

REPORT NUMBER: NCAP-CAL-21-006

**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

**Nissan Motor Co. LTD
2021 Nissan Rogue Sport
Five Door SUV**

NHTSA No: M20215205

**PREPARED BY:
CALSPAN CORPORATION
P.O. BOX 400
BUFFALO, NEW YORK 14225**



July 9, 2021

FINAL REPORT

**PREPARED FOR:
U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
1200 NEW JERSEY AVE SE, ROOM W43-410
WASHINGTON, D.C. 20590**

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Date: July 9, 2021

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Date: July 9, 2021

FINAL REPORT ACCEPTANCE BY OCWS:

Division Chief, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

COTR, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

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16. Abstract A 56.30 km/h (35 mph), NCAP frontal rigid barrier impact test was conducted on a 2021 Nissan Rogue Sport SUV in accordance with the specifications of the Office of Crashworthiness Standards Laboratory Procedure for NCAP Full Frontal Rigid Barrier Impact Testing. The test was conducted at Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on March 15, 2021. The impact velocity of the vehicle was 56.18 km/h, and the ambient temperature at the barrier face at the time of impact was 21°C. The target vehicle post-test maximum crush was 293 mm at the vehicle's centerline. The test vehicle's occupant performance data is as follows:																																																									
<table border="1"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th rowspan="2">Units</th> <th colspan="2">Driver ATD (Serial No. 142)</th> <th colspan="2">Passenger ATD (Serial No. 140)</th> </tr> <tr> <th>Threshold</th> <th>Result</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td></td> <td>700</td> <td>398.799</td> <td>700</td> <td>131.984</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-23.444</td> <td>52</td> <td>-12.686</td> </tr> <tr> <td>Nij</td> <td></td> <td>1</td> <td>0.337</td> <td>1</td> <td>0.353</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4,170</td> <td>1552.754</td> <td>2,620</td> <td>839.640</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4,000</td> <td>-471.712</td> <td>2,520</td> <td>-152.449</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10,008</td> <td>-1182.408</td> <td>6,805</td> <td>-1454.876</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10,008</td> <td>-1238.298</td> <td>6,805</td> <td>-2534.701</td> </tr> </tbody> </table>						Measurement Description	Units	Driver ATD (Serial No. 142)		Passenger ATD (Serial No. 140)		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)		700	398.799	700	131.984	Maximum Chest Compression	mm	63	-23.444	52	-12.686	Nij		1	0.337	1	0.353	Neck Tension	N	4,170	1552.754	2,620	839.640	Neck Compression	N	4,000	-471.712	2,520	-152.449	Left Femur Force	N	10,008	-1182.408	6,805	-1454.876	Right Femur Force	N	10,008	-1238.298	6,805	-2534.701
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TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
1	Purpose and Summary of the Test	1-1
2	Occupant and Vehicle Information / Data Sheets	2-1
<u>Data Sheet</u>		<u>Page</u>
1	General Test and Vehicle Parameter Data	2-2
2	Seat Adjustment, Fuel System, and Steering Wheel Data	2-6
3	Dummy Longitudinal Clearance Dimensions	2-8
4	Dummy Lateral Clearance Dimensions	2-9
5	Seat Belt Positioning Data	2-10
6	High-Speed Camera Locations and Data	2-11
7	Vehicle Accelerometer Locations	2-13
8	Photographic Reference Target Locations	2-14
9	Load Cell Locations on Fixed Barrier	2-15
10	Test Vehicle Summary of Results	2-16
11	Post-Test Observations	2-17
12	Vehicle Profile Measurements	2-18
13	Accident Investigation Division Data	2-20
14	Vehicle Intrusion Measurements	2-21
15	Summary of Indicant FMVSS No.212 and FMVSS No.219 (Partial) Data	2-23
16	FMVSS 301 Barrier Impact & Static Rollover Results	2-25
17	Dummy/Vehicle Temperature Stabilization Chart	2-26
<u>Appendix</u>		<u>Page</u>
A	Photographs	A-1
B	Dummy Response Data Traces	B-1
C	Dummy Calibration and Performance Verification Data	C-1
D	Test Equipment and Instrumentation Calibration	D-1

SECTION 1

PURPOSE AND SUMMARY OF TEST

PURPOSE

This 56.3 km/h frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. 693JJ919D000005. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for consumer information purposes.

The 56.3 km/h frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Procedure for NCAP Full Frontal Rigid Barrier Impact Testing.

SUMMARY

A load cell barrier consisting of 128 load cells was impacted by a 2021 Nissan Rogue Sport SUV at a velocity of 56.18 km/h. The test was performed at Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on March 15, 2021. Pre- and post-test photographs of the vehicle and dummies to document the test can be found in Appendix A. One real-time camera and 16 high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in Data Sheet 6 of this report.

One Part 572E, 50th percentile male anthropomorphic test device (ATD), was placed in the driver seating position and one Part 572O 5th percentile female ATD was placed in the right-front passenger seating position according to dummy placement instructions specified in the Laboratory Procedure for NCAP Full Frontal Rigid Barrier Impact Testing. Both ATDs were fully instrumented with head, chest and pelvis tri-axial accelerometers, chest displacement potentiometers, upper neck transducers, femur load cells, and lower leg instrumentation. Seat belt load cells were not installed on the driver's and passenger's lap and shoulder belts. The driver (position 1) ATD (Serial No. 142) and the right-front passenger (position 2) ATD (Serial No. 140) were qualified prior to this test. Certification details, along with instrumentation calibration data, can be found in Appendix C of this report.

The 486 channels of data were recorded on an on-board data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces.

There was 99.2 percent windshield retention and no intrusion into the protected zone of the windshield during the event. There was a total of 0.0 grams of stoddard solvent leakage after the event or during any phase of the static rollover. The maximum static crush of the vehicle was 293 mm and both driver and passenger side doors remained closed during the impact event and were operable after the impact.

The driver's visible contact points were as follows: The driver's head contacted the frontal airbag and then the head restraint. The upper torso contacted the frontal airbag. Both knees contacted the knee air bag.

The passenger's visible contact points were as follows: The passenger's head contacted the frontal airbag and then the head restraint. The upper torso contacted the frontal airbag. Both knees contacted the knee airbag

The occupant data is summarized below.

ATD Position	HIC ₁₅	Nij	Neck Tension (N)	Neck Comp. (N)	3ms Chest Clip (Gs)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)
Driver (50 th)	398.799	0.337	1552.754	-471.712	42.690	-23.444	-1182.408	-1238.298
Passenger (5 th)	131.984	0.353	839.640	-152.449	36.250	-12.686	-1454.876	-2534.701

GENERAL COMMENTS:

1. P1 (Driver) serial number - 142
2. P2 (Passenger) serial number – 140
3. P1 Seatbelt shoulder and lap load cells were not installed
4. P2 Seatbelt shoulder and lap load cells were not installed

Data Anomalies:

- BARRIER D-01 FX – QUESTIONABLE DATA

SECTION 2

OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

This section contains information reporting for the following Data Sheets:

Data Sheet No. 1 – General Test and Vehicle Parameter Data

Data Sheet No. 2 – Seat Adjustment, Fuel System, and Steering Wheel Data

Data Sheet No. 3 – Dummy Longitudinal Clearance Dimensions

Data Sheet No. 4 – Dummy Lateral Clearance Dimensions

Data Sheet No. 5 – Seat Belt Positioning Data

Data Sheet No. 6 – High-Speed Camera Locations and Data

Data Sheet No. 7 – Vehicle Accelerometer Locations

Data Sheet No. 8 – Photographic Reference Target Locations

Data Sheet No. 9 – Load Cell Locations on Fixed Barrier

Data Sheet No. 10 – Test Vehicle Summary of Results

Data Sheet No. 11 – Post-Test Observations

Data Sheet No. 12 – Vehicle Profile Measurements

Data Sheet No. 13 – Accident Investigation Division Data

Data Sheet No. 14 – Vehicle Intrusion Measurements

Data Sheet No. 15 – Summary of Indicant FMVSS No. 212 and FMVSS No. 219 (Partial)

