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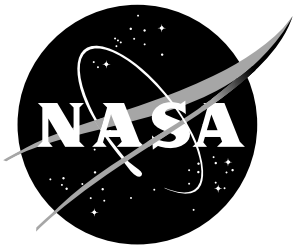

Acoustic Testing of Five Multicopter UAS in the U.S. Army's 7- by 10-Foot Wind Tunnel

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May 2018

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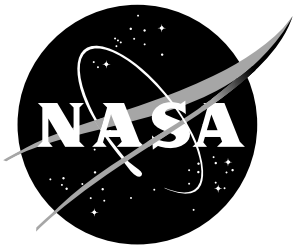

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Nomenclature

$AWSPL$	A-Weighted Sound Pressure Level (dBA; ref: 2×10^{-5} Pa)
$AWOASPL$	A-Weighted Overall Sound Pressure Level (dBA; ref: 2×10^{-5} Pa)
BPF	blade Pass Frequency (Hz)
f	frequency (Hz)
dBA	A-Weighted Decibel
dB	decibel
k	calibration Constant (V/Pa)
$OASPL$	overall Sound Pressure Level (dB; ref: 2×10^{-5} Pa)
P	acoustic pressure (Pa)
P_0	decibel RMS reference pressure (20 μPa)
RPM	revolutions Per Minute
V	voltage
V_∞	wind Speed (ft/s)
X	streamwise coordinate relative to test vehicle in 0° position (ft), (positive downstream)
Y	lateral coordinate relative to test vehicle in 0° position (ft), (positive to the right)
Z	vertical coordinate relative to test vehicle in 0° position (ft), (positive up)
ψ	model yaw deg
θ	model pitch deg

1 Summary

Unmanned Aerial Systems (UAS) are finding increased use in todays civil and military applications. There are still very few acoustic measurements existing in today's UAS literature even with this increased use. Five Multicopter Unmanned Aerial Systems (MUAS) models were tested in the United States Army's 7- by 10-Foot Wind Tunnel at NASA Ames Research Center in the fall of 2015 over a wide variety of flight conditions. The acoustic trends are presented and discussed for each model along with the testing facility limitations.

2 Introduction

Five Multicopter UAS models representing a range of designs were tested in the U.S. Army's 7- by 10-Foot Wind Tunnel in the fall of 2015. Acoustic hardware was set up to measure the noise level of each test point. Each model was tested in different operating conditions consisting of varying pitch, yaw, wind speed, and rotor RPM. The purpose of the test was to better understand the acoustics of the Multicopter UAS models in different flight conditions as well as to determine if meaningful measurements could be acquired in the hard-wall tunnel. Objectives included identifying blade pass frequency, observing changes in the frequency spectrum with operating condition, noise directionality, wind tunnel background noise, and how the number of rotors affected the measurements. This paper explains how the acoustic data was processed. Results are presented and analyzed while any trends among models are discussed.

3 Test Description

A description of the test objectives, hardware, facility, vehicles, instrumentation and data acquisition, and flight conditions are discussed.

3.1 Test Objectives

Objectives of the Multicopter UAS testing included the characterization of isolated rotor performance, full vehicle performance, and acoustics of the aircraft [1]. The main objectives of the acoustic testing were to develop an understanding of noise produced during various flight conditions. This was accomplished by subjecting each model to varying wind speed, rotor RPM, pitch, and yaw. Trends between runs and models were analyzed in order to gain insight into the acoustic signature of various Multicopter UAS.

3.2 Test Hardware

The models were placed on a custom built sting stand mount in the U.S. Army's 7- by 10-Foot Wind Tunnel. The test stand was created so that it could rotate to change the pitch and yaw angles of the models. The forces were measured using typical aircraft body axes, with F_x positive downstream, F_z positive up, and F_y positive to the right. The models are mounted at a 90 degree roll angle, so the Y- and Z- directions of the load cell do not align with a typical wind tunnel coordinate system. Figure 1 shows the orientation of the X-,Y-, and Z-body axis. The center of rotation shown in the figures is located at the center of the turntable 3.5 feet above the tunnel floor. There were three microphones placed in the tunnel for all tests whose locations are noted in Table 1. Figure 2 shows the location of the microphones relative to the center of rotation in the

U.S. Army's 7- by 10-Foot Wind Tunnel. Figures A11 through A15 in Appendix A show additional views of the microphone set up relative to each model.

3.2.1 Testing Facility - Acoustic Limitations

The U.S. Army's 7- by 10-Foot Wind Tunnel is a closed-circuit wind tunnel with a 15 foot long test-section, with a height and width of 7 and 10 feet, respectively. The side walls are made of plexiglass, steel, and wood, while the floor and ceiling are made of plexiglass and steel. Limited acoustic testing has been performed in the U.S. Army's 7- by 10-Foot Wind Tunnel due to the non-anechoic environment.

Results presented should therefore be viewed with caution. The acquired data may contain contamination due to reflections and standing waves, it is at the readers discretion to interpret the data.

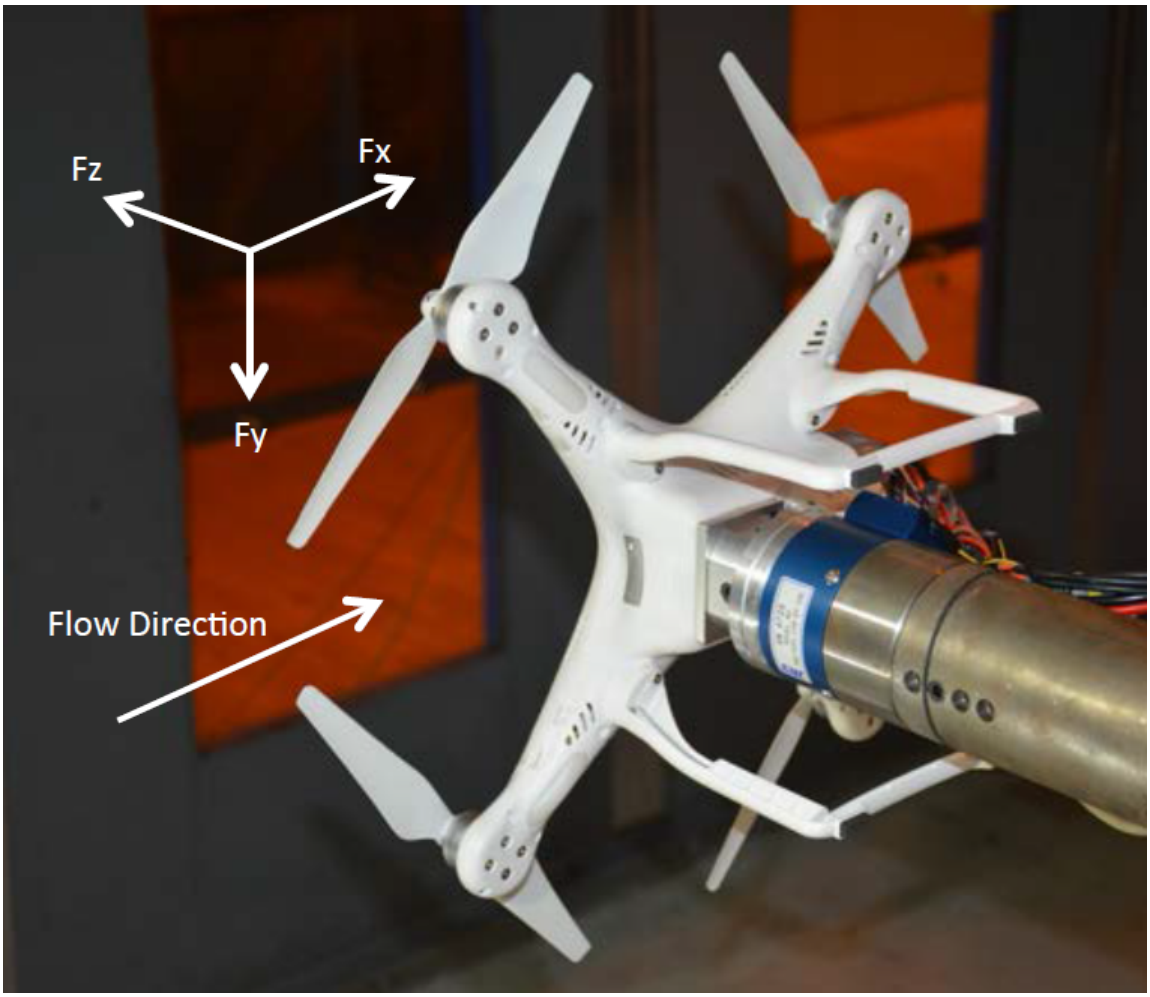

Figure 1: Close-up of DJI Phantom 3 mounted on sting stand showing body axis in the U.S. Army's 7- by 10-Foot Wind Tunnel.

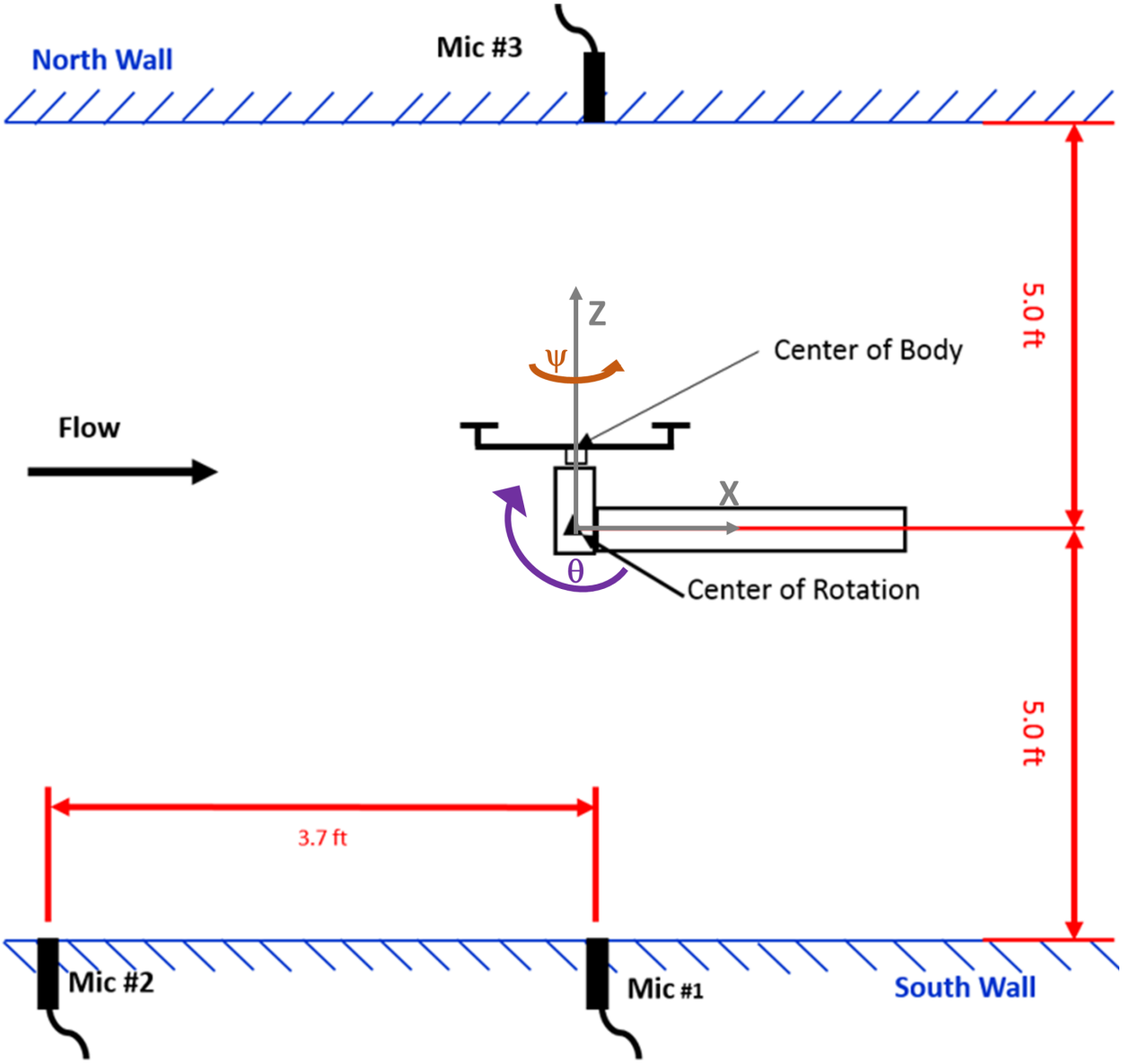

Figure 2: Top view diagram of microphone locations in the U.S. Army's 7- by 10-Foot Wind Tunnel.

Changing the pitch of the model changes its angle relative to the microphones in the plane cutting horizontally through the test section. Yawing the model changes the angle relative to the microphones in the plane passing through the four rotors. Pitch is rotated about the Y-axis, and yaw is rotated about the Z-axis.

3.3 Test Vehicles

The five Multicopter UAS tested were the 3D Robotics SOLO Quadcopter Drone (SOLO) [2], DJI Phantom 3 (Phantom)[3], 3D Robotics IRIS+ (IRIS) [4], Drone America x8 (DAx8) [5], and the Straight Up Imaging Endurance (SUI) [6]. Table 2 and 3 summarizes the pertinent details of the five aircraft. The five Multicopter UAS can be seen mounted in the U.S. Army's 7- by 10-Foot

Table 1: Geometric Center of vehicle and microphone locations with origin at the center of the turntable 3.5 feet above the tunnel floor.

Object	**X (ft)**	**Y (ft)**	**Z (ft)**
3D Robotics SOLO (SOLO)	0.23	0.00	0.85
DJI Phantom 3 (Phantom)	0.07	0.00	0.82
3D Robotics Iris+ (IRIS)	0.12	0.00	0.75
Drone America x8 (DAx8)	0.00	0.00	0.94
Straight Up Imaging Endurance (SUI)	-0.12	0.00	0.75
Microphone 1	0.0	0.0	-5.0
Microphone 2	-3.7	0.0	-5.0
Microphone 3	0.0	0.0	5.0

Wind Tunnel in Figs. 3 a) through e). See Russell et al. [1] for detailed information.

Table 2: Multicopter test vehicle parameters (*rotor-to-rotor)

Make/Model	**Length (in)***	**Width (in)***	**Rotor diameter (in)**
3DR SOLO	11.5	11.5	10.0
DJI Phantom 3	9.8	9.9	9.4
3DR Iris+	10.4	16.1	9.6
Drone America x8	31.4	31.4	11.0
Straight Up Imaging (SUI) Endurance	20.1	20.1	15.0

Table 3: Multicopter test vehicle parameters (contd.)

Make/Model	**No. of rotors**	**Nominal flight weight (lb)**	**Nominal RPM**
3DR SOLO	4	3.3	5,700
DJI Phantom 3	4	2.8	5,300
3DR Iris+	4	2.8	5,400
Drone America x8	8	12.8	7,000
Straight Up Imaging (SUI) Endurance	4	6.0	3,500

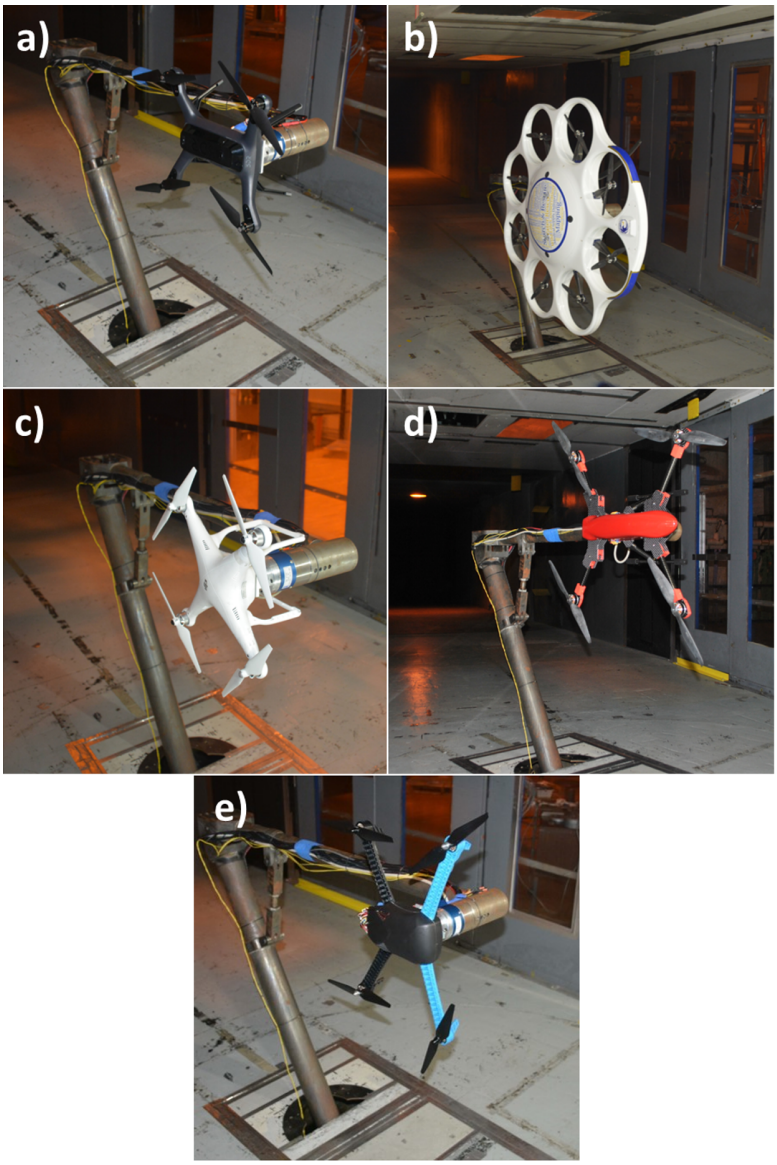

Figure 3: The a) 3DR SOLO, b) Drone America x8, c) DJI Phantom 3, d) SUI Endurance, and e) 3DR Iris+ mounted in the U.S. Army's 7- by 10-Foot Wind Tunnel.

3.4 Instrumentation and Data Acquisition

The acoustic equipment used in the testing consisted of a ASTRO-MED 18X oscilloscope/data acquisition system (DAQ), a B&K Nexus type 2690-A-054 power supply, G.R.A.S. 26AJ $\frac{1}{2}$" preamplifiers, G.R.A.S. 40AC $\frac{1}{2}$" free-field microphones, and a G.R.A.S. type 42AA (114 dB (Decibel), 250 Hz) pistonphone calibrator. The sample rate of the DAQ was set to 100,000 Hz and ran for 15 second per run. The gain was varied for different runs using the B&K Nexus power supply to maintain $+5V$. Rotor RPM was controlled through LabView and an open-loop servo controller program.

3.5 Test Conditions

Each model was tested separately in the U.S. Army's 7- by 10-Foot Wind Tunnel with each run varying pitch, yaw, wind speed, or rotor RPM. Three microphones were set up to capture the noise levels of each 15 second run. There were aerodynamic tare runs for each model in which the blades were removed and testing was performed on the bare airframe. (Turning was simulated by varying the RPM of individual rotors.)

Table 4: Test matrix summary

Configuration	**Pitch (deg)**	**Yaw (deg)**	**Airspeed (ft/s)**	**RPM (baseline)**
Full Airframe	-40-40	0-90	20-80	80-120
Bare Airframe	-40-40	0-90	20-80	N/A
Rotor Only	-40-40	N/A	20-80	80-120
Hover	N/A	N/A	0	70-130

4 Data Processing

The acoustic data are first converted from voltage to Pascals by the microphones calibration factor. Next, the data are organized to compare trends. The acoustic data are further processed by performing an FFT, applying an A-weighted scale and identifying and calculating the blade pass frequency. See Fig. 4 for acoustic data processing procedure.

An end-to-end calibration of each microphone channel was performed prior to each day's data runs. A fixed frequency pistonphone (G.R.A.S. Type 42AA) of known output (nominally 114 dB at 250 Hz) was utilized for the calibrations. Calibration constants were calculated and used to convert the voltage signals from the microphone into pressure measurements. A MATLAB code was written to find peak voltages within the raw voltage data, sum and average the peaks over the length of the signal, and calculate the calibration constants for each microphone using the average peak voltages. The equation to calculate the calibration constants is $k = \frac{V}{10^{\frac{114+G}{20}} * P_{ref}}$ where k is the calibration constant (V/Pa), V is the average root-mean-square peak voltage (V), and P_{ref} is the reference pressure.

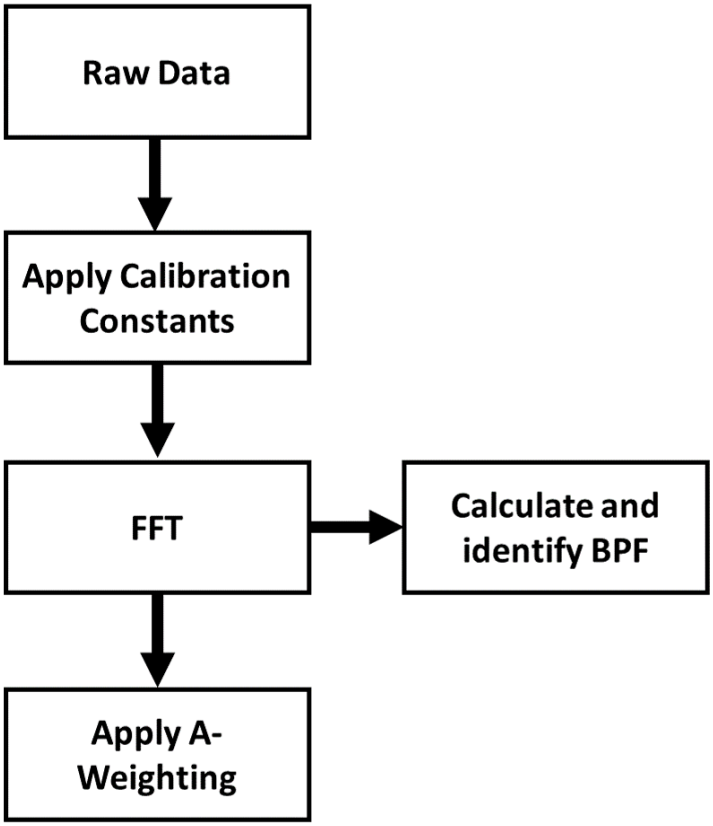

Figure 4: Acoustic data processing procedure.

A script was written to read in *.txt* files containing microphone voltage data for each 15 second run. The data sample rate of 100 kHz makes the 15 second *.txt* files contain 1.5 million voltage readings for each of the three microphones. The script also read an Excel file specifying the variables for each run such as pitch, yaw, wind speed, and rotor RPM. The microphone voltage was then converted into pressure through a calibration constant and the gain was removed. The overall sound pressure level was first calculated from this pressure in the time history. In order to suppress any background and non-harmonic related spurious noise, the 15 second signal was broken into 15 individual one second signals and averaged after processing was completed. An FFT was performed on the microphone voltage data after it had been converted to pressures from the calibration constant. An FFT is a process that convert a signal from a time (s) domain to a frequency (Hz) domain, giving a power density spectrum and showing which frequencies are predominant within the alternating voltage signal.

$$X(f) = \sum_{n=0}^{N-1} x_n e^{(-2\pi i f \frac{n}{N})} \tag{1}$$

The overall sound pressure level was then calculated from the one second intervals. Rotating blades emit a frequency based on the number of blades and the RPM the system. This equation can be used to solve for the fundamental frequency of the system as well as higher harmonics. Looking at the frequency spectrum, it can be seen how the blade pass frequencies are contributing to the overall noise.

$$\frac{(NumberofProps * 2 * RPM)}{60} = BPF(Hz) \tag{2}$$

After the FFT was performed, the signal was then converted to decibels and A-weighted using the method outlined in [7] in order to obtain standard values for comparison. By applying A-weighting to the FFT the values become an expression of the relative loudness in air as heard by a human ear. The following equation was used to apply A-weighting to the FFT:

$$W_A(f) = 10 \cdot log_{10}\left[\frac{3.506e16 * f^4}{(f^2 + 20.6^2)(f^2 + 107.7^2)(f^2 + 737.9^2)(f^2 + 12194^2)}\right] \tag{3}$$

$$AWSPL = 20 \cdot log_{10}\left[\frac{P}{P_0}\right] + W_A(f) \tag{4}$$

4.1 Data Organization

Each model was tested with varying pitch, wind speed, and rotor RPM while the DAx8, SOLO, and SUI were additionally tested with varying yaw. Each run was compiled and documented in a table organized by the testing variables to make a key for every graph as shown in Appendix C. The graph key was organized by model, variable test condition, and a number that corresponded to the .png file containing the generated graph. Any plots that contained only a bare airframe were color coded blue. Runs that simulated the MUAS turning by varying the RPM of individual rotors were color coded beige.

5 Acoustic Quality Assessment

The background noise, microphone-to-microphone difference, and repeatability of the acoustic data was analyzed for an acoustic quality assessment. Besides being in a non-anechoic environment, differences in change in boundary layer amongst other wind tunnel structural factors may affect the overall noise measurements.

5.1 Background Noise

A profile of the background noise was obtained by having runs where only the motor mount was present, with no rotor blades installed. Figures 5 through 7 shows these runs where wind speed was varied from 0 to 40 feet per second for microphones 1 through 3. As wind speed was increased, the AW-OASPL increased non-linearly. No further investigations of background noise were explored.

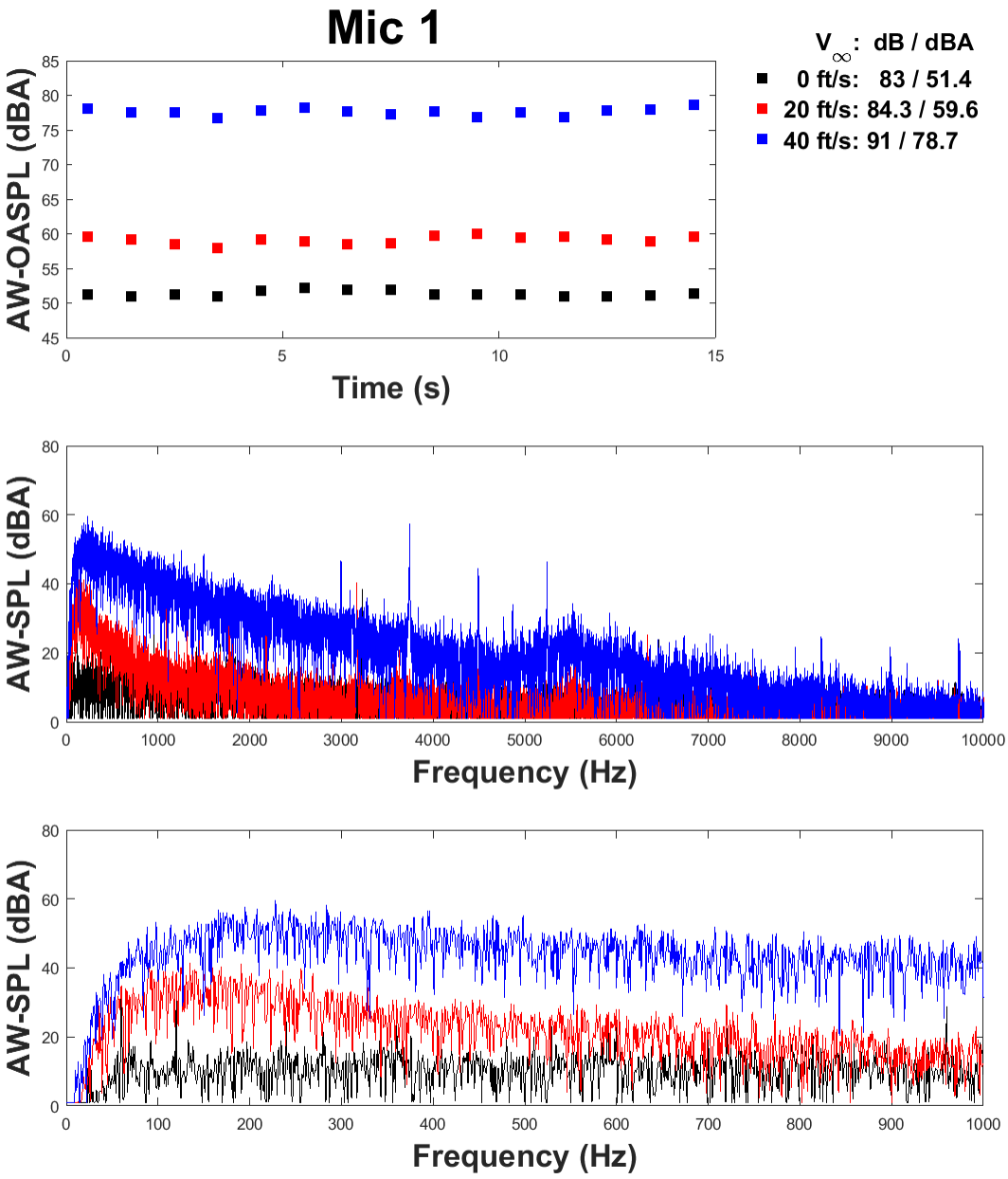

Figure 5: Background noise for varying wind speed for microphone 1.

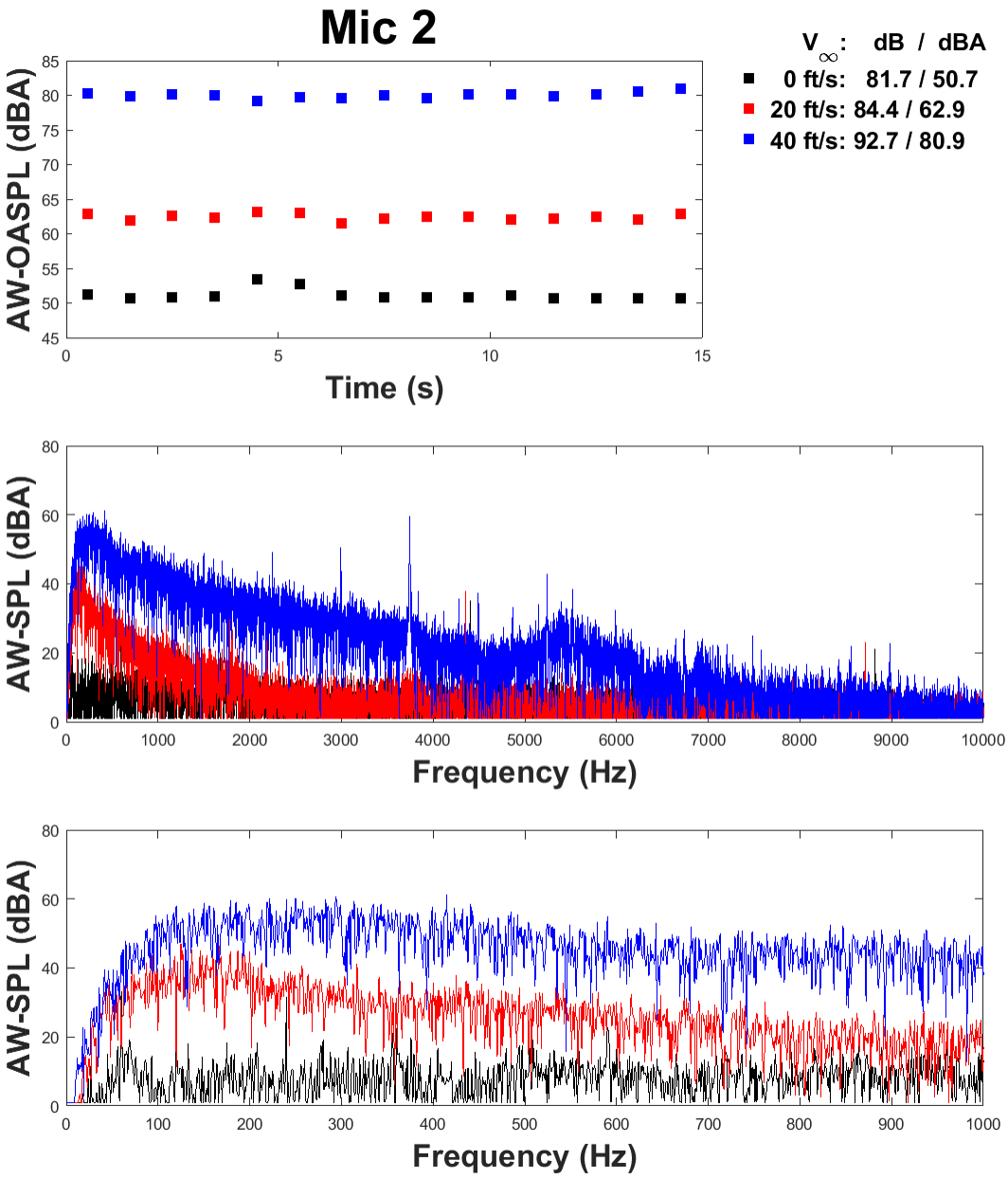

Figure 6: Background noise for varying wind speed for microphone 2.

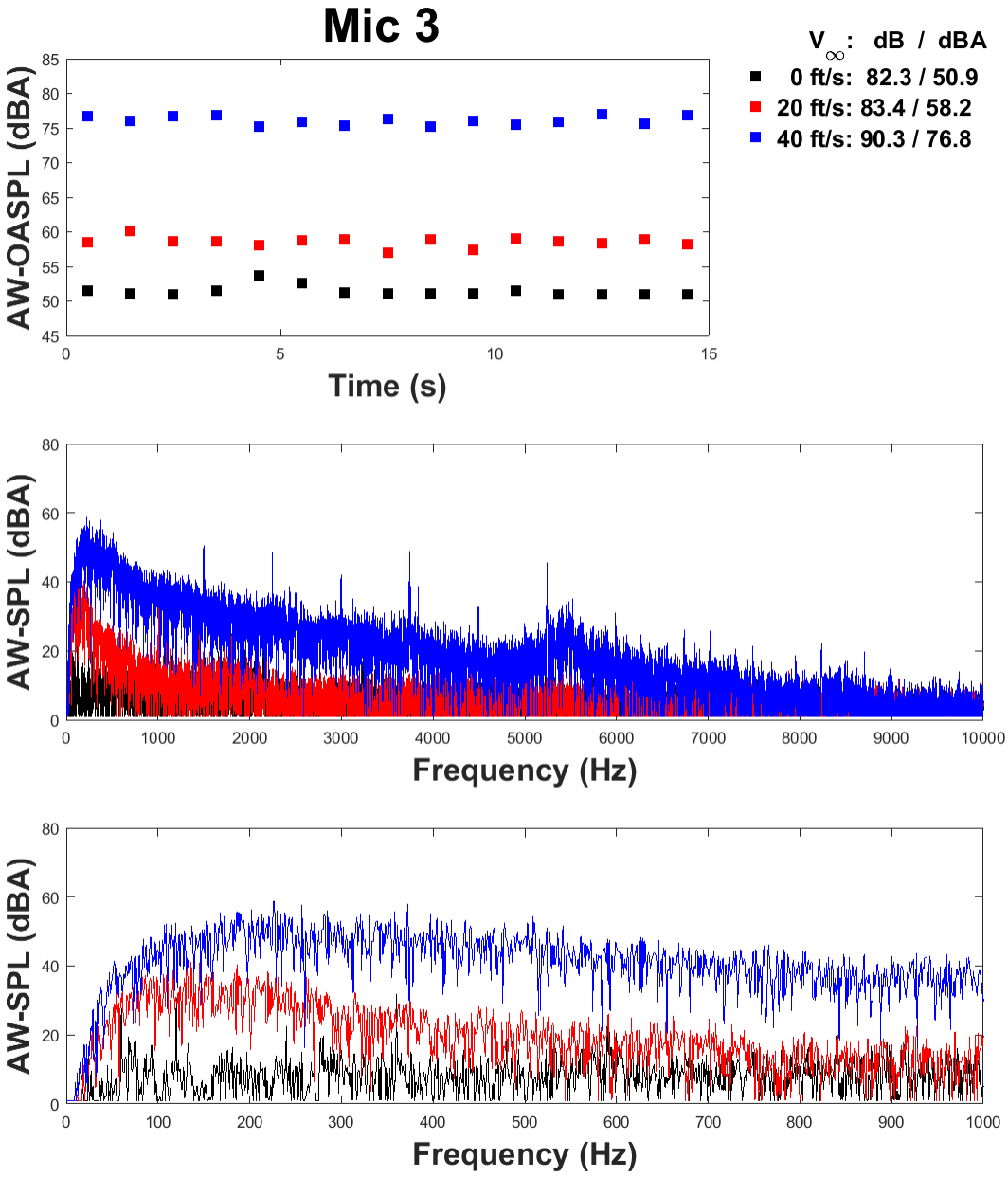

Figure 7: Background noise for varying wind speed for microphone 3.

5.2 Microphone-to-Microphone Difference

A difference between the three microphone is shown in Figs. 8 through 10 for background wind speeds of 0, 20, and 40 ft/s respectively. An increase in wind speed resulted in a larger difference between each microphone, particularly at 20 ft/s (Fig. 9). No further investigation into microphone-to-microphone differences was done.

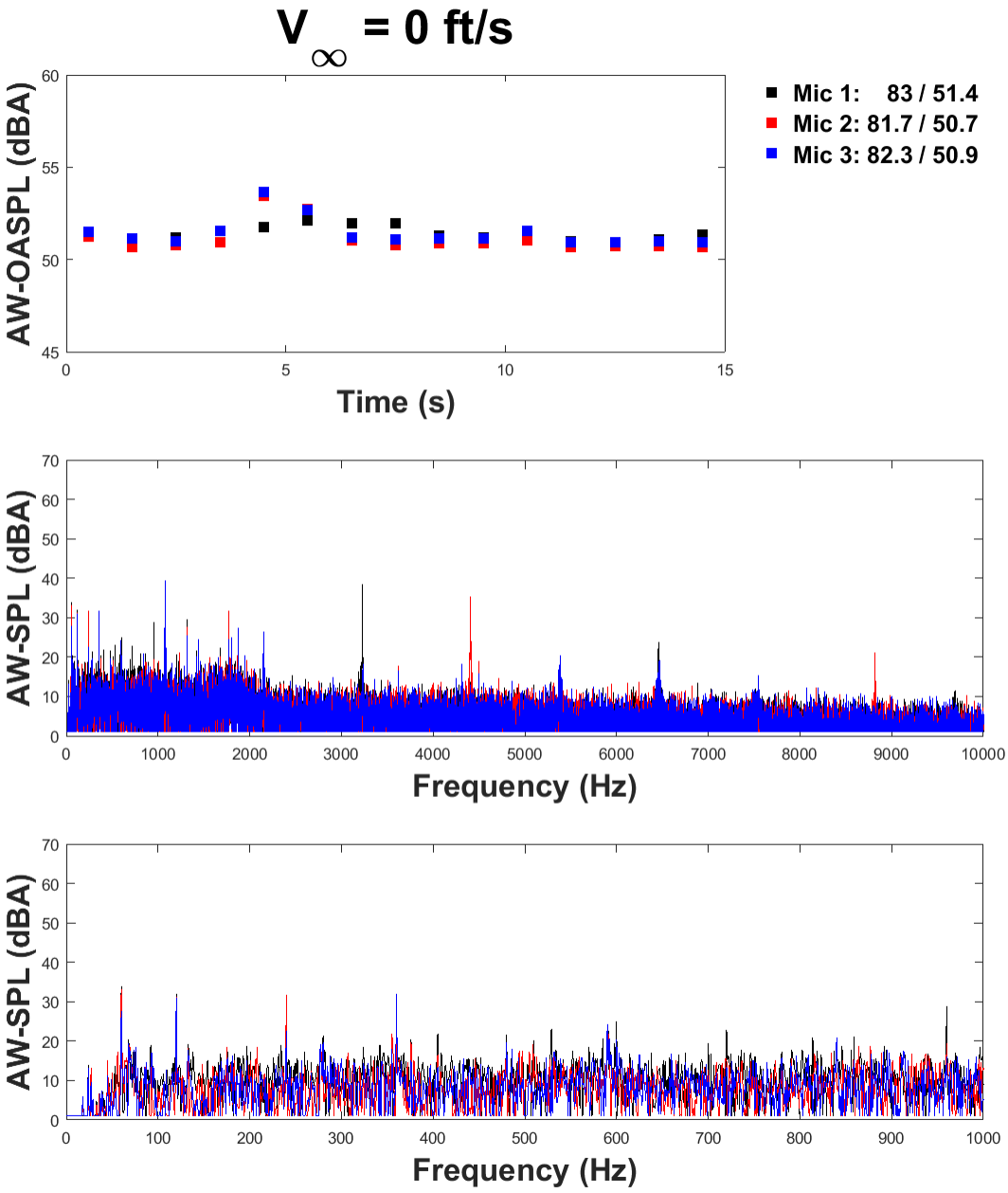

Figure 8: Background noise for wind speed of 0 ft/s for microphones 1 through 3.

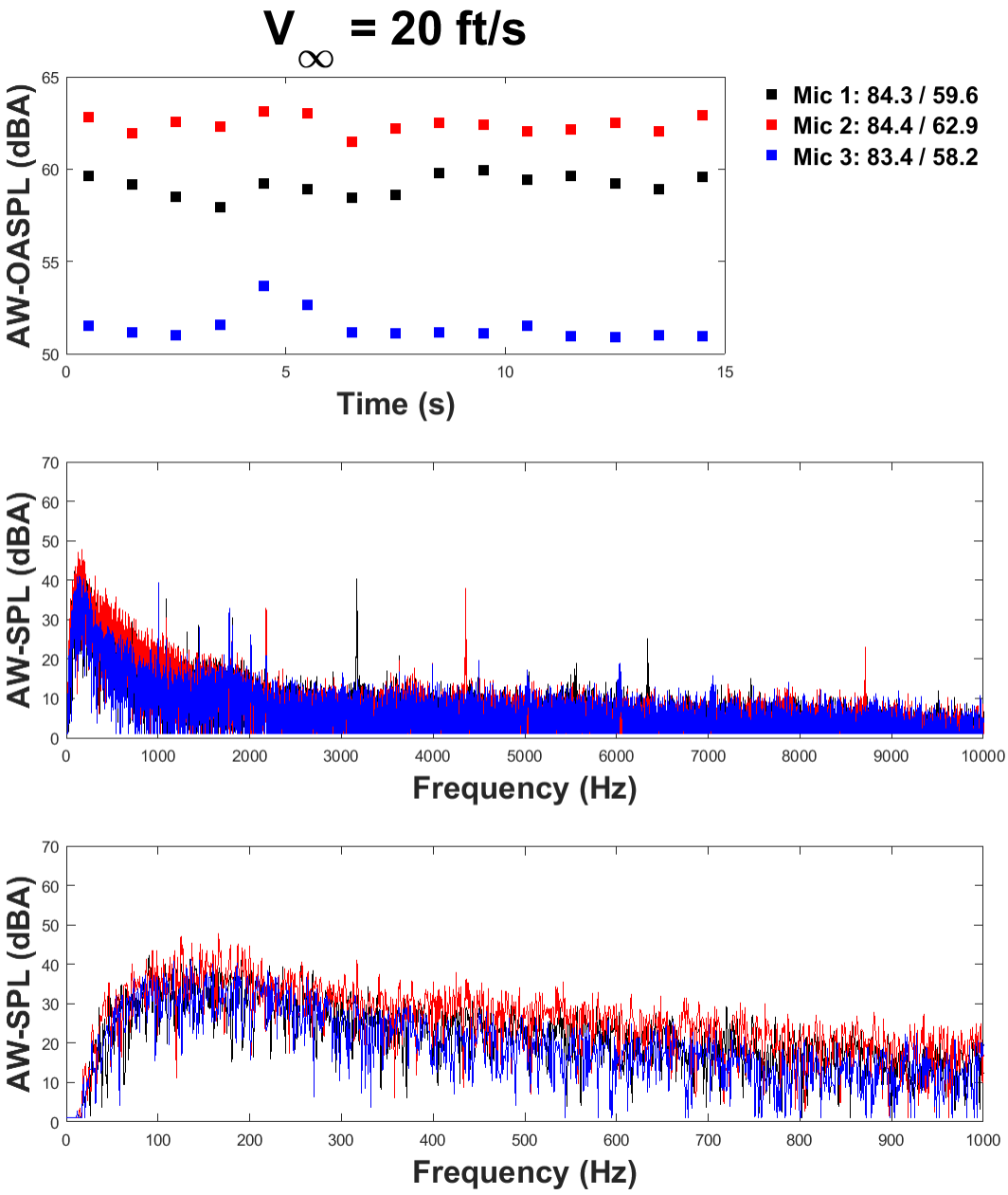

Figure 9: Background noise for wind speed of 20 ft/s for microphones 1 through 3.

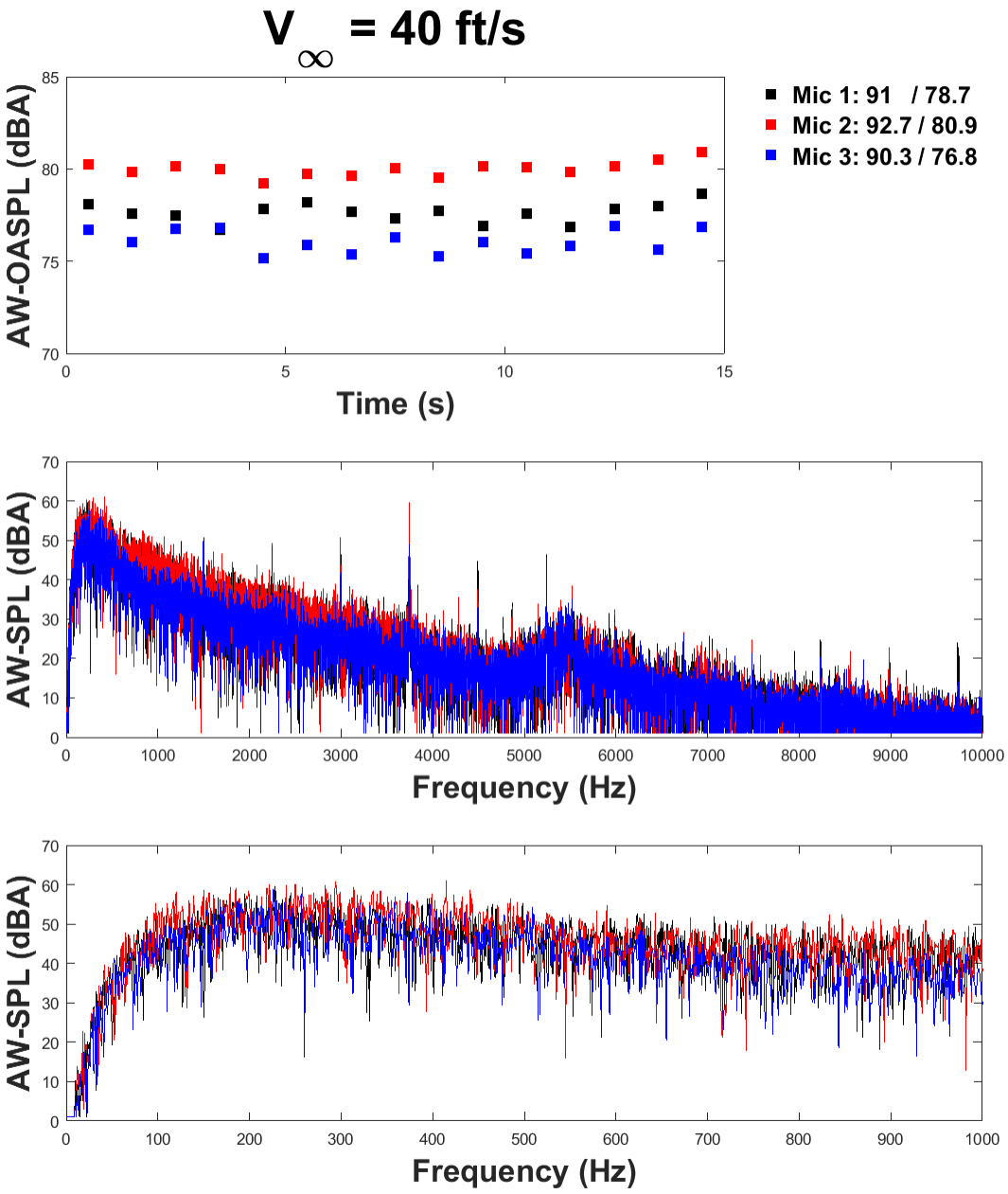

Figure 10: Background noise for wind speed of 40 ft/s for microphones 1 through 3.

5.3 Repeatability

There were many runs that consisted of the same test conditions. These runs were superimposed on plots to show the repeatability of the measurements in the U.S. Army's 7- by 10-Foot Wind Tunnel. From Fig. E16 it can be concluded that repeatable acoustic measurements can be obtained in the U.S. Army's 7- by 10-Foot Wind Tunnel, since the calculated AW-OASPLs have less than a 2.0 dBA difference between repeated runs. The repeatability shows that the vehicle state was well controlled. Figures E17 and E18 show similar trends for the DAx8 for different flight conditions.

Figures E19 through E22 show similar trends for the IRIS in different flight conditions. Figure E23 shows similar trends for the Phantom in different flight conditions. Figures E24 through E29 show similar trends for the SUI in different flight conditions. Figures E30 through E34 show similar trends for the SOLO in different flight conditions.

6 3DR SOLO

Acoustic testing of the 3DR SOLO consisted of aerodynamic tares and various sweeps for hover and forward flight. For all MUAS aerotares, the motors are turning without propellers therefore reported RPM is the motors rotational speed.

6.1 Aerodynamic Tares

Figure E35 contains the SOLO with yaw, pitch, and wind speed of 0°, 0°, and 0 ft/s, respectively. One run contains the model with rotors off and one run has the model with rotors spinning at 5,700 RPM. The AW-OASPL increases by 2.3 dBA. Figures E36 and E37 show the AW-OASPL remaining constant between a wind speed of 0 and 20 ft/s and an increase in AW-OASPL of 12.0 dBA when wind speed was increased to 40 ft/s. Figure E38 shows the AW-OASPL remaining constant for changes in pitch when only the bare airframe was present. This trend was also observed in Figs E39 through E45 for different flight conditions with varying pitch.

6.2 Hover

In hover, a RPM and yaw sweep was performed for the 3DR SOLO.

6.2.1 RPM Sweep

The SOLO in hover with RPM varying from 4,600 to 5,700 is shown in Fig. E46. The runs consisted of yaw and pitch of 0° and 0°, respectively. The AW-OASPL between the highest and lowest runs vary by about 4.0 dBA. The dBA of the first BPF harmonic of each run does not appear to increase with increased RPM. Figure E47 shows similar trends for different flight conditions with varying RPM.

6.2.2 Yaw Sweep

Figure E48 shows the SOLO in hover with varying yaw. The runs consisted of pitch and RPM of 0° and 5,700, respectively. AW-OASPL remains constant within 1.0 dBA when the pitch is varied. The dBA of each BPFs first harmonic varied by up to 8.0 dBA.

6.3 Forward Flight

A sweep of speed, RPM, pitch, and simulated turning with varied rotor RPM was performed for the 3DR SOLO aircraft in forward flight.

6.3.1 Speed Sweep

Forward flight of the SOLO can be seen in Fig. E49 with a yaw, pitch, and RPM of 0°, -40°, and 6,800 RPM, respectively. Wind speed was varied from 20 to 80 ft/s. The AW-OASPL increased with increased wind speed and was between 86.5 and 96.1 dBA. The dBA of each BPFs first

harmonic increased with increased wind speed with a maximum difference of approximately 9.0 dBA.

6.3.2 RPM Sweep

Figure E50 shows the SOLO with yaw, pitch, and wind speed of -90°, 10°, and 20 ft/s respectively. The AW-OASPL is seen to increase as RPM is swept from 4,000 to 6,300 with a difference of about 12.0 dBA between the lowest and highest RPM. Figures E51 through E57 show similar trends for different flight conditions with varying RPM.

6.3.3 Pitch Sweep

Figure E58 shows the SOLO with yaw, wind speed, and RPM to be -90°, 20 ft/s, and 4,000 RPM, respectively. There is a trend of the AW-OASPL increasing when pitch is increased from -10° to 0°. The AW-OASPL ranges from 81.0 to 84.0 dBA. The dBA of the first BPF harmonic varied by about 6.0 dBA. There is no trend relating increased pitch and increased dBA for the first BPF harmonic. Figures E59 through E65 show similar trends for different flight conditions with varying pitch. Figure E66 shows the pitch being swept from 0° to 10°. It follows a similar trend as the other pitch sweeps, but it has a pitch of 5° as the highest dBA instead of a pitch of 10°. This may be attributed to uncertainty error since dBA varied by a small amount between pitches. Figures E67 and E68 follow the same trend as Fig. E66 for different flight conditions with varying pitch.

6.3.4 Simulated Turning with Varied Rotor RPM

Figure E69 has the SOLO simulating turning with a yaw and wind speed of 0° and 20 ft/s, respectively. Rotors 1 and 2 have an RPM of 4,600 and rotors 3 and 4 have an RPM of 6,800. The AW-OASPL varied from 92.0 to 95.0 dBA when pitch is swept. There is no trend between increased pitch and the AW-OASPL. There are two BPFs associated with each run since there are two separate RPMs. The dBA of the first harmonic varied by 7.0 dBA. Figure E70 shows similar trends for different flight conditions with varying pitch. Figures E71 and E72 show similar trends when yaw is swept from -90° to 0°. Figures E73 and E74 have pitch swept from -10° to 0° and show the AW-OASPL increasing with increased pitch.

7 3DR Iris+

Acoustic testing of the 3DR Iris+ consisted of aerodynamic tares and various sweeps for hover and forward flight.

7.1 Aerodynamic Tares

Figure E75 shows two runs. One run consists of a bare airframe with the motors off. The other run consists of the motors being run at an RPM of 5,400. The OASPL remains the same for both runs, but after A-weighting, AW-OASPL increases when the motors are turned on by 6.4 dBA. Figure E76 shows the AW-OASPL increasing with increased wind speed. This trend can also be seen in Fig. E77 for different flight conditions with varying wind speed. Figure E78 shows AW-OASPL remaining constant with change in pitch when a bare airframe is present. This trend can also be seen in Figs E79, E80, and E81 for different flight conditions with varying pitch.

7.2 Hover

A sweep of RPM was performed in hover for the 3DR Iris+.

7.2.1 RPM Sweep

Figures E82, E83, and E84 show the IRIS with both yaw and pitch of 0°. An RPM sweep from 3,000 to 7,000 was performed. The AW-OASPL increases when the RPM is increased with a maximum difference of 10.0 dBA for each run.

7.3 Forward Flight

For forward flight, a sweep of speed, RPM, pitch, and simulated turning with varied rotor RPM was performed for the 3DR Iris+.

7.3.1 Speed Sweep

Figure E85 shows the IRIS with a yaw, pitch, and RPM of 0°, -40°, and 4,300, respectively. When wind speed is increased from 20 to 40 ft/s, the AW-OASPL increases by 4.5 dBA. The dBA of the first BPF harmonic increased with increased wind speed. Figures E86, E87, and E88 show similar trends for different flight conditions with varying wind speed.

7.3.2 RPM Sweep

Figure E89 shows the IRIS with yaw, pitch, and wind speed of 0°, -40°, and 20 ft/s, respectively. The RPM is swept from 4,300 to 6,500. The AW-OASPL increased with increased RPM with a maximum difference of about 5.5 dBA. The dBA of the first BPF harmonic increased with increased RPM. Figures E90, E91, and E92 show similar trends for different flight conditions with varying wind speed.

7.3.3 Pitch Sweep

Figure E93 shows the IRIS with a yaw, wind speed, and RPM of 0°, 20 ft/s and 4,300 RPM, respectively. Pitch is swept from -40° to 0°. The AW-OASPL increases with increased pitch. The maximum difference between runs is approximately 10.0 dBA. The dBA of the first BPF harmonic varied by about 3.0 dBA with no trend between increased pitch and change in dBA. Figures E94 and E95 show similar trends for different flight conditions with varying pitch. Figure E96 follows similar trends but has the dBA of the first harmonic BPF increasing with increased pitch.

7.3.4 Simulated Turning with Varied Rotor RPM

Figure E97 shows the IRIS simulating turning with rotors 1 and 2 running at 6,500 RPM and rotors 3 and 4 running at 4,300 RPM. The runs consist of yaw and pitch of 0° and -10°, respectively. The AW-OASPL increases by approximately 4.0 dBA when wind speed is increased from 20 to 40 ft/s. The dBA of each first BPF harmonic increased with increased wind speed. Figure E98 shows similar trends for different flight conditions with varying wind speed. Figure E99 has rotors 1 and 2 operating at 6,500 RPM and rotors 3 and 4 operating at 4,300 RPM. The runs had a yaw of 0° and a wind speed of 20 ft/s. Pitch was varied from -5° to 0°. The AW-OASPL remains constant with a slight variation of around 0.4 dBA. The dBA of each first harmonic varied by about 4.0 dBA. Figure E100 has the AW-OASPL increasing when pitch is swept from -10° to 0° with a maximum difference of about 3.0 dBA between runs. The BPF follows similar trends as Fig. E99.

8 Drone America x8

Acoustic testing of the Drone America x8 consisted of aerodynamic tares and various sweeps for hover and forward flight.

8.1 Aerodynamic Tares

Figure E101 consists of two runs with the DAx8: motors off and motors running at 7,000 RPM. The AW-OASPL increased with the motors on. Figure E102 shows the AW-OASPL remaining constant with increased pitch when only a bare airframe is present. This trend can also be seen in Figs. E103, E104, and E105 for different flight conditions with varying pitch.

8.2 Hover

In hover, a RPM sweep was performed for the Drone America x8 .

8.2.1 RPM Sweep

Figure E108 shows the DAx8 in hover with both yaw and pitch of 0°. An RPM sweep from 4,000 to 7,000 was performed. The AW-OASPL is found to increase when the RPM is increased with a maximum difference of 10.0 dBA for each run. The dBA of the first BPF harmonic increased with increased RPM.

8.3 Forward Flight

The Drone America x8 performed a speed, RPM, pitch, yaw, and simulated turning with varied rotor RPM in forward flight.

8.3.1 Speed Sweep

Figure E109 shows the DAx8 with yaw, pitch, and RPM of 0°, -40°, and 6,200 RPM, respectively. The AW-OASPL increased by 0.2 dBA when wind speed was increased from 20 to 40 ft/s. The BPF remains consistent between runs with some discrepancy due to uncertainty error. Figure E110 shows the DAx8 with yaw, pitch, and RPM of 0°, -40°, and 7,400, respectively. The AW-OASPL decreased by 1.3 dBA when wind speed is increased. The first BPF harmonic increased by about 7.0 dBA with increased wind speed. Figure E111 shows runs with yaw, pitch, and RPM of 0°, -40°, and 7,400 respectively. The AW-OASPL increases with by about 0.5 dBA when wind speed was increased from 20 to 40 ft/s. The first BPF harmonic decreases by 4.0 dBA when wind speed is increased.

8.3.2 RPM Sweep

Figure E112 shows the DAx8 with yaw, pitch, and wind speed of 0°, 20°, and 20 ft/s, respectively. RPM was swept from 5,000 to 7,400. The AW-OASPL increased with increasing RPM and has a maximum difference between runs of 10.0 dBA. The first BPF harmonic varied by run with a maximum of 9.0 dBA with no trend between increased RPM and dBA. These trends can be seen in Figs. E113, E114, and E115 for different flight conditions with varying RPM.

8.3.3 Pitch Sweep

Figure E116 shows the DAx8 with yaw, wind speed, and RPM of -90°, 20 ft/s, and 5,600, respectively. Pitch is swept from -10° to 0°. The AW-OASPL increases slightly between runs with only a 1.5 dBA difference between the runs with the highest and lowest pitch. The first BPF harmonic increased by up to 7.0 dBA with increased pitch. Figures E117 and E118 follow a similar trend for different flight conditions with varying pitch. Figures E119 and E120 show the DAx8 with yaw, wind speed, and RPM of -90°, 20 ft/s, and 8,400 respectively. Pitch is swept from -10° to 10°. The AW-OASPL is observed to remain constant within 1.0 dBA between runs. Figure E121 shows the DAx8 with yaw, wind speed, and RPM of 0°, 20 ft/s, and 5,000, respectively. The AW-OASPL varied by a maximum of 3.5 dBA between runs, with no relationship between increased pitch and the OASPL. Figure E122 shows the DAx8 with yaw, wind speed, and RPM of 0°, 20 ft/s, and 2,400. The AW-OASPL remains constant within 1.5 dBA when pitch is swept from 0° to 20°.

8.3.4 Yaw Sweep

Figure E123 shows the DAx8 with pitch, wind speed, and RPM of -2°, 20 ft/s, and 6,200, respectively. Yaw was swept from -90° to 0°. When yaw was increased, the AW-OASPL remained constant within 1.5 dBA.

8.3.5 Simulated Turning with Varied Rotor RPM

Figure E124 shows the DAx8 simulating turning with rotors 1 and 4 operating at 6,800 RPM and rotors 2 and 3 operating at 5,600 RPM. The runs consisted of a pitch of -10° and yaw of 0°. The AW-OASPL increased by 3.0 dBA when wind speed was increased from 20 to 40 ft/s. The first BPF harmonic of rotors 1 and 4 decreased by 0.5 dBA while that of rotors 2 and 3 increased by 4.0 dBA. Figure E125 followed similar trends for different flight conditions with varying wind speed. Figures E126 and E127 showed similar trends but both first BPF harmonics increased with increased wind speed. Figure E128 shows simulated turning with rotors 1 and 4 operating at 5,600 RPM and rotors 2 and 3 operating at 6,800 RPM. The runs consisted of a yaw of 0° and wind speed of 20 ft/s. Pitch was varied from -10° to 0°. The AW-OASPL remained constant between runs to within 1.0 dBA. Both sets of rotors' first harmonic varied by 4.0 dBA. Figures E129 through E135 follow similar trends for different flight conditions with varying pitch. Figure E136 shows simulated turning with rotors 1 and 2 operating at 6,200 RPM and rotors 3 and 4 operating at 7,700 RPM. When pitch is swept from -10° to 0°, it is observed that the AW-OASPL increases by 1.5 dBA. Figures E137 and E138 show similar trends for different flight conditions with varying pitch. Figure E139 shows simulated turning with rotors 1 and 2 operating at 7,700 RPM and rotors 3 and 4 operating at 6,200 RPM. The runs consisted of a pitch of -10° and wind speed of 20 ft/s. Yaw varied from -90° to -5°. AW-OASPL remains constant between runs. The first BPF harmonic of both sets of rotors varied by 5.0 dBA. Figures E140 and E141 follow similar trends for different flight conditions with varying yaw.

9 Straight Up Imaging Endurance

Acoustic testing of the Straight Up Imaging Endurance consisted of aerodynamic tares and various sweeps for hover and forward flight.

9.1 Aerodynamic Tares

Figure E142 contains a run with motors off and a run with motors operating at 3,500 RPM. The OASPL remains the same between runs while AW-OASPL increases with the motors on by 4.0 dBA. Figure E143 shows the AW-OASPL remaining constant for varying pitch. Figure E144 shows an increase in the AW-OASPL when wind speed is increased from 20 ft/s to 40 ft/s. This trend can also be seen in Figs. E145 through E151 for different flight conditions with varying wind speed. Figure E152 shows a 2.0 dBA increase in the AW-OASPL between a run with the fan off and a run with the fan operating at 20 ft/s.

9.2 Hover

For the Straight Up Imaging Endurance, a sweep of yaw was performed.

9.2.1 Yaw Sweep

Figure E153 shows the SUI in hover with a pitch of 0° and RPM of 3,500. The AW-OASPL remains within 1.0 dBA. The first BPF harmonic varied by 6.0 dBA.

9.3 Forward Flight

For the Straight Up Imaging Endurance, a sweep of speed, RPM, pitch, yaw, and simulated turning with varied rotor RPM in hover was performed.

9.3.1 Speed Sweep

Figure E154 shows the SUI with yaw, pitch, and RPM of 0°, -40°, and 2,800, respectively. Wind speed was varied from 20 to 40 ft/s. The AW-OASPL increases by about 1.5 dBA when wind speed is increased. The first BPF harmonic increased with increased wind speed. These trends can also be seen in Figs. E155 through E158 for different flight conditions with varying wind speed.

9.3.2 RPM Sweep

Figure E159 shows the SUI with yaw, pitch, and wind speed of -90°, -10°, and 20 ft/s, respectively. When RPM was swept from 2,800 to 4,200, the AW-OASPL increased. The first BPF harmonic varied by about 12.0 dBA. Similar trends can be seen in Figs. E160 through E163 for different flight conditions with varying RPM.

9.3.3 Pitch Sweep

Figure E164 shows the SUI with yaw, wind speed, and RPM of -90°, 20 ft/s, and 4,200, respectively. Pitch was varied from -10° to 0°. As pitch was increased, the AW-OASPL increased by 2.0 dBA between the runs with the lowest and highest pitch. The first BPF harmonic increased with increased pitch. Figures E165 and E166 follow similar trends. Figures E167 through E170 also follow these trends for different flight conditions with varying pitch, except that the dBA of the first BPF harmonic does not increase with increased pitch. Figure E171 has yaw, wind speed, and RPM of 0°, 20 ft/s, and 2,800, respectively. The AW-OASPL stays within 0.5 dBA when the pitch is swept from 0° to 40°. Figure E172 follows the same trend for different flight conditions with varying pitch.

9.3.4 Yaw Sweep

Figure E173 has the SUI with pitch, wind speed, and RPM of -10°, 20 ft/s, and 2,800, respectively. The yaw angle was swept from -90° to 0°. When the yaw was swept, AW-OASPL remained within 2.0 dBA. The first BPF harmonic varied by 4.0 dBA.

9.3.5 Simulated Turning with Varied Rotor RPM

Figure E174 shows the SUI simulating turning with rotors 1 and 2 operating at 3,200 RPM and rotors 3 and 4 operating at 3,800 RPM. The runs consisted of a yaw of 0° and a pitch of -10°. The AW-OASPL decreased by 1.0 dBA when wind speed was changed from 20 to 40 ft/s. Both first BPF harmonics increased with increased wind speed. Figure E175 followed a similar trend for different flight conditions with varying wind speed. Figures E176 and E177 show a similar trend for BPF, but they both have AW-OASPL increasing with increased wind speed. Figure E178 shows simulated turning with rotors 1 and 3 operating at 3,800 RPM and rotors 2 and 4 operating at 3,200 RPM. The runs consisted of a yaw of 0° and wind speed of 20 ft/s. Pitch was swept from -10° to 0°. When pitch was increased, the AW-OASPL increased by 1.0 dBA between the runs with the lowest and highest pitch. The first harmonic BPF corresponding to rotors 1 and 3 varied by up to 6.0 dBA. The first harmonic BPF corresponding to rotors 2 and 4 varied by 0.2 dBA. Figures E179 through E184 follow similar trends for different flight conditions with varying pitch. Figures E185 through E188 show similar trends with BPF, but they have the AW-OASPL remain constant within 2.0 dBA when pitch is changed. Figure E189 shows simulated turning with rotors 1 and 3 operating at 3,800 RPM and rotors 2 and 4 operating at 3,200 PM. The runs consisted of a pitch angle of 10° and wind speed of 20 ft/s. Yaw was varied from -90° to 0°. As yaw was varied, the AW-OASPL remained within 2.0 dBA. The magnitude of the first BPF harmonic for rotors 1 and 3 varied by 15.0 dBA. The magnitude of the first BPF harmonic for rotors 2 and 4 varied by 5.0 dBA. Figures E190 and E191 follow similar trends for different flight conditions with varying yaw. Figure E192 shows simulated turning with rotors 1 and 2 operating at 3,800 RPM and rotors 3 and 4 operating at 3,200 RPM. The runs consisted of a pitch of 10° and wind speed of 20 ft/s. The AW-OASPL increases from 93.5 to 94.6 dBA when yaw is swept from -90° to 0°.

10 DJI Phantom 3

Acoustic testing of the DJI Phantom 3 consisted of aerodynamic tares and various sweeps for hover and forward flight.

10.1 Aerodynamic Tares

Figure E193 consists of a run with motors off and a run with motors operating at 5,000 RPM. It can be seen that the AW-OASPL increases when motors are turned on by 9 dBA. Figure E194 shows the AW-OASPL remaining nearly constant between a run with the tunnel off and a run with the fan operating at 20 ft/s. It is seen that the AW-OASPL increases when the tunnel speed is increased from 20 ft/s to 40 ft/s. Figure E195 shows the AW-OASPL remaining constant for varying pitch.

10.2 Hover

In hover, a sweep of pitch was performed for the DJI Phantom 3.

10.2.1 Pitch Sweep

Figure E196 shows the Phantom in hover with a yaw of 0° and RPM of 5,300. A pitch from -10° to 0° was performed. As pitch is increased, the AW-OASPL decreases by 0.7 dBA.

10.3 Forward Flight

In forward flight, a sweep of speed, RPM, pitch, simulated turning with varied rotor RPM was performed for the DJI Phantom 3.

10.3.1 Speed Sweep

Figure E197 shows the Phantom with yaw, pitch, and RPM of 0°, -40°, and 6,400, respectively. Wind speed was varied from 20 ft/s to 80 ft/s. The AW-OASPL increases with increased wind speed to a maximum difference of 10.0 dBA. The first BPF harmonic increased with increased wind speed. These trends are also seen in Figures E198, E199, and E200 for different flight conditions with varying wind speed.

10.3.2 RPM Sweep

Figure E201 shows the Phantom with yaw, pitch, and wind speed of 0[°, 0.11°, and 20 ft/s. RPM was varied from 4,200 to 6,400. The AW-OASPL increases with increased RPM except for the run with 5,800 RPM. This may be attributed to human error during post processing. The first BPF harmonic varied by 17.0 dBA between runs. Figures E202 and E203 follow similar trends for different flight conditions with varying RPM.

10.3.3 Pitch Sweep

Figure E204 shows the Phantom with yaw, wind speed, and RPM of 0°, 20 ft/s, and 6,400, respectively. Pitch was swept from -40° to 0.11°. When pitch was changed, the AW-OASPL values varied by up to 4.5 dBA. Figures E205 and E206 follow a similar trend for different flight conditions with varying pitch. Figure E207 has the Phantom at a yaw, wind speed and RPM of 0°, 20 ft/s, and 4,200, respectively. When yaw was increased from -40° to 0.11°, the AW-OASPL increased as well.

10.3.4 Simulated Turning with Varied Rotor RPM

Figure E208 simulates the Phantom turning with rotors 1 and 2 operating at 4,200 RPM and rotors 3 and 4 operating at 6,400 RPM. The runs consisted of a yaw angle of 0° and pitch angle of -40°. When wind speed was increased from 20 to 40 ft/s, the AW-OASPL increased by 0.3 dBA. The first BPF harmonic for both sets of rotors increased with increased wind speed by about 10.0 dBA. Figures E209 and E210 followed similar trends for different flight conditions with varying wind speed. Figure E211 consisted of rotors 1 and 3 operating at 5,800 RPM and rotors 2 and 4 operating at 4,800 RPM. Both pitch and yaw were 0°. The AW-OASPL increased with wind speed similar to other runs. The dBA of the first BPF harmonic for rotors 1 and 3 increased with increased wind speed but the dBA of the first BPF harmonic for rotors 2 and 4 decreased with increased wind speed. Figure E212 simulated turning with rotors 1 and 2 operating at 4,800 RPM and rotors 3 and 4 operating at 5,800 RPM. The runs consisted of a yaw angle of 0° and wind speed of 20 ft/s. When pitch was swept from -40° to 0.11°, the AW-OASPL varied by up to 6.0 dBA. The first BPF harmonic varied up to 5.0 dBA. The first BPF harmonic varied by up to 2.0 dBA. Figure E213 simulated turning with rotors 1 and 2 operating at 4,800 RPM and rotors 3 and

4 operating at 5,800 RPM. The runs consisted of a yaw angle of 0° and a wind speed of 40 ft/s. When pitch was swept from -40° to 0°, AW-OASPL increased. The BPF followed the same trend as Fig. E212.

11 Conclusions

Acoustic measurements were taken for five Multicopter UAS models tested in the U.S. Army's 7- by 10-Foot Wind Tunnel at NASA Ames Research Center to determine if meaningful acoustic measurements can be acquired in this hard-wall tunnel. Plots of A-weighted sound pressure level versus time and frequency spectrum's were presented in the analysis. Repeatability studies for each Multicopter UAS model found less than a 5.0 dB deviation between repeated flight conditions for hover. This showed that repeatable acoustic measurements can be obtained in the U.S. Army's 7- by 10-Foot Wind Tunnel. General trends included the AW-OASPL increasing with increased wind speed as well as increased RPM. The AW-OASPL, however, was not a function of yaw or pitch changes. The magnitude of the first BPF A-weighted sound pressure level was not found to be a function of increased RPM. Further investigation in the U.S. Army's 7- by 10-Foot Wind Tunnel acoustic capability is required to quantify the accuracy of the magnitudes obtained in the acoustic measurements thus far.

12 References

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Appendix A

U.S. Army's 7- by 10-Foot Wind Tunnel Test Dimensions

Figures A11 through A15 show how each of the model was set up in the U.S. Army's 7- by 10-Foot Wind Tunnel. The dimensions show the distance from the center of rotation to the center of the vehicle body, the distance from the center of rotation to each of the three microphones, and the rotor to rotor length.

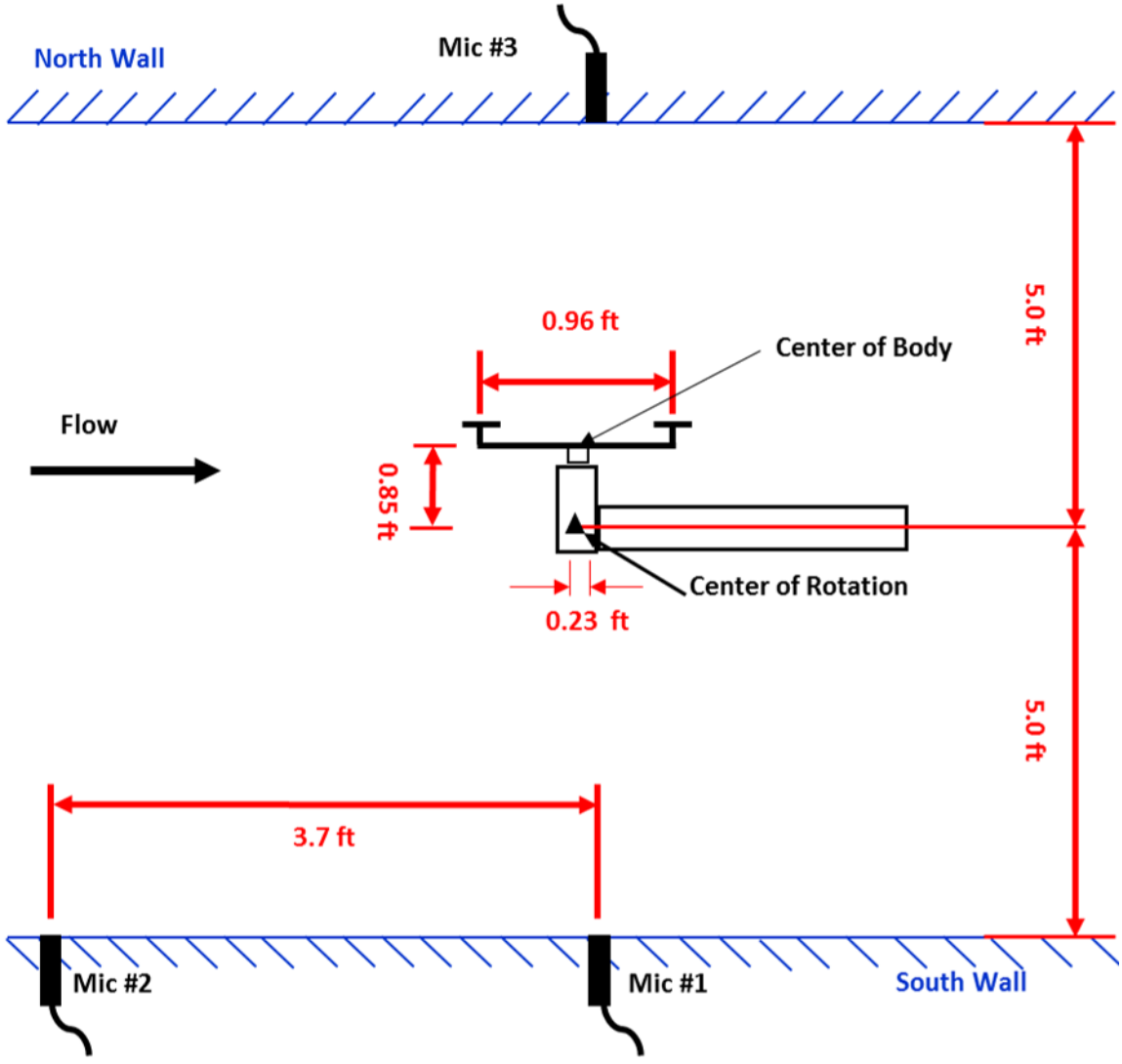

Figure A11: 3DR SOLO dimensional U.S. Army's 7- by 10-Foot Wind Tunnel set up.

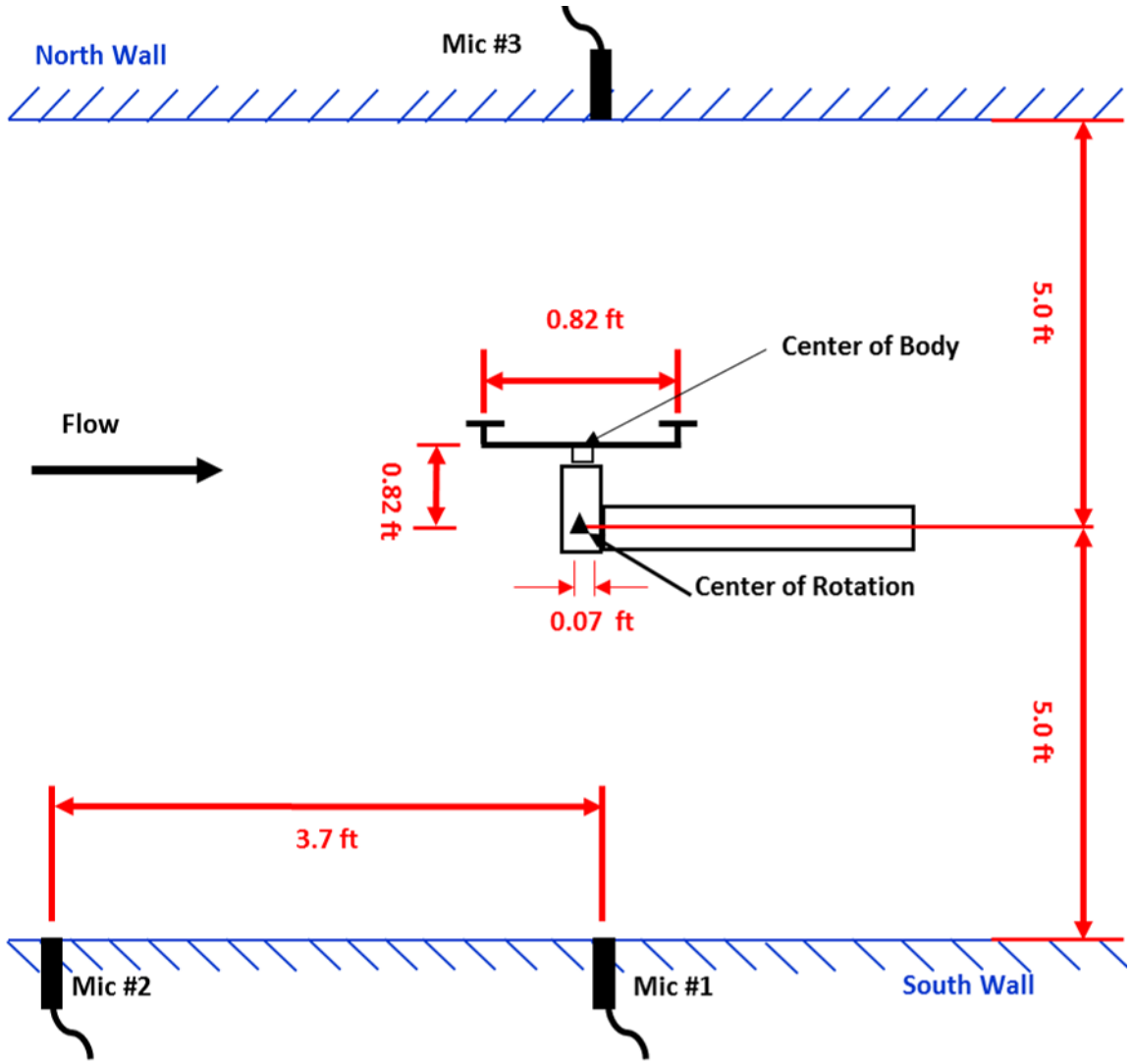

Figure A12: DJI dimensional U.S. Army's 7- by 10-Foot Wind Tunnel set up.

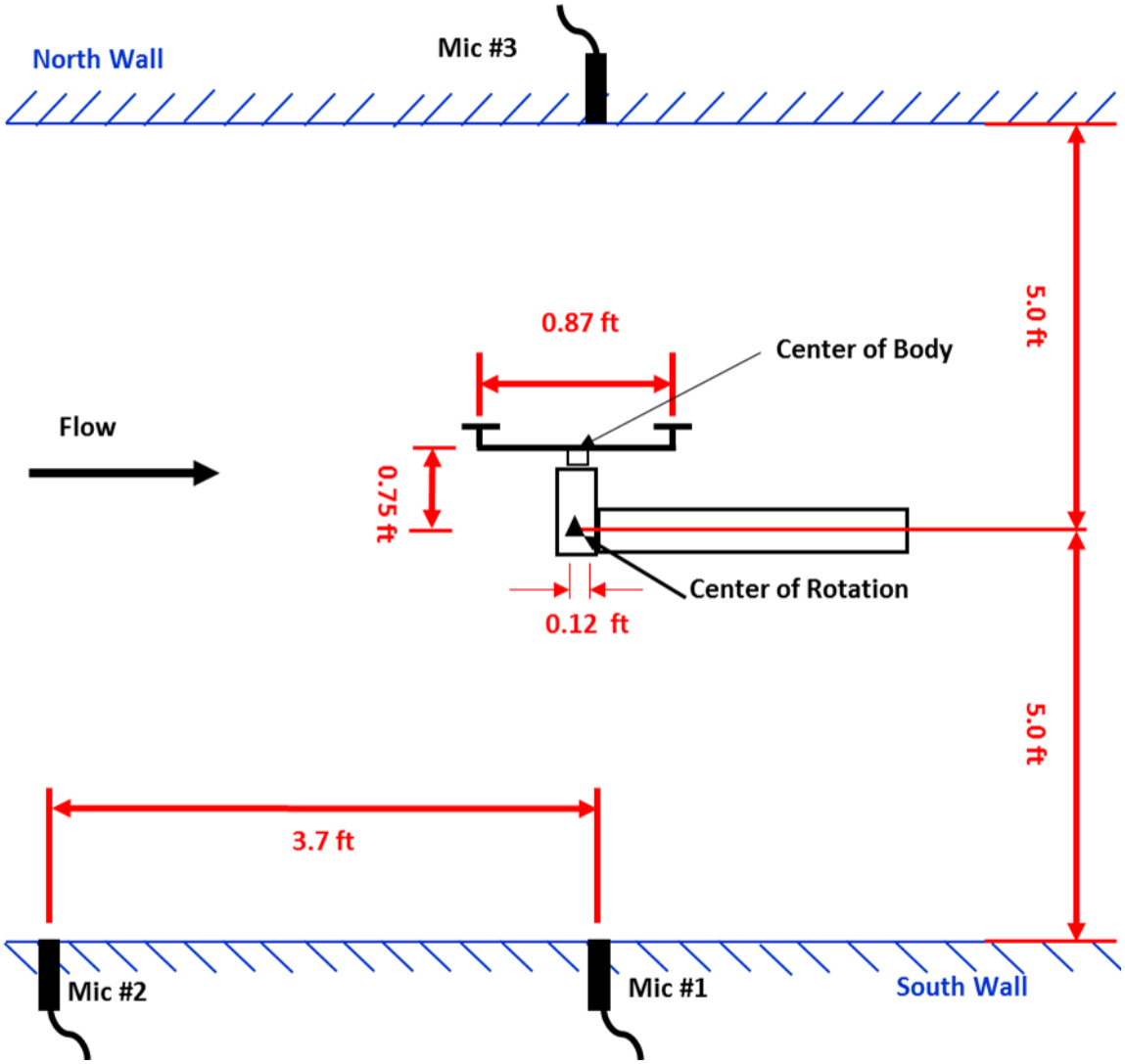

Figure A13: 3DR Iris+ dimensional U.S. Army's 7- by 10-Foot Wind Tunnel set up.

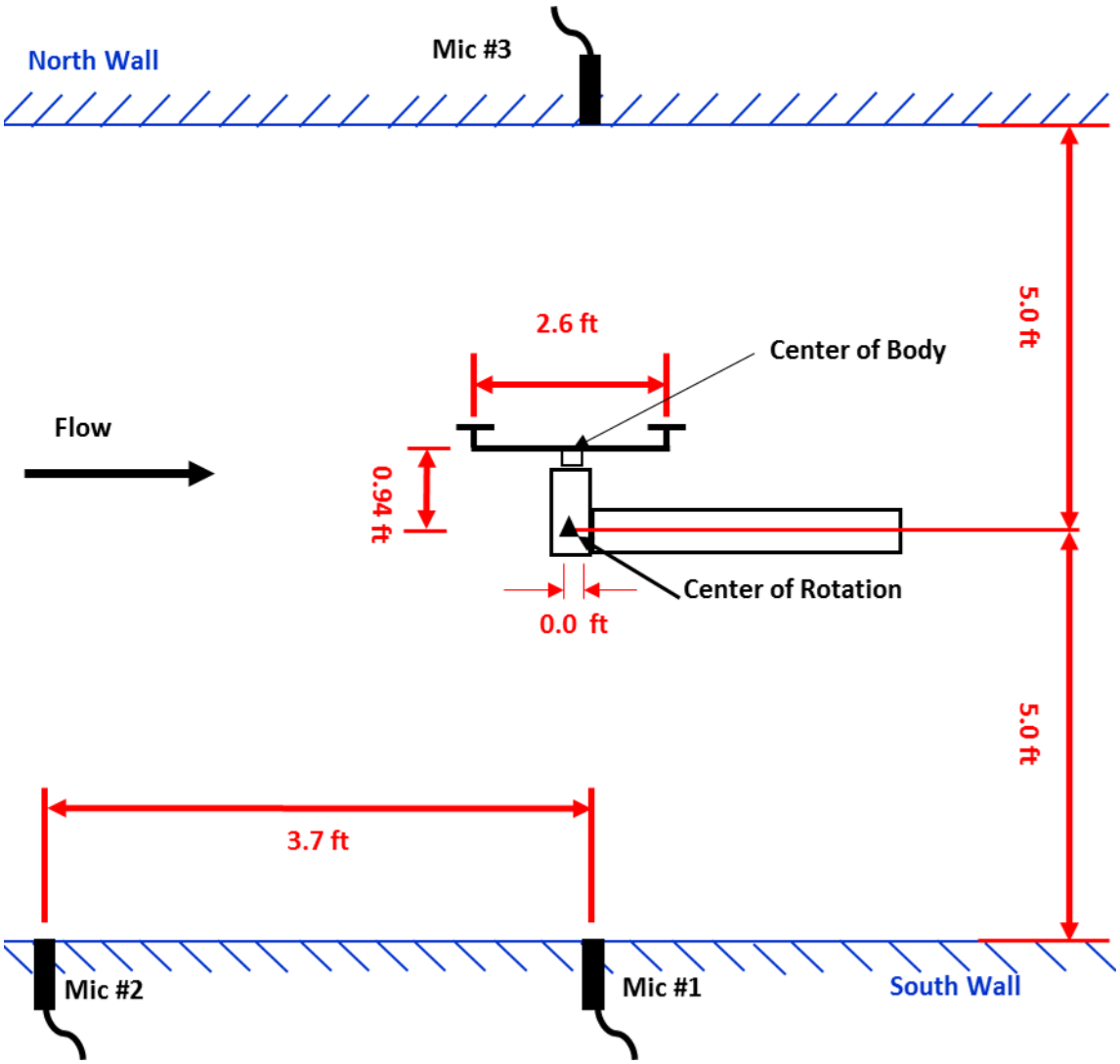

Figure A14: Drone America x8 dimensional U.S. Army's 7- by 10-Foot Wind Tunnel set up.

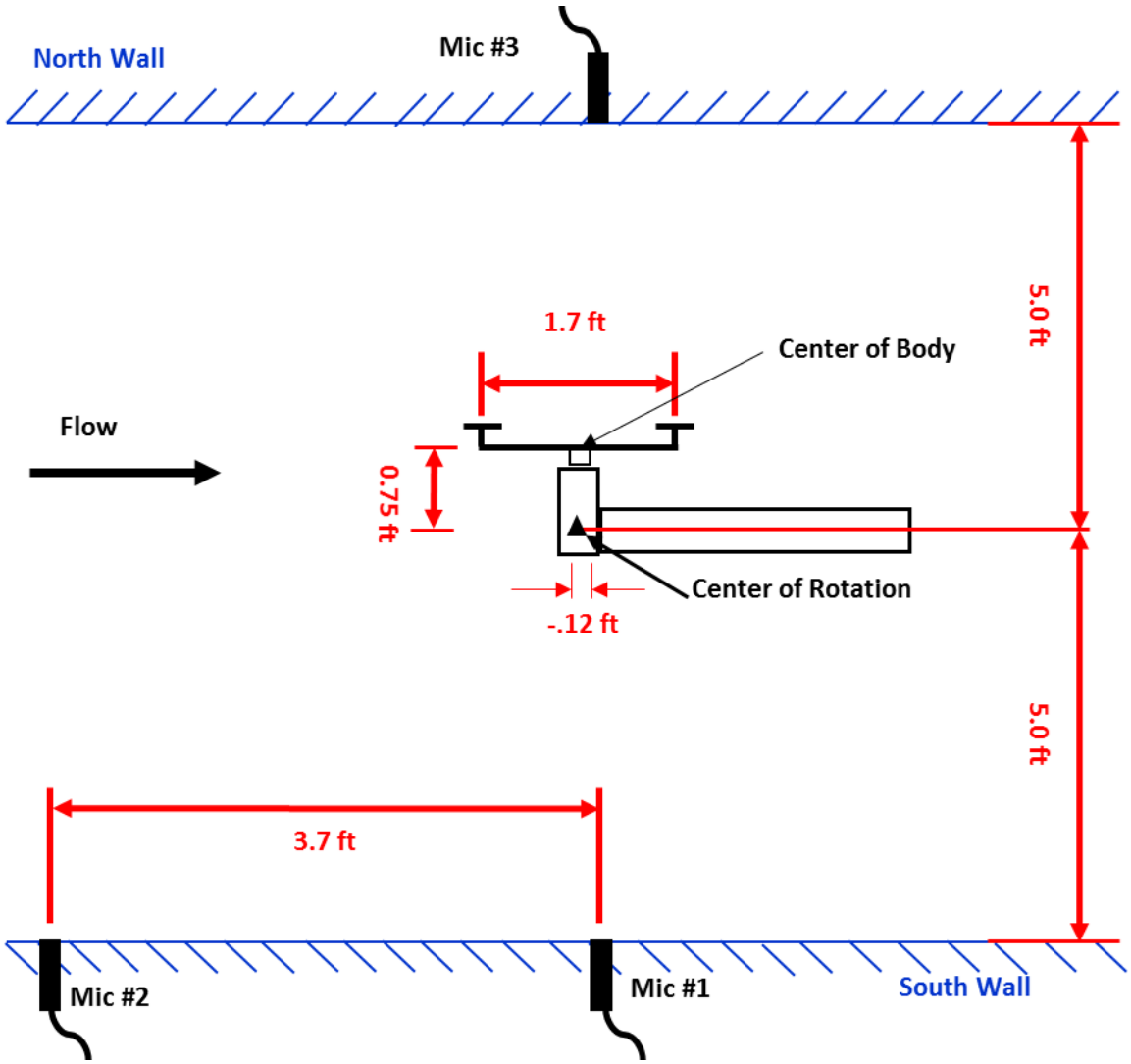

Figure A15: Straight Up Imaging (SUI) Endurance dimensional U.S. Army's 7- by 10-Foot Wind Tunnel set up.

Appendix B

Test Run Log

The test run log can be seen on the CD provided. The Excel file (.xls) labeled "Appendix B"' contains the complete run log.

Appendix C

Complete List of Figures

This section contains the complete list of the figures including all three microphones for various test conditions.

Below is a table of every plot generated. The column with J values denotes the row of the excel sheet entitled UAV Acoustic Data New. This J value is utilized in the MATLAB code to specify which run conditions to load. Graph Number denotes the .png files associated with each plot made. The .png files were named as followed: *Model Variable plot Graph number Mic*. As an example, the fifth RPM sweep plot of the IRIS corresponding to microphone 1 is titled $IRIS\ RPM\ Plot\ 5\ Mic1$. All rows color coded blue correspond to runs simulating turning. All rows color coded beige correspond to bare airframe runs.

IRIS Hover Sweep											
UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
IRIS	1	1333	58	3	0	0	0	3000			
		1334	58	4				4000			
		1335	58	5				5000			
		1338	58	8				5400			
		1337	58	7				7000			
IRIS RPM Sweep											
IRIS	1	1345	59	6	0	20	-40	4300			
		1346	59	7				4900			
		1347	59	8				5400			
		1348	59	9				5900			
		1349	59	10				6500			
IRIS	2	1350	59	11	0	20	-20	4300			
		1351	59	12				4900			
		1352	59	13				5400			
		1353	59	14				5900			
		1354	59	15				6500			
IRIS	3	1355	59	16	0	20	-10	4300			
		1356	59	17				4900			
		1357	59	18				5400			
		1358	59	19				5900			
		1359	59	20				6500			
IRIS	4	1376	61	5	0	20	-5	4300			
		1377	61	6				4900			
		1378	61	7				5400			
		1379	61	8				5900			
		1380	61	9				6500			
IRIS	5	1387	61	16	0	20	-2	4300			
		1388	61	17				4900			
		1389	61	18				5400			
		1390	61	19				5900			
		1391	61	20				6500			
IRIS	6	1398	61	27	0	20	0	4300			
		1399	61	28				4900			
		1400	61	29				5400			
		1401	61	30				5900			
		1402	61	31				6500			
IRIS	7	1418	62	5	0	40	-40	4300			
		1419	62	6				4900			
		1420	62	7				5400			
		1421	62	8				5900			
		1422	62	9				6500			
IRIS	8	1423	62	10	0	40	-20	4300			
		1424	62	11				4900			
		1425	62	12				5400			
		1426	62	13				5900			
		1427	62	14				6500			
IRIS	9	1428	62	15	0	40	-10	4300			
		1429	62	16				4900			
		1430	62	17				5400			
		1431	62	18				5900			
		1432	62	19				6500			
IRIS	10	1446	63	5	0	40	-5	4300			
		1447	63	6				4900			
		1448	63	7				5400			
		1449	63	8				5900			
		1450	63	9				6500			
IRIS	11	1457	63	16	0	40	-2	4300			
		1458	63	17				4900			
		1459	63	18				5400			
		1460	63	19				5900			
		1461	63	20				6500			

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
IRIS	12	1468	63	27	0	40	0	4300			
		1469	63	28				4900			
		1470	63	29				5400			
		1471	63	30				5900			
		1472	63	31				6500			
IRIS	13	1531	66	12	0	0	0	0			
		1486	64	3				5400			
IRIS Forward Flight Sweep											
IRIS	1	1338	58	8	0	0	0	5400			
		1400	61	29		19.5					
		1375	61	4		38.5					
IRIS	3	1398	61	27	0	19.7	0	4300			
		1468	63	27		40.2					
IRIS	4	1399	61	28	0	19.4	0	4900			
		1469	63	28		39.9					
IRIS	5	1401	61	30	0	19.9	0	5900			
		1471	63	30		40.2					
IRIS	6	1402	61	31	0	19.8	0	6500			
		1472	63	31		39.8					
IRIS	7	1387	61	16	0	20	-2	4300			
		1457	63	16		40					
IRIS	8	1388	61	17	0	20	-2	4900			
		1458	63	17		39.7					
IRIS	9	1389	61	18	0	20.3	-2	5400			
		1459	63	18		39.8					
IRIS	10	1390	61	19	0	20.1	-2	5900			
		1460	63	19		40.2					
IRIS	11	1391	61	20	0	20.4	-2	6500			
		1461	63	20		40.3					
IRIS	12	1376	61	5	0	20	-5	4300			
		1446	63	5		40					
IRIS	13	1377	61	6	0	19.8	-5	4900			
		1447	63	6		39.7					
IRIS	14	1378	61	7	0	19.7	-5	5400			
		1448	63	7		39.8					
IRIS	15	1379	61	8	0	20.1	-5	5900			
		1449	63	8		39.7					
IRIS	16	1380	61	9	0	20.3	-5	6500			
		1450	63	9		39.4					
IRIS	17	1355	59	16	0	20.4	-10	4300			
		1428	62	15		39.9					
IRIS	18	1356	59	17	0	20.1	-10	4900			
		1429	62	16		39.6					
IRIS	19	1357	59	18	0	20.3	-10	5400			
		1430	62	17		40.1					
IRIS	20	1358	59	19	0	19.9	-10	5900			
		1431	62	18		40.2					
IRIS	21	1359	59	20	0	20.3	-10	6500			
		1432	62	19		39.8					
IRIS	22	1350	59	11	0	20.5	-20	4300			
		1423	62	10		40					
IRIS	23	1351	59	12	0	20.4	-20	4900			
		1424	62	11		39.7					
IRIS	24	1352	59	13	0	20.3	-20	5400			
		1425	62	12		39.5					
IRIS	25	1353	59	14	0	19.9	-20	5900			
		1426	62	13		39.5					
IRIS	26	1354	59	15	0	20.1	-20	6500			
		1427	62	14		39.6					
IRIS	27	1345	59	6	0	20.4	-40	4300			
		1418	62	5		39.7					
IRIS	28	1346	59	7	0	20.5	-40	4900			
		1419	62	6		39.8					
IRIS	29	1347	59	8	0	20.6	-40	5400			
		1420	62	7		29.8					
IRIS	30	1348	59	9	0	20.5	-40	5900			
		1421	62	8		39.8					

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
IRIS	31	1349	59	10	0	20.8	-40	6500			
		1422	62	9		39.8					
IRIS	59	1342	59	3	0	0	0	5400			
		1343	59	4		20.2					
		1344	59	5		40.2					
IRIS	60	1367	59	28	0	0	0	5400			
		1366	59	27		40.5					
IRIS	61	1416	62	3	0	0	0	5400			
		1400	61	29		19.5					
		1375	61	4		38.5					
IRIS	62	1440	62	27	0	0	0	5400			
		1470	63	29		39.7					
IRIS	63	1412	61	41	0	0	0	5700			
		1411	61	40		39.7					
IRIS	2	1486	64	3	0	0	0	5400			
		1493	64	10		20.2					
		1499	64	16		40.6					
IRIS	32	1488	64	5	0	20	-40	5400			
		1506	65	5		40.5					
IRIS	33	1489	64	6	0	19.9	-20	5400			
		1507	65	6		40.4					
IRIS	36	1490	64	7	0	20.4	-10	5400			
		1508	65	7		40.5					
IRIS	43	1491	64	8	0	20.5	-5	5400			
		1509	65	8		40.3					
IRIS	50	1492	64	9	0	20.3	-2	5400			
		1510	65	9		40.4					
IRIS	68	1494	64	11	0	20.1	2	5400			
		1512	65	11		40.5					
IRIS	69	1495	64	12	0	20	5	5400			
		1513	65	12		40.4					
IRIS	70	1496	64	13	0	20.2	10	5400			
		1514	65	13		40.4					
IRIS	71	1497	64	14	0	20.1	20	5400			
		1515	65	14		41.1					
IRIS	72	1498	64	15	0	20.6	40	5400			
		1516	65	15		40.5					
IRIS	34	1365	59	26	0	20	-10	4300	4300	6500	6500
		1438	62	25		39.5					
IRIS	35	1364	59	25	0	20	-10	4900	4900	5900	5900
		1437	62	24		39.6					
IRIS	37	1361	59	22	0	20.1	-10	5900	4900	5900	4900
		1434	62	21		39.6					
IRIS	38	1363	59	24	0	19.5	-10	5900	5900	4900	4900
		1436	62	23		39.5					
IRIS	39	1360	59	21	0	19.9	-10	6500	4300	6500	4300
		1433	62	20		39.9					
IRIS	40	1362	59	23	0	19.6	-10	6500	6500	4300	4300
		1435	62	22		39.7					
IRIS	41	1386	61	15	0	20.3	-5	4300	4300	6500	6500
		1456	63	15		39.6					
IRIS	42	1385	61	14	0	19.3	-5	4900	4900	5900	5900
		1455	63	14		39.4					
IRIS	44	1382	61	11	0	19.4	-5	5900	4900	5900	4900
		1452	63	11		39.6					
IRIS	45	1384	61	13	0	19.4	-5	5900	5900	4900	4900
		1454	63	13		39.7					
IRIS	46	1381	61	10	0	19.6	-5	6500	4300	6500	4300
		1451	63	10		39.7					
IRIS	47	1383	61	12	0	19.6	-5	6500	6500	4300	4300
		1453	63	12		39.8					
IRIS	48	1397	61	26	0	20.1	-2	4300	4300	6500	6500
		1467	63	26		39.8					
IRIS	49	1396	61	25	0	19.8	-2	4900	4900	5900	5900
		1466	63	25		40.3					
IRIS	51	1393	61	22	0	19.6	-2	5900	4900	5900	4900
		1463	63	22		40.4					
IRIS	52	1395	61	24	0	19.8	-2	5900	5900	4900	4900
		1465	63	24		40.2					

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
IRIS	53	1392	61	21	0	19.5	-2	6500	4300	6500	4300
		1462	63	21		40.4					
IRIS	54	1394	61	23	0	19.6	-2	6500	6500	4300	4300
		1464	63	23		39.8					
IRIS	55	1410	61	39	0	20.1	0	4300	4300	6500	6500
		1480	63	39		39.5					
IRIS	56	1406	61	35	0	19.8	0	4300	6500	4300	6500
		1476	63	35		40.2					
IRIS	57	1409	61	38	0	19.9	0	4900	4900	5900	5900
		1479	63	38		39.9					
IRIS	58	1405	61	34	0	19.9	0	4900	5900	4900	5900
		1475	63	34		40.3					
IRIS	64	1404	61	33	0	20	0	5900	4900	5900	4900
		1474	63	33		40.3					
IRIS	65	1408	61	37	0	19.9	0	5900	5900	4900	4900
		1478	63	37		40.3					
IRIS	66	1403	61	32	0	19.7	0	6500	4300	6500	4300
		1473	63	32		39.7					
IRIS	67	1407	61	36	0	19.8	0	6500	6500	4300	4300
		1477	63	36		40					
IRIS Pitch Sweep											
IRIS	1	1345	59	6	0	20	-40	4300			
		1350	59	11			-20				
		1355	59	16			-10				
		1376	61	5			-5				
		1387	61	16			-2				
		1398	61	27			0				
IRIS	2	1346	59	7	0	20	-40	4900			
		1351	59	12			-20				
		1356	59	17			-10				
		1377	61	6			-5				
		1388	61	17			-2				
		1399	61	28			0				
IRIS	3	1347	59	8	0	20	-40	5400			
		1352	59	13			-20				
		1357	59	18			-10				
		1378	61	7			-5				
		1389	16	18			-2				
		1400	61	29			0				
IRIS	4	1348	59	9	0	20	-40	5900			
		1353	59	14			-20				
		1358	59	19			-10				
		1379	61	8			-5				
		1390	61	19			-2				
		1401	61	30			0				
IRIS	5	1349	59	10	0	20	-40	6500			
		1354	59	15			-20				
		1359	59	20			-10				
		1380	61	9			-5				
		1391	61	20			-2				
		1402	61	31			0				
IRIS	6	1418	62	5	0	40	-40	4300			
		1423	62	10			-20				
		1428	62	15			-10				
		1446	63	5			-5				
		1457	63	16			-2				
		1468	63	27			0				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
IRIS	7	1419	62	6	0	40	-40	4900			
		1424	62	11			-20				
		1429	62	16			-10				
		1447	63	6			-5				
		1458	63	17			-2				
		1469	63	28			0				
IRIS	8	1420	62	7	0	40	-40	5400			
		1425	62	12			-20				
		1430	62	17			-10				
		1448	63	7			-5				
		1459	63	18			-2				
		1470	63	29			0				
IRIS	9	1421	62	8	0	40	-40	5900			
		1426	62	13			-20				
		1431	62	18			-10				
		1449	63	8			-5				
		1460	63	19			-2				
		1471	63	30			0				
IRIS	10	1422	62	9	0	40	-40	6500			
		1427	62	14			-20				
		1432	62	19			-10				
		1450	63	9			-5				
		1461	63	20			-2				
		1472	63	31			0				
IRIS	11	1488	64	5	0	20	-40	5400			
		1489	64	6			-20				
		1490	64	7			-10				
		1491	64	8			-5				
		1492	64	9			-2				
		1493	64	10			0				
IRIS	12	1493	64	10	0	20	0	5400			
		1494	64	11			2				
		1495	64	12			5				
		1496	64	13			10				
		1497	64	14			20				
		1498	64	15			40				
IRIS	13	1506	65	5	0	40	-40	5400			
		1507	65	6			-20				
		1508	65	7			-10				
		1509	65	8			-5				
		1510	65	9			-2				
		1529	66	10			0				
IRIS	14	1517	65	16	0	40	0	5400			
		1512	65	11			2				
		1513	65	12			5				
		1514	65	13			10				
		1515	65	14			20				
		1516	65	15			40				
IRIS	15	1381	61	10	0	20	-5	6500	4300	6500	4300
		1392	61	21			-2				
		1403	61	32			0				
IRIS	16	1382	61	11	0	20	-5	5900	4900	5900	4900
		1393	61	22			-2				
		1404	61	33			0				
IRIS	17	1383	61	12	0	20	-5	6500	6500	4300	4300
		1394	61	23			-2				
		1407	61	36			0				
IRIS	18	1384	61	13	0	20	-5	5900	5900	4900	4900
		1395	61	24			-2				
		1408	61	37			0				
IRIS	19	1385	61	14	0	20	-5	4900	4900	5900	5900
		1396	61	25			-2				
		1409	61	38			0				
IRIS	20	1386	61	15	0	20	-5	4300	4300	6500	6500
		1397	61	26			-2				
		1410	61	39			0				
IRIS	21	1433	62	20	0	40	-10	6500	4300	6500	4300
		1451	63	10			-5				
		1462	63	21			-2				
		1473	63	32			0				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
IRIS	22	1434	62	21	0	40	-10	5900	4900	5900	4900
		1452	63	11			-5				
		1463	63	22			-2				
		1474	63	33			0				
IRIS	23	1435	62	22	0	40	-10	6500	6500	4300	4300
		1453	63	12			-5				
		1464	63	23			-2				
		1477	63	36			0				
IRIS	24	1436	62	23	0	40	-10	5900	5900	4900	4900
		1454	63	13			-5				
		1465	63	24			-2				
		1478	63	37			0				
IRIS	25	1437	62	24	0	40	-10	4900	4900	5900	5900
		1455	63	14			-5				
		1466	63	25			-2				
		1479	63	38			0				
IRIS	26	1438	62	25	0	40	-10	4300	4300	6500	6500
		1456	63	15			-5				
		1467	63	26			-2				
		1480	63	39			0				
IRIS Duplicate Runs											
IRIS	1	1342	59	3	0	0	0	5400			
		1367	59	28							
		1374	61	3							
		1416	62	3							
		1440	62	27							
		1482	63	41							
IRIS	2	1344	59	5	0	40	0	5400			
		1366	59	27							
		1375	61	4							
		1417	62	3							
		1439	62	26							
		1445	63	4							
IRIS	5	1343	59	4	0	20.2	0	5400			
		1400	61	29		19.5	0				
IRIS	3	1486	64	3	0	0	0	5400			
		1500	64	17							
		1504	65	3							
		1518	65	17							
		1522	66	3							
		1530	66	11							
IRIS	4	1487	64	4	0	40	0	5400			
		1499	64	16							
		1505	65	4							
		1511	65	10							
		1523	66	4							
		1529	66	10							
IRIS	6	1513	65	12	0	40.4	5	5400			
		1527	66	8		40.2	5				
IRIS	7	1514	65	13		40.4	10	5400			
		1528	66	9		40.4	10				

Solo RPM Sweep

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	1	1177	51	5	-90	20	-10	4000	4000	4000	4000
		1178	51	6				4600	4600	4600	4600
		1179	51	7				5100	5100	5100	5100
		1180	51	8				5700	5700	5700	5700
		1181	51	9				6300	6300	6300	6300
Solo	2	1124	49	6	-90	40	-10	4000	4000	4000	4000
		1125	49	7				4600	4600	4600	4600
		1126	49	8				5100	5100	5100	5100
		1127	49	9				5700	5700	5700	5700
		1128	49	10				6300	6300	6300	6300
Solo	3	1186	51	14	-90	20	-5	4000	4000	4000	4000
		1187	51	15				4600	4600	4600	4600
		1188	51	16				5100	5100	5100	5100
		1189	51	17				5700	5700	5700	5700
		1190	51	18				6300	6300	6300	6300
Solo	4	1129	49	11	-90	40	-5	4000	4000	4000	4000
		1130	49	12				4600	4600	4600	4600
		1131	49	13				5100	5100	5100	5100
		1132	49	14				5700	5700	5700	5700
		1133	49	15				6300	6300	6300	6300
Solo	5	1195	51	23	-90	20	-2	4000	4000	4000	4000
		1196	51	24				4600	4600	4600	4600
		1197	51	25				5100	5100	5100	5100
		1198	51	26				5700	5700	5700	5700
		1199	51	27				6300	6300	6300	6300
Solo	6	1204	51	32	-90	20	0	4000	4000	4000	4000
		1205	51	33				4600	4600	4600	4600
		1206	51	34				5100	5100	5100	5100
		1122	49	4				5700	5700	5700	5700
		1208	51	36				6300	6300	6300	6300
Solo	7	1146	50	10	-90	40	0	3500	3500	3500	3500
		1147	50	11				4000	4000	4000	4000
		1148	50	12				4600	4600	4600	4600
		1149	50	13				5100	5100	5100	5100
		1123	49	5				5700	5700	5700	5700
		1151	50	15				6300	6300	6300	6300
Solo	8	1213	51	41	-90	20	2	4000	4000	4000	4000
		1214	51	42				4600	4600	4600	4600
		1215	51	43				5100	5100	5100	5100
		1216	51	44				5700	5700	5700	5700
		1217	51	45				6300	6300	6300	6300
Solo	9	1152	50	16	-90	40	2	3500	3500	3500	3500
		1153	50	17				4000	4000	4000	4000
		1154	50	18				4600	4600	4600	4600
		1155	50	19				5100	5100	5100	5100
		1156	50	20				5700	5700	5700	5700
		1157	50	21				6300	6300	6300	6300
Solo	10	1222	51	50	-90	20	5	4000	4000	4000	4000
		1223	51	51				4600	4600	4600	4600
		1224	51	52				5100	5100	5100	5100
		1225	51	53				5700	5700	5700	5700
		1226	51	54				6300	6300	6300	6300

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	11	1158	50	22	-90	40	5	3500	3500	3500	3500
		1159	50	23				4000	4000	4000	4000
		1160	50	24				4600	4600	4600	4600
		1161	50	25				5100	5100	5100	5100
		1162	50	26				5700	5700	5700	5700
		1163	50	27				6300	6300	6300	6300
Solo	12	1241	53	5	-90	20	10	4000	4000	4000	4000
		1242	53	6				4600	4600	4600	4600
		1243	53	7				5100	5100	5100	5100
		1244	53	8				5700	5700	5700	5700
		1245	53	9				6300	6300	6300	6300
Solo	13	1164	50	28	-90	40	10	3500	3500	3500	3500
		1165	50	29				4000	4000	4000	4000
		1166	50	30				4600	4600	4600	4600
		1167	50	31				5100	5100	5100	5100
		1168	50	32				5700	5700	5700	5700
		1169	50	33				6300	6300	6300	6300
Solo	14	1073	47	6	-60	40	-10	4000	4000	4000	4000
		1074	47	7				4600	4600	4600	4600
		1075	47	8				5100	5100	5100	5100
		1076	47	9				5700	5700	5700	5700
		1077	47	10				6300	6300	6300	6300
Solo	15	1078	47	11	-60	40	-5	4000	4000	4000	4000
		1079	47	12				4600	4600	4600	4600
		1080	47	13				5100	5100	5100	5100
		1081	47	14				5700	5700	5700	5700
		1082	47	15				6300	6300	6300	6300
Solo	16	1083	47	16	-60	40	-2	4000	4000	4000	4000
		1084	47	17				4600	4600	4600	4600
		1085	47	18				5100	5100	5100	5100
		1086	47	19				5700	5700	5700	5700
		1087	47	20				6300	6300	6300	6300
Solo	17	1095	48	5	-60	40	0	3500	3500	3500	3500
		1096	48	6				4000	4000	4000	4000
		1097	48	7				4600	4600	4600	4600
		1098	48	8				5100	5100	5100	5100
		1072	47	5				5700	5700	5700	5700
Solo	18	1100	48	10	-60	40	2	3500	3500	3500	3500
		1101	48	11				4000	4000	4000	4000
		1102	48	12				4600	4600	4600	4600
		1103	48	13				5100	5100	5100	5100
		1104	48	14				5700	5700	5700	5700
Solo	19	1105	48	15	-60	40	5	3500	3500	3500	3500
		1106	48	16				4000	4000	4000	4000
		1107	48	17				4600	4600	4600	4600
		1108	48	18				5100	5100	5100	5100
		1109	48	19				5700	5700	5700	5700
Solo	20	1110	48	20	-60	40	10	3500	3500	3500	3500
		1111	48	21				4000	4000	4000	4000
		1112	48	22				4600	4600	4600	4600
		1113	48	23				5100	5100	5100	5100
		1114	48	24				5700	5700	5700	5700
Solo	21	943	42	7	-45	20	-10	4600	4600	4600	4600
		944	42	8				5100	5100	5100	5100
		945	42	9				5700	5700	5700	5700
		946	42	10				6300	6300	6300	6300

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	22	1030	46	5	-45	40	-10	4000	4000	4000	4000
		1031	46	6				4600	4600	4600	4600
		1032	46	7				5100	5100	5100	5100
		1033	46	8				5700	5700	5700	5700
		1034	46	9				6300	6300	6300	6300
Solo	23	951	42	15	-45	20	-5	4000	4000	4000	4000
		952	42	16				4600	4600	4600	4600
		953	42	17				5100	5100	5100	5100
		954	42	18				5700	5700	5700	5700
		955	42	19				6300	6300	6300	6300
Solo	24	1035	46	10	-45	40	-5	4000	4000	4000	4000
		1036	46	11				4600	4600	4600	4600
		1037	46	12				5100	5100	5100	5100
		1038	46	13				5700	5700	5700	5700
		1039	46	14				6300	6300	6300	6300
Solo	25	960	42	24	-45	20	-2	4000	4000	4000	4000
		961	42	25				4600	4600	4600	4600
		962	42	26				5100	5100	5100	5100
		963	42	27				5700	5700	5700	5700
		964	42	28				6300	6300	6300	6300
Solo	26	1040	46	15	-45	40	-2	4000	4000	4000	4000
		1041	46	16				4600	4600	4600	4600
		1042	46	17				5100	5100	5100	5100
		1043	46	18				5700	5700	5700	5700
		1044	46	19				6300	6300	6300	6300
Solo	27	977	43	5	-45	20	0	4000	4000	4000	4000
		978	43	6				4600	4600	4600	4600
		979	43	7				5100	5100	5100	5100
		980	43	8				5700	5700	5700	5700
		981	43	9				6300	6300	6300	6300
Solo	28	1045	46	20	-45	40	0	3500	3500	3500	3500
		1046	46	21				4000	4000	4000	4000
		1047	46	22				4600	4600	4600	4600
		1048	46	23				5100	5100	5100	5100
		976	43	4				5700	5700	5700	5700
Solo	29	986	43	14	-45	20	2	4000	4000	4000	4000
		987	43	15				4600	4600	4600	4600
		988	43	16				5100	5100	5100	5100
		989	43	17				5700	5700	5700	5700
		990	43	18				6300	6300	6300	6300
Solo	30	1050	46	25	-45	40	2	3500	3500	3500	3500
		1051	46	26				4000	4000	4000	4000
		1052	46	27				4600	4600	4600	4600
		1053	46	28				5100	5100	5100	5100
		1054	46	29				5700	5700	5700	5700
Solo	31	1005	45	5	-45	20	5	4000	4000	4000	4000
		1006	45	6				4600	4600	4600	4600
		1007	45	7				5100	5100	5100	5100
		1008	45	8				5700	5700	5700	5700
		1009	45	9				6300	6300	6300	6300

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	32	1055	46	30	-45	40	5	3500	3500	3500	3500
		1056	46	31				4000	4000	4000	4000
		1057	46	32				4600	4600	4600	4600
		1058	46	33				5100	5100	5100	5100
		1059	46	34				5700	5700	5700	5700
Solo	33	1014	45	14	-45	20	10	4000	4000	4000	4000
		1015	45	15				4600	4600	4600	4600
		1016	45	16				5100	5100	5100	5100
		1017	45	17				5700	5700	5700	5700
		1018	45	18				6300	6300	6300	6300
Solo	34	1060	46	35	-45	40	10	3500	3500	3500	3500
		1061	46	36				4000	4000	4000	4000
		1062	46	37				4600	4600	4600	4600
		1063	46	38				5100	5100	5100	5100
		1064	46	39				5700	5700	5700	5700
Solo	35	892	40	6	-30	40	-10	4000	4000	4000	4000
		893	40	7				4600	4600	4600	4600
		894	40	8				5100	5100	5100	5100
		895	40	9				5700	5700	5700	5700
		896	40	10				6300	6300	6300	6300
Solo	36	897	40	11	-30	40	-5	4000	4000	4000	4000
		898	40	12				4600	4600	4600	4600
		899	40	13				5100	5100	5100	5100
		900	40	14				5700	5700	5700	5700
		901	40	15				6300	6300	6300	6300
Solo	37	909	41	5	-30	40	-2	4000	4000	4000	4000
		910	41	6				4600	4600	4600	4600
		911	41	7				5100	5100	5100	5100
		912	41	8				5700	5700	5700	5700
		913	41	9				6300	6300	6300	6300
Solo	38	914	41	10	-30	40	0	4000	4000	4000	4000
		915	41	11				4600	4600	4600	4600
		916	41	12				5100	5100	5100	5100
		891	40	5				5700	5700	5700	5700
		918	41	14				6300	6300	6300	6300
Solo	39	919	41	15	-30	40	2	4000	4000	4000	4000
		920	41	16				4600	4600	4600	4600
		921	41	17				5100	5100	5100	5100
		922	41	18				5700	5700	5700	5700
		923	41	19				6300	6300	6300	6300
Solo	40	924	41	20	-30	40	5	4000	4000	4000	4000
		925	41	21				4600	4600	4600	4600
		926	41	22				5100	5100	5100	5100
		927	41	23				5700	5700	5700	5700
		928	41	24				6300	6300	6300	6300
Solo	41	929	41	25	-30	40	10	4000	4000	4000	4000
		930	41	26				4600	4600	4600	4600
		931	41	27				5100	5100	5100	5100
		932	41	28				5700	5700	5700	5700
		933	41	29				6300	6300	6300	6300
Solo	42	667	33	6	-5	20	-40	4600	4600	4600	4600
		668	33	7				5100	5100	5100	5100
		669	33	8				5700	5700	5700	5700
		670	33	9				6300	6300	6300	6300
		671	33	10				6800	6800	6800	6800

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	43	785	36	5	-5	40	-40	4600	4600	4600	4600
		786	36	6				5100	5100	5100	5100
		787	36	7				5700	5700	5700	5700
		788	36	8				6300	6300	6300	6300
		789	36	9				6800	6800	6800	6800
Solo	44	672	33	11	-5	20	-20	4600	4600	4600	4600
		673	33	12				5100	5100	5100	5100
		674	33	13				5700	5700	5700	5700
		675	33	14				6300	6300	6300	6300
		676	33	15				6800	6800	6800	6800
Solo	45	790	36	10	-5	40	-20	4600	4600	4600	4600
		791	36	11				5100	5100	5100	5100
		792	36	12				5700	5700	5700	5700
		793	36	13				6300	6300	6300	6300
		794	36	14				6800	6800	6800	6800
Solo	46	677	33	16	-5	20	-10	4600	4600	4600	4600
		678	33	17				5100	5100	5100	5100
		679	33	18				5700	5700	5700	5700
		680	33	19				6300	6300	6300	6300
		681	33	20				6800	6800	6800	6800
Solo	47	795	36	15	-5	40	-10	4600	4600	4600	4600
		796	36	16				5100	5100	5100	5100
		797	36	17				5700	5700	5700	5700
		798	36	18				6300	6300	6300	6300
Solo	48	688	33	27	-5	20	-5	4600	4600	4600	4600
		689	33	28				5100	5100	5100	5100
		690	33	29				5700	5700	5700	5700
		691	33	30				6300	6300	6300	6300
		692	33	31				6800	6800	6800	6800
Solo	49	810	37	5	-5	40	-5	4600	4600	4600	4600
		811	37	6				5100	5100	5100	5100
		812	37	7				5700	5700	5700	5700
		813	37	8				6300	6300	6300	6300
Solo	50	699	33	38	-5	20	-2	4600	4600	4600	4600
		700	33	39				5100	5100	5100	5100
		701	33	40				5700	5700	5700	5700
		702	33	41				6300	6300	6300	6300
		703	33	42				6800	6800	6800	6800
Solo	51	817	37	12	-5	40	-2	4600	4600	4600	4600
		818	37	13				5100	5100	5100	5100
		819	37	14				5700	5700	5700	5700
		820	37	15				6300	6300	6300	6300
Solo	52	710	33	49	-5	20	0	4600	4600	4600	4600
		711	33	50				5100	5100	5100	5100
		666	33	5				5700	5700	5700	5700
		714	33	53				6300	6300	6300	6300
		715	33	54				6800	6800	6800	6800
Solo	53	829	37	24	-5	40	0	4000	4000	4000	4000
		824	37	19				4600	4600	4600	4600
		825	37	20				5100	5100	5100	5100
		665	33	4				5700	5700	5700	5700
		827	37	22				6300	6300	6300	6300
Solo	54	732	34	6	-5	20	2	4600	4600	4600	4600
		733	34	7				5100	5100	5100	5100
		734	34	8				5700	5700	5700	5700
		735	34	9				6300	6300	6300	6300
		736	34	10				6800	6800	6800	6800
Solo	55	842	38	5	-5	40	2	4000	4000	4000	4000
		843	38	6				4600	4600	4600	4600
		844	38	7				5100	5100	5100	5100
		845	38	8				5700	5700	5700	5700
		846	38	9				6300	6300	6300	6300

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	56	743	34	17	-5	20	5	4600	4600	4600	4600
		744	34	18				5100	5100	5100	5100
		745	34	19				5700	5700	5700	5700
		746	34	20				6300	6300	6300	6300
		747	34	21				6800	6800	6800	6800
Solo	57	850	38	13	-5	40	5	4000	4000	4000	4000
		851	38	14				4600	4600	4600	4600
		852	38	15				5100	5100	5100	5100
		853	38	16				5700	5700	5700	5700
		854	38	17				6300	6300	6300	6300
Solo	58	754	34	28	-5	20	10	4600	4600	4600	4600
		755	34	29				5100	5100	5100	5100
		756	34	30				5700	5700	5700	5700
		757	34	31				6300	6300	6300	6300
		758	34	32				6800	6800	6800	6800
Solo	59	865	39	5	-5	40	10	4000	4000	4000	4000
		866	39	6				4600	4600	4600	4600
		867	39	7				5100	5100	5100	5100
		868	39	8				5700	5700	5700	5700
		869	39	9				6300	6300	6300	6300
Solo	60	765	34	39	-5	20	20	4600	4600	4600	4600
		766	34	40				5100	5100	5100	5100
		767	34	41				5700	5700	5700	5700
		768	34	42				6300	6300	6300	6300
		769	34	43				6800	6800	6800	6800
Solo	61	873	39	13	-5	40	20	4000	4000	4000	4000
		874	39	14				4600	4600	4600	4600
		875	39	15				5100	5100	5100	5100
		876	39	16				5700	5700	5700	5700
		877	39	17				6800	6800	6800	6800
Solo	62	770	34	44	-5	20	40	4600	4600	4600	4600
		771	34	45				5100	5100	5100	5100
		772	34	46				5700	5700	5700	5700
		773	34	47				6300	6300	6300	6300
		774	34	48				6800	6800	6800	6800
Solo	63	878	39	18	-5	40	40	3500	3500	3500	3500
		879	39	19				4000	4000	4000	4000
		880	39	20				4600	4600	4600	4600
		881	39	21				5100	5100	5100	5100
		882	39	22				5700	5700	5700	5700
		883	39	23				6300	6300	6300	6300
Solo	64	422	25	5	0	20	-40	4600	4600	4600	4600
		423	25	6				5100	5100	5100	5100
		424	25	7				5700	5700	5700	5700
		425	25	8				6300	6300	6300	6300
		426	25	9				6800	6800	6800	6800
Solo	65	552	29	4	0	40	-40	4600	4600	4600	4600
		553	29	5				5100	5100	5100	5100
		554	29	6				5700	5700	5700	5700
		555	29	7				6300	6300	6300	6300
		556	29	8				6800	6800	6800	6800

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	66	1317	57	6	0	60	-40	5700	5700	5700	5700
		1318	57	7				6300	6300	6300	6300
		1319	57	8				6800	6800	6800	6800
Solo	67	1320	57	9	0	80	-40	5700	5700	5700	5700
		1321	57	10				6300	6300	6300	6300
		1322	57	11				6800	6800	6800	6800
Solo	68	1323	57	12	0	80	-30	5700	5700	5700	5700
		1324	57	13				6300	6300	6300	6300
		1325	57	14				6800	6800	6800	6800
Solo	69	427	25	10	0	20	-20	4600	4600	4600	4600
		428	25	11				5100	5100	5100	5100
		429	25	12				5700	5700	5700	5700
		430	25	13				6300	6300	6300	6300
		431	25	14				6800	6800	6800	6800
Solo	70	557	29	9	0	40	-20	4600	4600	4600	4600
		558	29	10				5100	5100	5100	5100
		559	29	11				5700	5700	5700	5700
		560	29	12				6300	6300	6300	6300
		561	29	13				6800	6800	6800	6800
Solo	71	1326	57	15	0	80	-20	5700	5700	5700	5700
		1327	57	16				6300	6300	6300	6300
Solo	72	432	25	15	0	20	-10	4600	4600	4600	4600
		433	25	16				5100	5100	5100	5100
		434	25	17				5700	5700	5700	5700
		435	25	18				6300	6300	6300	6300
		436	25	19				6800	6800	6800	6800
Solo	73	562	29	14	0	40	-10	4600	4600	4600	4600
		563	29	15				5100	5100	5100	5100
		564	29	16				5700	5700	5700	5700
		565	29	17				6300	6300	6300	6300
		566	29	18				6800	6800	6800	6800
Solo	74	452	26	6	0	20	-5	4600	4600	4600	4600
		453	26	7				5100	5100	5100	5100
		454	26	8				5700	5700	5700	5700
		455	26	9				6800	6800	6800	6800
Solo	75	573	29	25	0	40	-5	4600	4600	4600	4600
		574	29	26				5100	5100	5100	5100
		575	29	27				5700	5700	5700	5700
		576	29	28				6300	6300	6300	6300
		577	29	29				6800	6800	6800	6800
Solo	76	463	26	17	0	20	-2	4600	4600	4600	4600
		464	26	18				5100	5100	5100	5100
		465	26	19				5700	5700	5700	5700
		466	26	20				6300	6300	6300	6300
		467	26	21				6800	6800	6800	6800
Solo	77	584	29	36	0	40	-2	4600	4600	4600	4600
		585	29	37				5100	5100	5100	5100
		586	29	38				5700	5700	5700	5700
		587	29	39				6300	6300	6300	6300
		588	29	40				6800	6800	6800	6800
Solo	78	407	24	3	0	0	0	4600	4600	4600	4600
		408	24	4				5100	5100	5100	5100
		409	24	5				5700	5700	5700	5700
Solo	79	410	24	6	0	0	0	6300	6300	6300	6300
		412	24	8				6800	6800	6800	6800
Solo	80	474	26	28	0	20	0	4600	4600	4600	4600
		475	26	29				5100	5100	5100	5100
		443	25	26				5700	5700	5700	5700
		478	26	32				6300	6300	6300	6300
		479	26	33				6800	6800	6800	6800

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	81	605	31	5	0	40	0	4600	4600	4600	4600
		606	31	6				5100	5100	5100	5100
		493	27	4				5700	5700	5700	5700
		608	31	8				6300	6300	6300	6300
		609	31	9				6800	6800	6800	6800
Solo	82	495	27	6	0	20	2	4600	4600	4600	4600
		496	27	7				5100	5100	5100	5100
		497	27	8				5700	5700	5700	5700
		498	27	9				6300	6300	6300	6300
		499	27	10				6800	6800	6800	6800
Solo	83	618	31	18	0	40	2	4600	4600	4600	4600
		619	31	19				5100	5100	5100	5100
		620	31	20				5700	5700	5700	5700
		621	31	21				6300	6300	6300	6300
Solo	84	506	27	17	0	20	5	4600	4600	4600	4600
		507	27	18				5100	5100	5100	5100
		508	27	19				5700	5700	5700	5700
		509	27	20				6300	6300	6300	6300
		510	27	21				6800	6800	6800	6800
Solo	85	625	31	25	0	40	5	4000	4000	4000	4000
		626	31	26				4600	4600	4600	4600
		628	31	28				5100	5100	5100	5100
		629	31	29				5700	5700	5700	5700
		630	31	30				6300	6300	6300	6300
Solo	86	525	28	5	0	20	10	4600	4600	4600	4600
		526	28	6				5100	5100	5100	5100
		527	28	7				5700	5700	5700	5700
		528	28	8				6300	6300	6300	6300
		529	28	9				6800	6800	6800	6800
Solo	87	641	32	5	0	40	10	4000	4000	4000	4000
		642	32	6				4600	4600	4600	4600
		643	32	7				5100	5100	5100	5100
		644	32	8				5700	5700	5700	5700
		645	32	9				6300	6300	6300	6300
Solo	88	536	28	16	0	20	20	4600	4600	4600	4600
		537	28	17				5100	5100	5100	5100
		538	28	18				5700	5700	5700	5700
		539	28	19				6300	6300	6300	6300
		540	28	20				6800	6800	6800	6800
Solo	89	649	32	13	0	40	20	4000	4000	4000	4000
		650	32	14				4600	4600	4600	4600
		651	32	15				5100	5100	5100	5100
		652	32	16				5700	5700	5700	5700
		653	32	17				6300	6300	6300	6300
Solo	90	541	28	21	0	20	40	4600	4600	4600	4600
		542	28	22				5100	5100	5100	5100
		543	28	23				5700	5700	5700	5700
		544	28	24				6300	6300	6300	6300
		545	28	25				6800	6800	6800	6800
Solo	91	654	32	18	0	40	40	4000	4000	4000	4000
		655	32	19				4600	4600	4600	4600
		656	32	20				5100	5100	5100	5100
		657	32	21				5700	5700	5700	5700
Solo	92	1293	56	1	0	0	0	0	0	0	0
		1277	55	3				5700	5700	5700	5700

Solo Forward Flight

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	1	422	25	5	0	20	-40	4600			
		552	29	4		40.3					
Solo	2	423	25	6	0	20	-40	5100			
		553	29	5		40.4					
Solo	4	424	25	7	0	20	-40	5700			
		1316	57	5		40.1					
		1317	57	6		59.6					
		1320	57	9		80.1					
Solo	5	425	25	8	0	20	-40	6300			
		555	29	7		40.6					
		1318	57	7		59.7					
		1321	57	10		80.2					
Solo	6	426	25	9	0	20	-40	6800			
		556	29	8		40.6					
		1319	57	8		59.9					
		1322	57	11		80.2					
Solo	7	427	25	10	0	20	-20	4600			
		557	29	9		40.2					
Solo	8	428	25	11	0	20	-20	5100			
		558	29	10		40.5					
Solo	10	429	25	12	0	20	-20	5700			
		559	29	11		40					
		1326	57	15		80.1					
Solo	11	430	25	13	0	20	-20	6300			
		560	29	12		40.1					
		1327	57	16		79.9					
Solo	12	431	25	14	0	20	-20	6800			
		561	29	13		39.9					
Solo	13	432	25	15	0	20	-10	4600			
		562	29	14		40.5					
Solo	15	433	25	16	0	20	-10	5100			
		563	29	15		40.2					
Solo	18	434	25	17	0	20	-10	5700			
		564	29	16		40					
Solo	21	435	25	18	0	20	-10	6300			
		565	29	17		40.3					
Solo	24	436	25	19	0	20	-10	6800			
		566	29	18		39.8					
Solo	25	452	26	6	0	20	-5	4600			
		573	29	25		41					
Solo	27	453	26	7	0	20	-5	5100			
		574	29	26		40.8					
Solo	29	454	26	8	0	20	-5	5700			
		575	29	27		40.5					
Solo	35	456	26	10	0	20	-5	6800			
		577	29	29		40.7					
Solo	36	463	26	17	0	20	-2	4600			
		584	29	36		39.8					
Solo	38	464	26	18	0	20	-2	5100			
		585	29	37		39.6					
Solo	40	465	26	19	0	20	-2	5700			
		586	29	38		40.3					
Solo	43	466	26	20	0	20	-2	6300			
		587	29	39		40.6					

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	46	467	26	21	0	20	-2	6800			
		588	29	40		40.2					
Solo	47	416	24	12	0	0	0	4600			
		474	26	28		20					
		605	31	5		39.1					
Solo	49	415	24	11	0	0	0	5100			
		476	26	30		20					
		606	31	6		39.9					
Solo	52	1329	57	18	0	0	0	5700			
		519	27	30		4.5					
		477	26	31		20					
		595	29	47		40.4					
Solo	57	413	24	9	0	0	0	6300			
		478	26	32		20					
		608	31	8		39.5					
Solo	60	412	24	8	0	0	0	6800			
		479	26	33		20					
		609	31	9		38.9					
Solo	61	495	27	6	0	20.3	2	4600			
		618	31	18		39.4					
Solo	62	496	27	7	0	20.6	2	5100			
		619	31	19		39.6					
Solo	64	497	27	8	0	20.2	2	5700			
		620	31	20		39.5					
Solo	68	498	27	9	0	20.2	2	6300			
		621	31	21		39					
Solo	69	506	27	17	0	20.2	5	4600			
		627	31	27		39.3					
Solo	70	507	27	18	0	20.1	5	5100			
		628	31	28		39.2					
Solo	72	508	27	19	0	20.3	5	5700			
		629	31	29		39					
Solo	76	509	27	20	0	19.8	5	6300			
		630	31	30		38.9					
Solo	77	525	28	5	0	20.2	10	4600			
		642	32	6		39.7					
Solo	78	526	28	6	0	20.3	10	5100			
		643	32	7		39.6					
Solo	80	527	28	7	0	20.2	10	5700			
		644	32	8		39.5					
Solo	84	528	28	8	0	19.9	10	6300			
		645	32	9		39.5					
Solo	85	536	28	16	0	20.1	20	4600			
		650	32	14		39.9					
Solo	86	537	28	17	0	20	20	5100			
		651	32	15		39.8					
Solo	87	538	28	18	0	19.7	20	5700			
		652	32	16		39.8					
Solo	89	539	28	19	0	20.4	20	6300			
		653	32	17		39.5					
Solo	90	541	28	21	0	20.5	40	4600			
		655	32	19		39.7					
Solo	91	542	28	22	0	19.7	40	5100			
		656	32	20		39.3					
Solo	92	543	28	23	0	20.5	40	5700			
		658	32	22		39.8					

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	94	667	33	6	-5	19.6	-40	4600			
		785	36	5		39.1					
Solo	95	668	33	7	-5	20.4	-40	5100			
		786	36	6		39.2					
Solo	96	669	33	8	-5	19.6	-40	5700			
		787	36	7		39.4					
Solo	97	670	33	9	-5	19.8	-40	6300			
		788	36	8		39.5					
Solo	98	671	33	10	-5	19.8	-40	6800			
		789	36	9		39.6					
Solo	99	672	33	11	-5	20	-20	4600			
		790	36	10		39.5					
Solo	100	673	33	12	-5	19.8	-20	5100			
		791	36	11		40					
Solo	101	674	33	13	-5	20.1	-20	5700			
		792	36	12		39					
Solo	102	675	33	14	-5	20.2	-20	6300			
		793	36	13		39.1					
Solo	103	676	33	15	-5	20.1	-20	6800			
		794	36	14		39					
Solo	104	677	33	16	-5	20	-10	4600			
		795	36	15		39.9					
Solo	105	678	33	17	-5	19.7	-10	5100			
		796	36	16		39.4					
Solo	107	679	33	18	-5	20	-10	5700			
		797	36	17		39.8					
Solo	110	680	33	19	-5	19.8	-10	6300			
		798	36	18		38.9					
Solo	111	688	33	27	-5	19.7	-5	4600			
		810	37	5		39.4					
Solo	112	689	33	28	-5	19.7	-5	5100			
		811	37	6		39.6					
Solo	114	690	33	29	-5	19.8	-5	5700			
		812	37	7		39.6					
Solo	117	691	33	30	-5	19.6	-5	6300			
		813	37	8		39.6					
Solo	118	699	33	38	-5	19.8	-2	4600			
		817	37	12		39.6					
Solo	119	700	33	39	-5	19.5	-2	5100			
		818	37	13		39.3					
Solo	121	701	33	40	-5	19.6	-2	5700			
		819	37	14		39.4					
Solo	124	702	33	41	-5	19.4	-2	6300			
		820	37	15		39.3					
Solo	125	710	33	49	-5	19.6	0	4600			
		824	37	19		39.6					
Solo	126	711	33	50	-5	19.9	0	5100			
		825	37	20		39.2					
Solo	129	863	39	3	-5	0	0	5700			
		885	39	25		4.3					
		712	33	51		20.9					
		775	34	49		40					
Solo	132	714	33	53	-5	18.6	0	6300			
		828	37	23		39.5					
Solo	133	732	34	6	-5	19	2	4600			
		843	38	6		39.4					
Solo	134	733	34	7	-5	20	2	5100			
		844	38	7		39.4					

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	136	734	34	8	-5	20	2	5700			
		845	38	8		40.1					
Solo	139	735	34	9	-5	20	2	6300			
		846	38	9		39.7					
Solo	140	743	34	17	-5	20	5	4600			
		851	38	14		40.1					
Solo	141	744	34	18	-5	20	5	5100			
		852	38	15		39.7					
Solo	143	745	34	19	-5	20	5	5700			
		853	38	16		39.5					
Solo	146	746	34	20	-5	20	5	6300			
		854	38	17		39.4					
Solo	147	754	34	28	-5	20	10	4600			
		866	39	6		40					
Solo	148	755	34	29	-5	20	10	5100			
		867	39	7		39.3					
Solo	150	756	34	30	-5	20	10	5700			
		868	39	8		39.4					
Solo	153	757	34	31	-5	19	10	6300			
		869	39	9		38.4					
Solo	154	765	34	39	-5	20	20	4600			
		874	39	14		40.1					
Solo	155	766	34	40	-5	20	20	5100			
		875	39	15		39.8					
Solo	156	767	34	41	-5	20	20	5700			
		876	39	16		39.4					
Solo	157	769	34	43	-5	20	20	6800			
		877	39	17		39.4					
Solo	158	770	34	44	-5	20	40	4600			
		880	39	20		39.4					
Solo	159	771	34	45	-5	20	40	5100			
		881	39	21		39.7					
Solo	160	772	34	46	-5	19	40	5700			
		882	39	22		39.3					
Solo	161	773	34	47	-5	17	40	6300			
		883	39	23		40					
Solo	162	889	40	3	-30	0	0	5700			
		890	40	4		20.2					
		891	40	5		40					
Solo	163	943	42	7	-45	20	-10	4600			
		1031	46	6		39.8					
Solo	164	944	42	8	-45	20	-10	5100			
		1032	46	7		39.7					
Solo	165	945	42	9	-45	20	-10	5700			
		1033	46	8		39.5					
Solo	166	946	42	10	-45	20	-10	6300			
		1034	46	9		39.5					
Solo	167	951	42	15	-45	20	-5	4000			
		1035	46	10		39.4					
Solo	168	952	42	16	-45	20	-5	4600			
		1036	46	11		39.3					
Solo	169	953	42	17	-45	20	-5	5100			
		1037	46	12		39.3					
Solo	170	954	42	18	-45	20	-5	5700			
		1038	46	13		39.1					
Solo	171	955	42	19	-45	20	-5	6300			
		1039	46	14		39.3					
Solo	172	960	42	24	-45	20	-2	4000			
		1040	46	15		39.5					
Solo	173	961	42	25	-45	20	-2	4600			
		1041	46	16		39.6					
Solo	174	962	42	26	-45	20	-2	5100			
		1042	46	17		39.5					
Solo	175	963	42	27	-45	20	-2	5700			
		1043	46	18		39.4					
Solo	176	964	42	28	-45	20	-2	6300			
		1044	46	19		39.4					

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	177	977	43	5	-45	20	0	4000			
		1046	46	21		39.1					
Solo	178	978	43	6	-45	20	0	4600			
		1047	46	22		39					
Solo	179	979	43	7	-45	20	0	5100			
		1048	46	23		39.6					
Solo	180	1028	46	3	-45	0	0	5700			
		1066	46	41		2.7					
		980	43	8		20					
		1004	45	4		40					
Solo	181	986	43	14	-45	20	2	4000			
		1051	46	26		39.8					
Solo	182	987	43	15	-45	20	2	4600			
		1052	46	27		39.8					
Solo	183	988	43	16	-45	20	2	5100			
		1053	46	28		39.6					
Solo	184	989	43	17	-45	20	2	5700			
		1054	46	29		39.5					
Solo	185	1005	45	5	-45	19.6	5	4000			
		1056	46	31		39.6					
Solo	186	1006	45	6	-45	19.5	5	4600			
		1057	46	32		39.4					
Solo	187	1007	45	7	-45	19.9	5	5100			
		1058	46	33		39.3					
Solo	188	1008	45	8	-45	19.5	5	5700			
		1059	46	34		39					
Solo	189	1014	45	14	-45	19.8	10	4000			
		1061	46	36		39.4					
Solo	190	1015	45	15	-45	19.7	10	4600			
		1062	46	37		39					
Solo	191	1016	45	16	-45	19.3	10	5100			
		1063	46	38		39.4					
Solo	192	1017	45	17	-45	19.6	10	5700			
		1064	46	39		39.3					
Solo	193	1117	48	27	-60	0	0	5700			
		1071	47	4		19.5					
		1116	48	26		40.2					
Solo	194	1177	51	5	-90	20.4	-10	4000			
		1124	49	6		39.7					
Solo	195	1178	51	6	-90	19.6	-10	4600			
		1125	49	7		40.4					
Solo	196	1179	51	7	-90	19.3	-10	5100			
		1126	49	8		40.1					
Solo	197	1180	51	8	-90	20.4	-10	5700			
		1127	49	9		40.4					
Solo	199	1181	51	9	-90	20	-10	6300			
		1128	49	10		40.1					
Solo	200	1186	51	14	-90	20.1	-5	4000			
		1129	49	11		39.5					

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	201	1187	51	15	-90	20.1	-5	4600			
		1130	49	12		40.5					
Solo	202	1188	51	16	-90	20.3	-5	5100			
		1131	49	13		40.2					
Solo	203	1189	51	17	-90	20	-5	5700			
		1132	49	14		40.2					
Solo	205	1190	51	18	-90	19.8	-5	6300			
		1133	49	15		40.4					
Solo	206	1195	51	23	-90	20	-2	4000			
		1141	50	5		40.8					
Solo	207	1196	51	24	-90	20.3	-2	4600			
		1142	50	6		40.1					
Solo	208	1197	51	25	-90	19.9	-2	5100			
		1143	50	7		40.3					
Solo	209	1198	51	26	-90	20	-2	5700			
		1144	50	8		40.1					
Solo	211	1199	51	27	-90	19.5	-2	6300			
		1145	50	9		39.9					
Solo	212	1204	51	32	-90	20.5	0	4000			
		1147	50	11		40.1					
Solo	213	1205	51	33	-90	19.7	0	4600			
		1148	50	12		39.9					
Solo	214	1206	51	34	-90	19.5	0	5100			
		1149	50	13		40.4					
Solo	215	1251	53	15	-90	0	0	5700			
		1231	51	59		20					
		1176	51	4		40					
Solo	217	1208	51	36	-90	20.6	0	6300			
		1151	50	15		40.5					
Solo	218	1213	51	41	-90	20.6	2	4000			
		1153	50	17		40					
Solo	219	1214	51	42	-90	20.2	2	4600			
		1154	50	18		40					
Solo	220	1215	51	43	-90	20.1	2	5100			
		1155	50	19		39.9					
Solo	221	1216	51	44	-90	19.8	2	5700			
		1156	50	20		39.9					
Solo	223	1217	51	45	-90	19.7	2	6300			
		1157	50	21		39.7					
Solo	224	1222	51	50	-90	20.1	5	4000			
		1159	50	23		40.2					
Solo	225	1223	51	51	-90	20	5	4600			
		1160	50	24		40.5					
Solo	226	1224	51	52	-90	20	5	5100			
		1161	50	25		40.8					
Solo	227	1225	51	53	-90	19.9	5	5700			
		1162	50	26		40					
Solo	229	1226	51	54	-90	19.7	5	6300			
		1163	50	27		40					
Solo	230	1241	53	5	-90	20.1	10	4000			
		1165	50	29		40.5					
Solo	231	1242	53	6	-90	19.8	10	4600			
		1166	50	30		40.6					
Solo	232	1243	53	7	-90	20.1	10	5100			
		1167	50	31		40.5					
Solo	233	1244	53	8	-90	19.7	10	5700			
		1168	50	32		40.5					
Solo	235	1245	53	9	-90	19.8	10	6300			
		1169	50	33		39.8					

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	3	1279	55	5	0	19.9	-40	5700			
		1297	56	5		39.9					
Solo	9	1280	55	6	0	20	-20	5700			
		1298	56	6		39.9					
Solo	17	1281	55	7	0	19.9	-10	5700			
		1299	56	7		40					
Solo	30	1282	55	8	0	20.1	-5	5700			
		1300	56	8		40					
Solo	41	1283	55	9	0	19.8	-2	5700			
		1301	56	9		39.8					
Solo	53	1310	56	18	0	0	0	5700			
		1284	55	10		19.6					
		1309	56	17		40					
Solo	54	14	1	10	0	38.5	0	6000			
		16	1	12		58.9					
Solo	65	1285	55	11	0	19.8	2	5700			
		1303	56	11		40.1					
Solo	73	1286	55	12	0	20	5	5700			
		1304	56	12		40.2					
Solo	81	1287	55	13	0	19.9	10	5700			
		1306	56	14		39.6					
Solo	88	1288	55	14	0	19.8	20	5700			
		1307	56	15		39.4					
Solo	93	1289	55	15	0	19.6	40	5700			
		1308	56	16		40					
Solo	198	1257	54	5	-90	19.6	-10	5700			
		1265	54	13		39.5					
Solo	204	1258	54	6	-90	20.1	-5	5700			
		1266	54	14		39.3					
Solo	210	1259	54	7	-90	19.9	-2	5700			
		1267	54	15		39.4					
Solo	216	1273	54	21	-90	0	0	5700			
		1260	54	8		19.9					
		1272	54	20		39.7					
Solo	222	1261	54	9	-90	20	2	5700			
		1269	54	17		39.4					
Solo	228	1262	54	10	-90	20	5	5700			
		1270	54	18		39.4					
Solo	234	1263	54	11	-90	19.7	10	5700			
		1271	54	19		39.5					
Solo	14	442	25	25	0	20	-10	4600		6800	
		572	29	24		40.5					
Solo	16	441	25	24	0	20	-10	5100		6300	
		571	29	23		40.1					
Solo	19	438	25	21	0	20	-10	6300	5100	6300	5100
		568	29	20		40.4					
Solo	20	440	25	23	0	20	-10	6300		5100	
		570	29	22		40					
Solo	22	437	25	20	0	20	-10	6800	4600	6800	4600
		567	29	19		40.2					
Solo	23	439	25	22	0	20	-10	6800		4600	
		569	29	21		40.2					
Solo	26	462	26	16	0	20	-5	4600		6800	
		583	29	35		40.6					
Solo	28	461	26	15	0	20	-5	5100		6300	
		582	29	34		40.5					
Solo	31	458	26	12	0	20	-5	6300	5100	6300	5100
		579	29	31		40.8					
Solo	32	460	26	14	0	20	-5	6300		5100	
		581	29	33		40.7					
Solo	33	457	26	11	0	20	-5	6800	4600	6800	4600
		578	29	30		40.6					
Solo	34	459	26	13	0	20	-5	6800		4600	
		580	29	32		40.5					

