

ENGINEERING REPORT

GOODMORNING.COM

THIRD PARTY MATTRESS TESTING

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RE: THIRD PARTY MATTRESS TESTING

INTRODUCTION

In May 2022, GoodMorning.com commissioned Techtree to provide independent 3rd party testing of multiple mattresses. Similar testing was done previously by Rus-Tec (5055-1,-2,-3,-4,-5,-6,-7,-8) and Pure Mosaic (PMTM-4211-01 and PMTM-4320-01). Data from all test runs are represented in this document, as provided by GoodMorning.com from the previously validated reports. Techtree followed testing procedures as directed by GoodMorning.com and attached in Appendix B. Below follows an overview of the testing procedures used as well as the results that they produced. Additional results can be found in Appendix A.

REFERENCE LOADS & TEST INFORMATION



Figure 1: Reference Load 1. Plastic 5 gallon water cooler bottle. Size: 10.75" diameter, 19.5" height, 42.3 lb weight



Figure 2: Reference Load 2. Spherical medicine ball. Size: 9" diameter, 10 lb weight

As specified by the testing methodology, all testing was completed in a room with a temperature range between 18°C and 25°C and a humidity range between 25% to 50%, in order to simulate the environment of a typical residence. Mattresses were placed on a drop cloth on a flat concrete floor such that the top and sides were unobstructed.



TEST 1 – MATTRESS FIRMNESS

Overview and Objective: Apply Reference Load 1 to the center of each subject mattress and measure the vertical displacement of each to establish their respective positions on a firmness (or “sinkage”) scale. A low relative vertical displacement shall indicate a firmer mattress, while a high relative vertical displacement shall indicate a softer mattress.

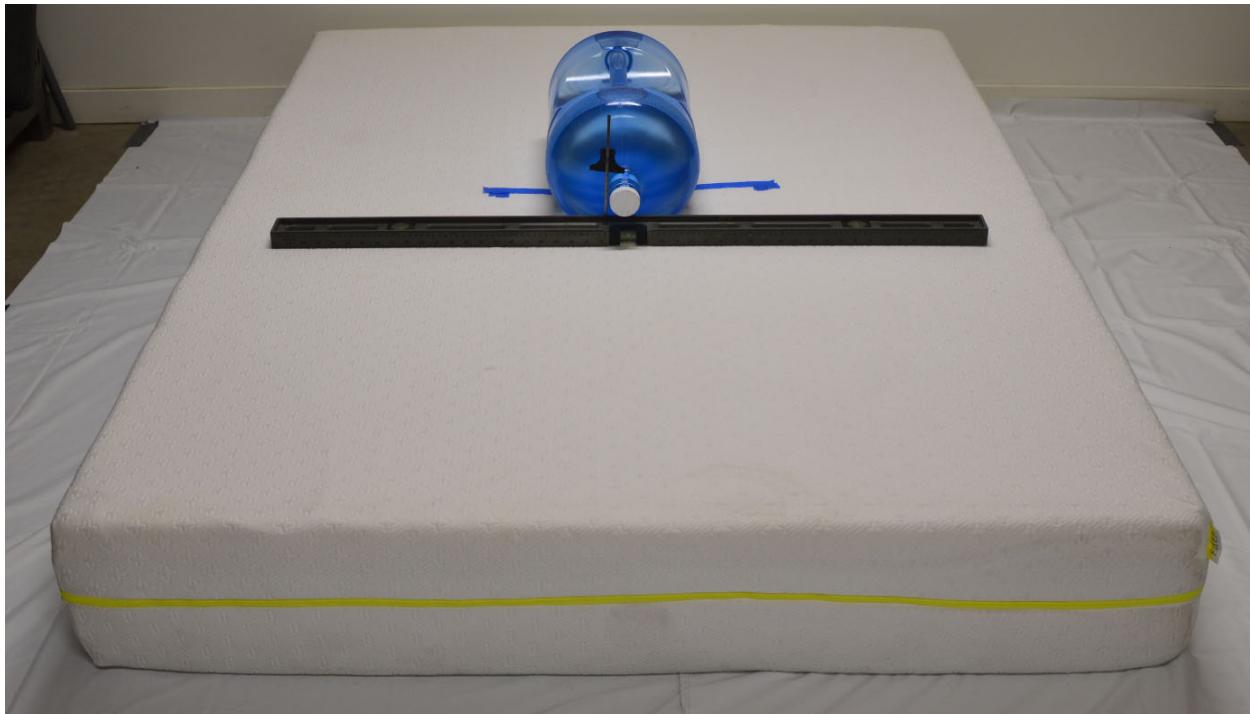


Figure 3: Typical setup for Test 1

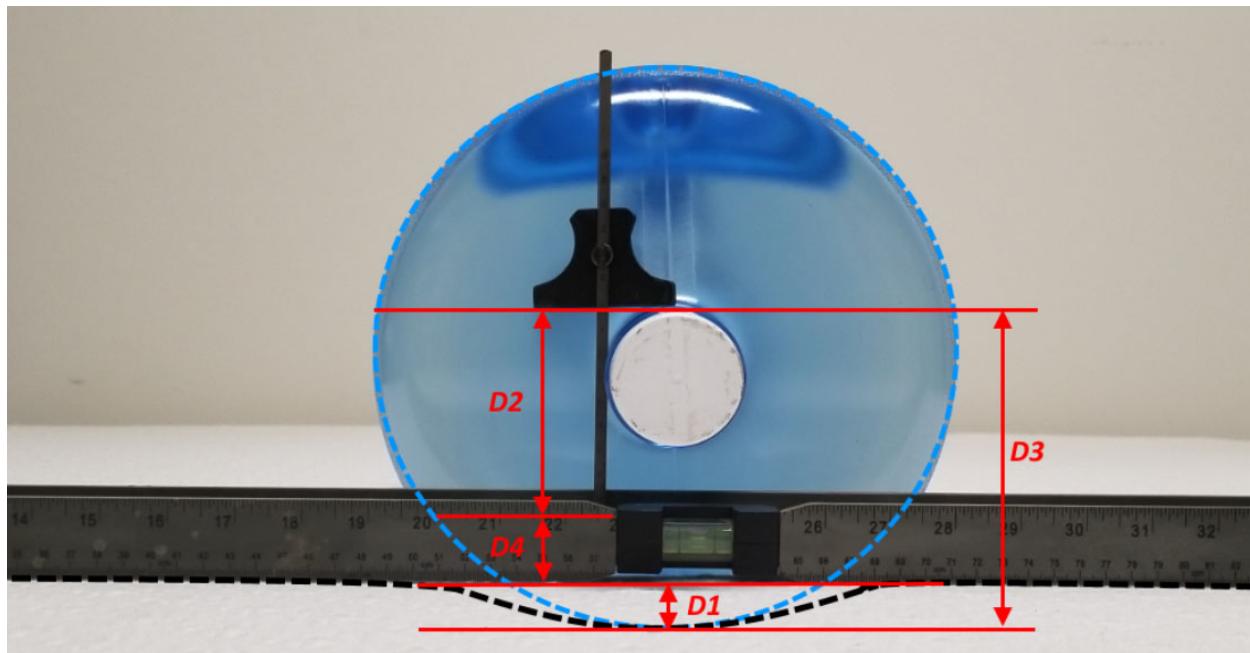


Figure 4: Deflection measurements for Test 1



Figure 4 shows the critical measurements taken for Test 1 in order to determine the vertical displacement with Reference Load 1 applied.

The vertical deflection value of interest for Test 1 is D_1 as defined below:

$$D_1 = D_3 - D_2 - D_4$$

D_2 = Measured (Deflection)

D_3 = 160 mm (Constant)

D_4 = varies (Constant)

The vertical displacement, D_1 can be found by inputting D_2 into the above expression.

TEST 2 – EDGE SUPPORTIVENESS

Overview and Objective: Apply Reference Load 1 to the edge each subject mattress and to measure the resultant vertical displacement of each to establish their respective positions on an “edge supportiveness” scale. A low relative vertical displacement shall indicate a mattress with more edge support, while a high relative vertical displacement shall indicate a mattress with less edge support.

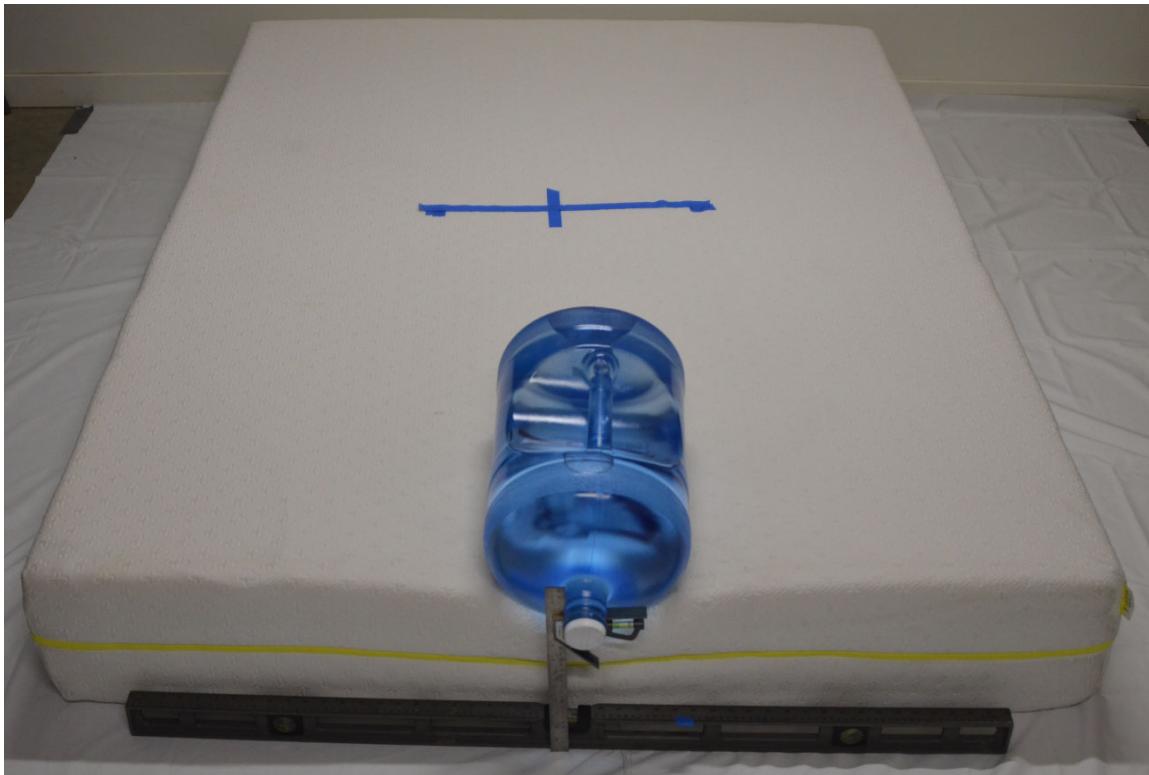


Figure 5: Typical setup for Test 2

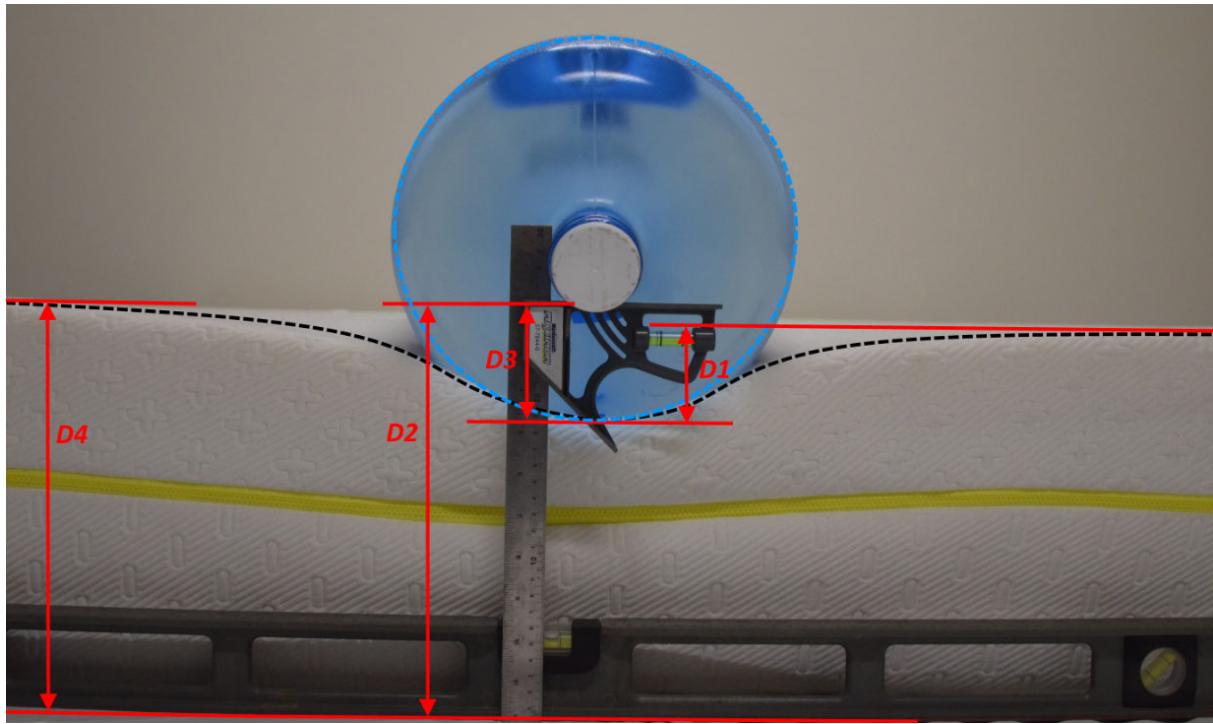


Figure 6: Deflection measurements for Test 2

The vertical deflection value of interest for Test 2 is D_1 as defined below:

$$D_1 = D_4 - (D_2 - D_3)$$

D_2 = Measured (Deflection)

D_3 = 104 mm (Constant)

D_4 = Measured (Mattress Height)



TEST 3 – MOTION ISOLATION

Overview and Objective: Apply a reference impulse to the top side of each subject mattress, representative of human movement on the mattress, and measure the resultant peak acceleration of a calibrated accelerometer placed on the mattress a fixed distance away from the epicenter of the impulse to establish their respective positions on a “motion isolation” scale. A high resultant peak acceleration shall indicate less motion isolation, while a low resultant peak acceleration shall indicate more motion isolation.

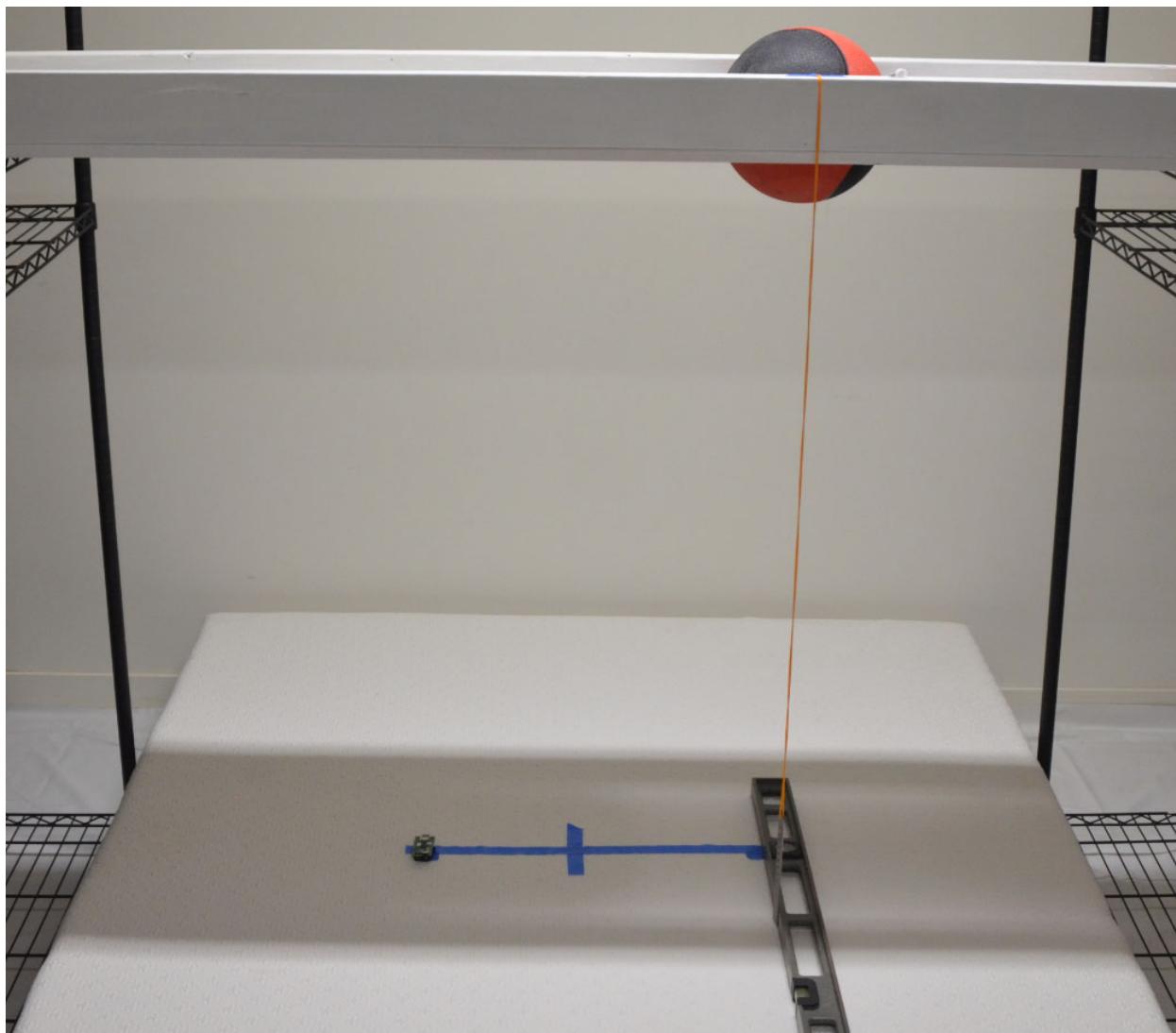


Figure 7: Typical setup for Test 3



Vector Magnitude Acceleration

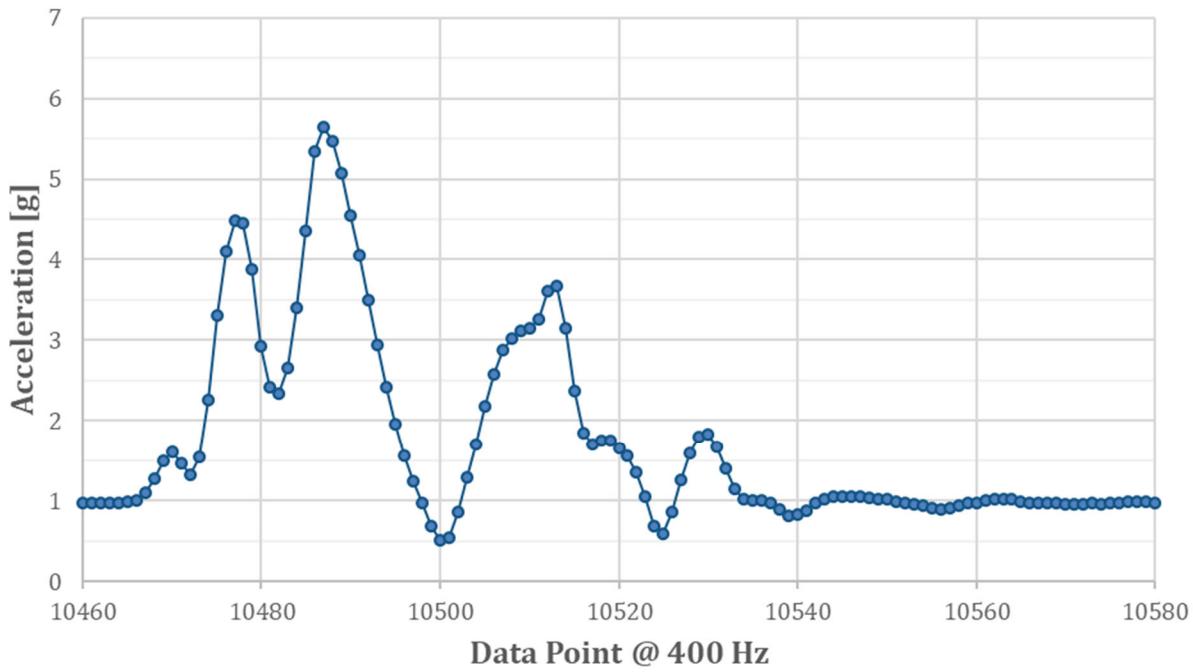


Figure 8: Example Vector Magnitude Acceleration of one ball drop

The vector magnitude of acceleration as shown above in Figure 8 is calculated using the expression shown below.

$$a = \sqrt{(x^2 + y^2 + z^2)}$$

The responsiveness of the mattress can be seen at one sleep point as a result of an impulse being applied at the second. In order to record this data, a digital accelerometer (ADXL345) was used and set to record data at 400 Hz (400 data points per second).



TEST 4 – BOUNCINESS

Overview and Objective: Drop a 10lb sphere (9" diameter) from a fixed distance on to the top side of each subject mattress and measure the resultant peak rebound height on its first bounce. A high resultant peak rebound height shall indicate more bounciness, while a low resultant peak height shall indicate less bounciness.

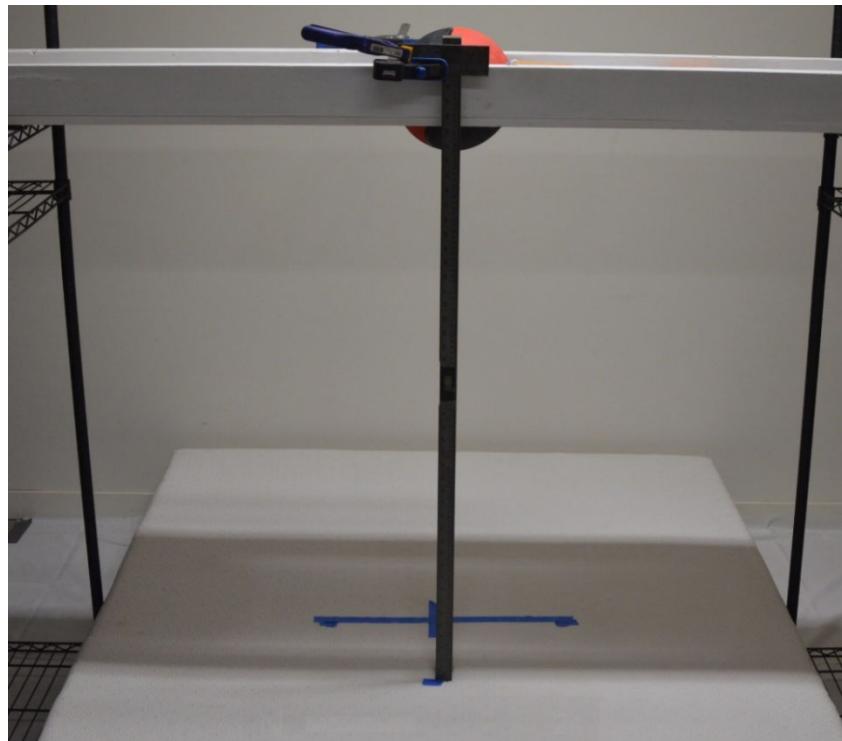


Figure 9: Typical setup for Test 4

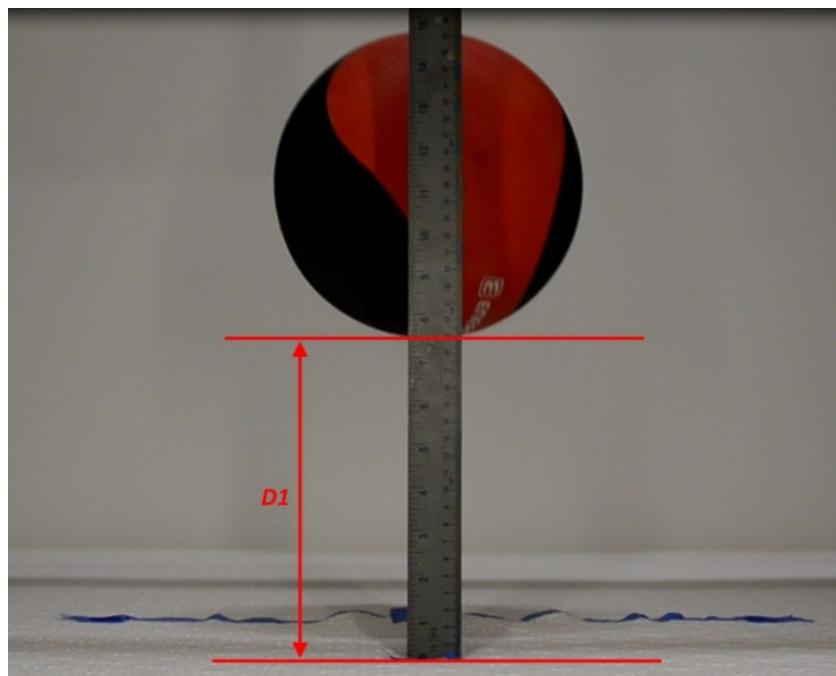


Figure 10: Rebound Measurement for Test 4



TEST 1 – RESULTS – MATTRESS FIRMNESS

Table 1: Test 1 – Mattress Firmness

Mattress	Deflection			Out of 10
	[mm]	[in]	Measured [mm]	
1 Amerisleep AS3	68.8	2.7	70.0	5.2
2 Apollo	76.8	3.0	70.0	4.2
3 Bear	69.8	2.7	69.0	5.1
4 Bloom Air	75.8	3.0	71.0	4.3
5 Bloom Cloud	64.3	2.5	74.5	5.8
6 Bloom Earth	76.8	3.0	70.0	4.2
7 Bloom Mist	65.8	2.6	81.0	5.6
8 Bloom River	51.8	2.0	95.0	7.4
9 Casper (V1)	71.8	2.8	67.0	4.8
10 Casper (V2)	62.8	2.5	76.0	6.0
11 Casper (V3)	78.8	3.1	68.0	3.9
12 Casper (V4)	71.8	2.8	75.0	4.8
13 Casper Element	73.8	2.9	73.0	4.6
14 Casper Essential (V1)	67.8	2.7	79.0	5.4
15 Casper Essential (V2)	65.8	2.6	81.0	5.6
16 Casper Wave	57.8	2.3	89.0	6.6
17 Cherry	53.8	2.1	93.0	7.2
18 Classic Brands (Thick)	56.8	2.2	82.0	6.8
19 Classic Brands (Thin)	46.8	1.8	92.0	8.1
20 Dormeo	76.8	3.0	70.0	4.2
21 Douglas (V1)	68.3	2.7	70.5	5.3
22 Douglas (V2)	57.8	2.3	81.0	6.6
23 Emma	67.8	2.7	79.0	5.4
24 Endy (V1)	76.3	3.0	62.5	4.3
25 Endy (V2)	51.8	2.0	87.0	7.4
26 Fleep (Firm)	50.3	2.0	88.5	7.6
27 Fleep (Soft)	69.3	2.7	69.5	5.2
28 Full Moon	68.8	2.7	78.0	5.2
29 GhostBed Classic	68.8	2.7	78.0	5.2
30 Gotta Sleep (OMG)	81.8	3.2	65.0	3.6
31 Haven Rejuvenate	48.8	1.9	98.0	7.8
32 Helix	61.8	2.4	77.0	6.1
33 Helix Midnight	87.8	3.5	59.0	2.8
34 iComfort	65.8	2.6	73.0	5.6
35 IKEA Foam	58.8	2.3	88.0	6.5
36 IKEA Spring	54.8	2.2	92.0	7.0
37 Juno	65.8	2.6	81.0	5.6
38 Layla (Firm)	61.8	2.4	77.0	6.1
39 Layla (Soft)	75.8	3.0	63.0	4.3
40 Leesa	76.3	3.0	62.5	4.3
41 Lucid	53.8	2.1	85.0	7.2
42 Lull	71.8	2.8	75.0	4.8
43 Luna	66.8	2.6	72.0	5.5
44 Mira (V1)	51.8	2.0	95.0	7.4
45 Mira (V2)	61.8	2.4	85.0	6.1
46 Nectar	76.8	3.0	70.0	4.2
47 Nora	58.8	2.3	80.0	6.5
48 Novaform	82.8	3.3	64.0	3.4
49 Novosbed Firm	59.3	2.3	79.5	6.5
50 Novosbed Firm (V2)	69.8	2.7	77.0	5.1
51 Novosbed Medium	68.3	2.7	70.5	5.3
52 Novosbed Medium (V2)	80.8	3.2	66.0	3.7
53 Novosbed Soft	79.3	3.1	59.5	3.9
54 Novosbed Soft (V2)	84.8	3.3	62.0	3.2
55 PerfectSense	61.8	2.4	85.0	6.1
56 PolySleep	65.8	2.6	73.0	5.6
57 Puffy (V1)	78.8	3.1	60.0	3.9
58 Puffy (V2)	80.8	3.2	66.0	3.7
59 Puffy Lux	72.8	2.9	74.0	4.7
60 Purple	66.8	2.6	72.0	5.5
61 Purple Plus	86.8	3.4	60.0	2.9
62 Recore	72.8	2.9	74.0	4.7
63 Sealy Cocoon	48.8	1.9	98.0	7.8
64 Sealy Posturepedic	76.8	3.0	62.0	4.2
65 Serta Chinook	70.8	2.8	76.0	5.0
66 Silk & Snow (V1)	77.8	3.1	69.0	4.1
67 Silk & Snow (V2)	80.8	3.2	66.0	3.7
68 Simba (V1)	36.8	1.4	110.0	9.4
69 Simba (V2)	84.8	3.3	62.0	3.2
70 Spa Sensations	71.8	2.8	75.0	4.8
71 Structube	41.8	1.6	105.0	8.7
72 Tempur-Pedic	68.8	2.7	70.0	5.2
73 Tuft & Needle (V1)	66.8	2.6	72.0	5.5
74 Tuft & Needle (V2)	57.8	2.3	89.0	6.6
75 Zinus	83.8	3.3	63.0	3.3

**Table 2: Test 1 – Mattress Firmness - Hybrid Mattresses**

	Mattress	Deflection		Measured [mm]	Out of 10
		[mm]	[in]		
76	Avocado Green	63.8	2.5	83.0	5.9
77	Brunswick	82.8	3.3	64.0	6.2
78	DreamCloud	88.8	3.5	58.0	2.7
79	Hamuq	63.8	2.5	75.0	7.6
80	Haven Lux Hybrid	77.8	3.1	69.0	6.6
81	Kingsdown	80.8	3.2	66.0	6.3
82	Logan & Cove (Firm)	62.8	2.5	76.0	7.7
83	Logan & Cove (Medium)	81.8	3.2	65.0	6.3
84	Purple Hybrid	72.8	2.9	74.0	6.9
85	Saatva	80.8	3.2	58.0	6.3
86	Silk & Snow Hybrid (V1)	66.8	2.6	80.0	7.4
87	Silk & Snow Hybrid (V2)	76.8	3.0	70.0	6.6
88	Silk & Snow Organic	75.8	3.0	71.0	4.3
89	Simmons Beautyrest Black	75.8	3.0	63.0	6.7
90	Springwall	68.8	2.7	78.0	7.2
91	Stearns & Foster	70.8	2.8	76.0	7.1
92	WinkBed	75.8	3.0	71.0	4.3



Test 1 - Mattress Firmness (or Sinkage)

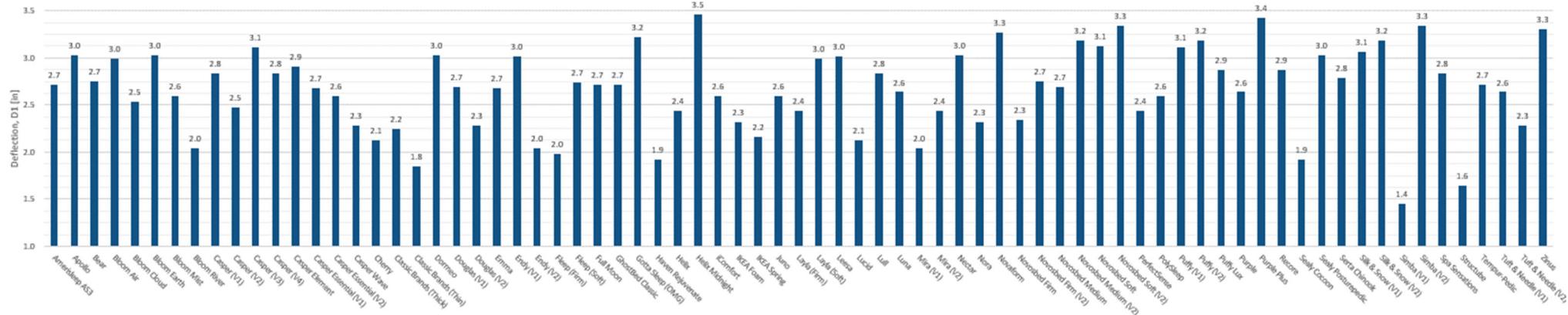


Figure 11: Test 1 – Mattress Firmness measuring how far Reference Load 1 deflects in the center of the mattress. A higher number indicates a softer mattress.

Test 1 - Mattress Firmness (or Sinkage)

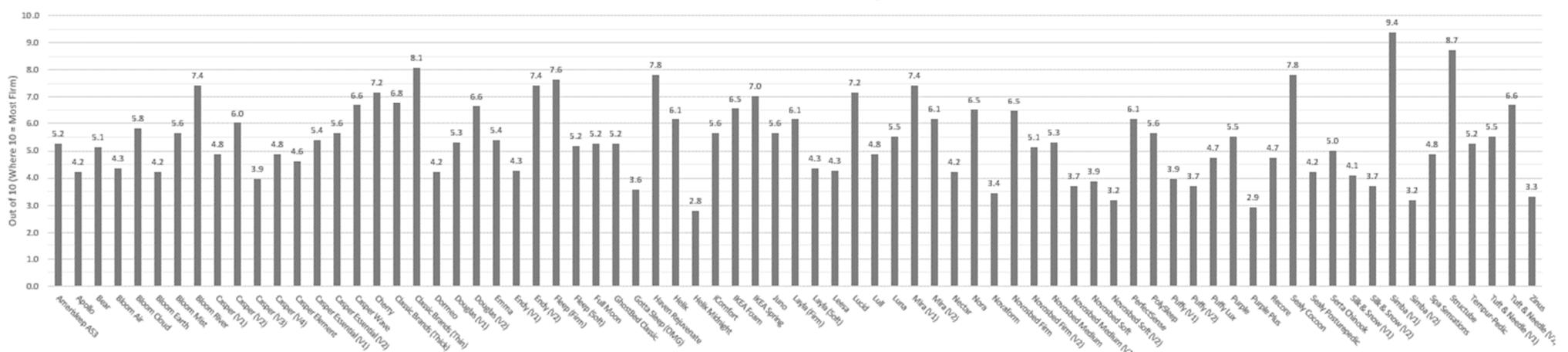


Figure 12: Test 1 – Mattress Firmness on a scale from 1 to 10 based on the given mattresses that were sampled (where 10 = most firm)

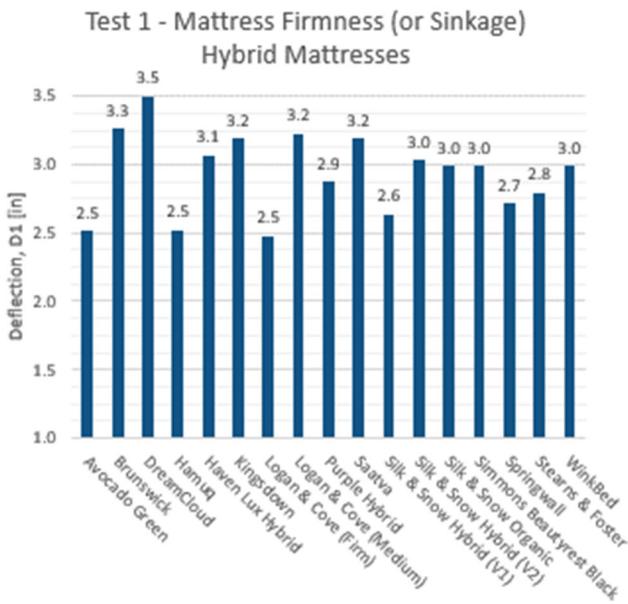


Figure 13: Test 1 – Mattress Firmness measuring how far Reference Load 1 deflects in the center of the mattress. A higher number indicates a softer mattress. Hybrid mattresses.

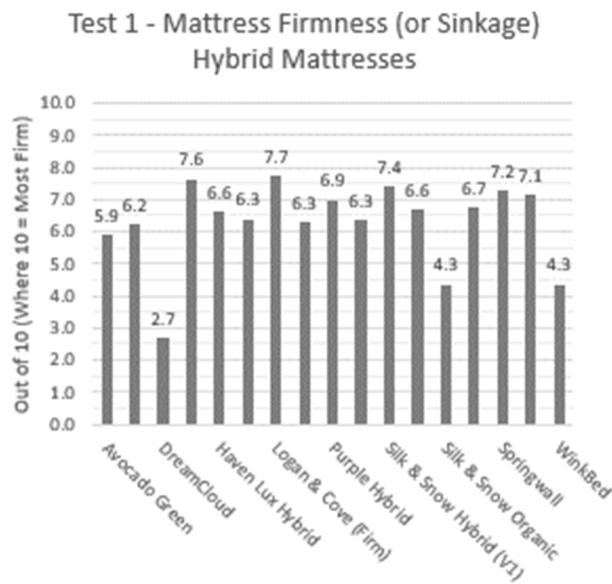


Figure 14: Test 1 – Mattress Firmness on a scale from 1 to 10 based on the given mattresses that were sampled (where 10 = most firm. Hybrid mattresses).



TEST 2 – RESULTS – EDGE SUPPORTIVENESS

Table 3: Test 2 – Edge Supportiveness

	Mattress	Mattress Height, D4 [mm] [in]	Measured Depth, D2 [mm] [in]	Deflection, D1 [mm] [in]	Out of 10
1	Amerisleep AS3	288	11.3	285	11.2
2	Apollo	307	12.1	285	11.2
3	Bear	235	9.3	241	9.5
4	Bloom Air	227	8.9	254	10.0
5	Bloom Cloud	281	11.1	301	11.9
6	Bloom Earth	201	7.9	213	8.4
7	Bloom Mist	227	8.9	248	9.8
8	Bloom River	180	7.1	190	7.5
9	Casper (V1)	249	9.8	268	10.6
10	Casper (V2)	233	9.2	198	7.8
11	Casper (V3)	285	11.2	288	11.3
12	Casper (V4)	260	10.2	261	10.3
13	Casper Element	240	9.4	235	9.3
14	Casper Essential (V1)	214	8.4	210	8.3
15	Casper Essential (V2)	271	10.7	279	11.0
16	Casper Wave	270	10.6	281	11.1
17	Cherry	156	6.1	161	6.3
18	Classic Brands (Thick)	204	8.0	239	9.4
19	Classic Brands (Thin)	154	6.1	194	7.6
20	Dormeo	304	12.0	314	12.4
21	Douglas (V1)	258	10.2	276	10.9
22	Douglas (V2)	253	10.0	283	11.1
23	Emma	305	12.0	294	11.6
24	Endy (V1)	261	10.3	250	9.8
25	Endy (V2)	247	9.7	235	9.3
26	Fleep (Firm)	249	9.8	259	10.2
27	Fleep (Soft)	249	9.8	243	9.6
28	Full Moon	208	8.2	210	8.3
29	GhostBed Classic	266	10.5	285	11.2
30	Gotta Sleep (OMG)	251	9.9	246	9.7
31	Haven Rejuvenate	255	10.0	281	11.1
32	Helix	252	9.9	222	8.7
33	Helix Midnight	300	11.8	296	11.7
34	iComfort	302	11.9	324	12.8
35	IKEA Foam	178	7.0	195	7.7
36	IKEA Spring	237	9.3	259	10.2
37	Juno	196	7.7	185	7.3
38	Layla (Firm)	270	10.6	271	10.7
39	Layla (Soft)	270	10.6	225	8.9
40	Leesa	250	9.8	273	10.7
41	Lucid	254	10.0	292	11.5
42	Lull	250	9.8	257	10.1
43	Luna	256	10.1	275	10.8
44	Mira (V1)	200	7.9	218	8.6
45	Mira (V2)	245	9.6	288	11.3
46	Nectar	267	10.5	270	10.6
47	Nora	289	11.4	272	10.7
48	Novaform	340	13.4	312	12.3
49	Novosbed Firm	293	11.5	316	12.4
50	Novosbed Firm (V2)	279	11.0	290	11.4
51	Novosbed Medium	307	12.1	311	12.2
52	Novosbed Medium (V2)	272	10.7	258	10.2
53	Novosbed Soft	286	11.3	276	10.9
54	Novosbed Soft (V2)	265	10.4	262	10.3
55	PerfectSense	255	10.0	265	10.4
56	PolySleep	248	9.8	297	11.7
57	Puffy (V1)	246	9.7	248	9.8
58	Puffy (V2)	257	10.1	230	9.1
59	Puffy Lux	304	12.0	297	11.7
60	Purple	242	9.5	236	9.3

61	Purple Plus	300	11.8	268	10.6	136.0	5.4	2.3
62	Recore	285	11.2	309	12.2	80.0	3.1	6.9
63	Sealy Cocoon	222	8.7	271	10.7	55.0	2.2	8.9
64	Sealy Posturepedic	325	12.8	312	12.3	117.0	4.6	3.9
65	Serta Chinook	230	9.1	233	9.2	101.0	4.0	5.2
66	Silk & Snow (V1)	265	10.4	268	10.6	101.0	4.0	5.2
67	Silk & Snow (V2)	250	9.8	253	10.0	101.0	4.0	5.2
68	Simba (V1)	263	10.4	301	11.9	66.0	2.6	8.0
69	Simba (V2)	304	12.0	282	11.1	126.0	5.0	3.1
70	Spa Sensations	224	8.8	216	8.5	112.0	4.4	4.3
71	Structube	275	10.8	316	12.4	63.0	2.5	8.2
72	Tempur-Pedic	286	11.3	246	9.7	144.0	5.7	1.7
73	Tuft & Needle (V1)	251	9.9	270	10.6	85.0	3.3	6.5
74	Tuft & Needle (V2)	245	9.6	269	10.6	80.0	3.1	6.9
75	Zinus	290	11.4	295	11.6	99.0	3.9	5.3

**Table 4: Test 2 – Edge Supportiveness - Hybrid Mattresses**

Mattress		Mattress Height, D4	Measured Depth, D2	Deflection, D1 [in]		Out of 10		
		[mm]	[in]	[mm]	[in]			
89	Avocado Green	279	11.0	309	12.2	74.0	2.9	7.3
76	Brunswick	298	11.7	309	12.2	93.0	3.7	5.8
90	DreamCloud	340	13.4	350	13.8	94.0	3.7	5.7
77	Hamuq	300	11.8	328	12.9	76.0	3.0	7.2
78	Haven Lux Hybrid	359	14.1	338	13.3	125.0	4.9	3.2
79	Kingsdown	369	14.5	355	14.0	118.0	4.6	3.8
80	Logan & Cove (Firm)	352	13.9	390	15.4	66.0	2.6	8.0
81	Logan & Cove (Medium)	350	13.8	343	13.5	111.0	4.4	4.4
82	Purple Hybrid	279	11.0	305	12.0	78.0	3.1	7.0
83	Saatva	400	15.7	384	15.1	120.0	4.7	3.6
84	Silk & Snow Hybrid (V1)	284	11.2	285	11.2	103.0	4.1	5.0
85	Silk & Snow Hybrid (V2)	295	11.6	325	12.8	74.0	2.9	7.3
92	Silk & Snow Organic	300	11.8	329	13.0	75.0	3.0	7.3
86	Simmons Beautyrest Black	355	14.0	349	13.7	110.0	4.3	4.4
87	Springwall	232	9.1	288	11.3	48.0	1.9	9.5
88	Stearns & Foster	342	13.5	355	14.0	91.0	3.6	6.0
91	WinkBed	330	13.0	356	14.0	78.0	3.1	7.0

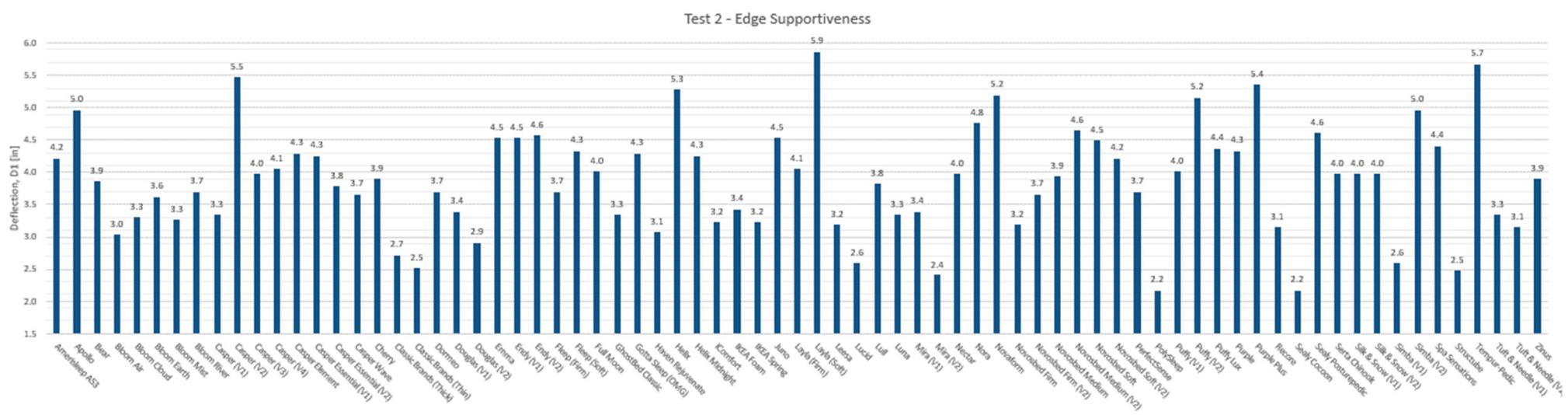


Figure 15: Test 2 – Mattress Firmness measuring how far Reference Load 1 deflects on the edge of the mattress. A higher number indicates a softer mattress.

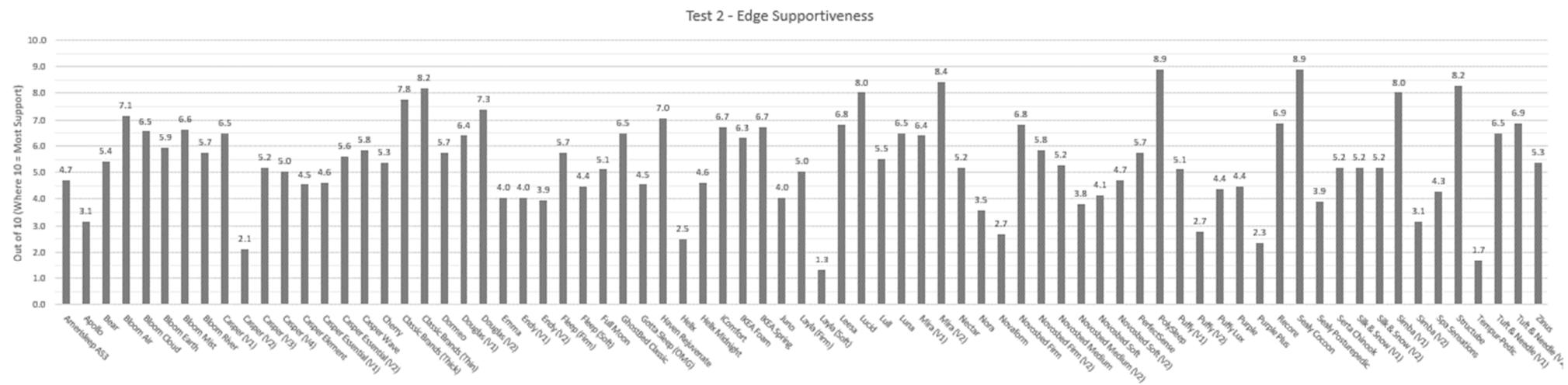


Figure 16: Test 2 – Mattress Firmness on a scale from 1 to 10 based on the given mattresses that were sampled (where 10 = most firm)

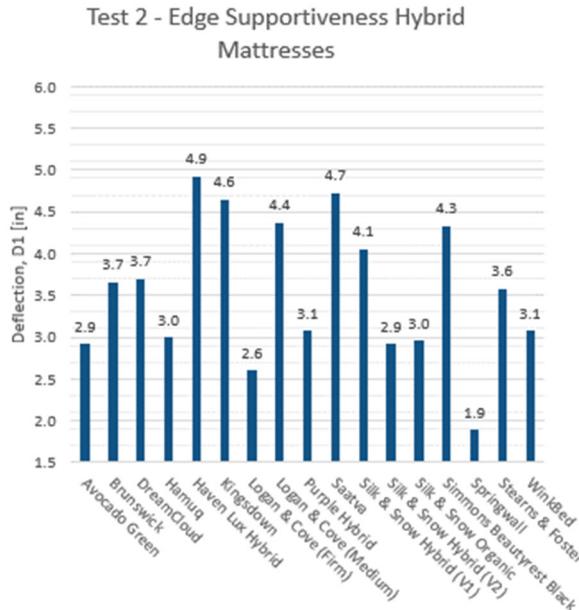


Figure 17: Test 2 – Mattress Firmness measuring how far Reference Load 1 deflects on the edge of the mattress. A higher number indicates a softer mattress. Hybrid mattresses.

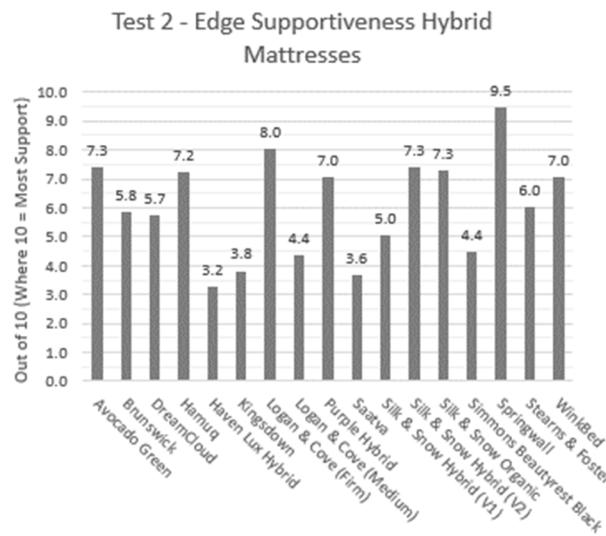


Figure 18: Test 2 – Mattress Firmness on a scale from 1 to 10 based on the given mattresses that were sampled (where 10 = most firm). Hybrid mattresses.



TEST 3 – RESULTS – MOTION ISOLATION

Table 5: Test 3 – Motion Isolation

Mattress	Average Peak Acceleration [g]	Out of 10
1 Amerisleep AS3	6.8	5.9
2 Apollo	2.3	8.6
3 Bear	5.1	6.9
4 Bloom Air	5.9	6.5
5 Bloom Cloud	5.1	6.9
6 Bloom Earth	4.5	7.3
7 Bloom Mist	5.9	6.5
8 Bloom River	5.3	6.8
9 Casper (V1)	8.7	4.8
10 Casper (V2)	6.1	6.4
11 Casper (V3)	4.8	7.1
12 Casper (V4)	4.8	7.1
13 Casper Element	6.9	5.9
14 Casper Essential (V1)	5.8	6.5
15 Casper Essential (V2)	5.3	6.8
16 Casper Wave	4.9	7.1
17 Cherry	6.1	6.4
18 Classic Brands (Thick)	7.0	5.8
19 Classic Brands (Thin)	6.4	6.2
20 Dormeo	6.7	6.0
21 Douglas (V1)	3.3	8.0
22 Douglas (V2)	2.8	8.3
23 Emma	4.9	7.0
24 Endy (V1)	5.1	6.9
25 Endy (V2)	5.7	6.6
26 Fleep (Firm)	5.2	6.9
27 Fleep (Soft)	5.2	6.9
28 Full Moon	4.2	7.5
29 GhostBed Classic	4.7	7.2
30 Gotta Sleep (OMG)	5.9	6.4
31 Haven Rejuvenate	6.2	6.3
32 Helix	5.4	6.7
33 Helix Midnight	5.9	6.5
34 iComfort	4.4	7.4
35 IKEA Foam	8.6	4.8
36 IKEA Spring	4.8	7.1
37 Juno	6.3	6.2
38 Layla (Firm)	5.8	6.5
39 Layla (Soft)	5.9	6.4
40 Leesa	6.4	6.1
41 Lucid	5.4	6.8
42 Lull	4.3	7.4
43 Luna	6.6	6.1
44 Mira (V1)	5.3	6.8
45 Mira (V2)	3.4	7.9
46 Nectar	4.5	7.3
47 Nora	3.1	8.1
48 Novaform	3.0	8.2
49 Novosbed Firm	5.4	6.8
50 Novosbed Firm (V2)	5.4	6.8
51 Novosbed Medium	5.0	7.0
52 Novosbed Medium (V2)	5.3	6.8
53 Novosbed Soft	6.7	6.0
54 Novosbed Soft (V2)	4.5	7.3
55 PerfectSense	9.8	4.1
56 PolySleep	3.3	8.0
57 Puffy (V1)	5.0	7.0
58 Puffy (V2)	6.1	6.3
59 Puffy Lux	4.6	7.3
60 Purple	9.9	4.0
61 Purple Plus	5.5	6.7
62 Recore	4.8	7.1
63 Sealy Cocoon	6.7	6.0
64 Sealy Posturepedic	6.5	6.1
65 Serta Chinook	4.4	7.4
66 Silk & Snow (V1)	3.9	7.6
67 Silk & Snow (V2)	4.0	7.6
68 Simba (V1)	6.2	6.3
69 Simba (V2)	5.7	6.6
70 Spa Sensations	7.1	5.7
71 Structube	5.9	6.5
72 Tempur-Pedic	4.3	7.4
73 Tuft & Needle (V1)	4.7	7.2
74 Tuft & Needle (V2)	5.9	6.5
75 Zinus	4.3	7.4

**Table 6: Test 3 – Motion Isolation - Hybrid Mattresses**

Mattress	Average Peak Acceleration [g]	Out of 10
76 Avocado Green	6.8	5.9
77 Brunswick	5.5	6.7
78 DreamCloud	6.8	5.9
79 Hamuq	6.0	6.4
80 Haven Lux Hybrid	4.6	7.3
81 Kingsdown	4.9	7.1
82 Logan & Cove (Firm)	5.2	6.9
83 Logan & Cove (Medium)	5.1	7.0
84 Purple Hybrid	5.8	6.5
85 Saatva	5.2	6.9
86 Silk & Snow Hybrid (V1)	4.9	7.0
87 Silk & Snow Hybrid (V2)	3.3	8.0
88 Silk & Snow Organic	5.1	7.0
89 Simmons Beautyrest Black	3.6	7.8
90 Springwall	6.5	6.1
91 Stearns & Foster	4.1	7.6
92 WinkBed	5.6	6.7



Test 3 - Motion Isolation

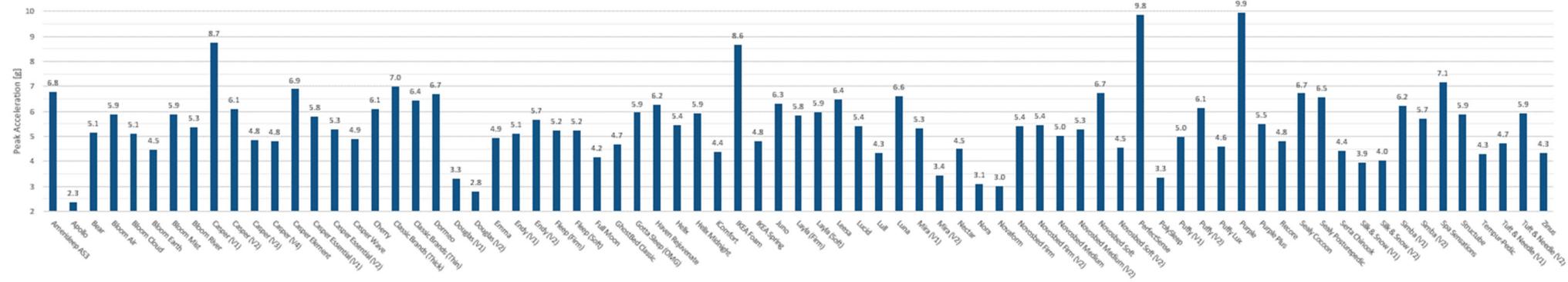


Figure 19: Test 3 - Peak Acceleration at one sleep point when Reference Load 2 is dropped on the other sleep point. Values shown are an average of 20 runs per mattress.

Test 3 - Motion Isolation

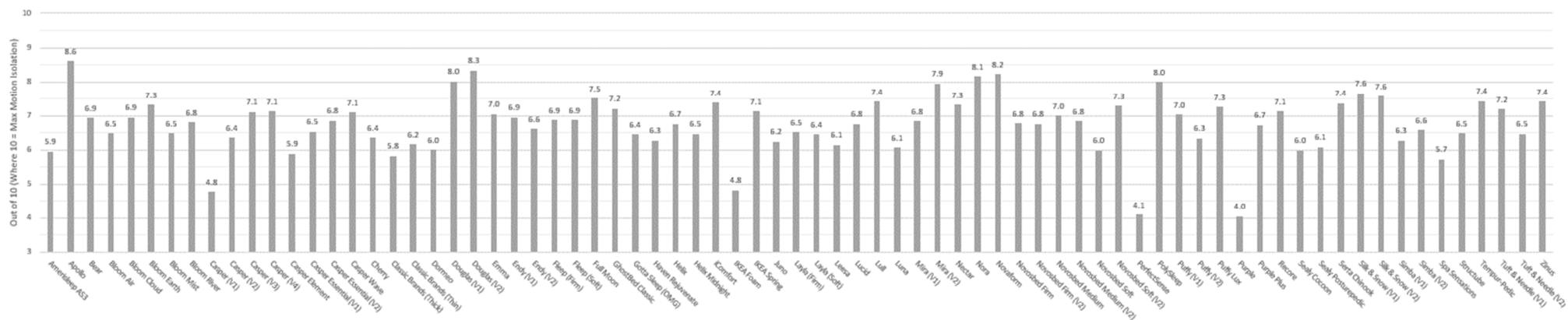


Figure 20: Test 3 – Motion Isolation on a scale from 1 to 10 based on the given mattresses that were sampled (where 10 = max motion isolation)

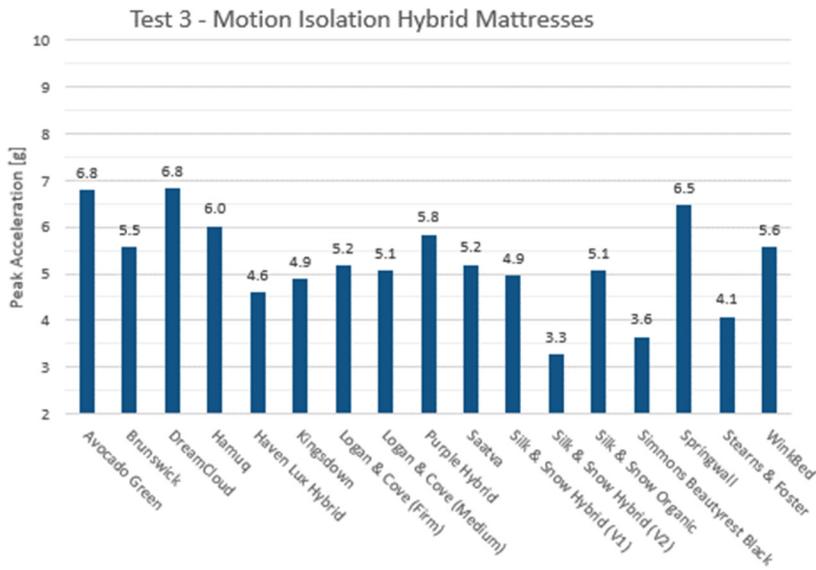


Figure 21: Test 3 - Peak Acceleration at one sleep point when Reference Load 2 is dropped on the other sleep point. Values shown are an average of 20 runs per mattress. Hybrid mattresses.

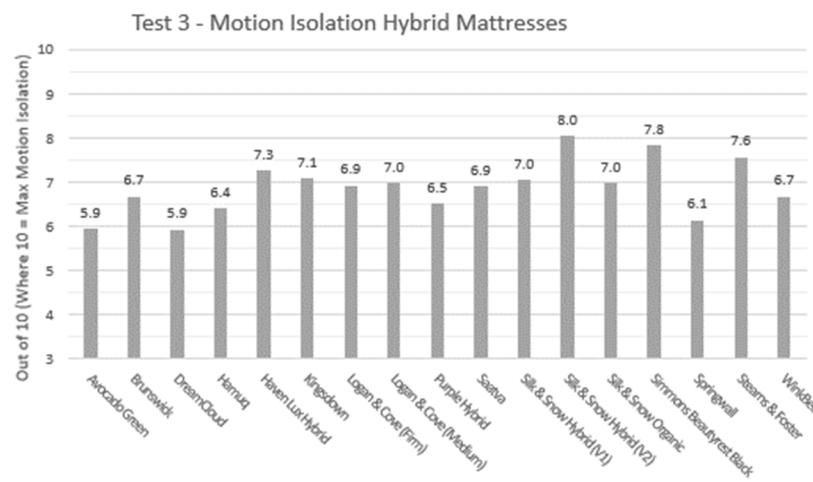


Figure 22: Test 3 – Motion Isolation on a scale from 1 to 10 based on the given mattresses that were sampled (where 10 = max motion isolation. Hybrid mattresses.



TEST 4 – RESULTS - BOUNCINESS

Table 7: Test 4 – Bounciness

Mattress		Height Run 1, [in]	Height Run 2, [in]	Height Run 3, [in]	Rebound Height Average, [in]	Out of 10				
1	Amerisleep AS3	3.1	3.0	3.3	3.1	2.9	61	Purple Plus	5.4	5.1
2	Apollo	1.8	1.8	1.5	1.7	2.0	62	Recore	4.3	4.4
3	Bear	3.8	3.8	3.9	3.8	3.3	63	Sealy Cocoon	8.0	8.0
4	Bloom Air	3.4	3.3	3.4	3.3	3.0	64	Sealy Posturepedic	5.4	5.4
5	Bloom Cloud	3.5	3.7	4.0	3.7	3.2	65	Serta Chinook	4.4	4.3
6	Bloom Earth	5.3	5.1	5.1	5.2	4.1	66	Silk & Snow (V1)	2.5	2.5
7	Bloom Mist	3.6	3.5	3.5	3.5	3.1	67	Silk & Snow (V2)	3.1	3.3
8	Bloom River	3.8	4.0	3.8	3.8	3.3	68	Simba (V1)	5.5	5.5
9	Casper (V1)	4.9	5.0	5.1	5.0	4.0	69	Simba (V2)	5.8	5.5
10	Casper (V2)	5.0	4.9	5.0	5.0	4.0	70	Spa Sensations	12.5	12.6
11	Casper (V3)	3.5	3.5	3.5	3.5	3.1	71	Structube	9.0	9.0
12	Casper (V4)	6.3	6.3	6.3	6.3	4.8	72	Tempur-Pedic	1.1	1.1
13	Casper Element	8.8	8.6	8.8	8.7	6.2	73	Tuft & Needle (V1)	6.3	6.5
14	Casper Essential (V1)	3.3	3.3	3.4	3.3	3.0	74	Tuft & Needle (V2)	5.0	5.3
15	Casper Essential (V2)	4.3	4.1	4.3	4.2	3.5	75	Zinus	1.5	1.5
16	Casper Wave	6.0	6.0	6.0	6.0	4.6				
17	Cherry	3.5	3.8	3.4	3.5	3.1				
18	Classic Brands (Thick)	3.4	3.6	3.5	3.5	3.1				
19	Classic Brands (Thin)	7.1	7.1	7.2	7.1	5.3				
20	Dormeo	8.8	8.8	8.6	8.7	6.2				
21	Douglas (V1)	5.5	5.7	5.5	5.6	4.3				
22	Douglas (V2)	3.8	3.8	3.5	3.7	3.2				
23	Emma	3.3	3.3	3.3	3.3	3.0				
24	Endy (V1)	2.5	2.6	2.6	2.6	2.5				
25	Endy (V2)	6.3	6.0	6.3	6.2	4.7				
26	Fleep (Firm)	7.5	7.6	7.5	7.5	5.5				
27	Fleep (Soft)	3.6	3.7	3.5	3.6	3.2				
28	Full Moon	4.0	3.8	4.2	4.0	3.4				
29	GhostBed Classic	3.5	3.4	3.5	3.5	3.1				
30	Gotta Sleep (OMG)	3.0	3.0	3.0	3.0	2.8				
31	Haven Rejuvinate	6.6	6.6	6.5	6.6	5.0				
32	Helix	9.3	9.3	9.3	9.3	6.6				
33	Helix Midnight	8.0	8.2	7.8	8.0	5.8				
34	iComfort	1.8	2.0	1.8	1.8	2.1				
35	IKEA Foam	9.6	9.5	9.8	9.6	6.8				
36	IKEA Spring	12.3	12.1	12.3	12.2	8.3				
37	Juno	2.6	2.6	2.6	2.6	2.6				
38	Layla (Firm)	4.5	4.4	4.5	4.5	3.7				
39	Layla (Soft)	1.8	1.8	1.5	1.7	2.0				
40	Leesa	4.4	4.4	4.3	4.4	3.6				
41	Lucid	3.4	3.5	3.4	3.4	3.1				
42	Lull	4.9	5.1	4.7	4.9	3.9				
43	Luna	3.3	3.4	3.4	3.4	3.0				
44	Mira (V1)	5.4	5.4	5.5	5.4	4.3				
45	Mira (V2)	4.8	4.5	4.8	4.7	3.8				
46	Nectar	1.3	1.3	1.1	1.2	1.7				
47	Nora	3.4	3.5	3.5	3.5	3.1				
48	Novaform	0.6	0.8	0.6	0.7	1.4				
49	Novosbed Firm	1.2	1.3	1.3	1.3	1.8				
50	Novosbed Firm (V2)	3.3	3.1	3.3	3.2	2.9				
51	Novosbed Medium	1.7	1.7	1.6	1.7	2.0				
52	Novosbed Medium (V2)	2.1	2.1	2.1	2.1	2.3				
53	Novosbed Soft	3.4	3.5	3.6	3.5	3.1				
54	Novosbed Soft (V2)	1.6	1.6	1.8	1.7	2.0				
55	PerfectSense	4.3	4.4	4.3	4.3	3.6				
56	PolySleep	3.5	3.8	3.6	3.6	3.2				
57	Puffy (V1)	0.5	0.4	0.5	0.5	1.3				
58	Puffy (V2)	4.1	4.1	4.3	4.2	3.5				
59	Puffy Lux	2.8	2.9	2.8	2.8	2.7				
60	Purple	8.6	8.5	8.6	8.6	6.1				

**Table 8: Test 4 – Bounciness - Hybrid Mattresses**

Mattress		Rebound	Rebound	Rebound	Rebound	Out of 10
		Height Run	Height Run	Height Run	Height	
76	Avocado Green	9.1	8.8	9.4	9.1	6.5
77	Brunswick	7.8	7.6	7.8	7.7	5.5
78	DreamCloud	5.0	5.2	4.8	5.0	4.0
79	Hamuq	6.8	6.5	6.8	6.7	4.9
80	Haven Lux Hybrid	9.5	9.3	9.4	9.4	6.4
81	Kingsdown	5.4	5.3	5.3	5.3	4.1
82	Logan & Cove (Firm)	7.5	7.8	7.6	7.6	5.4
83	Logan & Cove (Medium)	3.8	3.8	3.6	3.7	3.2
84	Purple Hybrid	15.5	15.4	15.6	15.5	10.0
85	Saatva	12.2	12.5	12.3	12.3	8.2
86	Silk & Snow Hybrid (V1)	7.5	7.5	7.5	7.5	5.4
87	Silk & Snow Hybrid (V2)	6.4	6.1	6.7	6.4	4.7
88	Silk & Snow Organic	9.9	10.2	9.7	9.9	7.0
89	Simmons Beautyrest Black	6.0	5.9	6.0	6.0	4.5
90	Springwall	13.6	13.8	13.6	13.7	8.9
91	Stearns & Foster	3.3	3.3	3.1	3.2	2.9
92	WinkBed	4.9	5.2	4.6	4.9	3.9

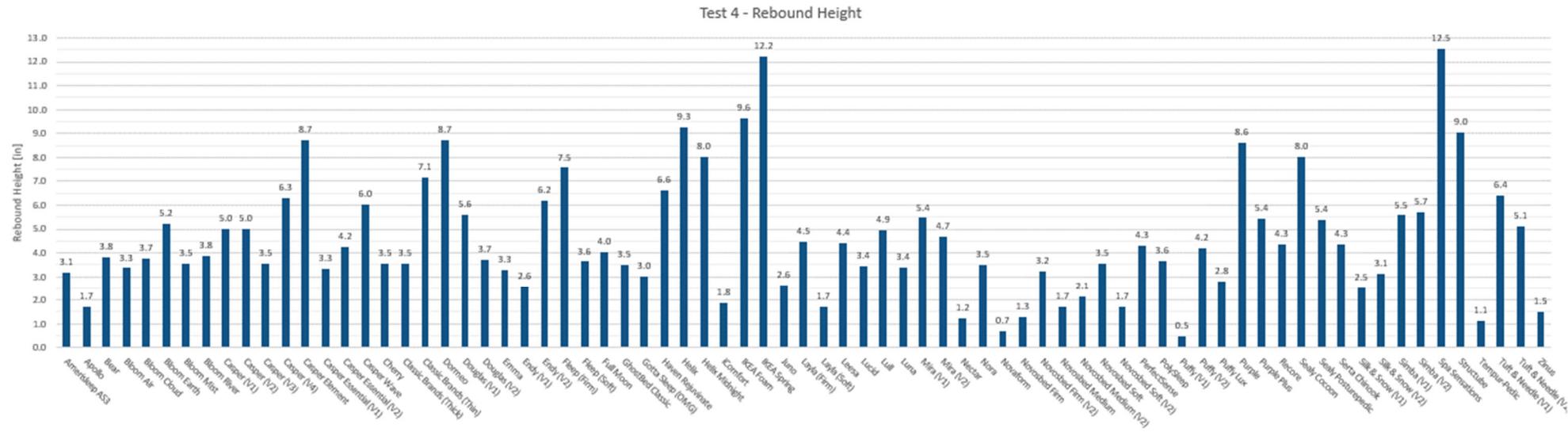


Figure 23: Test 4 - Rebound height of Reference Load 2 when dropped in the center of the mattress. Values shown are an average of 3 runs per mattress.

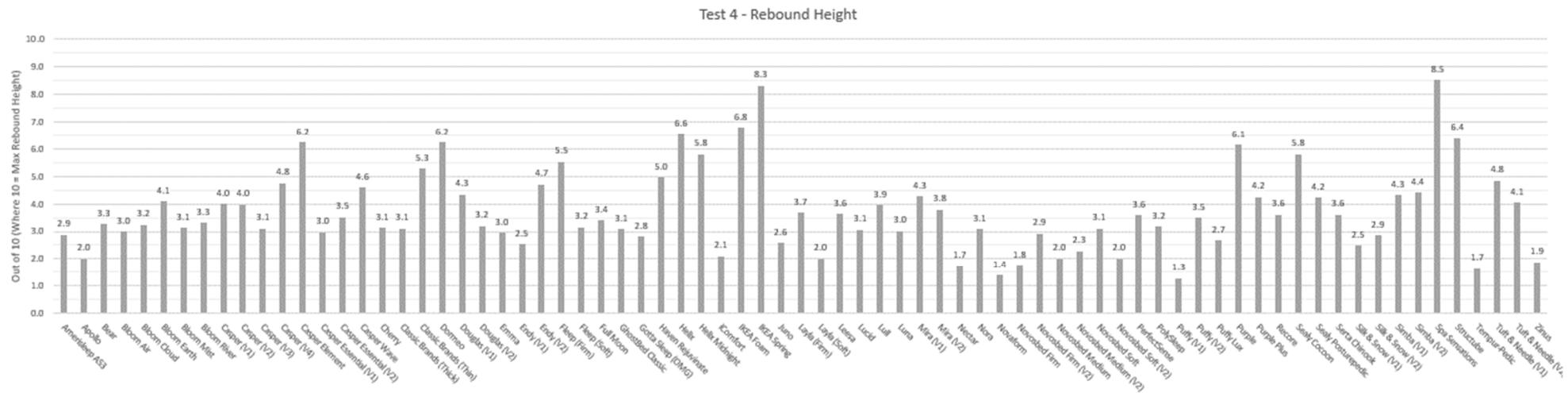


Figure 24: Test 4 – Rebound height on a scale from 1 to 10 based on the given mattresses that were sampled (where 10 = max rebound height)

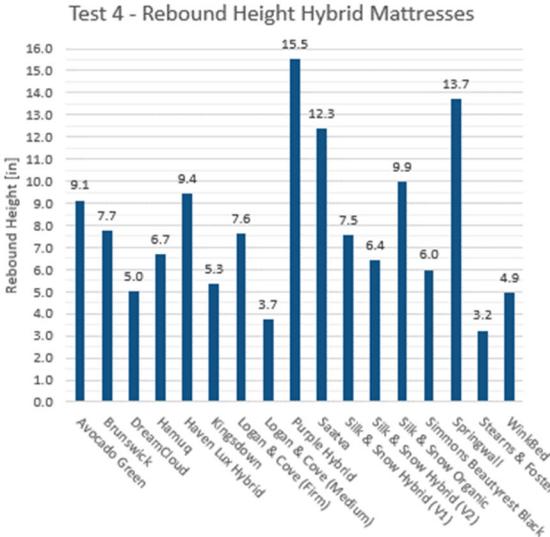


Figure 25: Test 4 - Rebound height of Reference Load 2 when dropped in the center of the mattress. Values shown are an average of 3 runs per mattress. Hybrid mattresses.

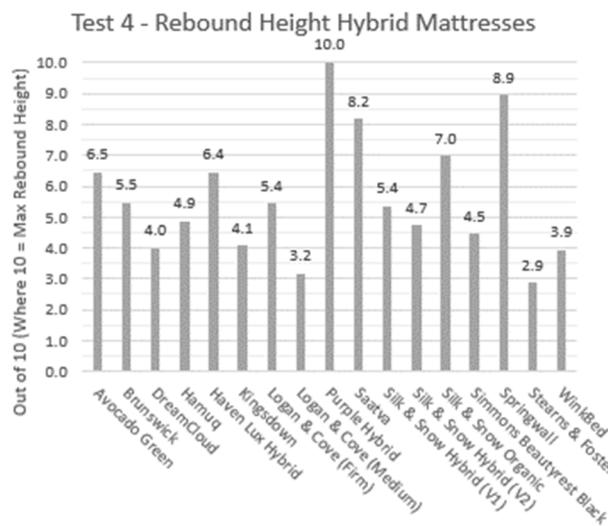


Figure 26: Test 4 – Rebound height on a scale from 1 to 10 based on the given mattresses that were sampled (where 10 = max rebound height). Hybrid mattresses.



CONCLUSION

We trust that the above and attached information is satisfactory. Please do not hesitate to contact the undersigned if you have any questions or require further information.

Sincerely,

Techtree Engineering Ltd.

Brad Schroeder, P.Eng.



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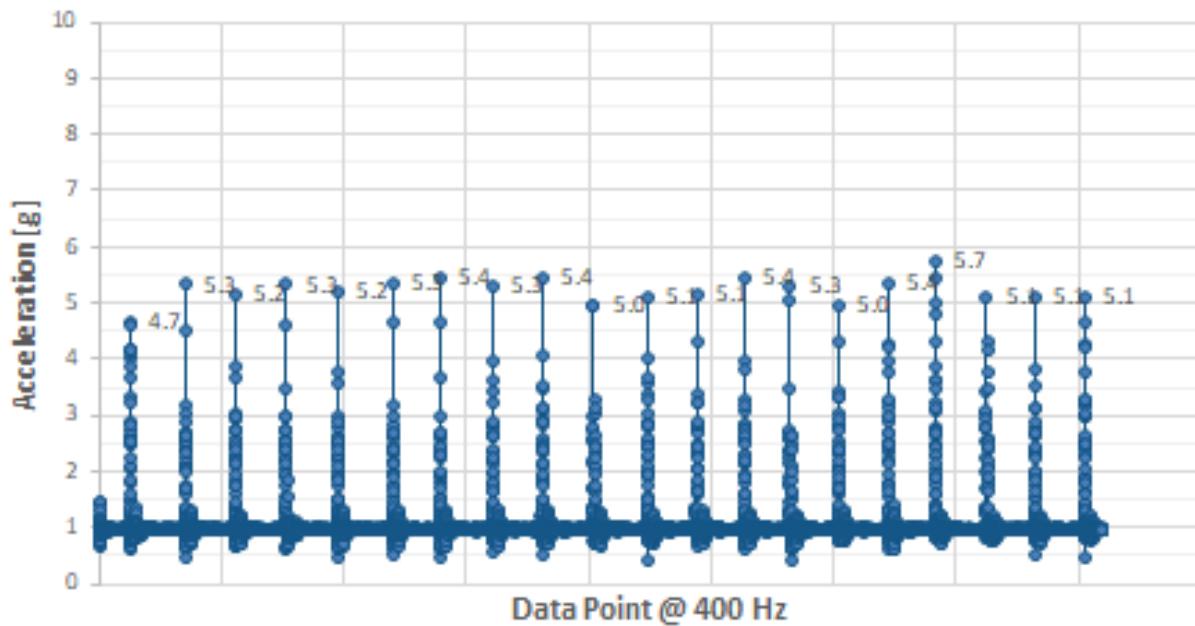
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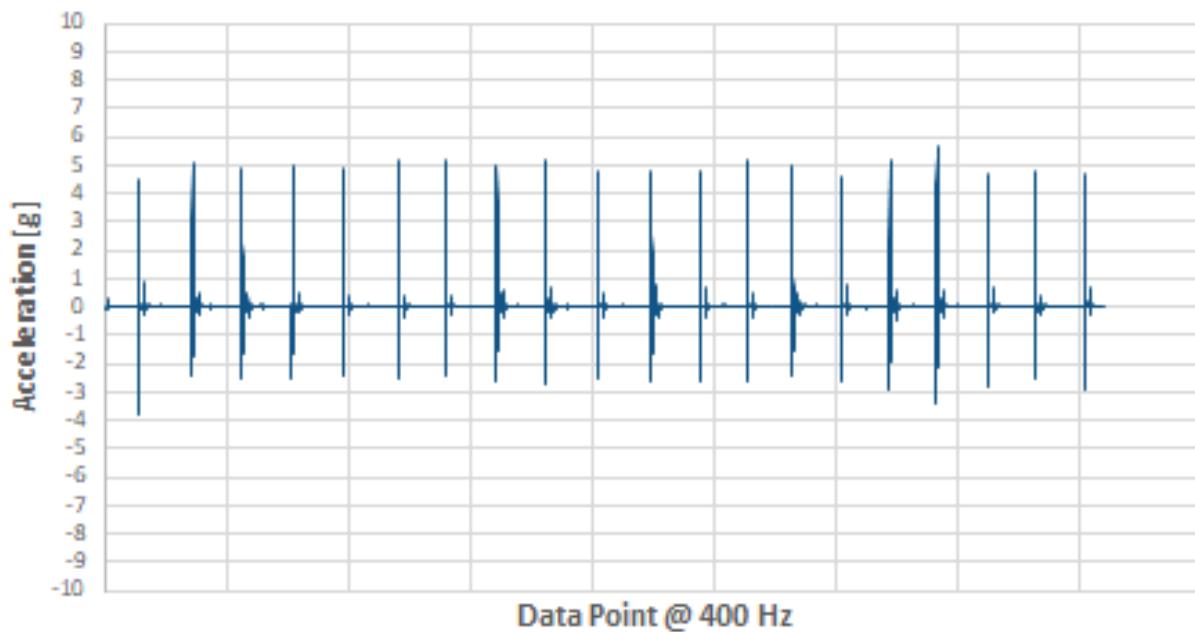
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TEST 3 – FLEEP (FIRM)

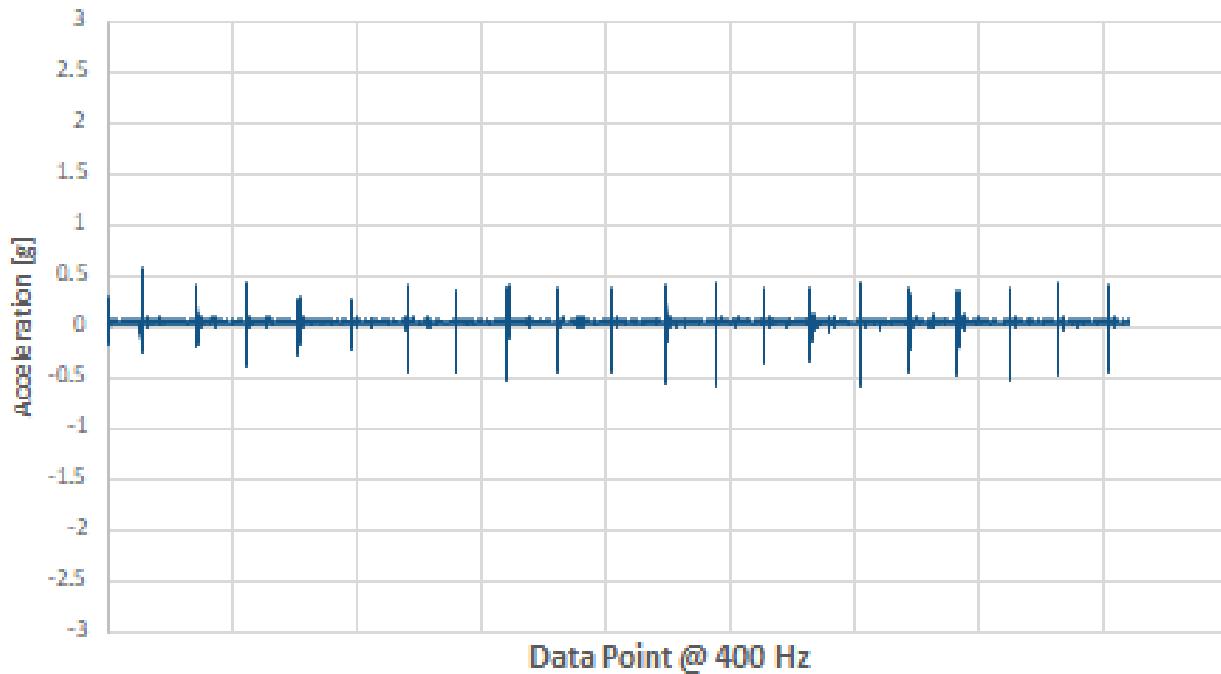
Vector Magnitude Acceleration - Fleep (Firm)



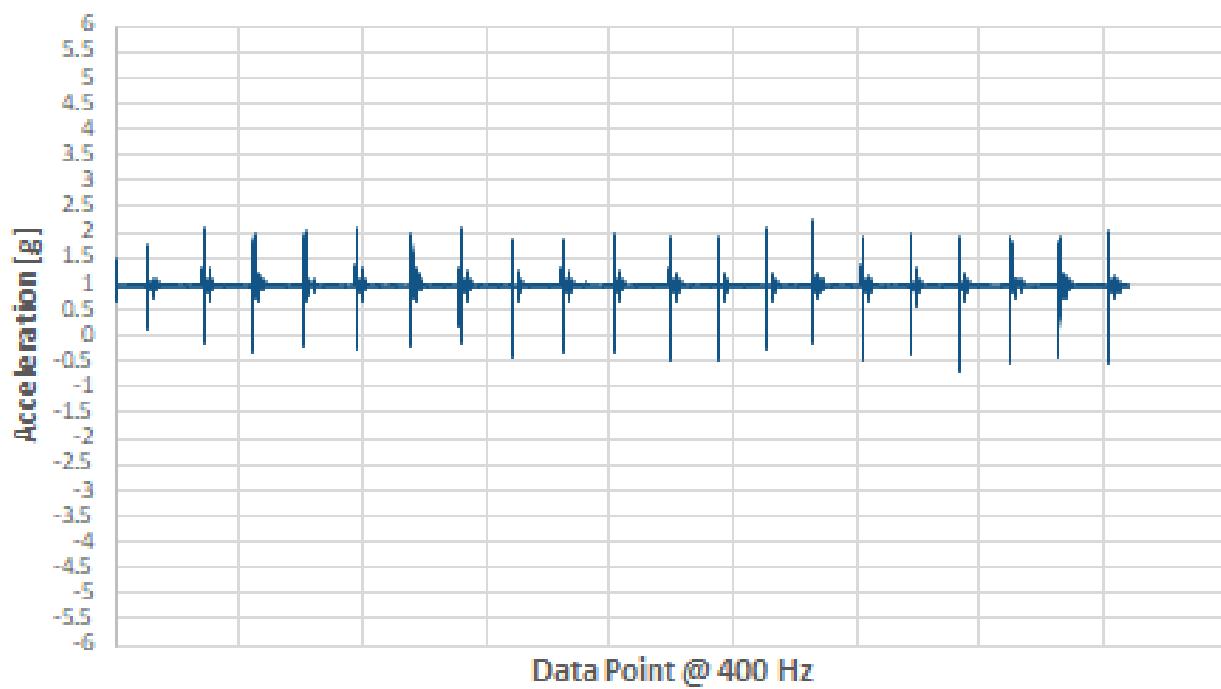
X Acceleration (Side to Side) - Fleep (Firm)



Y Acceleration (Head to Toe) - Fleep (Firm)



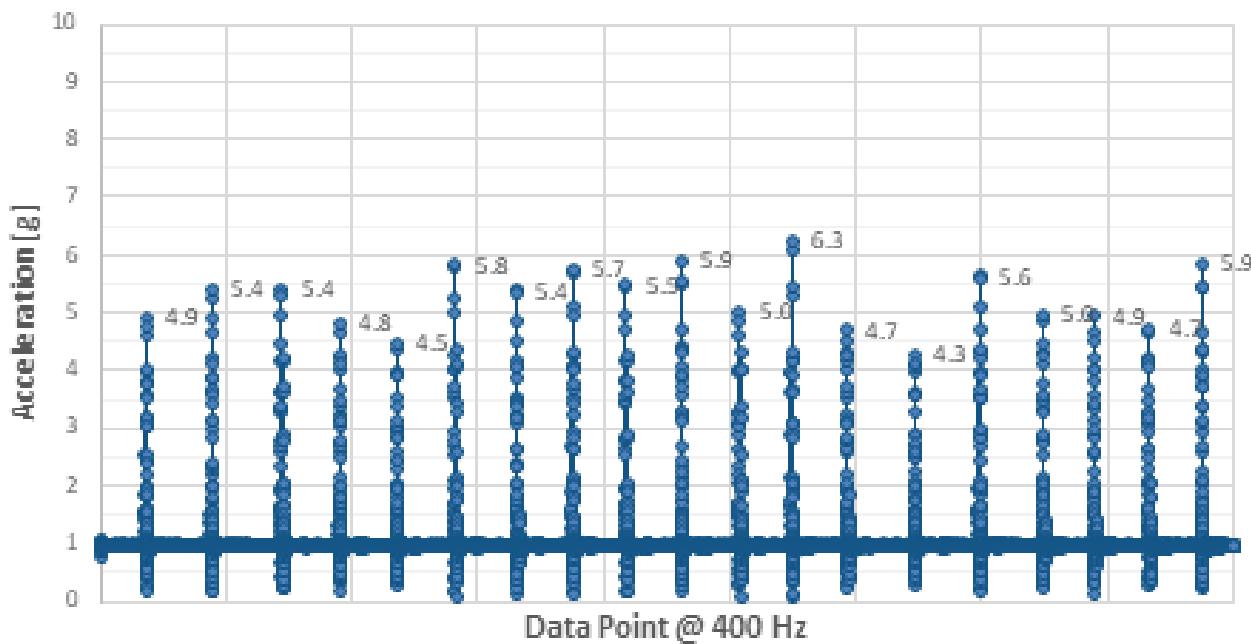
Z Acceleration (Up and Down) - Fleep (Firm)



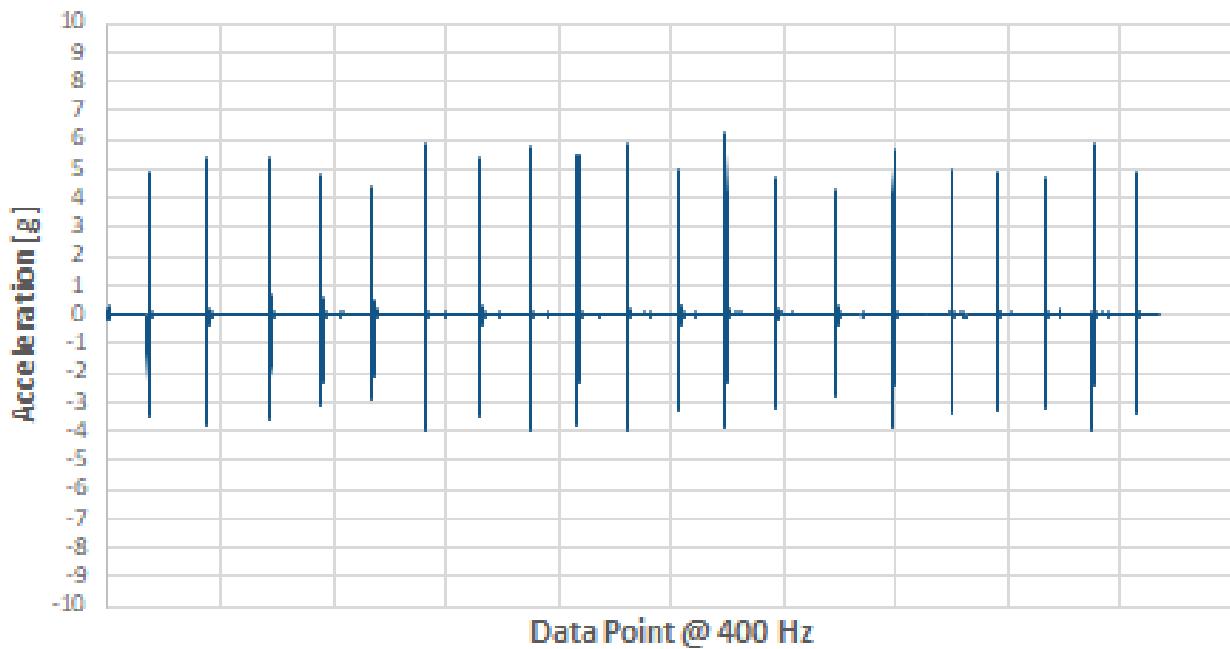


TEST 3 – FLEEP (SOFT)

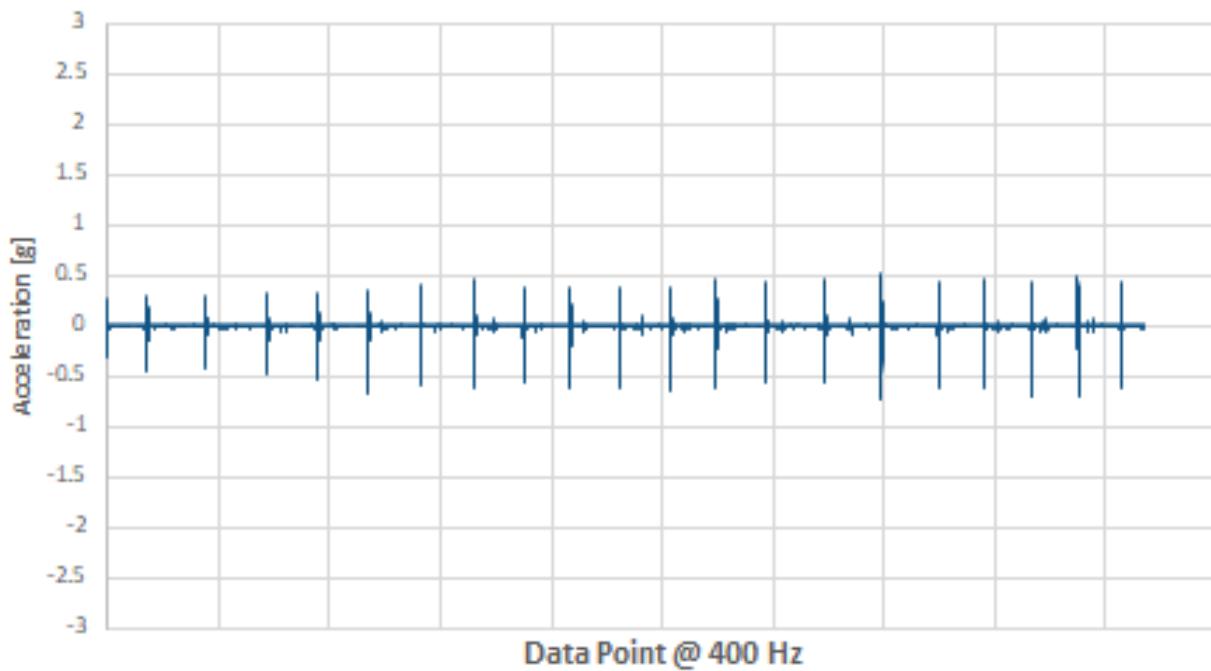
Vector Magnitude Acceleration - Fleep (Soft)



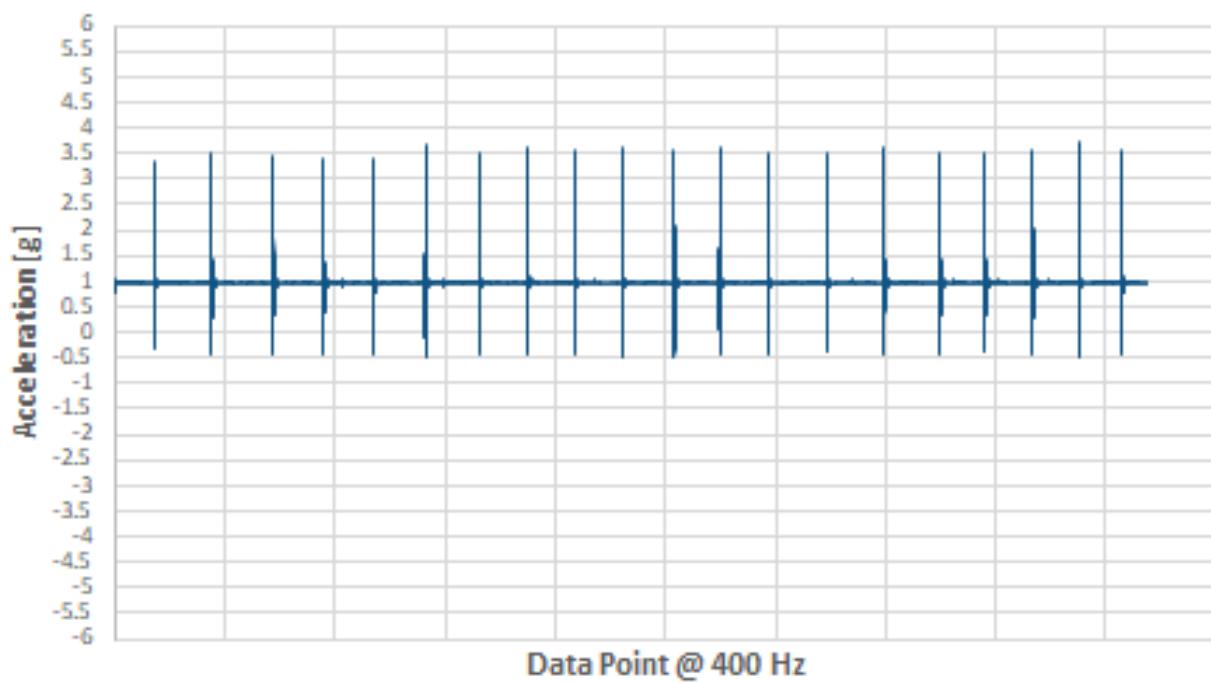
X Acceleration (Side to Side) - Fleep (Soft)



Y Acceleration (Head to Toe) - Fleep (Soft)



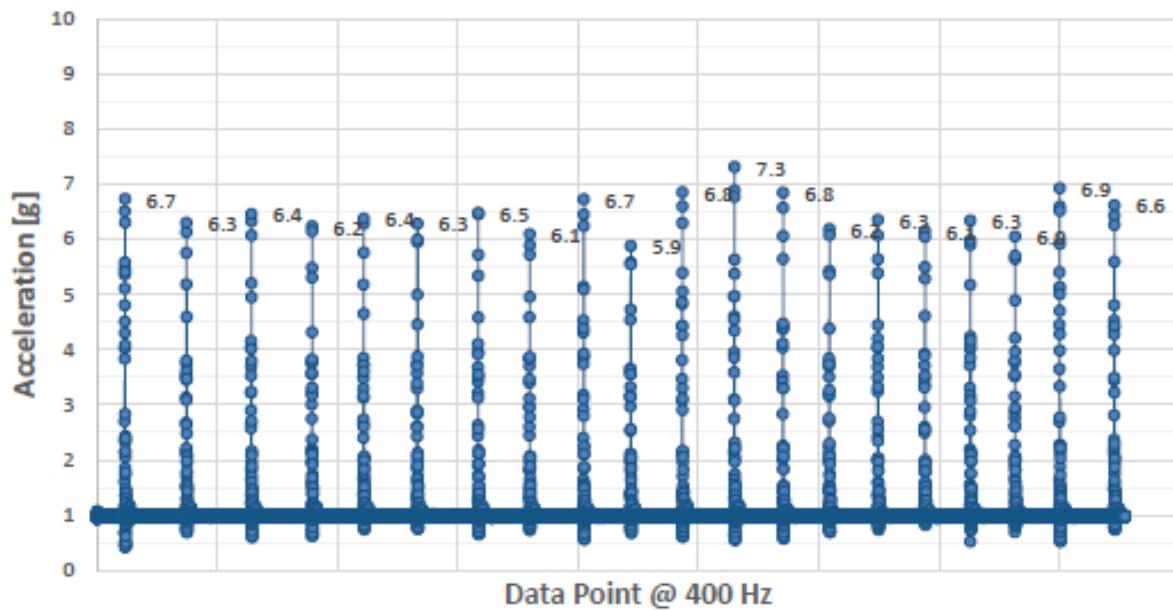
Z Acceleration (Up and Down) - Fleep (Soft)



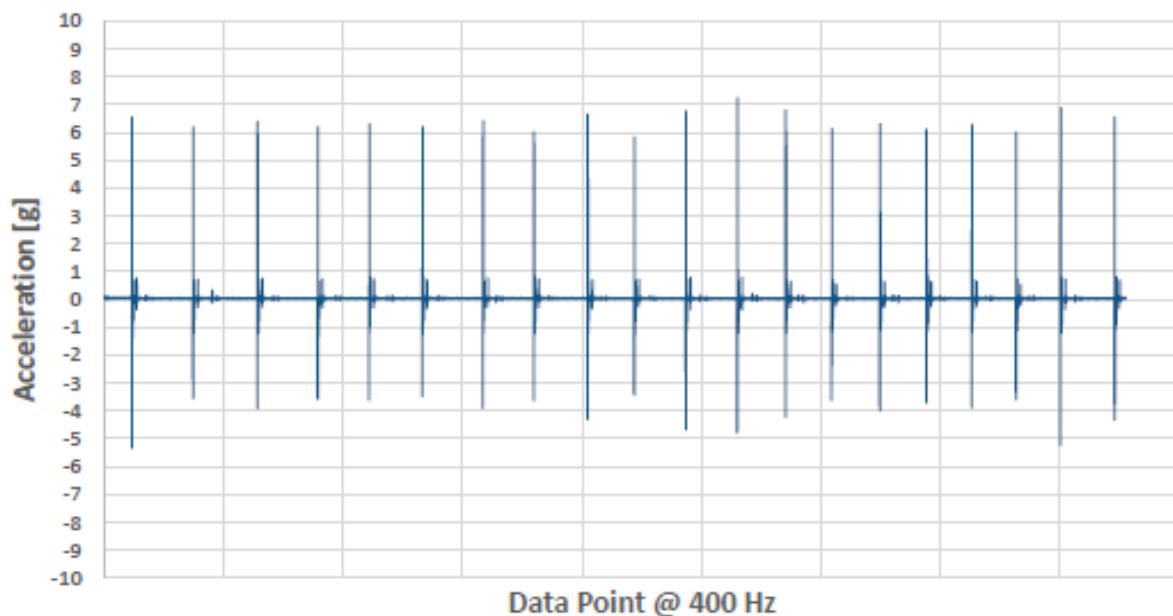


TEST 3 – LEESA

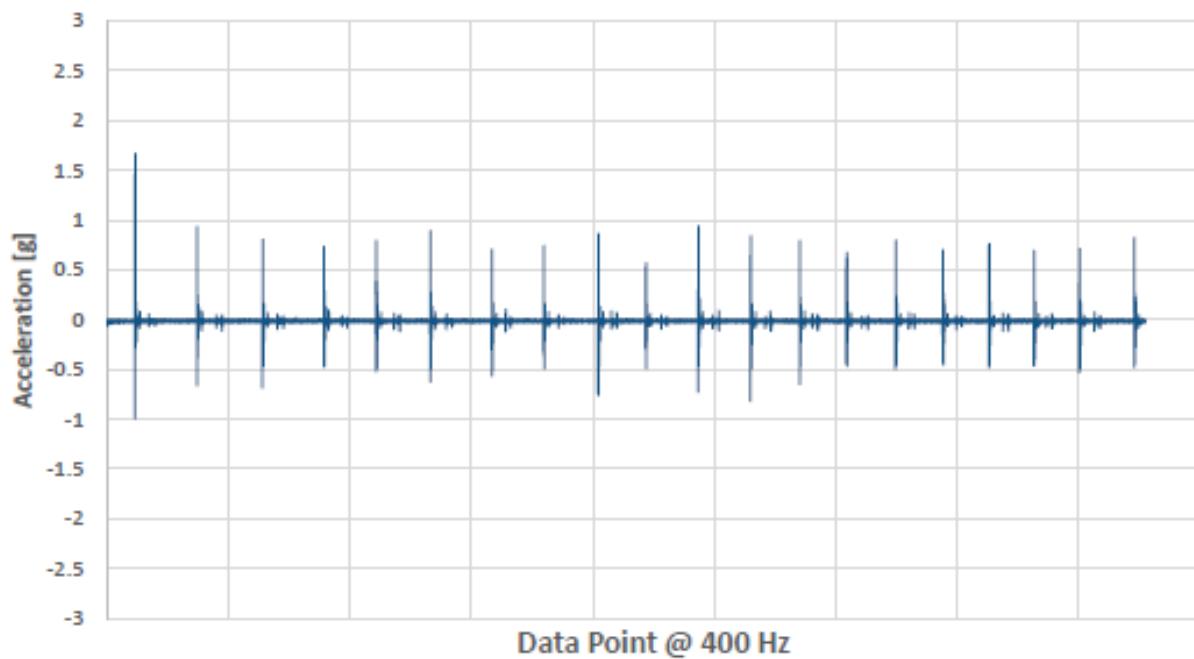
Vector Magnitude Acceleration - Leesa



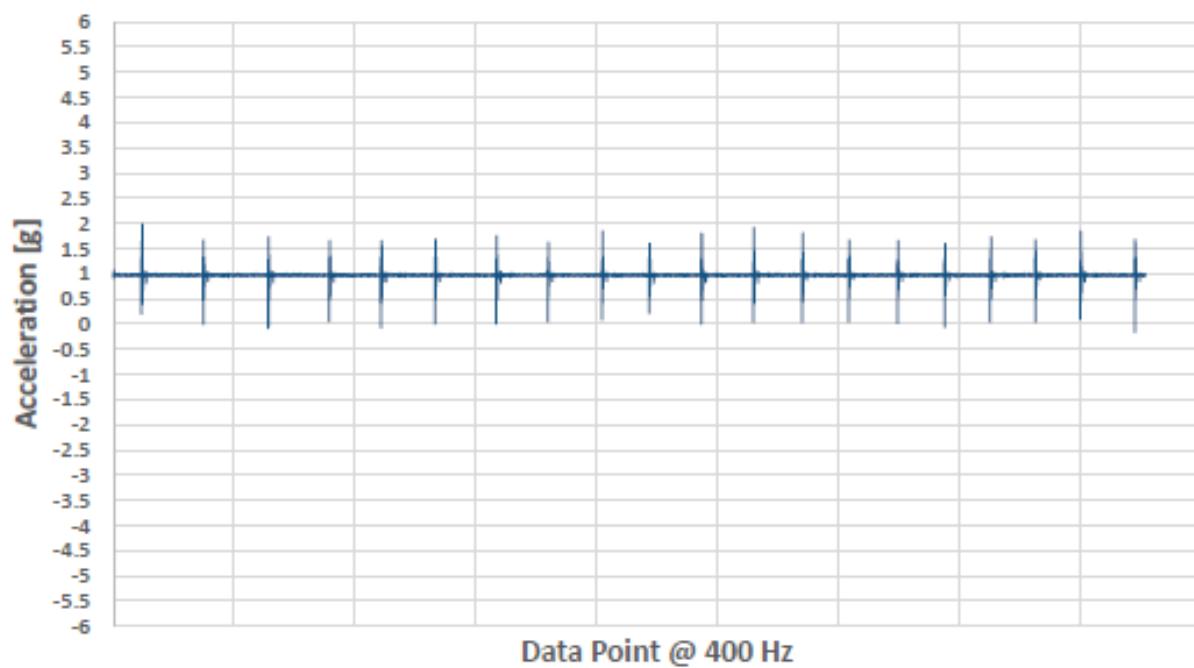
X Acceleration (Side to Side) - Leesa



Y Acceleration (Head to Toe) - Leesa



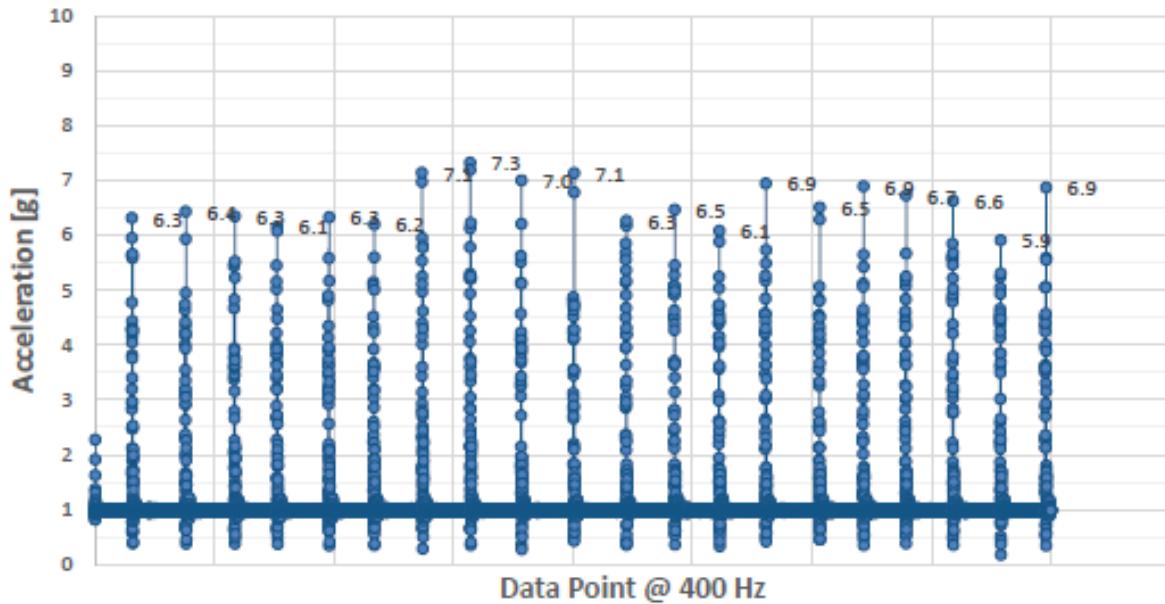
Z Acceleration (Up and Down) - Leesa



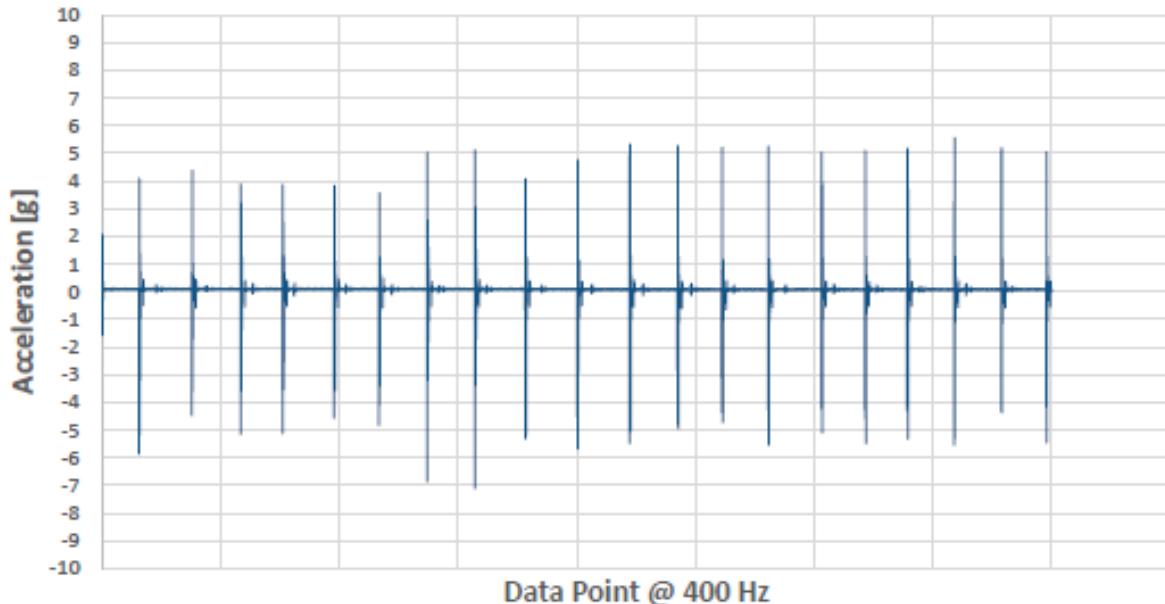


TEST 3 – LUNA

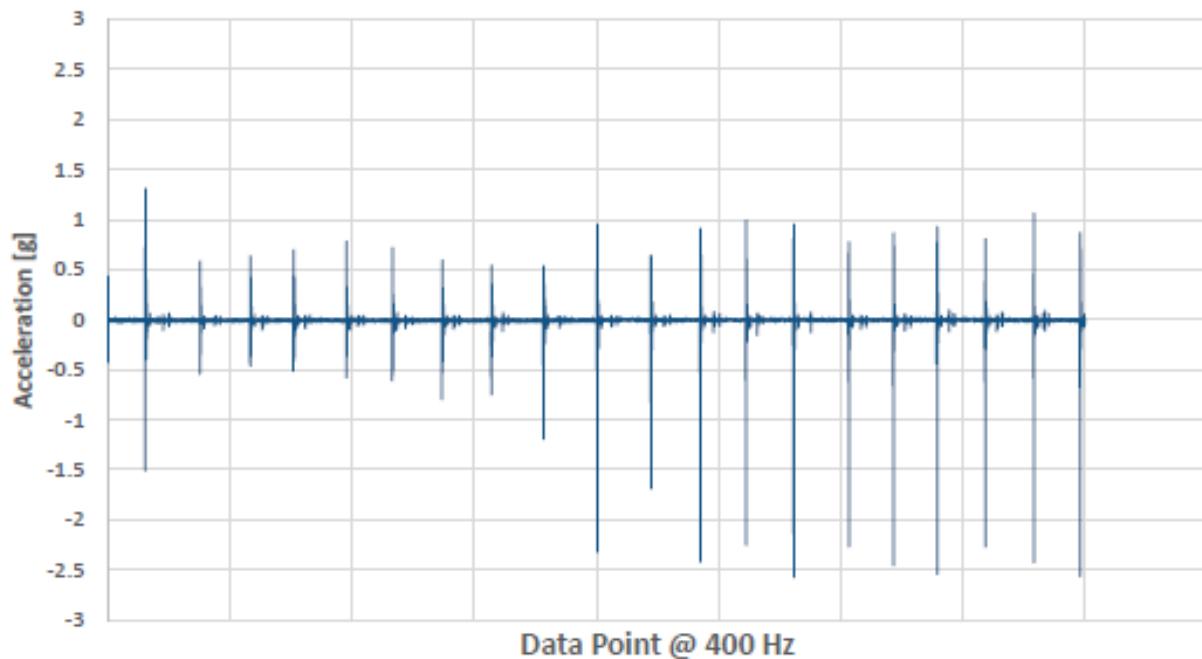
Vector Magnitude Acceleration - Luna



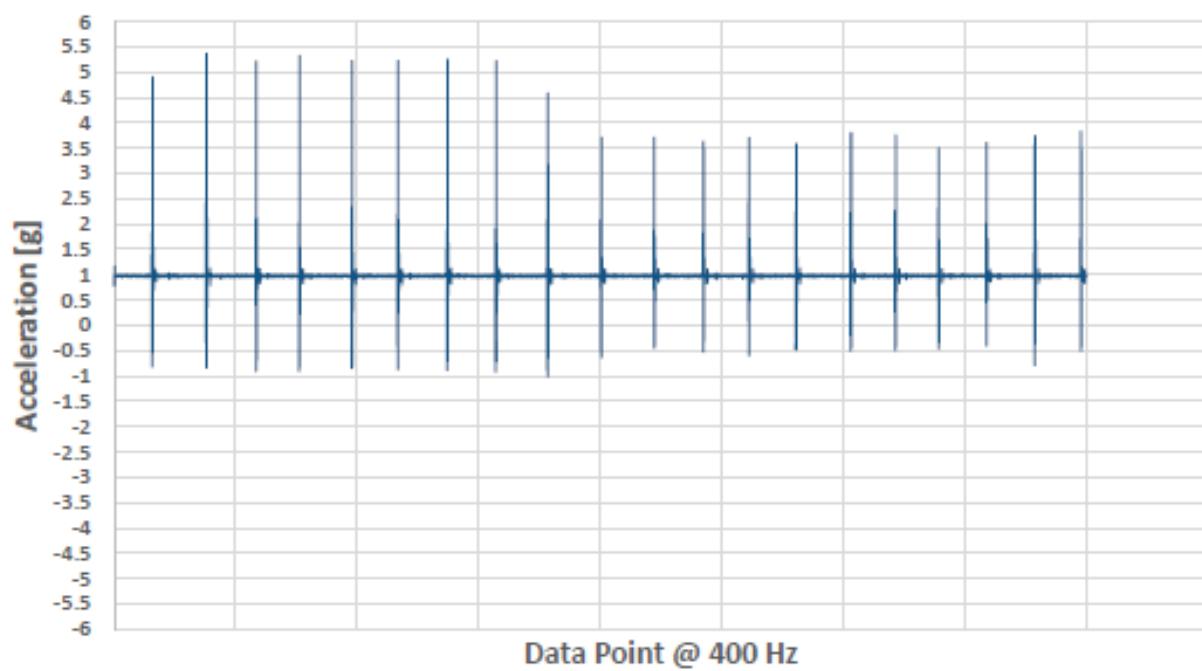
X Acceleration (Side to Side) - Luna



Y Acceleration (Head to Toe) - Luna



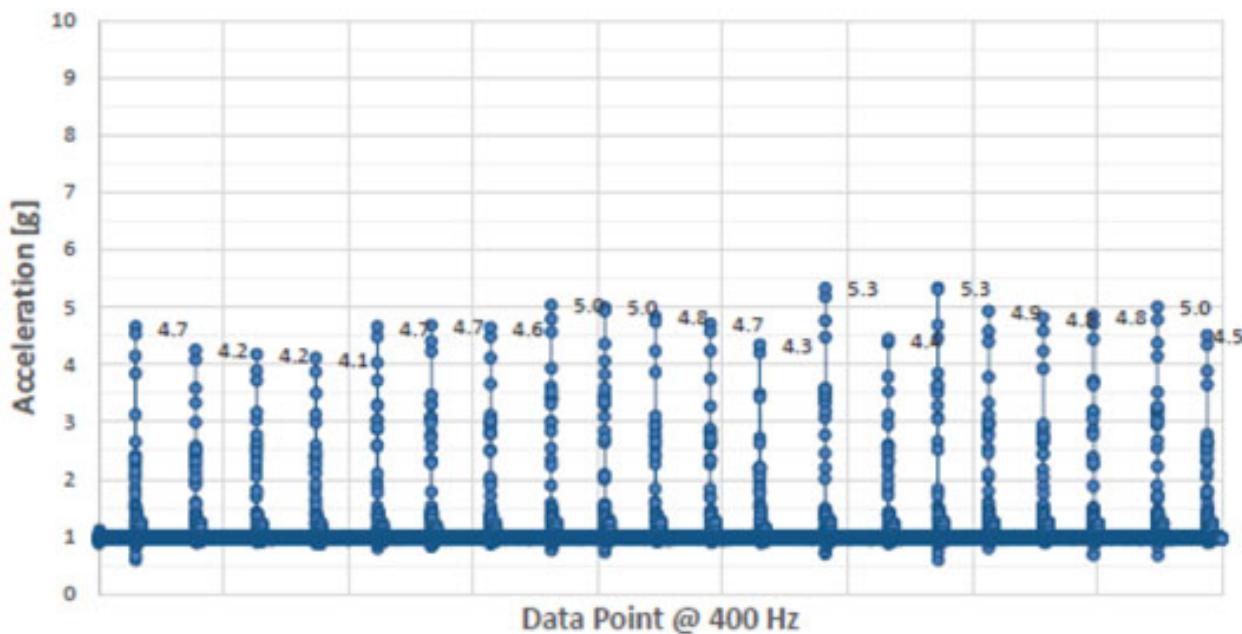
Z Acceleration (Up and Down) - Luna



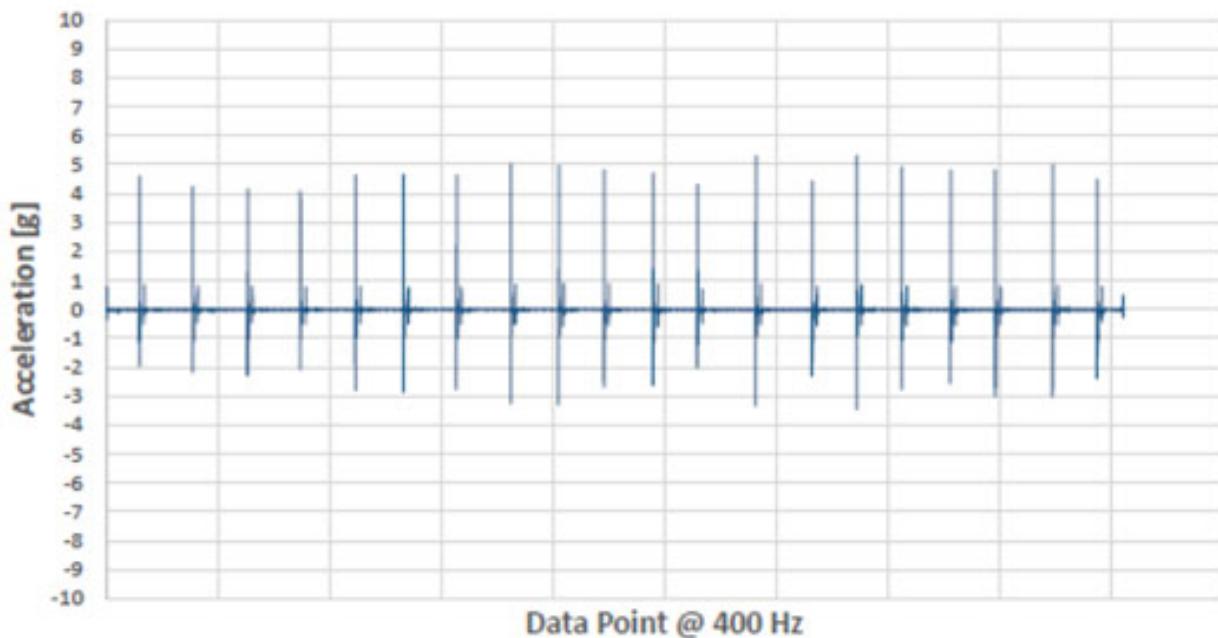


TEST 3 – TUFT & NEEDLE (V1)

Vector Magnitude Acceleration - Tuft & Needle (V1)

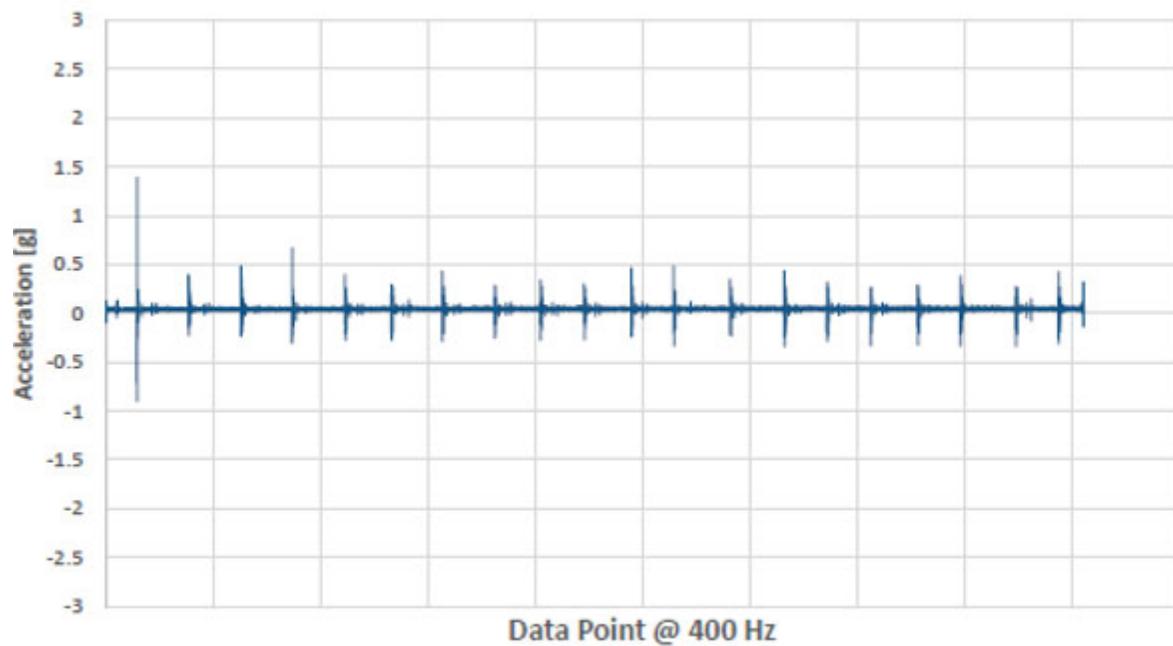


X Acceleration (Side to Side) - Tuft & Needle (V1)

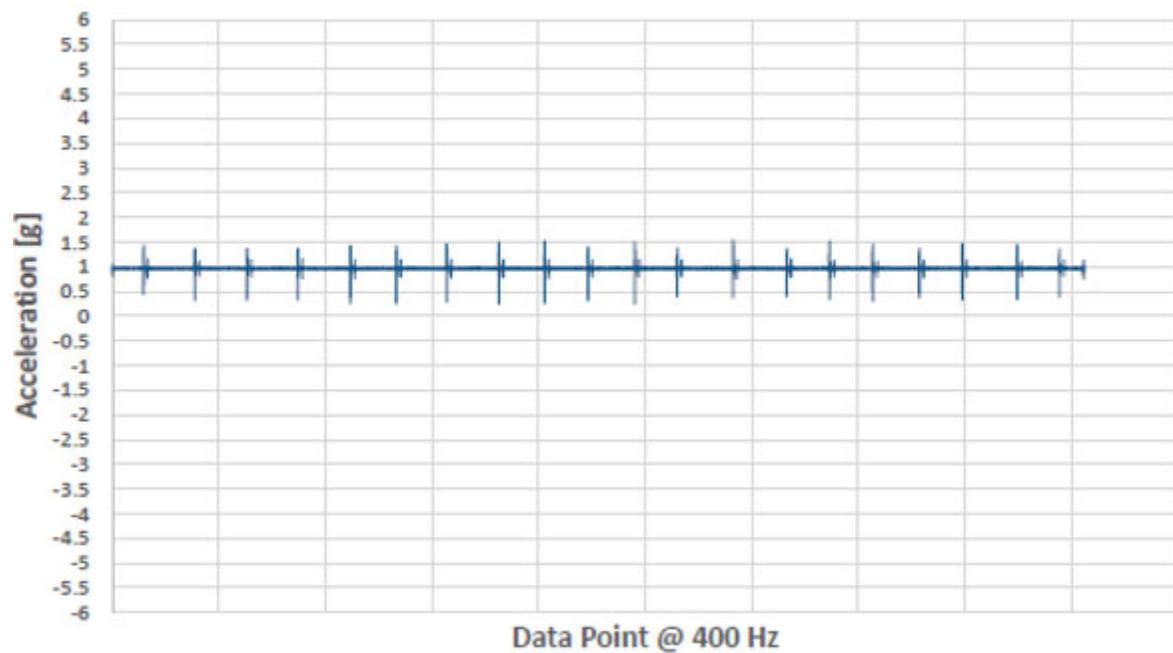




Y Acceleration (Head to Toe) - Tuft & Needle (V1)



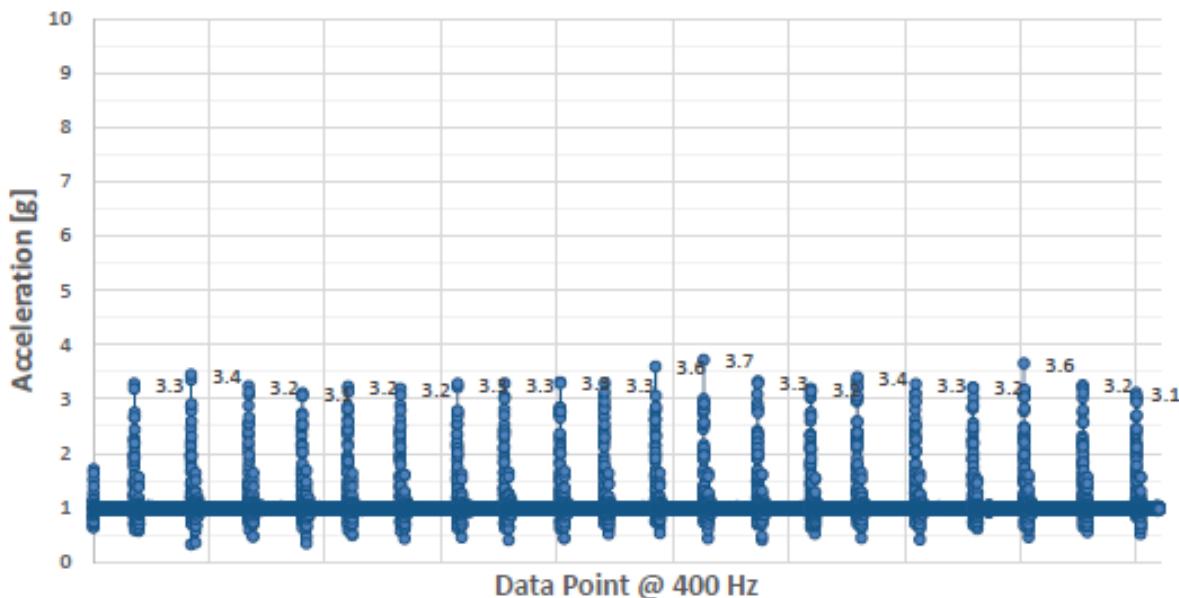
Z Acceleration (Up and Down) - Tuft & Needle (V1)



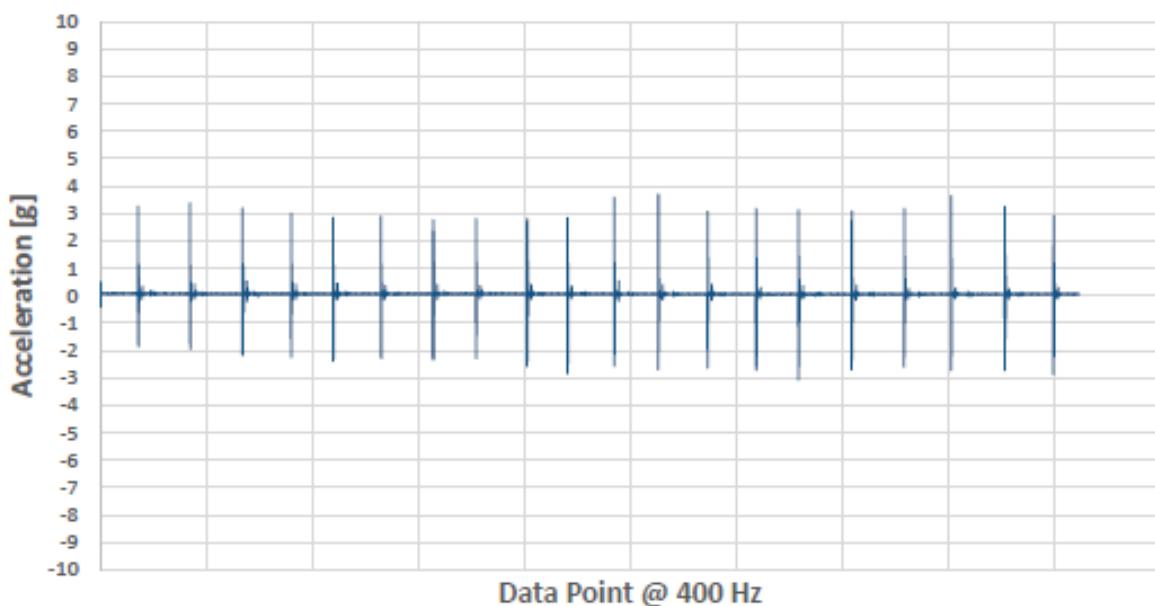


TEST 3 – DOUGLAS (V1)

Vector Magnitude Acceleration - Douglas V1

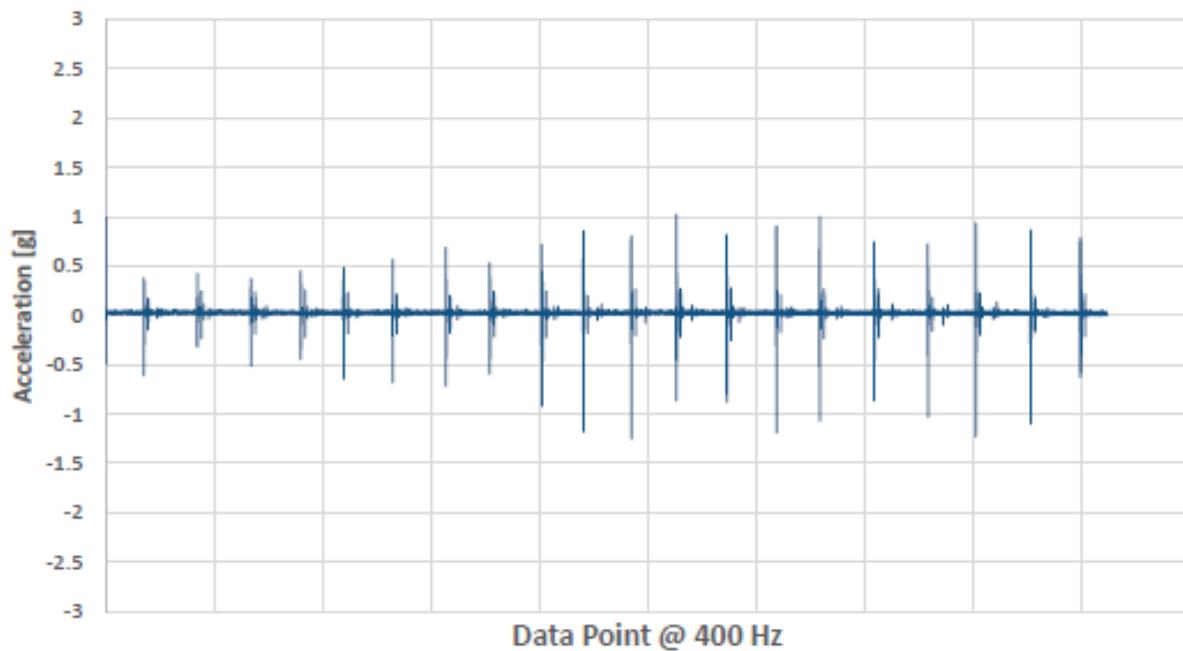


X Acceleration (Side to Side) - Douglas V1

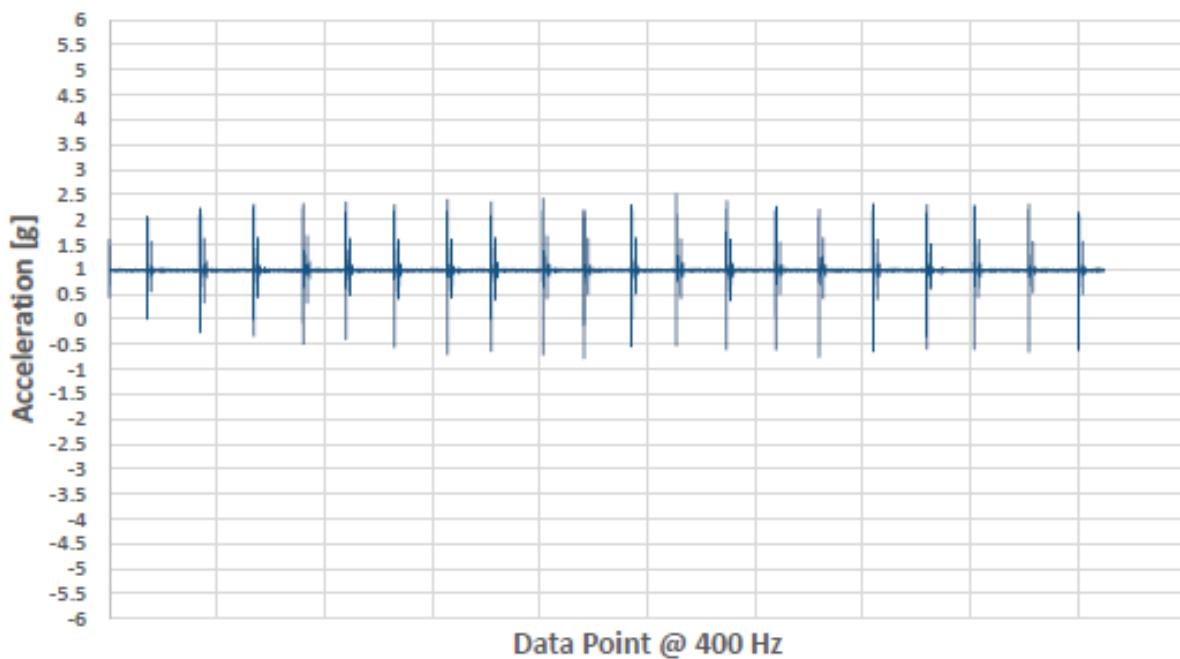




Y Acceleration (Head to Toe) - Douglas V1

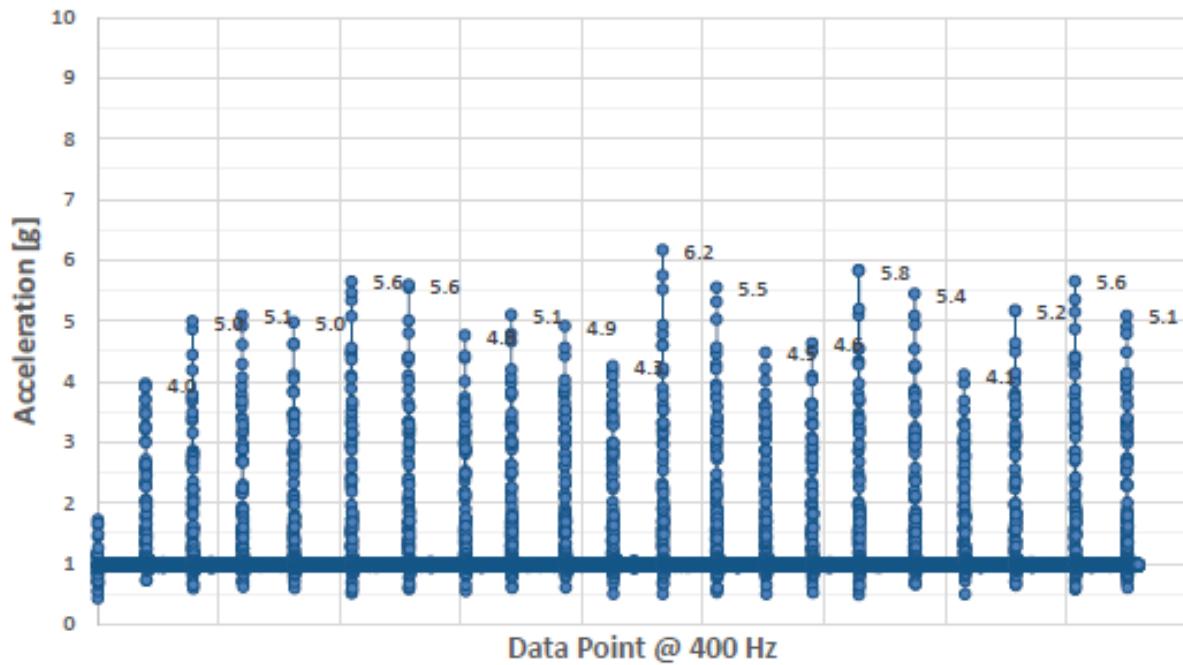


Z Acceleration (Up and Down) - Douglas V1

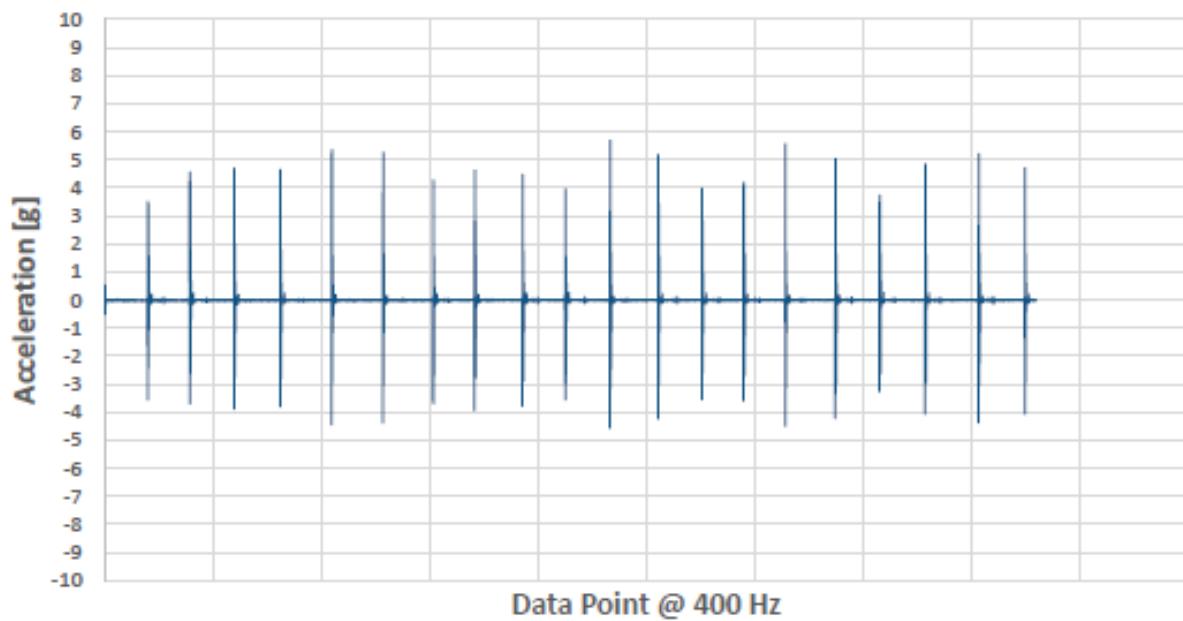


TEST 3 – ENDY

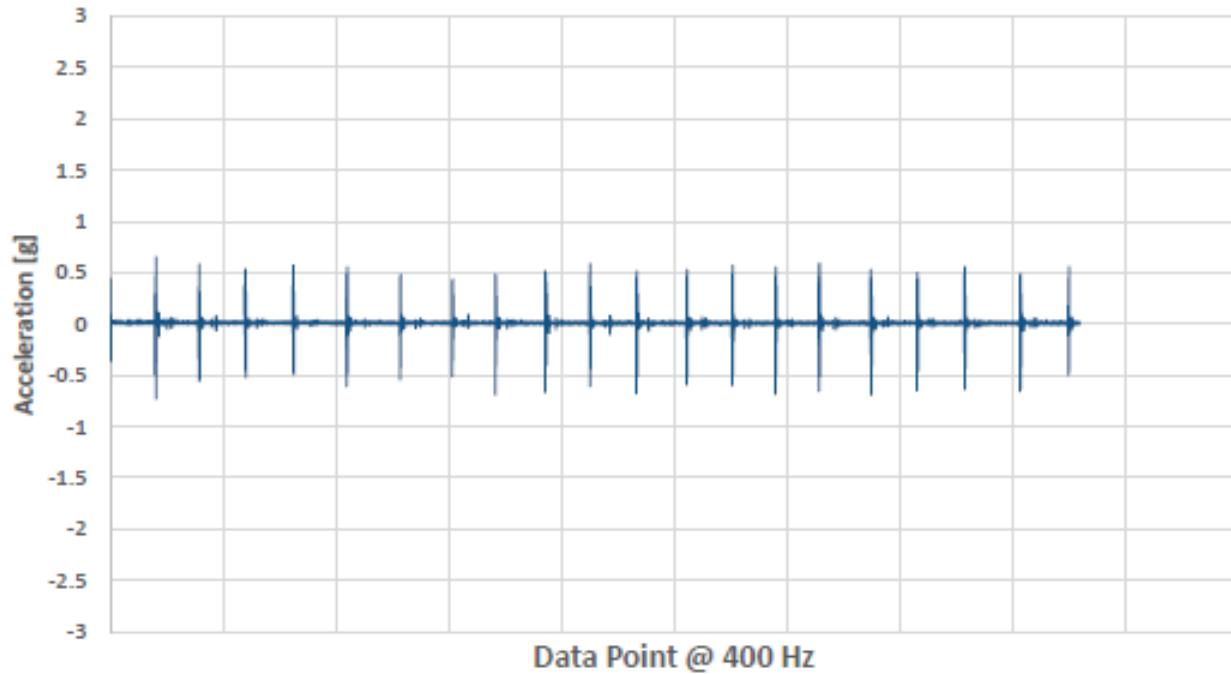
Vector Magnitude Acceleration - Endy



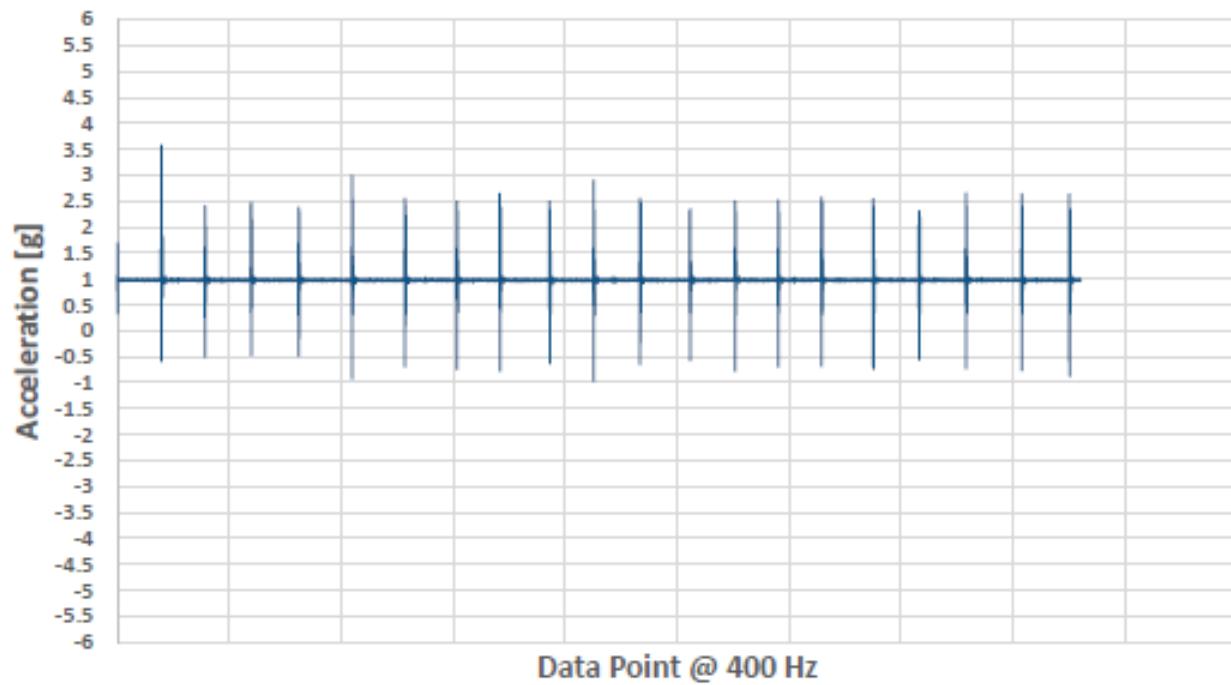
X Acceleration (Side to Side) - Endy



Y Acceleration (Head to Toe) - Endy

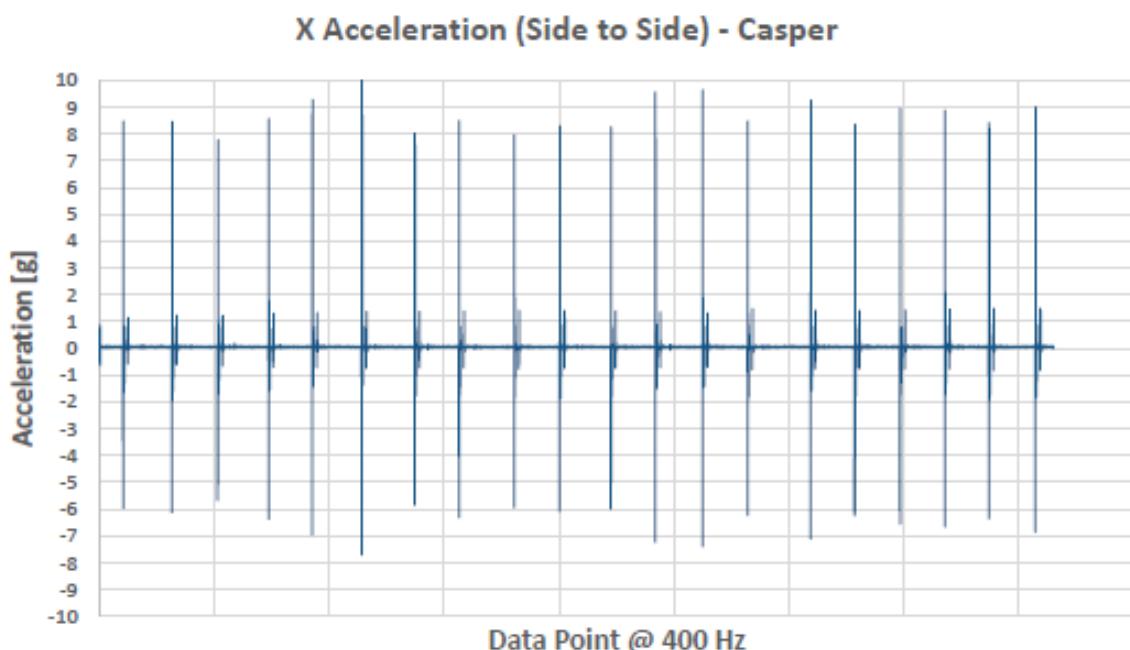
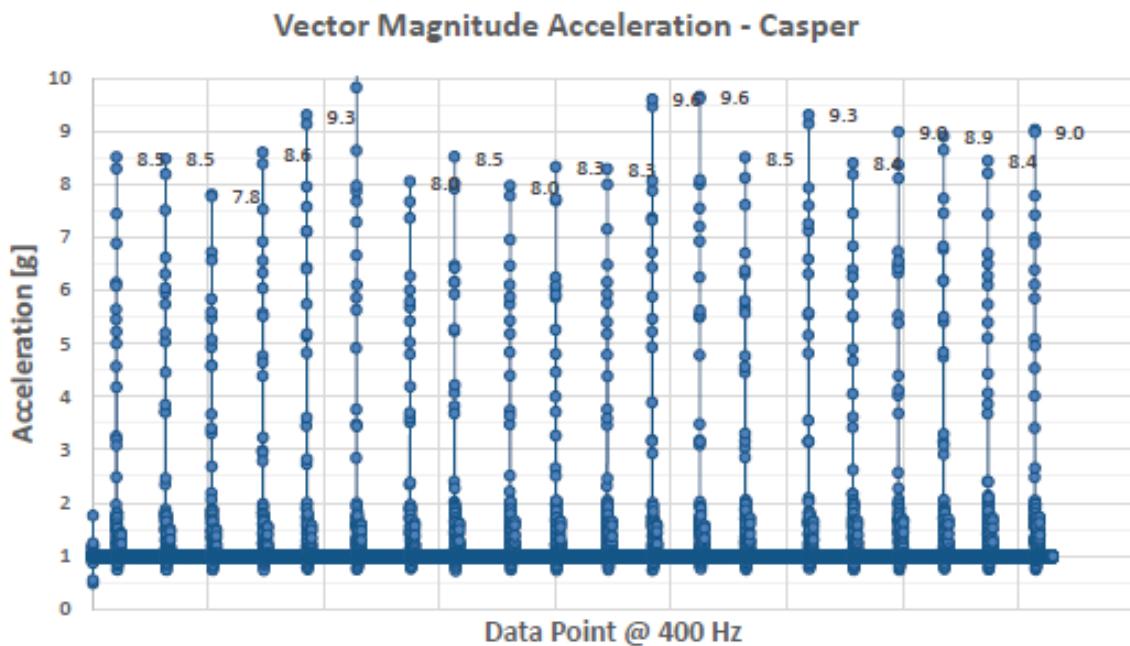


