

IMPACT ATTENUATION – SYSTEM CHECK

REPORT NO: 04

DATE: May 10 2022

Paragraph S5.1 and S7.1

Hemispherical	16.4 – 17.7 ft/s (5.0 – 5.4 m/s)
Flat	19.0 – 20.3 ft/s (5.8 – 6.2 m/s)

Ambient Temperature (°C) 19	Relative Humidity (%) 30
Headform size C	Drop Assembly Weight (kg) 4.95

SYSTEM CHECK	TRIAL DROP	DROP HEIGHT (cm)	VEL. (m/s)	PEAK g	DWELL TIME (ms)		TEST RECORD	GROUP NO.
					150 g	200 g		
PRETEST	1	100.0	4.35	283.7				
	2	100.2	4.35	286.0				
	3	100.0	4.33	288.5				
PRETEST AVERAGE		XXX	XXX	286.1	XXX	XXX	XXXX	XXX
POST TEST	1	100.1	4.36	280.9				
	2	100.1	4.33	288.2				
	3	100.4	4.38	284.1				
POST TEST AVERAGE		XXX	XXX	284.4	XXX	XXX	XXXX	XXX
DIFFERENCE BETWEEN PRETEST AND POST TEST AVERAGES				1.7	DIFFERENCE NOT TO EXCEED 40 g			

(Continued on next page)

IMPACT ATTENUATION

Helmet	Condition	Helmet Type	Impact location (+/- 45 degrees)							
		Half/Full	Forehead		Left Side		Right Side		Rear	
		Complete	Left Front		Right Rear		Right Front		Left Rear	
		Impact No.	1	2	1	2	1	2	1	2
A	Ambient	Anvil	HEMI		HEMI		FLAT		FLAT	
		Test Record No.	1	2	9	10	17	18	25	26
		PEAK g	186.7	169.5	169.8	189.4	280.9	300.9	242.1	252.0
		ms @ 150 g	1.41	1.18	1.25	1.35	2.54	2.51	2.81	2.81
		ms @ 200 g	0.0	0.0	0.0	0.0	1.61	1.63	1.65	1.64
		VEL. (m/s)	5.18	5.19	5.20	5.20	6.01	6.00	6.01	6.08
B	Low Temp	Anvil	HEMI		HEMI		FLAT		FLAT	
		Test Record No.	3	4	11	12	19	20	27	28
		PEAK g	172.5	185.2	167.1	179.0	286.4	303.2	245.5	250.3
		ms @ 150 g	1.35	1.46	1.20	1.12	2.45	2.55	2.93	2.81
		ms @ 200 g	0.0	0.0	0.0	0.0	1.52	1.58	1.55	1.68
		VEL. (m/s)	5.17	5.19	5.21	5.19	6.01	6.02	6.01	6.00
C	High Temp	Anvil	HEMI		HEMI		FLAT		FLAT	
		Test Record No.	5	6	13	14	21	22	29	30
		PEAK g	171.8	171.8	186.6	179.2	273.0	294.3	237.8	243.4
		ms @ 150 g	1.29	1.28	1.42	1.28	2.72	2.21	3.04	2.81
		ms @ 200 g	0.0	0.0	0.0	0.0	1.57	1.53	1.27	1.33
		VEL. (m/s)	5.19	5.20	5.27	5.19	6.04	6.01	6.03	6.02
D	Water Immersed	Anvil	HEMI		HEMI		FLAT		FLAT	
		Test Record No.	7	8	15	16	23	24	31	32
		PEAK g	203.1	381.2	158.6	322.0	198.0	281.9	190.6	199.8
		ms @ 150 g	1.21	0.90	0.53	1.23	1.87	1.44	1.91	1.99
		ms @ 200 g	0.13	0.73	0.0	0.75	0.0	0.87	0.0	0.0
		VEL. (m/s)	5.24	5.21	5.19	5.19	6.04	6.03	6.02	6.01

TEST DATA

Key for graphs

F.H.A.I -----→ Front Hemisphere Anvil Impact

L.S.H.A.I-----→ Left Side Hemisphere Anvil Impact

R.S.F.A.I-----→ Right Side Flat Anvil Impact

R.F.A.I-----→ Rear Flat Anvil Impact

Uni-Axial System-Check

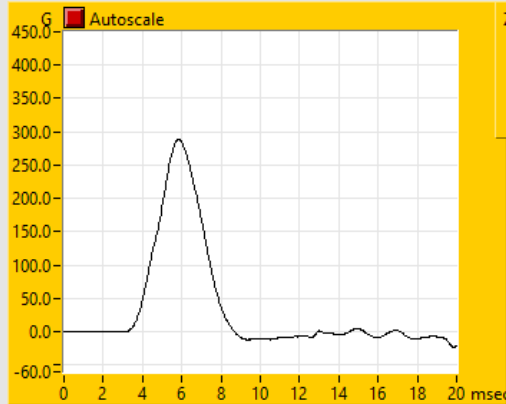
Helmet Manufacturer : KIRSH Helmets (Kirshon Impact)

Address : 75 Big Boom Road
Queensbury, NY 12804
USA

Pre-Test

Testing Laboratory : Cadex Inc.

Address : 755 Montrichard
Saint-Jean-Sur-Richelieu, Qc
J2X5K8



Z ☒

Laboratory Technician name : Joseph Vengen

Lab. Temperature : 19 deg C

Lab. Humidity : 36 %

Selected Filter Frequency : CFC 1000 # 1650 Hz

Acc. sensitivity (axis X) : 1.00 mV/G

Acc. sensitivity (axis Y) : 1.00 mV/G

Acc. sensitivity (axis Z) : 10.72 mV/G

Drop mass assembly : 4.998 kg

Time gate flag height : 25.40 mm

Calibration peak : 300.0 G +/- 20.00 G

Drop Device : Spherical Impactor (Uni-Axial)

M.E.P. Pad Model : M.E.P Pad 58.9 Shore A #06191902

Drop Height : 7.7 cm

ACCEPT

Impact #	Peak Acc.(G)	Velocity IN (m/sec)	Time Gate (msec)	Drop Height (cm)	SI	Energy (Joules)	Test Date	Test Time	HIC	PASS or FAIL
1	283.7	4.3524	5.84	100.0	2255	47.3	2022-05-10	13:15:12	1893	Pass
2	286.0	4.3556	5.83	100.2	2266	47.4	2022-05-10	13:16:15	1895	Pass
3	288.5	4.3305	5.87	100.0	2260	46.9	2022-05-10	13:17:05	1886	Pass

Pre-Test Calibration Results

Uni-Axial System-Check

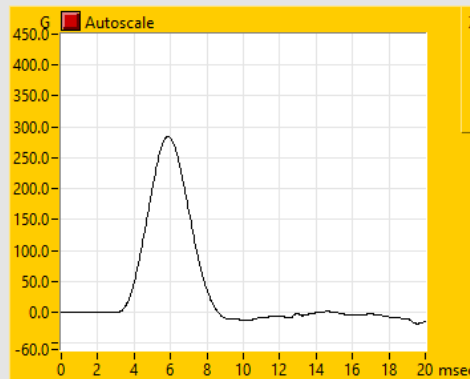
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USA

Post-Test

Testing Laboratory : Cadex Inc.

