Mill Point Solar I Project

PRE-CONSTRUCTION SOUND LEVEL MEASUREMENT PROGRAM

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1.0 BASELINE SOUND LEVEL MONITORING PROGRAM

To characterize the existing soundscape of the Project area, an ambient (baseline) monitoring program was conducted in accordance with the NYS Office of Renewable Energy (ORES) Section 94-c Section 900-2.8(i) Exhibit 7: Noise and Vibration requirements. This section outlines the methodology and results of the ambient program.

1.1 Sound Level Measurement Locations

In accordance with ANSI S12.9-1992/Part 2 (R2013), the deterministic spatial sampling technique was used to select measurement locations. In other words, sound monitoring locations were selected to be representative of nearby residences in various directions from the solar project. Thus, the selected locations are representative of potentially impacted receptors. The program was intended to measure total ambient sound in the area which includes all noise sources.

One sound level measurement program was conducted at seven (7) locations for approximately nine (9) days, which is well beyond the minimum requirement of four (4) days for a solar facility in the Section 94-c regulations. Figure 1-1 shows the measurement locations for the measurement program. The ambient measurement locations are representative of the general vicinity of the Project. Each sound level monitoring location is described in the following subsections.

The coordinates for the sound level measurement locations are listed in Table 1-1, which were slightly adjusted as needed from the field-measured Global Positioning System (GPS) points for refined accuracy.

Table 1-1 GPS Coordinates – Sound Level Measurement Locations

Location	Latitude	Longitude
Location 1	42.9182°	-74.3409°
Location 2	42.9060°	-74.3218°
Location 3	42.9057°	-74.3495°
Location 4	42.8939°	-74.3466°
Location 5	42.8972°	-74.3863°
Location 6	42.9155°	-74.3776°
Location 7	42.9340°	-74.4011°

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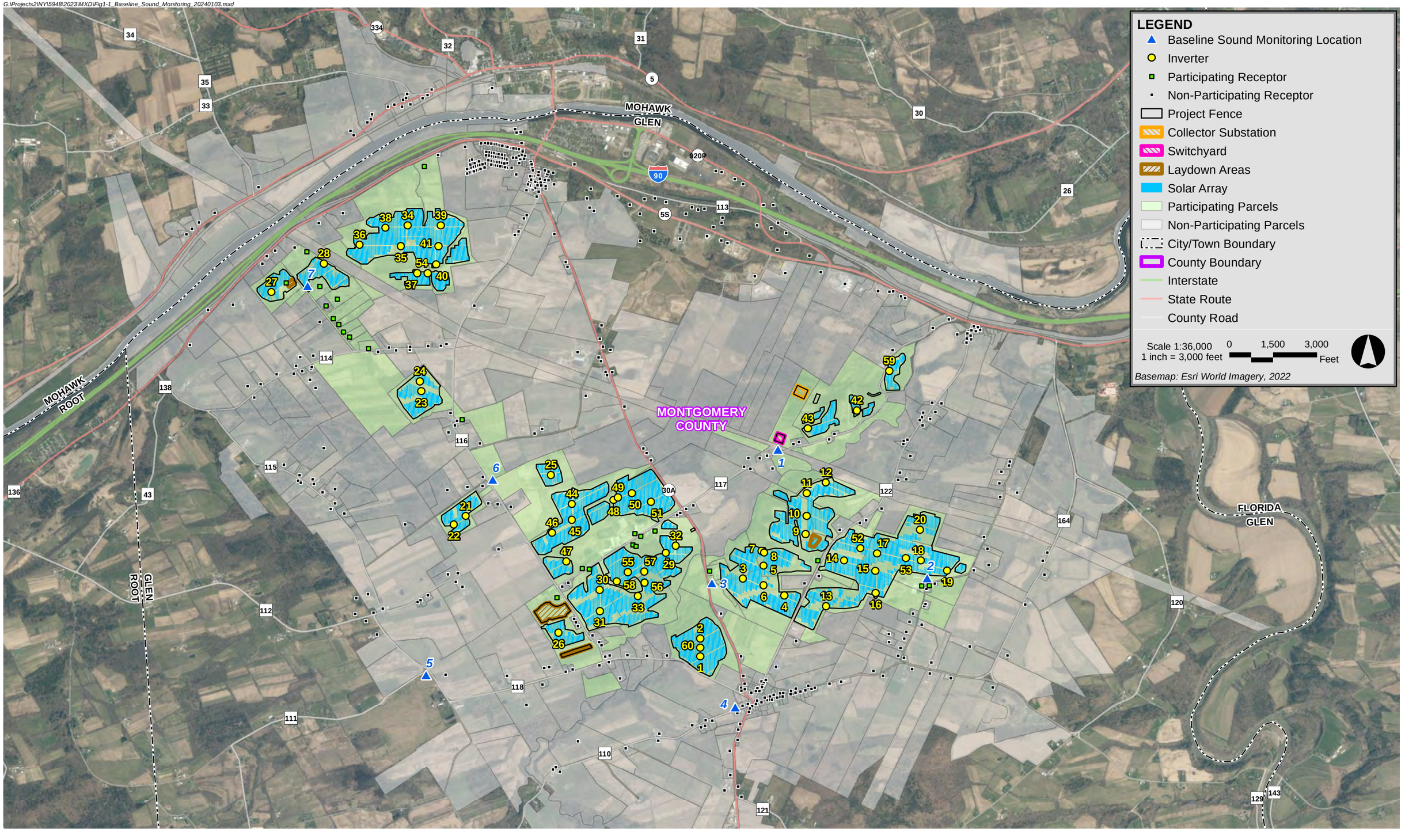

Mill Point Solar I **Montgomery County, New York**

Epsilon Associates Inc.

Figure 1-1
Baseline Sound Monitoring Locations

1.1.1 Location 1— Ingersoll Road

One continuous programmable, unattended sound level meter was placed near Ingersoll Road in the Town of Glen. The meter was placed approximately 130 feet northwest of the road near a crop field. This location is representative of existing sound levels on the eastern area of the project site and along Ingersoll Road. The monitoring setup is shown in Figure 1-2.

The meter continuously measured and stored broadband (A-weighted) and one-third octave band sound level statistics from 12:00 p.m. Wednesday, June 16, 2021 until 2:00 p.m. on Thursday, June 24, 2021. In total, 1,164 10-minute measurement periods were recorded during the measurement program.

In addition to sound data collection, continuous ground-level wind speed data were collected at this location. The meteorological equipment setup is shown in Figure 1-3.

Figure 1-2 Location 1 - Sound Level Meter

Figure 1-3 Location 1 - Meteorological Tower

1.1.2 Location 2—Egelston Road

One continuous programmable, unattended sound level meter was placed near Egelston Road in the Town of Glen. The meter was placed approximately 200 feet north of the road and is representative of existing sound levels on the southeastern area of the Project Site and along Egelston road. The monitoring setup is shown in Figure 1-4.

The meter continuously measured and stored broadband (A-weighted) and one-third octave band sound level statistics from 2:40 p.m. Wednesday, June 16, 2021 until 2:10 p.m. on Thursday, June 24, 2021. In total, 1,149 10-minute measurement periods were recorded during the measurement program.

Figure 1-4 Location 2 - Sound Level Meter

1.1.3 Location 3 – NY-30A

One continuous programmable, unattended sound level meter was placed near NY-30A in the Town of Glen. The meter was placed approximately 100 feet east of the road and is representative of existing sound levels on the central area of the Project Site and along NY-30A. The monitoring setup is shown in Figure 1-5.

The meter continuously measured and stored broadband (A-weighted) and one-third octave band sound level statistics from 1:00 p.m. Wednesday, June 16, 2021 until 2:10 p.m. on Thursday, June 24, 2021. In total, 1,159 10-minute measurement periods were recorded during the measurement program.

Figure 1-5 Location 3 - Sound Level Meter

1.1.4 Location 4 – Logtown Road

One continuous programmable, unattended sound level meter was placed near Logtown Road in the Town of Glen. The meter was placed approximately 80 feet north of the road and is representative of existing sound levels on the southern area of the Project Site and along Logtown Road. The monitoring setup is shown in Figure 1-6.

The meter continuously measured and stored broadband (A-weighted) and one-third octave band sound level statistics from 1:50 p.m. Wednesday, June 16, 2021 until 2:10 p.m. on Thursday, June 24, 2021. In total, 1,154 10-minute measurement periods were recorded during the measurement program.

Figure 1-6 Location 4 - Sound Level Meter

1.1.5 Location 5 – Lansing Road

One continuous programmable, unattended sound level meter was placed along Lansing Road, near the intersection of Lansing Road and Fisher Road in the Town of Glen. The meter was placed approximately 110 feet southeast of Lansing Road and 170 feet southwest of Fisher Road and is representative of existing sound levels in the southwestern area of the Project Site and along Lansing Road. The monitoring setup is shown in Figure 1-7.

The meter continuously measured and stored broadband (A-weighted) and one-third octave band sound level statistics from 5:20 p.m. Wednesday, June 16, 2021 until 4:20 p.m. on Thursday, June 24, 2021. In total, 1,146 10-minute measurement periods were recorded during the measurement program.

Figure 1-7 Location 5 - Sound Level Meter

1.1.6 Location 6 — Van Epps Road

One continuous programmable, unattended sound level meter was placed near Van Epps Road in the Town of Glen. The meter was placed approximately 140 feet northeast of the road and is representative of existing sound levels on the western area of the Project Site and along Van Epps Road. The monitoring setup is shown in Figure 1-8.

The meter continuously measured and stored broadband (A-weighted) and one-third octave band sound level statistics from 5:20 p.m. Wednesday, June 16, 2021 until 4:50 p.m. on Thursday, June 24, 2021. In total, 1,149 10-minute measurement periods were recorded during the measurement program.

Figure 1-8 Location 6 - Sound Level Meter

1.1.7 Location 7 — Marys Lane

One continuous programmable, unattended sound level meter was placed near Marys Lane in the Town of Glen. The meter was placed approximately 180 feet northeast of the road and is representative of existing sound levels on the northwestern area of the Project Site and along Marys Lane. The monitoring setup is shown in Figure 1-9.

The meter continuously measured and stored broadband (A-weighted) and one-third octave band sound level statistics from 5:20 p.m. Wednesday, June 16, 2021 until 5:20 p.m. on Thursday, June 24, 2021. In total, 1,152 10-minute measurement periods were recorded during the measurement program.

In addition to sound data collection, continuous ground-level wind speed data were collected at this location. The meteorological equipment setup is shown in Figure 1-10.

Figure 1-9 Location 7 - Sound Level Meter

Figure 1-10 Location 7 - Meteorological Tower

1.2 Sound Level Measurement Instrumentation

Each of the monitoring locations used either a Larson Davis (LD) model 831[1] sound level meter (SLM), a Larson Davis model 831C[2] SLM, or a Brüel & Kjær (B&K) model Type 2250[3] SLM to measure both A-weighted (dBA) and one third octave bands from 6.3Hz to 20,000Hz. A one-second time history data collection using the "fast" response setting was also implemented. The meters logged data every 10-minutes with statistical data for the L_{eq} and L_{90} among other parameters.

Each instrument was equipped with a LD PRM 831 preamplifier and a PCB 377B20 or a PCB 377C20 half inch microphone, or a B&K Type 4952 preamplifier and microphone along with an environmental protection kit. The kit included a 7-inch open cell foam wind screen to reduce wind-induced noise over the microphone. A peer-reviewed study presenting the windscreen insertion loss data by one-third octave band for each wind screen used in the background monitoring is provided in Appendix A. Since all measured sound level results are presented in terms of ANS weighting (see discussion in section 2.1), frequencies above 1250 Hz are not included, and thus the minor microphone insertion losses at higher frequencies are not relevant.

Microphones were tripod-mounted at a height of approximately five feet (1.5 meters) above ground level in accordance with ANSI S12.9-1992/Part 2 (R2013). Horizontal microphone placements near roadways were in accordance with ANSI S12.9-1992/Part 2 (R2013) for open land.

The LD831, LD831C, and B&K2250 meters meet Type 1 ANSI/ASA S1.4, ANSI S1.43-1997 (R2007), and IEC 61672 Class 1 standards for sound level meters and were calibrated and certified as accurate to standards set by the National Institute of Standards and Technology. The octave band filters for all instrumentation meet ANSI S1.11-2004 (R2009). These calibrations were conducted by an independent laboratory within 12 months of field placement and certificates of calibration are provided in Appendix B. All measurement equipment was calibrated in the field before and after the surveys with the manufacturer's acoustical calibrator which meets the standards of IEC 60942-2003 Class 1L and ANSI/ASA S1.40-2006 (R2016).

1.3 Meteorological Instrumentation

1.3.1 Ground Level Winds

Wind speed can have a strong influence on ambient sound levels. In order to understand how the existing sound levels are influenced by wind speed, a HOBO H21-002 or a HOBO H21-USB micro-weather station (manufactured by Onset Computer Corporation) with tripod and data logger was used to record continuous wind speed data at Location 1 and Location 7.

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[1] Noise floor specified in manufacturer's manual with use of PRM831 preamplifier and 377B20 microphone for A-weighted sound pressure levels is 18dBA at a 0dB gain and 17dBA at a 20dB gain. Noise floor specified for Z-weighted sound pressure levels is 23dBA at a 0dB gain and 21dBA at a 20dB gain.

[2] Noise floor specified in manufacturer's manual with use of PRM831 preamplifier and 377B20 microphone for A-weighted sound pressure levels is 16dBA at a 0dB gain and 16dBA at a 20dB gain. Noise floor specified for Z-weighted sound pressure levels is 23dBA at a 0dB gain and 23dBA at a 20dB gain.

[3] Noise floor specified in manufacturer's manual A-weighted sound pressure levels is 17 dBA.

The HOBO wind instruments have a measurement range of 0 to 44 m/s (99 mph) or 0 to 76 m/s (170 mph) and an accuracy of +/- 0.5 m/s (1.1 mph) or +/- 1.1 m/s (2.4 mph). The starting threshold is 0.5 m/s (1.1 mph) or ≤1.0 m/s (2.2 mph).

1.3.2 Precipitation, Temperature, and Relative Humidity

Precipitation, temperature, and relative humidity data from the New York State MesoNet system were collected during the measurements. The New York State MesoNet consists of 126 state-of-the-art environmental monitoring stations and serves as the foundation of an Early Warning Severe Weather Detection network for the entire State of New York. The New York State MesoNet was developed by research scientists at the State University of New York (SUNY) at Albany's Atmospheric Sciences Research Center, and Department of Atmospheric and Environmental Sciences. MesoNet sites are distributed statewide with every county across New York having at least one or more sites. The MesoNet collects measurements of several surface and atmospheric variables, such as temperature, relative humidity, wind speed and direction, surface pressure, soil moisture, soil temperature, solar radiation, and precipitation amounts for rainfall and snow accumulation. These data are archived and available to the public.

The Sprakers MesoNet station is located approximately 6.4 miles west-southwest from the closest Mill Point Solar I sound level measurement location. This MesoNet station is the closest to the Project site. The SUNY MesoNet data from the Sprakers station is provided in Appendix C of this report.

1.4 Low Frequency and Infrasound Monitoring

Although not relevant to solar energy projects, all monitoring locations were equipped to measure existing levels of low frequency and infrasound down to 6.3 Hz for informational purposes.

2.0 BASELINE SOUND LEVEL MONITORING RESULTS

This chapter discusses the results from the detailed ambient (baseline) monitoring program outlined in the previous chapter. Specifically, the logic for data validity, and sound level result descriptions for the monitoring locations are explained.

2.1 Data Formatting Overview

Sound level data were collected in 10-minute intervals[4] at seven strategically selected locations around the proposed solar energy project. Monitoring periods that experienced elevated ground-level wind speeds or precipitation were excluded from the data analysis per Method #1 in ANSI S12.18-1994. According to this standard, "No sound level measurement shall be made when the average wind velocity exceeds 5 m/s when measured at a height of 2±0.2 m above the ground". In addition, "Measurement during precipitation […] is highly discouraged". Precipitation events identified at the SUNY MesoNet station in Sprakers, NY defined periods for which sound level data were excluded from the analysis for the measurement program. By convention, daytime is defined as the hours from 7:00 AM through 9:59 PM and nighttime is defined as the hours from 10:00 PM through 6:59 AM.

The sound level equipment used in ambient monitoring have specifications regarding operative ranges under certain air conditions, e.g., temperature and relative humidity.[5,6] Data from the Sprakers MesoNet station was additionally referenced for the range exceedances during all measurement timeframes. Sound levels during these exceedances were excluded from further processing.

Intermittent noise was automatically filtered by using the L_{90} statistic. Seasonal noise was removed from the ambient sound level measurements regardless of season. A high-frequency natural sound (HFNS) filter was applied to the measured one-third octave-band data from which a broadband sound level was calculated for the monitoring period. This technique removes all sound energy above the 1,250 Hertz frequency band. The methodology for the filtration process is as specified in ANSI/ASA S12.100-2014 as required by Section 900-2.8(i) of the Section 94-c regulations. The calculated sound pressure levels presented in Chapter 3 of this report using this methodology are indicated as ANS-weighted levels (presented in dBA). The "as-measured"

[4] It should be noted that all sound level instrumentation and ground level meteorological instrumentation were time-synchronized to align the monitoring periods.

[5] Periods measured outside the temperature range of 14°F to 122°F were considered invalid due to the Larson Davis Model 831 and 831C SLM and specifications.

[6] Periods measured outside the relative humidity range of 1 to 99% were considered invalid based on microphone specifications. The accuracy of sound levels measured with a Larson Davis Model 831 SLM outside the relative humidity range of 25% to 90% is unknown; however, the data are not considered invalid and are included in the data summaries. The same is true for sound levels measured with a Norsonic Nor140 SLM outside the range of 5% to 90% relative humidity and for the sound levels measured with a B&K 2250 outside the range of 0% to 90% relative humidity

broadband A-weighted (dBA) L_{eq} and L_{90} and one-third octave band ambient sound levels are presented graphically for each location in the following subsections. The one-third octave-band data span the frequencies from 12.5 Hz to 10,000 Hz.

2.2 Location 1 – Ingersoll Road

Sound levels at Location 1 were influenced by occasional vehicular traffic, birds, insects, occasional distant trains, occasional aircraft, wind, vegetation rustle, and electric hum from nearby power lines. The measured A-weighted L_{eq} and L_{90} sound pressure levels during the measurement program are presented graphically in Figure 2-1. This figure includes ground-level wind speeds measured at Location 1. Data that were excluded from further analysis due to ground-level winds exceeding 5 m/s measured within the project area, or precipitation or instrumentation operative exceedances as recorded at the Sprakers MesoNet station, are identified in the figure. A total of 35 10-minute periods were excluded from the measurement analysis. The resulting dataset includes a total of 1129 10-minute periods of valid data.

In addition to broadband sound levels, spectral sound level data were measured during each 10-minute period at Location 1 during the measurement program. Using only valid measurement periods, one-third octave-band data are summarized in Figure 2-2, as logarithmic averages of the equivalent (L_{eq}) sound levels; separated by daytime and nighttime. The "spike" in the 2000 Hz and octave band for both the daytime and the nighttime measurement period was likely due to insect activity.

2.3 Location 2 – Egelston Road

Sound levels at Location 2 were influenced by vehicular traffic, local farm equipment, cattle, birds, insects, occasional aircraft, wind, and vegetation rustle. The measured A-weighted L_{eq} and L_{90} sound pressure levels during the measurement program are presented graphically in Figure 2-3. This figure includes ground-level wind speeds measured at Location 1. Data that were excluded from further analysis due to ground-level winds exceeding 5 m/s measured within the project area, or precipitation or instrumentation operative exceedances as recorded at the Sprakers MesoNet station, are identified in the figure. A total of 35 10-minute periods were excluded from the measurement analysis. The resulting dataset includes a total of 1114 10-minute periods of valid data.

In addition to broadband sound levels, spectral sound level data were measured during each 10-minute period at Location 2 during the measurement program. Using only valid measurement periods, one-third octave-band data are summarized in Figure 2-4, as logarithmic averages of the equivalent (L_{eq}) sound levels; separated by daytime and nighttime.

2.4 Location 3 – NY-30A

Sound levels at Location 3 were influenced by vehicular traffic, birds, cattle, insects, occasional aircraft, wind, and vegetation rustle. The measured A-weighted L_{eq} and L_{90} sound pressure levels during the measurement program are presented graphically in Figure 2-5. This figure includes ground-level wind speeds measured at Location 1. Data that were excluded from further analysis due to ground-level winds exceeding 5 m/s measured within the project area, or precipitation or instrumentation operative exceedances as recorded at the Sprakers MesoNet station, are

identified in the figure. A total of 35 10-minute periods were excluded from the measurement analysis. The resulting dataset includes a total of 1124 10-minute periods of valid data.

In addition to broadband sound levels, spectral sound level data were measured during each 10-minute period at Location 3 during the measurement program. Using only valid measurement periods, one-third octave-band data are summarized in Figure 2-6, as logarithmic averages of the equivalent (L_{eq}) sound levels; separated by daytime and nighttime. The "spike" in the 5,000 Hz and 6,300 Hz octave bands for the nighttime measurement period was likely due to insect activity.

2.5 Location 4 – Logtown Road

Sound levels at Location 4 were influenced by vehicular traffic, birds, insects, dogs, occasional distant trains, occasional horse and carriage, wind, and vegetation rustle. The measured A-weighted L_{eq} and L_{90} sound pressure levels during the measurement program are presented graphically in Figure 2-7. This figure includes ground-level wind speeds measured at Location 1. Data that were excluded from further analysis due to ground-level winds exceeding 5 m/s measured within the project area, or precipitation or instrumentation operative exceedances as recorded at the Sprakers MesoNet station, are identified in the figure. A total of 35 10-minute periods were excluded from the measurement analysis. The resulting dataset includes a total of 1119 10-minute periods of valid data.

In addition to broadband sound levels, spectral sound level data were measured during each 10-minute period at Location 4 during the measurement program. Using only valid measurement periods, one-third octave-band data are summarized in Figure 2-8, as logarithmic averages of the equivalent (L_{eq}) sound levels; separated by daytime and nighttime.

2.6 Location 5 – Lansing Road

Sound levels at Location 5 were influenced by vehicular traffic, birds, insects, occasional distant trains, occasional aircraft, dogs, other animal noises, wind, and vegetation rustle. The measured A-weighted L_{eq} and L_{90} sound pressure levels during the measurement program are presented graphically in Figure 2-9. This figure includes ground-level wind speeds measured at Location 7. Data that were excluded from further analysis due to ground-level winds exceeding 5 m/s measured within the project area, or precipitation or instrumentation operative exceedances as recorded at the Sprakers MesoNet station, are identified in the figure. A total of 37 10-minute periods were excluded from the measurement analysis. The resulting dataset includes a total of 1,109 10-minute periods of valid data.

In addition to broadband sound levels, spectral sound level data were measured during each 10-minute period at Location 5 during the measurement program. Using only valid measurement periods, one-third octave-band data are summarized in Figure 2-10, as logarithmic averages of the equivalent (L_{eq}) sound levels; separated by daytime and nighttime.

2.10 Location 6 – Van Epps Road

Sound levels at Location 6 were influenced by vehicular traffic, birds, insects, occasional aircraft, wind, and vegetation rustle. The measured A-weighted L_{eq} and L_{90} sound pressure levels during the measurement program are presented graphically in Figure 2-11. This figure includes ground-

level wind speeds measured at Location 7. Data that were excluded from further analysis due to ground-level winds exceeding 5 m/s measured within the project area, or precipitation or instrumentation operative exceedances as recorded at the Sprakers MesoNet station, are identified in the figure. A total of 37 10-minute periods were excluded from the measurement analysis. The resulting dataset includes a total of 1112 10-minute periods of valid data.

In addition to broadband sound levels, spectral sound level data were measured during each 10-minute period at Location 6 during the measurement program. Using only valid measurement periods, one-third octave-band data are summarized in Figure 2-12, as logarithmic averages of the equivalent (L_{eq}) sound levels; separated by daytime and nighttime.

2.10 Location 7 – Marys Lane

Sound levels at Location 6 were influenced by vehicular traffic, birds, insects, occasional distant trains, occasional aircraft, wind, and vegetation rustle. The measured A-weighted L_{eq} and L_{90} sound pressure levels during the measurement program are presented graphically in Figure 2-13. This figure includes ground-level wind speeds measured at Location 7. Data that were excluded from further analysis due to ground-level winds exceeding 5 m/s measured within the project area, or precipitation or instrumentation operative exceedances as recorded at the Sprakers MesoNet station, are identified in the figure. A total of 37 10-minute periods were excluded from the measurement analysis. The resulting dataset includes a total of 1115 10-minute periods of valid data.

In addition to broadband sound levels, spectral sound level data were measured during each 10-minute period at Location 6 during the measurement program. Using only valid measurement periods, one-third octave-band data are summarized in Figure 2-14, as logarithmic averages of the equivalent (L_{eq}) sound levels; separated by daytime and nighttime.

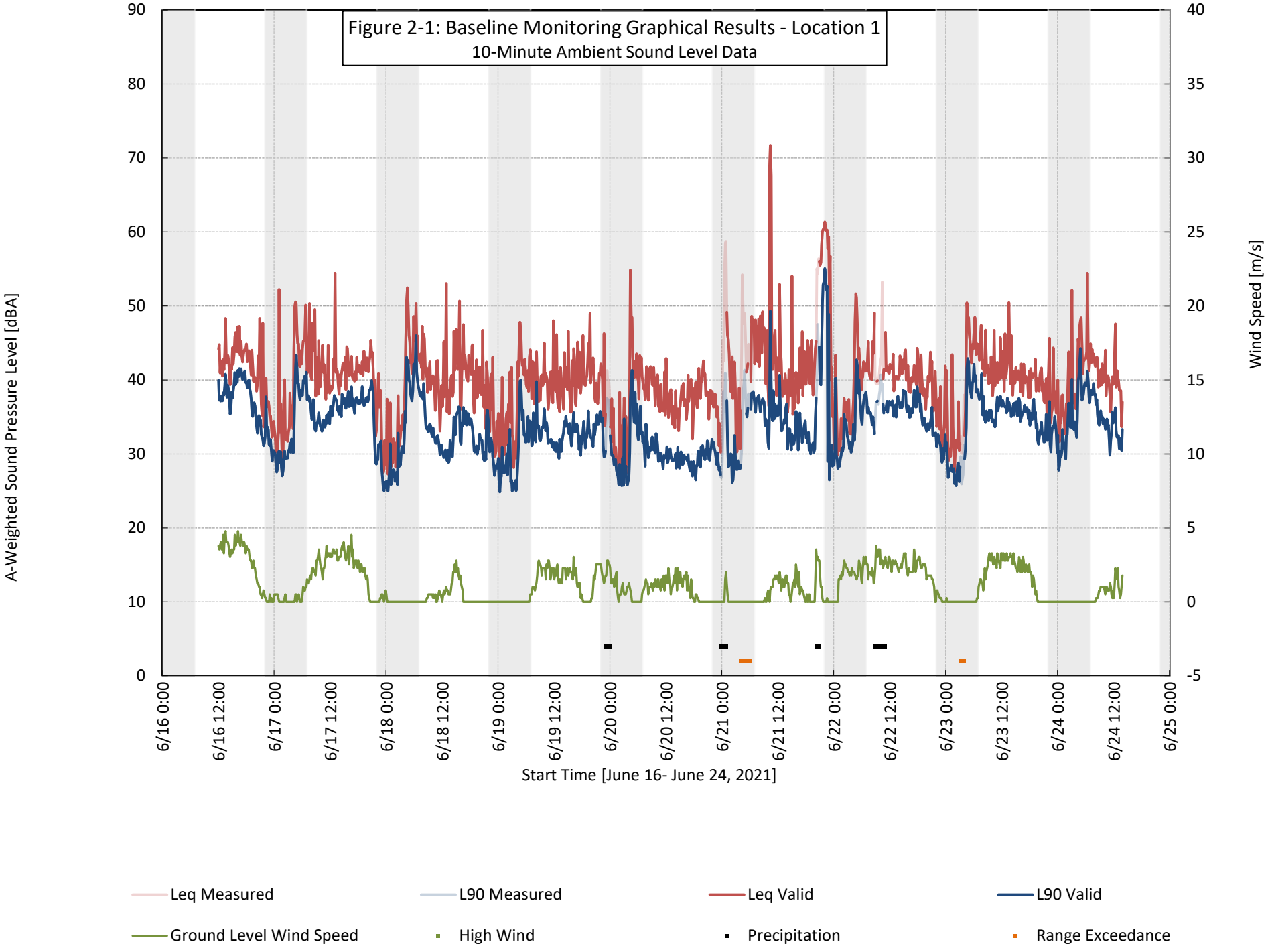
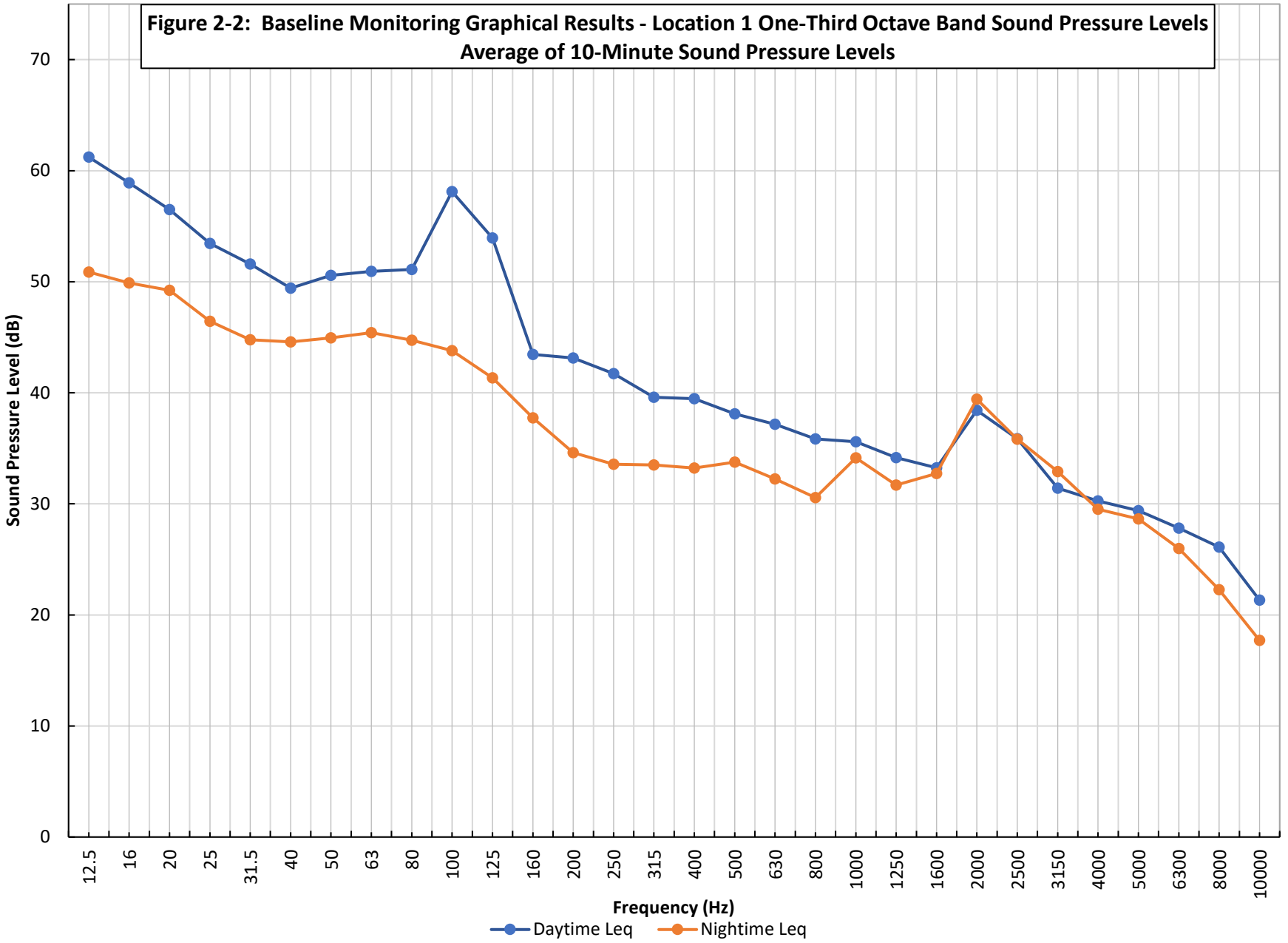


Figure 2-1: Baseline Monitoring Graphical Results - Location 1
10-Minute Ambient Sound Level Data
A-Weighted Sound Pressure Level [dBA]
Wind Speed [m/s]
Start Time [June 16- June 24, 2021]
90
80
70
60
50
40
30
20
10
0
40
35
30
25
20
15
10
5
0
-5
6/16 0:00
6/16 12:00
6/17 0:00
6/17 12:00
6/18 0:00
6/18 12:00
6/19 0:00
6/19 12:00
6/20 0:00
6/20 12:00
6/21 0:00
6/21 12:00
6/22 0:00
6/22 12:00
6/23 0:00
6/23 12:00
6/24 0:00
6/24 12:00
6/25 0:00
Leq Measured
L90 Measured
Leq Valid
L90 Valid
Ground Level Wind Speed
High Wind
Precipitation
Range Exceedance

Figure 2-2: Baseline Monitoring Graphical Results - Location 1 One-Third Octave Band Sound Pressure Levels
Average of 10-Minute Sound Pressure Levels



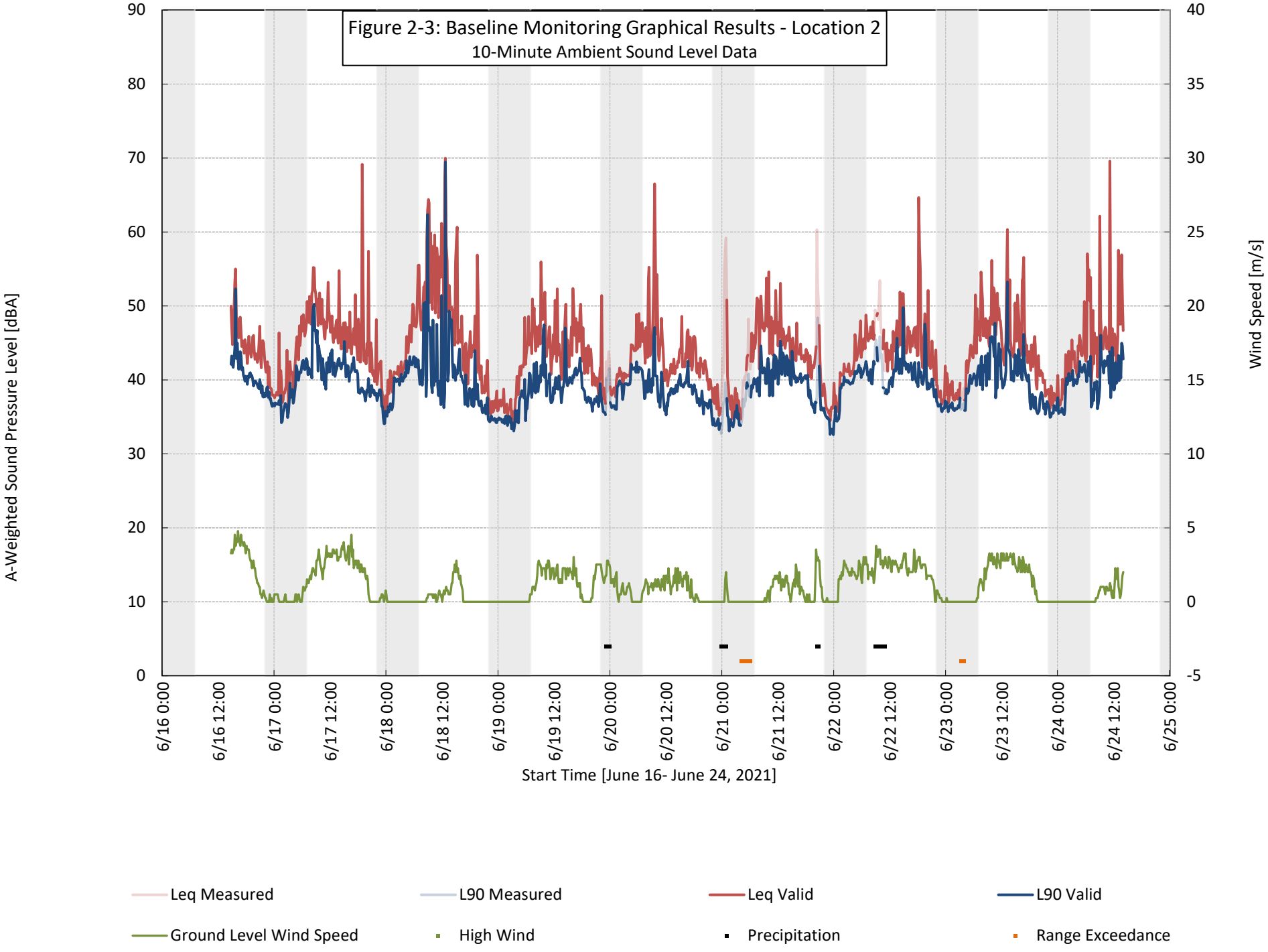
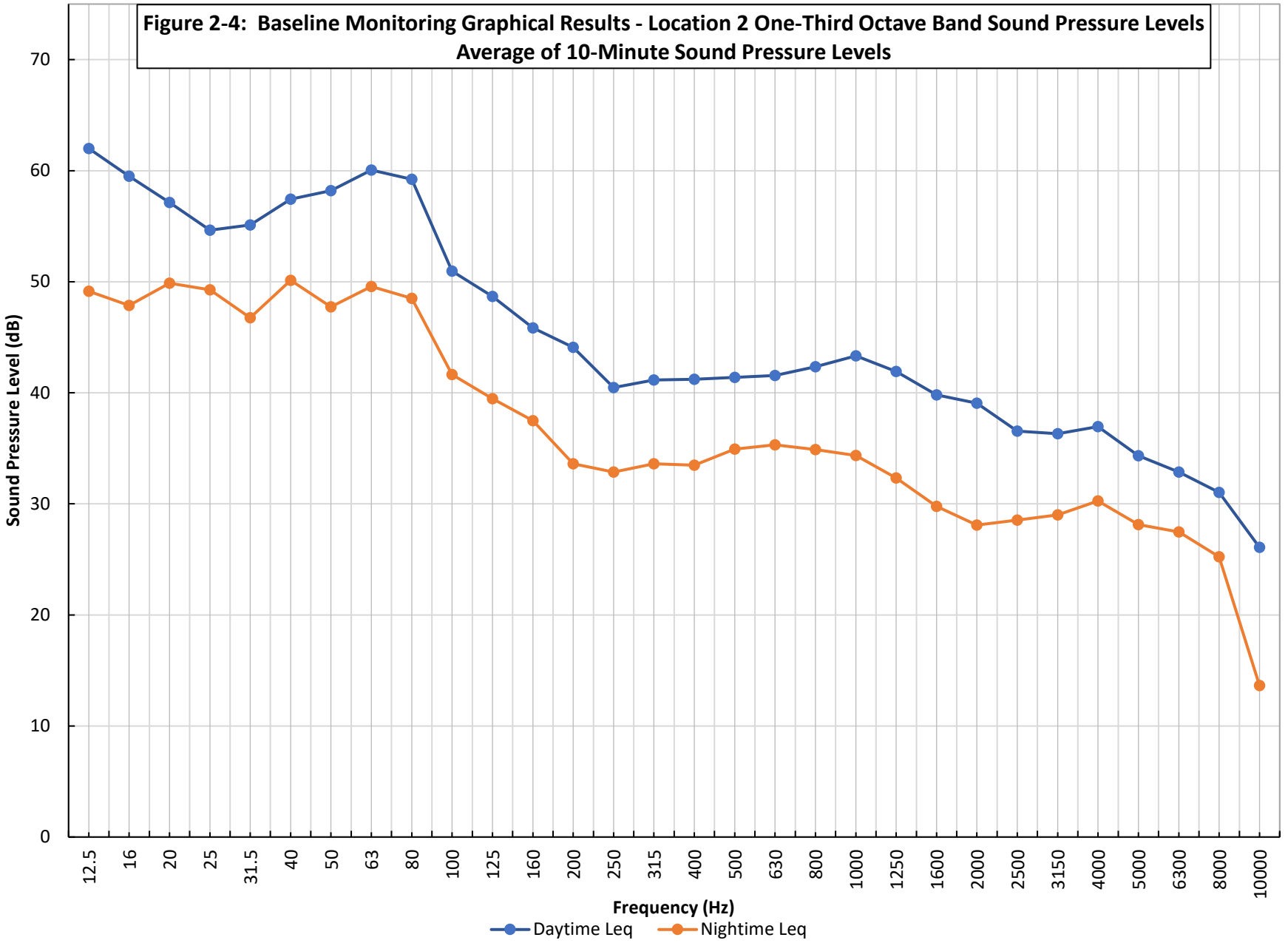


Figure 2-3: Baseline Monitoring Graphical Results - Location 2
10-Minute Ambient Sound Level Data
A-Weighted Sound Pressure Level [dBA]
Wind Speed [m/s]
90
80
70
60
50
40
30
20
10
0
40
35
30
25
20
15
10
5
0
-5
6/16 0:00
6/16 12:00
6/17 0:00
6/17 12:00
6/18 0:00
6/18 12:00
6/19 0:00
6/19 12:00
6/20 0:00
6/20 12:00
6/21 0:00
6/21 12:00
6/22 0:00
6/22 12:00
6/23 0:00
6/23 12:00
6/24 0:00
6/24 12:00
6/25 0:00
Start Time [June 16- June 24, 2021]
Leq Measured
L90 Measured
Leq Valid
L90 Valid
Ground Level Wind Speed
High Wind
Precipitation
Range Exceedance

Figure 2-4: Baseline Monitoring Graphical Results - Location 2 One-Third Octave Band Sound Pressure Levels
Average of 10-Minute Sound Pressure Levels



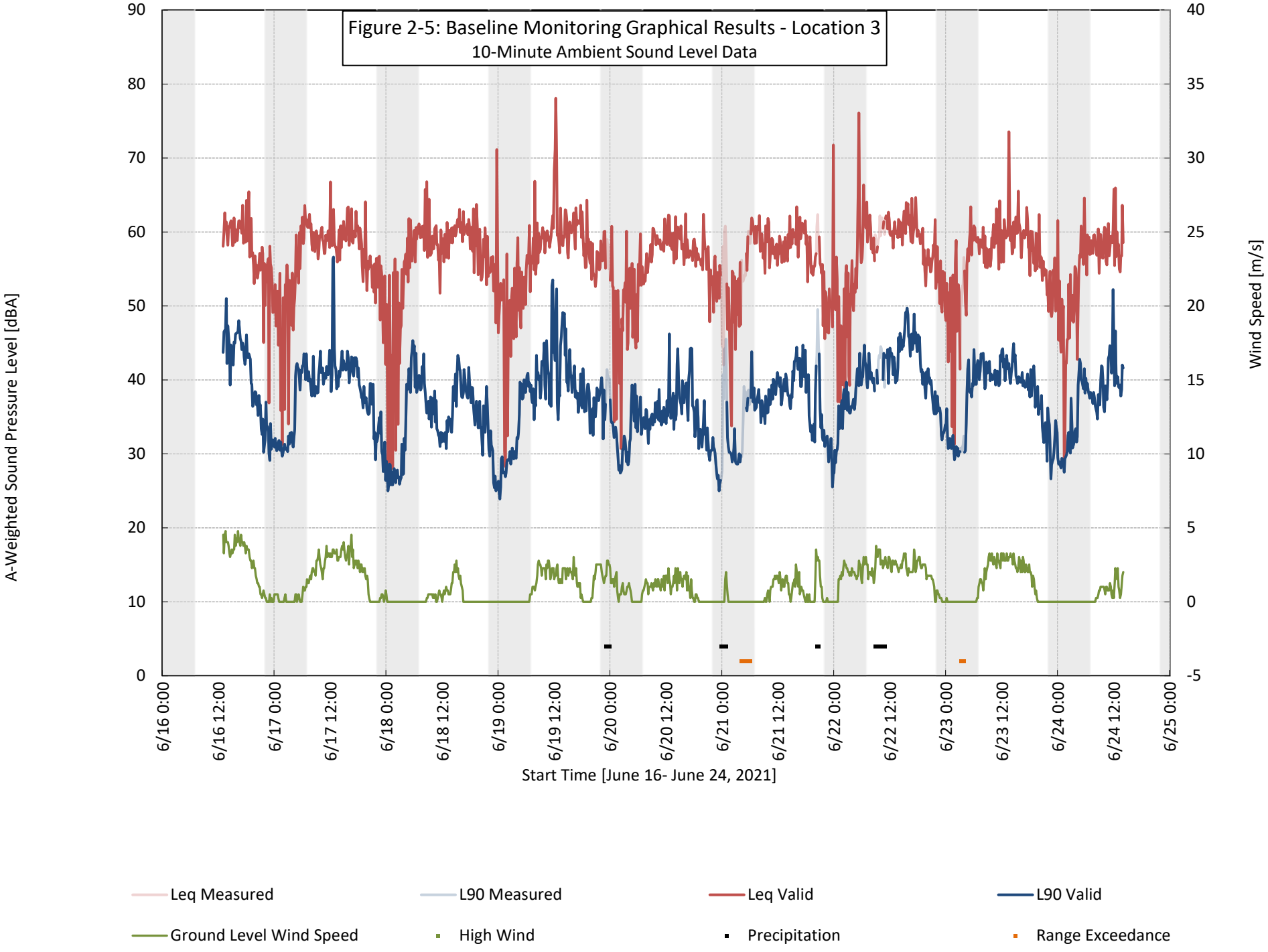
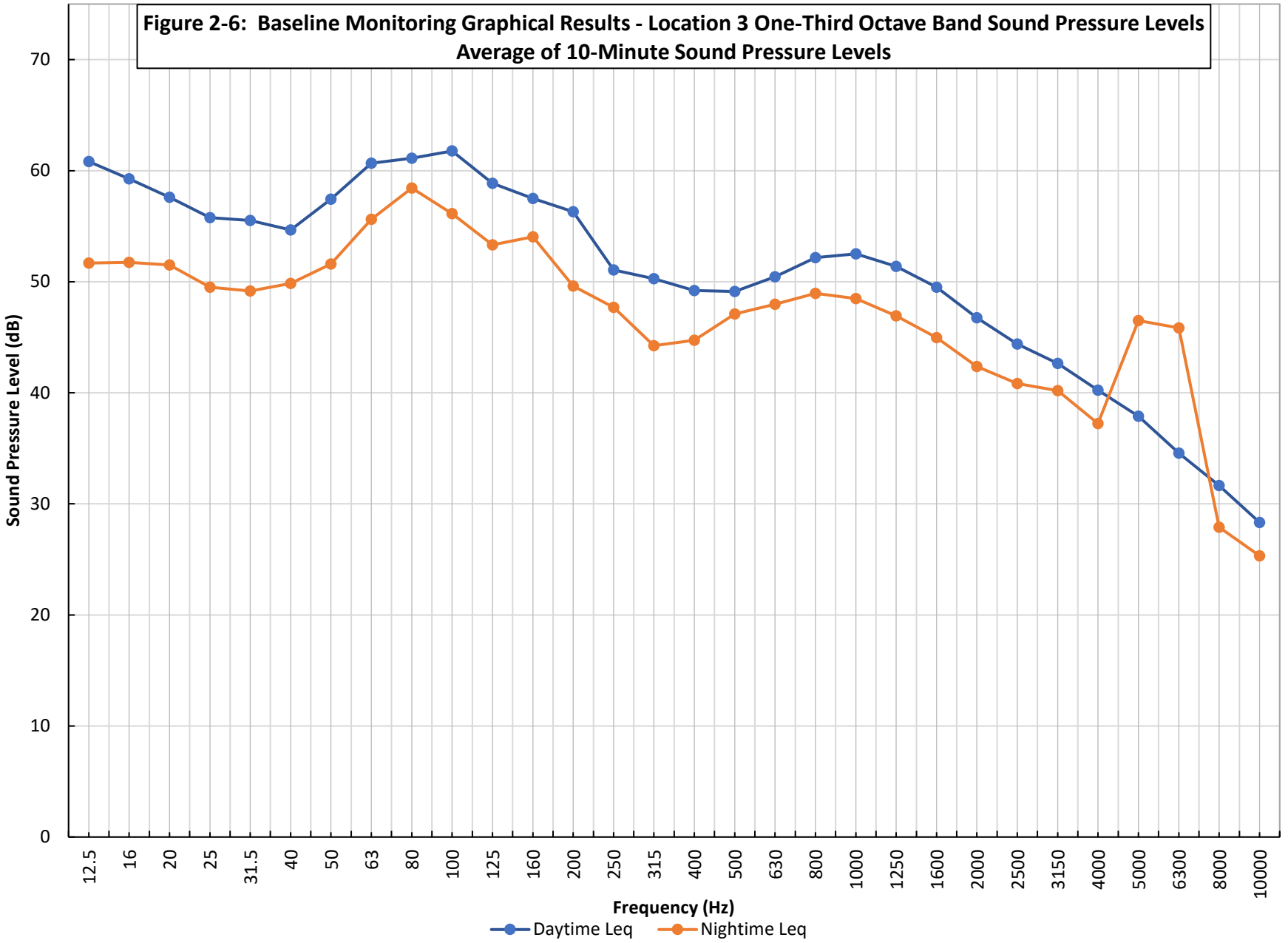


Figure 2-5: Baseline Monitoring Graphical Results - Location 3
10-Minute Ambient Sound Level Data
A-Weighted Sound Pressure Level [dBA]
Wind Speed [m/s]
Start Time [June 16- June 24, 2021]
90
80
70
60
50
40
30
20
10
0
40
35
30
25
20
15
10
5
0
-5
6/16 0:00
6/16 12:00
6/17 0:00
6/17 12:00
6/18 0:00
6/18 12:00
6/19 0:00
6/19 12:00
6/20 0:00
6/20 12:00
6/21 0:00
6/21 12:00
6/22 0:00
6/22 12:00
6/23 0:00
6/23 12:00
6/24 0:00
6/24 12:00
6/25 0:00
Leq Measured
L90 Measured
Leq Valid
L90 Valid
Ground Level Wind Speed
High Wind
Precipitation
Range Exceedance

Figure 2-6: Baseline Monitoring Graphical Results - Location 3 One-Third Octave Band Sound Pressure Levels
Average of 10-Minute Sound Pressure Levels



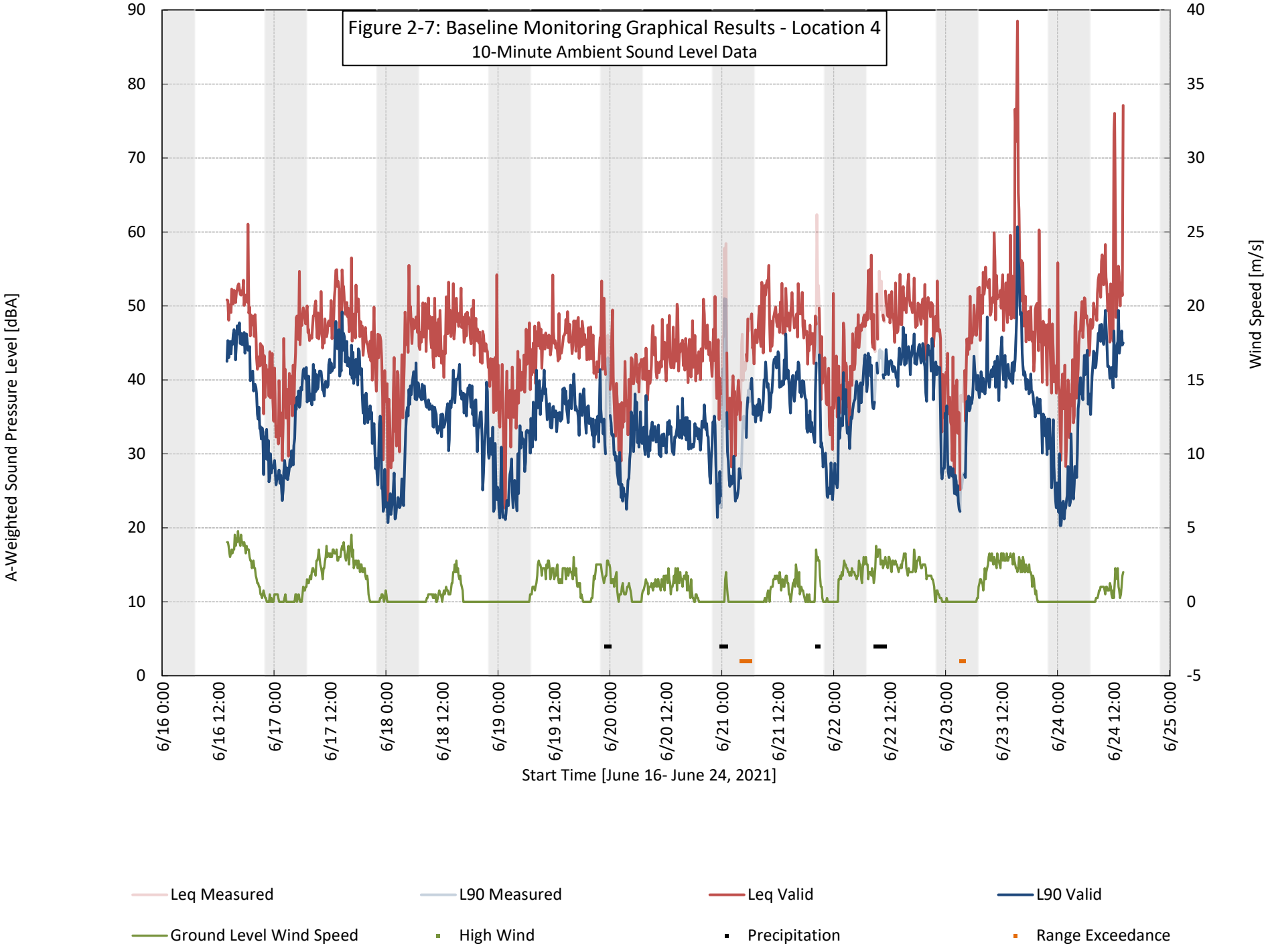
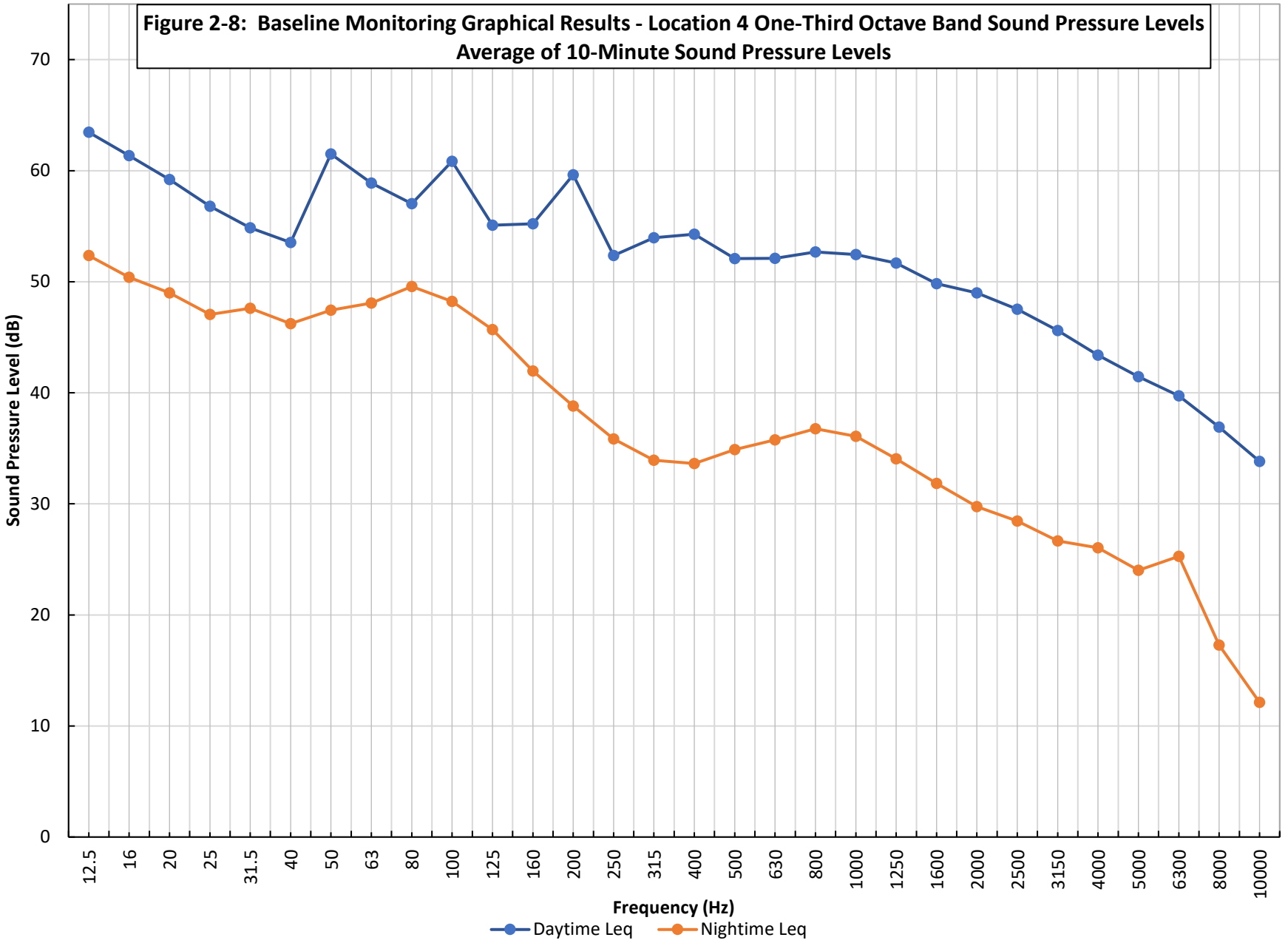


Figure 2-7: Baseline Monitoring Graphical Results - Location 4
10-Minute Ambient Sound Level Data
A-Weighted Sound Pressure Level [dBA]
Wind Speed [m/s]
Start Time [June 16- June 24, 2021]
6/16 0:00
6/16 12:00
6/17 0:00
6/17 12:00
6/18 0:00
6/18 12:00
6/19 0:00
6/19 12:00
6/20 0:00
6/20 12:00
6/21 0:00
6/21 12:00
6/22 0:00
6/22 12:00
6/23 0:00
6/23 12:00
6/24 0:00
6/24 12:00
6/25 0:00
Leq Measured
L90 Measured
Leq Valid
L90 Valid
Ground Level Wind Speed
High Wind
Precipitation
Range Exceedance

Figure 2-8: Baseline Monitoring Graphical Results - Location 4 One-Third Octave Band Sound Pressure Levels
Average of 10-Minute Sound Pressure Levels



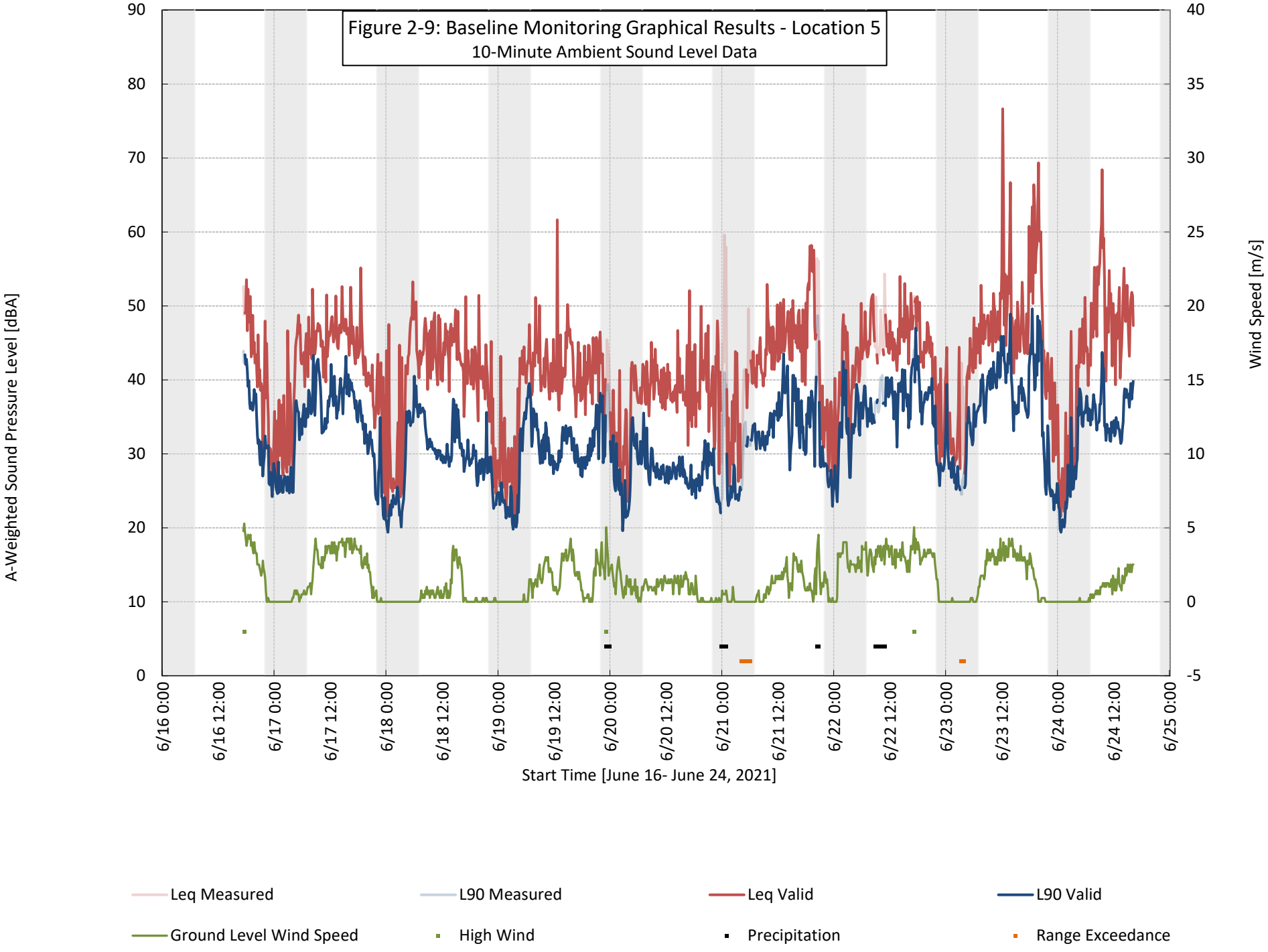


Figure 2-9: Baseline Monitoring Graphical Results - Location 5
10-Minute Ambient Sound Level Data
A-Weighted Sound Pressure Level [dBA]
Wind Speed [m/s]
Start Time [June 16- June 24, 2021]
90
80
70
60
50
40
30
20
10
0
40
35
30
25
20
15
10
5
0
-5
6/16 0:00
6/16 12:00
6/17 0:00
6/17 12:00
6/18 0:00
6/18 12:00
6/19 0:00
6/19 12:00
6/20 0:00
6/20 12:00
6/21 0:00
6/21 12:00
6/22 0:00
6/22 12:00
6/23 0:00
6/23 12:00
6/24 0:00
6/24 12:00
6/25 0:00
Leq Measured
L90 Measured
Leq Valid
L90 Valid
Ground Level Wind Speed
High Wind
Precipitation
Range Exceedance

