ANNEX 4

Tropical Sugar Company Limited (TSCL)

New Sugar Factory Development in Lionel Town, Clarendon

Noise Assessment Report

May 2025

Prepared by:

Environmental & Engineering Managers Ltd.

Unit #7, Phoenix Central, 2 Phoenix Avenue, Kingston 10, Jamaica
Tel: (876) 622-4193, (876) 622-4745
Email: eem@environmanagers.com • www.environmanagers.com

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1 INTRODUCTION

As part of the Terms of Reference and in keeping with its focus on assessing the potential environmental impacts of the proposed project, Environmental and Engineering Managers Ltd. (EEML) has undertaken a baseline noise assessment for the proposed new sugar factory development by TSCL in Lionel Town, Clarendon. This assessment provides a description of the ambient noise levels in and around the project site, taking into consideration the community, including nearby facilities, residential areas and other potentially sensitive receptors.

No active noise mitigation strategies are proposed at this stage, however, the data collected will serve as a valuable reference point for future evaluations. Should operational conditions change, or community concerns arise, this baseline will enable informed comparisons and support any necessary follow-up assessments in accordance with applicable regulatory guidance.

The noise assessment was conducted on April 16, 2025, by a monitoring team comprised of Mr. Andre Smith (Environmental Scientist), Mr. Brenton Bartley (Environmental Engineer) and Mr. Javell Johnson (Environmental Engineer).

2 METHODOLOGY

To assess ambient noise levels at the site, a structured approach was developed and implemented as outlined below:

1. **Development of Assessment Plan**

   A noise assessment plan was prepared to outline the procedures for data collection and analysis. This included selecting suitable measurement locations and defining the method for capturing and interpreting sound level data.

   Eight (8) monitoring points were identified using satellite imagery of the site (Google Earth). The selected points were strategically distributed to ensure comprehensive coverage, with at least one monitoring location placed along each of the four boundaries of the site (Figure 2). These positions were chosen based on their proximity to potential noise sources and nearby receptors.

2. **Sound Level Measurement**

   Noise measurements were conducted using a CR308 Sound Level Meter, a handheld device equipped with an LCD screen (see Figure 1). At each monitoring point:

   - Three (3) Sound Pressure Level (SPL) readings were taken, and
   - Three (3) Maximum (MAX) readings were recorded over a two-minute interval.
   - The readings were averaged to provide a representative noise level for each location.

   The results were tabulated and presented in a data summary table (Table 3).

2.1 Instrument Details and Measurement Parameters

2.1.1 Operating Modes

The CR308 Sound Level Meter operates in two modes: SPL and MAX. It features a linear measuring range of 32 to 140 decibels A-weighted (dBA). The 'A' weighting adjusts sound levels to reflect the sensitivity of human hearing, which is the standard method used in environmental noise assessments.

