

**Constitutive protocol for sound pressure measurement dated  
22.03.2024**

**Client:**

R-Engineering EOOD

**Object:**

Solar Park – Silistra city

**Discription**

Equivalent Sound pressure level measurment

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**Reviewed:** phd Tsvetan Nedkov

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## 1. Scope of work:

To conduct measurements of the Equivalent sound pressure level in the area provided for the construction of a solar park in the village of Polkovnik Lambrinovo at four points predetermined by the client in order to determine the background noise in the area.

The locations for the measurement points are indicated on the illustration with a star- Figura 1.

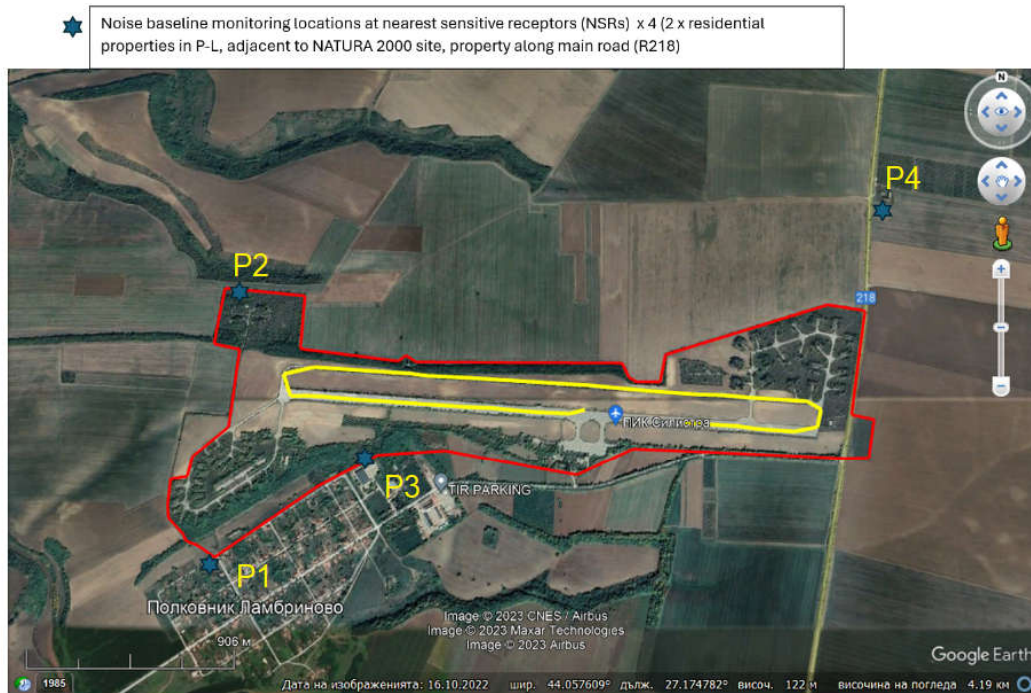


Figure 1 - Placement of measurement points

T1 is situated close to residential buildings in the populated area.

T2 is located at the northern boundary of the solar park.

T3 is positioned along the southern boundary of the park, next to the farm.

T4 is situated outside the boundaries of the solar park, next to the main road 218.

The necessary measurements should be conducted in three phases of the day (morning, daytime, and nighttime), and the obtained results will be analyzed according to Regulation No. 6 of June 26, 2006 (Official Gazette, issue 58 of July 18, 2006), which outlines the indicators for noise in the environment, reflecting the degree of discomfort during different parts of the day, the limit values of the indicators for noise in the environment, the methods for assessing the values of the noise indicators, and the harmful effects of noise on population health, specifically the nighttime standard."

## 2. Description of the measurement equipment, measurement method, and regulatory standards:

### 2.1. Description of the measurement equipment

Spectral analyzer – Pulsar Instruments, Model Quantifier 96



Legend:

Leq – Equivalent sound level

Lepd – Equivalent equivalent sound level at 8 o'clock working day

LAE – Sound Exposure Level: SEL with "A" Frequency Weighting

LAFmax – A-weighted, Fast, Maximum, Sound Level – conventional time weightings, F = Fast with time constants of 125 ms respectively.

Peak – Maximum level with a C or Flat [Z] Frequency Weighting

L1.0 – Middle sound level for 1% of the measurement time

L10.0 – Average sound level for 10% of the measurement time

L50.0 – Average sound level for 50% of the measurement time

L90.0 – Average sound level for 90 of the measurement time


L95.0 – Average sound level for 95% of the measurement time

Lmin – Minimum Sound Level: during a measurement period or a noise event

Certificate of calibration:

<b>CERTIFICATE OF CALIBRATION</b>	
ISSUED BY	<b>Pulsar Instruments Plc</b>
DATE OF ISSUE	<b>21 February 2023</b> CERTIFICATE NUMBER <b>187917</b>

 **Pulsar Instruments Plc**  
**Acoustic House**  
**Bridlington Road**  
**Hunmanby**  
**North Yorkshire**  
**YO14 0PH**  
**United Kingdom**

Page 1 of 2
Test engineer: D.Swalwell Electronically signed: 

## Microphone

### Microphone capsule

Manufacturer: Pulsar Instruments

Model: PM2

Serial Number: 021649E

### Calibration procedure

Date of calibration: 15 February 2023

Open circuit: 31.6 mV/Pa

Sensitivity at 1 kHz: -30.0 dB rel 1 V/Pa

The microphone capsule detailed above has been calibrated to the published data as described in the operating manual of the associated sound level meter (where applicable).

The frequency response was measured using an electrostatic actuator in accordance with BS EN 61094-6:2005 with the free-field response derived via standard correction data traceable to a National Measurement Institute.

The absolute sensitivity at 1 kHz was measured using an acoustic calibrator conforming to IEC 60942:2003 Class 1.

### Environmental conditions

Pressure: 101.20 kPa

Temperature: 20.0 °C

Humidity: 30.0 %

# CERTIFICATE OF CALIBRATION

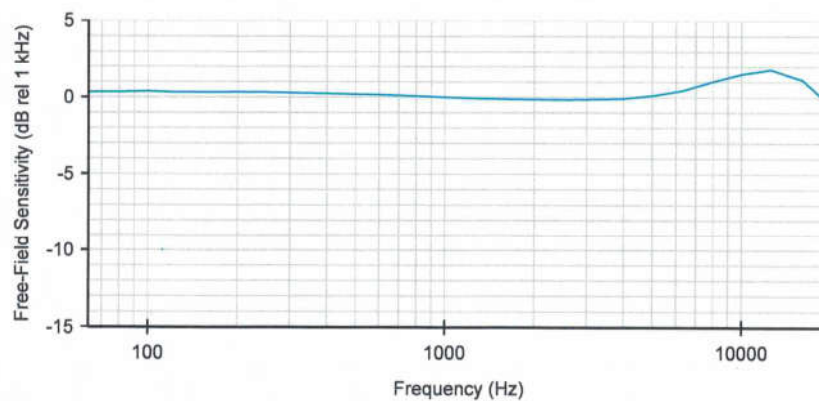
Certificate Number:  
**187917**

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## Free-Field Frequency Response : Tabular

Frequency (Hz)	Free-Field Sensitivity (dB rel 1 kHz)	Actuator Response (dB)
63	0.33	0.18
80	0.32	0.27
100	0.38	0.37
125	0.32	0.35
160	0.31	0.36
200	0.33	0.39
250	0.32	0.39
315	0.28	0.32
400	0.24	0.29
500	0.20	0.25
630	0.16	0.20
800	0.08	0.12
1 000	0.00	0.03
1 250	-0.06	-0.07
1 600	-0.11	-0.19
2 000	-0.14	-0.32
2 500	-0.16	-0.45
3 150	-0.13	-0.66
4 000	-0.09	-0.94
5 000	0.10	-1.21
6 300	0.44	-1.58
8 000	1.02	-2.09
10 000	1.51	-3.07
12 500	1.80	-4.68
16 000	1.13	-6.78
20 000	-0.53	-9.61

## Free-Field Frequency Response : Graphical



**CERTIFICATE OF CALIBRATION**ISSUED BY **Pulsar Instruments Plc**DATE OF ISSUE **21 February 2023** CERTIFICATE NUMBER **187921**

**Pulsar Instruments Plc**  
**Acoustic House**  
**Bridlington Road**  
**Hunmanby**  
**North Yorkshire**  
**YO14 0PH**  
**United Kingdom**

Page 1 of 2

Approved signatory

J. Johnston

Electronically signed:

**Sound Calibrator : IEC 60942:2003****Instrument information****Manufacturer:** Pulsar Instruments**Notes:****Model:** MODEL 106**Serial number:** 65791**Class:** 2**Test summary****Date of calibration:** 21 February 2023

The sound calibrator detailed above has been calibrated to the published data as described in the operating manual and in the half-inch configuration. The procedures and techniques used are as described in IEC60942\_2003 Annex B – Periodic Tests and three determinations of the sound pressure level, frequency and total distortion were made.

The sound pressure level was measured using a WS2F condenser microphone type MK:224 manufactured by Cirrus Research plc.

The results have been corrected to the reference pressure of 101.33 kPa using the manufacturer's data.

As public evidence was available, from a testing organisation responsible for approving the results of pattern evaluation tests, to demonstrate that the model of sound calibrator fully conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2003, the sound calibrator tested is considered to conform to all the Class 2 requirements of IEC 60942:2003.

The manufacturer's product information indicates that this model of sound calibrator has been formally pattern approved to IEC60942\_2003 Annex A to Class 2. This has been confirmed by PhysikalischTechnische Bundesanstalt (PTB).

**Notes:**

This certificate provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory. The results within this certificate relate only to the items calibrated. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k=2$ , providing a coverage probability of approximately 95%.

# CERTIFICATE OF CALIBRATION

Certificate Number:  
**187921**

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### Environmental conditions

The following conditions were recorded at the time of the test:

Pressure: 100.77 kPa  
 Temperature: 21.7 °C  
 Humidity: 40.3 %

### Test equipment

Equipment	Manufacturer	Model	Serial number
Distortion Meter	Keithley	2015	1063074
Acoustic Calibrator	Bruel and Kjaer	4231	2610257
Environmental Monitor	Comet	T7510	21962628

### Results

	Expected	Sample 1	Sample 2	Sample 3	Average	Deviation	Tolerance	Uncertainty
Level (dB)	94.00	94.00	93.98	93.98	<b>93.99</b>	-0.01	±0.75	0.11 dB
Distortion (%)	< 4.00	0.24	0.17	0.22	<b>0.21</b>	0.21	+4.00	0.13 %
Frequency (Hz)	1000.0	1000.4	1000.4	1000.4	<b>1000.4</b>	0.4	±20.0	0.1 Hz

The measured quantities or deviations (as applicable), extended by the expanded combined uncertainty of measurement, must not exceed the corresponding tolerance.

End of results

## 2.2. Method of conducting the measurements:

At each point, two measurements will be taken- to determine the equivalent sound pressure level with a measurement duration of 15 minutes and to determine the sound pressure level across the full frequency spectrum.

All measurements will be taken in three phases of the day - morning, noon, and evening.

## 2.3. Regulatory standards:

Regulation No. 6 of June 26, 2006 (Official Gazette, issue 58 of July 18, 2006) - regarding the indicators for noise in the environment, reflecting the degree of discomfort during different parts of the day, the limit values of the indicators for noise in the environment, the methods for assessing the values of the noise indicators, and the harmful effects of noise on population health.

Limit values of the noise levels in the different territories and planning zones in the urbanized territories and outside them.