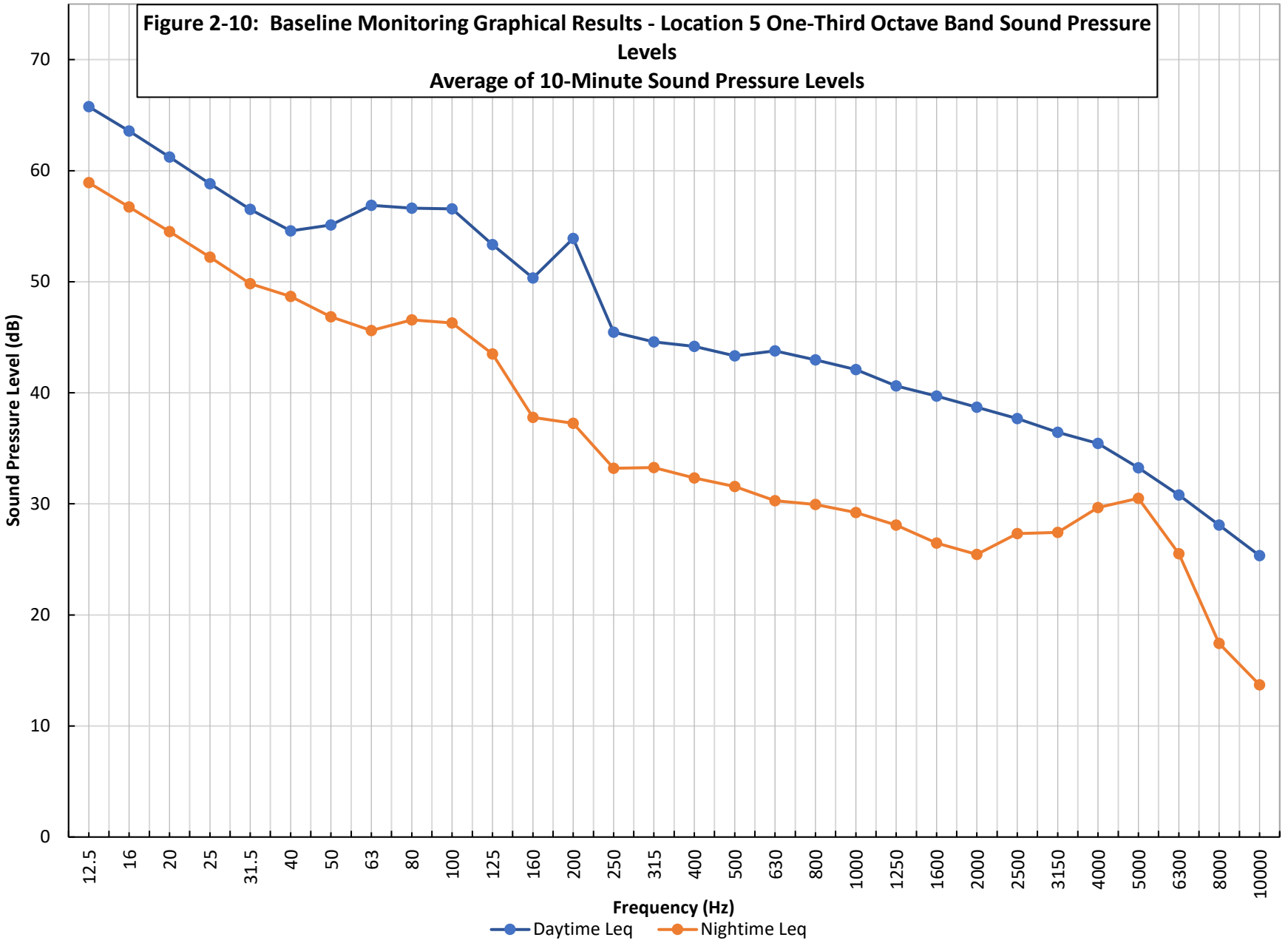


Figure 2-10: Baseline Monitoring Graphical Results - Location 5 One-Third Octave Band Sound Pressure Levels
Average of 10-Minute Sound Pressure Levels
Sound Pressure Level (dB)
0
10
20
30
40
50
60
70
12.5
16
20
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
Frequency (Hz)
Daytime Leq
Nightime Leq

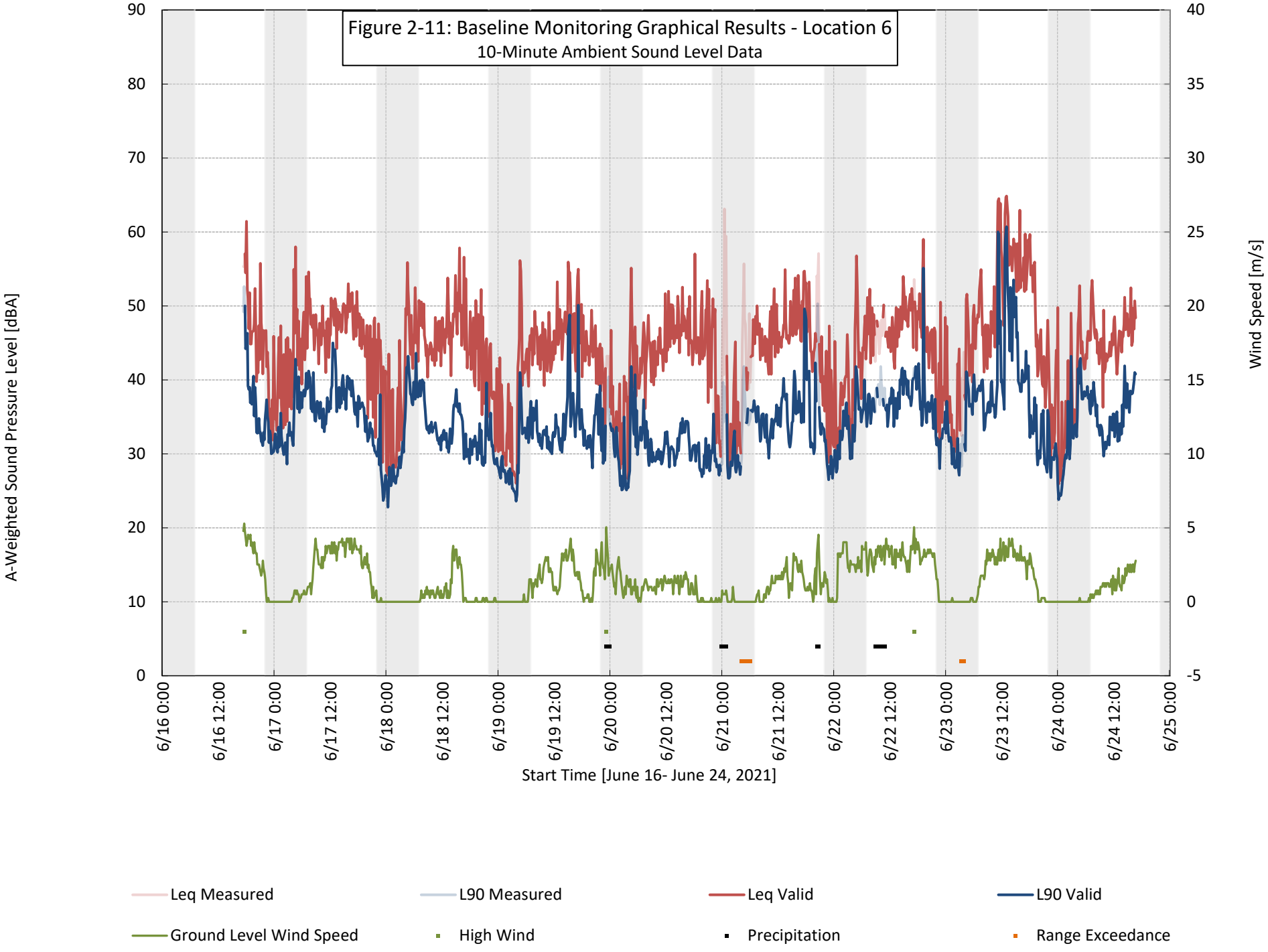
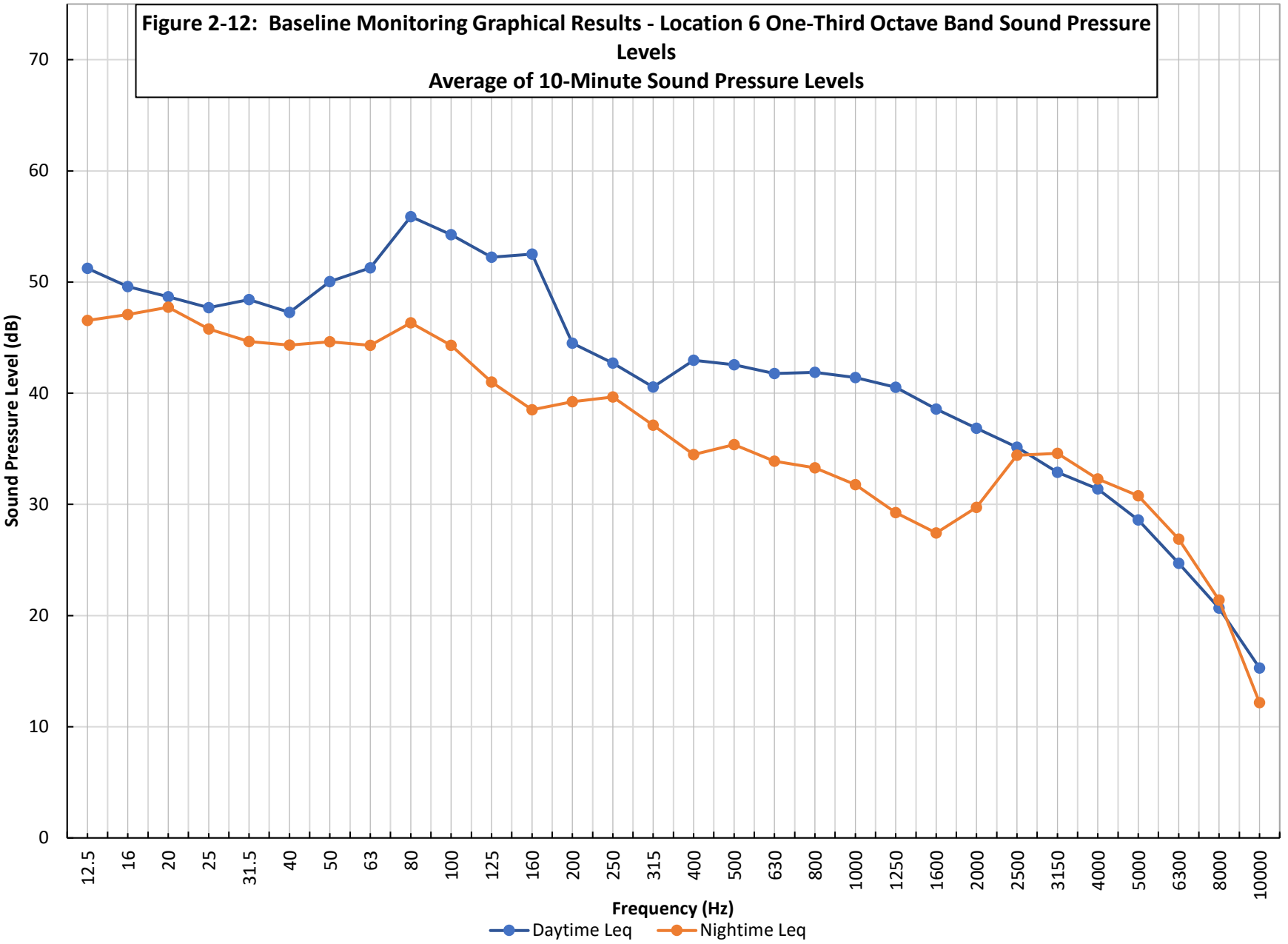


Figure 2-11: Baseline Monitoring Graphical Results - Location 6
10-Minute Ambient Sound Level Data
A-Weighted Sound Pressure Level [dBA]
Wind Speed [m/s]
Start Time [June 16- June 24, 2021]
90
80
70
60
50
40
30
20
10
0
40
35
30
25
20
15
10
5
0
-5
6/16 0:00
6/16 12:00
6/17 0:00
6/17 12:00
6/18 0:00
6/18 12:00
6/19 0:00
6/19 12:00
6/20 0:00
6/20 12:00
6/21 0:00
6/21 12:00
6/22 0:00
6/22 12:00
6/23 0:00
6/23 12:00
6/24 0:00
6/24 12:00
6/25 0:00
Leq Measured
L90 Measured
Leq Valid
L90 Valid
Ground Level Wind Speed
High Wind
Precipitation
Range Exceedance

Figure 2-12: Baseline Monitoring Graphical Results - Location 6 One-Third Octave Band Sound Pressure Levels
Average of 10-Minute Sound Pressure Levels



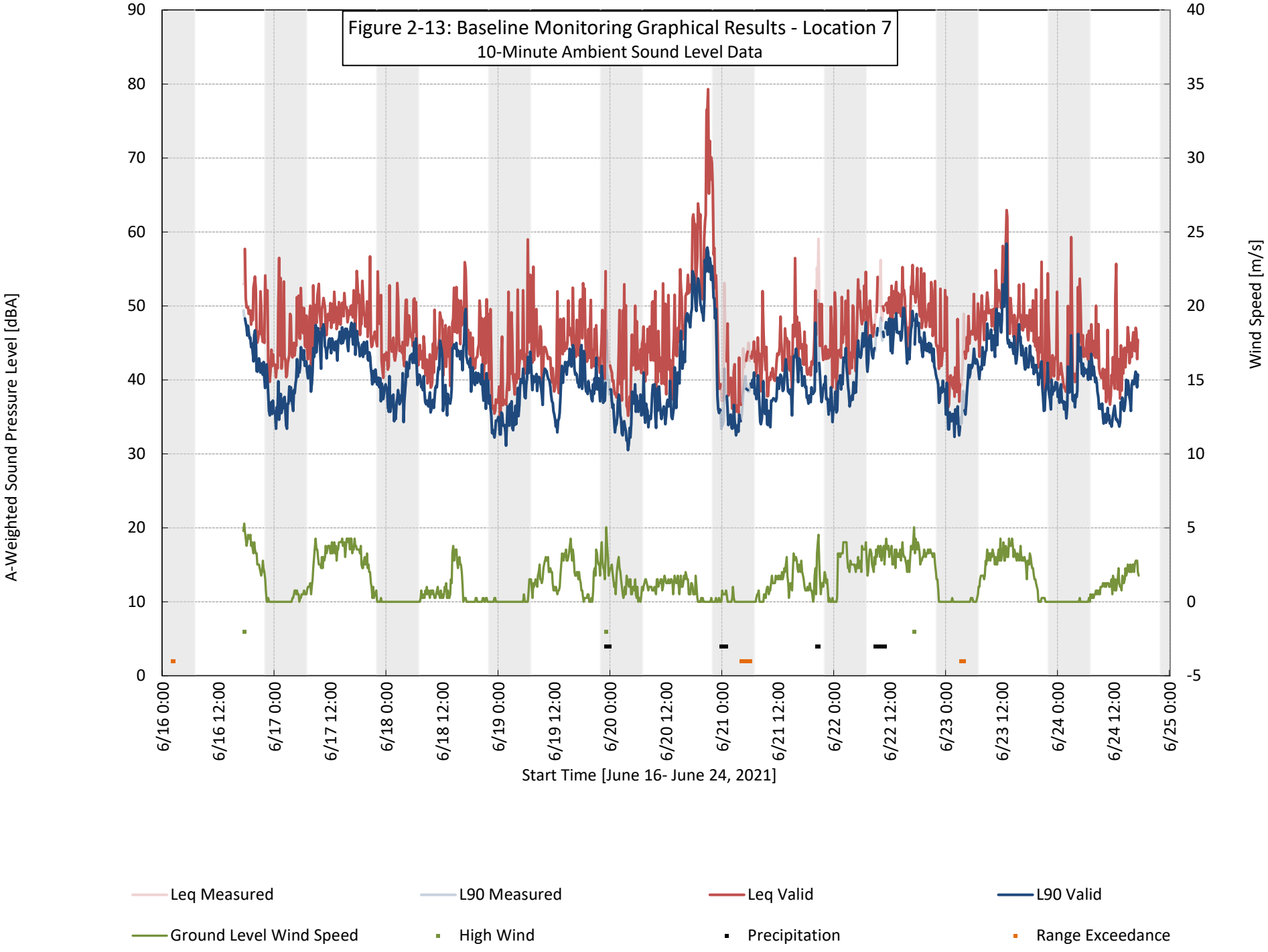


Figure 2-13: Baseline Monitoring Graphical Results - Location 7
10-Minute Ambient Sound Level Data
A-Weighted Sound Pressure Level [dBA]
Wind Speed [m/s]
90
80
70
60
50
40
30
20
10
0
40
35
30
25
20
15
10
5
0
-5
6/16 0:00
6/16 12:00
6/17 0:00
6/17 12:00
6/18 0:00
6/18 12:00
6/19 0:00
6/19 12:00
6/20 0:00
6/20 12:00
6/21 0:00
6/21 12:00
6/22 0:00
6/22 12:00
6/23 0:00
6/23 12:00
6/24 0:00
6/24 12:00
6/25 0:00
Start Time [June 16- June 24, 2021]
Leq Measured
L90 Measured
Leq Valid
L90 Valid
Ground Level Wind Speed
High Wind
Precipitation
Range Exceedance

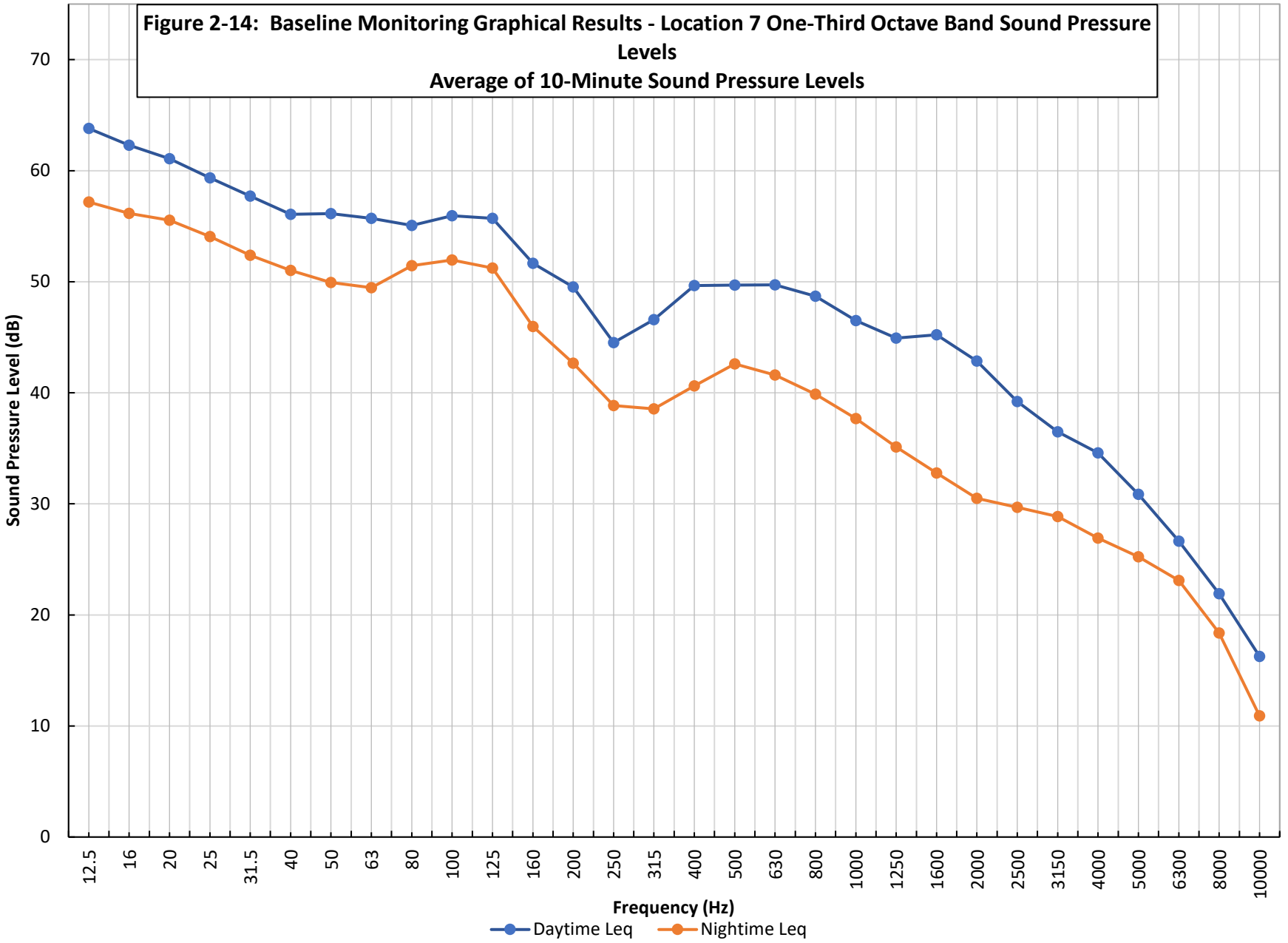


Figure 2-14: Baseline Monitoring Graphical Results - Location 7 One-Third Octave Band Sound Pressure Levels
Average of 10-Minute Sound Pressure Levels
Sound Pressure Level (dB)
0
10
20
30
40
50
60
70
12.5
16
20
25
31.5
40
50
63
80
100
125
160
200
250
315
400
500
630
800
1000
1250
1600
2000
2500
3150
4000
5000
6300
8000
10000
Frequency (Hz)
Daytime Leq
Nightime Leq

3.0 SOUND LEVEL MONITORING SUMMARY

A baseline monitoring program was performed for the proposed Mill Point Solar Project to characterize the existing sound level environment in the Project area. The measured sound levels are summarized below as tabular data by location. Respective ANS-weighted broadband sound levels calculated for the summary period of interest are provided along with the "as-measured" broadband levels within each table. Only valid[7] 10-minute measurement periods are included in the summary tables.

3.1 Existing Ambient – L90

Measured ambient L_{90} sound levels are shown below in Table 3-1. Values are separated by daytime and nighttime periods as well as for the entire program combined. These values represent the L_{90} of the measured L_{90} values.

Table 3-1 Existing Ambient L_{90} (dBA) Sound Pressure Level Summary

Location	Overall (dBA)		Daytime (dBA)		Nighttime (dBA)	
	Measured	ANS	Measured	ANS	Measured	ANS
Location 1	28	27	30	28	27	26
Location 2	36	34	37	35	34	34
Location 3	31	29	34	32	28	27
Location 4	28	27	32	31	23	22
Location 5	25	23	28	25	22	21
Location 6	28	27	30	28	27	26
Location 7	35	34	36	35	34	33

3.2 Existing Ambient - Leq

Measured average ambient L_{eq} levels are presented in Table 3-2. Values are separated by daytime and nighttime periods as well as for the entire program combined.

Table 3-2 Existing Ambient L_{eq} (dBA) Sound Pressure Level Summary

Location	Overall (dBA)		Daytime (dBA)		Nighttime (dBA)	
	Measured	ANS	Measured	ANS	Measured	ANS
Location 1	40	37	41	38	38	36
Location 2	44	42	46	43	41	39
Location 3	56	55	59	57	52	50
Location 4	45	44	48	47	40	39
Location 5	42	40	45	43	36	34
Location 6	45	43	47	46	39	37
Location 7	46	45	47	46	44	43

[7] Refer to Chapter 2 for details concerning valid periods.

Appendix A

Windscreen Insertion Loss

Experimental study to determine wind-induced noise and windscreen attenuation effects on microphone response for environmental wind turbine and other applications

George F. Hessler[a)], David M. Hessler[b)], Peter Brandstätt[c)] and Karlheinz Bay[d)]

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Despite the use of windscreens, the measurement of ambient sound levels or noise emissions in quiet environments can be adversely affected by wind blowing over the microphone. This is especially true when environmental impact assessments are being carried out for proposed wind turbine power projects - where the objective is to determine the level of background masking noise available as a function of wind speed, since any potential noise impact from the project will only occur under moderately windy conditions. Under calm conditions the project will produce no noise at all. A number of windscreen products are commercially available for short and long-term sound level monitoring in adverse weather conditions. Generally, these windscreens vary by physical size and the method of preventing water from reaching the microphone. High frequency attenuation effects are usually available from the product suppliers but, in general, low frequency turbulence effects are not available. Consequently, a controlled laboratory test program was carried out in a state-of-the-art wind tunnel at the Fraunhofer Institut für Bauphysik in Stuttgart, Germany to quantify the level of low frequency interference (down to 6.3 Hz) associated with a number of different foam windscreens and an aerodynamic microphone nose cone. A total of nine configurations were tested with "quiet" airflow only, artificial noise only and noise plus airflow to evaluate both low frequency wind induced noise and high frequency attenuation effects. The test program demonstrated that the largest size foam-based windscreens provided the most protection from flow induced noise due to wind. Flow induced noise by air flow alone was estimated from the study results and compared to community noise measurements at a typical wind turbine site. It was determined that flow induced wind noise does not have a significant or detrimental effect on the measurement of A-weighted sound levels under wind conditions of concern as long as the suggested measurement techniques described herein are followed.

Primary subject classification: 71.1.1; Secondary subject classification: 21.6

1 INTRODUCTION

It is a challenge to measure ambient or background levels in quiet, rural environments. Such areas are usually devoid of any major noise sources, such as highways, industrial facilities or airports. Except for occasional, usually man-made, noise events the sound level in rural environments is normally dominated by the rustling of tree leaves or branches in the wind or by the high frequency sounds of insects during the warmer months of the year. For wind turbine power project assessments, ambient sound levels when the wind is blowing in the 3 to 10 m/s range (measured at 10 m above the surface) is very relevant because that is when typical wind turbines first begin to generate significant noise. At higher wind speeds turbine sound levels remain largely constant while the background sound continues to increase. Consequently, background sound

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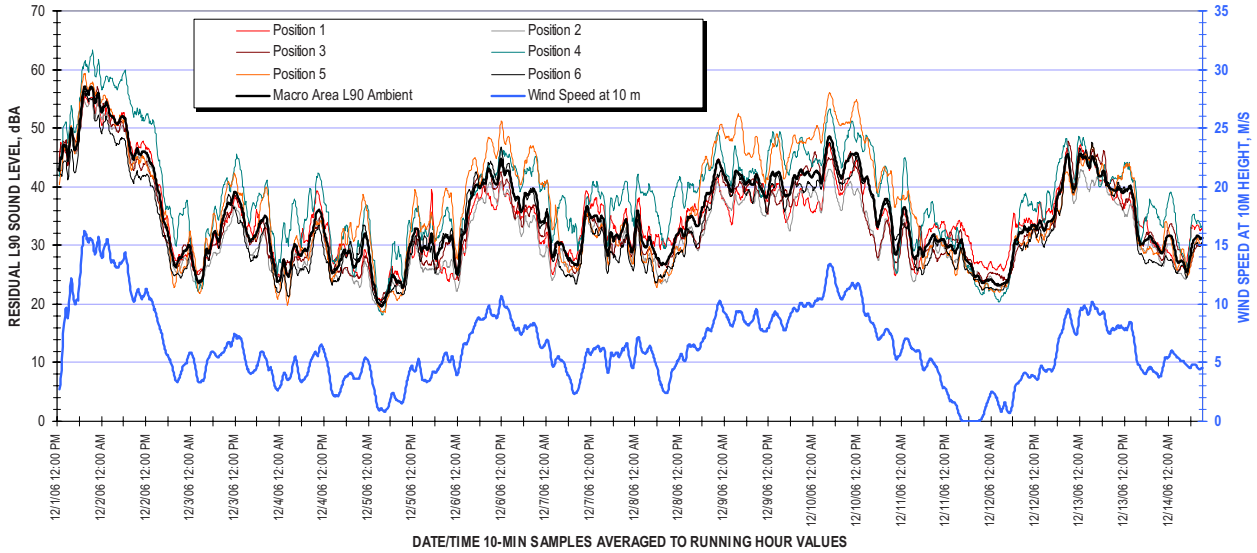


Fig. 1—Measured residual LA90 ambient sound levels at six widely spaced locations in a quiet rural area compared to wind speed over a 13 day period.

levels that occur during moderate winds are of the most interest. Reference 1 offers techniques for measuring wind turbine sources using a ground plane microphone setup to eliminate wind induced noise, but background baseline measurements are made above grade with wind.

In general, experience with (insect-free) wintertime surveys at rural sites indicates that there is normally an

Fig. 2—Photographs of nine microphone test configurations.

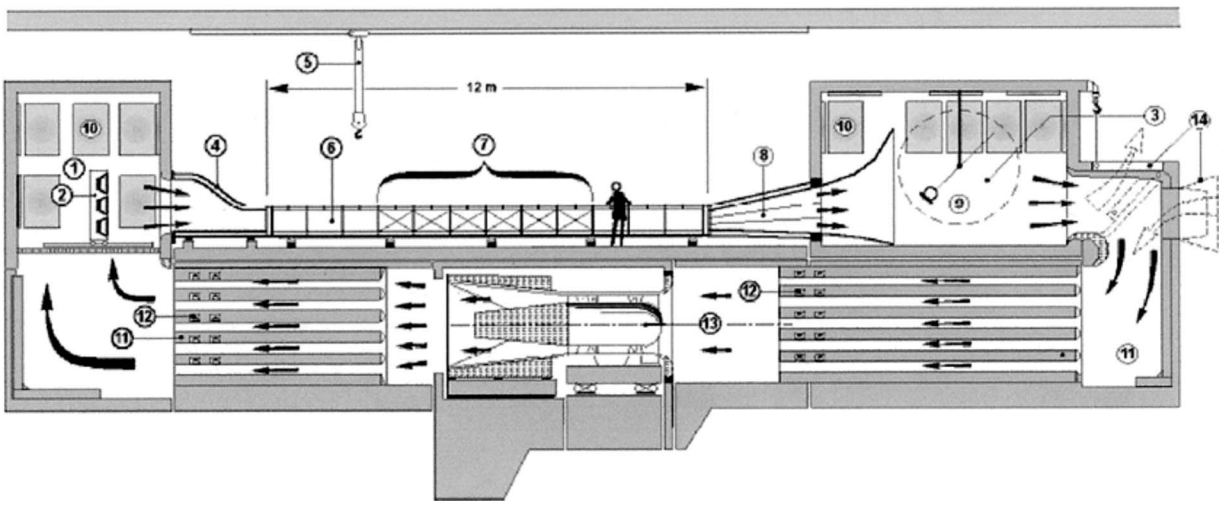


Fig. 3—Cross sectional elevation view of silencer test facility.

excellent correlation between wind speeds and the ambient residual (L90) sound levels as shown on Fig. 1. Of course, such a high degree of correlation could result if the microphone response was dominated by wind-induced turbulence effects around the microphone as opposed to the true ambient sound level signal. Hence, the purpose of this study is to quantitatively address this uncertainty and determine, for a number of common windscreens types, if/when any substantial contamination occurs over a range of wind speeds.

Nine microphone configurations, as illustrated in Fig. 2, were tested under controlled conditions in a wind tunnel duct using quiet airflow only, artificial noise only (at three volumes) and airflow plus artificial noise. Ninety degree incidence is used to duplicate ambient sound measurement survey techniques, but the nose cone (B&K model UA 0386) was aimed into the flow stream. Windscreens for tests 3, 4, 8 and 9 are products available for long-term outdoor monitoring. The foam ball ACO Pacific models (tests 8 and 9) are specifically treated to shed rain water while the other foam balls are not intended for outdoor rain exposure. Measurements were carried out at duct velocities of 2.5, 5, 10, 20 and 30 m/s (8, 16, 33, 66 and 98 ft/s, or 6, 11, 22, 45 and 67 mph). The test results are also useful for determining flow turbulence effects when measuring industrial noise sources in the presence of airflow, as well as for outdoor environmental measurements.

The test program was carried out at the Fraunhofer Institute of Building Physics located in Stuttgart, Germany at their aero-acoustic wind tunnel illustrated on Fig. 3. Note the large silencers on the inlet and exhaust path of the airflow fan and the structural isolation of the test duct. The airflow delivered to the duct test section is essentially free of fan noise or is "quiet" air. The airflow in the duct cross section has an even distribution without swirl or turbulences as it is supplied through a stilling chamber and an air inlet profile. The duct cross section of 1 m by 0.5 m was held constant over the complete length for all measurements. In this way re-generated noise was kept at a minimum. Measurements were made with a Norsonic 840 Analyzer, Norsonic Model 1201 preamp and 1/2 inch (13 mm) diameter Model 1225 microphone.

2 LOW FREQUENCY TURBULENCE EFFECTS - FLOW MEASUREMENTS

The raw measured data for all configurations at the five airflow speeds are plotted on Fig. 4. It is certainly not news, but the data clearly demonstrate that even the most modest foam windscreen should always be used when outdoors, since it dramatically improves the low and mid frequency microphone response. Because the extreme low frequencies are significantly affected by flow induced noise even at fairly low wind speeds, these plots also show that whenever low level very low frequency or C-weighted sound levels must be measured outdoors such measurements should only be carried out under completely calm conditions.

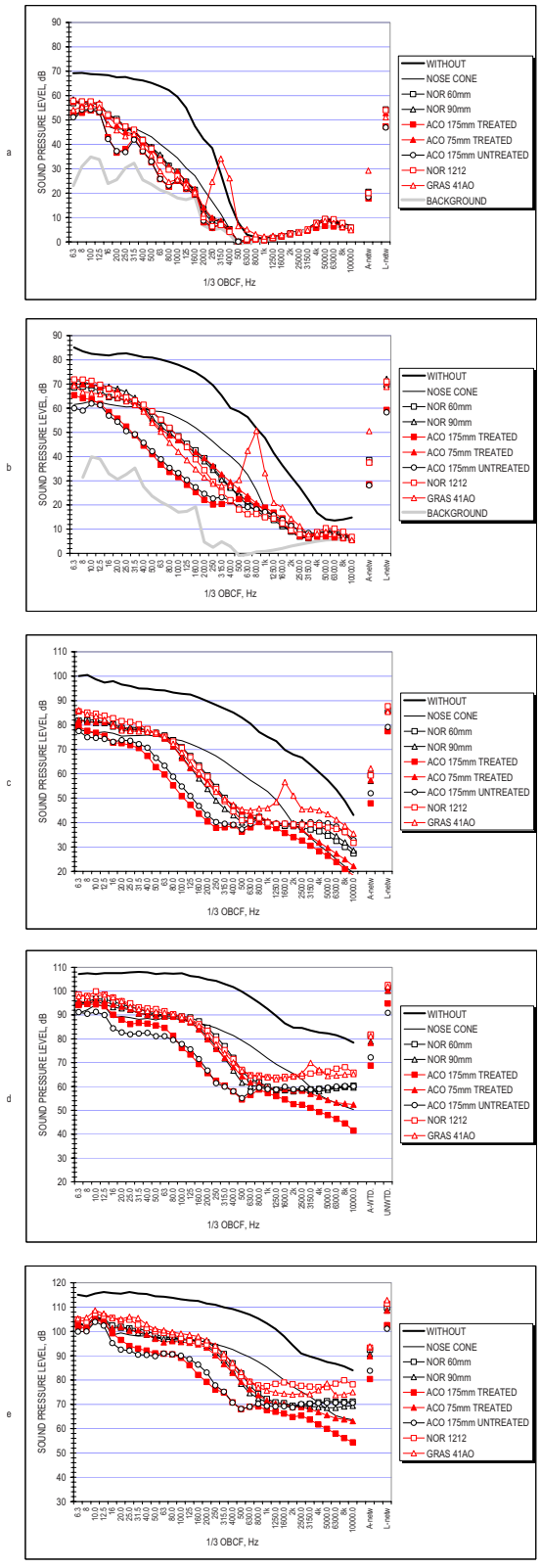


Fig. 4—Measured microphone response at five velocities (2.5, 5. 10, 20 and 30 m/s*, graph a through e).*

The second trend immediately noticeable is that the two larger (175 mm diameter) windscreens are significantly better at reducing flow induced noise at low and

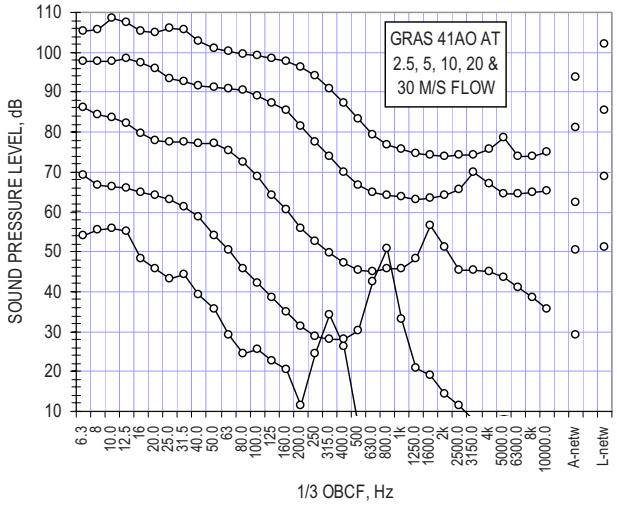


Fig. 5—Graph showing flow generated tonal noise associated with the gap between foam and wire.

mid frequencies. Flow-induced noise levels are on the order of 10 dB lower for this type of windscreen than they are for all others. Prior studies have shown this relationship and an excellent analytical study and summary of microphone response to turbulence is presented by van den Berg in Ref. 2. This testing quantifies the improvement and low frequency performance for readily available current wind protection products.

All of the plots, but particularly the lower wind speed cases, show a tonal aberration for the GRAS model 41AO windscreen. A frequency shift with wind velocity can clearly be seen in Fig. 5, which shows only the results for this model windscreen at all five wind speeds. This behavior was initially attributed to vortex shedding from the bird spike wires (each 1.5 mm in diameter) where the frequency may be calculated by the well known equation:

$$f = Sv/d \qquad (1)$$

where,
S=the Strouhal number of 0.2
v=velocity, m/s
d=diameter, m

This calculation indicated that the 315, 630, 1250, 2500 and 5000 Hz 1/3 octave bands would be excited by vortex shedding, but the actual measurements showed that the affected bands were 315, 800, 1600, 3150 and 5000 Hz. Further diagnostic testing demonstrated that the peaks are caused by the gap between the

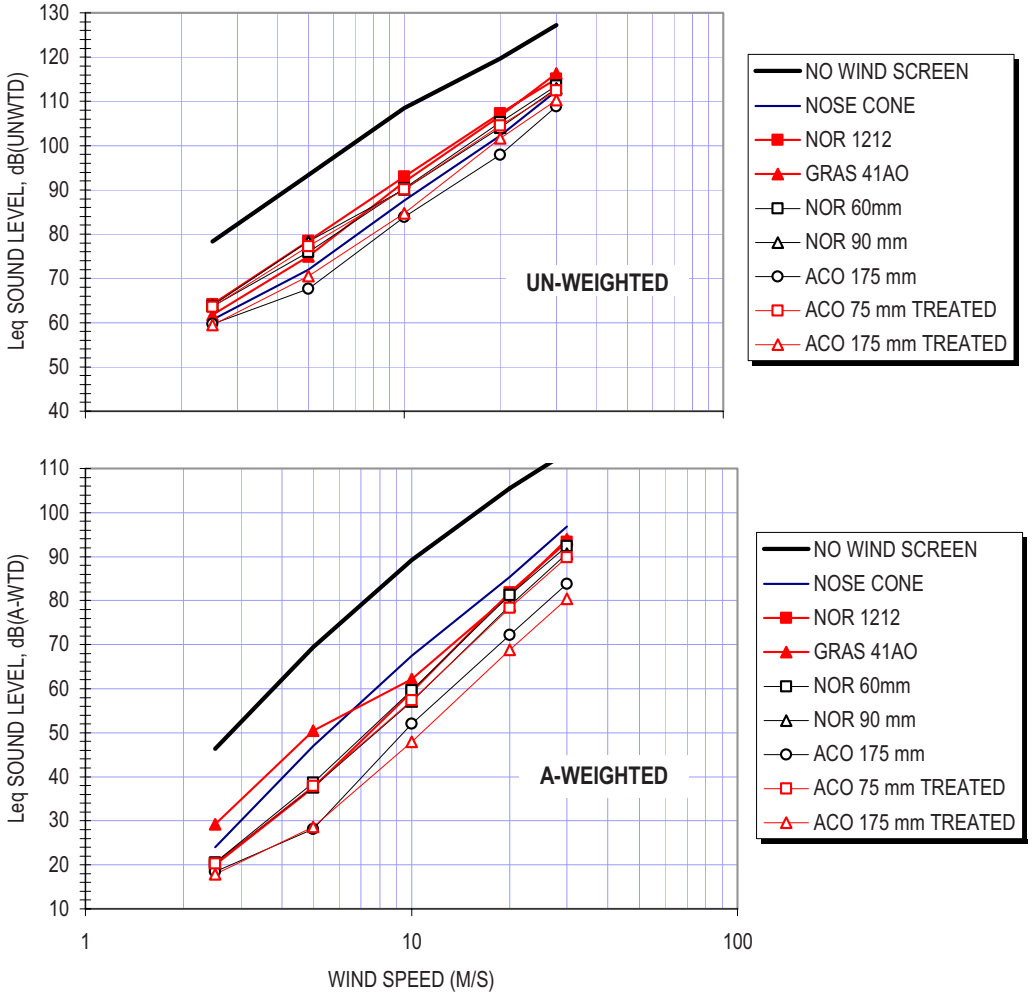


Fig. 6—Plot of overall flow noise response for windscreen models. Upper: Un-weighted level, Lower: A-weighted level.

wire bird spike base and the top of the windscreen. Apparently small mini-jets are created by this gap and it was found that this noise could be reduced by a closer fit between the foam screen and the wire. The gap should be eliminated when employing this model for monitoring.

Figure 6 plots the overall measured values of flow-generated noise as a function of air flow velocity. When plotted on a logarithmic scale, the data show a linear increase with velocity for all models. The overall, un-weighted sound level slope is a v^5 relationship, or approximately a 15 dB increase for each doubling of velocity, whereas the A-weighted results are a v^6 relationship, or approximately 18 dBA increase per doubling. Table 1 tabulates the overall measured values at each velocity for each model windscreen. These data can be used to derive a logarithmic expression for the self-generated noise level as a function of wind speed for any of the tested windscreens. For example, data for the treated ACO 175 mm windscreen leads to the following approximate equation for estimating the A-weighted flow induced noise level for the wind speed at the microphone location. Wind speed at 10 m elevation is the standardized elevation for rating wind turbines as given in Ref. 1 but this equation applies at the microphone location.

$$L_{fin} = 27.4 \ln(v) - 10.7, \text{ dBA} \qquad (2)$$

where,

L_{fin}=the A-weighted flow-induced-noise level due only to wind

v=the wind speed at the microphone, m/s

Table 1—Measured overall levels for microphone response with and without windscreens at five velocity settings. Lowest response results are for the 175 mm *size windscreens.*

		FLOW SPEED M/S (MPH)				
A-WTD		2.5	5	10	20	30
T1	NO WIND SCREEN	46	69	89	106	114
T2	NOSE CONE	24	47	68	85	97
T3	NOR 1212	20	38	59	82	93
T4	GRAS 41AO	29	51	62	81	94
T5	NOR 60 mm	21	39	60	81	92
T6	NOR 90 mm	20	38	57	79	91
T7	ACO 175 mm	18	28	52	72	84
T8	ACO 75 mm TREATED	20	38	57	78	90
T9	ACO 175 mm TREATED	18	29	48	69	80
UNWTD		FLOW SPEED M/S (MPH)				
		2.5	5	10	20	30
T1	NO WIND SCREEN	78	93	109	120	127
T2	NOSE CONE	61	72	88	102	112
T3	NOR 1212	64	79	93	107	115
T4	GRAS 41AO	62	75	92	107	116
T5	NOR 60 mm	64	76	90	105	114
T6	NOR 90 mm	64	78	90	104	113
T7	ACO 175 mm	60	68	84	98	109
T8	ACO 75 mm TREATED	64	77	90	105	113
T9	ACO 175 mm TREATED	60	71	85	102	110

3 ATTENUATION EFFECTS – ARTIFICIAL NOISE MEASUREMENTS

The measured sound levels in the duct at three volumes of artificial loud speaker noise (without any airflow) are plotted in Fig. 7. The fairly significant response variances at frequencies below 50 Hz are attributable to longitudinal in-duct resonances. Variable levels of external low frequency background noise outside the test duct at the facility may have also contributed to the scatter and loudspeaker output is poor at frequencies below 20 Hz. An improved signal to background noise ratio is suspected as the reason for better data grouping at the highest volume. There is no reason to believe that windscreens have any attenuation or amplification effects at these low frequencies. To verify this, testing was repeated in the facilities anechoic free-field environment. Figure 8 plots the raw data for this test and it is readily apparent that the low frequency variations are absent for a free progressive wave in an anechoic room as opposed to the wave front in a duct containing lateral reflections.

At the high end of the frequency spectrum the plots consistently show the same, model-dependent trends such as the significant attenuation of the ACO 175 mm treated windscreen at all frequencies above about 1250 Hz. Figure 9 shows the averaged attenuation for the three volumes in 1/3 octave bands for all windscreen models tested. Negative attenuation, or amplification of the signal, is significant for the nose cone and Nor 1212 outdoor windscreen. Table 2 tabulates the measured attenuations.

In general, the relatively large high frequency attenuation associated with the ACO 175 mm treated windscreen means that any un-corrected measurements made with it would be somewhat lower on an overall A-weighted basis than the actual value and therefore conservative in background survey applications. The overall noise reduction of this windscreen would depend on the frequency spectrum shape of the sound being measured but appears to be in 2 to 5 dBA range (neglecting any possible counteracting increases due to wind-induced effects). This low-pass filter quality could actually be beneficial in cases where unwanted summertime insect noise (generally above 2 kHz) is present. This contamination would be automatically

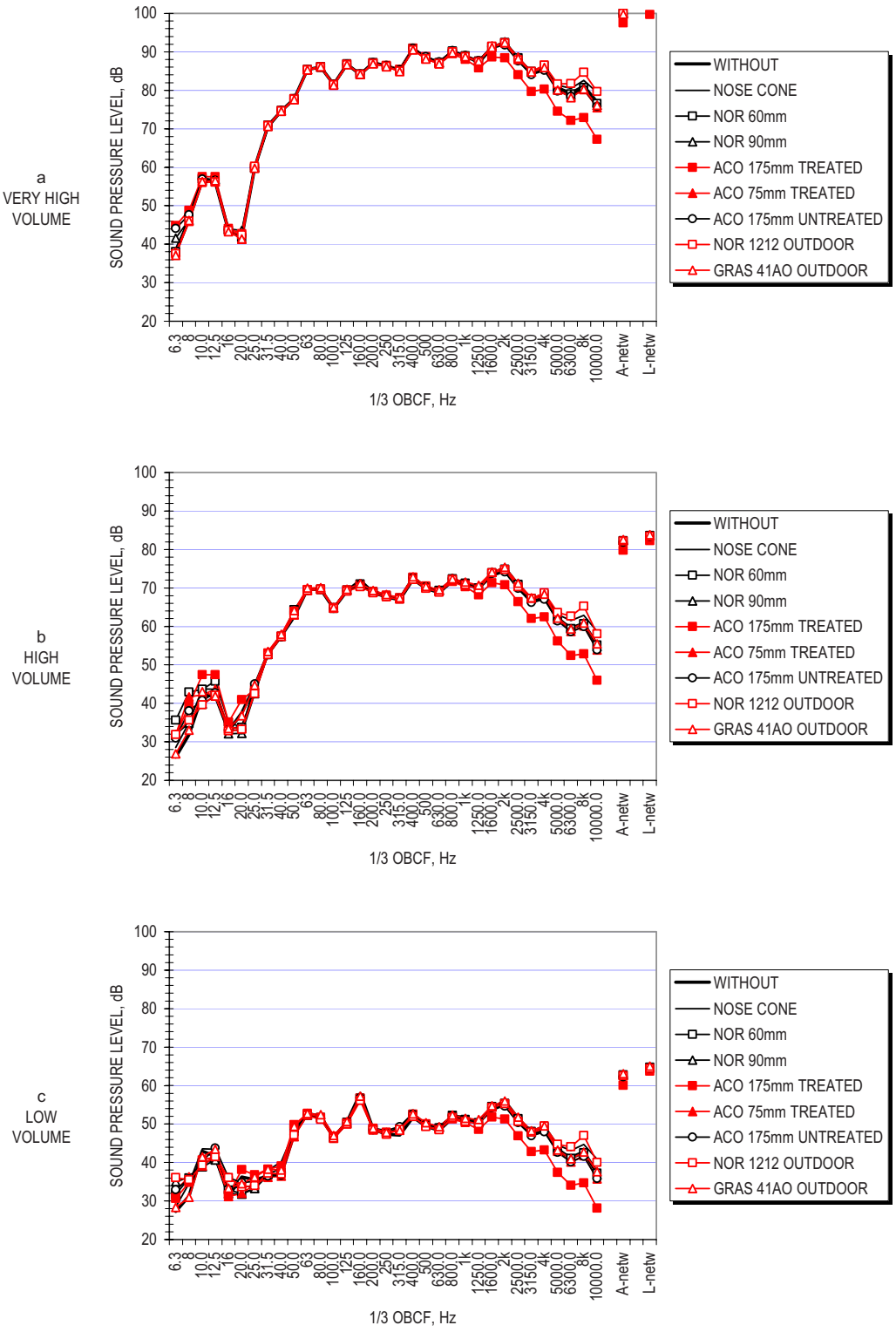


Fig. 7—Measured response with three volumes of artificial noise in the duct.

minimized, though not necessarily eliminated, through the use of this windscreen

4 FLOW AND NOISE MEASUREMENTS

The combined flow and noise measurements serve to illustrate the accuracy of the measurements and the benefits of using windscreens. Figure 10 plots the flow only, noise only and the combined flow and noise measurements for three cases: no windscreen, minimum diameter and maximum diameter foam windscreens. The point where the flow only and noise only traces cross essentially defines the minimum

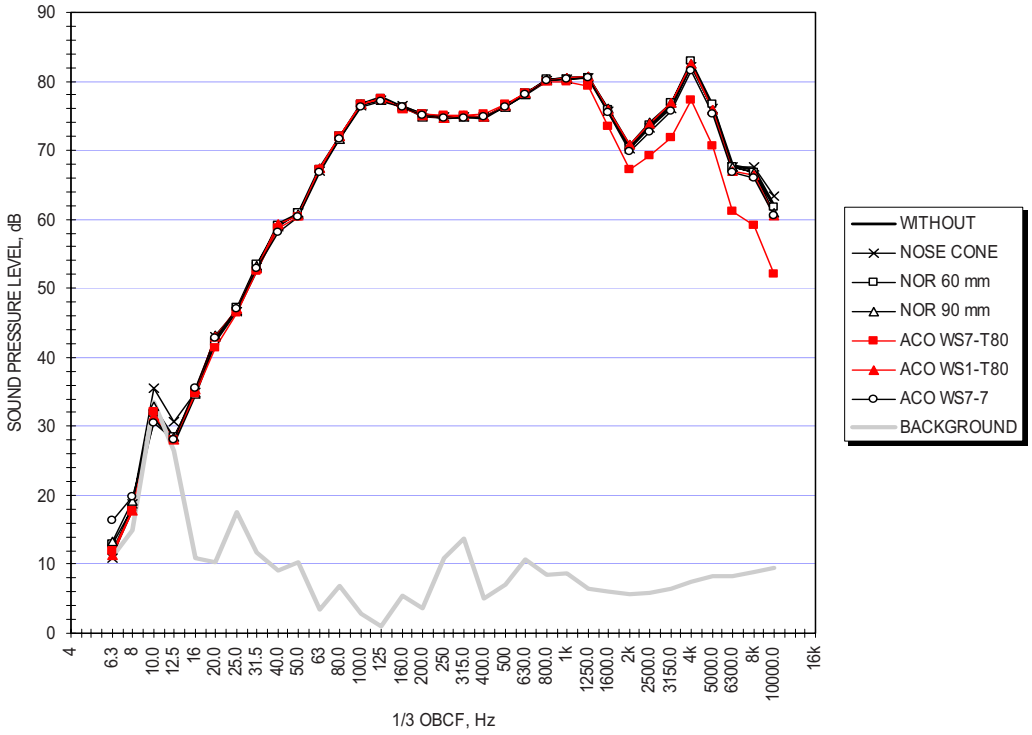


Fig. 8—Measured sound pressure spectra for five windscreen models in an anechoic chamber.

frequency at which valid data can be measured during, in this case, a 10 m/s wind. Without a windscreen, almost the entire spectrum (0 to 6300 Hz) is dominated by the 10 m/s flow noise. At the same 10 m/s flow speed; however, accurate measurements can be made in all bands above 125 Hz using only a 60 mm windscreen. The frequency response is improved to above 50 Hz using the largest (175 mm) windscreen.

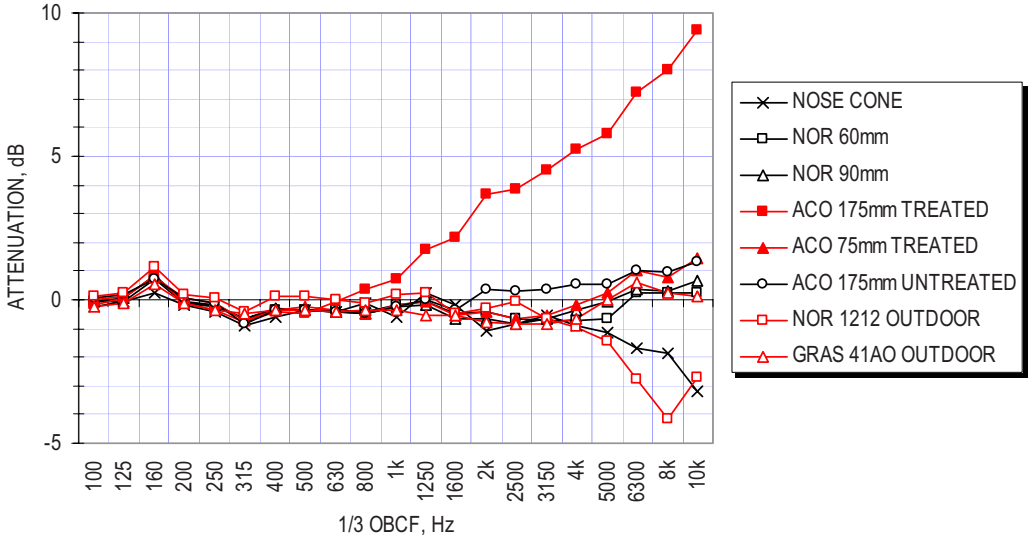


Fig. 9—Measured microphone response attenuation for windscreen models for 90 degree sound incidence.

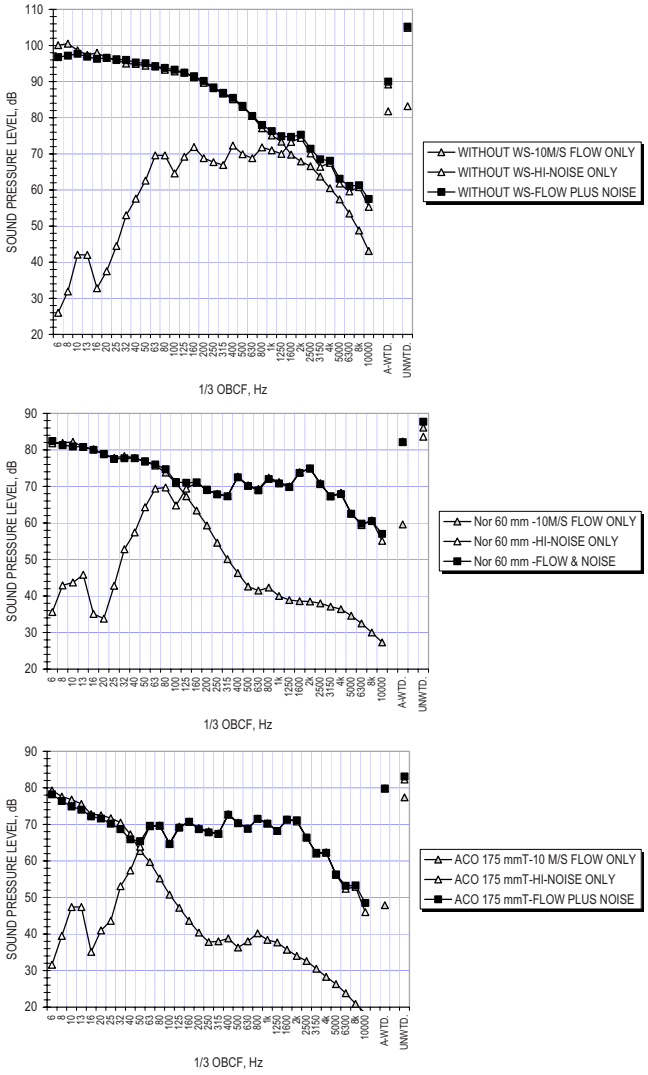


Fig. 10—Flow only, noise only and flow and noise measurements.

5 CONCLUSIONS AND RECOMMENDATIONS

The data show that reasonably good results when measuring in low to moderate wind conditions are possible even with conventional 60 mm windscreens, but that a larger (175 mm) diameter windscreen offers significantly better performance in the lower frequencies.

In the special case of background sound level surveys for wind turbine projects, where the objective is to determine the environmental sound level/masking level as a function of wind speed, the suggested practice based on this lab study is to use a large 175 mm windscreen and mount the microphone at a maximum elevation of about 1 m above grade. This latter step helps ensure that the microphone is exposed to relatively low wind speeds, since the nominal wind velocity profile, Eqn. (7) in Ref. 1 has a parabolic shape where the velocity decreases rapidly near the ground – theoretically going to zero at the surface. For example, a wind speed of 10 m/s (22.4 mph) measured at a standardized elevation of 10 m would translate to a nominal speed of 5.6 m/s (12.5 mph) at only 1 m above the surface. The wind speed range of most relevance to wind turbine analyses is usually in the 5 to 8 m/s range as measured at 10 m; consequently, a microphone at 1 m would be exposed to nominal flow velocities of 2.8 m/s (6.3 mph) to 4.5 m/s (10.1 mph) where the A-weighted flow induced noise levels would

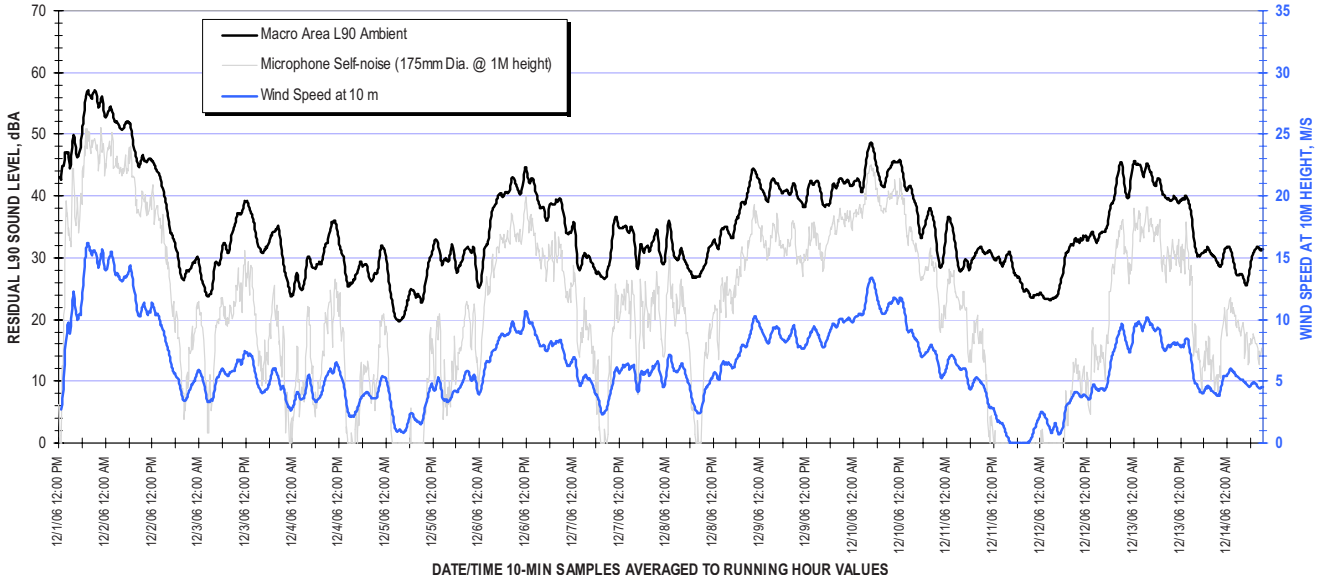


Fig. 11—Measured community ambient level compared to estimated microphone response to wind.

Table 2—Measured attenuation for windscreen models, 90 degree sound incidence.