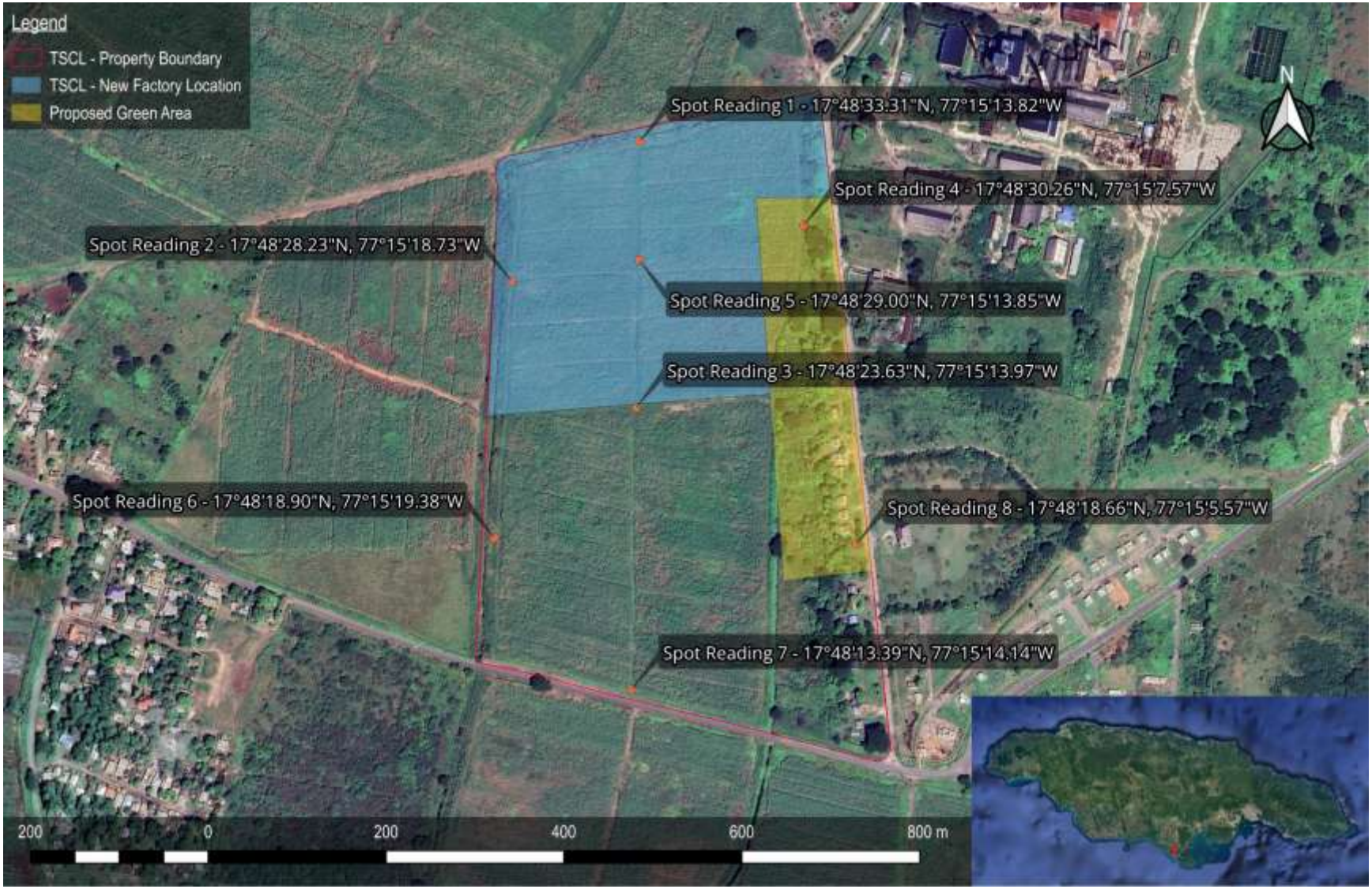
2.1.2 Microphone Protection Measures

A windshield was securely fitted to the microphone throughout the data collection process, protecting it from wind disturbances, as all readings were conducted outdoors in open areas exposed to varying weather conditions. This ensured that the sound levels recorded were truly reflective of the environmental noise, without significant distortion from wind gusts.

While a windshield may help reduce wind effects, it was also important to note that it may also cause slight attenuation of higher frequency sounds. However, its use was deemed essential to obtaining accurate data for the study, as wind noise could have otherwise compromised the results.

Figure 1: Cirrus CR-308 Sound Level Meter

Figure 2: TSCL – Noise Assessment Plan, Assessment Locations



3 NOISE ASSESSMENT OVERVIEW AND FINDINGS

3.1 Noise Exposure Criteria and Regulatory Standards

3.1.1 Ambient Noise

Ambient environmental noise refers to the background sound present in a given area under typical conditions. These sounds may originate from natural sources (such as wind, birdsong, or flowing water) or human activities (such as traffic, industry, or nearby construction). The intensity of ambient noise can vary significantly depending on the location and time of day, with quieter levels generally observed in rural and low-density residential areas, and higher levels in urban, commercial, and industrial zones.

Understanding ambient noise levels is important for assessing potential impacts on human health and well-being, especially in residential and sensitive land-use areas like schools and hospitals. These background noise levels also form the baseline for evaluating environmental noise pollution and establishing appropriate mitigation or zoning strategies.

Table 2 outlines typical ambient noise levels by area type, providing an overview of the expected sound environment in various settings during both daytime and nighttime periods.

