

ENVIRONMENTAL NOISE LEVEL SURVEY

Prepared for:

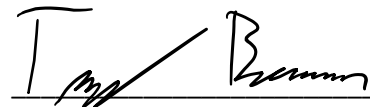
Dale McQuillen

4581 Dove Meadows Court

Lakeland, FL 33810

April 28, 2024

This document has been prepared by Mobile Health Diagnostics. The material and data in this report were prepared under the supervision and direction of the undersigned.



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Acoustical Engineer

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Acronyms

dB	Decibel reference 20uPa
dBZ	Unweighted decibel
dba	A-weight decibel. A-weighting reflects how humans perceive sound.
L10	Sound level that 90% of the noise falls under
SLM	Sound level meter
SPL	Sound pressure level

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1. Introduction

Mobile Health Diagnostics was contracted to perform environmental noise level testing at Dale McQuillen’s site located at 4581 Dove Meadows Court Lakeland, FL 33810. The goal of the testing was to understand the sound levels of a wedding venue in relation to the county ordinance. The Polk County ordinance section 761 states [1]:

No person shall operate, cause to be operated, or permit on private property any source of noise or noise in such a manner as to create a noise level which exceeds the limits set forth in the land use designations category in Table 7.17. The noise shall not be permitted for more than ten minutes.

Table 7.17 Noise Levels by Land Use Designation

Land Use Designation ⁽¹⁾	Noise Level Limit, dB(A) ⁽²⁾
BPC-2, IND, HIC	75
CC, NAC, CAC, RAC, LCC, L/R, CE, TC, TCC, RCC, BPC-1, EC	65

(1) of property on which the source of noise is located

(2) permitted from 7:00 a.m. until 9:00 p.m.

Being that the event venue on Dove Meadows is up against residential properties on all sides, 65 dBA is the target. The testing for this study was conducted on April 23, 2024.

2. Methodology

A sound level meter (SLM) was placed on a tripod and roamed to property line locations on the south, west, and north sides. There are no residents to the east, so that location was not collected. An example of the SLM at the west property line is shown in Figure 1.



Figure 1: Sound level meter location at the west property line.

Sound was recorded in 15-minute increments from ~10am – 1pm. First data was collected with the DJ not playing music to get background levels. Then the locations were repeated with the DJ playing music. The DJ was using two Carvin 1000 watt speakers model SCX15A with a Behringer X32 Digital Console (Figure 2). The DJ was playing representative music at typical levels for a wedding during the testing.



Figure 2: Sound equipment used for this testing.

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From that data, A-weighted average (i.e. LAeq/LA50) and LA10 levels were recorded. LA10 can be helpful when comparing sounds that vary with time, like music. LA10 represents the dBA level which 90% of the sound is below (Figure 3). Putting that another way, LA10 represents a dBA level for the loudest 6 minutes of every hour. This allows for a conservative comparison to the 10-minute ordinance dBA requirement.

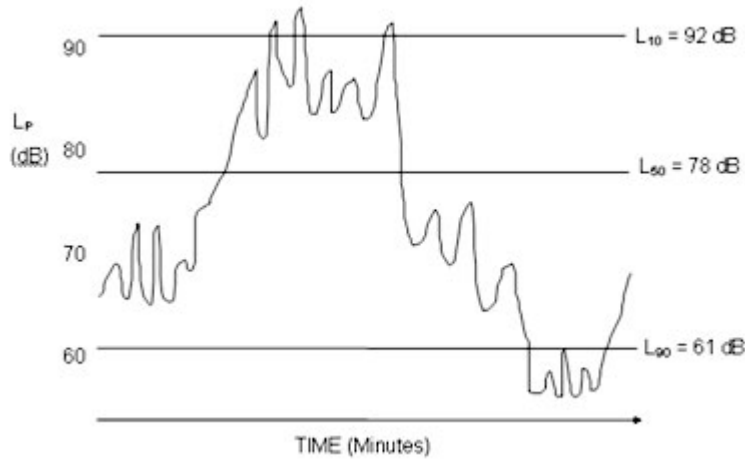


Figure 3: Image demonstrating how L10 is calculated for a time varying sound.

The measurements were made using a Quest Sound Pro sound level meter, SN BIX100007 set to slow response. The sound level meter was calibrated before and after each testing day using a 3M AC-300 calibrator, SN AC3000009137, and were within 0.5dB between each calibration. The calibration certificates for the equipment can be found in Appendix A. The weather on testing day was 70F, 64% humidity, and 30.04 inHg pressure.

3. Results

The results for the testing are shown in Table 1. The average and L10 levels are all well below the 65 dBA requirement. The levels themselves are very close to the background, no DJ, levels. This means that the DJ sound is being attenuated before it gets to the property line.

Table 1: Sound pressure levels throughout the testing. The limit is 65 dBA.