1/3 OBCF, Hz	NOR 60 mm	NOR 90 mm	ACO 175 mm TREATED	ACO 75 mm TREATED	ACO 175 mm UNTREATED	NOR1212 OUTDOOR	GRAS41AO OUTDOOR	NOSE CONE
100	0.0	−0.1	−0.2	0.0	0.1	0.1	−0.2	−0.2
125	−0.1	0.1	0.1	0.1	0.2	0.3	−0.1	−0.1
160	0.7	0.9	0.8	0.8	0.7	1.2	0.5	0.2
200	−0.1	0.0	−0.1	0.0	0.1	0.2	−0.1	−0.2
250	−0.2	−0.2	−0.4	−0.1	−0.1	0.0	−0.3	−0.4
315	−0.7	−0.6	−0.8	−0.7	−0.8	−0.4	−0.5	−0.9
400	−0.4	−0.3	−0.4	−0.3	−0.4	0.1	−0.4	−0.6
500	−0.3	−0.3	−0.5	−0.2	−0.3	0.1	−0.3	−0.3
630	−0.4	−0.4	0.0	−0.4	−0.4	0.0	−0.4	−0.4
800	−0.4	−0.5	0.4	−0.5	−0.5	−0.1	−0.3	−0.1
1K	−0.2	−0.2	0.7	−0.2	−0.2	0.2	−0.3	−0.6
1250	0.0	−0.2	1.8	−0.1	0.0	0.3	−0.5	0.3
1600	−0.5	−0.6	2.2	−0.6	−0.3	−0.5	−0.6	−0.2
2K	−0.4	−0.7	3.7	−0.4	0.3	−0.3	−0.8	−1.1
2500	−0.6	−0.8	3.8	−0.7	0.3	0.0	−0.8	−0.8
3150	−0.7	−0.6	4.5	−0.5	0.3	−0.7	−0.8	−0.6
4K	−0.7	−0.3	5.3	−0.2	0.5	−1.0	−0.7	−0.9
5K	−0.6	−0.1	5.8	0.2	0.6	−1.5	0.0	−1.1
6300	0.2	0.3	7.2	1.0	1.0	−2.8	0.6	−1.7
8K	0.2	0.3	8.0	0.8	1.0	−4.1	0.2	−1.9
10K	0.3	0.7	9.4	1.5	1.3	−2.7	0.1	−3.2

range from 18 to 31 dBA. Such levels are low to insignificant even compared to the quiet environmental sound levels that commonly exist in rural areas.

As an example, the self-noise sound levels associated with the field data illustrated in Figure 1 have been calculated from Eqn. (2) above (based on the 10 m wind data converted to 1 m) and used to correct the sound levels actually measured. The measured and corrected sound levels are plotted in Fig. 11. Since the microphone flow induced noise response alone is frequently 8 to 10 dBA below the measured levels, the adjustment is minimal in most instances (=< 0.5 dBA) and therefore considered insignificant.

6 ACKNOWLEDGEMENTS

The author wishes to acknowledge both the technical and financial assistance provided by the Norsonic in Germany, Scantek, Inc., GRAS and ACO Pacific in the U.S.

7 REFERENCES

1. International Standard IEC 61400-11, *Wind turbine generator systems – Part 11: "Acoustic noise measurement techniques"*, 2nd edition 2002–12, (2002).
2. G. P. van den Berg, "The sound of high winds: the effect of atmospheric stability on wind turbine sound and microphone noise." Ph.D. Thesis, National University of Groningen, The Netherlands, (2006).

Appendix B

Certificates of Sound Level Instrument Calibration

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.45408

Instrument: **Sound Level Meter**
Model: **2250**
Manufacturer: **Brüel and Kjær**
Serial number: **3025395**
Tested with: **Microphone 4952 s/n 3179684**
Preamplifier Part of 4952
Type (class): **1**
Customer: **Epsilon Associates, Inc.**
Tel/Fax: **978-461-6235 /**
asavino@epsilonassociates.com

Date Calibrated: **10/5/2020** *Cal Due:* **10/5/2021**

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __Yes X No
Calibration service: __ Basic X Standard
Address: **3 Mill & Main Place, Suite 250, Maynard, MA 01754**

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Oct 31, 2019	Scantek, Inc./ NVLAP	Oct 31, 2020
DS-360-SRS	Function Generator	33584	Oct 23, 2019	ACR Env./ A2LA	Oct 23, 2021
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Oct 22, 2019	ACR Env. / A2LA	Oct 22, 2020
HM30-Thommen	Meteo Station	1040170/39633	Oct 24, 2019	ACR Env./ A2LA	Oct 24, 2020
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Oct 23, 2019	Scantek, Inc./ NVLAP	Oct 23, 2020
4226-Brüel&Kjær	Multifunction calibrator	2305103	Sep 25, 2019	B&K / DANAK	Dec 25, 2020

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
21.7	100.58	43.5

Calibrated by:	Lydon Dawkins	Authorized signatory:	William D. Gallagher
Signature	Lydon Dawkins	Signature	William D. Gallagher
Date	10/5/2020	Date	10/6/2020

Results summary: Device complies with following clauses of mentioned specifications:

CLAUSES[1] FROM IEC/ANSI STANDARDS REFERENCED IN PROCEDURES:	RESULT[2,3]	EXPANDED UNCERTAINTY (coverage factor 2) [dB]
INDICATION AT THE CALIBRATION CHECK FREQUENCY - IEC61672-3 ED.2 CLAUSE 10	Passed	0.15
SELF-GENERATED NOISE - IEC 61672-3 ED.2 CLAUSE 11	Passed	0.30
ACOUSTICAL TEST OF A FREQUENCY WEIGHTING - IEC 61672-3 ED.2.0 CLAUSE 12	Passed	0.30
FREQUENCY WEIGHTINGS: A NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY WEIGHTINGS: C NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY WEIGHTINGS: Z NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY AND TIME WEIGHTINGS AT 1 KHZ IEC 61672-3 ED.2.0 CLAUSE 14	Passed	0.20
LEVEL LINEARITY ON THE REFERENCE LEVEL RANGE - IEC 61672-3 ED.2 CLAUSE 16	Passed	0.25
TONEBURST RESPONSE - IEC 61672-3 ED.2.0 CLAUSE 18	Passed	0.30
PEAK C SOUND LEVEL - IEC 61672-3 ED.2.0 CLAUSE 19	Passed	0.35
OVERLOAD INDICATION - IEC 61672-3 ED.2.0 CLAUSE 20	Passed	0.25
HIGH LEVEL STABILITY TEST - IEC 61672-3 ED.2.0 CLAUSE 21	Passed	0.10
LONG TERM STABILITY TEST - IEC 61672-3 ED.2.0 CLAUSE 15	Passed	0.1
FILTER TEST 1/1OCTAVE: RELATIVE ATTENUATION - IEC 61260, CLAUSE 4.4 & #5.3	Passed	0.25
FILTER TEST 1/3OCTAVE: RELATIVE ATTENUATION - IEC 61260, CLAUSE 4.4 & #5.3	Passed	0.25

1 The results of this calibration apply only to the instrument type with serial number identified in this report.

2 Parameters are certified at actual environmental conditions.

3 The tests marked with (*) are not covered by the current NVLAP accreditation.

Comments: The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organization responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2, to demonstrate that the model of sound level meter fully conforms to the requirements in the IEC 61672-2, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1.

Note: The instrument was tested for the parameters listed in the table above, using the test methods described in the listed standards. All tests were performed around the reference conditions. The test results were compared with the manufacturer's or with the standard's specifications, whichever are larger.
Compliance with any standard cannot be claimed based solely on the periodic tests.

Tests made with the following attachments to the instrument:

Microphone: Brüel & Kjær 4952 s/n 3179684 for acoustical test
Preamplifier: Brüel & Kjær Part of 3179684 s/n for all tests
Other: line adaptor ADP005 (18pF) for electrical tests
Accompanying acoustical calibrator: Larson Davis CAL200 s/n 7147
Windscreen: none

Measured Data: in Test Report # 45408 of 9 + 1 pages.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA
Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.45409

Instrument:	**Microphone Unit** (Outdoor Microphone)	*Date Calibrated:*	**10/5/2020** *Cal Due:* **10/5/2021**
Model:	**4952**	*Status:*	**Received** / **Sent**
Manufacturer:	**Brüel & Kjær**	*In tolerance:*	**X** / **X**
Serial number:	**3179684**	*Out of tolerance:*	
Composed of:	**Microphone cartridge** **Integrated preamplifier**	*See comments:*	
		Contains non-accredited tests:	**__Yes _X_ No**
Customer:	**Epsilon Associates, Inc.**	*Address:*	**3 Mill & Main Place, Suite 250, Maynard, MA 01754**
Tel/Fax:	**978-461-6235/asavino@epsilonassociates.com**		

Tested in accordance with the following procedures and standards:
Calibration of Measurement Microphones, Scantek, Inc., Rev. 2/25/2015

Instrumentation used for calibration: N-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Oct 31, 2019	Scantek, Inc./ NVLAP	Oct 31, 2020
DS-360-SRS	Function Generator	33584	Oct 23, 2019	ACR Env./ A2LA	Oct 23, 2021
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Oct 22, 2019	ACR Env. / A2LA	Oct 22, 2020
HM30-Thommen	Meteo Station	1040170/39633	Oct 24, 2019	ACR Env./ A2LA	Oct 24, 2020
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1253-Norsonic	Calibrator	28326	Oct 23, 2019	Scantek, Inc./ NVLAP	Oct 23, 2020
1203-Norsonic	Preamplifier	14059	March 3, 2020	Scantek, Inc./ NVLAP	March 3, 2021
4180-Brüel&Kjær	Microphone	2246115	Oct 1, 2019	DPLA / DANAK	Oct 1, 2021

Instrumentation and test results are traceable to SI - BIPM through standards maintained by NPL (UK) and NIST (USA)

Calibrated by:	Lydon Dawkins	**Authorized signatory:**	William D. Gallagher
Signature	Lydon Dawkins	Signature	William D. Gallagher
Date	10/5/2020	Date	10/6/2020

Results summary: Device was tested and complies with following clauses of mentioned specifications:

CLAUSES / METHODS[1] FROM PROCEDURES		MET[2,3]	NOT MET	NOT TESTED	MEASUREMENT EXPANDED UNCERTAINTY (coverage factor 2)
Sensitivity (250 Hz)		X			See below
Frequency response	Actuator response			X	63 – 200Hz: 0.3 dB 200 – 8000 Hz: 0.2 dB 8 – 10 kHz: 0.5 dB 10 – 20 kHz: 0.7 dB 20 – 50 kHz: 0.9 dB 50 – 100 kHz: 1.2 dB
	FF/Diffuse field responses			X	63 – 200Hz: 0.3 dB 200 – 4000 Hz: 0.2 dB 4 – 10 kHz: 0.6 dB 10 – 20 kHz: 0.9 dB 20 – 50 kHz: 2.2 dB 50 – 100 kHz: 4.4 dB
	Scantek, Inc. acoustical method			X	31.5 – 125 Hz: 0.16 dB 250, 1000 Hz: 0.12 dB 2 – 8 kHz: 0.8 dB 12.5 – 16 kHz: 2.4 dB

[1] The results of this calibration apply only to the instrument type with serial number identified in this report.

[2] Results are normalized to the reference conditions.

[3] The tests marked with (*) are not covered by the current NVLAP accreditation.

Note: The free field/diffuse field characteristics were calculated based on the measured actuator response and adjustment coefficients as provided by the manufacturer. The uncertainties reported for these characteristics may include assumed uncertainty components for the adjustment coefficients.

Comments:	The instrument was tested and met all specifications found in the referenced procedures.

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
22.1 ± 1.2	100.11 ± 0.020	58.0 ± 2.0

Main measured parameters:

Tone frequency (Hz)	Measured[4] /Acceptable Sensitivity (dB re 1 V/Pa)	Sensitivity (mV/Pa)
250	-30.32 ± 0.12/ -30.0 ±3.0	30.49

[4] The reported expanded uncertainty is calculated with a coverage factor k=2.00

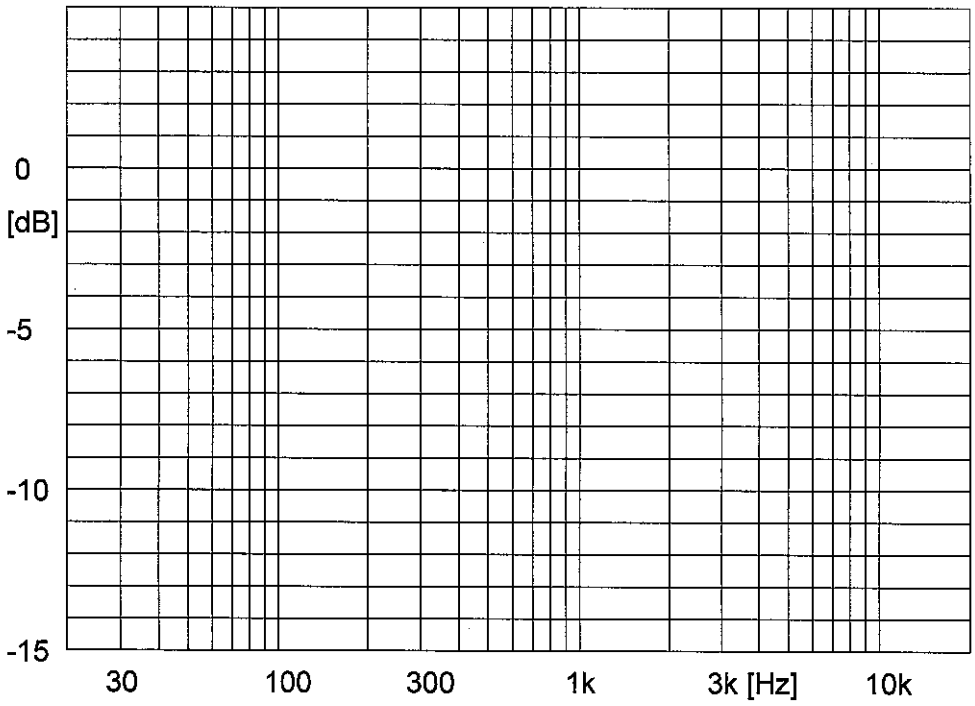
Tests made with following attachments to instrument and auxiliary devices:

Protection grid mounted for sensitivity measurements
Actuator type: G.R.A.S. RA0014

Measured Data: Found on Microphone Test Report # 45409 of one page.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA
Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

Microphone Test Report No.:45409



Brüel & Kjær
Type: 4952

Serial no: 3179684

Sensitivity: 30.49 mV/Pa
-30.32 ±0.12 dB re. 1 V/Pa

Date: 10/5/2020

Signature: LD

Measurement conditions:

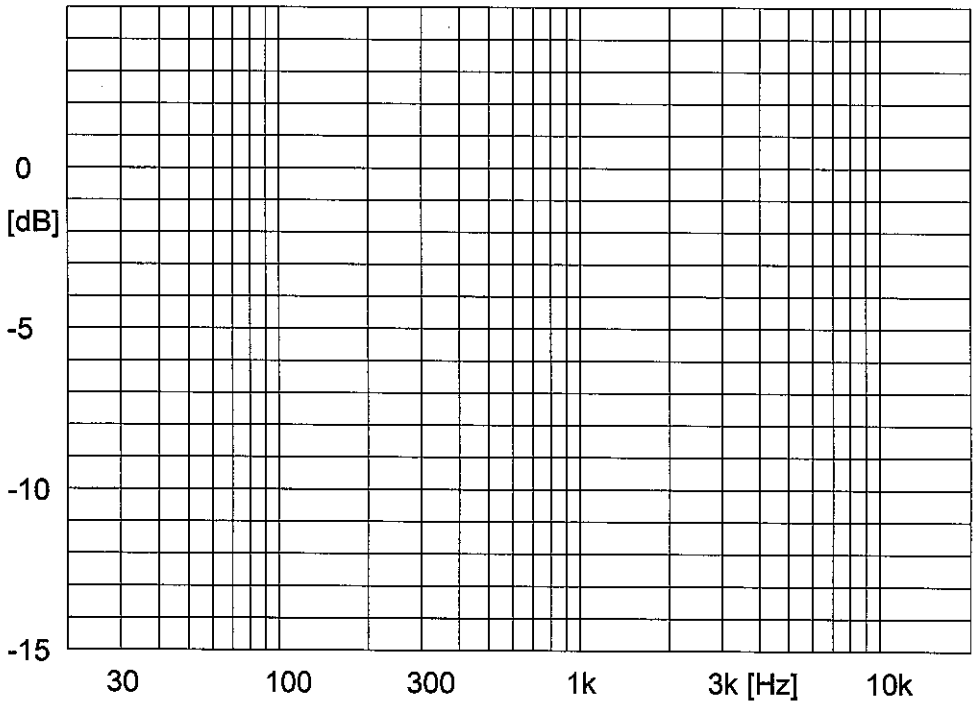
Polarisation voltage:	0.0 V
Pressure:	100.11 ±0.02 kPa
Temperature:	22.1 ±1.2 °C
Relative humidity:	58.0 ±2.0 %RH

Results are normalized to the reference conditions.

Free field response
Diffuse field response
Pressure response

Scantek, Inc.
6430 Dobbin Rd., Suite C, Columbia, MD 21045
Ph: 410-290-7726 eMail: callab@scantekinc.com

Microphone Test Report No.:45409



Brüel & Kjær
Type: 4952

Serial no: 3179684

Sensitivity: 30.49 mV/Pa
-30.32 ±0.12 dB re. 1 V/Pa

Date: 10/5/2020

Signature: LD

Measurement conditions:

Polarisation voltage:	0.0 V
Pressure:	100.11 ±0.02 kPa
Temperature:	22.1 ±1.2 °C
Relative humidity:	58.0 ±2.0 %RH

Results are normalized to the reference conditions.

Free field response
Diffuse field response
Pressure response

Scantek, Inc.
6430 Dobbin Rd., Suite C, Columbia, MD 21045
Ph: 410-290-7726 eMail: callab@scantekinc.com

Comment:
(Y:\Calibration Lab\Mic 2020\B&K4952_3179684_M1.nmf)

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.45406

Instrument: **Sound Level Meter**
Model: **2250**
Manufacturer: **Brüel and Kjær**
Serial number: **3025302**
Tested with: **Microphone 4952 s/n 3179704**
Preamplifier Part of 4952
Type (class): **1**
Customer: **Epsilon Associates, Inc.**
Tel/Fax: **978-461-6235 /**
asavino@epsilonassociates.com

Date Calibrated: **10/5/2020** *Cal Due:* **10/5/2021**

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __Yes _X_ No
Calibration service: __ Basic _X_ Standard
Address: **3 Mill & Main Place, Suite 250, Maynard, MA 01754**

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Oct 31, 2019	Scantek, Inc./ NVLAP	Oct 31, 2020
DS-360-SRS	Function Generator	33584	Oct 23, 2019	ACR Env./ A2LA	Oct 23, 2021
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Oct 22, 2019	ACR Env. / A2LA	Oct 22, 2020
HM30-Thommen	Meteo Station	1040170/39633	Oct 24, 2019	ACR Env./ A2LA	Oct 24, 2020
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Oct 23, 2019	Scantek, Inc./ NVLAP	Oct 23, 2020
4226-Brüel&Kjær	Multifunction calibrator	2305103	Sep 25, 2019	B&K / DANAK	Dec 25, 2020

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
22.8	100.62	47.7

Calibrated by:	Lydon Dawkins	**Authorized signatory:**	William D. Gallagher
Signature	Lydon Dawkins	Signature	William D. Gallagher
Date	10/5/2020	Date	10/6/2020

Results summary: Device complies with following clauses of mentioned specifications:

CLAUSES[1] FROM IEC/ANSI STANDARDS REFERENCED IN PROCEDURES:	RESULT[2,3]	EXPANDED UNCERTAINTY (coverage factor 2) [dB]
INDICATION AT THE CALIBRATION CHECK FREQUENCY - IEC61672-3 ED.2 CLAUSE 10	Passed	0.15
SELF-GENERATED NOISE - IEC 61672-3 ED.2 CLAUSE 11	Passed	0.30
ACOUSTICAL TEST OF A FREQUENCY WEIGHTING - IEC 61672-3 ED.2.0 CLAUSE 12	Passed	0.30
FREQUENCY WEIGHTINGS: A NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY WEIGHTINGS: C NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY WEIGHTINGS: Z NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY AND TIME WEIGHTINGS AT 1 KHZ IEC 61672-3 ED.2.0 CLAUSE 14	Passed	0.20
LEVEL LINEARITY ON THE REFERENCE LEVEL RANGE - IEC 61672-3 ED.2 CLAUSE 16	Passed	0.25
TONEBURST RESPONSE - IEC 61672-3 ED.2.0 CLAUSE 18	Passed	0.30
PEAK C SOUND LEVEL - IEC 61672-3 ED.2.0 CLAUSE 19	Passed	0.35
OVERLOAD INDICATION - IEC 61672-3 ED.2.0 CLAUSE 20	Passed	0.25
HIGH LEVEL STABILITY TEST - IEC 61672-3 ED.2.0 CLAUSE 21	Passed	0.10
LONG TERM STABILITY TEST - IEC 61672-3 ED.2.0 CLAUSE 15	Passed	0.1
FILTER TEST 1/1OCTAVE: RELATIVE ATTENUATION - IEC 61260, CLAUSE 4.4 & #5.3	Passed	0.25
FILTER TEST 1/3OCTAVE: RELATIVE ATTENUATION - IEC 61260, CLAUSE 4.4 & #5.3	Passed	0.25

1 The results of this calibration apply only to the instrument type with serial number identified in this report.

2 Parameters are certified at actual environmental conditions.

3 The tests marked with (*) are not covered by the current NVLAP accreditation.

Comments: The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organization responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2, to demonstrate that the model of sound level meter fully conforms to the requirements in the IEC 61672-2, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1.

Note: The instrument was tested for the parameters listed in the table above, using the test methods described in the listed standards. All tests were performed around the reference conditions. The test results were compared with the manufacturer's or with the standard's specifications, whichever are larger.
Compliance with any standard cannot be claimed based solely on the periodic tests.

Tests made with the following attachments to the instrument:

Microphone: Brüel & Kjær 4952 s/n 3179704 for acoustical test
Preamplifier: Brüel & Kjær Part of 4952 s/n 4952 for all tests
Other: line adaptor ADP005 (18pF) for electrical tests
Accompanying acoustical calibrator: Larson Davis CAL200 s/n 7147
Windscreen: none

Measured Data: in Test Report # 45406 of 9 + 1 pages.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA
Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.45407

Instrument:	**Microphone Unit** (Outdoor Microphone)	*Date Calibrated:*	**10/5/2020** *Cal Due:* **10/5/2021**
Model:	**4952**	*Status:*	**Received** / **Sent**
Manufacturer:	**Brüel & Kjær**	*In tolerance:*	X / X
Serial number:	**3179704**	*Out of tolerance:*	
Composed of:	**Microphone cartridge** **Integrated preamplifier**	*See comments:*	
		Contains non-accredited tests:	**__Yes _X_ No**
Customer:	**Epsilon Associates, Inc.**	*Address:*	**3 Mill & Main Place, Suite 250, Maynard, MA 01754**
Tel/Fax:	**978-461-6235/asavino@epsilonassociates.com**		

Tested in accordance with the following procedures and standards:
Calibration of Measurement Microphones, Scantek, Inc., Rev. 2/25/2015

Instrumentation used for calibration: N-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Oct 31, 2019	Scantek, Inc./ NVLAP	Oct 31, 2020
DS-360-SRS	Function Generator	33584	Oct 23, 2019	ACR Env./ A2LA	Oct 23, 2021
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Oct 22, 2019	ACR Env. / A2LA	Oct 22, 2020
HM30-Thommen	Meteo Station	1040170/39633	Oct 24, 2019	ACR Env./ A2LA	Oct 24, 2020
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1253-Norsonic	Calibrator	28326	Oct 23, 2019	Scantek, Inc./ NVLAP	Oct 23, 2020
1203-Norsonic	Preamplifier	14059	March 3, 2020	Scantek, Inc./ NVLAP	March 3, 2021
4180-Brüel&Kjær	Microphone	2246115	Oct 1, 2019	DPLA / DANAK	Oct 1, 2021

Instrumentation and test results are traceable to SI - BIPM through standards maintained by NPL (UK) and NIST (USA)

Calibrated by:	Lydon Dawkins	**Authorized signatory:**	William D. Gallagher
Signature	Lydon Dawkins	Signature	William D Gallagher
Date	10/5/2020	Date	10/6/2020

Results summary: Device was tested and complies with following clauses of mentioned specifications:

CLAUSES / METHODS[1] FROM PROCEDURES		MET[2,3]	NOT MET	NOT TESTED	MEASUREMENT EXPANDED UNCERTAINTY (coverage factor 2)
Sensitivity (250 Hz)		X			See below
Frequency response	Actuator response			X	63 – 200Hz: 0.3 dB 200 – 8000 Hz: 0.2 dB 8 – 10 kHz: 0.5 dB 10 – 20 kHz: 0.7 dB 20 – 50 kHz: 0.9 dB 50 – 100 kHz: 1.2 dB
	FF/Diffuse field responses			X	63 – 200Hz: 0.3 dB 200 – 4000 Hz: 0.2 dB 4 – 10 kHz: 0.6 dB 10 – 20 kHz: 0.9 dB 20 – 50 kHz: 2.2 dB 50 – 100 kHz: 4.4 dB
	Scantek, Inc. acoustical method			X	31.5 – 125 Hz: 0.16 dB 250, 1000 Hz: 0.12 dB 2 – 8 kHz: 0.8 dB 12.5 – 16 kHz: 2.4 dB

[1] The results of this calibration apply only to the instrument type with serial number identified in this report.

[2] Results are normalized to the reference conditions.

[3] The tests marked with (*) are not covered by the current NVLAP accreditation.

Note: The free field/diffuse field characteristics were calculated based on the measured actuator response and adjustment coefficients as provided by the manufacturer. The uncertainties reported for these characteristics may include assumed uncertainty components for the adjustment coefficients.

Comments:	The instrument was tested and met all specifications found in the referenced procedures.

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
22.0 ± 1.1	100.11 ± 0.020	58.3 ± 2.5

Main measured parameters:

Tone frequency (Hz)	Measured[4] /Acceptable Sensitivity (dB re 1 V/Pa)	Sensitivity (mV/Pa)
250	-28.73 ± 0.12/ -30.0 ±3.0	36.61

[4] The reported expanded uncertainty is calculated with a coverage factor k=2.00

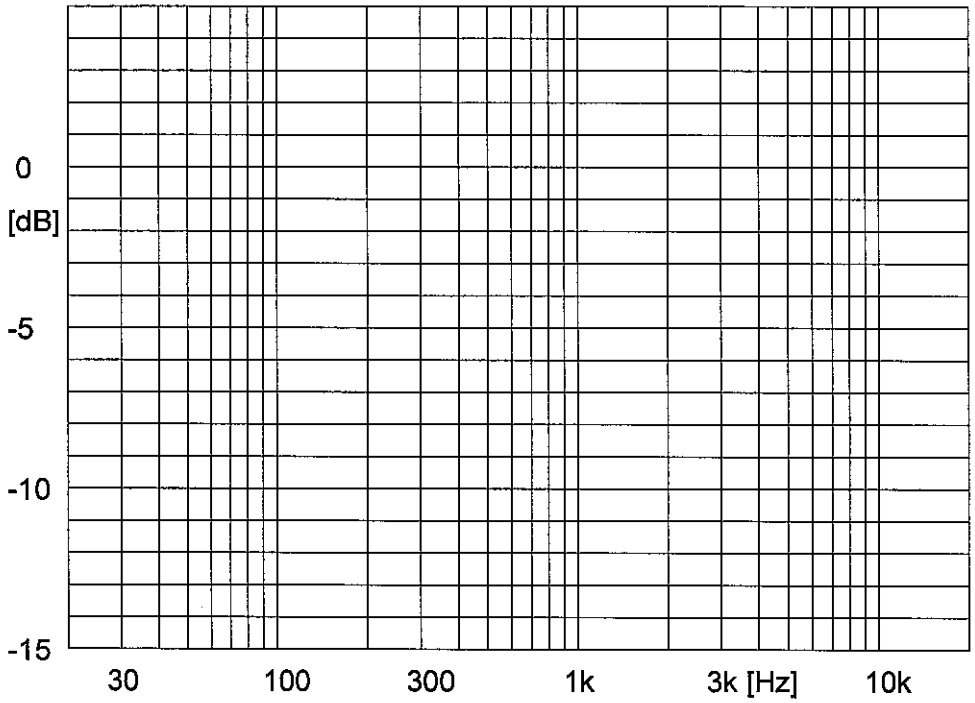
Tests made with following attachments to instrument and auxiliary devices:

Protection grid mounted for sensitivity measurements
Actuator type: G.R.A.S. RA0014

Measured Data: Found on Microphone Test Report # 45407 of one page.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA
Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

Microphone Test Report No.:45407



Brüel & Kjær
Type: 4952

Serial no: 3179704

Sensitivity: 36.61 mV/Pa
-28.73 ±0.12 dB re. 1 V/Pa

Date: 10/5/2020

Signature: LD

Measurement conditions:

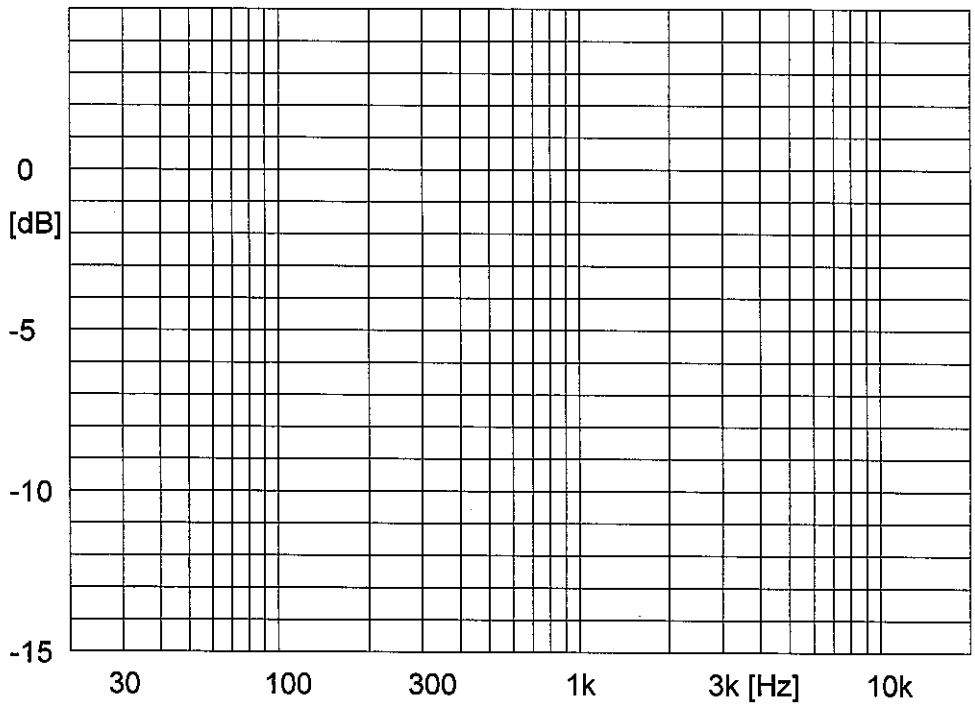
Polarisation voltage:	0.0 V
Pressure:	100.11 ±0.02 kPa
Temperature:	22.0 ±1.1 °C
Relative humidity:	58.3 ±2.5 %RH

Results are normalized to the reference conditions.

Free field response
Diffuse field response
Pressure response

Scantek, Inc.
6430 Dobbin Rd., Suite C, Columbia, MD 21045
Ph: 410-290-7726 eMail: callab@scantekinc.com

Microphone Test Report No.:45407



Brüel & Kjær
Type: 4952

Serial no: 3179704

Sensitivity: 36.61 mV/Pa
-28.73 ±0.12 dB re. 1 V/Pa

Date: 10/5/2020

Signature: LD

Measurement conditions:

Polarisation voltage:	0.0 V
Pressure:	100.11 ±0.02 kPa
Temperature:	22.0 ±1.1 °C
Relative humidity:	58.3 ±2.5 %RH

Results are normalized to the reference conditions.

Free field response
Diffuse field response
Pressure response

Scantek, Inc.
6430 Dobbin Rd., Suite C, Columbia, MD 21045
Ph: 410-290-7726 eMail: callab@scantekinc.com

Comment:
(Y:\Calibration Lab\Mic 2020\B&K4952_3179704_M1.nmf)

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.45402

Instrument: **Sound Level Meter**
Model: **831**
Manufacturer: **Larson Davis**
Serial number: **0003752**
Tested with: **Microphone 377C20 s/n 165015**
Preamplifier PRM831 s/n 029563
Type (class): **1**
Customer: **Epsilon Associates, Inc.**
Tel/Fax: **978-461-6235 /**
asavino@epsilonassociates.com

Date Calibrated: **10/3/2020** *Cal Due:* **10/3/2021**

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __Yes X No
Calibration service: __ Basic X Standard
Address: **3 Mill & Main Place, Suite 250, Maynard, MA 01754**

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Oct 31, 2019	Scantek, Inc./ NVLAP	Oct 31, 2020
DS-360-SRS	Function Generator	33584	Oct 23, 2019	ACR Env./ A2LA	Oct 23, 2021
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Oct 22, 2019	ACR Env. / A2LA	Oct 22, 2020
HM30-Thommen	Meteo Station	1040170/39633	Oct 24, 2019	ACR Env./ A2LA	Oct 24, 2020
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Oct 23, 2019	Scantek, Inc./ NVLAP	Oct 23, 2020

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
23.0	100.72	44.0

Calibrated by:	Lydon Dawkins	**Authorized signatory:**	William D. Gallagher
Signature	Lydon Dawkins	Signature	William D. Gallagher
Date	10/3/2020	Date	10/5/2020

Results summary: Device complies with following clauses of mentioned specifications:

CLAUSES [1] FROM IEC/ANSI STANDARDS REFERENCED IN PROCEDURES:	RESULT[2,3]	EXPANDED UNCERTAINTY (coverage factor 2) [dB]
INDICATION AT THE CALIBRATION CHECK FREQUENCY - IEC61672-3 ED.2 CLAUSE 10	Passed	0.15
SELF-GENERATED NOISE - IEC 61672-3 ED.2 CLAUSE 11	Passed	0.30
FREQUENCY WEIGHTINGS: A NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY WEIGHTINGS: C NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY WEIGHTINGS: Z NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY AND TIME WEIGHTINGS AT 1 KHZ IEC 61672-3 ED.2.0 CLAUSE 14	Passed	0.20
LEVEL LINEARITY ON THE REFERENCE LEVEL RANGE - IEC 61672-3 ED.2 CLAUSE 16	Passed	0.25
LEVEL LINEARITY INCLUDING THE LEVEL RANGE CONTROL - IEC 61672-3 ED.2.0 CLAUSE 17	Passed	0.25
TONEBURST RESPONSE - IEC 61672-3 ED.2.0 CLAUSE 18	Passed	0.30
PEAK C SOUND LEVEL - IEC 61672-3 ED.2.0 CLAUSE 19	Passed	0.35
OVERLOAD INDICATION - IEC 61672-3 ED.2.0 CLAUSE 20	Passed	0.25
HIGH LEVEL STABILITY TEST - IEC 61672-3 ED.2.0 CLAUSE 21	Passed	0.10
LONG TERM STABILITY TEST - IEC 61672-3 ED.2.0 CLAUSE 15	Passed	0.10
FILTER TEST 1/1OCTAVE: RELATIVE ATTENUATION - IEC 61260, CLAUSE 4.4 & #5.3	Passed	0.25
FILTER TEST 1/3OCTAVE: RELATIVE ATTENUATION - IEC 61260, CLAUSE 4.4 & #5.3	Passed	0.25
COMBINED ELECTRICAL AND ACOUSTICAL TEST - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	See test report

1 The results of this calibration apply only to the instrument type with serial number identified in this report.

2 Parameters are certified at actual environmental conditions.

3 The tests marked with (*) are not covered by the current NVLAP accreditation.

Comments: The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organization responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2, to demonstrate that the model of sound level meter fully conforms to the requirements in the IEC 61672-2, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1.

Note: The instrument was tested for the parameters listed in the table above, using the test methods described in the listed standards. All tests were performed around the reference conditions. The test results were compared with the manufacturer's or with the standard's specifications, whichever are larger.
Compliance with any standard cannot be claimed based solely on the periodic tests.

Tests made with the following attachments to the instrument:

Microphone: PCB Piezotronics 377C20 s/n 165015 for acoustical test
Preamplifier: Larson Davis PRM831 s/n 029563 for all tests
Other: line adaptor ADP005 (18pF) for electrical tests
Accompanying acoustical calibrator: Larson Davis CAL200 s/n 7147
Windscreen: none

Measured Data: in Test Report # 45402 of 9 + 1 pages.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA
Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.45403

Instrument: **Microphone**
Model: **377C20**
Manufacturer: **PCB Piezotronics**
Serial number: **165015**

Composed of:

Date Calibrated: **10/1/2020** *Cal Due:* **10/1/2021**

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __Yes _X_ No

Customer: **Epsilon Associates, Inc.**
Tel/Fax: **978-461-6235/asavino@epsilonassociates.com**

Address: **3 Mill & Main Place, Suite 250, Maynard, MA 01754**

Tested in accordance with the following procedures and standards:
Calibration of Measurement Microphones, Scantek, Inc., Rev. 2/25/2015

Instrumentation used for calibration: N-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Oct 31, 2019	Scantek, Inc./ NVLAP	Oct 31, 2020
DS-360-SRS	Function Generator	33584	Oct 23, 2019	ACR Env./ A2LA	Oct 23, 2021
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Oct 22, 2019	ACR Env. / A2LA	Oct 22, 2020
HM30-Thommen	Meteo Station	1040170/39633	Oct 24, 2019	ACR Env./ A2LA	Oct 24, 2020
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1253-Norsonic	Calibrator	28326	Oct 23, 2019	Scantek, Inc./ NVLAP	Oct 23, 2020
1203-Norsonic	Preamplifier	14059	March 3, 2020	Scantek, Inc./ NVLAP	March 3, 2021
4180-Brüel&Kjær	Microphone	2246115	Oct 1, 2019	DPLA / DANAK	Oct 1, 2021

Instrumentation and test results are traceable to SI - BIPM through standards maintained by NPL (UK) and NIST (USA)

Calibrated by:	Lydon Dawkins	**Authorized signatory:**	William D. Gallagher
Signature	Lydon Dawkins	Signature	William D Gallagher
Date	10/1/2020	Date	10/5/2020

Results summary: Device was tested and complies with following clauses of mentioned specifications:

CLAUSES / METHODS[1] FROM PROCEDURES		MET[2,3]	NOT MET	NOT TESTED	MEASUREMENT EXPANDED UNCERTAINTY (coverage factor 2)
Open circuit sensitivity (insert voltage method, 250 Hz)		X			See below
Frequency response	Actuator response	X			63 – 200Hz: 0.3 dB 200 – 8000 Hz: 0.2 dB 8 – 10 kHz: 0.5 dB 10 – 20 kHz: 0.7 dB 20 – 50 kHz: 0.9 dB 50 – 100 kHz: 1.2 dB
	FF/Diffuse field responses	X			63 – 200Hz: 0.3 dB 200 – 4000 Hz: 0.2 dB 4 – 10 kHz: 0.6 dB 10 – 20 kHz: 0.9 dB 20 – 50 kHz: 2.2 dB 50 – 100 kHz: 4.4 dB
	Scantek, Inc. acoustical method			X	31.5 – 125 Hz: 0.16 dB 250, 1000 Hz: 0.12 dB 2 – 8 kHz: 0.8 dB 12.5 – 16 kHz: 2.4 dB

[1] The results of this calibration apply only to the instrument type with serial number identified in this report.

[2] Results are normalized to the reference conditions.

[3] The tests marked with (*) are not covered by the current NVLAP accreditation.

Note: The free field/diffuse field characteristics were calculated based on the measured actuator response and adjustment coefficients as provided by the manufacturer. The uncertainties reported for these characteristics may include assumed uncertainty components for the adjustment coefficients.

Comments:	The instrument was tested and met all specifications found in the referenced procedures.

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
23.8 ± 1.0	99.73 ± 0.020	48.1 ± 2.0

Main measured parameters:

Tone frequency (Hz)	Measured[4] /Acceptable Open circuit sensitivity (dB re 1V/Pa)	Sensitivity (mV/Pa)
250	-27.25 ± 0.12/ -26.0 ±1.5	43.39

[4] The reported expanded uncertainty is calculated with a coverage factor k=2.00

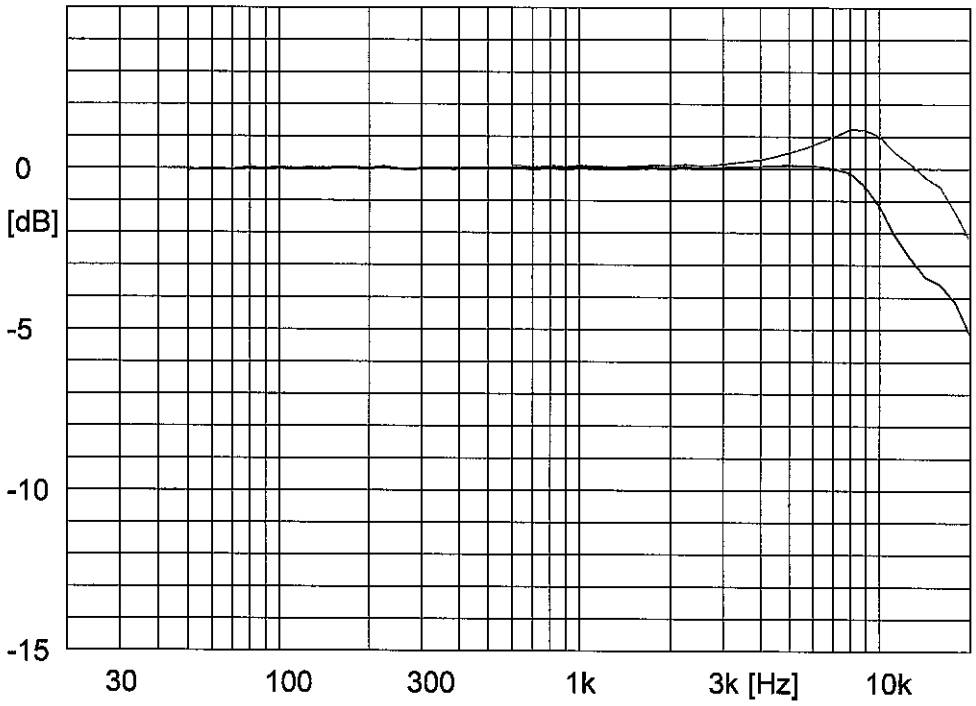
Tests made with following attachments to instrument and auxiliary devices:

Protection grid mounted for sensitivity measurements
Actuator type: G.R.A.S. RA0014

Measured Data: Found on Microphone Test Report # 45403 of one page.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA
Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

Microphone Test Report No.:45403



PCB Piezotronics
Type: 377C20

Serial no: 165015

Sensitivity: 43.39 mV/Pa
-27.25 ±0.12 dB re. 1 V/Pa

Date: 10/1/2020

Signature:

Measurement conditions:

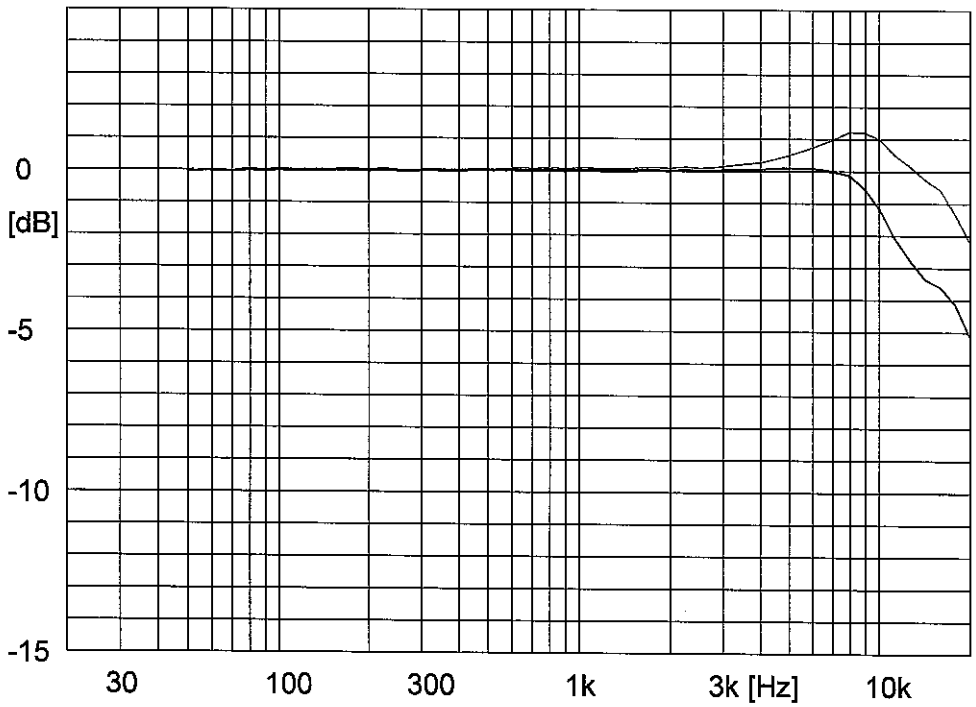
Polarisation voltage:	0.0 V
Pressure:	99.73 ±0.02 kPa
Temperature:	23.8 ±1.0 °C
Relative humidity:	48.1 ±2.0 %RH

Results are normalized to the reference conditions.

Diffuse field response
Pressure response

Scantek, Inc.
6430 Dobbin Rd., Suite C, Columbia, MD 21045
Ph: 410-290-7726 eMail: callab@scantekinc.com

Microphone Test Report No.:45403



PCB Piezotronics
Type: 377C20

Serial no: 165015

Sensitivity: 43.39 mV/Pa
-27.25 ±0.12 dB re. 1 V/Pa

Date: 10/1/2020

Signature:

Measurement conditions:

Polarisation voltage:	0.0 V
Pressure:	99.73 ±0.02 kPa
Temperature:	23.8 ±1.0 °C
Relative humidity:	48.1 ±2.0 %RH

Results are normalized to the reference conditions.

Diffuse field response
Pressure response

Scantek, Inc.
6430 Dobbin Rd., Suite C, Columbia, MD 21045
Ph: 410-290-7726 eMail: callab@scantekinc.com

Comment:
(Y:\Calibration Lab\Mic 2020\PCB377C20_165015_M1.nmf)

Calibration Certificate

Certificate Number 2021000509

Customer:
Epsilon Associates Inc
Suite 250
3 Mill and Main Place
Maynard, MA 01754, United States

Model Number	377C20		***Procedure Number***	D0001.8387	
Serial Number	320007		***Technician***	Abraham Ortega	
Test Results	**Pass**		***Calibration Date***	15 Jan 2021	
Initial Condition	AS RECEIVED same as shipped		***Calibration Due***	15 Jan 2022	
Description	1/2 inch Microphone - RI - 0V		***Temperature***	23.2 °C	± 0.01 °C
			Humidity	31.3 %RH	± 0.5 %RH
			Static Pressure	101.60 kPa	± 0.03 kPa

Evaluation Method Tested electrically using an electrostatic actuator.

Compliance Standards Compliant to Manufacturer Specifications.

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis Model 2900 Real Time Analyzer	07/01/2020	07/01/2021	001230
Microphone Calibration System	08/25/2020	08/25/2021	001233
1/2" Preamplifier	12/18/2020	12/18/2021	001274
Agilent 34401A DMM	12/08/2020	12/08/2021	001329
Larson Davis CAL250 Acoustic Calibrator	09/01/2020	09/01/2021	003030
1/2" Preamplifier	04/13/2020	04/13/2021	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	07/09/2020	07/09/2021	006507
1/2 inch Microphone - RI - 200V	06/04/2020	06/04/2021	006510
1/2 inch Microphone - RI - 200V	07/31/2020	07/31/2021	006519
Larson Davis 1/2" Preamplifier 7-pin LEMO	07/09/2020	07/09/2021	006530
Larson Davis 1/2" Preamplifier 7-pin LEMO	07/24/2020	07/24/2021	006531

Sensitivity

Measurement	Test Result [mV/Pa]	Lower limit [mV/Pa]	Upper limit [mV/Pa]	Expanded Uncertainty [mV/Pa]	Result
Open Circuit Sensitivity	50.74	42.17	59.57	1.20	Pass

-- End of measurement results--

Capacitance

Measurement	Test Result [pF]				
Capacitance	14.00			‡	

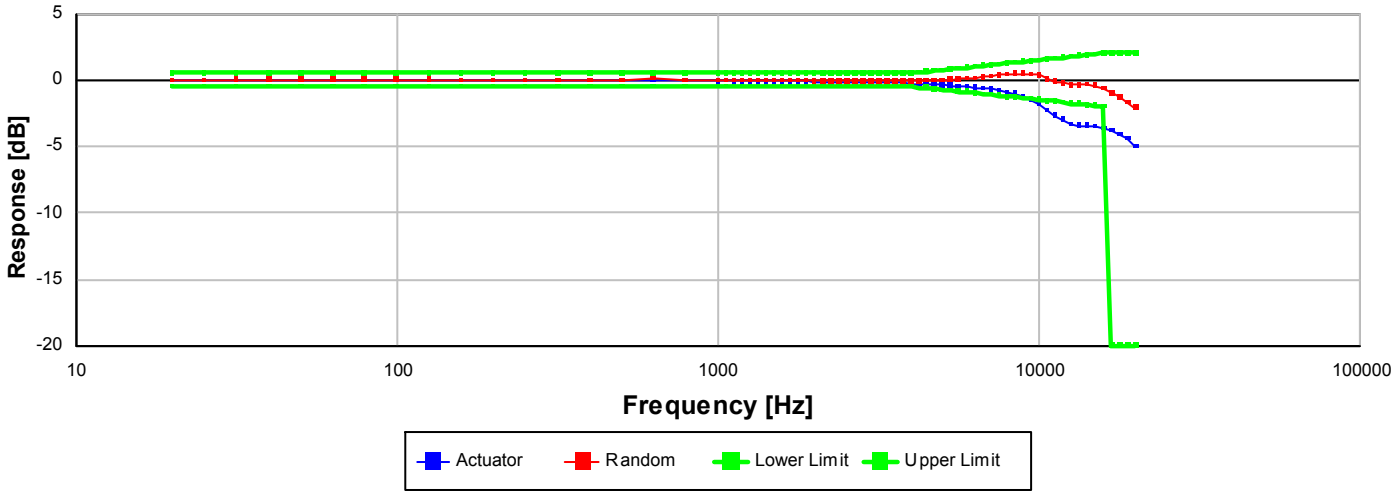
-- End of measurement results--

Lower Limiting Frequency

Measurement	Test Result [Hz]	Lower limit [Hz]	Upper limit [Hz]		Result
-3 dB Frequency	1.84	1.00	2.40		Pass ‡

-- End of measurement results--

Frequency Response



Data is normalized for 0 dB @ 251.19 Hz.

Frequency [Hz]	Actuator [dB]	Random [dB]	Lower limit [dB]	Upper limit [dB]	Result
19.95	-0.01	-0.01	-0.50	0.50	Pass ‡
25.12	0.00	0.00	-0.50	0.50	Pass ‡
31.62	0.02	0.02	-0.50	0.50	Pass ‡
39.81	0.03	0.03	-0.50	0.50	Pass ‡
50.12	0.01	0.01	-0.50	0.50	Pass ‡
63.10	0.02	0.02	-0.50	0.50	Pass ‡
79.43	0.01	0.01	-0.50	0.50	Pass ‡
100.00	0.01	0.01	-0.50	0.50	Pass ‡
125.89	0.01	0.01	-0.50	0.50	Pass ‡
158.49	0.00	0.00	-0.50	0.50	Pass ‡
199.53	0.00	0.00	-0.50	0.50	Pass ‡

LARSON DAVIS - A PCB PIEZOTRONICS DIV.
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ilac-MRA ACCREDITED Cert. #3622.01

LARSON DAVIS A PCB PIEZOTRONICS DIV.

Frequency [Hz]	Actuator [dB]	Random [dB]	Lower limit [dB]	Upper limit [dB]	Result
251.19	0.00	0.00	-0.50	0.50	Pass ‡
316.23	-0.02	-0.02	-0.50	0.50	Pass ‡
398.11	-0.02	-0.01	-0.50	0.50	Pass ‡
501.19	-0.02	-0.01	-0.50	0.50	Pass ‡
630.96	-0.04	0.14	-0.50	0.50	Pass ‡
794.33	-0.03	-0.01	-0.50	0.50	Pass ‡
1,000.00	-0.07	-0.04	-0.50	0.50	Pass ‡
1,059.25	-0.06	-0.03	-0.50	0.50	Pass ‡
1,122.02	-0.07	-0.04	-0.50	0.50	Pass ‡
1,188.50	-0.07	-0.04	-0.50	0.50	Pass ‡
1,258.93	-0.07	-0.04	-0.50	0.50	Pass ‡
1,333.52	-0.08	-0.04	-0.50	0.50	Pass ‡
1,412.54	-0.09	-0.05	-0.50	0.50	Pass ‡
1,496.24	-0.09	-0.05	-0.50	0.50	Pass ‡
1,584.89	-0.09	-0.05	-0.50	0.50	Pass ‡
1,678.80	-0.10	-0.06	-0.50	0.50	Pass ‡
1,778.28	-0.10	-0.06	-0.50	0.50	Pass ‡
1,883.65	-0.10	-0.05	-0.50	0.50	Pass ‡
1,995.26	-0.12	-0.07	-0.50	0.50	Pass ‡
2,113.49	-0.13	-0.08	-0.50	0.50	Pass ‡
2,238.72	-0.13	-0.08	-0.50	0.50	Pass ‡
2,371.37	-0.13	-0.07	-0.50	0.50	Pass ‡
2,511.89	-0.15	-0.08	-0.50	0.50	Pass ‡
2,660.73	-0.16	-0.09	-0.50	0.50	Pass ‡
2,818.38	-0.18	-0.10	-0.50	0.50	Pass ‡
2,985.38	-0.19	-0.10	-0.50	0.50	Pass ‡
3,162.28	-0.21	-0.10	-0.50	0.50	Pass ‡
3,349.65	-0.21	-0.09	-0.50	0.50	Pass ‡
3,548.13	-0.24	-0.10	-0.50	0.50	Pass ‡
3,758.37	-0.25	-0.09	-0.50	0.50	Pass ‡
3,981.07	-0.28	-0.09	-0.50	0.50	Pass ‡
4,216.97	-0.30	-0.07	-0.63	0.56	Pass ‡
4,466.84	-0.33	-0.05	-0.60	0.63	Pass ‡
4,731.51	-0.37	-0.04	-0.70	0.69	Pass ‡
5,011.87	-0.41	-0.02	-0.80	0.75	Pass ‡
5,308.84	-0.44	0.02	-0.80	0.81	Pass ‡
5,623.41	-0.48	0.06	-0.90	0.88	Pass ‡
5,956.62	-0.54	0.09	-0.90	0.94	Pass ‡
6,309.57	-0.59	0.15	-1.00	1.00	Pass ‡
6,683.44	-0.65	0.21	-1.10	1.06	Pass ‡
7,079.46	-0.71	0.29	-1.10	1.13	Pass ‡
7,498.94	-0.81	0.35	-1.20	1.19	Pass ‡
7,943.28	-0.91	0.42	-1.30	1.25	Pass ‡
8,413.95	-1.04	0.48	-1.30	1.31	Pass ‡
8,912.51	-1.24	0.48	-1.40	1.38	Pass ‡
9,440.61	-1.49	0.43	-1.40	1.43	Pass ‡
10,000.00	-1.79	0.35	-1.50	1.50	Pass ‡
10,592.54	-2.28	0.07	-1.60	1.56	Pass ‡
11,220.19	-2.68	-0.12	-1.60	1.63	Pass ‡
11,885.02	-2.99	-0.25	-1.70	1.68	Pass ‡
12,589.25	-3.31	-0.41	-1.80	1.75	Pass ‡
13,335.21	-3.42	-0.41	-1.80	1.81	Pass ‡
14,125.38	-3.44	-0.37	-1.90	1.87	Pass ‡

LARSON DAVIS - A PCB PIEZOTRONICS DIV.
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ACCREDITED Cert. #3622.01

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Frequency [Hz]	Actuator [dB]	Random [dB]	Lower limit [dB]	Upper limit [dB]	Result
14,962.36	-3.49	-0.42	-1.93	1.93	Pass ‡
15,848.93	-3.63	-0.62	-2.00	2.00	Pass ‡
16,788.04	-3.76	-0.98		2.00	Pass ‡
17,782.80	-4.07	-1.29		2.00	Pass ‡
18,836.49	-4.42	-1.69		2.00	Pass ‡
19,952.62	-5.00	-2.10		2.00	Pass ‡

-- End of measurement results--

Signatory: *Abraham Ortega*

LARSON DAVIS - A PCB PIEZOTRONICS DIV.
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

Calibration Certificate

Certificate Number 2021000518

Customer:

Epsilon Associates Inc
Suite 250
3 Mill and Main Place
Maynard, MA 01754, United States

Model Number	831C	***Procedure Number***	D0001.8384		
Serial Number	11388	***Technician***	Ron Harris		
Test Results	**Pass**	***Calibration Date***	15 Jan 2021		
Initial Condition	As Manufactured	***Calibration Due***	15 Jan 2022		
Description	Larson Davis Model 831C Class 1 Sound Level Meter Firmware Revision: 04.5.1R0	***Temperature***	23.47	°C	± 0.25 °C
		Humidity	52.1	%RH	± 2.0 %RH
		Static Pressure	87.53	kPa	± 0.13 kPa

Evaluation Method

Tested with:

Larson Davis PRM831. S/N 023824
PCB 377C20. S/N 320007
Larson Davis CAL200. S/N 9079
Larson Davis CAL291. S/N 0108

Data reported in dB re 20 µPa.

Compliance Standards

Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8378:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61260:2014 Class 1	ANSI S1.11-2014 Class 1
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Correction data from Larson Davis SoundAdvisor Model 831C Reference Manual, I831C.01 Rev B, 2017-03-31

For 1/4" microphones, the Larson Davis ADP024 1/4" to 1/2" adaptor is used with the calibrators and the Larson Davis ADP043 1/4" to

1/2" adaptor is used with the preamplifier.

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 µPa; Reference Range: 0 dB gain

Periodic tests were performed in accordance with precedures from IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part3.

No Pattern approval for IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 available.

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3, 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 / ANSI/ASA S1.4-2014/Part 1 because (a) evidence was not publicly available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 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 / ANSI/ASA S1.4-2014/Part 3 cover only a limited subset of the specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis CAL291 Residual Intensity Calibrator	2020-09-18	2021-09-18	001250
Hart Scientific 2626-S Humidity/Temperature Sensor	2020-05-12	2021-05-12	006943
Larson Davis CAL200 Acoustic Calibrator	2020-07-21	2021-07-21	007027
Larson Davis Model 831	2020-03-02	2021-03-02	007182
PCB 377A13 1/2 inch Prepolarized Pressure Microphone	2020-03-05	2021-03-05	007185
SRS DS360 Ultra Low Distortion Generator	2020-04-14	2021-04-14	007635
Larson Davis 1/2" Preamplifier for Model 831 Type 1	2020-10-06	2021-10-06	PCB0004783

Acoustic Calibration

Measured according to IEC 61672-3:2013 10 and ANSI S1.4-2014 Part 3: 10

Measurement	Test Result [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
1000 Hz	114.00	113.80	114.20	0.14	Pass

Loaded Circuit Sensitivity

Measurement	Test Result [dB re 1 V / Pa]	Lower Limit [dB re 1 V / Pa]	Upper Limit [dB re 1 V / Pa]	Expanded Uncertainty [dB]	Result
1000 Hz	-26.16	-27.82	-24.69	0.14	Pass

-- End of measurement results--

Acoustic Signal Tests, C-weighting

Measured according to IEC 61672-3:2013 12 and ANSI S1.4-2014 Part 3: 12 using a comparison coupler with Unit Under Test (UUT) and reference SLM using slow time-weighted sound level for compliance to IEC 61672-1:2013 5.5; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Expected [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
125	-0.13	-0.20	-1.20	0.80	0.23	Pass
1000	0.06	0.00	-0.70	0.70	0.23	Pass
8000	-3.04	-3.00	-5.50	-1.50	0.32	Pass

-- End of measurement results--

Self-generated Noise

Measured according to IEC 61672-3:2013 11.1 and ANSI S1.4-2014 Part 3: 11.1

Measurement	Test Result [dB]
A-weighted, 20 dB gain	40.49

-- End of measurement results--

-- End of Report--

Signatory: Ron Harris

LARSON DAVIS - A PCB PIEZOTRONICS DIV.
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ACCREDITED Cert. #3622.01

LARSON DAVIS A PCB PIEZOTRONICS DIV.