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	37	473	26	27	0	20	-2	4600		6800	
		594	29	46		40.6					
Solo	39	472	26	26	0	20	-2	5100		6300	
		593	29	45		40.6					
Solo	42	469	26	23	0	20	-2	6300	5100	6300	5100
		590	29	42		40.4					
Solo	44	468	26	22	0	20	-2	6800	4600	6800	4600
		589	29	41		40.4					
Solo	45	470	26	24	0	20	-2	6800		4600	
		591	29	43		40.4					
Solo	48	487	26	41	0	20	0	4600		6800	
		617	31	17		39.6					
Solo	50	486	26	40	0	20	0	5100		6300	
		616	31	16		39.6					
Solo	51	482	26	36	0	20	0	5100	6300	5100	6300
		612	31	12		39.3					
Solo	55	481	26	35	0	20	0	6300	5100	6300	5100
		611	31	11		39.4					
Solo	56	485	26	39	0	20	0	6300		5100	
		615	31	15		39.3					
Solo	58	483	26	37	0	20	0	6800	4600	6800	4600
		610	31	10		39.3					
Solo	59	484	26	38	0	20	0	6800		4600	
		614	31	14		39.3					
Solo	63	504	27	15	0	20.1	2	5100		6300	
		624	31	24		39.5					
Solo	66	501	27	12	0	20.4	2	6300	5100	6300	5100
		622	31	22		39.4					
Solo	67	503	27	14	0	19.9	2	6300		5100	
		623	31	23		39.6					
Solo	71	515	27	26	0	20.1	5	5100		6300	
		633	31	33		39.2					
Solo	74	512	27	23	0	20.1	5	6300	5100	6300	5100
		631	31	31		39					
Solo	75	514	27	25	0	19.8	5	6300		5100	
		632	31	32		39					
Solo	79	534	28	14	0	20	10	5100		6300	
		648	32	12		39.6					
Solo	82	531	28	11	0	19.8	10	6300	5100	6300	5100
		646	32	10		39.6					
Solo	83	533	28	13	0	20	10	6300		5100	
		647	32	11		39.6					
Solo	106	686	33	25	-5	19.9	-10	5100		6300	
		801	36	21		39.3					
Solo	108	683	33	22	-5	19.9	-10	6300	5100	6300	5100
		799	36	19		39.2					
Solo	109	685	33	24	-5	19.6	-10	6300		5100	
		800	36	20		39					
Solo	113	697	33	36	-5	19.5	-5	5100		6300	
		816	37	11		39.5					
Solo	115	694	33	33	-5	19.6	-5	6300	5100	6300	5100
		814	37	9		39.8					
Solo	116	696	33	35	-5	19.6	-5	6300		5100	
		815	37	10		39.6					

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	120	708	33	47	-5	20.4	-2	5100		6300	
		823	37	18		39.1					
Solo	122	705	33	44	-5	19.7	-2	6300	5100	6300	5100
		821	37	16		39.3					
Solo	123	707	33	46	-5	20	-2	6300		5100	
		822	37	17		39					
Solo	127	722	33	61	-5	20.2	0	5100		6300	
		834	37	29		39.6					
Solo	128	718	33	57	-5	20	0	5100	6300	5100	6300
		832	37	27		38.9					
Solo	130	717	33	56	-5	20.8	0	6300	5100	6300	5100
		831	37	26		39.4					
Solo	131	721	33	60	-5	19.9	0	6300		5100	
		833	37	28		39.6					
Solo	135	741	34	15	-5	20	2	5100		6300	
		849	38	12		39.7					
Solo	137	738	34	12	-5	20	2	6300	5100	6300	5100
		847	38	10		39.6					
Solo	138	740	34	14	-5	20	2	6300		5100	
		848	38	11		39.8					
Solo	142	752	34	26	-5	20	5	5100		6300	
		857	38	20		39.7					
Solo	144	749	34	23	-5	20	5	6300	5100	6300	5100
		855	38	18		39.2					
Solo	145	751	34	25	-5	20	5	6300		5100	
		856	38	19		39					
Solo	149	763	34	37	-5	20	10	5100		6300	
		872	39	12		39.1					
Solo	151	760	34	34	-5	20	10	6300	5100	6300	5100
		870	39	10		39.2					
Solo	152	762	34	36	-5	20	10	6300		5100	
		871	39	11		38.9					
Solo Yaw											
Solo	1	1330	57	19	0	0	0	0			
		862	39	2	-5						
		906	41	2	-30						
		1027	46	2	-45						
		1118	48	28	-60						
		1252	53	16	-90						
Solo	3	1329	57	18	0	0	0	5700			
		863	39	3	-5						
		907	41	3	-30						
		1028	46	3	-45						
		1117	48	27	-60						
		1251	53	15	-90						
Solo	4	805	36	25	-5	3.4	0	0			
		904	40	18	-30						
Solo	5	635	31	35	0	2.3	0	5700			
		731	34	5	-5						
Solo	6	596	29	48	0	3.6	0	5700			
		859	38	22	-5						
Solo	7	422	25	5	0	20	-40	4600			
		667	33	6	-5						
Solo	8	423	25	6	0	20	-40	5100			
		668	33	7	-5						
Solo	9	424	25	7	0	20	-40	5700			
		669	33	8	-5						
Solo	10	425	25	8	0	20	-40	6300			
		670	33	9	-5						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	11	426	25	9	0	20	-40	6800			
		671	33	10	-5						
Solo	12	427	25	10	0	20	-20	4600			
		672	33	11	-5						
Solo	13	428	25	11	0	20	-20	5100			
		673	33	12	-5						
Solo	14	429	25	12	0	20	-20	5700			
		674	33	13	-5						
Solo	15	430	25	13	0	20	-20	6300			
		675	33	14	-5						
Solo	16	431	25	14	0	20	-20	6800			
		676	33	15	-5						
Solo	17	432	25	15	0	20	-10	4600			
		677	33	16	-5						
		943	42	7	-45						
		1178	51	6	-90						
Solo	19	433	25	16	0	20	-10	5100			
		678	33	17	-5						
		944	42	8	-45						
		1179	51	7	-90						
Solo	22	434	25	17	0	20	-10	5700			
		679	33	18	-5						
		945	42	9	-45						
		1180	51	8	-90						
Solo	26	435	25	18	0	20	-10	6300			
		680	33	19	-5						
		946	42	10	-45						
		1181	51	9	-90						
Solo	29	436	25	19	0	20	-10	6800			
		681	33	20	-5						
Solo	30	951	42	15	-45	20	-5	4000			
		1186	51	14	-90						
Solo	31	452	26	6	0	20	-5	4600			
		688	33	27	-5						
		952	42	16	-45						
		1187	51	15	-90						
Solo	33	453	26	7	0	20	-5	5100			
		689	33	28	-5						
		953	42	17	-45						
		1188	51	16	-90						
Solo	36	454	26	8	0	20	-5	5700			
		690	33	29	-5						
		954	42	18	-45						
		1189	51	17	-90						
Solo	40	691	33	30	-5	20	-5	6300			
		955	42	19	-45						
		1190	51	18	-90						
Solo	43	455	26	9	0	20	-5	6800			
		692	33	31	-5						
Solo	44	960	42	24	-45	20	-2	4000			
		1195	51	23	-90						
Solo	45	463	26	17	0	20	-2	4600			
		699	33	38	-5						
		961	42	25	-45						
		1196	51	24	-90						
Solo	47	464	26	18	0	20	-2	5100			
		700	33	39	-5						
		962	42	26	-45						
		1197	51	25	-90						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	50	465	26	19	0	20	-2	5700			
		701	33	40	-5						
		963	42	27	-45						
		1198	51	26	-90						
Solo	54	466	26	20	0	20	-2	6300			
		702	33	41	-5						
		964	42	28	-45						
		1199	51	27	-90						
Solo	57	467	26	21	0	20	-2	6800			
		703	33	42	-5						
Solo	58	977	43	5	-45	20	0	4000			
		1204	51	32	-90						
Solo	59	474	26	28	0	20	0	4600			
		710	33	49	-5						
		978	43	6	-45						
		1205	51	33	-90						
Solo	61	476	26	30	0	20	0	5100			
		711	33	50	-5						
		979	43	7	-45						
		1206	51	34	-90						
Solo	64	517	27	28	0	20	0	5700			
		712	33	51	-5						
		890	40	4	-30						
		995	43	23	-45						
		1071	47	4	-60						
		1231	51	59	-90						
Solo	68	478	26	32	0	20	0	6300			
		714	33	53	-5						
		981	43	9	-45						
		1208	51	36	-90						
Solo	71	479	26	33	0	20	0	6800			
		715	33	54	-5						
Solo	72	986	43	14	-45	20	2	4000			
		1213	51	41	-90						
Solo	73	495	27	6	0	20	2	4600			
		732	34	6	-5						
		987	43	15	-45						
		1214	51	42	-90						
Solo	75	496	27	7	0	20	2	5100			
		733	34	7	-5						
		988	43	16	-45						
		1215	51	43	-90						
Solo	78	497	27	8	0	20	2	5700			
		734	34	8	-5						
		989	43	17	-45						
		1216	51	44	-90						
Solo	82	498	27	9	0	20	2	6300			
		735	34	9	-5						
		990	43	18	-45						
		1217	51	45	-90						
Solo	85	499	27	10	0	20	2	6800			
		736	34	10	-5						
Solo	86	1005	45	5	-45	20	5	4000			
		1222	51	50	-90						
Solo	87	506	27	17	0	20	5	4600			
		743	34	17	-5						
		1006	45	6	-45						
		1223	51	51	-90						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	89	507	27	18	0	20	5	5100			
		744	34	18	-5						
		1007	45	7	-45						
		1224	51	52	-90						
Solo	92	508	27	19	0	20	5	5700			
		745	34	19	-5						
		1008	45	8	-45						
		1225	51	53	-90						
Solo	96	509	27	20	0	20	5	6300			
		746	34	20	-5						
		1009	45	9	-45						
		1226	51	54	-90						
Solo	99	510	27	21	0	20	5	6800			
		747	34	21	-5						
Solo	100	1014	45	14	-45	20	10	4000			
		1241	53	5	-90						
Solo	101	525	28	5	0	20	10	4600			
		754	34	28	-5						
		1015	45	15	-45						
		1242	53	6	-90						
Solo	103	526	28	6	0	20	10	5100			
		755	34	29	-5						
		1016	45	16	-45						
		1243	53	7	-90						
Solo	106	527	28	7	0	20	10	5700			
		756	34	30	-5						
		1017	45	17	-45						
		1244	53	8	-90						
Solo	110	528	28	8	0	20	10	6300			
		757	34	31	-5						
		1018	45	18	-45						
		1245	53	9	-90						
Solo	113	529	28	9	0	20	10	6800			
		758	34	32	-5						
Solo	114	536	28	16	0	20	20	4600			
		765	34	39	-5						
Solo	115	537	28	17	0	20	20	5100			
		766	34	40	-5						
Solo	116	538	28	18	0	20	20	5700			
		767	34	41	-5						
Solo	117	539	28	19	0	20	20	6300			
		768	34	42	-5						
Solo	118	540	28	20	0	20	20	6800			
		769	34	43	-5						
Solo	119	541	28	21	0	20	40	4600			
		770	34	44	-5						
Solo	120	542	28	22	0	20	40	5100			
		771	34	45	-5						
Solo	121	543	28	23	0	20	40	5700			
		772	34	46	-5						
Solo	122	544	28	24	0	20	40	6300			
		773	34	47	-5						
Solo	123	545	28	25	0	20	40	6800			
		774	34	48	-5						
Solo	124	552	29	4	0	40	-40	4600			
		785	36	5	-5						
Solo	125	553	29	5	0	40	-40	5100			
		786	36	6	-5						
Solo	126	1316	57	5	0	40	-40	5700			
		787	36	7	-5						
Solo	127	555	29	7	0	40	-40	6300			
		788	36	8	-5						
Solo	128	556	29	8	0	40	-40	6800			
		789	36	9	-5						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	129	557	29	9	0	40	-20	4600			
		790	36	10	-5						
Solo	130	558	29	10	0	40	-20	5100			
		791	36	11	-5						
Solo	131	559	29	11	0	40	-20	5700			
		792	36	12	-5						
Solo	132	560	29	12	0	40	-20	6300			
		793	36	13	-5						
Solo	133	561	29	13	0	40	-20	6800			
		794	36	14	-5						
Solo	134	892	40	6	-30	40	-10	4000			
		1030	46	5	-45						
		1073	47	6	-60						
		1124	49	6	-90						
Solo	135	562	29	14	0	40	-10	4600			
		795	36	15	-5						
		893	40	7	-30						
		1031	46	6	-45						
		1074	47	7	-60						
		1125	49	7	-90						
Solo	136	563	29	15	0	40	-10	5100			
		796	36	16	-5						
		894	40	8	-30						
		1032	46	7	-45						
		1075	47	8	-60						
		1126	49	8	-90						
Solo	138	564	29	16	0	40	-10	5700			
		797	36	17	-5						
		895	40	9	-30						
		1033	46	8	-45						
		1076	47	9	-60						
		1127	49	9	-90						
Solo	142	565	29	17	0	40	-10	6300			
		798	36	18	-5						
		896	40	10	-30						
		1034	46	9	-45						
		1077	47	10	-60						
		1128	49	10	-90						
Solo	143	897	40	11	-30	40	-5	4000			
		1035	46	10	-45						
		1078	47	11	-60						
		1129	49	11	-90						
Solo	144	573	29	25	0	40	-5	4600			
		810	37	5	-5						
		898	40	12	-30						
		1036	46	11	-45						
		1079	47	12	-60						
		1130	49	12	-90						
Solo	145	574	29	26	0	40	-5	5100			
		811	37	6	-5						
		899	40	13	-30						
		1037	46	12	-45						
		1080	47	13	-60						
		1131	49	13	-90						
Solo	147	575	29	27	0	40	-5	5700			
		812	37	7	-5						
		900	40	14	-30						
		1038	46	13	-45						
		1081	47	14	-60						
		1132	49	14	-90						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	151	576	29	28	0	40	-5	6300			
		813	37	8	-5						
		901	40	15	-30						
		1039	46	14	-45						
		1082	47	15	-60						
		1133	49	15	-90						
Solo	152	909	41	5	-30	40	-2	4000			
		1040	46	15	-45						
		1083	47	16	-60						
		1141	50	5	-90						
Solo	153	584	29	36	0	40	-2	4600			
		817	37	12	-5						
		910	41	6	-30						
		1041	46	16	-45						
		1084	47	17	-60						
		1142	50	6	-90						
Solo	154	585	29	37	0	40	-2	5100			
		818	37	13	-5						
		911	41	7	-30						
		1042	46	17	-45						
		1085	47	18	-60						
		1143	50	7	-90						
Solo	156	586	29	38	0	40	-2	5700			
		819	37	14	-5						
		912	41	8	-30						
		1043	46	18	-45						
		1086	47	19	-60						
		1144	50	8	-90						
Solo	160	587	29	39	0	40	-2	6300			
		820	37	15	-5						
		913	41	9	-30						
		1044	46	19	-45						
		1087	47	20	-60						
		1145	50	9	-90						
Solo	161	1045	46	20	-45	40	0	3500			
		1095	48	5	-60						
		1146	50	10	-90						
Solo	162	830	37	25	-5	40	0	4000			
		914	41	10	-30						
		1046	46	21	-45						
		1096	48	6	-60						
		1147	50	11	-90						
Solo	163	605	31	5	0	40	0	4600			
		824	37	19	-5						
		915	41	11	-30						
		1047	46	22	-45						
		1097	48	7	-60						
		1148	50	12	-90						
Solo	164	606	31	6	0	40	0	5100			
		825	37	20	-5						
		916	41	12	-30						
		1048	46	23	-45						
		1098	48	8	-60						
		1149	50	13	-90						
Solo	167	595	29	47	0	40	0	5700			
		864	39	4	-5						
		917	41	13	-30						
		1004	45	4	-45						
		1116	48	26	-60						
		1140	50	4	-90						
Solo	171	608	31	8	0	40	0	6300			
		828	37	23	-5						
		918	41	14	-30						
		1151	50	15	-90						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	172	1050	46	25	-45	40	2	3500			
		1100	48	10	-60						
		1152	50	16	-90						
Solo	173	842	38	5	-5	40	2	4000			
		919	41	15	-30						
		1051	46	26	-45						
		1101	48	11	-60						
		1153	50	17	-90						
Solo	174	618	31	18	0	40	2	4600			
		843	38	6	-5						
		920	41	16	-30						
		1052	46	27	-45						
		1102	48	12	-60						
		1154	50	18	-90						
Solo	175	619	31	19	0	40	2	5100			
		844	38	7	-5						
		921	41	17	-30						
		1053	46	28	-45						
		1103	48	13	-60						
		1155	50	19	-90						
Solo	177	620	31	20	0	40	2	5700			
		845	38	8	-5						
		922	41	18	-30						
		1054	46	29	-45						
		1104	48	14	-60						
		1156	50	20	-90						
Solo	181	621	31	21	0	40	2	6300			
		846	38	9	-5						
		923	41	19	-30						
		1157	50	21	-90						
Solo	182	1055	46	30	-45	40	5	3500			
		1105	48	15	-60						
		1158	50	22	-90						
Solo	183	625	31	25	0	40	5	4000			
		850	38	13	-5						
		924	41	20	-30						
		1056	46	31	-45						
		1106	48	16	-60						
		1159	50	23	-90						
Solo	184	627	31	27	0	40	5	4600			
		851	38	14	-5						
		925	41	21	-30						
		1057	46	32	-45						
		1107	48	17	-60						
		1160	50	24	-90						
Solo	185	628	31	28	0	40	5	5100			
		852	38	15	-5						
		926	41	22	-30						
		1058	46	33	-45						
		1108	48	18	-60						
		1161	50	25	-90						
Solo	187	629	31	29	0	40	5	5700			
		853	38	16	-5						
		927	41	23	-30						
		1059	46	34	-45						
		1109	48	19	-60						
		1162	50	26	-90						
Solo	191	630	31	30	0	40	5	6300			
		854	38	17	-5						
		928	41	24	-30						
		1163	50	27	-90						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	192	1060	46	35	-45	40	10	3500			
		1110	48	20	-60						
		1164	50	28	-90						
Solo	193	641	32	5	0	40	10	4000			
		865	39	5	-5						
		929	41	25	-30						
		1061	46	36	-45						
		1111	48	21	-60						
		1165	50	29	-90						
Solo	194	642	32	6	0	40	10	4600			
		866	39	6	-5						
		930	41	26	-30						
		1062	46	37	-45						
		1112	48	22	-60						
		1166	50	30	-90						
Solo	195	643	32	7	0	40	10	5100			
		867	39	7	-5						
		931	41	27	-30						
		1063	46	38	-45						
		1113	48	23	-60						
		1167	50	31	-90						
Solo	196	648	32	12	0	40	10	5100			
		872	39	12	-5						
Solo	197	644	32	8	0	40	10	5700			
		868	39	8	-5						
		932	41	28	-30						
		1064	46	39	-45						
		1115	48	25	-60						
		1168	50	32	-90						
Solo	201	645	32	9	0	40	10	6300			
		869	39	9	-5						
		933	41	29	-30						
		1169	50	33	-90						
Solo	202	649	32	13	0	40	20	4000			
		873	39	13	-5						
Solo	203	650	32	14	0	40	20	4600			
		874	39	14	-5						
Solo	204	651	32	15	0	40	20	5100			
		875	39	15	-5						
Solo	205	652	32	16	0	40	20	5700			
		876	39	16	-5						
Solo	206	654	32	18	0	40	40	4000			
		879	39	19	-5						
Solo	207	655	32	19	0	40	40	4600			
		880	39	20	-5						
Solo	208	656	32	20	0	40	40	5100			
		881	39	21	-5						
Solo	209	658	32	22	0	40	40	5700			
		882	39	22	-5						
Solo	2	1311	56	19	0	0	0	0			
		1274	54	22	-90						
Solo	23	1281	55	7	0	20	-10	5700			
		1257	54	5	-90						
Solo	37	1282	55	8	0	20	-5	5700			
		1258	54	6	-90						
Solo	51	1283	55	9	0	20	-2	5700			
		1259	54	7	-90						
Solo	65	1284	55	10	0	20	0	5700			
		1260	54	8	-90						
Solo	79	1285	55	11	0	20	2	5700			
		1261	54	9	-90						
Solo	93	1286	55	12	0	20	5	5700			
		1262	54	10	-90						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	107	1287	55	13	0	20	10	5700			
		1263	54	11	-90						
Solo	139	1299	56	7	0	40	-10	5700			
		1265	54	13	-90						
Solo	148	1300	56	8	0	40	-5	5700			
		1266	54	14	-90						
Solo	157	1301	56	9	0	40	-2	5700			
		1267	54	15	-90						
Solo	168	1309	56	17	0	40	0	5700			
		1272	54	20	-90						
Solo	178	1303	56	11	0	40	2	5700			
		1269	54	17	-90						
Solo	188	1304	56	12	0	40	5	5700			
		1270	54	18	-90						
Solo	198	1306	56	14	0	40	10	5700			
		1271	54	19	-90						
Solo	18	442	25	25	0	20	-10	4600		6800	
		687	33	26	-5						
Solo	20	441	25	24	0	20	-10	5100		6300	
		686	33	25	-5						
		950	42	14	-45						
		1185	51	13	-90						
Solo	21	948	42	12	-45	20	-10	5100	6300	5100	6300
		1183	51	11	-90						
Solo	24	438	25	21	0	20	-10	6300	5100	6300	5100
		683	33	22	-5						
		947	42	11	-45						
		1182	51	10	-90						
Solo	25	440	25	23	0	20	-10	6300		5100	
		685	33	24	-5						
		949	42	13	-45						
		1184	51	12	-90						
Solo	27	437	25	20	0	20	-10	6800	4600	6800	4600
		682	33	21	-5						
Solo	28	439	25	22	0	20	-10	6800		4600	
		684	33	23	-5						
Solo	32	462	26	16	0	20	-5	4600		6800	
		698	33	37	-5						
Solo	34	461	26	15	0	20	-5	5100		6300	
		697	33	36	-5						
		959	42	23	-45						
		1194	51	22	-90						
Solo	35	957	42	21	-45	20	-5	5100	6300	5100	6300
		1192	51	20	-90						
Solo	38	458	26	12	0	20	-5	6300	5100	6300	5100
		694	33	33	-5						
		956	42	20	-45						
		1191	51	19	-90						
Solo	39	460	26	14	0	20	-5	6300		5100	
		696	33	35	-5						
		958	42	22	-45						
		1193	51	21	-90						
Solo	41	457	26	11	0	20	-5	6800	4600	6800	4600
		693	33	32	-5						
Solo	42	459	26	13	0	20	-5	6800		4600	
		695	33	34	-5						
Solo	46	473	26	27	0	20	-2	4600		6800	
		709	33	48	-5						
Solo	48	472	26	26	0	20	-2	5100		6300	
		708	33	47	-5						
		968	42	32	-45						
		1203	51	31	-90						
Solo	49	966	42	30	-45	20	-2	5100	6300	5100	6300
		1201	51	29	-90						
Solo	52	469	26	23	0	20	-2	6300	5100	6300	5100
		705	33	44	-5						
		965	42	29	-45						
		1200	51	28	-90						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	53	707	33	46	-5	20	-2	6300		5100	
		967	42	31	-45						
		1202	51	30	-90						
Solo	55	468	26	22	0	20	-2	6800	4600	6800	4600
		704	33	43	-5						
Solo	56	470	26	24	0	20	-2	6800		4600	
		706	33	45	-5						
Solo	60	487	26	41	0	20	0	4600		6800	
		723	33	62	-5						
Solo	62	486	26	40	0	20	0	5100		6300	
		722	33	61	-5						
		985	43	13	-45						
		1212	51	40	-90						
Solo	63	482	26	36	0	20	0	5100	6300	5100	6300
		718	33	57	-5						
		983	43	11	-45						
		1210	51	38	-90						
Solo	66	481	26	35	0	20	0	6300	5100	6300	5100
		717	33	56	-5						
		982	43	10	-45						
		1209	51	37	-90						
Solo	67	485	26	39	0	20	0	6300		5100	
		721	33	60	-5						
		984	43	12	-45						
		1211	51	39	-90						
Solo	69	483	26	37	0	20	0	6800	4600	6800	4600
		716	33	55	-5						
Solo	70	484	26	38	0	20	0	6800		4600	
		720	33	59	-5						
Solo	74	505	27	16	0	20	2	4600		6800	
		742	34	16	-5						
Solo	76	504	27	15	0	20	2	5100		6300	
		741	34	15	-5						
		994	43	22	-45						
		1221	51	49	-90						
Solo	77	992	43	20	-45	20	2	5100	6300	5100	6300
		1219	51	47	-90						
Solo	80	501	27	12	0	20	2	6300	5100	6300	5100
		738	34	12	-5						
		991	43	19	-45						
		1218	51	46	-90						
Solo	81	503	27	14	0	20	2	6300		5100	
		740	34	14	-5						
		993	43	21	-45						
		1220	51	48	-90						
Solo	83	500	27	11	0	20	2	6800	4600	6800	4600
		737	34	11	-5						
Solo	84	502	27	13	0	20	2	6800		4600	
		739	34	13	-5						
Solo	88	516	27	27	0	20	5	4600		6800	
		753	34	27	-5						
Solo	90	515	27	26	0	20	5	5100		6300	
		752	34	26	-5						
		1013	45	13	-45						
		1230	51	58	-90						
Solo	91	1011	45	11	-45	20	5	5100	6300	5100	6300
		1228	51	56	-90						
Solo	94	512	27	23	0	20	5	6300	5100	6300	5100
		749	34	23	-5						
		1010	45	10	-45						
		1227	51	55	-90						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	95	514	27	25	0	20	5	6300		5100	
		751	34	25	-5						
		1012	45	12	-45						
		1229	51	57	-90						
Solo	97	511	27	22	0	20	5	6800	4600	6800	4600
		748	34	22	-5						
Solo	98	513	27	24	0	20	5	6800		4600	
		750	34	24	-5						
Solo	102	535	28	15	0	20	10	4600		6800	
		764	34	38	-5						
Solo	104	534	28	14	0	20	10	5100		6300	
		763	34	37	-5						
		1022	45	22	-45						
		1249	53	13	-90						
Solo	105	1020	45	20	-45	20	10	5100	6300	5100	6300
		1247	53	11	-90						
Solo	108	531	28	11	0	20	10	6300	5100	6300	5100
		760	34	34	-5						
		1019	45	19	-45						
		1246	53	10	-90						
Solo	109	533	28	13	0	20	10	6300		5100	
		762	34	36	-5						
		1021	45	21	-45						
		1248	53	12	-90						
Solo	111	530	28	10	0	20	10	6800	4600	6800	4600
		759	34	33	-5						
Solo	112	532	28	12	0	20	10	6800		4600	
		761	34	35	-5						
Solo	137	571	29	23	0	40	-10	5100		6300	
		801	36	21	-5						
Solo	140	568	29	20	0	40	-10	6300	5100	6300	5100
		799	36	19	-5						
Solo	141	570	29	22	0	40	-10	6300		5100	
		800	36	20	-5						
Solo	146	582	29	34	0	40	-5	5100			
		816	37	11	-5						
Solo	149	579	29	31	0	40	-5	6300	5100	6300	5100
		814	37	9	-5						
Solo	150	581	29	33	0	40	-5	6300		5100	
		815	37	10	-5						
Solo	155	593	29	45	0	40	-2	5100		6300	
		823	37	18	-5						
Solo	158	590	29	42	0	40	-2	6300	5100	6300	5100
		821	37	16	-5						
Solo	159	592	29	44	0	40	-2	6300		5100	
		822	37	17	-5						
Solo	165	616	31	16	0	40	0	5100		6300	
		834	37	29	-5						
Solo	166	612	31	12	0	40	0	5100	6300	5100	6300
		832	37	27	-5						
Solo	169	611	31	11	0	40	0	6300	5100	6300	5100
		831	37	26	-5						
Solo	170	615	31	15	0	40	0	6300		5100	
		833	37	28	-5						
Solo	176	624	31	24	0	40	2	5100			
		849	38	12	-5						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	179	622	31	22	0	40	2	6300	5100	6300	5100
		847	38	10	-5						
Solo	180	623	31	23	0	40	2	6300		5100	
		848	38	11	-5						
Solo	186	633	31	33	0	40	5	5100			
		857	38	20	-5						
Solo	189	631	31	31	0	40	5	6300	5100	6300	5100
		855	38	18	-5						
Solo	190	632	31	32	0	40	5	6300		5100	
		856	38	19	-5						
Solo	199	646	32	10	0	40	10	6300	5100	6300	5100
		870	39	10	-5						
Solo	200	647	32	11	0	40	10	6300		5100	
		871	39	11	-5						
Solo Pitch											
Solo	1	422	25	5	0	20	-40	4600			
		427	25	10			-20				
		432	25	15			-10				
		452	26	6			-5				
		463	26	17			-2				
		474	26	28			0				
Solo	2	474	26	28	0	20	0	4600			
		495	27	6			2				
		506	27	17			5				
		525	28	5			10				
		536	28	16			20				
		541	28	21			40				
Solo	5	423	25	6	0	20	-40	5100			
		428	25	11			-20				
		433	25	16			-10				
		453	26	7			-5				
		464	26	18			-2				
		475	26	29			0				
Solo	6	476	26	30	0	20	0	5100			
		496	27	7			2				
		507	27	18			5				
		526	28	6			10				
		537	28	17			20				
		542	28	22			40				
Solo	9	424	25	7	0	20	-40	5700			
		429	25	12			-20				
		434	25	17			-10				
		454	26	8			-5				
		465	26	19			-2				
		443	25	26			0				
Solo	10	517	27	28	0	20	0	5700			
		497	27	8			2				
		508	27	19			5				
		527	28	7			10				
		538	28	18			20				
		543	28	23			40				
Solo	17	425	25	8	0	20	-40	6300			
		430	25	13			-20				
		435	25	18			-10				
		466	26	20			-2				
		478	26	32			0				
Solo	18	478	26	32	0	20	0	6300			
		498	27	9			2				
		509	27	20			5				
		528	28	8			10				
		539	28	19			20				
		544	28	24			40				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	23	426	25	9	0	20	-40	6800			
		431	25	14			-20				
		436	25	19			-10				
		456	26	10			-5				
		467	26	21			-2				
		479	26	33			0				
Solo	24	479	26	33	0	20	0	6800			
		499	27	10			2				
		510	27	21			5				
		529	28	9			10				
		540	28	20			20				
		545	28	25			40				
Solo	25	625	31	25	0	40	5	4000			
		641	32	5			10				
		649	32	13			20				
		654	32	18			40				
Solo	26	552	29	4	0	40	-40	4600			
		557	29	9			-20				
		562	29	14			-10				
		573	29	25			-5				
		584	29	36			-2				
		605	31	5			0				
Solo	27	605	31	5	0	40	0	4600			
		618	31	18			2				
		627	31	27			5				
		642	32	6			10				
		650	32	14			20				
		655	32	19			40				
Solo	29	553	29	5	0	40	-40	5100			
		558	29	10			-20				
		563	29	15			-10				
		574	29	26			-5				
		585	29	37			-2				
		606	31	6			0				
Solo	30	606	31	6	0	40	0	5100			
		619	31	19			2				
		628	31	28			5				
		643	32	7			10				
		651	32	15			20				
		656	32	20			40				
Solo	33	554	29	6	0	40	-40	5700			
		559	29	11			-20				
		564	29	16			-10				
		575	29	27			-5				
		586	29	38			-2				
		546	28	26			0				
Solo	34	595	29	47	0	40	0	5700			
		620	31	20			2				
		629	31	29			5				
		644	32	8			10				
		652	32	16			20				
		658	32	22			40				
Solo	41	555	29	7	0	40	-40	6300			
		560	29	12			-20				
		565	29	17			-10				
		576	29	28			-5				
		587	29	39			-2				
		608	31	8			0				
Solo	42	608	31	8	0	40	0	6300			
		621	31	21			2				
		630	31	30			5				
		645	32	9			10				
		653	32	17			20				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	45	556	29	8	0	40	-40	6800			
		561	29	13			-20				
		566	29	18			-10				
		577	29	29			-5				
		588	29	40			-2				
		609	31	9			0				
Solo	46	1320	57	9	0	80	-40	5700			
		1323	57	12			-30				
		1326	57	15			-20				
Solo	47	1321	57	10	0	80	-40	6300			
		1324	57	13			-30				
		1327	57	16			-20				
Solo	48	1322	57	11	0	80	-40	6800			
		1325	57	14			-30				
Solo	49	667	33	6	-5	20	-40	4600			
		672	33	11			-20				
		677	33	16			-10				
		688	33	27			-5				
		699	33	38			-2				
		710	33	49			0				
Solo	50	710	33	49	-5	20	0	4600			
		732	34	6			2				
		743	34	17			5				
		754	34	28			10				
		765	34	39			20				
		770	34	44			40				
Solo	53	668	33	7	-5	20	-40	5100			
		673	33	12			-20				
		678	33	17			-10				
		689	33	28			-5				
		700	33	39			-2				
		711	33	50			0				
Solo	54	711	33	50	-5	20	0	5100			
		733	34	7			2				
		744	34	18			5				
		755	34	29			10				
		766	34	40			20				
		771	34	45			40				
Solo	57	669	33	8	-5	20	-40	5700			
		674	33	13			-20				
		679	33	18			-10				
		690	33	29			-5				
		701	33	40			-2				
		713	33	52			0				
Solo	58	712	33	51	-5	20	0	5700			
		734	34	8			2				
		745	34	19			5				
		756	34	30			10				
		767	34	41			20				
		772	34	46			40				
Solo	63	670	33	9	-5	20	-40	6300			
		675	33	14			-20				
		680	33	19			-10				
		691	33	30			-5				
		702	33	41			-2				
		714	33	53			0				
Solo	64	714	33	53	-5	20	0	6300			
		735	34	9			2				
		746	34	20			5				
		757	34	31			10				
		768	34	42			20				
		773	34	47			40				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	69	671	33	10	-5	20	-40	6800			
		676	33	15			-20				
		681	33	20			-10				
		692	33	31			-5				
		703	33	42			-2				
		715	33	54			0				
Solo	70	715	33	54	-5	20	0	6800			
		736	34	10			2				
		747	34	21			5				
		758	34	32			10				
		769	34	43			20				
		774	34	48			40				
Solo	71	830	37	25	-5	40	0	4000			
		842	38	5			2				
		850	38	13			5				
		865	39	5			10				
		873	39	13			20				
		879	39	19			40				
Solo	72	785	36	5	-5	40	-40	4600			
		790	36	10			-20				
		795	36	15			-10				
		810	37	5			-5				
		817	37	12			-2				
		824	37	19			0				
Solo	73	824	37	19	-5	40	0	4600			
		843	38	6			2				
		851	38	14			5				
		866	39	6			10				
		874	39	14			20				
		880	39	20			40				
Solo	74	786	36	6	-5	40	-40	5100			
		791	36	11			-20				
		796	36	16			-10				
		811	37	6			-5				
		818	37	13			-2				
		825	37	20			0				
Solo	75	825	37	20	-5	40	0	5100			
		844	38	7			2				
		852	38	15			5				
		867	39	7			10				
		875	39	15			20				
		881	39	21			40				
Solo	78	787	36	7	-5	40	-40	5700			
		792	36	12			-20				
		797	36	17			-10				
		812	37	7			-5				
		819	37	14			-2				
		784	36	4			0				
Solo	79	858	38	21	-5	40	0	5700			
		845	38	8			2				
		853	38	16			5				
		868	39	8			10				
		876	39	16			20				
		882	39	22			40				
Solo	84	788	36	8	-5	40	-40	6300			
		793	36	13			-20				
		798	36	18			-10				
		813	37	8			-5				
		820	37	15			-2				
		827	37	22			0				
Solo	85	827	37	22	-5	40	0	6300			
		846	38	9			2				
		854	38	17			5				
		869	39	9			10				
		883	39	23			40				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	86	789	36	9	-5	40	-40	6800			
		794	36	14			-20				
		877	39	17			20				
Solo	87	892	40	6	-30	40	-10	4000			
		897	40	11			-5				
		909	41	5			-2				
		914	41	10			0				
Solo	88	914	41	10	-30	40	0	4000			
		919	41	15			2				
		924	41	20			5				
		929	41	25			10				
Solo	89	893	40	7	-30	40	-10	4600			
		898	40	12			-5				
		910	41	6			-2				
		915	41	11			0				
Solo	90	915	41	11	-30	40	0	4600			
		920	41	16			2				
		925	41	21			5				
		930	41	26			10				
Solo	91	894	40	8	-30	40	-10	5100			
		899	40	13			-5				
		911	41	7			-2				
		916	41	12			0				
Solo	92	916	41	12	-30	40	0	5100			
		921	41	17			2				
		926	41	22			5				
		931	41	27			10				
Solo	93	895	40	9	-30	40	-10	5700			
		900	40	14			-5				
		912	41	8			-2				
		908	41	4			0				
Solo	94	934	41	30	-30	40	0	5700			
		922	41	18			2				
		927	41	23			5				
		932	41	28			10				
Solo	95	896	40	10	-30	40	-10	6300			
		901	40	15			-5				
		913	41	9			-2				
		918	41	14			0				
Solo	96	918	41	14	-30	40	0	6300			
		923	41	19			2				
		928	41	24			5				
		933	41	29			10				
Solo	97	951	42	15	-45	20	-5	4000			
		960	42	24			-2				
		977	43	5			0				
Solo	98	977	43	5	-45	20	0	4000			
		986	43	14			2				
		1005	45	5			5				
		1014	45	14			10				
Solo	99	943	42	7	-45	20	-10	4600			
		952	42	16			-5				
		961	42	25			-2				
		978	43	6			0				
Solo	100	978	43	6	-45	20	0	4600			
		987	43	15			2				
		1006	45	6			5				
		1015	45	15			10				
Solo	101	944	42	8	-45	20	-10	5100			
		953	42	17			-5				
		962	42	26			-2				
		979	43	7			0				
Solo	102	979	43	7	-45	20	0	5100			
		988	43	16			2				
		1007	45	7			5				
		1016	45	16			10				
Solo	107	945	42	9	-45	20	-10	5700			
		954	42	18			-5				
		963	42	27			-2				
		995	43	23			0				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	108	995	43	23	-45	20	0	5700			
		989	43	17			2				
		1008	45	8			5				
		1017	45	17			10				
Solo	113	946	42	10	-45	20	-10	6300			
		955	42	19			-5				
		964	42	28			-2				
		981	43	9			0				
Solo	114	981	43	9	-45	20	0	6300			
		990	43	18			2				
		1009	45	9			5				
		1018	45	18			10				
Solo	115	1045	46	20	-45	40	0	3500			
		1050	46	25			2				
		1055	46	30			5				
		1060	46	35			10				
Solo	116	1030	46	5	-45	40	-10	4000			
		1035	46	10			-5				
		1040	46	15			-2				
		1046	46	21			0				
Solo	117	1046	46	21	-45	40	0	4000			
		1051	46	26			2				
		1056	46	31			5				
		1061	46	36			10				
Solo	118	1031	46	6	-45	40	-10	4600			
		1036	46	11			-5				
		1041	46	16			-2				
		1047	46	22			0				
Solo	119	1047	46	22	-45	40	0	4600			
		1052	46	27			2				
		1057	46	32			5				
		1062	46	37			10				
Solo	120	1032	46	7	-45	40	-10	5100			
		1037	46	12			-5				
		1042	46	17			-2				
		1048	46	23			0				
Solo	121	1048	46	23	-45	40	0	5100			
		1053	46	28			2				
		1058	46	33			5				
		1063	46	38			10				
Solo	122	1033	46	8	-45	40	-10	5700			
		1038	46	13			-5				
		1043	46	18			-2				
		1029	46	4			0				
Solo	123	1049	46	24	-45	40	0	5700			
		1054	46	29			2				
		1059	46	34			5				
		1064	46	39			10				
Solo	124	1034	46	9	-45	40	-10	6300			
		1039	46	14			-5				
		1044	46	19			-2				
Solo	125	1095	48	5	-60	40	0	3500			
		1100	48	10			2				
		1105	48	15			5				
		1110	48	20			10				
Solo	126	1073	47	6	-60	40	-10	4000			
		1078	47	11			-5				
		1083	47	16			-2				
		1096	48	6			0				
Solo	127	1096	48	6	-60	40	0	4000			
		1101	48	11			2				
		1106	48	16			5				
		1111	48	21			10				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	128	1074	47	7	-60	40	-10	4600			
		1079	47	12			-5				
		1084	47	17			-2				
		1097	48	7			0				
Solo	129	1097	48	7	-60	40	0	4600			
		1102	48	12			2				
		1107	48	17			5				
		1112	48	22			10				
Solo	130	1075	47	8	-60	40	-10	5100			
		1080	47	13			-5				
		1085	47	18			-2				
		1098	48	8			0				
Solo	131	1098	48	8	-60	40	0	5100			
		1103	48	13			2				
		1108	48	18			5				
		1113	48	23			10				
Solo	132	1076	47	9	-60	40	-10	5700			
		1081	47	14			-5				
		1086	47	19			-2				
		1088	47	21			0				
Solo	133	1116	48	26	-60	40	0	5700			
		1104	48	14			2				
		1109	48	19			5				
		1115	48	25			10				
Solo	134	1077	47	10	-60	40	-10	6300			
		1082	47	15			-5				
		1087	47	20			-2				
Solo	135	1177	51	5	-90	20	-10	4000			
		1186	51	14			-5				
		1195	51	23			-2				
		1204	51	32			0				
Solo	136	1204	51	32	-90	20	0	4000			
		1213	51	41			2				
		1222	51	50			5				
		1241	53	5			10				
Solo	137	1178	51	6	-90	20	-10	4600			
		1187	51	15			-5				
		1196	51	24			-2				
		1205	51	33			0				
Solo	138	1205	51	33	-90	20	0	4600			
		1214	51	42			2				
		1223	51	51			5				
		1242	53	6			10				
Solo	139	1179	51	7	-90	20	-10	5100			
		1188	51	16			-5				
		1197	51	25			-2				
		1206	51	34			0				
Solo	140	1206	51	34	-90	20	0	5100			
		1215	51	43			2				
		1224	51	52			5				
		1243	53	7			10				
Solo	145	1180	51	8	-90	20	-10	5700			
		1189	51	17			-5				
		1198	51	26			-2				
		1231	51	59			0				
Solo	146	1207	51	35	-90	20	0	5700			
		1216	51	44			2				
		1225	51	53			5				
		1244	53	8			10				
Solo	153	1181	51	9	-90	20	-10	6300			
		1190	51	18			-5				
		1199	51	27			-2				
		1208	51	36			0				
Solo	154	1208	51	36	-90	20	0	6300			
		1217	51	45			2				
		1226	51	54			5				
		1245	53	9			10				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	155	1146	50	10	-90	40	0	3500			
		1152	50	16			2				
		1158	50	22			5				
		1164	50	28			10				
Solo	156	1124	49	6	-90	40	-10	4000			
		1129	49	11			-5				
		1141	50	5			-2				
		1147	50	11			0				
Solo	157	1147	50	11	-90	40	0	4000			
		1153	50	17			2				
		1159	50	23			5				
		1165	50	29			10				
Solo	158	1125	49	7	-90	40	-10	4600			
		1130	49	12			-5				
		1142	50	6			-2				
		1148	50	12			0				
Solo	159	1148	50	12	-90	40	0	4600			
		1154	50	18			2				
		1160	50	24			5				
		1166	50	30			10				
Solo	160	1126	49	8	-90	40	-10	5100			
		1131	49	13			-5				
		1143	50	7			-2				
		1149	50	13			0				
Solo	161	1149	50	13	-90	40	0	5100			
		1155	50	19			2				
		1161	50	25			5				
		1167	50	31			10				
Solo	162	1127	49	9	-90	40	-10	5700			
		1132	49	14			-5				
		1144	50	8			-2				
		1123	49	5			0				
Solo	163	1170	50	34	-90	40	0	5700			
		1156	50	20			2				
		1162	50	26			5				
		1168	50	32			10				
Solo	166	1128	49	10	-90	40	-10	6300			
		1133	49	15			-5				
		1145	50	9			-2				
		1151	50	15			0				
Solo	167	1151	50	15	-90	40	0	6300			
		1157	50	21			2				
		1163	50	27			5				
		1169	50	33			10				
Solo	11	1279	55	5	0	20	-40	5700			
		1280	55	6			-20				
		1281	55	7			-10				
		1282	55	8			-5				
		1283	55	9			-2				
		1284	55	10			0				
Solo	12	1284	55	10	0	20	0	5700			
		1285	55	11			2				
		1286	55	12			5				
		1287	55	13			10				
		1288	55	14			20				
		1289	55	15			40				
Solo	35	1297	56	5	0	40	-40	5700			
		1298	56	6			-20				
		1299	56	7			-10				
		1300	56	8			-5				
		1301	56	9			-2				
		1290	55	16			0				
Solo	36	1309	56	17	0	40	0	5700			
		1303	56	11			2				
		1304	56	12			5				
		1306	56	14			10				
		1307	56	15			20				
		1308	56	16			40				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	147	1257	54	5	-90	20	-10	5700			
		1258	54	6			-5				
		1259	54	7			-2				
		1260	54	8			0				
Solo	148	1260	54	8	-90	20	0	5700			
		1261	54	9			2				
		1262	54	10			5				
		1263	54	11			10				
Solo	164	1265	54	13	-90	40	-10	5700			
		1266	54	14			-5				
		1267	54	15			-2				
		1268	54	16			0				
Solo	165	1272	54	20	-90	40	0	5700			
		1269	54	17			2				
		1270	54	18			5				
		1271	54	19			10				
Solo	3	442	25	25	0	20	-10	4600		6800	
		462	26	16			-5				
		473	26	27			-2				
		487	26	41			0				
Solo	4	487	26	41	0	20	0	4600		6800	
		505	27	16			2				
		516	27	27			5				
		535	28	15			10				
Solo	7	441	25	24	0	20	-10	5100		6300	
		461	26	15			-5				
		472	26	26			-2				
		486	26	40			0				
Solo	8	486	26	40	0	20	0	5100		6300	
		504	27	15			2				
		515	27	26			5				
		534	28	14			10				
Solo	13	438	25	21	0	20	-10	6300	5100		5100
		458	26	12			-5				
		469	26	23			-2				
		481	26	35			0				
Solo	14	481	26	35	0	20	0	6300	5100	6300	5100
		501	27	12			2				
		512	27	23			5				
		531	28	11			10				
Solo	15	440	25	23	0	20	-10	6300		5100	
		460	26	14			-5				
		485	26	39			0				
Solo	16	485	26	39	0	20	0	6300		5100	
		503	27	14			2				
		514	27	25			5				
		533	28	13			10				
Solo	19	437	25	20	0	20	-10	6800	4600	6800	4600
		457	26	11			-5				
		468	26	22			-2				
		480	26	34			0				
Solo	20	480	26	34	0	20	0	6800	4600	6800	4600
		500	27	11			2				
		511	27	22			5				
		530	28	10			10				
Solo	21	439	25	22	0	20	-10	6800		4600	
		459	26	13			-5				
		470	26	24			-2				
		484	26	38			0				
Solo	22	484	26	38	0	20	0	6800		4600	
		502	27	13			2				
		513	27	24			5				
		532	28	12			10				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	28	572	29	24	0	40	-10	4600		6800	
		583	29	35			-5				
		594	29	46			-2				
		617	31	17			0				
Solo	31	571	29	23	0	40	-10	5100		6300	
		582	29	34			-5				
		593	29	45			-2				
		616	31	16			0				
Solo	32	616	31	16	0	40	0	5100		6300	
		624	31	24			2				
		633	31	33			5				
		648	32	12			10				
Solo	37	568	29	20	0	40	-10	6300	5100	6300	5100
		579	29	31			-5				
		590	29	42			-2				
		611	31	11			0				
Solo	38	611	31	11	0	40	0	6300	5100	6300	5100
		622	31	22			2				
		631	31	31			5				
		646	32	10			10				
Solo	39	570	29	22	0	40	-10	6300		5100	
		581	29	33			-5				
		592	29	44			-2				
		615	31	15			0				
Solo	40	615	31	15	0	40	0	6300		5100	
		623	31	23			2				
		632	31	32			5				
		647	32	11			10				
Solo	43	567	29	19	0	40	-10	6800	4600	6800	4600
		578	29	30			-5				
		589	29	41			-2				
		610	31	10			0				
Solo	44	569	29	21	0	40	-10	6800		4600	
		580	29	32			-5				
		591	29	43			-2				
		614	31	14			0				
Solo	51	687	33	26	-5	20	-10	4600		6800	
		698	33	37			-5				
		709	33	48			-2				
		723	33	62			0				
Solo	52	723	33	62	-5	20	0	4600		6800	
		742	34	16			2				
		753	34	27			5				
		764	34	38			10				
Solo	55	686	33	25	-5	20	-10	5100		6300	
		697	33	36			-5				
		708	33	47			-2				
		722	33	61			0				
Solo	56	722	33	61	-5	20	0	5100		6300	
		741	34	15			2				
		752	34	26			5				
		763	34	37			10				
Solo	59	683	33	22	-5	20	-10	6300	5100	6300	5100
		694	33	33			-5				
		705	33	44			-2				
		717	33	56			0				
Solo	60	717	33	56	-5	20	0	6300	5100	6300	5100
		738	34	12			2				
		749	34	23			5				
		760	34	34			10				
Solo	61	685	33	24	-5	20	-10	6300		5100	
		696	33	35			-5				
		707	33	46			-2				
		721	33	60			0				
Solo	62	721	33	60	-5	20	0	6300		5100	
		740	34	14			2				
		751	34	25			5				
		762	34	36			10				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	65	682	33	21	-5	20	-10	6800	4600	6800	4600
		693	33	32			-5				
		704	33	43			-2				
		716	33	55			0				
Solo	66	716	33	55	-5	20	0	6800	4600	6800	4600
		737	34	11			2				
		748	34	22			5				
		759	34	33			10				
Solo	67	684	33	23	-5	20	-10	6800		4600	
		695	33	34			-5				
		706	33	45			-2				
		720	33	59			0				
Solo	68	720	33	59	-5	20	0	6800		4600	
		739	34	13			2				
		750	34	24			5				
		761	34	35			10				
Solo	76	801	36	21	-5	40	-10	5100		6300	
		816	37	11			-5				
		823	37	18			-2				
		834	37	29			0				
Solo	77	834	37	29	-5	40	0	5100		6300	
		849	38	12			2				
		857	38	20			5				
		872	39	12			10				
Solo	80	799	36	19	-5	40	-10	6300	5100	6300	5100
		814	37	9			-5				
		821	37	16			-2				
		831	37	26			0				
Solo	81	831	37	26	-5	40	0	6300	5100	6300	5100
		847	38	10			2				
		855	38	18			5				
		870	39	10			10				
Solo	82	800	36	20	-5	40	-10	6300		5100	
		815	37	10			-5				
		822	37	17			-2				
		833	37	28			0				
Solo	83	833	37	28	-5	40	0	6300		5100	
		848	38	11			2				
		856	38	19			5				
		871	39	11			10				
Solo	103	950	42	14	-45	20	-10	5100		6300	
		959	42	23			-5				
		968	42	32			-2				
		985	43	13			0				
Solo	104	985	43	13	-45	20	0	5100		6300	
		994	43	22			2				
		1013	45	13			5				
		1022	45	22			10				
Solo	105	948	42	12	-45	20	-10	5100	6300	5100	6300
		957	42	21			-5				
		966	42	30			-2				
		983	43	11			0				
Solo	106	983	43	11	-45	20	0	5100	6300	5100	6300
		992	43	20			2				
		1011	45	11			5				
		1020	45	20			10				
Solo	109	947	42	11	-45	20	-10	6300	5100	6300	5100
		956	42	20			-5				
		965	42	29			-2				
		982	43	10			0				
Solo	110	982	43	10	-45	20	0	6300	5100	6300	5100
		991	43	19			2				
		1010	45	10			5				
		1019	45	19			10				
Solo	111	949	42	13	-45	20	-10	6300		5100	
		958	42	22			-5				
		967	42	31			-2				
		984	43	12			0				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	112	984	43	12	-45	20	0	6300		5100	
		993	43	21			2				
		1012	45	12			5				
		1021	45	21			10				
Solo	141	1185	51	13	-90	20	-10	5100		6300	
		1194	51	22			-5				
		1203	51	31			-2				
		1212	51	40			0				
Solo	142	1212	51	40	-90	20	0	5100		6300	
		1221	51	49			2				
		1230	51	58			5				
		1249	53	13			10				
Solo	143	1183	51	11	-90	20	-10	5100	6300	5100	6300
		1192	51	20			-5				
		1201	51	29			-2				
		1210	51	38			0				
Solo	144	1210	51	38	-90	20	0	5100	6300	5100	6300
		1219	51	47			2				
		1228	51	56			5				
		1247	53	11			10				
Solo	149	1182	51	10	-90	20	-10	6300	5100	6300	5100
		1191	51	19			-5				
		1200	51	28			-2				
		1209	51	37			0				
Solo	150	1209	51	37	-90	20	0	6300	5100	6300	5100
		1218	51	46			2				
		1227	51	55			5				
		1246	53	10			10				
Solo	151	1184	51	12	-90	20	-10	6300		5100	
		1193	51	21			-5				
		1202	51	30			-2				
		1211	51	39			0				
Solo	152	1211	51	39	-90	20	0	6300		5100	
		1220	51	48			2				
		1229	51	57			5				
		1248	53	12			10				

Solo Duplicate Runs

Solo	1	1121	49	3	-90	0	0	5700	5700	5700	5700
		1135	49	17	-90	0	0	5700	5700	5700	5700
		1139	50	3	-90	0	0	5700	5700	5700	5700
		1175	51	3	-90	0	0	5700	5700	5700	5700
		1232	51	60	-90	0	0	5700	5700	5700	5700
		1239	53	3	-90	0	0	5700	5700	5700	5700
Solo	3	1122	49	4	-90	20.6	0	5700	5700	5700	5700
		1207	51	35	-90	20.2	0	5700	5700	5700	5700
		1231	51	59	-90	20	0	5700	5700	5700	5700
Solo	4	1123	49	5	-90	39.5	0	5700	5700	5700	5700
		1134	49	16	-90	40.4	0	5700	5700	5700	5700
		1140	50	4	-90	40.4	0	5700	5700	5700	5700
		1150	50	14	-90	40.1	0	5700	5700	5700	5700
		1170	50	34	-90	40	0	5700	5700	5700	5700
		1176	51	4	-90	40	0	5700	5700	5700	5700
Solo	6	1070	47	3	-60	0	0	5700	5700	5700	5700
		1089	47	22	-60	0	0	5700	5700	5700	5700
		1093	48	3	-60	0	0	5700	5700	5700	5700
		1117	48	27	-60	0	0	5700	5700	5700	5700
Solo	7	1072	47	5	-60	39.7	0	5700	5700	5700	5700
		1088	47	21	-60	39.8	0	5700	5700	5700	5700
		1094	48	4	-60	39.6	0	5700	5700	5700	5700
		1099	48	9	-60	39.6	0	5700	5700	5700	5700
		1116	48	26	-60	40.2	0	5700	5700	5700	5700
Solo	8	1114	48	24	-60	40.3	10	5700	5700	5700	5700
		1115	48	25	-60	39.7	10	5700	5700	5700	5700

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	9	939	42	3	-45	0	0	5700	5700	5700	5700
		970	42	34	-45	0	0	5700	5700	5700	5700
		975	43	3	-45	0	0	5700	5700	5700	5700
		996	43	24	-45	0	0	5700	5700	5700	5700
		1003	45	3	-45	0	0	5700	5700	5700	5700
Solo	10	980	43	8	-45	20	0	5700	5700	5700	5700
		995	43	23	-45	20	0	5700	5700	5700	5700
Solo	11	976	43	4	-45	40	0	5700	5700	5700	5700
		1004	45	4	-45	40	0	5700	5700	5700	5700
		1023	45	23	-45	39.5	0	5700	5700	5700	5700
		1029	46	4	-45	39.2	0	5700	5700	5700	5700
		1049	46	24	-45	39.5	0	5700	5700	5700	5700
		1065	46	40	-45	39.3	0	5700	5700	5700	5700
Solo	12	891	40	5	-30	40	0	5700	5700	5700	5700
		902	40	16	-30	40	0	5700	5700	5700	5700
		908	41	4	-30	39.4	0	5700	5700	5700	5700
		917	41	13	-30	40.1	0	5700	5700	5700	5700
		934	41	30	-30	40	0	5700	5700	5700	5700
Solo	13	725	33	64	-5	2.4	0	5700	5700	5700	5700
		730	34	4	-5	2.3	0	5700	5700	5700	5700
		731	34	5	-5	2.3	0	5700	5700	5700	5700
Solo	14	666	33	5	-5	20.1	0	5700	5700	5700	5700
		712	33	51	-5	20.9	0	5700	5700	5700	5700
		713	33	52	-5	19.8	0	5700	5700	5700	5700
Solo	15	829	37	24	-5	39.9	0	4000	4000	4000	4000
		830	37	25	-5	39.7	0	4000	4000	4000	4000
Solo	16	724	33	63	-5	39.5	0	5700	5700	5700	5700
		775	34	49	-5	40	0	5700	5700	5700	5700
		784	36	4	-5	39.2	0	5700	5700	5700	5700
		802	36	22	-5	40.1	0	5700	5700	5700	5700
		803	36	23	-5	39.4	0	5700	5700	5700	5700
		809	37	4	-5	39.5	0	5700	5700	5700	5700
Solo	17	826	37	21	-5	39.2	0	5700	5700	5700	5700
		835	37	30	-5	39.9	0	5700	5700	5700	5700
		841	38	4	-5	39.8	0	5700	5700	5700	5700
		858	38	21	-5	39.7	0	5700	5700	5700	5700
		864	39	4	-5	40.1	0	5700	5700	5700	5700
		884	39	24	-5	39.8	0	5700	5700	5700	5700
Solo	18	827	37	22	-5	38.4	0	6300	6300	6300	6300
		828	37	23	-5	39.5	0	6300	6300	6300	6300
Solo	19	455	26	9	0	20	-5	6800	6800	6800	6800
		456	26	10	0	20	-5	6800	6800	6800	6800
Solo	20	407	24	3	0	0	0	4600	4600	4600	4600
		416	24	12	0	0	0	4600	4600	4600	4600
Solo	21	408	24	4	0	0	0	5100	5100	5100	5100
		415	24	11	0	0	0	5100	5100	5100	5100
Solo	22	409	24	5	0	0	0	5700	5700	5700	5700
		414	24	10	0	0	0	5700	5700	5700	5700
		445	25	28	0	0	0	5700	5700	5700	5700
		489	26	43	0	0	0	5700	5700	5700	5700
		492	27	3	0	0	0	5700	5700	5700	5700
Solo	24	1314	57	3	0	0	0	5700	5700	5700	5700
		1329	57	18	0	0	0	5700	5700	5700	5700
Solo	25	410	24	6	0	0	0	6300	6300	6300	6300
		413	24	9	0	0	0	6300	6300	6300	6300
Solo	26	411	24	7	0	0	0	6800	6800	6800	6800
		412	24	8	0	0	0	6800	6800	6800	6800
Solo	27	475	26	29	0	20	0	5100	5100	5100	5100
		476	26	30	0	20	0	5100	5100	5100	5100
Solo	28	443	25	26	0	20	0	5700	5700	5700	5700
		477	26	31	0	20	0	5700	5700	5700	5700
		494	27	5	0	19.9	0	5700	5700	5700	5700
		517	27	28	0	20.2	0	5700	5700	5700	5700
Solo	30	493	27	4	0	39.5	0	5700	5700	5700	5700
		518	27	29	0	39.2	0	5700	5700	5700	5700
		524	28	4	0	40.4	0	5700	5700	5700	5700
		546	28	26	0	40.3	0	5700	5700	5700	5700
		551	29	3	0	40.4	0	5700	5700	5700	5700
		595	29	47	0	40.4	0	5700	5700	5700	5700

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	31	604	31	4	0	39.5	0	5700	5700	5700	5700
		607	31	7	0	39.4	0	5700	5700	5700	5700
		634	31	34	0	39.2	0	5700	5700	5700	5700
		640	32	4	0	39.6	0	5700	5700	5700	5700
		659	32	23	0	39.8	0	5700	5700	5700	5700
Solo	33	1315	57	4	0	39.9	0	5700	5700	5700	5700
		1328	57	17	0	40.1	0	5700	5700	5700	5700
Solo	35	626	31	26	0	38.6	5	4600	4600	4600	4600
		627	31	27	0	39.3	5	4600	4600	4600	4600
Solo	2	1255	54	3	-90	0	0	5700	5700	5700	5700
		1273	54	21	-90	0	0	5700	5700	5700	5700
Solo	5	1256	54	4	-90	39.7	0	5700	5700	5700	5700
		1264	54	12	-90	39.7	0	5700	5700	5700	5700
		1268	54	16	-90	39.6	0	5700	5700	5700	5700
		1272	54	20	-90	39.7	0	5700	5700	5700	5700
Solo	23	1277	55	3	0	0	0	5700	5700	5700	5700
		1291	55	17	0	0	0	5700	5700	5700	5700
		1295	56	3	0	0	0	5700	5700	5700	5700
		1310	56	18	0	0	0	5700	5700	5700	5700
Solo	32	1278	55	4	0	39.7	0	5700	5700	5700	5700
		1290	55	16	0	39.7	0	5700	5700	5700	5700
		1296	56	4	0	39.9	0	5700	5700	5700	5700
		1302	56	10	0	39.8	0	5700	5700	5700	5700
		1309	56	17	0	40	0	5700	5700	5700	5700
Solo	34	15	1	11	0	58.47	0	6000	6000	6000	6000
		16	1	12	0	58.9	0	6000	6000	6000	6000
Solo	36	1305	56	13	0	39.4	10	5700	5700	5700	5700
		1306	56	14	0	39.6	10	5700	5700	5700	5700
Solo	29	480	26	34	0	20	0	6800	4600	6800	4600
		483	26	37	0	20	0	6800	4600	6800	4600

SUI RPM Sweep

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	1	2753	116	5	-90	20	-10	2800	2800	2800	2800
		2754	116	6				3200	3200	3200	3200
		2755	116	7				3500	3500	3500	3500
		2756	116	8				3800	3800	3800	3800
		2757	116	9				4200	4200	4200	4200
SUI	2	2762	116	14	-90	20	-5	2800	2800	2800	2800
		2763	116	15				3200	3200	3200	3200
		2764	116	16				3500	3500	3500	3500
		2765	116	17				3800	3800	3800	3800
		2766	116	18				4200	4200	4200	4200
SUI	3	2771	116	23	-90	20	-2	2800	2800	2800	2800
		2772	116	24				3200	3200	3200	3200
		2773	116	25				3500	3500	3500	3500
		2774	116	26				3800	3800	3800	3800
		2775	116	27				4200	4200	4200	4200
SUI	4	2780	116	32	-90	20	0	2800	2800	2800	2800
		2781	116	33				3200	3200	3200	3200
		2752	116	4				3500	3500	3500	3500
		2783	116	35				3800	3800	3800	3800
		2784	116	36				4200	4200	4200	4200
SUI	5	2789	116	41	-90	20	2	2800	2800	2800	2800
		2790	116	42				3200	3200	3200	3200
		2791	116	43				3500	3500	3500	3500
		2792	116	44				3800	3800	3800	3800
		2793	116	45				4200	4200	4200	4200
SUI	6	2798	116	50	-90	20	5	2800	2800	2800	2800
		2799	116	51				3200	3200	3200	3200
		2800	116	52				3500	3500	3500	3500
		2801	116	53				3800	3800	3800	3800
		2802	116	54				4200	4200	4200	4200
SUI	7	2807	116	59	-90	20	10	2800	2800	2800	2800
		2808	116	60				3200	3200	3200	3200
		2809	116	61				3500	3500	3500	3500
		2810	116	62				3800	3800	3800	3800
		2811	116	63				4200	4200	4200	4200
SUI	8	2711	115	5	-60	20	-10	2800	2800	2800	2800
		2712	115	6				3200	3200	3200	3200
		2713	115	7				3500	3500	3500	3500
		2714	115	8				3800	3800	3800	3800
		2715	115	9				4200	4200	4200	4200
SUI	9	2716	115	10	-60	20	-5	2800	2800	2800	2800
		2717	115	11				3200	3200	3200	3200
		2718	115	12				3500	3500	3500	3500
		2719	115	13				3800	3800	3800	3800
		2720	115	14				4200	4200	4200	4200
SUI	10	2721	115	15	-60	20	-2	2800	2800	2800	2800
		2722	115	16				3200	3200	3200	3200
		2723	115	17				3500	3500	3500	3500
		2724	115	18				3800	3800	3800	3800
		2725	115	19				4200	4200	4200	4200

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
		2726	115	20				2800	2800	2800	2800
		2727	115	21				3200	3200	3200	3200
SUI	11	2710	115	4	-60	20	0	3500	3500	3500	3500
		2729	115	23				3800	3800	3800	3800
		2730	115	24				4200	4200	4200	4200
		2731	115	25				2800	2800	2800	2800
		2732	115	26				3200	3200	3200	3200
SUI	12	2733	115	27	-60	20	2	3500	3500	3500	3500
		2734	115	28				3800	3800	3800	3800
		2735	115	29				4200	4200	4200	4200
		2736	115	30				2800	2800	2800	2800
		2737	115	31				3200	3200	3200	3200
SUI	13	2738	115	32	-60	20	5	3500	3500	3500	3500
		2739	115	33				3800	3800	3800	3800
		2740	115	34				4200	4200	4200	4200
		2741	115	35				2800	2800	2800	2800
		2742	115	36				3200	3200	3200	3200
SUI	14	2743	115	37	-60	20	10	3500	3500	3500	3500
		2744	115	38				3800	3800	3800	3800
		2745	115	39				4200	4200	4200	4200
		2634	113	5				2800	2800	2800	2800
		2635	113	6				3200	3200	3200	3200
SUI	15	2636	113	7	-45	20	-10	3500	3500	3500	3500
		2637	113	8				3800	3800	3800	3800
		2638	113	9				4200	4200	4200	4200
		2643	113	14				2800	2800	2800	2800
		2644	113	15				3200	3200	3200	3200
SUI	16	2645	113	16	-45	20	-5	3500	3500	3500	3500
		2646	113	17				3800	3800	3800	3800
		2647	113	18				4200	4200	4200	4200
		2652	113	23				2800	2800	2800	2800
		2653	113	24				3200	3200	3200	3200
SUI	17	2654	113	25	-45	20	-2	3500	3500	3500	3500
		2655	113	26				3800	3800	3800	3800
		2656	113	27				4200	4200	4200	4200
		2661	113	32				2800	2800	2800	2800
		2662	113	33				3200	3200	3200	3200
SUI	18	2633	113	4	-45	20	0	3500	3500	3500	3500
		2664	113	35				3800	3800	3800	3800
		2665	113	36				4200	4200	4200	4200
		2670	113	41				2800	2800	2800	2800
		2671	113	42				3200	3200	3200	3200
SUI	19	2672	113	43	-45	20	2	3500	3500	3500	3500
		2673	113	44				3800	3800	3800	3800
		2674	113	45				4200	4200	4200	4200
		2686	114	5				2800	2800	2800	2800
		2687	114	6				3200	3200	3200	3200
SUI	20	2688	114	7	-45	20	5	3500	3500	3500	3500
		2689	114	8				3800	3800	3800	3800
		2690	114	9				4200	4200	4200	4200
		2695	114	14				2800	2800	2800	2800
		2696	114	15				3200	3200	3200	3200
SUI	21	2697	114	16	-45	20	10	3500	3500	3500	3500
		2698	114	17				3800	3800	3800	3800
		2699	114	18				4200	4200	4200	4200
		2592	112	5				2800	2800	2800	2800
		2593	112	6				3200	3200	3200	3200
SUI	22	2594	112	7	-30	20	-10	3500	3500	3500	3500
		2595	112	8				3800	3800	3800	3800
		2596	112	9				4200	4200	4200	4200
		2597	112	10				2800	2800	2800	2800
		2598	112	11				3200	3200	3200	3200
SUI	23	2599	112	12	-30	20	-5	3500	3500	3500	3500
		2600	112	13				3800	3800	3800	3800
		2601	112	14				4200	4200	4200	4200
		2602	112	15				2800	2800	2800	2800
		2603	112	16				3200	3200	3200	3200
SUI	24	2604	112	17	-30	20	-2	3500	3500	3500	3500
		2605	112	18				3800	3800	3800	3800
		2606	112	19				4200	4200	4200	4200

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
		2607	112	20				2800	2800	2800	2800
		2608	112	21				3200	3200	3200	3200
SUI	25	2591	112	4	-30	20	0	3500	3500	3500	3500
		2610	112	23				3800	3800	3800	3800
		2611	112	24				4200	4200	4200	4200
		2612	112	25				2800	2800	2800	2800
		2613	112	26				3200	3200	3200	3200
SUI	26	2614	112	27	-30	20	2	3500	3500	3500	3500
		2615	112	28				3800	3800	3800	3800
		2616	112	29				4200	4200	4200	4200
		2617	112	30				2800	2800	2800	2800
		2618	112	31				3200	3200	3200	3200
SUI	27	2619	112	32	-30	20	5	3500	3500	3500	3500
		2620	112	33				3800	3800	3800	3800
		2621	112	34				4200	4200	4200	4200
		2622	112	35				2800	2800	2800	2800
		2623	112	36				3200	3200	3200	3200
SUI	28	2624	112	37	-30	20	10	3500	3500	3500	3500
		2625	112	38				3800	3800	3800	3800
		2626	112	39				4200	4200	4200	4200
		2492	110	5				2800	2800	2800	2800
		2493	110	6				3200	3200	3200	3200
SUI	29	2494	110	7	-5	20	-40	3500	3500	3500	3500
		2495	110	8				3800	3800	3800	3800
		2496	110	9				4200	4200	4200	4200
		2497	110	10				4500	4500	4500	4500
		2499	110	12				3200	3200	3200	3200
SUI	30	2500	110	13	-5	20	-20	3500	3500	3500	3500
		2498	110	11				3800	3800	3800	3800
		2502	110	15				4200	4200	4200	4200
		2503	110	16				2800	2800	2800	2800
		2504	110	17				3200	3200	3200	3200
SUI	31	2505	110	18	-5	20	-10	3500	3500	3500	3500
		2506	110	19				3800	3800	3800	3800
		2507	110	20				4200	4200	4200	4200
		2512	110	25				2800	2800	2800	2800
		2513	110	26				3200	3200	3200	3200
SUI	32	2514	110	27	-5	20	-5	3500	3500	3500	3500
		2515	110	28				3800	3800	3800	3800
		2516	110	29				4200	4200	4200	4200
		2521	110	34				2800	2800	2800	2800
		2522	110	35				3200	3200	3200	3200
SUI	33	2523	110	36	-5	20	-2	3500	3500	3500	3500
		2524	110	37				3800	3800	3800	3800
		2525	110	38				4200	4200	4200	4200
		2530	110	43				2800	2800	2800	2800
		2531	110	44				3200	3200	3200	3200
SUI	34	2532	110	45	-5	20	0	3500	3500	3500	3500
		2533	110	46				3800	3800	3800	3800
		2534	110	47				4200	4200	4200	4200
		2547	111	5				2800	2800	2800	2800
		2548	111	6				3200	3200	3200	3200
SUI	35	2549	111	7	-5	20	2	3500	3500	3500	3500
		2550	111	8				3800	3800	3800	3800
		2551	111	9				4200	4200	4200	4200
		2556	111	14				2800	2800	2800	2800
		2557	111	15				3200	3200	3200	3200
SUI	36	2558	111	16	-5	20	5	3500	3500	3500	3500
		2559	111	17				3800	3800	3800	3800
		2560	111	18				4200	4200	4200	4200
		2565	111	23				2800	2800	2800	2800
		2566	111	24				3200	3200	3200	3200
SUI	37	2567	111	25	-5	20	10	3500	3500	3500	3500
		2568	111	26				3800	3800	3800	3800
		2569	111	27				4200	4200	4200	4200
		2574	111	32				2800	2800	2800	2800
		2575	111	33				3200	3200	3200	3200
SUI	38	2576	111	34	-5	20	20	3500	3500	3500	3500
		2577	111	35				3800	3800	3800	3800
		2578	111	36				4200	4200	4200	4200

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	39	2579	111	37	-5	20	40	2800	2800	2800	2800
		2580	111	38				3200	3200	3200	3200
		2581	111	39				3500	3500	3500	3500
		2582	111	40				3800	3800	3800	3800
		2584	111	42				4200	4200	4200	4200
SUI	40	2281	104	5	0	20	-40	2800	2800	2800	2800
		2282	104	6				3200	3200	3200	3200
		2283	104	7				3500	3500	3500	3500
		2284	104	8				3800	3800	3800	3800
		2285	104	9				4200	4200	4200	4200
		2286	104	10				4500	4500	4500	4500
SUI	41	2374	106	5	0	40	-40	2800	2800	2800	2800
		2375	106	6				3200	3200	3200	3200
		2376	106	7				3500	3500	3500	3500
SUI	42	2476	109	5	0	60	-40	4200	4200	4200	4200
		2477	109	6				4500	4500	4500	4500
		2478	109	7				5000	5000	5000	5000
SUI	43	2479	109	8	0	60	-30	4200	4200	4200	4200
		2480	109	9				4500	4500	4500	4500
		2481	109	10				4900	4900	4900	4900
SUI	44	2287	104	11	0	20	-20	2800	2800	2800	2800
		2288	104	12				3200	3200	3200	3200
		2289	104	13				3500	3500	3500	3500
		2290	104	14				3800	3800	3800	3800
		2292	104	16				4200	4200	4200	4200
SUI	45	2381	106	12	0	40	-20	2800	2800	2800	2800
		2382	106	13				3200	3200	3200	3200
		2383	106	14				3500	3500	3500	3500
		2384	106	15				3800	3800	3800	3800
		2385	106	16				4200	4200	4200	4200
		2386	106	17				4500	4500	4500	4500
SUI	46	2482	109	11	0	60	-20	4200	4200	4200	4200
		2483	109	12				4500	4500	4500	4500
		2484	109	13				4800	4800	4800	4800
SUI	47	2293	104	17	0	20	-10	2800	2800	2800	2800
		2294	104	18				3200	3200	3200	3200
		2299	104	23				3200	3200	3800	3800
		2295	104	19				3500	3500	3500	3500
		2296	104	20				3800	3800	3800	3800
		2297	104	21				4200	4200	4200	4200
SUI	48	2387	106	18	0	40	-10	2800	2800	2800	2800
		2388	106	19				3200	3200	3200	3200
		2389	106	20				3500	3500	3500	3500
		2390	106	21				3800	3800	3800	3800
		2391	106	22				4200	4200	4200	4200

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	49	2301	104	25	0	20	-5	2800	2800	2800	2800
		2302	104	26				3200	3200	3200	3200
		2303	104	27				3500	3500	3500	3500
		2304	104	28				3800	3800	3800	3800
		2305	104	29				4200	4200	4200	4200
SUI	50	2395	106	26	0	40	-5	2800	2800	2800	2800
		2396	106	27				3200	3200	3200	3200
		2397	106	28				3500	3500	3500	3500
		2398	106	29				3800	3800	3800	3800
		2399	106	30				4200	4200	4200	4200
SUI	51	2309	104	33	0	20	-2	2800	2800	2800	2800
		2310	104	34				3200	3200	3200	3200
		2311	104	35				3500	3500	3500	3500
		2312	104	36				3800	3800	3800	3800
		2313	104	37				4200	4200	4200	4200
SUI	52	2403	106	34	0	40	-2	2800	2800	2800	2800
		2404	106	35				3200	3200	3200	3200
		2405	106	36				3500	3500	3500	3500
		2406	106	37				3800	3800	3800	3800
		2407	106	38				4200	4200	4200	4200
SUI	53	2271	102	5	0	0	0	3500	3500	3500	3500
		2318	104	42				3800	3800	3800	3800
		2269	102	3				4000	4000	4000	4000
SUI	54	2324	105	5	0	20	0	2800	2800	2800	2800
		2325	105	6				3200	3200	3200	3200
		2280	104	4				3500	3500	3500	3500
		2327	105	8				3800	3800	3800	3800
		2328	105	9				4200	4200	4200	4200
SUI	55	2419	107	5	0	40	0	2800	2800	2800	2800
		2420	107	6				3200	3200	3200	3200
		2411	106	42				3500	3500	3500	3500
		2422	107	8				3800	3800	3800	3800
		2423	107	9				4200	4200	4200	4200
SUI	56	2333	105	14	0	20	2	2800	2800	2800	2800
		2334	105	15				3200	3200	3200	3200
		2335	105	16				3500	3500	3500	3500
		2336	105	17				3800	3800	3800	3800
		2337	105	18				4200	4200	4200	4200
SUI	57	2427	107	13	0	40	2	2800	2800	2800	2800
		2428	107	14				3200	3200	3200	3200
		2430	107	16				3500	3500	3500	3500
		2431	107	17				3800	3800	3800	3800
		2432	107	18				4200	4200	4200	4200

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	58	2341	105	22	0	20	5	2800	2800	2800	2800
		2342	105	23				3200	3200	3200	3200
		2343	105	24				3500	3500	3500	3500
		2344	105	25				3800	3800	3800	3800
		2345	105	26				4200	4200	4200	4200
SUI	59	2436	107	22	0	40	5	2800	2800	2800	2800
		2437	107	23				3200	3200	3200	3200
		2438	107	24				3500	3500	3500	3500
		2439	107	25				3800	3800	3800	3800
		2440	107	26				4200	4200	4200	4200
SUI	60	2349	105	30	0	20	10	2800	2800	2800	2800
		2350	105	31				3200	3200	3200	3200
		2351	105	32				3500	3500	3500	3500
		2352	105	33				3800	3800	3800	3800
		2353	105	34				4200	4200	4200	4200
SUI	61	2452	108	6	0	40	10	2800	2800	2800	2800
		2453	108	7				3200	3200	3200	3200
		2454	108	8				3500	3500	3500	3500
		2455	108	9				3800	3800	3800	3800
SUI	62	2357	105	38	0	20	20	2800	2800	2800	2800
		2358	105	39				3200	3200	3200	3200
		2359	105	40				3500	3500	3500	3500
		2360	105	41				3800	3800	3800	3800
		2361	105	42				4200	4200	4200	4200
SUI	63	2459	108	13	0	40	20	2500	2500	2500	2500
		2460	108	14				2800	2800	2800	2800
		2461	108	15				3200	3200	3200	3200
		2462	108	16				3500	3500	3500	3500
		2463	108	17				3800	3800	3800	3800
SUI	64	2362	105	43	0	20	40	2800	2800	2800	2800
		2363	105	44				3200	3200	3200	3200
		2364	105	45				3500	3500	3500	3500
		2365	105	46				3800	3800	3800	3800
		2366	105	47				4200	4200	4200	4200
SUI	65	2464	108	18	0	40	40	2000	2000	2000	2000
		2465	108	19				2500	2500	2500	2500
		2466	108	20				2800	2800	2800	2800
		2467	108	21				3200	3200	3200	3200
		2468	108	22				3500	3500	3500	3500
SUI	66	2377	106	8	0	40	-40	3800	3800	3800	3800
		2378	106	9				4200	4200	4200	4200
		2379	106	10				4500	4500	4500	4500
		2380	106	11				4900	4900	4900	4900
SUI	67	2819	117	1	-90	0	0	0	0	0	0
		2821	117	3				3500	3500	3500	3500

SUI Pitch Sweep

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	1	2281	104	5	0	20.0	-40	2800			
		2287	104	11			-20				
		2293	104	17			-10				
		2301	104	25			-5				
		2309	104	33			-2				
		2324	105	5			0				
SUI	2	2324	105	5	0	20.0	0	2800			
		2333	105	14			2				
		2341	105	22			5				
		2349	105	30			10				
		2357	105	38			20				
		2362	105	43			40				
SUI	3	2282	104	6	0	20.0	-40	3200			
		2288	104	12			-20				
		2294	104	18			-10				
		2302	104	26			-5				
		2310	104	34			-2				
		2325	105	6			0				
SUI	4	2325	105	6	0	20.0	0	3200			
		2334	105	15			2				
		2342	105	23			5				
		2350	105	31			10				
		2358	105	39			20				
		2363	105	44			40				
SUI	7	2283	104	7	0	20.0	-40	3500			
		2289	104	13			-20				
		2295	104	19			-10				
		2303	104	27			-5				
		2311	104	35			-2				
		2485	109	14			0				
SUI	8	2485	109	14	0	20.0	0	3500			
		2335	105	16			2				
		2343	105	24			5				
		2351	105	32			10				
		2359	105	40			20				
		2364	105	45			40				
SUI	15	2284	104	8	0	20.0	-40	3800			
		2291	104	15			-20				
		2296	104	20			-10				
		2304	104	28			-5				
		2312	104	36			-2				
		2327	105	8			0				
SUI	16	2327	105	8	0	20.0	0	3800			
		2336	105	17			2				
		2344	105	25			5				
		2352	105	33			10				
		2360	105	41			20				
		2365	105	46			40				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	17	2285	104	9	0	20.0	-40	4200			
		2292	104	16			-20				
		2297	104	21			-10				
		2305	104	29			-5				
		2313	104	37			-2				
		2328	105	9			0				
SUI	18	2328	105	9	0	20.0	0	4200			
		2337	105	18			2				
		2345	105	26			5				
		2353	105	34			10				
		2361	105	42			20				
		2366	105	47			40				
SUI	19	2459	108	13	0	40.0	20	2500			
		2465	108	19			40				
SUI	20	2374	106	5	0	40.0	-40	2800			
		2381	106	12			-20				
		2387	106	18			-10				
		2395	106	26			-5				
		2403	106	34			-2				
		2419	107	5			0				
SUI	21	2419	107	5	0	40.0	0	2800			
		2427	107	13			2				
		2436	107	22			5				
		2452	108	6			10				
		2460	108	14			20				
		2466	108	20			40				
SUI	23	2375	106	6	0	40.0	-40	3200			
		2382	106	13			-20				
		2388	106	19			-10				
		2396	106	27			-5				
		2404	106	35			-2				
		2420	107	6			0				
SUI	24	2420	107	6	0	40.0	0	3200			
		2429	107	15			2				
		2437	107	23			5				
		2453	108	7			10				
		2461	108	15			20				
		2467	108	21			40				
SUI	27	2376	106	7	0	40.0	-40	3500			
		2383	106	14			-20				
		2389	106	20			-10				
		2397	106	28			-5				
		2405	106	36			-2				
		2451	108	5			0				
SUI	28	2451	108	5	0	40.0	0	3500			
		2430	107	16			2				
		2438	107	24			5				
		2454	108	8			10				
		2462	108	16			20				
		2468	108	22			40				
SUI	35	2377	106	8	0	40.0	-40	3800			
		2384	106	15			-20				
		2390	106	21			-10				
		2398	106	29			-5				
		2406	106	37			-2				
		2422	107	8			0				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	36	2422	107	8	0	40.0	0	3800			
		2431	107	17			2				
		2439	107	25			5				
		2455	108	9			10				
		2463	108	17			20				
SUI	37	2378	106	9	0	40.0	-40	4200			
		2385	106	16			-20				
		2391	106	22			-10				
		2399	106	30			-5				
		2407	106	38			-2				
		2423	107	9			0				
SUI	38	2423	107	9	0	40.0	0	4200			
		2432	107	18			2				
		2440	107	26			5				
SUI	39	2379	106	10	0	40.0	-40	4500			
		2386	106	17			-20				
SUI	40	2476	109	5	0	60.0	-40	4200			
		2479	109	8			-30				
		2482	109	11			-20				
SUI	41	2477	109	6	0	60.0	-40	4500			
		2480	109	9			-30				
		2483	109	12			-20				
SUI	42	2492	110	5	-5	20.0	-40	2800			
		2503	110	16			-10				
		2512	110	25			-5				
		2521	110	34			-2				
		2530	110	43			0				
SUI	43	2530	110	43	-5	20.0	0	2800			
		2547	111	5			2				
		2556	111	14			5				
		2565	111	23			10				
		2574	111	32			20				
		2579	111	37			40				
SUI	44	2493	110	6	-5	20.0	-40	3200			
		2499	110	12			-20				
		2504	110	17			-10				
		2513	110	26			-5				
		2522	110	35			-2				
		2531	110	44			0				
SUI	45	2531	110	44	-5	20.0	0	3200			
		2548	111	6			2				
		2557	111	15			5				
		2566	111	24			10				
		2575	111	33			20				
		2580	111	38			40				
SUI	50	2494	110	7	-5	20.0	-40	3500			
		2500	110	13			-20				
		2505	110	18			-10				
		2514	110	27			-5				
		2523	110	36			-2				
		2585	111	43			0				
SUI	51	2585	111	43	-5	20.0	0	3500			
		2549	111	7			2				
		2558	111	16			5				
		2567	111	25			10				
		2576	111	34			20				
		2581	111	39			40				
SUI	56	2495	110	8	-5	20.0	-40	3800			
		2501	110	14			-20				
		2506	110	19			-10				
		2515	110	28			-5				
		2524	110	37			-2				
		2533	110	46			0				
SUI	57	2533	110	46	-5	20.0	0	3800			
		2550	111	8			2				
		2559	111	17			5				
		2568	111	26			10				
		2577	111	35			20				
		2583	111	41			40				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	58	2496	110	9	-5	20.0	-40	4200			
		2502	110	15			-20				
		2507	110	20			-10				
		2516	110	29			-5				
		2525	110	38			-2				
		2534	110	47			0				
SUI	59	2534	110	47	-5	20.0	0	4200			
		2551	111	9			2				
		2560	111	18			5				
		2569	111	27			10				
		2578	111	36			20				
		2584	111	42			40				
SUI	60	2592	112	5	-30	20.0	-10	2800			
		2597	112	10			-5				
		2602	112	15			-2				
		2607	112	20			0				
SUI	61	2607	112	20	-30	20.0	0	2800			
		2612	112	25			2				
		2617	112	30			5				
		2622	112	35			10				
SUI	62	2593	112	6	-30	20.0	-10	3200			
		2598	112	11			-5				
		2603	112	16			-2				
		2608	112	21			0				
SUI	63	2608	112	21	-30	20.0	0	3200			
		2613	112	26			2				
		2618	112	31			5				
		2623	112	36			10				
SUI	64	2594	112	7	-30	20.0	-10	3500			
		2599	112	12			-5				
		2604	112	17			-2				
		2627	112	40			0				
SUI	65	2627	112	40	-30	20.0	0	3500			
		2614	112	27			2				
		2619	112	32			5				
		2624	112	37			10				
SUI	66	2595	112	8	-30	20.0	-10	3800			
		2600	112	13			-5				
		2605	112	18			-2				
		2610	112	23			0				
SUI	67	2610	112	23	-30	20.0	0	3800			
		2615	112	28			2				
		2620	112	33			5				
		2625	112	38			10				
SUI	68	2596	112	9	-30	20.0	-10	4200			
		2601	112	14			-5				
		2606	112	19			-2				
		2611	112	24			0				
SUI	69	2611	112	24	-30	20.0	0	4200			
		2616	112	29			2				
		2621	112	34			5				
		2626	112	39			10				
SUI	70	2634	113	5	-45	20.0	-10	2800			
		2643	113	14			-5				
		2652	113	23			-2				
		2661	113	32			0				
SUI	71	2661	113	32	-45	20.0	0	2800			
		2670	113	41			2				
		2686	114	5			5				
		2695	114	14			10				
SUI	72	2635	113	6	-45	20.0	-10	3200			
		2644	113	15			-5				
		2653	113	24			-2				
		2662	113	33			0				
SUI	73	2662	113	33	-45	20.0	0	3200			
		2671	113	42			2				
		2687	114	6			5				
		2696	114	15			10				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	78	2636	113	7	-45	20.0	-10	3500			
		2645	113	16			-5				
		2654	113	25			-2				
		2704	114	23			0				
SUI	79	2704	114	23	-45	20.0	0	3500			
		2672	113	43			2				
		2688	114	7			5				
		2697	114	16			10				
SUI	84	2637	113	8	-45	20.0	-10	3800			
		2646	113	17			-5				
		2655	113	26			-2				
		2664	113	35			0				
SUI	85	2664	113	35	-45	20.0	0	3800			
		2673	113	44			2				
		2689	114	8			5				
		2698	114	17			10				
SUI	86	2638	113	9	-45	20.0	-10	4200			
		2647	113	18			-5				
		2656	113	27			-2				
		2665	113	36			0				
SUI	87	2665	113	36	-45	20.0	0	4200			
		2674	113	45			2				
		2690	114	9			5				
		2699	114	18			10				
SUI	88	2711	115	5	-60	20.0	-10	2800			
		2716	115	10			-5				
		2721	115	15			-2				
		2726	115	20			0				
SUI	89	2726	115	20	-60	20.0	0	2800			
		2731	115	25			2				
		2736	115	30			5				
		2741	115	35			10				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	90	2712	115	6	-60	20.0	-10	3200			
		2717	115	11			-5				
		2722	115	16			-2				
		2727	115	21			0				
SUI	91	2727	115	21	-60	20.0	0	3200			
		2732	115	26			2				
		2737	115	31			5				
		2742	115	36			10				
SUI	92	2713	115	7	-60	20.0	-10	3500			
		2718	115	12			-5				
		2723	115	17			-2				
		2746	115	40			0				
SUI	93	2746	115	40	-60	20.0	0	3500			
		2733	115	27			2				
		2738	115	32			5				
		2743	115	37			10				
SUI	94	2714	115	8	-60	20.0	-10	3800			
		2719	115	13			-5				
		2724	115	18			-2				
		2729	115	23			0				
SUI	95	2729	115	23	-60	20.0	0	3800			
		2734	115	28			2				
		2739	115	33			5				
		2744	115	38			10				
SUI	96	2715	115	9	-60	20.0	-10	4200			
		2720	115	14			-5				
		2725	115	19			-2				
		2730	115	24			0				
SUI	97	2730	115	24	-60	20.0	0	4200			
		2735	115	29			2				
		2740	115	34			5				
		2745	115	39			10				
SUI	98	2753	116	5	-90	20.0	-10	2800			
		2762	116	14			-5				
		2771	116	23			-2				
		2780	116	32			0				
SUI	99	2780	116	32	-90	20.0	0	2800			
		2789	116	41			2				
		2798	116	50			5				
		2807	116	59			10				
SUI	100	2754	116	6	-90	20.0	-10	3200			
		2763	116	15			-5				
		2772	116	24			-2				
		2781	116	33			0				
SUI	101	2781	116	33	-90	20.0	0	3200			
		2790	116	42			2				
		2799	116	51			5				
		2808	116	60			10				
SUI	106	2755	116	7	-90	20.0	-10	3500			
		2764	116	16			-5				
		2773	116	25			-2				
		2816	116	68			0				
SUI	107	2816	116	68	-90	20.0	0	3500			
		2791	116	43			2				
		2800	116	52			5				
		2809	116	61			10				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	114	2756	116	8	-90	20.0	-10	3800			
		2765	116	17			-5				
		2774	116	26			-2				
		2783	116	35			0				
SUI	115	2783	116	35	-90	20.0	0	3800			
		2792	116	44			2				
		2801	116	53			5				
		2810	116	62			10				
SUI	116	2757	116	9	-90	20.0	-10	4200			
		2766	116	18			-5				
		2775	116	27			-2				
		2784	116	36			0				
SUI	117	2784	116	36	-90	20.0	0	4200			
		2793	116	45			2				
		2802	116	54			5				
		2811	116	63			10				
SUI	9	2837	118	5	0	20.0	-40	3500			
		2838	118	6			-20				
		2839	118	7			-10				
		2840	118	8			-5				
		2841	118	9			-2				
		2862	118	30			0				
SUI	10	2862	118	30	0	20.0	0	3500			
		2843	118	11			2				
		2844	118	12			5				
		2845	118	13			10				
		2846	118	14			20				
		2847	118	15			40				
SUI	29	2852	118	20	0	40.0	-10	3500			
		2853	118	21			-5				
		2854	118	22			-2				
		2861	118	29			0				
SUI	30	2861	118	29	0	40.0	0	3500			
		2856	118	24			2				
		2858	118	26			10				
		2859	118	27			20				
		2860	118	28			40				
SUI	108	2823	117	5	-90	20.0	-10	3500			
		2824	117	6			-5				
		2825	117	7			-2				
		2830	117	12			0				
SUI	109	2830	117	12	-90	20.0	0	3500			
		2827	117	9			2				
		2828	117	10			5				
		2829	117	11			10				
SUI	5	2299	104	23	0	20.0	-10	3200		3800	
		2307	104	31			-5				
		2315	104	39			-2				
		2332	105	13			0				
SUI	6	2332	105	13	0	20.0	0	3200		3800	
		2339	105	20			2				
		2347	105	28			5				
		2355	105	36			10				
SUI	11	2300	104	24	0	20.0	-10	3800	3200	3800	3200
		2308	104	32			-5				
		2316	104	40			-2				
		2329	105	10			0				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	12	2329	105	10	0	20.0	0	3800	3200	3800	3200
		2340	105	21			2				
		2348	105	29			5				
		2356	105	37			10				
SUI	13	2298	104	22	0	20.0	-10	3800		3200	
		2306	104	30			-5				
		2314	104	38			-2				
		2331	105	12			0				
SUI	14	2331	105	12	0	20.0	0	3800		3200	
		2338	105	19			2				
		2346	105	27			5				
		2354	105	35			10				
SUI	22	2442	107	28	0	40.0	5	2800		4200	
		2457	108	11			10				
SUI	25	2393	106	24	0	40.0	-10	3200		3800	
		2401	106	32			-5				
		2409	106	40			-2				
		2425	107	11			0				
SUI	26	2425	107	11	0	40.0	0	3200		3800	
		2434	107	20			2				
		2441	107	27			5				
		2456	108	10			10				
SUI	31	2394	106	25	0	40.0	-10	3800	3200	3800	3200
		2402	106	33			-5				
		2410	106	41			-2				
		2426	107	12			0				
SUI	32	2426	107	12	0	40.0	0	3800	3200	3800	3200
		2435	107	21			2				
		2443	107	29			5				
		2458	108	12			10				
SUI	33	2392	106	23	0	40.0	-10	3800		3200	
		2400	106	31			-5				
		2408	106	39			-2				
		2424	107	10			0				
SUI	34	2424	107	10	0	40.0	0	3800		3200	
		2433	107	19			2				
SUI	46	2509	110	22	-5	20.0	-10	3200		3800	
		2518	110	31			-5				
		2527	110	40			-2				
		2536	110	49			0				
SUI	47	2536	110	49	-5	20.0	0	3200		3800	
		2553	111	11			2				
		2562	111	20			5				
		2571	111	29			10				
SUI	48	2511	110	24	-5	20.0	-10	3200	3800	3200	3800
		2520	110	33			-5				
		2529	110	42			-2				
		2538	110	51			0				
SUI	49	2538	110	51	-5	20.0	0	3200	3800	3200	3800
		2555	111	13			2				
		2564	111	22			5				
		2573	111	31			10				
SUI	52	2510	110	23	-5	20.0	-10	3800	3200	3800	3200
		2519	110	32			-5				
		2528	110	41			-2				
		2537	110	50			0				
SUI	53	2537	110	50	-5	20.0	0	3800	3200	3800	3200
		2554	111	12			2				
		2563	111	21			5				
		2572	111	30			10				
SUI	54	2508	110	21	-5	20.0	-10	3800		3200	
		2517	110	30			-5				
		2526	110	39			-2				
		2535	110	48			0				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	55	2535	110	48	-5	20.0	0	3800		3200	
		2552	111	10			2				
		2561	111	19			5				
		2570	111	28			10				
SUI	74	2640	113	11	-45	20.0	-10	3200		3800	
		2649	113	20			-5				
		2658	113	29			-2				
		2667	113	38			0				
SUI	75	2667	113	38	-45	20.0	0	3200		3800	
		2676	113	47			2				
		2692	114	11			5				
		2701	114	20			10				
SUI	76	2642	113	13	-45	20.0	-10	3200	3800	3200	3800
		2651	113	22			-5				
		2660	113	31			-2				
		2669	113	40			0				
SUI	77	2669	113	40	-45	20.0	0	3200	3800	3200	3800
		2678	113	49			2				
		2694	114	13			5				
		2703	114	22			10				
SUI	80	2641	113	12	-45	20.0	-10	3800	3200	3800	3200
		2650	113	21			-5				
		2659	113	30			-2				
		2668	113	39			0				
SUI	81	2668	113	39	-45	20.0	0	3800	3200	3800	3200
		2677	113	48			2				
		2693	114	12			5				
		2702	114	21			10				
SUI	82	2639	113	10	-45	20.0	-10	3800		3200	
		2648	113	19			-5				
		2657	113	28			-2				
		2666	113	37			0				
SUI	83	2666	113	37	-45	20.0	0	3800		3200	
		2675	113	46			2				
		2691	114	10			5				
		2700	114	19			10				
SUI	102	2759	116	11	-90	20.0	-10	3200		3800	
		2768	116	20			-5				
		2777	116	29			-2				
		2786	116	38			0				
SUI	103	2786	116	38	-90	20.0	0	3200		3800	
		2795	116	47			2				
		2804	116	56			5				
		2813	116	65			10				
SUI	104	2761	116	13	-90	20.0	-10	3200	3800	3200	3800
		2770	116	22			-5				
		2779	116	31			-2				
		2788	116	40			0				
SUI	105	2788	116	40	-90	20.0	0	3200	3800	3200	3800
		2797	116	49			2				
		2806	116	58			5				
		2815	116	67			10				
SUI	110	2760	116	12	-90	20.0	-10	3800	3200	3800	3200
		2769	116	21			-5				
		2778	116	30			-2				
		2787	116	39			0				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	111	2787	116	39	-90	20.0	0	3800	3200	3800	3200
		2796	116	48			2				
		2805	116	57			5				
		2814	116	66			10				
SUI	112	2758	116	10	-90	20.0	-10	3800		3200	
		2767	116	19			-5				
		2776	116	28			-2				
		2785	116	37			0				
SUI	113	2785	116	37	-90	20.0	0	3800		3200	
		2794	116	46			2				
		2803	116	55			5				
		2812	116	64			10				

SUI Forward Flight Sweep

SUI	1	2281	104	5	0	20.4	-40	2800
		2374	106	5		40.3		
SUI	2	2282	104	6	0	20.8	-40	3200
		2375	106	6		40.2		
SUI	3	2283	104	7	0	20.6	-40	3500
		2376	106	7		40.5		
SUI	4	2284	104	8	0	20.8	-40	3800
		2377	106	8		40.3		
SUI	5	2285	104	9	0	20.3	-40	4200
		2378	106	9		40.3		
		2476	109	5		60.7		
SUI	6	2286	104	10	0	20.1	-40	4500
		2379	106	10		40.2		
		2477	109	6		60.7		
SUI	7	2287	104	11	0	20.0	-20	2800
		2381	106	12		39.6		
SUI	8	2288	104	12	0	20.4	-20	3200
		2382	106	13		40.5		
SUI	9	2289	104	13	0	20.5	-20	3500
		2383	106	14		40.2		
SUI	10	2291	104	15	0	20.1	-20	3800
		2384	106	15		40.1		
SUI	11	2292	104	16	0	20.6	-20	4200
		2385	106	16		39.6		
		2482	109	11		60.6		
SUI	12	2386	106	17	0	40.2	-20	4500
		2483	109	12		60.7		
SUI	13	2293	104	17	0	20.8	-10	2800
		2387	106	18		40.0		
SUI	14	2294	104	18	0	20.4	-10	3200
		2388	106	19		40.3		
SUI	16	2295	104	19	0	20.2	-10	3500
		2389	106	20		40.1		
SUI	20	2296	104	20	0	20.6	-10	3800
		2390	106	21		40.2		
SUI	21	2297	104	21	0	19.7	-10	4200
		2391	106	22		39.8		
SUI	22	2301	104	25	0	20.5	-5	2800
		2395	106	26		40.3		
SUI	23	2302	104	26	0	20.6	-5	3200
		2396	106	27		39.9		
SUI	25	2303	104	27	0	20.3	-5	3500
		2397	106	28		40.0		
SUI	29	2304	104	28	0	20.0	-5	3800
		2398	106	29		39.8		
SUI	30	2305	104	29	0	20.4	-5	4200
		2399	106	30		39.9		

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	31	2309	104	33	0	19.5	-2	2800			
		2403	106	34		40.3					
SUI	32	2310	104	34	0	20.3	-2	3200			
		2404	106	35		40.4					
SUI	34	2311	104	35	0	19.9	-2	3500			
		2405	106	36		39.8					
SUI	38	2312	104	36	0	20.6	-2	3800			
		2406	106	37		40.2					
SUI	39	2313	104	37	0	21.0	-2	4200			
		2407	106	38		40.4					
SUI	40	2324	105	5	0	19.7	0	2800			
		2419	107	5		40.8					
SUI	41	2325	105	6	0	19.6	0	3200			
		2420	107	6		40.4					
SUI	42	2332	105	13	0	20.3	0	3200			
		2425	107	11		41.0					
SUI	43	2486	109	15	0	0.0	0	3500			
		2469	108	23		20.0					
		2411	106	42		40.5					
SUI	47	2318	104	42	0	0.0	0	3800			
		2327	105	8		19.8					
		2422	107	8		40.5					
SUI	48	2328	105	9	0	19.9	0	4200			
		2423	107	9		40.7					
SUI	49	2333	105	14	0	20.7	2	2800			
		2427	107	13		40.4					
SUI	50	2334	105	15	0	20.5	2	3200			
		2429	107	15		40.2					
SUI	52	2335	105	16	0	20.0	2	3500			
		2430	107	16		40.3					
SUI	56	2336	105	17	0	20.7	2	3800			
		2431	107	17		40.1					
SUI	57	2337	105	18	0	20.2	2	4200			
		2432	107	18		40.7					
SUI	58	2341	105	22	0	20.1	5	2800			
		2436	107	22		40.3					
SUI	59	2342	105	23	0	20.0	5	3200			
		2437	107	23		40.7					
SUI	61	2343	105	24	0	20.2	5	3500			
		2438	107	24		40.9					
SUI	63	2344	105	25	0	20.2	5	3800			
		2439	107	25		40.5					
SUI	64	2345	105	26	0	20.4	5	4200			
		2440	107	26		40.5					
SUI	65	2349	105	30	0	19.9	10	2800			
		2452	108	6		40.6					
SUI	66	2350	105	31	0	20.0	10	3200			
		2453	108	7		39.9					
SUI	68	2351	105	32	0	19.9	10	3500			
		2454	108	8		40.5					
SUI	71	2352	105	33	0	20.2	10	3800			
		2455	108	9		40.0					
SUI	72	2357	105	38	0	19.9	20	2800			
		2460	108	14		40.5					
SUI	73	2358	105	39	0	19.6	20	3200			
		2461	108	15		40.3					
SUI	74	2359	105	40	0	19.4	20	3500			
		2462	108	16		39.8					
SUI	76	2360	105	41	0	18.8	20	3800			
		2463	108	17		40.0					
SUI	77	2362	105	43	0	20.8	40	2800			
		2466	108	20		40.2					
SUI	78	2363	105	44	0	20.3	40	3200			
		2467	108	21		39.6					
SUI	79	2364	105	45	0	19.7	40	3500			
		2468	108	22		39.9					
SUI	81	2586	111	44	-5	0.0	0	3500			
		2539	110	52		20.0					
SUI	82	2628	112	41	-30	0.0	0	3500			
		2609	112	22		20.5					

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	83	2705	114	24	-45	0.0	0	3500			
		2663	113	34		20.2					
SUI	84	2747	115	41	-60	0.0	0	3500			
		2710	115	4		20.1					
SUI	85	2817	116	69	-90	0.0	0	3500			
		2816	116	68		20.0					
SUI	17	2839	118	7	0	20.4	-10	3500			
		2852	118	20		40.3					
SUI	26	2840	118	8	0	19.6	-5	3500			
		2853	118	21	0	40.4					
SUI	35	2841	118	9	0	19.9	-2	3500			
		2854	118	22		40.5					
SUI	44	2842	118	10	0	20.1	0	3500			
		2855	118	23		40.2					
SUI	53	2843	118	11	0	20.4	2	3500			
		2856	118	24		40.0					
SUI	69	2845	118	13	0	20.1	10	3500			
		2858	118	26		40.5					
SUI	75	2846	118	14	0	20.2	20	3500			
		2859	118	27		40.3					
SUI	80	2847	118	15	0	20.1	40	3500			
		2860	118	28		40.4					
SUI	86	2831	117	13	-90	0.0	0	3500			
		2826	117	8		20.3					
SUI	15	2299	104	23	0	19.5	-10	3200		3800	
		2393	106	24		40.4					
SUI	18	2300	104	24	0	19.4	-10	3800	3200	3800	3200
		2394	106	25		40.1					
SUI	19	2298	104	22	0	19.3	-10	3800		3200	
		2392	106	23		39.5					
SUI	24	2307	104	31	0	19.8	-5	3200		3800	
		2401	106	32		40.2					
SUI	27	2308	104	32	0	19.8	-5	3800	3200	3800	3200
		2402	106	33		40.2					
SUI	28	2306	104	30	0	19.9	-5	3800		3200	
		2400	106	31		40.7					
SUI	33	2315	104	39	0	19.5	-2	3200		3800	
		2409	106	40		40.3					
SUI	36	2316	104	40	0	19.8	-2	3800	3200	3800	3200
		2410	106	41		39.8					
SUI	37	2314	104	38	0	19.6	-2	3800		3200	
		2408	106	39		40.4					
SUI	45	2329	105	10	0	19.9	0	3800	3200	3800	3200
		2426	107	12		41.0					
SUI	46	2331	105	12	0	20.3	0	3800		3200	
		2424	107	10		40.4					
SUI	51	2339	105	20	0	20.1	2	3200		3800	
		2434	107	20		40.9					

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	54	2340	105	21	0	19.9	2	3800	3200	3800	3200
		2435	107	21		40.6					
SUI	55	2338	105	19	0	20.5	2	3800		3200	
		2433	107	19		40.1					
SUI	60	2347	105	28	0	20.0	5	3200		3800	
		2441	107	27		40.3					
SUI	67	2355	105	36	0	20.0	10	3200		3800	
		2456	108	10		40.1					
SUI	70	2356	105	37	0	19.7	10	3800	3200	3800	3200
		2458	108	12		40.2					
SUI Yaw Sweep											
SUI	1	2487	109	16	0	0.0	0	0			
		2587	111	45	-5						
		2629	112	42	-30						
		2706	114	25	-45						
		2748	115	42	-60						
		2818	116	70	-90						
SUI	2	2486	109	15	0	0.0	0	3500			
		2586	111	44	-5						
		2628	112	41	-30						
		2705	114	24	-45						
		2747	115	41	-60						
		2817	116	69	-90						
SUI	3	2281	104	5	0	20.0	-40	2800			
		2492	110	5	-5						
SUI	4	2282	104	6	0	20.0	-40	3200			
		2493	110	6	-5						
SUI	5	2283	104	7	0	20.0	-40	3500			
		2494	110	7	-5						
SUI	6	2284	104	8	0	20.0	-40	3800			
		2495	110	8	-5						
SUI	7	2285	104	9	0	20.0	-40	4200			
		2496	110	9	-5						
SUI	8	2286	104	10	0	20.0	-40	4500			
		2497	110	10	-5						
SUI	9	2288	104	12	0	20.0	-20	3200			
		2499	110	12	-5						
SUI	10	2289	104	13	0	20.0	-20	3500			
		2500	110	13	-5						
SUI	11	2291	104	15	0	20.0	-20	3800			
		2501	110	14	-5						
SUI	12	2292	104	16	0	20.0	-20	4200			
		2502	110	15	-5						
SUI	13	2293	104	17	0	20.0	-10	2800			
		2503	110	16	-5						
		2592	112	5	-30						
		2634	113	5	-45						
		2711	115	5	-60						
		2753	116	5	-90						
SUI	14	2294	104	18	0	20.0	-10	3200			
		2504	110	17	-5						
		2593	112	6	-30						
		2635	113	6	-45						
		2712	115	6	-60						
		2754	116	6	-90						
SUI	17	2295	104	19	0	20.0	-10	3500			
		2505	110	18	-5						
		2594	112	7	-30						
		2636	113	7	-45						
		2713	115	7	-60						
		2755	116	7	-90						
SUI	21	2296	104	20	0	20.0	-10	3800			
		2506	110	19	-5						
		2595	112	8	-30						
		2637	113	8	-45						
		2714	115	8	-60						
		2756	116	8	-90						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	22	2297	104	21	0	20.0	-10	4200			
		2507	110	20	-5						
		2596	112	9	-30						
		2638	113	9	-45						
		2715	115	9	-60						
		2757	116	9	-90						
SUI	23	2301	104	25	0	20.0	-5	2800			
		2512	110	25	-5						
		2597	112	10	-30						
		2643	113	14	-45						
		2716	115	10	-60						
		2762	116	14	-90						
SUI	24	2302	104	26	0	20.0	-5	3200			
		2513	110	26	-5						
		2598	112	11	-30						
		2644	113	15	-45						
		2717	115	11	-60						
		2763	116	15	-90						
SUI	27	2303	104	27	0	20.0	-5	3500			
		2514	110	27	-5						
		2599	112	12	-30						
		2645	113	16	-45						
		2718	115	12	-60						
		2764	116	16	-90						
SUI	31	2304	104	28	0	20.0	-5	3800			
		2515	110	28	-5						
		2600	112	13	-30						
		2646	113	17	-45						
		2719	115	13	-60						
		2765	116	17	-90						
SUI	32	2305	104	29	0	20.0	-5	4200			
		2516	110	29	-5						
		2601	112	14	-30						
		2647	113	18	-45						
		2720	115	14	-60						
		2766	116	18	-90						
SUI	33	2309	104	33	0	20.0	-2	2800			
		2521	110	34	-5						
		2602	112	15	-30						
		2652	113	23	-45						
		2721	115	15	-60						
		2771	116	23	-90						
SUI	34	2310	104	34	0	20.0	-2	3200			
		2522	110	35	-5						
		2603	112	16	-30						
		2653	113	24	-45						
		2722	115	16	-60						
		2772	116	24	-90						
SUI	37	2311	104	35	0	20.0	-2	3500			
		2523	110	36	-5						
		2604	112	17	-30						
		2654	113	25	-45						
		2723	115	17	-60						
		2773	116	25	-90						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	41	2312	104	36	0	20.0	-2	3800			
		2524	110	37	-5						
		2605	112	18	-30						
		2655	113	26	-45						
		2724	115	18	-60						
		2774	116	26	-90						
SUI	42	2313	104	37	0	20.0	-2	4200			
		2525	110	38	-5						
		2606	112	19	-30						
		2656	113	27	-45						
		2725	115	19	-60						
		2775	116	27	-90						
SUI	43	2324	105	5	0	20.0	0	2800			
		2530	110	43	-5						
		2607	112	20	-30						
		2661	113	32	-45						
		2726	115	20	-60						
		2780	116	32	-90						
SUI	44	2325	105	6	0	20.0	0	3200			
		2531	110	44	-5						
		2608	112	21	-30						
		2662	113	33	-45						
		2727	115	21	-60						
		2781	116	33	-90						
SUI	47	2485	109	14	0	20.0	0	3500			
		2585	111	43	-5						
		2627	112	40	-30						
		2704	114	23	-45						
		2746	115	40	-60						
		2816	116	68	-90						
SUI	51	2327	105	8	0	20.0	0	3800			
		2533	110	46	-5						
		2610	112	23	-30						
		2664	113	35	-45						
		2729	115	23	-60						
		2783	116	35	-90						
SUI	52	2328	105	9	0	20.0	0	4200			
		2534	110	47	-5						
		2611	112	24	-30						
		2665	113	36	-45						
		2730	115	24	-60						
		2784	116	36	-90						
SUI	53	2333	105	14	0	20.0	2	2800			
		2547	111	5	-5						
		2612	112	25	-30						
		2670	113	41	-45						
		2731	115	25	-60						
		2789	116	41	-90						
SUI	54	2334	105	15	0	20.0	2	3200			
		2548	111	6	-5						
		2613	112	26	-30						
		2671	113	42	-45						
		2732	115	26	-60						
		2790	116	42	-90						
SUI	57	2335	105	16	0	20.0	2	3500			
		2549	111	7	-5						
		2614	112	27	-30						
		2672	113	43	-45						
		2733	115	27	-60						
		2791	116	43	-90						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	61	2336	105	17	0	20.0	2	3800			
		2550	111	8	-5						
		2615	112	28	-30						
		2673	113	44	-45						
		2734	115	28	-60						
		2792	116	44	-90						
SUI	62	2337	105	18	0	20.0	2	4200			
		2551	111	9	-5						
		2616	112	29	-30						
		2674	113	45	-45						
		2735	115	29	-60						
		2793	116	45	-90						
SUI	63	2341	105	22	0	20.0	5	2800			
		2556	111	14	-5						
		2617	112	30	-30						
		2686	114	5	-45						
		2736	115	30	-60						
		2798	116	50	-90						
SUI	64	2342	105	23	0	20.0	5	3200			
		2557	111	15	-5						
		2618	112	31	-30						
		2687	114	6	-45						
		2737	115	31	-60						
		2799	116	51	-90						
SUI	67	2343	105	24	0	20.0	5	3500			
		2558	111	16	-5						
		2619	112	32	-30						
		2688	114	7	-45						
		2738	115	32	-60						
		2800	116	52	-90						
SUI	71	2344	105	25	0	20.0	5	3800			
		2559	111	17	-5						
		2620	112	33	-30						
		2689	114	8	-45						
		2739	115	33	-60						
		2801	116	53	-90						
SUI	72	2345	105	26	0	20.0	5	4200			
		2560	111	18	-5						
		2621	112	34	-30						
		2690	114	9	-45						
		2740	115	34	-60						
		2802	116	54	-90						
SUI	73	2349	105	30	0	20.0	10	2800			
		2565	111	23	-5						
		2622	112	35	-30						
		2695	114	14	-45						
		2741	115	35	-60						
		2807	116	59	-90						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	74	2350	105	31	0	20.0	10	3200			
		2566	111	24	-5						
		2623	112	36	-30						
		2696	114	15	-45						
		2742	115	36	-60						
		2808	116	60	-90						
SUI	77	2351	105	32	0	20.0	10	3500			
		2567	111	25	-5						
		2624	112	37	-30						
		2697	114	16	-45						
		2743	115	37	-60						
		2809	116	61	-90						
SUI	81	2352	105	33	0	20.0	10	3800			
		2568	111	26	-5						
		2625	112	38	-30						
		2698	114	17	-45						
		2744	115	38	-60						
		2810	116	62	-90						
SUI	82	2353	105	34	0	20.0	10	4200			
		2569	111	27	-5						
		2626	112	39	-30						
		2699	114	18	-45						
		2745	115	39	-60						
		2811	116	63	-90						
SUI	83	2357	105	38	0	20.0	20	2800			
		2574	111	32	-5						
SUI	84	2358	105	39	0	20.0	20	3200			
		2575	111	33	-5						
SUI	85	2359	105	40	0	20.0	20	3500			
		2576	111	34	-5						
SUI	86	2360	105	41	0	20.0	20	3800			
		2577	111	35	-5						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	87	2361	105	42	0	20.0	20	4200			
		2578	111	36	-5						
SUI	88	2362	105	43	0	20.0	40	2800			
		2579	111	37	-5						
SUI	89	2363	105	44	0	20.0	40	3200			
		2580	111	38	-5						
SUI	90	2364	105	45	0	20.0	40	3500			
		2581	111	39	-5						
SUI	91	2365	105	46	0	20.0	40	3800			
		2583	111	41	-5						
SUI	92	2366	105	47	0	20.0	40	4200			
		2584	111	42	-5						
SUI	18	2839	118	7	0	20.0	-10	3500			
		2823	117	5	-90						
SUI	28	2840	118	8	0	20.0	-5	3500			
		2824	117	6	-90						
SUI	38	2841	118	9	0	20.0	-2	3500			
		2825	117	7	-90						
SUI	48	2862	118	30	0	20.0	0	3500			
		2830	117	12	-90						
SUI	58	2843	118	11	0	20.0	2	3500			
		2827	117	9	-90						
SUI	68	2844	118	12	0	20.0	5	3500			
		2828	117	10	-90						
SUI	78	2845	118	13	0	20.0	10	3500			
		2829	117	11	-90						
SUI	15	2299	104	23	0	20.0	-10	3200		3800	
		2509	110	22	-5						
		2640	113	11	-45						
		2759	116	11	-90						
SUI	16	2511	110	24	-5	20.0	-10	3200	3800	3200	3800
		2642	113	13	-45						
		2761	116	13	-90						
SUI	19	2300	104	24	0	20.0	-10	3800	3200	3800	3200
		2510	110	23	-5						
		2641	113	12	-45						
		2760	116	12	-90						
SUI	20	2298	104	22	0	20.0	-10	3800		3200	
		2508	110	21	-5						
		2639	113	10	-45						
		2758	116	10	-90						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	25	2307	104	31	0	20.0	-5	3200		3800	
		2518	110	31	-5						
		2649	113	20	-45						
		2768	116	20	-90						
SUI	26	2520	110	33	-5	20.0	-5	3200	3800	3200	3800
		2651	113	22	-45						
		2770	116	22	-90						
SUI	29	2308	104	32	0	20.0	-5	3800	3200	3800	3200
		2519	110	32	-5						
		2650	113	21	-45						
		2769	116	21	-90						
SUI	30	2306	104	30	0	20.0	-5	3800		3200	
		2517	110	30	-5						
		2648	113	19	-45						
		2767	116	19	-90						
SUI	35	2315	104	39	0	20.0	-2	3200		3800	
		2527	110	40	-5						
		2658	113	29	-45						
		2777	116	29	-90						
SUI	36	2529	110	42	-5	20.0	-2	3200	3800	3200	3800
		2660	113	31	-45						
		2779	116	31	-90						
SUI	39	2316	104	40	0	20.0	-2	3800	3200	3800	3200
		2528	110	41	-5						
		2659	113	30	-45						
		2778	116	30	-90						
SUI	40	2314	104	38	0	20.0	-2	3800		3200	
		2526	110	39	-5						
		2657	113	28	-45						
		2776	116	28	-90						
SUI	45	2332	105	13	0	20.0	0	3200		3800	
		2536	110	49	-5						
		2667	113	38	-45						
		2786	116	38	-90						
SUI	46	2330	105	11	0	20.0	0	3200	3800	3200	3800
		2538	110	51	-5						
		2669	113	40	-45						
		2788	116	40	-90						
SUI	49	2329	105	10	0	20.0	0	3800	3200	3800	3200
		2537	110	50	-5						
		2668	113	39	-45						
		2787	116	39	-90						
SUI	50	2331	105	12	0	20.0	0	3800		3200	
		2535	110	48	-5						
		2666	113	37	-45						
		2785	116	37	-90						
SUI	55	2339	105	20	0	20.0	2	3200		3800	
		2553	111	11	-5						
		2676	113	47	-45						
		2795	116	47	-90						
SUI	56	2555	111	13	-5	20.0	2	3200	3800	3200	3800
		2678	113	49	-45						
		2797	116	49	-90						
SUI	59	2340	105	21	0	20.0	2	3800	3200	3800	3200
		2554	111	12	-5						
		2677	113	48	-45						
		2796	116	48	-90						
SUI	60	2338	105	19	0	20.0	2	3800		3200	
		2552	111	10	-5						
		2675	113	46	-45						
		2794	116	46	-90						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	65	2347	105	28	0	20.0	5	3200		3800	
		2562	111	20	-5						
		2692	114	11	-45						
		2804	116	56	-90						
SUI	66	2564	111	22	-5	20.0	5	3200	3800	3200	3800
		2694	114	13	-45						
		2806	116	58	-90						
SUI	69	2348	105	29	0	20.0	5	3800	3200	3800	3200
		2563	111	21	-5						
		2693	114	12	-45						
		2805	116	57	-90						
SUI	70	2346	105	27	0	20.0	5	3800		3200	
		2561	111	19	-5						
		2691	114	10	-45						
		2803	116	55	-90						
SUI	75	2355	105	36	0	20.0	10	3200		3800	
		2571	111	29	-5						
		2701	114	20	-45						
		2813	116	65	-90						
SUI	76	2573	111	31	-5	20.0	10	3200	3800	3200	3800
		2703	114	22	-45						
		2815	116	67	-90						
SUI	79	2356	105	37	0	20.0	10	3800	3200	3800	3200
		2572	111	30	-5						
		2702	114	21	-45						
		2814	116	66	-90						
SUI	80	2354	105	35	0	20.0	10	3800		3200	
		2570	111	28	-5						
		2700	114	19	-45						
		2812	116	64	-90						
SUI Duplicate Runs											
SUI	1	2751	116	3	-90	0	0	3500			
		2817	116	69	-90	0	0				
SUI	2	2752	116	4	-90	19.8	0	3500			
		2782	116	34	-90	20	0				
		2816	116	68	-90	20	0				
SUI	4	2709	115	3	-60	0	0	3500			
		2747	115	41	-60	0	0				
SUI	5	2710	115	4	-60	20.1	0	3500			
		2728	115	22	-60	19.7	0				
		2746	115	40	-60	19.5	0				
SUI	6	2632	113	3	-45	0	0	3500			
		2680	113	51	-45	0	0				
		2684	114	3	-45	0	0				
		2705	114	24	-45	0	0				
SUI	7	2633	113	4	-45	19.9	0	3500			
		2663	113	34	-45	20.2	0				
		2679	113	50	-45	20.4	0				
		2685	114	4	-45	19.9	0				
		2704	114	23	-45	19.9	0				
SUI	8	2590	112	3	-30	0	0	3500			
		2628	112	41	-30	0	0				
SUI	9	2591	112	4	-30	21.1	0	3500			
		2609	112	22	-30	20.5	0				
		2627	112	40	-30	20.5	0				
SUI	10	2498	110	11	-5	20.7	-20	3800			
		2501	110	14	-5	20	-20				
SUI	11	2490	110	3	-5	0	0	3500			
		2540	110	53	-5	0	0				
		2541	110	54	-5	0	0				
		2545	111	3	-5	0	0				
		2586	111	44	-5	0	0				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	12	2491	110	4	-5	18.8	0	3500			
		2532	110	45	-5	20.4	0				
		2539	110	52	-5	20	0				
		2546	111	4	-5	20.6	0				
		2585	111	43	-5	19.9	0				
SUI	13	2290	104	14	0	21.1	-20	3800			
		2291	104	15	0	20.1	-20				
SUI	14	2271	102	5	0	0	0	3500			
		2279	104	3	0	0	0				
		2322	105	3	0	0	0				
		2368	105	49	0	0	0				
		2372	106	3	0	0	0				
		2413	106	44	0	0	0				
SUI	15	2417	107	3	0	0	0	3500			
		2445	107	31	0	0	0				
		2449	108	3	0	0	0				
		2470	108	24	0	0	0				
		2474	109	3	0	0	0				
		2486	109	15	0	0	0				
SUI	16	2280	104	4	0	21	0	3500			
		2317	104	41	0	19.5	0				
		2323	105	4	0	19.8	0				
		2326	105	7	0	19.5	0				
		2367	105	48	0	20.5	0				
		2373	106	4	0	20.5	0				
SUI	17	2412	106	43	0	20.7	0	3500			
		2418	107	4	0	20.3	0				
		2444	107	30	0	20.4	0				
		2450	108	4	0	20.7	0				
		2469	108	23	0	20	0				
		2475	109	4	0	20.7	0				
SUI	19	2411	106	42	0	40.5	0	3500			
		2421	107	7	0	40.8	0				
		2451	108	5	0	40.6	0				
SUI	21	2428	107	14	0	40	2	3200			
		2429	107	15	0	40.2	2				
SUI	3	2822	117	4	-90	20.6	0	3500			
		2826	117	8	-90	20.3	0				
		2830	117	12	-90	19.8	0				
SUI	18	2836	118	4	0	20.3	0	3500			
		2842	118	10	0	20.1	0				
		2848	118	16	0	20.6	0				
		2862	118	30	0	20.2	0				
SUI	20	2849	118	17	0	40.3	0	3500			
		2855	118	23	0	40.2	0				
		2861	118	29	0	40.4	0				

Phantom RPM Sweep

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Phantom	1	187	16	7	0	20	-40	4200			
		188	16	8				4800			
		186	16	6				5300			
		189	16	9				5800			
		190	16	10				6400			
Phantom	2	284	18	6	0	40	-40	4200			
		285	18	7				4800			
		283	18	5				5300			
		286	18	8				5800			
		287	18	9				6400			
Phantom	3	151	14	13	0	80	-40	5300			
		152	14	14				6400			
Phantom	4	200	16	19	0	20	-30	4200			
		201	16	20				4800			
		199	16	18				5300			
		202	16	21				5800			
		203	16	22				6400			
Phantom	5	295	18	17	0	40	-30	4200			
		296	18	18				4800			
		294	18	16				5300			
		297	18	19				5800			
		298	18	20				6400			
Phantom	6	209	16	28	0	20	-20	4300			
		210	16	29				4800			
		208	16	27				5300			
		211	16	30				5800			
		212	16	31				6400			
Phantom	7	303	18	25	0	40	-20	4200			
		304	18	26				4800			
		122	10	10				5300			
		305	18	27				5800			
		306	18	28				6400			
Phantom	8	218	16	37	0	20	-10	4200			
		223	16	42				4800			
		217	16	36				5300			
		224	16	43				5800			
		225	16	44				6400			
Phantom	9	328	19	13	0	40	-5	4200			
		329	19	14				4800			
		118	10	6				5300			
		331	19	16				5800			
		332	19	17				6400			
Phantom	10	320	19	5	0	40	-10	4200			
		321	19	6				4800			
		119	10	7				5300			
		326	19	11				5800			
		324	19	9				6400			
Phantom	11	234	16	53	0	20	-5	4200			
		235	16	54				4800			
		233	16	52				5300			
		236	16	55				5800			
		237	16	56				6400			
Phantom	12	243	16	62	0	20	-2	4200			
		244	16	63				4800			
		242	16	61				5300			
		245	16	64				5800			
		246	16	65				6400			

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Phantom	13	249	16	68	0	20	0.11	4200			
		250	16	69				4800			
		248	16	67				5300			
		251	16	70				5800			
		252	16	71				6400			
Phantom	14	347	19	32	0	40	0	4200			
		348	19	33				4800			
		117	10	5				5300			
		350	19	35				5800			
		351	19	36				6400			
Phantom	15	339	19	24	0	40	-2	4200			
		340	19	25				4800			
		341	19	26				5300			
		342	19	27				5800			
		343	19	28				6400			
Phantom	16	272	17	7	0	84	0	4200			
		273	17	8				4800			
		271	17	6				5300			
Phantom	17	274	17	9	0	84	5	4200			
		275	17	10				4800			
		171	15	10				5300			
Phantom	18	174	15	13	0	84	20	4200			
		173	15	12				5300			
Phantom	19	367	21	1	0	0	0	0			
		369	21	3				5000			
Phantom Forward Flight Sweep											
Phantom	1	187	16	7	0	21.2	-40	4200			
		284	18	6		41.9					
Phantom	3	188	16	8	0	21.8	-40	4800			
		285	18	7		42.2					
Phantom	5	198	16	17	0	20.7	-40	5300			
		283	18	5		42.5					
		151	14	13		80.8					
Phantom	8	189	16	9	0	21.3	-40	5800			
		286	18	8		42.3					
Phantom	11	190	16	10	0	21.1	-40	6400			
		287	18	9		42.3					
		152	14	14		81.0					
Phantom	12	200	16	19	0	20.8	-30	4200			
		295	18	17		42.0					
Phantom	13	201	16	20	0	20.9	-30	4800			
		296	18	18		42.1					
Phantom	15	207	16	26	0	21.0	-30	5300			
		294	18	16		42.4					
		150	14	12		80.8					
Phantom	18	202	16	21	0	21.1	-30	5800			
		297	18	19		42.5					
Phantom	19	203	16	22	0	21.3	-30	6400			
		298	18	20		42.4					
Phantom	20	210	16	29	0	21.5	-20	4800			
		304	18	26		41.9					
Phantom	22	216	16	35	0	20.8	-20	5300			
		147	14	9		40.3					
		148	14	10		60.7					
		149	14	11		80.7					

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Phantom	25	211	16	30	0	21.5	-20	5800			
		305	18	27		42.1					
Phantom	26	212	16	31	0	21.9	-20	6400			
		306	18	28		41.4					
Phantom	27	121	10	9	0	40.4	-15	5300			
		146	14	8		40.7					
Phantom	28	218	16	37	0	20.7	-10	4200			
		320	19	5		42.6					
Phantom	29	223	16	42	0	20.0	-10	4800			
		321	19	6		42.8					
Phantom	31	221	16	40	0	0.0	-10	5300			
		217	16	36		20.9					
		145	14	7		40.3					
		155	14	17		80.6					
Phantom	34	224	16	43	0	21.1	-10	5800			
		323	19	8		43.1					
Phantom	35	225	16	44	0	21.0	-10	6400			
		324	19	9		42.9					
Phantom	36	234	16	53	0	20.6	-5	4200			
		328	19	13		42.9					
Phantom	37	235	16	54	0	20.8	-5	4800			
		329	19	14		42.7					
Phantom	39	233	16	52	0	21.2	-5	5300			
		118	10	6		40.4					
		156	14	18		80.7					
Phantom	42	236	16	55	0	21.1	-5	5800			
		331	19	16		42.4					
Phantom	43	237	16	56	0	20.7	-5	6400			
		332	19	17		42.6					
Phantom	44	243	16	62	0	20.9	-2	4200			
		339	19	24		42.6					
Phantom	45	244	16	63	0	21.1	-2	4800			
		340	19	25		42.2					
Phantom	46	247	16	66	0	21.0	-2	5300			
		341	19	26		42.1					
Phantom	47	245	16	64	0	20.7	-2	5800			
		342	19	27		42.2					
Phantom	48	246	16	65	0	21.1	-2	6400			
		343	19	28		41.9					
Phantom	49	249	16	68	0	21.0	0	4200			
		347	19	32		42.2					
		272	17	7		84.1					
Phantom	52	250	16	69	0	21.0	0	4800			
		348	19	33		42.1					
		273	17	8		84.2					
Phantom	56	361	19	46	0	0.0	0	5300			
		142	14	4		20.0					
		143	14	5		39.9					
		157	14	19		80.4					
Phantom	59	251	16	70	0	20.7	0	5800			
		350	19	35		42.2					
Phantom	62	252	16	71	0	20.6	0	6400			
		351	19	36		42.1					
Phantom	55	386	21	20	0	0.0	0	5000			
		385	21	19		21.5					
		370	21	4		41.8					
Phantom	2	197	16	16	0	21.0	-40	4200		6400	
		293	18	15		42.4					
Phantom	4	196	16	15	0	20.7	-40	4800		5800	
		292	18	14		42.4					

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Phantom	6	192	16	11	0	20.9	-40	5800	4800	5800	4800
		289	18	11		41.9					
Phantom	7	195	16	14	0	20.8	-40	5800		4800	
		291	18	13		42.2					
Phantom	9	193	16	12	0	20.9	-40	6400	4200	6400	4200
		288	18	10		42.3					
Phantom	10	194	16	13	0	21.1	-40	6400		4200	
		290	18	12		42.2					
Phantom	14	206	16	25	0	20.7	-30	4800		5800	
		301	18	23		42.5					
Phantom	16	204	16	23	0	20.8	-30	5800	4800	5800	4800
		299	18	21		42.1					
Phantom	17	205	16	24	0	20.7	-30	5800		4800	
		300	18	22		42.3					
Phantom	21	215	16	34	0	21.4	-20	4800		5800	
		311	18	33		41.9					
Phantom	23	213	16	32	0	21.2	-20	5800	4800	5800	4800
		308	18	30		42.2					
Phantom	24	214	16	33	0	21.3	-20	5800		4800	
		310	18	32		42.1					
Phantom	30	230	16	49	0	21.2	-10	4800		5800	
		327	19	12		43.1					
Phantom	32	227	16	46	0	21.1	-10	5800	4800	5800	4800
		325	19	10		42.9					
Phantom	33	229	16	48	0	20.7	-10	5800		4800	
		326	19	11		42.9					
Phantom	38	240	16	59	0	21.2	-5	4800		5800	
		337	19	22		43.1					
Phantom	40	238	16	57	0	21.0	-5	5800	4800	5800	4800
		334	19	19		43.0					
Phantom	41	239	16	58	0	21.0	-5	5800		4800	
		336	19	21		42.9					
Phantom	50	261	16	80	0	20.7	0	4200		6400	
		359	19	44		42.4					
Phantom	51	256	16	75	0	20.9	0	4200	6400	4200	6400
		355	19	40		42.2					
Phantom	53	260	16	79	0	20.7	0	4800		5800	
		358	19	43		42.3					
Phantom	54	255	16	74	0	20.6	0	4800	5800	4800	5800
		354	19	39		42.3					
Phantom	57	254	16	73	0	21.0	0	5800	4800	5800	4800
		353	19	38		42.2					
Phantom	58	259	16	78	0	20.6	0	5800		4800	
		357	19	42		42.3					
Phantom	60	253	16	72	0	20.7	0	6400	4200	6400	4200
		352	19	37		42.2					
Phantom	61	258	16	77	0	20.3	0	6400		4200	
		356	19	41		42.1					

Phantom Pitch Sweep

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Phantom	1	220	16	39	0	0.0	-10	0			
		366	20	4			0				
Phantom	2	219	16	38	0	0.0	-10	5300			
		361	19	46			0				
Phantom	3	187	16	7	0	20.0	-40	4200			
		200	16	19			-30				
		218	16	37			-10				
		234	16	53			-5				
		243	16	62			-2				
		249	16	68			0				
Phantom	5	188	16	8	0	20.0	-40	4800			
		201	16	20			-30				
		210	16	29			-20				
		223	16	42			-10				
		235	16	54			-5				
		250	16	69			0				
Phantom	7	198	16	17	0	20.0	-40	5300			
		207	16	26			-30				
		216	16	35			-20				
		232	16	51			-10				
		241	16	60			-5				
		262	16	81			0				
Phantom	10	189	16	9	0	20.0	-40	5800			
		202	16	21			-30				
		211	16	30			-20				
		224	16	43			-10				
		236	16	55			-5				
		251	16	70			0				
Phantom	13	190	16	10	0	20.0	-40	6400			
		203	16	22			-30				
		212	16	31			-20				
		225	16	44			-10				
		237	16	56			-5				
		252	16	71			0				
Phantom	14	284	18	6	0	40.0	-40	4200			
		295	18	17			-30				
		303	18	25			-20				
		320	19	5			-10				
		328	19	13			-5				
		347	19	32			0				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Phantom	16	285	18	7	0	40.0	-40	4800			
		296	18	18			-30				
		304	18	26			-20				
		321	19	6			-10				
		329	19	14			-5				
		348	19	33			0				
Phantom	20	283	18	5	0	40.0	-40	5300			
		294	18	16			-30				
		302	18	24			-20				
		146	14	8			-15				
		322	19	7			-10				
		330	19	15			-5				
		360	19	45			0				
Phantom	23	286	18	8	0	40.0	-40	5800			
		297	18	19			-30				
		305	18	27			-20				
		323	19	8			-10				
		331	19	16			-5				
		350	19	35			0				
Phantom	26	287	18	9	0	40.0	-40	6400			
		298	18	20			-30				
		306	18	28			-20				
		324	19	9			-10				
		332	19	17			-5				
		351	19	36			0				
Phantom	27	272	17	7	0	80.0	0	4200			
		274	17	9			5				
		174	15	13			20				
		175	15	14			30				
		176	15	15			40				
Phantom	28	273	17	8	0	80.0	0	4800			
		275	17	10			5				
Phantom	29	151	14	13	0	80.0	-40	5300			
		153	14	15			-30				
		154	14	16			-20				
		155	14	17			-10				
		156	14	18			-5				
		271	17	6			0				
Phantom	30	271	17	6	0	80.0	0	5300			
		171	15	10			5				
		172	15	11			10				
		173	15	12			20				
Phantom	18	371	21	5	0	40.0	-40	5000			
		372	21	6			-30				
		373	21	7			-20				
		374	21	8			-10				
		375	21	9			-5				
		384	21	18			0				
Phantom	19	384	21	18	0	40.0	0	5000			
		379	21	13			5				
		380	21	14			10				
		381	21	15			20				
		382	21	16			30				
		383	21	17			40				
Phantom	4	197	16	16	0	20.0	-40	4200		6400	
		231	16	50			-10				
		261	16	80			0				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Phantom	6	196	16	15	0	20.0	-40	4800		5800	
		206	16	25			-30				
		215	16	34			-20				
		230	16	49			-10				
		240	16	59			-5				
		260	16	79			0				
Phantom	8	192	16	11	0	20.0	-40	5800	4800	5800	4800
		204	16	23			-30				
		213	16	32			-20				
		227	16	46			-10				
		238	16	57			-5				
		254	16	73			0				
Phantom	9	195	16	14	0	20.0	-40	5800		4800	
		205	16	24			-30				
		214	16	33			-20				
		229	16	48			-10				
		239	16	58			-5				
		259	16	78			0				
Phantom	11	193	16	12	0	20.0	-40	6400	4200	6400	4200
		226	16	45			-10				
		253	16	72			0				
Phantom	12	194	16	13	0	20.0	-40	6400		4200	
		228	16	47			-10				
		258	16	77			0				
Phantom	15	293	18	15	0	40.0	-40	4200		6400	
		312	18	34			-20				
		338	19	23			-5				
		359	19	44			0				
Phantom	17	292	18	14	0	40.0	-40	4800		5800	
		301	18	23			-30				
		311	18	33			-20				
		327	19	12			-10				
		337	19	22			-5				
		358	19	43			0				
Phantom	21	289	18	11	0	40.0	-40	5800	4800	5800	4800
		299	18	21			-30				
		308	18	30			-20				
		325	19	10			-10				
		334	19	19			-5				
		353	19	38			0				
Phantom	22	291	18	13	0	40.0	-40	5800		4800	
		300	18	22			-30				
		310	18	32			-20				
		326	19	11			-10				
		336	19	21			-5				
		357	19	42			0				
Phantom	24	288	18	10	0	40.0	-40	6400	4200	6400	4200
		307	18	29			-20				
		333	19	18			-5				
		352	19	37			0				
Phantom	25	290	18	12	0	40.0	-40	6400		4200	
		309	18	31			-20				
		335	19	20			-5				
		356	19	41			0				

Phantom Duplicate Runs

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Phantom	1	186	16	6	0	20.9	-39.95	5300			
		198	16	17	0	20.7	-39.95				
Phantom	2	199	16	18	0	21.3	-29.95	5300			
		207	16	26	0	21	-29.95				
Phantom	3	147	14	9	0	40.3	-19.91	5300			
		302	18	24	0	42.4	-19.91				
Phantom	4	121	10	9	0	40.4	-15	5300			
		146	14	8	0	40.7	-14.99				
Phantom	5	119	10	7	0	41.1	-10.1	5300			
		120	10	8	0	41.1	-10.1				
Phantom	6	219	16	38	0	0	-9.9	5300			
		221	16	40	0	0	-9.9				
Phantom	7	217	16	36	0	20.9	-9.9	5300			
		222	16	41	0	21	-9.9				
		232	16	51	0	21	-9.9				
Phantom	8	242	16	61	0	21	-1.99	5300			
		247	16	66	0	21	-1.99				
Phantom	9	158	14	20	0	81	-0.04	5300			
		170	15	9	0	83.8	-0.04				
Phantom	10	134	13	3	0	0	0	5300			
		141	14	3	0	0	0				
		168	15	7	0	0	0				
		183	16	3	0	0	0				
		268	17	3	0	0	0				
		269	17	4	0	0	0				
Phantom	11	281	18	3	0	0	0	5300			
		318	19	3	0	0	0				
		361	19	46	0	0	0				
Phantom	12	116	10	4	0	20.3	0	5300			
		142	14	4	0	20	0				
		185	16	5	0	21.1	0				
Phantom	13	117	10	5	0	40.1	0	5300			
		143	14	5	0	39.9	0				
		169	15	8	0	41.9	0				
		184	16	4	0	41.9	0				
		270	17	5	0	42.2	0				
		282	18	4	0	42.5	0				
Phantom	14	319	19	4	0	41.49	0	5300			
		349	19	34	0	42.2	0				
		360	19	45	0	42.3	0				
Phantom	15	123	10	11	0	40.5	0.1	5300			
		124	10	12	0	40.6	0.1				
		125	10	13	0	40.6	0.1				
Phantom	16	179	15	18	0	2.92	0.11	5300			
		277	17	12	0	3.11	0.11				
Phantom	17	248	16	67	0	21	0.11	5300			
		262	16	81	0	20.4	0.11				
Phantom	18	178	15	17	0	41.9	0.11	5300			
		263	16	82	0	42.5	0.11				
		276	17	11	0	41.9	0.11				

DAx8 RPM Sweep

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	1	1540	68	3	0	0	0	4000			
		1541	68	4				5000			
		1542	68	5				6000			
		1543	68	6				7000			
		1544	68	7				6200			
DAx8	2	1551	69	7	0	20	-40	5000			
		1552	69	8				5600			
		1553	69	9				6200			
		1554	69	10				6800			
		1555	69	11				7400			
DAx8	3	1556	69	12	0	20	-20	5000			
		1557	69	13				5600			
		1558	69	14				6200			
		1559	69	15				6800			
		1560	69	16				7400			
DAx8	4	1561	69	17	0	20	-10	5000			
		1562	69	18				5600			
		1563	69	19				6200			
		1564	69	20				6800			
		1565	69	21				7400			
DAx8	5	1582	71	11	0	20	-5	5000			
		1583	71	12				5600			
		1584	71	13				6200			
		1585	71	14				6800			
		1586	71	15				7400			
DAx8	6	1593	71	22	0	20	-2	5000			
		1594	71	23				5600			
		1595	71	24				6200			
		1596	71	25				6800			
		1597	71	26				7400			
DAx8	7	1615	73	12	0	20	0	5000			
		1616	73	13				5600			
		1617	73	14				6200			
		1618	73	15				6800			
		1619	73	16				7400			
DAx8	8	1628	73	25	0	20	2	5000			
		1629	73	26				5600			
		1631	73	28				6200			
		1632	73	29				6800			
		1634	73	31				7400			
DAx8	9	1645	74	5	0	20	5	5000			
		1646	74	6				5600			
		1648	74	8				6200			
		1649	74	9				6800			
		1650	74	10				7400			
DAx8	10	1654	74	14	0	20	10	5000			
		1655	74	15				5600			
		1656	74	16				6200			
		1657	74	17				6800			
		1658	74	18				7400			
DAx8	11	1662	74	22	0	20	20	5000			
		1663	74	23				5600			
		1664	74	24				6200			
		1665	74	25				6800			
		1666	74	26				7400			

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	12	1675	75	6	0	40	-40	6200			
		1676	75	7				6800			
		1677	75	8				7400			
		1678	75	9				8000			
		1679	75	10				8600			
		1680	75	11				9200			
DAx8	13	1681	75	12	0	40	-20	6200			
		1682	75	13				6800			
		1683	75	14				7400			
		1684	75	15				8000			
		1686	75	17				8600			
		1687	75	18				9200			
DAx8	14	1688	75	19	0	40	-10	6800			
		1689	75	20				7400			
		1690	75	21				8000			
		1691	75	22				8600			
DAx8	15	1703	76	9	0	40	-5	5000			
		1704	76	10				5600			
		1705	76	11				6200			
		1706	76	12				6800			
		1707	76	13				7400			
DAx8	16	1711	76	17	0	40	-2	5000			
		1712	76	18				5600			
		1713	76	19				6200			
		1714	76	20				6800			
		1715	76	21				7400			
DAx8	17	1730	78	5	0	40	0	5000			
		1731	78	6				5600			
		1732	78	7				6200			
		1733	78	8				6800			
		1734	78	9				7400			
DAx8	18	1760	82	5	-5	20	-40	5600			
		1761	82	6				6200			
		1762	82	7				7000			
		1763	82	8				7700			
		1764	82	9				8400			
DAx8	19	1765	82	10	-5	20	-20	5600			
		1766	82	11				6200			
		1767	82	12				7000			
		1768	82	13				7700			
		1769	82	14				8400			
DAx8	20	1770	82	15	-5	20	-10	5600			
		1771	82	16				6200			
		1772	82	17				7000			
		1773	82	18				7700			
		1774	82	19				8400			
DAx8	21	1785	83	5	-5	20	-5	5600			
		1786	83	6				6200			
		1787	83	7				7000			
		1788	83	8				7700			
		1789	83	9				8400			
DAx8	22	1801	84	5	-5	20	-2	5600			
		1802	84	6				6200			
		1803	84	7				7000			
		1804	84	8				7700			
		1805	84	9				8400			

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	23	1809	84	13	-5	20	0	5600			
		1810	84	14				6200			
		1811	84	15				7000			
		1812	84	16				7700			
		1813	84	17				8400			
DAx8	24	1825	85	9	-5	20	2	5600			
		1826	85	10				6200			
		1827	85	11				7000			
		1828	85	12				7700			
		1829	85	13				8400			
DAx8	25	1834	85	18	-5	20	5	5600			
		1835	85	19				6200			
		1836	85	20				7000			
		1837	85	21				7700			
		1838	85	22				8400			
DAx8	26	1848	86	5	-5	20	10	5600			
		1849	86	6				6200			
		1850	86	7				7000			
		1851	86	8				7700			
		1852	86	9				8400			
DAx8	27	1855	86	12	-5	20	20	5600			
		1856	86	13				6200			
		1857	86	14				7000			
		1858	86	15				7700			
DAx8	28	1866	87	5	-5	40	0	5600			
		1867	87	6				6200			
		1868	87	7				7000			
DAx8	29	1876	88	5	-5	40	-40	7000			
		1877	88	6				7700			
		1878	88	7				8400			
		1879	88	8				9200			
DAx8	30	1880	88	9	-5	40	-20	7000			
		1881	88	10				7700			
		1882	88	11				8400			
		1883	88	12				9200			
DAx8	31	1884	88	13	-5	40	-10	6200			
		1885	88	14				7000			
		1886	88	15				7700			
		1887	88	16				8400			
		1888	88	17				9200			
DAx8	32	1893	88	22	-5	40	-5	5600			
		1894	88	23				6200			
		1895	88	24				7000			
		1896	88	25				7700			
		1897	88	26				8400			
DAx8	33	1908	89	5	-5	40	-2	5600			
		1909	89	6				6200			
		1910	89	7				7000			
		1911	89	8				7700			
DAx8	34	1932	90	5	-30	20	-10	5600			
		1933	90	6				6200			
		1934	90	7				7000			
		1935	90	8				7700			
		1936	90	9				8400			

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	35	1937	90	10	-30	20	-5	5600			
		1938	90	11				6200			
		1939	90	12				7000			
		1940	90	13				7700			
		1941	90	14				8400			
DAx8	36	1942	90	15	-30	20	-2	5600			
		1943	90	16				6200			
		1944	90	17				7000			
		1945	90	18				7700			
		1946	90	19				8400			
DAx8	37	1947	90	20	-30	20	0	5600			
		1948	90	21				6200			
		1949	90	22				7000			
		1950	90	23				7700			
		1951	90	24				8400			
DAx8	38	1952	90	25	-30	20	2	5600			
		1953	90	26				6200			
		1954	90	27				7000			
		1955	90	28				7700			
		1956	90	29				8400			
DAx8	39	1957	90	30	-30	20	5	5600			
		1958	90	31				6200			
		1959	90	32				7000			
		1960	90	33				7700			
		1961	90	34				8400			
DAx8	40	1962	90	35	-30	20	10	5600			
		1963	90	36				6200			
		1964	90	37				7000			
		1965	90	38				7700			
		1966	90	39				8400			
DAx8	41	1974	91	5	-45	20	-10	5600			
		1975	91	6				6200			
		1976	91	7				7000			
		1977	91	8				7700			
		1979	91	10				8400			
DAx8	42	1984	91	15	-45	20	-5	5600			
		1985	91	16				6200			
		1986	91	17				7000			
		1987	91	18				7700			
		1988	91	19				8400			
DAx8	43	1993	91	24	-45	20	-2	5600			
		1994	91	25				6200			
		1995	91	26				7000			
		1996	91	27				7700			
		1997	91	28				8400			
DAx8	44	2002	91	33	-45	20	0	5600			
		2003	91	34				6200			
		2004	91	35				7000			
		2005	91	36				7700			
		2006	91	37				8400			
DAx8	45	2018	92	9	-45	20	2	5600			
		2019	92	10				6200			
		2020	92	11				7000			
		2021	92	12				7700			
		2022	92	13				8400			
DAx8	46	2026	92	17	-45	20	5	5600			
		2027	92	18				6200			
		2028	92	19				7000			
		2029	92	20				7700			
		2030	92	21				8400			