Address : 755 Montrichard
Saint-Jean-Sur-Richelieu, Qc
J2X5K8



Z ☒

Laboratory Technician name : Joseph Vengen

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Lab. Humidity : 36 %

Selected Filter Frequency : CFC 1000 # 1650 Hz

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Calibration peak : 300.0 G +/- 20.00 G

Drop Device : Spherical Impactor (Uni-Axial)

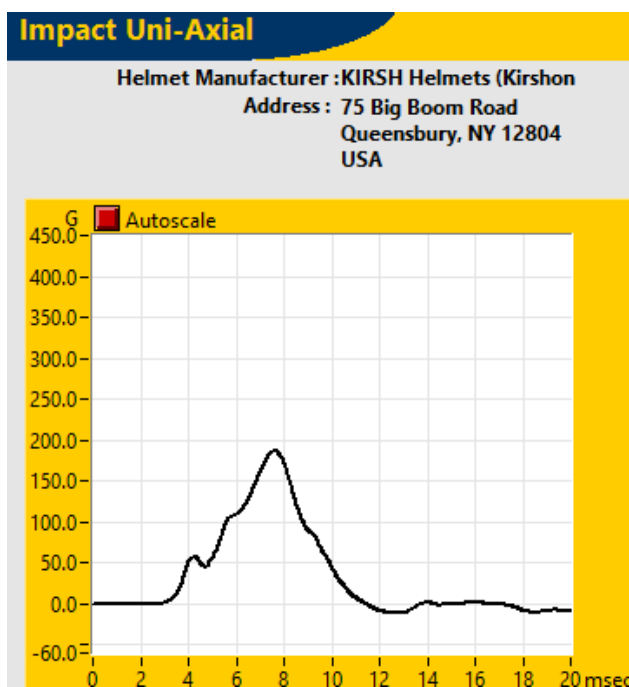
M.E.P. Pad Model : M.E.P Pad 58.9 Shore A #06191902

Drop Height : 7.7 cm

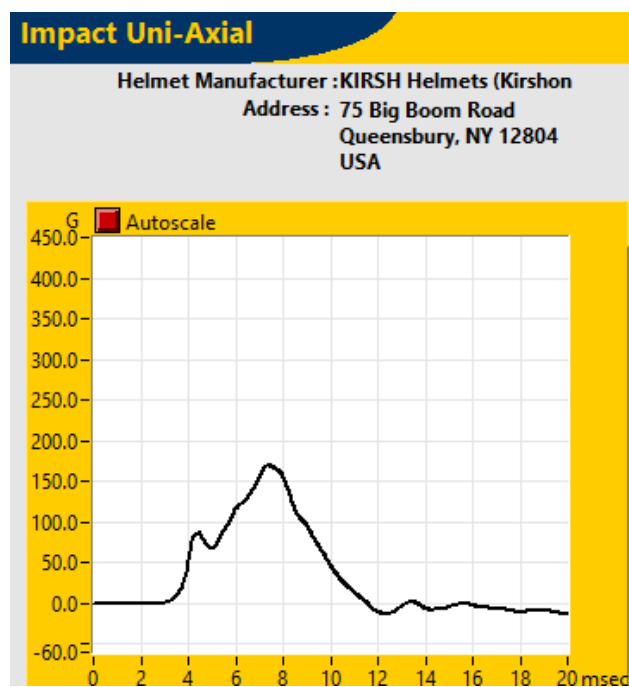
ACCEPT

Impact #	Peak Acc.(G)	Velocity IN (m/sec)	Time Gate (msec)	Drop Height (cm)	SI	Energy (Joules)	Test Date	Test Time	HIC	PASS or FAIL
1	280.9	4.3618	5.82	100.1	2223	47.5	2022-05-10	16:42:32	1850	Pass
2	288.2	4.3383	5.85	100.1	2290	47.0	2022-05-10	16:43:24	1910	Pass
3	284.1	4.3871	5.79	100.4	2276	48.1	2022-05-10	16:44:11	1896	Pass