Calibration Certificate

Certificate Number 2021000438

Customer:

Epsilon Associates Inc
Suite 250
3 Mill and Main Place
Maynard, MA 01754, United States

Model Number	831C
Serial Number	11388
Test Results	**Pass**
Initial Condition	As Manufactured
Description	Larson Davis Model 831C Class 1 Sound Level Meter Firmware Revision: 04.5.1R0

Procedure Number	D0001.8378		
Technician	Ron Harris		
Calibration Date	14 Jan 2021		
Calibration Due	14 Jan 2022		
Temperature	23.52	°C	± 0.25 °C
Humidity	51.4	%RH	± 2.0 %RH
Static Pressure	87.39	kPa	± 0.13 kPa

Evaluation Method Tested electrically using Larson Davis PRM831 S/N 023824 and a 12.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 µPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8384:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1
IEC 61260:2014 Class 1	ANSI S1.11-2014 Class 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017. **Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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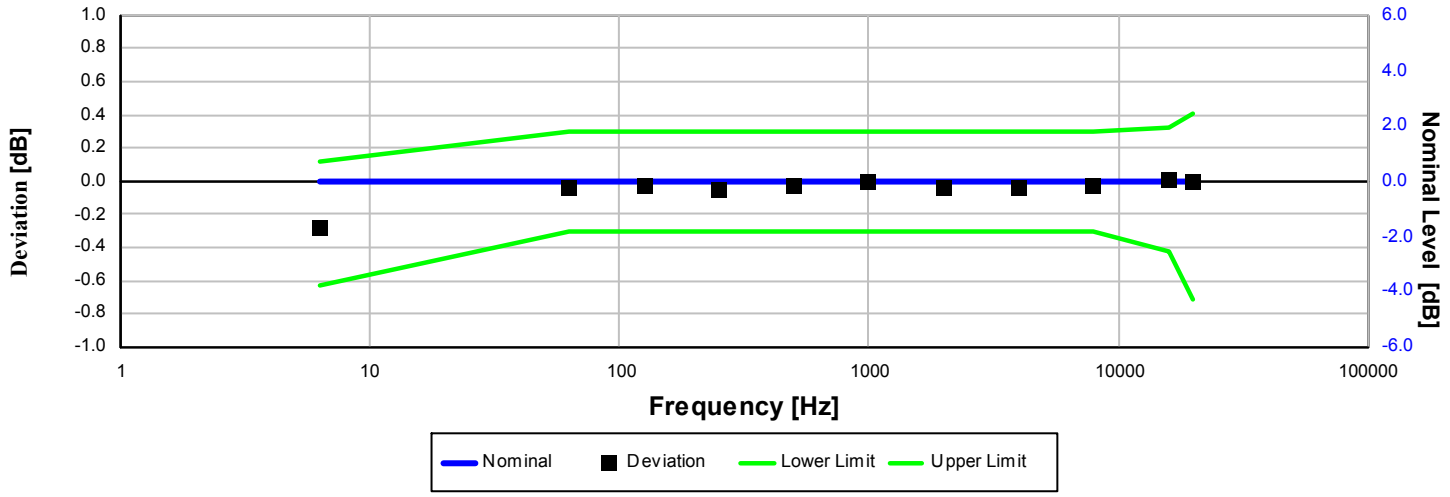
Correction data from Larson Davis SoundAdvisor Model 831C Reference Manual, I831C.01 Rev M, 2019-09-10

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 µPa; Reference Range: 0 dB gain

Standards Used			
Description	**Cal Date**	**Cal Due**	**Cal Standard**
Hart Scientific 2626-S Humidity/Temperature Sensor	2020-05-12	2021-05-12	006943
SRS DS360 Ultra Low Distortion Generator	2021-01-05	2022-01-05	007118

Z-weight Filter Response

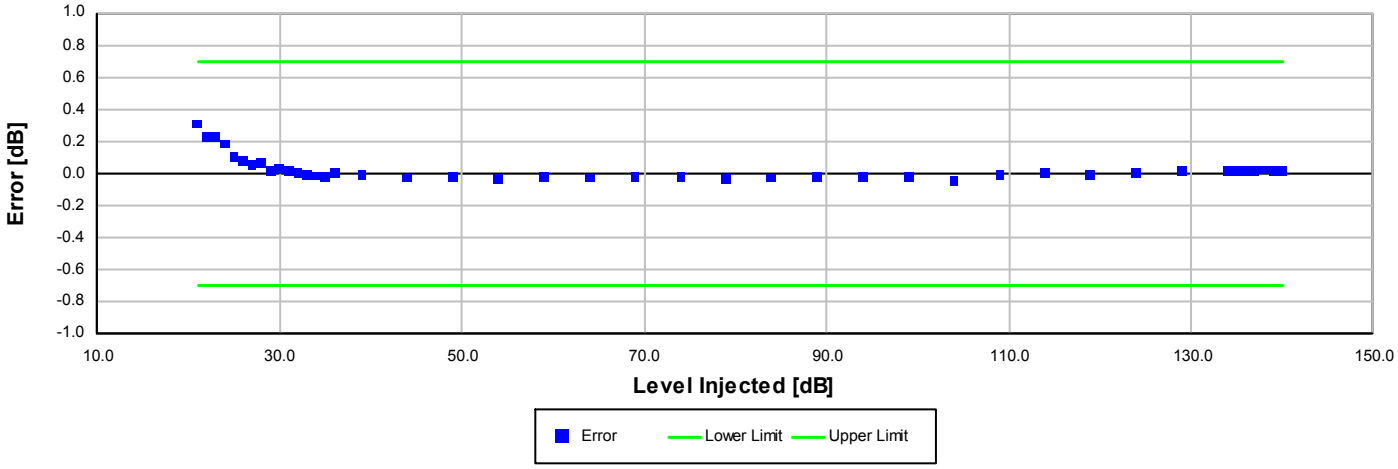


Electrical signal test of frequency weighting performed according to IEC 61672-3:2013 13 and ANSI S1.4-2014 Part 3: 13 for compliance to IEC 61672-1:2013 5.5; IEC 60651:2001 6.1 and 9.2.2; IEC 60804:2000 5; ANSI S1.4:1983 (R2006) 5.1 and 8.2.1; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Deviation [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
6.31	-0.27	-0.27	-0.63	0.12	0.15	Pass
63.10	-0.03	-0.03	-0.30	0.30	0.15	Pass
125.89	-0.03	-0.03	-0.30	0.30	0.15	Pass
251.19	-0.05	-0.05	-0.30	0.30	0.15	Pass
501.19	-0.02	-0.02	-0.30	0.30	0.15	Pass
1,000.00	0.00	0.00	-0.30	0.30	0.15	Pass
1,995.26	-0.04	-0.04	-0.30	0.30	0.15	Pass
3,981.07	-0.03	-0.03	-0.30	0.30	0.15	Pass
7,943.28	-0.02	-0.02	-0.30	0.30	0.15	Pass
15,848.93	0.01	0.01	-0.42	0.32	0.15	Pass
19,952.62	0.00	0.00	-0.71	0.41	0.15	Pass

-- End of measurement results--

A-weighted 0 dB Gain Broadband Log Linearity: 8,000.00 Hz



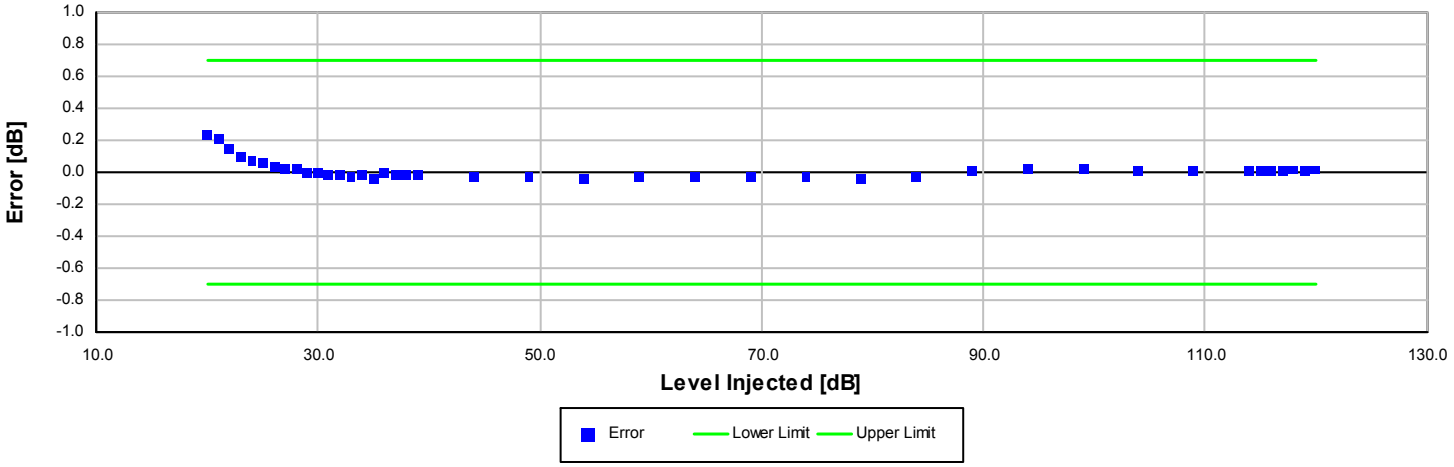
Broadband level linearity performed according to IEC 61672-3:2013 16 and ANSI S1.4-2014 Part 3: 16 for compliance to IEC 61672-1:2013 5.6, IEC 60804:2000 6.2, IEC 61252:2002 8, ANSI S1.4 (R2006) 6.9, ANSI S1.4-2014 Part 1: 5.6, ANSI S1.43 (R2007) 6.2

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
21.00	0.31	-0.70	0.70	0.16	Pass
22.00	0.23	-0.70	0.70	0.16	Pass
23.00	0.23	-0.70	0.70	0.16	Pass
24.00	0.19	-0.70	0.70	0.16	Pass
25.00	0.11	-0.70	0.70	0.16	Pass
26.00	0.08	-0.70	0.70	0.16	Pass
27.00	0.06	-0.70	0.70	0.16	Pass
28.00	0.07	-0.70	0.70	0.16	Pass
29.00	0.02	-0.70	0.70	0.18	Pass
30.00	0.03	-0.70	0.70	0.17	Pass
31.00	0.01	-0.70	0.70	0.17	Pass
32.00	0.00	-0.70	0.70	0.17	Pass
33.00	0.00	-0.70	0.70	0.16	Pass
34.00	-0.01	-0.70	0.70	0.16	Pass
35.00	-0.02	-0.70	0.70	0.16	Pass
36.00	0.01	-0.70	0.70	0.16	Pass
39.00	-0.01	-0.70	0.70	0.16	Pass
44.00	-0.03	-0.70	0.70	0.16	Pass
49.00	-0.02	-0.70	0.70	0.16	Pass
54.00	-0.03	-0.70	0.70	0.16	Pass
59.00	-0.02	-0.70	0.70	0.16	Pass
64.00	-0.03	-0.70	0.70	0.16	Pass
69.00	-0.02	-0.70	0.70	0.16	Pass
74.00	-0.02	-0.70	0.70	0.16	Pass
79.00	-0.03	-0.70	0.70	0.16	Pass
84.00	-0.03	-0.70	0.70	0.16	Pass
89.00	-0.02	-0.70	0.70	0.16	Pass
94.00	-0.02	-0.70	0.70	0.16	Pass
99.00	-0.02	-0.70	0.70	0.16	Pass
104.00	-0.04	-0.70	0.70	0.15	Pass
109.00	-0.01	-0.70	0.70	0.15	Pass
114.00	0.00	-0.70	0.70	0.15	Pass
119.00	0.00	-0.70	0.70	0.15	Pass
124.00	0.01	-0.70	0.70	0.15	Pass
129.00	0.01	-0.70	0.70	0.15	Pass
134.00	0.02	-0.70	0.70	0.15	Pass

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
135.00	0.02	-0.70	0.70	0.15	Pass
136.00	0.02	-0.70	0.70	0.15	Pass
137.00	0.02	-0.70	0.70	0.15	Pass
138.00	0.02	-0.70	0.70	0.15	Pass
139.00	0.02	-0.70	0.70	0.15	Pass
140.00	0.02	-0.70	0.70	0.15	Pass

-- End of measurement results--

A-weighted 20 dB Gain Broadband Log Linearity: 8,000.00 Hz



Broadband level linearity performed according to IEC 61672-3:2013 16 and ANSI S1.4-2014 Part 3: 16 for compliance to IEC 61672-1:2013 5.6, IEC 60804:2000 6.2, IEC 61252:2002 8, ANSI S1.4 (R2006) 6.9, ANSI S1.4-2014 Part 1: 5.6, ANSI S1.43 (R2007) 6.2

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
20.00	0.23	-0.70	0.70	0.17	Pass
21.00	0.20	-0.70	0.70	0.16	Pass
22.00	0.14	-0.70	0.70	0.16	Pass
23.00	0.09	-0.70	0.70	0.16	Pass
24.00	0.07	-0.70	0.70	0.16	Pass
25.00	0.05	-0.70	0.70	0.16	Pass
26.00	0.03	-0.70	0.70	0.19	Pass
27.00	0.02	-0.70	0.70	0.18	Pass
28.00	0.01	-0.70	0.70	0.19	Pass
29.00	-0.01	-0.70	0.70	0.18	Pass
30.00	-0.01	-0.70	0.70	0.17	Pass
31.00	-0.02	-0.70	0.70	0.17	Pass
32.00	-0.02	-0.70	0.70	0.17	Pass
33.00	-0.04	-0.70	0.70	0.16	Pass
34.00	-0.03	-0.70	0.70	0.16	Pass
35.00	-0.04	-0.70	0.70	0.16	Pass
36.00	-0.01	-0.70	0.70	0.16	Pass
37.00	-0.02	-0.70	0.70	0.16	Pass
38.00	-0.03	-0.70	0.70	0.16	Pass
39.00	-0.02	-0.70	0.70	0.16	Pass
44.00	-0.04	-0.70	0.70	0.16	Pass
49.00	-0.04	-0.70	0.70	0.16	Pass
54.00	-0.05	-0.70	0.70	0.16	Pass
59.00	-0.03	-0.70	0.70	0.16	Pass
64.00	-0.04	-0.70	0.70	0.16	Pass
69.00	-0.04	-0.70	0.70	0.16	Pass
74.00	-0.03	-0.70	0.70	0.16	Pass
79.00	-0.05	-0.70	0.70	0.16	Pass
84.00	-0.04	-0.70	0.70	0.16	Pass
89.00	0.00	-0.70	0.70	0.16	Pass
94.00	0.01	-0.70	0.70	0.16	Pass
99.00	0.02	-0.70	0.70	0.16	Pass
104.00	0.00	-0.70	0.70	0.15	Pass
109.00	0.00	-0.70	0.70	0.15	Pass
114.00	0.00	-0.70	0.70	0.15	Pass
115.00	0.01	-0.70	0.70	0.15	Pass

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
116.00	0.00	-0.70	0.70	0.15	Pass
117.00	0.01	-0.70	0.70	0.15	Pass
118.00	0.01	-0.70	0.70	0.15	Pass
119.00	0.00	-0.70	0.70	0.15	Pass
120.00	0.01	-0.70	0.70	0.15	Pass

-- End of measurement results--

Peak Rise Time

Peak rise time performed according to IEC 60651:2001 9.4.4 and ANSI S1.4:1983 (R2006) 8.4.4

Amplitude [dB]	Duration [µs]		Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
139.00	40	Negative Pulse	135.92	134.60	136.60	0.15	Pass
		Positive Pulse	135.93	134.60	136.60	0.15	Pass
	30	Negative Pulse	135.11	134.60	136.60	0.15	Pass
		Positive Pulse	135.12	134.60	136.60	0.15	Pass

-- End of measurement results--

Positive Pulse Crest Factor

200 µs pulse tests at 2.0, 12.0, 22.0, 32.0 dB below Overload Limit

Crest Factor measured according to IEC 60651:2001 9.4.2 and ANSI S1.4:1983 (R2006) 8.4.2

Amplitude [dB]	Crest Factor	Test Result [dB]	Limits [dB]	Expanded Uncertainty [dB]	Result
138.00	3	OVLD	± 0.50	0.15 ‡	Pass
	5	OVLD	± 1.00	0.15 ‡	Pass
	10	OVLD	± 1.50	0.15 ‡	Pass
128.00	3	-0.12	± 0.50	0.15 ‡	Pass
	5	-0.11	± 1.00	0.15 ‡	Pass
	10	OVLD	± 1.50	0.15 ‡	Pass
118.00	3	-0.13	± 0.50	0.15 ‡	Pass
	5	-0.13	± 1.00	0.15 ‡	Pass
	10	-0.01	± 1.50	0.15 ‡	Pass
108.00	3	-0.14	± 0.50	0.15 ‡	Pass
	5	-0.14	± 1.00	0.15 ‡	Pass
	10	-0.25	± 1.50	0.15 ‡	Pass

-- End of measurement results--

Negative Pulse Crest Factor

200 µs pulse tests at 2.0, 12.0, 22.0, 32.0 dB below Overload Limit

Crest Factor measured according to IEC 60651:2001 9.4.2 and ANSI S1.4:1983 (R2006) 8.4.2

Amplitude [dB]	Crest Factor	Test Result [dB]	Limits [dB]	Expanded Uncertainty [dB]	Result
138.00	3	OVLD	± 0.50	0.15 ‡	Pass
	5	OVLD	± 1.00	0.15 ‡	Pass
	10	OVLD	± 1.50	0.15 ‡	Pass
128.00	3	-0.13	± 0.50	0.15 ‡	Pass
	5	-0.14	± 1.00	0.15 ‡	Pass
	10	OVLD	± 1.50	0.15 ‡	Pass
118.00	3	-0.14	± 0.50	0.15 ‡	Pass
	5	-0.13	± 1.00	0.15 ‡	Pass
	10	-0.19	± 1.50	0.15 ‡	Pass
108.00	3	-0.15	± 0.50	0.15 ‡	Pass
	5	-0.14	± 1.00	0.15 ‡	Pass
	10	-0.14	± 1.50	0.16 ‡	Pass

-- End of measurement results--

Gain

Gain measured according to IEC 61672-3:2013 17.3 and 17.4 and ANSI S1.4-2014 Part 3: 17.3 and 17.4

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
0 dB Gain	94.01	93.92	94.12	0.15	Pass
0 dB Gain, Linearity	28.04	27.32	28.72	0.16	Pass
20 dB Gain	94.04	93.92	94.12	0.15	Pass
20 dB Gain, Linearity	23.12	22.32	23.72	0.16	Pass
OBA High Range	94.02	93.20	94.80	0.15	Pass
OBA Normal Range	94.02	93.92	94.12	0.15	Pass

-- End of measurement results--

Broadband Noise Floor

Self-generated noise measured according to IEC 61672-3:2013 11.2 and ANSI S1.4-2014 Part 3: 11.2

Measurement	Test Result [dB]	Upper limit [dB]	Result
A-weight Noise Floor	6.64	9.00	Pass
C-weight Noise Floor	12.07	15.00	Pass
Z-weight Noise Floor	21.63	25.00	Pass

-- End of measurement results--

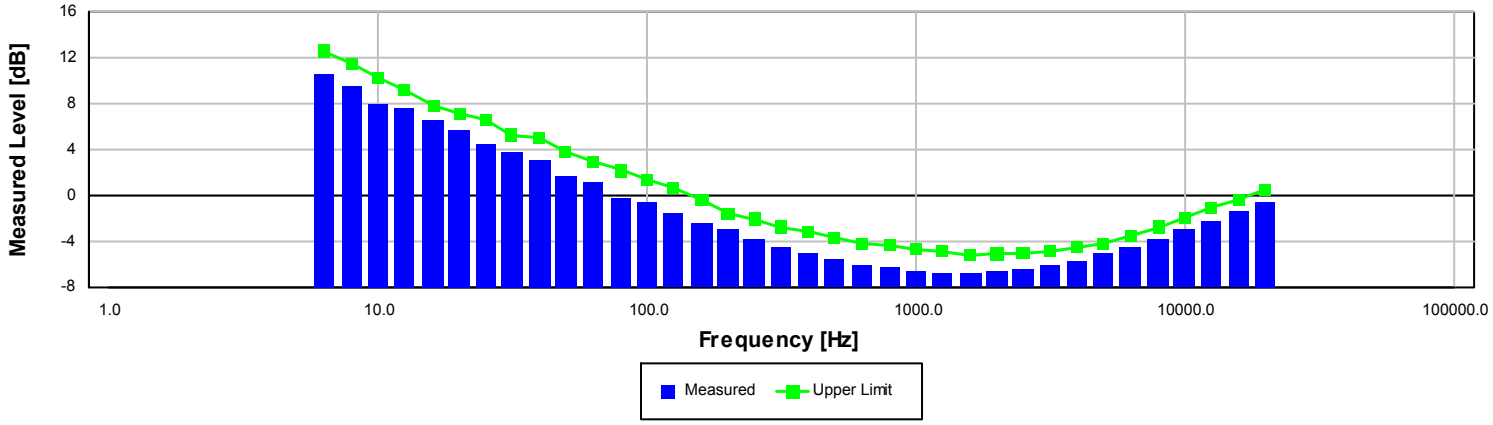
Total Harmonic Distortion

Measured using 1/3-Octave filters

Measurement	Test Result [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
10 Hz Signal	137.51	137.20	138.80	0.15	Pass
THD	-77.81		-60.00	1.30 ‡	Pass
THD+N	-76.62		-60.00	1.30 ‡	Pass

-- End of measurement results--

1/3-Octave Self-Generated Noise



The SLM is set to normal range and 20 dB gain.

Frequency [Hz]	Test Result [dB]	Upper limit [dB]	Result
6.30	10.54	12.60	Pass
8.00	9.58	11.50	Pass
10.00	7.96	10.20	Pass
12.50	7.69	9.20	Pass
16.00	6.69	7.90	Pass
20.00	5.83	7.20	Pass
25.00	4.54	6.60	Pass
31.50	3.83	5.30	Pass
40.00	3.22	5.00	Pass
50.00	1.77	3.80	Pass
63.00	1.19	3.00	Pass
80.00	-0.12	2.20	Pass
100.00	-0.59	1.40	Pass
125.00	-1.55	0.70	Pass
160.00	-2.34	-0.40	Pass
200.00	-2.88	-1.50	Pass
250.00	-3.77	-2.00	Pass
315.00	-4.56	-2.70	Pass
400.00	-5.08	-3.10	Pass
500.00	-5.59	-3.70	Pass
630.00	-6.14	-4.10	Pass
800.00	-6.31	-4.30	Pass
1,000.00	-6.65	-4.70	Pass
1,250.00	-6.73	-4.80	Pass
1,600.00	-6.77	-5.20	Pass
2,000.00	-6.67	-5.10	Pass
2,500.00	-6.44	-5.00	Pass
3,150.00	-6.12	-4.80	Pass
4,000.00	-5.65	-4.50	Pass
5,000.00	-5.09	-4.10	Pass
6,300.00	-4.49	-3.40	Pass
8,000.00	-3.78	-2.70	Pass
10,000.00	-3.02	-1.90	Pass
12,500.00	-2.21	-1.10	Pass
16,000.00	-1.33	-0.30	Pass
20,000.00	-0.43	0.60	Pass

-- End of measurement results--

-- End of Report--

Signatory: Ron Harris

LARSON DAVIS - A PCB PIEZOTRONICS DIV.
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

Calibration Certificate

Certificate Number 2021000431
Customer:
Epsilon Associates Inc
Suite 250
3 Mill and Main Place
Maynard, MA 01754, United States

Model Number	PRM831	***Procedure Number***	D0001.8383	
Serial Number	023824	***Technician***	Ron Harris	
Test Results	**Pass**	***Calibration Date***	14 Jan 2021	
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	14 Jan 2022	
		Temperature	23.06 °C	± 0.01 °C
Description	Larson Davis 1/2" Preamplifier for Model 831 Type 1	***Humidity***	53.6 %RH	± 0.5 %RH
		Static Pressure	87.29 kPa	± 0.03 kPa

Evaluation Method Tested electrically using a 12.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 µPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

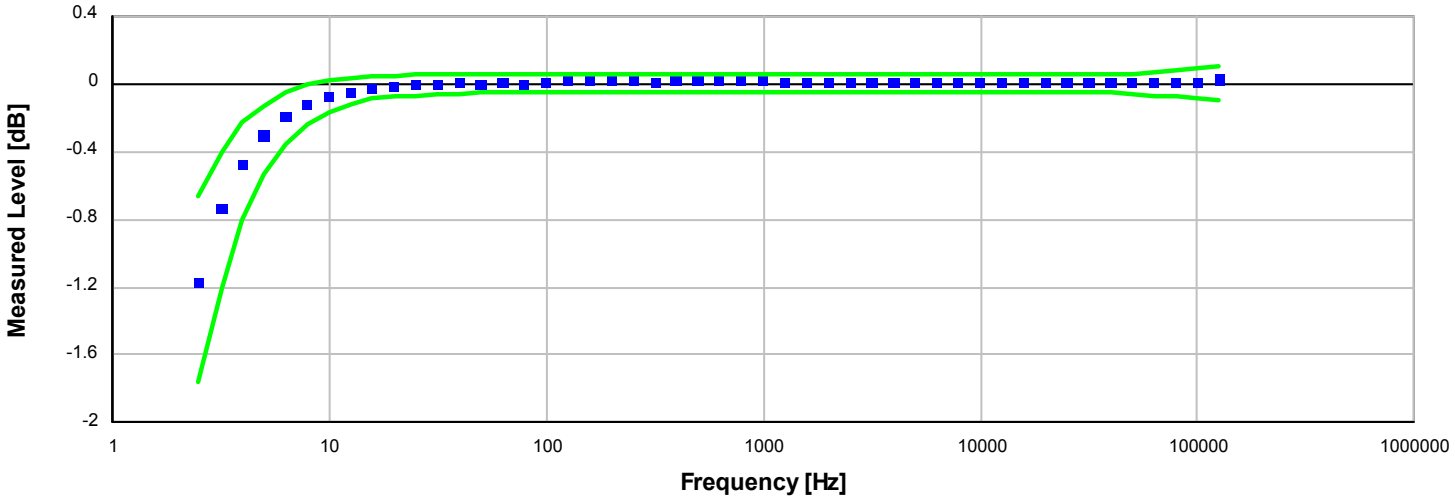
This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis Model 2900 Real Time Analyzer	03/06/2020	03/06/2021	003003
Hart Scientific 2626-S Humidity/Temperature Sensor	05/12/2020	05/12/2021	006943
Agilent 34401A DMM	07/07/2020	07/07/2021	007165
SRS DS360 Ultra Low Distortion Generator	08/19/2020	08/19/2021	007167

Frequency Response



Frequency response electrically tested at 120.0 dB re 1 µV

Frequency [Hz]	Test Result [dB re 1 kHz]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
2.50	-1.18	-1.76	-0.66	0.12	Pass
3.20	-0.74	-1.20	-0.40	0.12	Pass
4.00	-0.48	-0.81	-0.23	0.12	Pass
5.00	-0.31	-0.53	-0.13	0.12	Pass
6.30	-0.20	-0.36	-0.05	0.12	Pass
7.90	-0.13	-0.24	-0.01	0.12	Pass
10.00	-0.08	-0.17	0.03	0.12	Pass
12.60	-0.06	-0.13	0.04	0.12	Pass
15.80	-0.03	-0.09	0.04	0.12	Pass
20.00	-0.02	-0.08	0.05	0.12	Pass
25.10	-0.01	-0.07	0.05	0.12	Pass
31.60	-0.01	-0.07	0.05	0.12	Pass
39.80	0.00	-0.06	0.05	0.12	Pass
50.10	-0.01	-0.06	0.05	0.12	Pass
63.10	0.00	-0.05	0.05	0.12	Pass
79.40	-0.01	-0.05	0.05	0.12	Pass
100.00	0.00	-0.05	0.05	0.12	Pass
125.90	0.01	-0.05	0.05	0.12	Pass
158.50	0.01	-0.05	0.05	0.12	Pass
199.50	0.01	-0.05	0.05	0.12	Pass
251.20	0.01	-0.05	0.05	0.12	Pass
316.20	0.00	-0.05	0.05	0.12	Pass
398.10	0.01	-0.05	0.05	0.12	Pass
501.20	0.01	-0.05	0.05	0.12	Pass
631.00	0.01	-0.05	0.05	0.12	Pass
794.30	0.01	-0.05	0.05	0.12	Pass
1,000.00	0.01	-0.05	0.05	0.12	Pass
1,258.90	0.00	-0.05	0.05	0.12	Pass
1,584.90	0.00	-0.05	0.05	0.12	Pass
1,995.30	0.00	-0.05	0.05	0.12	Pass
2,511.90	0.00	-0.05	0.05	0.12	Pass
3,162.30	0.00	-0.05	0.05	0.12	Pass

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1681 West 820 North
Provo, UT 84601, United States
716-684-0001

Frequency [Hz]	Test Result [dB re 1 kHz]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
3,981.10	0.00	-0.05	0.05	0.12	Pass
5,011.90	0.00	-0.05	0.05	0.12	Pass
6,309.60	0.00	-0.05	0.05	0.12	Pass
7,943.30	0.00	-0.05	0.05	0.12	Pass
10,000.00	0.00	-0.05	0.05	0.12	Pass
12,589.30	0.00	-0.05	0.05	0.12	Pass
15,848.90	0.00	-0.05	0.05	0.12	Pass
19,952.60	0.00	-0.05	0.05	0.12	Pass
25,118.90	0.00	-0.05	0.05	0.12	Pass
31,622.80	0.00	-0.05	0.05	0.12	Pass
39,810.70	0.00	-0.05	0.05	0.12	Pass
50,118.70	0.00	-0.06	0.06	0.12	Pass
63,095.70	0.00	-0.07	0.07	0.12	Pass
79,432.80	0.00	-0.08	0.08	0.12	Pass
100,000.00	0.00	-0.09	0.09	0.12	Pass
125,892.50	0.02	-0.10	0.10	0.26	Pass

Gain Measurement

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
Output Gain @ 1 kHz	-0.11	-0.45	-0.03	0.12	Pass

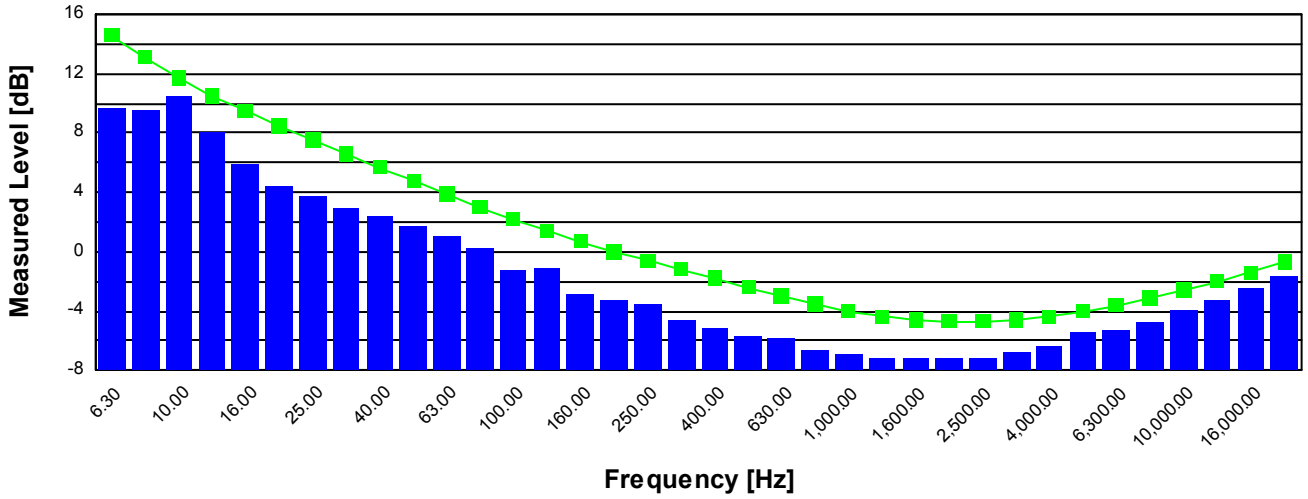
-- End of measurement results--

DC Bias Measurement

Measurement	Test Result [V]	Lower limit [V]	Upper limit [V]	Expanded Uncertainty [V]	Result
DC Voltage	18.20	15.50	19.50	0.04	Pass

-- End of measurement results--

1/3-Octave Self-Generated Noise



Frequency [Hz]	Test Result [dB re 1 µV]	Upper limit [dB re 1 µV]	Result
6.30	9.70	14.60	Pass
8.00	9.60	13.10	Pass
10.00	10.50	11.70	Pass
12.50	8.00	10.50	Pass
16.00	5.90	9.50	Pass
20.00	4.40	8.50	Pass
25.00	3.70	7.50	Pass
31.50	3.00	6.60	Pass
40.00	2.40	5.70	Pass
50.00	1.70	4.80	Pass
63.00	1.10	3.90	Pass
80.00	0.30	3.00	Pass
100.00	-1.20	2.20	Pass
125.00	-1.10	1.40	Pass
160.00	-2.80	0.70	Pass
200.00	-3.20	0.00	Pass
250.00	-3.50	-0.60	Pass
315.00	-4.60	-1.20	Pass
400.00	-5.20	-1.80	Pass
500.00	-5.70	-2.40	Pass
630.00	-5.80	-3.00	Pass
800.00	-6.60	-3.50	Pass
1,000.00	-6.90	-4.00	Pass
1,250.00	-7.20	-4.40	Pass
1,600.00	-7.10	-4.60	Pass
2,000.00	-7.10	-4.70	Pass
2,500.00	-7.10	-4.70	Pass
3,150.00	-6.70	-4.60	Pass
4,000.00	-6.30	-4.40	Pass
5,000.00	-5.40	-4.00	Pass
6,300.00	-5.30	-3.60	Pass
8,000.00	-4.70	-3.10	Pass
10,000.00	-3.90	-2.60	Pass
12,500.00	-3.30	-2.00	Pass
16,000.00	-2.40	-1.40	Pass
20,000.00	-1.70	-0.70	Pass

-- End of measurement results--

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1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ACCREDITED Cert. #3622.01

LARSON DAVIS A PCB PIEZOTRONICS DIV.

Self-generated Noise

Bandwidth	Test Result [µV]	Test Result [dB re 1 µV]	Upper limit [dB re 1 µV]	Result
A-weighted (1 Hz - 20 kHz)	2.02	6.10	8.00	Pass
Broadband (1 Hz - 20 kHz)	4.32	12.70	15.50	Pass

-- End of measurement results--

Signatory: Ron Harris

LARSON DAVIS - A PCB PIEZOTRONICS DIV.
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Provo, UT 84601, United States
716-684-0001

ACCREDITED Cert. #3622.01

LARSON DAVIS A PCB PIEZOTRONICS DIV.

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.45946

Instrument: **Sound Level Meter**
Model: **831**
Manufacturer: **Larson Davis**
Serial number: **0003751**
Tested with: **Microphone 377C20 s/n 162996**
Preamplifier PRM831 s/n 029562
Type (class): **1**
Customer: **Epsilon Associates, Inc.**
Tel/Fax: **978-461-6235 / asavino@epsilonassociates.com**

Date Calibrated: **2/9/2021** *Cal Due:* **2/9/2022**

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __Yes _X_ No
Calibration service: __ Basic _X_ Standard
Address: **3 Mill & Main Place, Suite 250, Maynard, MA 01754**

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Oct 31, 2020	Scantek, Inc./ NVLAP	Oct 31, 2021
DS-360-SRS	Function Generator	33584	Oct 23, 2019	ACR Env./ A2LA	Oct 23, 2021
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Feb 4, 2021	ACR Env. / A2LA	Feb 4, 2022
HM30-Thommen	Meteo Station	1040170/39633	Dec 7, 2020	ACR Env./ A2LA	Dec 7, 2021
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Oct 26, 2020	Scantek, Inc./ NVLAP	Oct 26, 2021

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
21.8	100.64	39.0

Calibrated by:	Lydon Dawkins	**Authorized signatory:**	William D. Gallagher
Signature	Lydon Dawkins	Signature	William D Gallagher
Date	2/9/2021	Date	2/9/2021

Results summary: Device complies with following clauses of mentioned specifications:

CLAUSES[1] FROM IEC/ANSI STANDARDS REFERENCED IN PROCEDURES:	RESULT[2,3]	EXPANDED UNCERTAINTY (coverage factor 2) [dB]
INDICATION AT THE CALIBRATION CHECK FREQUENCY - IEC61672-3 ED.2 CLAUSE 10	Passed	0.15
SELF-GENERATED NOISE - IEC 61672-3 ED.2 CLAUSE 11	Passed	0.30
FREQUENCY WEIGHTINGS: A NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY WEIGHTINGS: C NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY WEIGHTINGS: Z NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY AND TIME WEIGHTINGS AT 1 KHZ IEC 61672-3 ED.2.0 CLAUSE 14	Passed	0.20
LEVEL LINEARITY ON THE REFERENCE LEVEL RANGE - IEC 61672-3 ED.2 CLAUSE 16	Passed	0.25
LEVEL LINEARITY INCLUDING THE LEVEL RANGE CONTROL - IEC 61672-3 ED.2.0 CLAUSE 17	Passed	0.25
TONEBURST RESPONSE - IEC 61672-3 ED.2.0 CLAUSE 18	Passed	0.30
PEAK C SOUND LEVEL - IEC 61672-3 ED.2.0 CLAUSE 19	Passed	0.35
OVERLOAD INDICATION - IEC 61672-3 ED.2.0 CLAUSE 20	Passed	0.25
HIGH LEVEL STABILITY TEST - IEC 61672-3 ED.2.0 CLAUSE 21	Passed	0.10
LONG TERM STABILITY TEST - IEC 61672-3 ED.2.0 CLAUSE 15	Passed	0.10
FILTER TEST 1/1OCTAVE: RELATIVE ATTENUATION - IEC 61260, CLAUSE 4.4 & #5.3	Passed	0.25
FILTER TEST 1/3OCTAVE: RELATIVE ATTENUATION - IEC 61260, CLAUSE 4.4 & #5.3	Passed	0.25
COMBINED ELECTRICAL AND ACOUSTICAL TEST - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	See test report

1 The results of this calibration apply only to the instrument type with serial number identified in this report.

2 Parameters are certified at actual environmental conditions.

3 The tests marked with (*) are not covered by the current NVLAP accreditation.

Comments: The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organization responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2, to demonstrate that the model of sound level meter fully conforms to the requirements in the IEC 61672-2, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1.

Note: The instrument was tested for the parameters listed in the table above, using the test methods described in the listed standards. All tests were performed around the reference conditions. The test results were compared with the manufacturer's or with the standard's specifications, whichever are larger.
Compliance with any standard cannot be claimed based solely on the periodic tests.

Tests made with the following attachments to the instrument:

Microphone: PCB Piezotronics 377C20 s/n 162996 for acoustical test
Preamplifier: Larson Davis PRM831 s/n 029562 for all tests
Other: line adaptor ADP005 (18pF) for electrical tests
Accompanying acoustical calibrator: Norsonic 1251 s/n 34880
Windscreen: none

Measured Data: in Test Report # 45946 of 9 + 1 pages.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA
Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.45947

Instrument: **Microphone**
Model: **377C20**
Manufacturer: **PCB Piezotronics**
Serial number: **162996**

Composed of:

Date Calibrated: **2/9/2021** *Cal Due:* **2/9/2022**

Status:	**Received**	**Sent**
In tolerance:	**X**	**X**
Out of tolerance:		
See comments:		

Contains non-accredited tests: ___**Yes** _**X**_ **No**

Customer: **Epsilon Associates, Inc.**
978-461-
Tel/Fax: **6235/asavino@epsilonassociates.com**

Address: **3 Mill & Main Place, Suite 250, Maynard, MA 01754**

Tested in accordance with the following procedures and standards:
Calibration of Measurement Microphones, Scantek, Inc., Rev. 2/25/2015

Instrumentation used for calibration: N-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Oct 31, 2020	Scantek, Inc./ NVLAP	Oct 31, 2021
DS-360-SRS	Function Generator	33584	Oct 23, 2019	ACR Env./ A2LA	Oct 23, 2021
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Feb 4, 2021	ACR Env. / A2LA	Feb 4, 2022
HM30-Thommen	Meteo Station	1040170/39633	Dec 7, 2020	ACR Env./ A2LA	Dec 7, 2021
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1253-Norsonic	Calibrator	28326	Oct 26, 2020	Scantek, Inc./ NVLAP	Oct 26, 2021
1203-Norsonic	Preamplifier	14059	March 3, 2020	Scantek, Inc./ NVLAP	March 3, 2021
4180-Brüel&Kjær	Microphone	2246115	Oct 1, 2019	DPLA / DANAK	Oct 1, 2021

Instrumentation and test results are traceable to SI - BIPM through standards maintained by NPL (UK) and NIST (USA)

Calibrated by:	Lydon Dawkins	**Authorized signatory:**	William D. Gallagher
Signature	Lydon Dawkins	Signature	William D Gallagher
Date	2/9/2021	Date	2/9/2021

Results summary: Device was tested and complies with following clauses of mentioned specifications:

CLAUSES / METHODS[1] FROM PROCEDURES		MET[2,3]	NOT MET	NOT TESTED	MEASUREMENT EXPANDED UNCERTAINTY (coverage factor 2)
Open circuit sensitivity (insert voltage method, 250 Hz)		X			See below
Frequency response	Actuator response	X			63 – 200Hz: 0.3 dB 200 – 8000 Hz: 0.2 dB 8 – 10 kHz: 0.5 dB 10 – 20 kHz: 0.7 dB 20 – 50 kHz: 0.9 dB 50 – 100 kHz: 1.2 dB
	FF/Diffuse field responses	X			63 – 200Hz: 0.3 dB 200 – 4000 Hz: 0.2 dB 4 – 10 kHz: 0.6 dB 10 – 20 kHz: 0.9 dB 20 – 50 kHz: 2.2 dB 50 – 100 kHz: 4.4 dB
	Scantek, Inc. acoustical method			X	31.5 – 125 Hz: 0.16 dB 250, 1000 Hz: 0.12 dB 2 – 8 kHz: 0.8 dB 12.5 – 16 kHz: 2.4 dB

[1] The results of this calibration apply only to the instrument type with serial number identified in this report.

[2] Results are normalized to the reference conditions.

[3] The tests marked with (*) are not covered by the current NVLAP accreditation.

Note: The free field/diffuse field characteristics were calculated based on the measured actuator response and adjustment coefficients as provided by the manufacturer. The uncertainties reported for these characteristics may include assumed uncertainty components for the adjustment coefficients.

Comments:	The instrument was tested and met all specifications found in the referenced procedures.

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
22.7 ± 1.1	100.83 ± 0.020	40.1 ± 2.3

Main measured parameters:

Tone frequency (Hz)	Measured[4] /Acceptable Open circuit sensitivity (dB re 1V/Pa)	Sensitivity (mV/Pa)
250	-26.55 ± 0.12/ -26.0 ±1.5	47.07

[4] The reported expanded uncertainty is calculated with a coverage factor k=2.00

Tests made with following attachments to instrument and auxiliary devices:

Protection grid mounted for sensitivity measurements
Actuator type: G.R.A.S. RA0014

Measured Data: Found on Microphone Test Report # 45947 of one page.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA
Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

Calibration Certificate

Certificate Number 2021000510

Customer:
Epsilon Associates Inc
Suite 250
3 Mill and Main Place
Maynard, MA 01754, United States

Model Number	377B20		***Procedure Number***	D0001.8387	
Serial Number	LW130579		***Technician***	Abraham Ortega	
Test Results	**Pass**		***Calibration Date***	14 Jan 2021	
Initial Condition	AS RECEIVED same as shipped		***Calibration Due***	14 Jan 2022	
Description	1/2 inch Microphone - RI - 0V		***Temperature***	23.3 °C	± 0.01 °C
			Humidity	31.7 %RH	± 0.5 %RH
			Static Pressure	101.53 kPa	± 0.03 kPa

Evaluation Method Tested electrically using an electrostatic actuator.

Compliance Standards Compliant to Manufacturer Specifications.

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis Model 2900 Real Time Analyzer	07/01/2020	07/01/2021	001230
Microphone Calibration System	08/25/2020	08/25/2021	001233
1/2" Preamplifier	12/18/2020	12/18/2021	001274
Agilent 34401A DMM	12/08/2020	12/08/2021	001329
Larson Davis CAL250 Acoustic Calibrator	09/01/2020	09/01/2021	003030
1/2" Preamplifier	04/13/2020	04/13/2021	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	07/09/2020	07/09/2021	006507
1/2 inch Microphone - RI - 200V	06/04/2020	06/04/2021	006510
1/2 inch Microphone - RI - 200V	07/31/2020	07/31/2021	006519
Larson Davis 1/2" Preamplifier 7-pin LEMO	07/09/2020	07/09/2021	006530
Larson Davis 1/2" Preamplifier 7-pin LEMO	07/24/2020	07/24/2021	006531

Sensitivity

Measurement	Test Result [mV/Pa]	Lower limit [mV/Pa]	Upper limit [mV/Pa]	Expanded Uncertainty [mV/Pa]	Result
Open Circuit Sensitivity	47.64	43.15	58.21	1.11	Pass

-- End of measurement results--

Capacitance

Measurement	Test Result [pF]				
Capacitance	11.00			‡	

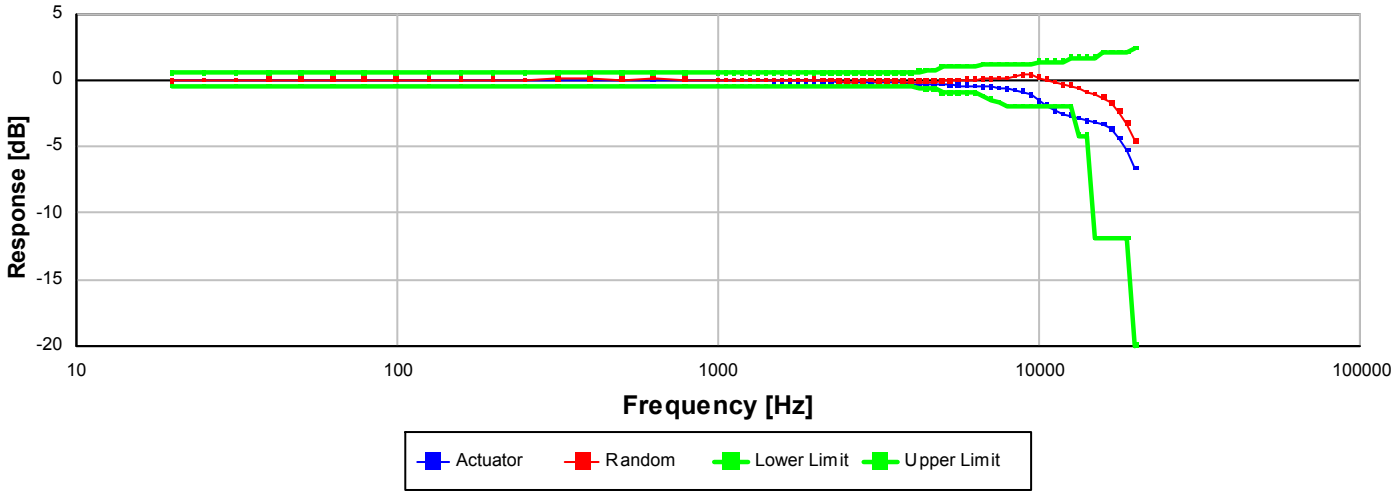
-- End of measurement results--

Lower Limiting Frequency

Measurement	Test Result [Hz]	Lower limit [Hz]	Upper limit [Hz]		Result
-3 dB Frequency	1.35	1.00	2.40		Pass ‡

-- End of measurement results--

Frequency Response



Data is normalized for 0 dB @ 251.19 Hz.

Frequency [Hz]	Actuator [dB]	Random [dB]	Lower limit [dB]	Upper limit [dB]	Result
19.95	-0.07	-0.07	-0.50	0.50	Pass ‡
25.12	-0.03	-0.03	-0.50	0.50	Pass ‡
31.62	0.00	0.00	-0.50	0.50	Pass ‡
39.81	0.01	0.01	-0.50	0.50	Pass ‡
50.12	0.02	0.02	-0.50	0.50	Pass ‡
63.10	0.02	0.02	-0.50	0.50	Pass ‡
79.43	0.02	0.02	-0.50	0.50	Pass ‡
100.00	0.02	0.02	-0.50	0.50	Pass ‡
125.89	0.01	0.01	-0.50	0.50	Pass ‡
158.49	0.01	0.01	-0.50	0.50	Pass ‡
199.53	0.01	0.01	-0.50	0.50	Pass ‡

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716-684-0001

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Frequency [Hz]	Actuator [dB]	Random [dB]	Lower limit [dB]	Upper limit [dB]	Result
251.19	0.00	0.00	-0.50	0.50	Pass ‡
316.23	0.00	0.06	-0.50	0.50	Pass ‡
398.11	-0.01	0.05	-0.50	0.50	Pass ‡
501.19	-0.01	0.01	-0.50	0.50	Pass ‡
630.96	-0.02	0.12	-0.50	0.50	Pass ‡
794.33	-0.03	0.04	-0.50	0.50	Pass ‡
1,000.00	-0.04	-0.02	-0.50	0.50	Pass ‡
1,059.25	-0.04	-0.04	-0.50	0.50	Pass ‡
1,122.02	-0.04	-0.03	-0.50	0.50	Pass ‡
1,188.50	-0.05	-0.03	-0.50	0.50	Pass ‡
1,258.93	-0.05	-0.01	-0.50	0.50	Pass ‡
1,333.52	-0.06	-0.01	-0.50	0.50	Pass ‡
1,412.54	-0.06	-0.01	-0.50	0.50	Pass ‡
1,496.24	-0.07	-0.03	-0.50	0.50	Pass ‡
1,584.89	-0.07	-0.03	-0.50	0.50	Pass ‡
1,678.80	-0.08	-0.03	-0.50	0.50	Pass ‡
1,778.28	-0.09	-0.03	-0.50	0.50	Pass ‡
1,883.65	-0.09	-0.01	-0.50	0.50	Pass ‡
1,995.26	-0.08	0.01	-0.50	0.50	Pass ‡
2,113.49	-0.08	0.00	-0.50	0.50	Pass ‡
2,238.72	-0.10	-0.05	-0.50	0.50	Pass ‡
2,371.37	-0.11	-0.09	-0.50	0.50	Pass ‡
2,511.89	-0.11	-0.11	-0.50	0.50	Pass ‡
2,660.73	-0.12	-0.11	-0.50	0.50	Pass ‡
2,818.38	-0.12	-0.09	-0.50	0.50	Pass ‡
2,985.38	-0.12	-0.05	-0.50	0.50	Pass ‡
3,162.28	-0.22	-0.12	-0.50	0.50	Pass ‡
3,349.65	-0.22	-0.09	-0.50	0.50	Pass ‡
3,548.13	-0.23	-0.10	-0.50	0.50	Pass ‡
3,758.37	-0.25	-0.12	-0.50	0.50	Pass ‡
3,981.07	-0.26	-0.13	-0.50	0.50	Pass ‡
4,216.97	-0.28	-0.14	-0.63	0.63	Pass ‡
4,466.84	-0.31	-0.14	-0.70	0.70	Pass ‡
4,731.51	-0.34	-0.13	-0.70	0.70	Pass ‡
5,011.87	-0.36	-0.10	-1.00	1.00	Pass ‡
5,308.84	-0.39	-0.07	-1.00	1.00	Pass ‡
5,623.41	-0.43	-0.04	-1.00	1.00	Pass ‡
5,956.62	-0.45	0.02	-1.00	1.00	Pass ‡
6,309.57	-0.49	0.04	-1.00	1.00	Pass ‡
6,683.44	-0.53	0.06	-1.25	1.20	Pass ‡
7,079.46	-0.56	0.08	-1.50	1.20	Pass ‡
7,498.94	-0.61	0.10	-1.70	1.20	Pass ‡
7,943.28	-0.69	0.14	-2.00	1.20	Pass ‡
8,413.95	-0.77	0.24	-2.00	1.20	Pass ‡
8,912.51	-0.87	0.37	-2.00	1.20	Pass ‡
9,440.61	-1.14	0.37	-2.00	1.20	Pass ‡
10,000.00	-1.60	0.17	-2.00	1.38	Pass ‡
10,592.54	-1.95	0.03	-2.00	1.38	Pass ‡
11,220.19	-2.33	-0.20	-2.00	1.38	Pass ‡
11,885.02	-2.60	-0.39	-2.00	1.38	Pass ‡
12,589.25	-2.67	-0.44	-2.00	1.68	Pass ‡
13,335.21	-2.88	-0.67	-4.20	1.68	Pass ‡
14,125.38	-3.09	-0.94	-4.20	1.68	Pass ‡

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Frequency [Hz]	Actuator [dB]	Random [dB]	Lower limit [dB]	Upper limit [dB]	Result
14,962.36	-3.16	-1.09	-11.90	1.68	Pass ‡
15,848.93	-3.35	-1.35	-11.90	2.08	Pass ‡
16,788.04	-3.71	-1.74	-11.90	2.08	Pass ‡
17,782.80	-4.37	-2.40	-11.90	2.08	Pass ‡
18,836.49	-5.30	-3.30	-11.90	2.08	Pass ‡
19,952.62	-6.64	-4.59	-100.00	2.38	Pass ‡

-- End of measurement results--

Signatory: Abraham Ortega

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1681 West 820 North
Provo, UT 84601, United States
716-684-0001

Calibration Certificate

Certificate Number 2021000517

Customer:

Epsilon Associates Inc
Suite 250
3 Mill and Main Place
Maynard, MA 01754, United States

Model Number	831C	***Procedure Number***	D0001.8384		
Serial Number	11387	***Technician***	Ron Harris		
Test Results	**Pass**	***Calibration Date***	15 Jan 2021		
Initial Condition	As Manufactured	***Calibration Due***	15 Jan 2022		
Description	Larson Davis Model 831C Class 1 Sound Level Meter Firmware Revision: 04.5.1R0	***Temperature***	23.22	°C	± 0.25 °C
		Humidity	52.9	%RH	± 2.0 %RH
		Static Pressure	87.53	kPa	± 0.13 kPa

Evaluation Method

Tested with:

Larson Davis PRM831. S/N 016477
PCB 377B20. S/N LW130579
Larson Davis CAL200. S/N 9079
Larson Davis CAL291. S/N 0108

Data reported in dB re 20 µPa.

Compliance Standards

Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8378:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61260:2014 Class 1	ANSI S1.11-2014 Class 1
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Correction data from Larson Davis SoundAdvisor Model 831C Reference Manual, I831C.01 Rev B, 2017-03-31

For 1/4" microphones, the Larson Davis ADP024 1/4" to 1/2" adaptor is used with the calibrators and the Larson Davis ADP043 1/4" to

1/2" adaptor is used with the preamplifier.

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 µPa; Reference Range: 0 dB gain

Periodic tests were performed in accordance with precedures from IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part3.

No Pattern approval for IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 available.

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3, 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 / ANSI/ASA S1.4-2014/Part 1 because (a) evidence was not publicly available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 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 / ANSI/ASA S1.4-2014/Part 3 cover only a limited subset of the specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis CAL291 Residual Intensity Calibrator	2020-09-18	2021-09-18	001250
Hart Scientific 2626-S Humidity/Temperature Sensor	2020-05-12	2021-05-12	006943
Larson Davis CAL200 Acoustic Calibrator	2020-07-21	2021-07-21	007027
Larson Davis Model 831	2020-03-02	2021-03-02	007182
PCB 377A13 1/2 inch Prepolarized Pressure Microphone	2020-03-05	2021-03-05	007185
SRS DS360 Ultra Low Distortion Generator	2020-04-14	2021-04-14	007635
Larson Davis 1/2" Preamplifier for Model 831 Type 1	2020-10-06	2021-10-06	PCB0004783

Acoustic Calibration

Measured according to IEC 61672-3:2013 10 and ANSI S1.4-2014 Part 3: 10

Measurement	Test Result [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
1000 Hz	114.00	113.80	114.20	0.14	Pass

Acoustic Signal Tests, C-weighting

Measured according to IEC 61672-3:2013 12 and ANSI S1.4-2014 Part 3: 12 using a comparison coupler with Unit Under Test (UUT) and reference SLM using slow time-weighted sound level for compliance to IEC 61672-1:2013 5.5; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Expected [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
125	-0.12	-0.20	-1.20	0.80	0.23	Pass
1000	0.11	0.00	-0.70	0.70	0.23	Pass
8000	-2.89	-3.00	-5.50	-1.50	0.32	Pass

-- End of measurement results--

Self-generated Noise

Measured according to IEC 61672-3:2013 11.1 and ANSI S1.4-2014 Part 3: 11.1

Measurement	Test Result [dB]
A-weighted, 20 dB gain	40.29

-- End of measurement results--

-- End of Report--

Signatory: Ron Harris

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1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ACCREDITED Cert. #3622.01

LARSON DAVIS A PCB PIEZOTRONICS DIV.

