Paul Carpenter Associates, Inc.

A Certified Women-Owned Business Enterprise

7 Columbia Turnpike, Suite 101
Florham Park, NJ 07932
(973) 822-8221

March 22, 2017

Mr. Chris Rutishauser, P.E.
Director of Public Works/Village Engineer
Village of Ridgewood
131 North Maple Avenue
Ridgewood, NJ 07450

Re: Baseline Noise Monitoring Assessment;
460 West Saddle River Road (Block 4704, Lots 9, 10, 11 and 12)

Dear Chris:

Paul Carpenter Associates, Inc. (PCA) was retained by the Village of Ridgewood to perform a baseline noise monitoring study to determine existing noise levels as well as an approximate level of noise attenuation provided by the existing trees located on the project site (460 West Saddle River Road; Block 4704, Lots 9, 10, 11 and 12) . Results of the baseline noise monitoring assessment are presented within.

Noise Fundamentals

Certain critical factors affect sound and the way it is perceived by the human ear. Such factors include the acoustical level, frequency and the length of the exposure period. Noise is typically referred to as unwanted sound. In this document, noise and sound will be used interchangeably. Sound or noise levels are measured in units of decibels (dB). Due to the complex manner in which the human ear functions, measurement of different noise sources does not always correspond to relative loudness or annoyances. Therefore, different scales have been developed to furnish guidance in evaluating the importance of different noise sources. The A-weighted scale (unit expressed as dBA) is utilized almost exclusively in noise measurement and prediction assessments since it reflects the frequency range to which the human ear is most sensitive (1,000 to 6,000 Hertz).

The A-weighted sound pressure level (dBA) is applicable for noise levels at one single moment. Table

1 details typical community A-weighted noise levels. Very few noise sources are constant and usually noise intensity fluctuates over time. The most widely used sound level descriptor to describe the time-varying noise level is the L_{eq}. This metric represents an equivalent steady-state sound level, which in a specific period of time, contains the same acoustic energy as the time-varying sound level during that same period. The A-weighted L_{eq}, referred to hereinafter as L_{Aeq}, is commonly used to describe traffic noise levels. Therefore, this metric was used in the measurement and evaluation of baseline noise levels for this assessment.

Table 1
Noise Levels of Common Sources

Sound Source	Sound Pressure Level (dBA)
Air Raid Siren at 50 feet	120
Maximum Levels at Rock Concerts (Rear Seats)	110
On Platform by Passing Subway Train	100
On Sidewalk by Passing Heavy Truck or Bus	90
On Sidewalk by Typical Highway	80
On Sidewalk by Passing Automobiles with Mufflers	70
Typical Urban Area	60-70
Typical Suburban Area	50-60
Quiet Suburban Area at Night	40-50
Typical Rural Area at Night	30-40
Isolated Broadcast Studio	20
Audiometric (Hearing Testing) Booth	10
Threshold of Hearing	0

Sources: CEQR Technical Manual, 2010
Cowan, James P. *Handbook of Environmental Acoustics*, 1994
Egan, M. David, *Architectural Acoustics*, 1988.

Factors affecting the transmission of noise and received sound level include distance from the source, frequency of the sound produced, absorptivity or reflectivity of the ground surface, as well as obstructions between the source and receiver location. Noise levels associated with mobile-sources, such as the vehicles traveling along Route 17 and W. Saddle River Road, attenuate (i.e. reduce) at a rate of 3 decibels per doubling of distance. This attenuation rate is based on the geometry of the source (i.e. a line of vehicles) and the source-to-receiver distance and does not include reductions from other atmospheric and environmental factors such as those described above.

Noise is described in a logarithmic scale where doubling the noise source results in a 3 dB increase in sound pressure level. Studies have shown a decrease in 10 dB is perceived by the average listener as a reduction of loudness by one-half, while an increase in 10 dB is discerned as a doubling of loudness.

Under normal circumstances, a 3 dB change is required for the average person to detect a difference without the use of instruments. A change in 5 dB is considered to be a noticeable change.

Background Noise Monitoring Study

Goals of the background noise monitoring study were to determine existing noise levels as well as an approximate level of noise attenuation (i.e. noise level reduction) provided by existing vegetative coverage. Due to the non-uniform shape of the project site, noise level reductions were expected to vary; therefore, background noise monitoring was performed in three locations along Route 17 (Sites 1, 3 and 5) and in three locations along W. Saddle River Road (Sites 2, 4, and 6) directly east of those along Route 17. Noise monitoring locations are illustrated in Figure 1.

Continuous, 24-hour background noise level data was collected between February 23, 2017 and March 9, 2017 utilizing six (6) Type 1 precision sound level meters. Equipment calibration certificates are included within Appendix A. The time-synchronized noise level meters documented instantaneous A-weighted noise levels, averaged over 10-minute periods, which is expressed as the 10-minute L_{Aeq}. Noise level meters were set to a 3 dB exchange rate and slow response. Each noise level meter was housed within a weather-proof case and equipped with rechargeable batteries. The outdoor microphone kit included a heavy-duty windscreen, which allowed the unit to be left unattended during most weather conditions. Photos of each monitoring location are included within Appendix B.

Every Monday and Friday during the monitoring period, a field technician performed data downloads, equipment field calibration to ensure equipment continued to function properly, replaced batteries and verified wind screens were properly affixed to microphones. Once the data was downloaded, raw noise levels from each site were graphed for individual 24-hour periods and subsequently filtered through a three-step process developed by PCA to remove data resulting from the following conditions:

> ***Abnormal Traffic Patterns***. Traffic patterns are abnormal during major holidays; therefore background noise levels are not representative of typical levels during these periods. No holidays fell on days for which noise monitoring was conducted. Traffic patterns are also abnormal during accidents and roadway construction or during periods of general heavy volume thereby causing traffic congestion. There was a short period on Friday, February 24, 2017 between approximately 9:40 am and 10:20 am during which noise levels decreased noticeably (by approximately 5 dBA)

PROJECT NORTH

LEGEND

X Noise Monitoring Location

Noise Monitoring Location Number

0 100 200 400 FEET

Date	March 22, 2017

Village of Ridgewood

40 West Saddle River Road
Baseline Noise Monitoring
Assessment

Figure 1

Noise Monitoring Locations

Drawn by: M. Amabile Checked by: S.P. Carpenter

Paul Carpenter Associates, Inc.

at Sites 1, 3 and 5, which was likely due to lower travel speeds caused by congestion, roadway construction, or potentially as a result of an accident. Therefore, noise levels documented during this timeframe were filtered from the data set.

Adverse Meteorological Conditions. Weather conditions play an important role in obtaining appropriate noise levels; therefore, the background noise level data was filtered based on a review of meteorological data. Official hourly surface observations were obtained from the closest National Oceanic and Atmospheric Association (NOAA) weather station (Newark Liberty International Airport) and cross-referenced with data to identify conditions which exceed noise monitoring equipment tolerances based on manufacturer specifications. Certain conditions, including precipitation events, periods of high wind or high relative humidity, invalidate the noise data. Therefore, noise levels obtained during these types of meteorological events were removed from the data set. All corresponding meteorological data is included within Appendix C.

Extraneous Noise Sources. The noise level meters were unattended for long periods of time. Extraneous noise sources such as, but not limited to, police sirens, aircraft fly-overs, and car horns also contribute to the overall noise environment to a varying degree. Atypical noise peaks which are non-repetitive and therefore uncharacteristic of the area were subsequently filtered from the data set. After careful review of the data collected, no atypical noise peaks were identified. The only extraneous filters necessary corresponded with on-site field technician time periods.

Graphs of filtered noise measurement data documented at each site representing typical background noise levels are included within Appendix D. Subsequently, each 10-minute L_{Aeq} noise level was averaged over a 24-hour period to identify average hourly L_{Aeq} noise levels at each site.

Results

Based on documented background noise levels and review of the average hourly L_{Aeq} noise levels for each site, the peak noise hour was identified to occur weekdays from 7:00 am to 8:00 am. The peak noise hour was consistent at the locations along Route 17 (Sites 1, 3 and 5) as well as locations along W. Saddle River Road (Sites 2, 4, and 6), as expected. The peak noise hour was utilized to determine the approximate level of attenuation provided by vegetation located between Route 17 and W. Saddle River Road, as this time period should yield the highest level of attenuation provided by the vegetation.

Since the shape of the site is non-uniform, the width of vegetation between Route 17 and W. Saddle River Road varies greatly from south to north. Noise monitors were strategically placed along the perimeter of the site to form monitoring pairs for more accurate data comparisons. While Site 2 was located directly east of Site 1, Site 3 (along Route 17) was located in between Site 4 and Site 6 (along W. Saddle River Road). Also, Site 5 was located further north along Route 17 and therefore not directly paired with Site 6. Adjustments in the calculations when comparing Site 5 and Site 6 were made accordingly.

To determine the attenuation provided by the existing vegetation located within the project site, the assessment cannot be performed by simply subtracting noise monitoring data along the east site perimeter from the west site perimeter without performing calculations to account for sound propagation over distance. As sound propagates (i.e. travels) over distance, the sound intensity reduces in a certain pattern away from the sound source, ignoring any other atmospheric or environmental effects. The steady stream of vehicles traveling along Route 17 is described as a line source, and as sound waves travel away from this sound source, the sound level reduces at a rate of 3 dB per doubling of distance, as described within. For example, if vehicles traveling along Route 17 resulted in a sound level of 80 dBA at a distance of 25 feet (reference condition), then one would expect the sound level at a distance of 50 feet to be 77 dBA, simply based on the reduction in sound due to the increased distance.

Initially, the received sound levels along the east perimeter monitoring sites (Sites 2, 4 and 6) were calculated using the standard line source propagation equation utilizing distances and documented sound levels from monitoring sites along Route 17. This calculation yielded a level of noise reduction that may be attributed solely to the distance. Assuming atmospheric effects were negligible, the remaining reduction in noise level (i.e. the difference between the total noise level reduction between site pairs and the noise level reduction attributable to distance) was assumed to be the reduction provided by vegetation. Table 2 details the total noise level reduction, the noise level reduction due to distance and the remaining level of reduction attributable to vegetation. As shown in Table 2, the level of reduction due to vegetation varies approximately between 7 dBA at the most southern portion of the project site to 11 dBA at the northern portion of the project site.

Table 2
Noise Level Reductions (dBA)

Analysis Location	Total Reduction	Distance Reduction	Vegetation Reduction
Between Site 1 and Site 2	11	4	7
Between Site 3 and Site 4	16	7	9
Between Site 5 and Site 6	21	10	11

Source: Paul Carpenter Associates, Inc. 2017.

Utilizing the vegetation reductions detailed in Table 2, noise levels along the eastern perimeter of the project site (Sites 2, 4, and 6) were subsequently predicted for the future development condition in which the existing vegetation would be removed. Table 3 presents 2017 existing measured noise levels in comparison to predicted future development noise levels with tree loss as well as perceived change in noise levels.

Table 3
Peak Noise Levels (dBA)

Noise Monitoring Location No.	2017 Existing	Future Development with Tree Loss	Perceived Change With Tree Loss
2	70	76	Clearly Noticeable
4	66	75	Doubling of Sound
6	63	74	Doubling of Sound

Source: Paul Carpenter Associates, Inc. 2017.

The Federal Highway Administration (FHWA), through promulgation of the federal traffic noise regulation (23 CFR 772), has established Noise Abatement Criteria (NAC) for evaluating traffic noise impact to noise sensitive land use. The New Jersey Department of Transportation (NJDOT) establishes impact based on approach (i.e. within 1 dBA of the NAC) or exceedance of the NAC. Specifically, the FHWA NAC for residential land use is 67 dBA; therefore, NJDOT considers residences to be impacted by traffic noise when future noise levels with construction of a project are 66 dBA or greater. This value was developed based on several factors, one of which is related to speech interference.

Assuming loss of vegetation within the project site, noise levels were then predicted for the future development condition at residences along the east side of W. Saddle River Road between the on/off-ramp to/from Route 17 and Kenwood Road (seven total residences). The residence on the

development parcel is abandoned. Using the FHWA/NJDOT traffic noise impact criterion as a guide to place existing and future development noise levels into perspective, 2017 existing noise levels predicted at residences on the east side of W. Saddle River Road, south of Terhune Road (across from Site 4), would all be predicted at 66 dBA or greater and therefore approach or exceed the FHWA NAC (four residences). North of Terhune Road at the remaining three residences, existing 2017 noise levels are predicted to be below 66 dBA and the FHWA NAC. However, with future development of the parcel at 460 West Saddle River Road (Block 4704, Lots 9, 10, 11 and 12) noise levels at all seven residences along the east side of W. Saddle River Road between the on/off-ramp to/from Route 17 and Kenwood Road would exceed the NAC due to the loss of vegetation.

There is no federal or state requirement for the Village of Ridgewood to construct a noise wall in the event the parcel at 460 West Saddle River Road (Block 4704, Lots 9, 10, 11 and 12) is developed and all trees are removed. However, the intent of this assessment was to provide information necessary for the Village of Ridgewood to formulate future decisions regarding the project site.

Respectfully,

Dayna Bowen

Dayna Bowen, Project Manager

APPENDIX A
EQUIPMENT CALIBRATION CERTIFICATES

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

Dear Larson Davis Customer,

Below you will find a check list for the following item(s) received on order: **363648**
Model / Serial Number(s): **831/0004053 PRM831/036902 377B02/154240**
Please verify all certificates and data upon arrival as per the checked boxes below.
The following actions have taken place with your order:

FACTORY CERTIFICATION

- ☒ Certified and recalibrated the above listed item(s).
  - ☒ With a calibration cycle of 12 months.
  - ☐ Without due date; recalibration period was not provided.
  - ☒ Test results included.
- ☒ Firmware upgraded to 2.311
  - ☐ New version of software CD included. ☒ Upgrade instructions included.
- ☒ Accessories (i.e. cables, adaptors, power supplies, etc.) were inspected:
- ☒ Settings were restored to same as upon arrival.
- ☐ Data was downloaded and saved as

SERVICE AND REPAIRS

- ☐ No faults were found with item(s).
  - ☐ No certification was issued.
  - ☐ Test results included.
- ☐ Repairs were performed.
  - ☐ No certification was issued.
  - ☐ Test results included.
- ☐ Neither repair nor certification occurred due to the following:
  - ☐ Larson Davis no longer supports repairs on item(s).
  - ☐ Item(s) damaged beyond reasonable means of repair.
  - ☐ Larson Davis did not manufacture the item(s) and we are unable to perform calibration, certification or repairs.
  - ☐ Customer Request.
- ☐ Damaged or unwanted item(s) disposed of at Larson Davis.
- ☐ Item(s) replaced with new product.
- ☐ Item(s) returned "AS IS".

We appreciate your business and would hope that in the future we will be able to continue to provide you with the service that you require.

Sincerely,
Larson Davis Service Team

R&D AND MANUFACTURING CENTER
1681 West 820 North, Provo, Utah 84601 USA
Phone: 801-375-0177 Fax: 801-375-8864

D0001.9006-1(E)
LARSON DAVIS — A DIVISION OF PCB PIEZOTRONICS, INC.
3425 Walden Avenue, Depew, New York 14043-2495 USA
Phone: 716-926-8243 Fax: 716-926-8215
E-mail: sales@larsondavis.com
www.larsondavis.com
ISO 9001 CERTIFIED

Calibration Certificate

Certificate Number 2016009221

Customer:
Paul Carpenter Associates
23 Vreeland Road
Florham Park, NJ 07932, United States

Model Number	831		***Procedure Number***	D0001.8384	
Serial Number	0004053		***Technician***	Ron Harris	
Test Results	**Pass**		***Calibration Date***	18 Oct 2016	
Initial Condition	AS RECEIVED same as shipped		***Calibration Due***	18 Oct 2017	
Description	Larson Davis Model 831		***Temperature***	23.14 °C	± 0.01 °C
			Humidity	51 %RH	± 0.5 %RH
			Static Pressure	86.17 kPa	± 0.03 kPa

Evaluation Method

Tested with:
PRM831. S/N 036902
377B02. S/N 154240

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 61252:2002	ANSI S1.11 (R2009) Class 1
IEC 61260:2001 Class 1	ANSI S1.25 (R2007)
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 SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005. **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 9001:2008.

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
SRS DS360 Ultra Low Distortion Generator	06/21/2016	06/21/2017	006311
Hart Scientific 2626-S Humidity/Temperature Sensor	06/17/2016	06/17/2017	006946
Larson Davis CAL200 Acoustic Calibrator	07/26/2016	07/26/2017	007027
Larson Davis Model 831	03/01/2016	03/01/2017	007182
1/2 inch Microphone - P - 0V	03/07/2016	03/07/2017	007185
Larson Davis CAL291 Residual Intensity Calibrator	09/22/2016	09/22/2017	007287

Larson Davis, a division of PCB Piezotronics, Inc
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ACCREDITED Cert. #3822.01

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

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

As Received Level: 114.55
Adjusted Level: 114.00

-- 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 S-time-weighted sound level

Frequency [Hz]	Test Result [dB]	Expected [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
125	-0.20	-0.20	-1.20	0.80	0.21	Pass
1000	0.18	0.00	-0.70	0.70	0.21	Pass
8000	-2.19	-3.00	-5.50	-1.50	0.21	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]
Low Range, 20 dB gain	64.40

-- End of measurement results--

-- End of Report--

Signatory: *Ron Harris*

Larson Davis, a division of PCB Piezotronics, Inc
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 2016009216

Customer:
Paul Carpenter Associates
23 Vreeland Road
Florham Park, NJ 07932, United States

Model Number	831	***Procedure Number***	D0001.8378	
Serial Number	0004053	***Technician***	Ron Harris	
Test Results	**Pass**	***Calibration Date***	17 Oct 2016	
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	17 Oct 2017	
Description	Larson Davis Model 831	***Temperature***	23.87 °C	± 0.01 °C
		Humidity	49.5 %RH	± 0.5 %RH
		Static Pressure	86.04 kPa	± 0.03 kPa

Evaluation Method Tested electrically using PRM831 S/N 036902 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 61252:2002	ANSI S1.11 (R2009) Class 1
IEC 61260:2001 Class 1	ANSI S1.25 (R2007)
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 SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005.
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 9001:2008.

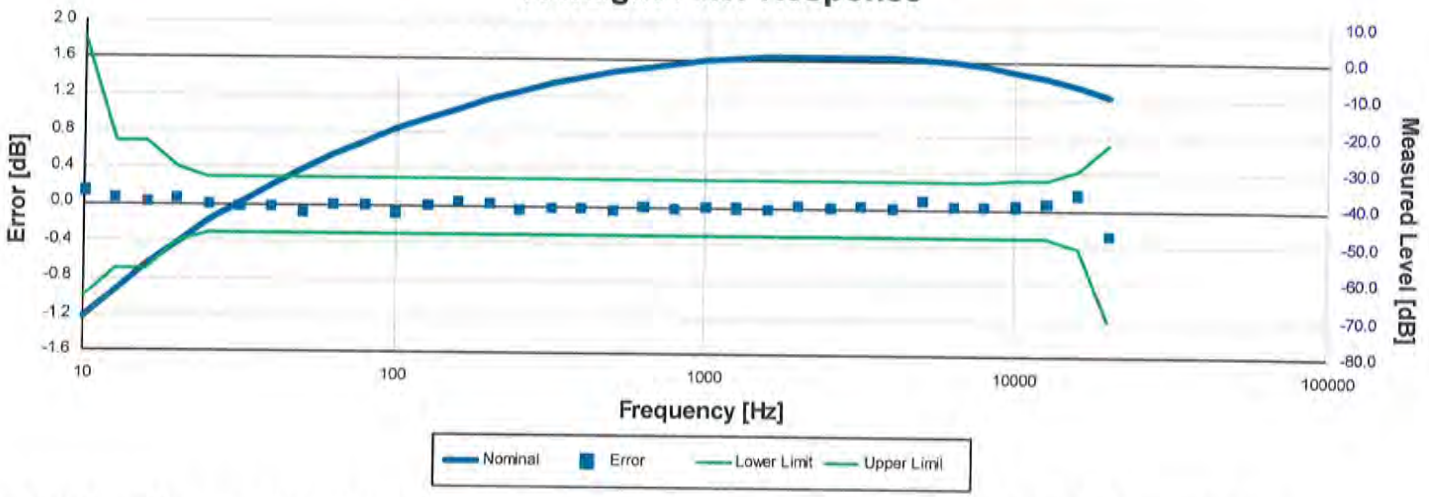
This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

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
Hart Scientific 2626-S Humidity/Temperature Sensor	06/17/2016	06/17/2017	006946
SRS DS360 Ultra Low Distortion Generator	10/14/2016	10/14/2017	007167

A-weight Filter Response

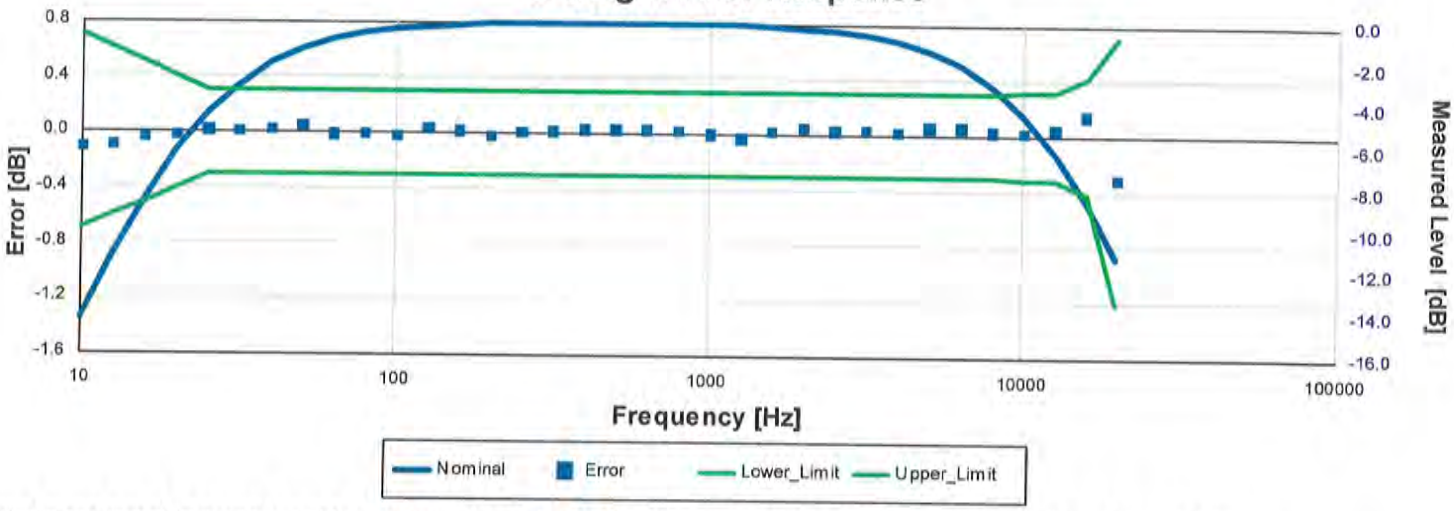


Electrical signal test of frequency weighting performed according to IEC 61672-3:2013 13 and ANSI S1.4-2014 Part 3: 13 for compliance to IEC 61672-1:2013 5.5; IEC 60651:2001 6.1 and 9.2.2; IEC 60804:2000 5; ANSI S1.4:1983 (R2006) 5.1 and 8.2.1; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
10.00	-70.25	0.15	-1.00	1.80	0.09	Pass
12.59	-63.33	0.07	-0.70	0.70	0.09	Pass
15.85	-56.68	0.02	-0.70	0.70	0.09	Pass
19.95	-50.44	0.06	-0.40	0.40	0.09	Pass
25.12	-44.69	0.01	-0.30	0.30	0.09	Pass
31.62	-39.42	-0.02	-0.30	0.30	0.09	Pass
39.81	-34.62	-0.02	-0.30	0.30	0.09	Pass
50.12	-30.27	-0.07	-0.30	0.30	0.09	Pass
63.10	-26.19	0.01	-0.30	0.30	0.09	Pass
79.43	-22.50	0.00	-0.30	0.30	0.09	Pass
100.00	-19.17	-0.07	-0.30	0.30	0.09	Pass
125.89	-16.10	0.00	-0.30	0.30	0.09	Pass
158.49	-13.35	0.05	-0.30	0.30	0.09	Pass
199.53	-10.88	0.02	-0.30	0.30	0.09	Pass
251.19	-8.63	-0.03	-0.30	0.30	0.09	Pass
316.23	-6.62	-0.02	-0.30	0.30	0.09	Pass
398.11	-4.81	-0.01	-0.30	0.30	0.09	Pass
501.19	-3.23	-0.03	-0.30	0.30	0.09	Pass
630.96	-1.90	0.00	-0.30	0.30	0.09	Pass
794.33	-0.82	-0.02	-0.30	0.30	0.09	Pass
1,000.00	0.00	0.00	-0.30	0.30	0.09	Pass
1,258.93	0.60	0.00	-0.30	0.30	0.09	Pass
1,584.89	0.99	-0.01	-0.30	0.30	0.09	Pass
1,995.26	1.22	0.02	-0.30	0.30	0.09	Pass
2,511.89	1.30	0.00	-0.30	0.30	0.09	Pass
3,162.28	1.23	0.03	-0.30	0.30	0.09	Pass
3,981.07	1.01	0.01	-0.30	0.30	0.09	Pass
5,011.87	0.60	0.10	-0.30	0.30	0.09	Pass
6,309.57	-0.07	0.03	-0.30	0.30	0.09	Pass
7,943.28	-1.07	0.03	-0.30	0.30	0.09	Pass
10,000.00	-2.46	0.04	-0.32	0.32	0.09	Pass
12,589.25	-4.24	0.06	-0.32	0.32	0.09	Pass
15,848.93	-6.43	0.17	-0.42	0.42	0.09	Pass
19,952.62	-9.58	-0.28	-1.21	0.71	0.09	Pass

-- End of measurement results--

C-weight Filter Response

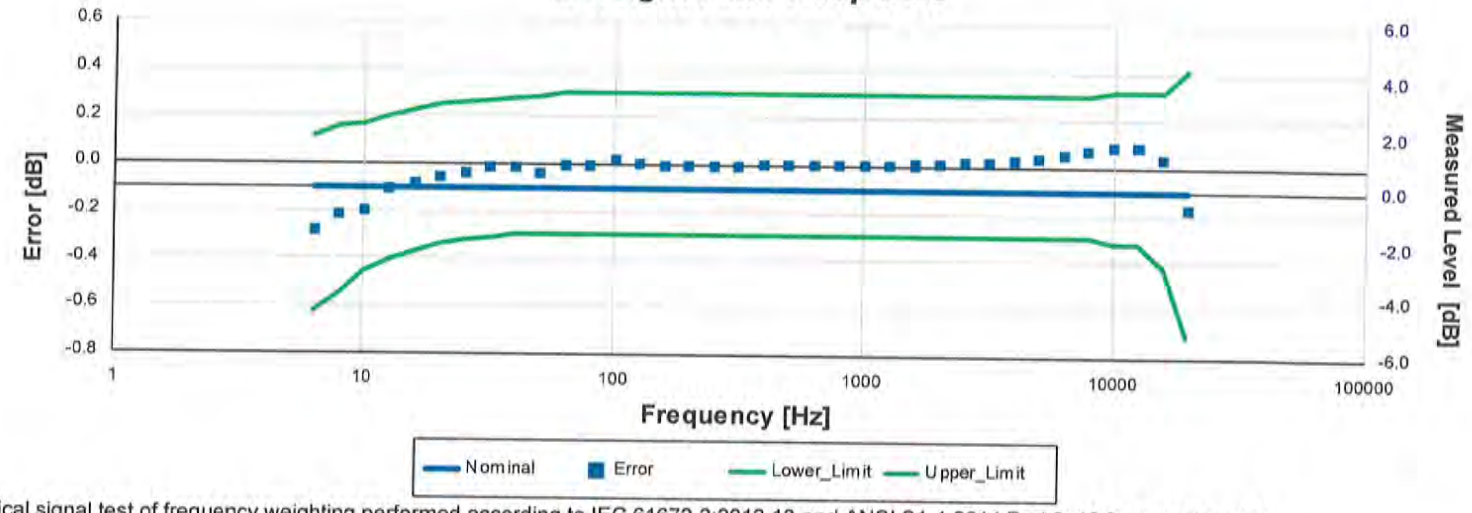


Electrical signal test of frequency weighting performed according to IEC 61672-3:2013 13 and ANSI S1.4-2014 Part 3: 13 for compliance to IEC 61672-1:2013 5.5; IEC 60651:2001 6.1 and 9.2.2; IEC 60804:2000 5; ANSI S1.4:1983 (R2006) 5.1 and 8.2.1; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
10.00	-14.41	-0.11	-0.70	0.70	0.09	Pass
12.59	-11.30	-0.10	-0.60	0.60	0.09	Pass
15.85	-8.54	-0.04	-0.50	0.50	0.09	Pass
19.95	-6.23	-0.03	-0.40	0.40	0.09	Pass
25.12	-4.39	0.01	-0.30	0.30	0.09	Pass
31.62	-2.99	0.01	-0.30	0.30	0.09	Pass
39.81	-1.98	0.02	-0.30	0.30	0.09	Pass
50.12	-1.25	0.05	-0.30	0.30	0.09	Pass
63.10	-0.81	-0.01	-0.30	0.30	0.09	Pass
79.43	-0.51	-0.01	-0.30	0.30	0.09	Pass
100.00	-0.33	-0.03	-0.30	0.30	0.09	Pass
125.89	-0.17	0.03	-0.30	0.30	0.09	Pass
158.49	-0.09	0.01	-0.30	0.30	0.09	Pass
199.53	-0.03	-0.03	-0.30	0.30	0.09	Pass
251.19	0.00	0.00	-0.30	0.30	0.09	Pass
316.23	0.01	0.01	-0.30	0.30	0.09	Pass
398.11	0.03	0.03	-0.30	0.30	0.09	Pass
501.19	0.03	0.03	-0.30	0.30	0.09	Pass
630.96	0.03	0.03	-0.30	0.30	0.09	Pass
794.33	0.02	0.02	-0.30	0.30	0.09	Pass
1,000.00	0.00	0.00	-0.30	0.30	0.09	Pass
1,258.93	-0.03	-0.03	-0.30	0.30	0.09	Pass
1,584.89	-0.07	0.03	-0.30	0.30	0.09	Pass
1,995.26	-0.15	0.05	-0.30	0.30	0.09	Pass
2,511.89	-0.27	0.03	-0.30	0.30	0.09	Pass
3,162.28	-0.47	0.03	-0.30	0.30	0.09	Pass
3,981.07	-0.78	0.02	-0.30	0.30	0.09	Pass
5,011.87	-1.24	0.06	-0.30	0.30	0.09	Pass
6,309.57	-1.94	0.06	-0.30	0.30	0.09	Pass
7,943.28	-2.97	0.03	-0.30	0.30	0.09	Pass
10,000.00	-4.37	0.03	-0.32	0.32	0.09	Pass
12,589.25	-6.16	0.04	-0.32	0.32	0.09	Pass
15,848.93	-8.36	0.14	-0.42	0.42	0.09	Pass
19,952.62	-11.51	-0.31	-1.21	0.71	0.09	Pass

-- End of measurement results--

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]	Error [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
6.31	-0.29	-0.29	-0.63	0.12	0.09	Pass
7.94	-0.22	-0.22	-0.55	0.16	0.09	Pass
10.00	-0.20	-0.20	-0.46	0.17	0.09	Pass
12.59	-0.11	-0.11	-0.41	0.20	0.09	Pass
15.85	-0.08	-0.08	-0.37	0.23	0.09	Pass
19.95	-0.06	-0.06	-0.34	0.25	0.09	Pass
25.12	-0.04	-0.04	-0.32	0.26	0.09	Pass
31.62	-0.02	-0.02	-0.31	0.27	0.09	Pass
39.81	-0.02	-0.02	-0.30	0.28	0.09	Pass
50.12	-0.04	-0.04	-0.30	0.29	0.09	Pass
63.10	-0.01	-0.01	-0.30	0.30	0.09	Pass
79.43	-0.01	-0.01	-0.30	0.30	0.09	Pass
100.00	0.02	0.02	-0.30	0.30	0.09	Pass
125.89	0.00	0.00	-0.30	0.30	0.09	Pass
158.49	0.00	0.00	-0.30	0.30	0.09	Pass
199.53	-0.01	-0.01	-0.30	0.30	0.09	Pass
251.19	-0.01	-0.01	-0.30	0.30	0.09	Pass
316.23	0.00	0.00	-0.30	0.30	0.09	Pass
398.11	0.00	0.00	-0.30	0.30	0.09	Pass
501.19	0.00	0.00	-0.30	0.30	0.09	Pass
630.96	0.00	0.00	-0.30	0.30	0.09	Pass
794.33	0.00	0.00	-0.30	0.30	0.09	Pass
1,000.00	0.00	0.00	-0.30	0.30	0.09	Pass
1,258.93	0.00	0.00	-0.30	0.30	0.09	Pass
1,584.89	0.01	0.01	-0.30	0.30	0.09	Pass
1,995.26	0.01	0.01	-0.30	0.30	0.09	Pass
2,511.89	0.02	0.02	-0.30	0.30	0.09	Pass
3,162.28	0.02	0.02	-0.30	0.30	0.09	Pass
3,981.07	0.03	0.03	-0.30	0.30	0.09	Pass
5,011.87	0.04	0.04	-0.30	0.30	0.09	Pass
6,309.57	0.05	0.05	-0.30	0.30	0.09	Pass
7,943.28	0.07	0.07	-0.30	0.30	0.09	Pass
10,000.00	0.09	0.09	-0.32	0.32	0.09	Pass
12,589.25	0.09	0.09	-0.32	0.32	0.09	Pass
15,848.93	0.04	0.04	-0.42	0.32	0.09	Pass
19,952.62	-0.17	-0.17	-0.71	0.41	0.09	Pass

-- End of measurement results--

High Level Stability

Electrical signal test of high level stability performed according to IEC 61672-3:2013 21 and ANSI S1.4-2014 Part 3: 21 for compliance to IEC 61672-1:2013 5.15 and ANSI S1.4-2014 Part 1: 5.15

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
High Level Stability	138.60	138.50	138.70	0.09	Pass

-- End of measurement results--

Long-Term Stability

Electrical signal test of long term stability performed according to IEC 61672-3:2013 15 and ANSI S1.4-2014 Part 3: 15 for compliance to ISC 61672-1:2013 5.14 and ANSI S1.4-2014 Part 1: 5.14

Test Duration [min]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
33	113.56	113.46	113.66	0.09	Pass

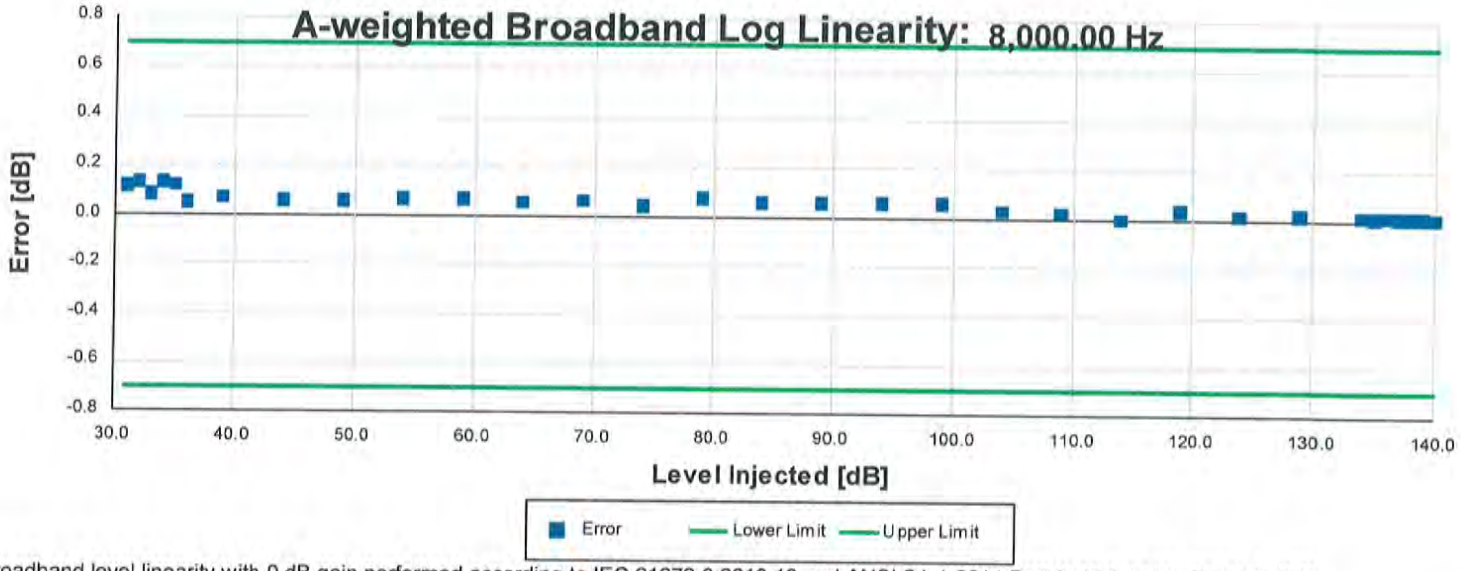
-- End of measurement results--

1 kHz Reference Levels

Frequency weightings and time weightings at 1 kHz performed according to IEC 61672-3:2013 14 and ANSI S1.4-2014 Part 3: 14 for compliance to IEC 61672-1:2013 5.5.9 and 5.8.3 and ANSI S1.4-2014 Part 1: 5.5.9 and 5.8.3

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
C weight	113.56	113.36	113.76	0.09	Pass
Z weight	113.55	113.36	113.76	0.09	Pass
slow	113.56	113.46	113.66	0.09	Pass
impulse	113.56	113.46	113.66	0.09	Pass

-- End of measurement results--



Broadband level linearity with 0 dB gain 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
31.00	0.12	-0.70	0.70	0.09	Pass
32.00	0.14	-0.70	0.70	0.09	Pass
33.00	0.08	-0.70	0.70	0.09	Pass
34.00	0.13	-0.70	0.70	0.09	Pass
35.00	0.12	-0.70	0.70	0.09	Pass
36.00	0.05	-0.70	0.70	0.09	Pass
39.00	0.07	-0.70	0.70	0.09	Pass
44.00	0.06	-0.70	0.70	0.09	Pass
49.00	0.06	-0.70	0.70	0.09	Pass
54.00	0.07	-0.70	0.70	0.09	Pass
59.00	0.07	-0.70	0.70	0.09	Pass
64.00	0.06	-0.70	0.70	0.09	Pass
69.00	0.06	-0.70	0.70	0.09	Pass
74.00	0.04	-0.70	0.70	0.09	Pass
79.00	0.08	-0.70	0.70	0.09	Pass
84.00	0.06	-0.70	0.70	0.09	Pass
89.00	0.06	-0.70	0.70	0.09	Pass
94.00	0.06	-0.70	0.70	0.09	Pass
99.00	0.06	-0.70	0.70	0.09	Pass
104.00	0.03	-0.70	0.70	0.09	Pass
109.00	0.02	-0.70	0.70	0.09	Pass
114.00	0.00	-0.70	0.70	0.09	Pass
119.00	0.03	-0.70	0.70	0.09	Pass
124.00	0.02	-0.70	0.70	0.09	Pass
129.00	0.02	-0.70	0.70	0.09	Pass
134.00	0.02	-0.70	0.70	0.09	Pass
135.00	0.01	-0.70	0.70	0.09	Pass
136.00	0.02	-0.70	0.70	0.09	Pass
137.00	0.01	-0.70	0.70	0.09	Pass
138.00	0.01	-0.70	0.70	0.09	Pass
139.00	0.01	-0.70	0.70	0.09	Pass
140.00	0.01	-0.70	0.70	0.09	Pass