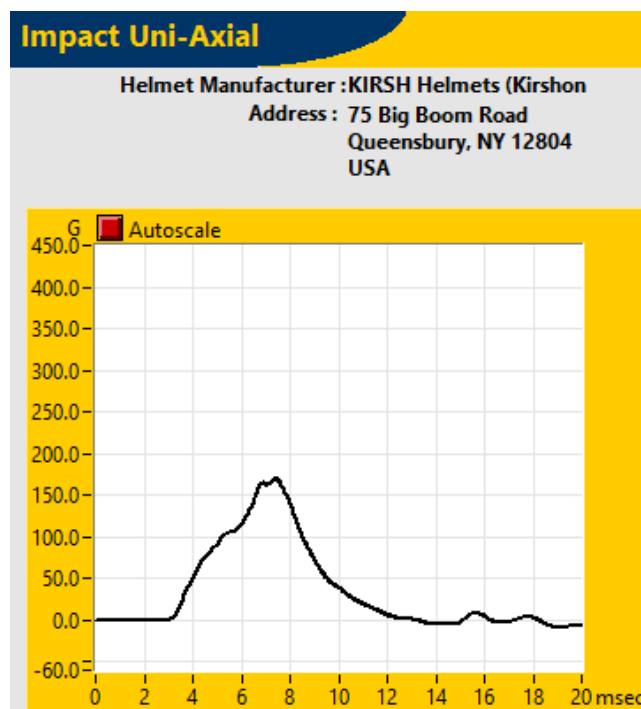
Post Test Calibration Results



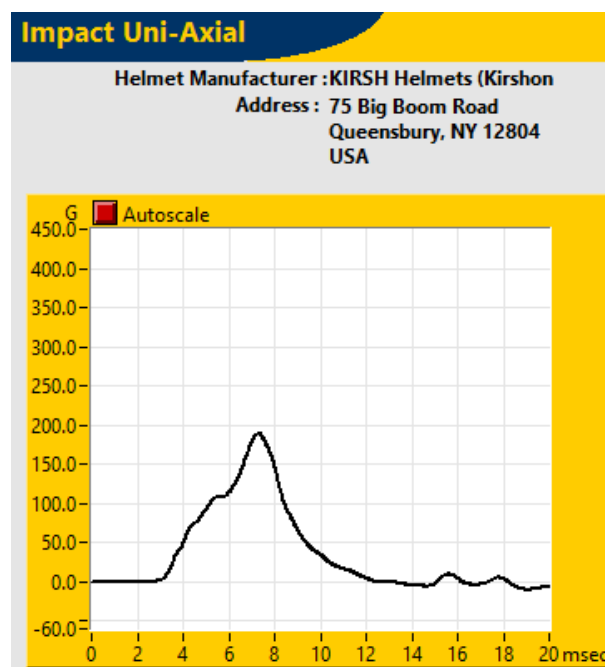
Ambient F.H.A.I #1



Ambient F.H.A.I #2



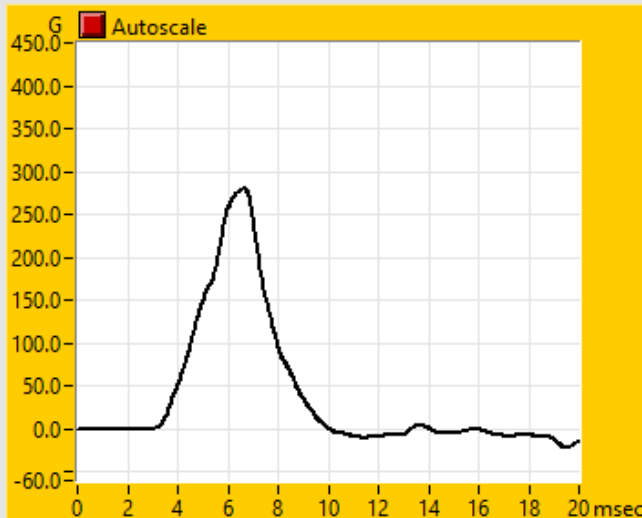
Ambient L.S.H.A.I #1



Ambient L.S.H.A.I #2

Impact Uni-Axial

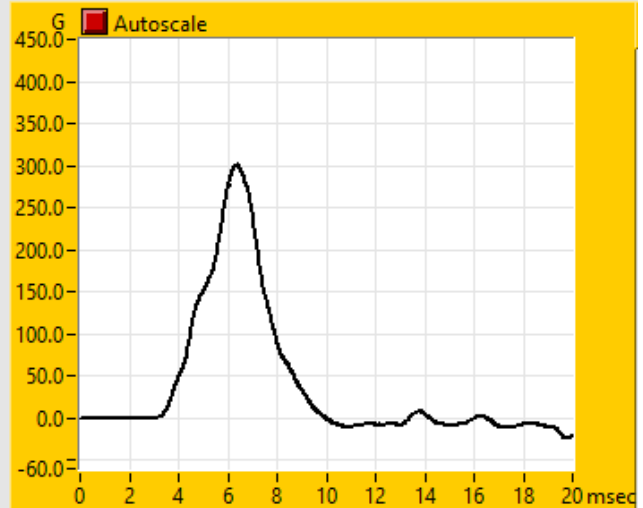
Helmet Manufacturer : KIRSH Helmets (Kirshon)
Address : 75 Big Boom Road
Queensbury, NY 12804
USA



Ambient R.S.F.A.I #1

Impact Uni-Axial

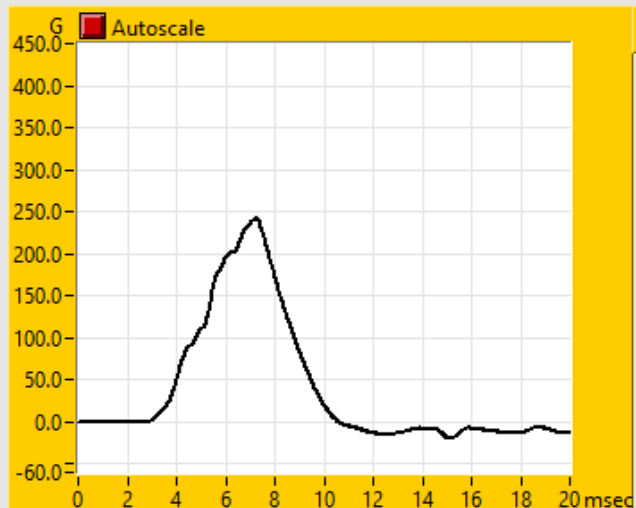
Helmet Manufacturer : KIRSH Helmets (Kirshon)
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USA



Ambient R.S.F.A.I #2

Impact Uni-Axial

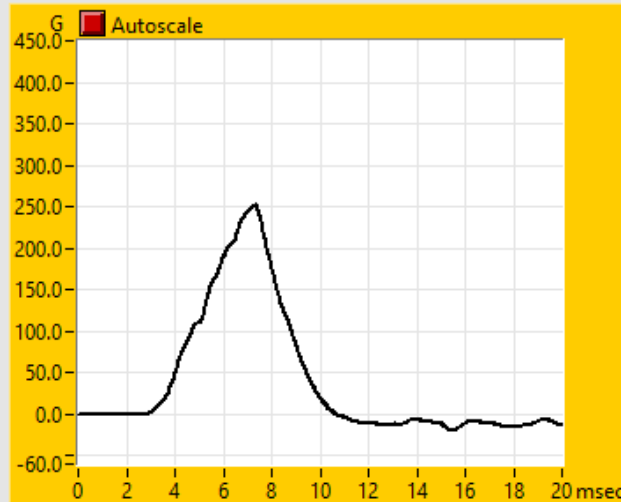
Helmet Manufacturer : KIRSH Helmets (Kirshon)
Address : 75 Big Boom Road
Queensbury, NY 12804
USA