Calibration Certificate

Certificate Number 2021000439

Customer:

Epsilon Associates Inc
Suite 250
3 Mill and Main Place
Maynard, MA 01754, United States

Model Number	831C	***Procedure Number***	D0001.8378		
Serial Number	11387	***Technician***	Ron Harris		
Test Results	**Pass**	***Calibration Date***	14 Jan 2021		
Initial Condition	As Manufactured	***Calibration Due***	14 Jan 2022		
Description	Larson Davis Model 831C Class 1 Sound Level Meter Firmware Revision: 04.5.1R0	***Temperature***	23.44	°C	± 0.25 °C
		Humidity	51.1	%RH	± 2.0 %RH
		Static Pressure	87.39	kPa	± 0.13 kPa

Evaluation Method Tested electrically using Larson Davis PRM831 S/N 016477 and a 12.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 µPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8384:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1
IEC 61260:2014 Class 1	ANSI S1.11-2014 Class 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017. **Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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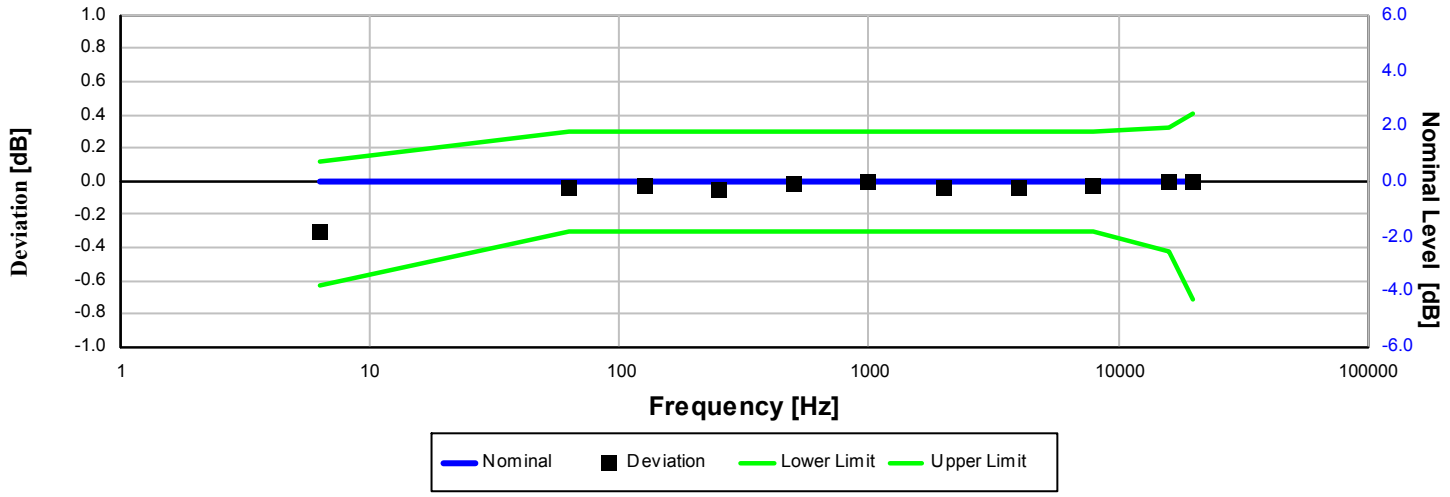
Correction data from Larson Davis SoundAdvisor Model 831C Reference Manual, I831C.01 Rev M, 2019-09-10

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 µPa; Reference Range: 0 dB gain

Standards Used			
Description	**Cal Date**	**Cal Due**	**Cal Standard**
Hart Scientific 2626-S Humidity/Temperature Sensor	2020-05-12	2021-05-12	006943
SRS DS360 Ultra Low Distortion Generator	2020-08-19	2021-08-19	007167

Z-weight Filter Response

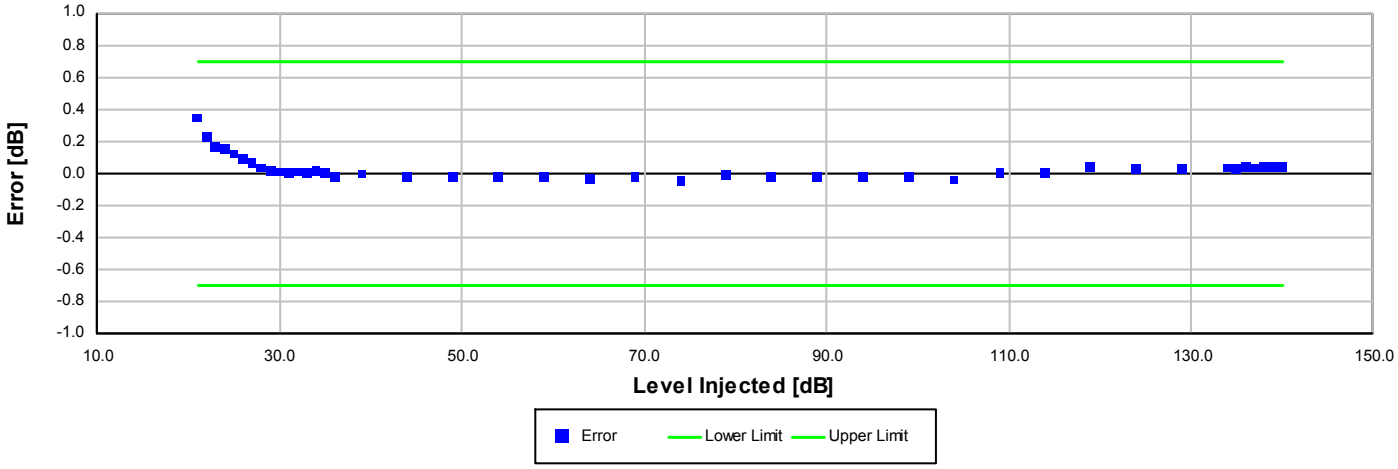


Electrical signal test of frequency weighting performed according to IEC 61672-3:2013 13 and ANSI S1.4-2014 Part 3: 13 for compliance to IEC 61672-1:2013 5.5; IEC 60651:2001 6.1 and 9.2.2; IEC 60804:2000 5; ANSI S1.4:1983 (R2006) 5.1 and 8.2.1; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Deviation [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
6.31	-0.30	-0.30	-0.63	0.12	0.15	Pass
63.10	-0.04	-0.04	-0.30	0.30	0.15	Pass
125.89	-0.03	-0.03	-0.30	0.30	0.15	Pass
251.19	-0.05	-0.05	-0.30	0.30	0.15	Pass
501.19	-0.01	-0.01	-0.30	0.30	0.15	Pass
1,000.00	0.00	0.00	-0.30	0.30	0.15	Pass
1,995.26	-0.04	-0.04	-0.30	0.30	0.15	Pass
3,981.07	-0.04	-0.04	-0.30	0.30	0.15	Pass
7,943.28	-0.02	-0.02	-0.30	0.30	0.15	Pass
15,848.93	-0.01	-0.01	-0.42	0.32	0.15	Pass
19,952.62	-0.01	-0.01	-0.71	0.41	0.15	Pass

-- End of measurement results--

A-weighted 0 dB Gain Broadband Log Linearity: 8,000.00 Hz



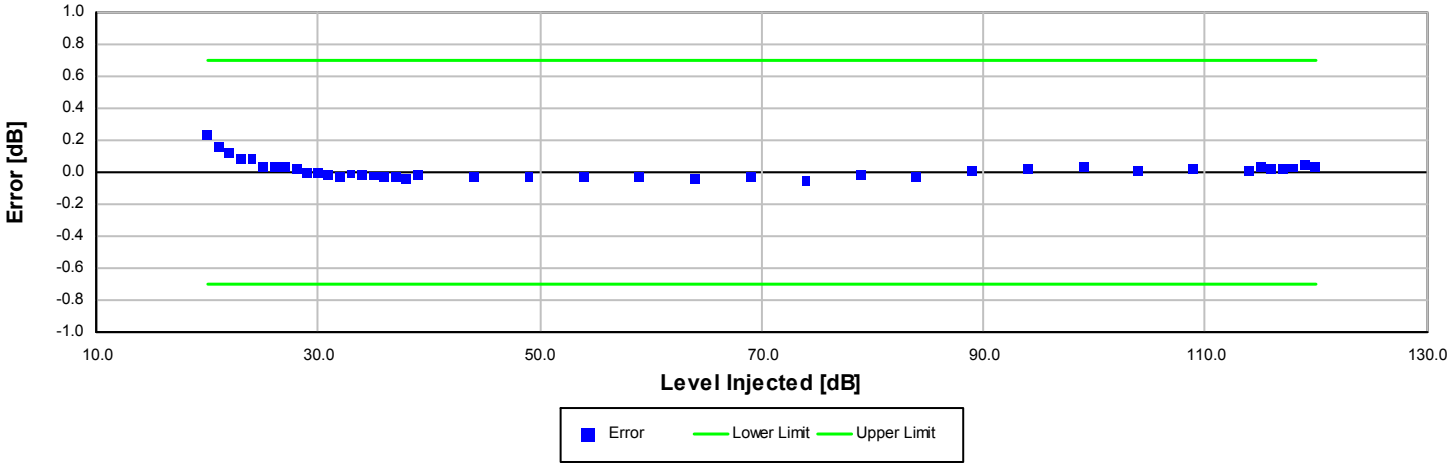
Broadband level linearity performed according to IEC 61672-3:2013 16 and ANSI S1.4-2014 Part 3: 16 for compliance to IEC 61672-1:2013 5.6, IEC 60804:2000 6.2, IEC 61252:2002 8, ANSI S1.4 (R2006) 6.9, ANSI S1.4-2014 Part 1: 5.6, ANSI S1.43 (R2007) 6.2

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
21.00	0.35	-0.70	0.70	0.16	Pass
22.00	0.22	-0.70	0.70	0.16	Pass
23.00	0.16	-0.70	0.70	0.16	Pass
24.00	0.15	-0.70	0.70	0.16	Pass
25.00	0.12	-0.70	0.70	0.16	Pass
26.00	0.09	-0.70	0.70	0.16	Pass
27.00	0.06	-0.70	0.70	0.16	Pass
28.00	0.04	-0.70	0.70	0.16	Pass
29.00	0.02	-0.70	0.70	0.18	Pass
30.00	0.01	-0.70	0.70	0.17	Pass
31.00	0.00	-0.70	0.70	0.17	Pass
32.00	0.01	-0.70	0.70	0.17	Pass
33.00	0.00	-0.70	0.70	0.16	Pass
34.00	0.02	-0.70	0.70	0.16	Pass
35.00	0.00	-0.70	0.70	0.16	Pass
36.00	-0.02	-0.70	0.70	0.16	Pass
39.00	0.00	-0.70	0.70	0.16	Pass
44.00	-0.02	-0.70	0.70	0.16	Pass
49.00	-0.02	-0.70	0.70	0.16	Pass
54.00	-0.02	-0.70	0.70	0.16	Pass
59.00	-0.02	-0.70	0.70	0.16	Pass
64.00	-0.03	-0.70	0.70	0.16	Pass
69.00	-0.02	-0.70	0.70	0.16	Pass
74.00	-0.04	-0.70	0.70	0.16	Pass
79.00	-0.01	-0.70	0.70	0.16	Pass
84.00	-0.02	-0.70	0.70	0.16	Pass
89.00	-0.02	-0.70	0.70	0.16	Pass
94.00	-0.02	-0.70	0.70	0.16	Pass
99.00	-0.02	-0.70	0.70	0.16	Pass
104.00	-0.04	-0.70	0.70	0.15	Pass
109.00	0.01	-0.70	0.70	0.15	Pass
114.00	0.00	-0.70	0.70	0.15	Pass
119.00	0.04	-0.70	0.70	0.15	Pass
124.00	0.03	-0.70	0.70	0.15	Pass
129.00	0.03	-0.70	0.70	0.15	Pass
134.00	0.04	-0.70	0.70	0.15	Pass

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
135.00	0.03	-0.70	0.70	0.15	Pass
136.00	0.04	-0.70	0.70	0.15	Pass
137.00	0.04	-0.70	0.70	0.15	Pass
138.00	0.04	-0.70	0.70	0.15	Pass
139.00	0.04	-0.70	0.70	0.15	Pass
140.00	0.04	-0.70	0.70	0.15	Pass

-- End of measurement results--

A-weighted 20 dB Gain Broadband Log Linearity: 8,000.00 Hz



Broadband level linearity performed according to IEC 61672-3:2013 16 and ANSI S1.4-2014 Part 3: 16 for compliance to IEC 61672-1:2013 5.6, IEC 60804:2000 6.2, IEC 61252:2002 8, ANSI S1.4 (R2006) 6.9, ANSI S1.4-2014 Part 1: 5.6, ANSI S1.43 (R2007) 6.2

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
20.00	0.23	-0.70	0.70	0.17	Pass
21.00	0.16	-0.70	0.70	0.16	Pass
22.00	0.11	-0.70	0.70	0.16	Pass
23.00	0.08	-0.70	0.70	0.16	Pass
24.00	0.08	-0.70	0.70	0.16	Pass
25.00	0.03	-0.70	0.70	0.16	Pass
26.00	0.03	-0.70	0.70	0.19	Pass
27.00	0.02	-0.70	0.70	0.18	Pass
28.00	0.01	-0.70	0.70	0.19	Pass
29.00	-0.01	-0.70	0.70	0.18	Pass
30.00	-0.02	-0.70	0.70	0.17	Pass
31.00	-0.02	-0.70	0.70	0.17	Pass
32.00	-0.04	-0.70	0.70	0.17	Pass
33.00	-0.02	-0.70	0.70	0.16	Pass
34.00	-0.02	-0.70	0.70	0.16	Pass
35.00	-0.03	-0.70	0.70	0.16	Pass
36.00	-0.03	-0.70	0.70	0.16	Pass
37.00	-0.04	-0.70	0.70	0.16	Pass
38.00	-0.04	-0.70	0.70	0.16	Pass
39.00	-0.02	-0.70	0.70	0.16	Pass
44.00	-0.04	-0.70	0.70	0.16	Pass
49.00	-0.04	-0.70	0.70	0.16	Pass
54.00	-0.04	-0.70	0.70	0.16	Pass
59.00	-0.03	-0.70	0.70	0.16	Pass
64.00	-0.05	-0.70	0.70	0.16	Pass
69.00	-0.04	-0.70	0.70	0.16	Pass
74.00	-0.06	-0.70	0.70	0.16	Pass
79.00	-0.02	-0.70	0.70	0.16	Pass
84.00	-0.04	-0.70	0.70	0.16	Pass
89.00	0.01	-0.70	0.70	0.16	Pass
94.00	0.02	-0.70	0.70	0.16	Pass
99.00	0.03	-0.70	0.70	0.16	Pass
104.00	0.01	-0.70	0.70	0.15	Pass
109.00	0.02	-0.70	0.70	0.15	Pass
114.00	0.00	-0.70	0.70	0.15	Pass
115.00	0.03	-0.70	0.70	0.15	Pass

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
116.00	0.01	-0.70	0.70	0.15	Pass
117.00	0.02	-0.70	0.70	0.15	Pass
118.00	0.02	-0.70	0.70	0.15	Pass
119.00	0.04	-0.70	0.70	0.15	Pass
120.00	0.03	-0.70	0.70	0.15	Pass

-- End of measurement results--

Peak Rise Time

Peak rise time performed according to IEC 60651:2001 9.4.4 and ANSI S1.4:1983 (R2006) 8.4.4

Amplitude [dB]	Duration [µs]		Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
139.00	40	Negative Pulse	135.99	134.65	136.65	0.15	Pass
		Positive Pulse	135.99	134.65	136.65	0.15	Pass
	30	Negative Pulse	135.14	134.65	136.65	0.15	Pass
		Positive Pulse	135.16	134.65	136.65	0.15	Pass

-- End of measurement results--

Positive Pulse Crest Factor

200 µs pulse tests at 2.0, 12.0, 22.0, 32.0 dB below Overload Limit

Crest Factor measured according to IEC 60651:2001 9.4.2 and ANSI S1.4:1983 (R2006) 8.4.2

Amplitude [dB]	Crest Factor	Test Result [dB]	Limits [dB]	Expanded Uncertainty [dB]	Result
138.00	3	OVLD	± 0.50	0.15 ‡	Pass
	5	OVLD	± 1.00	0.15 ‡	Pass
	10	OVLD	± 1.50	0.15 ‡	Pass
128.00	3	-0.12	± 0.50	0.15 ‡	Pass
	5	-0.11	± 1.00	0.15 ‡	Pass
	10	OVLD	± 1.50	0.15 ‡	Pass
118.00	3	-0.13	± 0.50	0.15 ‡	Pass
	5	-0.14	± 1.00	0.15 ‡	Pass
	10	-0.26	± 1.50	0.15 ‡	Pass
108.00	3	-0.11	± 0.50	0.15 ‡	Pass
	5	-0.12	± 1.00	0.15 ‡	Pass
	10	-0.16	± 1.50	0.15 ‡	Pass

-- End of measurement results--

Negative Pulse Crest Factor

200 µs pulse tests at 2.0, 12.0, 22.0, 32.0 dB below Overload Limit

Crest Factor measured according to IEC 60651:2001 9.4.2 and ANSI S1.4:1983 (R2006) 8.4.2

Amplitude [dB]	Crest Factor	Test Result [dB]	Limits [dB]	Expanded Uncertainty [dB]	Result
138.00	3	OVLD	± 0.50	0.15 ‡	Pass
	5	OVLD	± 1.00	0.15 ‡	Pass
	10	OVLD	± 1.50	0.15 ‡	Pass
128.00	3	-0.11	± 0.50	0.15 ‡	Pass
	5	-0.10	± 1.00	0.15 ‡	Pass
	10	OVLD	± 1.50	0.15 ‡	Pass
118.00	3	-0.14	± 0.50	0.15 ‡	Pass
	5	-0.14	± 1.00	0.15 ‡	Pass
	10	-0.01	± 1.50	0.15 ‡	Pass
108.00	3	-0.12	± 0.50	0.15 ‡	Pass
	5	-0.11	± 1.00	0.15 ‡	Pass
	10	-0.25	± 1.50	0.16 ‡	Pass

-- End of measurement results--

Gain

Gain measured according to IEC 61672-3:2013 17.3 and 17.4 and ANSI S1.4-2014 Part 3: 17.3 and 17.4

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
0 dB Gain	93.97	93.89	94.09	0.15	Pass
0 dB Gain, Linearity	28.04	27.29	28.69	0.16	Pass
20 dB Gain	94.01	93.89	94.09	0.15	Pass
20 dB Gain, Linearity	23.05	22.29	23.69	0.16	Pass
OBA High Range	93.99	93.20	94.80	0.15	Pass
OBA Normal Range	93.99	93.89	94.09	0.15	Pass

-- End of measurement results--

Broadband Noise Floor

Self-generated noise measured according to IEC 61672-3:2013 11.2 and ANSI S1.4-2014 Part 3: 11.2

Measurement	Test Result [dB]	Upper limit [dB]	Result
A-weight Noise Floor	6.29	9.00	Pass
C-weight Noise Floor	11.43	15.00	Pass
Z-weight Noise Floor	20.59	25.00	Pass

-- End of measurement results--

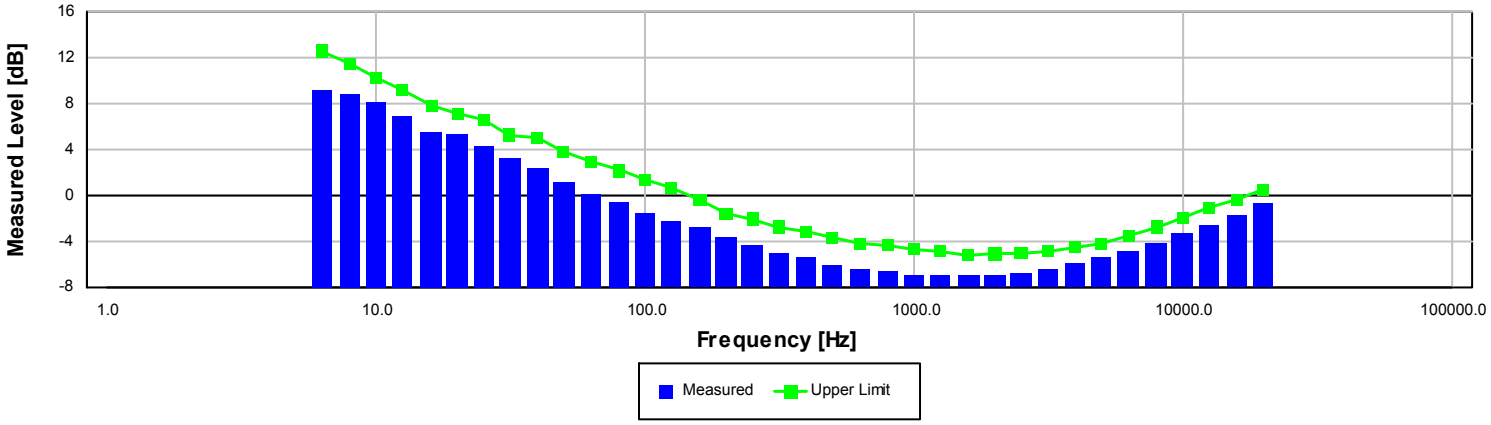
Total Harmonic Distortion

Measured using 1/3-Octave filters

Measurement	Test Result [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
10 Hz Signal	137.56	137.20	138.80	0.15	Pass
THD	-74.22		-60.00	1.30 ‡	Pass
THD+N	-73.45		-60.00	1.30 ‡	Pass

-- End of measurement results--

1/3-Octave Self-Generated Noise



The SLM is set to normal range and 20 dB gain.

Frequency [Hz]	Test Result [dB]	Upper limit [dB]	Result
6.30	9.30	12.60	Pass
8.00	8.91	11.50	Pass
10.00	8.27	10.20	Pass
12.50	6.93	9.20	Pass
16.00	5.60	7.90	Pass
20.00	5.40	7.20	Pass
25.00	4.43	6.60	Pass
31.50	3.25	5.30	Pass
40.00	2.38	5.00	Pass
50.00	1.20	3.80	Pass
63.00	0.13	3.00	Pass
80.00	-0.47	2.20	Pass
100.00	-1.49	1.40	Pass
125.00	-2.18	0.70	Pass
160.00	-2.77	-0.40	Pass
200.00	-3.61	-1.50	Pass
250.00	-4.39	-2.00	Pass
315.00	-4.98	-2.70	Pass
400.00	-5.42	-3.10	Pass
500.00	-6.04	-3.70	Pass
630.00	-6.36	-4.10	Pass
800.00	-6.57	-4.30	Pass
1,000.00	-6.87	-4.70	Pass
1,250.00	-6.98	-4.80	Pass
1,600.00	-7.03	-5.20	Pass
2,000.00	-6.95	-5.10	Pass
2,500.00	-6.71	-5.00	Pass
3,150.00	-6.39	-4.80	Pass
4,000.00	-5.94	-4.50	Pass
5,000.00	-5.45	-4.10	Pass
6,300.00	-4.81	-3.40	Pass
8,000.00	-4.09	-2.70	Pass
10,000.00	-3.34	-1.90	Pass
12,500.00	-2.55	-1.10	Pass
16,000.00	-1.69	-0.30	Pass
20,000.00	-0.76	0.60	Pass

-- End of measurement results--

-- End of Report--

Signatory: Ron Harris

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1681 West 820 North
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Calibration Certificate

Certificate Number 2021000426
Customer:
Epsilon Associates Inc
Suite 250
3 Mill and Main Place
Maynard, MA 01754, United States

Model Number	PRM831	***Procedure Number***	D0001.8383	
Serial Number	016477	***Technician***	Ron Harris	
Test Results	**Pass**	***Calibration Date***	13 Jan 2021	
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	13 Jan 2022	
		Temperature	23.76 °C	± 0.01 °C
Description	Larson Davis 1/2" Preamplifier for Model 831 Type 1	***Humidity***	51.4 %RH	± 0.5 %RH
		Static Pressure	86.74 kPa	± 0.03 kPa

Evaluation Method Tested electrically using a 12.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 µPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

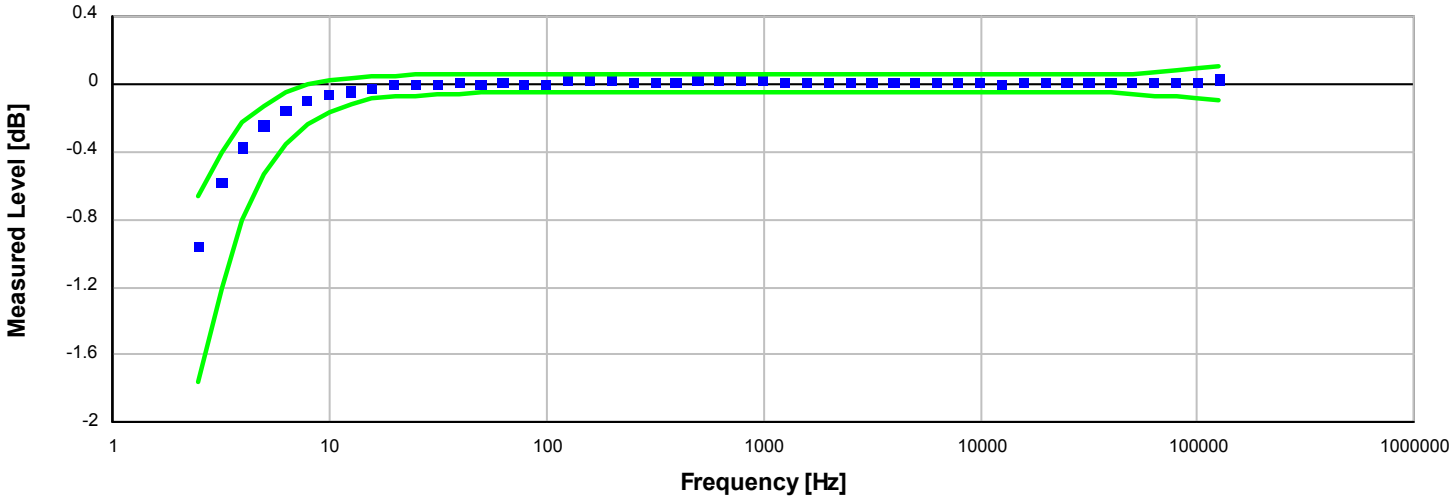
This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis Model 2900 Real Time Analyzer	03/06/2020	03/06/2021	003003
Hart Scientific 2626-S Humidity/Temperature Sensor	05/12/2020	05/12/2021	006943
Agilent 34401A DMM	07/07/2020	07/07/2021	007165
SRS DS360 Ultra Low Distortion Generator	08/19/2020	08/19/2021	007167

Frequency Response



Frequency response electrically tested at 120.0 dB re 1 µV

Frequency [Hz]	Test Result [dB re 1 kHz]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
2.50	-0.96	-1.76	-0.66	0.12	Pass
3.20	-0.59	-1.20	-0.40	0.12	Pass
4.00	-0.38	-0.81	-0.23	0.12	Pass
5.00	-0.25	-0.53	-0.13	0.12	Pass
6.30	-0.16	-0.36	-0.05	0.12	Pass
7.90	-0.10	-0.24	-0.01	0.12	Pass
10.00	-0.07	-0.17	0.03	0.12	Pass
12.60	-0.05	-0.13	0.04	0.12	Pass
15.80	-0.03	-0.09	0.04	0.12	Pass
20.00	-0.01	-0.08	0.05	0.12	Pass
25.10	-0.01	-0.07	0.05	0.12	Pass
31.60	-0.01	-0.07	0.05	0.12	Pass
39.80	0.00	-0.06	0.05	0.12	Pass
50.10	-0.01	-0.06	0.05	0.12	Pass
63.10	0.00	-0.05	0.05	0.12	Pass
79.40	-0.01	-0.05	0.05	0.12	Pass
100.00	-0.01	-0.05	0.05	0.12	Pass
125.90	0.01	-0.05	0.05	0.12	Pass
158.50	0.01	-0.05	0.05	0.12	Pass
199.50	0.01	-0.05	0.05	0.12	Pass
251.20	0.00	-0.05	0.05	0.12	Pass
316.20	0.00	-0.05	0.05	0.12	Pass
398.10	0.00	-0.05	0.05	0.12	Pass
501.20	0.01	-0.05	0.05	0.12	Pass
631.00	0.01	-0.05	0.05	0.12	Pass
794.30	0.01	-0.05	0.05	0.12	Pass
1,000.00	0.01	-0.05	0.05	0.12	Pass
1,258.90	0.00	-0.05	0.05	0.12	Pass
1,584.90	0.00	-0.05	0.05	0.12	Pass
1,995.30	0.00	-0.05	0.05	0.12	Pass
2,511.90	0.00	-0.05	0.05	0.12	Pass
3,162.30	0.00	-0.05	0.05	0.12	Pass

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Frequency [Hz]	Test Result [dB re 1 kHz]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
3,981.10	0.00	-0.05	0.05	0.12	Pass
5,011.90	0.00	-0.05	0.05	0.12	Pass
6,309.60	0.00	-0.05	0.05	0.12	Pass
7,943.30	0.00	-0.05	0.05	0.12	Pass
10,000.00	0.00	-0.05	0.05	0.12	Pass
12,589.30	-0.01	-0.05	0.05	0.12	Pass
15,848.90	0.00	-0.05	0.05	0.12	Pass
19,952.60	0.00	-0.05	0.05	0.12	Pass
25,118.90	0.00	-0.05	0.05	0.12	Pass
31,622.80	0.00	-0.05	0.05	0.12	Pass
39,810.70	0.00	-0.05	0.05	0.12	Pass
50,118.70	0.00	-0.06	0.06	0.12	Pass
63,095.70	0.00	-0.07	0.07	0.12	Pass
79,432.80	0.00	-0.08	0.08	0.12	Pass
100,000.00	0.00	-0.09	0.09	0.12	Pass
125,892.50	0.02	-0.10	0.10	0.26	Pass

Gain Measurement

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
Output Gain @ 1 kHz	-0.11	-0.45	-0.03	0.12	Pass

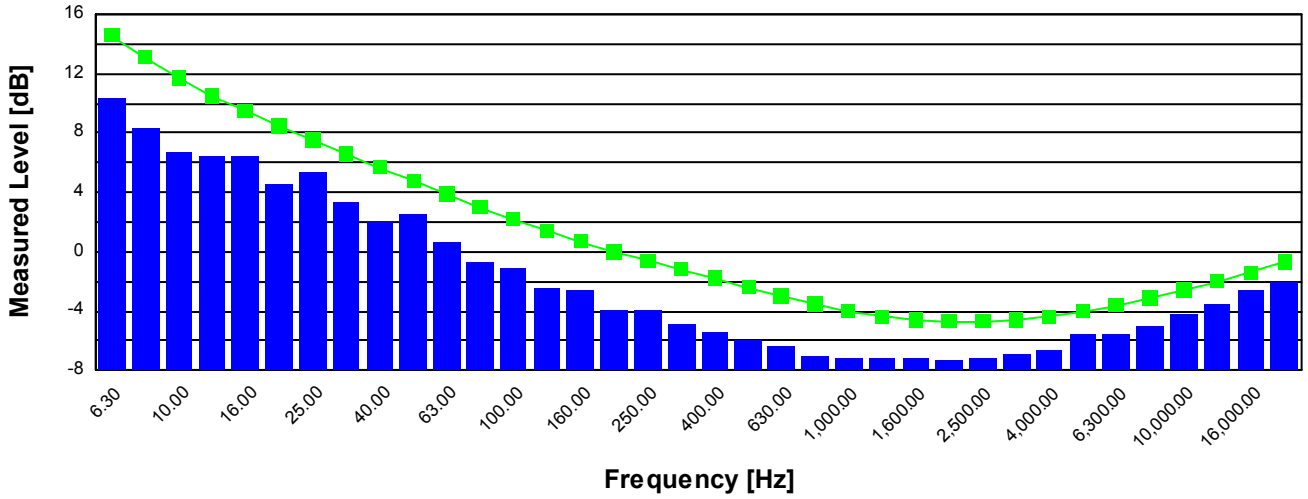
-- End of measurement results--

DC Bias Measurement

Measurement	Test Result [V]	Lower limit [V]	Upper limit [V]	Expanded Uncertainty [V]	Result
DC Voltage	17.98	15.50	19.50	0.04	Pass

-- End of measurement results--

1/3-Octave Self-Generated Noise



Frequency [Hz]	Test Result [dB re 1 µV]	Upper limit [dB re 1 µV]	Result
6.30	10.30	14.60	Pass
8.00	8.40	13.10	Pass
10.00	6.70	11.70	Pass
12.50	6.50	10.50	Pass
16.00	6.50	9.50	Pass
20.00	4.60	8.50	Pass
25.00	5.40	7.50	Pass
31.50	3.40	6.60	Pass
40.00	2.00	5.70	Pass
50.00	2.60	4.80	Pass
63.00	0.60	3.90	Pass
80.00	-0.70	3.00	Pass
100.00	-1.10	2.20	Pass
125.00	-2.40	1.40	Pass
160.00	-2.60	0.70	Pass
200.00	-3.90	0.00	Pass
250.00	-3.90	-0.60	Pass
315.00	-4.90	-1.20	Pass
400.00	-5.40	-1.80	Pass
500.00	-6.00	-2.40	Pass
630.00	-6.30	-3.00	Pass
800.00	-7.00	-3.50	Pass
1,000.00	-7.10	-4.00	Pass
1,250.00	-7.20	-4.40	Pass
1,600.00	-7.20	-4.60	Pass
2,000.00	-7.30	-4.70	Pass
2,500.00	-7.20	-4.70	Pass
3,150.00	-6.90	-4.60	Pass
4,000.00	-6.60	-4.40	Pass
5,000.00	-5.60	-4.00	Pass
6,300.00	-5.60	-3.60	Pass
8,000.00	-5.00	-3.10	Pass
10,000.00	-4.20	-2.60	Pass
12,500.00	-3.50	-2.00	Pass
16,000.00	-2.60	-1.40	Pass
20,000.00	-2.00	-0.70	Pass

-- End of measurement results--

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Self-generated Noise

Bandwidth	Test Result [µV]	Test Result [dB re 1 µV]	Upper limit [dB re 1 µV]	Result
A-weighted (1 Hz - 20 kHz)	1.95	5.80	8.00	Pass
Broadband (1 Hz - 20 kHz)	4.37	12.80	15.50	Pass

-- End of measurement results--

Signatory: Ron Harris

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LARSON DAVIS A PCB PIEZOTRONICS DIV.

Calibration Certificate

Certificate Number 2021000589

Customer:
Epsilon Associates Inc
Suite 250
3 Mill and Main Place
Maynard, MA 01754, United States

Model Number	377C20		***Procedure Number***	D0001.8387	
Serial Number	318147		***Technician***	Abraham Ortega	
Test Results	**Pass**		***Calibration Date***	18 Jan 2021	
Initial Condition	As Manufactured		***Calibration Due***	18 Jan 2022	
Description	1/2 inch Microphone - RI - 0V		***Temperature***	23.9 °C	± 0.01 °C
			Humidity	31.4 %RH	± 0.5 %RH
			Static Pressure	101.62 kPa	± 0.03 kPa

Evaluation Method Tested electrically using an electrostatic actuator.

Compliance Standards Compliant to Manufacturer Specifications.

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis Model 2900 Real Time Analyzer	07/01/2020	07/01/2021	001230
Microphone Calibration System	08/25/2020	08/25/2021	001233
1/2" Preamplifier	12/18/2020	12/18/2021	001274
Agilent 34401A DMM	12/08/2020	12/08/2021	001329
Larson Davis CAL250 Acoustic Calibrator	09/01/2020	09/01/2021	003030
1/2" Preamplifier	04/13/2020	04/13/2021	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	07/09/2020	07/09/2021	006507
1/2 inch Microphone - RI - 200V	06/04/2020	06/04/2021	006510
1/2 inch Microphone - RI - 200V	07/31/2020	07/31/2021	006519
Larson Davis 1/2" Preamplifier 7-pin LEMO	07/09/2020	07/09/2021	006530
Larson Davis 1/2" Preamplifier 7-pin LEMO	07/24/2020	07/24/2021	006531

Sensitivity

Measurement	Test Result [mV/Pa]	Lower limit [mV/Pa]	Upper limit [mV/Pa]	Expanded Uncertainty [mV/Pa]	Result
Open Circuit Sensitivity	44.25	42.17	59.57	1.00	Pass

-- End of measurement results--

Capacitance

Measurement	Test Result [pF]				
Capacitance	14.00			‡	

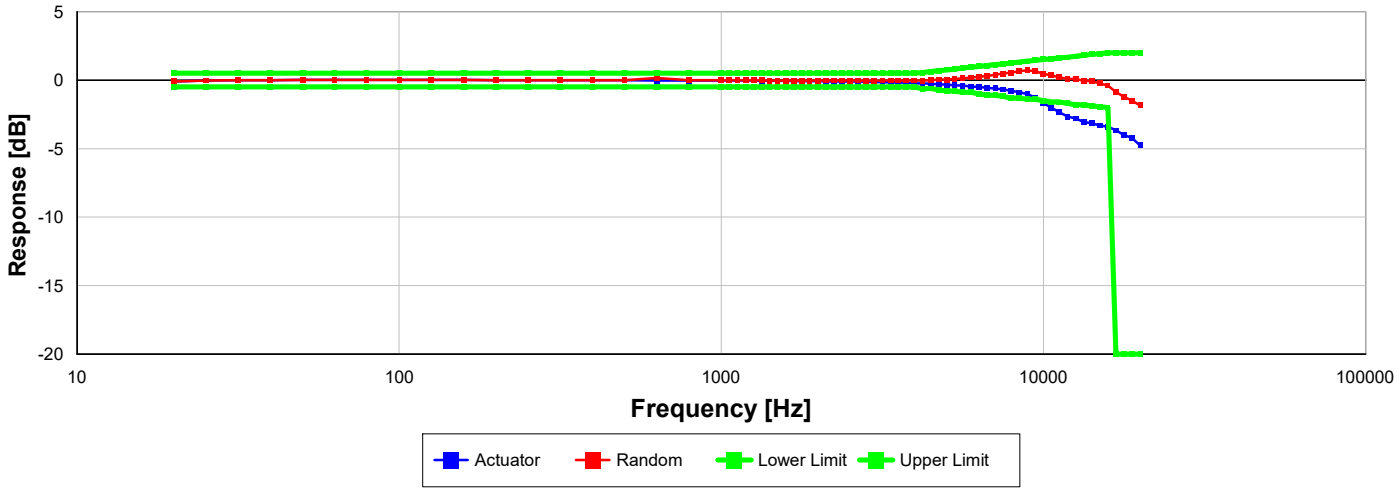
-- End of measurement results--

Lower Limiting Frequency

Measurement	Test Result [Hz]	Lower limit [Hz]	Upper limit [Hz]		Result
-3 dB Frequency	2.02	1.00	2.40		Pass ‡

-- End of measurement results--

Frequency Response



Data is normalized for 0 dB @ 251.19 Hz.

Frequency [Hz]	Actuator [dB]	Random [dB]	Lower limit [dB]	Upper limit [dB]	Result
19.95	-0.09	-0.09	-0.50	0.50	Pass ‡
25.12	-0.04	-0.04	-0.50	0.50	Pass ‡
31.62	-0.01	-0.01	-0.50	0.50	Pass ‡
39.81	0.00	0.00	-0.50	0.50	Pass ‡
50.12	0.01	0.01	-0.50	0.50	Pass ‡
63.10	0.01	0.01	-0.50	0.50	Pass ‡
79.43	0.01	0.01	-0.50	0.50	Pass ‡
100.00	0.01	0.01	-0.50	0.50	Pass ‡
125.89	0.01	0.01	-0.50	0.50	Pass ‡
158.49	0.01	0.01	-0.50	0.50	Pass ‡
199.53	0.00	0.00	-0.50	0.50	Pass ‡

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Frequency [Hz]	Actuator [dB]	Random [dB]	Lower limit [dB]	Upper limit [dB]	Result
251.19	0.00	0.00	-0.50	0.50	Pass ‡
316.23	0.00	0.00	-0.50	0.50	Pass ‡
398.11	-0.01	0.00	-0.50	0.50	Pass ‡
501.19	-0.01	0.00	-0.50	0.50	Pass ‡
630.96	-0.02	0.16	-0.50	0.50	Pass ‡
794.33	-0.03	0.00	-0.50	0.50	Pass ‡
1,000.00	-0.04	-0.01	-0.50	0.50	Pass ‡
1,059.25	-0.04	-0.01	-0.50	0.50	Pass ‡
1,122.02	-0.04	-0.01	-0.50	0.50	Pass ‡
1,188.50	-0.04	-0.01	-0.50	0.50	Pass ‡
1,258.93	-0.04	-0.01	-0.50	0.50	Pass ‡
1,333.52	-0.05	-0.01	-0.50	0.50	Pass ‡
1,412.54	-0.06	-0.02	-0.50	0.50	Pass ‡
1,496.24	-0.06	-0.02	-0.50	0.50	Pass ‡
1,584.89	-0.06	-0.02	-0.50	0.50	Pass ‡
1,678.80	-0.07	-0.03	-0.50	0.50	Pass ‡
1,778.28	-0.07	-0.03	-0.50	0.50	Pass ‡
1,883.65	-0.08	-0.03	-0.50	0.50	Pass ‡
1,995.26	-0.08	-0.03	-0.50	0.50	Pass ‡
2,113.49	-0.09	-0.04	-0.50	0.50	Pass ‡
2,238.72	-0.10	-0.04	-0.50	0.50	Pass ‡
2,371.37	-0.10	-0.04	-0.50	0.50	Pass ‡
2,511.89	-0.10	-0.03	-0.50	0.50	Pass ‡
2,660.73	-0.11	-0.04	-0.50	0.50	Pass ‡
2,818.38	-0.13	-0.05	-0.50	0.50	Pass ‡
2,985.38	-0.14	-0.05	-0.50	0.50	Pass ‡
3,162.28	-0.15	-0.04	-0.50	0.50	Pass ‡
3,349.65	-0.16	-0.04	-0.50	0.50	Pass ‡
3,548.13	-0.18	-0.04	-0.50	0.50	Pass ‡
3,758.37	-0.20	-0.04	-0.50	0.50	Pass ‡
3,981.07	-0.23	-0.04	-0.50	0.50	Pass ‡
4,216.97	-0.25	-0.02	-0.63	0.56	Pass ‡
4,466.84	-0.27	0.00	-0.60	0.63	Pass ‡
4,731.51	-0.30	0.03	-0.70	0.69	Pass ‡
5,011.87	-0.34	0.05	-0.80	0.75	Pass ‡
5,308.84	-0.37	0.09	-0.80	0.81	Pass ‡
5,623.41	-0.40	0.14	-0.90	0.88	Pass ‡
5,956.62	-0.46	0.17	-0.90	0.94	Pass ‡
6,309.57	-0.50	0.24	-1.00	1.00	Pass ‡
6,683.44	-0.56	0.30	-1.10	1.06	Pass ‡
7,079.46	-0.61	0.39	-1.10	1.13	Pass ‡
7,498.94	-0.67	0.49	-1.20	1.19	Pass ‡
7,943.28	-0.77	0.56	-1.30	1.25	Pass ‡
8,413.95	-0.88	0.64	-1.30	1.31	Pass ‡
8,912.51	-1.01	0.71	-1.40	1.38	Pass ‡
9,440.61	-1.28	0.64	-1.40	1.43	Pass ‡
10,000.00	-1.69	0.45	-1.50	1.50	Pass ‡
10,592.54	-2.00	0.35	-1.60	1.56	Pass ‡
11,220.19	-2.35	0.21	-1.60	1.63	Pass ‡
11,885.02	-2.65	0.09	-1.70	1.68	Pass ‡
12,589.25	-2.81	0.09	-1.80	1.75	Pass ‡
13,335.21	-3.06	-0.05	-1.80	1.81	Pass ‡
14,125.38	-3.15	-0.08	-1.90	1.87	Pass ‡

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Frequency [Hz]	Actuator [dB]	Random [dB]	Lower limit [dB]	Upper limit [dB]	Result
14,962.36	-3.30	-0.23	-1.93	1.93	Pass ‡
15,848.93	-3.40	-0.39	-2.00	2.00	Pass ‡
16,788.04	-3.65	-0.87		2.00	Pass ‡
17,782.80	-4.00	-1.22		2.00	Pass ‡
18,836.49	-4.22	-1.49		2.00	Pass ‡
19,952.62	-4.75	-1.85		2.00	Pass ‡

-- End of measurement results--

Signatory: Abraham Ortega

LARSON DAVIS - A PCB PIEZOTRONICS DIV.
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Provo, UT 84601, United States
716-684-0001

Calibration Certificate

Certificate Number 2021000599

Customer:

Epsilon Associates Inc
Suite 250
3 Mill and Main Place
Maynard, MA 01754, United States

Model Number	831C	***Procedure Number***	D0001.8384		
Serial Number	11389	***Technician***	Ron Harris		
Test Results	**Pass**	***Calibration Date***	19 Jan 2021		
Initial Condition	As Manufactured	***Calibration Due***	19 Jan 2022		
Description	Larson Davis Model 831C Class 1 Sound Level Meter Firmware Revision: 04.5.1R0	***Temperature***	23.33	°C	± 0.25 °C
		Humidity	52.4	%RH	± 2.0 %RH
		Static Pressure	86.58	kPa	± 0.13 kPa

Evaluation Method

Tested with:

Larson Davis PRM831. S/N 023825
PCB 377C20. S/N 318147
Larson Davis CAL200. S/N 9079
Larson Davis CAL291. S/N 0108

Data reported in dB re 20 µPa.

Compliance Standards

Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8378:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61260:2014 Class 1	ANSI S1.11-2014 Class 1
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Correction data from Larson Davis SoundAdvisor Model 831C Reference Manual, I831C.01 Rev B, 2017-03-31

For 1/4" microphones, the Larson Davis ADP024 1/4" to 1/2" adaptor is used with the calibrators and the Larson Davis ADP043 1/4" to

1/2" adaptor is used with the preamplifier.

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 µPa; Reference Range: 0 dB gain

Periodic tests were performed in accordance with precedures from IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part3.

No Pattern approval for IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 available.

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3, 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 / ANSI/ASA S1.4-2014/Part 1 because (a) evidence was not publicly available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 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 / ANSI/ASA S1.4-2014/Part 3 cover only a limited subset of the specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis CAL291 Residual Intensity Calibrator	2020-09-18	2021-09-18	001250
Hart Scientific 2626-S Humidity/Temperature Sensor	2020-05-12	2021-05-12	006943
Larson Davis CAL200 Acoustic Calibrator	2020-07-21	2021-07-21	007027
Larson Davis Model 831	2020-03-02	2021-03-02	007182
PCB 377A13 1/2 inch Prepolarized Pressure Microphone	2020-03-05	2021-03-05	007185
SRS DS360 Ultra Low Distortion Generator	2020-04-14	2021-04-14	007635
Larson Davis 1/2" Preamplifier for Model 831 Type 1	2020-10-06	2021-10-06	PCB0004783

Acoustic Calibration

Measured according to IEC 61672-3:2013 10 and ANSI S1.4-2014 Part 3: 10

Measurement	Test Result [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
1000 Hz	114.01	113.80	114.20	0.14	Pass

Loaded Circuit Sensitivity

Measurement	Test Result [dB re 1 V / Pa]	Lower Limit [dB re 1 V / Pa]	Upper Limit [dB re 1 V / Pa]	Expanded Uncertainty [dB]	Result
1000 Hz	-27.31	-27.82	-24.69	0.14	Pass

-- End of measurement results--

Acoustic Signal Tests, C-weighting

Measured according to IEC 61672-3:2013 12 and ANSI S1.4-2014 Part 3: 12 using a comparison coupler with Unit Under Test (UUT) and reference SLM using slow time-weighted sound level for compliance to IEC 61672-1:2013 5.5; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Expected [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
125	-0.13	-0.20	-1.20	0.80	0.23	Pass
1000	0.03	0.00	-0.70	0.70	0.23	Pass
8000	-3.16	-3.00	-5.50	-1.50	0.32	Pass

-- End of measurement results--

Self-generated Noise

Measured according to IEC 61672-3:2013 11.1 and ANSI S1.4-2014 Part 3: 11.1

Measurement	Test Result [dB]
A-weighted, 20 dB gain	40.49

-- End of measurement results--

-- End of Report--

Signatory: Ron Harris

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716-684-0001

ACCREDITED Cert. #3622.01

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Calibration Certificate

Certificate Number 2021000444

Customer:

Epsilon Associates Inc
Suite 250
3 Mill and Main Place
Maynard, MA 01754, United States

Model Number	831C	***Procedure Number***	D0001.8378		
Serial Number	11389	***Technician***	Ron Harris		
Test Results	**Pass**	***Calibration Date***	14 Jan 2021		
Initial Condition	As Manufactured	***Calibration Due***	14 Jan 2022		
Description	Larson Davis Model 831C Class 1 Sound Level Meter Firmware Revision: 04.5.1R0	***Temperature***	23.44	°C	± 0.25 °C
		Humidity	51.8	%RH	± 2.0 %RH
		Static Pressure	87.47	kPa	± 0.13 kPa

Evaluation Method Tested electrically using Larson Davis PRM831 S/N 023825 and a 12.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 µPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8384:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1
IEC 61260:2014 Class 1	ANSI S1.11-2014 Class 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017. **Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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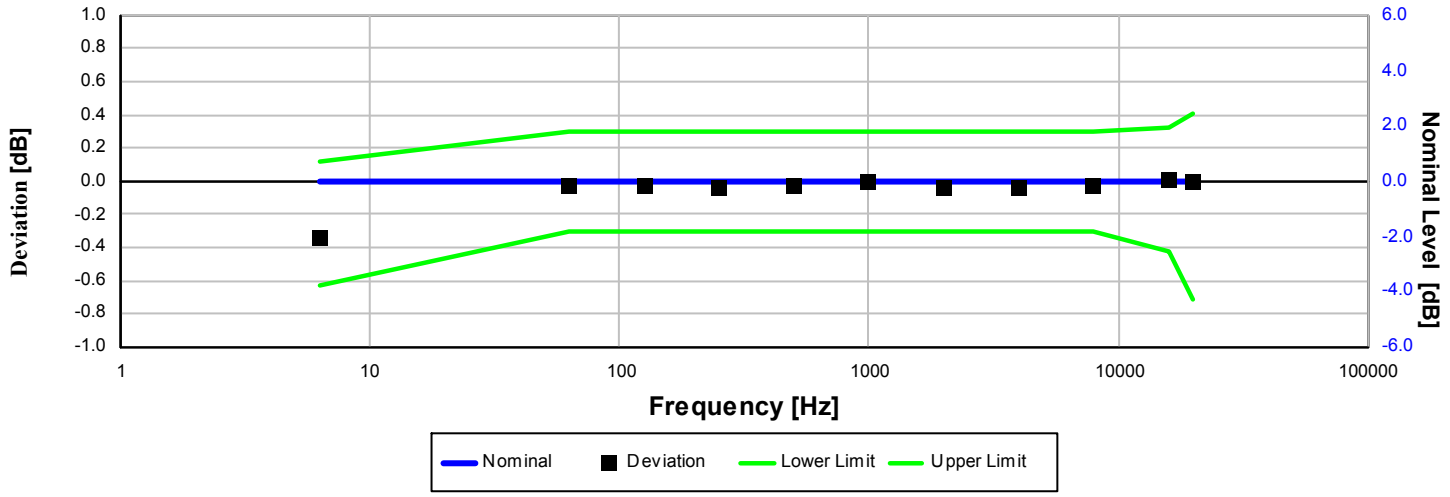
Correction data from Larson Davis SoundAdvisor Model 831C Reference Manual, I831C.01 Rev M, 2019-09-10

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 µPa; Reference Range: 0 dB gain

Standards Used			
Description	**Cal Date**	**Cal Due**	**Cal Standard**
Hart Scientific 2626-S Humidity/Temperature Sensor	2020-05-12	2021-05-12	006943
SRS DS360 Ultra Low Distortion Generator	2021-01-05	2022-01-05	007118

Z-weight Filter Response

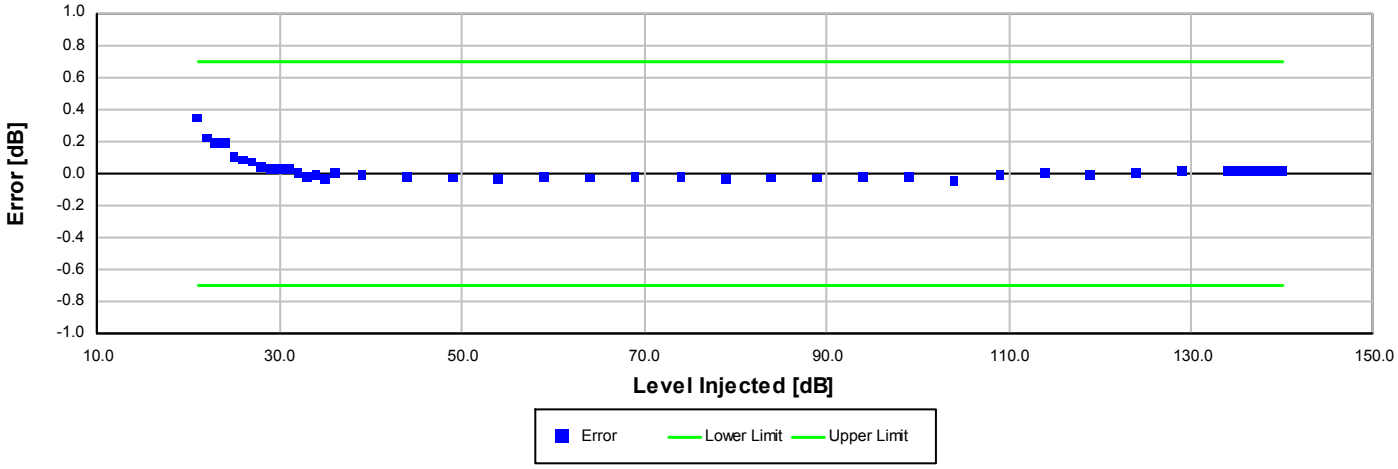


Electrical signal test of frequency weighting performed according to IEC 61672-3:2013 13 and ANSI S1.4-2014 Part 3: 13 for compliance to IEC 61672-1:2013 5.5; IEC 60651:2001 6.1 and 9.2.2; IEC 60804:2000 5; ANSI S1.4:1983 (R2006) 5.1 and 8.2.1; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Deviation [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
6.31	-0.34	-0.34	-0.63	0.12	0.15	Pass
63.10	-0.02	-0.02	-0.30	0.30	0.15	Pass
125.89	-0.03	-0.03	-0.30	0.30	0.15	Pass
251.19	-0.04	-0.04	-0.30	0.30	0.15	Pass
501.19	-0.02	-0.02	-0.30	0.30	0.15	Pass
1,000.00	0.00	0.00	-0.30	0.30	0.15	Pass
1,995.26	-0.04	-0.04	-0.30	0.30	0.15	Pass
3,981.07	-0.03	-0.03	-0.30	0.30	0.15	Pass
7,943.28	-0.02	-0.02	-0.30	0.30	0.15	Pass
15,848.93	0.01	0.01	-0.42	0.32	0.15	Pass
19,952.62	0.00	0.00	-0.71	0.41	0.15	Pass

-- End of measurement results--

A-weighted 0 dB Gain Broadband Log Linearity: 8,000.00 Hz



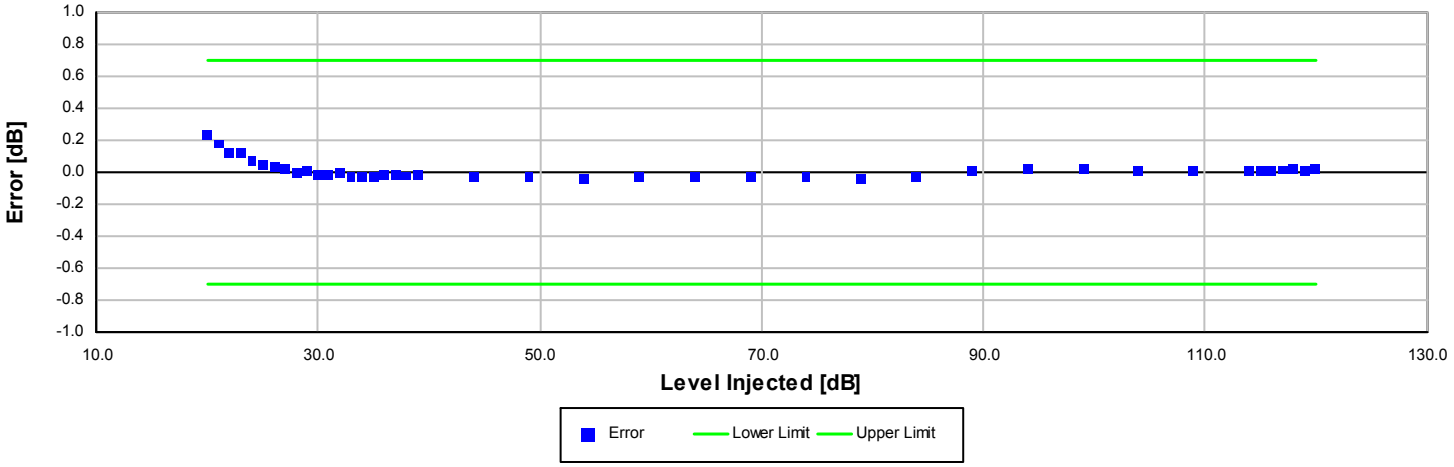
Broadband level linearity performed according to IEC 61672-3:2013 16 and ANSI S1.4-2014 Part 3: 16 for compliance to IEC 61672-1:2013 5.6, IEC 60804:2000 6.2, IEC 61252:2002 8, ANSI S1.4 (R2006) 6.9, ANSI S1.4-2014 Part 1: 5.6, ANSI S1.43 (R2007) 6.2

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
21.00	0.35	-0.70	0.70	0.16	Pass
22.00	0.22	-0.70	0.70	0.16	Pass
23.00	0.19	-0.70	0.70	0.16	Pass
24.00	0.19	-0.70	0.70	0.16	Pass
25.00	0.11	-0.70	0.70	0.16	Pass
26.00	0.09	-0.70	0.70	0.16	Pass
27.00	0.07	-0.70	0.70	0.16	Pass
28.00	0.04	-0.70	0.70	0.16	Pass
29.00	0.03	-0.70	0.70	0.18	Pass
30.00	0.03	-0.70	0.70	0.17	Pass
31.00	0.02	-0.70	0.70	0.17	Pass
32.00	0.00	-0.70	0.70	0.17	Pass
33.00	-0.02	-0.70	0.70	0.16	Pass
34.00	-0.01	-0.70	0.70	0.16	Pass
35.00	-0.03	-0.70	0.70	0.16	Pass
36.00	0.00	-0.70	0.70	0.16	Pass
39.00	0.00	-0.70	0.70	0.16	Pass
44.00	-0.02	-0.70	0.70	0.16	Pass
49.00	-0.03	-0.70	0.70	0.16	Pass
54.00	-0.03	-0.70	0.70	0.16	Pass
59.00	-0.02	-0.70	0.70	0.16	Pass
64.00	-0.03	-0.70	0.70	0.16	Pass
69.00	-0.02	-0.70	0.70	0.16	Pass
74.00	-0.02	-0.70	0.70	0.16	Pass
79.00	-0.03	-0.70	0.70	0.16	Pass
84.00	-0.03	-0.70	0.70	0.16	Pass
89.00	-0.03	-0.70	0.70	0.16	Pass
94.00	-0.02	-0.70	0.70	0.16	Pass
99.00	-0.02	-0.70	0.70	0.16	Pass
104.00	-0.04	-0.70	0.70	0.15	Pass
109.00	-0.01	-0.70	0.70	0.15	Pass
114.00	0.00	-0.70	0.70	0.15	Pass
119.00	0.00	-0.70	0.70	0.15	Pass
124.00	0.01	-0.70	0.70	0.15	Pass
129.00	0.01	-0.70	0.70	0.15	Pass
134.00	0.02	-0.70	0.70	0.15	Pass

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
135.00	0.02	-0.70	0.70	0.15	Pass
136.00	0.02	-0.70	0.70	0.15	Pass
137.00	0.02	-0.70	0.70	0.15	Pass
138.00	0.02	-0.70	0.70	0.15	Pass
139.00	0.02	-0.70	0.70	0.15	Pass
140.00	0.02	-0.70	0.70	0.15	Pass

-- End of measurement results--

A-weighted 20 dB Gain Broadband Log Linearity: 8,000.00 Hz



Broadband level linearity performed according to IEC 61672-3:2013 16 and ANSI S1.4-2014 Part 3: 16 for compliance to IEC 61672-1:2013 5.6, IEC 60804:2000 6.2, IEC 61252:2002 8, ANSI S1.4 (R2006) 6.9, ANSI S1.4-2014 Part 1: 5.6, ANSI S1.43 (R2007) 6.2

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
20.00	0.23	-0.70	0.70	0.17	Pass
21.00	0.17	-0.70	0.70	0.16	Pass
22.00	0.11	-0.70	0.70	0.16	Pass
23.00	0.11	-0.70	0.70	0.16	Pass
24.00	0.07	-0.70	0.70	0.16	Pass
25.00	0.04	-0.70	0.70	0.16	Pass
26.00	0.02	-0.70	0.70	0.19	Pass
27.00	0.01	-0.70	0.70	0.18	Pass
28.00	0.00	-0.70	0.70	0.19	Pass
29.00	0.00	-0.70	0.70	0.18	Pass
30.00	-0.02	-0.70	0.70	0.17	Pass
31.00	-0.02	-0.70	0.70	0.17	Pass
32.00	-0.01	-0.70	0.70	0.17	Pass
33.00	-0.04	-0.70	0.70	0.16	Pass
34.00	-0.04	-0.70	0.70	0.16	Pass
35.00	-0.04	-0.70	0.70	0.16	Pass
36.00	-0.02	-0.70	0.70	0.16	Pass
37.00	-0.03	-0.70	0.70	0.16	Pass
38.00	-0.03	-0.70	0.70	0.16	Pass
39.00	-0.02	-0.70	0.70	0.16	Pass
44.00	-0.04	-0.70	0.70	0.16	Pass
49.00	-0.04	-0.70	0.70	0.16	Pass
54.00	-0.05	-0.70	0.70	0.16	Pass
59.00	-0.03	-0.70	0.70	0.16	Pass
64.00	-0.04	-0.70	0.70	0.16	Pass
69.00	-0.04	-0.70	0.70	0.16	Pass
74.00	-0.03	-0.70	0.70	0.16	Pass
79.00	-0.05	-0.70	0.70	0.16	Pass
84.00	-0.04	-0.70	0.70	0.16	Pass
89.00	0.00	-0.70	0.70	0.16	Pass
94.00	0.01	-0.70	0.70	0.16	Pass
99.00	0.02	-0.70	0.70	0.16	Pass
104.00	0.00	-0.70	0.70	0.15	Pass
109.00	0.00	-0.70	0.70	0.15	Pass
114.00	0.00	-0.70	0.70	0.15	Pass
115.00	0.01	-0.70	0.70	0.15	Pass

Level [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
116.00	0.00	-0.70	0.70	0.15	Pass
117.00	0.01	-0.70	0.70	0.15	Pass
118.00	0.01	-0.70	0.70	0.15	Pass
119.00	0.00	-0.70	0.70	0.15	Pass
120.00	0.01	-0.70	0.70	0.15	Pass

-- End of measurement results--

Peak Rise Time

Peak rise time performed according to IEC 60651:2001 9.4.4 and ANSI S1.4:1983 (R2006) 8.4.4

Amplitude [dB]	Duration [µs]		Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
139.00	40	Negative Pulse	135.93	134.58	136.58	0.15	Pass
		Positive Pulse	135.94	134.59	136.59	0.15	Pass
	30	Negative Pulse	135.10	134.58	136.58	0.15	Pass
		Positive Pulse	135.09	134.59	136.59	0.15	Pass

-- End of measurement results--

Positive Pulse Crest Factor

200 µs pulse tests at 2.0, 12.0, 22.0, 32.0 dB below Overload Limit

Crest Factor measured according to IEC 60651:2001 9.4.2 and ANSI S1.4:1983 (R2006) 8.4.2

Amplitude [dB]	Crest Factor	Test Result [dB]	Limits [dB]	Expanded Uncertainty [dB]	Result
138.00	3	OVLD	± 0.50	0.15 ‡	Pass
	5	OVLD	± 1.00	0.15 ‡	Pass
	10	OVLD	± 1.50	0.15 ‡	Pass
128.00	3	-0.12	± 0.50	0.15 ‡	Pass
	5	-0.12	± 1.00	0.15 ‡	Pass
	10	OVLD	± 1.50	0.15 ‡	Pass
118.00	3	-0.13	± 0.50	0.15 ‡	Pass
	5	-0.14	± 1.00	0.15 ‡	Pass
	10	-0.26	± 1.50	0.15 ‡	Pass
108.00	3	-0.14	± 0.50	0.15 ‡	Pass
	5	-0.13	± 1.00	0.15 ‡	Pass
	10	-0.24	± 1.50	0.15 ‡	Pass

-- End of measurement results--

Negative Pulse Crest Factor

200 µs pulse tests at 2.0, 12.0, 22.0, 32.0 dB below Overload Limit

Crest Factor measured according to IEC 60651:2001 9.4.2 and ANSI S1.4:1983 (R2006) 8.4.2

Amplitude [dB]	Crest Factor	Test Result [dB]	Limits [dB]	Expanded Uncertainty [dB]	Result
138.00	3	OVLD	± 0.50	0.15 ‡	Pass
	5	OVLD	± 1.00	0.15 ‡	Pass
	10	OVLD	± 1.50	0.15 ‡	Pass
128.00	3	-0.12	± 0.50	0.15 ‡	Pass
	5	-0.12	± 1.00	0.15 ‡	Pass
	10	OVLD	± 1.50	0.15 ‡	Pass
118.00	3	-0.14	± 0.50	0.15 ‡	Pass
	5	-0.15	± 1.00	0.15 ‡	Pass
	10	-0.10	± 1.50	0.15 ‡	Pass
108.00	3	-0.15	± 0.50	0.15 ‡	Pass
	5	-0.12	± 1.00	0.15 ‡	Pass
	10	-0.08	± 1.50	0.16 ‡	Pass

-- End of measurement results--

Gain

Gain measured according to IEC 61672-3:2013 17.3 and 17.4 and ANSI S1.4-2014 Part 3: 17.3 and 17.4

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
0 dB Gain	94.01	93.92	94.12	0.15	Pass
0 dB Gain, Linearity	28.09	27.32	28.72	0.16	Pass
20 dB Gain	94.04	93.92	94.12	0.15	Pass
20 dB Gain, Linearity	23.10	22.32	23.72	0.16	Pass
OBA High Range	94.02	93.20	94.80	0.15	Pass
OBA Normal Range	94.02	93.92	94.12	0.15	Pass

-- End of measurement results--

Broadband Noise Floor

Self-generated noise measured according to IEC 61672-3:2013 11.2 and ANSI S1.4-2014 Part 3: 11.2

Measurement	Test Result [dB]	Upper limit [dB]	Result
A-weight Noise Floor	6.47	9.00	Pass
C-weight Noise Floor	12.04	15.00	Pass
Z-weight Noise Floor	22.12	25.00	Pass

-- End of measurement results--

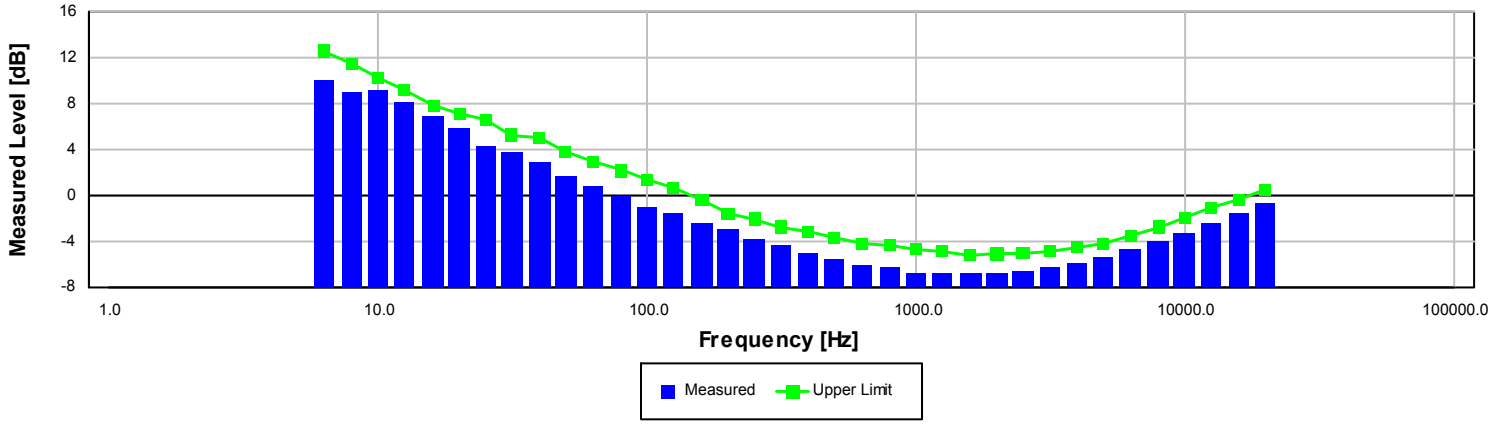
Total Harmonic Distortion

Measured using 1/3-Octave filters

Measurement	Test Result [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
10 Hz Signal	137.50	137.20	138.80	0.15	Pass
THD	-76.58		-60.00	1.30 ‡	Pass
THD+N	-75.56		-60.00	1.30 ‡	Pass

-- End of measurement results--

1/3-Octave Self-Generated Noise



The SLM is set to normal range and 20 dB gain.