Table 1: Typical Ambient Noise Levels by Area Type[1]

Area Type	Daytime (dBA)	Nighttime (dBA)
Quiet Rural Area	30–40	25–35
Residential (Suburban)	45–55	35–45
Residential (Urban)	55–65	45–55
Commercial Areas	60–70	50–60
Industrial Zones	65–75	55–65
Schools, Hospitals, Libraries	35–45 (interior)	—
Roadside/Traffic-Dense Areas	70–85+	60–75

3.1.2 Operational Noise

Exposure to excessive noise depends upon a number of factors, including:

- the loudness of the noise as measured in decibels (dBA)
- whether noise is generated from one or multiple sources

[1] Based on international standards and guidelines including the World Health Organization (WHO) *Environmental Noise Guidelines* (2018), the U.S. Environmental Protection Agency (EPA) *Information on Levels of Environmental Noise* (1974) and British Standard BS 8233:2014 *Guidance on Sound Insulation and Noise Reduction for Buildings*

- the duration and frequency of exposure to the noise over time

Generally, the louder the noise, the shorter the exposure time before hearing protection is required. In practice, individuals can be exposed to noise levels of 90 dBA for up to 8 hours per day without the need for hearing protection. However, at 115 dBA, hearing protection is recommended if the exposure is expected to exceed 15 minutes, due to the significantly increased risk of hearing damage. Appendix 2 presents the Decibel Levels of Environmental Sounds, which provides information on the various sounds that humans are exposed to daily.

Table 2 shows the permissible noise exposures that require hearing protection when exposed to occupational noise at specific decibel levels for particular time periods according to Occupational Health and Safety Administration (OSHA).

Table 2: Permissible Noise Exposures (OSHA)

Duration Per Day, In Hours	Sound Level in dB – Decibel Level
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25 or less	115

These OSHA standards for the United States are similar to the Guidelines from the Occupational Safety and Health Division of the Ministry of Labour, Jamaica.

3.2 Existing Noise Profile

The TSCL property is a rural sugar cane farm which falls within the lower end of the environmental/ambient noise spectrum. This especially during non-harvest periods, where natural sounds and minimal human activity contribute to relatively quiet conditions. Under current conditions, the ambient noise levels are assessed against baseline ambient environmental standards applicable to rural zones as outline in Table 1.

3.3 Measurement Observations and Results

Noise monitoring was carried out on April 16, 2025, between 11:00 a.m. and 2:00 p.m. with eight spot readings taken across the proposed factory site and adjacent TSCL property boundaries to assess existing ambient noise conditions. The summary results of the assessment are shown in Table 3 below.

Detailed results of the assessment along with relevant site pictures are included at Appendix 1 & Appendix 4, respectively. The calibration certificates for the Sound Level Meter can be found in Appendix 5.

3.3.1 Ambient Sound Pressure Levels

The average Sound Pressure Levels (SPLs) recorded ranged from 30.60 dBA to 45.90 dBA, with individual maximum SPLs between 29.5 dBA and 50.7 dBA. The highest average SPL was observed at Spot Reading 2 – west boundary of new factory location with 45.90 dBA, followed by Spot Reading 3 – south boundary of new factory location at 45.07 dBA, both of which approached the general range of elevated ambient noise levels. In contrast, the west boundary (Spot Reading 4) recorded the lowest average SPL at 30.60 dBA, indicating relatively quiet conditions, though the reading was slightly influenced by a passing motorbike and mild wind activity.

It is important to note that most spot readings recorded SPL averages within the 30 - 45 dBA range, which aligns with typical ambient noise levels expected in quiet rural environments. Only two locations, Spot Readings 2 and 3, registered average SPLs exceeding this range (marginally) at 45.9 dBA and 45.07 dBA, respectively. These findings confirm that ambient sound conditions at the proposed factory location and surrounding TSCL property boundaries are generally low to moderate, being influenced primarily by natural elements (wind) and occasional human activity (e.g., vehicular traffic, conversations).

The relatively low SPL averages at the boundary and centre locations also suggest minimal environmental noise impact at this stage and support the conclusion that current outdoor noise conditions do not pose significant health or comfort concerns for nearby personnel or residents.

3.3.2 Maximum Noise Levels and Contributing Factors

The maximum average noise level recorded across the eight spot readings varied between 57.23 dBA and 73.47 dBA, reflecting moderate ambient noise conditions influenced by a mix of environmental and incidental human activity.

Spot Reading 7 at the south boundary of the TSCL property recorded the highest maximum average noise level at 73.47 dBA with a peak of 75.5 dBA presenting fairly persistent noise contributions from nearby vehicular activity along the southern roadway. The second highest maximum average noise level was observed at Spot Reading 3, at the south boundary of the proposed factory location, reaching 73.07 dBA and peaking at 76.3 dBA during one of the measurements. This elevated value coincided with a period of high wind presence, which partially amplified background noise. Spot Reading 7 lies approximately 330 metres south of Spot Reading 3, however, despite this separation from the roadway, noise levels at Spot Reading 3 remained comparable to those at Spot 7, highlighting the influence of environmental factors like wind.