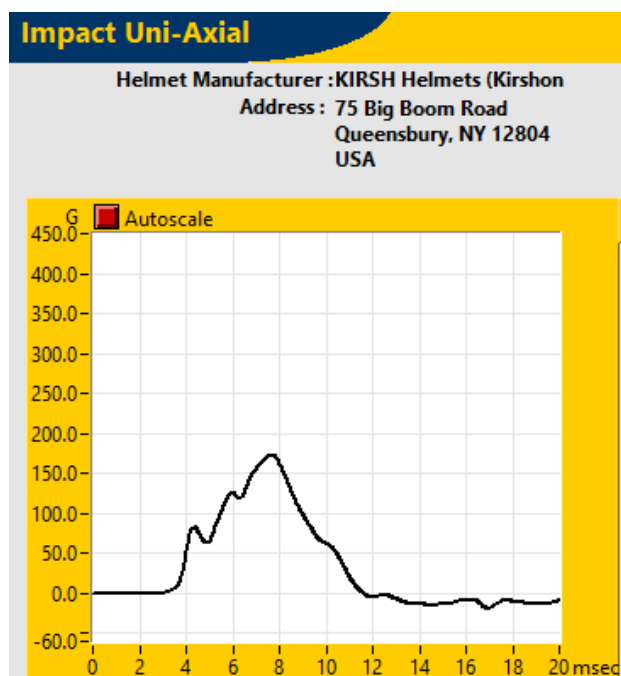
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Impact Uni-Axial

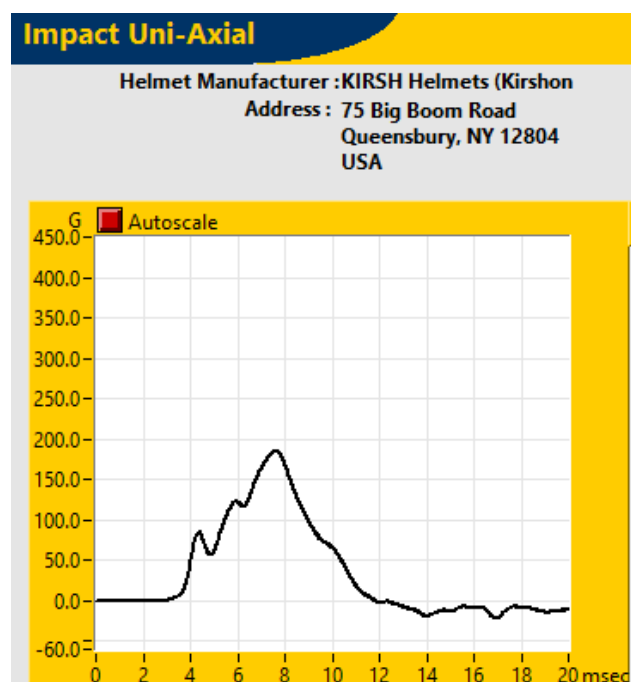
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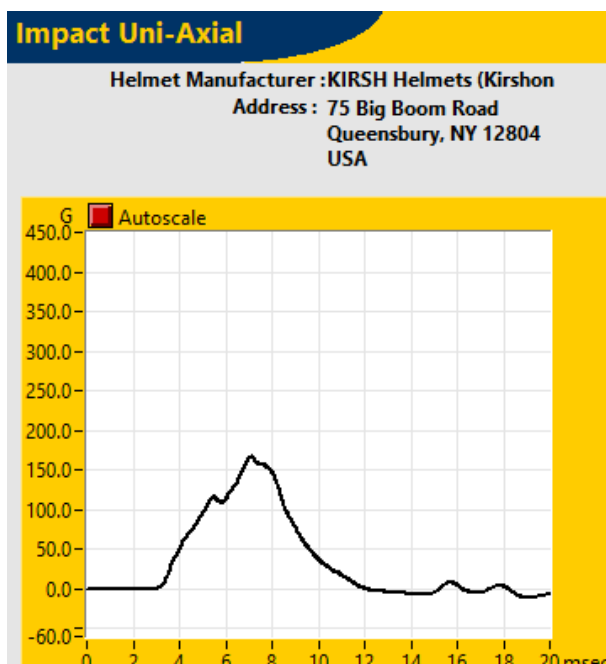
Ambient R.F.A.I #2



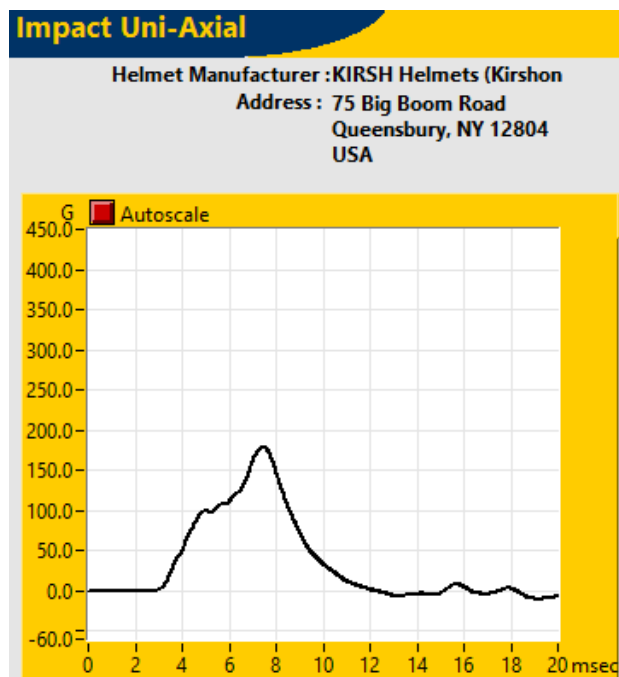
Low Temp F.H.A.I #1



Low Temp F.H.A.I #2



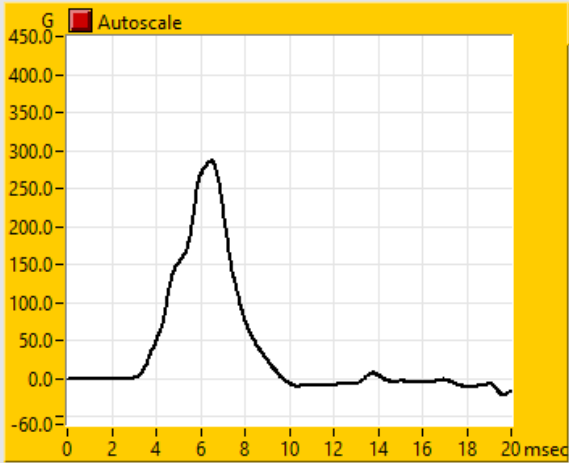
Low Temp L.S.H.A.I #1



Low Temp L.S.H.A.I #2

Impact Uni-Axial

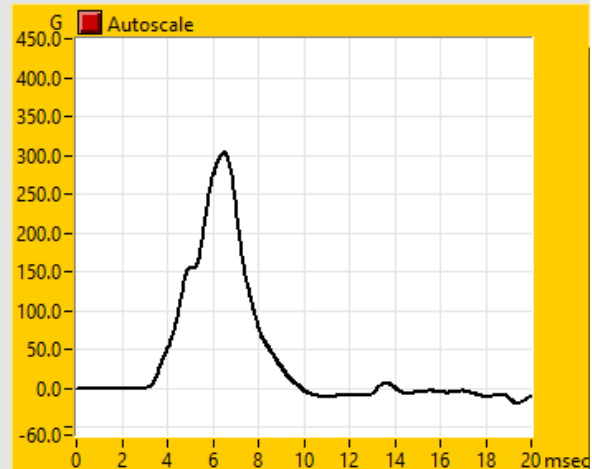
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Low Temp R.S.F.A.I #1