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	47	2034	92	25	-45	20	10	5600			
		2035	92	26				6200			
		2036	92	27				7000			
		2037	92	28				7700			
		2038	92	29				8400			
DAx8	48	2049	93	5	-60	20	-10	5600			
		2050	93	6				6200			
		2051	93	7				7000			
		2052	93	8				7700			
		2053	93	9				8400			
DAx8	49	2054	93	10	-60	20	-5	5600			
		2055	93	11				6200			
		2056	93	12				7000			
		2057	93	13				7700			
		2058	93	14				8400			
DAx8	50	2059	93	15	-60	20	-2	5600			
		2060	93	16				6200			
		2061	93	17				7000			
		2062	93	18				7700			
		2063	93	19				8400			
DAx8	51	2064	93	20	-60	20	0	5600			
		2065	93	21				6200			
		2066	93	22				7000			
		2067	93	23				7700			
		2068	93	24				8400			
DAx8	52	2069	93	25	-60	20	2	5600			
		2070	93	26				6200			
		2071	93	27				7000			
		2072	93	28				7700			
		2073	93	29				8400			
DAx8	53	2074	93	30	-60	20	5	5600			
		2075	93	31				6200			
		2076	93	32				7000			
		2077	93	33				7700			
		2078	93	34				8400			
DAx8	54	2079	93	35	-60	20	10	5600			
		2080	93	36				6200			
		2081	93	37				7000			
		2082	93	38				7700			
		2083	93	39				8400			
DAx8	55	2092	94	6	-90	20	-10	5600			
		2093	94	7				6200			
		2094	94	8				7000			
		2095	94	9				7700			
		2096	94	10				8400			
DAx8	56	2101	94	15	-90	20	-5	5600			
		2102	94	16				6200			
		2103	94	17				7000			
		2104	94	18				7700			
		2105	94	19				8400			
DAx8	57	2110	94	24	-90	20	-2	5600			
		2111	94	25				6200			
		2112	94	26				7000			
		2113	94	27				7700			
		2114	94	28				8400			
DAx8	58	2126	95	5	-90	20	0	5600			
		2127	95	6				6200			
		2128	95	7				7000			
		2129	95	8				7700			
		2130	95	9				8400			

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	59	2135	95	14	-90	20	2	5600			
		2136	95	15				6200			
		2137	95	16				7000			
		2138	95	17				7700			
		2139	95	18				8400			
DAx8	60	2186	98	5	-90	20	5	5600			
		2187	98	6				6200			
		2188	98	7				7000			
		2190	98	9				7700			
		2191	98	10				8400			
DAx8	61	2195	98	14	-90	20	10	5600			
		2196	98	15				6200			
		2197	98	16				7000			
		2198	98	17				7700			
		2199	98	18				8400			
DAx8	62	2220	99	14	-90	0	0	0			
		2209	99	3				7000			
DAx8 Pitch Sweep											
DAx8	1	1551	69	7	0	20.0	-40	5000			
		1556	69	12			-20				
		1561	69	17			-10				
		1582	71	11			-5				
		1593	71	22			-2				
		1615	73	12			0				
DAx8	2	1615	73	12	0	20.0	0	5000			
		1628	73	25			2				
		1645	74	5			5				
		1654	74	14			10				
		1662	74	22			20				
DAx8	4	1552	69	8	0	20.0	-40	5600			
		1557	69	13			-20				
		1562	69	18			-10				
		1583	71	12			-5				
		1594	71	23			-2				
		1616	73	13			0				
DAx8	5	1616	73	13	0	20.0	0	5600			
		1629	73	26			2				
		1646	74	6			5				
		1655	74	15			10				
		1663	74	23			20				
DAx8	8	1553	69	9	0	20.0	-40	6200			
		1558	69	14			-20				
		1563	69	19			-10				
		1584	71	13			-5				
		1595	71	24			-2				
		1548	69	4			0				
DAx8	9	1667	74	27	0	20.0	0	6200			
		1631	73	28			2				
		1647	74	7			5				
		1656	74	16			10				
		1664	74	24			20				
DAx8	14	1554	69	10	0	20.0	-40	6800			
		1559	69	15			-20				
		1564	69	20			-10				
		1585	71	14			-5				
		1596	71	25			-2				
		1618	73	15			0				
DAx8	15	1618	73	15	0	20.0	0	6800			
		1632	73	29			2				
		1649	74	9			5				
		1657	74	17			10				
		1665	74	25			20				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	16	2239	101	5	0	20.0	-40	7000			
		2240	101	6			-20				
		2241	101	7			-10				
		2242	101	8			-5				
		2243	101	9			-2				
		2238	101	4			0				
DAx8	17	2244	101	10	0	20.0	0	7000			
		2245	101	11			2				
		2246	101	12			5				
		2247	101	13			10				
		2248	101	14			20				
		2249	101	15			40				
DAx8	20	1555	69	11	0	20.0	-40	7400			
		1560	69	16			-20				
		1565	69	21			-10				
		1586	71	15			-5				
		1597	71	26			-2				
		1619	73	16			0				
DAx8	21	1619	73	16	0	20.0	0	7400			
		1634	73	31			2				
		1650	74	10			5				
		1658	74	18			10				
		1666	74	26			20				
DAx8	22	1703	76	9	0	40.0	-5	5000			
		1711	76	17			-2				
		1730	78	5			0				
DAx8	23	1704	76	10	0	40.0	-5	5600			
		1712	76	18			-2				
		1731	78	6			0				
DAx8	25	1675	75	6	0	40.0	-40	6200			
		1681	75	12			-20				
		1699	76	5			-10				
		1705	76	11			-5				
		1713	76	19			-2				
		1674	75	5			0				
DAx8	28	1676	75	7	0	40.0	-40	6800			
		1682	75	13			-20				
		1688	75	19			-10				
		1706	76	12			-5				
		1714	76	20			-2				
		1733	78	8			0				
DAx8	29	2252	101	18	0	40.0	-40	7000			
		2253	101	19			-20				
		2254	101	20			-10				
		2255	101	21			-5				
		2256	101	22			-2				
		2257	101	23			0				
DAx8	30	2263	101	29	0	40.0	0	7000			
		2258	101	24			2				
		2259	101	25			5				
		2260	101	26			10				
		2261	101	27			20				
		2262	101	28			40				
DAx8	31	1677	75	8	0	40.0	-40	7400			
		1683	75	14			-20				
		1689	75	20			-10				
		1707	76	13			-5				
		1715	76	21			-2				
		1734	78	9			0				
DAx8	32	1678	75	9	0	40.0	-40	8000			
		1684	75	15			-20				
		1690	75	21			-10				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	33	1679	75	10	0	40.0	-40	8600			
		1686	75	17			-20				
		1691	75	22			-10				
DAx8	34	1680	75	11	0	40.0	-40	9200			
		1687	75	18			-20				
DAx8	35	1760	82	5	-5	20.0	-40	5600			
		1765	82	10			-20				
		1770	82	15			-10				
		1785	83	5			-5				
		1801	84	5			-2				
		1809	84	13			0				
DAx8	36	1809	84	13	-5	20.0	0	5600			
		1825	85	9			2				
		1834	85	18			5				
		1848	86	5			10				
		1855	86	12			20				
DAx8	37	1761	82	6	-5	20.0	-40	6200			
		1766	82	11			-20				
		1771	82	16			-10				
		1786	83	6			-5				
		1802	84	6			-2				
		1810	84	14			0				
DAx8	38	1810	84	14	-5	20.0	0	6200			
		1826	85	10			2				
		1835	85	19			5				
		1849	86	6			10				
		1856	86	13			20				
DAx8	42	1762	82	7	-5	20.0	-40	7000			
		1767	82	12			-20				
		1772	82	17			-10				
		1787	83	7			-5				
		1803	84	7			-2				
		1811	84	15			0				
DAx8	43	1820	85	4	-5	20.0	0	7000			
		1827	85	11			2				
		1836	85	20			5				
		1850	86	7			10				
		1857	86	14			20				
DAx8	47	1763	82	8	-5	20.0	-40	7700			
		1768	82	13			-20				
		1773	82	18			-10				
		1788	83	8			-5				
		1804	84	8			-2				
		1812	84	16			0				
DAx8	48	1812	84	16	-5	20.0	0	7700			
		1828	85	12			2				
		1837	85	21			5				
		1851	86	8			10				
		1858	86	15			20				
DAx8	49	1764	82	9	-5	20.0	-40	8400			
		1769	82	14			-20				
		1774	82	19			-10				
		1789	83	9			-5				
		1805	84	9			-2				
		1813	84	17			0				
DAx8	50	1813	84	17	-5	20.0	0	8400			
		1829	85	13			2				
		1838	85	22			5				
		1852	86	9			10				
DAx8	51	1893	88	22	-5	40.0	-5	5600			
		1908	89	5			-2				
		1866	87	5			0				
DAx8	52	1866	87	5	-5	40.0	0	5600			
		1918	89	15			2				
		1921	89	18			5				
		1924	89	21			10				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	53	1884	88	13	-5	40.0	-10	6200			
		1894	88	23			-5				
		1909	89	6			-2				
		1867	87	6			0				
DAx8	54	1867	87	6	-5	40.0	0	6200			
		1919	89	16			2				
		1922	89	19			5				
DAx8	58	1876	88	5	-5	40.0	-40	7000			
		1880	88	9			-20				
		1885	88	14			-10				
		1895	88	24			-5				
		1910	89	7			-2				
		1868	87	7			0				
DAx8	60	1877	88	6	-5	40.0	-40	7700			
		1881	88	10			-20				
		1886	88	15			-10				
		1896	88	25			-5				
		1911	89	8			-2				
DAx8	61	1878	88	7	-5	40.0	-40	8400			
		1882	88	11			-20				
		1887	88	16			-10				
		1897	88	26			-5				
DAx8	62	1879	88	8	-5	40.0	-40	9200			
		1883	88	12			-20				
		1888	88	17			-10				
DAx8	63	1932	90	5	-30	20.0	-10	5600			
		1937	90	10			-5				
		1942	90	15			-2				
		1947	90	20			0				
DAx8	64	1947	90	20	-30	20.0	0	5600			
		1952	90	25			2				
		1957	90	30			5				
		1962	90	35			10				
DAx8	65	1933	90	6	-30	20.0	-10	6200			
		1938	90	11			-5				
		1943	90	16			-2				
		1948	90	21			0				
DAx8	66	1948	90	21	-30	20.0	0	6200			
		1953	90	26			2				
		1958	90	31			5				
		1963	90	36			10				
DAx8	67	1934	90	7	-30	20.0	-10	7000			
		1939	90	12			-5				
		1944	90	17			-2				
		1931	90	4			0				
DAx8	68	1931	90	4	-30	20.0	0	7000			
		1954	90	27			2				
		1959	90	32			5				
		1964	90	37			10				
DAx8	69	1935	90	8	-30	20.0	-10	7700			
		1940	90	13			-5				
		1945	90	18			-2				
		1950	90	23			0				
DAx8	70	1950	90	23	-30	20.0	0	7700			
		1955	90	28			2				
		1960	90	33			5				
		1965	90	38			10				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	71	1936	90	9	-30	20.0	-10	8400			
		1941	90	14			-5				
		1946	90	19			-2				
		1951	90	24			0				
DAx8	72	1951	90	24	-30	20.0	0	8400			
		1956	90	29			2				
		1961	90	34			5				
		1966	90	39			10				
DAx8	73	1974	91	5	-45	20.0	-10	5600			
		1984	91	15			-5				
		1993	91	24			-2				
		2002	91	33			0				
DAx8	74	2002	91	33	-45	20.0	0	5600			
		2018	92	9			2				
		2026	92	17			5				
		2034	92	25			10				
DAx8	75	1975	91	6	-45	20.0	-10	6200			
		1985	91	16			-5				
		1994	91	25			-2				
		2003	91	34			0				
DAx8	76	2003	91	34	-45	20.0	0	6200			
		2019	92	10			2				
		2027	92	18			5				
		2035	92	26			10				
DAx8	81	1976	91	7	-45	20.0	-10	7000			
		1986	91	17			-5				
		1995	91	26			-2				
		1973	91	4			0				
DAx8	82	2042	92	33	-45	20.0	0	7000			
		2020	92	11			2				
		2028	92	19			5				
		2036	92	27			10				
DAx8	88	1978	91	9	-45	20.0	-10	7700			
		1987	91	18			-5				
		1996	91	27			-2				
		2005	91	36			0				
DAx8	89	2005	91	36	-45	20.0	0	7700			
		2021	92	12			2				
		2029	92	20			5				
		2037	92	28			10				
DAx8	90	1979	91	10	-45	20.0	-10	8400			
		1988	91	19			-5				
		1997	91	28			-2				
		2006	91	37			0				
DAx8	91	2006	91	37	-45	20.0	0	8400			
		2022	92	13			2				
		2030	92	21			5				
		2038	92	29			10				
DAx8	92	2049	93	5	-60	20.0	-10	5600			
		2054	93	10			-5				
		2059	93	15			-2				
		2064	93	20			0				
DAx8	93	2064	93	20	-60	20.0	0	5600			
		2069	93	25			2				
		2074	93	30			5				
		2079	93	35			10				
DAx8	94	2050	93	6	-60	20.0	-10	6200			
		2055	93	11			-5				
		2060	93	16			-2				
		2065	93	21			0				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	95	2065	93	21	-60	20.0	0	6200			
		2070	93	26			2				
		2075	93	31			5				
		2080	93	36			10				
DAx8	96	2051	93	7	-60	20.0	-10	7000			
		2056	93	12			-5				
		2061	93	17			-2				
		2048	93	4			0				
DAx8	97	2048	93	4	-60	20.0	0	7000			
		2071	93	27			2				
		2076	93	32			5				
		2081	93	37			10				
DAx8	98	2052	93	8	-60	20.0	-10	7700			
		2057	93	13			-5				
		2062	93	18			-2				
		2067	93	23			0				
DAx8	99	2067	93	23	-60	20.0	0	7700			
		2072	93	28			2				
		2077	93	33			5				
		2082	93	38			10				
DAx8	100	2053	93	9	-60	20.0	-10	8400			
		2058	93	14			-5				
		2063	93	19			-2				
		2068	93	24			0				
DAx8	101	2068	93	24	-60	20.0	0	8400			
		2073	93	29			2				
		2078	93	34			5				
		2083	93	39			10				
DAx8	102	2092	94	6	-90	20.0	-10	5600			
		2101	94	15			-5				
		2110	94	24			-2				
		2126	95	5			0				
DAx8	103	2126	95	5	-90	20.0	0	5600			
		2135	95	14			2				
		2186	98	5			5				
		2195	98	14			10				
DAx8	104	2093	94	7	-90	20.0	-10	6200			
		2102	94	16			-5				
		2111	94	25			-2				
		2127	95	6			0				
DAx8	105	2127	95	6	-90	20.0	0	6200			
		2136	95	15			2				
		2187	98	6			5				
		2196	98	15			10				
DAx8	110	2094	94	8	-90	20.0	-10	7000			
		2103	94	17			-5				
		2112	94	26			-2				
		2091	94	5			0				
DAx8	111	2091	94	5	-90	20.0	0	7000			
		2137	95	16			2				
		2188	98	7			5				
		2197	98	16			10				
DAx8	117	2095	94	9	-90	20.0	-10	7700			
		2104	94	18			-5				
		2113	94	27			-2				
		2129	95	8			0				
DAx8	118	2129	95	8	-90	20.0	0	7700			
		2138	95	17			2				
		2190	98	9			5				
		2198	98	17			10				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	119	2096	94	10	-90	20.0	-10	8400			
		2105	94	19			-5				
		2114	94	28			-2				
		2130	95	9			0				
DAx8	120	2130	95	9	-90	20.0	0	8400			
		2139	95	18			2				
		2191	98	10			5				
		2199	98	18			10				
DAx8	83	2225	100	5	-45	20.0	-10	7000			
		2226	100	6			-5				
		2227	100	7			-2				
		2224	100	4			0				
DAx8	84	2232	100	12	-45	20.0	0	7000			
		2229	100	9			2				
		2230	100	10			5				
		2231	100	11			10				
DAx8	112	2211	99	5	-90	20.0	-10	7000			
		2212	99	6			-5				
		2213	99	7			-2				
		2214	99	8			0				
DAx8	113	2214	99	8	-90	20.0	0	7000			
		2215	99	9			2				
		2216	99	10			5				
		2217	99	11			10				
DAx8	3	1579	71	8	0	20.0	-10	5000	7400		5000
		1590	71	19			-5				
		1612	73	9			-2				
		1623	73	20			0				
DAx8	6	1578	71	7	0	20.0	-10	5600	6800		5600
		1589	71	18			-5				
		1611	73	8			-2				
		1622	73	19			0				
DAx8	7	1622	73	19	0	20.0	0	5600	6800		5600
		1636	73	33			2				
		1652	74	12			5				
		1660	74	20			10				
DAx8	10	1577	71	6	0	20.0	-10	6800	5600		6800
		1588	71	17			-5				
		1610	73	7			-2				
		1621	73	18			0				
DAx8	11	1621	73	18	0	20.0	0	6800	5600		6800
		1635	73	32			2				
		1651	74	11			5				
		1659	74	19			10				
DAx8	12	1581	71	10	0	20.0	-10	6800		5600	
		1592	71	21			-5				
		1614	73	11			-2				
		1626	73	23			0				
DAx8	13	1626	73	23	0	20.0	0	6800		5600	
		1637	73	34			2				
		1653	74	13			5				
		1661	74	21			10				
DAx8	18	1576	71	5	0	20.0	-10	7400	5000		7400
		1587	71	16			-5				
		1609	73	6			-2				
		1620	73	17			0				
DAx8	19	1580	71	9	0	20.0	-10	7400		5000	
		1591	71	20			-5				
		1613	73	10			-2				
		1624	73	21			0				
DAx8	24	1701	76	7	0	40.0	-10	5600	6800		5600
		1709	76	15			-5				
		1717	76	23			-2				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	26	1700	76	6	0	40.0	-10	6800	5600		6800
		1708	76	14			-5				
		1716	76	22			-2				
DAx8	27	1702	76	8	0	40.0	-10	6800		5600	
		1710	76	16			-5				
		1718	76	24			-2				
DAx8	39	1824	85	8	-5	20.0	0	6200		7700	
		1833	85	17			2				
DAx8	40	1776	82	21	-5	20.0	-10	6200	7700		6200
		1791	83	11			-5				
		1807	84	11			-2				
		1822	85	6			0				
DAx8	41	1822	85	6	-5	20.0	0	6200	7700		6200
		1831	85	15			2				
		1839	85	23			5				
		1853	86	10			10				
DAx8	44	1775	82	20	-5	20.0	-10	7700	6200		7700
		1790	83	10			-5				
		1806	84	10			-2				
		1821	85	5			0				
		1830	85	14			2				
DAx8	45	1777	82	22	-5	20.0	-10	7700		6200	
		1793	83	13			-5				
		1808	84	12			-2				
		1823	85	7			0				
DAx8	46	1823	85	7	-5	20.0	0	7700		6200	
		1832	85	16			2				
		1840	85	24			5				
		1854	86	11			10				
DAx8	55	1892	88	21	-5	40.0	-10	6200		7700	
		1900	88	29			-5				
		1914	89	11			-2				
		1915	89	12			0				
DAx8	56	1890	88	19	-5	40.0	-10	6200	7700		6200
		1898	88	27			-5				
		1912	89	9			-2				
		1916	89	13			0				
DAx8	57	1916	89	13	-5	40.0	0	6200	7700		6200
		1920	89	17			2				
		1923	89	20			5				
DAx8	59	1891	88	20	-5	40.0	-10	7700		6200	
		1899	88	28			-5				
		1913	89	10			-2				
		1917	89	14			0				
DAx8	77	1983	91	14	-45	20.0	-10	6200		7700	
		1992	91	23			-5				
		2001	91	32			-2				
		2017	92	8			0				
DAx8	78	2017	92	8	-45	20.0	0	6200		7700	
		2025	92	16			2				
		2033	92	24			5				
		2041	92	32			10				
DAx8	79	1981	91	12	-45	20.0	-10	6200	7700		6200
		1990	91	21			-5				
		1999	91	30			-2				
		2015	92	6			0				
DAx8	80	2015	92	6	-45	20.0	0	6200	7700		6200
		2023	92	14			2				
		2031	92	22			5				
		2039	92	30			10				
DAx8	85	1980	91	11	-45	20.0	-10	7700	6200		7700
		1989	91	20			-5				
		1998	91	29			-2				
		2014	92	5			0				

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	86	1982	91	13	-45	20.0	-10	7700		6200	
		1991	91	22			-5				
		2000	91	31			-2				
		2016	92	7			0				
DAx8	87	2016	92	7	-45	20.0	0	7700		6200	
		2024	92	15			2				
		2032	92	23			5				
		2040	92	31			10				
DAx8	106	2100	94	14	-90	20.0	-10	6200		7700	
		2107	94	21			-5				
		2118	94	32			-2				
		2134	95	13			0				
DAx8	107	2134	95	13	-90	20.0	0	6200		7700	
		2143	95	22			2				
		2194	98	13			5				
		2202	98	21			10				
DAx8	108	2098	94	12	-90	20.0	-10	6200	7700		6200
		2109	94	23			-5				
		2116	94	30			-2				
		2132	95	11			0				
DAx8	109	2132	95	11	-90	20.0	0	6200	7700		6200
		2141	95	20			2				
		2193	98	12			5				
		2201	98	20			10				
DAx8	114	2097	94	11	-90	20.0	-10	7700	6200		7700
		2108	94	22			-5				
		2115	94	29			-2				
		2131	95	10			0				
DAx8	115	2131	95	10	-90	20.0	0	7700	6200		7700
		2140	95	19			2				
		2192	98	11			5				
		2200	98	19			10				
DAx8	116	2099	94	13	-90	20.0	-10	7700		6200	
		2106	94	20			-5				
		2117	94	31			-2				
		2133	95	12			0				
		2142	95	21			2				

DAx8 Yaw Sweep

DAx8	1	2266	101	32	0	0.0	0	0
		1927	89	24	-5			
		1969	90	42	-30			
		2044	92	35	-45			
		2086	93	42	-60			
		2206	98	25	-90			
DAx8	3	2265	101	31	0	0.0	0	7000
		1926	89	23	-5			
		1968	90	41	-30			
		2043	92	34	-45			
		2085	93	41	-60			
		2205	98	24	-90			
DAx8	5	1552	69	8	0	20.0	-40	5600
		1760	82	5	-5			
DAx8	6	1553	69	9	0	20.0	-40	6200
		1761	82	6	-5			
DAx8	7	2239	101	5	0	20.0	-40	7000
		1762	82	7	-5			
DAx8	8	1557	69	13	0	20.0	-20	5600
		1765	82	10	-5			
DAx8	9	1558	69	14	0	20.0	-20	6200
		1766	82	11	-5			
DAx8	10	2240	101	6	0	20.0	-20	7000
		1767	82	12	-5			

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	11	1562	69	18	0	20.0	-10	5600			
		1770	82	15	-5						
		1932	90	5	-30						
		1974	91	5	-45						
		2049	93	5	-60						
		2092	94	6	-90						
DAx8	12	1563	69	19	0	20.0	-10	6200			
		1771	82	16	-5						
		1933	90	6	-30						
		1975	91	6	-45						
		2050	93	6	-60						
		2093	94	7	-90						
DAx8	15	2241	101	7	0	20.0	-10	7000			
		1772	82	17	-5						
		1934	90	7	-30						
		1976	91	7	-45						
		2051	93	7	-60						
		2094	94	8	-90						
DAx8	19	1773	82	18	-5	20.0	-10	7700			
		1935	90	8	-30						
		1978	91	9	-45						
		1977	91	8	-45						
		2052	93	8	-60						
		2095	94	9	-90						
DAx8	20	1774	82	19	-5	20.0	-10	8400			
		1936	90	9	-30						
		1979	91	10	-45						
		2053	93	9	-60						
		2096	94	10	-90						
DAx8	21	1583	71	12	0	20.0	-5	5600			
		1785	83	5	-5						
		1937	90	10	-30						
		1984	91	15	-45						
		2054	93	10	-60						
		2101	94	15	-90						
DAx8	22	1584	71	13	0	20.0	-5	6200			
		1786	83	6	-5						
		1938	90	11	-30						
		1985	91	16	-45						
		2055	93	11	-60						
		2102	94	16	-90						
DAx8	25	2242	101	8	0	20.0	-5	7000			
		1787	83	7	-5						
		1939	90	12	-30						
		1986	91	17	-45						
		2056	93	12	-60						
		2103	94	17	-90						
DAx8	29	1788	83	8	-5	20.0	-5	7700			
		1940	90	13	-30						
		1987	91	18	-45						
		2057	93	13	-60						
		2104	94	18	-90						
DAx8	30	1789	83	9	-5	20.0	-5	8400			
		1941	90	14	-30						
		1988	91	19	-45						
		2058	93	14	-60						
		2105	94	19	-90						
DAx8	31	1594	71	23	0	20.0	-2	5600			
		1801	84	5	-5						
		1942	90	15	-30						
		1993	91	24	-45						
		2059	93	15	-60						
		2110	94	24	-90						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	32	1608	73	5	0	20.0	-2	6200			
		1802	84	6	-5						
		1943	90	16	-30						
		1994	91	25	-45						
		2060	93	16	-60						
		2111	94	25	-90						
DAx8	35	2243	101	9	0	20.0	-2	7000			
		1803	84	7	-5						
		1944	90	17	-30						
		1995	91	26	-45						
		2061	93	17	-60						
		2112	94	26	-90						
DAx8	39	1804	84	8	-5	20.0	-2	7700			
		1945	90	18	-30						
		1996	91	27	-45						
		2062	93	18	-60						
		2113	94	27	-90						
DAx8	40	1805	84	9	-5	20.0	-2	8400			
		1946	90	19	-30						
		1997	91	28	-45						
		2063	93	19	-60						
		2114	94	28	-90						
DAx8	41	1616	73	13	0	20.0	0	5600			
		1809	84	13	-5						
		1947	90	20	-30						
		2002	91	33	-45						
		2064	93	20	-60						
		2126	95	5	-90						
DAx8	42	1725	77	4	0	20.0	0	6200			
		1810	84	14	-5						
		1948	90	21	-30						
		2003	91	34	-45						
		2065	93	21	-60						
		2127	95	6	-90						
DAx8	45	2250	101	16	0	20.0	0	7000			
		1925	89	22	-5						
		1931	90	4	-30						
		2007	91	38	-45						
		2048	93	4	-60						
		2144	95	23	-90						
DAx8	49	1812	84	16	-5	20.0	0	7700			
		1950	90	23	-30						
		2005	91	36	-45						
		2067	93	23	-60						
		2129	95	8	-90						
DAx8	50	1813	84	17	-5	20.0	0	8400			
		1951	90	24	-30						
		2006	91	37	-45						
		2068	93	24	-60						
		2130	95	9	-90						
DAx8	51	1629	73	26	0	20.0	2	5600			
		1825	85	9	-5						
		1952	90	25	-30						
		2018	92	9	-45						
		2069	93	25	-60						
		2135	95	14	-90						
DAx8	52	1631	73	28	0	20.0	2	6200			
		1826	85	10	-5						
		1953	90	26	-30						
		2019	92	10	-45						
		2070	93	26	-60						
		2136	95	15	-90						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	55	2245	101	11	0	20.0	2	7000			
		1827	85	11	-5						
		1954	90	27	-30						
		2020	92	11	-45						
		2071	93	27	-60						
		2137	95	16	-90						
DAx8	59	1828	85	12	-5	20.0	2	7700			
		1955	90	28	-30						
		2021	92	12	-45						
		2072	93	28	-60						
		2138	95	17	-90						
DAx8	60	1829	85	13	-5	20.0	2	8400			
		1956	90	29	-30						
		2022	92	13	-45						
		2073	93	29	-60						
		2139	95	18	-90						
DAx8	61	1646	74	6	0	20.0	5	5600			
		1834	85	18	-5						
		1957	90	30	-30						
		2026	92	17	-45						
		2074	93	30	-60						
		2186	98	5	-90						
DAx8	62	1648	74	8	0	20.0	5	6200			
		1835	85	19	-5						
		1958	90	31	-30						
		2027	92	18	-45						
		2075	93	31	-60						
		2187	98	6	-90						
DAx8	65	2246	101	12	0	20.0	5	7000			
		1836	85	20	-5						
		1959	90	32	-30						
		2028	92	19	-45						
		2076	93	32	-60						
		2188	98	7	-90						
DAx8	68	1837	85	21	-5	20.0	5	7700			
		1960	90	33	-30						
		2029	92	20	-45						
		2077	93	33	-60						
		2190	98	9	-90						
DAx8	69	1838	85	22	-5	20.0	5	8400			
		1961	90	34	-30						
		2030	92	21	-45						
		2078	93	34	-60						
		2191	98	10	-90						
DAx8	70	1655	74	15	0	20.0	10	5600			
		1848	86	5	-5						
		1962	90	35	-30						
		2034	92	25	-45						
		2079	93	35	-60						
		2195	98	14	-90						
DAx8	71	1656	74	16	0	20.0	10	6200			
		1849	86	6	-5						
		1963	90	36	-30						
		2035	92	26	-45						
		2080	93	36	-60						
		2196	98	15	-90						
DAx8	74	2247	101	13	0	20.0	10	7000			
		1850	86	7	-5						
		1964	90	37	-30						
		2036	92	27	-45						
		2081	93	37	-60						
		2197	98	16	-90						
DAx8	77	1851	86	8	-5	20.0	10	7700			
		1965	90	38	-30						
		2037	92	28	-45						
		2082	93	38	-60						
		2198	98	17	-90						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	78	1852	86	9	-5	20.0	10	8400			
		1966	90	39	-30						
		2038	92	29	-45						
		2083	93	39	-60						
		2199	98	18	-90						
DAx8	79	1663	74	23	0	20.0	20	5600			
		1855	86	12	-5						
DAx8	80	1664	74	24	0	20.0	20	6200			
		1856	86	13	-5						
DAx8	81	2248	101	14	0	20.0	20	7000			
		1857	86	14	-5						
DAx8	82	2252	101	18	0	40.0	-40	7000			
		1876	88	5	-5						
DAx8	83	1680	75	11	0	40.0	-40	9200			
		1879	88	8	-5						
DAx8	84	2253	101	19	0	40.0	-20	7000			
		1880	88	9	-5						
DAx8	85	1687	75	18	0	40.0	-20	9200			
		1883	88	12	-5						
DAx8	86	1699	76	5	0	40.0	-10	6200			
		1884	88	13	-5						
DAx8	87	2254	101	20	0	40.0	-10	7000			
		1885	88	14	-5						
DAx8	88	1704	76	10	0	40.0	-5	5600			
		1893	88	22	-5						
DAx8	89	1705	76	11	0	40.0	-5	6200			
		1894	88	23	-5						
DAx8	90	2255	101	21	0	40.0	-5	7000			
		1895	88	24	-5						
DAx8	91	1712	76	18	0	40.0	-2	5600			
		1908	89	5	-5						
DAx8	92	1713	76	19	0	40.0	-2	6200			
		1909	89	6	-5						
DAx8	93	2256	101	22	0	40.0	-2	7000			
		1910	89	7	-5						
DAx8	94	1731	78	6	0	40.0	0	5600			
		1866	87	5	-5						
DAx8	95	1732	78	7	0	40.0	0	6200			
		1867	87	6	-5						
DAx8	96	1750	81	5	0	40.0	0	7000			
		1868	87	7	-5						
DAx8	2	2221	100	1	-45	0.0	0	0			
		2220	99	14	-90						
DAx8	4	2233	100	13	-45	0.0	0	7000			
		2219	99	13	-90						
DAx8	16	2225	100	5	-45	20.0	-10	7000			
		2211	99	5	-90						
DAx8	26	2226	100	6	-45	20.0	-5	7000			
		2212	99	6	-90						
DAx8	36	2227	100	7	-45	20.0	-2	7000			
		2213	99	7	-90						
DAx8	46	2232	100	12	-45	20.0	0	7000			
		2218	99	12	-90						
DAx8	56	2229	100	9	-45	20.0	2	7000			
		2215	99	9	-90						
DAx8	66	2230	100	10	-45	20.0	5	7000			
		2216	99	10	-90						
DAx8	75	2231	100	11	-45	20.0	10	7000			
		2217	99	11	-90						
DAx8	13	1983	91	14	-45	20.0	-10	6200		7700	
		2100	94	14	-90						
DAx8	14	1776	82	21	-5	20.0	-10	6200	7700		6200
		1981	91	12	-45						
		2098	94	12	-90						
DAx8	17	1775	82	20	-5	20.0	-10	7700	6200		7700
		1980	91	11	-45						
		2097	94	11	-90						

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	18	1777	82	22	-5	20.0	-10	7700		6200	
		1982	91	13	-45						
		2099	94	13	-90						
DAx8	23	1992	91	23	-45	20.0	-5	6200		7700	
		2107	94	21	-90						
DAx8	24	1791	83	11	-5	20.0	-5	6200	7700		6200
		1990	91	21	-45						
		2109	94	23	-90						
DAx8	27	1790	83	10	-5	20.0	-5	7700	6200		7700
		1989	91	20	-45						
		2108	94	22	-90						
DAx8	28	1793	83	13	-5	20.0	-5	7700		6200	
		1991	91	22	-45						
		2106	94	20	-90						
DAx8	33	2001	91	32	-45	20.0	-2	6200		7700	
		2118	94	32	-90						
DAx8	34	1807	84	11	-5	20.0	-2	6200	7700		6200
		1999	91	30	-45						
		2116	94	30	-90						
DAx8	37	1806	84	10	-5	20.0	-2	7700	6200		7700
		1998	91	29	-45						
		2115	94	29	-90						
DAx8	38	1808	84	12	-5	20.0	-2	7700		6200	
		2000	91	31	-45						
		2117	94	31	-90						
DAx8	43	1824	85	8	-5	20.0	0	6200		7700	
		2017	92	8	-45						
		2134	95	13	-90						
DAx8	44	1822	85	6	-5	20.0	0	6200	7700		6200
		2015	92	6	-45						
		2132	95	11	-90						
DAx8	47	1821	85	5	-5	20.0	0	7700	6200		7700
		2014	92	5	-45						
		2131	95	10	-90						
DAx8	48	1823	85	7	-5	20.0	0	7700		6200	
		2016	92	7	-45						
		2133	95	12	-90						
DAx8	53	1833	85	17	-5	20.0	2	6200		7700	
		2025	92	16	-45						
		2143	95	22	-90						
DAx8	54	1831	85	15	-5	20.0	2	6200	7700		6200
		2023	92	14	-45						
		2141	95	20	-90						
DAx8	57	1830	85	14	-5	20.0	2	7700	6200		7700
		2140	95	19	-90						
DAx8	58	1832	85	16	-5	20.0	2	7700		6200	
		2024	92	15	-45						
		2142	95	21	-90						
DAx8	63	2033	92	24	-45	20.0	5	6200		7700	
		2194	98	13	-90						
DAx8	64	1839	85	23	-5	20.0	5	6200	7700		6200
		2031	92	22	-45						
		2193	98	12	-90						
DAx8	67	1840	85	24	-5	20.0	5	7700		6200	
		2032	92	23	-45						
DAx8	72	2041	92	32	-45	20.0	10	6200		7700	
		2202	98	21	-90						
DAx8	73	1853	86	10	-5	20.0	10	6200	7700		6200
		2039	92	30	-45						
		2201	98	20	-90						
DAx8	76	1854	86	11	-5	20.0	10	7700		6200	
		2040	92	31	-45						

DAx8 Forward Flight Sweep

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	1	1553	69	9	0	19.8	-40	6200			
		1675	75	6		39.3					
DAx8	2	1554	69	10	0	20.3	-40	6800			
		1676	75	7		40.0					
DAx8	3	2239	101	5	0	20.0	-40	7000			
		2252	101	18		39.7					
DAx8	4	1555	69	11	0	20.3	-40	7400			
		1677	75	8		40.4					
DAx8	5	1550	69	6	0	20.0	-20	6200			
		1681	75	12		39.7					
DAx8	6	1559	69	15	0	20.6	-20	6800			
		1682	75	13		39.7					
DAx8	7	2240	101	6	0	19.8	-20	7000			
		2253	101	19		39.2					
DAx8	8	1560	69	16	0	21.2	-20	7400			
		1683	75	14		40.2					
DAx8	10	1563	69	19	0	19.5	-10	6200			
		1699	76	5		39.7					
DAx8	13	1564	69	20	0	20.1	-10	6800			
		1688	75	19		40.2					
DAx8	14	2241	101	7	0	19.8	-10	7000			
		2254	101	20		40.0					
DAx8	15	1565	69	21	0	20.4	-10	7400			
		1689	75	20		40.2					
DAx8	16	1582	71	11	0	20.2	-5	5000			
		1703	76	9		39.8					
DAx8	17	1583	71	12	0	19.8	-5	5600			
		1704	76	10		39.4					
DAx8	19	1584	71	13	0	19.9	-5	6200			
		1705	76	11		39.4					
DAx8	22	1585	71	14	0	19.9	-5	6800			
		1706	76	12		40.4					
DAx8	23	2242	101	8	0	19.6	-5	7000			
		2255	101	21		39.9					
DAx8	24	1586	71	15	0	19.9	-5	7400			
		1707	76	13		40.2					
DAx8	25	1593	71	22	0	19.8	-2	5000			
		1711	76	17		40.2					
DAx8	26	1594	71	23	0	19.5	-2	5600			
		1712	76	18		40.3					
DAx8	28	1608	73	5	0	20.1	-2	6200			
		1713	76	19		39.8					
DAx8	31	1596	71	25	0	19.3	-2	6800			
		1714	76	20		40.2					
DAx8	32	2243	101	9	0	19.5	-2	7000			
		2256	101	22		39.8					
DAx8	33	1597	71	26	0	20.7	-2	7400			
		1715	76	21		40.0					
DAx8	34	1541	68	4	0	0.0	0	5000			
		1615	73	12		20.1					
		1730	78	5		40.1					
DAx8	35	1616	73	13	0	19.9	0	5600			
		1731	78	6		39.7					
DAx8	36	1736	78	11	0	0.0	0	6200			
		1575	71	4		20.1					
		1674	75	5		40.0					
DAx8	37	1618	73	15	0	20.1	0	6800			
		1733	78	8		40.4					
DAx8	38	2265	101	31	0	0.0	0	7000			
		2238	101	4		20.0					
		2251	101	17		40.0					
DAx8	39	1619	73	16	0	19.1	0	7400			
		1734	78	9		40.5					

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	40	2245	101	11	0	20.0	2	7000			
		2258	101	24		39.6					
DAx8	41	2246	101	12	0	19.6	5	7000			
		2259	101	25		39.8					
DAx8	42	2247	101	13	0	20.0	10	7000			
		2260	101	26		40.2					
DAx8	43	2248	101	14	0	20.0	20	7000			
		2261	101	27		40.1					
DAx8	44	2249	101	15	0	20.2	40	7000			
		2262	101	28		39.9					
DAx8	45	1762	82	7	-5	20.0	-40	7000			
		1876	88	5		39.8					
DAx8	46	1763	82	8	-5	20.0	-40	7700			
		1877	88	6		39.6					
DAx8	47	1764	82	9	-5	20.0	-40	8400			
		1878	88	7		39.3					
DAx8	48	1767	82	12	-5	21.1	-20	7000			
		1880	88	9		39.9					
DAx8	49	1768	82	13	-5	19.5	-20	7700			
		1881	88	10		39.0					
DAx8	50	1769	82	14	-5	20.0	-20	8400			
		1882	88	11		39.5					
DAx8	51	1771	82	16	-5	20.4	-10	6200			
		1884	88	13		39.8					
DAx8	53	1772	82	17	-5	20.4	-10	7000			
		1885	88	14		39.9					
DAx8	56	1773	82	18	-5	20.8	-10	7700			
		1886	88	15		39.4					
DAx8	57	1774	82	19	-5	20.2	-10	8400			
		1887	88	16		39.9					
DAx8	58	1785	83	5	-5	20.7	-5	5600			
		1893	88	22		39.7					
DAx8	59	1786	83	6	-5	20.0	-5	6200			
		1894	88	23		39.8					
DAx8	61	1787	83	7	-5	20.1	-5	7000			
		1895	88	24		40.1					
DAx8	63	1788	83	8	-5	20.1	-5	7700			
		1896	88	25		40.1					
DAx8	64	1789	83	9	-5	20.1	-5	8400			
		1897	88	26		40.2					
DAx8	65	1801	84	5	-5	20.9	-2	5600			
		1908	89	5		40.0					
DAx8	66	1802	84	6	-5	20.5	-2	6200			
		1909	89	6		39.9					
DAx8	68	1803	84	7	-5	20.4	-2	7000			
		1910	89	7		39.5					
DAx8	70	1804	84	8	-5	19.8	-2	7700			
		1911	89	8		39.4					
DAx8	71	1809	84	13	-5	20.6	0	5600			
		1866	87	5		39.9					
DAx8	72	1810	84	14	-5	20.1	0	6200			
		1867	87	6		39.6					
DAx8	75	1926	89	23	-5	0.0	0	7000			
		1759	82	4		20.0					
		1868	87	7		39.8					
DAx8	77	1825	85	9	-5	20.7	2	5600			
		1918	89	15		39.9					
DAx8	78	1826	85	10	-5	20.3	2	6200			
		1919	89	16		39.8					
DAx8	80	1834	85	18	-5	20.2	5	5600			
		1921	89	18		40.4					
DAx8	81	1835	85	19	-5	19.5	5	6200			
		1922	89	19		39.8					
DAx8	83	1848	86	5	-5	20.3	10	5600			
		1924	89	21		39.8					
DAx8	84	1968	90	41	-30	0.0	0	7000			
		1967	90	40		20.5					

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	85	2043	92	34	-45	0.0	0	7000			
		2013	92	4		20.0					
DAx8	87	2085	93	41	-60	0.0	0	7000			
		2084	93	40		20.1					
DAx8	88	2205	98	24	-90	0.0	0	7000			
		2119	94	33		20.0					
DAx8	86	2233	100	13	-45	0.0	0	7000			
		2232	100	12		20.0					
DAx8	89	2219	99	13	-90	0.0	0	7000			
		2218	99	12		20.1					
DAx8	9	1578	71	7	0	20.3	-10	5600	6800		5600
		1701	76	7		39.7					
DAx8	11	1577	71	6	0	20.4	-10	6800	5600		6800
		1700	76	6		39.4					
DAx8	12	1581	71	10	0	19.9	-10	6800		5600	
		1702	76	8		39.8					
DAx8	18	1589	71	18	0	20.0	-5	5600	6800		5600
		1709	76	15		40.5					
DAx8	20	1588	71	17	0	20.4	-5	6800	5600		6800
		1708	76	14		39.8					
DAx8	21	1592	71	21	0	20.2	-5	6800		5600	
		1710	76	16		39.9					
DAx8	27	1611	73	8	0	19.5	-2	5600	6800		5600
		1717	76	23		40.0					
DAx8	29	1610	73	7	0	19.5	-2	6800	5600		6800
		1716	76	22		39.8					
DAx8	30	1614	73	11	0	19.5	-2	6800		5600	
		1718	76	24		39.6					
DAx8	52	1776	82	21	-5	19.5	-10	6200	7700		6200
		1890	88	19		39.7					
DAx8	54	1775	82	20	-5	19.0	-10	7700	6200		7700
		1889	88	18		39.9					
DAx8	55	1777	82	22	-5	19.3	-10	7700		6200	
		1891	88	20		39.8					
DAx8	60	1791	83	11	-5	20.1	-5	6200	7700		6200
		1898	88	27		40.2					
DAx8	62	1792	83	12	-5	20.1	-5	7700		6200	
		1899	88	28		39.6					
DAx8	67	1807	84	11	-5	20.5	-2	6200	7700		6200
		1912	89	9		39.7					
DAx8	69	1808	84	12	-5	20.4	-2	7700		6200	
		1913	89	10		39.7					
DAx8	73	1824	85	8	-5	19.5	0	6200		7700	
		1915	89	12		39.8					
DAx8	74	1822	85	6	-5	19.9	0	6200	7700		6200
		1916	89	13		39.6					
DAx8	76	1823	85	7	-5	20.8	0	7700		6200	
		1917	89	14		39.8					
DAx8	79	1831	85	15	-5	20.3	2	6200	7700		6200
		1920	89	17		39.8					
DAx8	82	1839	85	23	-5	21.0	5	6200	7700		6200
		1923	89	20		40.4					
DAx8 Duplicate Runs											
DAx8	1	2089	94	3	-90	0	0	7000	7000	7000	7000
		2090	94	4	-90	0	0	7000	7000	7000	7000
		2120	94	34	-90	0	0	7000	7000	7000	7000
		2124	95	3	-90	0	0	7000	7000	7000	7000
		2145	95	24	-90	0	0	7000	7000	7000	7000
		2184	98	3	-90	0	0	7000	7000	7000	7000
DAx8	3	2091	94	5	-90	20.3	0	7000	7000	7000	7000
		2119	94	33	-90	20	0	7000	7000	7000	7000
		2125	95	4	-90	20.2	0	7000	7000	7000	7000
		2128	95	7	-90	19.7	0	7000	7000	7000	7000
		2144	95	23	-90	20.5	0	7000	7000	7000	7000
		2185	98	4	-90	20.2	0	7000	7000	7000	7000

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	4	2189	98	8	-90	18.6	5	7700	7700	7700	7700
		2190	98	9	-90	20.1	5	7700	7700	7700	7700
DAx8	5	2047	93	3	-60	0	0	7000	7000	7000	7000
		2085	93	41	-60	0	0	7000	7000	7000	7000
DAx8	6	2048	93	4	-60	20.2	0	7000	7000	7000	7000
		2066	93	22	-60	19.9	0	7000	7000	7000	7000
		2084	93	40	-60	20.1	0	7000	7000	7000	7000
DAx8	7	1977	91	8	-45	21.1	-10	7700	7700	7700	7700
		1978	91	9	-45	20.5	-10	7700	7700	7700	7700
DAx8	8	1972	91	3	-45	0	0	7000	7000	7000	7000
		2008	91	39	-45	0	0	7000	7000	7000	7000
		2012	92	3	-45	0	0	7000	7000	7000	7000
		2043	92	34	-45	0	0	7000	7000	7000	7000
DAx8	10	1973	91	4	-45	20.3	0	7000	7000	7000	7000
		2004	91	35	-45	19.9	0	7000	7000	7000	7000
		2007	91	38	-45	20.9	0	7000	7000	7000	7000
		2013	92	4	-45	20	0	7000	7000	7000	7000
		2042	92	33	-45	20.6	0	7000	7000	7000	7000
DAx8	12	1930	90	3	-30	0	0	7000	7000	7000	7000
		1968	90	41	-30	0	0	7000	7000	7000	7000
DAx8	13	1949	90	22	-30	19.8	0	7000	7000	7000	7000
		1967	90	40	-30	20.5	0	7000	7000	7000	7000
DAx8	15	1758	82	3	-5	0	0	7000	7000	7000	7000
		1779	82	24	-5	0	0	7000	7000	7000	7000
		1783	83	3	-5	0	0	7000	7000	7000	7000
		1795	83	15	-5	0	0	7000	7000	7000	7000
		1799	84	3	-5	0	0	7000	7000	7000	7000
DAx8	16	1759	82	4	-5	20	0	7000	7000	7000	7000
		1778	82	23	-5	19.8	0	7000	7000	7000	7000
		1784	83	4	-5	20.3	0	7000	7000	7000	7000
		1794	83	14	-5	20	0	7000	7000	7000	7000
		1800	84	4	-5	20.3	0	7000	7000	7000	7000
		1811	84	15	-5	19.7	0	7000	7000	7000	7000
DAx8	17	1814	84	18	-5	20	0	7000	7000	7000	7000
		1820	85	4	-5	20.2	0	7000	7000	7000	7000
		1841	85	25	-5	19.9	0	7000	7000	7000	7000
		1847	86	4	-5	20	0	7000	7000	7000	7000
		1859	86	16	-5	20.1	0	7000	7000	7000	7000
		1865	87	4	-5	19.8	0	7000	7000	7000	7000
DAx8	18	1869	87	8	-5	20.2	0	7000	7000	7000	7000
		1875	88	4	-5	20.2	0	7000	7000	7000	7000
		1901	88	30	-5	20.2	0	7000	7000	7000	7000
		1907	89	4	-5	20.5	0	7000	7000	7000	7000
		1925	89	22	-5	20.6	0	7000	7000	7000	7000
DAx8	19	1685	75	16	0	40.7	-20	8600	8600	8600	8600
		1686	75	17	0	39.8	-20	8600	8600	8600	8600
DAx8	20	1595	71	24	0	19.4	-2	6200	6200	6200	6200
		1608	73	5	0	20.1	-2	6200	6200	6200	6200
DAx8	21	1544	68	7	0	0	0	6200	6200	6200	6200
		1547	69	3	0	0	0	6200	6200	6200	6200
		1567	69	23	0	0	0	6200	6200	6200	6200
		1574	71	3	0	0	0	6200	6200	6200	6200
		1599	71	28	0	0	0	6200	6200	6200	6200
		1606	73	3	0	0	0	6200	6200	6200	6200
DAx8	22	1639	73	36	0	0	0	6200	6200	6200	6200
		1643	74	3	0	0	0	6200	6200	6200	6200
		1668	74	28	0	0	0	6200	6200	6200	6200
		1672	75	3	0	0	0	6200	6200	6200	6200
		1693	75	24	0	0	0	6200	6200	6200	6200
		1697	76	3	0	0	0	6200	6200	6200	6200
DAx8	23	1720	76	26	0	0	0	6200	6200	6200	6200
		1724	77	3	0	0	0	6200	6200	6200	6200
		1728	78	3	0	0	0	6200	6200	6200	6200
		1736	78	11	0	0	0	6200	6200	6200	6200

UAV model	Graph Number	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	24	1543	68	6	0	0	0	7000	7000	7000	7000
		1743	80	3	0	0	0	7000	7000	7000	7000
		1748	81	3	0	0	0	7000	7000	7000	7000
		1754	81	9	0	0	0	7000	7000	7000	7000
		2237	101	3	0	0	0	7000	7000	7000	7000
		2265	101	31	0	0	0	7000	7000	7000	7000
DAx8	25	1548	69	4	0	19.7	0	6200	6200	6200	6200
		1575	71	4	0	20.1	0	6200	6200	6200	6200
		1598	71	27	0	20.1	0	6200	6200	6200	6200
		1607	73	4	0	19.4	0	6200	6200	6200	6200
		1617	73	14	0	19.1	0	6200	6200	6200	6200
		1638	73	35	0	19.9	0	6200	6200	6200	6200
DAx8	26	1644	74	4	0	19	0	6200	6200	6200	6200
		1667	74	27	0	20.1	0	6200	6200	6200	6200
		1673	75	4	0	20.5	0	6200	6200	6200	6200
		1692	75	23	0	20.1	0	6200	6200	6200	6200
		1698	76	4	0	20.2	0	6200	6200	6200	6200
		1719	76	25	0	19.7	0	6200	6200	6200	6200
DAx8	27	1725	77	4	0	20.6	0	6200	6200	6200	6200
		1729	78	4	0	20.4	0	6200	6200	6200	6200
		1735	78	10	0	19.6	0	6200	6200	6200	6200
DAx8	28	1749	81	4	0	20.2	0	7000	7000	7000	7000
		1753	81	8	0	19	0	7000	7000	7000	7000
		2238	101	4	0	20	0	7000	7000	7000	7000
		2244	101	10	0	20.1	0	7000	7000	7000	7000
		2250	101	16	0	20.5	0	7000	7000	7000	7000
		2264	101	30	0	20.1	0	7000	7000	7000	7000
DAx8	30	1549	69	5	0	39.1	0	6200	6200	6200	6200
		1674	75	5	0	40	0	6200	6200	6200	6200
		1732	78	7	0	39.7	0	6200	6200	6200	6200
DAx8	31	1750	81	5	0	39.2	0	7000	7000	7000	7000
		2251	101	17	0	40	0	7000	7000	7000	7000
		2257	101	23	0	39.7	0	7000	7000	7000	7000
		2263	101	29	0	39.9	0	7000	7000	7000	7000
DAx8	32	1630	73	27	0	18.7	2	6200	6200	6200	6200
		1631	73	28	0	20.1	2	6200	6200	6200	6200
DAx8	33	1633	73	30	0	18.5	2	7400	7400	7400	7400
		1634	73	31	0	19.9	2	7400	7400	7400	7400
DAx8	34	1647	74	7	0	20.3	5	6200	6200	6200	6200
		1648	74	8	0	19.4	5	6200	6200	6200	6200
DAx8	2	2209	99	3	-90	0	0	7000	7000	7000	7000
		2219	99	13	-90	0	0	7000	7000	7000	7000
DAx8	9	2223	100	3	-45	0	0	7000	7000	7000	7000
		2233	100	13	-45	0	0	7000	7000	7000	7000
DAx8	11	2224	100	4	-45	19.7	0	7000	7000	7000	7000
		2228	100	8	-45	19.7	0	7000	7000	7000	7000
		2232	100	12	-45	20	0	7000	7000	7000	7000
DAx8	14	1792	83	12	-5	20.1	-5	7700	7700	6200	6200
		1793	83	13	-5	20.2	-5	7700	7700	6200	6200
DAx8	29	1624	73	21	0	21.3	0	7400	7400	5000	5000
		1625	73	22	0	19.4	0	7400	7400	5000	5000

Appendix D

Graph Key

Appendix Graph Key tabulates the runs plotted in Appendix E. All rows color coded blue correspond to runs simulating turning. All rows color coded beige correspond to bare airframe runs.

IRIS Hover Sweep

UAV model	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
IRIS	1333	58	3	0	0	0	3000			
	1334	58	4				4000			
	1335	58	5				5000			
	1338	58	8				5400			
	1337	58	7				7000			

IRIS RPM Sweep

IRIS	1345	59	6	0	20	-40	4300			
	1346	59	7				4900			
	1347	59	8				5400			
	1348	59	9				5900			
	1349	59	10				6500			
IRIS	1398	61	27	0	20	0	4300			
	1399	61	28				4900			
	1400	61	29				5400			
	1401	61	30				5900			
	1402	61	31				6500			
IRIS	1418	62	5	0	40	-40	4300			
	1419	62	6				4900			
	1420	62	7				5400			
	1421	62	8				5900			
	1422	62	9				6500			
IRIS	1468	63	27	0	40	0	4300			
	1469	63	28				4900			
	1470	63	29				5400			
	1471	63	30				5900			
	1472	63	31				6500			
IRIS	1531	66	12	0	0	0	0			
	1486	64	3				5400			

IRIS Forward Flight Sweep

IRIS	1398	61	27	0	19.7	0	4300			
	1468	63	27		40.2					
IRIS	1402	61	31	0	19.8	0	6500			
	1472	63	31		39.8					
IRIS	1345	59	6	0	20.4	-40	4300			
	1418	62	5		39.7					
IRIS	1349	59	10	0	20.8	-40	6500			
	1422	62	9		39.8					
IRIS	1488	64	5	0	20	-40	5400			
	1506	65	5		40.5					
IRIS	1362	59	23	0	19.6	-10	6500	6500	4300	4300
	1435	62	22		39.7					
IRIS	1407	61	36	0	19.8	0	6500	6500	4300	4300
	1477	63	36		40					

UAV model	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
IRIS	1498	64	15	0	20.6	40	5400			
	1516	65	15		40.5					
IRIS Pitch Sweep										
IRIS	1345	59	6	0	20	-40	4300			
	1350	59	11			-20				
	1355	59	16			-10				
	1376	61	5			-5				
	1387	61	16			-2				
	1398	61	27			0				
IRIS	1349	59	10	0	20	-40	6500			
	1354	59	15			-20				
	1359	59	20			-10				
	1380	61	9			-5				
	1391	61	20			-2				
	1402	61	31			0				
IRIS	1418	62	5	0	40	-40	4300			
	1423	62	10			-20				
	1428	62	15			-10				
	1446	63	5			-5				
	1457	63	16			-2				
	1468	63	27			0				
IRIS	1422	62	9	0	40	-40	6500			
	1427	62	14			-20				
	1432	62	19			-10				
	1450	63	9			-5				
	1461	63	20			-2				
	1472	63	31			0				
IRIS	1488	64	5	0	20	-40	5400			
	1489	64	6			-20				
	1490	64	7			-10				
	1491	64	8			-5				
	1492	64	9			-2				
	1493	64	10			0				
IRIS	1493	64	10	0	20	0	5400			
	1494	64	11			2				
	1495	64	12			5				
	1496	64	13			10				
	1497	64	14			20				
	1498	64	15			40				
IRIS	1506	65	5	0	40	-40	5400			
	1507	65	6			-20				
	1508	65	7			-10				
	1509	65	8			-5				
	1510	65	9			-2				
	1529	66	10			0				

UAV model	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
IRIS	1517	65	16	0	40	0	5400			
	1512	65	11			2				
	1513	65	12			5				
	1514	65	13			10				
	1515	65	14			20				
	1516	65	15			40				
IRIS	1383	61	12	0	20	-5	6500	6500	4300	4300
	1394	61	23			-2				
	1407	61	36			0				
IRIS	1435	62	22	0	40	-10	6500	6500	4300	4300
	1453	63	12			-5				
	1464	63	23			-2				
	1477	63	36			0				
IRIS Duplicate Runs										
IRIS	1342	59	3	0	0	0	5400			
	1367	59	28							
	1374	61	3							
	1416	62	3							
	1440	62	27							
	1482	63	41							
IRIS	1344	59	5	0	40	0	5400			
	1366	59	27							
	1375	61	4							
	1417	62	3							
	1439	62	26							
	1445	63	4							
IRIS	1486	64	3	0	0	0	5400			
	1500	64	17							
	1504	65	3							
	1518	65	17							
	1522	66	3							
	1530	66	11							
IRIS	1487	64	4	0	40	0	5400			
	1499	64	16							
	1505	65	4							
	1511	65	10							
	1523	66	4							
	1529	66	10							
DAx8 RPM Sweep										
DAx8	1551	69	7	0	20	-40	5000			
	1552	69	8				5600			
	1553	69	9				6200			
	1554	69	10				6800			
	1555	69	11				7400			
DAx8	1662	74	22	0	20	20	5000			
	1663	74	23				5600			
	1664	74	24				6200			
	1665	74	25				6800			
	1666	74	26				7400			
DAx8	1675	75	6	0	40	-40	6200			
	1676	75	7				6800			
	1677	75	8				7400			
	1678	75	9				8000			
	1679	75	10				8600			
	1680	75	11				9200			

UAV model	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	1730	78	5	0	40	0	5000			
	1731	78	6				5600			
	1732	78	7				6200			
	1733	78	8				6800			
	1734	78	9				7400			
DAx8	2220	99	14	-90	0	0	0			
	2209	99	3				7000			
DAx8 Pitch Sweep										
DAx8	1551	69	7	0	20.0	-40	5000			
	1556	69	12			-20				
	1561	69	17			-10				
	1582	71	11			-5				
	1593	71	22			-2				
	1615	73	12			0				
DAx8	1578	71	7	0	20.0	-10	5600	6800		5600
	1589	71	18			-5				
	1611	73	8			-2				
	1622	73	19			0				
DAx8	1555	69	11	0	20.0	-40	7400			
	1560	69	16			-20				
	1565	69	21			-10				
	1586	71	15			-5				
	1597	71	26			-2				
	1619	73	16			0				
DAx8	1619	73	16	0	20.0	0	7400			
	1634	73	31			2				
	1650	74	10			5				
	1658	74	18			10				
	1666	74	26			20				
DAx8	1703	76	9	0	40.0	-5	5000			
	1711	76	17			-2				
	1730	78	5			0				
DAx8	1701	76	7	0	40.0	-10	5600	6800		5600
	1709	76	15			-5				
	1717	76	23			-2				
DAx8	1702	76	8	0	40.0	-10	6800		5600	
	1710	76	16			-5				
	1718	76	24			-2				
DAx8	1822	85	6	-5	20.0	0	6200	7700		6200
	1831	85	15			2				
	1839	85	23			5				
	1853	86	10			10				
DAx8	1777	82	22	-5	20.0	-10	7700		6200	
	1793	83	13			-5				
	1808	84	12			-2				
	1823	85	7			0				

UAV model	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	1823	85	7	-5	20.0	0	7700		6200	
	1832	85	16			2				
	1840	85	24			5				
	1854	86	11			10				
DAx8	1983	91	14	-45	20.0	-10	6200		7700	
	1992	91	23			-5				
	2001	91	32			-2				
	2017	92	8			0				
DAx8	2017	92	8	-45	20.0	0	6200		7700	
	2025	92	16			2				
	2033	92	24			5				
	2041	92	32			10				
DAx8	2225	100	5	-45	20.0	-10	7000			
	2226	100	6			-5				
	2227	100	7			-2				
	2224	100	4			0				
DAx8	2232	100	12	-45	20.0	0	7000			
	2229	100	9			2				
	2230	100	10			5				
	2231	100	11			10				
DAx8	2092	94	6	-90	20.0	-10	5600			
	2101	94	15			-5				
	2110	94	24			-2				
	2126	95	5			0				
DAx8	2100	94	14	-90	20.0	-10	6200		7700	
	2107	94	21			-5				
	2118	94	32			-2				
	2134	95	13			0				
DAx8	2134	95	13	-90	20.0	0	6200		7700	
	2143	95	22			2				
	2194	98	13			5				
	2202	98	21			10				
DAx8	2098	94	12	-90	20.0	-10	6200	7700		6200
	2109	94	23			-5				
	2116	94	30			-2				
	2132	95	11			0				
DAx8	2211	99	5	-90	20.0	-10	7000			
	2212	99	6			-5				
	2213	99	7			-2				
	2214	99	8			0				
DAx8	2214	99	8	-90	20.0	0	7000			
	2215	99	9			2				
	2216	99	10			5				
	2217	99	11			10				
DAx8	2096	94	10	-90	20.0	-10	8400			
	2105	94	19			-5				
	2114	94	28			-2				
	2130	95	9			0				

UAV model	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	2130	95	9	-90	20.0	0	8400			
	2139	95	18			2				
	2191	98	10			5				
	2199	98	18			10				
DAx8 Yaw Sweep										
DAx8	2266	101	32	0	0.0	0	0			
	1927	89	24	-5						
	1969	90	42	-30						
	2044	92	35	-45						
	2086	93	42	-60						
	2206	98	25	-90						
DAx8	1777	82	22	-5	20.0	-10	7700		6200	
	1982	91	13	-45						
	2099	94	13	-90						
DAx8	1608	73	5	0	20.0	-2	6200			
	1802	84	6	-5						
	1943	90	16	-30						
	1994	91	25	-45						
	2060	93	16	-60						
	2111	94	25	-90						
DAx8	1791	83	11	-5	20.0	-5	6200	7700		6200
	1990	91	21	-45						
	2109	94	23	-90						
DAx8	1853	86	10	-5	20.0	10	6200	7700		6200
	2039	92	30	-45						
	2201	98	20	-90						
DAx8 Forward Flight Sweep										
DAx8	1553	69	9	0	19.8	-40	6200			
	1675	75	6		39.3					
DAx8	1555	69	11	0	20.3	-40	7400			
	1677	75	8		40.4					
DAx8	1577	71	6	0	20.4	-10	6800	5600		6800
	1700	76	6		39.4					
DAx8	1592	71	21	0	20.2	-5	6800		5600	
	1710	76	16		39.9					
DAx8	2249	101	15	0	20.2	40	7000			
	2262	101	28		39.9					
DAx8	1791	83	11	-5	20.1	-5	6200	7700		6200
	1898	88	27		40.2					
DAx8	1839	85	23	-5	21.0	5	6200	7700		6200
	1923	89	20		40.4					
DAx8	2233	100	13	-45	0.0	0	7000			
	2232	100	12		20.0					
DAx8	2219	99	13	-90	0.0	0	7000			
	2218	99	12		20.1					
DAx8 Duplicate Runs										
DAx8	2089	94	3	-90	0	0	7000	7000	7000	7000
	2090	94	4	-90	0	0	7000	7000	7000	7000
	2120	94	34	-90	0	0	7000	7000	7000	7000
	2124	95	3	-90	0	0	7000	7000	7000	7000
	2145	95	24	-90	0	0	7000	7000	7000	7000
	2184	98	3	-90	0	0	7000	7000	7000	7000

UAV model	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
DAx8	2091	94	5	-90	20.3	0	7000	7000	7000	7000
	2119	94	33	-90	20	0	7000	7000	7000	7000
	2125	95	4	-90	20.2	0	7000	7000	7000	7000
	2128	95	7	-90	19.7	0	7000	7000	7000	7000
	2144	95	23	-90	20.5	0	7000	7000	7000	7000
	2185	98	4	-90	20.2	0	7000	7000	7000	7000
DAx8	2224	100	4	-45	19.7	0	7000	7000	7000	7000
	2228	100	8	-45	19.7	0	7000	7000	7000	7000
	2232	100	12	-45	20	0	7000	7000	7000	7000
Phantom RPM Sweep										
Phantom	187	16	7	0	20	-40	4200			
	188	16	8				4800			
	186	16	6				5300			
	189	16	9				5800			
	190	16	10				6400			
Phantom	249	16	68	0	20	0.11	4200			
	250	16	69				4800			
	248	16	67				5300			
	251	16	70				5800			
	252	16	71				6400			
Phantom	272	17	7	0	84	0	4200			
	273	17	8				4800			
	271	17	6				5300			
Phantom	367	21	1	0	0	0	0			
	369	21	3				5000			
Phantom Forward Flight Sweep										
Phantom	187	16	7	0	21.2	-40	4200			
	284	18	6		41.9					
Phantom	197	16	16	0	21.0	-40	4200		6400	
	293	18	15		42.4					
Phantom	192	16	11	0	20.9	-40	5800	4800	5800	4800
	289	18	11		41.9					
Phantom	190	16	10	0	21.1	-40	6400			
	287	18	9		42.3					
	152	14	14		81.0					
Phantom	249	16	68	0	21.0	0	4200			
	347	19	32		42.2					
	272	17	7		84.1					
Phantom	261	16	80	0	20.7	0	4200		6400	
	359	19	44		42.4					
Phantom	254	16	73	0	21.0	0	5800	4800	5800	4800
	353	19	38		42.2					
Phantom	252	16	71	0	20.6	0	6400			
	351	19	36		42.1					

UAV model	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Phantom Pitch Sweep										
Phantom	219	16	38	0	0.0	-10	5300			
	361	19	46			0				
Phantom	187	16	7	0	20.0	-40	4200			
	200	16	19			-30				
	218	16	37			-10				
	234	16	53			-5				
	243	16	62			-2				
	249	16	68			0				
Phantom	196	16	15	0	20.0	-40	4800		5800	
	206	16	25			-30				
	215	16	34			-20				
	230	16	49			-10				
	240	16	59			-5				
	260	16	79			0				
Phantom	190	16	10	0	20.0	-40	6400			
	203	16	22			-30				
	212	16	31			-20				
	225	16	44			-10				
	237	16	56			-5				
	252	16	71			0				
Phantom	292	18	14	0	40.0	-40	4800		5800	
	301	18	23			-30				
	311	18	33			-20				
	327	19	12			-10				
	337	19	22			-5				
	358	19	43			0				
Phantom	272	17	7	0	80.0	0	4200			
	274	17	9			5				
	174	15	13			20				
	175	15	14			30				
	176	15	15			40				
Phantom	271	17	6	0	80.0	0	5300			
	171	15	10			5				
	172	15	11			10				
	173	15	12			20				
Phantom Duplicate Runs										
Phantom	134	13	3	0	0	0	5300			
	141	14	3	0	0	0				
	168	15	7	0	0	0				
	183	16	3	0	0	0				
	268	17	3	0	0	0				
	269	17	4	0	0	0				
SUI RPM Sweep										
SUI	2753	116	5	-90	20	-10	2800			
	2754	116	6				3200			
	2755	116	7				3500			
	2756	116	8				3800			
	2757	116	9				4200			

UAV model	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	2807	116	59	-90	20	10	2800			
	2808	116	60				3200			
	2809	116	61				3500			
	2810	116	62				3800			
	2811	116	63				4200			
SUI	2281	104	5	0	20	-40	2800			
	2282	104	6				3200			
	2283	104	7				3500			
	2284	104	8				3800			
	2285	104	9				4200			
	2286	104	10				4500			
SUI	2482	109	11	0	60	-20	4200			
	2483	109	12				4500			
	2484	109	13				4800			
SUI	2362	105	43	0	20	40	2800			
	2363	105	44				3200			
	2364	105	45				3500			
	2365	105	46				3800			
	2366	105	47				4200			
SUI	2819	117	1	-90	0	0	0			
	2821	117	3				3500			
SUI Pitch Sweep										
SUI	2281	104	5	0	20.0	-40	2800			
	2287	104	11			-20				
	2293	104	17			-10				
	2301	104	25			-5				
	2309	104	33			-2				
	2324	105	5			0				
SUI	2324	105	5	0	20.0	0	2800			
	2333	105	14			2				
	2341	105	22			5				
	2349	105	30			10				
	2357	105	38			20				
	2362	105	43			40				
SUI	2299	104	23	0	20.0	-10	3200		3800	
	2307	104	31			-5				
	2315	104	39			-2				
	2332	105	13			0				
SUI	2332	105	13	0	20.0	0	3200		3800	
	2339	105	20			2				
	2347	105	28			5				
	2355	105	36			10				
SUI	2300	104	24	0	20.0	-10	3800	3200	3800	3200
	2308	104	32			-5				
	2316	104	40			-2				
	2329	105	10			0				
SUI	2329	105	10	0	20.0	0	3800	3200	3800	3200
	2340	105	21			2				
	2348	105	29			5				
	2356	105	37			10				
SUI	2285	104	9	0	20.0	-40	4200			
	2292	104	16			-20				
	2297	104	21			-10				
	2305	104	29			-5				
	2313	104	37			-2				
	2328	105	9			0				

UAV model	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	2328	105	9	0	20.0	0	4200			
	2337	105	18			2				
	2345	105	26			5				
	2353	105	34			10				
	2361	105	42			20				
	2366	105	47			40				
SUI	2393	106	24	0	40.0	-10	3200		3800	
	2401	106	32			-5				
	2409	106	40			-2				
	2425	107	11			0				
SUI	2425	107	11	0	40.0	0	3200		3800	
	2434	107	20			2				
	2441	107	27			5				
	2456	108	10			10				
SUI	2394	106	25	0	40.0	-10	3800	3200	3800	3200
	2402	106	33			-5				
	2410	106	41			-2				
	2426	107	12			0				
SUI	2426	107	12	0	40.0	0	3800	3200	3800	3200
	2435	107	21			2				
	2443	107	29			5				
	2458	108	12			10				
SUI	2476	109	5	0	60.0	-40	4200			
	2479	109	8			-30				
	2482	109	11			-20				
SUI	2477	109	6	0	60.0	-40	4500			
	2480	109	9			-30				
	2483	109	12			-20				
SUI	2753	116	5	-90	20.0	-10	2800			
	2762	116	14			-5				
	2771	116	23			-2				
	2780	116	32			0				
SUI	2786	116	38	-90	20.0	0	3200		3800	
	2795	116	47			2				
	2804	116	56			5				
	2813	116	65			10				
SUI	2830	117	12	-90	20.0	0	3500			
	2827	117	9			2				
	2828	117	10			5				
	2829	117	11			10				
SUI	2760	116	12	-90	20.0	-10	3800	3200	3800	3200
	2769	116	21			-5				
	2778	116	30			-2				
	2787	116	39			0				
SUI	2787	116	39	-90	20.0	0	3800	3200	3800	3200
	2796	116	48			2				
	2805	116	57			5				
	2814	116	66			10				

UAV model	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	2757	116	9	-90	20.0	-10	4200			
	2766	116	18			-5				
	2775	116	27			-2				
	2784	116	36			0				
SUI	2784	116	36	-90	20.0	0	4200			
	2793	116	45			2				
	2802	116	54			5				
	2811	116	63			10				
SUI Forward Flight Sweep										
SUI	2281	104	5	0	20.4	-40	2800			
	2374	106	5		40.3					
SUI	2286	104	10	0	20.1	-40	4500			
	2379	106	10		40.2					
	2477	109	6		60.7					
SUI	2299	104	23	0	19.5	-10	3200		3800	
	2393	106	24		40.4					
SUI	2839	118	7	0	20.4	-10	3500			
	2852	118	20		40.3					
SUI	2300	104	24	0	19.4	-10	3800	3200	3800	3200
	2394	106	25		40.1					
SUI	2840	118	8	0	19.6	-5	3500			
	2853	118	21		40.4					
SUI	2841	118	9	0	19.9	-2	3500			
	2854	118	22		40.5					
SUI	2842	118	10	0	20.1	0	3500			
	2855	118	23		40.2					
SUI	2843	118	11	0	20.4	2	3500			
	2856	118	24		40.0					
SUI	2355	105	36	0	20.0	10	3200		3800	
	2456	108	10		40.1					
SUI	2845	118	13	0	20.1	10	3500			
	2858	118	26		40.5					
SUI	2356	105	37	0	19.7	10	3800	3200	3800	3200
	2458	108	12		40.2					

UAV model	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	2846	118	14	0	20.2	20	3500			
	2859	118	27		40.3					
SUI	2362	105	43	0	20.8	40	2800			
	2466	108	20		40.2					
SUI	2364	105	45	0	19.7	40	3500			
	2468	108	22		39.9					
SUI	2847	118	15	0	20.1	40	3500			
	2860	118	28		40.4					
SUI	2817	116	69	-90	0.0	0	3500			
	2816	116	68		20.0					
SUI	2831	117	13	-90	0.0	0	3500			
	2826	117	8		20.3					
SUI Yaw Sweep										
SUI	2486	109	15	0	0.0	0	3500			
	2586	111	44	-5						
	2628	112	41	-30						
	2705	114	24	-45						
	2747	115	41	-60						
	2817	116	69	-90						
SUI	2293	104	17	0	20.0	-10	2800			
	2503	110	16	-5						
	2592	112	5	-30						
	2634	113	5	-45						
	2711	115	5	-60						
	2753	116	5	-90						
SUI	2300	104	24	0	20.0	-10	3800	3200	3800	3200
	2510	110	23	-5						
	2641	113	12	-45						
	2760	116	12	-90						
SUI	2298	104	22	0	20.0	-10	3800		3200	
	2508	110	21	-5						
	2639	113	10	-45						
	2758	116	10	-90						
SUI	2356	105	37	0	20.0	10	3800	3200	3800	3200
	2572	111	30	-5						
	2702	114	21	-45						
	2814	116	66	-90						
SUI	2354	105	35	0	20.0	10	3800		3200	
	2570	111	28	-5						
	2700	114	19	-45						
	2812	116	64	-90						
SUI Duplicate Runs										
SUI	2752	116	4	-90	19.8	0	3500			
	2782	116	34	-90	20	0				
	2816	116	68	-90	20	0				

UAV model	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
SUI	2822	117	4	-90	20.6	0	3500			
	2826	117	8	-90	20.3	0				
	2830	117	12	-90	19.8	0				
SUI	2271	102	5	0	0	0	3500			
	2279	104	3	0	0	0				
	2322	105	3	0	0	0				
	2368	105	49	0	0	0				
	2372	106	3	0	0	0				
	2413	106	44	0	0	0				
SUI	2836	118	4	0	20.3	0	3500			
	2842	118	10	0	20.1	0				
	2848	118	16	0	20.6	0				
	2862	118	30	0	20.2	0				
SUI	2411	106	42	0	40.5	0	3500			
	2421	107	7	0	40.8	0				
	2451	108	5	0	40.6	0				
SUI	2849	118	17	0	40.3	0	3500			
	2855	118	23	0	40.2	0				
	2861	118	29	0	40.4	0				
Solo RPM Sweep										
Solo	1177	51	5	-90	20	-10	4000			
	1178	51	6				4600			
	1179	51	7				5100			
	1180	51	8				5700			
	1181	51	9				6300			
Solo	1124	49	6	-90	40	-10	4000			
	1125	49	7				4600			
	1126	49	8				5100			
	1127	49	9				5700			
	1128	49	10				6300			
Solo	1241	53	5	-90	20	10	4000			
	1242	53	6				4600			
	1243	53	7				5100			
	1244	53	8				5700			
	1245	53	9				6300			
Solo	1164	50	28	-90	40	10	3500			
	1165	50	29				4000			
	1166	50	30				4600			
	1167	50	31				5100			
	1168	50	32				5700			
	1169	50	33				6300			

UAV model	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	422	25	5	0	20	-40	4600			
	423	25	6				5100			
	424	25	7				5700			
	425	25	8				6300			
	426	25	9				6800			
Solo	1320	57	9	0	80	-40	5700			
	1321	57	10				6300			
	1322	57	11				6800			
Solo	1326	57	15	0	80	-20	5700			
	1327	57	16				6300			
Solo	541	28	21	0	20	40	4600			
	542	28	22				5100			
	543	28	23				5700			
	544	28	24				6300			
	545	28	25				6800			
Solo	1293	56	1	0	0	0	0			
	1277	55	3				5700			
Solo Forward Flight										
Solo	426	25	9	0	20	-40	6800			
	556	29	8		40.6					
	1319	57	8		59.9					
	1322	57	11		80.2					
Solo	1310	56	18	0	0	0	5700			
	1284	55	10		19.6					
	1309	56	17		40					
Solo	1273	54	21	-90	0	0	5700			
	1260	54	8		19.9					
	1272	54	20		39.7					
Solo Yaw										
Solo	1329	57	18	0	0	0	5700			
	863	39	3	-5						
	907	41	3	-30						
	1028	46	3	-45						
	1117	48	27	-60						
	1251	53	15	-90						
Solo	486	26	40	0	20	0	5100		6300	
	722	33	61	-5						
	985	43	13	-45						
	1212	51	40	-90						
Solo	533	28	13	0	20	10	6300		5100	
	762	34	36	-5						
	1021	45	21	-45						
	1248	53	12	-90						
Solo Pitch										
Solo	422	25	5	0	20	-40	4600			
	427	25	10			-20				
	432	25	15			-10				
	452	26	6			-5				
	463	26	17			-2				
	474	26	28			0				

UAV model	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	474	26	28	0	20	0	4600			
	495	27	6			2				
	506	27	17			5				
	525	28	5			10				
	536	28	16			20				
	541	28	21			40				
Solo	442	25	25	0	20	-10	4600		6800	
	462	26	16			-5				
	473	26	27			-2				
	487	26	41			0				
Solo	486	26	40	0	20	0	5100		6300	
	504	27	15			2				
	515	27	26			5				
	534	28	14			10				
Solo	1279	55	5	0	20	-40	5700			
	1280	55	6			-20				
	1281	55	7			-10				
	1282	55	8			-5				
	1283	55	9			-2				
	1284	55	10			0				
Solo	1284	55	10	0	20	0	5700			
	1285	55	11			2				
	1286	55	12			5				
	1287	55	13			10				
	1288	55	14			20				
	1289	55	15			40				
Solo	479	26	33	0	20	0	6800			
	499	27	10			2				
	510	27	21			5				
	529	28	9			10				
	540	28	20			20				
	545	28	25			40				
Solo	625	31	25	0	40	5	4000			
	641	32	5			10				
	649	32	13			20				
	654	32	18			40				
Solo	572	29	24	0	40	-10	4600		6800	
	583	29	35			-5				
	594	29	46			-2				
	617	31	17			0				
Solo	1297	56	5	0	40	-40	5700			
	1298	56	6			-20				
	1299	56	7			-10				
	1300	56	8			-5				
	1301	56	9			-2				
	1290	55	16			0				

UAV model	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo	1309	56	17	0	40	0	5700			
	1303	56	11			2				
	1304	56	12			5				
	1306	56	14			10				
	1307	56	15			20				
	1308	56	16			40				
Solo	1177	51	5	-90	20	-10	4000			
	1186	51	14			-5				
	1195	51	23			-2				
	1204	51	32			0				
Solo	1204	51	32	-90	20	0	4000			
	1213	51	41			2				
	1222	51	50			5				
	1241	53	5			10				
Solo	1185	51	13	-90	20	-10	5100		6300	
	1194	51	22			-5				
	1203	51	31			-2				
	1212	51	40			0				
Solo	1257	54	5	-90	20	-10	5700			
	1258	54	6			-5				
	1259	54	7			-2				
	1260	54	8			0				
Solo	1260	54	8	-90	20	0	5700			
	1261	54	9			2				
	1262	54	10			5				
	1263	54	11			10				
Solo	1181	51	9	-90	20	-10	6300			
	1190	51	18			-5				
	1199	51	27			-2				
	1208	51	36			0				
Solo	1208	51	36	-90	20	0	6300			
	1217	51	45			2				
	1226	51	54			5				
	1245	53	9			10				
Solo	1146	50	10	-90	40	0	3500			
	1152	50	16			2				
	1158	50	22			5				
	1164	50	28			10				
Solo	1265	54	13	-90	40	-10	5700			
	1266	54	14			-5				
	1267	54	15			-2				
	1268	54	16			0				
Solo	1272	54	20	-90	40	0	5700			
	1269	54	17			2				
	1270	54	18			5				
	1271	54	19			10				
Solo	1128	49	10	-90	40	-10	6300			
	1133	49	15			-5				
	1145	50	9			-2				
	1151	50	15			0				
Solo	1151	50	15	-90	40	0	6300			
	1157	50	21			2				
	1163	50	27			5				
	1169	50	33			10				

UAV model	J	BDAS Run #	BDAS Point #	yaw (deg)	windspeed (ft/s)	pitch (deg)	RPM1	RPM2	RPM3	RPM4
Solo Duplicate Runs										
Solo	1121	49	3	-90	0	0	5700	5700	5700	5700
	1135	49	17	-90	0	0	5700	5700	5700	5700
	1139	50	3	-90	0	0	5700	5700	5700	5700
	1175	51	3	-90	0	0	5700	5700	5700	5700
	1232	51	60	-90	0	0	5700	5700	5700	5700
	1239	53	3	-90	0	0	5700	5700	5700	5700
Solo	1123	49	5	-90	39.5	0	5700	5700	5700	5700
	1134	49	16	-90	40.4	0	5700	5700	5700	5700
	1140	50	4	-90	40.4	0	5700	5700	5700	5700
	1150	50	14	-90	40.1	0	5700	5700	5700	5700
	1170	50	34	-90	40	0	5700	5700	5700	5700
	1176	51	4	-90	40	0	5700	5700	5700	5700
Solo	1256	54	4	-90	39.7	0	5700	5700	5700	5700
	1264	54	12	-90	39.7	0	5700	5700	5700	5700
	1268	54	16	-90	39.6	0	5700	5700	5700	5700
	1272	54	20	-90	39.7	0	5700	5700	5700	5700
Solo	1277	55	3	0	0	0	5700	5700	5700	5700
	1291	55	17	0	0	0	5700	5700	5700	5700
	1295	56	3	0	0	0	5700	5700	5700	5700
	1310	56	18	0	0	0	5700	5700	5700	5700
Solo	1278	55	4	0	39.7	0	5700	5700	5700	5700
	1290	55	16	0	39.7	0	5700	5700	5700	5700
	1296	56	4	0	39.9	0	5700	5700	5700	5700
	1302	56	10	0	39.8	0	5700	5700	5700	5700
	1309	56	17	0	40	0	5700	5700	5700	5700

Appendix E

Plots

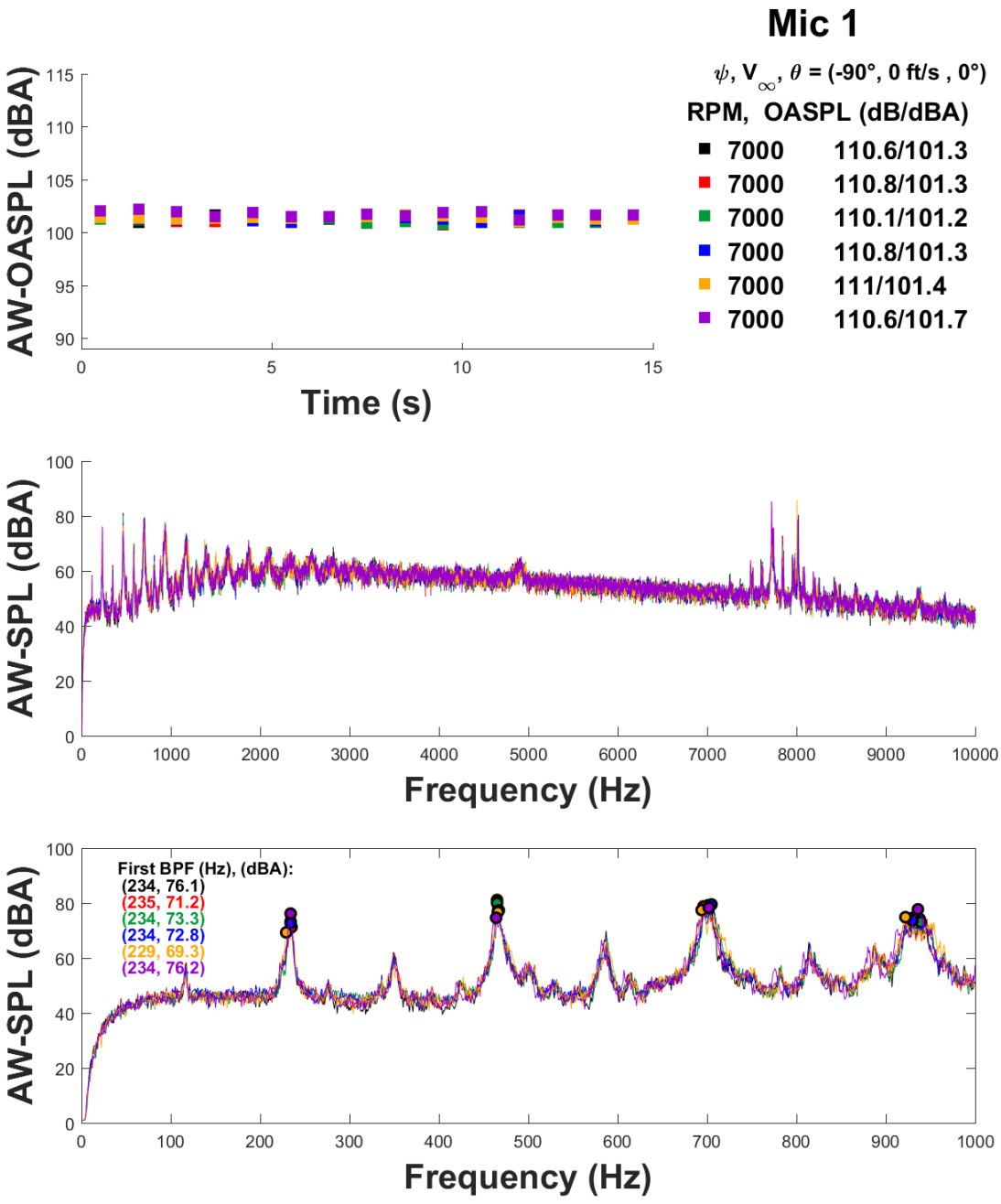

Figure E16: DAx8 microphone 1: Repeat ψ = -90°, V_∞ = 0 ft/s, θ = 0°

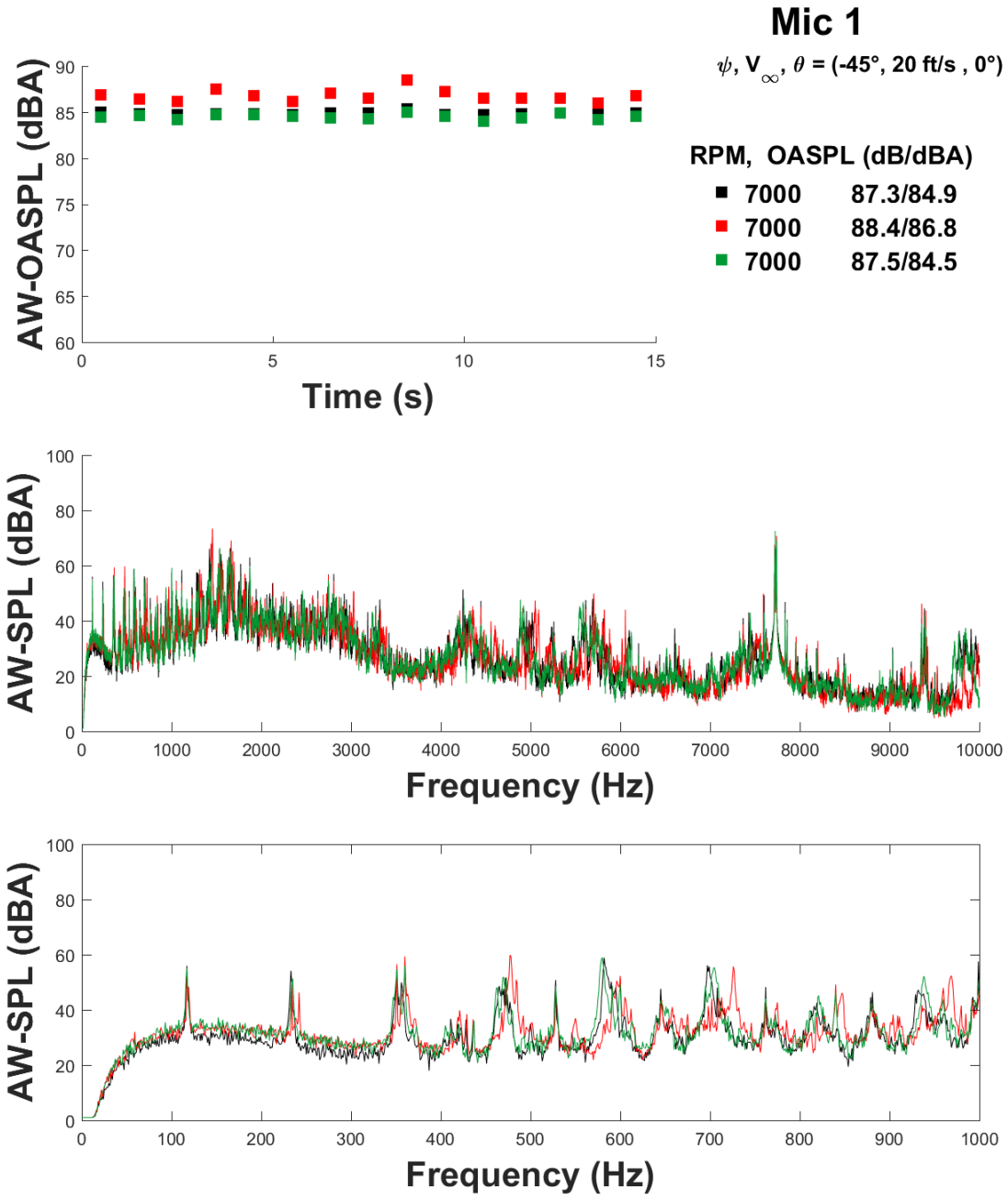

Figure E17: DAx8 Bare Airframe microphone 1: Repeat ψ = -45°, V_∞ = 20 ft/s, θ = 0°

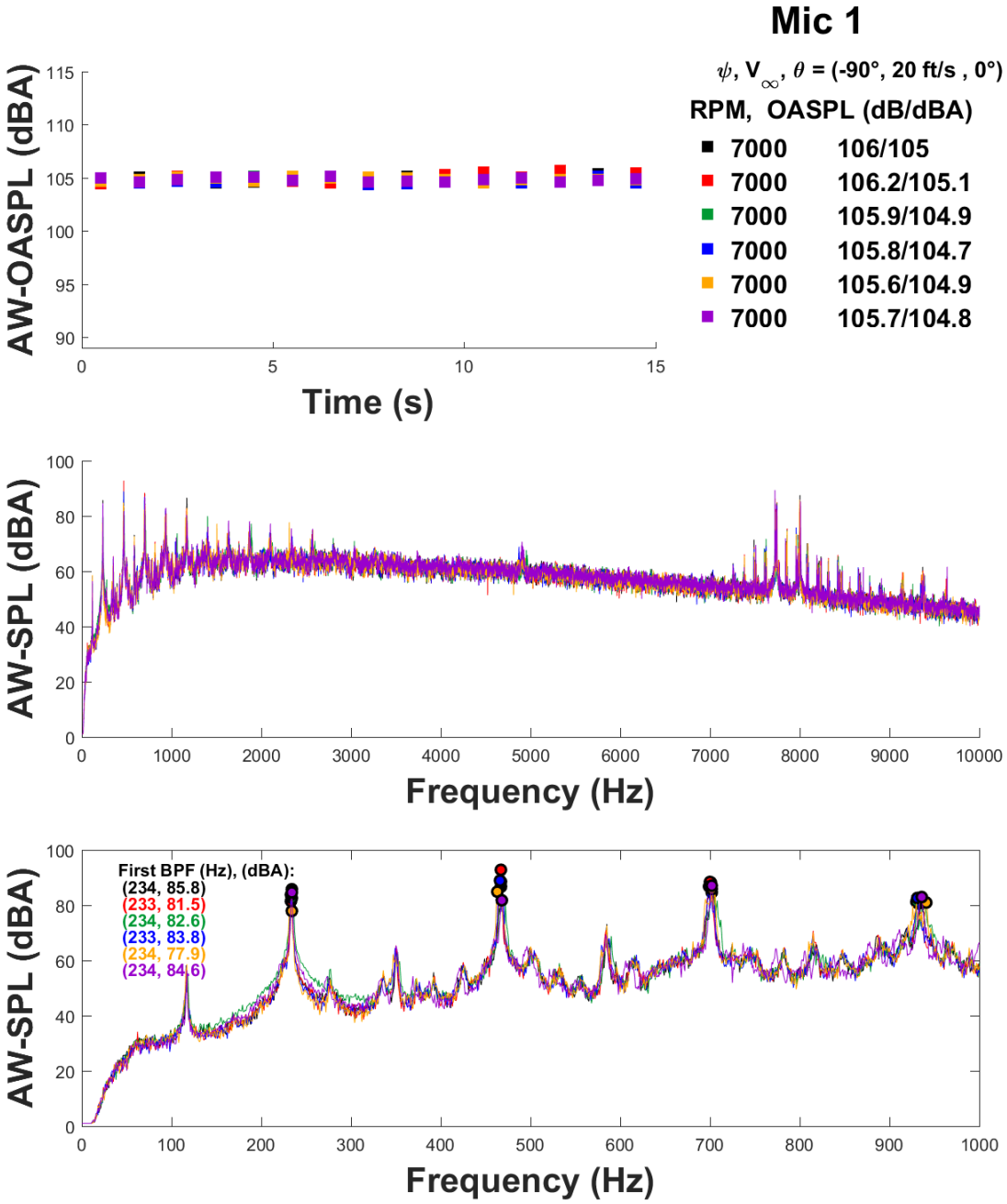

Figure E18: DAx8 microphone 1: Repeat ψ = -90°, V_∞ = 20 ft/s, θ = 0°

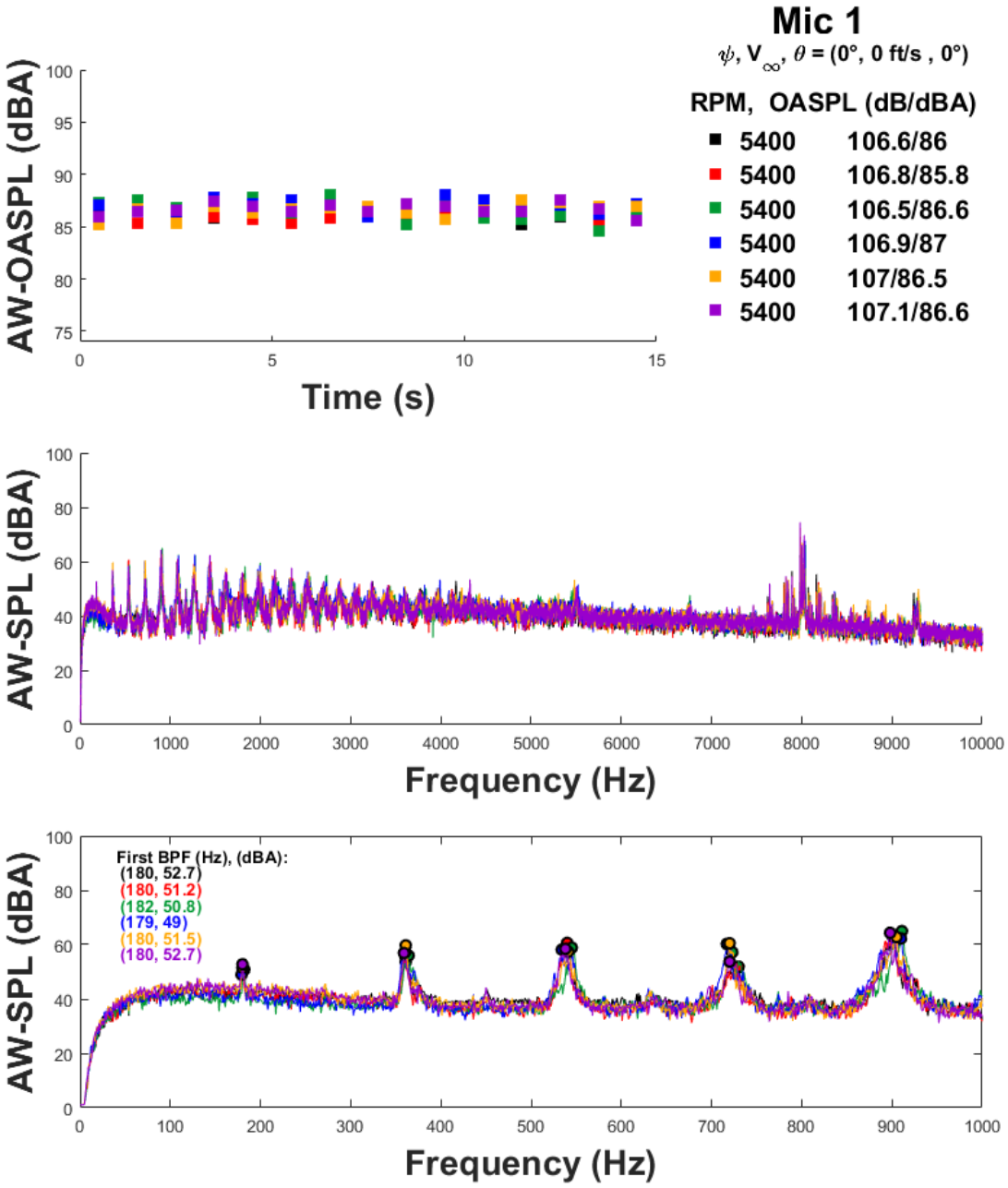

Figure E19: IRIS microphone 1: Repeat $\psi = 0°$, $V_\infty = 0$ ft/s, $\theta = 0°$, RPM= 5,400

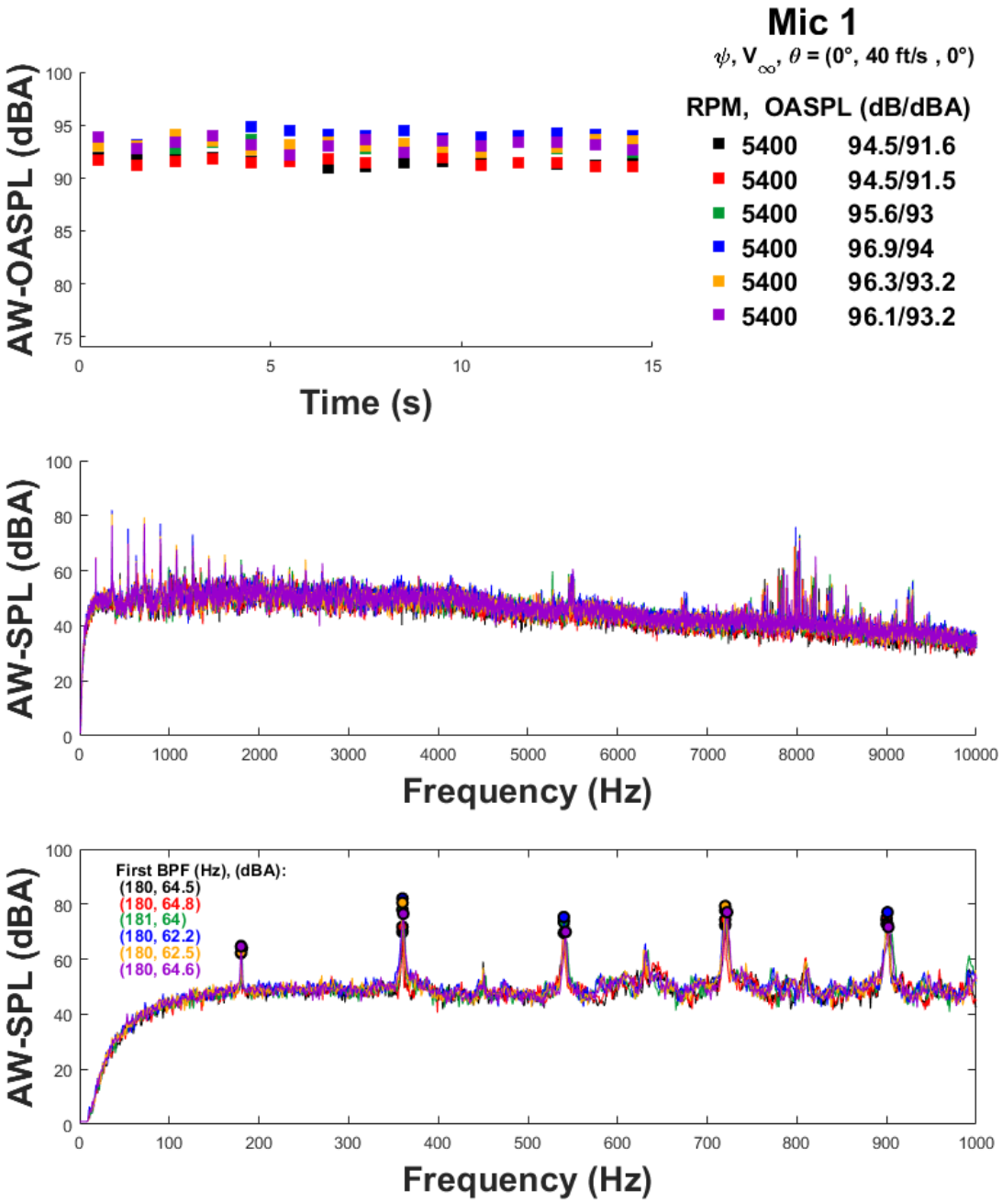

Figure E20: IRIS microphone 1: Repeat $\psi = 0°$, $V_\infty = 40$ ft/s, $\theta = 0°$, RPM= 5,400

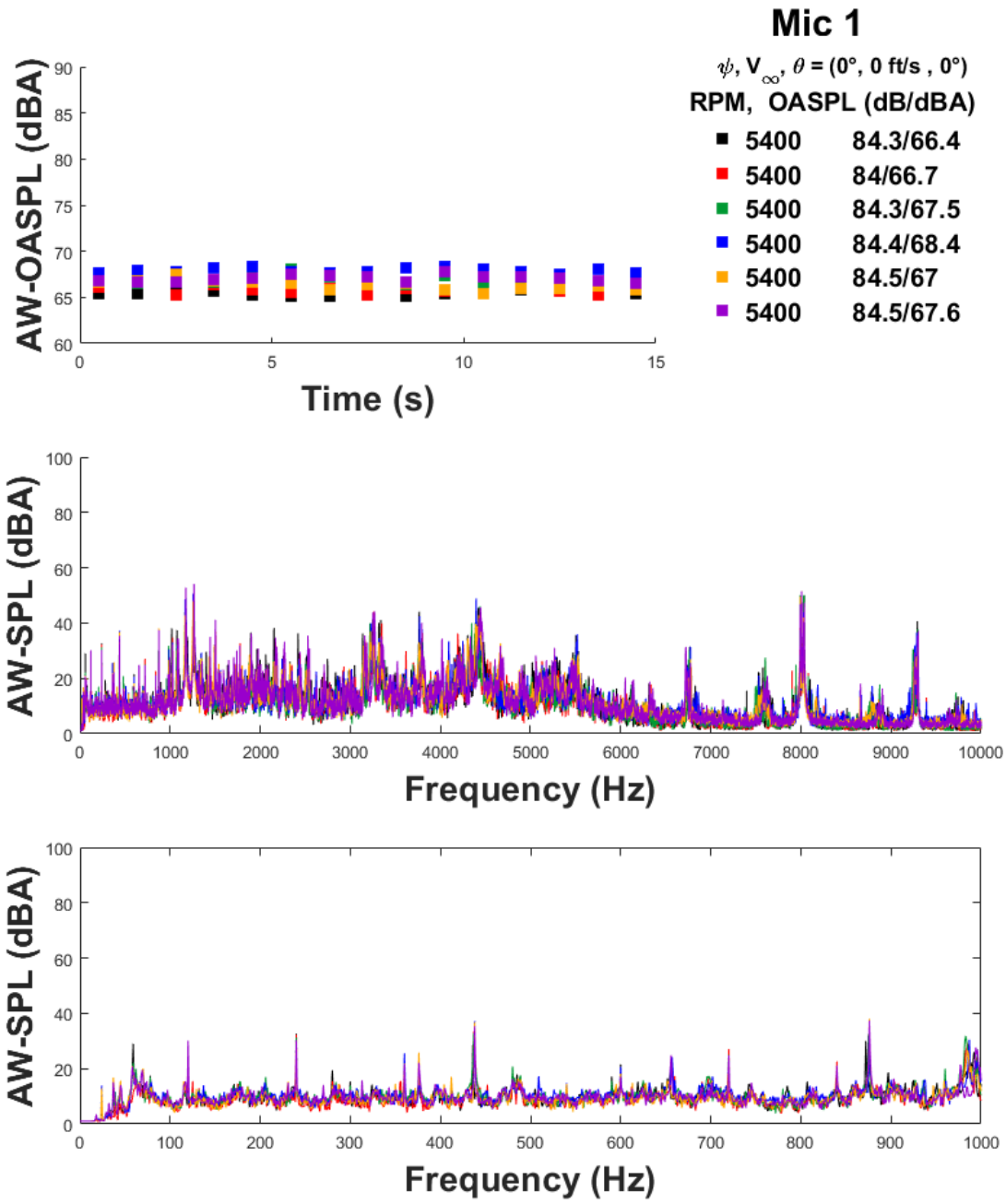

Figure E21: IRIS Bare Airframe microphone 1: Repeat $\psi = 0°$, $V_\infty = 0$ ft/s, $\theta = 0°$, RPM= 5,400

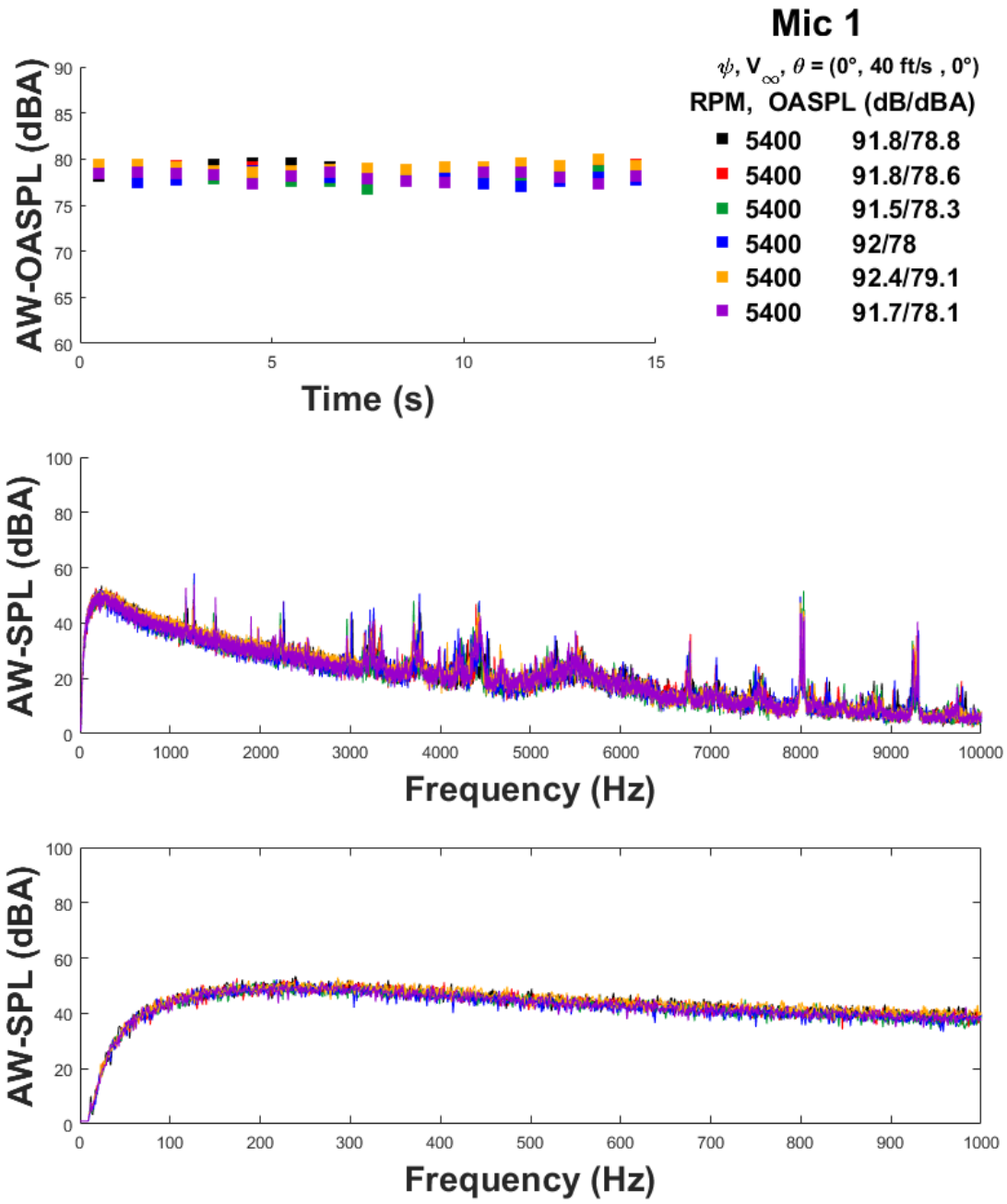

Figure E22: IRIS Bare Airframe microphone 1: Repeat $\psi = 0°$, $V_\infty = 40$ ft/s, $\theta = 0°$, RPM= 5,400

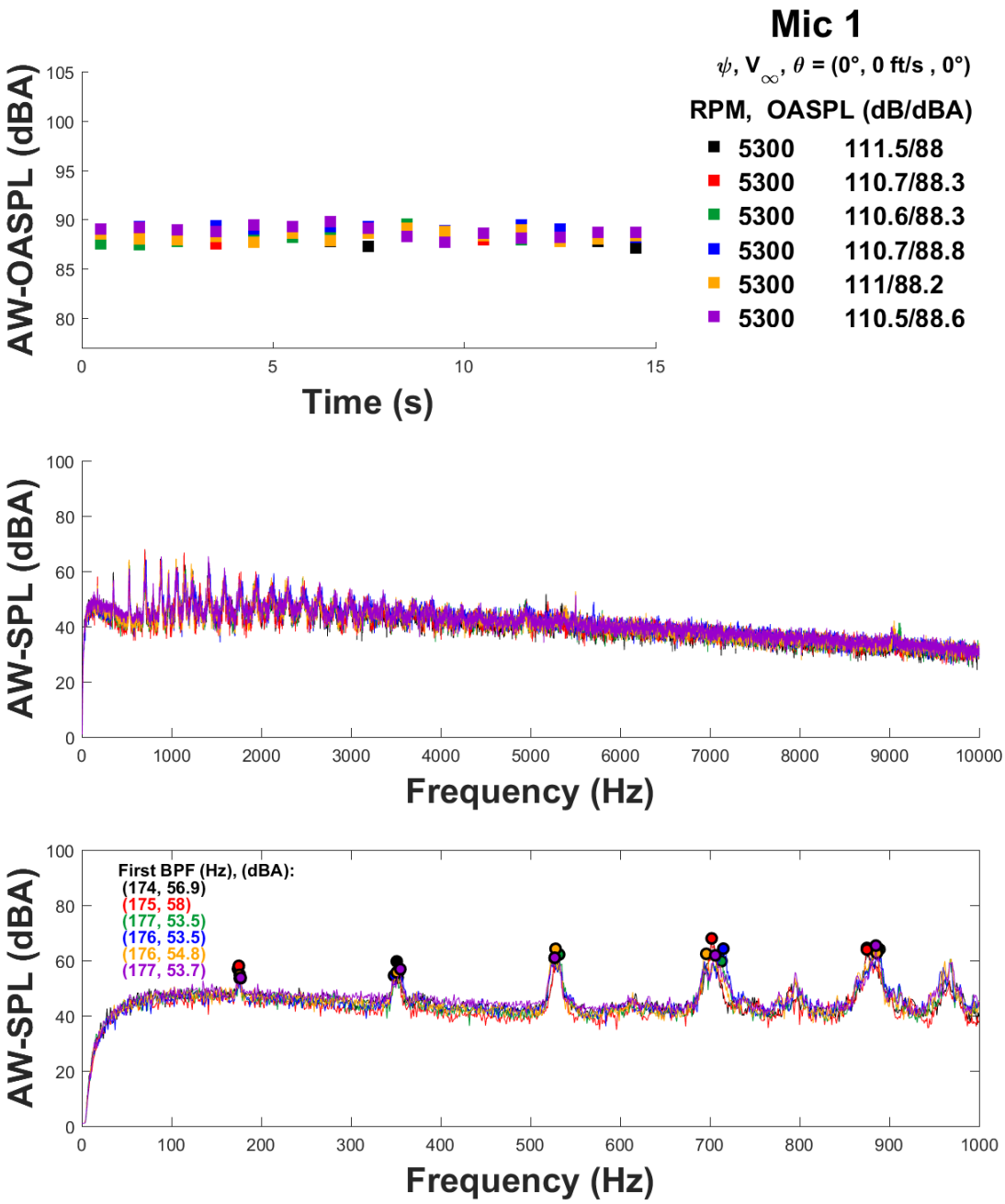

Figure E23: Phantom microphone 1: Repeat $\psi = 0°$, $V_\infty = 0$ ft/s, $\theta = 0°$, RPM= 5,300

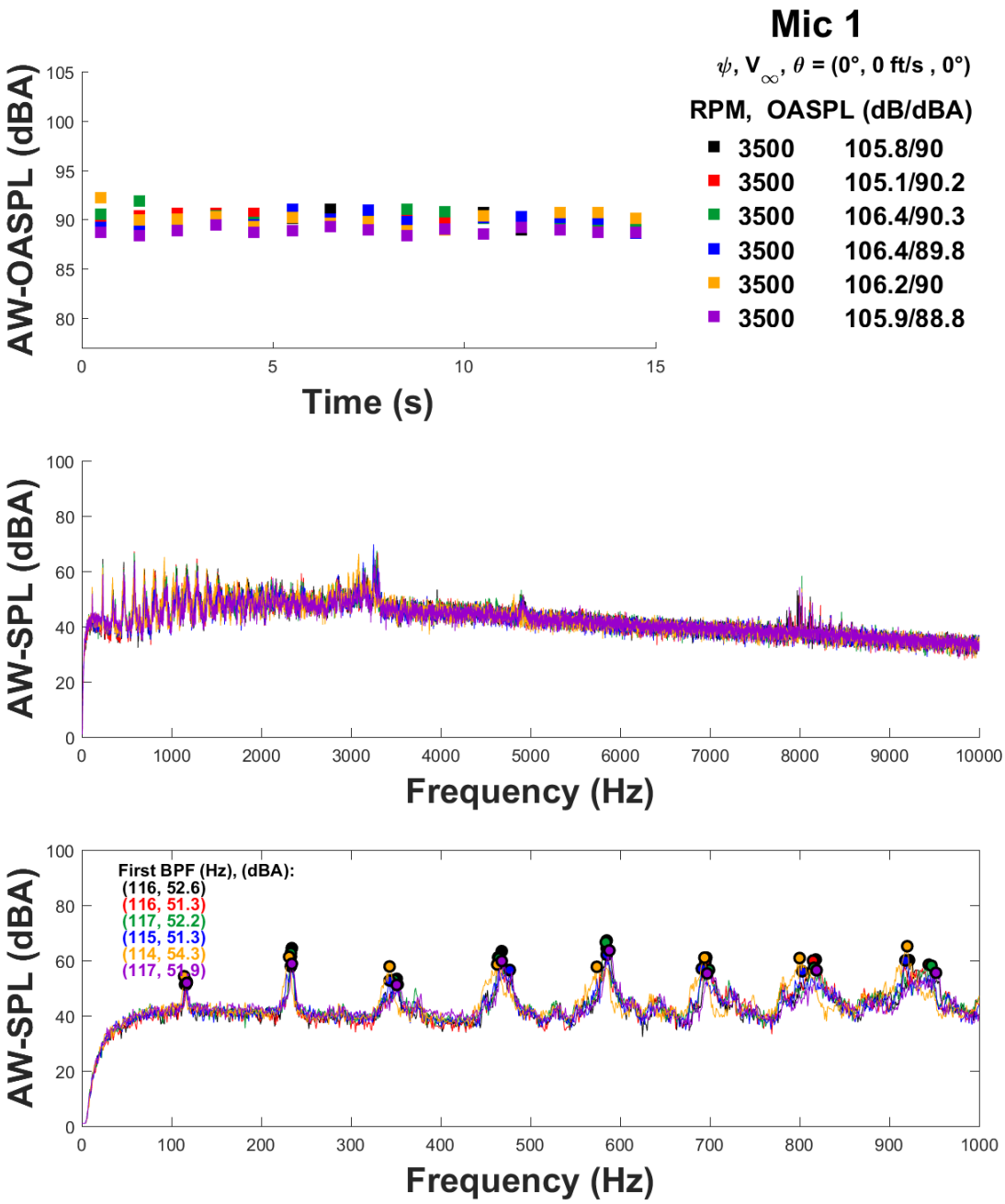

Figure E24: SUI microphone 1: Repeat $\psi = 0°$, $V_\infty = 0$ ft/s, $\theta = 0°$, RPM= 3,500

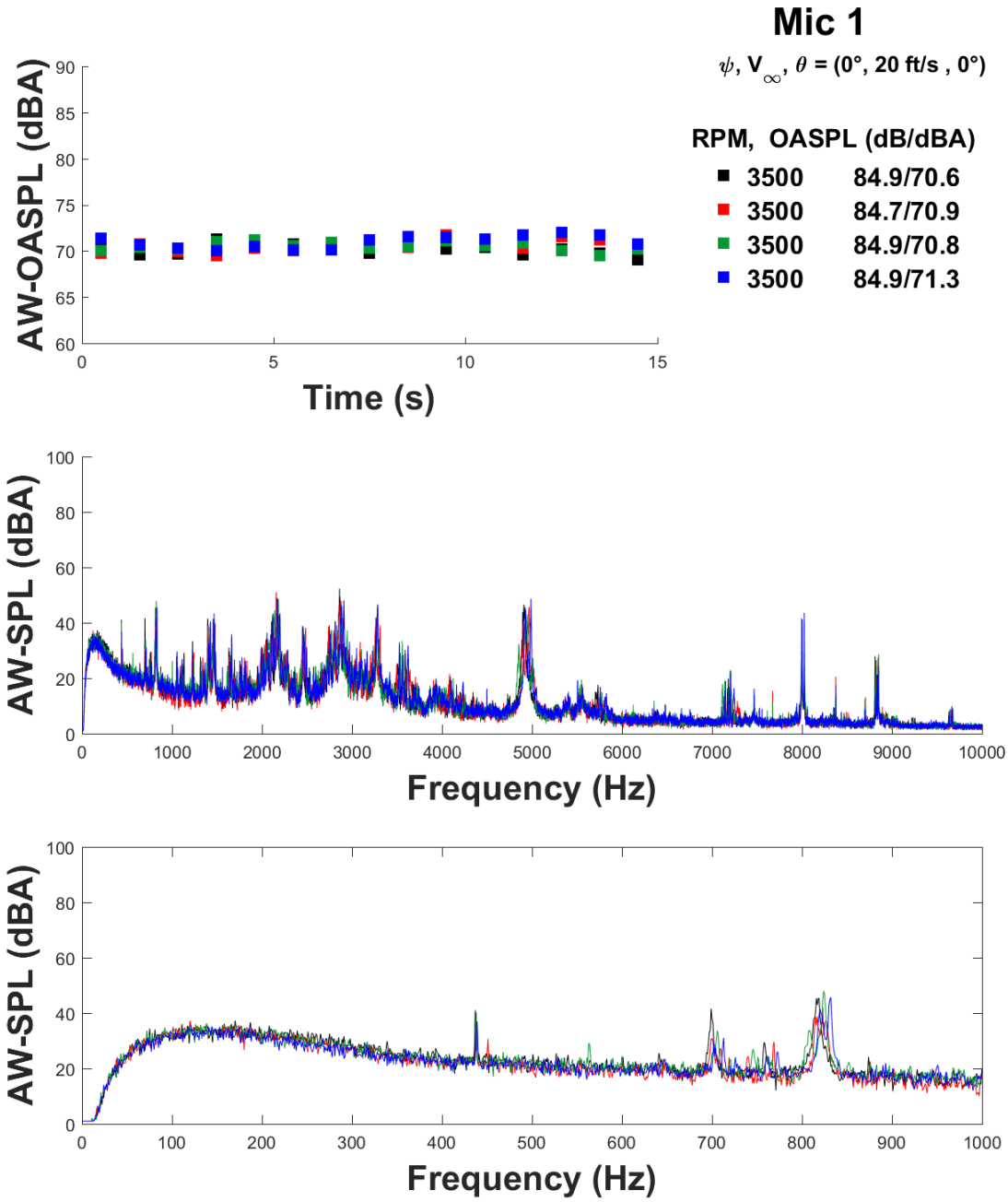

Figure E25: SUI Bare Airframe microphone 1: Repeat $\psi = 0°$, $V_\infty = 20$ ft/s, $\theta = 0°$, RPM= 3,500

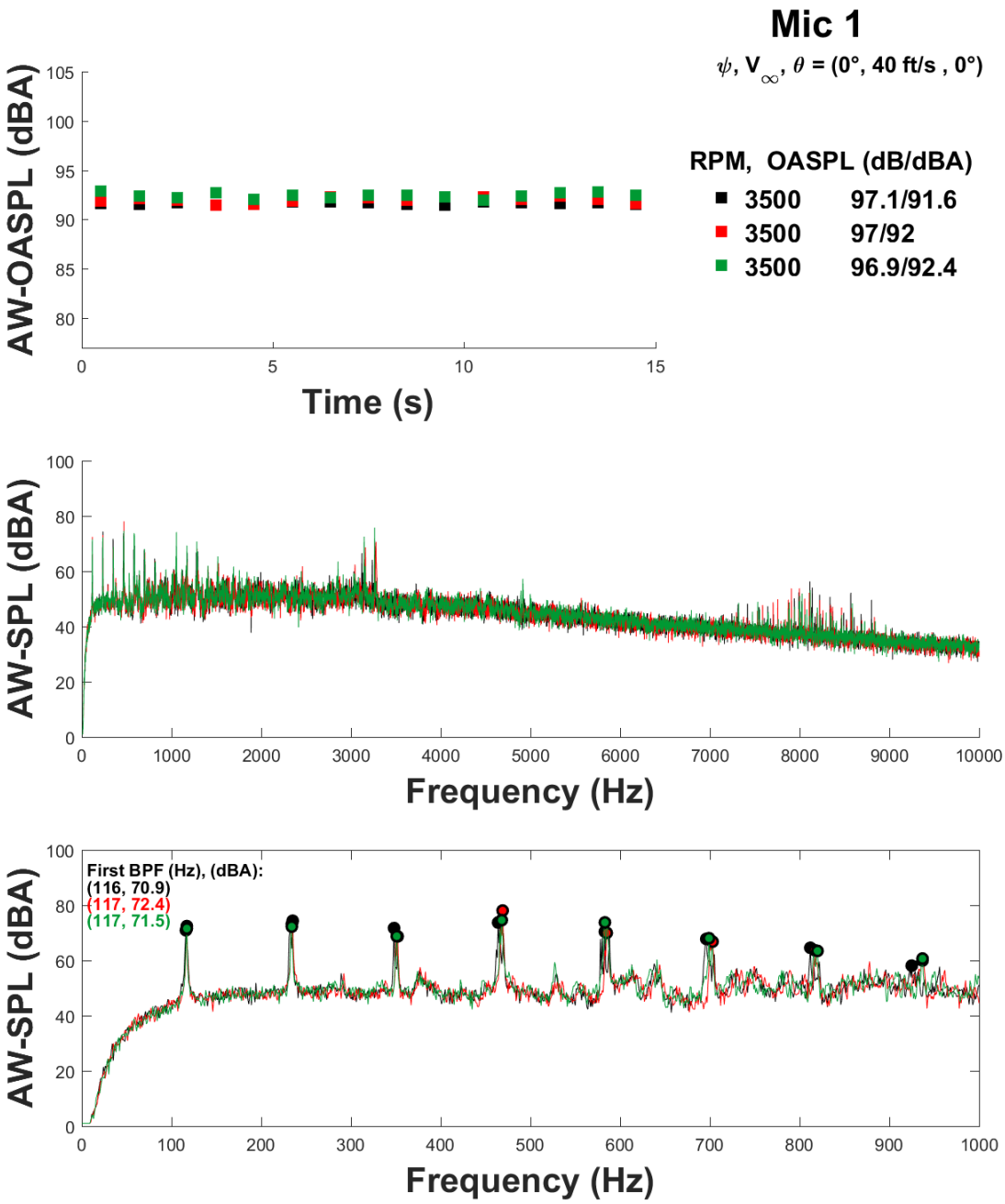

Figure E26: SUI microphone 1: Repeat $\psi = 0°$, $V_\infty = 40$ ft/s, $\theta = 0°$, RPM= 3,500

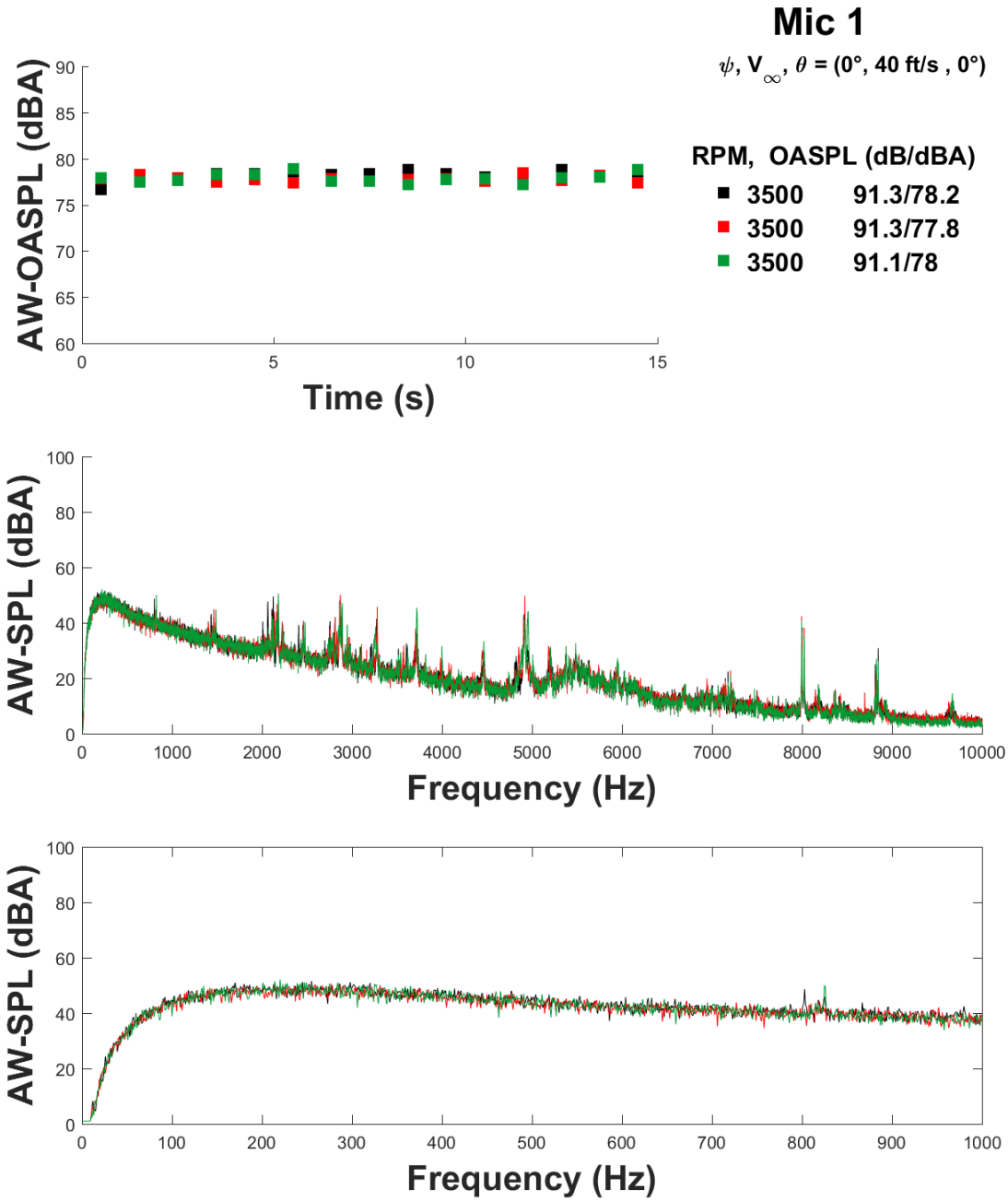

Figure E27: SUI Bare Airframe microphone 1: Repeat $\psi = 0°$, $V_\infty = 40$ ft/s, $\theta = 0°$, RPM= 3,500

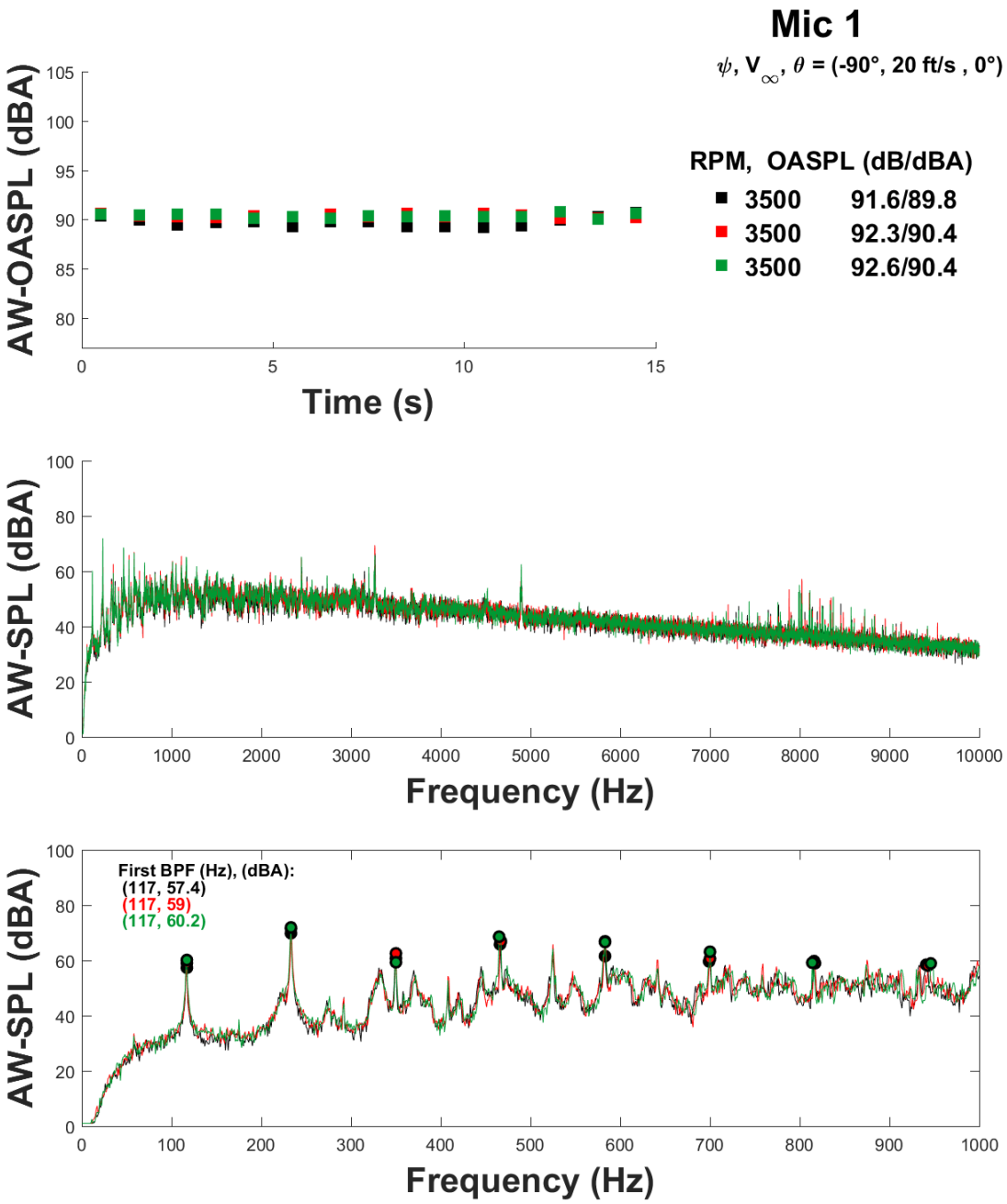

Figure E28: SUI microphone 1: Repeat ψ = -90°, V_∞ = 20 ft/s, θ = 0°, RPM= 3,500

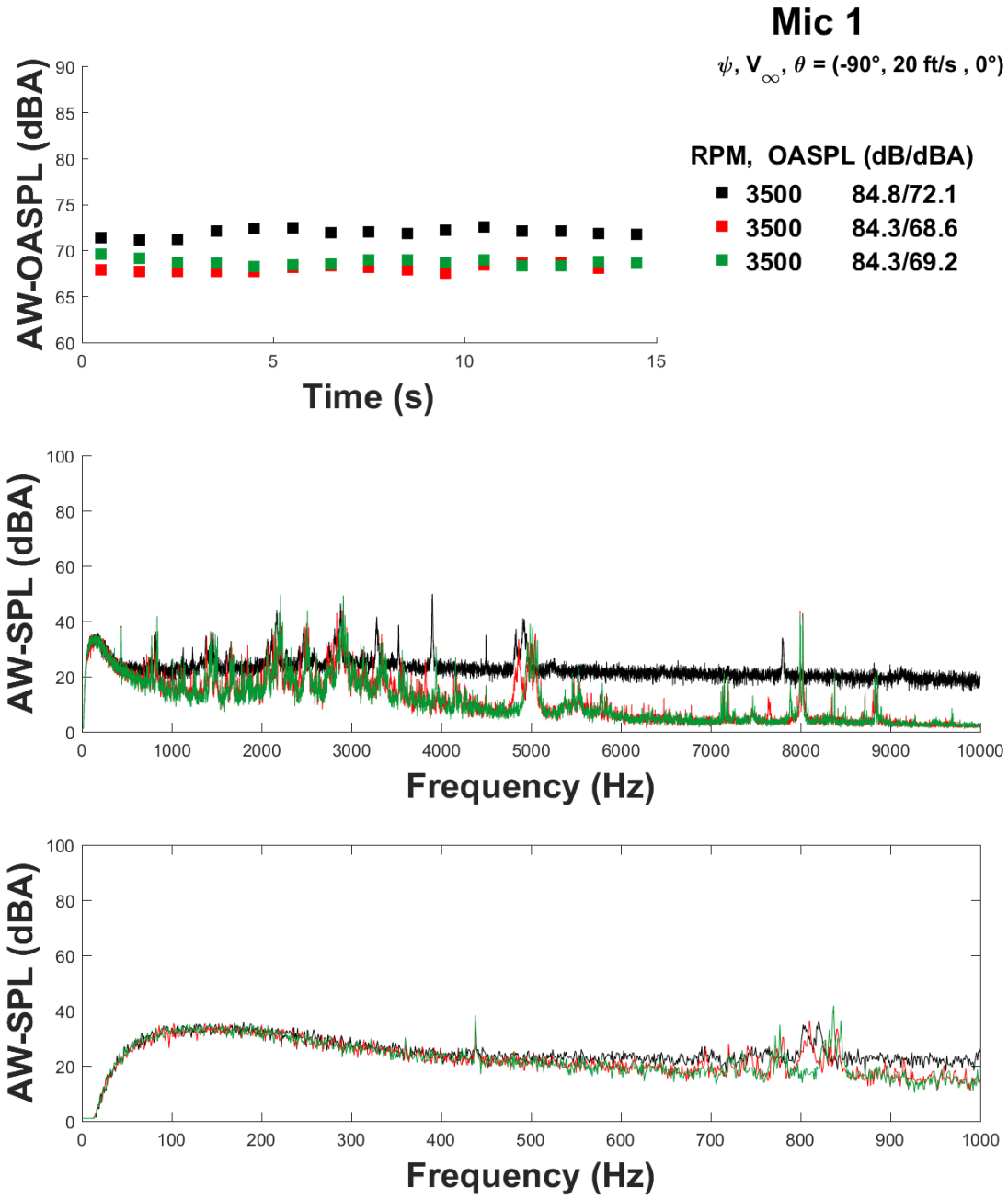

Figure E29: SUI Bare Airframe microphone 1: Repeat ψ = -90°, V_∞ = 20 ft/s, θ = 0°, RPM= 3,500

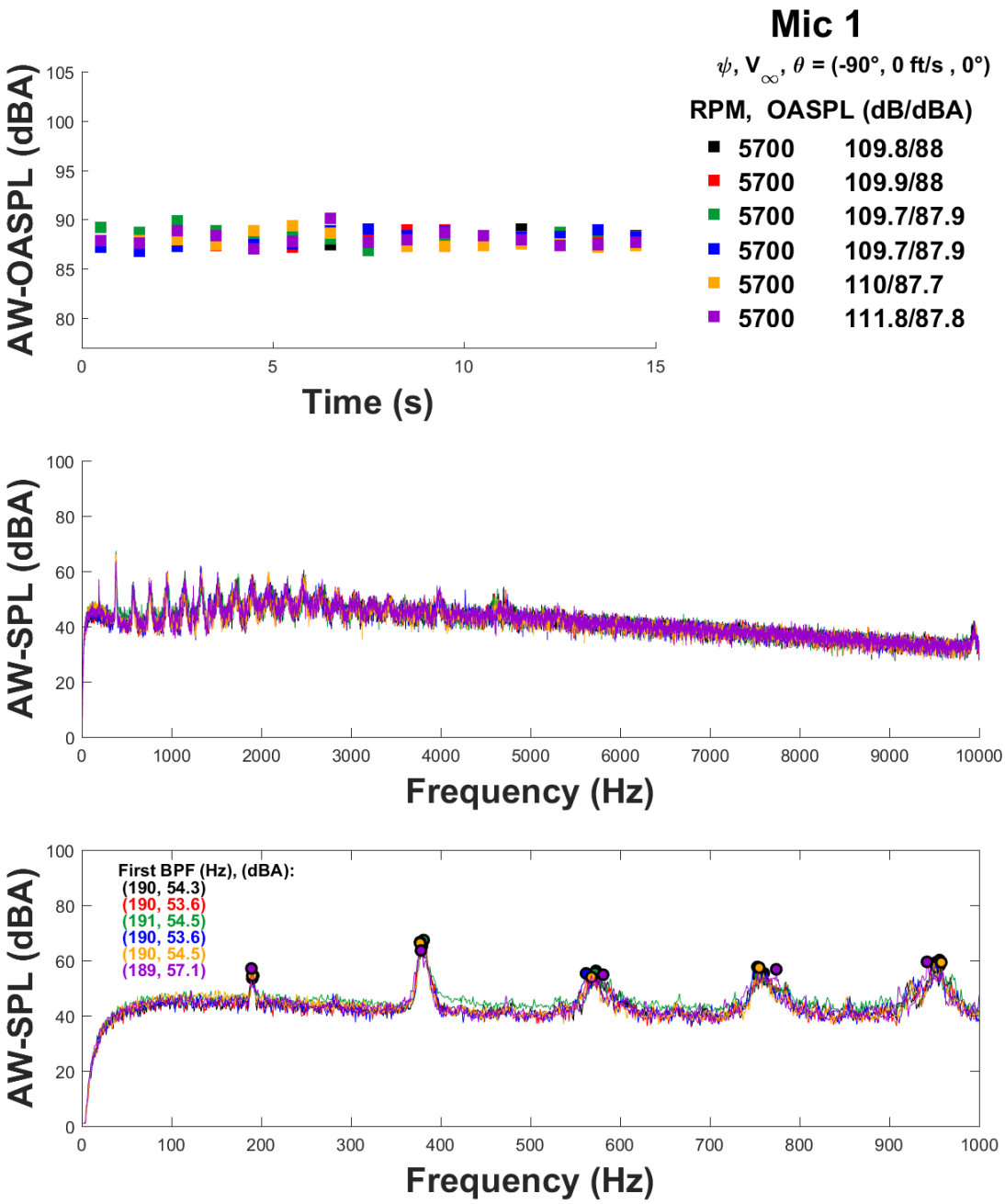

Figure E30: SOLO microphone 1: Repeat ψ = -90°, V_∞ = 0 ft/s, θ = 0°, RPM= 5,700

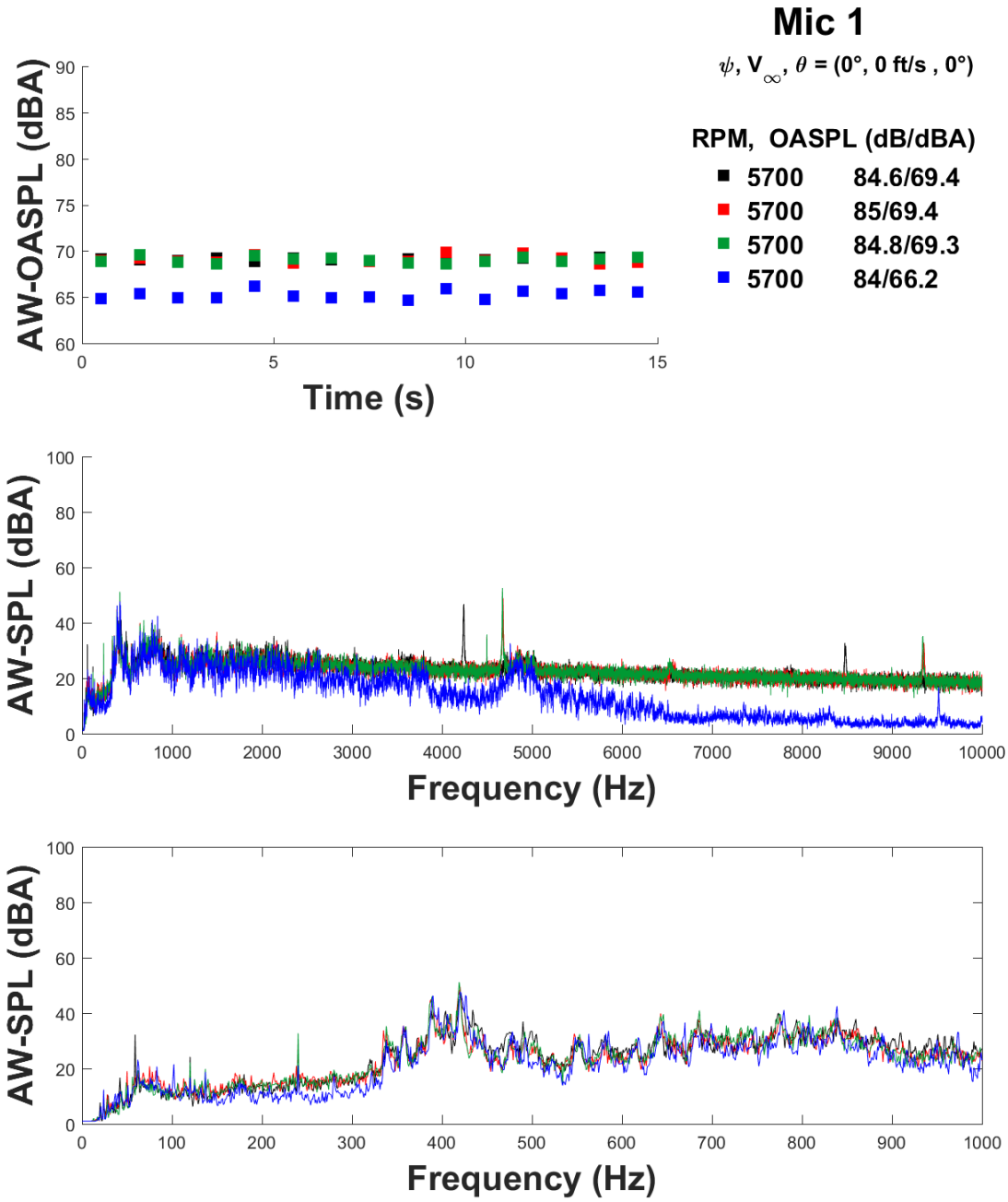

Figure E31: SOLO Bare Airframe microphone 1: Repeat $\psi = 0°$, $V_\infty = 0$ ft/s, $\theta = 0°$, RPM= 5,700

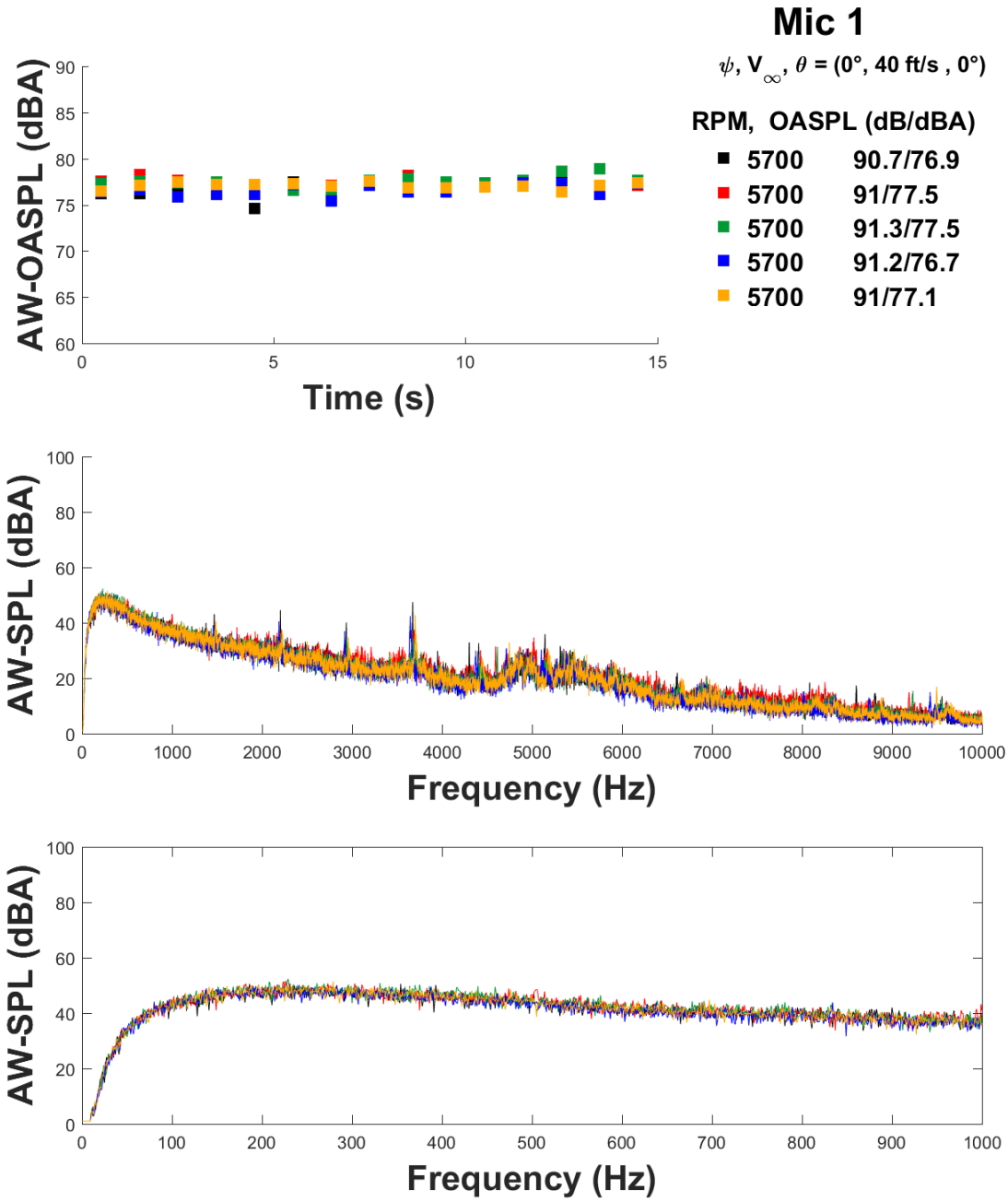

Figure E32: SOLO Bare Airframe microphone 1: Repeat $\psi = 0°$, $V_\infty = 40$ ft/s, $\theta = 0°$, RPM= 5,700