-- End of measurement results--

Slow Detector

Toneburst response performed according to IEC 61672-3:2013 18 and ANSI S1.4-2014 Part 3: 18 for compliance to IEC 61672-1:2013 5.9, IEC 60651:2001 9.4.2, ANSI S1.4:1983 (R2006) 8.4.2 and ANSI S1.4-2014 Part 1: 5.9

Amplitude [dB]	Duration [ms]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
137.00	1,000	-2.09	-2.49	-1.49	0.09	Pass
	500	-4.18	-4.55	-3.55	0.09	Pass
	200	-7.56	-7.92	-6.92	0.09	Pass
	100	-10.36	-11.22	-9.22	0.09	Pass
	50	-13.26	-14.12	-12.12	0.09	Pass
	20	-17.20	-18.53	-16.03	0.09	Pass
	10	-20.18	-22.02	-19.02	0.09	Pass
	5	-23.17	-25.52	-22.02	0.09	Pass
	2	-27.17	-29.99	-25.99	0.09	Pass

-- End of measurement results--

Fast Detector

Toneburst response performed according to IEC 61672-3:2013 18 and ANSI S1.4-2014 Part 3: 18 for compliance to IEC 61672-1:2013 5.9, IEC 60651:2001 9.4.2, ANSI S1.4:1983 (R2006) 8.4.2 and ANSI S1.4-2014 Part 1: 5.9

Amplitude [dB]	Duration [ms]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
137.00	1,000.00	-0.03	-0.50	0.50	0.09	Pass
	500.00	-0.11	-0.58	0.42	0.09	Pass
	200.00	-1.04	-1.48	-0.48	0.09	Pass
	100.00	-2.70	-3.59	-1.59	0.56	Pass
	50.00	-5.01	-5.82	-3.82	0.09	Pass
	20.00	-8.62	-9.30	-7.30	0.09	Pass
	10.00	-11.46	-12.14	-10.14	0.09	Pass
	5.00	-14.20	-15.07	-13.07	0.09	Pass
	2.00	-18.20	-19.49	-16.99	0.09	Pass
	1.00	-21.30	-22.99	-19.99	0.09	Pass
	0.50	-24.45	-26.49	-22.99	0.09	Pass
	0.25	-27.40	-29.99	-25.99	0.09	Pass

-- End of measurement results--

Peak C-weight

C-weighted peak sound level performed according to IEC 61672-3:2013 19 and ANSI S1.4-2014 Part 3: 19 for compliance to IEC 61672-1:2013 5.13 and ANSI S1.4-2014 Part 1: 5.13

Level [dB]	Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
135.00	31.50	3.19	0.50	4.50	0.09	Pass
135.00	500.00	3.55	2.50	4.50	0.09	Pass
135.00	8,000.00	2.75	1.40	5.40	0.10	Pass
135.00, Negative	500.00	2.16	1.40	3.40	0.09	Pass
135.00, Positive	500.00	2.17	1.40	3.40	0.09	Pass

-- End of measurement results--

Peak Z-weight

Z-weighted peak sound level 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
136.00	100	Negative Pulse	135.85	133.50	137.50	0.09	Pass
	100	Positive Pulse	135.86	133.51	137.51	0.09	Pass
126.00	100	Negative Pulse	125.85	123.51	127.51	0.09	Pass
	100	Positive Pulse	125.86	123.51	127.51	0.09	Pass
116.00	100	Negative Pulse	115.84	113.50	117.50	0.09	Pass
	100	Positive Pulse	115.84	113.49	117.49	0.09	Pass
106.00	100	Negative Pulse	105.85	103.49	107.49	0.09	Pass
	100	Positive Pulse	105.87	103.52	107.52	0.09	Pass

-- End of measurement results--

Overload Detector

Overload indication performed according to IEC 61672-3:2013 20 and ANSI S1.4-2014 Part 3: 20 for compliance to IEC 61672-1:2013 5.13, IEC 60804:2000 9.3.5, IEC 61252:2002 11, ANSI S1.4 (R2006) 5.8, and ANSI S1.4-2014 Part 1: 5.13, ANSI S1.25 (R2007) 7.6, ANSI S1.43 (R2007) 7

Measurement	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
Positive	141.00	140.00	142.00	0.09	Pass
Negative	140.90	140.00	142.00	0.09	Pass
Comparison	140.90	139.50	142.50	0.10	Pass

-- End of measurement results--

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
137.00	40	Negative Pulse	136.02	134.50	136.50	0.09	Pass
		Positive Pulse	136.02	134.51	136.51	0.09	Pass
	30	Negative Pulse	135.08	134.50	136.50	0.09	Pass
		Positive Pulse	135.11	134.51	136.51	0.09	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	0.09	Pass
	5	OVLD	± 1.00	0.09	Pass
	10	OVLD	± 1.50	0.09	Pass
128.00	3	-0.12	± 0.50	0.10	Pass
	5	-0.13	± 1.00	0.09	Pass
	10	OVLD	± 1.50	0.09	Pass
118.00	3	-0.13	± 0.50	0.10	Pass
	5	-0.13	± 1.00	0.09	Pass
	10	0.01	± 1.50	0.09	Pass
108.00	3	-0.12	± 0.50	0.13	Pass
	5	-0.11	± 1.00	0.09	Pass
	10	0.00	± 1.50	0.09	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	0.09	Pass
	5	OVLD	± 1.00	0.09	Pass
	10	OVLD	± 1.50	0.09	Pass
128.00	3	-0.12	± 0.50	0.09	Pass
	5	-0.11	± 1.00	0.09	Pass
	10	OVLD	± 1.50	0.09	Pass
118.00	3	-0.13	± 0.50	0.09	Pass
	5	-0.11	± 1.00	0.09	Pass
	10	-0.10	± 1.50	0.09	Pass
108.00	3	-0.13	± 0.50	0.09	Pass
	5	-0.13	± 1.00	0.09	Pass
	10	0.00	± 1.50	0.09	Pass

-- End of measurement results--

Tone Burst

2kHz tone burst tests at 2.0, 12.0, 22.0, 32.0 dB below Overload Limit

Tone burst response 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	0.09	Pass
	5	OVLD	± 1.00	0.09	Pass
128.00	3	-0.07	± 0.50	0.12	Pass
	5	-0.01	± 1.00	0.09	Pass
118.00	3	-0.07	± 0.50	0.09	Pass
	5	-0.01	± 1.00	0.09	Pass
108.00	3	-0.07	± 0.50	0.09	Pass
	5	-0.06	± 1.00	0.09	Pass

-- End of measurement results--

Impulse Detector - Repeat

Impulse Detector measured according to IEC 60651:2001 9.4.3 and ANSI S1.4:1983 (R2006) 8.4.3

Amplitude [dB]	Repitition Rate [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
140	100.00	-2.77	-3.71	-1.71	0.09	Pass
	20.00	-6.42	-9.57	-5.57	0.09	Pass
	2.00	-8.83	-10.76	-6.76	0.09	Pass
135	2.00	126.60	125.74	127.74	0.11	Pass

-- End of measurement results--

Impulse Detector - Single

Impulse Detector measured according to IEC 60651:2001 9.4.3 and ANSI S1.4:1983 (R2006) 8.4.3

Amplitude [dB]	Duration [ms]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
140	20.00	-3.72	-5.11	-2.11	0.09	Pass
	5.00	-8.76	-10.76	-6.76	0.10	Pass
	2.00	-12.67	-14.55	-10.55	0.11	Pass
130	2.00	117.86	116.90	118.90	0.11	Pass

-- End of measurement results--

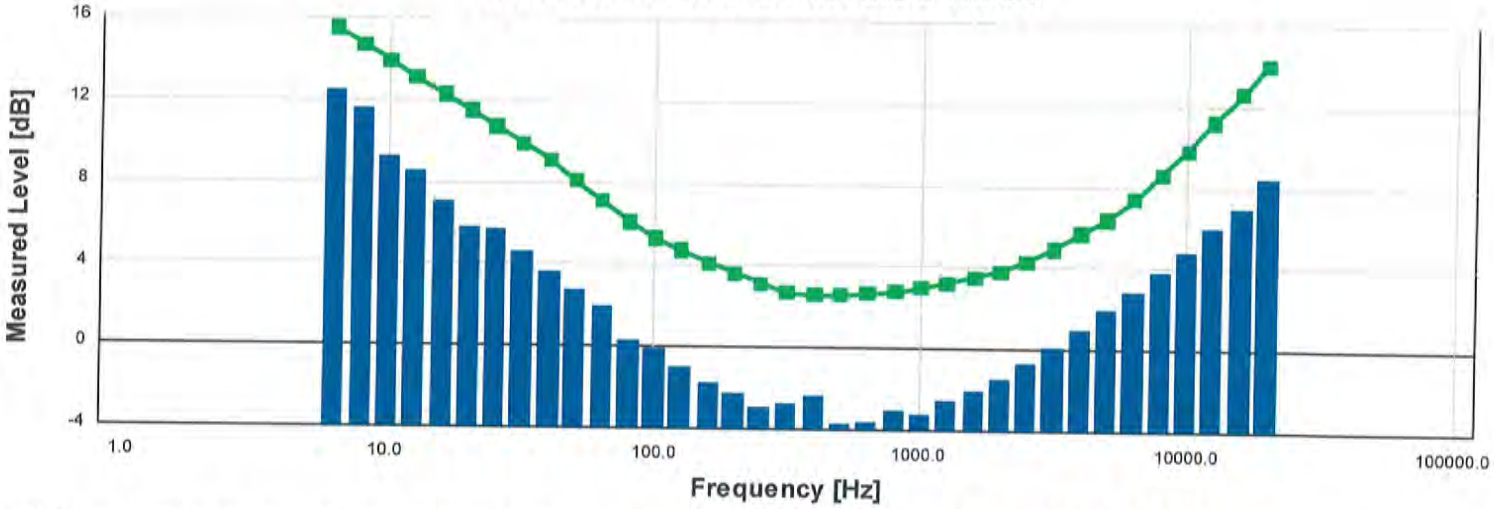
Gain

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
20 dB Gain	93.59	93.49	93.69	0.09	Pass
Normal Range	93.59	93.20	94.80	0.09	Pass
Low Range	93.59	93.49	93.69	0.09	Pass
20 dB Gain, Linearity	24.20	23.89	25.29	0.12	Pass

-- End of measurement results--

1/3-Octave Self-Generated Noise



The SLM is set to low range and 0 dB gain. 1/3-Octave self-generated noise measured according to IEC 61672-3:2013 11.2 and ANSI S1.4-2014 Part 3: 11.2

Frequency [Hz]	Test Result [dB]	Upper limit [dB]	Result
6.30	12.43	15.50	Pass
8.00	11.55	14.70	Pass
10.00	9.25	13.90	Pass
12.50	8.53	13.10	Pass
16.00	7.06	12.30	Pass
20.00	5.77	11.50	Pass
25.00	5.70	10.70	Pass
31.50	4.64	9.90	Pass
40.00	3.64	9.10	Pass
50.00	2.72	8.10	Pass
63.00	1.98	7.10	Pass
80.00	0.30	6.10	Pass
100.00	-0.06	5.30	Pass
125.00	-0.93	4.70	Pass
160.00	-1.73	4.10	Pass
200.00	-2.28	3.60	Pass
250.00	-2.96	3.10	Pass
315.00	-2.78	2.70	Pass
400.00	-2.37	2.60	Pass
500.00	-3.75	2.60	Pass
630.00	-3.66	2.70	Pass
800.00	-3.02	2.80	Pass
1,000.00	-3.22	3.00	Pass
1,250.00	-2.51	3.20	Pass
1,600.00	-2.06	3.50	Pass
2,000.00	-1.48	3.80	Pass
2,500.00	-0.72	4.30	Pass
3,150.00	0.08	4.90	Pass
4,000.00	0.99	5.70	Pass
5,000.00	1.94	6.40	Pass
6,300.00	2.82	7.40	Pass
8,000.00	3.84	8.60	Pass
10,000.00	4.81	9.80	Pass
12,500.00	5.99	11.20	Pass
16,000.00	6.98	12.60	Pass

Frequency [Hz]	Test Result [dB]	Upper limit [dB]	Result
20,000.00	8.49	14.00	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	12.86	15.00	Pass
C-weight Noise Floor	14.65	17.30	Pass
Z-weight Noise Floor	23.38	24.50	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	137.54	137.20	138.80	0.09	Pass
THD	-71.67		-60.00	0.01	Pass
THD+N	-65.21		-60.00	0.01	Pass

-- End of measurement results--

-- End of Report--

Signatory: *Ron Harris*

Calibration Certificate

Certificate Number 2016009215

Customer:
Paul Carpenter Associates
23 Vreeland Road
Florham Park, NJ 07932, United States

Model Number	PRM831	***Procedure Number***	D0001.8383	
Serial Number	036902	***Technician***	Ron Harris	
Test Results	**Pass**	***Calibration Date***	17 Oct 2016	
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	17 Oct 2017	
Description	Larson Davis 1/2" Preamplifier for Model 831 Type 1	***Temperature***	23.74 °C	± 0.01 °C
		Humidity	50.1 %RH	± 0.5 %RH
		Static Pressure	86.03 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 17025:2005. **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 9001:2008.

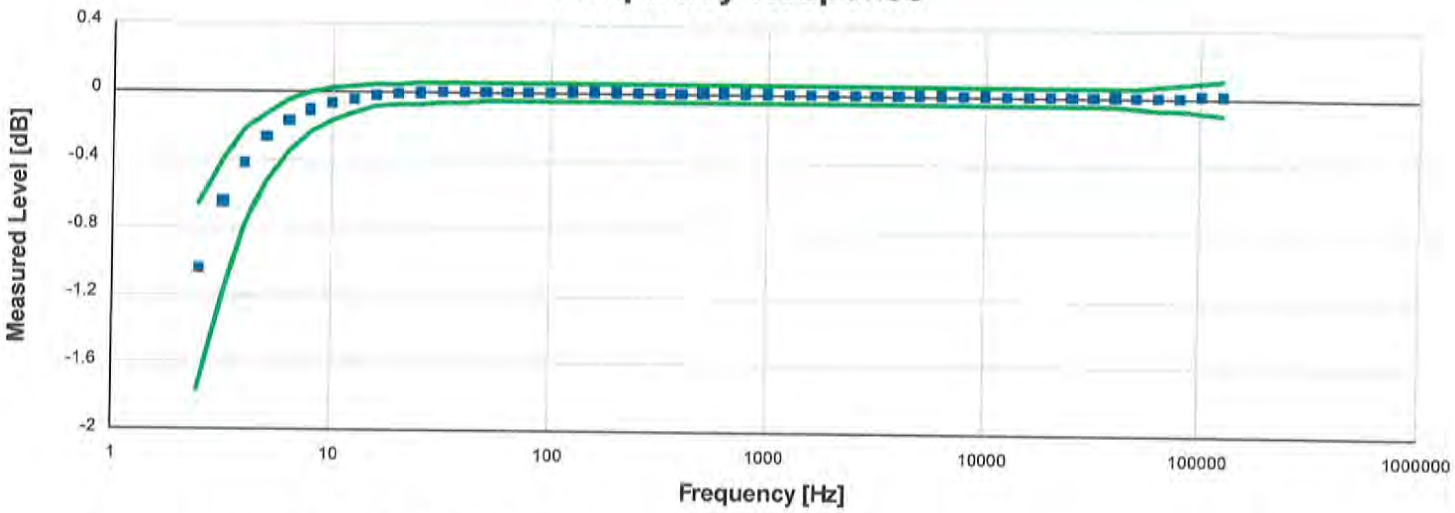
This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

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
Sound Level Meter / Real Time Analyzer	03/08/2016	03/08/2017	003003
Hart Scientific 2626-S Humidity/Temperature Sensor	06/17/2016	06/17/2017	006946
Agilent 34401A DMM	06/07/2016	06/07/2017	007165
SRS DS360 Ultra Low Distortion Generator	10/14/2016	10/14/2017	007167

Frequency Response



Frequency response electrically tested at 120.0 dB µV

Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
2.50	-1.05	-1.76	-0.66	0.07	Pass
3.20	-0.65	-1.20	-0.40	0.08	Pass
4.00	-0.42	-0.81	-0.23	0.08	Pass
5.00	-0.27	-0.53	-0.13	0.07	Pass
6.30	-0.17	-0.36	-0.05	0.07	Pass
7.90	-0.11	-0.24	-0.01	0.07	Pass
10.00	-0.07	-0.17	0.03	0.06	Pass
12.60	-0.04	-0.13	0.04	0.06	Pass
15.80	-0.02	-0.09	0.04	0.06	Pass
20.00	-0.01	-0.08	0.05	0.06	Pass
25.10	0.00	-0.07	0.05	0.06	Pass
31.60	0.00	-0.07	0.05	0.06	Pass
39.80	0.00	-0.06	0.05	0.06	Pass
50.10	0.00	-0.06	0.05	0.06	Pass
63.10	0.01	-0.05	0.05	0.06	Pass
79.40	0.00	-0.05	0.05	0.06	Pass
100.00	0.00	-0.05	0.05	0.06	Pass
125.90	0.01	-0.05	0.05	0.06	Pass
158.50	0.01	-0.05	0.05	0.06	Pass
199.50	0.01	-0.05	0.05	0.06	Pass
251.20	0.01	-0.05	0.05	0.06	Pass
316.20	0.00	-0.05	0.05	0.06	Pass
398.10	0.01	-0.05	0.05	0.06	Pass
501.20	0.01	-0.05	0.05	0.06	Pass
631.00	0.01	-0.05	0.05	0.06	Pass
794.30	0.01	-0.05	0.05	0.06	Pass
1,000.00	0.01	-0.05	0.05	0.06	Pass
1,258.90	0.00	-0.05	0.05	0.06	Pass
1,584.90	0.00	-0.05	0.05	0.06	Pass
1,995.30	0.00	-0.05	0.05	0.06	Pass
2,511.90	0.01	-0.05	0.05	0.06	Pass
3,162.30	0.01	-0.05	0.05	0.06	Pass

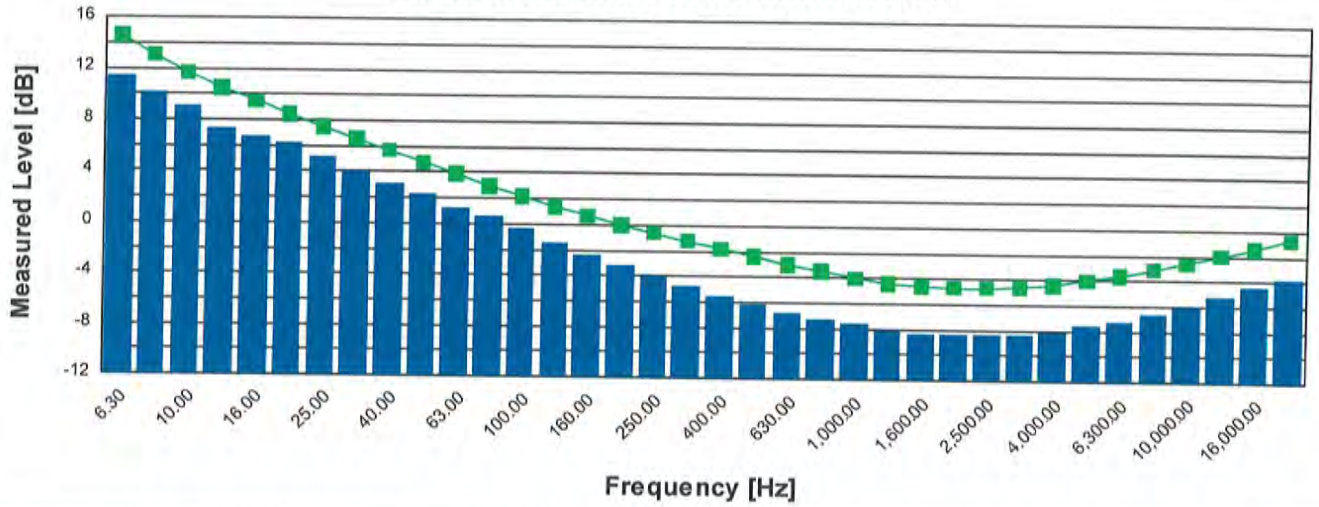
Frequency [Hz]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
3,981.10	0.01	-0.05	0.05	0.06	Pass
5,011.90	0.01	-0.05	0.05	0.06	Pass
6,309.60	0.01	-0.05	0.05	0.06	Pass
7,943.30	0.01	-0.05	0.05	0.06	Pass
10,000.00	0.01	-0.05	0.05	0.06	Pass
12,589.30	0.00	-0.05	0.05	0.06	Pass
15,848.90	0.00	-0.05	0.05	0.06	Pass
19,952.60	0.00	-0.05	0.05	0.06	Pass
25,118.90	0.01	-0.05	0.05	0.06	Pass
31,622.80	0.01	-0.05	0.05	0.06	Pass
39,810.70	0.01	-0.05	0.05	0.06	Pass
50,118.70	0.00	-0.06	0.06	0.07	Pass
63,095.70	0.01	-0.07	0.07	0.07	Pass
79,432.80	0.01	-0.08	0.08	0.07	Pass
100,000.00	0.01	-0.09	0.09	0.07	Pass
125,892.50	0.02	-0.10	0.10	0.24	Pass

DC Bias and 1kHz Reference Measurements

Measurement	Test Result [V]	Lower limit [V]	Upper limit [V]	Expanded Uncertainty	Result
DC Voltage	17.85	15.50	18.50	0.19	Pass
1000 Hz Reference	0.96	0.92	0.98	0.03	Pass

-- End of measurement results--

1/3-Octave Self-Generated Noise



Frequency [Hz]	Test Result [dB]	Upper limit [dB]	Result
6.30	11.40	14.60	Pass
8.00	10.20	13.10	Pass
10.00	9.10	11.70	Pass
12.50	7.40	10.50	Pass
16.00	6.80	9.50	Pass
20.00	6.20	8.50	Pass
25.00	5.20	7.50	Pass
31.50	4.10	6.60	Pass
40.00	3.20	5.70	Pass
50.00	2.40	4.80	Pass
63.00	1.30	3.90	Pass
80.00	0.60	3.00	Pass
100.00	-0.40	2.20	Pass
125.00	-1.40	1.40	Pass
160.00	-2.30	0.70	Pass
200.00	-3.20	0.00	Pass
250.00	-3.90	-0.60	Pass
315.00	-4.80	-1.20	Pass
400.00	-5.60	-1.80	Pass
500.00	-6.20	-2.40	Pass
630.00	-6.80	-3.00	Pass
800.00	-7.30	-3.50	Pass
1,000.00	-7.60	-4.00	Pass
1,250.00	-8.00	-4.40	Pass
1,600.00	-8.30	-4.60	Pass
2,000.00	-8.40	-4.70	Pass
2,500.00	-8.40	-4.70	Pass
3,150.00	-8.30	-4.60	Pass
4,000.00	-8.00	-4.40	Pass
5,000.00	-7.60	-4.00	Pass
6,300.00	-7.20	-3.60	Pass
8,000.00	-6.70	-3.10	Pass
10,000.00	-6.00	-2.60	Pass
12,500.00	-5.20	-2.00	Pass
16,000.00	-4.40	-1.40	Pass
20,000.00	-3.80	-0.70	Pass

Self-generated Noise

Bandwidth	Test Result [dB]	Upper limit [dB]	Result
A-weighted	4.70	8.00	Pass
Broadband	12.90	15.50	Pass

-- End of measurement results--

Signatory: *Ron Harris*

Larson Davis, a division of PCB Piezotronics, Inc
1681 West 820 North
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 Lab Code: 200625-0

Calibration Certificate No.36143

Instrument: **Sound Level Meter**
Model: **NL31**
Manufacturer: **Rion**
Serial number: **00583307**
Tested with: **Microphone UC53A s/n 319760**
Preamplifier NH21 s/n 27537
Type (class): **1**
Customer: **Paul Carpenter Associates, Inc.**
Tel/Fax: **973-822-8221 x21 / -833-9221**

Date Calibrated: **5/3/2016** *Cal Due:* **5/3/2017**

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: **23 Vreeland Road, Suite 204**
Florham Park, NJ 07932

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	31061	Jul 20, 2015	Scantek, Inc./ NVLAP	Jul 20, 2016
DS-360-SRS	Function Generator	88077	Sep 9, 2014	ACR Env./ A2LA	Sep 9, 2016
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Sep 24, 2015	ACR Env./ A2LA	Sep 24, 2016
HM30-Thommen	Meteo Station	1040170/39633	Oct 23, 2015	ACR Env./ A2LA	Oct 23, 2016
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Nov 10, 2015	Scantek, Inc./ NVLAP	Nov 10, 2016

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 (%)
24.1	99.37	52.2

Calibrated by:	Jeremy Gotwalt	**Authorized signatory:**	Valentin Buzduga
Signature		Signature	
Date	5/3/16	Date	5/04/2016

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	0.3
FREQUENCY WEIGHTINGS: A NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.2
FREQUENCY WEIGHTINGS: C NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.2
FREQUENCY WEIGHTINGS: Z NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.2
FREQUENCY AND TIME WEIGHTINGS AT 1 KHZ IEC 61672-3 ED.2.0 CLAUSE 14	Passed	0.2
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	0.3
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	0.1
LONG TERM STABILITY TEST - IEC 61672-3 ED.2.0 CLAUSE 15	Passed	0.1
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. However, No general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1 because evidence was not publicly available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conforms to the requirements of IEC 61672-1:2002, and because the periodic tests of IEC 61672-3 cover only a limited subset of the specifications in 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: Rion UC53A s/n 319760 for acoustical test
Preamplifier: Rion NH21 s/n 27537 for all tests
Other: line adaptor ADP005 (18pF) for electrical tests and 1448 (18pF) for noise test
Accompanying acoustical calibrator: none
Windscreen: none

Measured Data: in Test Report # 36143 of eight pages.

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

Summary of Test Report No.:36143

Rion Type: NL31 Serial no: 00583307

Customer:	**Paul Carpenter Associates, Inc.**
Address:	**23 Vreeland Road, Suite 204, Florham Park, NJ 07932**
Contact Person:	**Bryan Fuerte**
Phone No.:	**973-822-8221 x21**
Fax No.:	**973-833-9221**

Microphone:	Rion	Type: UC53A	Serial no: 319760	Sens:-26.69dB
Preamplifier	Rion	Type: NH21	Serial no: 27537	

Measurement Results:

Indication at the calibration check frequency - IEC61672-3 Ed.2 Clause 10	Passed
Self-generated noise - IEC 61672-3 Ed.2 Clause 11	Passed
Frequency weightings: A Network - IEC 61672-3 Ed.2.0 Clause 13	Passed
Frequency weightings: C Network - IEC 61672-3 Ed.2.0 Clause 13	Passed
Frequency weightings: Z Network - IEC 61672-3 Ed.2.0 Clause 13	Passed
Frequency and time weightings at 1 kHz IEC 61672-3 Ed.2.0 Clause 14	Passed
Level linearity on the reference level range - IEC 61672-3 Ed.2 Clause 16	Passed
Level linearity including the level range control - IEC 61672-3 Ed.2.0 Clause 17	Passed
Toneburst response - IEC 61672-3 Ed.2.0 Clause 18	Passed
Peak C sound level - IEC 61672-3 Ed.2.0 Clause 19	Passed
Overload indication - IEC 61672-3 Ed.2.0 Clause 20	Passed
High level stability test - IEC 61672-3 Ed.2.0 Clause 21	Passed
Long term stability test - IEC 61672-3 Ed.2.0 Clause 15	Passed
Combined electrical and acoustical test - IEC 61672-3 Ed.2.0 Clause 13	Passed

Environmental conditions:

Pressure:	Temperature:	Relative humidity:
99.37	24.1	52.2

Date of calibration: 5/3/2016
Date of issue: 5/3/2016
Supervisor: Valentin Buzduga
Measurements performed by:

Jeremy Gotwalt

Software version: 6.1 T

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

Test Report No.:36143

Manufacturer:	Rion
Instrument type:	NL31
Serial no:	00583307
Customer:	Paul Carpenter Associates, Inc.
Department:	
Order No:	
Contact Person:	Bryan Fuerte
Address:	23 Vreeland Road, Suite 204, Florham Park, NJ 07932

Environmental conditions:

Pressure:	99.37
Temperature:	24.1
Relative humidity:	52.2

Supervisor	Valentin Buzduga
Engineer	Jeremy Gotwalt
Date:	5/3/2016

Measurement Results:

Indication at the calibration check frequency - IEC61672-3 Ed.2 Clause 10

```
Reference Calibrator: WSC4 - NOR1251-30878
Reference calibrator level: 114.06
Before calibration:
  Environmental corrections: 0.00
  Other corrections: 0.00
  Notional level: 114.06
Reference calibrator level before calibration: 115.0
After calibration:
  Environmental corrections: 0.00
  Other corrections: 0.00
  Notional level: 114.06
Reference calibrator level after calibration: 114.1
Associated Calibrator:  -  -
Associated calibrator level: Not calibrated
Test Passed
```

Self-generated noise - IEC 61672-3 Ed.2 Clause 11

Network	Level (dB)	Max (dB)	Uncert. (dB)	Result	Comment
A	9.1	20.0	0.3	P	Equivalent capacity
C	13.4	25.0	0.3	P	Equivalent capacity
Z	20.6	30.0	0.3	P	Equivalent capacity

Test Passed

Frequency weightings: A Network - IEC 61672-3 Ed.2.0 Clause 13

Freq (Hz)	Ref. (dB)	Meas. (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
63.1	83.0	82.9	1.0	-1.0	0.2	-0.1	P
125.9	83.0	82.9	1.0	-1.0	0.2	-0.1	P
251.2	83.0	82.9	1.0	-1.0	0.2	-0.1	P
501.2	83.0	82.9	1.0	-1.0	0.2	-0.1	P
1000.0	83.0	83.0	0.7	-0.7	0.2	0.0	P
1995.3	83.0	83.0	1.0	-1.0	0.2	0.0	P
3981.1	83.0	83.1	1.0	-1.0	0.2	0.1	P
7943.3	83.0	83.2	1.5	-2.5	0.2	0.2	P
15848.9	83.0	83.4	2.5	-16.0	0.2	0.4	P

Test Passed

Frequency weightings: C Network - IEC 61672-3 Ed.2.0 Clause 13

Freq	Ref. Level	Meas. Value	Tol.		Uncert.	Dev.	Result
(Hz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	
63.1	83.0	82.9	1.0	-1.0	0.2	-0.1	P
125.9	83.0	83.0	1.0	-1.0	0.2	0.0	P
251.2	83.0	83.0	1.0	-1.0	0.2	0.0	P
501.2	83.0	83.1	1.0	-1.0	0.2	0.1	P
1000.0	83.0	83.1	0.7	-0.7	0.2	0.1	P
1995.3	83.0	83.1	1.0	-1.0	0.2	0.1	P
3981.1	83.0	83.2	1.0	-1.0	0.2	0.2	P
7943.3	83.0	83.2	1.5	-2.5	0.2	0.2	P
15848.9	83.0	83.4	2.5	-16.0	0.2	0.4	P

Test Passed

Frequency weightings: Z Network - IEC 61672-3 Ed.2.0 Clause 13

Freq	Ref. Level	Meas. Value	Tol.		Uncert.	Dev.	Result
(Hz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	
63.1	83.0	82.9	1.0	-1.0	0.2	-0.1	P
125.9	83.0	83.0	1.0	-1.0	0.2	0.0	P
251.2	83.0	83.0	1.0	-1.0	0.2	0.0	P
501.2	83.0	83.0	1.0	-1.0	0.2	0.0	P
1000.0	83.0	83.1	0.7	-0.7	0.2	0.1	P
1995.3	83.0	83.1	1.0	-1.0	0.2	0.1	P
3981.1	83.0	83.2	1.0	-1.0	0.2	0.2	P
7943.3	83.0	83.0	1.5	-2.5	0.2	0.0	P
15848.9	83.0	82.6	2.5	-16.0	0.2	-0.4	P

Test Passed

Frequency and time weightings at 1 kHz IEC 61672-3 Ed.2.0 Clause 14

Weightings		Ref.	Measured	Tol.		Uncert.	Dev.	Result
Time	Netw	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	
Fast	A	94.0	94.0	0.1	-0.1	0.2	0.0	P
Fast	C	94.0	94.1	0.1	-0.1	0.2	0.1	P
Fast	Z	94.0	94.1	0.1	-0.1	0.2	0.1	P
Fast	Flat	94.0	94.1	0.1	-0.1	0.2	0.1	P
Slow	A	94.0	94.0	0.1	-0.1	0.2	0.0	P
Leq	A	94.0	94.0	0.1	-0.1	0.2	0.0	P
SEL	A	104.0	104.0	0.1	-0.1	0.2	0.0	P

Test Passed

Level linearity on the reference level range - IEC 61672-3 Ed.2 Clause 16

Ref. (dB)	Measured (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
Full scale setting: 120dB						
The following measurements are SPL measurements						
Measured at 31.5 Hz						
74.0	74.1	0.8	-0.8	0.0	0.1	P
79.0	79.0	0.8	-0.8	0.0	0.0	P
84.6	84.6	0.8	-0.8	0.0	0.0	P
85.6	85.6	0.8	-0.8	0.0	0.0	P
86.6	86.6	0.8	-0.8	0.0	0.0	P
87.6	87.7	0.8	-0.8	0.0	0.1	P
88.6	88.6	0.8	-0.8	0.0	0.0	P
74.0	74.8	0.8	-0.8	0.0	0.8	P
69.0	69.1	0.8	-0.8	0.0	0.1	P
64.0	64.1	0.8	-0.8	0.0	0.1	P
59.0	59.1	0.8	-0.8	0.0	0.1	P
54.0	54.1	0.8	-0.8	0.0	0.1	P
49.0	49.1	0.8	-0.8	0.0	0.1	P
44.0	44.1	0.8	-0.8	0.0	0.1	P
39.0	39.0	0.8	-0.8	0.0	0.0	P
38.0	38.1	0.8	-0.8	0.0	0.1	P
37.0	37.1	0.8	-0.8	0.0	0.1	P
36.0	36.0	0.8	-0.8	0.0	0.0	P
35.0	35.0	0.8	-0.8	0.0	0.0	P
Measured at 1 kHz						
94.0	94.0	0.8	-0.8	0.0	0.0	P
99.0	99.0	0.8	-0.8	0.0	0.0	P
104.0	104.0	0.8	-0.8	0.0	0.0	P
109.0	109.0	0.8	-0.8	0.0	0.0	P
114.0	114.0	0.8	-0.8	0.0	0.0	P
119.0	119.1	0.8	-0.8	0.0	0.1	P
124.0	124.0	0.8	-0.8	0.0	0.0	P
125.0	125.0	0.8	-0.8	0.0	0.0	P
126.0	126.0	0.8	-0.8	0.0	0.0	P
127.0	127.0	0.8	-0.8	0.0	0.0	P
128.0	128.1	0.8	-0.8	0.0	0.1	P
94.0	94.0	0.8	-0.8	0.0	0.0	P
89.0	89.0	0.8	-0.8	0.0	0.0	P
84.0	84.0	0.8	-0.8	0.0	0.0	P
79.0	79.0	0.8	-0.8	0.0	0.0	P
74.0	74.0	0.8	-0.8	0.0	0.0	P
69.0	69.0	0.8	-0.8	0.0	0.0	P
64.0	64.0	0.8	-0.8	0.0	0.0	P
59.0	59.0	0.8	-0.8	0.0	0.0	P
54.0	54.0	0.8	-0.8	0.0	0.0	P
49.0	49.0	0.8	-0.8	0.0	0.0	P
44.0	44.0	0.8	-0.8	0.0	0.0	P
39.0	39.0	0.8	-0.8	0.0	0.0	P
38.0	38.0	0.8	-0.8	0.0	0.0	P
37.0	37.0	0.8	-0.8	0.0	0.0	P
36.0	35.9	0.8	-0.8	0.0	-0.1	P
35.0	34.9	0.8	-0.8	0.0	-0.1	P
Measured at 8 kHz						
94.0	94.0	0.8	-0.8	0.0	0.0	P
99.0	99.0	0.8	-0.8	0.0	0.0	P
104.0	104.0	0.8	-0.8	0.0	0.0	P
109.0	109.0	0.8	-0.8	0.0	0.0	P

Level linearity on the reference level range - IEC 61672-3 Ed.2 Clause 16

Ref. (dB)	Measured (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
114.0	114.0	0.8	-0.8	0.0	0.0	P
119.0	119.0	0.8	-0.8	0.0	0.0	P
122.9	122.9	0.8	-0.8	0.0	0.0	P
123.9	123.9	0.8	-0.8	0.0	0.0	P
124.9	124.9	0.8	-0.8	0.0	0.0	P
125.9	125.9	0.8	-0.8	0.0	0.0	P
94.0	94.0	0.8	-0.8	0.0	0.0	P
89.0	89.1	0.8	-0.8	0.0	0.1	P
84.0	84.1	0.8	-0.8	0.0	0.1	P
79.0	79.0	0.8	-0.8	0.0	0.0	P
74.0	74.0	0.8	-0.8	0.0	0.0	P
69.0	69.0	0.8	-0.8	0.0	0.0	P
64.0	64.0	0.8	-0.8	0.0	0.0	P
59.0	59.0	0.8	-0.8	0.0	0.0	P
54.0	54.0	0.8	-0.8	0.0	0.0	P
49.0	49.0	0.8	-0.8	0.0	0.0	P
44.0	44.0	0.8	-0.8	0.0	0.0	P
39.0	39.0	0.8	-0.8	0.0	0.0	P
38.0	38.1	0.8	-0.8	0.0	0.1	P
37.0	37.1	0.8	-0.8	0.0	0.1	P
36.0	36.0	0.8	-0.8	0.0	0.0	P
35.0	35.0	0.8	-0.8	0.0	0.0	P

Test Passed

Level linearity including the level range control - IEC 61672-3 Ed.2.0 Clause 17

Full Scale (dB)	Ref. Value (dB)	Measured Value (dB)	Tol. Value (dB)	Uncert. (dB)	Dev. (dB)	Result
Measured at 1 kHz						
The following measurements are SPL measurements						
Measuring the reference level on the available ranges.						
130	94.0	94.0	0.8	0.25	0.0	P
120	94.0	94.0	0.8	0.25	0.0	P
110	94.0	94.1	0.8	0.25	0.1	P
100	94.0	94.1	0.8	0.25	0.1	P
Measuring 5 dB below full scale on all available ranges.						
130	125.0	125.0	0.8	0.25	0.0	P
120	115.0	115.0	0.8	0.25	0.0	P
110	105.0	105.1	0.8	0.25	0.1	P
100	95.0	95.1	0.8	0.25	0.1	P
90	85.0	85.1	0.8	0.25	0.1	P
80	75.0	75.1	0.8	0.25	0.1	P