Impact Uni-Axial

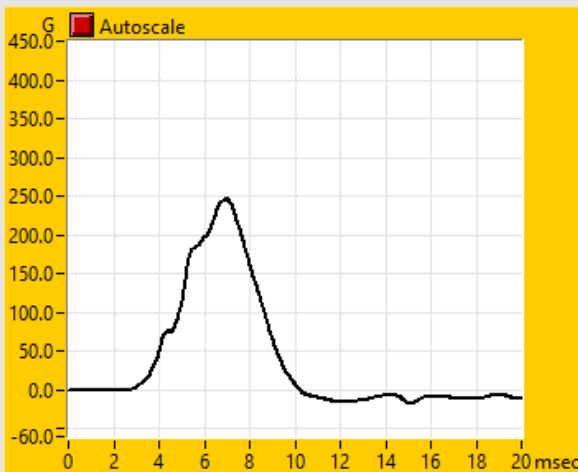
Helmet Manufacturer : KIRSH Helmets (Kirshon)
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USA



Low Temp R.S.F.A.I #2

Impact Uni-Axial

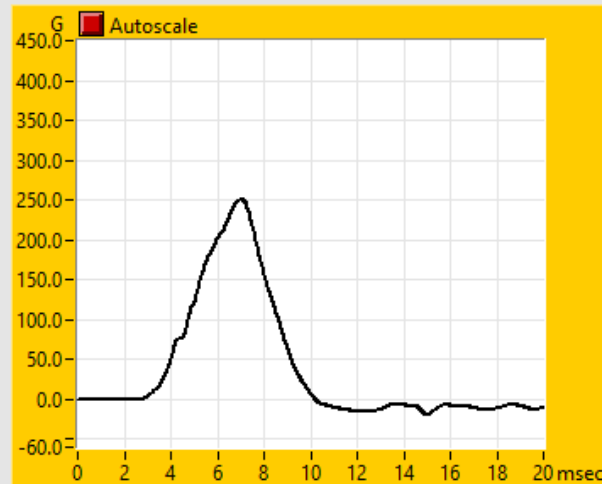
Helmet Manufacturer : KIRSH Helmets (Kirshon)
Address : 75 Big Boom Road
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USA



Low Temp R.F.A.I #1

Impact Uni-Axial

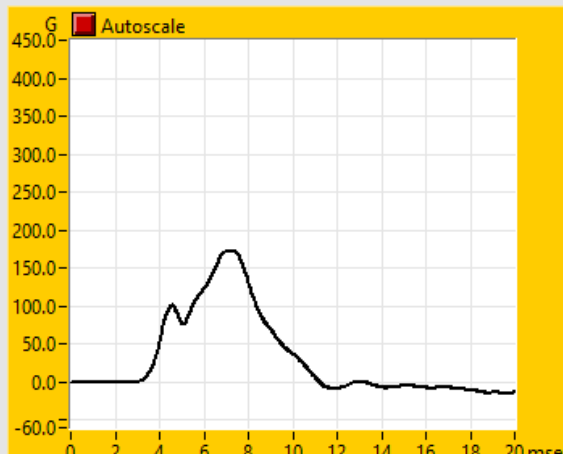
Helmet Manufacturer : KIRSH Helmets (Kirshon)
Address : 75 Big Boom Road
Queensbury, NY 12804
USA



Low Temp R.F.A.I #2

Impact Uni-Axial

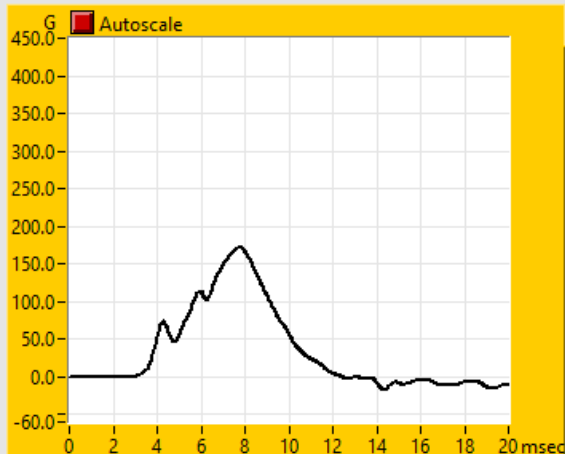
Helmet Manufacturer : KIRSH Helmets (Kirshon)
Address : 75 Big Boom Road
Queensbury, NY 12804
USA



High Temp F.H.A.I #1

Impact Uni-Axial

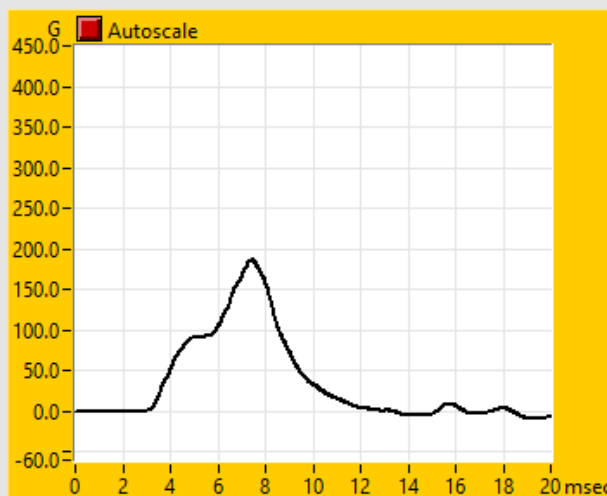
Helmet Manufacturer : KIRSH Helmets (Kirshon)
Address : 75 Big Boom Road
Queensbury, NY 12804
USA