Z Acceleration (Up and Down) - Endy



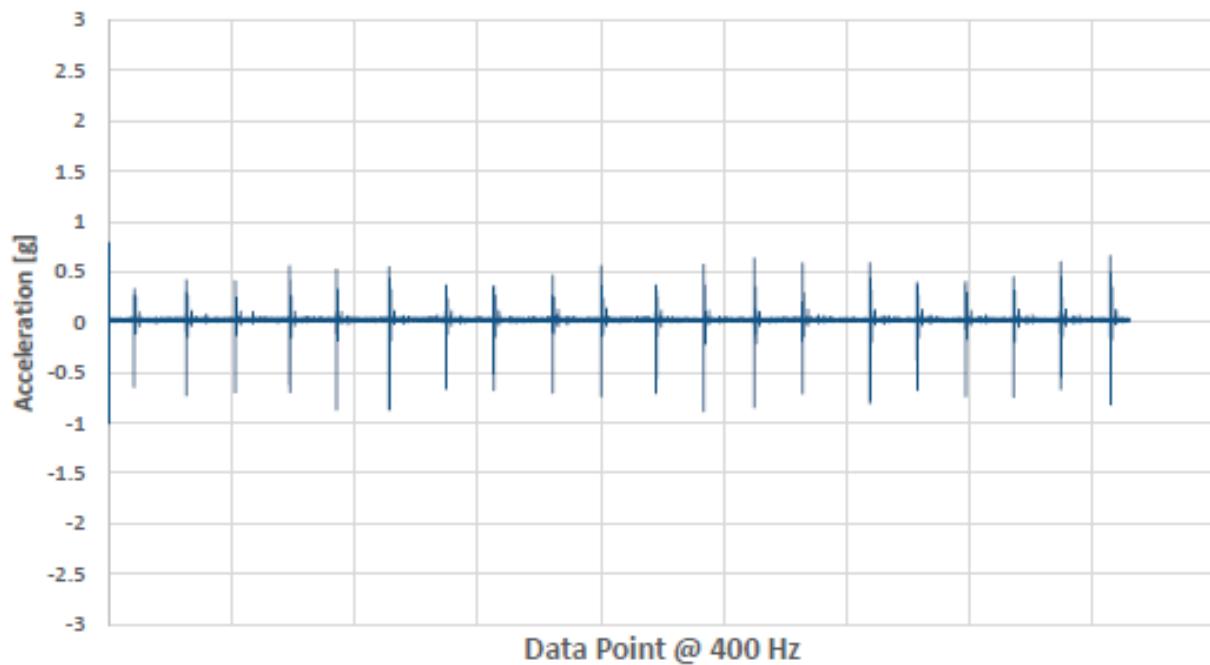


TEST 3 – CASPER

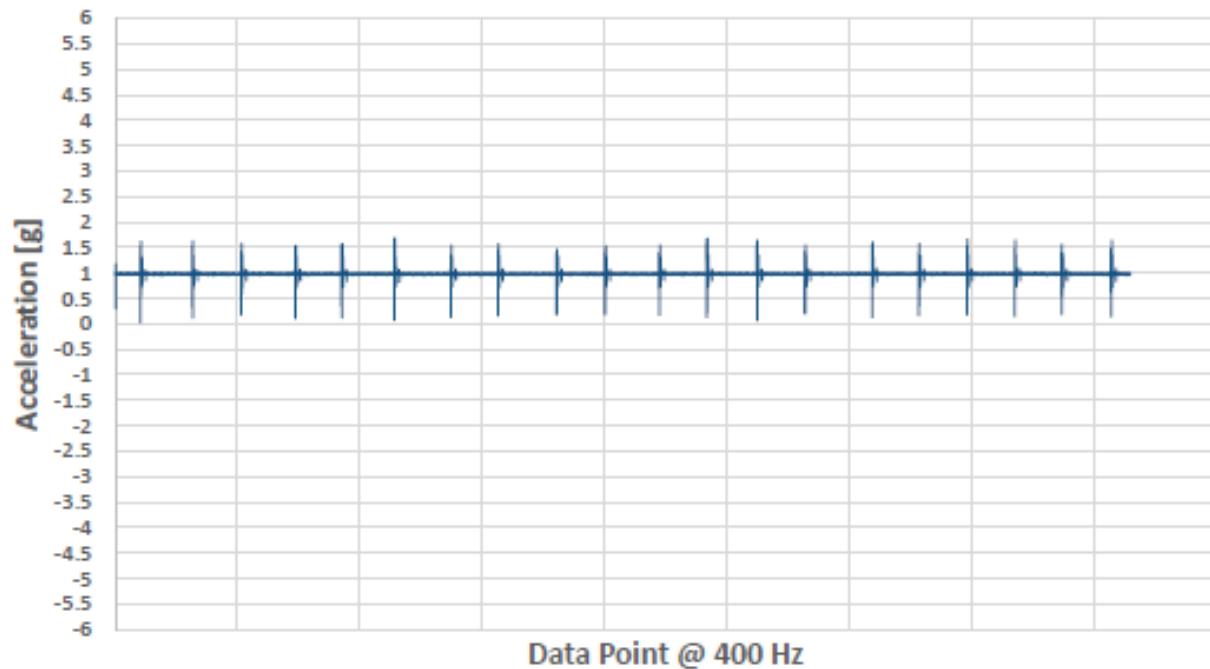




Y Acceleration (Head to Toe) - Casper



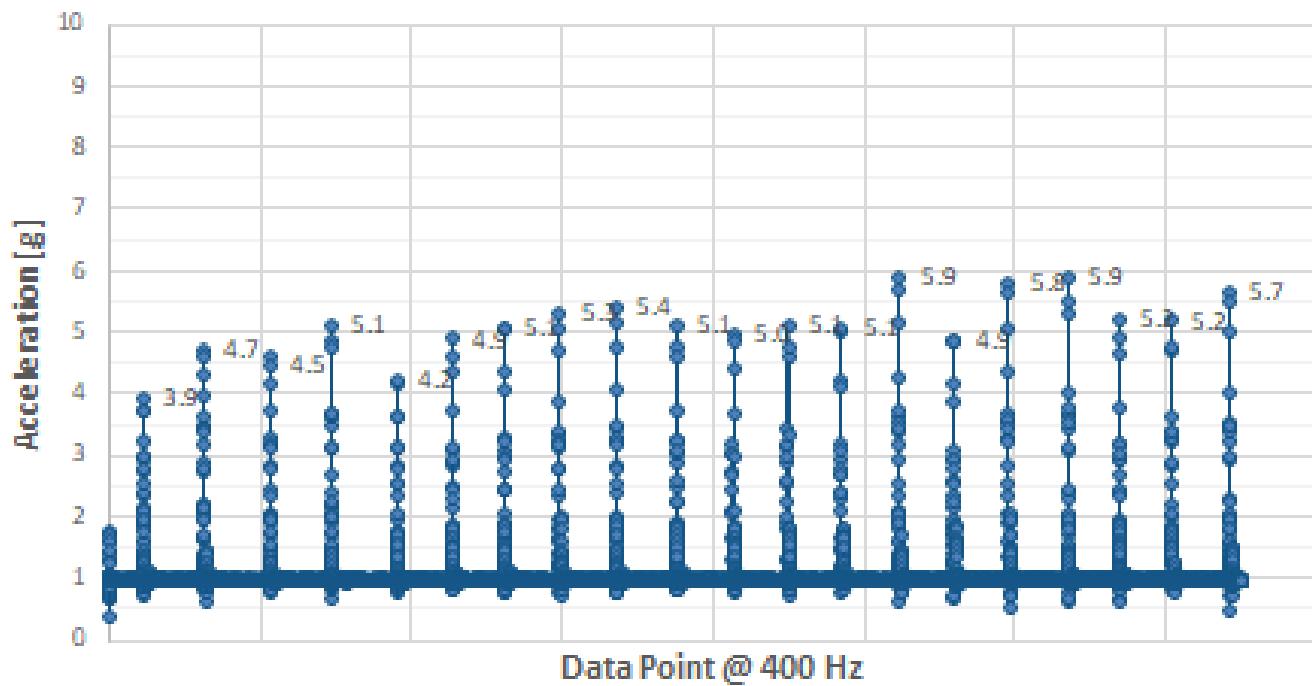
Z Acceleration (Up and Down) - Casper



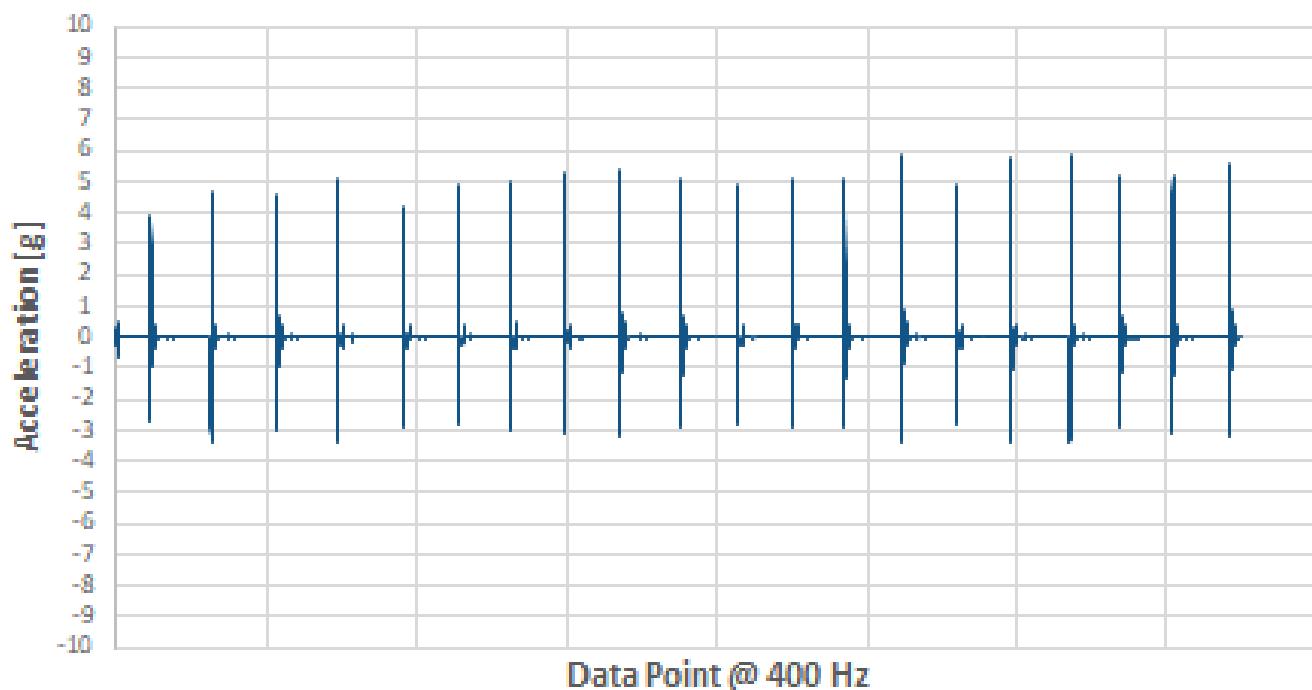


TEST 3 – BLOOM CLOUD

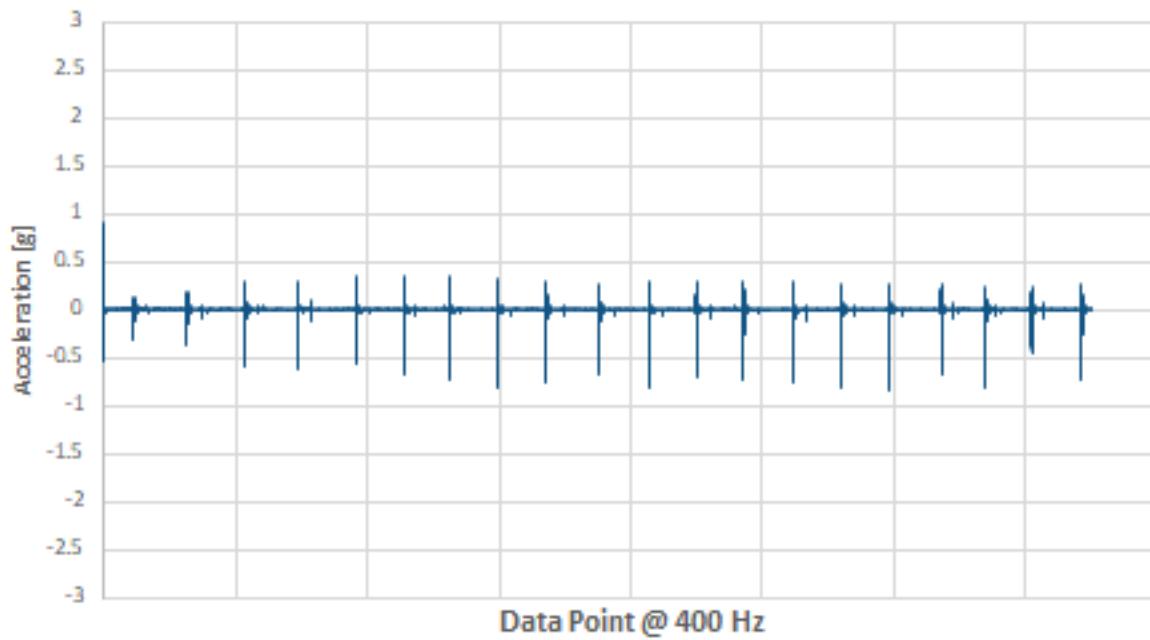
Vector Magnitude Acceleration - Bloom Cloud



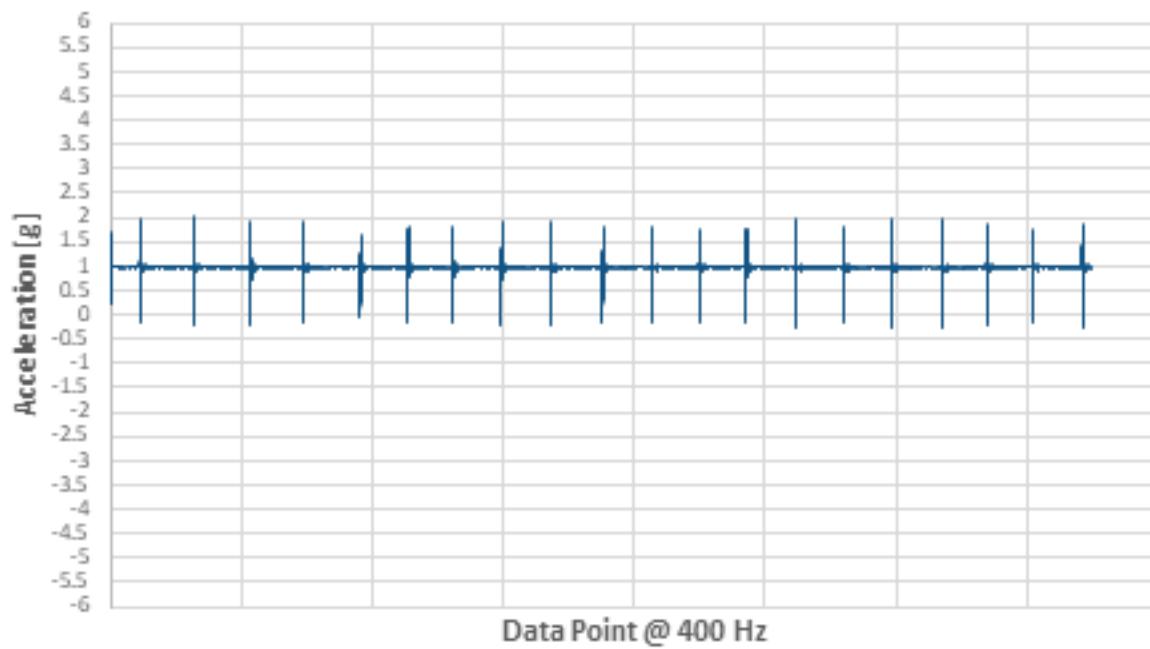
X Acceleration (Side to Side) - Bloom Cloud



Y Acceleration (Head to Toe) - Bloom Cloud

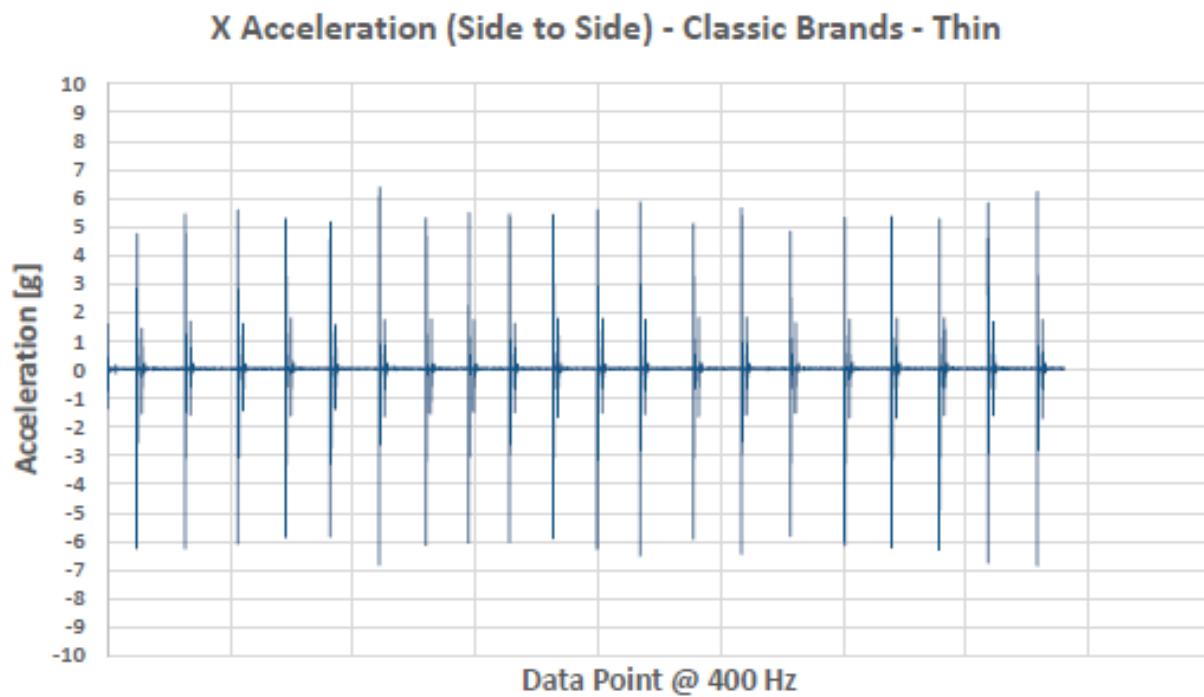
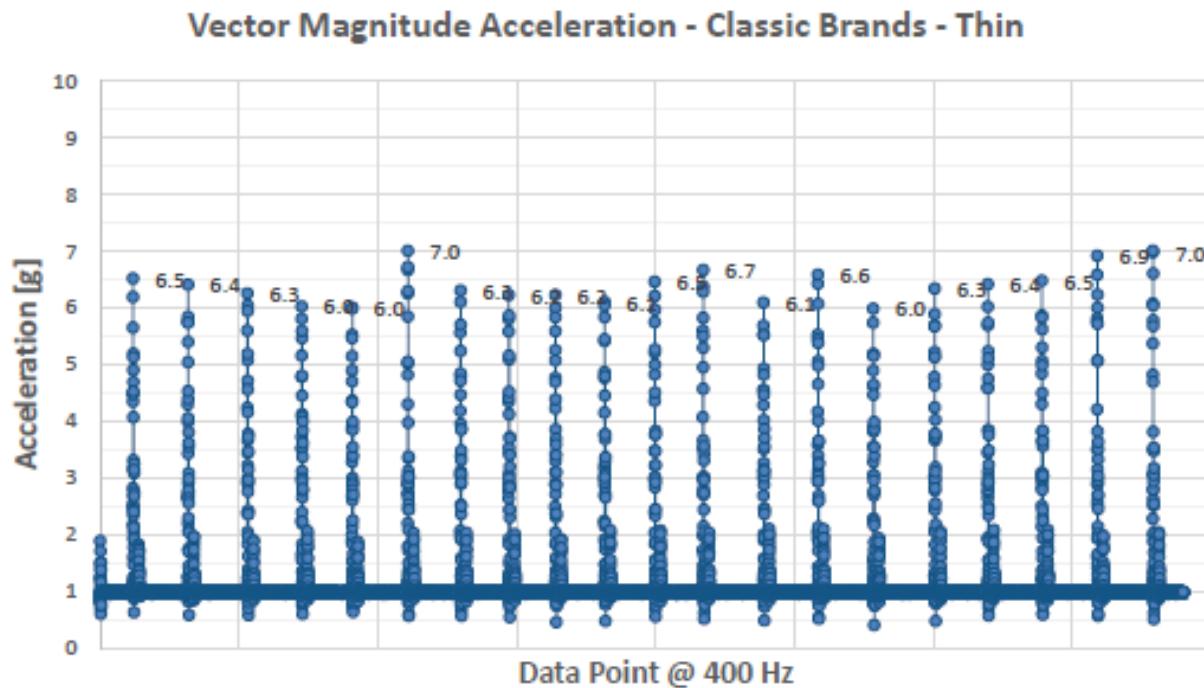


Z Acceleration (Up and Down) - Bloom Cloud

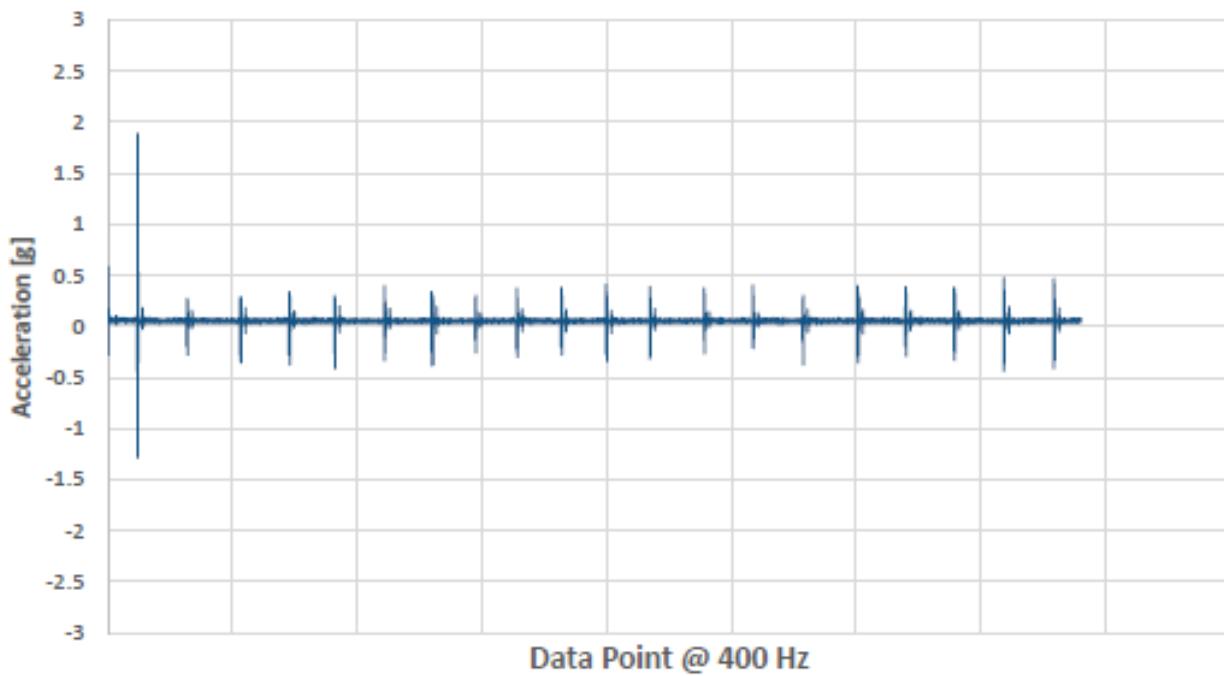




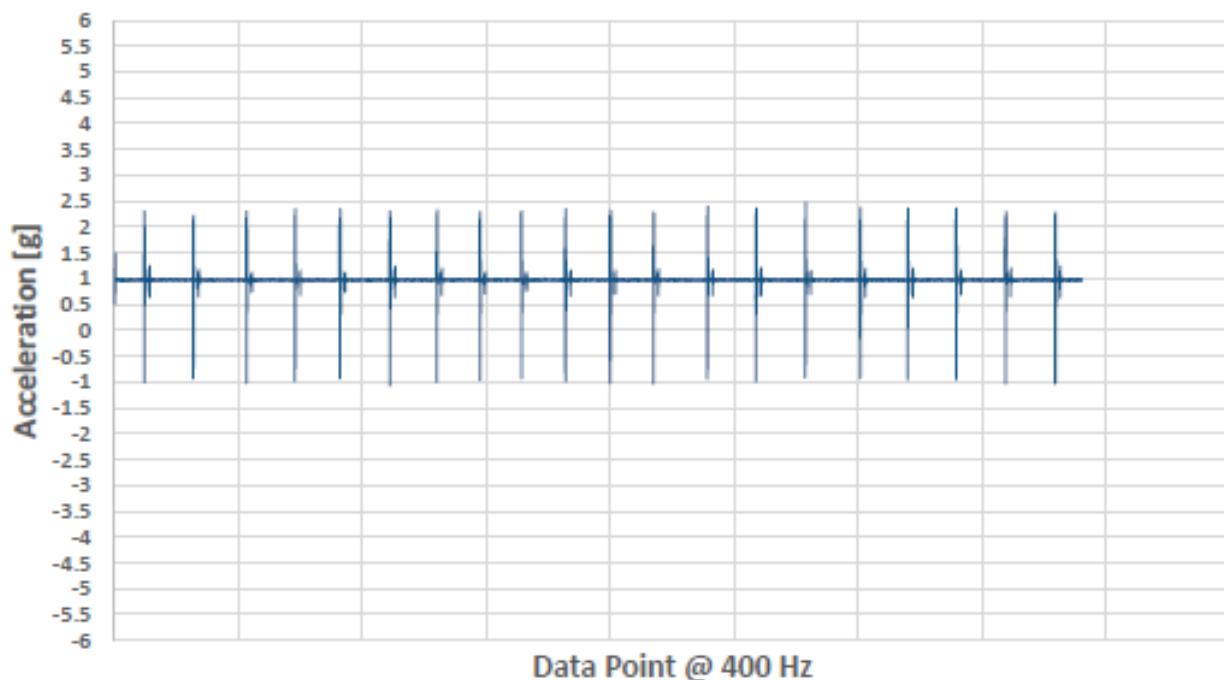
TEST 3 – CLASSIC BRANDS – THIN



Y Acceleration (Head to Toe) - Classic Brands - Thin



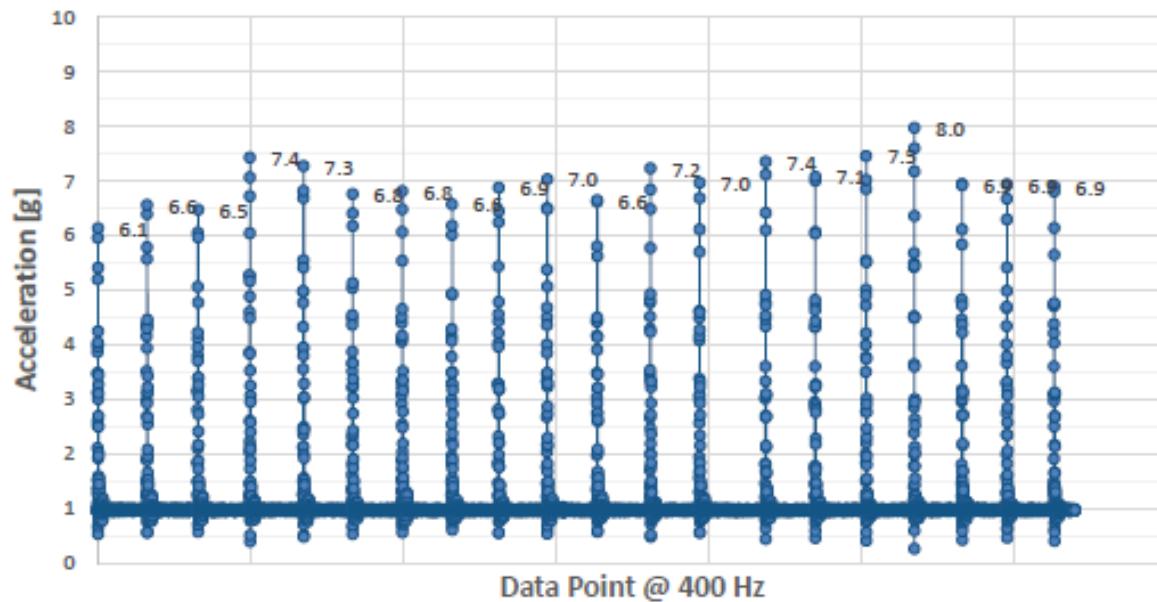
Z Acceleration (Up and Down) - Classic Brands - Thin



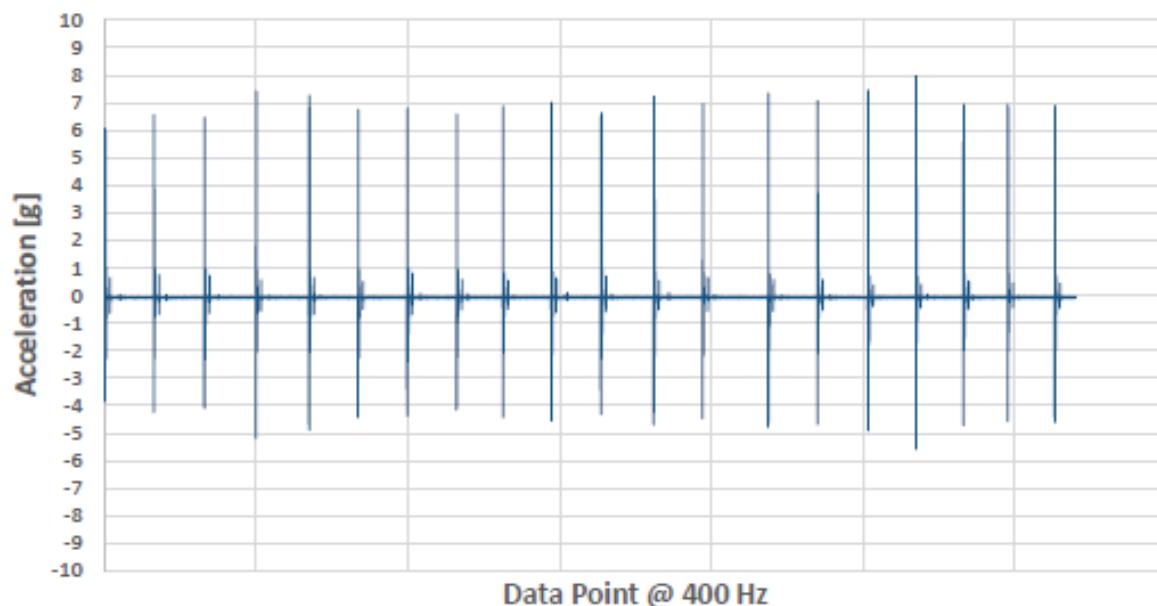


TEST 3 – CLASSIC BRANDS – THICK

Vector Magnitude Acceleration - Classic Brands - Thick

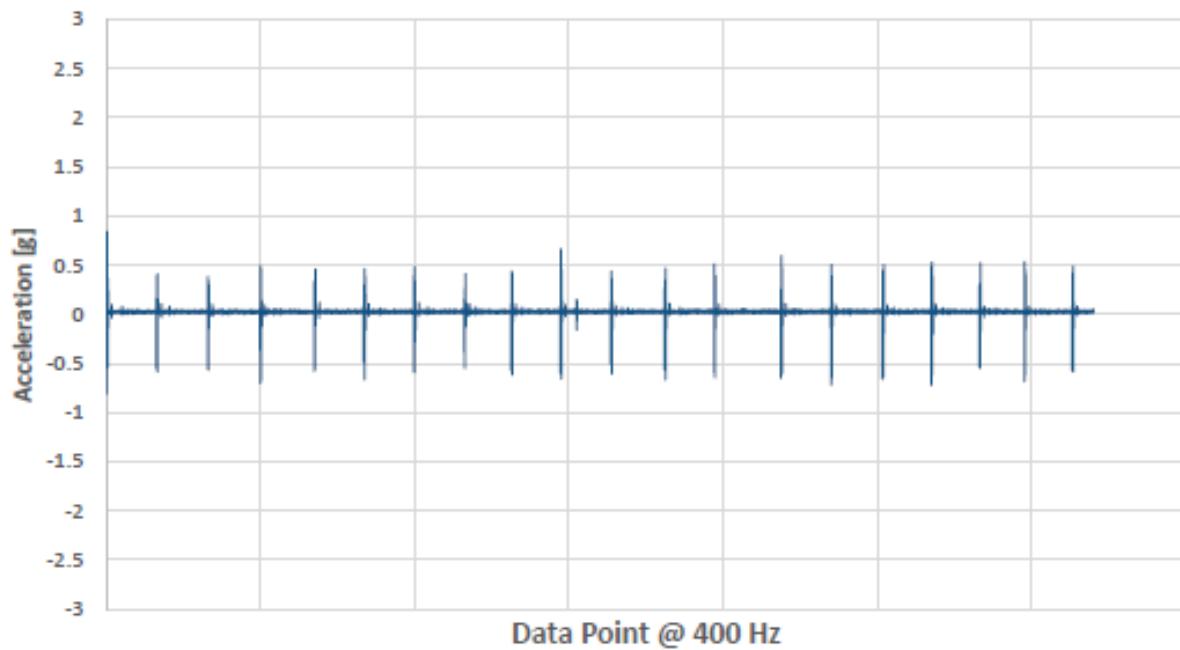


X Acceleration (Side to Side) - Classic Brands - Thick

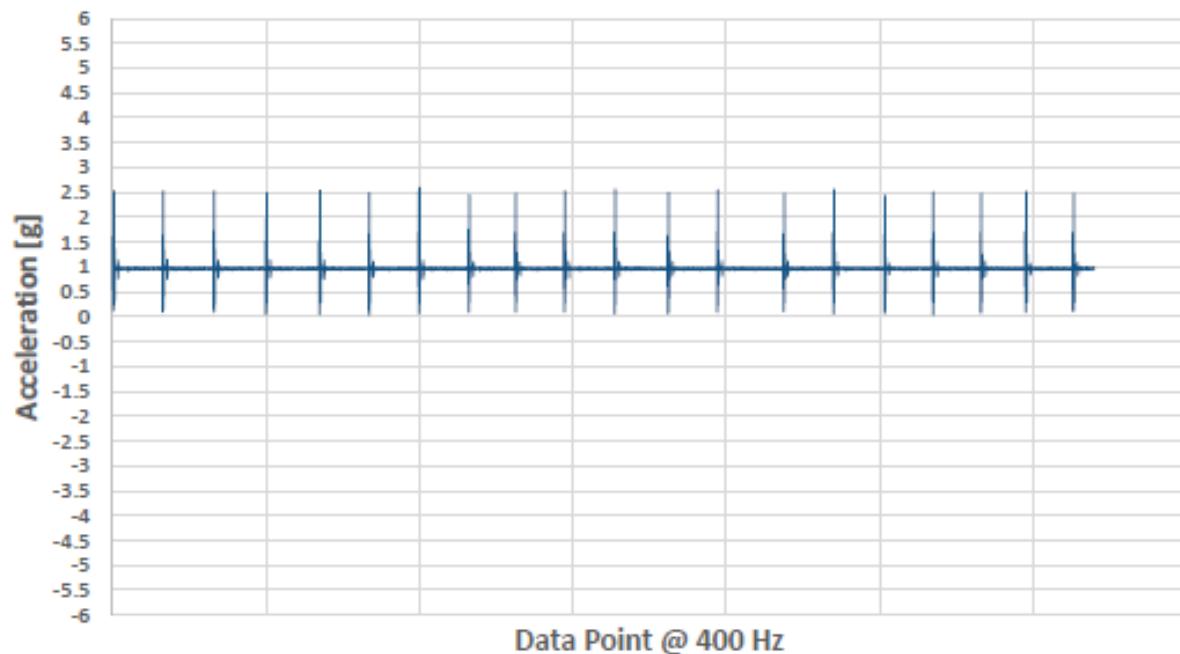




Y Acceleration (Head to Toe) - Classic Brands - Thick



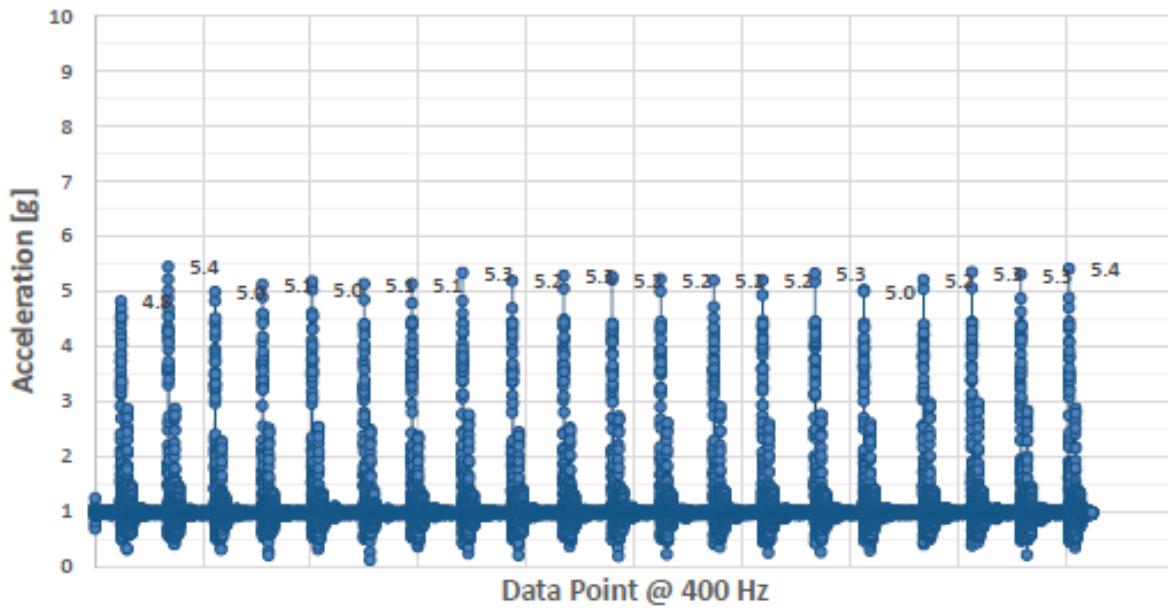
Z Acceleration (Up and Down) - Classic Brands - Thick



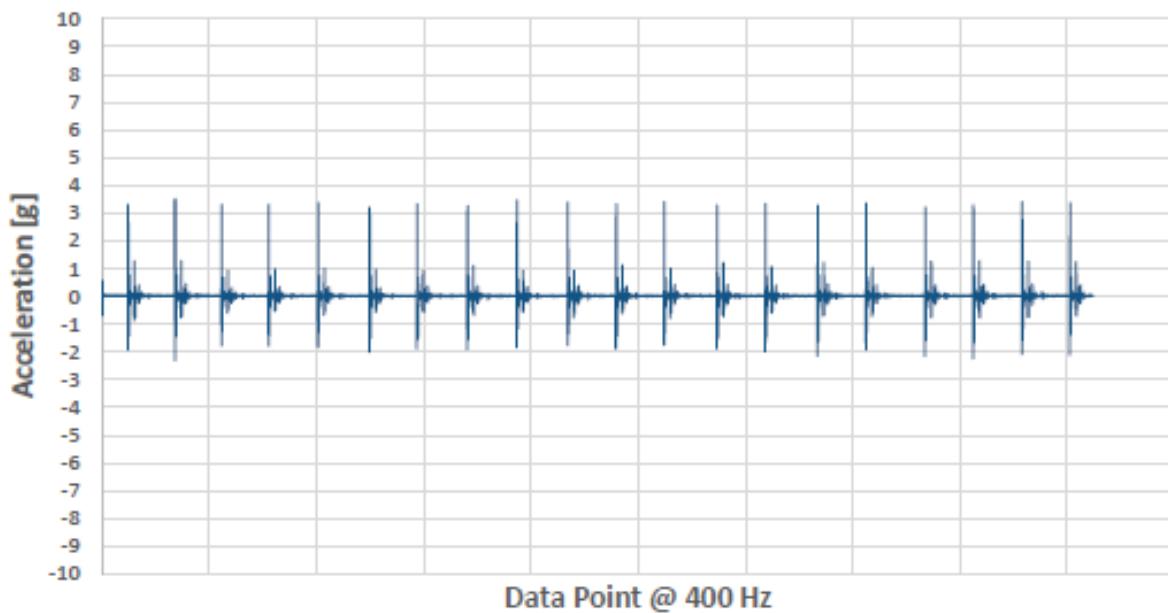


TEST 3 – SAATVA

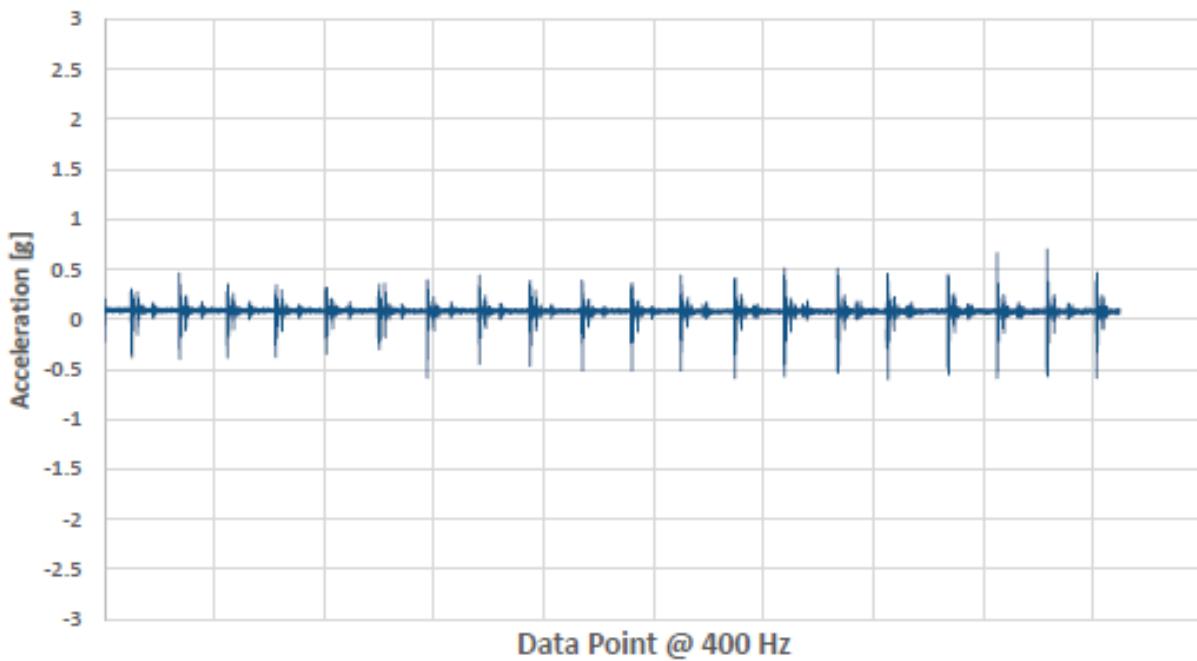
Vector Magnitude Acceleration - Saatva



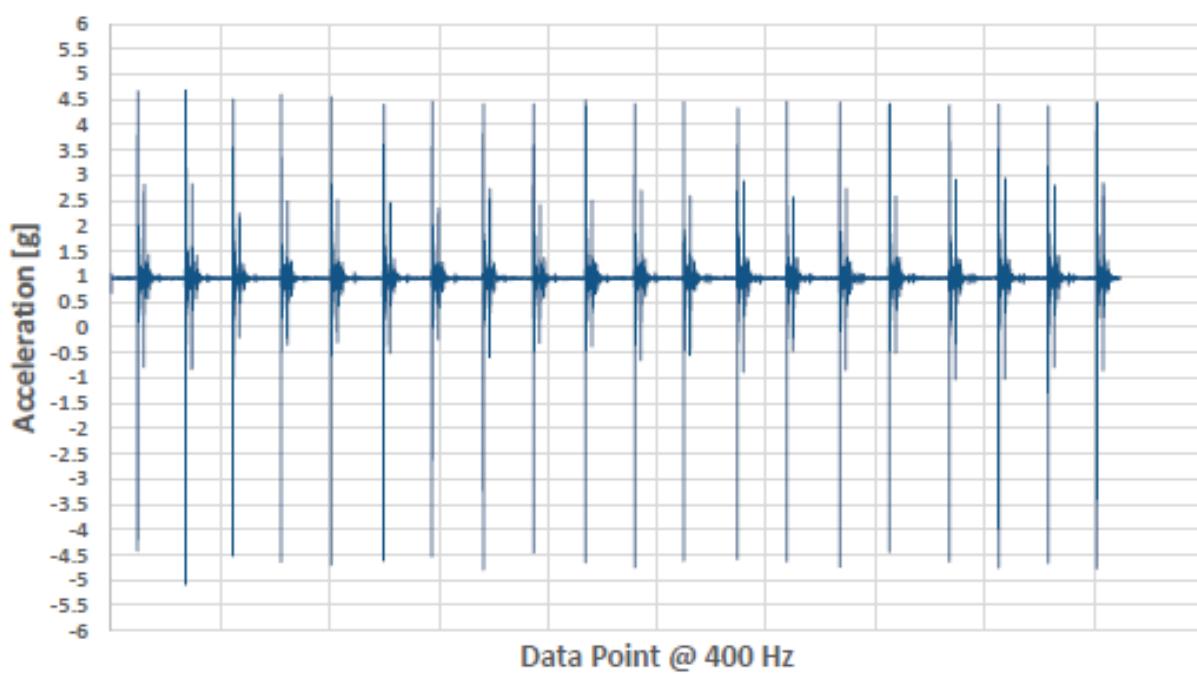
X Acceleration (Side to Side) - Saatva



Y Acceleration (Head to Toe) - Saatva



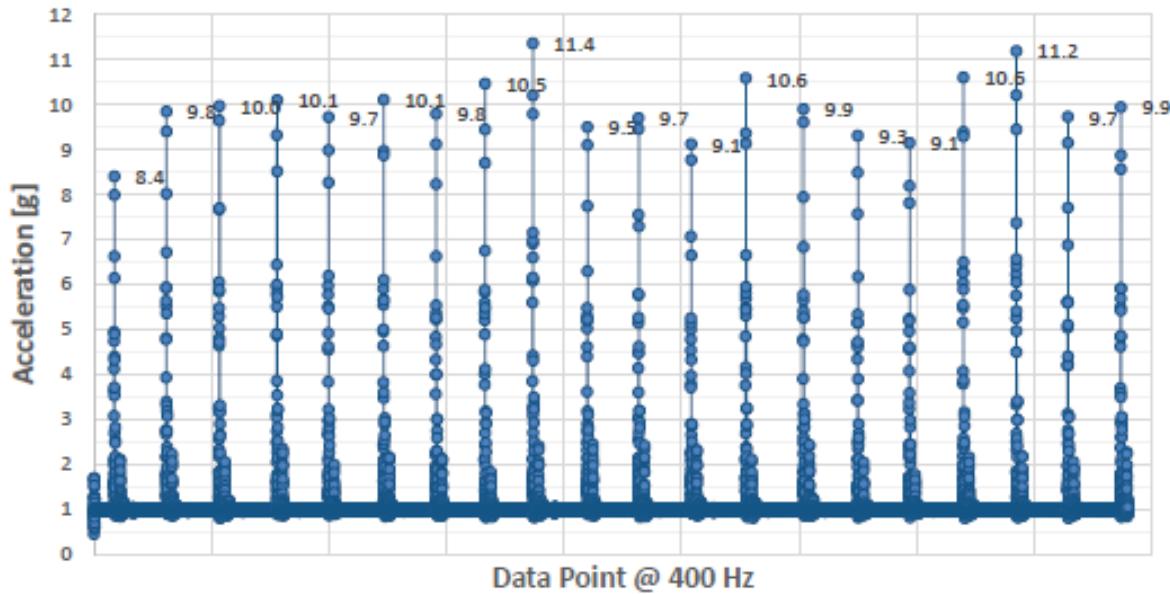
Z Acceleration (Up and Down) - Saatva



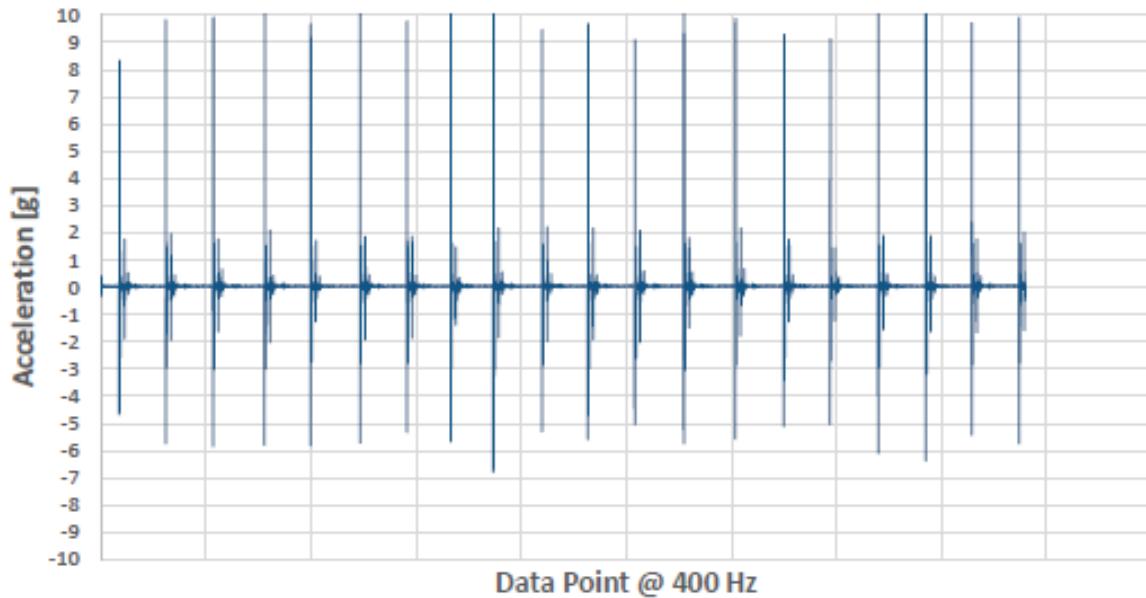


TEST 3 – PURPLE

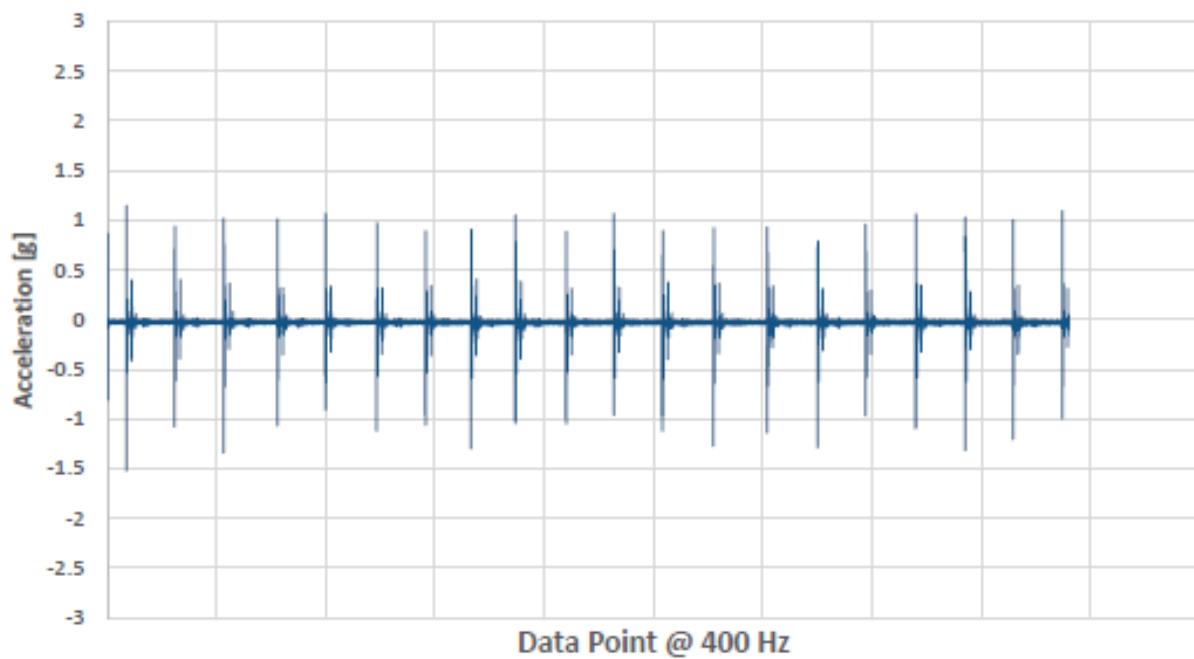
Vector Magnitude Acceleration - Purple



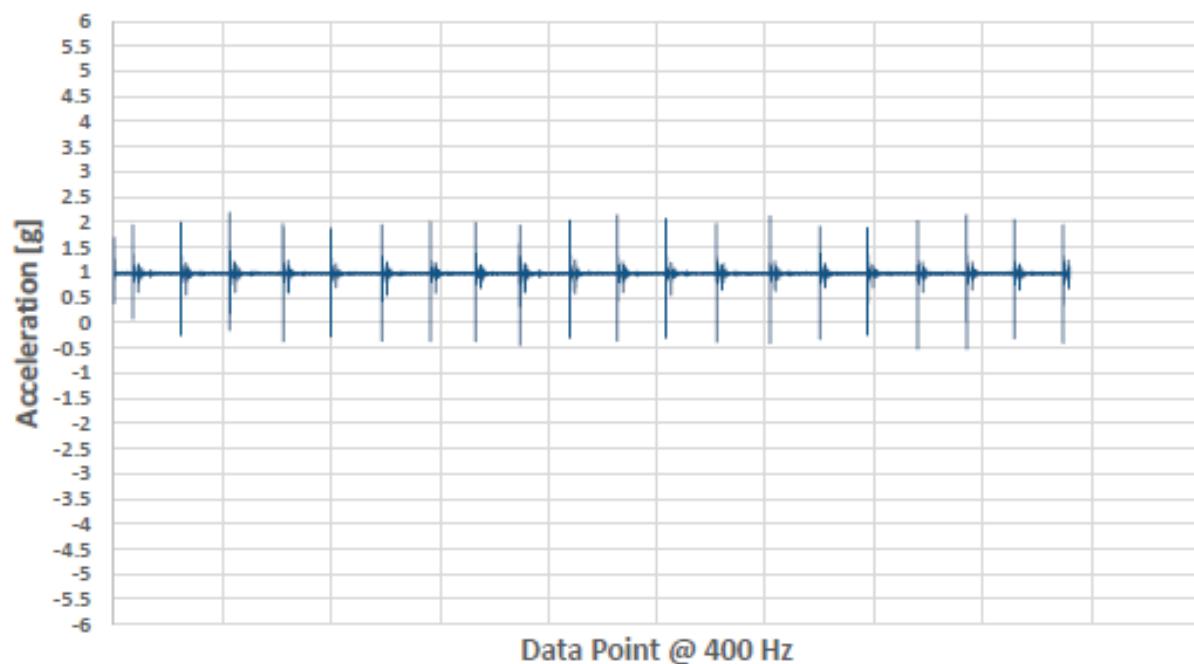
X Acceleration (Side to Side) - Purple



Y Acceleration (Head to Toe) - Purple



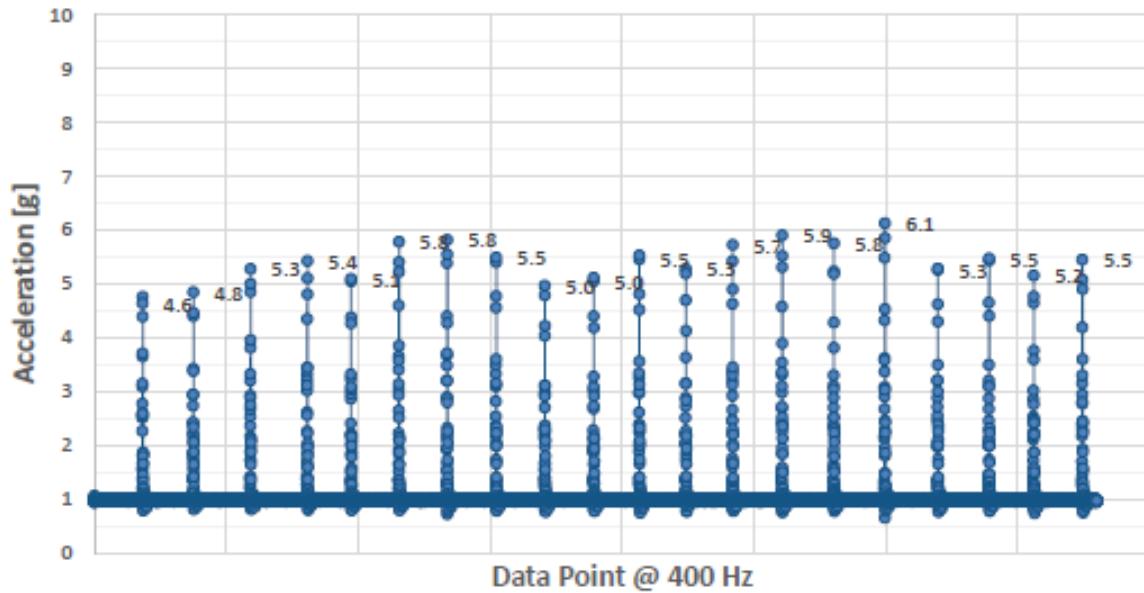
Z Acceleration (Up and Down) - Purple



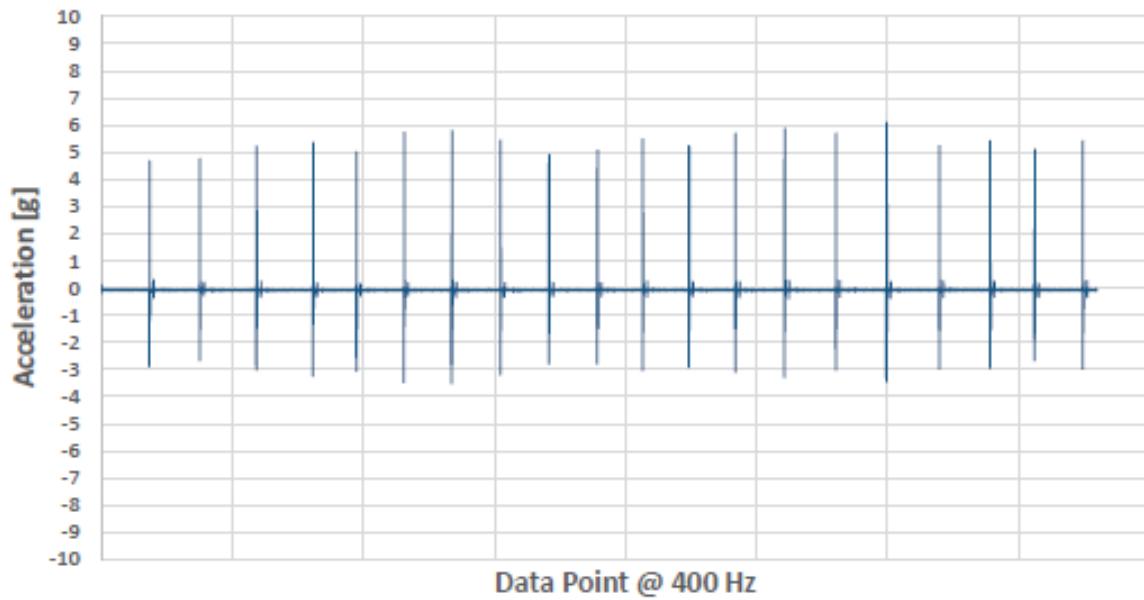


TEST 3 – LUCID

Vector Magnitude Acceleration - Lucid

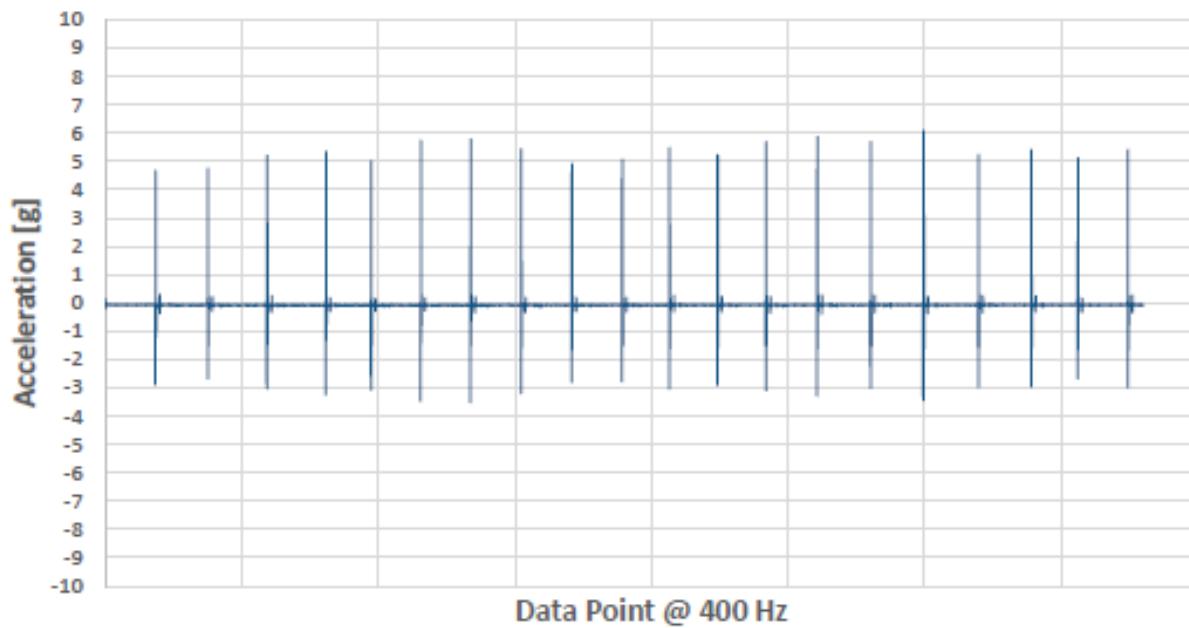


X Acceleration (Side to Side) - Lucid

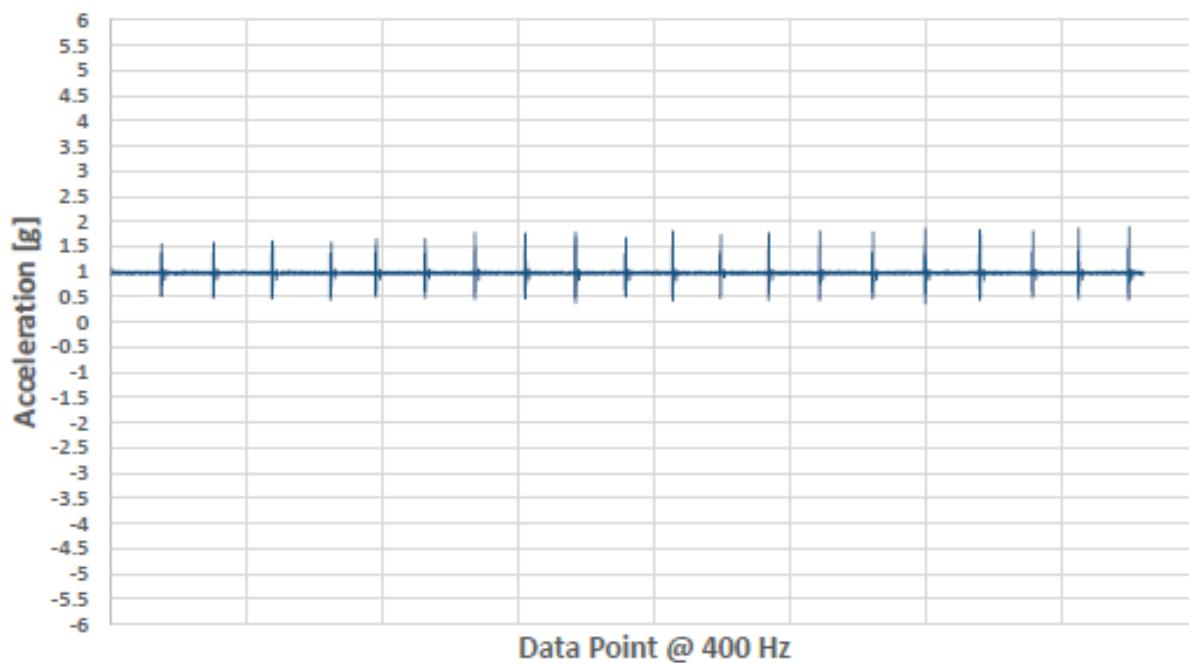




X Acceleration (Side to Side) - Lucid

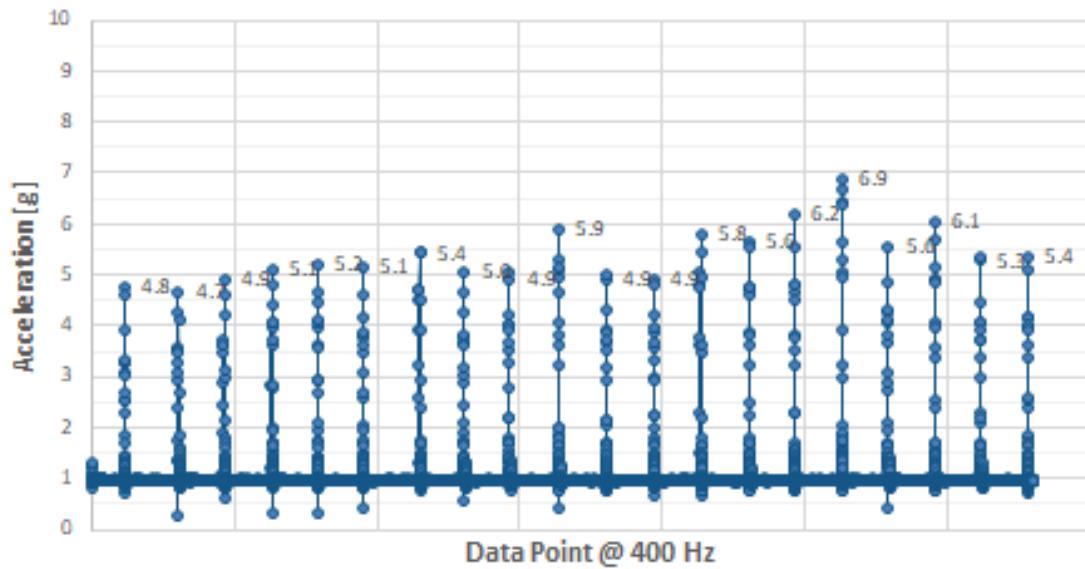


Z Acceleration (Up and Down) - Lucid

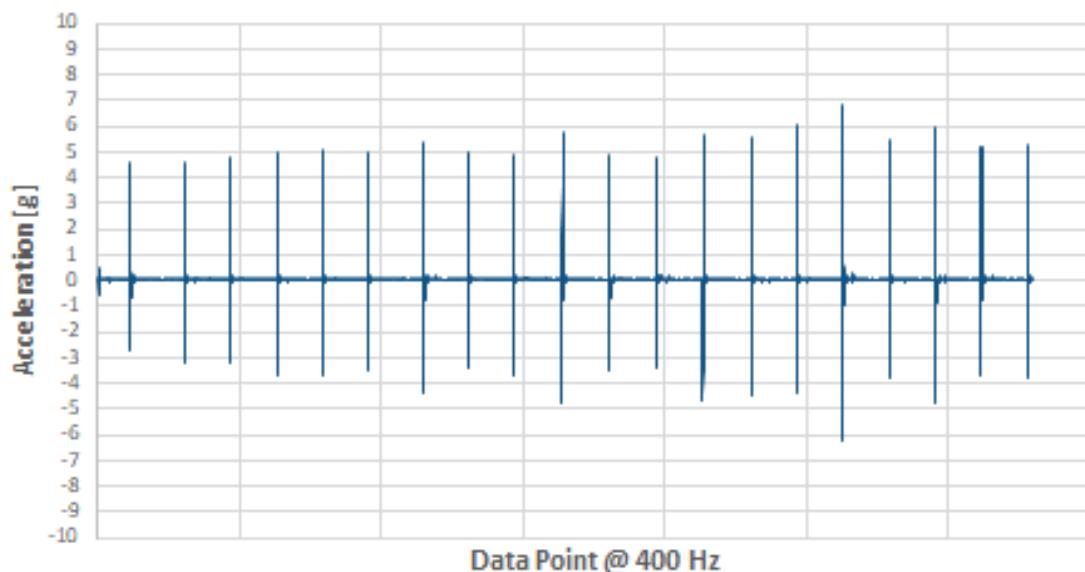


TEST 3 – NOVOSBED FIRM (V1)

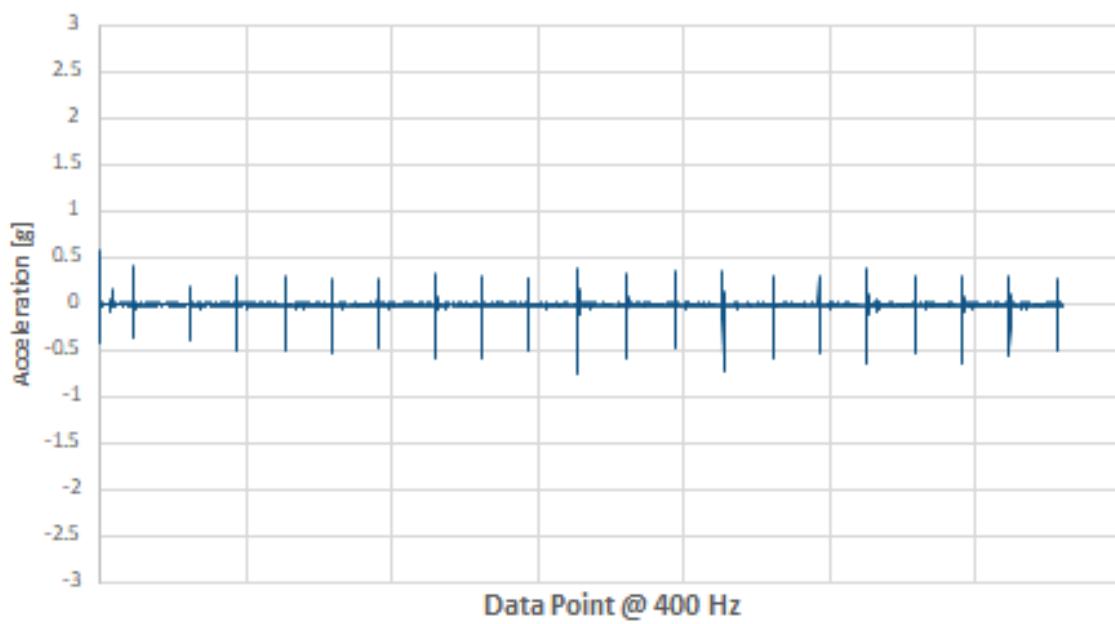
Vector Magnitude Acceleration - Novosbed Firm (V1)



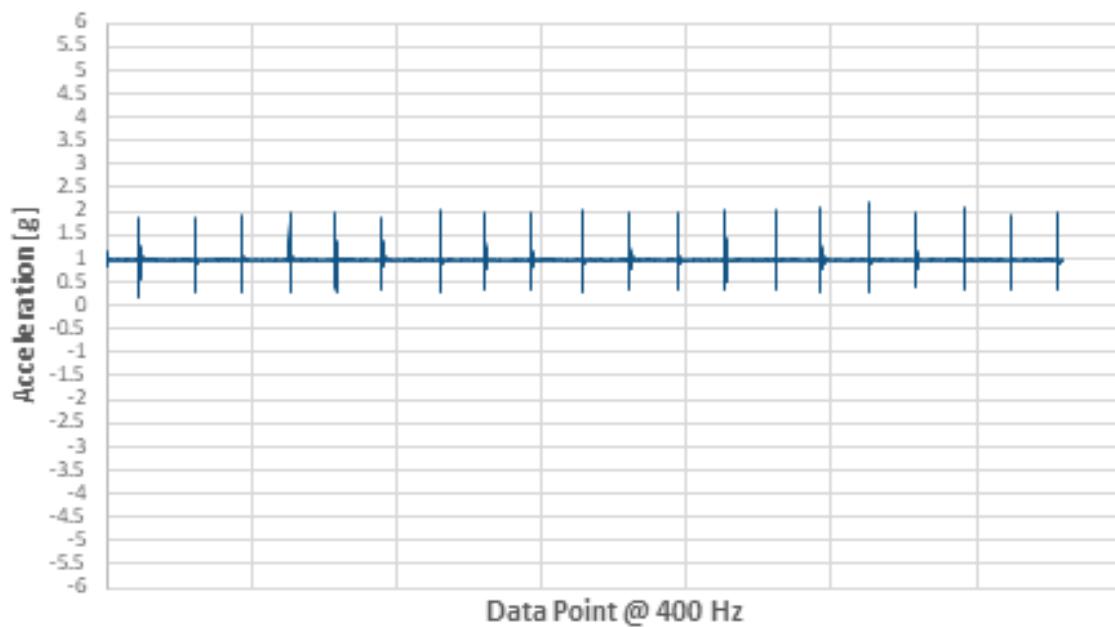
X Acceleration (Side to Side) - Novosbed Firm (V1)



Y Acceleration (Head to Toe) - Novosbed Firm (V1)

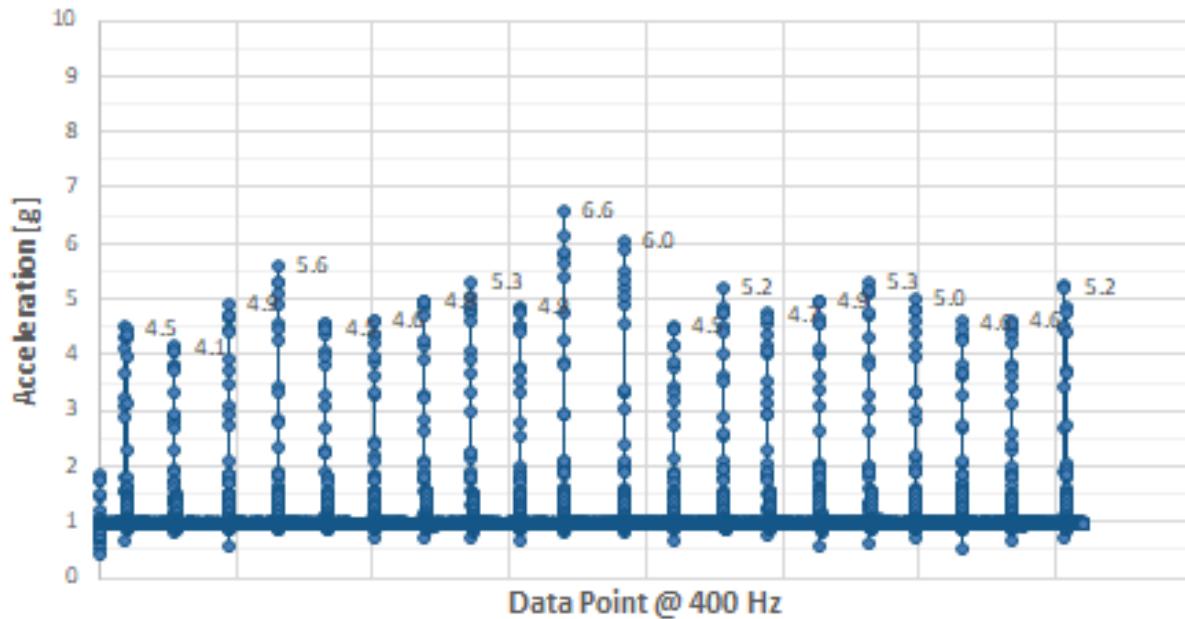


Z Acceleration (Up and Down) - Novosbed Firm (V1)

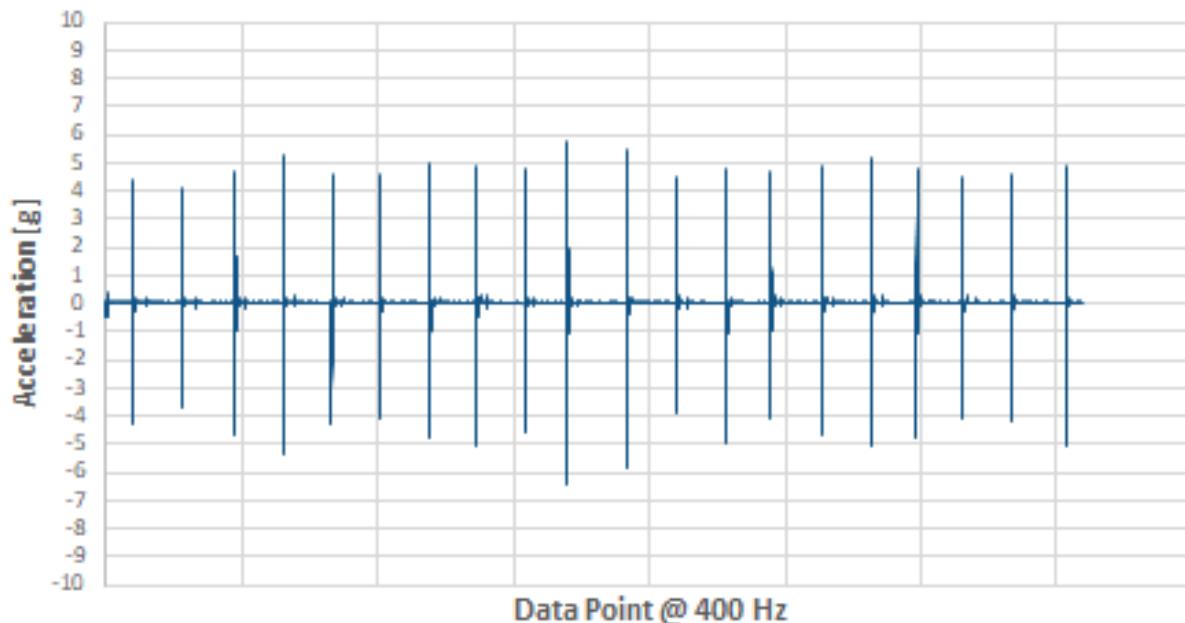


TEST 3 – NOVOSBED MEDIUM (V1)

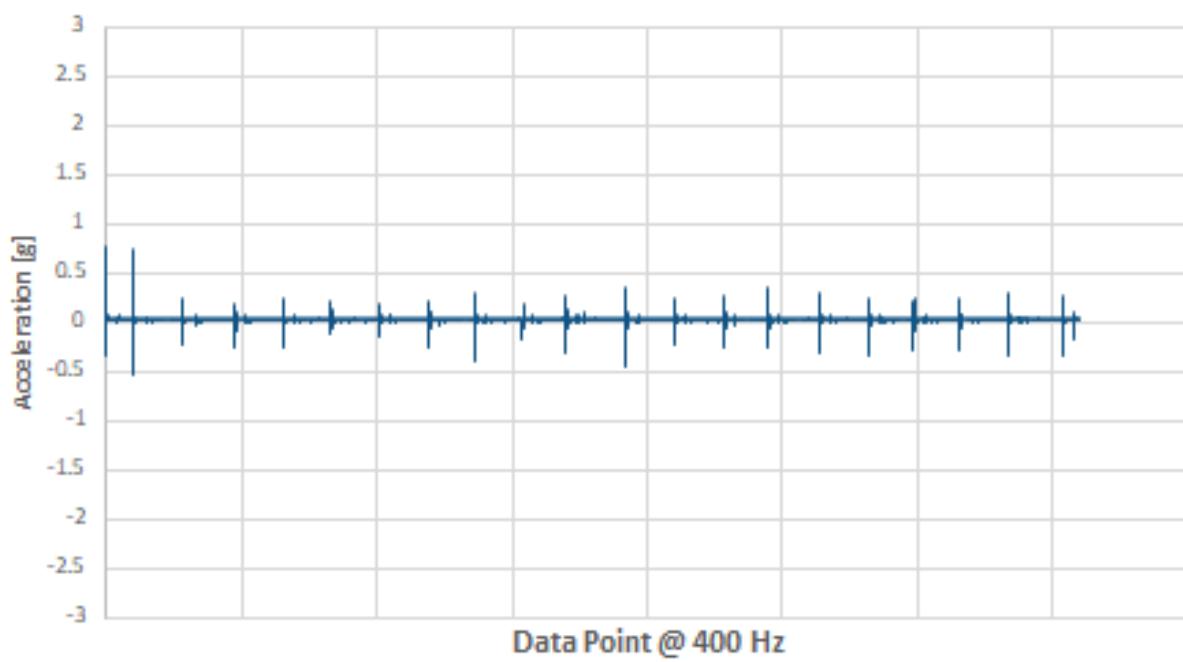
Vector Magnitude Acceleration - Novosbed Medium (V1)



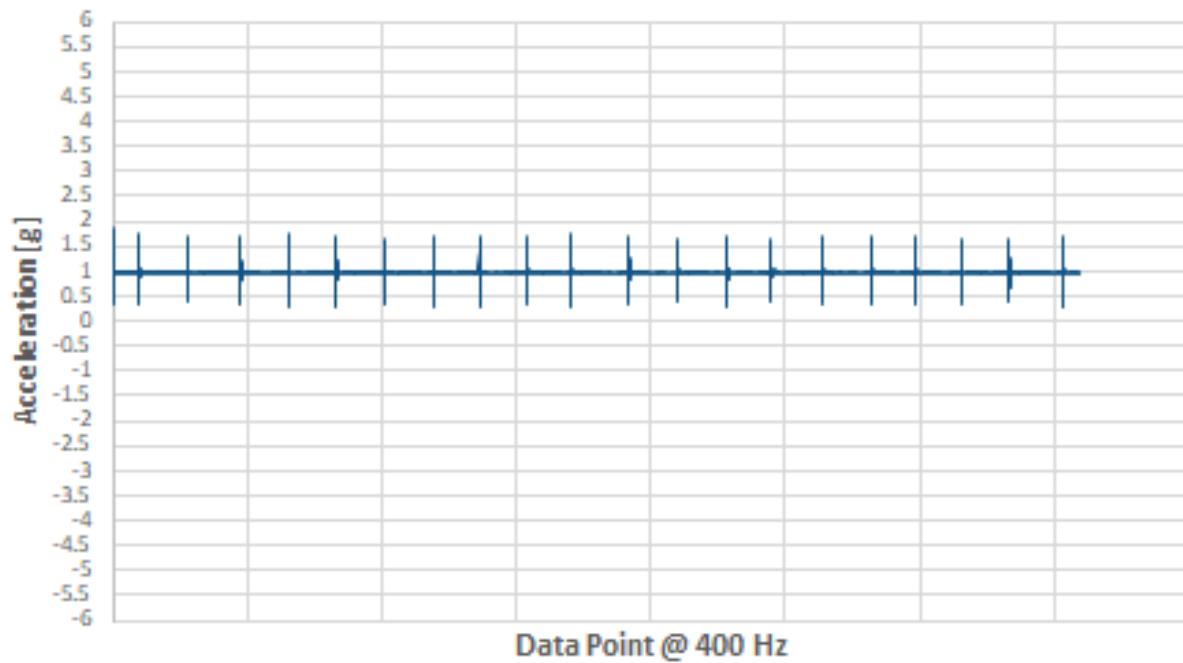
X Acceleration (Side to Side) - Novosbed Medium (V1)



Y Acceleration (Head to Toe) - Novosbed Medium (V1)

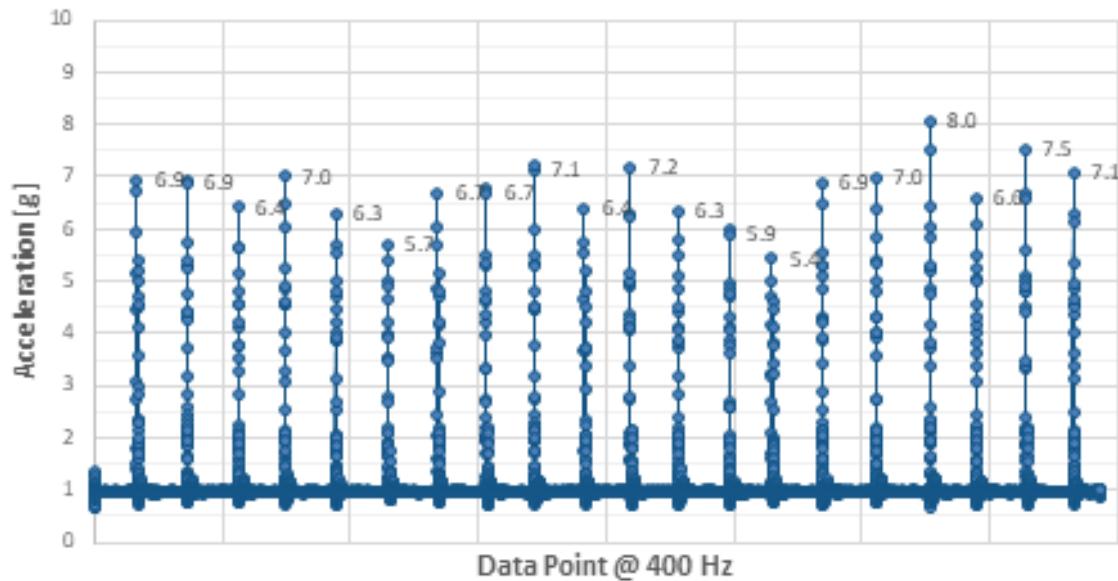


Z Acceleration (Up and Down) - Novosbed Medium (V1)

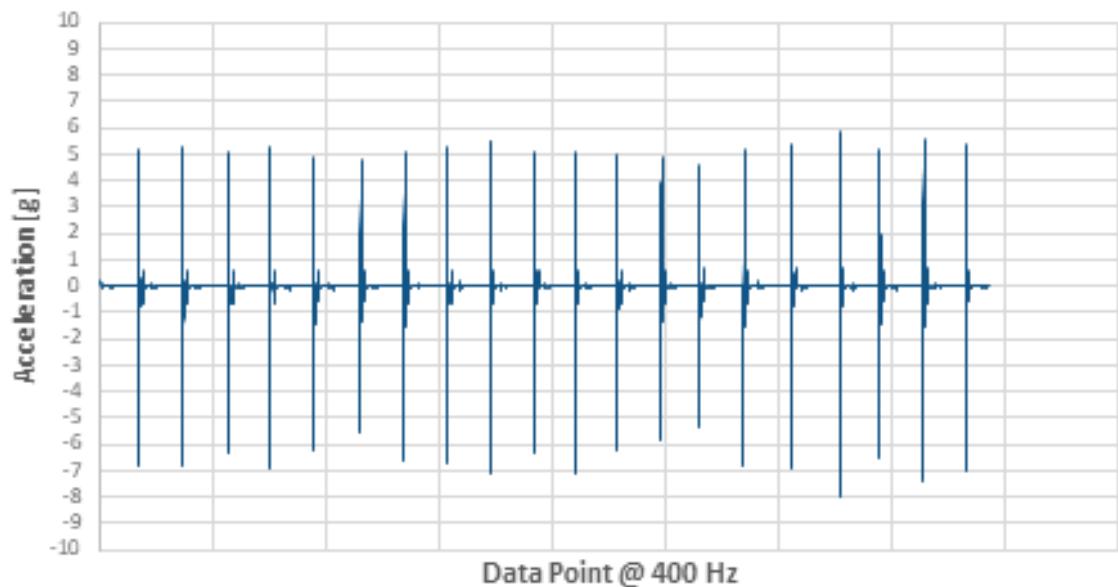


TEST 3 – NOVOSBED SOFT (V1)

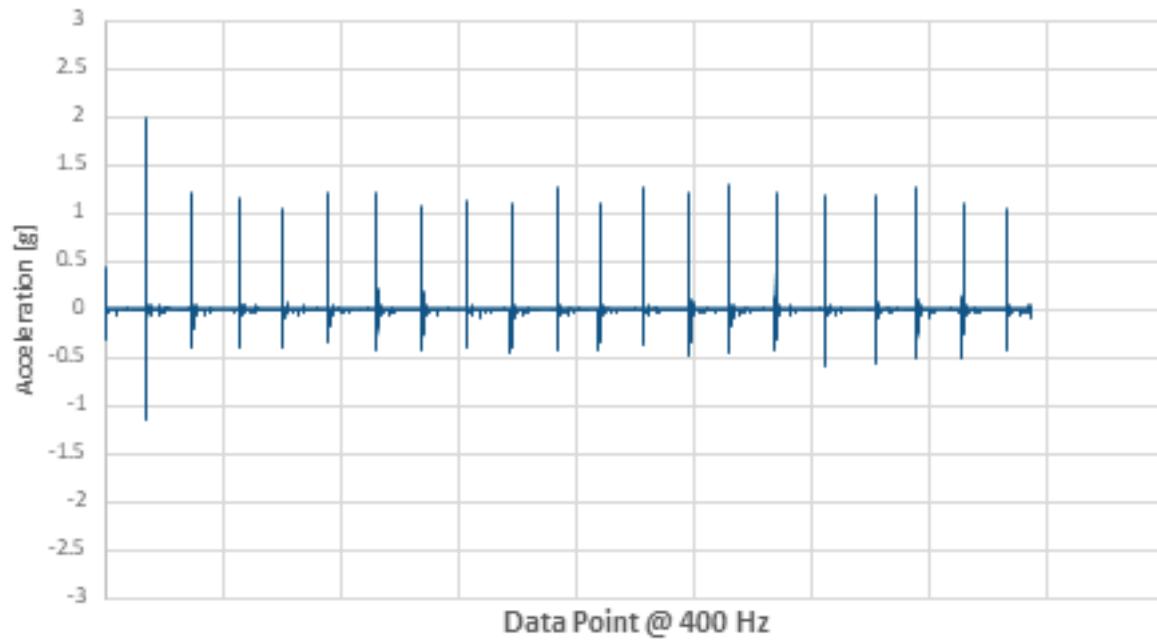
Vector Magnitude Acceleration - Novosbed Soft (V1)



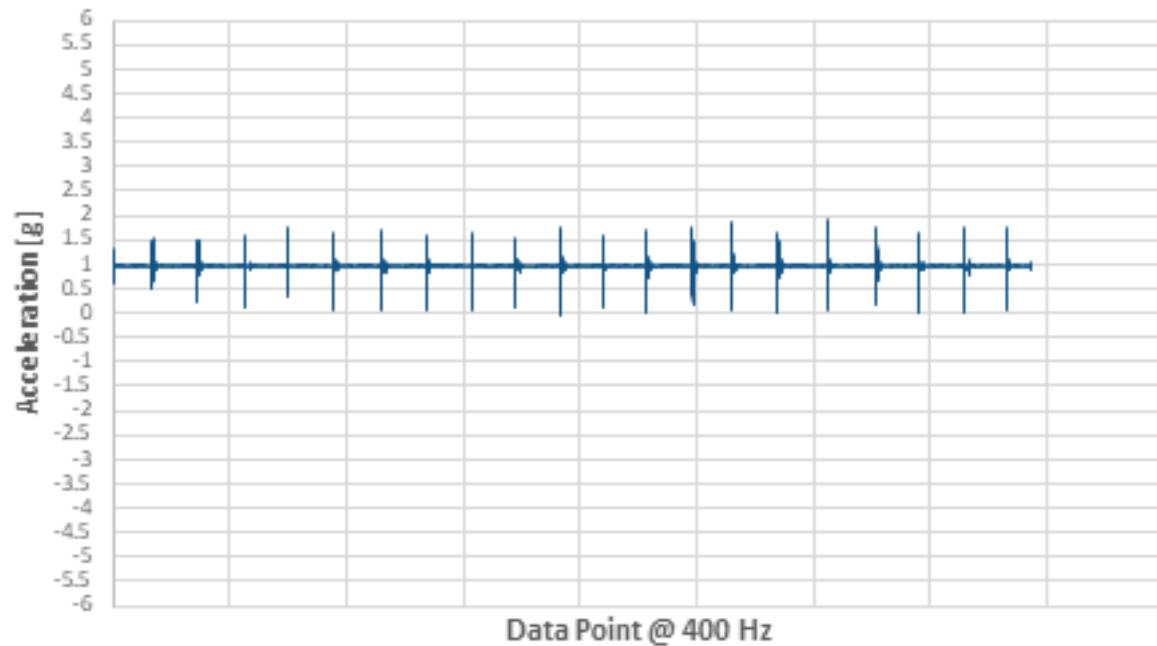
X Acceleration (Side to Side) - Novosbed Soft (V1)



Y Acceleration (Head to Toe) - Novosbed Soft (V1)

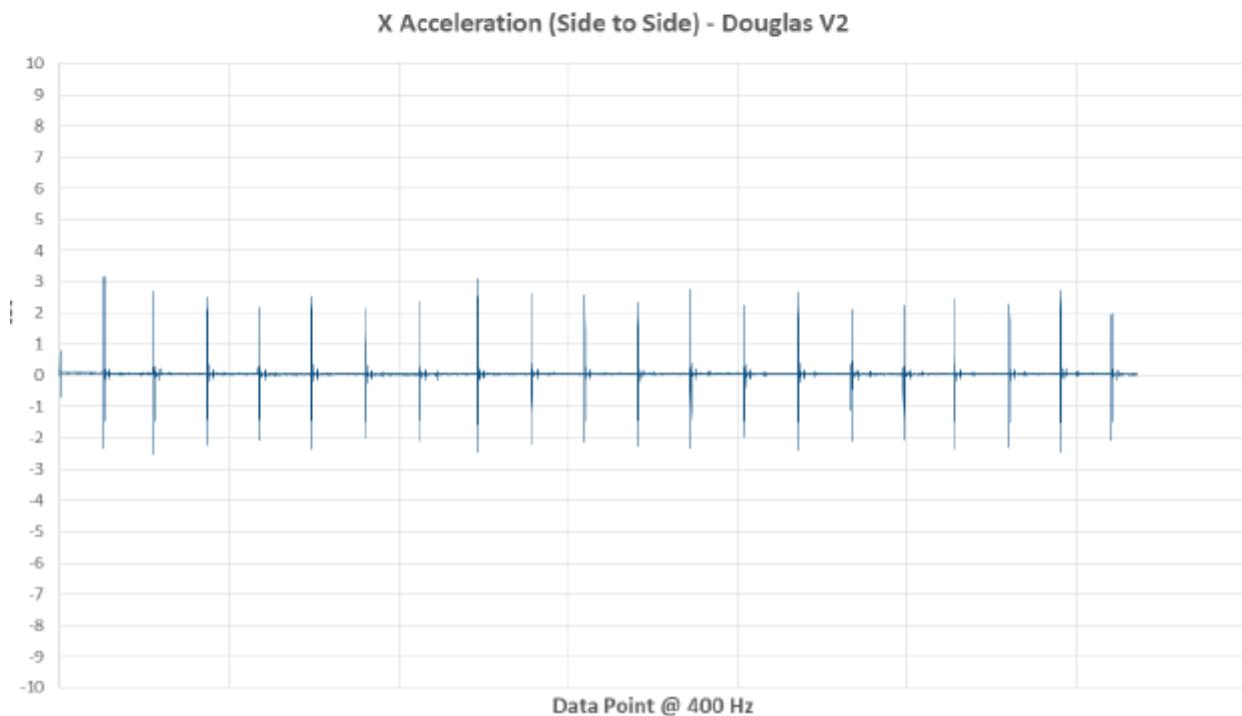
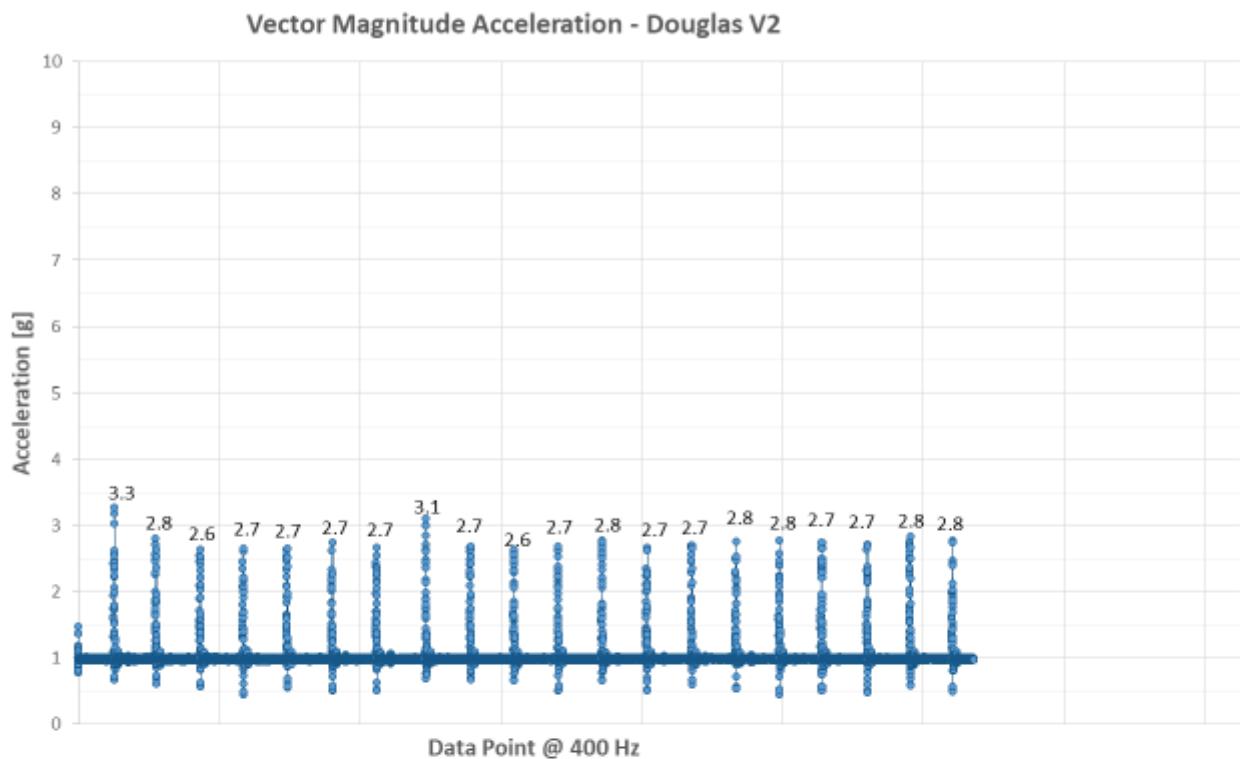


Z Acceleration (Up and Down) - Novosbed Soft (V1)



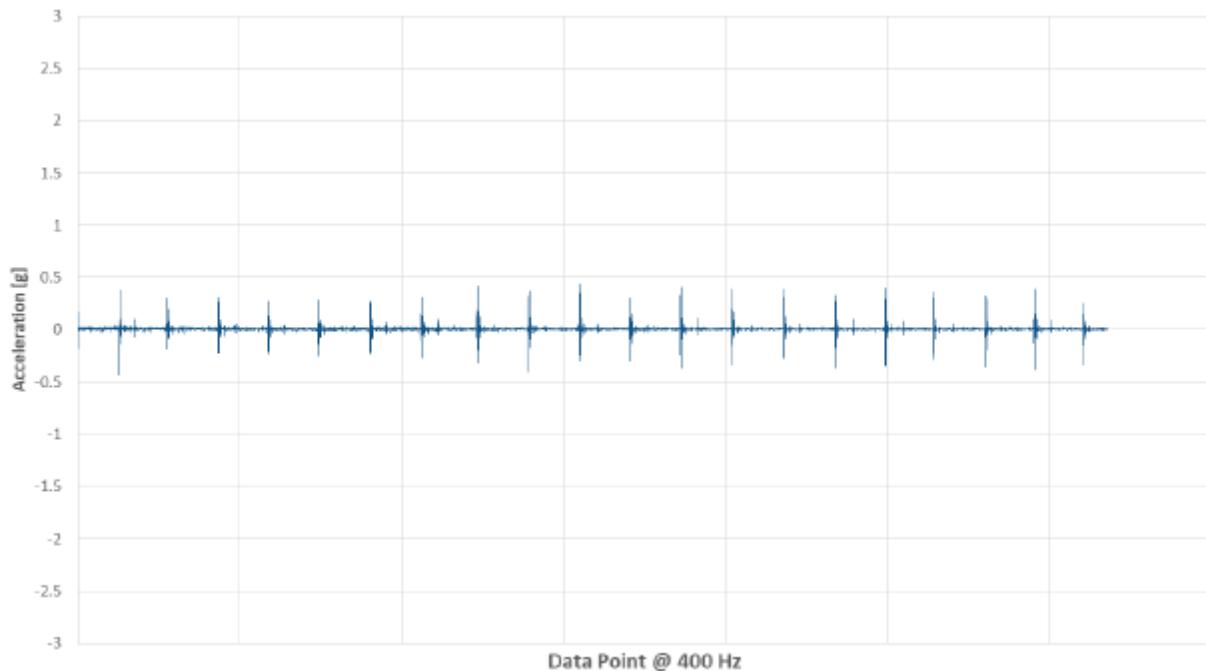


TEST 3 – DOUGLAS (V2)

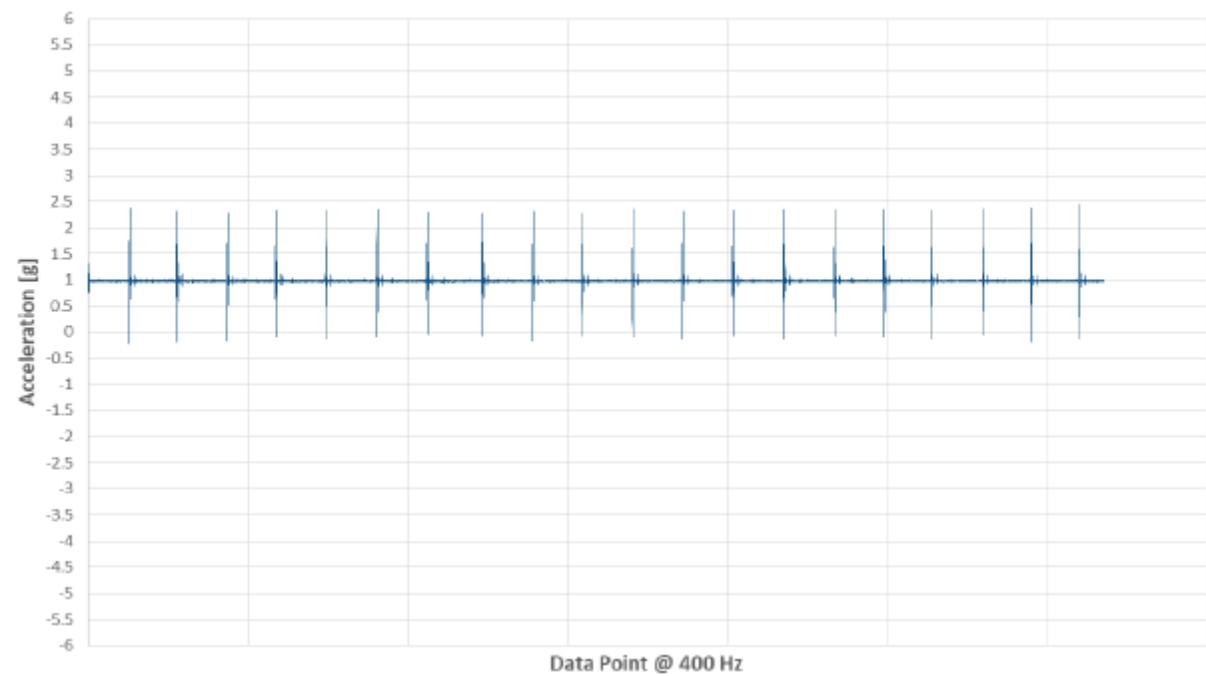




Y Acceleration (Head to Toe) - Douglas V2

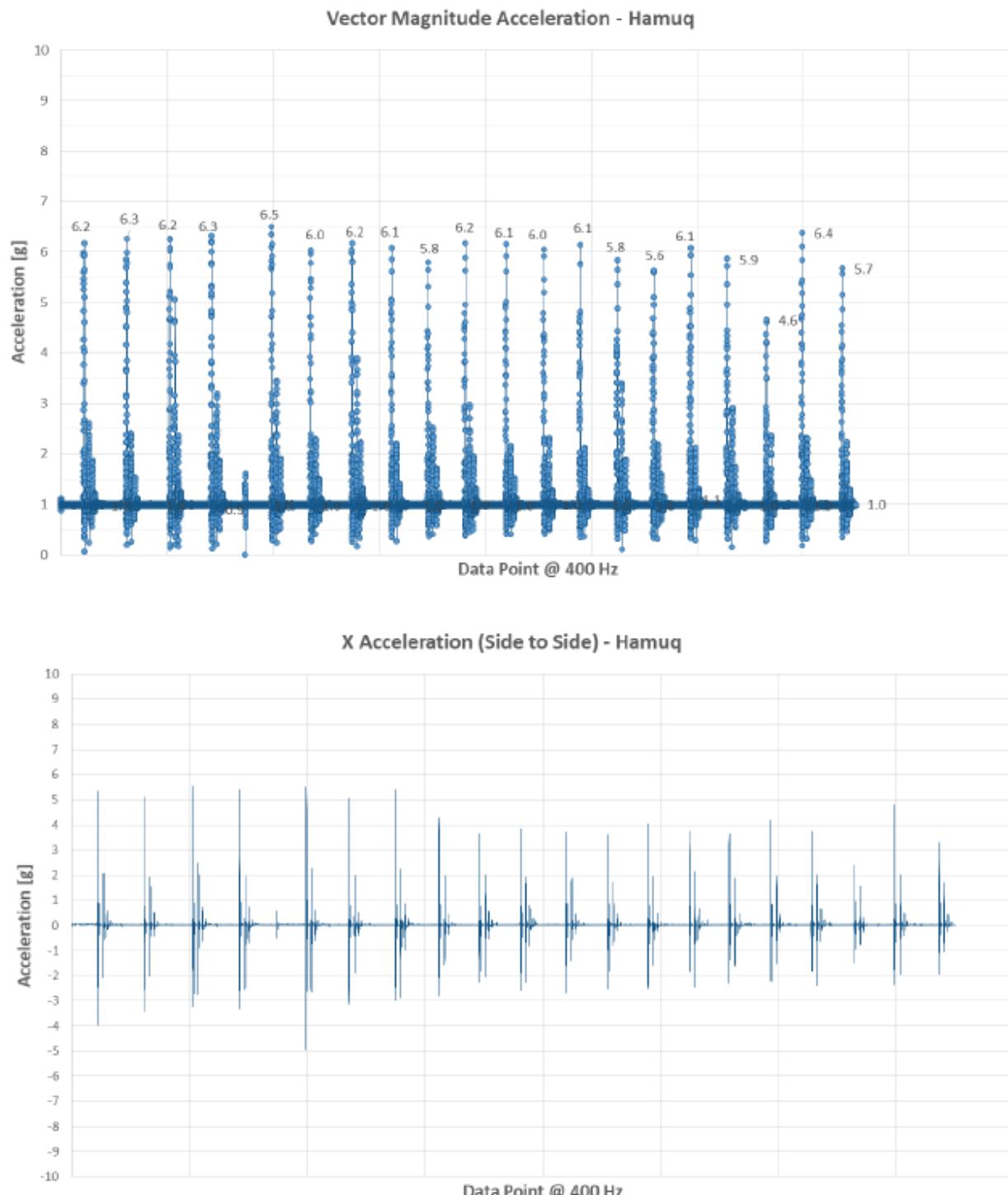


Z Acceleration (Up and Down) - Douglas V2



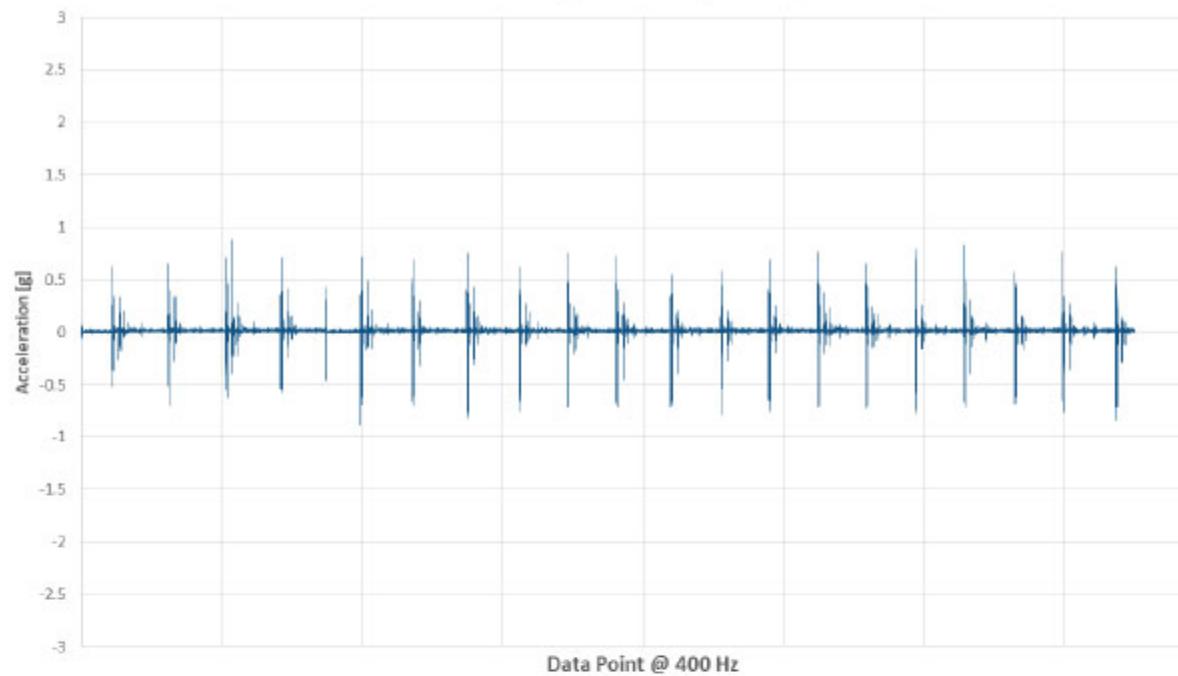


TEST 3 – HAMUQ

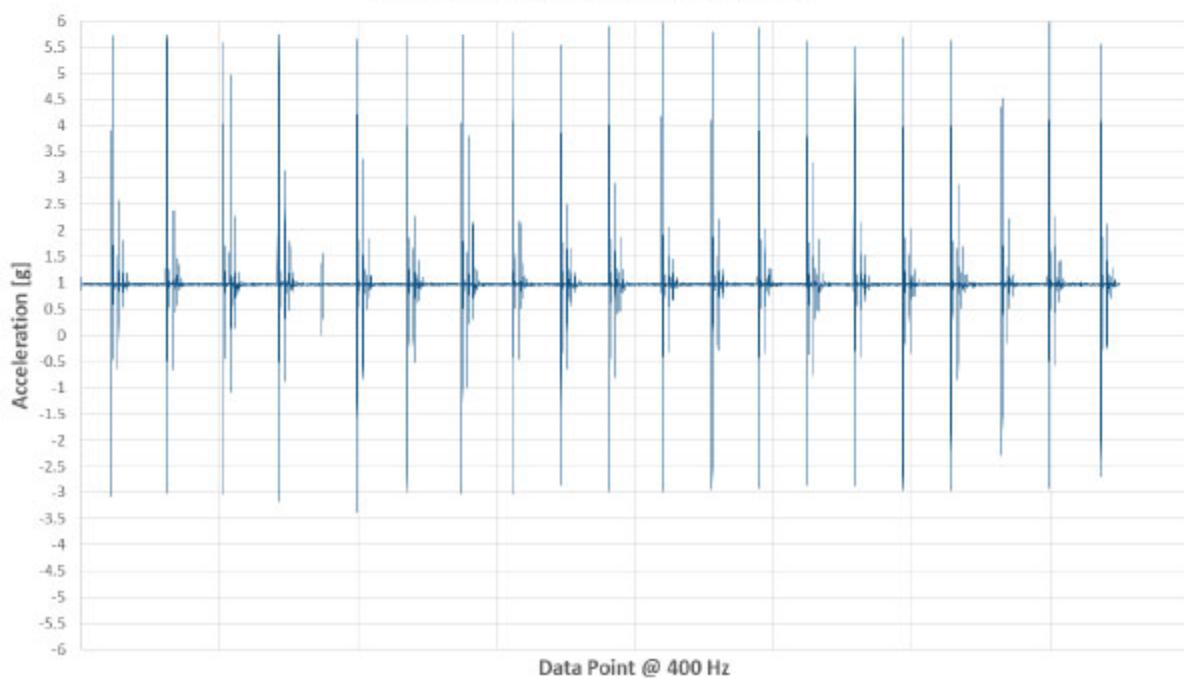




Y Acceleration (Head to Toe) - Hamuq



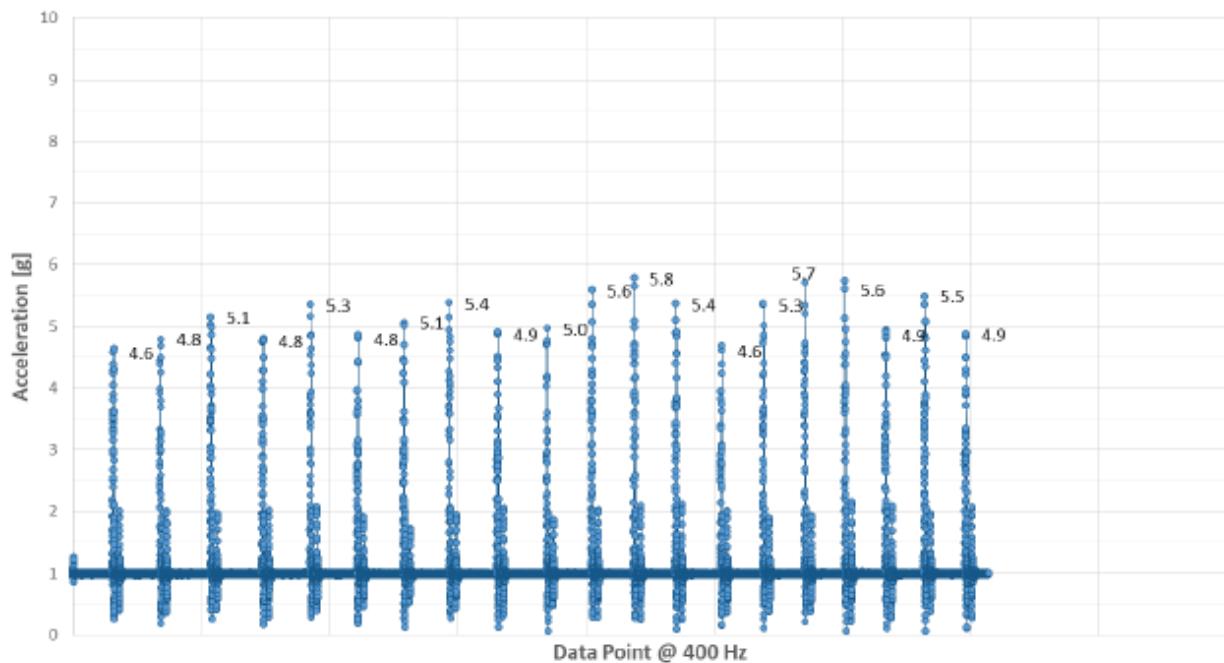
Z Acceleration (Up and Down) - Hamuq



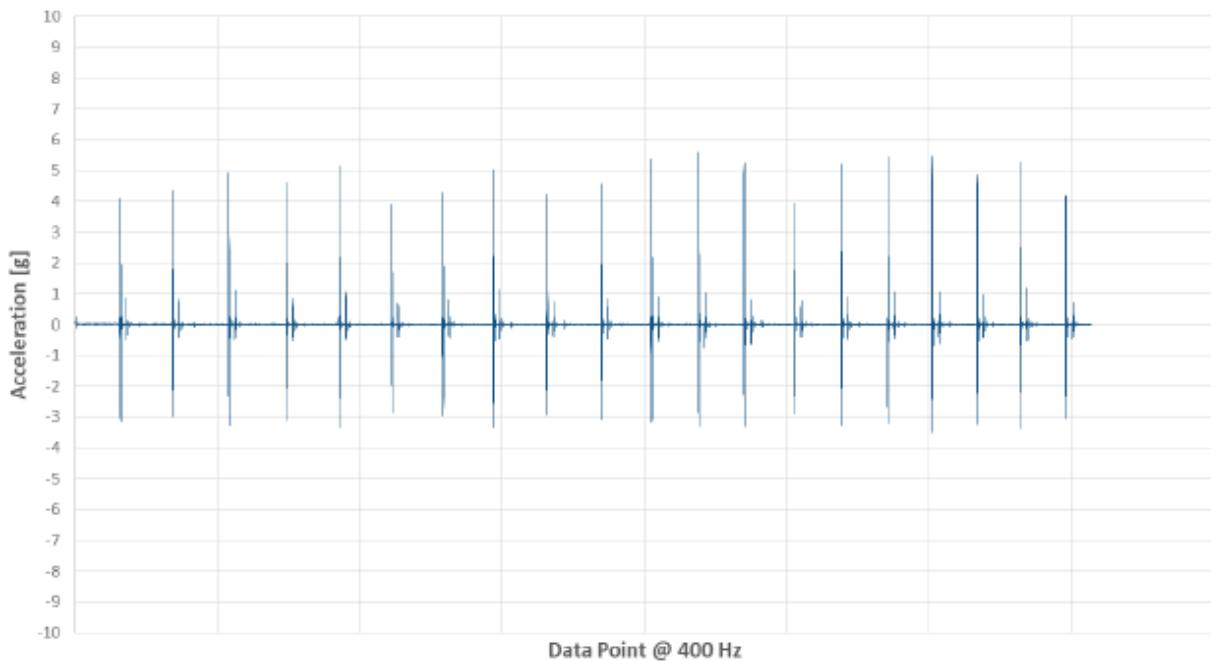


TEST 3 – LOGAN & COVE

Vector Magnitude Acceleration - Logan & Cove

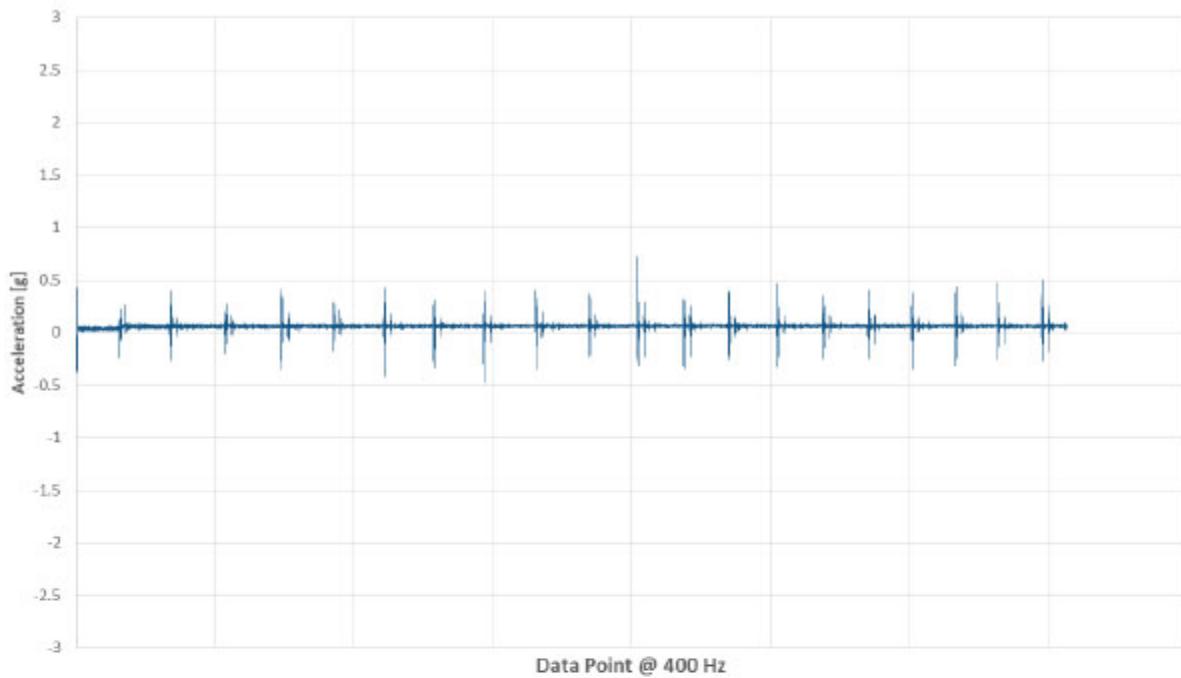


X Acceleration (Side to Side) - Logan & Cove

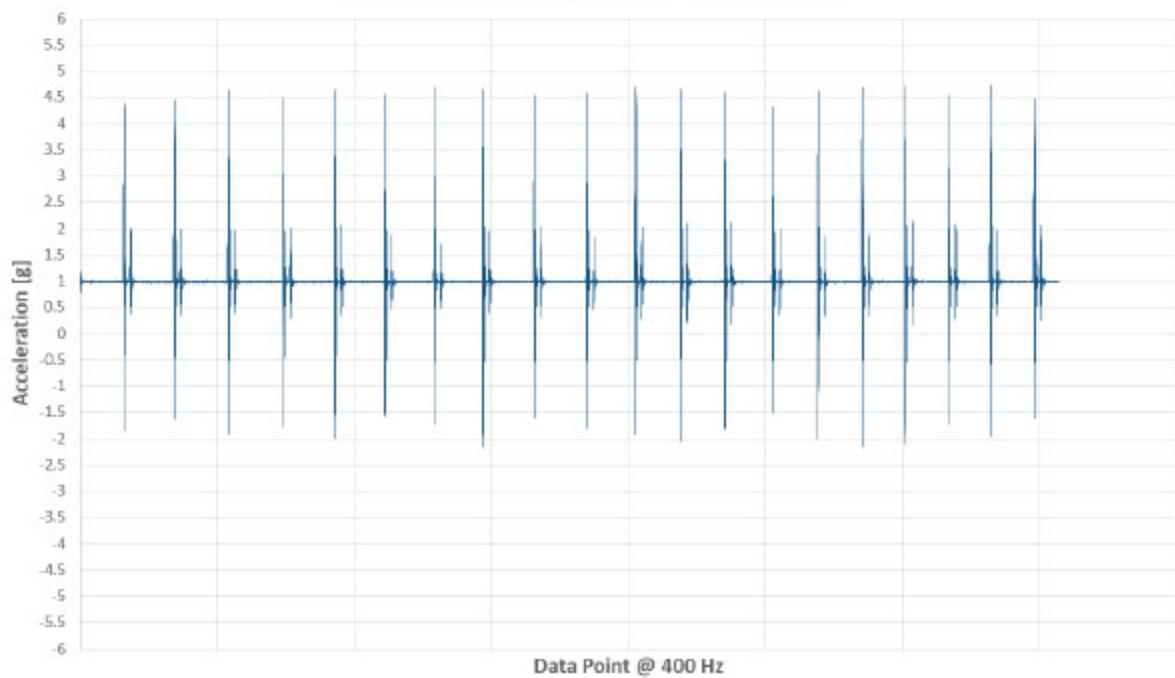




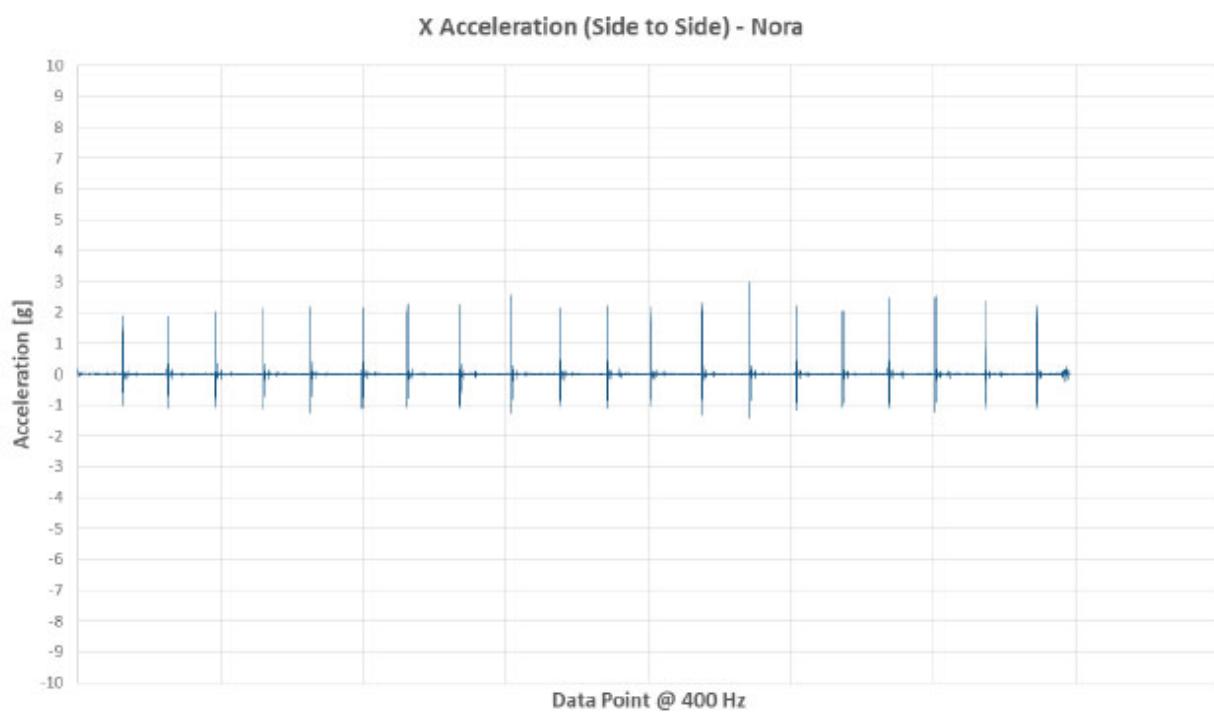
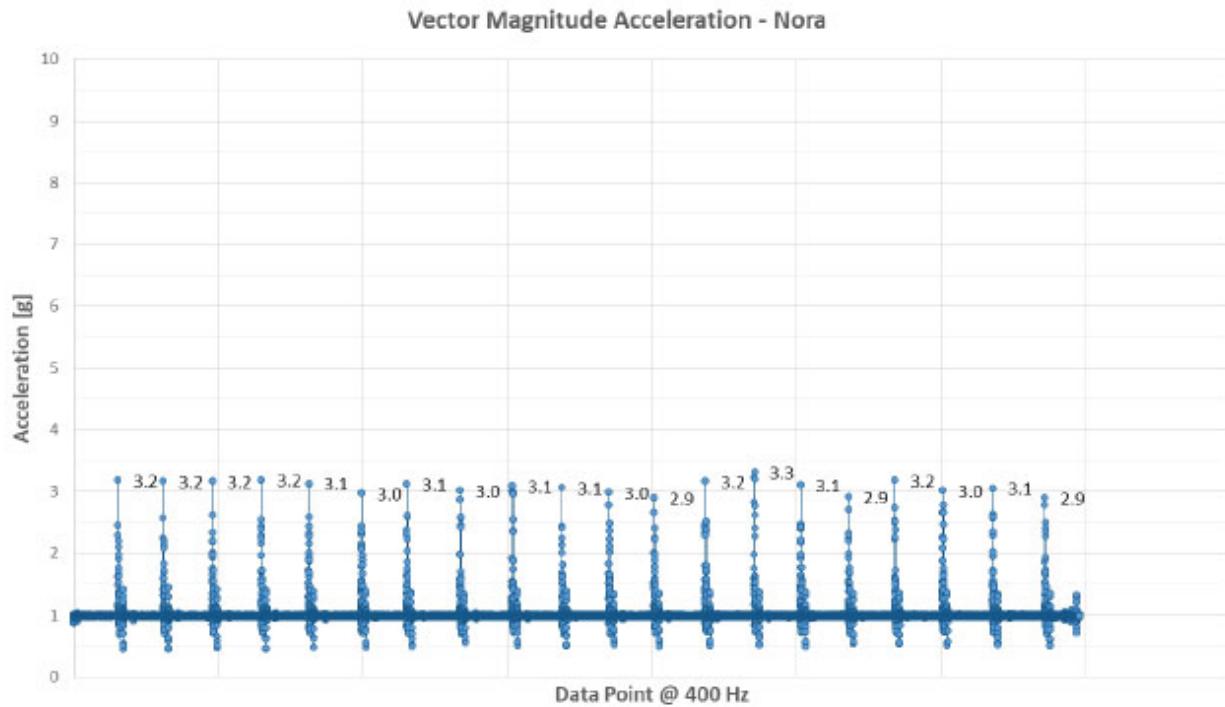
Y Acceleration (Head to Toe) - Logan & Cove



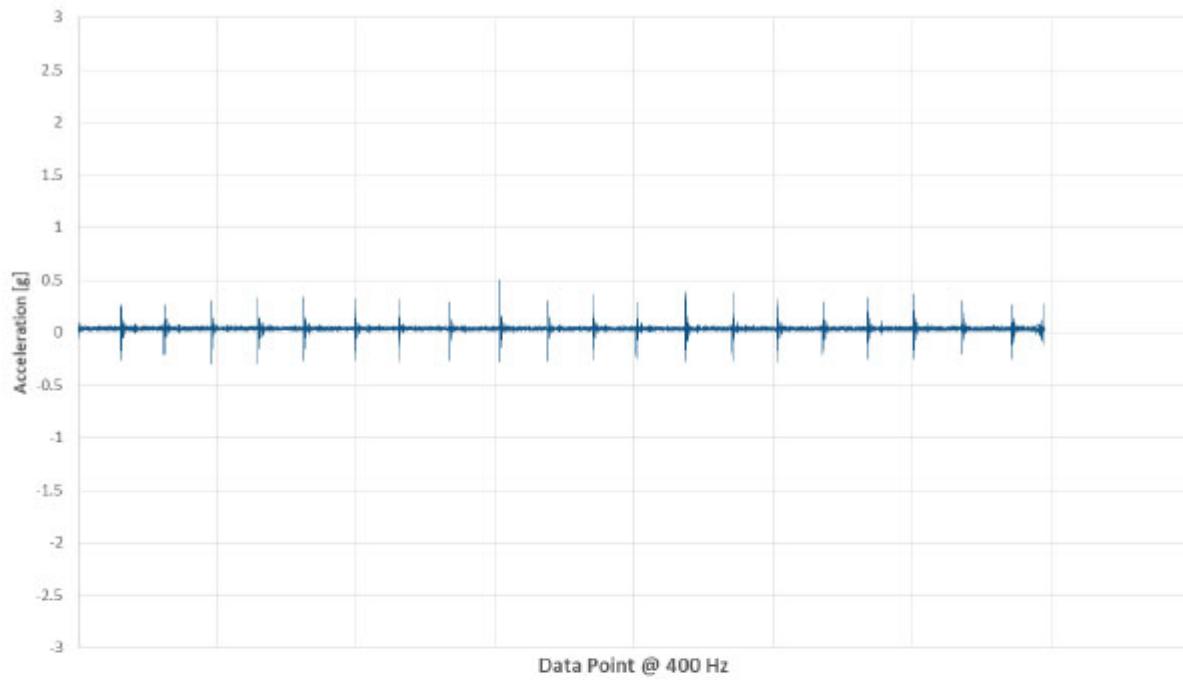
Z Acceleration (Up and Down) - Logan & Cove



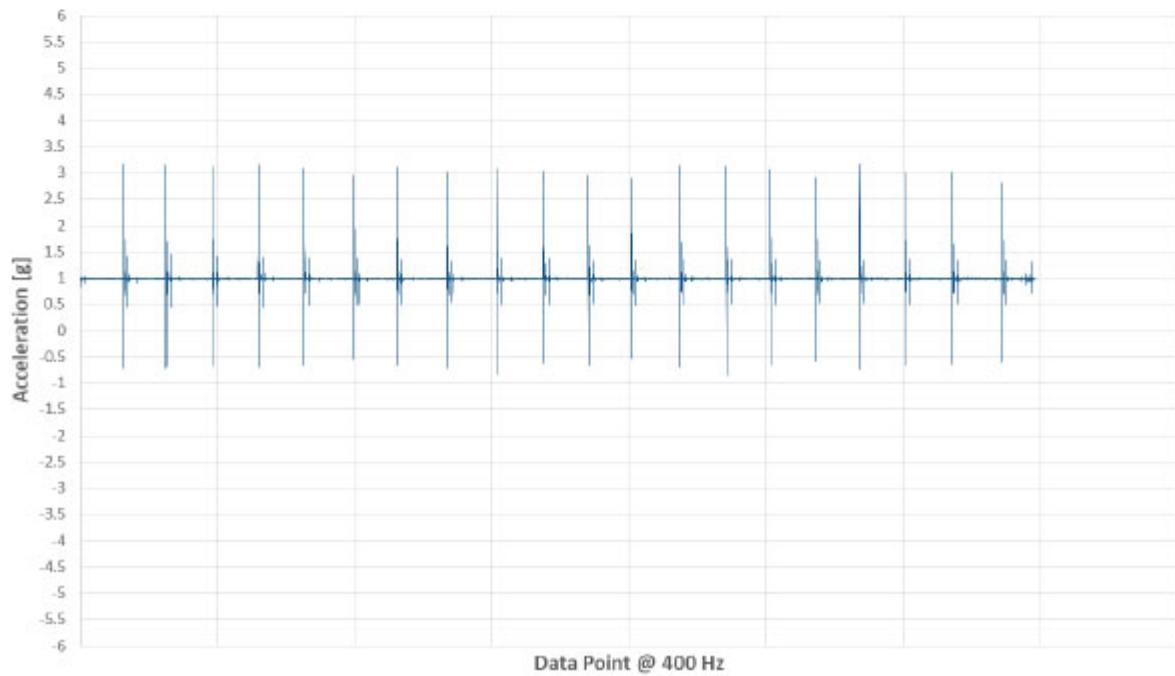
TEST 3 – NORA



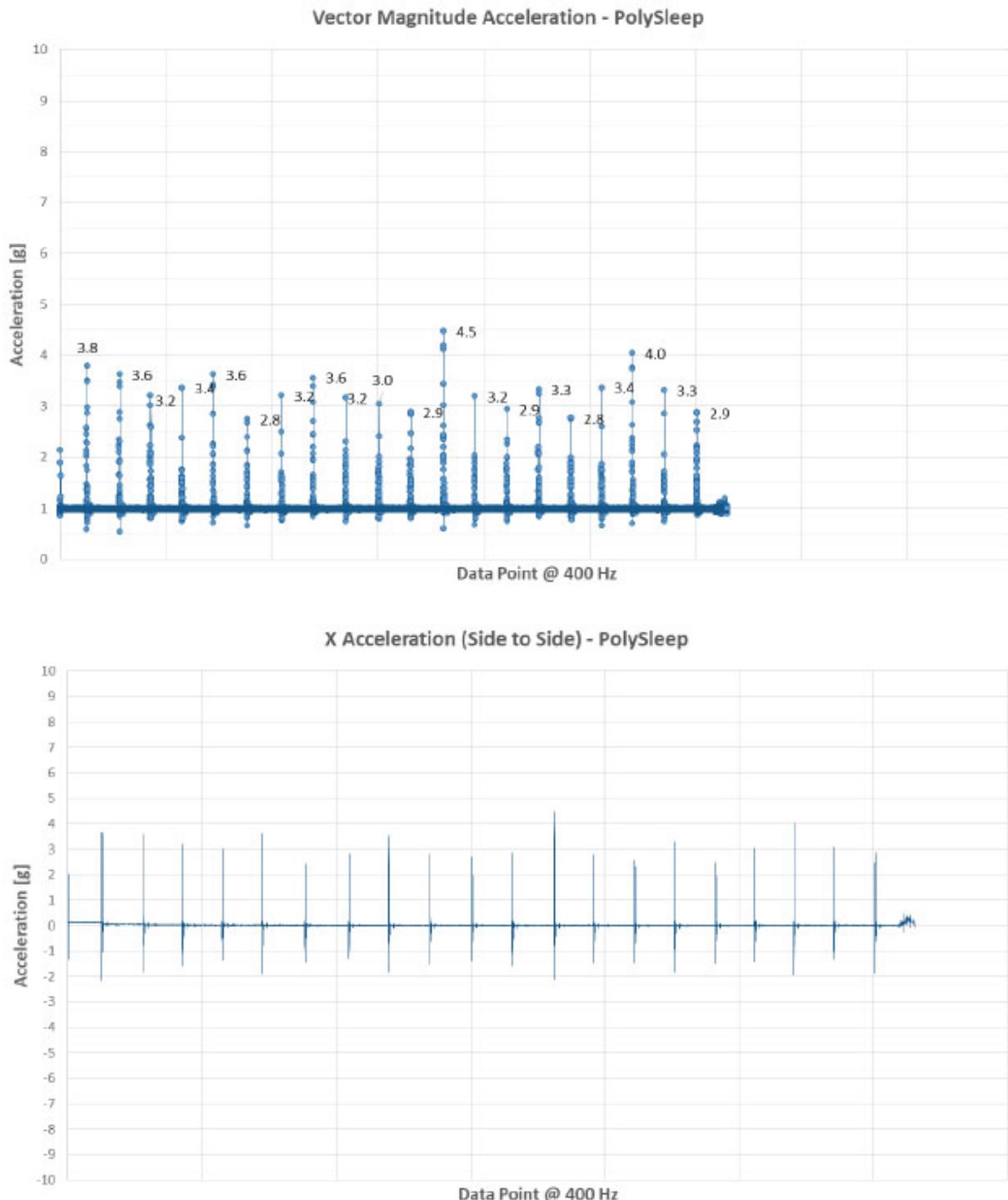
Y Acceleration (Head to Toe) - Nora



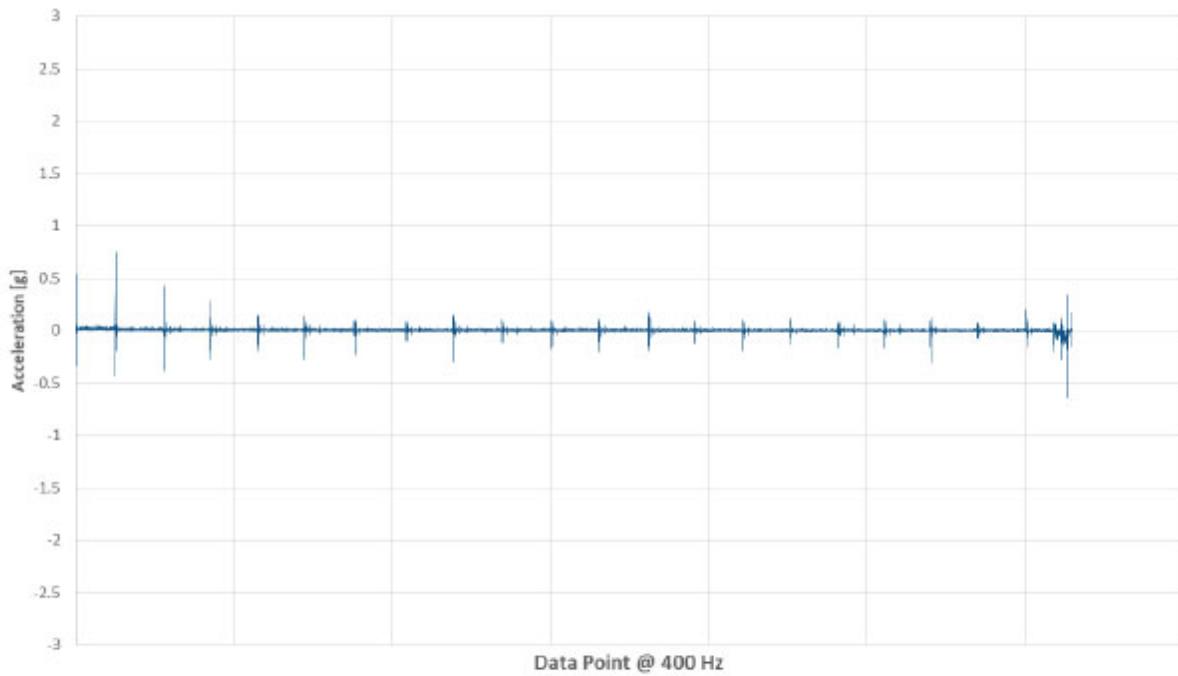
Z Acceleration (Up and Down) - Nora



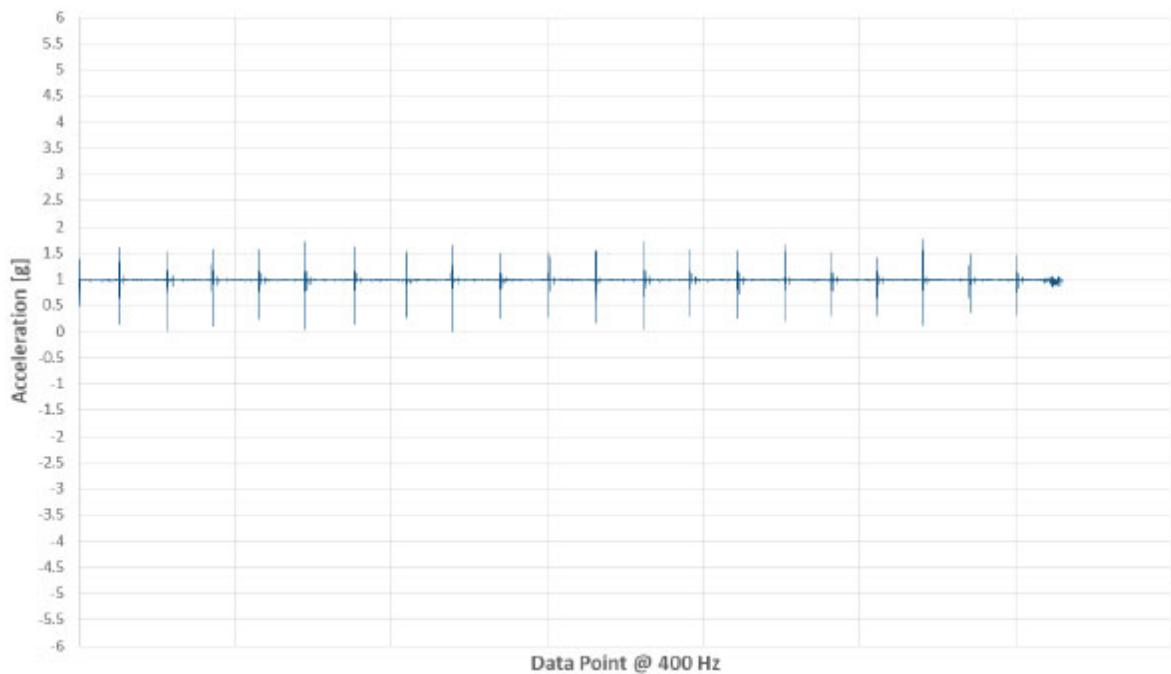
TEST 3 – POLYSLEEP



Y Acceleration (Head to Toe) - PolySleep

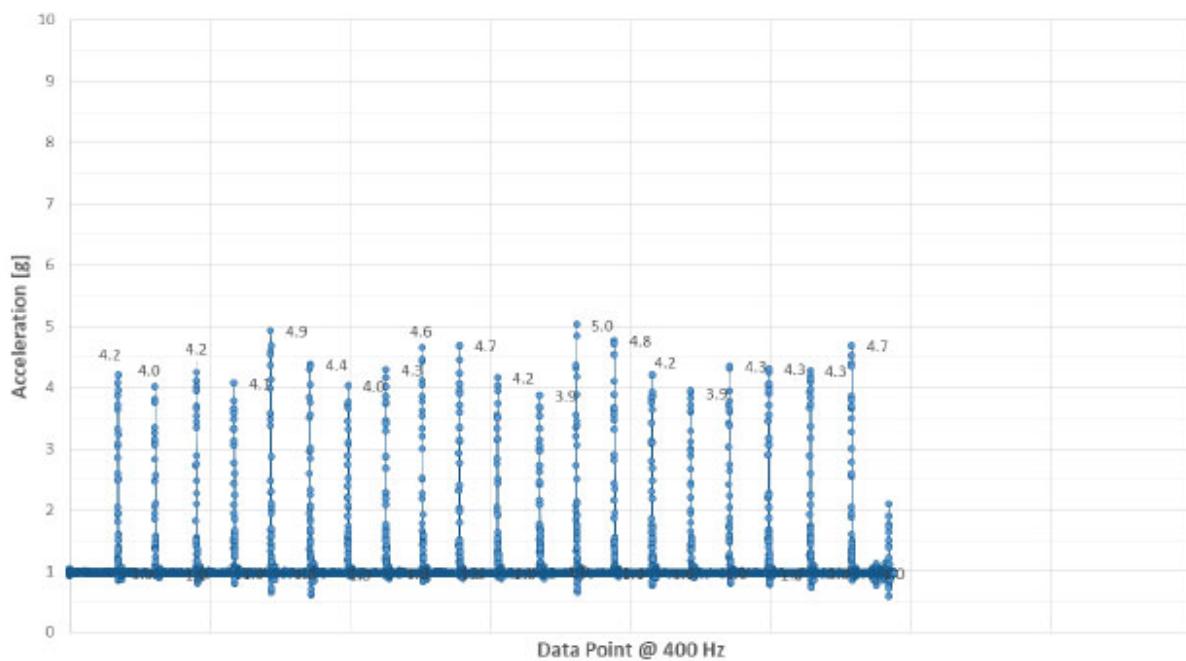


Z Acceleration (Up and Down) - PolySleep

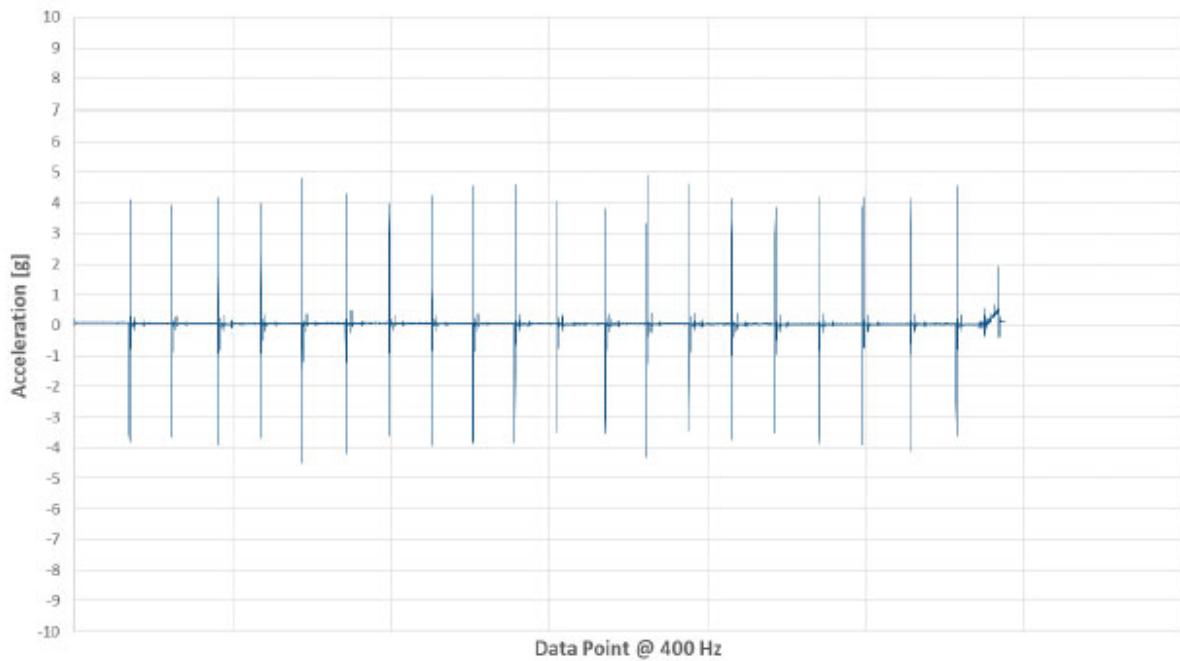


TEST 3 – iCOMFORT

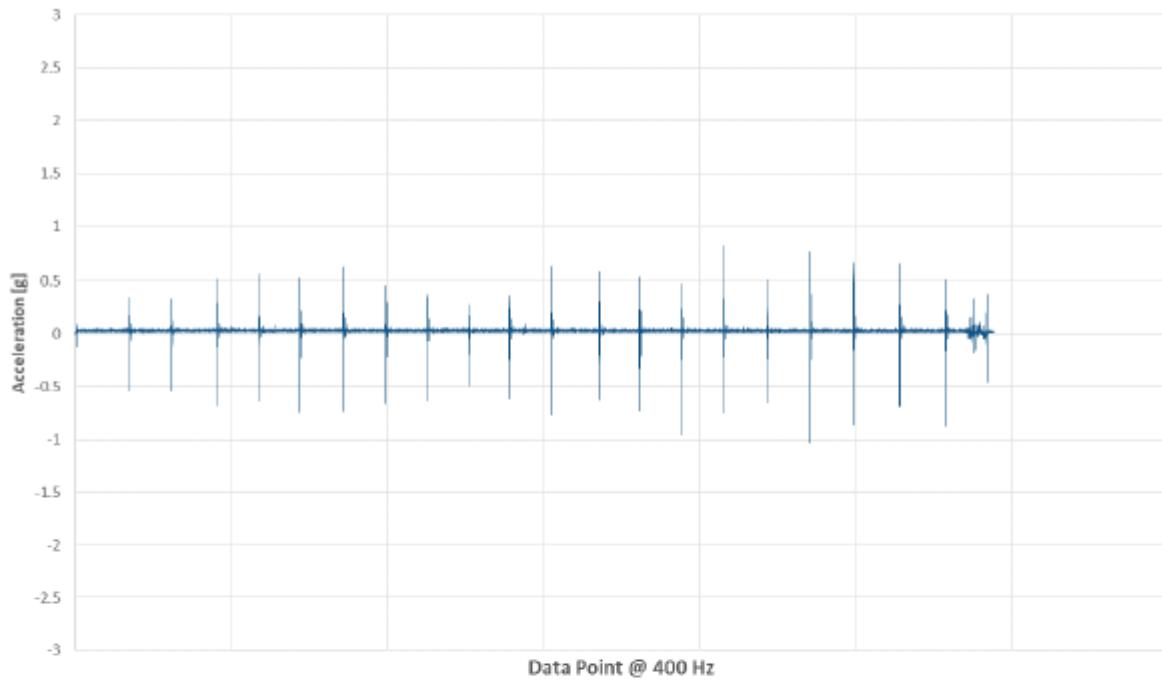
Vector Magnitude Acceleration - iComfort



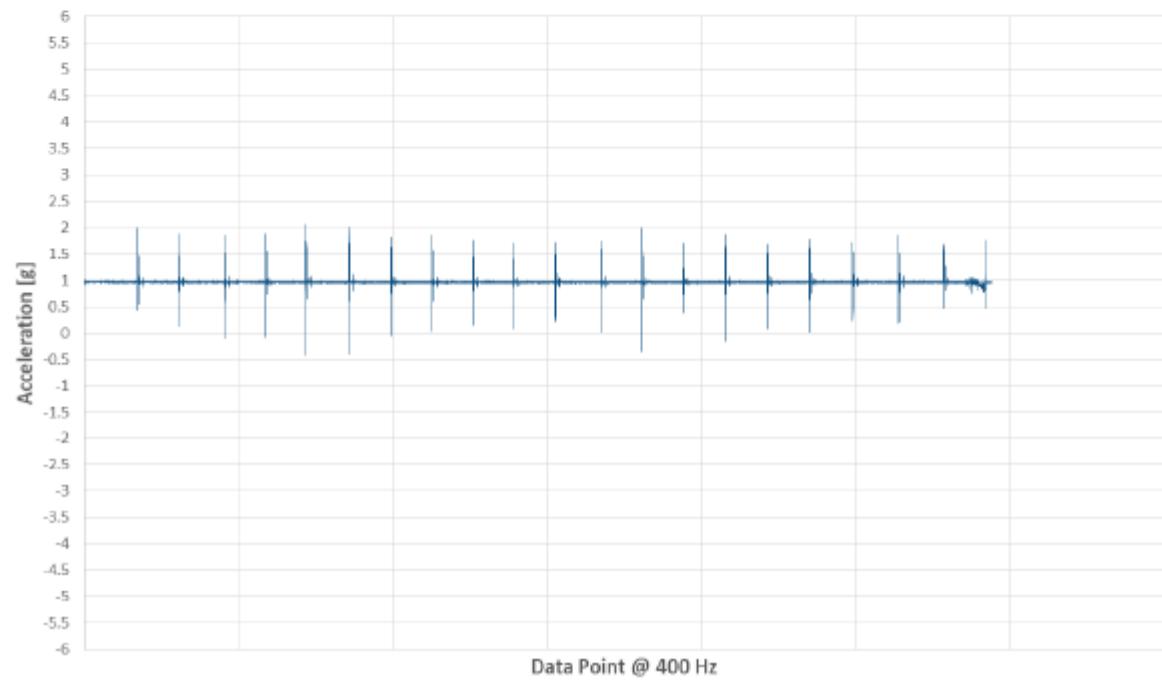
X Acceleration (Side to Side) - iComfort