Test Passed

Toneburst response - IEC 61672-3 Ed.2.0 Clause 18

Burst type	Ref. (dB)	Measured (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
Fast 200 mSec	125.0	125.0	0.5	-0.5	0.3	0.0	P
Fast 2.0 mSec	108.0	108.0	1.0	-1.5	0.3	0.0	P
Fast 0.25 mSec	99.0	98.9	1.0	-3.0	0.3	-0.1	P
Slow 200 mSec	118.6	118.5	0.5	-0.5	0.3	-0.1	P
Slow 2.0 mSec	99.0	98.9	1.0	-3.0	0.3	-0.1	P
SEL 200 mSec	119.0	119.0	0.5	-0.5	0.3	0.0	P
SEL 2.0 mSec	99.0	99.0	1.0	-1.5	0.3	0.0	P
SEL 0.25 mSec	90.0	89.9	1.0	-3.0	0.3	-0.1	P

Test Passed

Peak C sound level - IEC 61672-3 Ed.2.0 Clause 19

Pulse Type	Pulse Freq. (Hz)	Ref. RMS (dB)	Ref. Peak (dB)	Measured Value (dB)	Tol. (+/-dB)	Uncert. (dB)	Dev. (dB)	Result
1 cycle	8k	127.0	130.4	130.1	2.0	0.35	-0.3	P
Pos 1/2 cycle	500	130.0	132.4	132.1	1.0	0.35	-0.3	P
Neg 1/2 cycle	500	130.0	132.4	132.1	1.0	0.35	-0.3	P

Test Passed

Overload indication - IEC 61672-3 Ed.2.0 Clause 20

	Measured (dB)	Tol. (+/-dB)	Uncert. (dB)	Result
Level difference of positive and negative pulses:	0.0	1.5	0.25	P

Positive 1/2 cycle 4 kHz. Overload occurred at: 139.2
Negative 1/2 cycle 4 kHz. Overload occurred at: 139.2
Test Passed

High level stability test - IEC 61672-3 Ed.2.0 Clause 21

Test signal: Sine wave at 1 kHz

Initial level (dB)	Final level (dB)	Diff. (dB)	Tol. value (dB)	Uncert. (dB)	Result
137.0	137.0	0.0	0.1	0.1	P

Test Passed

Long term stability test - IEC 61672-3 Ed.2.0 Clause 15

Test signal: Sine wave at 1 kHz

Time inteval (mm:SS)	StartLevel (dB)	StopLevel (dB)	Difference (dB)	Tolerence (dB)	Result
25:49	94.0	94.0	0.0	0.1	P

Test Passed

Combined electrical and acoustical test - IEC 61672-3 Ed.2.0 Clause 13

A-Weighted results: Free field

Frequency	SLM Val (dB)	SLM U (dB)	Microphone Val (dB)	Microphone U (dB)	Case Refl. Val (dB)	Case Refl. U (dB)	Wind Screen Val (dB)	Wind Screen U (dB)	Uncert (dB)	Tol (dB)	Result (dB)	
63 Hz	-0.1	0.2	0.0	0.1					0.2	+-1.0	-0.1	P
125 Hz	-0.1	0.2	0.1	0.1					0.2	+-1.0	0.0	P
250 Hz	-0.1	0.2	0.0	0.1					0.2	+-1.0	-0.1	P
500 Hz	-0.1	0.2	-0.1	0.1					0.2	+-1.0	-0.2	P
1 kHz	0.0	0.2	-0.1	0.1					0.2	+-0.7	-0.1	P
2 kHz	0.0	0.2	-0.1	0.2					0.3	+-1.0	-0.1	P
4 kHz	0.1	0.2	0.2	0.2					0.3	+-1.0	0.3	P
8 kHz	0.2	0.2	-0.5	0.4					0.5	+1.5/-2.5	-0.3	P
16 kHz	0.4	0.2	-2.4	0.7					0.7	+2.5/-16.0	-2.0	P

C-Weighted results: Free field

Frequency	SLM Val (dB)	SLM U (dB)	Microphone Val (dB)	Microphone U (dB)	Case Refl. Val (dB)	Case Refl. U (dB)	Wind Screen Val (dB)	Wind Screen U (dB)	Uncert (dB)	Tol (dB)	Result (dB)	
63 Hz	-0.1	0.2	0.0	0.1					0.2	+-1.0	-0.1	P
125 Hz	0.0	0.2	0.1	0.1					0.2	+-1.0	0.1	P
250 Hz	0.0	0.2	0.0	0.1					0.2	+-1.0	0.0	P
500 Hz	0.1	0.2	-0.1	0.1					0.2	+-1.0	0.0	P
1 kHz	0.1	0.2	-0.1	0.1					0.2	+-0.7	0.0	P
2 kHz	0.1	0.2	-0.1	0.2					0.3	+-1.0	0.0	P
4 kHz	0.2	0.2	0.2	0.2					0.3	+-1.0	0.4	P
8 kHz	0.2	0.2	-0.5	0.4					0.5	+1.5/-2.5	-0.3	P
16 kHz	0.4	0.2	-2.4	0.7					0.7	+2.5/-16.0	-2.0	P

Z-Weighted results: Free field

Frequency	SLM Val (dB)	SLM U (dB)	Microphone Val (dB)	Microphone U (dB)	Case Refl. Val (dB)	Case Refl. U (dB)	Wind Screen Val (dB)	Wind Screen U (dB)	Uncert (dB)	Tol (dB)	Result (dB)	
63 Hz	-0.1	0.2	0.0	0.1					0.2	+-1.0	-0.1	P
125 Hz	0.0	0.2	0.1	0.1					0.2	+-1.0	0.1	P
250 Hz	0.0	0.2	0.0	0.1					0.2	+-1.0	0.0	P
500 Hz	0.0	0.2	-0.1	0.1					0.2	+-1.0	-0.1	P
1 kHz	0.1	0.2	-0.1	0.1					0.2	+-0.7	0.0	P
2 kHz	0.1	0.2	-0.1	0.2					0.3	+-1.0	0.0	P
4 kHz	0.2	0.2	0.2	0.2					0.3	+-1.0	0.4	P
8 kHz	0.0	0.2	-0.5	0.4					0.5	+1.5/-2.5	-0.5	P
16 kHz	-0.4	0.2	-2.4	0.7					0.7	+2.5/-16.0	-2.8	P

The actual frequency response of Rion / UC53A 319760 has been used for the calculations.

Test Passed

The overall frequency response of the sound level meter and microphone response has shown to conform with the requirements in IEC 61672-3 for a class 1 sound level meter.

JDG

Scantek, Inc.
CALIBRATION LABORATORY

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

NVLAP®
NVLAP Lab Code: 200625-0

Calibration Certificate No.36144

Instrument: **Microphone**
Model: **UC53A**
Manufacturer: **Rion**
Serial number: **319760**
Composed of:

Date Calibrated: **5/3/2016** *Cal Due:* **5/3/2017**

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

Contains non-accredited tests: __Yes _X_ No

Customer: **Paul Carpenter Associates, Inc.**
Tel/Fax: **973-822-8221 x21/-833-9221**

Address: **23 Vreeland Road, Suite 204**
Florham Park, NJ 07932

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	31061	Jul 20, 2015	Scantek, Inc./ NVLAP	Jul 20, 2016
DS-360-SRS	Function Generator	88077	Sep 9, 2014	ACR Env./ A2LA	Sep 9, 2016
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Sep 24, 2015	ACR Env./ A2LA	Sep 24, 2016
HM30-Thommen	Meteo Station	1040170/39633	Oct 23, 2015	ACR Env./ A2LA	Oct 23, 2016
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1253-Norsonic	Calibrator	22909	Nov 10, 2015	Scantek, Inc./ NVLAP	Nov 10, 2016
1203-Norsonic	Preamplifier	92268	Oct 14, 2015	Scantek, Inc./ NVLAP	Oct 14, 2016
4192-Brüel&Kjær	Microphone	2854675	Nov 11, 2015	NPL-UK / UKAS	Nov 11, 2016

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

Calibrated by:	Jeremy Gotwalt	**Authorized signatory:**	Valentin Buzduga
Signature		Signature	
Date	5/3/16	Date	5/04/2016

Document stored as: Z:\Calibration Lab\Mic 2016\Rion53A_319760_M1.doc

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 (%)
23.2 ± 1.0	99.33 ± 0.001	53.8 ± 2.0

Main measured parameters:

Tone frequency (Hz)	Measured[4] /Acceptable Open circuit sensitivity (dB re 1V/Pa)	Sensitivity (mV/Pa)
250	-26.69 ± 0.12/ -28.0 +3.0/-1.0	46.27

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

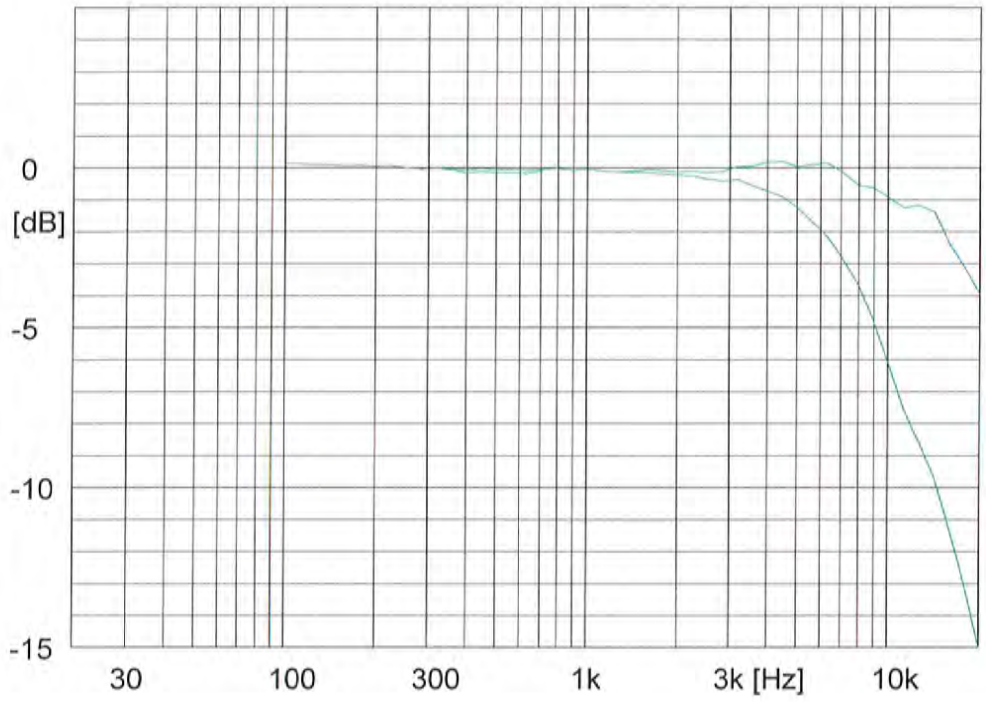
Tests made with following attachments to instrument and auxiliary devices:

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

Measured Data: Found on Microphone Test Report # 36144 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.:36144



Rion
Type: UC53A

Serial no: 319760

Sensitivity: 46.27 mV/Pa
-26.69 ±0.12 dB re. 1 V/Pa

Date: 5/3/2016

Signature:

Measurement conditions:

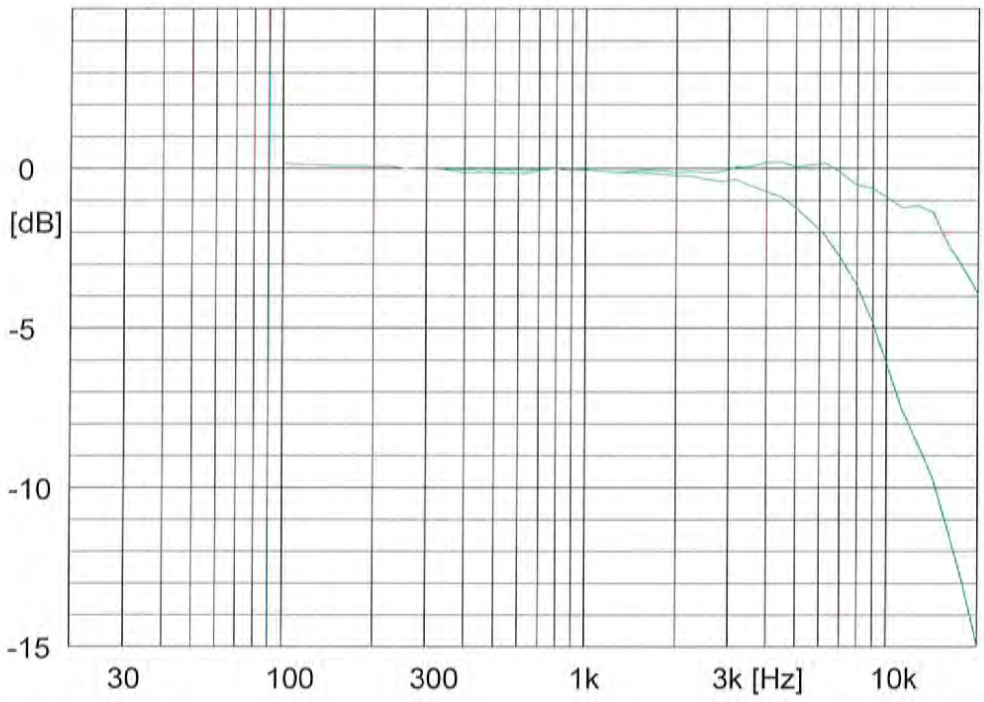
Polarisation voltage:	0.0 V
Pressure:	99.33 ±0.00 kPa
Temperature:	23.2 ±1.0 °C
Relative humidity:	53.8 ±2.0 %RH

Results are normalized to the reference conditions.

Free field response
Actuator response

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

Microphone Test Report No.:36144



Rion
Type: UC53A

Serial no: 319760

Sensitivity: 46.27 mV/Pa
-26.69 ±0.12 dB re. 1 V/Pa

Date: 5/3/2016

Signature:

Measurement conditions:

Polarisation voltage:	0.0 V
Pressure:	99.33 ±0.00 kPa
Temperature:	23.2 ±1.0 °C
Relative humidity:	53.8 ±2.0 %RH

Results are normalized to the reference conditions.

Free field response
Actuator response

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

Comment:
(Z:\Calibration Lab\Mic 2016\Rion53A_319760_M1.nmf)

Scantek, Inc.
CALIBRATION LABORATORY

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

NVLAP®
NVLAP Lab Code: 200625-0

Calibration Certificate No.36510

Instrument: **Sound Level Meter**
Model: **NL52**
Manufacturer: **Rion**
Serial number: **01243608**
Tested with: **Microphone UC-59 s/n 07650**
Preamplifier NH-25 s/n 43637
Type (class): **1**
Customer: **Paul Carpenter Associates, Inc.**
Tel/Fax: **973-822-8221 x21 / -833-9221**

Date Calibrated: **6/27/2016** *Cal Due:* **6/27/2017**

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: **7 Columbia Turnpike, Suite 101**
Florham Park, NJ 07932

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	25747	Jul 2, 2015	Scantek, Inc./ NVLAP	Jul 2, 2016
DS-360-SRS	Function Generator	61646	Aug 12, 2015	ACR Env./ A2LA	Aug 12, 2017
34401A-Agilent Technologies	Digital Voltmeter	MY41022043	Aug 13, 2015	ACR Env. / A2LA	Aug 13, 2016
DPI 141-Druck	Pressure Indicator	790/00-04	Nov 18, 2014	ACR Env./ A2LA	Nov 18, 2016
HMP233-Vaisala Oyj	Humidity & Temp. Transmitter	V3820001	Oct 1, 2015	ACR Env./ A2LA	Apr 1, 2017
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Nov 10, 2015	Scantek, Inc./ NVLAP	Nov 10, 2016

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 (%)
23.2	100.51	51.9

Calibrated by:	Jeremy Gotwalt	**Authorized signatory:**	William D. Gallagher
Signature		Signature	
Date	6/27/16	Date	6/27/2016

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
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	0.1
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
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: Rion UC-59 s/n 07650 for acoustical test
Preamplifier: Rion NH-25 s/n 43637 for all tests
Other: line adaptor ADP005 (18pF) for electrical tests
Accompanying acoustical calibrator: none
Windscreen: Rion WS-10

Measured Data: in Test Report # 36510 of 10 pages.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA

Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

Summary of Test Report No.:36510

Rion Type: NL52 Serial no: 01243608

Customer:	**Paul Carpenter Associates, Inc.**
Address:	**7 Columbia Turnpike, Suite 101, Florham Park, NJ 07932**
Contact Person:	**Bryan Fuerte**
Phone No.:	**973-822-8221 x21**
Fax No.:	**973-833-9221**

Instrument software version: NL-52 v1.5, NX-42EX v1.5, NX-42RT v1.5

Microphone:	Rion	Type: UC-59	Serial no: 07650	Sens:-26.79dB
Preamplifier	Rion	Type: NH-25	Serial no: 43637	
Wind screen	Rion	Type: WS-10		

Measurement Results:

Indication at the calibration check frequency - IEC61672-3 Ed.2 Clause 10	Passed
Self-generated noise - IEC 61672-3 Ed.2 Clause 11	Passed
Frequency weightings: A Network - IEC 61672-3 Ed.2.0 Clause 13	Passed
Frequency weightings: C Network - IEC 61672-3 Ed.2.0 Clause 13	Passed
Frequency weightings: Z Network - IEC 61672-3 Ed.2.0 Clause 13	Passed
Frequency and time weightings at 1 kHz IEC 61672-3 Ed.2.0 Clause 14	Passed
Level linearity on the reference level range - IEC 61672-3 Ed.2 Clause 16	Passed
Toneburst response - IEC 61672-3 Ed.2.0 Clause 18	Passed
Peak C sound level - IEC 61672-3 Ed.2.0 Clause 19	Passed
Overload indication - IEC 61672-3 Ed.2.0 Clause 20	Passed
High level stability test - IEC 61672-3 Ed.2.0 Clause 21	Passed
Long term stability test - IEC 61672-3 Ed.2.0 Clause 15	Passed
Filter Test 1/1octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3	Passed
Filter Test 1/3octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3	Passed
Combined electrical and acoustical test - IEC 61672-3 Ed.2.0 Clause 13	Passed

Environmental conditions:

Pressure:	Temperature:	Relative humidity:
100.51	23.2	51.9

Date of calibration: 6/27/2016
Date of issue: 6/27/2016
Supervisor: Valentin Buzduga
Measurements performed by:

Jeremy Gotwalt

Software version: 6.1 T

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

Test Report No.:36510

Manufacturer:	Rion
Instrument type:	NL52
Serial no:	01243608
Customer:	Paul Carpenter Associates, Inc.
Department:	
Order No:	
Contact Person:	Bryan Fuerte
Address:	7 Columbia Turnpike, Suite 101, Florham Park, NJ 07932

Environmental conditions:

Pressure:	100.51
Temperature:	23.2
Relative humidity:	51.9

Supervisor	Valentin Buzduga
Engineer	Jeremy Gotwalt
Date:	6/27/2016

Measurement Results:

Indication at the calibration check frequency - IEC61672-3 Ed.2 Clause 10

```
Reference Calibrator: WSC4 - NOR1251-30878
Reference calibrator level: 114.06
Before calibration:
  Environmental corrections: 0.00
  Other corrections: -0.02
  Notional level: 114.04
Reference calibrator level before calibration: 114.1
After calibration:
  Environmental corrections: 0.00
  Other corrections: -0.02
  Notional level: 114.04
Reference calibrator level after calibration: 114.0
Associated Calibrator:  -  -
Associated calibrator level: Not calibrated
Test Passed
```

Self-generated noise - IEC 61672-3 Ed.2 Clause 11

Network	Level (dB)	Max (dB)	Uncert. (dB)	Result	Comment
A	10.5	17.0	0.3	P	Equivalent capacity
C	14.3	25.0	0.3	P	Equivalent capacity
Z	19.8	30.0	0.3	P	Equivalent capacity

Test Passed

Frequency weightings: A Network - IEC 61672-3 Ed.2.0 Clause 13

Freq (Hz)	Ref. (dB)	Meas. (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
63.1	93.0	92.9	1.0	-1.0	0.2	-0.1	P
125.9	93.0	93.0	1.0	-1.0	0.2	0.0	P
251.2	93.0	92.9	1.0	-1.0	0.2	-0.1	P
501.2	93.0	93.0	1.0	-1.0	0.2	0.0	P
1000.0	93.0	93.0	0.7	-0.7	0.2	0.0	P
1995.3	93.0	93.0	1.0	-1.0	0.2	0.0	P
3981.1	93.0	93.0	1.0	-1.0	0.2	0.0	P
7943.3	93.0	93.1	1.5	-2.5	0.2	0.1	P
15848.9	93.0	91.8	2.5	-16.0	0.2	-1.2	P

Test Passed

Frequency weightings: C Network - IEC 61672-3 Ed.2.0 Clause 13

Freq (Hz)	Ref. Level (dB)	Meas. Value (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
63.1	93.0	92.9	1.0	-1.0	0.2	-0.1	P
125.9	93.0	93.0	1.0	-1.0	0.2	0.0	P
251.2	93.0	93.0	1.0	-1.0	0.2	0.0	P
501.2	93.0	93.0	1.0	-1.0	0.2	0.0	P
1000.0	93.0	93.0	0.7	-0.7	0.2	0.0	P
1995.3	93.0	93.0	1.0	-1.0	0.2	0.0	P
3981.1	93.0	93.0	1.0	-1.0	0.2	0.0	P
7943.3	93.0	93.1	1.5	-2.5	0.2	0.1	P
15848.9	93.0	91.8	2.5	-16.0	0.2	-1.2	P

Test Passed

Frequency weightings: Z Network - IEC 61672-3 Ed.2.0 Clause 13

Freq (Hz)	Ref. Level (dB)	Meas. Value (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
63.1	93.0	92.9	1.0	-1.0	0.2	-0.1	P
125.9	93.0	93.0	1.0	-1.0	0.2	0.0	P
251.2	93.0	93.0	1.0	-1.0	0.2	0.0	P
501.2	93.0	93.0	1.0	-1.0	0.2	0.0	P
1000.0	93.0	93.0	0.7	-0.7	0.2	0.0	P
1995.3	93.0	93.0	1.0	-1.0	0.2	0.0	P
3981.1	93.0	93.0	1.0	-1.0	0.2	0.0	P
7943.3	93.0	93.0	1.5	-2.5	0.2	0.0	P
15848.9	93.0	93.0	2.5	-16.0	0.2	0.0	P

Test Passed

Frequency and time weightings at 1 kHz IEC 61672-3 Ed.2.0 Clause 14

Weightings Time	Netw	Ref. (dB)	Measured (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
Fast	A	94.0	94.0	0.1	-0.1	0.2	0.0	P
Fast	C	94.0	94.0	0.1	-0.1	0.2	0.0	P
Fast	Z	94.0	94.0	0.1	-0.1	0.2	0.0	P
Slow	A	94.0	94.0	0.1	-0.1	0.2	0.0	P
Leq	A	94.0	94.0	0.1	-0.1	0.2	0.0	P
SEL	A	104.0	104.0	0.1	-0.1	0.2	0.0	P

Test Passed

Level linearity on the reference level range - IEC 61672-3 Ed.2 Clause 16

Ref. (dB)	Measured (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
Full scale setting: 130dB						
The following measurements are SPL measurements						
Measured at 31.5 Hz						
84.0	84.0	0.8	-0.8	0.0	0.0	P
89.0	89.0	0.8	-0.8	0.0	0.0	P
94.6	94.6	0.8	-0.8	0.0	0.0	P
95.6	95.6	0.8	-0.8	0.0	0.0	P
96.6	96.6	0.8	-0.8	0.0	0.0	P
97.6	97.6	0.8	-0.8	0.0	0.0	P
98.6	98.6	0.8	-0.8	0.0	0.0	P
84.0	84.7	0.8	-0.8	0.0	0.7	P
79.0	79.1	0.8	-0.8	0.0	0.1	P
74.0	74.2	0.8	-0.8	0.0	0.2	P
69.0	69.1	0.8	-0.8	0.0	0.1	P
64.0	64.1	0.8	-0.8	0.0	0.1	P
59.0	59.2	0.8	-0.8	0.0	0.2	P
54.0	54.2	0.8	-0.8	0.0	0.2	P
49.0	49.1	0.8	-0.8	0.0	0.1	P
44.0	44.0	0.8	-0.8	0.0	0.0	P
39.0	39.0	0.8	-0.8	0.0	0.0	P
34.0	34.1	0.8	-0.8	0.0	0.1	P
29.0	29.1	0.8	-0.8	0.0	0.1	P
28.0	28.0	0.8	-0.8	0.0	0.0	P
27.0	26.9	0.8	-0.8	0.0	-0.1	P
26.0	25.9	0.8	-0.8	0.0	-0.1	P
25.0	24.9	0.8	-0.8	0.0	-0.1	P
Measured at 1 kHz						
94.0	94.0	0.8	-0.8	0.0	0.0	P
99.0	99.0	0.8	-0.8	0.0	0.0	P
104.0	104.0	0.8	-0.8	0.0	0.0	P
109.0	109.0	0.8	-0.8	0.0	0.0	P
114.0	114.0	0.8	-0.8	0.0	0.0	P
119.0	119.0	0.8	-0.8	0.0	0.0	P
124.0	124.0	0.8	-0.8	0.0	0.0	P
129.0	129.0	0.8	-0.8	0.0	0.0	P
134.0	134.0	0.8	-0.8	0.0	0.0	P
135.0	135.0	0.8	-0.8	0.0	0.0	P
136.0	136.0	0.8	-0.8	0.0	0.0	P
137.0	137.0	0.8	-0.8	0.0	0.0	P
138.0	138.0	0.8	-0.8	0.0	0.0	P
94.0	94.0	0.8	-0.8	0.0	0.0	P
89.0	89.0	0.8	-0.8	0.0	0.0	P
84.0	84.0	0.8	-0.8	0.0	0.0	P
79.0	79.0	0.8	-0.8	0.0	0.0	P
74.0	74.0	0.8	-0.8	0.0	0.0	P
69.0	69.0	0.8	-0.8	0.0	0.0	P
64.0	64.0	0.8	-0.8	0.0	0.0	P
59.0	59.0	0.8	-0.8	0.0	0.0	P
54.0	54.0	0.8	-0.8	0.0	0.0	P
49.0	49.0	0.8	-0.8	0.0	0.0	P
44.0	44.0	0.8	-0.8	0.0	0.0	P
39.0	39.0	0.8	-0.8	0.0	0.0	P
34.0	34.0	0.8	-0.8	0.0	0.0	P
29.0	29.0	0.8	-0.8	0.0	0.0	P
28.0	28.1	0.8	-0.8	0.0	0.1	P

Level linearity on the reference level range - IEC 61672-3 Ed.2 Clause 16

Ref. (dB)	Measured (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
27.0	27.0	0.8	-0.8	0.0	0.0	P
26.0	26.0	0.8	-0.8	0.0	0.0	P
25.0	25.0	0.8	-0.8	0.0	0.0	P
Measured at 8 kHz						
94.0	94.0	0.8	-0.8	0.0	0.0	P
99.0	99.0	0.8	-0.8	0.0	0.0	P
104.0	104.0	0.8	-0.8	0.0	0.0	P
109.0	109.0	0.8	-0.8	0.0	0.0	P
114.0	114.0	0.8	-0.8	0.0	0.0	P
119.0	119.0	0.8	-0.8	0.0	0.0	P
124.0	124.0	0.8	-0.8	0.0	0.0	P
129.0	129.0	0.8	-0.8	0.0	0.0	P
132.9	132.9	0.8	-0.8	0.0	0.0	P
133.9	133.9	0.8	-0.8	0.0	0.0	P
134.9	134.9	0.8	-0.8	0.0	0.0	P
135.9	135.9	0.8	-0.8	0.0	0.0	P
136.9	136.9	0.8	-0.8	0.0	0.0	P
94.0	94.0	0.8	-0.8	0.0	0.0	P
89.0	89.0	0.8	-0.8	0.0	0.0	P
84.0	84.0	0.8	-0.8	0.0	0.0	P
79.0	79.0	0.8	-0.8	0.0	0.0	P
74.0	74.0	0.8	-0.8	0.0	0.0	P
69.0	69.0	0.8	-0.8	0.0	0.0	P
64.0	64.0	0.8	-0.8	0.0	0.0	P
59.0	59.0	0.8	-0.8	0.0	0.0	P
54.0	54.0	0.8	-0.8	0.0	0.0	P
49.0	49.0	0.8	-0.8	0.0	0.0	P
44.0	44.0	0.8	-0.8	0.0	0.0	P
39.0	39.0	0.8	-0.8	0.0	0.0	P
34.0	33.9	0.8	-0.8	0.0	-0.1	P
29.0	28.9	0.8	-0.8	0.0	-0.1	P
28.0	28.0	0.8	-0.8	0.0	0.0	P
27.0	27.0	0.8	-0.8	0.0	0.0	P
26.0	25.9	0.8	-0.8	0.0	-0.1	P
25.0	24.9	0.8	-0.8	0.0	-0.1	P

Test Passed

Toneburst response - IEC 61672-3 Ed.2.0 Clause 18

Burst type	Ref. (dB)	Measured (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
Fast 200 mSec	135.0	135.0	0.5	-0.5	0.3	0.0	P
Fast 2.0 mSec	118.0	118.0	1.0	-1.5	0.3	0.0	P
Fast 0.25 mSec	109.0	108.9	1.0	-3.0	0.3	-0.1	P
Slow 200 mSec	128.6	128.6	0.5	-0.5	0.3	0.0	P
Slow 2.0 mSec	109.0	109.0	1.0	-3.0	0.3	0.0	P
SEL 200 mSec	129.0	129.0	0.5	-0.5	0.3	0.0	P
SEL 2.0 mSec	109.0	109.0	1.0	-1.5	0.3	0.0	P
SEL 0.25 mSec	100.0	99.9	1.0	-3.0	0.3	-0.1	P

Test Passed

Peak C sound level - IEC 61672-3 Ed.2.0 Clause 19

Pulse Type	Pulse Freq. (Hz)	Ref. RMS (dB)	Ref. Peak (dB)	Measured Value (dB)	Tol. (+/-dB)	Uncert. (dB)	Dev. (dB)	Result
1 cycle	8k	130.0	133.4	133.3	2.0	0.35	-0.1	P
Pos 1/2 cycle	500	133.0	135.4	135.1	1.0	0.35	-0.3	P
Neg 1/2 cycle	500	133.0	135.4	135.1	1.0	0.35	-0.3	P

Test Passed

Overload indication - IEC 61672-3 Ed.2.0 Clause 20

	Measured (dB)	Tol. (+/-dB)	Uncert. (dB)	Result
Level difference of positive and negative pulses:	0.2	1.5	0.25	P
Positive 1/2 cycle 4 kHz. Overload occurred at:	139.6			
Negative 1/2 cycle 4 kHz. Overload occurred at:	139.4			

Test Passed

High level stability test - IEC 61672-3 Ed.2.0 Clause 21

Test signal: Sine wave at 1 kHz

Initial level (dB)	Final level (dB)	Diff. (dB)	Tol. value (dB)	Uncert. (dB)	Result
137.0	137.0	0.0	0.1	0.1	P

Test Passed

Long term stability test - IEC 61672-3 Ed.2.0 Clause 15

Test signal: Sine wave at 1 kHz

Time inteval (mm:SS)	StartLevel (dB)	StopLevel (dB)	Difference (dB)	Tolerence (dB)	Result
34:59	94.0	94.0	0.0	0.1	N

Test Passed

Filter Test 1/1octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

Test 1/1 octave filter X= 3 fexact=7943.282Hz class 1

Nominal f[Hz]	Measured L[dB]	LoLim [dB]	HiLim [dB]	Result [P/F]
501.187	30.3	0.0	58.0	P
1000.00	30.5	0.0	67.0	P
1995.26	42.0	0.0	86.0	P
3981.07	88.2	0.0	110.5	P
5623.41	124.8	123.0	126.0	P
6130.56	127.9	126.7	128.3	P

Filter Test 1/1octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

6683.44	128.0	127.4	128.3	P
7286.18	128.0	127.6	128.3	P
7943.28	128.0	127.7	128.3	P
8659.64	128.0	127.6	128.3	P
9440.61	128.0	127.4	128.3	P
10292.0	127.9	126.7	128.3	P
11220.2	124.7	123.0	126.0	P
15848.9	87.5	0.0	110.5	P
31622.8	31.3	0.0	86.0	P
63095.7	32.5	0.0	67.0	P
125893	27.3	0.0	58.0	P

Test 1/1 octave filter X= 4 fexact=15848.932Hz class 1

Nominal f[Hz]	Measured L[dB]	LoLim [dB]	HiLim [dB]	Result [P/F]
1000.00	36.7	0.0	58.0	P
1995.26	36.7	0.0	67.0	P
3981.07	40.1	0.0	86.0	P
7943.28	83.6	0.0	110.5	P
11220.2	123.9	123.0	126.0	P
12232.1	127.8	126.7	128.3	P
13335.2	127.9	127.4	128.3	P
14537.8	128.0	127.6	128.3	P
15848.9	128.0	127.7	128.3	P
17278.3	128.0	127.6	128.3	P
18836.5	127.9	127.4	128.3	P
20535.3	127.5	126.7	128.3	P
22387.2	124.2	123.0	126.0	P
31622.8	44.9	0.0	110.5	P
63095.7	38.9	0.0	86.0	P
125893	34.2	0.0	67.0	P
200000	32.0	0.0	58.0	P

Test Passed

Filter Test 1/3octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

Test 1/3 octave filter X= 12 fexact=15848.932Hz class 1

Nominal f[Hz]	Measured L[dB]	LoLim [dB]	HiLim [dB]	Result [P/F]
2939.37	43.9	0.0	58.0	P
5190.16	60.8	0.0	67.0	P
8422.54	79.5	0.0	86.0	P
12244.5	105.1	0.0	110.5	P
14125.4	124.3	123.0	126.0	P
14574.3	127.2	126.7	128.3	P
15012.0	127.9	127.4	128.3	P
15437.2	128.0	127.6	128.3	P
15848.9	128.0	127.7	128.3	P
16271.7	127.9	127.6	128.3	P
16732.6	127.9	127.4	128.3	P
17235.0	127.1	126.7	128.3	P
17782.8	123.9	123.0	126.0	P
20514.4	104.7	0.0	110.5	P
29823.4	30.9	0.0	86.0	P
48397.1	32.0	0.0	67.0	P
85456.6	42.5	0.0	58.0	P

Test 1/3 octave filter X= 13 fexact=19952.623Hz class 1

Filter Test 1/3octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

Nominal f[Hz]	Measured L[dB]	LoLim [dB]	HiLim [dB]	Result [P/F]
3700.45	41.4	0.0	58.0	P
6534.02	57.6	0.0	67.0	P
10603.4	77.3	0.0	86.0	P
15414.9	105.1	0.0	110.5	P
17782.8	125.2	123.0	126.0	P
18348.0	127.4	126.7	128.3	P
18898.9	127.9	127.4	128.3	P
19434.2	128.0	127.6	128.3	P
19952.6	127.9	127.7	128.3	P
20484.8	128.0	127.6	128.3	P
21065.1	127.9	127.4	128.3	P
21697.6	127.2	126.7	128.3	P
22387.2	123.6	123.0	126.0	P
25826.2	86.8	0.0	110.5	P
37545.4	39.5	0.0	86.0	P
60928.4	36.4	0.0	67.0	P
107584	35.8	0.0	58.0	P

Test Passed

Combined electrical and acoustical test - IEC 61672-3 Ed.2.0 Clause 13

A-Weighted results: Free field

Frequency	SLM Val (dB)	SLM U (dB)	Microphone Val (dB)	Microphone U (dB)	Case Val (dB)	Case U (dB)	Wind Screen Val (dB)	Wind Screen U (dB)	Uncert (dB)	Tol (dB)	Result (dB)	
63 Hz	-0.1	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	-0.1	P
125 Hz	0.0	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	0.0	P
250 Hz	-0.1	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	-0.1	P
500 Hz	0.0	0.2	-0.1	0.1			0.0	0.1	0.2	+-1.0	-0.1	P
1 kHz	0.0	0.2	0.0	0.1			0.1	0.1	0.2	+-0.7	0.1	P
2 kHz	0.0	0.2	0.0	0.2			0.3	0.2	0.4	+-1.0	0.3	P
4 kHz	0.0	0.2	0.1	0.2			0.3	0.2	0.4	+-1.0	0.4	P
8 kHz	0.1	0.2	0.2	0.4			0.0	0.3	0.5	+1.5/-2.5	0.3	P
16 kHz	-1.2	0.2	0.3	0.7			-0.7	0.4	0.8	+2.5/-16.0	-1.6	P

C-Weighted results: Free field

Frequency	SLM Val (dB)	SLM U (dB)	Microphone Val (dB)	Microphone U (dB)	Case Val (dB)	Case U (dB)	Wind Screen Val (dB)	Wind Screen U (dB)	Uncert (dB)	Tol (dB)	Result (dB)	
63 Hz	-0.1	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	-0.1	P
125 Hz	0.0	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	0.0	P
250 Hz	0.0	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	0.0	P
500 Hz	0.0	0.2	-0.1	0.1			0.0	0.1	0.2	+-1.0	-0.1	P
1 kHz	0.0	0.2	0.0	0.1			0.1	0.1	0.2	+-0.7	0.1	P
2 kHz	0.0	0.2	0.0	0.2			0.3	0.2	0.4	+-1.0	0.3	P
4 kHz	0.0	0.2	0.1	0.2			0.3	0.2	0.4	+-1.0	0.4	P
8 kHz	0.1	0.2	0.2	0.4			0.0	0.3	0.5	+1.5/-2.5	0.3	P
16 kHz	-1.2	0.2	0.3	0.7			-0.7	0.4	0.8	+2.5/-16.0	-1.6	P

Z-Weighted results: Free field

Frequency	SLM Val (dB)	SLM U (dB)	Microphone Val (dB)	Microphone U (dB)	Case Val (dB)	Case U (dB)	Wind Screen Val (dB)	Wind Screen U (dB)	Uncert (dB)	Tol (dB)	Result (dB)	
63 Hz	-0.1	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	-0.1	P
125 Hz	0.0	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	0.0	P
250 Hz	0.0	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	0.0	P

Combined electrical and acoustical test - IEC 61672-3 Ed.2.0 Clause 13

500 Hz	0.0	0.2	-0.1	0.1	0.0	0.1	0.2	+-1.0	-0.1	P
1 kHz	0.0	0.2	0.0	0.1	0.1	0.1	0.2	+-0.7	0.1	P
2 kHz	0.0	0.2	0.0	0.2	0.3	0.2	0.4	+-1.0	0.3	P
4 kHz	0.0	0.2	0.1	0.2	0.3	0.2	0.4	+-1.0	0.4	P
8 kHz	0.0	0.2	0.2	0.4	0.0	0.3	0.5	+1.5/-2.5	0.2	P
16 kHz	0.0	0.2	0.3	0.7	-0.7	0.4	0.8	+2.5/-16.0	-0.4	P

The actual frequency response of Rion / UC-59 07650 has been used for the calculations.
Test Passed
The overall frequency response of the sound level meter, typical wind screen response and microphone response has shown to conform with the requirements in IEC 61672-3 for a class 1 sound level meter.