High Temp F.H.A.I #2

Impact Uni-Axial

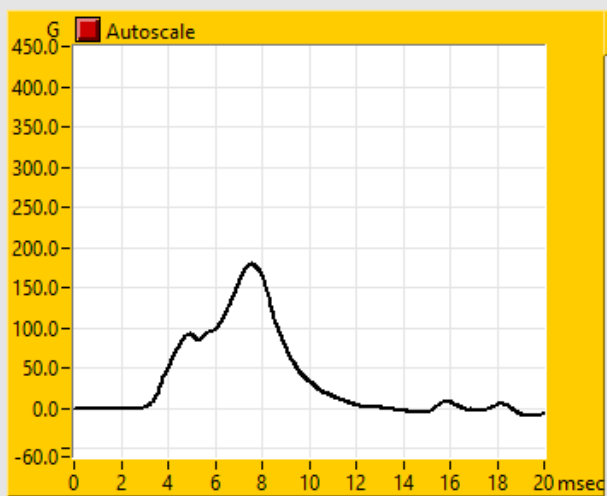
Helmet Manufacturer : KIRSH Helmets (Kirshon)
Address : 75 Big Boom Road
Queensbury, NY 12804
USA



High Temp L.S.H.A.I #1

Impact Uni-Axial

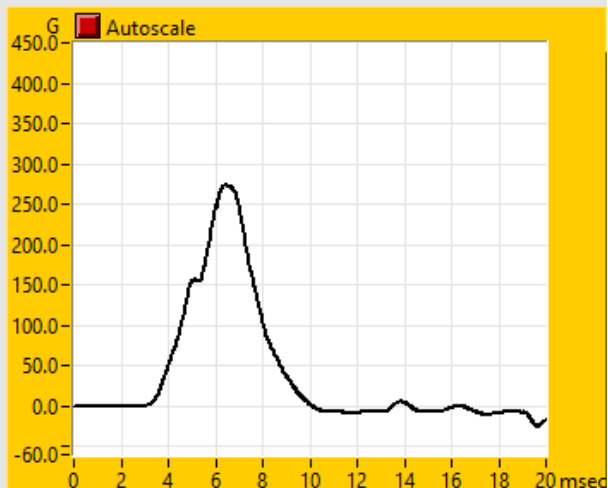
Helmet Manufacturer : KIRSH Helmets (Kirshon)
Address : 75 Big Boom Road
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USA



High Temp L.S.H.A.I #2

Impact Uni-Axial

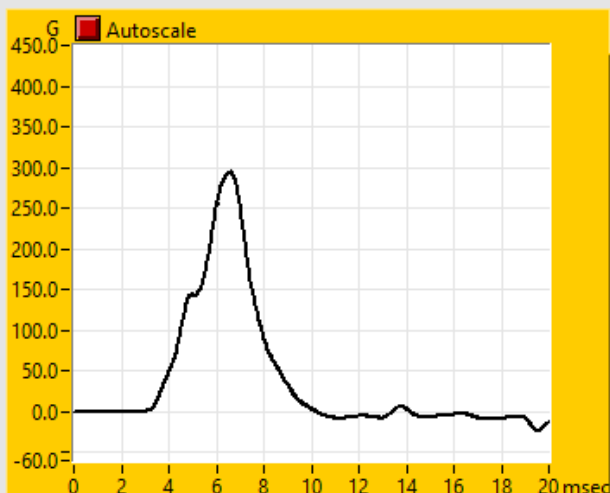
Helmet Manufacturer : KIRSH Helmets (Kirshon)
Address : 75 Big Boom Road
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USA



High Temp R.S.F.A.I #1

Impact Uni-Axial

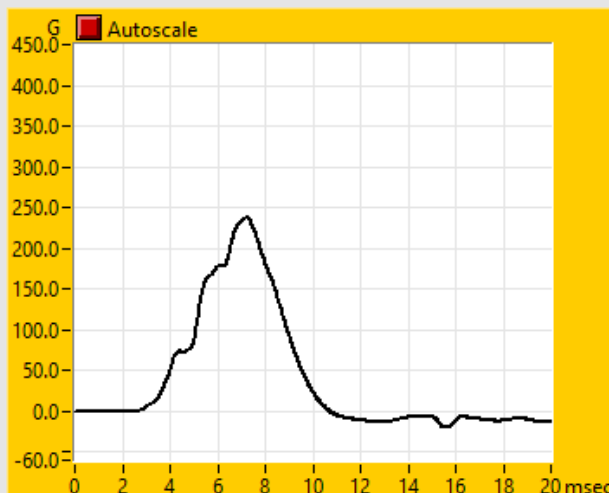
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High Temp R.S.F.A.I #2

Impact Uni-Axial

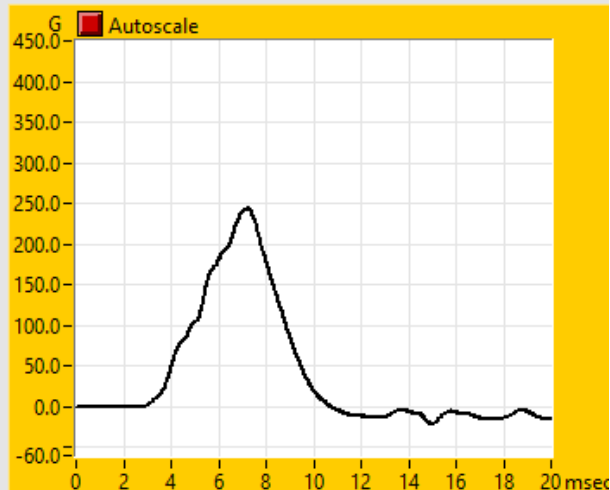
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USA



High Temp R.F.A.I #1

Impact Uni-Axial

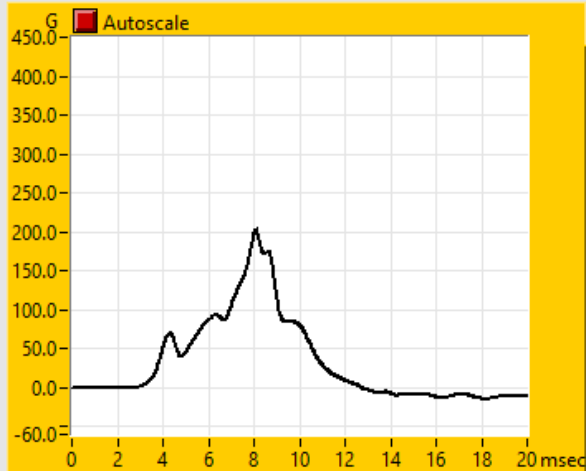
Helmet Manufacturer : KIRSH Helmets (Kirshon)
Address : 75 Big Boom Road
Queensbury, NY 12804
USA