Y Acceleration (Head to Toe) - iComfort



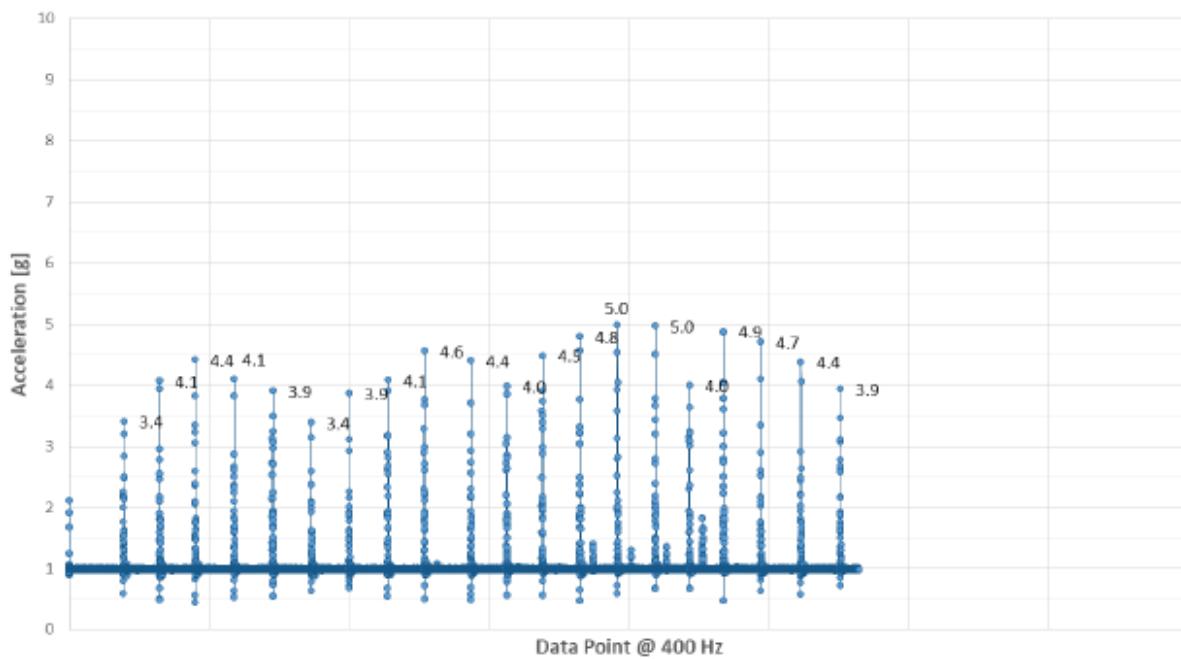
Z Acceleration (Up and Down) - iComfort



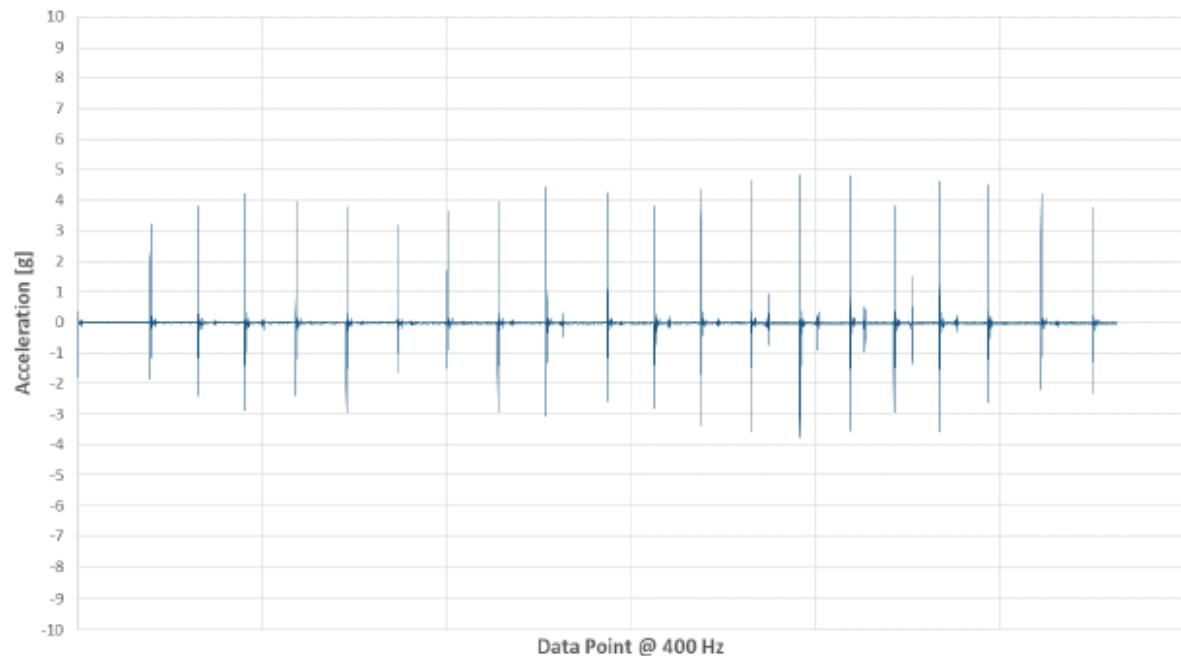


TEST 3 – TEMPUR-PEDIC

Vector Magnitude Acceleration - Tempur-Pedic

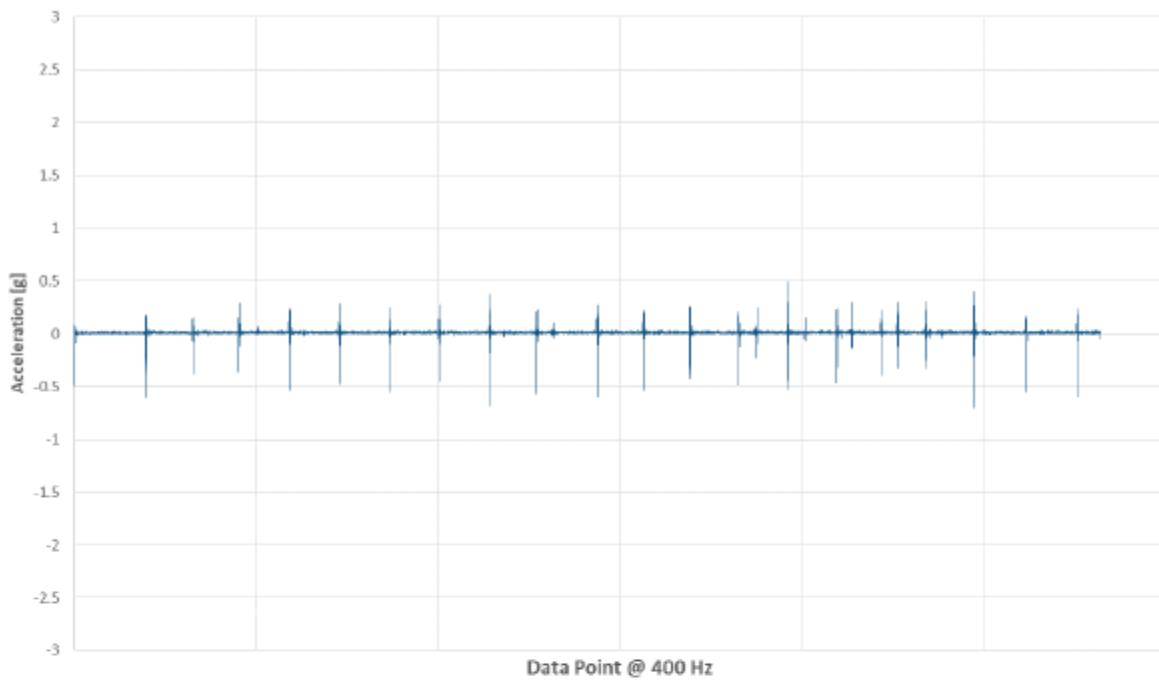


X Acceleration (Side to Side) - Tempur-Pedic

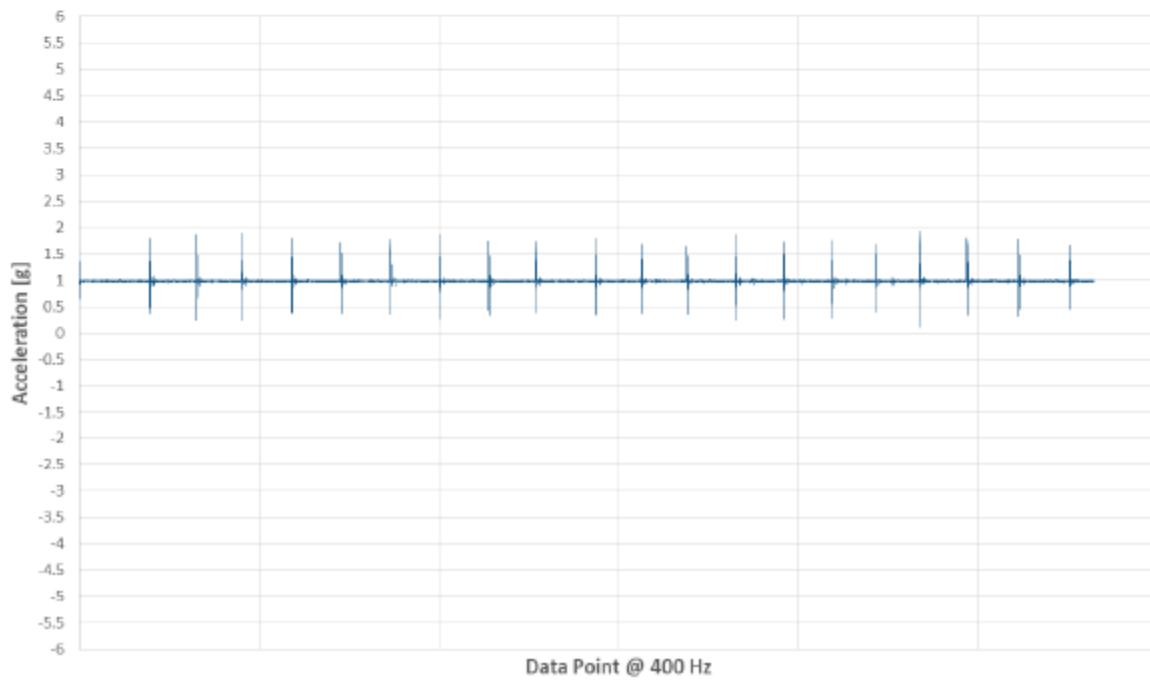




Y Acceleration (Head to Toe) - Tempur-Pedic

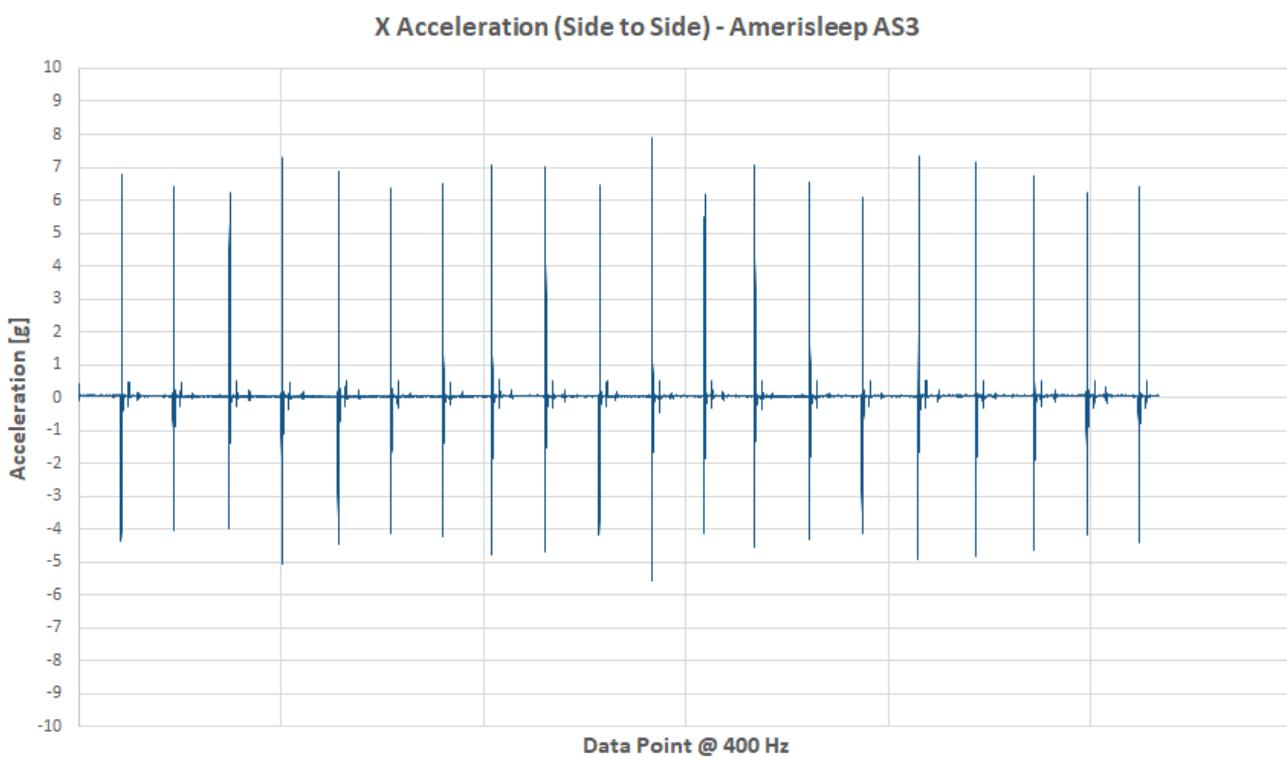
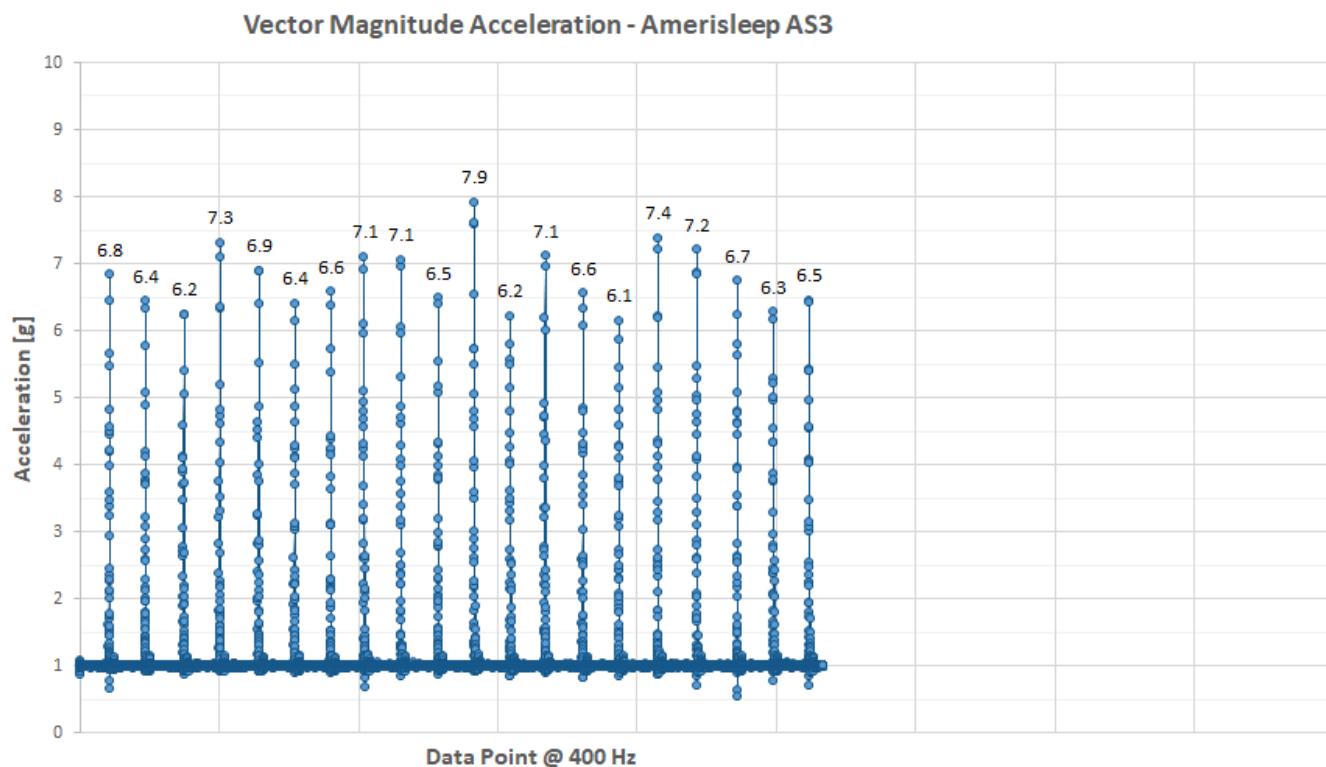


Z Acceleration (Up and Down) - Tempur-Pedic



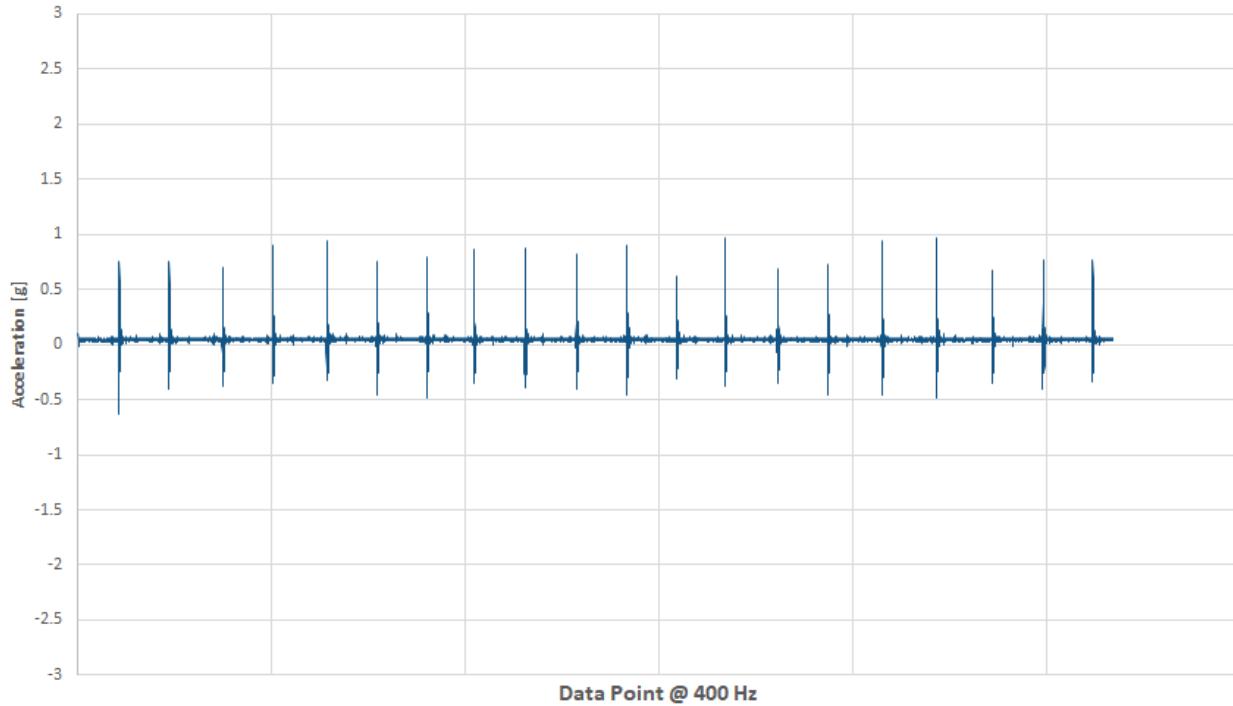


TEST 3 – AMERISLEEP AS3

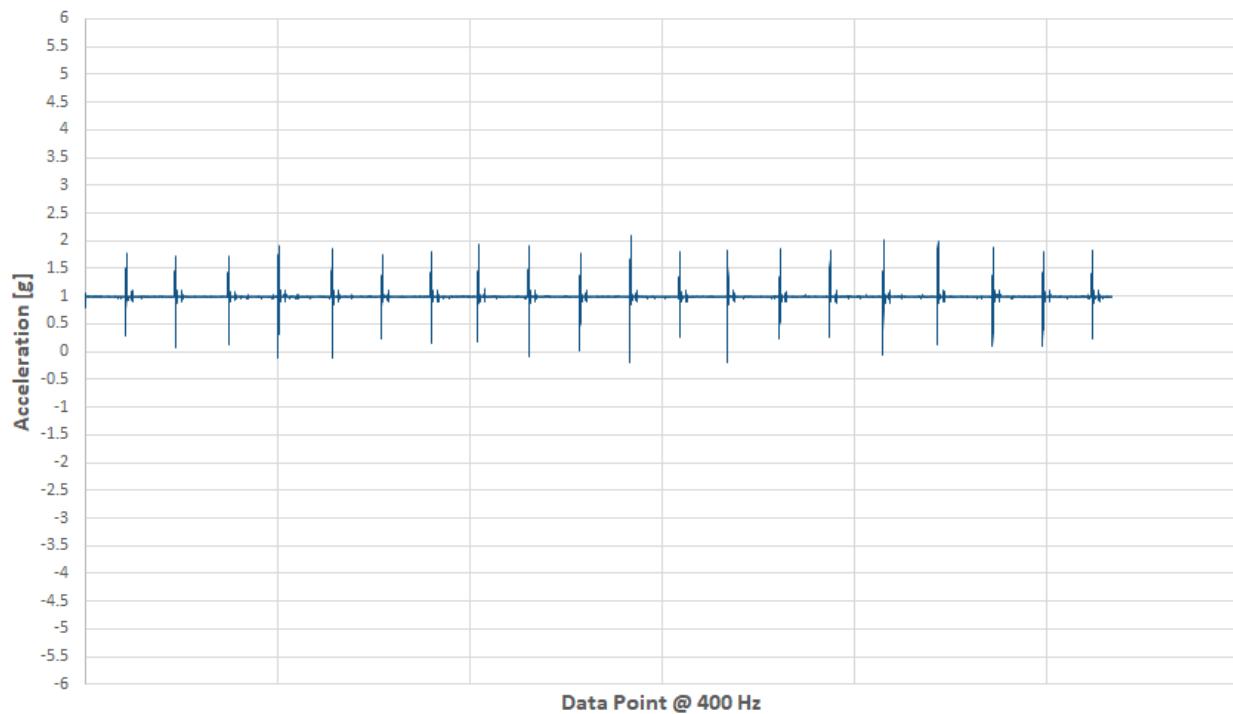




Y Acceleration (Head to Toe) - Amerisleep AS3

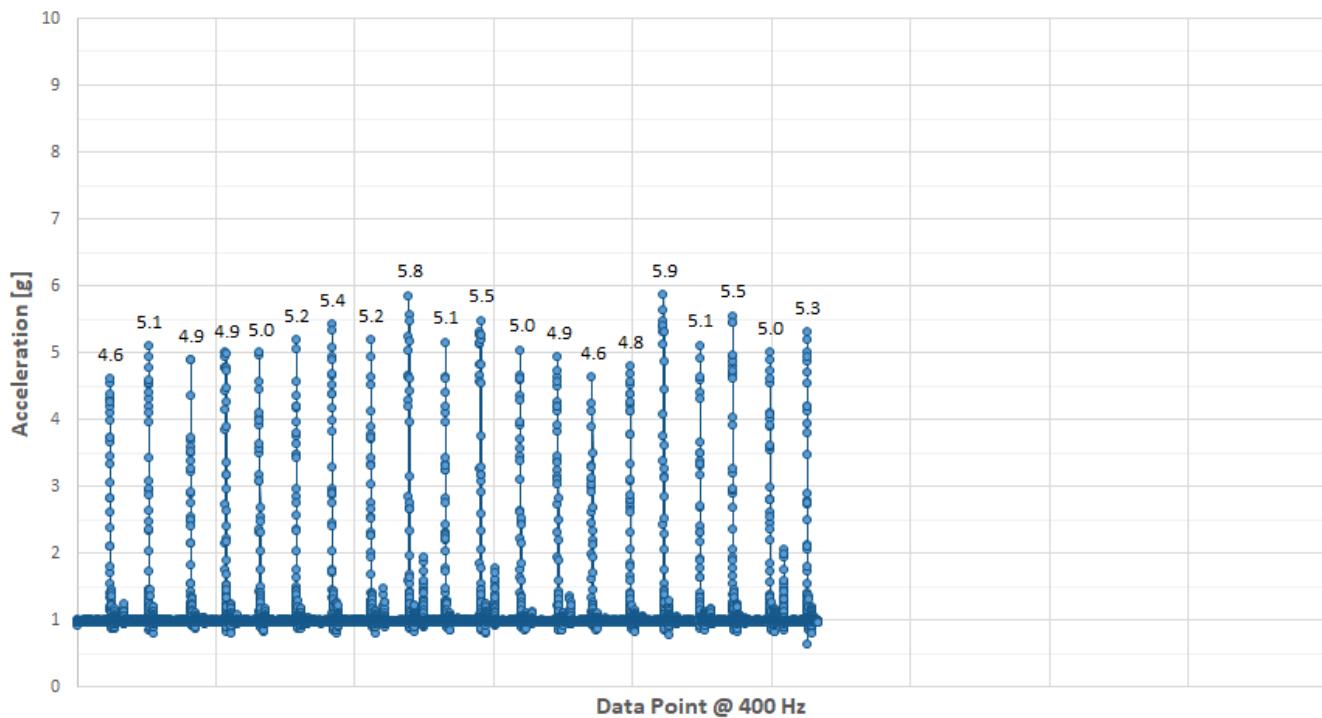


Z Acceleration (Up and Down) - Amerisleep AS3

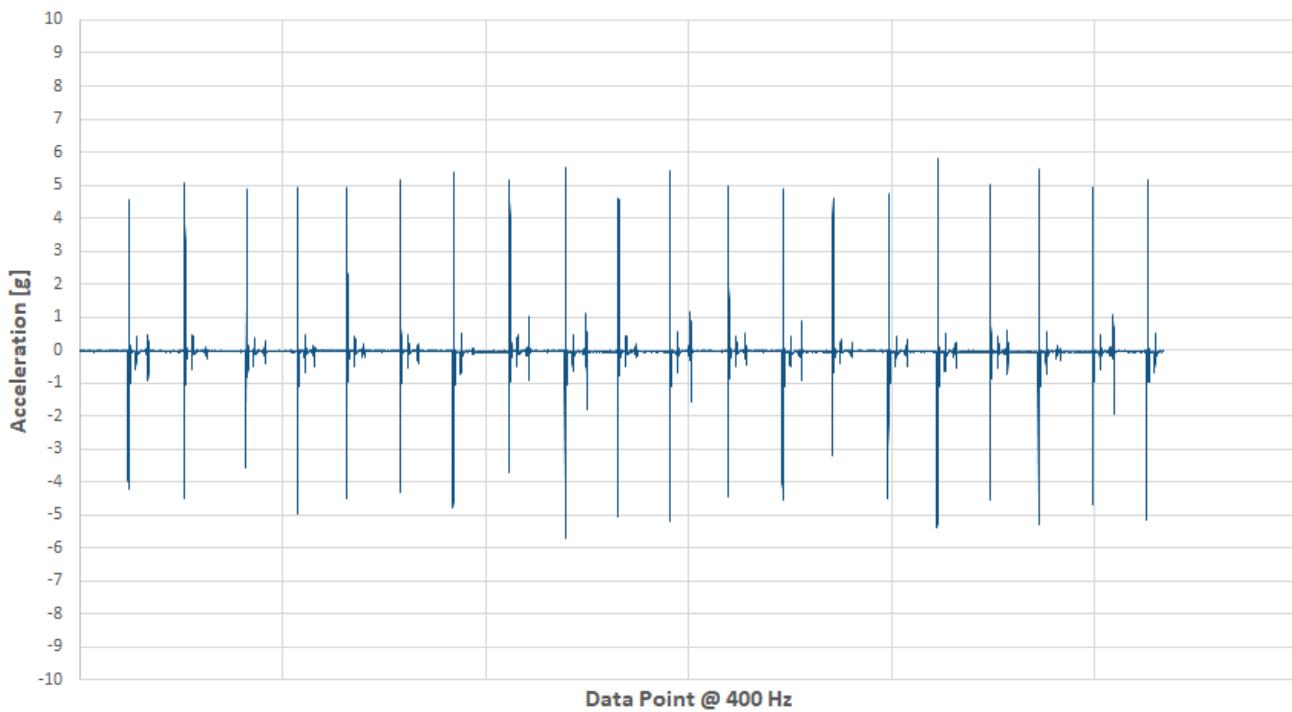


TEST 3 – BEAR

Vector Magnitude Acceleration - Bear

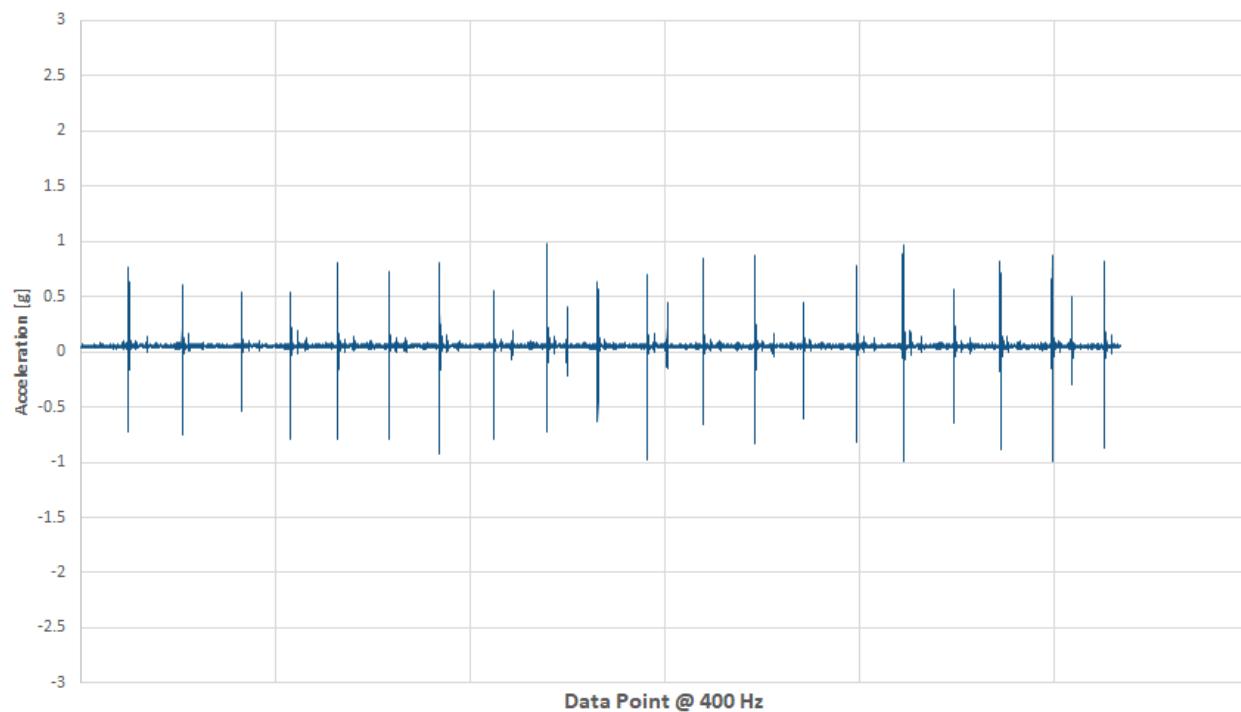


X Acceleration (Side to Side) - Bear

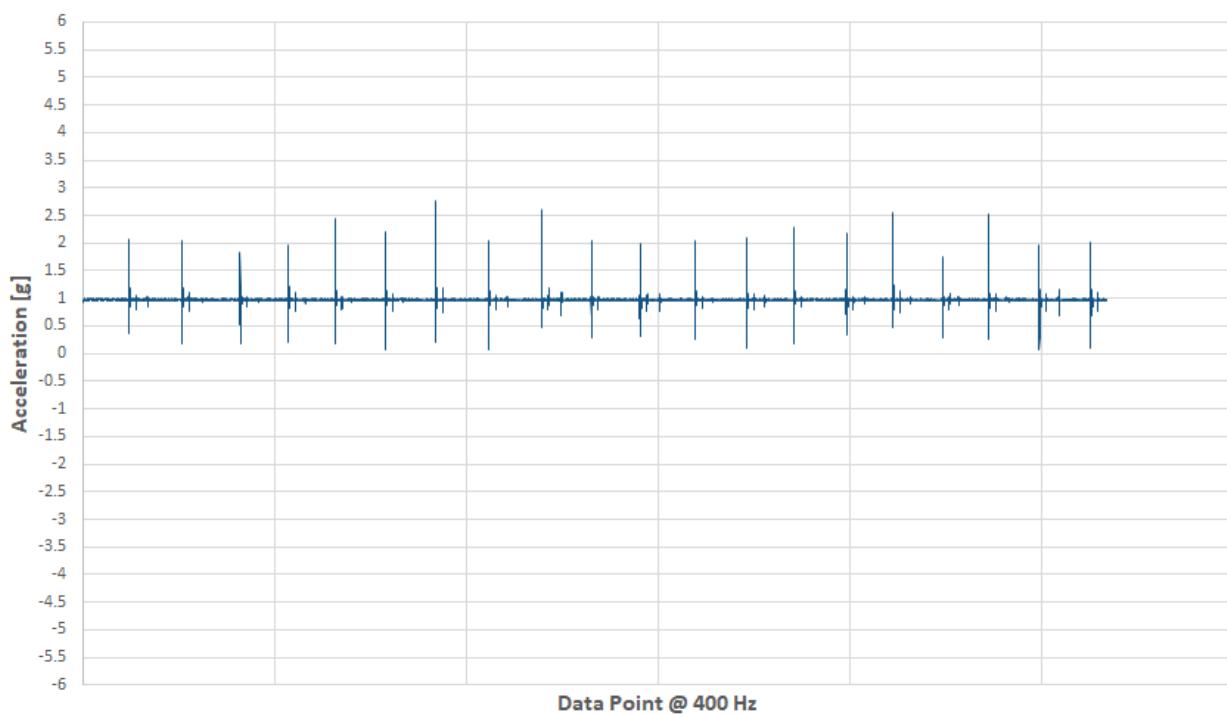




Y Acceleration (Head to Toe) - Bear



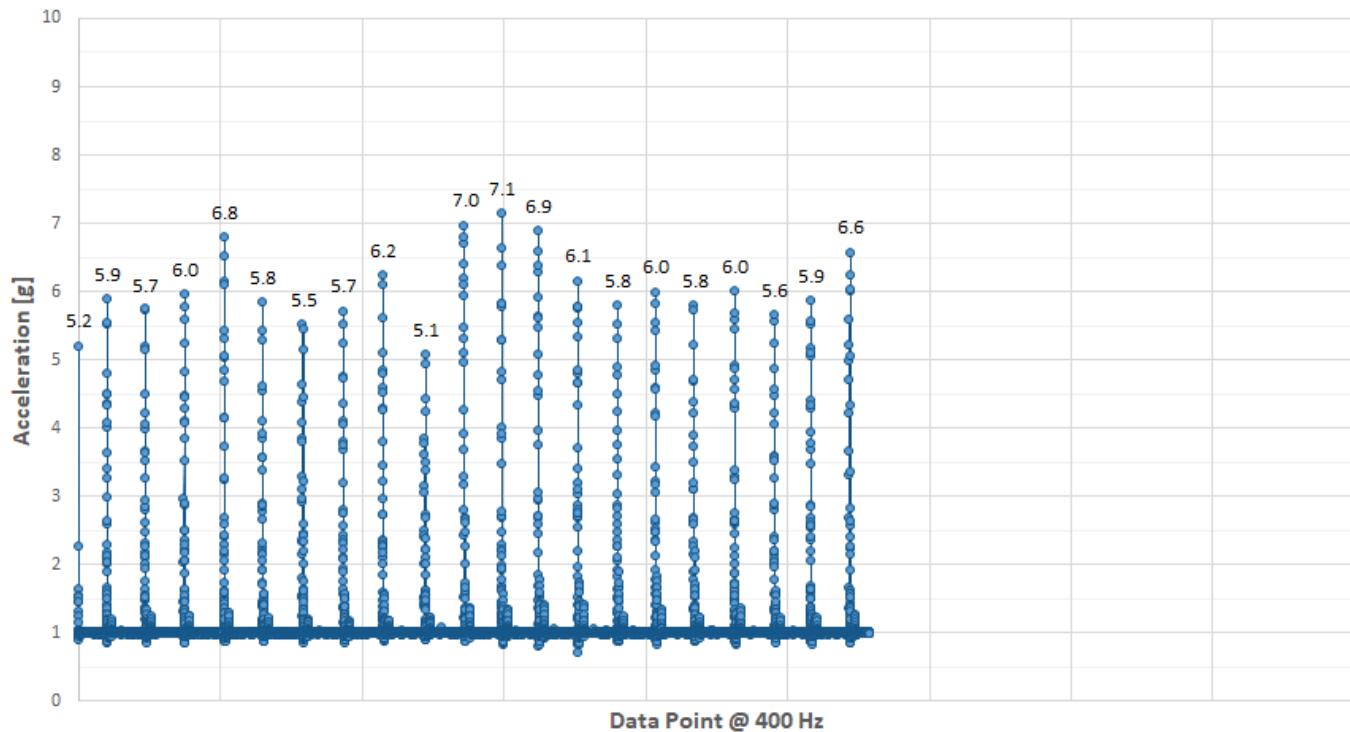
Z Acceleration (Up and Down) - Bear



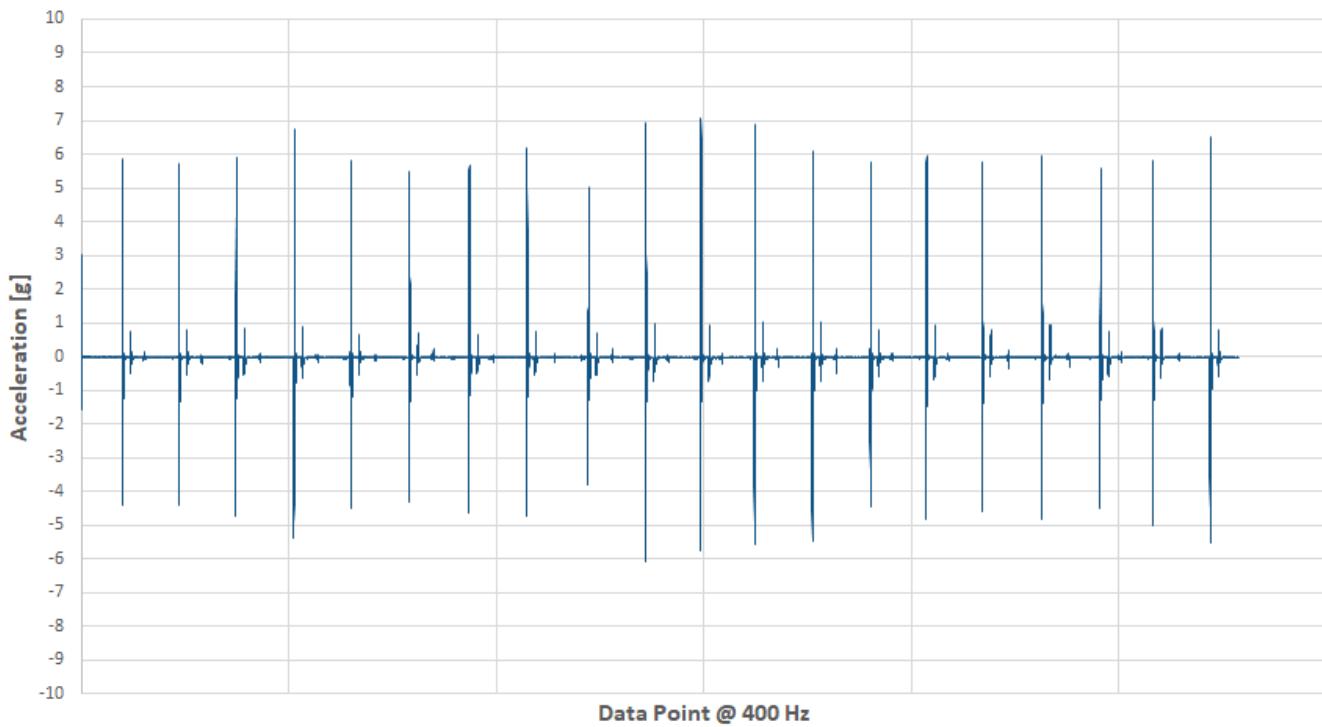


TEST 3 – CASPER (V2)

Vector Magnitude Acceleration - Casper (V2)

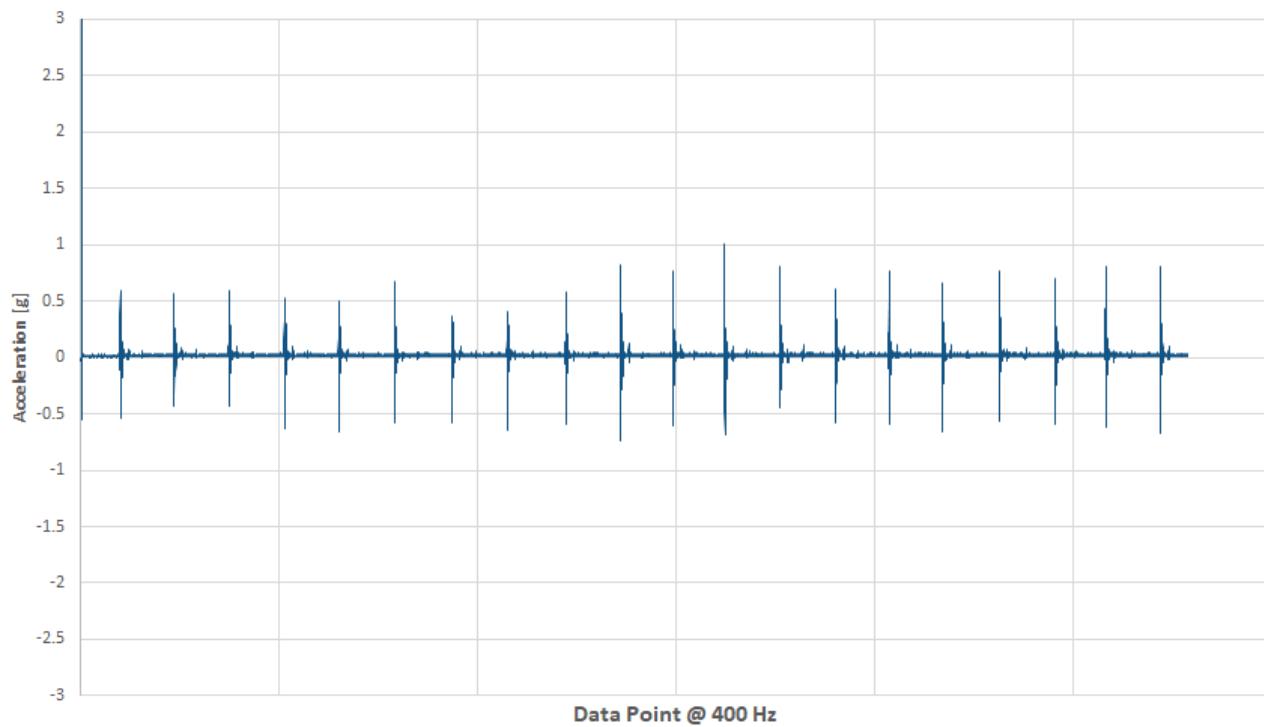


X Acceleration (Side to Side) - Casper (V2)

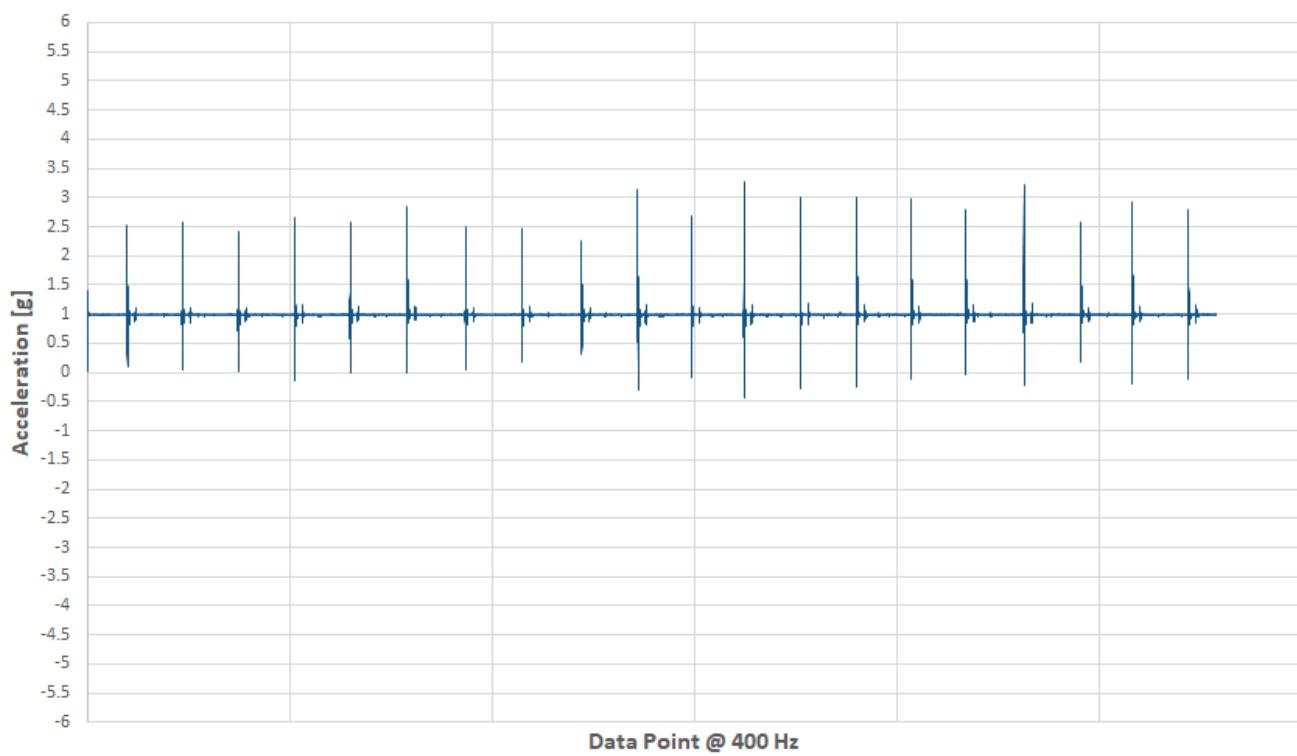




Y Acceleration (Head to Toe) - Casper (V2)



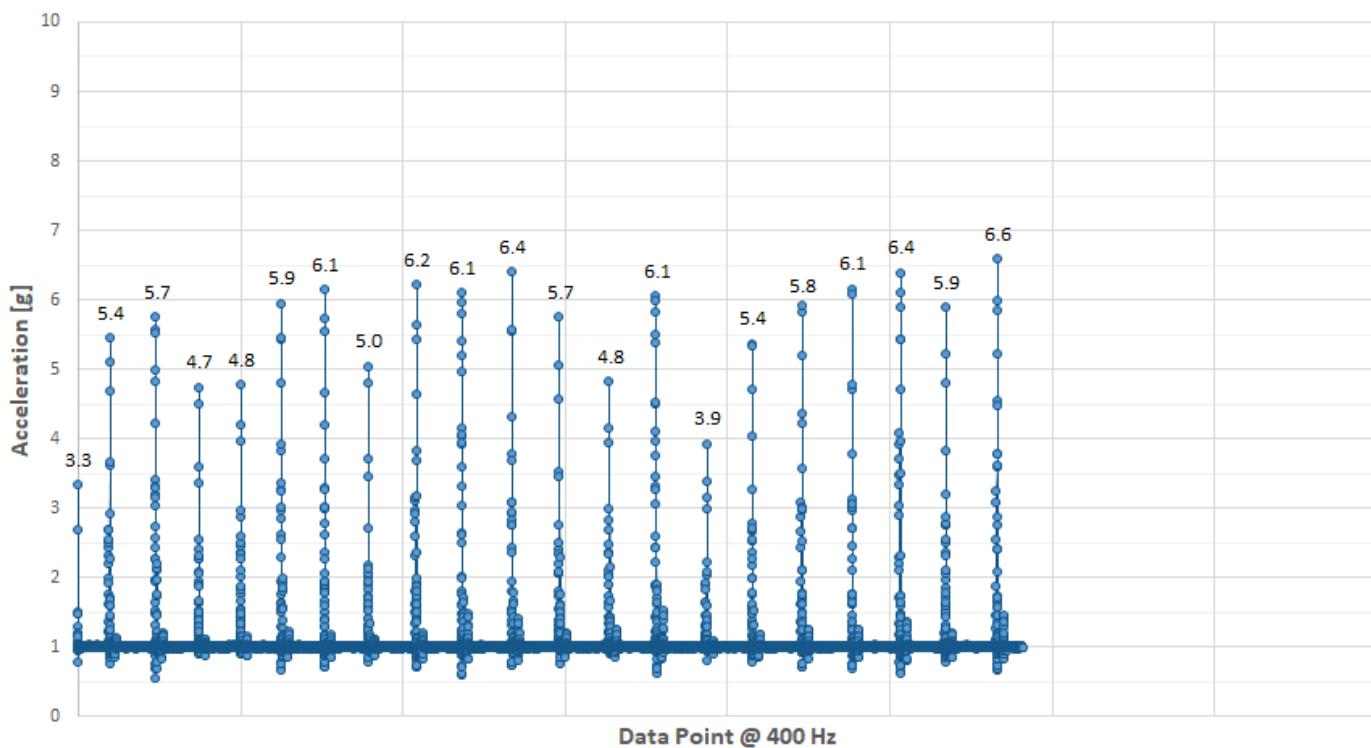
Z Acceleration (Up and Down) - Casper (V2)



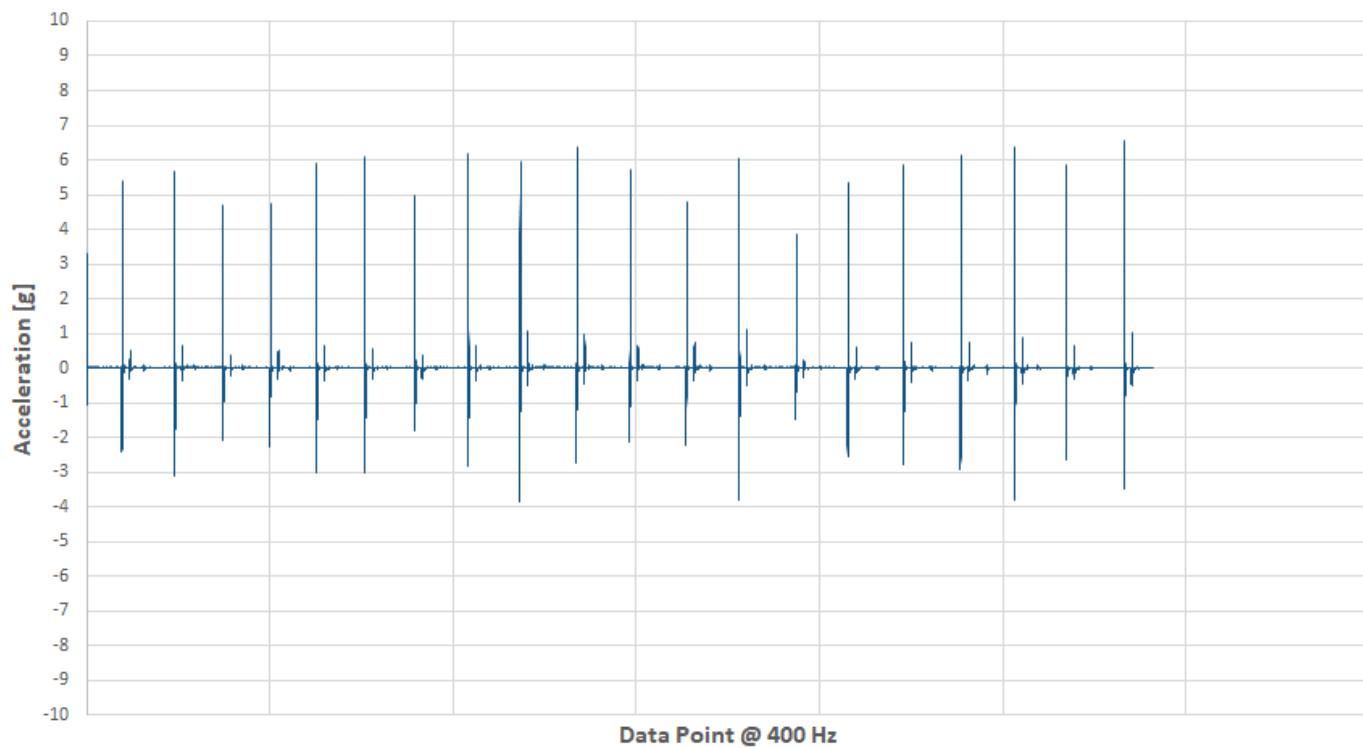


TEST 3 – ENDY (V2)

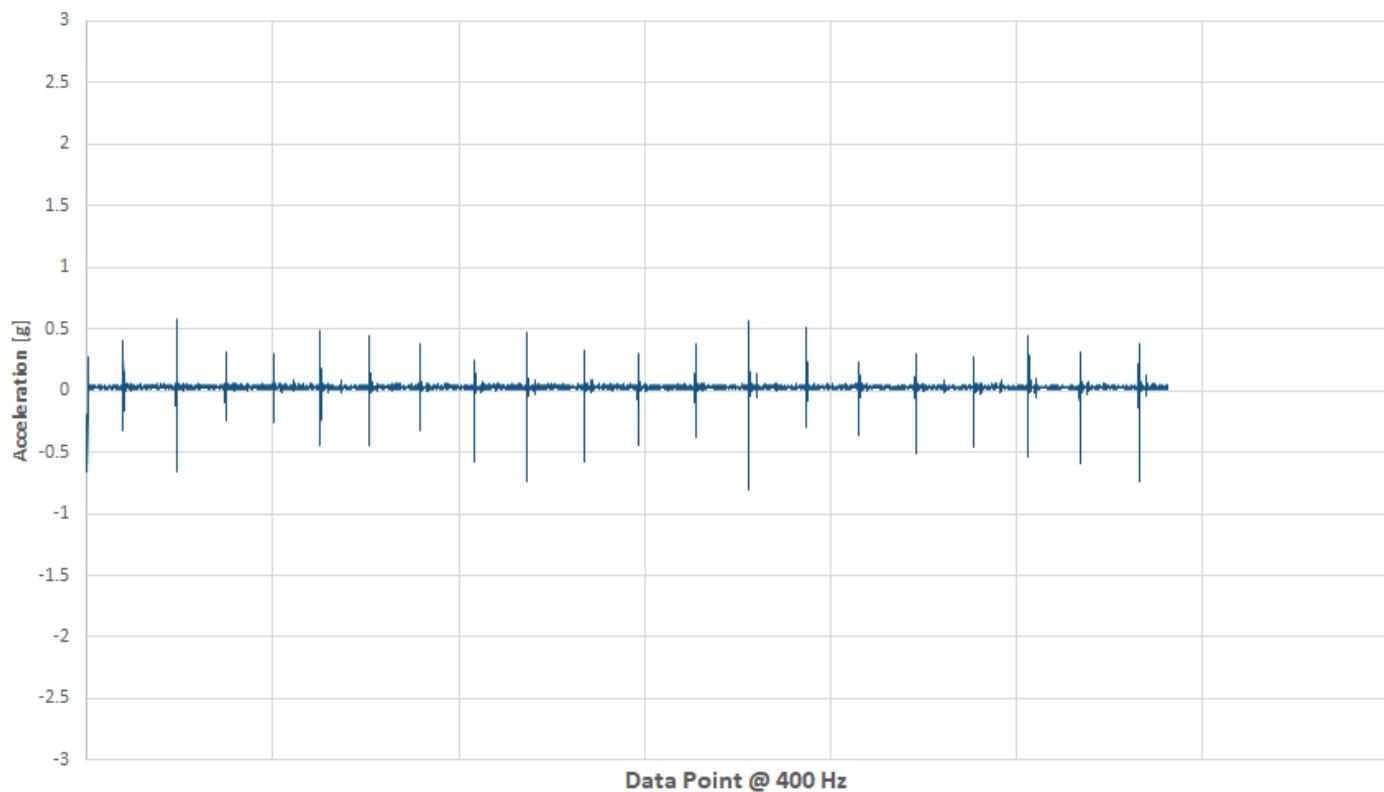
Vector Magnitude Acceleration - Endy (V2)



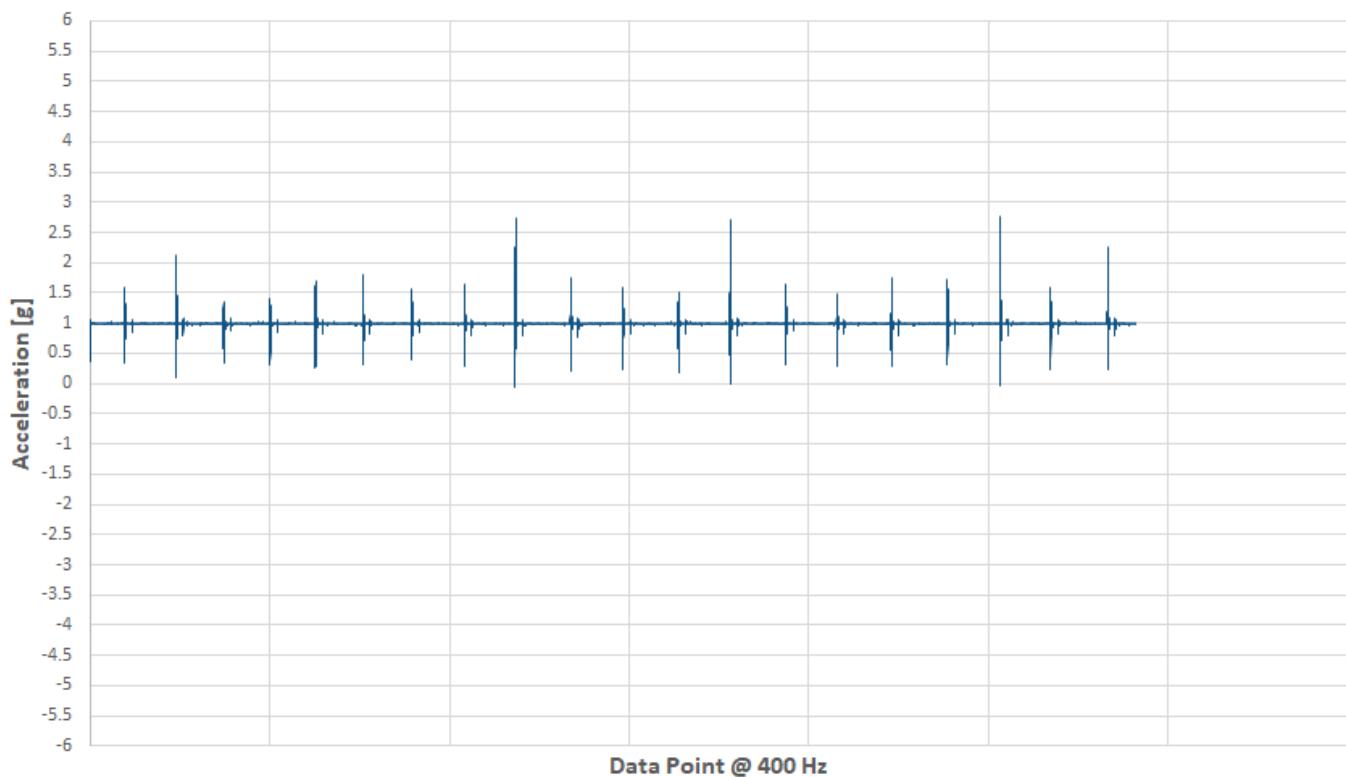
X Acceleration (Side to Side) - Endy (V2)



Y Acceleration (Head to Toe) - Endy (V2)



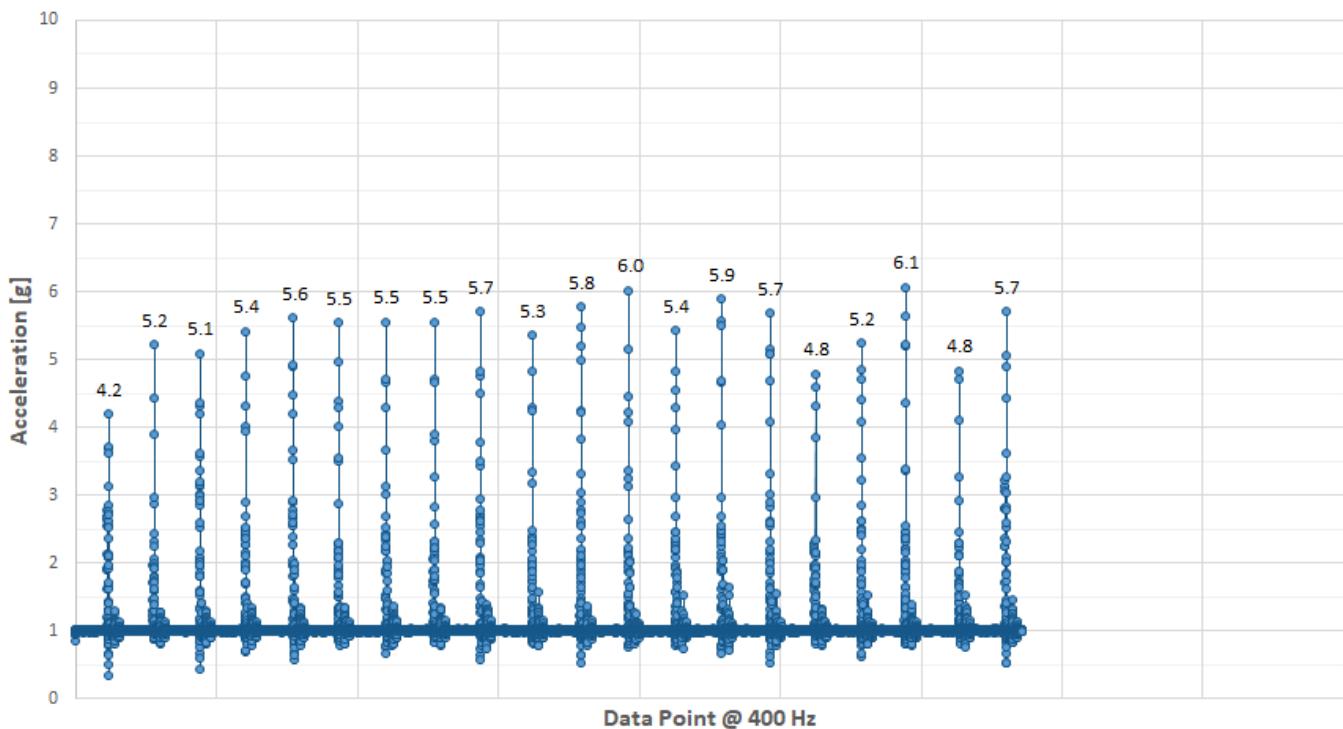
Z Acceleration (Up and Down) - Endy (V2)



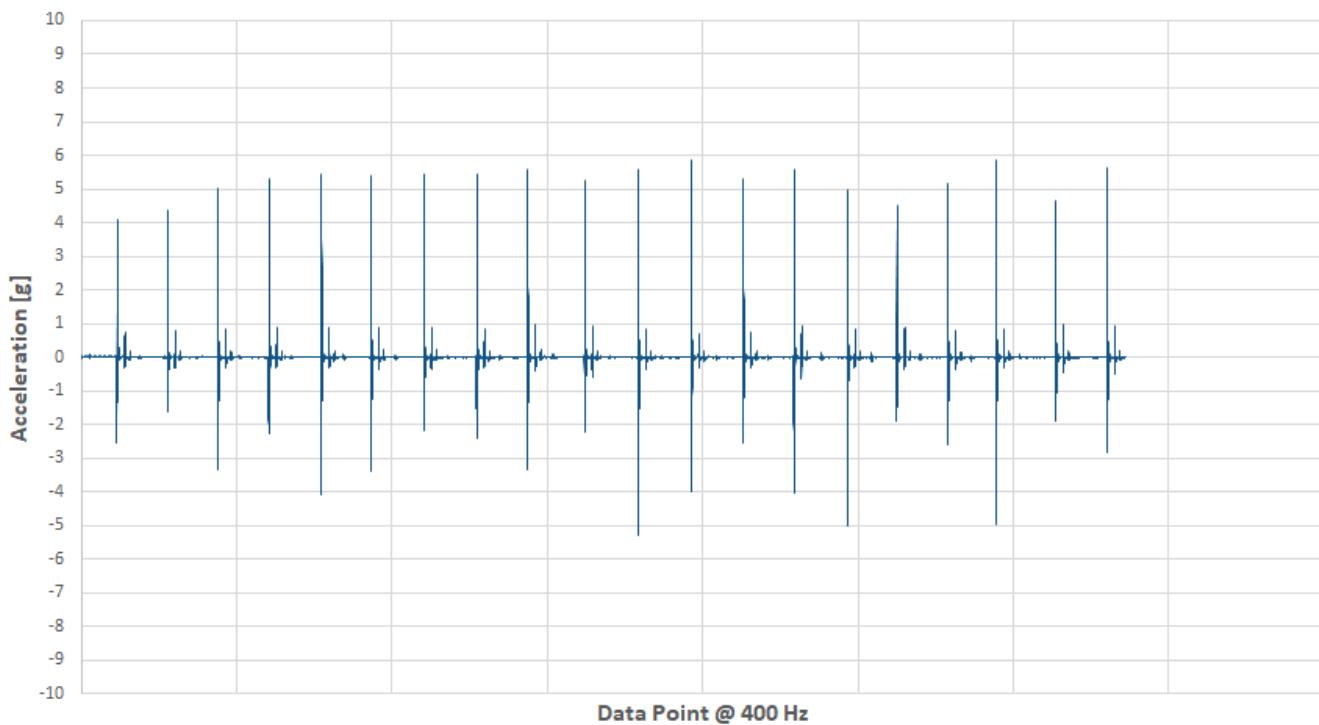


TEST 3 – HELIX

Vector Magnitude Acceleration - Helix

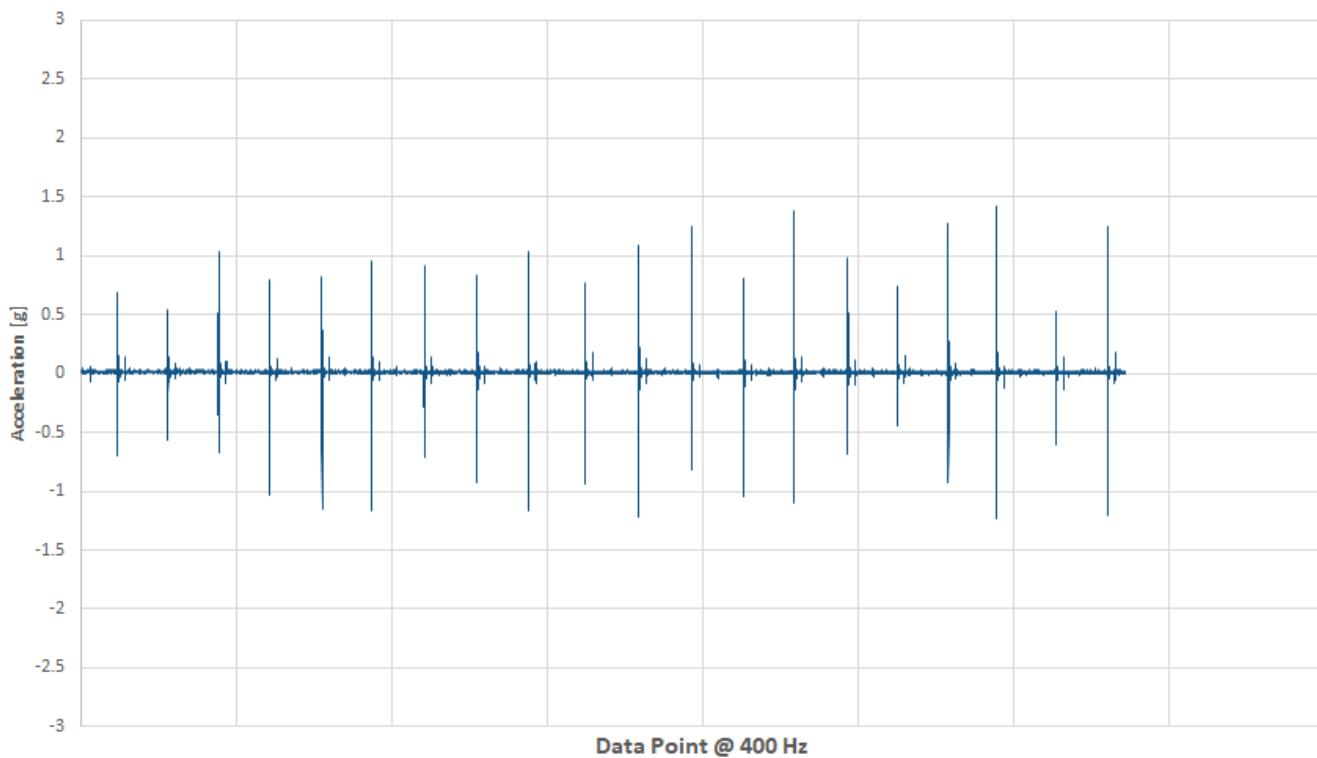


X Acceleration (Side to Side) - Helix

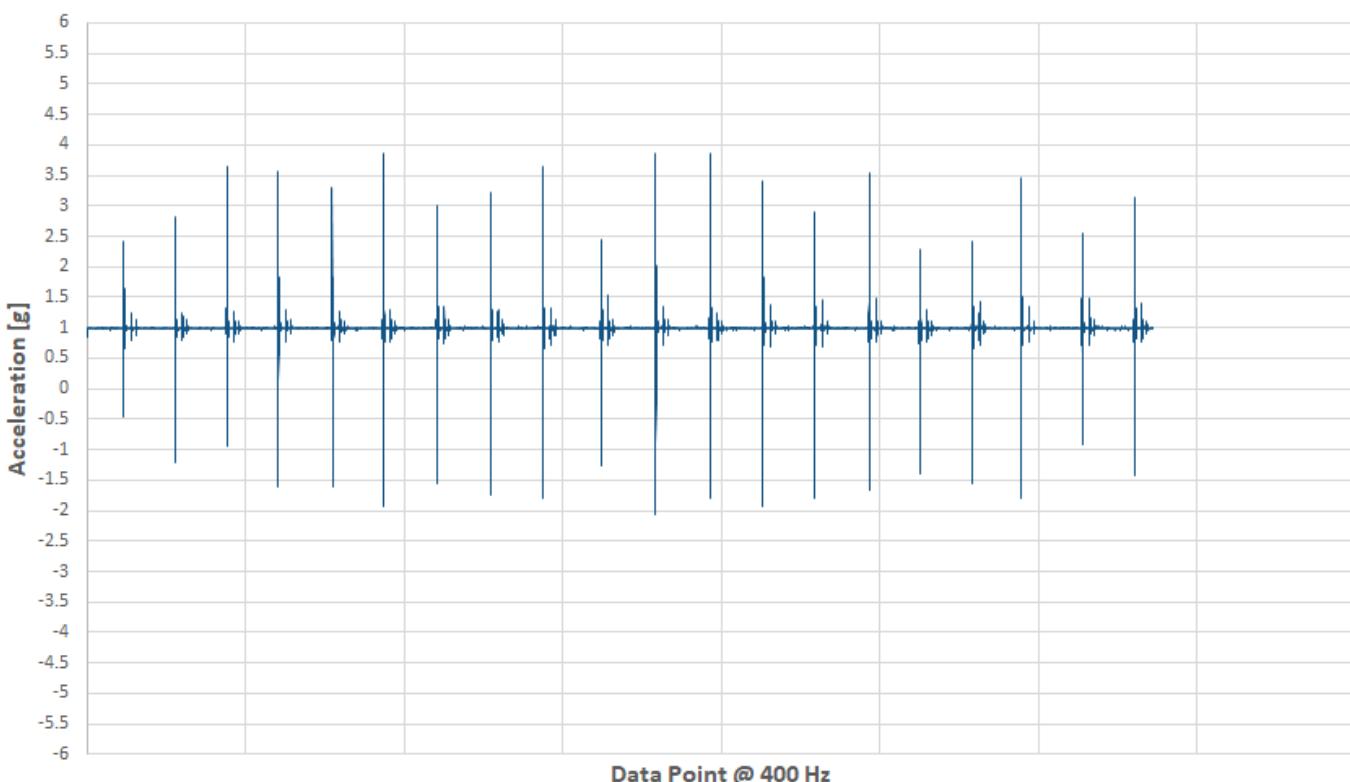




Y Acceleration (Head to Toe) - Helix



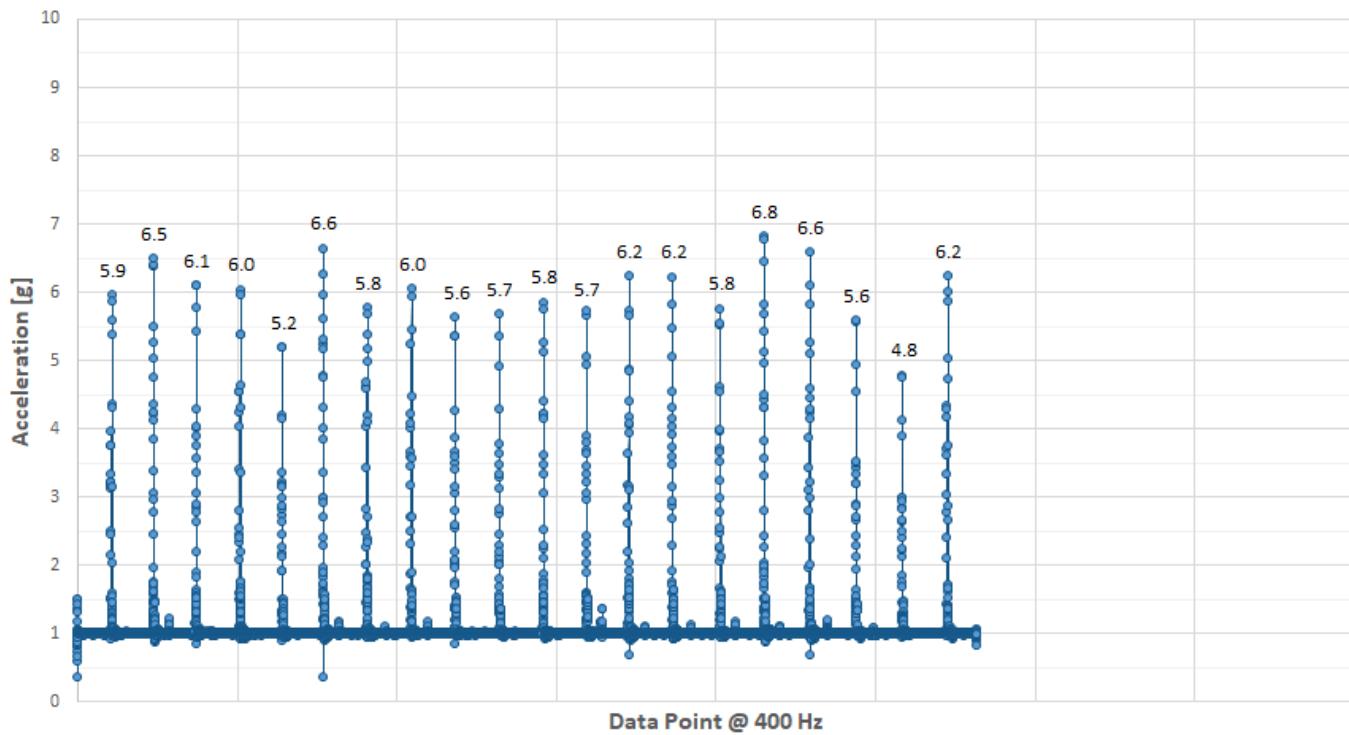
Z Acceleration (Up and Down) - Helix



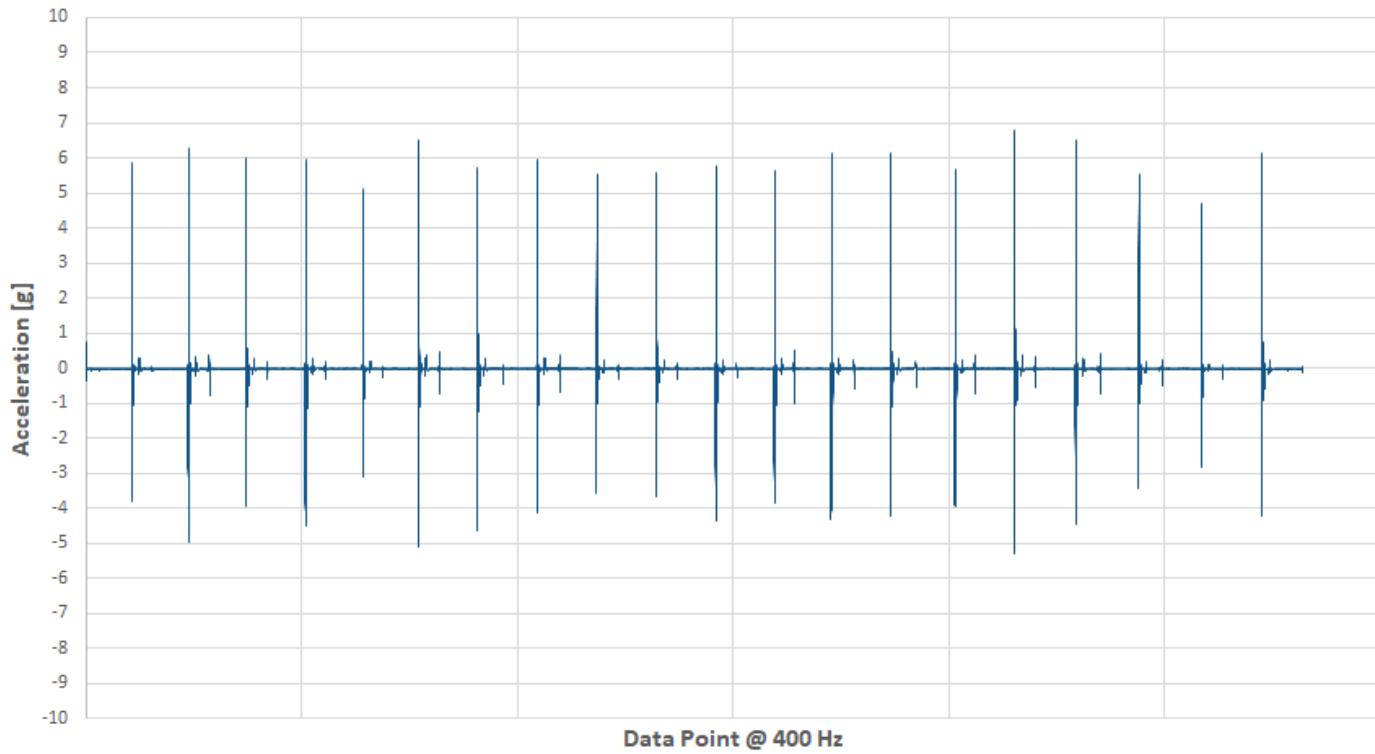


TEST 3 – LAYLA (SOFT)

Vector Magnitude Acceleration - Layla (Soft)

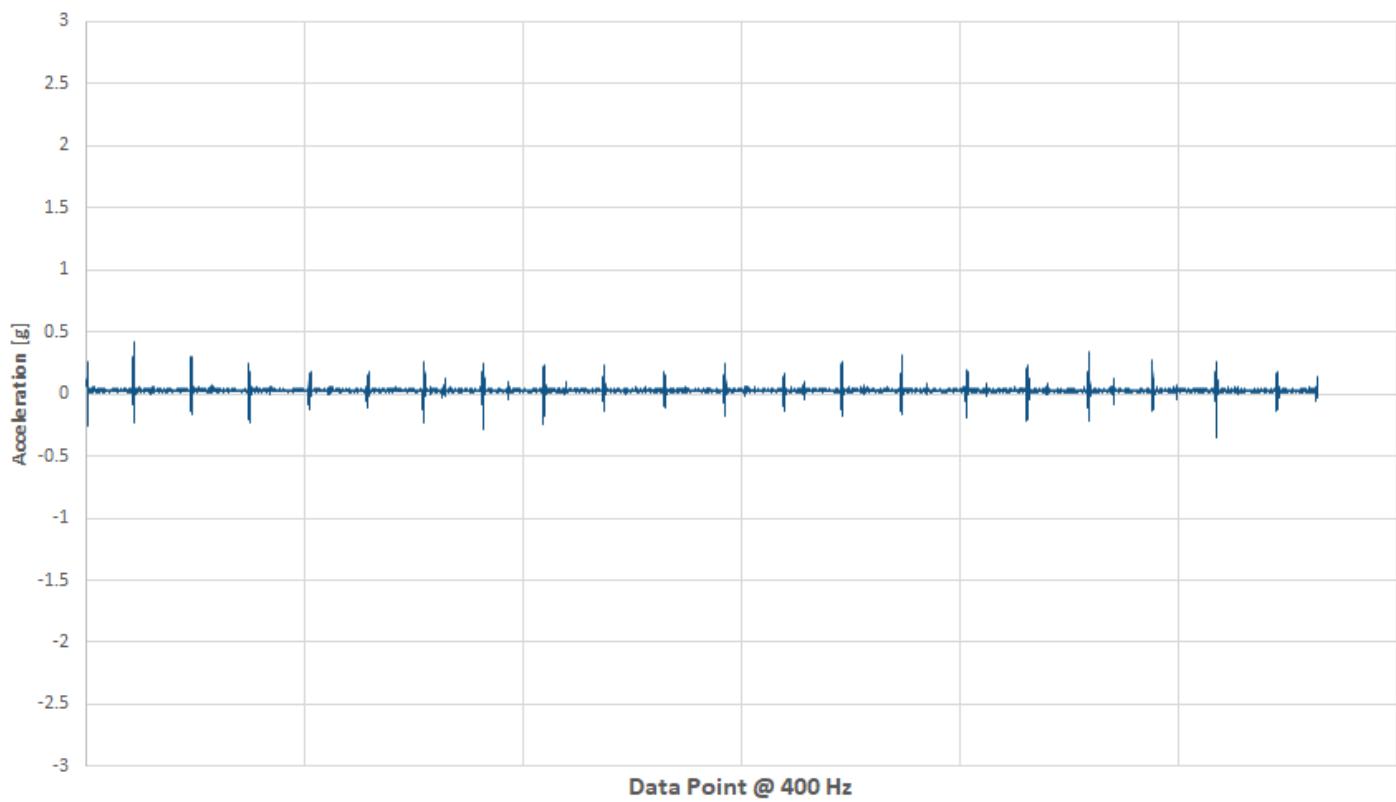


X Acceleration (Side to Side) - Layla (Soft)

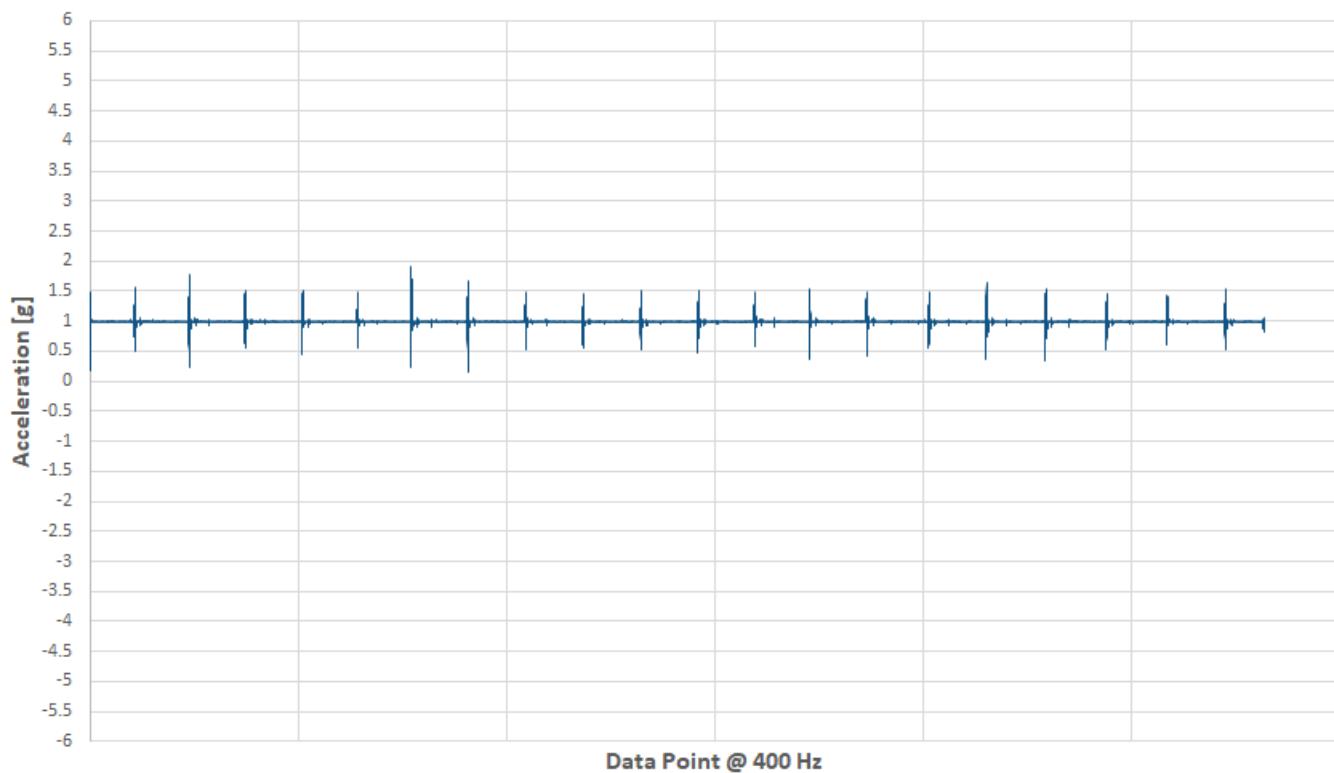




Y Acceleration (Head to Toe) - Layla (Soft)



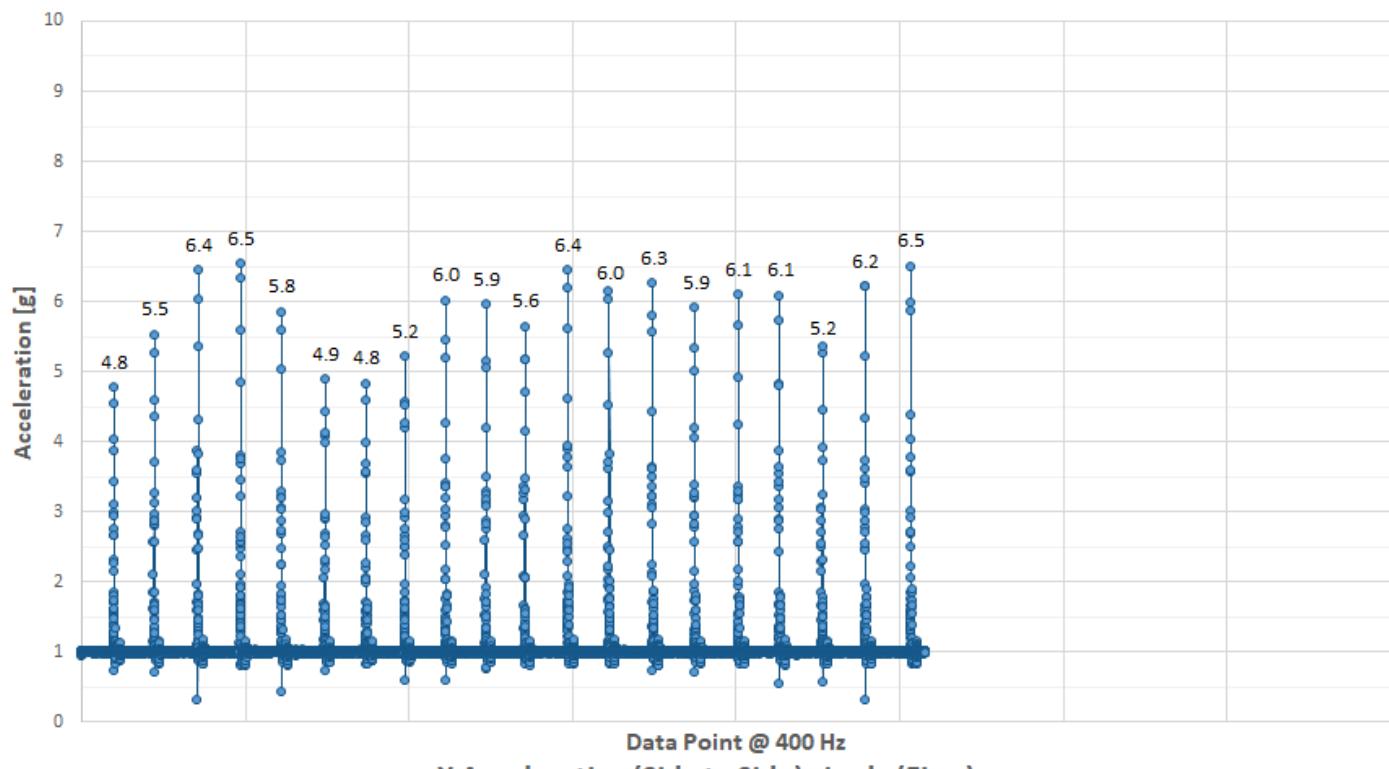
Z Acceleration (Up and Down) - Layla (Soft)



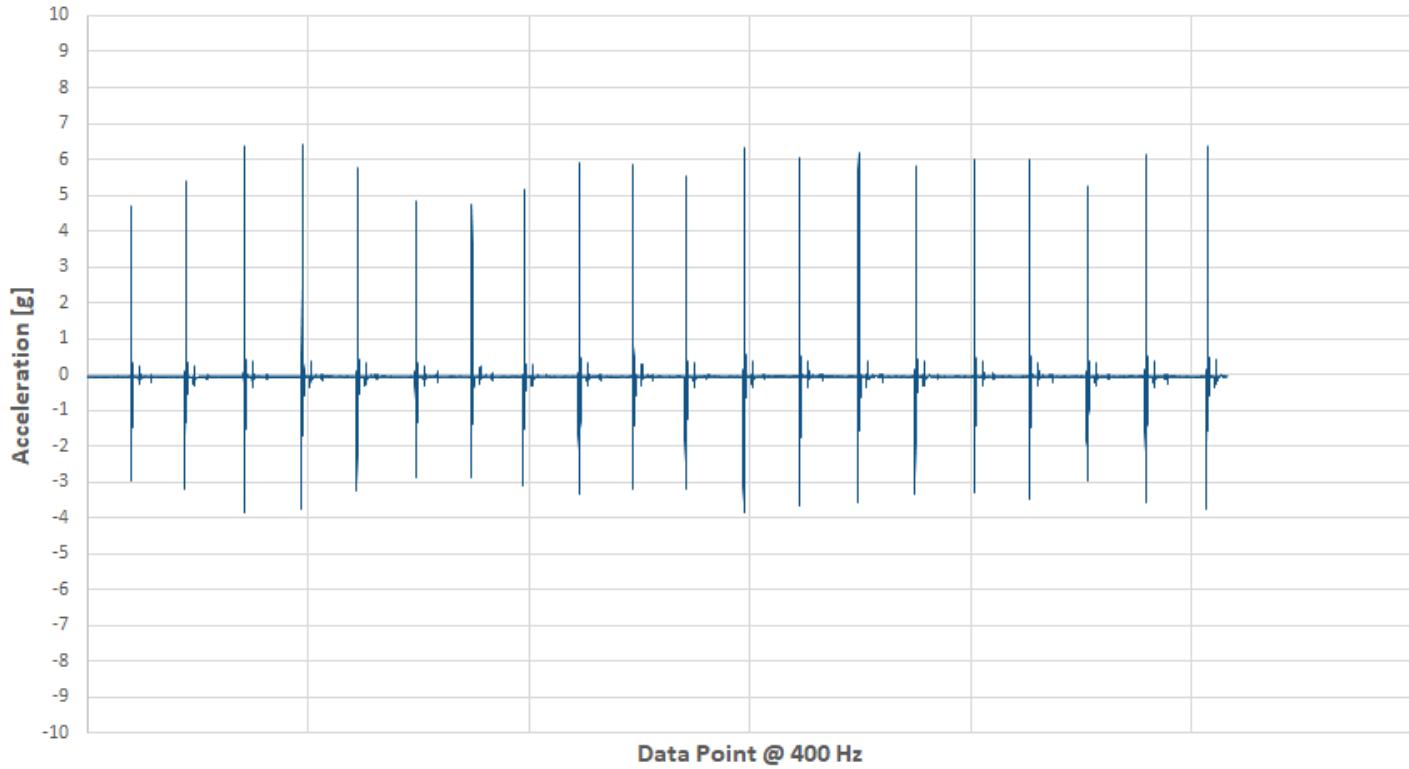


TEST 3 – LAYLA (FIRM)

Vector Magnitude Acceleration - Layla (Firm)

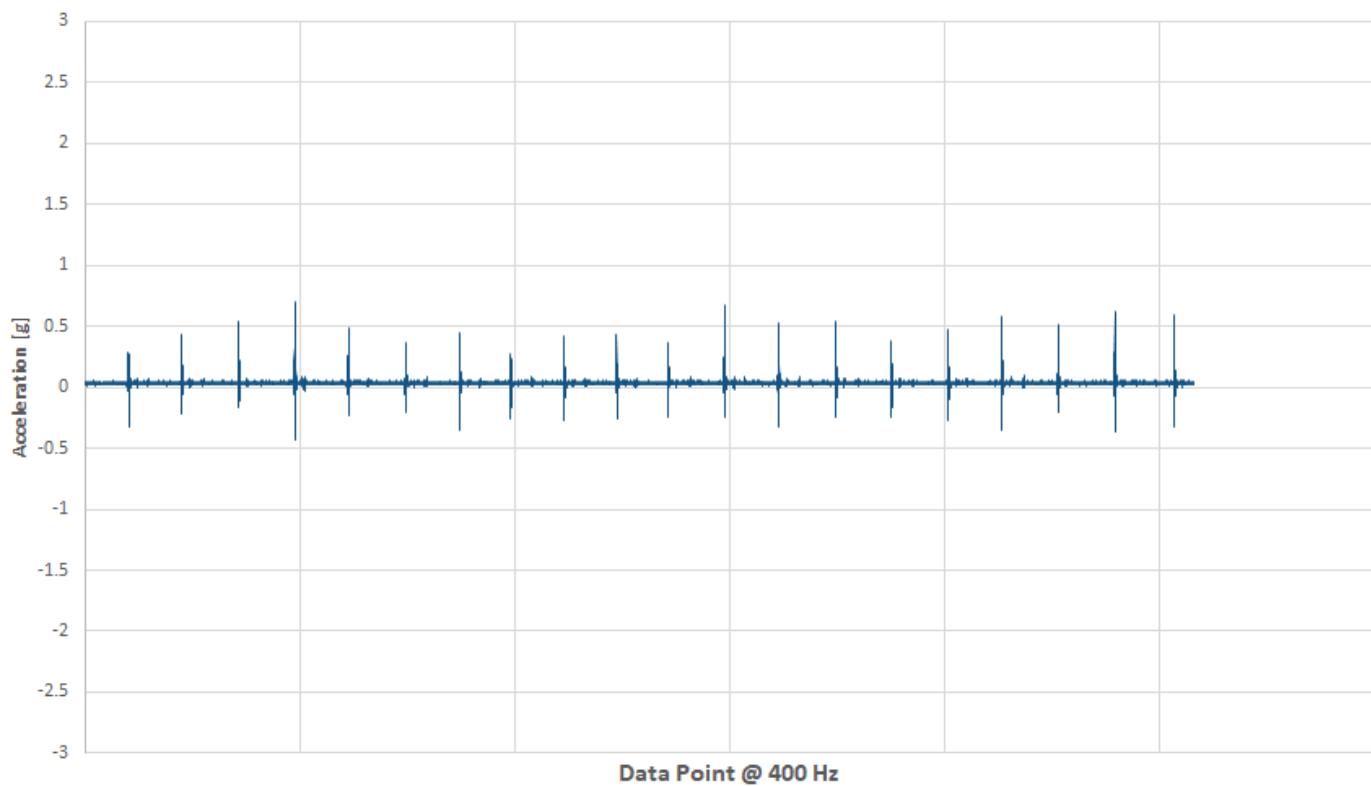


X Acceleration (Side to Side) - Layla (Firm)

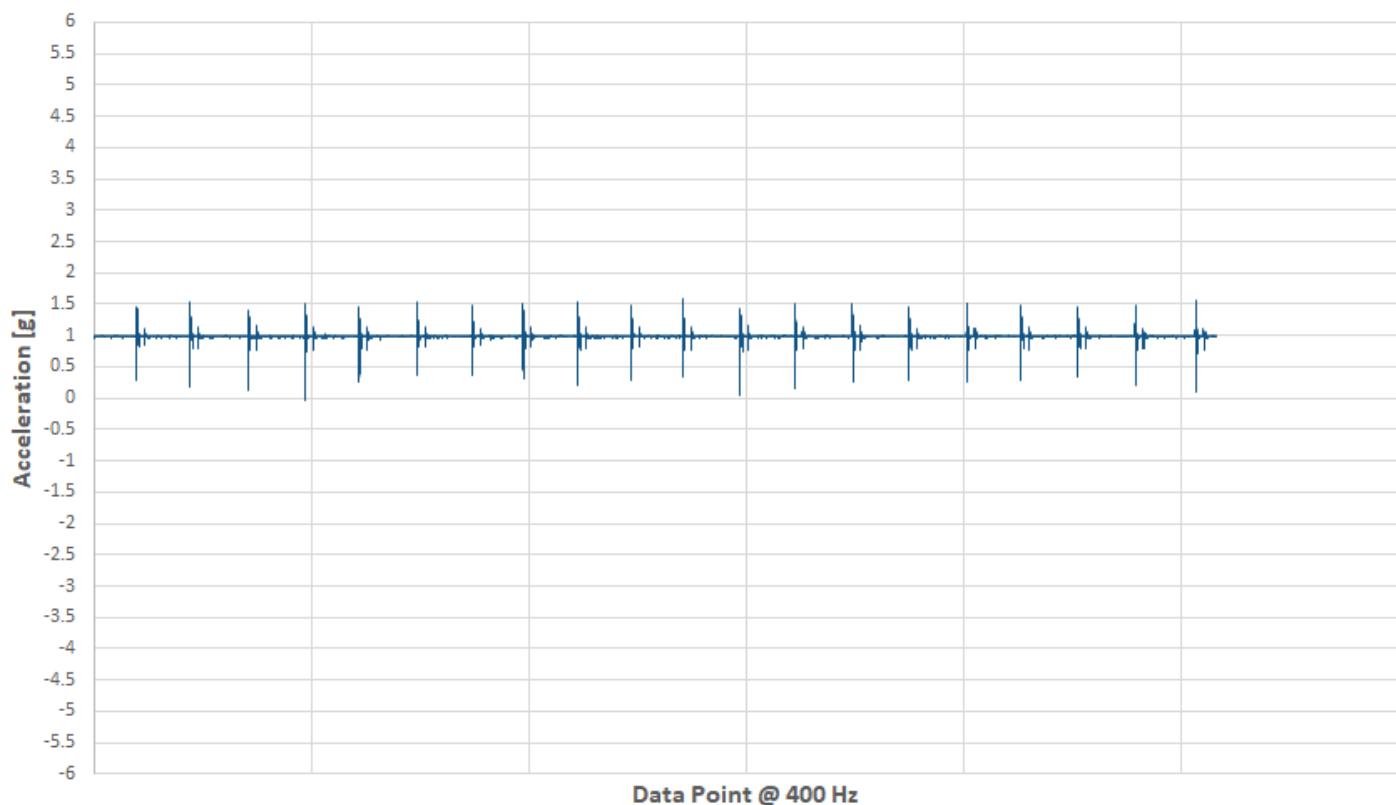




Y Acceleration (Head to Toe) - Layla (Firm)



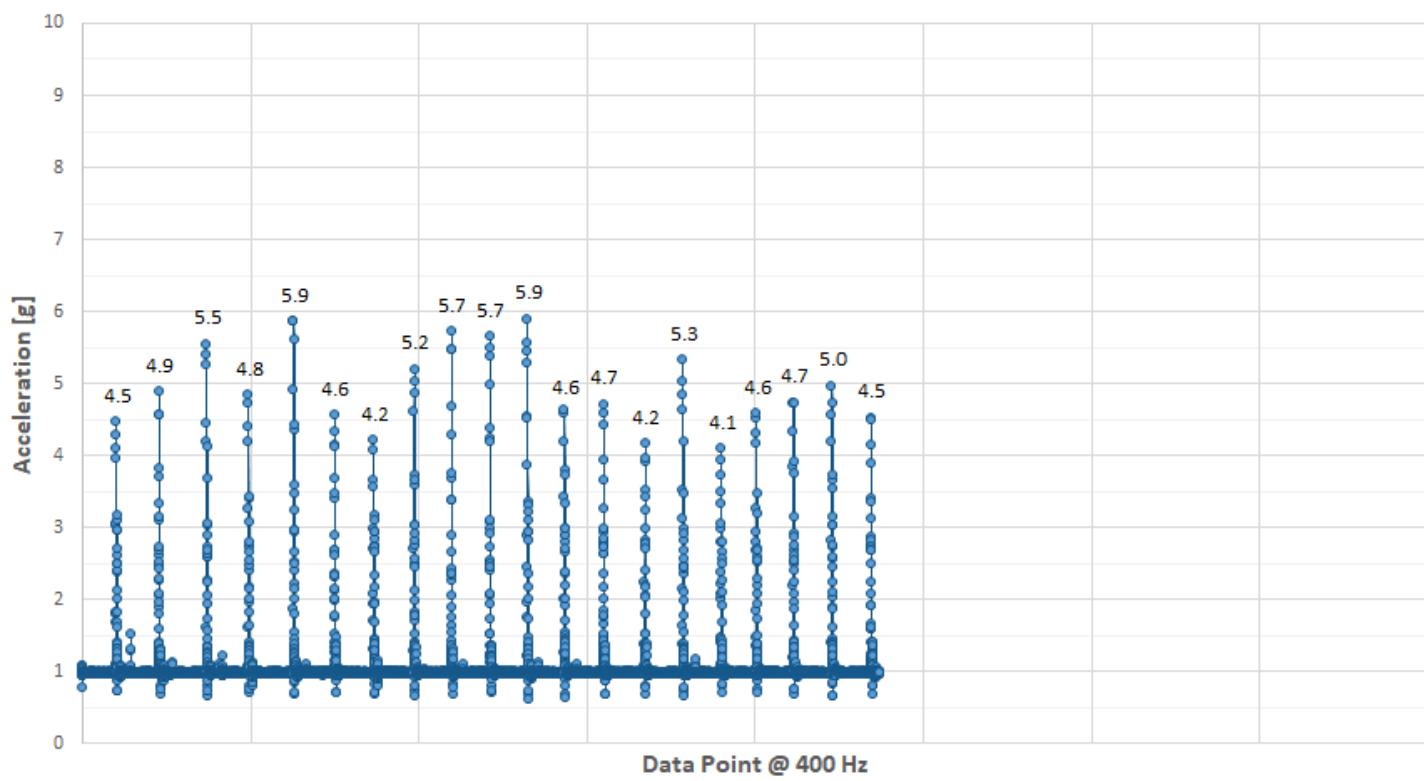
Z Acceleration (Up and Down) - Layla (Firm)



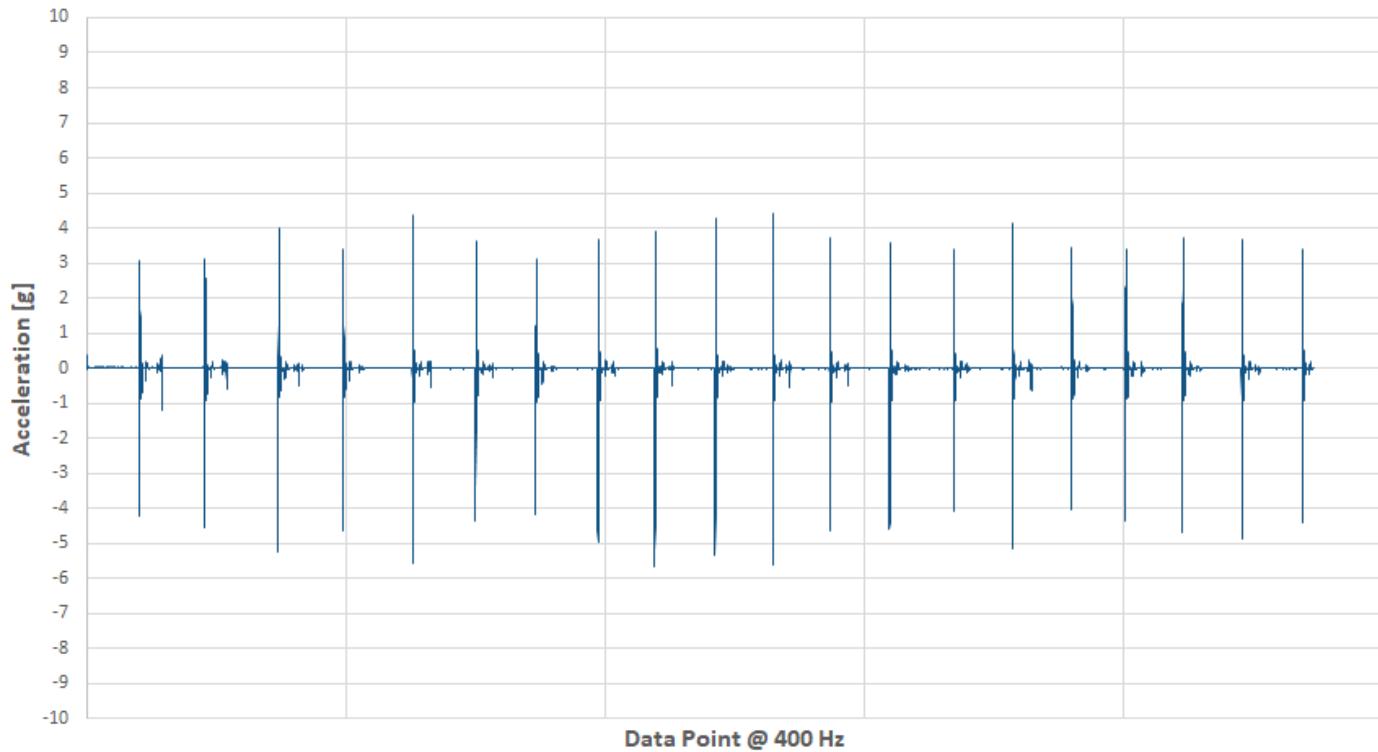


TEST 3 – PUFFY

Vector Magnitude Acceleration - Puffy

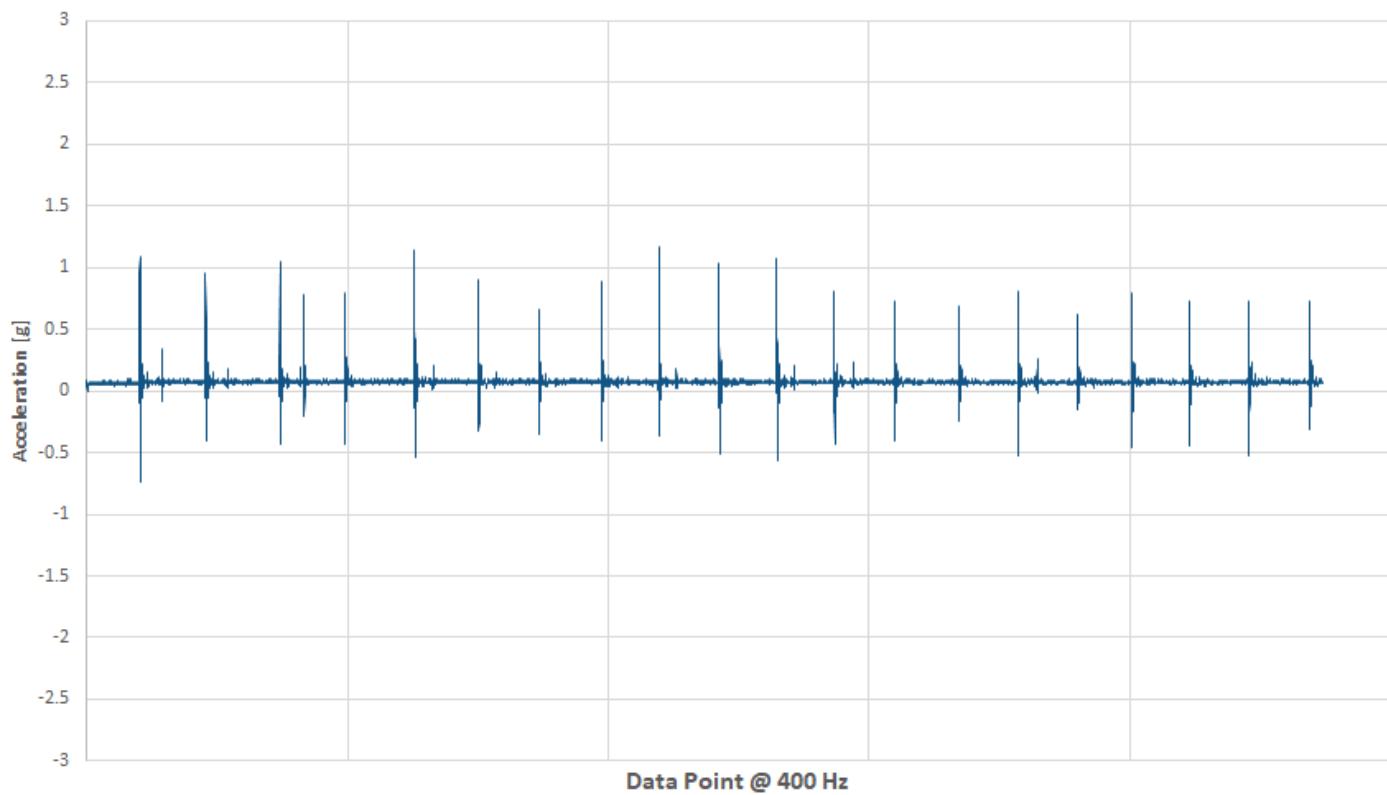


X Acceleration (Side to Side) - Puffy

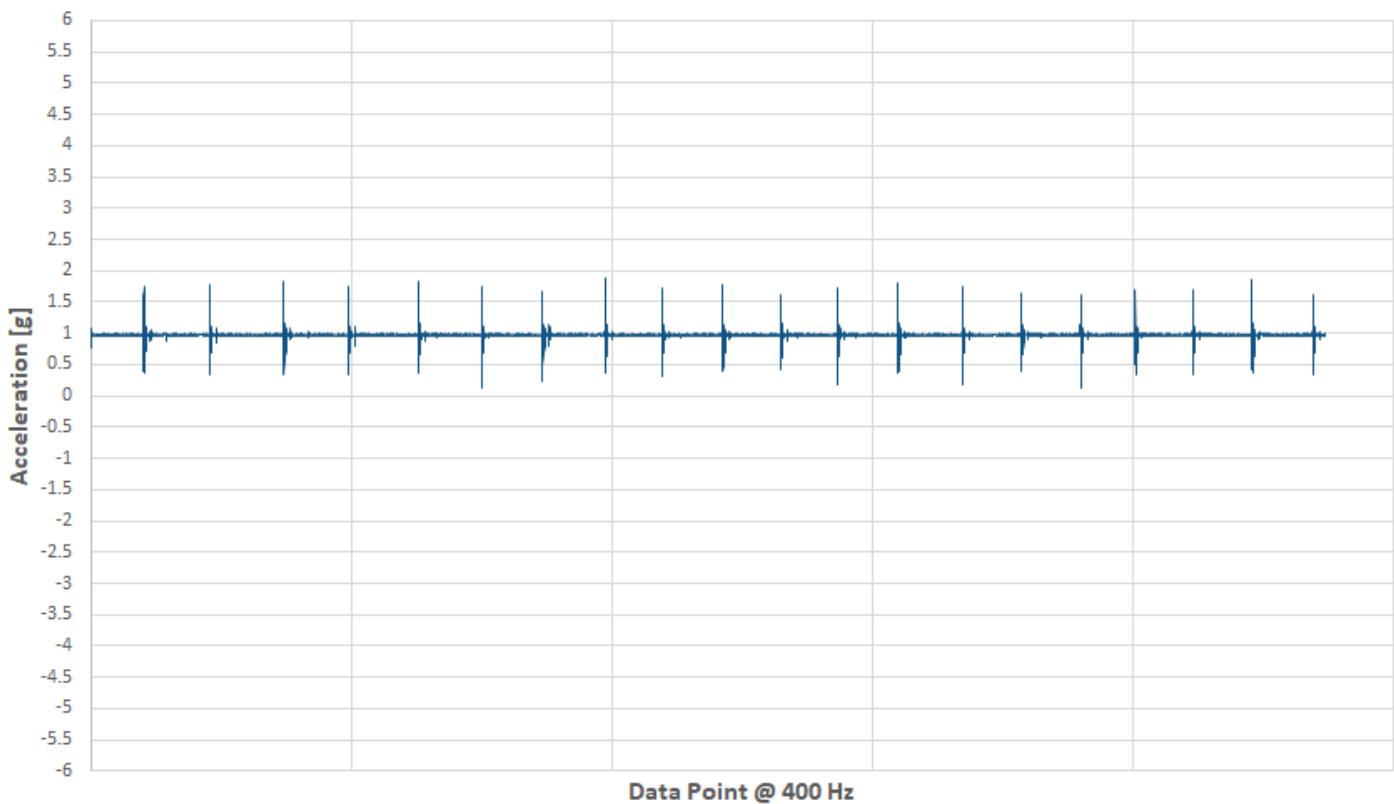




Y Acceleration (Head to Toe) - Puffy



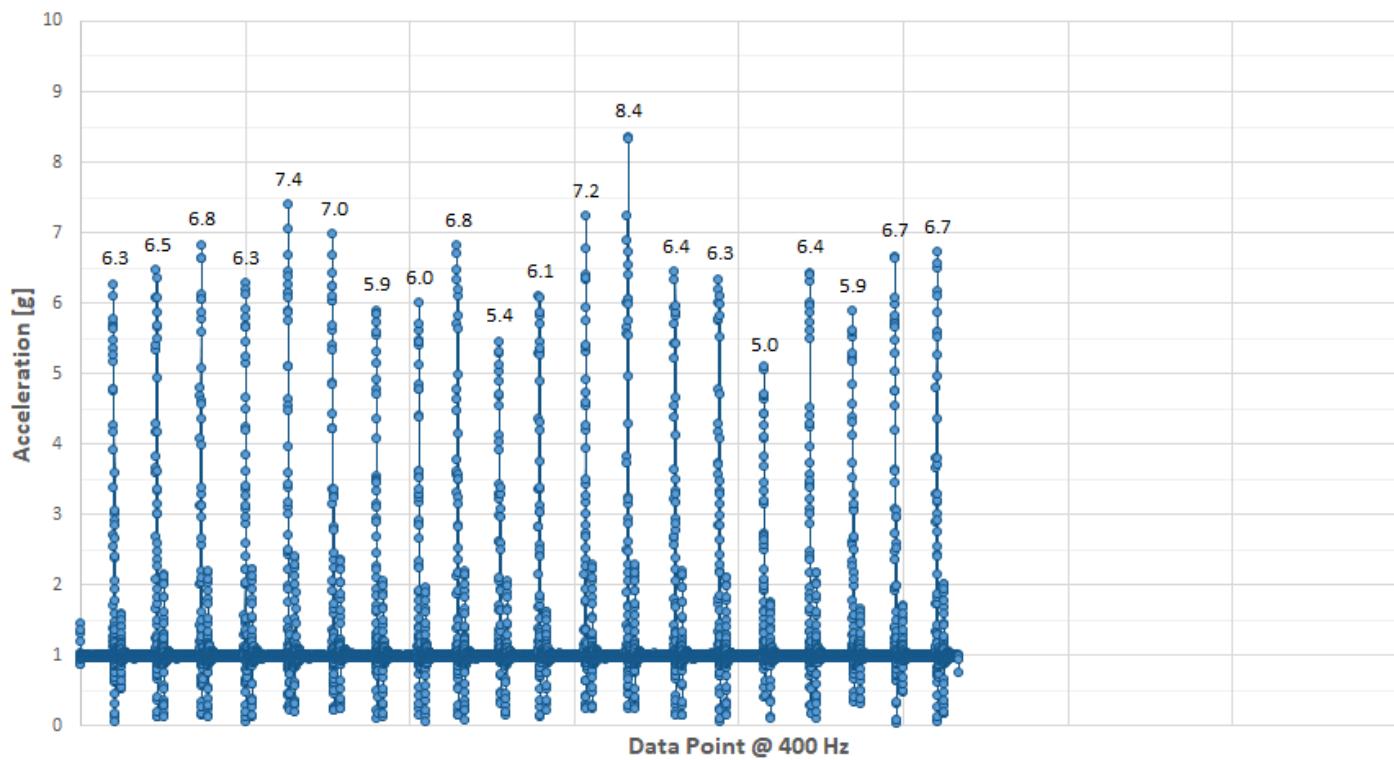
Z Acceleration (Up and Down) - Puffy



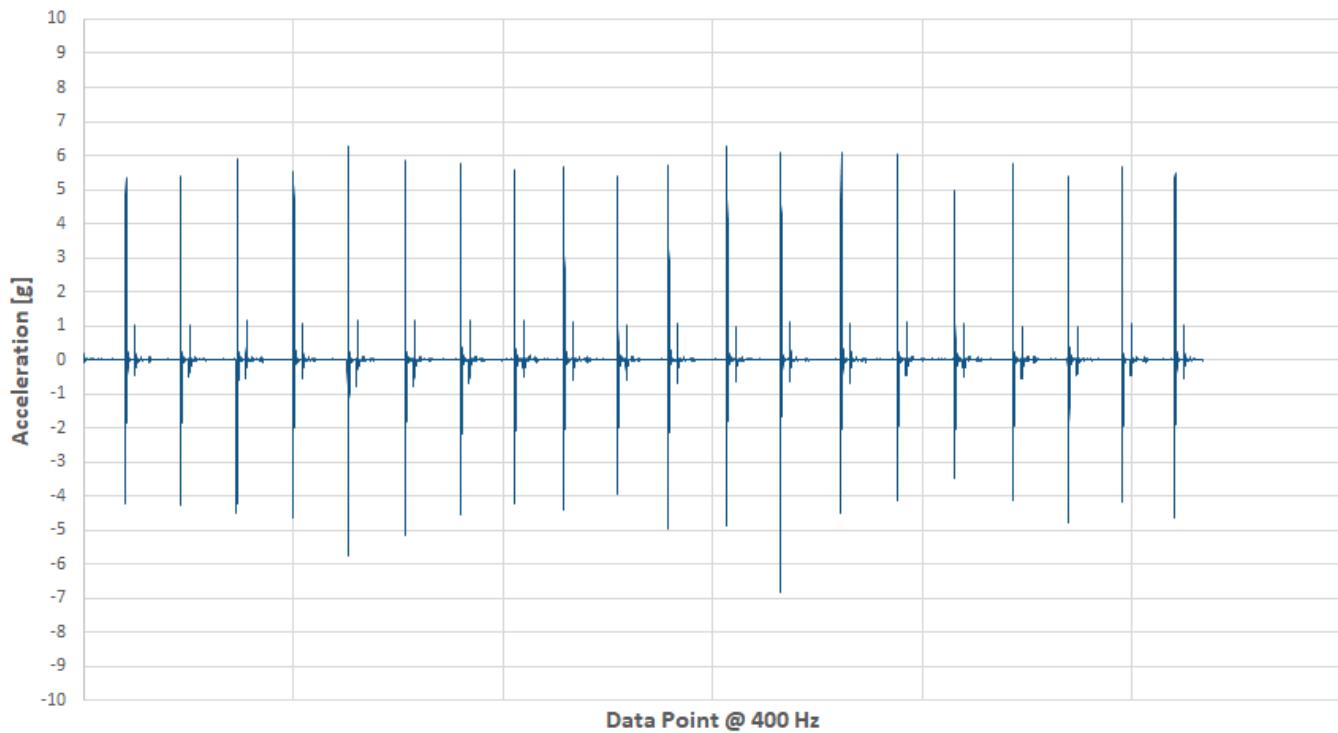


TEST 3 – SEALY POSTUREPEDIC

Vector Magnitude Acceleration - Sealy Posturepedic

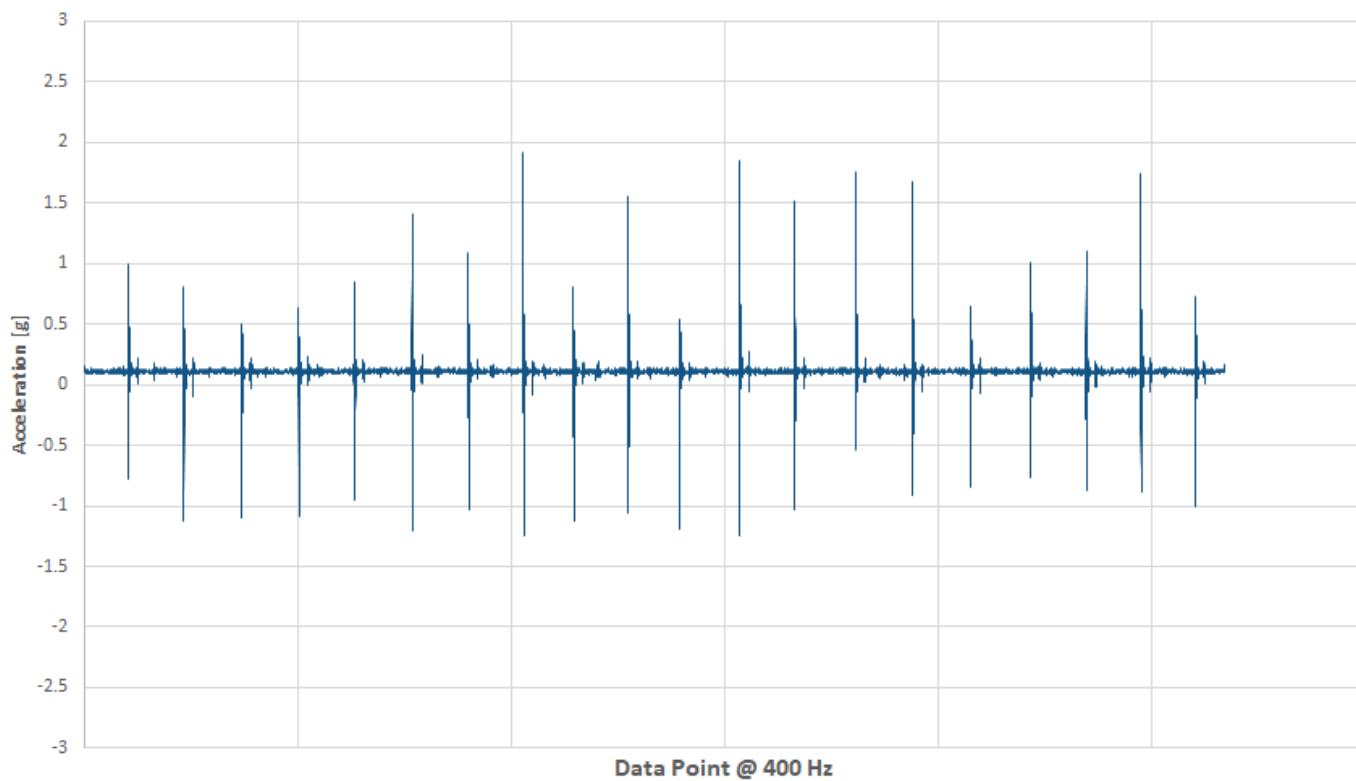


X Acceleration (Side to Side) - Sealy Posturepedic

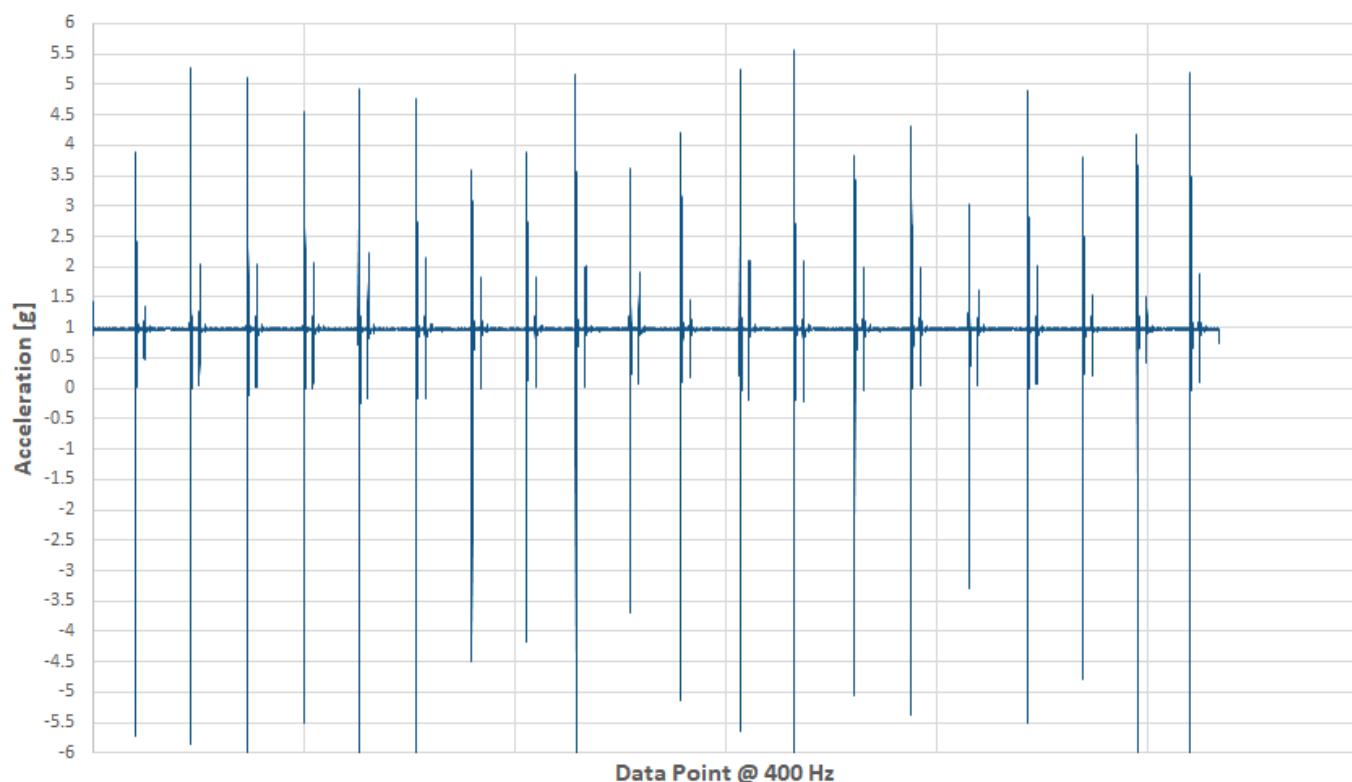




Y Acceleration (Head to Toe) - Sealy Posturepedic



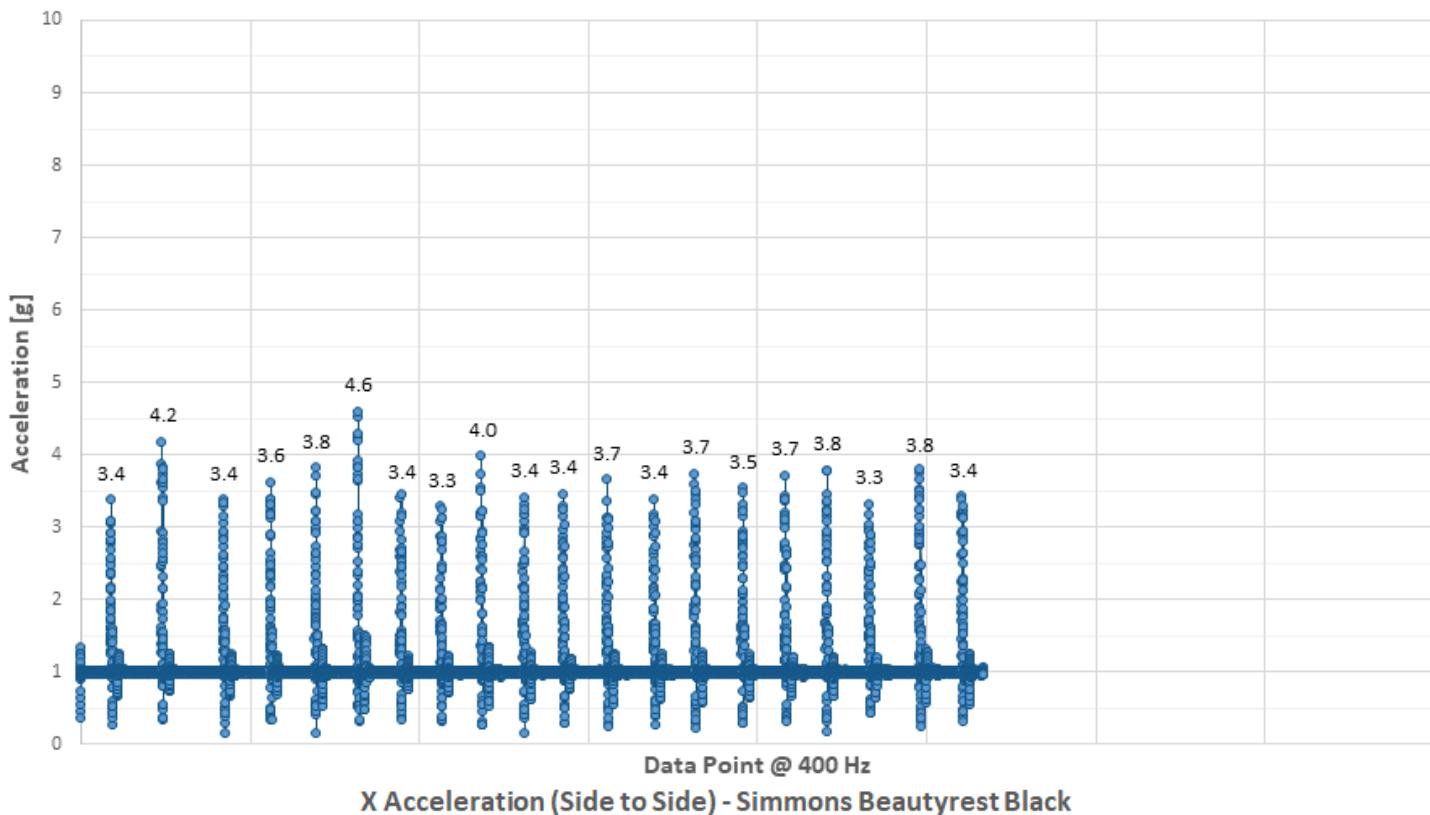
Z Acceleration (Up and Down) - Sealy Posturepedic



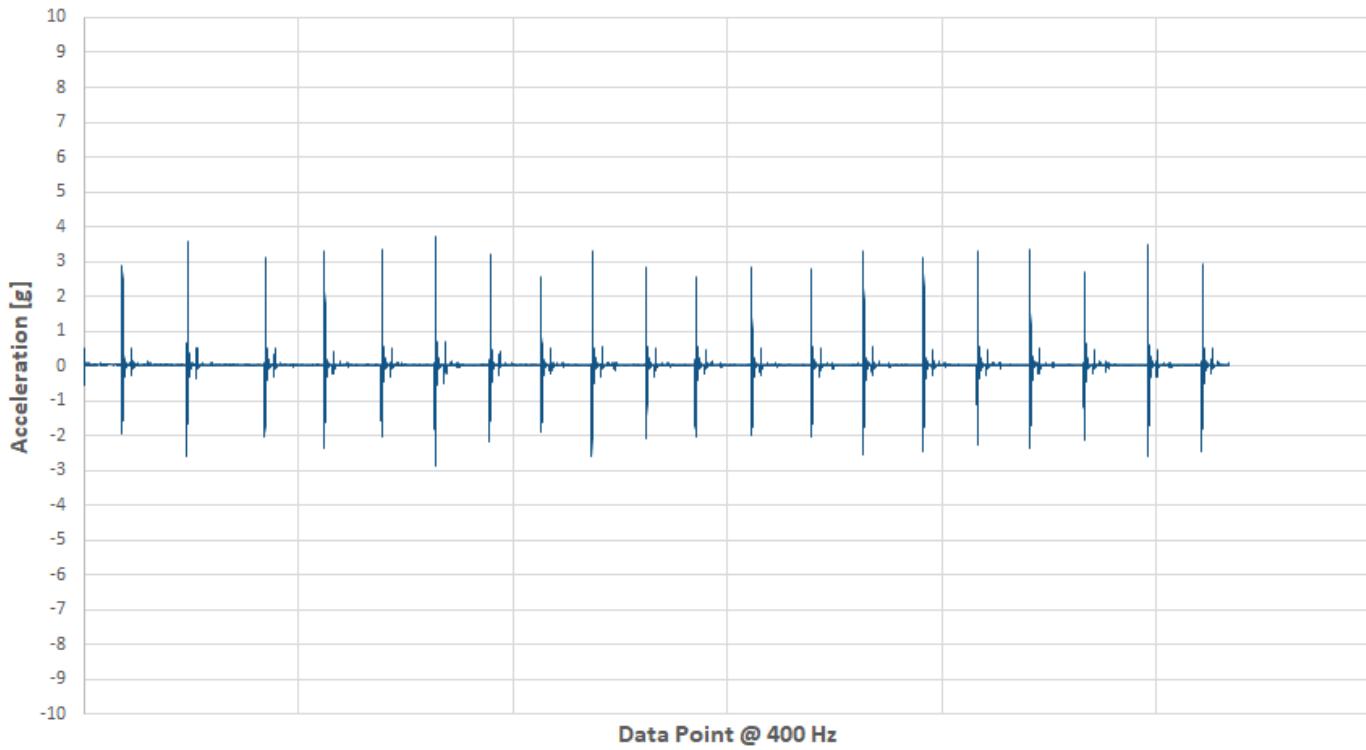


TEST 3 – SIMMONS BEAUTYREST BLACK

Vector Magnitude Acceleration - Simmons Beautyrest Black

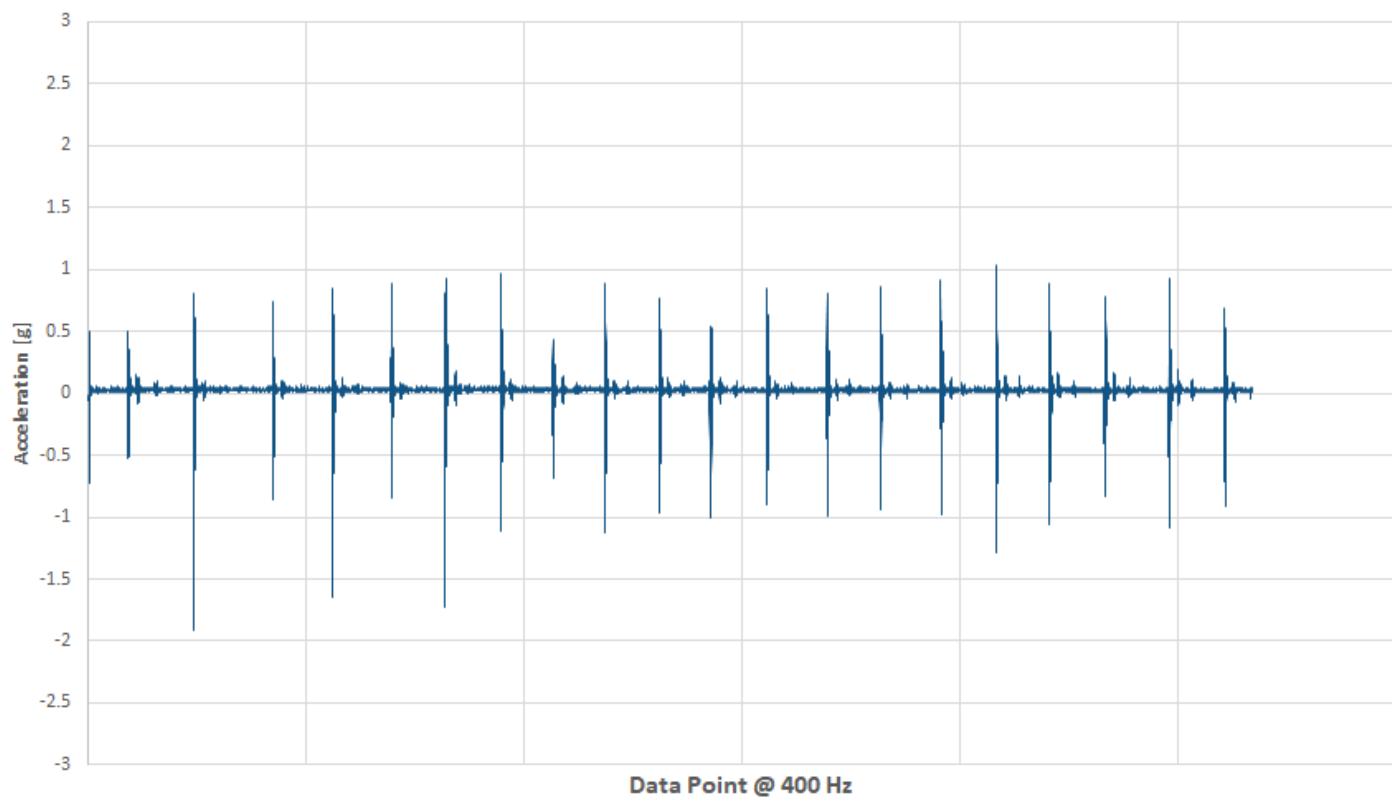


X Acceleration (Side to Side) - Simmons Beautyrest Black

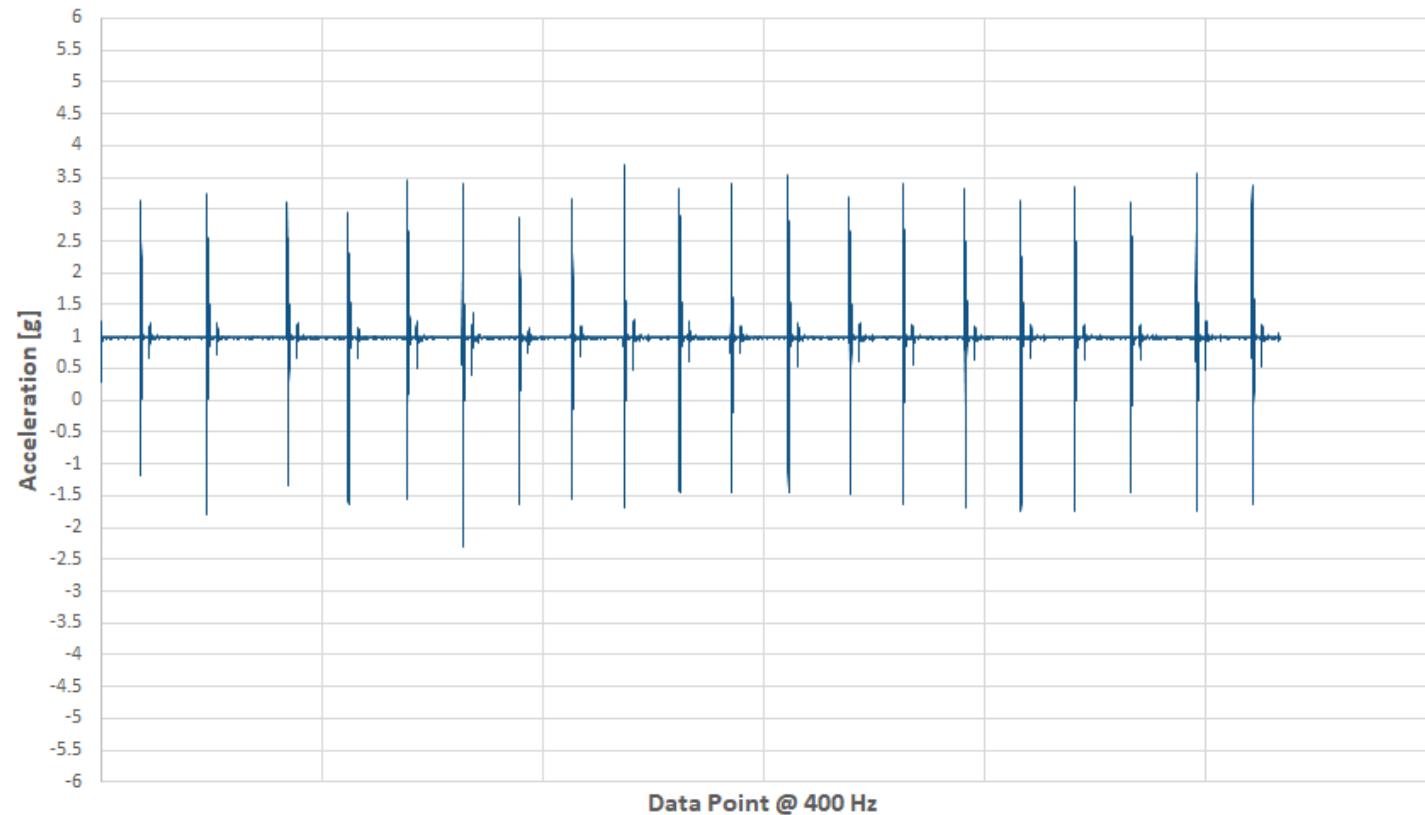




Y Acceleration (Head to Toe) - Simmons Beautyrest Black



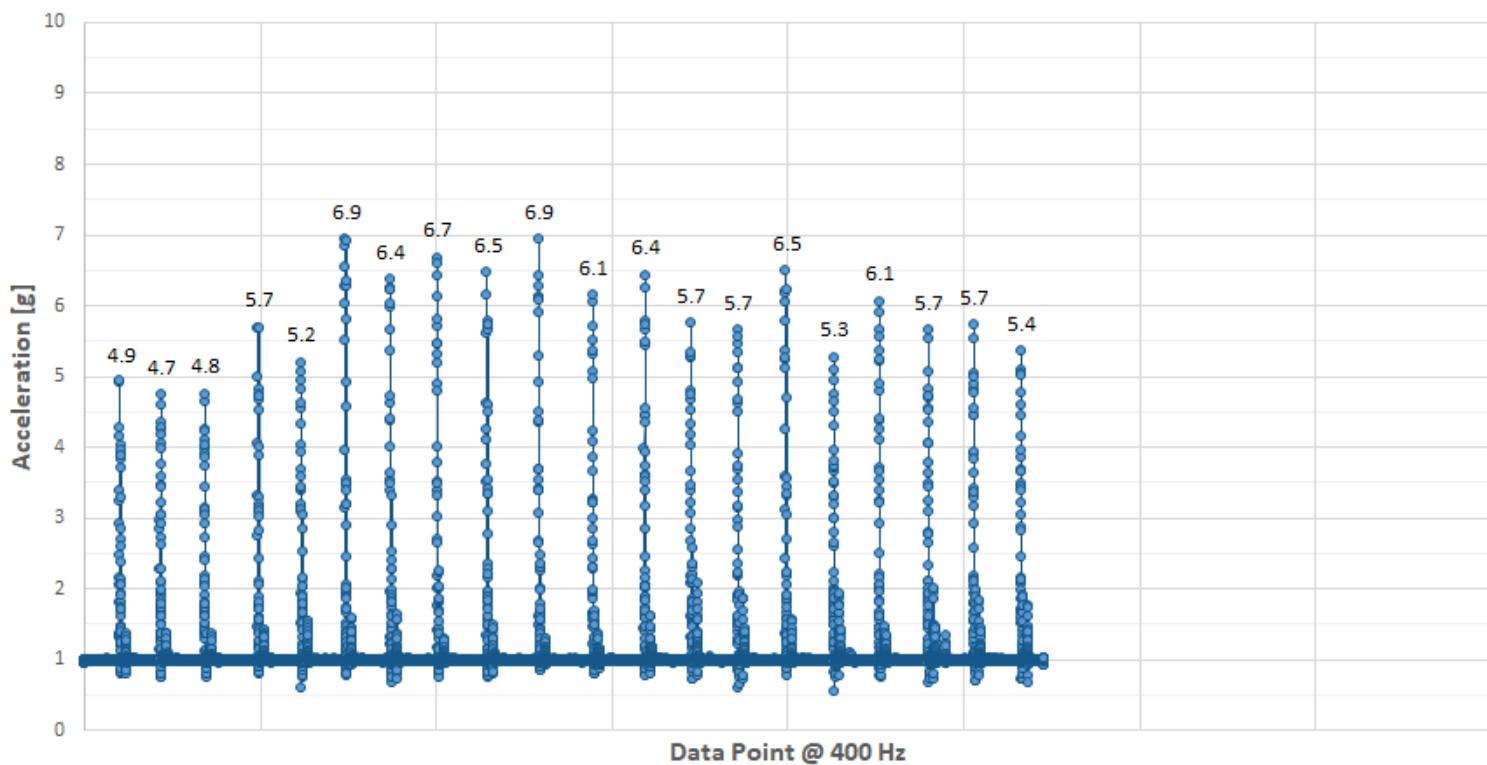
Z Acceleration (Up and Down) - Simmons Beautyrest Black



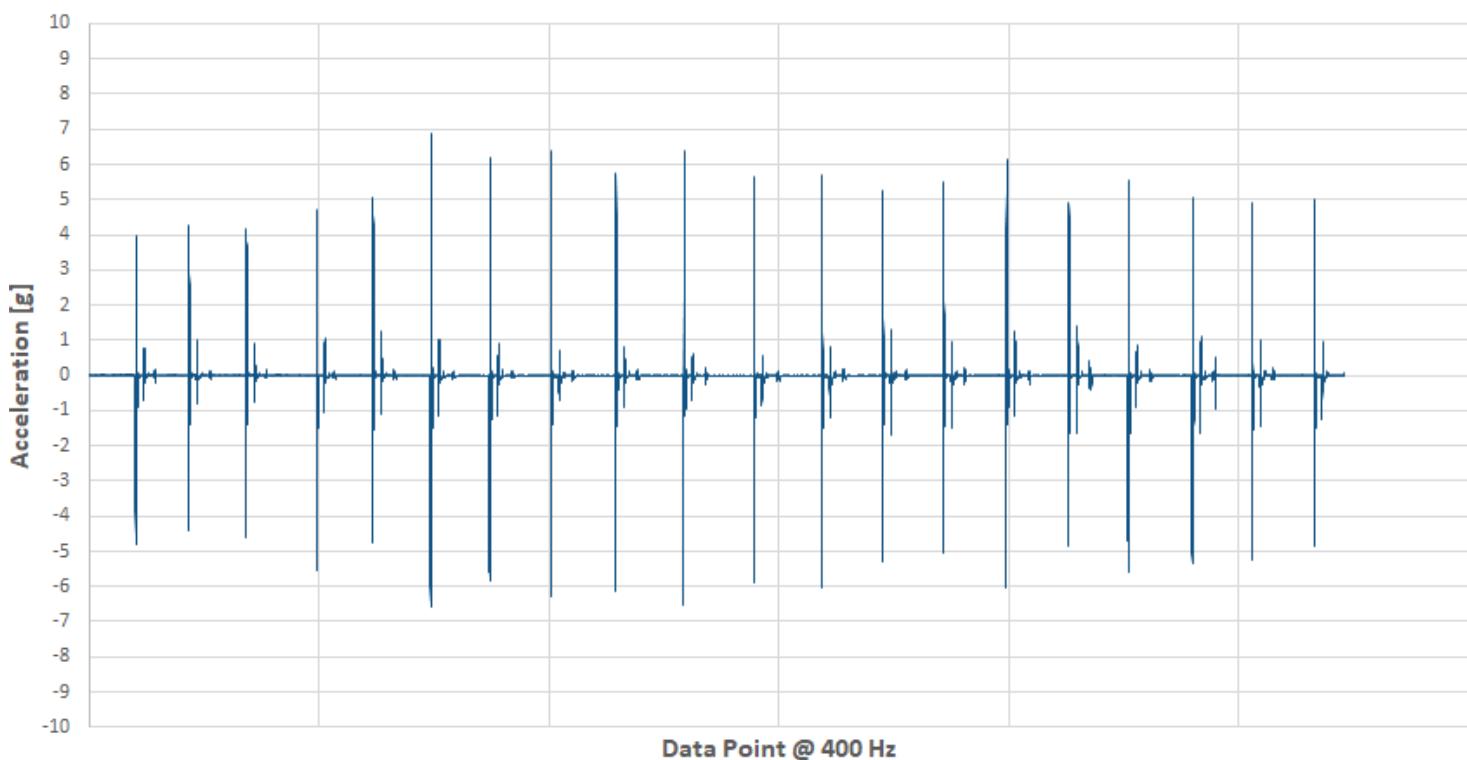


TEST 3 – BLOOM AIR

Vector Magnitude Acceleration - Bloom Air

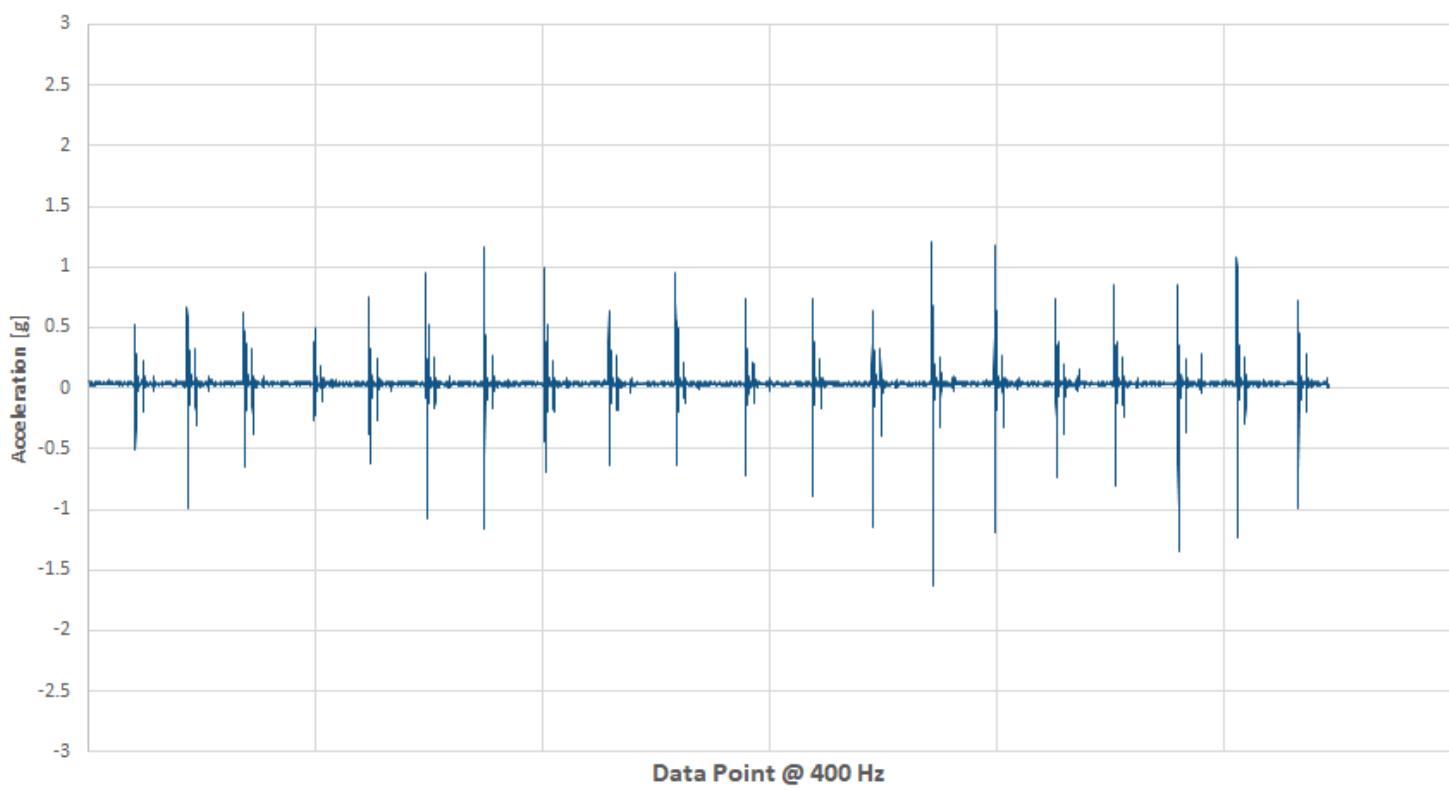


X Acceleration (Side to Side) - Bloom Air

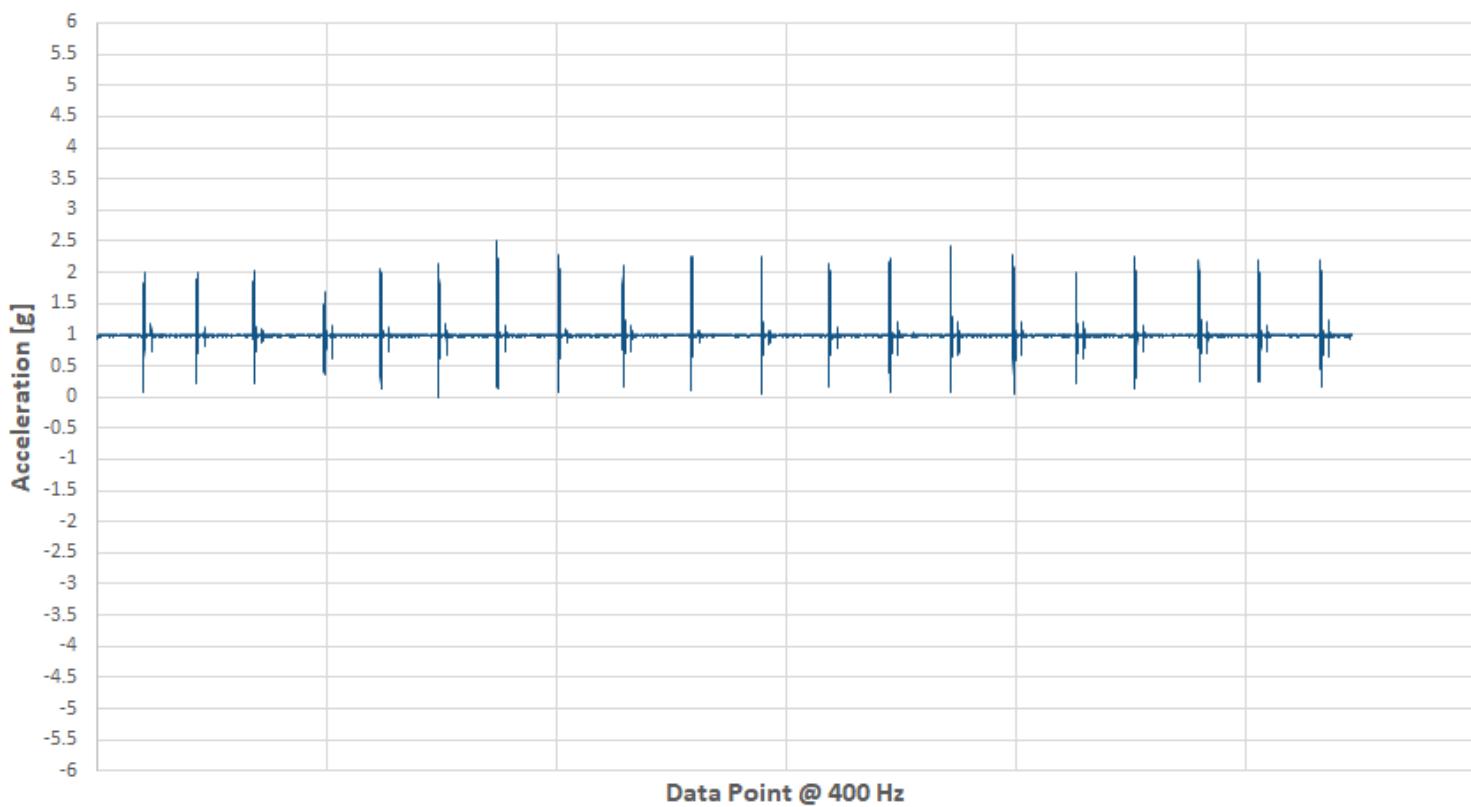




Y Acceleration (Head to Toe) - Bloom Air



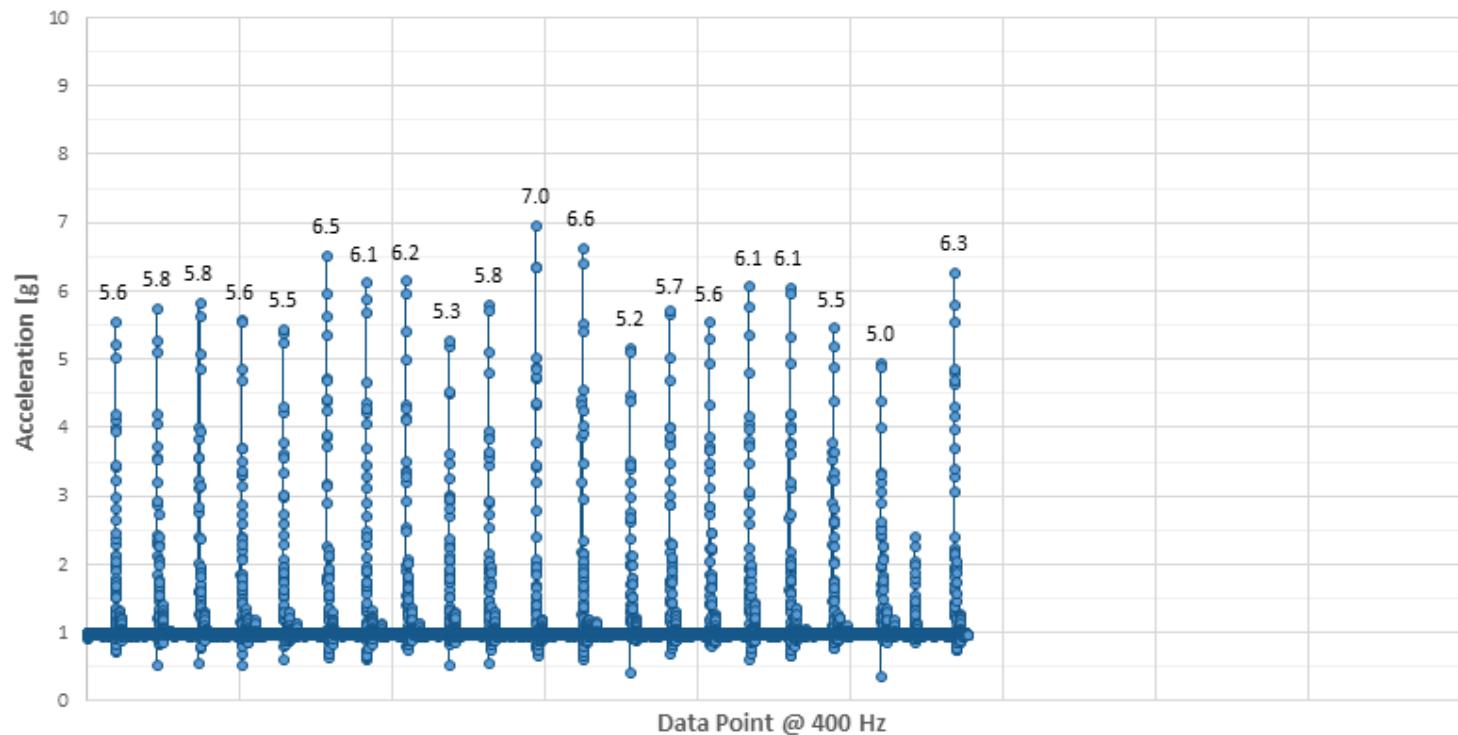
Z Acceleration (Up and Down) - Bloom Air