Scantek, Inc.
CALIBRATION LABORATORY

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

NVLAP®
NVLAP Lab Code: 200625-0

Calibration Certificate No.36511

Instrument: **Microphone**
Model: **UC-59**
Manufacturer: **Rion**
Serial number: **07650**
Composed of:

Customer: **Paul Carpenter Associates, Inc.**
Tel/Fax: **973-822-8221 x21/-833-9221**

Date Calibrated: **6/27/2016** *Cal Due:* **6/27/2017**

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

Contains non-accredited tests: __Yes _X_ No
Address: **7 Columbia Turnpike, Suite 101**
Florham Park, NJ 07932

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	25747	Jul 2, 2015	Scantek, Inc./ NVLAP	Jul 2, 2016
DS-360-SRS	Function Generator	61646	Aug 12, 2015	ACR Env./ A2LA	Aug 12, 2017
34401A-Agilent Technologies	Digital Voltmeter	MY41022043	Aug 13, 2015	ACR Env. / A2LA	Aug 13, 2016
DPI 141-Druck	Pressure Indicator	790/00-04	Nov 18, 2014	ACR Env./ A2LA	Nov 18, 2016
HMP233-Vaisala Oyj	Humidity & Temp. Transmitter	V3820001	Oct 1, 2015	ACR Env./ A2LA	Apr 1, 2017
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1253-Norsonic	Calibrator	28326	Nov 10, 2015	Scantek, Inc./ NVLAP	Nov 10, 2016
1203-Norsonic	Preamplifier	14059	Jan 4, 2016	Scantek, Inc./ NVLAP	Jan 4, 2017
4192-Brüel&Kjær	Microphone	2854675	Nov 11, 2015	NPL-UK / UKAS	Nov 11,2016

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

Calibrated by:	Jeremy Gotwalt	Authorized signatory:	William D. Gallagher
Signature		Signature	
Date	6/27/16	Date	6/27/2016

Document stored as: Z:\Calibration Lab\Mic 2016\Rion59_07650_M1.doc

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] Parameters are certified at actual environmental 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 (%)
22.4 ± 1.2	100.60 ± 0.003	52.7 ± 3.4

Main measured parameters:

Tone frequency (Hz)	Measured[4] /Acceptable Open circuit sensitivity (dB re 1V/Pa)	Sensitivity (mV/Pa)
250	-26.79 ± 0.12/ -27.0 ±2.0	45.76

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

Tests made with following attachments to instrument and auxiliary devices:

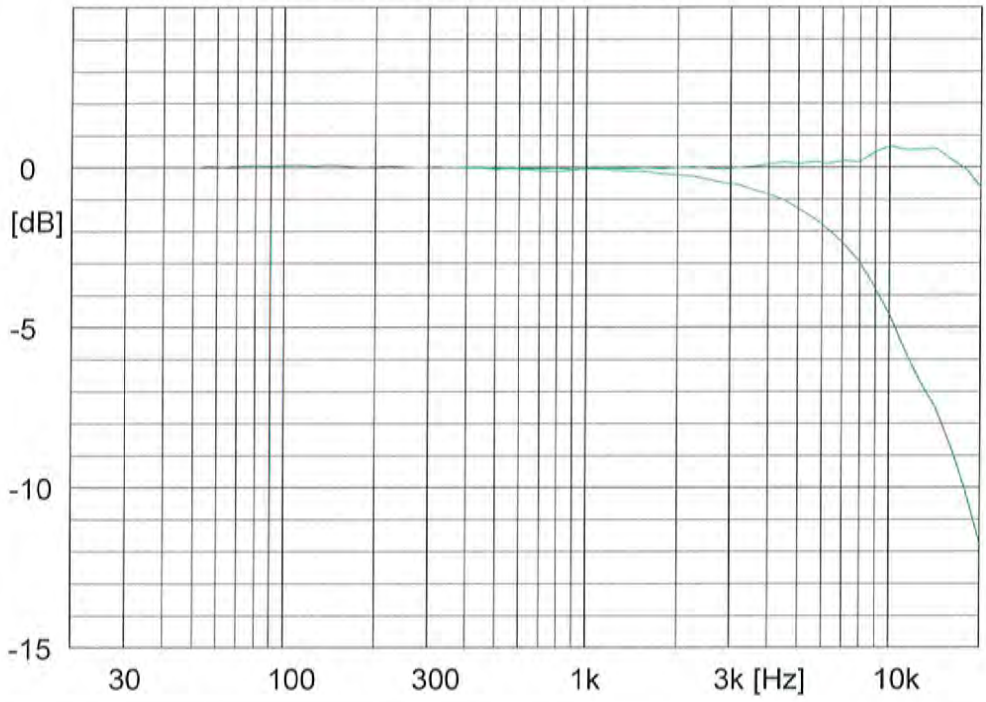
Protection grid mounted for sensitivity measurements
Actuator type: G.R.A.S. RA0014

Measured Data: Found on Microphone Test Report # 36511 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.:36511



Rion
Type: UC-59

Serial no: 07650

Sensitivity: 45.76 mV/Pa
-26.79 ±0.12 dB re. 1 V/Pa

Date: 6/27/2016

Signature:

Measurement conditions:

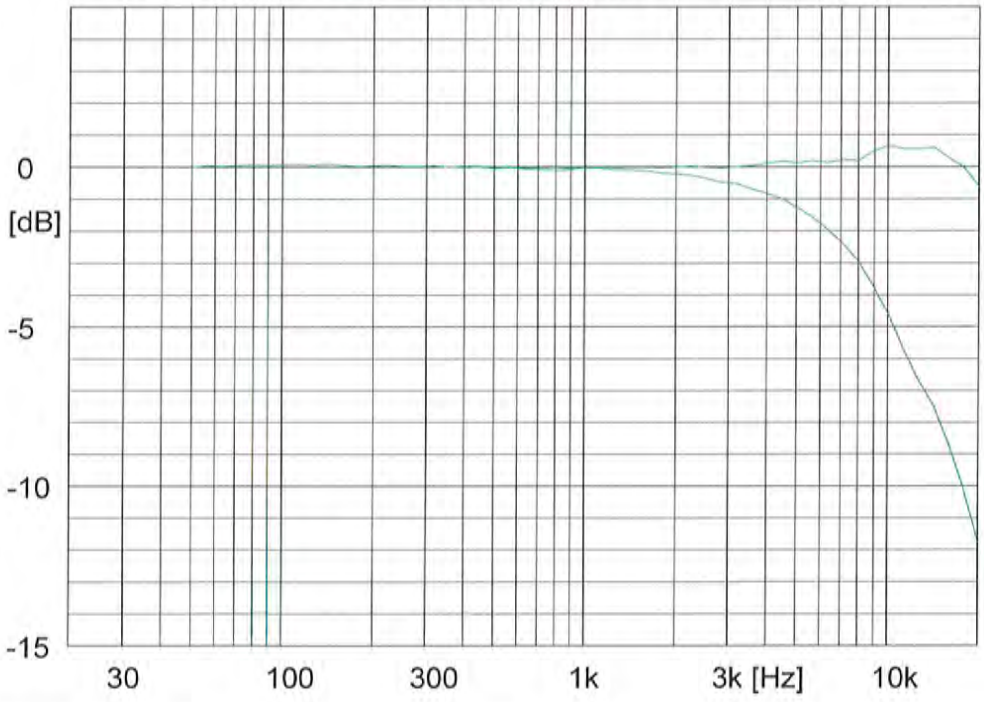
Polarisation voltage:	0.0 V
Pressure:	100.60 ±0.00 kPa
Temperature:	22.4 ±1.2 °C
Relative humidity:	52.7 ±3.4 %RH

Results are normalized to
the measurement conditions.

Free Field response
Actuator response

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

Microphone Test Report No.:36511



Rion
Type: UC-59

Serial no: 07650

Sensitivity: 45.76 mV/Pa
-26.79 ±0.12 dB re. 1 V/Pa

Date: 6/27/2016

Signature:

Measurement conditions:

Polarisation voltage:	0.0 V
Pressure:	100.60 ±0.00 kPa
Temperature:	22.4 ±1.2 °C
Relative humidity:	52.7 ±3.4 %RH

Results are normalized to
the measurement conditions.

Free Field response
Actuator response

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

Comment:
(Z:\Calibration Lab\Mic 2016\Rion59_07650_M1.nmf)

Scantek, Inc.
CALIBRATION LABORATORY

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

NVLAP®
NVLAP Lab Code: 200625-0

Calibration Certificate No.36824

Instrument: **Sound Level Meter**
Model: **NL52**
Manufacturer: **Rion**
Serial number: **01243609**
Tested with: **Microphone UC-59 s/n 07651**
Preamplifier NH25 s/n 43638
Type (class): **1**
Customer: **Paul Carpenter Associates, Inc.**
Tel/Fax: **973-822-8221 x21 / -833-9221**

Date Calibrated: **8/17/2016** *Cal Due:* **8/17/2017**

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: **7 Columbia Turnpike, Suite 101**
Florham Park, NJ 07932

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/22/2012
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	31061	Jul 27, 2016	Scantek, Inc./ NVLAP	Jul 27, 2017
DS-360-SRS	Function Generator	88077	Sep 9, 2014	ACR Env./ A2LA	Sep 9, 2016
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Sep 24, 2015	ACR Env./ A2LA	Sep 24, 2016
HM30-Thommen	Meteo Station	1040170/39633	Oct 23, 2015	ACR Env./ A2LA	Oct 23, 2016
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Nov 10, 2015	Scantek, Inc./ NVLAP	Nov 10, 2016

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	100.35	56.9

Calibrated by:	Jeremy Gotwalt	**Authorized signatory:**	Valentin Buzduga
Signature		Signature	
Date	8/17/16	Date	8/18/2016

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
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	0.1
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
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: Rion UC-59 s/n 07651 for acoustical test
Preamplifier: Rion NH25 s/n 43638 for all tests
Other: line adaptor ADP005 (18pF) for electrical tests
Accompanying acoustical calibrator: none
Windscreen: Rion WS-10

Measured Data: in Test Report # 36824 of 10 pages.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA

Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

Summary of Test Report No.:36824

Rion Type: NL52 Serial no: 01243609

Customer:	**Paul Carpenter Associates, Inc.**
Address:	**7 Columbia Turnpike, Suite 101, Florham Park, NJ 07932**
Contact Person:	**Bryan Fuerte**
Phone No.:	**973-822-8221 x21**
Fax No.:	**973-833-9221**

Instrument software version:	NL-52 v1.5, NX-42EX v1.5, NX-42RT v1.5			
Microphone:	Rion	Type: UC-59	Serial no: 07651	Sens:-26.82dB
Preamplifier	Rion	Type: NH25	Serial no: 43638	
Wind screen	Rion	Type: WS-10		

Measurement Results:

Indication at the calibration check frequency - IEC61672-3 Ed.2 Clause 10	Passed
Self-generated noise - IEC 61672-3 Ed.2 Clause 11	Passed
Frequency weightings: A Network - IEC 61672-3 Ed.2.0 Clause 13	Passed
Frequency weightings: C Network - IEC 61672-3 Ed.2.0 Clause 13	Passed
Frequency weightings: Z Network - IEC 61672-3 Ed.2.0 Clause 13	Passed
Frequency and time weightings at 1 kHz IEC 61672-3 Ed.2.0 Clause 14	Passed
Level linearity on the reference level range - IEC 61672-3 Ed.2 Clause 16	Passed
Toneburst response - IEC 61672-3 Ed.2.0 Clause 18	Passed
Peak C sound level - IEC 61672-3 Ed.2.0 Clause 19	Passed
Overload indication - IEC 61672-3 Ed.2.0 Clause 20	Passed
High level stability test - IEC 61672-3 Ed.2.0 Clause 21	Passed
Long term stability test - IEC 61672-3 Ed.2.0 Clause 15	Passed
Filter Test 1/1octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3	Passed
Filter Test 1/3octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3	Passed
Combined electrical and acoustical test - IEC 61672-3 Ed.2.0 Clause 13	Passed

Environmental conditions:

Pressure:	Temperature:	Relative humidity:
100.35	21.8	56.9

Date of calibration: 8/17/2016
Date of issue: 8/17/2016
Supervisor: Valentin Buzduga
Measurements performed by:

Jeremy Gotwalt

Software version: 6.1 T

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

Test Report No.:36824

Manufacturer:	Rion
Instrument type:	NL52
Serial no:	01243609
Customer:	Paul Carpenter Associates, Inc.
Department:	
Order No:	
Contact Person:	Bryan Fuerte
Address:	7 Columbia Turnpike, Suite 101, Florham Park, NJ 07932

Environmental conditions:

Pressure:	100.35
Temperature:	21.8
Relative humidity:	56.9

Supervisor	Valentin Buzduga
Engineer	Jeremy Gotwalt
Date:	8/17/2016

Measurement Results:

Indication at the calibration check frequency - IEC61672-3 Ed.2 Clause 10

```
Reference Calibrator: WSC4 - NOR1251-30878
Reference calibrator level: 114.06
Before calibration:
  Environmental corrections: 0.00
  Other corrections: -0.02
  Notional level: 114.04
Reference calibrator level before calibration: 114.0
After calibration:
  Environmental corrections: 0.00
  Other corrections: -0.02
  Notional level: 114.04
Reference calibrator level after calibration: 114.0
Associated Calibrator:  -  -
Associated calibrator level: Not calibrated
Test Passed
```

Self-generated noise - IEC 61672-3 Ed.2 Clause 11

Network	Level (dB)	Max (dB)	Uncert. (dB)	Result	Comment
A	10.6	17.0	0.3	P	Equivalent capacity
C	14.5	25.0	0.3	P	Equivalent capacity
Z	20.1	30.0	0.3	P	Equivalent capacity

Test Passed

Frequency weightings: A Network - IEC 61672-3 Ed.2.0 Clause 13

Freq (Hz)	Ref. (dB)	Meas. (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
63.1	93.0	92.9	1.0	-1.0	0.2	-0.1	P
125.9	93.0	93.0	1.0	-1.0	0.2	0.0	P
251.2	93.0	92.9	1.0	-1.0	0.2	-0.1	P
501.2	93.0	93.0	1.0	-1.0	0.2	0.0	P
1000.0	93.0	93.0	0.7	-0.7	0.2	0.0	P
1995.3	93.0	93.0	1.0	-1.0	0.2	0.0	P
3981.1	93.0	93.0	1.0	-1.0	0.2	0.0	P
7943.3	93.0	93.1	1.5	-2.5	0.2	0.1	P
15848.9	93.0	91.8	2.5	-16.0	0.2	-1.2	P

Test Passed

Frequency weightings: C Network - IEC 61672-3 Ed.2.0 Clause 13

Freq	Ref. Level	Meas. Value	Tol.		Uncert.	Dev.	Result
(Hz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	
63.1	93.0	93.0	1.0	-1.0	0.2	0.0	P
125.9	93.0	93.1	1.0	-1.0	0.2	0.1	P
251.2	93.0	93.0	1.0	-1.0	0.2	0.0	P
501.2	93.0	93.1	1.0	-1.0	0.2	0.1	P
1000.0	93.0	93.0	0.7	-0.7	0.2	0.0	P
1995.3	93.0	93.0	1.0	-1.0	0.2	0.0	P
3981.1	93.0	93.0	1.0	-1.0	0.2	0.0	P
7943.3	93.0	93.1	1.5	-2.5	0.2	0.1	P
15848.9	93.0	91.8	2.5	-16.0	0.2	-1.2	P

Test Passed

Frequency weightings: Z Network - IEC 61672-3 Ed.2.0 Clause 13

Freq	Ref. Level	Meas. Value	Tol.		Uncert.	Dev.	Result
(Hz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	
63.1	93.0	92.9	1.0	-1.0	0.2	-0.1	P
125.9	93.0	93.0	1.0	-1.0	0.2	0.0	P
251.2	93.0	93.0	1.0	-1.0	0.2	0.0	P
501.2	93.0	93.0	1.0	-1.0	0.2	0.0	P
1000.0	93.0	93.0	0.7	-0.7	0.2	0.0	P
1995.3	93.0	93.0	1.0	-1.0	0.2	0.0	P
3981.1	93.0	93.0	1.0	-1.0	0.2	0.0	P
7943.3	93.0	93.0	1.5	-2.5	0.2	0.0	P
15848.9	93.0	93.0	2.5	-16.0	0.2	0.0	P

Test Passed

Frequency and time weightings at 1 kHz IEC 61672-3 Ed.2.0 Clause 14

Weightings		Ref.	Measured	Tol.		Uncert.	Dev.	Result
Time	Netw	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	
Fast	A	94.0	94.0	0.1	-0.1	0.2	0.0	P
Fast	C	94.0	94.0	0.1	-0.1	0.2	0.0	P
Fast	Z	94.0	94.0	0.1	-0.1	0.2	0.0	P
Slow	A	94.0	94.0	0.1	-0.1	0.2	0.0	P
Leq	A	94.0	94.0	0.1	-0.1	0.2	0.0	P
SEL	A	104.0	104.0	0.1	-0.1	0.2	0.0	P

Test Passed

Level linearity on the reference level range - IEC 61672-3 Ed.2 Clause 16

Ref. (dB)	Measured (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
Full scale setting: 130dB						
The following measurements are SPL measurements						
Measured at 31.5 Hz						
84.0	84.1	0.8	-0.8	0.25	0.1	P
89.0	89.1	0.8	-0.8	0.25	0.1	P
94.6	94.6	0.8	-0.8	0.25	0.0	P
95.6	95.7	0.8	-0.8	0.25	0.1	P
96.6	96.7	0.8	-0.8	0.25	0.1	P
97.6	97.6	0.8	-0.8	0.25	0.0	P
98.6	98.7	0.8	-0.8	0.25	0.1	P
84.0	84.7	0.8	-0.8	0.25	0.7	P
79.0	79.2	0.8	-0.8	0.25	0.2	P
74.0	74.1	0.8	-0.8	0.25	0.1	P
69.0	69.2	0.8	-0.8	0.25	0.2	P
64.0	64.1	0.8	-0.8	0.25	0.1	P
59.0	59.2	0.8	-0.8	0.25	0.2	P
54.0	54.1	0.8	-0.8	0.25	0.1	P
49.0	49.2	0.8	-0.8	0.25	0.2	P
44.0	44.0	0.8	-0.8	0.25	0.0	P
39.0	39.1	0.8	-0.8	0.25	0.1	P
34.0	34.2	0.8	-0.8	0.25	0.2	P
29.0	29.1	0.8	-0.8	0.25	0.1	P
28.0	28.0	0.8	-0.8	0.25	0.0	P
27.0	26.9	0.8	-0.8	0.25	-0.1	P
26.0	25.9	0.8	-0.8	0.25	-0.1	P
25.0	24.9	0.8	-0.8	0.25	-0.1	P
Measured at 1 kHz						
94.0	94.0	0.8	-0.8	0.25	0.0	P
99.0	99.1	0.8	-0.8	0.25	0.1	P
104.0	104.1	0.8	-0.8	0.25	0.1	P
109.0	109.0	0.8	-0.8	0.25	0.0	P
114.0	114.0	0.8	-0.8	0.25	0.0	P
119.0	119.1	0.8	-0.8	0.25	0.1	P
124.0	124.0	0.8	-0.8	0.25	0.0	P
129.0	129.0	0.8	-0.8	0.25	0.0	P
134.0	134.1	0.8	-0.8	0.25	0.1	P
135.0	135.0	0.8	-0.8	0.25	0.0	P
136.0	136.0	0.8	-0.8	0.25	0.0	P
137.0	137.0	0.8	-0.8	0.25	0.0	P
138.0	138.0	0.8	-0.8	0.25	0.0	P
94.0	94.0	0.8	-0.8	0.25	0.0	P
89.0	89.0	0.8	-0.8	0.25	0.0	P
84.0	84.0	0.8	-0.8	0.25	0.0	P
79.0	79.0	0.8	-0.8	0.25	0.0	P
74.0	74.0	0.8	-0.8	0.25	0.0	P
69.0	69.0	0.8	-0.8	0.25	0.0	P
64.0	64.0	0.8	-0.8	0.25	0.0	P
59.0	59.0	0.8	-0.8	0.25	0.0	P
54.0	54.0	0.8	-0.8	0.25	0.0	P
49.0	49.0	0.8	-0.8	0.25	0.0	P
44.0	44.0	0.8	-0.8	0.25	0.0	P
39.0	39.0	0.8	-0.8	0.25	0.0	P
34.0	34.0	0.8	-0.8	0.25	0.0	P
29.0	29.0	0.8	-0.8	0.25	0.0	P
28.0	28.1	0.8	-0.8	0.25	0.1	P

Level linearity on the reference level range - IEC 61672-3 Ed.2 Clause 16

Ref. (dB)	Measured (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
27.0	27.0	0.8	-0.8	0.25	0.0	P
26.0	26.0	0.8	-0.8	0.25	0.0	P
25.0	25.0	0.8	-0.8	0.25	0.0	P
Measured at 8 kHz						
94.0	94.0	0.8	-0.8	0.25	0.0	P
99.0	99.0	0.8	-0.8	0.25	0.0	P
104.0	104.0	0.8	-0.8	0.25	0.0	P
109.0	109.0	0.8	-0.8	0.25	0.0	P
114.0	114.0	0.8	-0.8	0.25	0.0	P
119.0	119.0	0.8	-0.8	0.25	0.0	P
124.0	124.0	0.8	-0.8	0.25	0.0	P
129.0	129.0	0.8	-0.8	0.25	0.0	P
132.9	132.9	0.8	-0.8	0.25	0.0	P
133.9	133.9	0.8	-0.8	0.25	0.0	P
134.9	134.9	0.8	-0.8	0.25	0.0	P
135.9	135.9	0.8	-0.8	0.25	0.0	P
136.9	136.9	0.8	-0.8	0.25	0.0	P
94.0	94.0	0.8	-0.8	0.25	0.0	P
89.0	89.0	0.8	-0.8	0.25	0.0	P
84.0	84.0	0.8	-0.8	0.25	0.0	P
79.0	79.0	0.8	-0.8	0.25	0.0	P
74.0	74.0	0.8	-0.8	0.25	0.0	P
69.0	69.0	0.8	-0.8	0.25	0.0	P
64.0	64.0	0.8	-0.8	0.25	0.0	P
59.0	59.0	0.8	-0.8	0.25	0.0	P
54.0	54.0	0.8	-0.8	0.25	0.0	P
49.0	49.0	0.8	-0.8	0.25	0.0	P
44.0	44.0	0.8	-0.8	0.25	0.0	P
39.0	39.0	0.8	-0.8	0.25	0.0	P
34.0	34.0	0.8	-0.8	0.25	0.0	P
29.0	29.0	0.8	-0.8	0.25	0.0	P
28.0	28.0	0.8	-0.8	0.25	0.0	P
27.0	27.0	0.8	-0.8	0.25	0.0	P
26.0	26.0	0.8	-0.8	0.25	0.0	P
25.0	24.9	0.8	-0.8	0.25	-0.1	P

Test Passed

Toneburst response - IEC 61672-3 Ed.2.0 Clause 18

Burst type	Ref. (dB)	Measured (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
Fast 200 mSec	135.0	135.0	0.5	-0.5	0.3	0.0	P
Fast 2.0 mSec	118.0	118.0	1.0	-1.5	0.3	0.0	P
Fast 0.25 mSec	109.0	108.9	1.0	-3.0	0.3	-0.1	P
Slow 200 mSec	128.6	128.6	0.5	-0.5	0.3	0.0	P
Slow 2.0 mSec	109.0	109.0	1.0	-3.0	0.3	0.0	P
SEL 200 mSec	129.0	129.0	0.5	-0.5	0.3	0.0	P
SEL 2.0 mSec	109.0	109.0	1.0	-1.5	0.3	0.0	P
SEL 0.25 mSec	100.0	99.9	1.0	-3.0	0.3	-0.1	P

Test Passed

Peak C sound level - IEC 61672-3 Ed.2.0 Clause 19

Pulse Type	Pulse Freq. (Hz)	Ref. RMS (dB)	Ref. Peak (dB)	Measured Value (dB)	Tol. (+/-dB)	Uncert. (dB)	Dev. (dB)	Result
1 cycle	8k	130.0	133.4	133.0	2.0	0.35	-0.4	P
Pos 1/2 cycle	500	133.0	135.4	135.1	1.0	0.35	-0.3	P
Neg 1/2 cycle	500	133.0	135.4	135.1	1.0	0.35	-0.3	P

Test Passed

Overload indication - IEC 61672-3 Ed.2.0 Clause 20

	Measured (dB)	Tol. (+/-dB)	Uncert. (dB)	Result
Level difference of positive and negative pulses:	0.1	1.5	0.25	P
Positive 1/2 cycle 4 kHz. Overload occurred at:	139.4			
Negative 1/2 cycle 4 kHz. Overload occurred at:	139.5			

Test Passed

High level stability test - IEC 61672-3 Ed.2.0 Clause 21

Test signal: Sine wave at 1 kHz

Initial level (dB)	Final level (dB)	Diff. (dB)	Tol. value (dB)	Uncert. (dB)	Result
137.0	137.0	0.0	0.1	0.1	P

Test Passed

Long term stability test - IEC 61672-3 Ed.2.0 Clause 15

Test signal: Sine wave at 1 kHz

Time inteval (mm:SS)	StartLevel (dB)	StopLevel (dB)	Difference (dB)	Tolerence (dB)	Result
25:15	94.0	94.0	0.0	0.1	P

Test Passed

Filter Test 1/1octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

Test 1/1 octave filter X= 3 fexact=7943.282Hz class 1

Nominal f[Hz]	Measured L[dB]	LoLim [dB]	HiLim [dB]	Result [P/F]
501.187	30.2	0.0	58.0	P
1000.00	30.3	0.0	67.0	P
1995.26	41.6	0.0	86.0	P
3981.07	88.2	0.0	110.5	P
5623.41	124.8	123.0	126.0	P
6130.56	127.9	126.7	128.3	P

Filter Test 1/1octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

6683.44	128.0	127.4	128.3	P
7286.18	128.0	127.6	128.3	P
7943.28	128.0	127.7	128.3	P
8659.64	128.0	127.6	128.3	P
9440.61	128.0	127.4	128.3	P
10292.0	127.9	126.7	128.3	P
11220.2	124.8	123.0	126.0	P
15848.9	87.4	0.0	110.5	P
31622.8	31.1	0.0	86.0	P
63095.7	31.4	0.0	67.0	P
125893	27.4	0.0	58.0	P

Test 1/1 octave filter X= 4 fexact=15848.932Hz class 1

Nominal f[Hz]	Measured L[dB]	LoLim [dB]	HiLim [dB]	Result [P/F]
1000.00	36.7	0.0	58.0	P
1995.26	36.6	0.0	67.0	P
3981.07	40.2	0.0	86.0	P
7943.28	83.6	0.0	110.5	P
11220.2	123.9	123.0	126.0	P
12232.1	127.8	126.7	128.3	P
13335.2	128.0	127.4	128.3	P
14537.8	128.0	127.6	128.3	P
15848.9	128.0	127.7	128.3	P
17278.3	128.0	127.6	128.3	P
18836.5	128.0	127.4	128.3	P
20535.3	127.5	126.7	128.3	P
22387.2	124.2	123.0	126.0	P
31622.8	45.0	0.0	110.5	P
63095.7	37.6	0.0	86.0	P
125893	32.8	0.0	67.0	P
200000	31.0	0.0	58.0	P

Test Passed

Filter Test 1/3octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

Test 1/3 octave filter X= 12 fexact=15848.932Hz class 1

Nominal f[Hz]	Measured L[dB]	LoLim [dB]	HiLim [dB]	Result [P/F]
2939.37	43.9	0.0	58.0	P
5190.16	60.8	0.0	67.0	P
8422.54	79.6	0.0	86.0	P
12244.5	105.1	0.0	110.5	P
14125.4	124.3	123.0	126.0	P
14574.3	127.2	126.7	128.3	P
15012.0	127.9	127.4	128.3	P
15437.2	128.0	127.6	128.3	P
15848.9	128.0	127.7	128.3	P
16271.7	128.0	127.6	128.3	P
16732.6	127.9	127.4	128.3	P
17235.0	127.1	126.7	128.3	P
17782.8	124.0	123.0	126.0	P
20514.4	104.8	0.0	110.5	P
29823.4	30.8	0.0	86.0	P
48397.1	32.7	0.0	67.0	P
85456.6	39.2	0.0	58.0	P

Test 1/3 octave filter X= 13 fexact=19952.623Hz class 1

Filter Test 1/3octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

Nominal f[Hz]	Measured L[dB]	LoLim [dB]	HiLim [dB]	Result [P/F]
3700.45	41.4	0.0	58.0	P
6534.02	57.6	0.0	67.0	P
10603.4	77.4	0.0	86.0	P
15414.9	105.1	0.0	110.5	P
17782.8	125.2	123.0	126.0	P
18348.0	127.4	126.7	128.3	P
18898.9	127.9	127.4	128.3	P
19434.2	128.0	127.6	128.3	P
19952.6	128.0	127.7	128.3	P
20484.8	128.0	127.6	128.3	P
21065.1	128.0	127.4	128.3	P
21697.6	127.2	126.7	128.3	P
22387.2	123.6	123.0	126.0	P
25826.2	86.8	0.0	110.5	P
37545.4	36.1	0.0	86.0	P
60928.4	35.2	0.0	67.0	P
107584	35.1	0.0	58.0	P

Test Passed
RIONL52.ini
RIONL52.ini

Combined electrical and acoustical test - IEC 61672-3 Ed.2.0 Clause 13

A-Weighted results: Free field

Frequency	SLM Val (dB)	SLM U (dB)	Microphone Val (dB)	Microphone U (dB)	Case Val (dB)	Case U (dB)	Refl. Wind Screen Val (dB)	Refl. Wind Screen U (dB)	Uncert (dB)	Tol (dB)	Result (dB)	
63 Hz	-0.1	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	-0.1	P
125 Hz	0.0	0.2	0.1	0.1			0.0	0.1	0.2	+-1.0	0.1	P
250 Hz	-0.1	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	-0.1	P
500 Hz	0.0	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	0.0	P
1 kHz	0.0	0.2	0.0	0.1			0.1	0.1	0.2	+-0.7	0.1	P
2 kHz	0.0	0.2	0.0	0.2			0.3	0.2	0.4	+-1.0	0.3	P
4 kHz	0.0	0.2	0.1	0.2			0.3	0.2	0.4	+-1.0	0.4	P
8 kHz	0.1	0.2	0.2	0.4			0.0	0.3	0.5	+1.5/-2.5	0.3	P
16 kHz	-1.2	0.2	0.0	0.7			-0.7	0.4	0.8	+2.5/-16.0	-1.9	P

C-Weighted results: Free field

Frequency	SLM Val (dB)	SLM U (dB)	Microphone Val (dB)	Microphone U (dB)	Case Val (dB)	Case U (dB)	Refl. Wind Screen Val (dB)	Refl. Wind Screen U (dB)	Uncert (dB)	Tol (dB)	Result (dB)	
63 Hz	0.0	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	0.0	P
125 Hz	0.1	0.2	0.1	0.1			0.0	0.1	0.2	+-1.0	0.2	P
250 Hz	0.0	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	0.0	P
500 Hz	0.1	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	0.1	P
1 kHz	0.0	0.2	0.0	0.1			0.1	0.1	0.2	+-0.7	0.1	P
2 kHz	0.0	0.2	0.0	0.2			0.3	0.2	0.4	+-1.0	0.3	P
4 kHz	0.0	0.2	0.1	0.2			0.3	0.2	0.4	+-1.0	0.4	P
8 kHz	0.1	0.2	0.2	0.4			0.0	0.3	0.5	+1.5/-2.5	0.3	P
16 kHz	-1.2	0.2	0.0	0.7			-0.7	0.4	0.8	+2.5/-16.0	-1.9	P

Z-Weighted results: Free field

Frequency	SLM Val (dB)	SLM U (dB)	Microphone Val (dB)	Microphone U (dB)	Case Val (dB)	Case U (dB)	Refl. Wind Screen Val (dB)	Refl. Wind Screen U (dB)	Uncert (dB)	Tol (dB)	Result (dB)	
63 Hz	-0.1	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	-0.1	P

Combined electrical and acoustical test - IEC 61672-3 Ed.2.0 Clause 13

125 Hz	0.0	0.2	0.1	0.1	0.0	0.1	0.2	+-1.0	0.1	P
250 Hz	0.0	0.2	0.0	0.1	0.0	0.1	0.2	+-1.0	0.0	P
500 Hz	0.0	0.2	0.0	0.1	0.0	0.1	0.2	+-1.0	0.0	P
1 kHz	0.0	0.2	0.0	0.1	0.1	0.1	0.2	+-0.7	0.1	P
2 kHz	0.0	0.2	0.0	0.2	0.3	0.2	0.4	+-1.0	0.3	P
4 kHz	0.0	0.2	0.1	0.2	0.3	0.2	0.4	+-1.0	0.4	P
8 kHz	0.0	0.2	0.2	0.4	0.0	0.3	0.5	+1.5/-2.5	0.2	P
16 kHz	0.0	0.2	0.0	0.7	-0.7	0.4	0.8	+2.5/-16.0	-0.7	P

The actual frequency response of Rion / UC-59 07651 has been used for the calculations.
Test Passed
The overall frequency response of the sound level meter, typical wind screen response and microphone response has shown to conform with the requirements in IEC 61672-3 for a class 1 sound level meter.
RIONL52.ini

JTG

Scantek, Inc.
CALIBRATION LABORATORY

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

NVLAP®
NVLAP Lab Code: 200625-0

Calibration Certificate No.36825

Instrument:	**Microphone**	*Date Calibrated:*	**8/17/2016**	*Cal Due:*	**8/17/2017**
Model:	**UC-59**	*Status:*	**Received**		**Sent**
Manufacturer:	**Rion**	*In tolerance:*	**X**		**X**
Serial number:	**07651**	*Out of tolerance:*			
Composed of:		*See comments:*			
		Contains non-accredited tests:	**__Yes _X_ No**		
Customer:	**Paul Carpenter Associates, Inc.**	*Address:*	**7 Columbia Turnpike, Suite 101**		
Tel/Fax:	**973-822-8221 x21/-833-9221**		**Florham Park, NJ 07932**		

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	31061	Jul 27, 2016	Scantek, Inc./ NVLAP	Jul 27, 2017
DS-360-SRS	Function Generator	88077	Sep 9, 2014	ACR Env./ A2LA	Sep 9, 2016
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Sep 24, 2015	ACR Env./ A2LA	Sep 24, 2016
HM30-Thommen	Meteo Station	1040170/39633	Oct 23, 2015	ACR Env./ A2LA	Oct 23, 2016
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1253-Norsonic	Calibrator	28326	Nov 10, 2015	Scantek, Inc./ NVLAP	Nov 10, 2016
1203-Norsonic	Preamplifier	92268	Oct 14, 2015	Scantek, Inc./ NVLAP	Oct 14, 2016
4180-Brüel&Kjær	Microphone	2246115	Oct 26, 2015	NPL-UK / UKAS	Oct 26, 2017

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

Calibrated by:	Jeremy Gotwalt	**Authorized signatory:**	Valentin Buzduga
Signature		Signature	
Date	8/17/16	Date	8/18/2016

Document stored as: Z:\Calibration Lab\Mic 2016\Rion59_07651_M1.doc

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] Parameters are certified at actual environmental 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 (%)
22.4 ± 1.0	100.42 ± 0.020	58.9 ± 2.0

Main measured parameters:

Tone frequency (Hz)	Measured[4] /Acceptable Open circuit sensitivity (dB re 1V/Pa)	Sensitivity (mV/Pa)
250	-26.82 ± 0.12/ -27.0 ±2.0	45.60

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

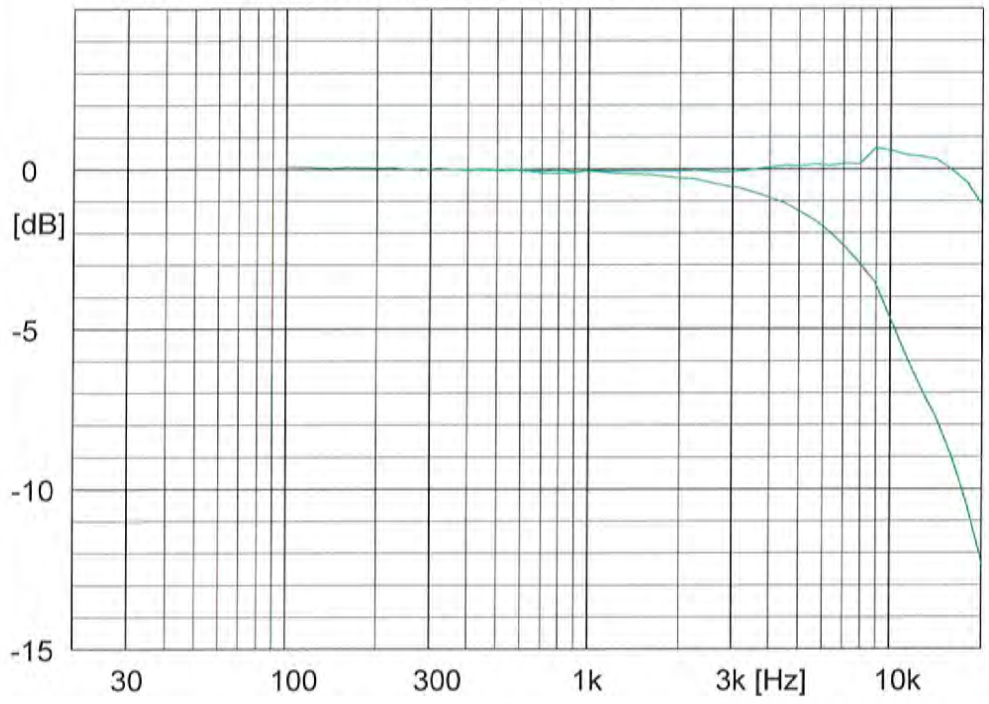
Tests made with following attachments to instrument and auxiliary devices:

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

Measured Data: Found on Microphone Test Report # 36825 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.:36825



Rion
Type: UC-59

Serial no: 07651

Sensitivity: 45.60 mV/Pa
-26.82 ±0.12 dB re. 1 V/Pa

Date: 8/17/2016

Signature:

Measurement conditions:

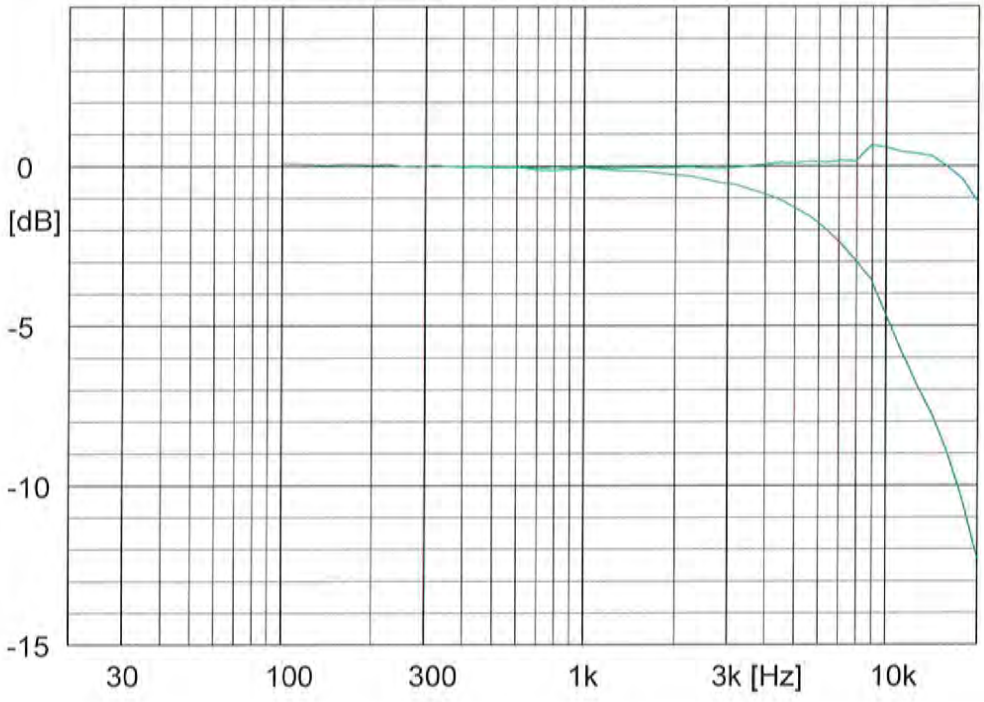
Polarisation voltage:	0.0 V
Pressure:	100.42 ±0.02 kPa
Temperature:	22.4 ±1.0 °C
Relative humidity:	58.9 ±2.0 %RH

Results are normalized to the measurement conditions.