Other readings, such as those at Spot Reading 8 – Lower east boundary and Spot Reading 1 – north boundary, also showed moderately high maximum levels of 75.9 dBA and 69.6 dBA, respectively. In these cases, the peak readings were attributed to localized disturbances including barking dogs, nearby conversations, and brief motor vehicle presence. In contrast, the lowest maximum levels were found at Spot Reading 4 at the east boundary of the new factory area and Spot Reading 5 at the centre of the new factory area, with values of 57.23 dBA and 57.63 dBA, respectively. These relatively low peaks reflect quieter acoustic conditions, with only occasional interruptions such as a passing motorbike or light wind.

Overall, while short-term fluctuations resulted in several relatively high maximum values, all measured peaks remained within the Jamaica National Noise Standards for industrial zones (75 dBA) (Appendix 3) and below occupational exposure limits (80 dBA). The average maximum noise levels for the majority of the assessed locations fell within the 50 – 65 dBA range, which is broadly consistent with ambient sound levels found in quiet suburban to quiet urban environments. These findings suggest that peak ambient noise across the site is influenced more by environmental conditions and intermittent human activity than by any continuous noise source and is not expected to pose any risk of hearing damage.

Table 3: TSCL Noise Monitoring Exercise Summary Results

- **Cells with ✅ are within the relevant standard, and no hearing protection is required.**
- **Cells with ⚠️ recorded values between 80 and 90 dBA, and hearing protection are recommended when working in these areas.**
- **Cells with 🎧 exceed 90 dBA, and hearing protection is required when working in these areas, based on OSHA's standards and guidelines from the Occupational Safety and Health Division of the Ministry of Labour, Jamaica.**

No	Location Description	SPL Average (dBA)	Max Average (dBA)	Comments
1	Spot Reading 1 — North boundary of new factory location	✅40.17	✅62.70	Minimal wind activity and external noise influence during the reading.
2	Spot Reading 2 – East boundary of new factory location	✅45.90	✅63.67	Minimal wind activity and external noise influence during the reading.
3	Spot Reading 3 – South boundary of new factory location	✅45.07	✅73.07	High wind presence.
4	Spot Reading 4 – West boundary of new factory location	✅30.60	✅57.23	Low levels overall; assessment influenced by a passing motorbike to the west and light wind activity.
5	Spot Reading 5 — Centre of new factory location	✅41.30	✅57.63	Minimal external noise influence during the reading.
6	Spot Reading 6 – Lower west boundary of TSCL property	✅37.70	✅59.10	The sound of motor vehicles was audible to the south of the reading location.

No	Location Description	SPL Average (dBA)	Max Average (dBA)	Comments
7	Spot Reading 7 – South boundary of TSCL property	✅34.87	✅73.47	Multiple vehicles passed on the adjacent southern road during the assessment.
8	Spot Reading 8 — Lower east boundary of TSCL property	✅44.10	✅66.97	Background noise included barking dogs, passing vehicles, and nearby conversations among residents.

4 CONCLUSION AND RECOMMENDATIONS

The baseline noise assessment conducted has provided a comprehensive overview of the current acoustic environment around the proposed sugar factory site, capturing the influence of local traffic, wind conditions, and community activity. The maximum average noise levels observed ranged from 57.23 dBA to 73.47 dBA, with the highest levels recorded at the southern boundary of the TSCL property (Spot Reading 7), primarily due to vehicular activity. Elevated readings at the southern boundary of the proposed factory site (Spot Reading 3) were also observed, likely influenced by high wind conditions during measurement. In contrast, the north, east, and central factory boundary locations recorded lower and more stable noise levels, indicating minimal external noise influence in those areas.

Overall, both the average Sound Pressure Level (SPL) and maximum measurements confirm that ambient noise levels in the area range from those typically associated with quiet rural environments (30–40 dBA) to those resembling residential suburban settings at peak times (>65 dBA).

With the proposed development of a sugar processing factory on the site, the acoustic landscape of the area is expected to change. Once the factory becomes operational, the site would be more appropriately evaluated in accordance with the industrial zone limits specified by the Jamaica National Noise Standards (Appendix 3). These standards allow for higher permissible noise levels, reflecting the increased activity and equipment-related noise typically associated with industrial operations.