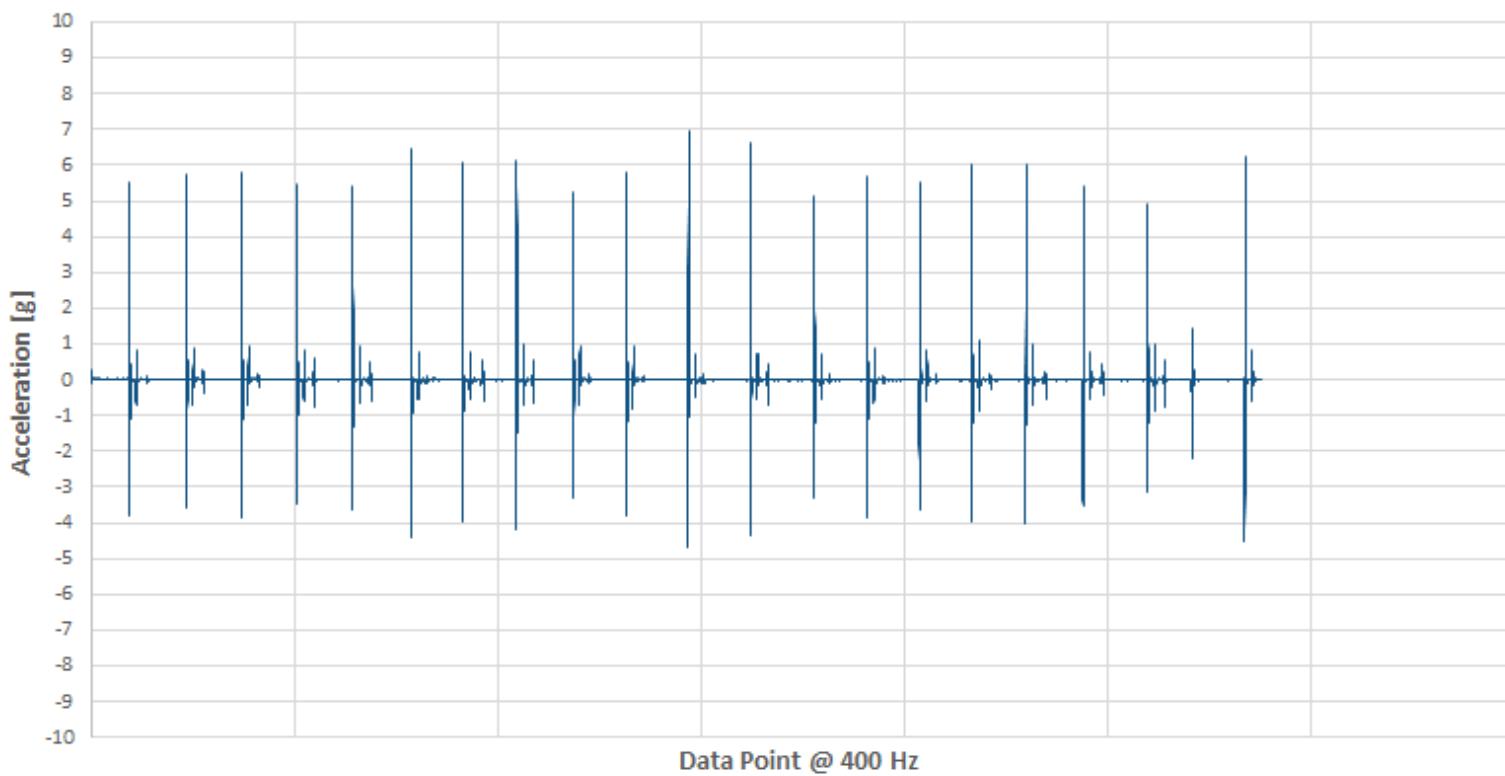


TEST 3 – BLOOM MIST

Vector Magnitude Acceleration - Bloom Mist

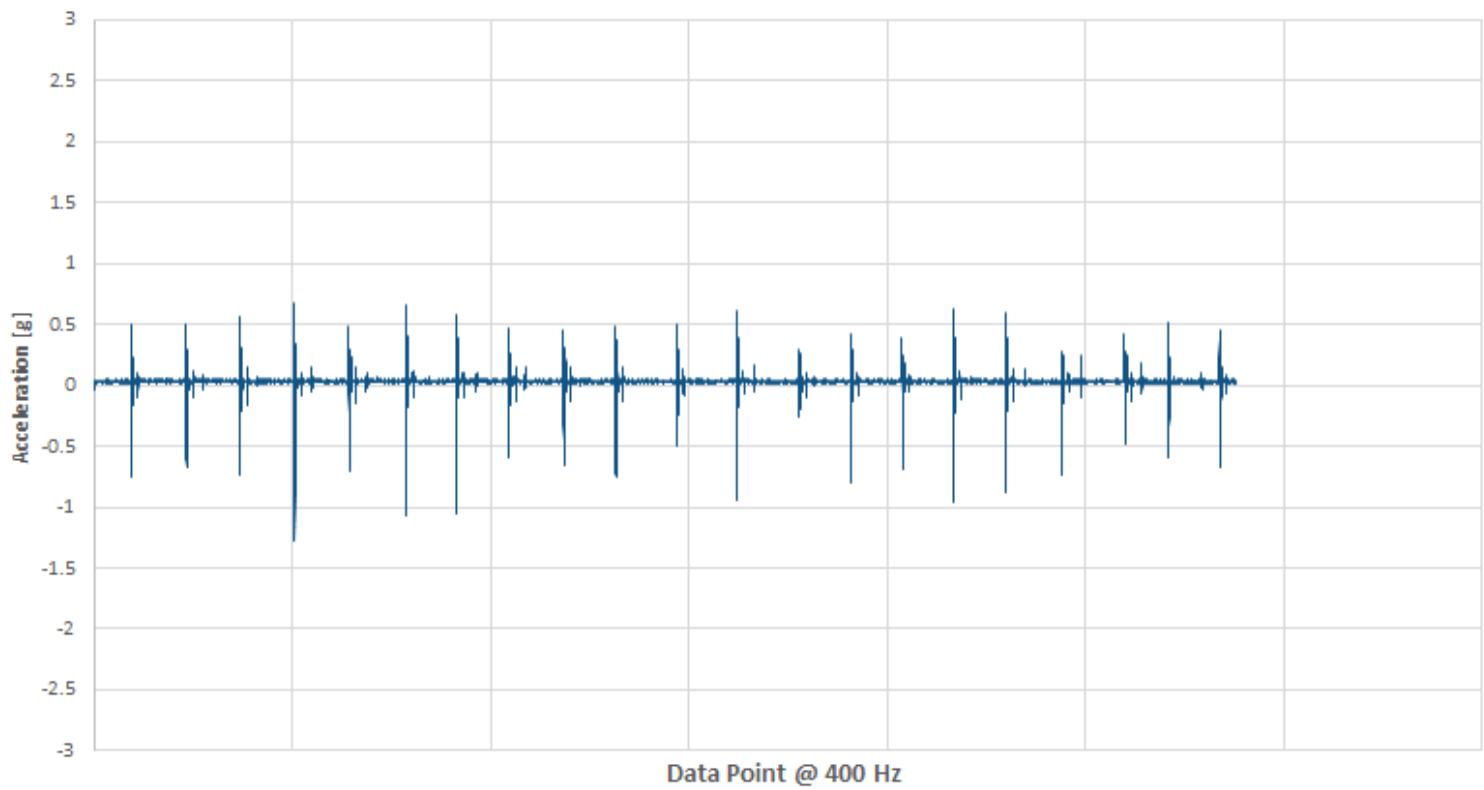


X Acceleration (Side to Side) - Bloom Mist

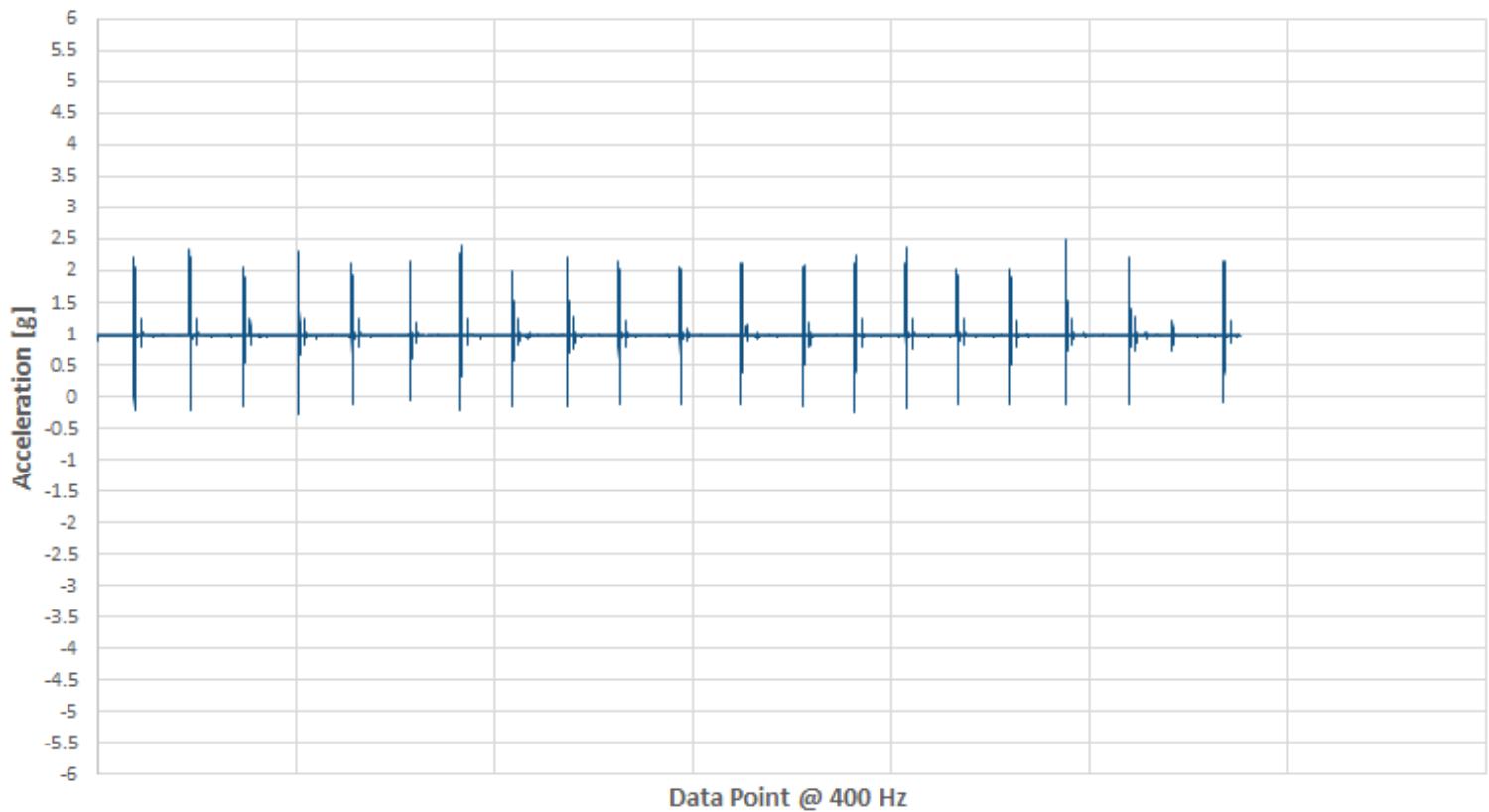




Y Acceleration (Head to Toe) - Bloom Mist



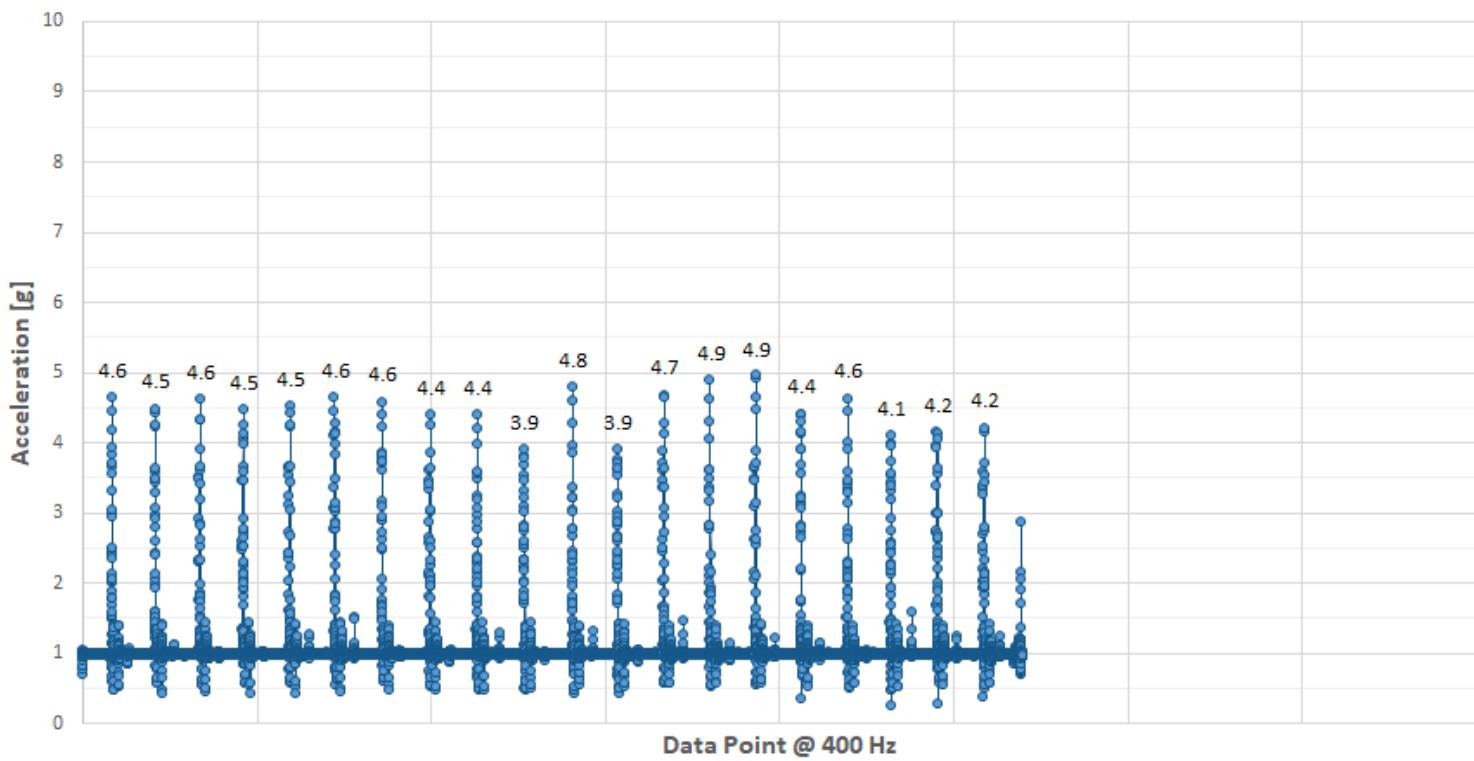
Z Acceleration (Up and Down) - Bloom Mist



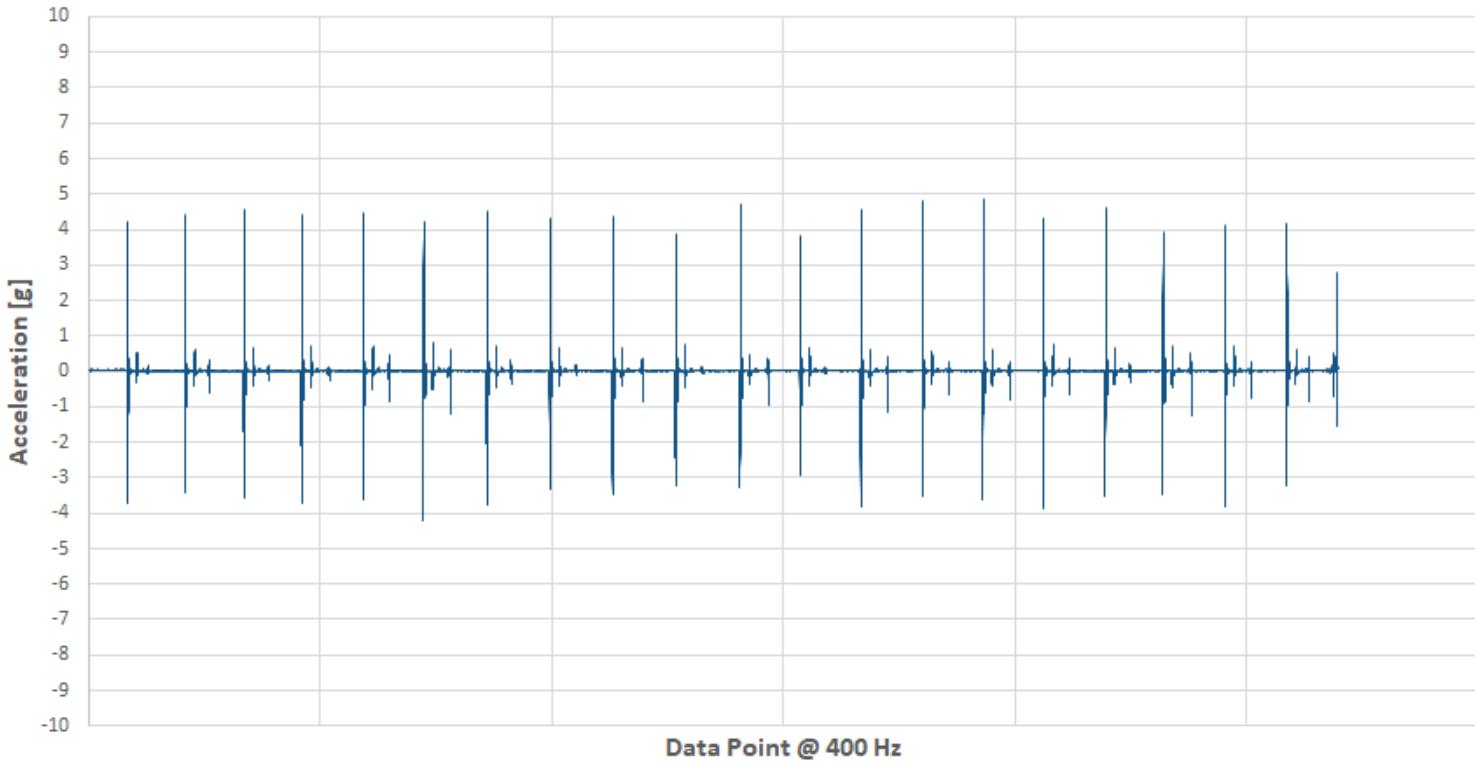


TEST 3 – BLOOM EARTH

Vector Magnitude Acceleration - Bloom Earth

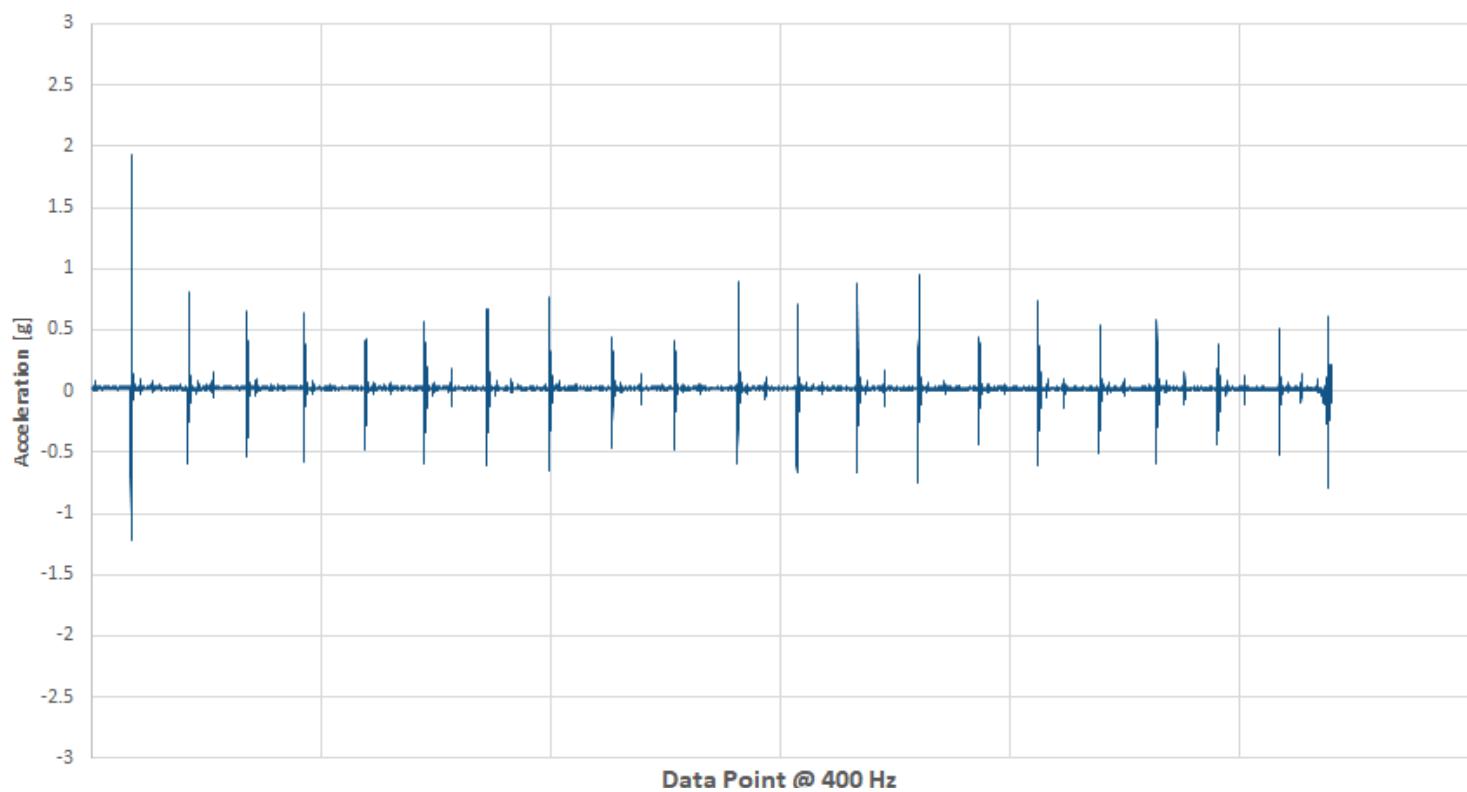


X Acceleration (Side to Side) - Bloom Earth

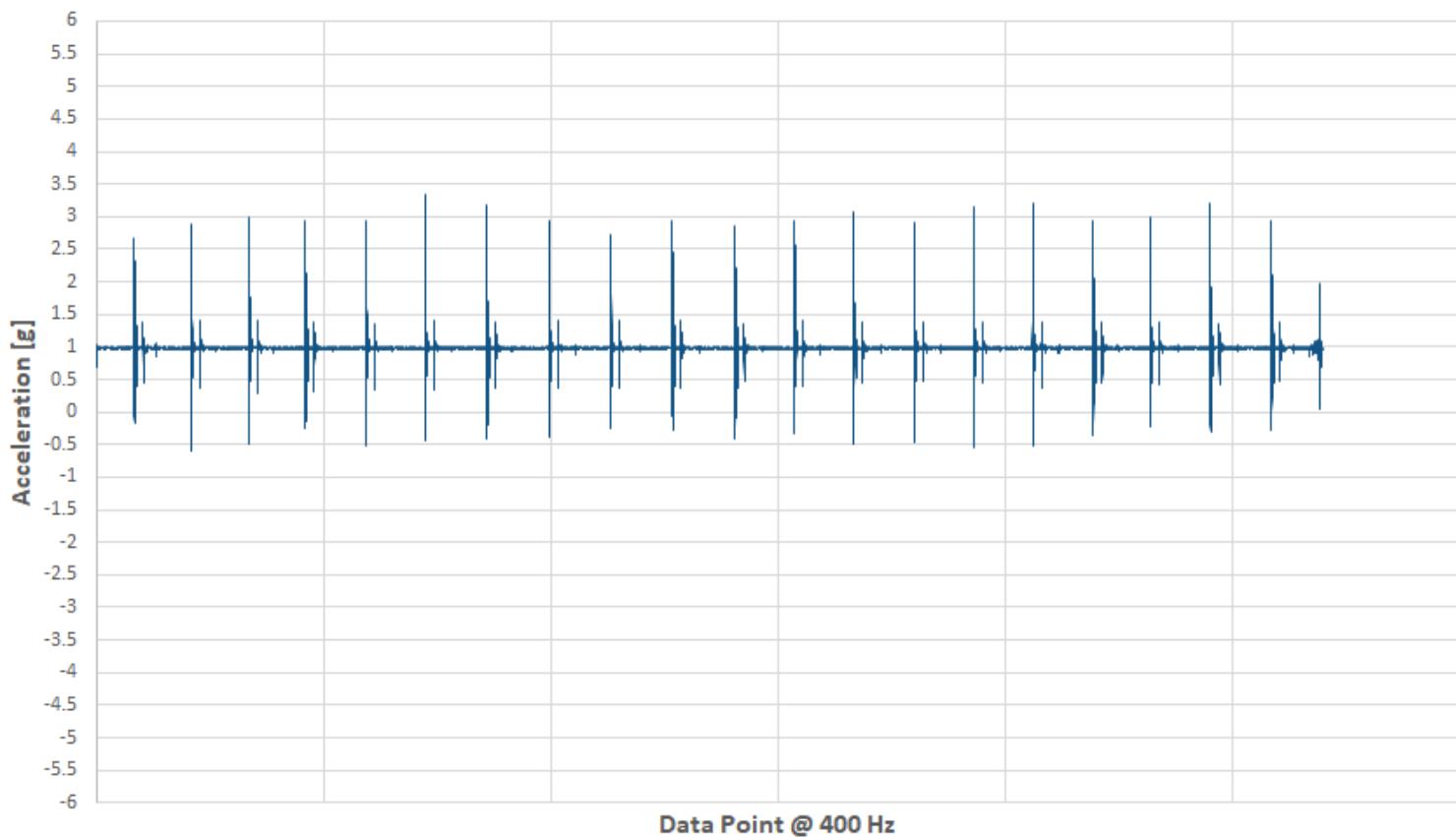




Y Acceleration (Head to Toe) - Bloom Earth

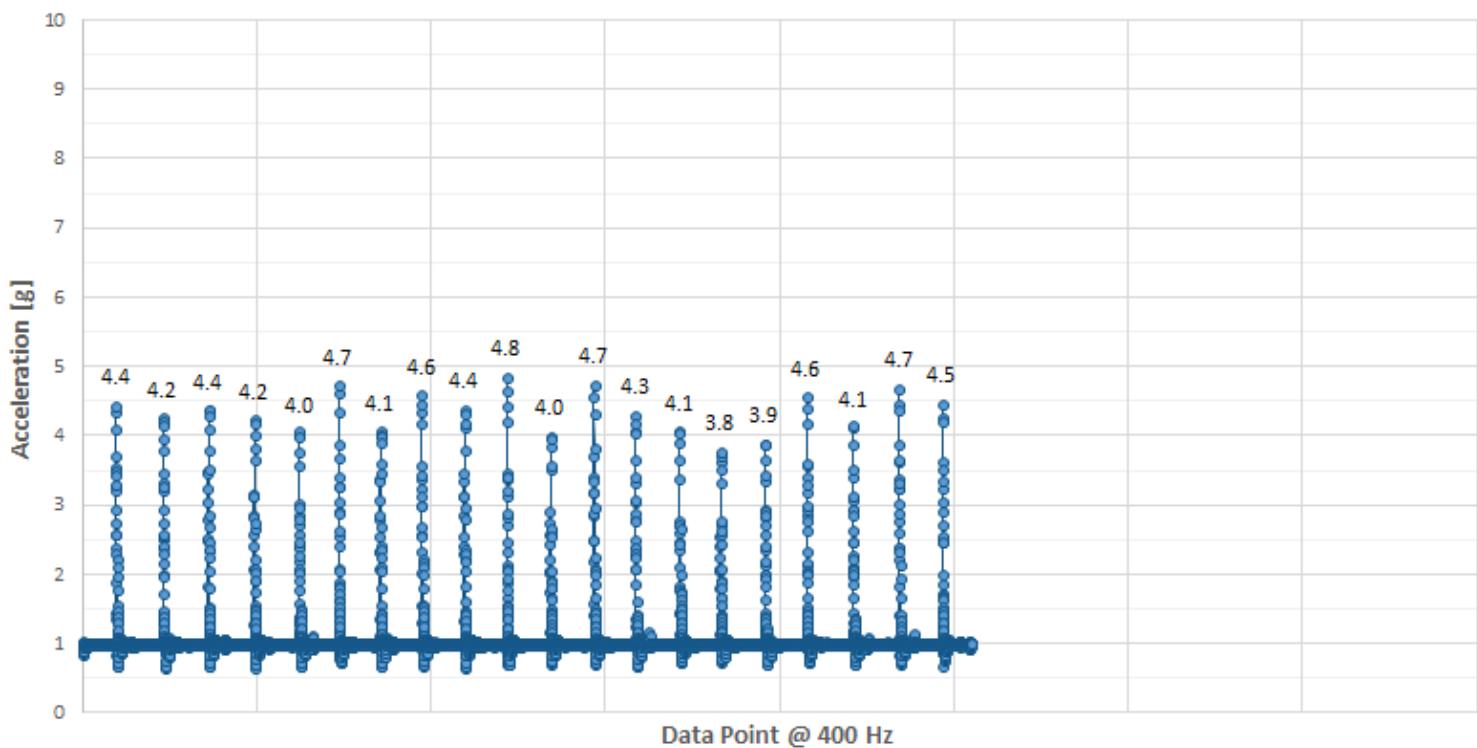


Z Acceleration (Up and Down) - Bloom Earth

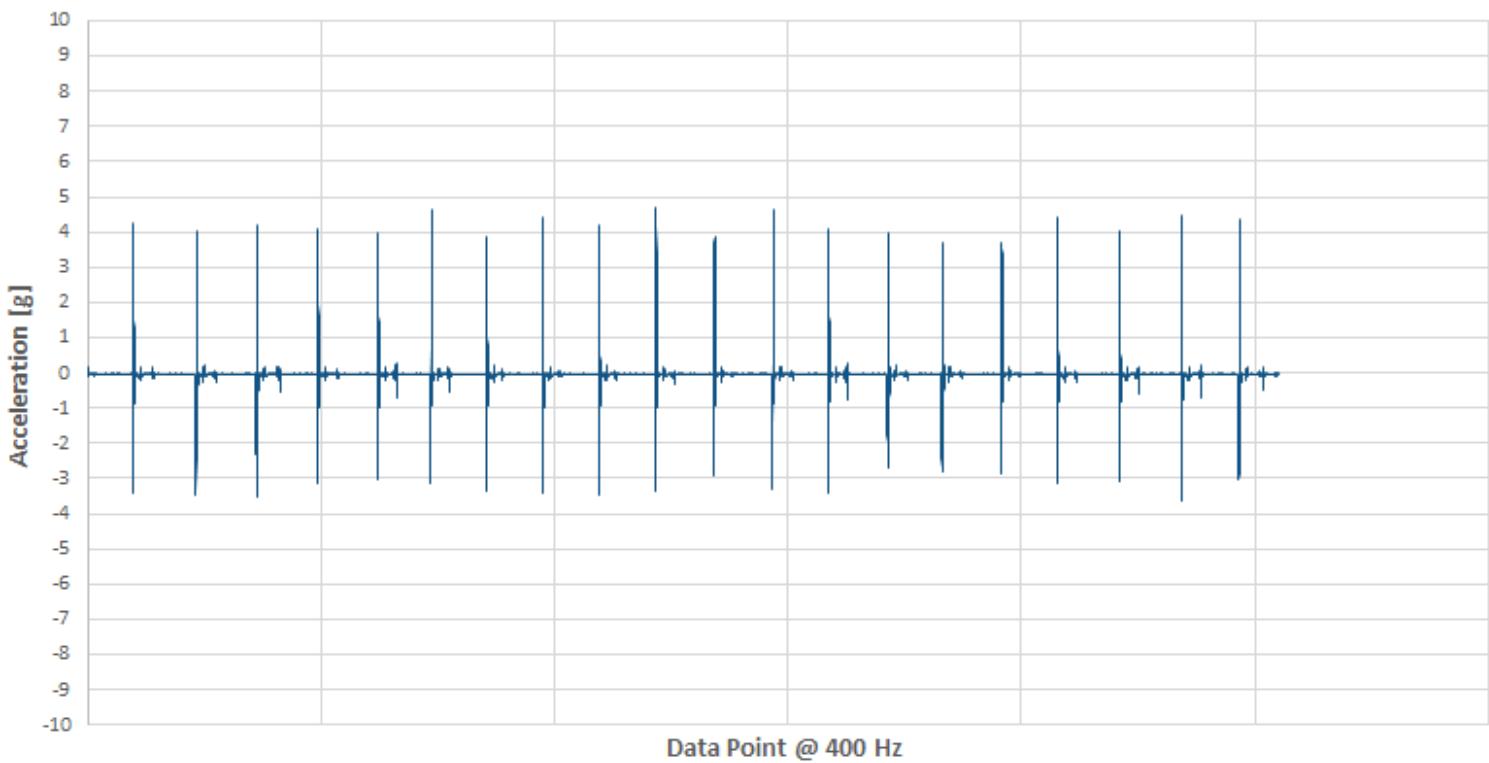


TEST 3 – ZINUS

Vector Magnitude Acceleration - Zinus

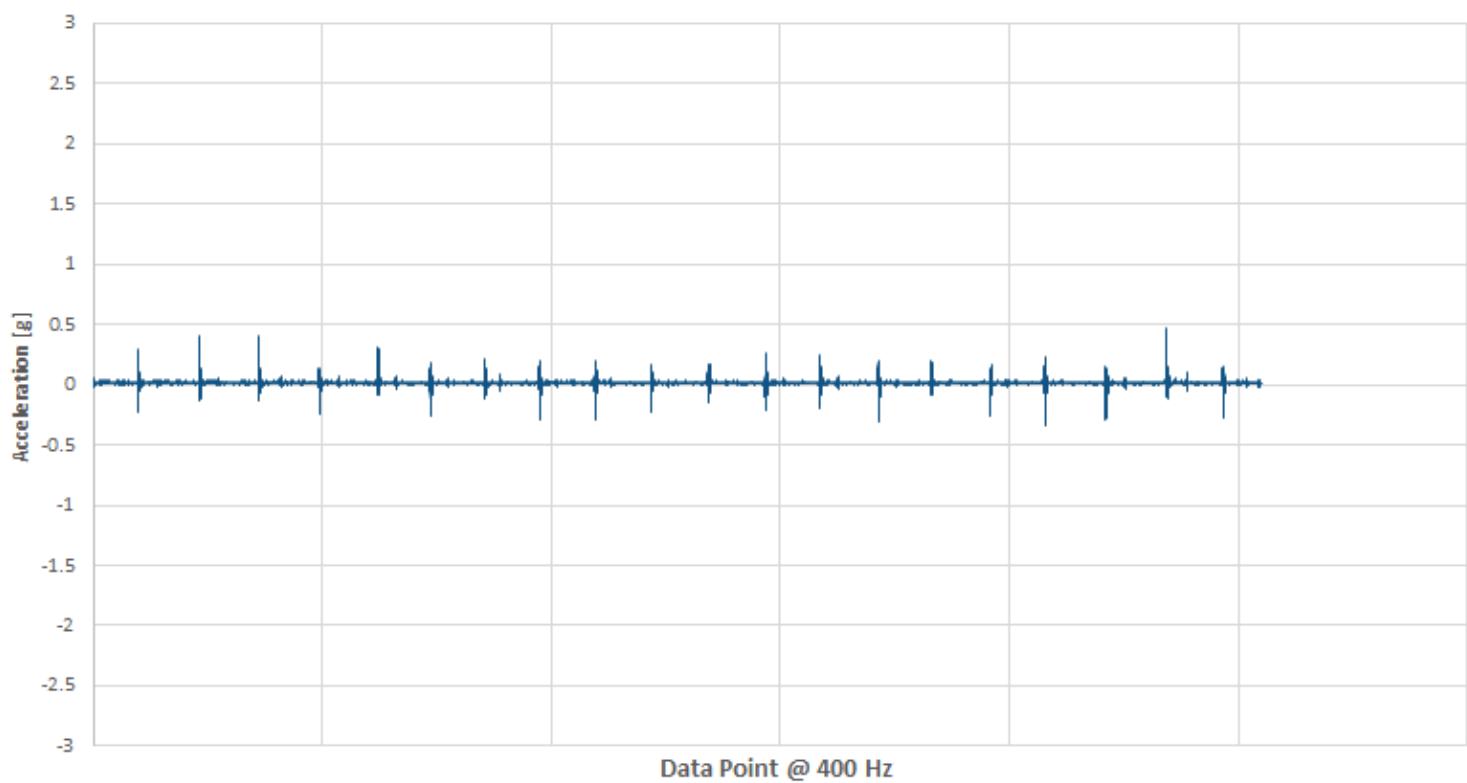


X Acceleration (Side to Side) - Zinus

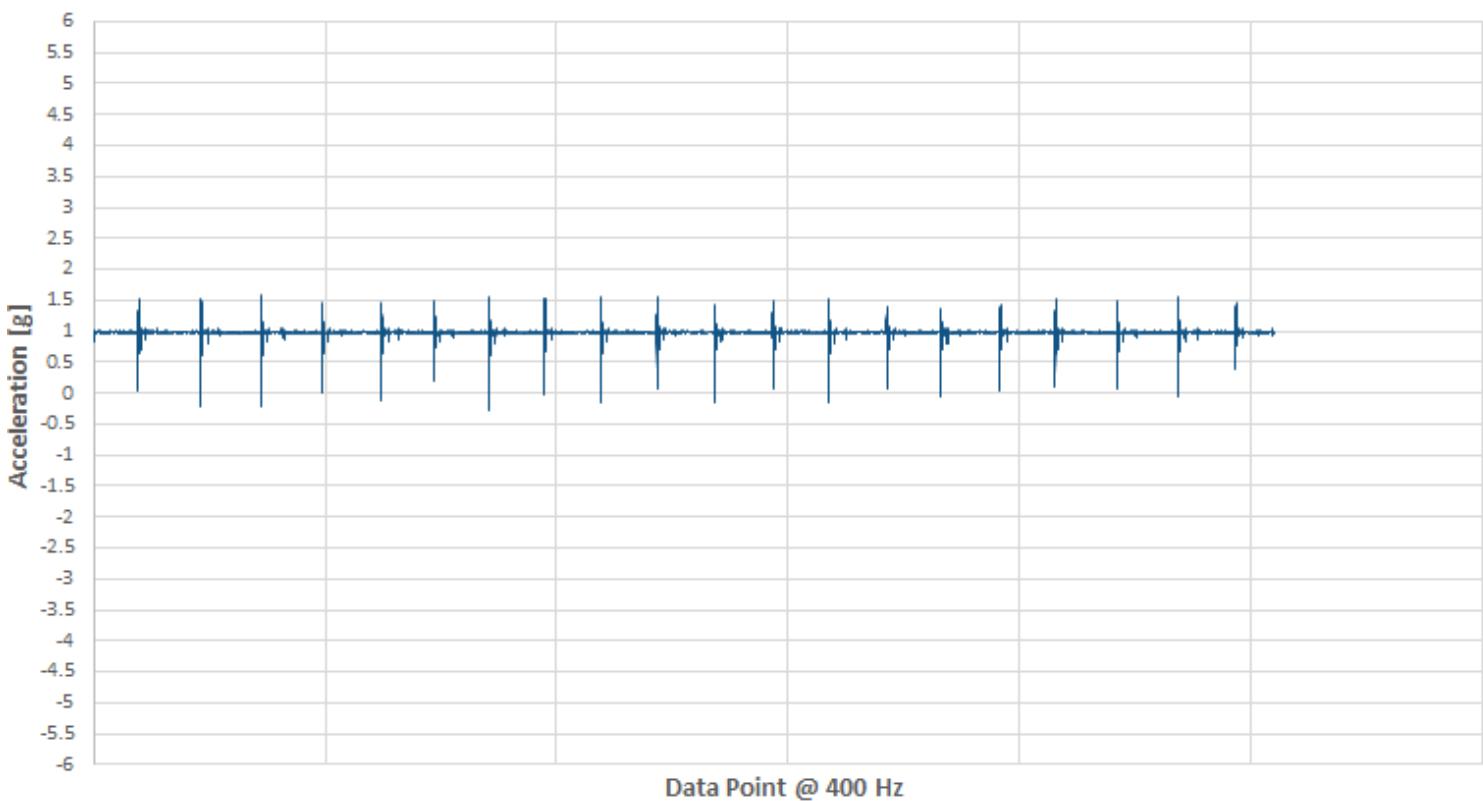




Y Acceleration (Head to Toe) - Zinus



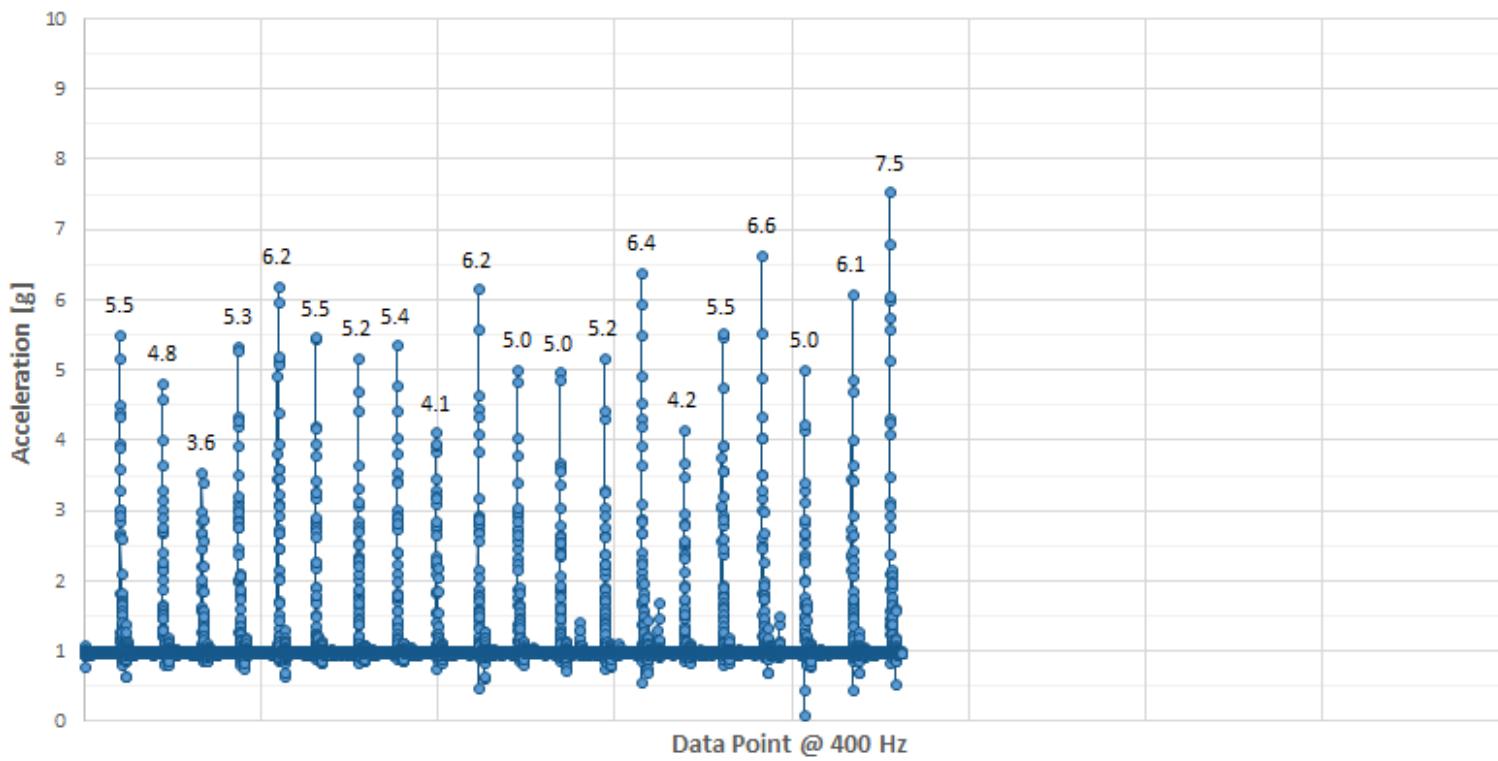
Z Acceleration (Up and Down) - Zinus



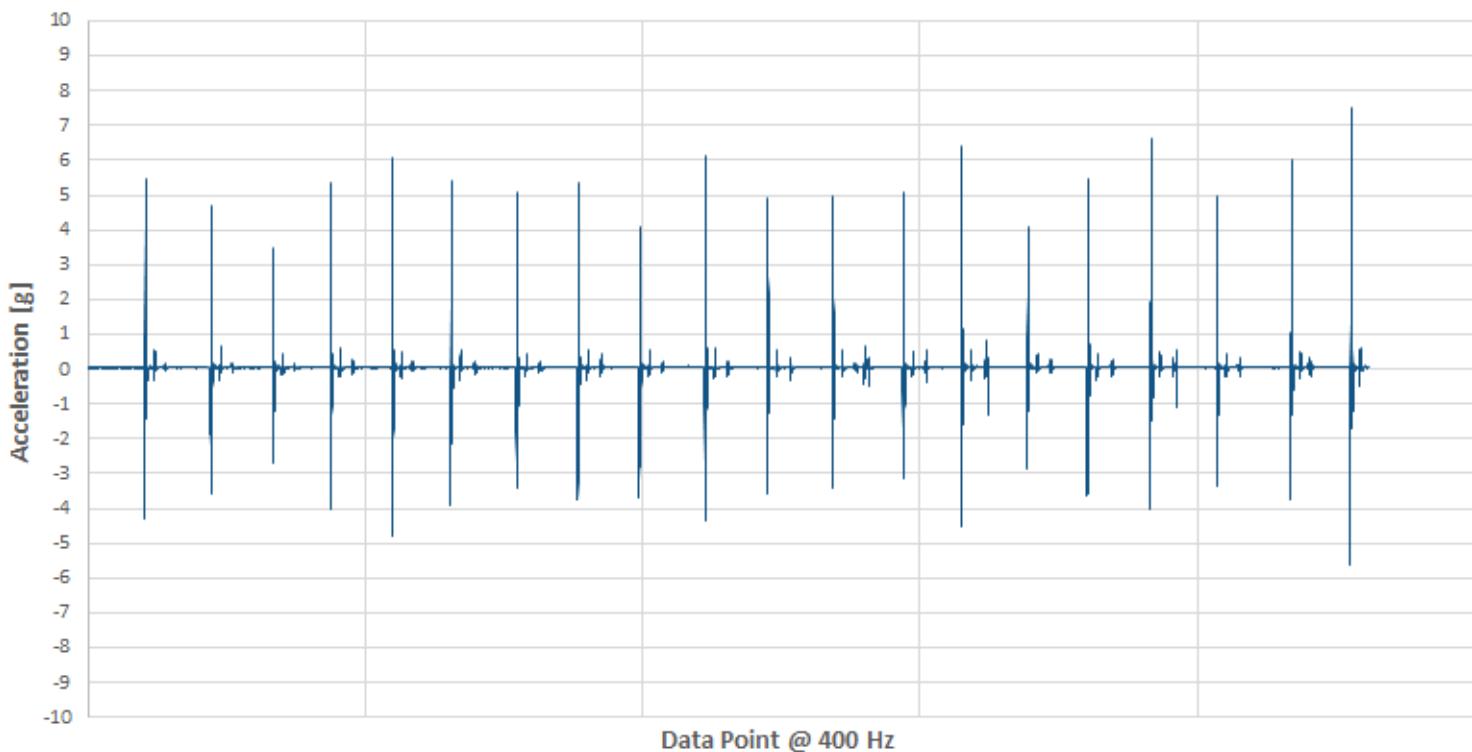


TEST 3 – NOVOSBED FIRM (V2)

Vector Magnitude Acceleration - Novosbed Firm (V2)

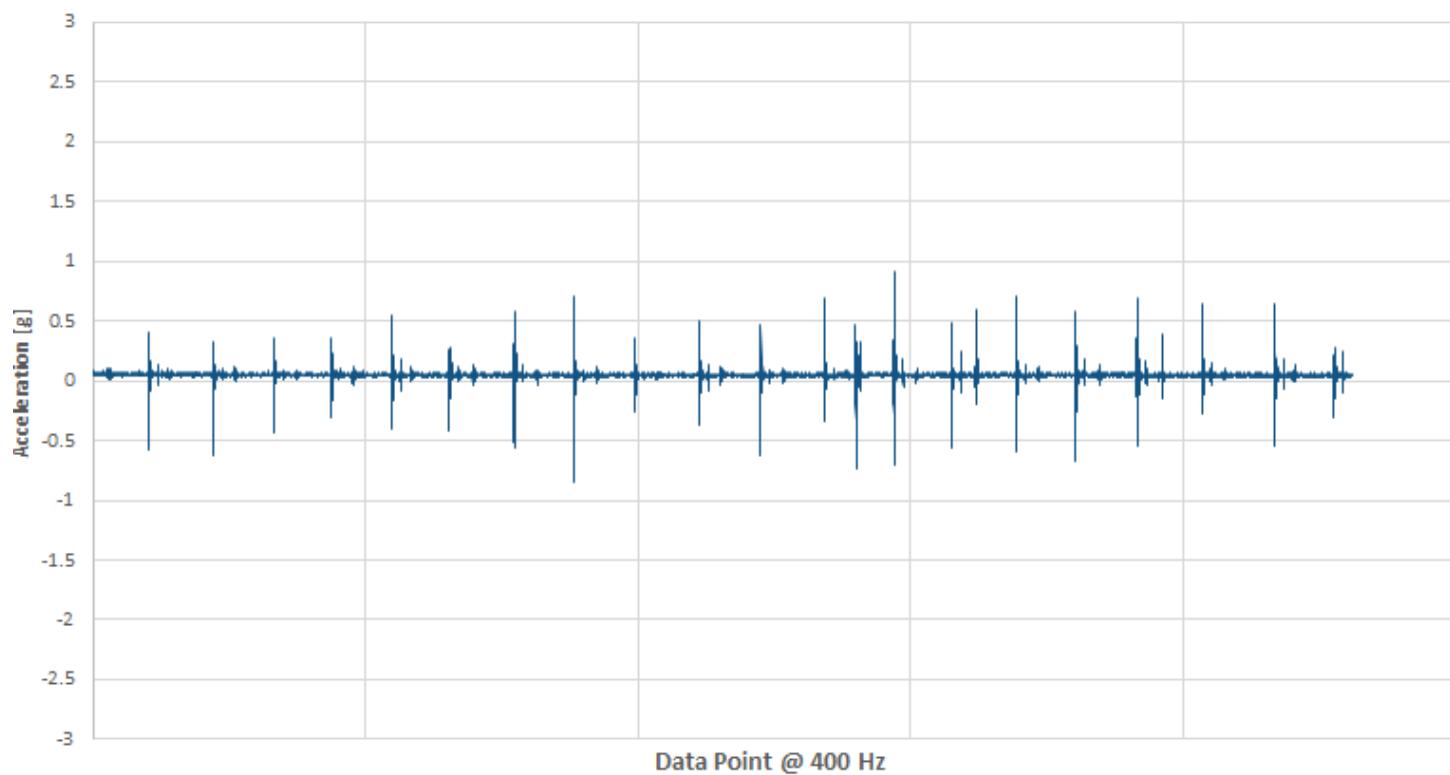


X Acceleration (Side to Side) - Novosbed Firm (V2)

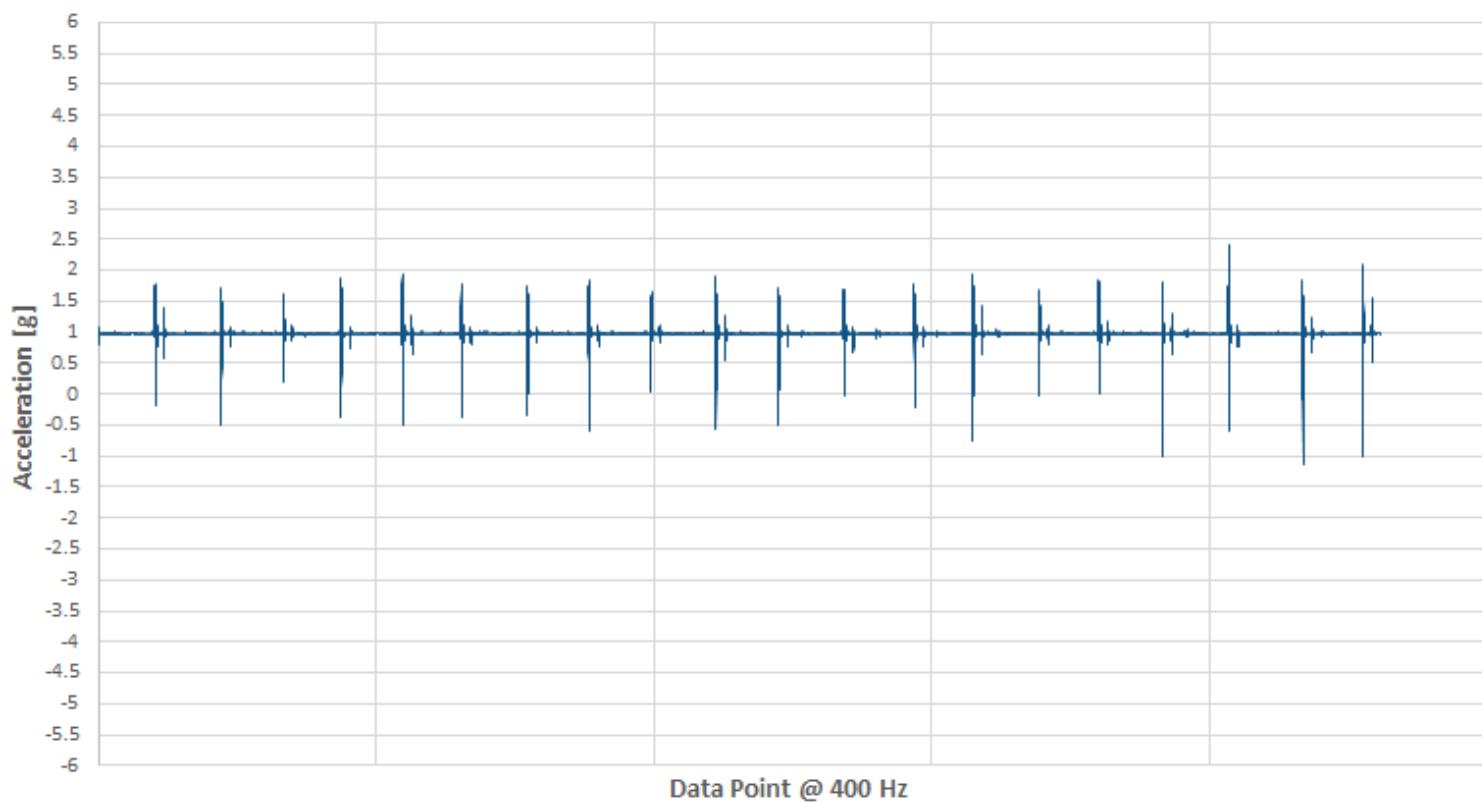




Y Acceleration (Head to Toe) - Novosbed Firm (V2)



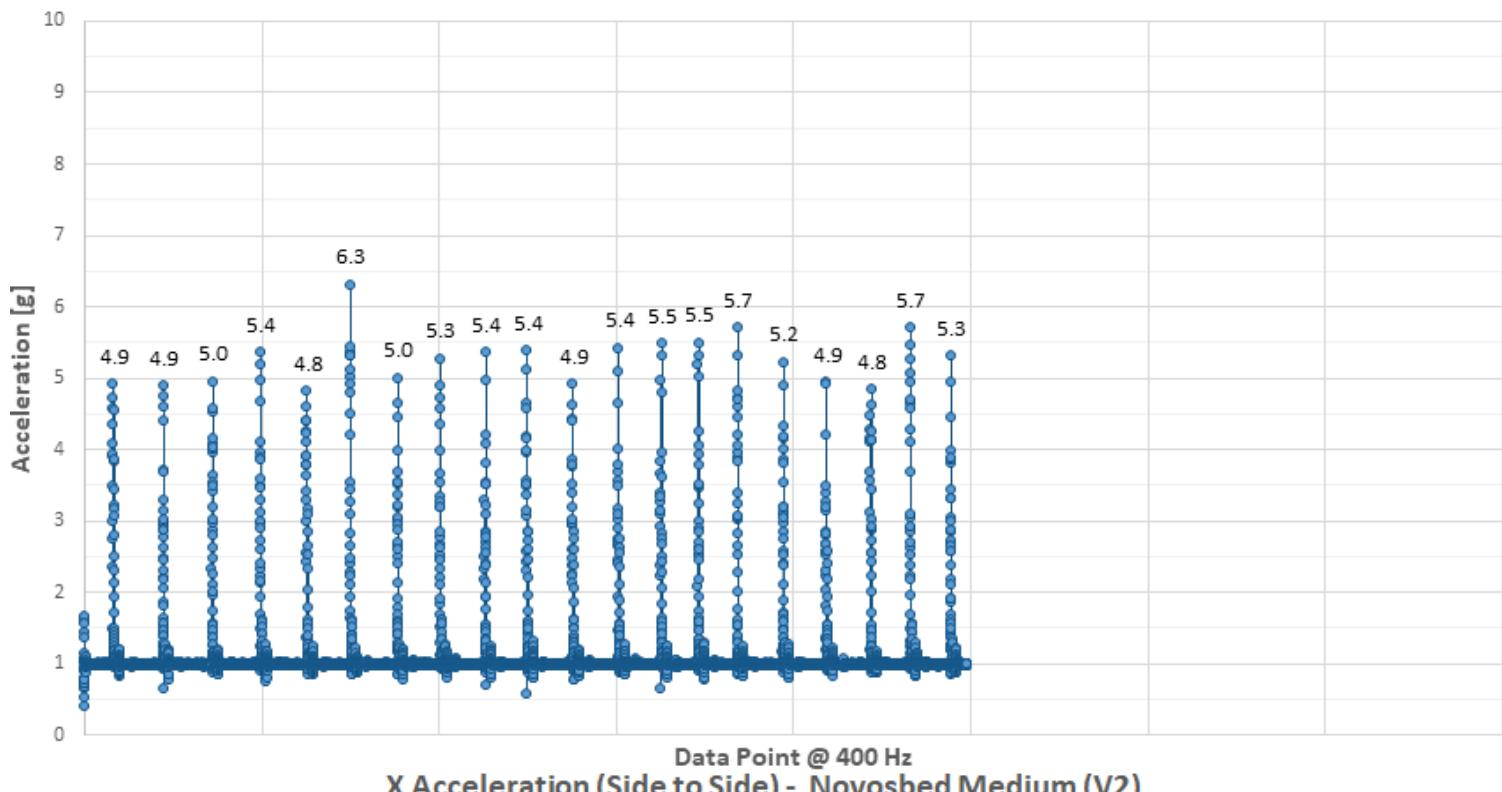
Z Acceleration (Up and Down) - Novosbed Firm (V2)



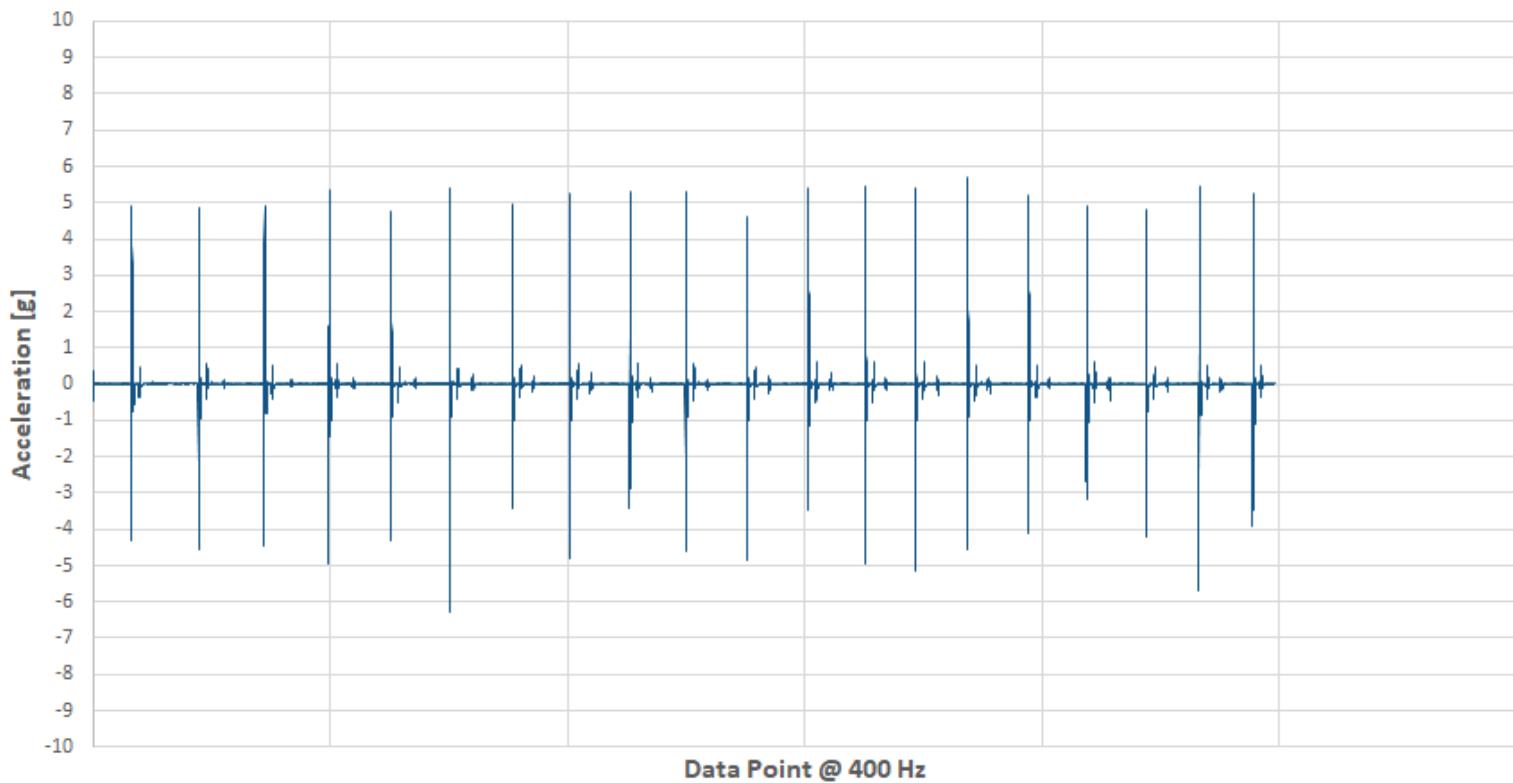


TEST 3 – NOVOSBED MEDIUM (V2)

Vector Magnitude Acceleration - Novosbed Medium (V2)

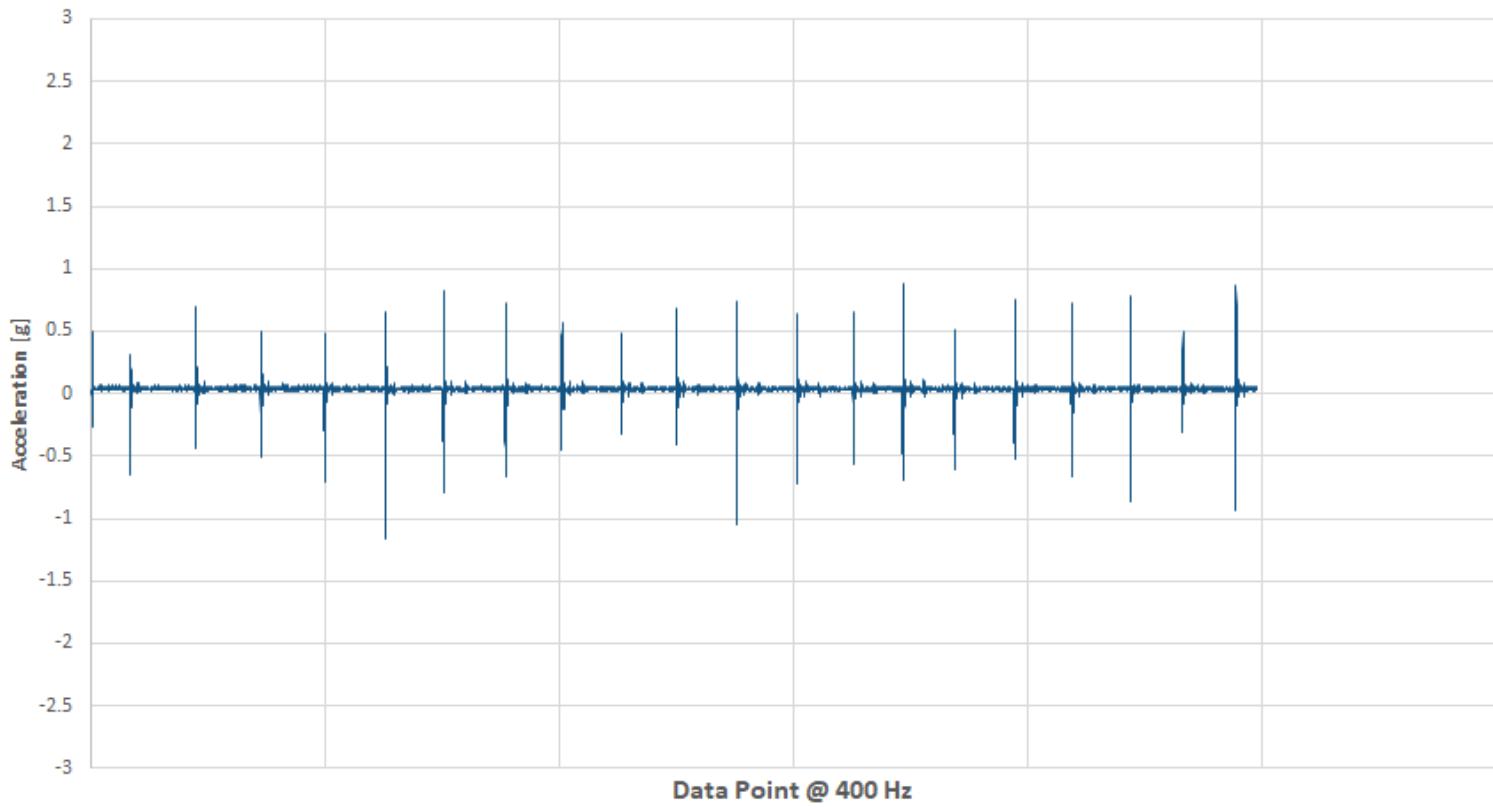


X Acceleration (Side to Side) - Novosbed Medium (V2)

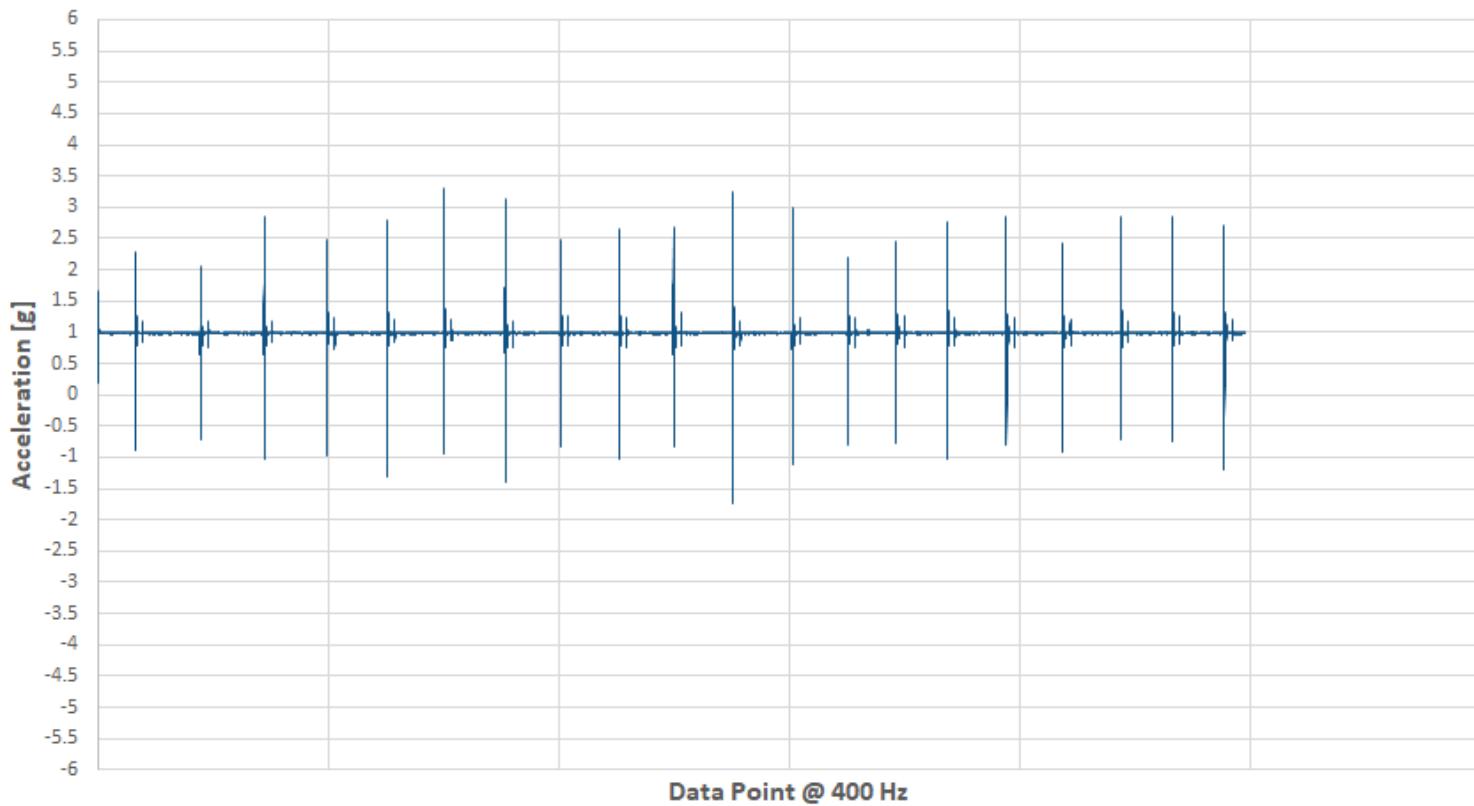




Y Acceleration (Head to Toe) - Novosbed Medium (V2)



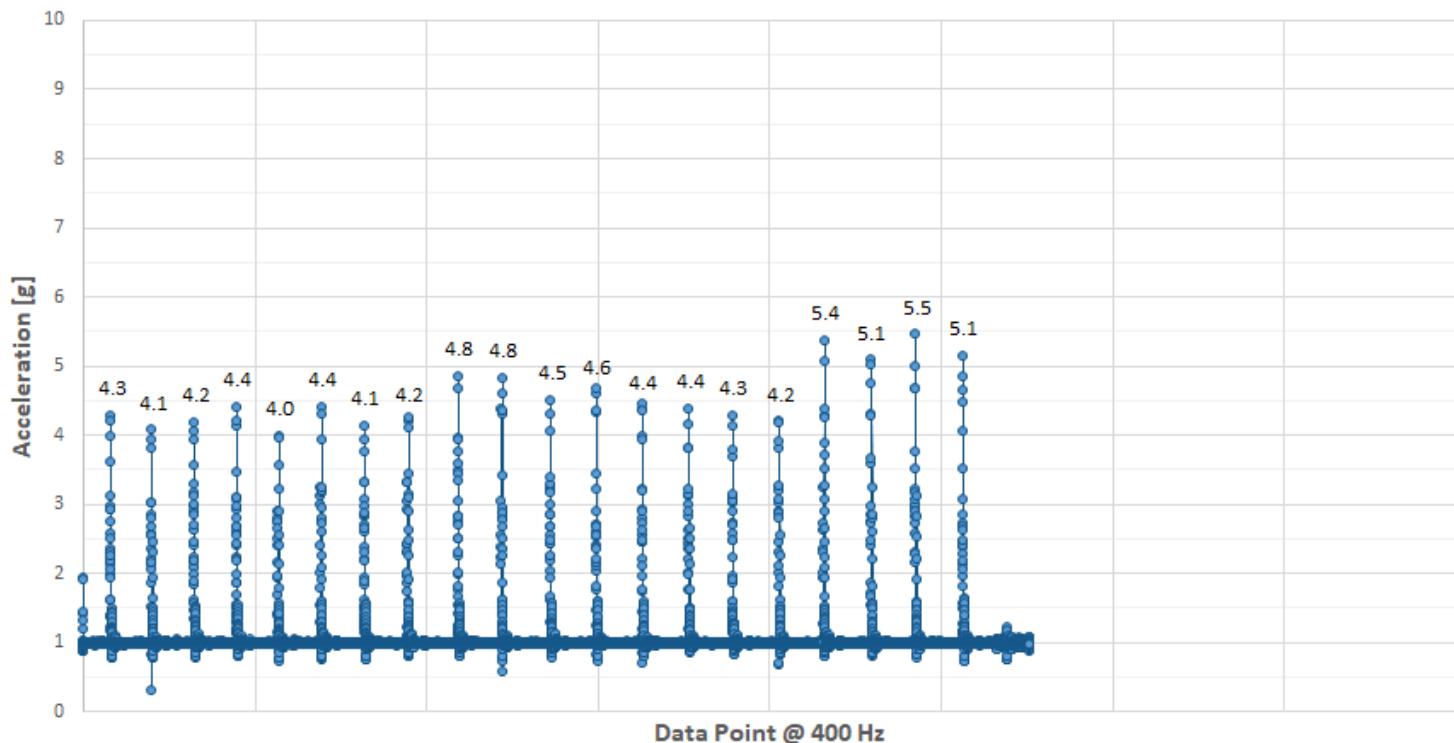
Z Acceleration (Up and Down) - Novosbed Medium (V2)



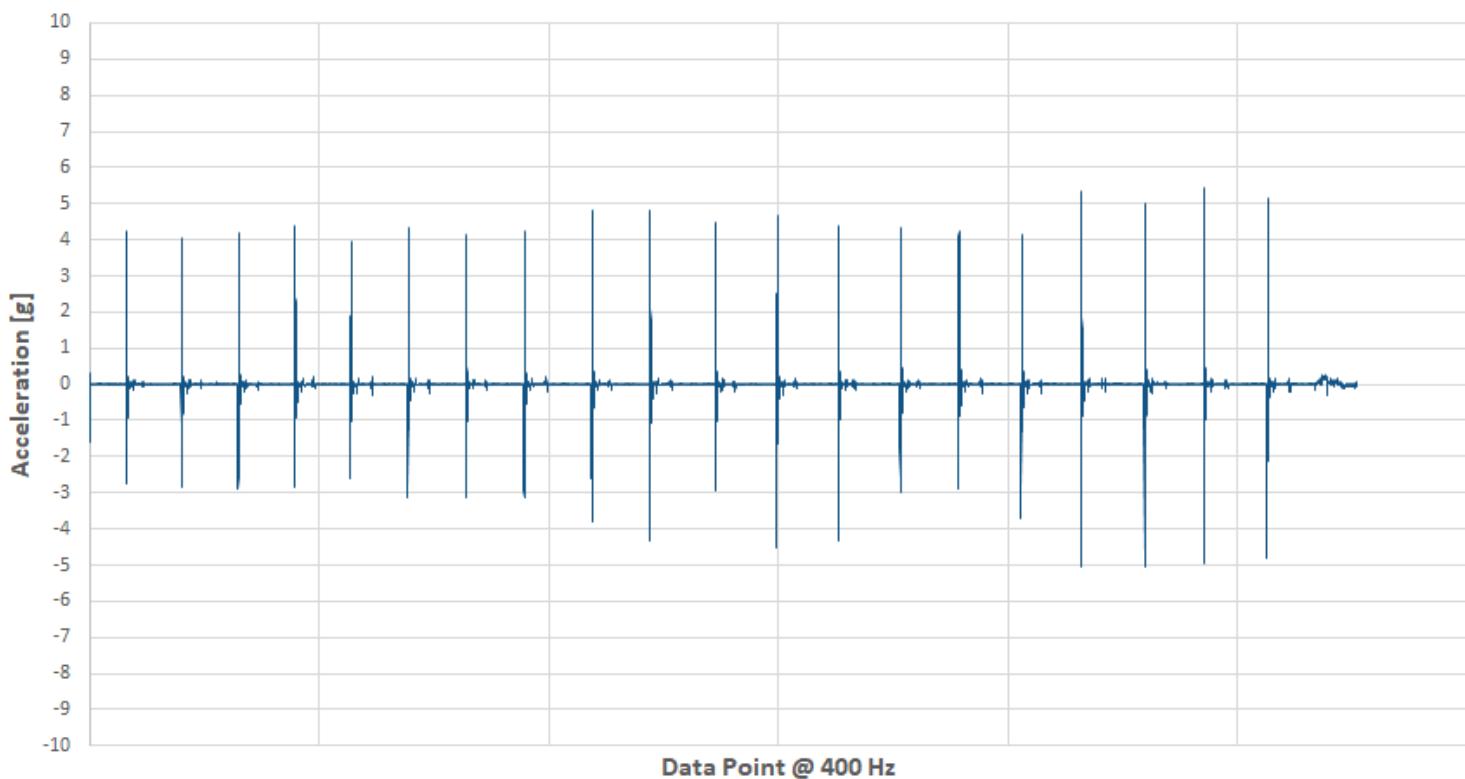


TEST 3 – NOVOSBED SOFT (V2)

Vector Magnitude Acceleration - Novosbed Soft (V2)

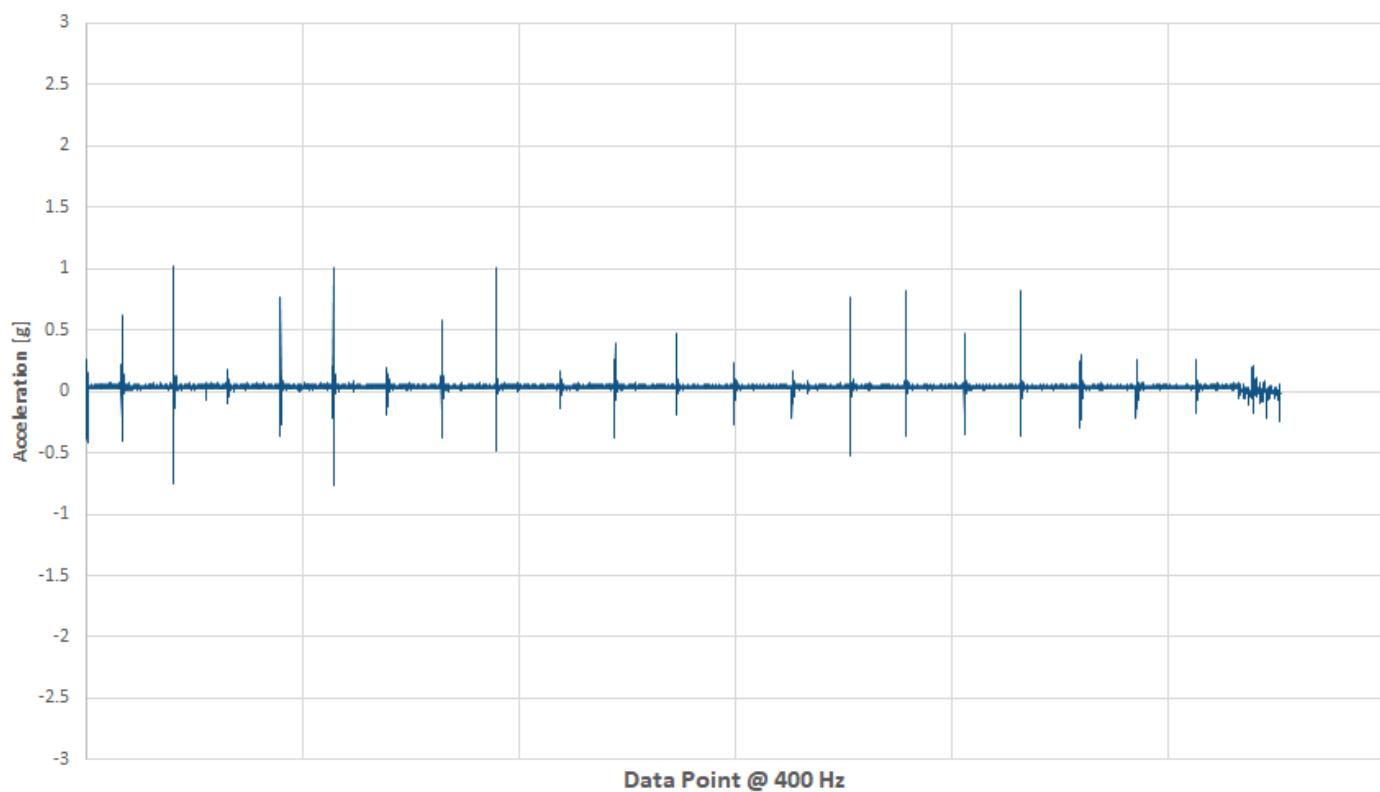


X Acceleration (Side to Side) - Novosbed Soft (V2)

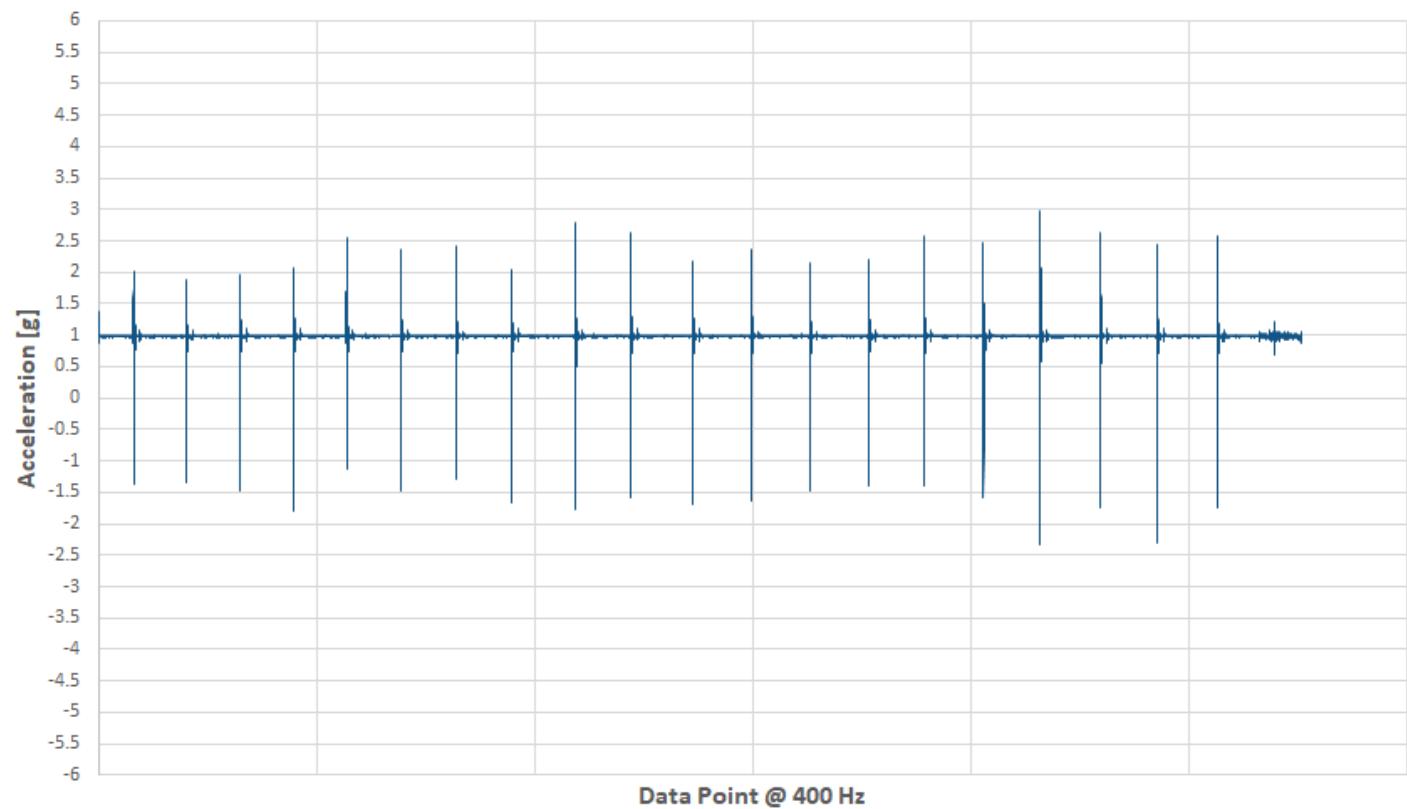




Y Acceleration (Head to Toe) - Novosbed Soft (V2)



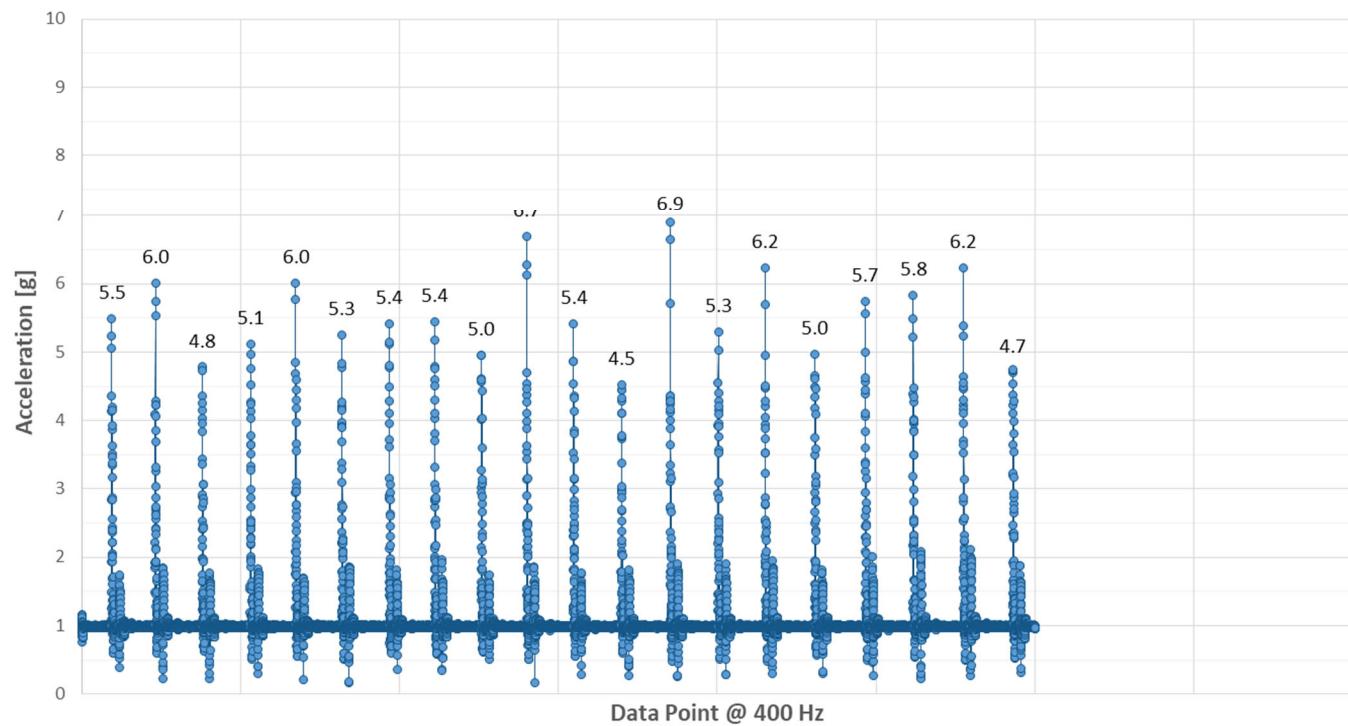
Z Acceleration (Up and Down) - Novosbed Soft (V2)



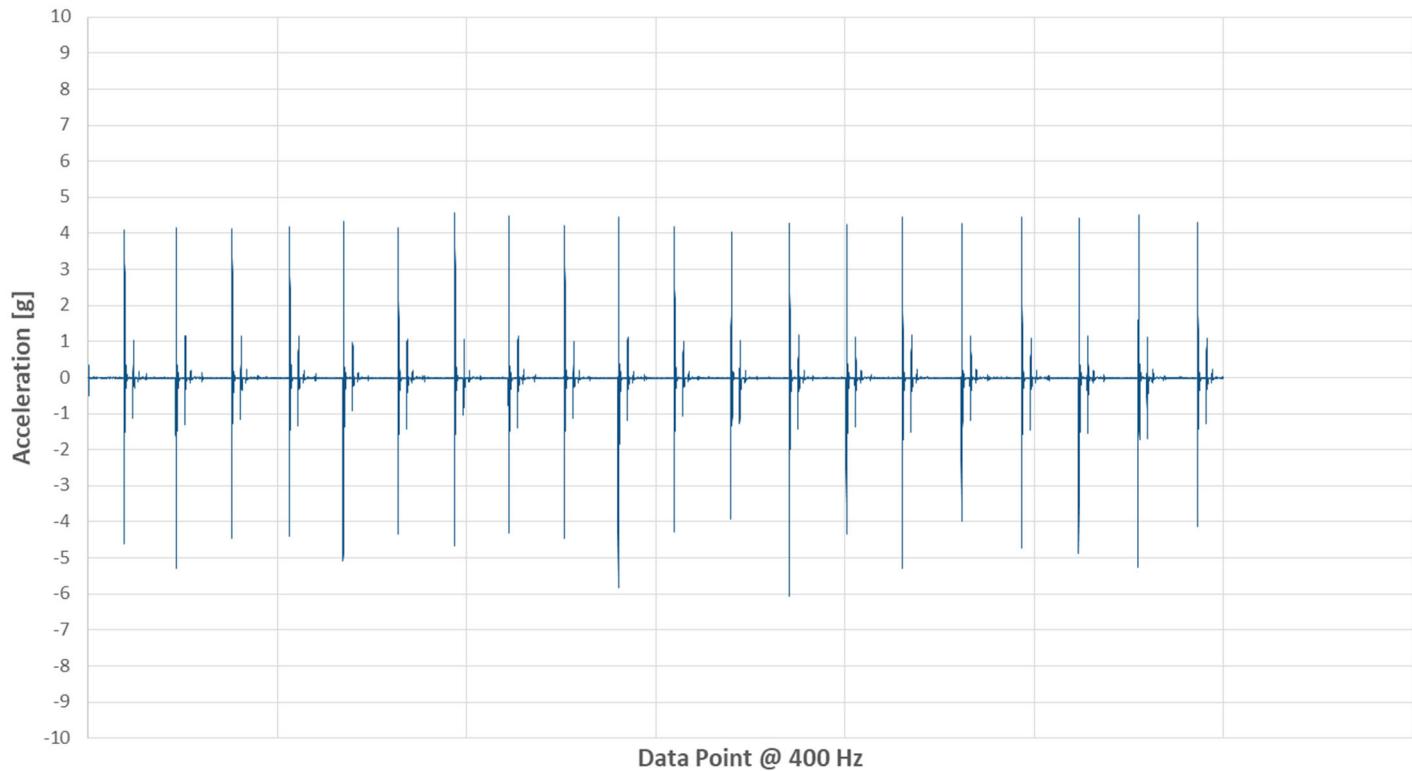


TEST 3 – BRUNSWICK

Vector Magnitude Acceleration - Brunswick

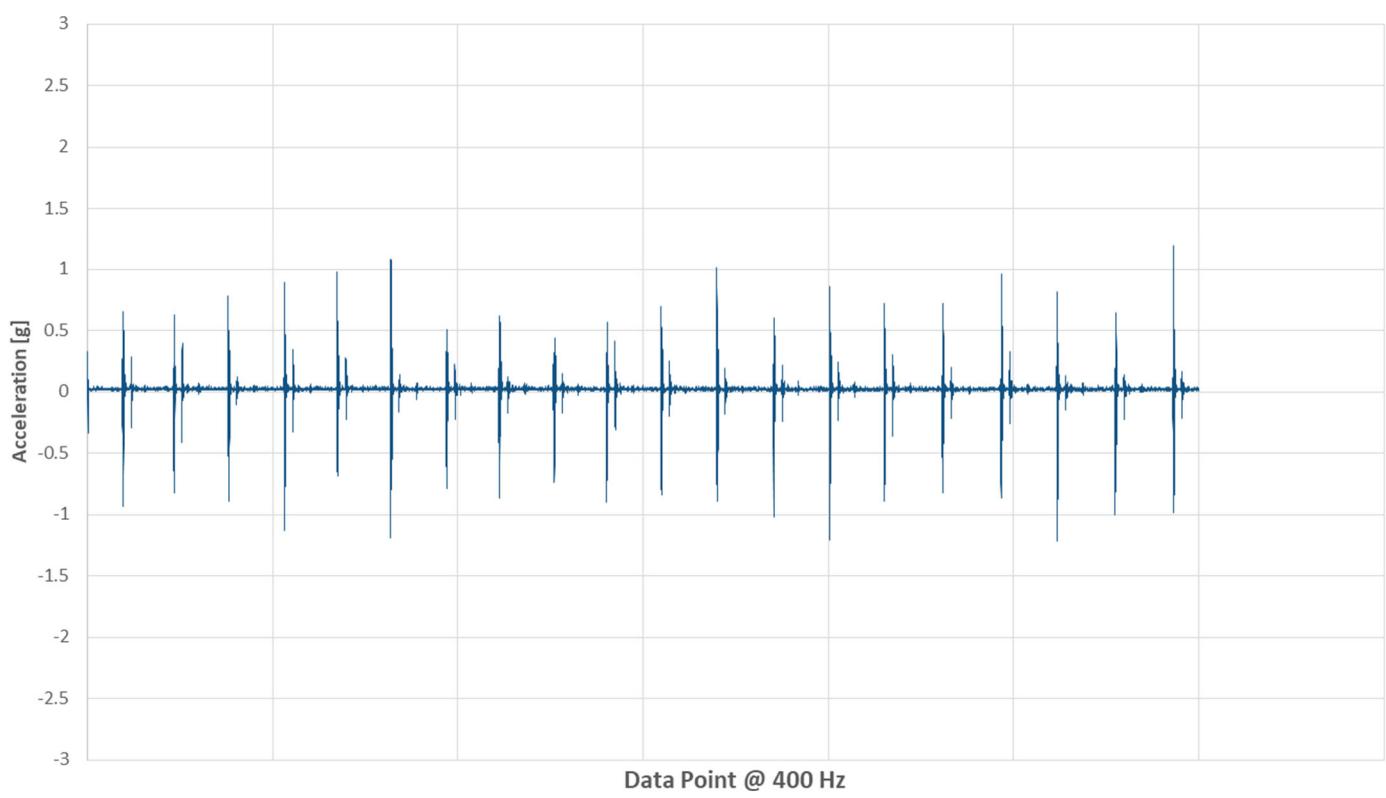


X Acceleration (Side to Side) - Brunswick

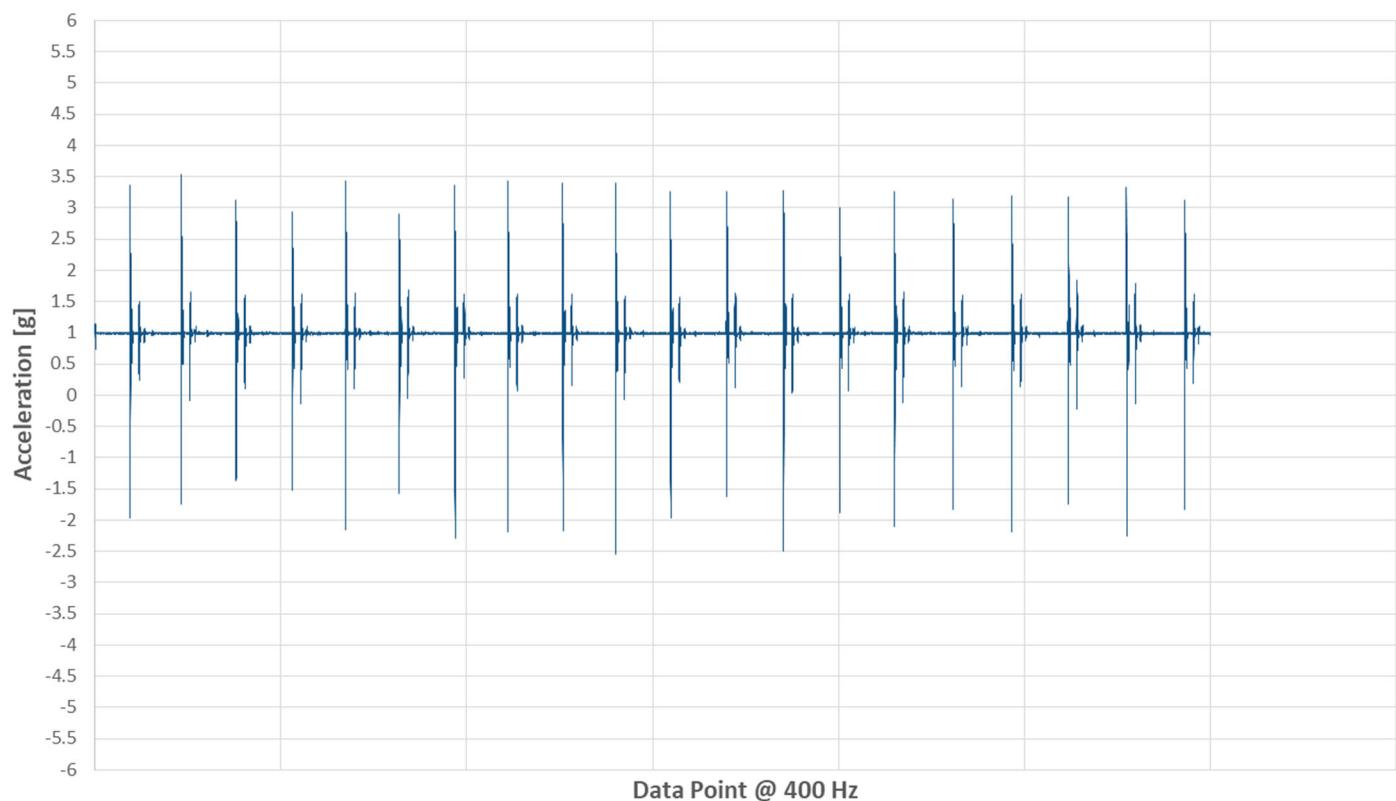




Y Acceleration (Head to Toe) - Brunswick



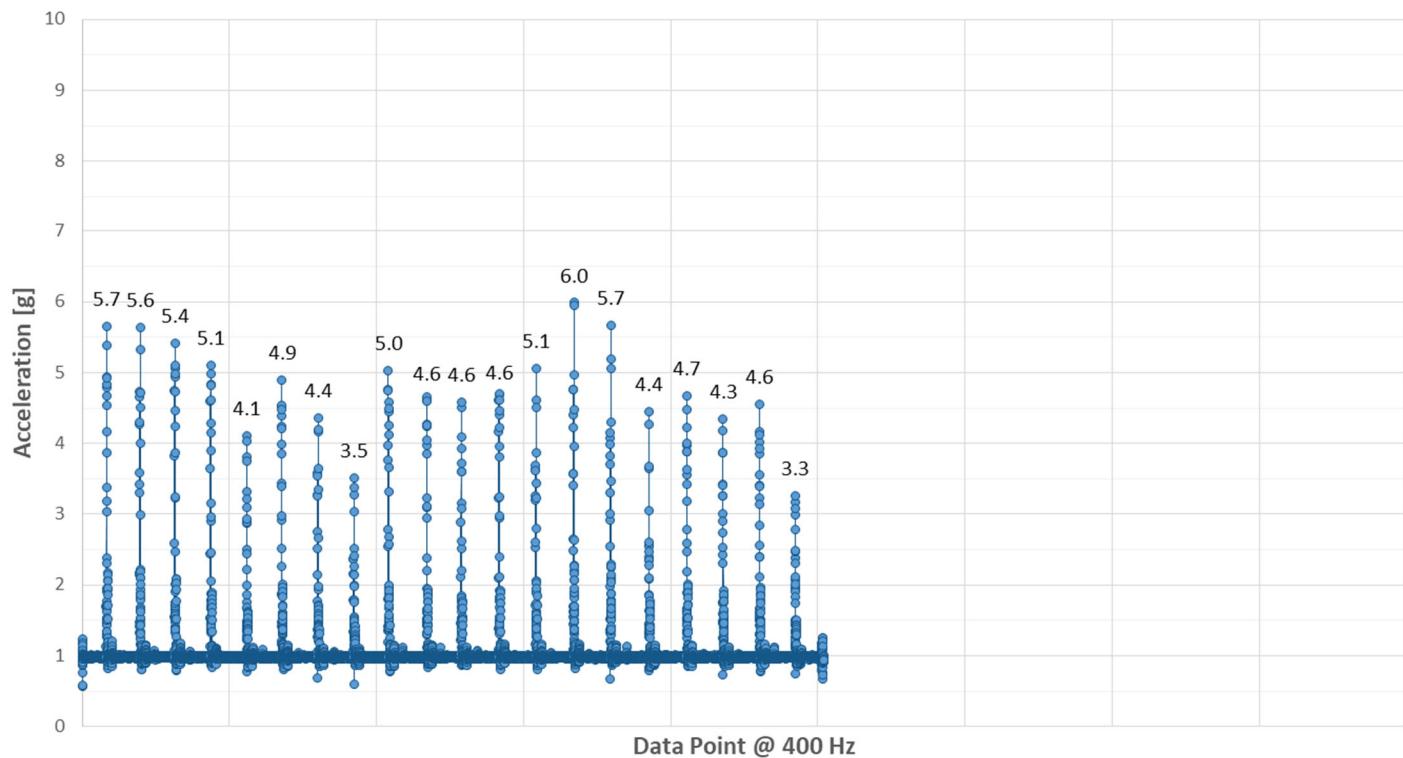
Z Acceleration (Up and Down) - Brunswick



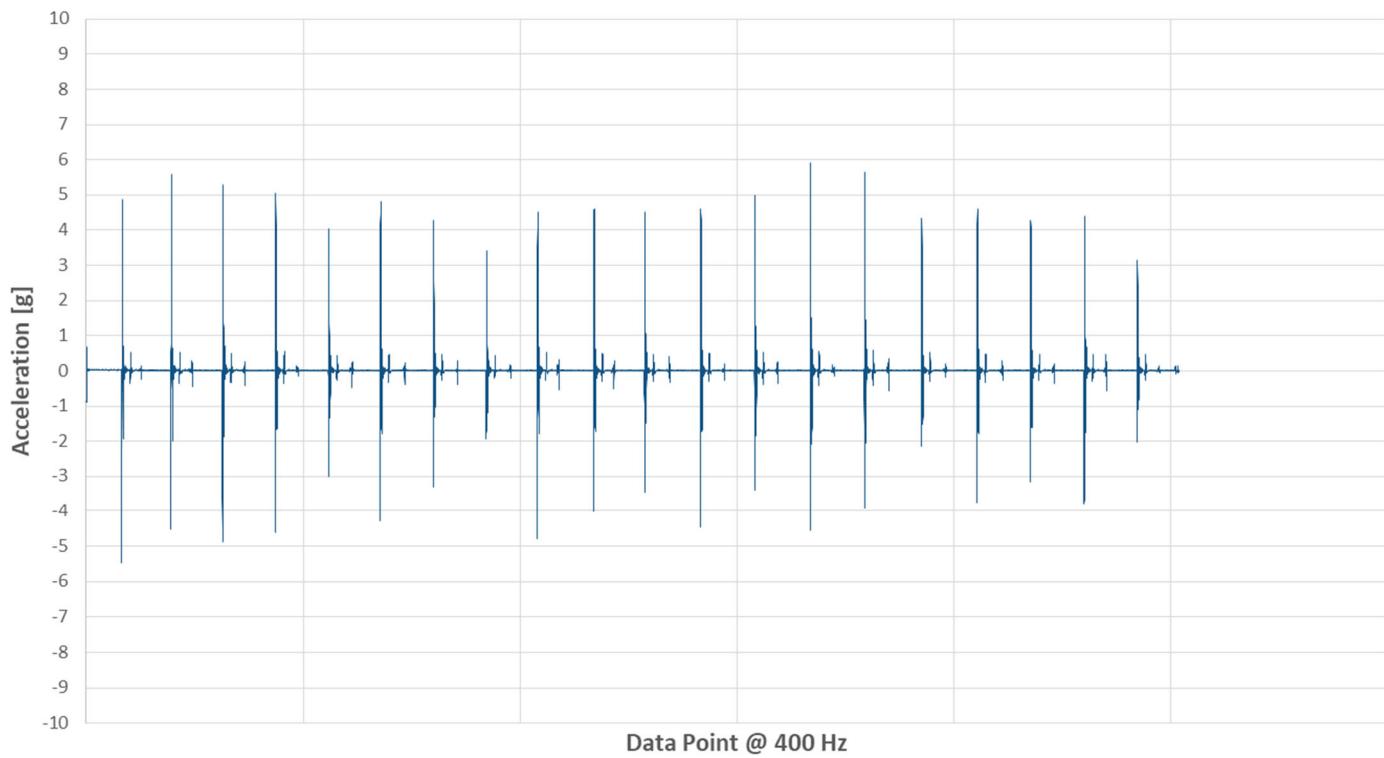


TEST 3 – RECORE

Vector Magnitude Acceleration - Recore

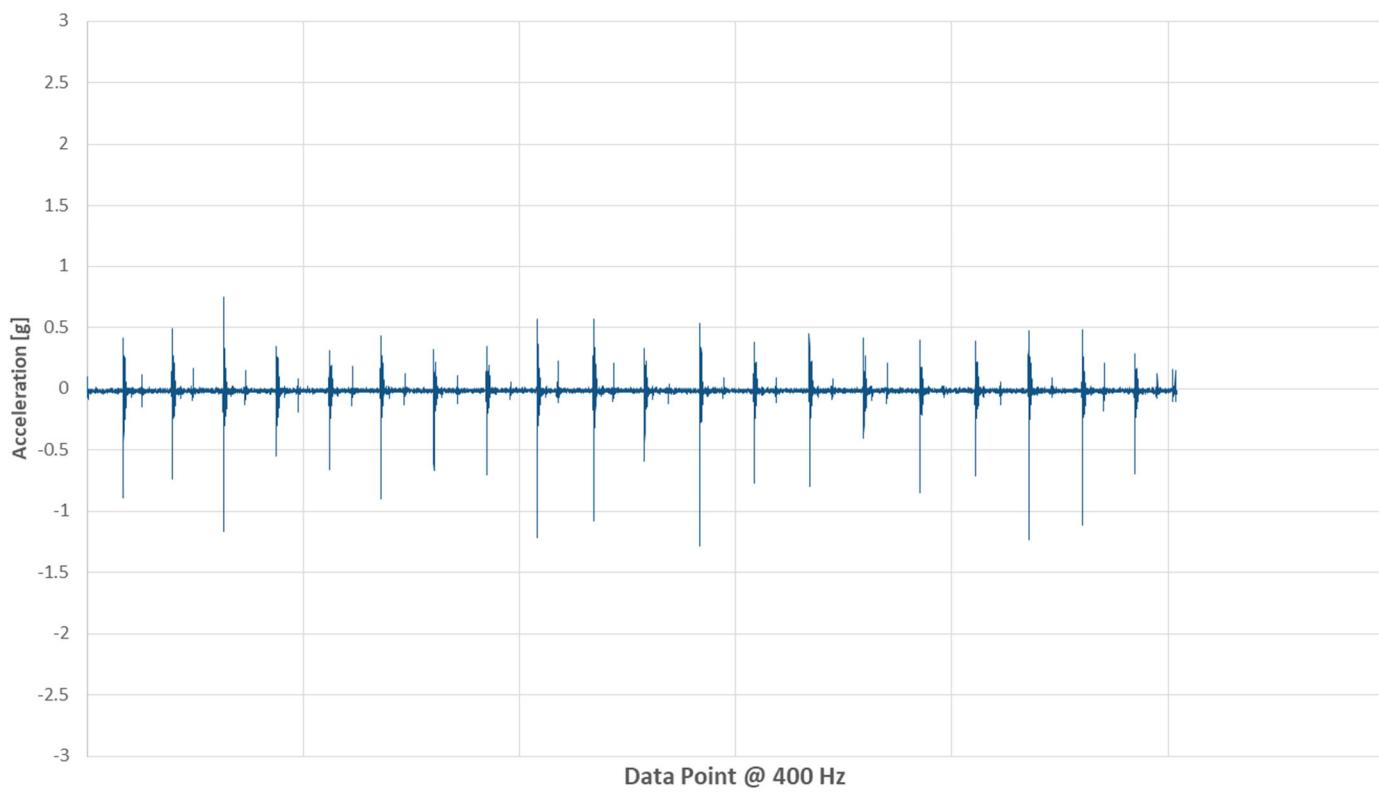


X Acceleration (Side to Side) - Recore

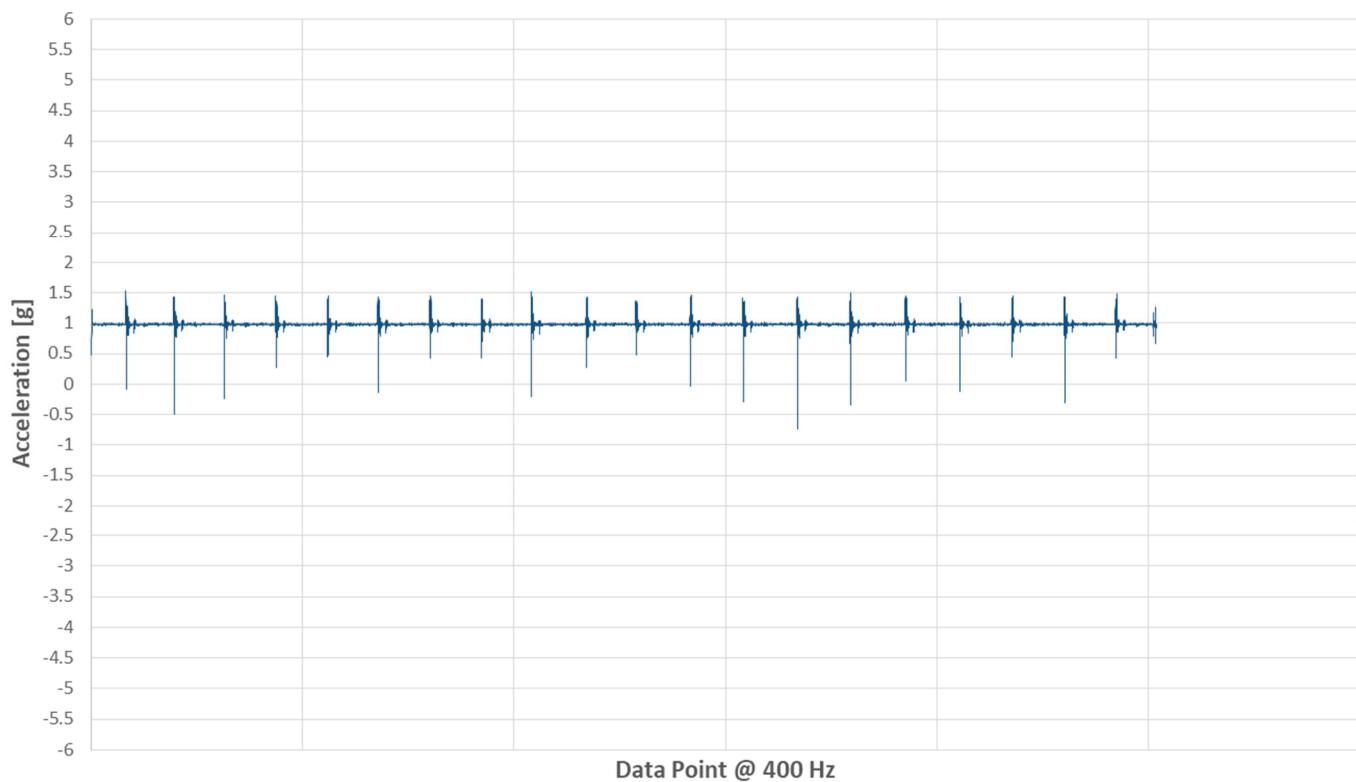




Y Acceleration (Head to Toe) - Recore



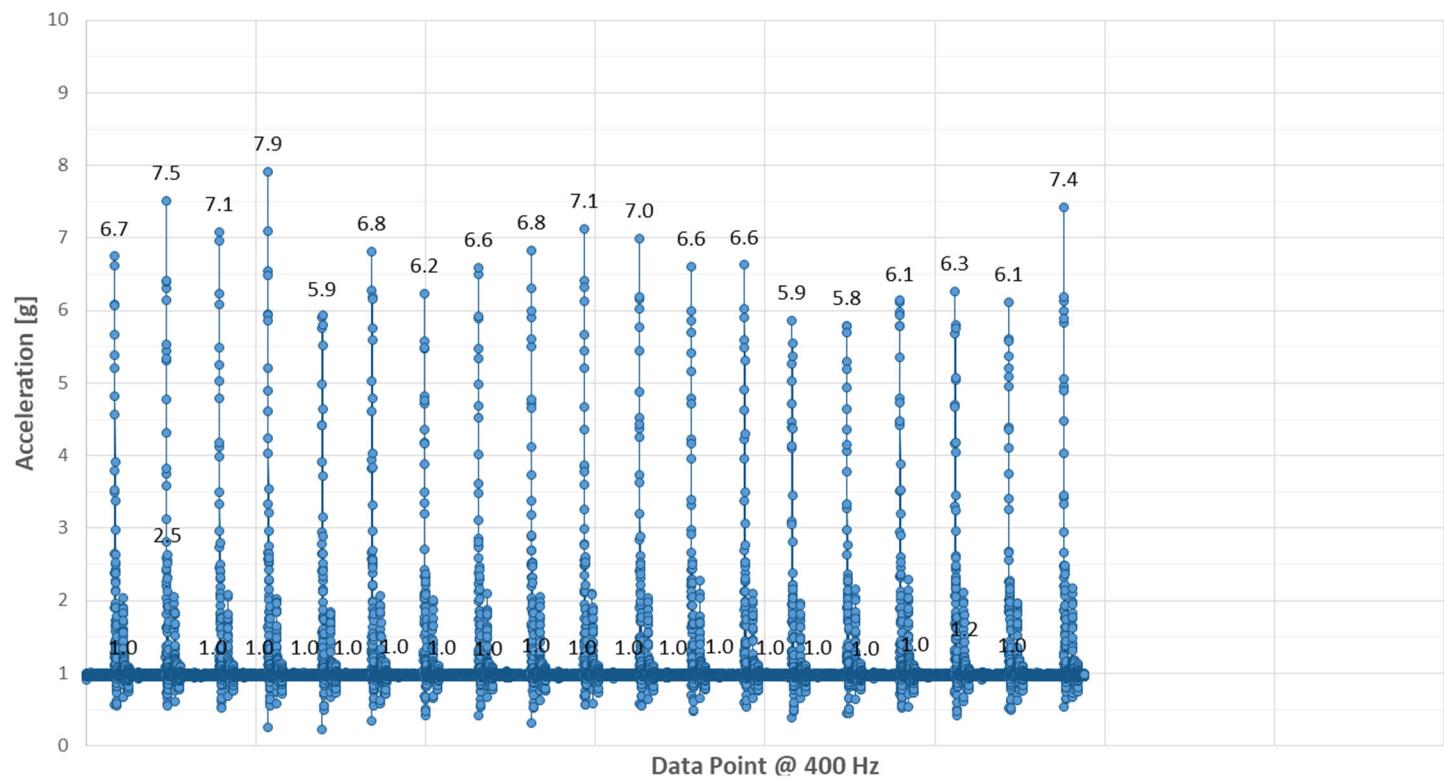
Z Acceleration (Up and Down) - Recore



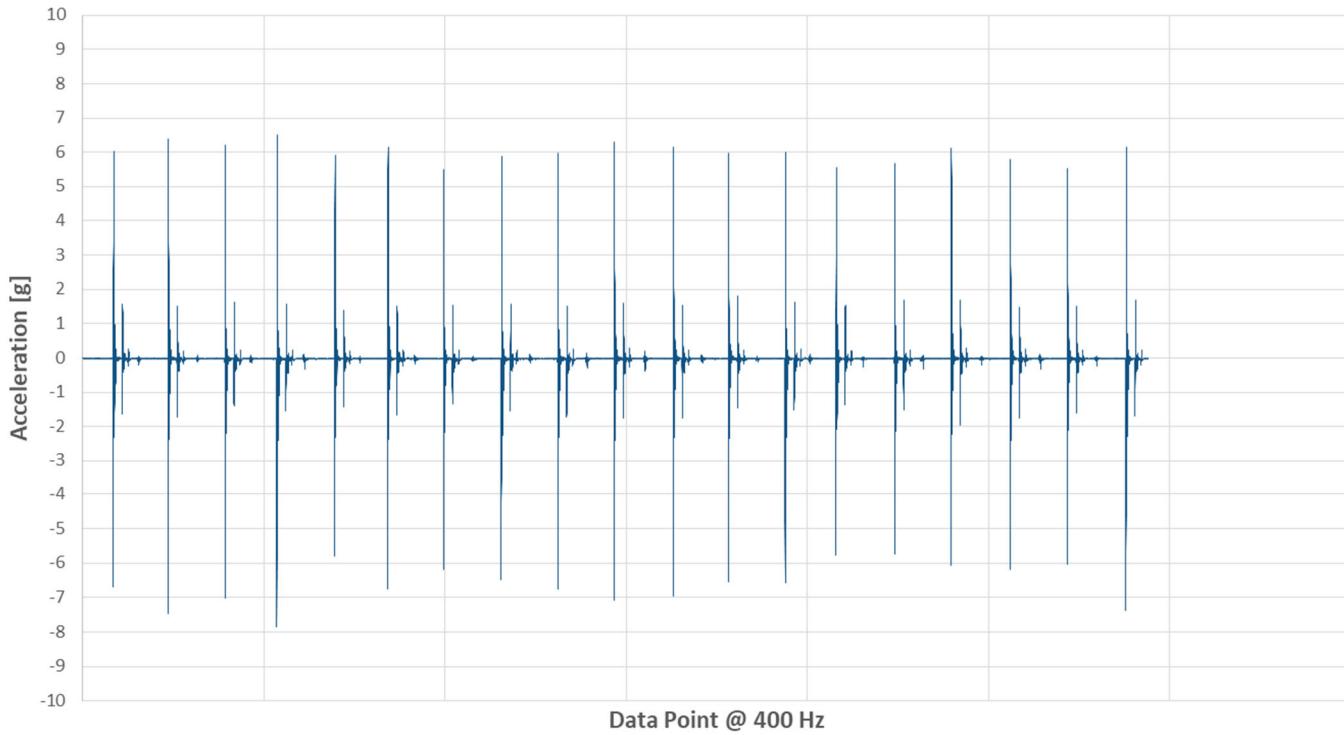


TEST 3 – DORMEO

Vector Magnitude Acceleration - Dormeo

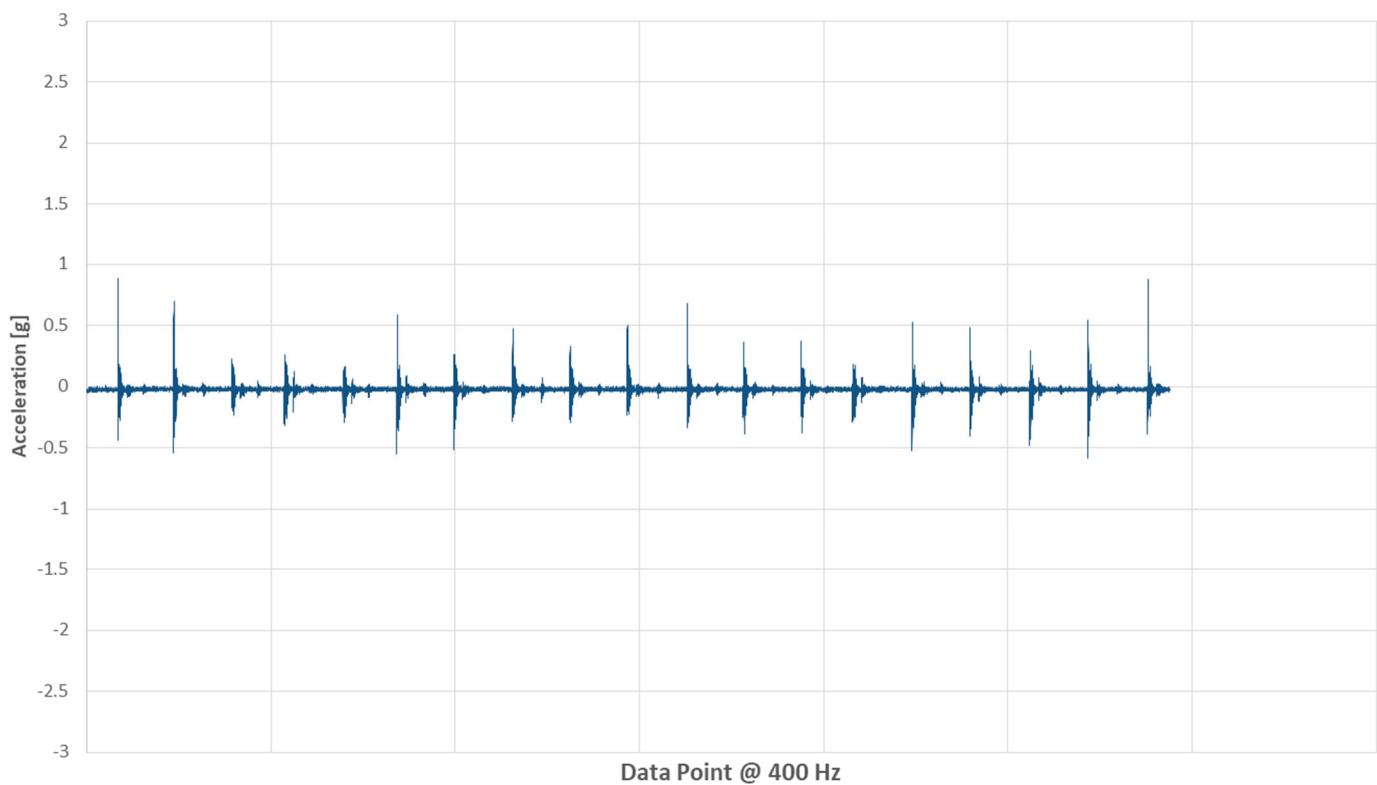


X Acceleration (Side to Side) - Dormeo

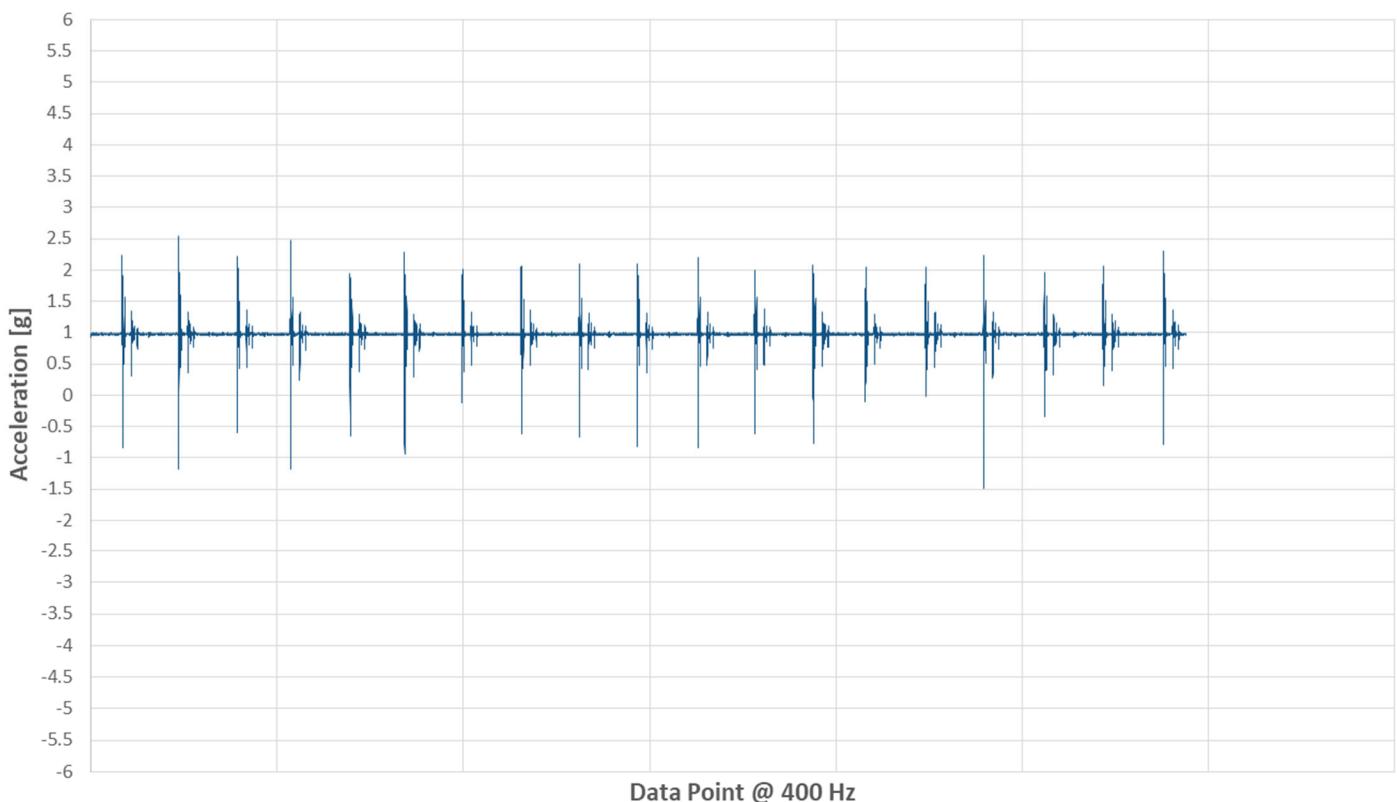




Y Acceleration (Head to Toe) - Dormeo



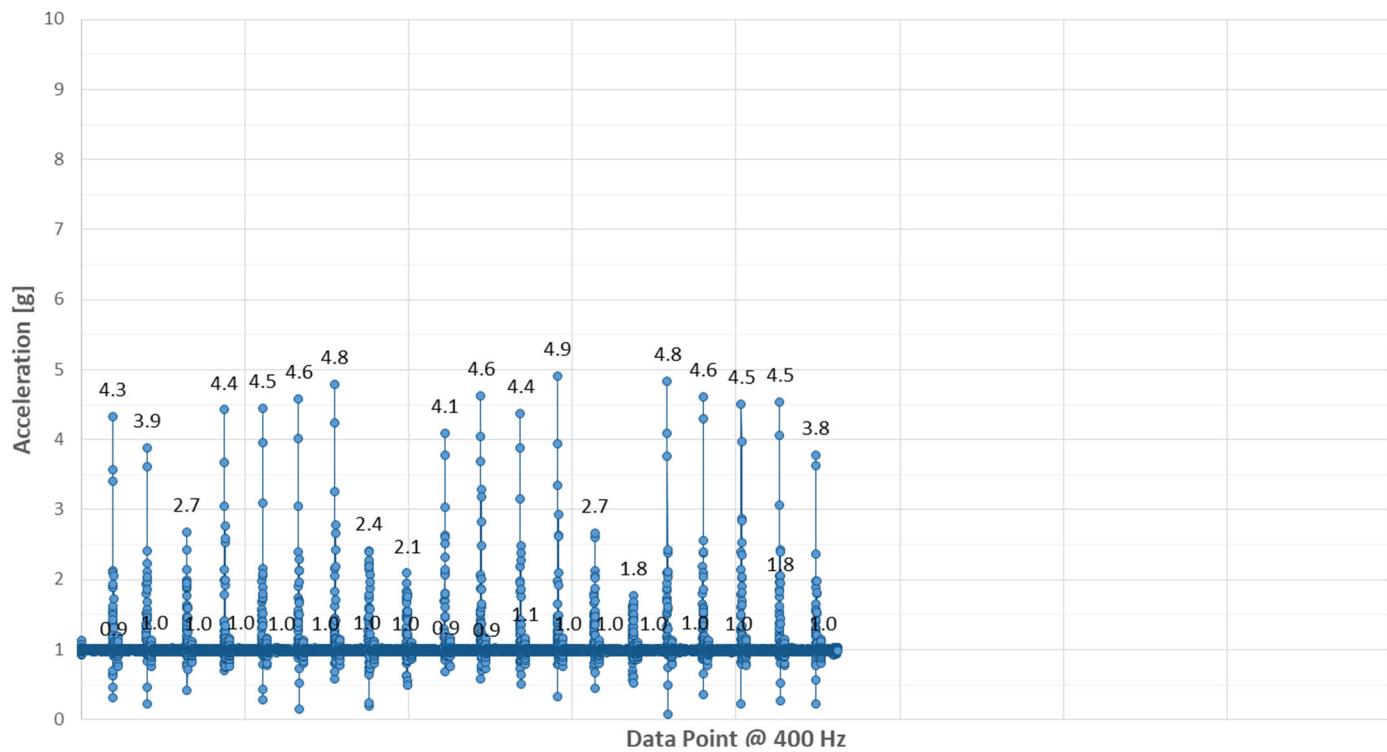
Z Acceleration (Up and Down) - Dormeo



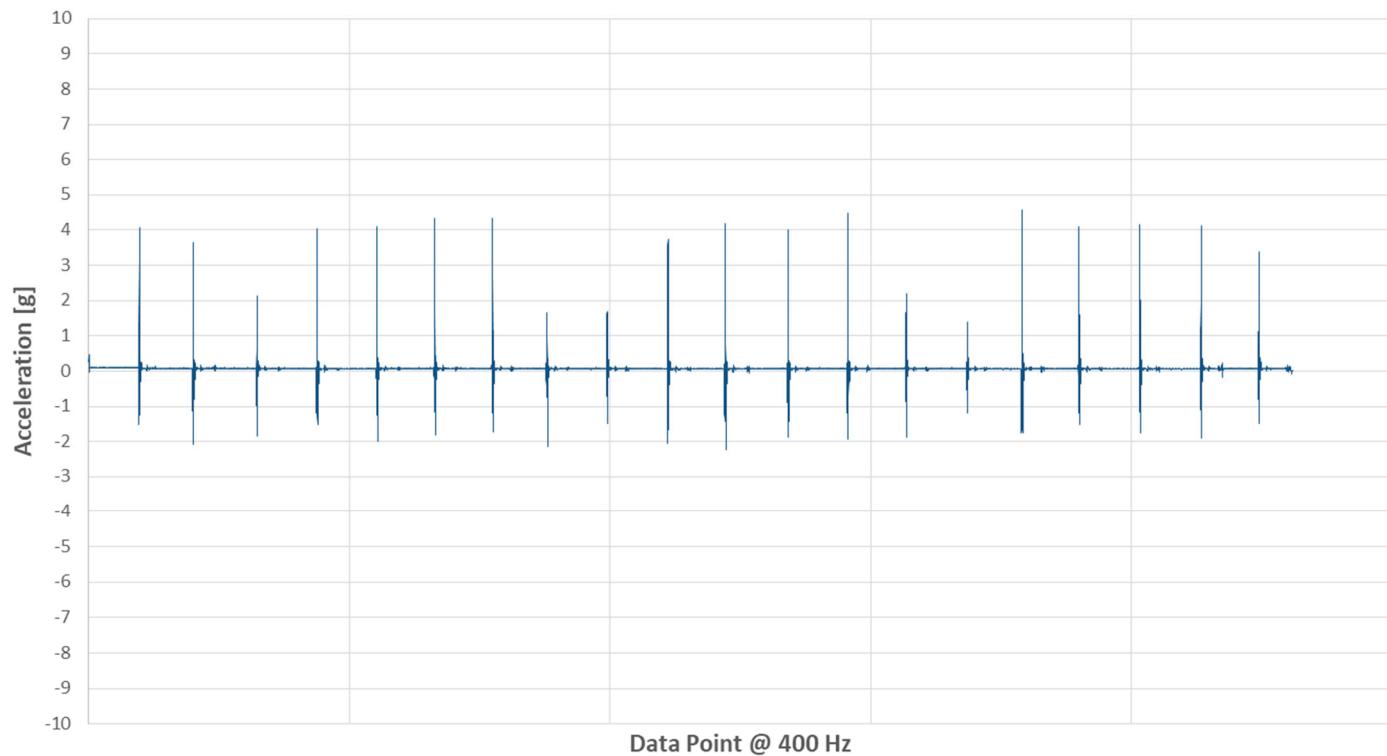


TEST 3 – SILK + SNOW (V1)

Vector Magnitude Acceleration - Silk + Snow

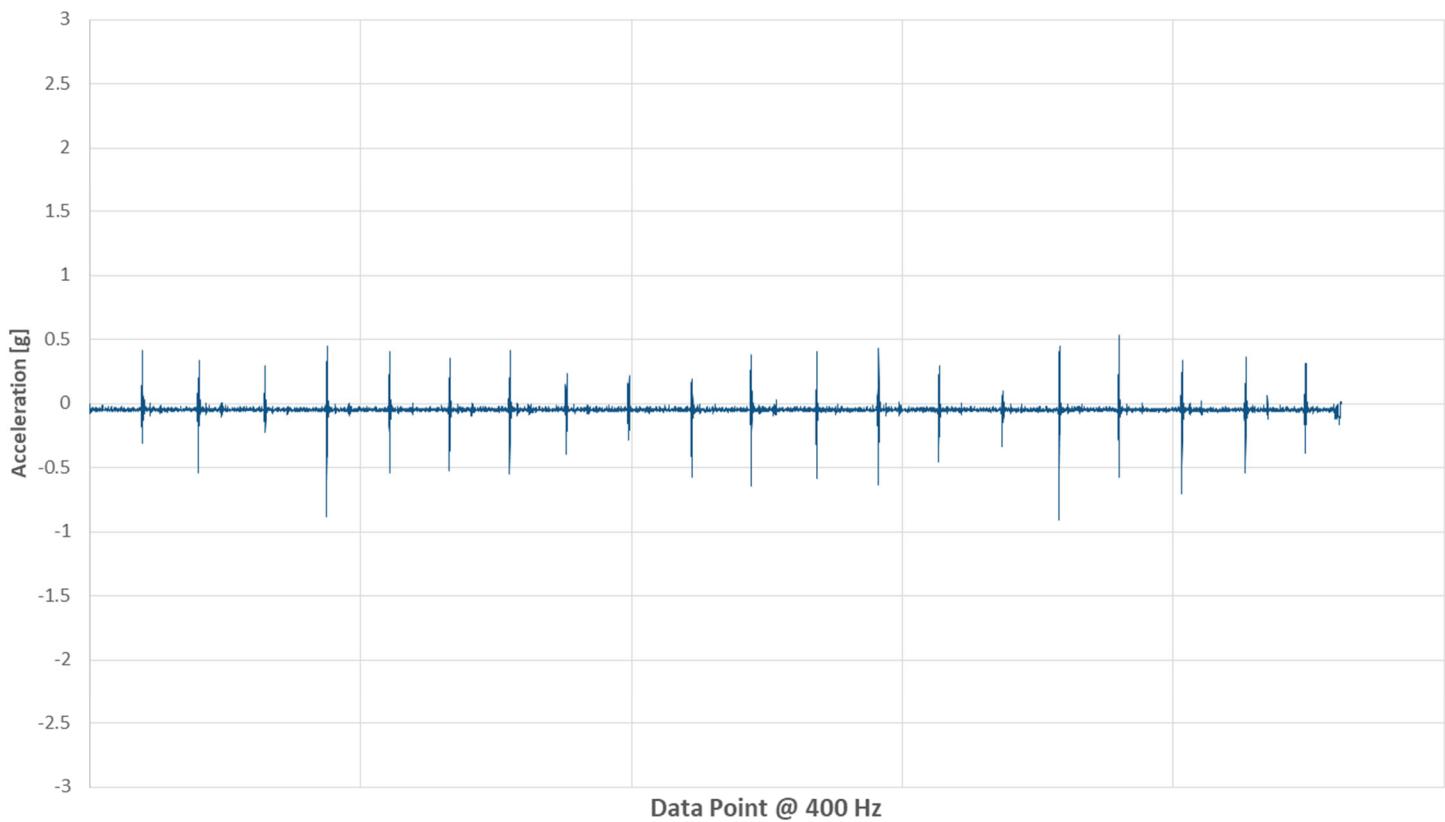


X Acceleration (Side to Side) - Silk + Snow

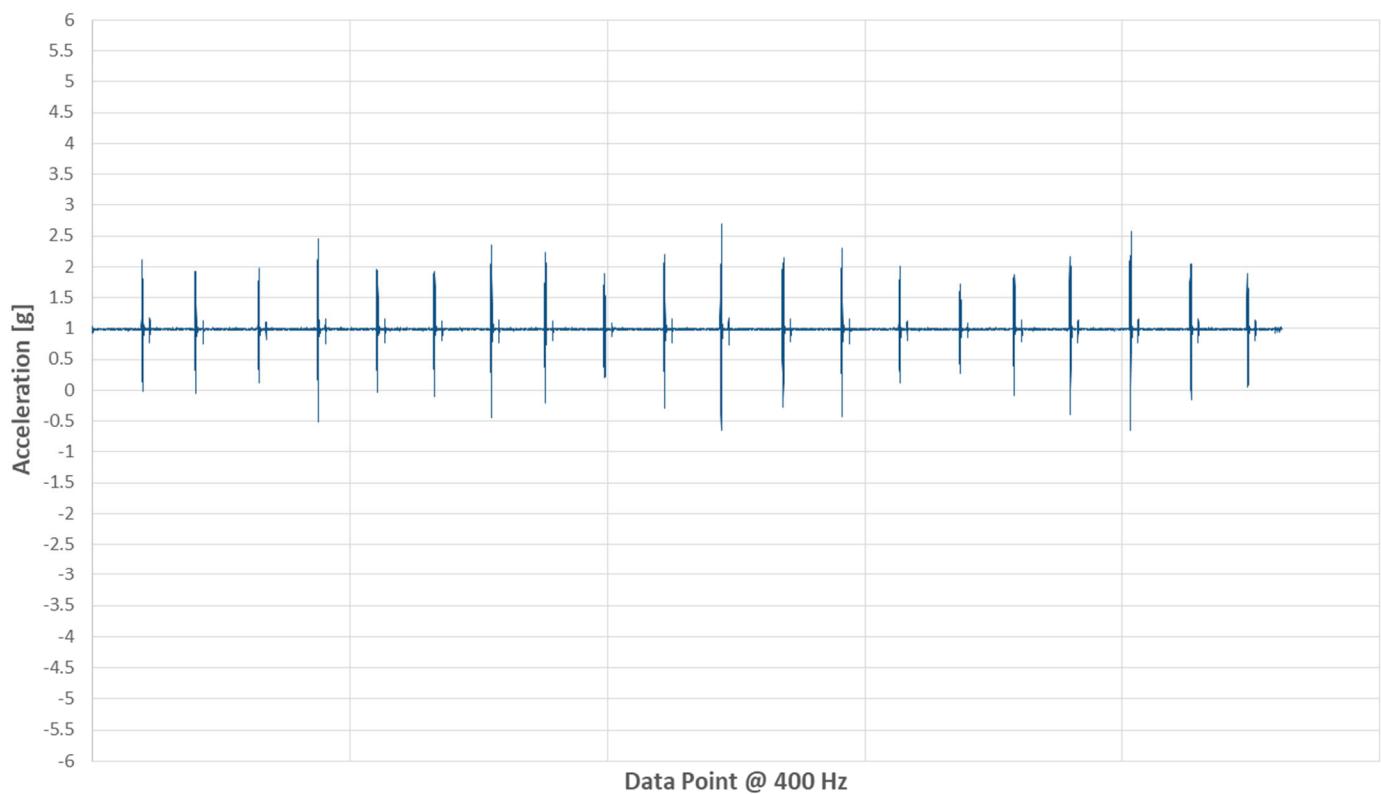




Y Acceleration (Head to Toe) - Silk + Snow



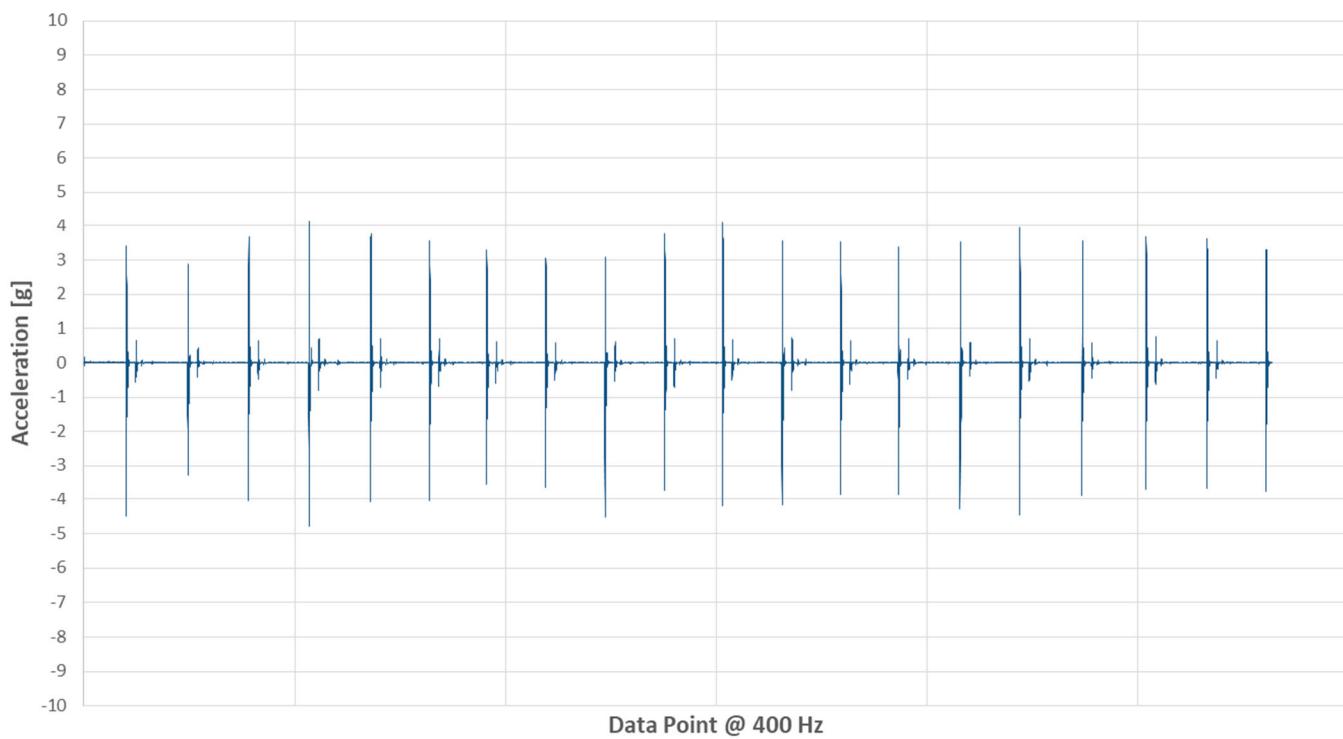
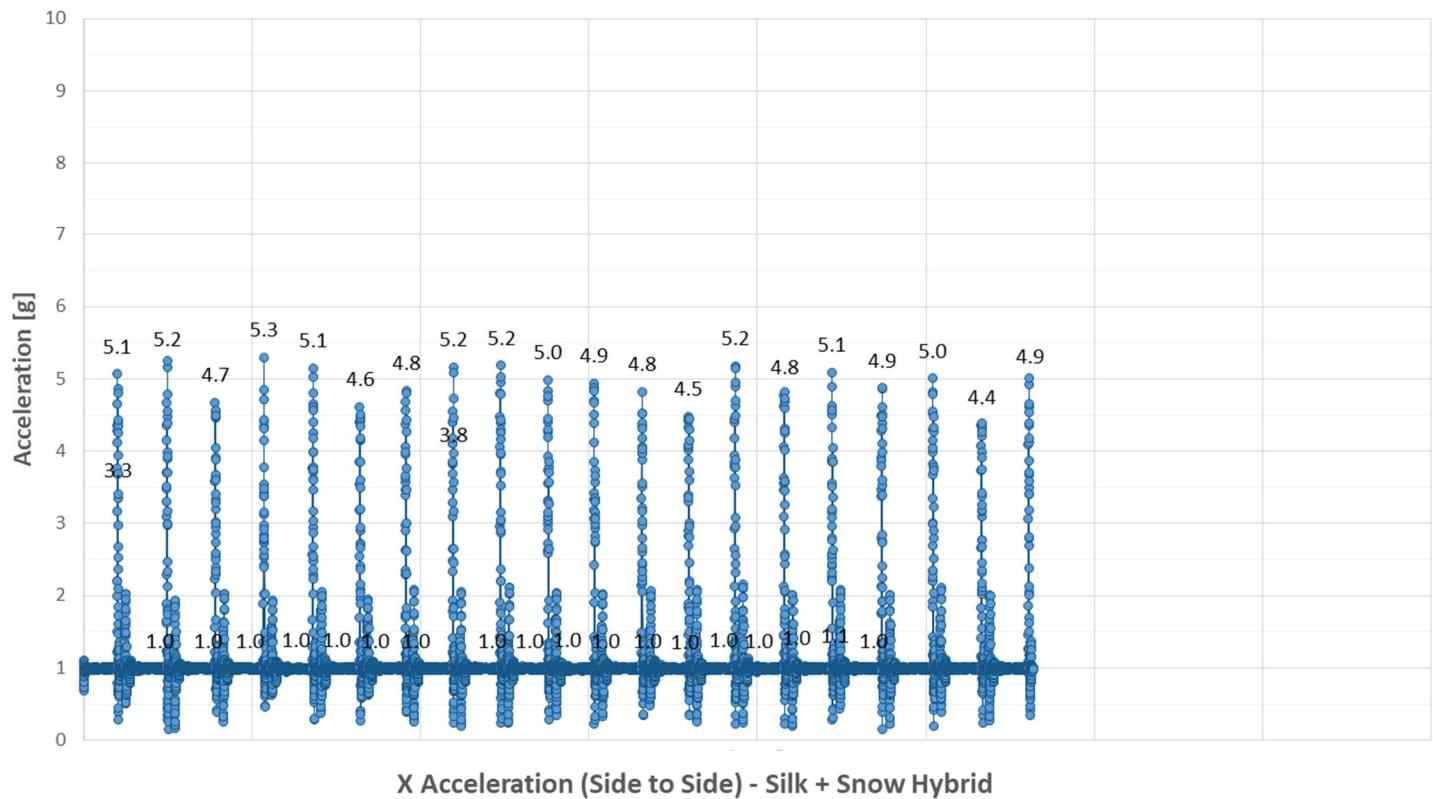
Z Acceleration (Up and Down) - Silk + Snow