Free field response
Actuator response

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

Microphone Test Report No.:36825



Rion
Type: UC-59

Serial no: 07651

Sensitivity: 45.60 mV/Pa
-26.82 ±0.12 dB re. 1 V/Pa

Date: 8/17/2016

Signature:

Measurement conditions:

Polarisation voltage:	0.0 V
Pressure:	100.42 ±0.02 kPa
Temperature:	22.4 ±1.0 °C
Relative humidity:	58.9 ±2.0 %RH

Results are normalized to the measurement conditions.

Free field response
Actuator response

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

Comment:
(Z:\Calibration Lab\Mic 2016\Rion59_07651_M1.nmf)

Scantek, Inc.
CALIBRATION LABORATORY

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

NVLAP®
NVLAP Lab Code: 200625-0

Calibration Certificate No.36054

Instrument:	**Sound Level Meter**	*Date Calibrated:* **4/22/2016**	*Cal Due:* **4/22/2017**
Model:	**NL52**	*Status:*	**Received** / **Sent**
Manufacturer:	**Rion**	*In tolerance:*	X / X
Serial number:	**012343610**	*Out of tolerance:*	
Tested with:	**Microphone UC-59 s/n 07652**	*See comments:*	X
	Preamplifier NH25 s/n 43639	*Contains non-accredited tests:*	__Yes X No
Type (class):	**1**	*Calibration service:*	__ Basic X Standard
Customer:	**Paul Carpenter Associates, Inc.**	*Address:*	**23 Vreeland Road, Suite 204, Florham Park, NJ 07932**
Tel/Fax:	**973-822-8221 x21 / 973-833-9221**		

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 23, 2015	Scantek, Inc./ NVLAP	Oct 23, 2016
DS-360-SRS	Function Generator	33584	Oct 20, 2015	ACR Env./ A2LA	Oct 20, 2017
34401A-Agilent Technologies	Digital Voltmeter	US36120731	Oct 6, 2015	ACR Env. / A2LA	Oct 6, 2016
HM30-Thommen	Meteo Station	1040170/39633	Oct 23, 2015	ACR Env./ A2LA	Oct 23, 2016
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Nov 10, 2015	Scantek, Inc./ NVLAP	Nov 10, 2016

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 (%)
23.9	99.81	50.7

Calibrated by:	Lydon Dawkins	**Authorized signatory:**	Valentin Buzduga
Signature	Lydon Dawkins	Signature	
Date	4/22/2016	Date	4/22/2016

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
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	0.1
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
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 instrument was tested after the case was repair at Scantek.

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: Rion UC-59 s/n 07652 for acoustical test
Preamplifier: Rion NH25 s/n 43639 for all tests
Other: line adaptor ADP005 (18pF) for electrical tests
Accompanying acoustical calibrator: none
Windscreen: none

Measured Data: in Test Report # 36054 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

Summary of Test Report No.:36054

Rion Type: NL52 Serial no: 012343610

Customer:	**Paul Carpenter Associates, Inc.**
Address:	**23 Vreeland Road, Suite 204, Florham Park, NJ 07932**
Contact Person:	**Bryan Fuerte**
Phone No.:	**973-822-8221 x21**
Fax No.:	**973-833-9221**

Instrument software version: NL-52 v1.5; NX-42EX v1.5; NX-42RT v1.5

Microphone:	Rion	Type: UC-59	Serial no: 07652	Sens:-26.64dB
Preamplifier	Rion	Type: NH25	Serial no: 43639	

Measurement Results:

Indication at the calibration check frequency - IEC61672-3 Ed.2 Clause 10	Passed
Self-generated noise - IEC 61672-3 Ed.2 Clause 11	Passed
Frequency weightings: A Network - IEC 61672-3 Ed.2.0 Clause 13	Passed
Frequency weightings: C Network - IEC 61672-3 Ed.2.0 Clause 13	Passed
Frequency weightings: Z Network - IEC 61672-3 Ed.2.0 Clause 13	Passed
Frequency and time weightings at 1 kHz IEC 61672-3 Ed.2.0 Clause 14	Passed
Level linearity on the reference level range - IEC 61672-3 Ed.2 Clause 16	Passed
Toneburst response - IEC 61672-3 Ed.2.0 Clause 18	Passed
Peak C sound level - IEC 61672-3 Ed.2.0 Clause 19	Passed
Overload indication - IEC 61672-3 Ed.2.0 Clause 20	Passed
High level stability test - IEC 61672-3 Ed.2.0 Clause 21	Passed
Long term stability test - IEC 61672-3 Ed.2.0 Clause 15	Passed
Filter Test 1/1octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3	Passed
Filter Test 1/3octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3	Passed
Combined electrical and acoustical test - IEC 61672-3 Ed.2.0 Clause 13	Passed

Environmental conditions:

Pressure:	Temperature:	Relative humidity:
99.81	23.9	50.7

Date of calibration: 4/22/2016
Date of issue: 4/22/2016
Supervisor: Valentin Buzduga
Measurements performed by:

LD

Lydon Dawkins

Software version: 6.1 T

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

Test Report No.:36054

Manufacturer:	Rion
Instrument type:	NL52
Serial no:	012343610
Customer:	Paul Carpenter Associates, Inc.
Department:	
Order No:	
Contact Person:	Bryan Fuerte
Address:	23 Vreeland Road, Suite 204, Florham Park, NJ 07932

Environmental conditions:

Pressure:	99.81
Temperature:	23.9
Relative humidity:	50.7

Supervisor	Valentin Buzduga
Engineer	Lydon Dawkins
Date:	4/22/2016

Measurement Results:

Indication at the calibration check frequency - IEC61672-3 Ed.2 Clause 10

```
Reference Calibrator: WSC4 - NOR1251-30878
Reference calibrator level: 114.06
Before calibration:
  Environmental corrections: 0.00
  Other corrections: -0.02
  Notional level: 114.04
Reference calibrator level before calibration: 114.2
After calibration:
  Environmental corrections: 0.00
  Other corrections: -0.02
  Notional level: 114.04
Reference calibrator level after calibration: 114.0
Associated Calibrator:  -  -
Associated calibrator level: Not calibrated
Test Passed
```

Self-generated noise - IEC 61672-3 Ed.2 Clause 11

Network	Level (dB)	Max (dB)	Uncert. (dB)	Result	Comment
A	10.4	17.0	0.3	P	Equivalent capacity
C	14.4	25.0	0.3	P	Equivalent capacity
Z	19.9	30.0	0.3	P	Equivalent capacity

Test Passed

Frequency weightings: A Network - IEC 61672-3 Ed.2.0 Clause 13

Freq (Hz)	Ref. (dB)	Meas. (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
63.1	93.0	92.9	1.0	-1.0	0.2	-0.1	P
125.9	93.0	92.9	1.0	-1.0	0.2	-0.1	P
251.2	93.0	92.9	1.0	-1.0	0.2	-0.1	P
501.2	93.0	93.0	1.0	-1.0	0.2	0.0	P
1000.0	93.0	93.0	0.7	-0.7	0.2	0.0	P
1995.3	93.0	93.0	1.0	-1.0	0.2	0.0	P
3981.1	93.0	93.0	1.0	-1.0	0.2	0.0	P
7943.3	93.0	93.1	1.5	-2.5	0.2	0.1	P
15848.9	93.0	91.8	2.5	-16.0	0.2	-1.2	P

Test Passed

Frequency weightings: C Network - IEC 61672-3 Ed.2.0 Clause 13

Freq	Ref. Level	Meas. Value	Tol.		Uncert.	Dev.	Result
(Hz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	
63.1	93.0	92.9	1.0	-1.0	0.2	-0.1	P
125.9	93.0	93.0	1.0	-1.0	0.2	0.0	P
251.2	93.0	93.0	1.0	-1.0	0.2	0.0	P
501.2	93.0	93.0	1.0	-1.0	0.2	0.0	P
1000.0	93.0	93.0	0.7	-0.7	0.2	0.0	P
1995.3	93.0	93.0	1.0	-1.0	0.2	0.0	P
3981.1	93.0	93.0	1.0	-1.0	0.2	0.0	P
7943.3	93.0	93.1	1.5	-2.5	0.2	0.1	P
15848.9	93.0	91.8	2.5	-16.0	0.2	-1.2	P

Test Passed

Frequency weightings: Z Network - IEC 61672-3 Ed.2.0 Clause 13

Freq	Ref. Level	Meas. Value	Tol.		Uncert.	Dev.	Result
(Hz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	
63.1	93.0	93.0	1.0	-1.0	0.2	0.0	P
125.9	93.0	93.0	1.0	-1.0	0.2	0.0	P
251.2	93.0	93.0	1.0	-1.0	0.2	0.0	P
501.2	93.0	93.0	1.0	-1.0	0.2	0.0	P
1000.0	93.0	93.0	0.7	-0.7	0.2	0.0	P
1995.3	93.0	93.0	1.0	-1.0	0.2	0.0	P
3981.1	93.0	93.0	1.0	-1.0	0.2	0.0	P
7943.3	93.0	93.0	1.5	-2.5	0.2	0.0	P
15848.9	93.0	93.0	2.5	-16.0	0.2	0.0	P

Test Passed

Frequency and time weightings at 1 kHz IEC 61672-3 Ed.2.0 Clause 14

Weightings		Ref.	Measured	Tol.		Uncert.	Dev.	Result
Time	Netw	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	
Fast	A	94.0	94.0	0.1	-0.1	0.2	0.0	P
Fast	C	94.0	94.0	0.1	-0.1	0.2	0.0	P
Fast	Z	94.0	94.0	0.1	-0.1	0.2	0.0	P
Slow	A	94.0	94.0	0.1	-0.1	0.2	0.0	P
Leq	A	94.0	94.0	0.1	-0.1	0.2	0.0	P
SEL	A	104.0	104.0	0.1	-0.1	0.2	0.0	P

Test Passed

Level linearity on the reference level range - IEC 61672-3 Ed.2 Clause 16

Ref. (dB)	Measured (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
Full scale setting: 130dB						
The following measurements are SPL measurements						
Measured at 31.5 Hz						
84.0	84.0	0.8	-0.8	0.0	0.0	P
89.0	89.0	0.8	-0.8	0.0	0.0	P
94.6	94.6	0.8	-0.8	0.0	0.0	P
95.6	95.6	0.8	-0.8	0.0	0.0	P
96.6	96.6	0.8	-0.8	0.0	0.0	P
97.6	97.7	0.8	-0.8	0.0	0.1	P
98.6	98.6	0.8	-0.8	0.0	0.0	P
84.0	84.0	0.8	-0.8	0.0	0.0	P
79.0	79.1	0.8	-0.8	0.0	0.1	P
74.0	74.2	0.8	-0.8	0.0	0.2	P
69.0	69.2	0.8	-0.8	0.0	0.2	P
64.0	64.2	0.8	-0.8	0.0	0.2	P
59.0	59.2	0.8	-0.8	0.0	0.2	P
54.0	54.0	0.8	-0.8	0.0	0.0	P
49.0	49.0	0.8	-0.8	0.0	0.0	P
44.0	44.0	0.8	-0.8	0.0	0.0	P
39.0	39.0	0.8	-0.8	0.0	0.0	P
34.0	34.0	0.8	-0.8	0.0	0.0	P
29.0	29.0	0.8	-0.8	0.0	0.0	P
28.0	27.9	0.8	-0.8	0.0	-0.1	P
27.0	26.9	0.8	-0.8	0.0	-0.1	P
26.0	25.9	0.8	-0.8	0.0	-0.1	P
25.0	24.8	0.8	-0.8	0.0	-0.2	P
Measured at 1 kHz						
94.0	94.0	0.8	-0.8	0.0	0.0	P
99.0	99.0	0.8	-0.8	0.0	0.0	P
104.0	104.0	0.8	-0.8	0.0	0.0	P
109.0	109.0	0.8	-0.8	0.0	0.0	P
114.0	114.0	0.8	-0.8	0.0	0.0	P
119.0	119.0	0.8	-0.8	0.0	0.0	P
124.0	124.0	0.8	-0.8	0.0	0.0	P
129.0	129.0	0.8	-0.8	0.0	0.0	P
134.0	134.0	0.8	-0.8	0.0	0.0	P
135.0	135.0	0.8	-0.8	0.0	0.0	P
136.0	136.0	0.8	-0.8	0.0	0.0	P
137.0	137.0	0.8	-0.8	0.0	0.0	P
138.0	138.0	0.8	-0.8	0.0	0.0	P
94.0	94.0	0.8	-0.8	0.0	0.0	P
89.0	89.0	0.8	-0.8	0.0	0.0	P
84.0	84.0	0.8	-0.8	0.0	0.0	P
79.0	79.0	0.8	-0.8	0.0	0.0	P
74.0	74.0	0.8	-0.8	0.0	0.0	P
69.0	69.0	0.8	-0.8	0.0	0.0	P
64.0	64.0	0.8	-0.8	0.0	0.0	P
59.0	59.0	0.8	-0.8	0.0	0.0	P
54.0	54.0	0.8	-0.8	0.0	0.0	P
49.0	49.0	0.8	-0.8	0.0	0.0	P
44.0	44.0	0.8	-0.8	0.0	0.0	P
39.0	39.0	0.8	-0.8	0.0	0.0	P
34.0	34.0	0.8	-0.8	0.0	0.0	P
29.0	28.9	0.8	-0.8	0.0	-0.1	P
28.0	28.0	0.8	-0.8	0.0	0.0	P

Level linearity on the reference level range - IEC 61672-3 Ed.2 Clause 16

Ref. (dB)	Measured (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
27.0	27.0	0.8	-0.8	0.0	0.0	P
26.0	26.0	0.8	-0.8	0.0	0.0	P
25.0	24.9	0.8	-0.8	0.0	-0.1	P
Measured at 8 kHz						
94.0	94.0	0.8	-0.8	0.0	0.0	P
99.0	99.0	0.8	-0.8	0.0	0.0	P
104.0	104.0	0.8	-0.8	0.0	0.0	P
109.0	109.0	0.8	-0.8	0.0	0.0	P
114.0	114.0	0.8	-0.8	0.0	0.0	P
119.0	119.0	0.8	-0.8	0.0	0.0	P
124.0	124.0	0.8	-0.8	0.0	0.0	P
129.0	129.0	0.8	-0.8	0.0	0.0	P
132.9	132.9	0.8	-0.8	0.0	0.0	P
133.9	133.9	0.8	-0.8	0.0	0.0	P
134.9	134.9	0.8	-0.8	0.0	0.0	P
135.9	135.9	0.8	-0.8	0.0	0.0	P
136.9	136.9	0.8	-0.8	0.0	0.0	P
94.0	94.0	0.8	-0.8	0.0	0.0	P
89.0	89.0	0.8	-0.8	0.0	0.0	P
84.0	84.0	0.8	-0.8	0.0	0.0	P
79.0	79.0	0.8	-0.8	0.0	0.0	P
74.0	74.0	0.8	-0.8	0.0	0.0	P
69.0	69.0	0.8	-0.8	0.0	0.0	P
64.0	64.0	0.8	-0.8	0.0	0.0	P
59.0	59.0	0.8	-0.8	0.0	0.0	P
54.0	53.9	0.8	-0.8	0.0	-0.1	P
49.0	49.0	0.8	-0.8	0.0	0.0	P
44.0	44.0	0.8	-0.8	0.0	0.0	P
39.0	39.0	0.8	-0.8	0.0	0.0	P
34.0	34.0	0.8	-0.8	0.0	0.0	P
29.0	28.9	0.8	-0.8	0.0	-0.1	P
28.0	28.0	0.8	-0.8	0.0	0.0	P
27.0	27.0	0.8	-0.8	0.0	0.0	P
26.0	25.9	0.8	-0.8	0.0	-0.1	P
25.0	25.0	0.8	-0.8	0.0	0.0	P

Test Passed

Toneburst response - IEC 61672-3 Ed.2.0 Clause 18

Burst type	Ref. (dB)	Measured (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
Fast 200 mSec	135.0	135.0	0.5	-0.5	0.3	0.0	P
Fast 2.0 mSec	118.0	117.9	1.0	-1.5	0.3	-0.1	P
Fast 0.25 mSec	109.0	108.8	1.0	-3.0	0.3	-0.2	P
Slow 200 mSec	128.6	128.5	0.5	-0.5	0.3	-0.1	P
Slow 2.0 mSec	109.0	108.9	1.0	-3.0	0.3	-0.1	P
SEL 200 mSec	129.0	128.9	0.5	-0.5	0.3	-0.1	P
SEL 2.0 mSec	109.0	109.0	1.0	-1.5	0.3	0.0	P
SEL 0.25 mSec	100.0	99.8	1.0	-3.0	0.3	-0.2	P

Test Passed

Peak C sound level - IEC 61672-3 Ed.2.0 Clause 19

Pulse Type	Pulse Freq. (Hz)	Ref. RMS (dB)	Ref. Peak (dB)	Measured Value (dB)	Tol. (+/-dB)	Uncert. (dB)	Dev. (dB)	Result
1 cycle	8k	130.0	133.4	132.5	2.0	0.35	-0.9	P
Pos 1/2 cycle	500	133.0	135.4	135.0	1.0	0.35	-0.4	P
Neg 1/2 cycle	500	133.0	135.4	135.0	1.0	0.35	-0.4	P

Test Passed

Overload indication - IEC 61672-3 Ed.2.0 Clause 20

	Measured (dB)	Tol. (+/-dB)	Uncert. (dB)	Result
Level difference of positive and negative pulses:	0.1	1.5	0.25	P

Positive 1/2 cycle 4 kHz. Overload occurred at: 139.6
Negative 1/2 cycle 4 kHz. Overload occurred at: 139.5
Test Passed

High level stability test - IEC 61672-3 Ed.2.0 Clause 21

Test signal: Sine wave at 1 kHz

Initial level (dB)	Final level (dB)	Diff. (dB)	Tol. value (dB)	Uncert. (dB)	Result
137.0	137.0	0.0	0.1	0.10	P

Test Passed

Long term stability test - IEC 61672-3 Ed.2.0 Clause 15

Test signal: Sine wave at 1 kHz

Time inteval (mm:SS)	StartLevel (dB)	StopLevel (dB)	Difference (dB)	Tolerence (dB)	Result
25:11	93.9	94.0	0.1	0.1	P

Test Passed
RIONL52.ini

Filter Test 1/1octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

Test 1/1 octave filter X= 3 fexact=7943.282Hz class 1

Nominal f[Hz]	Measured L[dB]	LoLim [dB]	HiLim [dB]	Result [P/F]
501.187	30.2	0.0	58.0	P
1000.00	30.0	0.0	67.0	P
1995.26	41.6	0.0	86.0	P
3981.07	88.2	0.0	110.5	P
5623.41	124.8	123.0	126.0	P

Filter Test 1/1octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

6130.56	127.9	126.7	128.3	P
6683.44	128.0	127.4	128.3	P
7286.18	128.0	127.6	128.3	P
7943.28	128.0	127.7	128.3	P
8659.64	128.0	127.6	128.3	P
9440.61	128.0	127.4	128.3	P
10292.0	127.9	126.7	128.3	P
11220.2	124.7	123.0	126.0	P
15848.9	87.4	0.0	110.5	P
31622.8	30.0	0.0	86.0	P
63095.7	31.5	0.0	67.0	P
125893	27.3	0.0	58.0	P

Test 1/1 octave filter X= 4 fexact=15848.932Hz class 1

Nominal f[Hz]	Measured L[dB]	LoLim [dB]	HiLim [dB]	Result [P/F]
1000.00	36.5	0.0	58.0	P
1995.26	36.5	0.0	67.0	P
3981.07	39.9	0.0	86.0	P
7943.28	83.6	0.0	110.5	P
11220.2	123.9	123.0	126.0	P
12232.1	127.8	126.7	128.3	P
13335.2	128.0	127.4	128.3	P
14537.8	128.0	127.6	128.3	P
15848.9	128.0	127.7	128.3	P
17278.3	128.0	127.6	128.3	P
18836.5	127.9	127.4	128.3	P
20535.3	127.5	126.7	128.3	P
22387.2	124.2	123.0	126.0	P
31622.8	44.8	0.0	110.5	P
63095.7	37.2	0.0	86.0	P
125893	34.9	0.0	67.0	P
200000	30.7	0.0	58.0	P

Test Passed

Filter Test 1/3octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

Test 1/3 octave filter X= 12 fexact=15848.932Hz class 1

Nominal f[Hz]	Measured L[dB]	LoLim [dB]	HiLim [dB]	Result [P/F]
2939.37	43.9	0.0	58.0	P
5190.16	60.8	0.0	67.0	P
8422.54	79.5	0.0	86.0	P
12244.5	105.1	0.0	110.5	P
14125.4	124.2	123.0	126.0	P
14574.3	127.2	126.7	128.3	P
15012.0	127.9	127.4	128.3	P
15437.2	128.0	127.6	128.3	P
15848.9	128.0	127.7	128.3	P
16271.7	127.9	127.6	128.3	P
16732.6	127.9	127.4	128.3	P
17235.0	127.1	126.7	128.3	P
17782.8	123.9	123.0	126.0	P
20514.4	104.7	0.0	110.5	P
29823.4	30.9	0.0	86.0	P
48397.1	31.7	0.0	67.0	P
85456.6	39.5	0.0	58.0	P

Filter Test 1/3octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

Test 1/3 octave filter X= 13 fexact=19952.623Hz class 1

Nominal f[Hz]	Measured L[dB]	LoLim [dB]	HiLim [dB]	Result [P/F]
3700.45	41.4	0.0	58.0	P
6534.02	57.6	0.0	67.0	P
10603.4	77.3	0.0	86.0	P
15414.9	105.1	0.0	110.5	P
17782.8	125.2	123.0	126.0	P
18348.0	127.4	126.7	128.3	P
18898.9	127.9	127.4	128.3	P
19434.2	128.0	127.6	128.3	P
19952.6	127.9	127.7	128.3	P
20484.8	128.0	127.6	128.3	P
21065.1	127.9	127.4	128.3	P
21697.6	127.2	126.7	128.3	P
22387.2	123.6	123.0	126.0	P
25826.2	86.8	0.0	110.5	P
37545.4	35.6	0.0	86.0	P
60928.4	35.3	0.0	67.0	P
107584	35.1	0.0	58.0	P

Test Passed

Combined electrical and acoustical test - IEC 61672-3 Ed.2.0 Clause 13

A-Weighted results: Free field

Frequency	SLM Val (dB)	SLM U (dB)	Microphone Val (dB)	Microphone U (dB)	Case Refl. Val (dB)	Case Refl. U (dB)	Wind Screen Val (dB)	Wind Screen U (dB)	Uncert (dB)	Tol (dB)	Result (dB)	
63 Hz	-0.1	0.2	0.1	0.1	-0.1	0.3			0.4	+-1.0	-0.1	P
125 Hz	-0.1	0.2	0.1	0.1	0.0	0.3			0.4	+-1.0	0.0	P
250 Hz	-0.1	0.2	0.0	0.1	0.0	0.2			0.3	+-1.0	-0.1	P
500 Hz	0.0	0.2	-0.1	0.1	0.1	0.2			0.3	+-1.0	0.0	P
1 kHz	0.0	0.2	-0.1	0.1	0.0	0.2			0.3	+-0.7	-0.1	P
2 kHz	0.0	0.2	-0.1	0.2	0.0	0.3			0.4	+-1.0	-0.1	P
4 kHz	0.0	0.2	0.0	0.2	-0.1	0.4			0.5	+-1.0	-0.1	P
8 kHz	0.1	0.2	-0.1	0.4	0.0	0.4			0.6	+1.5/-2.5	0.0	P
16 kHz	-1.2	0.2	-0.5	0.7	-0.2	0.6			0.9	+2.5/-16.0	-1.9	P

C-Weighted results: Free field

Frequency	SLM Val (dB)	SLM U (dB)	Microphone Val (dB)	Microphone U (dB)	Case Refl. Val (dB)	Case Refl. U (dB)	Wind Screen Val (dB)	Wind Screen U (dB)	Uncert (dB)	Tol (dB)	Result (dB)	
63 Hz	-0.1	0.2	0.1	0.1	-0.1	0.3			0.4	+-1.0	-0.1	P
125 Hz	0.0	0.2	0.1	0.1	0.0	0.3			0.4	+-1.0	0.1	P
250 Hz	0.0	0.2	0.0	0.1	0.0	0.2			0.3	+-1.0	0.0	P
500 Hz	0.0	0.2	-0.1	0.1	0.1	0.2			0.3	+-1.0	0.0	P
1 kHz	0.0	0.2	-0.1	0.1	0.0	0.2			0.3	+-0.7	-0.1	P
2 kHz	0.0	0.2	-0.1	0.2	0.0	0.3			0.4	+-1.0	-0.1	P
4 kHz	0.0	0.2	0.0	0.2	-0.1	0.4			0.5	+-1.0	-0.1	P
8 kHz	0.1	0.2	-0.1	0.4	0.0	0.4			0.6	+1.5/-2.5	0.0	P
16 kHz	-1.2	0.2	-0.5	0.7	-0.2	0.6			0.9	+2.5/-16.0	-1.9	P

Z-Weighted results: Free field

Frequency	SLM Val (dB)	SLM U (dB)	Microphone Val (dB)	Microphone U (dB)	Case Refl. Val (dB)	Case Refl. U (dB)	Wind Screen Val (dB)	Wind Screen U (dB)	Uncert (dB)	Tol (dB)	Result (dB)	
63 Hz	0.0	0.2	0.1	0.1	-0.1	0.3			0.4	+-1.0	0.0	P
125 Hz	0.0	0.2	0.1	0.1	0.0	0.3			0.4	+-1.0	0.1	P

Combined electrical and acoustical test - IEC 61672-3 Ed.2.0 Clause 13

250 Hz	0.0	0.2	0.0	0.1	0.0	0.2	0.3	+-1.0	0.0	P
500 Hz	0.0	0.2	-0.1	0.1	0.1	0.2	0.3	+-1.0	0.0	P
1 kHz	0.0	0.2	-0.1	0.1	0.0	0.2	0.3	+-0.7	-0.1	P
2 kHz	0.0	0.2	-0.1	0.2	0.0	0.3	0.4	+-1.0	-0.1	P
4 kHz	0.0	0.2	0.0	0.2	-0.1	0.4	0.5	+-1.0	-0.1	P
8 kHz	0.0	0.2	-0.1	0.4	0.0	0.4	0.6	+1.5/-2.5	-0.1	P
16 kHz	0.0	0.2	-0.5	0.7	-0.2	0.6	0.9	+2.5/-16.0	-0.7	P

The actual frequency response of Rion / UC-59 07652 has been used for the calculations.

Test Passed

The overall frequency response of the sound level meter, nominal case reflections and microphone response has shown to conform with the requirements in IEC 61672-3 for a class 1 sound level meter.

LD

Scantek, Inc.
CALIBRATION LABORATORY

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

NVLAP®
NVLAP Lab Code: 200625-0

Calibration Certificate No.36055

Instrument:	**Microphone**	*Date Calibrated:* **4/21/2016**	*Cal Due:* **4/21/2017**
Model:	**UC-59**	*Status:*	**Received** / **Sent**
Manufacturer:	**Rion**	*In tolerance:*	X / X
Serial number:	**07652**	*Out of tolerance:*	
Composed of:		*See comments:*	
		Contains non-accredited tests:	**__Yes _X_ No**
Customer:	**Paul Carpenter Associates, Inc.**	*Address:*	**23 Vreeland Road, Suite 204, Florham Park, NJ 07932**
Tel/Fax:	**973-822-8221 x21/973-833-9221**		

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 23, 2015	Scantek, Inc./ NVLAP	Oct 23, 2016
DS-360-SRS	Function Generator	33584	Oct 20, 2015	ACR Env./ A2LA	Oct 20, 2017
34401A-Agilent Technologies	Digital Voltmeter	US36120731	Oct 6, 2015	ACR Env. / A2LA	Oct 6, 2016
HM30-Thommen	Meteo Station	1040170/39633	Oct 23, 2015	ACR Env./ A2LA	Oct 23, 2016
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1253-Norsonic	Calibrator	28326	Nov 10, 2015	Scantek, Inc./ NVLAP	Nov 10, 2016
1203-Norsonic	Preamplifier	14052	Aug 24, 2015	Scantek, Inc./ NVLAP	Aug 24, 2016
4180-Brüel&Kjær	Microphone	2246115	Oct 26, 2015	NPL-UK / UKAS	Oct 26, 2017

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

Calibrated by:	Lydon Dawkins	**Authorized signatory:**	Valentin Buzduga
Signature	Lydon Dawkins	Signature	
Date	4/21/2016	Date	4/22/2016

Document stored as: Z:\Calibration Lab\Mic 2016\Rion59_07652_M1.doc

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] Parameters are certified at actual environmental 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	100.12 ± 0.030	47.2 ± 2.2

Main measured parameters:

Tone frequency (Hz)	Measured[4] /Acceptable Open circuit sensitivity (dB re 1V/Pa)	Sensitivity (mV/Pa)
250	-26.64 ± 0.12/ -27.0 ±2.0	46.57

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

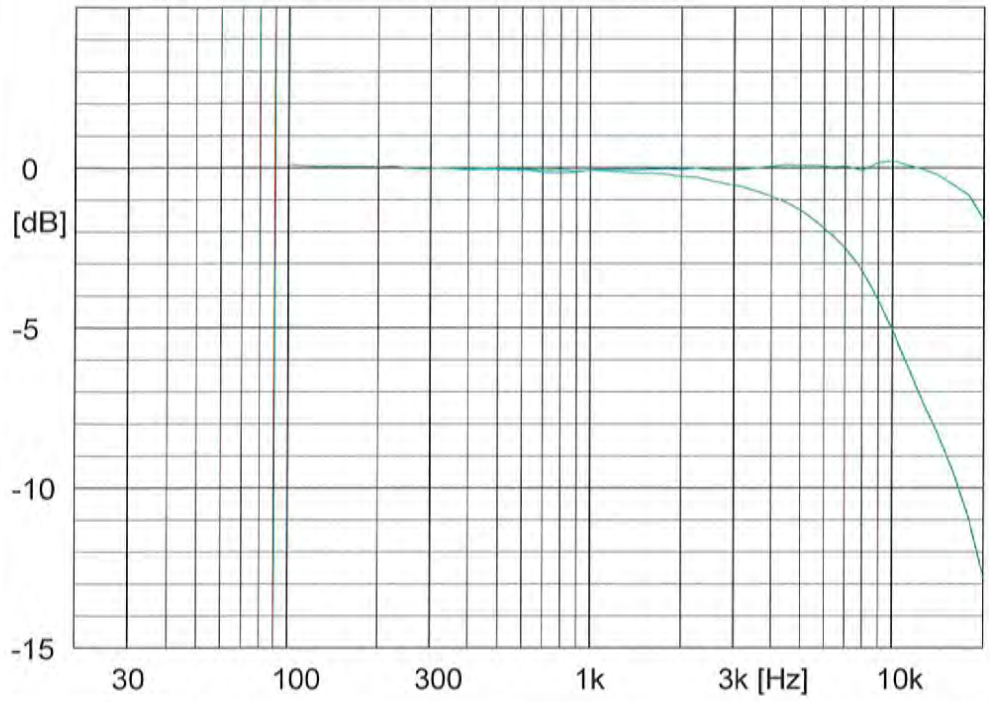
Tests made with following attachments to instrument and auxiliary devices:

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

Measured Data: Found on Microphone Test Report # 36055 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.:36055



Rion
Type: UC-59

Serial no: 07652

Sensitivity: 46.57 mV/Pa
-26.64 ±0.12 dB re. 1 V/Pa

Date: 4/21/2016

Signature: LD

Measurement conditions:

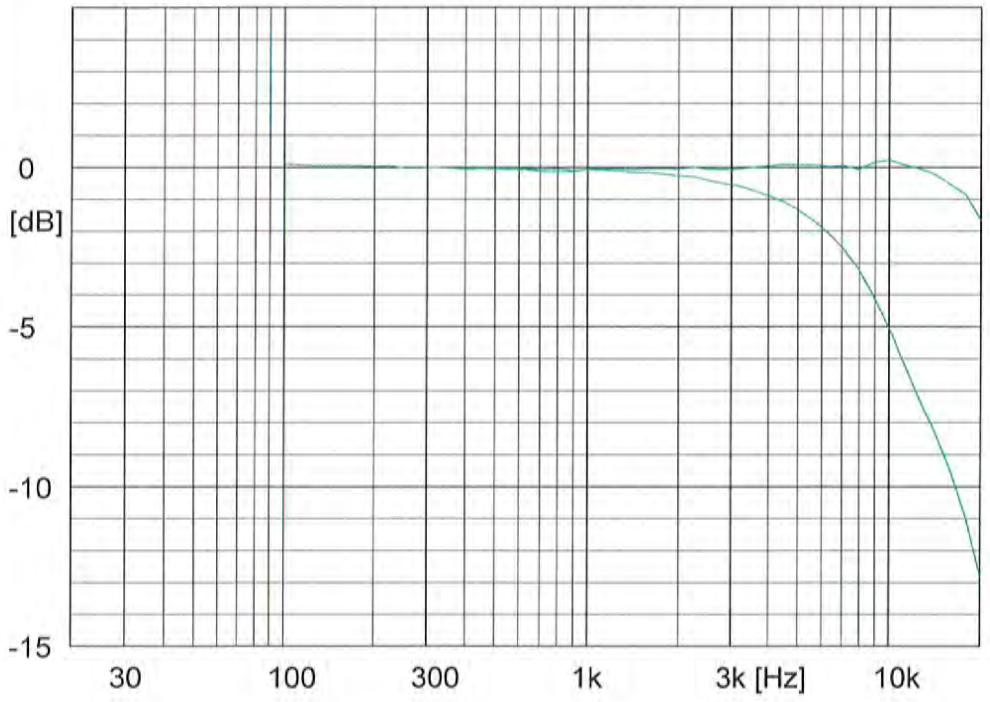
Polarisation voltage:	0.0 V
Pressure:	100.12 ±0.03 kPa
Temperature:	22.7 ±1.1 °C
Relative humidity:	47.2 ±2.2 %RH

Results are normalized to the measurement conditions.

Free field response
Actuator response

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

Microphone Test Report No.:36055



Rion
Type: UC-59

Serial no: 07652

Sensitivity: 46.57 mV/Pa
-26.64 ±0.12 dB re. 1 V/Pa

Date: 4/21/2016

Signature: LD

Measurement conditions:

Polarisation voltage:	0.0 V
Pressure:	100.12 ±0.03 kPa
Temperature:	22.7 ±1.1 °C
Relative humidity:	47.2 ±2.2 %RH

Results are normalized to the measurement conditions.