At present, the average ambient sound levels around the proposed sugar factory site were all below the Jamaica National Noise Standards for industrial zones, which specify allowable sound levels of 75 dBA during the day (7 a.m. to 10 p.m.) and 70 dBA at night (10 p.m. to 7 a.m.). Given the nature of the planned operations, the noise levels during the factory's operational phase are not expected to exceed these regulatory thresholds. While some increase in sound levels is anticipated due to machinery, vehicle movements, and processing activities, these changes are expected to remain within the acceptable bounds at the boundary of the site.

However, to ensure that sound pressure levels at the property boundaries do not exceed 75 dBA once the facility is operational, a proactive noise management strategy is recommended. This should include:

- **Design considerations**, such as positioning high-noise equipment away from property boundaries and incorporating shielding or enclosures where feasible.
- **Regular maintenance of machinery** to prevent avoidable mechanical noise and ensure optimal operation of sound suppression systems.
- **Operational phase noise monitoring** at key boundary points to ensure compliance and allow for prompt corrective action if levels approach or exceed thresholds.
- **Community engagement measures**, such as clear communication channels and response protocols for noise-related complaints, to foster transparency and responsiveness.

By establishing a clear baseline and proactively implementing the recommended noise mitigation strategies, the proposed sugar factory can be developed in a way that supports operational efficiency while ensuring boundary noise levels remain below 75 dBA. With careful planning and adherence to these recommendations, the proposed factory can operate efficiently while maintaining acceptable noise levels and minimizing disturbance to the surrounding environment and community.

Appendix 1: Complete Data Set from TSCL Noise Monitoring Exercise Results

Legend: >90 dBA Between 80 dBA and 90 dBA

No	Location Description	SPL 1	Max 1	SPL 2	Max 2	SPL 3	Max 3	SPL Average	Max Average	Comments
1	Spot Reading 1 - North boundary of new factory location	47.1	69.6	36.7	63.9	36.7	54.6	40.17	62.70	Minimal wind activity and external noise influence during the reading.
2	Spot Reading 2 – West boundary of new factory location	46.3	62.4	40.7	63.3	50.7	65.3	45.90	63.67	Minimal wind activity and external noise influence during the reading.
3	Spot Reading 3 – South boundary of new factory location	42.5	68.6	45.1	74.3	47.6	76.3	45.07	73.07	High wind presence.
4	Spot Reading 4 – East boundary of new factory location	30.6	57.3	31.7	58.4	29.5	56.0	30.60	57.23	Low levels overall; assessment influenced by a passing motorbike to the west and light wind activity.
5	Spot Reading 5 - Centre of new factory location	46.1	58.7	38.2	57.7	39.6	56.5	41.30	57.63	Minimal external noise influence during the reading.
6	Spot Reading 6 – Lower west boundary of TSCL property	43.5	64.6	36.3	54.9	33.3	57.8	37.70	59.10	The sound of motor vehicles was audible to the south of the reading location.
7	Spot Reading 7 – South boundary of TSCL property	31.6	70.7	33.5	75.5	39.5	74.2	34.87	73.47	Multiple vehicles passed on the adjacent southern road during the assessment.
8	Spot Reading 8 - Lower east boundary of TSCL property	46.9	75.9	47.0	63.4	38.4	61.6	44.10	66.97	Background noise included barking dogs, passing vehicles, and nearby conversations among residents.

Appendix 2: Decibel Levels of Environmental Sounds

Source – Dangerous Level	**dBA SPL**
Produces Pain	120–140
Jet Aircraft During Take-off (at 20 meters)	130
Snowmobile	120
Tractor Without Cab	120
Rock Concert	110
Die Forging Hammer	100–105
Gas Weed-Whacker	100–105
Chain Saw	100–105
Pneumatic Drill	100–105
Home Lawn Mowers	95–100
Semi-trailers (at 20 meters)	90

Source --	**dBA SPL**
Discomfort Level	Above 80
Heavy Traffic	80
Automobile (at 20 meters)	70
Vacuum Cleaner	65
Conversational Speech (at 1 meter)	60
Quiet Business Office	50
Residential Area at Night	40
Whisper, Rustle of Leaves	20
Rustle of Leaves	10
Threshold of Audibility	0

Appendix 3: Excerpt of Jamaica National Noise Standards

The Recommended Zone Limits:

ZONE	7 a.m. to 10 p.m.	10 p.m. to 7 a.m.
Industrial	75 dBA	70 dBA
Commercial	65 dBA	60 dBA
Residential	55 dBA	50 dBA
Silence	45 dBA	40 dBA

Extracted from the Recommendations for National Noise Standards for Jamaica, 1999

Notes:
The measurements are to be at the property line form which the sound is emitted or at the nearest point possible beyond that line. If the source of the sound is on public property, then measurements are to be made at a distance of 3m and 4m form the source. This excluded the mechanical noise made by moving vehicles but includes other noise (such as music) form such vehicles.