Table № 2

Territories and development zones in urban areas and beyond	Equivalent level of noise in dB(A)		
	day	evening	night
1	2	3	4
1. Residential areas and territories	55	50	45



### 3. Results of measurements made with a spectrum analyzer –

#### 3.1. On-site calibration:

#### Measurement Report

Page 1

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##### Measurement Details

Date and Time: 3/22/2024 2:03 PM  
Sound Level Meter: Pulsar PM:96 B22508  
Recalibration Due: 5/31/2019

Calibrated to: 93.7 dB dB  
Calibration Offset: 0.8 dB dB

### 3.2. Results of measurements made in Point 1- morning measurement-

3.2.1. Results of measurements made for Equivalent sound pressure level in Point 1-  
 Figura 2:

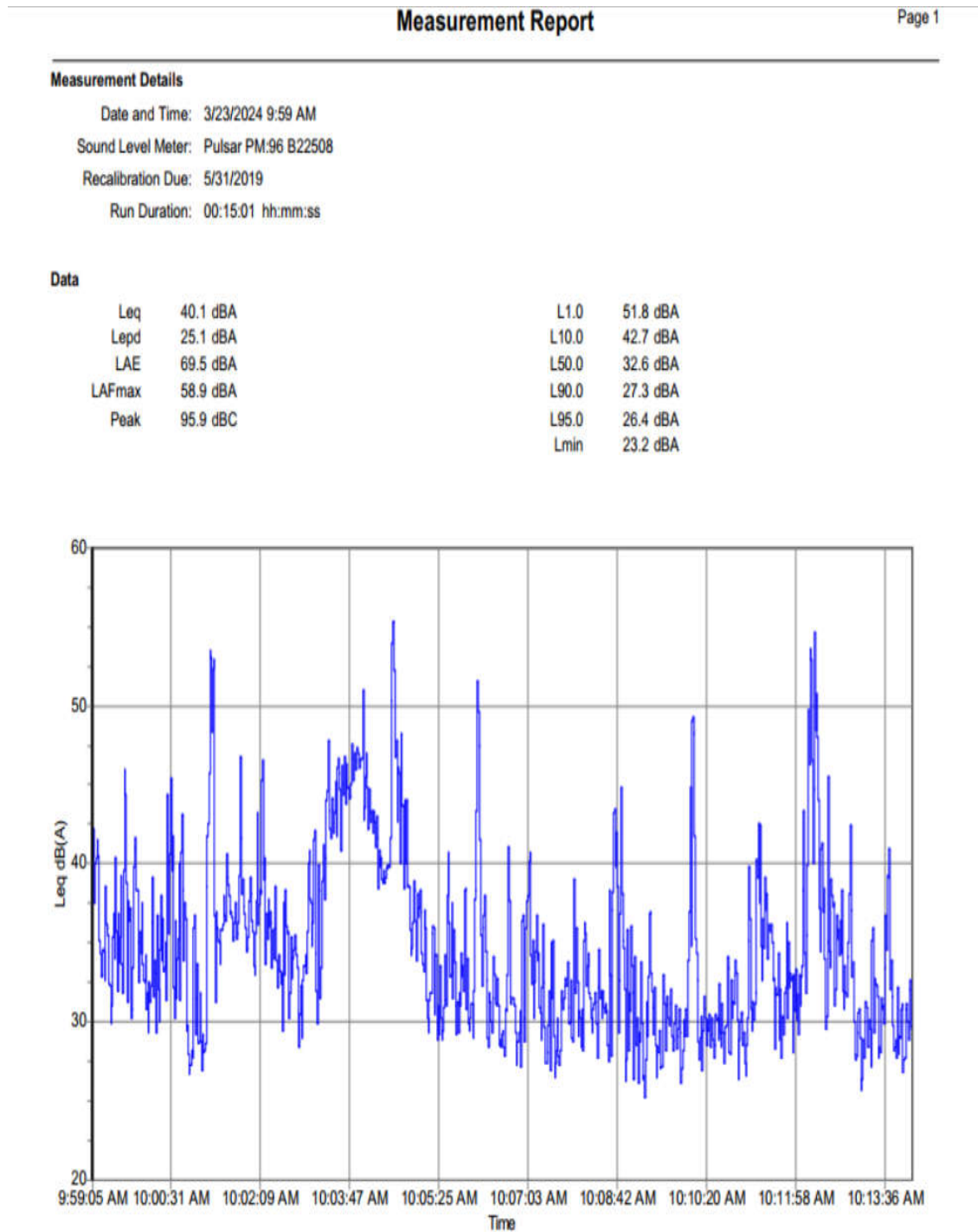


Figura 2.- Measurements made for Equivalent sound pressure level in Point-1 LAeq=40.1dB (A)

3.2.2. Results of measurements made throughout the frequency spectrum in Point 1-  
 1- Figura 3

### Measurement Report

**Measurement Details**

Date and Time: 3/23/2024 11:09 AM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:13:59 hh:mm:ss

**Data**

Band	LZeq,t	Band	LZeq,t	Band	LZeq,t
25 Hz	67.4 dB	315 Hz	34.4 dB	4 kHz	30.8 dB
31 Hz	66.0 dB	400 Hz	26.9 dB	5 kHz	32.5 dB
40 Hz	68.6 dB	500 Hz	24.6 dB	6.3 kHz	26.1 dB
50 Hz	65.0 dB	630 Hz	19.0 dB	8 kHz	18.2 dB
63 Hz	55.7 dB	800 Hz	31.7 dB	10 kHz	17.1 dB
80 Hz	57.0 dB	1 kHz	21.1 dB	12.5 kHz	17.4 dB
100 Hz	52.5 dB	1.25 kHz	26.2 dB	16 kHz	17.1 dB
125 Hz	59.0 dB	1.6 kHz	30.2 dB	Range	30-100 dB
160 Hz	50.9 dB	2 kHz	33.0 dB	Serial No.	B22508
200 Hz	38.3 dB	2.5 kHz	25.8 dB		
250 Hz	39.6 dB	3.15 kHz	25.6 dB		

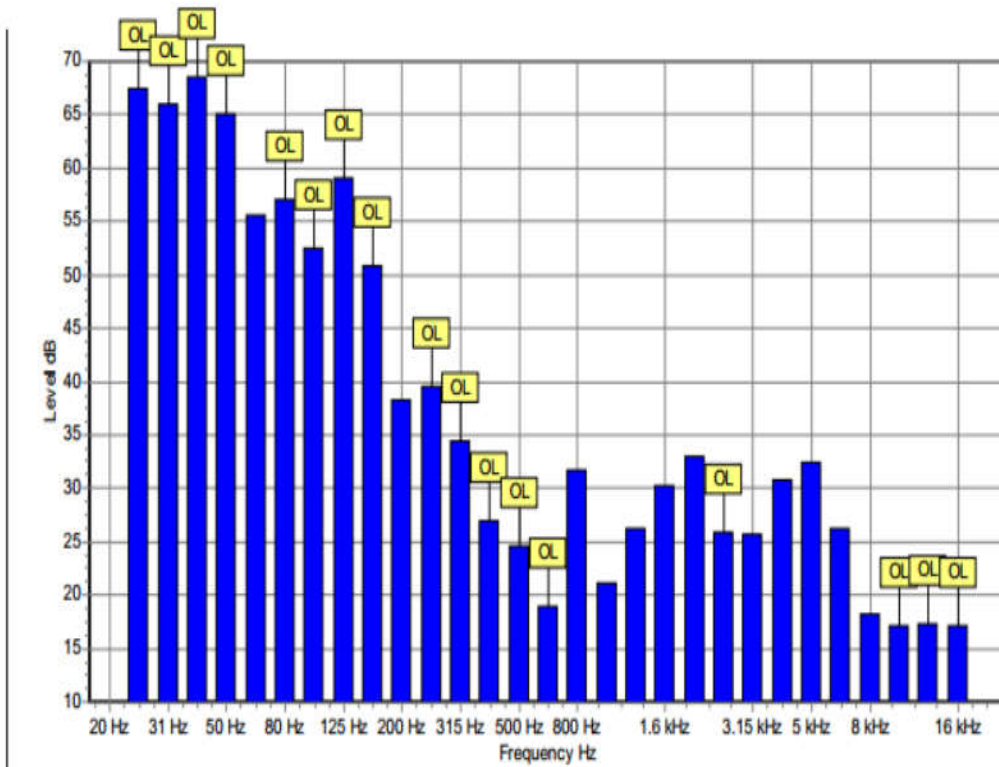


Figura 3.- Measurements made throughout the frequency spectrum in Point-1

### 3.3. Results of measurements made in Point 1- noon measurement-

3.3.1. Results of measurements made for Equivalent sound pressure level in Point 1-  
Figura 4:

#### Measurement Report

##### Measurement Details

Date and Time: 3/22/2024 2:07 PM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:14:59 hh:mm:ss

##### Data

Leq	45.1 dBA	L1.0	55.9 dBA
Lepd	30.0 dBA	L10.0	47.3 dBA
LAE	74.5 dBA	L50.0	35.1 dBA
LAFmax	67.4 dBA	L90.0	27.4 dBA
Peak	100.6 dBC	L95.0	26.5 dBA
		Lmin	22.9 dBA

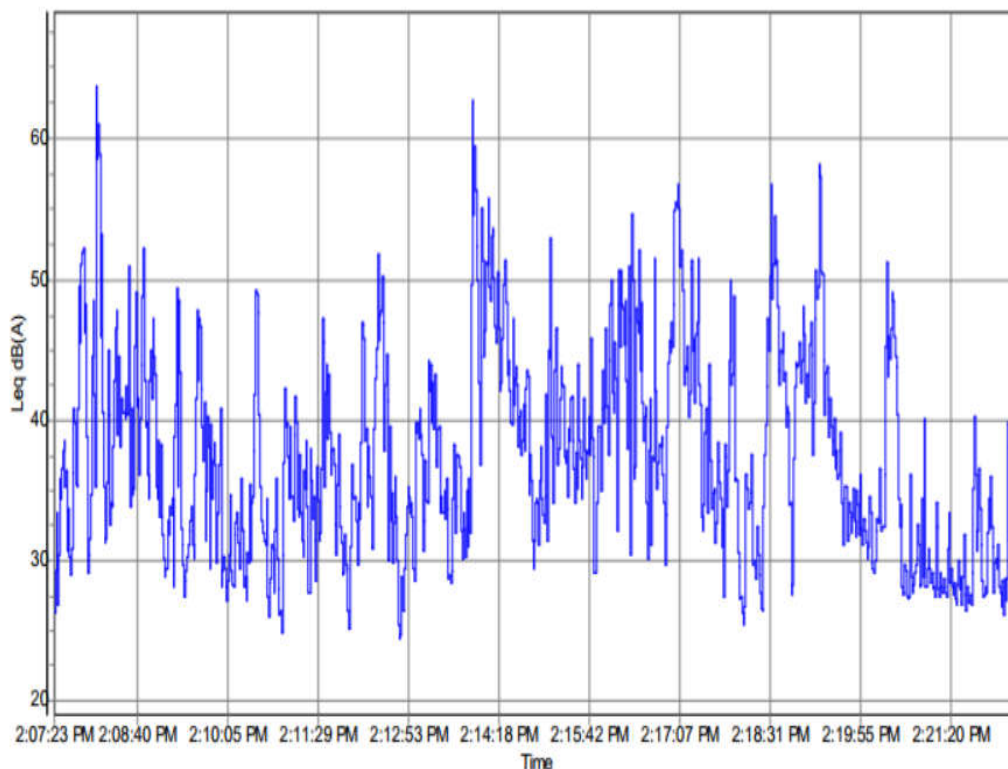


Figura 4.- Measurements made for Equivalent sound pressure level in Point-1 LAeq=45,1dB (A)

3.3.2. Results of measurements made throughout the frequency spectrum in Point 1- Figura 5

**Measurement Report**

**Measurement Details**

Date and Time: 3/22/2024 3:00 PM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:13:58 hh:mm:ss

**Data**

Band	LZeq,t	Band	LZeq,t	Band	LZeq,t
25 Hz	61.5 dB	315 Hz	40.1 dB	4 kHz	27.1 dB
31 Hz	50.8 dB	400 Hz	31.3 dB	5 kHz	26.3 dB
40 Hz	49.4 dB	500 Hz	20.9 dB	6.3 kHz	16.9 dB
50 Hz	46.5 dB	630 Hz	14.9 dB	8 kHz	15.5 dB
63 Hz	51.8 dB	800 Hz	13.8 dB	10 kHz	15.9 dB
80 Hz	56.2 dB	1 kHz	16.0 dB	12.5 kHz	16.2 dB
100 Hz	58.3 dB	1.25 kHz	18.4 dB	16 kHz	16.7 dB
125 Hz	49.8 dB	1.6 kHz	17.1 dB	Range	30-100 dB
160 Hz	43.3 dB	2 kHz	17.1 dB	Serial No.	B22508
200 Hz	51.6 dB	2.5 kHz	19.4 dB		
250 Hz	48.5 dB	3.15 kHz	23.1 dB		