Free field response
Actuator response

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

Comment:
(Z:\Calibration Lab\Mic 2016\Rion59_07652_M1.nmf)

Scantek, Inc.
CALIBRATION LABORATORY

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

NVLAP®
NVLAP Lab Code: 200625-0

Calibration Certificate No.37005

Instrument: **Sound Level Meter**
Model: **NL52**
Manufacturer: **Rion**
Serial number: **01243611**
Tested with: **Microphone UC-59 s/n 07653**
Preamplifier NH25 s/n 43640
Type (class): **1**
Customer: **Paul Carpenter Associates, Inc.**
Tel/Fax: **973-822-8221 x21 / -833-9221**

Date Calibrated: **9/16/2016** *Cal Due:* **9/16/2017**

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: **7 Columbia Turnpike, Suite 101**
Florham Park, NJ 07932

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	25747	Jul 6, 2016	Scantek, Inc./ NVLAP	Jul 6, 2017
DS-360-SRS	Function Generator	61646	Aug 12, 2015	ACR Env./ A2LA	Aug 12, 2017
34401A-Agilent Technologies	Digital Voltmeter	MY41022043	Aug 16, 2016	ACR Env. / A2LA	Aug 16, 2017
DPI 141-Druck	Pressure Indicator	790/00-04	Nov 18, 2014	ACR Env./ A2LA	Nov 18, 2016
HMP233-Vaisala Oyj	Humidity & Temp. Transmitter	V3820001	Oct 1, 2015	ACR Env./ A2LA	Apr 1, 2017
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Nov 10, 2015	Scantek, Inc./ NVLAP	Nov 10, 2016

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 (%)
22.6	101.04	51.6

Calibrated by:	Jeremy Gotwalt	**Authorized signatory:**	Valentin Buzduga
Signature		Signature	
Date	9/16/16	Date	9/16/2016

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
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	0.1
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
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: Rion UC-59 s/n 07653 for acoustical test
Preamplifier: Rion NH25 s/n 43640 for all tests
Other: line adaptor ADP005 (18pF) for electrical tests
Accompanying acoustical calibrator: none
Windscreen: Rion WS-10

Measured Data: in Test Report # 37005 of 10 pages.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA

Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

Summary of Test Report No.:37005

Rion Type: NL52 Serial no: 01243611

Customer:	**Paul Carpenter Associates, Inc.**
Address:	**7 Columbia Turnpike, Suite 101, Florham Park, NJ 07932**
Contact Person:	**Bryan Fuerte**
Phone No.:	**973-822-8221 x21**
Fax No.:	**973-833-9221**

Instrument software version: NL-52 v1.5, NX-42EX v1.5, NX-42RT v1.5

Microphone:	Rion	Type: UC-59	Serial no: 07653	Sens:-27.56dB
Preamplifier	Rion	Type: NH25	Serial no: 43640	
Wind screen	Rion	Type: WS-10		

Measurement Results:

Indication at the calibration check frequency - IEC61672-3 Ed.2 Clause 10	Passed
Self-generated noise - IEC 61672-3 Ed.2 Clause 11	Passed
Frequency weightings: A Network - IEC 61672-3 Ed.2.0 Clause 13	Passed
Frequency weightings: C Network - IEC 61672-3 Ed.2.0 Clause 13	Passed
Frequency weightings: Z Network - IEC 61672-3 Ed.2.0 Clause 13	Passed
Frequency and time weightings at 1 kHz IEC 61672-3 Ed.2.0 Clause 14	Passed
Level linearity on the reference level range - IEC 61672-3 Ed.2 Clause 16	Passed
Toneburst response - IEC 61672-3 Ed.2.0 Clause 18	Passed
Peak C sound level - IEC 61672-3 Ed.2.0 Clause 19	Passed
Overload indication - IEC 61672-3 Ed.2.0 Clause 20	Passed
High level stability test - IEC 61672-3 Ed.2.0 Clause 21	Passed
Long term stability test - IEC 61672-3 Ed.2.0 Clause 15	Passed
Filter Test 1/1octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3	Passed
Filter Test 1/3octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3	Passed
Combined electrical and acoustical test - IEC 61672-3 Ed.2.0 Clause 13	Passed

Environmental conditions:

Pressure:	Temperature:	Relative humidity:
101.04	22.6	51.6

Date of calibration: 9/16/2016
Date of issue: 9/16/2016
Supervisor: Valentin Buzduga
Measurements performed by:

Jeremy Gotwalt

Software version: 6.1 T

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

Test Report No.:37005

Manufacturer:	Rion
Instrument type:	NL52
Serial no:	01243611
Customer:	Paul Carpenter Associates, Inc.
Department:	
Order No:	
Contact Person:	Bryan Fuerte
Address:	7 Columbia Turnpike, Suite 101, Florham Park, NJ 07932

Environmental conditions:

Pressure:	101.04
Temperature:	22.6
Relative humidity:	51.6

Supervisor	Valentin Buzduga
Engineer	Jeremy Gotwalt
Date:	9/16/2016

Measurement Results:

Indication at the calibration check frequency - IEC61672-3 Ed.2 Clause 10

```
Reference Calibrator: WSC4 - NOR1251-30878
Reference calibrator level: 114.06
Before calibration:
  Environmental corrections: 0.00
  Other corrections: -0.02
  Notional level: 114.04
Reference calibrator level before calibration: 114.0
After calibration:
  Environmental corrections: 0.00
  Other corrections: -0.02
  Notional level: 114.04
Reference calibrator level after calibration: 114..0
Associated Calibrator:  -  -
Associated calibrator level: Not calibrated
Test Passed
```

Self-generated noise - IEC 61672-3 Ed.2 Clause 11

Network	Level (dB)	Max (dB)	Uncert. (dB)	Result	Comment
A	11.5	17.0	0.3	P	Equivalent capacity
C	15.3	25.0	0.3	P	Equivalent capacity
Z	20.8	30.0	0.3	P	Equivalent capacity

Test Passed

Frequency weightings: A Network - IEC 61672-3 Ed.2.0 Clause 13

Freq (Hz)	Ref. (dB)	Meas. (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
63.1	93.0	92.9	1.0	-1.0	0.2	-0.1	P
125.9	93.0	93.0	1.0	-1.0	0.2	0.0	P
251.2	93.0	92.9	1.0	-1.0	0.2	-0.1	P
501.2	93.0	92.9	1.0	-1.0	0.2	-0.1	P
1000.0	93.0	93.0	0.7	-0.7	0.2	0.0	P
1995.3	93.0	93.0	1.0	-1.0	0.2	0.0	P
3981.1	93.0	93.0	1.0	-1.0	0.2	0.0	P
7943.3	93.0	93.1	1.5	-2.5	0.2	0.1	P
15848.9	93.0	91.8	2.5	-16.0	0.2	-1.2	P

Test Passed

Frequency weightings: C Network - IEC 61672-3 Ed.2.0 Clause 13

Freq	Ref. Level	Meas. Value	Tol.		Uncert.	Dev.	Result
(Hz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	
63.1	93.0	92.9	1.0	-1.0	0.2	-0.1	P
125.9	93.0	93.0	1.0	-1.0	0.2	0.0	P
251.2	93.0	92.9	1.0	-1.0	0.2	-0.1	P
501.2	93.0	93.0	1.0	-1.0	0.2	0.0	P
1000.0	93.0	93.0	0.7	-0.7	0.2	0.0	P
1995.3	93.0	93.0	1.0	-1.0	0.2	0.0	P
3981.1	93.0	93.0	1.0	-1.0	0.2	0.0	P
7943.3	93.0	93.1	1.5	-2.5	0.2	0.1	P
15848.9	93.0	91.8	2.5	-16.0	0.2	-1.2	P

Test Passed

Frequency weightings: Z Network - IEC 61672-3 Ed.2.0 Clause 13

Freq	Ref. Level	Meas. Value	Tol.		Uncert.	Dev.	Result
(Hz)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	
63.1	93.0	92.9	1.0	-1.0	0.2	-0.1	P
125.9	93.0	93.0	1.0	-1.0	0.2	0.0	P
251.2	93.0	93.0	1.0	-1.0	0.2	0.0	P
501.2	93.0	93.0	1.0	-1.0	0.2	0.0	P
1000.0	93.0	93.0	0.7	-0.7	0.2	0.0	P
1995.3	93.0	93.0	1.0	-1.0	0.2	0.0	P
3981.1	93.0	93.0	1.0	-1.0	0.2	0.0	P
7943.3	93.0	93.0	1.5	-2.5	0.2	0.0	P
15848.9	93.0	93.0	2.5	-16.0	0.2	0.0	P

Test Passed

Frequency and time weightings at 1 kHz IEC 61672-3 Ed.2.0 Clause 14

Weightings		Ref.	Measured	Tol.		Uncert.	Dev.	Result
Time	Netw	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	
Fast	A	94.0	94.0	0.1	-0.1	0.2	0.0	P
Fast	C	94.0	94.0	0.1	-0.1	0.2	0.0	P
Fast	Z	94.0	94.0	0.1	-0.1	0.2	0.0	P
Slow	A	94.0	94.0	0.1	-0.1	0.2	0.0	P
Leq	A	94.0	94.0	0.1	-0.1	0.2	0.0	P
SEL	A	104.0	104.0	0.1	-0.1	0.2	0.0	P

Test Passed

Level linearity on the reference level range - IEC 61672-3 Ed.2 Clause 16

Ref. (dB)	Measured (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
Full scale setting: 130dB						
The following measurements are SPL measurements						
Measured at 31.5 Hz						
84.0	84.0	0.8	-0.8	0.25	0.0	P
89.0	89.0	0.8	-0.8	0.25	0.0	P
94.6	94.6	0.8	-0.8	0.25	0.0	P
95.6	95.6	0.8	-0.8	0.25	0.0	P
96.6	96.6	0.8	-0.8	0.25	0.0	P
97.6	97.6	0.8	-0.8	0.25	0.0	P
98.6	98.6	0.8	-0.8	0.25	0.0	P
84.0	84.5	0.8	-0.8	0.25	0.5	P
79.0	79.0	0.8	-0.8	0.25	0.0	P
74.0	74.1	0.8	-0.8	0.25	0.1	P
69.0	69.1	0.8	-0.8	0.25	0.1	P
64.0	64.1	0.8	-0.8	0.25	0.1	P
59.0	59.0	0.8	-0.8	0.25	0.0	P
54.0	54.0	0.8	-0.8	0.25	0.0	P
49.0	49.0	0.8	-0.8	0.25	0.0	P
44.0	44.0	0.8	-0.8	0.25	0.0	P
39.0	39.0	0.8	-0.8	0.25	0.0	P
34.0	34.0	0.8	-0.8	0.25	0.0	P
29.0	29.0	0.8	-0.8	0.25	0.0	P
28.0	27.9	0.8	-0.8	0.25	-0.1	P
27.0	26.9	0.8	-0.8	0.25	-0.1	P
26.0	26.0	0.8	-0.8	0.25	0.0	P
25.0	24.9	0.8	-0.8	0.25	-0.1	P
Measured at 1 kHz						
94.0	94.0	0.8	-0.8	0.25	0.0	P
99.0	99.0	0.8	-0.8	0.25	0.0	P
104.0	104.0	0.8	-0.8	0.25	0.0	P
109.0	109.0	0.8	-0.8	0.25	0.0	P
114.0	114.0	0.8	-0.8	0.25	0.0	P
119.0	119.0	0.8	-0.8	0.25	0.0	P
124.0	124.0	0.8	-0.8	0.25	0.0	P
129.0	129.0	0.8	-0.8	0.25	0.0	P
134.0	134.0	0.8	-0.8	0.25	0.0	P
135.0	135.0	0.8	-0.8	0.25	0.0	P
136.0	136.0	0.8	-0.8	0.25	0.0	P
137.0	137.0	0.8	-0.8	0.25	0.0	P
138.0	138.0	0.8	-0.8	0.25	0.0	P
94.0	94.0	0.8	-0.8	0.25	0.0	P
89.0	89.0	0.8	-0.8	0.25	0.0	P
84.0	84.0	0.8	-0.8	0.25	0.0	P
79.0	79.0	0.8	-0.8	0.25	0.0	P
74.0	74.0	0.8	-0.8	0.25	0.0	P
69.0	69.0	0.8	-0.8	0.25	0.0	P
64.0	64.0	0.8	-0.8	0.25	0.0	P
59.0	59.0	0.8	-0.8	0.25	0.0	P
54.0	54.0	0.8	-0.8	0.25	0.0	P
49.0	49.0	0.8	-0.8	0.25	0.0	P
44.0	44.0	0.8	-0.8	0.25	0.0	P
39.0	39.0	0.8	-0.8	0.25	0.0	P
34.0	34.0	0.8	-0.8	0.25	0.0	P
29.0	29.0	0.8	-0.8	0.25	0.0	P
28.0	28.0	0.8	-0.8	0.25	0.0	P

Level linearity on the reference level range - IEC 61672-3 Ed.2 Clause 16

Ref. (dB)	Measured (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
27.0	27.0	0.8	-0.8	0.25	0.0	P
26.0	25.9	0.8	-0.8	0.25	-0.1	P
25.0	25.0	0.8	-0.8	0.25	0.0	P
Measured at 8 kHz						
94.0	94.0	0.8	-0.8	0.25	0.0	P
99.0	99.0	0.8	-0.8	0.25	0.0	P
104.0	104.0	0.8	-0.8	0.25	0.0	P
109.0	109.0	0.8	-0.8	0.25	0.0	P
114.0	114.0	0.8	-0.8	0.25	0.0	P
119.0	119.0	0.8	-0.8	0.25	0.0	P
124.0	124.0	0.8	-0.8	0.25	0.0	P
129.0	129.0	0.8	-0.8	0.25	0.0	P
132.9	132.8	0.8	-0.8	0.25	-0.1	P
133.9	133.9	0.8	-0.8	0.25	0.0	P
134.9	134.9	0.8	-0.8	0.25	0.0	P
135.9	135.9	0.8	-0.8	0.25	0.0	P
136.9	136.9	0.8	-0.8	0.25	0.0	P
94.0	94.0	0.8	-0.8	0.25	0.0	P
89.0	89.0	0.8	-0.8	0.25	0.0	P
84.0	84.0	0.8	-0.8	0.25	0.0	P
79.0	78.9	0.8	-0.8	0.25	-0.1	P
74.0	74.0	0.8	-0.8	0.25	0.0	P
69.0	69.0	0.8	-0.8	0.25	0.0	P
64.0	63.9	0.8	-0.8	0.25	-0.1	P
59.0	59.0	0.8	-0.8	0.25	0.0	P
54.0	53.9	0.8	-0.8	0.25	-0.1	P
49.0	48.9	0.8	-0.8	0.25	-0.1	P
44.0	43.9	0.8	-0.8	0.25	-0.1	P
39.0	38.9	0.8	-0.8	0.25	-0.1	P
34.0	34.0	0.8	-0.8	0.25	0.0	P
29.0	28.9	0.8	-0.8	0.25	-0.1	P
28.0	28.0	0.8	-0.8	0.25	0.0	P
27.0	27.0	0.8	-0.8	0.25	0.0	P
26.0	25.9	0.8	-0.8	0.25	-0.1	P
25.0	25.0	0.8	-0.8	0.25	0.0	P

Test Passed

Toneburst response - IEC 61672-3 Ed.2.0 Clause 18

Burst type	Ref. (dB)	Measured (dB)	Tol. (dB)	Tol. (dB)	Uncert. (dB)	Dev. (dB)	Result
Fast 200 mSec	135.0	135.0	0.5	-0.5	0.3	0.0	P
Fast 2.0 mSec	118.0	117.9	1.0	-1.5	0.3	-0.1	P
Fast 0.25 mSec	109.0	108.8	1.0	-3.0	0.3	-0.2	P
Slow 200 mSec	128.6	128.5	0.5	-0.5	0.3	-0.1	P
Slow 2.0 mSec	109.0	108.9	1.0	-3.0	0.3	-0.1	P
SEL 200 mSec	129.0	129.0	0.5	-0.5	0.3	0.0	P
SEL 2.0 mSec	109.0	109.0	1.0	-1.5	0.3	0.0	P
SEL 0.25 mSec	100.0	99.8	1.0	-3.0	0.3	-0.2	P

Test Passed

Peak C sound level - IEC 61672-3 Ed.2.0 Clause 19

Pulse Type	Pulse Freq. (Hz)	Ref. RMS (dB)	Ref. Peak (dB)	Measured Value (dB)	Tol. (+/-dB)	Uncert. (dB)	Dev. (dB)	Result
1 cycle	8k	130.0	133.4	132.8	2.0	0.35	-0.6	P
Pos 1/2 cycle	500	133.0	135.4	135.1	1.0	0.35	-0.3	P
Neg 1/2 cycle	500	133.0	135.4	135.1	1.0	0.35	-0.3	P

Test Passed

Overload indication - IEC 61672-3 Ed.2.0 Clause 20

	Measured (dB)	Tol. (+/-dB)	Uncert. (dB)	Result
Level difference of positive and negative pulses:	0.1	1.5	0.25	P
Positive 1/2 cycle 4 kHz. Overload occurred at:	139.7			
Negative 1/2 cycle 4 kHz. Overload occurred at:	139.6			

Test Passed

High level stability test - IEC 61672-3 Ed.2.0 Clause 21

Test signal: Sine wave at 1 kHz

Initial level (dB)	Final level (dB)	Diff. (dB)	Tol. value (dB)	Uncert. (dB)	Result
136.9	137.0	0.1	0.1	0.1	P

Test Passed

Long term stability test - IEC 61672-3 Ed.2.0 Clause 15

Test signal: Sine wave at 1 kHz

Time inteval (mm:SS)	StartLevel (dB)	StopLevel (dB)	Difference (dB)	Tolerence (dB)	Result
25:11	94.0	94.1	0.1	0.1	P

Test Passed

Filter Test 1/1octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

Test 1/1 octave filter X= 3 fexact=7943.282Hz class 1

Nominal f[Hz]	Measured L[dB]	LoLim [dB]	HiLim [dB]	Result [P/F]
501.187	31.2	0.0	58.0	P
1000.00	31.4	0.0	67.0	P
1995.26	41.4	0.0	86.0	P
3981.07	88.2	0.0	110.5	P
5623.41	124.8	123.0	126.0	P
6130.56	127.8	126.7	128.3	P

Filter Test 1/1octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

6683.44	128.0	127.4	128.3	P
7286.18	128.0	127.6	128.3	P
7943.28	128.0	127.7	128.3	P
8659.64	128.0	127.6	128.3	P
9440.61	128.0	127.4	128.3	P
10292.0	127.8	126.7	128.3	P
11220.2	124.7	123.0	126.0	P
15848.9	87.3	0.0	110.5	P
31622.8	31.7	0.0	86.0	P
63095.7	32.7	0.0	67.0	P
125893	26.4	0.0	58.0	P

Test 1/1 octave filter X= 4 fexact=15848.932Hz class 1

Nominal f[Hz]	Measured L[dB]	LoLim [dB]	HiLim [dB]	Result [P/F]
1000.00	37.2	0.0	58.0	P
1995.26	37.0	0.0	67.0	P
3981.07	39.7	0.0	86.0	P
7943.28	83.6	0.0	110.5	P
11220.2	123.8	123.0	126.0	P
12232.1	127.8	126.7	128.3	P
13335.2	127.9	127.4	128.3	P
14537.8	127.9	127.6	128.3	P
15848.9	127.9	127.7	128.3	P
17278.3	127.9	127.6	128.3	P
18836.5	127.9	127.4	128.3	P
20535.3	127.5	126.7	128.3	P
22387.2	124.2	123.0	126.0	P
31622.8	44.9	0.0	110.5	P
63095.7	37.8	0.0	86.0	P
125893	36.6	0.0	67.0	P
200000	30.8	0.0	58.0	P

Test Passed

Filter Test 1/3octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

Test 1/3 octave filter X= 12 fexact=15848.932Hz class 1

Nominal f[Hz]	Measured L[dB]	LoLim [dB]	HiLim [dB]	Result [P/F]
2939.37	43.9	0.0	58.0	P
5190.16	60.8	0.0	67.0	P
8422.54	79.5	0.0	86.0	P
12244.5	105.0	0.0	110.5	P
14125.4	124.2	123.0	126.0	P
14574.3	127.1	126.7	128.3	P
15012.0	127.9	127.4	128.3	P
15437.2	127.9	127.6	128.3	P
15848.9	127.9	127.7	128.3	P
16271.7	127.9	127.6	128.3	P
16732.6	127.9	127.4	128.3	P
17235.0	127.0	126.7	128.3	P
17782.8	123.9	123.0	126.0	P
20514.4	104.7	0.0	110.5	P
29823.4	31.4	0.0	86.0	P
48397.1	31.8	0.0	67.0	P
85456.6	42.9	0.0	58.0	P

Test 1/3 octave filter X= 13 fexact=19952.623Hz class 1

Filter Test 1/3octave: Relative attenuation - IEC 61260, Clause 4.4 & #5.3

Nominal f[Hz]	Measured L[dB]	LoLim [dB]	HiLim [dB]	Result [P/F]
3700.45	41.4	0.0	58.0	P
6534.02	57.6	0.0	67.0	P
10603.4	77.3	0.0	86.0	P
15414.9	105.1	0.0	110.5	P
17782.8	125.1	123.0	126.0	P
18348.0	127.3	126.7	128.3	P
18898.9	127.9	127.4	128.3	P
19434.2	127.9	127.6	128.3	P
19952.6	127.9	127.7	128.3	P
20484.8	127.9	127.6	128.3	P
21065.1	127.9	127.4	128.3	P
21697.6	127.1	126.7	128.3	P
22387.2	123.6	123.0	126.0	P
25826.2	86.8	0.0	110.5	P
37545.4	36.2	0.0	86.0	P
60928.4	36.0	0.0	67.0	P
107584	35.4	0.0	58.0	P

Test Passed

Combined electrical and acoustical test - IEC 61672-3 Ed.2.0 Clause 13

A-Weighted results: Free field

Frequency	SLM Val (dB)	SLM U (dB)	Microphone Val (dB)	Microphone U (dB)	Case Val (dB)	Case U (dB)	Wind Screen Val (dB)	Wind Screen U (dB)	Uncert (dB)	Tol (dB)	Result (dB)	
63 Hz	-0.1	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	-0.1	P
125 Hz	0.0	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	0.0	P
250 Hz	-0.1	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	-0.1	P
500 Hz	-0.1	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	-0.1	P
1 kHz	0.0	0.2	0.0	0.1			0.1	0.1	0.2	+-0.7	0.1	P
2 kHz	0.0	0.2	0.0	0.2			0.3	0.2	0.4	+-1.0	0.3	P
4 kHz	0.0	0.2	0.3	0.2			0.3	0.2	0.4	+-1.0	0.6	P
8 kHz	0.1	0.2	0.2	0.4			0.0	0.3	0.5	+1.5/-2.5	0.3	P
16 kHz	-1.2	0.2	-0.5	0.7			-0.7	0.4	0.8	+2.5/-16.0	-2.4	P

C-Weighted results: Free field

Frequency	SLM Val (dB)	SLM U (dB)	Microphone Val (dB)	Microphone U (dB)	Case Val (dB)	Case U (dB)	Wind Screen Val (dB)	Wind Screen U (dB)	Uncert (dB)	Tol (dB)	Result (dB)	
63 Hz	-0.1	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	-0.1	P
125 Hz	0.0	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	0.0	P
250 Hz	-0.1	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	-0.1	P
500 Hz	0.0	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	0.0	P
1 kHz	0.0	0.2	0.0	0.1			0.1	0.1	0.2	+-0.7	0.1	P
2 kHz	0.0	0.2	0.0	0.2			0.3	0.2	0.4	+-1.0	0.3	P
4 kHz	0.0	0.2	0.3	0.2			0.3	0.2	0.4	+-1.0	0.6	P
8 kHz	0.1	0.2	0.2	0.4			0.0	0.3	0.5	+1.5/-2.5	0.3	P
16 kHz	-1.2	0.2	-0.5	0.7			-0.7	0.4	0.8	+2.5/-16.0	-2.4	P

Z-Weighted results: Free field

Frequency	SLM Val (dB)	SLM U (dB)	Microphone Val (dB)	Microphone U (dB)	Case Val (dB)	Case U (dB)	Wind Screen Val (dB)	Wind Screen U (dB)	Uncert (dB)	Tol (dB)	Result (dB)	
63 Hz	-0.1	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	-0.1	P
125 Hz	0.0	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	0.0	P
250 Hz	0.0	0.2	0.0	0.1			0.0	0.1	0.2	+-1.0	0.0	P

Combined electrical and acoustical test - IEC 61672-3 Ed.2.0 Clause 13

500 Hz	0.0	0.2	0.0	0.1	0.0	0.1	0.2	+-1.0	0.0	P
1 kHz	0.0	0.2	0.0	0.1	0.1	0.1	0.2	+-0.7	0.1	P
2 kHz	0.0	0.2	0.0	0.2	0.3	0.2	0.4	+-1.0	0.3	P
4 kHz	0.0	0.2	0.3	0.2	0.3	0.2	0.4	+-1.0	0.6	P
8 kHz	0.0	0.2	0.2	0.4	0.0	0.3	0.5	+1.5/-2.5	0.2	P
16 kHz	0.0	0.2	-0.5	0.7	-0.7	0.4	0.8	+2.5/-16.0	-1.2	P

The actual frequency response of Rion / UC-59 07653 has been used for the calculations.
Test Passed
The overall frequency response of the sound level meter, typical wind screen response and microphone response has shown to conform with the requirements in IEC 61672-3 for a class 1 sound level meter.

JPG

Scantek, Inc.
CALIBRATION LABORATORY

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

NVLAP®
NVLAP Lab Code: 200625-0

Calibration Certificate No.37006

Instrument: **Microphone**
Model: **UC-59**
Manufacturer: **Rion**
Serial number: **07653**
Composed of:

Customer: **Paul Carpenter Associates, Inc.**
Tel/Fax: **973-822-8221 x21/973-833-9221**

Date Calibrated: **9/16/2016** *Cal Due:* **9/16/17**

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

Contains non-accredited tests: __Yes _X_ No
Address: **7 Columbia Turnpike, Suite 101**
Florham Park, NJ 07932

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	25747	Jul 6, 2016	Scantek, Inc./ NVLAP	Jul 6, 2017
DS-360-SRS	Function Generator	61646	Aug 12, 2015	ACR Env./ A2LA	Aug 12, 2017
34401A-Agilent Technologies	Digital Voltmeter	MY41022043	Aug 16, 2016	ACR Env. / A2LA	Aug 16, 2017
DPI 141-Druck	Pressure Indicator	790/00-04	Nov 18, 2014	ACR Env./ A2LA	Nov 18, 2016
HMP233-Vaisala Oyj	Humidity & Temp. Transmitter	V3820001	Oct 1, 2015	ACR Env./ A2LA	Apr 1, 2017
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1253-Norsonic	Calibrator	28326	Nov 10, 2015	Scantek, Inc./ NVLAP	Nov 10, 2016
1203-Norsonic	Preamplifier	14059	Jan 4, 2016	Scantek, Inc./ NVLAP	Jan 4, 2017
4180-Brüel&Kjær	Microphone	2246115	Oct 26, 2015	NPL-UK / UKAS	Oct 26, 2017

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

Calibrated by:	Kenda Newton	**Authorized signatory:**	Valentin Buzduga
Signature	KS Newton	Signature	
Date	9-16-16	Date	9/16/2016

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] Parameters are certified at actual environmental 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 ± 1.0	101.25 ± 0.005	54.8 ± 2.1

Main measured parameters:

Tone frequency (Hz)	Measured[4] /Acceptable Open circuit sensitivity (dB re 1V/Pa)	Sensitivity (mV/Pa)
250	-27.56 ± 0.12/ -27.0 ±2.0	41.87

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

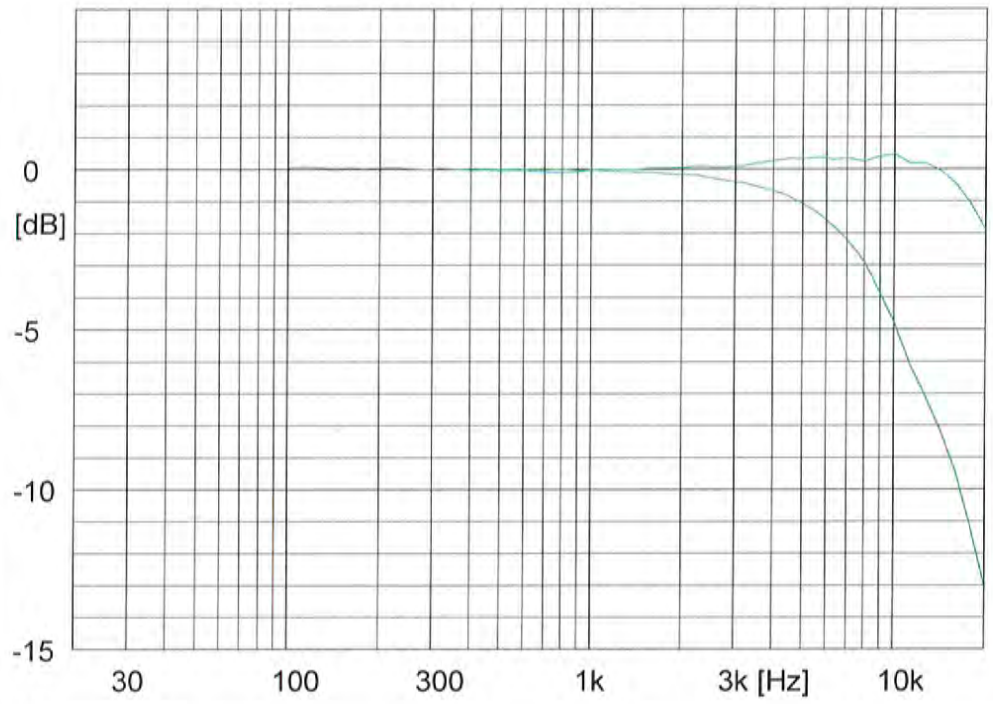
Tests made with following attachments to instrument and auxiliary devices:

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

Measured Data: Found on Microphone Test Report # 37006 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.:37006



Rion
Type: UC-59

Serial no: 07653

Sensitivity: 41.87 mV/Pa
-27.56 ±0.12 dB re. 1 V/Pa

Date: 9/16/2016

Signature: KN

Measurement conditions:

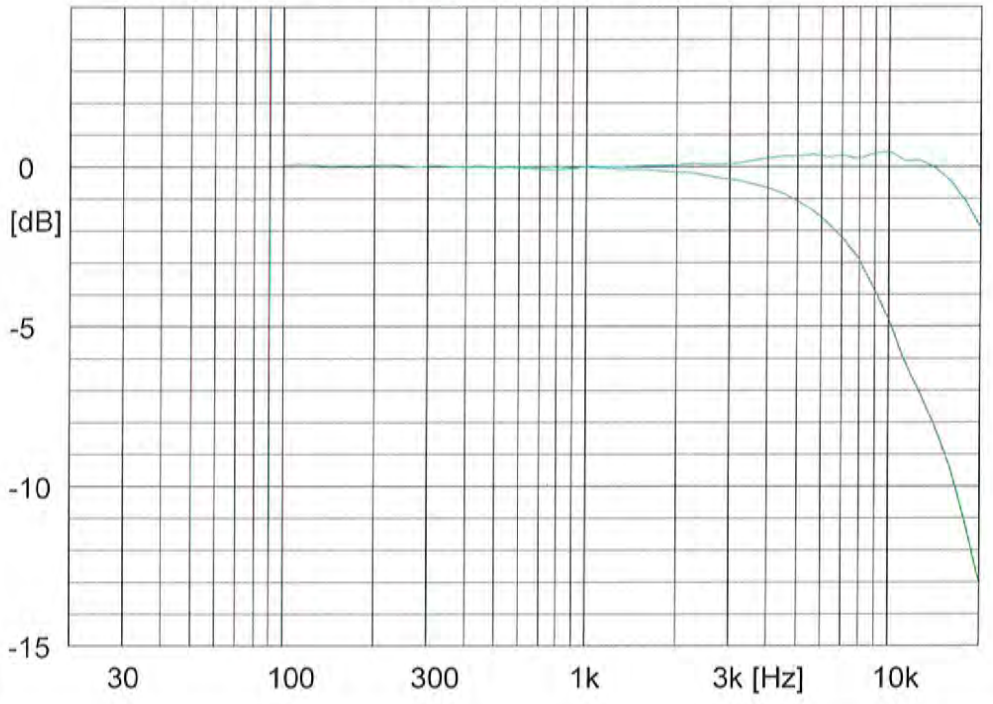
Polarisation voltage:	0.0 V
Pressure:	101.25 ±0.01 kPa
Temperature:	22.0 ±1.0 °C
Relative humidity:	54.8 ±2.1 %RH

Results are normalized to the measurement conditions.

Free Field response
Actuator response

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

Microphone Test Report No.:37006



Rion
Type: UC-59

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Pressure:	101.25 ±0.01 kPa
Temperature:	22.0 ±1.0 °C
Relative humidity:	54.8 ±2.1 %RH

Results are normalized to the measurement conditions.

Free Field response
Actuator response

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

Comment:
(Z:\Calibration Lab\Mic 2016\Rion59_07653_M1.nmf)

APPENDIX B
NOISE MONITORING PHOTOS

460 W. Saddle River Road (Block 4704, Lots 9, 10, 11, 12)
Noise Monitoring Photos

Site # 1: (View Facing RT. 17 NB)

Site # 2: (View Facing W Saddle River Road)

460 W. Saddle River Road (Block 4704, Lots 9, 10, 11, 12)
Noise Monitoring Photos

Site # 3: (View Facing RT. 17 NB)

Site # 4:
(View Facing W Saddle River Road and House on 617 Terhune Rd)

460 W. Saddle River Road (Block 4704, Lots 9, 10, 11, 12)
Noise Monitoring Photos

Site # 5: (View Facing RT. 17 NB)

Site # 6: (View Facing W Saddle River Road)

APPENDIX C
CERTIFIED METEOROLOGICAL DATA

HourlyObs

Month/Year: 2/2017
Station Location: NEWARK LIBERTY INTERNATIONAL AP (14734)
Lat: 40.682
Lon: -74.169
Elev: 7 ft. above sea level

WBAN	Date	Time	StationTyp	SkyCondition	SkyCondit	Visibility	DryBulbFaren	DryBulbC	RelativeHu	WindSpeed	Direction	urlyPrecip	FilterOut?	Filter Date	Filter Time
14734	2/23/2017	0:51	11	SCT250		10	48	8.9	80	6	200				
14734	2/23/2017	1:51	11	SCT250		10	48	8.9	77	0	0				
14734	2/23/2017	2:51	11	SCT250		10	46	7.8	83	5	170				
14734	2/23/2017	3:51	11	SCT250		9	46	7.8	83	0	0				
14734	2/23/2017	4:51	11	FEW250		8	43	6.1	93	3	180				
14734	2/23/2017	5:51	11	FEW250		9	44	6.7	89	5	190				
14734	2/23/2017	6:51	11	FEW250		5	44	6.7	93	3	200				
14734	2/23/2017	6:55	11	FEW008 SCT250		2.5	44	6.7	93	3	190				
14734	2/23/2017	7:03	11	BKN005		1	43	6.1	93	6	220				
14734	2/23/2017	7:16	11	OVC003		0.25	44	6.7	*96*	8	240		Y	2/23/2017	7:10
14734	2/23/2017	7:30	11	OVC001		0.25	44	6.7	*96*	8	250		Y		
14734	2/23/2017	7:34	11	OVC001		0.25	44	6.7	*96*	7	250		Y		
14734	2/23/2017	7:49	11	OVC001		0.25	45	7	93	7	240			2/23/2017	7:40
14734	2/23/2017	7:51	11	OVC001		0.25	44	6.7	*96*	8	250		Y	2/23/2017	7:50
14734	2/23/2017	8:01	11	VV002		0.25	44	6.7	*96*	6	230		Y		
14734	2/23/2017	8:35	11	OVC003		0.5	45	7.2	*100*	6	210		Y		
14734	2/23/2017	8:49	11	OVC003		1	46	8	*96*	5	210		Y		
14734	2/23/2017	8:51	11	OVC003		1	46	7.8	*96*	5	210	*T*	Y		
14734	2/23/2017	9:46	11	BKN005 BKN010		1.75	46	8	*100*	5	VR		Y		
14734	2/23/2017	9:51	11	BKN005 BKN010		1.75	48	8.9	*100*	5	160	*T*	Y		
14734	2/23/2017	10:51	11	BKN005 OVC010		1.75	51	10.6	90	8	210			2/23/2017	10:50
14734	2/23/2017	11:25	11	BKN005 OVC010		2.5	52	11.1	90	8	230				
14734	2/23/2017	11:49	11	BKN005 OVC010		3	54	12	86	13	240				
14734	2/23/2017	11:51	11	BKN006 OVC010		3	54	12.2	86	11	240				
14734	2/23/2017	12:51	11	SCT008 BKN012		9	58	14.4	78	10	230				
14734	2/23/2017	13:14	11	FEW008 SCT012 SCT		10	60	15.6	72	11	250				
14734	2/23/2017	13:51	11	FEW010 SCT250		10	62	16.7	70	9	220				
14734	2/23/2017	14:51	11	FEW040 FEW100 SC		10	65	18.3	63	9	180				
14734	2/23/2017	15:51	11	FEW040 FEW100 SC		10	66	18.9	61	8	180				
14734	2/23/2017	16:51	11	FEW040 FEW100 SC		10	62	16.7	65	6	120				
14734	2/23/2017	17:51	11	FEW080 SCT250		10	57	13.9	72	6	20				
14734	2/23/2017	18:51	11	FEW060 SCT250		10	58	14.4	72	5	50				
14734	2/23/2017	19:51	11	FEW070 BKN250		10	57	13.9	75	5	140				
14734	2/23/2017	20:51	11	FEW060 FEW080 BKI		10	58	14.4	72	3	200				
14734	2/23/2017	21:51	11	FEW060 SCT080 BKN		10	59	15	75	3	150				
14734	2/23/2017	22:51	11	FEW060 FEW080 BKI		10	58	14.4	75	5	180				
14734	2/23/2017	23:51	11	BKN090 BKN250		10	55	12.8	80	7	210				
14734	2/24/2017	0:51	11	BKN090 OVC250		10	57	13.9	78	7	210				
14734	2/24/2017	1:51	11	FEW090 SCT250		10	56	13.3	80	7	200				
14734	2/24/2017	2:51	11	FEW090 SCT250		10	55	12.8	83	5	170				
14734	2/24/2017	3:51	11	FEW090 FEW250		10	54	12.2	83	0	0				
14734	2/24/2017	4:51	11	FEW180 BKN250		10	54	12.2	86	0	0				
14734	2/24/2017	5:51	11	FEW150 BKN200		10	54	12.2	86	5	160				
14734	2/24/2017	6:51	11	FEW140 SCT200		10	53	11.7	90	0	0				
14734	2/24/2017	7:51	11	FEW130 FEW200 BKI		10	57	13.9	83	3	190				
14734	2/24/2017	8:51	11	FEW150 BKN250		10	61	16.1	75	9	210				
14734	2/24/2017	9:51	11	FEW150 BKN250		10	66	18.9	68	7	220				
14734	2/24/2017	10:51	11	FEW090 SCT250		10	68	20	63	9	180				
14734	2/24/2017	11:51	11	FEW035 SCT250		10	72	22.2	53	13	190				
14734	2/24/2017	12:51	11	SCT045 BKN250		10	73	22.8	50	13	170				
14734	2/24/2017	13:51	11	SCT046 BKN250		10	72	22.2	51	8	130				
14734	2/24/2017	14:51	11	SCT048		10	70	21.1	53	9	130				
14734	2/24/2017	15:51	11	BKN055 BKN250		10	69	20.6	55	8	150				
14734	2/24/2017	16:51	11	SCT055 SCT100 BKN		10	68	20	59	10	160				
14734	2/24/2017	17:51	11	FEW050 SCT100 BKN		10	67	19.4	61	8	160				
14734	2/24/2017	18:51	11	FEW040 FEW100 SC		10	65	18.3	65	7	160				
14734	2/24/2017	19:25	11	FEW040 SCT250		10	64	17.8	68	9	170				
14734	2/24/2017	19:51	11	FEW040 SCT250		10	64	17.8	73	7	180				
14734	2/24/2017	20:51	11	FEW005 FEW250		10	61	16.1	81	8	160				
14734	2/24/2017	21:51	11	FEW005 SCT250		10	61	16.1	84	7	170				
14734	2/24/2017	22:51	11	FEW005 SCT027 BKN		10	60	15.6	90	7	180				
14734	2/24/2017	23:51	11	FEW005 FEW029 SC		10	59	15	90	5	180				
14734	2/25/2017	0:51	11	FEW005 BKN055 OVC		10	59	15	90	3	VR				
14734	2/25/2017	1:51	11	FEW004 SCT050 BKN		10	58	14.4	90	5	150				
14734	2/25/2017	2:51	11	FEW004 SCT055 BKN		9	58	14.4	90	5	170				
14734	2/25/2017	3:51	11	FEW004 FEW055 BKI		9	53	11.7	90	3	90				
14734	2/25/2017	4:51	11	SCT003		7	51	10.6	93	3	90				
14734	2/25/2017	5:31	11	VV012		0.5	50	10	93	5	80				
14734	2/25/2017	5:42	11	BKN001 BKN006 OVC		0.5	50	10	*96*	3	90		Y	2/25/2017	5:40
14734	2/25/2017	5:51	11	BKN001 BKN006 OVC		0.5	50	10	*96*	5	90		Y		
14734	2/25/2017	6:01	11	VV003		0.25	50	10	*96*	3	90		Y		
14734	2/25/2017	6:46	11	VV001		0.12	48	9	*100*	3	60		Y		
14734	2/25/2017	6:51	11	VV002		0.12	49	9.4	*96*	5	70		Y		
14734	2/25/2017	7:10	11	OVC002		0.12	50	10	*96*	3	80		Y		
14734	2/25/2017	7:23	11	VV002		0.12	50	10	*96*	6	90		Y		
14734	2/25/2017	7:41	11	OVC002		0.12	49	9.4	*100*	7	110		Y		
14734	2/25/2017	7:51	11	OVC002		0.12	49	9.4	*100*	6	100		Y		
14734	2/25/2017	7:57	11	OVC003		0.12	50	10	*96*	5	110		Y		
14734	2/25/2017	8:02	11	BKN002 OVC070		0.5	50	10	*100*	5	110		Y		
14734	2/25/2017	8:15	11	BKN002 OVC070		1.5	50	10	*100*	6	90		Y		
14734	2/25/2017	8:18	11	SCT002 BKN070 OVC		4	50	10	*100*	3	100		Y		
14734	2/25/2017	8:51	11	FEW005 SCT070 BKN		5	53	11.7	90	0	0			2/25/2017	8:50
14734	2/25/2017	9:51	11	FEW012 SCT070 BKN		10	56	13.3	80	6	80				
14734	2/25/2017	10:51	11	FEW014 SCT070 BKN		10	58	14.4	78	7	80				
14734	2/25/2017	11:51	11	FEW020 SCT070 BKN		10	64	17.8	70	8	80				
14734	2/25/2017	12:51	11	SCT023 SCT070 BKN		10	65	18.3	68	11	120				
14734	2/25/2017	13:51	11	SCT023 SCT070 BKN		10	65	18.3	70	16	140				
14734	2/25/2017	14:51	11	SCT023 SCT070 BKN		10	66	18.9	68	15	150				
14734	2/25/2017	15:51	11	FEW023 FEW070 SC		10	64	17.8	75	16	140				