Data Sheet No. 16 – FMVSS 301 Barrier Impact and Static Rollover Results

Data Sheet No. 17 – Dummy/Vehicle Temperature Stabilization Chart

**DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
 Test Date: 3/15/2021

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20215205	Traction Control System (TCS)	Yes
Model Year	2021	Power Steering	Yes
Make	Nissan	Power Window Auto-Reverse	No
Model	Rogue Sport	Driver Frontal Airbag	Yes
Body Style	SUV	Driver Curtain Airbag	Yes
VIN	JN1BJ1AW9MW422109	Driver Head/Torso Airbag	No
Body Color	Gray	Driver Torso Airbag	No
Odometer Reading (km /mi)	165 mi	Driver Torso/Pelvis Airbag	Yes
Engine Displacement (L)	2.0	Driver Pelvis Airbag	No
Type / No. Cylinders	I4	Driver Knee Airbag	Yes
Engine Placement	Transverse	Front Pass. Frontal Airbag	Yes
Transmission Type	Automatic	Front Pass. Curtain Airbag	Yes
Transmission Speeds	CVT	Front Pass. Head/Torso Airbag	No
Overdrive	Yes	Front Pass. Torso Airbag	No
Final Drive	All Wheel Drive	Front Pass. Torso/Pelvis Airbag	Yes
Roof Rack	No	Front Pass. Pelvis Airbag	No
Sunroof / T-Top	No	Front Pass. Knee Airbag	Yes
Running Boards	No	Driver Pretensioner	Yes
Tilt Steering Wheel	Yes	Driver Load Limiter	Yes
Power Seats	No	Front Pass. Pretensioner	Yes
Anti-Lock Brakes (ABS)	Yes	Front Pass. Load Limiter	Yes
Automatic Door Locks (ADLs)	Yes	Other –	-

Does owner's manual provide instructions to turn off automatic door locks?

No

DATA FROM CERTIFICATION LABEL

Manufactured By	Nissan Motor Co, LTD	GVWR (kg)	2021
Date of Manufacture	12/20	GAWR Front (kg)	1075
		GAWR Rear (kg)	962

VEHICLE SEATING AND WEIGHT CAPACITY DATA

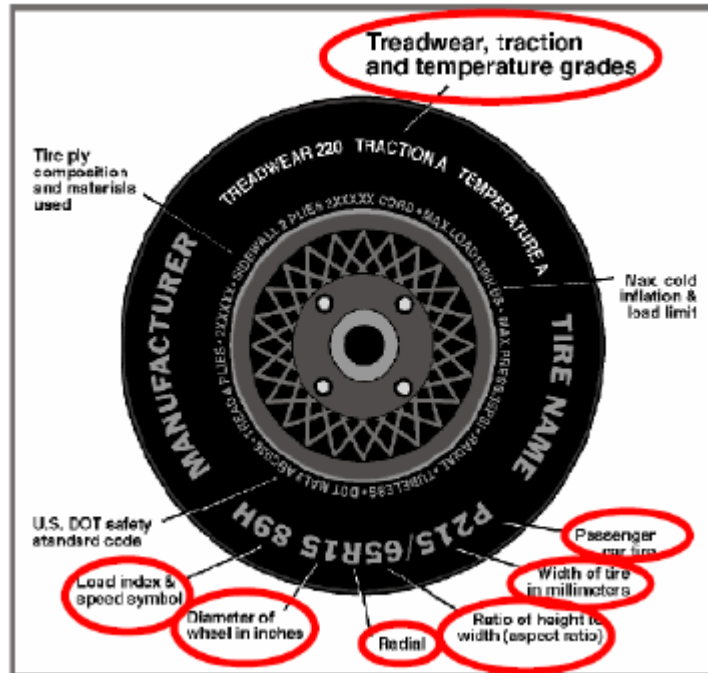
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench	N/A	
Number of Occupants	2	3	N/A	5
Capacity Wt. (VCW) (kg)				408
Cargo Wt. (RCLW) (kg)				67.8

DATA SHEET NO. 1 ... (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
 Test Date: 3/15/2021

Collect items circled in red, tire manufacturer, and tire name.



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	230	230
Recommended Tire Size	215/60R17	215/60R17
Tire Size on Vehicle	215/60R17	215/60R17
Tire Manufacturer	Bridgestone	Bridgestone
Tire Model	Ecopia H/L 422 Plus	Ecopia H/L 422 Plus
Treadwear	600	600
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Nylon	1 Polyester, 2 Steel, 1 Nylon
Load Index / Speed Symbol	96H	96H
Tire Material	Rubber	Rubber
DOT Safety Code Left	ELERJKL4920	ELERJKL5020
DOT Safety Code Right	ELERJKL4920	ELERJKL5020

DATA SHEET NO. 1 ... (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
 Test Date: 3/15/2021

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	464	309		505	383	
Right	kg	453	303		479	365	
Ratio	%	60.0	40.0		56.8	43.2	
Totals	kg	917	612	1529	984	748	1732

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1529	(A)
Weight of 1 P572E ATD & 1 P572O ATD	kg	142	(B)
Rated Cargo / Luggage Weight (RCLW)	kg	67.8	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1738.8	(A+B+C)

TEST VEHICLE ATTITUDES AND CG

Condition	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	823	825	845	848	1058
As Tested	mm	812	815	814	817	1141
Post-Test	mm	883	847	820	797	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2643
Total Vehicle Length at Left Side	mm	4311
Total Vehicle Length at Centerline	mm	4386
Total Vehicle Length at Right Side	mm	4311
Weight of Ballast in Cargo Area	kg	0
Weight of Vehicle Components Removed	kg	30
Amount of Stoddard Solvent in Fuel Tank	L	51.1

LIST OF COMPONENTS REMOVED TO MEET TEST WEIGHT:

Trunk Carpeting, Spare Tire, Jack, Tail Lights, Rear Wiper Motor

DATA SHEET NO.1 ... (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
 Test Date: 3/15/2021

TARGET VEHICLE STRUCTURAL MEASUREMENT

No.	Description	Pre-Test
1	Total Length	4386
2	Total Width	1790
3*	Bumper Top Height	594
4*	Bumper Bottom Height	480
5*	Longitudinal Member Top Height	631
6	Distance Between Longitudinal Members	1032
7	Longitudinal Member Width	54
8*	Engine Top Height	915
9*	Engine Bottom Height	229
10	Engine and Gearbox Width	552
11	Front Bumper-Engine Distance	596
12*	Front Shock Absorber Fixing Height	957
13*	Bonnet Leading Edge Height	853
14	Front Shock Absorber Fixing Width	1195
15	Front Bumper – Front Axle Distance	910
16	Front Axle – A Pillar Distance	490
17	A-Pillar – B-Pillar Distance	1112
18	B-Pillar – Rear Axle Distance	1041
19	B-Pillar – C-Pillar Distance	912
20*	Roof Sill Bottom Height	1457
21*	Roof Sill Top Height	1504
22*	Floor Sill Bottom Height	362
23*	Floor Sill Top Height	440

*Height Measurements are taken from the ground
 Note: All measurements are in millimeters

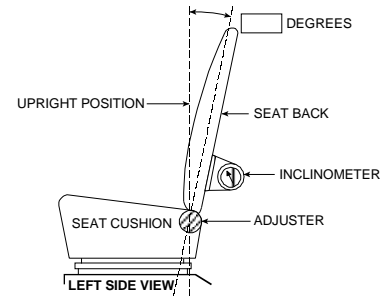
DATA SHEET NO. 2
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
 Test Date: 3/15/2021

NOMINAL DESIGN RIDING POSITION

The driver's seat back was set to the manufacturer's designated angle. The passenger's seat back was positioned in a similar manner as the driver's seat back. Seat back angles are measured at the headrest post bezel using a digital inclinometer.



FRONT SEAT ASSEMBLY

Seating Position	Degrees
Driver Seat Back Angle	2.8
Passenger Seat Back Angle	1.6

SEAT FORE / AFT POSITIONS

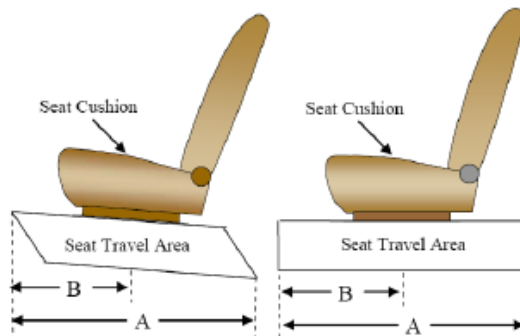
The driver's seat was positioned at the mid-point of fore/aft travel at its lowest position. The passenger's seat was positioned at the most forward position of fore/aft travel. Zero is defined as the forward most position.