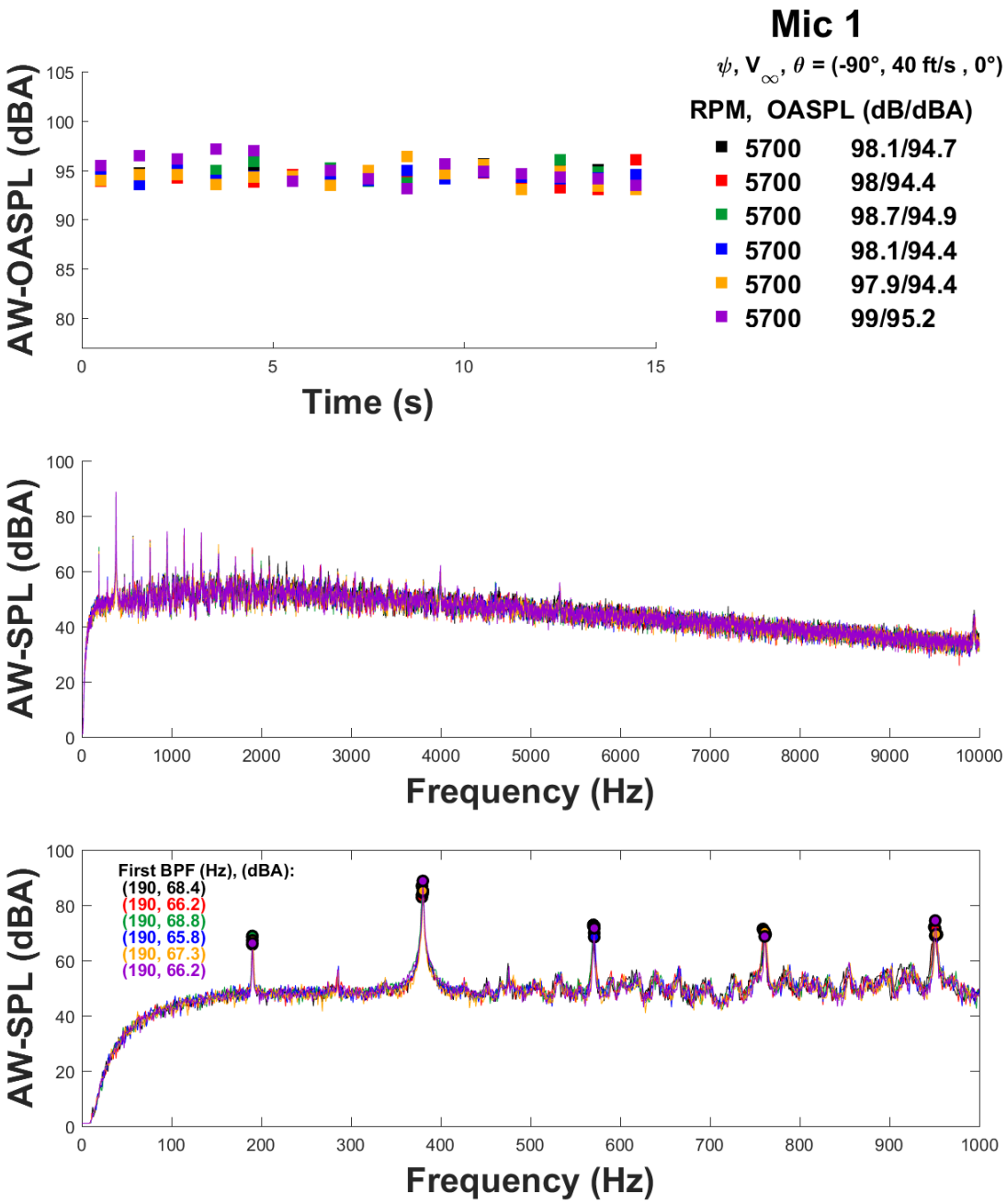

Figure E33: SOLO microphone 1: Repeat ψ = -90°, V_∞ = 40 ft/s, θ = 0°, RPM= 5,700

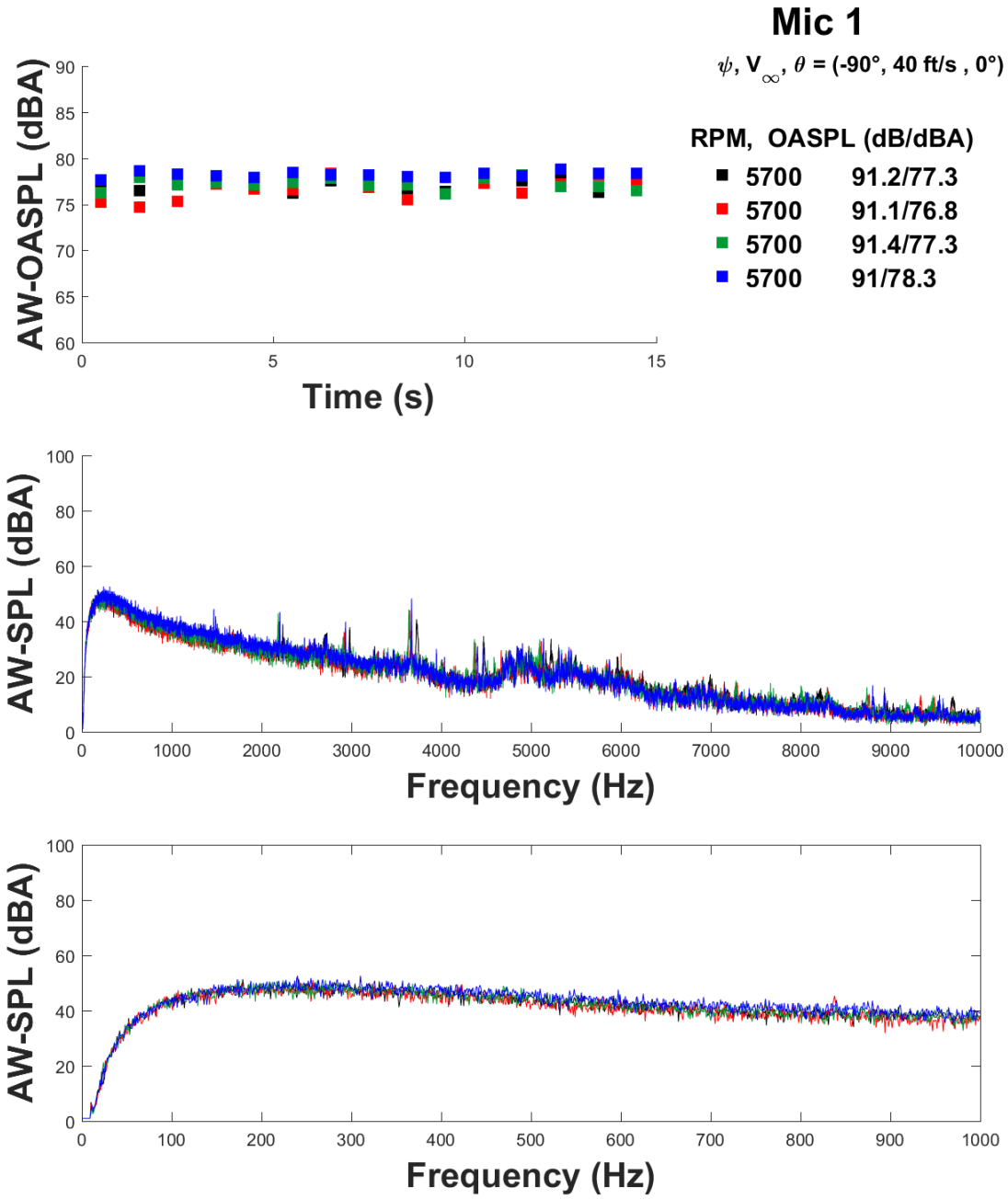

Figure E34: SOLO Bare Airframe microphone 1: Repeat ψ = -90°, V_∞ = 40 ft/s, θ = 0°, RPM= 5,700

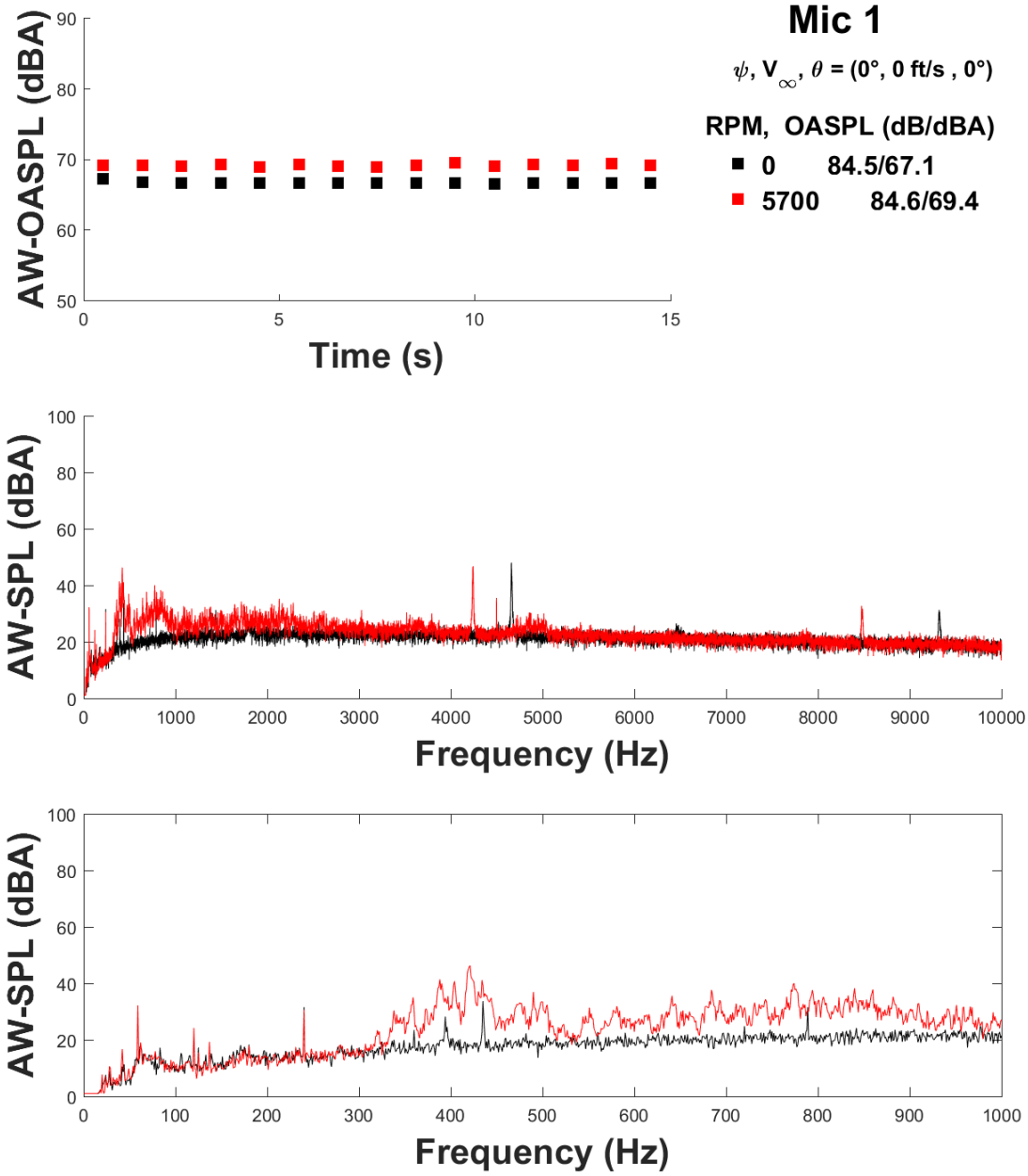

Figure E35: SOLO Bare Airframe microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 0$ ft/s, $\theta = 0°$

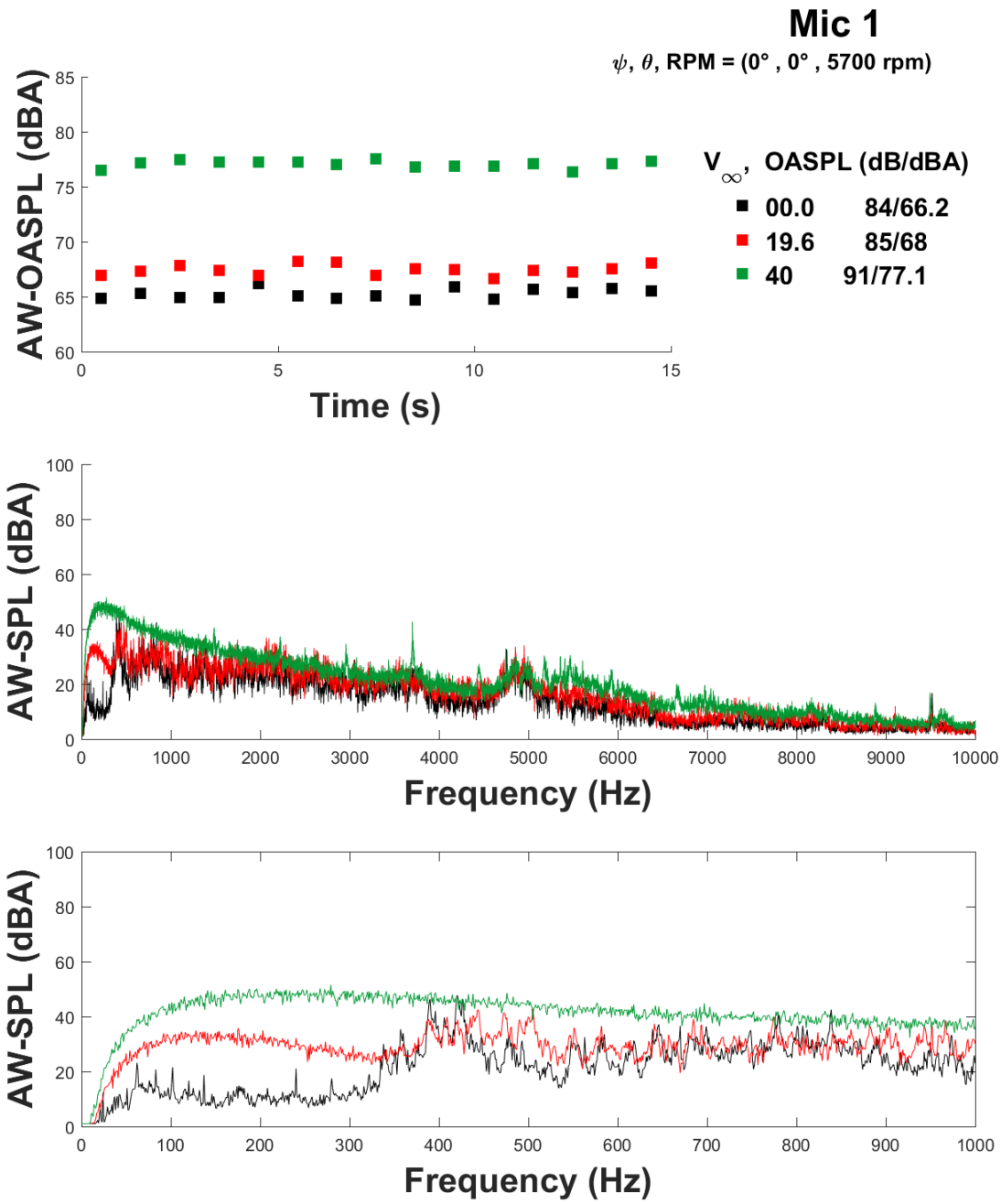

Figure E36: SOLO Bare Airframe microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 0°$, RPM= 5,700

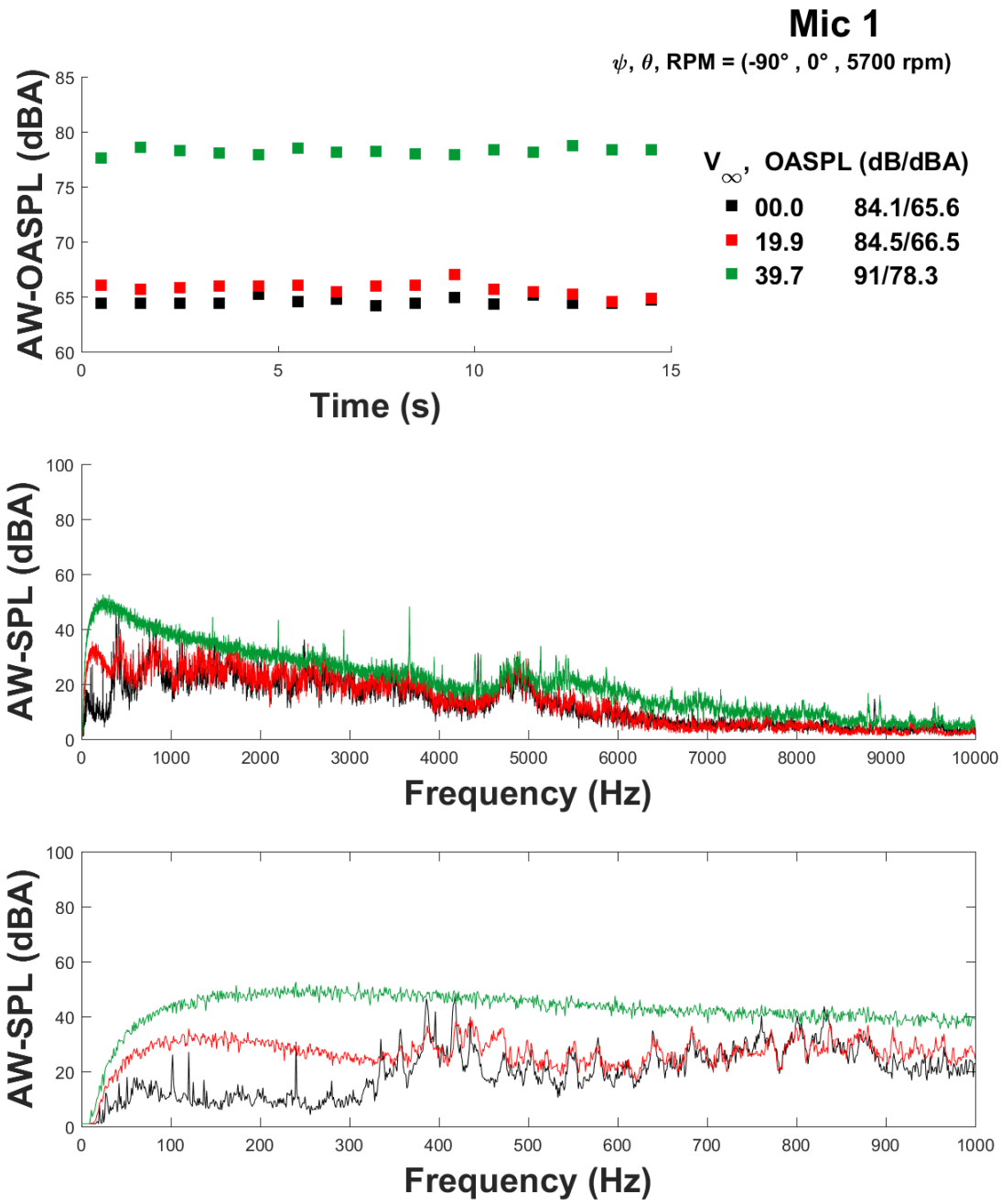

Figure E37: SOLO Bare Airframe microphone 1: V_∞ sweep ψ = -90°, θ = 0°, RPM= 5,700

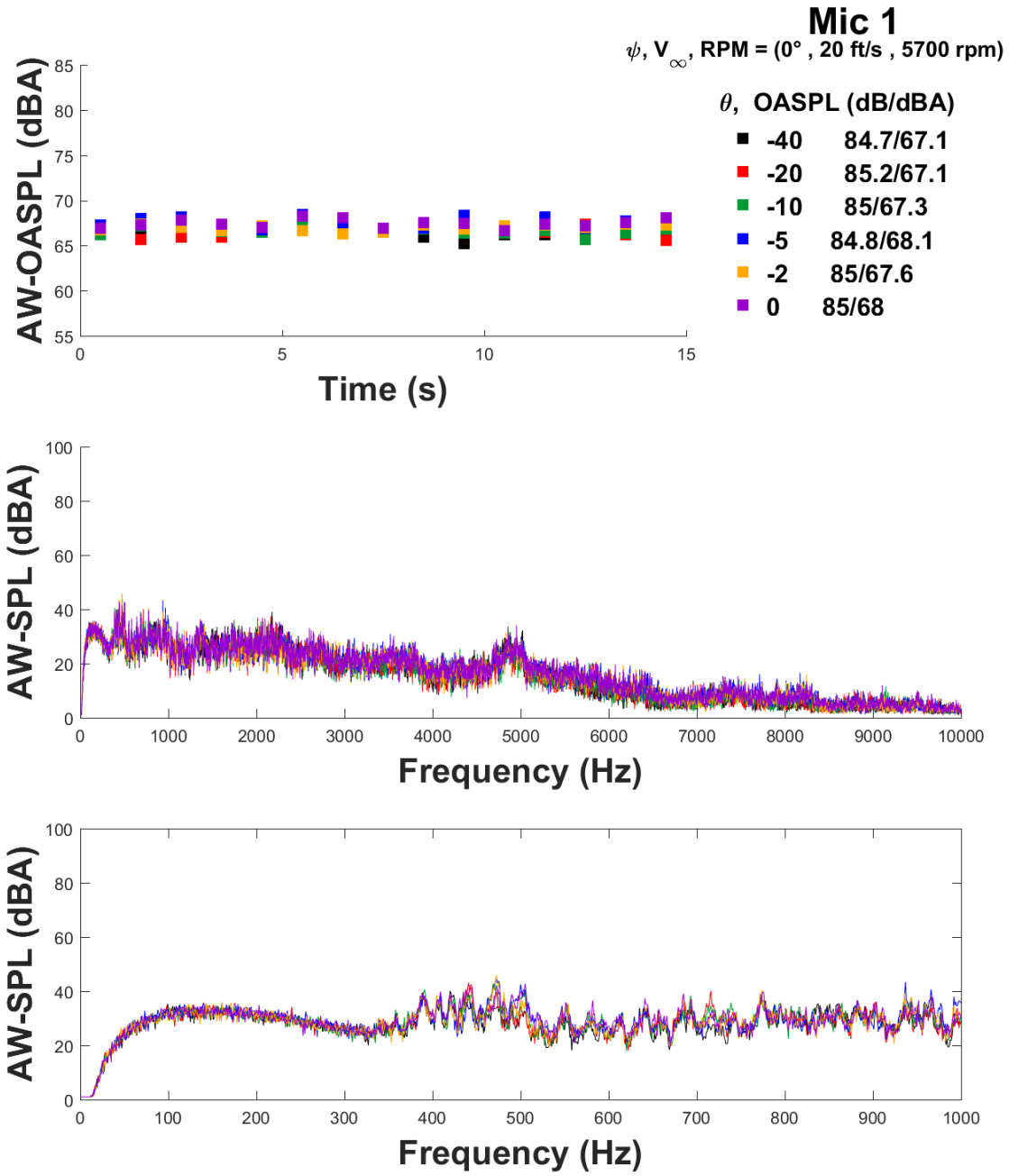

Figure E38: SOLO Bare Airframe microphone 1: Negative pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, RPM= 5,700

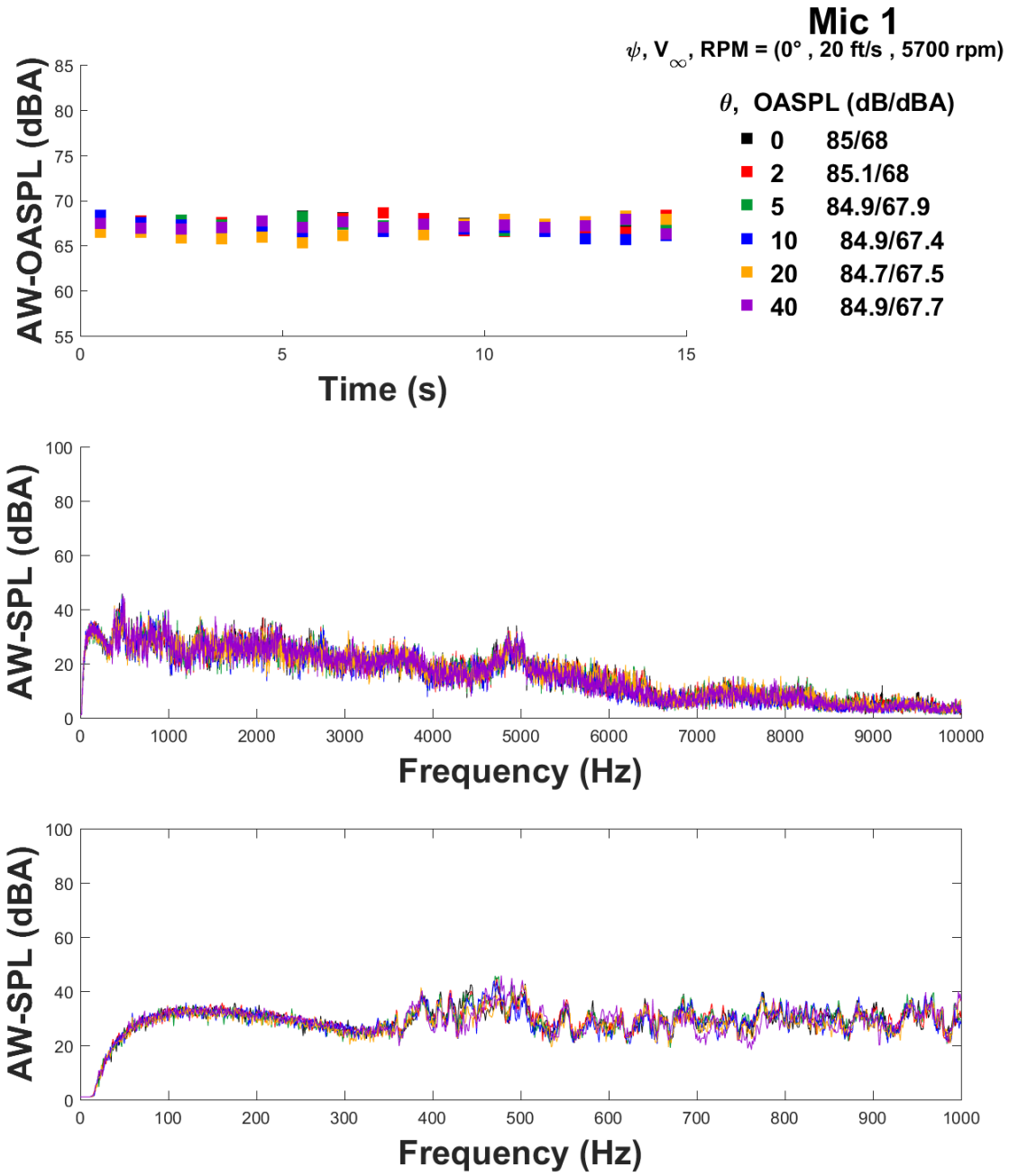

Figure E39: SOLO Bare Airframe microphone 1: Positive pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, RPM= 5,700

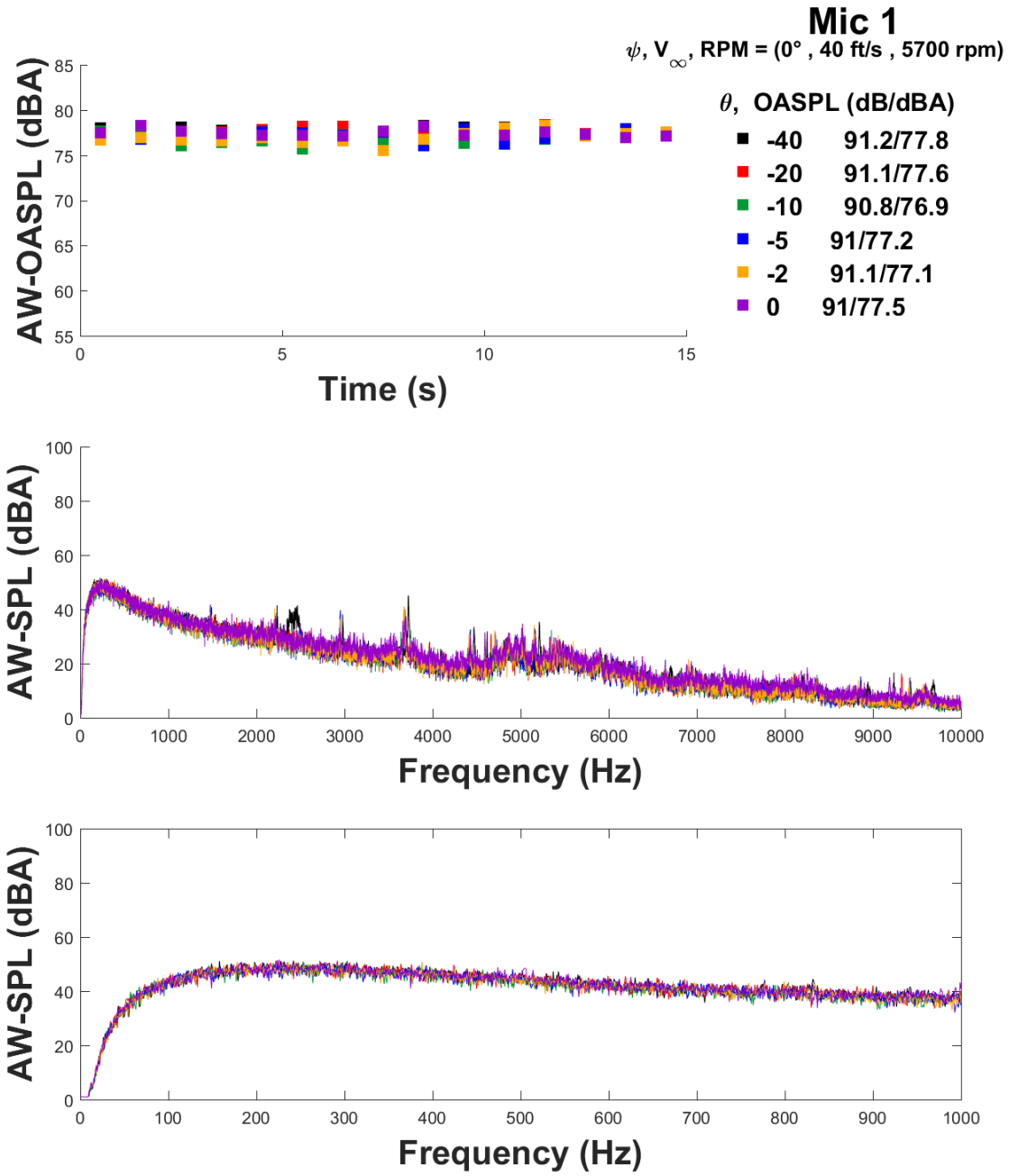

Figure E40: SOLO Bare Airframe microphone 1: Negative pitch sweep $\psi = 0°$, $V_\infty = 40$ ft/s, RPM= 5,700

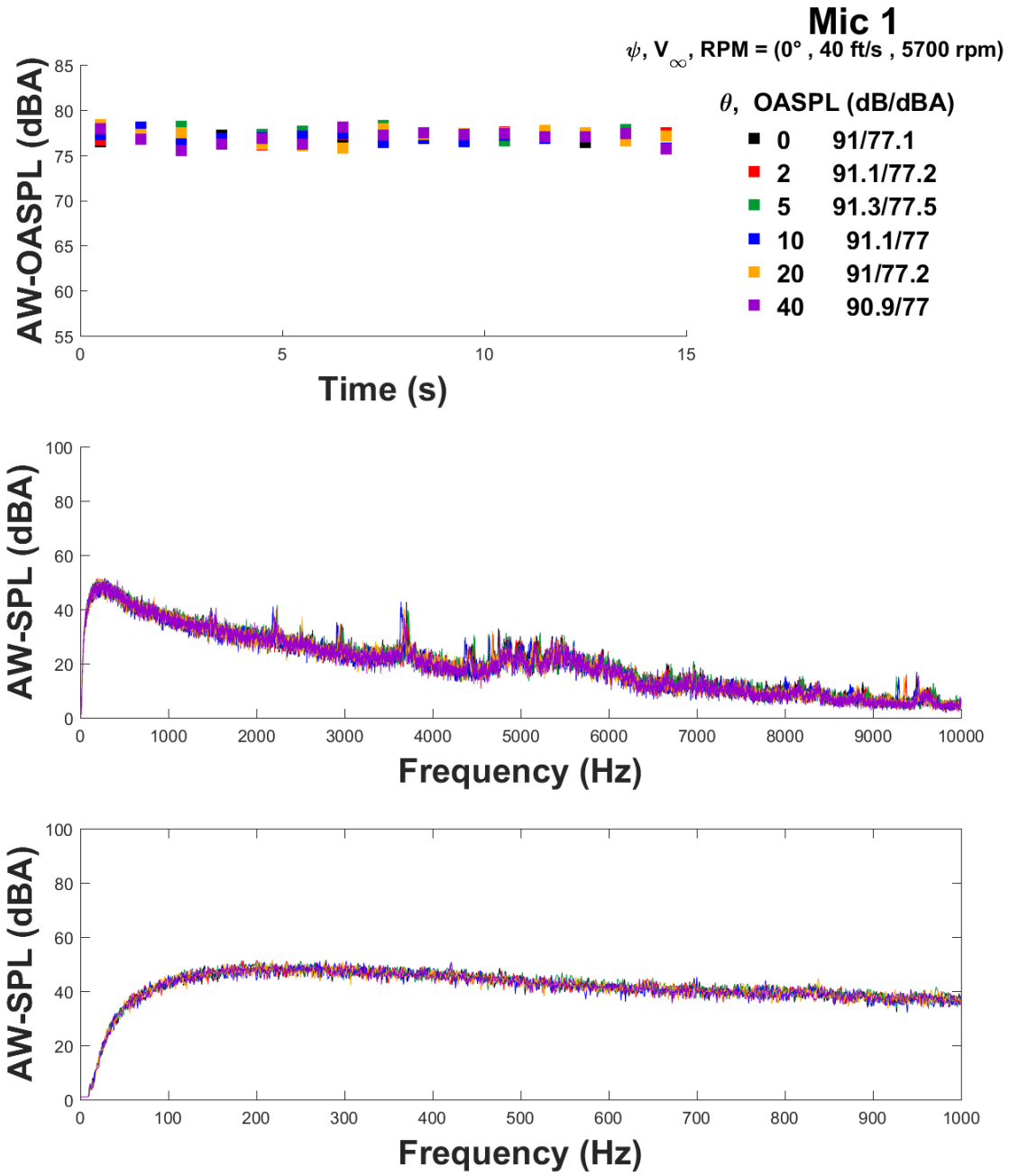

Figure E41: SOLO Bare Airframe microphone 1: Positive pitch sweep $\psi = 0°$, $V_\infty = 40$ ft/s, RPM= 5,700

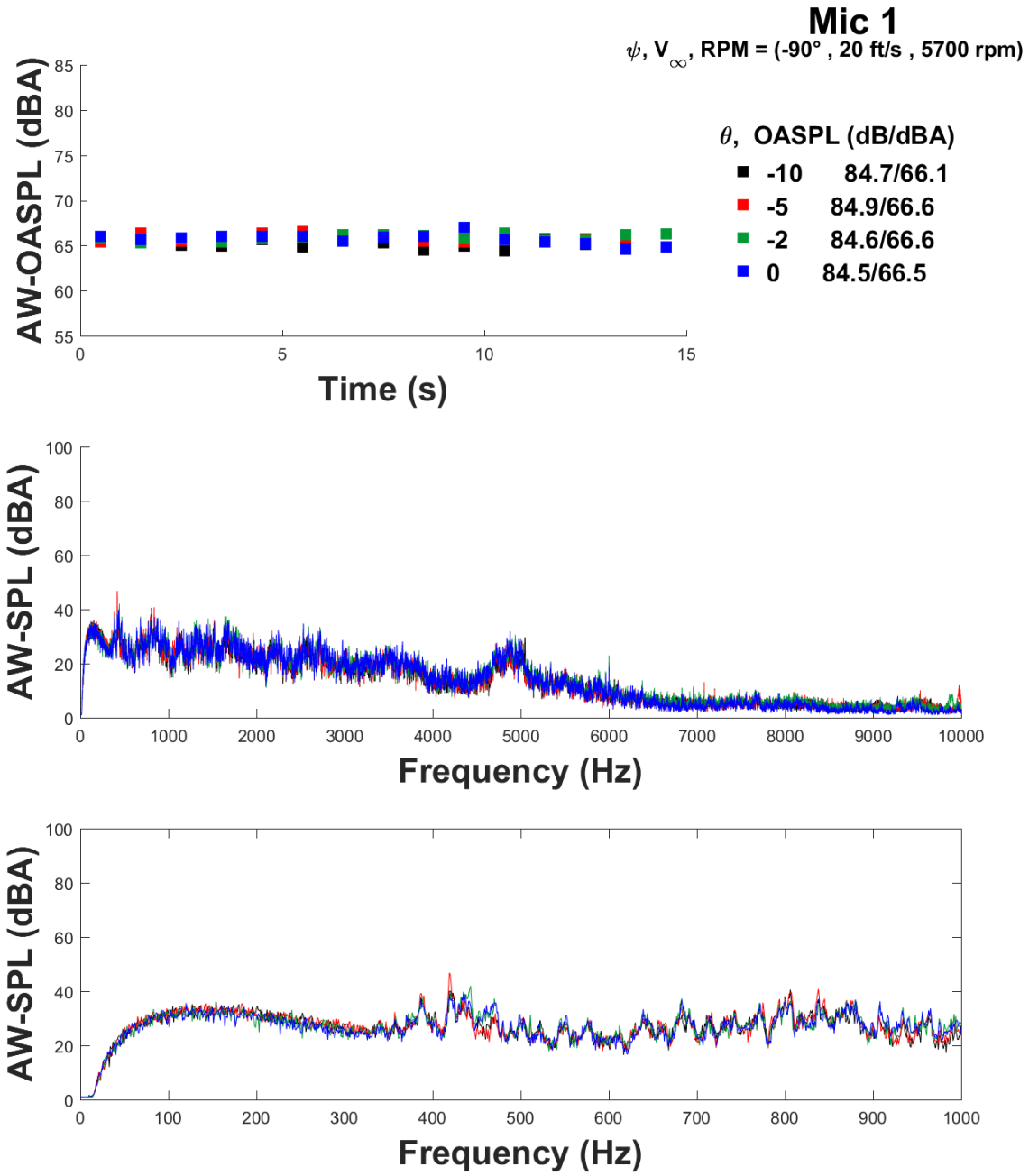

Figure E42: SOLO Bare Airframe microphone 1: Negative pitch sweep ψ = -90°, V_∞ = 20 ft/s, RPM= 5,700

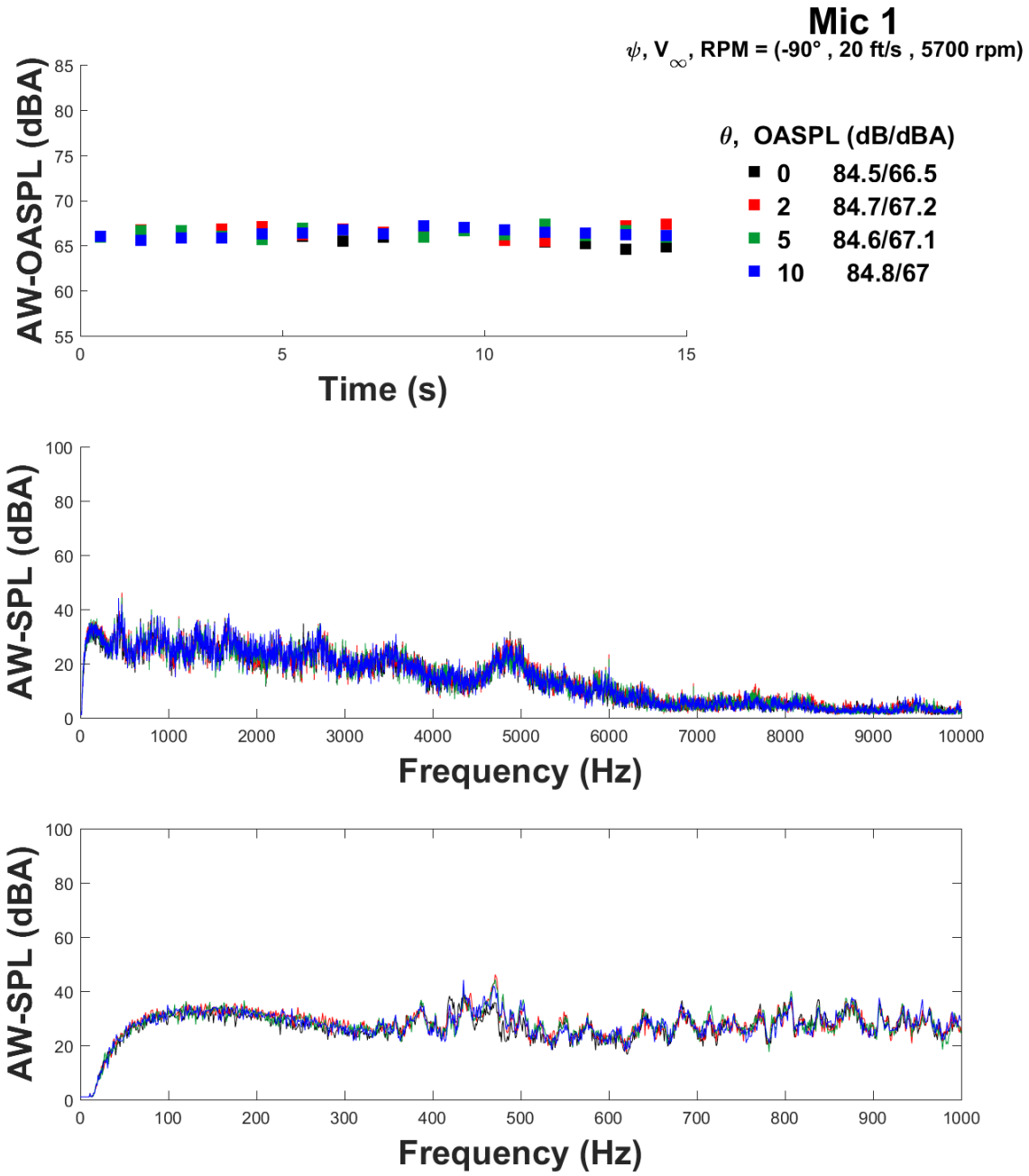

Figure E43: SOLO Bare Airframe microphone 1: Positive pitch sweep ψ = -90°, V_∞ = 20 ft/s, RPM= 5,700

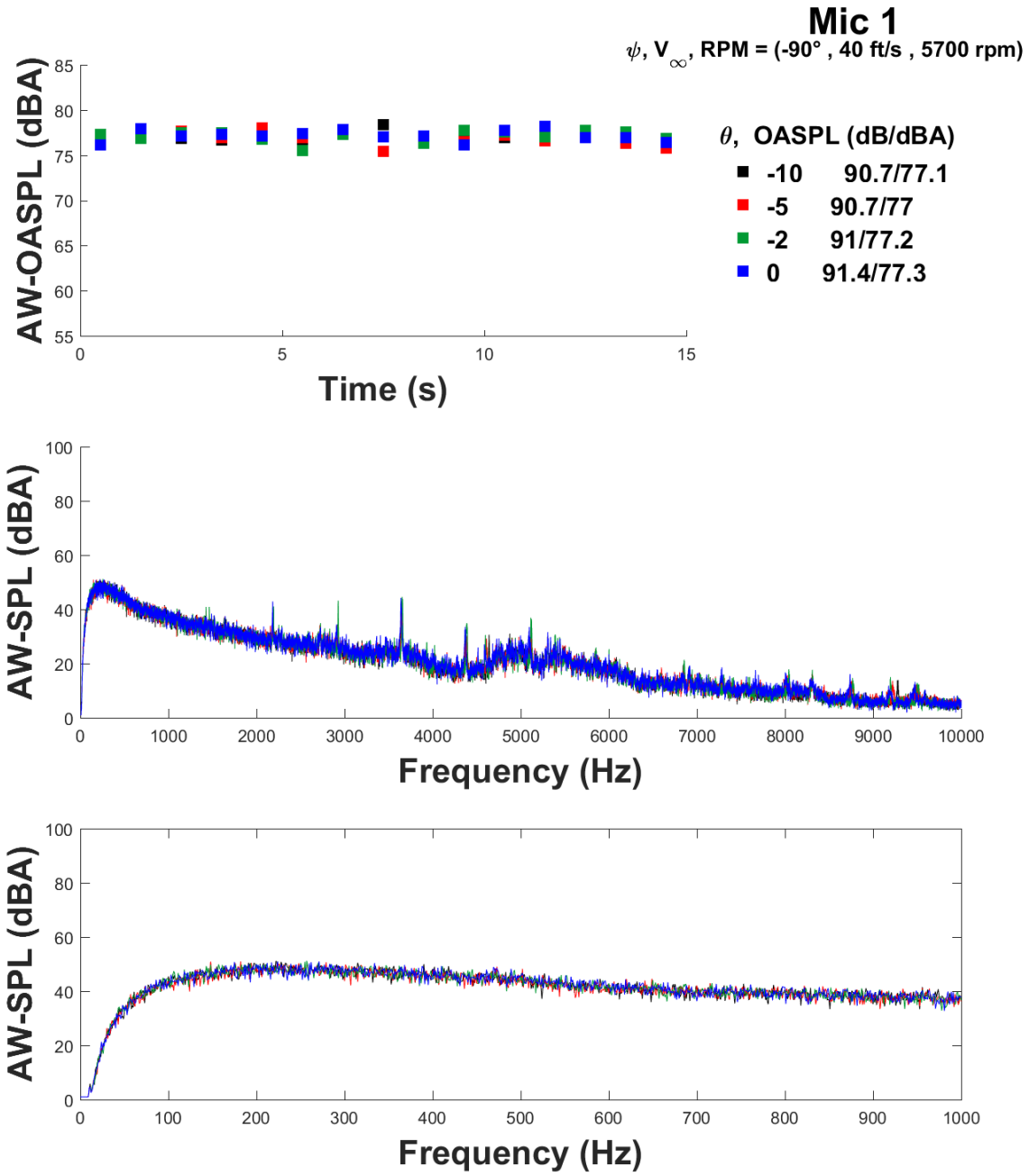

Figure E44: SOLO Bare Airframe microphone 1: Negative pitch sweep ψ = -90°, V_∞ = 40 ft/s, RPM= 5,700

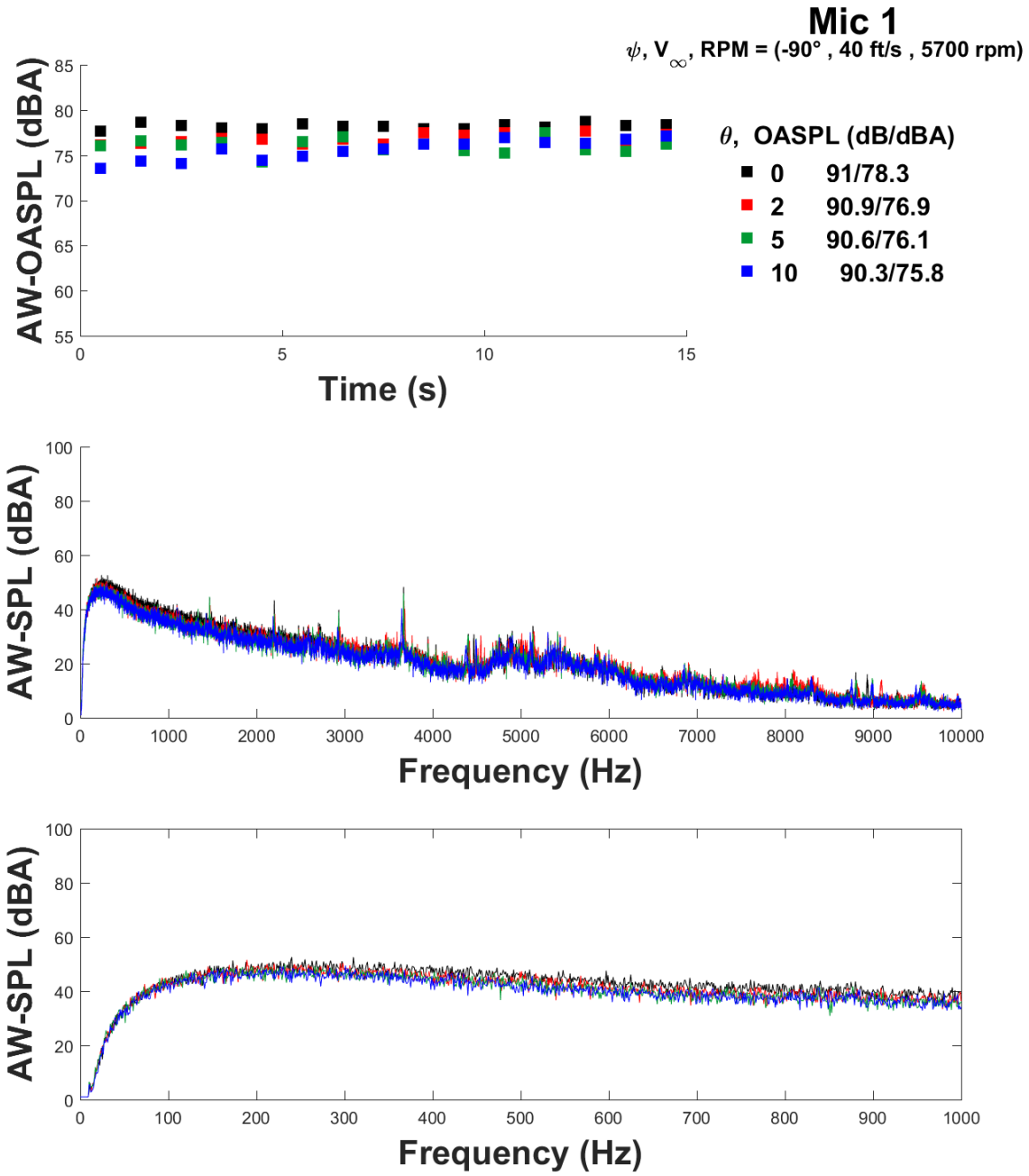

Figure E45: SOLO Bare Airframe microphone 1: Positive pitch sweep ψ = -90°, V_∞ = 40 ft/s, RPM= 5,700

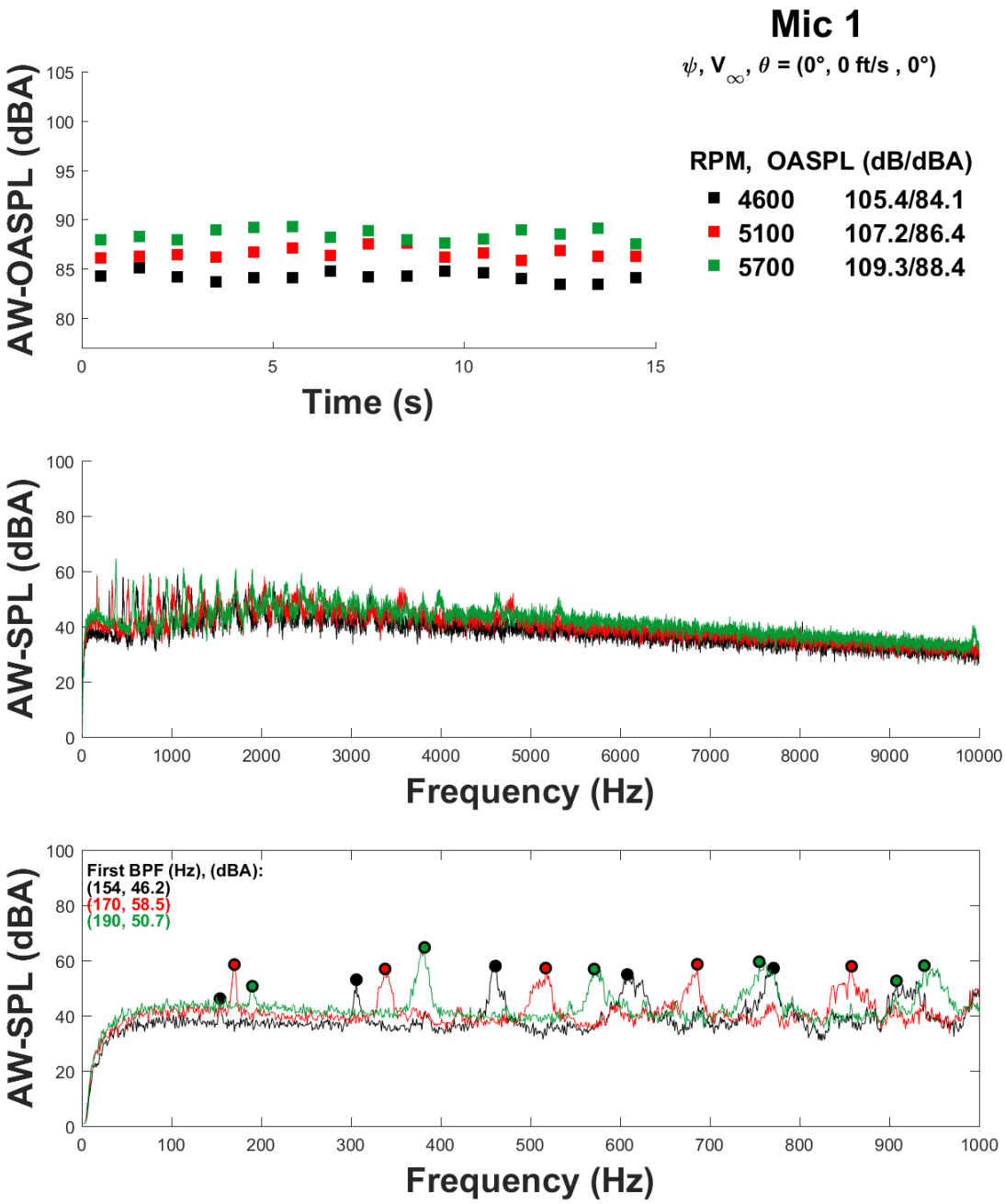

Figure E46: SOLO microphone 1: Low RPM sweep $\psi = 0°$, $V_\infty = 0$ ft/s, $\theta = 0°$

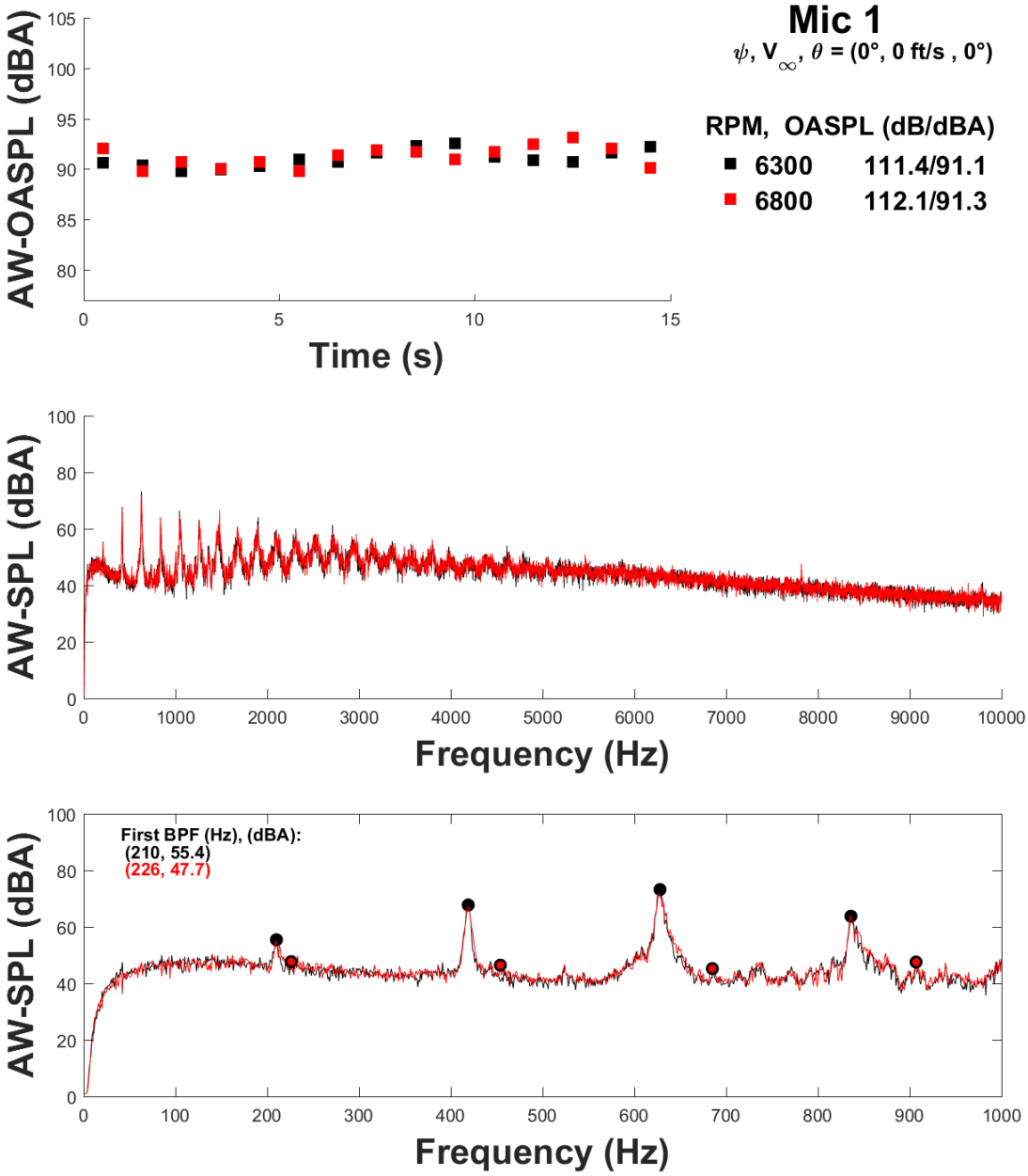

Figure E47: SOLO microphone 1: High RPM sweep $\psi = 0°$, $V_\infty = 0$ ft/s, $\theta = 0°$

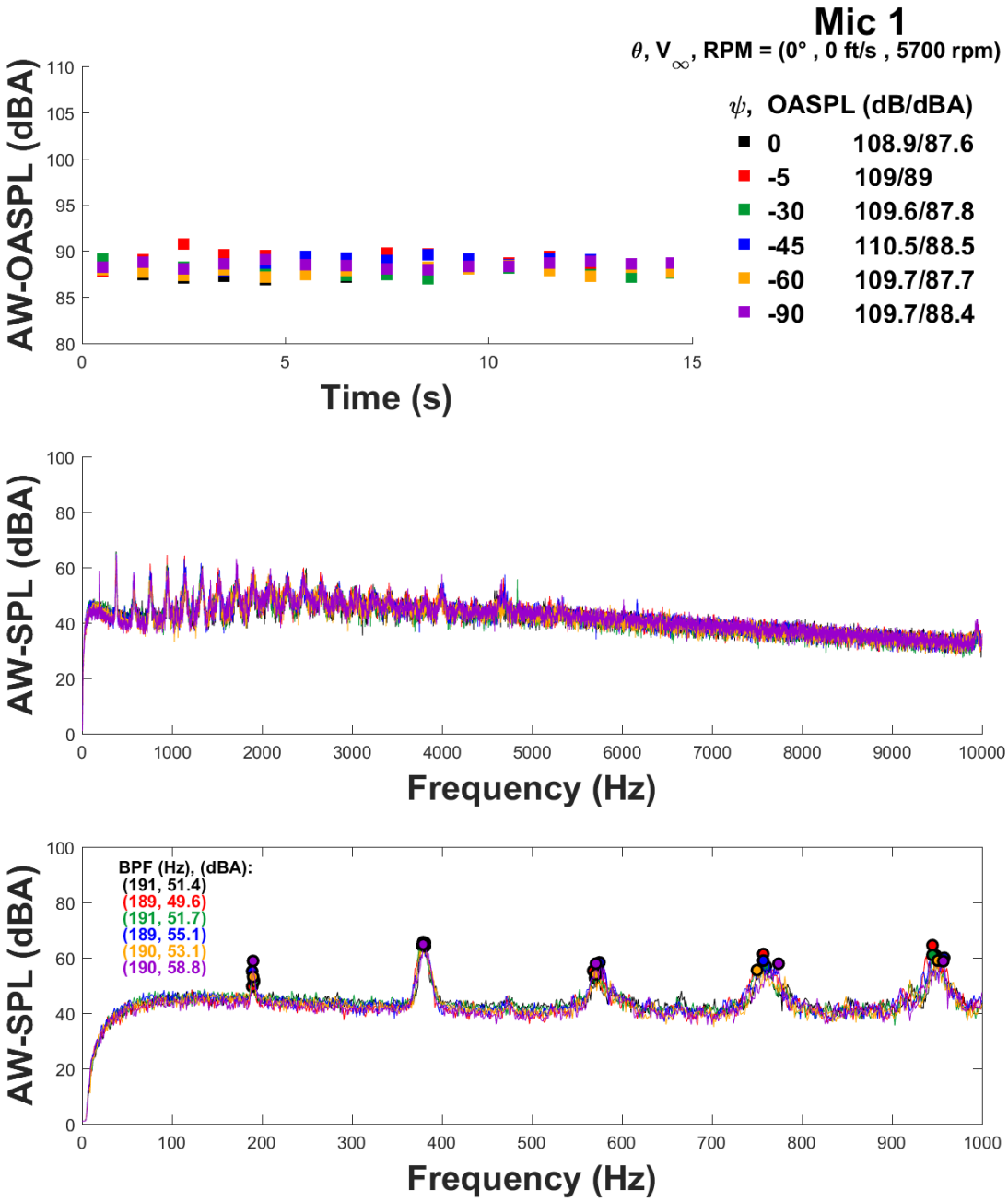

Figure E48: SOLO microphone 1: Yaw sweep $V_\infty = 0$ ft/s, $\theta = 0°$, RPM= 5,700

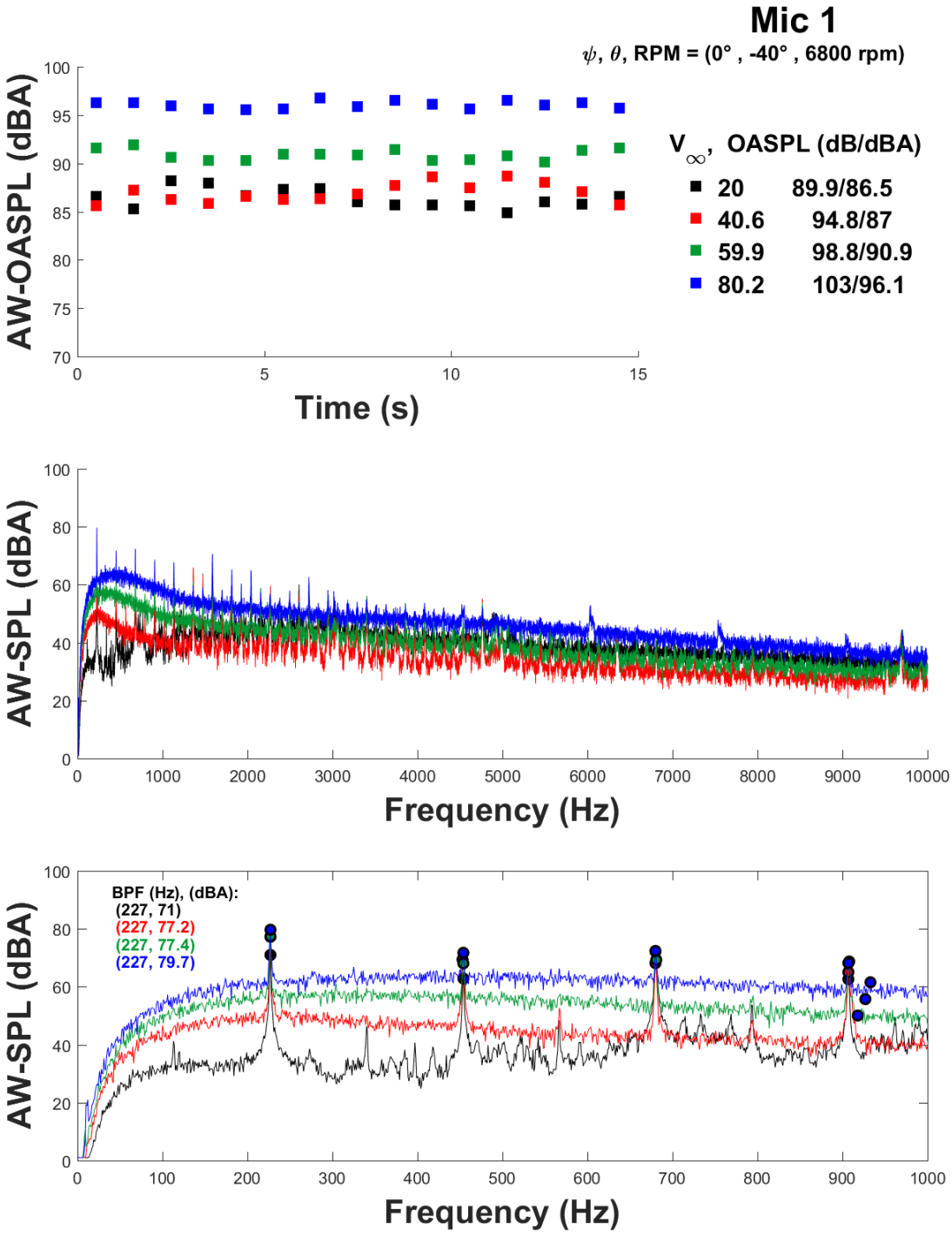

Figure E49: SOLO microphone 1: V_∞ sweep ψ = 0°, θ = -40°, RPM= 6,800

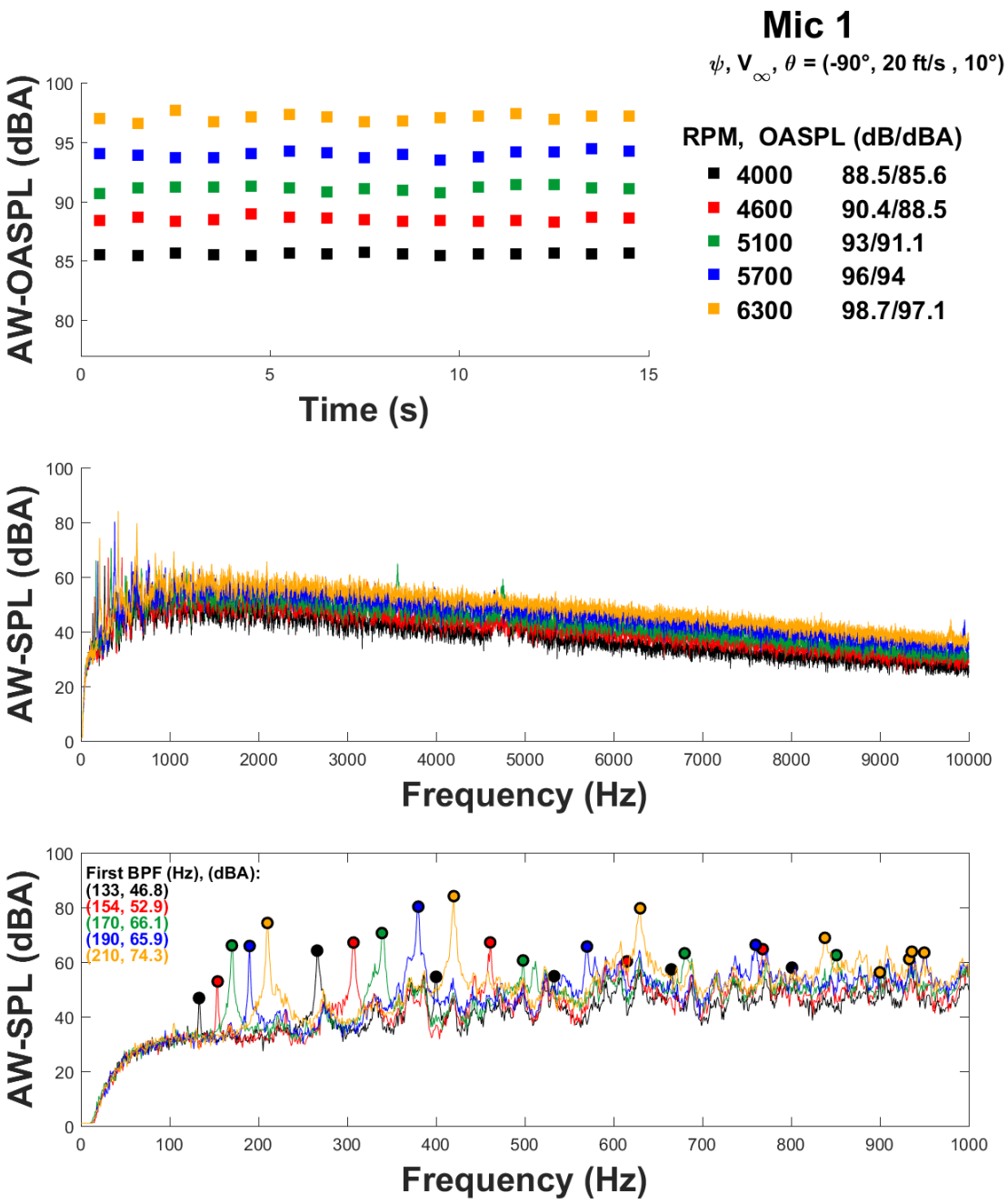

Figure E50: SOLO microphone 1: RPM sweep ψ = -90°, V_∞ = 20 ft/s, θ = 10°

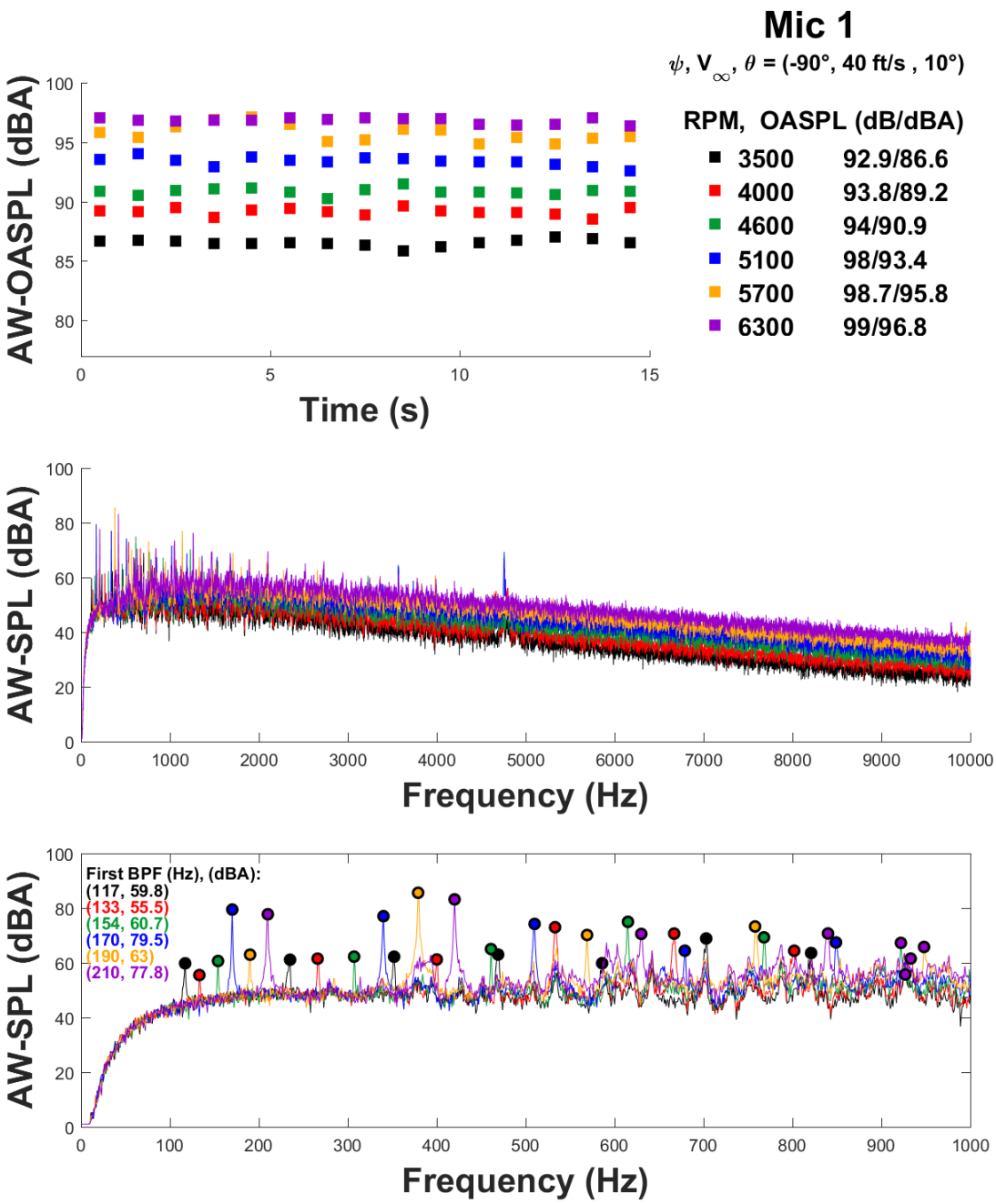

Figure E51: SOLO microphone 1: RPM sweep ψ = -90°, V_∞ = 40 ft/s, θ = 10°

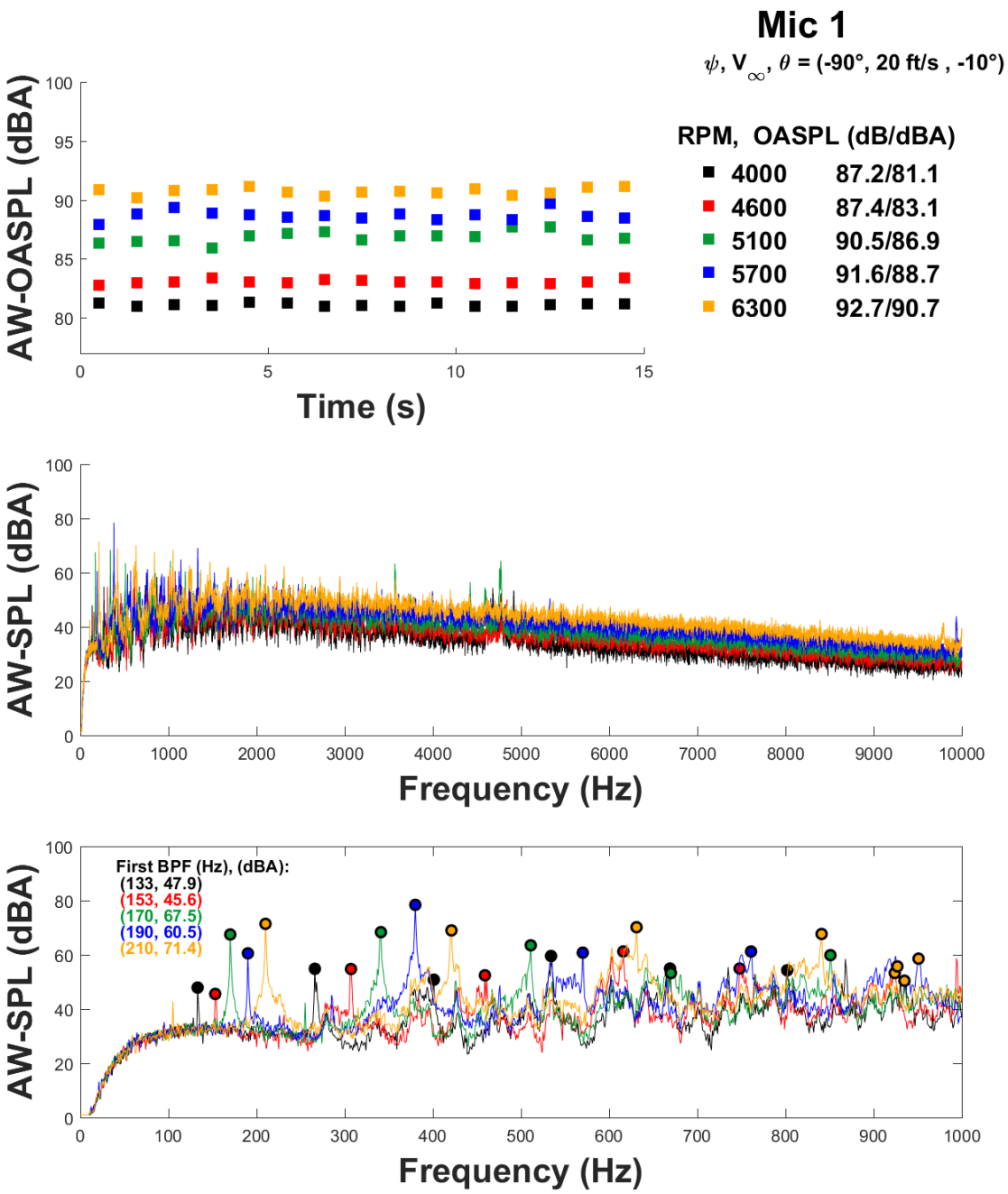

Figure E52: SOLO microphone 1: RPM sweep ψ = -90°, V_∞ = 20 ft/s, θ = -10°

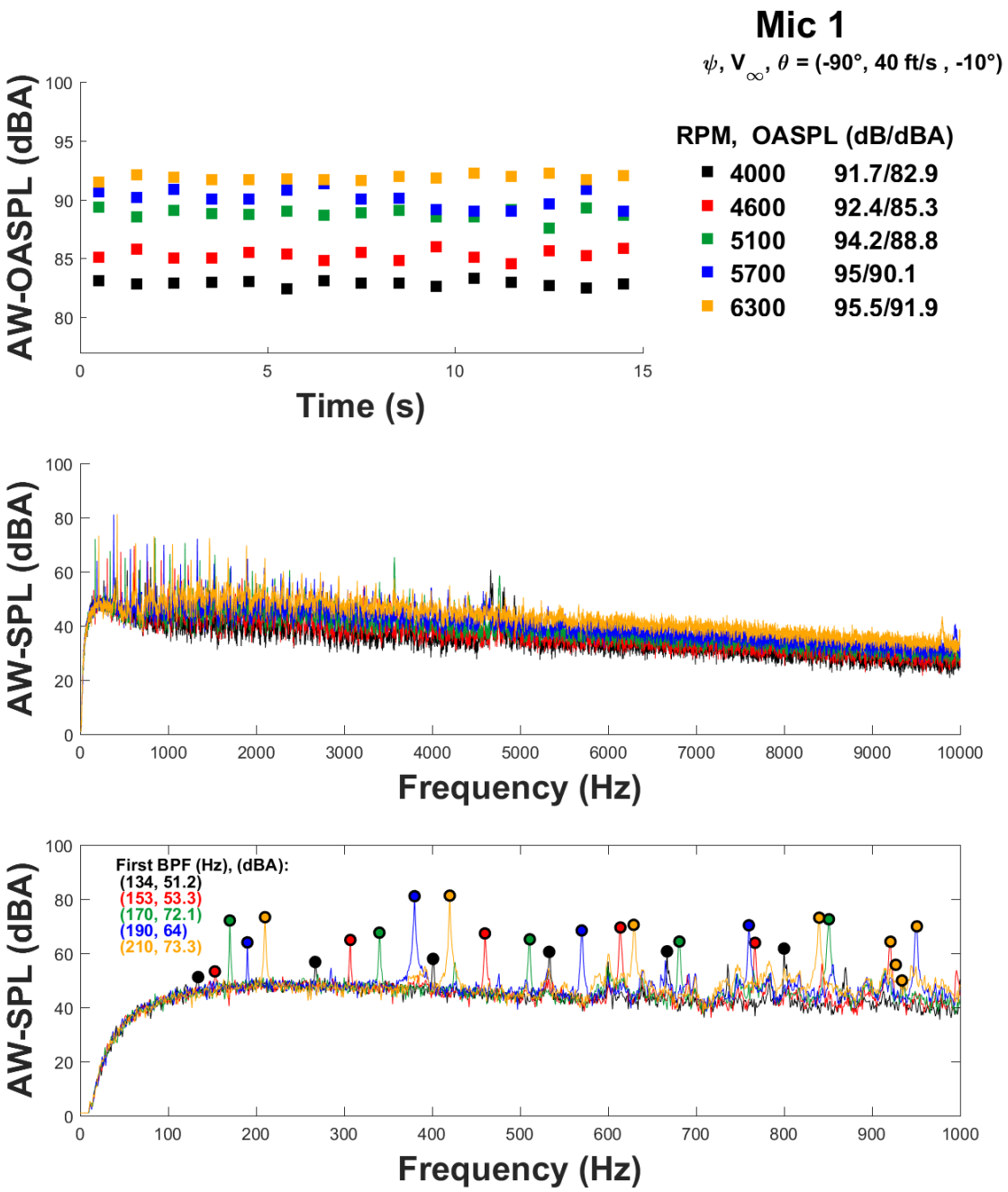

Figure E53: SOLO microphone 1: RPM sweep ψ = -90°, V_∞ = 40 ft/s, θ = -10°

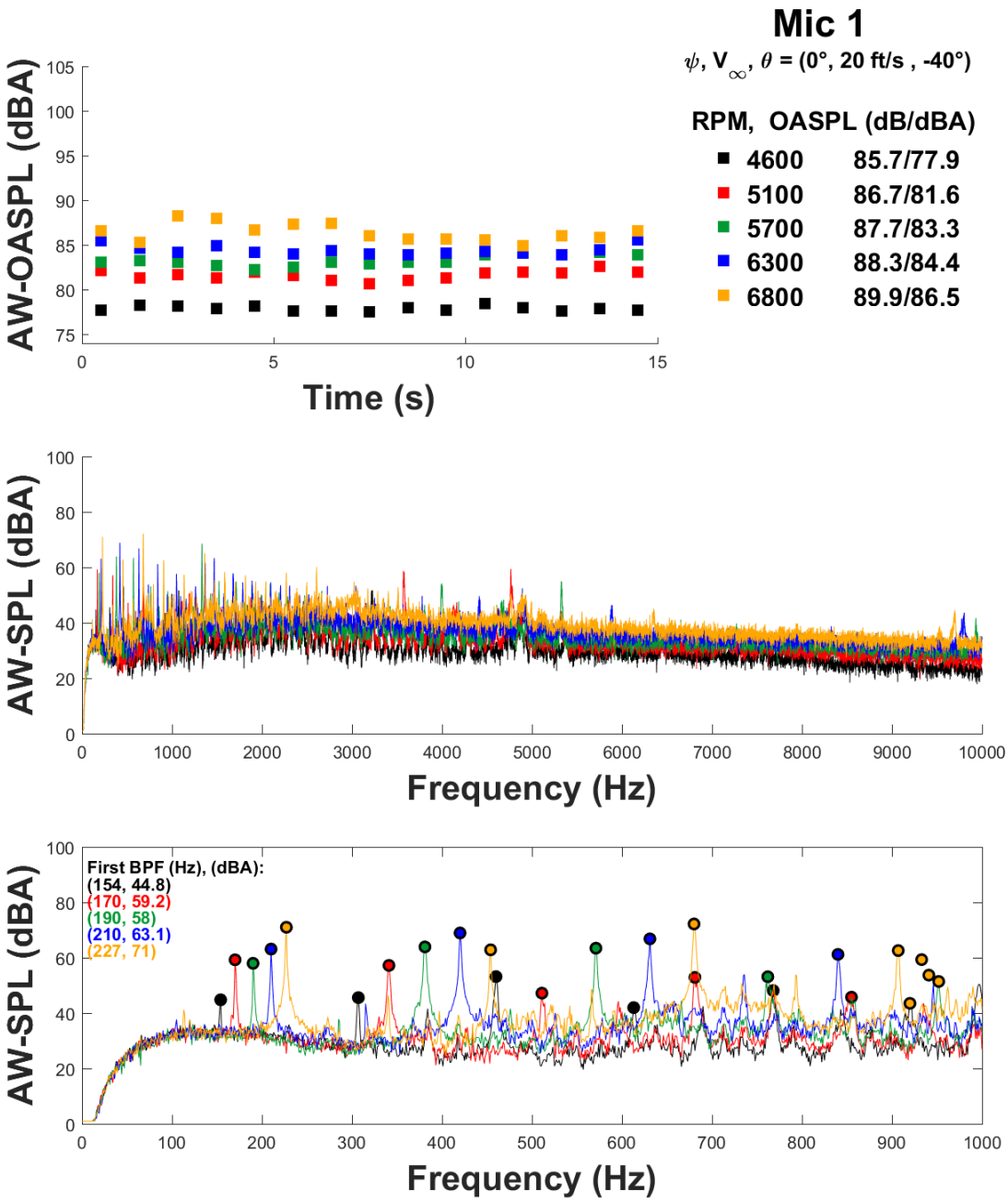

Figure E54: SOLO microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 20$ ft/s, θ = -40°

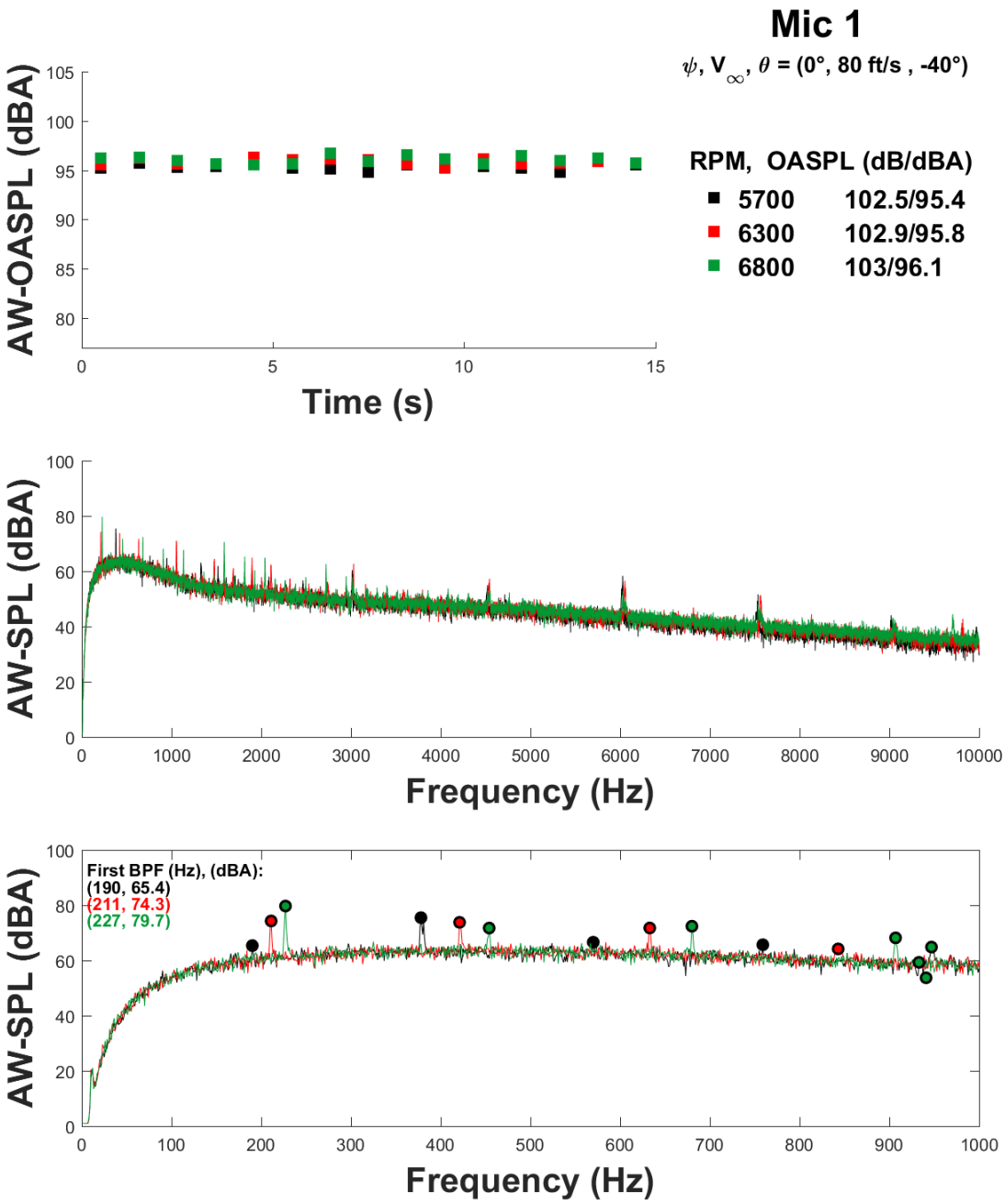

Figure E55: SOLO microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 80$ ft/s, θ = -40°

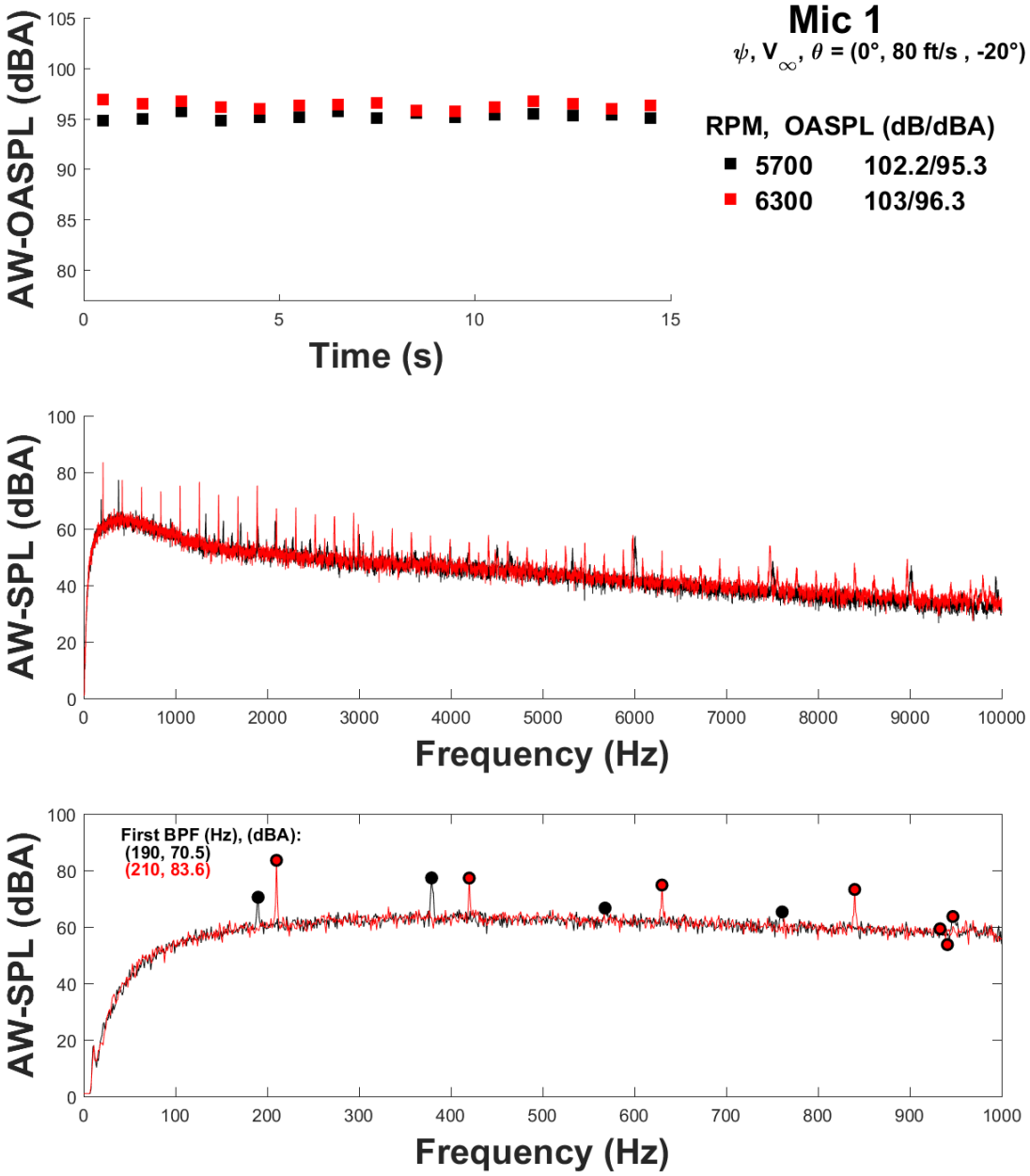

Figure E56: SOLO microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 80$ ft/s, θ = -20°

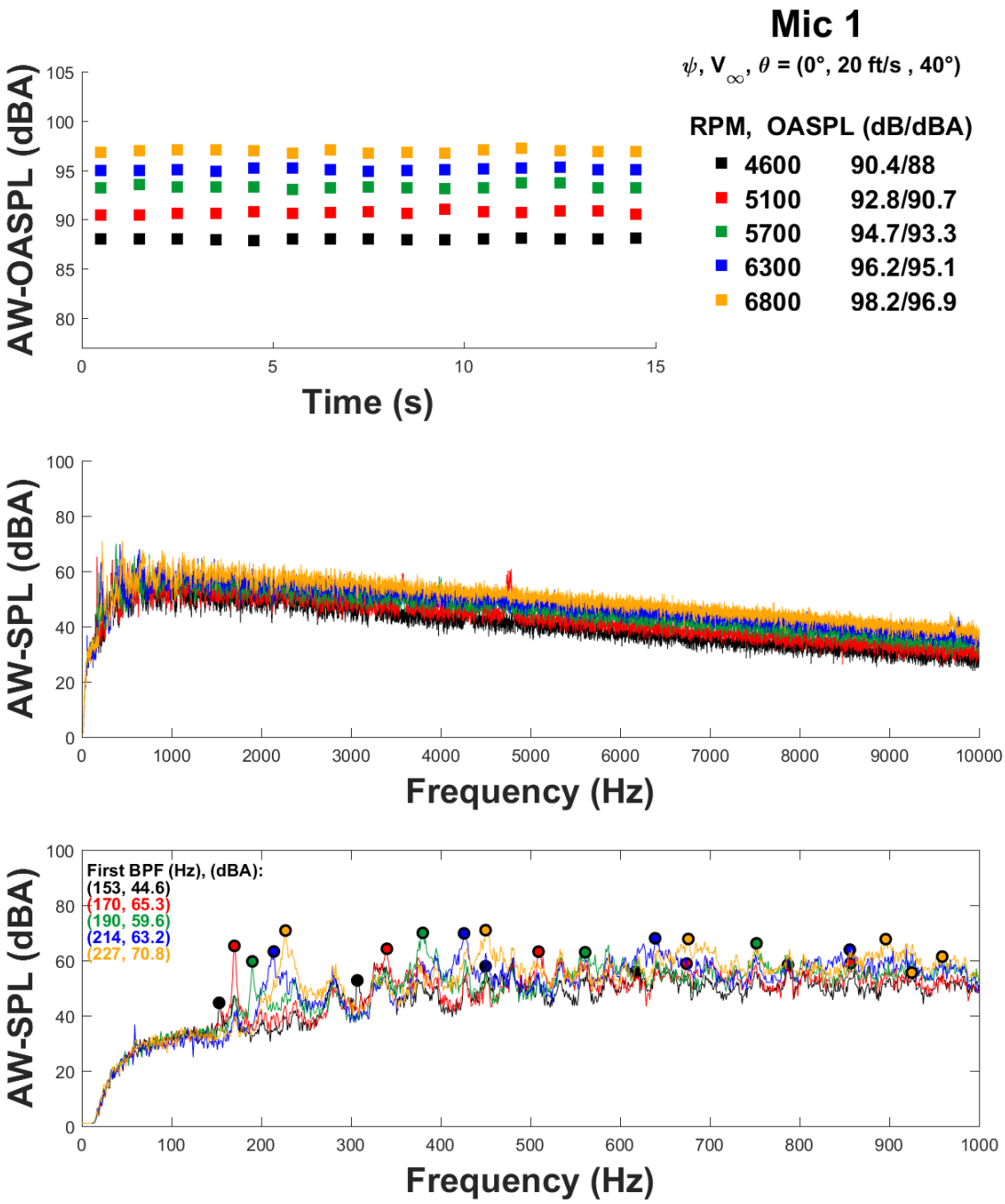

Figure E57: SOLO microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 20$ ft/s, $\theta = 40°$

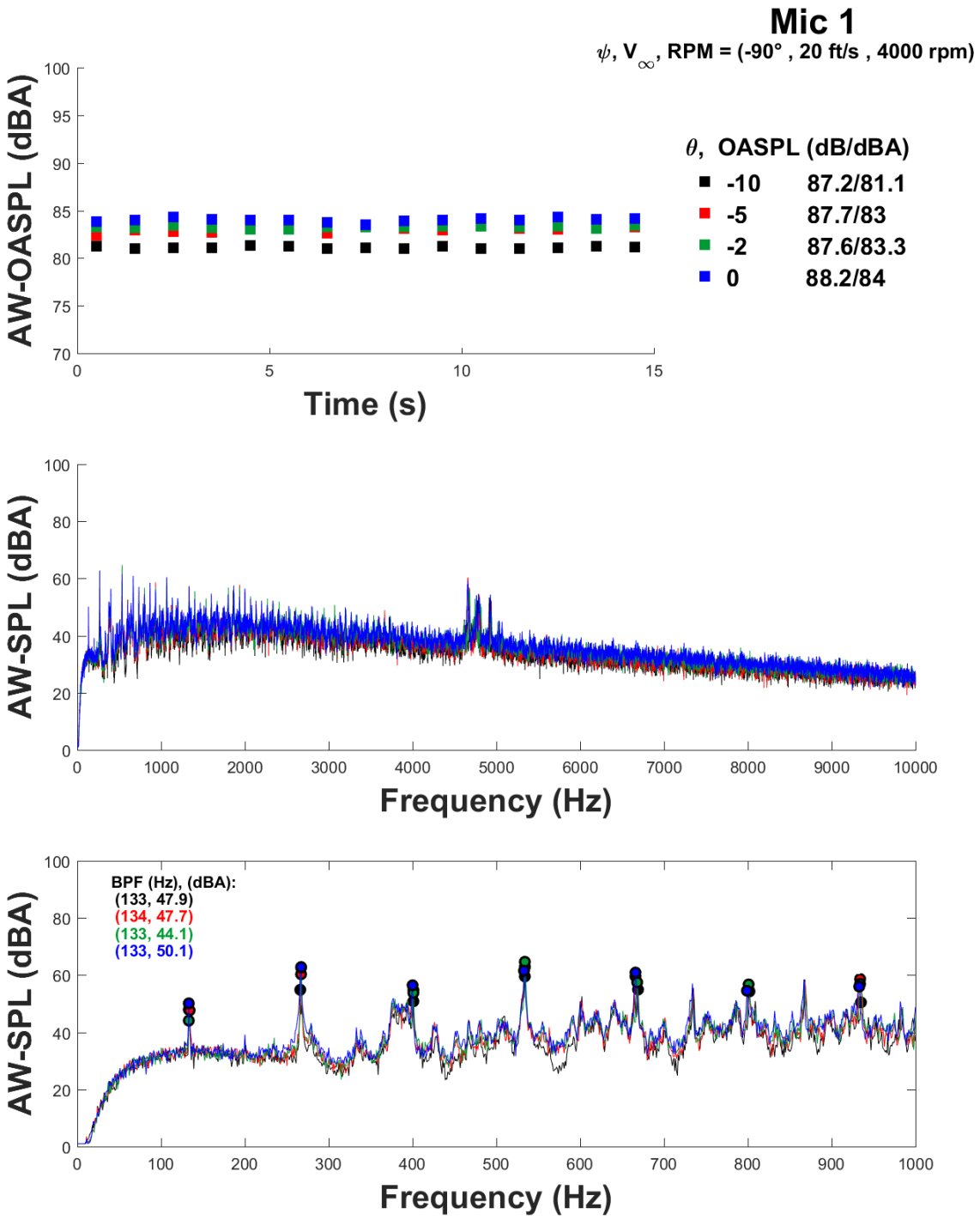

Figure E58: SOLO microphone 1: Negative pitch sweep ψ = -90°, V_∞ = 20 ft/s, RPM= 4,000

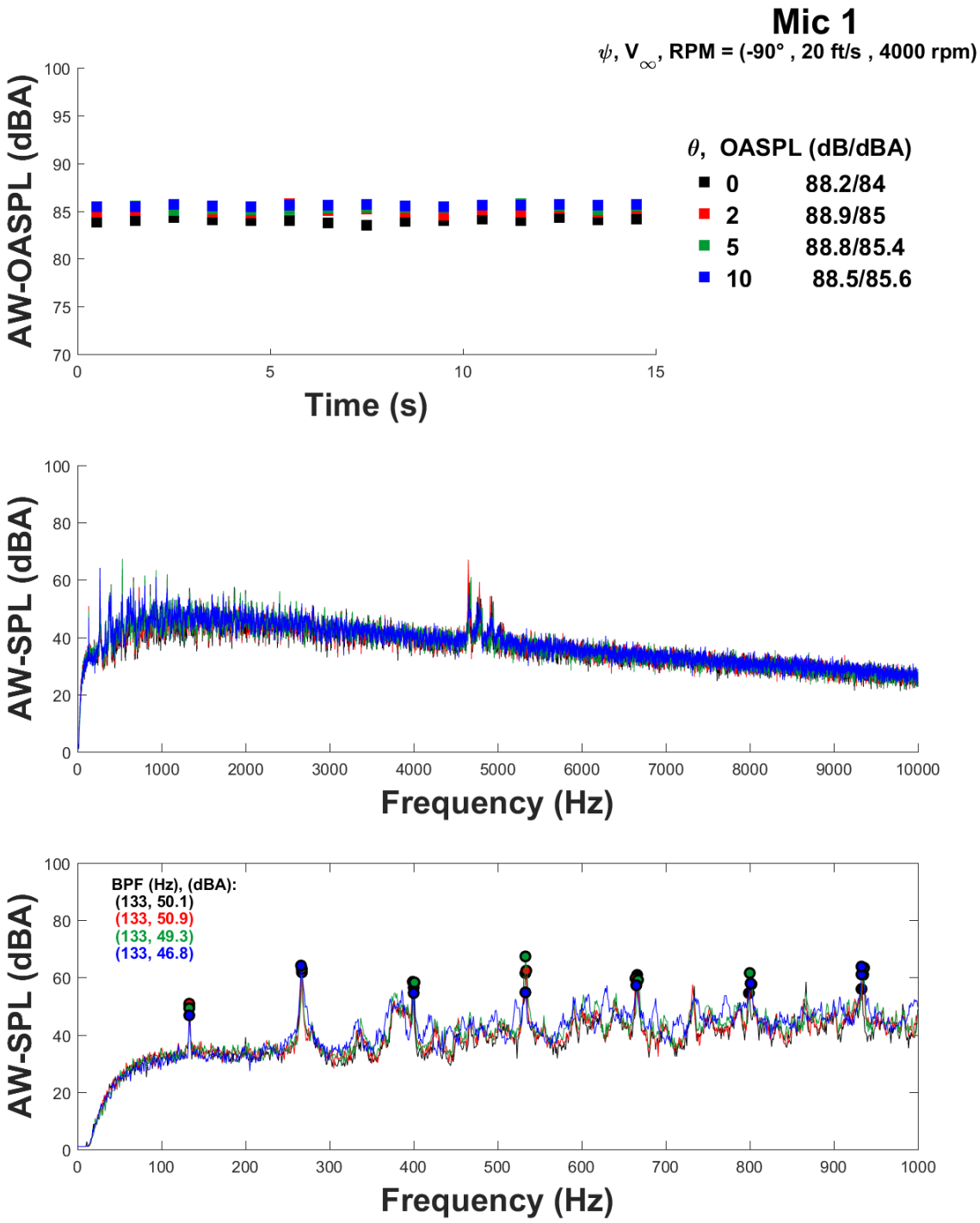

Figure E59: SOLO microphone 1: Positive pitch sweep ψ = -90°, V_∞ = 20 ft/s, RPM= 4,000

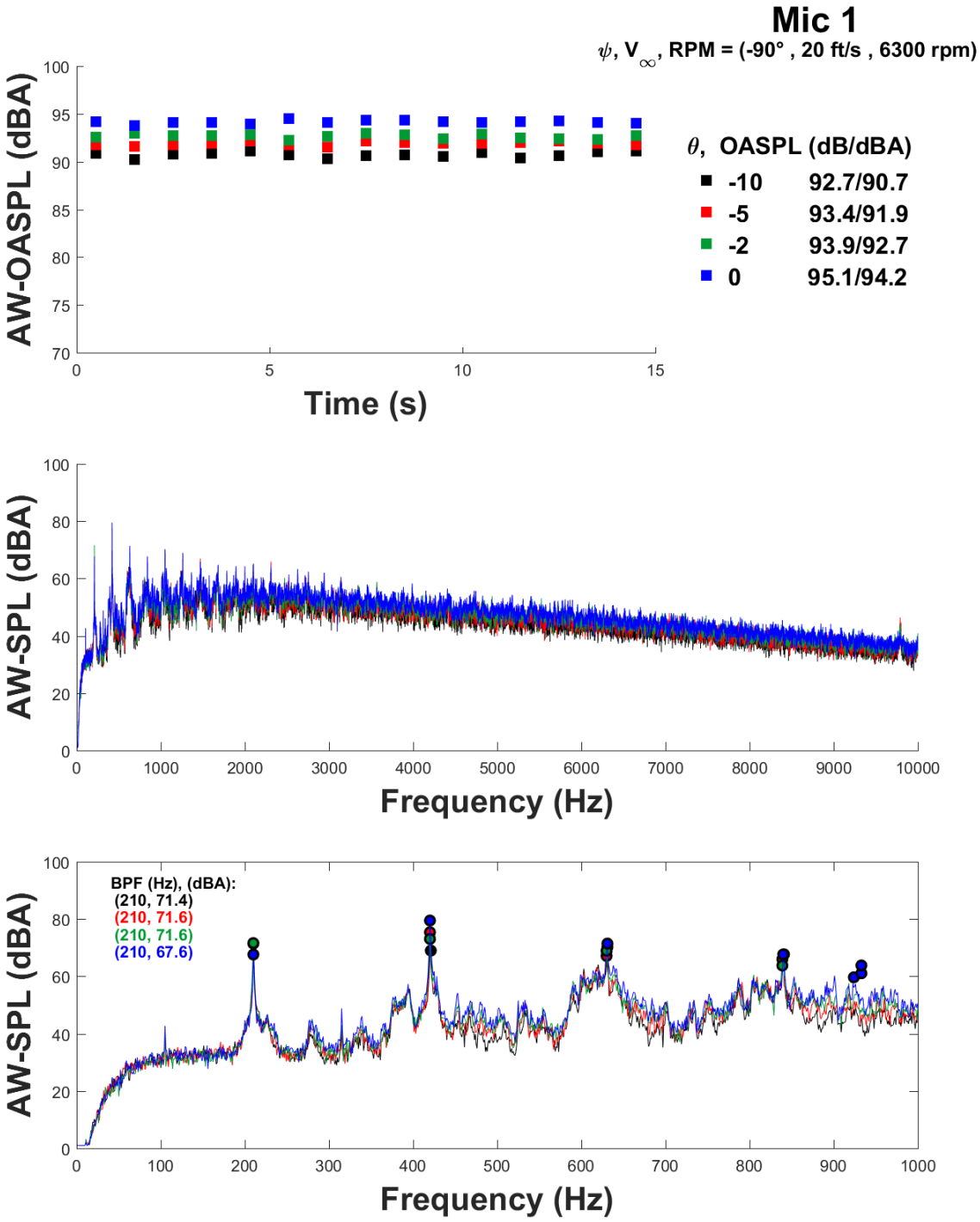

Figure E60: SOLO microphone 1: Negative pitch sweep ψ = -90°, V_∞ = 20 ft/s, RPM= 6,300

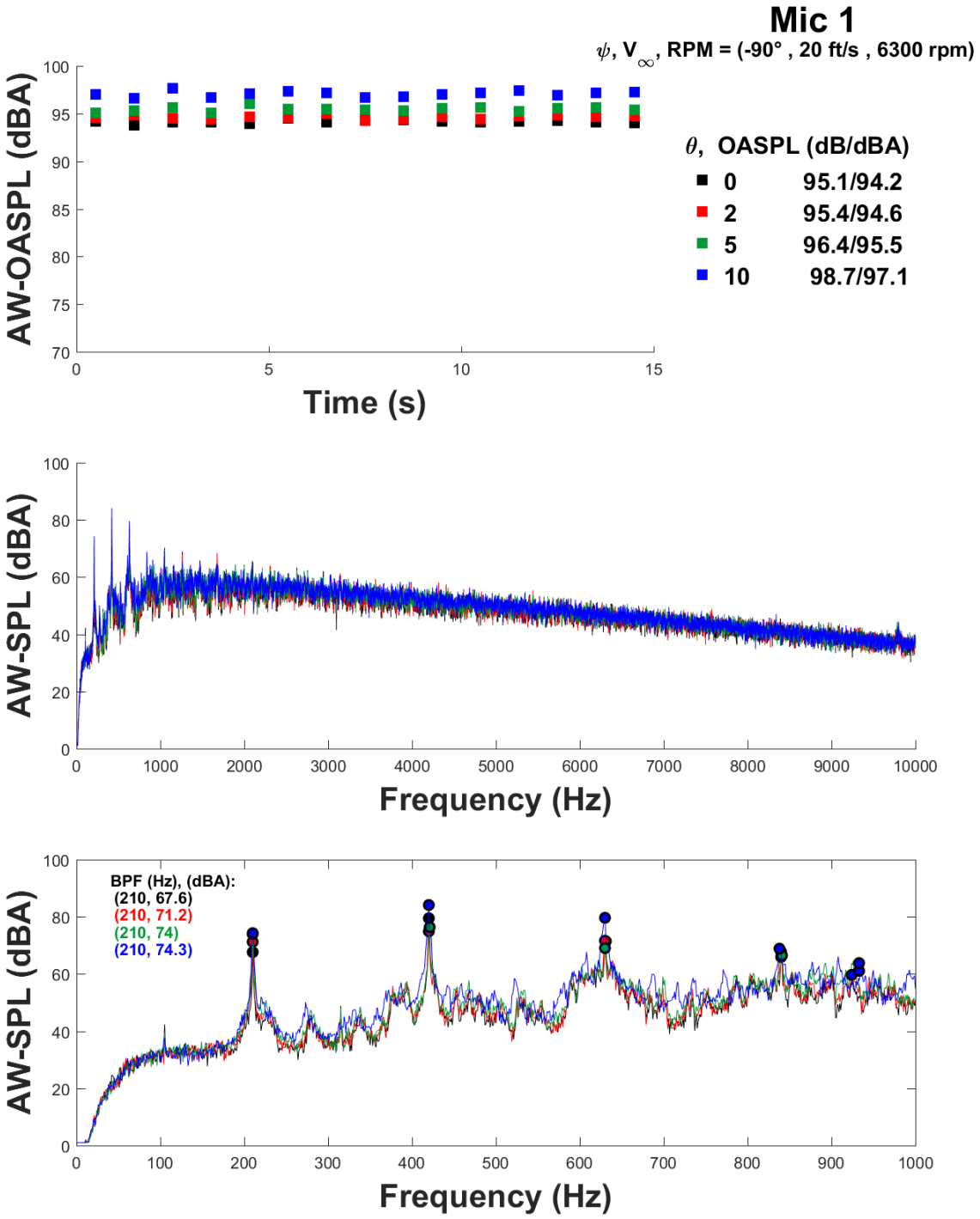

Figure E61: SOLO microphone 1: Positive pitch sweep ψ = -90°, V_∞ = 20 ft/s, RPM= 6,300

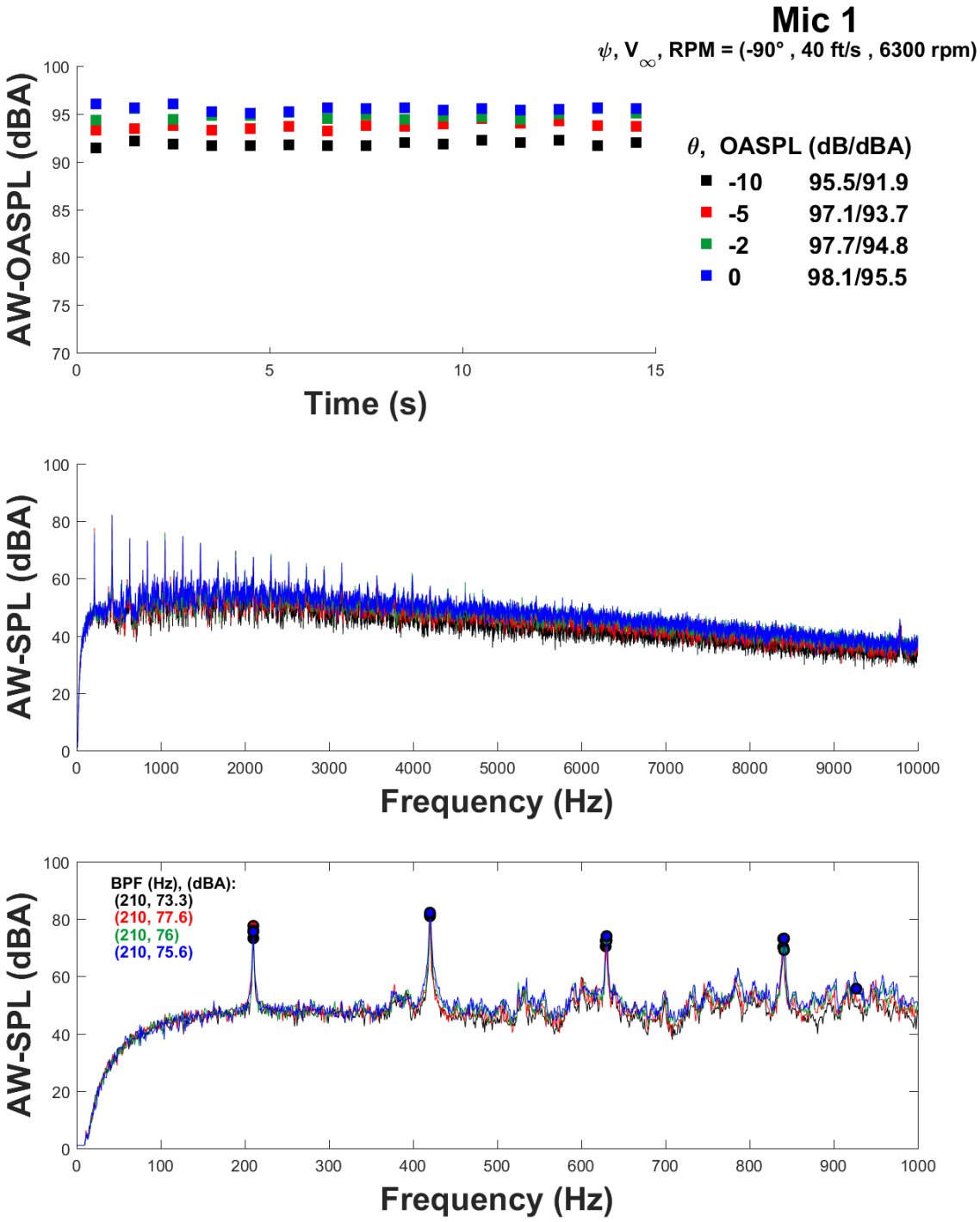

Figure E62: SOLO microphone 1: Negative pitch sweep ψ = -90°, V_∞ = 40 ft/s, RPM= 6,300

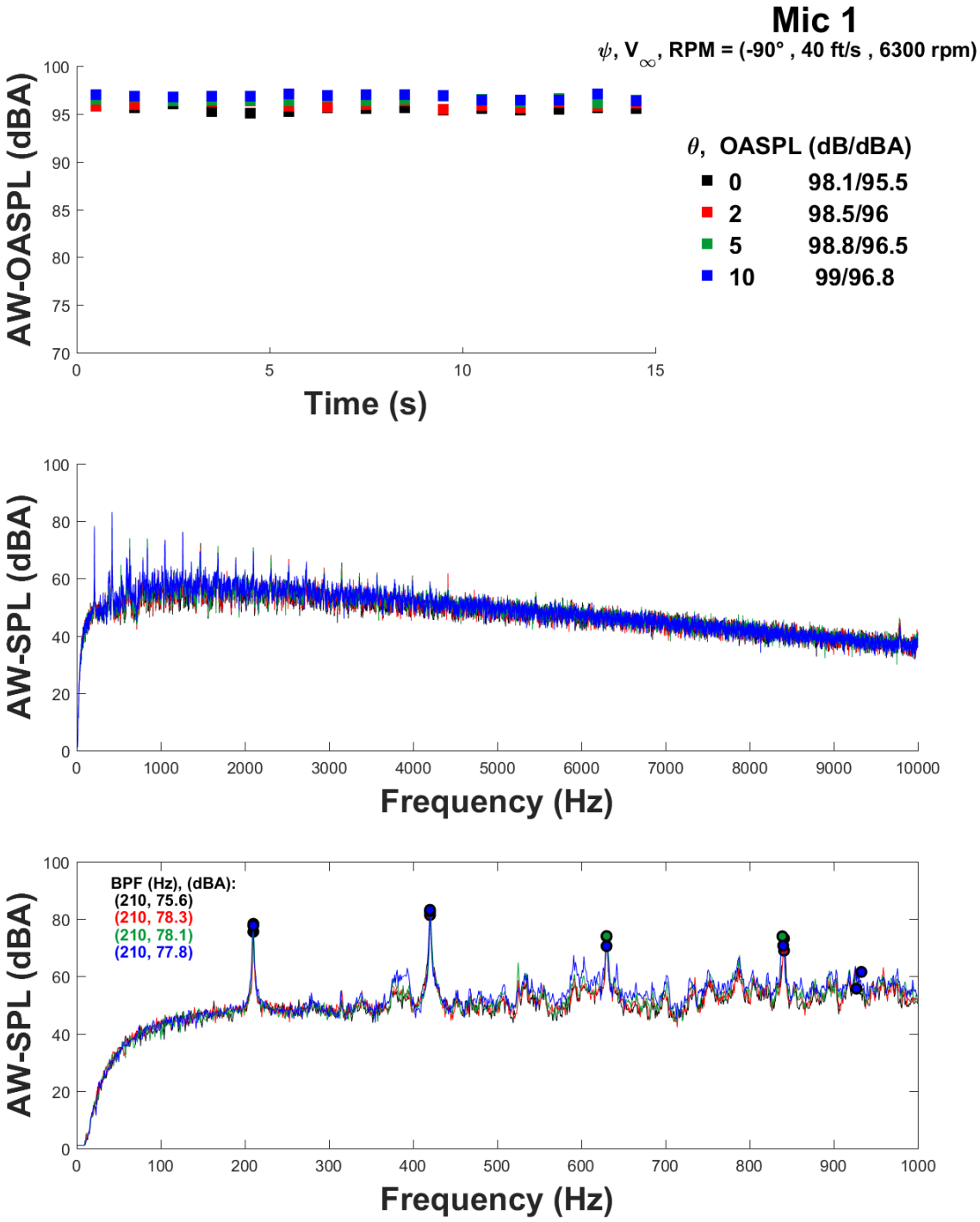

Figure E63: SOLO microphone 1: Positive pitch sweep ψ = -90°, V_∞ = 40 ft/s, RPM= 6,300

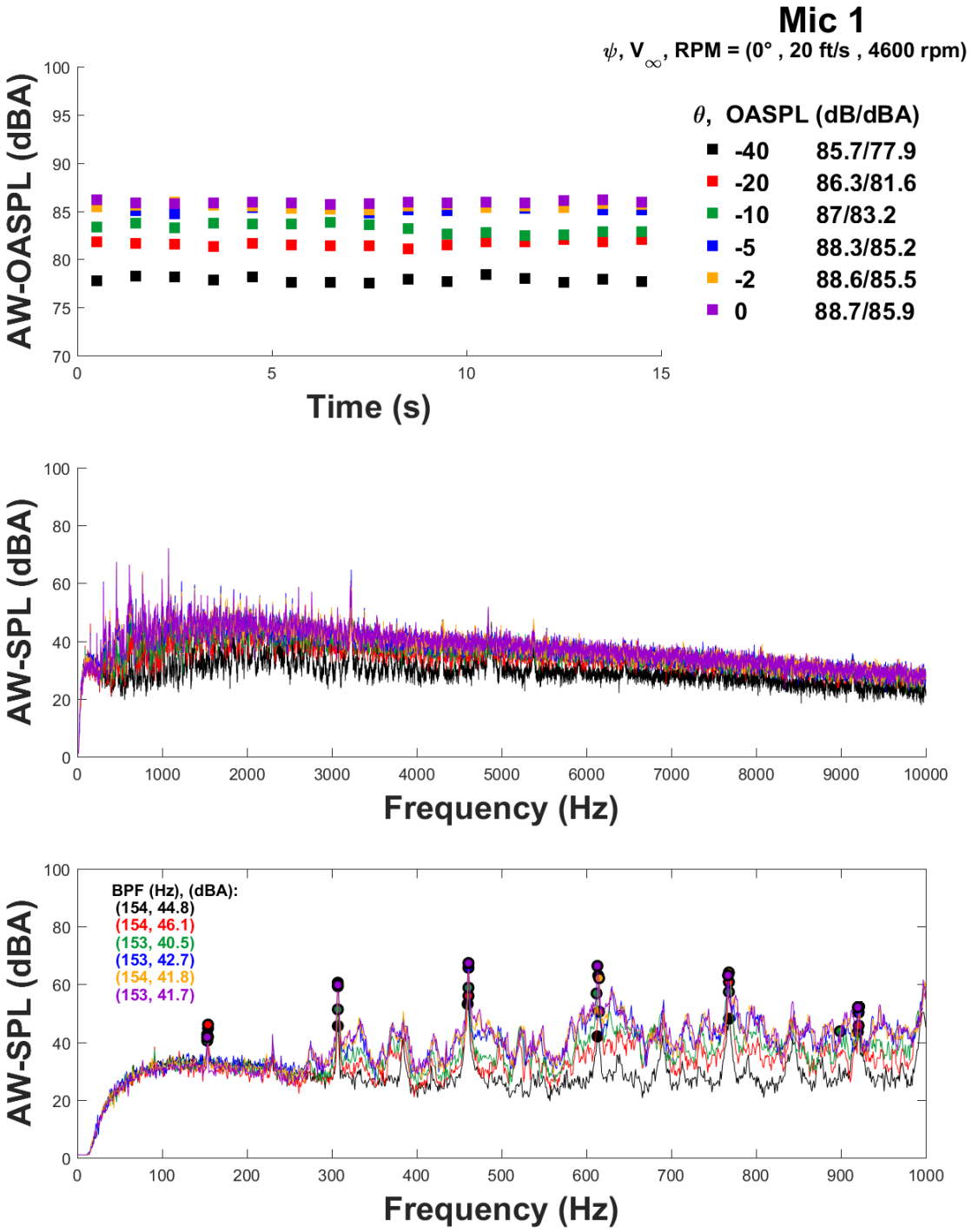

Figure E64: SOLO microphone 1: Negative pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, RPM= 4,600

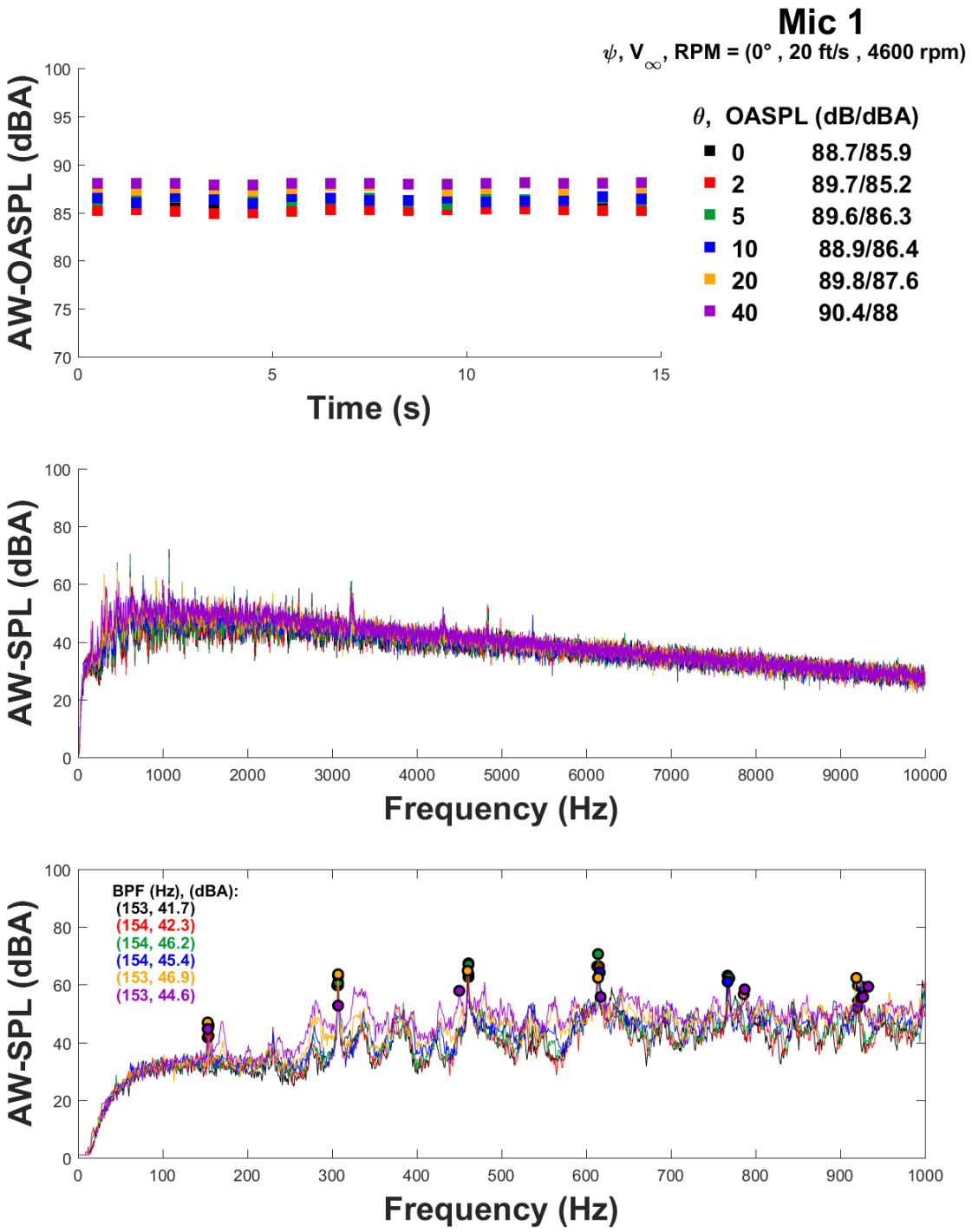

Figure E65: SOLO microphone 1: Positive pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, RPM= 4,600

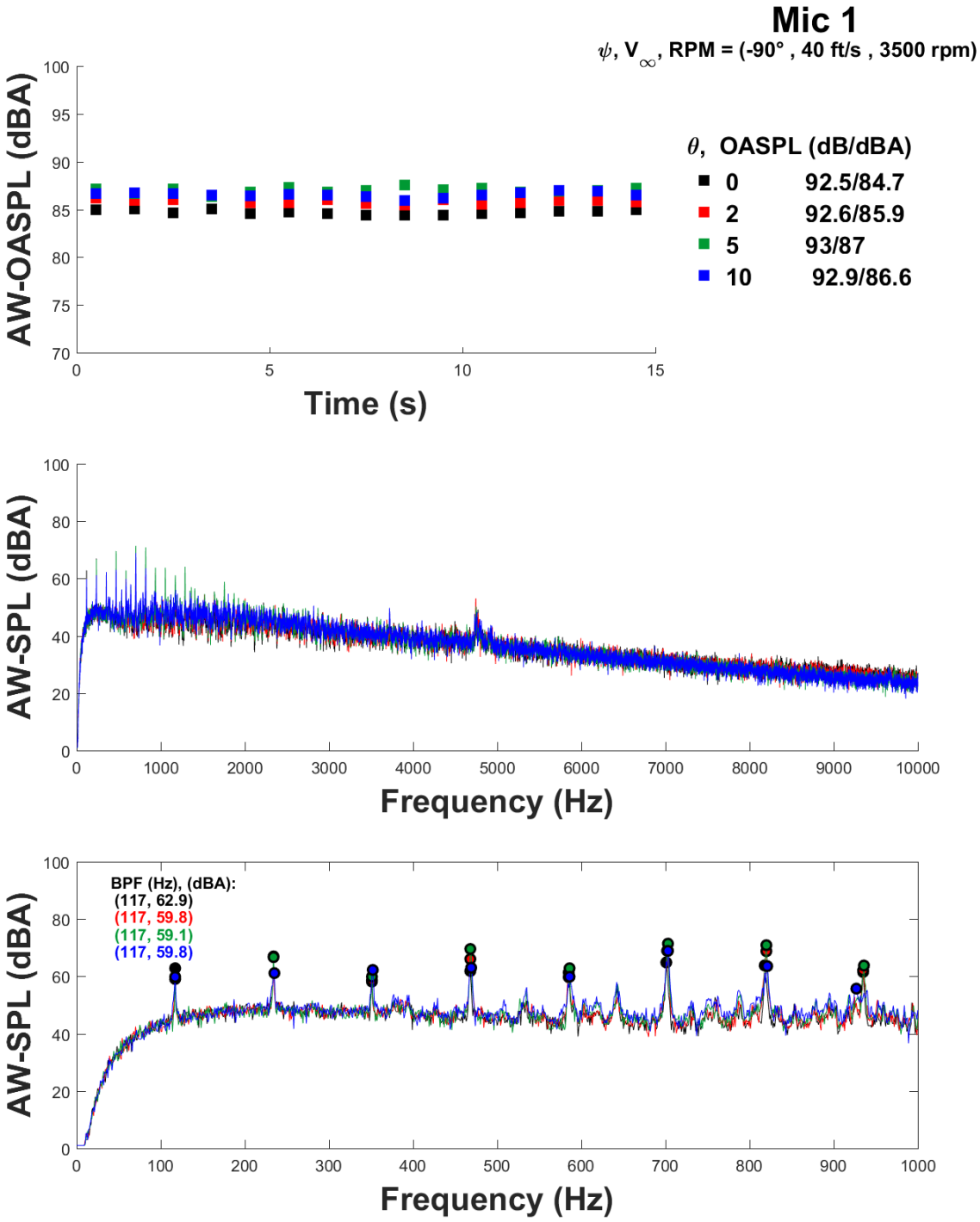

Figure E66: SOLO microphone 1: Pitch sweep ψ = -90°, V_∞ = 40 ft/s, RPM= 3,500

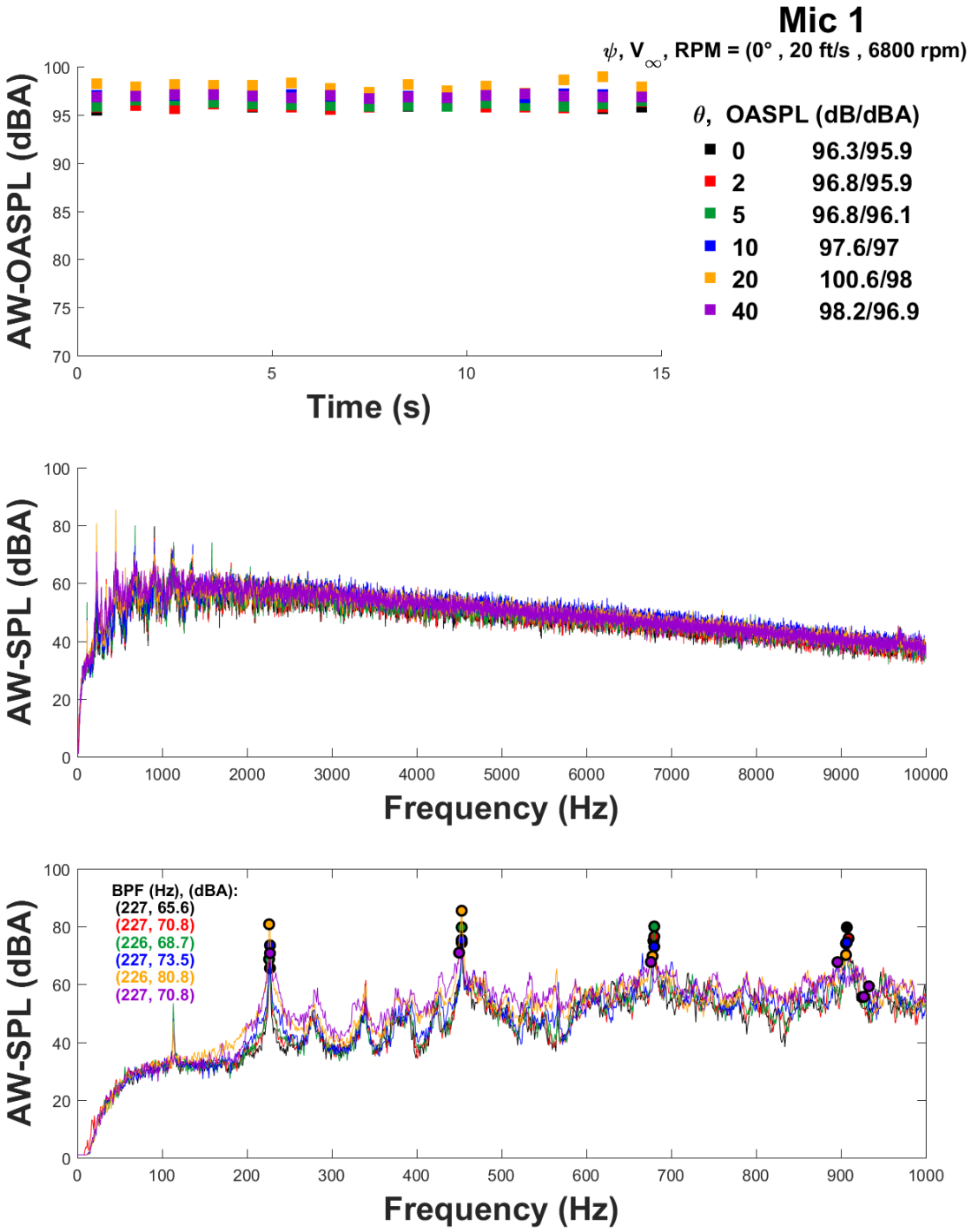

Figure E67: SOLO microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, RPM= 6,800

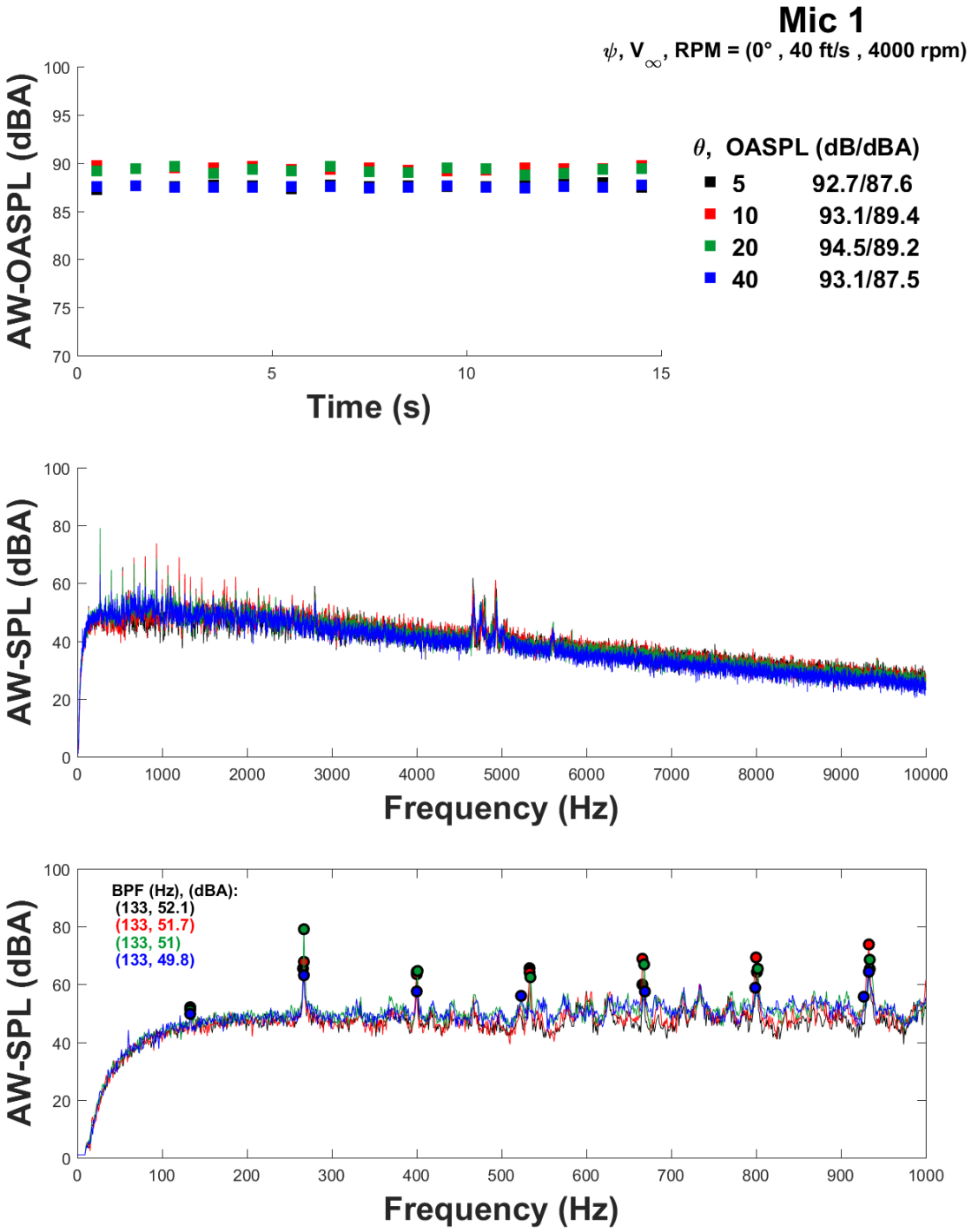

Figure E68: SOLO microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 40$ ft/s, RPM= 4,000

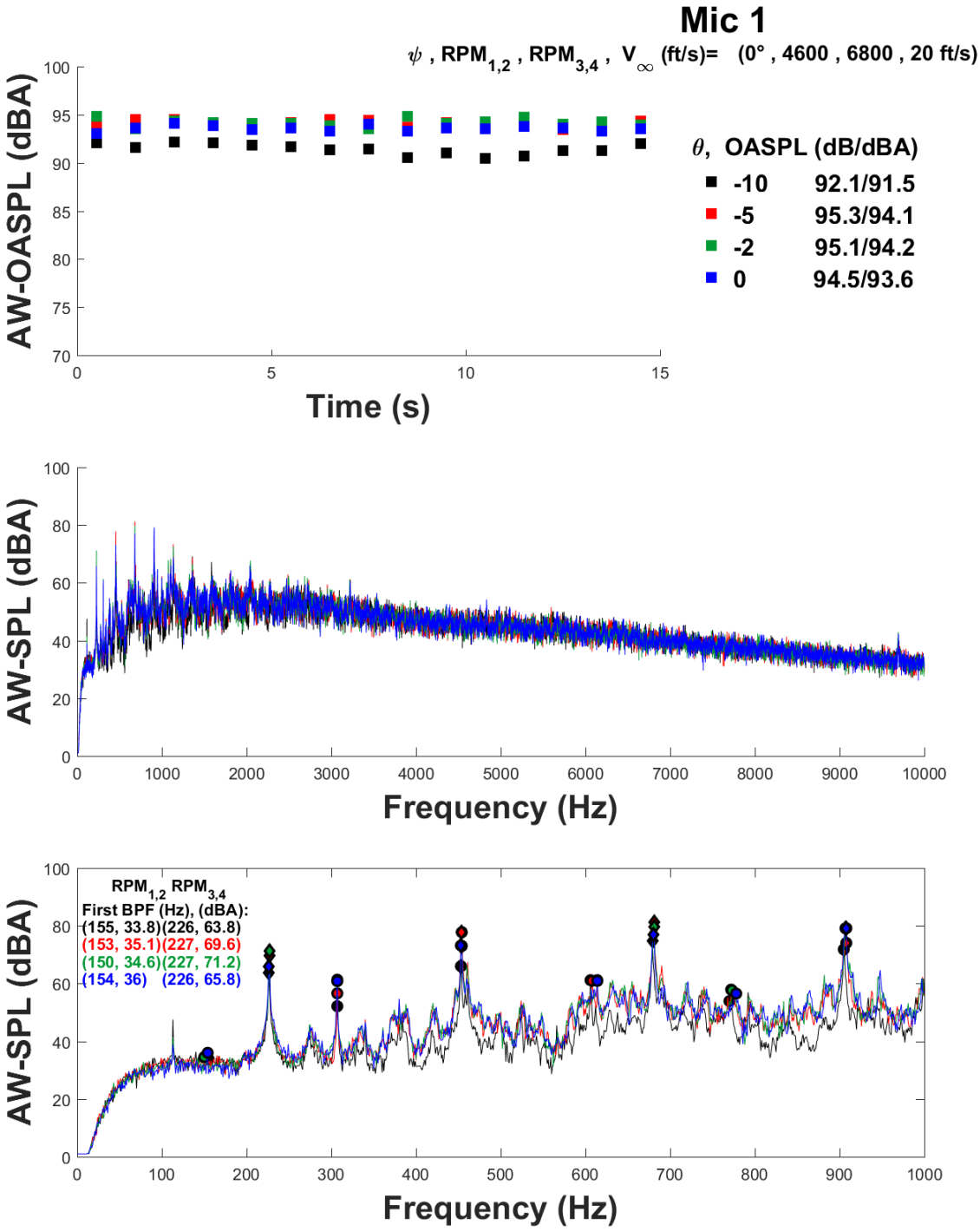

Figure E69: SOLO microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, $RPM_{1,2} = 4{,}600$, $RPM_{3,4} = 6{,}800$

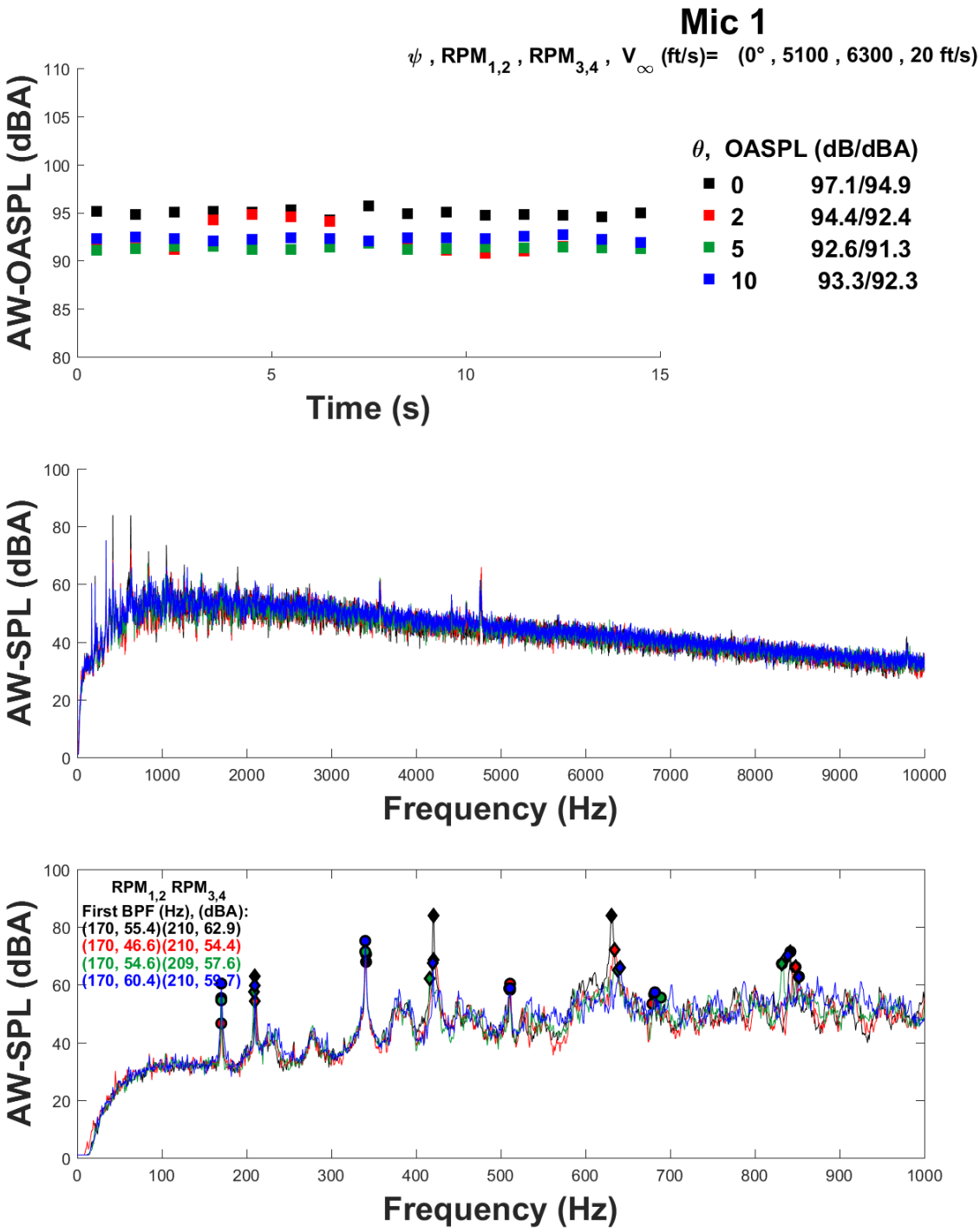

Figure E70: SOLO microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, $RPM_{1,2} = 5{,}100$, $RPM_{3,4} = 6{,}300$

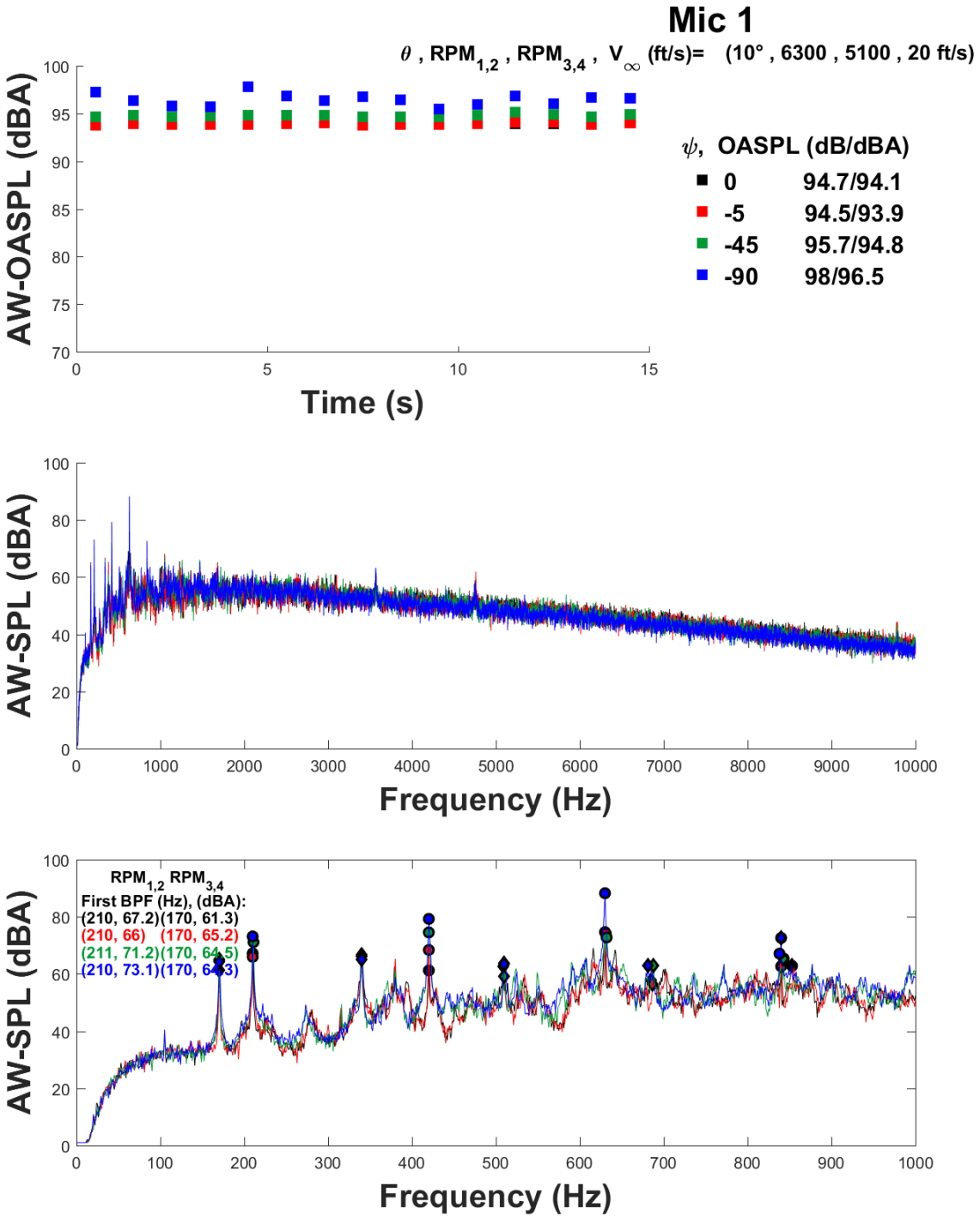

Figure E71: SOLO microphone 1: Yaw sweep $V_\infty = 20$ ft/s, $\theta = 10°$, $RPM_{1,2} = 6{,}300$, $RPM_{3,4} = 5{,}100$