HourlyObs

Month/Year: 2/2017
Station Location: NEWARK LIBERTY INTERNATIONAL AP (14734)
Lat: 40.682
Lon: -74.169
Elev: 7 ft. above sea level

WBAN	Date	Time	StationTyp	SkyCondition	SkyCondit	Visibility	DryBulbFaren	DryBulbCe	RelativeHu	WindSpeed	Direction	urlyPrecip	FilterOut?	Filter Date	Filter Time
14734	2/25/2017	16:51	11	FEW020 FEW070 BK		10	62	16.7	78	15	150				
14734	2/25/2017	17:51	11	FEW065 BKN100 OV		10	61	16.1	84	10	180	T	Y	2/25/2017	17:00
14734	2/25/2017	18:03	11	SCT060CB SCT080		10	62	16.7	81	9	180			2/25/2017	18:00
14734	2/25/2017	18:24	11	FEW021 BKN055CB		0.5	61	16.1	87	21	250		Y	2/25/2017	18:10
14734	2/25/2017	18:32	11	FEW012 BKN021 OV		0.5	58	14.4	87	20	260		Y		
14734	2/25/2017	18:33	11	FEW012 BKN021 OV		3	57	13.9	90	16	270			2/25/2017	18:30
14734	2/25/2017	18:51	11	FEW012 SCT021 OV		5	55	13	90	15	260	0.43	Y	2/25/2017	18:40
14734	2/25/2017	19:04	11	SCT014 SCT022 OVC		10	55	12.8	90	15	290			2/25/2017	19:00
14734	2/25/2017	19:27	11	SCT014 BKN021 OVC		7	54	12.2	86	26	270		Y	2/25/2017	19:10
14734	2/25/2017	19:51	11	SCT019 BKN037 OVC		7	52	11.1	86	18	310	0.1	Y		
14734	2/25/2017	20:51	11	FEW019 BKN075 OV		10	50	10	77	11	310	0.01	Y		
14734	2/25/2017	21:51	11	SCT100 BKN140 BKN		10	50	10	71	13	290	T	Y		
14734	2/25/2017	22:51	11	FEW020 BKN035 BKN		10	49	9.4	69	21	310	T	Y		
14734	2/25/2017	23:51	11	FEW027 SCT040 BKN		10	46	7.8	66	18	330	T	Y		
14734	2/26/2017	0:51	11	FEW034 SCT040 BKN		10	44	6.7	63	21	290		Y		
14734	2/26/2017	1:51	11	FEW034 OVC060		10	43	6.1	63	17	290			2/26/2017	1:50
14734	2/26/2017	2:51	11	BKN034 OVC060		10	42	5.6	65	15	290	T	Y	2/26/2017	2:00
14734	2/26/2017	3:51	11	FEW035 OVC050		10	41	5	53	18	310	T	Y		
14734	2/26/2017	4:51	11	BKN045		10	39	3.9	53	15	300			2/26/2017	4:50
14734	2/26/2017	5:51	11	SCT045		10	37	2.8	46	17	300				
14734	2/26/2017	6:51	11	BKN048		10	37	2.8	46	17	300				
14734	2/26/2017	7:51	11	BKN047		10	38	3.3	46	13	300				
14734	2/26/2017	8:51	11	BKN049		10	39	3.9	43	22	300		Y	2/26/2017	8:00
14734	2/26/2017	9:51	11	BKN049		10	39	3.9	39	18	290		Y		
14734	2/26/2017	10:51	11	BKN055		10	41	5	36	21	290		Y		
14734	2/26/2017	11:51	11	SCT055		10	42	5.6	32	23	270		Y		
14734	2/26/2017	12:51	11	SCT055		10	43	6.1	32	20	290		Y		
14734	2/26/2017	13:51	11	SCT055		10	44	6.7	32	10	280			2/26/2017	13:50
14734	2/26/2017	14:51	11	SCT060		10	44	6.7	31	15	300				
14734	2/26/2017	15:51	11	FEW065		10	43	6.1	31	18	260		Y	2/26/2017	15:00
14734	2/26/2017	16:51	11	SCT060		10	41	5	36	20	260		Y		
14734	2/26/2017	17:51	11	SCT060		10	40	4.4	38	18	250		Y		
14734	2/26/2017	18:51	11	BKN060		10	39	3.9	39	16	260			2/26/2017	18:50
14734	2/26/2017	19:51	11	FEW060		10	38	3.3	41	13	270				
14734	2/26/2017	20:51	11	CLR		10	37	2.8	41	10	280				
14734	2/26/2017	21:51	11	CLR		10	37	2.8	41	7	250				
14734	2/26/2017	22:51	11	CLR		10	35	1.7	44	7	250				
14734	2/26/2017	23:51	11	CLR		10	33	0.6	52	7	220				
14734	2/27/2017	0:51	11	CLR		10	33	0.6	54	3	180				
14734	2/27/2017	1:51	11	CLR		10	33	0.6	56	0	0				
14734	2/27/2017	2:51	11	CLR		10	33	0.6	56	3	200				
14734	2/27/2017	3:51	11	CLR		10	31	-0.6	61	6	220				
14734	2/27/2017	4:51	11	CLR		10	31	-0.6	61	7	230				
14734	2/27/2017	5:51	11	CLR		10	30	-1.1	64	9	210				
14734	2/27/2017	6:51	11	FEW100 FEW260		10	30	-1.1	64	6	210				
14734	2/27/2017	7:51	11	FEW100 BKN260		10	35	1.7	57	8	220				
14734	2/27/2017	8:51	11	FEW100 BKN260		10	39	3.9	53	7	210				
14734	2/27/2017	9:51	11	FEW100 BKN260		10	45	7.2	44	14	220				
14734	2/27/2017	10:51	11	FEW100 SCT230 BKN		10	49	9.4	38	17	230				
14734	2/27/2017	11:51	11	FEW100 SCT220 OVC		10	52	11.1	34	13	220				
14734	2/27/2017	12:51	11	FEW100 SCT220 OVC		10	54	12.2	26	11	230				
14734	2/27/2017	13:51	11	FEW110 SCT150 SCT		10	54	12.2	24	16	230				
14734	2/27/2017	14:51	11	SCT095 OVC260		10	54	12.2	25	16	230				
14734	2/27/2017	15:51	11	FEW060 BKN090 OV		10	54	12.2	28	10	220				
14734	2/27/2017	16:51	11	FEW060 BKN090 BKN		10	53	11.7	30	14	250				
14734	2/27/2017	17:51	11	FEW090 SCT120 SCT		10	52	11.1	37	20	240		Y	2/27/2017	17:00
14734	2/27/2017	18:51	11	FEW090 BKN120 BKN		10	51	10.6	41	13	220			2/27/2017	18:50
14734	2/27/2017	19:51	11	FEW060 BKN095 BKN		10	50	10	43	9	230				
14734	2/27/2017	20:51	11	FEW080 SCT110 BKN		10	48	8.9	50	6	220				
14734	2/27/2017	21:51	11	FEW080 SCT110 BKN		10	46	7.8	56	3	210				
14734	2/27/2017	22:51	11	FEW080 BKN150 OV		10	47	8.3	54	3	190				
14734	2/27/2017	23:51	11	SCT080 BKN140 OVC		10	46	7.8	56	3	150				
14734	2/28/2017	0:51	11	BKN080 OVC140		10	45	7.2	58	3	190				
14734	2/28/2017	1:51	11	OVC090		10	46	7.8	56	0	0				
14734	2/28/2017	2:51	11	OVC100		10	46	7.8	58	3	170				
14734	2/28/2017	3:51	11	BKN090 OVC130		10	46	7.8	58	0	0				
14734	2/28/2017	4:51	11	OVC120		10	46	7.8	58	0	0				
14734	2/28/2017	5:51	11	SCT095 OVC120		10	47	8.3	61	0	0				
14734	2/28/2017	6:51	11	FEW095 BKN110 BKN		10	47	8.3	63	3	80				
14734	2/28/2017	7:51	11	FEW030 SCT085 BKN		10	48	8.9	66	0	0				
14734	2/28/2017	8:51	11	FEW080 FEW120 BKN		10	50	10	61	7	70				
14734	2/28/2017	9:51	11	FEW080 SCT250		10	53	11.7	53	3	VR				
14734	2/28/2017	10:51	11	FEW250		10	56	13.3	49	6	70				
14734	2/28/2017	11:51	11	BKN250		10	58	14.4	51	7	90				
14734	2/28/2017	12:51	11	FEW035 BKN250		10	60	15.6	56	5	130				
14734	2/28/2017	13:51	11	FEW013 FEW230 BKN		10	58	14.4	70	9	110				
14734	2/28/2017	14:49	11	BKN009 OVC250		10	55	13	77	9	140				
14734	2/28/2017	14:51	11	BKN009 OVC250		10	55	12.8	80	9	140				
14734	2/28/2017	15:51	11	BKN006 OVC010		8	55	12.8	83	7	120				
14734	2/28/2017	16:02	11	BKN004 OVC009		5	54	12.2	83	9	130				
14734	2/28/2017	16:15	11	OVC004		2	53	11.7	86	7	100				
14734	2/28/2017	16:25	11	OVC003		0.25	53	11.7	86	7	100				
14734	2/28/2017	16:51	11	OVC002		0.25	52	11.1	93	10	100	T	Y	2/28/2017	16:30
14734	2/28/2017	17:51	11	BKN002 OVC005		0.25	51	10.6	93	6	80	T	Y		
14734	2/28/2017	18:40	11	BKN002 OVC005		1	51	10.6	93	6	100			2/28/2017	18:40
14734	2/28/2017	18:51	11	BKN003 OVC006		1	51	10.6	93	5	VR	T	Y	2/28/2017	18:40
14734	2/28/2017	19:05	11	BKN003 OVC006		2.5	51	10.6	93	3	90			2/28/2017	19:00
14734	2/28/2017	19:08	11	BKN003 BKN006 OVC		2.5	51	10.6	93	3	100				
14734	2/28/2017	19:32	11	SCT003 BKN005 OVC		2.5	51	10.6	90	3	120				

HourlyObs

Month/Year: 2/2017
Station Location: NEWARK LIBERTY INTERNATIONAL AP (14734)
Lat: 40.682
Lon: -74.169
Elev: 7 ft. above sea level

WBAN	Date	Time	StationTyp	SkyCondition	SkyCondit	Visibility	DryBulbFaren	DryBulbCe	RelativeHu	WindSpeed	Direction	urlyPrecip	FilterOut?	Filter Date	Filter Time
14734	2/28/2017	19:51	11	BKN005 BKN065 OVC		5	51	10.6	90	5	70				
14734	2/28/2017	20:09	11	SCT005 BKN065 OVC		8	50	10	90	5	60				
14734	2/28/2017	20:51	11	FEW005 BKN060 OVC		10	50	10	90	3	70				
14734	2/28/2017	21:51	11	FEW007 BKN070 OVC		10	51	10.6	86	0	0				
14734	2/28/2017	22:51	11	SCT045 OVC060		10	52	11.1	83	0	0				
14734	2/28/2017	23:51	11	FEW026 BKN045 OVC		10	52	11.1	83	3	20				

HourlyObs

Month/Year: 3/2017
Station Location: NEWARK LIBERTY INTERNATIONAL AP (14734)
Lat: 40.682
Lon: -74.169
Elev: 7 ft. above sea level

WBAN	Date	Time	StationTyp	SkyCondition	SkyCondit	Visibility	DryBulbFaren	DryBulbCe	RelativeHu	WindSpeed	Direction	urlyPrecip	FilterOut?	Filter Date	Filter Time
14734	3/1/2017	0:24	11	BKN016 BKN021 OVC		10	53	11.7	86	0	0				
14734	3/1/2017	0:51	11	BKN016 BKN028 OVC		10	52	11.1	86	3	120				
14734	3/1/2017	1:51	11	BKN015 BKN025 OVC		10	52	11.1	86	5	90				
14734	3/1/2017	2:49	11	BKN010 OVC025		10	54	12	86	3	360				
14734	3/1/2017	2:51	11	BKN010 OVC025		10	52	11.1	93	3	330 T		Y	3/1/2017	2:50
14734	3/1/2017	3:17	11	BKN008 OVC015		10	54	12.2	93	5	250			3/1/2017	3:10
14734	3/1/2017	3:51	11	BKN008 OVC015		10	54	12.2	96	0	0		Y	3/1/2017	3:20
14734	3/1/2017	4:51	11	OVC008		10	56	13.3	93	5	170			3/1/2017	4:50
14734	3/1/2017	5:49	11	SCT008 OVC012		10	57	14	93	8	190				
14734	3/1/2017	5:51	11	SCT008 OVC012		10	58	14.4	90	7	190				
14734	3/1/2017	6:51	11	FEW008 OVC012		10	58	14.4	90	9	190				
14734	3/1/2017	7:10	11	BKN008 OVC011		10	58	14.4	90	10	180				
14734	3/1/2017	7:51	11	OVC008		8	59	15	90	9	220				
14734	3/1/2017	8:38	11	SCT008 OVC011		8	59	15	90	14	220				
14734	3/1/2017	8:51	11	FEW008 OVC010		8	59	15	90	9	210				
14734	3/1/2017	9:51	11	FEW007 OVC014		9	61	16.1	84	10	200 T		Y	3/1/2017	9:00
14734	3/1/2017	10:51	11	FEW007 OVC014CB		9	60	15.6	87	11	230	0.05	Y		
14734	3/1/2017	10:58	11	SCT006 OVC012CB		1.75	60	15.6	87	11	250			3/1/2017	10:50
14734	3/1/2017	11:09	11	SCT006 OVC012CB		2	60	15.6	90	11	230				
14734	3/1/2017	11:24	11	FEW006 BKN014CB (		2	59	15	93	6	210				
14734	3/1/2017	11:35	11	FEW006 SCT015CB (		4	60	15.6	93	9	220				
14734	3/1/2017	11:49	11	FEW009 SCT017 OVC		6	61	16	87	5	210				
14734	3/1/2017	11:51	11	FEW009 SCT017 OVC		6	60	15.6	93	5	190	0.11	Y	3/1/2017	11:50
14734	3/1/2017	12:02	11	FEW011 BKN023 OVC		6	60	15.6	93	7	190			3/1/2017	12:00
14734	3/1/2017	12:51	11	FEW012 SCT018 OVC		7	63	17.2	87	9	190 T		Y	3/1/2017	12:10
14734	3/1/2017	13:51	11	SCT014 OVC023		8	66	18.9	81	14	210			3/1/2017	13:50
14734	3/1/2017	14:33	11	SCT029 OVC250		10	70	21.1	73	11	210				
14734	3/1/2017	14:51	11	SCT031 SCT180 OVC		10	72	22.2	66	18	220		Y	3/1/2017	14:40
14734	3/1/2017	15:51	11	SCT036 BKN055 OVC		9	71	21.7	68	17	220 T		Y		
14734	3/1/2017	16:51	11	FEW035 SCT050 BKN		10	71	21.7	66	20	210 T		Y		
14734	3/1/2017	17:51	11	FEW025 FEW090 SC		10	70	21.1	61	17	230			3/1/2017	17:50
14734	3/1/2017	18:51	11	BKN180 OVC250		10	69	20.6	51	25	230		Y	3/1/2017	18:00
14734	3/1/2017	19:51	11	OVC200		10	68	20	57	17	220			3/1/2017	19:50
14734	3/1/2017	20:51	11	SCT180 OVC250		10	66	18.9	59	20	230		Y	3/1/2017	20:00
14734	3/1/2017	21:51	11	SCT170 OVC240		10	66	18.9	57	18	230		Y		
14734	3/1/2017	22:51	11	FEW150 OVC240		10	65	18.3	56	21	220		Y		
14734	3/1/2017	23:51	11	FEW060 SCT180 BKN		10	64	17.8	61	21	220		Y		
14734	3/2/2017	0:51	11	FEW060 SCT180 BKN		10	64	17.8	61	18	220		Y		
14734	3/2/2017	1:51	11	SCT044 BKN060 BKN		10	62	16.7	56	23	250 T		Y		
14734	3/2/2017	2:51	11	BKN070 BKN100		10	59	15	41	30	260 T		Y		
14734	3/2/2017	3:51	11	SCT085 BKN100		10	55	12.8	31	28	250		Y		
14734	3/2/2017	4:51	11	FEW065 SCT110		10	52	11.1	38	29	270		Y		
14734	3/2/2017	5:51	11	FEW065 FEW110		10	50	10	35	17	260			3/2/2017	5:50
14734	3/2/2017	6:51	11	FEW070 FEW150		10	48	8.9	46	33	260		Y	3/2/2017	6:00
14734	3/2/2017	7:51	11	FEW070 FEW250		10	46	7.8	40	37	270		Y		
14734	3/2/2017	8:41	11	FEW070 FEW250		10	46	7.8	36	29	270		Y		
14734	3/2/2017	8:51	11	FEW070 FEW250		10	46	7.8	36	32	270		Y		
14734	3/2/2017	9:51	11	FEW050		10	46	7.8	34	34	270		Y		
14734	3/2/2017	10:51	11	FEW055		10	48	8.9	30	24	270		Y		
14734	3/2/2017	11:51	11	FEW060		10	48	8.9	28	29	290		Y		
14734	3/2/2017	12:51	11	FEW060		10	49	9.4	27	28	290		Y		
14734	3/2/2017	13:51	11	FEW065		10	49	9.4	26	28	300		Y		
14734	3/2/2017	14:51	11	FEW065		10	50	10	26	24	300		Y		
14734	3/2/2017	15:51	11	FEW065		10	47	8.3	28	31	280		Y		
14734	3/2/2017	16:51	11	FEW060		10	45	7.2	27	22	300		Y		
14734	3/2/2017	17:51	11	FEW060		10	43	6.1	26	16	310			3/2/2017	17:50
14734	3/2/2017	18:51	11	FEW060		10	42	5.6	27	14	320				
14734	3/2/2017	19:51	11	CLR		10	41	5	29	14	300				
14734	3/2/2017	20:51	11	CLR		10	40	4.4	29	14	300				
14734	3/2/2017	21:51	11	CLR		10	38	3.3	31	13	290				
14734	3/2/2017	22:51	11	CLR		10	37	2.8	34	13	290				
14734	3/2/2017	23:51	11	CLR		10	36	2.2	35	11	300				
14734	3/3/2017	0:51	11	CLR		10	34	1.1	40	8	300				
14734	3/3/2017	1:51	11	CLR		10	34	1.1	40	13	320				
14734	3/3/2017	2:51	11	CLR		10	32	0	42	13	300				
14734	3/3/2017	3:51	11	CLR		10	31	-0.6	43	10	300				
14734	3/3/2017	4:51	11	CLR		10	31	-0.6	43	13	290				
14734	3/3/2017	5:51	11	CLR		10	30	-1.1	41	14	290				
14734	3/3/2017	6:51	11	FEW055		10	30	-1.1	41	8	290				
14734	3/3/2017	7:51	11	FEW055		10	32	0	38	15	270				
14734	3/3/2017	8:51	11	FEW055		10	33	0.6	38	15	310				
14734	3/3/2017	9:51	11	FEW055		10	35	1.7	34	14	280				
14734	3/3/2017	10:51	11	FEW055 SCT090		10	37	2.8	30	17	270				
14734	3/3/2017	11:51	11	SCT070 SCT090		10	38	3.3	27	15	310				
14734	3/3/2017	12:51	11	SCT070 BKN090		10	41	5	23	16	270				
14734	3/3/2017	13:51	11	SCT075 BKN095		10	40	4.4	18	21	310		Y	3/3/2017	13:00
14734	3/3/2017	14:51	11	FEW075 BKN085		10	38	3.3	22	20	310		Y		
14734	3/3/2017	15:51	11	FEW050 SCT080 BKN		10	39	3.9	23	16	320			3/3/2017	15:50
14734	3/3/2017	16:51	11	FEW050 FEW075 SC		10	37	2.8	27	21	300		Y	3/3/2017	16:00
14734	3/3/2017	17:51	11	FEW050 BKN070 BKN		10	34	1.1	54	21	270		Y		
14734	3/3/2017	18:51	11	FEW045 SCT080		10	32	0	59	13	280			3/3/2017	18:50
14734	3/3/2017	19:51	11	FEW035 BKN055 BKN		10	32	0	47	22	320 T		Y	3/3/2017	19:00
14734	3/3/2017	20:51	11	FEW040 SCT100		10	30	-1.1	45	18	310		Y		
14734	3/3/2017	21:51	11	FEW045		10	28	-2.2	36	21	320		Y		
14734	3/3/2017	22:51	11	FEW040		10	26	-3.3	34	20	300		Y		
14734	3/3/2017	23:51	11	SCT060		10	25	-3.9	35	21	320		Y		
14734	3/4/2017	0:51	11	FEW060		10	24	-4.4	38	15	320			3/4/2017	0:50
14734	3/4/2017	1:51	11	FEW050		10	23	-5	42	14	310				
14734	3/4/2017	2:51	11	FEW050		10	23	-5	42	17	290				

HourlyObs

Month/Year: 3/2017
Station Location: NEWARK LIBERTY INTERNATIONAL AP (14734)
Lat: 40.682
Lon: -74.169
Elev: 7 ft. above sea level

WBAN	Date	Time	StationTyp	SkyCondition	SkyCondit	Visibility	DryBulbFaren	DryBulbCe	RelativeHu	WindSpeed	dDirection	urlyPrecip	FilterOut?	Filter Date	Filter Time
14734	3/4/2017	3:51	11	FEW050		10	22	-5.6	42	13	310				
14734	3/4/2017	4:51	11	CLR		10	21	-6.1	45	11	280				
14734	3/4/2017	5:51	11	FEW050		10	21	-6.1	45	13	290				
14734	3/4/2017	6:51	11	FEW050		10	22	-5.6	44	10	280				
14734	3/4/2017	7:51	11	FEW042 BKN060		10	24	-4.4	44	10	270				
14734	3/4/2017	8:51	11	FEW045 SCT055		10	25	-3.9	40	9	290				
14734	3/4/2017	9:51	11	BKN060		10	28	-2.2	34	*21*	310		Y	3/4/2017	9:00
14734	3/4/2017	10:51	11	BKN055 BKN070		10	29	-1.7	34	17	310			3/4/2017	10:50
14734	3/4/2017	11:51	11	SCT055 BKN065		10	29	-1.7	31	*22*	320		Y	3/4/2017	11:00
14734	3/4/2017	12:51	11	SCT060 BKN075		10	31	-0.6	27	*21*	300		Y		
14734	3/4/2017	13:51	11	BKN065 BKN075		10	31	-0.6	27	*26*	290		Y		
14734	3/4/2017	14:51	11	BKN065 BKN075		10	29	-1.7	27	*29*	300		Y		
14734	3/4/2017	15:51	11	SCT070		10	30	-1.1	23	*29*	300		Y		
14734	3/4/2017	16:51	11	FEW070		10	29	-1.7	18	*23*	310		Y		
14734	3/4/2017	17:51	11	FEW070		10	26	-3.3	20	*21*	320		Y		
14734	3/4/2017	18:51	11	FEW070		10	24	-4.4	23	*26*	330		Y		
14734	3/4/2017	19:51	11	CLR		10	22	-5.6	26	*24*	310		Y		
14734	3/4/2017	20:51	11	CLR		10	21	-6.1	26	*21*	330		Y		
14734	3/4/2017	21:51	11	CLR		10	19	-7.2	32	*18*	320		Y		
14734	3/4/2017	22:51	11	CLR		10	18	-7.8	32	16	320			3/4/2017	22:50
14734	3/4/2017	23:51	11	CLR		10	17	-8.3	34	15	320				
14734	3/5/2017	0:51	11	CLR		10	16	-8.9	33	13	330				
14734	3/5/2017	1:51	11	CLR		10	16	-8.9	33	*18*	330		Y	3/5/2017	1:00
14734	3/5/2017	2:51	11	CLR		10	16	-8.9	33	13	320			3/5/2017	2:50
14734	3/5/2017	3:51	11	CLR		10	15	-9.4	37	9	310				
14734	3/5/2017	4:51	11	CLR		10	15	-9.4	40	11	290				
14734	3/5/2017	5:51	11	CLR		10	15	-9.4	40	10	310				
14734	3/5/2017	6:51	11	CLR		10	15	-9.4	38	9	320				
14734	3/5/2017	7:51	11	CLR		10	17	-8.3	30	10	320				
14734	3/5/2017	8:51	11	CLR		10	21	-6.1	23	10	340				
14734	3/5/2017	9:51	11	FEW250		10	24	-4.4	19	10	340				
14734	3/5/2017	10:51	11	FEW250		10	28	-2.2	15	15	320				
14734	3/5/2017	11:51	11	FEW200 FEW250		10	31	-0.6	13	11	320				
14734	3/5/2017	12:51	11	FEW220 FEW260		10	33	0.6	13	11	320				
14734	3/5/2017	13:51	11	FEW220 SCT260		10	36	2.2	13	13	290				
14734	3/5/2017	14:51	11	FEW220 FEW260		10	36	2.2	11	8	300				
14734	3/5/2017	15:51	11	FEW250		10	37	2.8	11	10	270				
14734	3/5/2017	16:51	11	FEW250		10	37	2.8	11	14	300				
14734	3/5/2017	17:51	11	FEW250		10	35	1.7	13	13	280				
14734	3/5/2017	18:51	11	FEW250		10	35	1.7	14	9	290				
14734	3/5/2017	19:51	11	FEW250		10	31	-0.6	26	9	20				
14734	3/5/2017	20:51	11	FEW250		10	31	-0.6	22	8	360				
14734	3/5/2017	21:51	11	CLR		10	29	-1.7	25	7	10				
14734	3/5/2017	22:51	11	CLR		10	26	-3.3	31	7	360				
14734	3/5/2017	23:51	11	CLR		10	27	-2.8	32	8	30				
14734	3/6/2017	0:51	11	CLR		10	27	-2.8	37	0	0				
14734	3/6/2017	1:51	11	SCT250		10	27	-2.8	32	0	0				
14734	3/6/2017	2:51	11	SCT250		10	27	-2.8	35	5	30				
14734	3/6/2017	3:51	11	SCT250		10	22	-5.6	52	7	360				
14734	3/6/2017	4:51	11	SCT250		10	22	-5.6	52	8	20				
14734	3/6/2017	5:51	11	FEW150 SCT250		10	23	-5	48	8	20				
14734	3/6/2017	6:51	11	FEW110 SCT250		10	24	-4.4	46	6	10				
14734	3/6/2017	7:51	11	FEW110 FEW250		10	28	-2.2	36	9	20				
14734	3/6/2017	8:51	11	FEW110 SCT250		10	31	-0.6	30	5	20				
14734	3/6/2017	9:51	11	SCT260		10	34	1.1	23	5	90				
14734	3/6/2017	10:51	11	FEW150 SCT260		10	36	2.2	24	0	0				
14734	3/6/2017	11:51	11	FEW120 SCT250		10	41	5	23	6	220				
14734	3/6/2017	12:51	11	FEW120 BKN250		10	43	6.1	25	6	VR				
14734	3/6/2017	13:51	11	FEW100 FEW140 BKI		10	42	5.6	31	10	150				
14734	3/6/2017	14:51	11	BKN110 BKN150 BKN		10	42	5.6	38	8	130				
14734	3/6/2017	15:51	11	BKN110 OVC270		10	41	5	43	9	140				
14734	3/6/2017	16:51	11	OVC110		10	40	4.4	51	10	140				
14734	3/6/2017	17:51	11	OVC100		10	40	4.4	51	7	140				
14734	3/6/2017	18:51	11	OVC100		10	41	5	45	8	150				
14734	3/6/2017	19:51	11	OVC110		10	41	5	41	8	170				
14734	3/6/2017	20:51	11	FEW065 BKN080 OVC		10	41	5	43	7	170				
14734	3/6/2017	21:51	11	SCT060 OVC080		10	41	5	47	6	160				
14734	3/6/2017	22:51	11	BKN060 OVC080		10	41	5	49	7	170				
14734	3/6/2017	22:58	11	BKN060 OVC080		10	41	5	49	6	170				
14734	3/6/2017	23:51	11	OVC060		10	42	5.6	53	6	170				
14734	3/7/2017	0:51	11	OVC050		10	42	5.6	58	5	150				
14734	3/7/2017	1:51	11	OVC055		10	42	5.6	60	3	130				
14734	3/7/2017	2:51	11	OVC060		10	42	5.6	65	0	0	*T*	Y	3/7/2017	2:00
14734	3/7/2017	3:51	11	OVC060		10	43	6.1	73	0	0	*T*	Y		
14734	3/7/2017	4:51	11	OVC055		10	43	6.1	79	3	100	*0.01*	Y		
14734	3/7/2017	5:51	11	OVC045		10	44	6.7	83	5	110	*T*	Y		
14734	3/7/2017	6:51	11	OVC050		10	45	7.2	83	3	110	*T*	Y		
14734	3/7/2017	7:51	11	FEW045 BKN055 OVC		10	46	7.8	83	3	100	*T*	Y		
14734	3/7/2017	8:51	11	FEW015 BKN060 OVC		8	47	8.3	83	3	VR	*0.01*	Y		
14734	3/7/2017	9:51	11	FEW015 OVC070		5	47	8.3	89	3	120	*0.04*	Y		
14734	3/7/2017	10:51	11	FEW010 OVC065		7	48	8.9	93	0	0	*0.02*	Y		
14734	3/7/2017	11:51	11	FEW010 BKN045 OVC		6	50	10	90	3	VR	*0.01*	Y		
14734	3/7/2017	12:51	11	FEW010 BKN032 OVC		8	51	10.6	86	3	VR	*T*	Y		
14734	3/7/2017	13:51	11	FEW010 BKN032 OVC		8	51	10.6	83	6	90	*T*	Y		
14734	3/7/2017	14:51	11	FEW035 SCT070 BKN		9	50	10	86	6	90	*T*	Y		
14734	3/7/2017	15:51	11	FEW040 SCT100 OVC		9	50	10	83	5	90	*T*	Y		
14734	3/7/2017	16:51	11	FEW040 SCT110 BKN		9	50	10	80	5	80			3/7/2017	16:50
14734	3/7/2017	17:51	11	FEW070 BKN130 BKN		9	48	8.9	86	3	50				
14734	3/7/2017	18:51	11	FEW060 SCT120 BKN		10	49	9.4	80	3	70				

HourlyObs

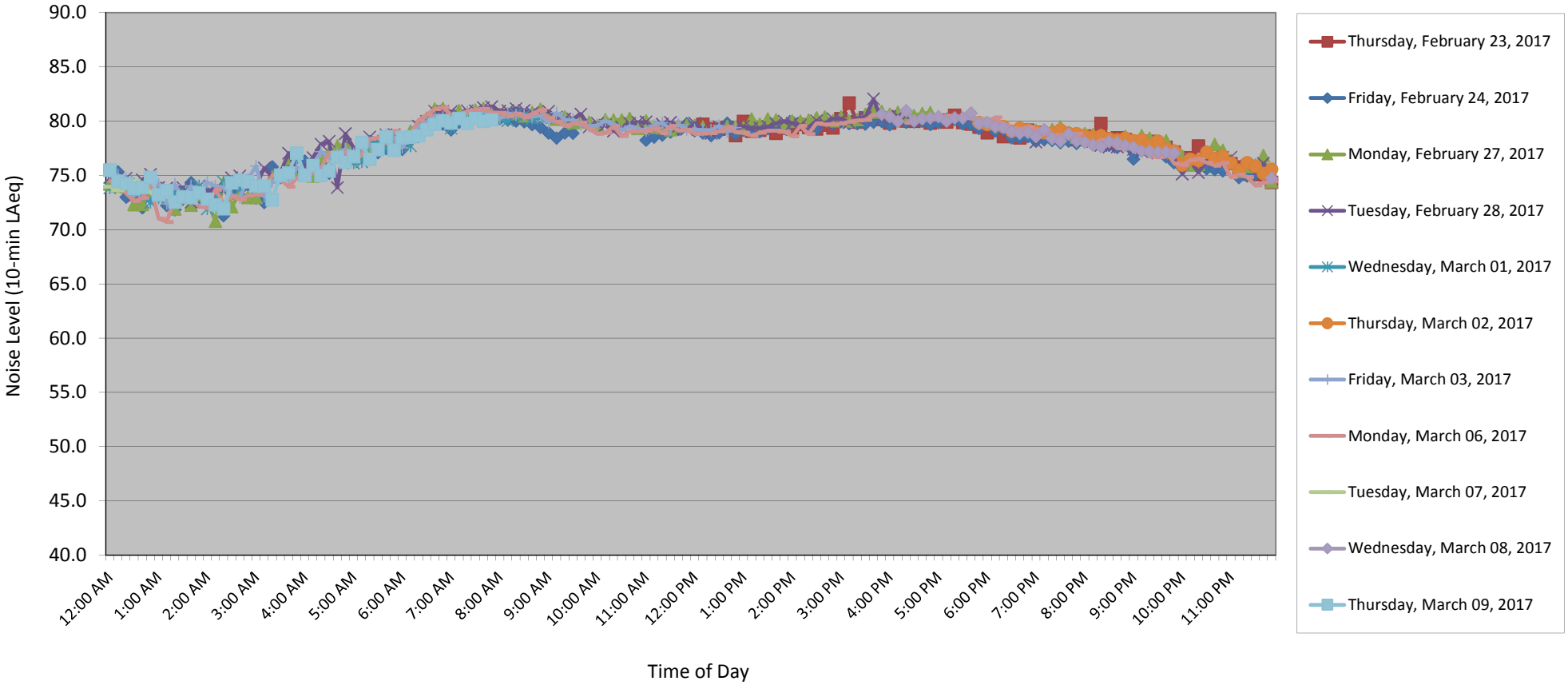
Month/Year: 3/2017
Station Location: NEWARK LIBERTY INTERNATIONAL AP (14734)
Lat: 40.682
Lon: -74.169
Elev: 7 ft. above sea level