Seating Position	Total Fore / Aft Travel	Placed in Position #
Driver Seat	25 (0-24)	10
Passenger Seat	25 (0-24)	0

SEAT BELT UPPER ANCHORAGE

The driver's seat belt anchorage was positioned according to the manufacturer's designated positioning for a 50th percentile adult male ATD. The passenger's seat belt anchorage was positioned according to the manufacturer's designated positioning for a 5th percentile adult female ATD. For this test zero is defined as the uppermost position.

Seating Position	Total # of Positions	Placed in Position #
Driver Seat	4 (0-3)	0
Passenger Seat	4 (0-3)	0



DATA SHEET NO. 2 ... (CONTINUED)
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

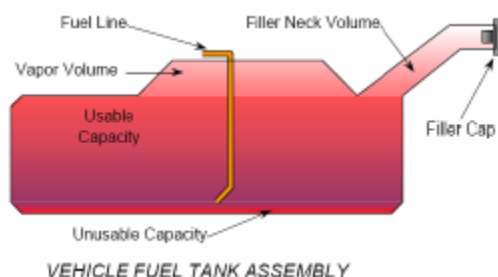
NHTSA No.: M20215205
 Test Date: 3/15/2021

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	55
Usable Capacity of "Optional Tank"	N/A
92%-94% of Usable Capacity	50.6 – 51.7
Actual Amount of Solvent Used	51.1
1/3 of Usable Capacity	18.3

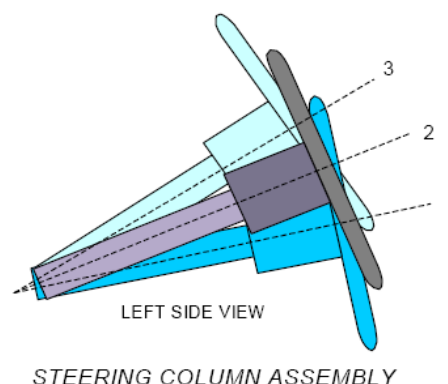
FUEL PUMP

The vehicle is equipped with an electric fuel pump. The fuel filler neck is on the right side of the vehicle. The pump creates positive pressure in the fuel lines, pushing the gasoline to the engine. See form 1 for more information.



STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. For angular measurements, a digital inclinometer was used to measure a plate which was placed across the steering wheel rim. A tape measure was used to measure the telescoping steering wheel travel.



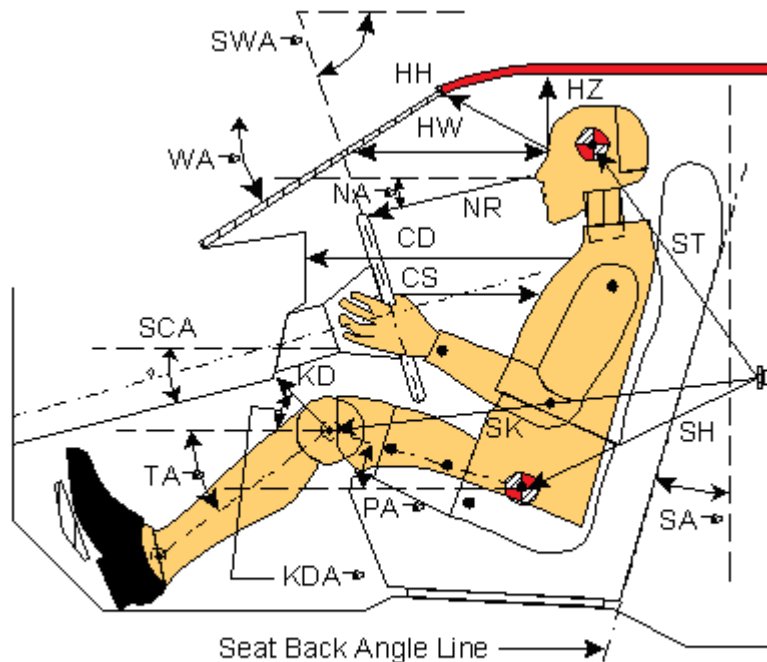
STEERING COLUMN POSITIONS

Description	Degrees	Fore / Aft Position (mm)
Lowermost position No. 1	24.4	
Geometric center position No. 2	26.7	
Uppermost position No. 3	28.9	
Telescoping Steering Wheel Travel		48
Test Position	26.7	24

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2021 Nissan Rogue Sport SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
Test Date: 3/15/2021



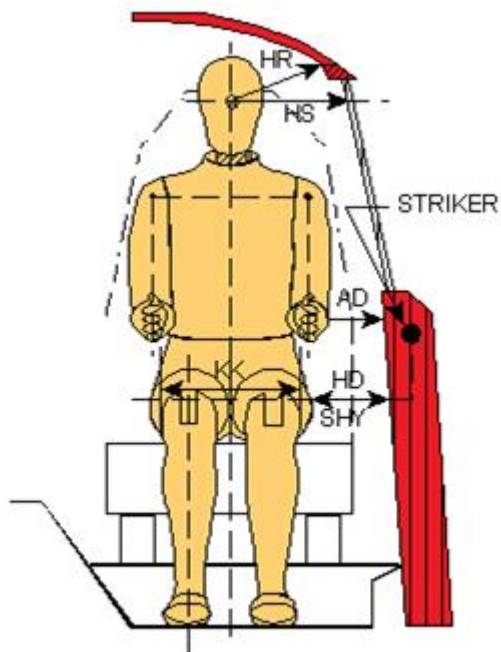
Left Side View

Code	Measurement Description	Driver (SN: 142)		Passenger (SN: 140)	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA ^o	Windshield Angle		25.5		
SWA ^o	Steering Wheel Angle		26.7		
SCA ^o	Steering Column Angle		63.3		
SA ^o	Seat Back Angle (on headrest post)		2.8		1.6
HZ	Head to Roof (Z)	205	90	196	90
HH	Head to Header	328	32.8	279	56.1
HW	Head to Windshield	665	0	614	0
NR	Nose to Rim / Dash	400	9.6	480	28.8
CD	Chest to Dash	528		390	
CS	Chest to Steering Hub	300	4.4		
RA	Rim to Abdomen	188	0		
KDL	Left Knee to Dash	142	32.6	85	45.3
KDR	Right Knee to Dash	140	21.7	78	34.6
PA ^o	Pelvic Angle		24.1		20.1
TA ^o	Tibia Angle		38.0		50.8
SK	Striker to Knee	649	1.1	735	7.1
ST	Striker to Head	554	72.4	543	58.2
SH	Striker to H-Point	314	25.5	417	22.4

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
 Test Date: 3/15/2021



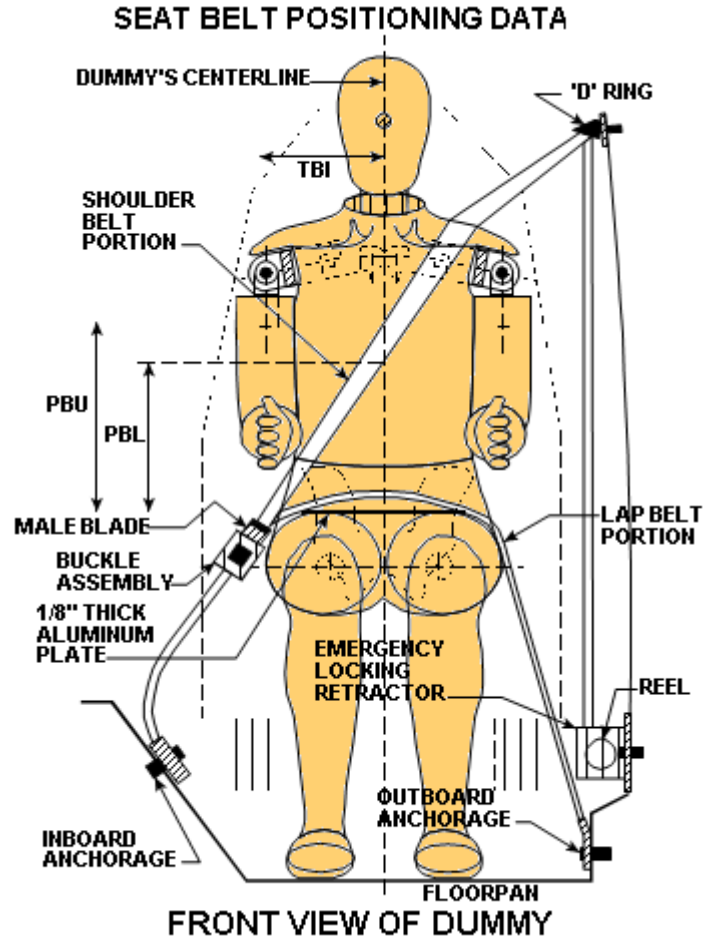
Front View

Code	Description	Driver (mm)	Passenger (mm)
AD	Arm to Door	47	65
HD	H-Point to Door	152	211
HR	Head to Side Header	239	264
HS	Head to Side Window	355	380
KK	Knee to Knee	320	167
SHY	Striker to H-Point (Y Direction)	265	275
AA	Ankle to Ankle	335	166