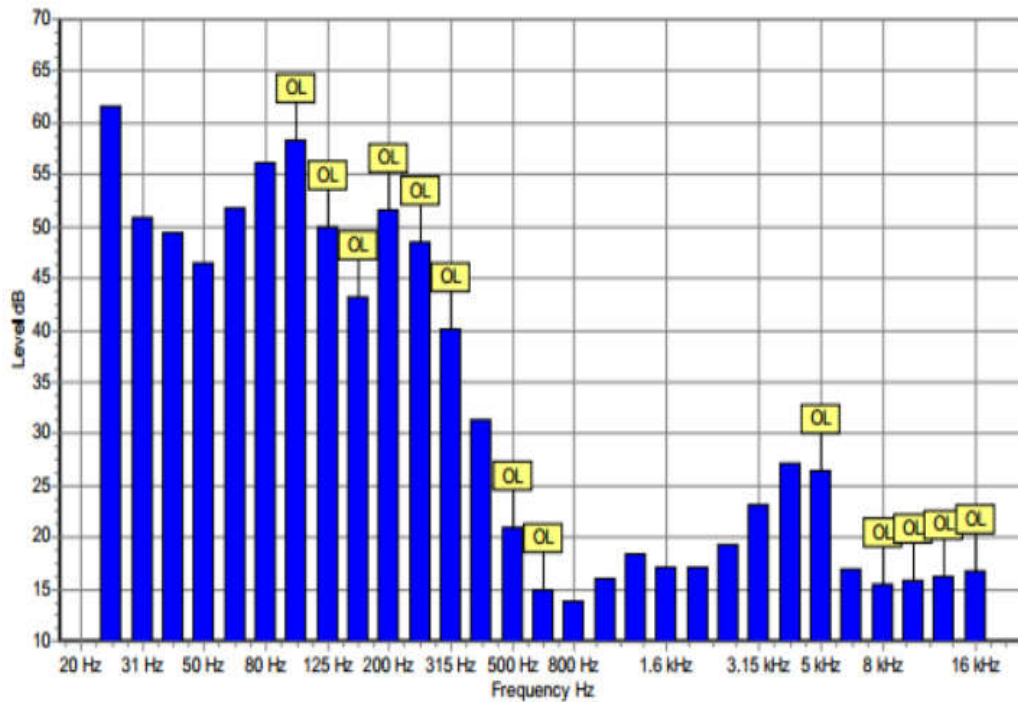


Figura 5.- Measurements made throughout the frequency spectrum in Point-1

### 3.4. Results of measurements made in Point 1 -night measurement-

3.4.1 Results of measurements made for Equivalent sound pressure level in Point 1- Figura 6:

## Measurement Report

Page 1

### Measurement Details

Date and Time: 3/22/2024 10:18 PM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:14:59 hh:mm:ss

### Data

Leq	37.0 dBA	L1.0	48.2 dBA
Lepd	21.9 dBA	L10.0	40.2 dBA
LAE	66.3 dBA	L50.0	28.3 dBA
LAFmax	52.7 dBA	L90.0	23.0 dBA
Peak	79.2 dBC	L95.0	22.3 dBA
		Lmin	20.5 dBA

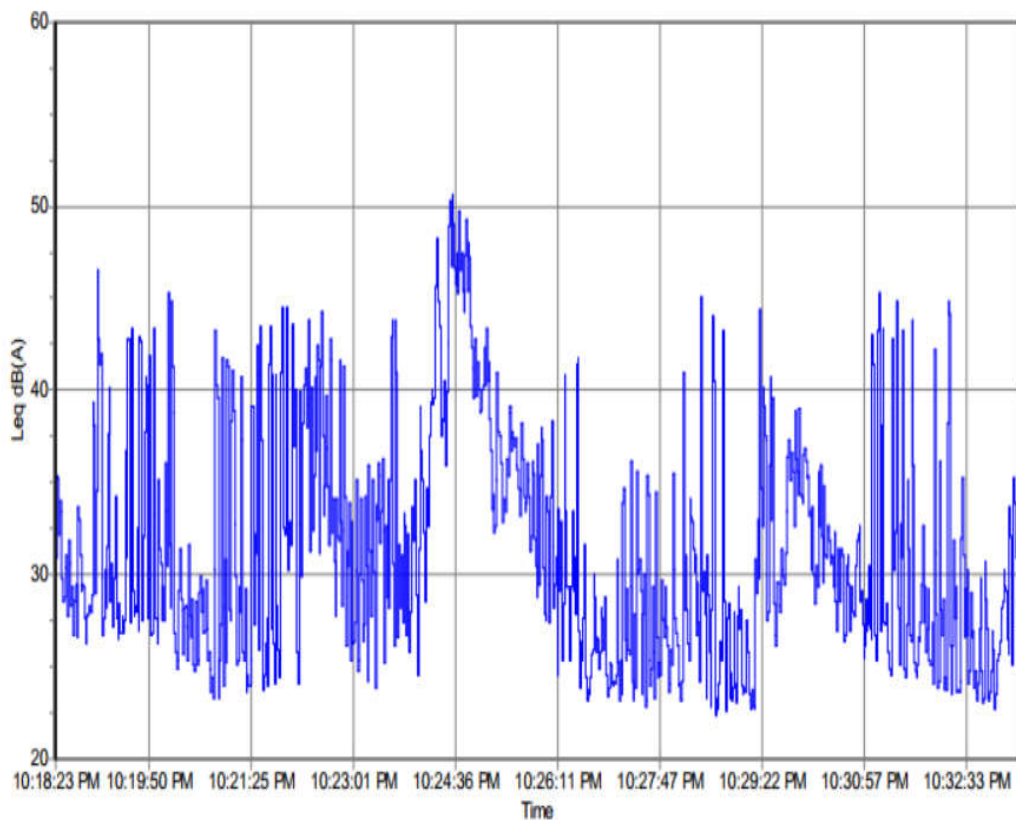


Figura 6.- Measurements made for Equivalent sound pressure level in Point-1 LAeq=37.0dB (A)

3.4.2. Results of measurements made throughout the frequency spectrum level in Point 2- Figura 7

### Measurement Report

**Measurement Details**

Date and Time: 3/23/2024 11:09 AM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:13:59 hh:mm:ss

**Data**

Band	LZeq,t	Band	LZeq,t	Band	LZeq,t
25 Hz	67.4 dB	315 Hz	34.4 dB	4 kHz	30.8 dB
31 Hz	66.0 dB	400 Hz	26.9 dB	5 kHz	32.5 dB
40 Hz	68.6 dB	500 Hz	24.6 dB	6.3 kHz	26.1 dB
50 Hz	65.0 dB	630 Hz	19.0 dB	8 kHz	18.2 dB
63 Hz	55.7 dB	800 Hz	31.7 dB	10 kHz	17.1 dB
80 Hz	57.0 dB	1 kHz	21.1 dB	12.5 kHz	17.4 dB
100 Hz	52.5 dB	1.25 kHz	26.2 dB	16 kHz	17.1 dB
125 Hz	59.0 dB	1.6 kHz	30.2 dB	Range	30-100 dB
160 Hz	50.9 dB	2 kHz	33.0 dB	Serial No.	B22508
200 Hz	38.3 dB	2.5 kHz	25.8 dB		
250 Hz	39.6 dB	3.15 kHz	25.6 dB		

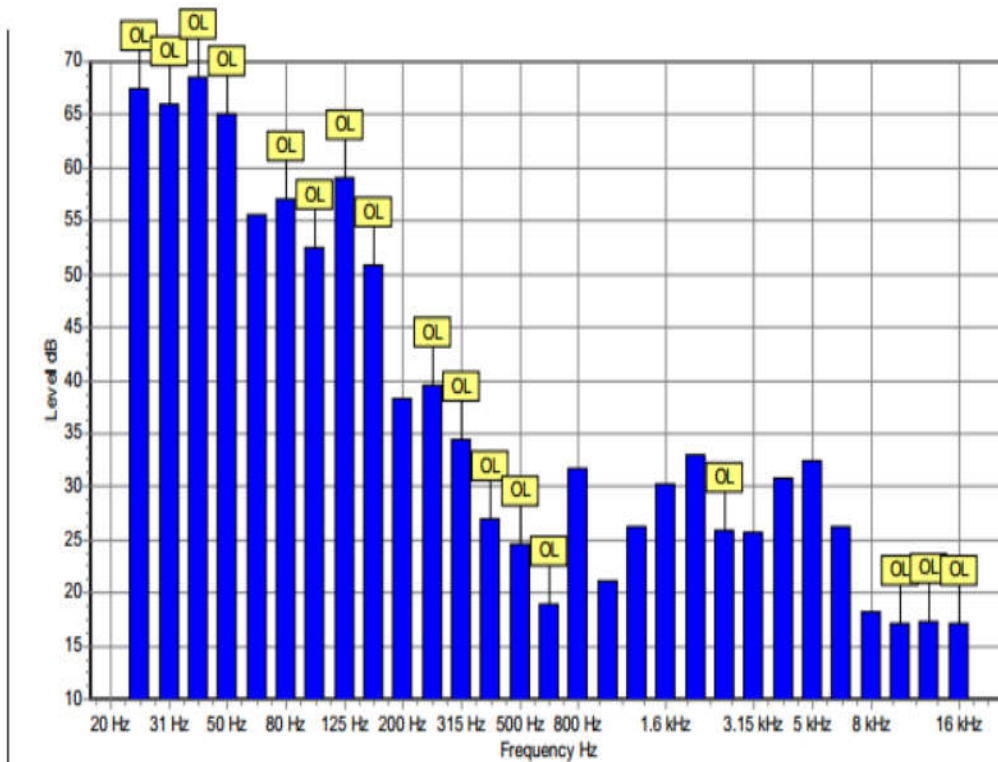


Figura 7.- Measurements made throughout the frequency spectrum in Point-1

### 3.5. Results of measurements made in Point 2- morning measurement-

3.5.1. Results of measurements made for Equivalent sound pressure level in Point 2- Figura 8:

## Measurement Report

Page 1

### Measurement Details

Date and Time: 3/23/2024 11:33 AM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:15:00 hh:mm:ss

### Data

Leq	57.0 dBA	L1.0	68.3 dBA
Lepd	41.9 dBA	L10.0	60.2 dBA
LAE	86.3 dBA	L50.0	46.9 dBA
LAFmax	77.4 dBA	L90.0	30.9 dBA
Peak	103.6 dBC	L95.0	27.9 dBA
		Lmin	23.5 dBA

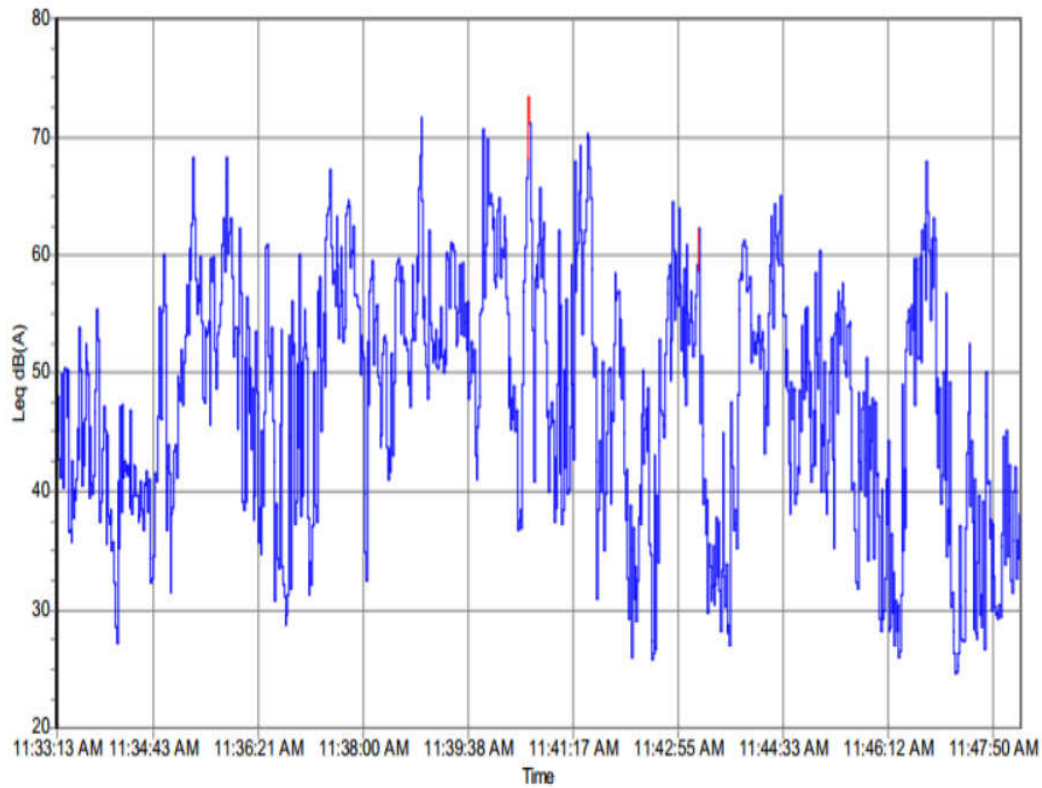


Figura 8.- Measurements made for Equivalent sound pressure level in Point-2 LAeq=57.0dB (A)