Frequency [Hz]	Test Result [dB]	Upper limit [dB]	Result
6.30	10.07	12.60	Pass
8.00	9.11	11.50	Pass
10.00	9.31	10.20	Pass
12.50	8.20	9.20	Pass
16.00	6.98	7.90	Pass
20.00	5.90	7.20	Pass
25.00	4.36	6.60	Pass
31.50	3.78	5.30	Pass
40.00	2.91	5.00	Pass
50.00	1.72	3.80	Pass
63.00	0.95	3.00	Pass
80.00	0.04	2.20	Pass
100.00	-0.99	1.40	Pass
125.00	-1.59	0.70	Pass
160.00	-2.36	-0.40	Pass
200.00	-2.96	-1.50	Pass
250.00	-3.84	-2.00	Pass
315.00	-4.39	-2.70	Pass
400.00	-5.04	-3.10	Pass
500.00	-5.55	-3.70	Pass
630.00	-6.04	-4.10	Pass
800.00	-6.22	-4.30	Pass
1,000.00	-6.73	-4.70	Pass
1,250.00	-6.85	-4.80	Pass
1,600.00	-6.85	-5.20	Pass
2,000.00	-6.80	-5.10	Pass
2,500.00	-6.56	-5.00	Pass
3,150.00	-6.33	-4.80	Pass
4,000.00	-5.85	-4.50	Pass
5,000.00	-5.31	-4.10	Pass
6,300.00	-4.70	-3.40	Pass
8,000.00	-4.03	-2.70	Pass
10,000.00	-3.28	-1.90	Pass
12,500.00	-2.45	-1.10	Pass
16,000.00	-1.59	-0.30	Pass
20,000.00	-0.67	0.60	Pass

-- End of measurement results--

-- End of Report--

Signatory: Ron Harris

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Provo, UT 84601, United States
716-684-0001

Calibration Certificate

Certificate Number 2021000432
Customer:
Epsilon Associates Inc
Suite 250
3 Mill and Main Place
Maynard, MA 01754, United States

Model Number	PRM831	***Procedure Number***	D0001.8383		
Serial Number	023825	***Technician***	Ron Harris		
Test Results	**Pass**	***Calibration Date***	14 Jan 2021		
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	14 Jan 2022		
		Temperature	23.12	°C	± 0.01 °C
Description	Larson Davis 1/2" Preamplifier for Model 831 Type 1	***Humidity***	52.9	%RH	± 0.5 %RH
		Static Pressure	87.3	kPa	± 0.03 kPa

Evaluation Method Tested electrically using a 12.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 µPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

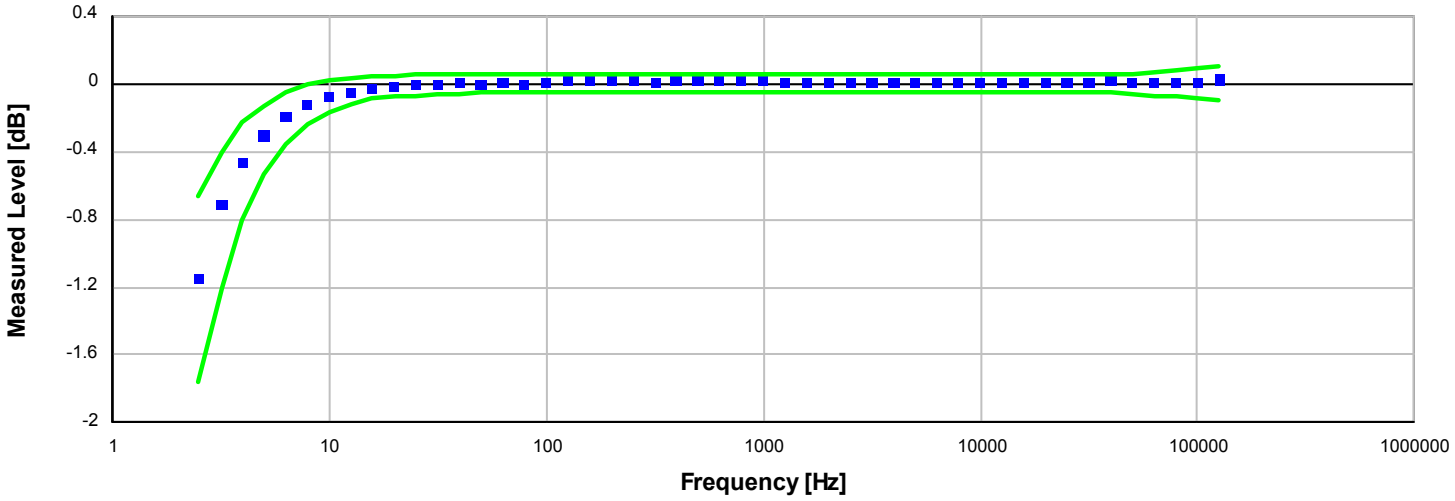
This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis Model 2900 Real Time Analyzer	03/06/2020	03/06/2021	003003
Hart Scientific 2626-S Humidity/Temperature Sensor	05/12/2020	05/12/2021	006943
Agilent 34401A DMM	07/07/2020	07/07/2021	007165
SRS DS360 Ultra Low Distortion Generator	08/19/2020	08/19/2021	007167

Frequency Response



Frequency response electrically tested at 120.0 dB re 1 µV

Frequency [Hz]	Test Result [dB re 1 kHz]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
2.50	-1.15	-1.76	-0.66	0.12	Pass
3.20	-0.72	-1.20	-0.40	0.12	Pass
4.00	-0.47	-0.81	-0.23	0.12	Pass
5.00	-0.31	-0.53	-0.13	0.12	Pass
6.30	-0.20	-0.36	-0.05	0.12	Pass
7.90	-0.13	-0.24	-0.01	0.12	Pass
10.00	-0.08	-0.17	0.03	0.12	Pass
12.60	-0.06	-0.13	0.04	0.12	Pass
15.80	-0.03	-0.09	0.04	0.12	Pass
20.00	-0.02	-0.08	0.05	0.12	Pass
25.10	-0.01	-0.07	0.05	0.12	Pass
31.60	-0.01	-0.07	0.05	0.12	Pass
39.80	0.00	-0.06	0.05	0.12	Pass
50.10	-0.01	-0.06	0.05	0.12	Pass
63.10	0.00	-0.05	0.05	0.12	Pass
79.40	-0.01	-0.05	0.05	0.12	Pass
100.00	0.00	-0.05	0.05	0.12	Pass
125.90	0.01	-0.05	0.05	0.12	Pass
158.50	0.01	-0.05	0.05	0.12	Pass
199.50	0.01	-0.05	0.05	0.12	Pass
251.20	0.01	-0.05	0.05	0.12	Pass
316.20	0.00	-0.05	0.05	0.12	Pass
398.10	0.01	-0.05	0.05	0.12	Pass
501.20	0.01	-0.05	0.05	0.12	Pass
631.00	0.01	-0.05	0.05	0.12	Pass
794.30	0.01	-0.05	0.05	0.12	Pass
1,000.00	0.01	-0.05	0.05	0.12	Pass
1,258.90	0.00	-0.05	0.05	0.12	Pass
1,584.90	0.00	-0.05	0.05	0.12	Pass
1,995.30	0.00	-0.05	0.05	0.12	Pass
2,511.90	0.00	-0.05	0.05	0.12	Pass
3,162.30	0.00	-0.05	0.05	0.12	Pass

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Frequency [Hz]	Test Result [dB re 1 kHz]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
3,981.10	0.00	-0.05	0.05	0.12	Pass
5,011.90	0.00	-0.05	0.05	0.12	Pass
6,309.60	0.00	-0.05	0.05	0.12	Pass
7,943.30	0.00	-0.05	0.05	0.12	Pass
10,000.00	0.00	-0.05	0.05	0.12	Pass
12,589.30	0.00	-0.05	0.05	0.12	Pass
15,848.90	0.00	-0.05	0.05	0.12	Pass
19,952.60	0.00	-0.05	0.05	0.12	Pass
25,118.90	0.00	-0.05	0.05	0.12	Pass
31,622.80	0.00	-0.05	0.05	0.12	Pass
39,810.70	0.01	-0.05	0.05	0.12	Pass
50,118.70	0.00	-0.06	0.06	0.12	Pass
63,095.70	0.00	-0.07	0.07	0.12	Pass
79,432.80	0.00	-0.08	0.08	0.12	Pass
100,000.00	0.00	-0.09	0.09	0.12	Pass
125,892.50	0.02	-0.10	0.10	0.26	Pass

Gain Measurement

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
Output Gain @ 1 kHz	-0.13	-0.45	-0.03	0.12	Pass

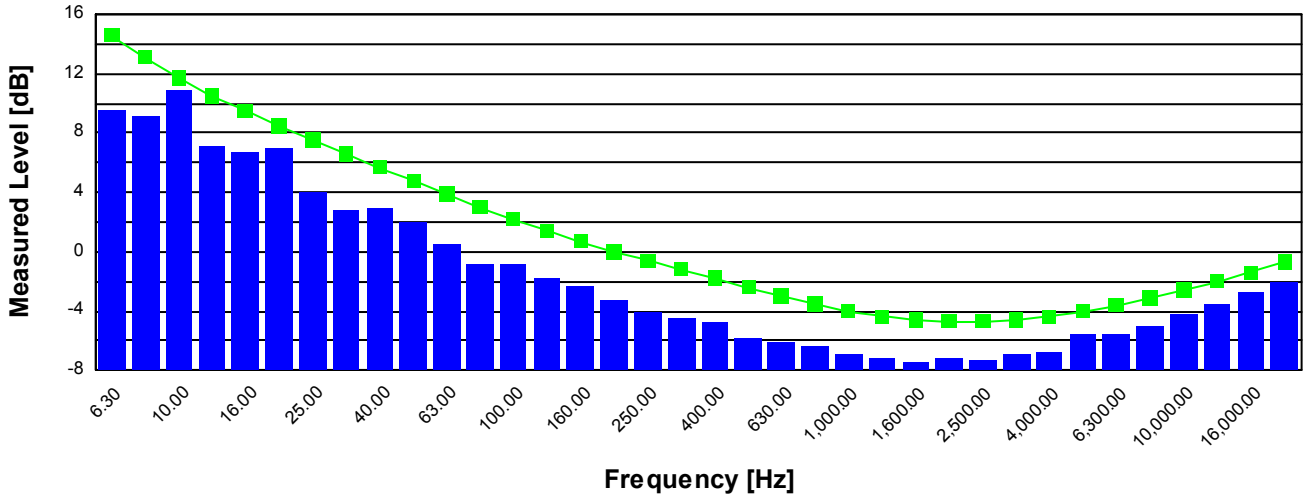
-- End of measurement results--

DC Bias Measurement

Measurement	Test Result [V]	Lower limit [V]	Upper limit [V]	Expanded Uncertainty [V]	Result
DC Voltage	17.94	15.50	19.50	0.04	Pass

-- End of measurement results--

1/3-Octave Self-Generated Noise



Frequency [Hz]	Test Result [dB re 1 µV]	Upper limit [dB re 1 µV]	Result
6.30	9.60	14.60	Pass
8.00	9.10	13.10	Pass
10.00	10.90	11.70	Pass
12.50	7.10	10.50	Pass
16.00	6.70	9.50	Pass
20.00	7.00	8.50	Pass
25.00	4.00	7.50	Pass
31.50	2.80	6.60	Pass
40.00	3.00	5.70	Pass
50.00	2.00	4.80	Pass
63.00	0.50	3.90	Pass
80.00	-0.80	3.00	Pass
100.00	-0.80	2.20	Pass
125.00	-1.80	1.40	Pass
160.00	-2.30	0.70	Pass
200.00	-3.30	0.00	Pass
250.00	-4.00	-0.60	Pass
315.00	-4.50	-1.20	Pass
400.00	-4.80	-1.80	Pass
500.00	-5.80	-2.40	Pass
630.00	-6.10	-3.00	Pass
800.00	-6.30	-3.50	Pass
1,000.00	-6.90	-4.00	Pass
1,250.00	-7.20	-4.40	Pass
1,600.00	-7.40	-4.60	Pass
2,000.00	-7.20	-4.70	Pass
2,500.00	-7.30	-4.70	Pass
3,150.00	-6.90	-4.60	Pass
4,000.00	-6.70	-4.40	Pass
5,000.00	-5.60	-4.00	Pass
6,300.00	-5.60	-3.60	Pass
8,000.00	-5.00	-3.10	Pass
10,000.00	-4.20	-2.60	Pass
12,500.00	-3.50	-2.00	Pass
16,000.00	-2.70	-1.40	Pass
20,000.00	-2.00	-0.70	Pass

-- End of measurement results--

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Self-generated Noise

Bandwidth	Test Result [µV]	Test Result [dB re 1 µV]	Upper limit [dB re 1 µV]	Result
A-weighted (1 Hz - 20 kHz)	1.97	5.90	8.00	Pass
Broadband (1 Hz - 20 kHz)	4.32	12.70	15.50	Pass