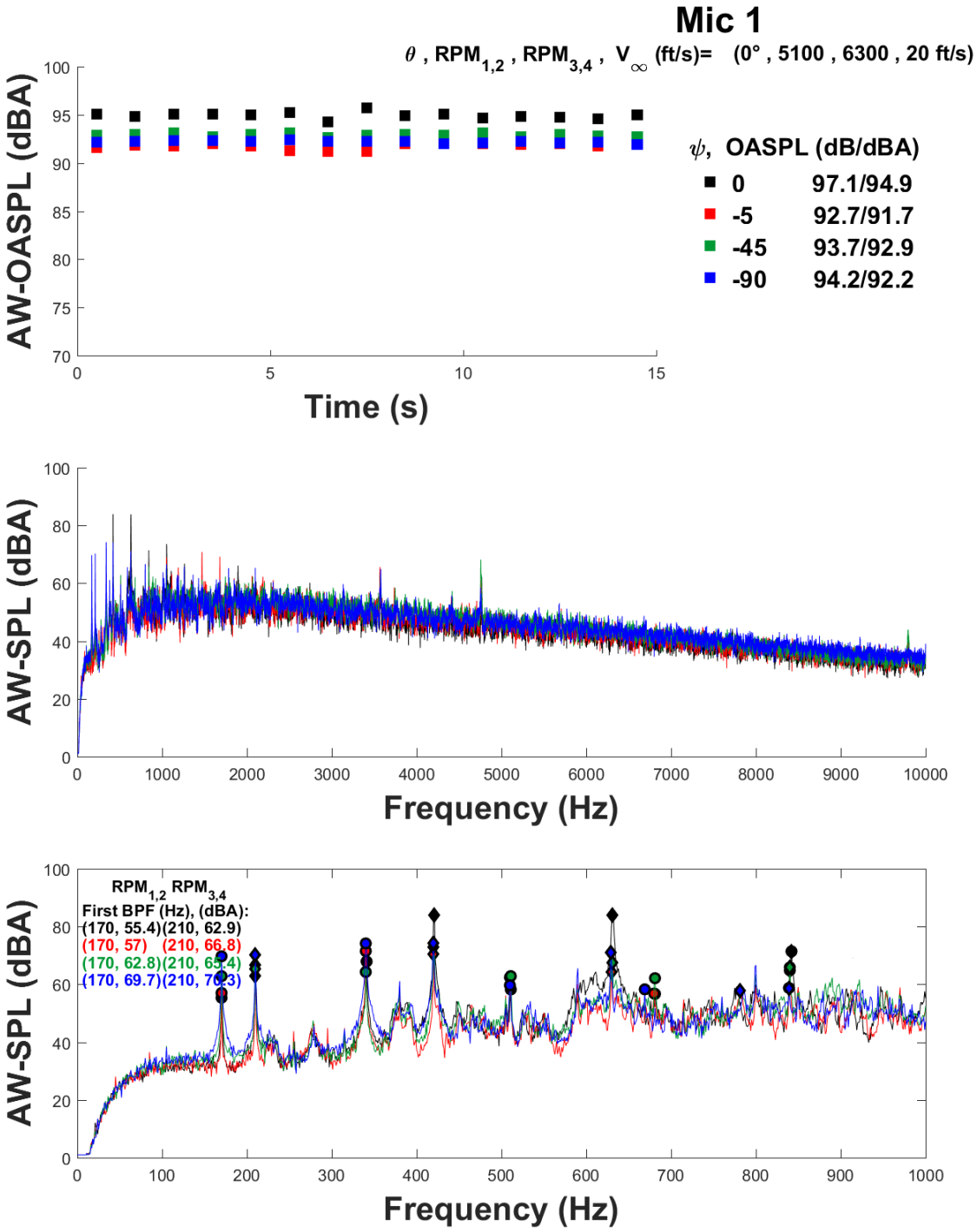

Figure E72: SOLO microphone 1: Yaw sweep $V_\infty = 20$ ft/s, $\theta = 0°$, $RPM_{1,2} = 5{,}100$, $RPM_{3,4} = 6{,}300$

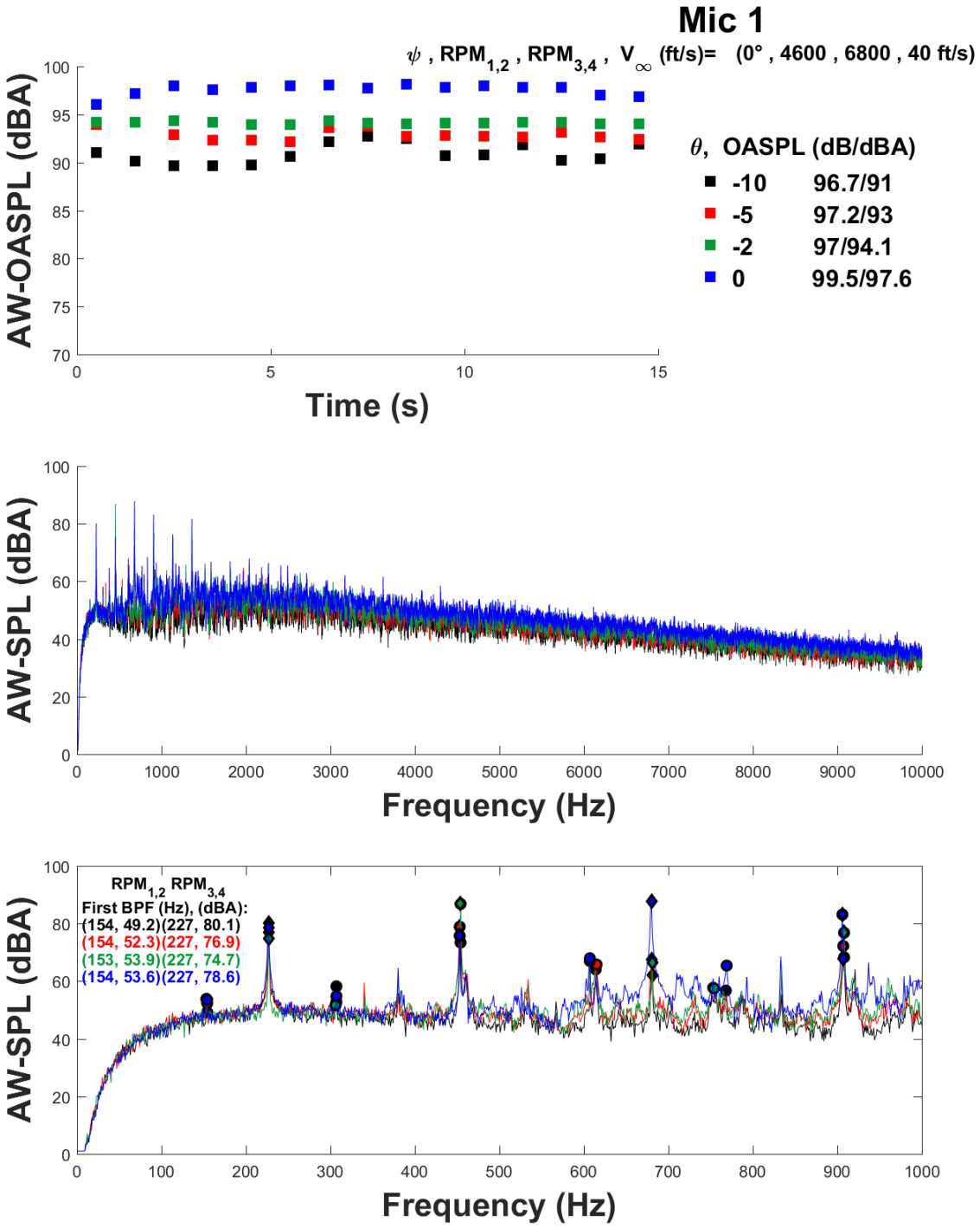

Figure E73: SOLO microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 40$ ft/s, $RPM_{1,2} = 4{,}600$, $RPM_{3,4} = 6{,}800$

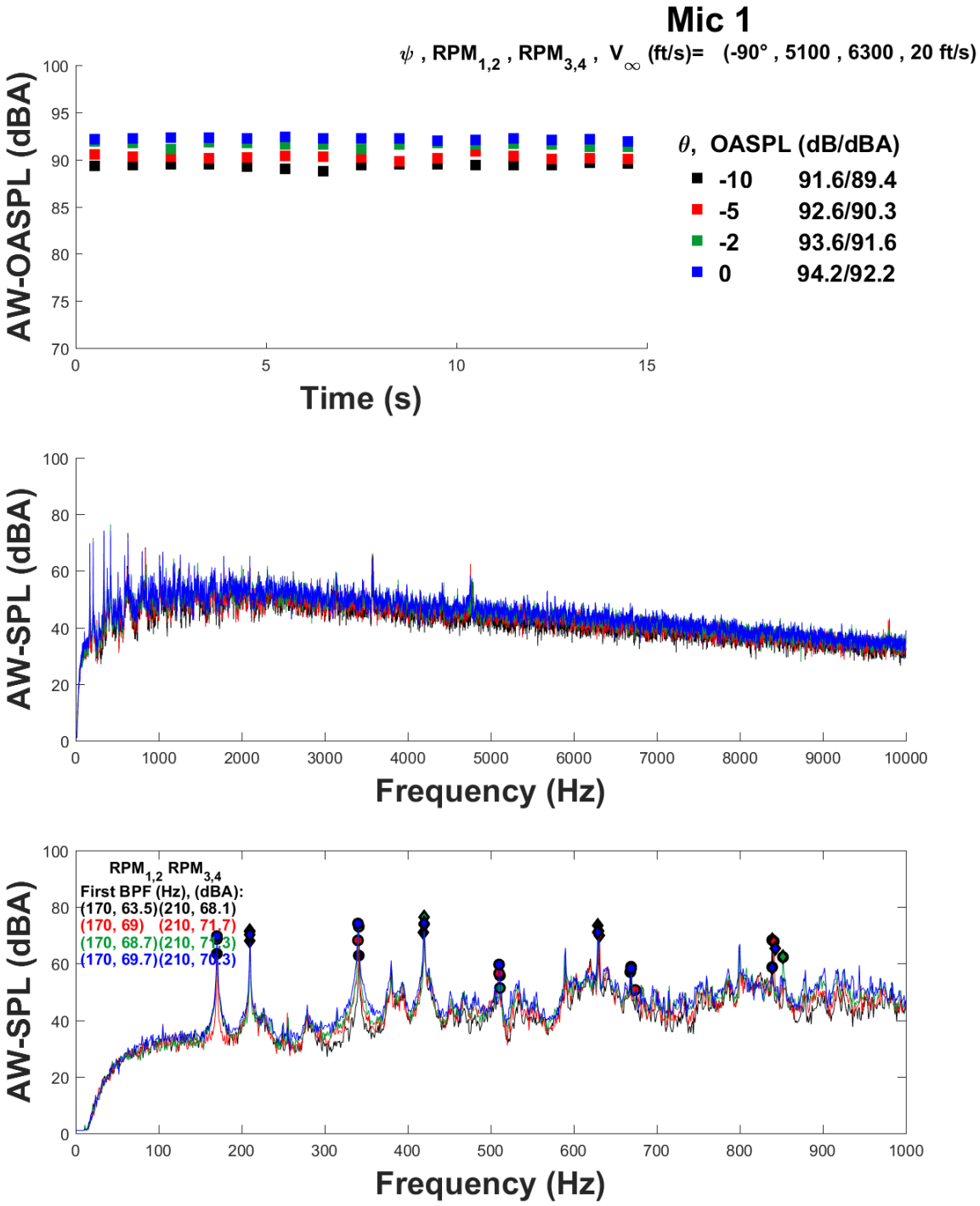

Figure E74: SOLO microphone 1: Pitch sweep ψ = -90°, V_∞ = 20 ft/s, $RPM_{1,2}$ = 5,100, $RPM_{3,4}$ = 6,300

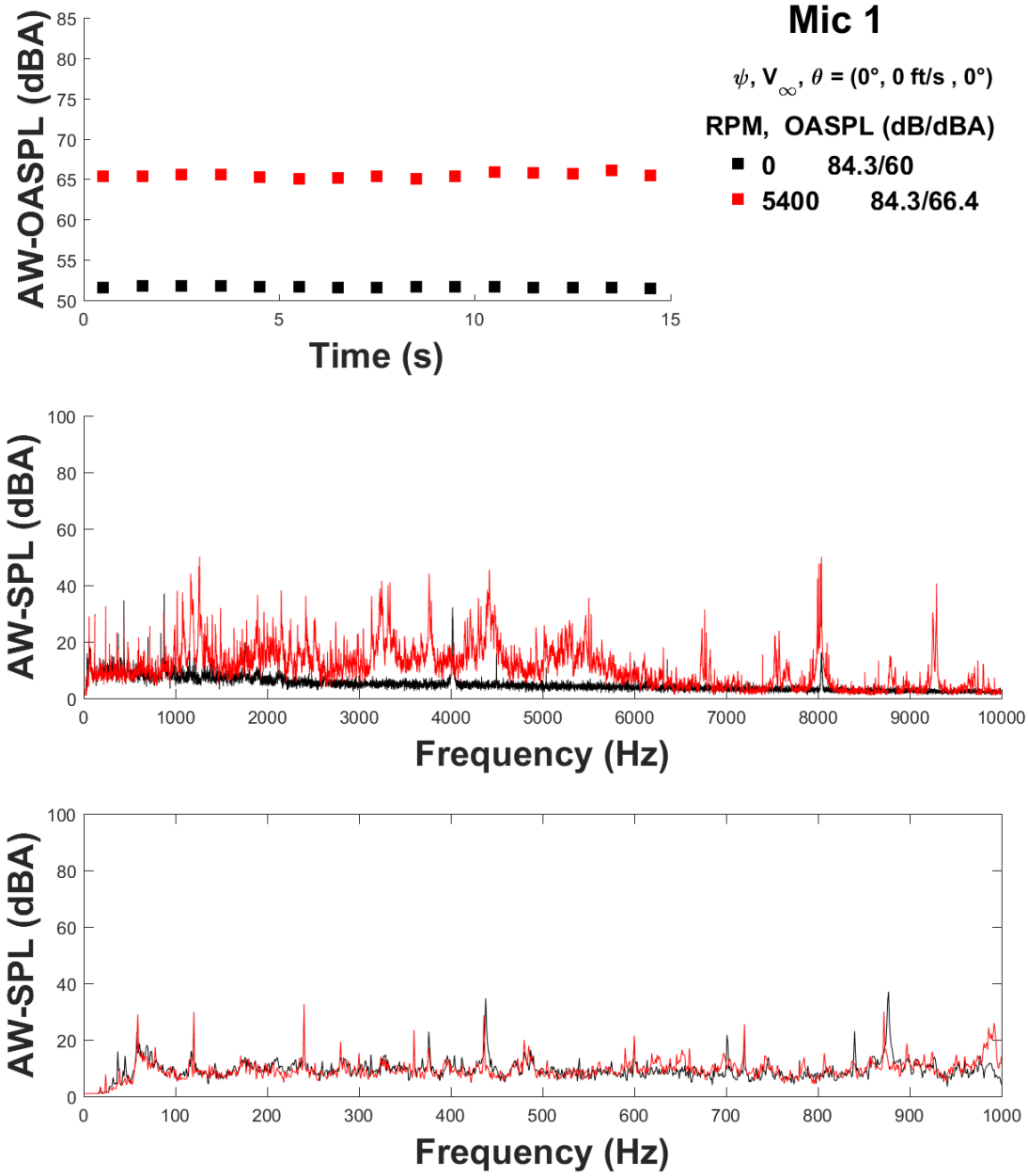

Figure E75: IRIS Bare Airframe microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 0$ ft/s, $\theta = 0°$

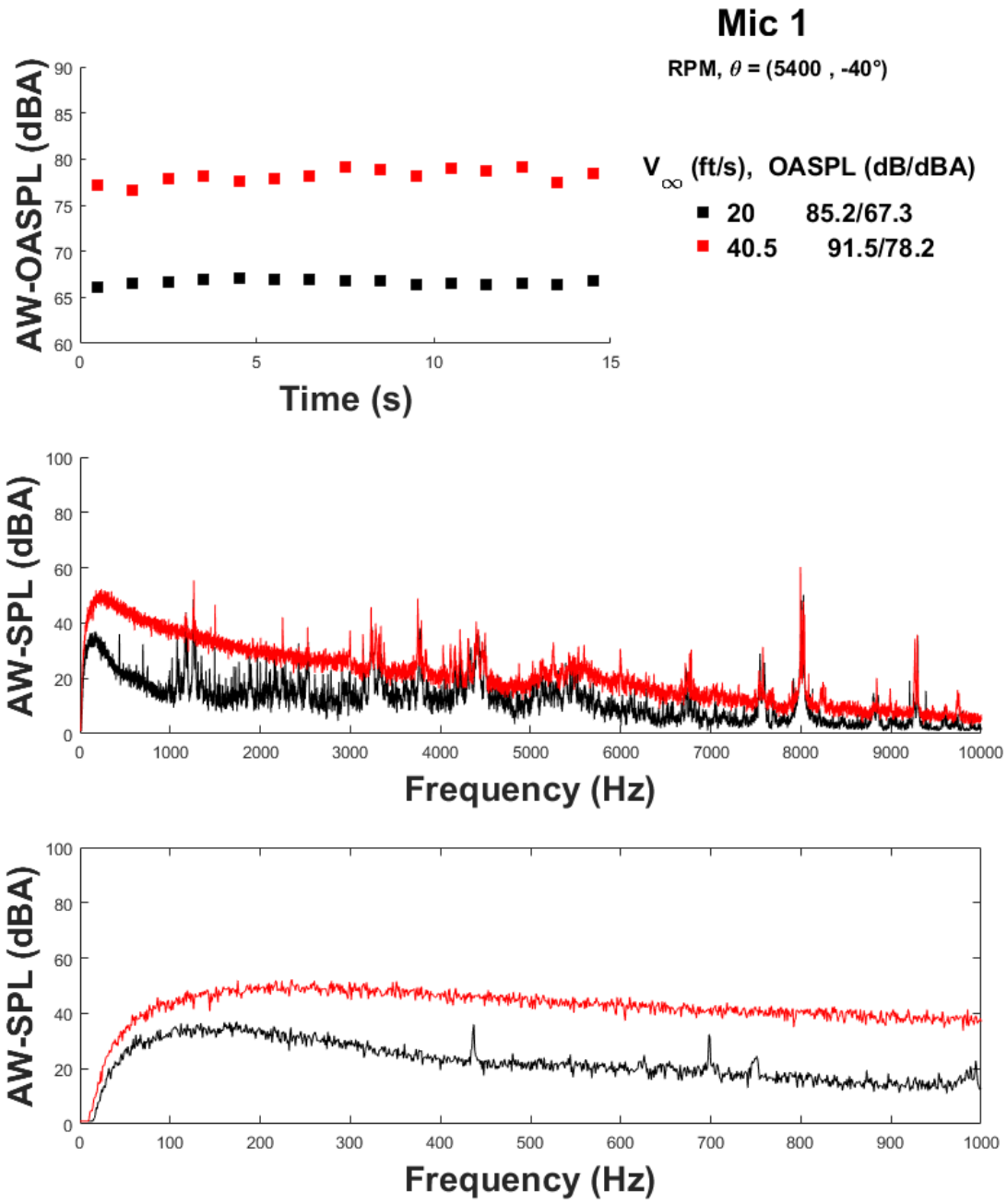

Figure E76: IRIS Bare Airframe microphone 1: V_∞ sweep $\psi = 40°$, $V_\infty = 20$ ft/s, $\theta = 20°$, RPM= 4,000

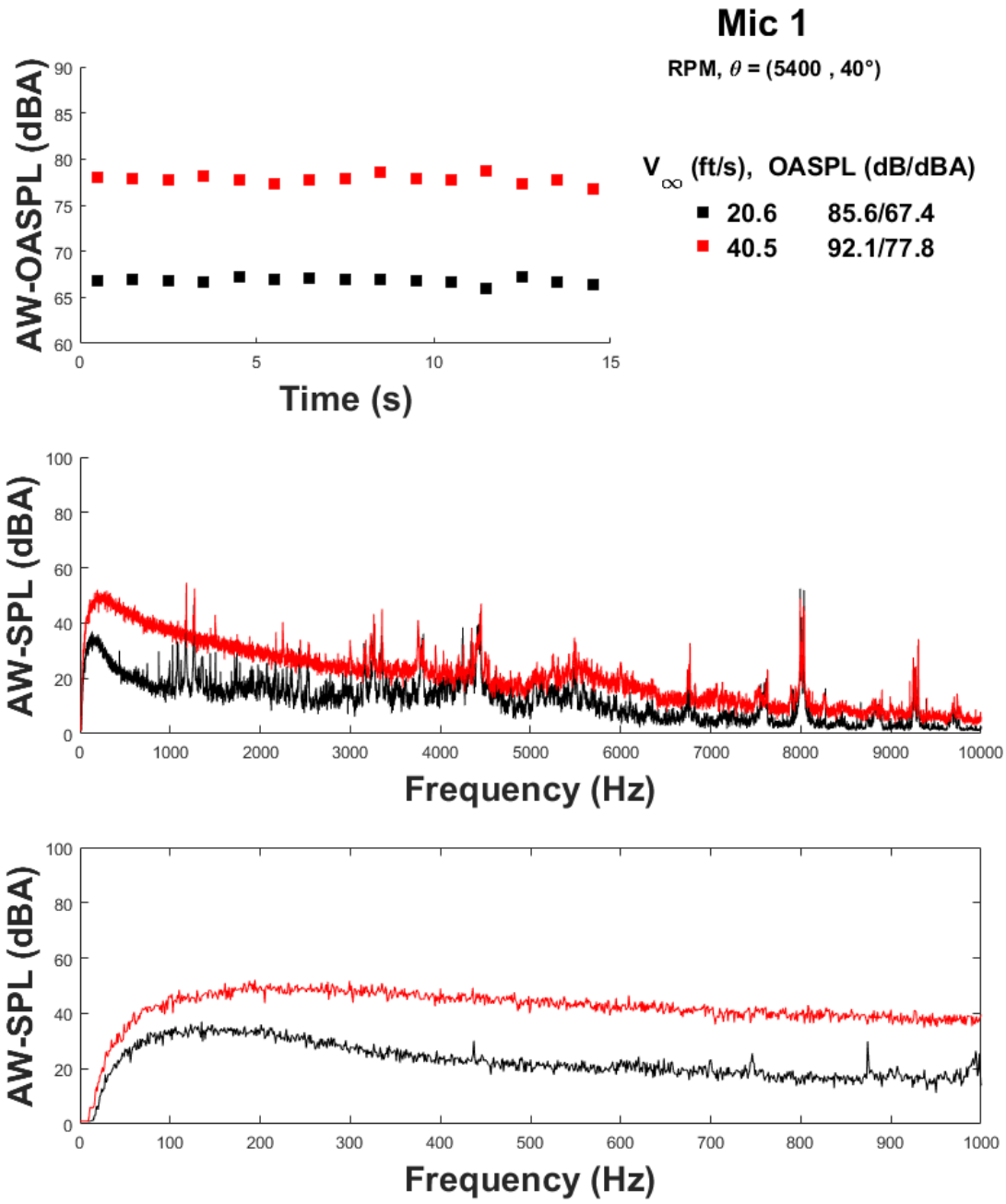

Figure E77: IRIS Bare Airframe microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 40°$, RPM= 5,400

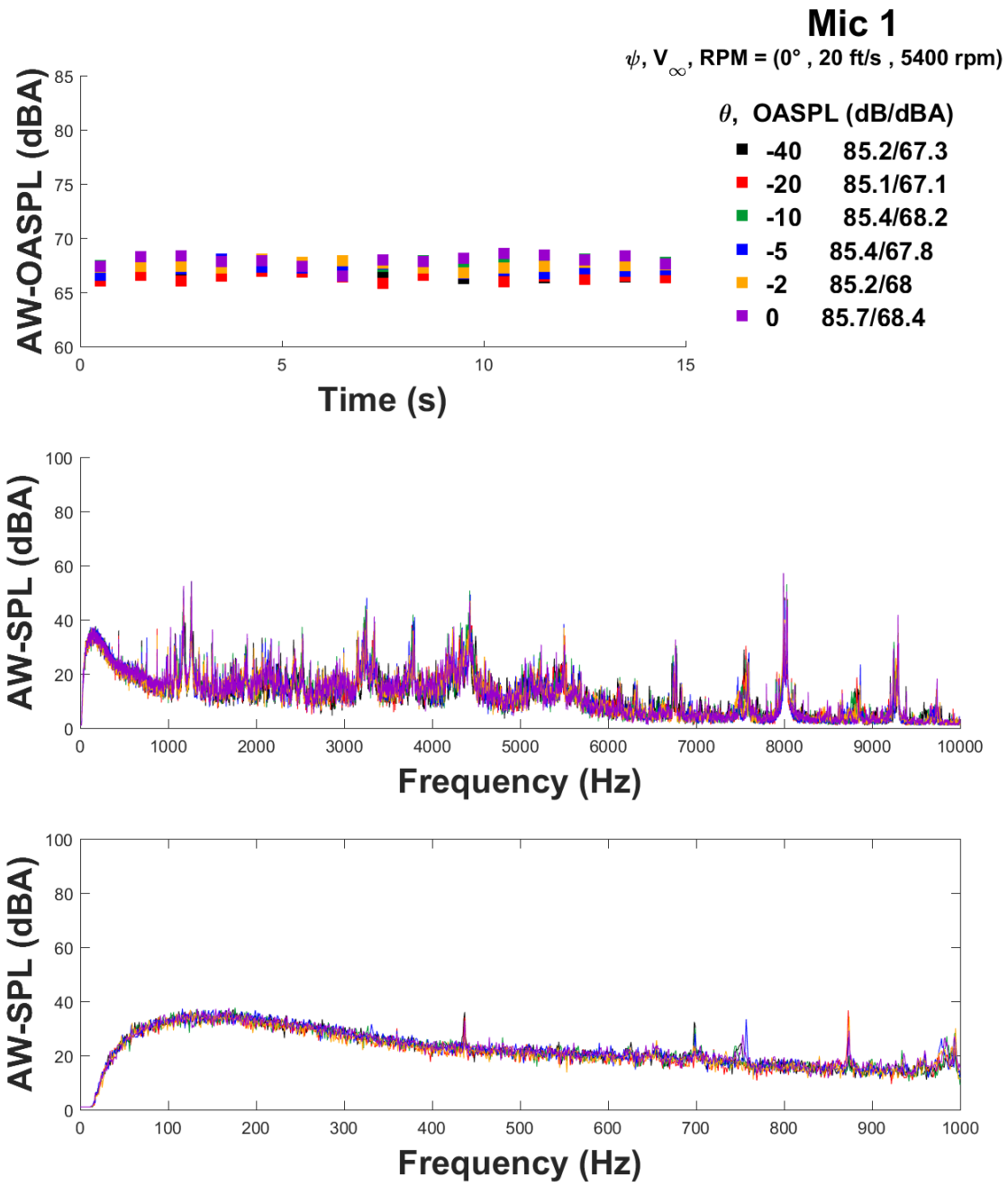

Figure E78: IRIS Bare Airframe microphone 1: Negative pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, RPM= 5,400

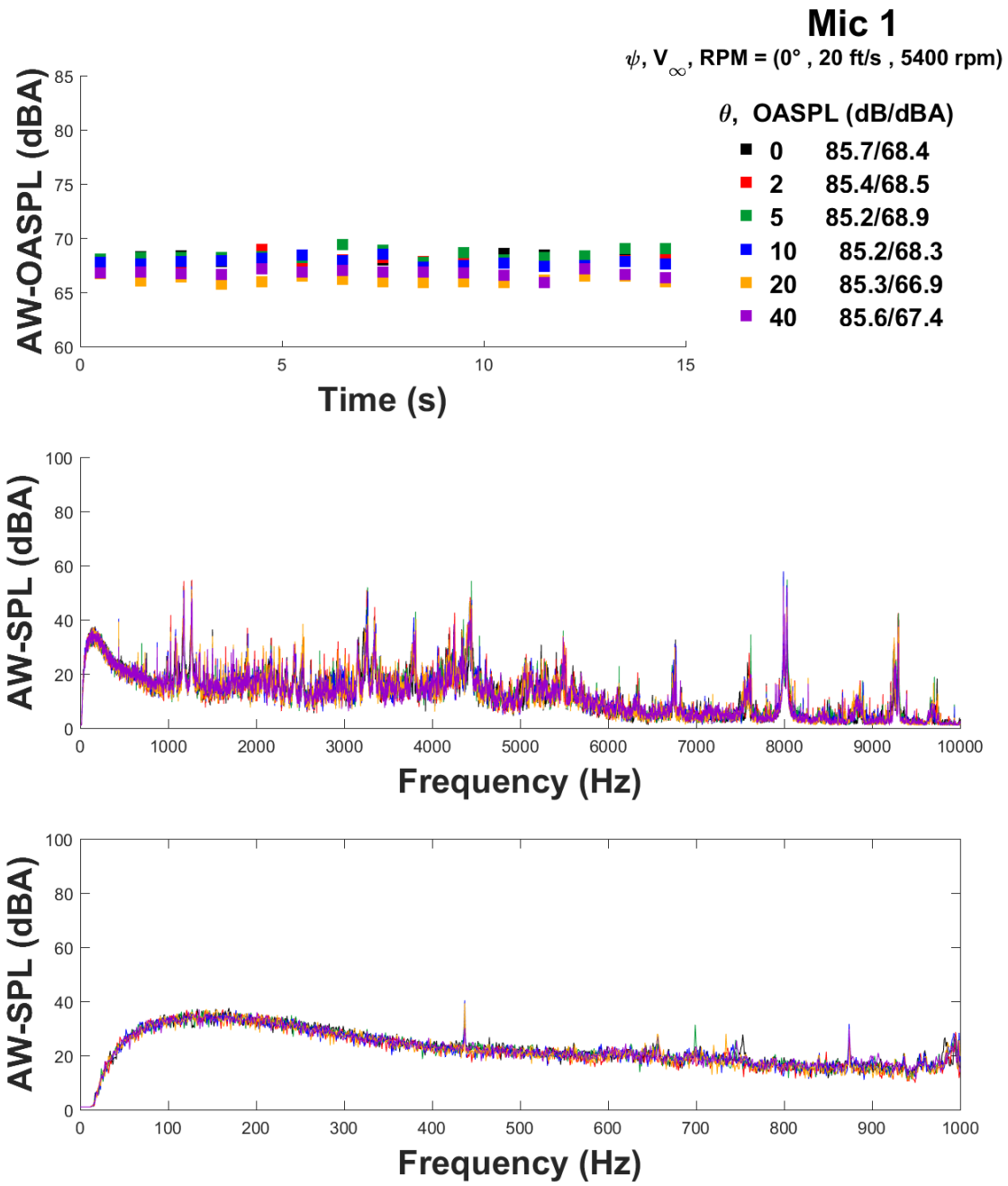

Figure E79: IRIS Bare Airframe microphone 1: Positive pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, RPM= 5,400

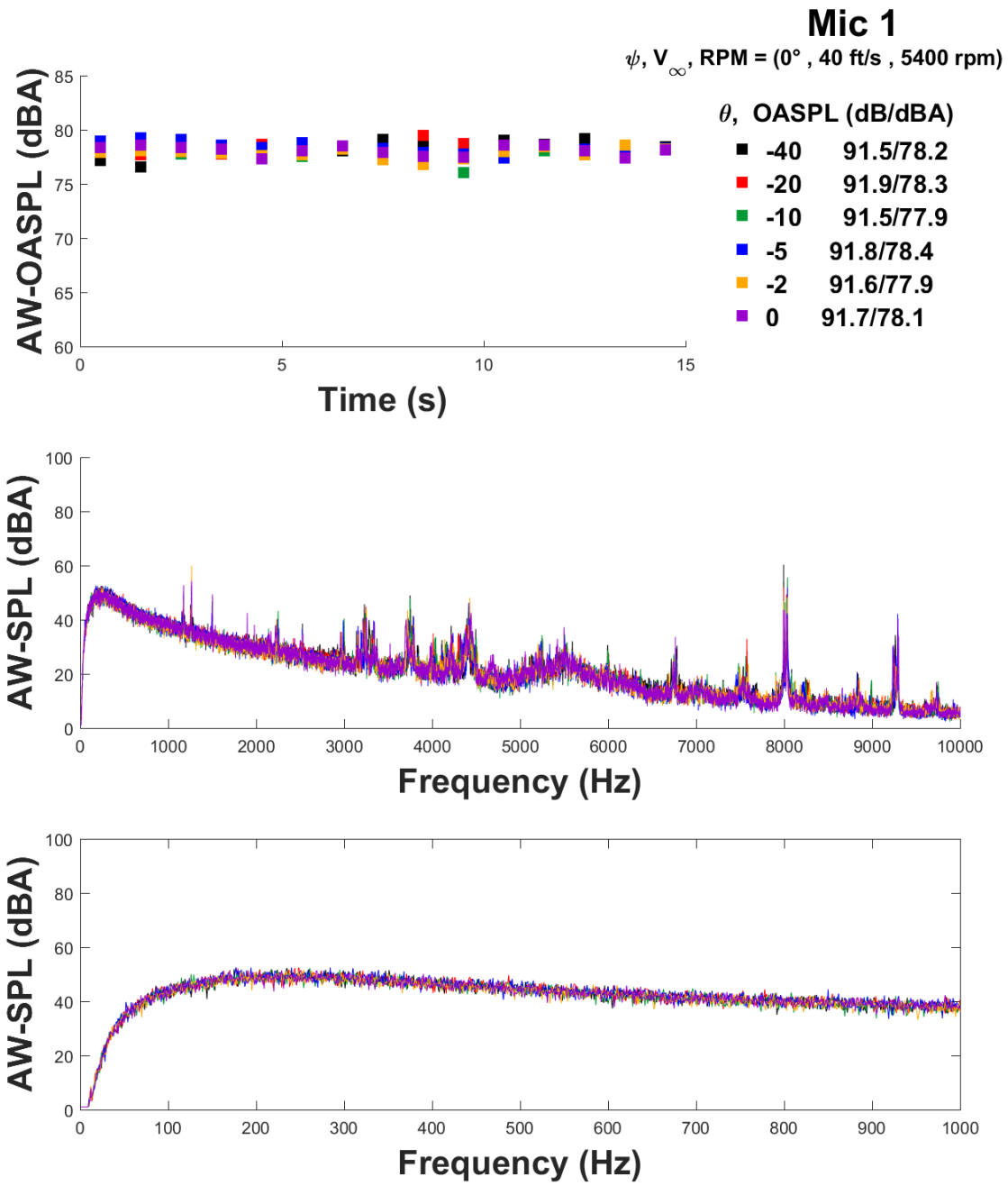

Figure E80: IRIS Bare Airframe microphone 1: Negative pitch sweep $\psi = 0°$, $V_\infty = 40$ ft/s, RPM= 5,400

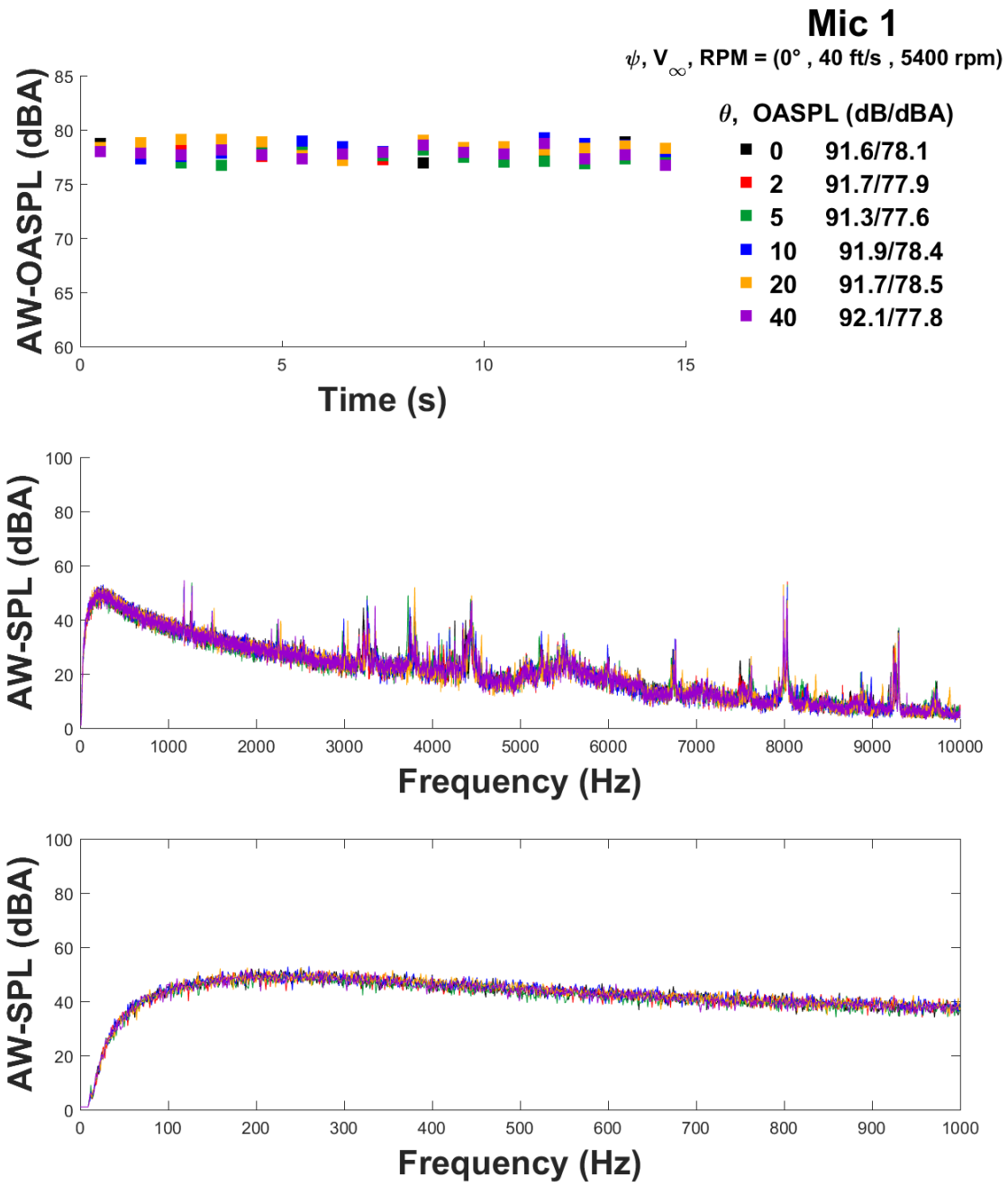

Figure E81: IRIS Bare Airframe microphone 1: Positive pitch sweep $\psi = 0°$, $V_\infty = 40$ ft/s, RPM= 5,400

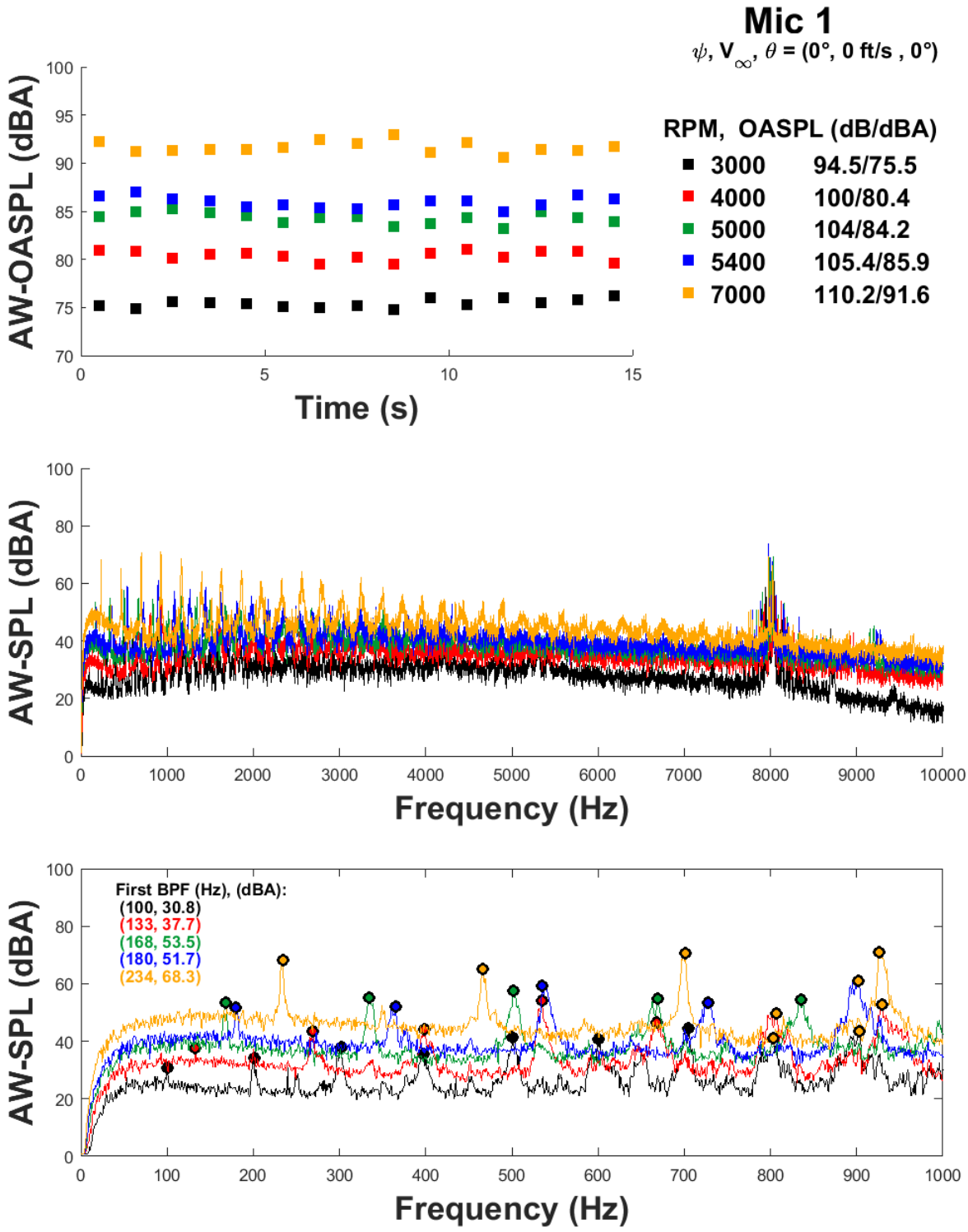

Figure E82: IRIS microphone 1: Hover RPM Sweep

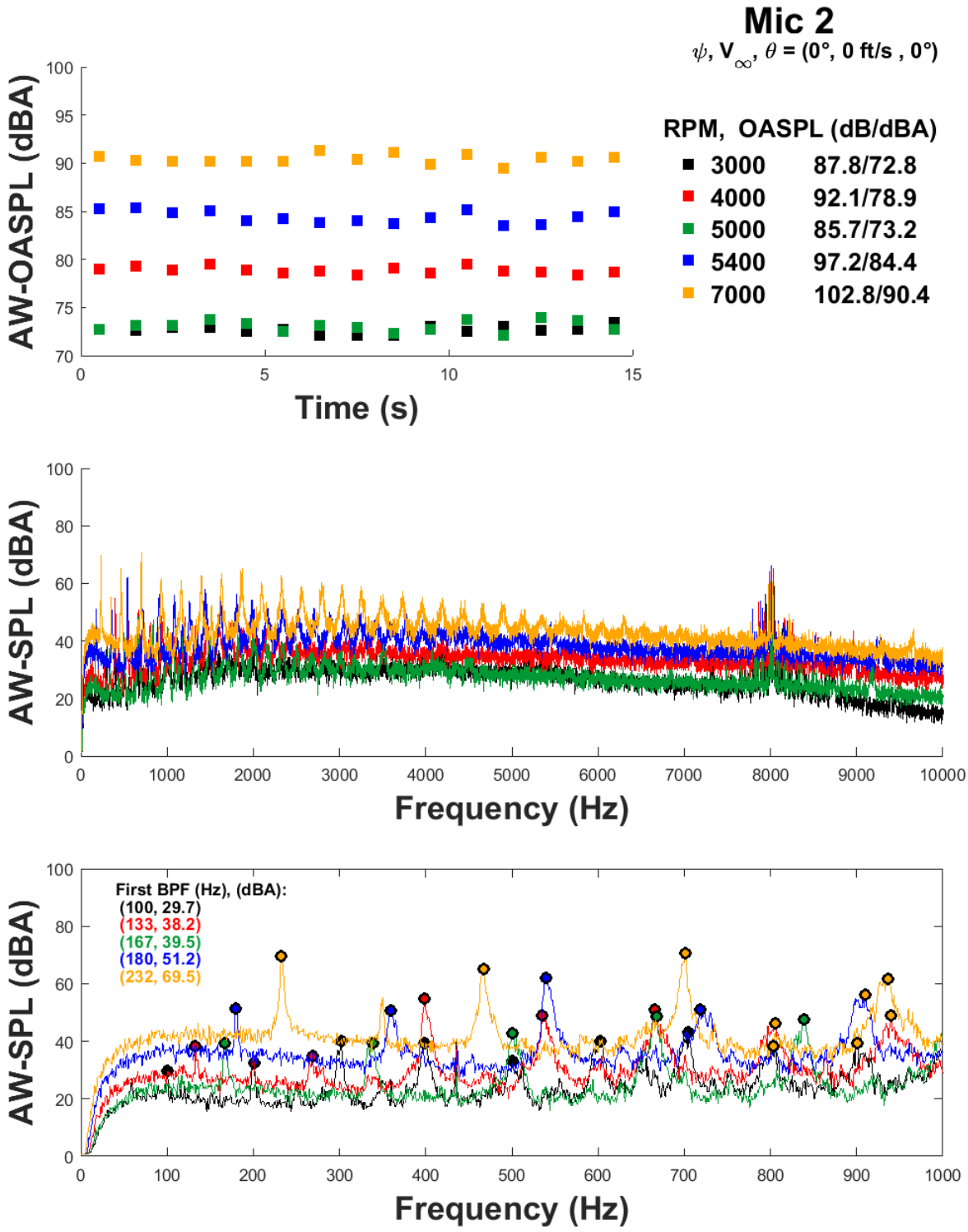

Figure E83: IRIS microphone 2: Hover RPM Sweep

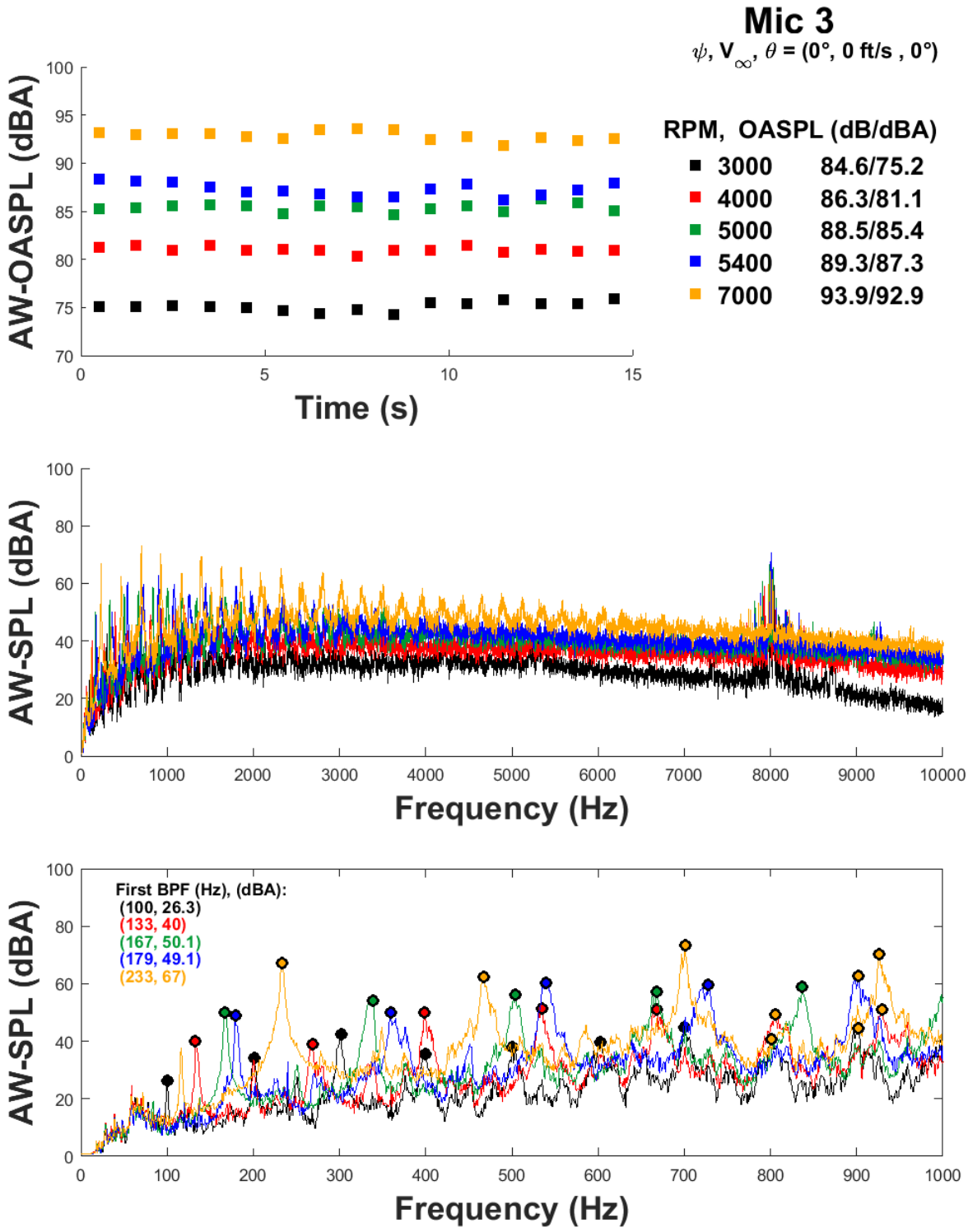

Figure E84: IRIS microphone 3: Hover RPM Sweep

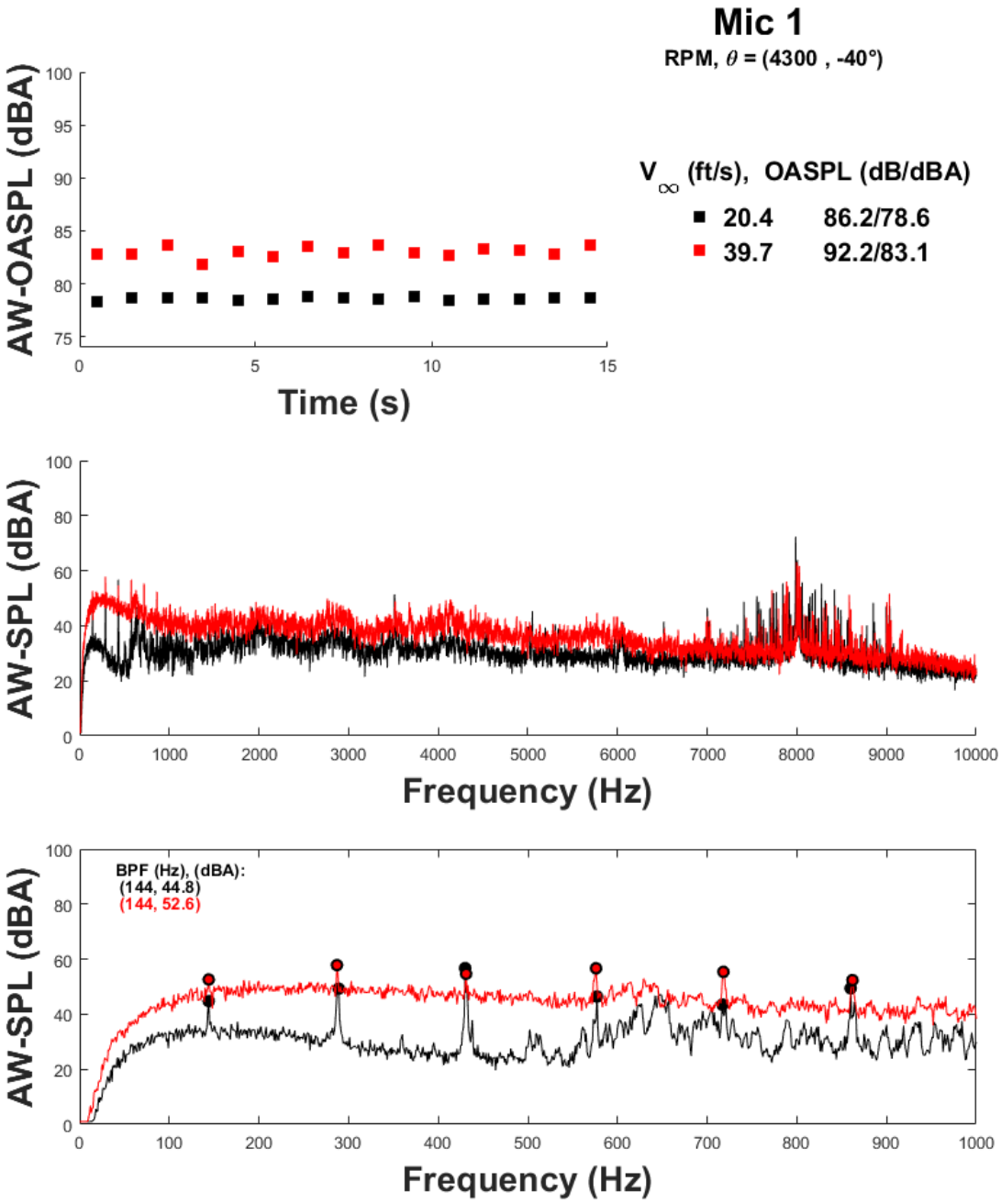

Figure E85: IRIS microphone 1: V_∞ sweep $\psi = 0°$, θ = -40°, RPM= 4,300

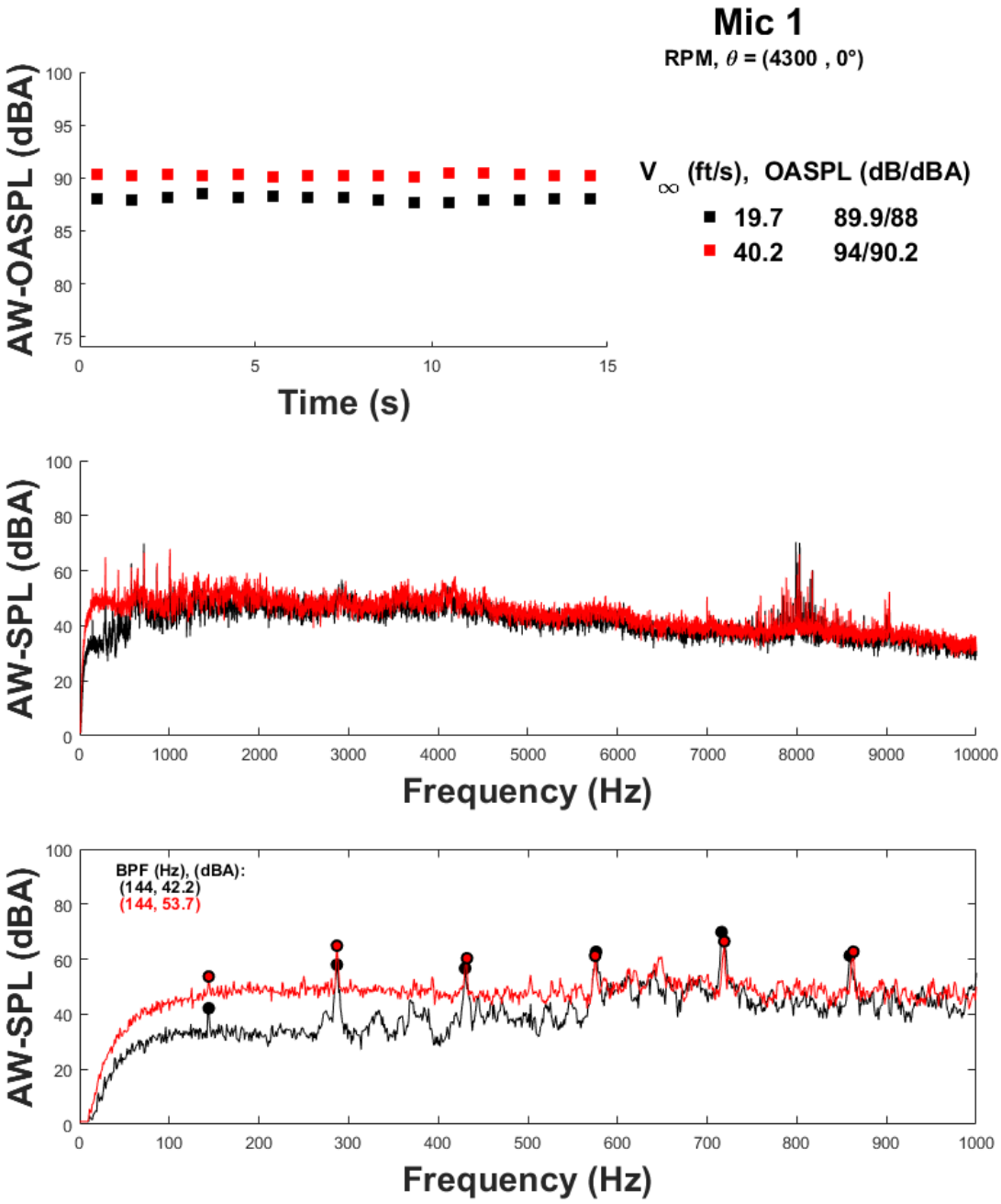

Figure E86: IRIS microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 0°$, RPM= 4,300

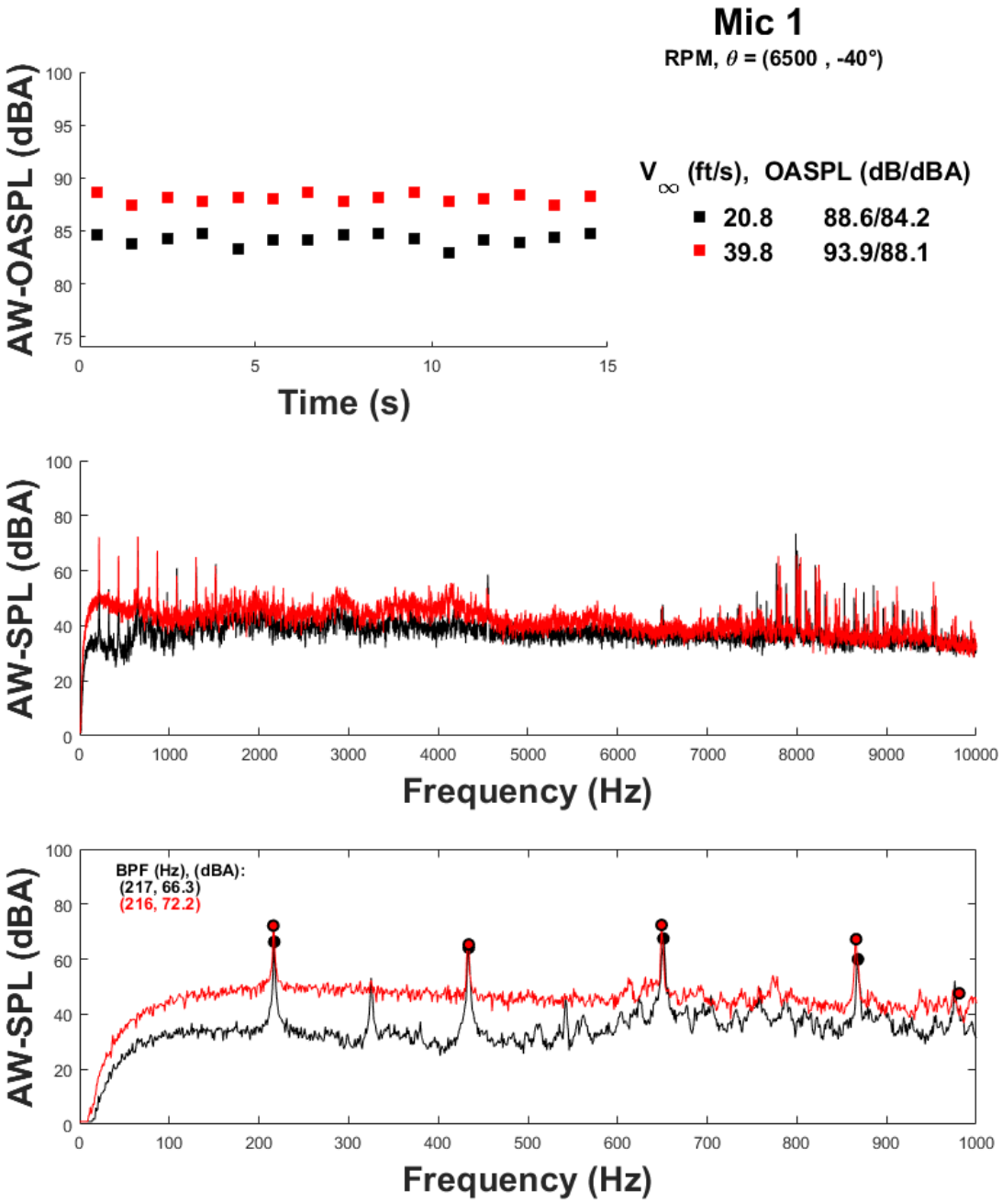

Figure E87: IRIS microphone 1: V_∞ sweep $\psi = 0°$, θ = -40°, RPM= 6,500

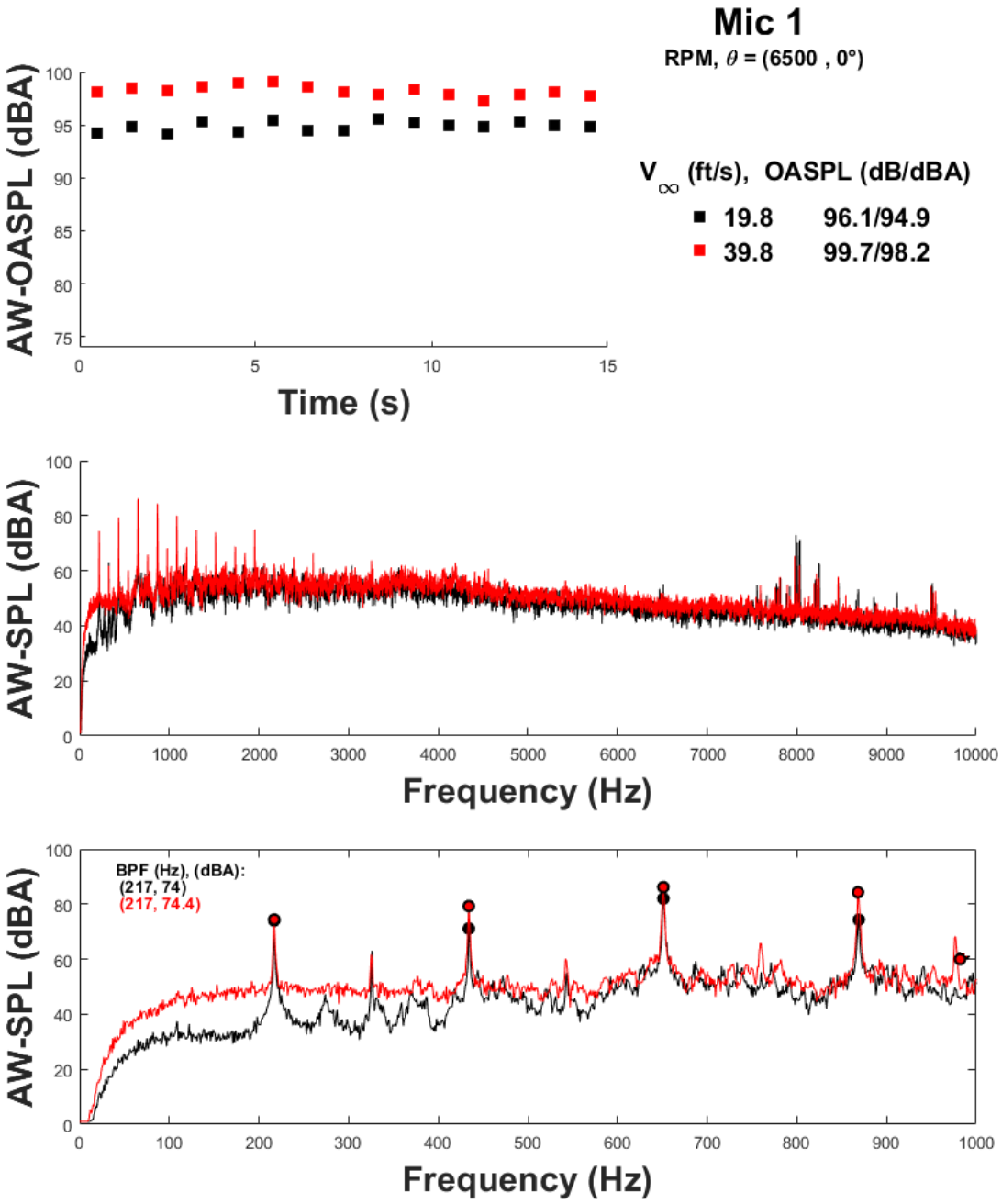

Figure E88: IRIS microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 0°$, RPM= 6,500

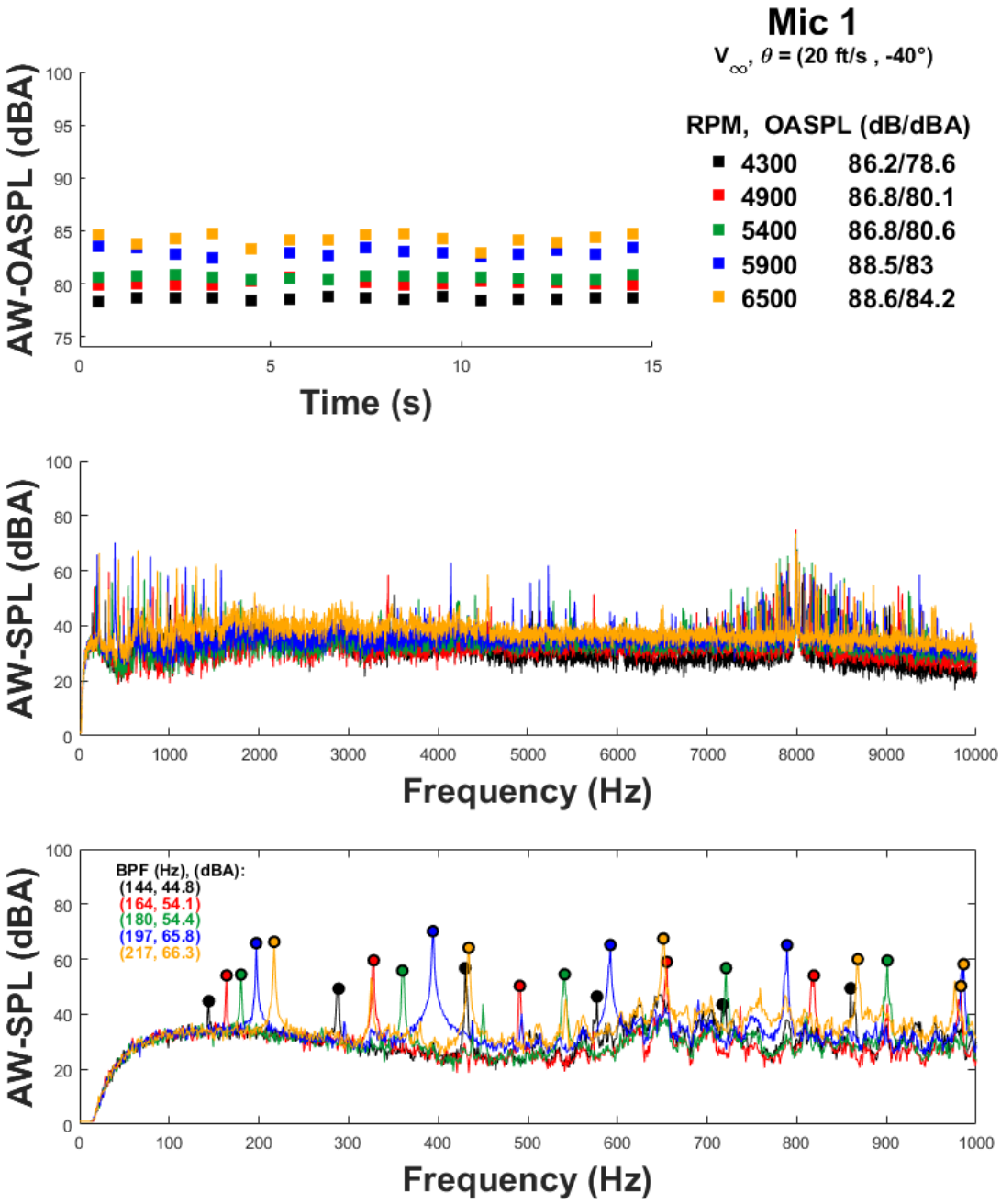

Figure E89: IRIS microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 20$ ft/s, θ = -40°

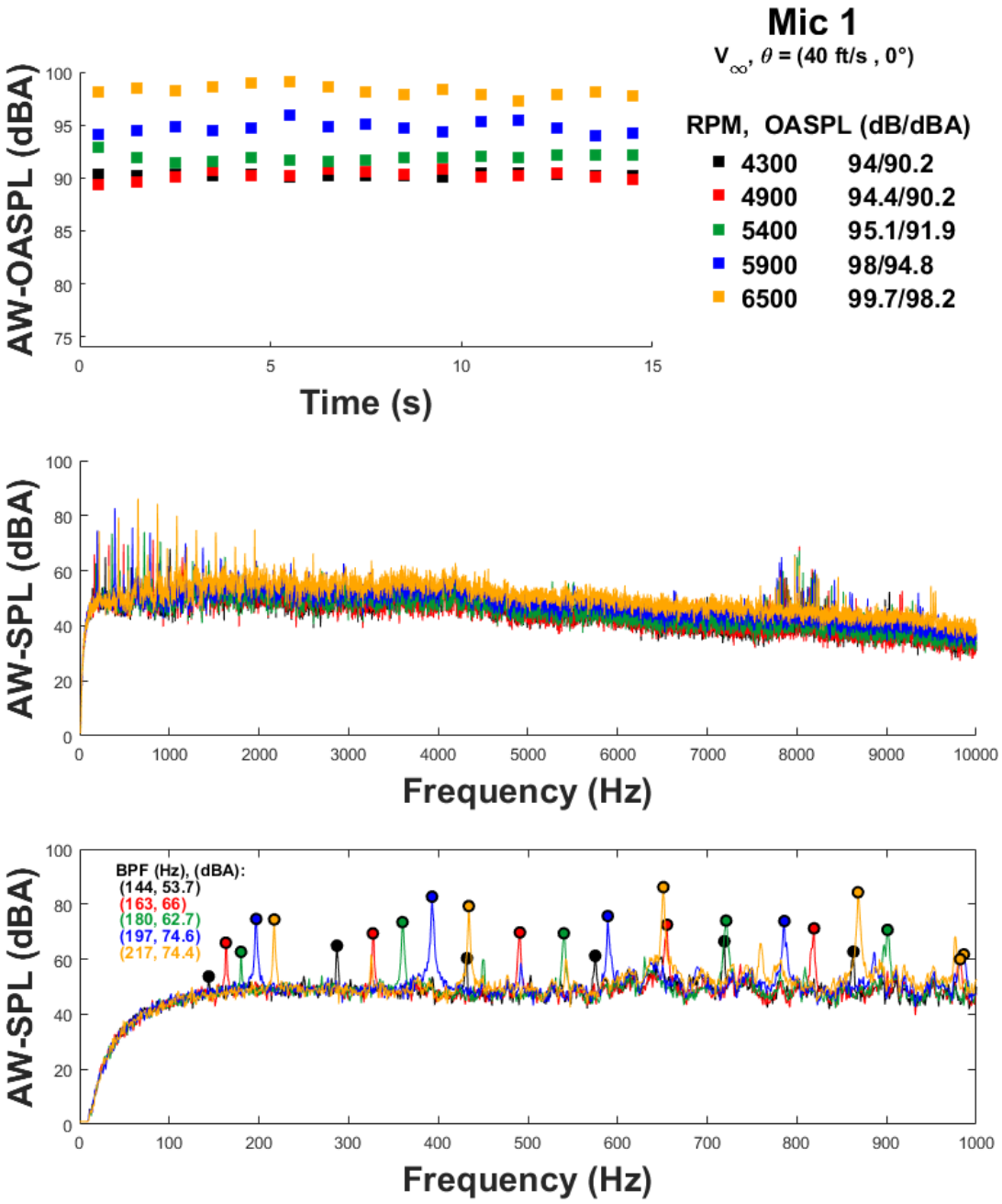

Figure E90: IRIS microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 40$ ft/s, $\theta = 0°$

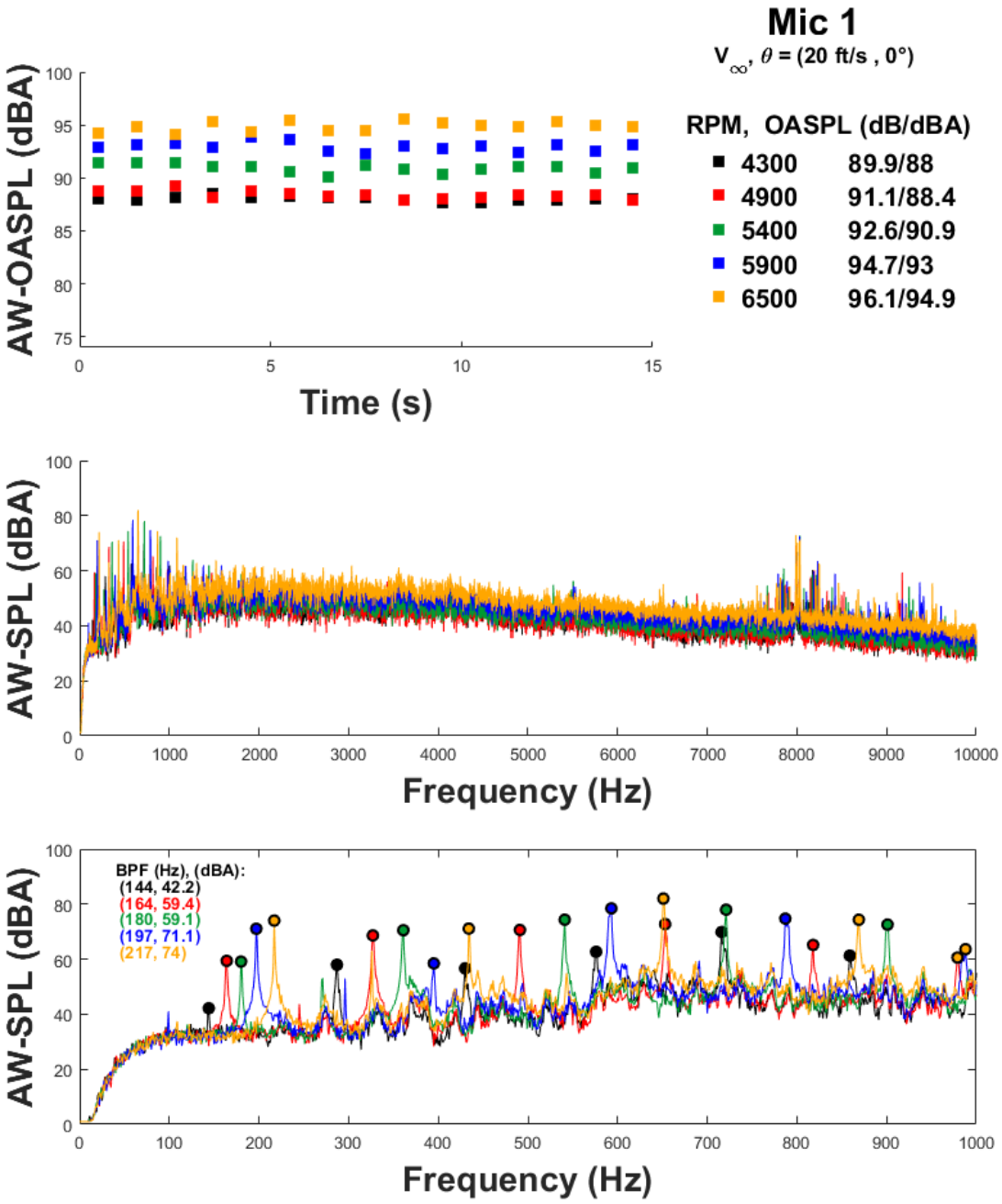

Figure E91: IRIS microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 20$ ft/s, $\theta = 0°$

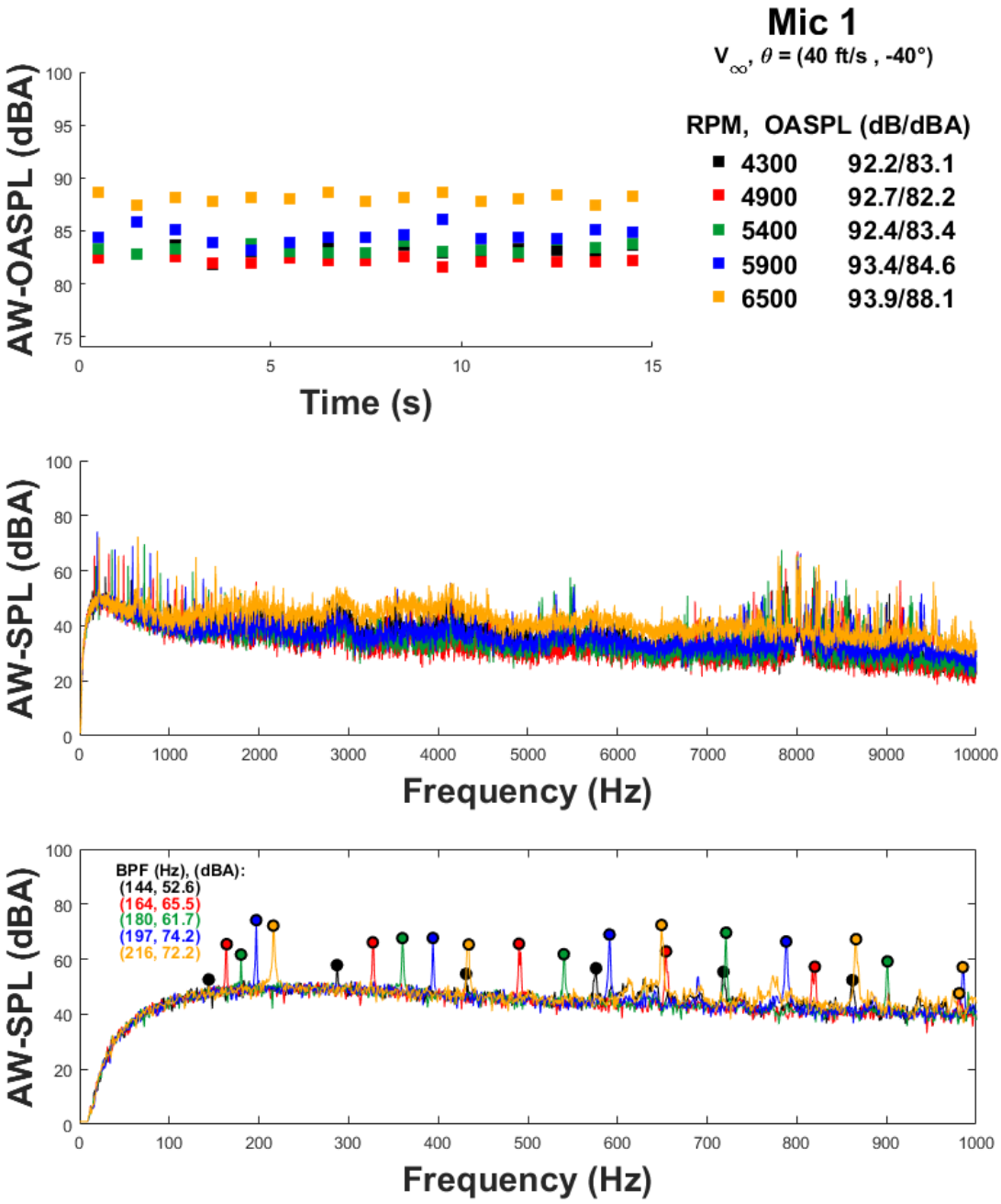

Figure E92: IRIS microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 40$ ft/s, θ = -40°

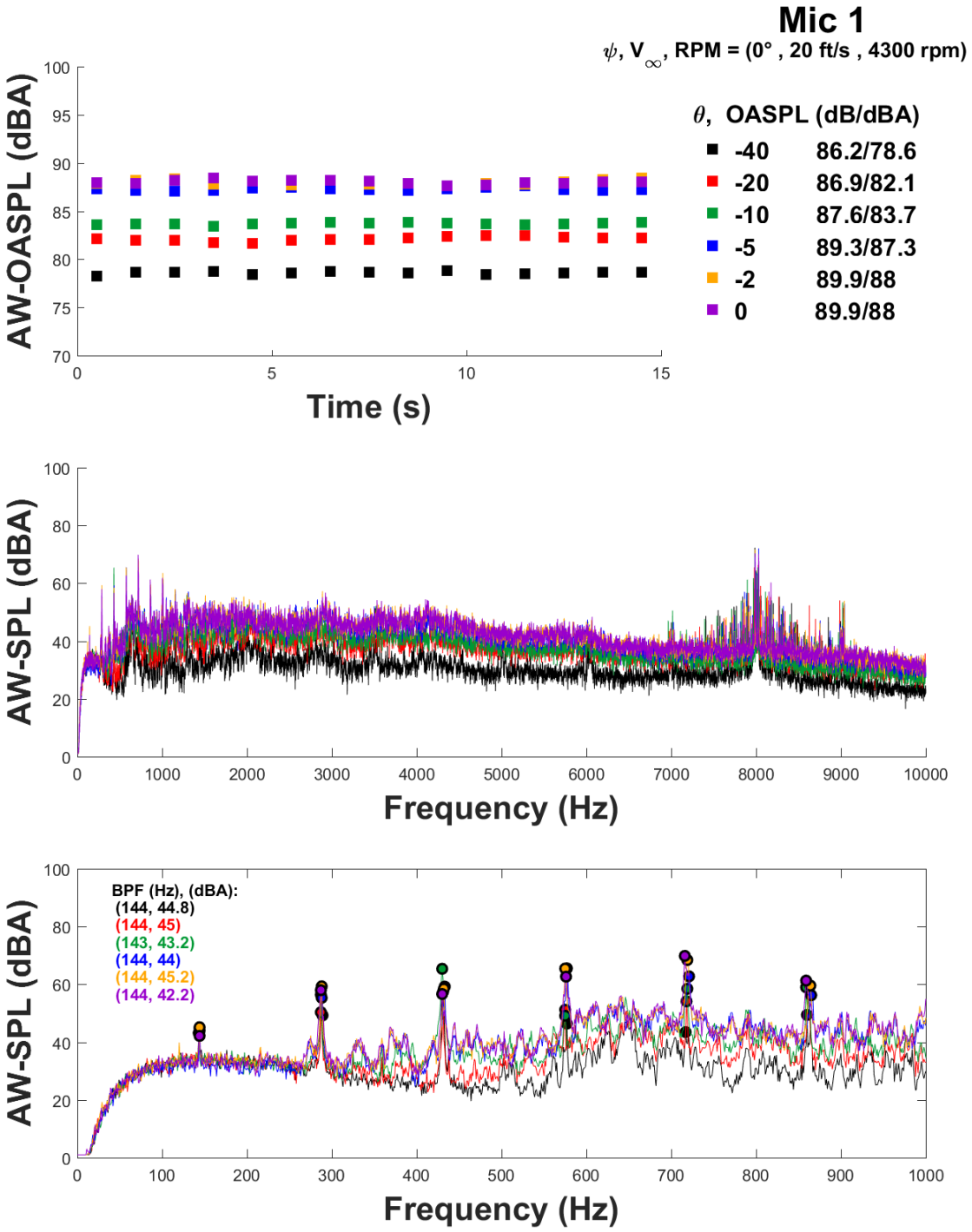

Figure E93: IRIS microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, RPM= 4,300

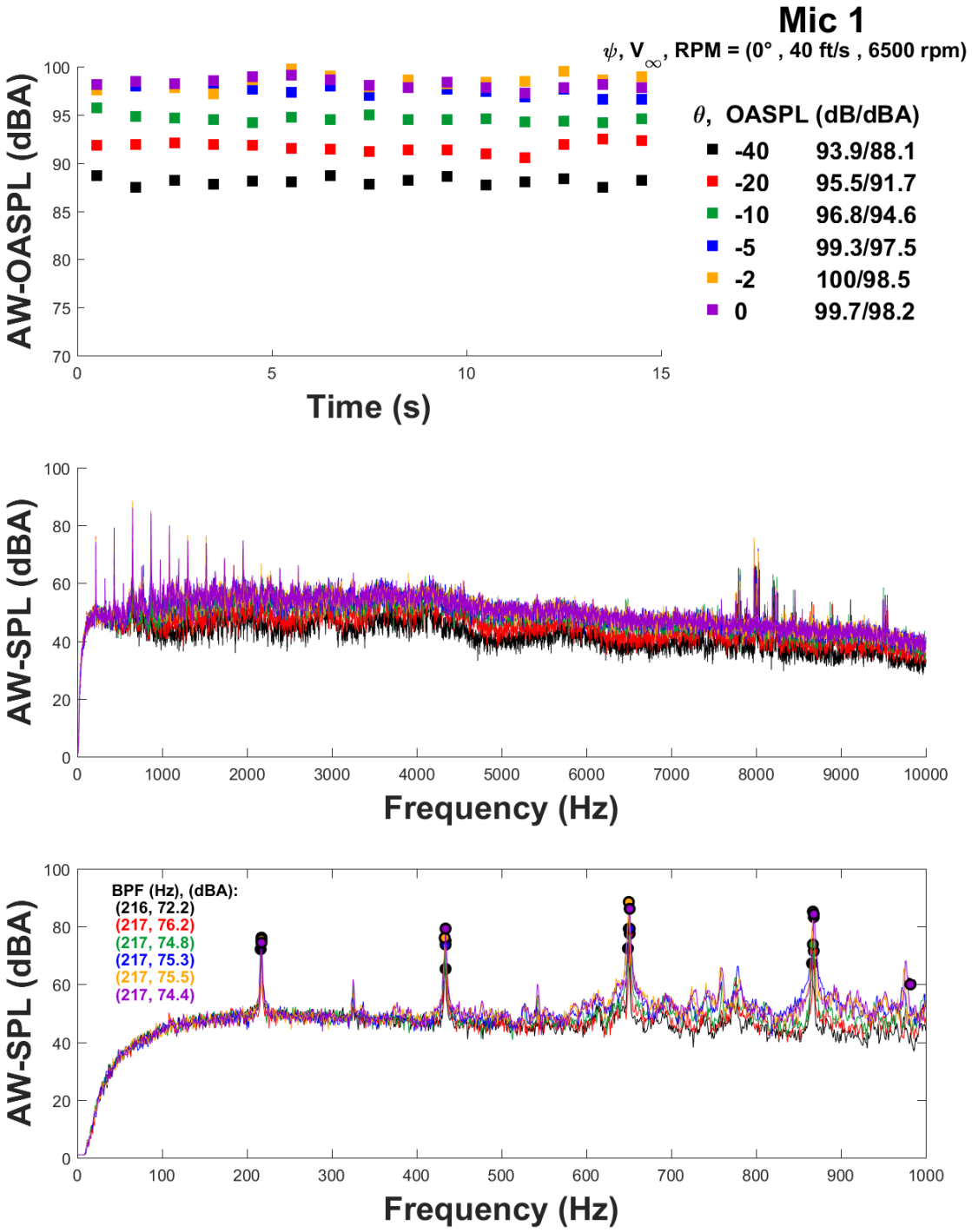

Figure E94: IRIS microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 40$ ft/s, RPM= 6,500

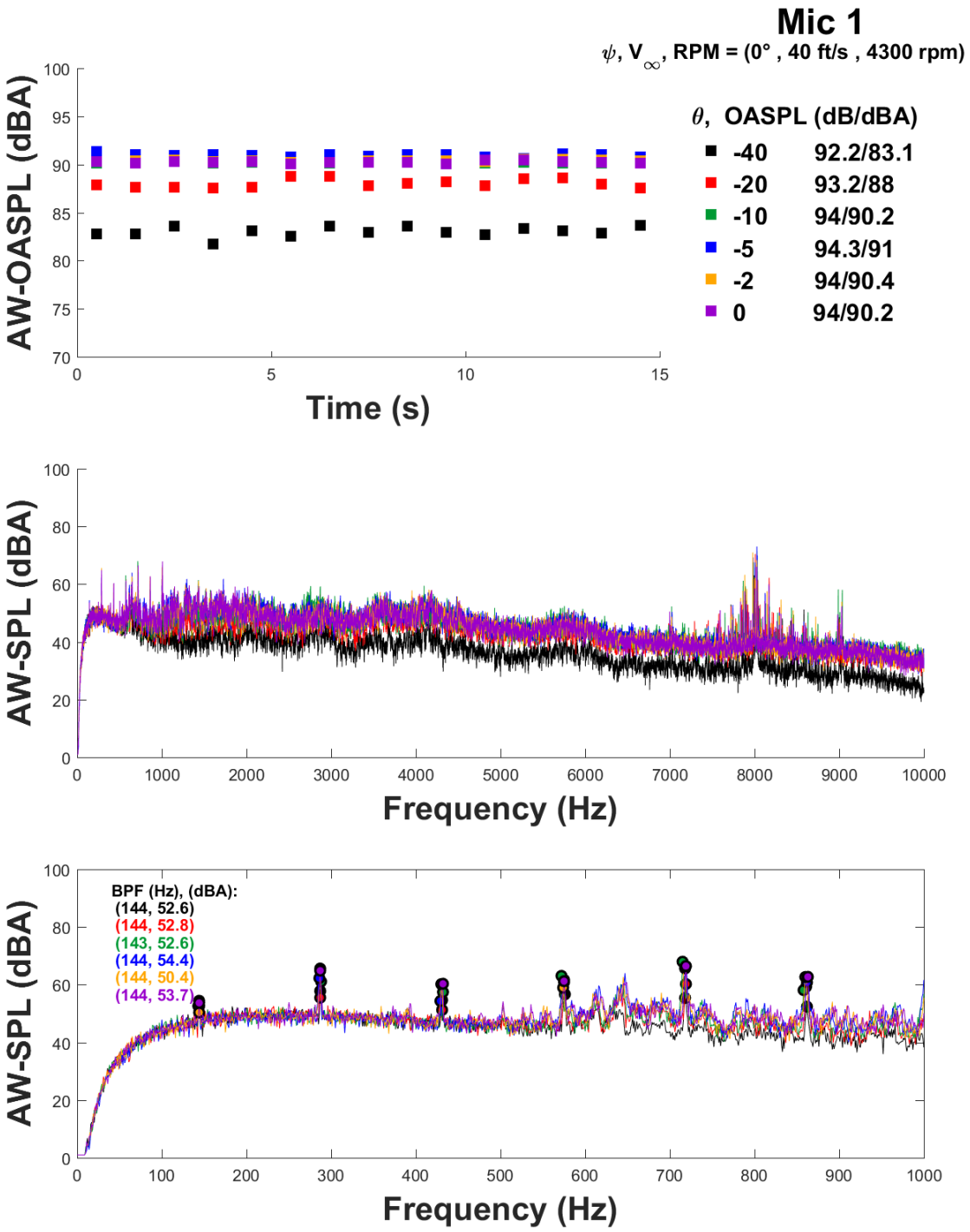

Figure E95: IRIS microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 40$ ft/s, RPM= 4,300

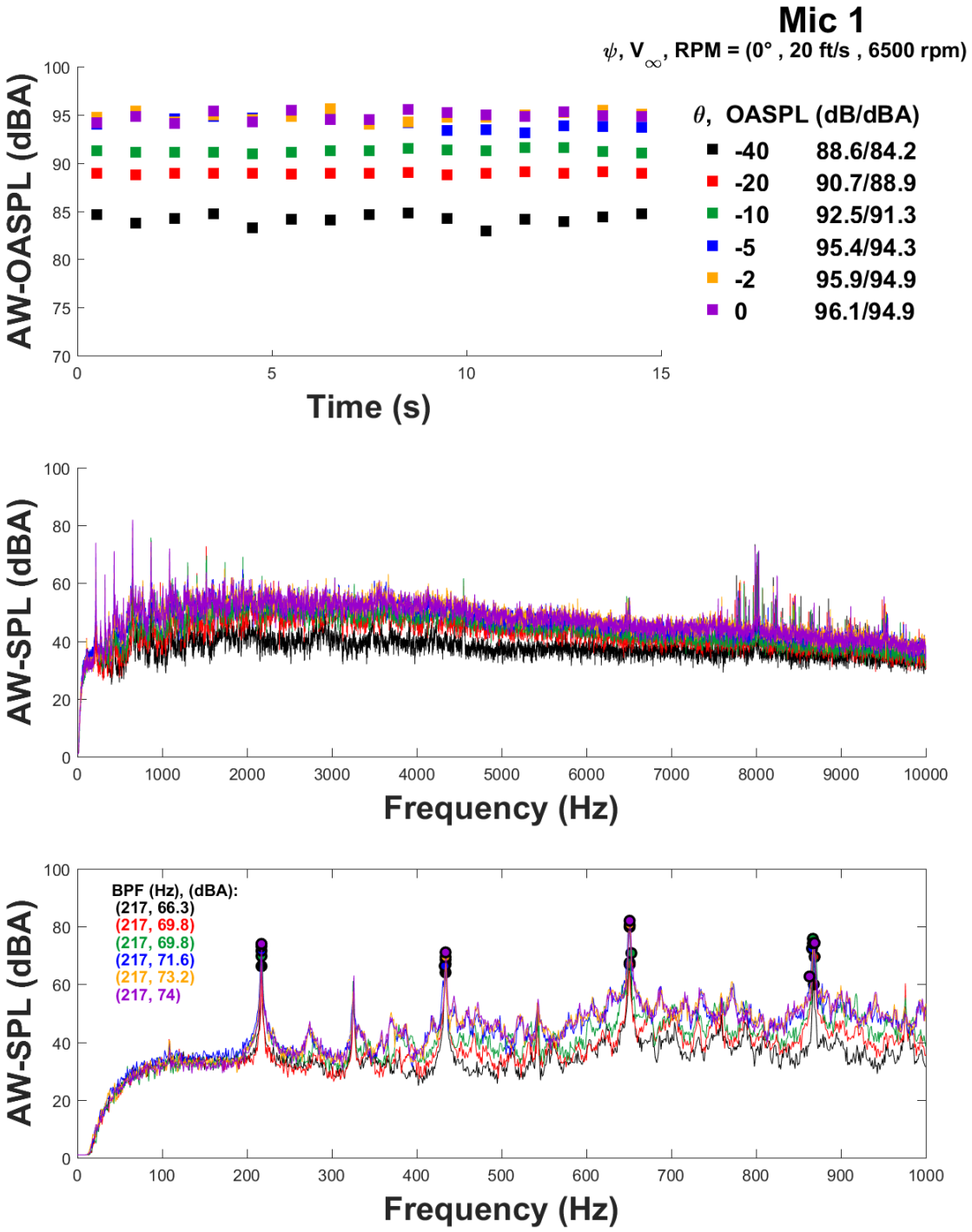

Figure E96: IRIS microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, RPM= 6,500

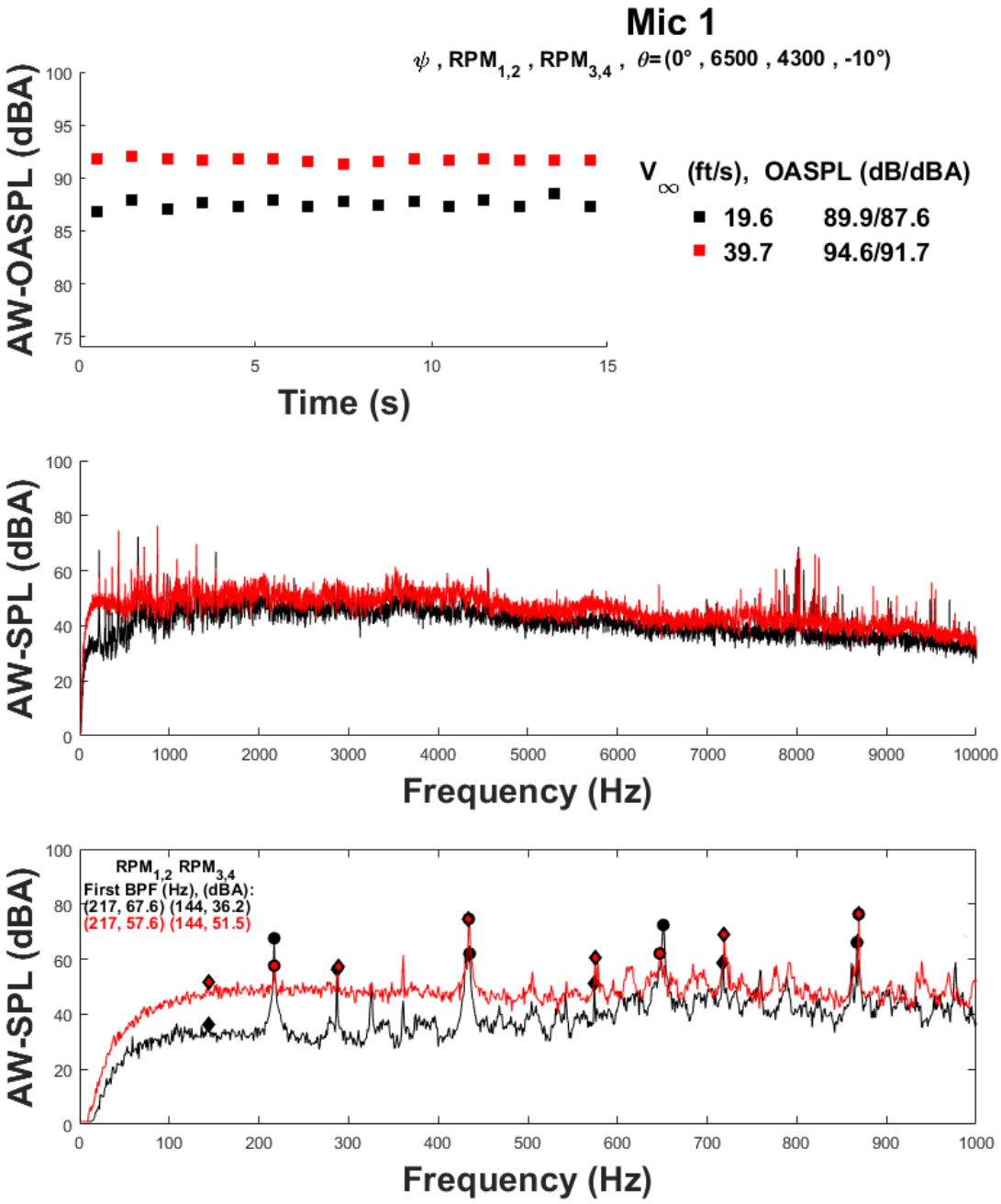

Figure E97: IRIS microphone 1: V_∞ sweep ψ = 0°, θ = -10°, $RPM_{1,2}$ = 6,500, $RPM_{3,4}$ = 4,300

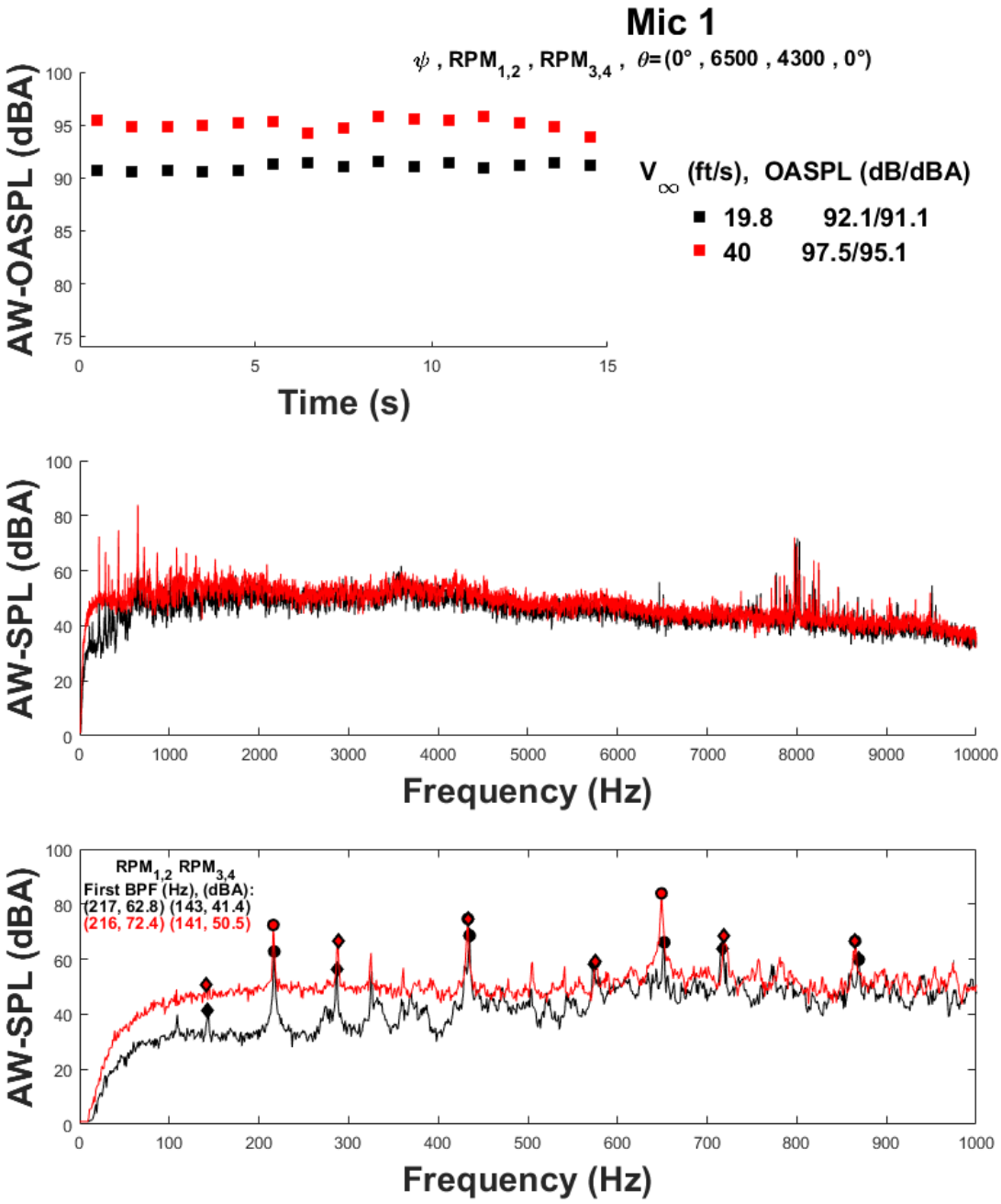

Figure E98: IRIS microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 0°$, $RPM_{1,2} = 6{,}500$, $RPM_{3,4} = 4{,}300$

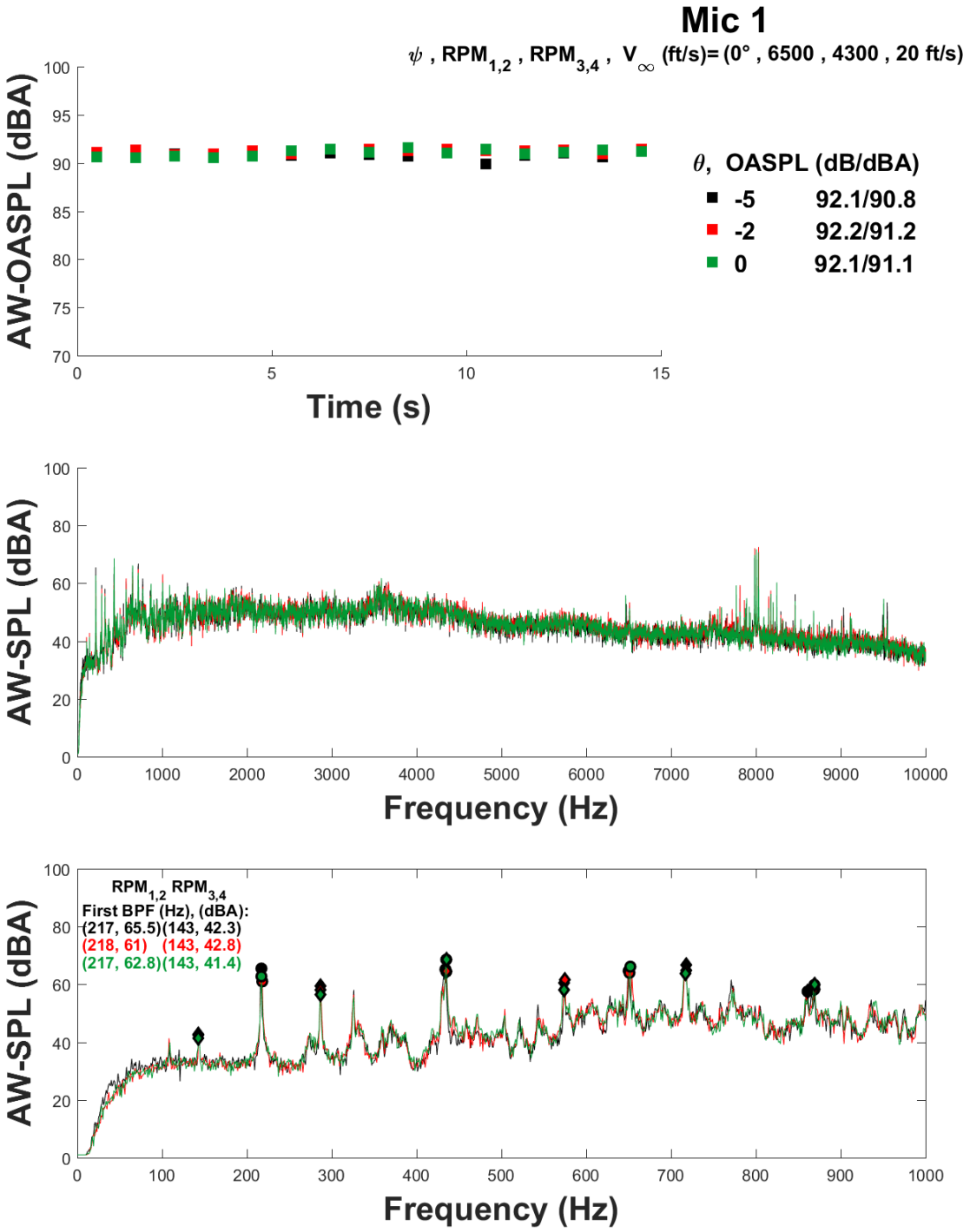

Figure E99: IRIS microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, $RPM_{1,2} = 6{,}500$, $RPM_{3,4} = 4{,}300$

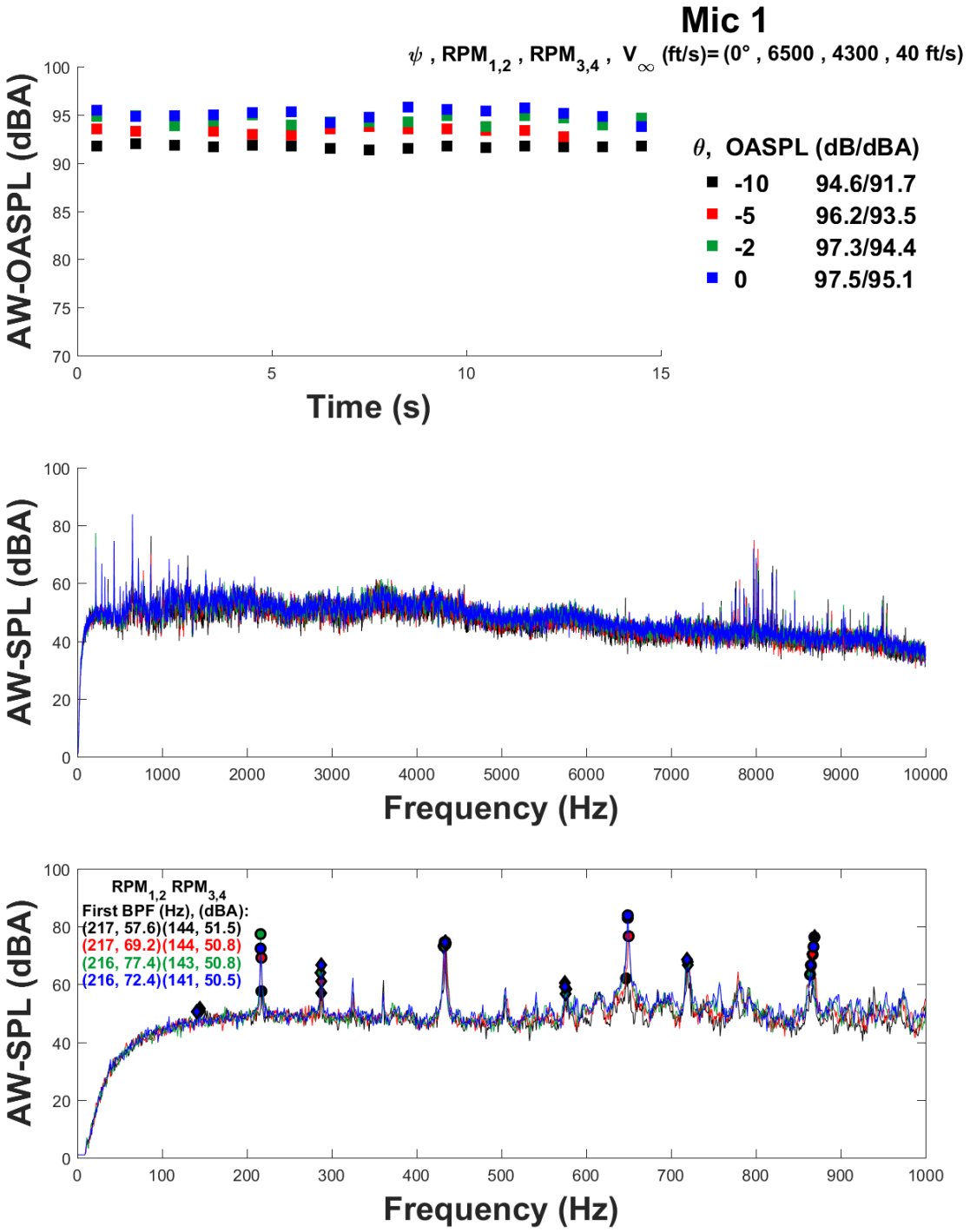

Figure E100: IRIS microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 40$ ft/s, $RPM_{1,2} = 6{,}500$, $RPM_{3,4} = 4{,}300$

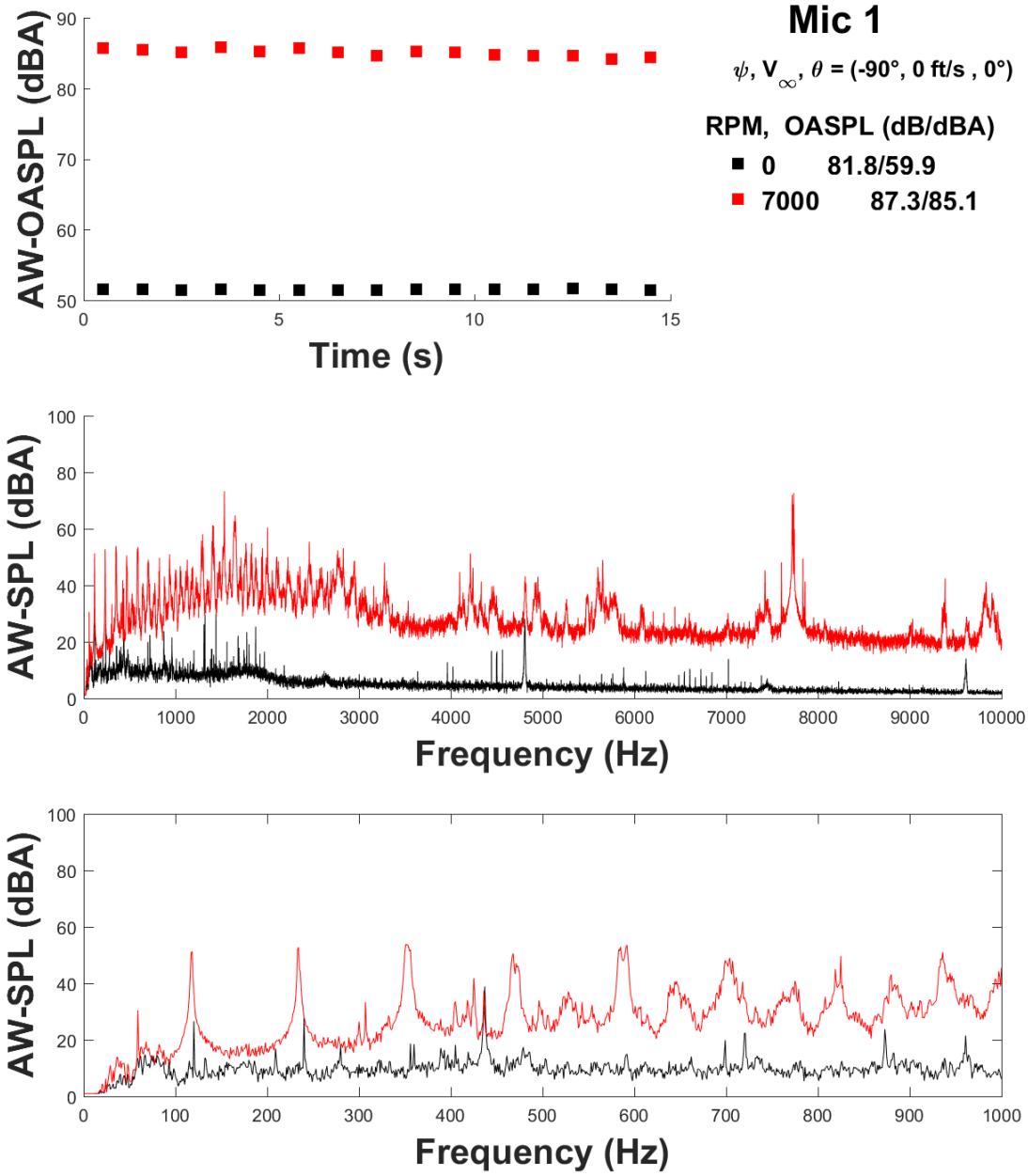

Figure E101: DAx8 Bare Airframe microphone 1: RPM sweep ψ = -90°, V_∞ = 0 ft/s, θ = 0°

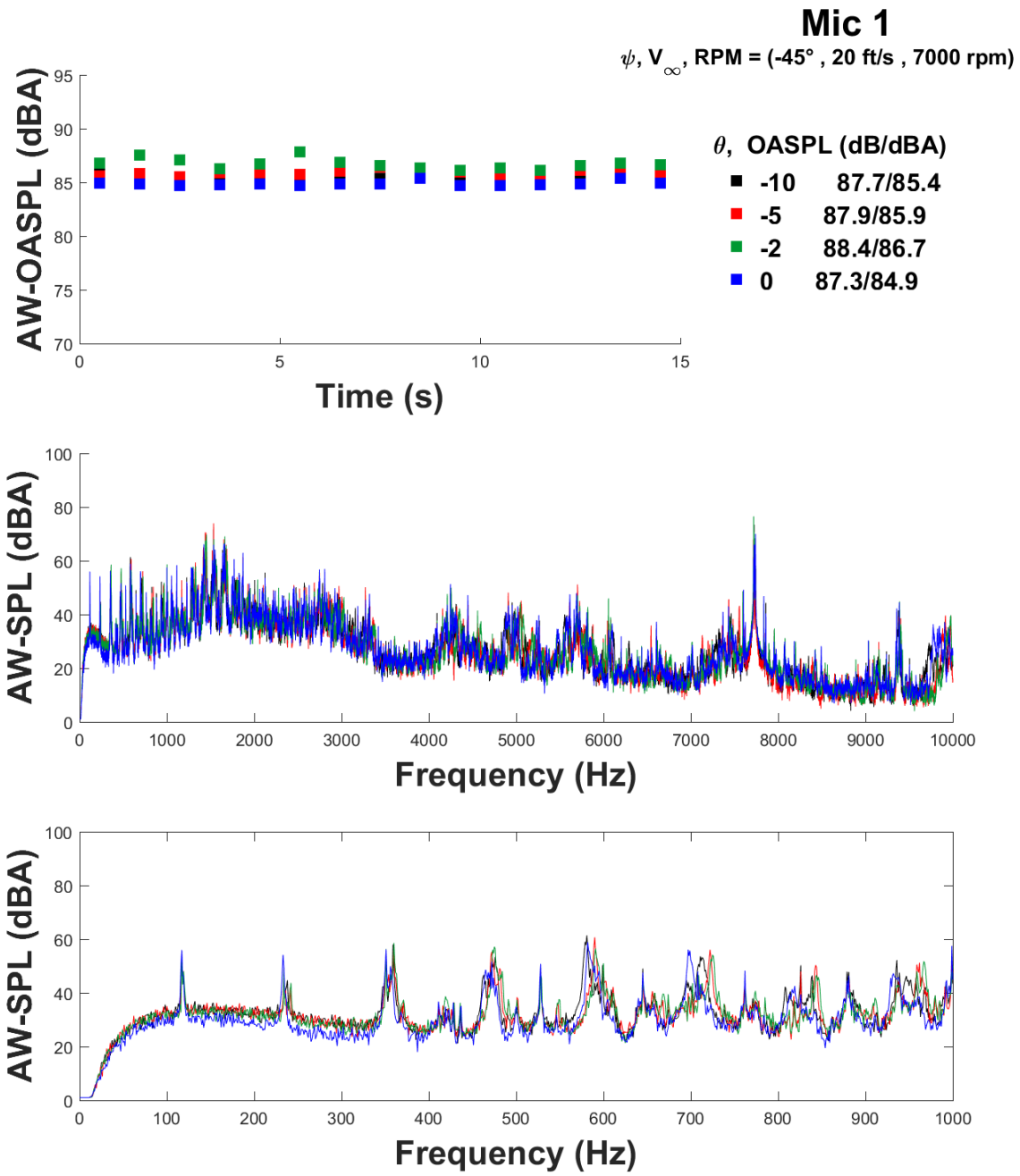

Figure E102: DAx8 Bare Airframe microphone 1: Negative pitch sweep ψ = -45°, V_∞ = 20 ft/s, RPM= 7,000

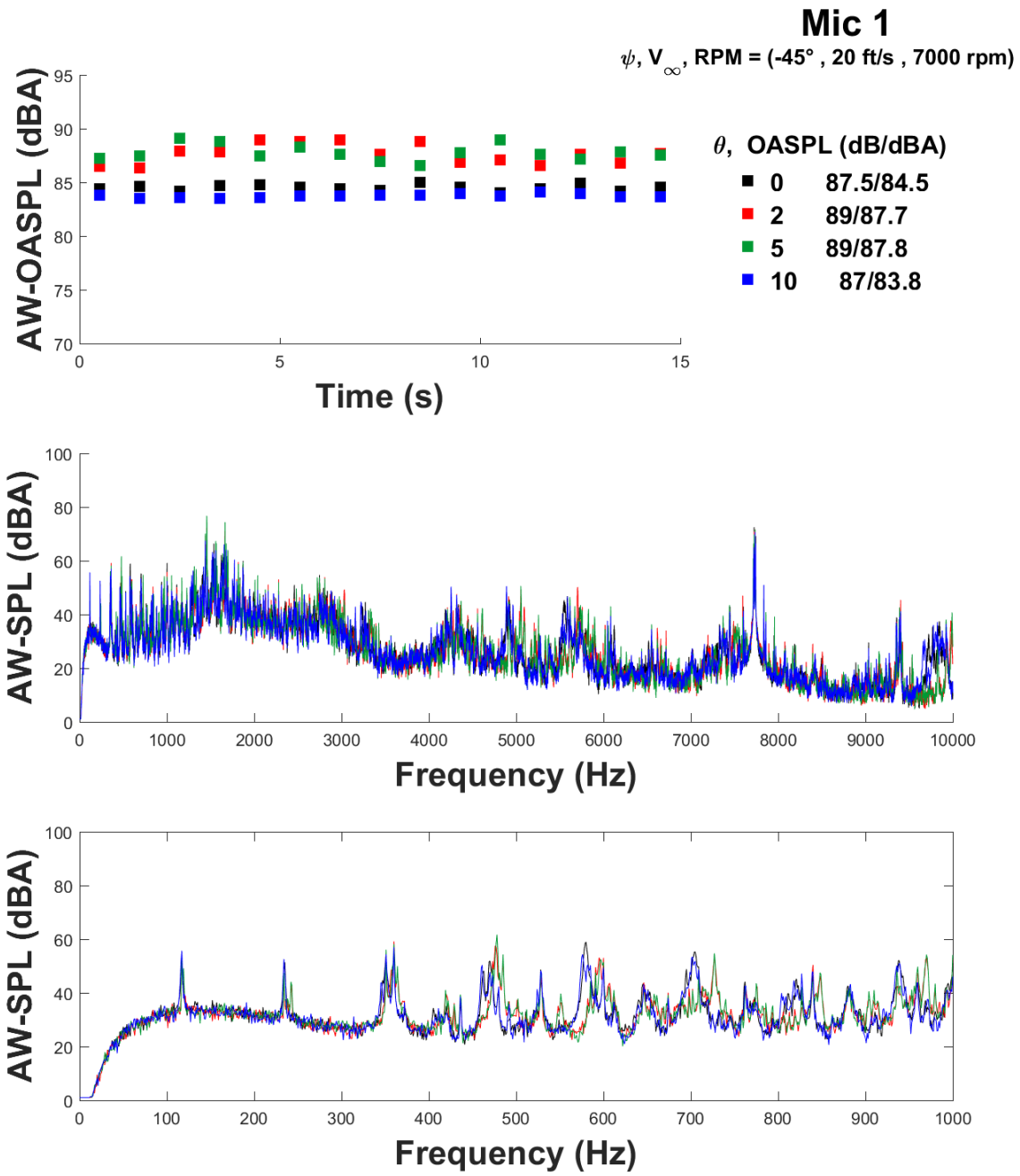

Figure E103: DAx8 Bare Airframe microphone 1: Positive pitch sweep ψ = -45°, V_∞ = 20 ft/s, RPM= 7,000

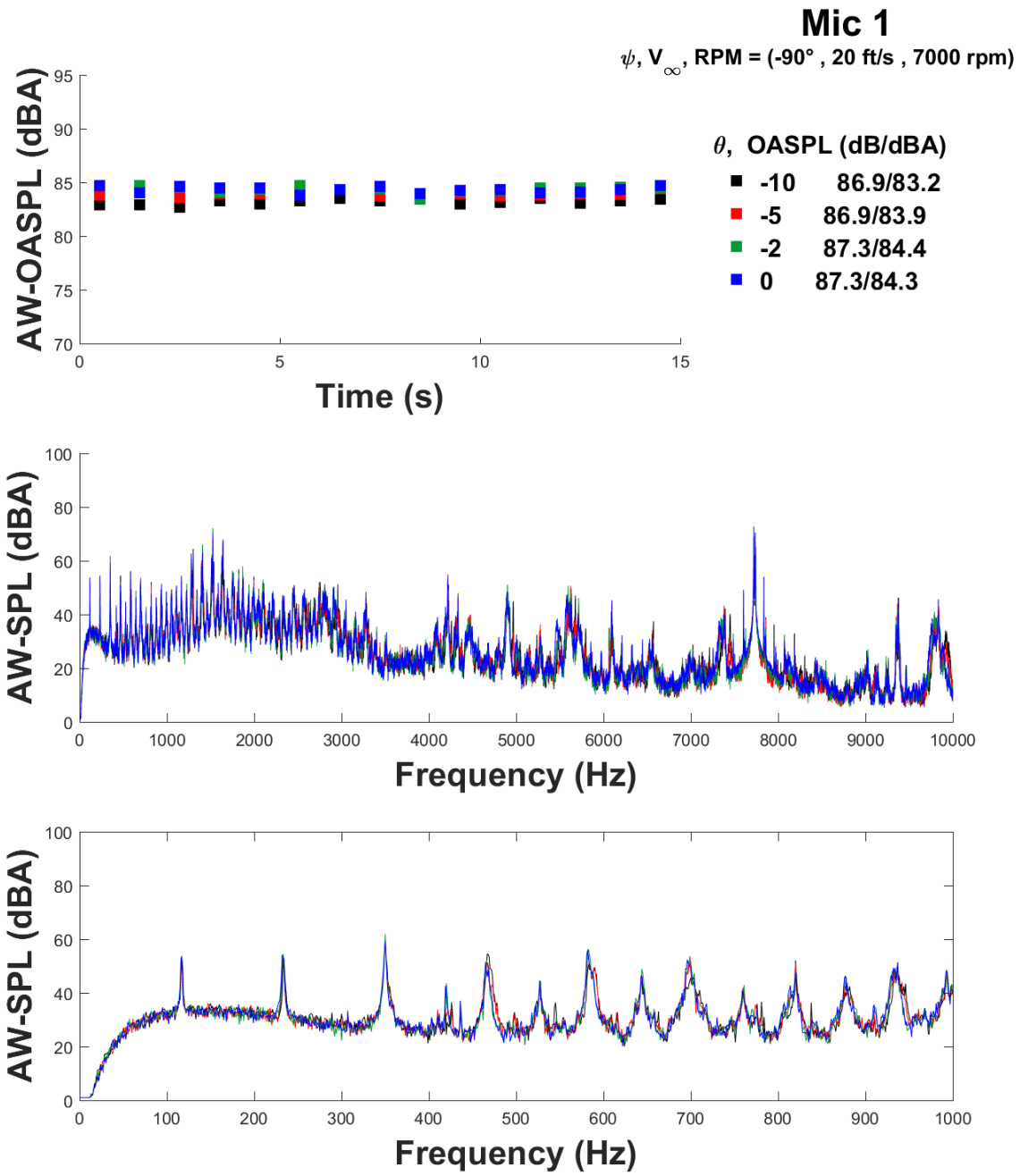

Figure E104: DAx8 Bare Airframe microphone 1: Negative pitch sweep ψ = -90°, V_∞ = 20 ft/s, RPM= 7,000

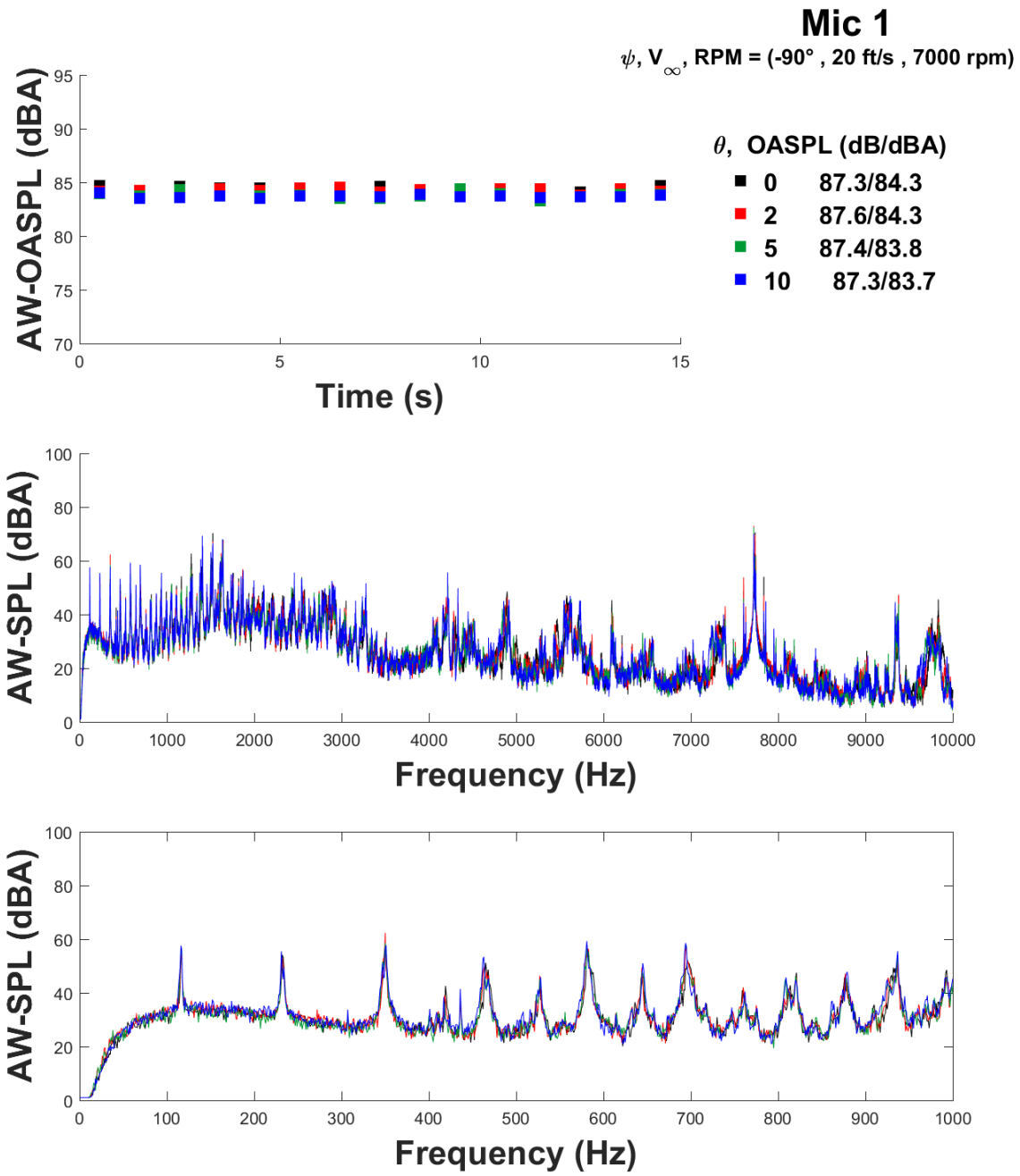

Figure E105: DAx8 Bare Airframe microphone 1: Positive pitch sweep ψ = -90°, V_∞ = 20 ft/s, RPM= 7,000

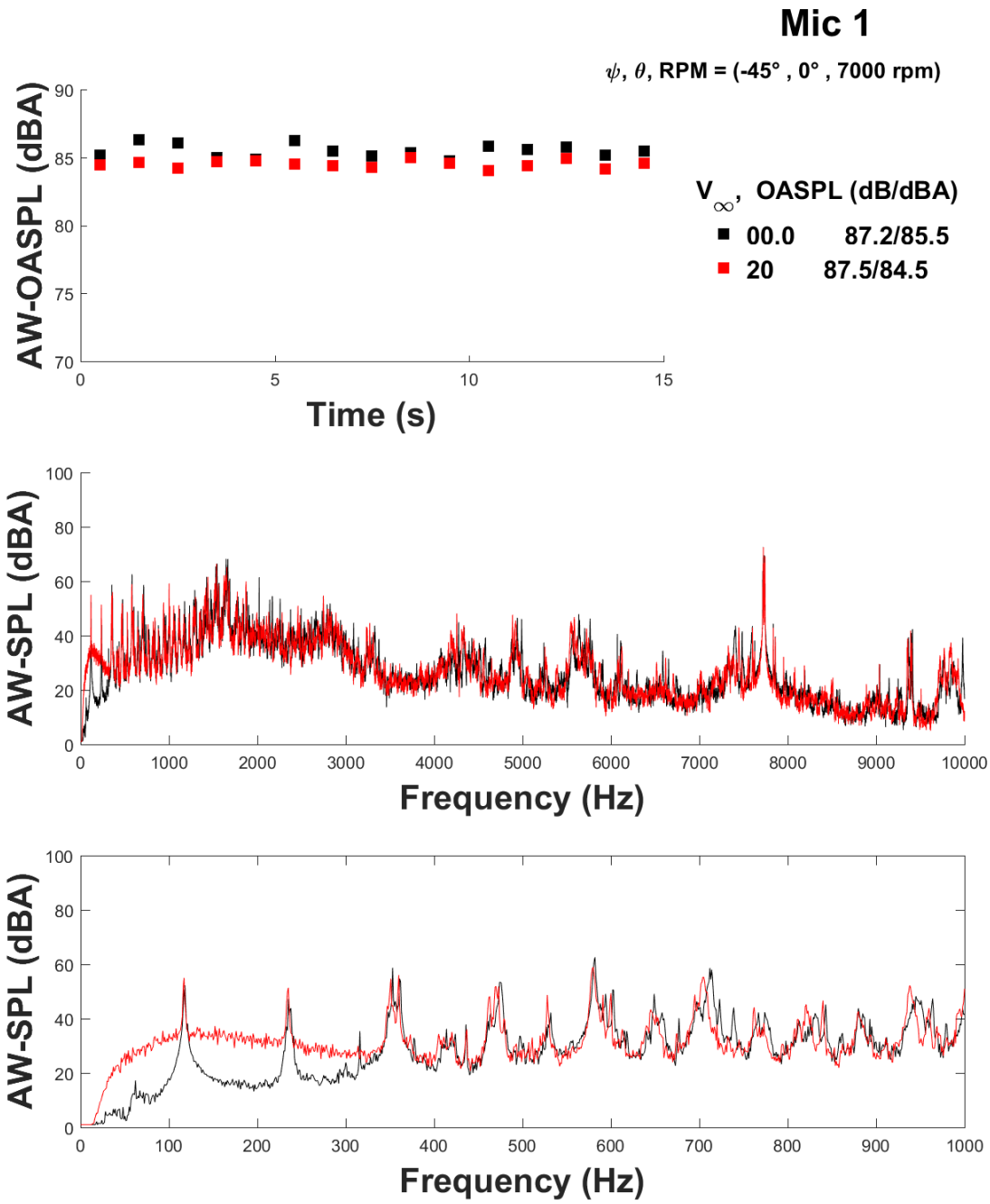

Figure E106: DAx8 Bare Airframe microphone 1: V_∞ sweep ψ = -45°, θ = 0°, RPM= 7,000

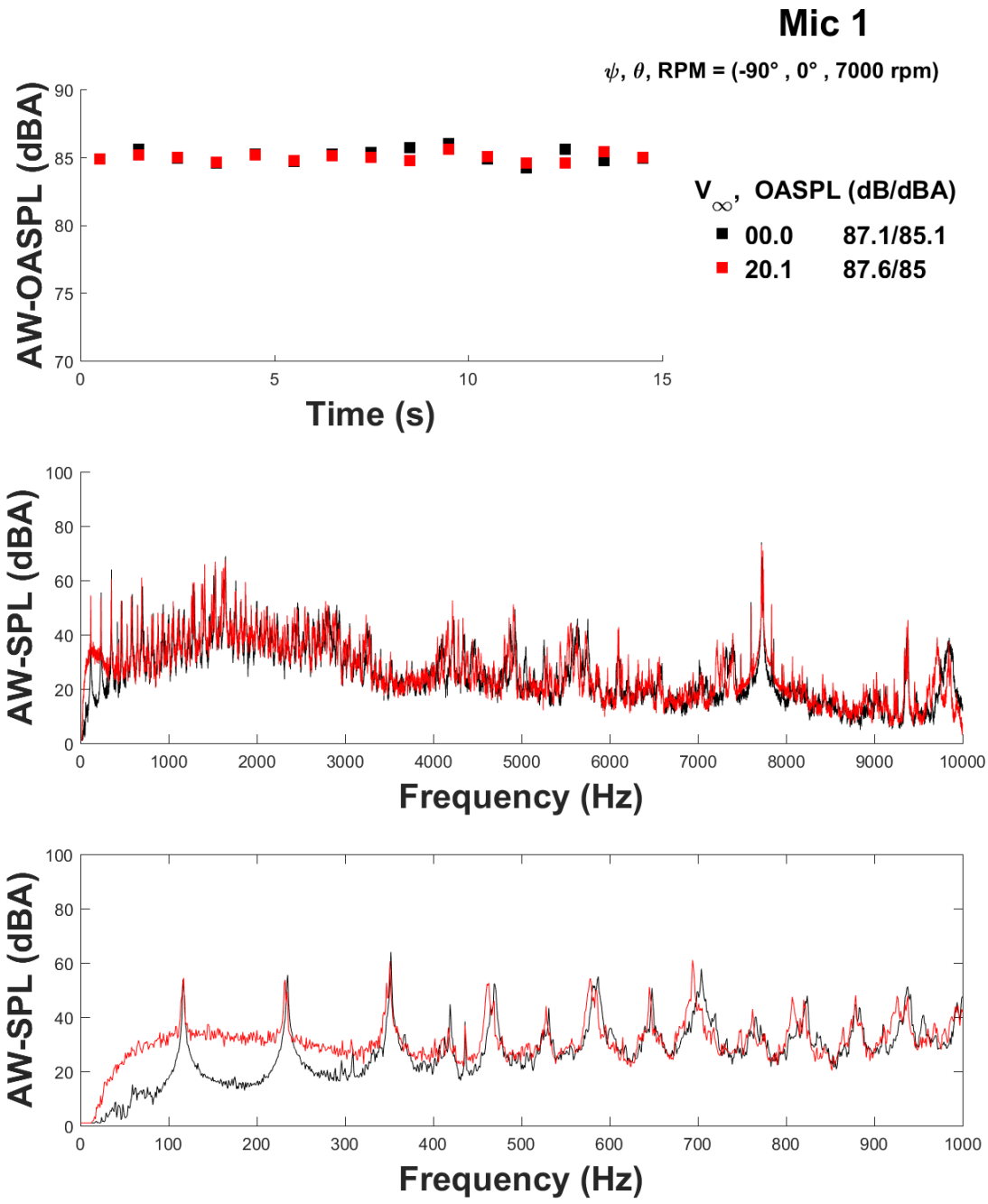

Figure E107: DAx8 Bare Airframe microphone 1: V_∞ sweep ψ = -90°, θ = 0°, RPM= 7,000

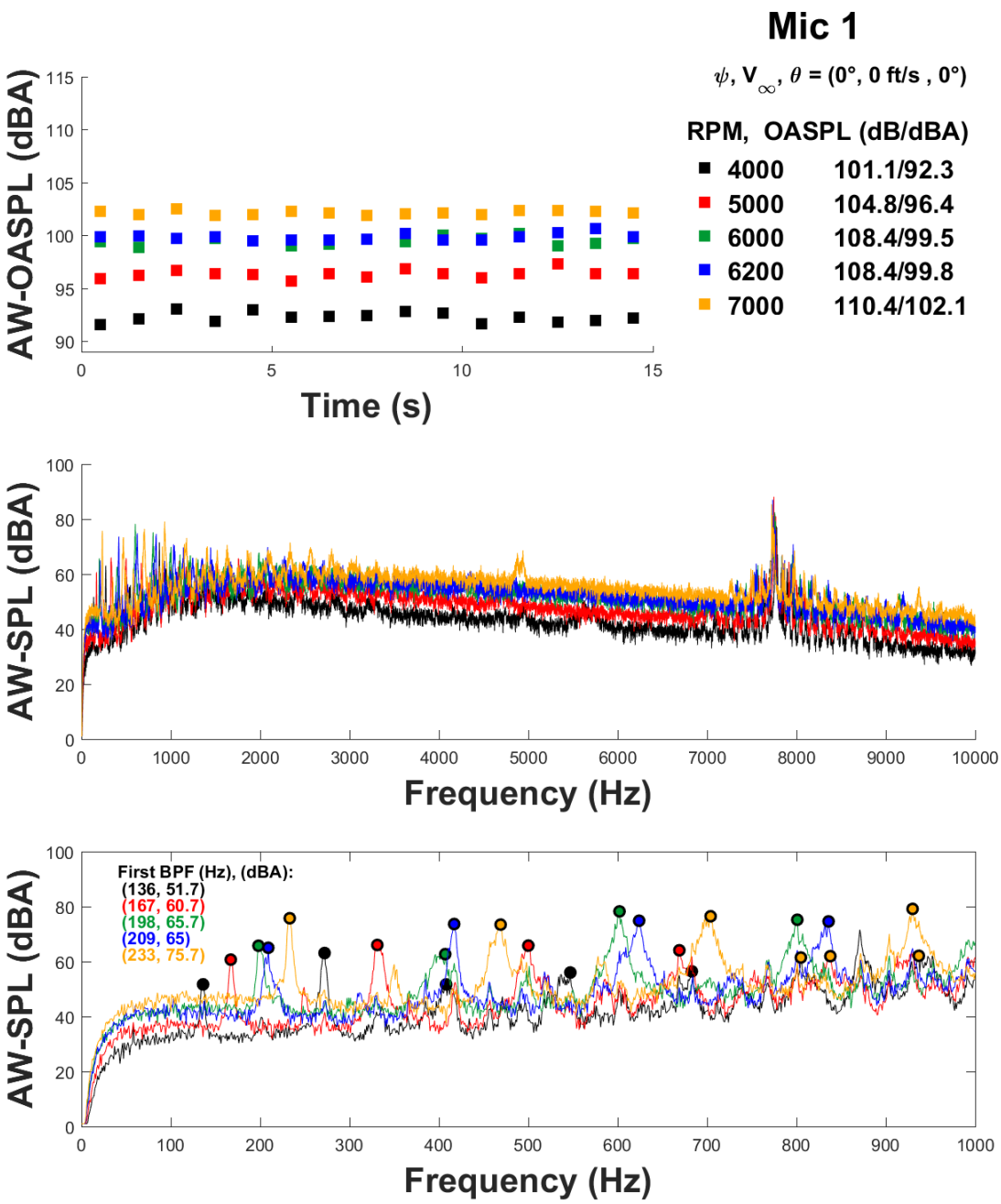

Figure E108: DAx8 microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 0$ ft/s, $\theta = 0°$