Industrial Zone

Lands designated *Industrial Zone* shall generally be industrial where protection against damage to hearing may be required, and the necessity for conversation is limited. The land uses in this category would include, but not be limited to, manufacturing activities, transportation facilities, warehousing, mining, and other lands intended for such uses.

Appendix 4: Pictures from Noise Assessments

Figure 3: TSCL Property – Proposed Sugar Factory Development Area

Figure 4: North Boundary of Proposed Factory

Figure 5: West Boundary of Proposed Factory

Figure 6: North Boundary of Proposed Factory

Figure 7: Lower West Boundary of TSCL Property

Figure 8: South Boundary TSCL Property

Figure 9: Lower East Boundary TSCL Property

Appendix 5: Calibration Certificates for Sound Level Meter, Microphone and Calibrator

CERTIFICATE OF CALIBRATION

ISSUED BY **Noisemeters**

DATE OF ISSUE **30 January 2025** CERTIFICATE NUMBER **232642**

NoiseMeters
NoiseMeters
Acoustic House
Bridlington Road
Hunmanby
YO14 0PH
United Kingdom
www.noisemeters.com

Test engineer:
D.Swalwell
Electronically signed:

Microphone

Microphone capsule

Manufacturer: Hunan Acoustic Instrument and Control Technology Co, Ltd

Model: HY205

Serial Number: 07043

Calibration procedure

Date of calibration: 30 January 2025

Open circuit: 49.1 mV/Pa

Sensitivity at 1 kHz: -26.2 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: 100.80 kPa

Temperature: 23.0 °C

Humidity: 25.0 %

CERTIFICATE OF CALIBRATION

Certificate Number: 232642

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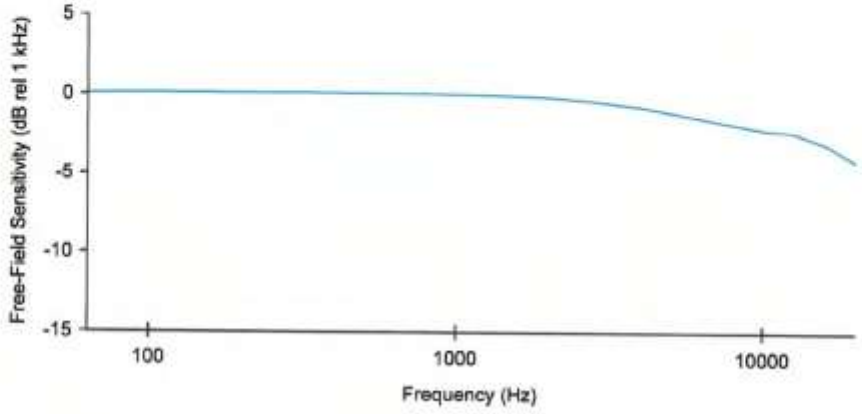
Free-Field Frequency Response : Tabular

Frequency (Hz)	Free-Field Sensitivity (dB rel 1 kHz)	Actuator Response (dB)
63	**0.06**	**-0.15**
80	0.09	-0.01
100	0.10	0.05
125	**0.10**	**0.10**
160	0.10	0.12
200	0.09	0.13
250	**0.09**	**0.14**
315	0.10	0.13
400	0.08	0.13
500	**0.07**	**0.11**
630	0.05	0.10
800	0.03	0.06
1 000	**0.00**	**0.02**
1 250	-0.05	-0.05
1 600	-0.10	-0.17
2 000	**-0.18**	**-0.33**
2 500	-0.32	-0.58
3 150	-0.52	-0.98
4 000	**-0.79**	**-1.56**
5 000	-1.12	-2.33
6 300	-1.49	-3.40
8 000	**-1.85**	**-4.89**
10 000	-2.19	-6.85
12 500	-2.37	-8.83
16 000	**-3.09**	**-10.99**
20 000	-4.19	-13.20