3.5.2. Results of measurements made for throughout the frequency spectrum in Point 2- Figura 9

**Measurement Report**

**Measurement Details**

Date and Time: 3/23/2024 12:21 PM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:13:57 hh:mm:ss

**Data**

Band	LZeq,t	Band	LZeq,t	Band	LZeq,t
25 Hz	56.8 dB	315 Hz	58.1 dB	4 kHz	26.0 dB
31 Hz	62.6 dB	400 Hz	52.7 dB	5 kHz	27.2 dB
40 Hz	70.2 dB	500 Hz	49.9 dB	6.3 kHz	20.5 dB
50 Hz	74.4 dB	630 Hz	38.8 dB	8 kHz	12.4 dB
63 Hz	74.4 dB	800 Hz	54.3 dB	10 kHz	12.8 dB
80 Hz	71.4 dB	1 kHz	37.8 dB	12.5 kHz	11.4 dB
100 Hz	68.4 dB	1.25 kHz	29.9 dB	16 kHz	17.4 dB
125 Hz	43.7 dB	1.6 kHz	20.6 dB	Range	30-100 dB
160 Hz	65.4 dB	2 kHz	22.2 dB	Serial No.	B22508
200 Hz	65.3 dB	2.5 kHz	19.1 dB		
250 Hz	68.3 dB	3.15 kHz	26.6 dB		

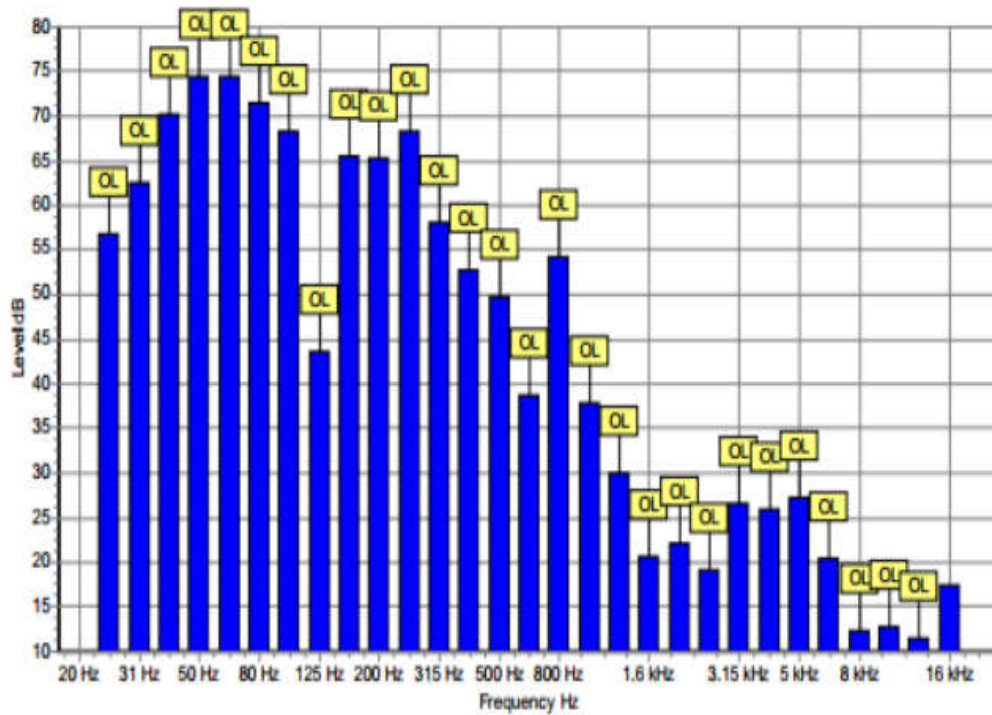


Figura 9.- Measurements made throughout the frequency spectrum in Point-2

3.6. Results of measurements made in Point 2- noon measurement-

3.6.1. Results of measurements made for Equivalent sound pressure level in Point 2- Figura 10:

**Measurement Report**

**Measurement Details**

Date and Time: 3/22/2024 4:13 PM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:14:59 hh:mm:ss

**Data**

Leq	47.1 dBA	L1.0	59.1 dBA
Lepd	32.1 dBA	L10.0	50.5 dBA
LAE	76.5 dBA	L50.0	36.8 dBA
LAFmax	67.6 dBA	L90.0	23.5 dBA
Peak	101.4 dBC	L95.0	21.8 dBA
		Lmin	20.1 dBA

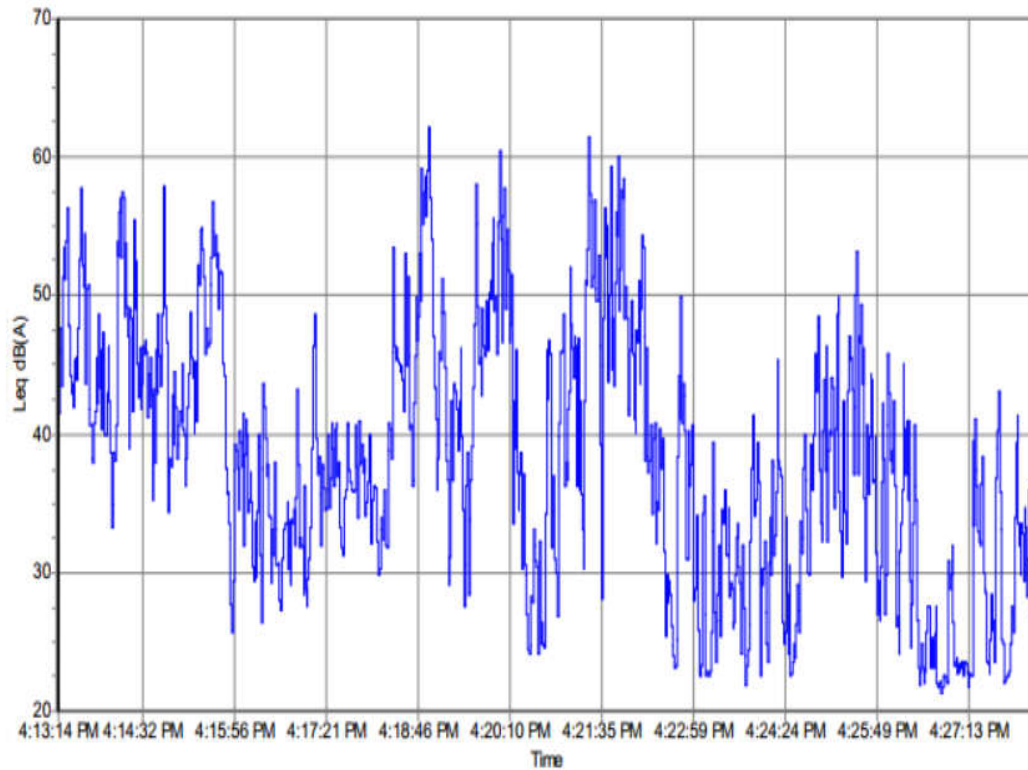


Figura 10.- Measurements made for Equivalent sound pressure level in Point-2 LAeq=47.1dB(A)

3.6.2. Results of measurements made throughout the frequency spectrum in Point 2- Figura 11

**Measurement Report**

**Measurement Details**

Date and Time: 3/22/2024 3:21 PM

Sound Level Meter: Pulsar PM:96 B22508

Recalibration Due: 5/31/2019

Run Duration: 00:13:58 h:mm:ss

**Data**

Band	LZeq,t	Band	LZeq,t	Band	LZeq,t
25 Hz	63.1 dB	315 Hz	18.6 dB	4 kHz	18.1 dB
31 Hz	68.3 dB	400 Hz	19.4 dB	5 kHz	20.9 dB
40 Hz	56.1 dB	500 Hz	19.3 dB	6.3 kHz	17.1 dB
50 Hz	59.9 dB	630 Hz	21.1 dB	8 kHz	15.6 dB
63 Hz	67.2 dB	800 Hz	27.3 dB	10 kHz	16.0 dB
80 Hz	58.7 dB	1 kHz	20.0 dB	12.5 kHz	16.3 dB
100 Hz	30.9 dB	1.25 kHz	21.7 dB	16 kHz	16.7 dB
125 Hz	39.5 dB	1.6 kHz	18.8 dB	Range	40-110 dB
160 Hz	50.8 dB	2 kHz	17.8 dB	Serial No.	B22508
200 Hz	42.4 dB	2.5 kHz	18.7 dB		
250 Hz	35.9 dB	3.15 kHz	18.3 dB		

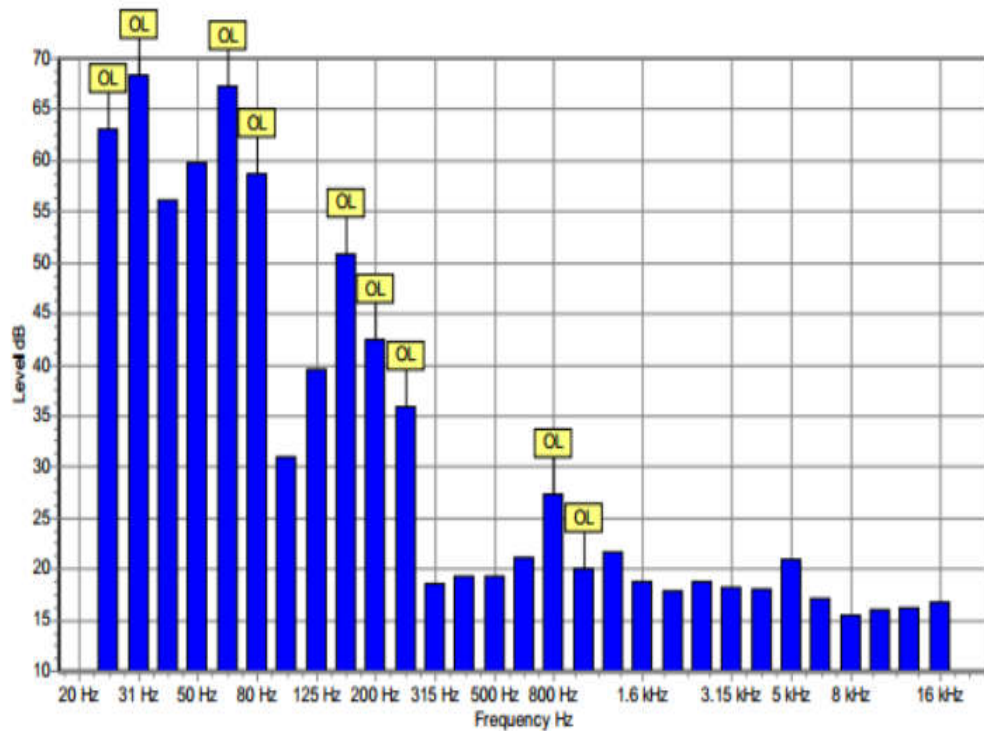


Figura 11.- Measurements made throughout the frequency spectrum in Point-2

### 3.7. Results of measurements made in Point 2 -night measurement-

3.7.1. Results of measurements made for Equivalent sound pressure level in Point 2- Figura 12:

## Measurement Report

Page 1

### Measurement Details

Date and Time: 3/23/2024 12:21 AM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:15:00 hh:mm:ss

### Data

Leq	30.9 dBA	L1.0	40.8 dBA
Lepd	15.9 dBA	L10.0	32.6 dBA
LAE	60.6 dBA	L50.0	24.3 dBA
LAFmax	58.4 dBA	L90.0	21.4 dBA
Peak	89.8 dBC	L95.0	21.1 dBA
		Lmin	19.4 dBA