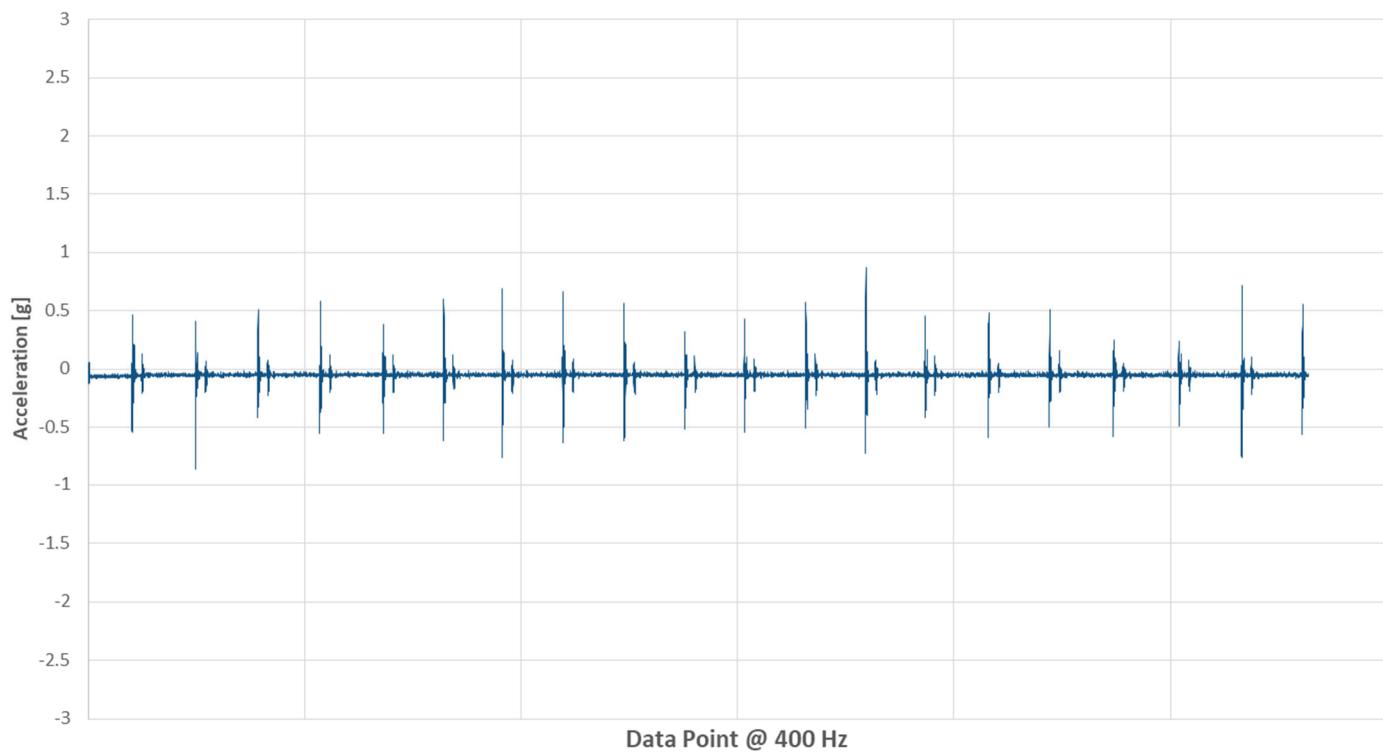
TEST 3 – SILK + SNOW HYBRID (V1)

Vector Magnitude Acceleration - Silk + Snow Hybrid

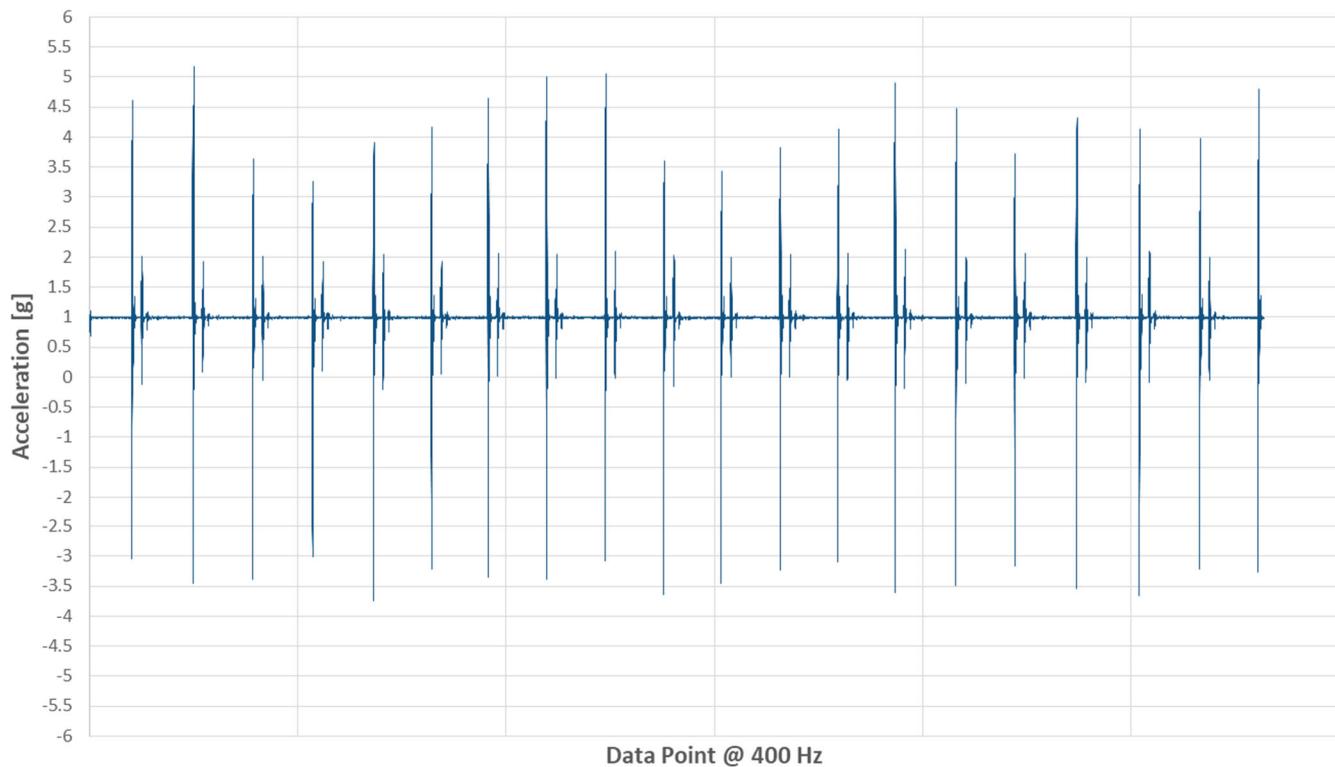




Y Acceleration (Head to Toe) - Silk + Snow Hybrid



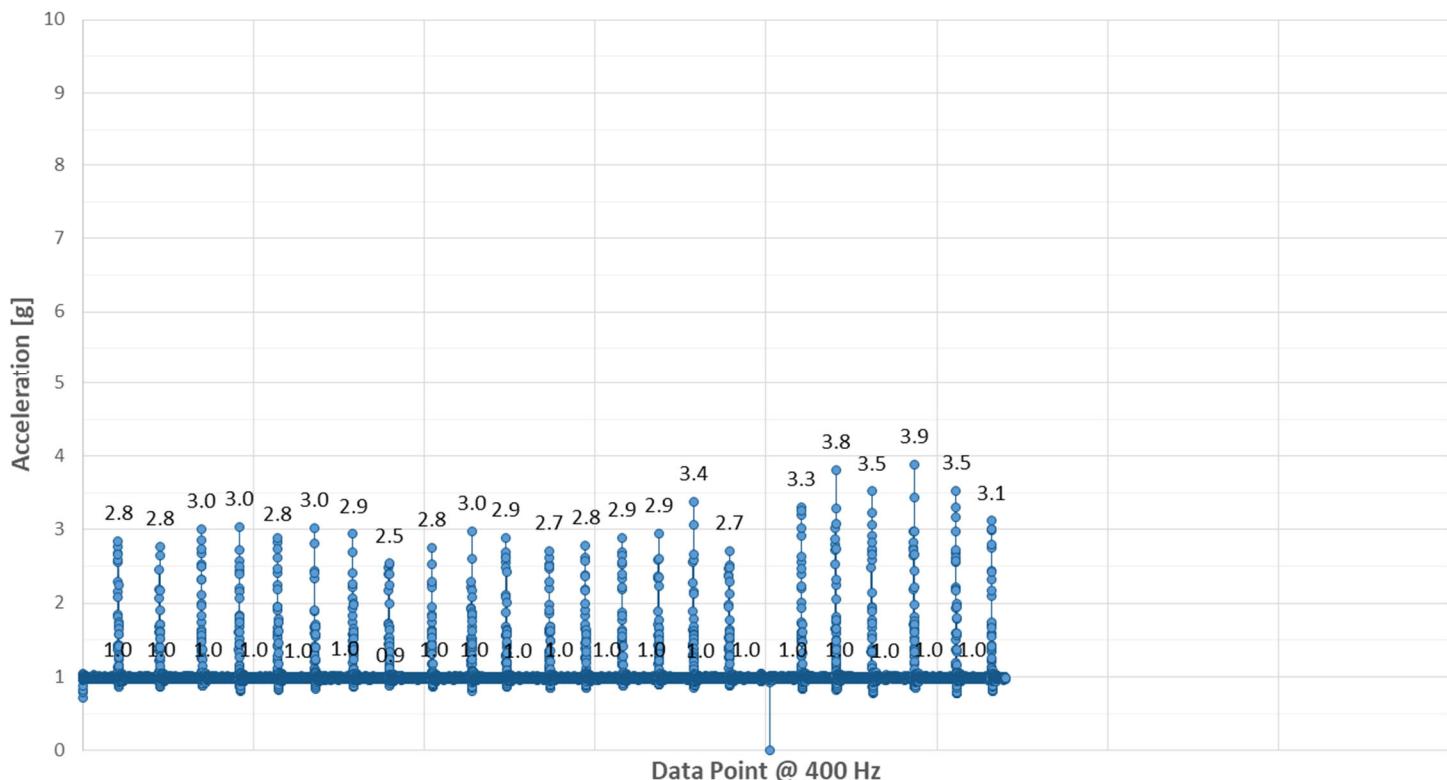
Z Acceleration (Up and Down) - Silk + Snow Hybrid



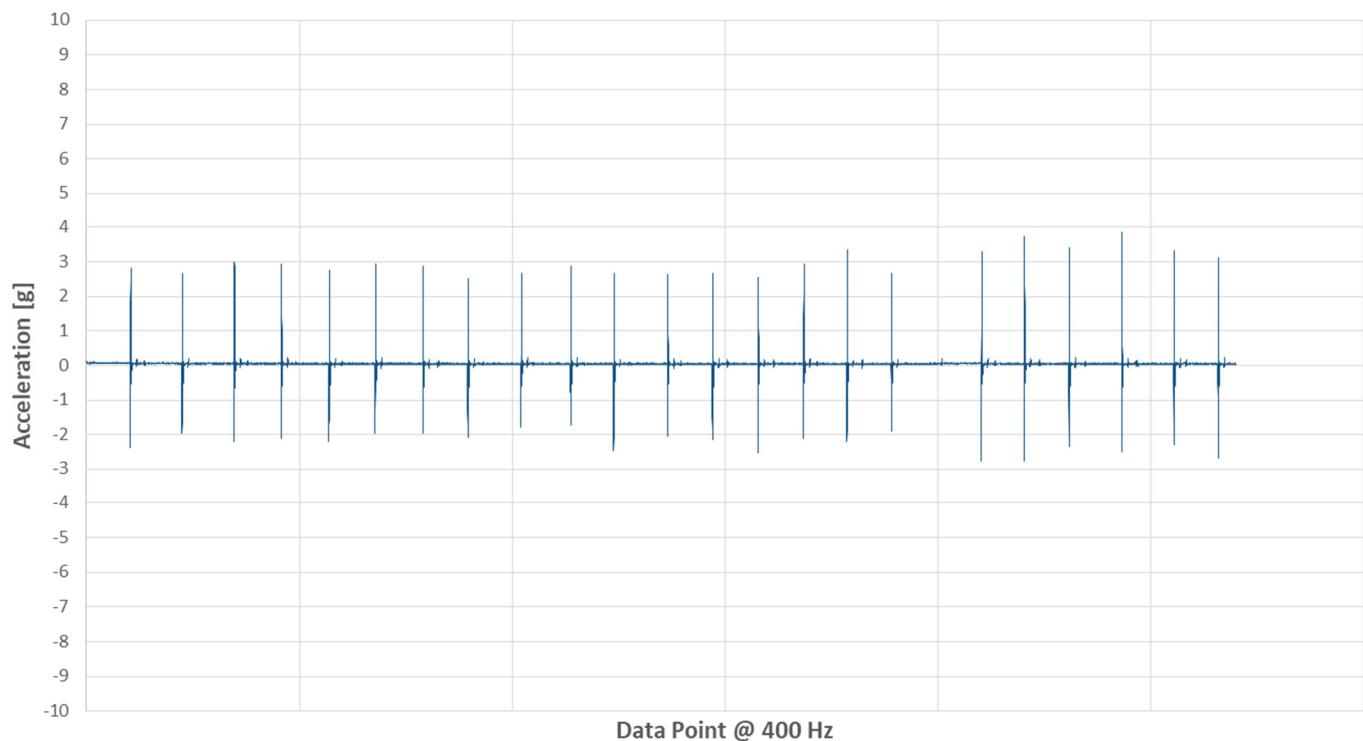


TEST 3 – NOVAFORM

Vector Magnitude Acceleration - Novaform

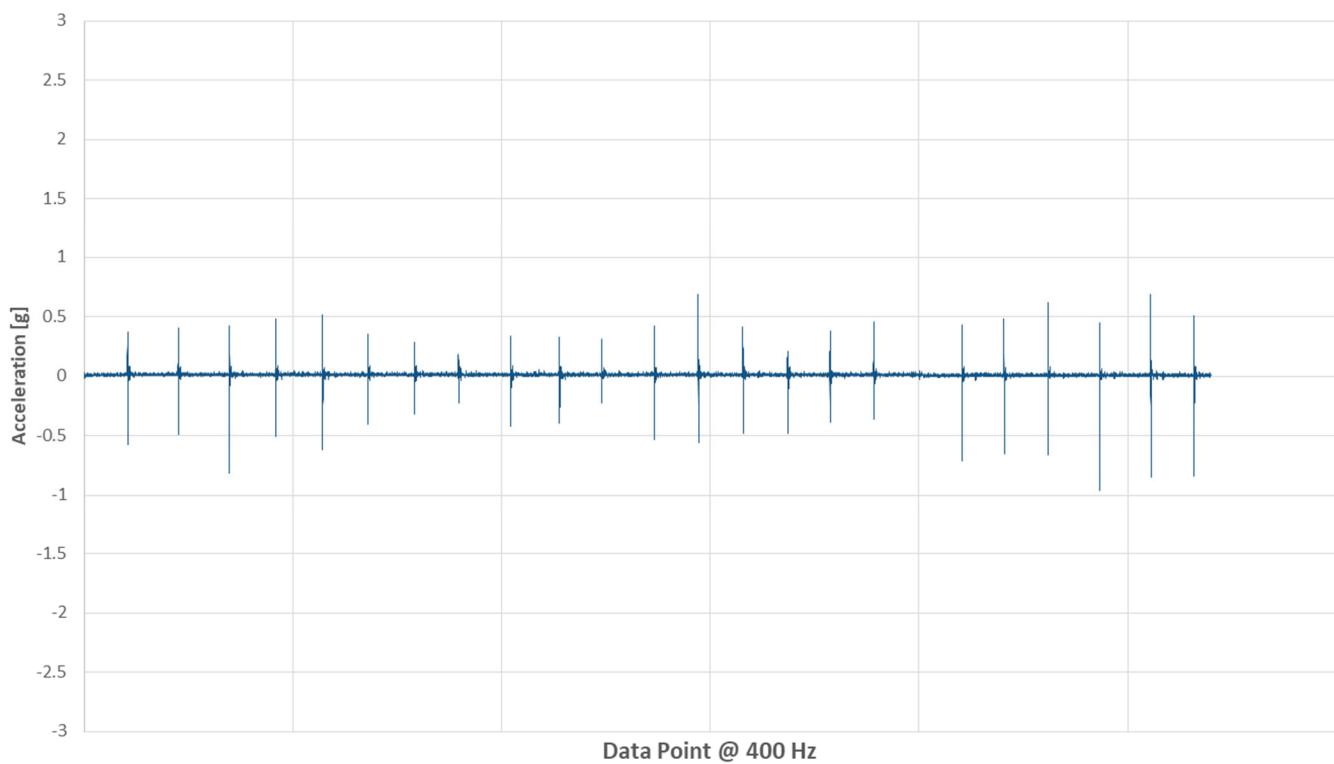


X Acceleration (Side to Side) - Novaform

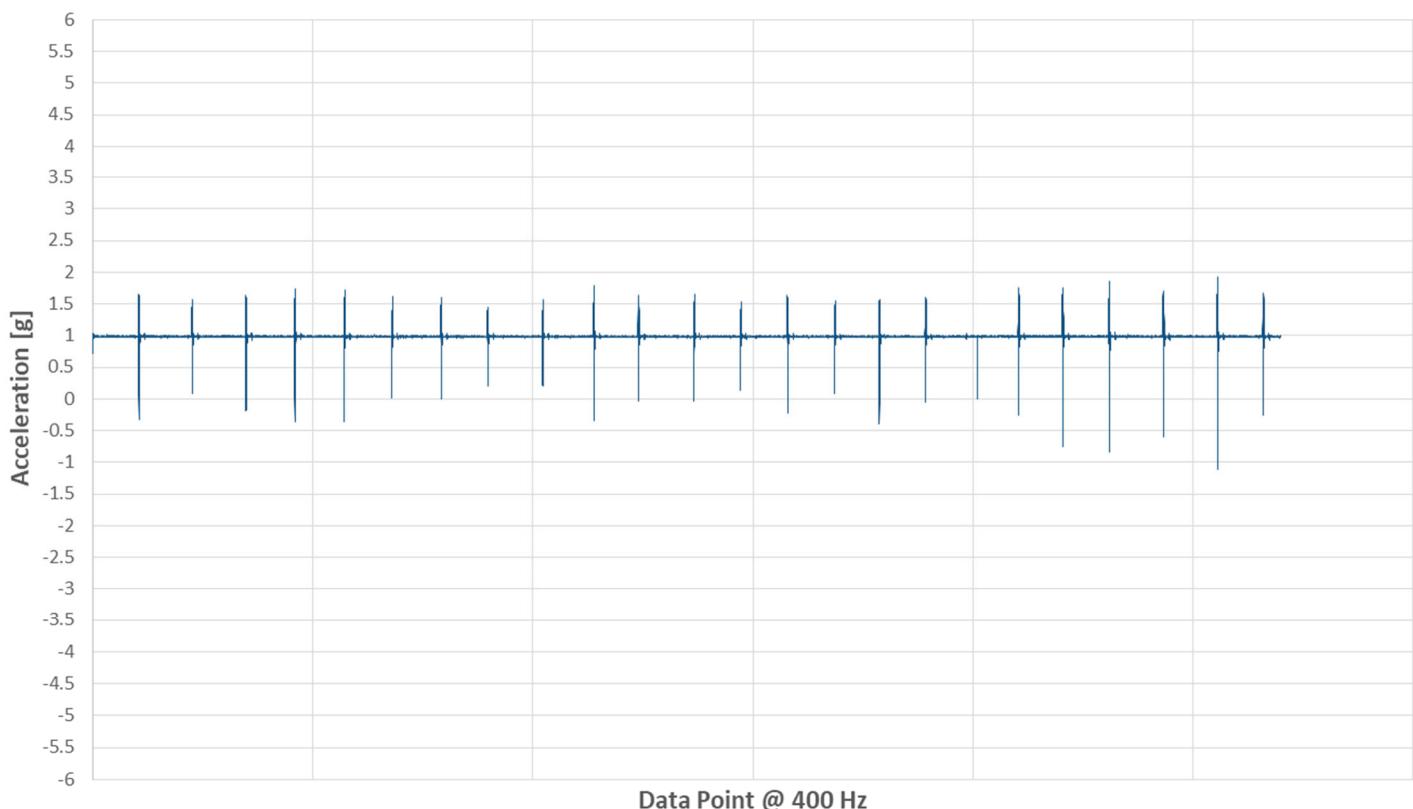




Y Acceleration (Head to Toe) - Novaform



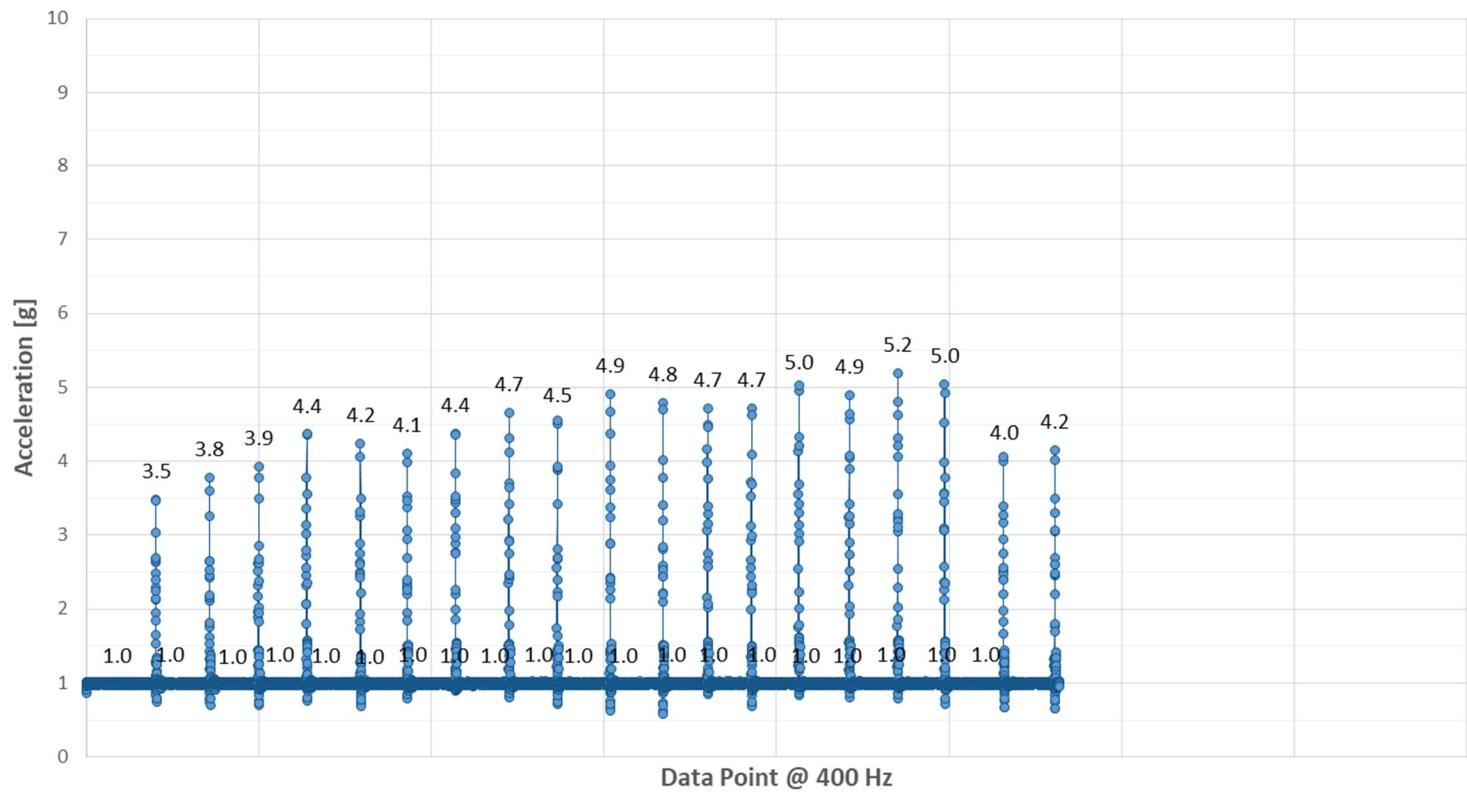
Z Acceleration (Up and Down) - Novaform



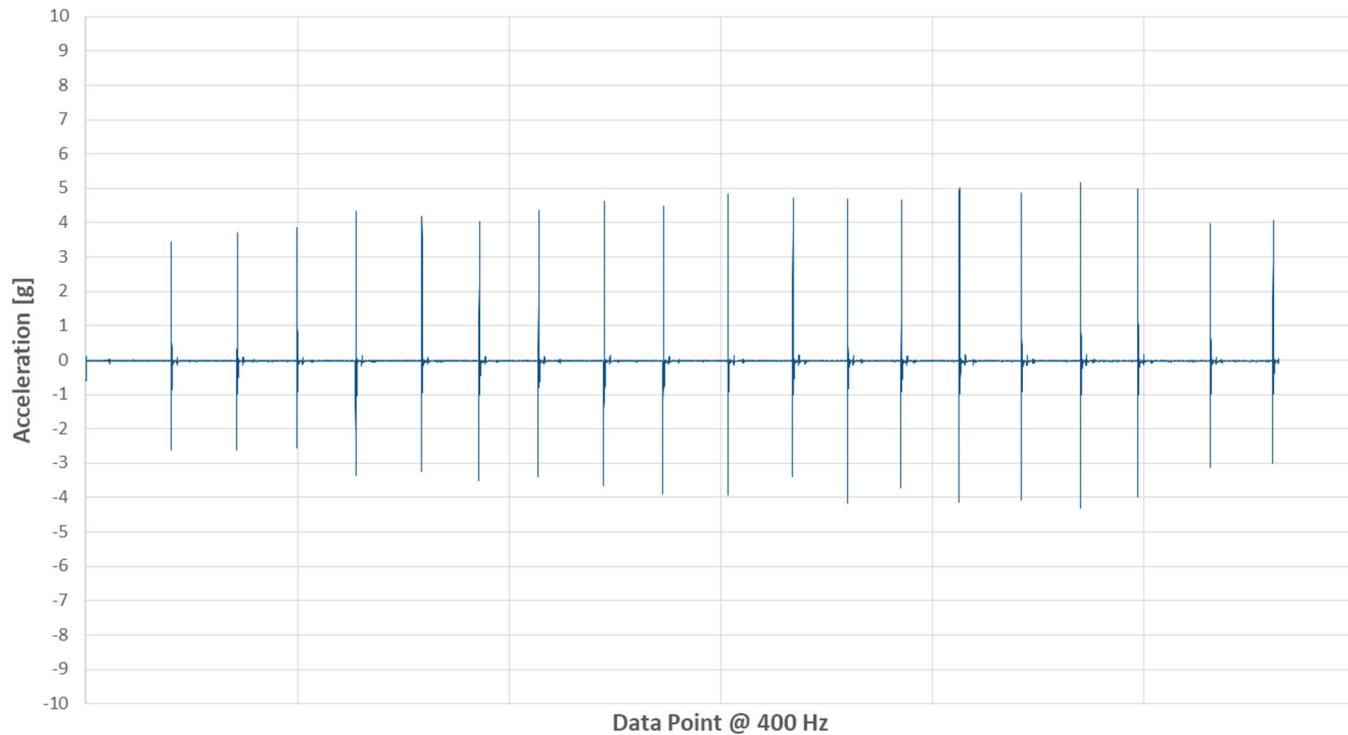


TEST 3 – NECTAR

Vector Magnitude Acceleration - Nectar

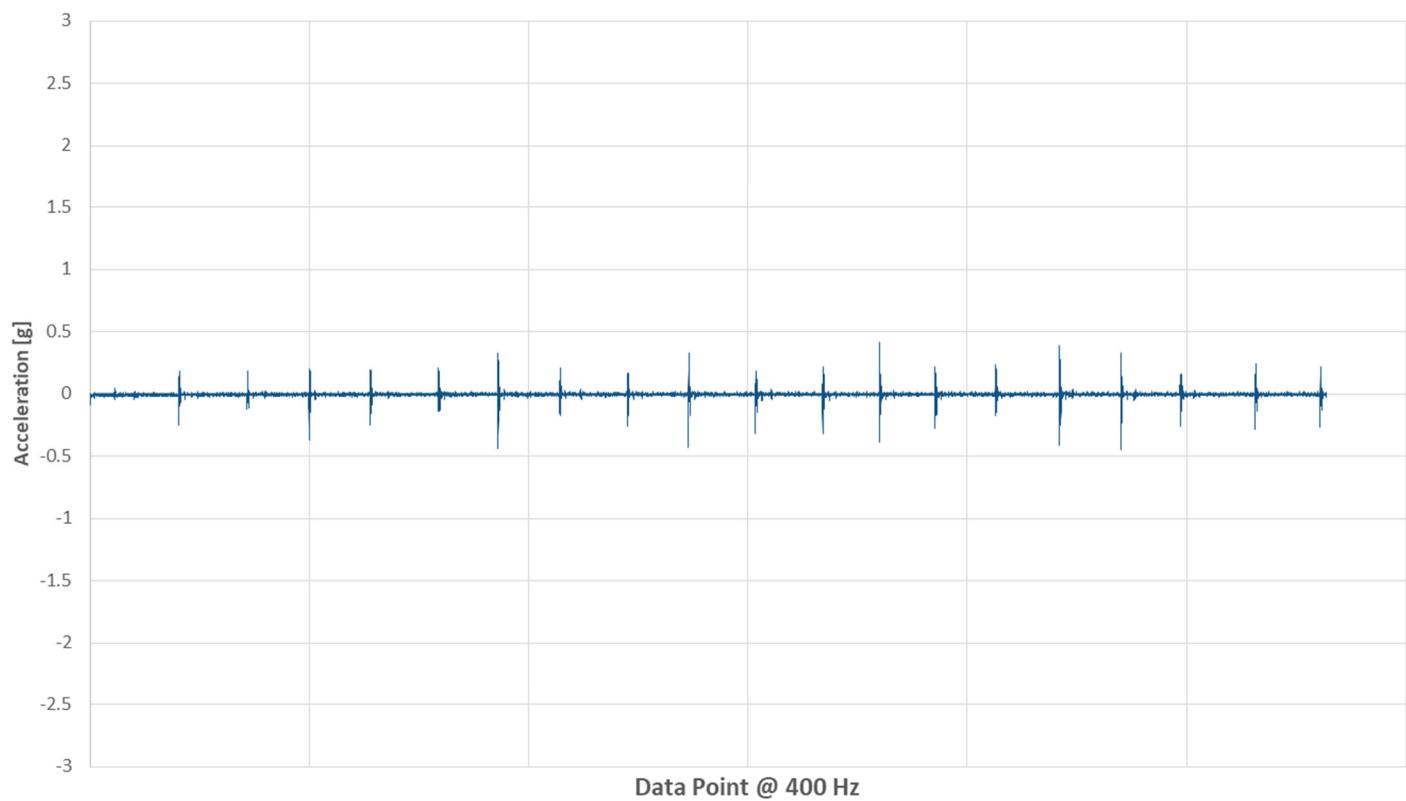


X Acceleration (Side to Side) - Nectar

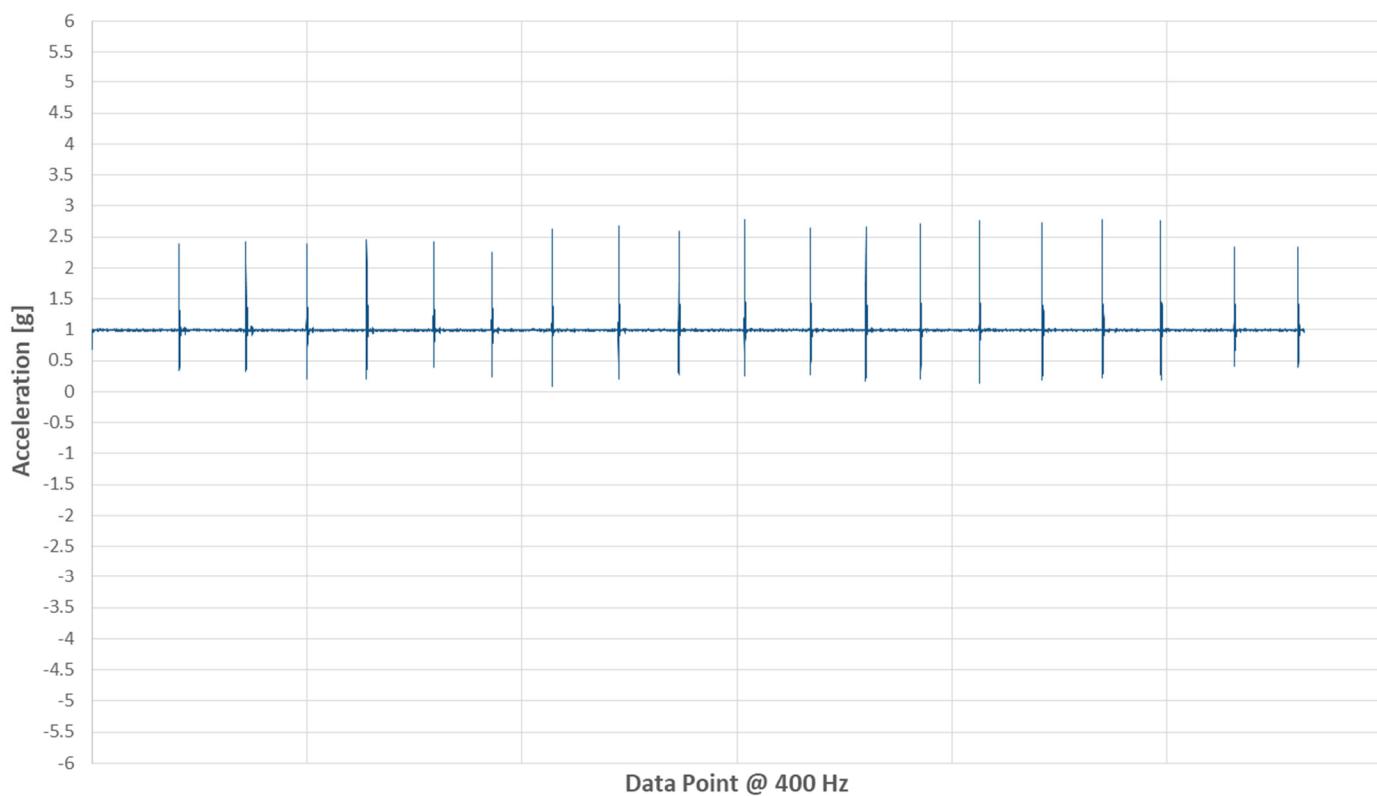




Y Acceleration (Head to Toe) - Nectar



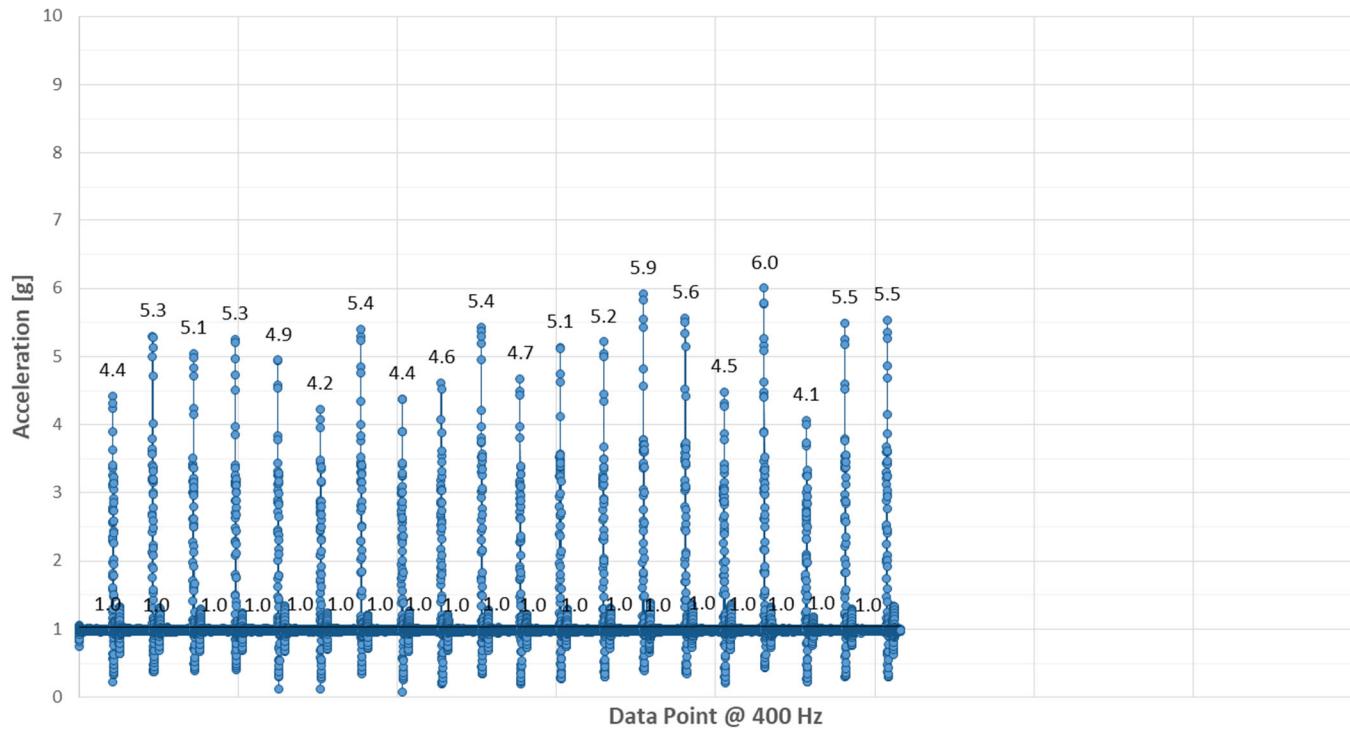
Z Acceleration (Up and Down) - Nectar



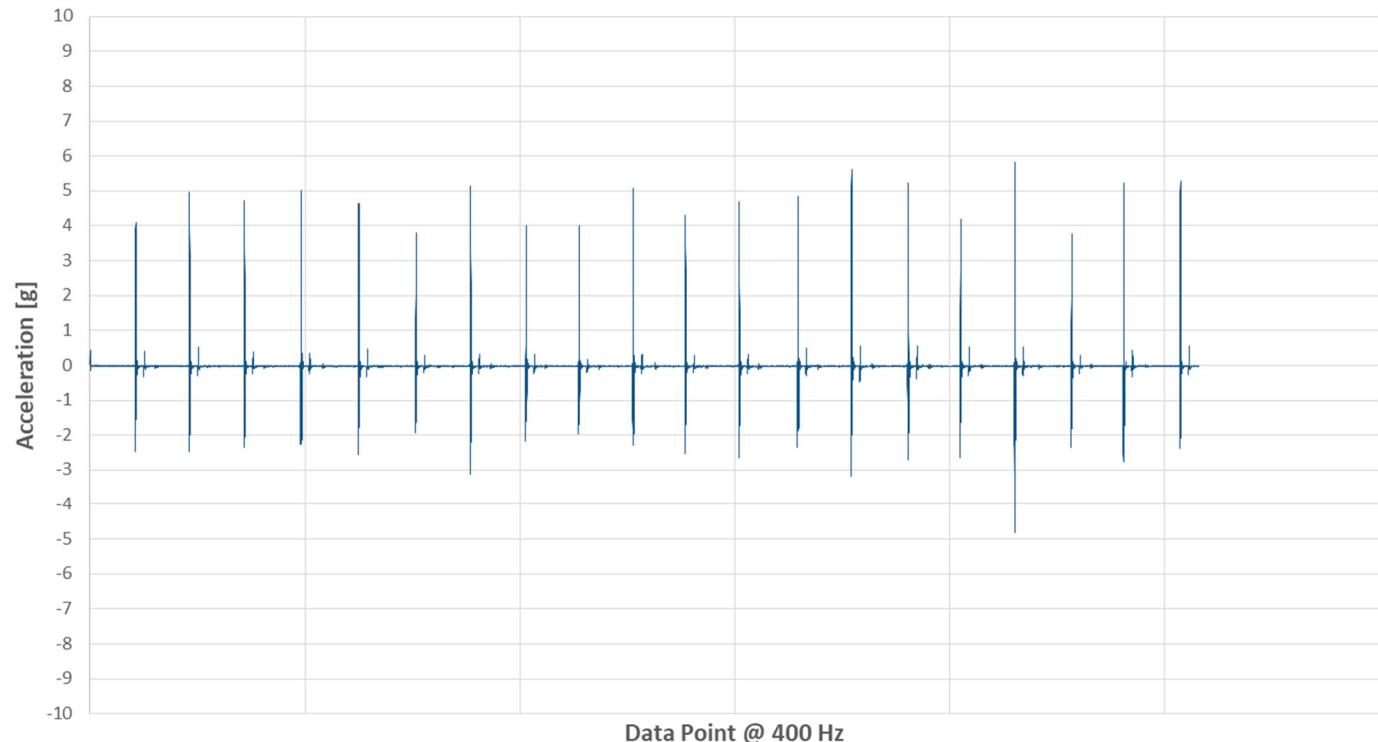


TEST 3 – LOGAN & COVE MEDIUM

Vector Magnitude Acceleration - Logan & Cove Medium

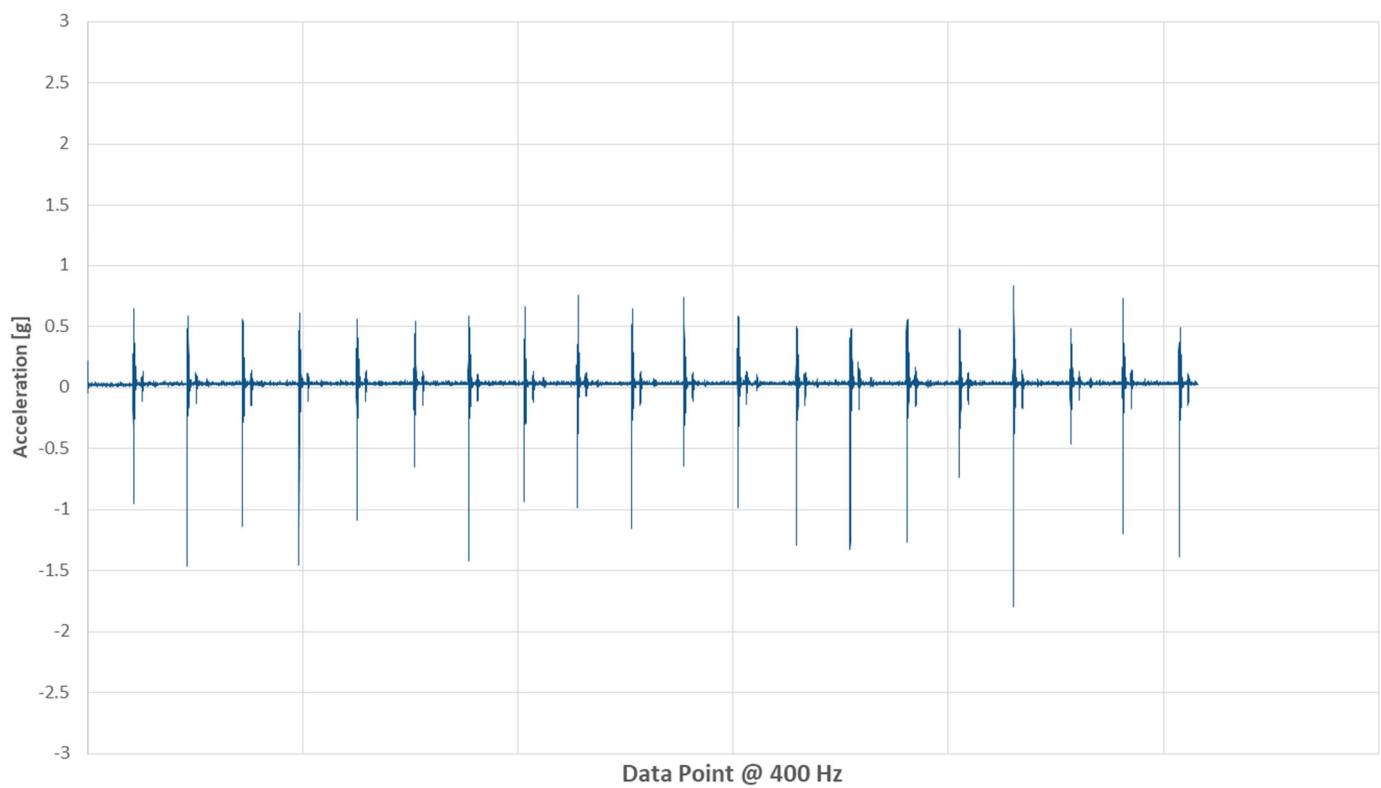


X Acceleration (Side to Side) - Logan & Cove Medium

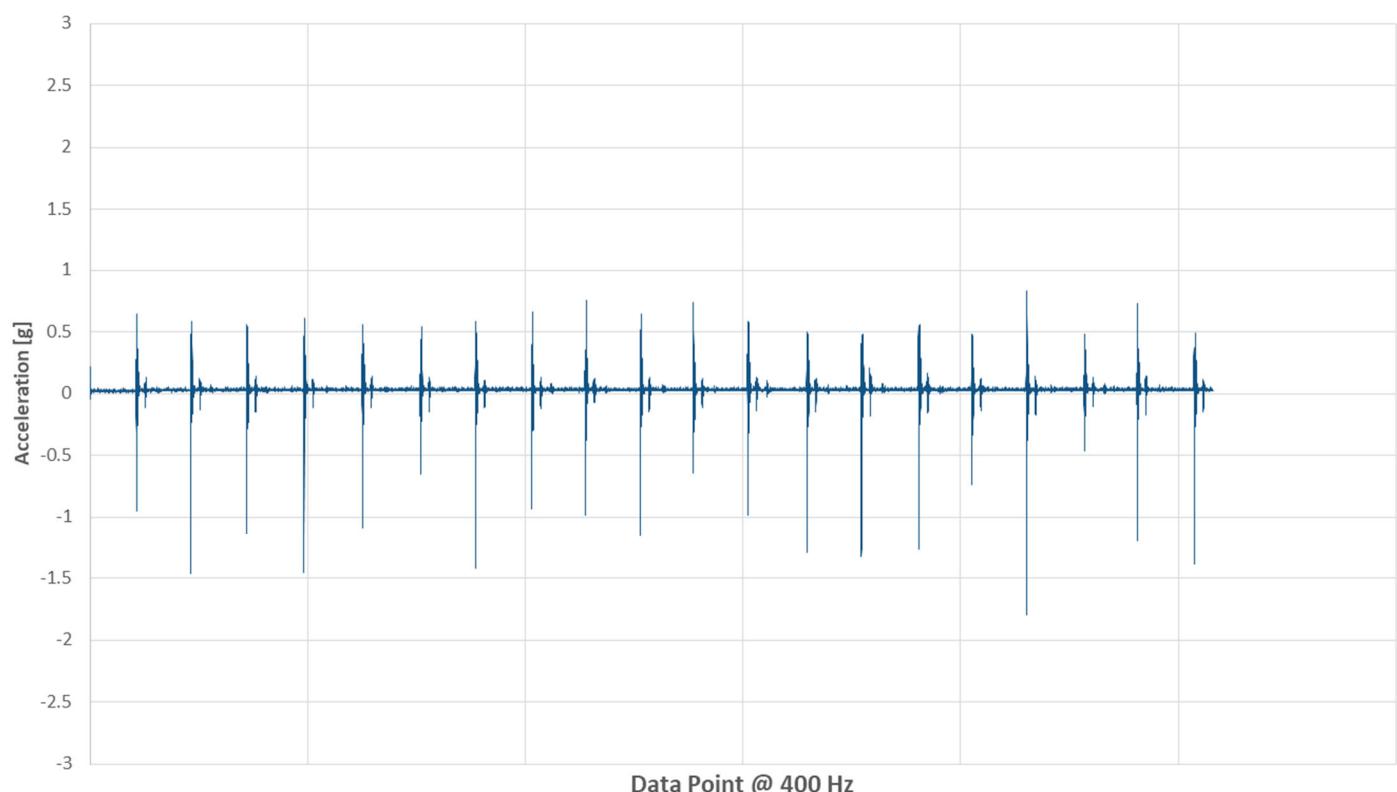




Y Acceleration (Head to Toe) - Logan & Cove Medium



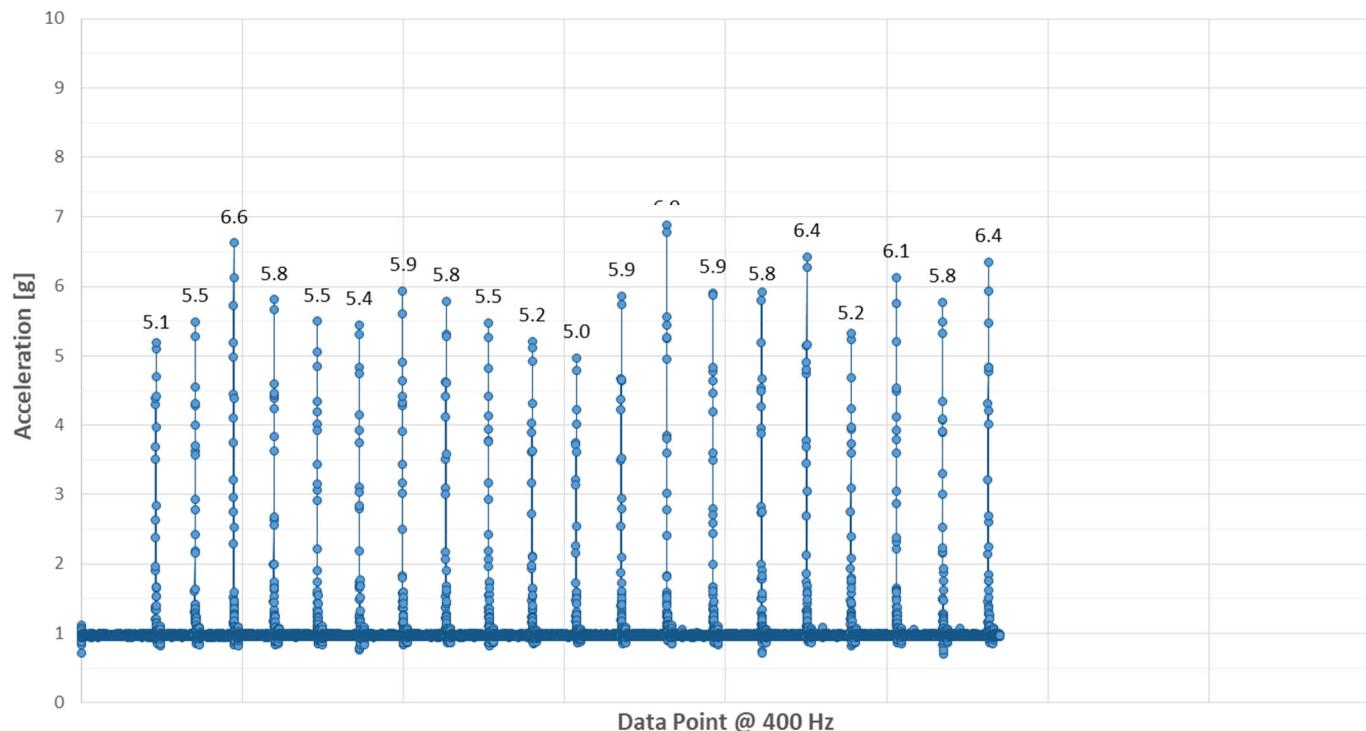
Y Acceleration (Head to Toe) - Logan & Cove Medium



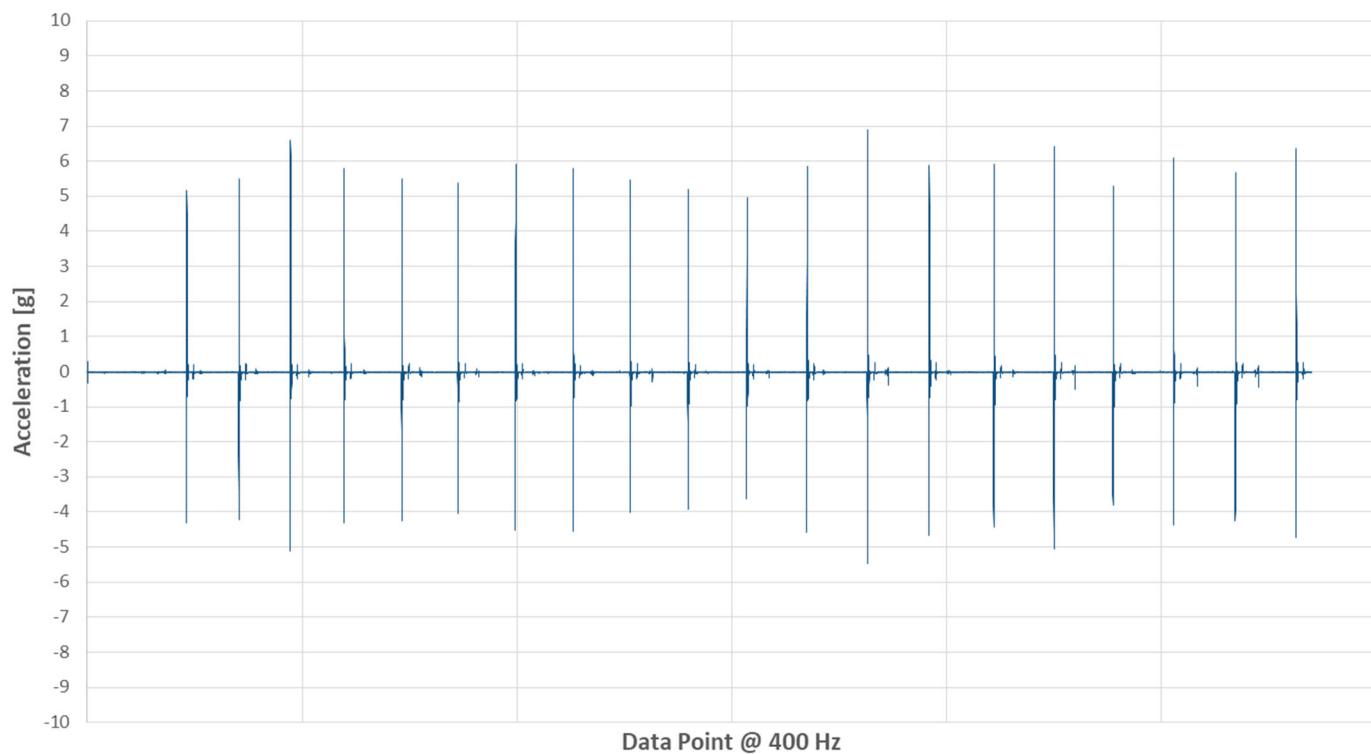


TEST 3 – CASPER ESSENTIAL

Vector Magnitude Acceleration - Casper Essential

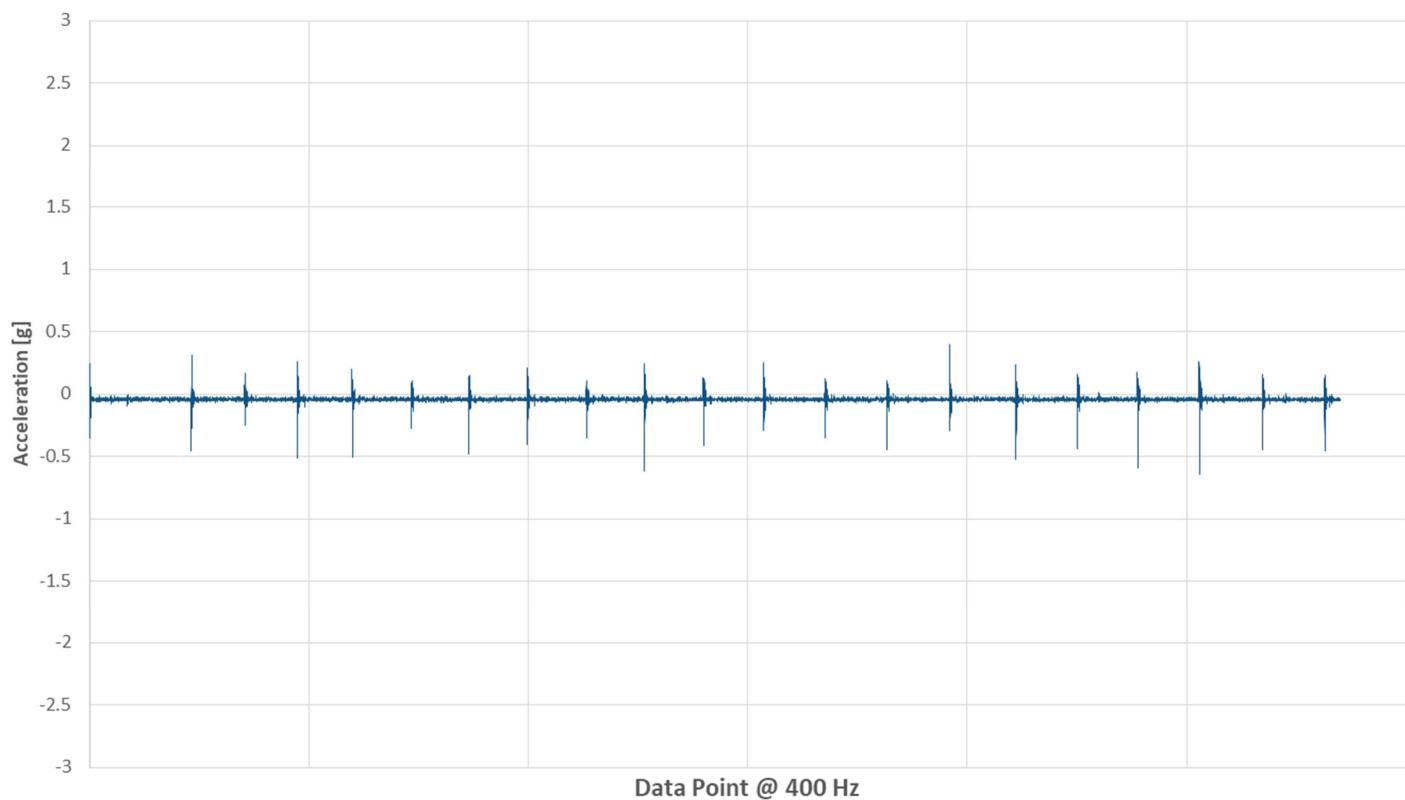


X Acceleration (Side to Side) - Casper Essential

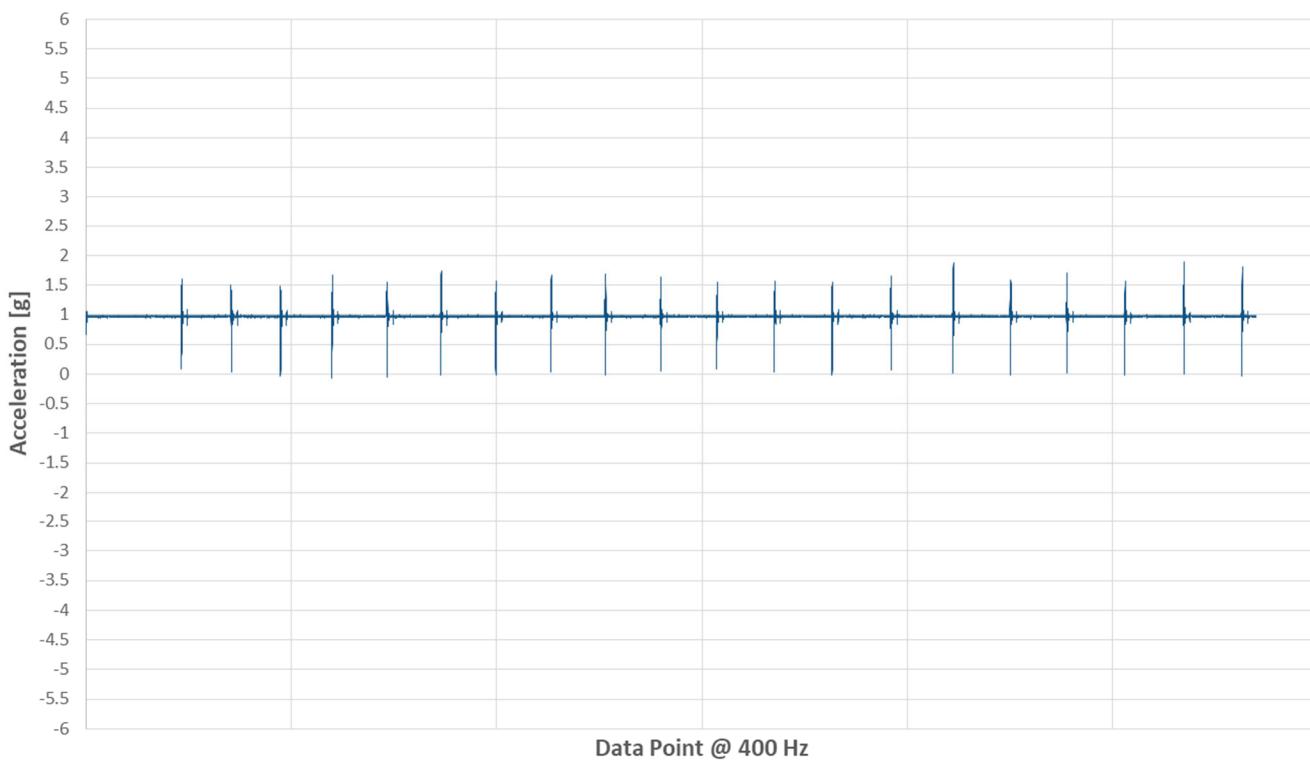




Y Acceleration (Head to Toe) - Casper Essential



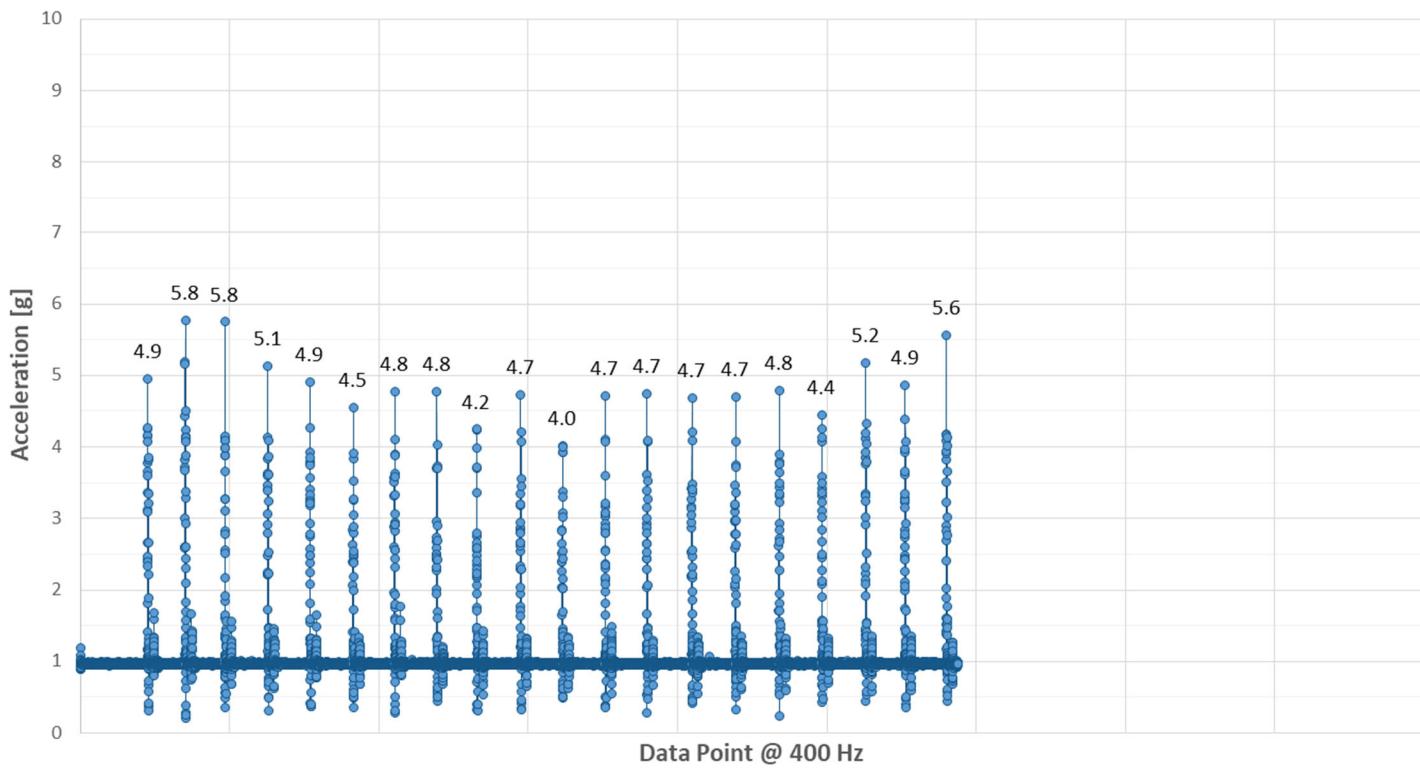
Z Acceleration (Up and Down) - Casper Essential



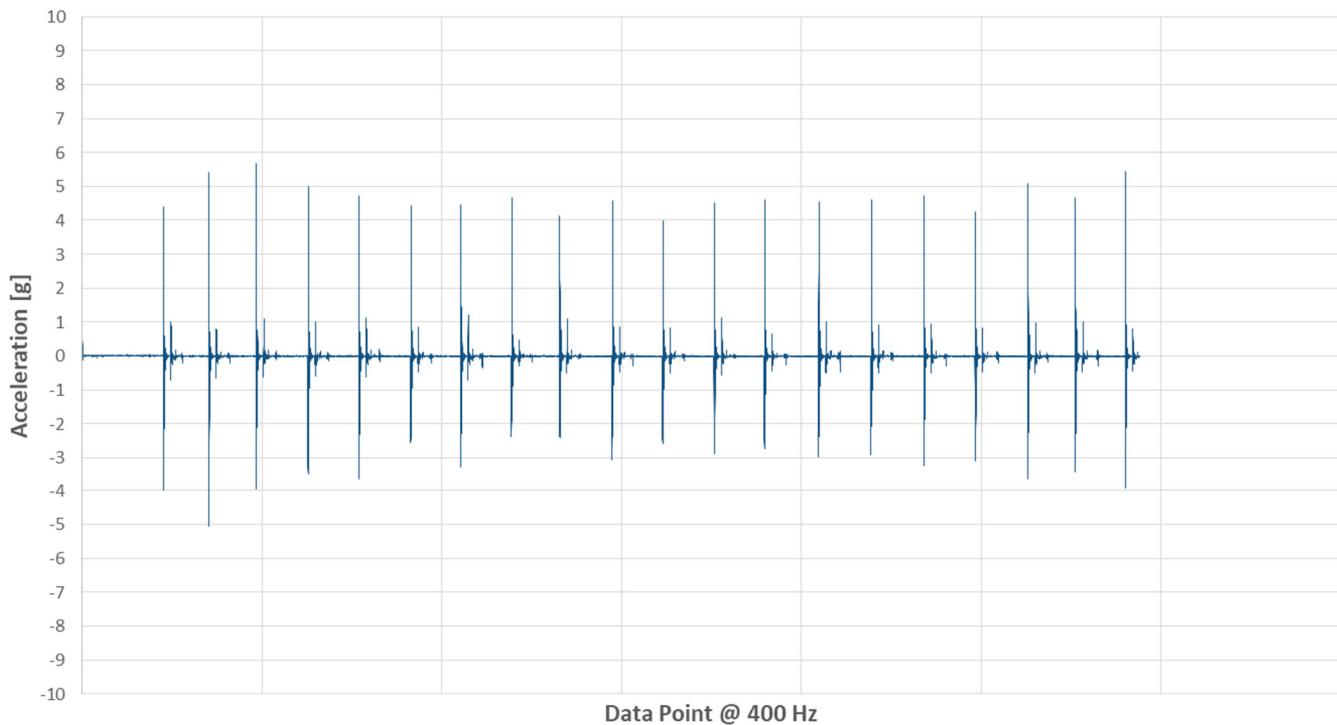


TEST 3 – CASPER WAVE

Vector Magnitude Acceleration - Casper Wave

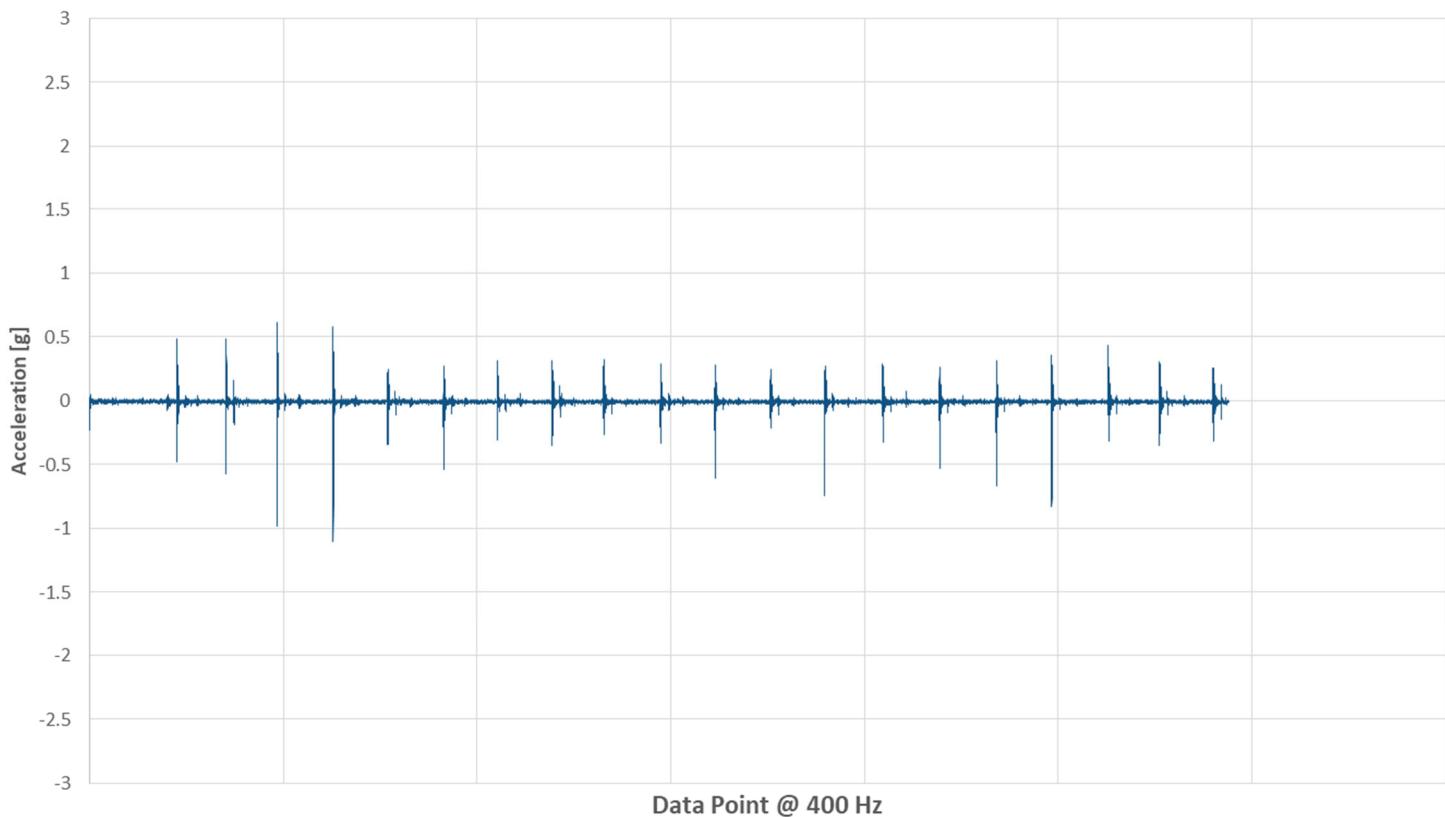


X Acceleration (Side to Side) - Casper Wave

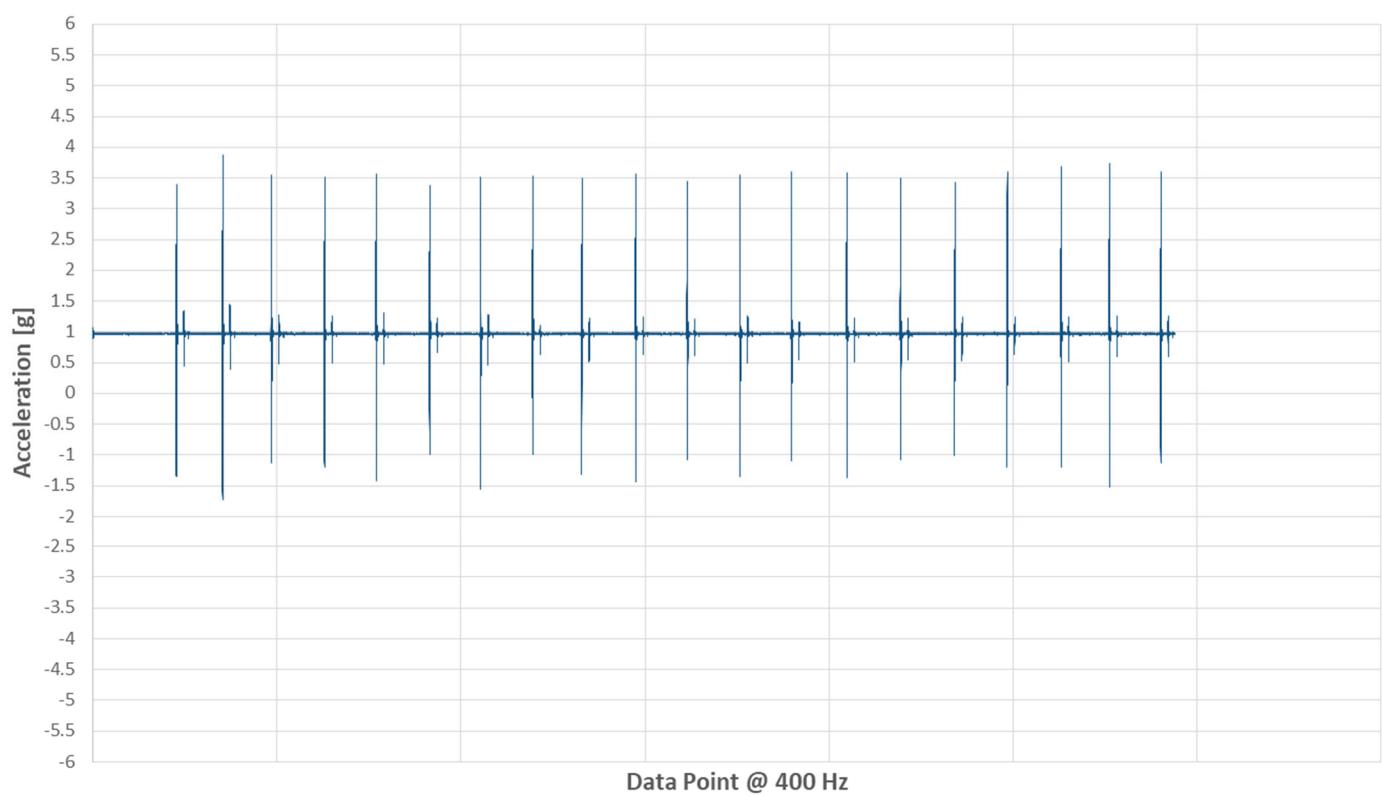




Y Acceleration (Head to Toe) - Casper Wave



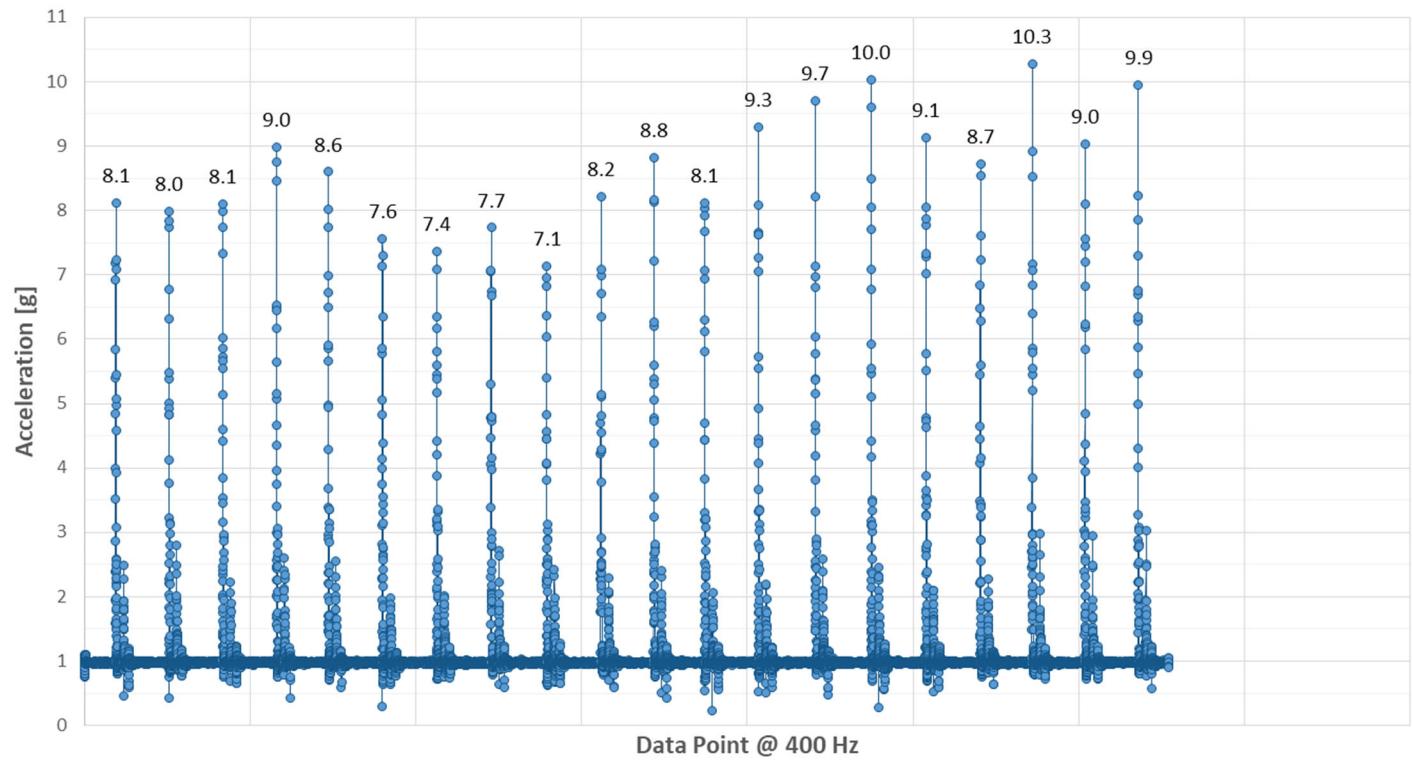
Z Acceleration (Up and Down) - Casper Wave



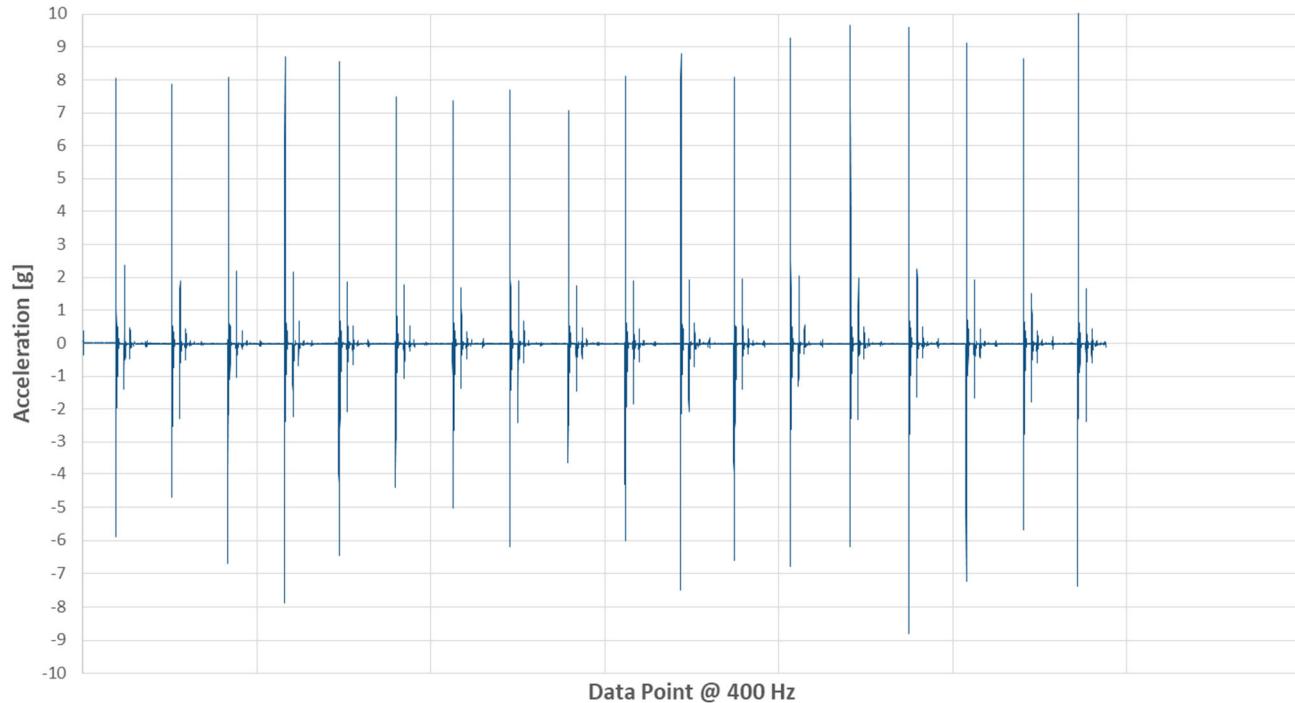


TEST 3 – IKEA FOAM

Vector Magnitude Acceleration - IKEA Foam

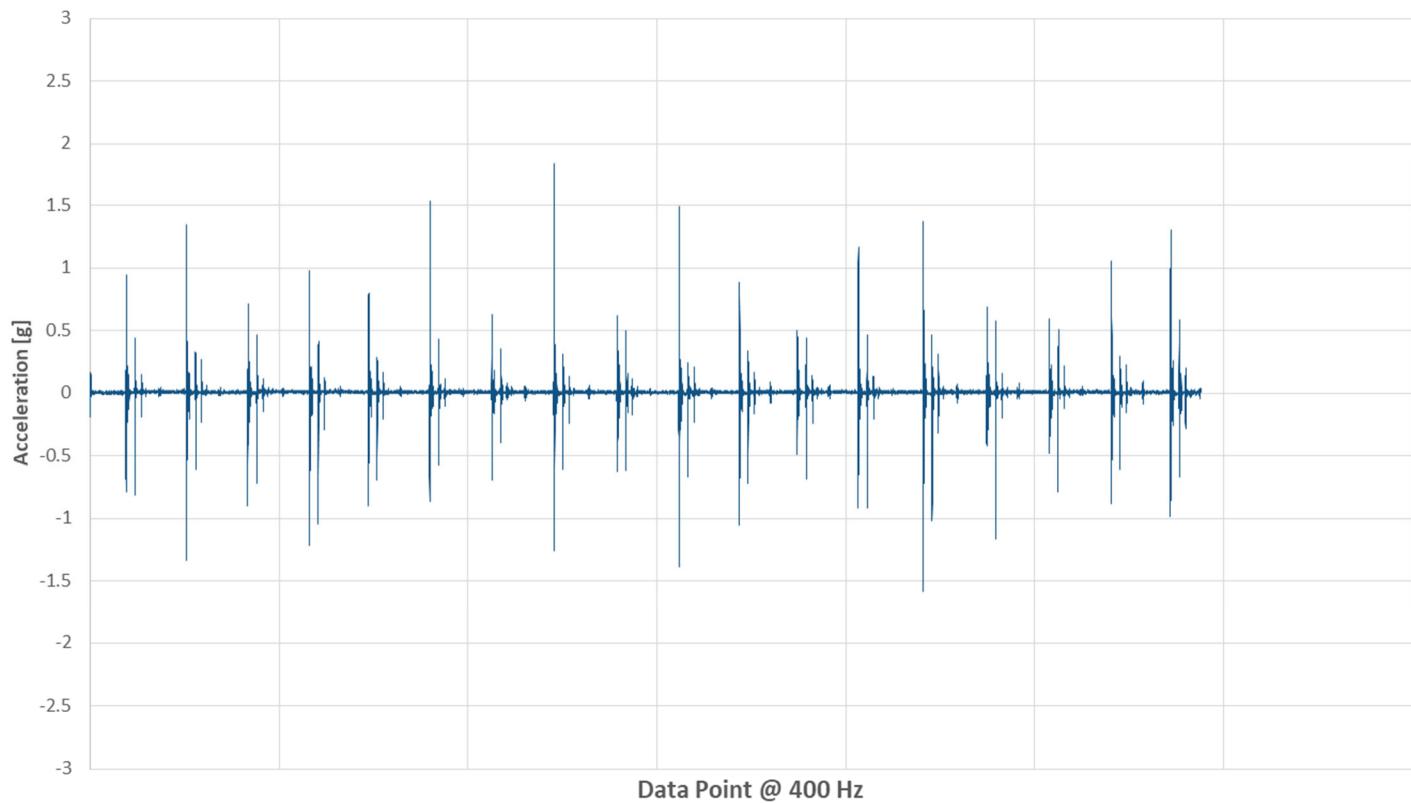


X Acceleration (Side to Side) - IKEA Foam

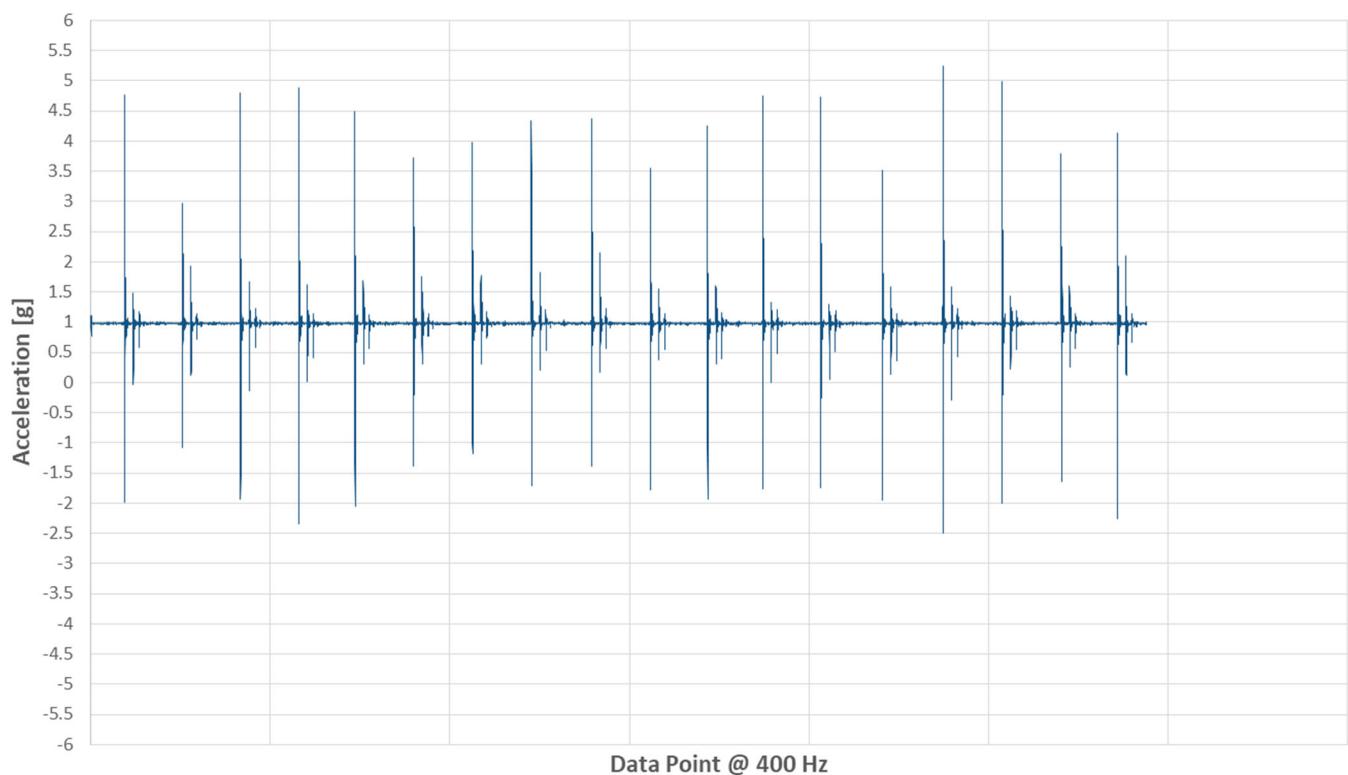




Y Acceleration (Head to Toe) - IKEA Foam



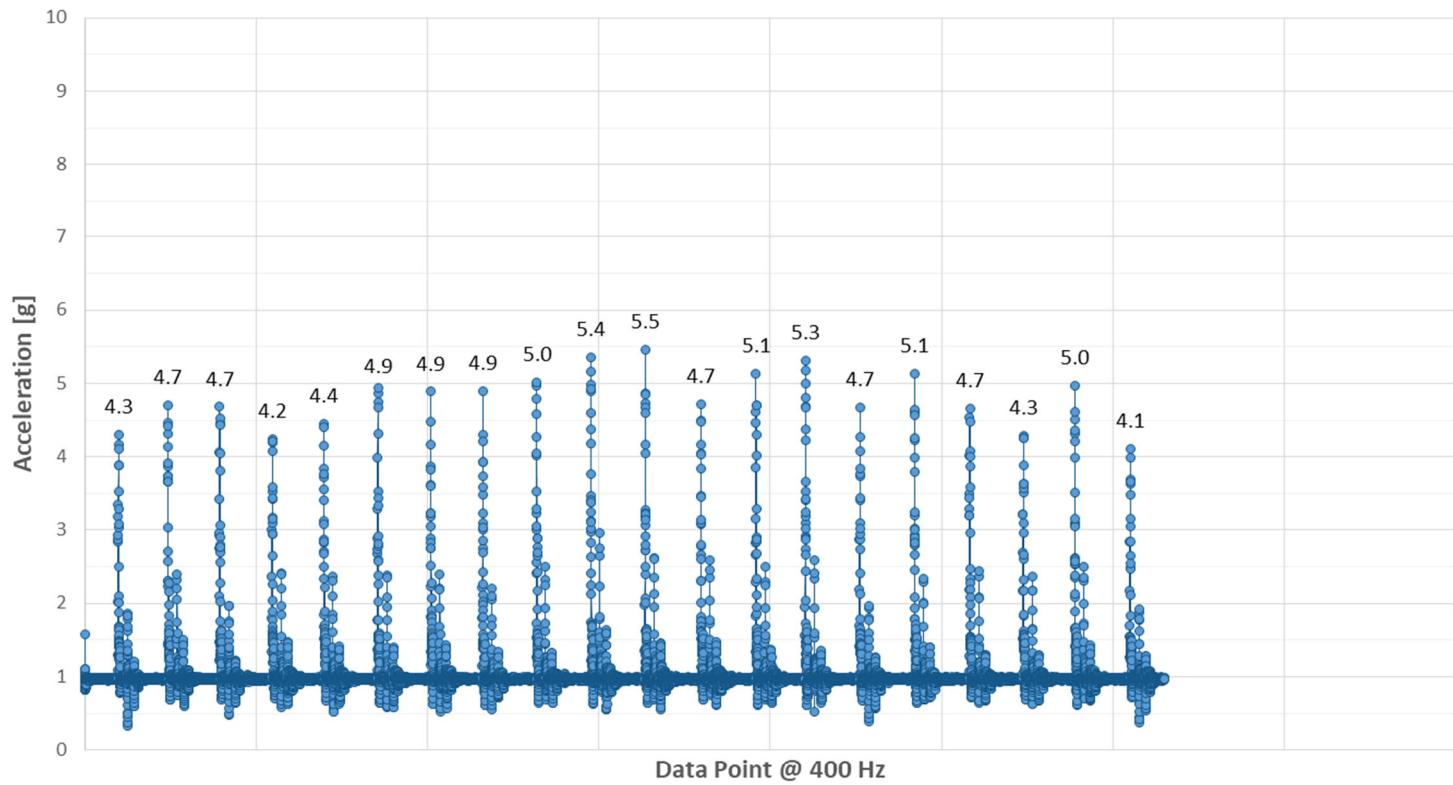
Z Acceleration (Up and Down) - IKEA Foam



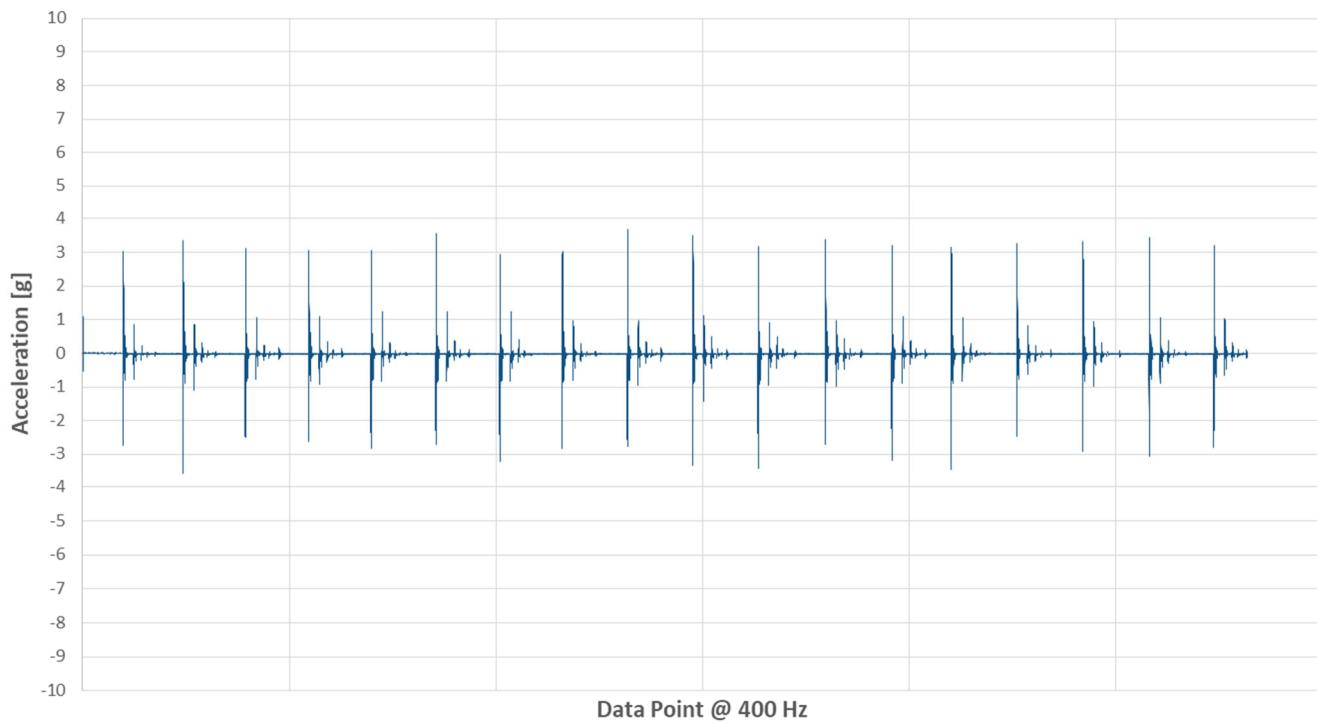


TEST 3 – IKEA SPRING

Vector Magnitude Acceleration - IKEA Spring

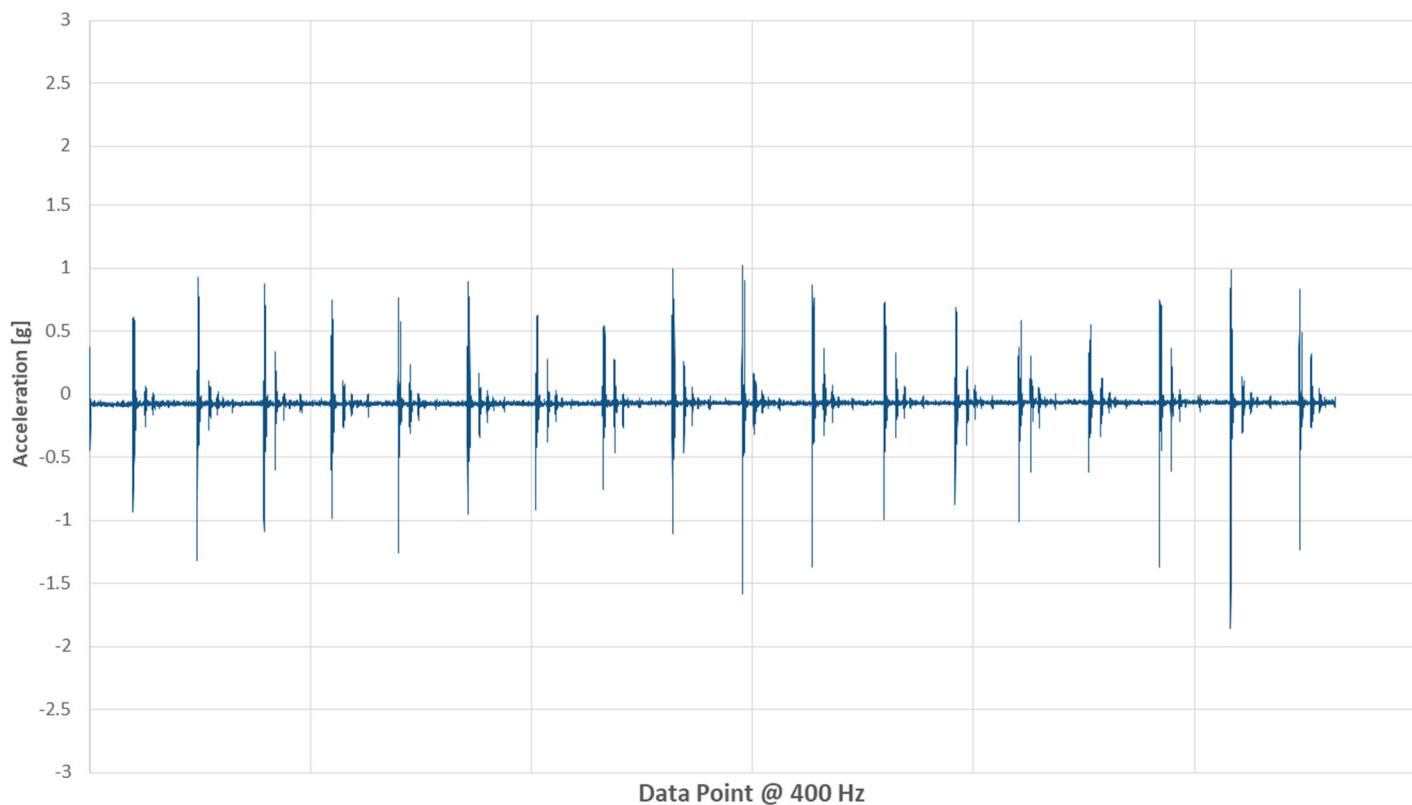


X Acceleration (Side to Side) - IKEA Spring

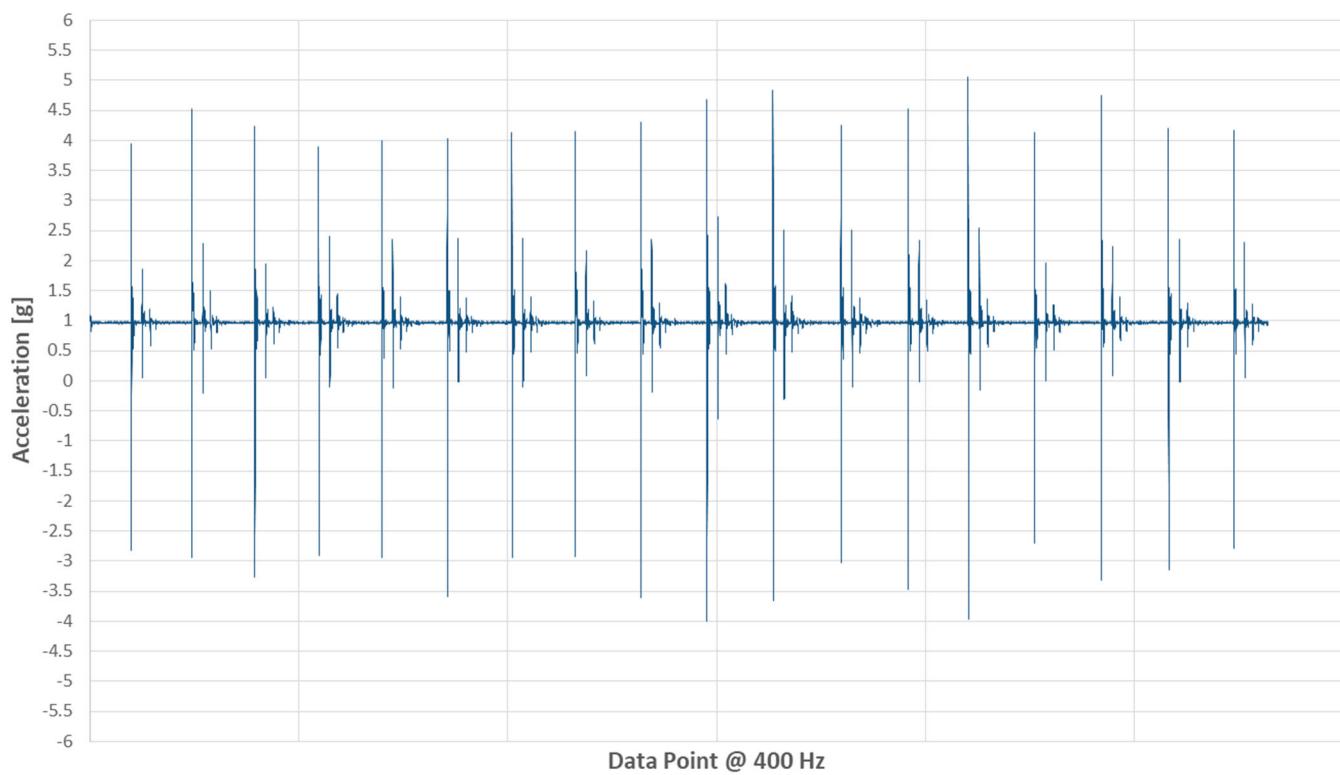




Y Acceleration (Head to Toe) - IKEA Spring



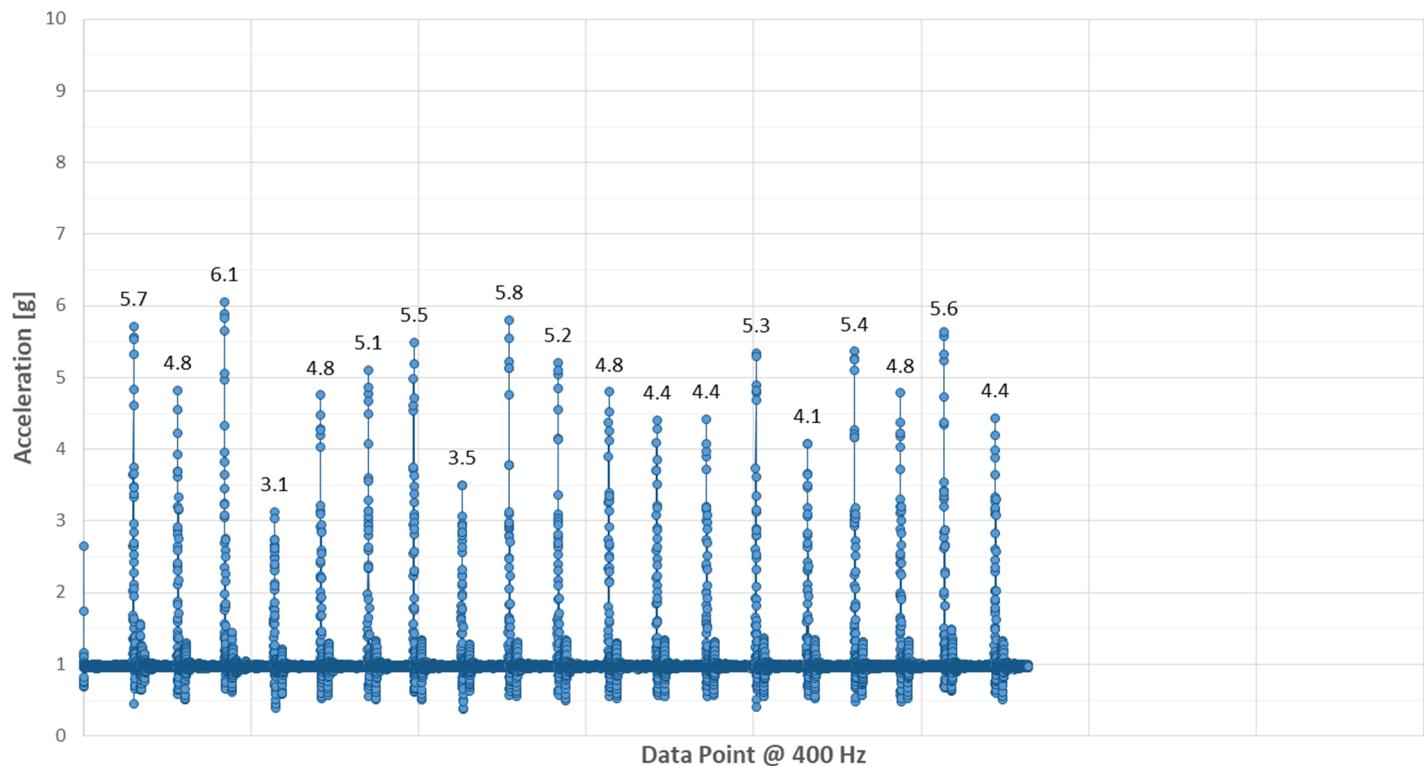
Z Acceleration (Up and Down) - IKEA Spring



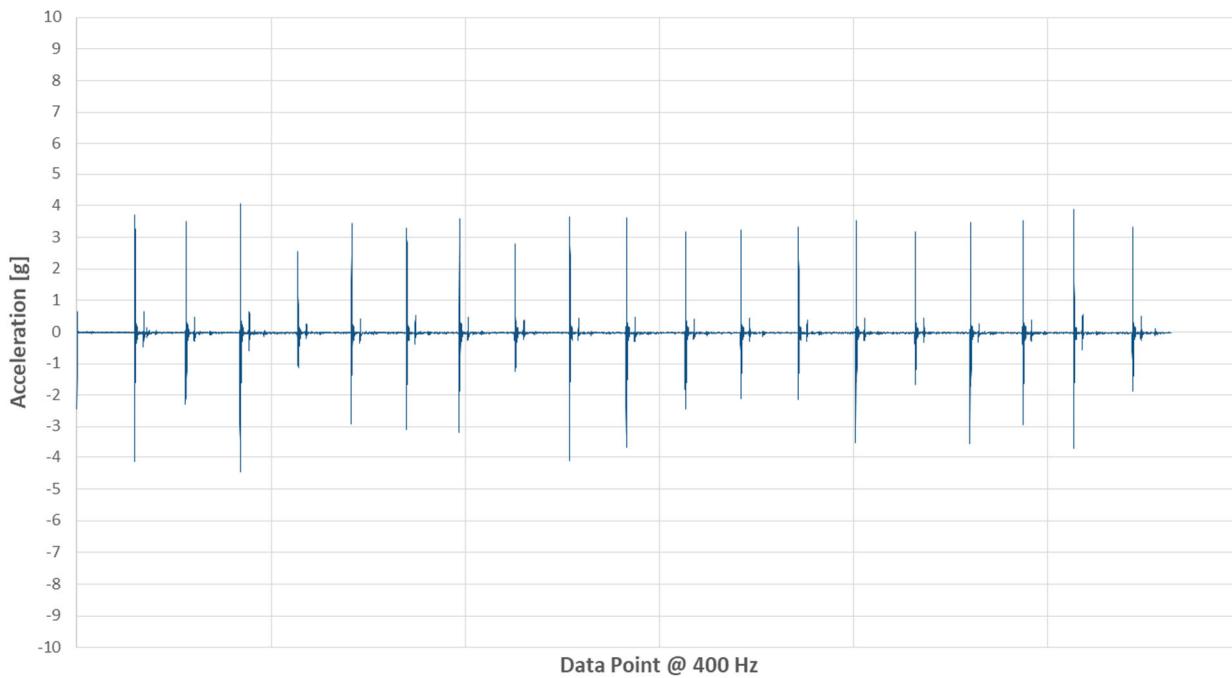


TEST 3 – KINGSDOWN

Vector Magnitude Acceleration - Kingsdown

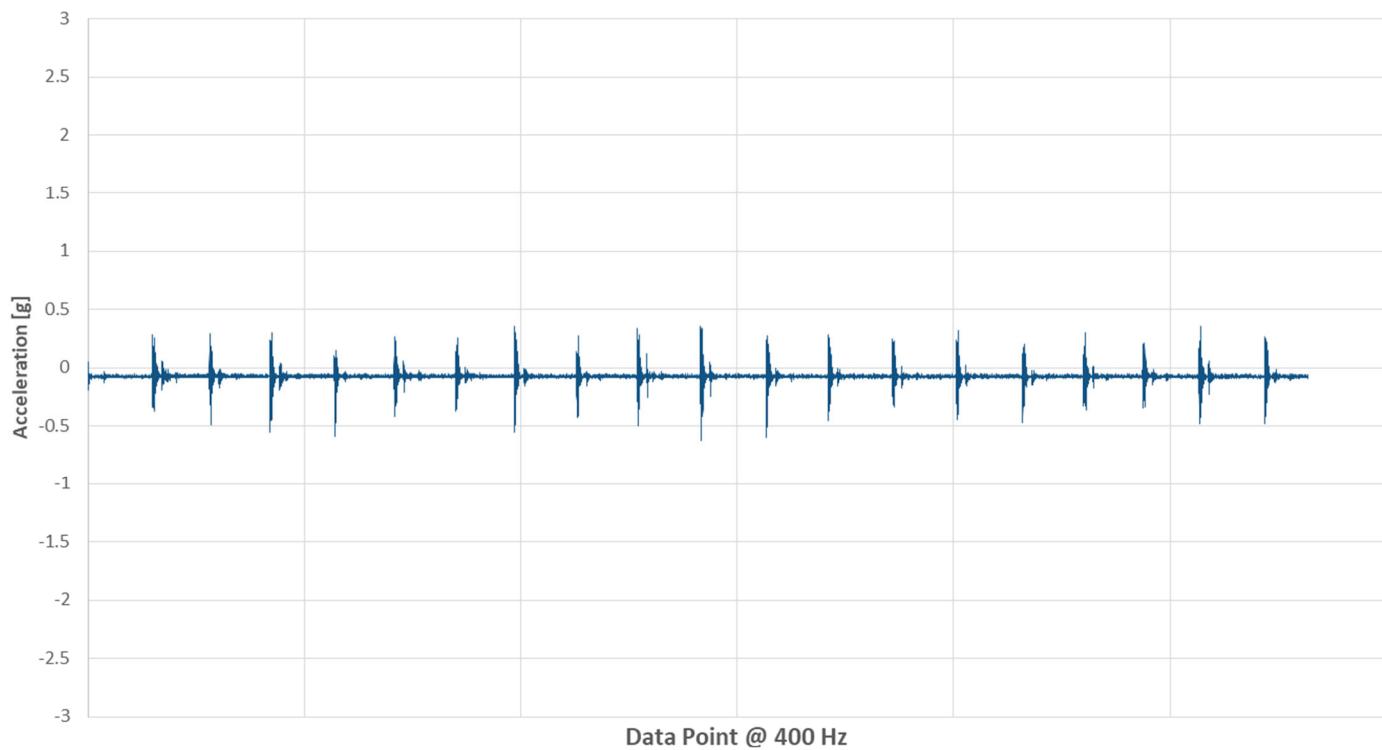


X Acceleration (Side to Side) - Kingsdown

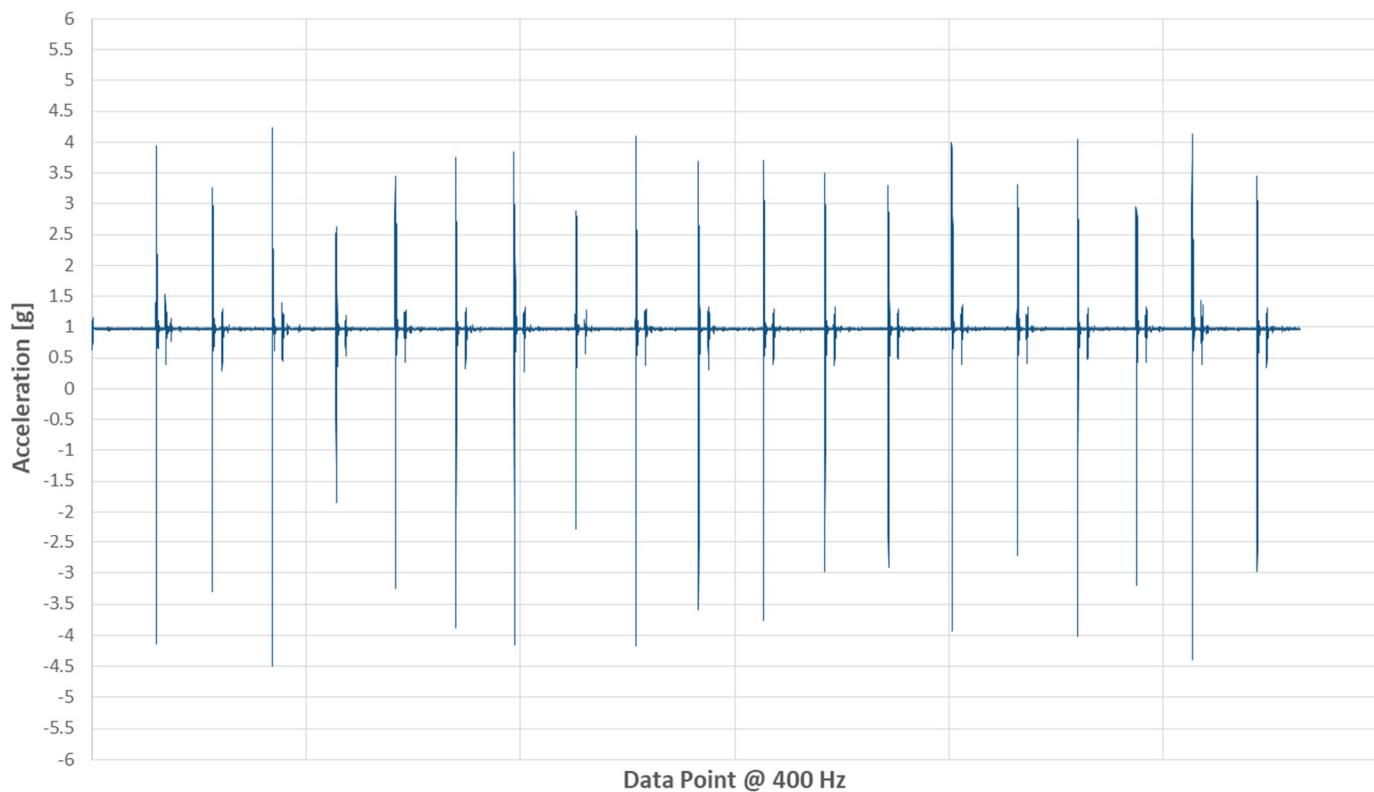




Y Acceleration (Head to Toe) - Kingsdown



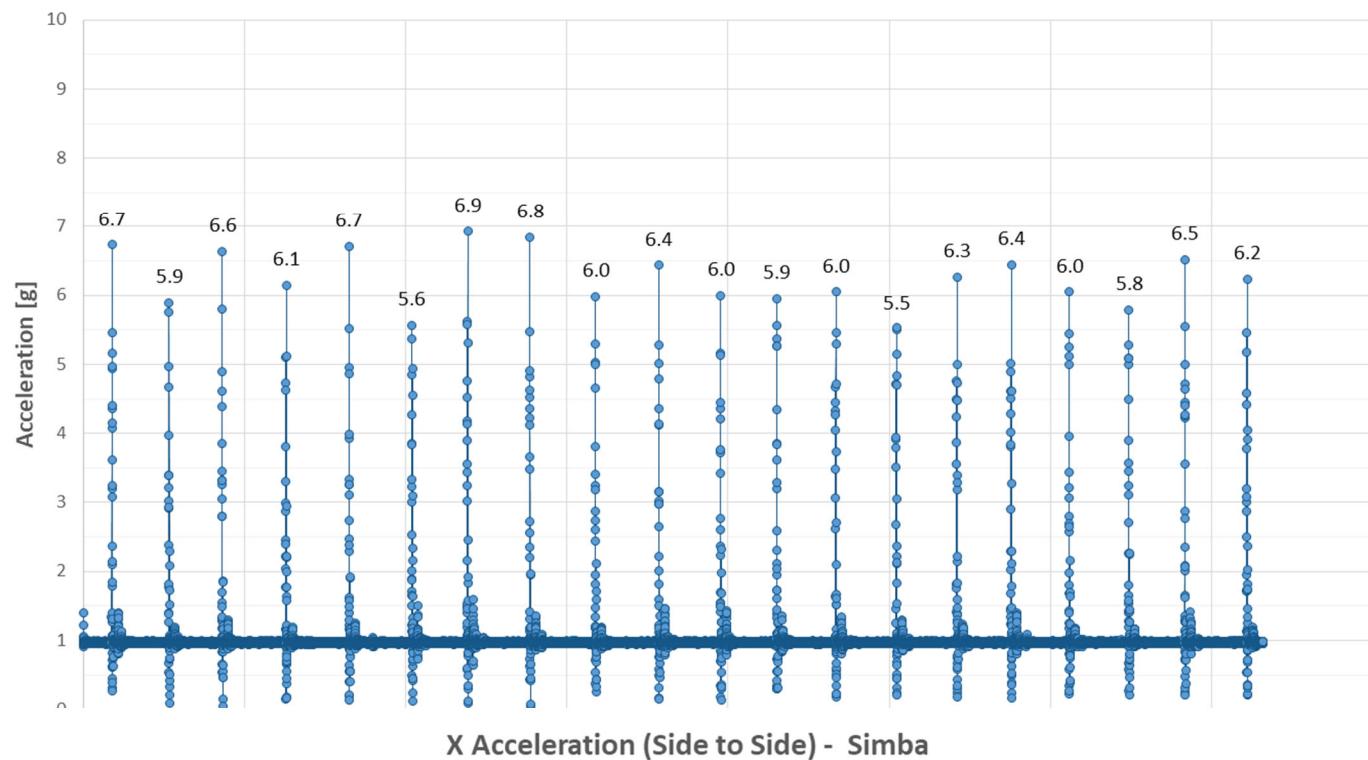
Z Acceleration (Up and Down) - Kingsdown



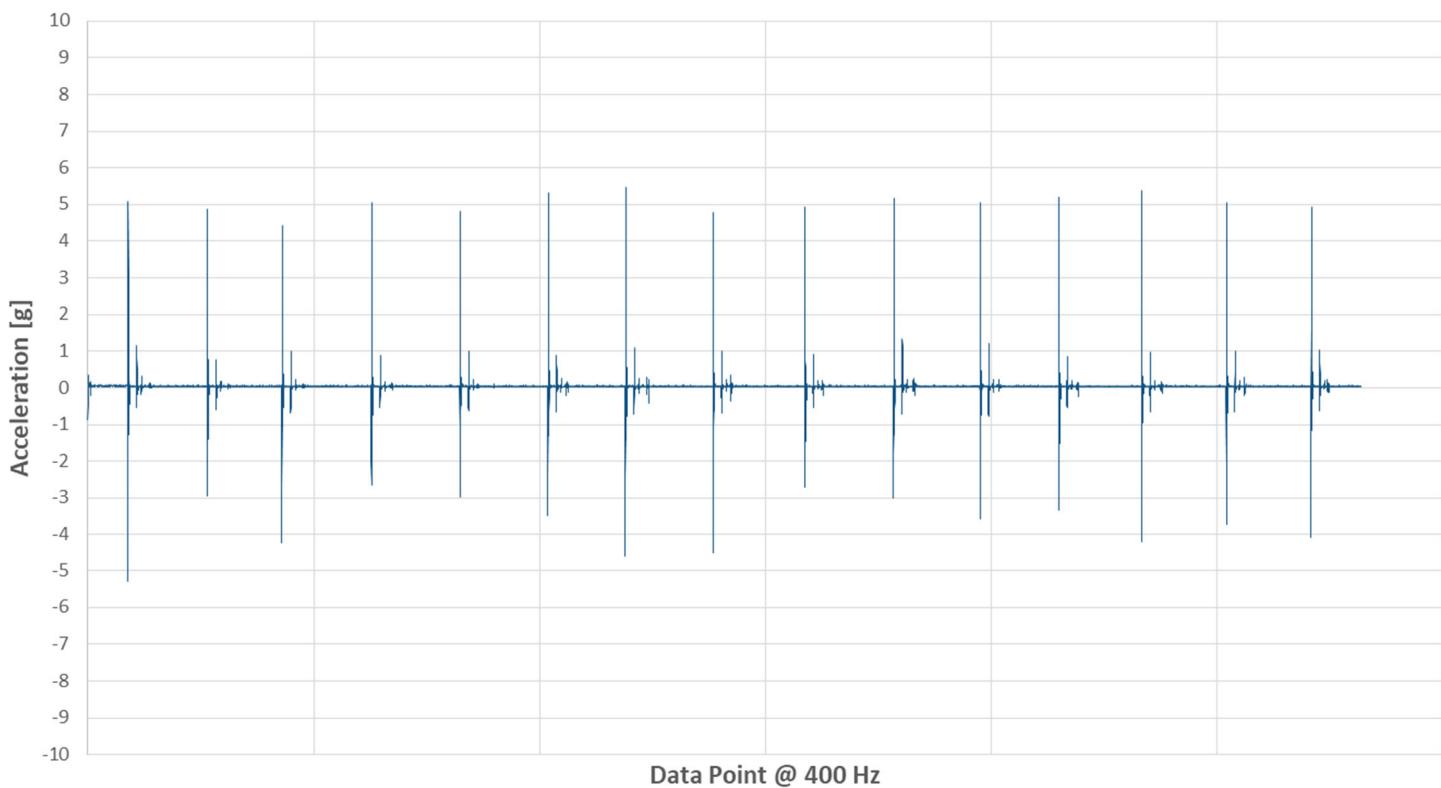


TEST 3 – SIMBA

Vector Magnitude Acceleration - Simba



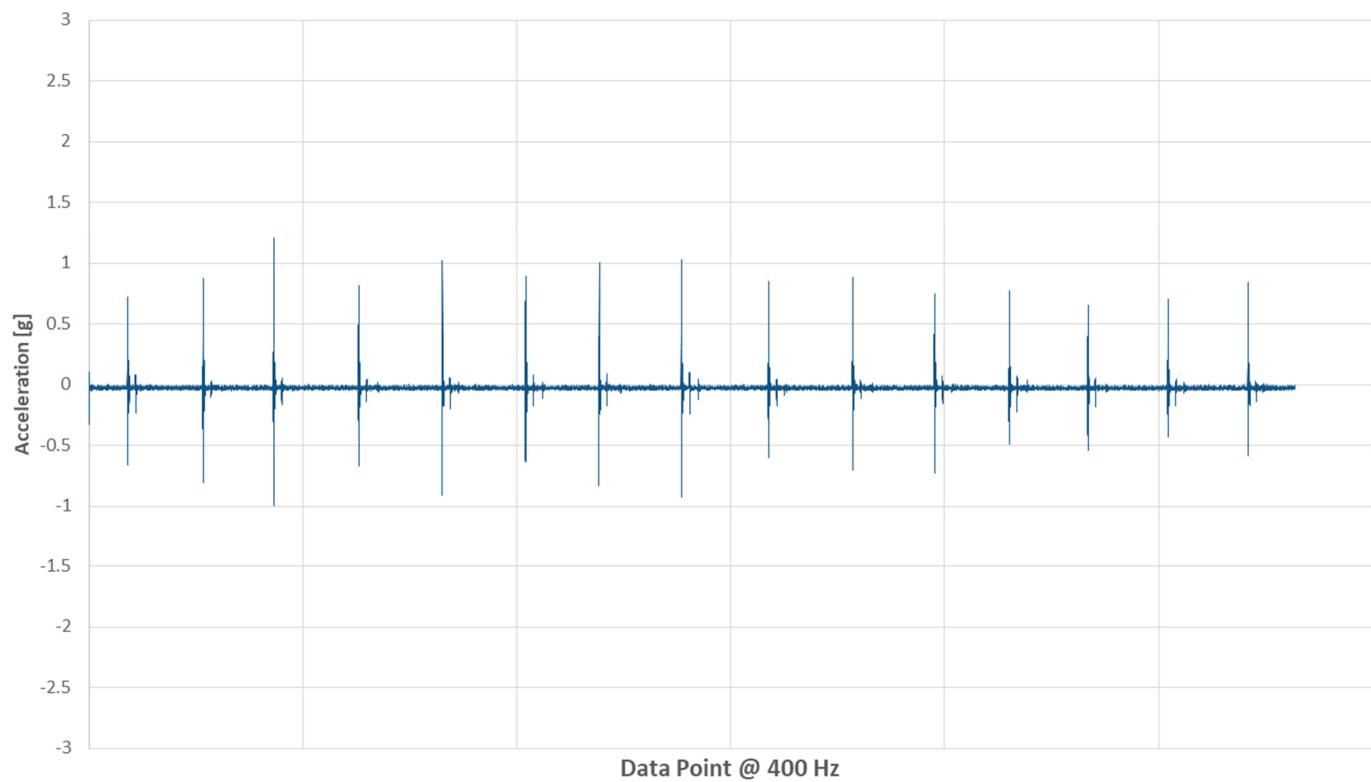
X Acceleration (Side to Side) - Simba



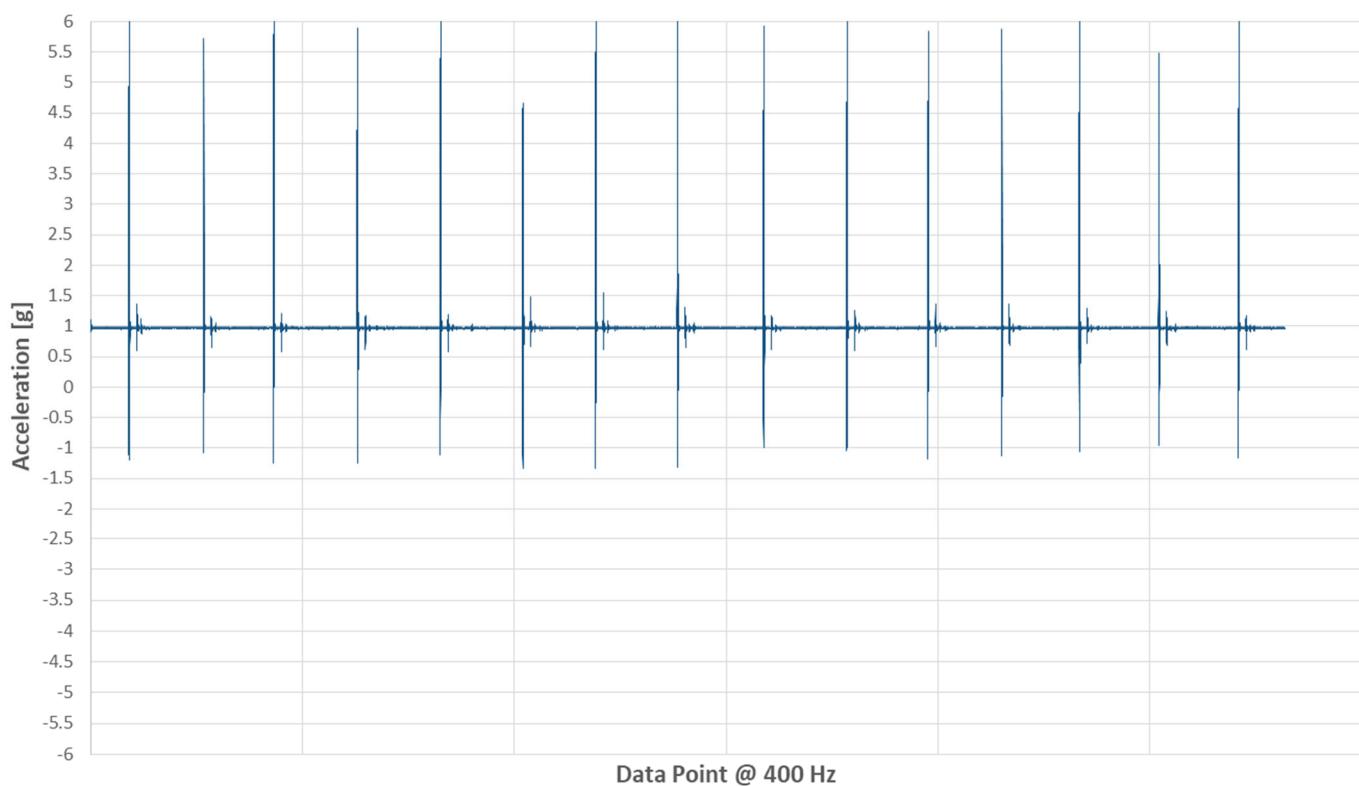
Data Point @ 400 Hz



Y Acceleration (Head to Toe) - Simba



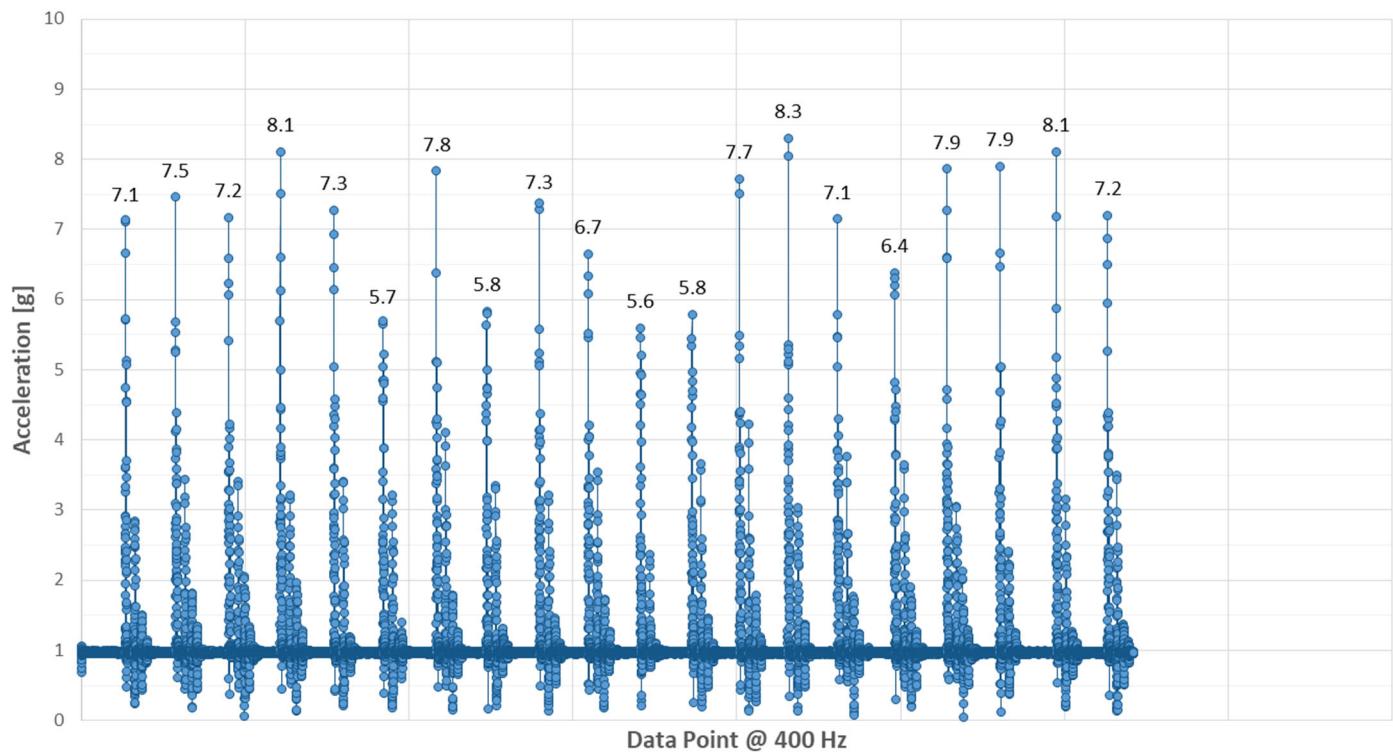
Z Acceleration (Up and Down) - Simba



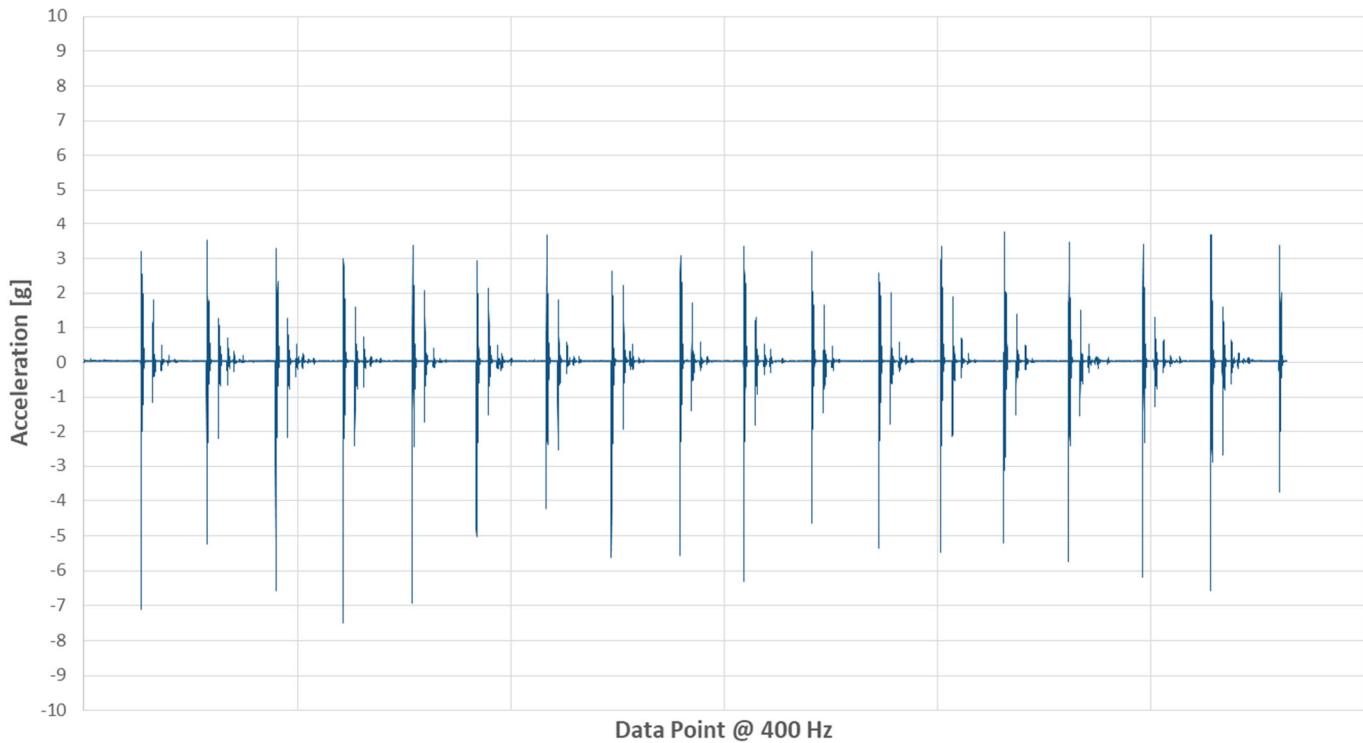


TEST 3 – SPA SENSATIONS

Vector Magnitude Acceleration - Spa Sensations

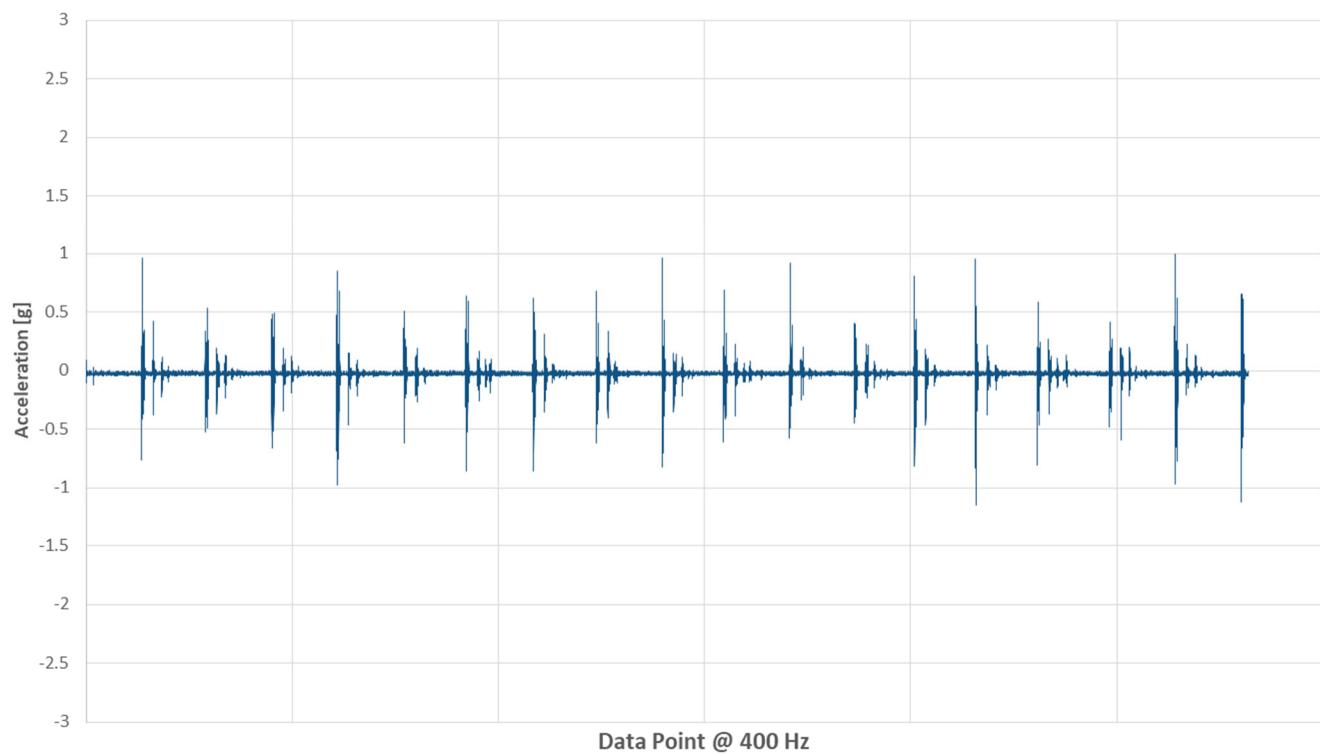


X Acceleration (Side to Side) - Spa Sensations

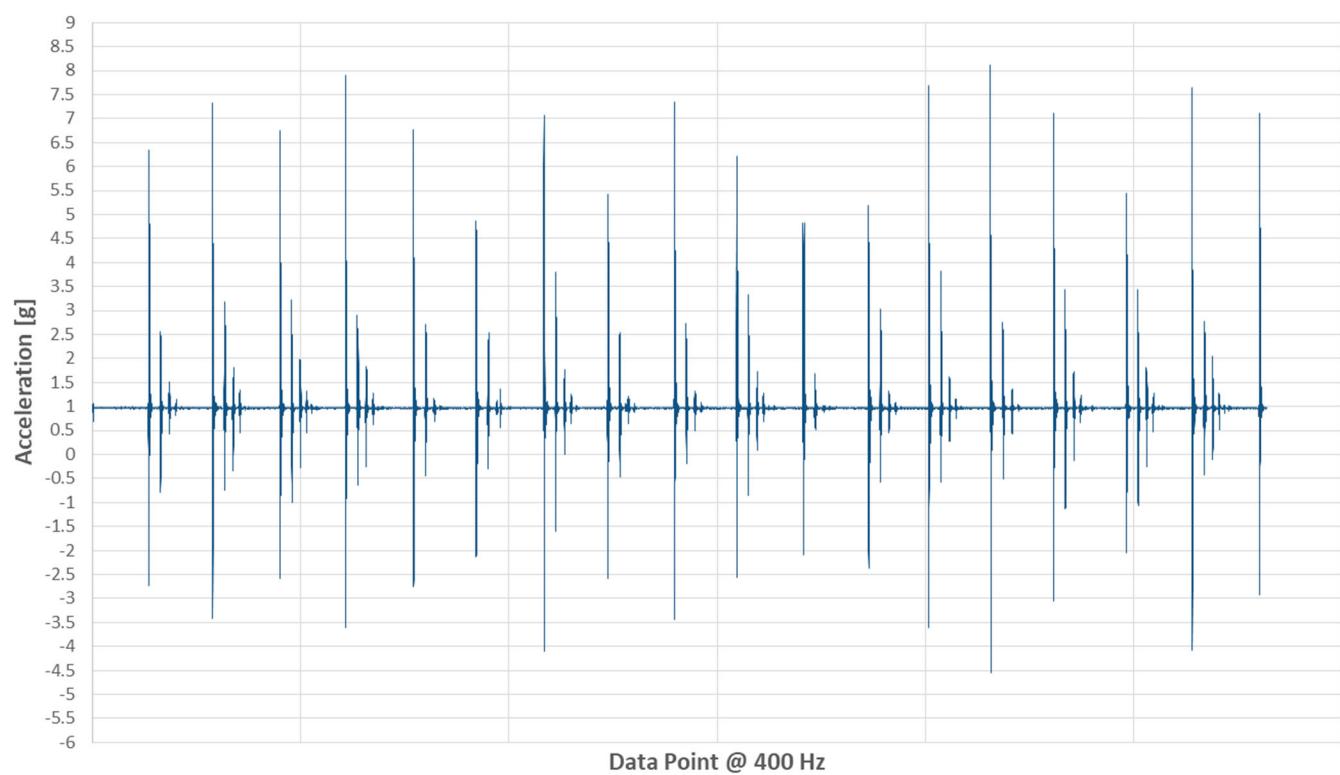




Y Acceleration (Head to Toe) - Spa Sensations



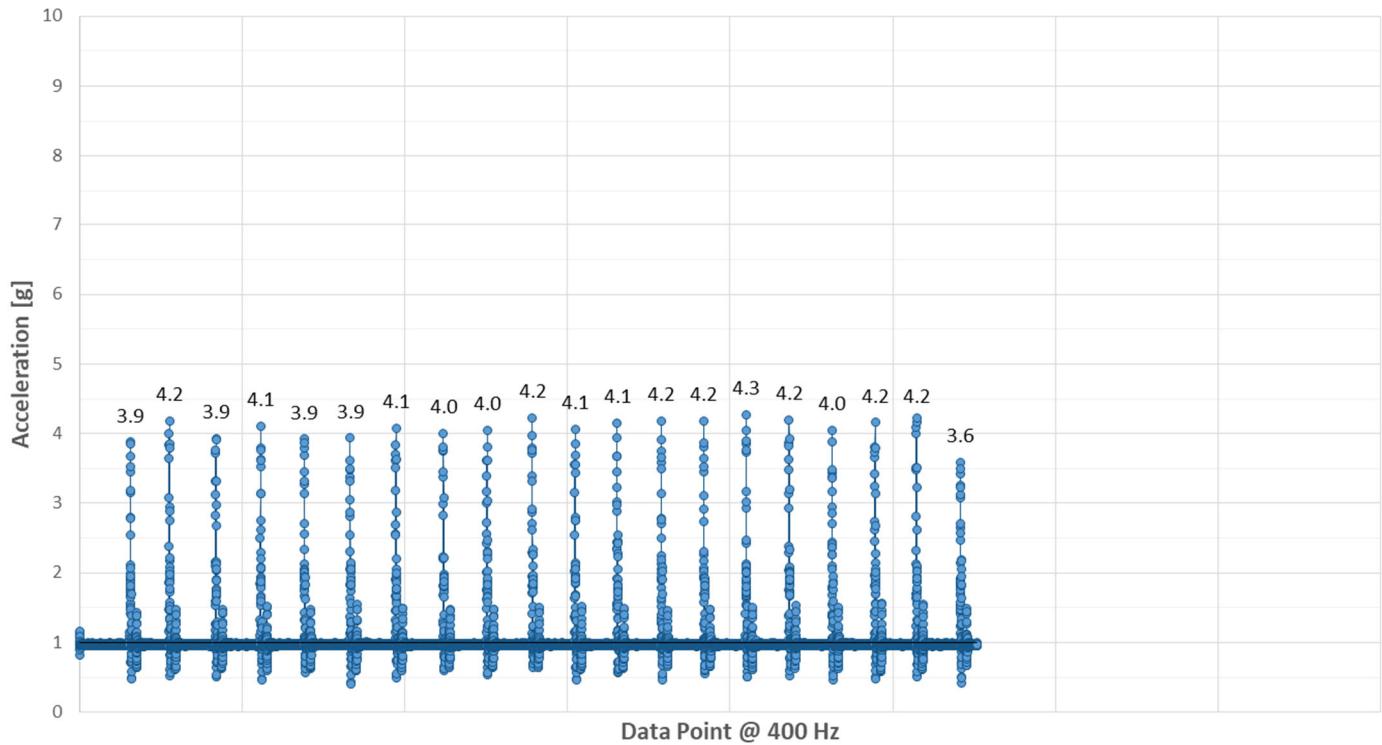
Z Acceleration (Up and Down) - Spa Sensations



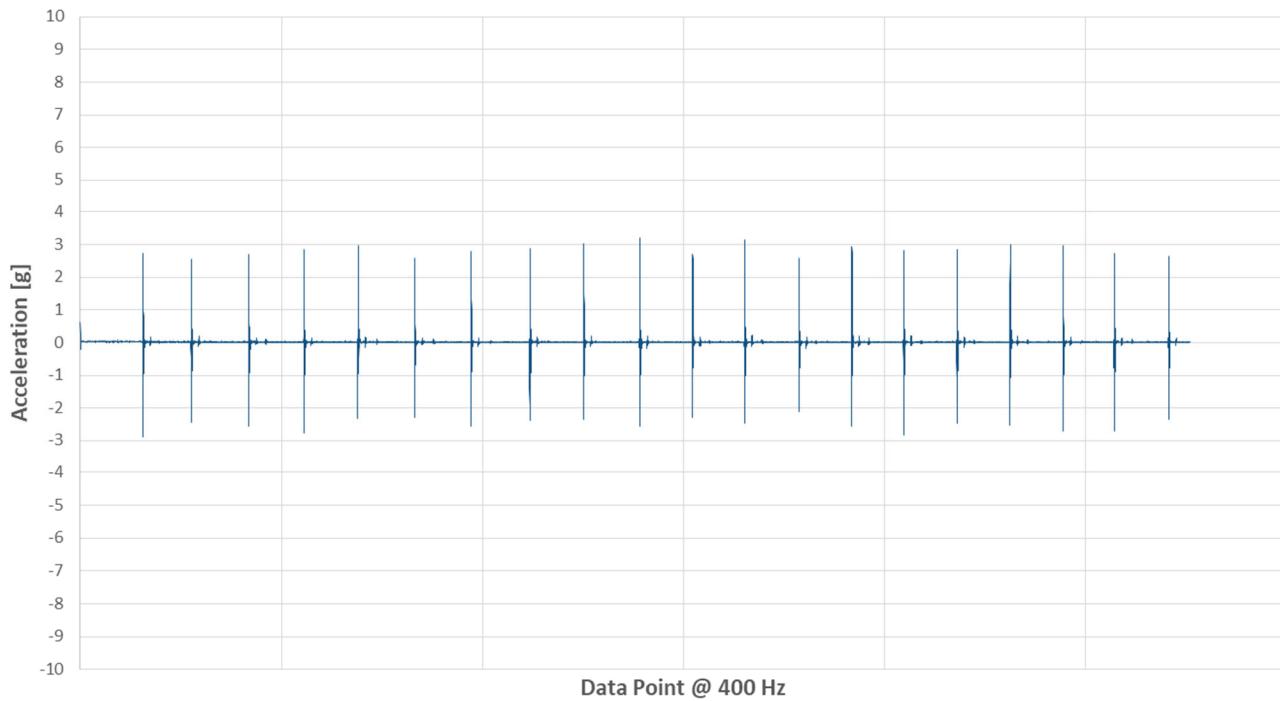


TEST 3 – STEARNS & FOSTER

Vector Magnitude Acceleration - Stearns & Foster

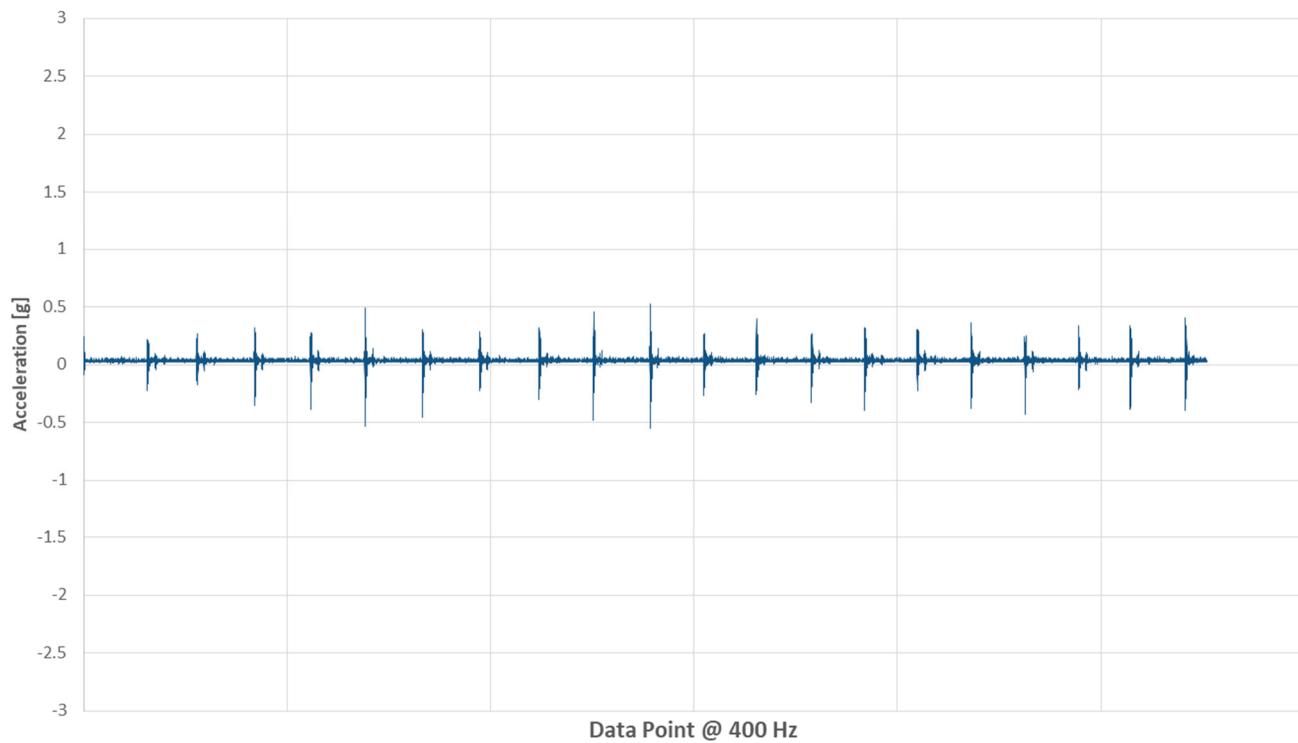


X Acceleration (Side to Side) - Stearns & Foster

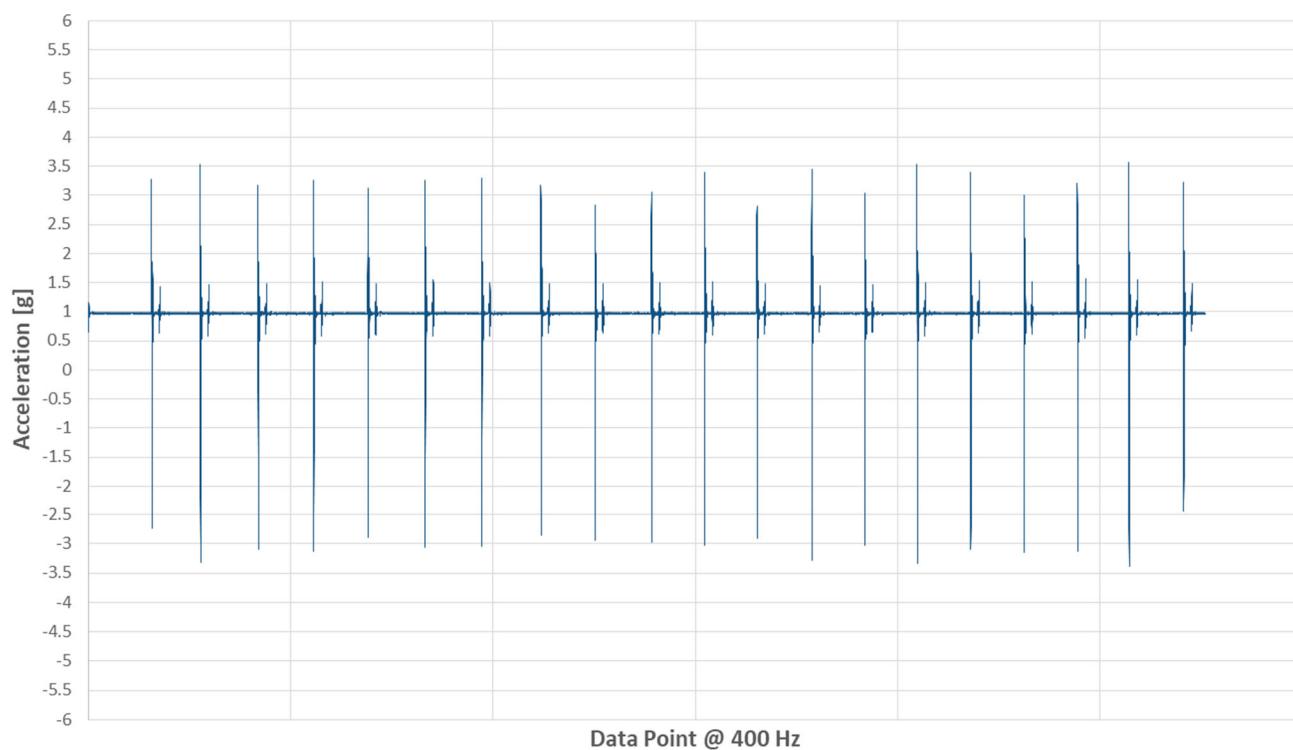


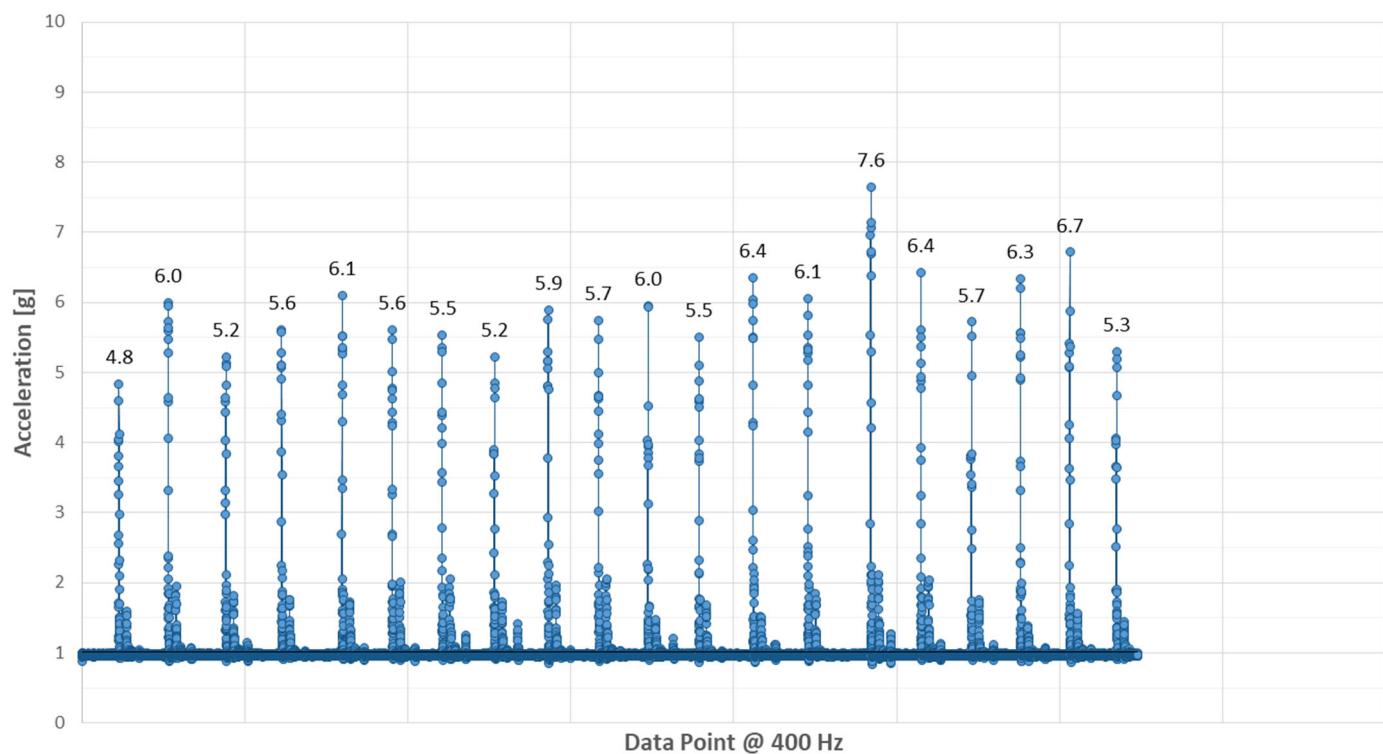
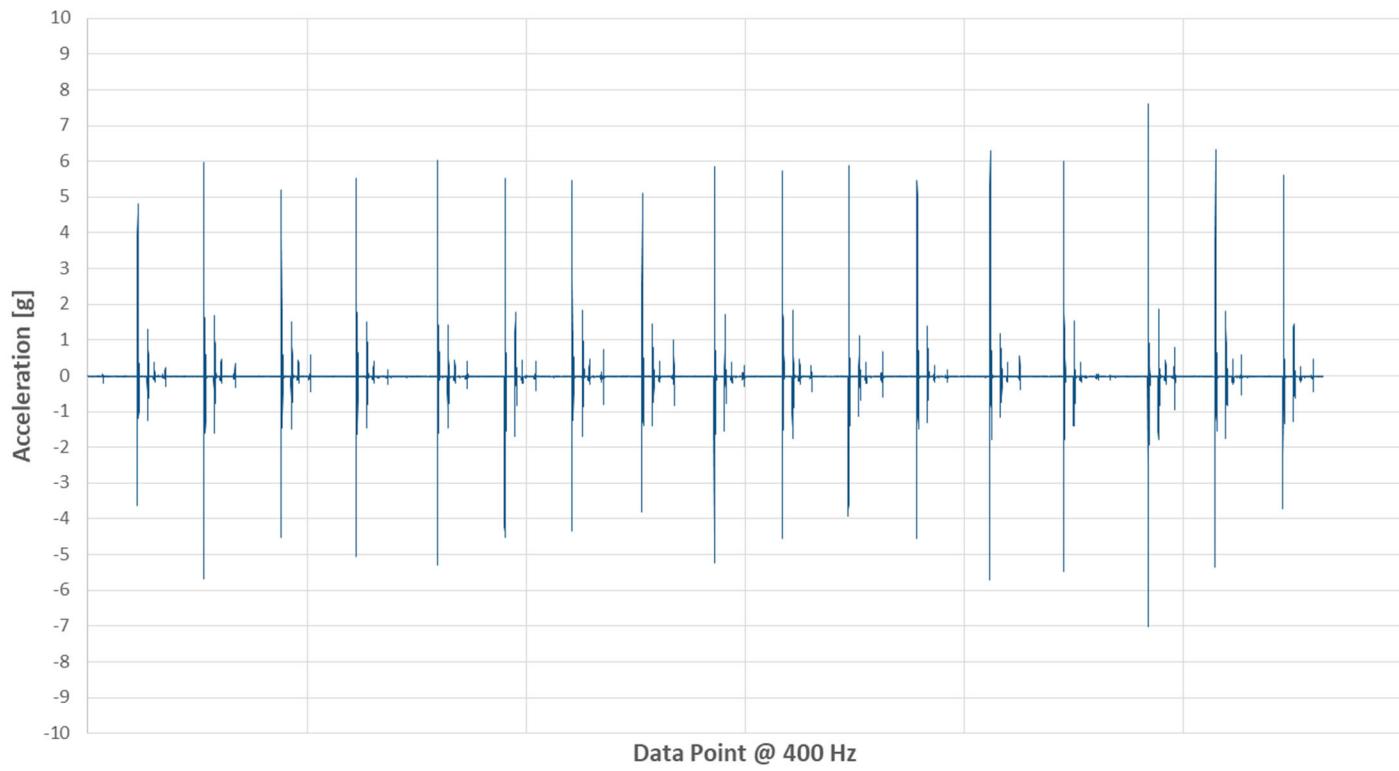