**DATA SHEET NO. 5
SEAT BELT POSITIONING DATA**

Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
 Test Date: 3/15/2021



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU — Top surface of reference to belt upper edge	mm	310	330
PBL — Top surface of reference to belt lower edge	mm	236	235

BELT LENGTH DATA

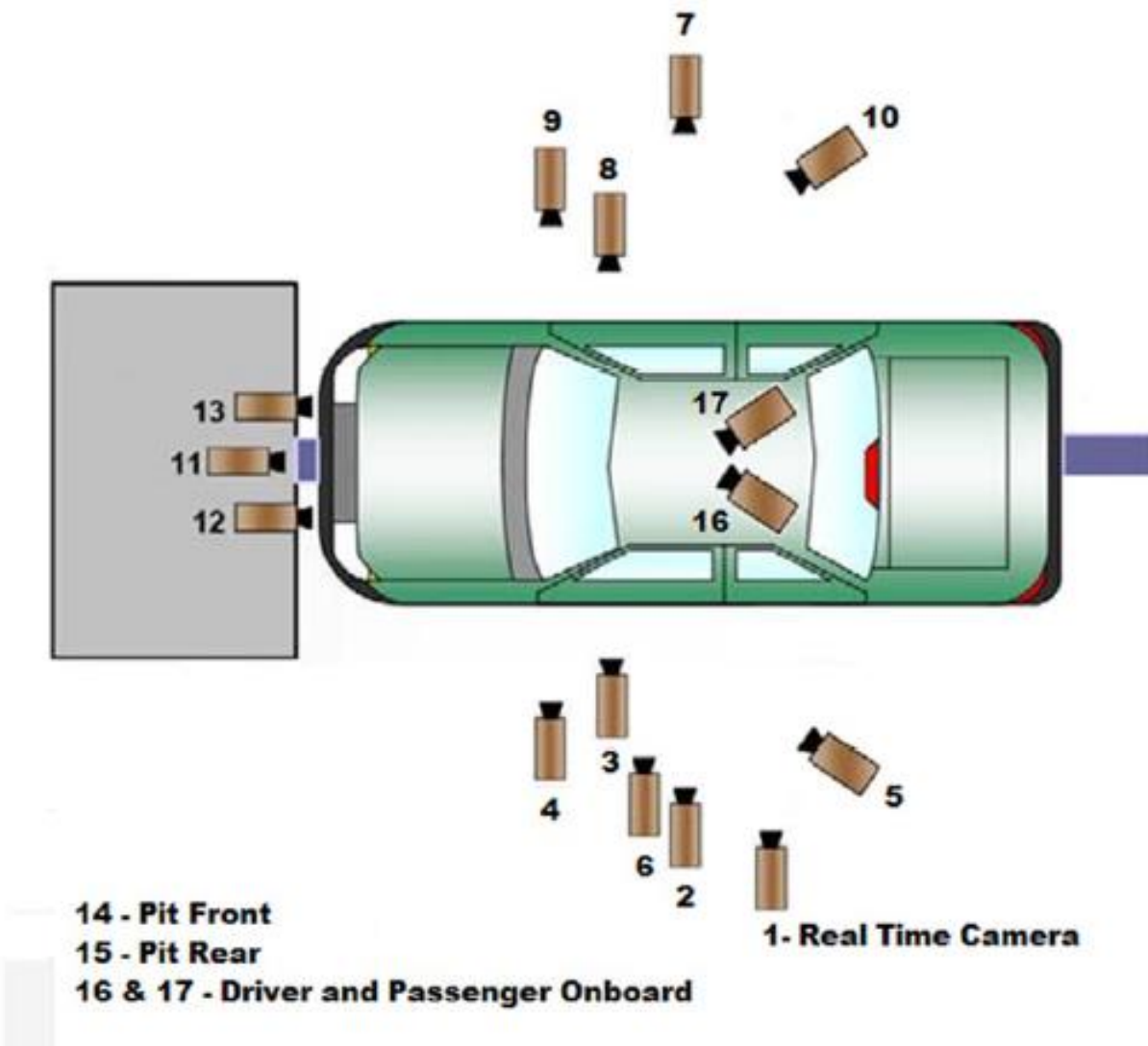
Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	874	955
Lap Belt Length as measured on ATD	mm	755	850
Remainder of belt on reel	mm	74	595
Total belt length for continuous webbing systems	mm	2350	2400

**DATA SHEET NO. 6
HIGH-SPEED CAMERA LOCATIONS AND DATA**

Test Vehicle: 2021 Nissan Rogue Sport SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
Test Date: 3/15/2021

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 ... (CONTINUED)
HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
 Test Date: 3/15/2021

CAMERA LOCATIONS

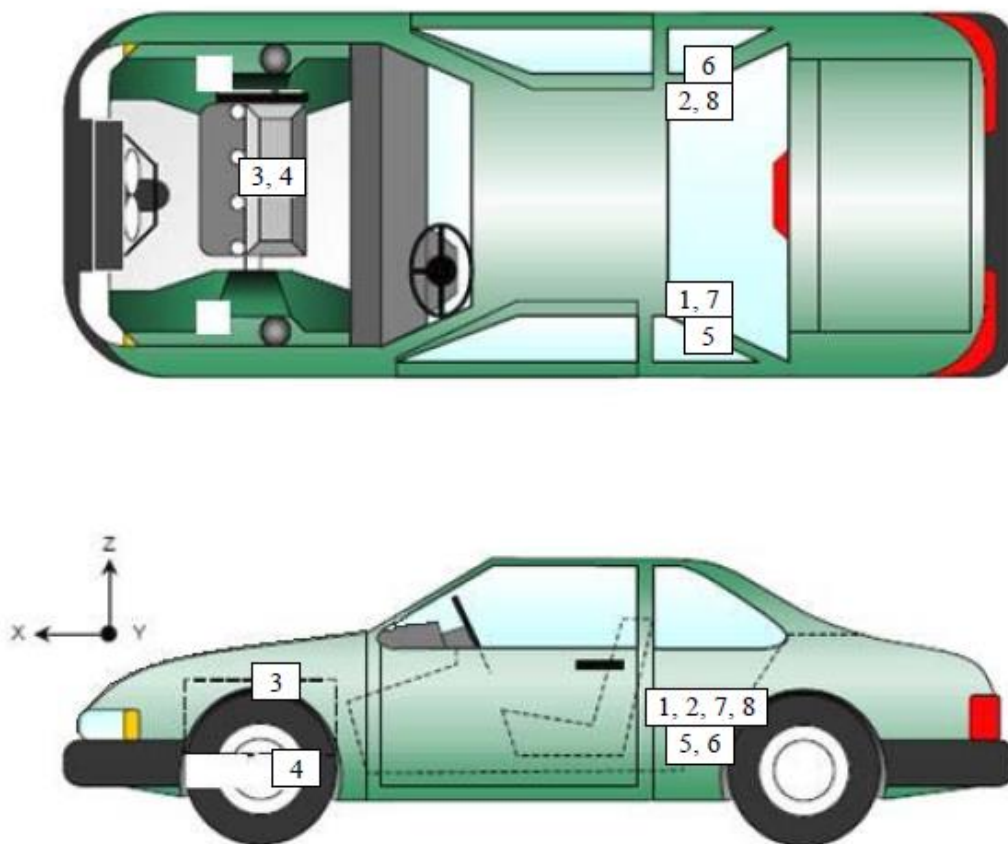
No.	Camera View	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall	-	-	-		60
2	Left Overall	-2639	-7037	-1409	24	1000
3	Driver Close-Up	-1462	-8381	-1572	75	1000
4	Left Front Half	-973	-5928	-1270	28	1000
5	Left Angle	-4305	5400	-2579	50	1000
6	Steering Column	-1711	-8667	-2256	80	1000
7	Right Overall	-2163	7514	-1367	24	1000
8	Passenger Close-Up	-1495	8403	-1446	75	1000
9	Right Front Half	-1108	6034	-1468	28	1000
10	Right Angle	-4320	5006	-2555	50	1000
11	Windshield	1193	0	-3732	12.5	1000
12	Driver Windshield	850	-289	-2342	25	1000
13	Passenger Windshield	850	269	-2342	25	1000
14	Pit Front	-969	0	2313	12.5	1000
15	Pit Rear	-2397	0	2265	12.5	1000
16	Onboard Driver Airbag (Optional)				8	1000
17	Onboard Passenger Airbag (Optional)				8	1000