High Temp R.F.A.I #2

Impact Uni-Axial

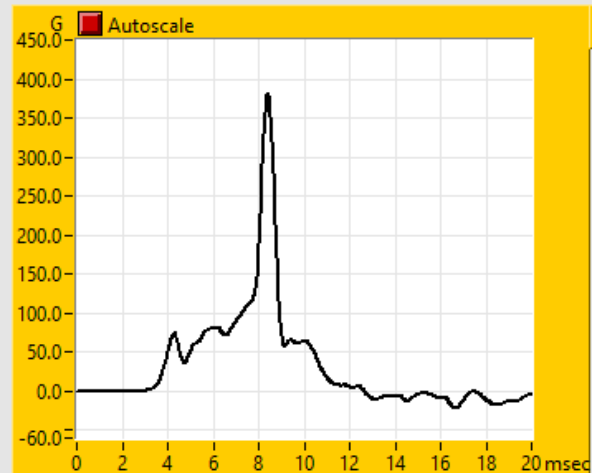
Helmet Manufacturer :KIRSH Helmets (Kirshon)
Address : 75 Big Boom Road
Queensbury, NY 12804
USA



Water Immersed F.H.A.I #1

Impact Uni-Axial

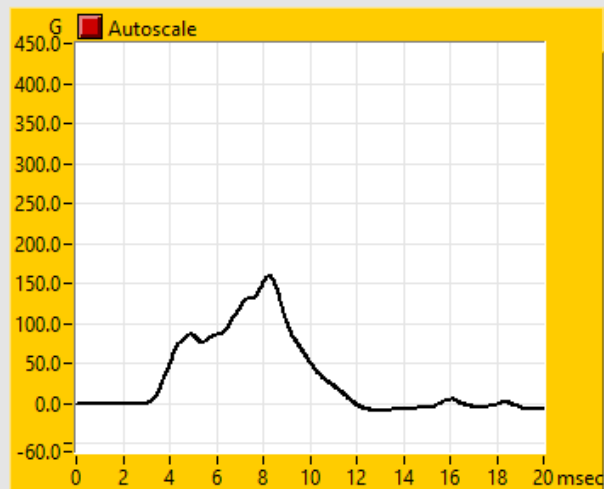
Helmet Manufacturer :KIRSH Helmets (Kirshon)
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USA



Water Immersed F.H.A.I #2

Impact Uni-Axial

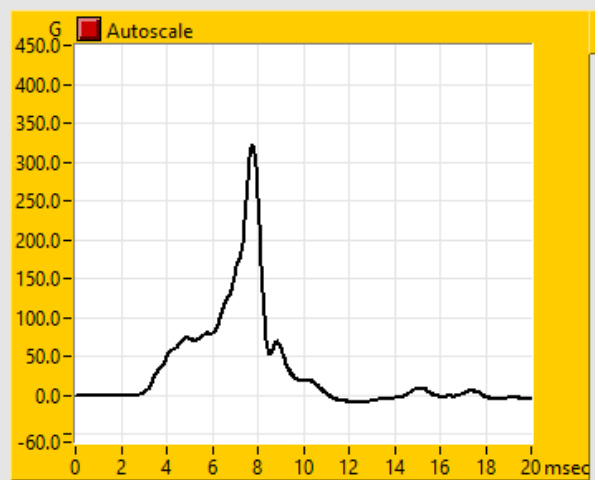
Helmet Manufacturer :KIRSH Helmets (Kirshon)
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USA



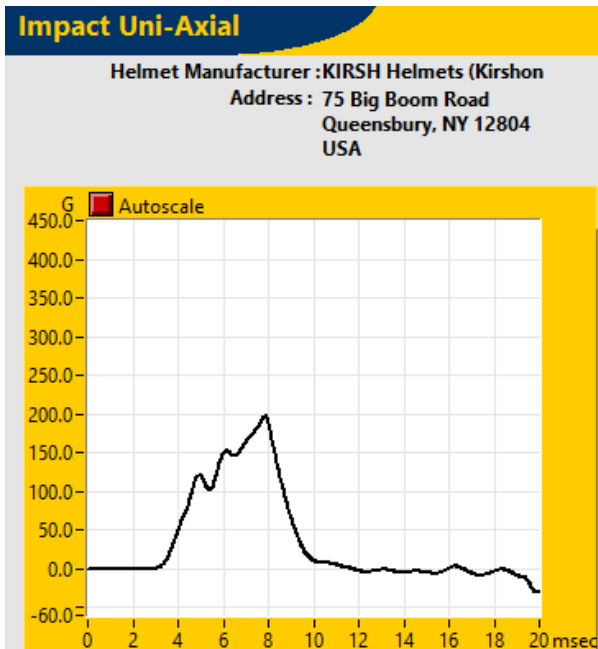
Water Immersed L.S.H.A.I #1

Impact Uni-Axial

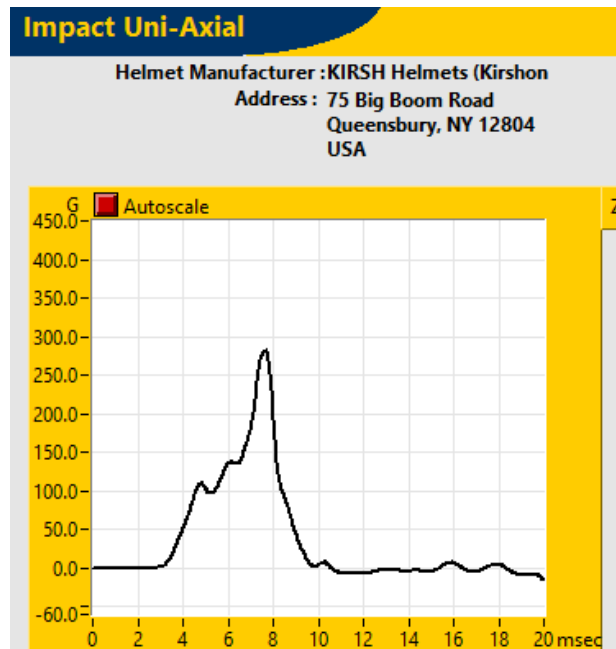
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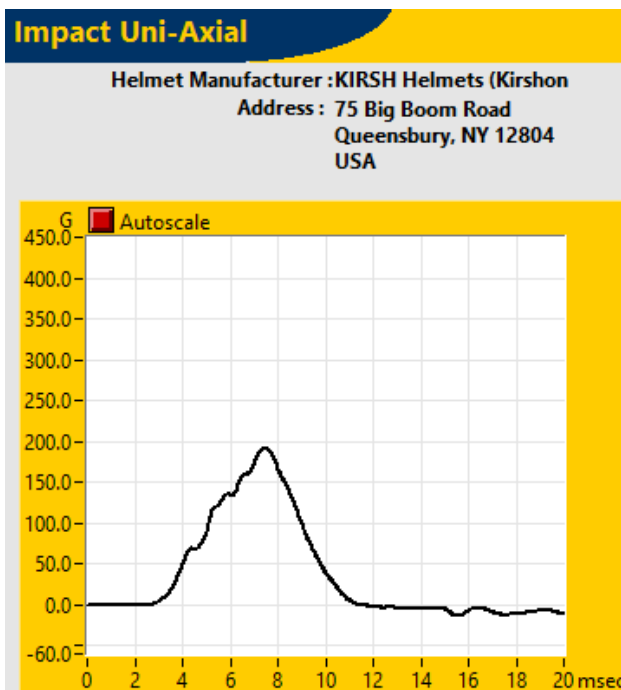
Water Immersed L.S.H.A.I #2