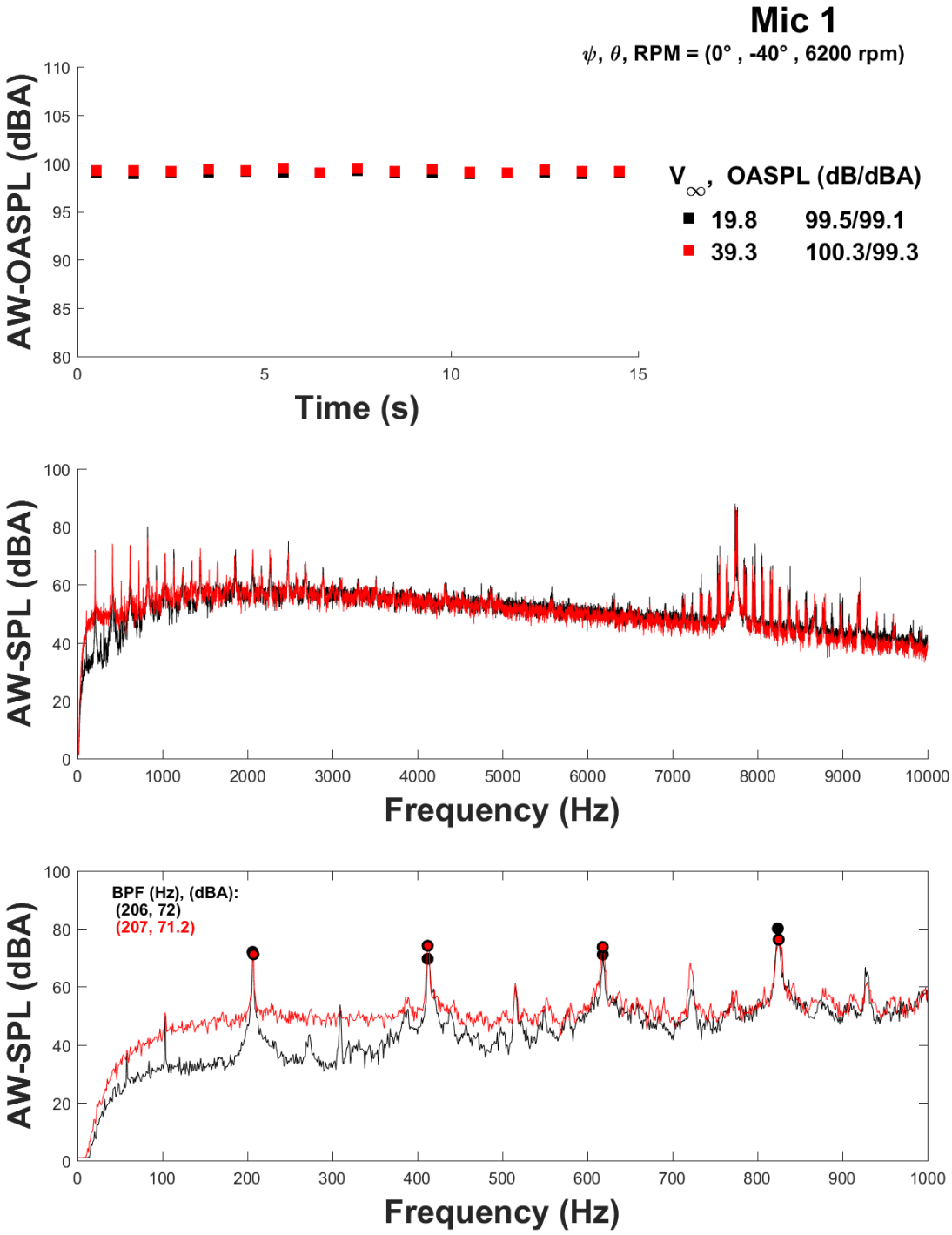

Figure E109: DAx8 microphone 1: V_∞ sweep ψ = 0°, θ = -40°, RPM= 6,200

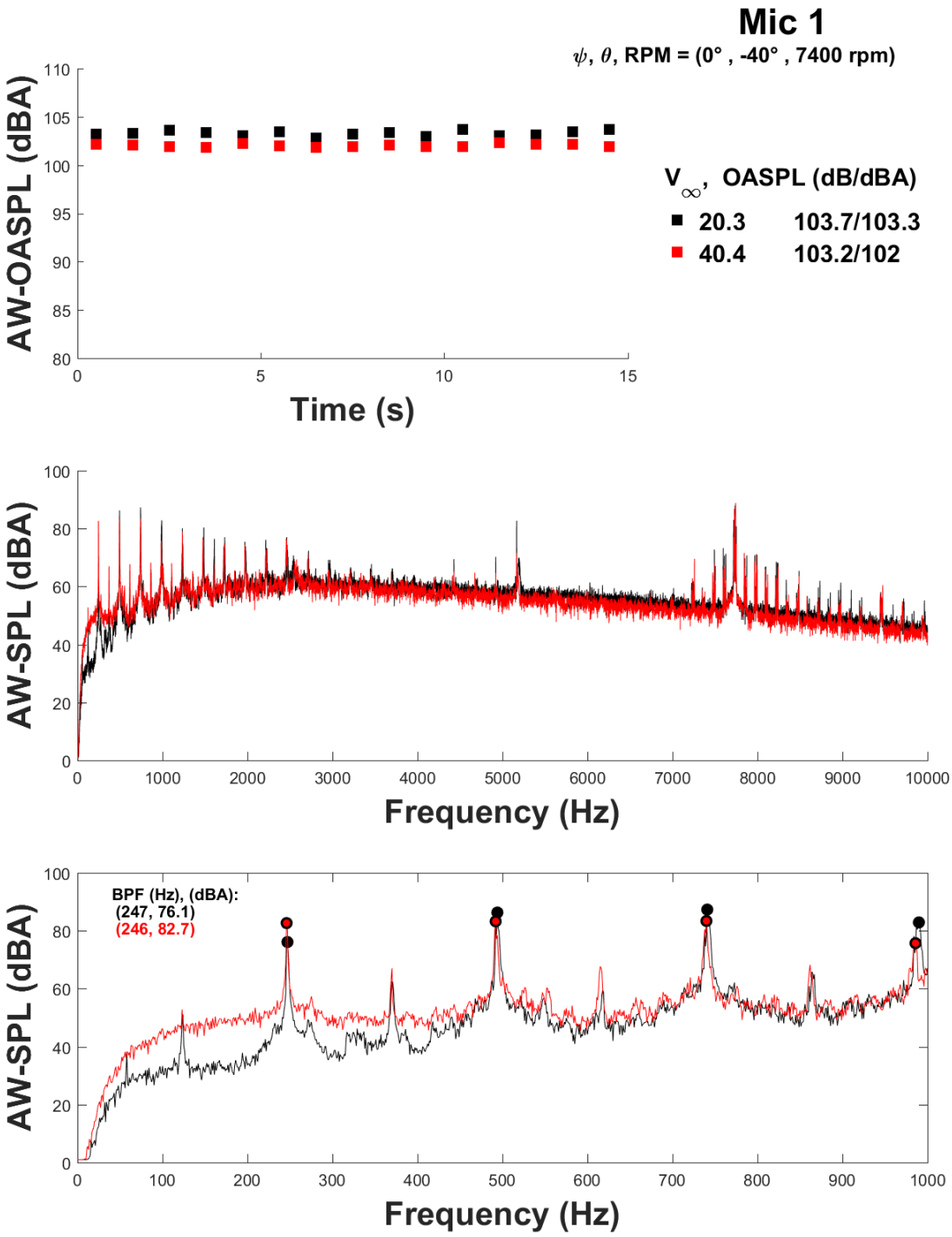

Figure E110: DAx8 microphone 1: V_∞ sweep ψ = 0°, θ = -40°, RPM= 7,400

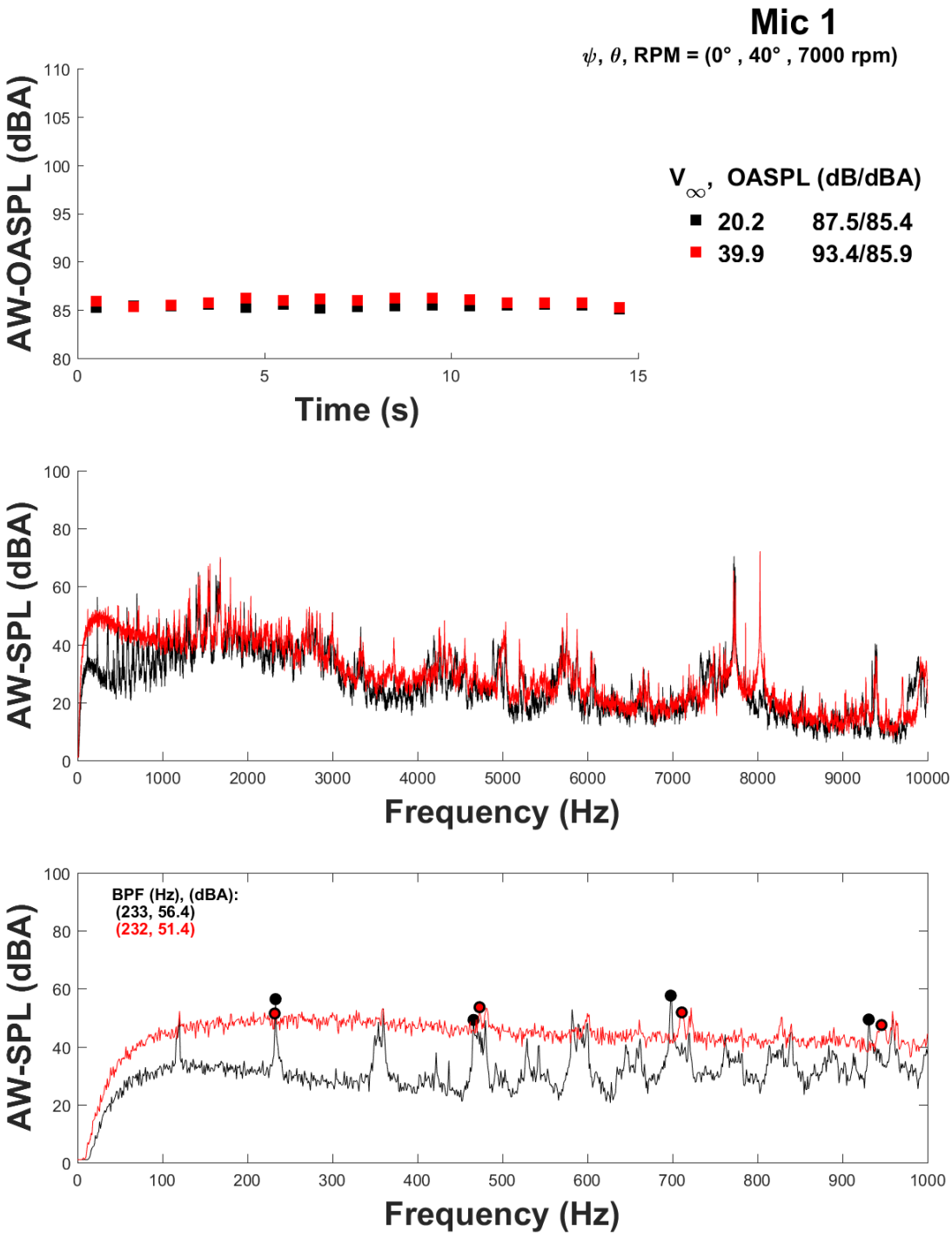

Figure E111: DAx8 microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 40°$, RPM= 7,000

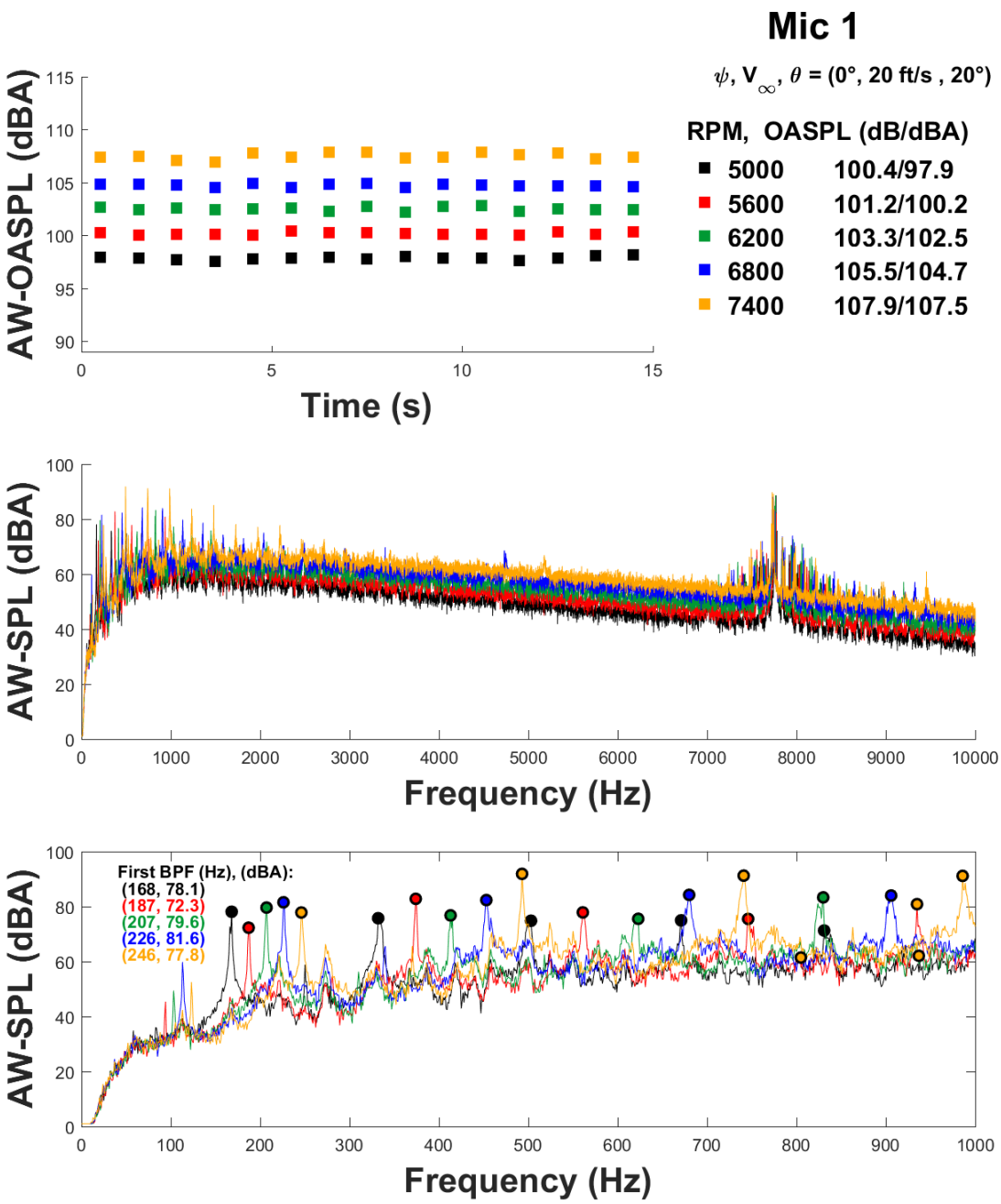

Figure E112: DAx8 microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 20$ ft/s, $\theta = 20°$

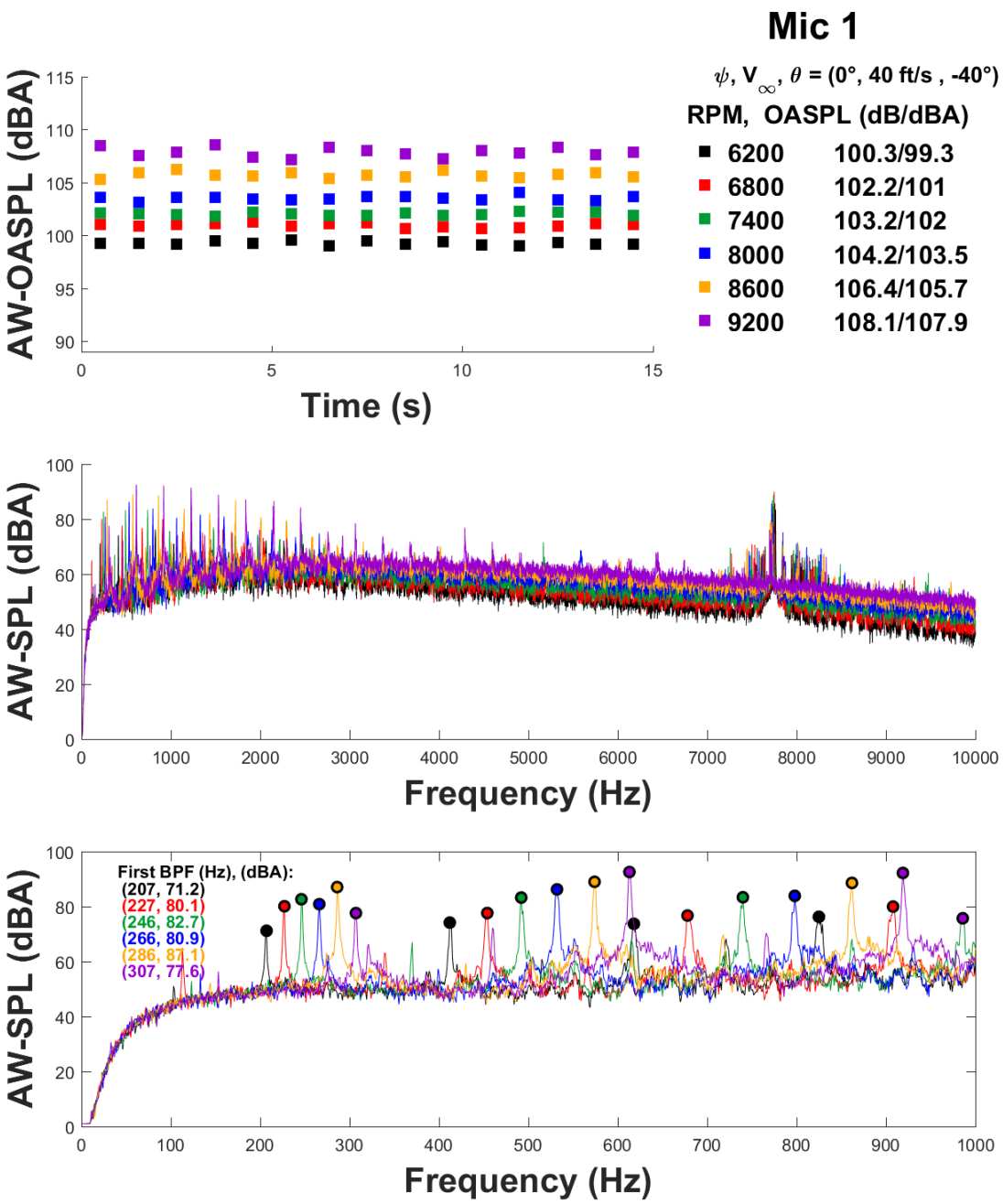

Figure E113: DAx8 microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 40$ ft/s, θ = -40°

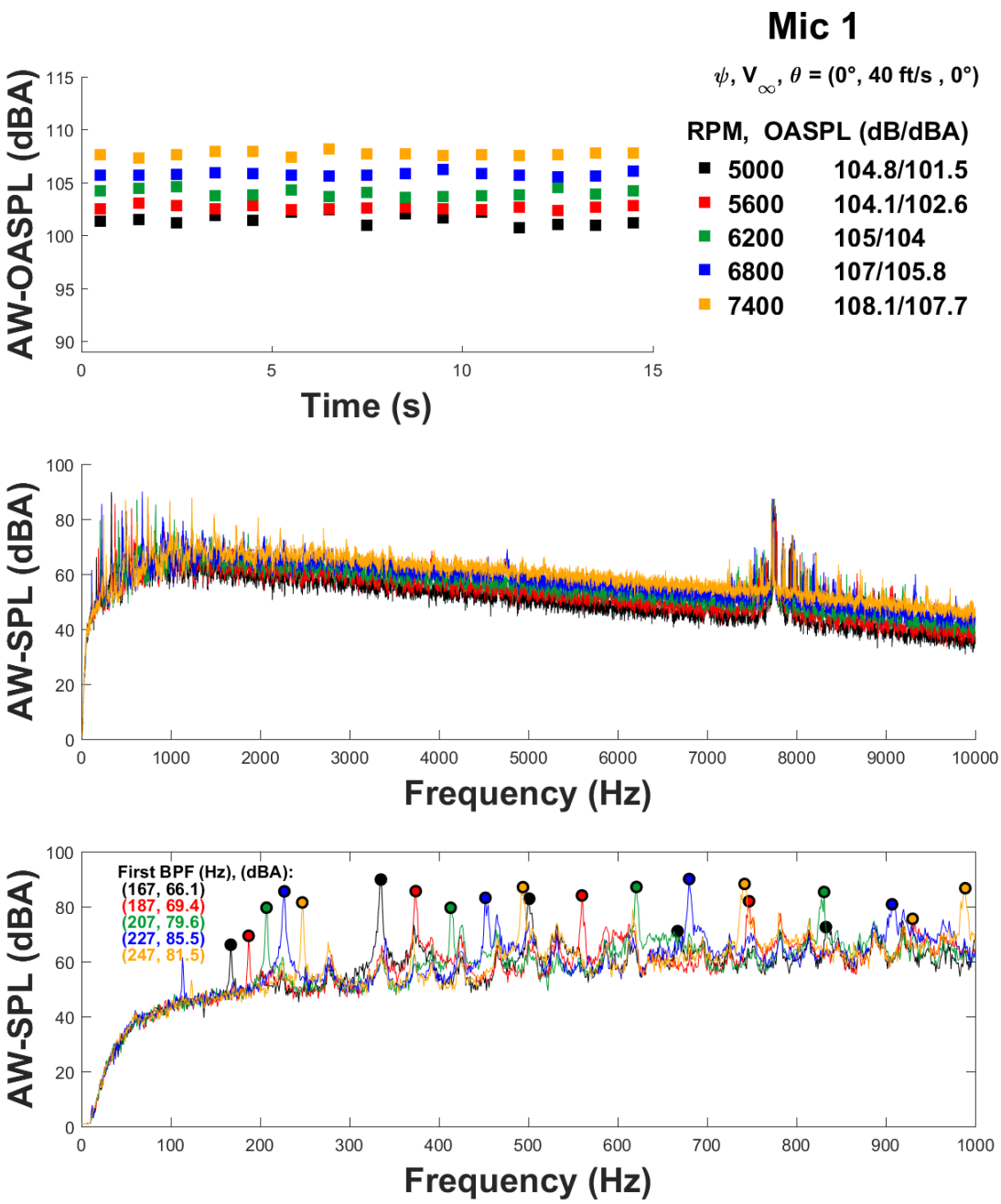

Figure E114: DAx8 microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 40$ ft/s, $\theta = 0°$

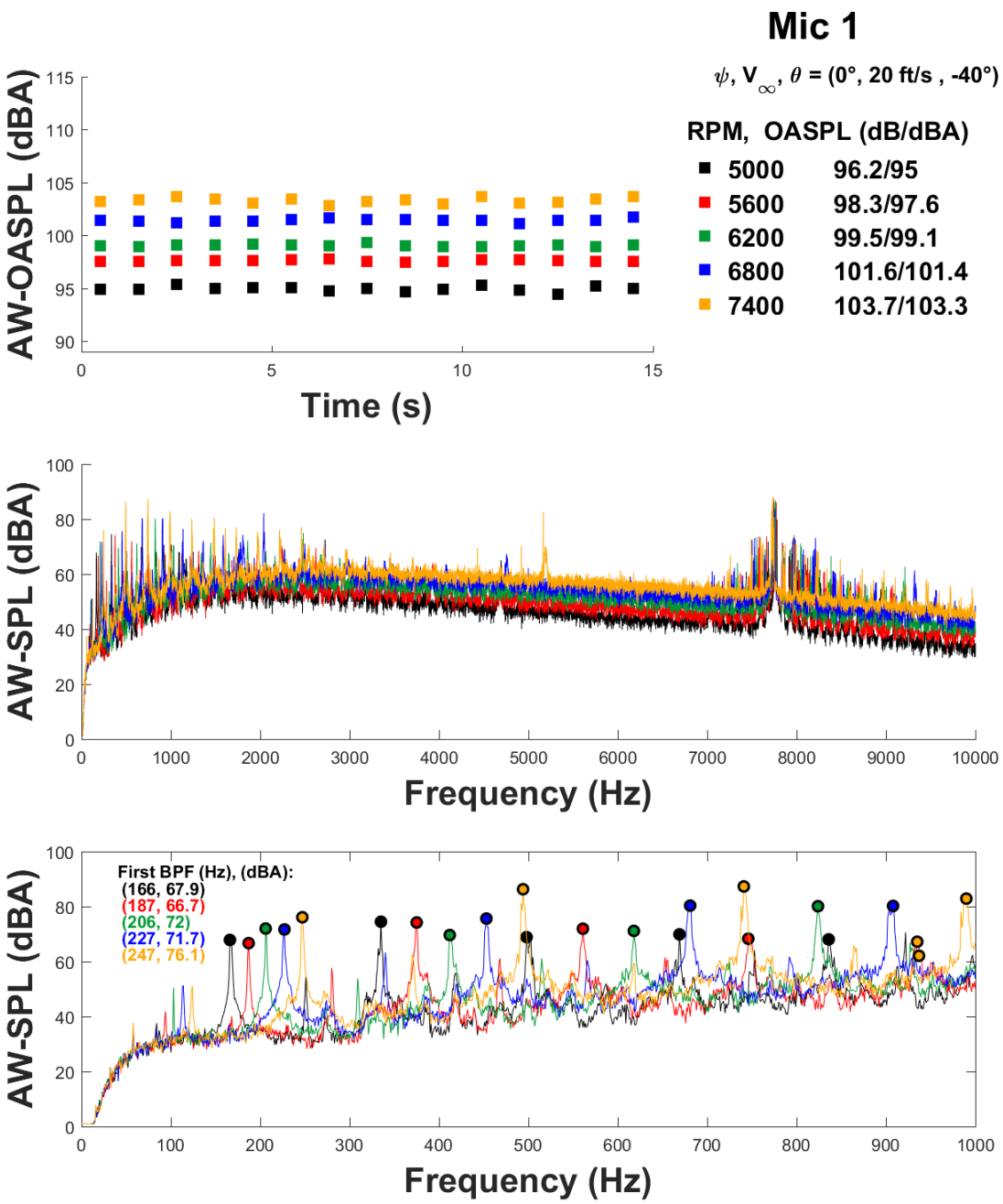

Figure E115: DAx8 microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 20$ ft/s, θ = -40°

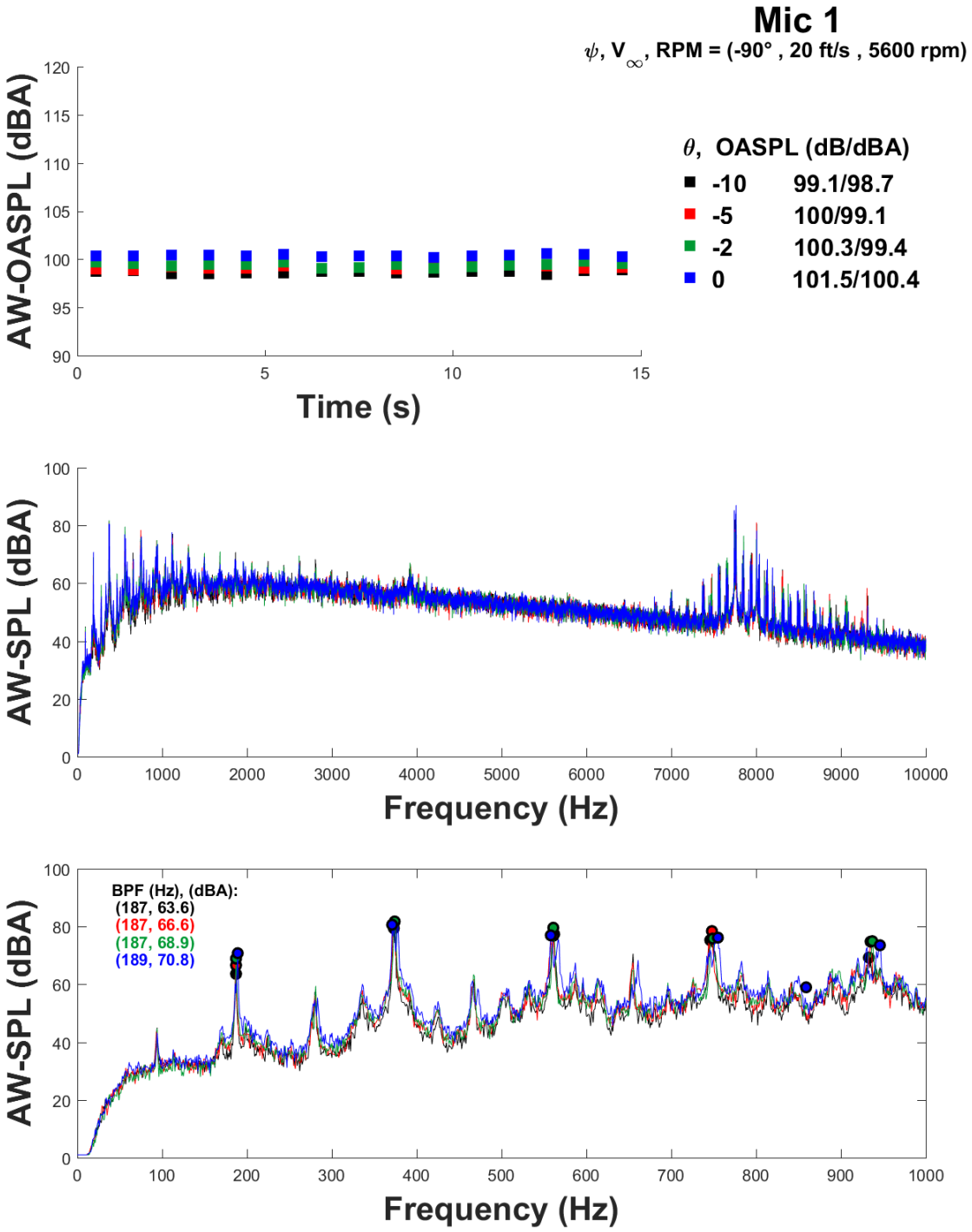

Figure E116: DAx8 microphone 1: Pitch sweep ψ = -90°, V_∞ = 20 ft/s, RPM= 5,600

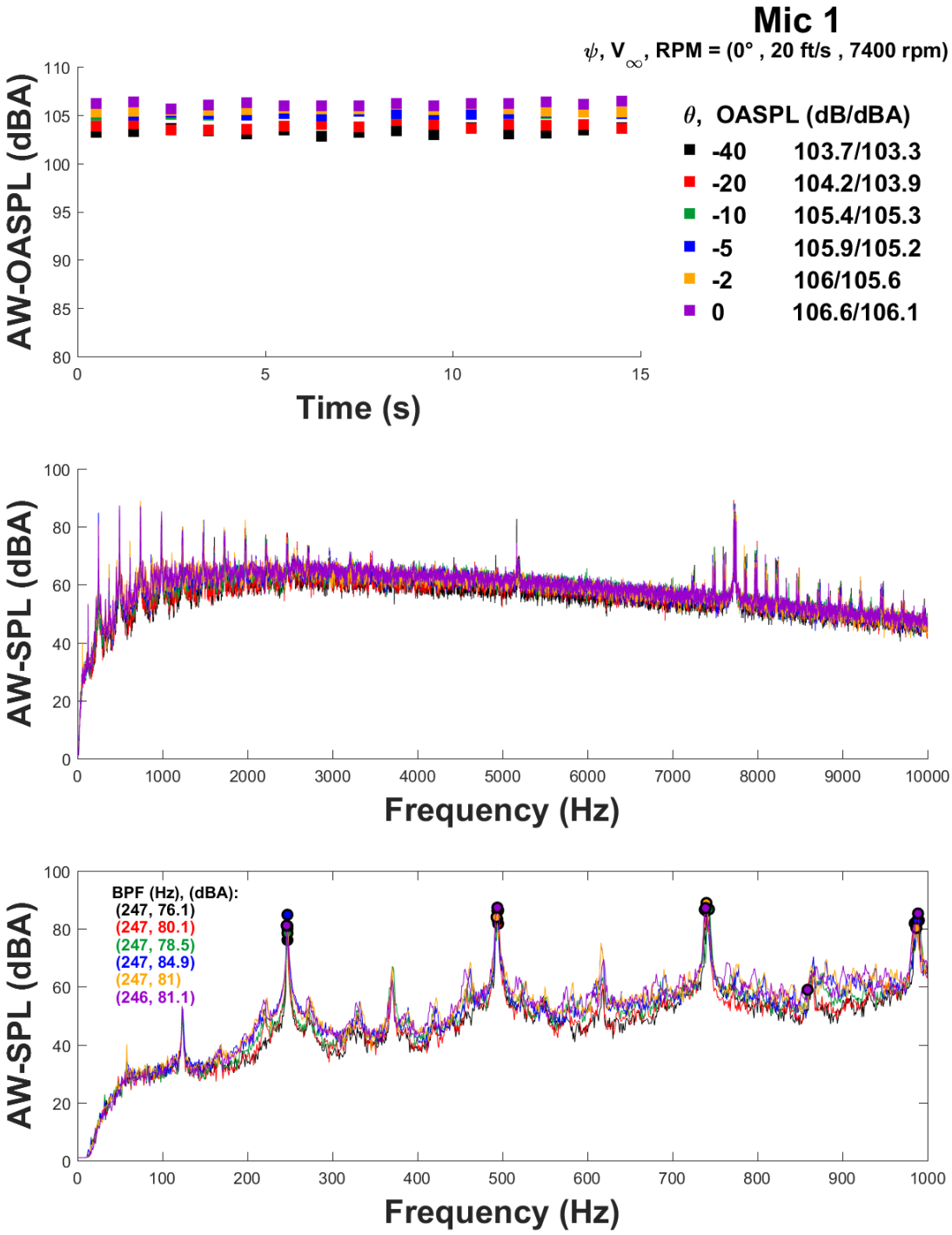

Figure E117: DAx8 microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, $\theta = 20°$, RPM= 7,400

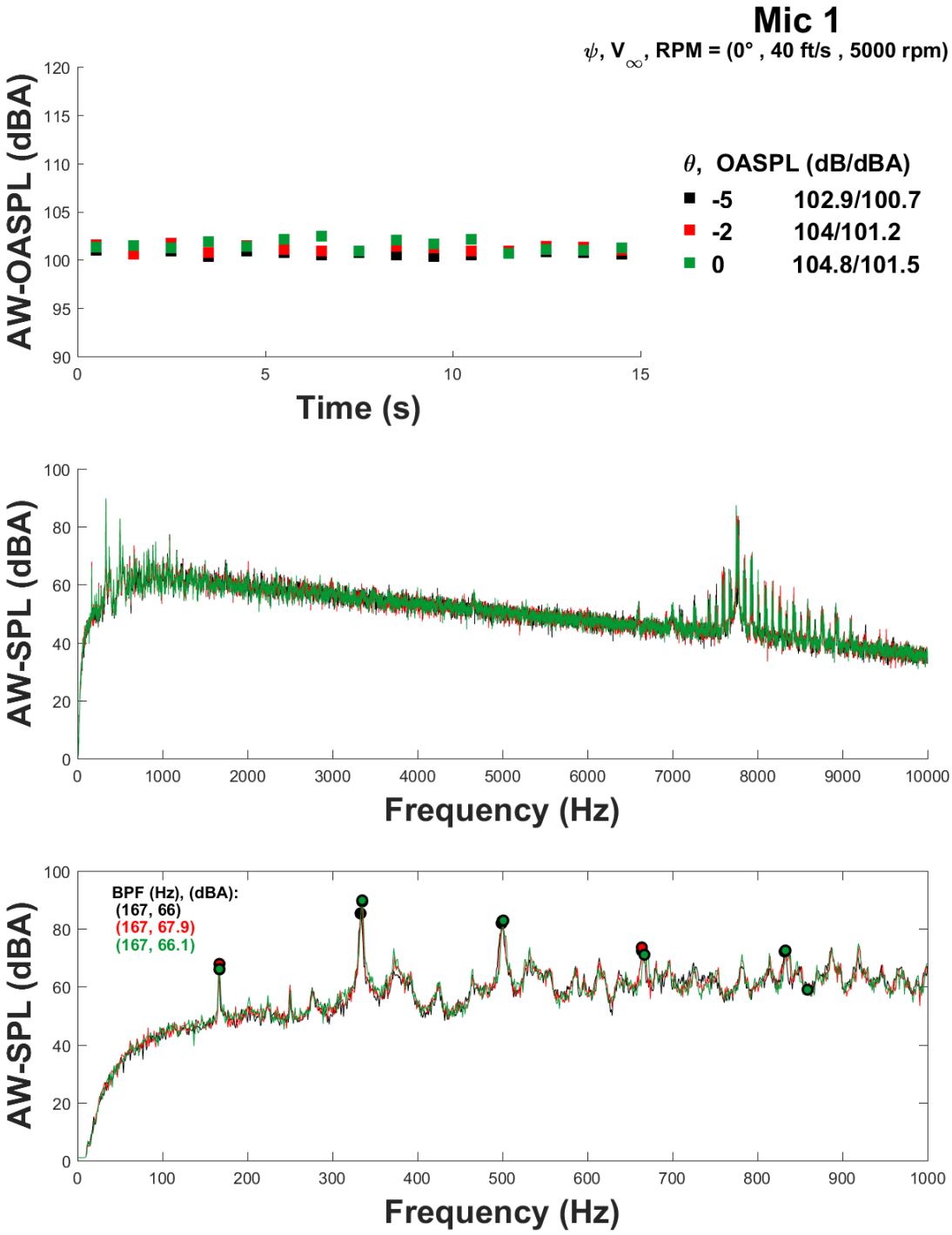

Figure E118: DAx8 microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 40$ ft/s, RPM= 5,000

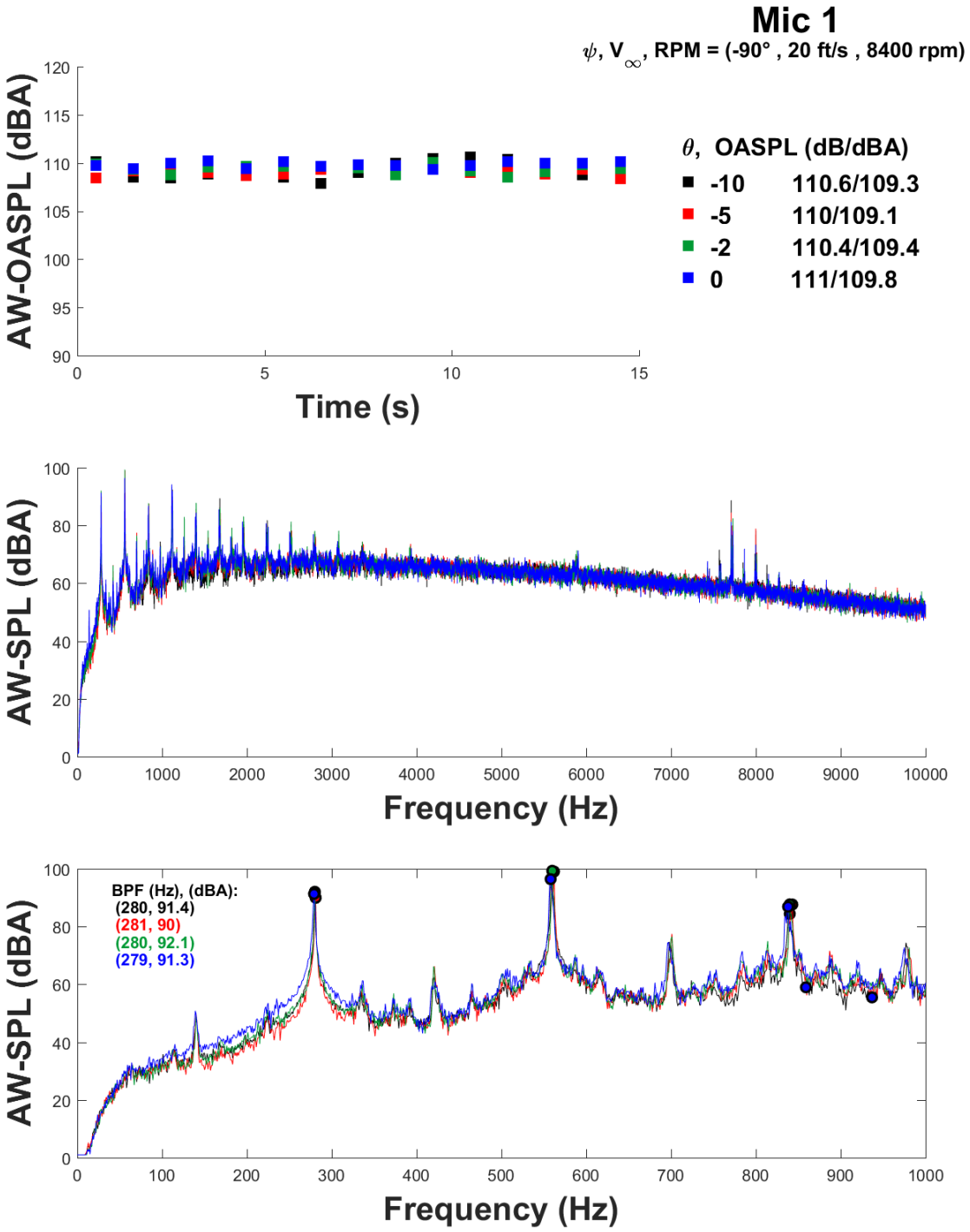

Figure E119: DAx8 microphone 1: Negative pitch sweep ψ = -90°, V_∞ = 20 ft/s, RPM= 8,400

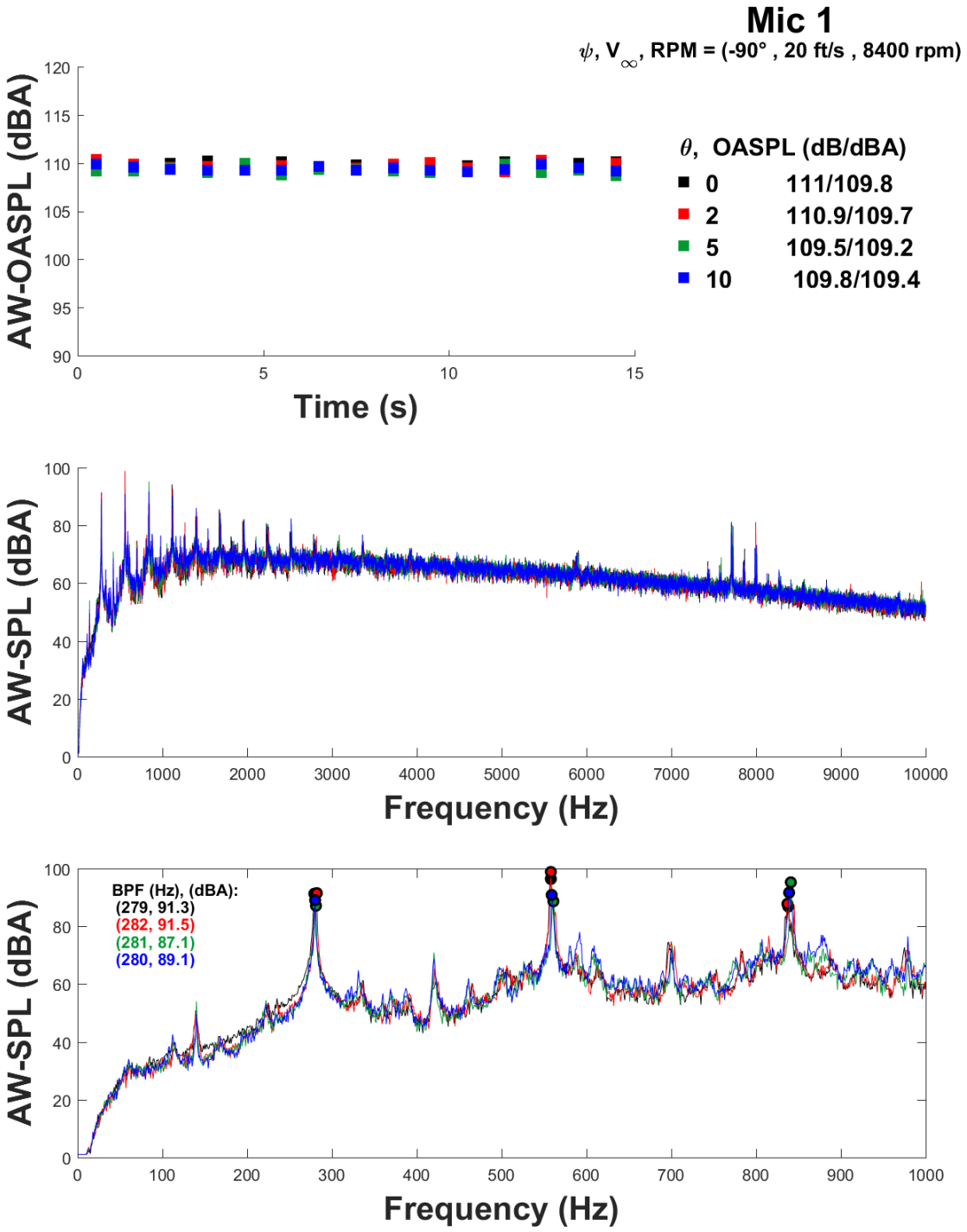

Figure E120: DAx8 microphone 1: Positive pitch sweep ψ = -90°, V_∞ = 20 ft/s, RPM= 8,400

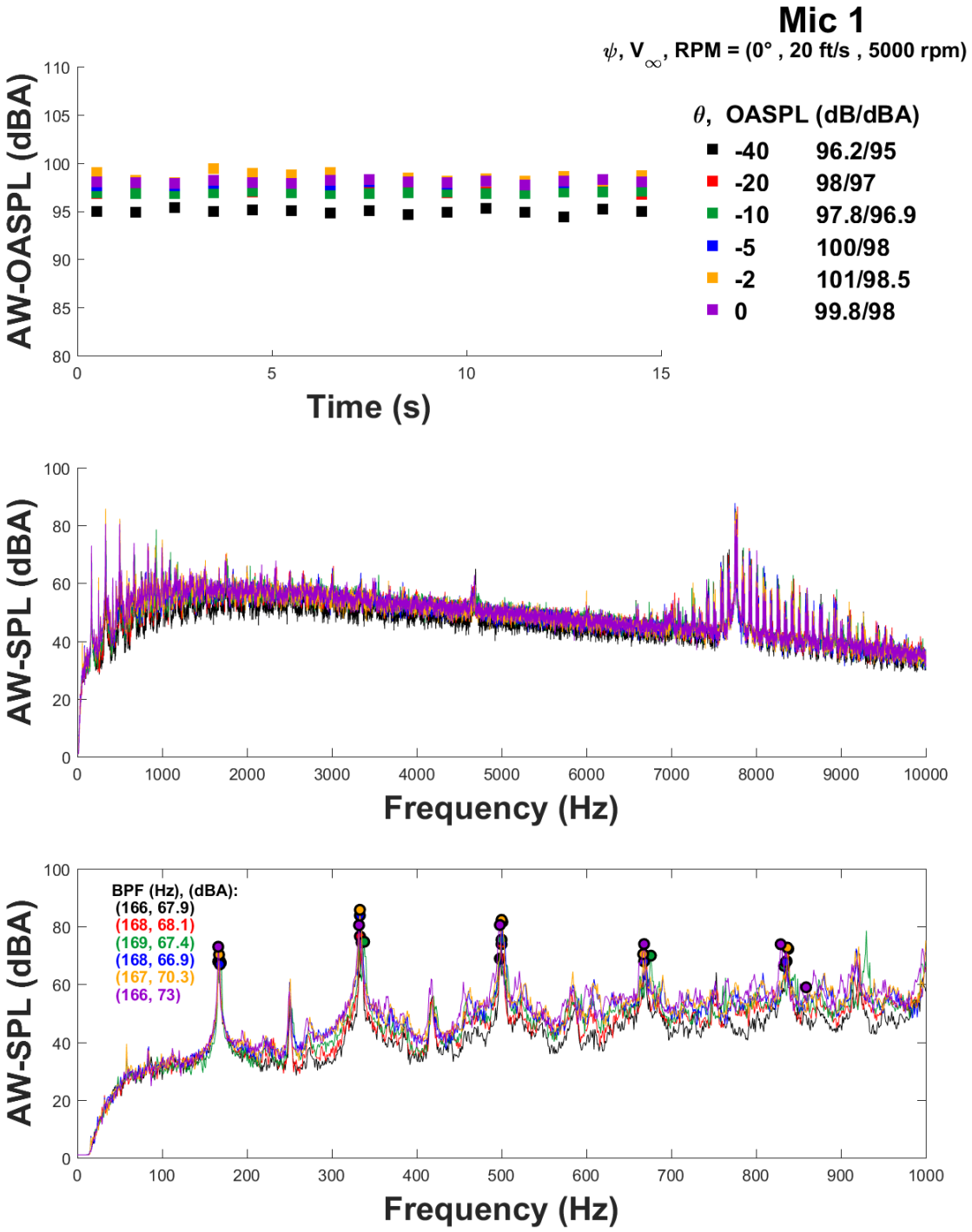

Figure E121: DAx8 microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, RPM= 5,000

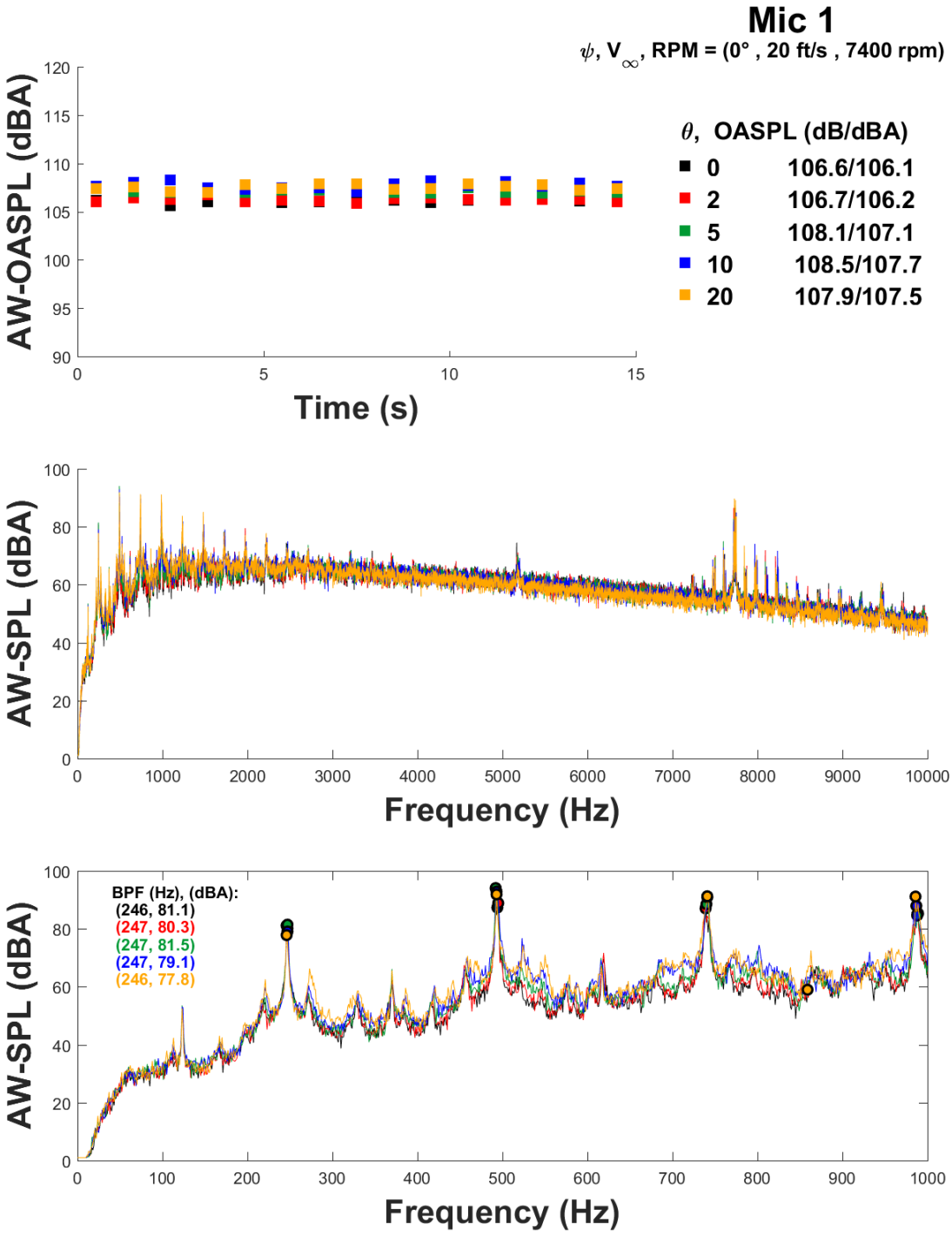

Figure E122: DAx8 microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, RPM= 2,400

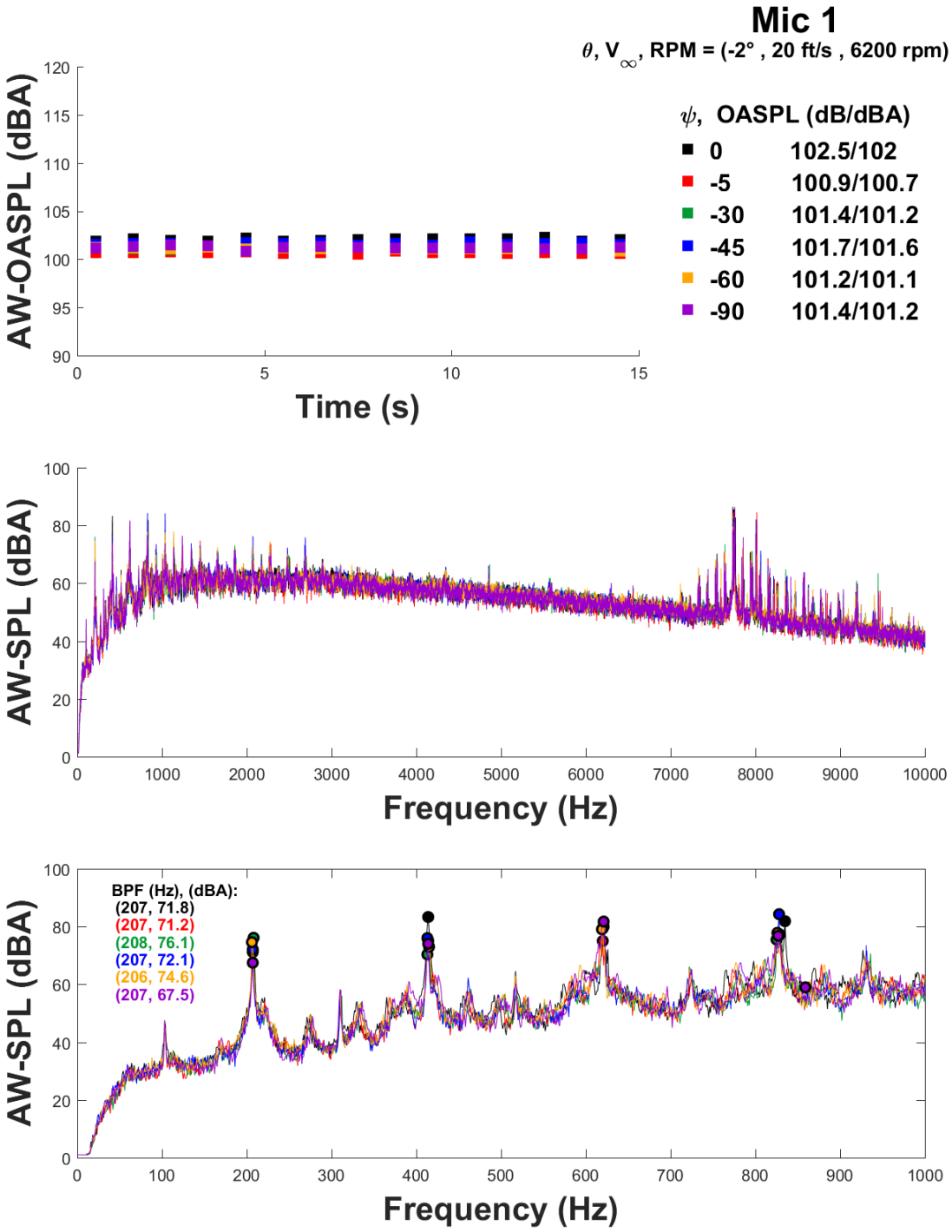

Figure E123: DAx8 microphone 1: Yaw sweep V_∞ = 20 ft/s, θ = -2°, RPM= 6,200

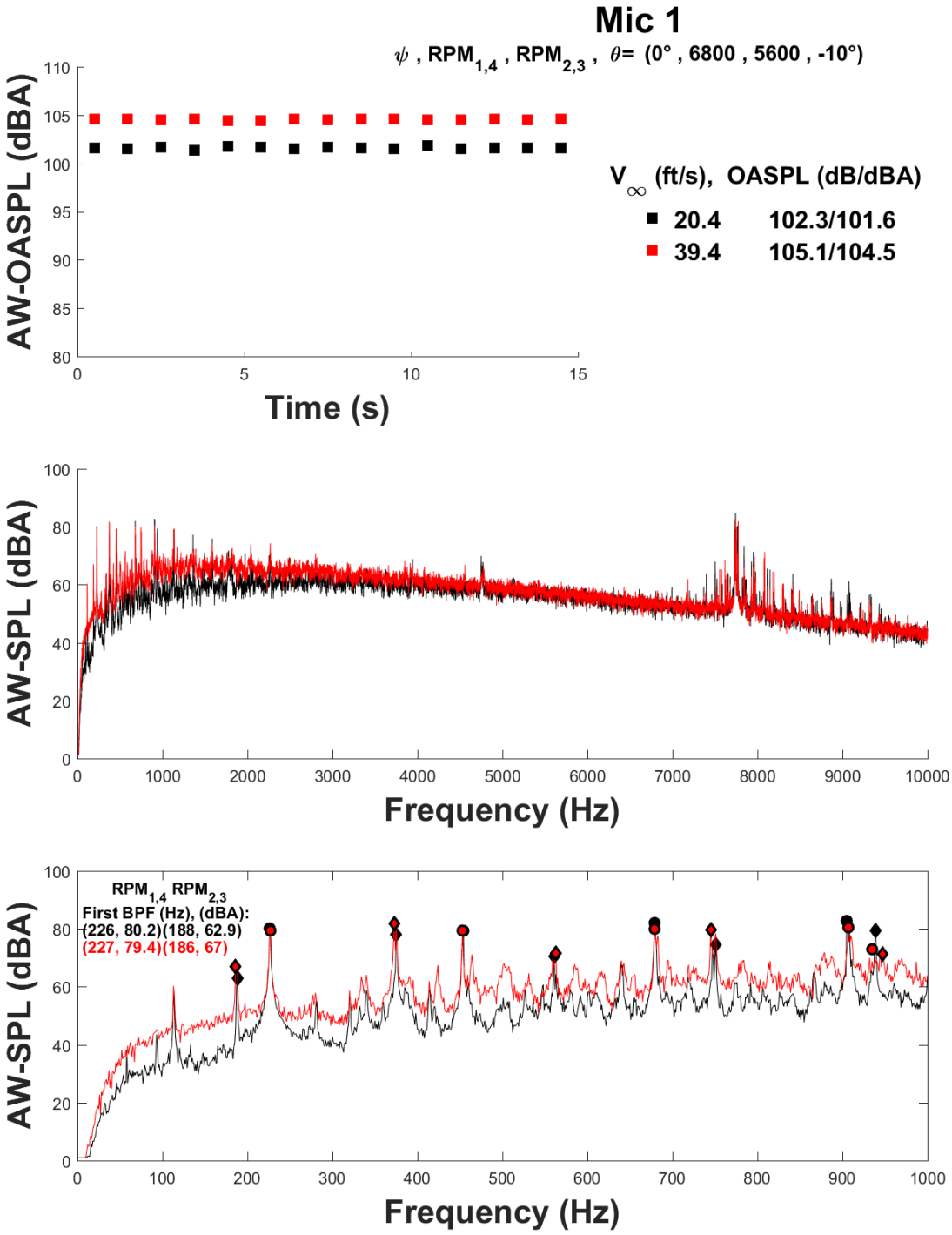

Figure E124: DAx8 microphone 1: V_∞ sweep $\psi = 0°$, θ = -10°, $RPM_{1,4}$ = 6,800, $RPM_{2,3}$ = 5,600

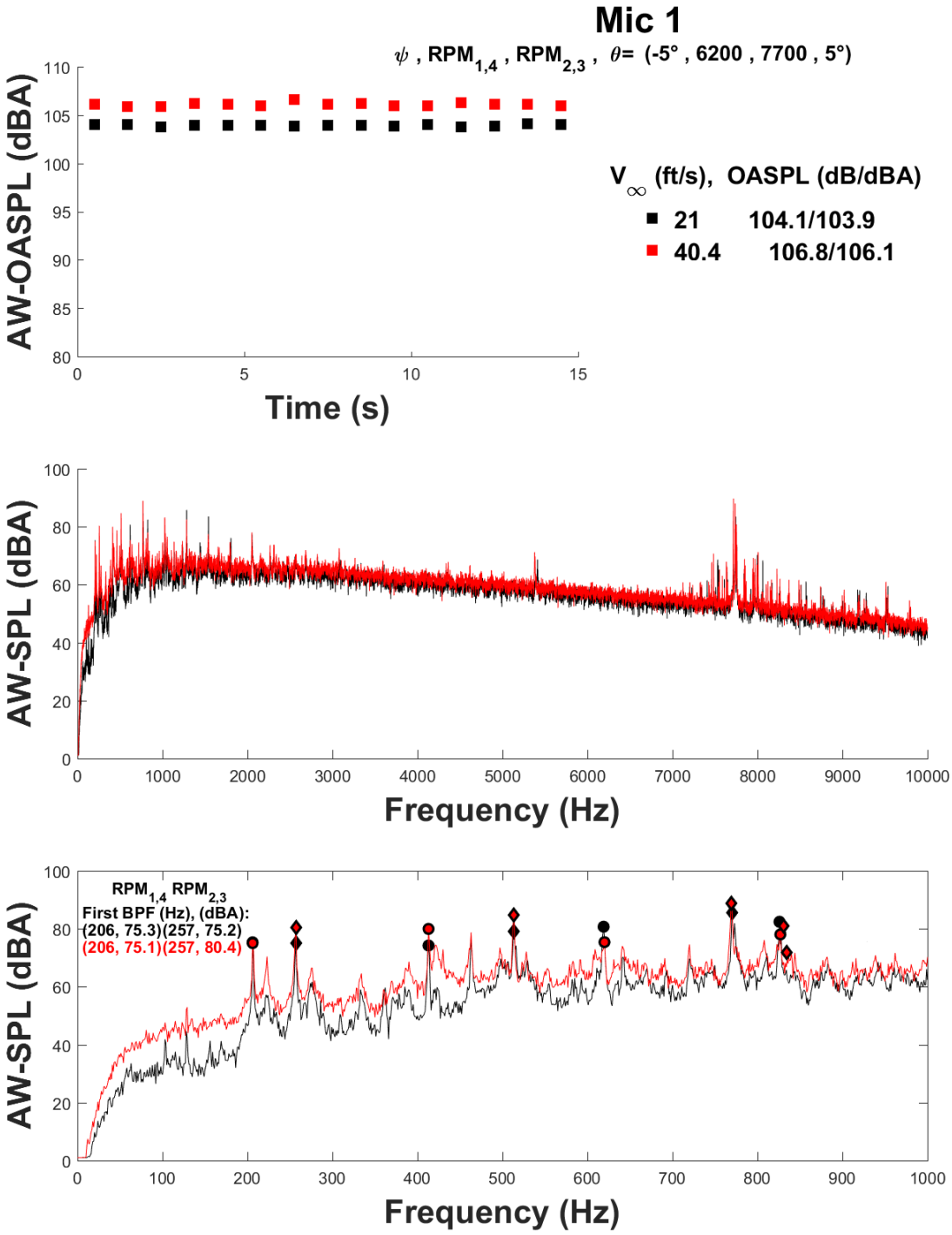

Figure E125: DAx8 microphone 1: V_∞ sweep ψ = -5°, θ = 5°, $RPM_{1,4}$ = 6,200, $RPM_{2,3}$ = 7,700

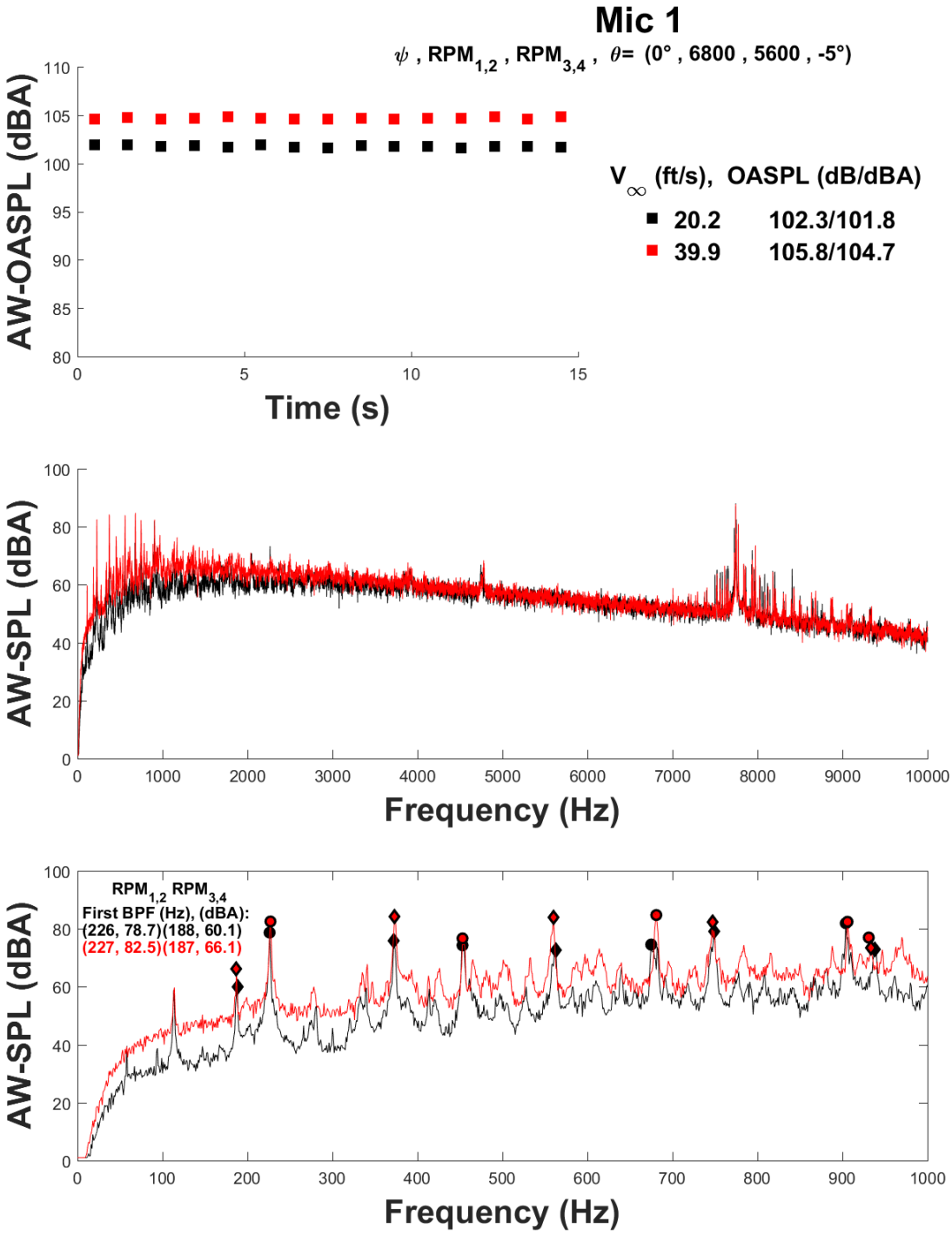

Figure E126: DAx8 microphone 1: V_∞ sweep $\psi = 0°$, θ = -5°, $RPM_{1,2}$ = 6,800, $RPM_{3,4}$ = 5,600

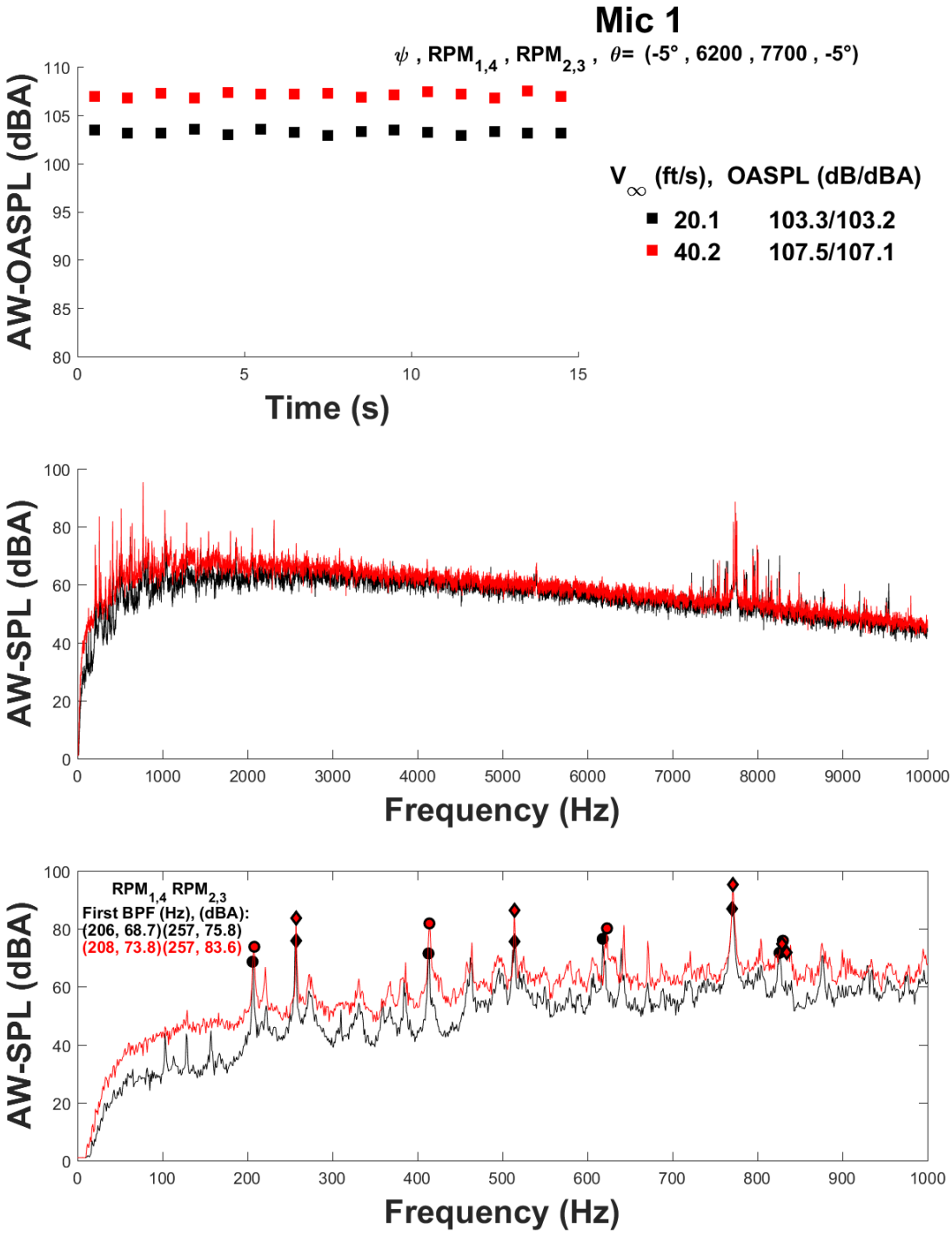

Figure E127: DAx8 microphone 1: V_∞ sweep ψ = -5°, θ = -5°, $RPM_{1,4}$ = 6,200, $RPM_{2,3}$ = 7,700

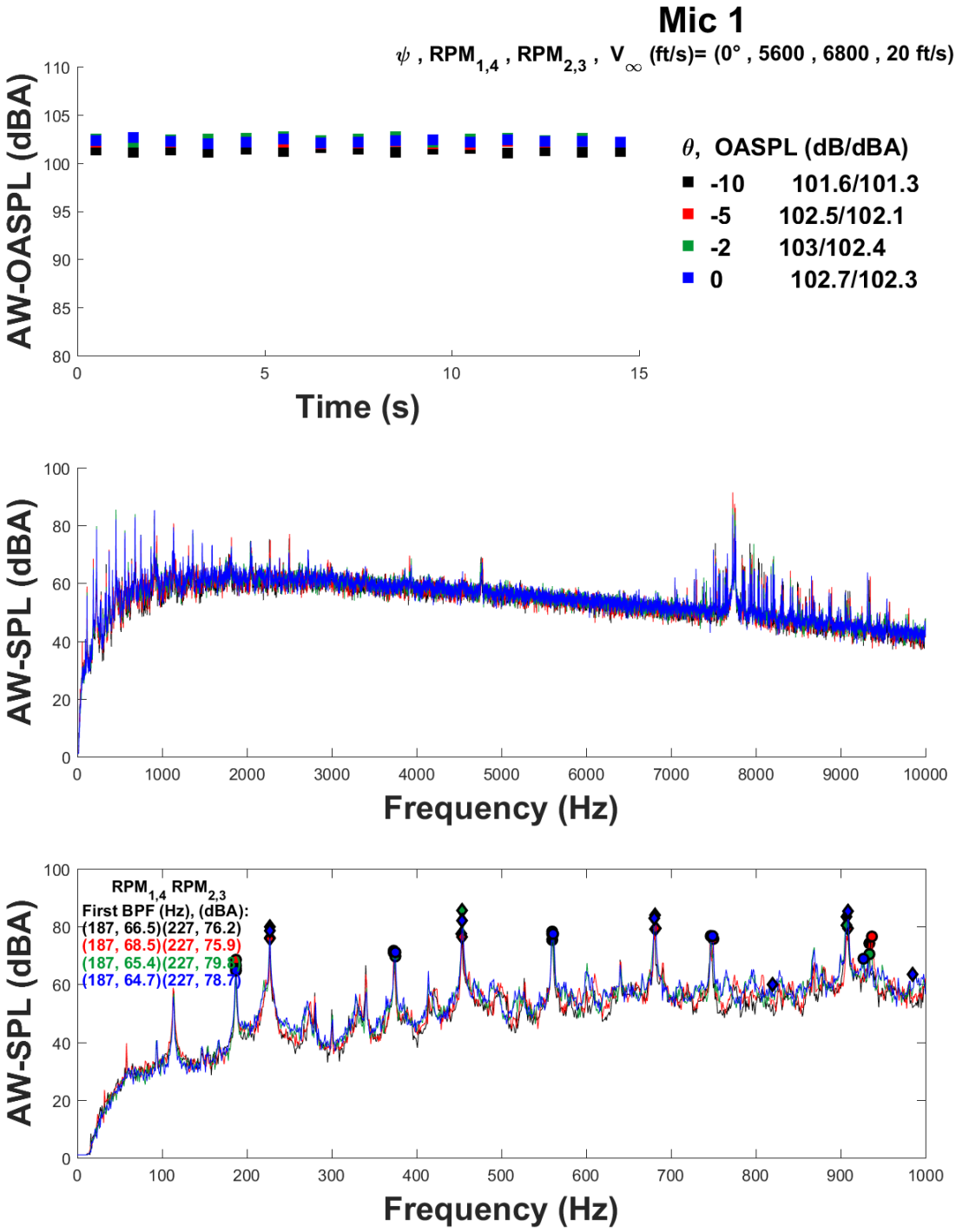

Figure E128: DAx8 microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, $RPM_{1,4} = 5{,}600$, $RPM_{2,3} = 6{,}800$

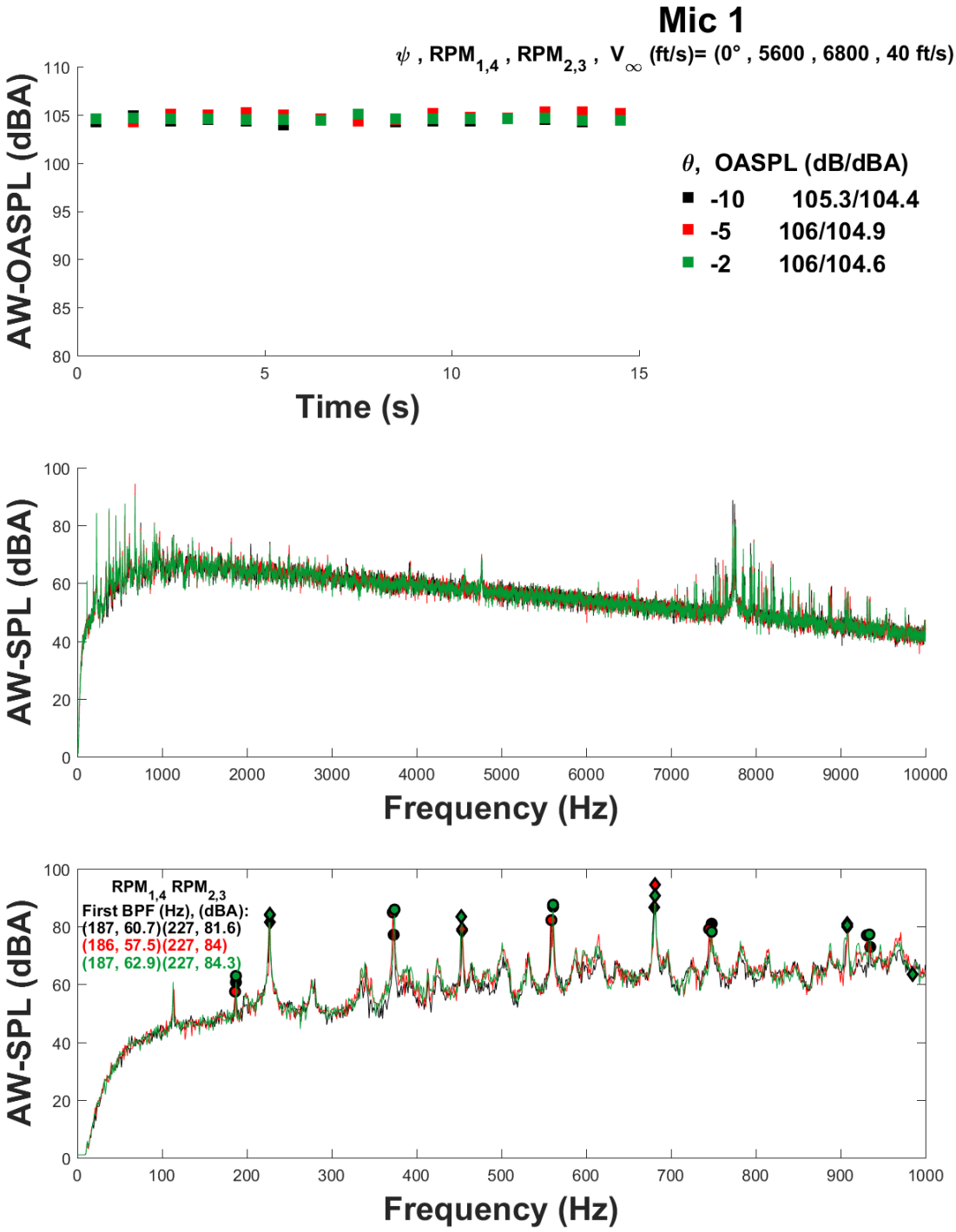

Figure E129: DAx8 microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 40$ ft/s, $RPM_{1,4} = 5{,}600$, $RPM_{2,3} = 6{,}800$

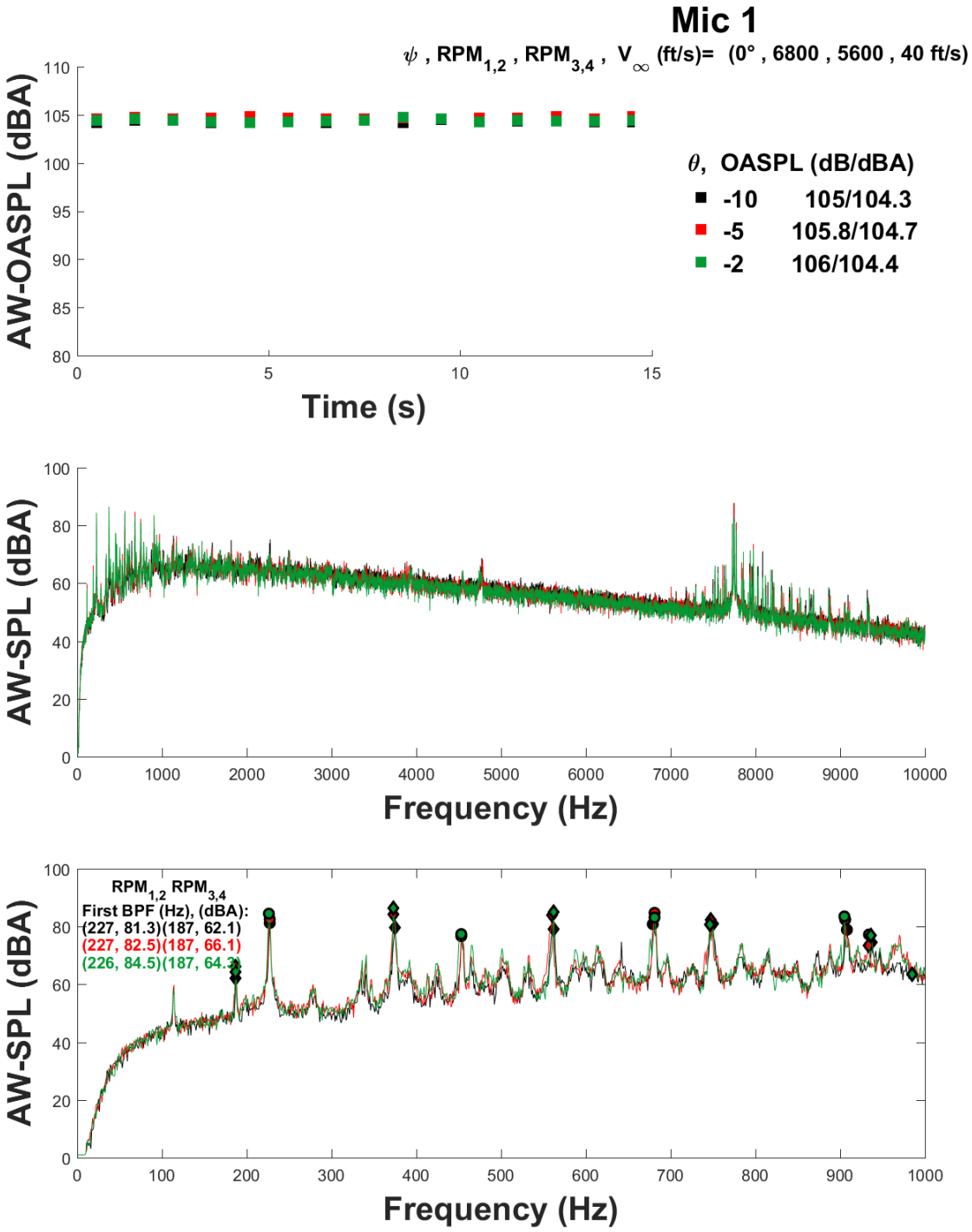

Figure E130: DAx8 microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 40$ ft/s, $RPM_{1,2} = 6{,}800$, $RPM_{3,4} = 5{,}600$

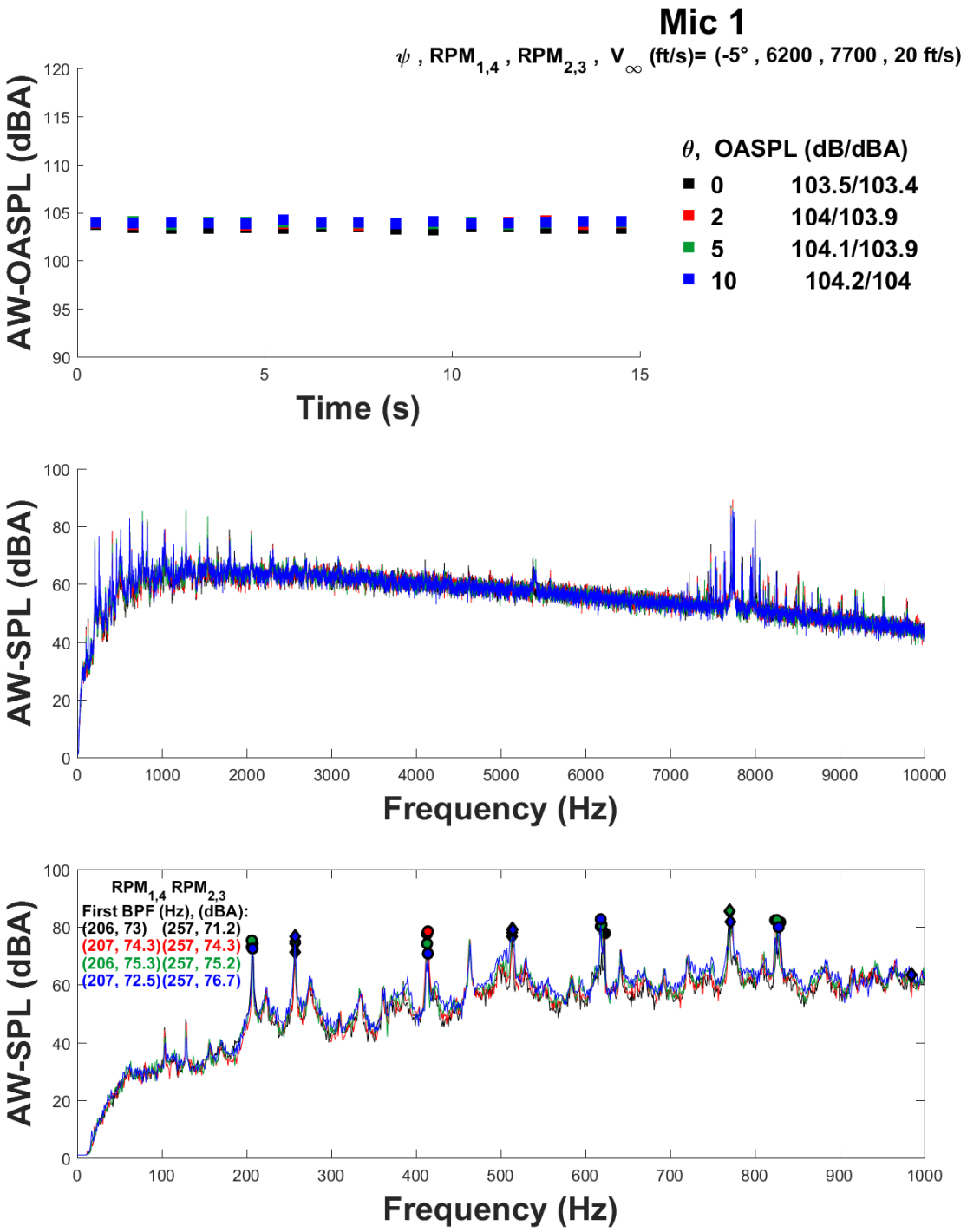

Figure E131: DAx8 microphone 1: Pitch sweep ψ = -5°, V_∞ = 20 ft/s, $RPM_{1,4}$ = 6,200, $RPM_{2,3}$ = 7,700

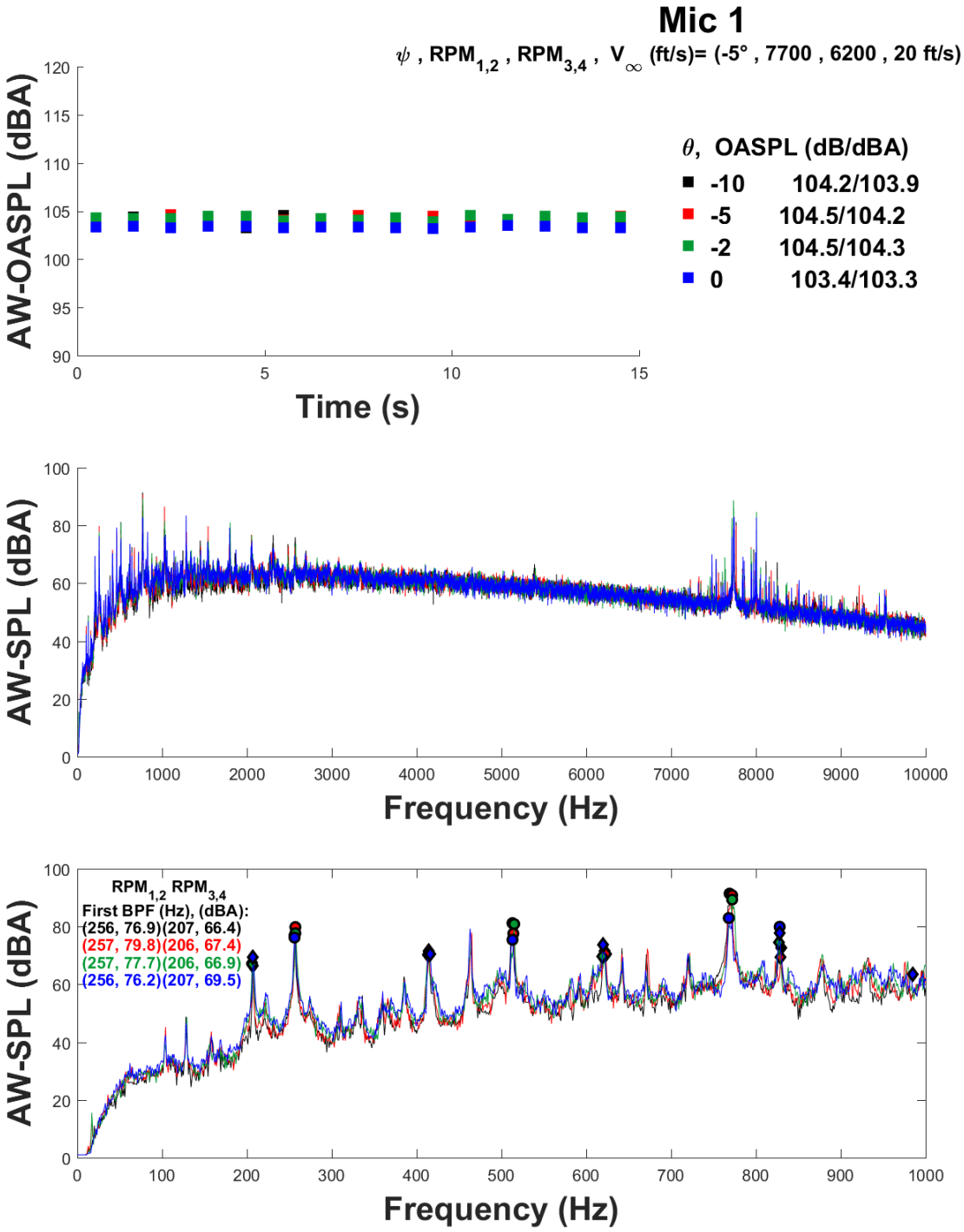

Figure E132: DAx8 microphone 1: Negative pitch sweep ψ = -5°, V_∞ = 20 ft/s, $RPM_{1,2}$ = 7,700, $RPM_{3,4}$ = 6,200

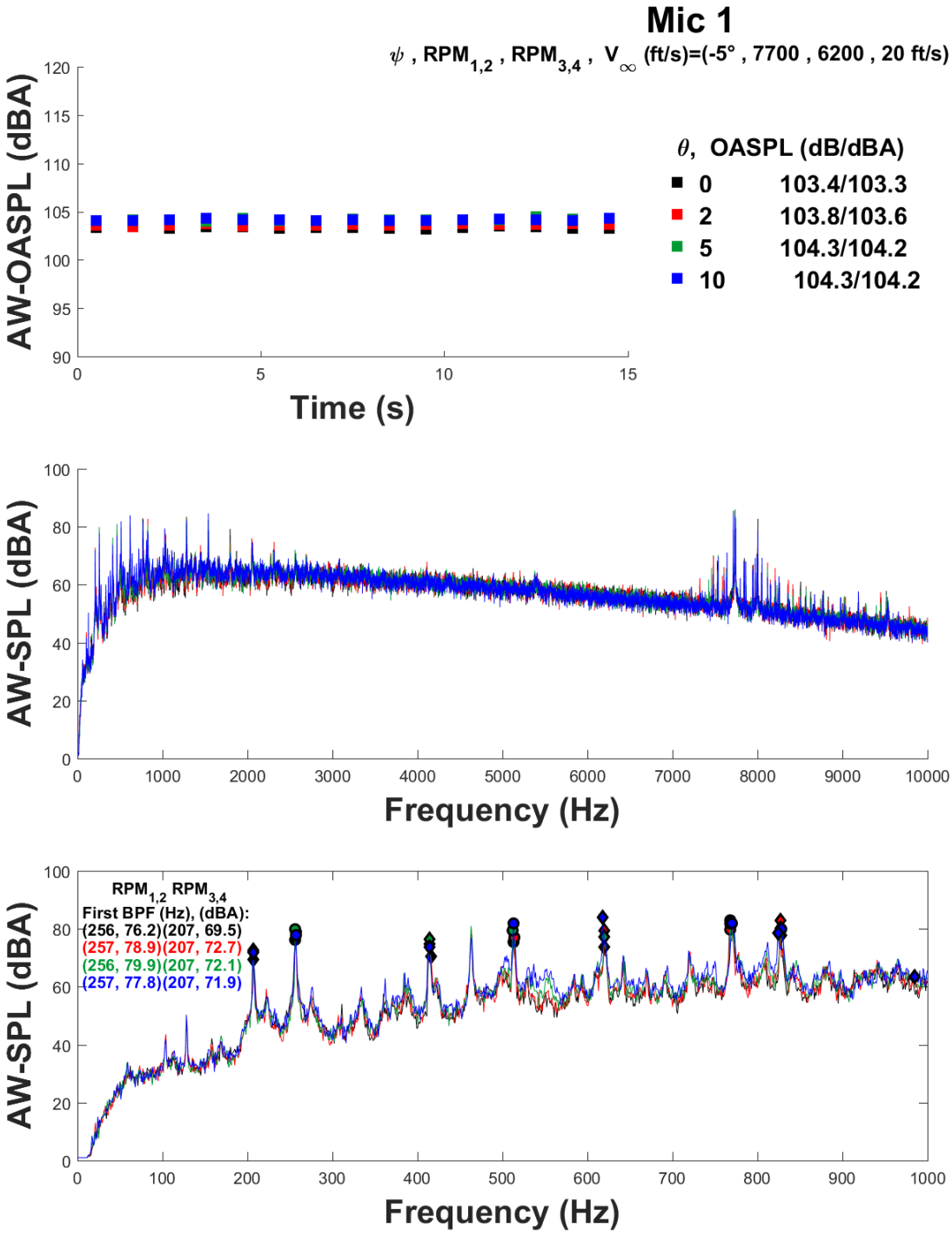

Figure E133: DAx8 microphone 1: Positive pitch sweep ψ = -5°, V_∞ = 20 ft/s, $RPM_{1,2}$ = 7,700, $RPM_{3,4}$ = 6,200

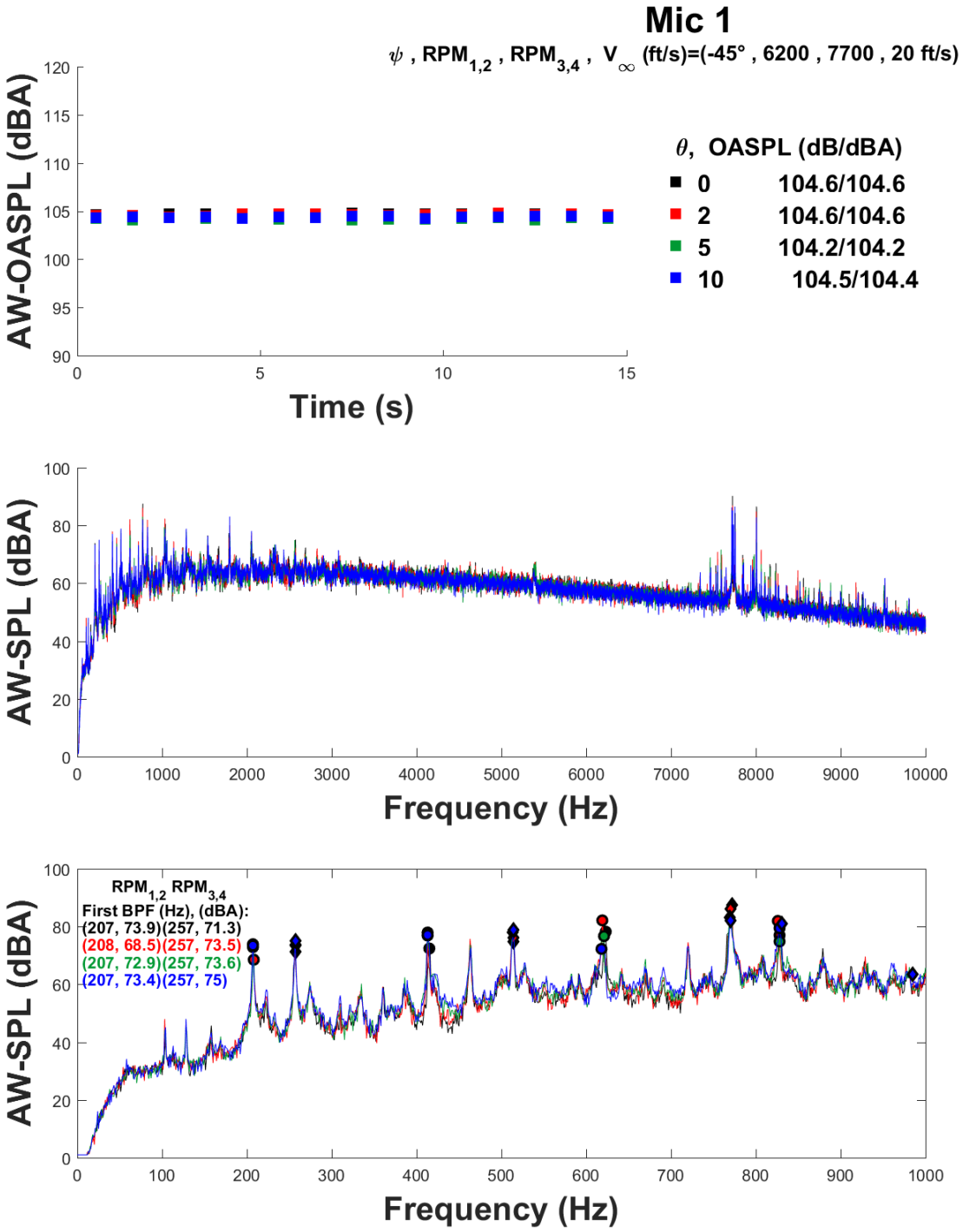

Figure E134: DAx8 microphone 1: Positive pitch sweep ψ = -45°, V_∞ = 20 ft/s, $RPM_{1,2}$ = 6,200, $RPM_{3,4}$ = 7,700

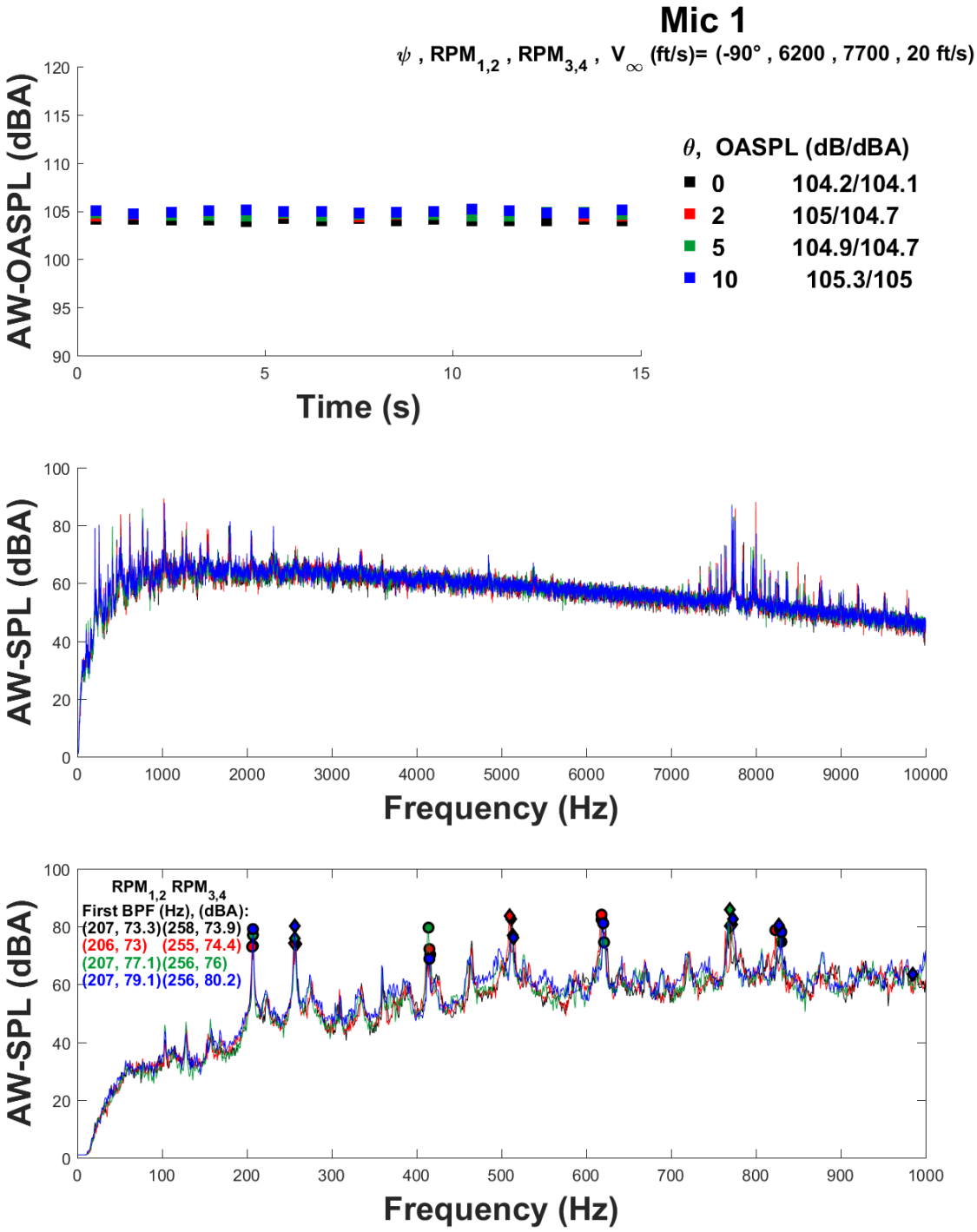

Figure E135: DAx8 microphone 1: Positive pitch sweep ψ = -90°, V_∞ = 20 ft/s, $RPM_{1,2}$ = 6,200, $RPM_{3,4}$ = 7,700

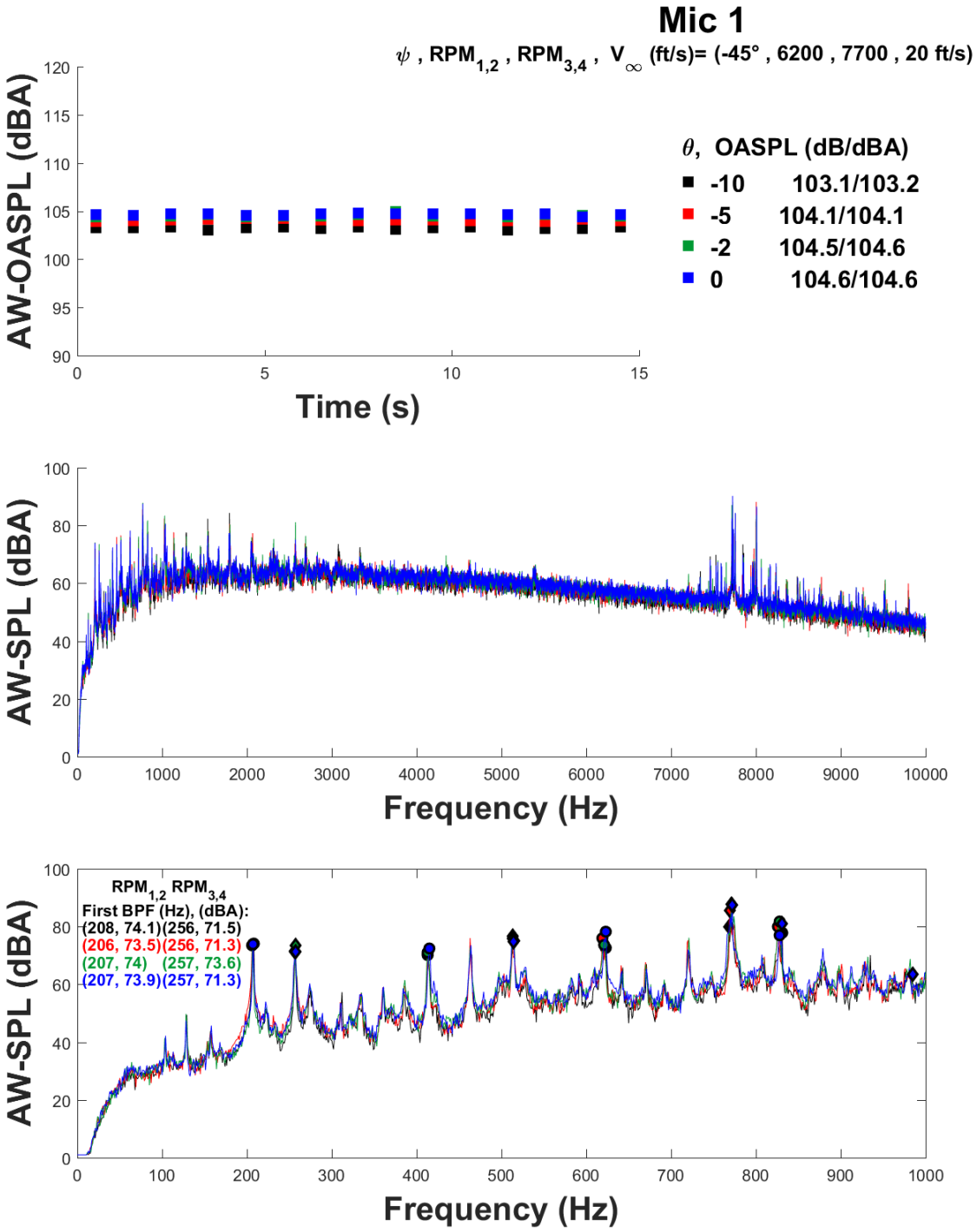

Figure E136: DAx8 microphone 1: Negative pitch sweep ψ = -45°, V_∞ = 20 ft/s, $RPM_{1,2}$ = 6,200, $RPM_{3,4}$ = 7,700

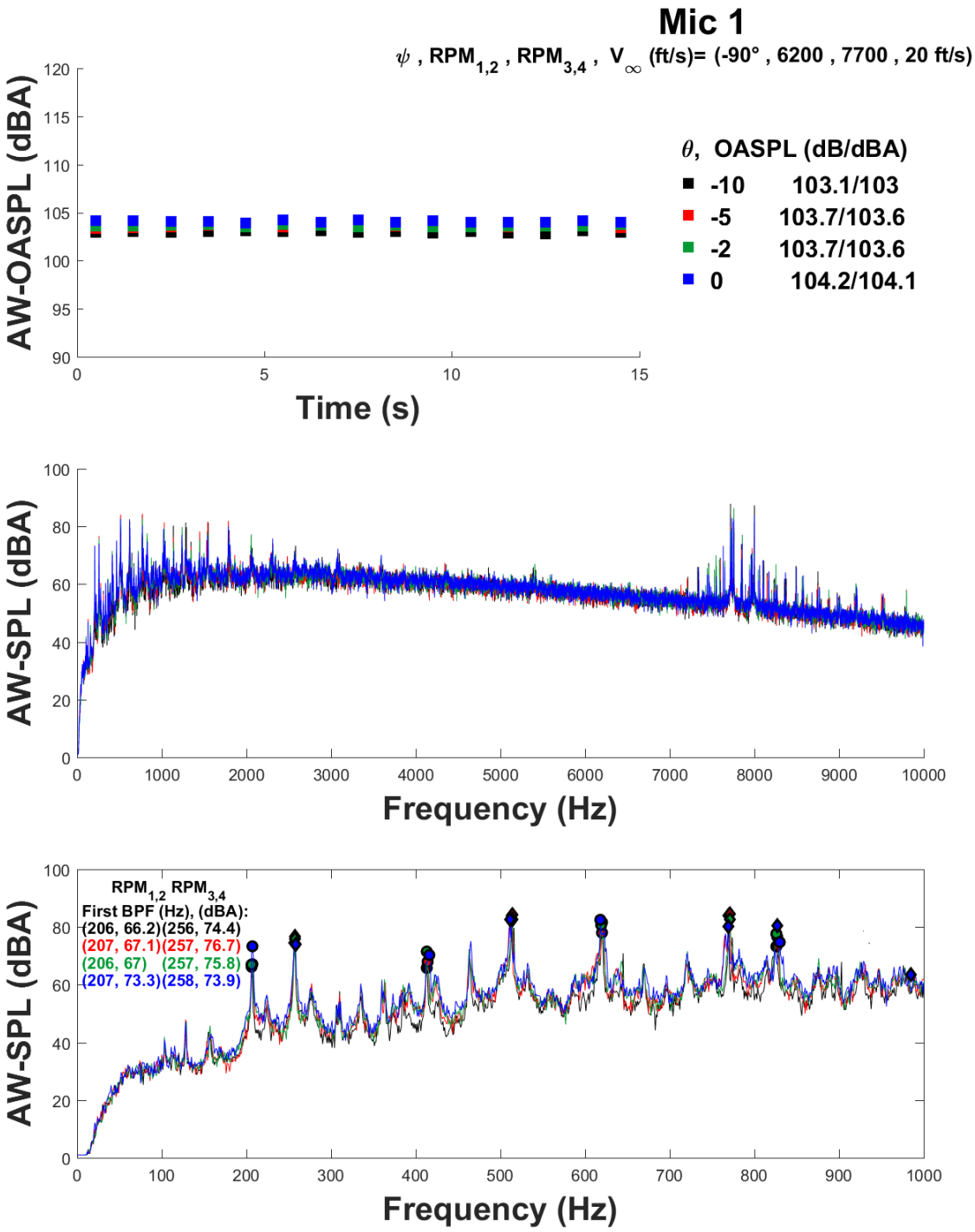

Figure E137: DAx8 microphone 1: Negative pitch sweep ψ = -90°, V_∞ = 20 ft/s, $RPM_{1,2}$ = 6,200, $RPM_{3,4}$ = 7,700

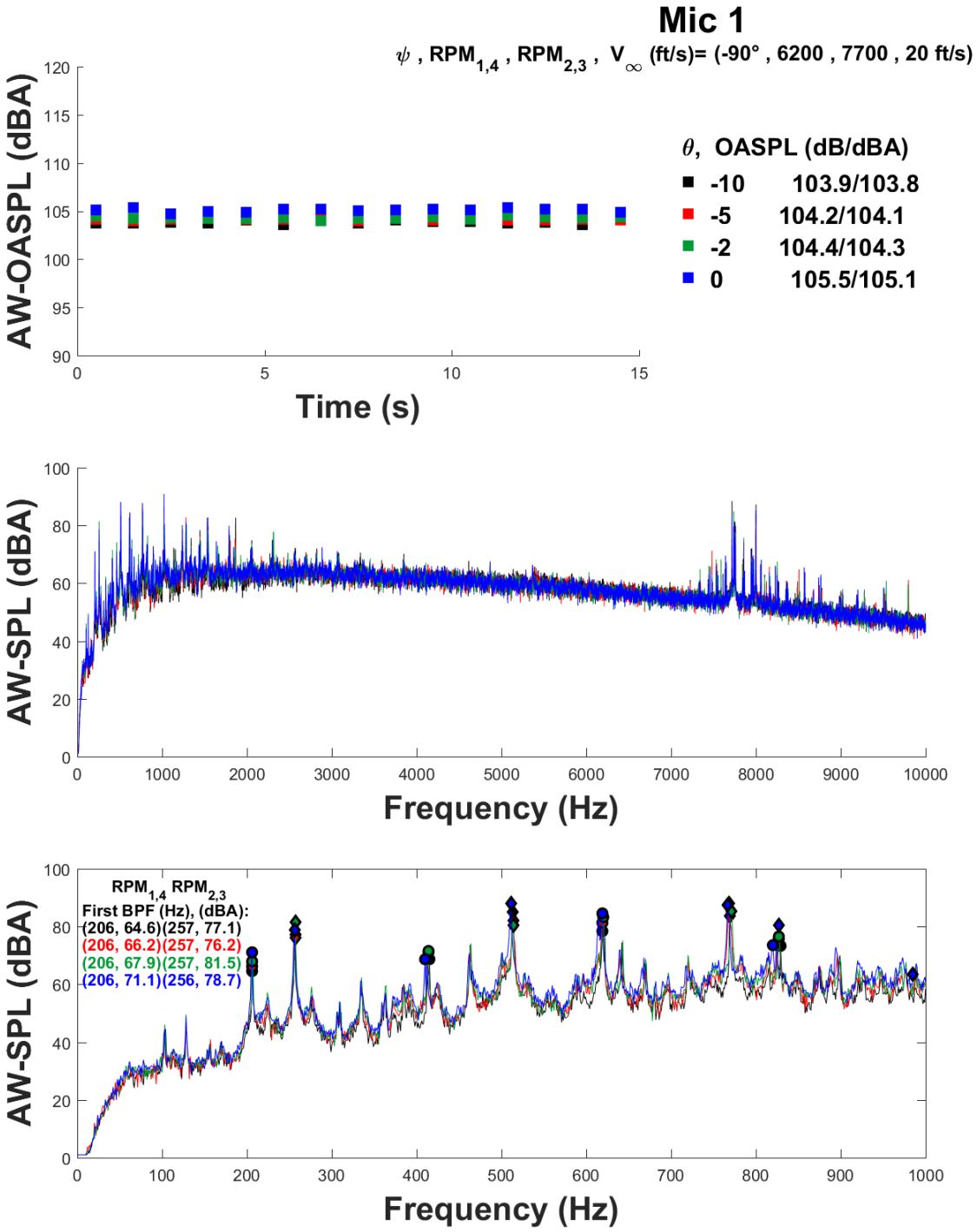

Figure E138: DAx8 microphone 1: Pitch sweep ψ = -90°, V_∞ = 20 ft/s, $RPM_{1,4}$ = 6,200, $RPM_{2,3}$ = 7,700

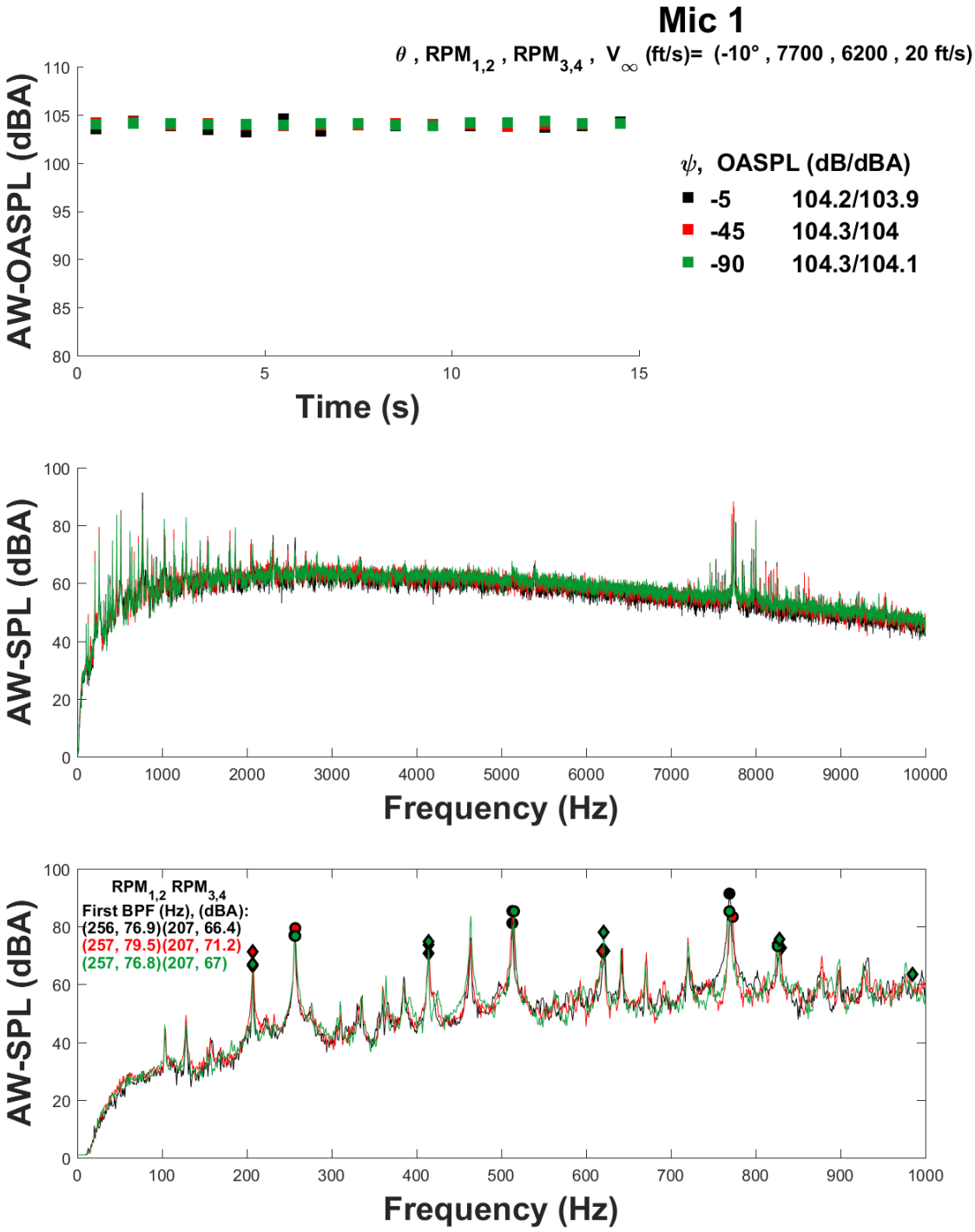

Figure E139: DAx8 microphone 1: Yaw sweep V_∞ = 20 ft/s, θ = -10°, $RPM_{1,2}$ = 7,700, $RPM_{3,4}$ = 6,200

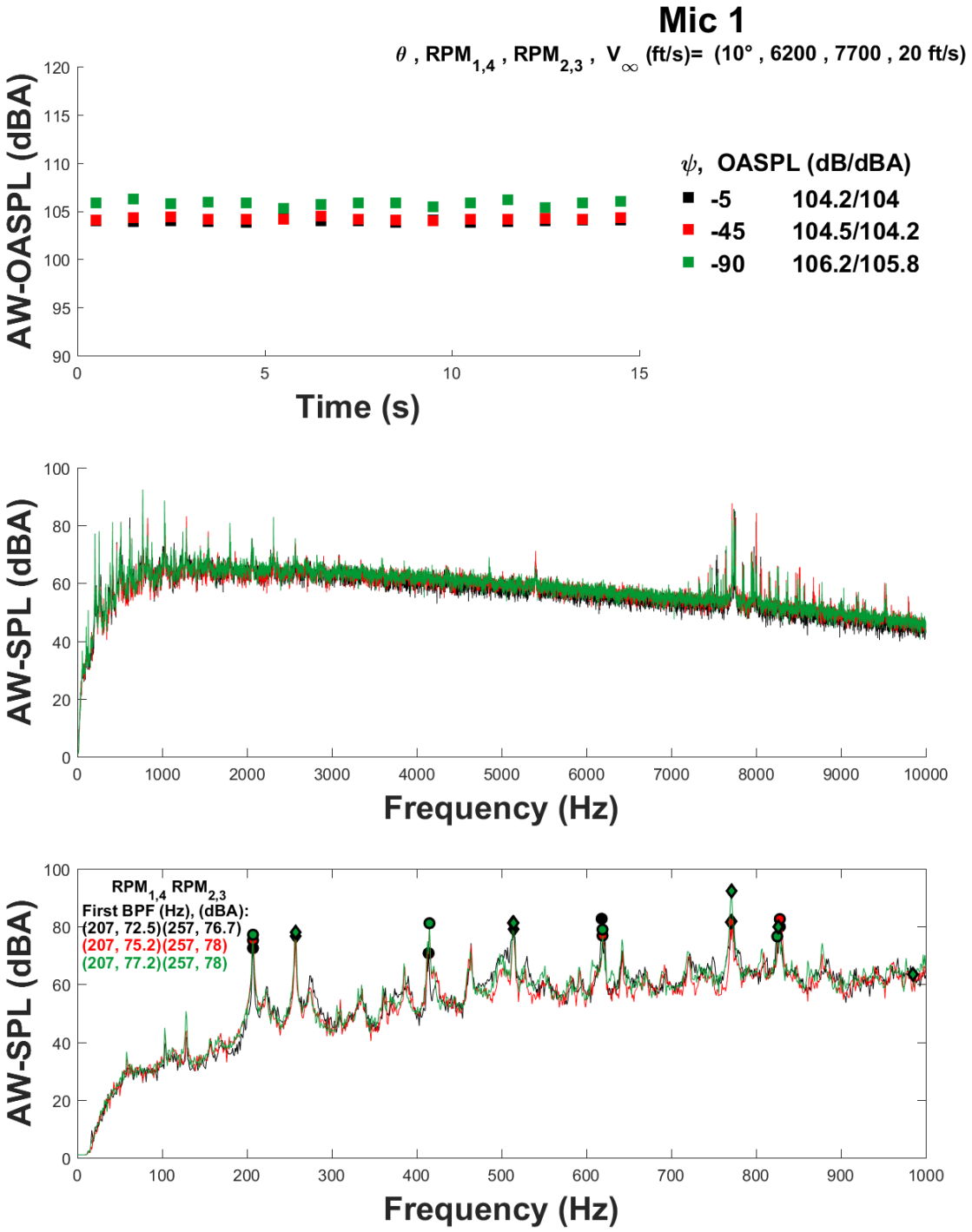

Figure E140: DAx8 microphone 1: Yaw sweep V_∞ = 20 ft/s, $\theta = 10°$, $RPM_{1,4}$ = 6,200, $RPM_{2,3}$ = 7,700

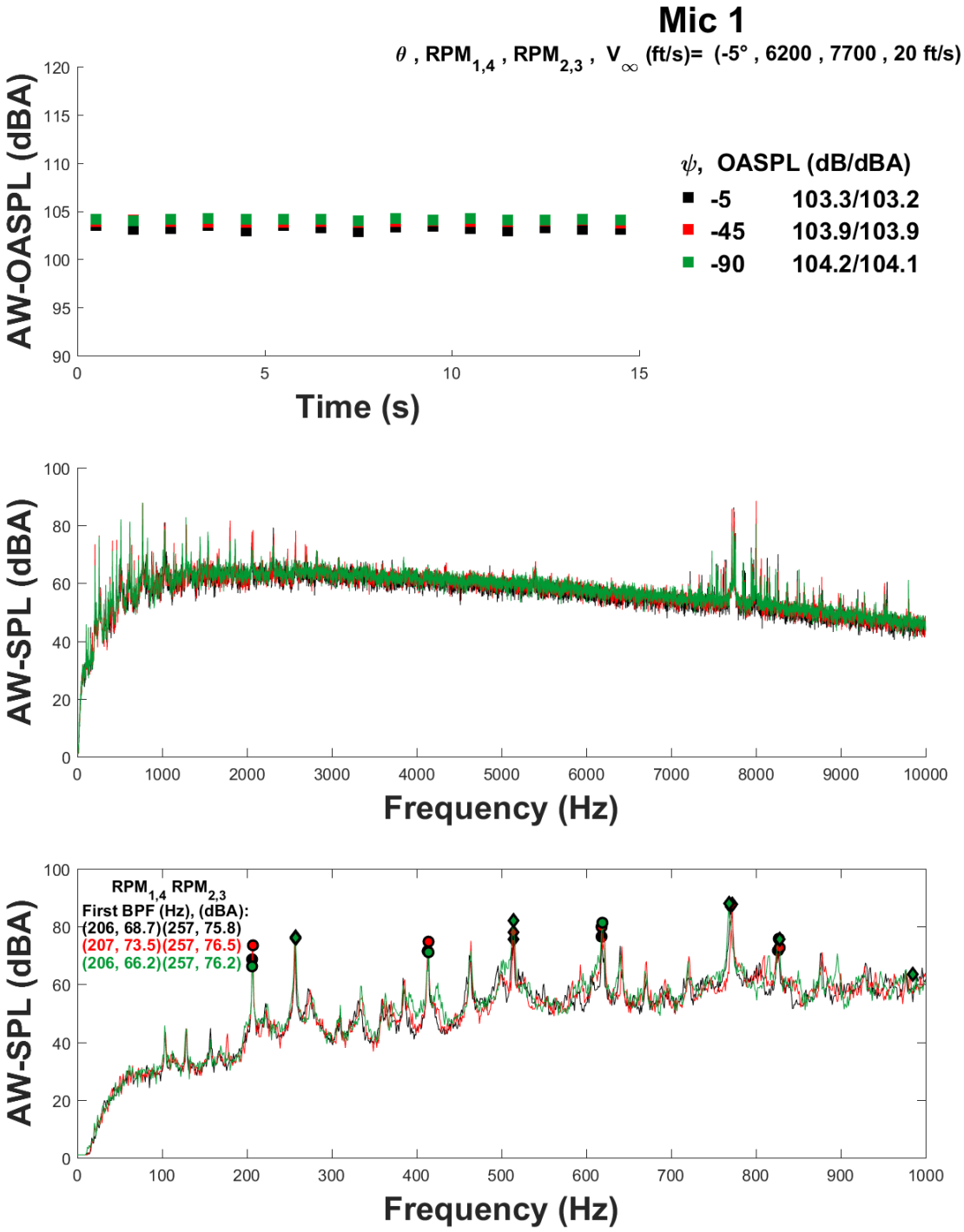

Figure E141: DAx8 microphone 1: Yaw sweep V_∞ = 20 ft/s, θ = -5°, $RPM_{1,4}$ = 6,200, $RPM_{2,3}$ = 7,700

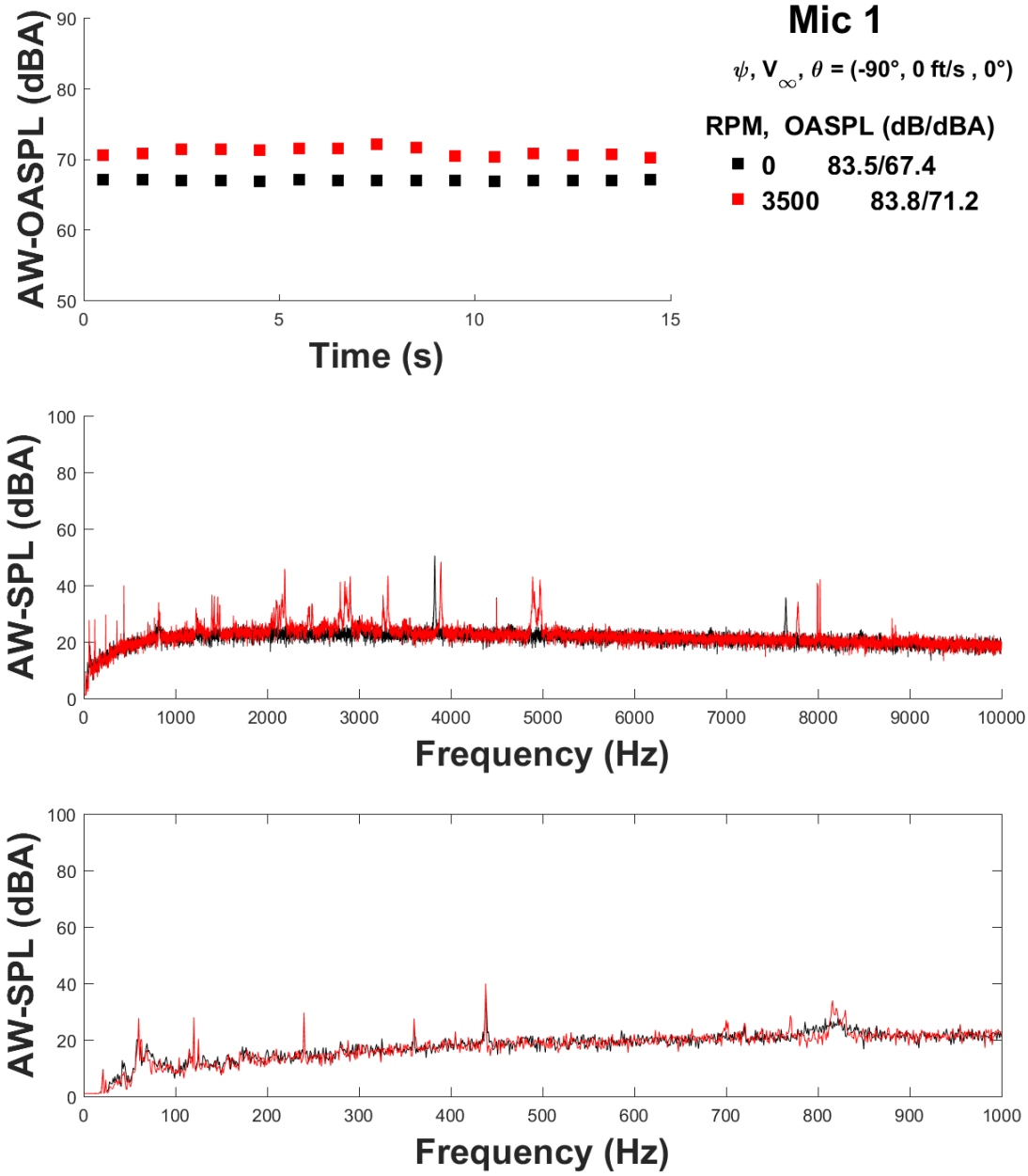

Figure E142: SUI Bare Airframe microphone 1: RPM sweep ψ = -90°, V_∞ = 0 ft/s, θ = 0°

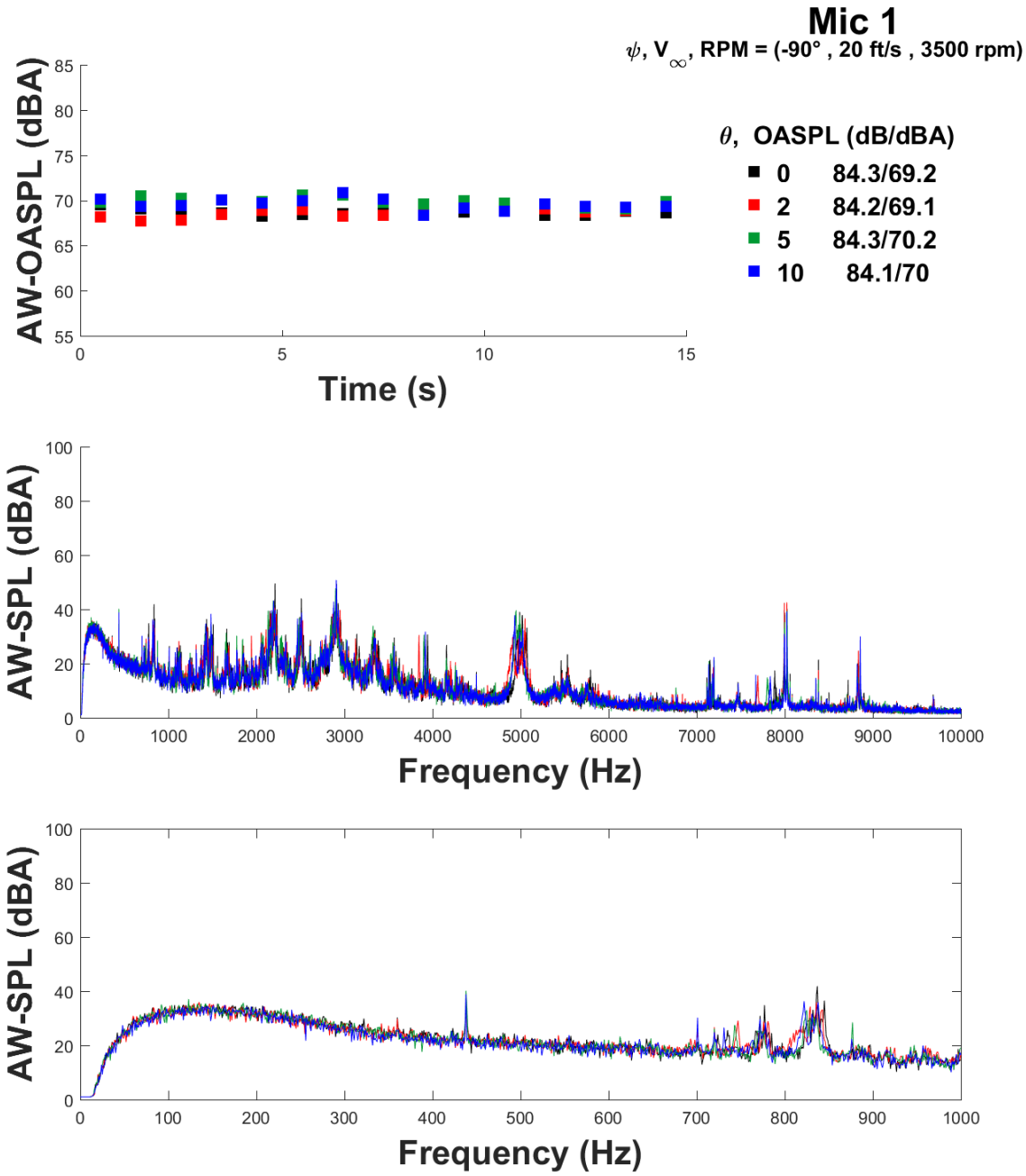

Figure E143: SUI Bare Airframe microphone 1: Pitch sweep ψ = -90°, V_∞ = 20 ft/s, RPM= 3,500

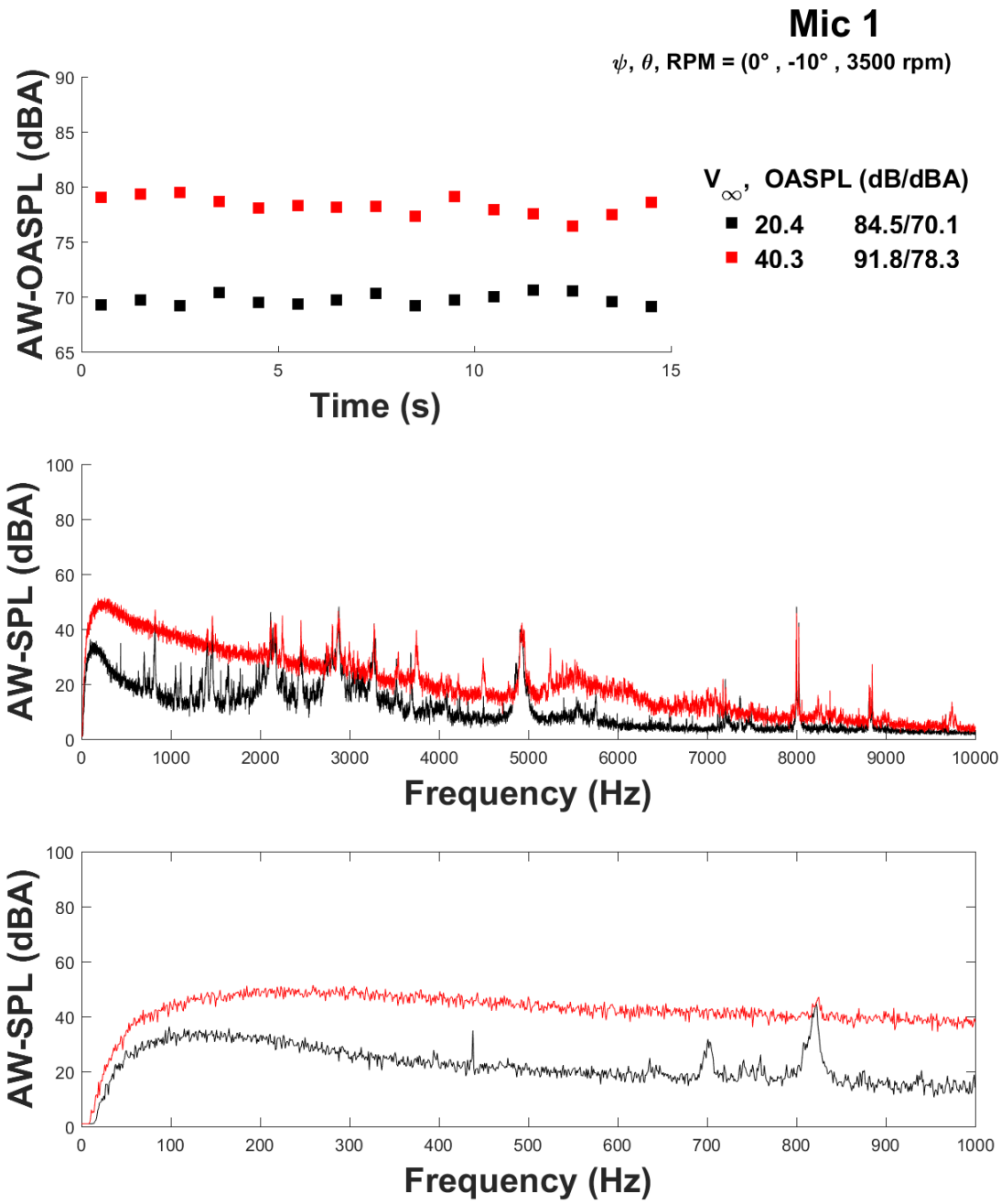

Figure E144: SUI Bare Airframe microphone 1: V_∞ sweep ψ = 0°, θ = -10°, RPM= 3,500

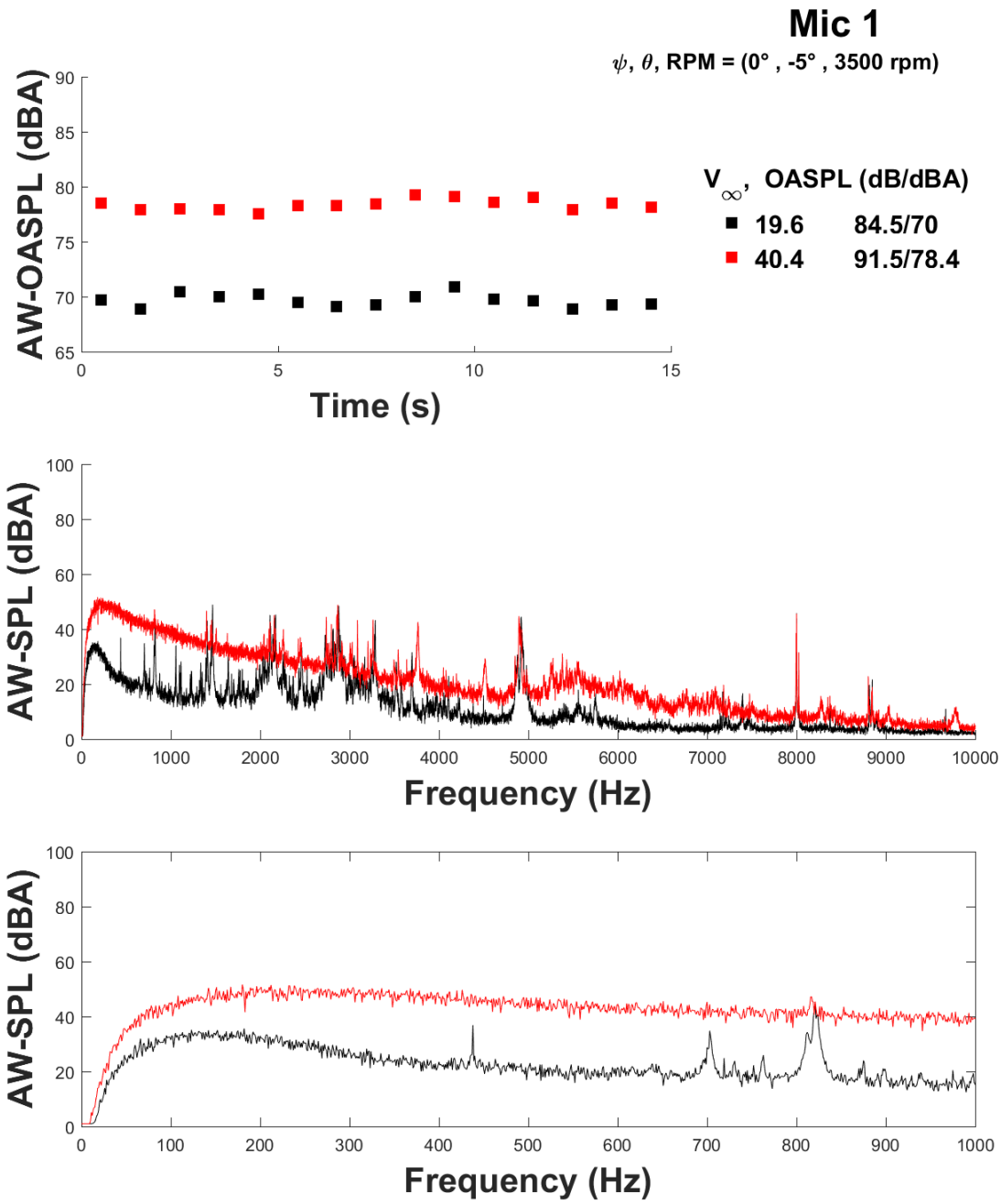

Figure E145: SUI Bare Airframe microphone 1: V_∞ sweep $\psi = 0°$, $\theta =$ -5°, RPM= 3,500

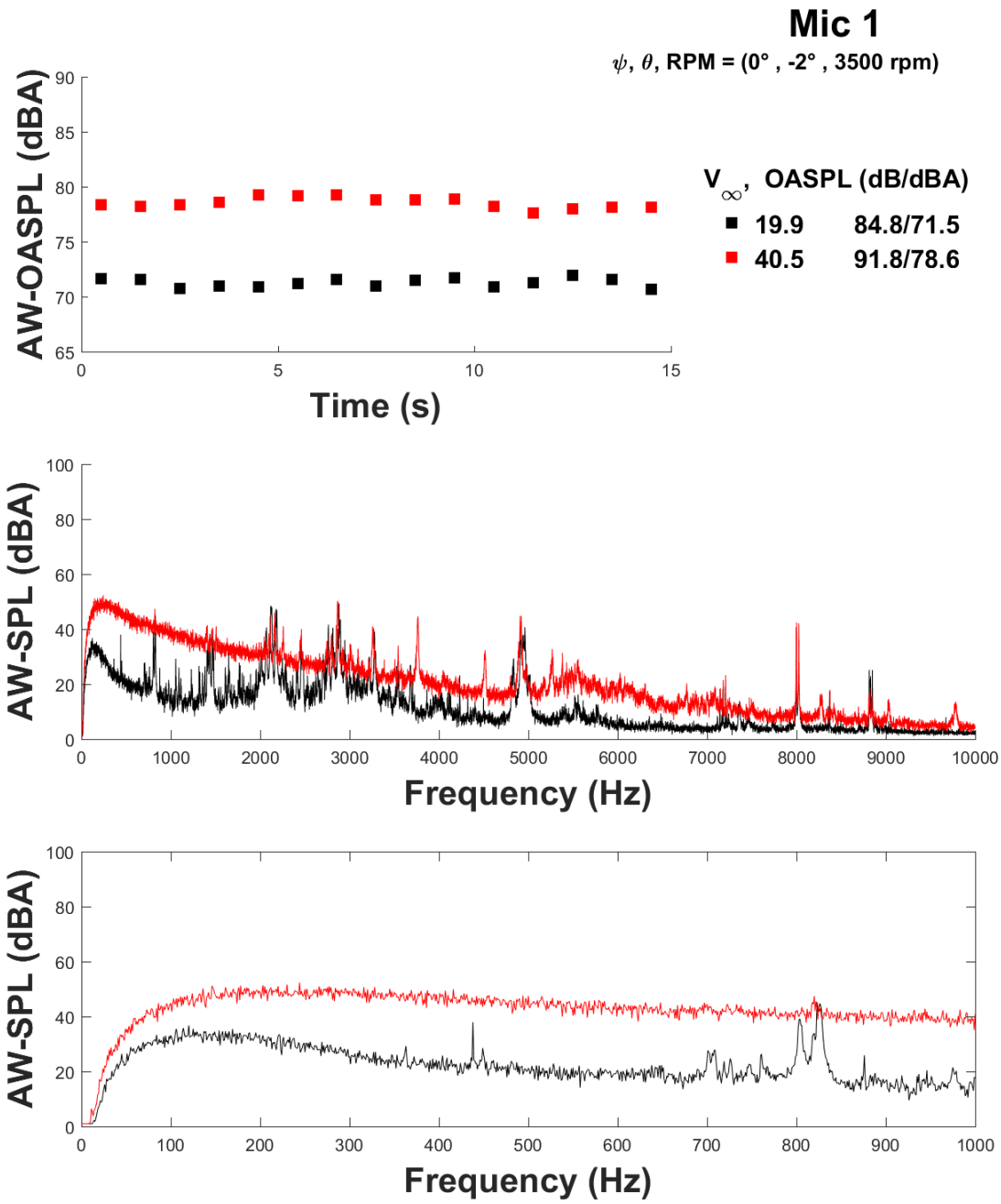

Figure E146: SUI Bare Airframe microphone 1: V_∞ sweep $\psi = 0°$, θ = -2°, RPM= 3,500

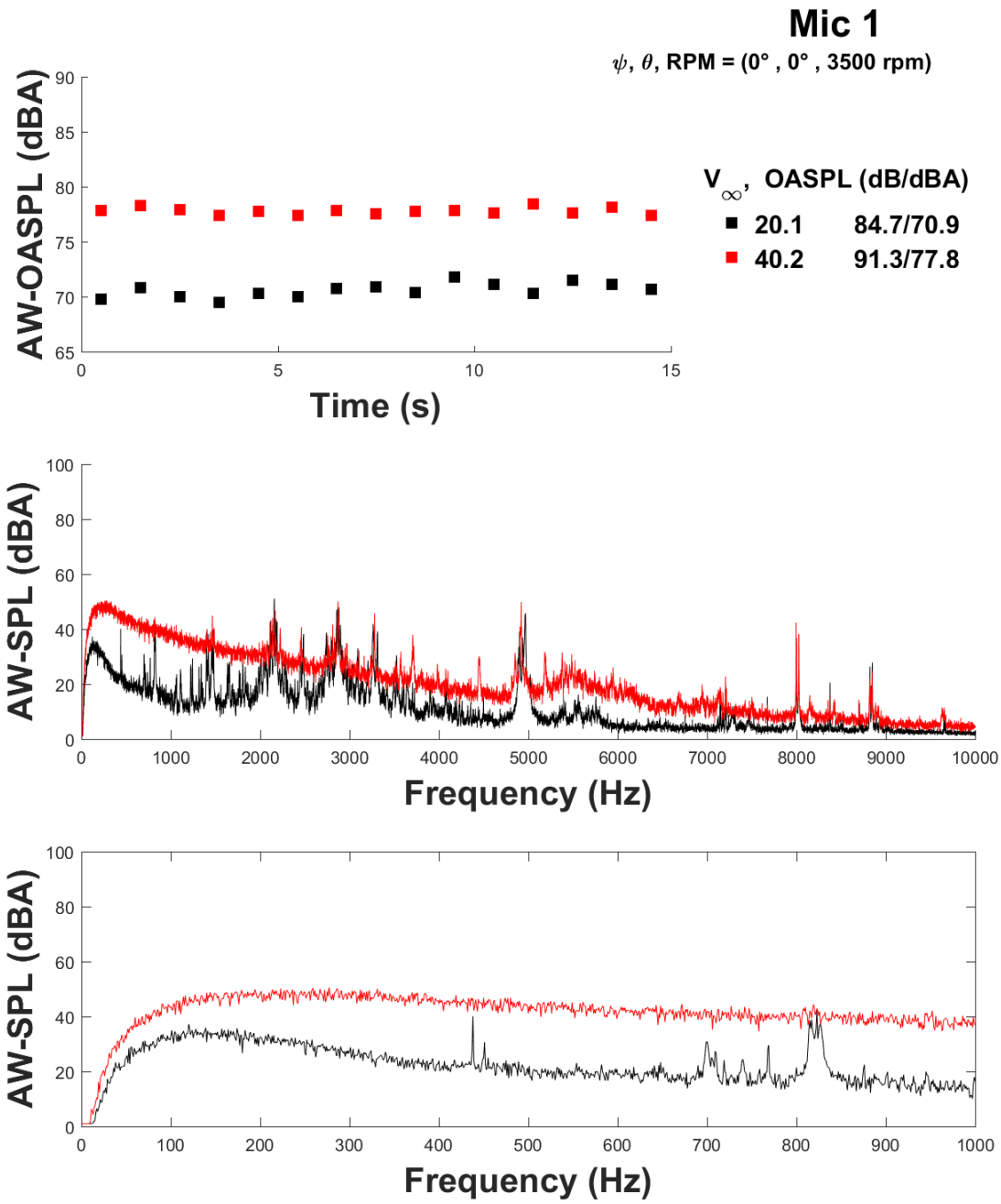

Figure E147: SUI Bare Airframe microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 0°$, RPM= 3,500

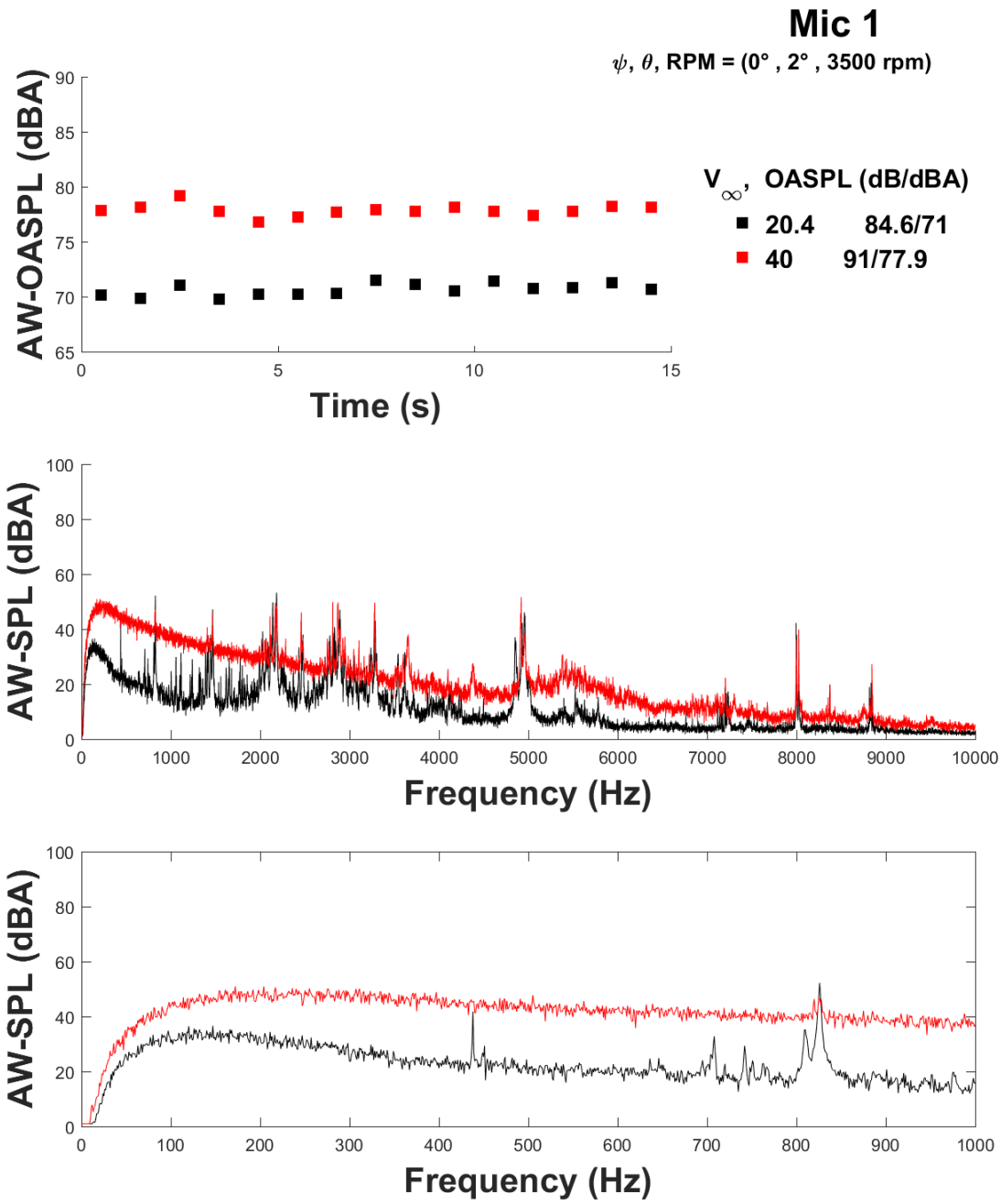

Figure E148: SUI Bare Airframe microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 2°$, RPM= 3,500