* COORDINATES: +X = forward of impact plane
 +Y = right of monorail center
 +Z = into ground

**DATA SHEET NO. 7
VEHICLE ACCELEROMETER LOCATIONS**

Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
 Test Date: 3/15/2021



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Accelerometer – X Direction	1657	-379	60
2	Right Rear Accelerometer – X Direction	1657	350	59
3	Engine Top X	3514	-44	-406
4	Engine Bottom X	4103	3	273
5	Left Rear Accelerometer – Z Direction	1657	-379	60
6	Right Rear Accelerometer – Z Direction	1657	350	59
7	Left Rear Accelerometer – X Direction Redundant	1657	-372	60
8	Right Rear Accelerometer – X Direction Redundant	1657	360	60

Reference Points: *X – Rear Surface of Vehicle (+ forward)*
 Y – Vehicle Centerline (+ to right)
 Z – Ground Plane (+ down)

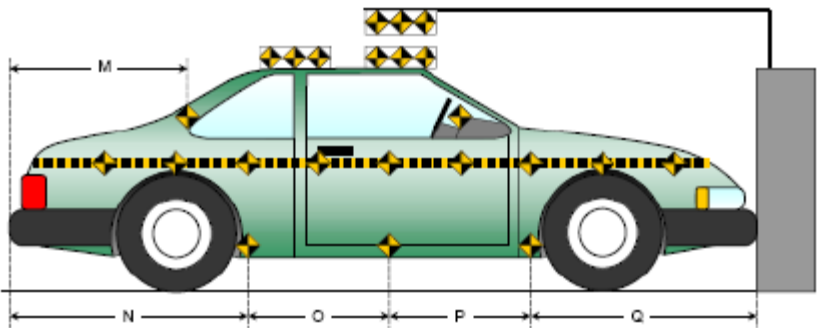
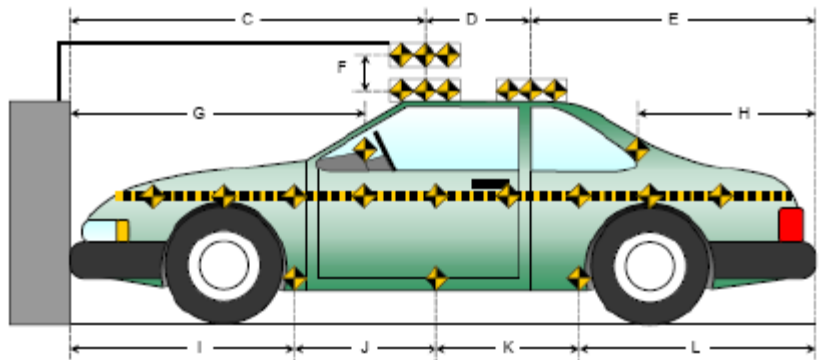
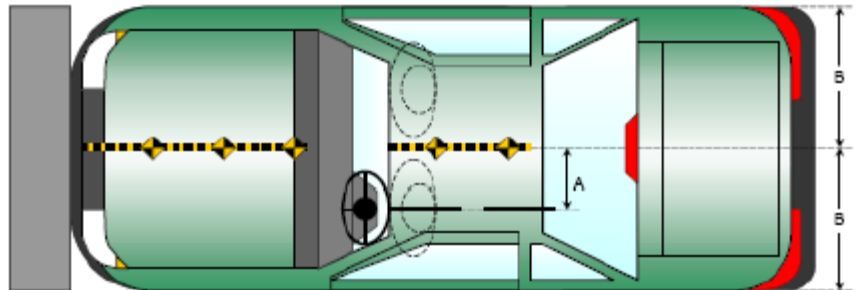
DATA SHEET NO. 8
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
 Test Date: 3/15/2021

Item	Value
A	374
B	895
C	2344
D	613
E	1429
F	186
G	1669
H	969
I	1368
J	861
K	867
L	1290
M	969
N	1291
O	864
P	864
Q	1367

All units in millimeters



DATA SHEET NO. 9
LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
 Test Date: 3/15/2021

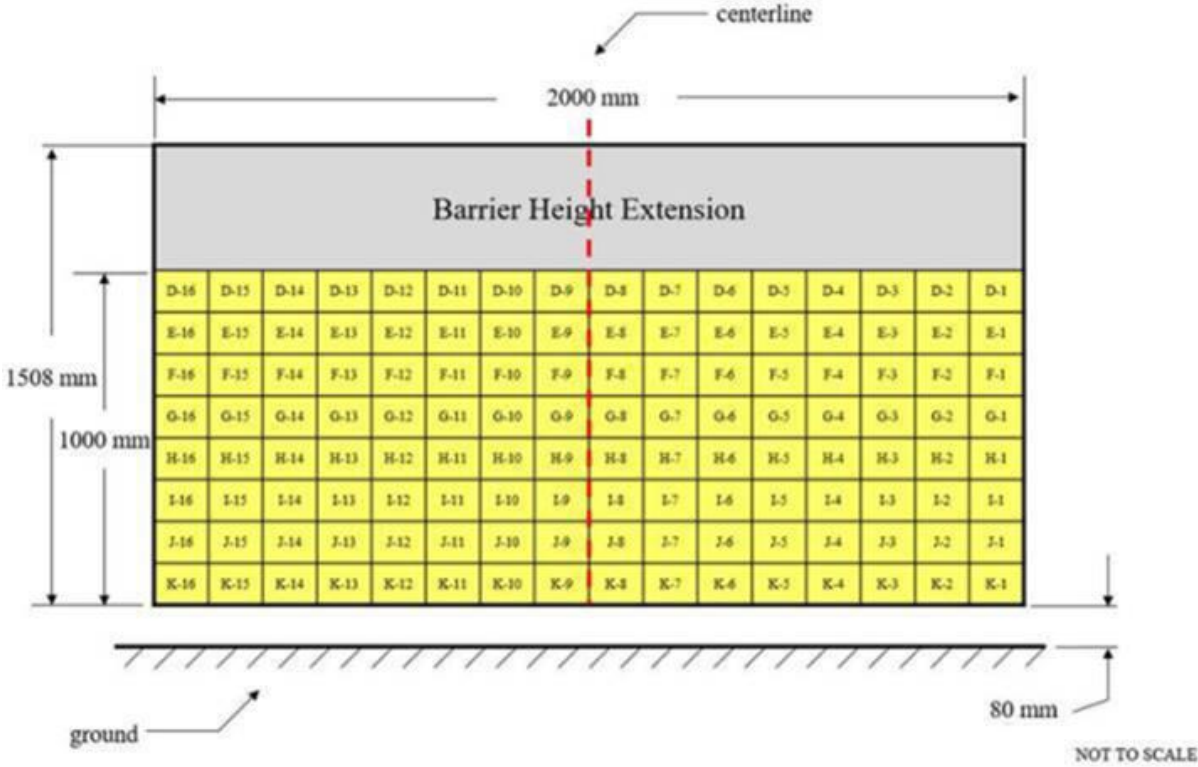


Figure 1 - Load Cell Locations on a 128-Load Cell Barrier with Plywood Height Extension*
 Please note above diagram is not actual representation of load cell barrier used.