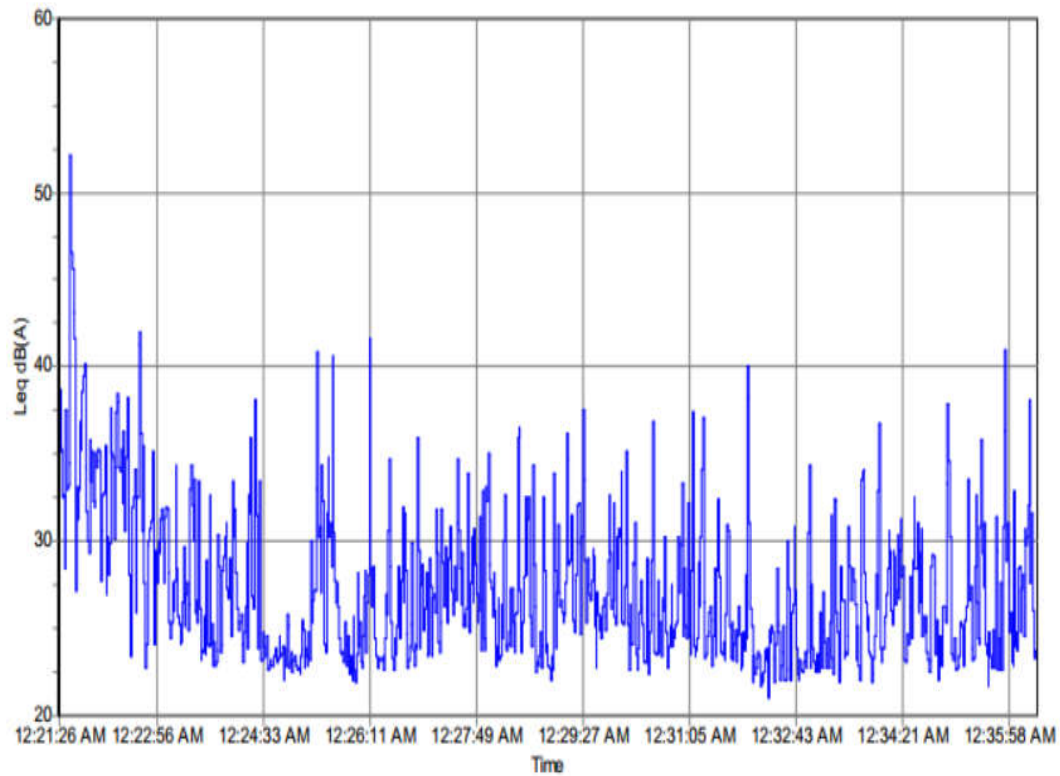


Figura 12.- Measurements made for Equivalent sound pressure level in Point-2 LAeq=30.9dB(A)

3.7.2. Results of measurements made throughout the frequency spectrum in Point 2- Figura 13

**Measurement Report**

**Measurement Details**

Date and Time: 3/23/2024 12:52 AM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:13:58 hh:mm:ss

**Data**

Band	LZeq,t	Band	LZeq,t	Band	LZeq,t
25 Hz	54.1 dB	315 Hz	14.8 dB	4 kHz	14.0 dB
31 Hz	52.3 dB	400 Hz	15.5 dB	5 kHz	14.3 dB
40 Hz	55.2 dB	500 Hz	13.7 dB	6.3 kHz	14.4 dB
50 Hz	44.9 dB	630 Hz	13.4 dB	8 kHz	14.9 dB
63 Hz	42.2 dB	800 Hz	13.5 dB	10 kHz	15.3 dB
80 Hz	40.0 dB	1 kHz	12.8 dB	12.5 kHz	15.5 dB
100 Hz	38.4 dB	1.25 kHz	13.5 dB	16 kHz	16.0 dB
125 Hz	28.1 dB	1.6 kHz	13.1 dB	Range	20-90 dB
160 Hz	21.0 dB	2 kHz	12.9 dB	Serial No.	B22508
200 Hz	18.9 dB	2.5 kHz	13.4 dB		
250 Hz	17.6 dB	3.15 kHz	13.8 dB		

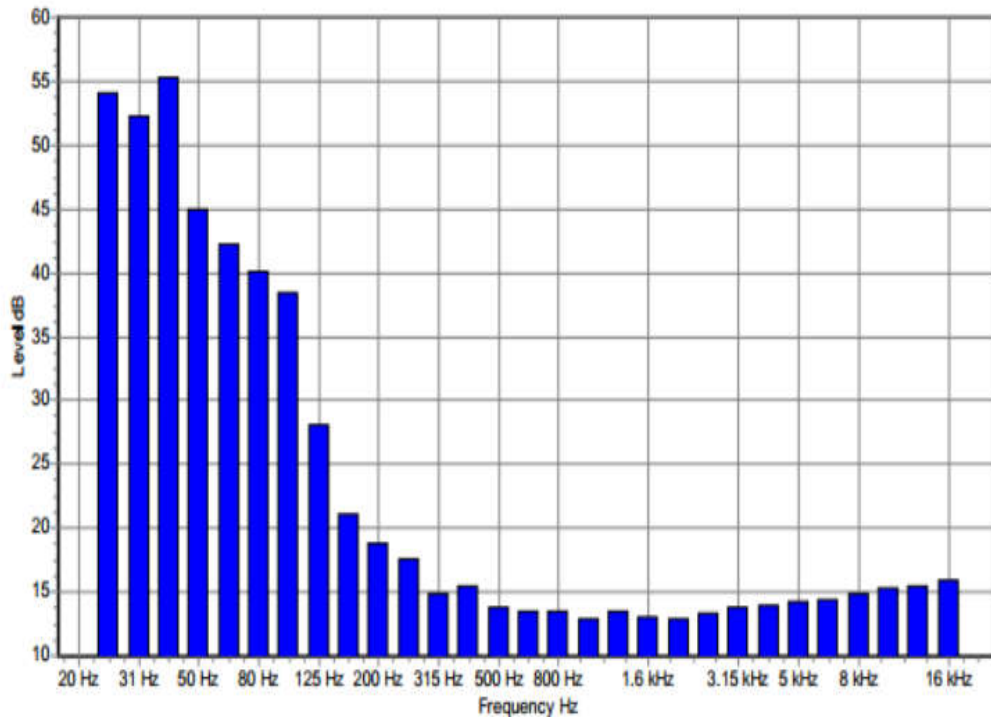


Figura 13.- Measurements made throughout the frequency spectrum in Point-2

### 3.8. Results of measurements made in Point 3- morning measurement-

3.8.1. Results of measurements made for Equivalent sound pressure level in Point 3- Figura 14:

## Measurement Report

Page 1

### Measurement Details

Date and Time: 3/23/2024 1:11 PM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:14:59 hh:mm:ss

### Data

Leq	54.8 dBA	L1.0	65.9 dBA
Lepd	39.7 dBA	L10.0	57.8 dBA
LAE	84.1 dBA	L50.0	43.8 dBA
LAFmax	76.2 dBA	L90.0	31.9 dBA
Peak	102.9 dBC	L95.0	30.0 dBA
		Lmin	25.5 dBA

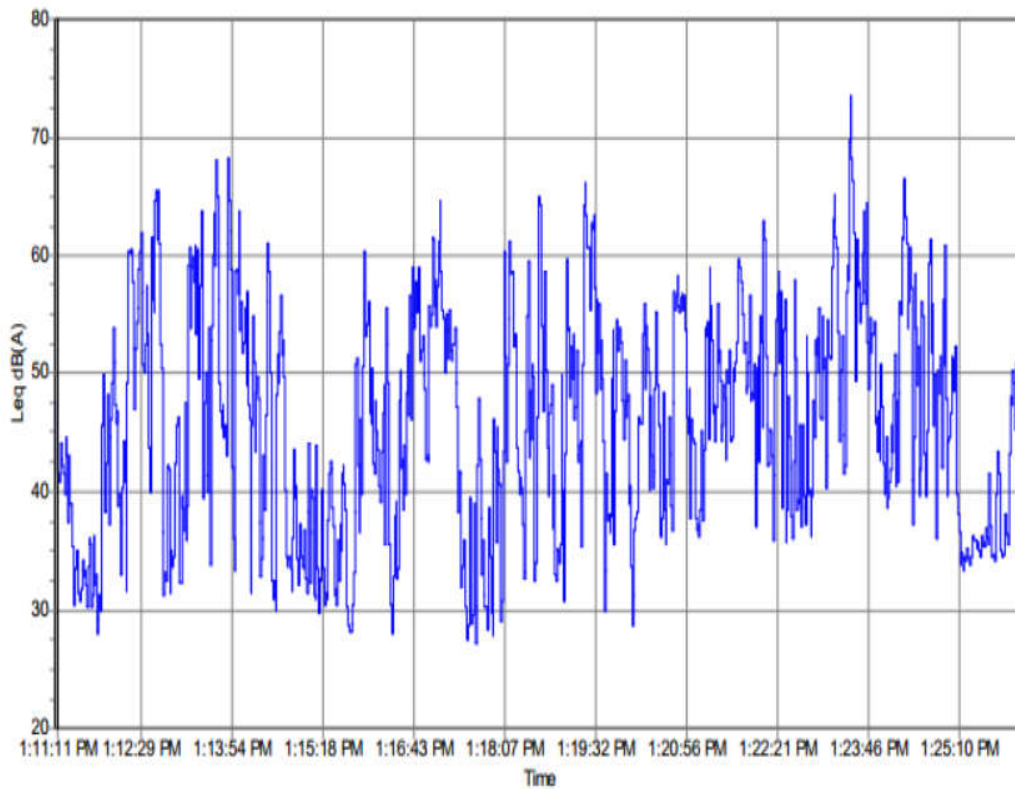


Figura 14.- Measurements made for Equivalent sound pressure level in Point-3 LAeq=54.8dB(A)

3.8.2. Results of measurements made for throughout the frequency spectrum in Point 3- Figura 15

### Measurement Report

**Measurement Details**

Date and Time: 3/23/2024 1:41 PM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:13:58 hh:mm:ss

**Data**

Band	LZeq,t	Band	LZeq,t	Band	LZeq,t
25 Hz	75.2 dB	315 Hz	51.1 dB	4 kHz	12.2 dB
31 Hz	77.5 dB	400 Hz	46.2 dB	5 kHz	20.4 dB
40 Hz	62.5 dB	500 Hz	35.3 dB	6.3 kHz	17.2 dB
50 Hz	71.2 dB	630 Hz	22.1 dB	8 kHz	17.6 dB
63 Hz	56.8 dB	800 Hz	21.2 dB	10 kHz	17.4 dB
80 Hz	74.1 dB	1 kHz	22.8 dB	12.5 kHz	17.6 dB
100 Hz	73.7 dB	1.25 kHz	22.1 dB	16 kHz	11.5 dB
125 Hz	65.4 dB	1.6 kHz	30.1 dB	Range	30-100 dB
160 Hz	64.0 dB	2 kHz	28.3 dB	Serial No.	B22508
200 Hz	64.1 dB	2.5 kHz	22.4 dB		
250 Hz	62.3 dB	3.15 kHz	20.7 dB		

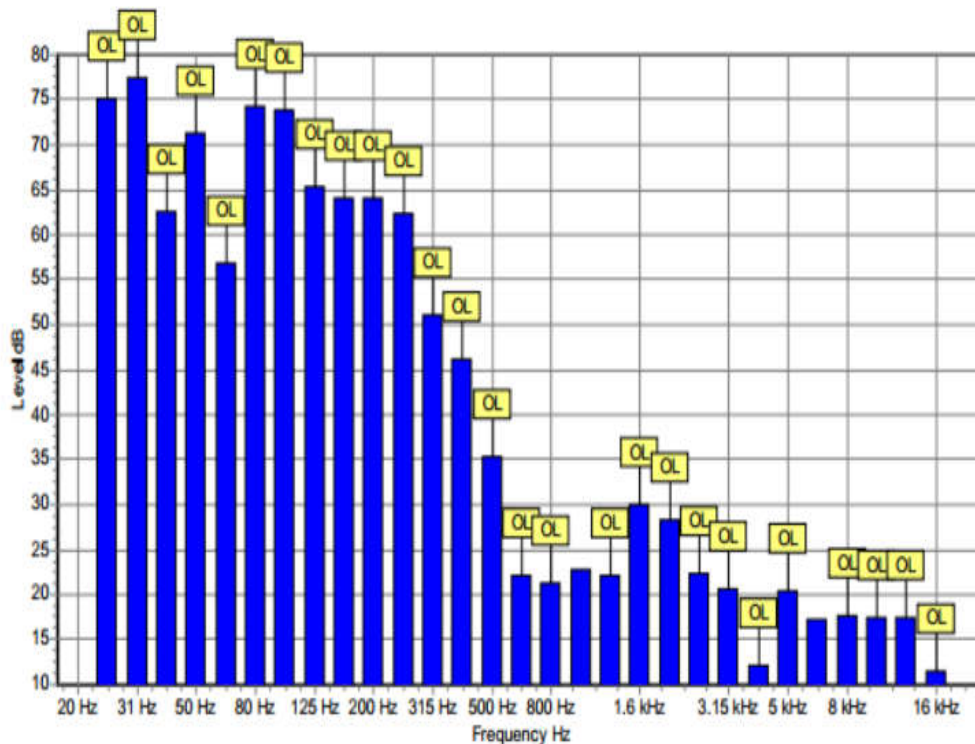


Figura 15.- Measurements made throughout the frequency spectrum in Point-3

3.9. Results of measurements made in Point 3- noon measurement-

3.9.1. Results of measurements made for Equivalent sound pressure level in Point 3- Figura 16:

**Measurement Report**

**Measurement Details**

Date and Time: 3/22/2024 5:44 PM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:15:01 hh:mm:ss