Location	Description	Background - No DJ (dBA)	LAeq with DJ (dBA)	LA10 with DJ (dBA)
1	South Side	47.7	47.6	46.4
2	West Side	45.7	47.8	49.0
3	North Side	47.8	48.8	52.3

4. Conclusions

Acoustic data were acquired at Dale McQuillen's site located at 4581 Dove Meadows Court Lakeland, FL 33810. The testing showed the dBA levels to be well below the 7am-9pm 65 dBA requirement. The levels themselves were very similar to the background, i.e. no DJ, levels. Therefore, the wedding venue does not require any noise mitigation to comply with the ordinance. The ordinance does not specifically state the requirements after 9pm but being that the levels during this testing are similar to the background levels, there shouldn't be any concern after 9pm since the levels at the property line are not increased by the DJ. The abundance of trees on the property helps this by creating significant acoustic attenuation. Note: These results assume that a DJ setup with similar equipment and output level is used in the future.

5. References

[1] Polk County Ordinance

https://library.municode.com/fl/polk_county/codes/land_development_code?nodeId=CH7SIDEST_S761MA_PENOLELAUSDERE251RD19-008LIMITATIONS

[2] L10 image

https://sp-ao.shortpixel.ai/client/to_webp,q_glossy,ret_img,w_400,h_237/https://www.castlegroup.co.uk/images/2011/03/ln-percentile-graph.jpg

6. LIMITATIONS

The services described in this work product were performed in accordance with generally accepted professional consulting principles and practices. No other representations or warranties, expressed or implied, are made. These services were performed consistent with our agreement with our client. This work product is intended solely for the use and information of our client unless otherwise noted. Any reliance on this work product by a third party is at such party's sole risk.

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This work product presents professional opinions and findings of a scientific and technical nature. The work product shall not be construed to offer legal opinion or representations as to the requirements of, nor the compliance with, environmental laws rules, regulations, or federal, state or local regulations.

Appendix A – Calibration Certificates

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tel 651 490 2811 + toll free 800 245 0779 + web www.tsi.com

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Certificate of Calibration
Certificate No: 1110664A AC300009137

Submitted By:	MOBILE HEALTH DIAGNOSTICS 2639 ONEIDA STREET DENVER, CO 80207		
Serial Number:	AC300009137	Date Received:	8/17/2023
Customer ID:		Date Issued:	8/17/2023
Model:	AC-300 CALIBRATOR	Valid Until:	8/17/2024
Test Conditions:	Model Conditions:		
Temperature:	18°C to 29°C	As Found:	IN TOLERANCE
Humidity:	20% to 80%	As Left:	IN TOLERANCE
Barometric Pressure:	890 mbar to 1050 mbar		
SubAssemblies:			
Description:	Serial Number:		

Calibrated per Procedure: 057V879

Reference Standard(s):

I.D. Number	Device	Last Calibration	Date Calibration Due
ET0000556	B&K ENSEMBLE	6/6/2022	6/6/2024

Measurement Uncertainty:

ACOUSTIC +/- 0.19DB FREQUENCY +/- 0.058%
Estimated at 95% Confidence Level (k=2)

Calibrated By: 8/17/2023
JAMES CULLINANE III Service Technician

This report certifies that all calibration equipment used in the test is traceable to NIST, and applies only to the unit identified under equipment above. This report must not be reproduced except in its entirety without the written approval of TSI Incorporated.

A1-1: Calibration certification for the calibrator



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Certificate of Calibration

Certificate Number: 2310110156BIX100007

Model: SoundPro SP DL-2-1/3

Date Issued: 11 Oct 2023

S/N: BIX100007

On this day of manufacture and calibration, TSI certifies that the above listed product meets or exceeds the performance requirements of the following acoustic standard(s):

ANSI S1.4 1983 (R 2006) - Specification for Sound Level Meters / Type 2
ANSI S1.43 1997 (R 2007) - Specification for Integrating - Averaging Sound Level Meters / Type 2
IEC 61672-1 (2002) - Electro acoustics – Sound Level Meters – Part 1: Specifications / Class 2

Test Conditions: Temp: 18-25°C Humidity: 20-80% R.H. Barometric Pressure: 950-1050 mBar

Test Procedure: S053-899

Subassemblies:

QE7052	54814
SPro Preamp	08231285

Reference Standard(s):

Device	Ref Standard Cal Due	Uncertainty - Estimated at 95% Confidence Level (k=2)
B&K Ensemble	07 Jan 2024	+/- 0.19dB Acoustic
Fluke 45	17 Feb 2024	+/- 1.4% AC Voltage, +/-0.1% DC Voltage

Calibrated By:

Michele Hust
Michele Hust - Assembler

In order to maintain best instrument performance over time, and in the event of inspection, audit or litigation, we recommend the instrument be recalibrated annually. Any number of factors may cause the calibration to drift before the recommended interval has expired.
See user manual for more information.

All equipment used in the test and calibration of this instrument is traceable to NIST, and applies only to the unit identified above.
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A1-2: Calibration certificate for the sound level meter

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