-- End of measurement results--

Signatory: Ron Harris

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Appendix C

SUNY MesoNet Meteorological Data

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210616T000000	2021	06	16	00:00	55	94.2	0
20210616T000500	2021	06	16	00:05	54.5	94.4	0
20210616T001000	2021	06	16	00:10	53.7	95.2	0
20210616T001500	2021	06	16	00:15	53.8	94.9	0
20210616T002000	2021	06	16	00:20	53.2	95.3	0
20210616T002500	2021	06	16	00:25	52.4	96.1	0
20210616T003000	2021	06	16	00:30	53.3	97.4	0
20210616T003500	2021	06	16	00:35	54.1	97.3	0
20210616T004000	2021	06	16	00:40	54.1	96.3	0
20210616T004500	2021	06	16	00:45	54	96.5	0
20210616T005000	2021	06	16	00:50	53.8	96.6	0
20210616T005500	2021	06	16	00:55	53	96.4	0
20210616T010000	2021	06	16	01:00	53.4	97.3	0
20210616T010500	2021	06	16	01:05	53.5	97.6	0
20210616T011000	2021	06	16	01:10	54.2	97.9	0
20210616T011500	2021	06	16	01:15	54.3	96.9	0
20210616T012000	2021	06	16	01:20	53.9	96.7	0
20210616T012500	2021	06	16	01:25	54.1	97.5	0
20210616T013000	2021	06	16	01:30	54	97.2	0
20210616T013500	2021	06	16	01:35	54.4	98.2	0
20210616T014000	2021	06	16	01:40	54.2	97.9	0
20210616T014500	2021	06	16	01:45	53.8	97.8	0
20210616T015000	2021	06	16	01:50	53.3	97.6	0
20210616T015500	2021	06	16	01:55	53.2	97.9	0
20210616T020000	2021	06	16	02:00	52.6	98	0
20210616T020500	2021	06	16	02:05	53.2	98.8	0
20210616T021000	2021	06	16	02:10	53.5	99.1	0
20210616T021500	2021	06	16	02:15	54	99.4	0
20210616T022000	2021	06	16	02:20	54.4	99.6	0
20210616T022500	2021	06	16	02:25	54.6	99.4	0
20210616T023000	2021	06	16	02:30	54.7	99.1	0
20210616T023500	2021	06	16	02:35	54.4	98.6	0
20210616T024000	2021	06	16	02:40	54.3	98.6	0
20210616T024500	2021	06	16	02:45	54.1	98.4	0
20210616T025000	2021	06	16	02:50	53.9	98.3	0
20210616T025500	2021	06	16	02:55	53.6	98.3	0
20210616T030000	2021	06	16	03:00	53.2	98.1	0
20210616T030500	2021	06	16	03:05	52.8	98.1	0
20210616T031000	2021	06	16	03:10	52.3	97.9	0
20210616T031500	2021	06	16	03:15	52	98.1	0
20210616T032000	2021	06	16	03:20	52.3	98.3	0
20210616T032500	2021	06	16	03:25	52.1	98.2	0
20210616T033000	2021	06	16	03:30	51.9	97.8	0
20210616T033500	2021	06	16	03:35	52	98.5	0
20210616T034000	2021	06	16	03:40	51.9	98.1	0
20210616T034500	2021	06	16	03:45	51.8	97.5	0
20210616T035000	2021	06	16	03:50	51.5	96.7	0
20210616T035500	2021	06	16	03:55	51.5	96.8	0
20210616T040000	2021	06	16	04:00	51.5	96.6	0
20210616T040500	2021	06	16	04:05	51.4	95.9	0
20210616T041000	2021	06	16	04:10	51.5	95.8	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210616T041500	2021	06	16	04:15	51.4	95.5	0
20210616T042000	2021	06	16	04:20	51.2	95.3	0
20210616T042500	2021	06	16	04:25	50.8	95.4	0
20210616T043000	2021	06	16	04:30	50.7	95.6	0
20210616T043500	2021	06	16	04:35	50.7	95.4	0
20210616T044000	2021	06	16	04:40	50.9	94.3	0
20210616T044500	2021	06	16	04:45	50.6	93.5	0
20210616T045000	2021	06	16	04:50	50.4	92.9	0
20210616T045500	2021	06	16	04:55	49.9	92.4	0
20210616T050000	2021	06	16	05:00	49.7	92.8	0
20210616T050500	2021	06	16	05:05	49.9	93.4	0
20210616T051000	2021	06	16	05:10	49.7	91.8	0
20210616T051500	2021	06	16	05:15	49.6	92.1	0
20210616T052000	2021	06	16	05:20	48.6	91.5	0
20210616T052500	2021	06	16	05:25	49.1	93.5	0
20210616T053000	2021	06	16	05:30	49.2	93.3	0
20210616T053500	2021	06	16	05:35	49.7	92	0
20210616T054000	2021	06	16	05:40	49.6	89.9	0
20210616T054500	2021	06	16	05:45	49.7	88.7	0
20210616T055000	2021	06	16	05:50	49.6	88.3	0
20210616T055500	2021	06	16	05:55	49.8	88	0
20210616T060000	2021	06	16	06:00	49.7	87.2	0
20210616T060500	2021	06	16	06:05	49.9	86.8	0
20210616T061000	2021	06	16	06:10	49.9	86.6	0
20210616T061500	2021	06	16	06:15	50.3	86.4	0
20210616T062000	2021	06	16	06:20	50.8	84.8	0
20210616T062500	2021	06	16	06:25	51	83.2	0
20210616T063000	2021	06	16	06:30	51.2	82.7	0
20210616T063500	2021	06	16	06:35	51.4	81.6	0
20210616T064000	2021	06	16	06:40	51.6	81.6	0
20210616T064500	2021	06	16	06:45	51.7	81.7	0
20210616T065000	2021	06	16	06:50	51.9	82	0
20210616T065500	2021	06	16	06:55	52.1	81.9	0
20210616T070000	2021	06	16	07:00	52.3	81.5	0
20210616T070500	2021	06	16	07:05	52.6	81.7	0
20210616T071000	2021	06	16	07:10	52.8	80.4	0
20210616T071500	2021	06	16	07:15	52.8	78.9	0
20210616T072000	2021	06	16	07:20	52.9	78	0
20210616T072500	2021	06	16	07:25	53.2	79.2	0
20210616T073000	2021	06	16	07:30	53.4	78.2	0
20210616T073500	2021	06	16	07:35	53.7	78.5	0
20210616T074000	2021	06	16	07:40	54	77	0
20210616T074500	2021	06	16	07:45	54.1	75.5	0
20210616T075000	2021	06	16	07:50	54.3	76	0
20210616T075500	2021	06	16	07:55	54.2	74.4	0
20210616T080000	2021	06	16	08:00	54.3	74.1	0
20210616T080500	2021	06	16	08:05	54.2	73.1	0
20210616T081000	2021	06	16	08:10	54.4	73.2	0
20210616T081500	2021	06	16	08:15	54.5	72.6	0
20210616T082000	2021	06	16	08:20	55	72.7	0
20210616T082500	2021	06	16	08:25	55.1	73	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210616T083000	2021	06	16	08:30	55.5	72.3	0
20210616T083500	2021	06	16	08:35	55.9	71.7	0
20210616T084000	2021	06	16	08:40	56.1	71.7	0
20210616T084500	2021	06	16	08:45	55.9	69.7	0
20210616T085000	2021	06	16	08:50	56.3	71.3	0
20210616T085500	2021	06	16	08:55	56.7	70.2	0
20210616T090000	2021	06	16	09:00	56.6	68.9	0
20210616T090500	2021	06	16	09:05	56.9	69	0
20210616T091000	2021	06	16	09:10	57	67.4	0
20210616T091500	2021	06	16	09:15	57.3	66.4	0
20210616T092000	2021	06	16	09:20	57.8	66.2	0
20210616T092500	2021	06	16	09:25	57.9	65.4	0
20210616T093000	2021	06	16	09:30	57.9	65.2	0
20210616T093500	2021	06	16	09:35	58.2	65.8	0
20210616T094000	2021	06	16	09:40	58.1	64.7	0
20210616T094500	2021	06	16	09:45	58.3	65.1	0
20210616T095000	2021	06	16	09:50	58.9	63.3	0
20210616T095500	2021	06	16	09:55	59	64.3	0
20210616T100000	2021	06	16	10:00	59.3	64.4	0
20210616T100500	2021	06	16	10:05	59.6	63.9	0
20210616T101000	2021	06	16	10:10	59.5	63.2	0
20210616T101500	2021	06	16	10:15	59.4	62.2	0
20210616T102000	2021	06	16	10:20	60.1	64.2	0
20210616T102500	2021	06	16	10:25	59.7	63.2	0
20210616T103000	2021	06	16	10:30	60.1	63.8	0
20210616T103500	2021	06	16	10:35	60.7	60.7	0
20210616T104000	2021	06	16	10:40	61	61.8	0
20210616T104500	2021	06	16	10:45	60.8	58.4	0
20210616T105000	2021	06	16	10:50	61.2	55.6	0
20210616T105500	2021	06	16	10:55	61.2	55.2	0
20210616T110000	2021	06	16	11:00	61.2	54.9	0
20210616T110500	2021	06	16	11:05	61.5	54.2	0
20210616T111000	2021	06	16	11:10	61.8	53.7	0
20210616T111500	2021	06	16	11:15	61.2	53.4	0
20210616T112000	2021	06	16	11:20	61.9	53.6	0
20210616T112500	2021	06	16	11:25	61.3	51.5	0
20210616T113000	2021	06	16	11:30	61.8	51.3	0
20210616T113500	2021	06	16	11:35	62	51.3	0
20210616T114000	2021	06	16	11:40	61.6	49.7	0
20210616T114500	2021	06	16	11:45	61.3	51.3	0
20210616T115000	2021	06	16	11:50	60.9	53.3	0
20210616T115500	2021	06	16	11:55	62.4	51.2	0
20210616T120000	2021	06	16	12:00	62.7	49.2	0
20210616T120500	2021	06	16	12:05	62.7	48.9	0
20210616T121000	2021	06	16	12:10	62.3	46.8	0
20210616T121500	2021	06	16	12:15	62.7	48.3	0
20210616T122000	2021	06	16	12:20	62.4	48.1	0
20210616T122500	2021	06	16	12:25	62.7	46.7	0
20210616T123000	2021	06	16	12:30	63.3	47.1	0
20210616T123500	2021	06	16	12:35	63	45.1	0
20210616T124000	2021	06	16	12:40	63.3	46.4	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210616T124500	2021	06	16	12:45	63.5	46.9	0
20210616T125000	2021	06	16	12:50	63.6	45.1	0
20210616T125500	2021	06	16	12:55	63.5	45.1	0
20210616T130000	2021	06	16	13:00	63.8	43.9	0
20210616T130500	2021	06	16	13:05	64.1	45.9	0
20210616T131000	2021	06	16	13:10	63.8	44.8	0
20210616T131500	2021	06	16	13:15	63.7	46	0
20210616T132000	2021	06	16	13:20	64.4	49.4	0
20210616T132500	2021	06	16	13:25	64.7	47.7	0
20210616T133000	2021	06	16	13:30	65.1	47.7	0
20210616T133500	2021	06	16	13:35	65.3	49.3	0
20210616T134000	2021	06	16	13:40	65	47.5	0
20210616T134500	2021	06	16	13:45	65.3	48.8	0
20210616T135000	2021	06	16	13:50	64.6	48.1	0
20210616T135500	2021	06	16	13:55	64.9	48.8	0
20210616T140000	2021	06	16	14:00	65.4	46.5	0
20210616T140500	2021	06	16	14:05	65	46.4	0
20210616T141000	2021	06	16	14:10	65.6	46	0
20210616T141500	2021	06	16	14:15	66.2	47.2	0
20210616T142000	2021	06	16	14:20	66	46.3	0
20210616T142500	2021	06	16	14:25	64.8	45	0
20210616T143000	2021	06	16	14:30	65.6	47	0
20210616T143500	2021	06	16	14:35	65.8	45	0
20210616T144000	2021	06	16	14:40	65.3	46.9	0
20210616T144500	2021	06	16	14:45	65.9	46.5	0
20210616T145000	2021	06	16	14:50	65.4	45.9	0
20210616T145500	2021	06	16	14:55	66	45.6	0
20210616T150000	2021	06	16	15:00	66.4	44.9	0
20210616T150500	2021	06	16	15:05	66.1	45.7	0
20210616T151000	2021	06	16	15:10	66.1	45.1	0
20210616T151500	2021	06	16	15:15	66.1	45.8	0
20210616T152000	2021	06	16	15:20	66.4	47.3	0
20210616T152500	2021	06	16	15:25	65.7	45.3	0
20210616T153000	2021	06	16	15:30	66.5	44.2	0
20210616T153500	2021	06	16	15:35	66.4	43.8	0
20210616T154000	2021	06	16	15:40	66.1	44	0
20210616T154500	2021	06	16	15:45	65.8	43.2	0
20210616T155000	2021	06	16	15:50	65.6	43.7	0
20210616T155500	2021	06	16	15:55	65.8	43.7	0
20210616T160000	2021	06	16	16:00	66	42.1	0
20210616T160500	2021	06	16	16:05	66.1	41.7	0
20210616T161000	2021	06	16	16:10	66.5	42.7	0
20210616T161500	2021	06	16	16:15	66.3	41.7	0
20210616T162000	2021	06	16	16:20	66.2	40.7	0
20210616T162500	2021	06	16	16:25	66.1	40.5	0
20210616T163000	2021	06	16	16:30	66.3	42	0
20210616T163500	2021	06	16	16:35	66.1	42	0
20210616T164000	2021	06	16	16:40	66.1	43.4	0
20210616T164500	2021	06	16	16:45	66.4	42.9	0
20210616T165000	2021	06	16	16:50	66.5	42.6	0
20210616T165500	2021	06	16	16:55	66.4	41.2	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210616T170000	2021	06	16	17:00	66	39.9	0
20210616T170500	2021	06	16	17:05	65.8	39.7	0
20210616T171000	2021	06	16	17:10	66.1	40.5	0
20210616T171500	2021	06	16	17:15	65.9	41.2	0
20210616T172000	2021	06	16	17:20	65.7	42.3	0
20210616T172500	2021	06	16	17:25	65.7	42.1	0
20210616T173000	2021	06	16	17:30	65.5	40.8	0
20210616T173500	2021	06	16	17:35	65.3	41.7	0
20210616T174000	2021	06	16	17:40	65.1	41.3	0
20210616T174500	2021	06	16	17:45	65.1	42.4	0
20210616T175000	2021	06	16	17:50	65.1	42.6	0
20210616T175500	2021	06	16	17:55	65.2	43.3	0
20210616T180000	2021	06	16	18:00	65.1	40.8	0
20210616T180500	2021	06	16	18:05	64.7	40.3	0
20210616T181000	2021	06	16	18:10	64.5	40.2	0
20210616T181500	2021	06	16	18:15	64.5	40.4	0
20210616T182000	2021	06	16	18:20	64.3	39.6	0
20210616T182500	2021	06	16	18:25	64.2	40.4	0
20210616T183000	2021	06	16	18:30	64.2	40.2	0
20210616T183500	2021	06	16	18:35	64.2	40.9	0
20210616T184000	2021	06	16	18:40	64.2	41.2	0
20210616T184500	2021	06	16	18:45	64	40	0
20210616T185000	2021	06	16	18:50	63.8	40.3	0
20210616T185500	2021	06	16	18:55	63.6	41	0
20210616T190000	2021	06	16	19:00	63.5	40.7	0
20210616T190500	2021	06	16	19:05	63.5	40.2	0
20210616T191000	2021	06	16	19:10	63.2	40.7	0
20210616T191500	2021	06	16	19:15	63.2	39.8	0
20210616T192000	2021	06	16	19:20	63.1	39.7	0
20210616T192500	2021	06	16	19:25	62.9	39.8	0
20210616T193000	2021	06	16	19:30	62.7	39.8	0
20210616T193500	2021	06	16	19:35	62.5	40.5	0
20210616T194000	2021	06	16	19:40	62.3	41.3	0
20210616T194500	2021	06	16	19:45	61.9	42.3	0
20210616T195000	2021	06	16	19:50	61.9	42.3	0
20210616T195500	2021	06	16	19:55	61.8	42.5	0
20210616T200000	2021	06	16	20:00	61.4	43.4	0
20210616T200500	2021	06	16	20:05	60.9	44.6	0
20210616T201000	2021	06	16	20:10	61	44.2	0
20210616T201500	2021	06	16	20:15	60.2	46.1	0
20210616T202000	2021	06	16	20:20	60.2	46.4	0
20210616T202500	2021	06	16	20:25	59.7	47.9	0
20210616T203000	2021	06	16	20:30	59	49.6	0
20210616T203500	2021	06	16	20:35	58.1	52.7	0
20210616T204000	2021	06	16	20:40	56.8	57.1	0
20210616T204500	2021	06	16	20:45	56.4	59	0
20210616T205000	2021	06	16	20:50	56.2	60.4	0
20210616T205500	2021	06	16	20:55	56.7	59.8	0
20210616T210000	2021	06	16	21:00	56.7	59.2	0
20210616T210500	2021	06	16	21:05	55.9	60.3	0
20210616T211000	2021	06	16	21:10	55.5	61.5	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210616T211500	2021	06	16	21:15	55.3	61.6	0
20210616T212000	2021	06	16	21:20	55	61.9	0
20210616T212500	2021	06	16	21:25	54.8	62.9	0
20210616T213000	2021	06	16	21:30	54.7	63.2	0
20210616T213500	2021	06	16	21:35	54.9	63.3	0
20210616T214000	2021	06	16	21:40	55.1	62.4	0
20210616T214500	2021	06	16	21:45	55.3	61.2	0
20210616T215000	2021	06	16	21:50	55	60.7	0
20210616T215500	2021	06	16	21:55	55	61.2	0
20210616T220000	2021	06	16	22:00	54.5	62.4	0
20210616T220500	2021	06	16	22:05	53.1	65	0
20210616T221000	2021	06	16	22:10	52.8	66.3	0
20210616T221500	2021	06	16	22:15	51.2	72.3	0
20210616T222000	2021	06	16	22:20	51.4	73.9	0
20210616T222500	2021	06	16	22:25	51.5	73	0
20210616T223000	2021	06	16	22:30	51.6	73.8	0
20210616T223500	2021	06	16	22:35	51.9	73.7	0
20210616T224000	2021	06	16	22:40	52.6	71.6	0
20210616T224500	2021	06	16	22:45	52.3	70.8	0
20210616T225000	2021	06	16	22:50	50.4	73.1	0
20210616T225500	2021	06	16	22:55	51.2	71.6	0
20210616T230000	2021	06	16	23:00	51.3	71.1	0
20210616T230500	2021	06	16	23:05	51.3	70.5	0
20210616T231000	2021	06	16	23:10	49.6	75	0
20210616T231500	2021	06	16	23:15	49.3	78.3	0
20210616T232000	2021	06	16	23:20	50.5	75	0
20210616T232500	2021	06	16	23:25	49.9	73	0
20210616T233000	2021	06	16	23:30	47.7	78.6	0
20210616T233500	2021	06	16	23:35	47.4	81.4	0
20210616T234000	2021	06	16	23:40	48	81.6	0
20210616T234500	2021	06	16	23:45	46.7	84	0
20210616T235000	2021	06	16	23:50	45.8	85.3	0
20210616T235500	2021	06	16	23:55	46.6	88.9	0
20210617T000000	2021	06	17	00:00	46.3	86.7	0
20210617T000500	2021	06	17	00:05	46.2	86	0
20210617T001000	2021	06	17	00:10	45.3	89.7	0
20210617T001500	2021	06	17	00:15	44.9	89.2	0
20210617T002000	2021	06	17	00:20	45	89.7	0
20210617T002500	2021	06	17	00:25	46	87.4	0
20210617T003000	2021	06	17	00:30	44.3	87	0
20210617T003500	2021	06	17	00:35	43.4	89	0
20210617T004000	2021	06	17	00:40	43.6	90.1	0
20210617T004500	2021	06	17	00:45	43.5	89.7	0
20210617T005000	2021	06	17	00:50	45	89.6	0
20210617T005500	2021	06	17	00:55	45.4	85.2	0
20210617T010000	2021	06	17	01:00	45.7	85.3	0
20210617T010500	2021	06	17	01:05	46	83	0
20210617T011000	2021	06	17	01:10	46	83	0
20210617T011500	2021	06	17	01:15	46.1	82.5	0
20210617T012000	2021	06	17	01:20	46.1	82	0
20210617T012500	2021	06	17	01:25	45.7	83.3	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210617T013000	2021	06	17	01:30	45.3	85	0
20210617T013500	2021	06	17	01:35	45.7	85.5	0
20210617T014000	2021	06	17	01:40	44.9	86	0
20210617T014500	2021	06	17	01:45	44.1	86.8	0
20210617T015000	2021	06	17	01:50	44	88.8	0
20210617T015500	2021	06	17	01:55	44.8	88.4	0
20210617T020000	2021	06	17	02:00	44.3	85.6	0
20210617T020500	2021	06	17	02:05	44.2	87.9	0
20210617T021000	2021	06	17	02:10	45.3	88.6	0
20210617T021500	2021	06	17	02:15	45.4	87.9	0
20210617T022000	2021	06	17	02:20	45.2	85.8	0
20210617T022500	2021	06	17	02:25	44.6	86.4	0
20210617T023000	2021	06	17	02:30	43.8	90.4	0
20210617T023500	2021	06	17	02:35	43.5	91	0
20210617T024000	2021	06	17	02:40	43.7	92	0
20210617T024500	2021	06	17	02:45	43.8	92.9	0
20210617T025000	2021	06	17	02:50	43.7	92.2	0
20210617T025500	2021	06	17	02:55	43.8	92.8	0
20210617T030000	2021	06	17	03:00	43.7	92.3	0
20210617T030500	2021	06	17	03:05	42.8	90.7	0
20210617T031000	2021	06	17	03:10	42.6	93.2	0
20210617T031500	2021	06	17	03:15	42.3	93.9	0
20210617T032000	2021	06	17	03:20	42.5	94.7	0
20210617T032500	2021	06	17	03:25	42.8	95.5	0
20210617T033000	2021	06	17	03:30	42.3	96.1	0
20210617T033500	2021	06	17	03:35	42.3	95.3	0
20210617T034000	2021	06	17	03:40	42.4	95.6	0
20210617T034500	2021	06	17	03:45	42.2	95.2	0
20210617T035000	2021	06	17	03:50	42	95.1	0
20210617T035500	2021	06	17	03:55	41.4	94	0
20210617T040000	2021	06	17	04:00	41.1	93.5	0
20210617T040500	2021	06	17	04:05	41.5	95.2	0
20210617T041000	2021	06	17	04:10	41.8	95.9	0
20210617T041500	2021	06	17	04:15	41.8	95.3	0
20210617T042000	2021	06	17	04:20	41.8	95.1	0
20210617T042500	2021	06	17	04:25	41.6	95.2	0
20210617T043000	2021	06	17	04:30	41.3	95.3	0
20210617T043500	2021	06	17	04:35	41.8	95.7	0
20210617T044000	2021	06	17	04:40	42.1	93.9	0
20210617T044500	2021	06	17	04:45	41.5	93.5	0
20210617T045000	2021	06	17	04:50	41.4	94.4	0
20210617T045500	2021	06	17	04:55	41.3	95.3	0
20210617T050000	2021	06	17	05:00	41.1	96.5	0
20210617T050500	2021	06	17	05:05	41.3	97.1	0
20210617T051000	2021	06	17	05:10	41	96.7	0
20210617T051500	2021	06	17	05:15	40.7	96.2	0
20210617T052000	2021	06	17	05:20	41	96.7	0
20210617T052500	2021	06	17	05:25	41.3	96.6	0
20210617T053000	2021	06	17	05:30	41.5	96.5	0
20210617T053500	2021	06	17	05:35	41.6	97.1	0
20210617T054000	2021	06	17	05:40	41.3	96.8	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210617T054500	2021	06	17	05:45	41.2	96.7	0
20210617T055000	2021	06	17	05:50	40.7	95.7	0
20210617T055500	2021	06	17	05:55	41.4	96.3	0
20210617T060000	2021	06	17	06:00	42.2	95.2	0
20210617T060500	2021	06	17	06:05	42.7	94.4	0
20210617T061000	2021	06	17	06:10	42.8	93.2	0
20210617T061500	2021	06	17	06:15	42.9	93.2	0
20210617T062000	2021	06	17	06:20	43.5	91.6	0
20210617T062500	2021	06	17	06:25	44.3	92	0
20210617T063000	2021	06	17	06:30	45.4	89.8	0
20210617T063500	2021	06	17	06:35	46.2	88.1	0
20210617T064000	2021	06	17	06:40	46.7	87.7	0
20210617T064500	2021	06	17	06:45	47.1	85.6	0
20210617T065000	2021	06	17	06:50	47.5	85.1	0
20210617T065500	2021	06	17	06:55	47.7	81.9	0
20210617T070000	2021	06	17	07:00	48	82.1	0
20210617T070500	2021	06	17	07:05	48.2	81.9	0
20210617T071000	2021	06	17	07:10	48.6	83	0
20210617T071500	2021	06	17	07:15	49.3	84	0
20210617T072000	2021	06	17	07:20	49.9	82.7	0
20210617T072500	2021	06	17	07:25	50.3	80.3	0
20210617T073000	2021	06	17	07:30	50.8	80.9	0
20210617T073500	2021	06	17	07:35	51	82.8	0
20210617T074000	2021	06	17	07:40	51.1	81.6	0
20210617T074500	2021	06	17	07:45	51.4	81.3	0
20210617T075000	2021	06	17	07:50	51.9	78.8	0
20210617T075500	2021	06	17	07:55	52.4	78.3	0
20210617T080000	2021	06	17	08:00	53.1	77	0
20210617T080500	2021	06	17	08:05	53.5	74.6	0
20210617T081000	2021	06	17	08:10	53.9	76	0
20210617T081500	2021	06	17	08:15	53.6	75.9	0
20210617T082000	2021	06	17	08:20	54	76.3	0
20210617T082500	2021	06	17	08:25	54.4	74.4	0
20210617T083000	2021	06	17	08:30	54.9	74.8	0
20210617T083500	2021	06	17	08:35	55.3	74.1	0
20210617T084000	2021	06	17	08:40	55.6	73.3	0
20210617T084500	2021	06	17	08:45	55.9	72.4	0
20210617T085000	2021	06	17	08:50	56.2	71.5	0
20210617T085500	2021	06	17	08:55	56.3	70.9	0
20210617T090000	2021	06	17	09:00	56.9	71.5	0
20210617T090500	2021	06	17	09:05	56.8	70.2	0
20210617T091000	2021	06	17	09:10	57.2	70.3	0
20210617T091500	2021	06	17	09:15	57.7	68.6	0
20210617T092000	2021	06	17	09:20	58	68.4	0
20210617T092500	2021	06	17	09:25	58.3	67.7	0
20210617T093000	2021	06	17	09:30	58.9	66.7	0
20210617T093500	2021	06	17	09:35	59.5	65.1	0
20210617T094000	2021	06	17	09:40	59.3	63.9	0
20210617T094500	2021	06	17	09:45	59.9	65.3	0
20210617T095000	2021	06	17	09:50	60.4	65.5	0
20210617T095500	2021	06	17	09:55	60.8	63.9	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210617T100000	2021	06	17	10:00	61.1	64.1	0
20210617T100500	2021	06	17	10:05	61.1	62.9	0
20210617T101000	2021	06	17	10:10	61.6	61.3	0
20210617T101500	2021	06	17	10:15	62.3	61	0
20210617T102000	2021	06	17	10:20	62.8	60.9	0
20210617T102500	2021	06	17	10:25	63.3	59.3	0
20210617T103000	2021	06	17	10:30	63.1	58.9	0
20210617T103500	2021	06	17	10:35	63.5	57.3	0
20210617T104000	2021	06	17	10:40	64	57.9	0
20210617T104500	2021	06	17	10:45	63.7	53.8	0
20210617T105000	2021	06	17	10:50	64.1	55.6	0
20210617T105500	2021	06	17	10:55	64.8	53.4	0
20210617T110000	2021	06	17	11:00	65.1	52.6	0
20210617T110500	2021	06	17	11:05	65.1	52.1	0
20210617T111000	2021	06	17	11:10	64.7	50.6	0
20210617T111500	2021	06	17	11:15	65	50.8	0
20210617T112000	2021	06	17	11:20	65.6	49.4	0
20210617T112500	2021	06	17	11:25	65.9	47.2	0
20210617T113000	2021	06	17	11:30	66	46.6	0
20210617T113500	2021	06	17	11:35	66.7	46.5	0
20210617T114000	2021	06	17	11:40	66.6	43	0
20210617T114500	2021	06	17	11:45	67.2	43.9	0
20210617T115000	2021	06	17	11:50	67	40.5	0
20210617T115500	2021	06	17	11:55	67	43.3	0
20210617T120000	2021	06	17	12:00	66.9	40.8	0
20210617T120500	2021	06	17	12:05	67.1	40.7	0
20210617T121000	2021	06	17	12:10	67.8	40	0
20210617T121500	2021	06	17	12:15	67.8	37.4	0
20210617T122000	2021	06	17	12:20	67.8	36.7	0
20210617T122500	2021	06	17	12:25	67.8	35.7	0
20210617T123000	2021	06	17	12:30	68.2	37.1	0
20210617T123500	2021	06	17	12:35	68.5	36.8	0
20210617T124000	2021	06	17	12:40	68.2	34.8	0
20210617T124500	2021	06	17	12:45	68.6	35.2	0
20210617T125000	2021	06	17	12:50	68.5	35.6	0
20210617T125500	2021	06	17	12:55	68.4	35	0
20210617T130000	2021	06	17	13:00	68.5	35.8	0
20210617T130500	2021	06	17	13:05	68.8	37.9	0
20210617T131000	2021	06	17	13:10	68.8	37.8	0
20210617T131500	2021	06	17	13:15	68.8	37.1	0
20210617T132000	2021	06	17	13:20	68.9	36.8	0
20210617T132500	2021	06	17	13:25	69.3	39	0
20210617T133000	2021	06	17	13:30	70	39.4	0
20210617T133500	2021	06	17	13:35	69.4	36.9	0
20210617T134000	2021	06	17	13:40	69.2	37.6	0
20210617T134500	2021	06	17	13:45	69.5	38.3	0
20210617T135000	2021	06	17	13:50	69.2	37.4	0
20210617T135500	2021	06	17	13:55	70	38.4	0
20210617T140000	2021	06	17	14:00	70	37.6	0
20210617T140500	2021	06	17	14:05	69.8	37.6	0
20210617T141000	2021	06	17	14:10	70.4	38.6	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210617T141500	2021	06	17	14:15	70	37.1	0
20210617T142000	2021	06	17	14:20	69.8	36.5	0
20210617T142500	2021	06	17	14:25	70.3	37.6	0
20210617T143000	2021	06	17	14:30	70.1	35.3	0
20210617T143500	2021	06	17	14:35	70.4	36.5	0
20210617T144000	2021	06	17	14:40	70.3	36.7	0
20210617T144500	2021	06	17	14:45	70.5	36.9	0
20210617T145000	2021	06	17	14:50	70.6	36.4	0
20210617T145500	2021	06	17	14:55	70.3	36	0
20210617T150000	2021	06	17	15:00	70.9	37.7	0
20210617T150500	2021	06	17	15:05	71	37.2	0
20210617T151000	2021	06	17	15:10	70.7	35.7	0
20210617T151500	2021	06	17	15:15	71.1	38	0
20210617T152000	2021	06	17	15:20	71.1	36.6	0
20210617T152500	2021	06	17	15:25	71	36	0
20210617T153000	2021	06	17	15:30	71.2	36.6	0
20210617T153500	2021	06	17	15:35	71.6	35.3	0
20210617T154000	2021	06	17	15:40	71.4	37.5	0
20210617T154500	2021	06	17	15:45	71.5	35.9	0
20210617T155000	2021	06	17	15:50	71.2	35.6	0
20210617T155500	2021	06	17	15:55	71.4	35.6	0
20210617T160000	2021	06	17	16:00	71.5	36.4	0
20210617T160500	2021	06	17	16:05	71.5	37.6	0
20210617T161000	2021	06	17	16:10	71.7	36.3	0
20210617T161500	2021	06	17	16:15	71.6	36.3	0
20210617T162000	2021	06	17	16:20	71.6	36.5	0
20210617T162500	2021	06	17	16:25	71.8	36.2	0
20210617T163000	2021	06	17	16:30	71.4	36.3	0
20210617T163500	2021	06	17	16:35	71.5	35.6	0
20210617T164000	2021	06	17	16:40	71.4	36.8	0
20210617T164500	2021	06	17	16:45	71.5	38.2	0
20210617T165000	2021	06	17	16:50	71.3	37.7	0
20210617T165500	2021	06	17	16:55	71.2	37.9	0
20210617T170000	2021	06	17	17:00	71.4	38.5	0
20210617T170500	2021	06	17	17:05	71.1	38.9	0
20210617T171000	2021	06	17	17:10	71.4	38.5	0
20210617T171500	2021	06	17	17:15	71.2	37.7	0
20210617T172000	2021	06	17	17:20	71.1	38.6	0
20210617T172500	2021	06	17	17:25	70.8	39.1	0
20210617T173000	2021	06	17	17:30	70.8	38.3	0
20210617T173500	2021	06	17	17:35	70.8	38.2	0
20210617T174000	2021	06	17	17:40	70.7	38	0
20210617T174500	2021	06	17	17:45	70.8	39.3	0
20210617T175000	2021	06	17	17:50	71.1	41.2	0
20210617T175500	2021	06	17	17:55	71.1	39.9	0
20210617T180000	2021	06	17	18:00	71.1	39.2	0
20210617T180500	2021	06	17	18:05	71	38.6	0
20210617T181000	2021	06	17	18:10	71.1	39.1	0
20210617T181500	2021	06	17	18:15	70.9	37.2	0
20210617T182000	2021	06	17	18:20	70.8	36.3	0
20210617T182500	2021	06	17	18:25	70.6	35.6	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210617T183000	2021	06	17	18:30	70.5	35.1	0
20210617T183500	2021	06	17	18:35	70.4	35.9	0
20210617T184000	2021	06	17	18:40	70.3	35.6	0
20210617T184500	2021	06	17	18:45	70.3	36.4	0
20210617T185000	2021	06	17	18:50	70.3	36.7	0
20210617T185500	2021	06	17	18:55	70.2	37.1	0
20210617T190000	2021	06	17	19:00	70.1	36.1	0
20210617T190500	2021	06	17	19:05	70	36.1	0
20210617T191000	2021	06	17	19:10	69.7	36.8	0
20210617T191500	2021	06	17	19:15	69.5	37.6	0
20210617T192000	2021	06	17	19:20	69.3	38.4	0
20210617T192500	2021	06	17	19:25	69.1	38.6	0
20210617T193000	2021	06	17	19:30	68.8	39.5	0
20210617T193500	2021	06	17	19:35	68.8	38.8	0
20210617T194000	2021	06	17	19:40	68.4	40.2	0
20210617T194500	2021	06	17	19:45	68.1	40.5	0
20210617T195000	2021	06	17	19:50	67.9	40.7	0
20210617T195500	2021	06	17	19:55	67.6	41.2	0
20210617T200000	2021	06	17	20:00	67.3	41.3	0
20210617T200500	2021	06	17	20:05	66.9	41.6	0
20210617T201000	2021	06	17	20:10	66.6	41.8	0
20210617T201500	2021	06	17	20:15	66.2	42.4	0
20210617T202000	2021	06	17	20:20	65.7	43.2	0
20210617T202500	2021	06	17	20:25	65.8	43.2	0
20210617T203000	2021	06	17	20:30	65.3	43.9	0
20210617T203500	2021	06	17	20:35	64.9	44.8	0
20210617T204000	2021	06	17	20:40	64.3	46.4	0
20210617T204500	2021	06	17	20:45	63.5	47.5	0
20210617T205000	2021	06	17	20:50	62.6	48.9	0
20210617T205500	2021	06	17	20:55	62	51.3	0
20210617T210000	2021	06	17	21:00	61.3	53.2	0
20210617T210500	2021	06	17	21:05	60.7	54.5	0
20210617T211000	2021	06	17	21:10	58.5	59.8	0
20210617T211500	2021	06	17	21:15	57.2	66.3	0
20210617T212000	2021	06	17	21:20	58.5	65.9	0
20210617T212500	2021	06	17	21:25	59.5	58.8	0
20210617T213000	2021	06	17	21:30	59.7	55.1	0
20210617T213500	2021	06	17	21:35	59.3	55.5	0
20210617T214000	2021	06	17	21:40	58.9	57.8	0
20210617T214500	2021	06	17	21:45	58.2	60.3	0
20210617T215000	2021	06	17	21:50	55.9	64.9	0
20210617T215500	2021	06	17	21:55	54.7	68.3	0
20210617T220000	2021	06	17	22:00	55.3	69.4	0
20210617T220500	2021	06	17	22:05	54	71.1	0
20210617T221000	2021	06	17	22:10	54.7	67.9	0
20210617T221500	2021	06	17	22:15	53.7	70	0
20210617T222000	2021	06	17	22:20	54.4	70.7	0
20210617T222500	2021	06	17	22:25	54.8	68.7	0
20210617T223000	2021	06	17	22:30	53.7	69.5	0
20210617T223500	2021	06	17	22:35	53	72.4	0
20210617T224000	2021	06	17	22:40	52.8	73.7	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210617T224500	2021	06	17	22:45	52.1	74.9	0
20210617T225000	2021	06	17	22:50	51.9	76.4	0
20210617T225500	2021	06	17	22:55	52	76.7	0
20210617T230000	2021	06	17	23:00	51.3	78.5	0
20210617T230500	2021	06	17	23:05	50.9	81.8	0
20210617T231000	2021	06	17	23:10	51	82.1	0
20210617T231500	2021	06	17	23:15	49.9	83.1	0
20210617T232000	2021	06	17	23:20	49.9	83.1	0
20210617T232500	2021	06	17	23:25	50.1	83.4	0
20210617T233000	2021	06	17	23:30	50.2	82.2	0
20210617T233500	2021	06	17	23:35	49.5	84.2	0
20210617T234000	2021	06	17	23:40	49.7	82.9	0
20210617T234500	2021	06	17	23:45	49.9	81.9	0
20210617T235000	2021	06	17	23:50	50.3	82.4	0
20210617T235500	2021	06	17	23:55	50.2	81.6	0
20210618T000000	2021	06	18	00:00	50.2	80.1	0
20210618T000500	2021	06	18	00:05	49.4	80.4	0
20210618T001000	2021	06	18	00:10	49.2	82.2	0
20210618T001500	2021	06	18	00:15	50.7	80.4	0
20210618T002000	2021	06	18	00:20	50.1	79.4	0
20210618T002500	2021	06	18	00:25	49.5	79.2	0
20210618T003000	2021	06	18	00:30	48.4	82.2	0
20210618T003500	2021	06	18	00:35	48.6	85	0
20210618T004000	2021	06	18	00:40	48.9	85.4	0
20210618T004500	2021	06	18	00:45	48.8	85.1	0
20210618T005000	2021	06	18	00:50	49	84.1	0
20210618T005500	2021	06	18	00:55	46.9	84.5	0
20210618T010000	2021	06	18	01:00	46.2	87.9	0
20210618T010500	2021	06	18	01:05	46.5	90.1	0
20210618T011000	2021	06	18	01:10	47.4	92.2	0
20210618T011500	2021	06	18	01:15	47.9	89.8	0
20210618T012000	2021	06	18	01:20	46.1	88.3	0
20210618T012500	2021	06	18	01:25	46.4	89.7	0
20210618T013000	2021	06	18	01:30	47.1	89.3	0
20210618T013500	2021	06	18	01:35	46.1	89.2	0
20210618T014000	2021	06	18	01:40	45.8	91.1	0
20210618T014500	2021	06	18	01:45	45.2	91.7	0
20210618T015000	2021	06	18	01:50	45.7	92.4	0
20210618T015500	2021	06	18	01:55	46	92.9	0
20210618T020000	2021	06	18	02:00	46.1	92	0
20210618T020500	2021	06	18	02:05	46.1	92.4	0
20210618T021000	2021	06	18	02:10	45.2	93	0
20210618T021500	2021	06	18	02:15	45.4	91.9	0
20210618T022000	2021	06	18	02:20	44.2	90.5	0
20210618T022500	2021	06	18	02:25	44.2	93.1	0
20210618T023000	2021	06	18	02:30	45.6	91.6	0
20210618T023500	2021	06	18	02:35	45.5	91.5	0
20210618T024000	2021	06	18	02:40	45	91.3	0
20210618T024500	2021	06	18	02:45	44.1	91.8	0
20210618T025000	2021	06	18	02:50	44.2	92.9	0
20210618T025500	2021	06	18	02:55	44.3	94.3	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210618T030000	2021	06	18	03:00	45.2	94.3	0
20210618T030500	2021	06	18	03:05	44.7	92.2	0
20210618T031000	2021	06	18	03:10	43.7	91.8	0
20210618T031500	2021	06	18	03:15	44.7	94.5	0
20210618T032000	2021	06	18	03:20	44.6	95.1	0
20210618T032500	2021	06	18	03:25	44.1	94.3	0
20210618T033000	2021	06	18	03:30	44.1	94.7	0
20210618T033500	2021	06	18	03:35	43.6	95.2	0
20210618T034000	2021	06	18	03:40	43.3	96.3	0
20210618T034500	2021	06	18	03:45	42.8	95.9	0
20210618T035000	2021	06	18	03:50	43.1	95.7	0
20210618T035500	2021	06	18	03:55	43.7	95.8	0
20210618T040000	2021	06	18	04:00	43.2	96.5	0
20210618T040500	2021	06	18	04:05	43.4	96.2	0
20210618T041000	2021	06	18	04:10	43.8	96.4	0
20210618T041500	2021	06	18	04:15	43.4	95.9	0
20210618T042000	2021	06	18	04:20	43.8	97.3	0
20210618T042500	2021	06	18	04:25	43.5	95.3	0
20210618T043000	2021	06	18	04:30	43.3	95.3	0
20210618T043500	2021	06	18	04:35	42.3	94.7	0
20210618T044000	2021	06	18	04:40	42.3	95.1	0
20210618T044500	2021	06	18	04:45	43.7	97.2	0
20210618T045000	2021	06	18	04:50	43.2	95.7	0
20210618T045500	2021	06	18	04:55	43	95.6	0
20210618T050000	2021	06	18	05:00	43.2	95.9	0
20210618T050500	2021	06	18	05:05	42.7	96	0
20210618T051000	2021	06	18	05:10	44.3	97.9	0
20210618T051500	2021	06	18	05:15	43.9	94.5	0
20210618T052000	2021	06	18	05:20	42.8	93.8	0
20210618T052500	2021	06	18	05:25	42.4	95.5	0
20210618T053000	2021	06	18	05:30	42	95.5	0
20210618T053500	2021	06	18	05:35	43	97	0
20210618T054000	2021	06	18	05:40	43.5	98	0
20210618T054500	2021	06	18	05:45	44.1	97.4	0
20210618T055000	2021	06	18	05:50	44.3	95.9	0
20210618T055500	2021	06	18	05:55	44.4	94.4	0
20210618T060000	2021	06	18	06:00	44	93.3	0
20210618T060500	2021	06	18	06:05	44.1	94.3	0
20210618T061000	2021	06	18	06:10	45	94.4	0
20210618T061500	2021	06	18	06:15	45.8	92.9	0
20210618T062000	2021	06	18	06:20	46.1	92.2	0
20210618T062500	2021	06	18	06:25	47	91.9	0
20210618T063000	2021	06	18	06:30	47.9	90.8	0
20210618T063500	2021	06	18	06:35	48.5	88.3	0
20210618T064000	2021	06	18	06:40	49	86.6	0
20210618T064500	2021	06	18	06:45	49.6	85.3	0
20210618T065000	2021	06	18	06:50	50.2	83.3	0
20210618T065500	2021	06	18	06:55	50.7	80.4	0
20210618T070000	2021	06	18	07:00	51.7	80.8	0
20210618T070500	2021	06	18	07:05	52	80.8	0
20210618T071000	2021	06	18	07:10	52.3	80.7	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210618T071500	2021	06	18	07:15	52.9	81.6	0
20210618T072000	2021	06	18	07:20	52.8	80.4	0
20210618T072500	2021	06	18	07:25	53.2	79.5	0
20210618T073000	2021	06	18	07:30	53.9	78.5	0
20210618T073500	2021	06	18	07:35	53.8	81.7	0
20210618T074000	2021	06	18	07:40	53.4	84.2	0
20210618T074500	2021	06	18	07:45	53.3	84.4	0
20210618T075000	2021	06	18	07:50	54.3	82.9	0
20210618T075500	2021	06	18	07:55	55.2	76.3	0
20210618T080000	2021	06	18	08:00	55.4	74.3	0
20210618T080500	2021	06	18	08:05	55.6	75.1	0
20210618T081000	2021	06	18	08:10	56.3	74.5	0
20210618T081500	2021	06	18	08:15	56.2	72.9	0
20210618T082000	2021	06	18	08:20	56.8	71.9	0
20210618T082500	2021	06	18	08:25	57.2	71.1	0
20210618T083000	2021	06	18	08:30	57.9	70.7	0
20210618T083500	2021	06	18	08:35	58.3	70.4	0
20210618T084000	2021	06	18	08:40	59.1	71.2	0
20210618T084500	2021	06	18	08:45	59.2	69	0
20210618T085000	2021	06	18	08:50	59.7	69.7	0
20210618T085500	2021	06	18	08:55	59.9	67.8	0
20210618T090000	2021	06	18	09:00	60	66.6	0
20210618T090500	2021	06	18	09:05	60.8	66.7	0
20210618T091000	2021	06	18	09:10	61.3	66.2	0
20210618T091500	2021	06	18	09:15	61.7	66.8	0
20210618T092000	2021	06	18	09:20	62.3	66.3	0
20210618T092500	2021	06	18	09:25	61.7	64.4	0
20210618T093000	2021	06	18	09:30	62.1	67.2	0
20210618T093500	2021	06	18	09:35	62.9	66.6	0
20210618T094000	2021	06	18	09:40	63.3	66.8	0
20210618T094500	2021	06	18	09:45	64.1	67.4	0
20210618T095000	2021	06	18	09:50	64.5	66.9	0
20210618T095500	2021	06	18	09:55	65.1	65.8	0
20210618T100000	2021	06	18	10:00	64.9	65.4	0
20210618T100500	2021	06	18	10:05	65.2	66	0
20210618T101000	2021	06	18	10:10	65.9	64.9	0
20210618T101500	2021	06	18	10:15	67.1	65.9	0
20210618T102000	2021	06	18	10:20	67.7	64.6	0
20210618T102500	2021	06	18	10:25	68	63.7	0
20210618T103000	2021	06	18	10:30	68.6	62.6	0
20210618T103500	2021	06	18	10:35	69.1	61	0
20210618T104000	2021	06	18	10:40	68.9	62.3	0
20210618T104500	2021	06	18	10:45	69	63.6	0
20210618T105000	2021	06	18	10:50	70.5	62	0
20210618T105500	2021	06	18	10:55	69.9	60.7	0
20210618T110000	2021	06	18	11:00	70.9	60.7	0
20210618T110500	2021	06	18	11:05	71.1	61.4	0
20210618T111000	2021	06	18	11:10	71	59.9	0
20210618T111500	2021	06	18	11:15	71.8	59.2	0
20210618T112000	2021	06	18	11:20	72.8	57.7	0
20210618T112500	2021	06	18	11:25	72.7	58.6	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210618T113000	2021	06	18	11:30	73.5	56.5	0
20210618T113500	2021	06	18	11:35	73.5	55.2	0
20210618T114000	2021	06	18	11:40	74.1	54.9	0
20210618T114500	2021	06	18	11:45	74.1	57.3	0
20210618T115000	2021	06	18	11:50	74.7	56.4	0
20210618T115500	2021	06	18	11:55	75.4	53.9	0
20210618T120000	2021	06	18	12:00	75.9	54.1	0
20210618T120500	2021	06	18	12:05	76.3	53.8	0
20210618T121000	2021	06	18	12:10	77.3	48.7	0
20210618T121500	2021	06	18	12:15	77	49.4	0
20210618T122000	2021	06	18	12:20	77.6	46.1	0
20210618T122500	2021	06	18	12:25	78.7	45.6	0
20210618T123000	2021	06	18	12:30	79.3	46.1	0
20210618T123500	2021	06	18	12:35	78.6	43.3	0
20210618T124000	2021	06	18	12:40	79	44.5	0
20210618T124500	2021	06	18	12:45	79.2	42.9	0
20210618T125000	2021	06	18	12:50	78.4	42.3	0
20210618T125500	2021	06	18	12:55	78.8	43.1	0
20210618T130000	2021	06	18	13:00	79.3	43.3	0
20210618T130500	2021	06	18	13:05	79.4	41.9	0
20210618T131000	2021	06	18	13:10	79.6	43.3	0
20210618T131500	2021	06	18	13:15	79.3	42.6	0
20210618T132000	2021	06	18	13:20	79.1	43.2	0
20210618T132500	2021	06	18	13:25	79.2	44.5	0
20210618T133000	2021	06	18	13:30	79.2	44.5	0
20210618T133500	2021	06	18	13:35	79.3	46.1	0
20210618T134000	2021	06	18	13:40	79.5	44.1	0
20210618T134500	2021	06	18	13:45	80	45.1	0
20210618T135000	2021	06	18	13:50	80.5	43.2	0
20210618T135500	2021	06	18	13:55	80.5	43.1	0
20210618T140000	2021	06	18	14:00	81	44.5	0
20210618T140500	2021	06	18	14:05	80.4	43.2	0
20210618T141000	2021	06	18	14:10	80.2	43.8	0
20210618T141500	2021	06	18	14:15	80.3	43.4	0
20210618T142000	2021	06	18	14:20	80.2	45.1	0
20210618T142500	2021	06	18	14:25	79.5	44.7	0
20210618T143000	2021	06	18	14:30	79.3	46.2	0
20210618T143500	2021	06	18	14:35	79.6	46.2	0
20210618T144000	2021	06	18	14:40	79.8	46.5	0
20210618T144500	2021	06	18	14:45	80.1	47.6	0
20210618T145000	2021	06	18	14:50	79.7	47.1	0
20210618T145500	2021	06	18	14:55	79.2	47	0
20210618T150000	2021	06	18	15:00	79	47.1	0
20210618T150500	2021	06	18	15:05	78.6	47.7	0
20210618T151000	2021	06	18	15:10	78.5	47	0
20210618T151500	2021	06	18	15:15	78.2	48.1	0
20210618T152000	2021	06	18	15:20	78.2	49.8	0
20210618T152500	2021	06	18	15:25	78.4	49.1	0
20210618T153000	2021	06	18	15:30	78.5	50.8	0
20210618T153500	2021	06	18	15:35	78.7	49.3	0
20210618T154000	2021	06	18	15:40	78.8	49.1	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210618T154500	2021	06	18	15:45	78.7	48.7	0
20210618T155000	2021	06	18	15:50	78.5	48.9	0
20210618T155500	2021	06	18	15:55	78.1	49.4	0
20210618T160000	2021	06	18	16:00	77.8	50.8	0
20210618T160500	2021	06	18	16:05	77.5	52.2	0
20210618T161000	2021	06	18	16:10	77.4	52.5	0
20210618T161500	2021	06	18	16:15	77.4	51.9	0
20210618T162000	2021	06	18	16:20	77.1	54	0
20210618T162500	2021	06	18	16:25	76.9	56.3	0
20210618T163000	2021	06	18	16:30	77.1	53.7	0
20210618T163500	2021	06	18	16:35	76.8	55.3	0
20210618T164000	2021	06	18	16:40	76.8	56.1	0
20210618T164500	2021	06	18	16:45	76.5	57.6	0
20210618T165000	2021	06	18	16:50	76.2	60	0
20210618T165500	2021	06	18	16:55	76.1	62.3	0
20210618T170000	2021	06	18	17:00	76.1	64.2	0
20210618T170500	2021	06	18	17:05	76.4	61.2	0
20210618T171000	2021	06	18	17:10	76.4	61.2	0
20210618T171500	2021	06	18	17:15	75.8	65.5	0
20210618T172000	2021	06	18	17:20	75.7	64.6	0
20210618T172500	2021	06	18	17:25	75.8	62.2	0
20210618T173000	2021	06	18	17:30	75.5	65.7	0
20210618T173500	2021	06	18	17:35	75.2	66	0
20210618T174000	2021	06	18	17:40	75	64.1	0
20210618T174500	2021	06	18	17:45	75	61.9	0
20210618T175000	2021	06	18	17:50	74.9	61.5	0
20210618T175500	2021	06	18	17:55	74.8	62.3	0
20210618T180000	2021	06	18	18:00	74.6	63.6	0
20210618T180500	2021	06	18	18:05	74.5	65.7	0
20210618T181000	2021	06	18	18:10	74.7	64.3	0
20210618T181500	2021	06	18	18:15	74.7	63	0
20210618T182000	2021	06	18	18:20	74.8	62.5	0
20210618T182500	2021	06	18	18:25	74.5	63.3	0
20210618T183000	2021	06	18	18:30	74.3	65.4	0
20210618T183500	2021	06	18	18:35	73.5	68.3	0
20210618T184000	2021	06	18	18:40	73.3	68.5	0
20210618T184500	2021	06	18	18:45	73.4	68.3	0
20210618T185000	2021	06	18	18:50	73.5	68.3	0
20210618T185500	2021	06	18	18:55	73.4	69.4	0
20210618T190000	2021	06	18	19:00	73.1	70.2	0
20210618T190500	2021	06	18	19:05	72.8	72.2	0
20210618T191000	2021	06	18	19:10	72.7	72.7	0
20210618T191500	2021	06	18	19:15	72.5	73.3	0
20210618T192000	2021	06	18	19:20	72.8	70.9	0
20210618T192500	2021	06	18	19:25	73	68.9	0
20210618T193000	2021	06	18	19:30	73.1	66.9	0
20210618T193500	2021	06	18	19:35	73.1	66.6	0
20210618T194000	2021	06	18	19:40	73.1	65.5	0
20210618T194500	2021	06	18	19:45	73.4	63.8	0
20210618T195000	2021	06	18	19:50	73.4	63.3	0
20210618T195500	2021	06	18	19:55	73.8	60.6	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210618T200000	2021	06	18	20:00	73.6	60.2	0
20210618T200500	2021	06	18	20:05	73.4	60.9	0
20210618T201000	2021	06	18	20:10	73.4	61.2	0
20210618T201500	2021	06	18	20:15	72.6	64.4	0
20210618T202000	2021	06	18	20:20	71.7	68	0
20210618T202500	2021	06	18	20:25	71.3	70.9	0
20210618T203000	2021	06	18	20:30	70.2	71.6	0
20210618T203500	2021	06	18	20:35	70.9	68.1	0
20210618T204000	2021	06	18	20:40	70.5	72.6	0
20210618T204500	2021	06	18	20:45	70.4	74.7	0
20210618T205000	2021	06	18	20:50	69.9	76.4	0
20210618T205500	2021	06	18	20:55	68.4	80.1	0
20210618T210000	2021	06	18	21:00	69.3	78.3	0
20210618T210500	2021	06	18	21:05	69.2	78.7	0
20210618T211000	2021	06	18	21:10	68.8	78.7	0
20210618T211500	2021	06	18	21:15	69	78.3	0
20210618T212000	2021	06	18	21:20	69.1	78.1	0
20210618T212500	2021	06	18	21:25	70.5	74	0
20210618T213000	2021	06	18	21:30	70.9	74.6	0
20210618T213500	2021	06	18	21:35	71	75.3	0
20210618T214000	2021	06	18	21:40	70.2	76.9	0
20210618T214500	2021	06	18	21:45	69.7	78.2	0
20210618T215000	2021	06	18	21:50	69.1	79.8	0
20210618T215500	2021	06	18	21:55	69	80.4	0
20210618T220000	2021	06	18	22:00	69	79.7	0
20210618T220500	2021	06	18	22:05	68.8	79.6	0
20210618T221000	2021	06	18	22:10	68.6	79.7	0
20210618T221500	2021	06	18	22:15	68.3	80.7	0
20210618T222000	2021	06	18	22:20	67.9	82.3	0
20210618T222500	2021	06	18	22:25	67.4	84.6	0
20210618T223000	2021	06	18	22:30	67	86.8	0
20210618T223500	2021	06	18	22:35	67	87.5	0
20210618T224000	2021	06	18	22:40	66.9	87.9	0
20210618T224500	2021	06	18	22:45	66.9	87.9	0
20210618T225000	2021	06	18	22:50	66.9	87.6	0
20210618T225500	2021	06	18	22:55	66.6	88.9	0
20210618T230000	2021	06	18	23:00	66.5	89.3	0
20210618T230500	2021	06	18	23:05	66.7	88.4	0
20210618T231000	2021	06	18	23:10	66.8	87.5	0
20210618T231500	2021	06	18	23:15	66.9	87.3	0
20210618T232000	2021	06	18	23:20	66.9	86.9	0
20210618T232500	2021	06	18	23:25	67.1	85.7	0
20210618T233000	2021	06	18	23:30	67	84.7	0
20210618T233500	2021	06	18	23:35	66.3	85.9	0
20210618T234000	2021	06	18	23:40	66	85.9	0
20210618T234500	2021	06	18	23:45	66.1	85.3	0
20210618T235000	2021	06	18	23:50	65.3	87.4	0
20210618T235500	2021	06	18	23:55	66.3	85.8	0
20210619T000000	2021	06	19	00:00	66.3	85.9	0
20210619T000500	2021	06	19	00:05	66	87.6	0
20210619T001000	2021	06	19	00:10	66.5	85.9	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210619T001500	2021	06	19	00:15	66.5	85.5	0
20210619T002000	2021	06	19	00:20	66.2	88.2	0
20210619T002500	2021	06	19	00:25	66.3	88.2	0
20210619T003000	2021	06	19	00:30	67	85.8	0
20210619T003500	2021	06	19	00:35	66.7	85.8	0
20210619T004000	2021	06	19	00:40	66.5	86.2	0
20210619T004500	2021	06	19	00:45	66.2	85.7	0
20210619T005000	2021	06	19	00:50	68.4	76.7	0
20210619T005500	2021	06	19	00:55	67.4	79	0
20210619T010000	2021	06	19	01:00	67.2	79.4	0
20210619T010500	2021	06	19	01:05	68.4	75.2	0
20210619T011000	2021	06	19	01:10	70.9	65.2	0
20210619T011500	2021	06	19	01:15	72.3	57.9	0
20210619T012000	2021	06	19	01:20	72.7	55.3	0
20210619T012500	2021	06	19	01:25	72.7	54.6	0
20210619T013000	2021	06	19	01:30	72.8	54.6	0
20210619T013500	2021	06	19	01:35	73.1	53.4	0
20210619T014000	2021	06	19	01:40	73.3	52.9	0
20210619T014500	2021	06	19	01:45	73.4	52.7	0
20210619T015000	2021	06	19	01:50	73.2	53.3	0
20210619T015500	2021	06	19	01:55	73	53.9	0
20210619T020000	2021	06	19	02:00	73.1	53.6	0
20210619T020500	2021	06	19	02:05	73	53.8	0
20210619T021000	2021	06	19	02:10	72.8	54.1	0
20210619T021500	2021	06	19	02:15	73.2	53.1	0
20210619T022000	2021	06	19	02:20	73.1	53.4	0
20210619T022500	2021	06	19	02:25	72.9	54.2	0
20210619T023000	2021	06	19	02:30	73	54.6	0
20210619T023500	2021	06	19	02:35	73.5	53.8	0
20210619T024000	2021	06	19	02:40	73.6	53.5	0
20210619T024500	2021	06	19	02:45	73.5	53.8	0
20210619T025000	2021	06	19	02:50	73.5	53.9	0
20210619T025500	2021	06	19	02:55	73.4	54.4	0
20210619T030000	2021	06	19	03:00	73.7	53.3	0
20210619T030500	2021	06	19	03:05	73.5	53.8	0
20210619T031000	2021	06	19	03:10	72.5	55.6	0
20210619T031500	2021	06	19	03:15	72.4	56.5	0
20210619T032000	2021	06	19	03:20	72.6	56.1	0
20210619T032500	2021	06	19	03:25	72.8	55.4	0
20210619T033000	2021	06	19	03:30	72.7	55.5	0
20210619T033500	2021	06	19	03:35	72.9	55.6	0
20210619T034000	2021	06	19	03:40	72.7	56	0
20210619T034500	2021	06	19	03:45	72.8	56.1	0
20210619T035000	2021	06	19	03:50	72.3	57.4	0
20210619T035500	2021	06	19	03:55	72.3	57.9	0
20210619T040000	2021	06	19	04:00	72.2	58.1	0
20210619T040500	2021	06	19	04:05	72.3	58.2	0
20210619T041000	2021	06	19	04:10	72.1	58.6	0
20210619T041500	2021	06	19	04:15	72.1	59	0
20210619T042000	2021	06	19	04:20	72.1	58.9	0
20210619T042500	2021	06	19	04:25	71.7	59.7	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210619T043000	2021	06	19	04:30	71.7	60.2	0
20210619T043500	2021	06	19	04:35	71.7	60.3	0
20210619T044000	2021	06	19	04:40	71.6	60.7	0
20210619T044500	2021	06	19	04:45	71.6	61	0
20210619T045000	2021	06	19	04:50	71.5	61.6	0
20210619T045500	2021	06	19	04:55	71.5	62	0
20210619T050000	2021	06	19	05:00	71.6	61.9	0
20210619T050500	2021	06	19	05:05	71.8	62	0
20210619T051000	2021	06	19	05:10	71.9	61.7	0
20210619T051500	2021	06	19	05:15	71.5	62.8	0
20210619T052000	2021	06	19	05:20	71.5	62.8	0
20210619T052500	2021	06	19	05:25	71.4	63.6	0
20210619T053000	2021	06	19	05:30	71.6	63.6	0
20210619T053500	2021	06	19	05:35	71.5	63.9	0
20210619T054000	2021	06	19	05:40	71.4	63.9	0
20210619T054500	2021	06	19	05:45	71.4	64.1	0
20210619T055000	2021	06	19	05:50	71.1	64.6	0
20210619T055500	2021	06	19	05:55	71.1	64.8	0
20210619T060000	2021	06	19	06:00	70.9	66.1	0
20210619T060500	2021	06	19	06:05	71.1	65.6	0
20210619T061000	2021	06	19	06:10	70.7	66.5	0
20210619T061500	2021	06	19	06:15	70.4	67.5	0
20210619T062000	2021	06	19	06:20	69.8	68.5	0
20210619T062500	2021	06	19	06:25	70.2	67	0
20210619T063000	2021	06	19	06:30	70	67.2	0
20210619T063500	2021	06	19	06:35	69.8	67.6	0
20210619T064000	2021	06	19	06:40	69.4	69.4	0
20210619T064500	2021	06	19	06:45	69.2	69.8	0
20210619T065000	2021	06	19	06:50	69	70.2	0
20210619T065500	2021	06	19	06:55	69.2	69.7	0
20210619T070000	2021	06	19	07:00	69	70.2	0
20210619T070500	2021	06	19	07:05	69.1	70.5	0
20210619T071000	2021	06	19	07:10	69	71.1	0
20210619T071500	2021	06	19	07:15	68.5	73.1	0
20210619T072000	2021	06	19	07:20	67.8	76.1	0
20210619T072500	2021	06	19	07:25	67.5	78.2	0
20210619T073000	2021	06	19	07:30	67.4	79.6	0
20210619T073500	2021	06	19	07:35	67.2	80.8	0
20210619T074000	2021	06	19	07:40	66.9	82.1	0
20210619T074500	2021	06	19	07:45	67	82.2	0
20210619T075000	2021	06	19	07:50	67.1	83.2	0
20210619T075500	2021	06	19	07:55	67.1	82.8	0
20210619T080000	2021	06	19	08:00	67.1	84	0
20210619T080500	2021	06	19	08:05	67	84.4	0
20210619T081000	2021	06	19	08:10	67	85	0
20210619T081500	2021	06	19	08:15	67.2	85.4	0
20210619T082000	2021	06	19	08:20	67.5	83.9	0
20210619T082500	2021	06	19	08:25	67.9	84.5	0
20210619T083000	2021	06	19	08:30	68	84.1	0
20210619T083500	2021	06	19	08:35	68.5	83.4	0
20210619T084000	2021	06	19	08:40	68.7	81.6	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210619T084500	2021	06	19	08:45	69.6	80.6	0
20210619T085000	2021	06	19	08:50	70.1	79.8	0
20210619T085500	2021	06	19	08:55	70.4	79.7	0
20210619T090000	2021	06	19	09:00	70.4	78.8	0
20210619T090500	2021	06	19	09:05	71.2	80	0
20210619T091000	2021	06	19	09:10	71.2	79.4	0
20210619T091500	2021	06	19	09:15	71.6	79.5	0
20210619T092000	2021	06	19	09:20	71.9	80	0
20210619T092500	2021	06	19	09:25	72.5	80.1	0
20210619T093000	2021	06	19	09:30	72.5	79.9	0
20210619T093500	2021	06	19	09:35	71.9	79.7	0
20210619T094000	2021	06	19	09:40	72.2	80.9	0
20210619T094500	2021	06	19	09:45	72.1	79.9	0
20210619T095000	2021	06	19	09:50	72.5	81.5	0
20210619T095500	2021	06	19	09:55	71.6	82	0
20210619T100000	2021	06	19	10:00	71.4	83	0
20210619T100500	2021	06	19	10:05	72	83.1	0
20210619T101000	2021	06	19	10:10	72	82.6	0
20210619T101500	2021	06	19	10:15	72.3	82.7	0
20210619T102000	2021	06	19	10:20	72.5	81.7	0
20210619T102500	2021	06	19	10:25	72.5	81.5	0
20210619T103000	2021	06	19	10:30	73.1	80.6	0
20210619T103500	2021	06	19	10:35	73.3	81	0
20210619T104000	2021	06	19	10:40	73.1	81.3	0
20210619T104500	2021	06	19	10:45	73.1	81.1	0
20210619T105000	2021	06	19	10:50	73.2	80.9	0
20210619T105500	2021	06	19	10:55	73.3	79.9	0
20210619T110000	2021	06	19	11:00	74	79	0
20210619T110500	2021	06	19	11:05	73.6	79.5	0
20210619T111000	2021	06	19	11:10	74.2	78.3	0
20210619T111500	2021	06	19	11:15	74.3	77.5	0
20210619T112000	2021	06	19	11:20	74.6	76.6	0
20210619T112500	2021	06	19	11:25	74.9	76.7	0
20210619T113000	2021	06	19	11:30	75.1	76.7	0
20210619T113500	2021	06	19	11:35	75.5	74.7	0
20210619T114000	2021	06	19	11:40	75.2	77.1	0
20210619T114500	2021	06	19	11:45	75.3	77.6	0
20210619T115000	2021	06	19	11:50	75.3	77.5	0
20210619T115500	2021	06	19	11:55	75.6	77.2	0
20210619T120000	2021	06	19	12:00	76.3	76.4	0
20210619T120500	2021	06	19	12:05	76.2	74.8	0
20210619T121000	2021	06	19	12:10	76.2	76.3	0
20210619T121500	2021	06	19	12:15	76.6	74.2	0
20210619T122000	2021	06	19	12:20	76.8	73.6	0
20210619T122500	2021	06	19	12:25	77	73.6	0
20210619T123000	2021	06	19	12:30	76.8	74.6	0
20210619T123500	2021	06	19	12:35	76.8	74	0
20210619T124000	2021	06	19	12:40	77.1	74.9	0
20210619T124500	2021	06	19	12:45	76.8	71.8	0
20210619T125000	2021	06	19	12:50	77.1	73	0
20210619T125500	2021	06	19	12:55	77.4	72	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210619T130000	2021	06	19	13:00	77.6	71.7	0
20210619T130500	2021	06	19	13:05	77.8	72.8	0
20210619T131000	2021	06	19	13:10	77.9	73.3	0
20210619T131500	2021	06	19	13:15	78.3	73.1	0
20210619T132000	2021	06	19	13:20	78.7	71.2	0
20210619T132500	2021	06	19	13:25	79.6	53.9	0
20210619T133000	2021	06	19	13:30	79.7	50.6	0
20210619T133500	2021	06	19	13:35	79.8	51.4	0
20210619T134000	2021	06	19	13:40	79.9	47.7	0
20210619T134500	2021	06	19	13:45	80	49	0
20210619T135000	2021	06	19	13:50	80.3	47.8	0
20210619T135500	2021	06	19	13:55	80.2	45.6	0
20210619T140000	2021	06	19	14:00	80.1	45	0
20210619T140500	2021	06	19	14:05	79.9	44.3	0
20210619T141000	2021	06	19	14:10	79.9	45.8	0
20210619T141500	2021	06	19	14:15	80	45.5	0
20210619T142000	2021	06	19	14:20	79.9	46.8	0
20210619T142500	2021	06	19	14:25	80.1	48.6	0
20210619T143000	2021	06	19	14:30	80.3	48.9	0
20210619T143500	2021	06	19	14:35	80.2	47.3	0
20210619T144000	2021	06	19	14:40	80	47.3	0
20210619T144500	2021	06	19	14:45	80.2	46	0
20210619T145000	2021	06	19	14:50	80.3	46.7	0
20210619T145500	2021	06	19	14:55	80.3	45.7	0
20210619T150000	2021	06	19	15:00	79.9	44.3	0
20210619T150500	2021	06	19	15:05	80.2	45.4	0
20210619T151000	2021	06	19	15:10	80.7	42.8	0
20210619T151500	2021	06	19	15:15	80.8	43.1	0
20210619T152000	2021	06	19	15:20	81.2	42.8	0
20210619T152500	2021	06	19	15:25	81.1	41	0
20210619T153000	2021	06	19	15:30	82	40.1	0
20210619T153500	2021	06	19	15:35	82.1	39.6	0
20210619T154000	2021	06	19	15:40	81.7	39.7	0
20210619T154500	2021	06	19	15:45	81.2	40.3	0
20210619T155000	2021	06	19	15:50	80.4	41.3	0
20210619T155500	2021	06	19	15:55	80.5	43.5	0
20210619T160000	2021	06	19	16:00	80.9	42.2	0
20210619T160500	2021	06	19	16:05	80.7	41.8	0
20210619T161000	2021	06	19	16:10	80.9	40.7	0
20210619T161500	2021	06	19	16:15	80.8	40.7	0
20210619T162000	2021	06	19	16:20	80.4	41.4	0
20210619T162500	2021	06	19	16:25	79.9	42.3	0
20210619T163000	2021	06	19	16:30	79.8	42.3	0
20210619T163500	2021	06	19	16:35	79.9	43.4	0
20210619T164000	2021	06	19	16:40	80.6	43.9	0
20210619T164500	2021	06	19	16:45	80.5	45	0
20210619T165000	2021	06	19	16:50	80	45.9	0
20210619T165500	2021	06	19	16:55	80.5	45.6	0
20210619T170000	2021	06	19	17:00	81	45.1	0
20210619T170500	2021	06	19	17:05	80.8	43.4	0
20210619T171000	2021	06	19	17:10	81	46.3	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210619T171500	2021	06	19	17:15	80.9	45.2	0
20210619T172000	2021	06	19	17:20	80.9	43.7	0
20210619T172500	2021	06	19	17:25	80.7	44.5	0
20210619T173000	2021	06	19	17:30	80.6	46.2	0
20210619T173500	2021	06	19	17:35	80.4	48.1	0
20210619T174000	2021	06	19	17:40	80	46.9	0
20210619T174500	2021	06	19	17:45	79.5	48.3	0
20210619T175000	2021	06	19	17:50	79.7	47	0
20210619T175500	2021	06	19	17:55	79.6	47	0
20210619T180000	2021	06	19	18:00	79.2	48.3	0
20210619T180500	2021	06	19	18:05	78.9	48.8	0
20210619T181000	2021	06	19	18:10	79	48.5	0
20210619T181500	2021	06	19	18:15	78.8	49.3	0
20210619T182000	2021	06	19	18:20	78.5	50.9	0
20210619T182500	2021	06	19	18:25	77.9	53.2	0
20210619T183000	2021	06	19	18:30	77.4	55	0
20210619T183500	2021	06	19	18:35	77.4	55.5	0
20210619T184000	2021	06	19	18:40	77	56.8	0
20210619T184500	2021	06	19	18:45	76.6	60	0
20210619T185000	2021	06	19	18:50	76.3	60.9	0
20210619T185500	2021	06	19	18:55	75.7	64.1	0
20210619T190000	2021	06	19	19:00	75.2	65.4	0
20210619T190500	2021	06	19	19:05	75.5	63.2	0
20210619T191000	2021	06	19	19:10	75.4	62.9	0
20210619T191500	2021	06	19	19:15	75	63.7	0
20210619T192000	2021	06	19	19:20	74.6	64.8	0
20210619T192500	2021	06	19	19:25	74.5	64.3	0
20210619T193000	2021	06	19	19:30	74.8	63	0
20210619T193500	2021	06	19	19:35	74.7	61.7	0
20210619T194000	2021	06	19	19:40	73.9	63	0
20210619T194500	2021	06	19	19:45	74.4	61	0
20210619T195000	2021	06	19	19:50	75	57.9	0
20210619T195500	2021	06	19	19:55	75.2	56	0
20210619T200000	2021	06	19	20:00	75	56.2	0
20210619T200500	2021	06	19	20:05	74.5	57.9	0
20210619T201000	2021	06	19	20:10	75.1	54.9	0
20210619T201500	2021	06	19	20:15	74.9	53.4	0
20210619T202000	2021	06	19	20:20	74.4	54	0
20210619T202500	2021	06	19	20:25	73.8	55.5	0
20210619T203000	2021	06	19	20:30	73.2	57.8	0
20210619T203500	2021	06	19	20:35	73.1	58.6	0
20210619T204000	2021	06	19	20:40	72.7	59.6	0
20210619T204500	2021	06	19	20:45	72.8	59.6	0
20210619T205000	2021	06	19	20:50	72.5	59.7	0
20210619T205500	2021	06	19	20:55	72.3	60	0
20210619T210000	2021	06	19	21:00	71.8	60.6	0
20210619T210500	2021	06	19	21:05	71	62.3	0
20210619T211000	2021	06	19	21:10	70.5	63.4	0
20210619T211500	2021	06	19	21:15	69.9	65	0
20210619T212000	2021	06	19	21:20	69.3	66.2	0
20210619T212500	2021	06	19	21:25	69.2	66.1	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210619T213000	2021	06	19	21:30	69	66.5	0
20210619T213500	2021	06	19	21:35	68.8	66.2	0
20210619T214000	2021	06	19	21:40	68.9	64.7	0
20210619T214500	2021	06	19	21:45	68.9	63.5	0
20210619T215000	2021	06	19	21:50	69	62.6	0
20210619T215500	2021	06	19	21:55	68.7	63.8	0
20210619T220000	2021	06	19	22:00	68.6	65	0
20210619T220500	2021	06	19	22:05	68.5	65.4	0
20210619T221000	2021	06	19	22:10	68.4	66	0
20210619T221500	2021	06	19	22:15	68.2	66.6	0
20210619T222000	2021	06	19	22:20	67.8	67.4	0
20210619T222500	2021	06	19	22:25	67.9	67.1	0
20210619T223000	2021	06	19	22:30	68	66.2	0
20210619T223500	2021	06	19	22:35	67.7	66.8	0
20210619T224000	2021	06	19	22:40	68	65.9	0
20210619T224500	2021	06	19	22:45	67.9	65.7	0
20210619T225000	2021	06	19	22:50	68.1	65	0
20210619T225500	2021	06	19	22:55	67.9	65.1	0
20210619T230000	2021	06	19	23:00	68	64.7	0
20210619T230500	2021	06	19	23:05	68.2	64.1	0
20210619T231000	2021	06	19	23:10	68.5	62.9	0
20210619T231500	2021	06	19	23:15	66.8	69.4	0.009
20210619T232000	2021	06	19	23:20	64.9	77.8	0.033
20210619T232500	2021	06	19	23:25	63.7	83.7	0.009
20210619T233000	2021	06	19	23:30	63.5	86	0.007
20210619T233500	2021	06	19	23:35	63.2	87.9	0.014
20210619T234000	2021	06	19	23:40	62.8	89.9	0.007
20210619T234500	2021	06	19	23:45	62.8	90.2	0.002
20210619T235000	2021	06	19	23:50	62.8	90.8	0.01
20210619T235500	2021	06	19	23:55	62.2	93.2	0.002
20210620T000000	2021	06	20	00:00	62	94.8	0.001
20210620T000500	2021	06	20	00:05	62.2	94.7	0
20210620T001000	2021	06	20	00:10	62.4	94.1	0
20210620T001500	2021	06	20	00:15	62.5	93.9	0
20210620T002000	2021	06	20	00:20	62.5	93.6	0
20210620T002500	2021	06	20	00:25	62.7	92.8	0
20210620T003000	2021	06	20	00:30	62.7	92.6	0
20210620T003500	2021	06	20	00:35	62.5	93	0
20210620T004000	2021	06	20	00:40	62.6	92.8	0
20210620T004500	2021	06	20	00:45	62.5	93.2	0
20210620T005000	2021	06	20	00:50	62.4	93.4	0
20210620T005500	2021	06	20	00:55	62.4	93.8	0
20210620T010000	2021	06	20	01:00	62.4	93.7	0
20210620T010500	2021	06	20	01:05	62.5	93.3	0
20210620T011000	2021	06	20	01:10	62.7	92.9	0
20210620T011500	2021	06	20	01:15	62.8	92.4	0
20210620T012000	2021	06	20	01:20	63	91.4	0
20210620T012500	2021	06	20	01:25	63	91.4	0
20210620T013000	2021	06	20	01:30	62.9	91.5	0
20210620T013500	2021	06	20	01:35	62.7	92.5	0
20210620T014000	2021	06	20	01:40	62.3	94.1	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210620T014500	2021	06	20	01:45	62.1	95	0
20210620T015000	2021	06	20	01:50	62.2	95.2	0
20210620T015500	2021	06	20	01:55	62.2	94.9	0
20210620T020000	2021	06	20	02:00	61.8	95.5	0
20210620T020500	2021	06	20	02:05	61.9	95.6	0
20210620T021000	2021	06	20	02:10	61.9	95.3	0
20210620T021500	2021	06	20	02:15	61.9	94.5	0
20210620T022000	2021	06	20	02:20	61.7	95	0
20210620T022500	2021	06	20	02:25	61.5	95.7	0
20210620T023000	2021	06	20	02:30	61.7	95.9	0
20210620T023500	2021	06	20	02:35	61.9	95.1	0
20210620T024000	2021	06	20	02:40	62.1	93.6	0
20210620T024500	2021	06	20	02:45	62.1	93.7	0
20210620T025000	2021	06	20	02:50	62	93.6	0
20210620T025500	2021	06	20	02:55	61.7	95	0
20210620T030000	2021	06	20	03:00	61.5	96	0
20210620T030500	2021	06	20	03:05	61.4	96.8	0
20210620T031000	2021	06	20	03:10	61.5	97.2	0
20210620T031500	2021	06	20	03:15	61.9	96.1	0
20210620T032000	2021	06	20	03:20	61.9	95.3	0
20210620T032500	2021	06	20	03:25	61.8	95.7	0
20210620T033000	2021	06	20	03:30	61.6	95.8	0
20210620T033500	2021	06	20	03:35	61.6	96	0
20210620T034000	2021	06	20	03:40	61.6	95.7	0
20210620T034500	2021	06	20	03:45	61.7	94.9	0
20210620T035000	2021	06	20	03:50	61.5	94.7	0
20210620T035500	2021	06	20	03:55	61.3	94.6	0
20210620T040000	2021	06	20	04:00	61.2	94.4	0
20210620T040500	2021	06	20	04:05	60.9	94.3	0
20210620T041000	2021	06	20	04:10	60.3	94.3	0
20210620T041500	2021	06	20	04:15	59.8	95.1	0
20210620T042000	2021	06	20	04:20	59.5	95.7	0
20210620T042500	2021	06	20	04:25	59.3	96.7	0
20210620T043000	2021	06	20	04:30	58.8	96.6	0
20210620T043500	2021	06	20	04:35	58.9	97.6	0
20210620T044000	2021	06	20	04:40	59.3	97.7	0
20210620T044500	2021	06	20	04:45	59	97.1	0
20210620T045000	2021	06	20	04:50	59.3	97.6	0
20210620T045500	2021	06	20	04:55	58.9	97	0
20210620T050000	2021	06	20	05:00	58.7	97.2	0
20210620T050500	2021	06	20	05:05	58.6	97.3	0
20210620T051000	2021	06	20	05:10	58.4	97.7	0
20210620T051500	2021	06	20	05:15	58	97.8	0
20210620T052000	2021	06	20	05:20	57.8	98	0
20210620T052500	2021	06	20	05:25	58	98.3	0
20210620T053000	2021	06	20	05:30	58.2	98.2	0
20210620T053500	2021	06	20	05:35	57.8	98.4	0
20210620T054000	2021	06	20	05:40	56.5	97.4	0
20210620T054500	2021	06	20	05:45	57.4	98.8	0
20210620T055000	2021	06	20	05:50	58	98.9	0
20210620T055500	2021	06	20	05:55	57.5	98.3	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210620T060000	2021	06	20	06:00	58.1	98.3	0
20210620T060500	2021	06	20	06:05	58.4	98.2	0
20210620T061000	2021	06	20	06:10	59.1	97.2	0
20210620T061500	2021	06	20	06:15	59.1	96.2	0
20210620T062000	2021	06	20	06:20	59.6	96.1	0
20210620T062500	2021	06	20	06:25	60	95.4	0
20210620T063000	2021	06	20	06:30	60.4	93.7	0
20210620T063500	2021	06	20	06:35	60.8	92.4	0
20210620T064000	2021	06	20	06:40	61.1	92.1	0
20210620T064500	2021	06	20	06:45	61.5	91.5	0
20210620T065000	2021	06	20	06:50	61.8	90.4	0
20210620T065500	2021	06	20	06:55	62.1	90.6	0
20210620T070000	2021	06	20	07:00	62.5	87.6	0
20210620T070500	2021	06	20	07:05	62.6	87.6	0
20210620T071000	2021	06	20	07:10	62.9	88.3	0
20210620T071500	2021	06	20	07:15	62.9	87.7	0
20210620T072000	2021	06	20	07:20	63.1	87.7	0
20210620T072500	2021	06	20	07:25	63.6	86.5	0
20210620T073000	2021	06	20	07:30	63.7	83.7	0
20210620T073500	2021	06	20	07:35	63.8	81.9	0
20210620T074000	2021	06	20	07:40	64.9	79.8	0
20210620T074500	2021	06	20	07:45	64.2	79.7	0
20210620T075000	2021	06	20	07:50	64.3	81.3	0
20210620T075500	2021	06	20	07:55	64.6	83.2	0
20210620T080000	2021	06	20	08:00	65.5	82.4	0
20210620T080500	2021	06	20	08:05	65	81.9	0
20210620T081000	2021	06	20	08:10	64.8	83.9	0
20210620T081500	2021	06	20	08:15	65.2	84	0
20210620T082000	2021	06	20	08:20	65.3	82.8	0
20210620T082500	2021	06	20	08:25	65.2	83.4	0
20210620T083000	2021	06	20	08:30	65.8	83.3	0
20210620T083500	2021	06	20	08:35	66	83.8	0
20210620T084000	2021	06	20	08:40	66.4	83.2	0
20210620T084500	2021	06	20	08:45	66.5	81.8	0
20210620T085000	2021	06	20	08:50	67.7	82.9	0
20210620T085500	2021	06	20	08:55	67.1	82.2	0
20210620T090000	2021	06	20	09:00	67.5	83.2	0
20210620T090500	2021	06	20	09:05	67.4	82	0
20210620T091000	2021	06	20	09:10	67.6	82.1	0
20210620T091500	2021	06	20	09:15	67.7	81.7	0
20210620T092000	2021	06	20	09:20	68.1	81.9	0
20210620T092500	2021	06	20	09:25	68.6	81	0
20210620T093000	2021	06	20	09:30	69.1	79.8	0
20210620T093500	2021	06	20	09:35	69.1	78.1	0
20210620T094000	2021	06	20	09:40	69.4	78.7	0
20210620T094500	2021	06	20	09:45	69.8	76.2	0
20210620T095000	2021	06	20	09:50	70	74.7	0
20210620T095500	2021	06	20	09:55	70.9	74	0
20210620T100000	2021	06	20	10:00	70.7	69.9	0
20210620T100500	2021	06	20	10:05	70.7	69.8	0
20210620T101000	2021	06	20	10:10	71.2	70.6	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210620T101500	2021	06	20	10:15	72.2	72	0
20210620T102000	2021	06	20	10:20	71.9	70.9	0
20210620T102500	2021	06	20	10:25	71.9	69.7	0
20210620T103000	2021	06	20	10:30	71.6	70.4	0
20210620T103500	2021	06	20	10:35	71.5	70.6	0
20210620T104000	2021	06	20	10:40	71.8	70.6	0
20210620T104500	2021	06	20	10:45	72.1	70.1	0
20210620T105000	2021	06	20	10:50	71.8	68.4	0
20210620T105500	2021	06	20	10:55	72.6	68.5	0
20210620T110000	2021	06	20	11:00	72.3	68.5	0
20210620T110500	2021	06	20	11:05	73.1	68.7	0
20210620T111000	2021	06	20	11:10	73.5	67.5	0
20210620T111500	2021	06	20	11:15	73.4	68.4	0
20210620T112000	2021	06	20	11:20	73.1	67.1	0
20210620T112500	2021	06	20	11:25	74.5	68.5	0
20210620T113000	2021	06	20	11:30	73.7	66.8	0
20210620T113500	2021	06	20	11:35	74	67.8	0
20210620T114000	2021	06	20	11:40	73.9	65.5	0
20210620T114500	2021	06	20	11:45	74.2	64.2	0
20210620T115000	2021	06	20	11:50	74.4	63.9	0
20210620T115500	2021	06	20	11:55	74.9	63.7	0
20210620T120000	2021	06	20	12:00	74.7	63.6	0
20210620T120500	2021	06	20	12:05	75.2	62.9	0
20210620T121000	2021	06	20	12:10	75.8	62.2	0
20210620T121500	2021	06	20	12:15	76.2	62.1	0
20210620T122000	2021	06	20	12:20	75.7	61.1	0
20210620T122500	2021	06	20	12:25	75.9	60.5	0
20210620T123000	2021	06	20	12:30	76.4	63	0
20210620T123500	2021	06	20	12:35	76.2	63	0
20210620T124000	2021	06	20	12:40	76.9	62	0
20210620T124500	2021	06	20	12:45	78.1	62.9	0
20210620T125000	2021	06	20	12:50	77.7	60.4	0
20210620T125500	2021	06	20	12:55	77.3	61.5	0
20210620T130000	2021	06	20	13:00	77.5	57.7	0
20210620T130500	2021	06	20	13:05	77.5	58.3	0
20210620T131000	2021	06	20	13:10	77.4	58.8	0
20210620T131500	2021	06	20	13:15	77.4	58.8	0
20210620T132000	2021	06	20	13:20	77.8	57.7	0
20210620T132500	2021	06	20	13:25	77.3	59.1	0
20210620T133000	2021	06	20	13:30	76.7	59.9	0
20210620T133500	2021	06	20	13:35	76.9	61.1	0
20210620T134000	2021	06	20	13:40	77.8	61.3	0
20210620T134500	2021	06	20	13:45	79.2	60	0
20210620T135000	2021	06	20	13:50	79.2	58.6	0
20210620T135500	2021	06	20	13:55	78.4	57.6	0
20210620T140000	2021	06	20	14:00	78.8	56	0
20210620T140500	2021	06	20	14:05	80.1	57.5	0
20210620T141000	2021	06	20	14:10	78.3	54.8	0
20210620T141500	2021	06	20	14:15	79.1	57.7	0
20210620T142000	2021	06	20	14:20	78.3	57.9	0
20210620T142500	2021	06	20	14:25	77.7	58.5	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210620T143000	2021	06	20	14:30	77.8	59.1	0
20210620T143500	2021	06	20	14:35	79.4	57.6	0
20210620T144000	2021	06	20	14:40	79.7	54.6	0
20210620T144500	2021	06	20	14:45	80.2	55.1	0
20210620T145000	2021	06	20	14:50	80.3	55.7	0
20210620T145500	2021	06	20	14:55	80.6	54.3	0
20210620T150000	2021	06	20	15:00	80.3	53.3	0
20210620T150500	2021	06	20	15:05	80.1	54.6	0
20210620T151000	2021	06	20	15:10	80.5	52.8	0
20210620T151500	2021	06	20	15:15	79.8	54.4	0
20210620T152000	2021	06	20	15:20	79.5	55.6	0
20210620T152500	2021	06	20	15:25	79.4	57.3	0
20210620T153000	2021	06	20	15:30	79.4	54.6	0
20210620T153500	2021	06	20	15:35	80.9	55.7	0
20210620T154000	2021	06	20	15:40	79.9	52.3	0
20210620T154500	2021	06	20	15:45	80.4	53.2	0
20210620T155000	2021	06	20	15:50	79.9	53.1	0
20210620T155500	2021	06	20	15:55	80.2	56	0
20210620T160000	2021	06	20	16:00	80.7	51.2	0
20210620T160500	2021	06	20	16:05	80.8	54.8	0
20210620T161000	2021	06	20	16:10	80.6	52.9	0
20210620T161500	2021	06	20	16:15	80.7	53.1	0
20210620T162000	2021	06	20	16:20	81.2	52.9	0
20210620T162500	2021	06	20	16:25	81.2	53.7	0
20210620T163000	2021	06	20	16:30	81.2	54.5	0
20210620T163500	2021	06	20	16:35	80.2	53	0
20210620T164000	2021	06	20	16:40	80	54.5	0
20210620T164500	2021	06	20	16:45	79.6	54.4	0
20210620T165000	2021	06	20	16:50	79.8	54.1	0
20210620T165500	2021	06	20	16:55	80.1	55	0
20210620T170000	2021	06	20	17:00	80.8	52.5	0
20210620T170500	2021	06	20	17:05	80.6	53.7	0
20210620T171000	2021	06	20	17:10	80.4	53.4	0
20210620T171500	2021	06	20	17:15	80.6	54.7	0
20210620T172000	2021	06	20	17:20	80.4	53.8	0
20210620T172500	2021	06	20	17:25	80.6	55.3	0
20210620T173000	2021	06	20	17:30	80.6	55.7	0
20210620T173500	2021	06	20	17:35	80.7	54.5	0
20210620T174000	2021	06	20	17:40	81.1	56.8	0
20210620T174500	2021	06	20	17:45	80.8	55.1	0
20210620T175000	2021	06	20	17:50	80.6	55.8	0
20210620T175500	2021	06	20	17:55	81.1	56	0
20210620T180000	2021	06	20	18:00	81.4	53.7	0
20210620T180500	2021	06	20	18:05	81.5	52.3	0
20210620T181000	2021	06	20	18:10	81.5	53.6	0
20210620T181500	2021	06	20	18:15	81.4	53	0
20210620T182000	2021	06	20	18:20	81.4	52.1	0
20210620T182500	2021	06	20	18:25	81.2	52.6	0
20210620T183000	2021	06	20	18:30	80.7	55.3	0
20210620T183500	2021	06	20	18:35	81.2	56.2	0
20210620T184000	2021	06	20	18:40	81.3	53.6	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210620T184500	2021	06	20	18:45	81.3	52.6	0
20210620T185000	2021	06	20	18:50	81.1	52.8	0
20210620T185500	2021	06	20	18:55	81	54.2	0
20210620T190000	2021	06	20	19:00	80.6	54.9	0
20210620T190500	2021	06	20	19:05	80.4	58.9	0
20210620T191000	2021	06	20	19:10	80.8	55.8	0
20210620T191500	2021	06	20	19:15	81.1	54.1	0
20210620T192000	2021	06	20	19:20	80.4	53.1	0
20210620T192500	2021	06	20	19:25	80	57.1	0
20210620T193000	2021	06	20	19:30	79.6	58.6	0
20210620T193500	2021	06	20	19:35	79	64.2	0
20210620T194000	2021	06	20	19:40	78.4	68.6	0
20210620T194500	2021	06	20	19:45	78.3	68.5	0
20210620T195000	2021	06	20	19:50	78	68.8	0
20210620T195500	2021	06	20	19:55	78.2	66.7	0
20210620T200000	2021	06	20	20:00	78.3	62.7	0
20210620T200500	2021	06	20	20:05	77.6	61.8	0
20210620T201000	2021	06	20	20:10	76.7	64	0
20210620T201500	2021	06	20	20:15	77.1	64.6	0
20210620T202000	2021	06	20	20:20	76.9	66	0
20210620T202500	2021	06	20	20:25	74	72.1	0
20210620T203000	2021	06	20	20:30	71	81.9	0
20210620T203500	2021	06	20	20:35	70.3	85.1	0
20210620T204000	2021	06	20	20:40	70.5	84.9	0
20210620T204500	2021	06	20	20:45	70.2	87.3	0
20210620T205000	2021	06	20	20:50	69.1	87.7	0
20210620T205500	2021	06	20	20:55	68.3	87.6	0
20210620T210000	2021	06	20	21:00	68.8	88.4	0
20210620T210500	2021	06	20	21:05	69.6	86.4	0
20210620T211000	2021	06	20	21:10	68.8	85.6	0
20210620T211500	2021	06	20	21:15	68.4	88.8	0
20210620T212000	2021	06	20	21:20	68.4	87.9	0
20210620T212500	2021	06	20	21:25	67.9	88.4	0
20210620T213000	2021	06	20	21:30	67.8	89.4	0
20210620T213500	2021	06	20	21:35	68.6	88.9	0
20210620T214000	2021	06	20	21:40	70	86.4	0
20210620T214500	2021	06	20	21:45	69.9	84	0
20210620T215000	2021	06	20	21:50	70.1	82.9	0
20210620T215500	2021	06	20	21:55	69.3	82.7	0
20210620T220000	2021	06	20	22:00	68.6	84.6	0
20210620T220500	2021	06	20	22:05	69.4	85.8	0
20210620T221000	2021	06	20	22:10	69.1	85.6	0
20210620T221500	2021	06	20	22:15	67.9	85.7	0
20210620T222000	2021	06	20	22:20	67.9	86.8	0
20210620T222500	2021	06	20	22:25	68.5	87	0
20210620T223000	2021	06	20	22:30	67.7	87.5	0
20210620T223500	2021	06	20	22:35	66.9	88.3	0
20210620T224000	2021	06	20	22:40	67.1	89.5	0
20210620T224500	2021	06	20	22:45	68.1	88.6	0
20210620T225000	2021	06	20	22:50	67.5	88	0
20210620T225500	2021	06	20	22:55	67.4	89.2	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210620T230000	2021	06	20	23:00	67.6	89.6	0
20210620T230500	2021	06	20	23:05	68.1	89	0
20210620T231000	2021	06	20	23:10	68.4	88.7	0
20210620T231500	2021	06	20	23:15	68.5	88.1	0
20210620T232000	2021	06	20	23:20	68.3	88	0
20210620T232500	2021	06	20	23:25	68.5	88.8	0
20210620T233000	2021	06	20	23:30	68.1	89.6	0
20210620T233500	2021	06	20	23:35	67.6	91.3	0
20210620T234000	2021	06	20	23:40	67.7	92.1	0
20210620T234500	2021	06	20	23:45	68.1	91.5	0
20210620T235000	2021	06	20	23:50	68.2	91.4	0
20210620T235500	2021	06	20	23:55	68.7	89.4	0.006
20210621T000000	2021	06	21	00:00	68.7	90.6	0.004
20210621T000500	2021	06	21	00:05	68.3	92.3	0.01
20210621T001000	2021	06	21	00:10	68.7	91.9	0.002
20210621T001500	2021	06	21	00:15	69.7	91	0.006
20210621T002000	2021	06	21	00:20	70.2	88.7	0
20210621T002500	2021	06	21	00:25	71.7	84.9	0
20210621T003000	2021	06	21	00:30	70.8	84.7	0
20210621T003500	2021	06	21	00:35	68.5	90.9	0
20210621T004000	2021	06	21	00:40	69	93.5	0.026
20210621T004500	2021	06	21	00:45	69.5	92.4	0.012
20210621T005000	2021	06	21	00:50	69.1	93.4	0.012
20210621T005500	2021	06	21	00:55	69	93.8	0.002
20210621T010000	2021	06	21	01:00	68.8	94.7	0.001
20210621T010500	2021	06	21	01:05	68.9	94.8	0
20210621T011000	2021	06	21	01:10	68.8	95.5	0
20210621T011500	2021	06	21	01:15	69	95.2	0
20210621T012000	2021	06	21	01:20	68.4	96.1	0
20210621T012500	2021	06	21	01:25	68.3	96.8	0
20210621T013000	2021	06	21	01:30	68.2	97.4	0
20210621T013500	2021	06	21	01:35	68.6	97	0
20210621T014000	2021	06	21	01:40	68.7	95.9	0
20210621T014500	2021	06	21	01:45	68.6	95.2	0
20210621T015000	2021	06	21	01:50	68.4	95.8	0
20210621T015500	2021	06	21	01:55	68.4	96.2	0
20210621T020000	2021	06	21	02:00	68.5	96	0
20210621T020500	2021	06	21	02:05	68.5	95.7	0
20210621T021000	2021	06	21	02:10	68.1	96.4	0
20210621T021500	2021	06	21	02:15	67.9	97.1	0
20210621T022000	2021	06	21	02:20	67.8	96.8	0
20210621T022500	2021	06	21	02:25	67.8	96.7	0
20210621T023000	2021	06	21	02:30	67.8	95.9	0
20210621T023500	2021	06	21	02:35	67.6	95.9	0
20210621T024000	2021	06	21	02:40	67.5	96.3	0
20210621T024500	2021	06	21	02:45	67.5	95.5	0
20210621T025000	2021	06	21	02:50	67.2	95.8	0
20210621T025500	2021	06	21	02:55	67.1	95.9	0
20210621T030000	2021	06	21	03:00	66.8	96.1	0
20210621T030500	2021	06	21	03:05	66.6	96.7	0
20210621T031000	2021	06	21	03:10	66.8	97.3	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210621T031500	2021	06	21	03:15	66.7	97.4	0
20210621T032000	2021	06	21	03:20	66.6	97.6	0
20210621T032500	2021	06	21	03:25	66.4	97.9	0
20210621T033000	2021	06	21	03:30	66.5	98.3	0
20210621T033500	2021	06	21	03:35	66.7	98.8	0
20210621T034000	2021	06	21	03:40	66.9	98.9	0
20210621T034500	2021	06	21	03:45	67	98.6	0
20210621T035000	2021	06	21	03:50	67	98.4	0
20210621T035500	2021	06	21	03:55	67	98.2	0
20210621T040000	2021	06	21	04:00	66.8	98.2	0
20210621T040500	2021	06	21	04:05	66.6	98.4	0
20210621T041000	2021	06	21	04:10	66.5	98.8	0
20210621T041500	2021	06	21	04:15	66.4	99	0
20210621T042000	2021	06	21	04:20	66.4	99.2	0
20210621T042500	2021	06	21	04:25	66.4	99.3	0
20210621T043000	2021	06	21	04:30	66.4	99.6	0
20210621T043500	2021	06	21	04:35	66.4	99.7	0
20210621T044000	2021	06	21	04:40	66.5	99.7	0
20210621T044500	2021	06	21	04:45	66.6	99.6	0
20210621T045000	2021	06	21	04:50	66.6	99.6	0
20210621T045500	2021	06	21	04:55	66.6	99.6	0
20210621T050000	2021	06	21	05:00	66.7	99.5	0
20210621T050500	2021	06	21	05:05	66.7	99.3	0
20210621T051000	2021	06	21	05:10	66.7	99	0
20210621T051500	2021	06	21	05:15	66.7	98.9	0
20210621T052000	2021	06	21	05:20	66.6	98.8	0
20210621T052500	2021	06	21	05:25	66.6	98.9	0
20210621T053000	2021	06	21	05:30	66.6	98.9	0
20210621T053500	2021	06	21	05:35	66.5	98.9	0
20210621T054000	2021	06	21	05:40	66.5	99	0
20210621T054500	2021	06	21	05:45	66.5	99.1	0
20210621T055000	2021	06	21	05:50	66.4	99.2	0
20210621T055500	2021	06	21	05:55	66.4	99.3	0
20210621T060000	2021	06	21	06:00	66.4	99.4	0
20210621T060500	2021	06	21	06:05	66.5	99.3	0
20210621T061000	2021	06	21	06:10	66.7	99.1	0
20210621T061500	2021	06	21	06:15	66.8	98.9	0
20210621T062000	2021	06	21	06:20	66.9	98.8	0
20210621T062500	2021	06	21	06:25	67	98.6	0
20210621T063000	2021	06	21	06:30	67.2	98.4	0
20210621T063500	2021	06	21	06:35	67.3	97.9	0
20210621T064000	2021	06	21	06:40	67.4	97.8	0
20210621T064500	2021	06	21	06:45	67.3	97.8	0
20210621T065000	2021	06	21	06:50	67.4	97.8	0
20210621T065500	2021	06	21	06:55	67.6	97.8	0
20210621T070000	2021	06	21	07:00	67.7	97.8	0
20210621T070500	2021	06	21	07:05	67.8	97.5	0
20210621T071000	2021	06	21	07:10	68.1	97.2	0
20210621T071500	2021	06	21	07:15	68.5	96.7	0
20210621T072000	2021	06	21	07:20	69.2	95.9	0
20210621T072500	2021	06	21	07:25	68.9	95.1	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210621T073000	2021	06	21	07:30	69.3	95.7	0
20210621T073500	2021	06	21	07:35	69.7	95.2	0
20210621T074000	2021	06	21	07:40	69.9	94.8	0
20210621T074500	2021	06	21	07:45	69.7	94.7	0
20210621T075000	2021	06	21	07:50	69.5	94.7	0
20210621T075500	2021	06	21	07:55	69.9	95.2	0
20210621T080000	2021	06	21	08:00	70.2	93.4	0
20210621T080500	2021	06	21	08:05	70.7	92.7	0
20210621T081000	2021	06	21	08:10	71.1	91.9	0
20210621T081500	2021	06	21	08:15	70.9	92.4	0
20210621T082000	2021	06	21	08:20	71.1	93.1	0
20210621T082500	2021	06	21	08:25	71.4	93.4	0
20210621T083000	2021	06	21	08:30	71.5	93.1	0
20210621T083500	2021	06	21	08:35	72.4	92	0
20210621T084000	2021	06	21	08:40	72.8	91.3	0
20210621T084500	2021	06	21	08:45	73	91.3	0
20210621T085000	2021	06	21	08:50	73.2	91	0
20210621T085500	2021	06	21	08:55	73.3	90.9	0
20210621T090000	2021	06	21	09:00	73.7	90	0
20210621T090500	2021	06	21	09:05	74.6	89.2	0
20210621T091000	2021	06	21	09:10	75.5	89.8	0
20210621T091500	2021	06	21	09:15	76.8	88.2	0
20210621T092000	2021	06	21	09:20	79	84.6	0
20210621T092500	2021	06	21	09:25	80.4	76.1	0
20210621T093000	2021	06	21	09:30	80.8	75.3	0
20210621T093500	2021	06	21	09:35	80.5	74.7	0
20210621T094000	2021	06	21	09:40	81.3	74.5	0
20210621T094500	2021	06	21	09:45	81.4	72.2	0
20210621T095000	2021	06	21	09:50	81.6	71.4	0
20210621T095500	2021	06	21	09:55	81.8	71.9	0
20210621T100000	2021	06	21	10:00	81.6	70.3	0
20210621T100500	2021	06	21	10:05	81.2	71.4	0
20210621T101000	2021	06	21	10:10	81.8	72.1	0
20210621T101500	2021	06	21	10:15	81.8	70.8	0
20210621T102000	2021	06	21	10:20	82.3	71.5	0
20210621T102500	2021	06	21	10:25	82.5	70.9	0
20210621T103000	2021	06	21	10:30	82.2	68.9	0
20210621T103500	2021	06	21	10:35	82.4	70.6	0
20210621T104000	2021	06	21	10:40	82.5	68.1	0
20210621T104500	2021	06	21	10:45	83.5	69.8	0
20210621T105000	2021	06	21	10:50	83.7	66.8	0
20210621T105500	2021	06	21	10:55	83.4	68.4	0
20210621T110000	2021	06	21	11:00	83.2	67.4	0
20210621T110500	2021	06	21	11:05	83.7	65.7	0
20210621T111000	2021	06	21	11:10	84.1	65.6	0
20210621T111500	2021	06	21	11:15	83.3	65.3	0
20210621T112000	2021	06	21	11:20	83.6	64.9	0
20210621T112500	2021	06	21	11:25	84	63.1	0
20210621T113000	2021	06	21	11:30	84.2	62.7	0
20210621T113500	2021	06	21	11:35	83.7	62.6	0
20210621T114000	2021	06	21	11:40	84.9	62	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210621T114500	2021	06	21	11:45	85.4	59.5	0
20210621T115000	2021	06	21	11:50	85.2	60.4	0
20210621T115500	2021	06	21	11:55	84.7	61.1	0
20210621T120000	2021	06	21	12:00	85.6	60.1	0
20210621T120500	2021	06	21	12:05	85.7	58	0
20210621T121000	2021	06	21	12:10	86.2	57.7	0
20210621T121500	2021	06	21	12:15	86.1	58.6	0
20210621T122000	2021	06	21	12:20	86.3	58.4	0
20210621T122500	2021	06	21	12:25	86.9	57.5	0
20210621T123000	2021	06	21	12:30	86.6	55.9	0
20210621T123500	2021	06	21	12:35	86.6	56.8	0
20210621T124000	2021	06	21	12:40	87.1	56.7	0
20210621T124500	2021	06	21	12:45	87.2	55.2	0
20210621T125000	2021	06	21	12:50	87.2	54.6	0
20210621T125500	2021	06	21	12:55	87.2	56.8	0
20210621T130000	2021	06	21	13:00	87.3	55.4	0
20210621T130500	2021	06	21	13:05	87.2	54.1	0
20210621T131000	2021	06	21	13:10	87.4	55.7	0
20210621T131500	2021	06	21	13:15	87.2	56	0
20210621T132000	2021	06	21	13:20	86.9	55	0
20210621T132500	2021	06	21	13:25	87.6	54.6	0
20210621T133000	2021	06	21	13:30	87.5	53.4	0
20210621T133500	2021	06	21	13:35	87.7	53.2	0
20210621T134000	2021	06	21	13:40	88	53.3	0
20210621T134500	2021	06	21	13:45	88	52.5	0
20210621T135000	2021	06	21	13:50	88.1	51.7	0
20210621T135500	2021	06	21	13:55	88.6	52	0
20210621T140000	2021	06	21	14:00	87.9	51	0
20210621T140500	2021	06	21	14:05	87.4	52.2	0
20210621T141000	2021	06	21	14:10	87.2	52	0
20210621T141500	2021	06	21	14:15	86.5	52.2	0
20210621T142000	2021	06	21	14:20	86.1	53.7	0
20210621T142500	2021	06	21	14:25	85.8	54.6	0
20210621T143000	2021	06	21	14:30	85.8	54.3	0
20210621T143500	2021	06	21	14:35	86.3	55.8	0
20210621T144000	2021	06	21	14:40	87.5	53.8	0
20210621T144500	2021	06	21	14:45	88.9	53	0
20210621T145000	2021	06	21	14:50	90.1	51.3	0
20210621T145500	2021	06	21	14:55	90.3	51.6	0
20210621T150000	2021	06	21	15:00	90.4	49.9	0
20210621T150500	2021	06	21	15:05	89.8	46.9	0
20210621T151000	2021	06	21	15:10	89.6	48.7	0
20210621T151500	2021	06	21	15:15	89.8	47.9	0
20210621T152000	2021	06	21	15:20	89.8	47.7	0
20210621T152500	2021	06	21	15:25	90	48.3	0
20210621T153000	2021	06	21	15:30	89.8	47.7	0
20210621T153500	2021	06	21	15:35	89.9	49.5	0
20210621T154000	2021	06	21	15:40	89.1	49.3	0
20210621T154500	2021	06	21	15:45	89.6	49.1	0
20210621T155000	2021	06	21	15:50	89.8	49.8	0
20210621T155500	2021	06	21	15:55	89.1	50.5	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210621T160000	2021	06	21	16:00	87.9	50.4	0
20210621T160500	2021	06	21	16:05	89	50.5	0
20210621T161000	2021	06	21	16:10	89.5	50.1	0
20210621T161500	2021	06	21	16:15	89.8	48.3	0
20210621T162000	2021	06	21	16:20	90	49.1	0
20210621T162500	2021	06	21	16:25	89.5	47.8	0
20210621T163000	2021	06	21	16:30	89	48.4	0
20210621T163500	2021	06	21	16:35	88.3	47.6	0
20210621T164000	2021	06	21	16:40	88.1	48.5	0
20210621T164500	2021	06	21	16:45	88.4	50	0
20210621T165000	2021	06	21	16:50	89.3	47.8	0
20210621T165500	2021	06	21	16:55	89.1	47.3	0
20210621T170000	2021	06	21	17:00	88.8	47.6	0
20210621T170500	2021	06	21	17:05	88.9	47.3	0
20210621T171000	2021	06	21	17:10	88.3	48.8	0
20210621T171500	2021	06	21	17:15	87.4	51.3	0
20210621T172000	2021	06	21	17:20	86.3	53.3	0
20210621T172500	2021	06	21	17:25	86.3	53.2	0
20210621T173000	2021	06	21	17:30	86	54.4	0
20210621T173500	2021	06	21	17:35	86.1	54.8	0
20210621T174000	2021	06	21	17:40	86	55	0
20210621T174500	2021	06	21	17:45	85.8	55.8	0
20210621T175000	2021	06	21	17:50	85.8	56.7	0
20210621T175500	2021	06	21	17:55	85.8	57.8	0
20210621T180000	2021	06	21	18:00	85.9	58.6	0
20210621T180500	2021	06	21	18:05	85.9	58.3	0
20210621T181000	2021	06	21	18:10	85.3	60.5	0
20210621T181500	2021	06	21	18:15	85.3	60	0
20210621T182000	2021	06	21	18:20	85	60.4	0
20210621T182500	2021	06	21	18:25	84.9	60.6	0
20210621T183000	2021	06	21	18:30	84.8	60.8	0
20210621T183500	2021	06	21	18:35	84.4	62.1	0
20210621T184000	2021	06	21	18:40	84.4	61.8	0
20210621T184500	2021	06	21	18:45	84.2	62.1	0
20210621T185000	2021	06	21	18:50	83.8	63	0
20210621T185500	2021	06	21	18:55	83.6	63.7	0
20210621T190000	2021	06	21	19:00	83.3	64.5	0
20210621T190500	2021	06	21	19:05	83.3	64.6	0
20210621T191000	2021	06	21	19:10	83	65.3	0
20210621T191500	2021	06	21	19:15	83	64.7	0
20210621T192000	2021	06	21	19:20	82.9	64.7	0
20210621T192500	2021	06	21	19:25	82.7	65.1	0
20210621T193000	2021	06	21	19:30	82.7	64.7	0
20210621T193500	2021	06	21	19:35	82.3	65.3	0
20210621T194000	2021	06	21	19:40	82.8	64.1	0
20210621T194500	2021	06	21	19:45	82.6	63.8	0
20210621T195000	2021	06	21	19:50	82.6	64.1	0
20210621T195500	2021	06	21	19:55	80.9	65.1	0
20210621T200000	2021	06	21	20:00	77	71.8	0
20210621T200500	2021	06	21	20:05	75.7	76	0
20210621T201000	2021	06	21	20:10	74.6	78.5	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210621T201500	2021	06	21	20:15	73.6	81.4	0
20210621T202000	2021	06	21	20:20	72.3	85.3	0
20210621T202500	2021	06	21	20:25	71.2	89.9	0.017
20210621T203000	2021	06	21	20:30	70.7	92.7	0.02
20210621T203500	2021	06	21	20:35	70.5	94.3	0.037
20210621T204000	2021	06	21	20:40	70.3	95.8	0.077
20210621T204500	2021	06	21	20:45	70.2	95.7	0.016
20210621T205000	2021	06	21	20:50	70.3	95	0.001
20210621T205500	2021	06	21	20:55	70.1	95.4	0
20210621T210000	2021	06	21	21:00	70.1	95.8	0
20210621T210500	2021	06	21	21:05	69.9	96.2	0
20210621T211000	2021	06	21	21:10	69.8	96.5	0
20210621T211500	2021	06	21	21:15	69.9	96	0
20210621T212000	2021	06	21	21:20	70.1	95.1	0
20210621T212500	2021	06	21	21:25	70	94.3	0
20210621T213000	2021	06	21	21:30	70.2	94.6	0
20210621T213500	2021	06	21	21:35	69.9	95.2	0
20210621T214000	2021	06	21	21:40	69.8	95.9	0
20210621T214500	2021	06	21	21:45	69.7	96.4	0
20210621T215000	2021	06	21	21:50	69.5	96.7	0
20210621T215500	2021	06	21	21:55	69.5	97	0
20210621T220000	2021	06	21	22:00	69.5	97.1	0
20210621T220500	2021	06	21	22:05	69.3	97.1	0
20210621T221000	2021	06	21	22:10	69.1	97.4	0
20210621T221500	2021	06	21	22:15	69.3	97.6	0
20210621T222000	2021	06	21	22:20	69.7	96.4	0
20210621T222500	2021	06	21	22:25	69.6	96	0
20210621T223000	2021	06	21	22:30	69.5	97.1	0
20210621T223500	2021	06	21	22:35	69.4	97.6	0
20210621T224000	2021	06	21	22:40	69.6	97.6	0
20210621T224500	2021	06	21	22:45	69.7	97.2	0
20210621T225000	2021	06	21	22:50	69.6	97.5	0
20210621T225500	2021	06	21	22:55	69.6	97.8	0
20210621T230000	2021	06	21	23:00	70	96.9	0
20210621T230500	2021	06	21	23:05	70.9	92.5	0
20210621T231000	2021	06	21	23:10	70.6	93.3	0
20210621T231500	2021	06	21	23:15	70.7	92.7	0
20210621T232000	2021	06	21	23:20	70.6	93.2	0
20210621T232500	2021	06	21	23:25	70.8	93.2	0
20210621T233000	2021	06	21	23:30	70.4	94.1	0
20210621T233500	2021	06	21	23:35	70.2	96.1	0
20210621T234000	2021	06	21	23:40	70.1	96.8	0
20210621T234500	2021	06	21	23:45	70	97.4	0
20210621T235000	2021	06	21	23:50	70.1	97	0
20210621T235500	2021	06	21	23:55	70.4	95.7	0
20210622T000000	2021	06	22	00:00	70.8	94	0
20210622T000500	2021	06	22	00:05	71	93.7	0
20210622T001000	2021	06	22	00:10	70.4	95.5	0
20210622T001500	2021	06	22	00:15	70	96.2	0
20210622T002000	2021	06	22	00:20	69.9	96.2	0
20210622T002500	2021	06	22	00:25	69.4	96.5	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210622T003000	2021	06	22	00:30	69.4	97.6	0
20210622T003500	2021	06	22	00:35	69.6	97.9	0
20210622T004000	2021	06	22	00:40	70.1	97.6	0
20210622T004500	2021	06	22	00:45	70.8	96.7	0
20210622T005000	2021	06	22	00:50	70.5	95.3	0
20210622T005500	2021	06	22	00:55	69.9	96	0
20210622T010000	2021	06	22	01:00	70.3	93.6	0
20210622T010500	2021	06	22	01:05	70.4	88.9	0
20210622T011000	2021	06	22	01:10	69.9	87.4	0
20210622T011500	2021	06	22	01:15	69.4	87.1	0
20210622T012000	2021	06	22	01:20	69	88	0
20210622T012500	2021	06	22	01:25	68.8	88.7	0
20210622T013000	2021	06	22	01:30	68.5	89.4	0
20210622T013500	2021	06	22	01:35	68.3	89.5	0
20210622T014000	2021	06	22	01:40	68	90	0
20210622T014500	2021	06	22	01:45	67.8	90	0
20210622T015000	2021	06	22	01:50	67.7	89.4	0
20210622T015500	2021	06	22	01:55	67.5	87.2	0
20210622T020000	2021	06	22	02:00	66.9	83.2	0
20210622T020500	2021	06	22	02:05	66.3	80.2	0
20210622T021000	2021	06	22	02:10	65.9	79.7	0
20210622T021500	2021	06	22	02:15	65.5	80.2	0
20210622T022000	2021	06	22	02:20	65.4	80.4	0
20210622T022500	2021	06	22	02:25	65.4	79.9	0
20210622T023000	2021	06	22	02:30	65.2	79.9	0
20210622T023500	2021	06	22	02:35	65.1	79.9	0
20210622T024000	2021	06	22	02:40	64.8	80.1	0
20210622T024500	2021	06	22	02:45	64.6	79.8	0
20210622T025000	2021	06	22	02:50	64.6	78.6	0
20210622T025500	2021	06	22	02:55	64.3	78.2	0
20210622T030000	2021	06	22	03:00	64.2	77.9	0
20210622T030500	2021	06	22	03:05	64	78.1	0
20210622T031000	2021	06	22	03:10	64	78.8	0
20210622T031500	2021	06	22	03:15	64.1	78.6	0
20210622T032000	2021	06	22	03:20	64	79.2	0
20210622T032500	2021	06	22	03:25	63.9	80	0
20210622T033000	2021	06	22	03:30	63.8	80.7	0
20210622T033500	2021	06	22	03:35	63.7	81.4	0
20210622T034000	2021	06	22	03:40	63.5	82.3	0
20210622T034500	2021	06	22	03:45	63.5	82.4	0
20210622T035000	2021	06	22	03:50	63.5	82.6	0
20210622T035500	2021	06	22	03:55	63.4	83.1	0
20210622T040000	2021	06	22	04:00	63.3	82.8	0
20210622T040500	2021	06	22	04:05	63.2	82.8	0
20210622T041000	2021	06	22	04:10	63	82.5	0
20210622T041500	2021	06	22	04:15	63	82.3	0
20210622T042000	2021	06	22	04:20	62.8	83.1	0
20210622T042500	2021	06	22	04:25	62.8	82.8	0
20210622T043000	2021	06	22	04:30	62.6	83.2	0
20210622T043500	2021	06	22	04:35	62.6	82.7	0
20210622T044000	2021	06	22	04:40	62.5	82.1	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210622T044500	2021	06	22	04:45	62.5	81.3	0
20210622T045000	2021	06	22	04:50	62.4	81.5	0
20210622T045500	2021	06	22	04:55	62.3	81.2	0
20210622T050000	2021	06	22	05:00	62.2	80.3	0
20210622T050500	2021	06	22	05:05	62	80.5	0
20210622T051000	2021	06	22	05:10	61.9	80.5	0
20210622T051500	2021	06	22	05:15	61.7	81.3	0
20210622T052000	2021	06	22	05:20	61.7	81.6	0
20210622T052500	2021	06	22	05:25	61.6	81.9	0
20210622T053000	2021	06	22	05:30	61.5	82.4	0
20210622T053500	2021	06	22	05:35	61.4	83.1	0
20210622T054000	2021	06	22	05:40	61.3	83.4	0
20210622T054500	2021	06	22	05:45	61.2	83.9	0
20210622T055000	2021	06	22	05:50	61.2	83.8	0
20210622T055500	2021	06	22	05:55	61.1	83.4	0
20210622T060000	2021	06	22	06:00	61	83.7	0
20210622T060500	2021	06	22	06:05	60.9	84.2	0
20210622T061000	2021	06	22	06:10	60.9	83.9	0
20210622T061500	2021	06	22	06:15	60.8	83.9	0
20210622T062000	2021	06	22	06:20	60.7	84.5	0
20210622T062500	2021	06	22	06:25	60.6	84.1	0
20210622T063000	2021	06	22	06:30	60.5	83.9	0
20210622T063500	2021	06	22	06:35	60.3	83.7	0
20210622T064000	2021	06	22	06:40	60.1	83.8	0
20210622T064500	2021	06	22	06:45	60	84.1	0
20210622T065000	2021	06	22	06:50	59.9	84.5	0
20210622T065500	2021	06	22	06:55	59.9	84.4	0
20210622T070000	2021	06	22	07:00	59.8	84.3	0
20210622T070500	2021	06	22	07:05	59.7	84.3	0
20210622T071000	2021	06	22	07:10	59.6	84.2	0
20210622T071500	2021	06	22	07:15	59.5	84.4	0
20210622T072000	2021	06	22	07:20	59.5	84.3	0
20210622T072500	2021	06	22	07:25	59.5	84.2	0
20210622T073000	2021	06	22	07:30	59.4	84.9	0
20210622T073500	2021	06	22	07:35	59.2	85.6	0
20210622T074000	2021	06	22	07:40	59.2	86.8	0
20210622T074500	2021	06	22	07:45	59.2	86.9	0
20210622T075000	2021	06	22	07:50	59.1	87.2	0
20210622T075500	2021	06	22	07:55	59.1	87.2	0
20210622T080000	2021	06	22	08:00	59.1	87.2	0
20210622T080500	2021	06	22	08:05	59.1	86.7	0
20210622T081000	2021	06	22	08:10	59.2	85.9	0
20210622T081500	2021	06	22	08:15	59.2	86.2	0
20210622T082000	2021	06	22	08:20	59.2	86.1	0
20210622T082500	2021	06	22	08:25	59.1	86.4	0
20210622T083000	2021	06	22	08:30	59	86.2	0
20210622T083500	2021	06	22	08:35	59	85.8	0
20210622T084000	2021	06	22	08:40	59	86.3	0
20210622T084500	2021	06	22	08:45	59.2	86.3	0
20210622T085000	2021	06	22	08:50	59.2	87.1	0
20210622T085500	2021	06	22	08:55	59	86.4	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210622T090000	2021	06	22	09:00	58.8	87.6	0.002
20210622T090500	2021	06	22	09:05	58.6	88.6	0.001
20210622T091000	2021	06	22	09:10	58.5	88.8	0.001
20210622T091500	2021	06	22	09:15	58.5	89.3	0
20210622T092000	2021	06	22	09:20	58.5	89.5	0
20210622T092500	2021	06	22	09:25	58.4	88.5	0
20210622T093000	2021	06	22	09:30	58.3	88.3	0
20210622T093500	2021	06	22	09:35	58.3	88.8	0.002
20210622T094000	2021	06	22	09:40	58.2	89.6	0.001
20210622T094500	2021	06	22	09:45	58.2	90	0.001
20210622T095000	2021	06	22	09:50	58.2	91.1	0.004
20210622T095500	2021	06	22	09:55	58	90.8	0.002
20210622T100000	2021	06	22	10:00	57.8	91.8	0.005
20210622T100500	2021	06	22	10:05	57.7	93.5	0.005
20210622T101000	2021	06	22	10:10	57.4	92.8	0.002
20210622T101500	2021	06	22	10:15	57.3	93.4	0.002
20210622T102000	2021	06	22	10:20	57.2	93.2	0.002
20210622T102500	2021	06	22	10:25	57.2	93.8	0.002
20210622T103000	2021	06	22	10:30	57.1	93.3	0
20210622T103500	2021	06	22	10:35	57.1	92.7	0
20210622T104000	2021	06	22	10:40	57.4	93.8	0
20210622T104500	2021	06	22	10:45	57.5	92.7	0
20210622T105000	2021	06	22	10:50	57.6	92.1	0
20210622T105500	2021	06	22	10:55	57.9	92.5	0.003
20210622T110000	2021	06	22	11:00	57.9	91.5	0
20210622T110500	2021	06	22	11:05	57.8	90	0
20210622T111000	2021	06	22	11:10	57.7	90.2	0
20210622T111500	2021	06	22	11:15	57.5	90.2	0
20210622T112000	2021	06	22	11:20	57.4	90.8	0
20210622T112500	2021	06	22	11:25	57.5	90.6	0
20210622T113000	2021	06	22	11:30	57.6	90.7	0
20210622T113500	2021	06	22	11:35	57.7	90.2	0
20210622T114000	2021	06	22	11:40	57.6	90.3	0
20210622T114500	2021	06	22	11:45	57.8	90.5	0
20210622T115000	2021	06	22	11:50	57.7	89.5	0
20210622T115500	2021	06	22	11:55	57.7	90.2	0
20210622T120000	2021	06	22	12:00	57.8	90.3	0
20210622T120500	2021	06	22	12:05	57.7	89.4	0
20210622T121000	2021	06	22	12:10	57.7	88.5	0
20210622T121500	2021	06	22	12:15	57.7	88.1	0
20210622T122000	2021	06	22	12:20	57.9	88.1	0
20210622T122500	2021	06	22	12:25	58.2	87	0
20210622T123000	2021	06	22	12:30	58.5	86.6	0
20210622T123500	2021	06	22	12:35	58.6	86.1	0
20210622T124000	2021	06	22	12:40	58.6	85.4	0
20210622T124500	2021	06	22	12:45	58.6	84	0
20210622T125000	2021	06	22	12:50	58.6	84.2	0
20210622T125500	2021	06	22	12:55	59	84	0
20210622T130000	2021	06	22	13:00	59.2	82.7	0
20210622T130500	2021	06	22	13:05	59.2	82.1	0
20210622T131000	2021	06	22	13:10	59.5	82.3	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210622T131500	2021	06	22	13:15	59.7	81.4	0
20210622T132000	2021	06	22	13:20	59.8	81.2	0
20210622T132500	2021	06	22	13:25	59.8	81.2	0
20210622T133000	2021	06	22	13:30	60.1	81.8	0
20210622T133500	2021	06	22	13:35	60	80.6	0
20210622T134000	2021	06	22	13:40	59.9	81.4	0
20210622T134500	2021	06	22	13:45	60.1	80.2	0
20210622T135000	2021	06	22	13:50	60.1	79.7	0
20210622T135500	2021	06	22	13:55	60.4	80.7	0
20210622T140000	2021	06	22	14:00	60.4	80.2	0
20210622T140500	2021	06	22	14:05	60	80.2	0
20210622T141000	2021	06	22	14:10	59.4	81.3	0
20210622T141500	2021	06	22	14:15	59.3	82.8	0
20210622T142000	2021	06	22	14:20	59.3	82.8	0
20210622T142500	2021	06	22	14:25	59.3	82.8	0
20210622T143000	2021	06	22	14:30	58.9	82	0
20210622T143500	2021	06	22	14:35	58.8	82.6	0
20210622T144000	2021	06	22	14:40	58.8	82.6	0
20210622T144500	2021	06	22	14:45	58.8	83.2	0
20210622T145000	2021	06	22	14:50	59	82.2	0
20210622T145500	2021	06	22	14:55	59.1	82.3	0
20210622T150000	2021	06	22	15:00	59.2	80.8	0
20210622T150500	2021	06	22	15:05	59.3	81.1	0
20210622T151000	2021	06	22	15:10	59	81	0
20210622T151500	2021	06	22	15:15	59.1	81	0
20210622T152000	2021	06	22	15:20	59	81.5	0
20210622T152500	2021	06	22	15:25	59	81.2	0
20210622T153000	2021	06	22	15:30	59	81.6	0
20210622T153500	2021	06	22	15:35	59.1	81.5	0
20210622T154000	2021	06	22	15:40	59	80.8	0
20210622T154500	2021	06	22	15:45	59	80.9	0
20210622T155000	2021	06	22	15:50	59.1	81	0
20210622T155500	2021	06	22	15:55	59.2	81.1	0
20210622T160000	2021	06	22	16:00	59.2	81.1	0
20210622T160500	2021	06	22	16:05	59.1	81.2	0
20210622T161000	2021	06	22	16:10	59	81.7	0
20210622T161500	2021	06	22	16:15	59.1	81.9	0
20210622T162000	2021	06	22	16:20	59	81.5	0
20210622T162500	2021	06	22	16:25	59	81.5	0
20210622T163000	2021	06	22	16:30	59.1	81.7	0
20210622T163500	2021	06	22	16:35	59.2	81.2	0
20210622T164000	2021	06	22	16:40	59	80.8	0
20210622T164500	2021	06	22	16:45	58.8	81.6	0
20210622T165000	2021	06	22	16:50	58.2	83.1	0
20210622T165500	2021	06	22	16:55	57.9	84.6	0
20210622T170000	2021	06	22	17:00	57.3	84.9	0
20210622T170500	2021	06	22	17:05	57	85.2	0
20210622T171000	2021	06	22	17:10	56.8	85.5	0
20210622T171500	2021	06	22	17:15	56.7	85.2	0
20210622T172000	2021	06	22	17:20	56.7	84.8	0
20210622T172500	2021	06	22	17:25	56.7	85	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210622T173000	2021	06	22	17:30	56.8	84.1	0
20210622T173500	2021	06	22	17:35	56.9	83.1	0
20210622T174000	2021	06	22	17:40	57	81.9	0
20210622T174500	2021	06	22	17:45	57	81.9	0
20210622T175000	2021	06	22	17:50	57.1	82	0
20210622T175500	2021	06	22	17:55	57.2	82.3	0
20210622T180000	2021	06	22	18:00	57.3	81.8	0
20210622T180500	2021	06	22	18:05	57.2	81.6	0
20210622T181000	2021	06	22	18:10	57.1	81.8	0
20210622T181500	2021	06	22	18:15	57.1	82.2	0
20210622T182000	2021	06	22	18:20	57.1	82.1	0
20210622T182500	2021	06	22	18:25	56.9	81.2	0
20210622T183000	2021	06	22	18:30	56.7	80.7	0
20210622T183500	2021	06	22	18:35	56.5	81.1	0
20210622T184000	2021	06	22	18:40	56.4	81	0
20210622T184500	2021	06	22	18:45	56.4	80.7	0
20210622T185000	2021	06	22	18:50	56.4	81	0
20210622T185500	2021	06	22	18:55	56.3	80.2	0
20210622T190000	2021	06	22	19:00	56.3	79.9	0
20210622T190500	2021	06	22	19:05	56.4	79.5	0
20210622T191000	2021	06	22	19:10	56.3	78.9	0
20210622T191500	2021	06	22	19:15	56.2	77.9	0
20210622T192000	2021	06	22	19:20	56	78.5	0
20210622T192500	2021	06	22	19:25	55.9	78.6	0
20210622T193000	2021	06	22	19:30	55.7	78.7	0
20210622T193500	2021	06	22	19:35	55.5	79.2	0
20210622T194000	2021	06	22	19:40	55.4	79.6	0
20210622T194500	2021	06	22	19:45	55.3	79.3	0
20210622T195000	2021	06	22	19:50	55.3	78.8	0
20210622T195500	2021	06	22	19:55	55.3	78.5	0
20210622T200000	2021	06	22	20:00	55.2	78.8	0
20210622T200500	2021	06	22	20:05	55.3	78.9	0
20210622T201000	2021	06	22	20:10	55.3	78.5	0
20210622T201500	2021	06	22	20:15	55.3	78	0
20210622T202000	2021	06	22	20:20	55.6	75.9	0
20210622T202500	2021	06	22	20:25	55.7	74.6	0
20210622T203000	2021	06	22	20:30	55.5	75.2	0
20210622T203500	2021	06	22	20:35	55.4	75.5	0
20210622T204000	2021	06	22	20:40	55.3	75.4	0
20210622T204500	2021	06	22	20:45	55.1	76.3	0
20210622T205000	2021	06	22	20:50	55	76.6	0
20210622T205500	2021	06	22	20:55	54.8	77.7	0
20210622T210000	2021	06	22	21:00	54.7	78.6	0
20210622T210500	2021	06	22	21:05	54.6	79.3	0
20210622T211000	2021	06	22	21:10	54.3	79.9	0
20210622T211500	2021	06	22	21:15	54.4	79.7	0
20210622T212000	2021	06	22	21:20	54.2	80.9	0
20210622T212500	2021	06	22	21:25	54.3	80.9	0
20210622T213000	2021	06	22	21:30	54.1	81.2	0
20210622T213500	2021	06	22	21:35	54	81.5	0
20210622T214000	2021	06	22	21:40	53.6	82.5	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210622T214500	2021	06	22	21:45	53.9	82.3	0
20210622T215000	2021	06	22	21:50	53.5	82.7	0
20210622T215500	2021	06	22	21:55	53.5	83.6	0
20210622T220000	2021	06	22	22:00	53.5	84.3	0
20210622T220500	2021	06	22	22:05	53.1	85.1	0
20210622T221000	2021	06	22	22:10	53	86.1	0
20210622T221500	2021	06	22	22:15	52.7	87.1	0
20210622T222000	2021	06	22	22:20	52.9	87.5	0
20210622T222500	2021	06	22	22:25	52.9	87.2	0
20210622T223000	2021	06	22	22:30	53.1	86.9	0
20210622T223500	2021	06	22	22:35	53.2	86.3	0
20210622T224000	2021	06	22	22:40	53.5	86.3	0
20210622T224500	2021	06	22	22:45	53.5	85.8	0
20210622T225000	2021	06	22	22:50	53.3	85.9	0
20210622T225500	2021	06	22	22:55	53.1	86.2	0
20210622T230000	2021	06	22	23:00	52.9	86.7	0
20210622T230500	2021	06	22	23:05	53	87.1	0
20210622T231000	2021	06	22	23:10	52.9	86.6	0
20210622T231500	2021	06	22	23:15	53	86.6	0
20210622T232000	2021	06	22	23:20	52.8	86.3	0
20210622T232500	2021	06	22	23:25	52.7	86.5	0
20210622T233000	2021	06	22	23:30	52.4	87	0
20210622T233500	2021	06	22	23:35	52.5	87.3	0
20210622T234000	2021	06	22	23:40	52.1	87.6	0
20210622T234500	2021	06	22	23:45	51.7	88.3	0
20210622T235000	2021	06	22	23:50	51.3	89	0
20210622T235500	2021	06	22	23:55	51.2	89.3	0
20210623T000000	2021	06	23	00:00	51.1	89.7	0
20210623T000500	2021	06	23	00:05	51.2	90.3	0
20210623T001000	2021	06	23	00:10	51.3	90	0
20210623T001500	2021	06	23	00:15	51.3	89.8	0
20210623T002000	2021	06	23	00:20	51	89.9	0
20210623T002500	2021	06	23	00:25	50.8	89.9	0
20210623T003000	2021	06	23	00:30	50.1	90.5	0
20210623T003500	2021	06	23	00:35	50.5	91.1	0
20210623T004000	2021	06	23	00:40	50.1	90.8	0
20210623T004500	2021	06	23	00:45	50.1	91.1	0
20210623T005000	2021	06	23	00:50	49.8	91.5	0
20210623T005500	2021	06	23	00:55	49.8	91.8	0
20210623T010000	2021	06	23	01:00	50.1	91.3	0
20210623T010500	2021	06	23	01:05	50.1	91	0
20210623T011000	2021	06	23	01:10	49.8	90.9	0
20210623T011500	2021	06	23	01:15	49.5	91.7	0
20210623T012000	2021	06	23	01:20	49.3	92.1	0
20210623T012500	2021	06	23	01:25	49.3	92.5	0
20210623T013000	2021	06	23	01:30	49.5	92.6	0
20210623T013500	2021	06	23	01:35	49.5	91.9	0
20210623T014000	2021	06	23	01:40	49.7	92.3	0
20210623T014500	2021	06	23	01:45	49.1	92	0
20210623T015000	2021	06	23	01:50	48.6	93.6	0
20210623T015500	2021	06	23	01:55	47.6	93	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210623T020000	2021	06	23	02:00	48.1	96	0
20210623T020500	2021	06	23	02:05	47.1	95.2	0
20210623T021000	2021	06	23	02:10	47	94.9	0
20210623T021500	2021	06	23	02:15	46.3	95.5	0
20210623T022000	2021	06	23	02:20	46.7	97	0
20210623T022500	2021	06	23	02:25	47.4	97.5	0
20210623T023000	2021	06	23	02:30	46.5	97.2	0
20210623T023500	2021	06	23	02:35	46.6	97.4	0
20210623T024000	2021	06	23	02:40	45.5	96.7	0
20210623T024500	2021	06	23	02:45	44.9	96.8	0
20210623T025000	2021	06	23	02:50	44.8	97.8	0
20210623T025500	2021	06	23	02:55	44.6	97.7	0
20210623T030000	2021	06	23	03:00	45.1	98.7	0
20210623T030500	2021	06	23	03:05	43.6	97.4	0
20210623T031000	2021	06	23	03:10	43.5	97.6	0
20210623T031500	2021	06	23	03:15	44.6	99.2	0
20210623T032000	2021	06	23	03:20	44.3	99	0
20210623T032500	2021	06	23	03:25	44.1	98.7	0
20210623T033000	2021	06	23	03:30	43.8	98.7	0
20210623T033500	2021	06	23	03:35	44.3	99	0
20210623T034000	2021	06	23	03:40	44.1	99.2	0
20210623T034500	2021	06	23	03:45	43.5	98.9	0
20210623T035000	2021	06	23	03:50	43.7	98.9	0
20210623T035500	2021	06	23	03:55	43.5	99	0
20210623T040000	2021	06	23	04:00	44.4	99.4	0
20210623T040500	2021	06	23	04:05	45.4	99.4	0
20210623T041000	2021	06	23	04:10	46.4	97.9	0
20210623T041500	2021	06	23	04:15	46.9	94.1	0
20210623T042000	2021	06	23	04:20	46.9	92.9	0
20210623T042500	2021	06	23	04:25	46.6	92.2	0
20210623T043000	2021	06	23	04:30	46.6	92.2	0
20210623T043500	2021	06	23	04:35	46.9	91.4	0
20210623T044000	2021	06	23	04:40	47.2	90.8	0
20210623T044500	2021	06	23	04:45	47.1	90	0
20210623T045000	2021	06	23	04:50	46.7	90.4	0
20210623T045500	2021	06	23	04:55	46.5	91.1	0
20210623T050000	2021	06	23	05:00	46.1	91	0
20210623T050500	2021	06	23	05:05	46.2	92	0
20210623T051000	2021	06	23	05:10	45.5	91.7	0
20210623T051500	2021	06	23	05:15	45.5	93.1	0
20210623T052000	2021	06	23	05:20	44.7	91.9	0
20210623T052500	2021	06	23	05:25	45	93.8	0
20210623T053000	2021	06	23	05:30	45	94.3	0
20210623T053500	2021	06	23	05:35	45	94.1	0
20210623T054000	2021	06	23	05:40	45.1	93.9	0
20210623T054500	2021	06	23	05:45	45.1	93.5	0
20210623T055000	2021	06	23	05:50	45.3	93.2	0
20210623T055500	2021	06	23	05:55	45.3	92.5	0
20210623T060000	2021	06	23	06:00	45.7	92.8	0
20210623T060500	2021	06	23	06:05	45.7	91.8	0
20210623T061000	2021	06	23	06:10	45.6	91.2	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210623T061500	2021	06	23	06:15	46	91.1	0
20210623T062000	2021	06	23	06:20	46.1	88.1	0
20210623T062500	2021	06	23	06:25	46.4	88	0
20210623T063000	2021	06	23	06:30	46.7	88.2	0
20210623T063500	2021	06	23	06:35	47.1	89.2	0
20210623T064000	2021	06	23	06:40	47.4	88.3	0
20210623T064500	2021	06	23	06:45	48	87.3	0
20210623T065000	2021	06	23	06:50	48.4	86.4	0
20210623T065500	2021	06	23	06:55	48.6	86.3	0
20210623T070000	2021	06	23	07:00	49	85.2	0
20210623T070500	2021	06	23	07:05	49.3	85.8	0
20210623T071000	2021	06	23	07:10	49.4	88.6	0
20210623T071500	2021	06	23	07:15	49.4	89.1	0
20210623T072000	2021	06	23	07:20	49.6	89.3	0
20210623T072500	2021	06	23	07:25	49.7	88.2	0
20210623T073000	2021	06	23	07:30	50.1	87.8	0
20210623T073500	2021	06	23	07:35	50.5	86.6	0
20210623T074000	2021	06	23	07:40	51	86.1	0
20210623T074500	2021	06	23	07:45	51.2	84.1	0
20210623T075000	2021	06	23	07:50	51.3	85.1	0
20210623T075500	2021	06	23	07:55	51.5	84.9	0
20210623T080000	2021	06	23	08:00	51.6	84.9	0
20210623T080500	2021	06	23	08:05	51.7	85.4	0
20210623T081000	2021	06	23	08:10	51.8	85.4	0
20210623T081500	2021	06	23	08:15	52.5	86.3	0
20210623T082000	2021	06	23	08:20	52.7	84	0
20210623T082500	2021	06	23	08:25	53.3	83.7	0
20210623T083000	2021	06	23	08:30	53.4	81.4	0
20210623T083500	2021	06	23	08:35	53.7	80.6	0
20210623T084000	2021	06	23	08:40	54.3	80.8	0
20210623T084500	2021	06	23	08:45	54.5	78.3	0
20210623T085000	2021	06	23	08:50	54.5	79.3	0
20210623T085500	2021	06	23	08:55	54.4	80.5	0
20210623T090000	2021	06	23	09:00	55.1	80.5	0
20210623T090500	2021	06	23	09:05	55.8	79.5	0
20210623T091000	2021	06	23	09:10	56.4	77.5	0
20210623T091500	2021	06	23	09:15	56.5	76.8	0
20210623T092000	2021	06	23	09:20	56.7	76.7	0
20210623T092500	2021	06	23	09:25	57.4	76.4	0
20210623T093000	2021	06	23	09:30	56.9	75.3	0
20210623T093500	2021	06	23	09:35	58	75.3	0
20210623T094000	2021	06	23	09:40	58.4	71.1	0
20210623T094500	2021	06	23	09:45	58.5	71.7	0
20210623T095000	2021	06	23	09:50	59.5	69	0
20210623T095500	2021	06	23	09:55	59.7	66.5	0
20210623T100000	2021	06	23	10:00	60	66.7	0
20210623T100500	2021	06	23	10:05	60.2	64.3	0
20210623T101000	2021	06	23	10:10	60.6	59	0
20210623T101500	2021	06	23	10:15	61	58.4	0
20210623T102000	2021	06	23	10:20	61.3	52.1	0
20210623T102500	2021	06	23	10:25	61.4	49.2	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210623T103000	2021	06	23	10:30	61.7	51.7	0
20210623T103500	2021	06	23	10:35	61.9	48.3	0
20210623T104000	2021	06	23	10:40	62.5	46	0
20210623T104500	2021	06	23	10:45	62.5	45.2	0
20210623T105000	2021	06	23	10:50	62.9	47.2	0
20210623T105500	2021	06	23	10:55	62.7	45.6	0
20210623T110000	2021	06	23	11:00	63.2	47.5	0
20210623T110500	2021	06	23	11:05	63.1	45.8	0
20210623T111000	2021	06	23	11:10	63.1	46.7	0
20210623T111500	2021	06	23	11:15	62.7	46.5	0
20210623T112000	2021	06	23	11:20	63.1	48	0
20210623T112500	2021	06	23	11:25	63.4	45.8	0
20210623T113000	2021	06	23	11:30	63.2	46	0
20210623T113500	2021	06	23	11:35	63.5	45.9	0
20210623T114000	2021	06	23	11:40	63.8	45.3	0
20210623T114500	2021	06	23	11:45	63.8	45.3	0
20210623T115000	2021	06	23	11:50	63.8	45.8	0
20210623T115500	2021	06	23	11:55	64	47.5	0
20210623T120000	2021	06	23	12:00	64.3	47.1	0
20210623T120500	2021	06	23	12:05	64.2	49	0
20210623T121000	2021	06	23	12:10	64.6	48.3	0
20210623T121500	2021	06	23	12:15	64.6	48	0
20210623T122000	2021	06	23	12:20	63.4	48.4	0
20210623T122500	2021	06	23	12:25	64.2	49.6	0
20210623T123000	2021	06	23	12:30	64.8	47.6	0
20210623T123500	2021	06	23	12:35	65.1	48.3	0
20210623T124000	2021	06	23	12:40	65.2	47.4	0
20210623T124500	2021	06	23	12:45	64.6	46.6	0
20210623T125000	2021	06	23	12:50	65.2	48.9	0
20210623T125500	2021	06	23	12:55	64.5	48.3	0
20210623T130000	2021	06	23	13:00	65.6	48.8	0
20210623T130500	2021	06	23	13:05	65.2	45.6	0
20210623T131000	2021	06	23	13:10	65.3	46.9	0
20210623T131500	2021	06	23	13:15	65.5	45.8	0
20210623T132000	2021	06	23	13:20	65.3	45.3	0
20210623T132500	2021	06	23	13:25	65.6	47	0
20210623T133000	2021	06	23	13:30	64.8	48.2	0
20210623T133500	2021	06	23	13:35	65.5	47.6	0
20210623T134000	2021	06	23	13:40	66	46.5	0
20210623T134500	2021	06	23	13:45	65.7	45.1	0
20210623T135000	2021	06	23	13:50	65.1	45.7	0
20210623T135500	2021	06	23	13:55	66.5	45.7	0
20210623T140000	2021	06	23	14:00	66.7	44.6	0
20210623T140500	2021	06	23	14:05	66.9	41.8	0
20210623T141000	2021	06	23	14:10	66.9	41.9	0
20210623T141500	2021	06	23	14:15	66.9	44.3	0
20210623T142000	2021	06	23	14:20	67.4	43	0
20210623T142500	2021	06	23	14:25	67.3	42.2	0
20210623T143000	2021	06	23	14:30	67.4	43.3	0
20210623T143500	2021	06	23	14:35	67.6	40.5	0
20210623T144000	2021	06	23	14:40	67.1	39.2	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210623T144500	2021	06	23	14:45	67	41.2	0
20210623T145000	2021	06	23	14:50	67.8	42	0
20210623T145500	2021	06	23	14:55	67.4	41.6	0
20210623T150000	2021	06	23	15:00	66.3	41.4	0
20210623T150500	2021	06	23	15:05	67.5	43.2	0
20210623T151000	2021	06	23	15:10	66.8	40.9	0
20210623T151500	2021	06	23	15:15	67.3	42.2	0
20210623T152000	2021	06	23	15:20	67.9	41.6	0
20210623T152500	2021	06	23	15:25	67.9	41.5	0
20210623T153000	2021	06	23	15:30	67.6	40.1	0
20210623T153500	2021	06	23	15:35	68	41.4	0
20210623T154000	2021	06	23	15:40	68	41.6	0
20210623T154500	2021	06	23	15:45	67.9	40.9	0
20210623T155000	2021	06	23	15:50	67.9	40.5	0
20210623T155500	2021	06	23	15:55	68.1	40.1	0
20210623T160000	2021	06	23	16:00	68.3	41.8	0
20210623T160500	2021	06	23	16:05	68.2	39.7	0
20210623T161000	2021	06	23	16:10	68.1	40.2	0
20210623T161500	2021	06	23	16:15	68.3	39.9	0
20210623T162000	2021	06	23	16:20	68.5	40.5	0
20210623T162500	2021	06	23	16:25	68.7	39.2	0
20210623T163000	2021	06	23	16:30	68.6	39.9	0
20210623T163500	2021	06	23	16:35	68.1	40.6	0
20210623T164000	2021	06	23	16:40	68.2	40.6	0
20210623T164500	2021	06	23	16:45	68.3	39.1	0
20210623T165000	2021	06	23	16:50	67.8	39.6	0
20210623T165500	2021	06	23	16:55	67.4	40.6	0
20210623T170000	2021	06	23	17:00	68.3	38.9	0
20210623T170500	2021	06	23	17:05	68.5	39	0
20210623T171000	2021	06	23	17:10	68.7	38.6	0
20210623T171500	2021	06	23	17:15	68.5	38.8	0
20210623T172000	2021	06	23	17:20	68.3	39.4	0
20210623T172500	2021	06	23	17:25	68.3	41	0
20210623T173000	2021	06	23	17:30	68.3	39.7	0
20210623T173500	2021	06	23	17:35	68.4	38.7	0
20210623T174000	2021	06	23	17:40	68.2	37.1	0
20210623T174500	2021	06	23	17:45	68.3	38	0
20210623T175000	2021	06	23	17:50	68.4	36.9	0
20210623T175500	2021	06	23	17:55	68.2	34.9	0
20210623T180000	2021	06	23	18:00	68.4	37.8	0
20210623T180500	2021	06	23	18:05	68.1	36.3	0
20210623T181000	2021	06	23	18:10	68.2	37.8	0
20210623T181500	2021	06	23	18:15	68.2	39.2	0
20210623T182000	2021	06	23	18:20	68.1	38.9	0
20210623T182500	2021	06	23	18:25	67.9	38.1	0
20210623T183000	2021	06	23	18:30	67.8	38.9	0
20210623T183500	2021	06	23	18:35	67.9	40.3	0
20210623T184000	2021	06	23	18:40	67.9	39.2	0
20210623T184500	2021	06	23	18:45	67.7	37.9	0
20210623T185000	2021	06	23	18:50	67.7	37.4	0
20210623T185500	2021	06	23	18:55	67.7	37.8	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210623T190000	2021	06	23	19:00	67.6	38.1	0
20210623T190500	2021	06	23	19:05	67.4	39.3	0
20210623T191000	2021	06	23	19:10	67.1	39.8	0
20210623T191500	2021	06	23	19:15	67	39	0
20210623T192000	2021	06	23	19:20	67	38.8	0
20210623T192500	2021	06	23	19:25	67	38.3	0
20210623T193000	2021	06	23	19:30	66.8	39.7	0
20210623T193500	2021	06	23	19:35	66.6	40	0
20210623T194000	2021	06	23	19:40	66.5	39.9	0
20210623T194500	2021	06	23	19:45	66.6	39.7	0
20210623T195000	2021	06	23	19:50	66.3	40.5	0
20210623T195500	2021	06	23	19:55	66.1	41	0
20210623T200000	2021	06	23	20:00	65.3	44.6	0
20210623T200500	2021	06	23	20:05	64.9	44.7	0
20210623T201000	2021	06	23	20:10	65	43.3	0
20210623T201500	2021	06	23	20:15	63.8	46.1	0
20210623T202000	2021	06	23	20:20	63.1	50.5	0
20210623T202500	2021	06	23	20:25	61.4	56.7	0
20210623T203000	2021	06	23	20:30	60.8	58.3	0
20210623T203500	2021	06	23	20:35	56.8	69.6	0
20210623T204000	2021	06	23	20:40	56.2	69.3	0
20210623T204500	2021	06	23	20:45	55.9	68	0
20210623T205000	2021	06	23	20:50	55.5	68.6	0
20210623T205500	2021	06	23	20:55	53.9	73.1	0
20210623T210000	2021	06	23	21:00	53.2	80	0
20210623T210500	2021	06	23	21:05	53.3	82.3	0
20210623T211000	2021	06	23	21:10	52.7	83.5	0
20210623T211500	2021	06	23	21:15	52	84.8	0
20210623T212000	2021	06	23	21:20	51.2	87.4	0
20210623T212500	2021	06	23	21:25	51.1	88	0
20210623T213000	2021	06	23	21:30	51.9	89.3	0
20210623T213500	2021	06	23	21:35	52	87.8	0
20210623T214000	2021	06	23	21:40	51.7	86.3	0
20210623T214500	2021	06	23	21:45	51.3	86.7	0
20210623T215000	2021	06	23	21:50	50.9	89	0
20210623T215500	2021	06	23	21:55	50.6	89.3	0
20210623T220000	2021	06	23	22:00	50.6	88.7	0
20210623T220500	2021	06	23	22:05	50.5	88.3	0
20210623T221000	2021	06	23	22:10	50.5	87.7	0
20210623T221500	2021	06	23	22:15	50.8	87.9	0
20210623T222000	2021	06	23	22:20	50.5	87.1	0
20210623T222500	2021	06	23	22:25	50.4	86.5	0
20210623T223000	2021	06	23	22:30	51.6	86.1	0
20210623T223500	2021	06	23	22:35	51.5	85.5	0
20210623T224000	2021	06	23	22:40	51	85.3	0
20210623T224500	2021	06	23	22:45	50.7	83.9	0
20210623T225000	2021	06	23	22:50	50.8	84.8	0
20210623T225500	2021	06	23	22:55	50.9	83.3	0
20210623T230000	2021	06	23	23:00	51.5	82.6	0
20210623T230500	2021	06	23	23:05	50.7	84.1	0
20210623T231000	2021	06	23	23:10	51.3	82.2	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210623T231500	2021	06	23	23:15	52.1	80.6	0
20210623T232000	2021	06	23	23:20	52.5	79.3	0
20210623T232500	2021	06	23	23:25	50.3	81.6	0
20210623T233000	2021	06	23	23:30	51.2	83.3	0
20210623T233500	2021	06	23	23:35	50.1	83.6	0
20210623T234000	2021	06	23	23:40	51.5	84.9	0
20210623T234500	2021	06	23	23:45	51.1	83.6	0
20210623T235000	2021	06	23	23:50	50.8	82.8	0
20210623T235500	2021	06	23	23:55	51.8	82	0
20210624T000000	2021	06	24	00:00	52.8	75.5	0
20210624T000500	2021	06	24	00:05	48.6	80.9	0
20210624T001000	2021	06	24	00:10	48.6	86	0
20210624T001500	2021	06	24	00:15	48.5	88.8	0
20210624T002000	2021	06	24	00:20	49	90.4	0
20210624T002500	2021	06	24	00:25	48.8	90.4	0
20210624T003000	2021	06	24	00:30	49.1	90.7	0
20210624T003500	2021	06	24	00:35	47.6	89.9	0
20210624T004000	2021	06	24	00:40	47.7	92.1	0
20210624T004500	2021	06	24	00:45	48.6	92.6	0
20210624T005000	2021	06	24	00:50	48.4	92.1	0
20210624T005500	2021	06	24	00:55	47.6	90.5	0
20210624T010000	2021	06	24	01:00	48.1	91.4	0
20210624T010500	2021	06	24	01:05	47.2	91.7	0
20210624T011000	2021	06	24	01:10	47.2	92.6	0
20210624T011500	2021	06	24	01:15	45.9	93.9	0
20210624T012000	2021	06	24	01:20	47.7	95.8	0
20210624T012500	2021	06	24	01:25	46.9	93.8	0
20210624T013000	2021	06	24	01:30	47.2	95.5	0
20210624T013500	2021	06	24	01:35	48.1	94.1	0
20210624T014000	2021	06	24	01:40	46.4	89.4	0
20210624T014500	2021	06	24	01:45	45.3	94.4	0
20210624T015000	2021	06	24	01:50	46.3	96.5	0
20210624T015500	2021	06	24	01:55	47.6	97.3	0
20210624T020000	2021	06	24	02:00	47.9	95.3	0
20210624T020500	2021	06	24	02:05	46.6	92.4	0
20210624T021000	2021	06	24	02:10	47.6	94.7	0
20210624T021500	2021	06	24	02:15	46.9	94	0
20210624T022000	2021	06	24	02:20	46.6	94.5	0
20210624T022500	2021	06	24	02:25	47	95.6	0
20210624T023000	2021	06	24	02:30	46.6	92.7	0
20210624T023500	2021	06	24	02:35	45.2	91.5	0
20210624T024000	2021	06	24	02:40	45.8	95.9	0
20210624T024500	2021	06	24	02:45	45	95.4	0
20210624T025000	2021	06	24	02:50	45.5	96.1	0
20210624T025500	2021	06	24	02:55	46	97.7	0
20210624T030000	2021	06	24	03:00	45	95.5	0
20210624T030500	2021	06	24	03:05	44.7	95.8	0
20210624T031000	2021	06	24	03:10	44.7	95.3	0
20210624T031500	2021	06	24	03:15	44.3	96.3	0
20210624T032000	2021	06	24	03:20	44.8	97.8	0
20210624T032500	2021	06	24	03:25	44.7	97.7	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210624T033000	2021	06	24	03:30	44.5	96.6	0
20210624T033500	2021	06	24	03:35	44.9	97.7	0
20210624T034000	2021	06	24	03:40	44.7	97.1	0
20210624T034500	2021	06	24	03:45	44.9	97.6	0
20210624T035000	2021	06	24	03:50	45.2	98.3	0
20210624T035500	2021	06	24	03:55	46.3	98.6	0
20210624T040000	2021	06	24	04:00	46.5	96.3	0
20210624T040500	2021	06	24	04:05	45	93.4	0
20210624T041000	2021	06	24	04:10	45.1	95.8	0
20210624T041500	2021	06	24	04:15	43.7	93.5	0
20210624T042000	2021	06	24	04:20	43.9	96.3	0
20210624T042500	2021	06	24	04:25	43.4	96.4	0
20210624T043000	2021	06	24	04:30	44.3	97.8	0
20210624T043500	2021	06	24	04:35	44.3	98.2	0
20210624T044000	2021	06	24	04:40	44.3	98.2	0
20210624T044500	2021	06	24	04:45	43.3	97.4	0
20210624T045000	2021	06	24	04:50	43.8	98.1	0
20210624T045500	2021	06	24	04:55	44.1	98.2	0
20210624T050000	2021	06	24	05:00	43.4	98.1	0
20210624T050500	2021	06	24	05:05	43.1	97.7	0
20210624T051000	2021	06	24	05:10	43.2	98.2	0
20210624T051500	2021	06	24	05:15	43	98.4	0
20210624T052000	2021	06	24	05:20	43.3	99	0
20210624T052500	2021	06	24	05:25	42.7	98.1	0
20210624T053000	2021	06	24	05:30	43.8	99.2	0
20210624T053500	2021	06	24	05:35	43	98.9	0
20210624T054000	2021	06	24	05:40	42.9	98.6	0
20210624T054500	2021	06	24	05:45	42.9	98.5	0
20210624T055000	2021	06	24	05:50	43.4	98.8	0
20210624T055500	2021	06	24	05:55	43.4	98.6	0
20210624T060000	2021	06	24	06:00	44.3	99.1	0
20210624T060500	2021	06	24	06:05	43.8	98.6	0
20210624T061000	2021	06	24	06:10	44.4	98.4	0
20210624T061500	2021	06	24	06:15	44.7	98.3	0
20210624T062000	2021	06	24	06:20	45.3	98	0
20210624T062500	2021	06	24	06:25	46.7	98	0
20210624T063000	2021	06	24	06:30	47.6	96.4	0
20210624T063500	2021	06	24	06:35	48.1	93.3	0
20210624T064000	2021	06	24	06:40	48.4	91.9	0
20210624T064500	2021	06	24	06:45	48.9	92	0
20210624T065000	2021	06	24	06:50	49.3	91.2	0
20210624T065500	2021	06	24	06:55	49.4	91.3	0
20210624T070000	2021	06	24	07:00	49.9	91.1	0
20210624T070500	2021	06	24	07:05	50	90.6	0
20210624T071000	2021	06	24	07:10	50.4	90.5	0
20210624T071500	2021	06	24	07:15	50.5	90.3	0
20210624T072000	2021	06	24	07:20	51.1	89.8	0
20210624T072500	2021	06	24	07:25	51.3	88.9	0
20210624T073000	2021	06	24	07:30	51.7	88.6	0
20210624T073500	2021	06	24	07:35	52	87.5	0
20210624T074000	2021	06	24	07:40	52.4	86.9	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210624T074500	2021	06	24	07:45	53.1	86	0
20210624T075000	2021	06	24	07:50	53.6	84.9	0
20210624T075500	2021	06	24	07:55	54.2	85	0
20210624T080000	2021	06	24	08:00	54.6	83.6	0
20210624T080500	2021	06	24	08:05	54.5	83.6	0
20210624T081000	2021	06	24	08:10	54.8	82.3	0
20210624T081500	2021	06	24	08:15	55.6	80.6	0
20210624T082000	2021	06	24	08:20	56.1	80.3	0
20210624T082500	2021	06	24	08:25	56.5	81	0
20210624T083000	2021	06	24	08:30	56.8	79.8	0
20210624T083500	2021	06	24	08:35	57	77.4	0
20210624T084000	2021	06	24	08:40	57.2	78.5	0
20210624T084500	2021	06	24	08:45	58.5	77.8	0
20210624T085000	2021	06	24	08:50	59.4	77.8	0
20210624T085500	2021	06	24	08:55	59.8	76.5	0
20210624T090000	2021	06	24	09:00	59.5	74.1	0
20210624T090500	2021	06	24	09:05	59.8	73.6	0
20210624T091000	2021	06	24	09:10	60	75	0
20210624T091500	2021	06	24	09:15	61	74.5	0
20210624T092000	2021	06	24	09:20	61	74.3	0
20210624T092500	2021	06	24	09:25	61.9	73.2	0
20210624T093000	2021	06	24	09:30	61.8	73.1	0
20210624T093500	2021	06	24	09:35	62.4	73.1	0
20210624T094000	2021	06	24	09:40	62.7	73	0
20210624T094500	2021	06	24	09:45	63.1	73.4	0
20210624T095000	2021	06	24	09:50	63.2	73.1	0
20210624T095500	2021	06	24	09:55	63.8	71.8	0
20210624T100000	2021	06	24	10:00	64.5	71.7	0
20210624T100500	2021	06	24	10:05	65	71.4	0
20210624T101000	2021	06	24	10:10	65.4	70.3	0
20210624T101500	2021	06	24	10:15	66.2	70.8	0
20210624T102000	2021	06	24	10:20	66.9	68.8	0
20210624T102500	2021	06	24	10:25	67.1	68.4	0
20210624T103000	2021	06	24	10:30	67.8	68.4	0
20210624T103500	2021	06	24	10:35	68.1	66.9	0
20210624T104000	2021	06	24	10:40	68.3	65.3	0
20210624T104500	2021	06	24	10:45	68.5	65.3	0
20210624T105000	2021	06	24	10:50	69.4	65.6	0
20210624T105500	2021	06	24	10:55	69.9	64.5	0
20210624T110000	2021	06	24	11:00	70.2	63.9	0
20210624T110500	2021	06	24	11:05	70.3	63	0
20210624T111000	2021	06	24	11:10	69.8	63.3	0
20210624T111500	2021	06	24	11:15	69.6	64.9	0
20210624T112000	2021	06	24	11:20	69.8	62.3	0
20210624T112500	2021	06	24	11:25	69.9	63.4	0
20210624T113000	2021	06	24	11:30	70.3	61.4	0
20210624T113500	2021	06	24	11:35	70.6	61.6	0
20210624T114000	2021	06	24	11:40	71.1	59	0
20210624T114500	2021	06	24	11:45	71.2	58	0
20210624T115000	2021	06	24	11:50	72.3	59	0
20210624T115500	2021	06	24	11:55	71.9	56.9	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210624T120000	2021	06	24	12:00	73.2	58.7	0
20210624T120500	2021	06	24	12:05	73.5	54	0
20210624T121000	2021	06	24	12:10	73.5	49.2	0
20210624T121500	2021	06	24	12:15	74.4	49.5	0
20210624T122000	2021	06	24	12:20	74.3	43	0
20210624T122500	2021	06	24	12:25	73.6	42.1	0
20210624T123000	2021	06	24	12:30	73.6	43.6	0
20210624T123500	2021	06	24	12:35	74.6	42.8	0
20210624T124000	2021	06	24	12:40	74.4	38	0
20210624T124500	2021	06	24	12:45	74.8	41.9	0
20210624T125000	2021	06	24	12:50	75.7	39.2	0
20210624T125500	2021	06	24	12:55	75.7	39.6	0
20210624T130000	2021	06	24	13:00	75.2	38.3	0
20210624T130500	2021	06	24	13:05	74.8	39.7	0
20210624T131000	2021	06	24	13:10	74.8	42.4	0
20210624T131500	2021	06	24	13:15	76.7	40.3	0
20210624T132000	2021	06	24	13:20	75.5	38.1	0
20210624T132500	2021	06	24	13:25	76	40.1	0
20210624T133000	2021	06	24	13:30	74.5	40.7	0
20210624T133500	2021	06	24	13:35	75	43.4	0
20210624T134000	2021	06	24	13:40	75.6	42.5	0
20210624T134500	2021	06	24	13:45	75.5	41.1	0
20210624T135000	2021	06	24	13:50	74.2	44.4	0
20210624T135500	2021	06	24	13:55	75.5	42.9	0
20210624T140000	2021	06	24	14:00	75.7	42.3	0
20210624T140500	2021	06	24	14:05	76.5	40.6	0
20210624T141000	2021	06	24	14:10	76.8	42.3	0
20210624T141500	2021	06	24	14:15	76.9	40.6	0
20210624T142000	2021	06	24	14:20	76.3	42.6	0
20210624T142500	2021	06	24	14:25	76	43	0
20210624T143000	2021	06	24	14:30	76	42.6	0
20210624T143500	2021	06	24	14:35	76.5	42.1	0
20210624T144000	2021	06	24	14:40	76.4	43.2	0
20210624T144500	2021	06	24	14:45	75.9	42.3	0
20210624T145000	2021	06	24	14:50	76.7	41.2	0
20210624T145500	2021	06	24	14:55	77.1	41.8	0
20210624T150000	2021	06	24	15:00	76.9	40.3	0
20210624T150500	2021	06	24	15:05	77	41.1	0
20210624T151000	2021	06	24	15:10	76.6	40.4	0
20210624T151500	2021	06	24	15:15	75.9	38.9	0
20210624T152000	2021	06	24	15:20	77.3	40.9	0
20210624T152500	2021	06	24	15:25	77.9	41.5	0
20210624T153000	2021	06	24	15:30	77.4	39.3	0
20210624T153500	2021	06	24	15:35	76.6	38.8	0
20210624T154000	2021	06	24	15:40	76.8	39.8	0
20210624T154500	2021	06	24	15:45	76.8	40.8	0
20210624T155000	2021	06	24	15:50	76.9	41.1	0
20210624T155500	2021	06	24	15:55	77	40.7	0
20210624T160000	2021	06	24	16:00	77.7	41.8	0
20210624T160500	2021	06	24	16:05	77.3	41.2	0
20210624T161000	2021	06	24	16:10	77.4	41.1	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210624T161500	2021	06	24	16:15	77.5	42.4	0
20210624T162000	2021	06	24	16:20	77.2	41.1	0
20210624T162500	2021	06	24	16:25	77.4	40.5	0
20210624T163000	2021	06	24	16:30	77.1	39.5	0
20210624T163500	2021	06	24	16:35	77.7	42.1	0
20210624T164000	2021	06	24	16:40	77.9	42.5	0
20210624T164500	2021	06	24	16:45	77.6	39.1	0
20210624T165000	2021	06	24	16:50	77.4	38.8	0
20210624T165500	2021	06	24	16:55	77.2	38.6	0
20210624T170000	2021	06	24	17:00	77.2	38.4	0
20210624T170500	2021	06	24	17:05	77	38.1	0
20210624T171000	2021	06	24	17:10	77.2	39.6	0
20210624T171500	2021	06	24	17:15	76.8	38.4	0
20210624T172000	2021	06	24	17:20	77.2	40.2	0
20210624T172500	2021	06	24	17:25	77.4	40.3	0
20210624T173000	2021	06	24	17:30	77.4	38.4	0
20210624T173500	2021	06	24	17:35	76.9	37.5	0
20210624T174000	2021	06	24	17:40	76.8	37.8	0
20210624T174500	2021	06	24	17:45	76.6	39	0
20210624T175000	2021	06	24	17:50	77.1	38.3	0
20210624T175500	2021	06	24	17:55	77	38.6	0
20210624T180000	2021	06	24	18:00	77	39.9	0
20210624T180500	2021	06	24	18:05	76.5	39.5	0
20210624T181000	2021	06	24	18:10	76.5	40.2	0
20210624T181500	2021	06	24	18:15	76.5	39.9	0
20210624T182000	2021	06	24	18:20	76.4	38.4	0
20210624T182500	2021	06	24	18:25	76.1	40	0
20210624T183000	2021	06	24	18:30	76.2	40.5	0
20210624T183500	2021	06	24	18:35	76.1	39.2	0
20210624T184000	2021	06	24	18:40	75.9	40.9	0
20210624T184500	2021	06	24	18:45	75.9	39.3	0
20210624T185000	2021	06	24	18:50	75.7	39.6	0
20210624T185500	2021	06	24	18:55	75.5	39.7	0
20210624T190000	2021	06	24	19:00	75.4	40.5	0
20210624T190500	2021	06	24	19:05	75	42.2	0
20210624T191000	2021	06	24	19:10	75.1	41.8	0
20210624T191500	2021	06	24	19:15	74.6	43.9	0
20210624T192000	2021	06	24	19:20	74.4	42.8	0
20210624T192500	2021	06	24	19:25	73.6	44.9	0
20210624T193000	2021	06	24	19:30	72.7	49.2	0
20210624T193500	2021	06	24	19:35	72.3	48.7	0
20210624T194000	2021	06	24	19:40	71.5	49.7	0
20210624T194500	2021	06	24	19:45	71.3	49.8	0
20210624T195000	2021	06	24	19:50	71.2	50.2	0
20210624T195500	2021	06	24	19:55	70.8	51.4	0
20210624T200000	2021	06	24	20:00	70.2	52.5	0
20210624T200500	2021	06	24	20:05	70	52.6	0
20210624T201000	2021	06	24	20:10	69.4	53.3	0
20210624T201500	2021	06	24	20:15	68.6	55	0
20210624T202000	2021	06	24	20:20	68.2	55.6	0
20210624T202500	2021	06	24	20:25	67.7	56.2	0