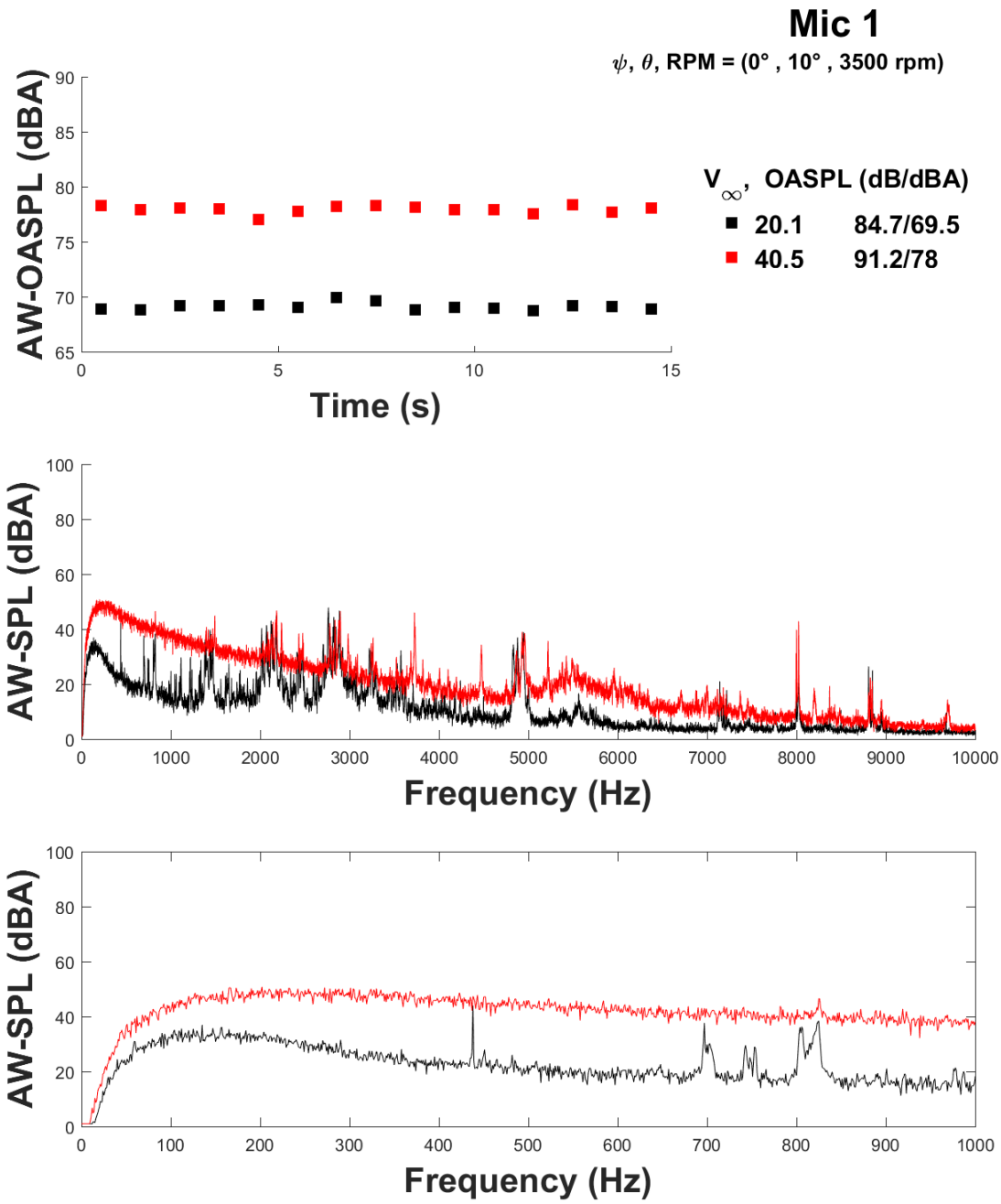

Figure E149: SUI Bare Airframe microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 10°$, RPM= 3,500

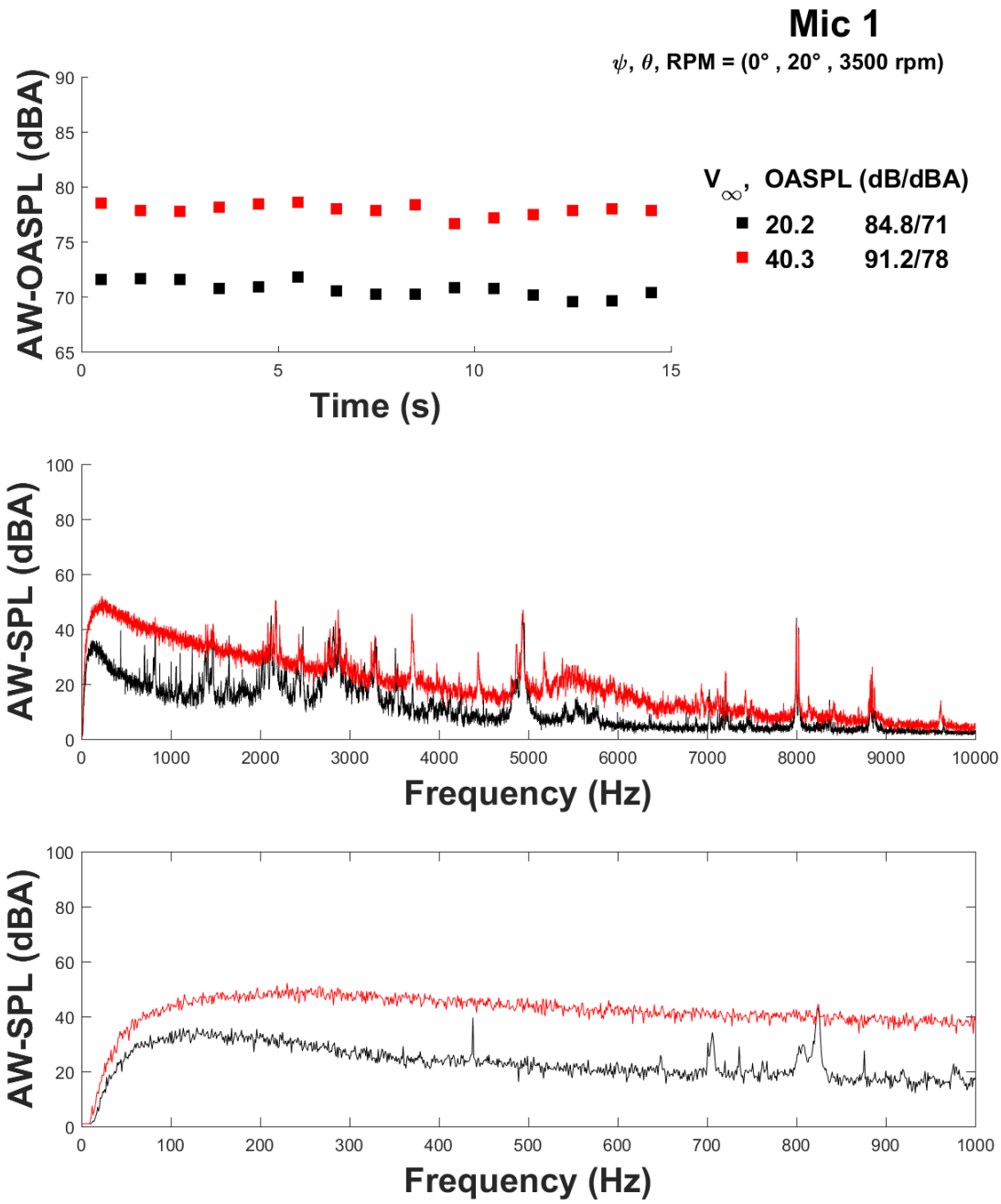

Figure E150: SUI Bare Airframe microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 20°$, RPM= 3,500

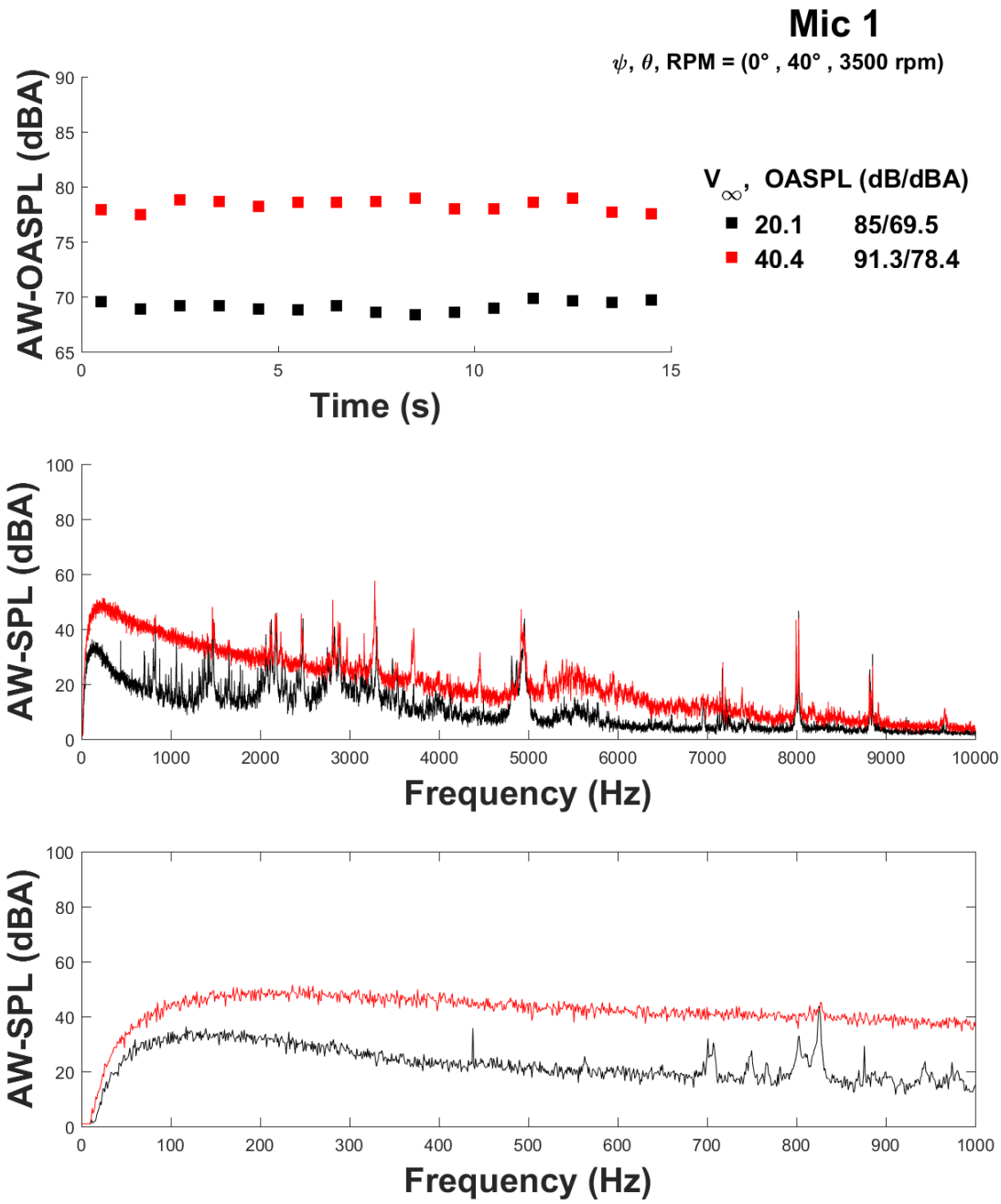

Figure E151: SUI Bare Airframe microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 40°$, RPM= 3,500

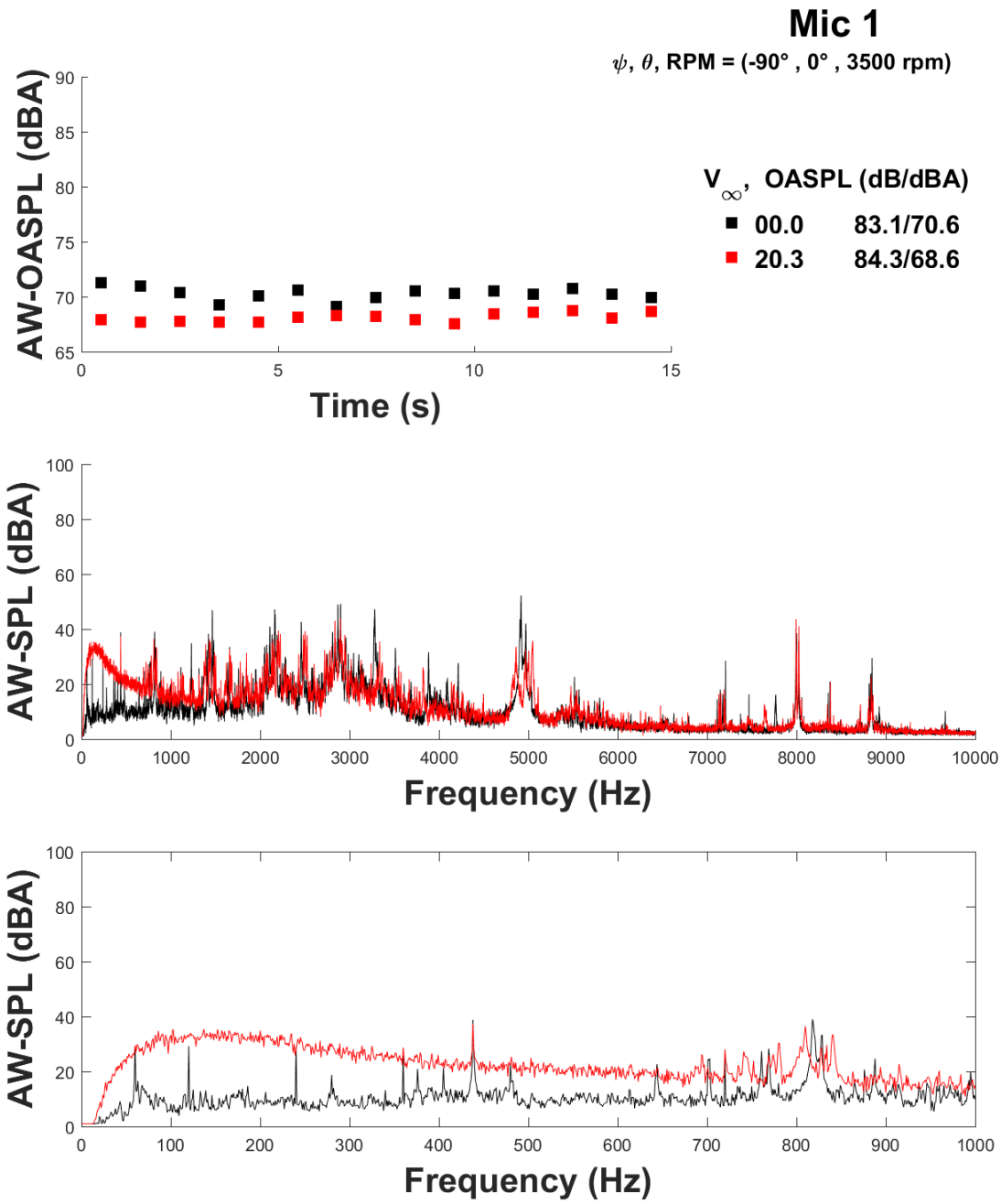

Figure E152: SUI Bare Airframe microphone 1: V_∞ sweep ψ = -90°, θ = 0°, RPM= 3,500

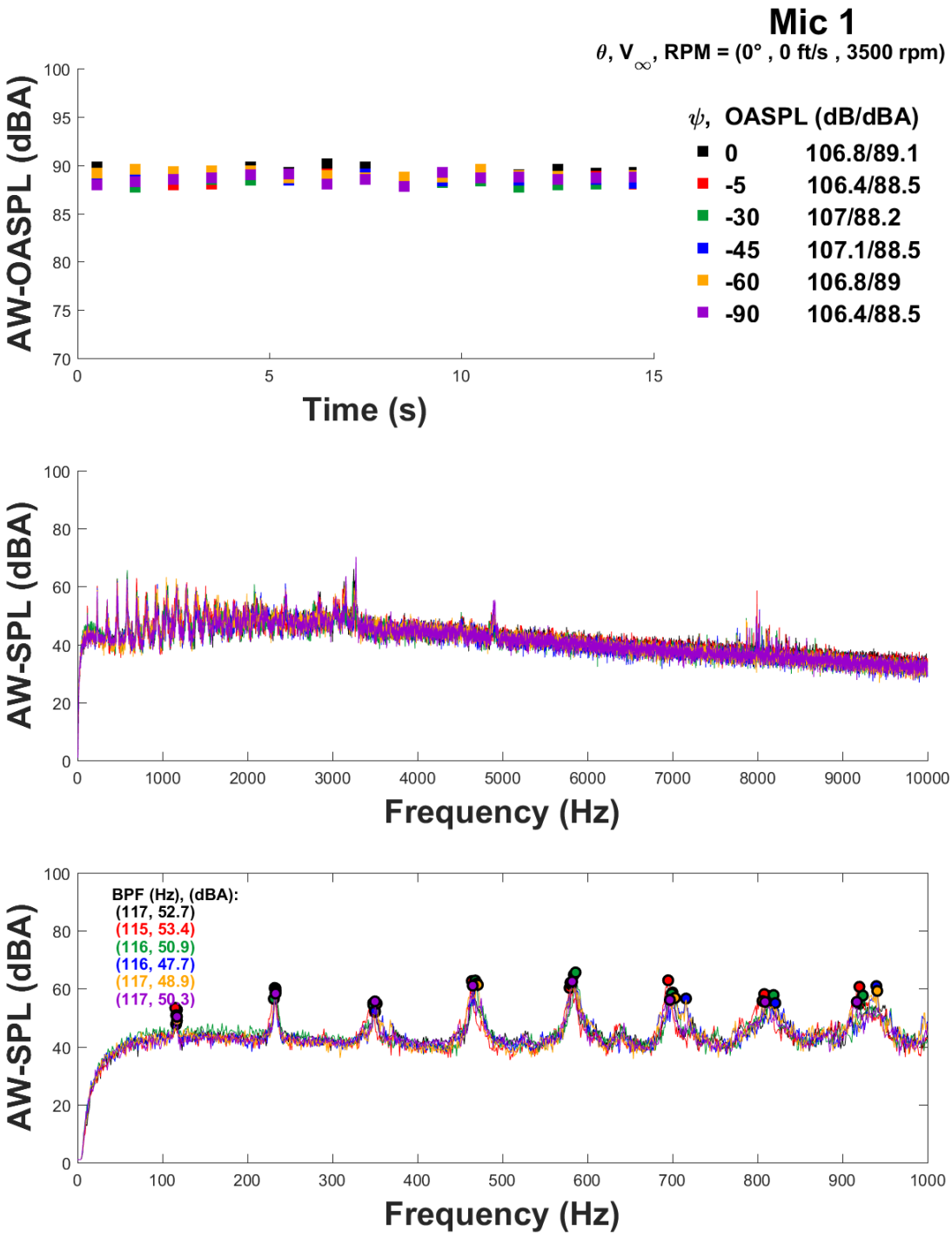

Figure E153: SUI microphone 1: Yaw sweep $V_\infty = 0$ ft/s, $\theta = 0°$, RPM= 3,500

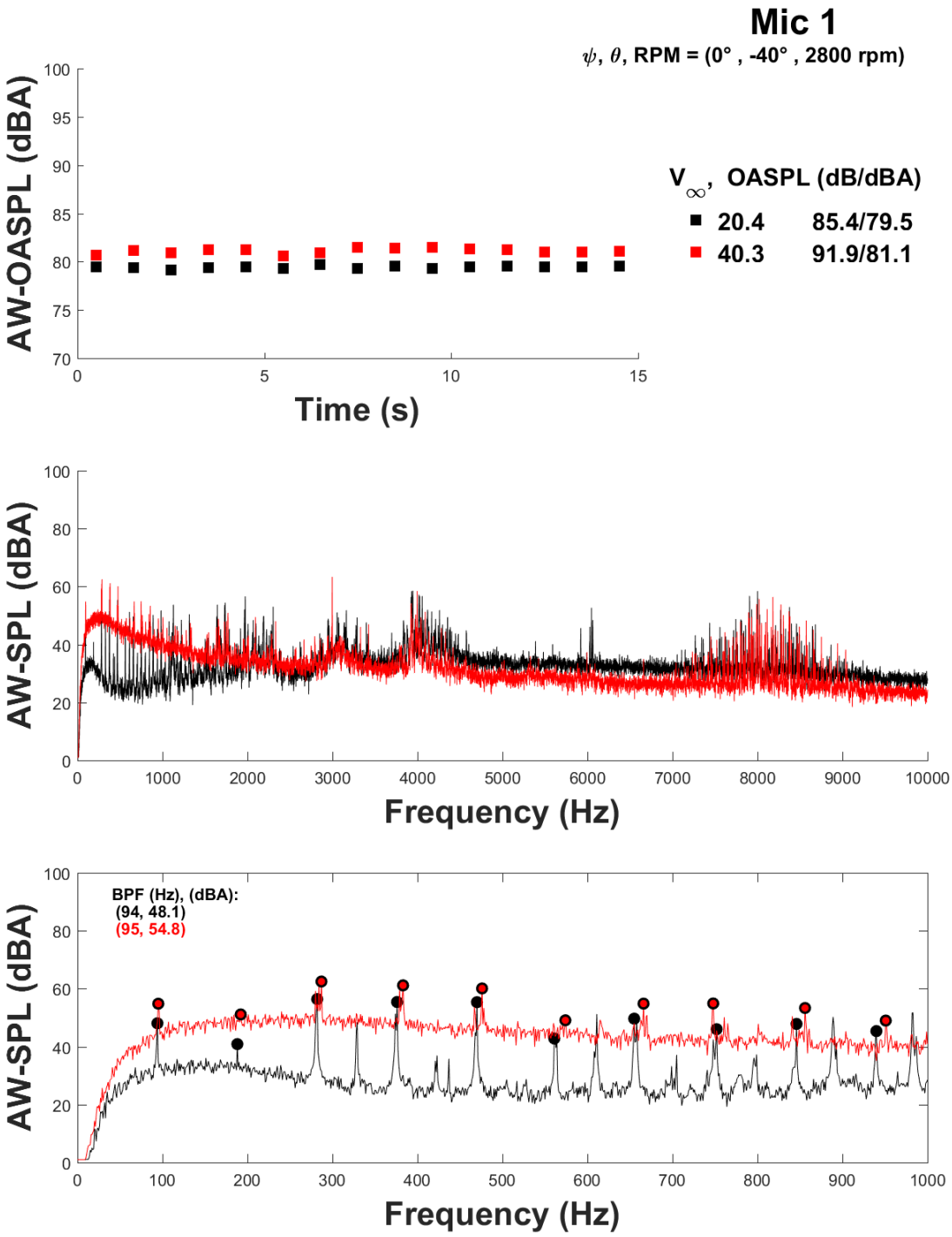

Figure E154: SUI microphone 1: V_∞ sweep ψ = 0°, θ = -40°, RPM= 2,800

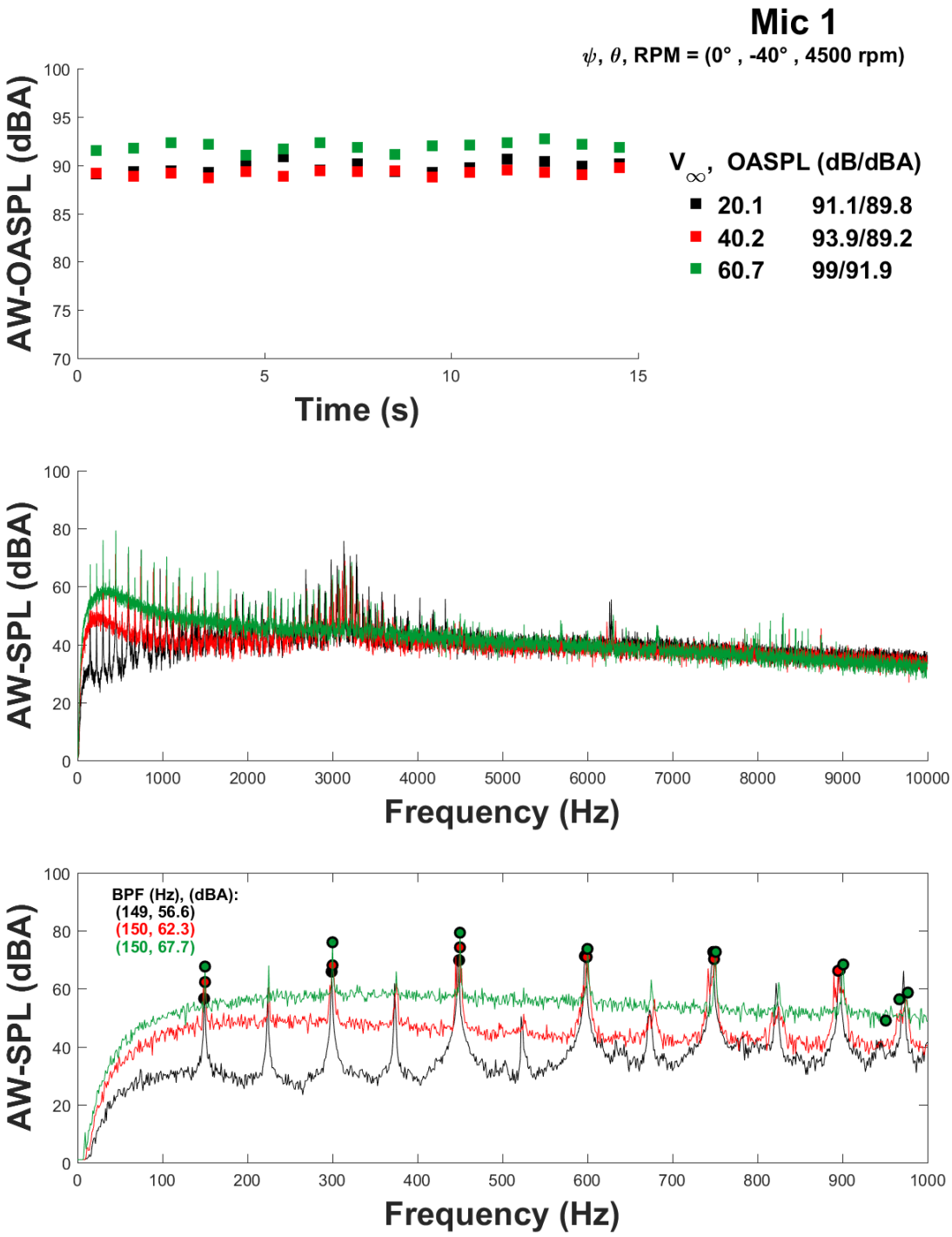

Figure E155: SUI microphone 1: V_∞ sweep ψ = 0°, θ = -40°, RPM= 4,500

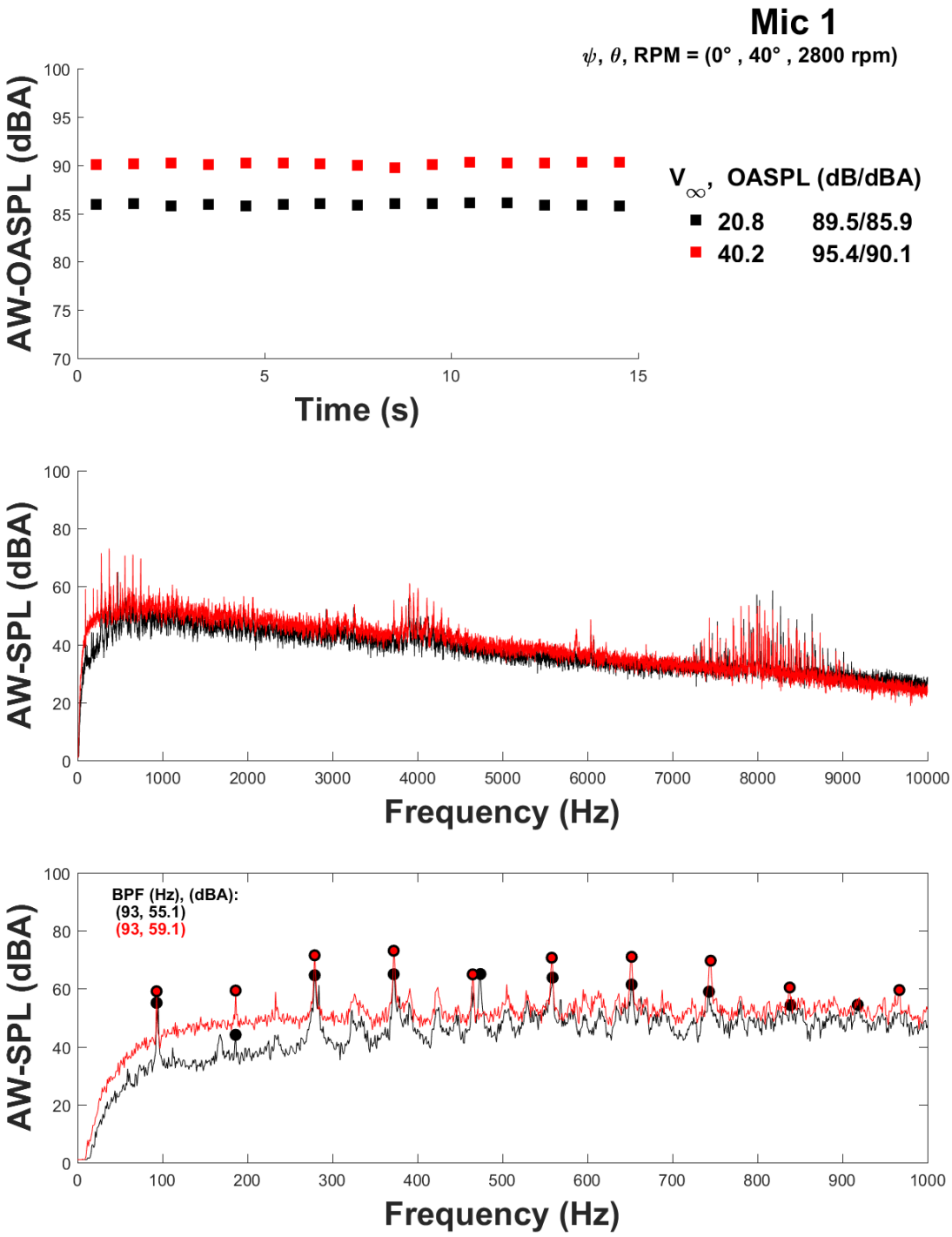

Figure E156: SUI microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 40°$, RPM= 2,800

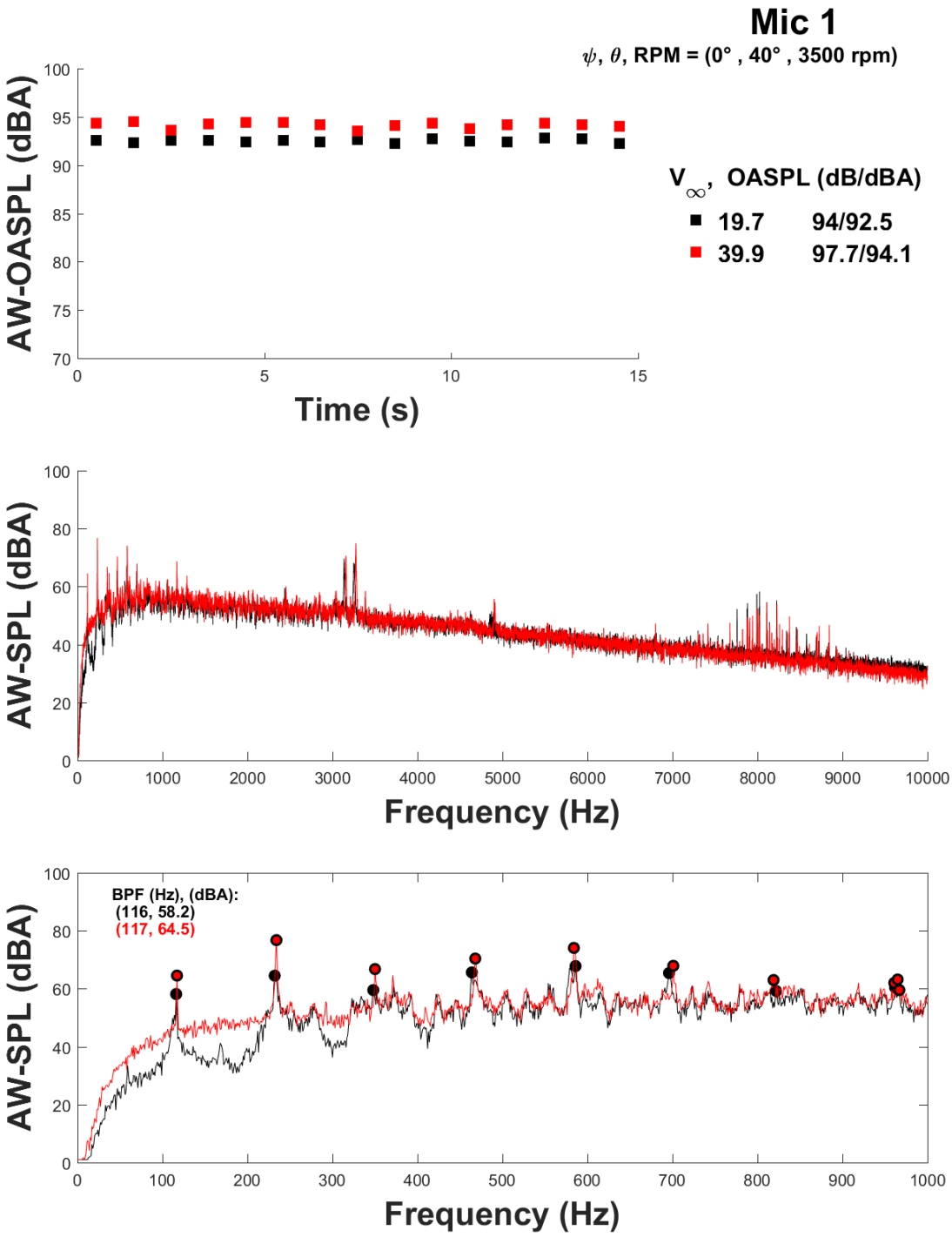

Figure E157: SUI microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 40°$, RPM= 3,500

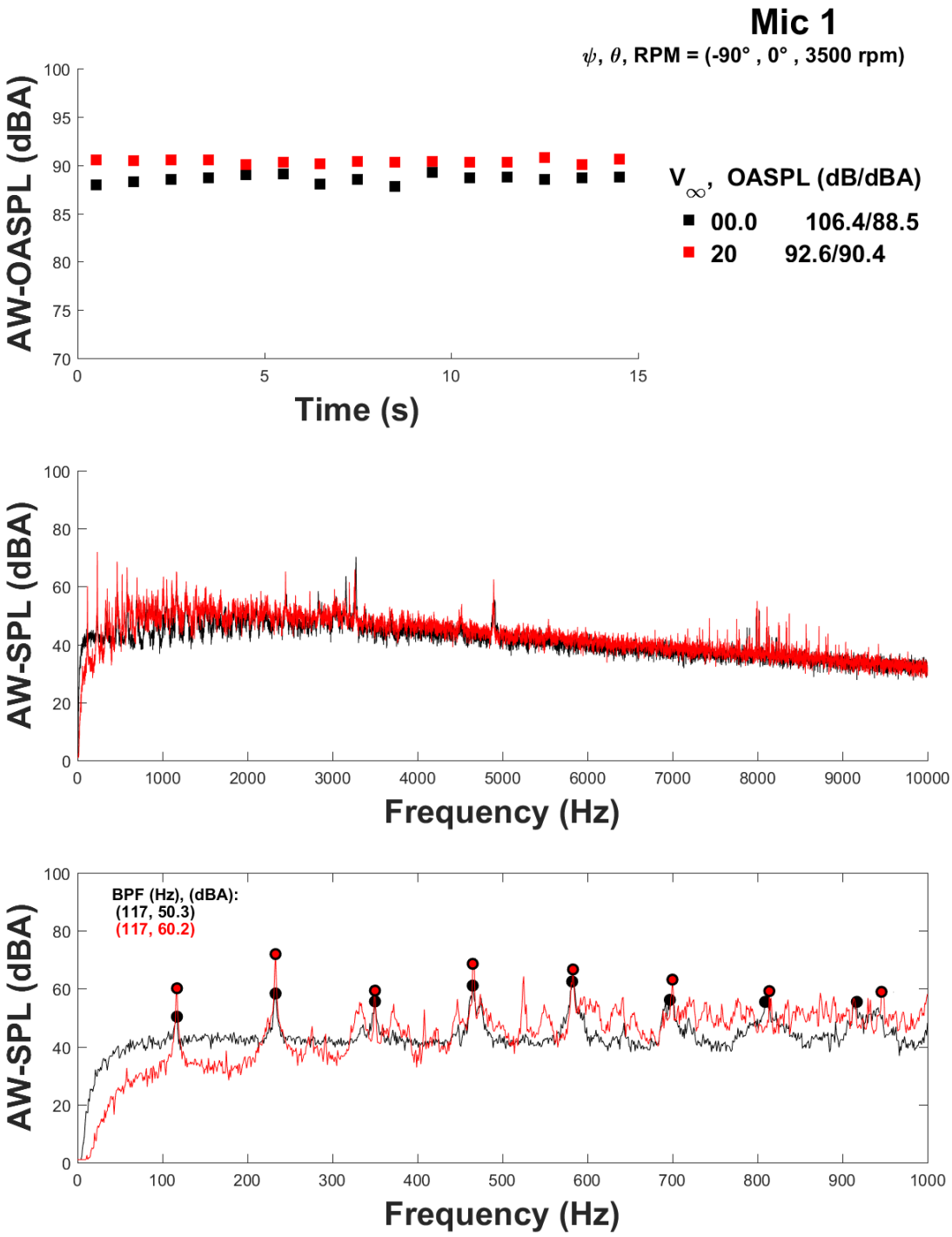

Figure E158: SUI microphone 1: V_∞ sweep ψ = -90°, θ = 0°, RPM= 3,500

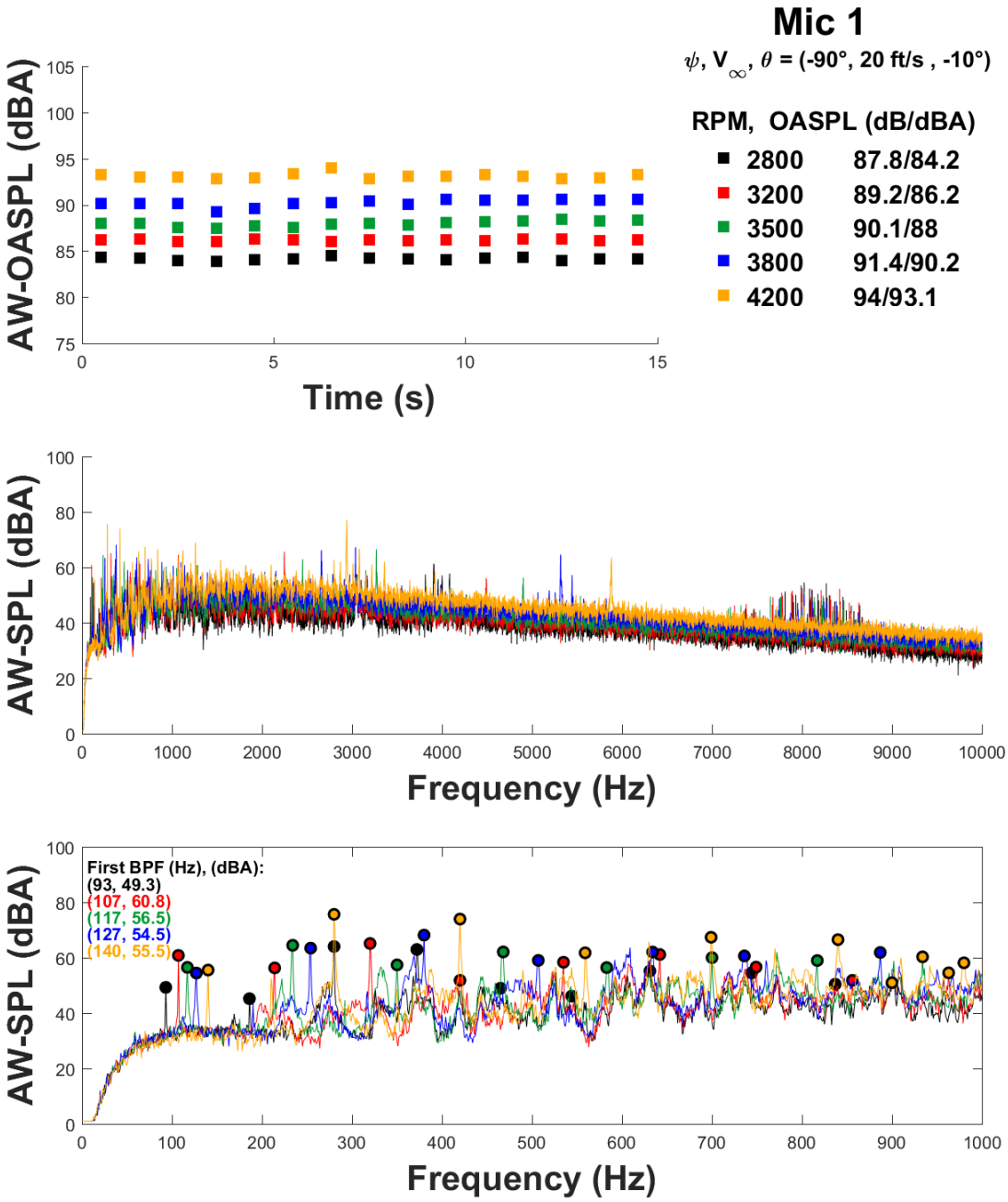

Figure E159: SUI microphone 1: RPM sweep ψ = -90°, V_∞ = 20 ft/s, θ = -10°

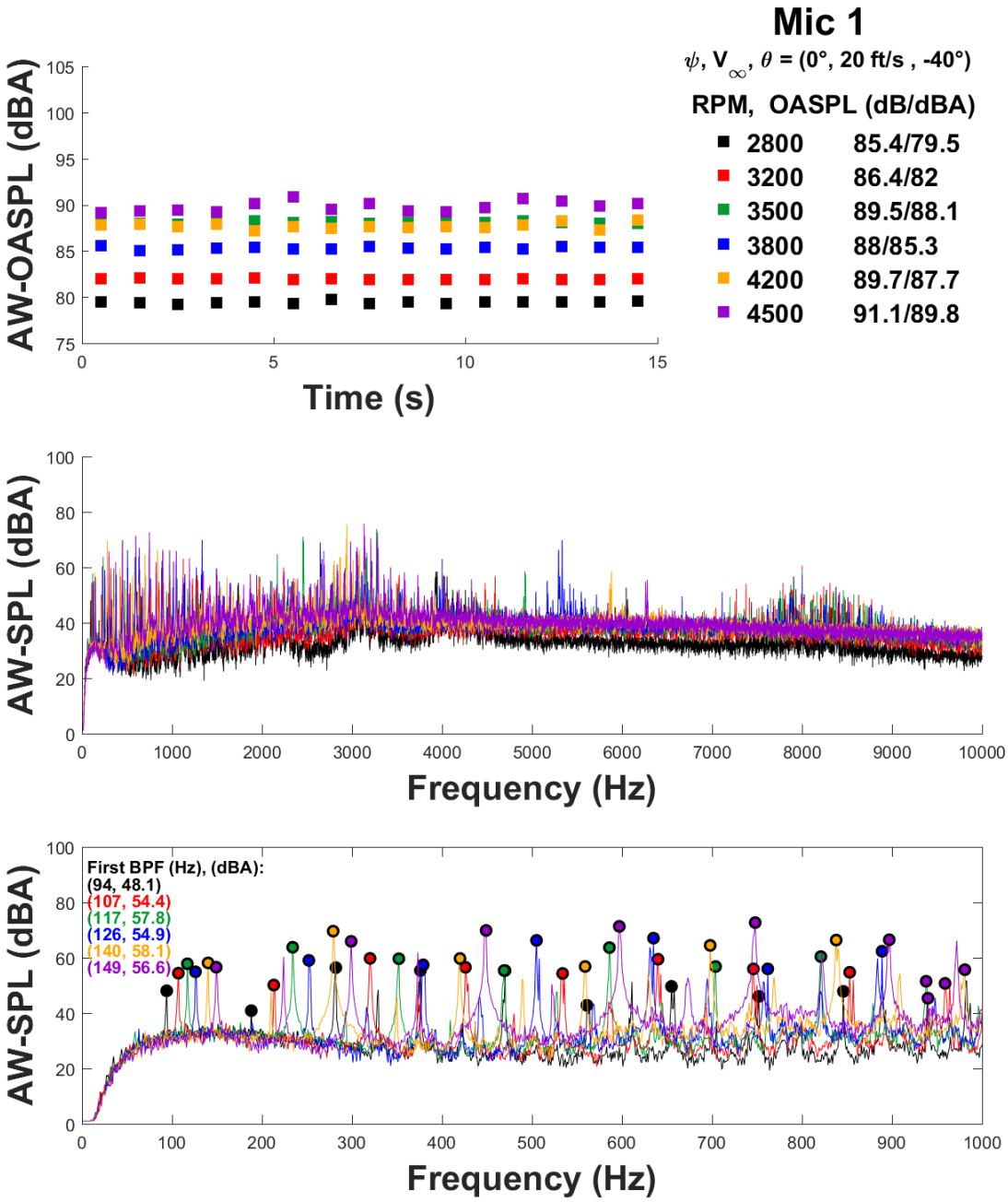

Figure E160: SUI microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 20$ ft/s, θ = -40°

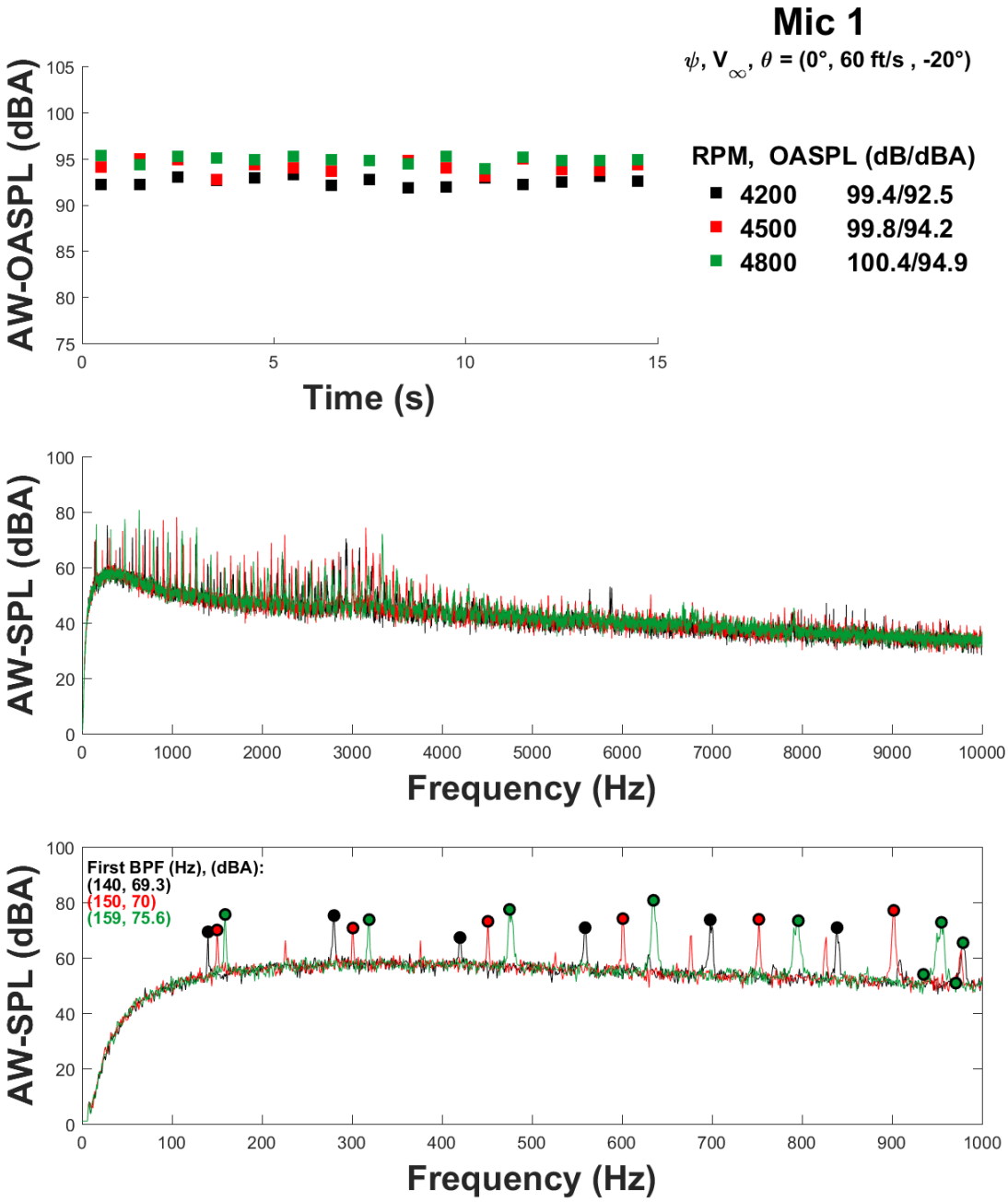

Figure E161: SUI microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 60$ ft/s, θ = -20°

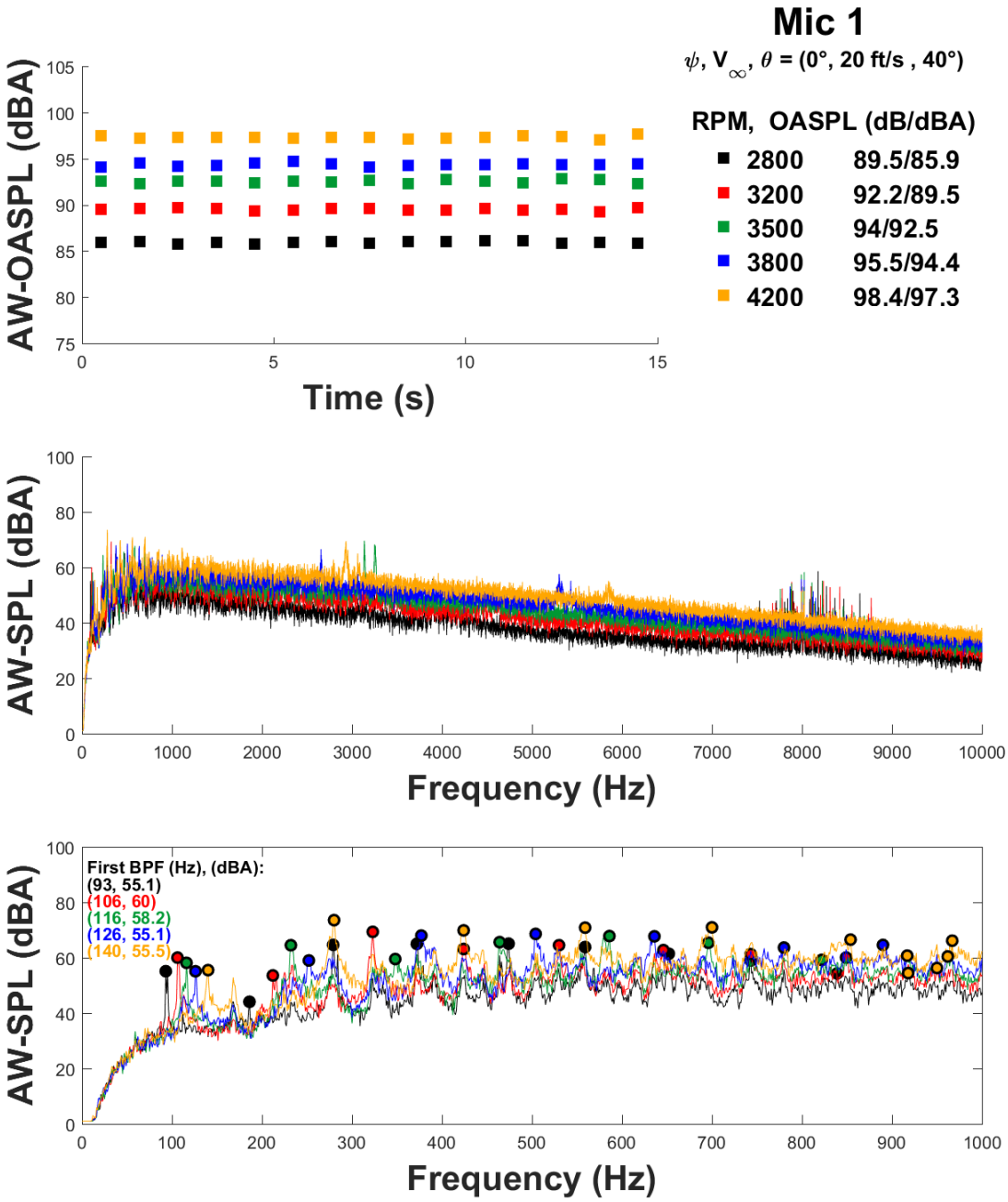

Figure E162: SUI microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 20$ ft/s, $\theta = 40°$

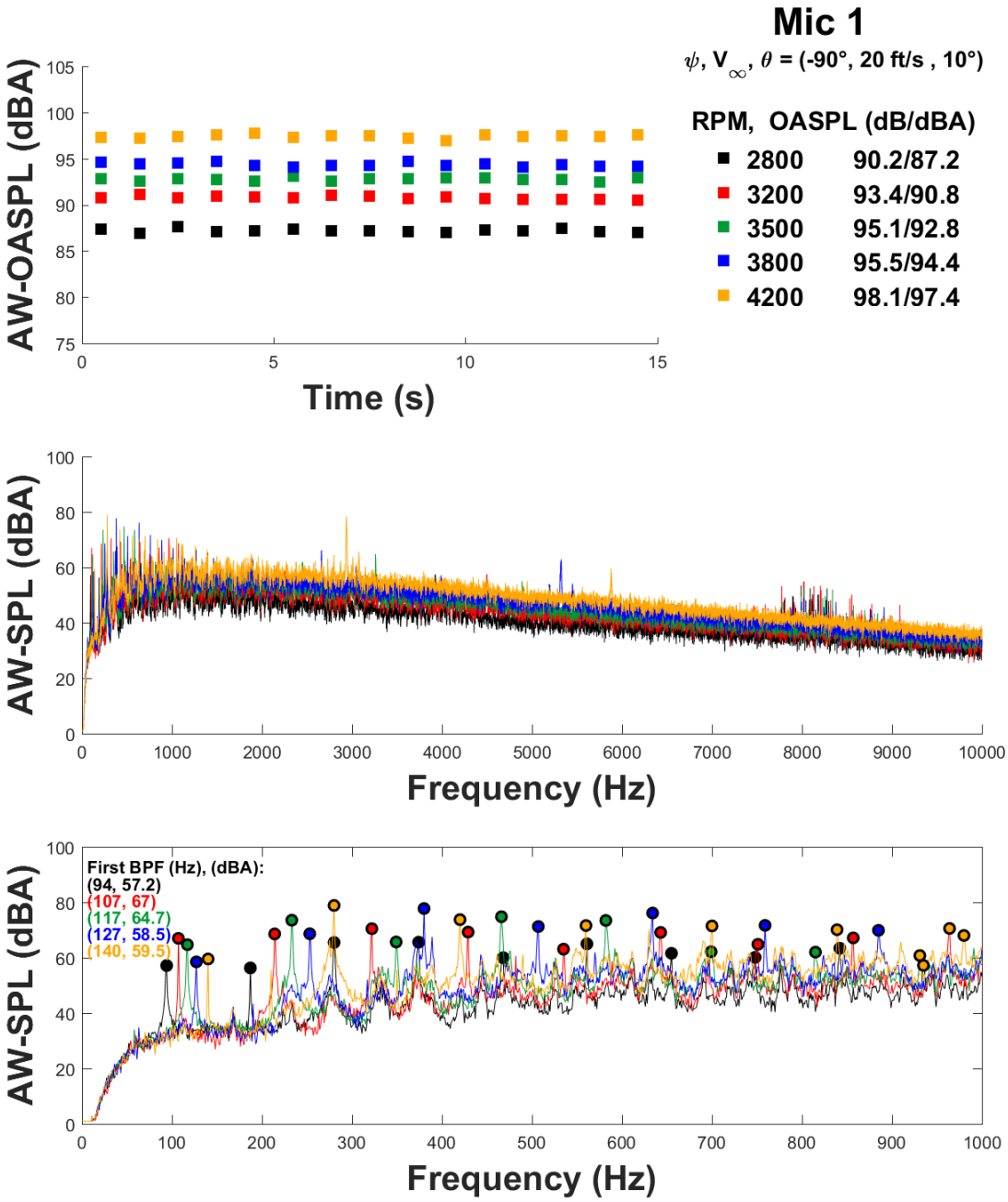

Figure E163: SUI microphone 1: RPM sweep ψ = -90°, V_∞ = 20 ft/s, θ = 10°

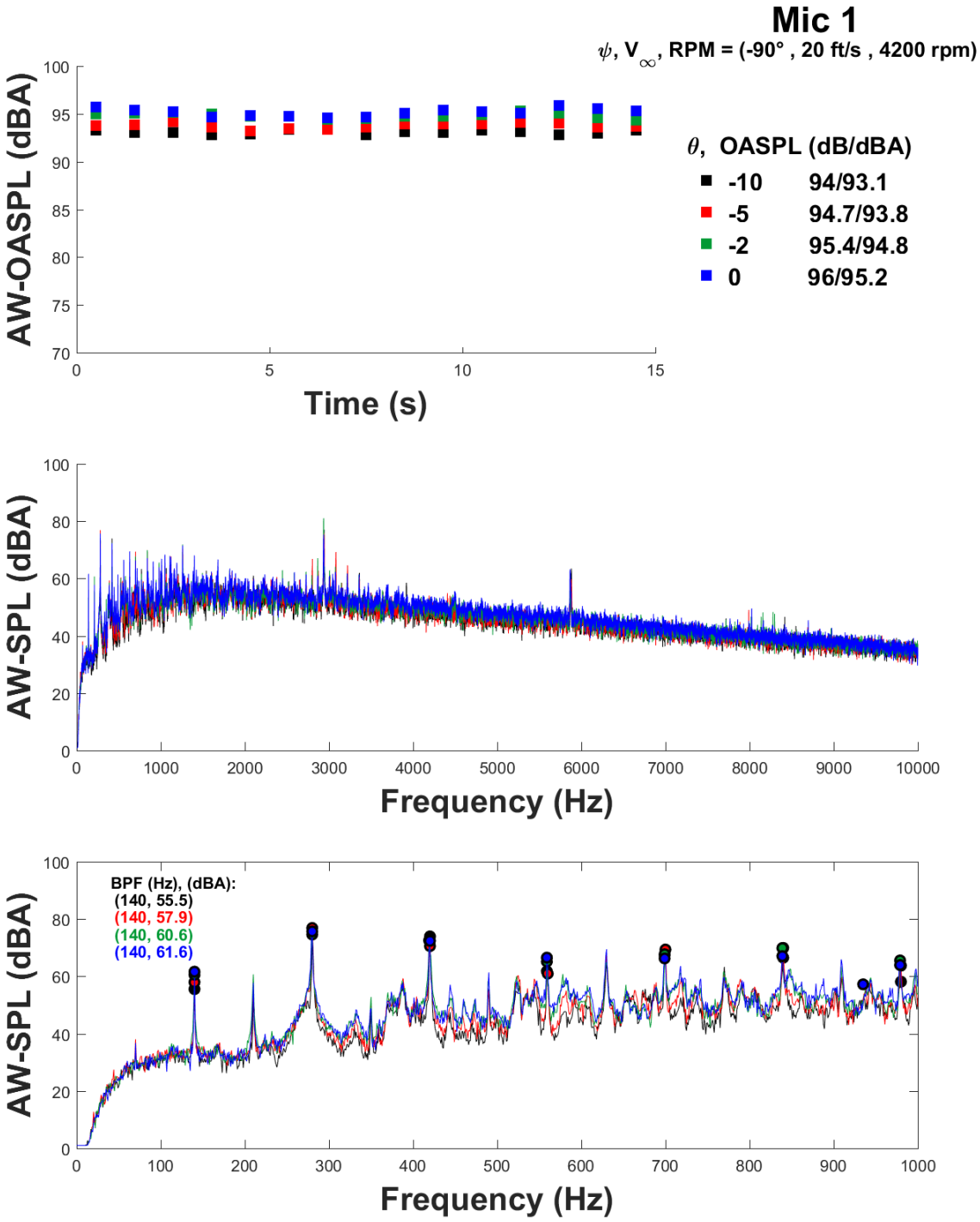

Figure E164: SUI microphone 1: Negative pitch sweep ψ = -90°, V_∞ = 20 ft/s, RPM= 4,200

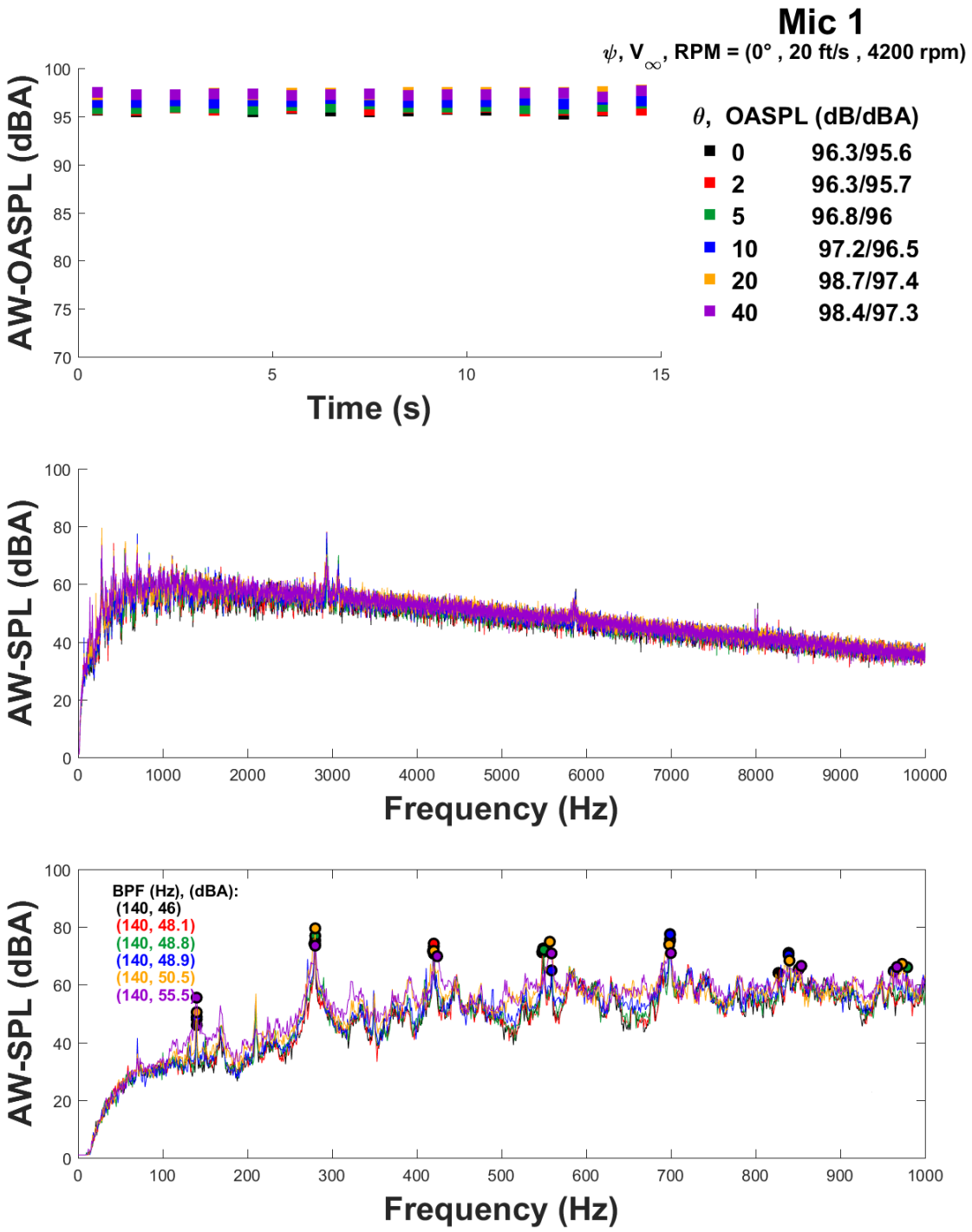

Figure E165: SUI microphone 1: Positive pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, RPM= 4,200

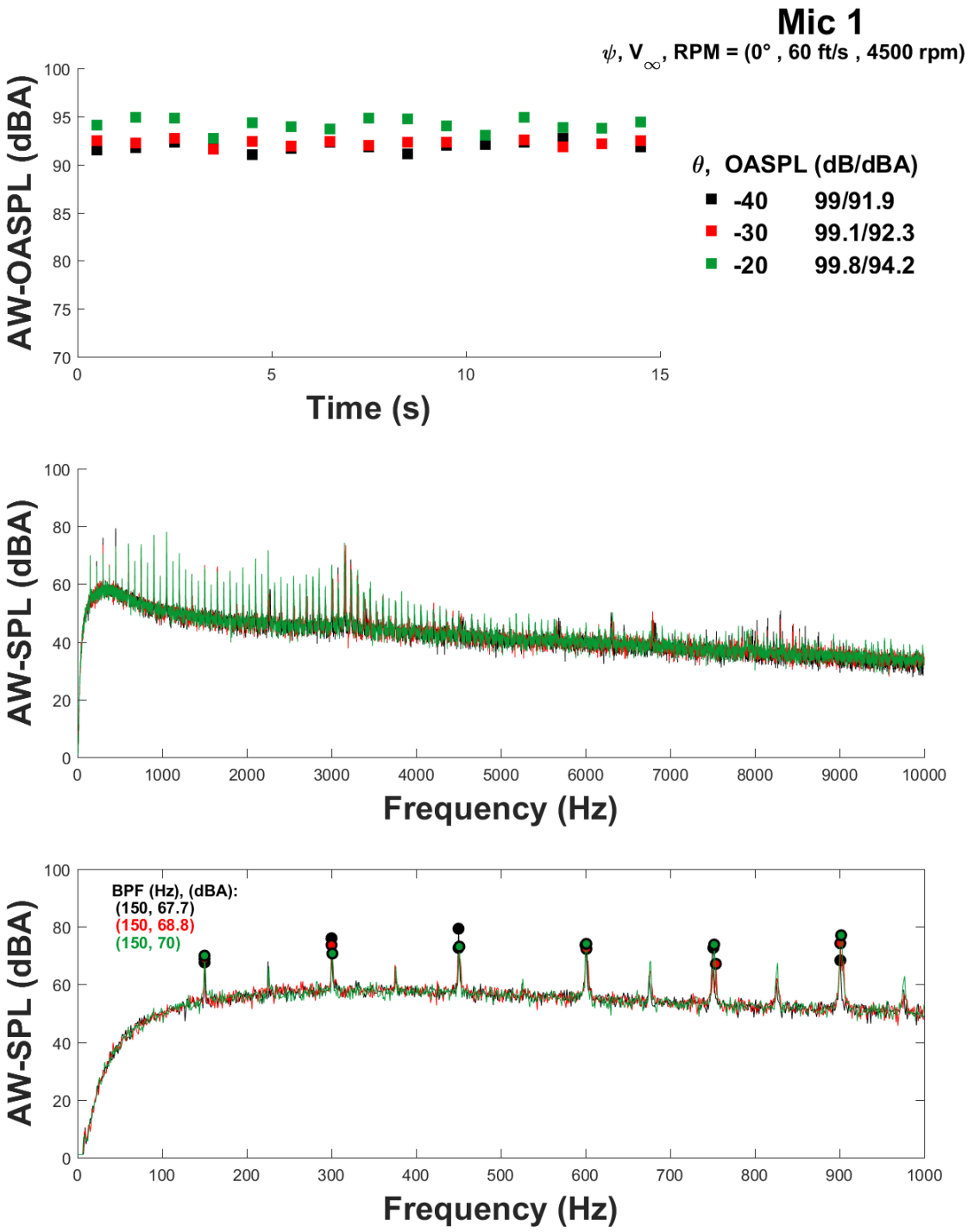

Figure E166: SUI microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 60$ ft/s RPM= 4,500

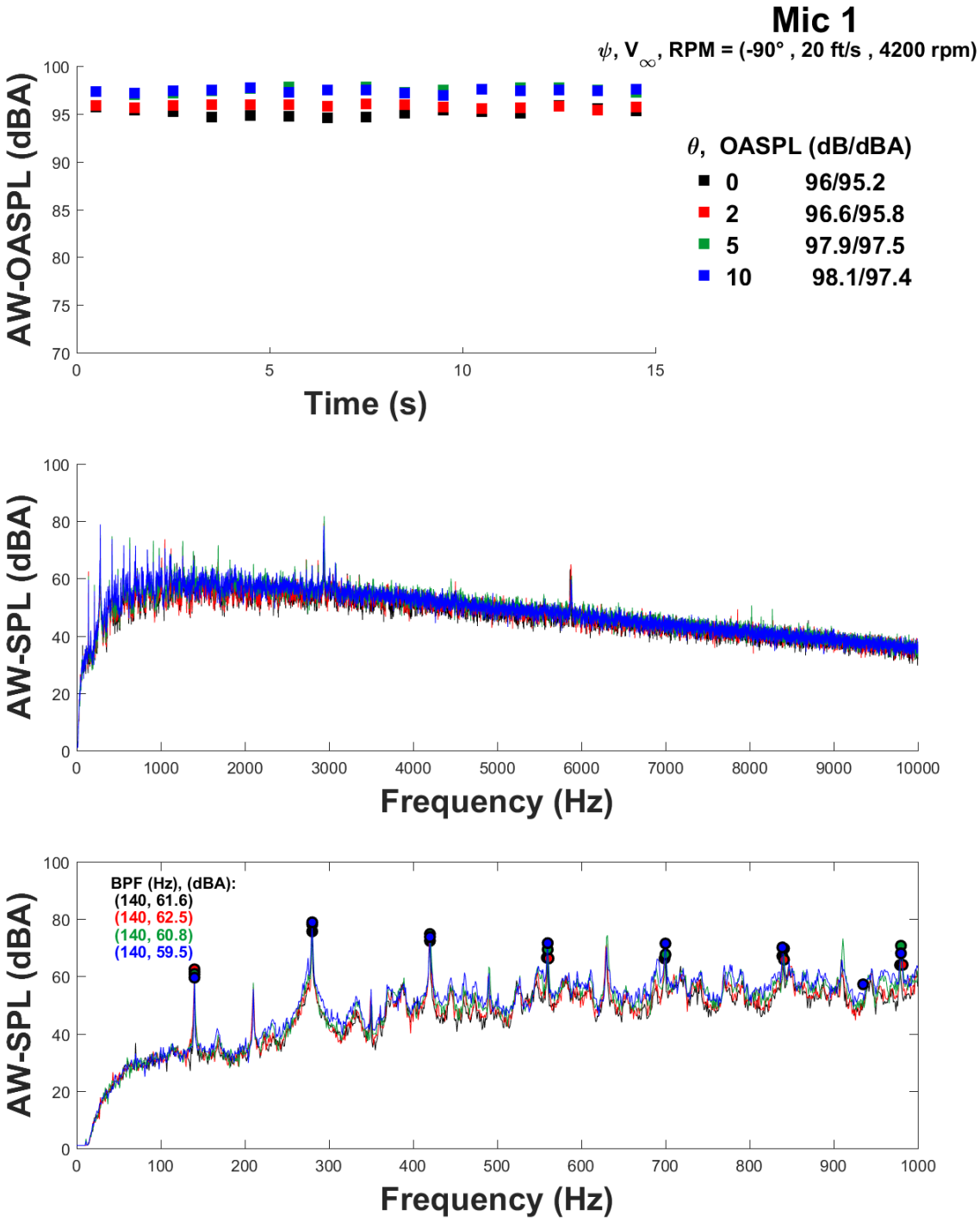

Figure E167: SUI microphone 1: Positive pitch sweep ψ = -90°, V_∞ = 20 ft/s, RPM= 4,200

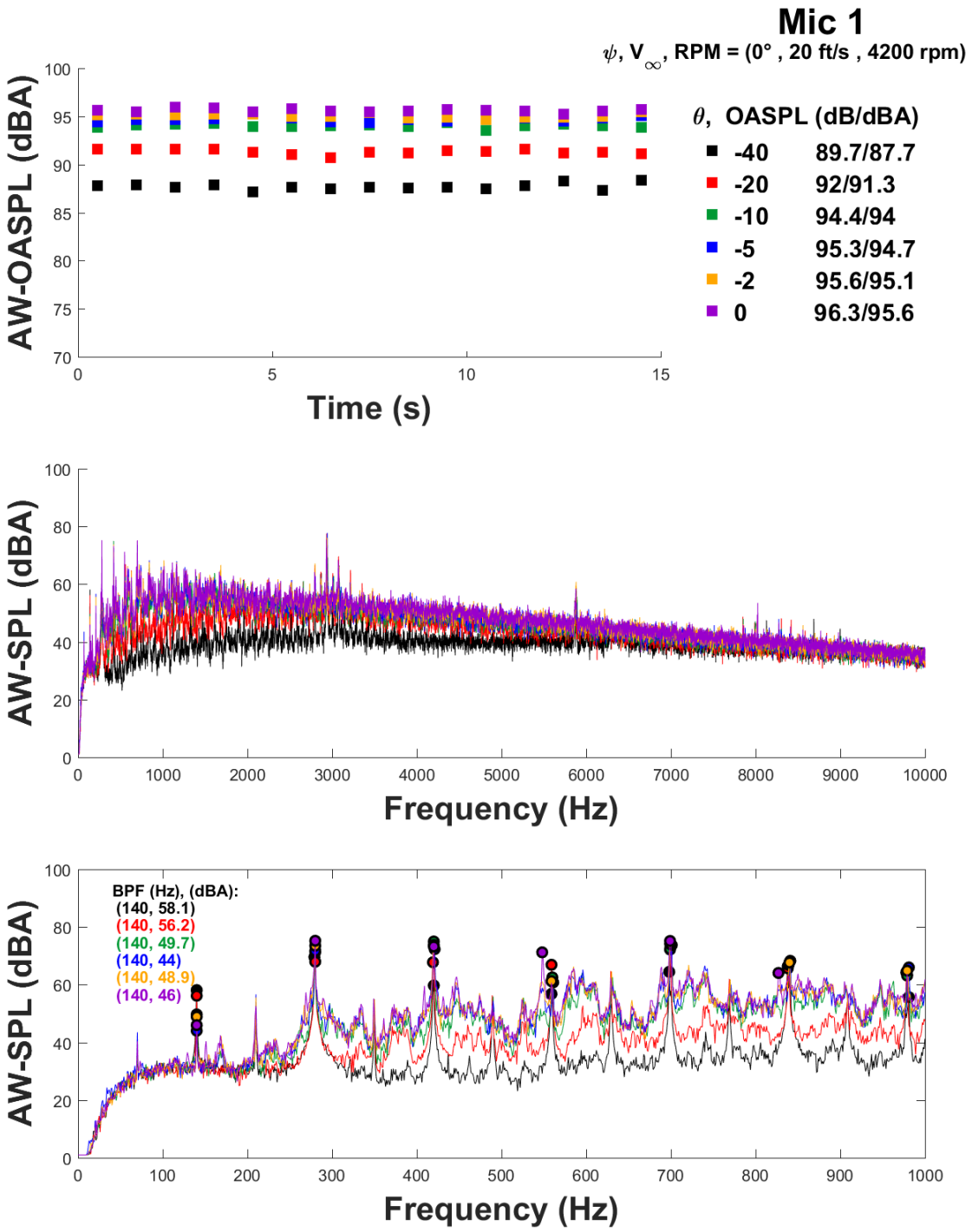

Figure E168: SUI microphone 1: Negative pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s RPM= 4,200

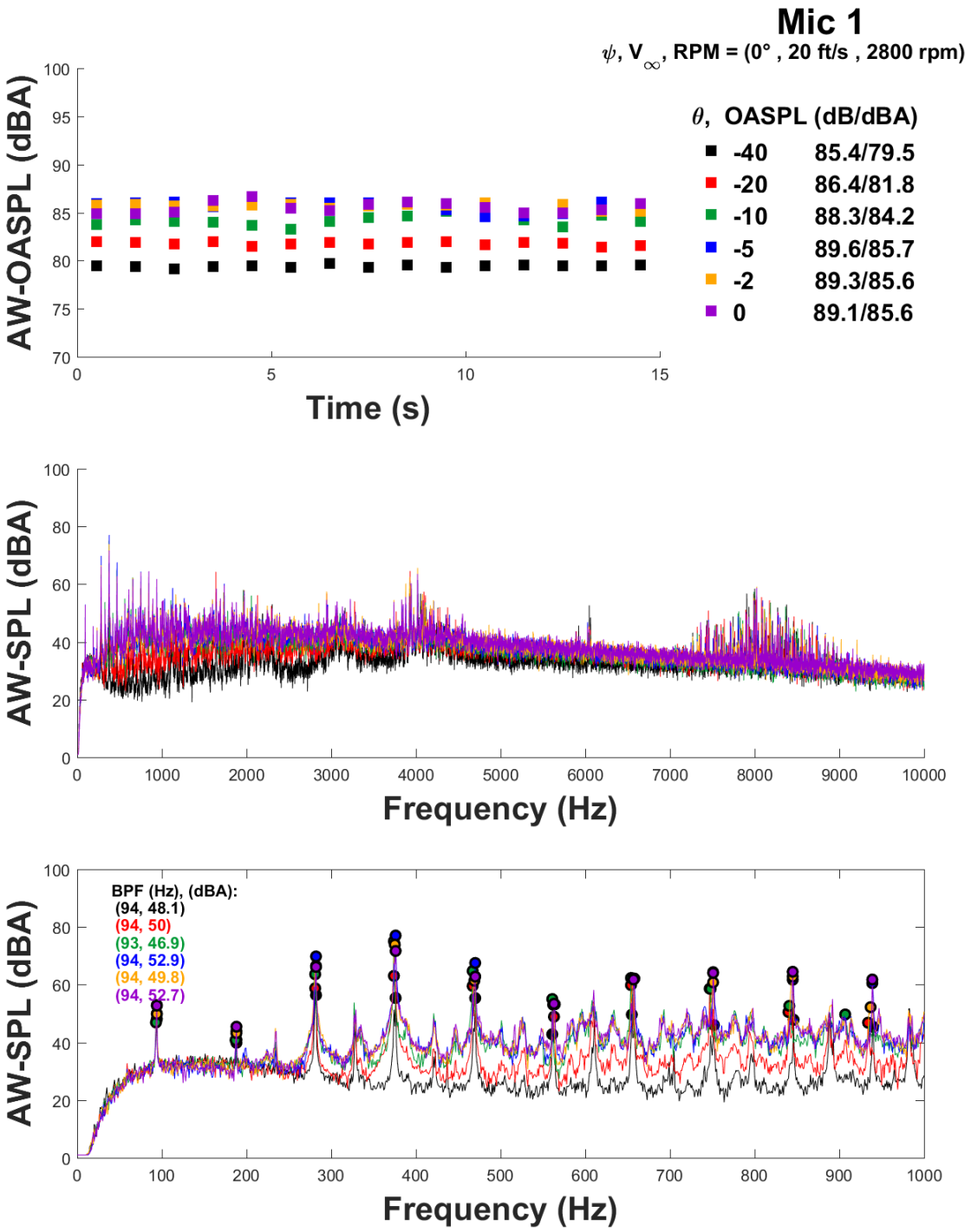

Figure E169: SUI microphone 1: Negative pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, RPM= 2,800

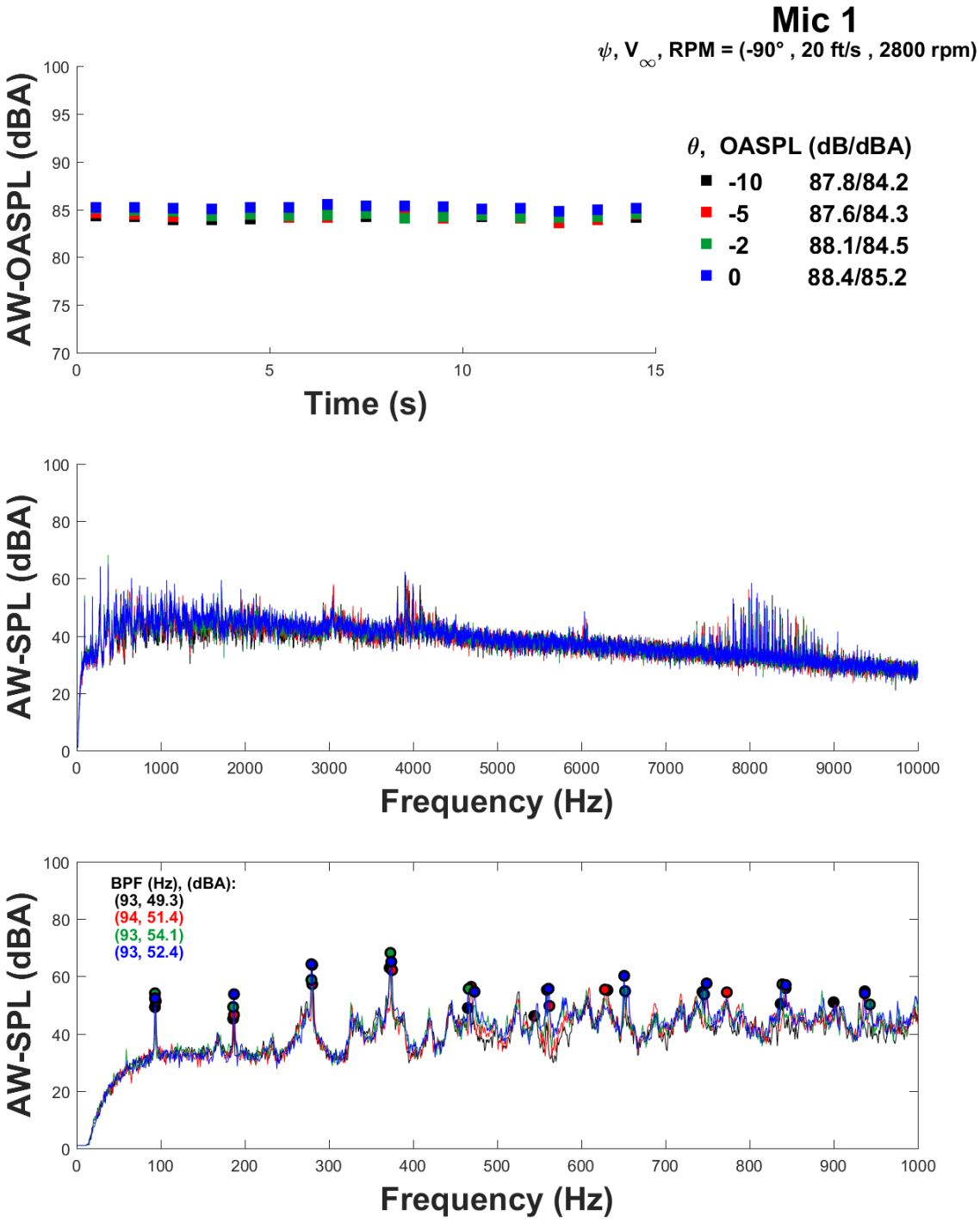

Figure E170: SUI microphone 1: Pitch sweep ψ = -90°, V_∞ = 20 ft/s, RPM= 2,800

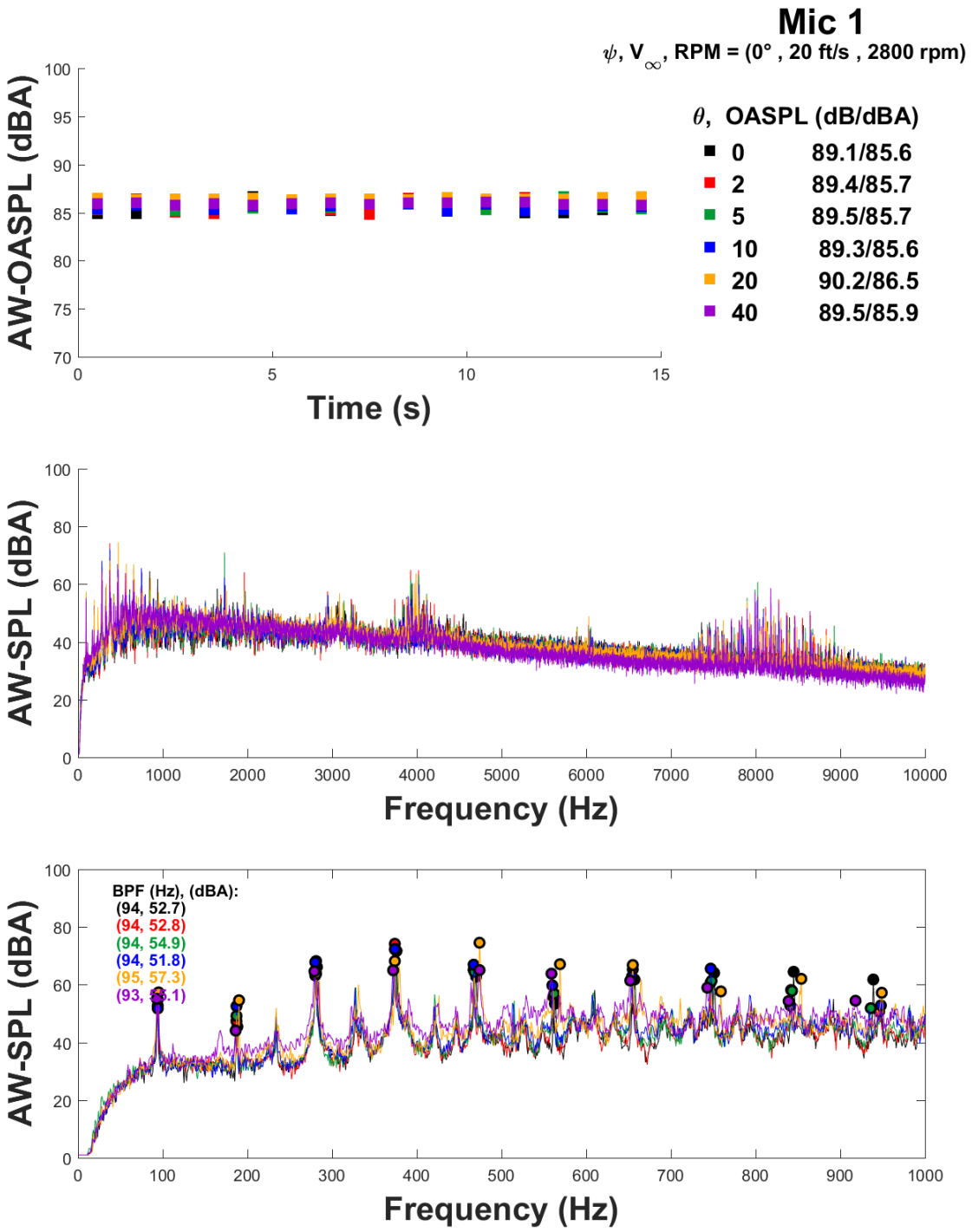

Figure E171: SUI microphone 1: Positive pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, RPM= 2,800

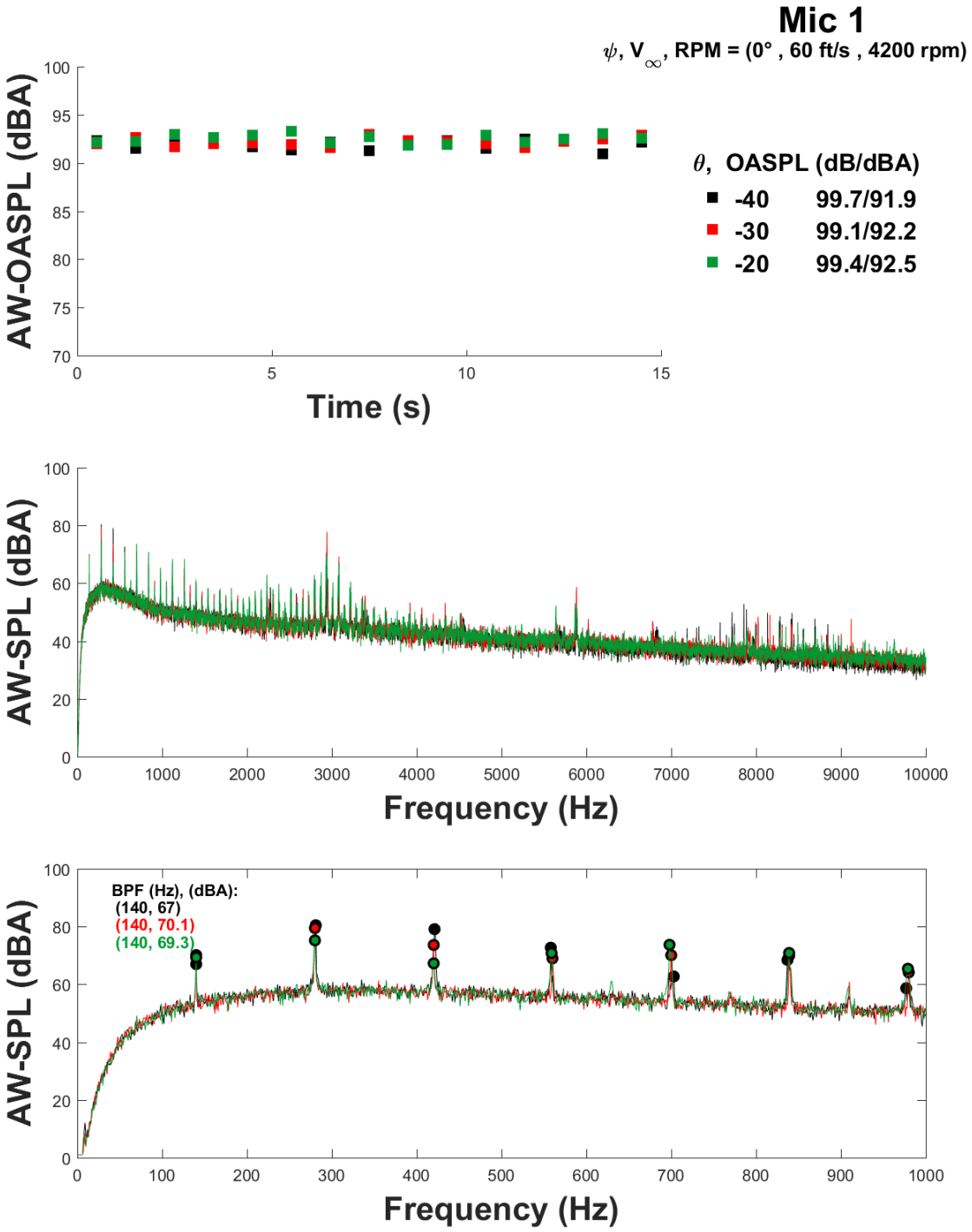

Figure E172: SUI microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 60$ ft/s, RPM= 4,200

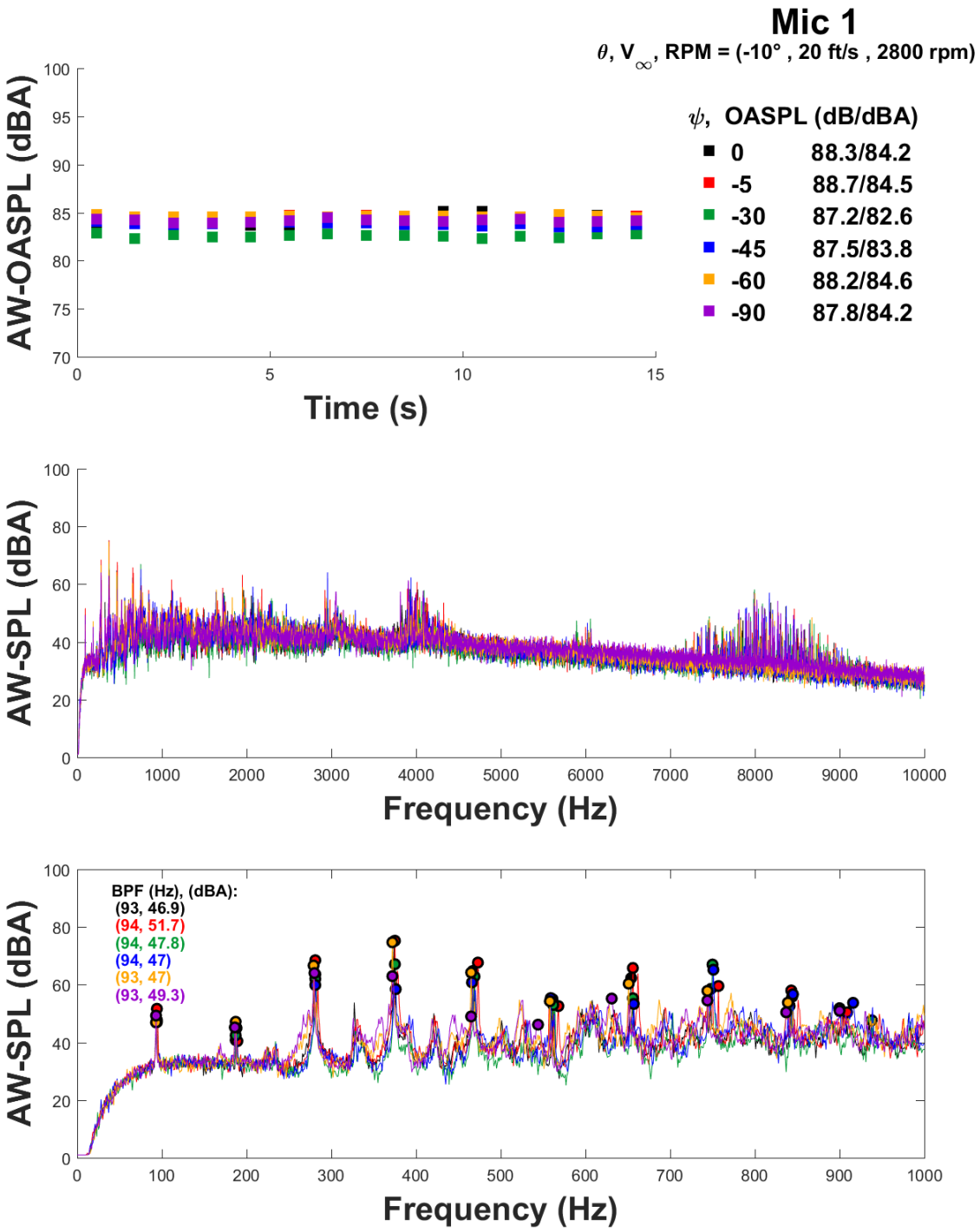

Figure E173: SUI microphone 1: Yaw sweep V_∞ = 20 ft/s, θ = -10°, RPM= 2,800

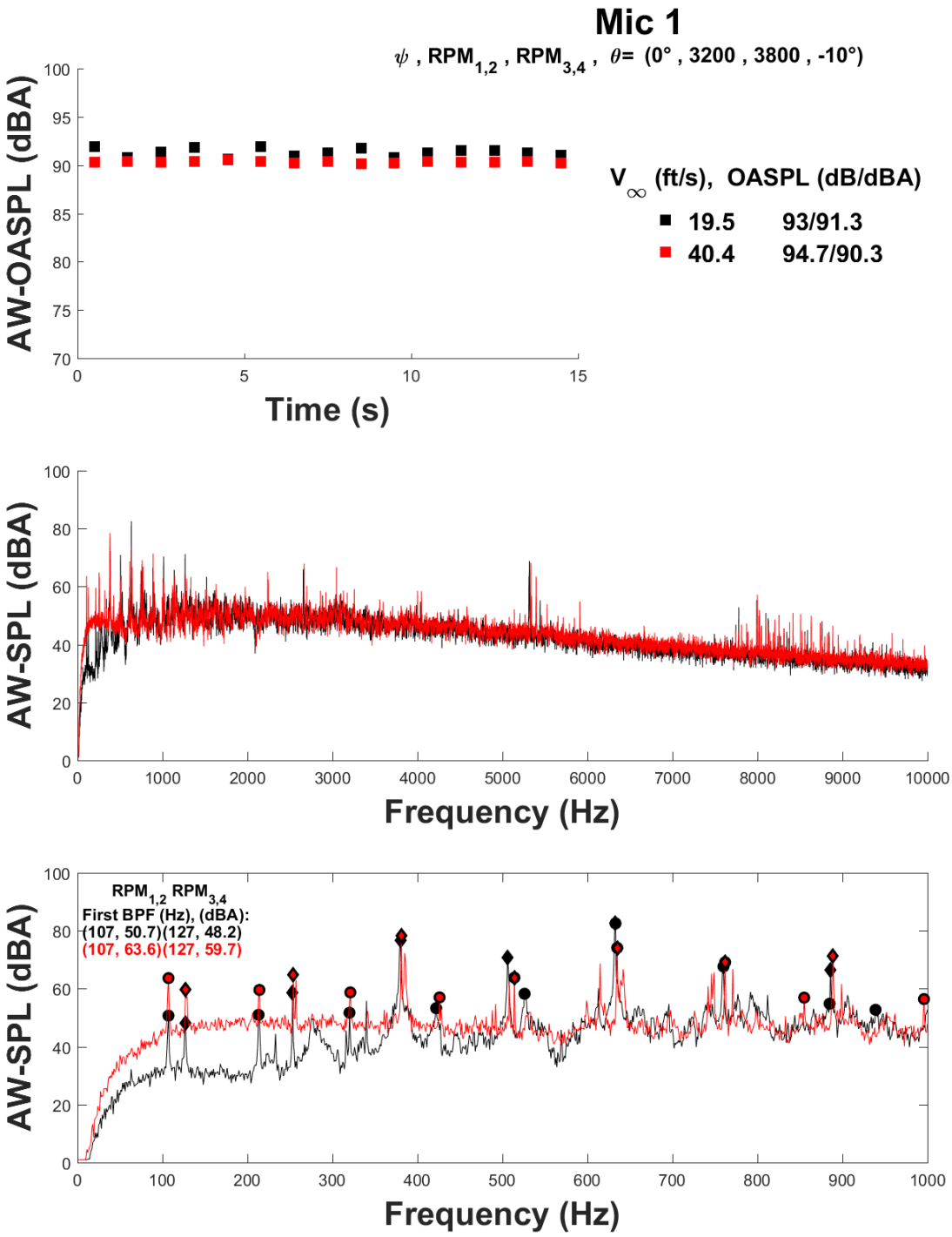

Figure E174: SUI microphone 1: V_∞ sweep ψ = 0°, θ = -10°, $RPM_{1,2}$ = 3,200, $RPM_{3,4}$ = 3,800

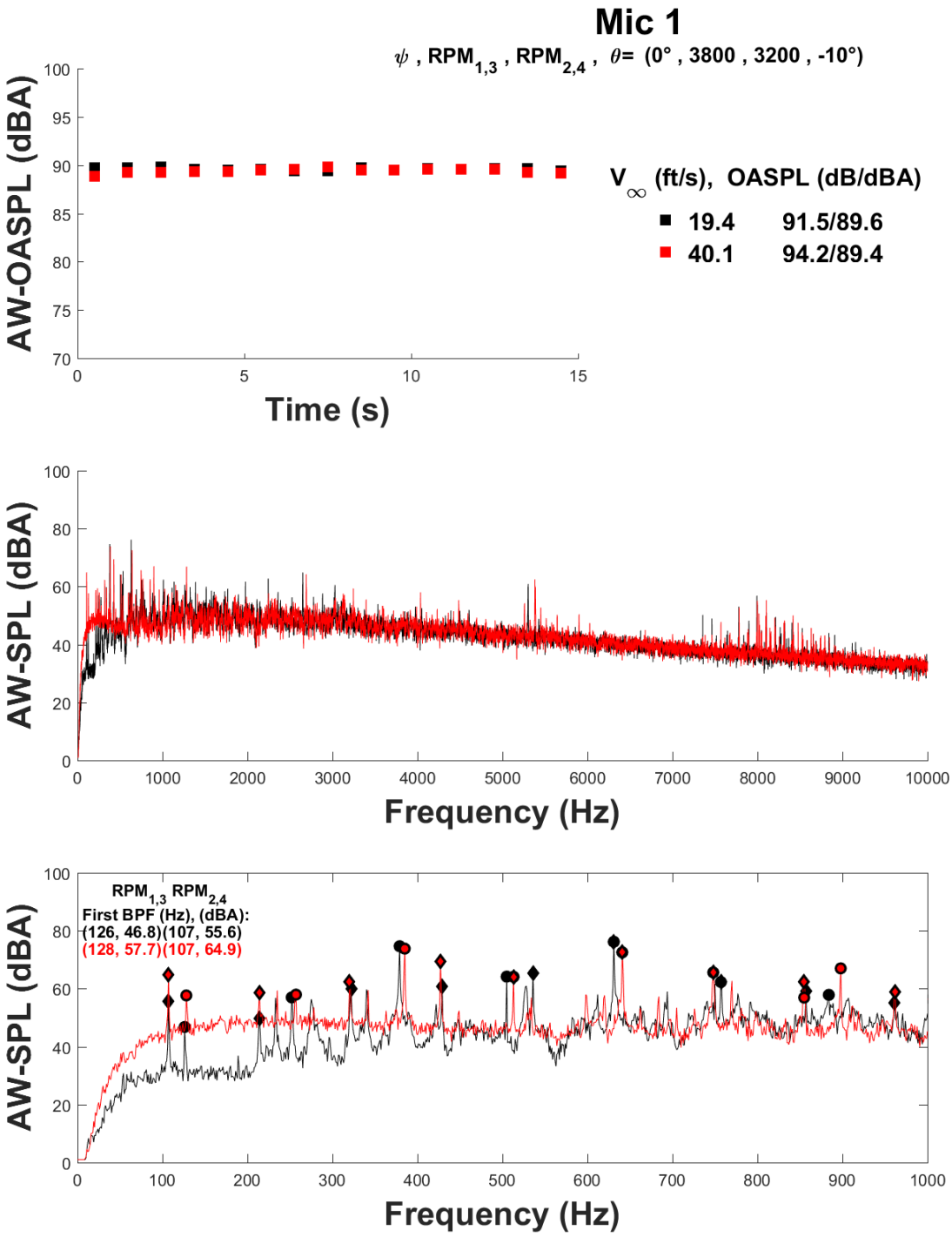

Figure E175: SUI microphone 1: V_∞ sweep $\psi = 0°$, θ = -10°, $RPM_{1,3}$ = 3,800, $RPM_{2,4}$ = 3,200

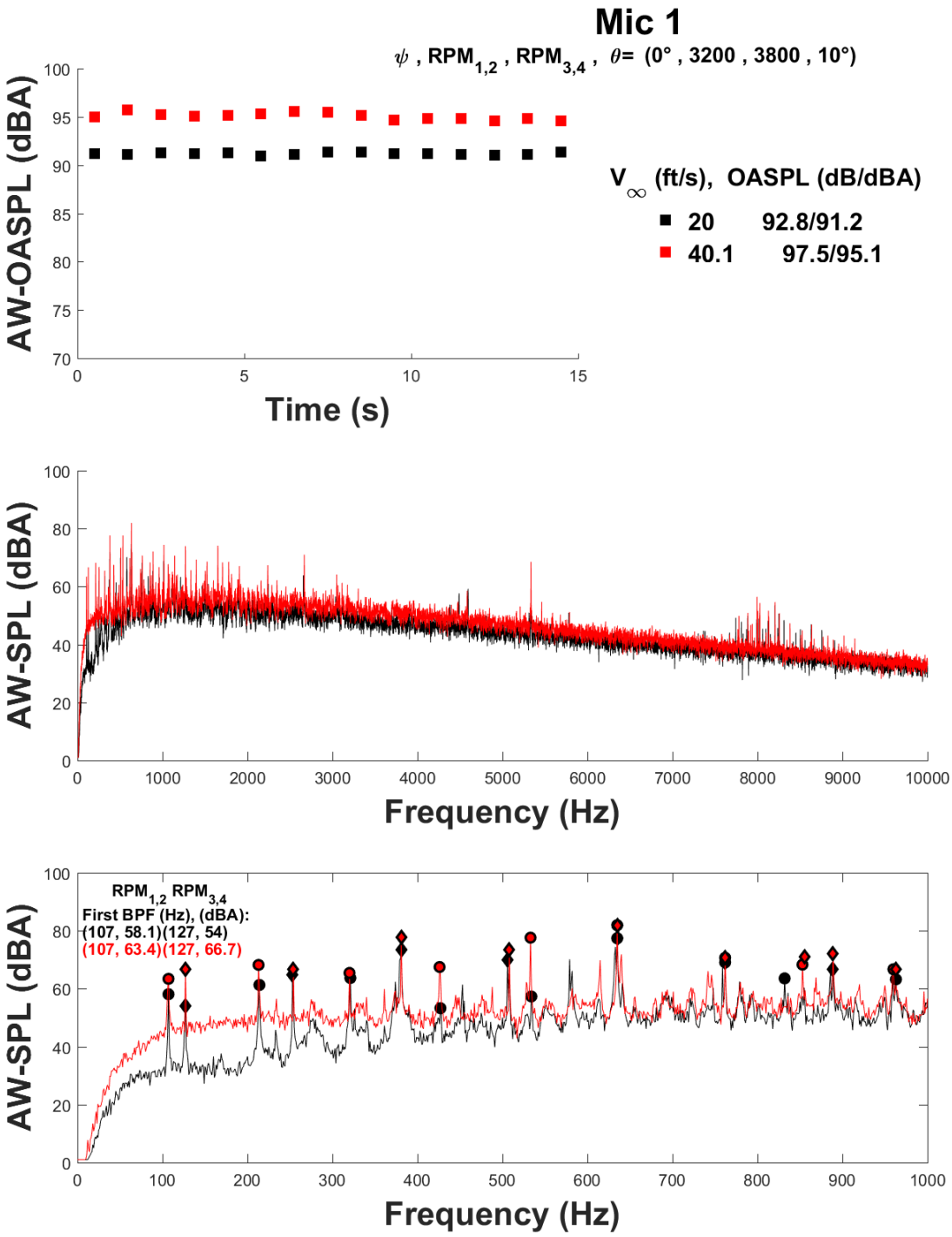

Figure E176: SUI microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 10°$, $RPM_{1,2} = 3{,}200$, $RPM_{3,4} = 3{,}800$

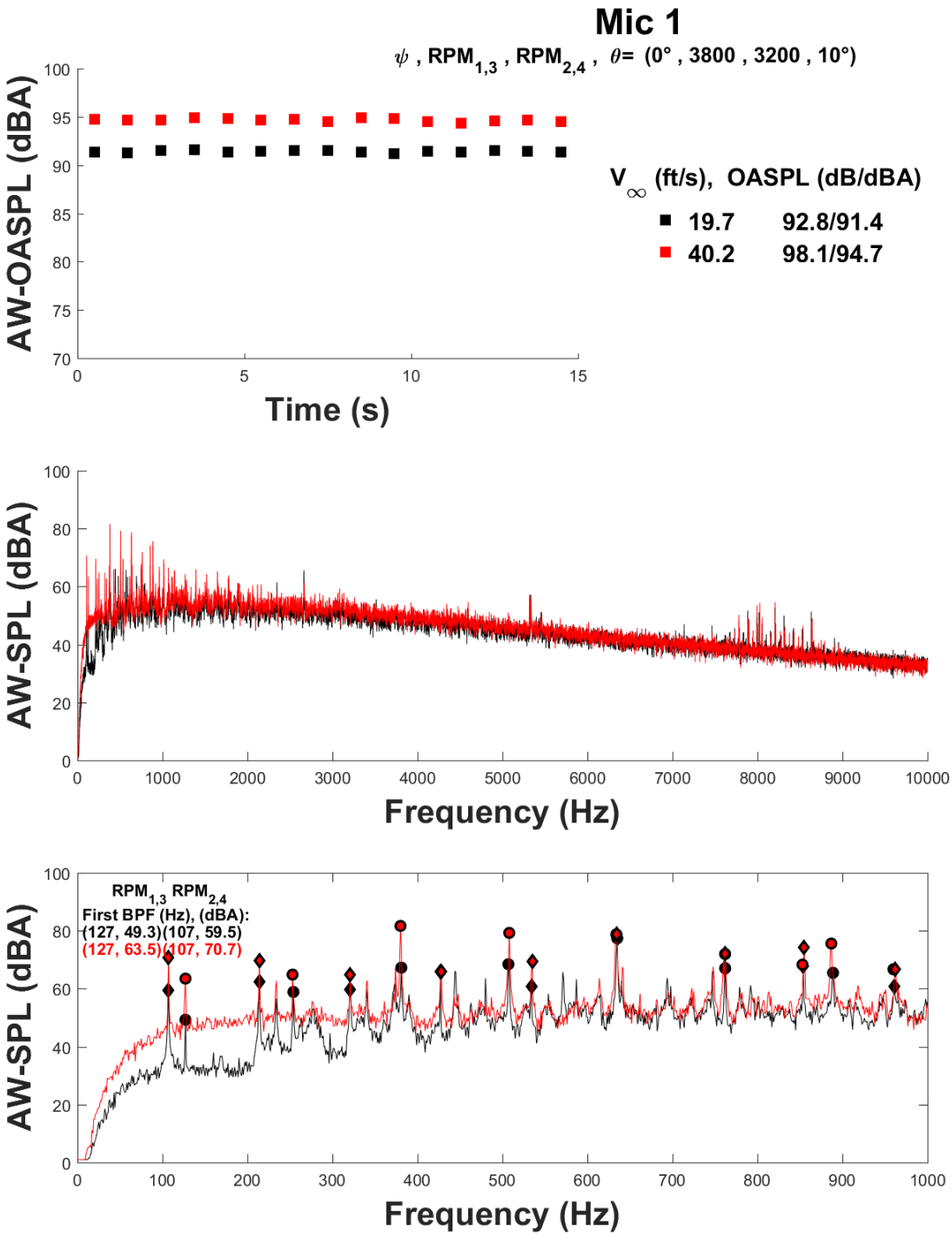

Figure E177: SUI microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 10°$, $RPM_{1,3} = 3{,}800$, $RPM_{2,4} = 3{,}200$

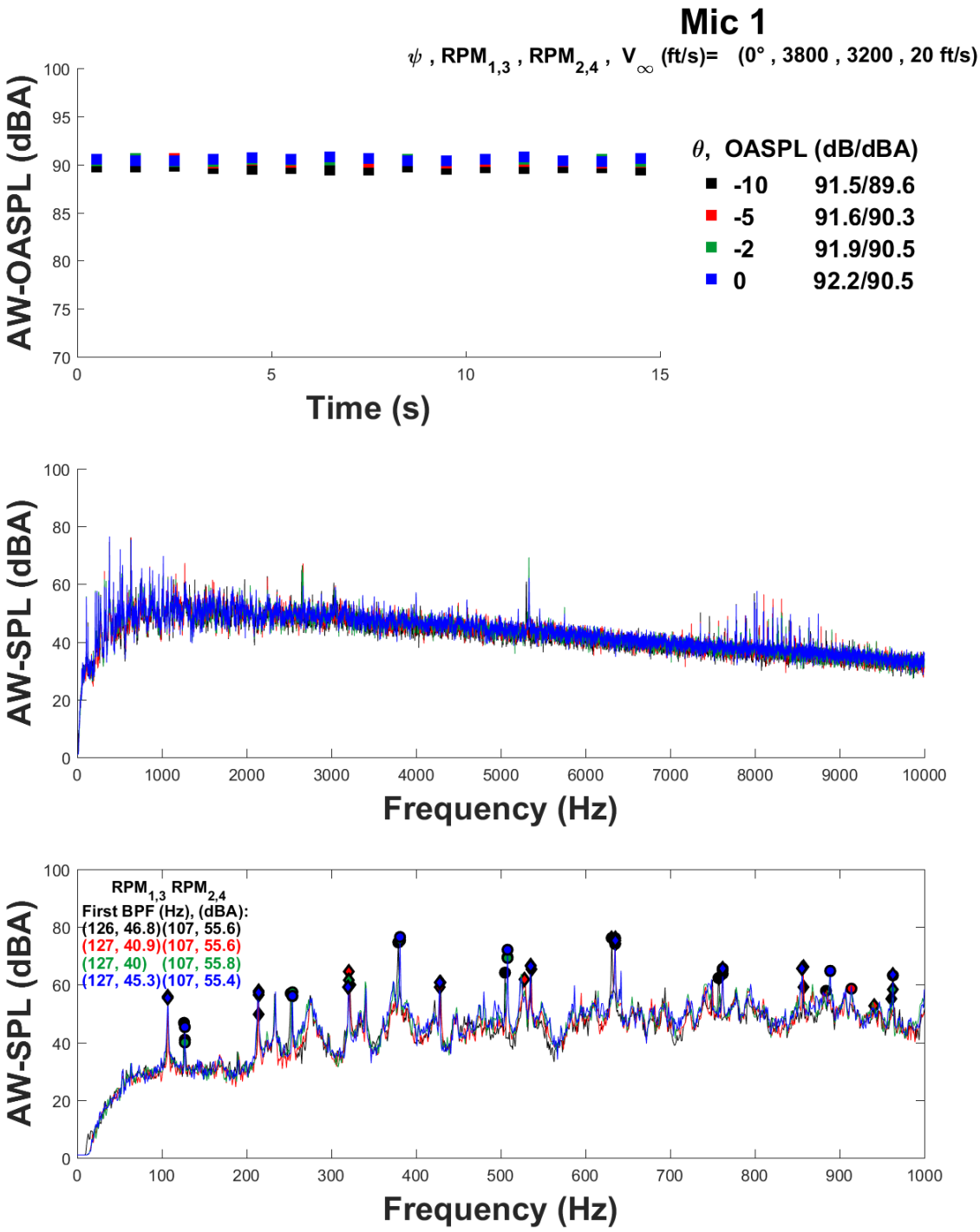

Figure E178: SUI microphone 1: Negative pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, $RPM_{1,3} = 3{,}800$, $RPM_{2,4} = 3{,}200$

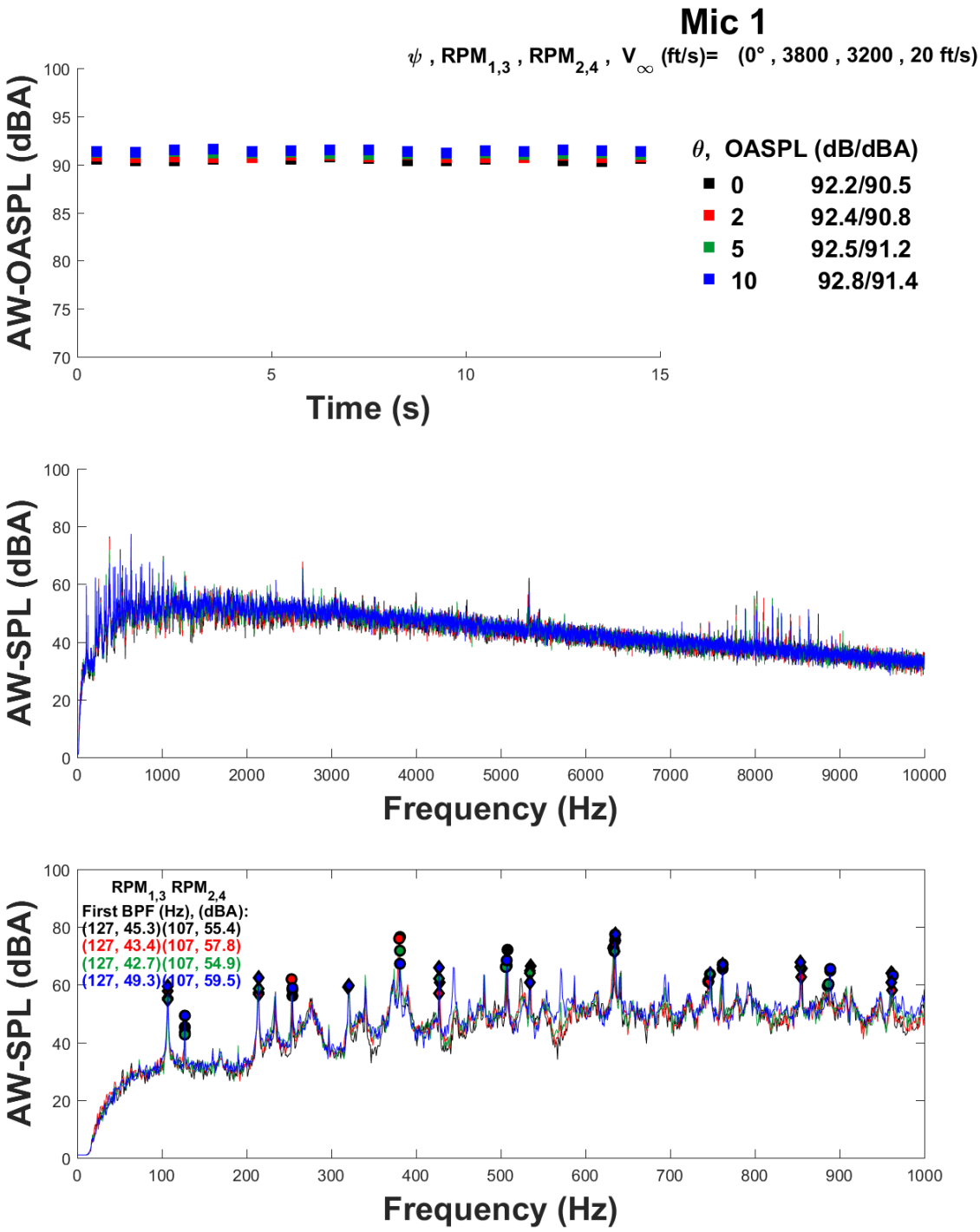

Figure E179: SUI microphone 1: Positive pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, $RPM_{1,3} = 3{,}800$, $RPM_{2,4} = 3{,}200$

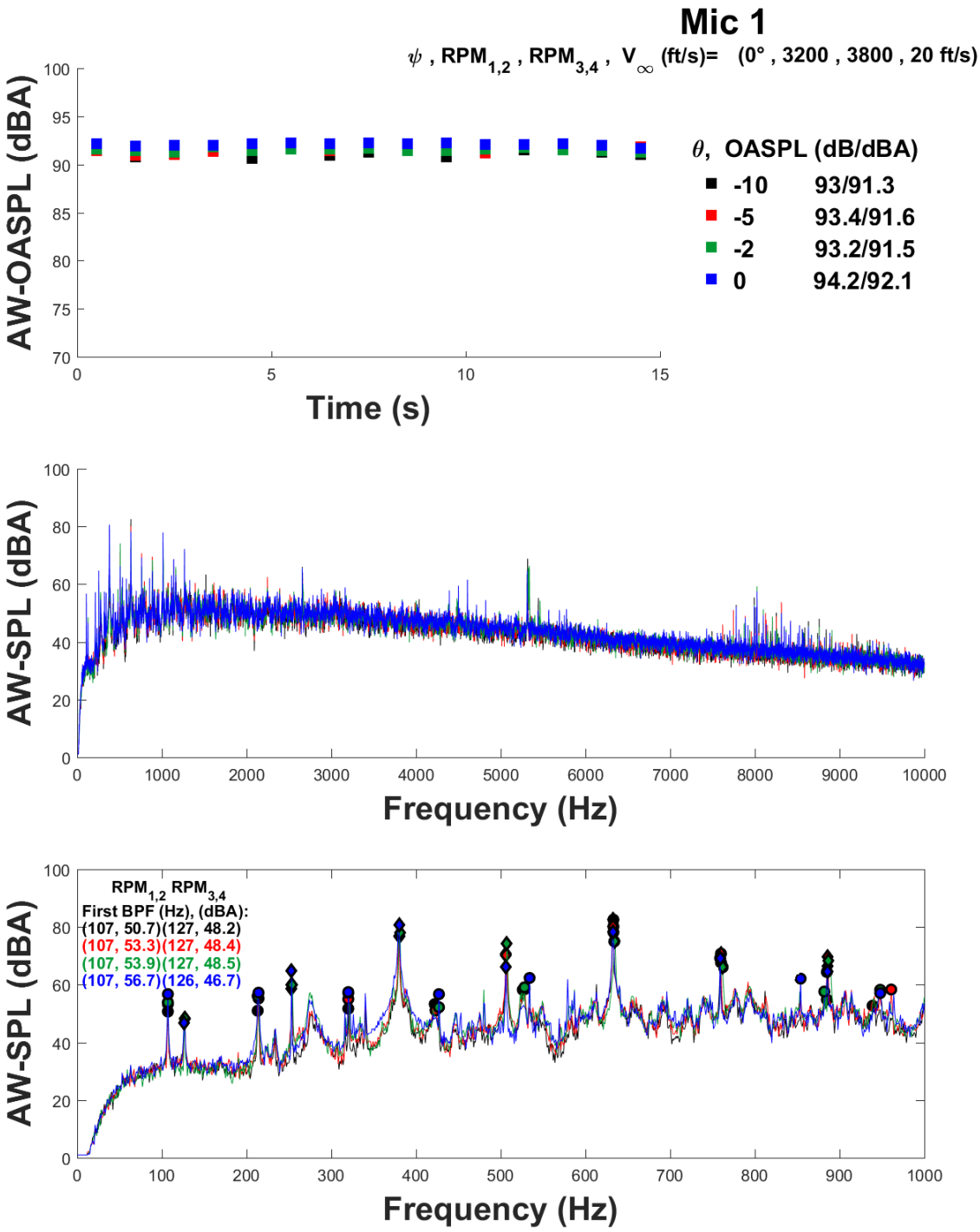

Figure E180: SUI microphone 1: Negative pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, $RPM_{1,2} = 3{,}200$, $RPM_{3,4} = 3{,}800$

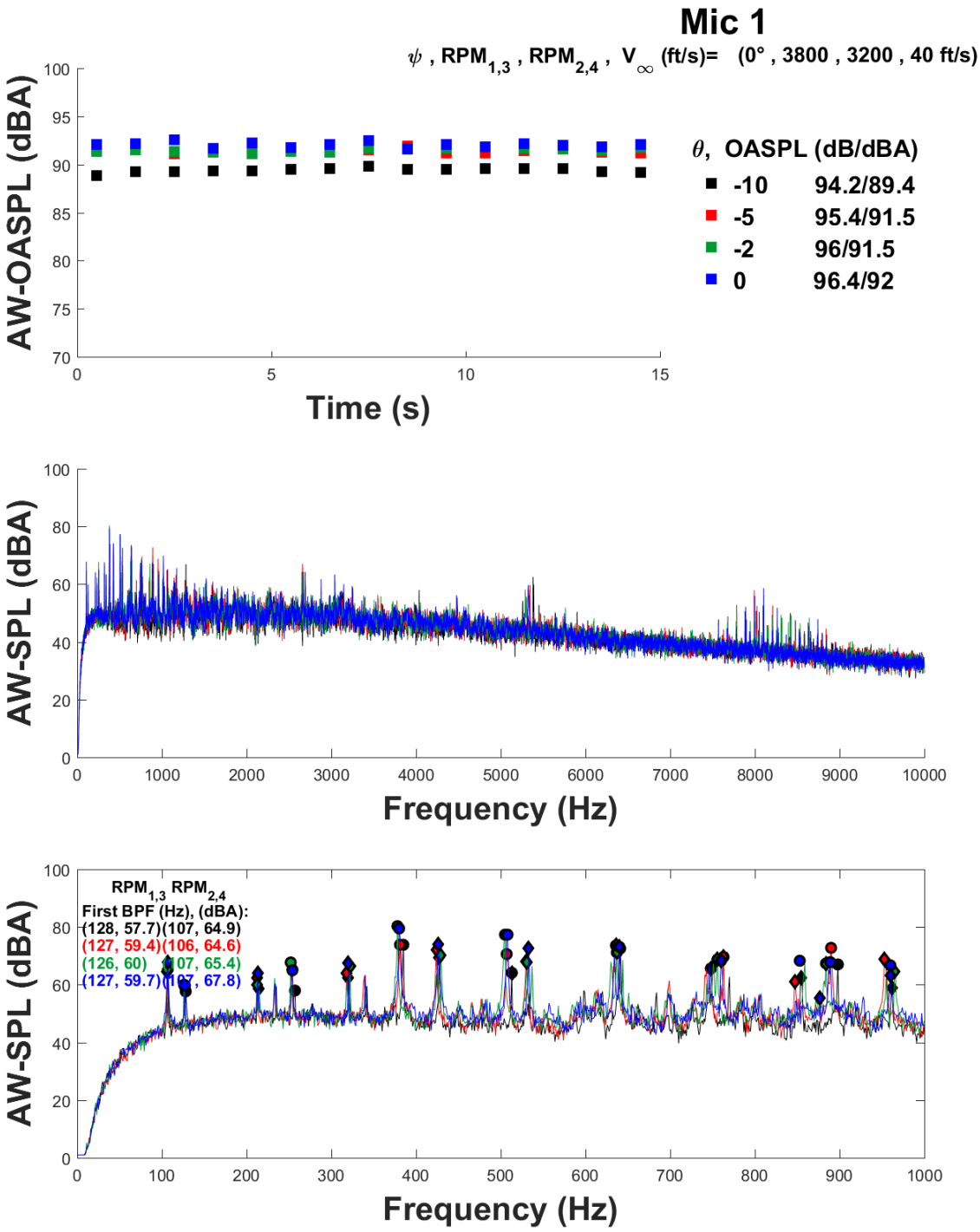

Figure E181: SUI microphone 1: Negative pitch sweep $\psi = 0°$, $V_\infty = 40$ ft/s, $RPM_{1,3} = 3{,}800$, $RPM_{2,4} = 3{,}200$

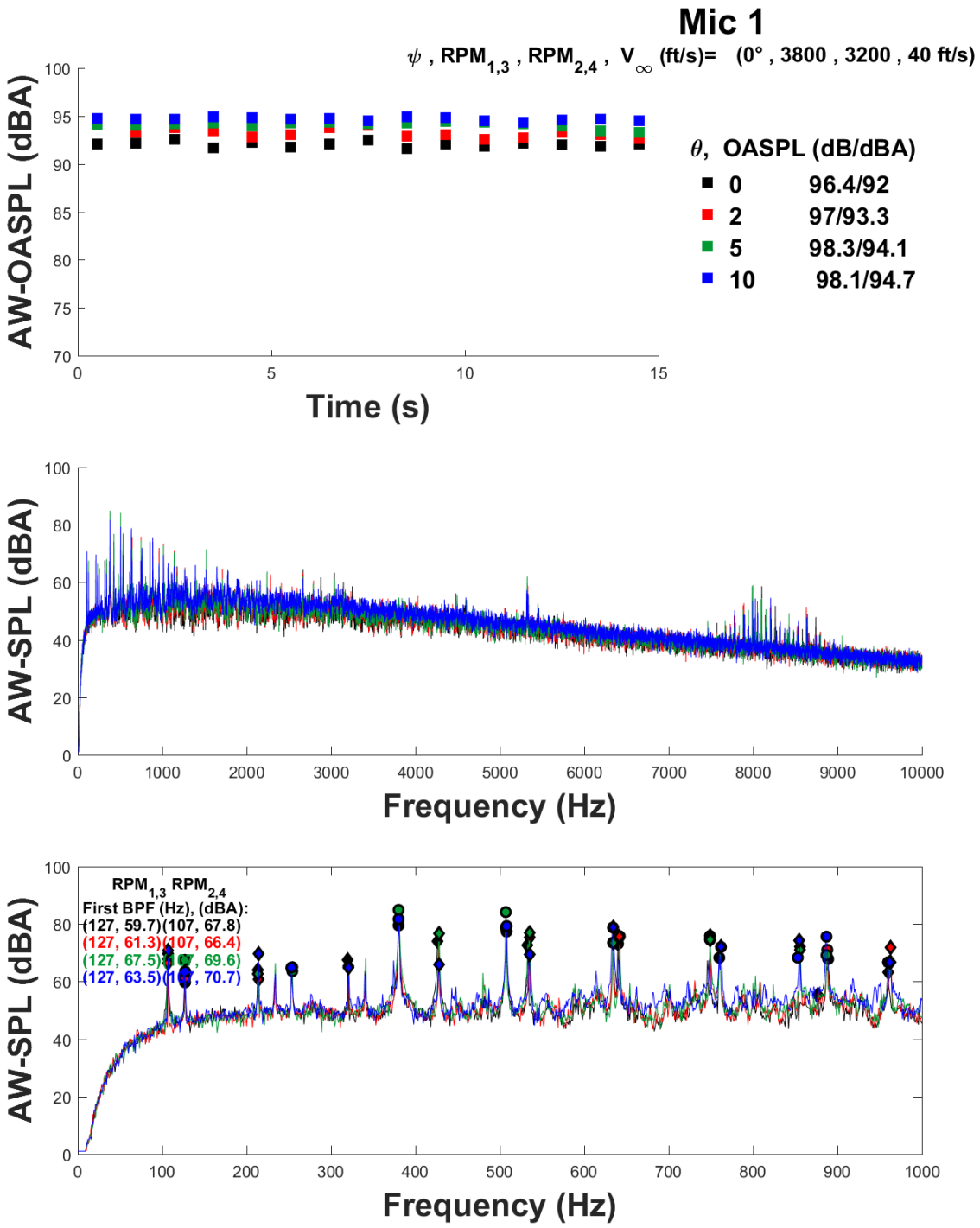

Figure E182: SUI microphone 1: Positive pitch sweep $\psi = 0°$, $V_\infty = 40$ ft/s, $RPM_{1,3} = 3{,}800$, $RPM_{2,4} = 3{,}200$

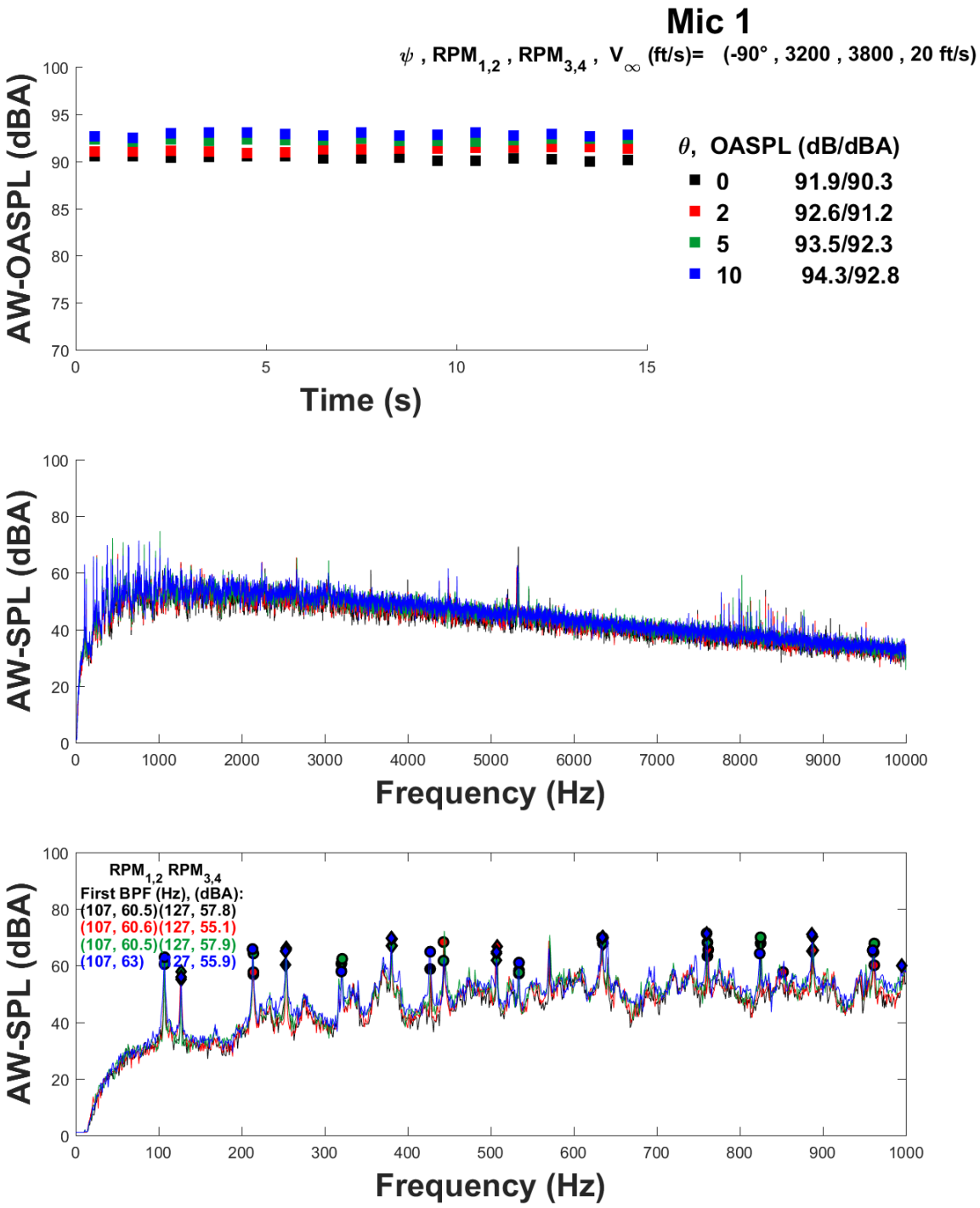

Figure E183: SUI microphone 1: Pitch sweep ψ = -90°, V_∞ = 20 ft/s, $RPM_{1,2}$ = 3,200, $RPM_{3,4}$ = 3,800

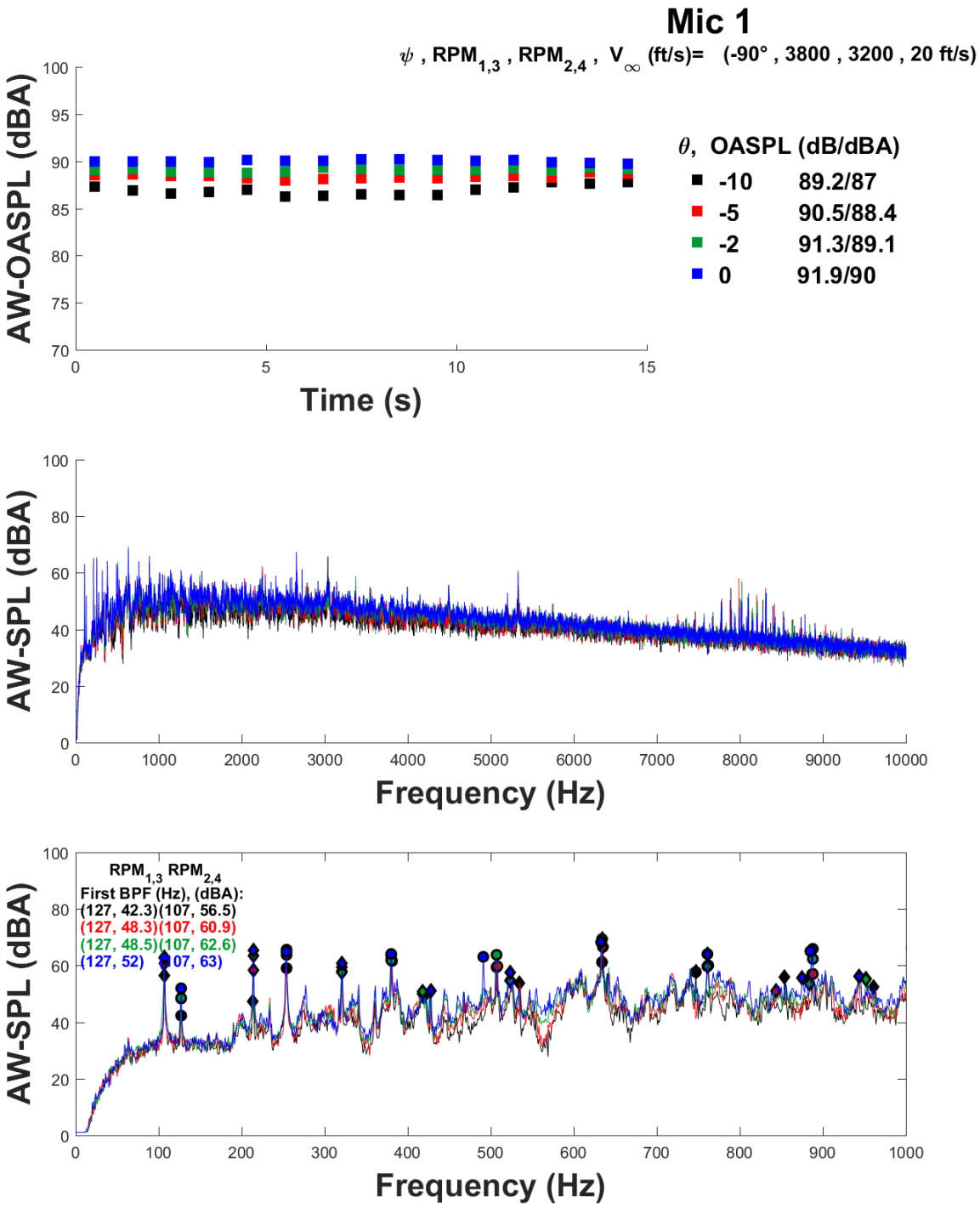

Figure E184: SUI microphone 1: Negative pitch sweep ψ = -90°, V_∞ = 20 ft/s, $RPM_{1,3}$ = 3,800, $RPM_{2,4}$ = 3,200

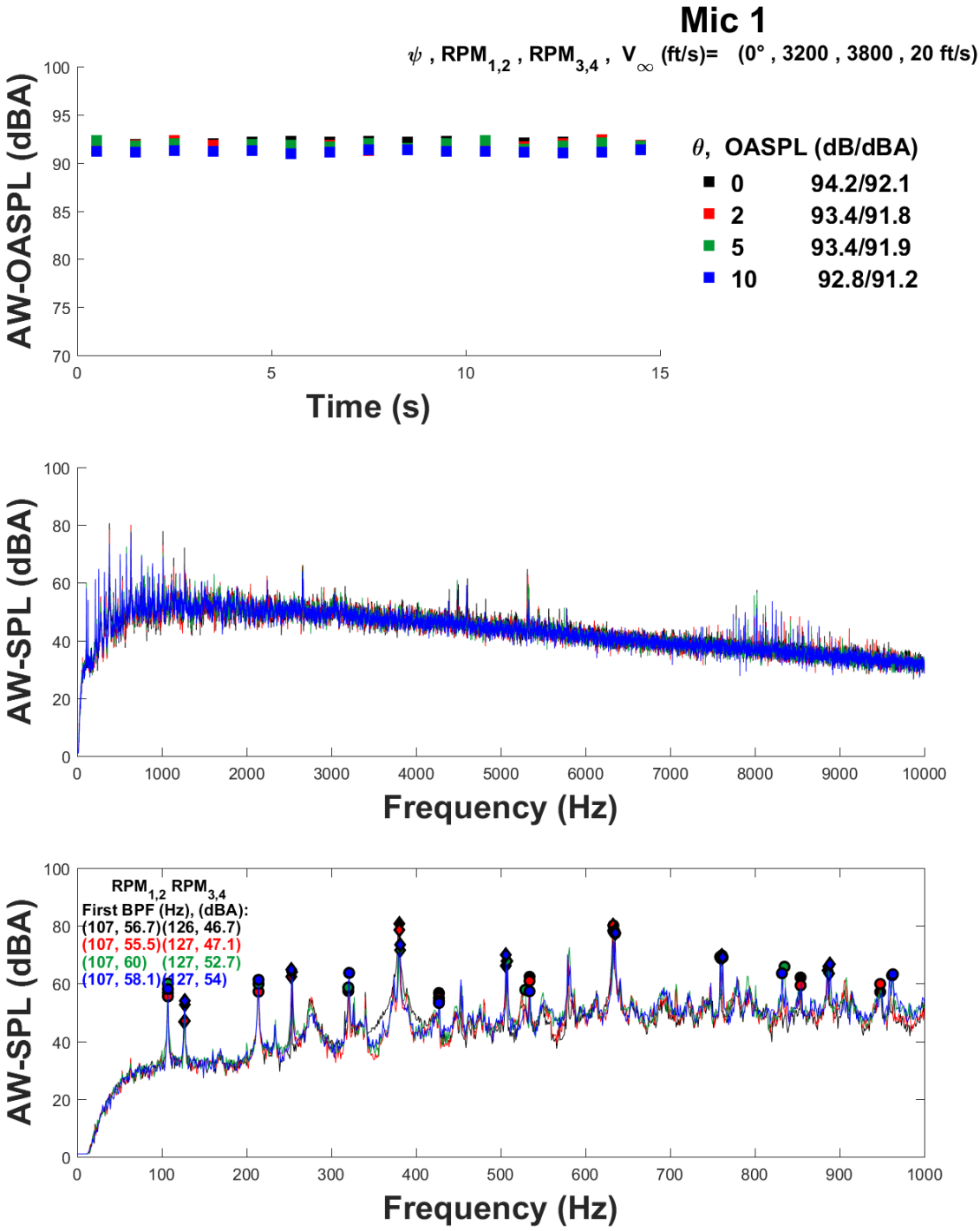

Figure E185: SUI microphone 1: Positive pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, $RPM_{1,2} = 3{,}200$, $RPM_{3,4} = 3{,}800$

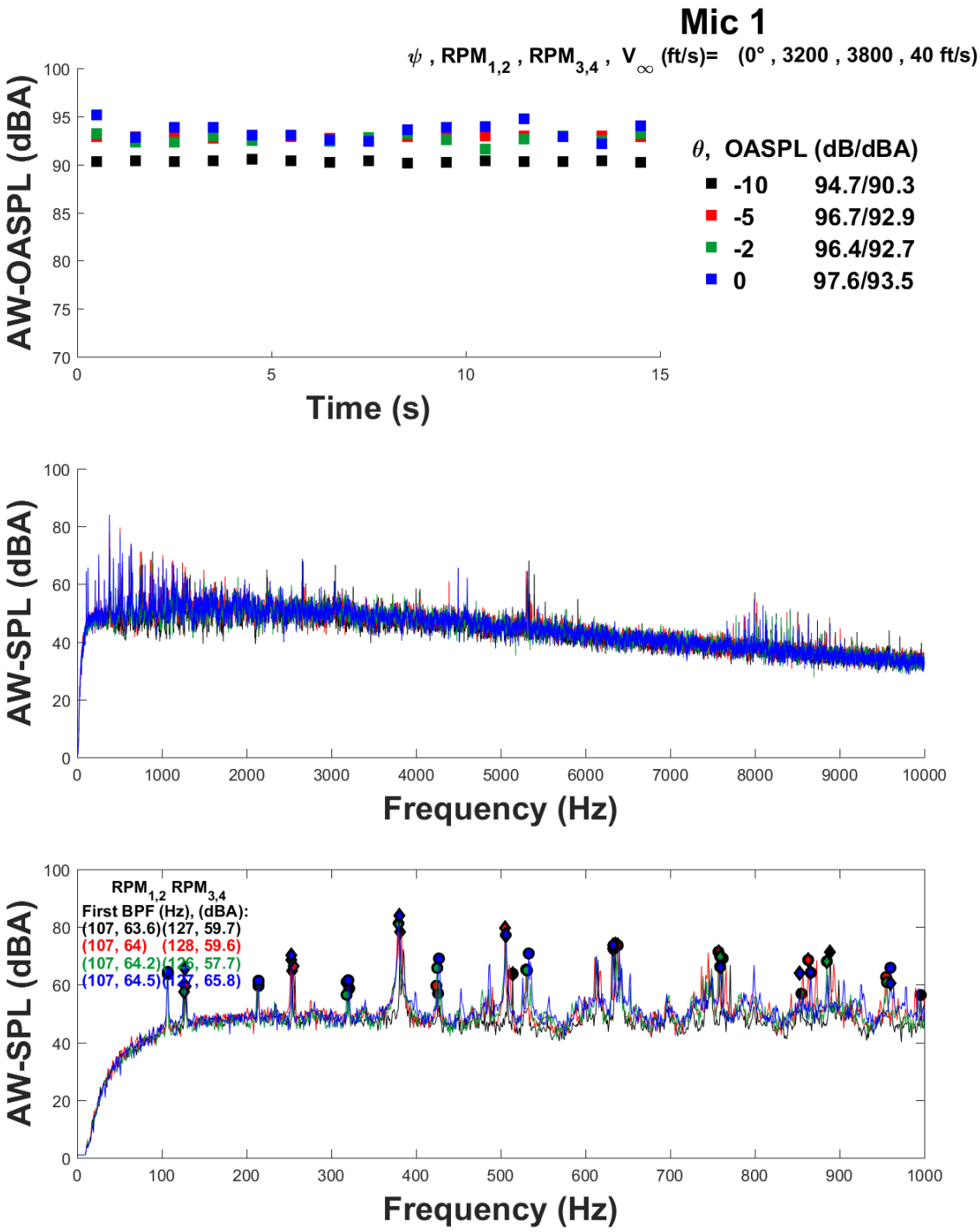

Figure E186: SUI microphone 1: Negative pitch sweep $\psi = 0°$, $V_\infty = 40$ ft/s, $RPM_{1,2} = 3{,}200$, $RPM_{3,4} = 3{,}800$

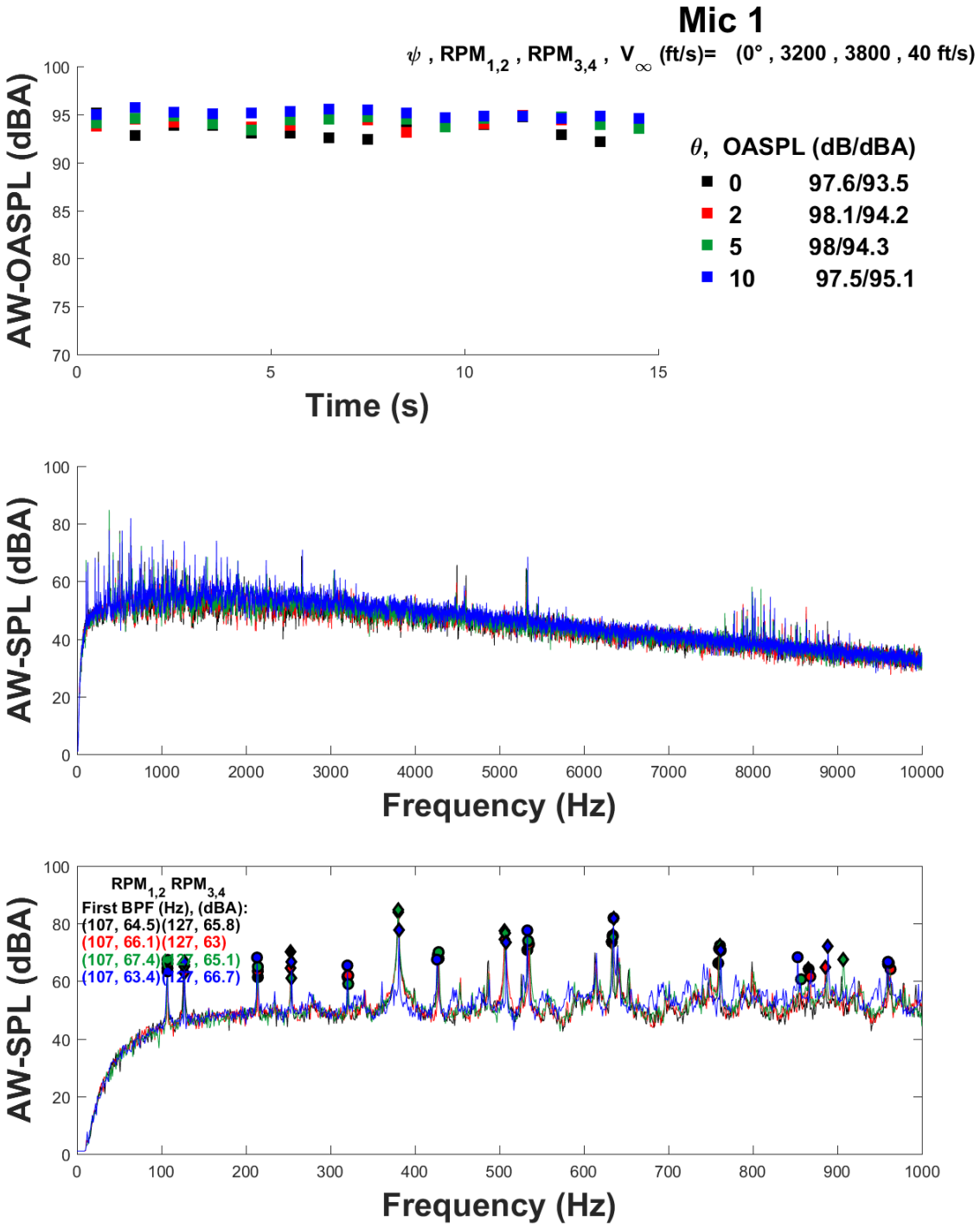

Figure E187: SUI microphone 1: Positive pitch sweep $\psi = 0°$, $V_\infty = 40$ ft/s, $RPM_{1,2} = 3{,}200$, $RPM_{3,4} = 3{,}800$