Free-Field Frequency Response : Graphical



CERTIFICATE OF CALIBRATION

Certificate Number: **232595**

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Environmental conditions

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

Pressure: 101.41 kPa
Temperature: 23.5 °C
Humidity: 34.8 %

Test equipment

Equipment	Manufacturer	Model	Serial number
Distortion Meter	Keithley	2015	1063074
Environmental Monitor	Comet	T7510	21962628

Results

	Expected	Sample 1	Sample 2	Sample 3	Average	Deviation	Tolerance	Uncertainty
Level (dB)	94.00	94.00	94.00	93.98	**93.99**	-0.01	±0.75	0.11 dB
Distortion (%)	< 4.00	0.39	0.37	0.39	**0.39**	0.39	+4.00	0.13 %
Frequency (Hz)	1000.0	1000.2	1000.4	1000.2	**1000.3**	0.3	±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

CERTIFICATE OF CALIBRATION

ISSUED BY **Noisemeters**

DATE OF ISSUE **11 February 2025** CERTIFICATE NUMBER **232595**

NoiseMeters
Acoustic House
Bridlington Road
Hunmanby
YO14 0PH
United Kingdom
www.noisemeters.com

Approved signatory
A.Windrass
Electronically signed:

Sound Calibrator : IEC 60942:2003

Instrument information

Manufacturer: Cirrus Research plc **Notes:**
Model: CR:514
Serial number: 97787
Class: 2

Test summary

Date of calibration: 11 February 2025

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:

CERTIFICATE OF CALIBRATION

ISSUED BY **Noisemeters**

DATE OF ISSUE **11 February 2025** CERTIFICATE NUMBER **232652**

NoiseMeters
NoiseMeters
Acoustic House
Bridlington Road
Hunmanby
YO14 0PH
United Kingdom
www.noisemeters.com

Approved signatory
A.Windrass
Electronically signed:

Sound Level Meter : IEC 61672-3:2013

Instrument information

Manufacturer:	Cirrus Research plc	Notes:
Model:	CR:308	
Serial number:	SH01555	
Class:	2	
Firmware version:	V0.1.1	

Test summary

Date of calibration: 11 February 2025

The calibration was performed respecting the requirements of ISO/IEC 17025:2017.
Periodic tests were performed in accordance with procedures from IEC 61672-3:2013.

The sound level meter submitted for testing successfully completed the class 2 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full specifications of IEC 61672-1:2013 because (a) evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to determine that the model of sound level meter fully conformed to the class 2 specifications in IEC 61672-1:2013 or correction data for acoustical test of frequency weighting were not provided in the Instruction Manual and (b) because the periodic tests of IEC 61672-3:2013 cover only a limited subset of the specifications in IEC 61672-1:2013.

Notes

CERTIFICATE OF CALIBRATION

Certificate Number: **232652**

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Environmental conditions

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

Before	Pressure:	101.40 kPa	Temperature:	21.3 °C	Humidity: 39.8 %
After	Pressure:	101.39 kPa	Temperature:	21.4 °C	Humidity: 39.9 %

Test equipment

Equipment	Manufacturer	Model	Serial number
Signal Generator	SIGLENT	SDG1032X	SDG1XDDQ6R6309
Attenuator	Cirrus Research	ZE:952	78700
Multi-frequency Calibrator	Bruel and Kjaer	4226	2532068

Additional instrument information

Instruction manual: User Manual
Reference level range: Single range
Pattern approval: No
Source of pattern approval: -

Preamplifier

Manufacturer: -
Model: -
Serial number: -

Microphone

Manufacturer: Hunan Acoustic Instrument and Control Technology Co, Ltd
Model: HY:205
Serial number: 07043

Test results summary

Test	Result
Self-generated noise	Complies
Long-term stability	Complies
Acoustic frequency weightings	Complies
Electrical frequency weightings	Complies
Weightings at 1 kHz	Complies
Linearity	Complies
Toneburst response	Complies
C-weighted peak	Complies
High-level stability	Complies

Acoustic Calibrator

Manufacturer: Cirrus Research plc
Model: CR:514
Serial number: 97787

Calibration

Calibration check frequency: 1000 Hz
Calibrator's certificate ref: 232595
Level before adjustment: 94.10 dB(A)
Level after adjustment: 93.70 dB(A)