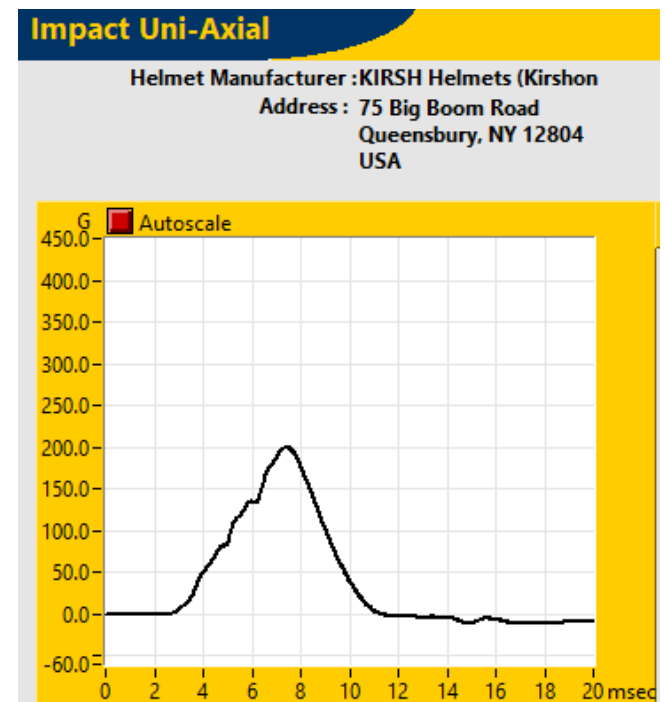
Water Immersed R.S.F.A.I #1



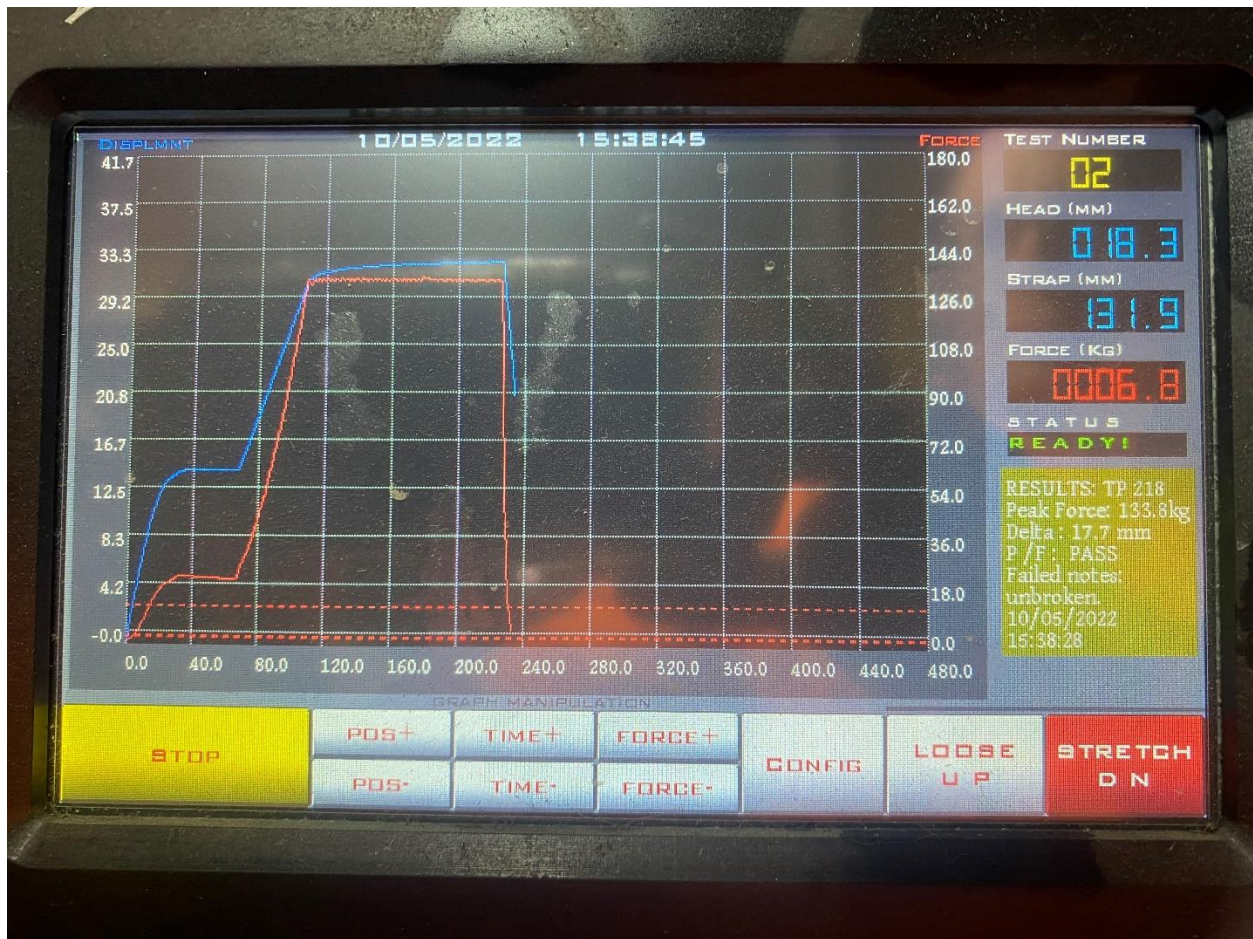
Water Immersed R.S.F.A.I #2



Water Immersed R.F.A.I #1



Water Immersed R.F.A.I #2



Chin Strap Retention Results



Penetration Test First Hit



Penetration Test Second Hit