**Data**

Leq	37.5 dBA	L1.0	45.5 dBA
Lepd	22.4 dBA	L10.0	40.2 dBA
LAE	66.8 dBA	L50.0	36.0 dBA
LAFmax	55.4 dBA	L90.0	26.9 dBA
Peak	93.9 dBC	L95.0	26.1 dBA
		Lmin	23.8 dBA

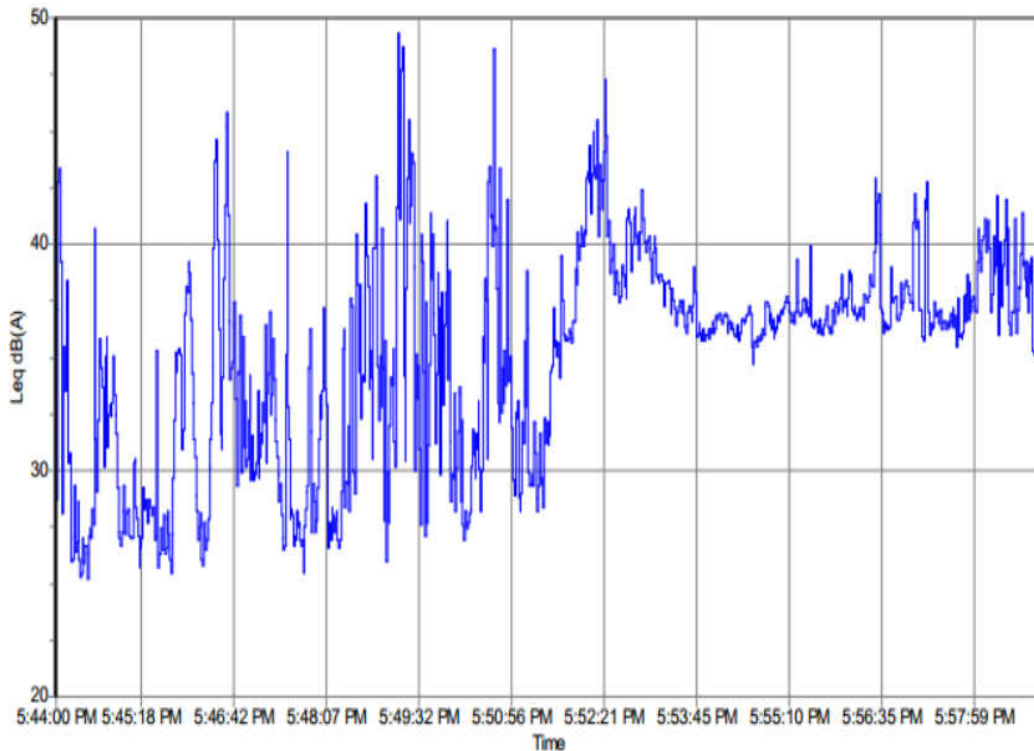


Figura 16.- Measurements made for Equivalent sound pressure level in Point-3 LAeq=37.5dB(A)

3.9.2. Results of measurements made throughout the frequency spectrum in Point 2- Figura 17

### Measurement Report

**Measurement Details**

Date and Time: 3/22/2024 4:46 PM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:13:57 hh:mm:ss

**Data**

Band	LZeq,t	Band	LZeq,t	Band	LZeq,t
25 Hz	62.9 dB	315 Hz	26.2 dB	4 kHz	14.8 dB
31 Hz	66.9 dB	400 Hz	18.1 dB	5 kHz	14.9 dB
40 Hz	69.9 dB	500 Hz	19.8 dB	6.3 kHz	14.9 dB
50 Hz	63.3 dB	630 Hz	14.7 dB	8 kHz	15.6 dB
63 Hz	57.1 dB	800 Hz	14.3 dB	10 kHz	15.8 dB
80 Hz	57.1 dB	1 kHz	13.2 dB	12.5 kHz	16.2 dB
100 Hz	58.6 dB	1.25 kHz	13.8 dB	16 kHz	16.6 dB
125 Hz	46.0 dB	1.6 kHz	13.7 dB	Range	20-90 dB
160 Hz	48.9 dB	2 kHz	14.1 dB	Serial No.	B22508
200 Hz	41.0 dB	2.5 kHz	14.6 dB		
250 Hz	29.7 dB	3.15 kHz	14.8 dB		

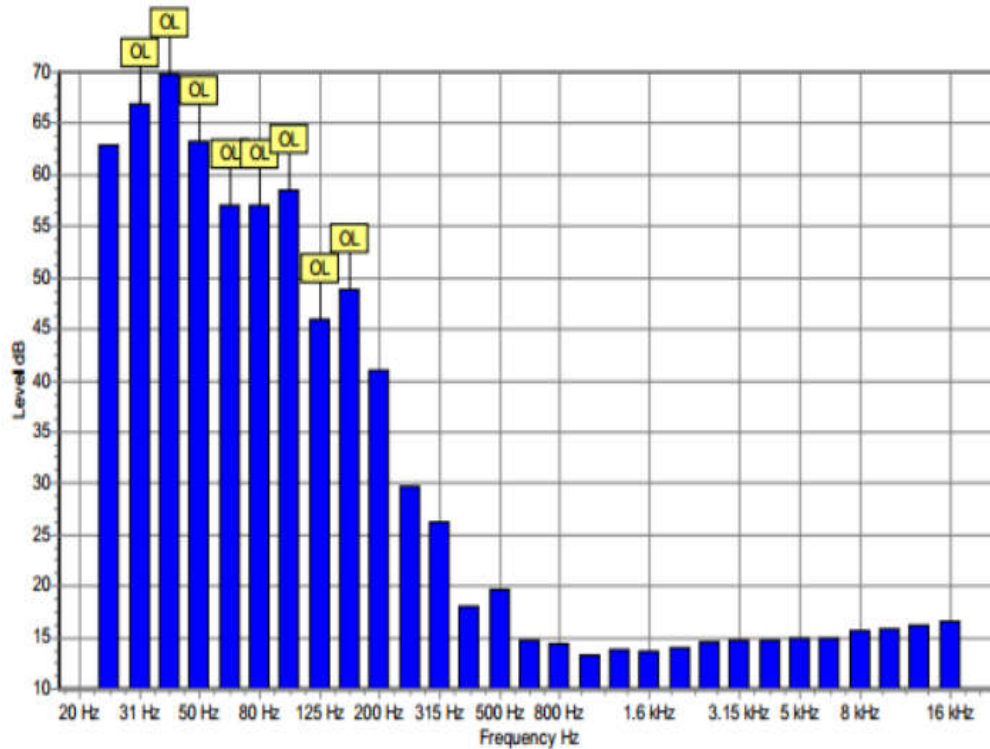


Figura 17.- Measurements made throughout the frequency spectrum in Point-3

3.10. Results of measurements made in Point 3 -night measurement-

3.10.1. Results of measurements made for Equivalent sound pressure level in Point 3- Figura 18:

**Measurement Report**

**Measurement Details**

Date and Time: 3/23/2024 1:40 AM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:15:01 hh:mm:ss

**Data**

Leq	34.5 dBA	L1.0	46.5 dBA
Lepd	19.4 dBA	L10.0	35.9 dBA
LAE	64.0 dBA	L50.0	24.8 dBA
LAFmax	55.9 dBA	L90.0	21.3 dBA
Peak	77.3 dBC	L95.0	20.9 dBA
		Lmin	19.5 dBA

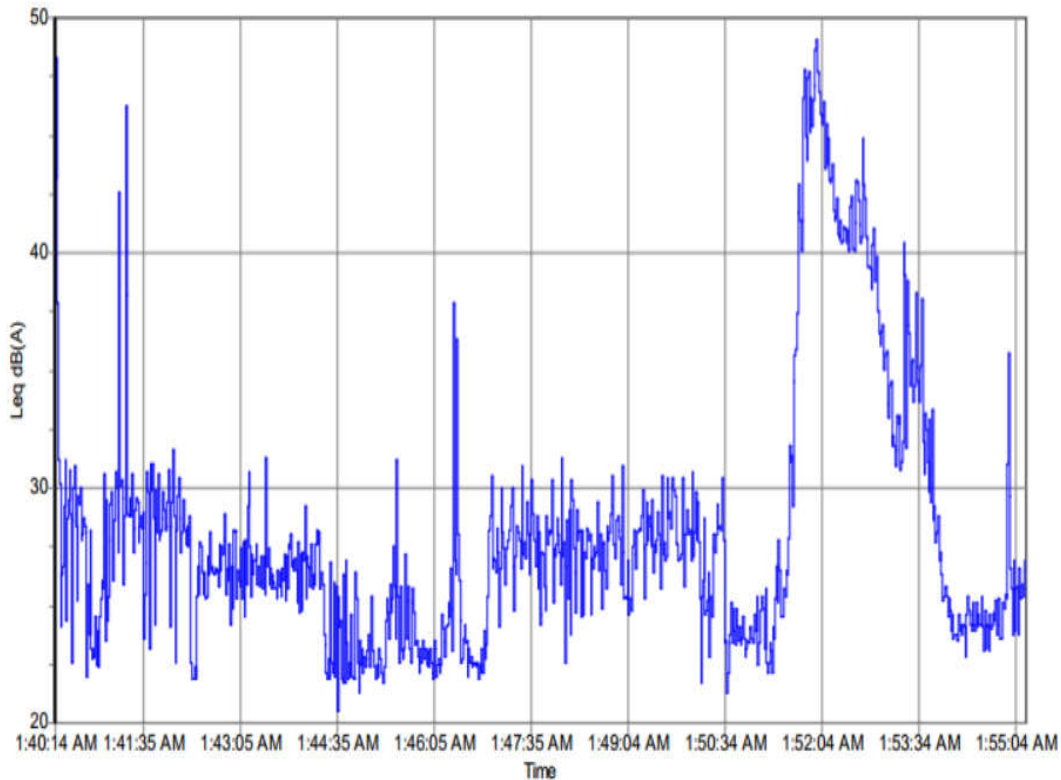


Figura 18.- Measurements made for Equivalent sound pressure level in Point-3 LAeq=34.5dB(A)

3.10.2. Results of measurements made throughout the frequency spectrum in Point 3- Figura 19

**Measurement Report**

**Measurement Details**

Date and Time: 3/23/2024 1:56 AM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:13:58 hh:mm:ss

**Data**

Band	LZeq,t	Band	LZeq,t	Band	LZeq,t
25 Hz	46.1 dB	315 Hz	21.4 dB	4 kHz	14.1 dB
31 Hz	39.1 dB	400 Hz	23.4 dB	5 kHz	14.2 dB
40 Hz	37.5 dB	500 Hz	23.3 dB	6.3 kHz	14.5 dB
50 Hz	40.4 dB	630 Hz	24.4 dB	8 kHz	16.1 dB
63 Hz	37.7 dB	800 Hz	20.7 dB	10 kHz	15.3 dB
80 Hz	37.7 dB	1 kHz	13.2 dB	12.5 kHz	15.4 dB
100 Hz	40.0 dB	1.25 kHz	15.4 dB	16 kHz	15.8 dB
125 Hz	43.3 dB	1.6 kHz	14.4 dB	Range	10-80 dB
160 Hz	37.5 dB	2 kHz	13.0 dB	Serial No.	B22508
200 Hz	24.5 dB	2.5 kHz	13.3 dB		
250 Hz	25.8 dB	3.15 kHz	13.9 dB		