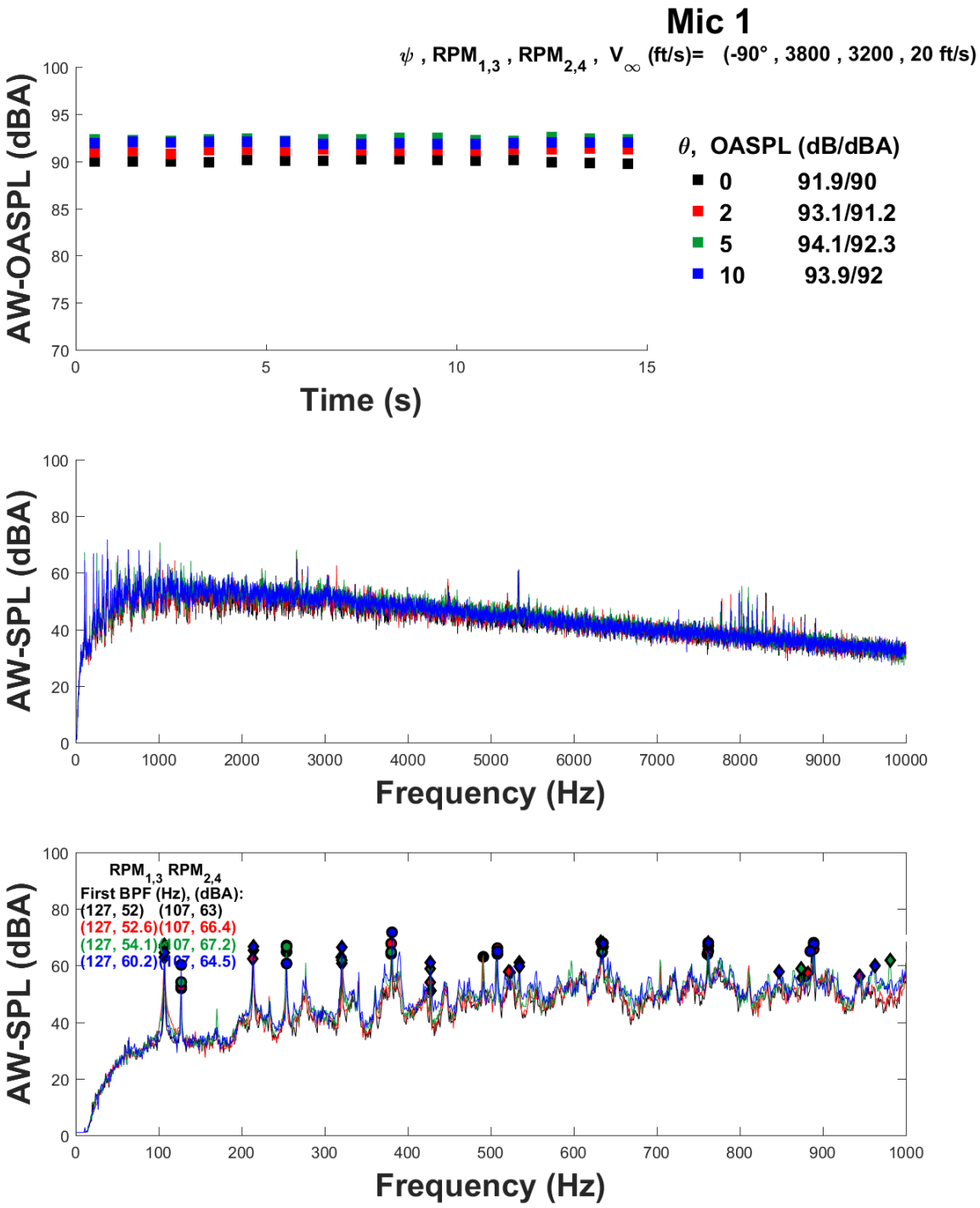

Figure E188: SUI microphone 1: Positive pitch sweep ψ = -90°, V_∞ = 20 ft/s, $RPM_{1,3}$ = 3,800, $RPM_{2,4}$ = 3,200

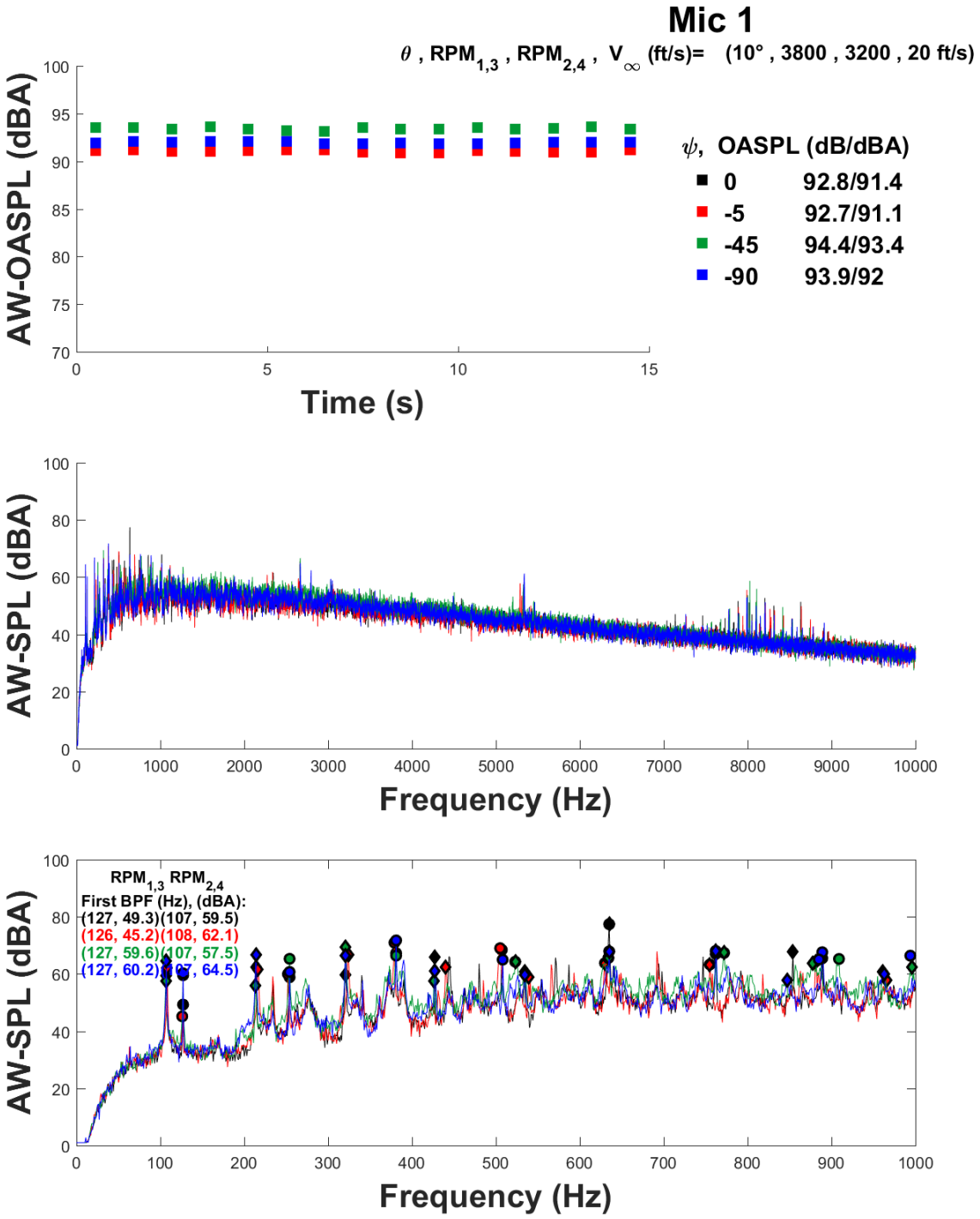

Figure E189: SUI microphone 1: Yaw sweep $V_\infty = 20$ ft/s, $\theta = 10°$, $RPM_{1,3} = 3{,}800$, $RPM_{2,4} = 3{,}200$

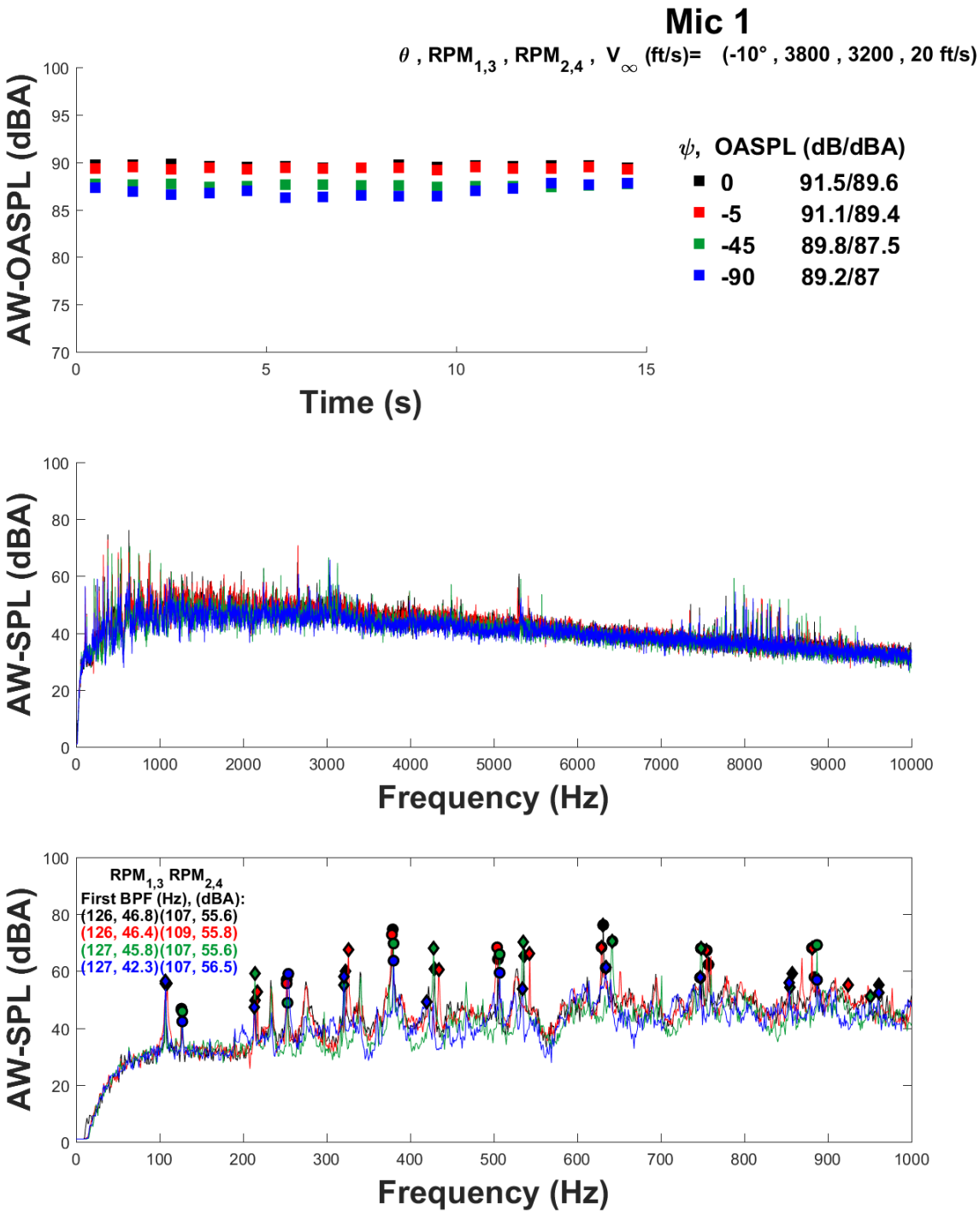

Figure E190: SUI microphone 1: Yaw sweep V_∞ = 20 ft/s, θ = -10°, $RPM_{1,3}$ = 3,800, $RPM_{2,4}$ = 3,200

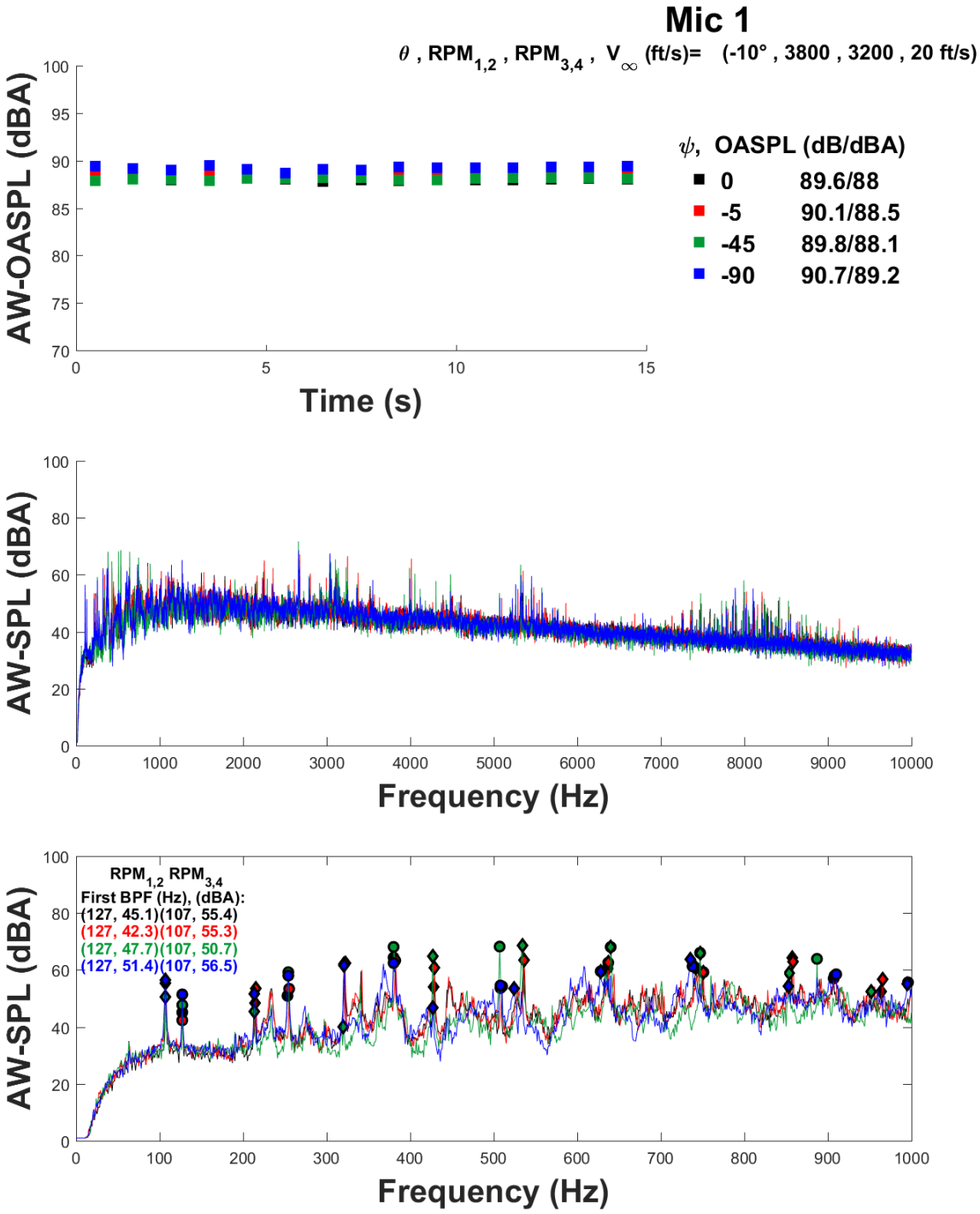

Figure E191: SUI microphone 1: Yaw sweep V_∞ = 20 ft/s, θ = -10°, $RPM_{1,2}$ = 3,800, $RPM_{3,4}$ = 3,200

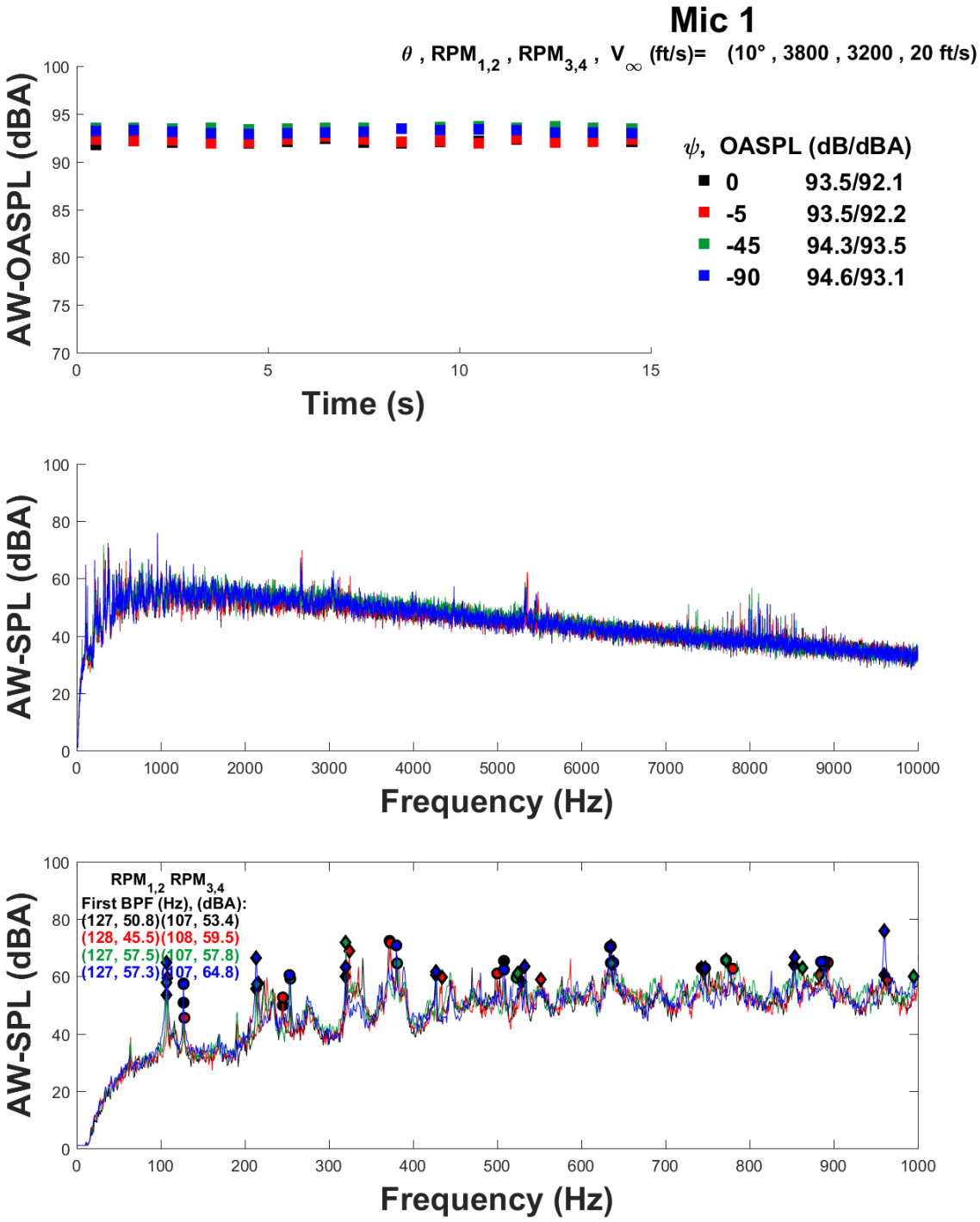

Figure E192: SUI microphone 1: Yaw sweep repeat $V_\infty = 20$ ft/s, $\theta = 10°$, $RPM_{1,2} = 3{,}800$, $RPM_{3,4} = 3{,}200$

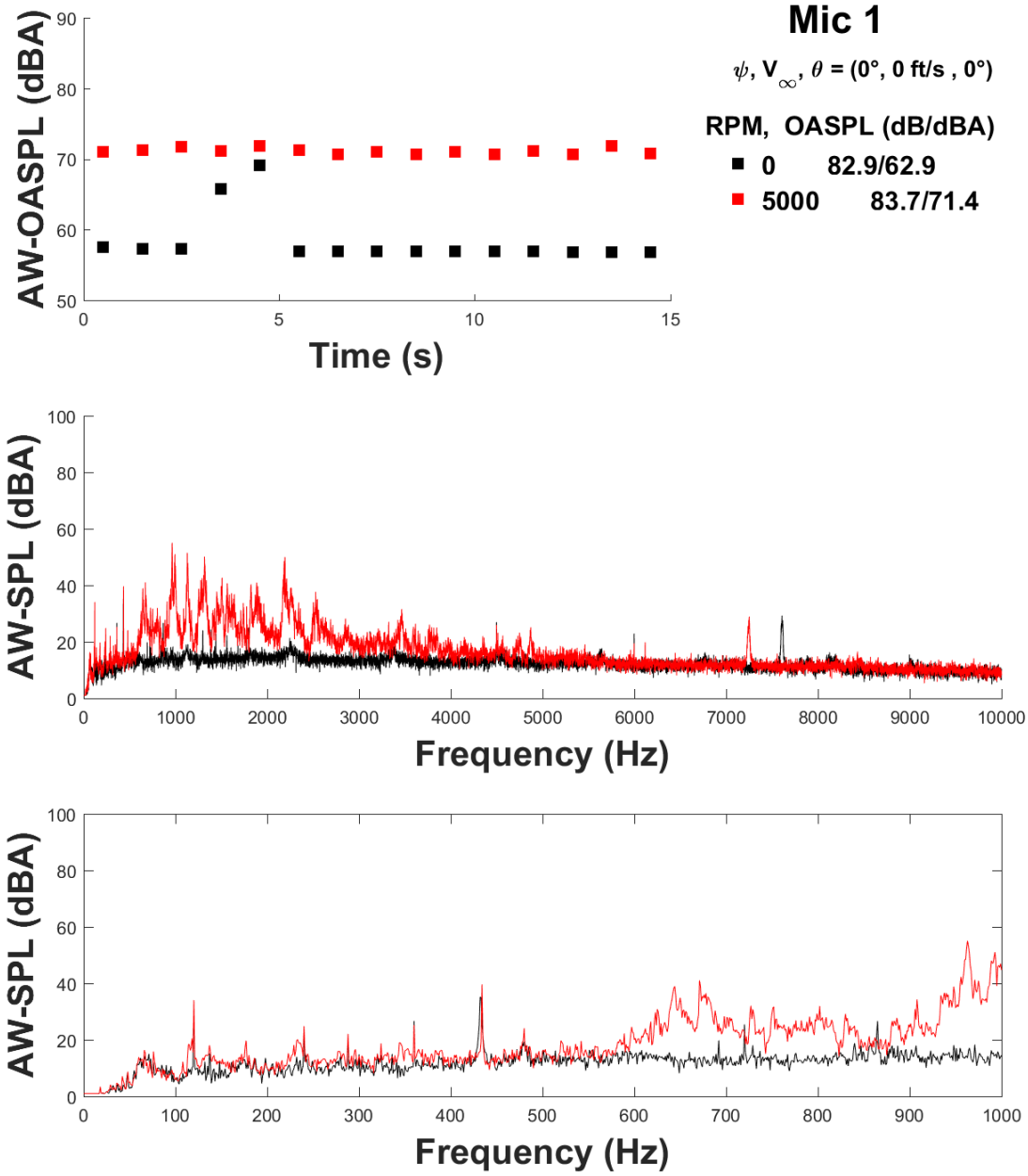

Figure E193: Phantom Bare Airframe microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 0$ ft/s, $\theta = 0°$

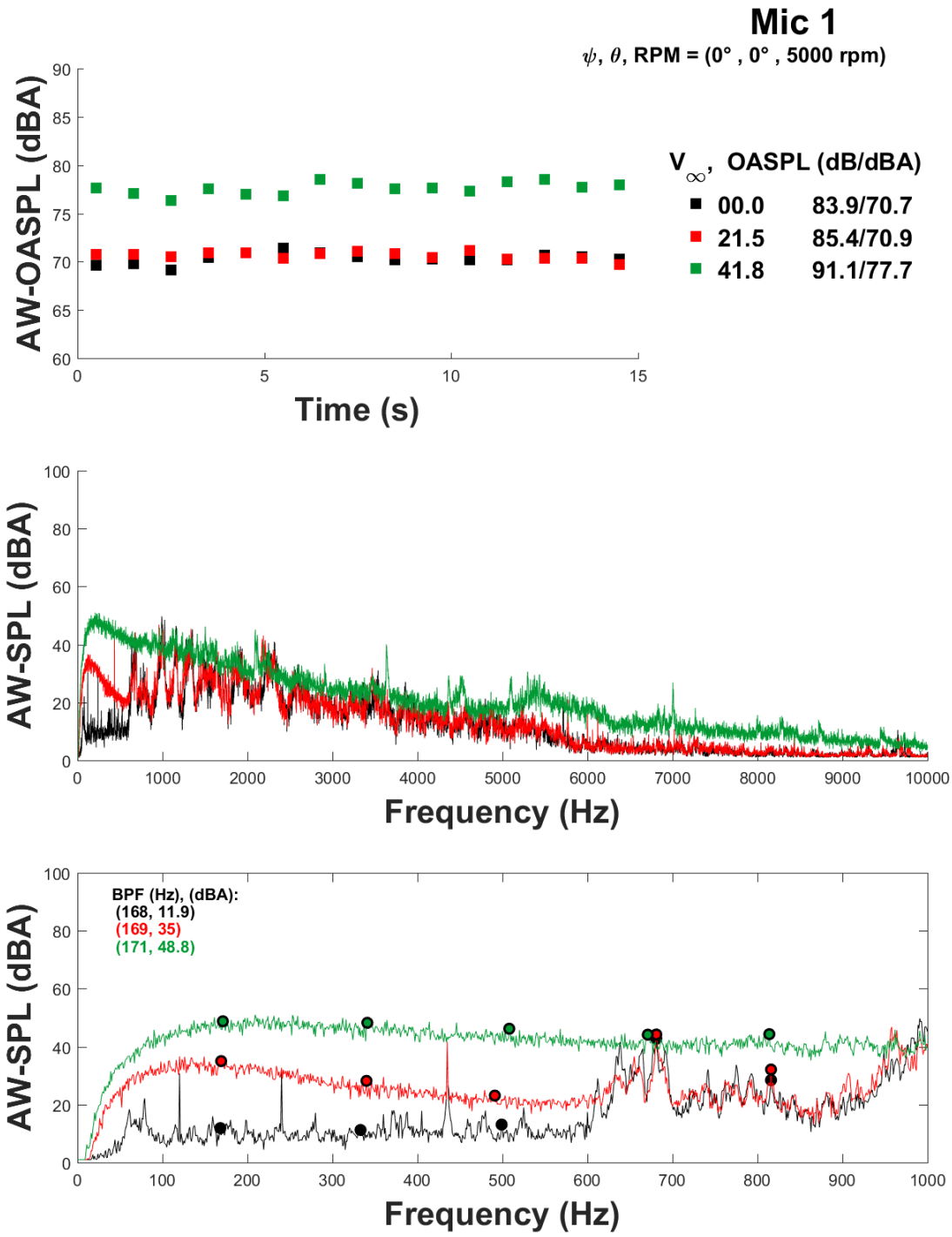

Figure E194: Phantom Bare Airframe microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 0°$, $RPM_{1,2,3,4} =$ 5,000

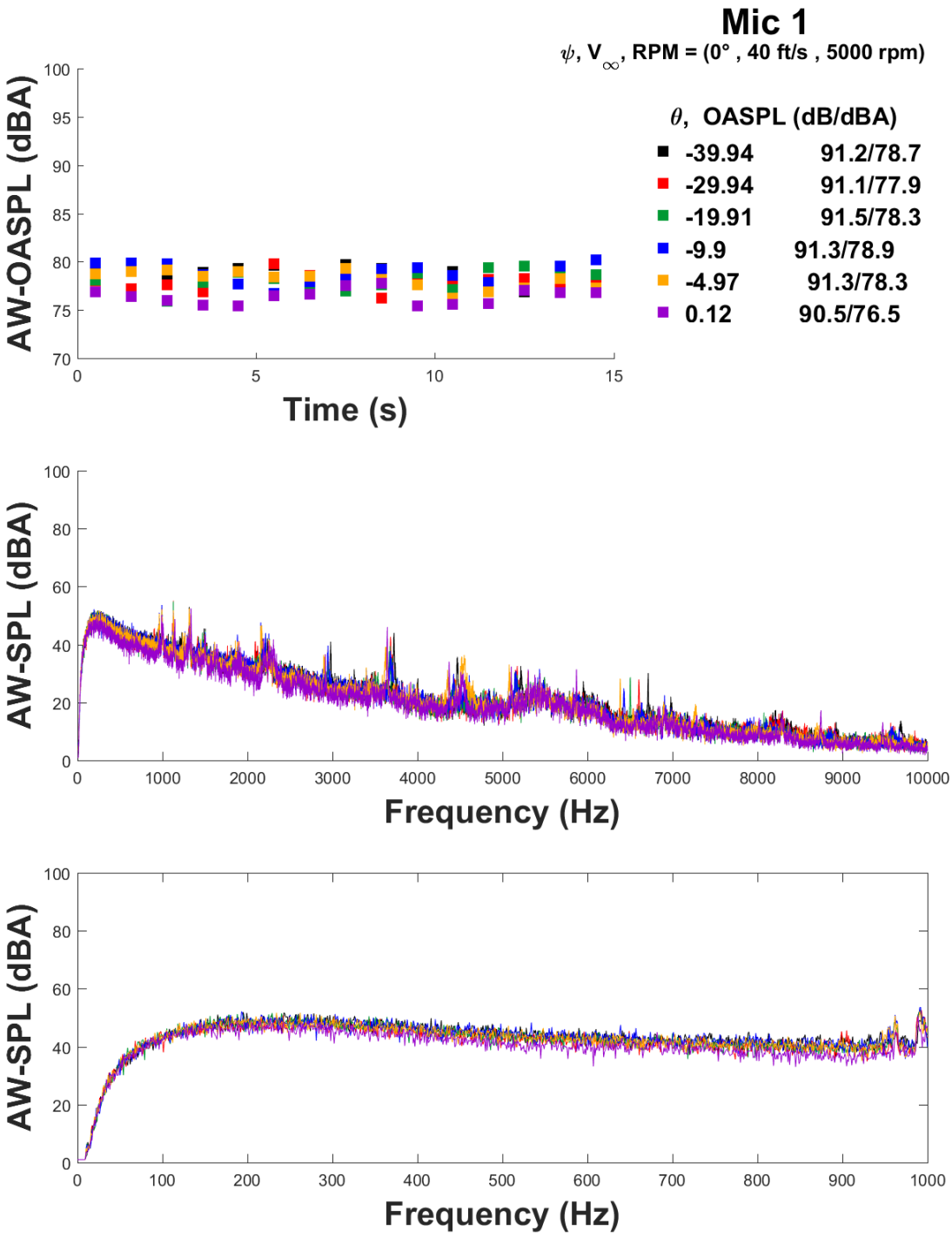

Figure E195: Phantom Bare Airframe microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 40$ ft/s, RPM= 5,000

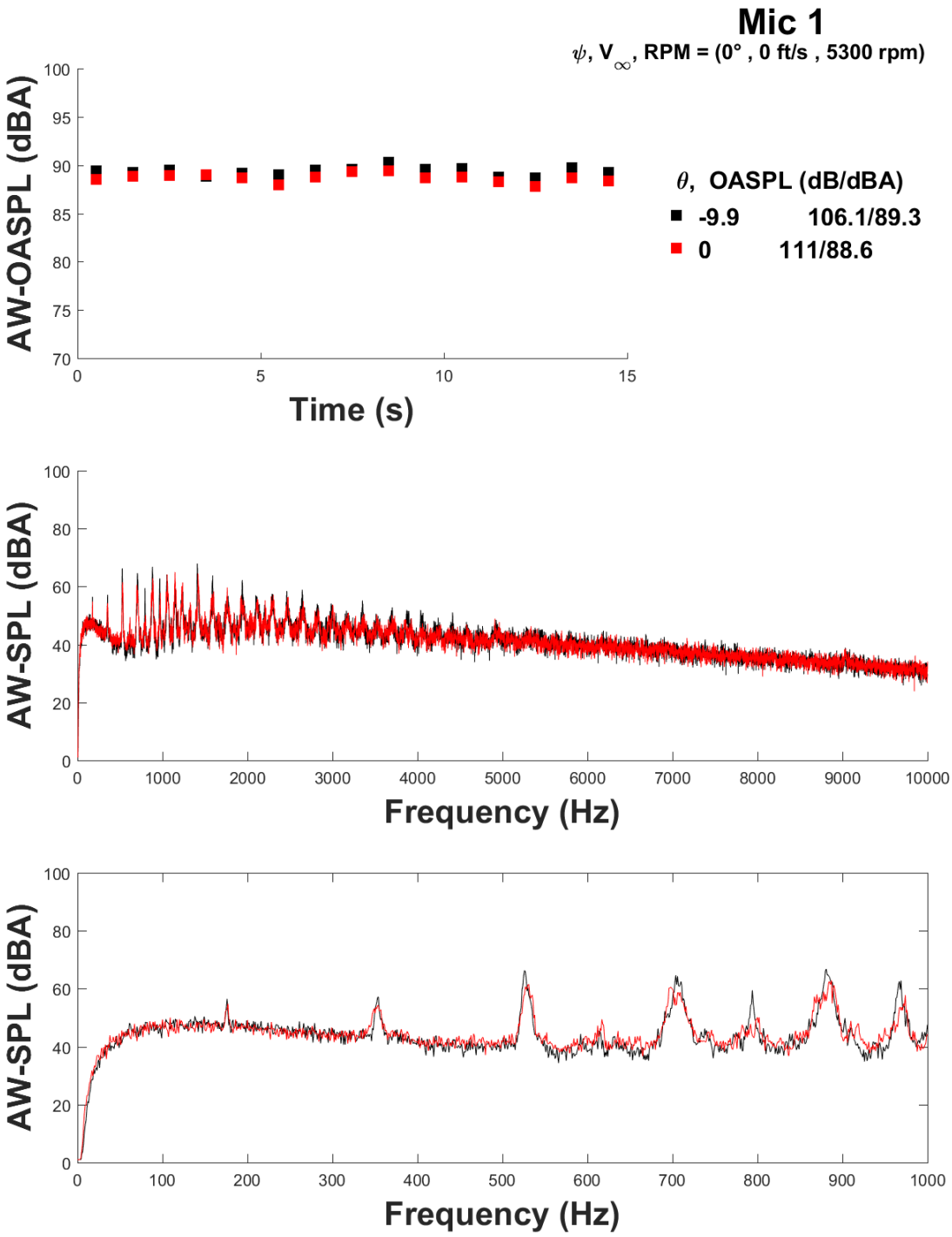

Figure E196: Phantom microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 0$ ft/s, RPM= 5,300

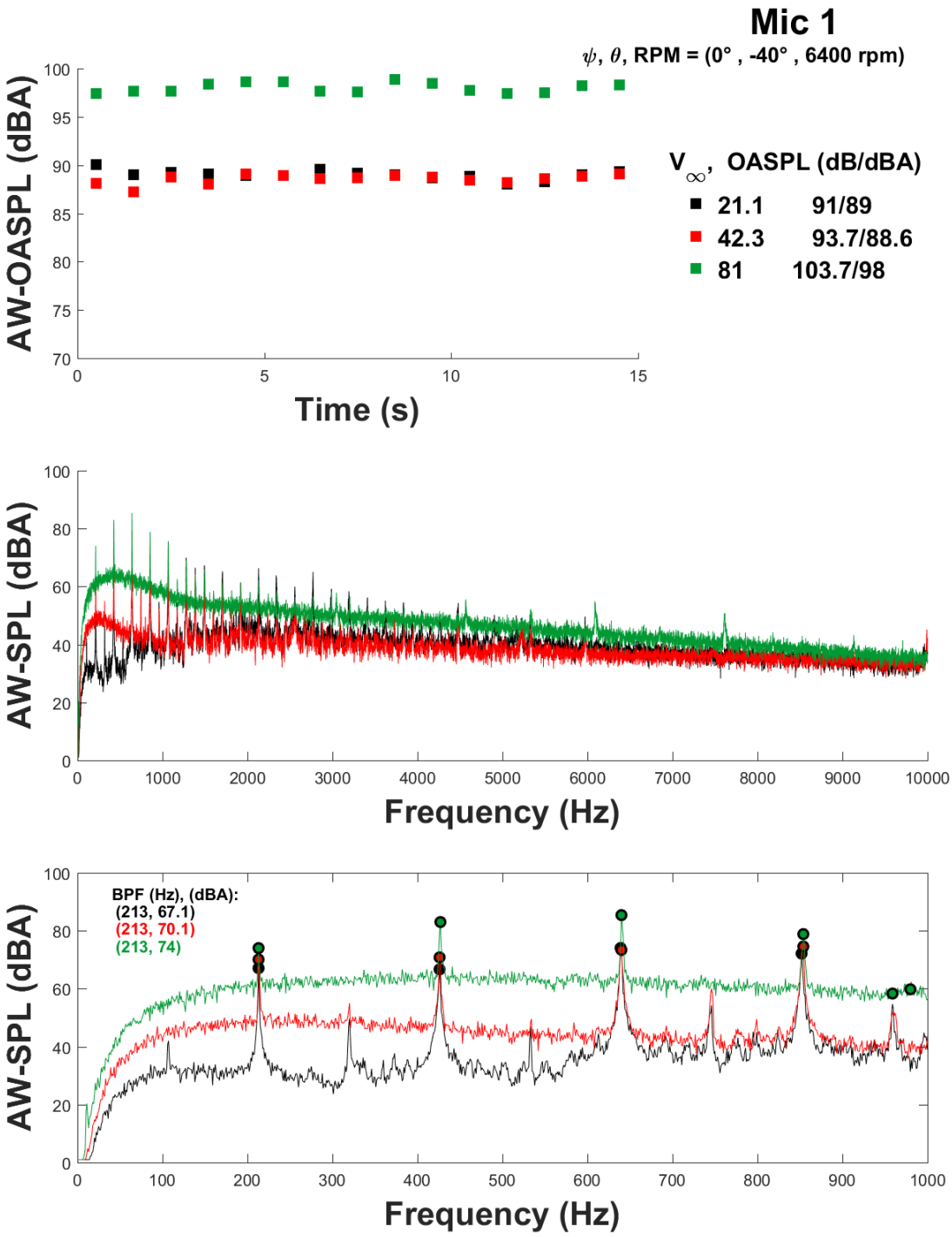

Figure E197: Phantom microphone 1: V_∞ sweep $\psi = 0°$, θ = -40°, RPM= 6,400

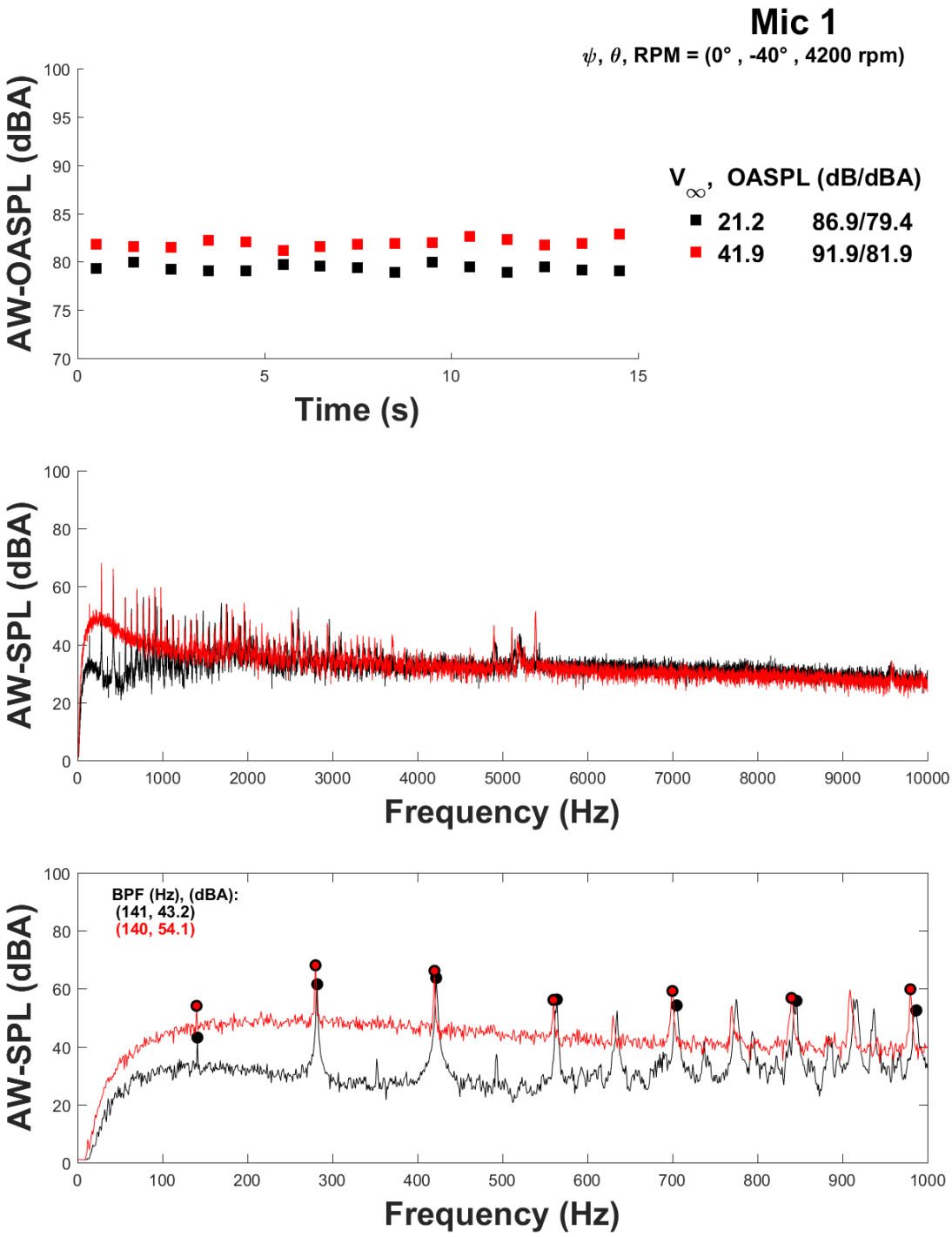

Figure E198: Phantom microphone 1: V_∞ sweep $\psi = 0°$, θ = -40°, RPM= 4,200

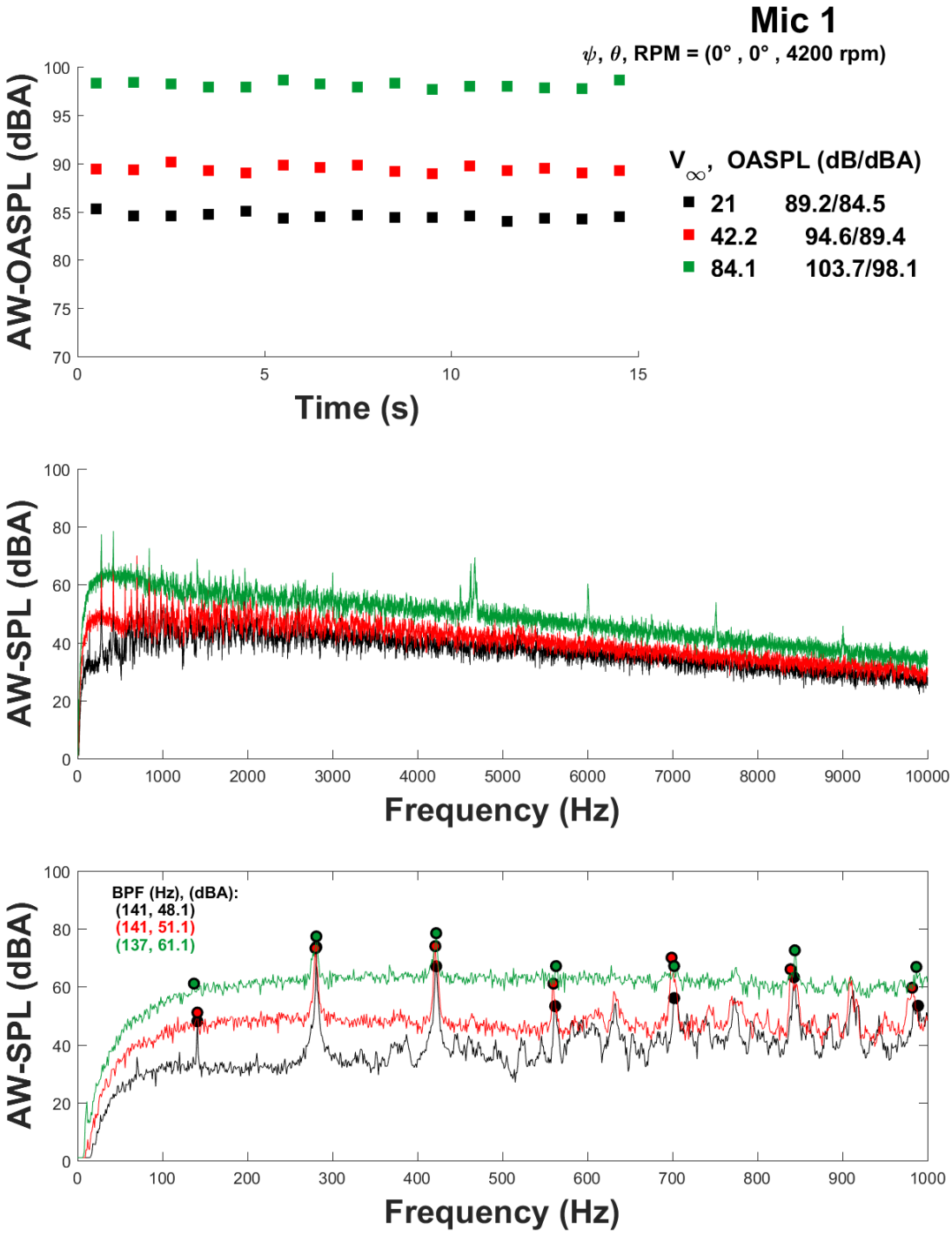

Figure E199: Phantom microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 0°$, RPM= 4,200

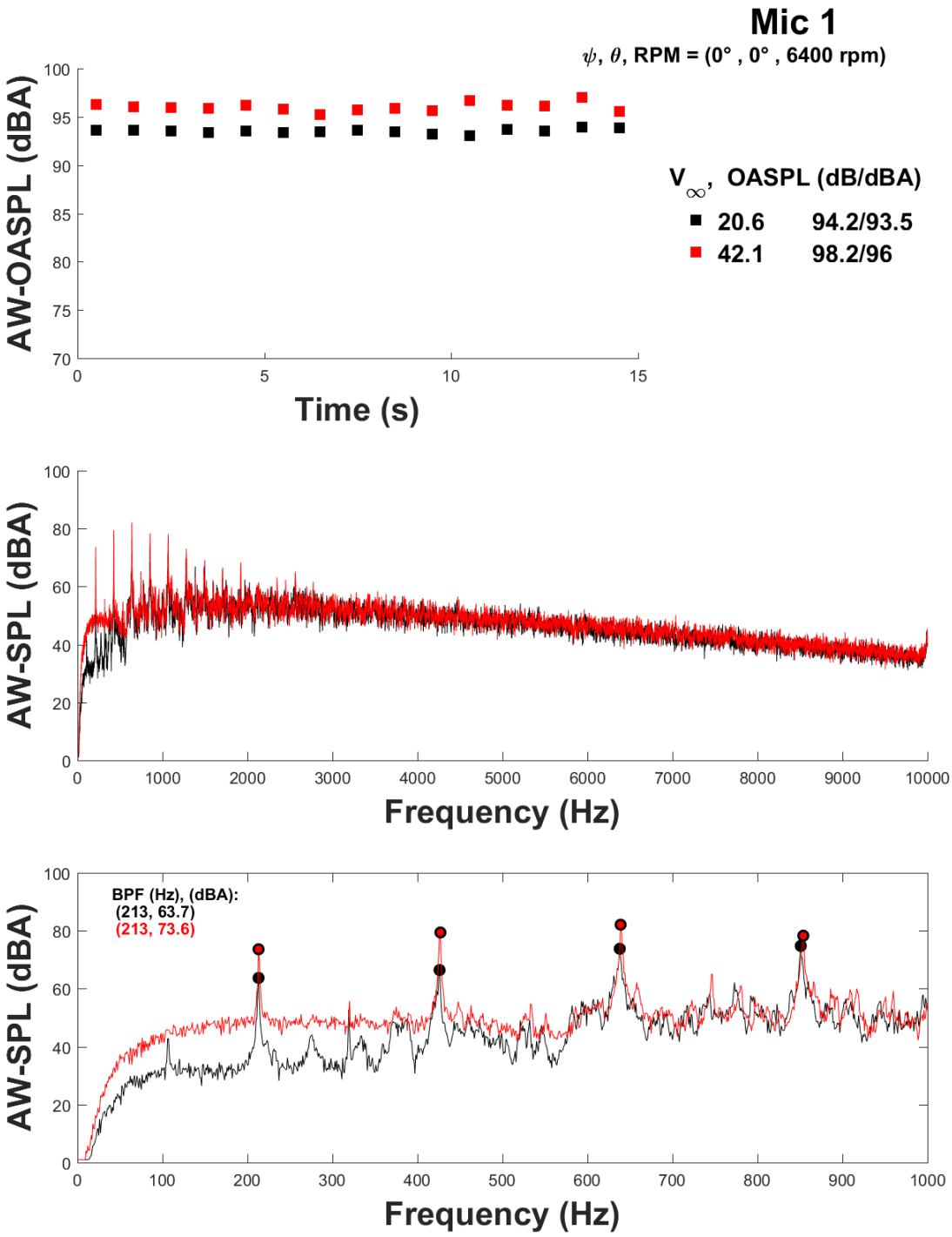

Figure E200: Phantom microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 0°$, RPM= 6,400

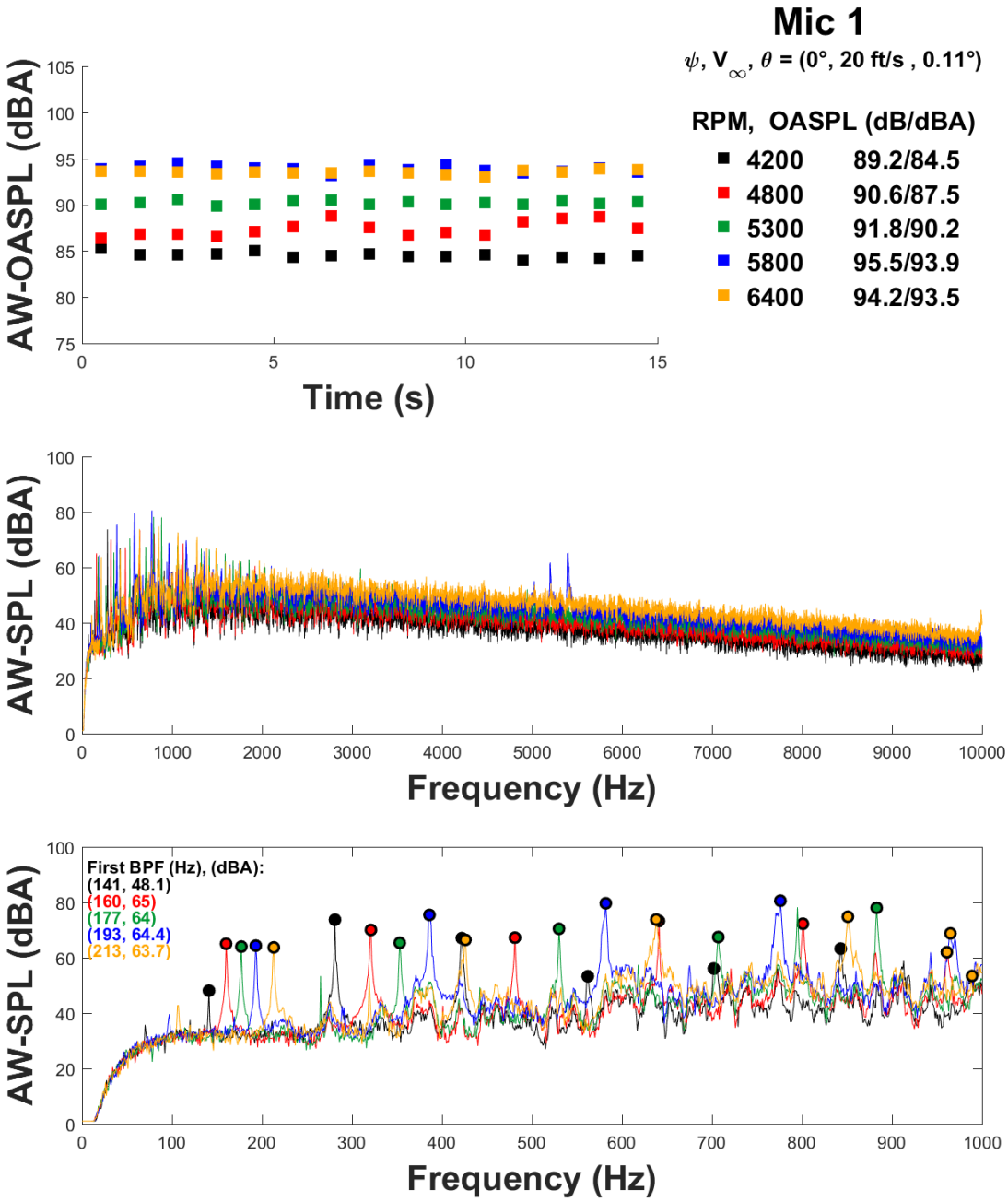

Figure E201: Phantom microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 20$ ft/s, $\theta = 0.11°$

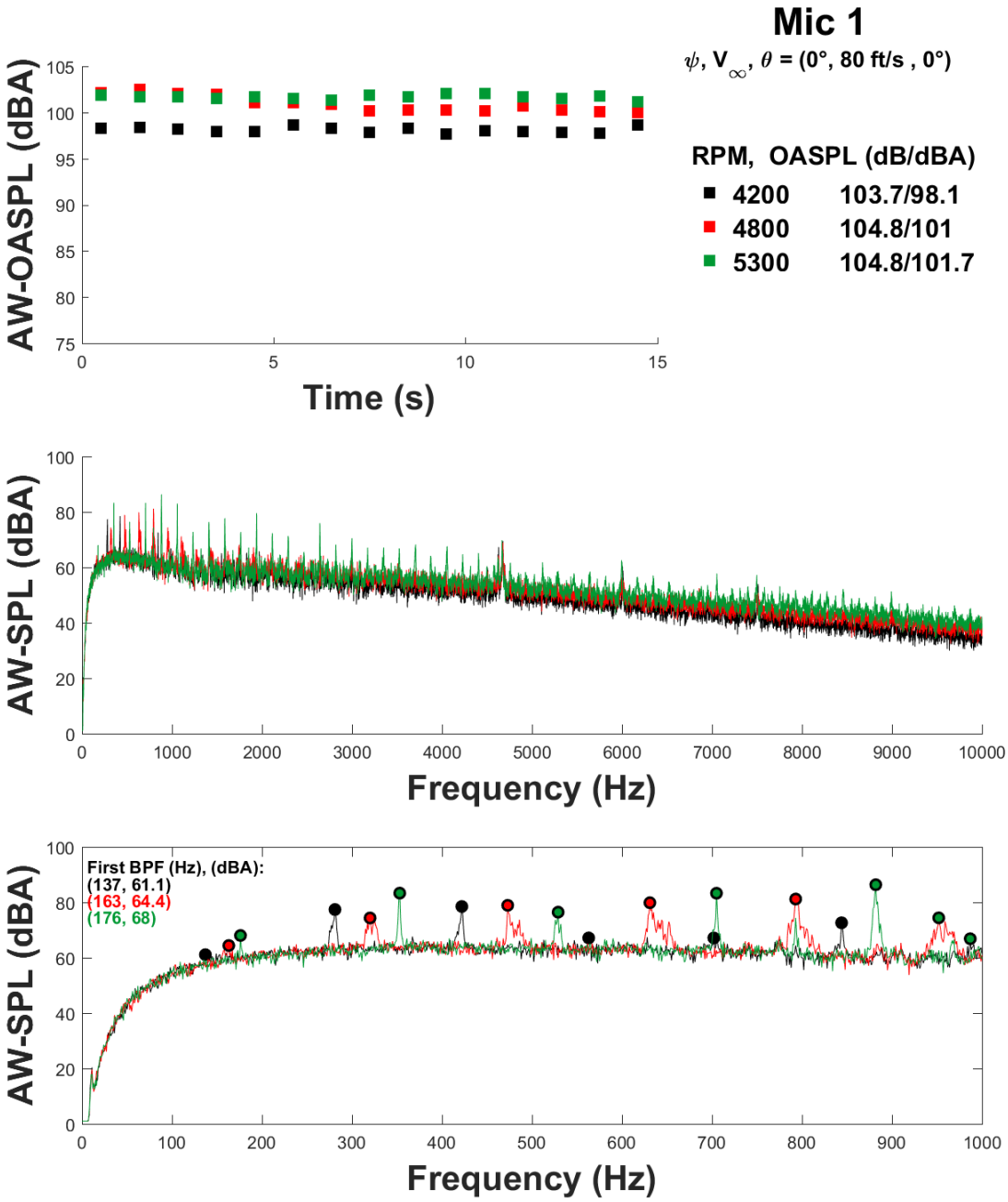

Figure E202: Phantom microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 80$ ft/s, $\theta = 0°$

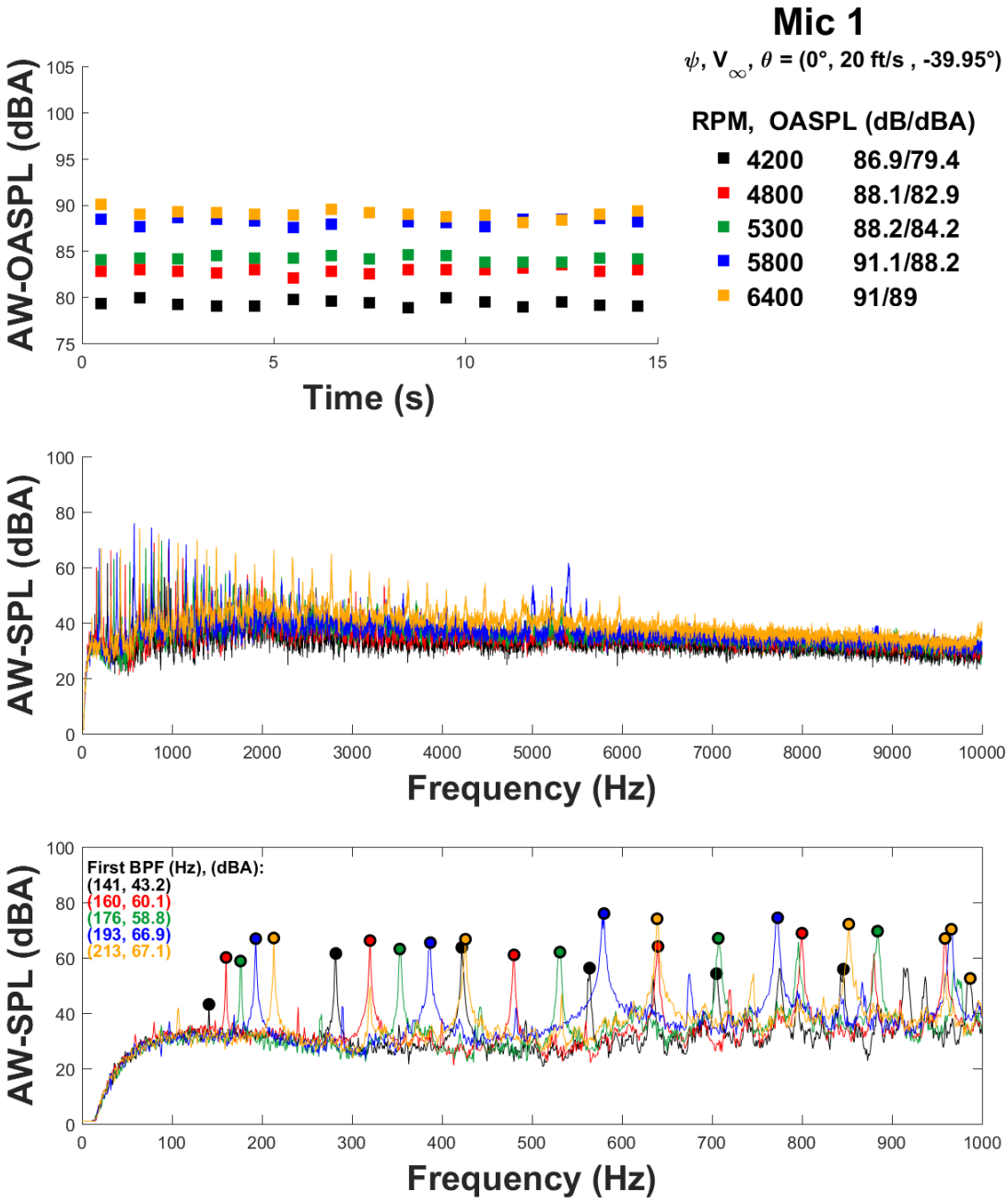

Figure E203: Phantom microphone 1: RPM sweep $\psi = 0°$, $V_\infty = 20$ ft/s, θ = -40°

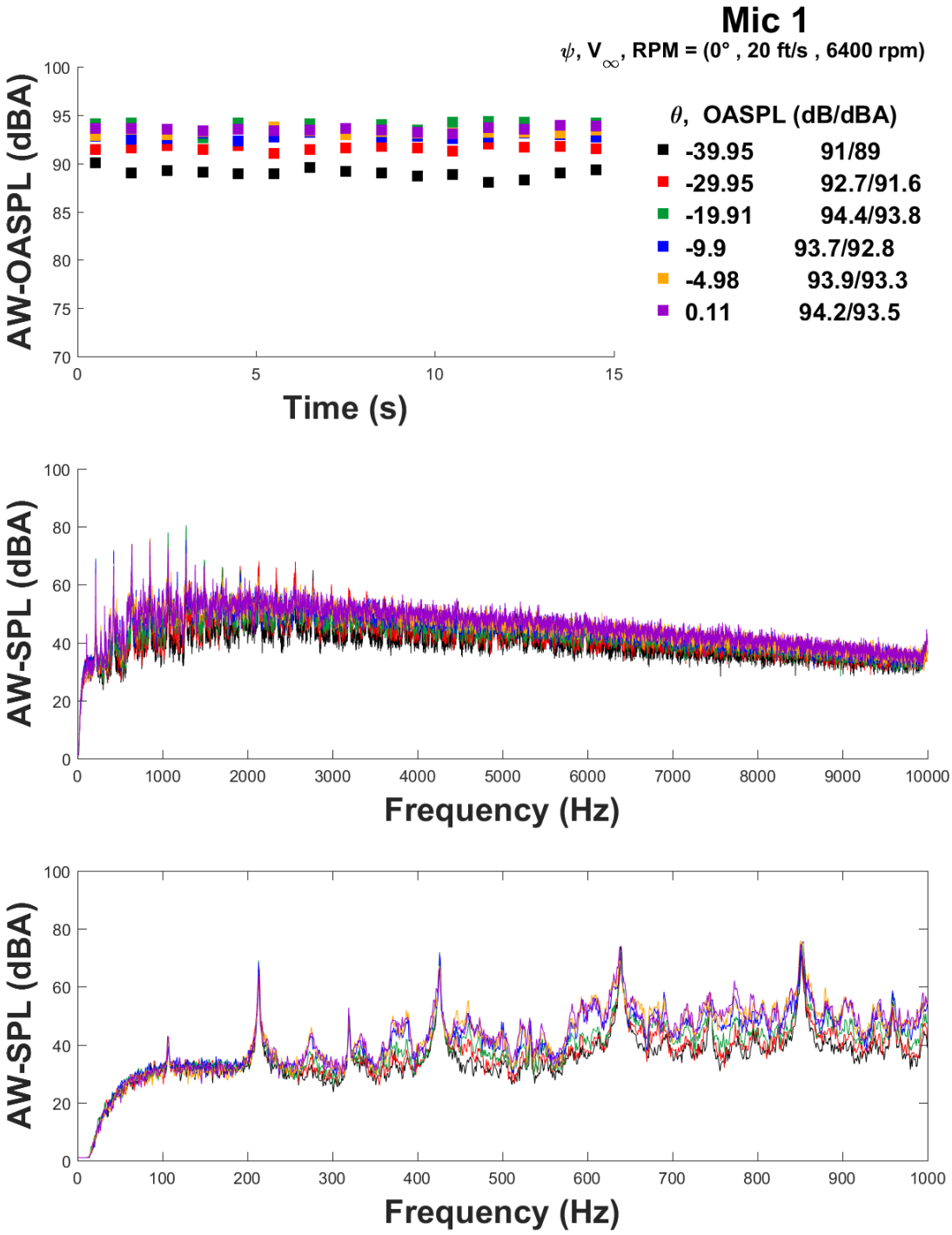

Figure E204: Phantom microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, RPM= 6,400

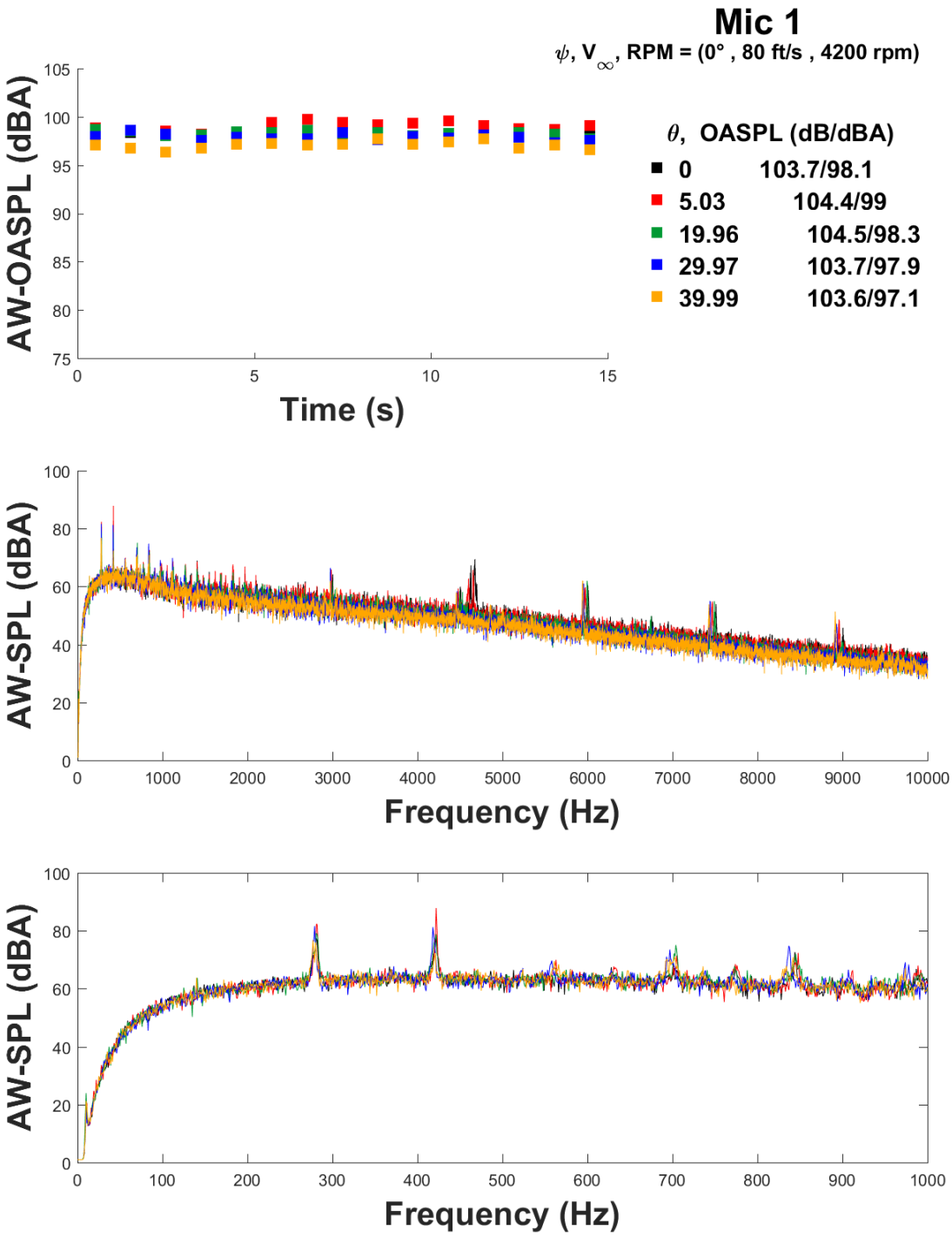

Figure E205: Phantom microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 80$ ft/s, RPM= 4,200

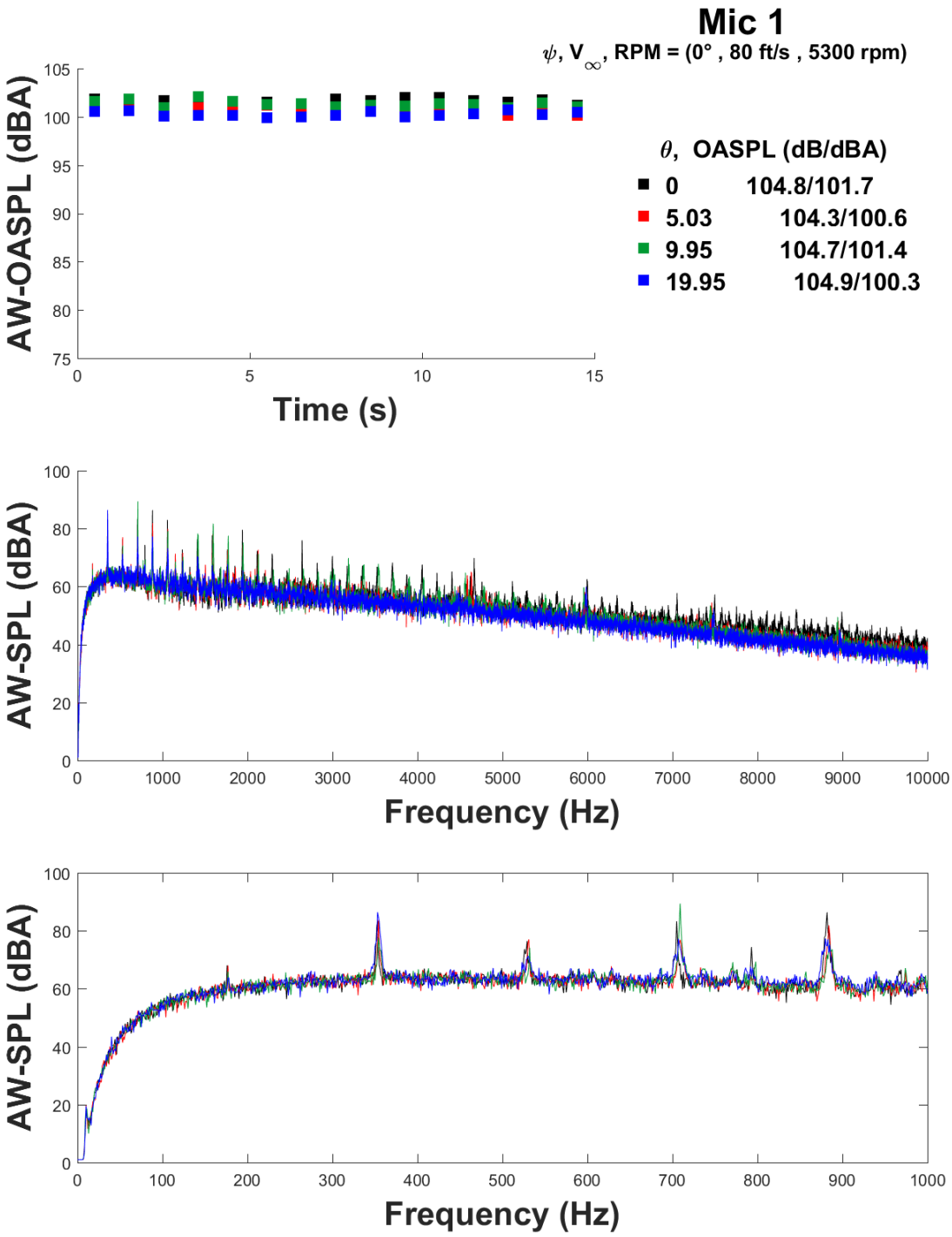

Figure E206: Phantom microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 80$ ft/s, RPM= 5,300

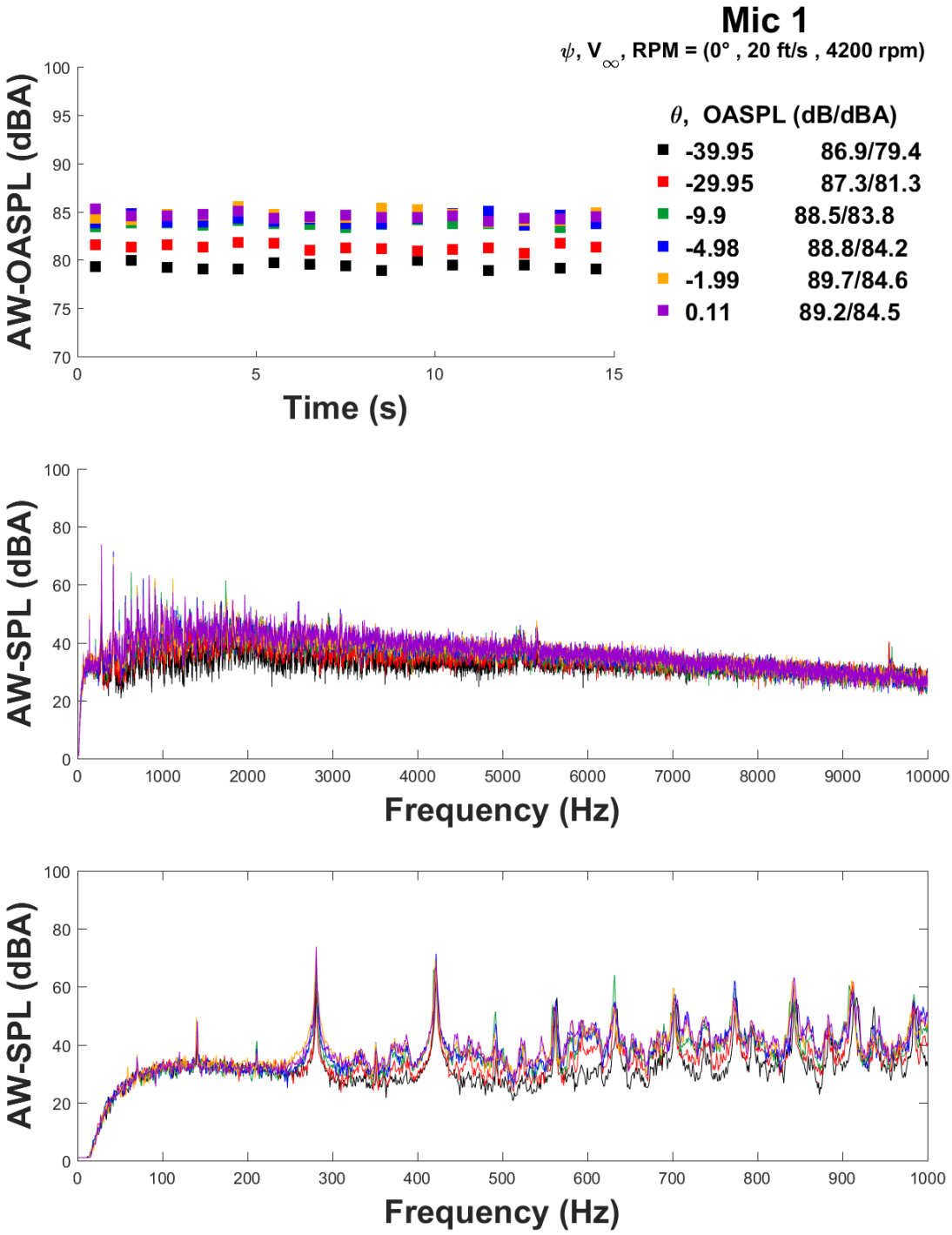

Figure E207: Phantom microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, RPM= 4,200

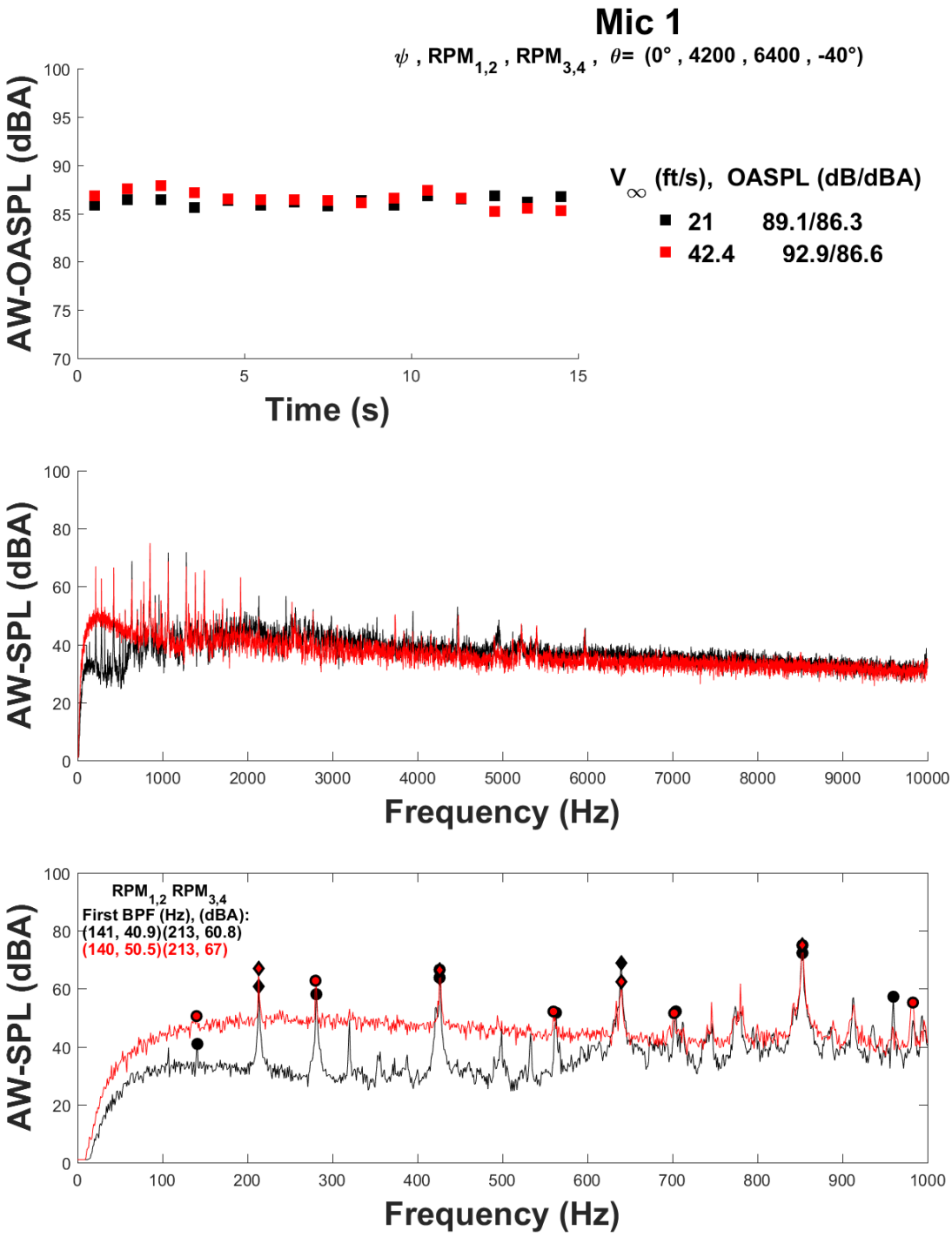

Figure E208: Phantom microphone 1: V_∞ sweep $\psi = 0°$, θ = -40°, $RPM_{1,2}$ = 4,200, $RPM_{3,4}$ = 6,400

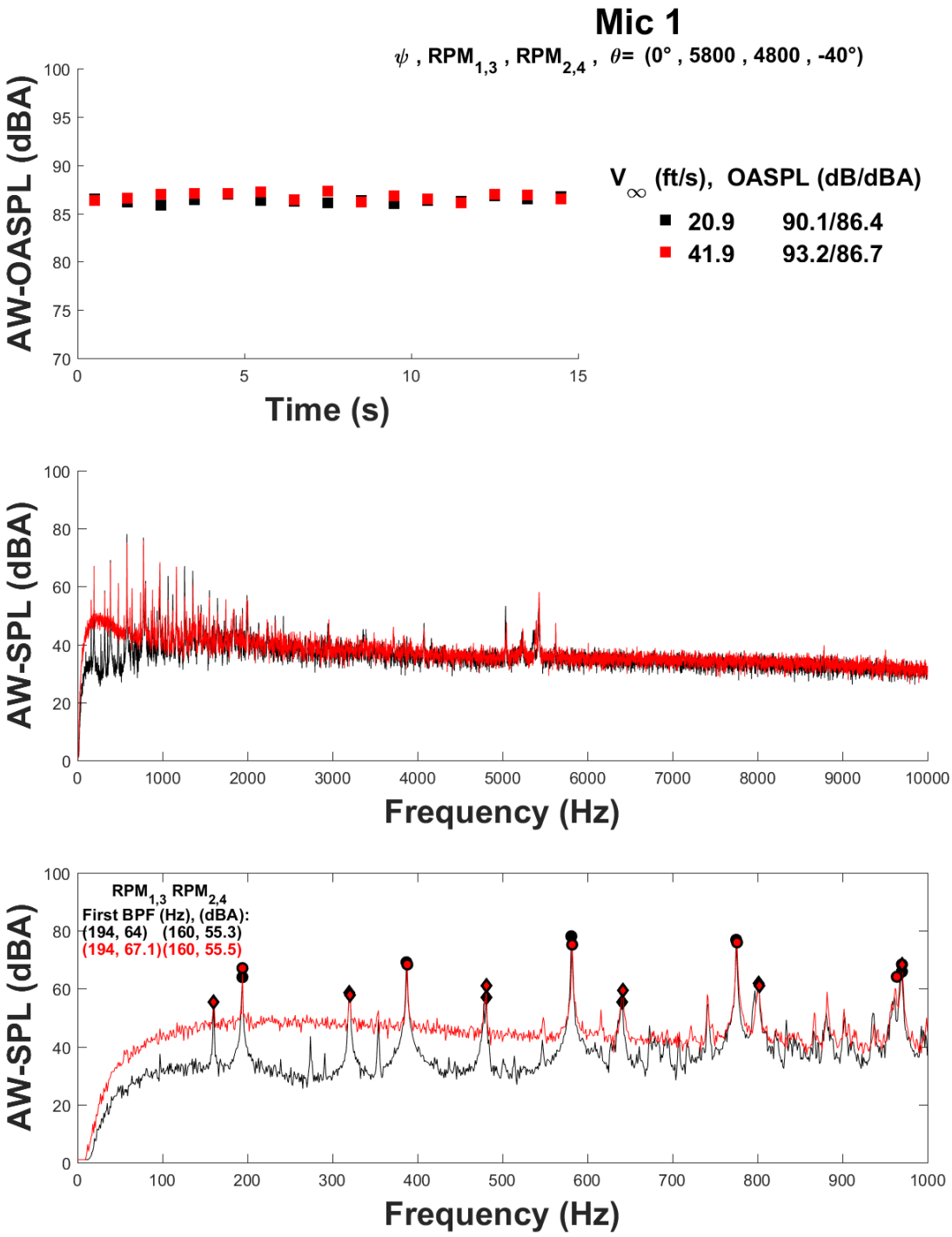

Figure E209: Phantom microphone 1: V_∞ sweep $\psi = 0°$, θ = -40°, $RPM_{1,3}$ = 5,800, $RPM_{2,4}$ = 4,800

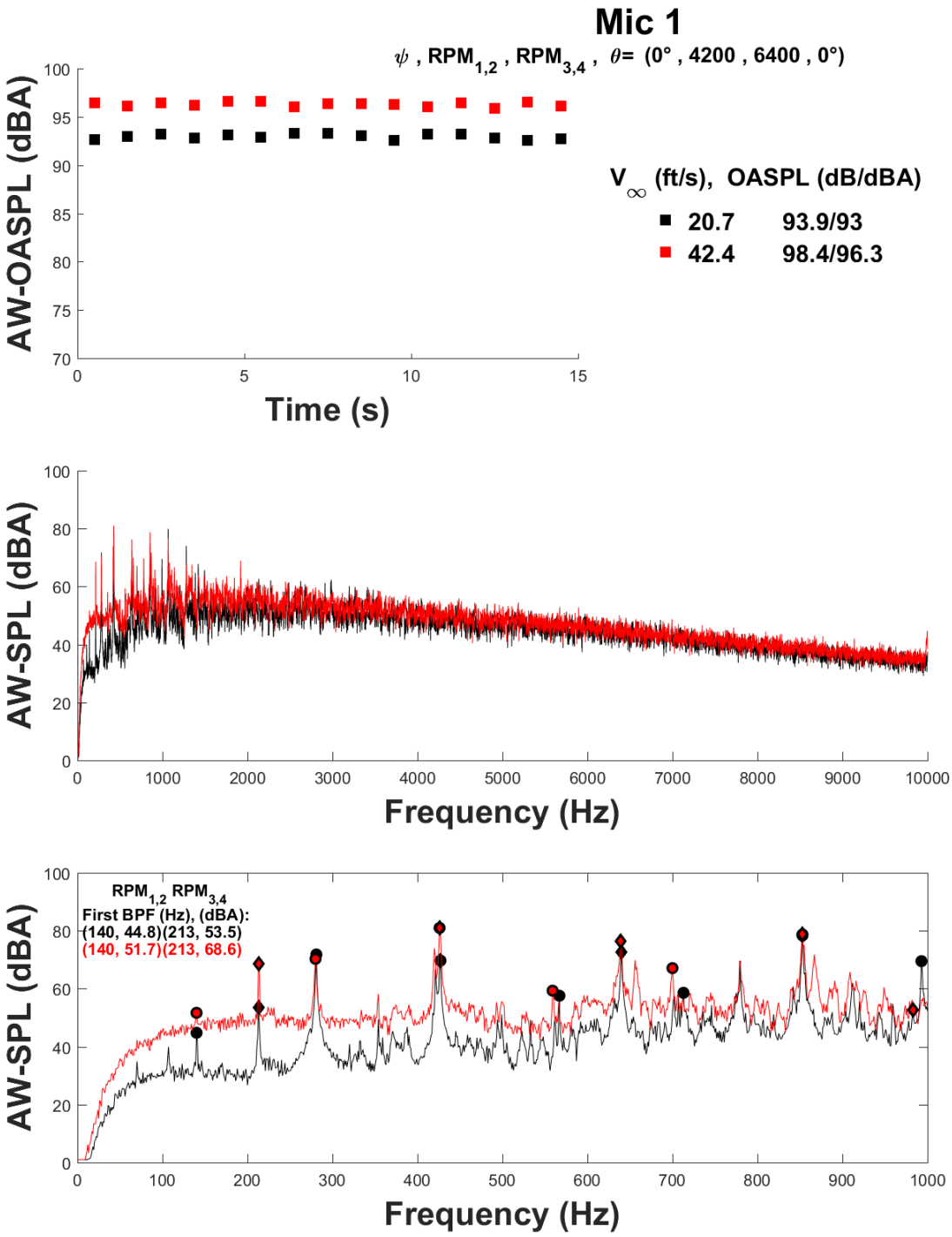

Figure E210: Phantom microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 0°$, $RPM_{1,2} = 4{,}200$, $RPM_{3,4} = 6{,}400$

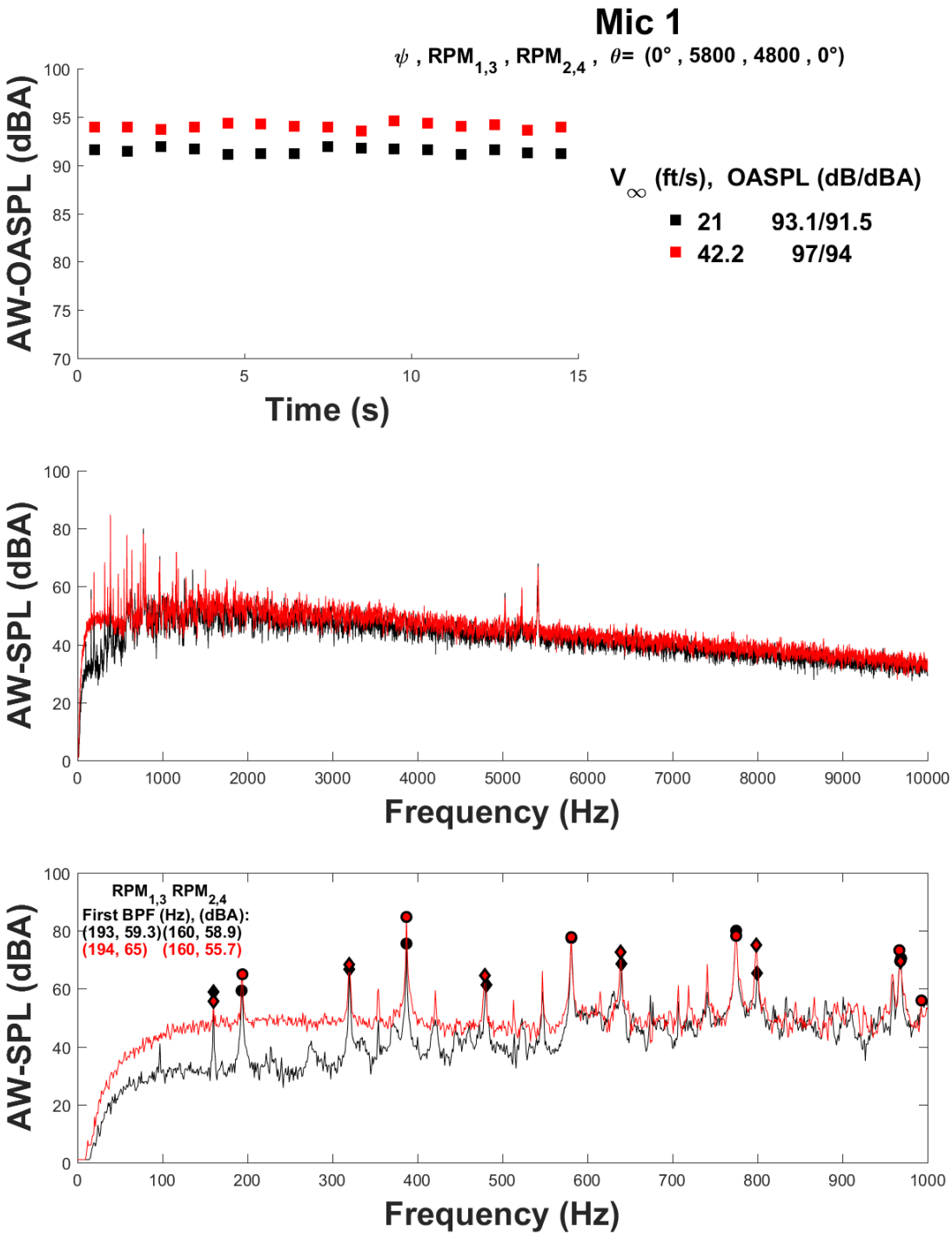

Figure E211: Phantom microphone 1: V_∞ sweep $\psi = 0°$, $\theta = 0°$, $RPM_{1,3} = 5{,}800$, $RPM_{2,4} = 4{,}800$

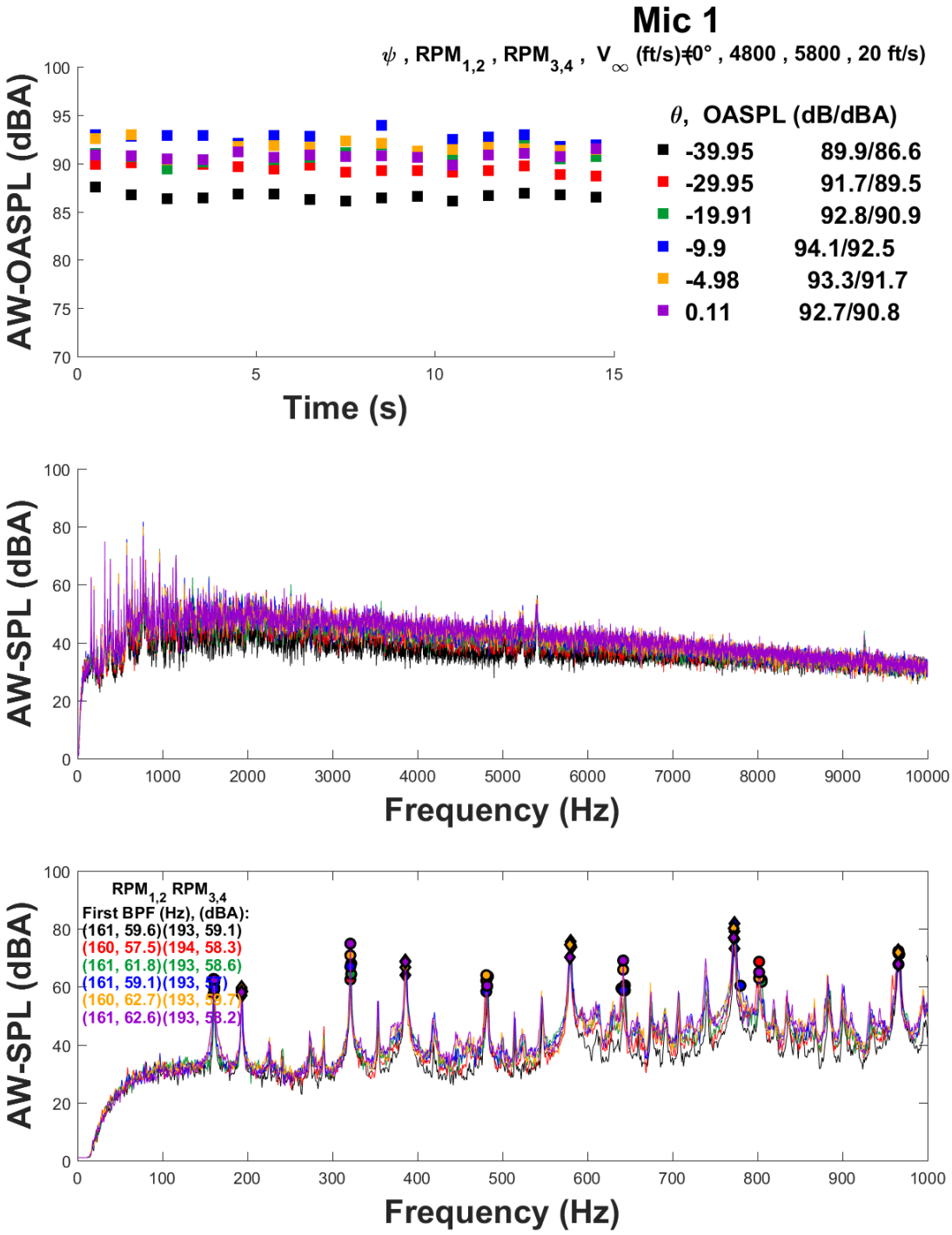

Figure E212: Phantom microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 20$ ft/s, $RPM_{1,2} = 4{,}800$, $RPM_{3,4} = 5{,}800$

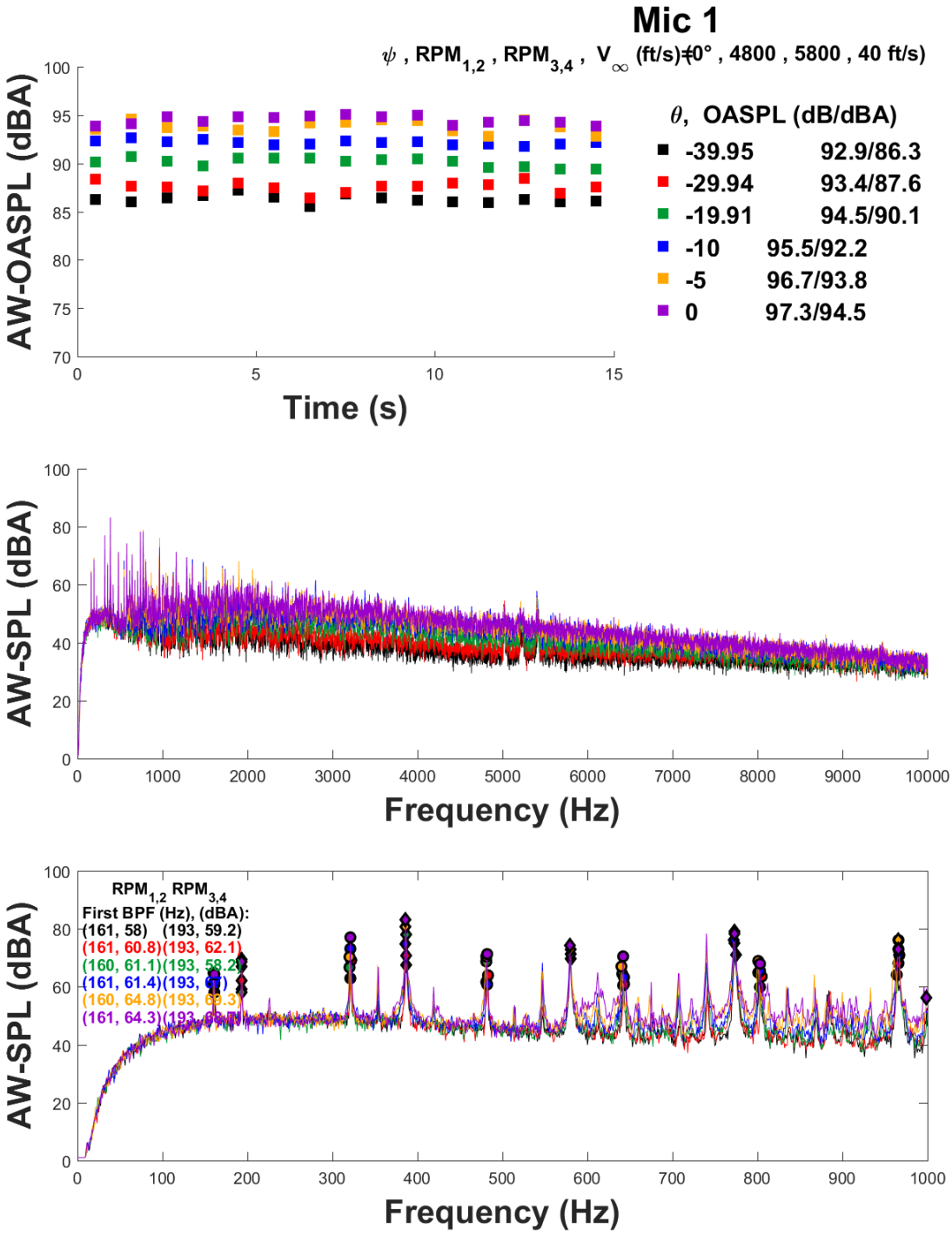

Figure E213: Phantom microphone 1: Pitch sweep $\psi = 0°$, $V_\infty = 40$ ft/s, $RPM_{1,2} = 4{,}800$, $RPM_{3,4} = 5{,}800$

Appendix F

MATLAB Code

F.1 Yaw Sweep MATLAB plotting code

```
% Process .txt files from Astro Med data acquisition system.
%
%
% SYNTAX:
% fft = fft(signal) ; Signal is the vector you perform the FFT on.
%
%
% DESCRIPTION:
% This code reads in Text files generated by an Astro Med data acquisition
% system. The Text files must be properly generated and converted from DCR
% files which is the original format produced by the Astro Med machine.
% This process is detailed in 'Acoustic Analysis of Multicopter UAS 7x10
% Wind Tunnel Test - J. Cornelius'. The code processes the voltage data,
% removes the gain from the signal, calculates a 1-Hz averaged A-weighted
% overall sound pressure level, a 1-Hz averaged A-weighted frequency
% spectrum, and an overall frequency spectrum. The code plots the
% A-weighted OASPL vs. time and the A-weighted sound pressure level vs.
% frequency.
%
%
% INPUTS:
%
% j = For loop variable, allows the code to run multiple text
%  files and lay them on top of each other on the same plot.
%  'j' is the row of the sheet "Main", from the digitized run
%  log, that you would like to run. 'j' must be set at the
%  beginning of the loop, and in the three if statements
%  immediately following the loop declaration.
%
% ModelName = Name of the model you want to be shown on the plots
%  produced
%
% frequency = The maximum value that the plots will plot to on the
%  frequency spectrum plot
%
% ylim1 = ymin for A-weighted OASPL plot
% ylim2 = ymax for A-weighted OASPL plot
% ylim3 = ymin for A-weighted frequency spectrum plot
% ylim4 = ymax for A-weighted frequency spectrum plot
%
% filename = This is the file path that tells MATLAB where to find the
%  .txt file you are trying to run. To locate the correct
%  file, go to the point you would like to run in the
%  digitized run log (excel sheet "Main"), and look at the
%  time recorded in column 'E' (DAQ Time). Go into the folder
%  corresponding to the day the data point was recorded
%  (column H). Find the file with the matching time on line 4
%  of the text file.
```

```
%  *Tip: The preview pane allows a view of the first few lines
%  of the text file without actually opening it (saves time).
%
% startRow = Tells the code the first pertinent line of the .txt file
%
% endRow = Tells the code how long the .txt file is. This must be
%  changed if the Astro Med is not set to record 15 seconds of
%  data.
%
% P_ref = Reference pressure in pascals, 2e-5 is standard for air.
%
% Fs = Sampling frequency. Note! This is a setting on the Astro
%  Med system. 100,000 Hz was used for the Multicopter UAS 7-by 10-foot
%  wind tunnel testing.
%
% FFT_Calculation_Time_Interval = The amount of time the FFT calculates per
%  iteration. Standard practice calls for 1-second divisions
%  averaged together to get the final frequency spectrum. So
%  this should be set to 1.
%
%
%
% OUTPUT:
% 1-Hz averaged A-weighted overall sound pressure level (in dBA) and 1-Hz
% averaged A-weighted sound pressure level frequency spectrum (in dBA)
%
% * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
% Written By: Jason K. Cornelius.
% Modified By: Domenick Gregory, Sean Waltermire
% * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

%% Text File Declaration
% This section specifies the appropriate .txt files and reads them in.

%Uncomment the following three lines to reset variables and clear figures
% on each run

%clear all
%close all
%clc

% 'Calibration_Constants_V2.mat' contains calibration constants from all
% the days acoustic data was collected. Constants used later in code. If
% additional testing is conducted, the 'Mic_Calibrations.m' code needs to
% be updated and run to gather the new calibration constants. The
% calibration procedure is documented in the 'Acoustic Analysis of
% Multicopter UAS 7x10 Wind Tunnel Test - J. Cornelius' TM.
load Calibration_Constants.mat;
% 'Excel_Reader_Main.m' calls a code that reads in the data from the
% digitized run log. This data is used throughout the code. If additional
% runs are added to the sheet "Main" of the excel document, the
% 'Excel_Reader_Main.m' must be updated to include the new rows.
run Cornelius_Excel_Reader_Main.m;
%Uncomment the following line to load variables produced from
%Cornelius_Excel_Reader_Main. This saves time. However, when the excel
%sheet is changed excel.mat needs to be updated by running the excel reader
%agian.
%load excel.mat
% Plotting settings are set here.
```

```
get(0,'Factory');
set(0,'defaultfigurecolor',[1 1 1]);
color = [[0 0 0]; [1 0 0]; [0 .6 .2]; [0 0 1]; [1 .65 0]; [.6 0 .8]];
c_color = 1;
space = ' ';
RPM_word = 'RPM, ';
pitch_word = 'Pitch, ';
yaw_word = 'Yaw, ';
middle = 'fps Run ';
point = '.';


% Use 'loop' if .txt files you are running are not in numerical order in
% the digitized run log. Make the for loop below like this:
% for j = loop(1,1:3)
j1 = 1330;
j2 = 862;
j3 = 906;
j4 = 1027;
j5 = 1118;
j6 = 1252;
%plot_number specifies the number corresponding to the graph key and .png
%file you want to save each plot as.
plot_number = 'plot_1';
loop = [j1,j2,j3,j4,j5,j6];
%determines whether the files are automatically saved or not when running
%the program. When save_files = 1 then the figures will be saved, otherwise
%they will not be saved automatically.
save_files = 1;

% Before running the code, set j, ModelName and the frequency you
% would like to plot out to
% Set Frequency as either 1000 or 10000 for best results. [Hz]
ModelName = 'Solo';
plot_variable = 'Yaw';
%First part of the directory that you will use to pull the data from
file_location =...
'E:\MUAS_Acoustics\Jason_Cornelius_Spring2016\ACOUSTIC_MUAS_DATA\';
%save_location specifies the part of the directory that you would like
%to save the figures to.
save_location = ['C:\Users\dgregor2\Desktop\Solo\Yaw\', ...
ModelName, '_', plot_variable, '_' ];
frequency = 10000;
ylim1 = 80;
ylim2 = 110;
ylim3 = 0;
ylim4 = 100;
%loops through the files
for j = loop(1,1:6)
if j == j1;
%automatically finds the date and formats it into the same format
%of the file that you're extracting
date_1 = Date(j-1,1);
date_2 = regexprep(date_1,'201', '1');
date = regexprep(date_2,'/', '-');
%gets the filename and then puts you onto a direct path to the file
%that you will be using to print the figures.
file = File(j,1);
filename1 = strcat(file_location, date, '\', file, '.txt');
```

```
filename_1 = char(filename1);
filename = filename_1;
%calls up the rpm, windspeed,yaw, and BDAS point and run numbers
%from the excelsheet.
RPM = num2str(RPM1(j-1,1));
yaw = num2str(Yaw(j-1,1));
Windspeed = num2str(round(WindSpeed(j-1,1),2));
if Windspeed == '0'
Windspeed = '00.0';
end
BDAS_run = num2str(BDAS_Run(j-1,1));
BDAS_point = num2str(BDAS_Point(j-1,1));
pitch=num2str(Pitch(j-1,1));
Name1_Mic1_OASPL = [yaw, pitch_word,' ', 'OASPL(dB)',' '];
Name1_Mic2_OASPL= [yaw, pitch_word,' ', 'OASPL(dB)',' '];
Name1_Mic3_OASPL=[yaw, pitch_word,' ', 'OASPL(dB)',' '];
Name1_Mic1_SPL=[yaw,pitch_word,' ','OASPL(dB)',' '];
Name1_Mic2_SPL=[yaw,pitch_word,' ','OASPL(dB)',' '];
Name1_Mic3_SPL=[yaw,pitch_word,' ','OASPL(dB)',' '];
Name2 = ' ';
Name3 = ' ';
%sets the number of spaces that divide the numbers present in the
%legend of the figure so that they all line up properly
if length(yaw) == 3;
space_num = ' ';
else if length(yaw) == 2;
space_num = ' ';
else if length(yaw) == 1;
space_num = ' ';
end
end
end
else if j == j2;
date_1 = Date(j-1,1);
date_2 = regexprep(date_1,'201', '1');
date = regexprep(date_2,'/', '-');
file = File(j,1);
filename2 = strcat(file_location, date, '\', file, '.txt');
filename_2 = char(filename2);
filename = filename_2;
RPM = num2str(RPM1(j-1,1));
yaw = num2str(Yaw(j-1,1));
Windspeed = num2str(round(WindSpeed(j-1,1),2));
if Windspeed == '0'
Windspeed = '00.0';
end
BDAS_run = num2str(BDAS_Run(j-1,1));
BDAS_point = num2str(BDAS_Point(j-1,1));
pitch=num2str(Pitch(j-1,1));
Name2_Mic1_OASPL = [yaw, pitch_word,' ', 'OASPL(dB)',' '];
Name2_Mic2_OASPL= [yaw, pitch_word,' ', 'OASPL(dB)',' '];
Name2_Mic3_OASPL=[yaw, pitch_word,' ', 'OASPL(dB)',' '];
Name2_Mic1_SPL=[yaw,pitch_word,' ','OASPL(dB)',' '];
Name2_Mic2_SPL=[yaw,pitch_word,' ','OASPL(dB)',' '];
Name2_Mic3_SPL=[yaw,pitch_word,' ','OASPL(dB)',' '];
Name2 = [ModelName, space, pitch, pitch_word, Windspeed, middle,...
BDAS_run, point, BDAS_point,space,'Pitch',pitch];
Name3 = ' ';
if length(yaw) == 3;
```

```
space_num = ' ';
else if length(yaw) == 2;
space_num = ' ';
else if length(yaw) == 1;
space_num = ' ';
end
end
end
else if j == j3;
date_1 = Date(j-1,1);
date_2 = regexprep(date_1,'201', '1');
date = regexprep(date_2,'/', '-');
file = File(j,1);
filename3 = strcat(file_location, date, '\', file, '.txt');
filename_3 = char(filename3);
filename = filename_3;
yaw = num2str(Yaw(j-1,1));
RPM = num2str(RPM1(j-1,1));
Windspeed = num2str(round(WindSpeed(j-1,1),2));
if Windspeed == '0'
Windspeed = '00.0';
end
BDAS_run = num2str(BDAS_Run(j-1,1));
BDAS_point = num2str(BDAS_Point(j-1,1));
pitch=num2str(Pitch(j-1,1));
Name3_Mic1_OASPL = [yaw, pitch_word,' ', 'OASPL(dB)',' '];
Name3_Mic2_OASPL= [yaw, pitch_word,' ', 'OASPL(dB)',' '];
Name3_Mic3_OASPL=[yaw, pitch_word,' ', 'OASPL(dB)',' '];
Name3_Mic1_SPL=[yaw,pitch_word,' ','OASPL(dB)',' '];
Name3_Mic2_SPL=[yaw,pitch_word,' ','OASPL(dB)',' '];
Name3_Mic3_SPL=[yaw,pitch_word,' ','OASPL(dB)',' '];
Name3 = ' ';
if length(yaw) == 3;
space_num = ' ';
else if length(yaw) == 2;
space_num = ' ';
else if length(yaw) == 1;
space_num = ' ';
end
end
end
else if j == j4;
date_1 = Date(j-1,1);
date_2 = regexprep(date_1,'201', '1');
date = regexprep(date_2,'/', '-');
file = File(j,1);
filename4 = strcat(file_location, date, '\', file, '.txt');
filename_4 = char(filename4);
filename = filename_4;
RPM = num2str(RPM1(j-1,1));
yaw = num2str(Yaw(j-1,1));
Windspeed = num2str(round(WindSpeed(j-1,1),2));
if Windspeed == '0'
Windspeed = '00.0';
end
BDAS_run = num2str(BDAS_Run(j-1,1));
BDAS_point = num2str(BDAS_Point(j-1,1));
pitch=num2str(Pitch(j-1,1));
Name4_Mic1_OASPL = [yaw, pitch_word,' ', 'OASPL(dB)',' '];
```

```
Name4_Mic2_OASPL= [yaw, pitch_word,' ', 'OASPL(dB)',' '];
Name4_Mic3_OASPL=[yaw, pitch_word,' ', 'OASPL(dB)',' '];
Name4_Mic1_SPL=[yaw,pitch_word,' ','OASPL(dB)',' '];
Name4_Mic2_SPL=[yaw,pitch_word,' ','OASPL(dB)',' '];
Name4_Mic3_SPL=[yaw,pitch_word,' ','OASPL(dB)',' '];
Name3 = ' ';
if length(yaw) == 3;
space_num = ' ';
else if length(yaw) == 2;
space_num = ' ';
else if length(yaw) == 1;
space_num = ' ';
end
end
end
else if j == j5;
date_1 = Date(j-1,1);
date_2 = regexprep(date_1,'201', '1');
date = regexprep(date_2,'/', '-');
file = File(j,1);
filename5 = strcat(file_location, date, '\', file, '.txt');
filename_5 = char(filename5);
filename = filename_5;
RPM = num2str(RPM1(j-1,1));
yaw = num2str(Yaw(j-1,1));
Windspeed = num2str(round(WindSpeed(j-1,1),2));
if Windspeed == '0'
Windspeed = '00.0';
end
BDAS_run = num2str(BDAS_Run(j-1,1));
BDAS_point = num2str(BDAS_Point(j-1,1));
pitch=num2str(Pitch(j-1,1));
Name5_Mic1_OASPL = [yaw, pitch_word,' ', 'OASPL(dB)',' '];
Name5_Mic2_OASPL= [yaw, pitch_word,' ', 'OASPL(dB)',' '];
Name5_Mic3_OASPL=[yaw, pitch_word,' ', 'OASPL(dB)',' '];
Name5_Mic1_SPL=[yaw,pitch_word,' ','OASPL(dB)',' '];
Name5_Mic2_SPL=[yaw,pitch_word,' ','OASPL(dB)',' '];
Name5_Mic3_SPL=[yaw,pitch_word,' ','OASPL(dB)',' '];
if length(yaw) == 3;
space_num = ' ';
else if length(yaw) == 2;
space_num = ' ';
else if length(yaw) == 1;
space_num = ' ';
end
end
end
else if j == j6;
date_1 = Date(j-1,1);
date_2 = regexprep(date_1,'201', '1');
date = regexprep(date_2,'/', '-');
file = File(j,1);
filename6 = strcat(file_location, date, '\', file, '.txt');
filename_6 = char(filename6);
filename = filename_6;
RPM = num2str(RPM1(j-1,1));
yaw = num2str(Yaw(j-1,1));
Windspeed = num2str(round(WindSpeed(j-1,1),2));
if Windspeed == '0'
```

```
Windspeed = '00.0';
end
BDAS_run = num2str(BDAS_Run(j-1,1));
BDAS_point = num2str(BDAS_Point(j-1,1));
pitch=num2str(Pitch(j-1,1));
Name6_Mic1_OASPL = [yaw, pitch_word,' ', 'OASPL(dB)',' '];
Name6_Mic2_OASPL= [yaw, pitch_word,' ', 'OASPL(dB)',' '];
Name6_Mic3_OASPL=[yaw, pitch_word,' ', 'OASPL(dB)',' '];
Name6_Mic1_SPL=[yaw,pitch_word,' ','OASPL(dB)',' '];
Name6_Mic2_SPL=[yaw,pitch_word,' ','OASPL(dB)',' '];
Name6_Mic3_SPL=[yaw,pitch_word,' ','OASPL(dB)',' '];
Name6 = [ModelName, space, pitch, pitch_word, Windspeed, middle,...
BDAS_run, point, BDAS_point,space,'Pitch',pitch];
if length(yaw) == 3;
space_num = ' ';
else if length(yaw) == 2;
space_num = ' ';
else if length(yaw) == 1;
space_num = ' ';
end
end
end
end%j6
end%j5
end%j4
end%j3
end%j2
end%j1

RunNumber = num2str(BDAS_Run(j-1,1));
PointNumber = num2str(BDAS_Point(j-1,1));


delimiter = ' ';
startRow = 12;
endRow =15,00012;
% Specifies how to read in .txt file. Should not need to be changed as
% long as Astro Med settings and file conversion done correctly.
formatSpec = '%f%*s%*s%*s%f%f%f%*s%*[^\n\r]';
fileID = fopen(filename,'r');
% If textscan throws an error, double check the filename path used
textscan(fileID, '%[^\n\r]', startRow-1, 'ReturnOnError', false);
% Used to read in data in format specified by formatSpec
dataArray = textscan(fileID, formatSpec, endRow-startRow+1,...
'Delimiter', delimiter, 'MultipleDelimsAsOne', true,...
'EmptyValue' ,NaN,'ReturnOnError', false);
fclose(fileID);
Sample = dataArray{:, 1};
% Sets the voltage data from .txt file to variables Mic01, Mic02, and Mic03
Mic01 = dataArray{:, 2};
Mic02 = dataArray{:, 3};
Mic03 = dataArray{:, 4};
L1 = length(Mic01); % Length of signal
L2 = length(Mic02);
L3 = length(Mic03);

v = Mic1Gain;
% Clears temporary variables
clearvars filename delimiter startRow endRow...
```

```
formatSpec fileID dataArray ans;
% Sets sample rate and creates Time vector required for A-weighted OASPL
% plot
Fs=100000;
Time=Sample./Fs;
%% Changing signal from Voltage [volts] to Pressure [Pa]
% Determines which day the .txt file was recorded to select the appropriate
% calibration constant. The reasoning for j-1 is because the run log
% starts on line 2. strcmp outputs a 1 if the two strings are the same.
% If it cannot match the date it defaults to the calibration constant
% represented by Date_Calibration(5,1). This was an average 'k' value.
for count = 1:36
if strcmp(Date(j-1, 1), Date_Calibration(count,1)) == 1
break
end
if count == 36
count = 5;
break
end
end

% Convert from Volts to Pressure using the appropriate calibration constant
% The explanation for the options here is that on mic calibration runs 144
% and 147 not all three microphones were being used. So there were not
% three seperate calibrations per run (one for each mic). The signals from
% the non-existant mics offer no data, however, it was easier to still run
% the code for these signals. If future testing conducted only requires
% one microphone, it may be beneficial to modify the code to only process
% one microphone signal.
if count < 34
Mic01_Pa = (Mic01)/(k_Calibration(count,1));
Mic02_Pa = (Mic02)/(k_Calibration(count + 1,1));
Mic03_Pa = (Mic03)/(k_Calibration(count + 2,1));
end
if count == 34
Mic01_Pa = (Mic01)/(k_Calibration(count,1));
Mic02_Pa = (Mic02)/(k_Calibration(count + 1,1));
Mic03_Pa = (Mic03)/(k_Calibration(count + 1,1));
end
if count > 34
Mic01_Pa = (Mic01)/(k_Calibration(count,1));
Mic02_Pa = (Mic02)/(k_Calibration(count,1));
Mic03_Pa = (Mic03)/(k_Calibration(count,1));
end

P_ref= 20*10^(-6); %[Pa]
%% Removing the Gain
% A post processing step necessary to make signals recorded at different
% gains possible to compare. The process multiplies the signal by a
% scaling factor to reverse the amplification caused by the gain.
% Done for each microphone (3 times).

Mic01_Pa_adjusted = Mic01_Pa / (10^((Mic1Gain(j-1,1)-10)/20));
Mic02_Pa_adjusted = Mic02_Pa / (10^((Mic2Gain(j-1,1)-10)/20));
Mic03_Pa_adjusted = Mic03_Pa / (10^((Mic3Gain(j-1,1)-10)/20));


%% Setting Up the FFT
% The MATLAB fft function and application can be studied here:
```

```
% http://www.mathworks.com/help/matlab/ref/fft.html?refresh=true

FFT_Calculation_Time_Interval = 1;
FFT_Calculation_Substeps = Fs * FFT_Calculation_Time_Interval;
FFT_Calculation_Steps = 15/FFT_Calculation_Time_Interval;
% Pre-allocates a vector of zeros in order to speed up MATLAB code.
YP1_1_Sum = zeros((FFT_Calculation_Substeps/2) + 1,1);
YP1_2_Sum = zeros((FFT_Calculation_Substeps/2) + 1,1);
YP1_3_Sum = zeros((FFT_Calculation_Substeps/2) + 1,1);
% Sampling period
T = 1/Fs;
% Setting the frequency domain. Plot4 corresponds to the averaged FFT.
% Plot3 corresponds to the single 15-second FFT. 1, 2, and 3 correspond to
% their respective microphone. Plot4 is the one currently being plotted.
f1_Plot4 =...
Fs*(0:(FFT_Calculation_Substeps/2))/FFT_Calculation_Substeps;
f2_Plot4 =...
Fs*(0:(FFT_Calculation_Substeps/2))/FFT_Calculation_Substeps;
f3_Plot4 =...
Fs*(0:(FFT_Calculation_Substeps/2))/FFT_Calculation_Substeps;
f1_Plot3 = Fs*(0:(L1/2))/L1;
f2_Plot3 = Fs*(0:(L2/2))/L2;
f3_Plot3 = Fs*(0:(L3/2))/L3;
% Pre-allocates a vector of zeros in order to speed up MATLAB code.
OASPL1_Test_Plot2 = zeros(FFT_Calculation_Steps, 1);
OASPL2_Test_Plot2 = zeros(FFT_Calculation_Steps, 1);
OASPL3_Test_Plot2 = zeros(FFT_Calculation_Steps, 1);
% Time vector for the 1-Hz averaged A-weighted OASPL plot.
Time_Plot2 =...
(Time(FFT_Calculation_Substeps,1)/2:Time(FFT_Calculation_Substeps,1):15);

%% A-Weighting
% This section calculates a vector with the appropriate A-weighting values
% to apply to the result of the FFT. The A-weighting is based on a formula
% which takes the frequency vector into consideration.

% Pre-allocates a vector of zeros in order to speed up MATLAB code.
A_Weighting = zeros(length(f1_Plot4),1);
% Calculates the A-weighted vector.
for DDD = 1:length(f1_Plot4)
A_Weighting(DDD,1) = ...
10.*log10(1.562339.*(f1_Plot4(1,DDD).^4)/...
(((f1_Plot4(1,DDD).^2)+(107.65265^2)).*...
((f1_Plot4(1,DDD).^2)+(737.86223^2)))...
+ 10.*log10(2.242881e16 .*(f1_Plot4(1,DDD).^4)/...
((((f1_Plot4(1,DDD).^2)+(20.598997^2)).^2).*...
(((f1_Plot4(1,DDD).^2)+(12194.22^2)).^2)));
end
%% 1-Hz Averaged A-Weighted FFT
% Runs the FFT in timesteps declared earlier by the
% FFT_Calculation_Time_Interval variable.
for v = 0:FFT_Calculation_Steps - 1
% fft is the MATLAB Fast Fourier Transform function. Its syntax is given
% at the top of this code. The indices are for the 1-Hz averaging.
Y1 = fft(Mic01_Pa_adjusted(FFT_Calculation_Substeps * v + 1 :...
FFT_Calculation_Substeps + FFT_Calculation_Substeps * v));
Y2 = fft(Mic02_Pa_adjusted(FFT_Calculation_Substeps * v + 1 :...
FFT_Calculation_Substeps + FFT_Calculation_Substeps * v));
Y3 = fft(Mic03_Pa_adjusted(FFT_Calculation_Substeps * v + 1 : ...
```

```
FFT_Calculation_Substeps + FFT_Calculation_Substeps * v));
% The fft output needs to be post-processed. Dividing by the number of
% substeps normalizes the signal.
YP2_1 = abs(Y1/FFT_Calculation_Substeps);
YP2_2 = abs(Y2/FFT_Calculation_Substeps);
YP2_3 = abs(Y3/FFT_Calculation_Substeps);
% Now take the first half of the fft and double it to get a single sided
% amplitude spectrum.
YP1_1 = YP2_1(1:FFT_Calculation_Substeps/2+1);
YP1_2 = YP2_2(1:FFT_Calculation_Substeps/2+1);
YP1_3 = YP2_3(1:FFT_Calculation_Substeps/2+1);
YP1_1(2:end-1) = 2*YP1_1(2:end-1);
YP1_2(2:end-1) = 2*YP1_2(2:end-1);
YP1_3(2:end-1) = 2*YP1_3(2:end-1);
% Converts the frequency spectrum to dB and adds the A-weighted vector to
% get dBA.
YP1_1_A_Weighted = ...
20*log10(YP1_1./(sqrt(2) * P_ref)) + A_Weighting;
YP1_2_A_Weighted = ...
20*log10(YP1_2./(sqrt(2) * P_ref)) + A_Weighting;
YP1_3_A_Weighted = ...
20*log10(YP1_3./(sqrt(2) * P_ref)) + A_Weighting;
% Cleans up the FFT result.
for EEE = 1:length(f1_Plot4)
if YP1_1_A_Weighted(EEE,1) < 1
YP1_1_A_Weighted(EEE,1) = 1;
end
end
for EEE = 1:length(f1_Plot4)
if YP1_2_A_Weighted(EEE,1) < 1
YP1_2_A_Weighted(EEE,1) = 1;
end
end
for EEE = 1:length(f1_Plot4)
if YP1_3_A_Weighted(EEE,1) < 1
YP1_3_A_Weighted(EEE,1) = 1;
end
end

% Consecutively adds together the results of the individual time steps.
YP1_1_Sum = YP1_1_Sum + YP1_1_A_Weighted;
YP1_2_Sum = YP1_2_Sum + YP1_2_A_Weighted;
YP1_3_Sum = YP1_3_Sum + YP1_3_A_Weighted;
% Calculates the OASPL from the current FFT timestep. Places it in a
% vector used for the 1-Hz Averaged A-Weighted OASPL.
OASPL1_Test_Plot2((v+1),1) = ...
10 * log10(trapz(f1_Plot4, (10.^(YP1_1_A_Weighted/10))));
OASPL2_Test_Plot2((v+1),1) =...
10 * log10(trapz(f2_Plot4, (10.^(YP1_2_A_Weighted/10))));
OASPL3_Test_Plot2((v+1),1) = ...
10 * log10(trapz(f3_Plot4, (10.^(YP1_3_A_Weighted/10))));
end
% Calculates the average of the fft timestepped results.
YP1_1_Average = (YP1_1_Sum ./ FFT_Calculation_Steps);
YP1_2_Average = (YP1_2_Sum ./ FFT_Calculation_Steps);
YP1_3_Average = (YP1_3_Sum ./ FFT_Calculation_Steps);

% Same FFT procedure as above. However, this calculates one FFT regardless
% of the signal length (not 1-Hz averaged).
```

```
Y1 = fft(Mic01_Pa_adjusted);
Y2 = fft(Mic02_Pa_adjusted);
Y3 = fft(Mic03_Pa_adjusted);
YP2_1 = abs(Y1/L1);
YP2_2 = abs(Y2/L2);
YP2_3 = abs(Y3/L3);
YP1_1 = YP2_1(1:L1/2+1);
YP1_2 = YP2_2(1:L2/2+1);
YP1_3 = YP2_3(1:L3/2+1);
YP1_1(2:end-1) = 2*YP1_1(2:end-1);
YP1_2(2:end-1) = 2*YP1_2(2:end-1);
YP1_3(2:end-1) = 2*YP1_3(2:end-1);

% Same A-Weighting procedure as described above. This is for the single
% FFT. *NOTE: The single FFT is not currently used in the plotting section.
A_Weighting = zeros(length(f1_Plot3),1);
for DDD = 1:length(f1_Plot3)
A_Weighting(DDD,1) = 10.*log10(1.562339.*...
(f1_Plot3(1,DDD).^4)/(((f1_Plot3(1,DDD).^2)+(107.65265^2)).*...
((f1_Plot3(1,DDD).^2)+(737.86223^2)))) +...
10.*log10(2.242881e16 .*(f1_Plot3(1,DDD).^4)/...
((((f1_Plot3(1,DDD).^2)+(20.598997^2)).^2).*...
(((f1_Plot3(1,DDD).^2)+(12194.22^2)).^2)));
end
% Converts the frequency spectrum to dB and adds the A-weighted vector to
% get dBA.
YP1_1_A_Weighted = 20*log10(YP1_1./(sqrt(2) * P_ref)) + A_Weighting;
YP1_2_A_Weighted = 20*log10(YP1_2./(sqrt(2) * P_ref)) + A_Weighting;
YP1_3_A_Weighted = 20*log10(YP1_3./(sqrt(2) * P_ref)) + A_Weighting;
% Cleans up the FFT result.
for EEE = 1:length(f1_Plot3)
if YP1_1_A_Weighted(EEE,1) < 1
YP1_1_A_Weighted(EEE,1) = 1;
end
end
for EEE = 1:length(f1_Plot3)
if YP1_2_A_Weighted(EEE,1) < 1
YP1_2_A_Weighted(EEE,1) = 1;
end
end
for EEE = 1:length(f1_Plot3)
if YP1_3_A_Weighted(EEE,1) < 1
YP1_3_A_Weighted(EEE,1) = 1;
end
end
%%OASPL
%This section calculates the OASPL in dB from the time history
%microphone 1
Signal_SQUARE1=(Mic01_Pa_adjusted).^2;
Signal_SUM1=sum(Signal_SQUARE1);
P_RMS1=sqrt(1/L1 *Signal_SUM1);
P_RMS_REF1=((P_RMS1)/P_ref);
OASPL1= 20*log10(P_RMS_REF1);
%microphone 2
Signal_SQUARE2=(Mic02_Pa_adjusted).^2;
Signal_SUM2=sum(Signal_SQUARE2);
P_RMS2=sqrt(1/L2 *Signal_SUM2);
P_RMS_REF2=((P_RMS2)/P_ref);
OASPL2= 20*log10(P_RMS_REF2);
```

```
%microphone 3
Signal_SQUARE3=(Mic03_Pa_adjusted).^2;
Signal_SUM3=sum(Signal_SQUARE3);
P_RMS3=sqrt(1/L3 *Signal_SUM3);
P_RMS_REF3=((P_RMS3)/P_ref);
OASPL3= 20*log10(P_RMS_REF3);
%Calculates OASPL in dBA from frequency domain
%microphone 1
X1_1= (P_ref^2)*10.^(YP1_1_A_Weighted/10);
X2_1= sum(X1_1);
OASPL1_AW= 10*log10(X2_1/(P_ref^2));
%microphone 2
X1_2= (P_ref^2)*10.^(YP1_2_A_Weighted/10);
X2_2= sum(X1_2);
OASPL2_AW= 10*log10(X2_2/(P_ref^2));
%microphone 3
X1_3= (P_ref^2)*10.^(YP1_3_A_Weighted/10);
X2_3= sum(X1_3);
OASPL3_AW= 10*log10(X2_3/(P_ref^2));




%% Plotting
%Mic1 OASPL
figure(1)
subplot(3,1,1)
hold on
plot(Time_Plot2,OASPL1_Test_Plot2, 's', 'MarkerSize', 8,...
'MarkerEdgeColor', color(c_color,:),...
'MarkerFaceColor', color(c_color,:));
hold on
xlabel('Time (s)', 'FontSize', 20,'FontWeight','bold');
ylabel('AW-OASPL (dBA)', 'FontSize', 20,'FontWeight','bold');
ylim([ylim1 ylim2]);

%Mic1 SPL 10000 Hz
subplot(3,1,2)
hold on
h1(c_color,1) = plot(f1_Plot4, YP1_1_Average, 'color', color(c_color,:));

xlabel('Frequency (Hz)', 'FontSize', 20,'FontWeight','bold');
ylabel('AW-SPL (dBA)', 'FontSize', 20,'FontWeight','bold');
xlim([0 frequency])
ylim([ylim3 ylim4])
%Mic2 OASPL
figure(2)
subplot(3,1,1)
hold on
plot(Time_Plot2,OASPL2_Test_Plot2, 's', 'MarkerSize', 8,...
'MarkerEdgeColor', color(c_color,:), 'MarkerFaceColor',...
color(c_color,:));
hold on
xlabel('Time (s)', 'FontSize', 20,'FontWeight','bold');
ylabel('AW-OASPL (dBA)', 'FontSize', 20,'FontWeight','bold');
ylim([ylim1 ylim2]);

%Mic2 SPL 10000 Hz
```

```
subplot(3,1,2)
hold on
h1(c_color,1) = plot(f1_Plot4, YP1_2_Average, 'color', color(c_color,:));
xlabel('Frequency (Hz)', 'FontSize', 20,'FontWeight','bold');
ylabel('AW-SPL (dBA)', 'FontSize', 20,'FontWeight','bold');
xlim([0 frequency])
ylim([ylim3 ylim4])

%microphone 3 OASPL
figure(3)
subplot(3,1,1)
hold on
plot(Time_Plot2,OASPL3_Test_Plot2, 's', 'MarkerSize', 8,...
'MarkerEdgeColor', color(c_color,:), 'MarkerFaceColor',...
color(c_color,:));
hold on
xlabel('Time (s)', 'FontSize', 20,'FontWeight','bold');
ylabel('AW-OASPL (dBA)', 'FontSize', 20,'FontWeight','bold');
ylim([ylim1 ylim2]);

%microphone 3 SPL 10000 Hz
subplot(3,1,2)
hold on
h1(c_color,1) = plot(f1_Plot4, YP1_3_Average, 'color', color(c_color,:));
hold on
xlabel('Frequency (Hz)', 'FontSize', 20,'FontWeight','bold');
ylabel('AW-SPL (dBA)', 'FontSize', 20,'FontWeight','bold');
xlim([0 frequency])
ylim([ylim3 ylim4])



%% BPF (X,Y) Calculations
% This section calculates the actual blade passage frequencies that show up
% in the acoustic data. It calculates what the BPF should be based on the
% RPM reported in the digitized run log. It then searches a range of
% values around the estimate and finds the local maximum. This X and Y
% value are recorded for plotting of the BPF. This portion of the code
% only runs when 'frequency' is set to 1,000 Hz. A larger domain
% (ex. 10,000 Hz) does not provide enough space to plot the BPF
% coordinates.

% Gets the RPM, calculates the BPF. BPF = (RPM * 2)/60
if RPM1(j-1,1)== 0
BPF= 0;
end
while RPM1(j-1,1) ~= 0
if RPM1(j-1,1)% == RPM2(j-1,1)
%if RPM2(j-1,1) == RPM3(j-1,1)
%if RPM3(j-1,1) == RPM4(j-1,1)
BPF = (RPM1(j-1,1) * 2)/60;
% end
% end
end
break
end
% Checks for the required setting of 1,000 Hz.
% Checks for a RPM that will work with the code.
```

```
freq=1000;
if freq == 1000 && RPM1(j-1,1) ~= 0
% Declares a start at the first BPF. Defines a range of values to search
% for the local maximum (true BPF).
b = 1;
c = ceil(50 * length(f1_Plot4) / length(f1_Plot3));
while (BPF * b) < 1000
BPFxvals(b,1) = BPF * b;
val = BPFxvals(b,1);
% Runs once for each microphone. Searches for the local maximum in the
% pre- specified range.
tmp = abs(f1_Plot4-val);
[idx idx] = min(tmp);
closest= f1_Plot4(idx - (c*b): idx + (c*b));
for e = 1:(2*c*b+1)
k(1,e) = find(f1_Plot4==closest(1,e));
l(1,e) = YP1_1_Average(k(1,e));
end
[row,col] = max(l);
m1_Plot4(1,b) = k(col);
n1_Plot4(b,1) = row;

tmp = abs(f2_Plot4-val);
[idx idx] = min(tmp);
closest = f2_Plot4(idx - (c*b): idx + (c*b));
for e = 1:(2*c*b+1)
k(1,e) = find(f2_Plot4==closest(1,e));
l(1,e) = YP1_2_Average(k(1,e));
end
[row,col] = max(l);
m2_Plot4(1,b) = k(col);
n2_Plot4(b,1) = row;

tmp = abs(f3_Plot4-val);
[idx idx] = min(tmp);
closest = f3_Plot4(idx - (c*b): idx + (c*b));
for e = 1:(2*c*b+1)
k(1,e) = find(f3_Plot4==closest(1,e));
l(1,e) = YP1_3_Average(k(1,e));
end
[row,col] = max(l);
m3_Plot4(1,b) = k(col);
n3_Plot4(b,1) = row;
b = b + 1;
end
clearvars k l row col idx closest BPFxvals val;
% Creates matrices to store the BPF frequency and amplitudes for plotting.
m1(1,c_color) = m1_Plot4(1,1);
n1(c_color,1) = n1_Plot4(1,1);
m2(1,c_color) = m2_Plot4(1,1);
n2(c_color,1) = n2_Plot4(1,1);
m3(1,c_color) = m3_Plot4(1,1);
n3(c_color,1) = n3_Plot4(1,1);
end

%Mic1 SPL 1000 Hz
hold on
figure(1)
subplot(3,1,3)
```

```
h1(c_color,1) = plot(f1_Plot4, YP1_1_Average, 'color',...
color(c_color,:));
hold on
plot(f1_Plot4(m1_Plot4), n1_Plot4, 'ok', 'MarkerSize', 6,...
'LineWidth', 1.5,'MarkerFaceColor',color(c_color,:));
hold on
xlabel('Frequency (Hz)', 'FontSize', 20,'FontWeight','bold');
ylabel('AW-SPL (dBA)', 'FontSize', 20,'FontWeight','bold');
xlim([0 freq])
ylim([ylim3 ylim4])

%Mic2 SPL 1000 Hz
figure(2)
subplot(3,1,3)
h1(c_color,1) = plot(f1_Plot4, YP1_2_Average, 'color',...
color(c_color,:));
hold on
plot(f2_Plot4(m2_Plot4), n2_Plot4, 'ok', 'MarkerSize', 6,...
'LineWidth', 1.5,'MarkerFaceColor',color(c_color,:));
hold on
xlabel('Frequency (Hz)', 'FontSize', 20,'FontWeight','bold');
ylabel('AW-SPL (dBA)', 'FontSize', 20,'FontWeight','bold');
xlim([0 freq])
ylim([ylim3 ylim4])

%microphone 3 SPL 1000 Hz
figure(3)
subplot(3,1,3)
h1(c_color,1) = plot(f1_Plot4, YP1_3_Average, 'color',...
color(c_color,:));
hold on
plot(f3_Plot4(m3_Plot4), n3_Plot4, 'ok', 'MarkerSize', 6,...
'LineWidth', 1.5,'MarkerFaceColor',color(c_color,:));
hold on
xlabel('Frequency (Hz)', 'FontSize', 20,'FontWeight','bold');
ylabel('AW-SPL (dBA)', 'FontSize', 20,'FontWeight','bold');
xlim([0 freq])
ylim([ylim3 ylim4])
c_color = c_color + 1;

%% Setting up legend entries

if j == j1;
Name1_Mic1_OASPL = [yaw,space_num,...
num2str(round(OASPL1,1)),'/',num2str(round(OASPL1_AW,1))];
Name1_Mic2_OASPL= [yaw,space_num,num2str(round(OASPL2,1)),...
'/',num2str(round(OASPL2_AW,1))];
Name1_Mic3_OASPL=[yaw,space_num,num2str(round(OASPL3,1)),...
'/',num2str(round(OASPL3_AW,1))];

else if j == j2;

Name2_Mic1_OASPL = [yaw,space_num, num2str(round(OASPL1,1)),...
'/',num2str(round(OASPL1_AW,1))];
Name2_Mic2_OASPL= [yaw,space_num,num2str(round(OASPL2,1)),...
'/',num2str(round(OASPL2_AW,1))];
Name2_Mic3_OASPL=[yaw,space_num,num2str(round(OASPL3,1)),...
'/',num2str(round(OASPL3_AW,1))];
```

```
else if j == j3;

Name3_Mic1_OASPL = [yaw,space_num, num2str(round(OASPL1,1)),...
'/',num2str(round(OASPL1_AW,1))];
Name3_Mic2_OASPL= [yaw,space_num,num2str(round(OASPL2,1)),...
'/',num2str(round(OASPL2_AW,1))];
Name3_Mic3_OASPL=[yaw,space_num,num2str(round(OASPL3,1)),...
'/',num2str(round(OASPL3_AW,1))];

else if j == j4;

Name4_Mic1_OASPL = [yaw,space_num, num2str(round(OASPL1,1)),...
'/',num2str(round(OASPL1_AW,1))];
Name4_Mic2_OASPL= [yaw,space_num,num2str(round(OASPL2,1)),...
'/',num2str(round(OASPL2_AW,1))];
Name4_Mic3_OASPL=[yaw,space_num,num2str(round(OASPL3,1)),...
'/',num2str(round(OASPL3_AW,1))];


else if j == j5;
Name5_Mic1_OASPL = [yaw,space_num, num2str(round(OASPL1,1)),...
'/',num2str(round(OASPL1_AW,1))];
Name5_Mic2_OASPL= [yaw,space_num,num2str(round(OASPL2,1)),...
'/',num2str(round(OASPL2_AW,1))];
Name5_Mic3_OASPL=[yaw,space_num,num2str(round(OASPL3,1)),...
'/',num2str(round(OASPL3_AW,1))];

else if j == j6;

Name6_Mic1_OASPL = [yaw,space_num, num2str(round(OASPL1,1)),...
'/',num2str(round(OASPL1_AW,1))];
Name6_Mic2_OASPL= [yaw,space_num,num2str(round(OASPL2,1)),...
'/',num2str(round(OASPL2_AW,1))];
Name6_Mic3_OASPL=[yaw,space_num,num2str(round(OASPL3,1)),...
'/',num2str(round(OASPL3_AW,1))];

end
end
end
end
end
end

end %loop through files
% Set up legends and text boxes
RPM = num2str(RPM1(j-1,1));
Windspeed = num2str(round(WindSpeed(j-1,1),-1));

figure(1)
FigHandle1 = figure(1);
set(FigHandle1, 'Position', [10, 10, 900, 1100]);
subplot(3,1,1)
lgnd1=legend({Name1_Mic1_OASPL, Name2_Mic1_OASPL,...
Name3_Mic1_OASPL, Name4_Mic1_OASPL, Name5_Mic1_OASPL,...
Name6_Mic1_OASPL}, 'location', 'eastoutside', ...
'FontSize', 15, 'FontWeight', 'bold');
lgnd1_title = get(lgnd1, 'title');
set(lgnd1_title, 'string', '\psi, OASPL (dB/dBA)');
set(lgnd1,'color','none', 'Box', 'off');
```

```
set(lgnd1_title, 'string', '\psi, OASPL (dB/dBA)');
fps_constant = [num2str(roundn(WindSpeed(j-1,1),1)), ' ft/s'];
rpm_constant=[RPM,' rpm'];
yaw_constant=[yaw, '  ];
pitch_constant=[pitch, '  ];
set(gcf, 'name', 'Mic1 graph', 'NumberTitle','off');
text(18, ylim2 + 5, 'Mic 1', 'FontSize',22, 'FontWeight', 'bold');
text(13.5, ylim2 + 1.5, ['\theta, V_\infty, RPM = (' , ...
pitch_constant,' , ', fps_constant,' , ', rpm_constant, ')'],...
'FontSize',13, 'FontWeight', 'bold');
subplot(3,1,3) %plotting BPF
text(40, ylim4 - 7, 'BPF (Hz), (dBA):', 'color', 'k',...
'FontWeight', 'bold');
for CC = 1:c_color-1
text(45, (ylim4 - 7 - 6*CC), ['(',...
num2str(round(f1_Plot4(m1(1,CC)),1)), ', ',...
num2str(round(n1(CC,1),1)), ')'], 'color', color(CC,:),...
'FontSize', 10, 'FontWeight', 'bold');
end
if save_files == 1; %#ok<ALIGN>
saveas(gcf, [save_location, plot_number, '_Mic1'], 'png');
end


figure(2)
FigHandle2 = figure(2);
set(FigHandle2, 'Position', [10, 10, 900, 1100]);
subplot(3,1,1)
lgnd2=legend({Name1_Mic2_OASPL, Name2_Mic2_OASPL, Name3_Mic2_OASPL,...
Name4_Mic2_OASPL, Name5_Mic2_OASPL, Name6_Mic2_OASPL}, ...
'location', 'eastoutside', 'FontSize', 15, 'FontWeight', 'bold');
lgnd2_title = get(lgnd2, 'title');
set(lgnd2_title, 'string', '\psi, OASPL (dB/dBA)');
set(lgnd2,'color','none', 'Box', 'off');
set(lgnd2_title, 'string', '\psi, OASPL (dB/dBA)');
fps_constant = [num2str(roundn(WindSpeed(j-1,1),1)), ' ft/s'];
rpm_constant=[RPM,' rpm'];
yaw_constant=[yaw, '  ];
pitch_constant=[pitch, '  ];
set(gcf, 'name', 'Mic2 graph', 'NumberTitle','off');
text(18, ylim2 + 5, 'Mic 2', 'FontSize',22, 'FontWeight', 'bold');
text(13.5, ylim2 + 1.5, ['\theta, V_\infty, RPM = (' , ...
pitch_constant,' , ', fps_constant,' , ', rpm_constant, ')'],...
'FontSize',13, 'FontWeight', 'bold');
subplot(3,1,3)
text(40, ylim4 - 7, 'BPF (Hz), (dBA):', 'color', 'k', 'FontWeight',...
'bold');
for CC = 1:c_color-1
text(45, (ylim4 - 7 - 6*CC), ...
['(', num2str(round(f1_Plot4(m2(1,CC)),1)), ', ',...
num2str(round(n2(CC,1),1)), ')'], 'color', color(CC,:),...
'FontSize', 10, 'FontWeight', 'bold');
end
if save_files == 1; %#ok<ALIGN>
saveas(gcf, [save_location, plot_number, '_Mic2'], 'png');
end


figure(3)
```

```
FigHandle3 = figure(3);
set(FigHandle3, 'Position', [10, 10, 900, 1100]);
subplot(3,1,1)
lgnd3=legend({Name1_Mic3_OASPL, Name2_Mic3_OASPL, Name3_Mic3_OASPL,...
Name4_Mic3_OASPL, Name5_Mic3_OASPL, Name6_Mic3_OASPL},...
'location', 'eastoutside', 'FontSize', 15, 'FontWeight', 'bold');
lgnd3_title = get(lgnd3, 'title');
set(lgnd3_title, 'string', '\psi, OASPL (dB/dBA)');
set(lgnd3,'color','none', 'Box', 'off');
set(lgnd3_title, 'string', '\psi, OASPL (dB/dBA)');
fps_constant = [num2str(roundn(WindSpeed(j-1,1),1)), ' ft/s'];
rpm_constant=[RPM,' rpm'];
yaw_constant=[yaw, '  ];
pitch_constant=[pitch, '  ];
set(gcf, 'name', 'Mic2 graph', 'NumberTitle','off');
text(18, ylim2 + 5, 'Mic 3', 'FontSize',22, 'FontWeight', 'bold');
text(13.5, ylim2 + 1.5, ['\theta, V_\infty, RPM = (' ,...
pitch_constant,' , ', fps_constant,' , ', rpm_constant, ')'],...
'FontSize',13, 'FontWeight', 'bold');
subplot(3,1,3)
text(40, ylim4 - 7, 'BPF (Hz), (dBA):', 'color', 'k', ...
'FontWeight', 'bold');
for CC = 1:c_color-1
text(45, (ylim4 - 7 - 6*CC), ['(', ...
num2str(round(f1_Plot4(m3(1,CC)),1)), ', ',...
num2str(round(n3(CC,1),1)), ')'], 'color', color(CC,:), ...
'FontSize', 10, 'FontWeight', 'bold');
end
if save_files == 1;
saveas(gcf, [save_location, plot_number, '_Mic3'], 'png');
end
```

F.2 Cornelius Excel Reader Main MATLAB code

```
% Read in pertinent information from the digitized run log for use in
% MATLAB acoustic post-processing codes.
%
%
% SYNTAX:
% xlsread = xlsread(filename, sheet, xlRange); Filename is the filepath of
% the excel document to be read. Sheet calls a specific sheet within the
% excel document. XlRange specifies the range of rows to be read in.
%
%
% DESCRIPTION:
% This code reads in data from the digitized run log for use in the
% post-processing acoustic codes. Pertinent information that is gathered
% consists of run number, point number, date, model, gains, RPMs, pitch,
% and wind speed. Additional columns can be read in if the codes are
% further developed to further study correlations in the data. XlRange
% must be modified if additional testing is done and recorded in the
% digitized run log.
%
%
% INPUTS:
% Excelfile = Provides the filepath of the digitized run log to be read
%  in.
```

```
%
% Excelsheet = Defines the specific sheet from the digitized run log to
%  read in.
%
% OUTPUT:
% No Output.
%
% * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
% Written By: Jason K. Cornelius.
% * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
%Excel Reading Specifications
%This section specifies what rows and columns of the excel document will be read in.
% Specifies the excel document to be read.
Excelfile = 'UAV Acoustics Data New.xlsx';
% Calls the specific sheet to be read.
Excelsheet = 'Main';

% Reads in the specified rows of each column as specified below.
BDAS_Run = xlsread(Excelfile, Excelsheet, 'B2:B3300');
BDAS_Point = xlsread(Excelfile, Excelsheet, 'C2:C3300');
[~,txt,~] = xlsread(Excelfile, Excelsheet, 'H2:H3300');
Date = txt;
[~,txt,~] = xlsread(Excelfile, Excelsheet, 'I2:I3300');
Model = txt;
[num,txt,raw] = xlsread(Excelfile, Excelsheet, 'AH1:AH3300');
File = txt;
Mic1Gain = xlsread(Excelfile, Excelsheet, 'T2:T3300');
Mic2Gain = xlsread(Excelfile, Excelsheet, 'U2:U3300');
Mic3Gain = xlsread(Excelfile, Excelsheet, 'V2:V3300');
RPM1 = xlsread(Excelfile, Excelsheet, 'P2:P3300');
RPM2 = xlsread(Excelfile, Excelsheet, 'Q2:Q3300');
RPM3 = xlsread(Excelfile, Excelsheet, 'R2:R3300');
RPM4 = xlsread(Excelfile, Excelsheet, 'S2:S3300');
Pitch = xlsread(Excelfile, Excelsheet, 'O2:O3300');
WindSpeed = xlsread(Excelfile, Excelsheet, 'N2:N3300');
Yaw = xlsread(Excelfile, Excelsheet, 'J2:J3300');
```

Appendix G

Processed Data

Appendix H contains all of the processed frequency spectrum acoustic data for all three microphones. Each text file contains four columns: Frequency (Hz), Mic01 (dBA), Mic02 (dBA), and Mic03(dBA).