DATA SHEET NO. 10
TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
 Test Date: 3/15/2021

INSTRUMENTATION

Instrumentation	Number of Channels Collected
Driver Dummy Accelerometers	47
Passenger Dummy Accelerometers	47
Vehicle Structure Accelerometers	8
Load Cell Barrier	384
Total	486

CAMERA COVERAGE

Type of Camera	Number Used in this Test
High-Speed Vehicle Onboard	2
High-Speed Offboard	14
Real-Time Panning	1
Total	17

**DATA SHEET NO. 11
POST-TEST OBSERVATIONS**

Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
 Test Date: 3/15/2021

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

Description	Driver	Passenger
Dummy Type / Serial No.	P572E 50 th Male / 142	P5720 5 th Female / 140
Head Contact	Frontal Airbag & Headrest	Frontal Airbag & Headrest
Upper Torso Contact	Frontal Airbag	Frontal Airbag
Lower Torso Contact	None	None
Left Knee Contact	Knee Airbag	Knee Airbag
Right Knee Contact	Knee Airbag	Knee Airbag

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger	Other
Locked / Unlocked Doors	Locked	Locked	
Front Door Opening	Closed & Operational	Closed & Operational	
Rear Door Opening	Closed & Operational	Closed & Operational	
Trunk/Hatch/Tailgate Opening			Closed & Operational
Seat Track Shift (mm)	0	0	
Seat Back Movement from Initial Position	None	None	

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Windshield Damage	Cracks throughout with some minor separation
Window Damage	Driver & Passenger windows slide up during impact
Other	None

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	1942
Center	mm	1750
Right Side	mm	1704
Average	mm	1799

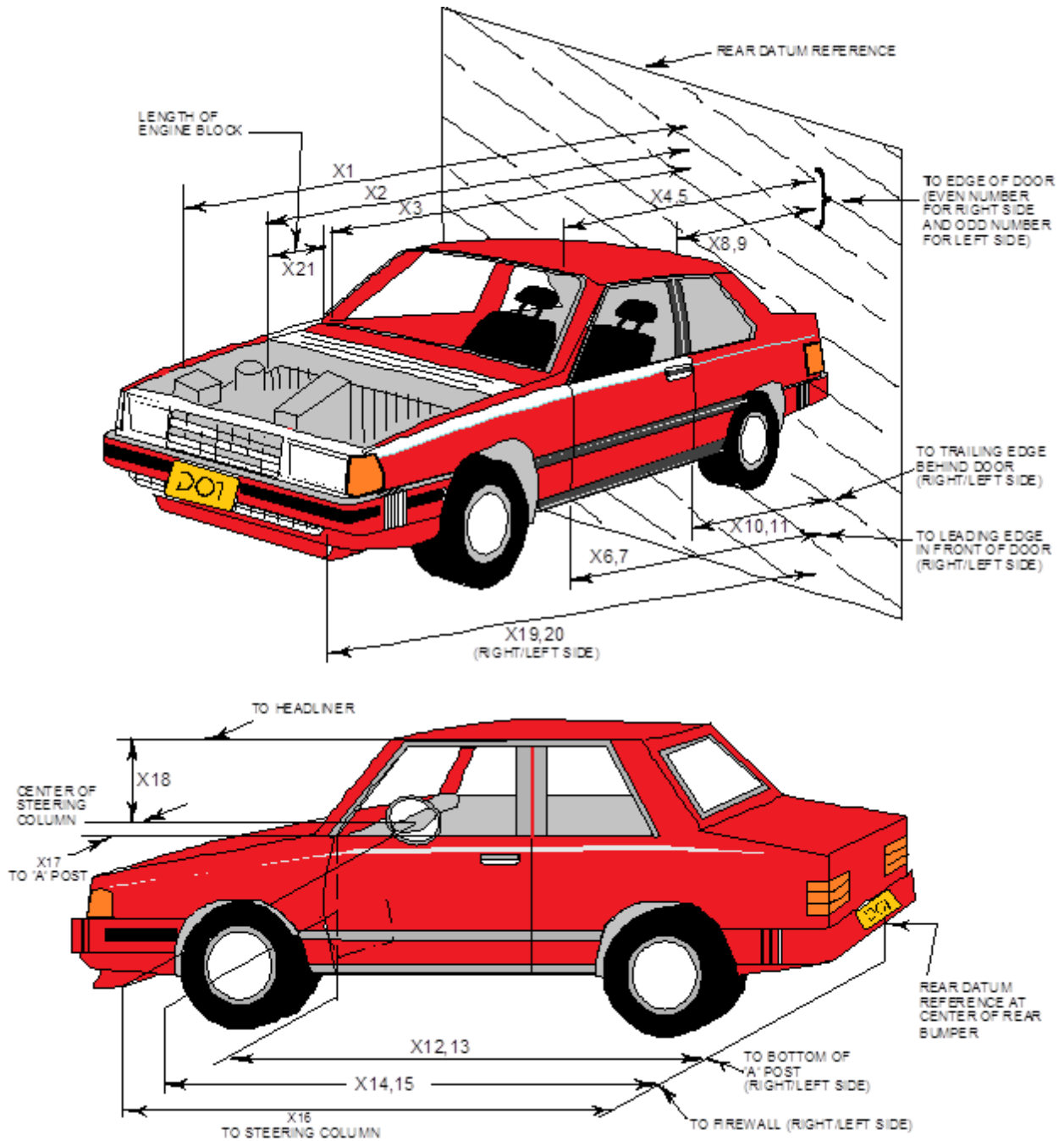
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver		Passenger	
	Installed	Deployed	Installed	Deployed
Front Airbag	Yes	Yes	Yes	Yes
Side Airbag 1 - Curtain	Yes	No	Yes	No
Side Airbag 2 - Torso/Pelvis Airbag	Yes	No	Yes	No
Knee Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Other				

**DATA SHEET NO. 12
VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
 Test Date: 3/15/2021



**DATA SHEET NO. 12 ... (CONTINUED)
VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
 Test Date: 3/15/2021

No.	Measurement Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	4386	4093	-293
2	Rear Surface of Vehicle (RSOV) to Front of Engine	3790	3634	-156
3	RSOV to Firewall	3441	3405	-36
4	RSOV to Upper Leading Edge of Right Door	2985	2982	-3
5	RSOV to Upper Leading Edge of Left Door	2982	2979	-3
6	RSOV to Lower Leading Edge of Right Door	2987	2986	-1
7	RSOV to Lower Leading Edge of Left Door	2986	2983	-3
8	RSOV to Upper Trailing Edge of Right Door	1879	1877	-2
9	RSOV to Upper Trailing Edge of Left Door	1879	1875	-4
10	RSOV to Lower Trailing Edge of Right Door	1909	1908	-1
11	RSOV to Lower Trailing Edge of Left Door	1908	1907	-1
12	RSOV to Bottom of "A" Post of Right Side	3061	3060	-1
13	RSOV to Bottom of "A" Post of Left Side	3059	3057	-2
14	RSOV to Firewall, Right Side	3390	3364	-26
15	RSOV to Firewall, Left Side	3389	3361	-28
16	RSOV to Steering Column	2503	2577	74
17	Center of Steering Column to "A" Post	277	280	3
18	Center of Steering Column to Headliner	429	434	5
19	RSOV to Right Side of Front Bumper	4343	4097	-246
20	RSOV to Left Side of Front Bumper	4342	4077	-265
21	Length of Engine Block	250	250	0
RD	RSOV to Right Side of Dash Panel	2689	2690	1
CD	RSOV to Center of Dash Panel	2695	2699	4
LD	RSOV to Left Side of Dash Panel	2688	2683	-5

*UR= Unrecoverable data point
 All Dimensions in mm

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2021 Nissan Rogue Sport SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
Test Date: 3/15/2021

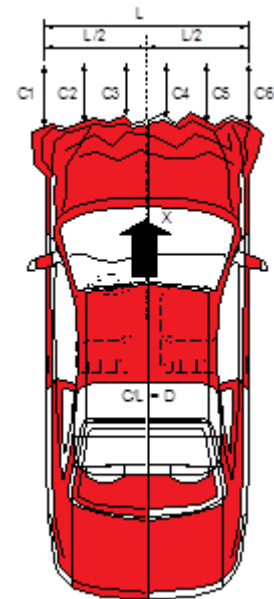
VEHICLE INFORMATION

VIN: JN1BJ1AW9MW422109
Vehicle Size Category: Passenger Car

Wheelbase (mm): 2643
Test Weight (kg): 1732

ACCELEROMETER DATA

Accelerometer Locations: Please See Data Sheet No. 7
Cal. Procedure / Interval: Calspan Procedure / 6 month
Integration Algorithm: Trapezoidal
Linearity: > 99%
Impact Velocity (km/h): 56.18
Velocity Change (km/h): 64.79
Time of Separation (ms): 130