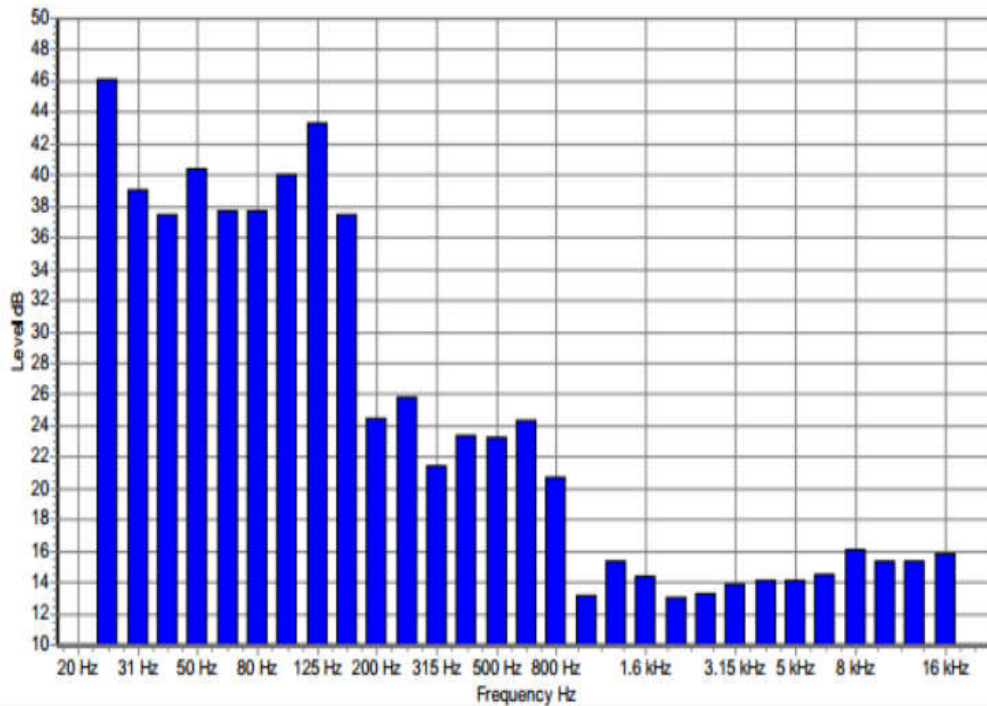


Figura 19.- Measurements made throughout the frequency spectrum in Point-3

### 3.11. Results of measurements made in Point 4- morning measurement-

3.11.1. Results of measurements made for Equivalent sound pressure level in Point 4- Figura 20:

## Measurement Report

Page 1

### Measurement Details

Date and Time: 3/23/2024 2:03 PM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:15:00 hh:mm:ss

### Data

Leq	58.3 dBA	L1.0	67.6 dBA
Lepd	43.3 dBA	L10.0	62.5 dBA
LAE	87.7 dBA	L50.0	53.5 dBA
LAFmax	73.5 dBA	L90.0	42.0 dBA
Peak	103.0 dBC	L95.0	38.4 dBA
		Lmin	28.1 dBA

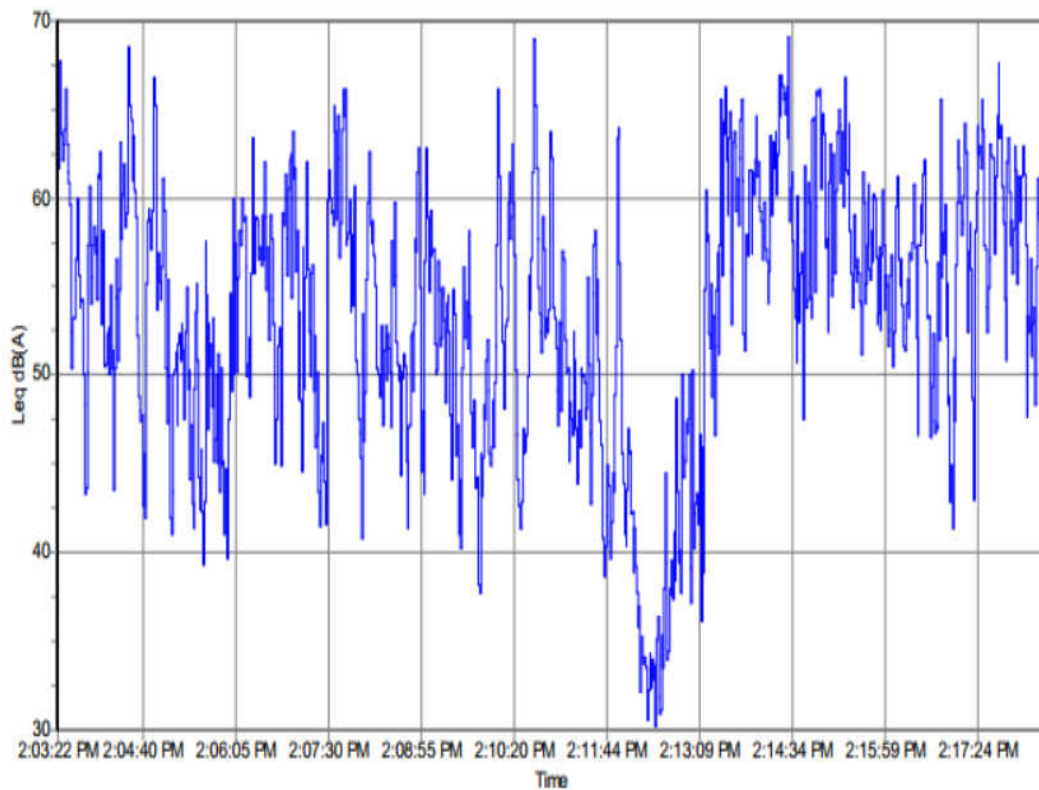


Figura 21.- Measurements made for Equivalent sound pressure level in Point-4 LAeq=58.3dB(A)

3.11.2. Results of measurements made for throughout the frequency spectrum in Point 4- Figura 22

### Measurement Report

**Measurement Details**

Date and Time: 3/23/2024 2:18 PM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:13:58 hh:mm:ss

**Data**

Band	LZeq,t	Band	LZeq,t	Band	LZeq,t
25 Hz	70.5 dB	315 Hz	46.2 dB	4 kHz	29.9 dB
31 Hz	67.9 dB	400 Hz	40.0 dB	5 kHz	22.4 dB
40 Hz	70.8 dB	500 Hz	28.4 dB	6.3 kHz	18.3 dB
50 Hz	62.1 dB	630 Hz	19.0 dB	8 kHz	22.6 dB
63 Hz	53.9 dB	800 Hz	42.8 dB	10 kHz	16.9 dB
80 Hz	47.9 dB	1 kHz	22.6 dB	12.5 kHz	16.8 dB
100 Hz	50.6 dB	1.25 kHz	37.8 dB	16 kHz	17.3 dB
125 Hz	50.7 dB	1.6 kHz	22.3 dB	Range	40-110 dB
160 Hz	49.6 dB	2 kHz	40.6 dB	Serial No.	B22508
200 Hz	47.4 dB	2.5 kHz	15.4 dB		
250 Hz	36.8 dB	3.15 kHz	15.1 dB		

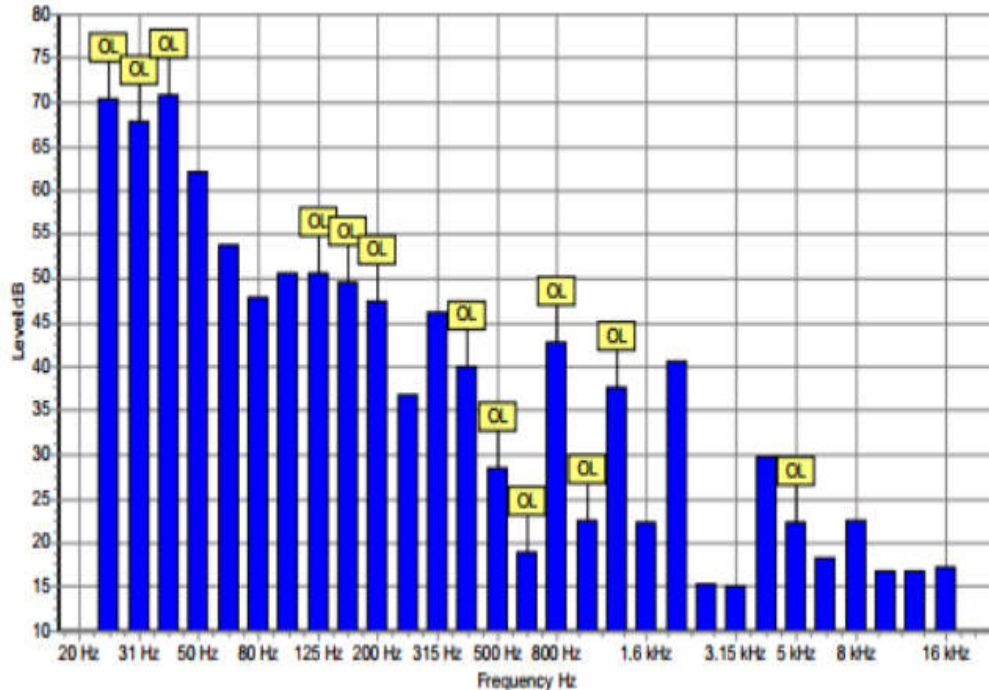


Figura 22.- Measurements made throughout the frequency spectrum in Point-4

### 3.12. Results of measurements made in Point 4- noon measurement-

3.12.1. Results of measurements made for Equivalent sound pressure level in Point 4- Figura 23:

## Measurement Report

Page 1

### Measurement Details

Date and Time: 3/22/2024 6:59 PM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:15:00 hh:mm:ss

### Data

Leq	55.3 dBA	L1.0	65.6 dBA
Lepd	40.2 dBA	L10.0	59.8 dBA
LAE	84.7 dBA	L50.0	48.1 dBA
LAFmax	70.7 dBA	L90.0	38.3 dBA
Peak	89.7 dBC	L95.0	35.4 dBA
		Lmin	28.8 dBA

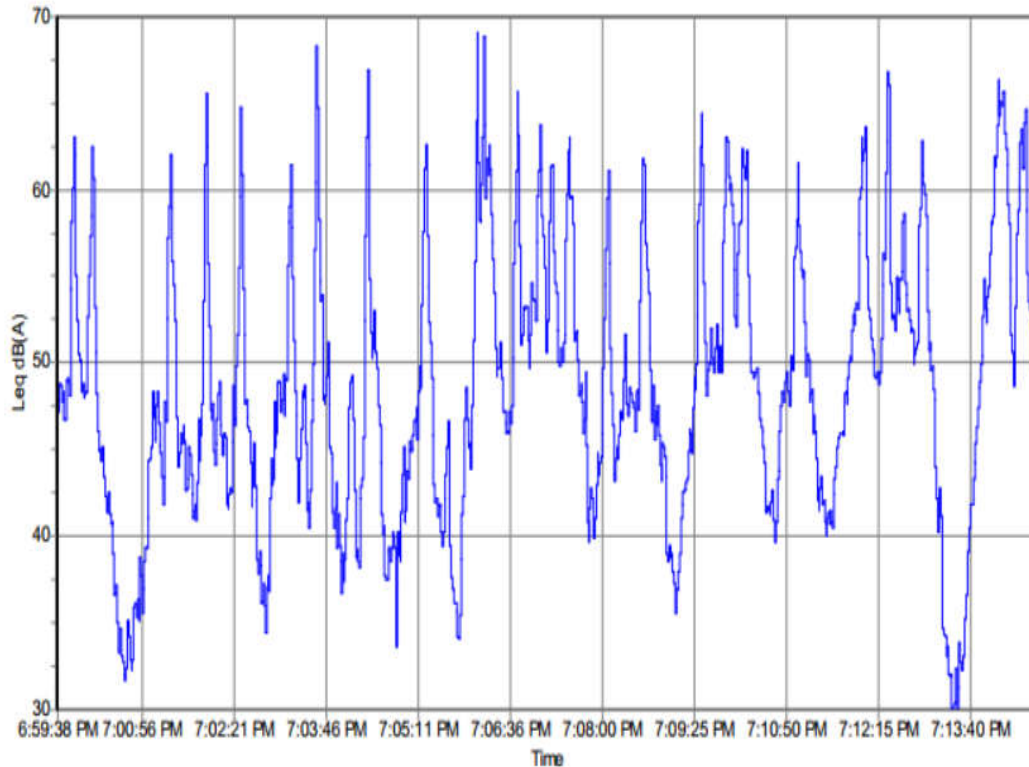


Figura 23.- Measurements made for Equivalent sound pressure level in Point-4 LAeq=55,3dB(A)