Y Acceleration (Head to Toe) - Stearns & Foster



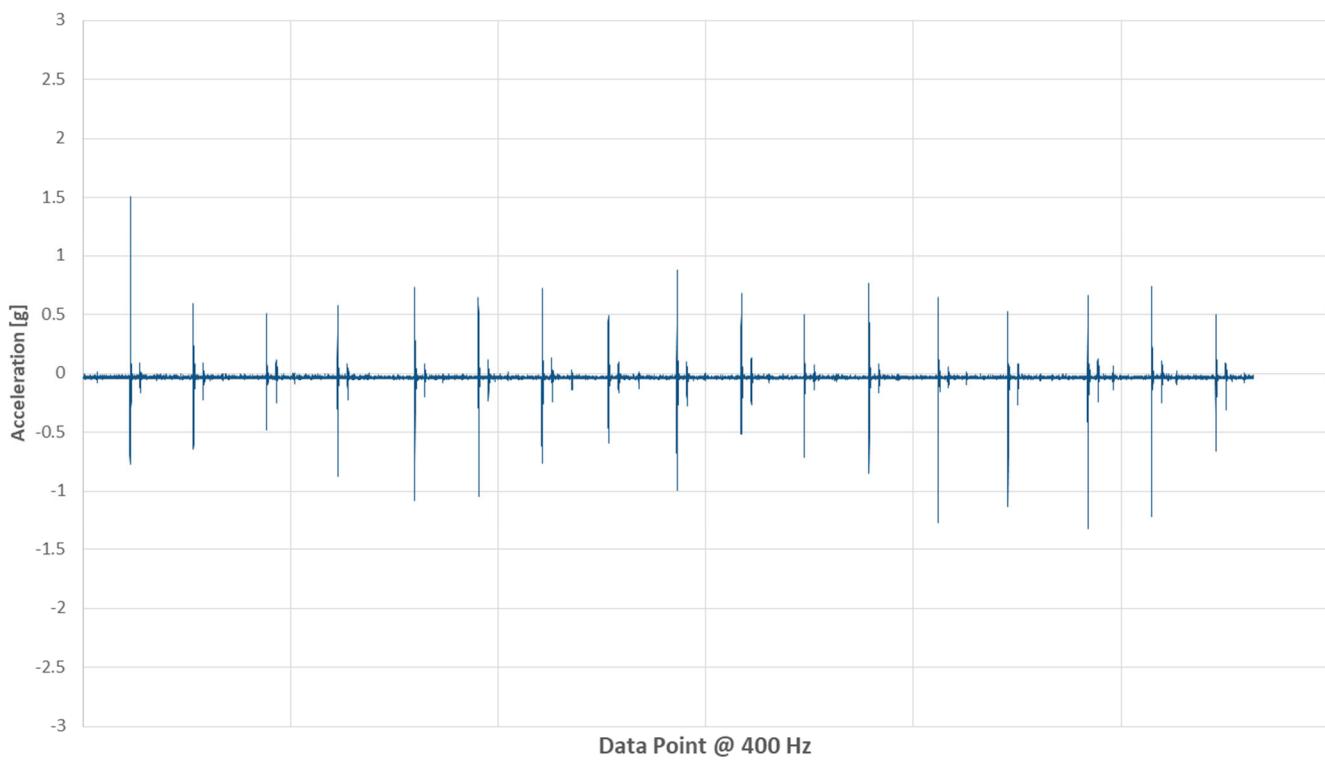
Z Acceleration (Up and Down) - Stearns & Foster



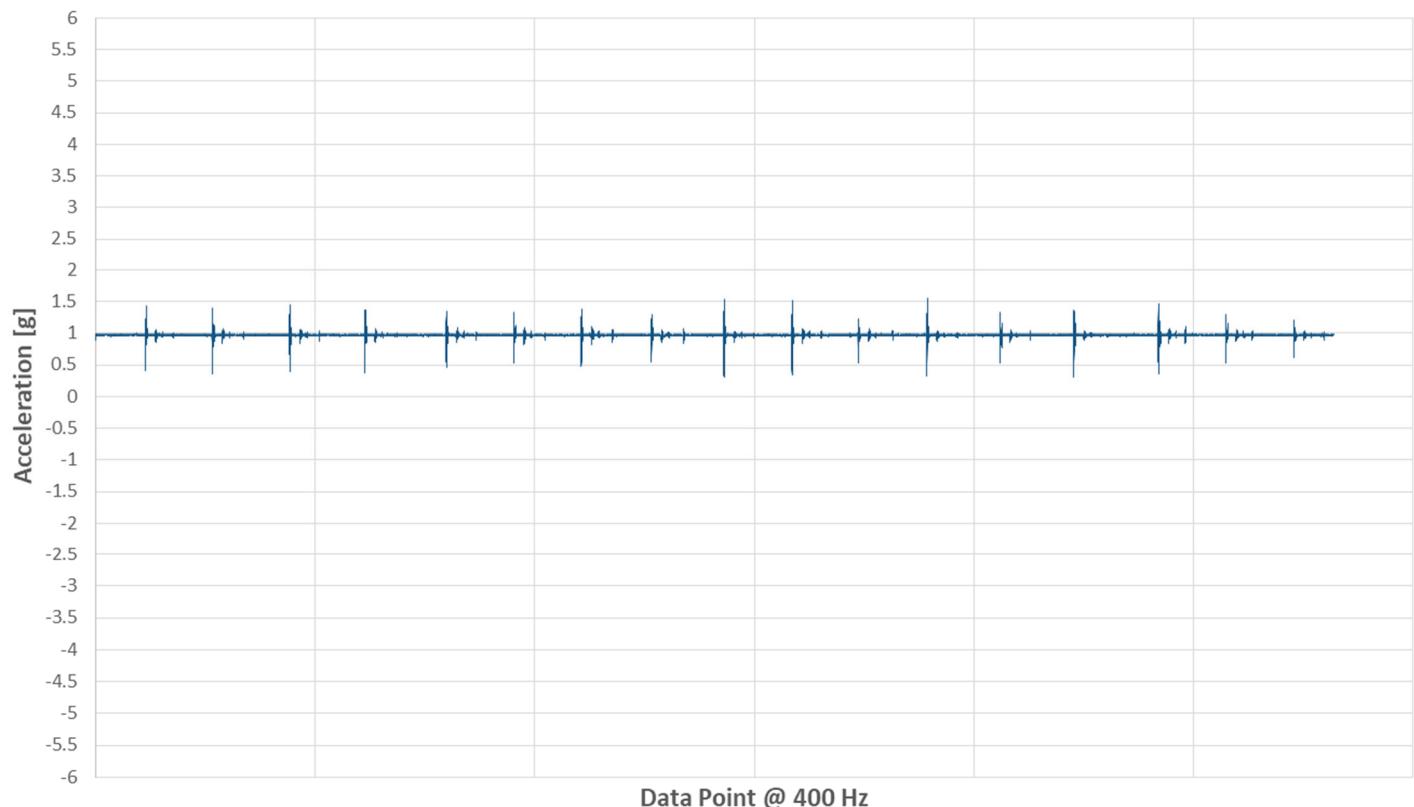
**TEST 2 – STRUCTURE****Vector Magnitude Acceleration - Structube****X Acceleration (Side to Side) - Structube**



Y Acceleration (Head to Toe) - Structube



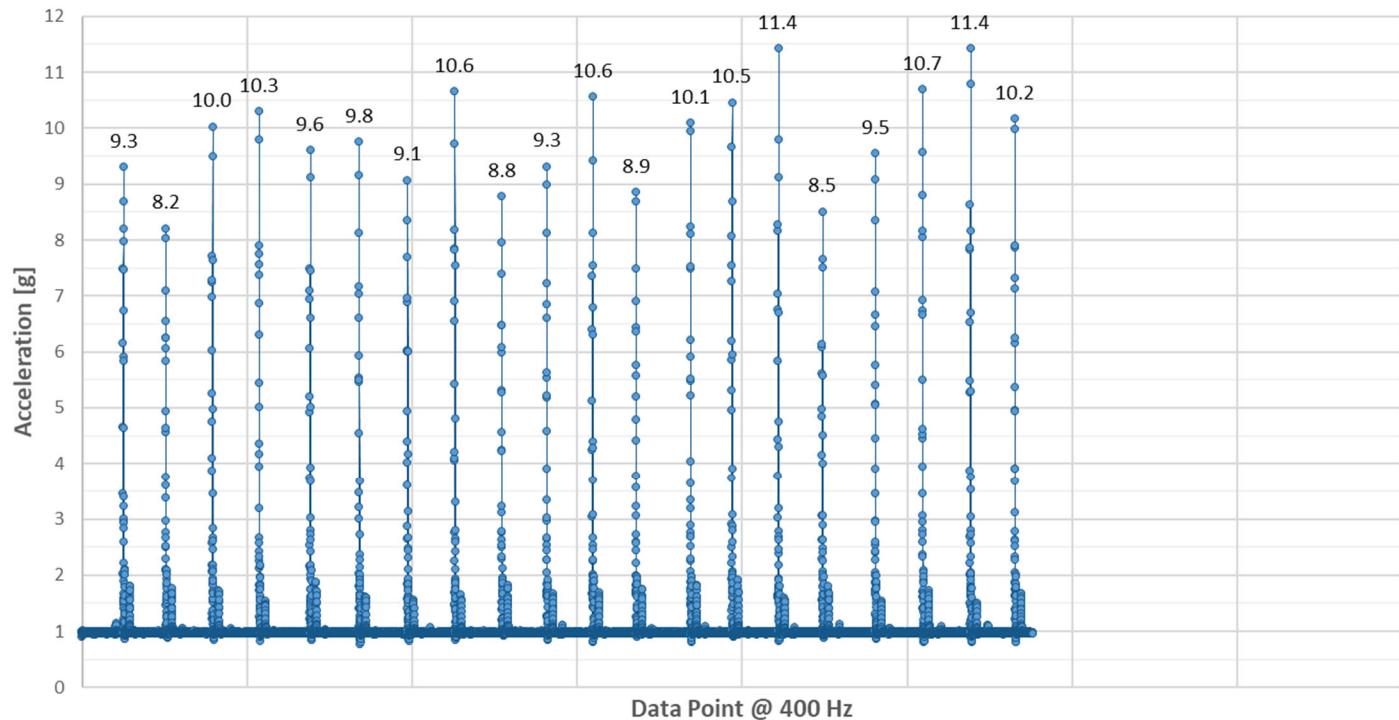
Z Acceleration (Up and Down) - Structube



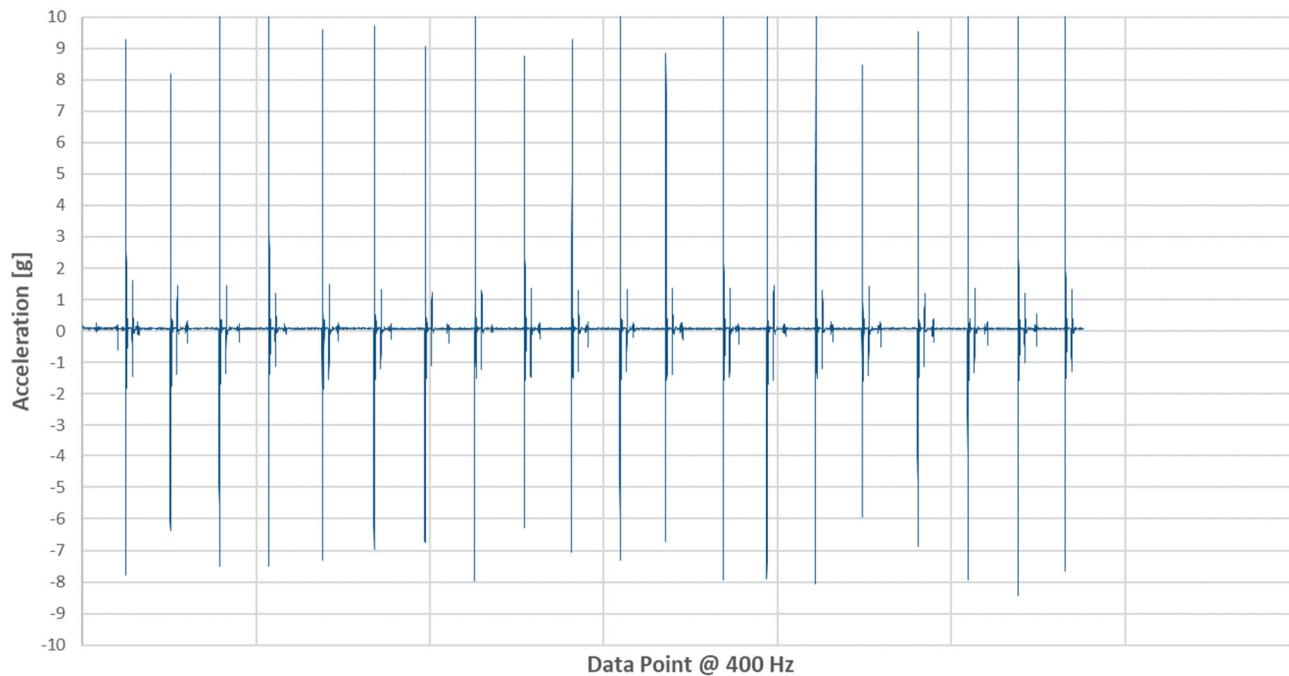


TEST 3 – PERFECTSENSE

Vector Magnitude Acceleration - PerfectSense

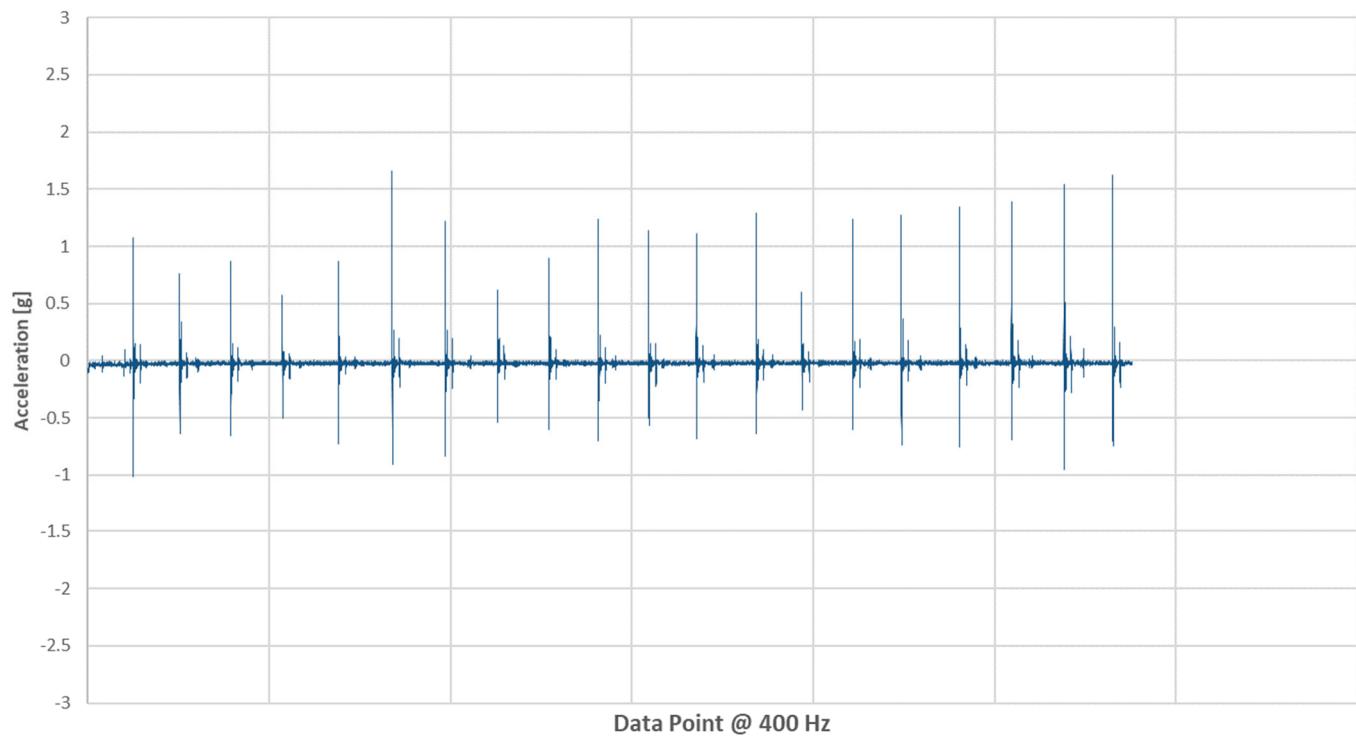


X Acceleration (Side to Side) - PerfectSense

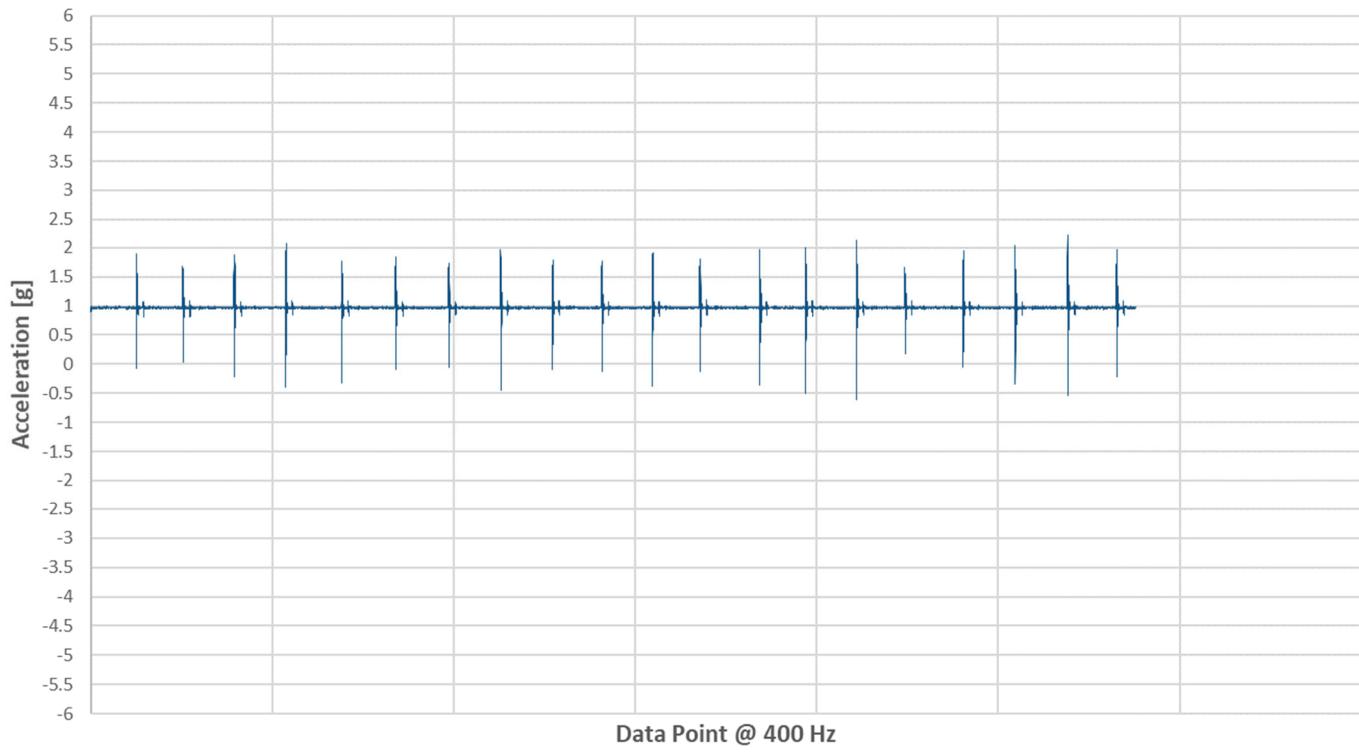




Y Acceleration (Head to Toe) - PerfectSense



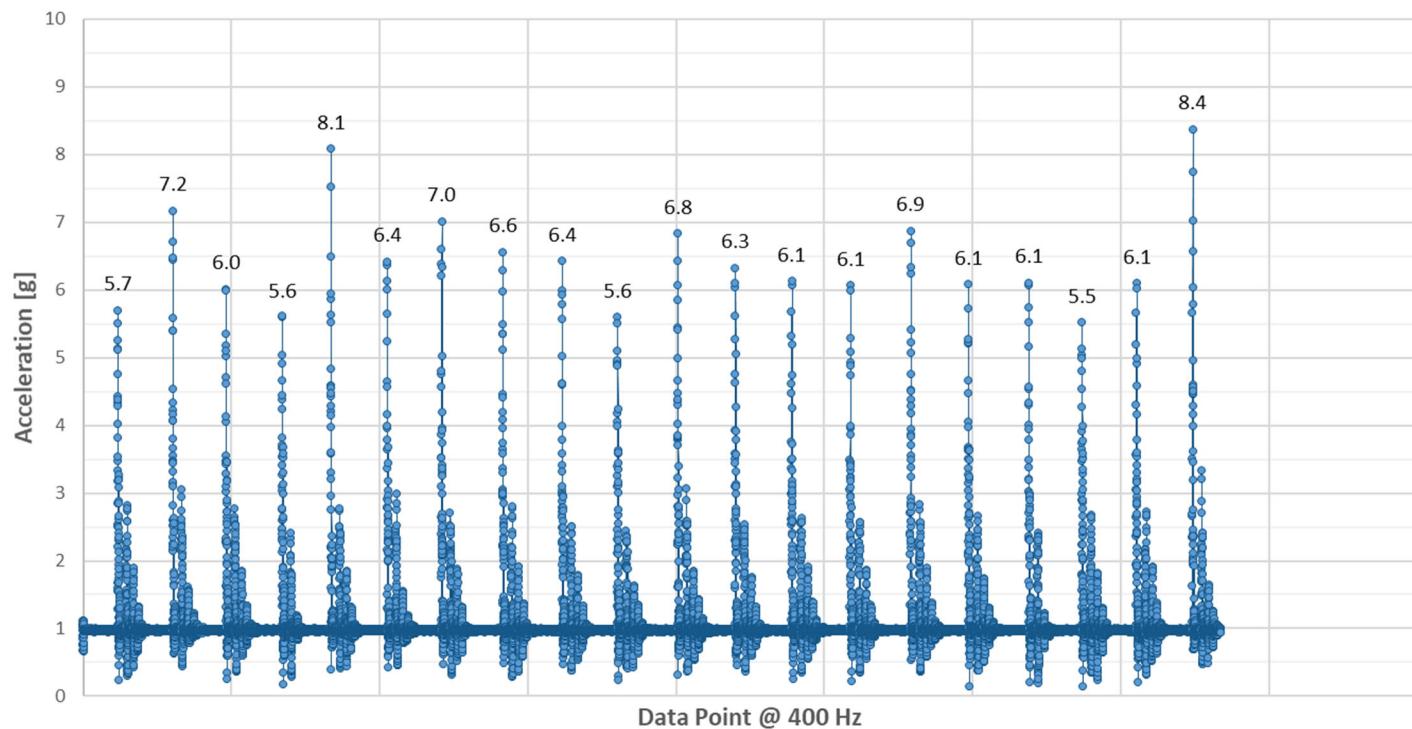
Z Acceleration (Up and Down) - PerfectSense



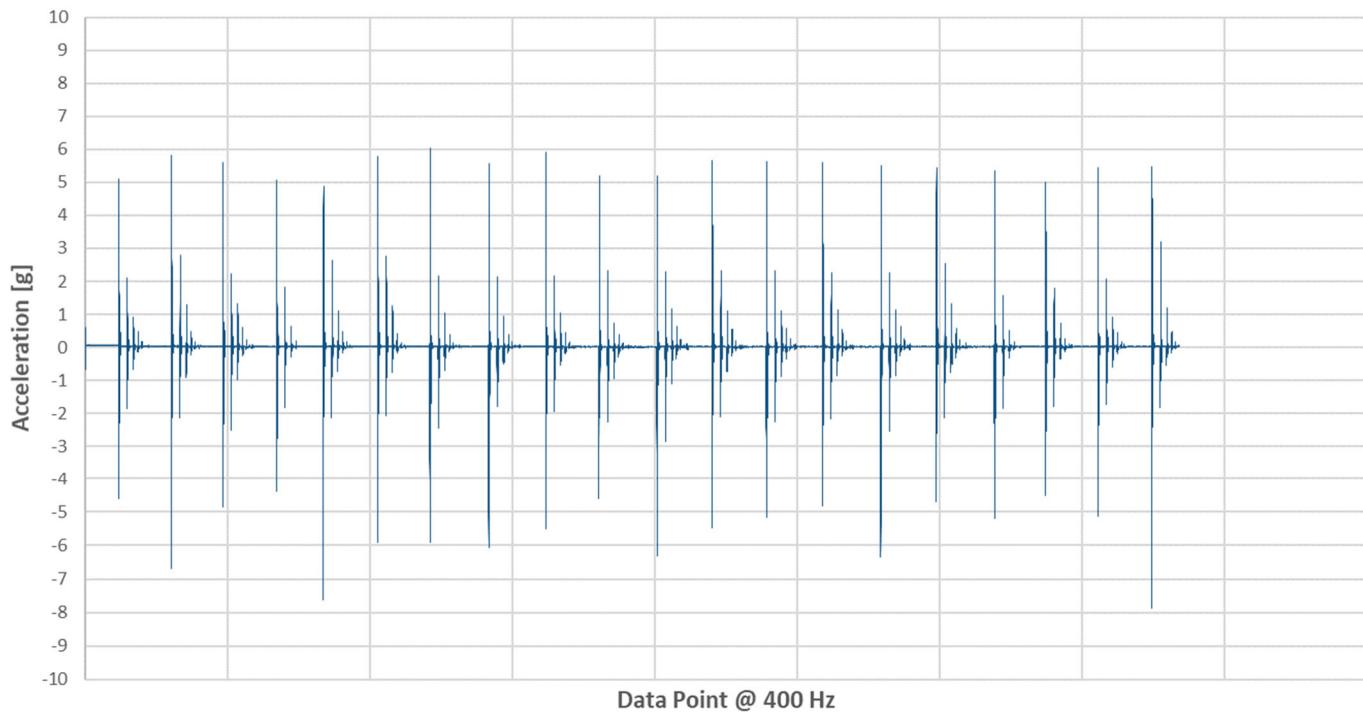


TEST 3 – SPRINGWALL

Vector Magnitude Acceleration - Springwall

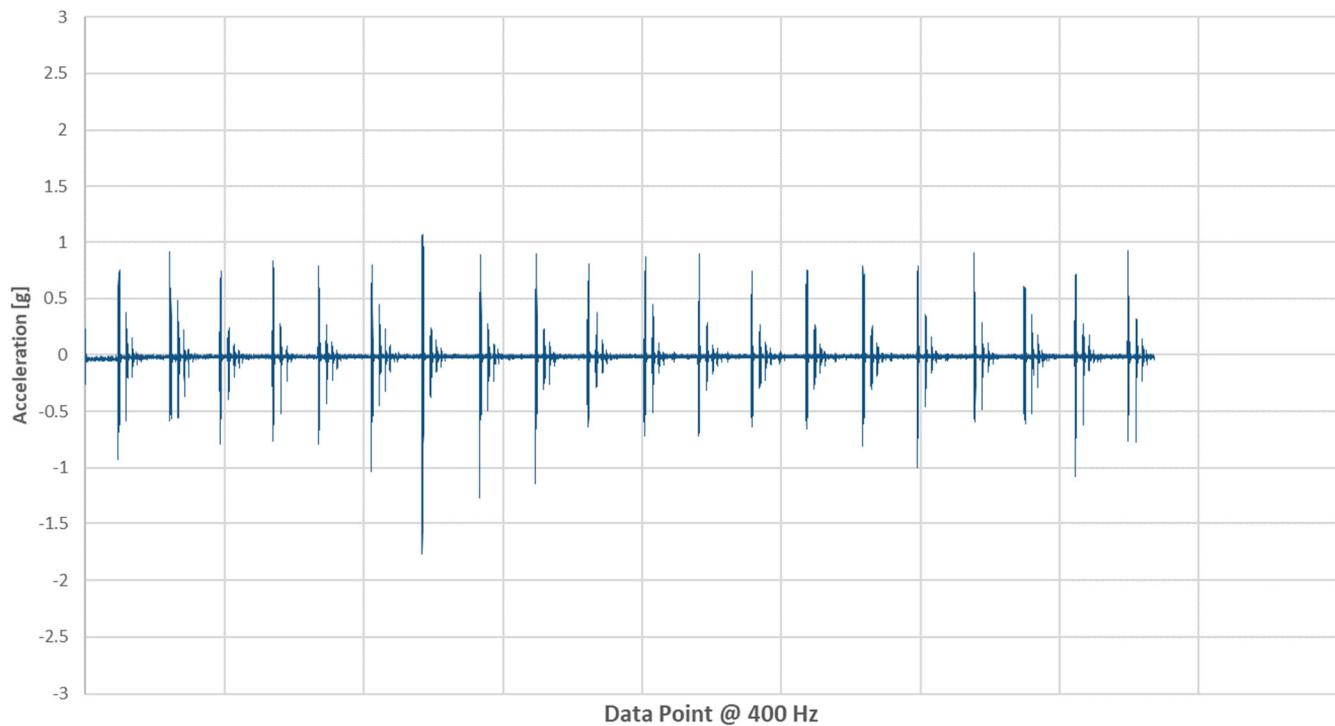


X Acceleration (Side to Side) - Springwall

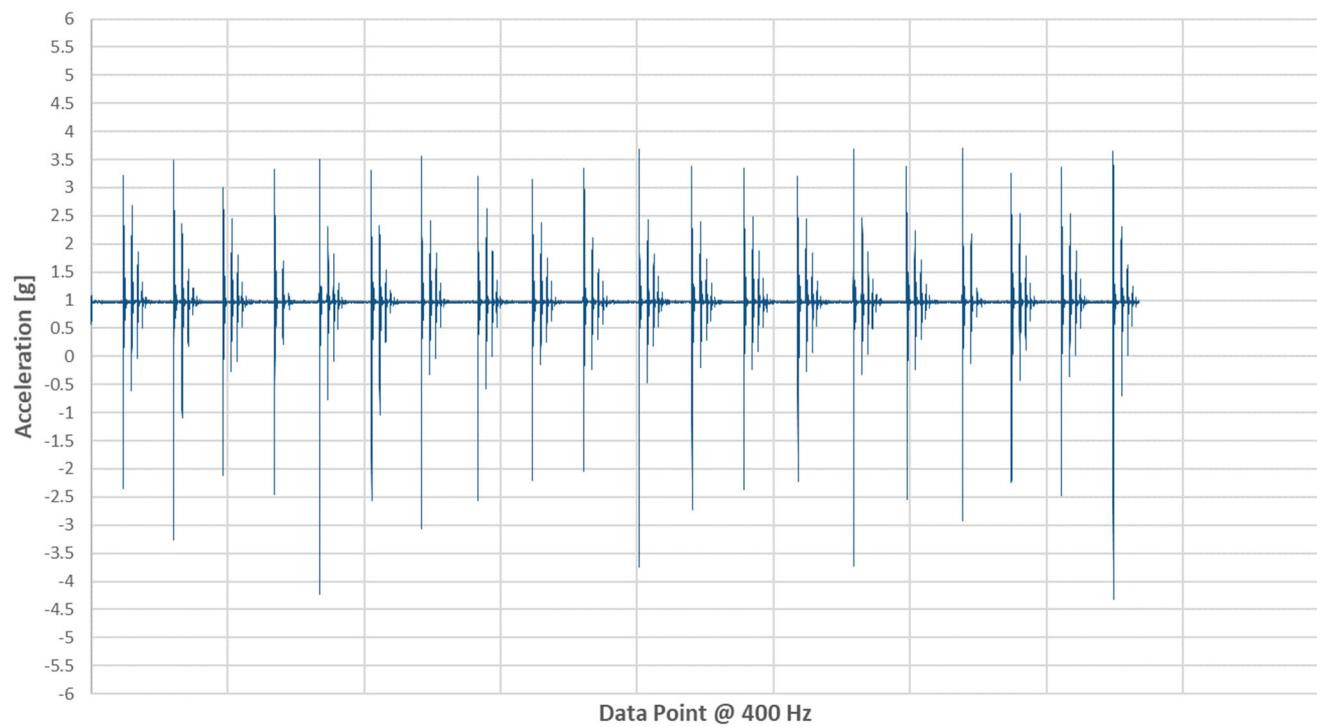




Y Acceleration (Head to Toe) - Springwall



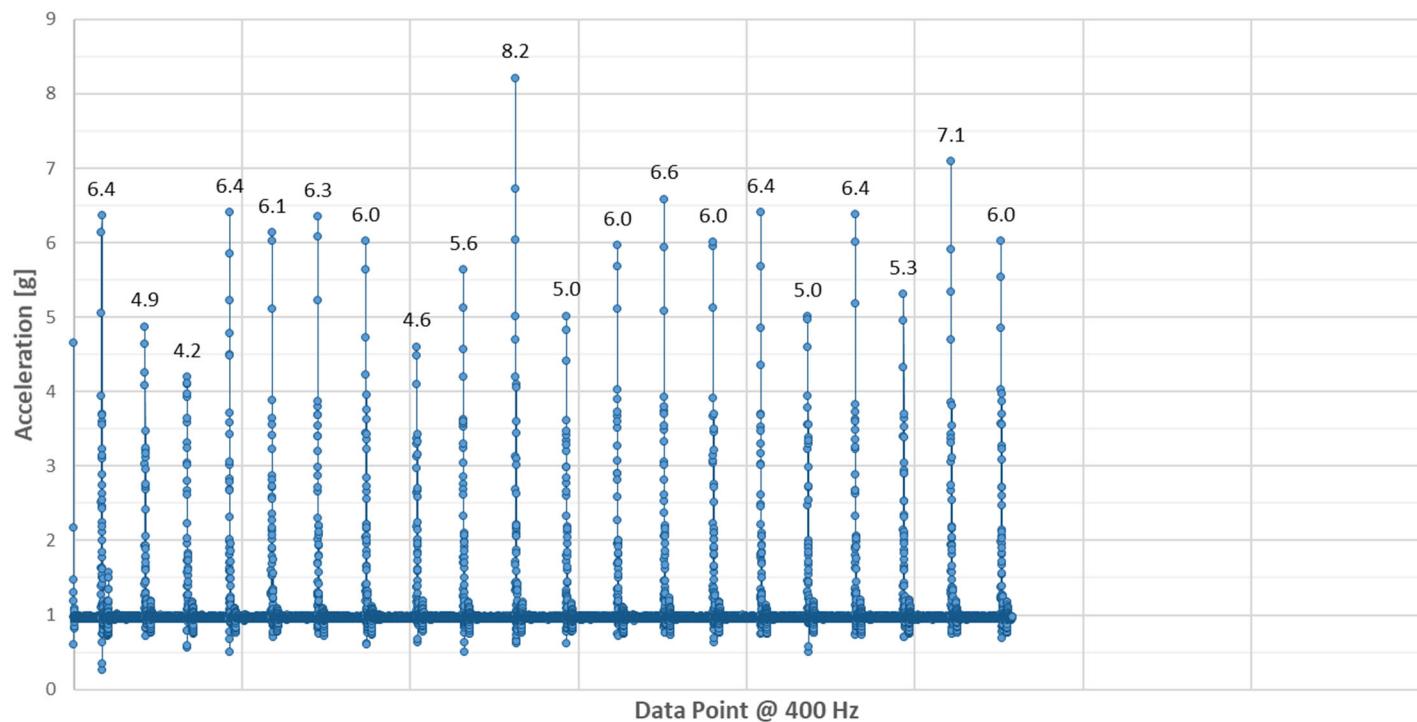
Z Acceleration (Up and Down) - Springwall



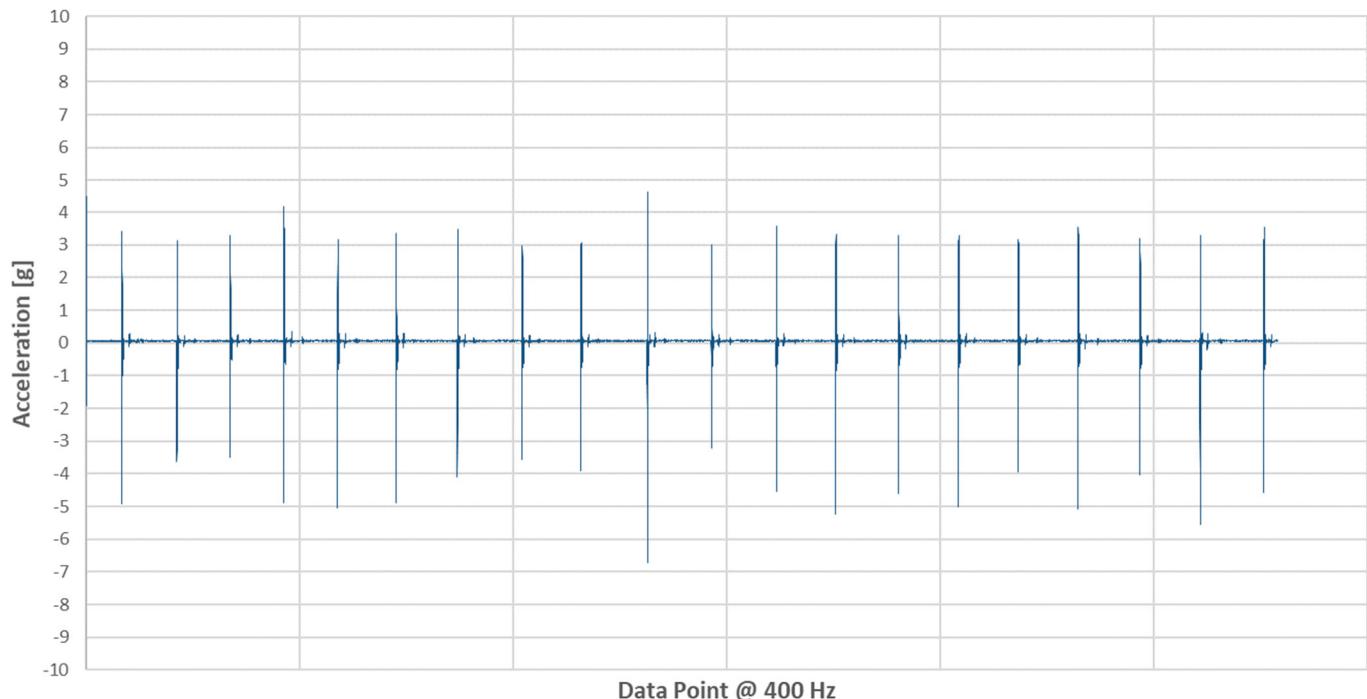


TEST 3 – GOTTA SLEEP (OMG)

Vector Magnitude Acceleration - Gotta Sleep (OMG)

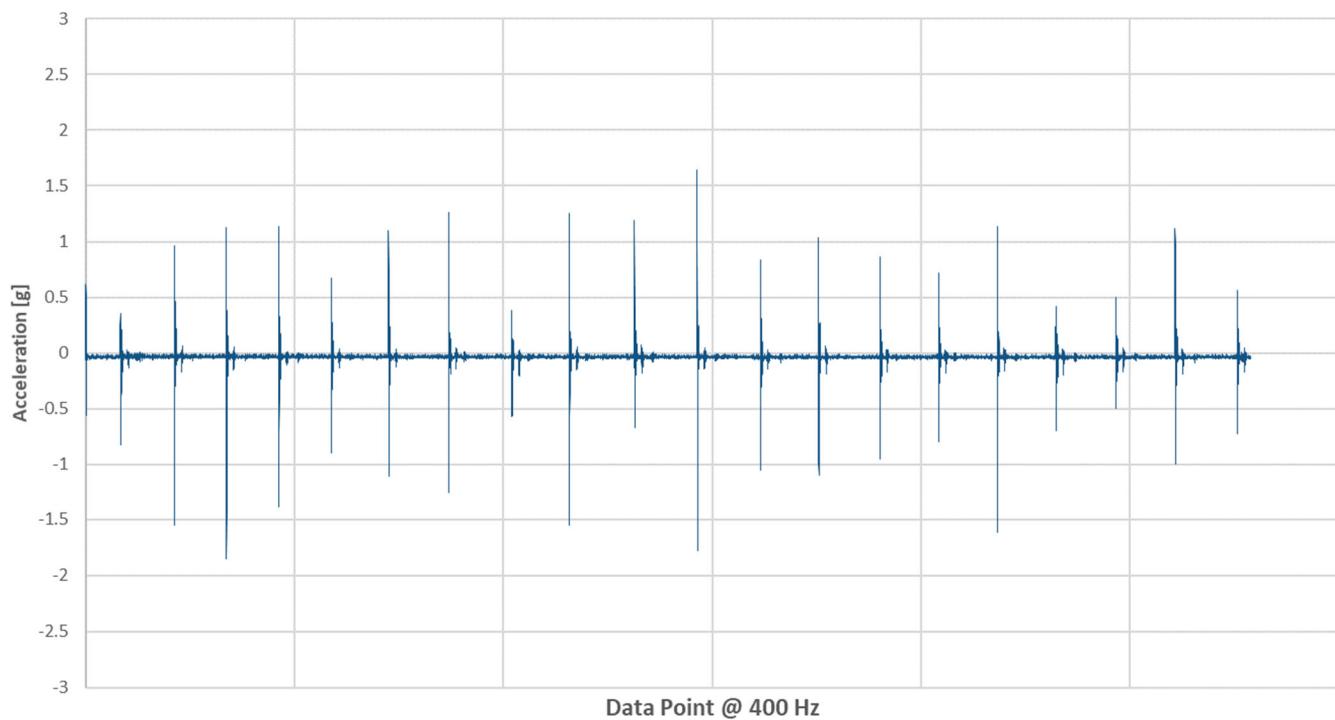


X Acceleration (Side to Side) - Gotta Sleep (OMG)

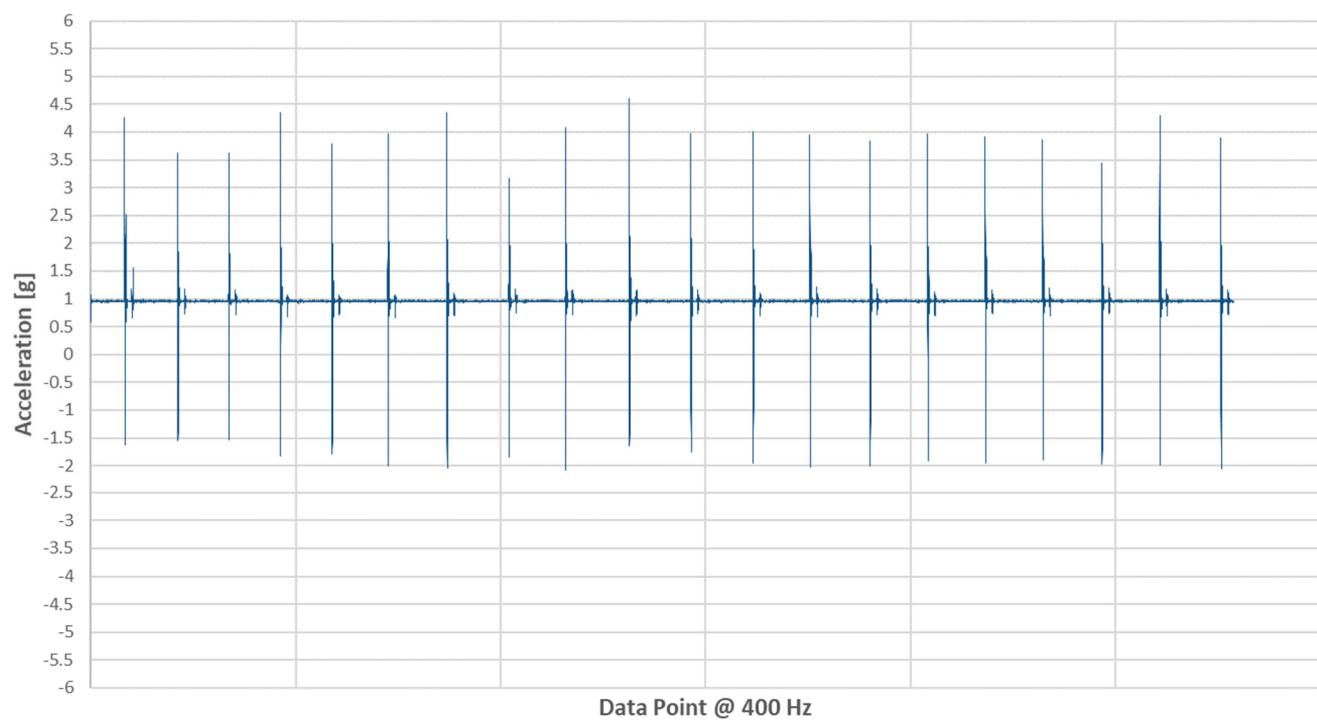




Y Acceleration (Head to Toe) - Gotta Sleep (OMG)



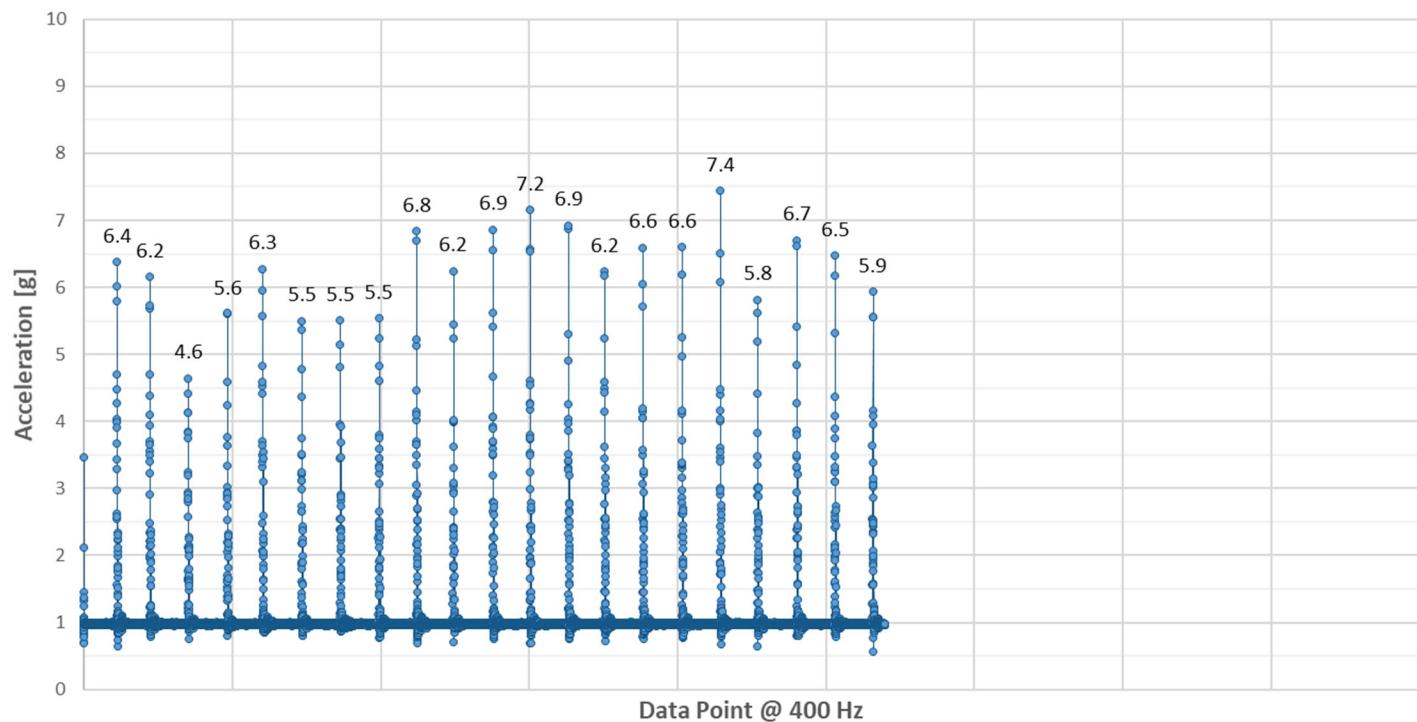
Z Acceleration (Up and Down) - Gotta Sleep (OMG)



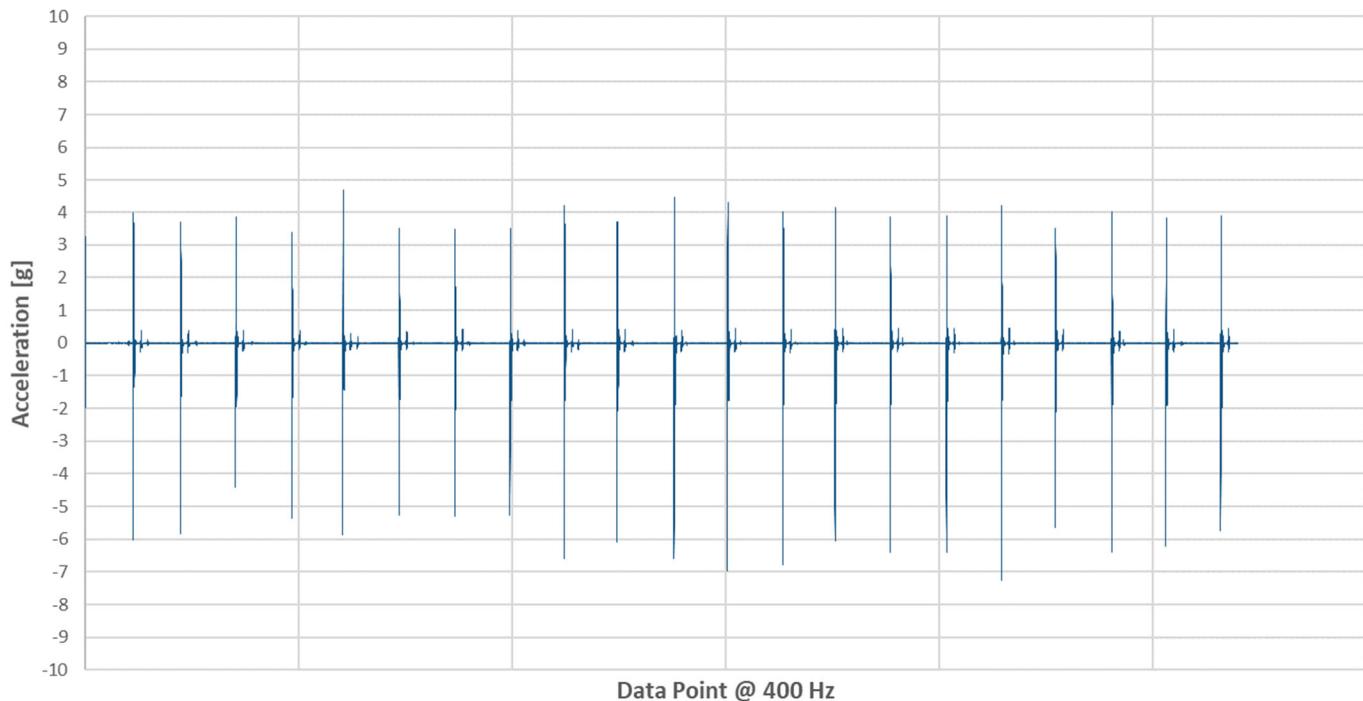


TEST 3 – JUNO

Vector Magnitude Acceleration - Juno

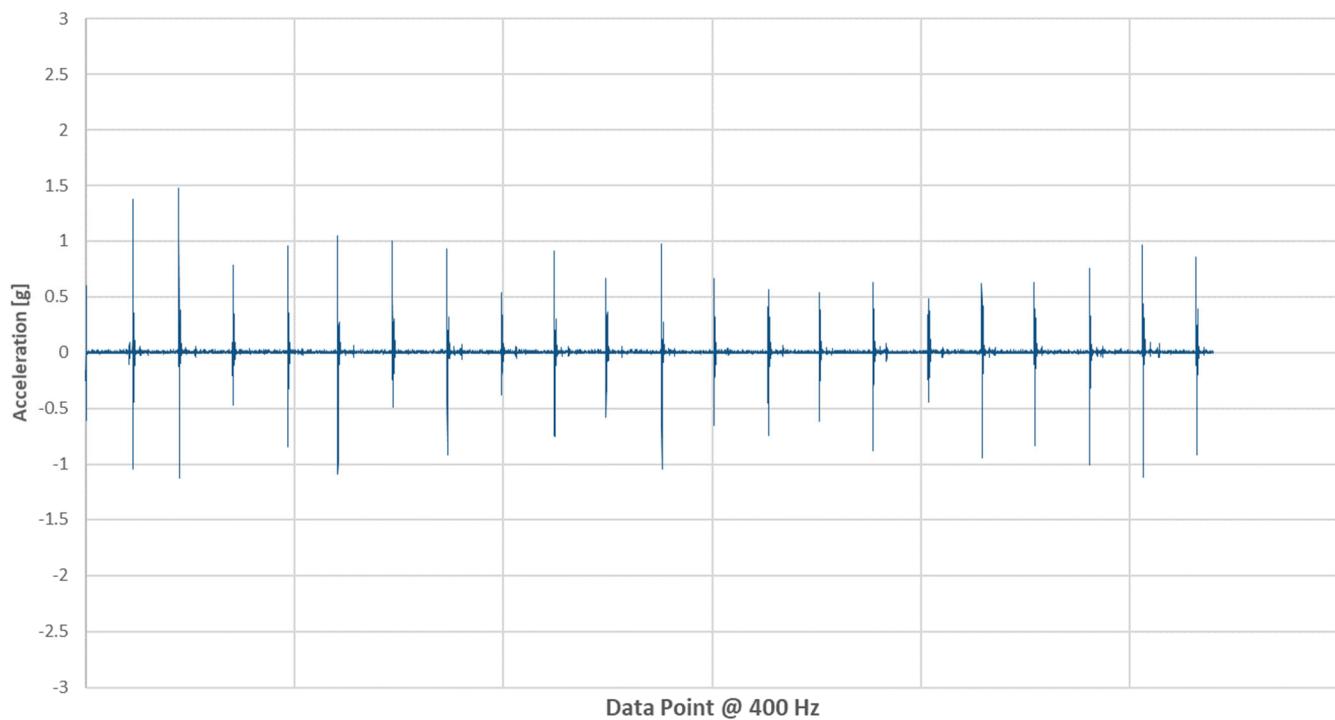


X Acceleration (Side to Side) - Juno

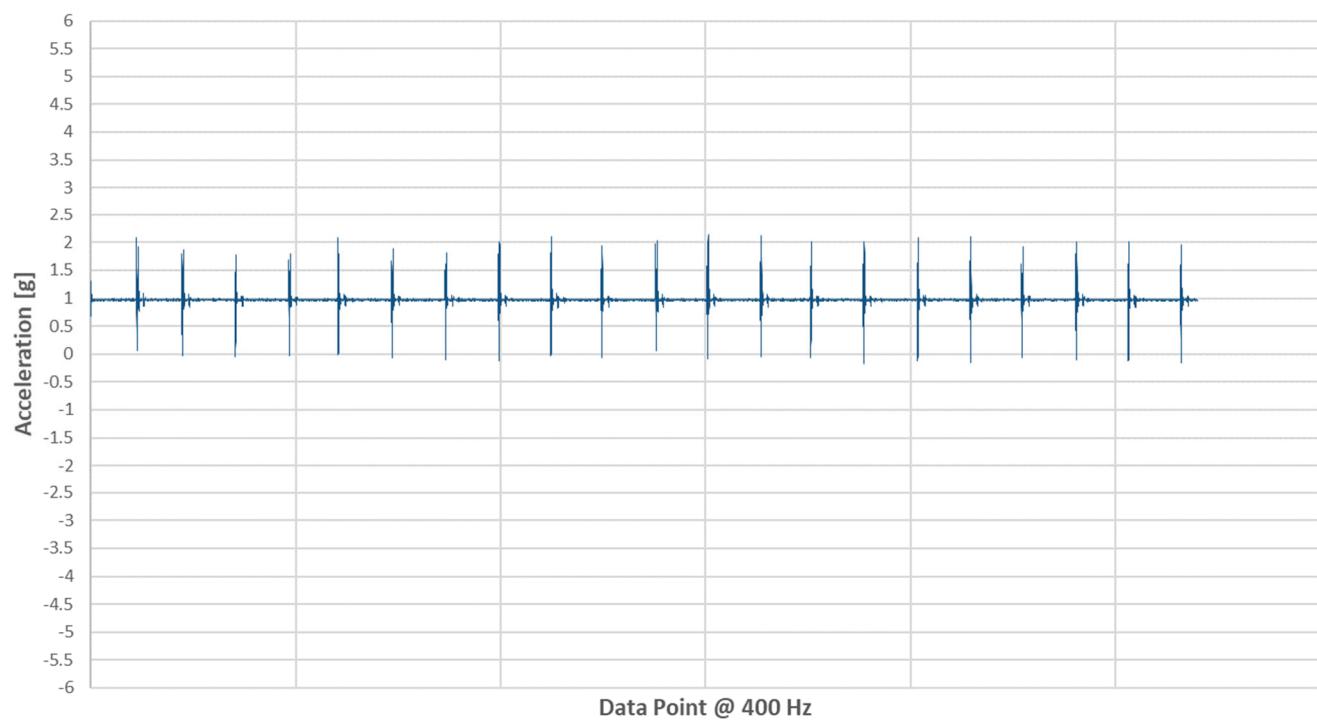




Y Acceleration (Head to Toe) - Juno



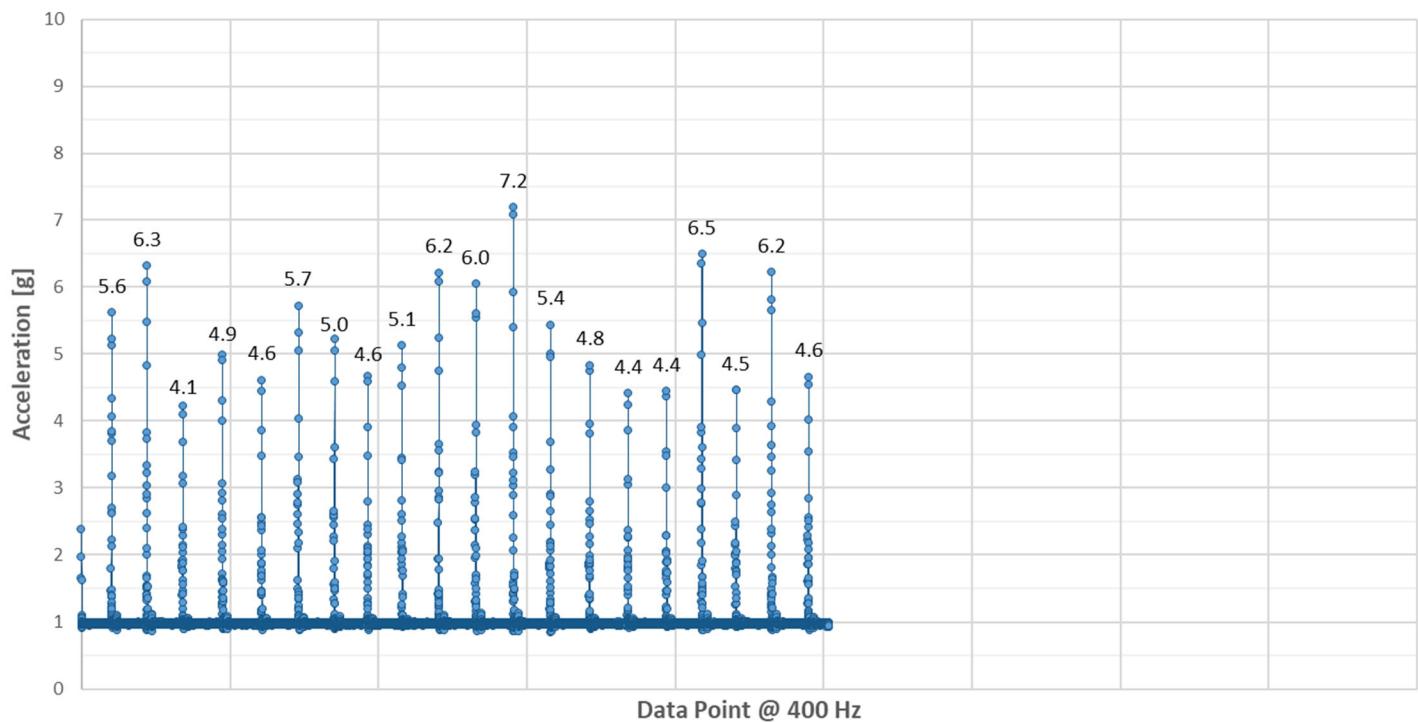
Z Acceleration (Up and Down) - Juno



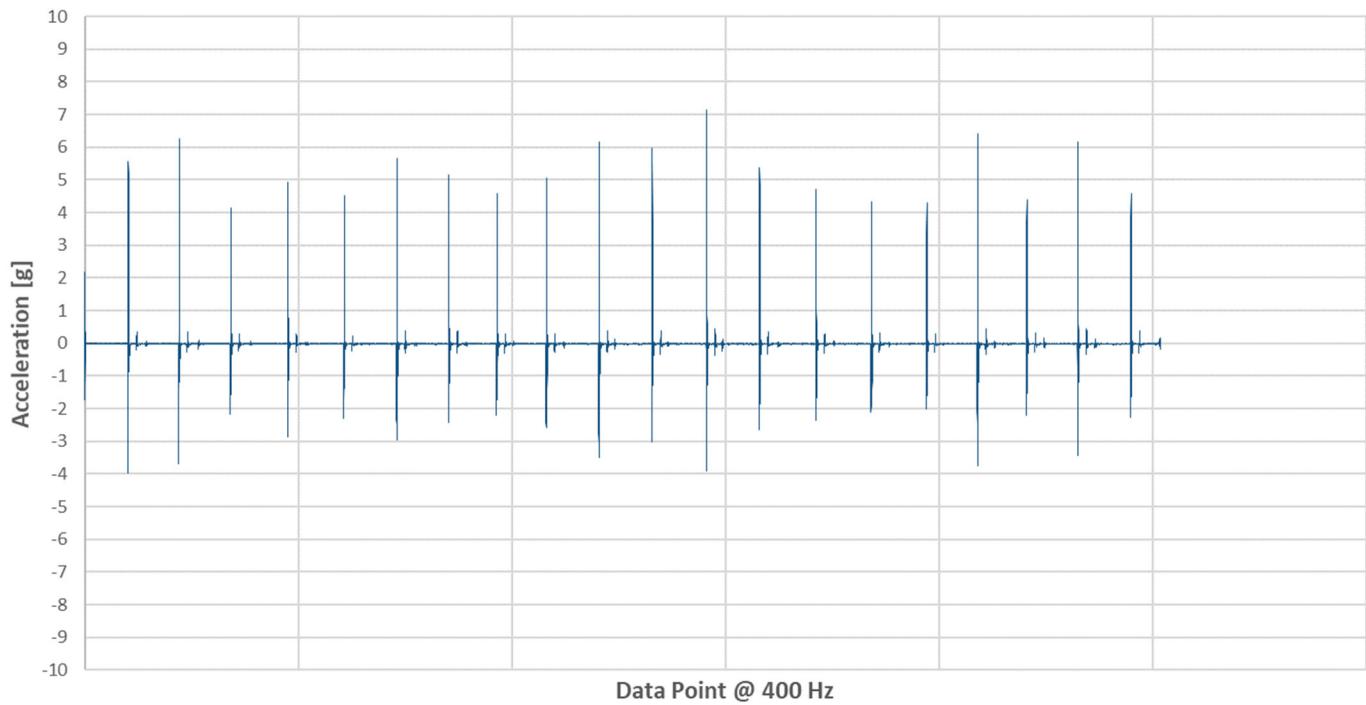


TEST 3 – MIRA

Vector Magnitude Acceleration - Mira

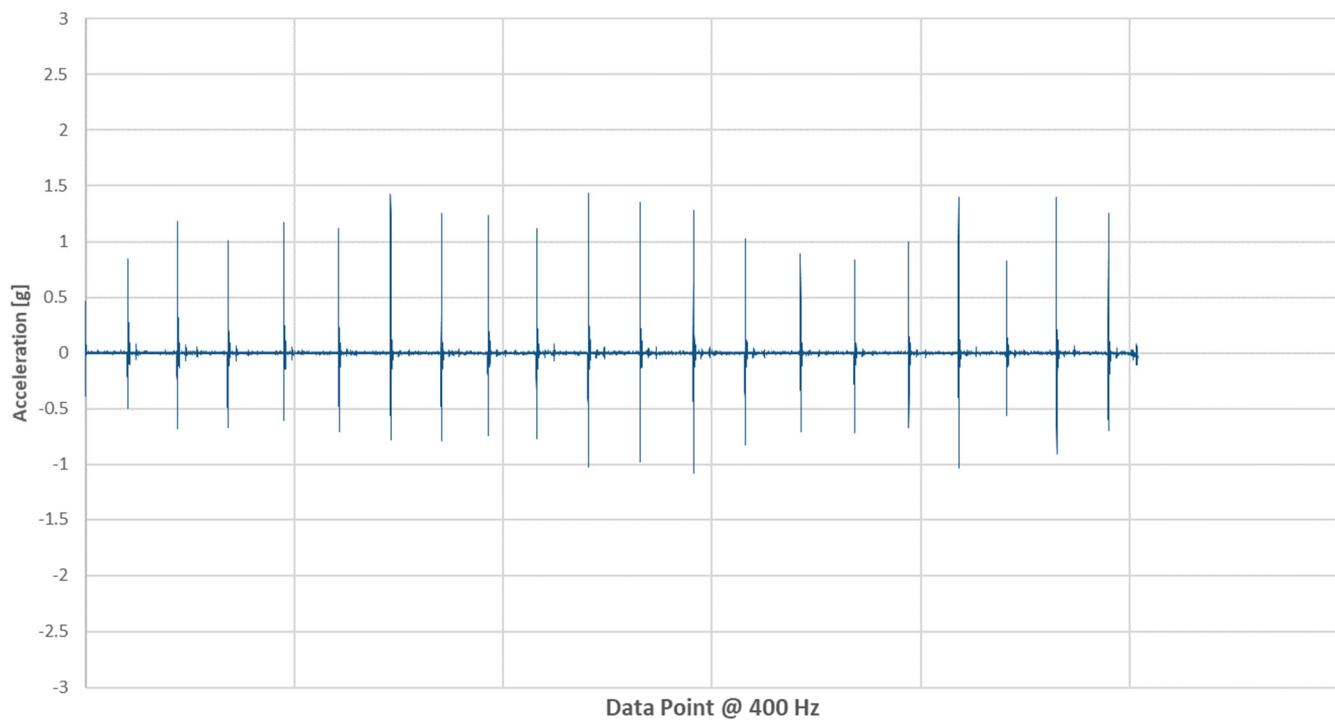


X Acceleration (Side to Side) - Mira

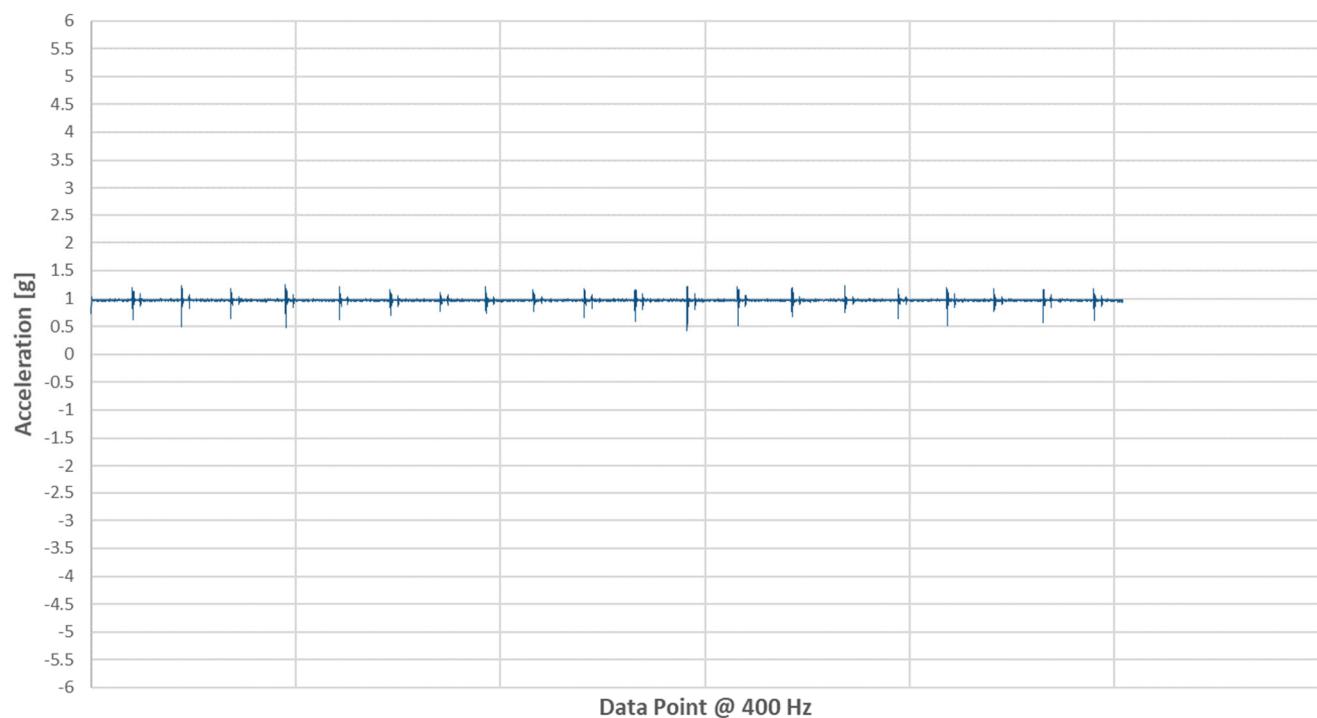




Y Acceleration (Head to Toe) - Mira



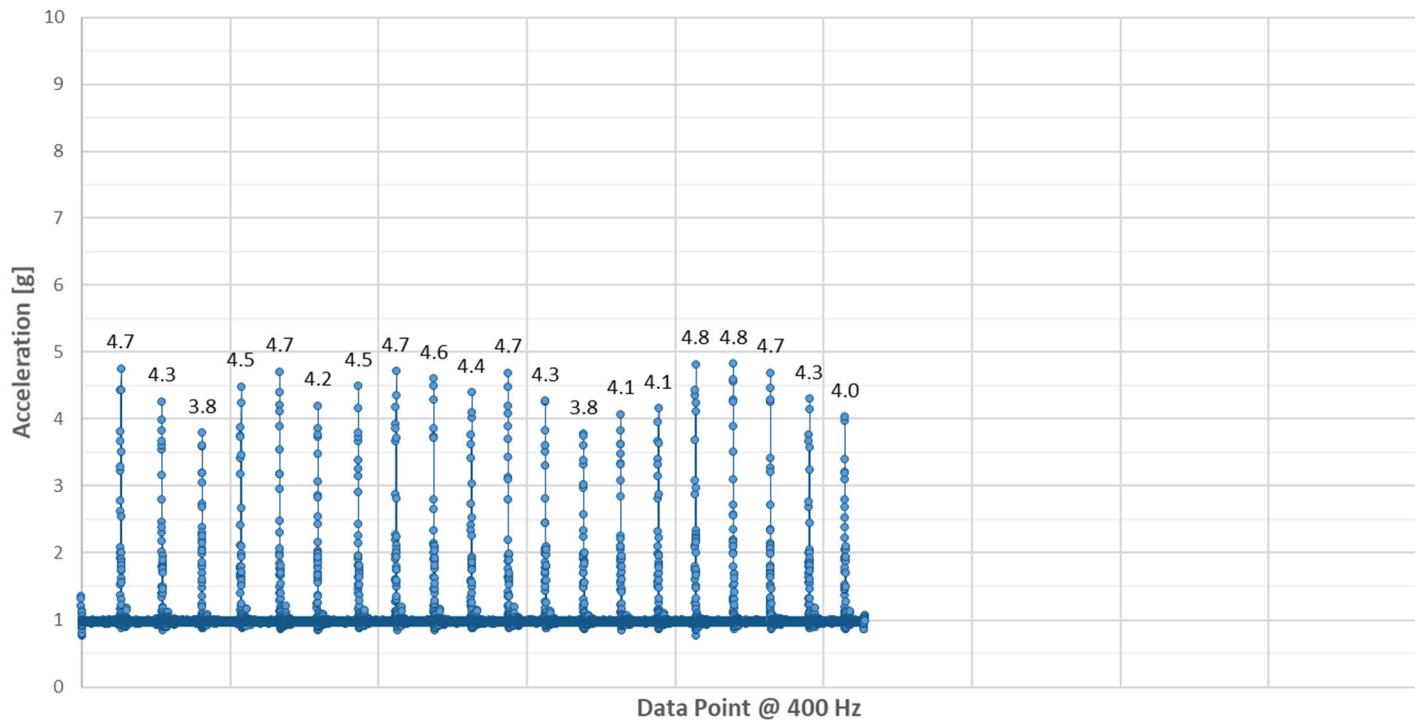
Z Acceleration (Up and Down) - Mira



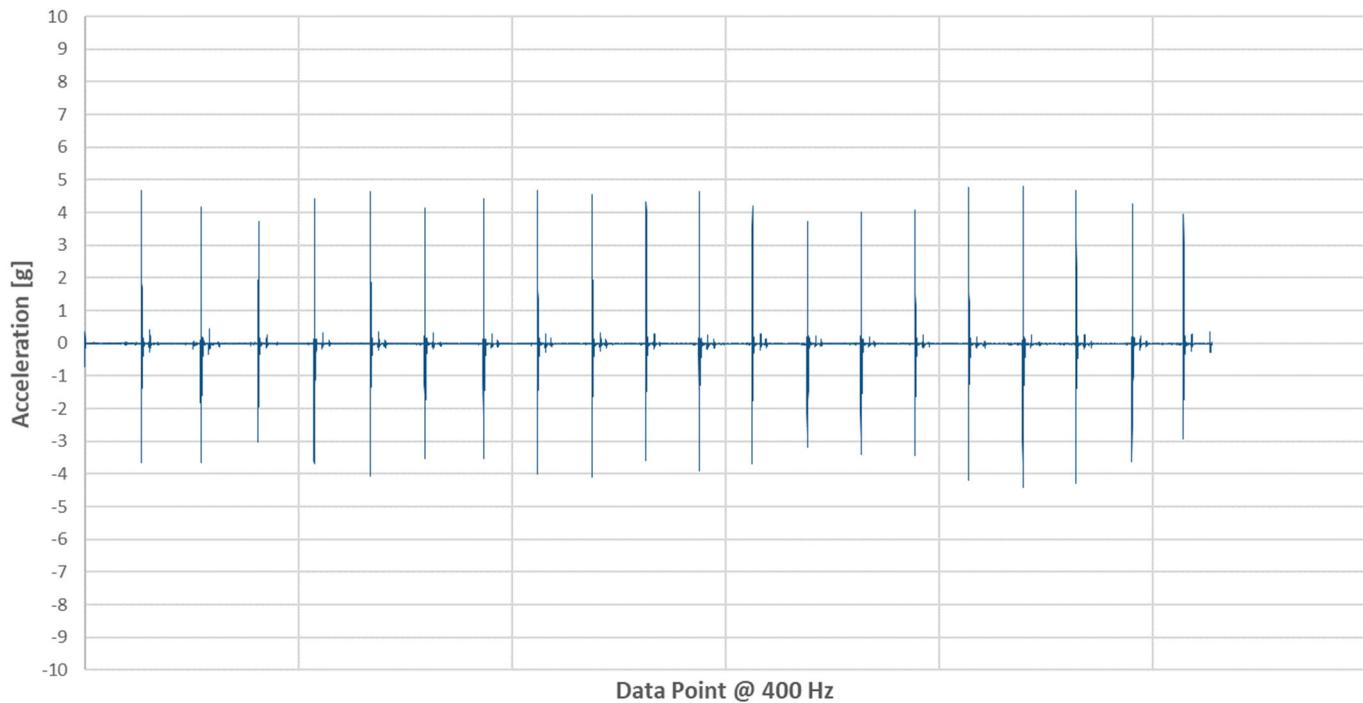


TEST 3 – SERTA CHINOOK

Vector Magnitude Acceleration - Serta Chinook

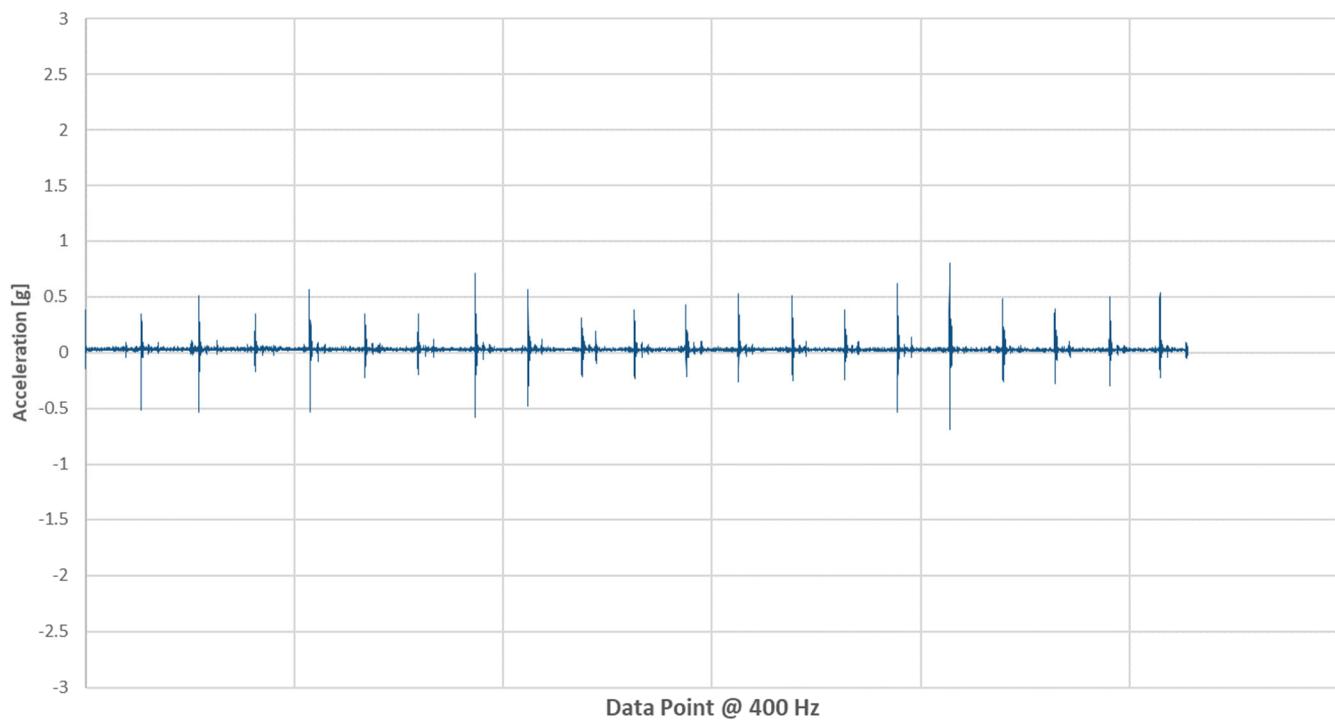


X Acceleration (Side to Side) - Serta Chinook

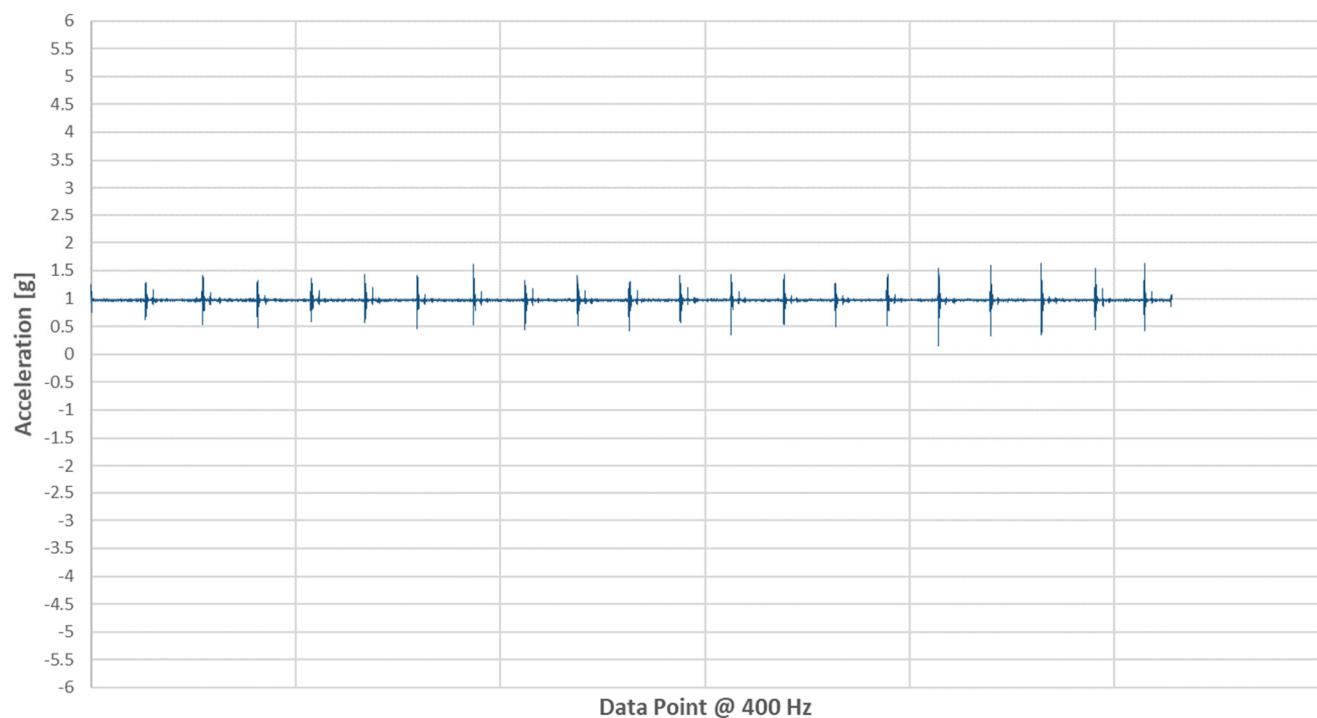




Y Acceleration (Head to Toe) - Serta Chinook



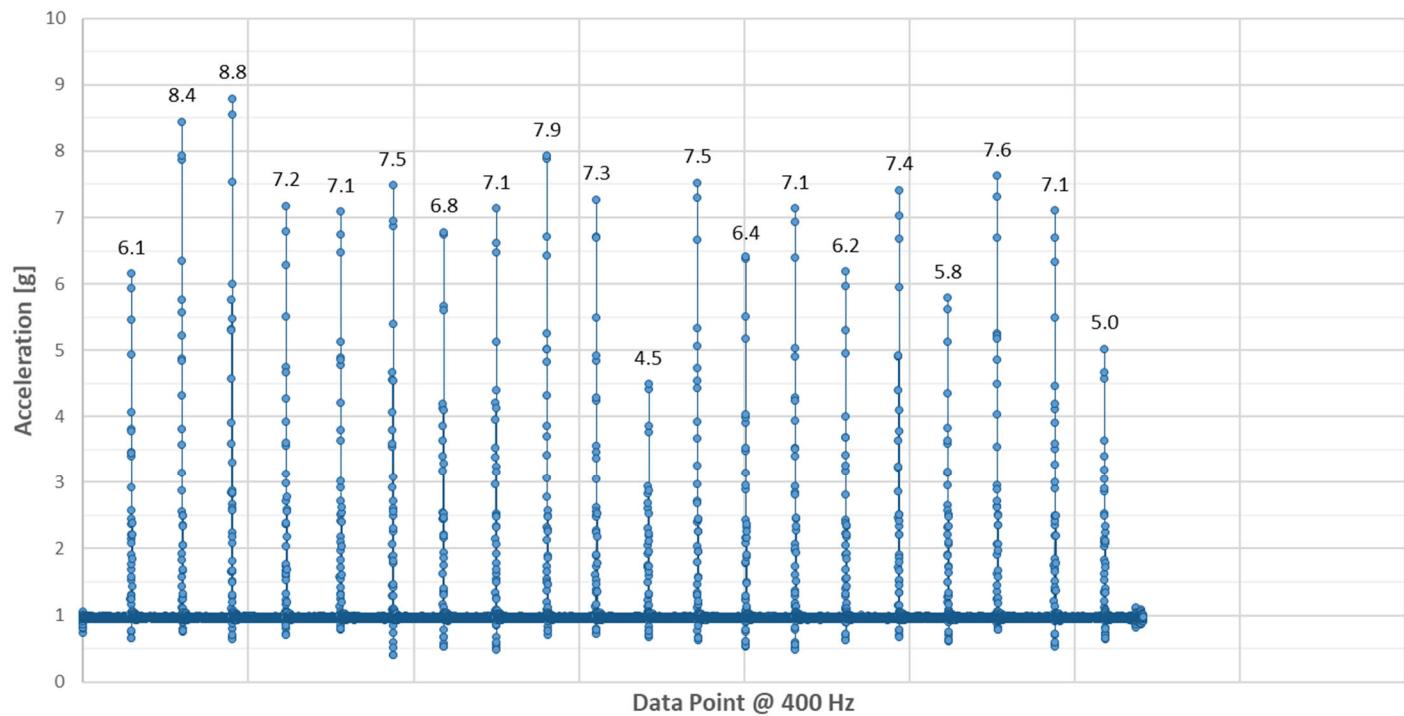
Z Acceleration (Up and Down) - Serta Chinook



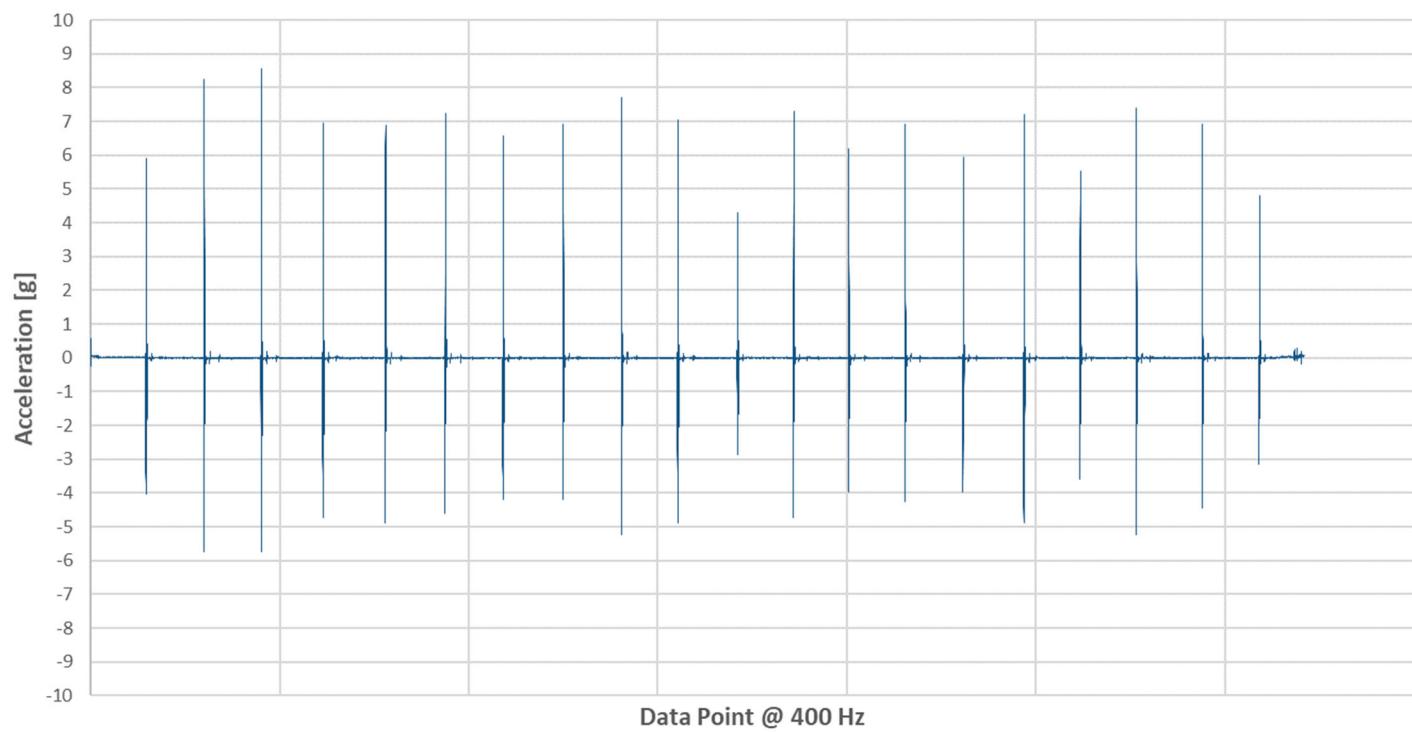


TEST 3 – PENNY

Vector Magnitude Acceleration - Penny

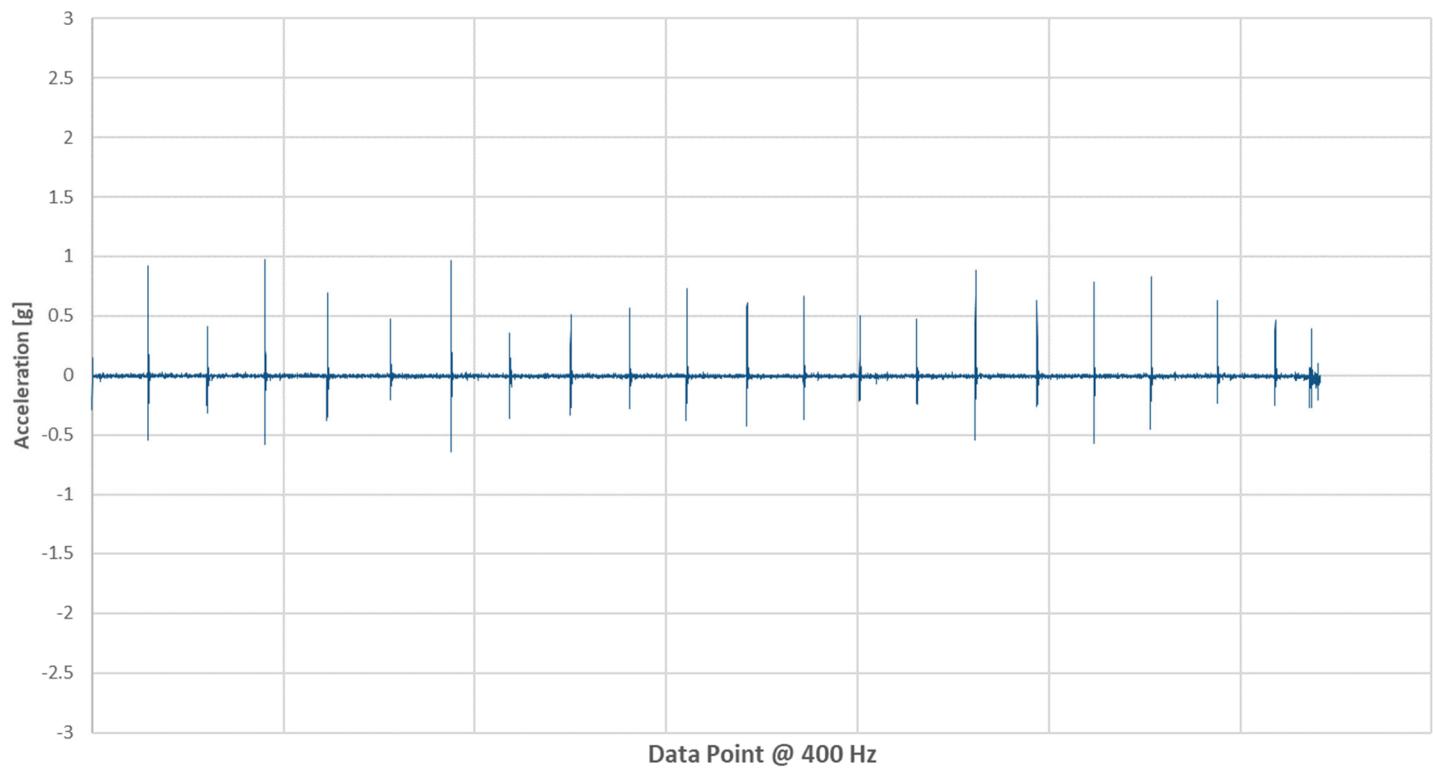


X Acceleration (Side to Side) - Penny

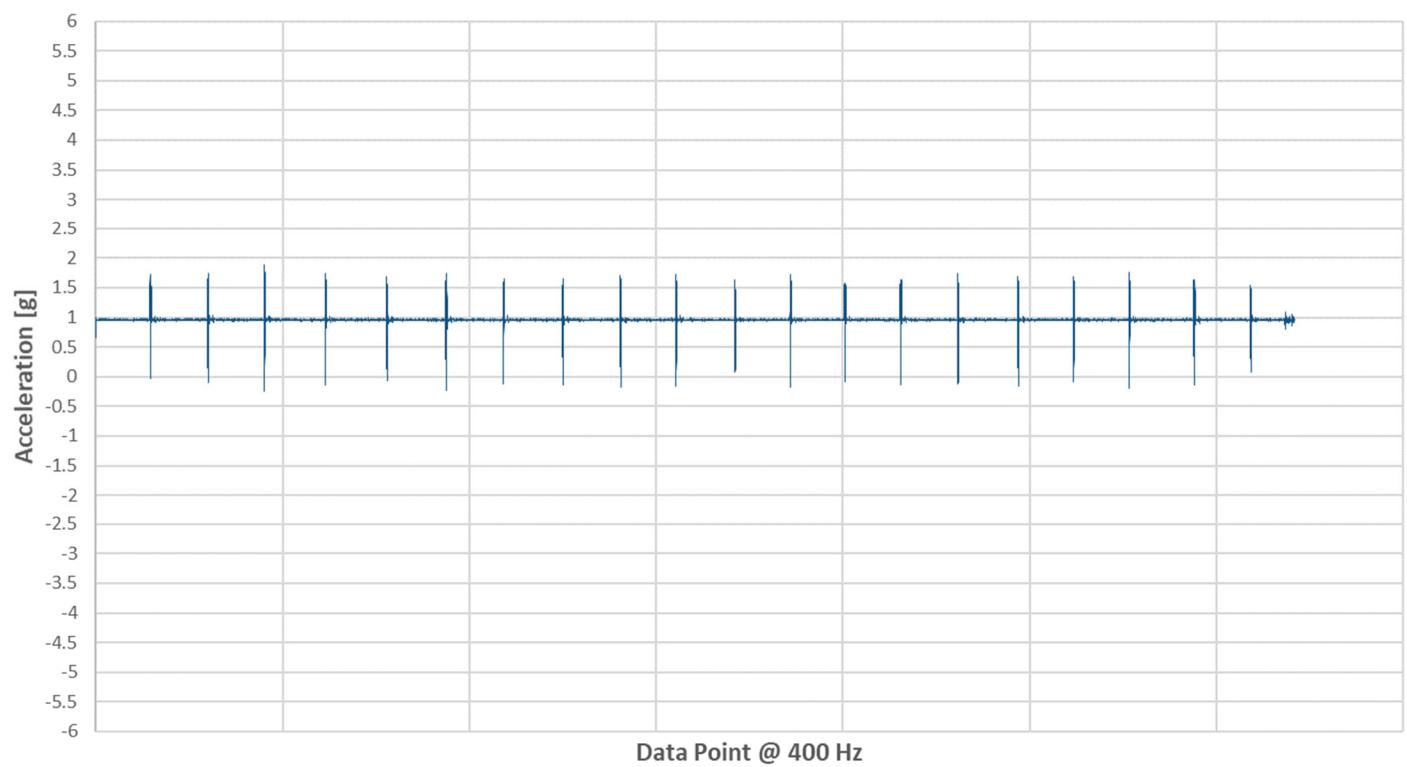




Y Acceleration (Head to Toe) - Penny



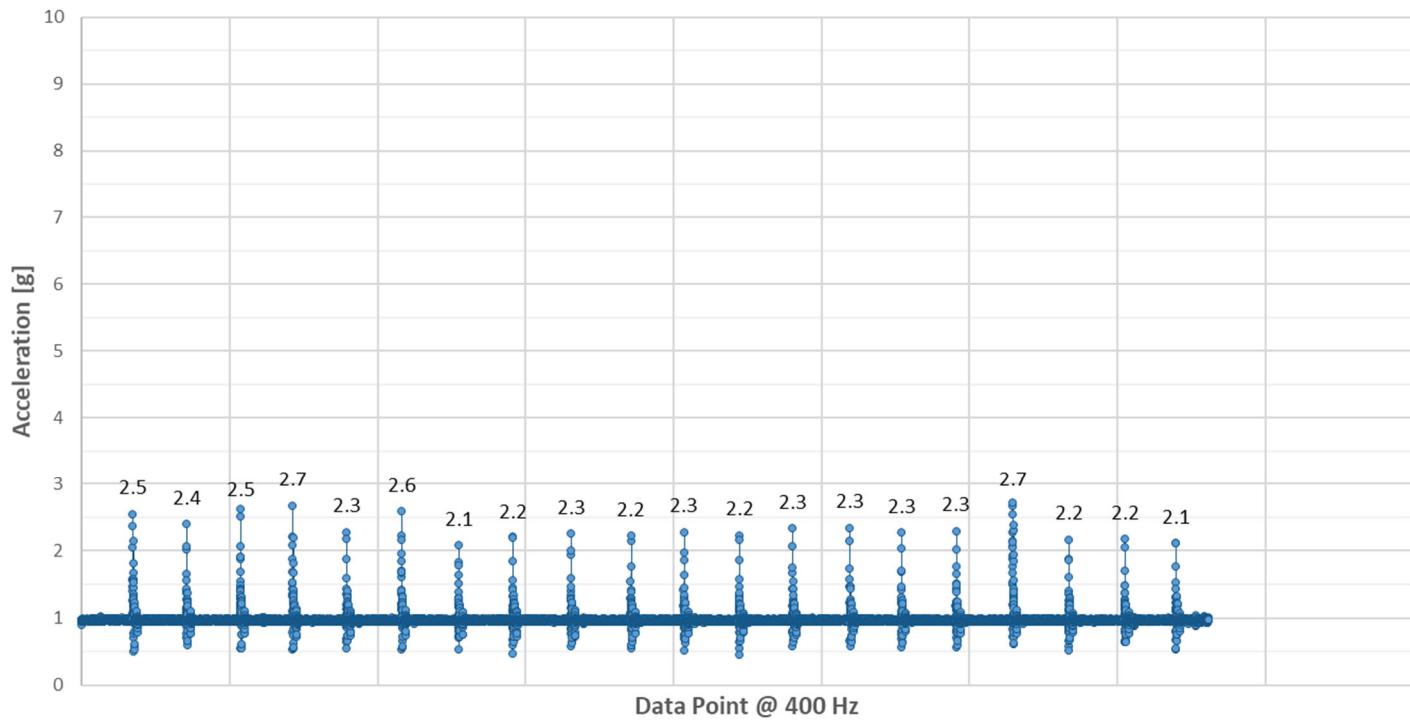
Z Acceleration (Up and Down) - Penny



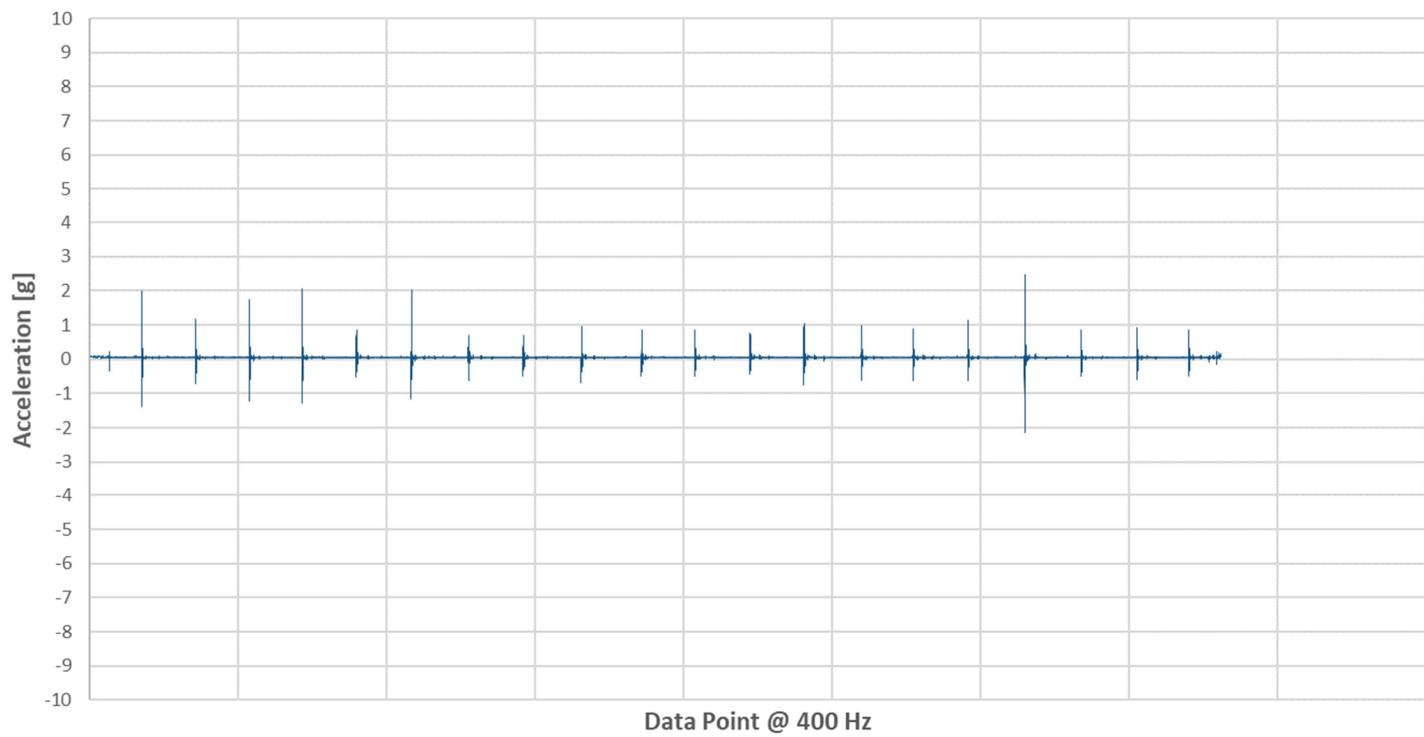


TEST 3 –APOLLO

Vector Magnitude Acceleration - Apollo

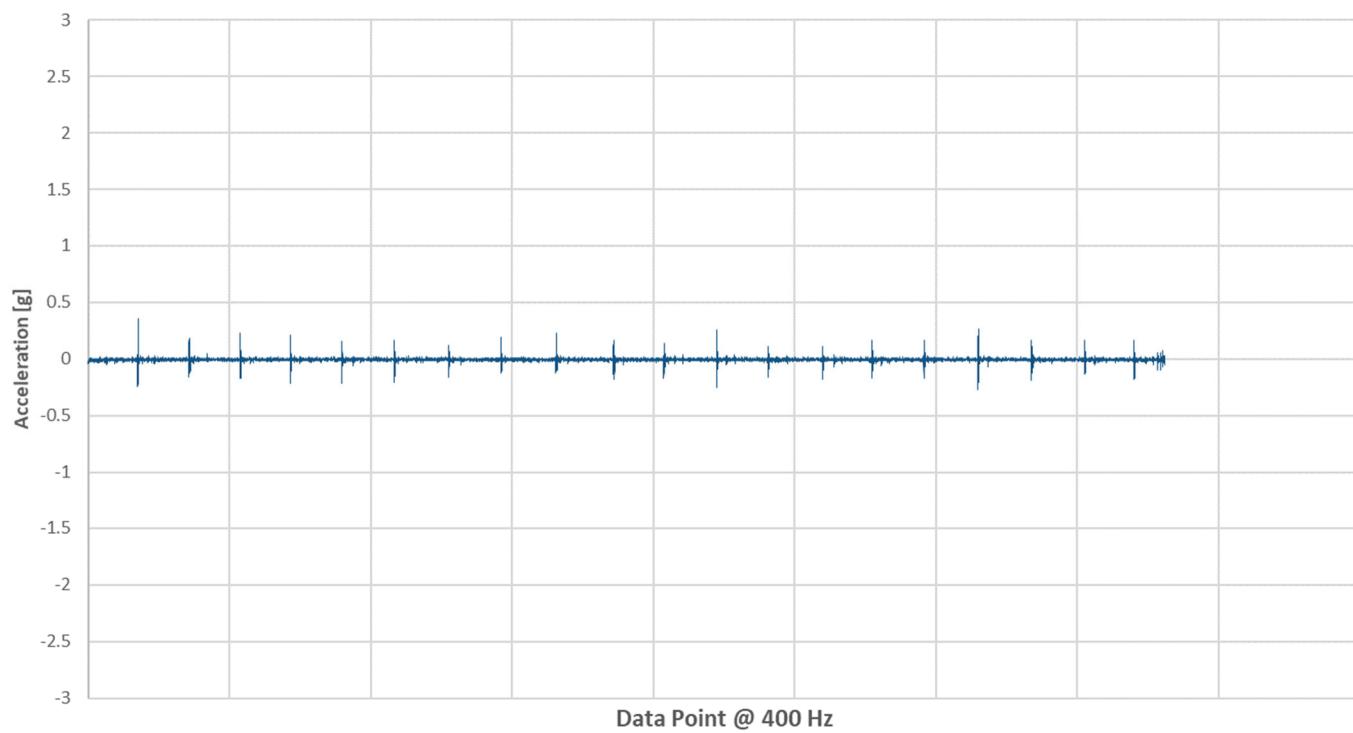


X Acceleration (Side to Side) - Apollo

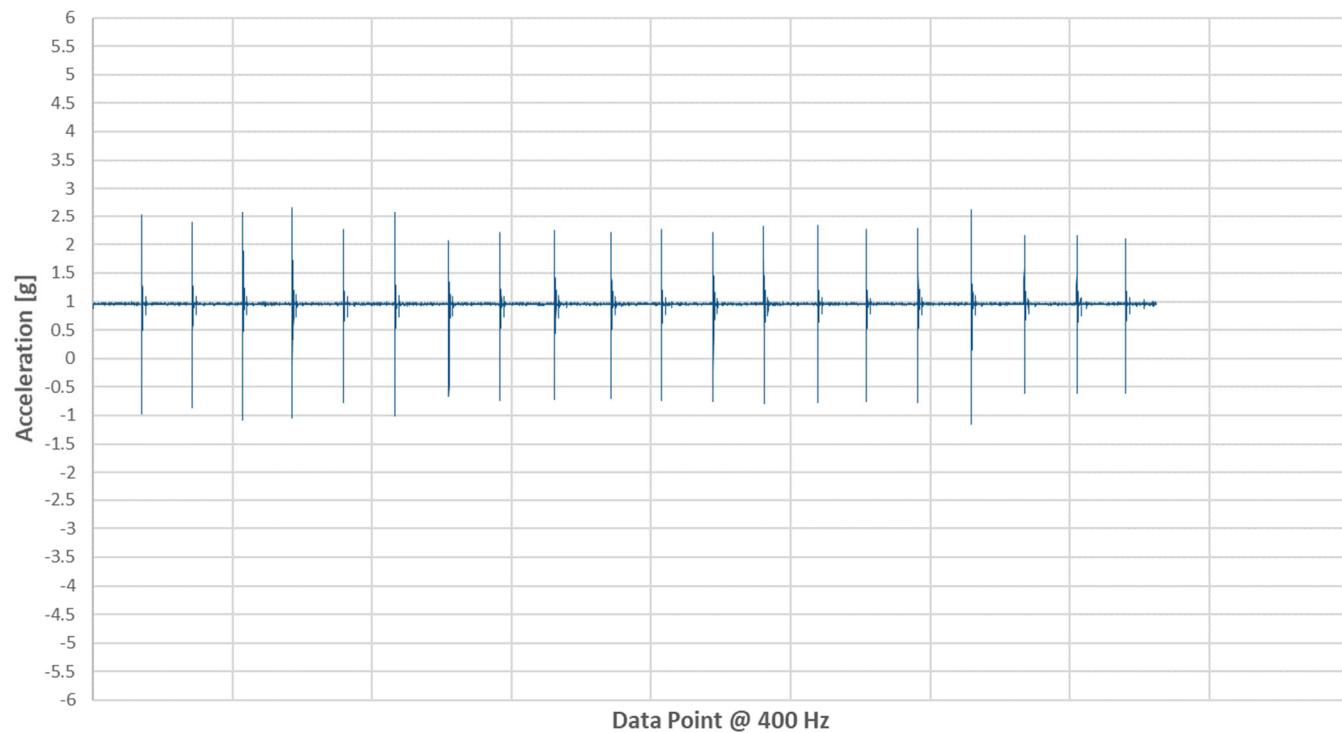




Y Acceleration (Head to Toe) - Apollo



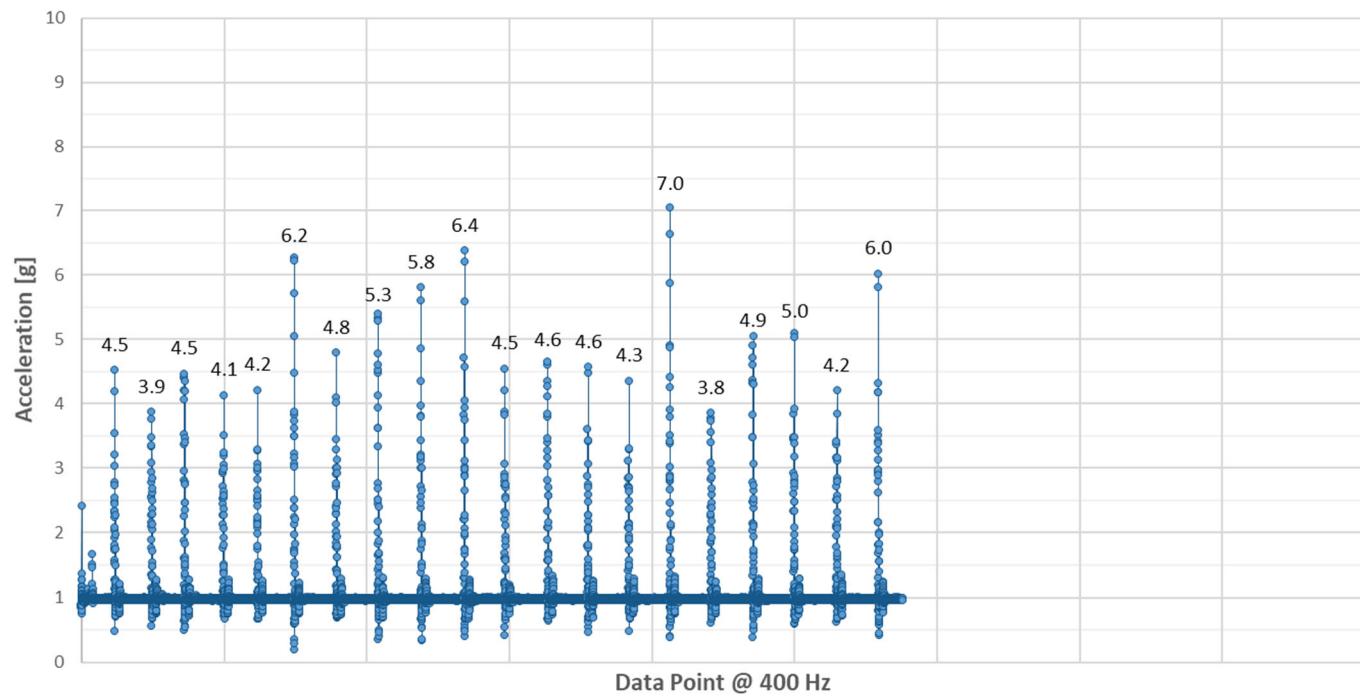
Z Acceleration (Up and Down) - Apollo



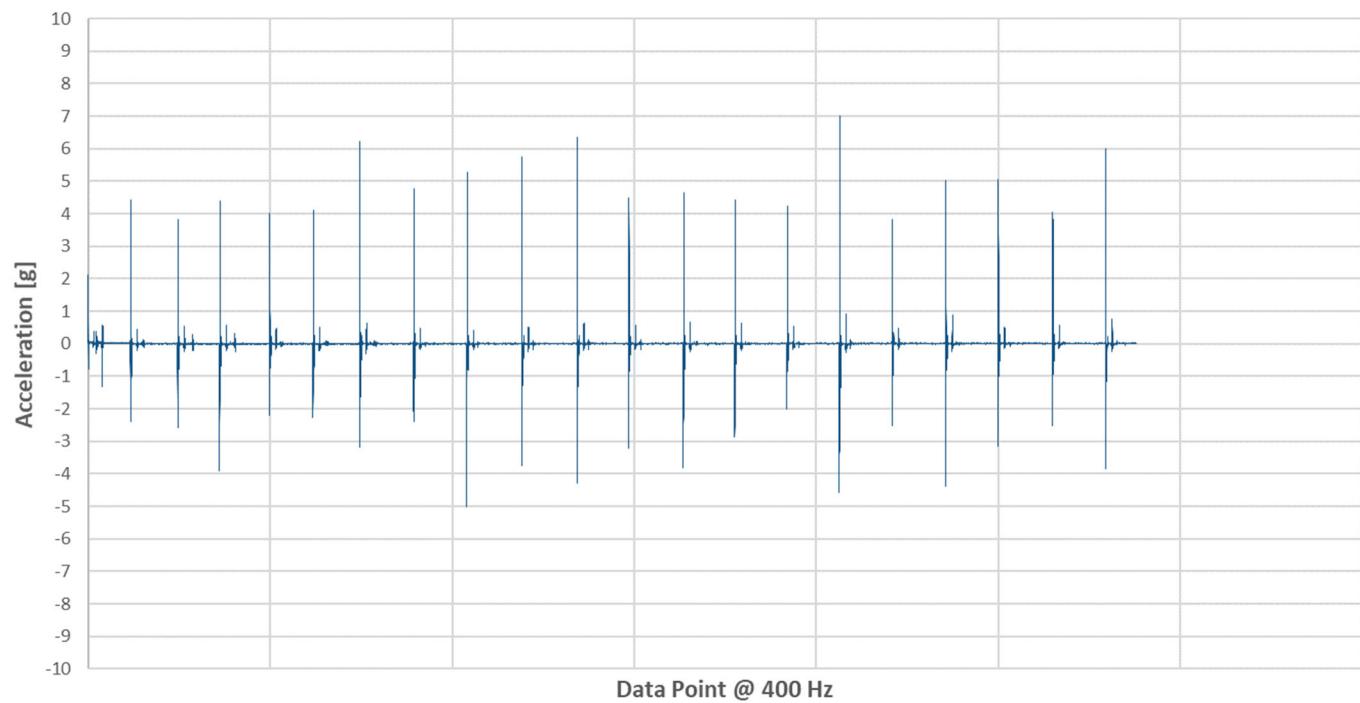


TEST 3 –EMMA

Vector Magnitude Acceleration - Emma

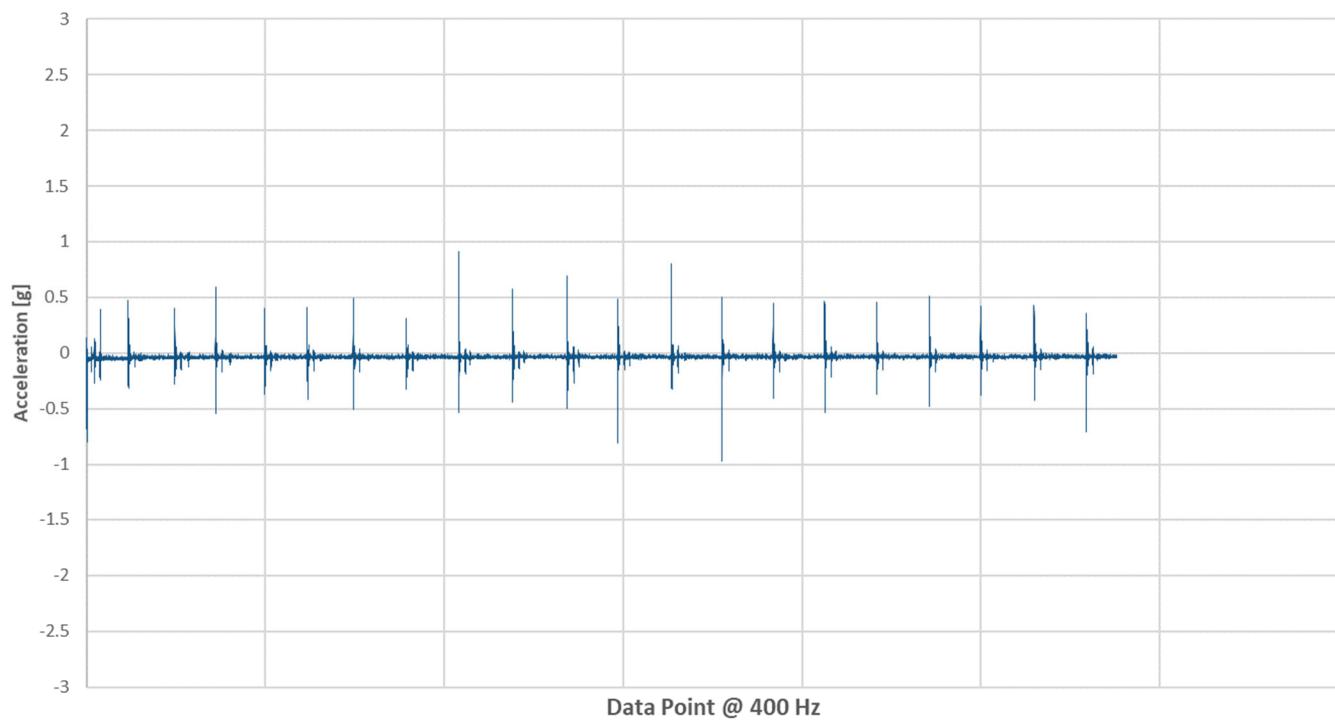


X Acceleration (Side to Side) - Emma

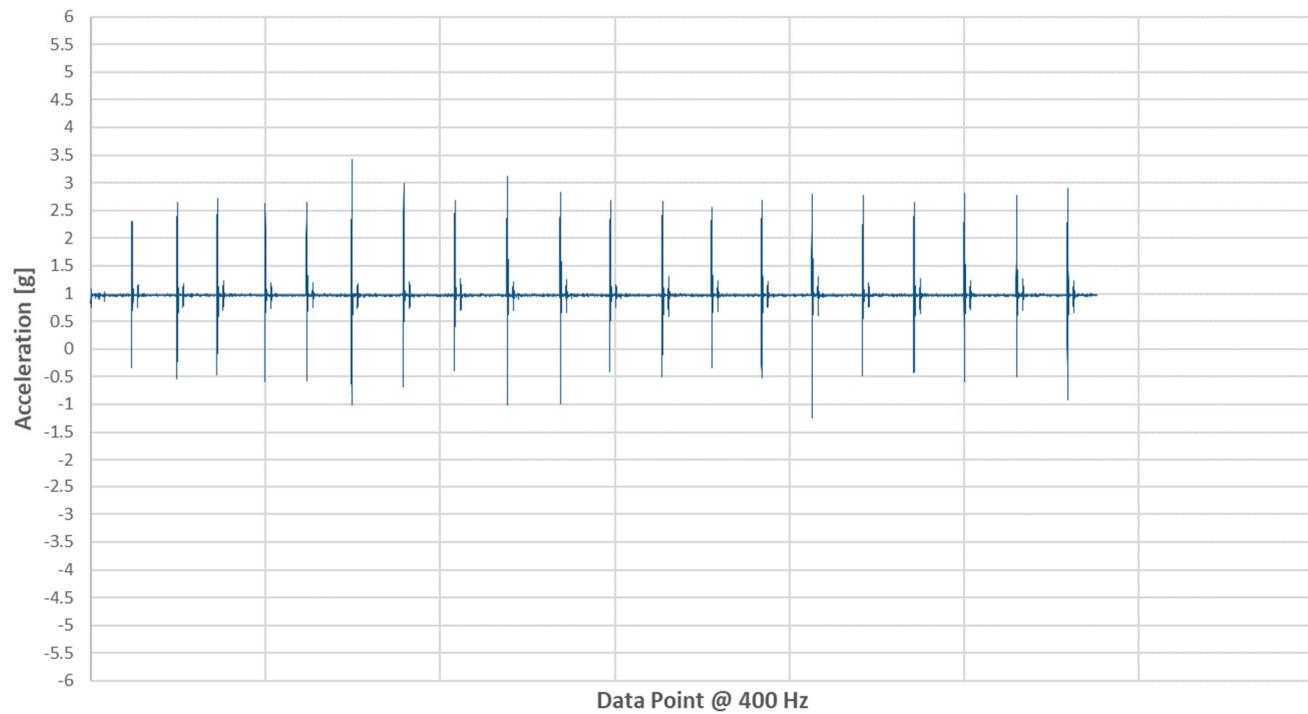




Y Acceleration (Head to Toe) - Emma



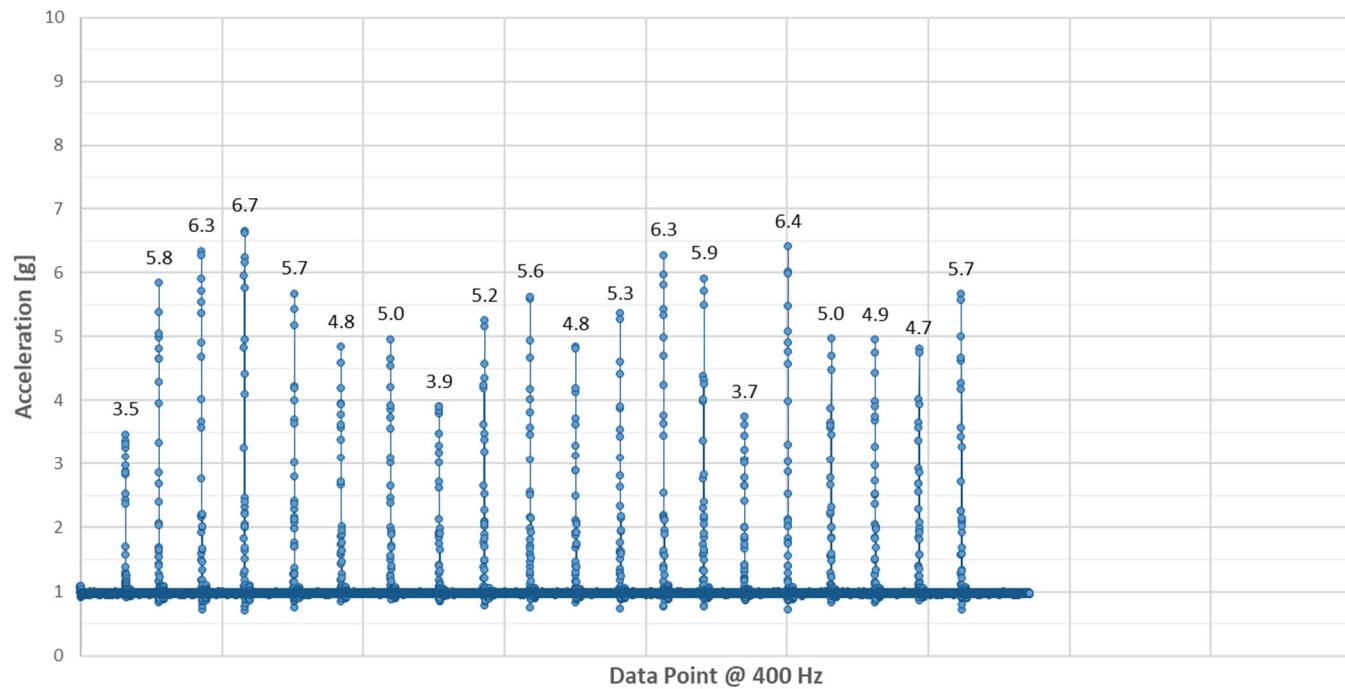
Z Acceleration (Up and Down) - Emma



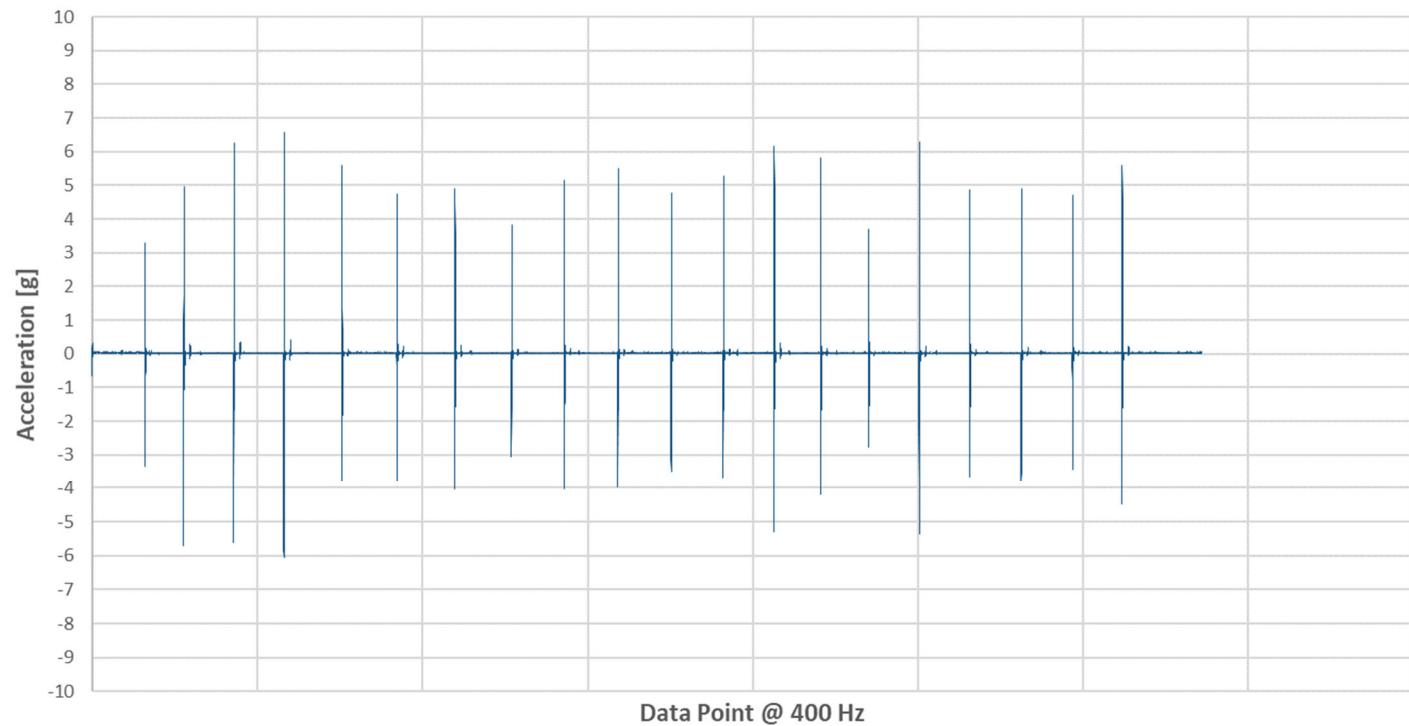


TEST 3 –CASPER ESSENTIAL (V2)

Vector Magnitude Acceleration - Casper Essential (V2)

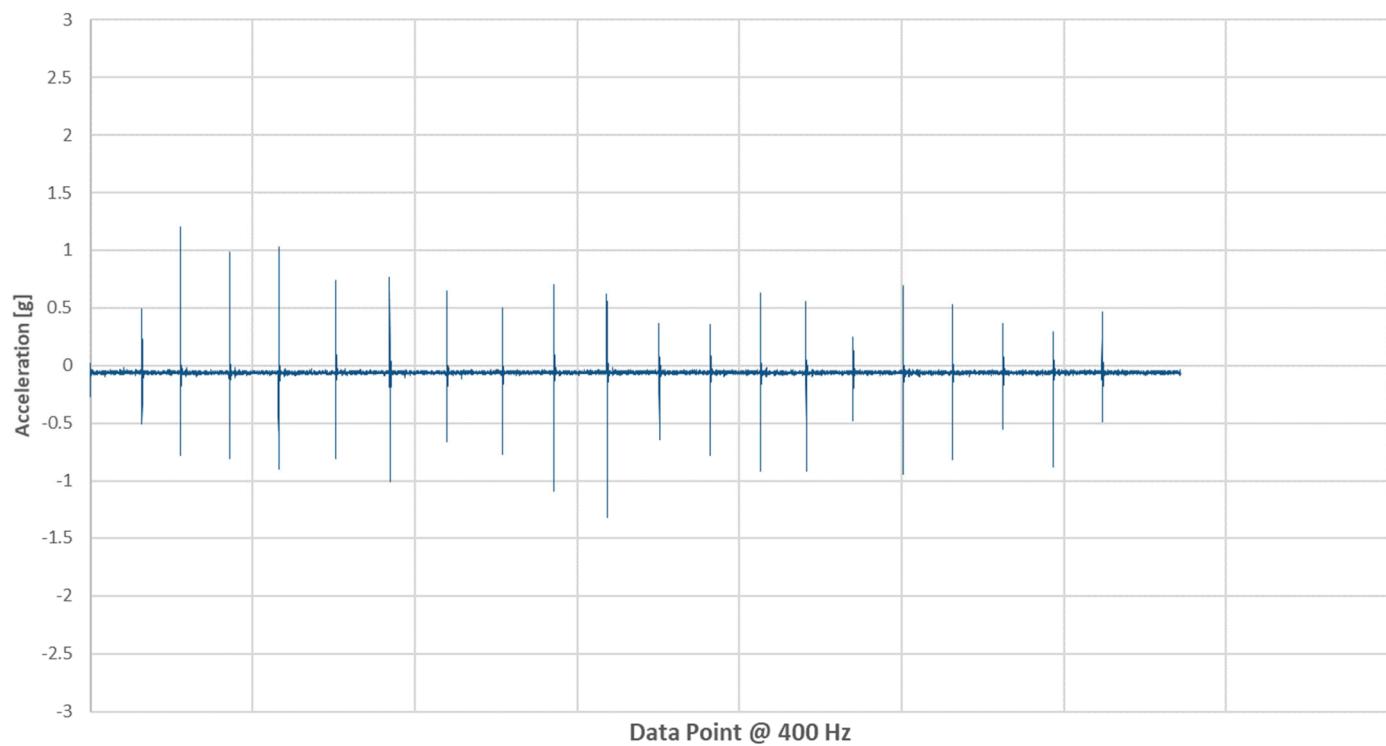


X Acceleration (Side to Side) - Casper Essential (V2)

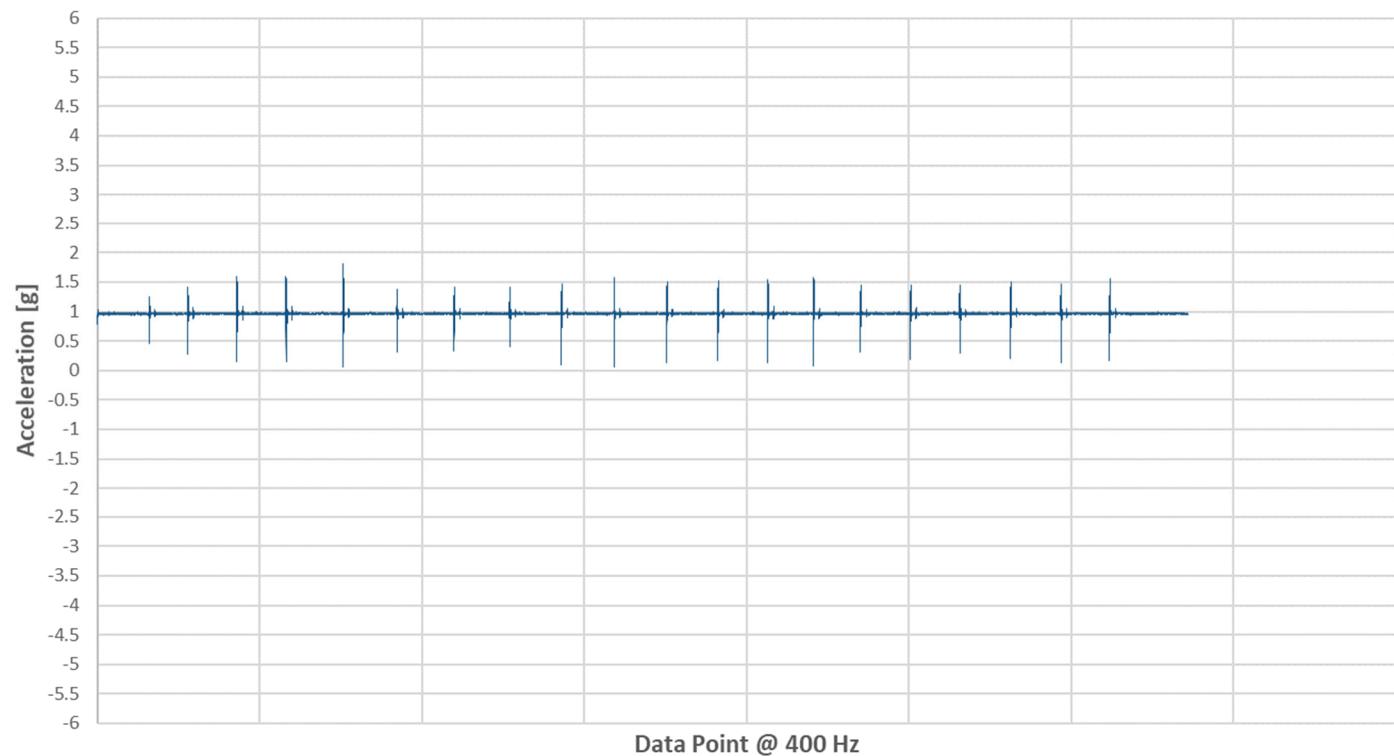




Y Acceleration (Head to Toe) - Casper Essential (V2)



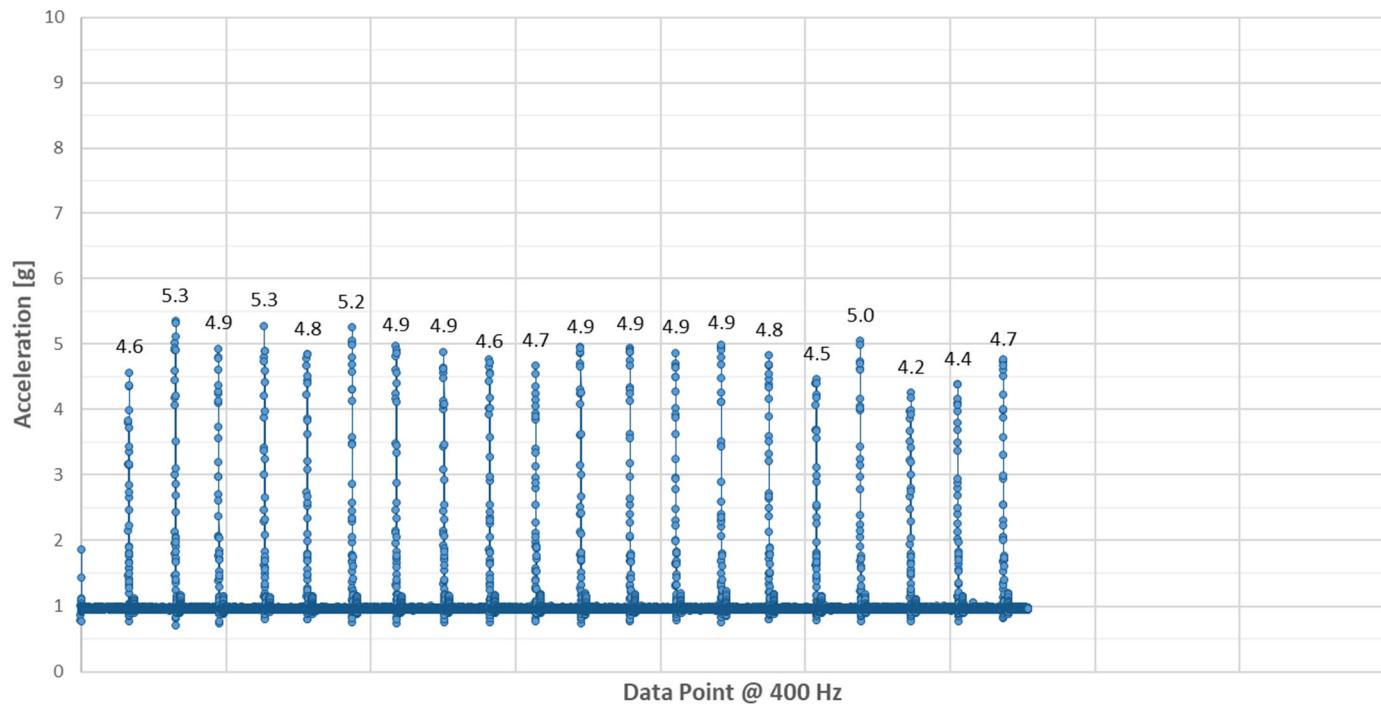
Z Acceleration (Up and Down) - Casper Essential (V2)



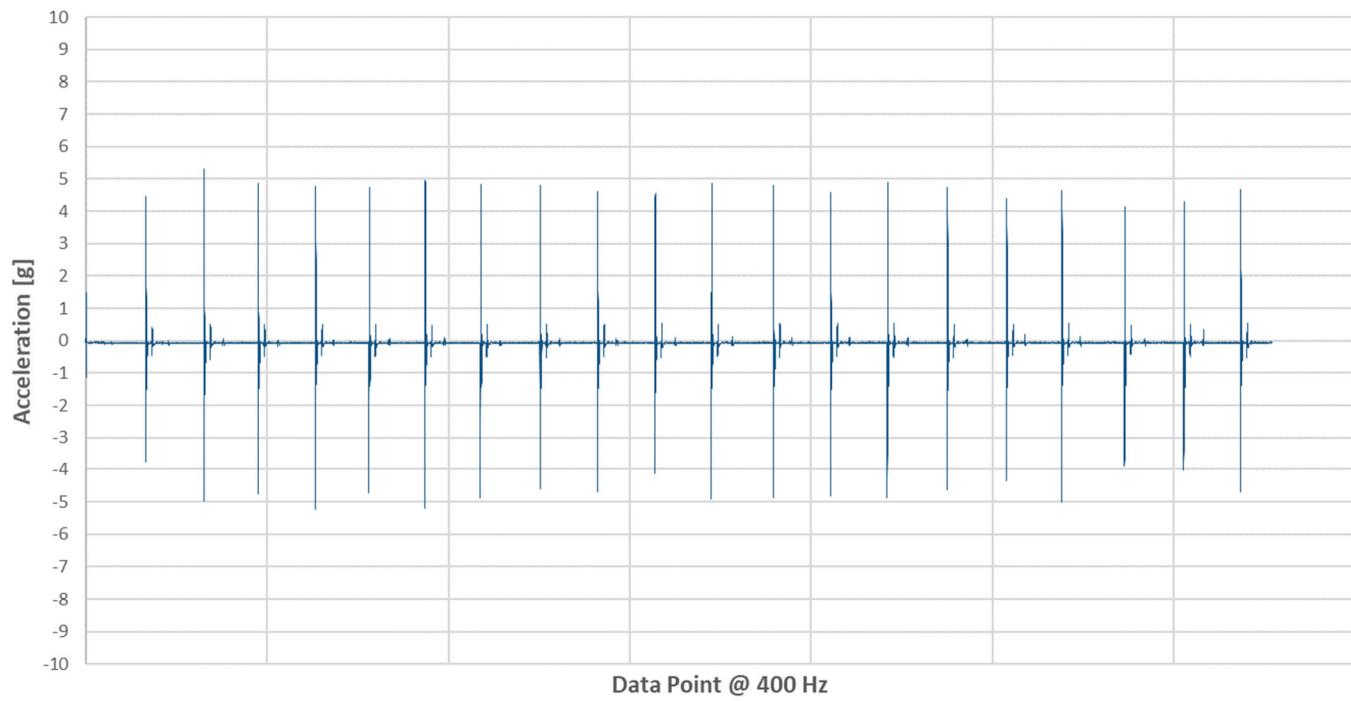


TEST 3 –CASPER (V3)

Vector Magnitude Acceleration - Casper (V3)

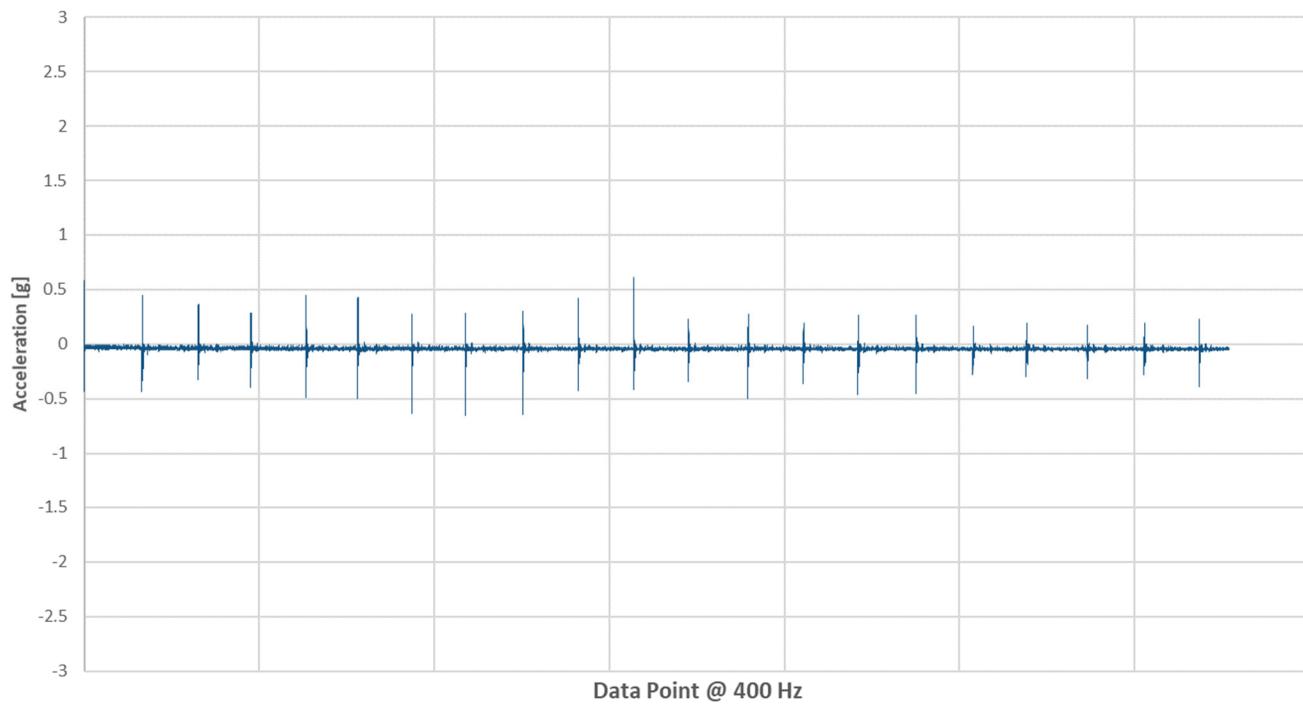


X Acceleration (Side to Side) - Casper (V3)

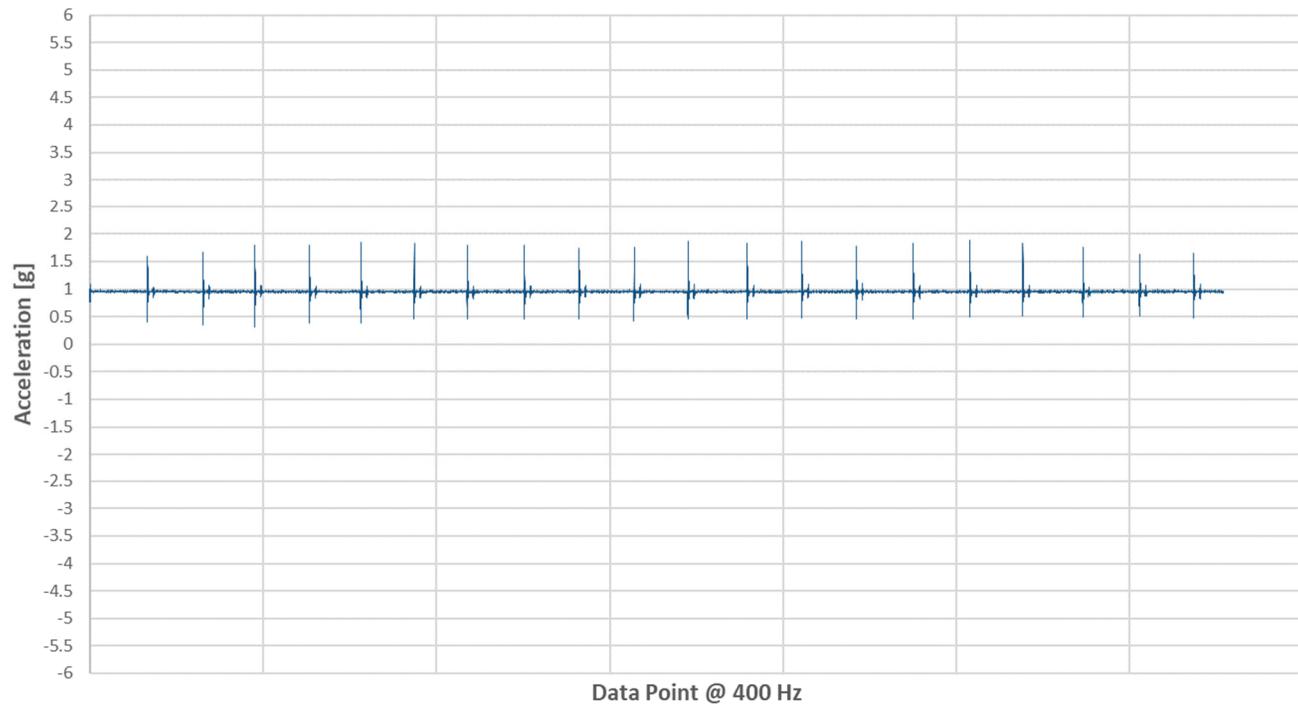




Y Acceleration (Head to Toe) - Casper (V3)