CRUSH PROFILE

Collision Deformation Classification: 12FDEW2
Midpoint of Damage: C3
Damage Region Length (mm): 1369
Impact Mode: Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	4181	3960	221
C2	Crush Zone 2 at Left Side	mm	4339	4065	274
C3	Crush Zone 3 at Left Side	mm	4373	4091	282
C4	Crush Zone 4 at Right Side	mm	4374	4102	272
C5	Crush Zone 5 at Right Side	mm	4341	4107	234
C6	Crush Zone 6 at Right Side	mm	4183	4059	124
L	C1 to C6	mm	1369	1443	-74

**DATA SHEET NO. 14
VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

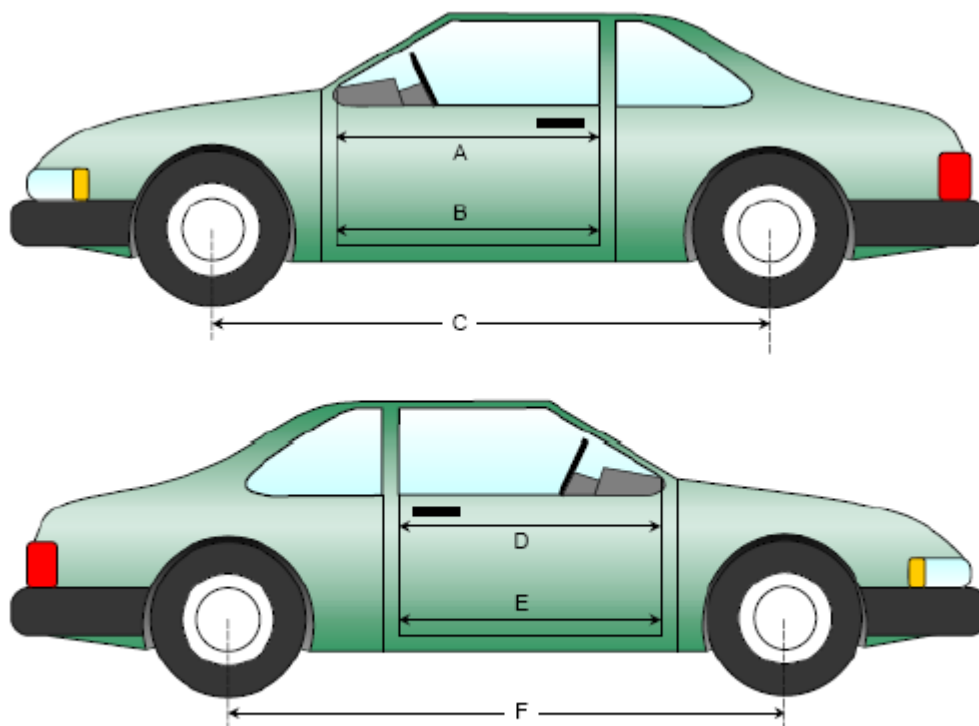
NHTSA No.: M20215205
 Test Date: 3/15/2021

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1016	1013	-3
B	Left Side Lower	mm	924	922	-2
D	Right Side Upper	mm	1016	1014	-2
E	Right Side Lower	mm	923	921	-2

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2643	2598	-45
F	Right Side Wheelbase	mm	2643	2623	-20



Left & Right Side Views

DATA SHEET NO.14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

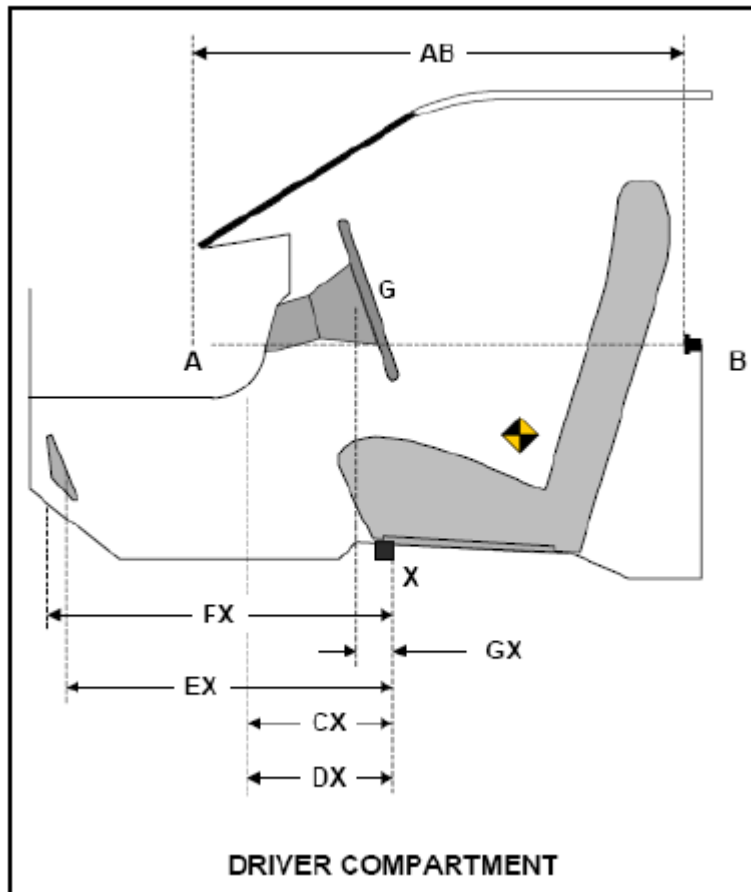
Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
 Test Date: 3/15/2021

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	815	817	2
CX	Left Knee Bolster to X	mm	338	325	-13
DX	Right Knee Bolster to X	mm	319	338	19
EX	Brake Pedal to X	mm	589	559	-30
FX	Foot Rest to X	mm	638	638	0
GX	Center of Steering Column Wheel Hub to X	mm	81	158	77

X = Front of Seat Track (Stationary)



DATA SHEET NO. 15
SUMMARY OF FMVSS 212, 219 (PARTIAL), AND 301 DATA

Test Vehicle: 2021 Nissan Rogue Sport SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
 Test Date: 3/15/2021

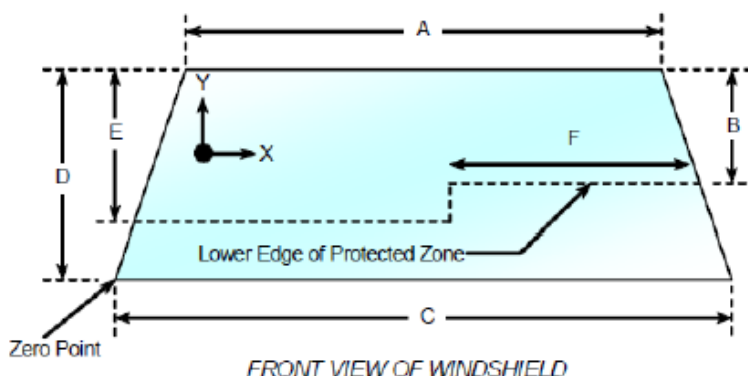
Windshield Mounting Details: A 0.8 mm trim surrounds the top and side of windshield while a plastic shroud is on the bottom.

The standard requires that the post-test retention measurement be a minimum of 75% of the pre-test total periphery measurement for vehicles not equipped with occupant passive restraints and 50% for each side of the windshield for vehicles which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21° C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2230	2195	98.4
Right Side	2230	2230	100
Total	4460	4425	99.2



Item	Units	Value
A	mm	1230
B	mm	570
C	mm	1410
D	mm	910
E	mm	580
F	mm	445

AREAS OF PROTECTED ZONE FAILURES

A. Provide coordinates of the area that the protected zone was penetrated more than .25 inches by a vehicle component other than one that is normally in contact with the windshield.

- No Penetration

X	Y

B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component.