3.12.2. Results of measurements made throughout the frequency spectrum in Point 4- Figura 24

### Measurement Report

**Measurement Details**

Date and Time: 3/22/2024 6:19 PM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:13:57 hh:mm:ss

**Data**

Band	LZeq,t	Band	LZeq,t	Band	LZeq,t
25 Hz	62.3 dB	315 Hz	33.3 dB	4 kHz	16.3 dB
31 Hz	48.9 dB	400 Hz	34.4 dB	5 kHz	15.4 dB
40 Hz	43.2 dB	500 Hz	18.1 dB	6.3 kHz	15.4 dB
50 Hz	46.9 dB	630 Hz	25.1 dB	8 kHz	16.1 dB
63 Hz	45.0 dB	800 Hz	28.3 dB	10 kHz	16.2 dB
80 Hz	46.3 dB	1 kHz	23.7 dB	12.5 kHz	16.3 dB
100 Hz	44.8 dB	1.25 kHz	25.0 dB	16 kHz	16.9 dB
125 Hz	47.0 dB	1.6 kHz	23.0 dB	Range	30-100 dB
160 Hz	43.0 dB	2 kHz	22.2 dB	Serial No.	B22508
200 Hz	48.1 dB	2.5 kHz	20.3 dB		
250 Hz	36.2 dB	3.15 kHz	11.3 dB		

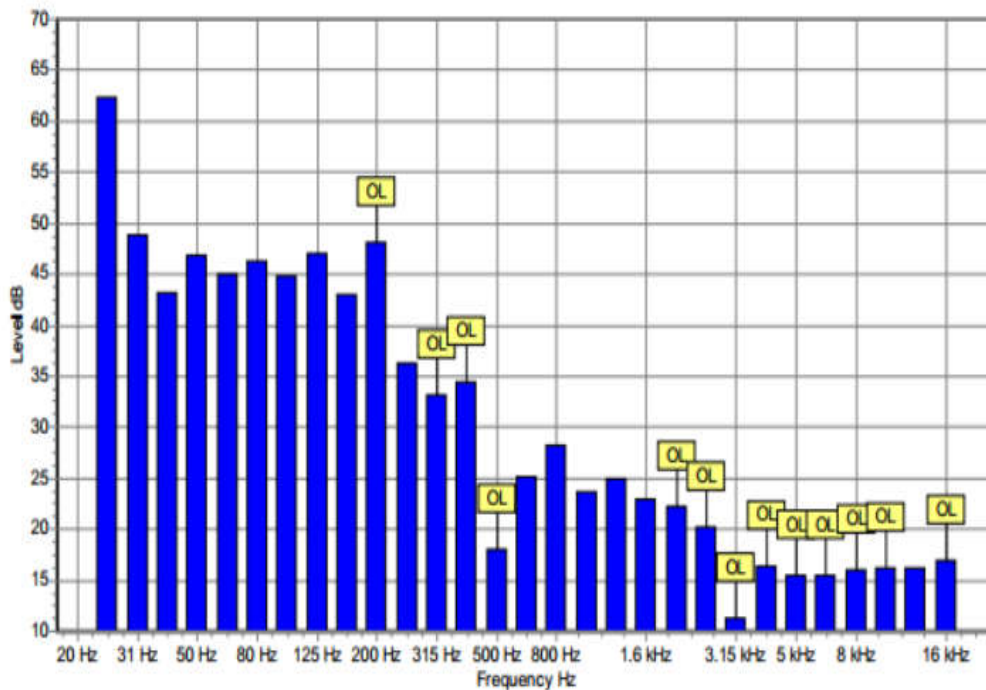


Figura 24.- Measurements made throughout the frequency spectrum in Point-4

### 3.13. Results of measurements made in Point 4 -night measurement-

3.13.1. Results of measurements made for Equivalent sound pressure level in Point 3- Figura 25:

## Measurement Report

Page 1

### Measurement Details

Date and Time: 3/23/2024 2:19 AM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:15:00 hh:mm:ss

### Data

Leq	49.4 dBA	L1.0	59.2 dBA
Lepd	34.3 dBA	L10.0	45.5 dBA
LAE	78.7 dBA	L50.0	37.3 dBA
LAFmax	77.2 dBA	L90.0	27.7 dBA
Peak	95.0 dBC	L95.0	25.6 dBA
		Lmin	21.3 dBA

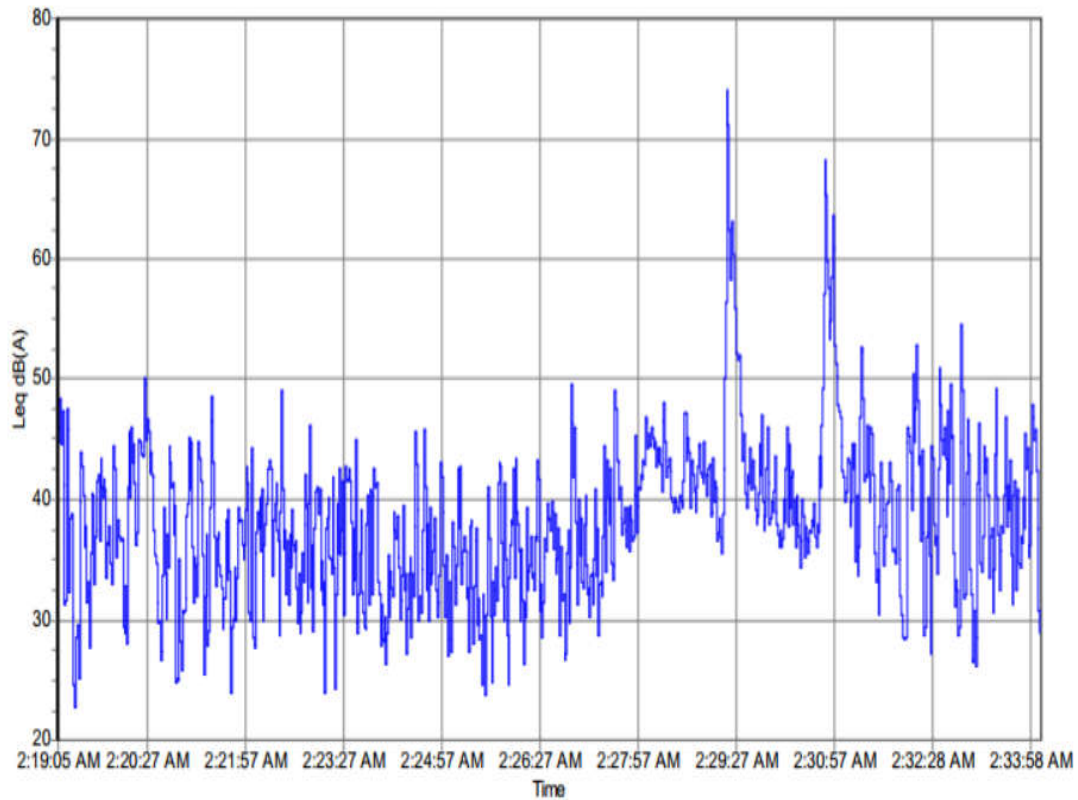


Figura 25.- Measurements made for Equivalent sound pressure level in Point-4 LAeq=49,4dB(A)

3.13.2. Results of measurements made throughout the frequency spectrum in Point 4- Figura 26

### Measurement Report

**Measurement Details**

Date and Time: 3/23/2024 2:34 AM  
 Sound Level Meter: Pulsar PM:96 B22508  
 Recalibration Due: 5/31/2019  
 Run Duration: 00:13:57 h:mm:ss

**Data**

Band	LZeq,t	Band	LZeq,t	Band	LZeq,t
25 Hz	67.7 dB	315 Hz	28.9 dB	4 kHz	14.0 dB
31 Hz	62.8 dB	400 Hz	21.7 dB	5 kHz	14.4 dB
40 Hz	65.8 dB	500 Hz	16.0 dB	6.3 kHz	14.3 dB
50 Hz	65.4 dB	630 Hz	14.6 dB	8 kHz	14.8 dB
63 Hz	56.8 dB	800 Hz	47.5 dB	10 kHz	15.3 dB
80 Hz	51.0 dB	1 kHz	39.5 dB	12.5 kHz	15.4 dB
100 Hz	54.1 dB	1.25 kHz	21.4 dB	16 kHz	15.9 dB
125 Hz	52.4 dB	1.6 kHz	25.3 dB	Range	40-110 dB
160 Hz	38.7 dB	2 kHz	13.3 dB	Serial No.	B22508
200 Hz	42.2 dB	2.5 kHz	13.6 dB		
250 Hz	40.0 dB	3.15 kHz	13.9 dB		

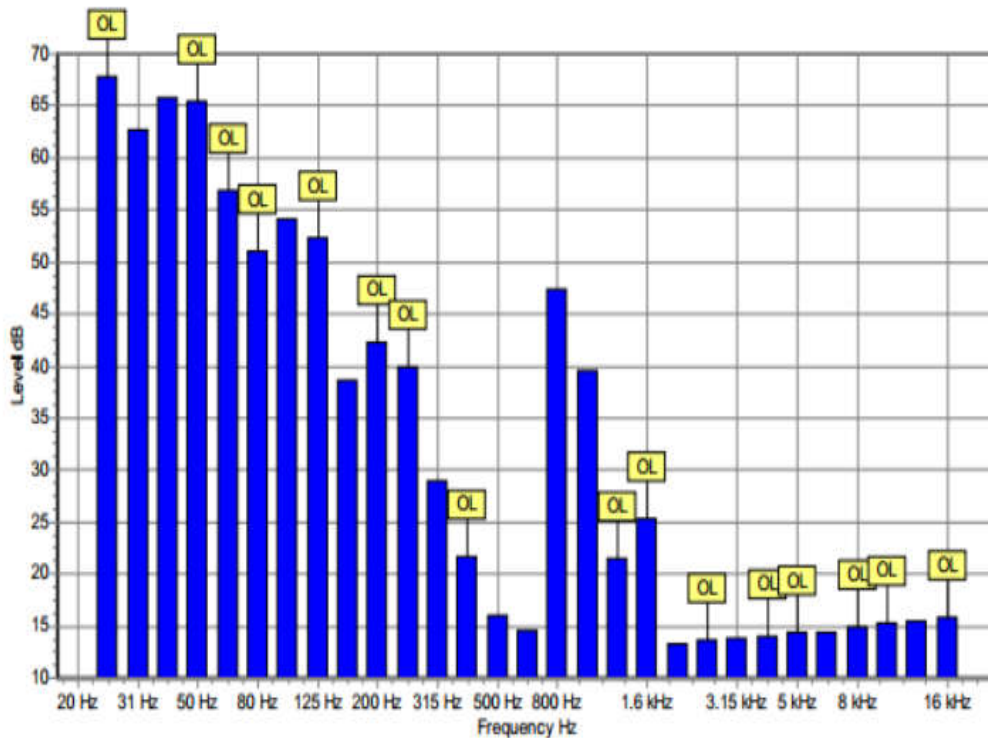


Figura 26.- Measurements made throughout the frequency spectrum in Point-4

### 3. Summary results:

The results of the measurements for equivalent sound pressure are presented in tabular form according to the point of measurement and the period of the day in which it was made - Table 1

POs.	Measurement point	Stage of the day in which the measurement was made	Measured value of $L_{aeg,dB(A)}$
1	P1	Morning measurement	40,1
		Noon measurement	45,1
		Night measurement	37,0
2	P2	Morning measurement	57,0
		Noon measurement	47,1
		Night measurement	30,9
3	P3	Morning measurement	54,8
		Noon measurement	37,5
		Night measurement	34,5
4	P4	Morning measurement	58,3
		Noon measurement	55,3
		Night measurement	49,4

Table 1 - Presentation of the results of the measurements.

### 4. Conclusion:

As a conclusion from the presented measurements made with a spectrum analyzer - Pulsar Instruments, model Quantifier 96, there is no excess of background noise compared to Regulation 6 with a tone noise correction of -5dB. Exceeding the regulatory requirements in point 2 (norm day 55dB(A)) is caused by aerodynamic noise (presence of stronger wind gusts). Point 4 is located next to a road and there are no residential buildings in the immediate vicinity.

According to the regulatory requirements for sound pressure in front of the facades of residential buildings/farms located, there is no excess of background noise.

Data: 25.03.2024г.  
гр. София