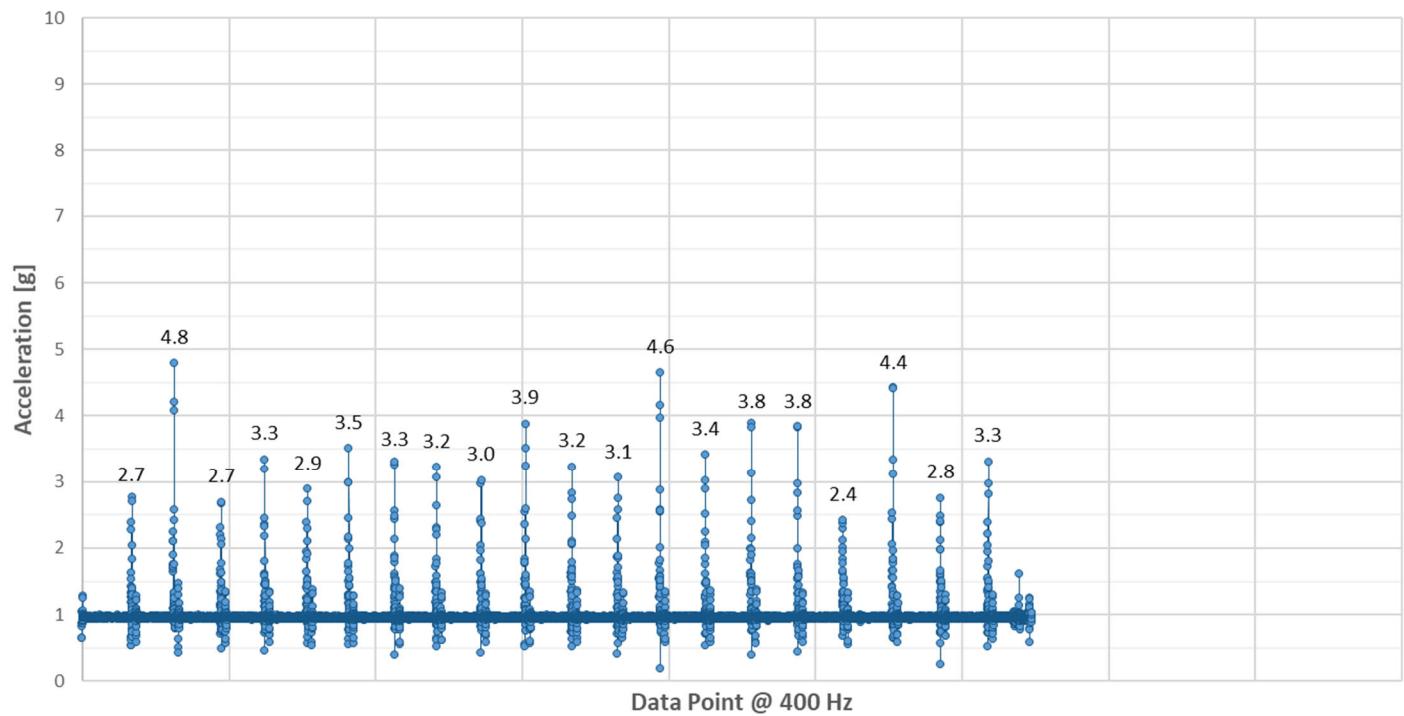
Z Acceleration (Up and Down) - Casper (V3)



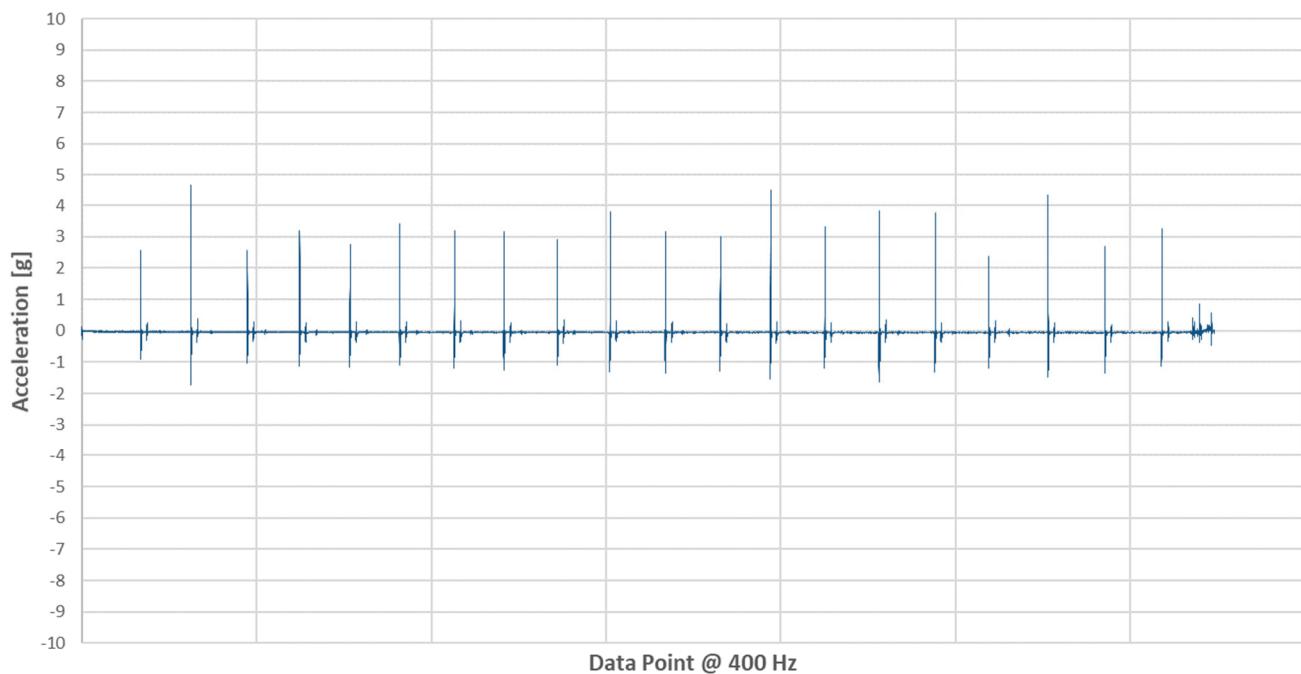


TEST 3 – MIRA (V2)

Vector Magnitude Acceleration - Mira (V2)

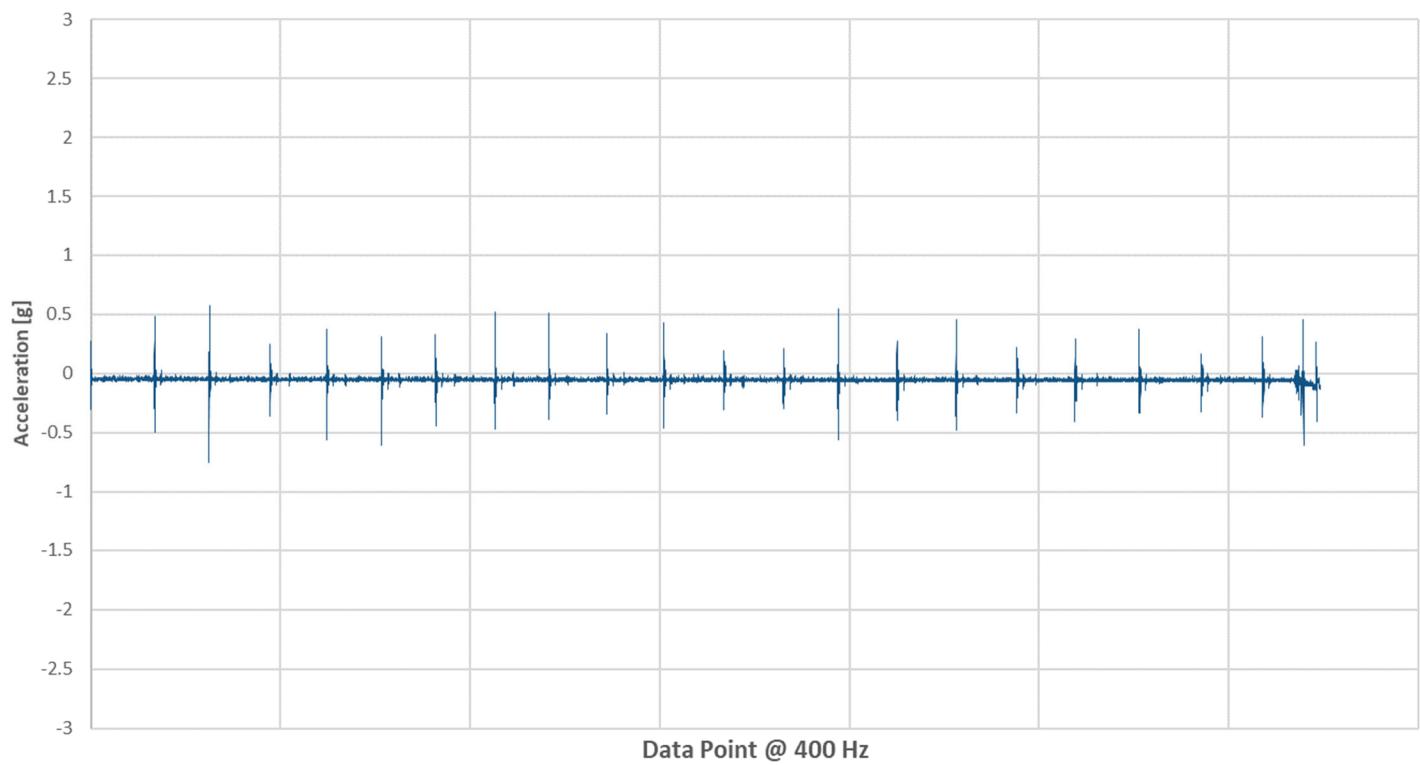


X Acceleration (Side to Side) - Mira (V2)

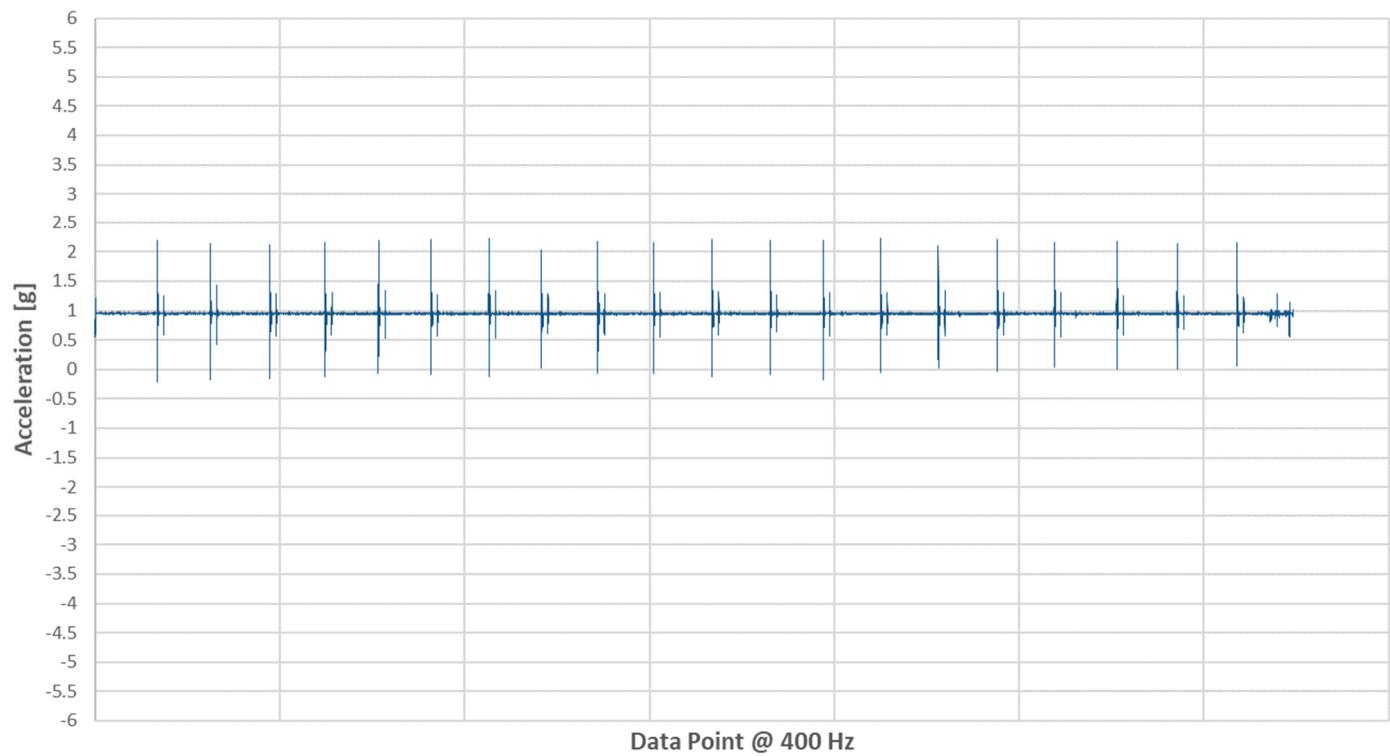




Y Acceleration (Head to Toe) - Mira (V2)



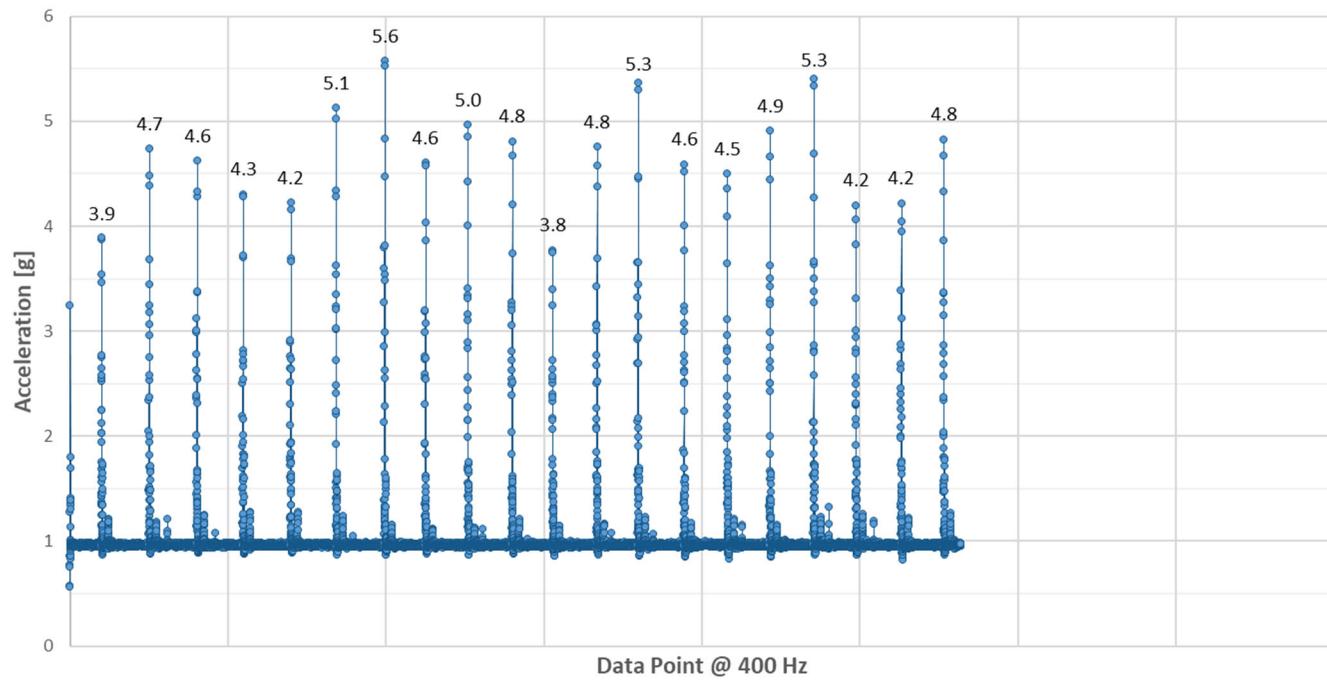
Z Acceleration (Up and Down) - Mira (V2)



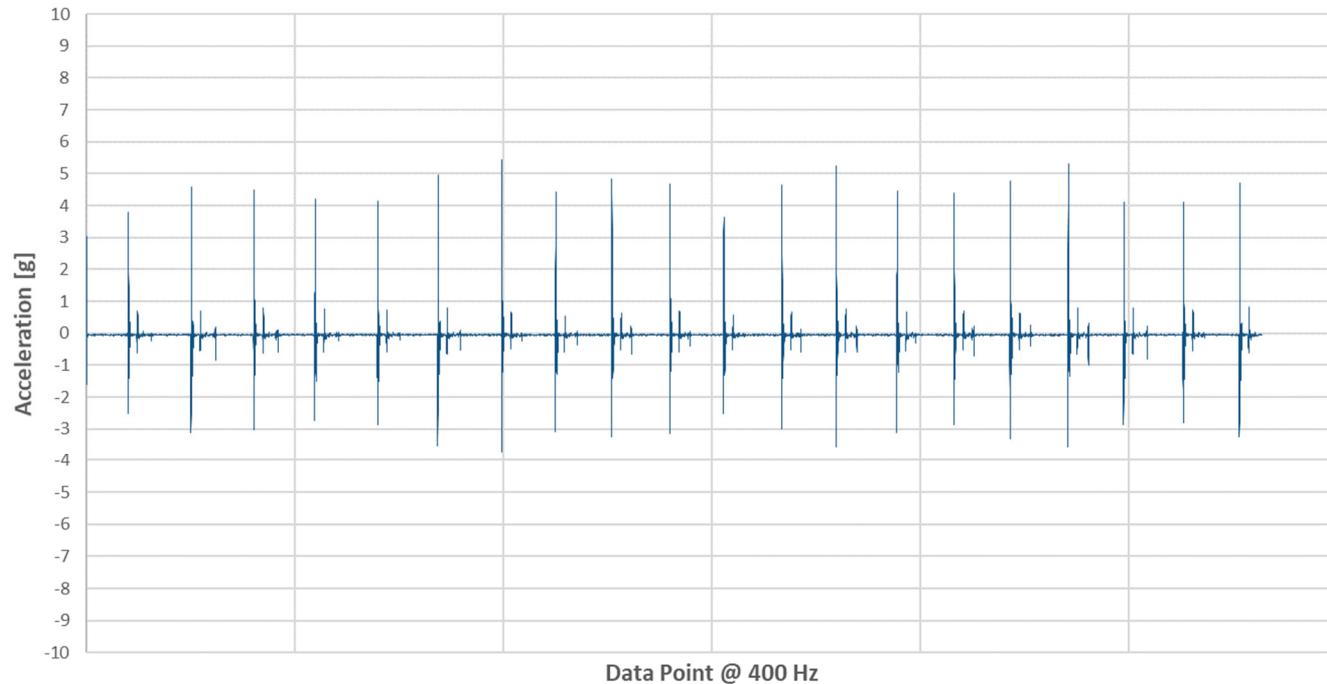


TEST 3 – CASPER (V4)

Vector Magnitude Acceleration - Casper (V4)

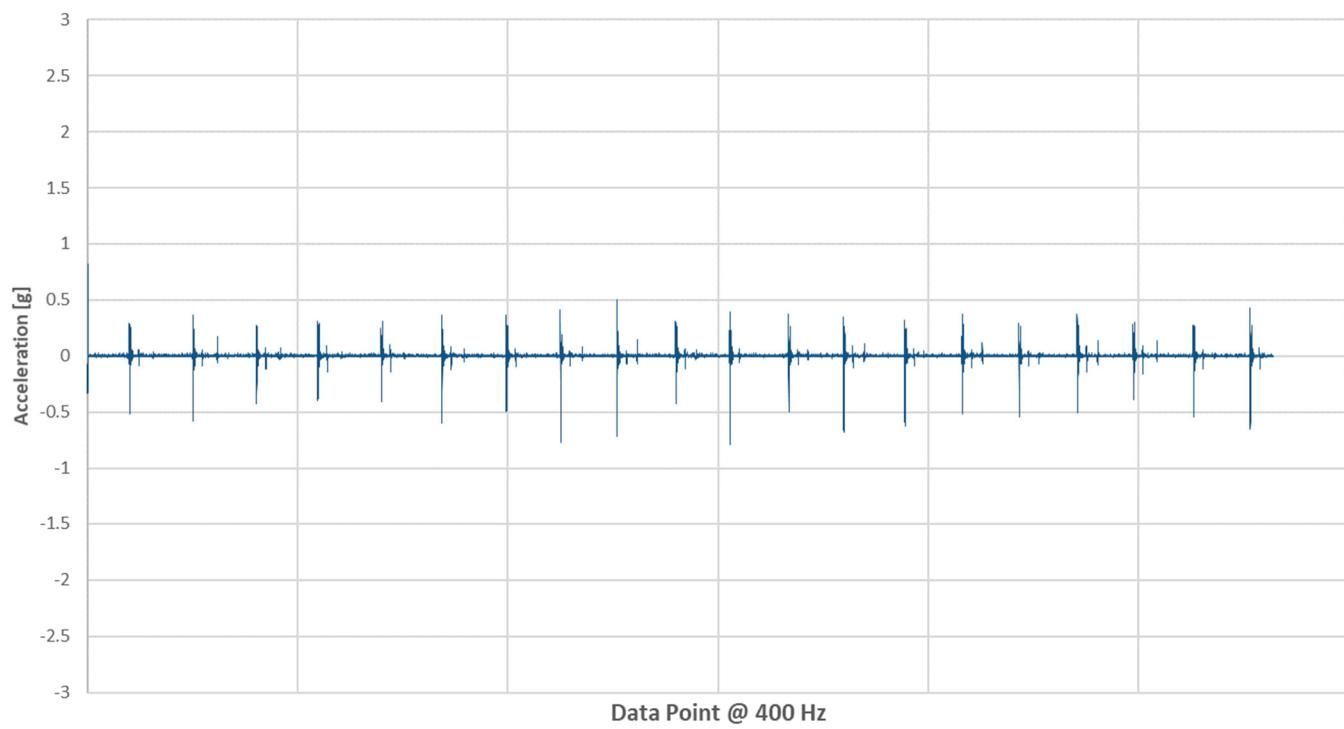


X Acceleration (Side to Side) - Casper (V4)

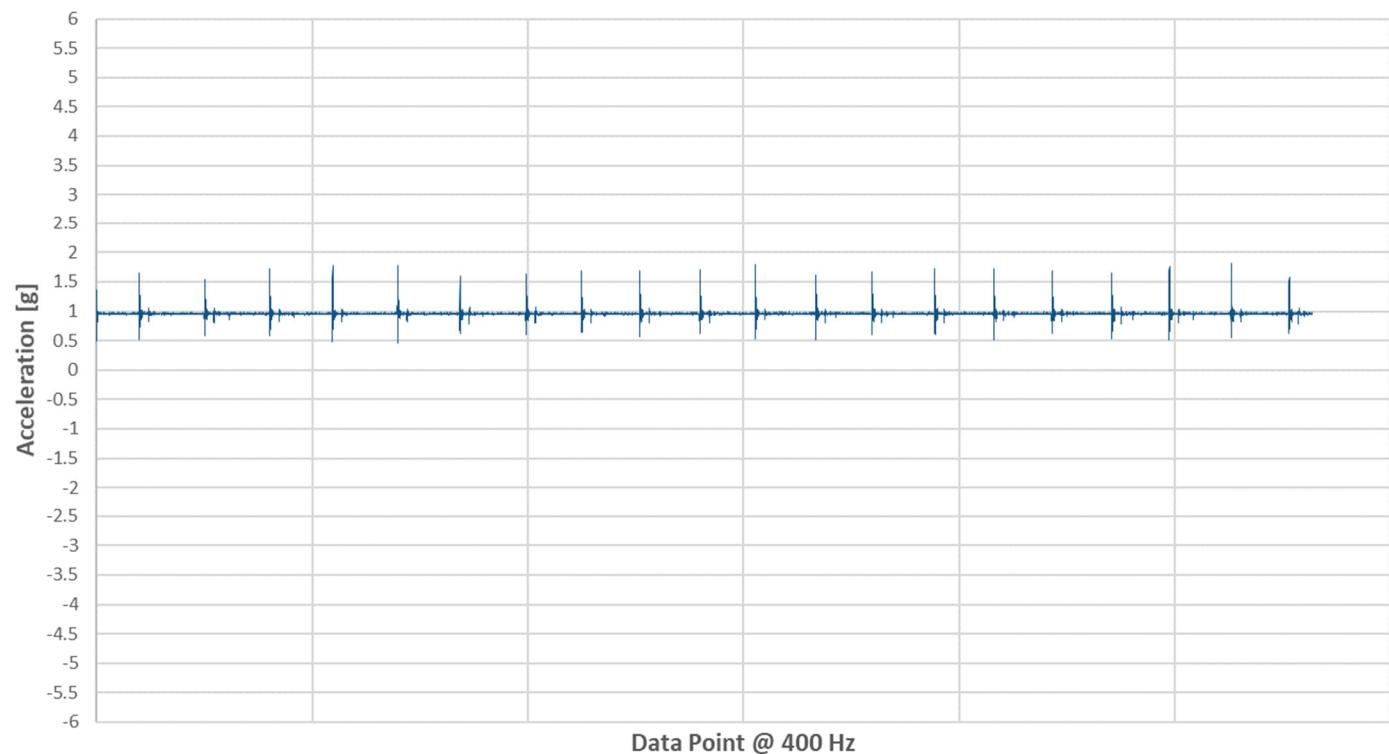




Y Acceleration (Head to Toe) - Casper (V4)



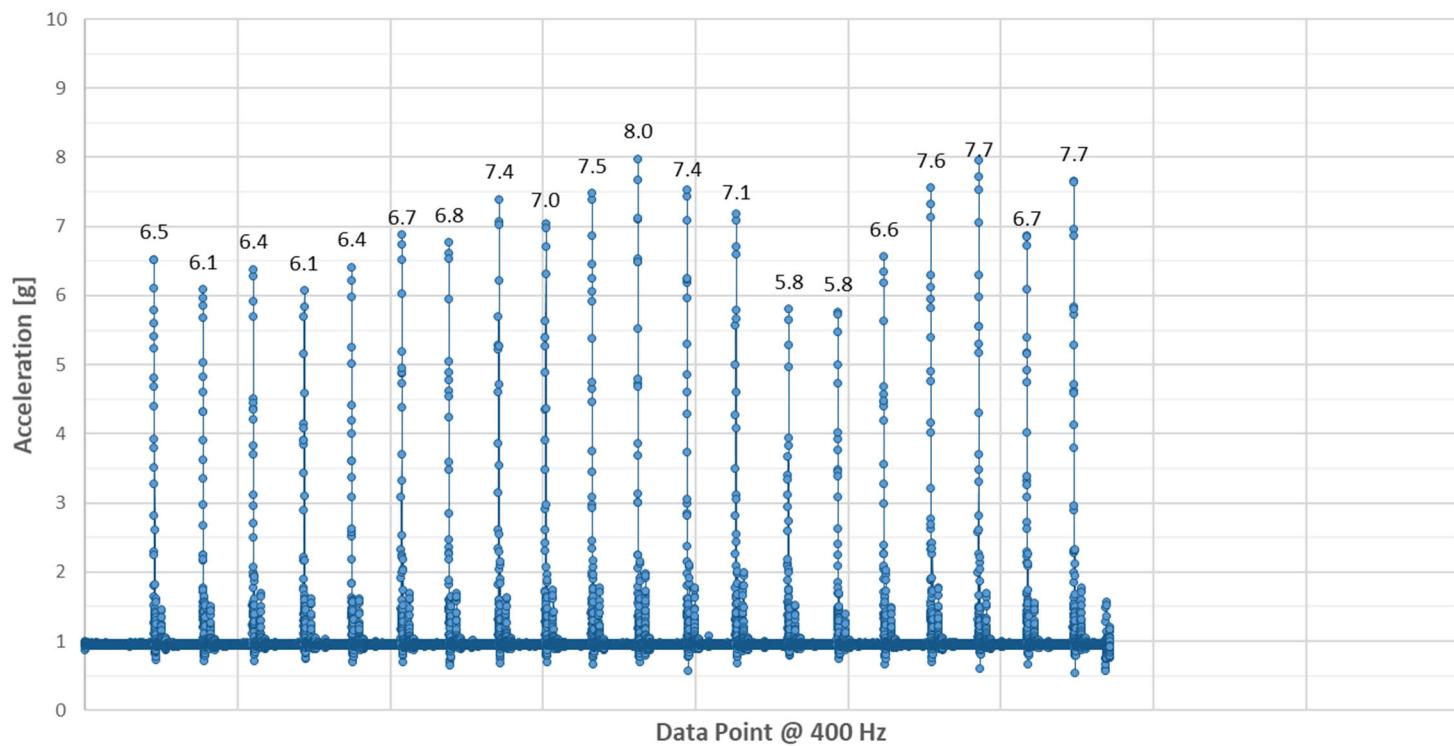
Z Acceleration (Up and Down) - Casper (V4)



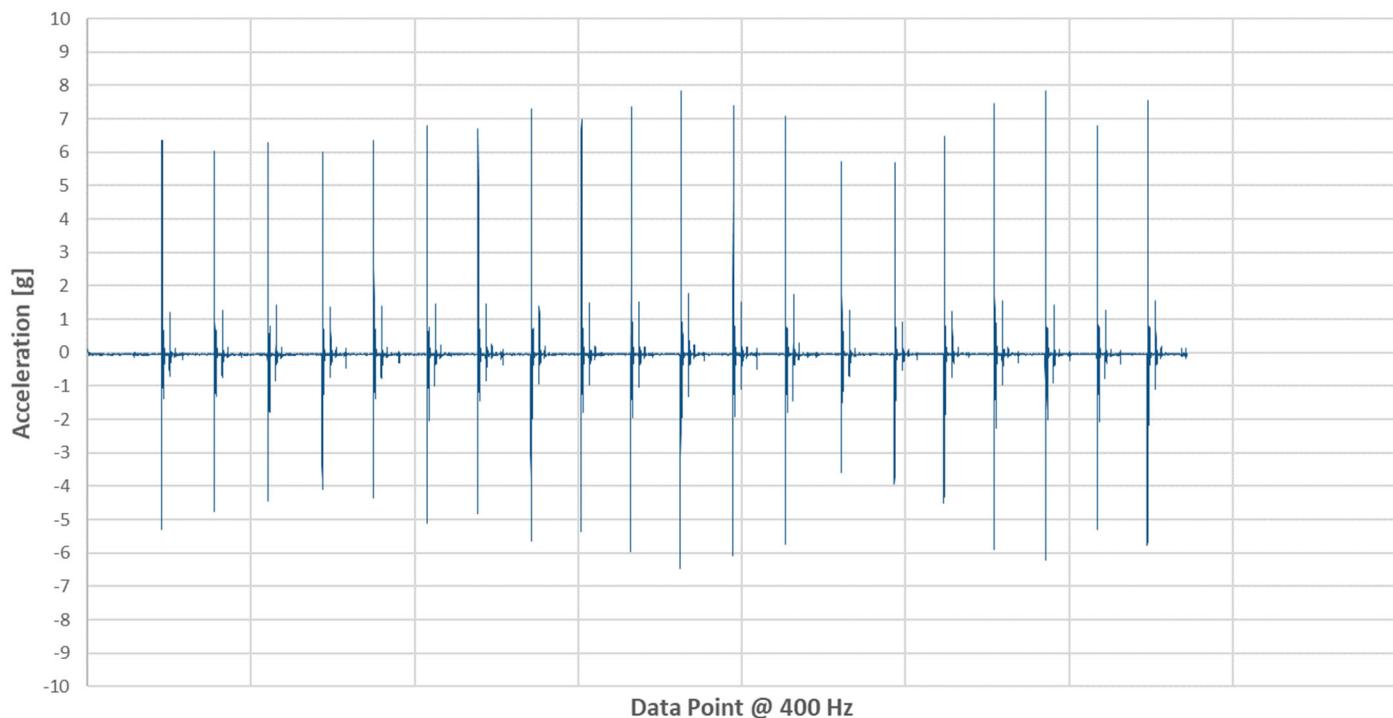


TEST 3 – CASPER ELEMENT

Vector Magnitude Acceleration - Casper Element

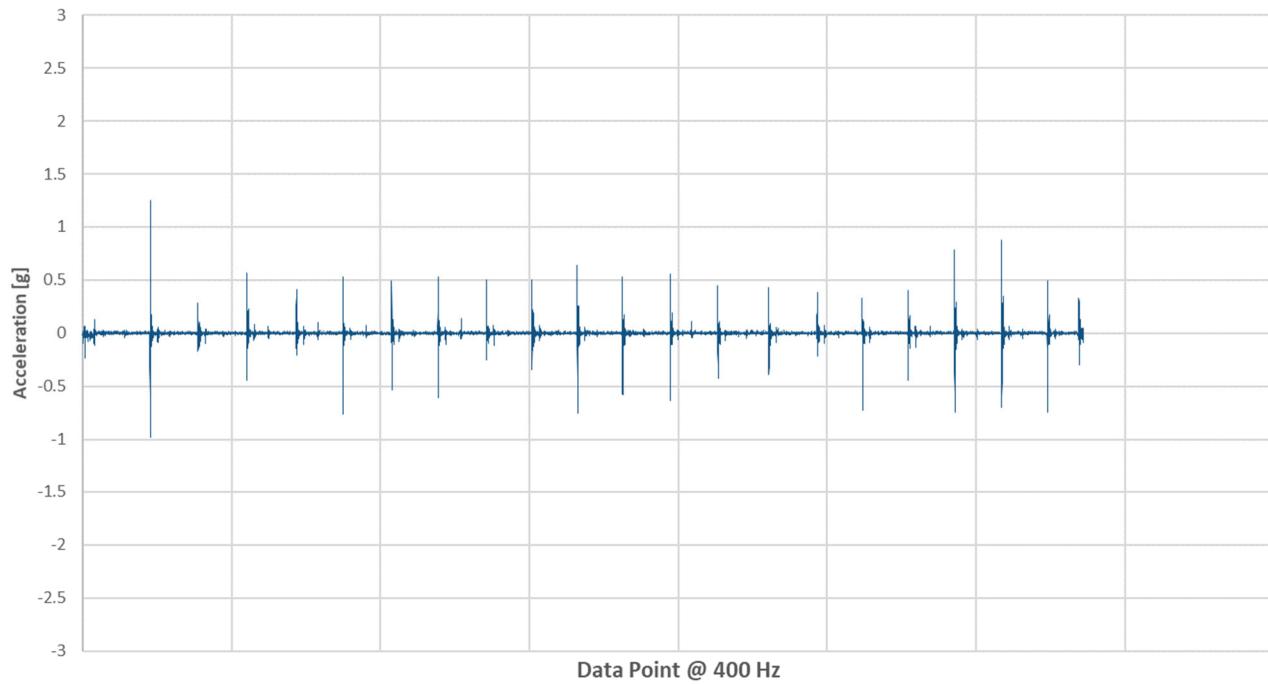


X Acceleration (Side to Side) - Casper Element

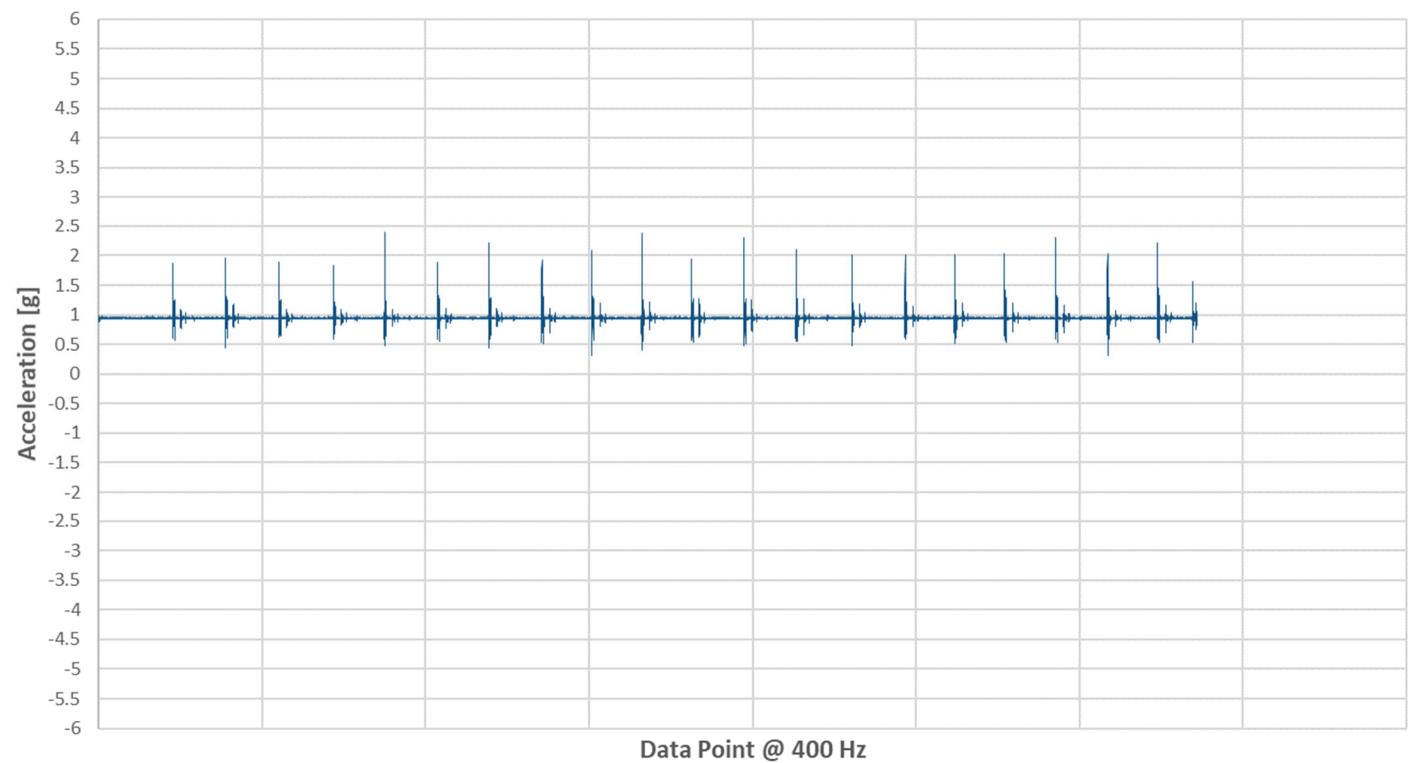




Y Acceleration (Head to Toe) - Casper Element



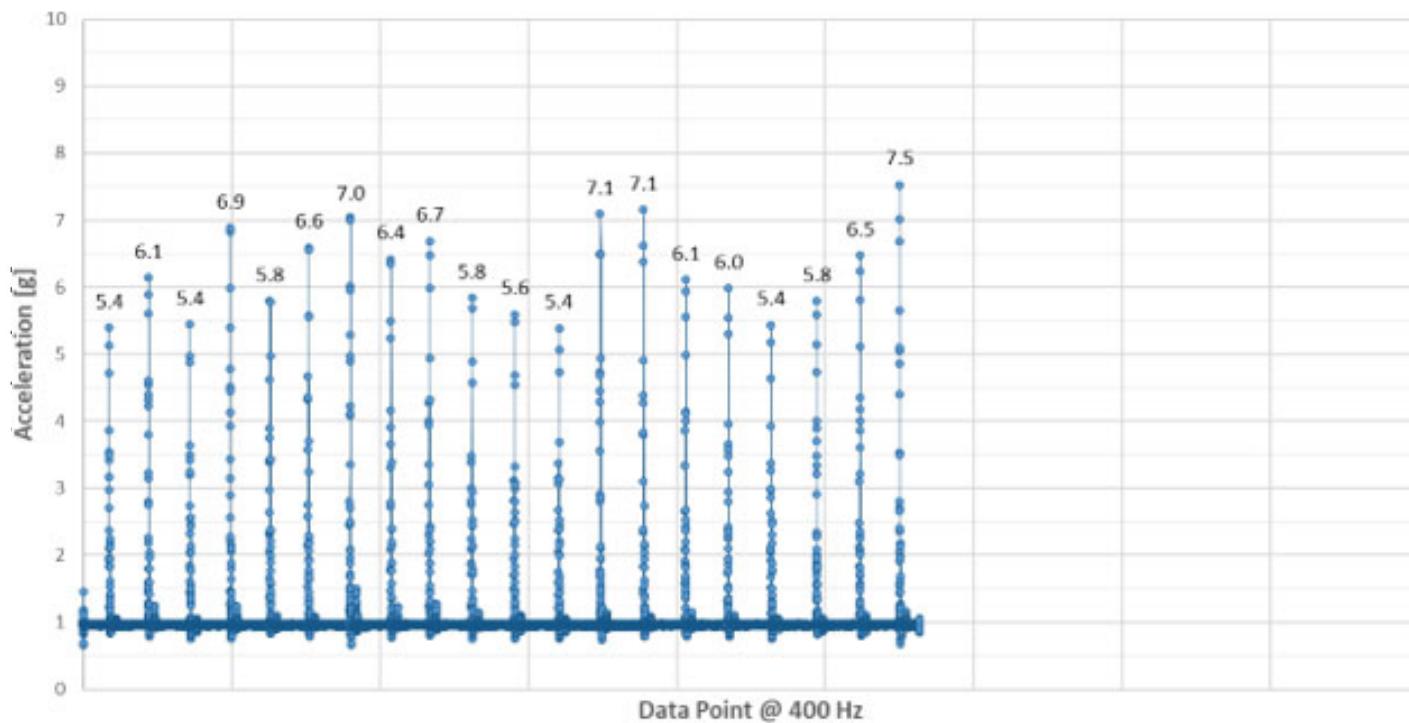
Z Acceleration (Up and Down) - Casper Element



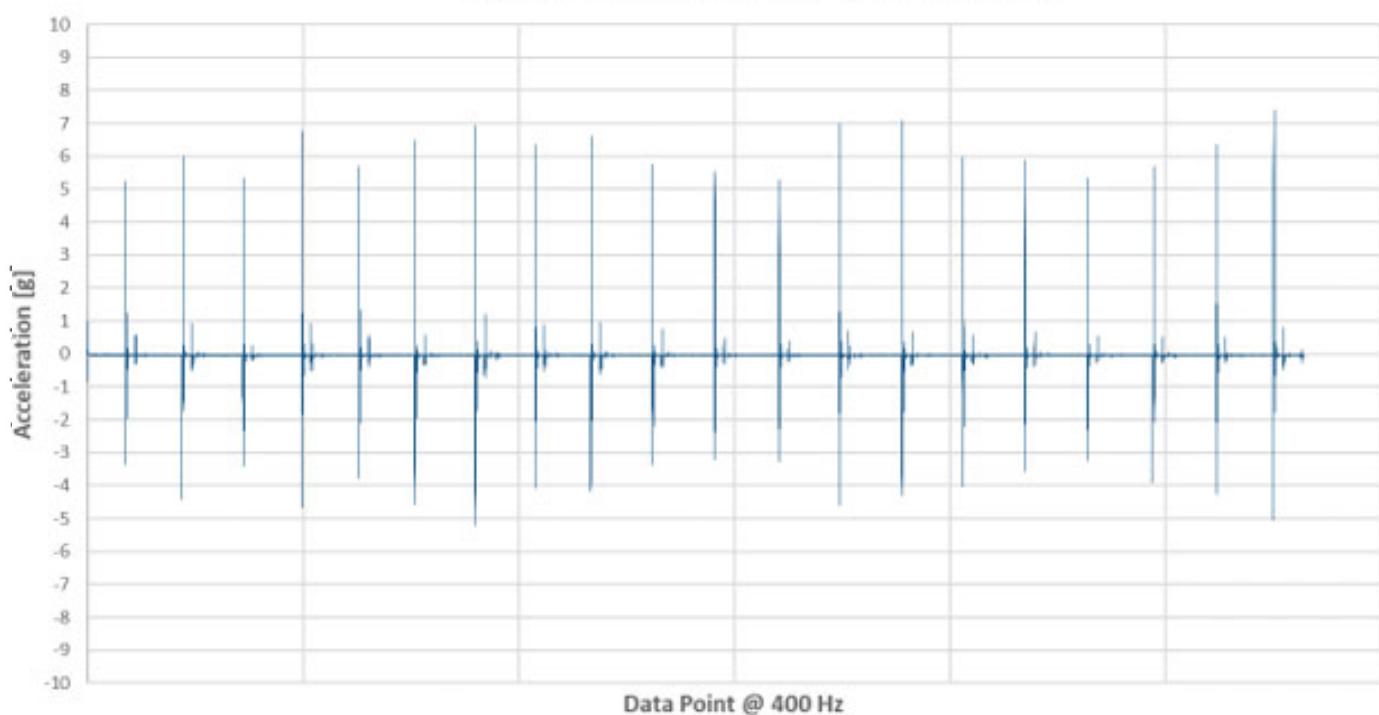


TEST 3 – HAVEN REJUVENATE

Vector Magnitude Acceleration Haven Rejuvenate

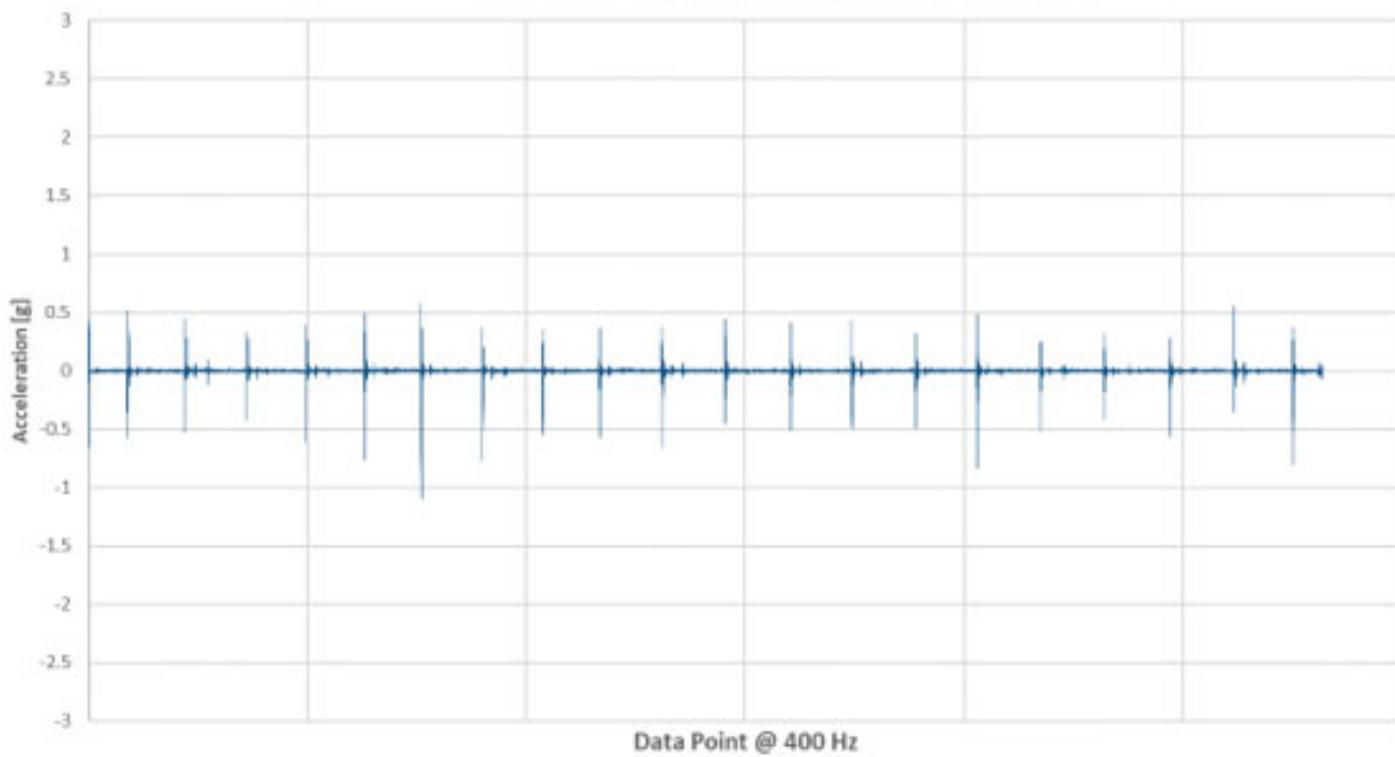


X Acceleration (Side to Side) - Haven Rejuvenate

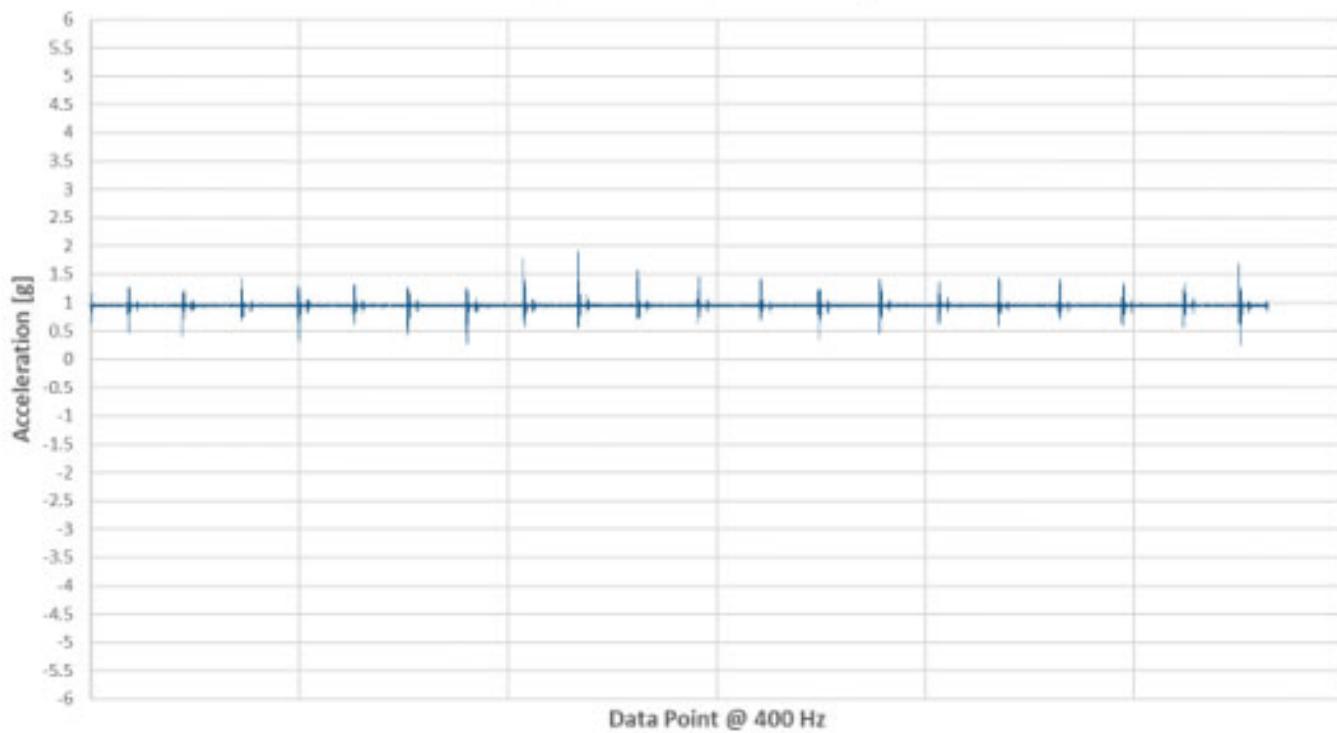




Y Acceleration (Head to Toe) - Haven Rejuvenate



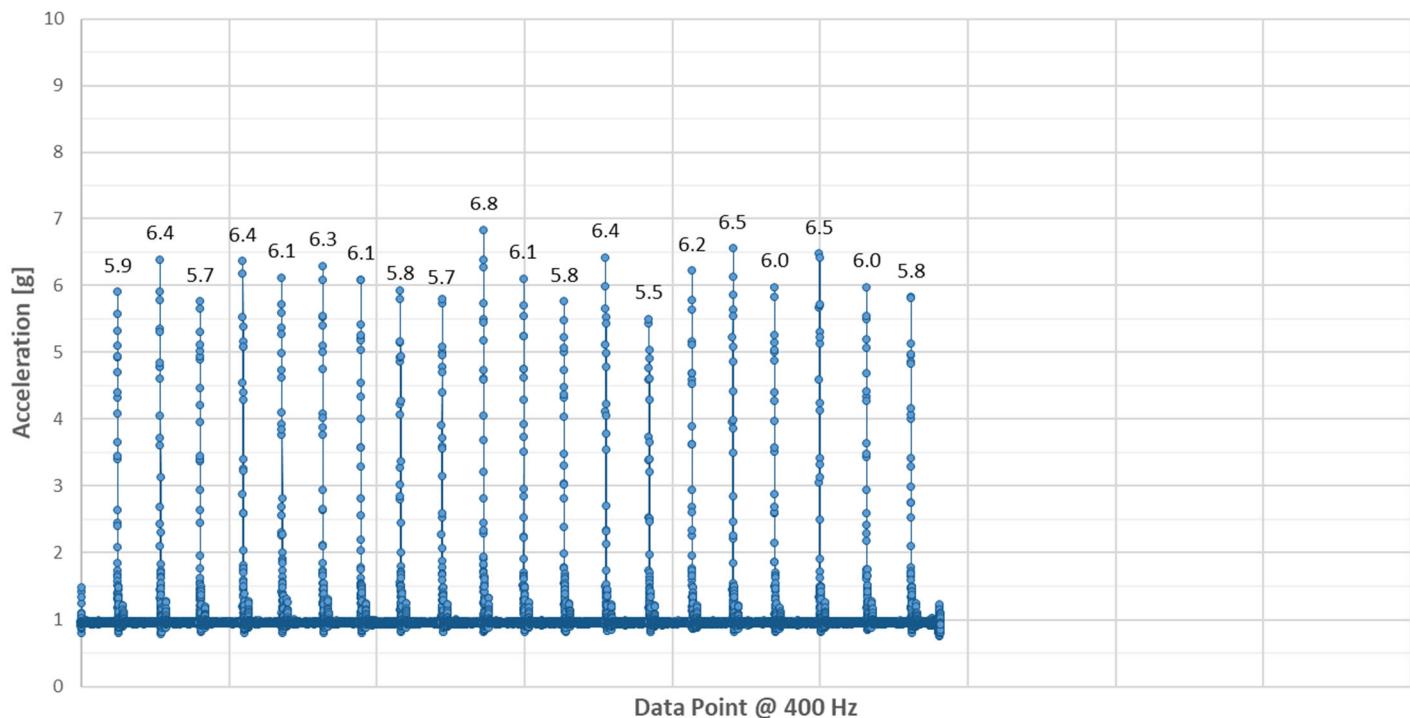
Z Acceleration (Up and Down) - Haven Rejuvenate



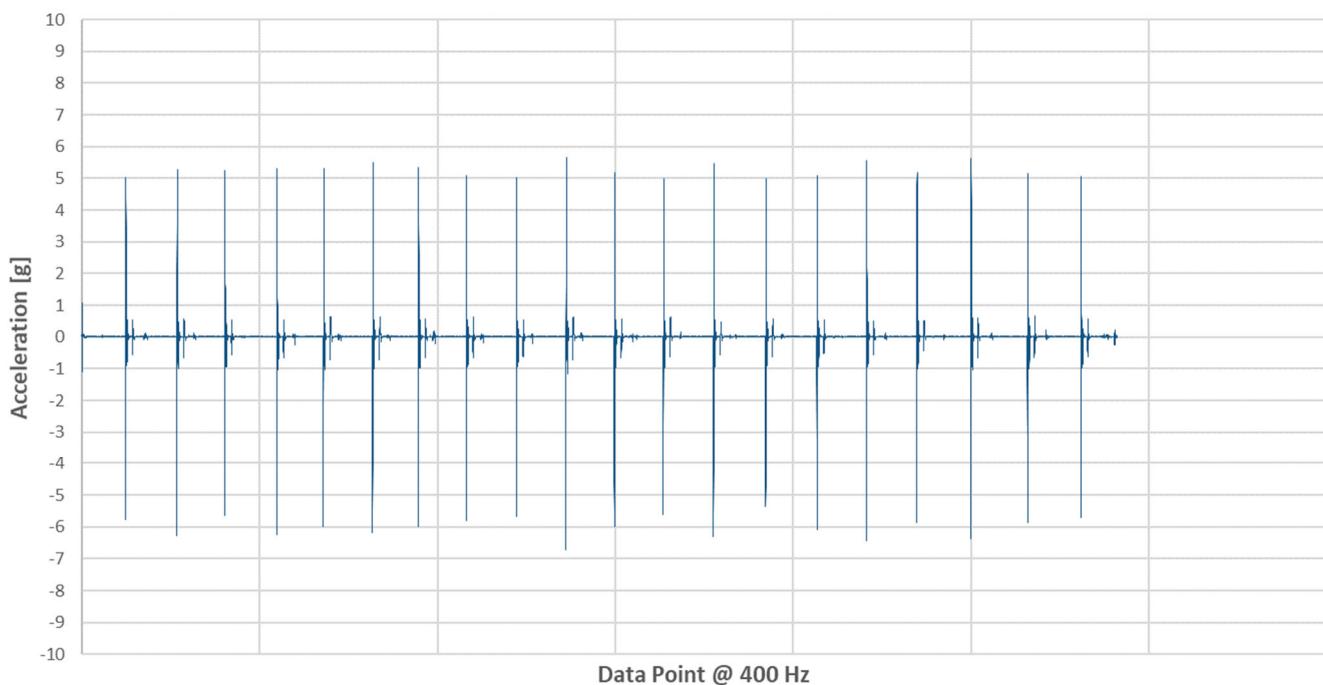


TEST 3 – PUFFY (V2)

Vector Magnitude Acceleration - Puffy (V2)

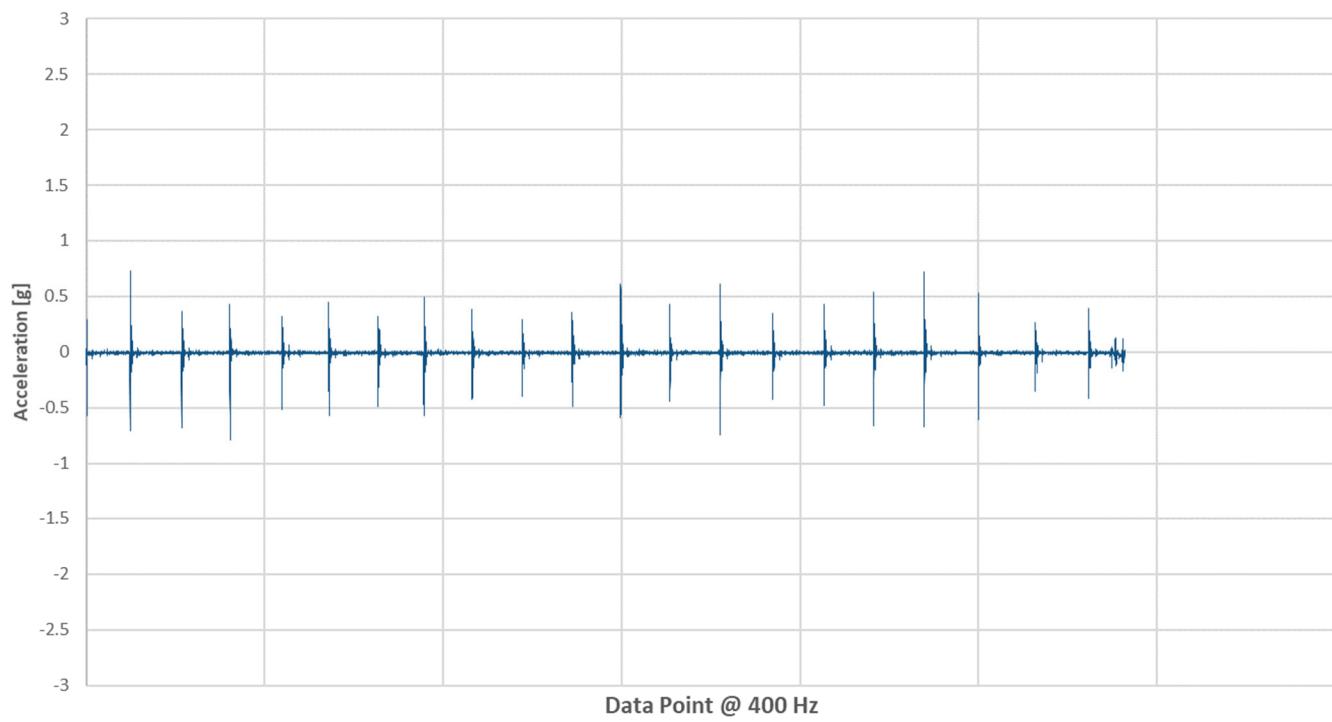


X Acceleration (Side to Side) - Puffy (V2)

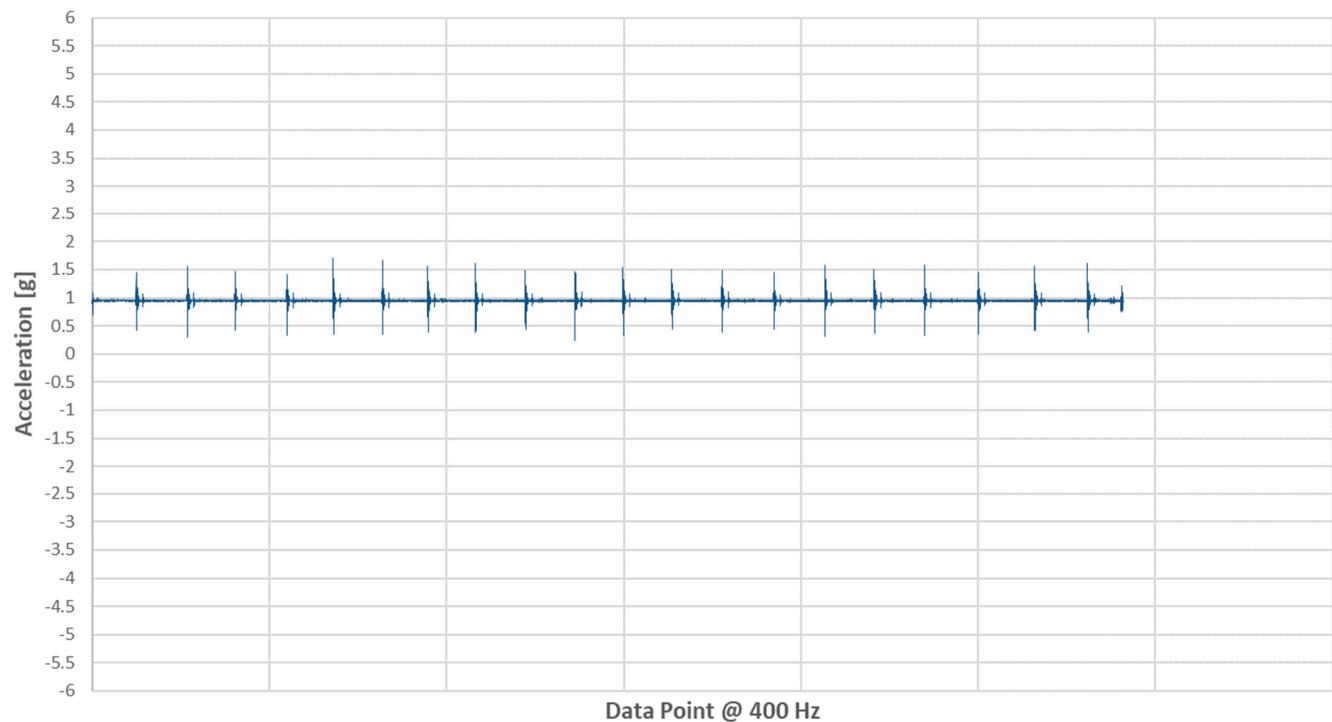




Y Acceleration (Head to Toe) - Puffy (V2)



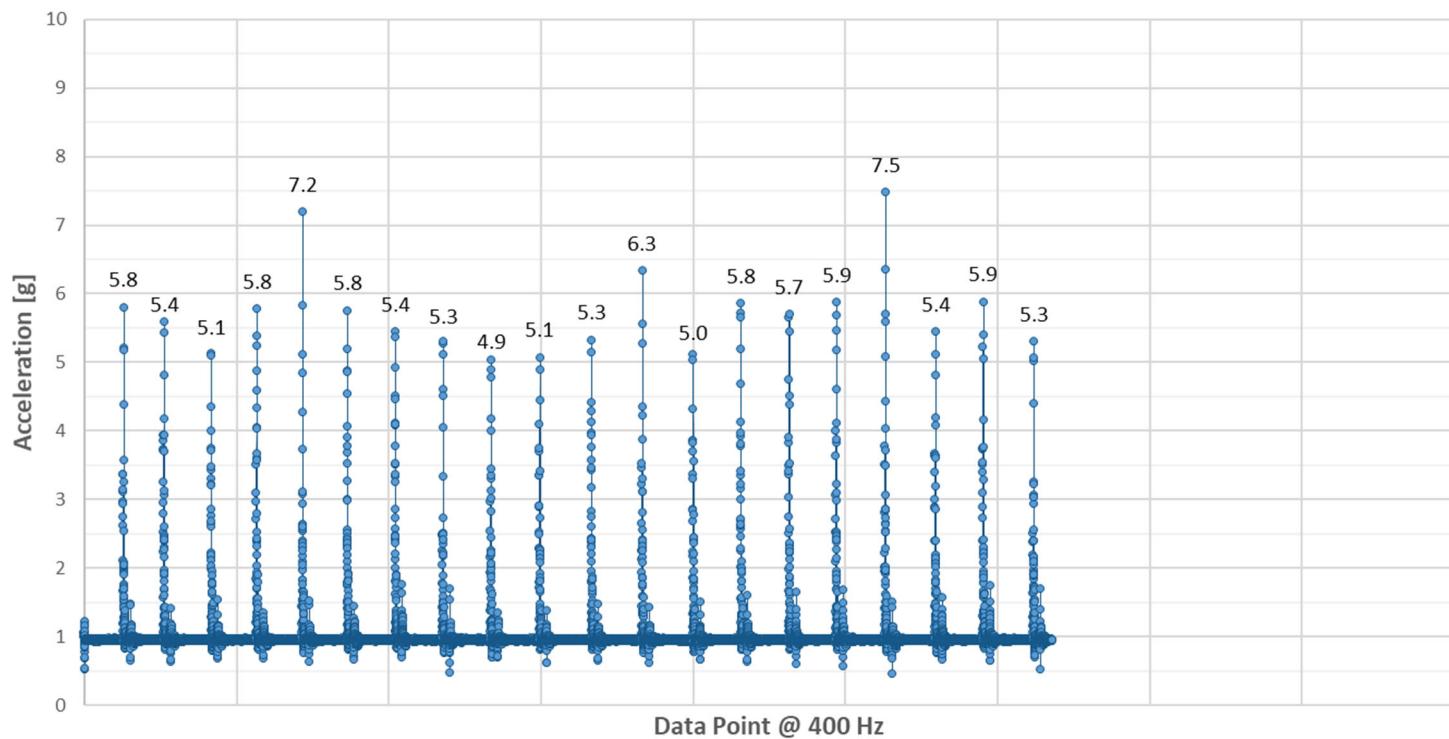
Z Acceleration (Up and Down) - Puffy (V2)



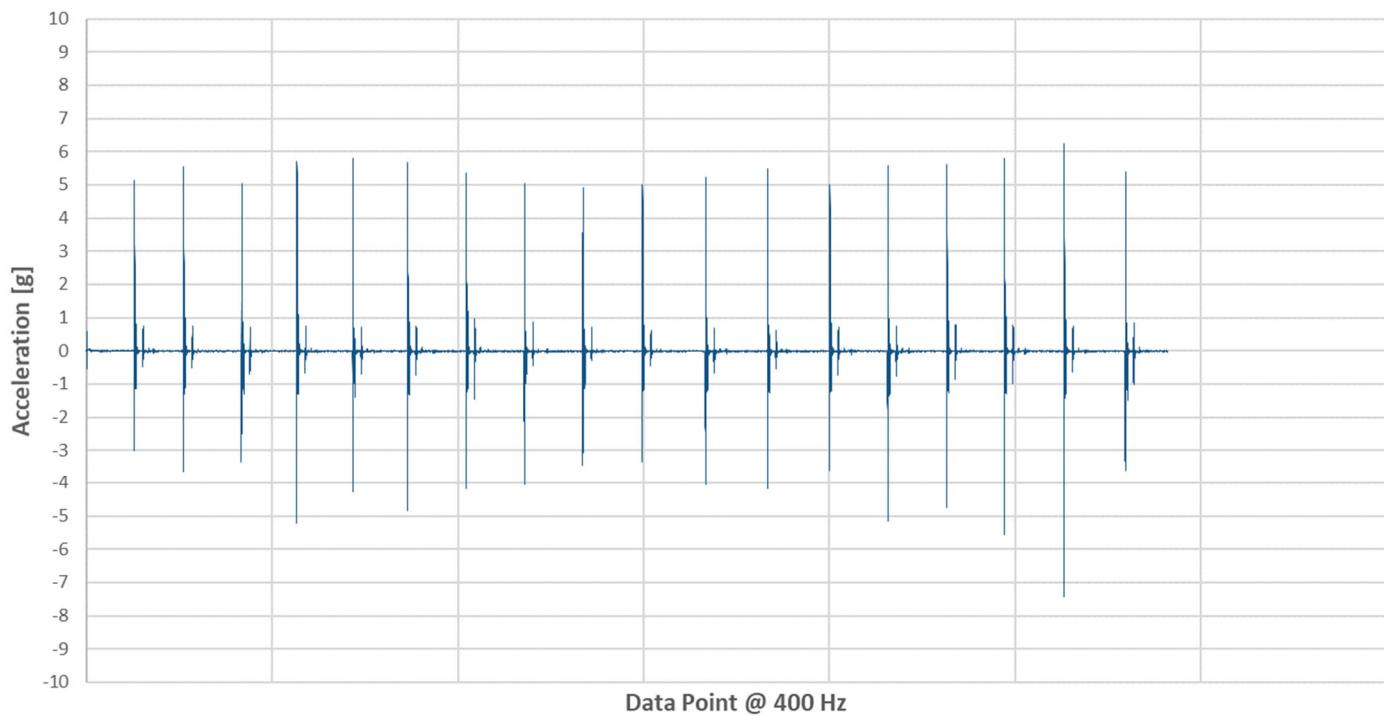


TEST 3 – SIMBA (V2)

Vector Magnitude Acceleration - Simba (V2)

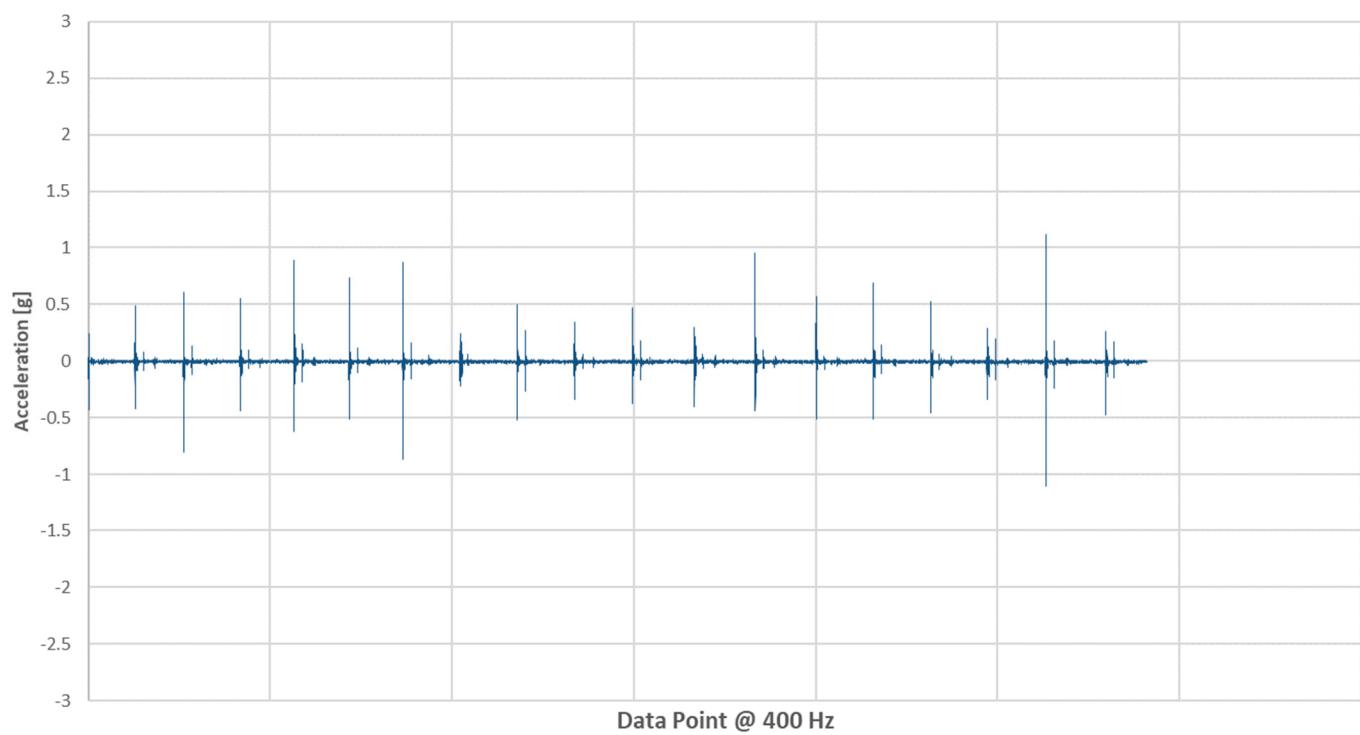


X Acceleration (Side to Side) - Simba (V2)

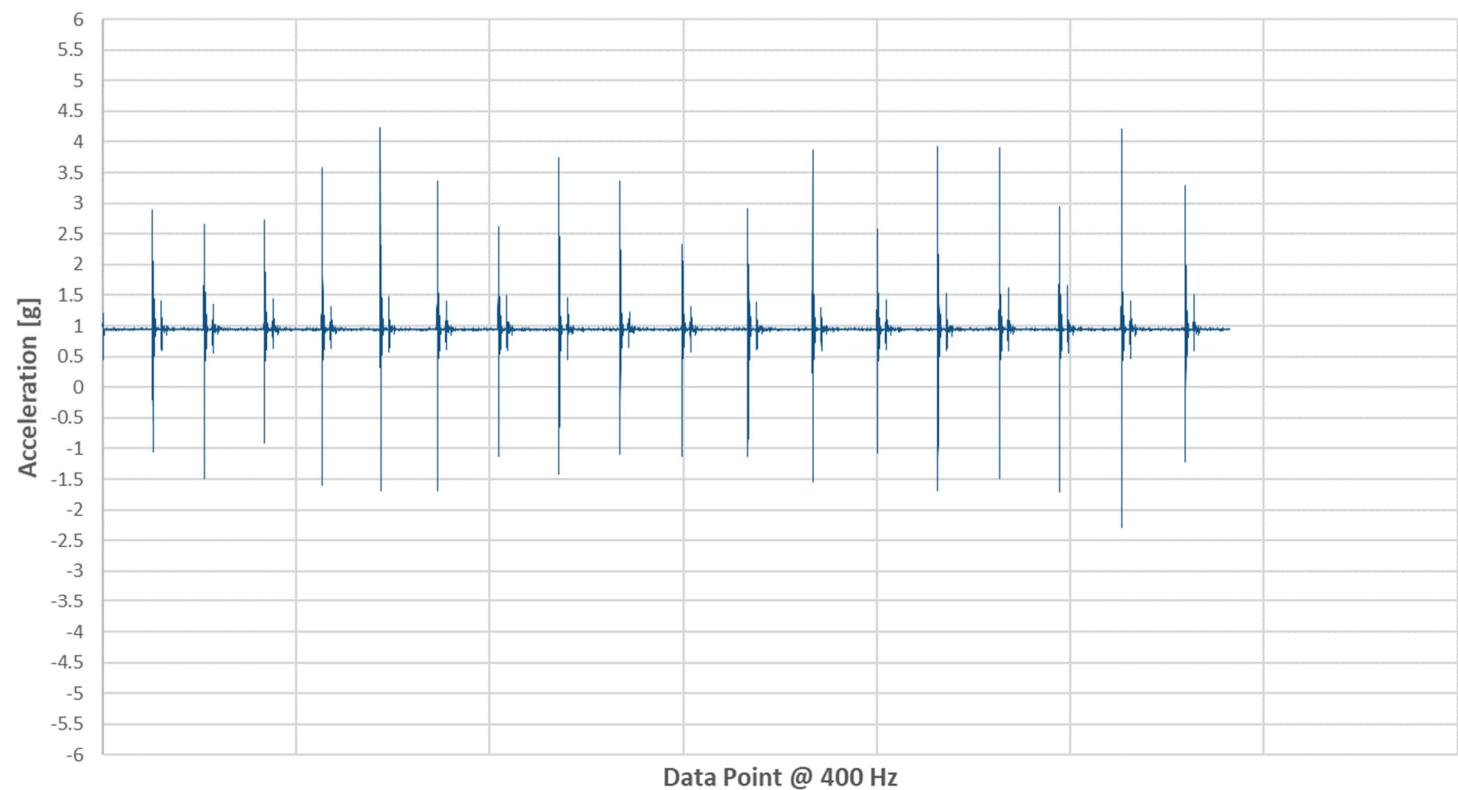




Y Acceleration (Head to Toe) - Simba (V2)



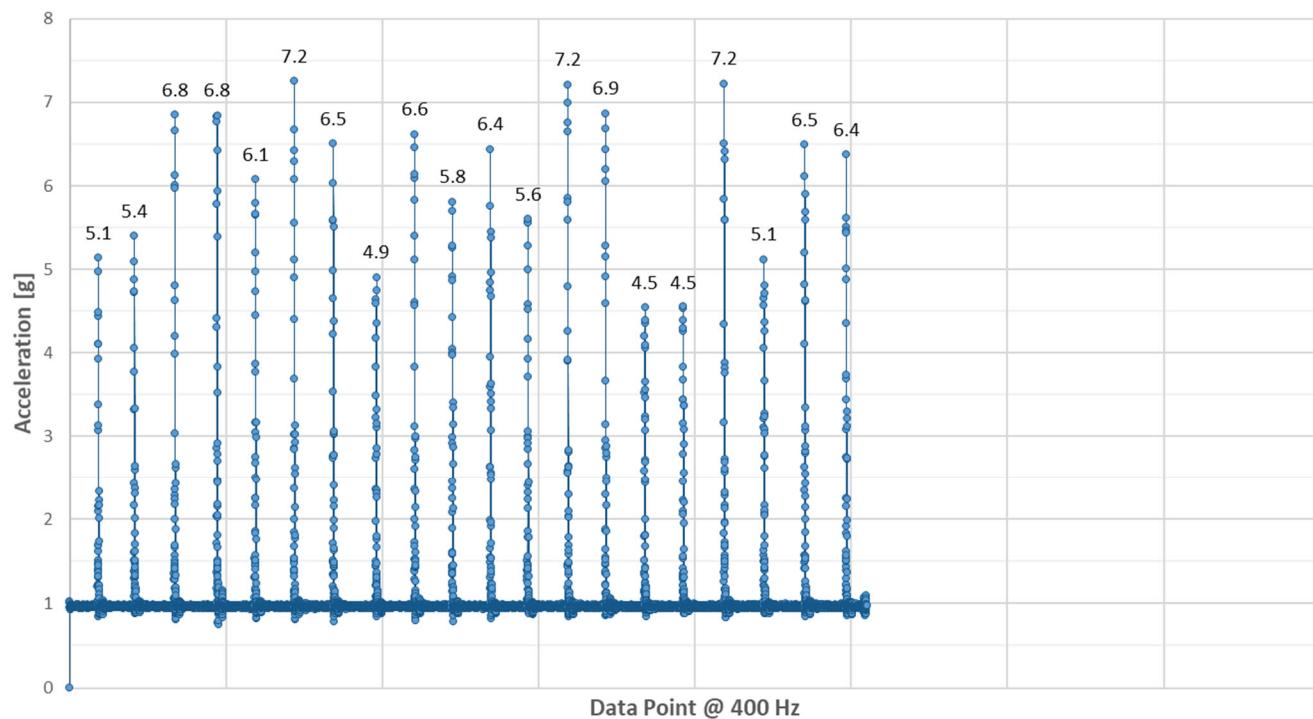
Z Acceleration (Up and Down) - Simba (V2)



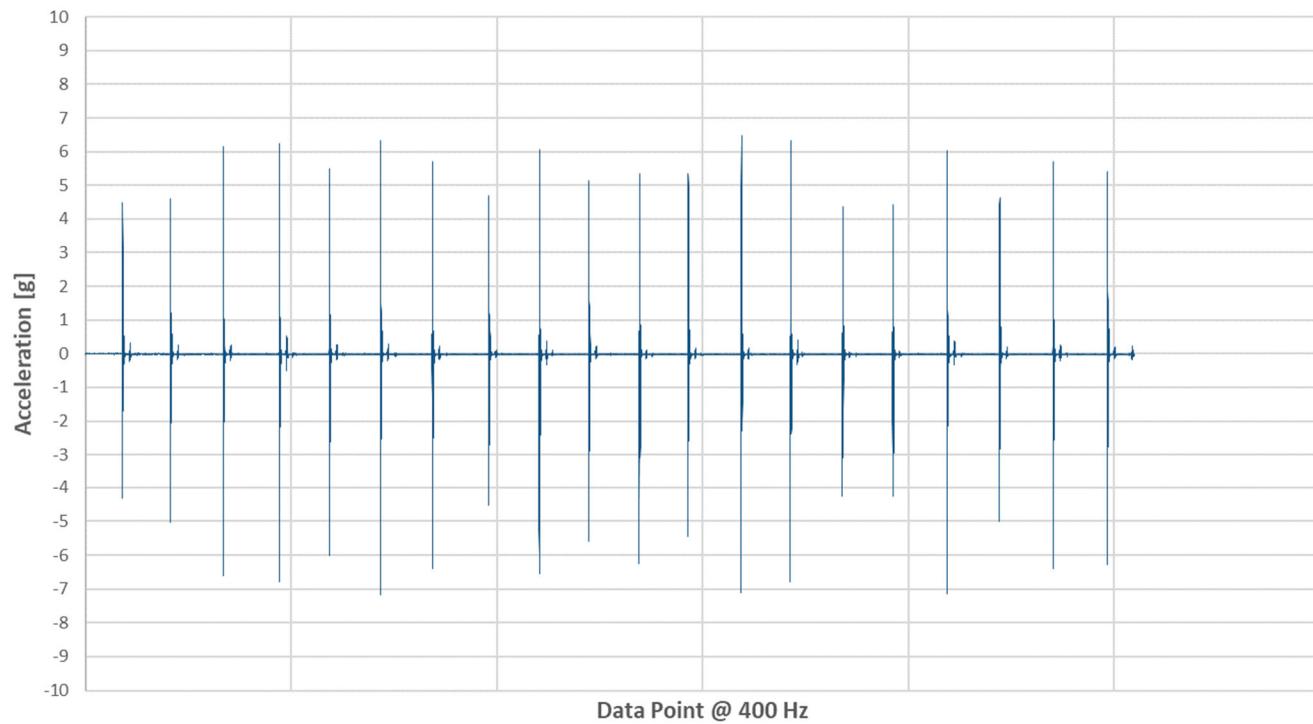


TEST 3 – CHERRY

Vector Magnitude Acceleration - Cherry

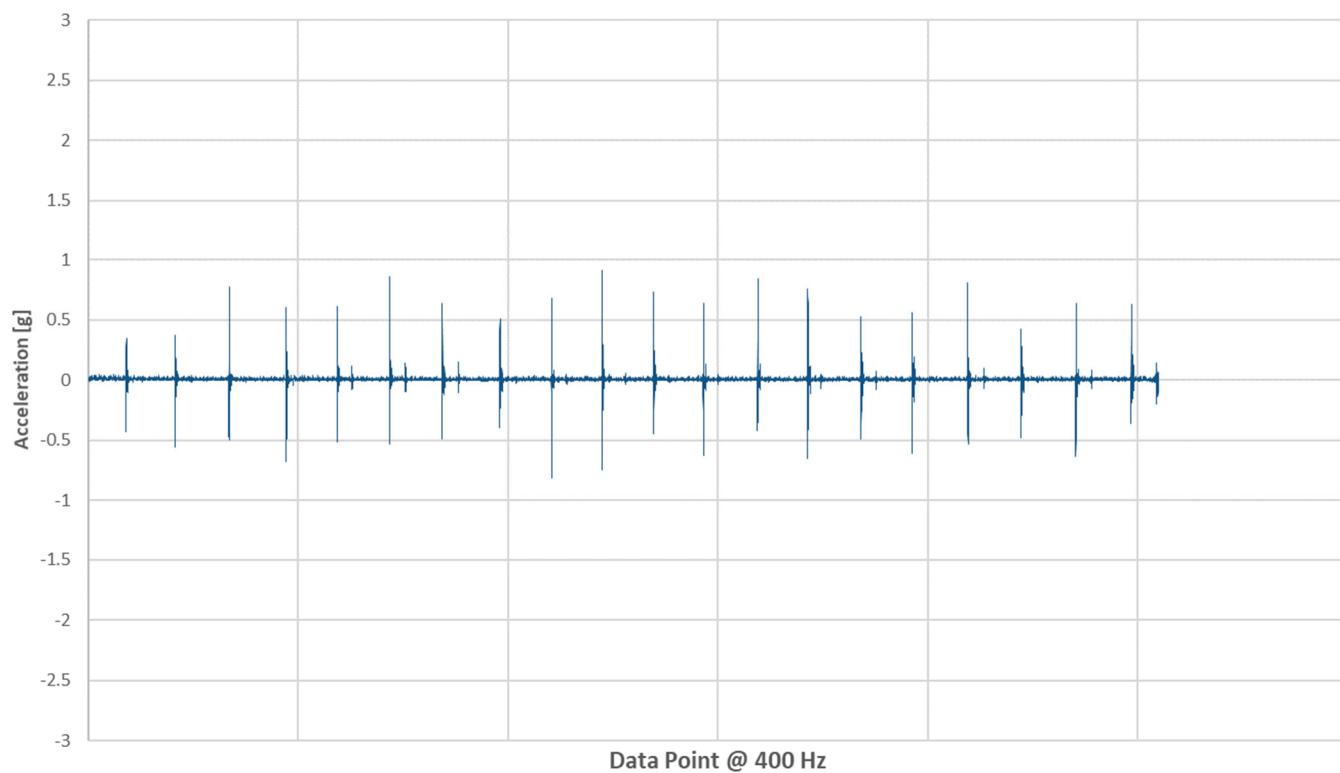


X Acceleration (Side to Side) - Cherry

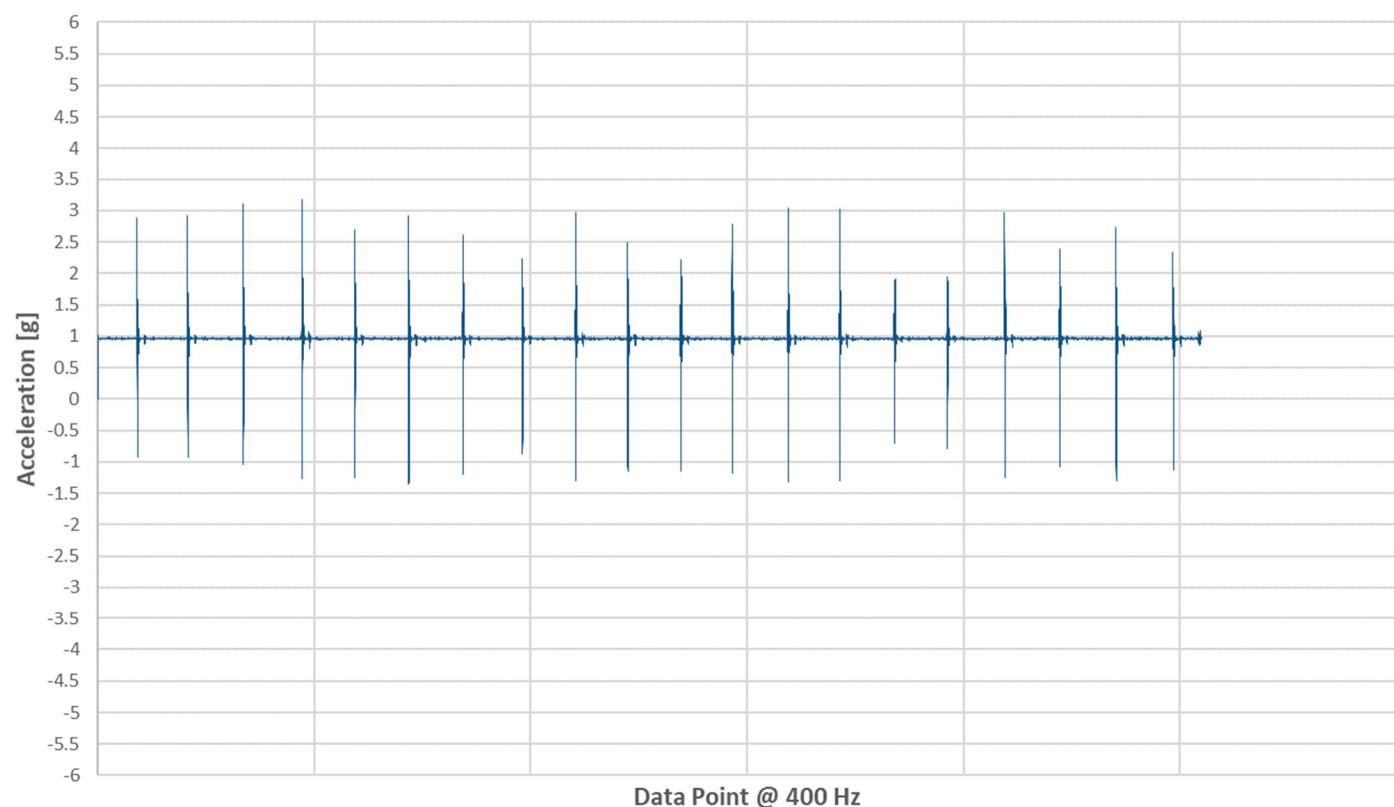




Y Acceleration (Head to Toe) - Cherry



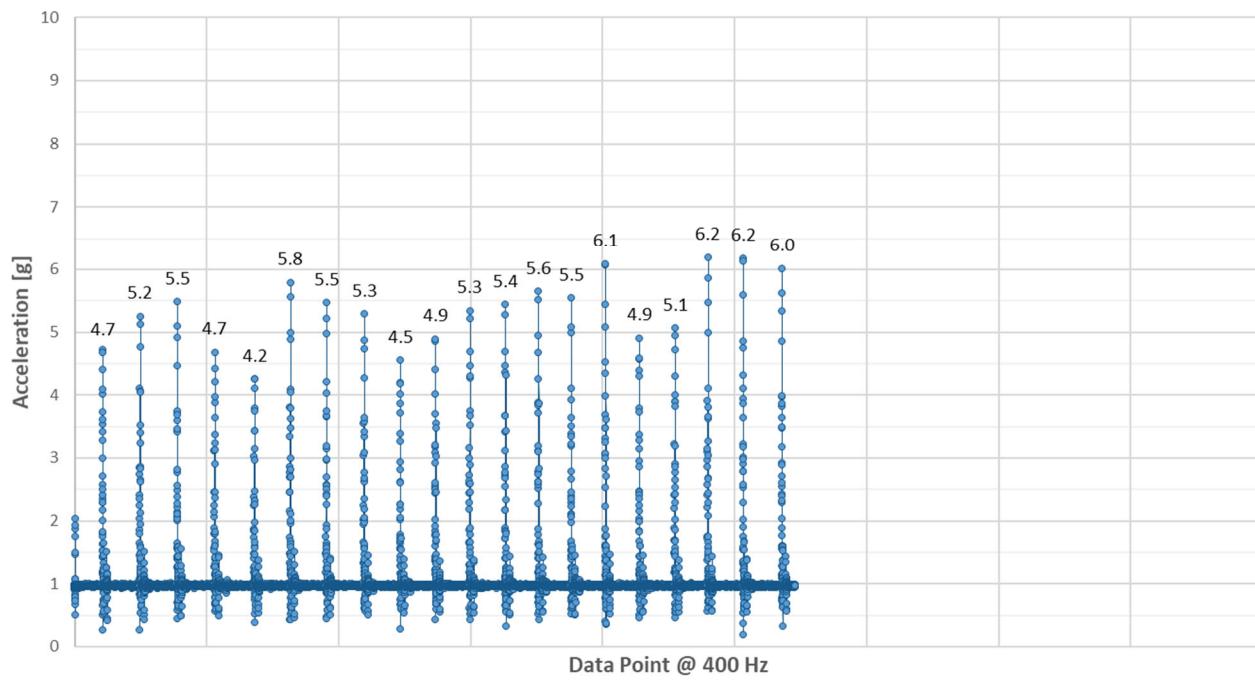
Z Acceleration (Up and Down) - Cherry



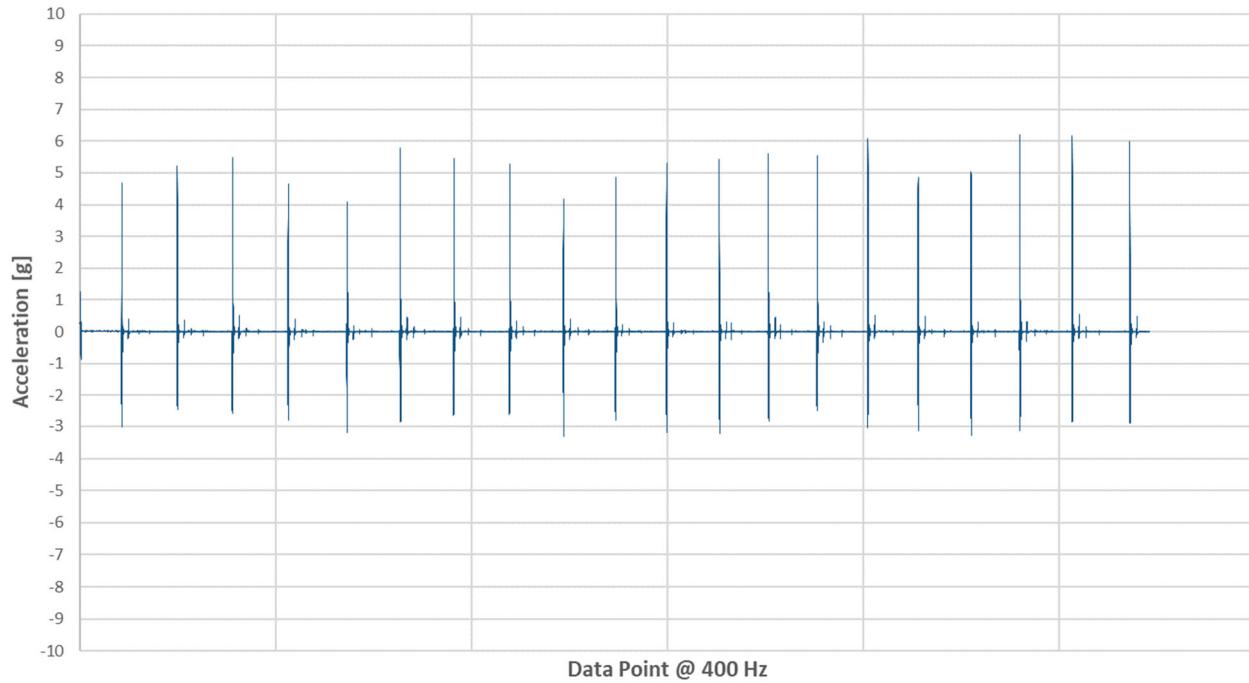


TEST 3 – BLOOM RIVER

Vector Magnitude Acceleration - Bloom River

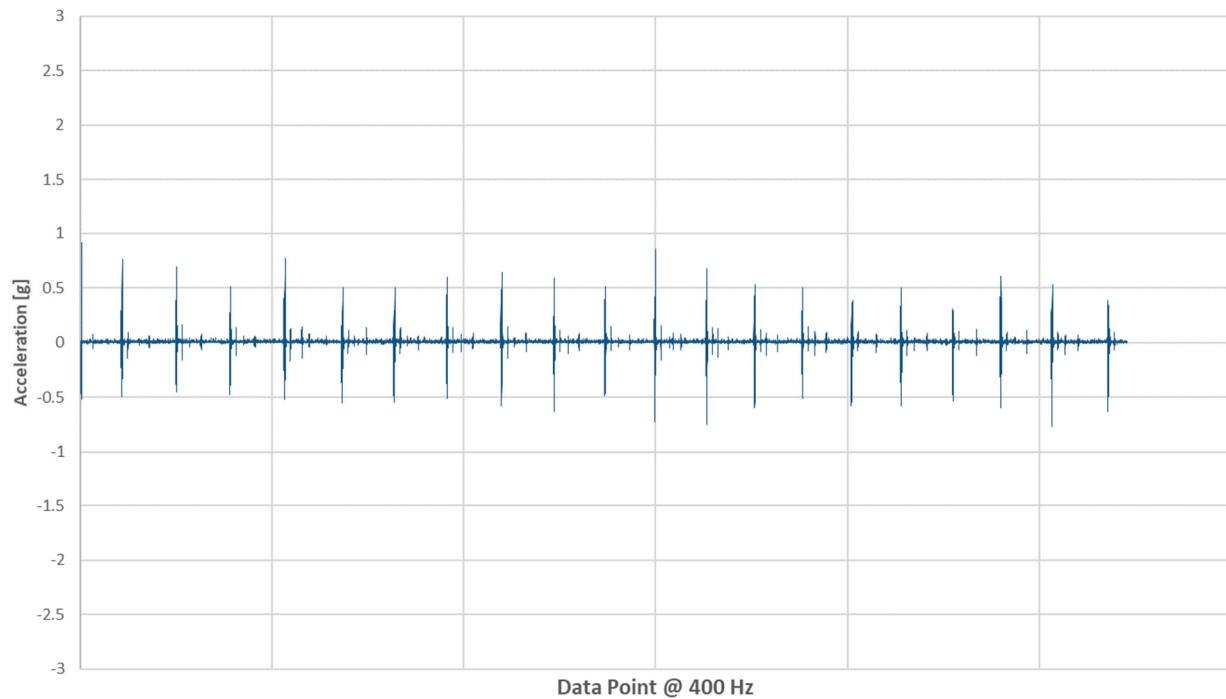


X Acceleration (Side to Side) - Bloom River

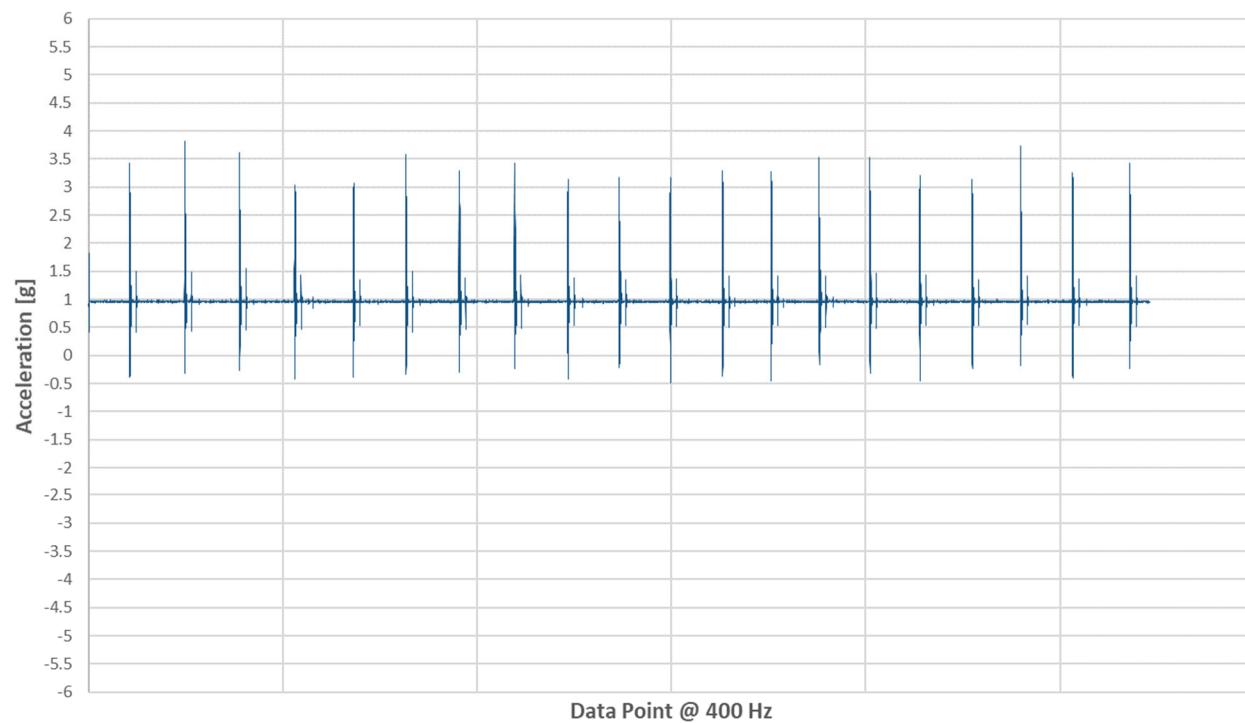




Y Acceleration (Head to Toe) - Bloom River

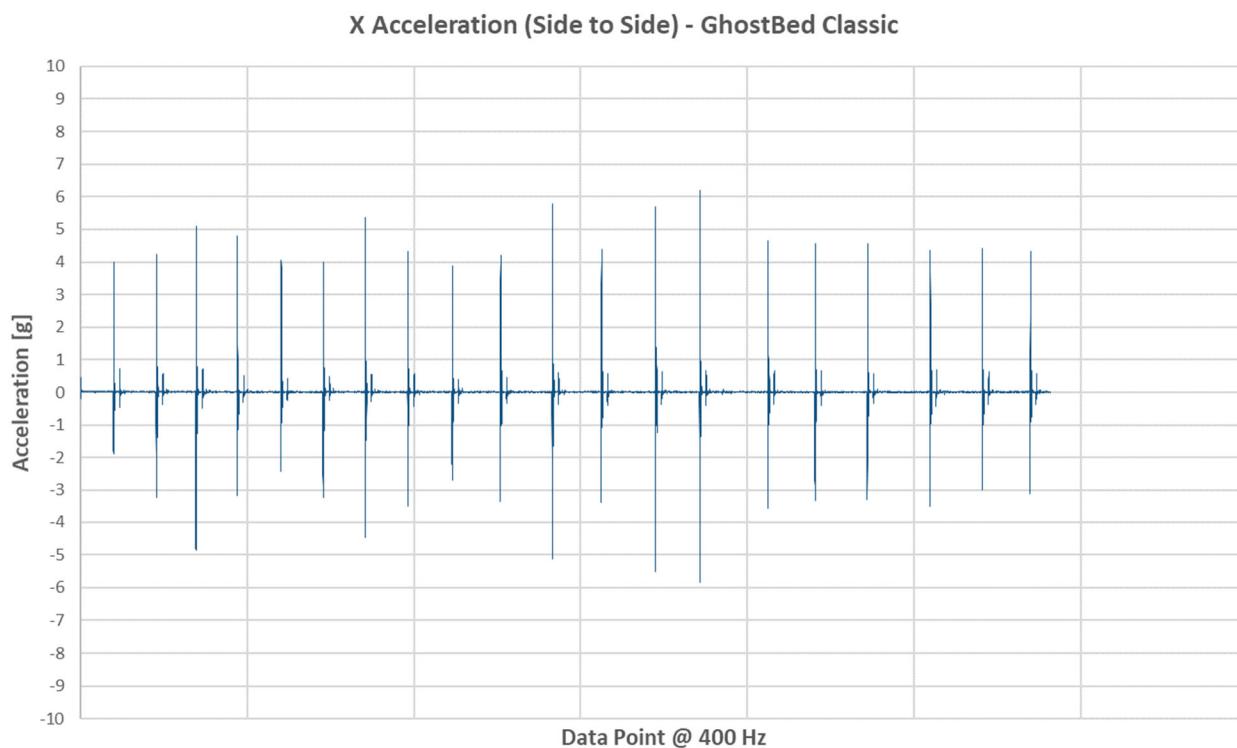
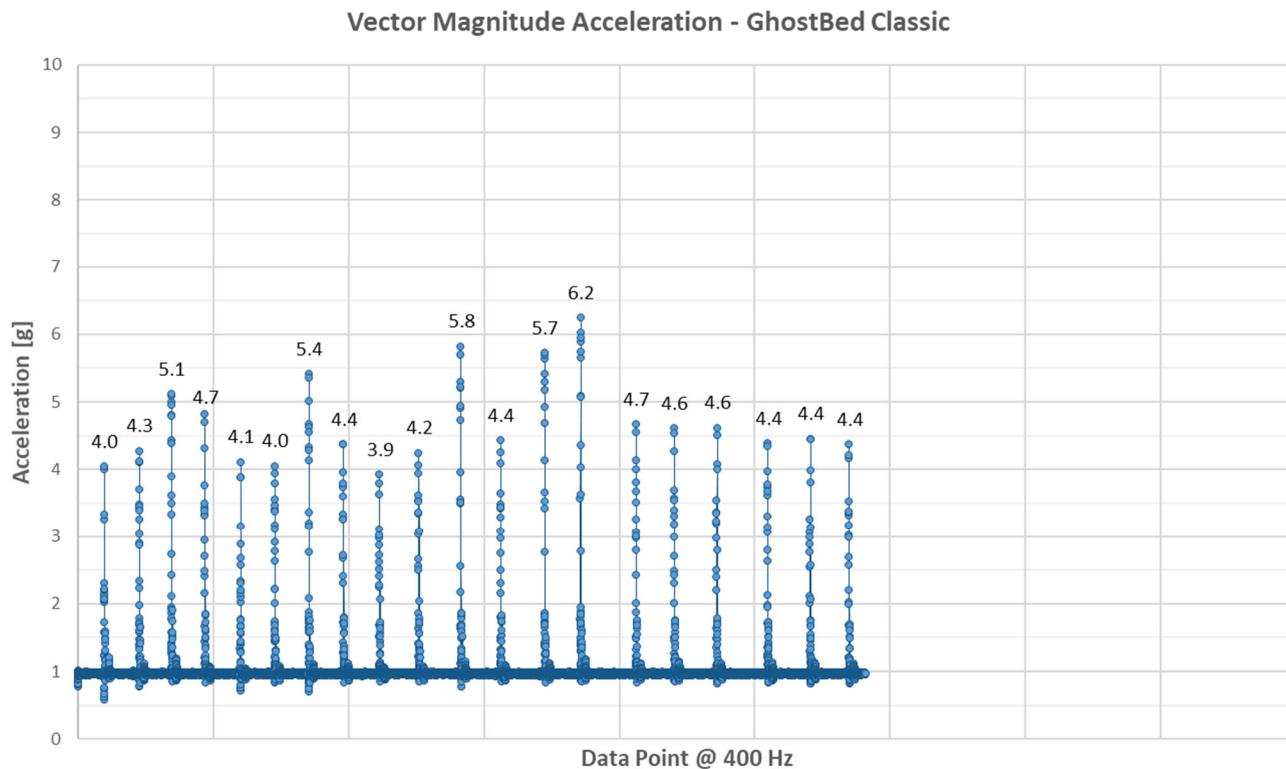


Z Acceleration (Up and Down) - Bloom River



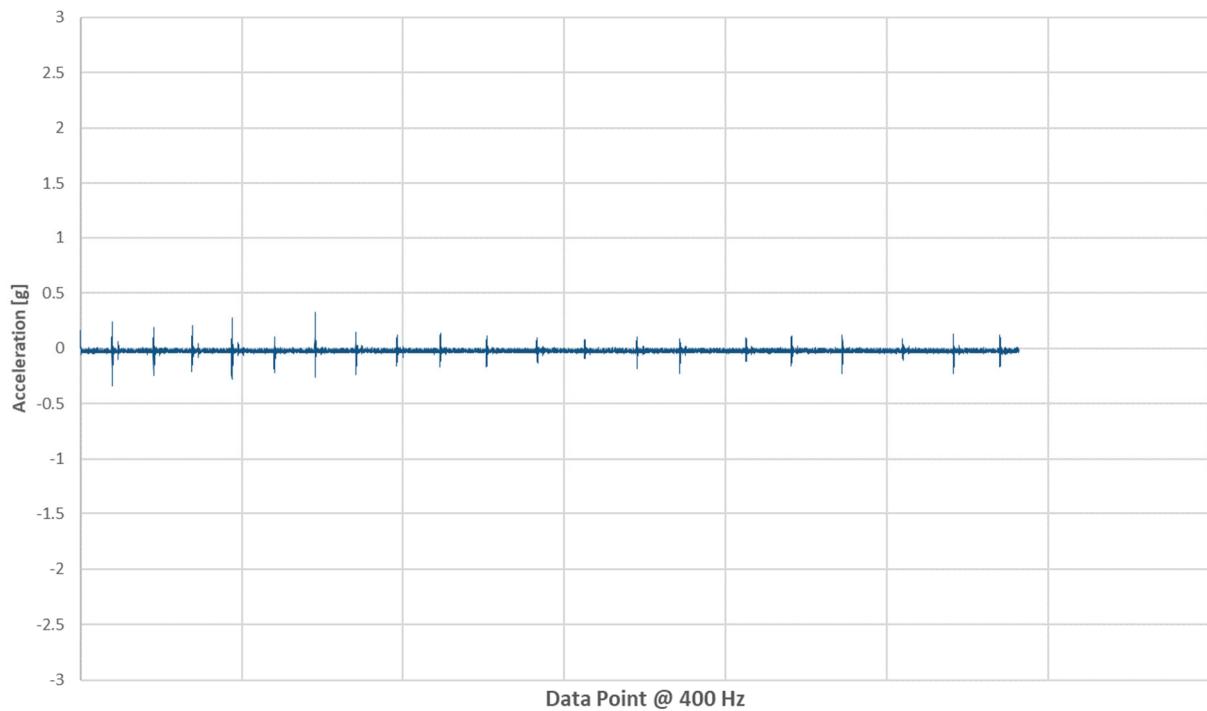


TEST 3 – GHOSTBED CLASSIC

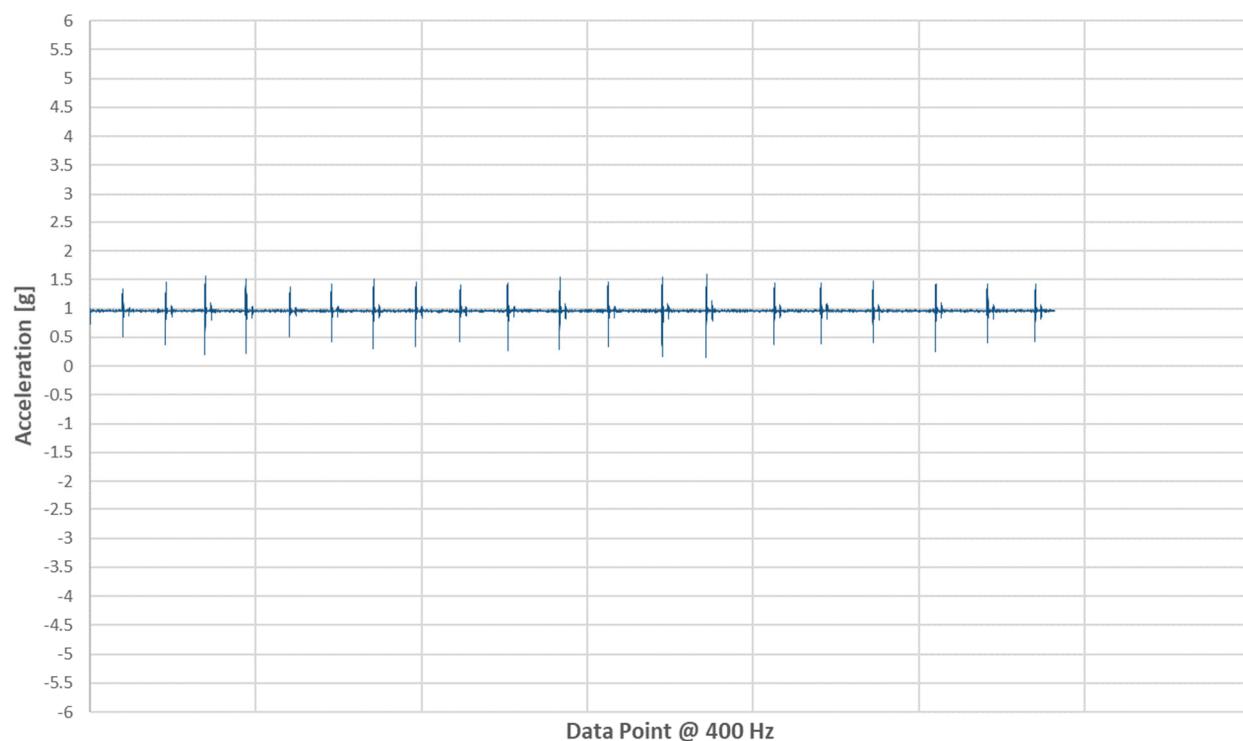




Y Acceleration (Head to Toe) - GhostBed Classic



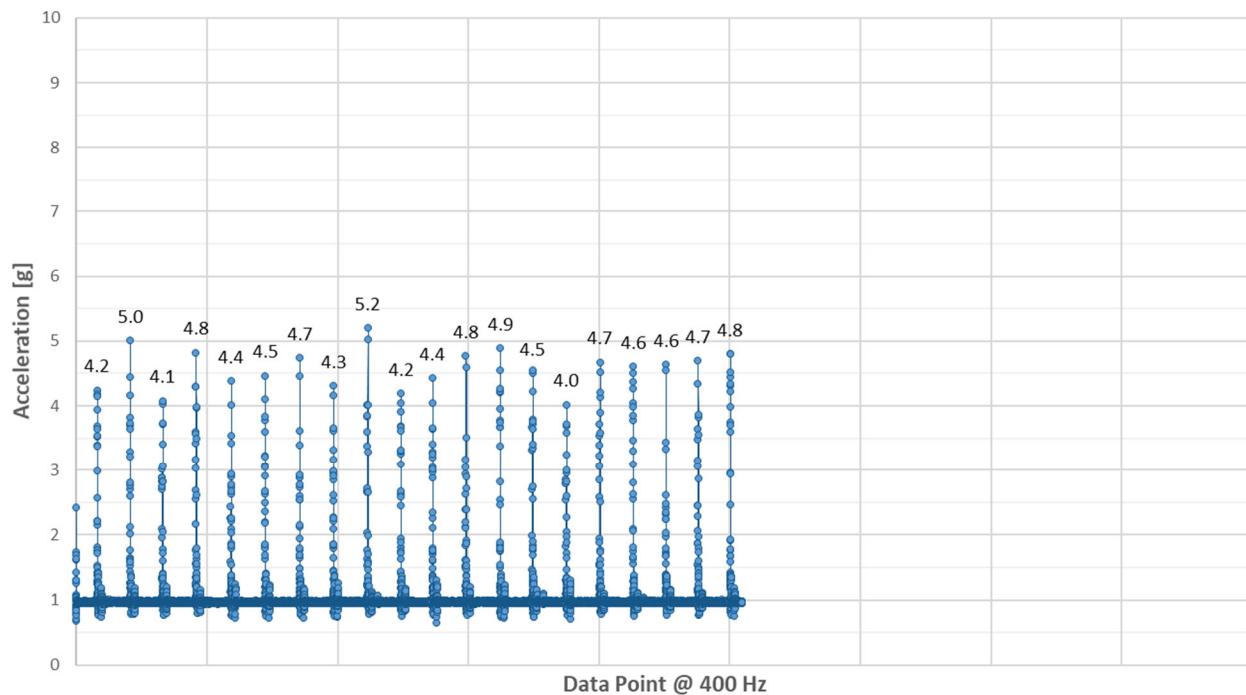
Z Acceleration (Up and Down) - GhostBed Classic



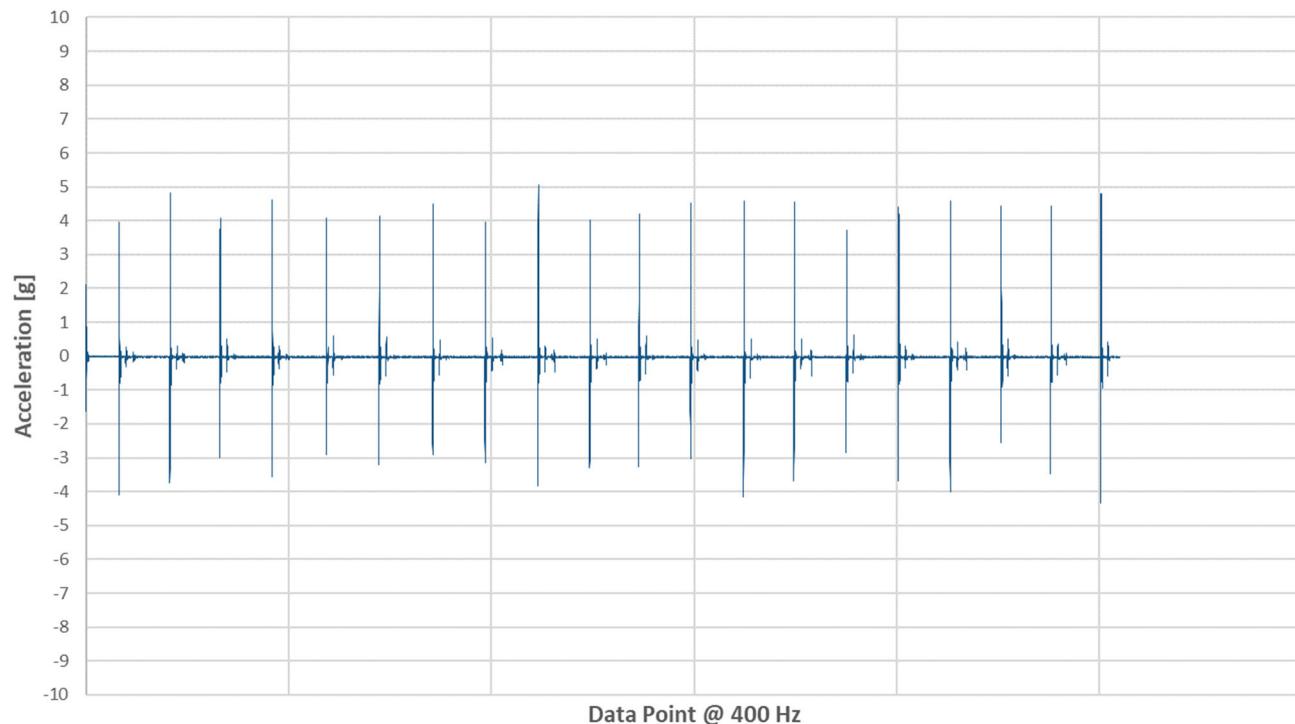


TEST 3 – PUFFY LUX

Vector Magnitude Acceleration - Puffy Lux

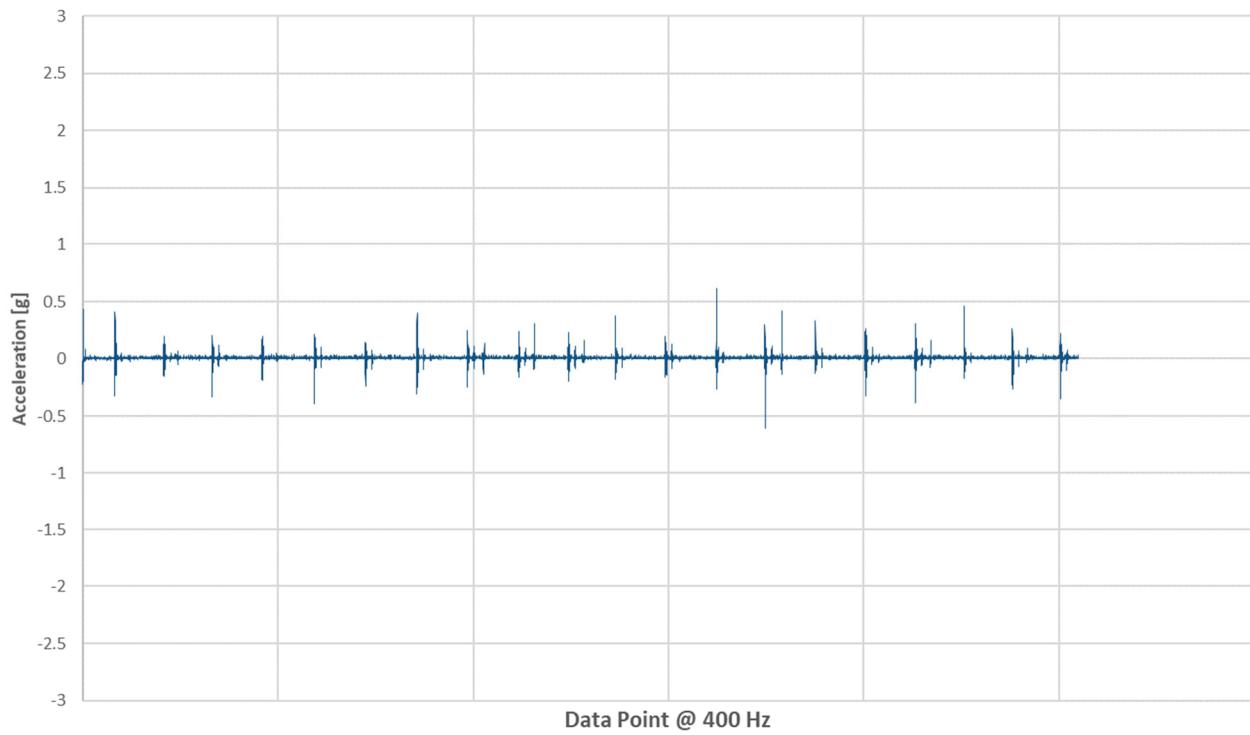


X Acceleration (Side to Side) - Puffy Lux

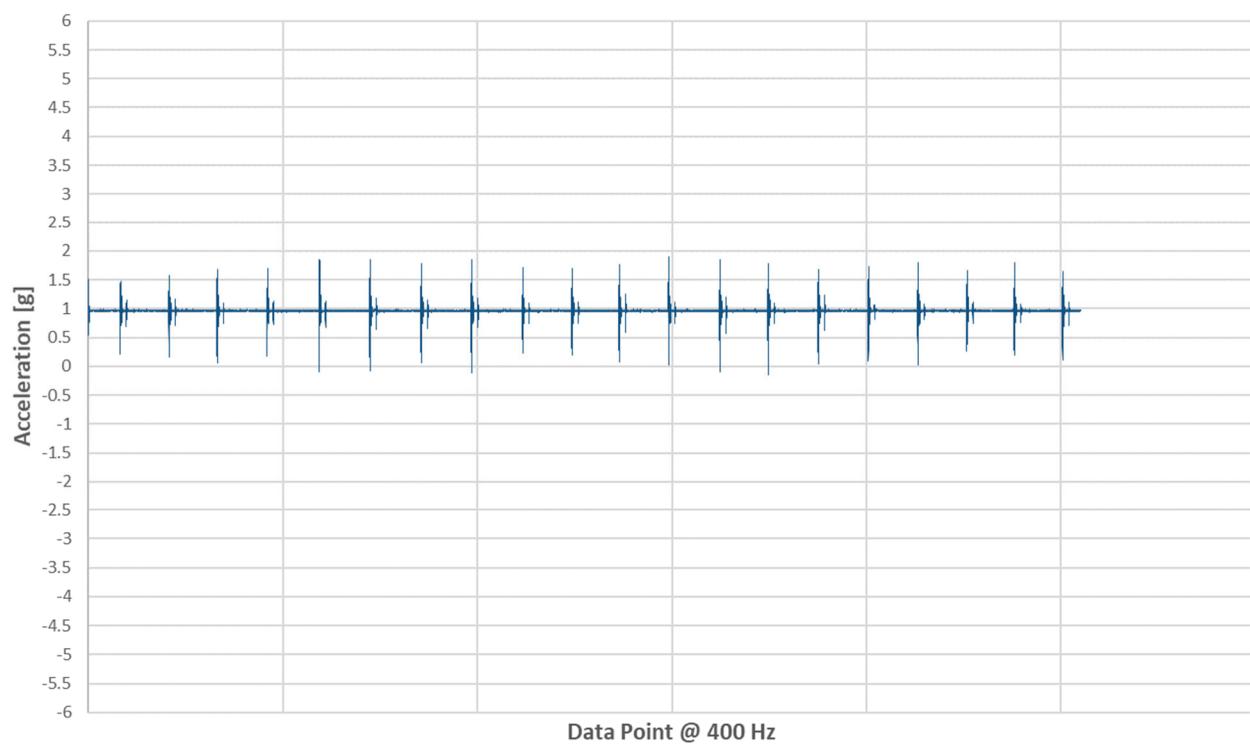




Y Acceleration (Head to Toe) - Puffy Lux



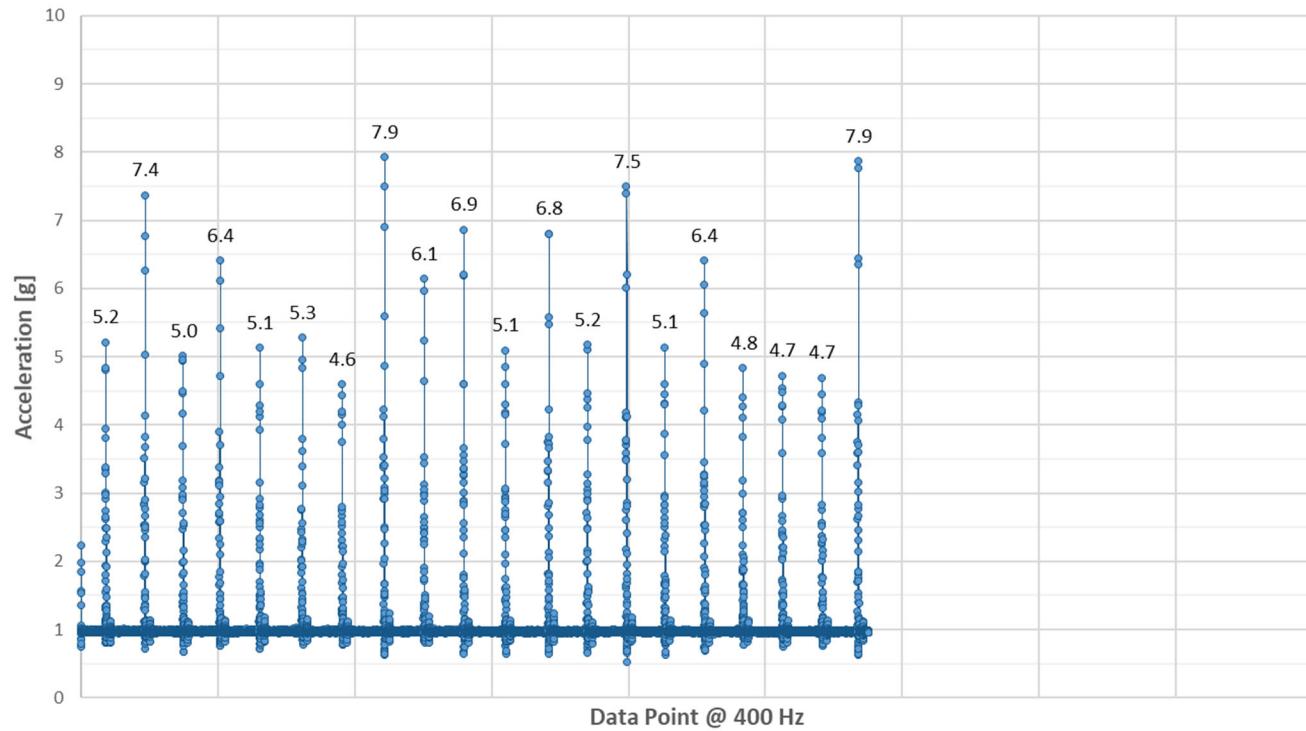
Z Acceleration (Up and Down) - Puffy Lux



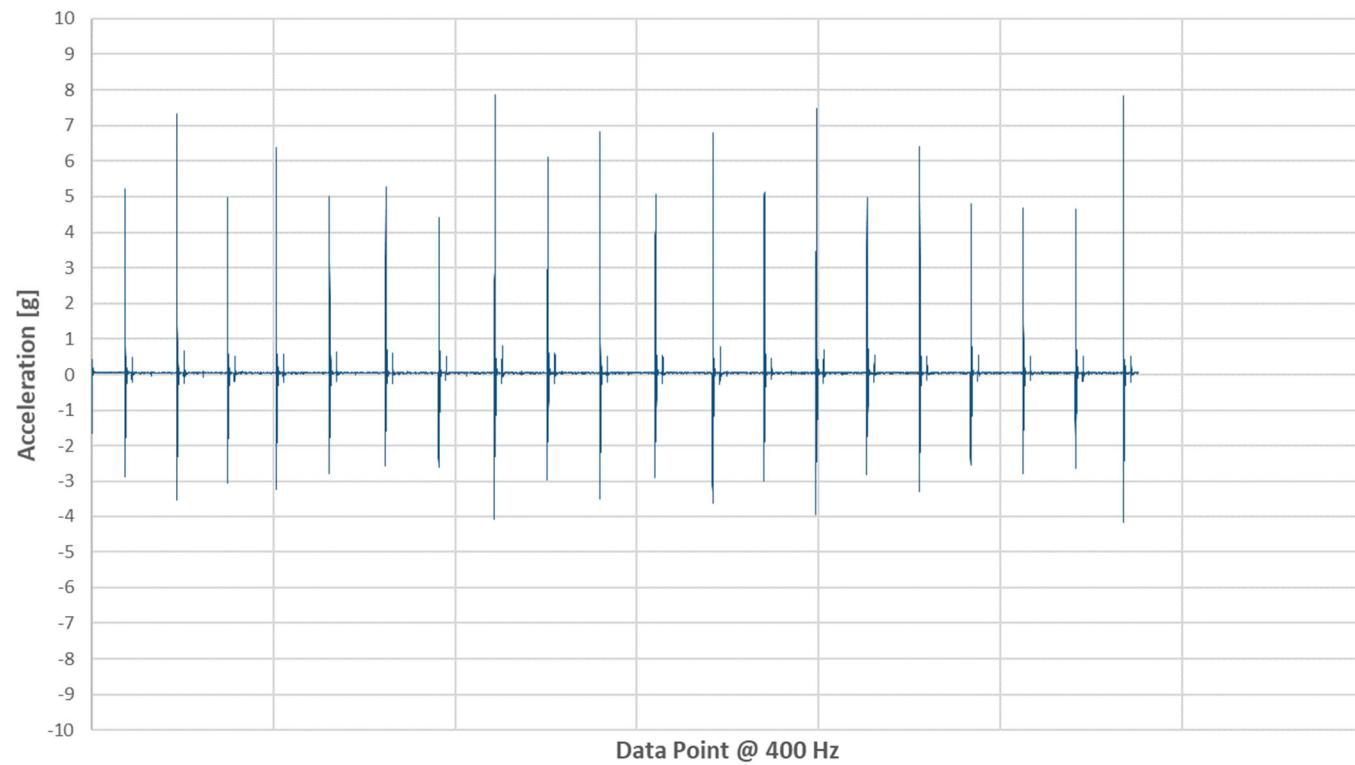


TEST 3 – TUFT & NEEDLE (V2)

Vector Magnitude Acceleration - Tuft & Needle (V2)

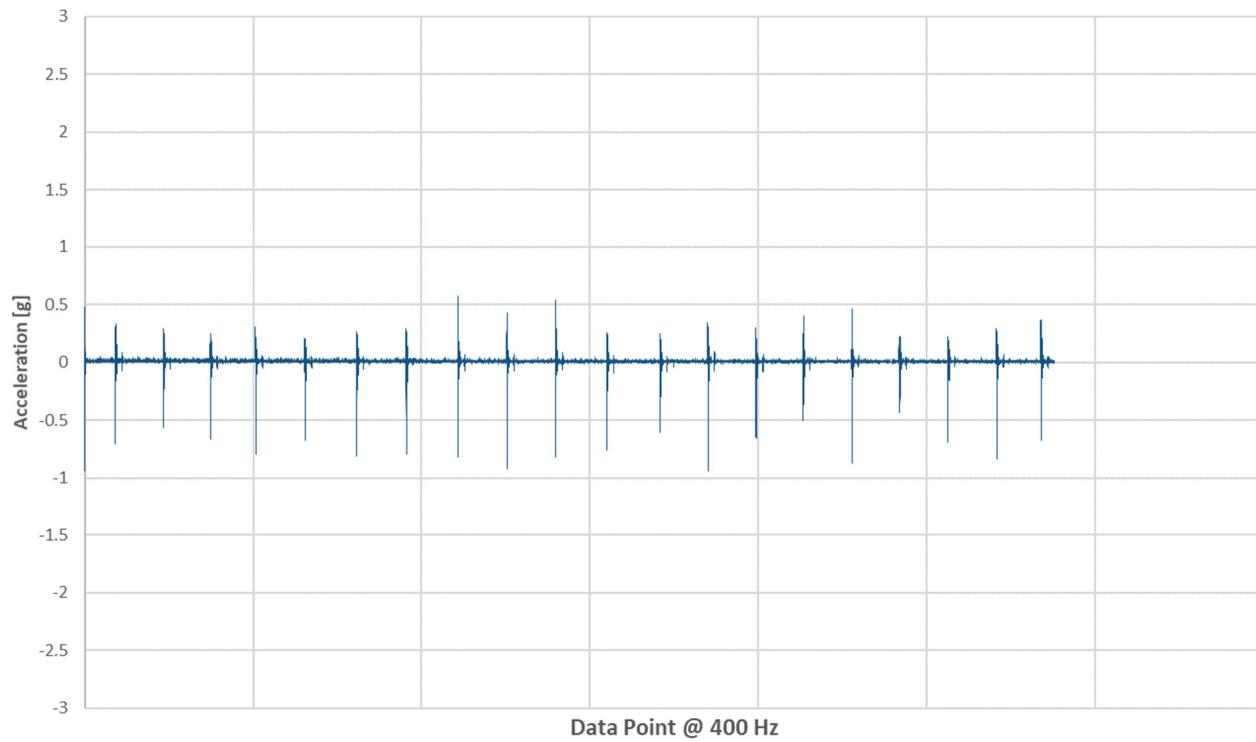


X Acceleration (Side to Side) - Tuft & Needle (V2)

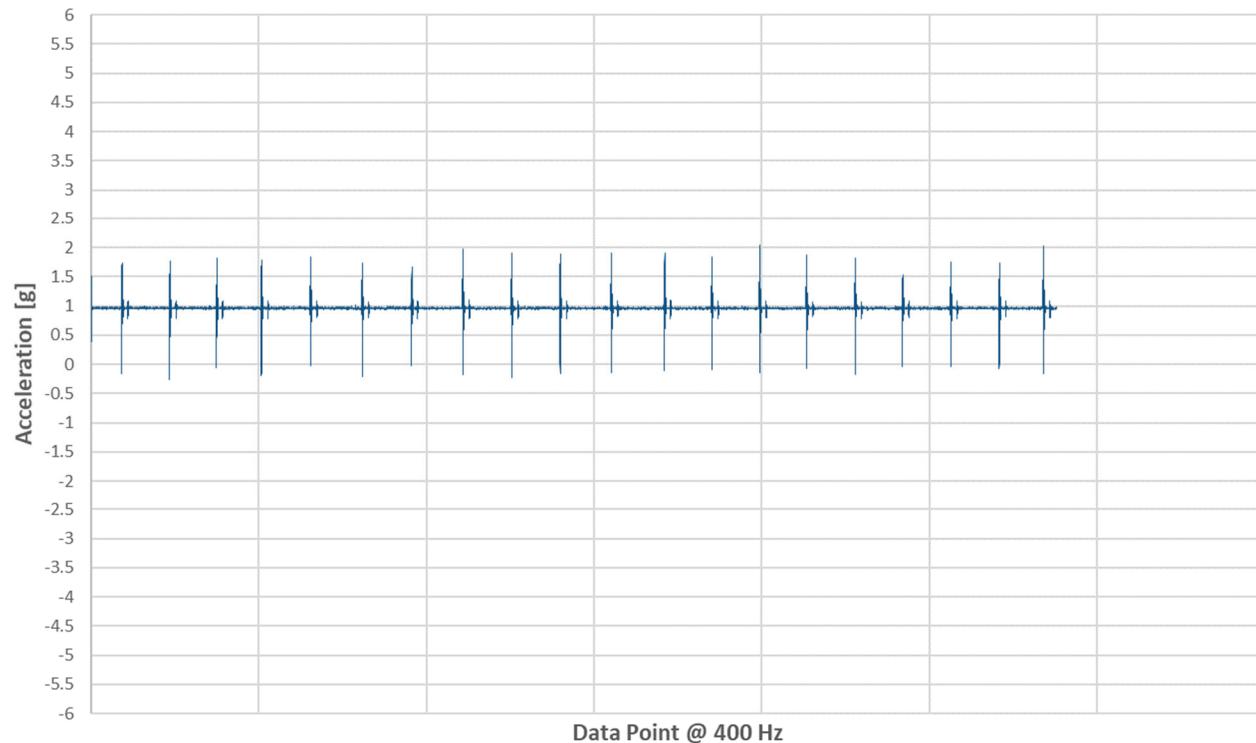




Y Acceleration (Head to Toe) - Tuft & Needle (V2)



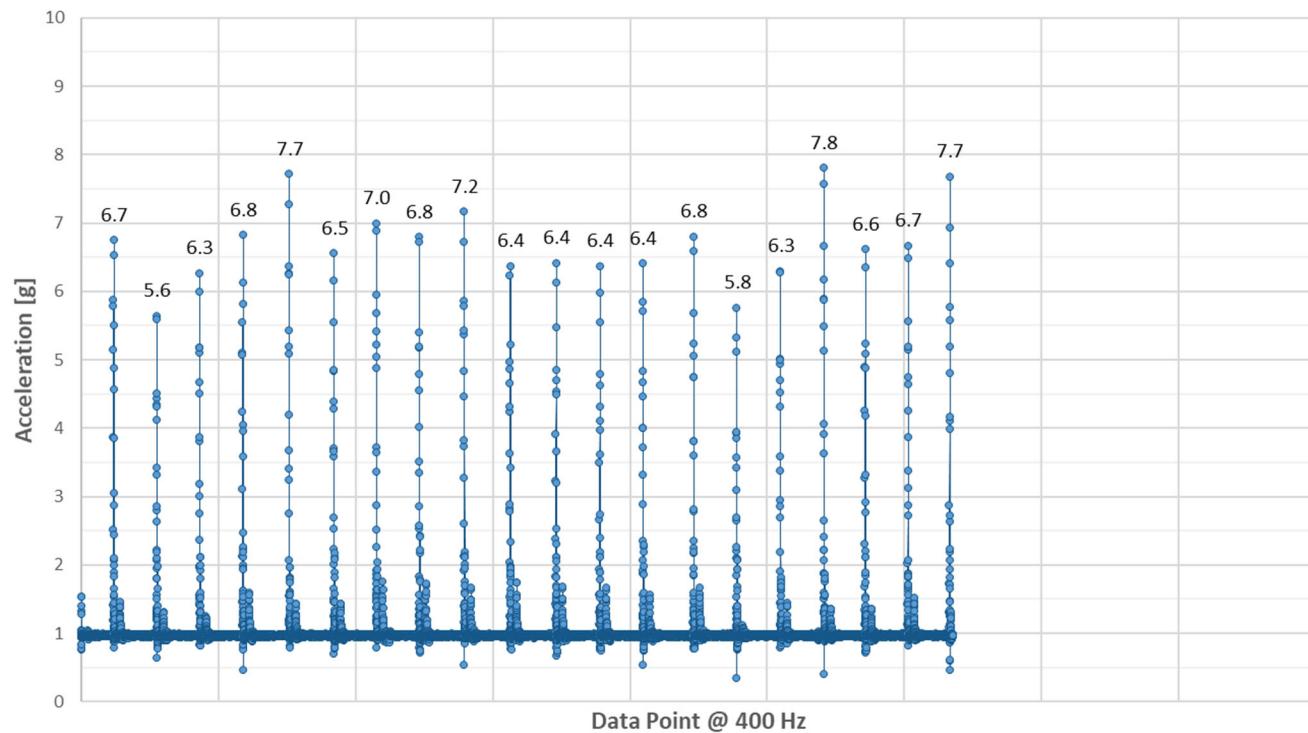
Z Acceleration (Up and Down) - Tuft & Needle (V2)



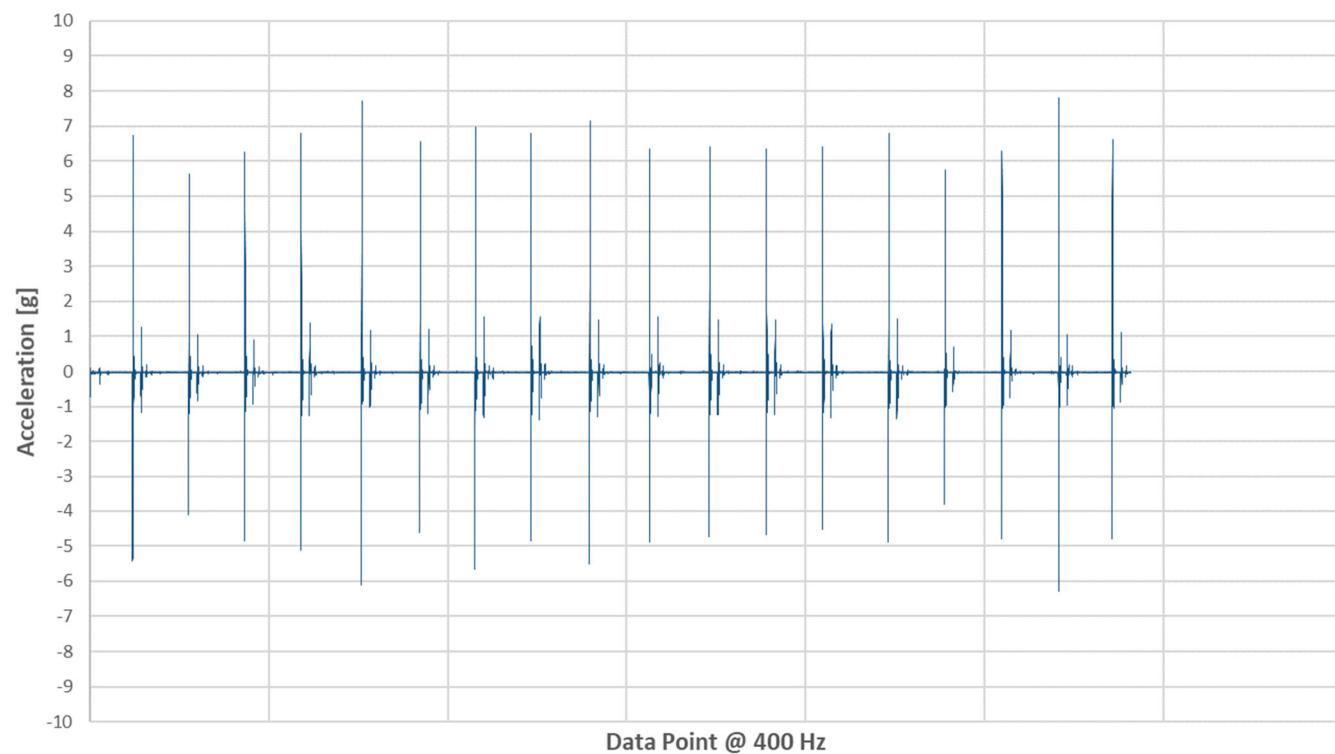


TEST 3 – SEALY COCOON

Vector Magnitude Acceleration - Sealy Cocoon

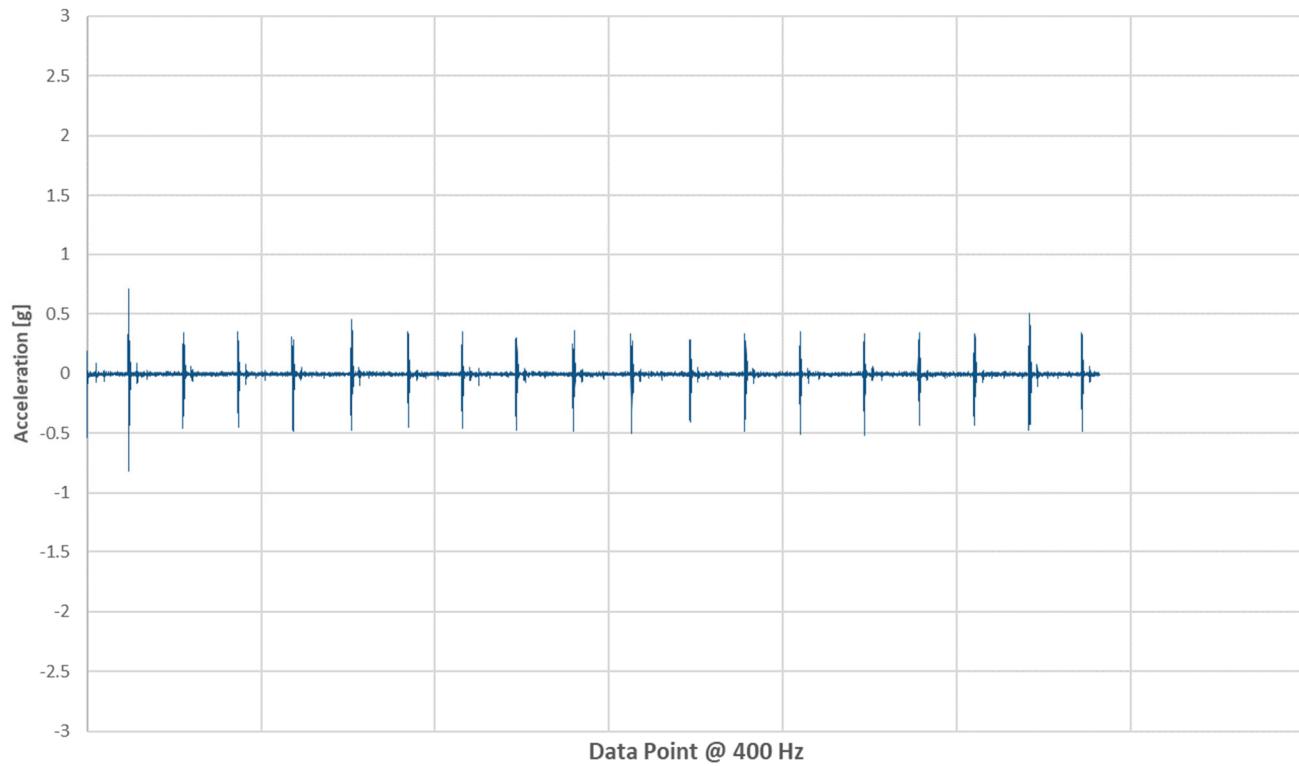


X Acceleration (Side to Side) - Sealy Cocoon

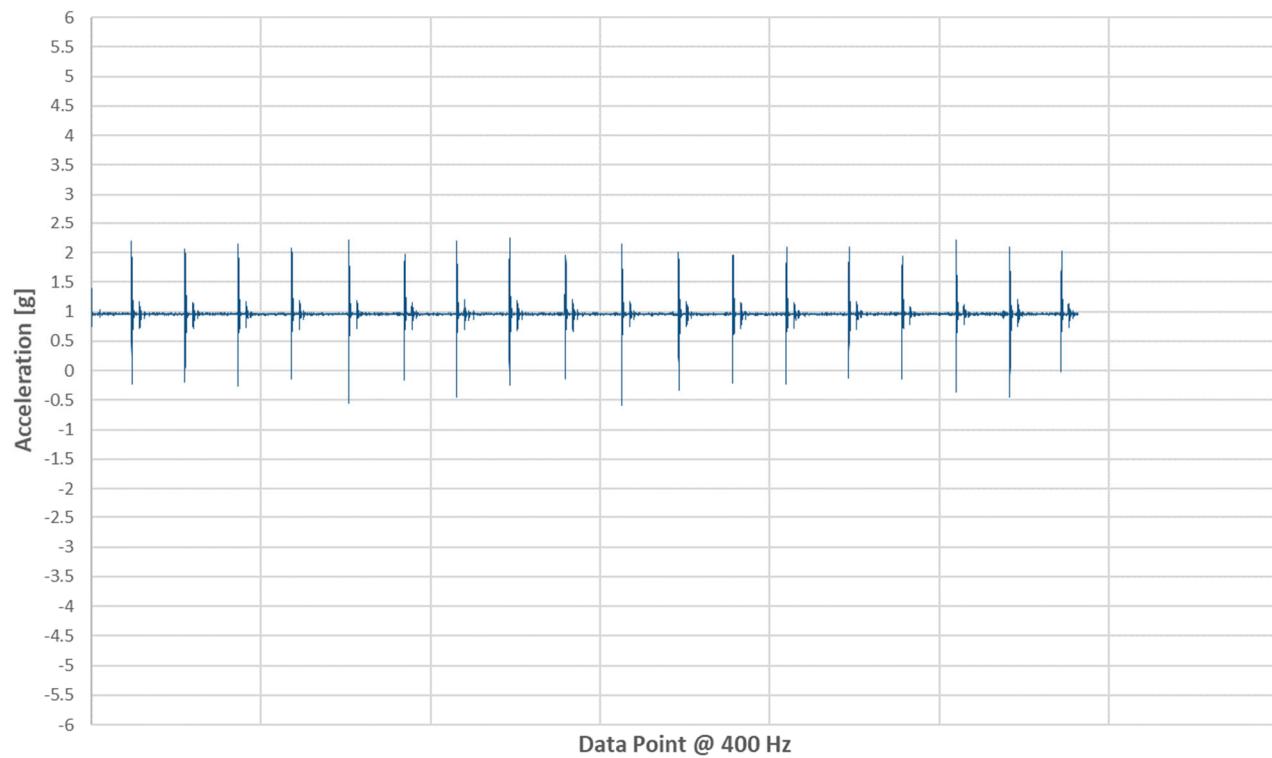




Y Acceleration (Head to Toe) - Sealy Cocoon



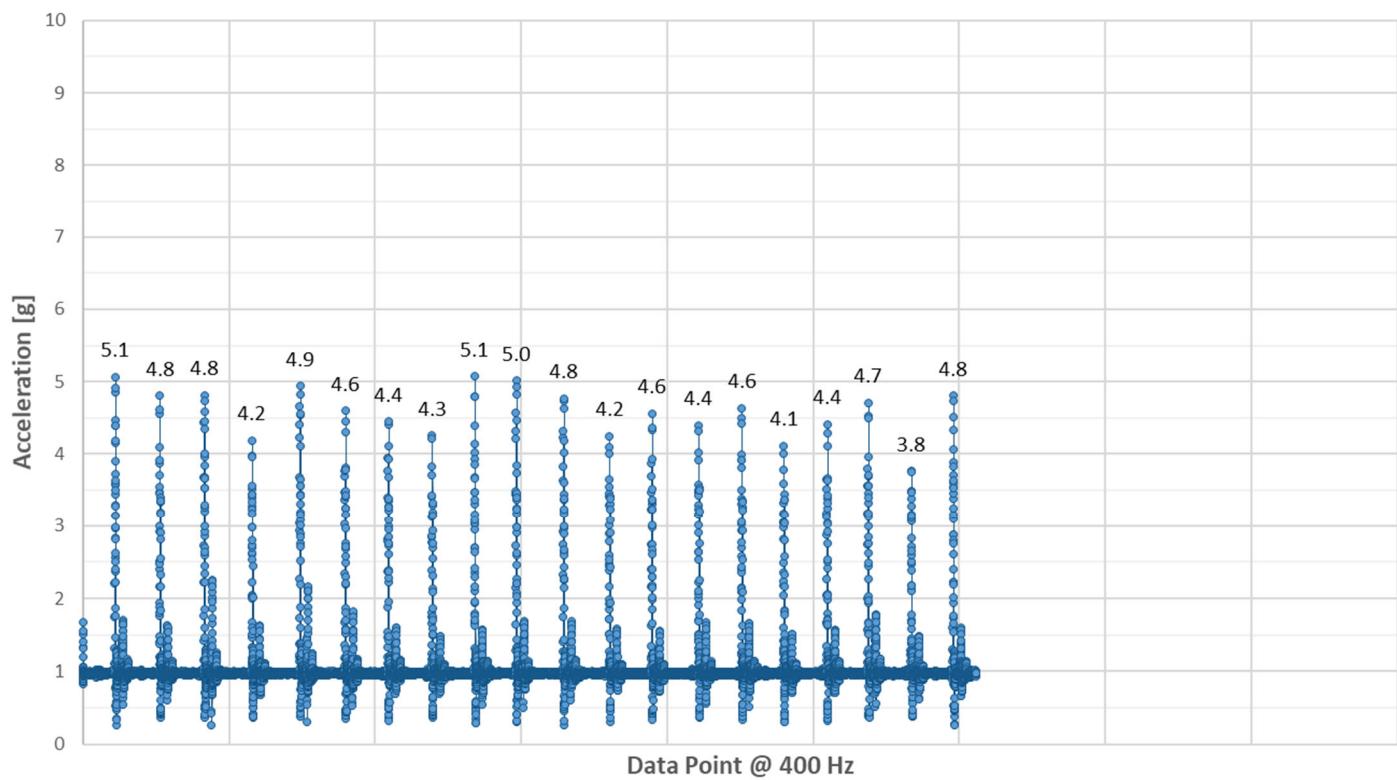
Z Acceleration (Up and Down) - Sealy Cocoon