WBAN	Date	Time	StationTyp	SkyCondition	SkyCondit	Visibility	DryBulbFaren	DryBulbCe	RelativeHu	WindSpeed	Direction	urlyPrecip	FilterOut?	Filter Date	Filter Time
14734	3/7/2017	19:51	11	FEW060 BKN090 OVC		10	49	9.4	83	3	70	T	Y	3/7/2017	19:00
14734	3/7/2017	20:51	11	FEW040 BKN080 OVC		10	49	9.4	83	0	0			3/7/2017	20:50
14734	3/7/2017	21:51	11	FEW040 SCT065 BKN		10	51	10.6	83	0	0	T	Y	3/7/2017	21:00
14734	3/7/2017	22:51	11	FEW050 BKN110 OVC		10	51	10.6	80	0	0	T	Y		
14734	3/7/2017	23:51	11	FEW045 BKN060 BKN		10	56	13.3	75	8	190	T	Y		
14734	3/8/2017	0:51	11	SCT065 OVC110		10	56	13.3	75	9	180	T	Y		
14734	3/8/2017	1:51	11	FEW065 OVC100		10	56	13.3	75	9	190	T	Y		
14734	3/8/2017	2:51	11	BKN095 OVC190		10	57	13.9	75	10	190			3/8/2017	2:50
14734	3/8/2017	3:51	11	SCT065 BKN110 OVC		10	58	14.4	75	14	200				
14734	3/8/2017	4:47	11	BKN027 OVC040		10	55	13	90	11	220				
14734	3/8/2017	4:51	11	BKN027 OVC038		10	55	12.8	86	14	220	T	Y	3/8/2017	4:50
14734	3/8/2017	5:51	11	BKN026 OVC034		8	58	14.4	81	18	250	T	Y		
14734	3/8/2017	6:11	11	SCT015 BKN023 OVC		8	50	10	77	23	300		Y		
14734	3/8/2017	6:47	11	FEW015 BKN039 OVC		10	50	10	66	15	310			3/8/2017	6:40
14734	3/8/2017	6:51	11	FEW015 BKN039 OVC		10	50	10	69	16	310	T	Y	3/8/2017	6:50
14734	3/8/2017	7:51	11	OVC070		10	50	10	64	11	280			3/8/2017	7:50
14734	3/8/2017	8:51	11	FEW030 BKN090		10	50	10	61	15	270	T	Y	3/8/2017	8:00
14734	3/8/2017	9:51	11	FEW035 SCT100 BKN		10	52	11.1	50	15	290			3/8/2017	9:50
14734	3/8/2017	10:51	11	FEW055 SCT110		10	55	12.8	39	13	290				
14734	3/8/2017	11:51	11	FEW055 FEW110		10	58	14.4	27	20	260		Y	3/8/2017	11:00
14734	3/8/2017	12:51	11	FEW065 FEW120		10	60	15.6	25	16	250			3/8/2017	12:50
14734	3/8/2017	13:51	11	FEW070		10	61	16.1	21	23	270		Y	3/8/2017	13:00
14734	3/8/2017	14:51	11	SCT090		10	62	16.7	21	25	240		Y		
14734	3/8/2017	15:51	11	FEW095 SCT250		10	60	15.7	20	14	270			3/8/2017	15:50
14734	3/8/2017	16:51	11	FEW080 SCT250		10	60	15.8	19	14	250				
14734	3/8/2017	17:51	11	FEW070 FEW250		10	58	14.7	20	8	230				
14734	3/8/2017	18:51	11	FEW070		10	58	14.5	21	10	230				
14734	3/8/2017	19:51	11	CLR	s	10	58	14.2	22	8	220				
14734	3/8/2017	20:51	11	CLR	s	10	55	12.7	24	7	230				
14734	3/8/2017	21:51	11	FEW050		10	55	12.8	23	10	260				
14734	3/8/2017	22:51	11	FEW050		10	55	13	21	18	260		Y	3/8/2017	22:00
14734	3/8/2017	23:51	11	CLR	s	10	56	13.1	21	11	250			3/8/2017	23:50
14734	3/9/2017	0:51	11	CLR	s	10	55	12.6	19	16	270				
14734	3/9/2017	1:51	11	CLR	s	10	54	12.2	20	11	260				
14734	3/9/2017	2:51	11	CLR	s	10	54	12.4	20	16	270				
14734	3/9/2017	3:51	11	CLR	s	10	54	12	21	14	270				
14734	3/9/2017	4:51	11	CLR	s	10	52	11.3	25	14	270				
14734	3/9/2017	5:51	11	CLR	s	10	52	11.1	23	10	260				
14734	3/9/2017	6:51	11	CLR	s	10	51	10.6	23	14	270				
14734	3/9/2017	7:51	11	FEW250		10	53	11.6	21	11	270				
14734	3/9/2017	8:51	11	FEW100		10	55	12.7	18	22	300		Y	3/9/2017	8:00
14734	3/9/2017	9:51	11	FEW100 FEW250		10	57	13.7	16	15	290			3/9/2017	9:50
14734	3/9/2017	10:51	11	FEW100 FEW250		10	58	14.2	13	18	270		Y	3/9/2017	10:00
14734	3/9/2017	11:51	11	FEW100		10	58	14.7	13	20	300		Y		
14734	3/9/2017	12:51	11	FEW100 FEW250		10	60	15.7	12	15	290			3/9/2017	12:50
14734	3/9/2017	13:46	11	FEW100 FEW250		10	64	18	15	25	260		Y	3/9/2017	13:00
14734	3/9/2017	13:51	11	FEW100 FEW250		10	63	17.2	15	23	260		Y		
14734	3/9/2017	14:51	11	FEW100 FEW250		10	64	17.8	15	22	280		Y		
14734	3/9/2017	15:51	11	SCT100		10	64	17.8	15	24	280		Y		
14734	3/9/2017	16:51	11	SCT100 SCT150 BKN		10	63	17.2	16	22	280		Y		
14734	3/9/2017	17:49	11	SCT100 BKN150 BKN		10	59	15	18	15	350			3/9/2017	17:40
14734	3/9/2017	17:51	11	SCT100 BKN150 BKN		10	59	15	18	15	340				
14734	3/9/2017	18:51	11	SCT100 BKN140 BKN		10	55	12.8	27	14	350				
14734	3/9/2017	19:51	11	FEW090 BKN130 BKN		10	53	11.7	26	17	320				
14734	3/9/2017	20:51	11	SCT080 OVC110		10	53	11.7	26	15	330				
14734	3/9/2017	21:51	11	SCT080 OVC110		10	50	10	35	14	350				
14734	3/9/2017	22:51	11	FEW070 OVC100		10	50	10	36	7	350				
14734	3/9/2017	23:51	11	FEW070 OVC100		10	49	9.4	38	10	340				

APPENDIX D
FILTERED NOISE LEVEL DATA GRAPHS

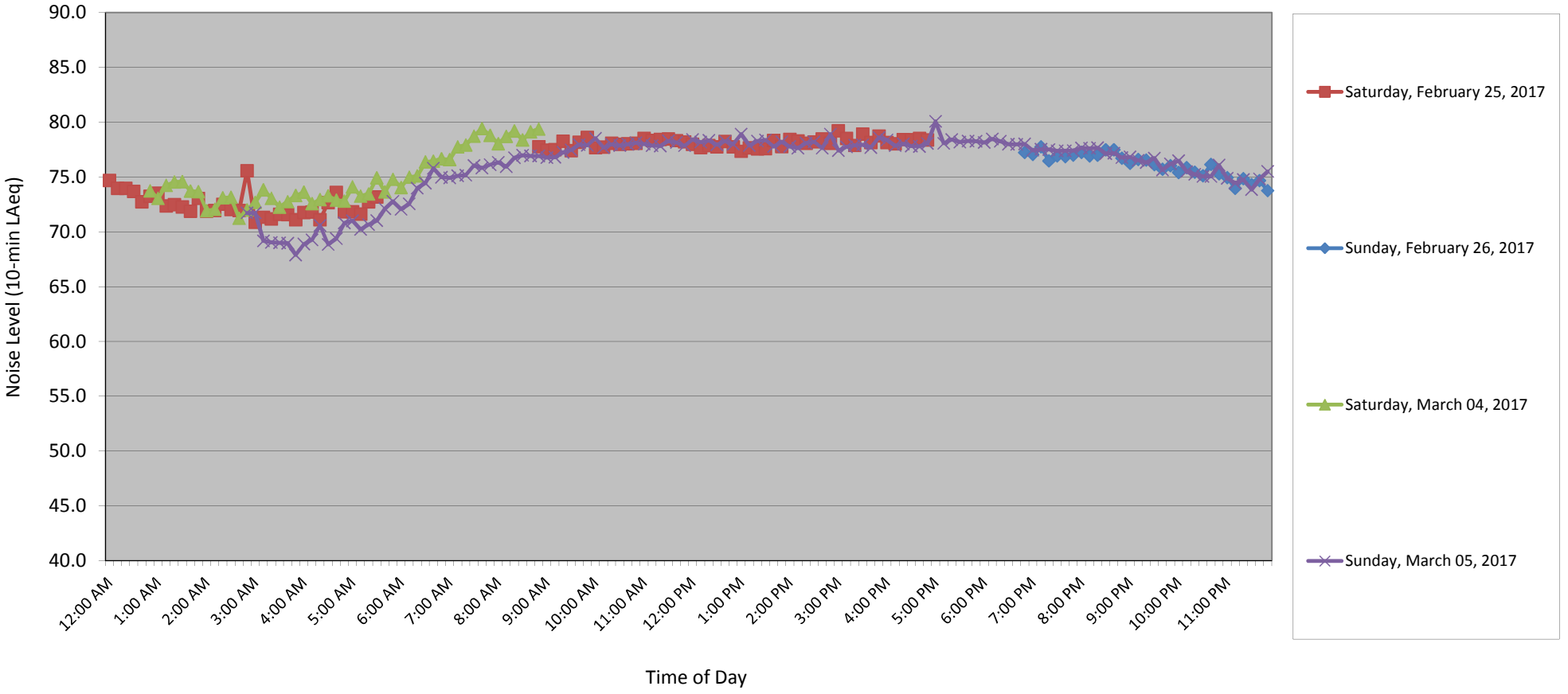
Filtered Data

Professional Noise Assessment of Block 4704 Lots 9, 10, 11, and 12
Site #1
Weekday Noise Level Data (dBA)



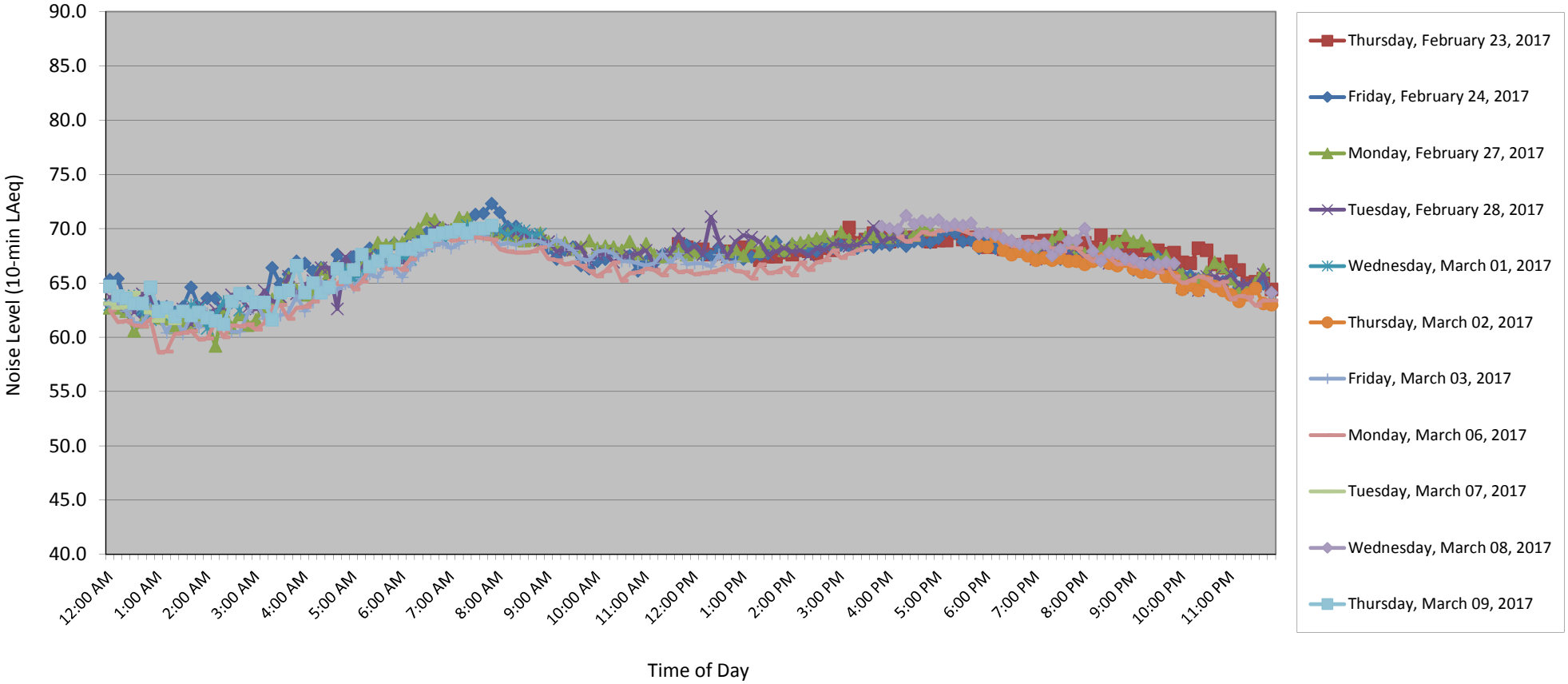
Filtered Data

Professional Noise Assessment of Block 4704 Lots 9, 10, 11, and 12
Site #1
Weekend Noise Level Data (dBA)



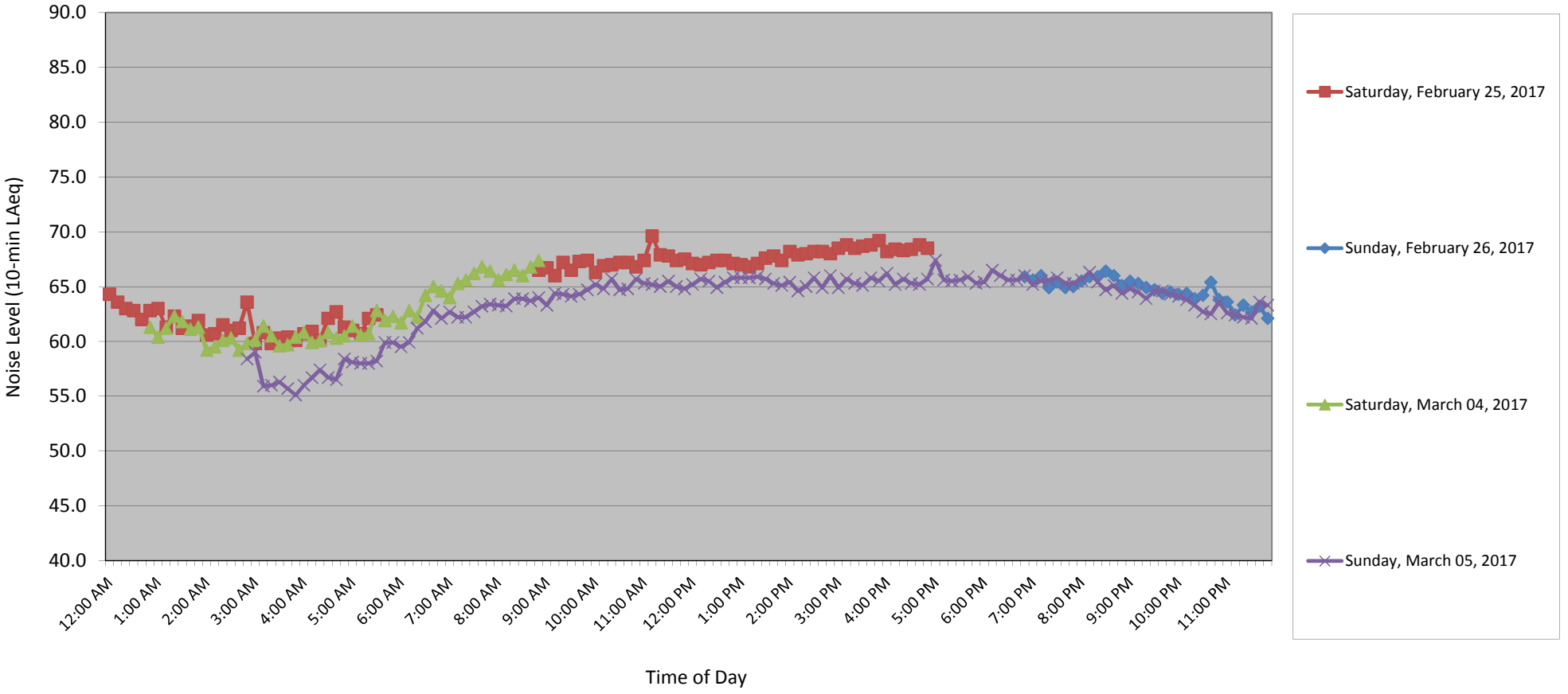
Filtered Data

Professional Noise Assessment of Block 4704 Lots 9, 10, 11, and 12
Site #2
Weekday Noise Level Data (dBA)



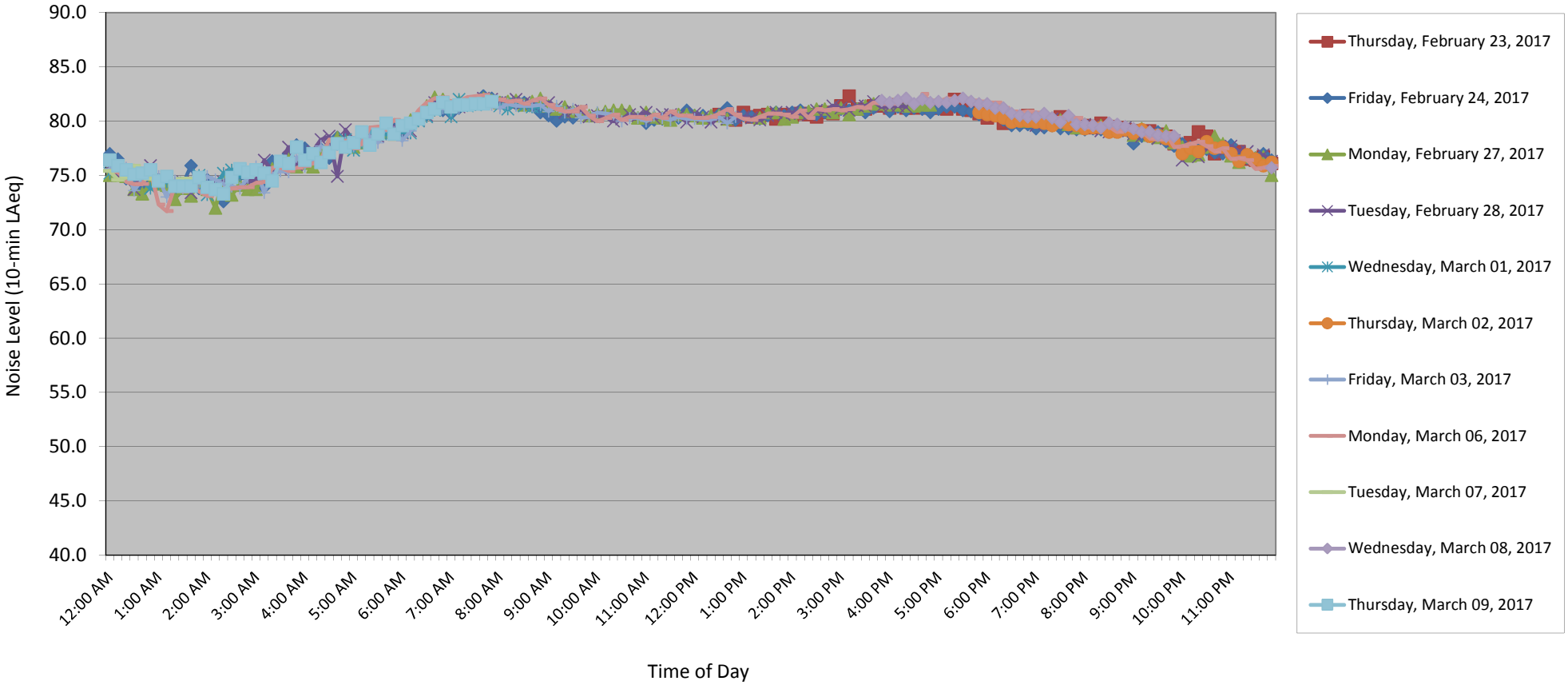
Filtered Data

Professional Noise Assessment of Block 4704 Lots 9, 10, 11, and 12
Site #2
Weekend Noise Level Data (dBA)



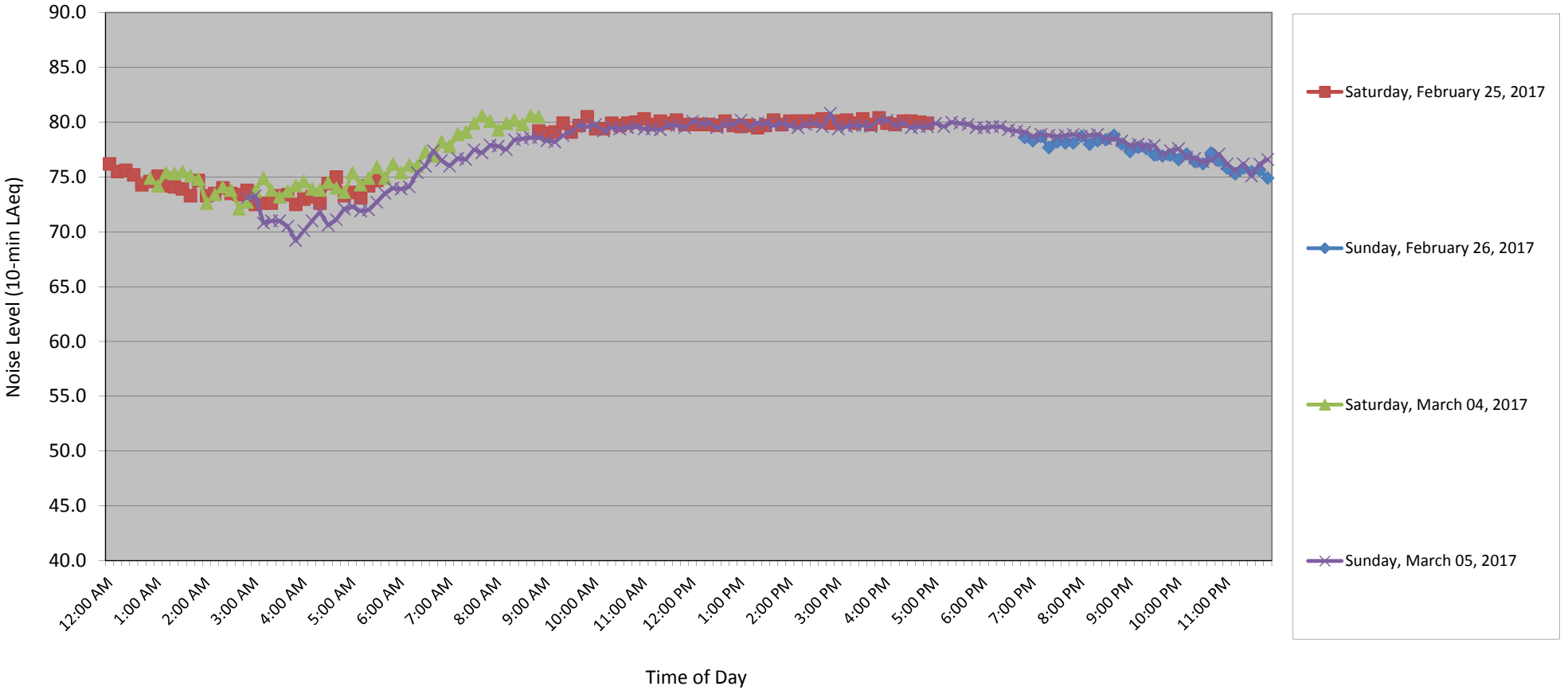
Filtered Data

Professional Noise Assessment of Block 4704 Lots 9, 10, 11, and 12
Site #3
Weekday Noise Level Data (dBA)



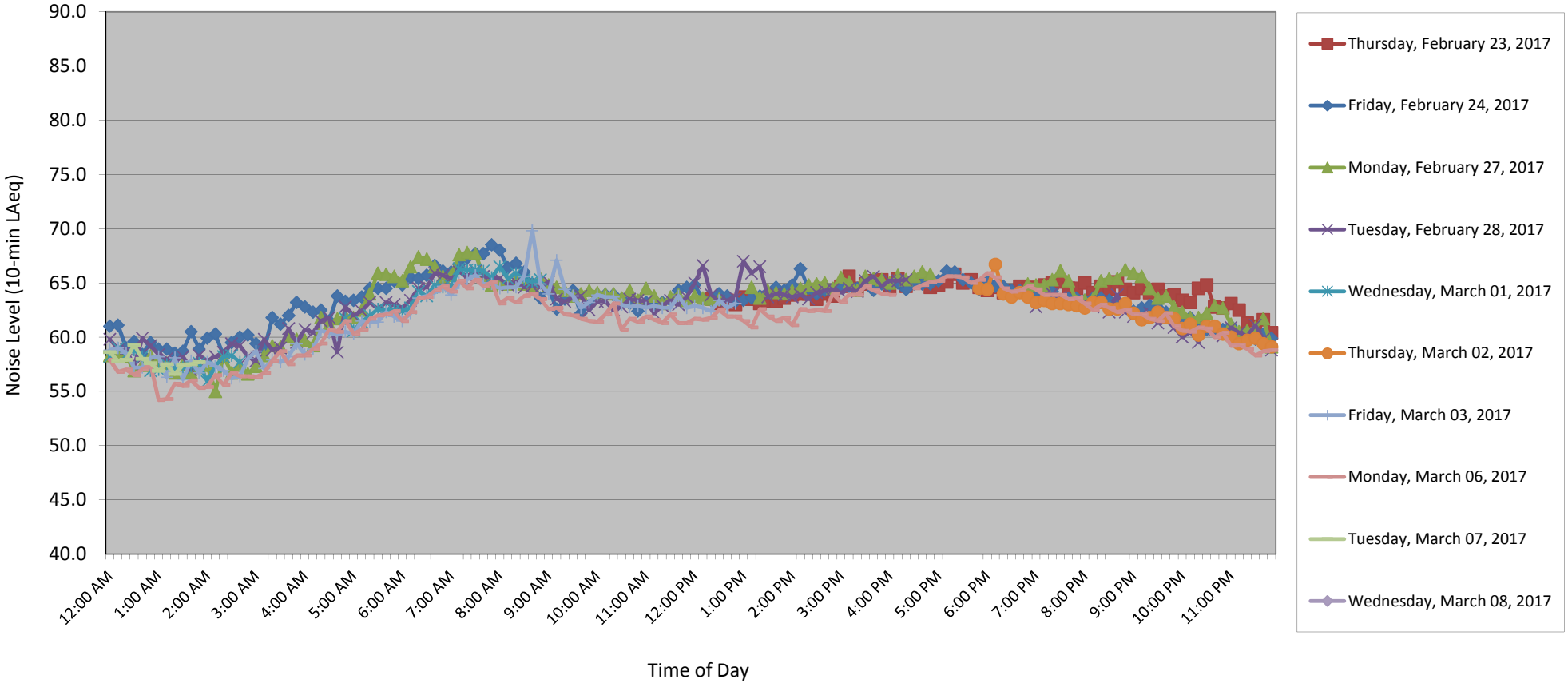
Filtered Data

Professional Noise Assessment of Block 4704 Lots 9, 10, 11, and 12
Site #3
Weekend Noise Level Data (dBA)



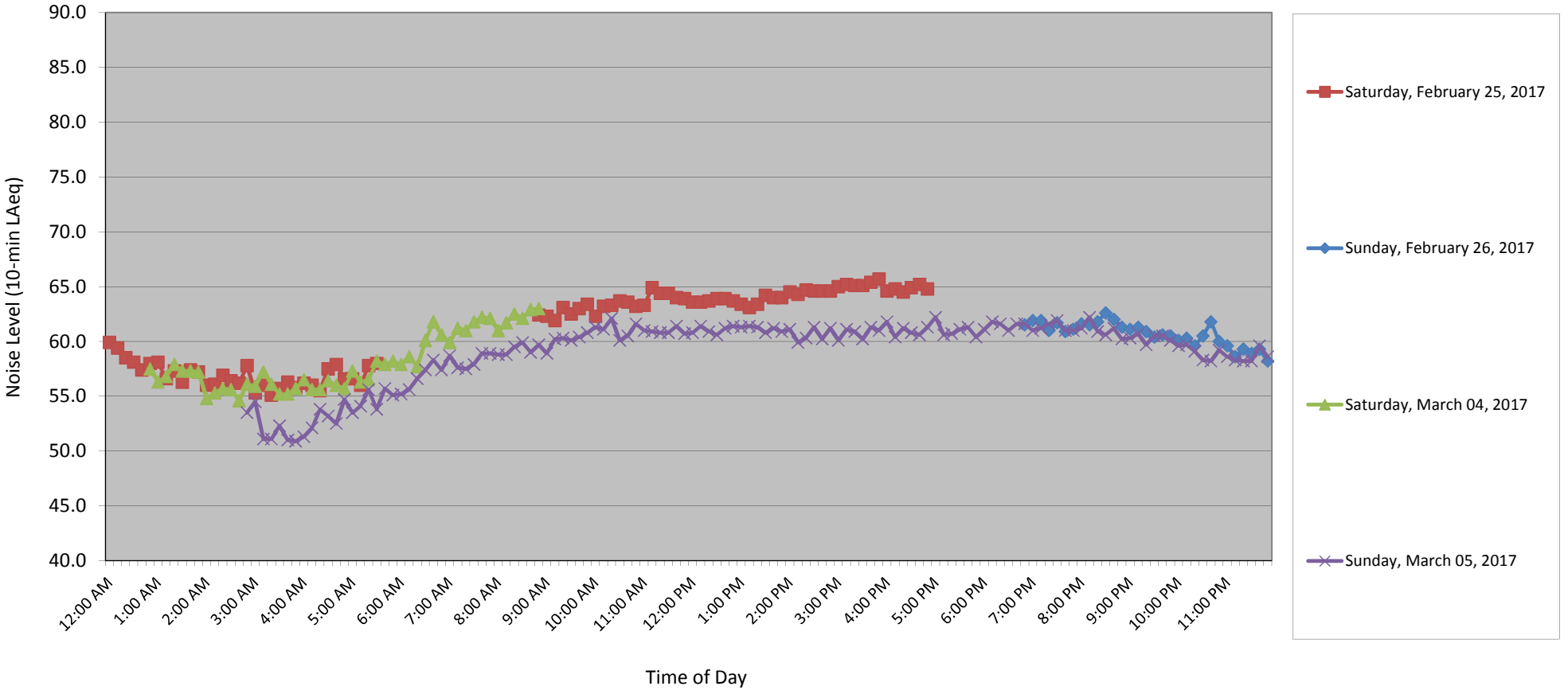
Filtered Data

Professional Noise Assessment of Block 4704 Lots 9, 10, 11, and 12
Site #4
Weekday Noise Level Data (dBA)



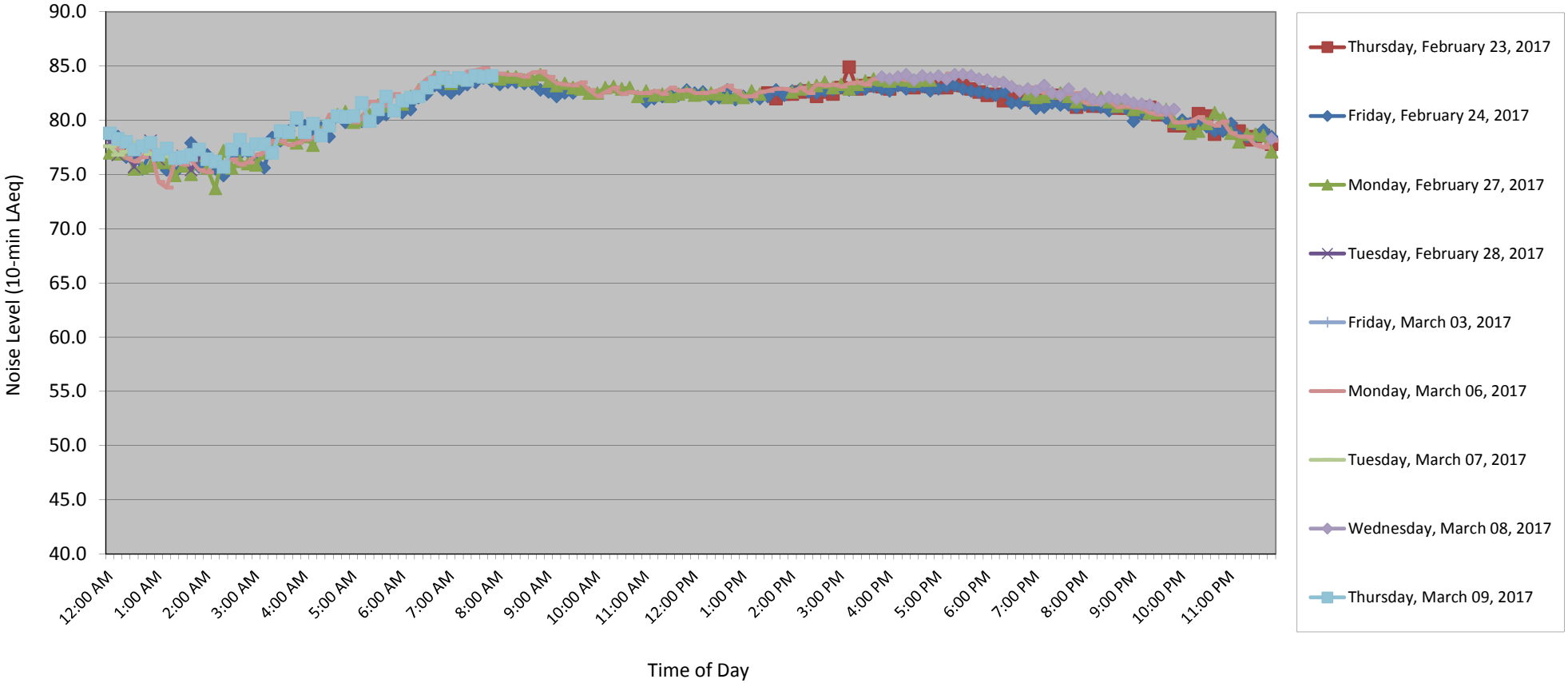
Filtered Data

Professional Noise Assessment of Block 4704 Lots 9, 10, 11, and 12
Site #4
Weekend Noise Level Data (dBA)



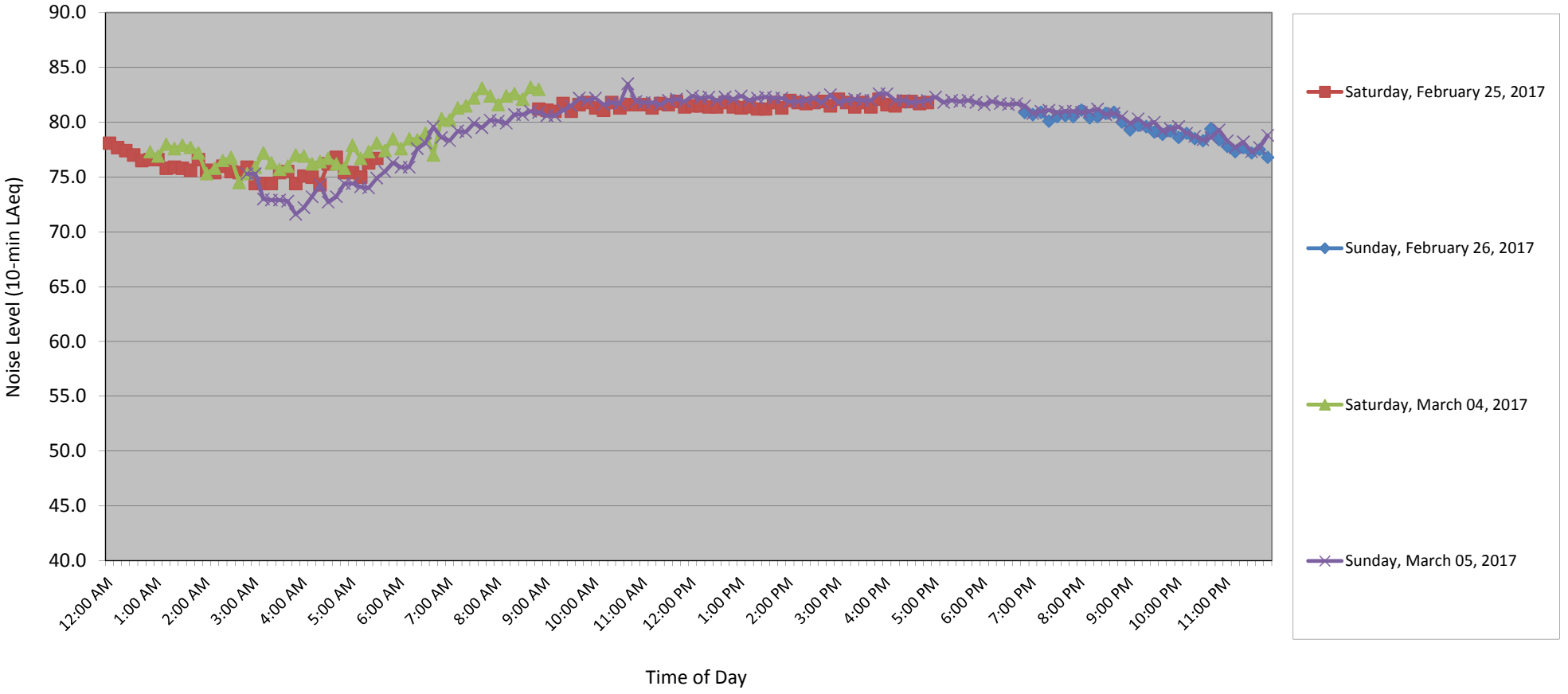
Filtered Data

Professional Noise Assessment of Block 4704 Lots 9, 10, 11, and 12
Site #5
Weekday Noise Level Data (dBA)



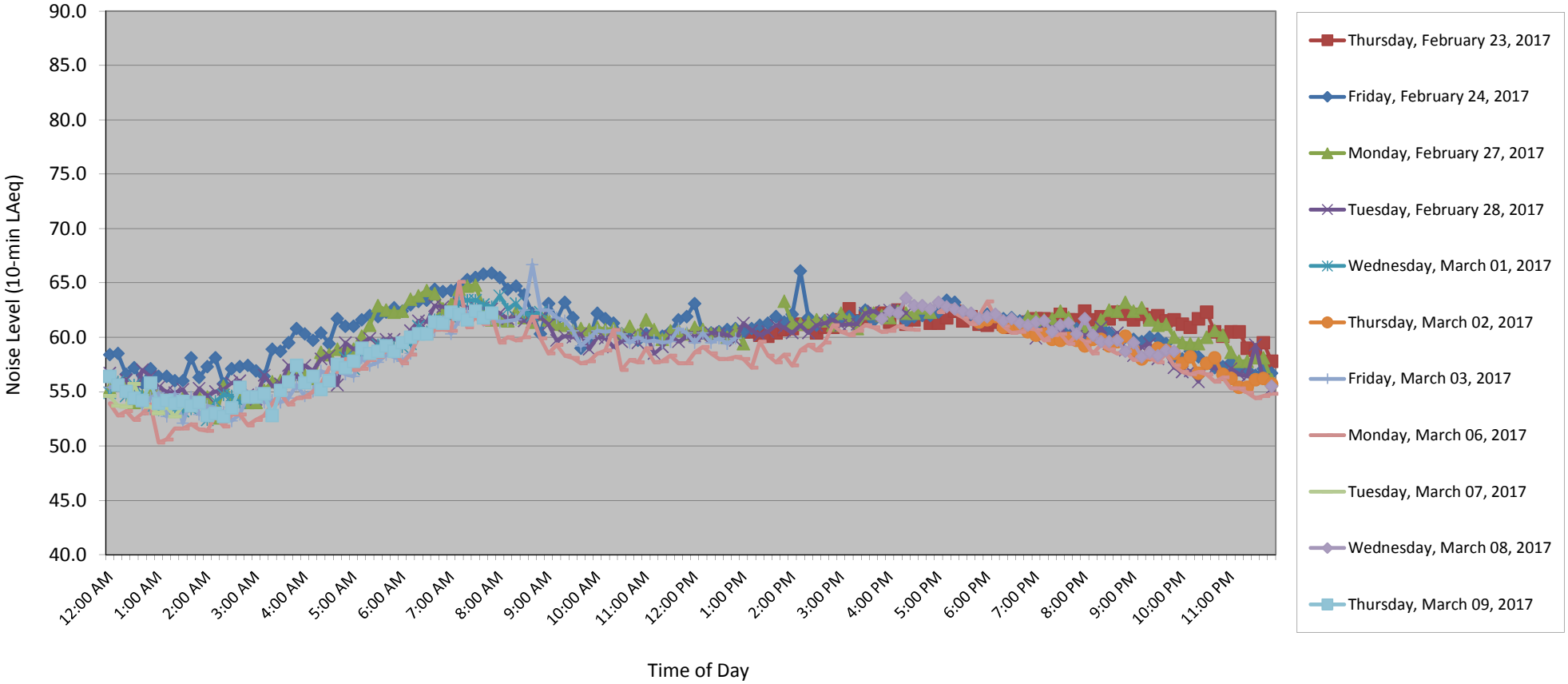
Filtered Data

Professional Noise Assessment of Block 4704 Lots 9, 10, 11, and 12
Site #5
Weekend Noise Level Data (dBA)



Filtered Data

Professional Noise Assessment of Block 4704 Lots 9, 10, 11, and 12
Site #6
Weekday Noise Level Data (dBA)



Filtered Data

Professional Noise Assessment of Block 4704 Lots 9, 10, 11, and 12
Site #6
Weekend Noise Level Data (dBA)