Table C-1: Summer SUNY MesoNet Meteorological Data (Sprakers Station)

Raw Date/Time	Year	Month	Day	Time	Temperature [F]	Relative Humidity [%]	Precipitation [in]
20210624T203000	2021	06	24	20:30	67.3	56.9	0
20210624T203500	2021	06	24	20:35	67	57.3	0
20210624T204000	2021	06	24	20:40	66.6	58.4	0
20210624T204500	2021	06	24	20:45	66.2	58.6	0
20210624T205000	2021	06	24	20:50	65.7	59.6	0
20210624T205500	2021	06	24	20:55	65.6	60.3	0
20210624T210000	2021	06	24	21:00	65.5	60.5	0
20210624T210500	2021	06	24	21:05	65.2	60.3	0
20210624T211000	2021	06	24	21:10	65.2	60.2	0
20210624T211500	2021	06	24	21:15	65.1	60.1	0
20210624T212000	2021	06	24	21:20	64.7	60.7	0
20210624T212500	2021	06	24	21:25	64.3	61.1	0
20210624T213000	2021	06	24	21:30	64.3	61	0
20210624T213500	2021	06	24	21:35	64.4	60.5	0
20210624T214000	2021	06	24	21:40	64.2	60.7	0
20210624T214500	2021	06	24	21:45	63.9	60.8	0
20210624T215000	2021	06	24	21:50	63.9	60.4	0
20210624T215500	2021	06	24	21:55	63.8	60.3	0
20210624T220000	2021	06	24	22:00	64	59.7	0
20210624T220500	2021	06	24	22:05	63.9	59.8	0
20210624T221000	2021	06	24	22:10	63.7	59.9	0
20210624T221500	2021	06	24	22:15	63.4	60	0
20210624T222000	2021	06	24	22:20	63	60.4	0
20210624T222500	2021	06	24	22:25	62.9	60.5	0
20210624T223000	2021	06	24	22:30	63.1	59.6	0
20210624T223500	2021	06	24	22:35	62.7	60.1	0
20210624T224000	2021	06	24	22:40	62.1	61	0
20210624T224500	2021	06	24	22:45	62	61.4	0
20210624T225000	2021	06	24	22:50	60.7	64.1	0
20210624T225500	2021	06	24	22:55	59.7	67.2	0
20210624T230000	2021	06	24	23:00	59.8	68.6	0
20210624T230500	2021	06	24	23:05	59.4	69.4	0
20210624T231000	2021	06	24	23:10	59.7	66.9	0
20210624T231500	2021	06	24	23:15	60.5	63.2	0
20210624T232000	2021	06	24	23:20	60.3	64.6	0
20210624T232500	2021	06	24	23:25	60.2	64.7	0
20210624T233000	2021	06	24	23:30	61.1	61.8	0
20210624T233500	2021	06	24	23:35	61.1	61.5	0
20210624T234000	2021	06	24	23:40	61	62.1	0
20210624T234500	2021	06	24	23:45	60.4	62.3	0
20210624T235000	2021	06	24	23:50	60.4	63.1	0
20210624T235500	2021	06	24	23:55	60.5	63.3	0