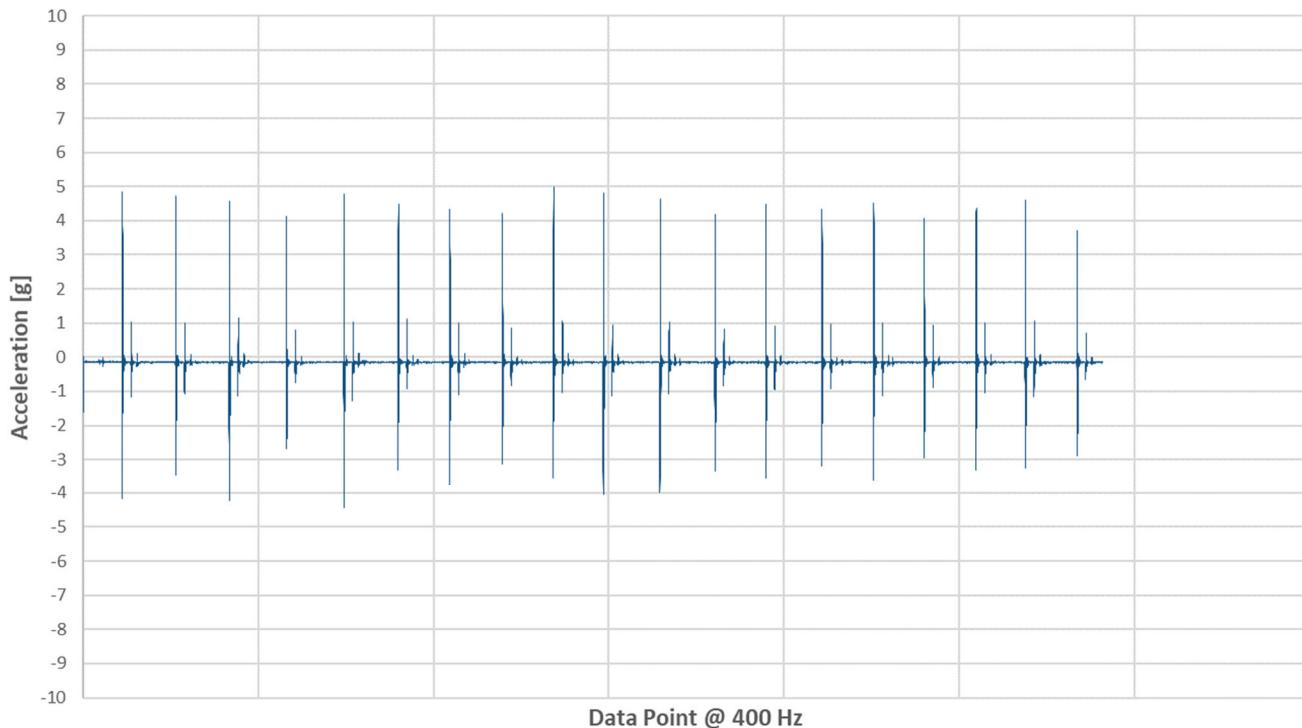


TEST 3 – HAVEN LUX HYBRID

Vector Magnitude Acceleration - Haven Lux Hybrid

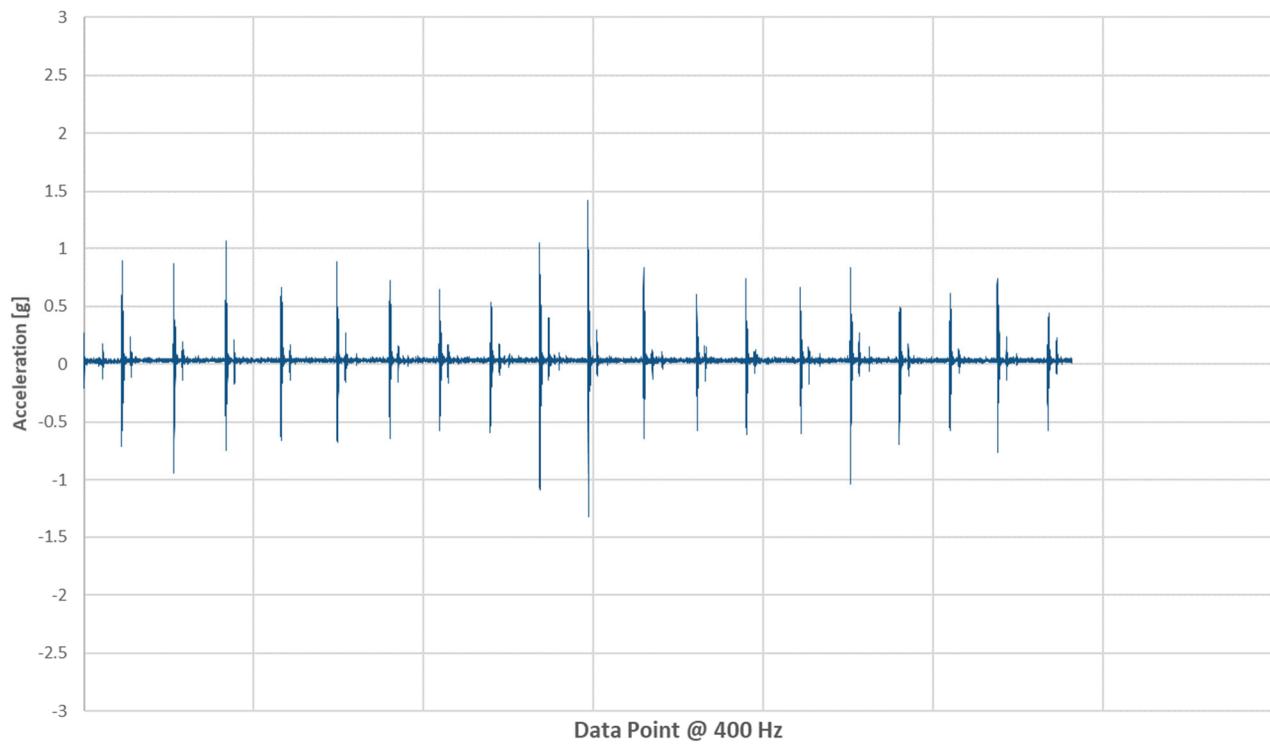


X Acceleration (Side to Side) - Haven Lux Hybrid

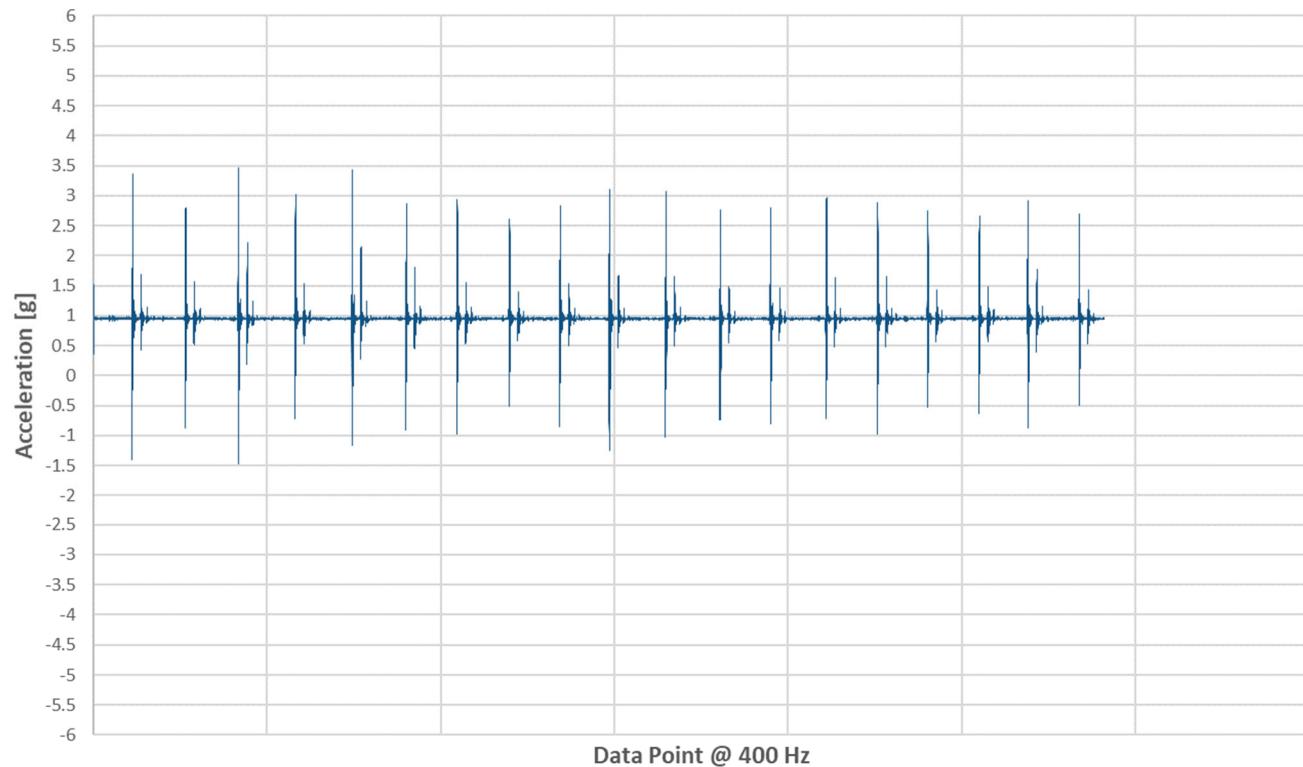




Y Acceleration (Head to Toe) - Haven Lux Hybrid

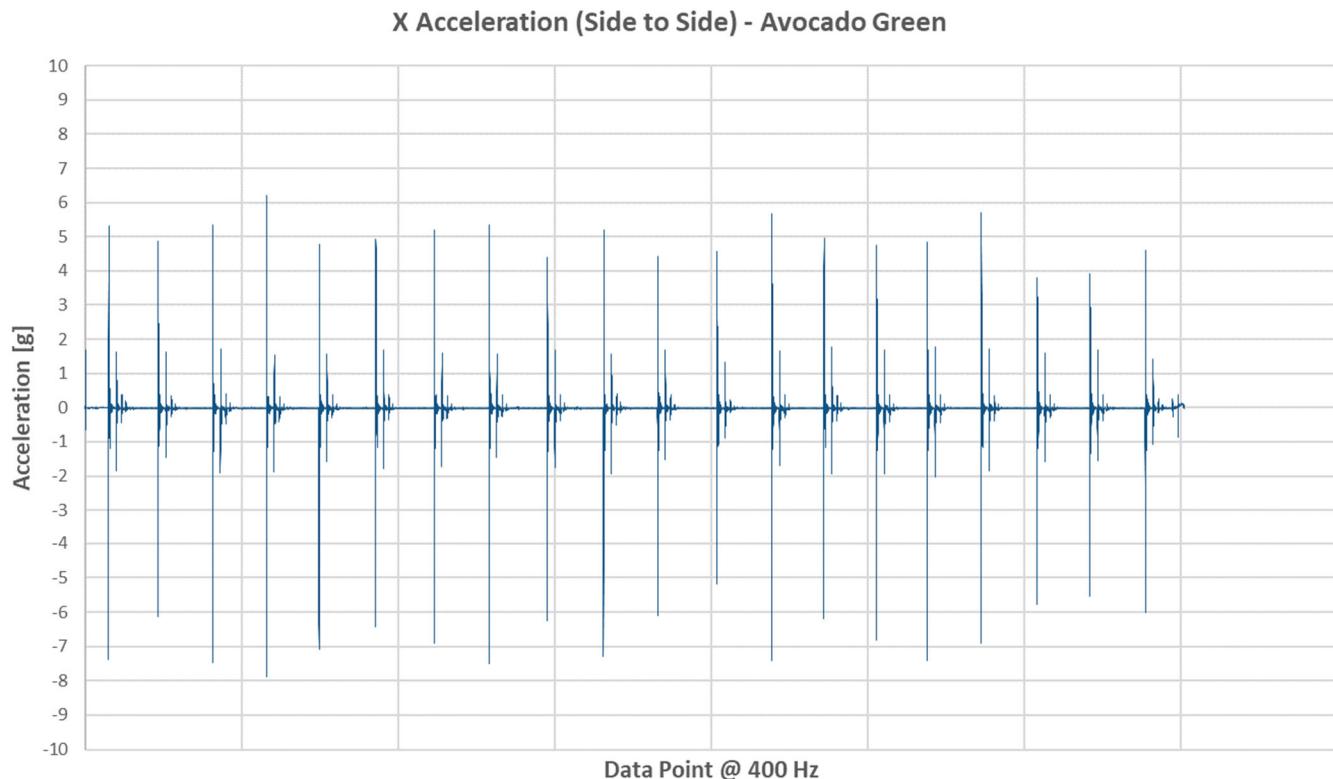
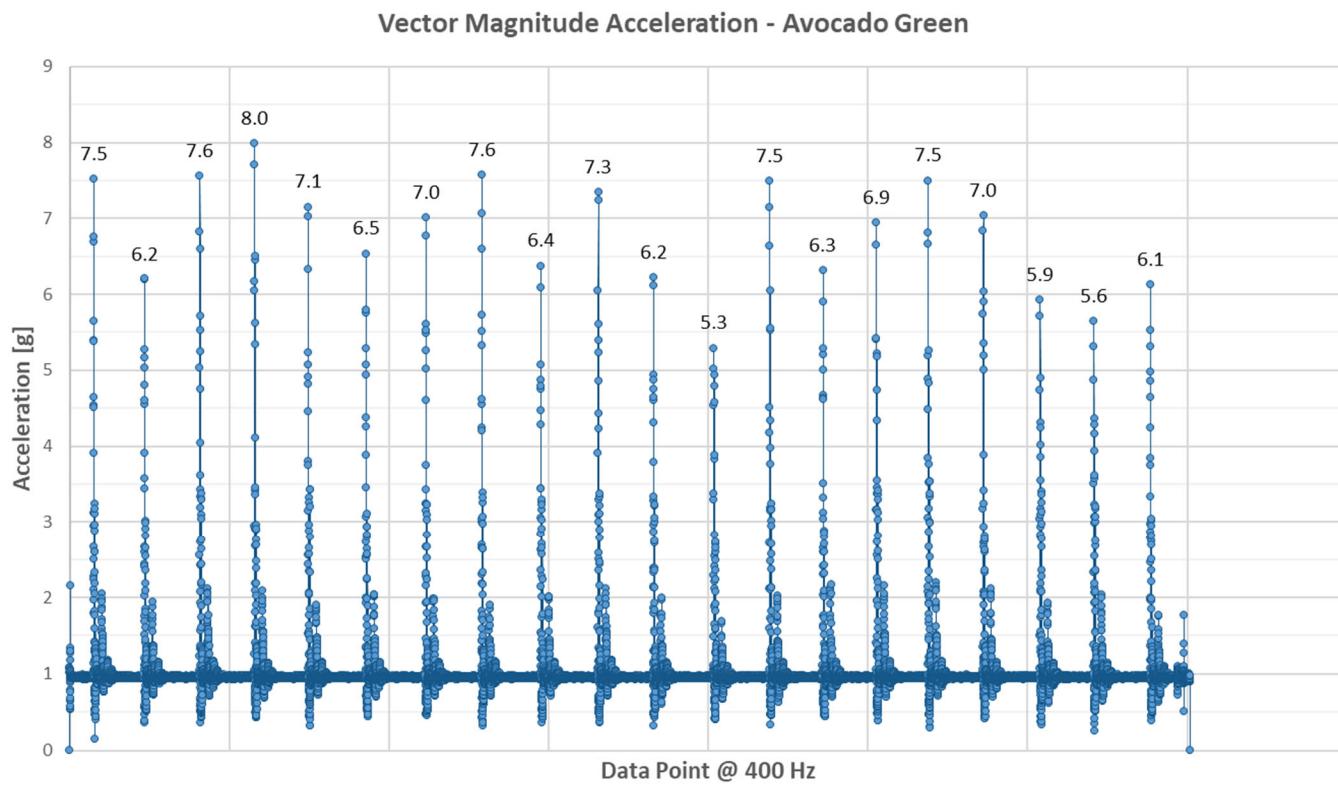


Z Acceleration (Up and Down) - Haven Lux Hybrid



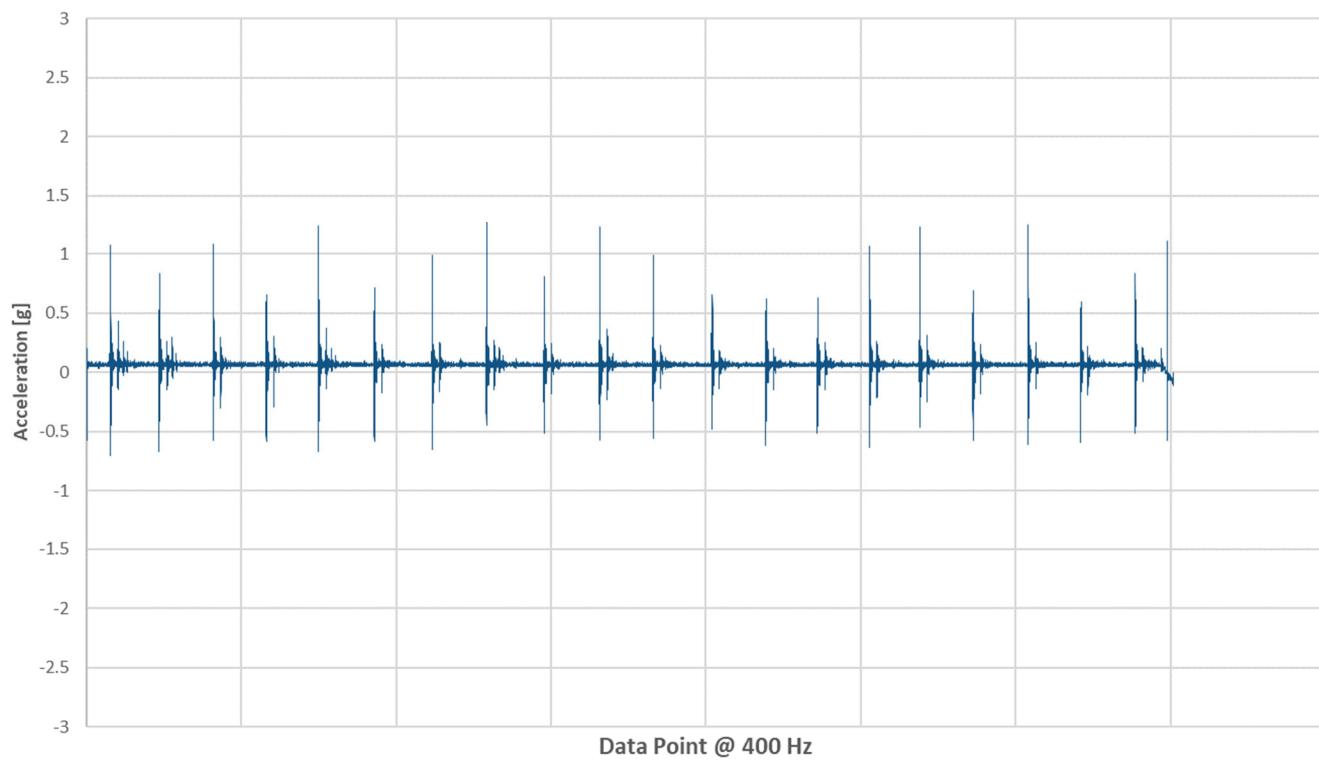


TEST 3 – AVACADO GREEN

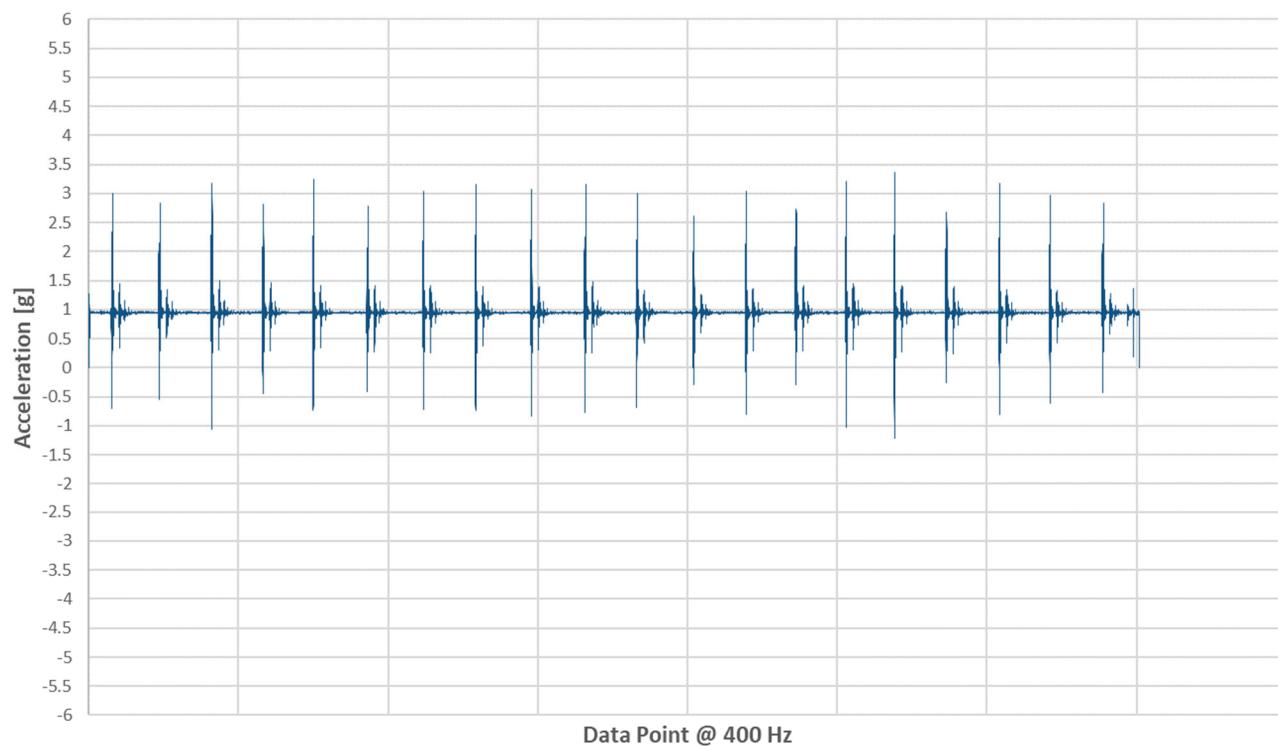




Y Acceleration (Head to Toe) - Avocado Green



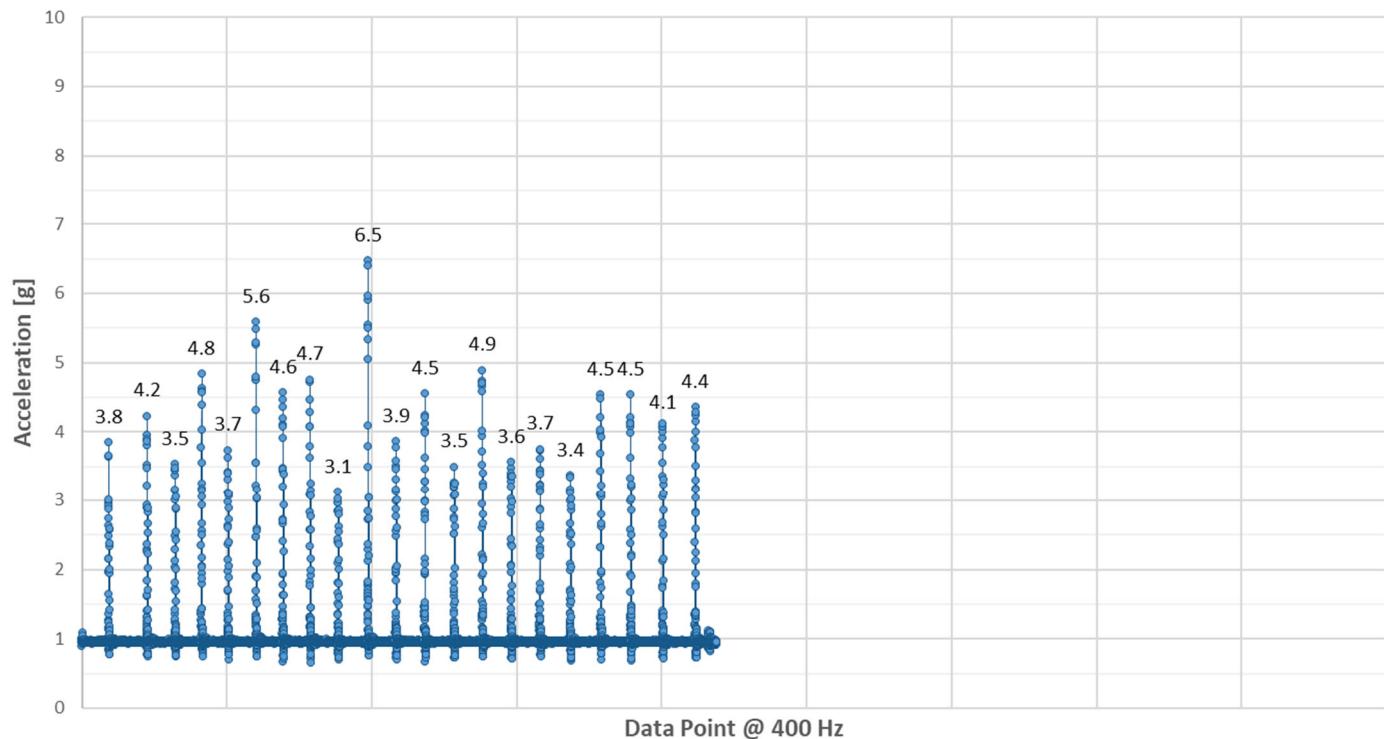
Z Acceleration (Up and Down) - Avocado Green



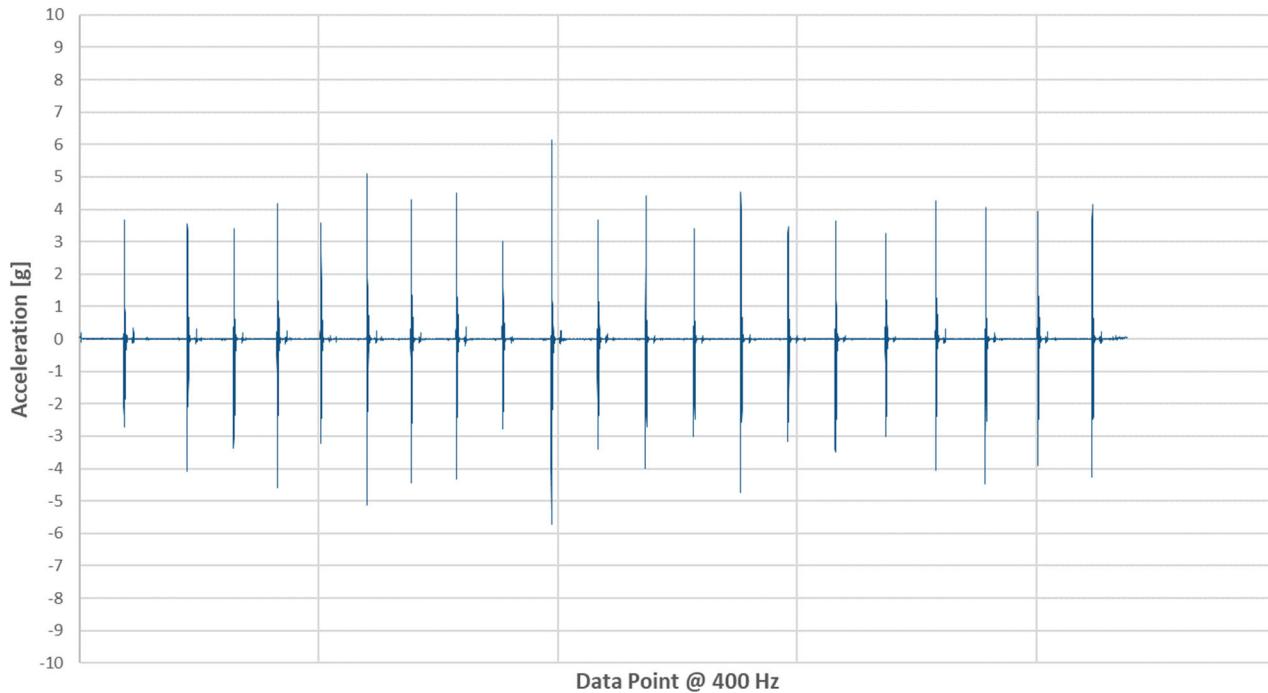


TEST 3 – FULL MOON

Vector Magnitude Acceleration - Full Moon

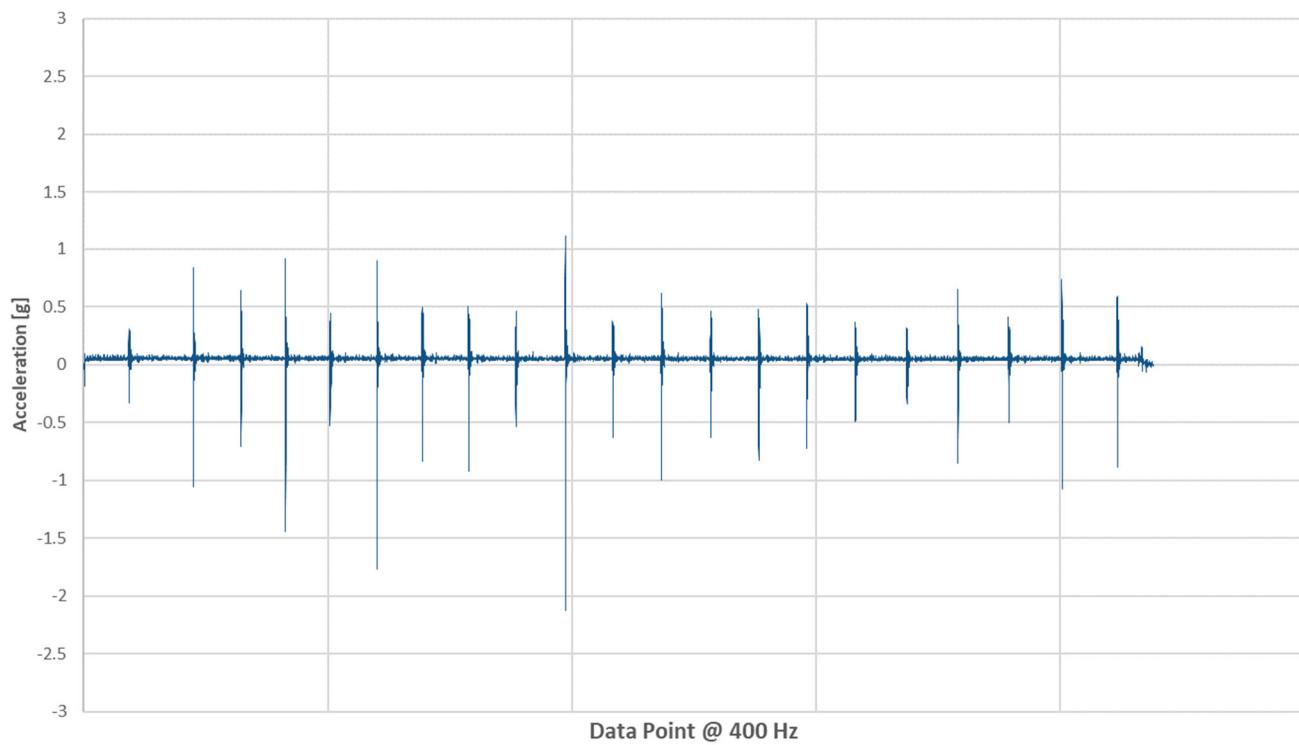


X Acceleration (Side to Side) - Full Moon

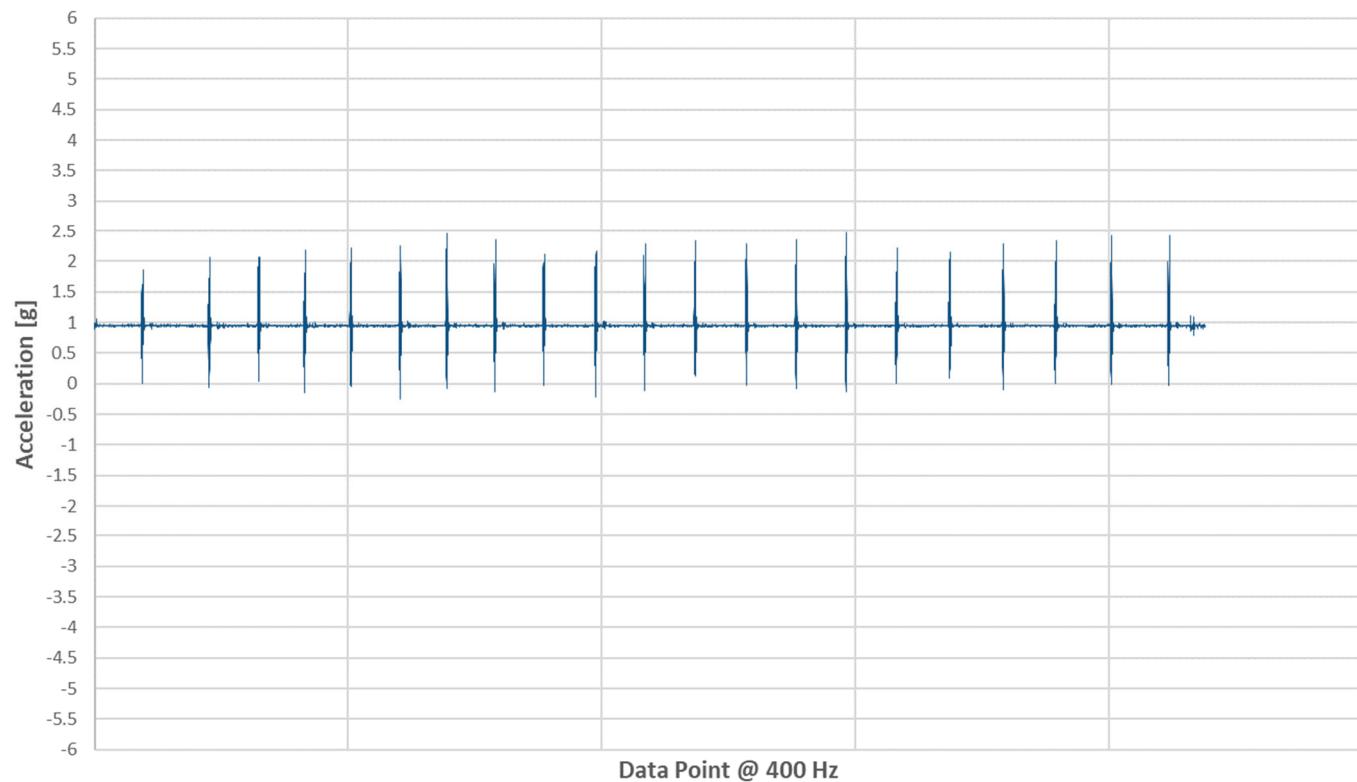




Y Acceleration (Head to Toe) - Full Moon



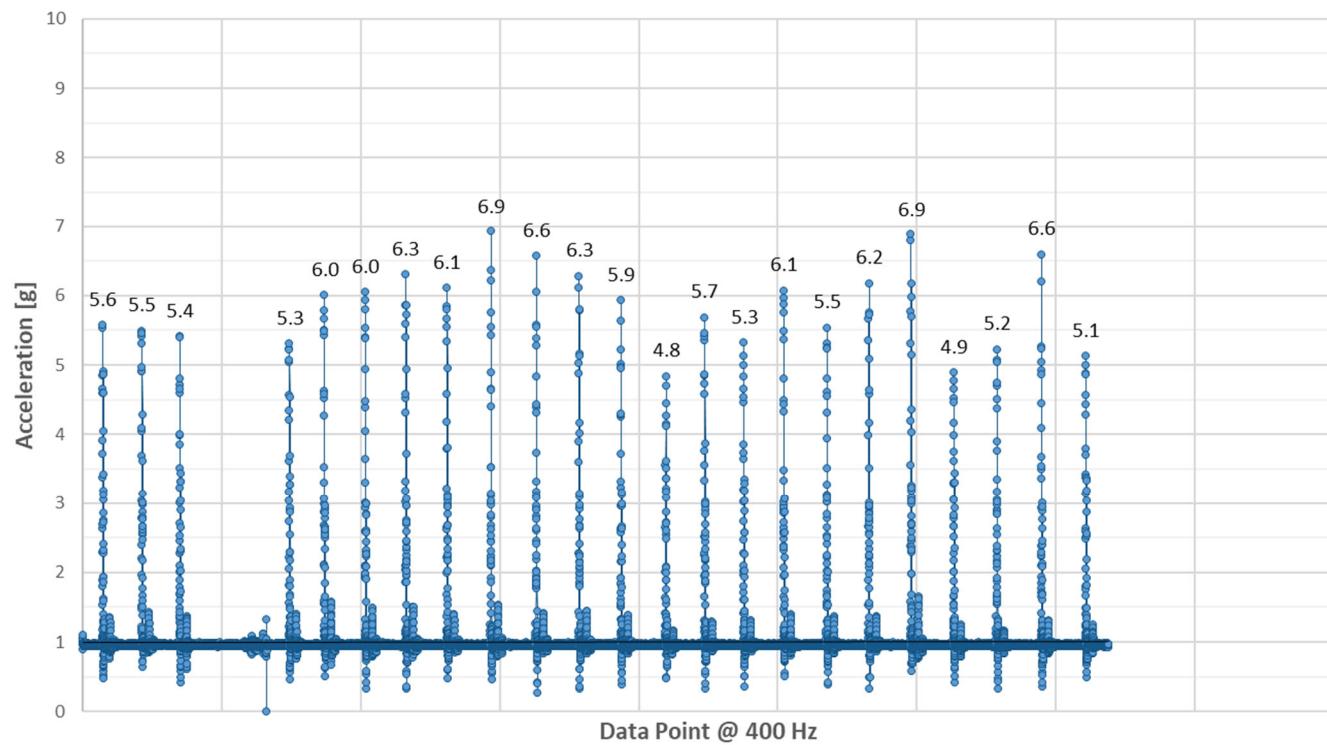
Z Acceleration (Up and Down) - Full Moon



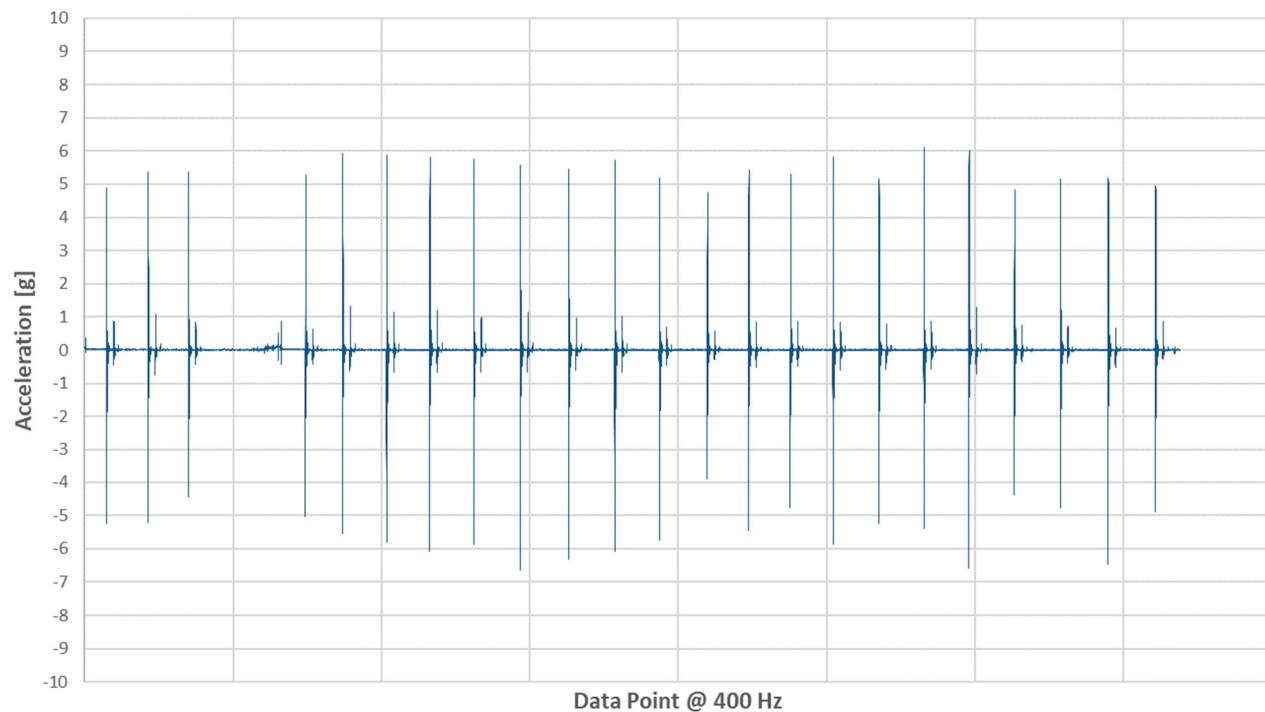


TEST 3 – HELIX MIDNIGHT

Vector Magnitude Acceleration - Helix Midnight

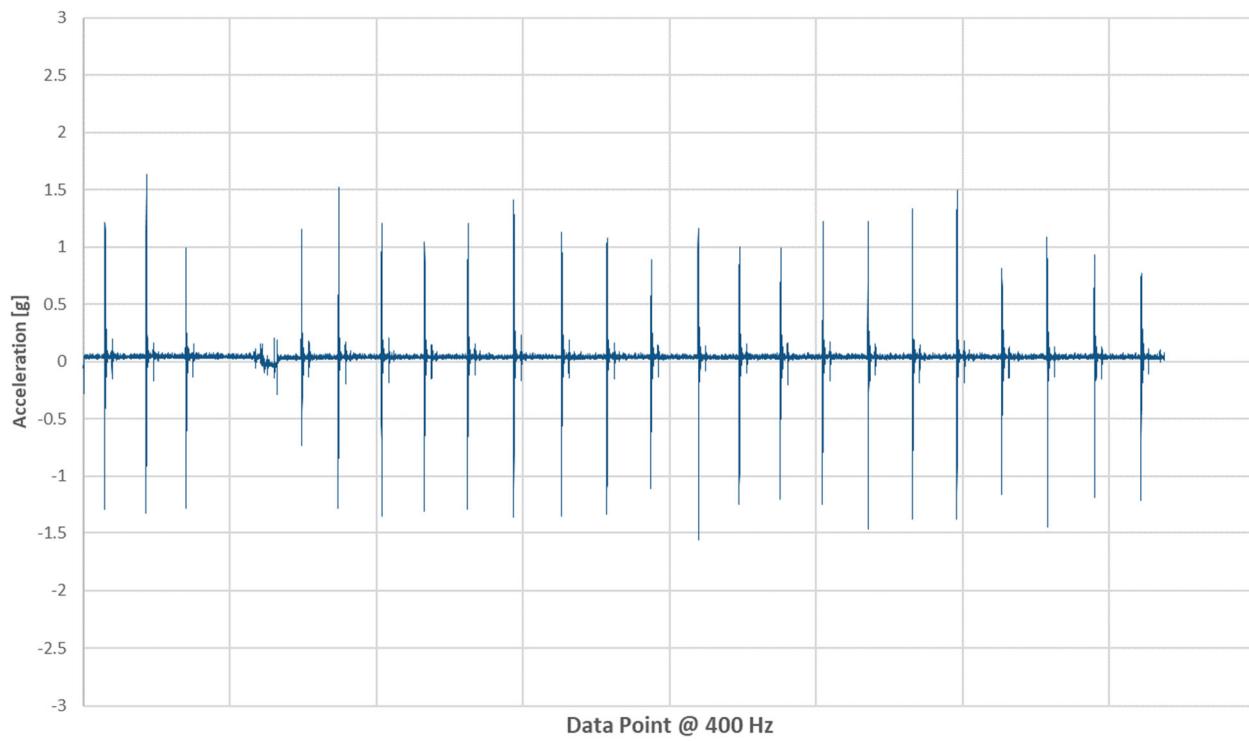


X Acceleration (Side to Side) - Helix Midnight

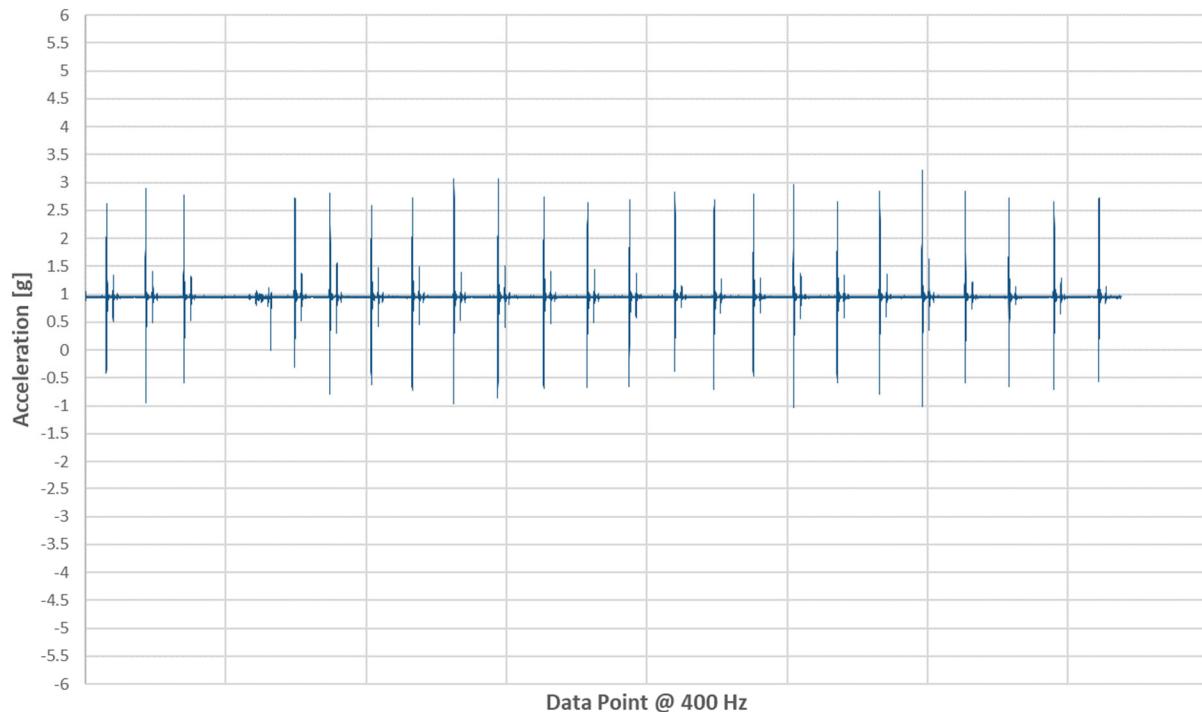




Y Acceleration (Head to Toe) - Helix Midnight



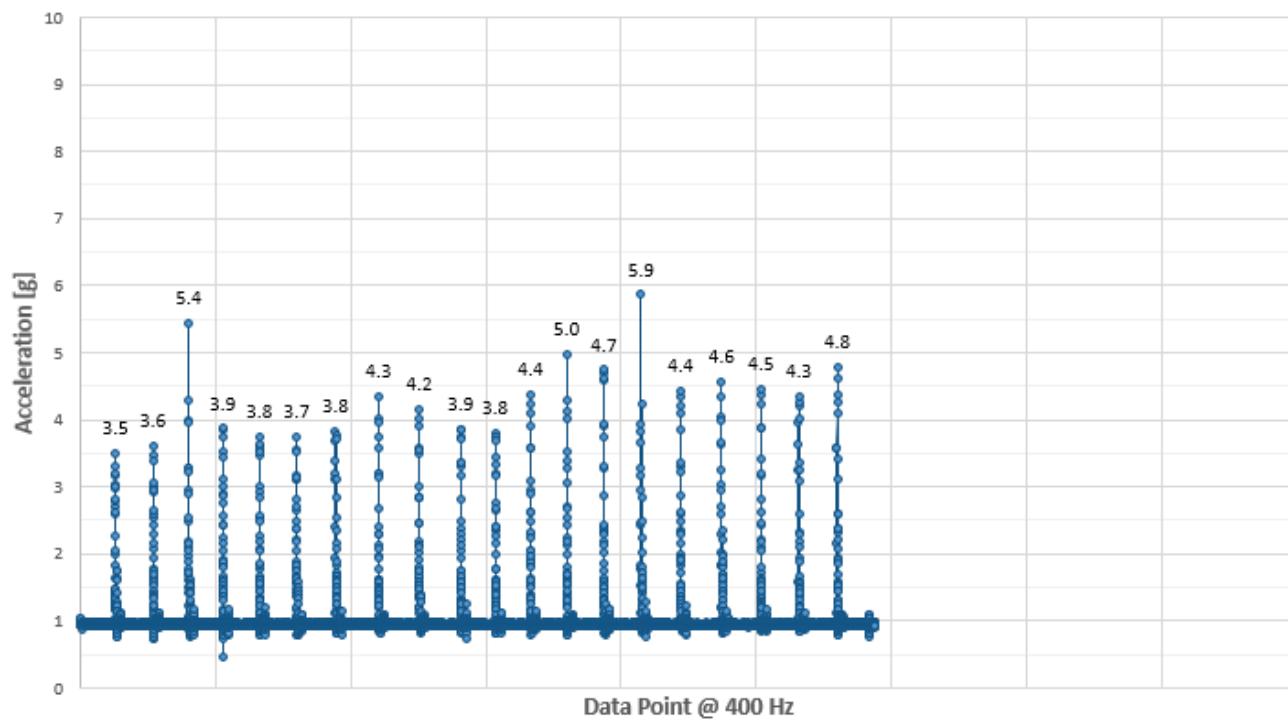
Z Acceleration (Up and Down) - Helix Midnight



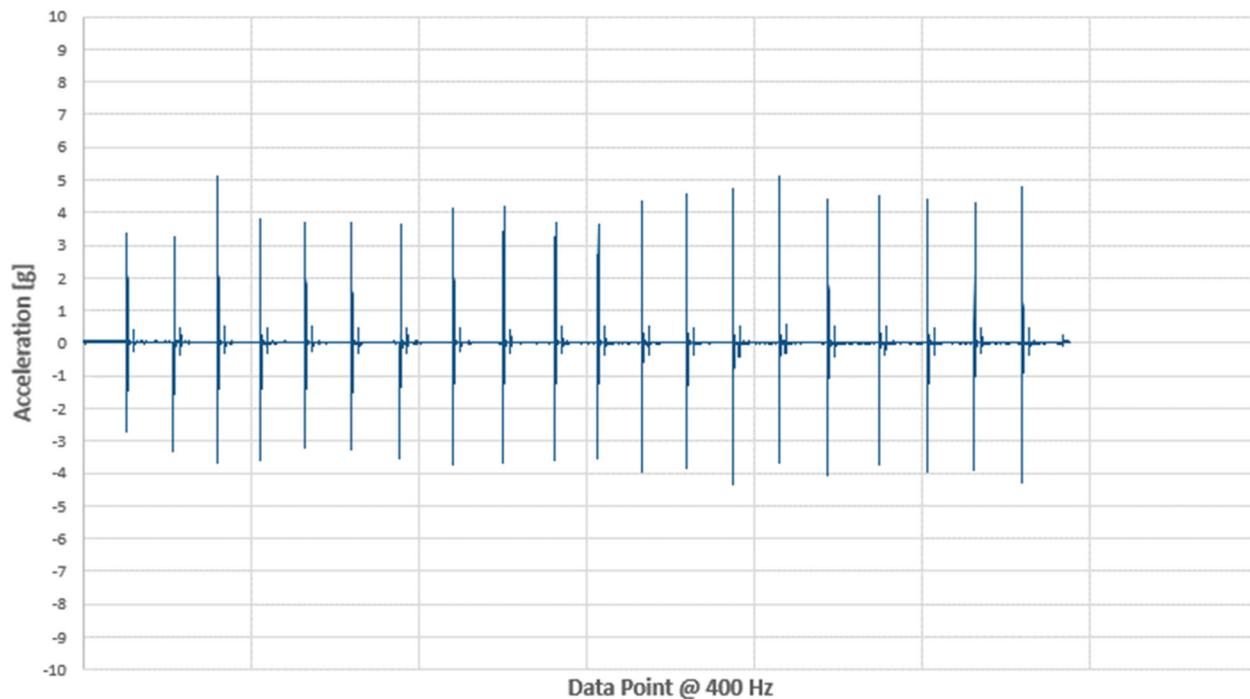


TEST 3 – LULL

Vector Magnitude Acceleration - Lull

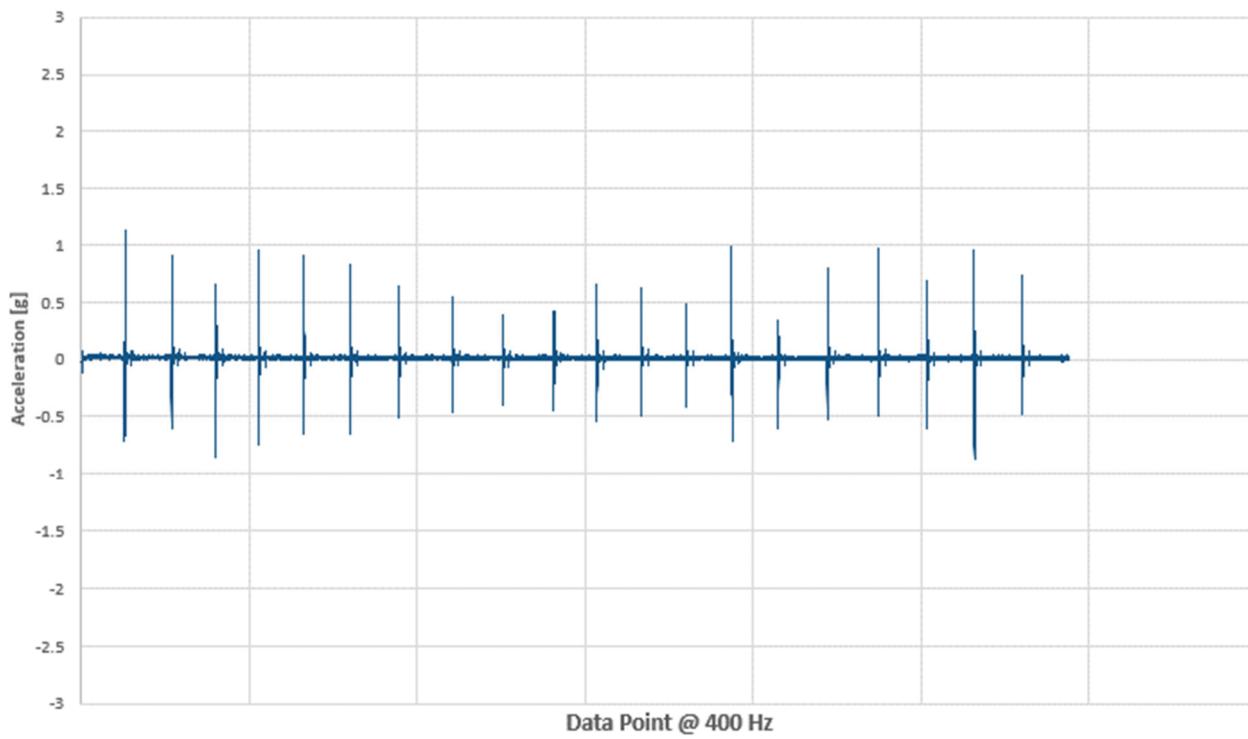


X Acceleration (Side to Side) - Lull

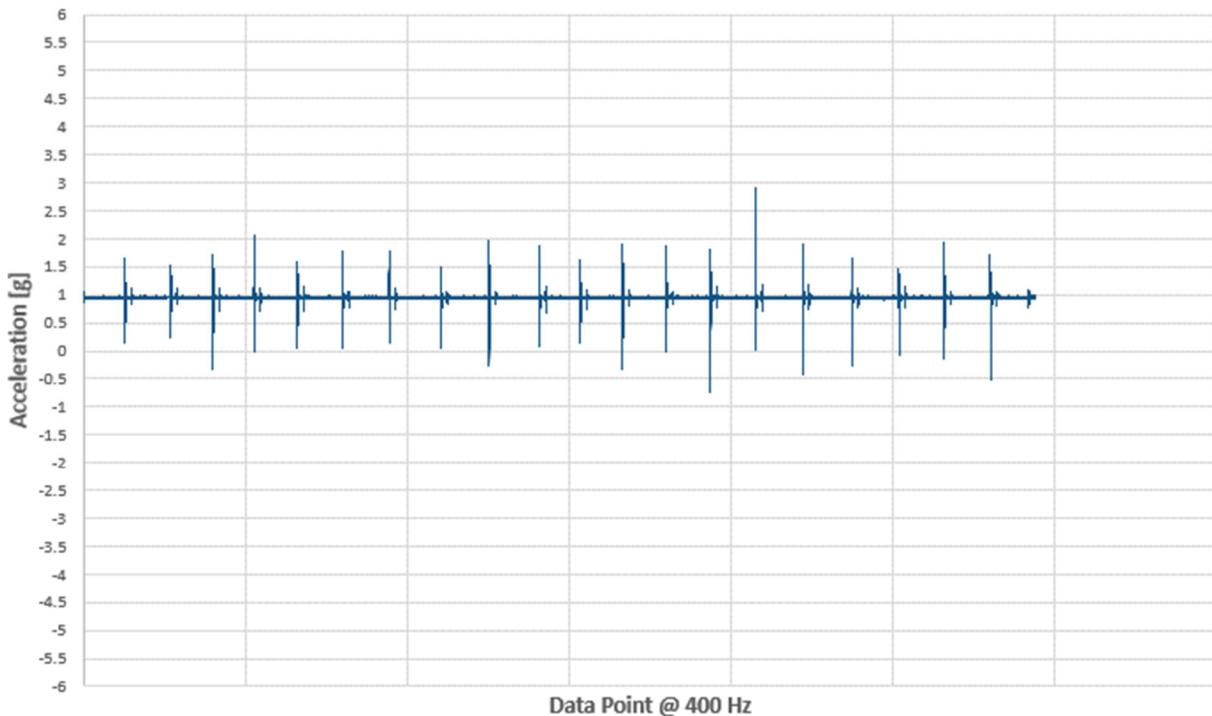




Y Acceleration (Head to Toe) - Lull



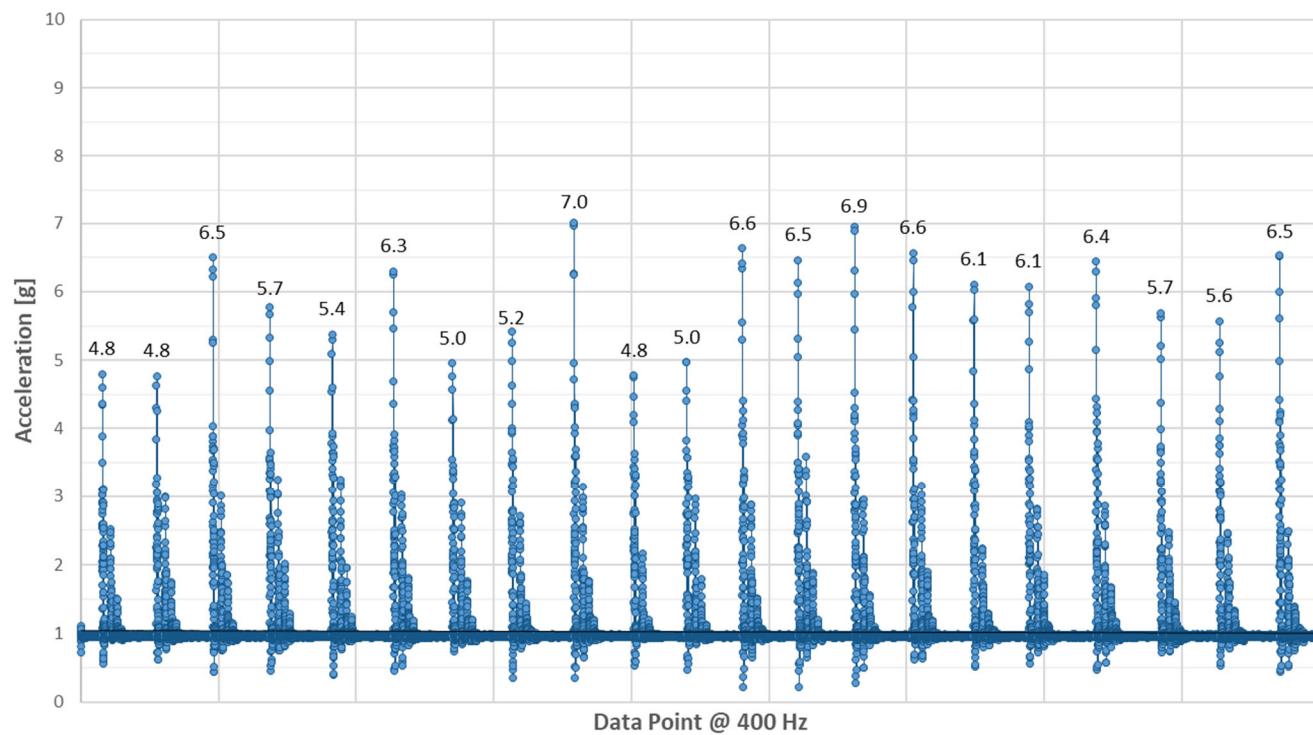
Z Acceleration (Up and Down) - Lull



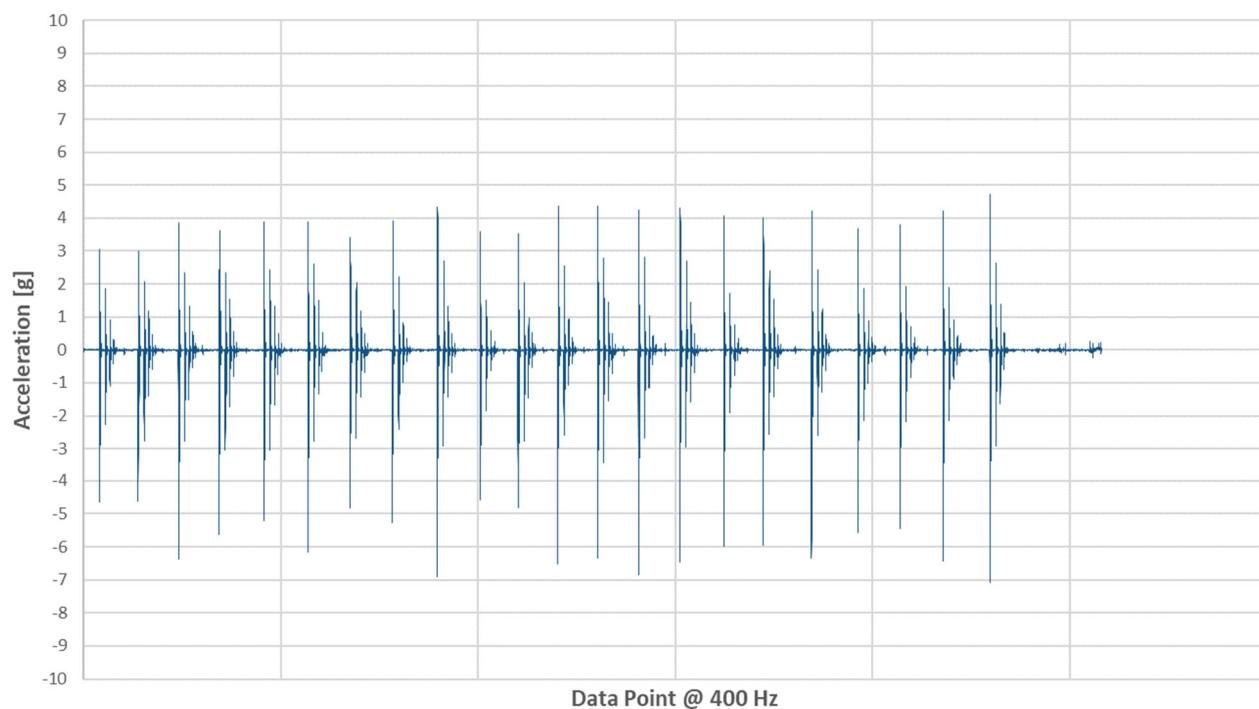


TEST 3 – PURPLE HYBRID

Vector Magnitude Acceleration - Purple Hybrid

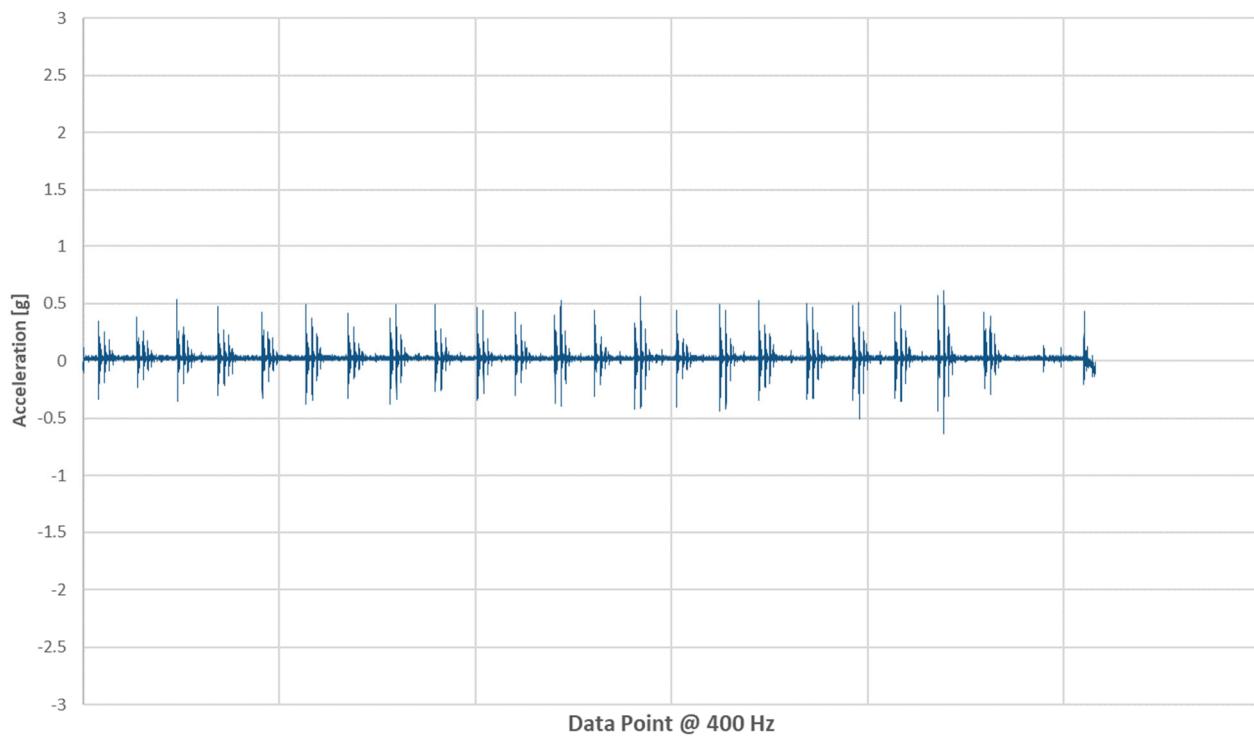


X Acceleration (Side to Side) - Purple Hybrid

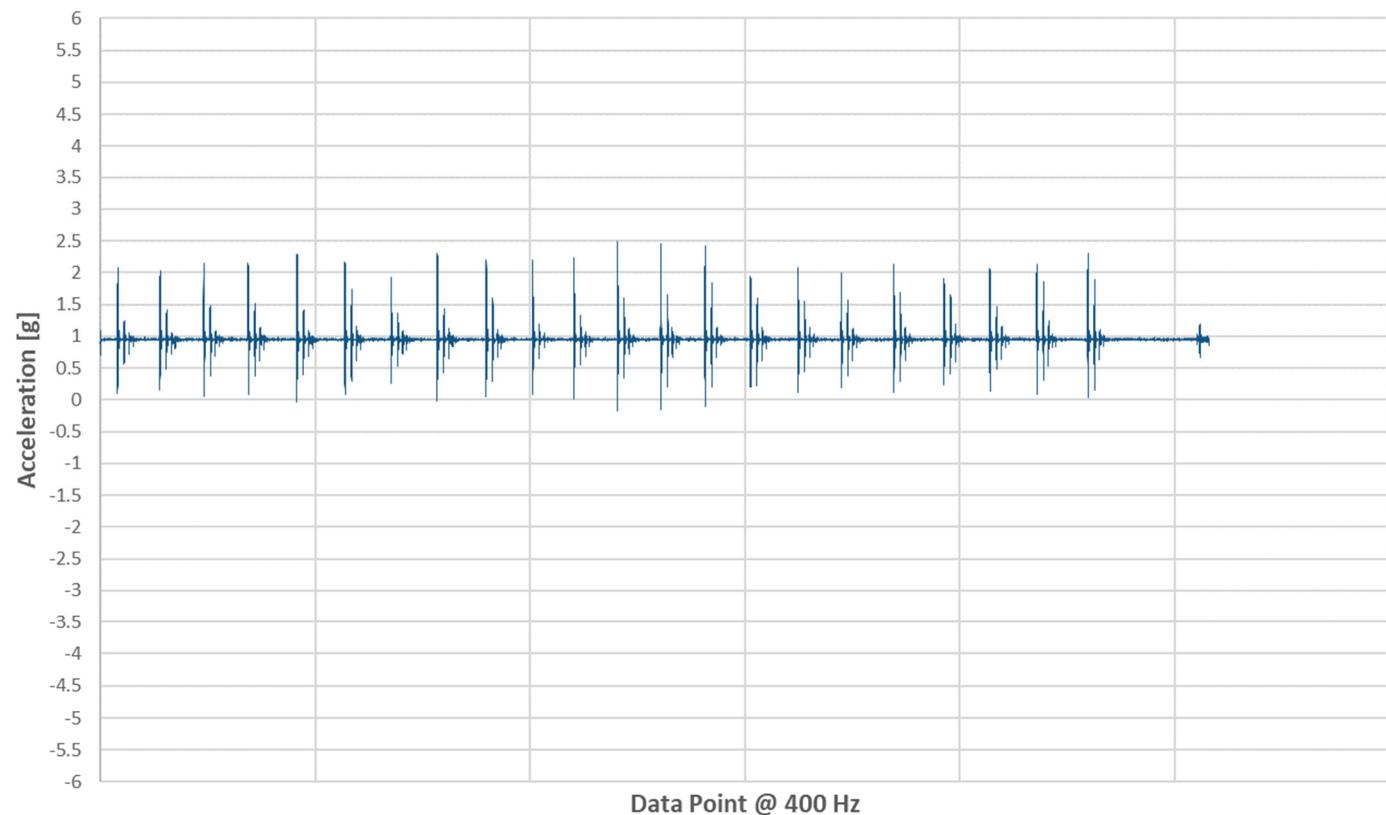




Y Acceleration (Head to Toe) - Purple Hybrid



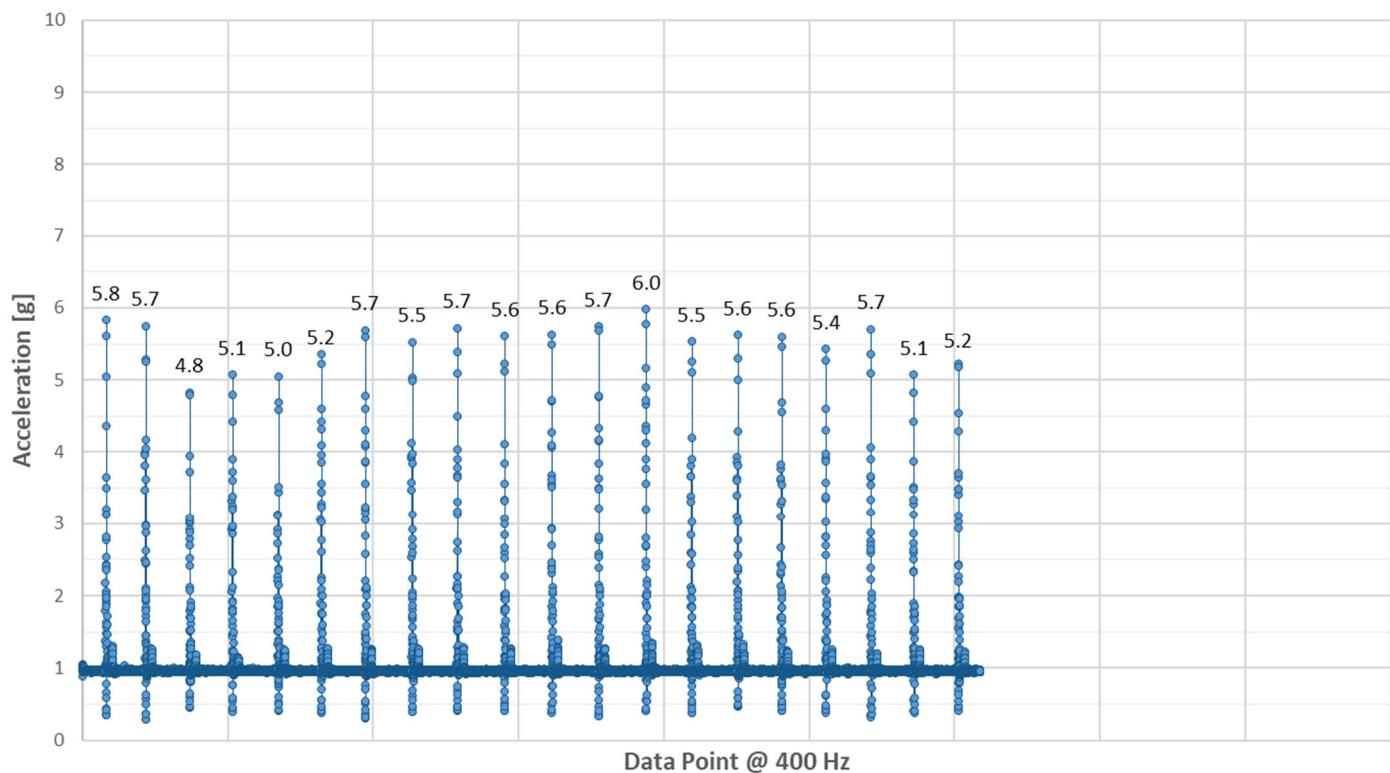
Z Acceleration (Up and Down) - Purple Hybrid



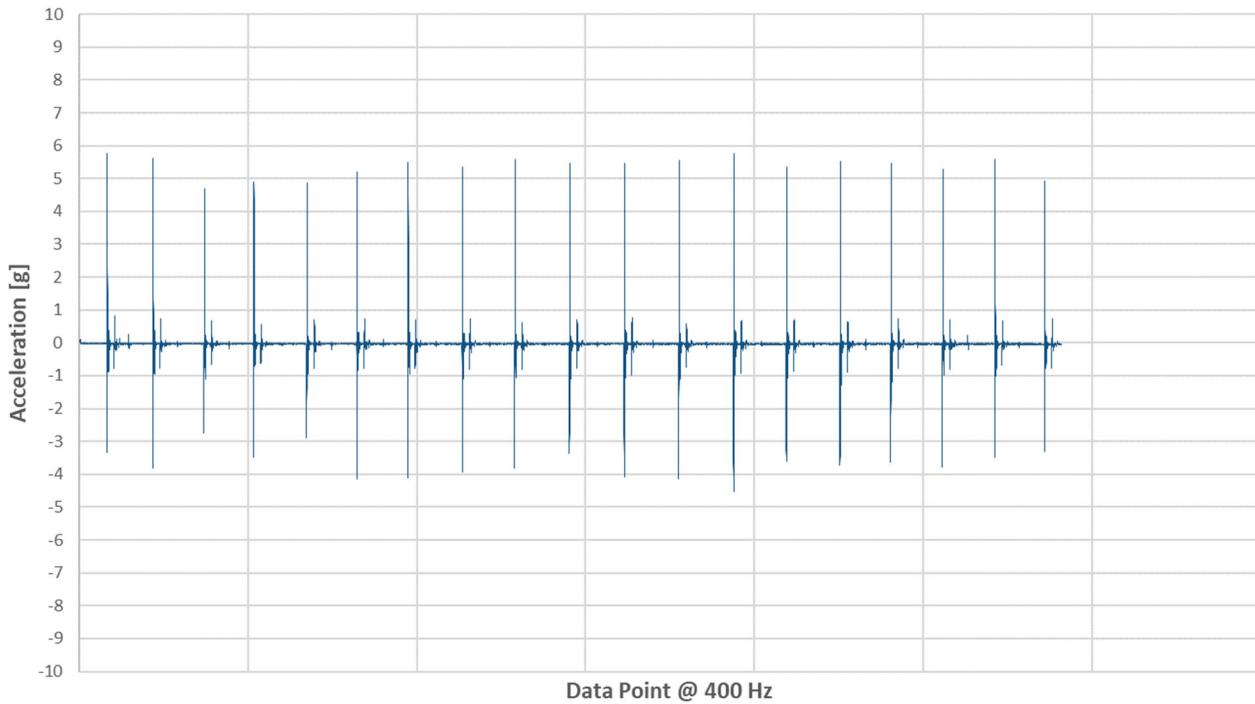


TEST 3 – PURPLE PLUS

Vector Magnitude Acceleration - Purple Plus

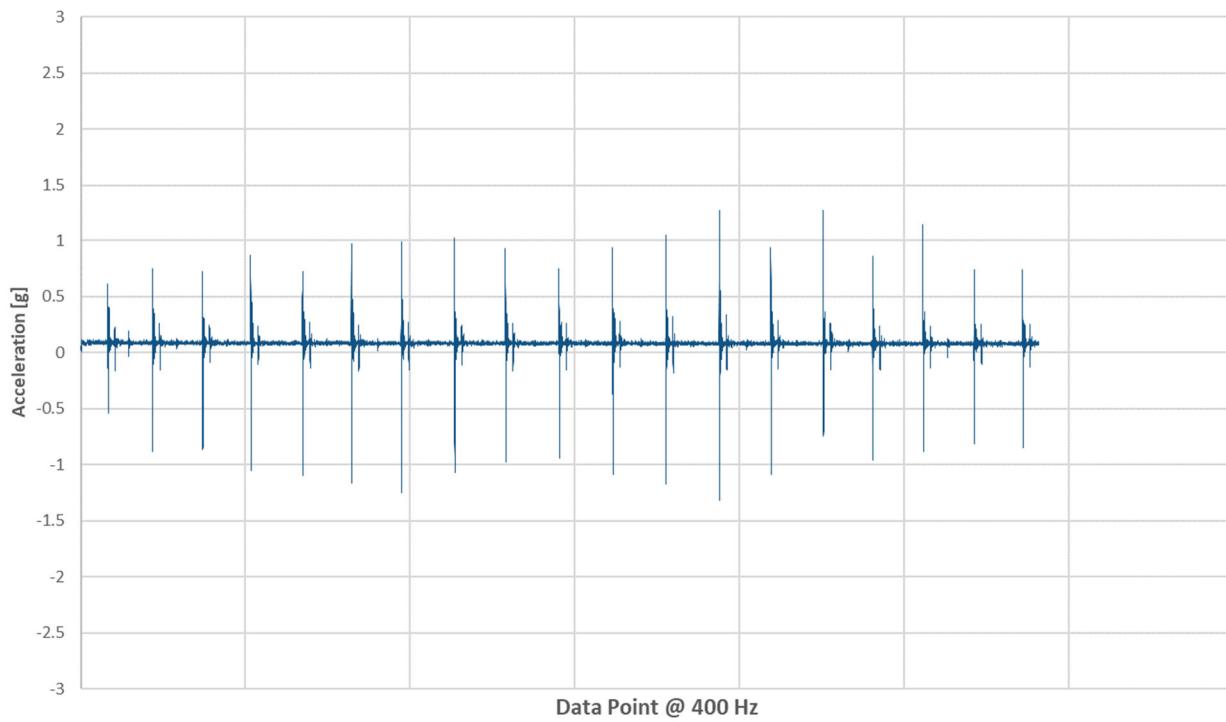


X Acceleration (Side to Side) - Purple Plus

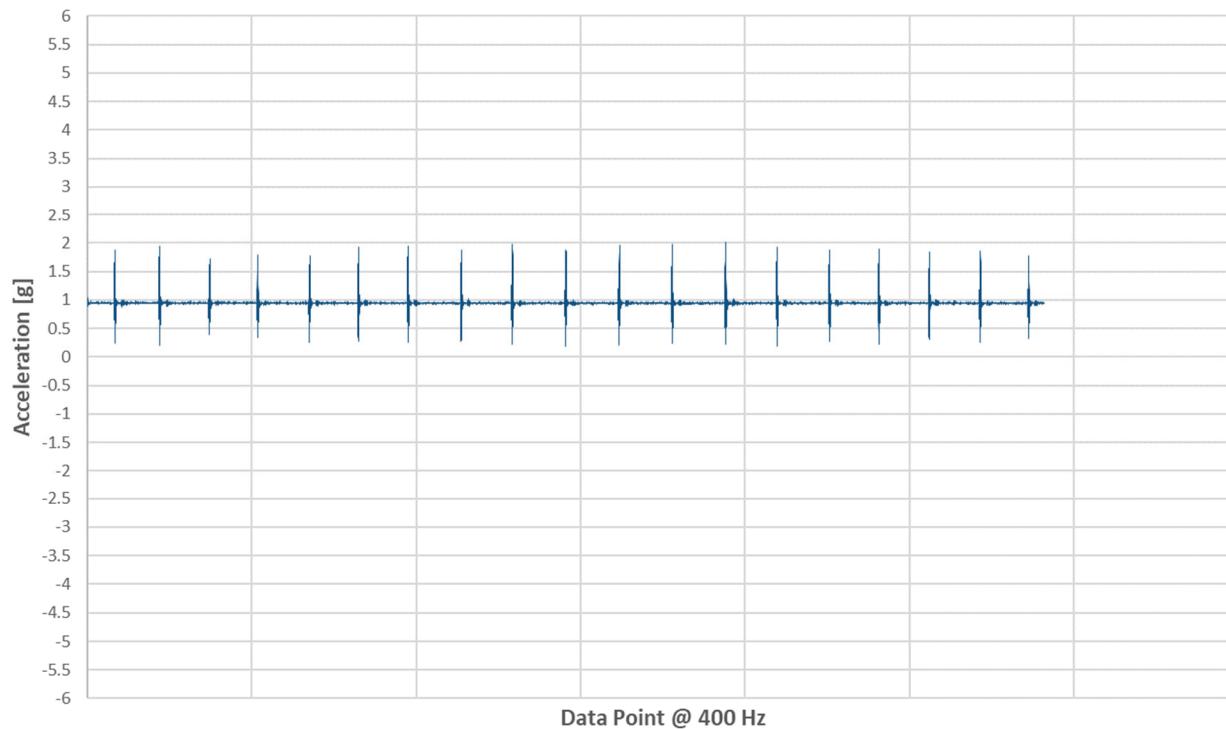




Y Acceleration (Head to Toe) - Purple Plus



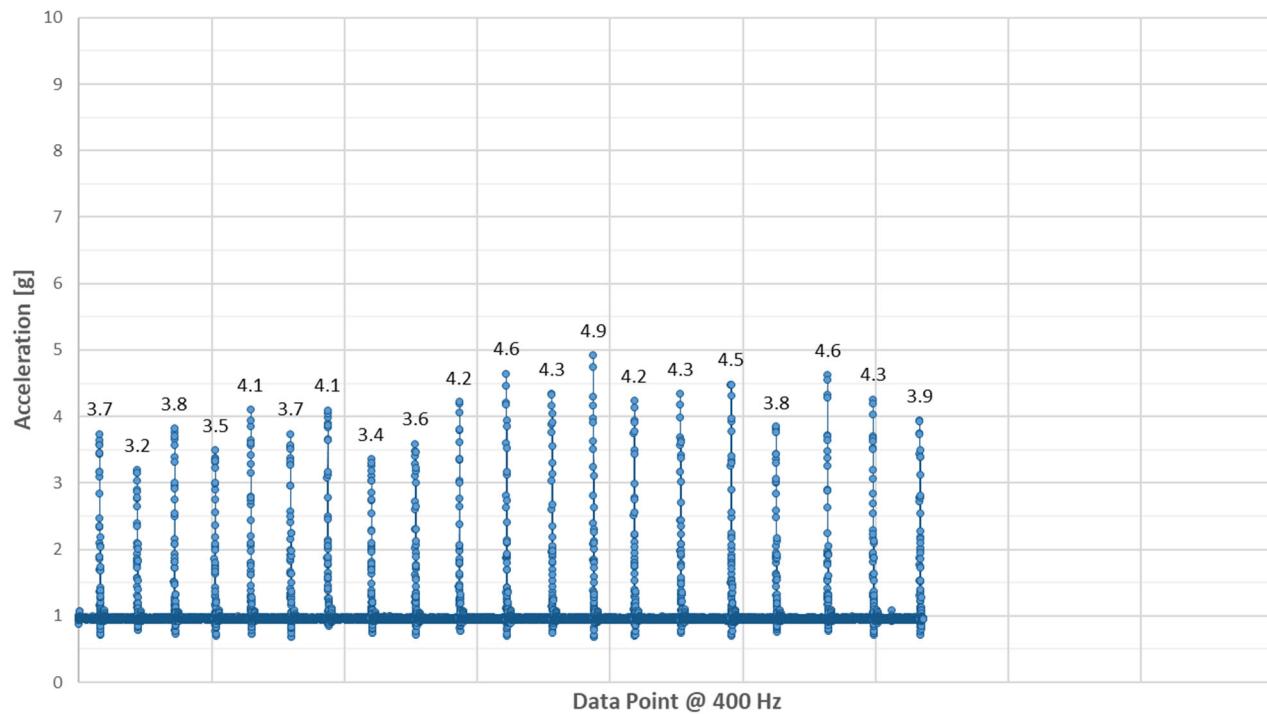
Z Acceleration (Up and Down) - Purple Plus



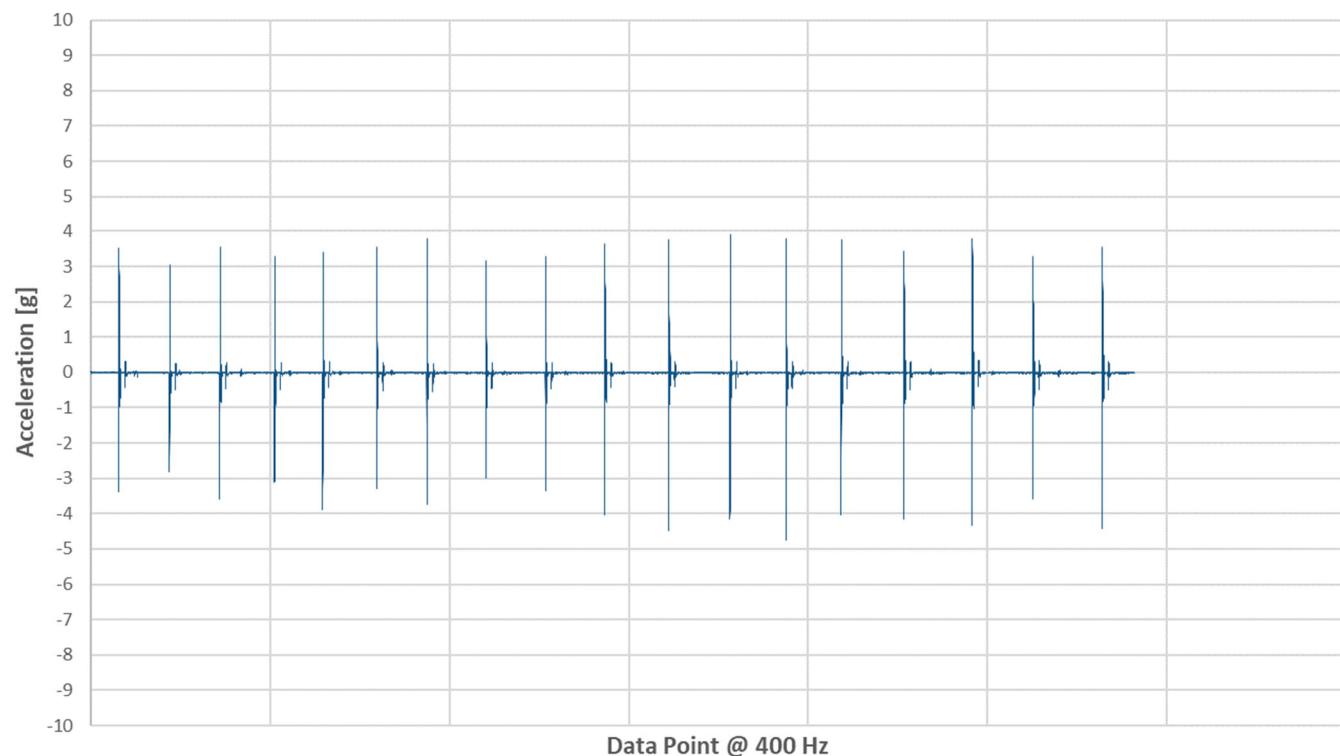


TEST 3 – SILK & SNOW (V2)

Vector Magnitude Acceleration - Silk & Snow (V2)

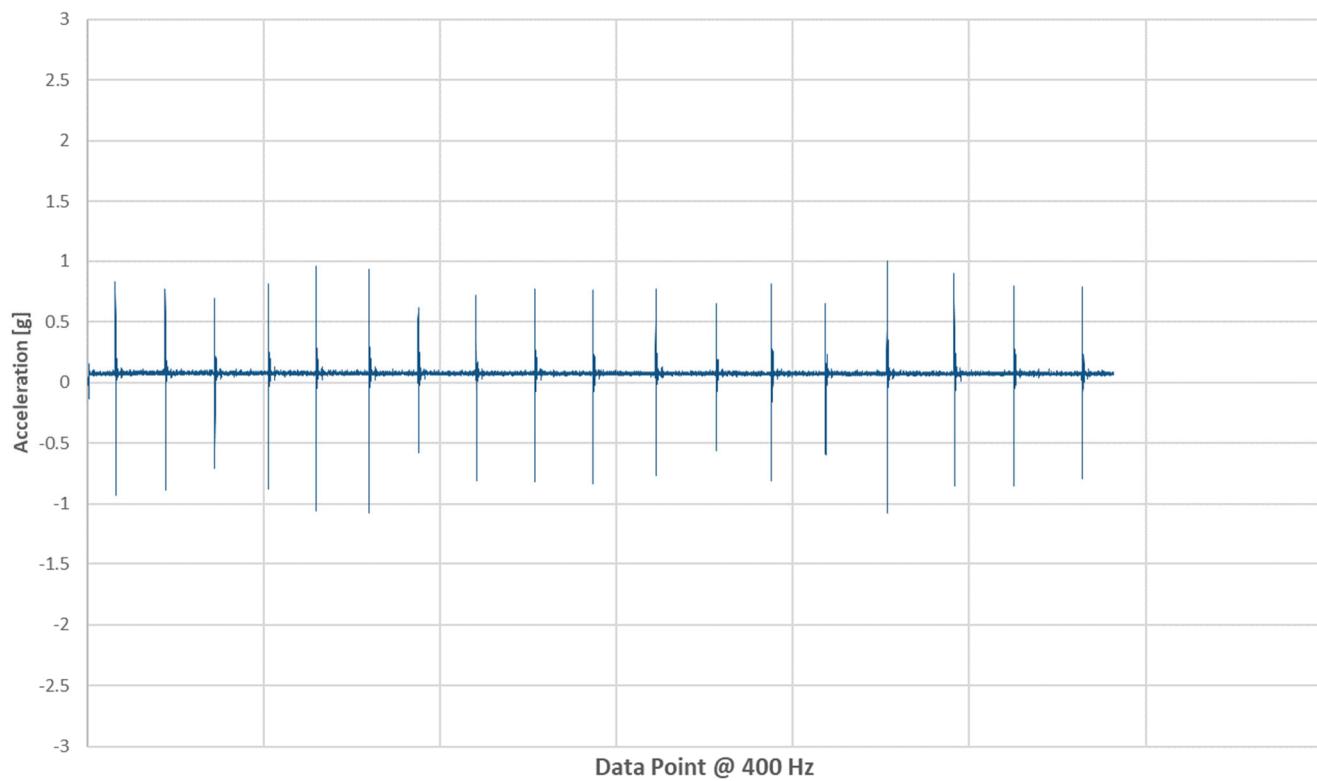


X Acceleration (Side to Side) - Silk & Snow (V2)

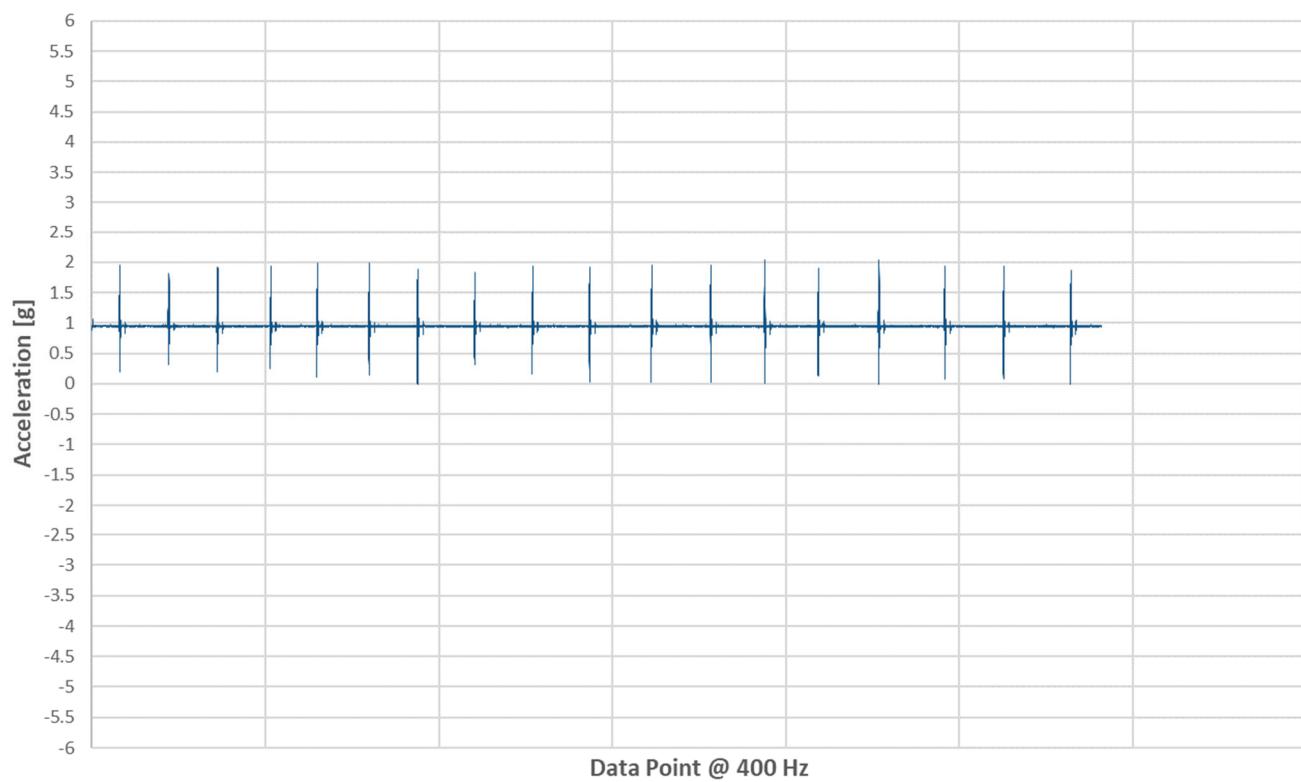




Y Acceleration (Head to Toe) - Silk & Snow (V2)



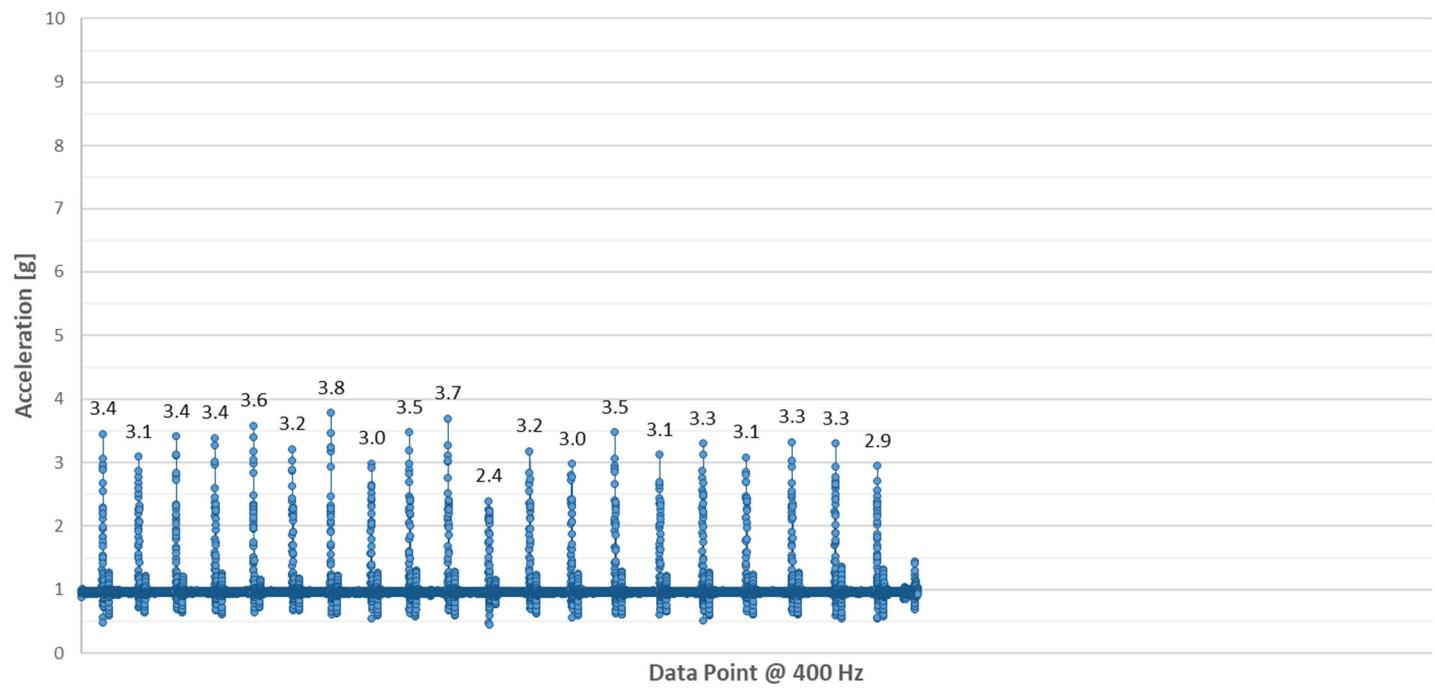
Z Acceleration (Up and Down) - Silk & Snow (V2)



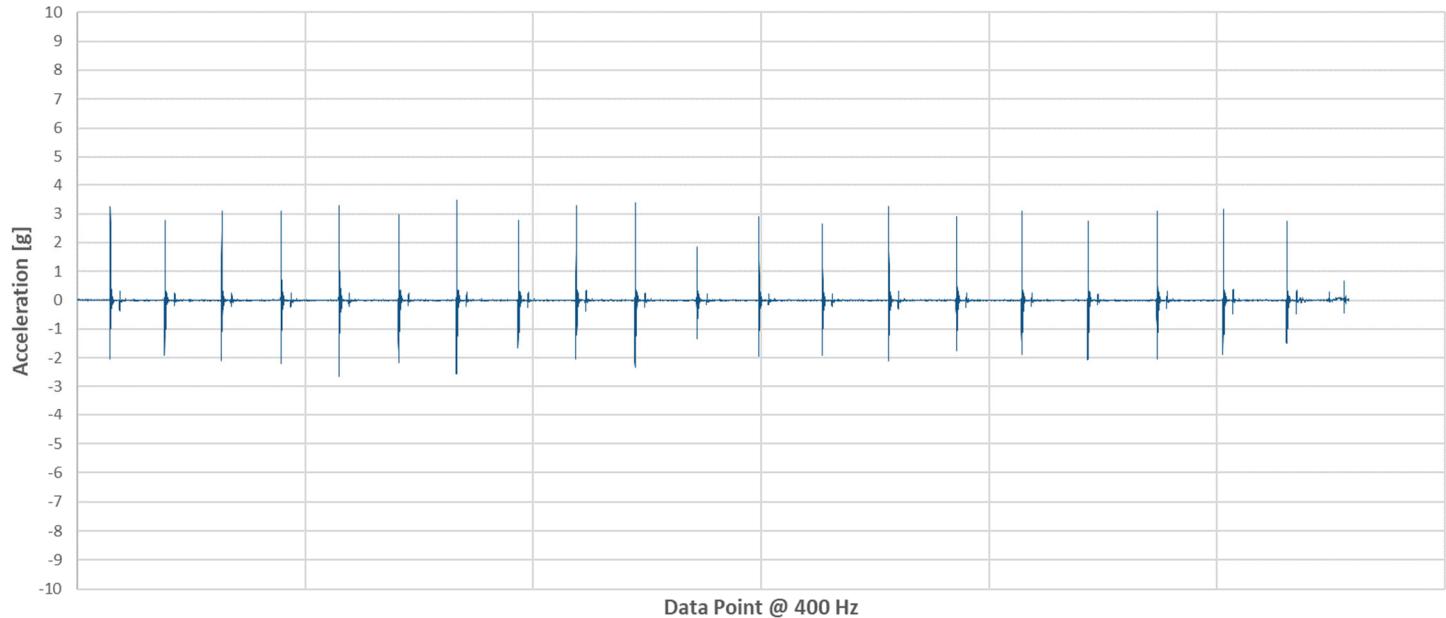


TEST 3 – SILK & SNOW HYBRID (V2)

Vector Magnitude Acceleration - Silk & Snow Hybrid (V2)

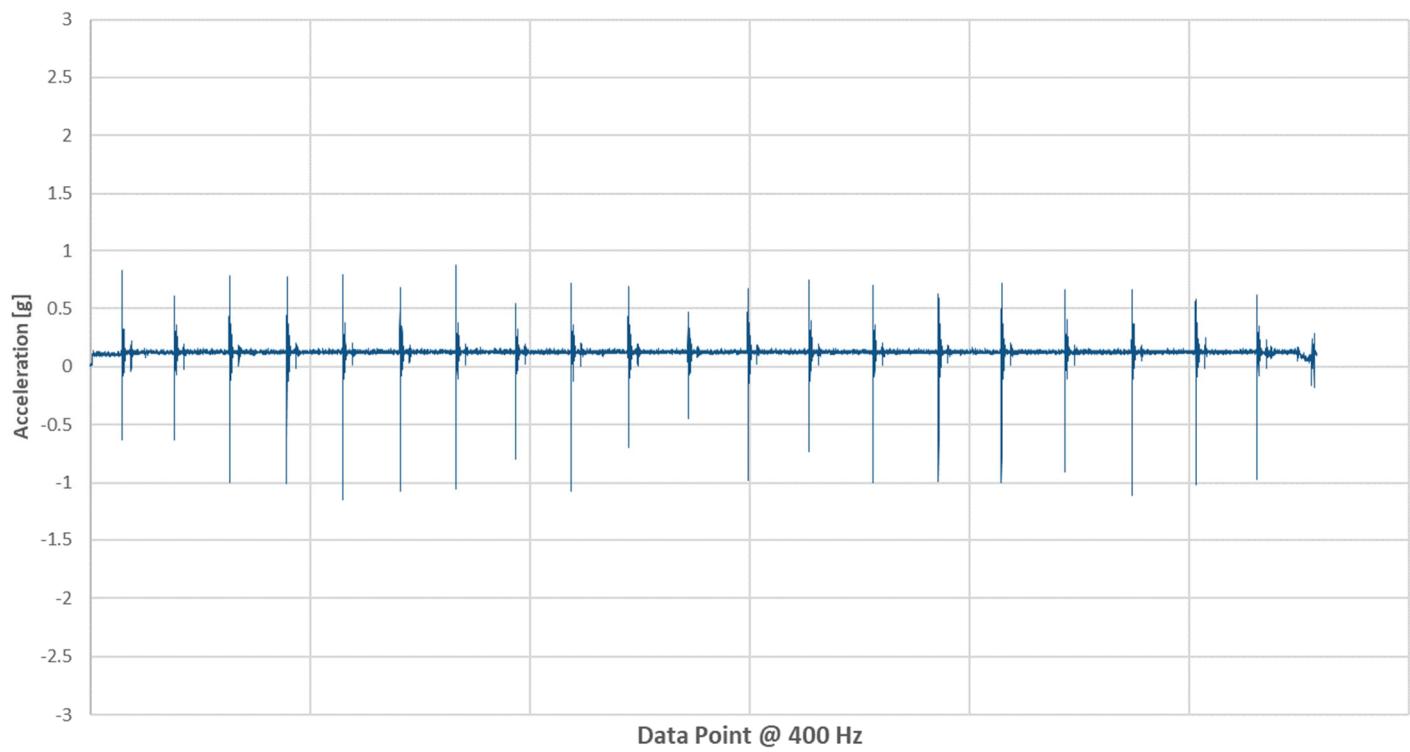


X Acceleration (Side to Side) - Silk & Snow Hybrid (V2)

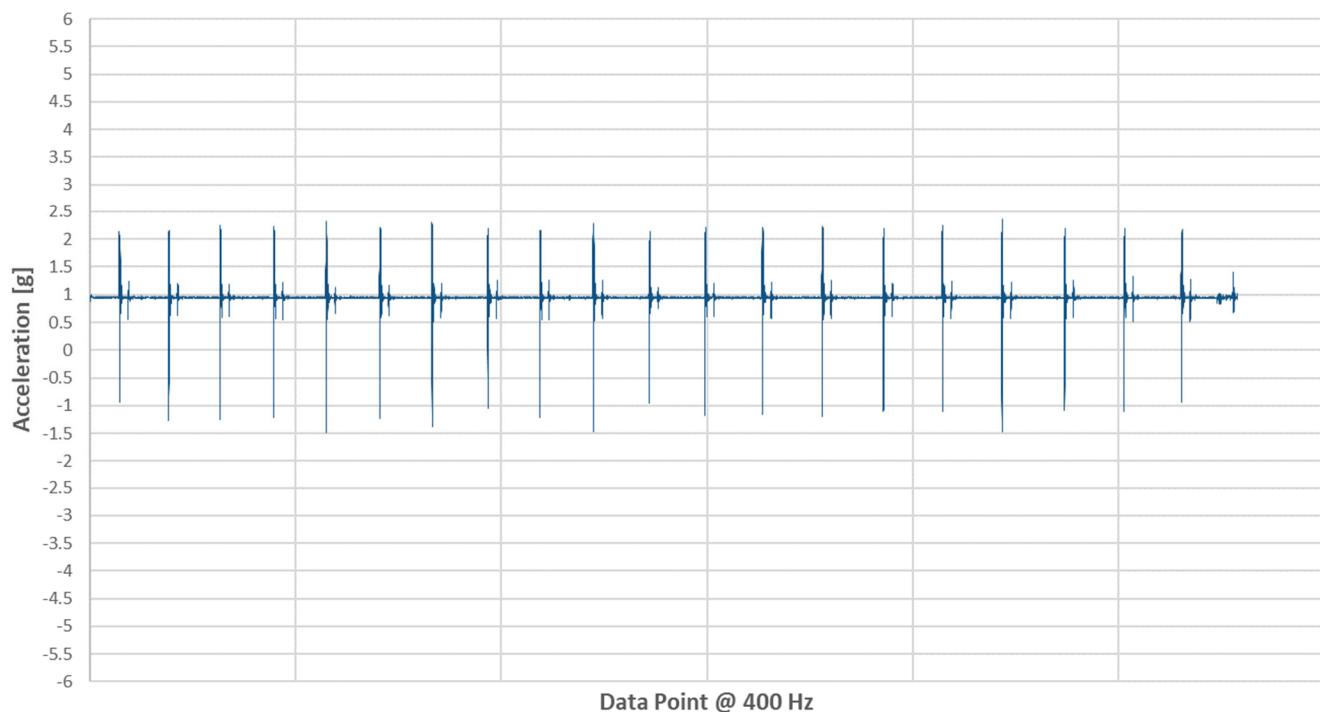




Y Acceleration (Head to Toe) - Silk & Snow Hybrid (V2)



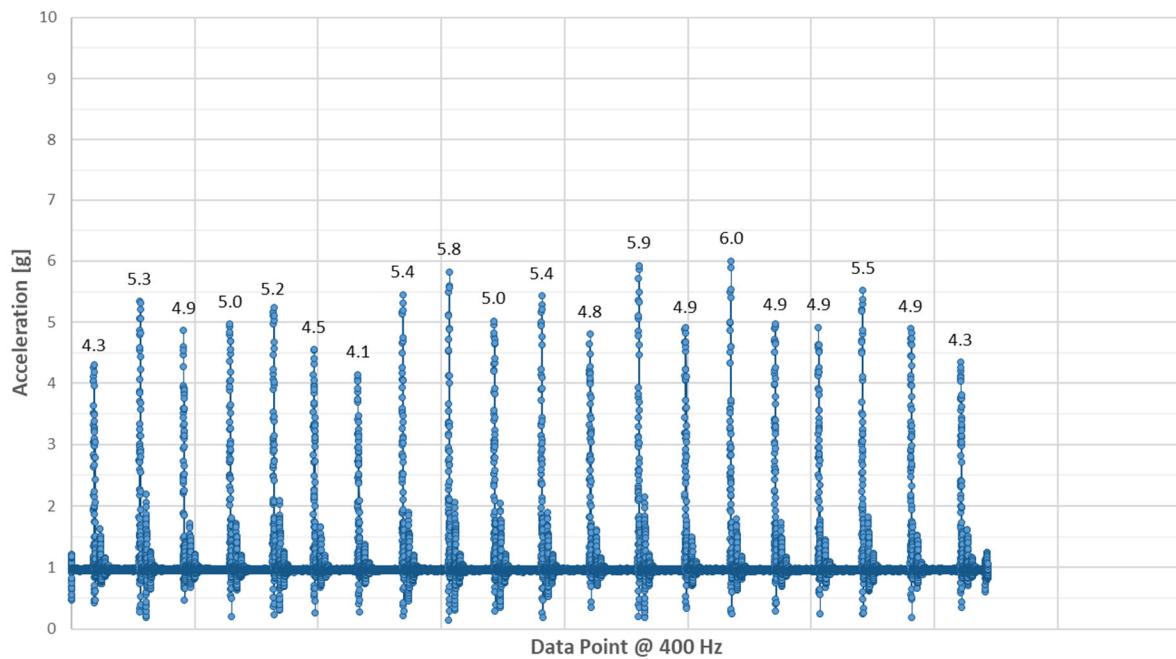
Z Acceleration (Up and Down) - Silk & Snow Hybrid (V2)



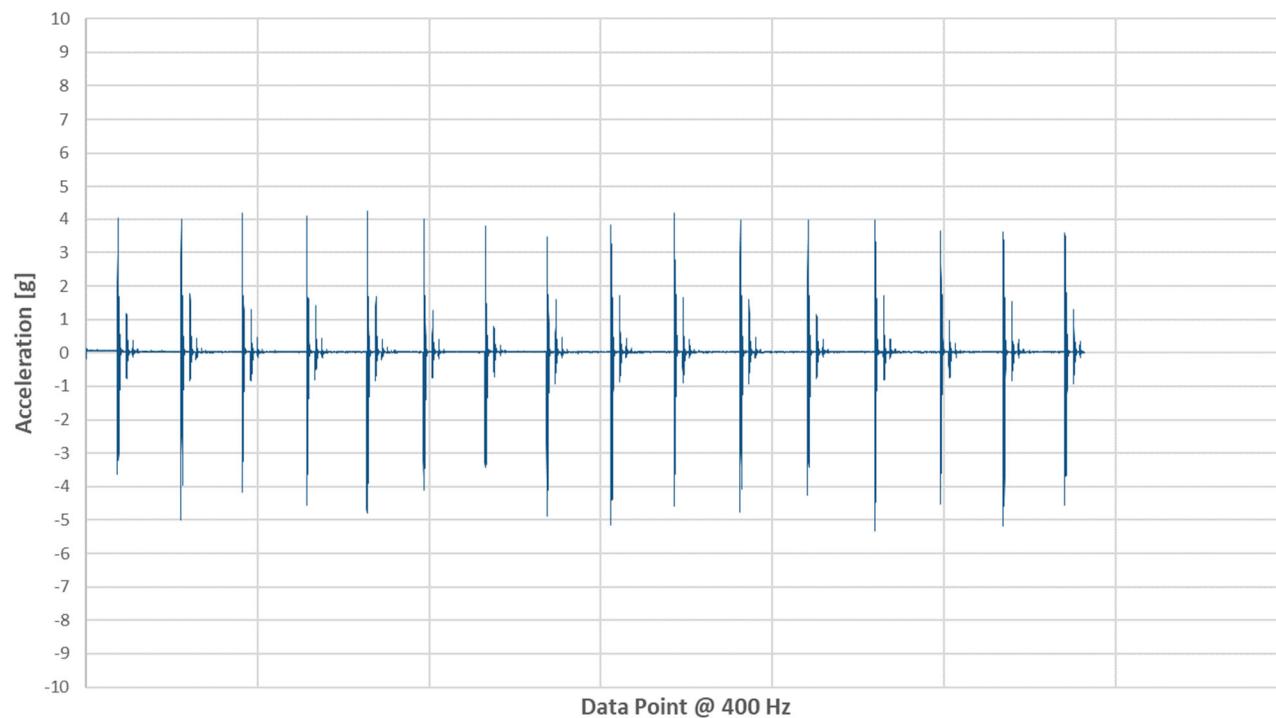


TEST 3 – SILK & SNOW ORGANIC

Vector Magnitude Acceleration - Silk & Snow Organic

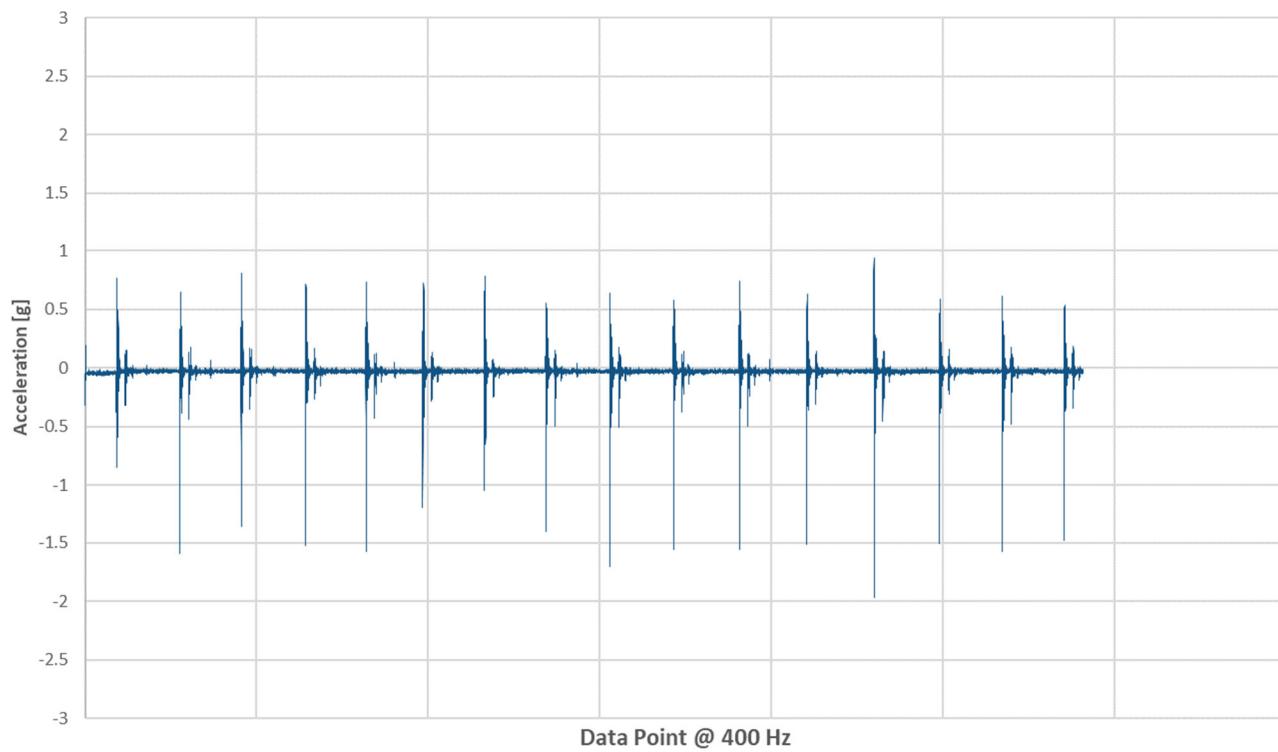


X Acceleration (Side to Side) - Silk & Snow Organic

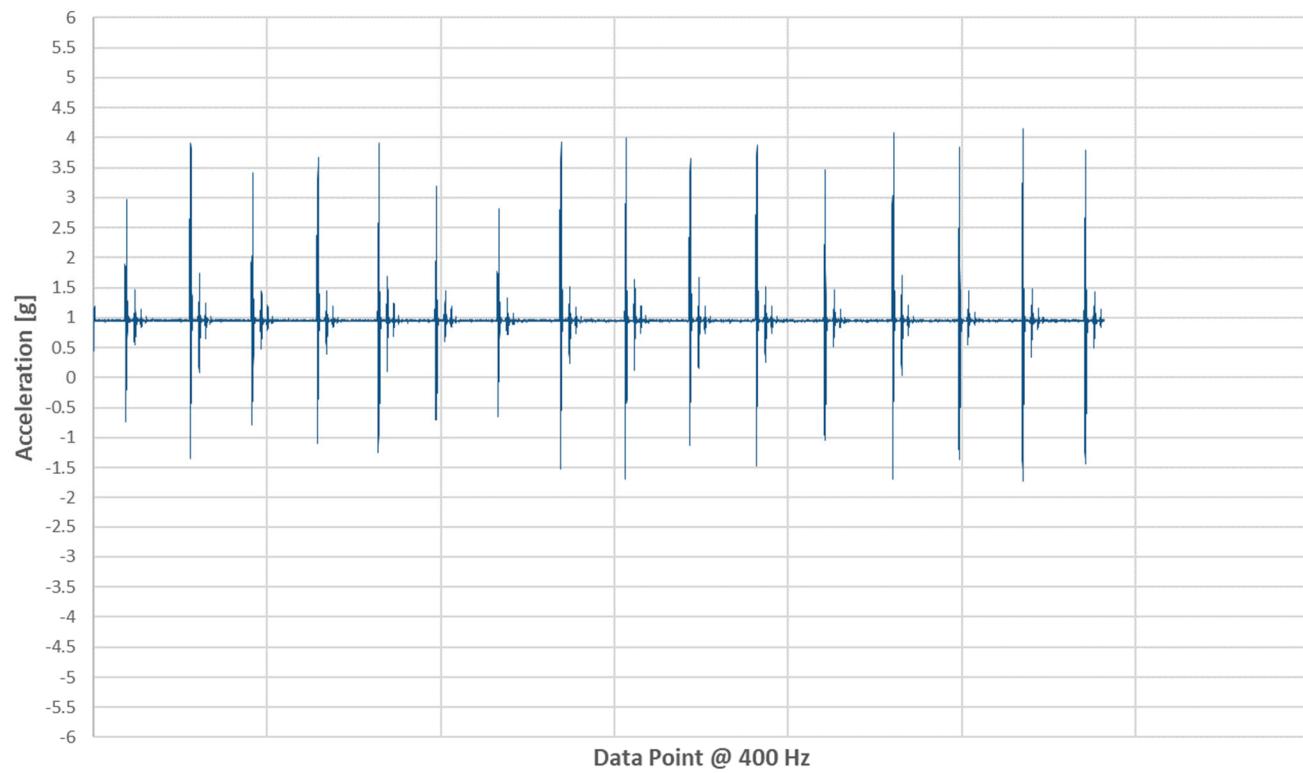




Y Acceleration (Head to Toe) - Silk & Snow Organic

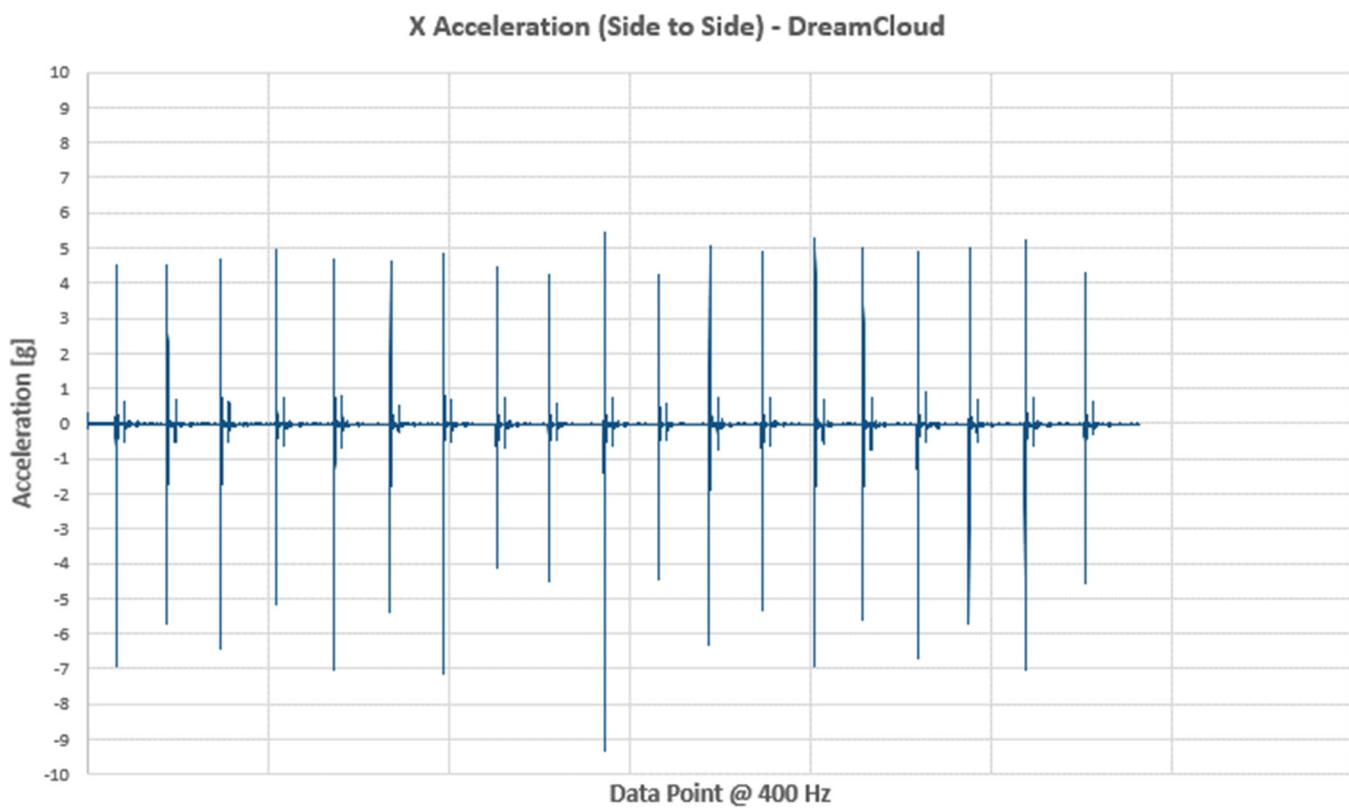
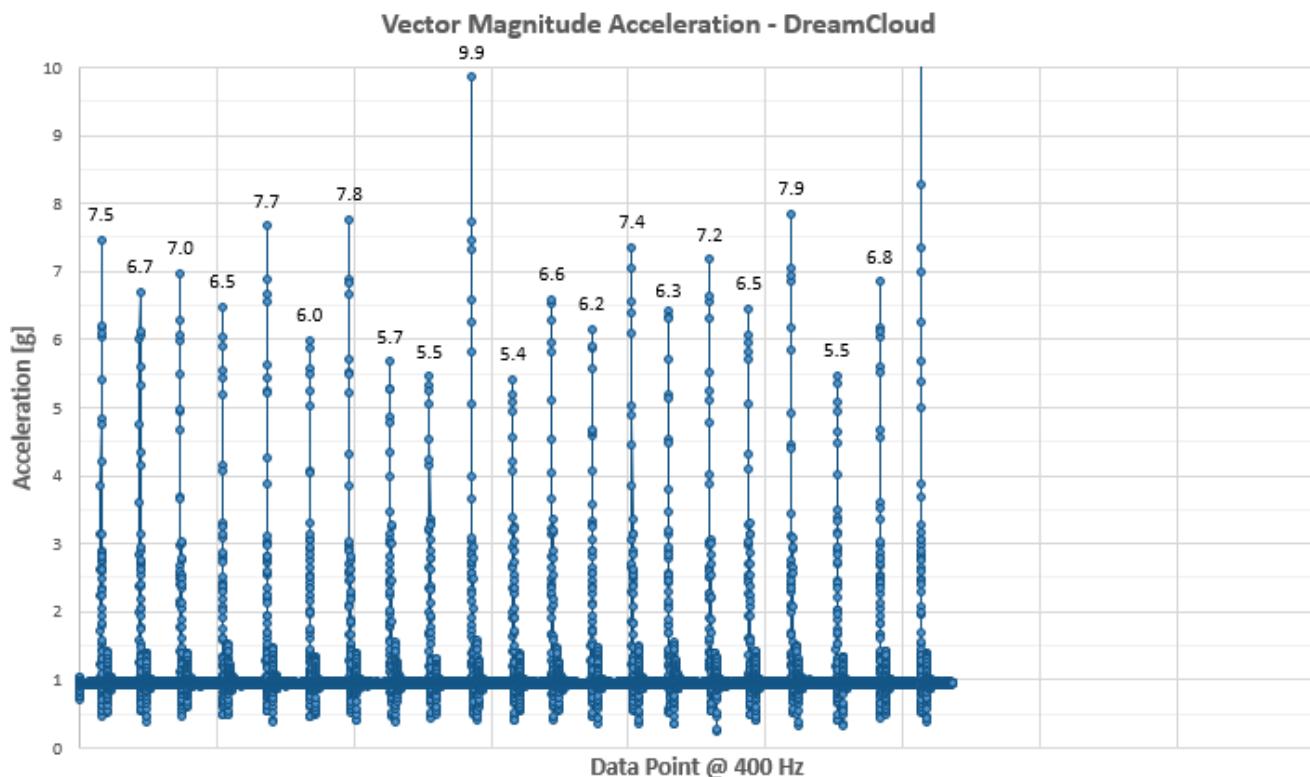


Z Acceleration (Up and Down) - Silk & Snow Organic



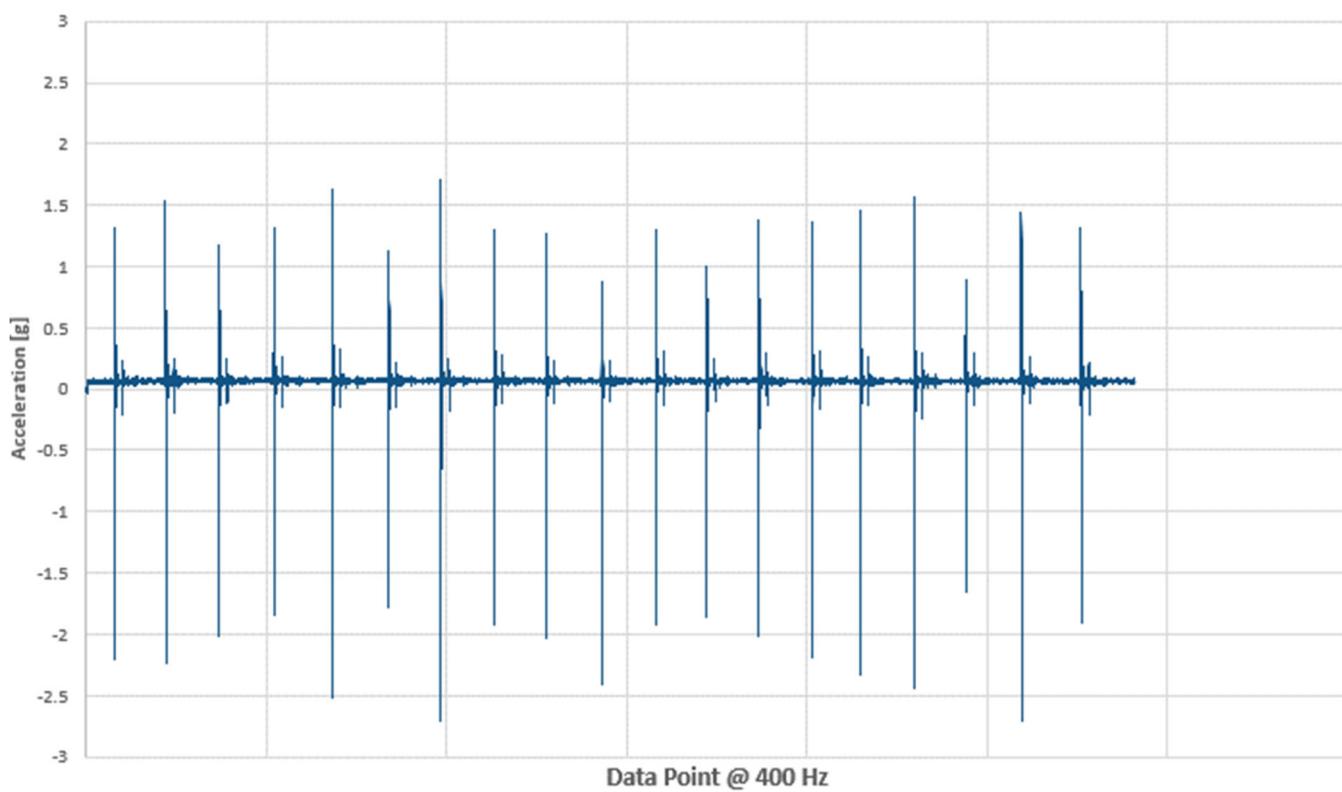


TEST 3 – DREAMCLOUD

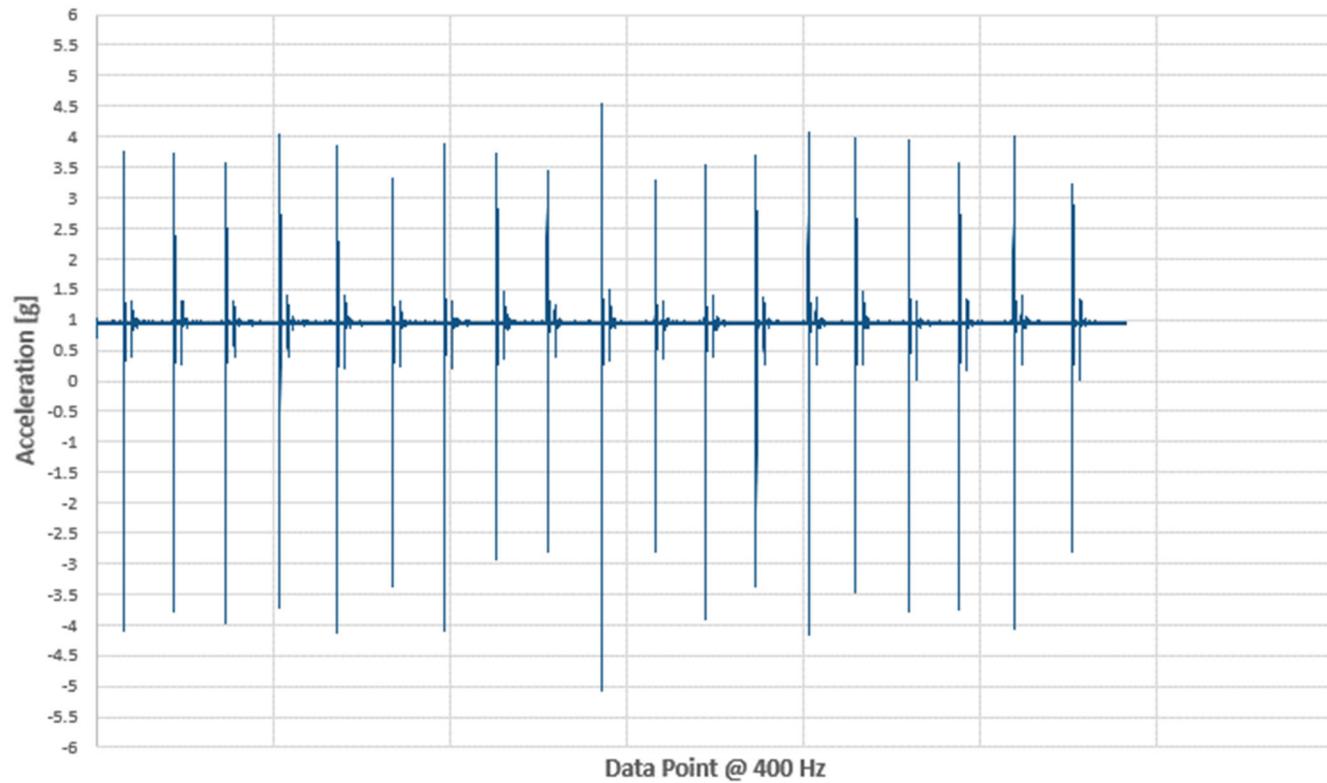




Y Acceleration (Head to Toe) - DreamCloud

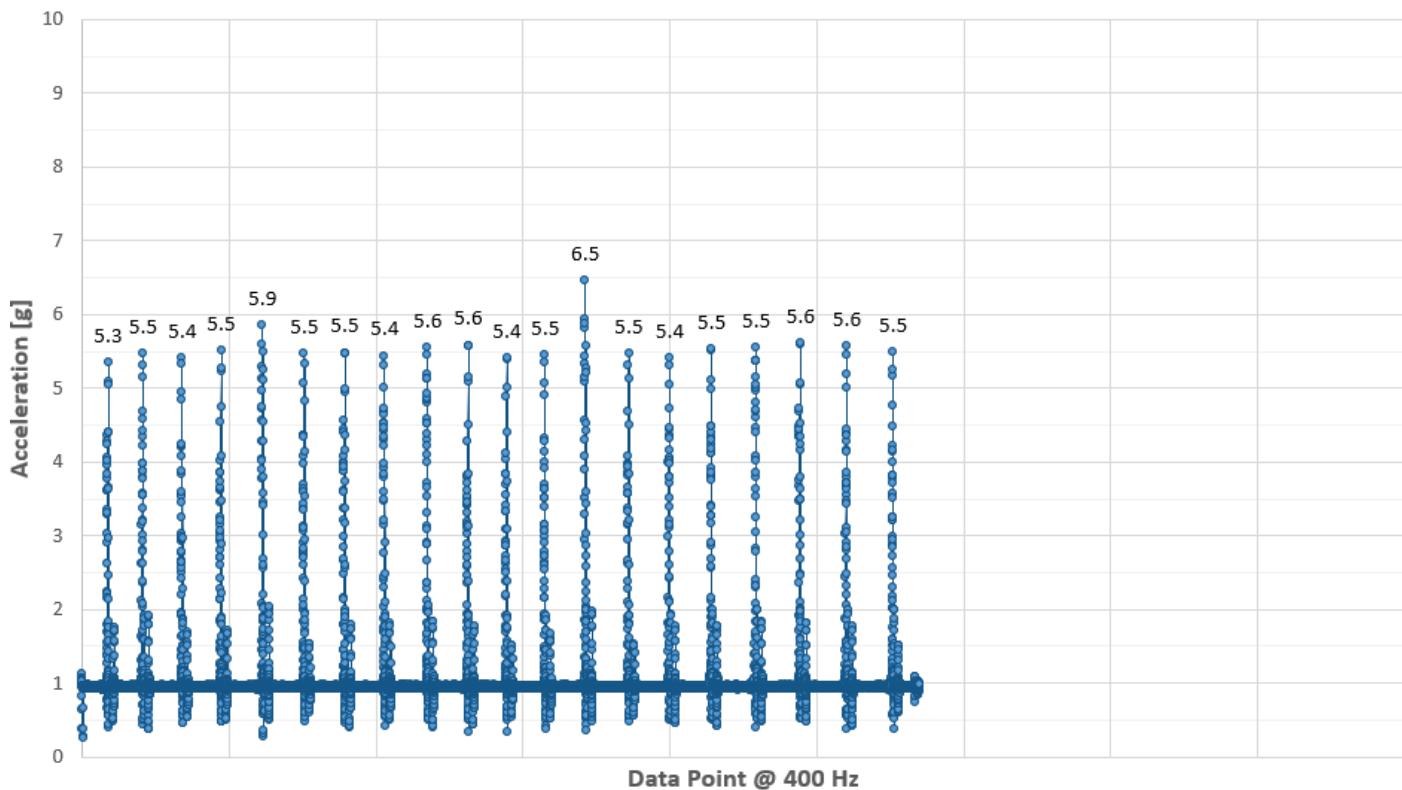


Z Acceleration (Up and Down) - DreamCloud

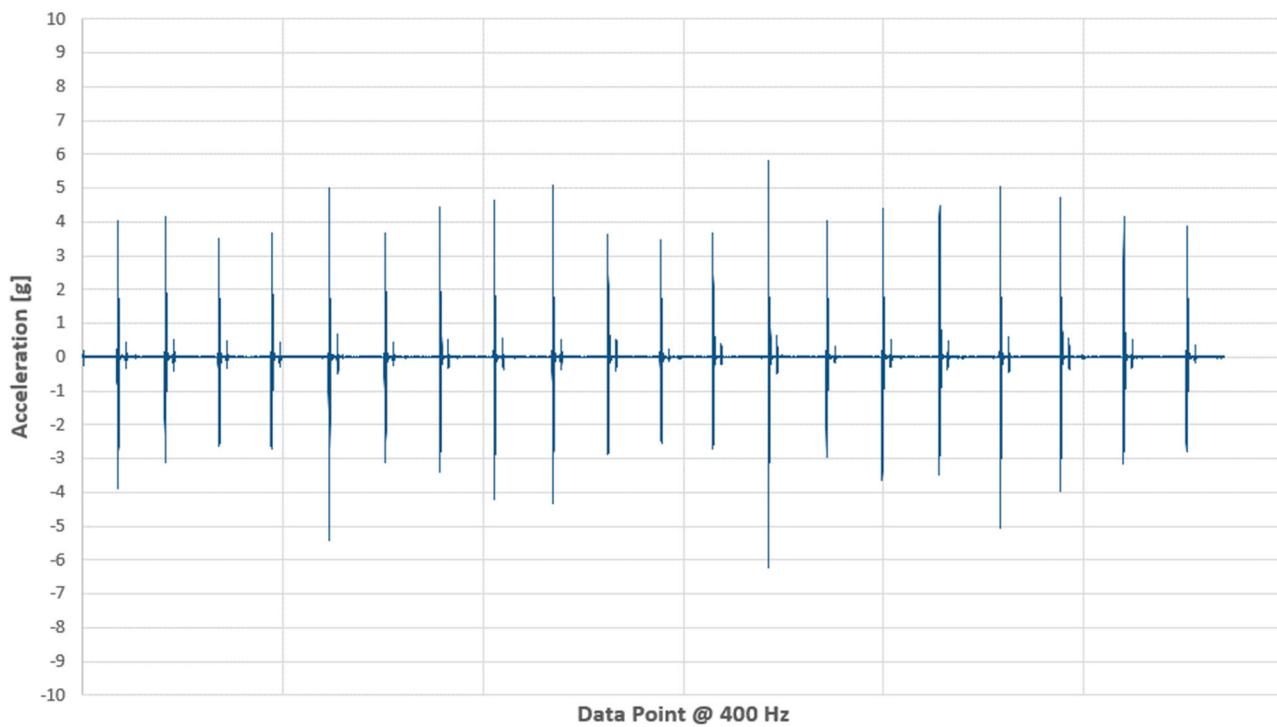


TEST 3 – WINKBED

Vector Magnitude Acceleration - WinkBed

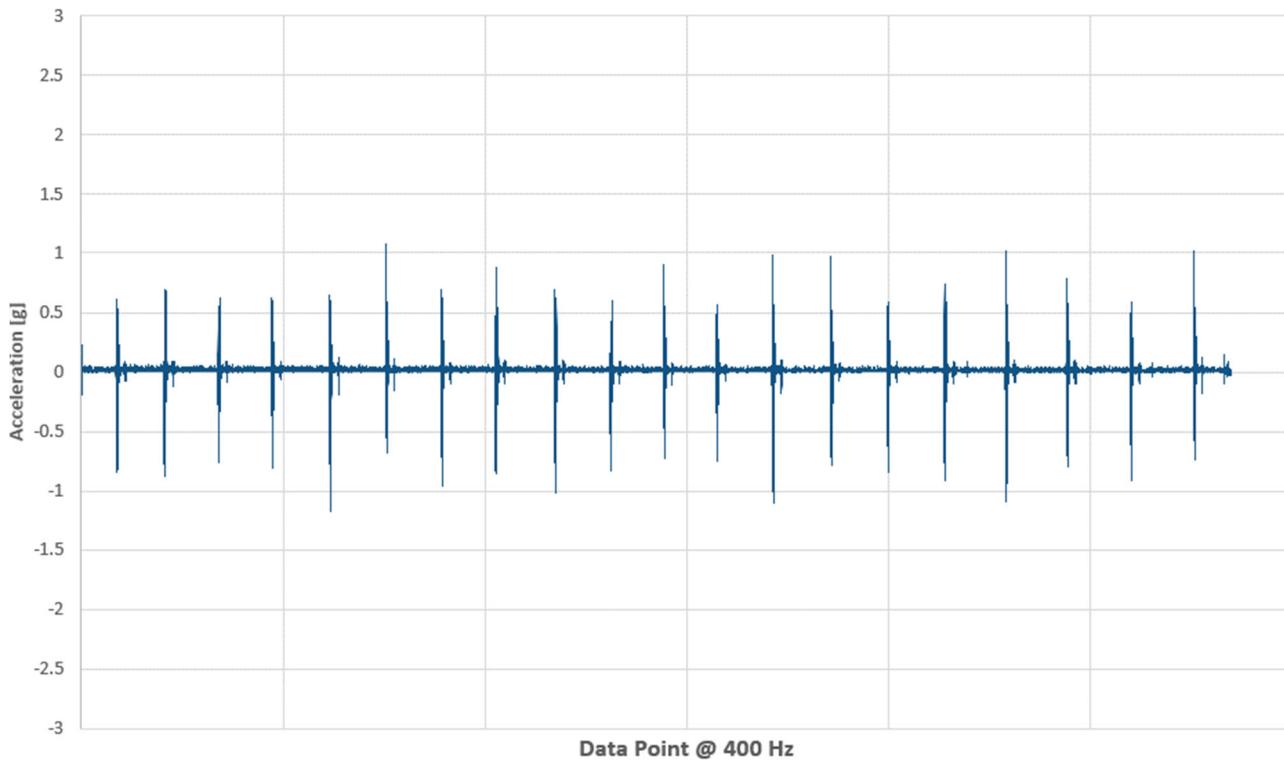


X Acceleration (Side to Side) - WinkBed

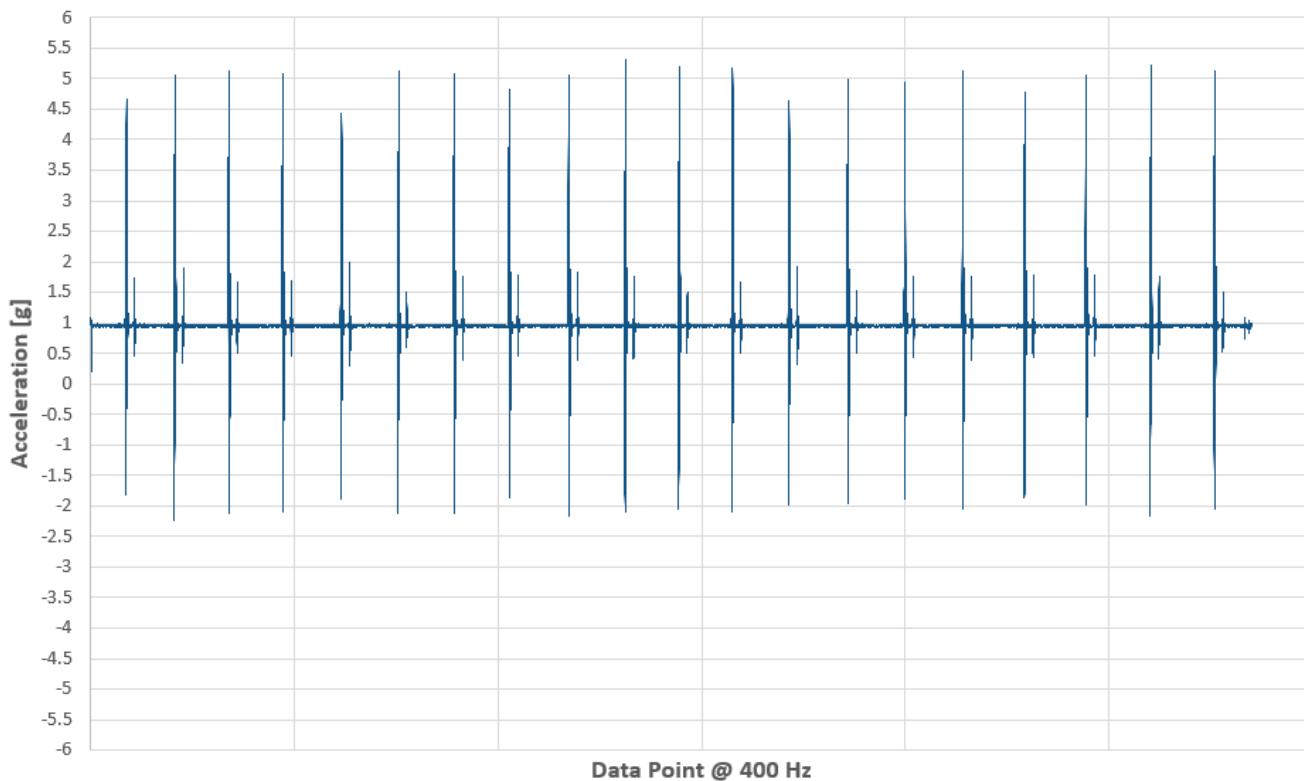




Y Acceleration (Head to Toe) - WinkBed



Z Acceleration (Up and Down) - WinkBed





APPENDIX B



Mattress-Reviews.com Testing Methodology

Goal:

To gather relative performance data from two or more different queen-sized mattresses to provide basis for comparison, grading, and discussion.

Equipment:

- Reference Load 1: plastic 5 gallon water cooler bottle – size: ~ 10.75" diameter X ~ 19.5" height; weight 42.3 lbs.
- Reference Load 2: spherical medicine ball - size: ~ 9" diameter; weight 10 lbs.
- Tape measure.
- Masking tape.
- Metal ruler.
- 4-foot piece of aluminium, $\frac{1}{4}$ inch thick.
- Calibrated accelerometer.
- A DSLR video camera.

General Test Conditions:

- Measure temperature and humidity in a room and verify it falls within the range of a normal house (18°C - 24°C / 25% - 50%). Measure and record temperature and humidity before each test.
- Lay the test mattress on a flat concrete floor such that the top and sides are unobstructed.

Test #1: Mattress Firmness (or “sinkage”):

Overview and Objective: Apply Reference Load 1 to the center of each subject mattress and measure the vertical displacement of each to establish their respective positions on a firmness (or “sinkage”) scale. A low relative vertical displacement shall indicate a firmer mattress, while a high relative vertical displacement shall indicate a softer mattress.

Procedure:

1. Find the “approximate centre” of a given mattress sample:
 - a. Place 2 straight lines (tensioned string-lines or straight measuring tape), each from one corner of the mattress to the diametrically opposite corner (e.g. top right to bottom left and top left to bottom right).
 - b. Mark the intersection point of each straight line reference with masking tape - this is the “approximate center” of the mattress.
2. Place Reference Load 1 on the mattress, such that a point halfway between the top and bottom extremes of the water bottle lies on the marked approximate center of the mattress; and that the spout of the water bottom faces the foot of the bed, such that the sides of the water bottle are parallel to the sides of the mattress.
3. Wait 30 seconds for the water cooler bottle to entirely stop moving to allow the system to settle to a static state.
4. Place a 4-foot piece of $\frac{1}{4}$ inch thick aluminium across the surface of the mattress. The long side of the aluminium piece shall run parallel to the foot of the mattress. The metal shall rest beneath the spout of the bottle without touching the bottle.
5. Using a tape measure or metal ruler, measure and record the distance between the bottom of the spout and the metal level immediately below it, without noticeably distorting the shape of the mattress at the measurement point.

Test #2 Edge Supportiveness:

Overview and Objective: Apply Reference Load 1 to the edge each subject mattress and to measure the resultant vertical displacement of each to establish their respective positions on an “edge supportiveness” scale. A low relative vertical displacement shall indicate a mattress with more edge support, while a high relative vertical displacement shall indicate a mattress with less edge support.

Procedure:

1. Find the “approximate middle” of the foot of a given mattress sample:
 - a. Measure the length of the top-facing edge of the foot of the subject mattress.
 - b. Divide the measurement by 2 and mark this point with masking tape - this is the “approximate middle” of the foot of the mattress.
 - c. Measure the height of the mattress at this point.
2. Place Reference Load 1 on the mattress such that a predetermined point of the water bottle lies on the marked “approximate middle” of the mattress edge, and that the sides of the water bottle are parallel to the sides of the mattress. The long edge of the water bottle shall be parallel to the long side of the mattress.
 - a. This predetermined point of the water bottle is where the spout of the water bottle begins. That is, there shall be 16 inches of the 19-inch water bottle lying ‘behind’ the edge of the mattress (i.e. on the mattress). The 3-inch spout shall extend off the edge of the mattress.
3. Wait 30 seconds for the water cooler bottle to entirely stop moving to allow the system to settle to a static state.
4. Measure the distance between the bottom of the spout and the floor (**variable X**).
5. Add the height of the mattress (see step 1c) to 4.25 inches (**variable Y**).
6. **Y minus X = vertical displacement.**

Test #3 Motion Isolation:

Overview and Objective: Apply a reference impulse to the top side of each subject mattress, representative of human movement on the mattress, and measure the resultant peak acceleration of a calibrated accelerometer placed on the mattress a fixed distance away from the epicenter of the impulse to establish their respective positions on a “motion isolation” scale. A high resultant peak acceleration shall indicate less motion isolation, while a low resultant peak acceleration shall indicate more motion isolation.

Procedure:

1. Find two “Sleep Points” on a given mattress sample:
 - a. Measure the width of the mattress and divide by 3 (the “Edge Distance”).
 - b. Measure the length of the mattress and divide by 2 (the “Center Distance”).
 - c. Find the first point lying Center Distance from the foot of the bed and Edge Distance from one the side of the bed and mark this point with masking tape - this is the first Sleep Point.
 - d. Repeat the above step for the other side of the bed - this is the second Sleep Point.
2. Center a calibrated accelerometer on the mattress.
3. Drop a 10 lbs sphere (9” diameter) on the second Sleep Point on the mattress from a height of 39” above the mattress surface.
4. Wait 5 seconds and record the peak acceleration experienced by the accelerometer.
5. Repeat 20 times and take an average.

Test #4 Bounciness:

Overview and Objective: Drop a 10lb sphere (9" diameter) from a fixed distance on to the top side of each subject mattress and measure the resultant peak rebound height on its first bounce. A high resultant peak rebound height shall indicate more bounciness, while a low resultant peak height shall indicate less bounciness.

Procedure:

1. Find the "Approximate Centre" of a given mattress sample:
 - a. Place 2 straight lines (tensioned string-lines or straight measuring tape), each from one corner of the mattress to the diametrically opposite corner (e.g. top right to bottom left and top left to bottom right).
 - b. Mark the intersection point of each straight line reference with masking tape - this is the "approximate center" of the mattress.
2. Suspend a 10lb sphere (9" diameter) such that it is centered 39" directly above the Approximate Center.
3. Suspend a measurement scale, such as a measuring tape, vertically above the mattress such that it touches the mattress at a point 9" away from the Approximate Center towards the foot of the bed.
4. Wait 1 minute for the system to reach relative static equilibrium.
5. Release the sphere such that it lands on the Approximate center of the mattress.
6. Place the DSLR video camera, mounted on a static tripod located 6" from the mid-point of the foot of the bed such that its line of sight is parallel to the top surface of the mattress, and that it is focussed on the vertically suspended measurement scale.
7. Wait 1 minute for the system to reach static equilibrium.
8. Begin recording on the video camera.
9. Release the sphere and wait 5 seconds.
10. Review the video and determine the maximum rebound point - that is, the point on the scale reached by the bottom of the weight on its first rebound (if it rebounds).
11. Repeat 3 times and take an average.