- No Penetration

X	Y

DATA SHEET NO. 15 ... (CONTINUED)
SUMMARY OF FMVSS 212, 219 (PARTIAL), AND 301 DATA

Test Vehicle: 2021 Nissan Rogue Sport SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
Test Date: 3/15/2021

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21 ° C

Test Time: 1:30 PM

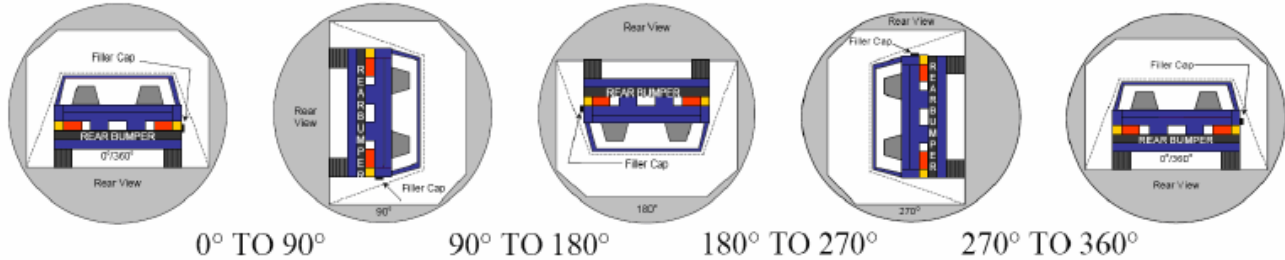
STODDARD SOLVENT SPILLAGE MEASUREMENTS

- A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable is 1 oz.)
- B. For the 5-minute period after motion ceases: 0 oz.
(Maximum allowable is 5 oz.)
- C. For the following 25 minutes: 0 oz.
(Maximum allowable is 1 oz./minute)
- D. Spillage: No Spillage Occurred

DATA SHEET NO. 16
FMVSS 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2021 Nissan Rogue Sport SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
Test Date: 3/15/2021



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent Spillage: No Spillage Occurred

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	71	300	371
90° to 180°	63	300	363
180° to 270°	62	300	362
270° to 360°	62	300	362

FMVSS 301 SPILLAGE TABLE

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° to 90°	0	0	0	
90° to 180°	0	0	0	
180° to 270°	0	0	0	
270° to 360°	0	0	0	

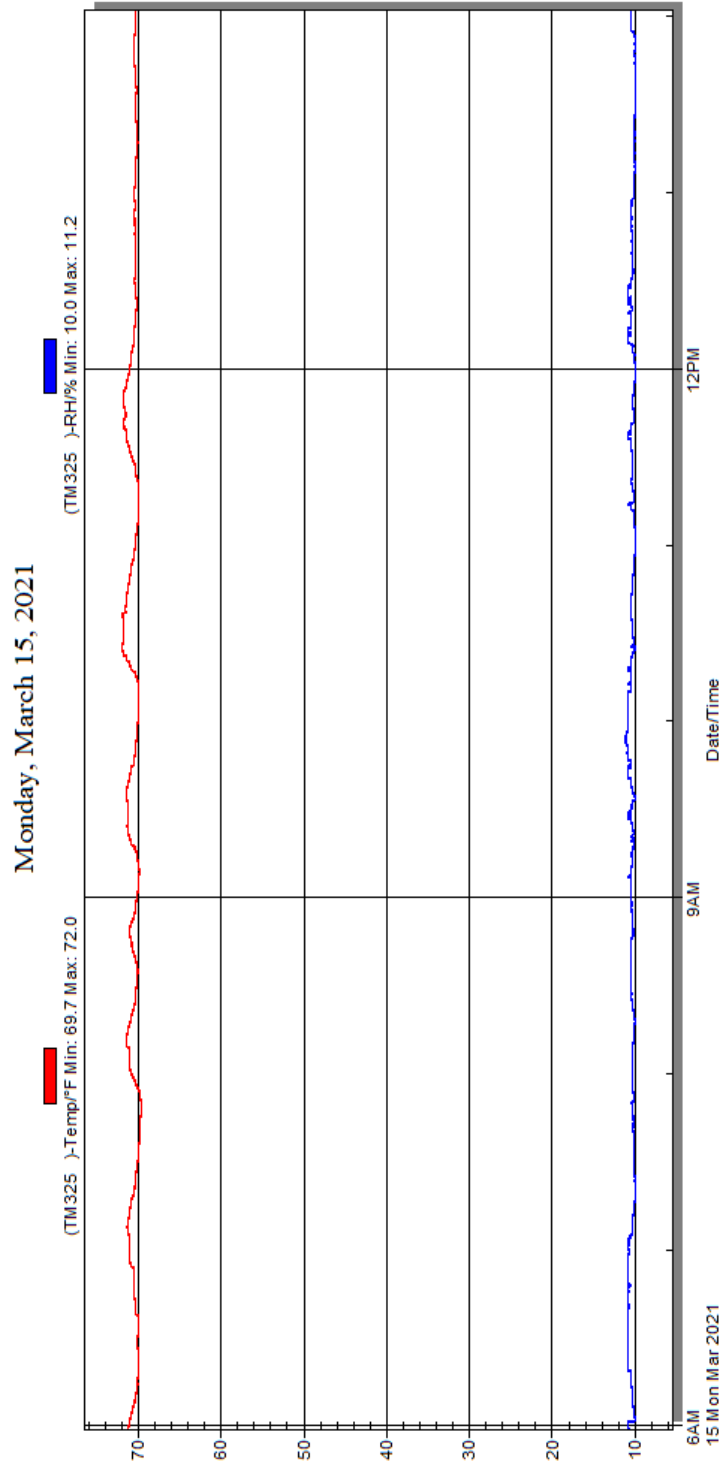
SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° to 90°	None
90° to 180°	None
180° to 270°	None
270° to 360°	None

DATA SHEET NO. 17
DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2021 Nissan Rogue Sport SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20215205
Test Date: 3/15/2021



Temperature and Humidity Stabilization Chart/Data for Dummies and Test Vehicle

APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

Fig.	Description	Page
1	Load Cell Location	A-5
2	Pre-Test Load Cell Wall	A-5
3	Post-Test Load Cell Wall	A-6
4	Manufacturer's Label	A-6
5	Tire Placard	A-7
6	2021 Nissan Rogue Sport Frontal As Delivered	A-7
7	Left Rear 3-4 View, as Received	A-8
8	Pre-Test Front View of Test Vehicle	A-8
9	Post-Test Front View of Test Vehicle	A-9
10	Pre-Test Left View of Test Vehicle	A-9
11	Post-Test Left View of Test Vehicle	A-10
12	Pre-Test Right View of Test Vehicle	A-10
13	Post-Test Right View of Test Vehicle	A-11
14	Pre-Test Right Front 3-4 View	A-11
15	Post-Test Right Front 3-4 View	A-12
16	Pre-Test Left Rear 3-4 View	A-12
17	Post-Test Left Rear 3-4 View	A-13
18	Pre-Test Windshield View	A-13
19	Post-Test Windshield View	A-14
20	Pre-Test Engine Compartment View	A-14
21	Post-Test Engine Compartment View	A-15
22	Pre-Test Fuel Filler Cap View	A-15
23	Post-Test Fuel Filler Cap View	A-16
24	Pre-Test Front Underbody View ¹	A-16
25	Post-Test Front Underbody View ¹	A-17
26	Pre-Test Rear Underbody View ¹	A-17
27	Post-Test Rear Underbody View ¹	A-18
28	Pre-Test Dummy Cable Routing	A-18
29	Post-Test Dummy Cable Routing	A-19
30	Pre-Test Driver Dummy Front View	A-19
31	Post-Test Driver Dummy Front View	A-20
32	Pre-Test Driver Dummy Window View	A-20
33	Post-Test Driver Dummy Window View	A-21
34	Pre-Test Driver Dummy and Vehicle Interior View	A-21
35	Post-Test Driver Dummy and Vehicle Interior View	A-22

Fig.	Description	Page
36	Pre-Test Driver's Seat Fore-Aft Markings	A-22
37	Post-Test Driver's Seat Fore-Aft Markings	A-23
38	Pre-Test View of Belt Anchorage for Driver Dummy	A-23
39	Post-Test View of Belt Anchorage for Driver Dummy	A-24
40	Pre-Test View of Belt Buckle and Latch Plate for Driver Dummy	A-24
41	Post-Test View of Belt Buckle and Latch Plate for Driver Dummy	A-25
42	Pre-Test Driver Dummy Feet	A-25
43	Post-Test Driver Dummy Feet	A-26
44	Pre-Test Driver's Side Knee Bolster	A-26
45	Post-Test Driver's Side Knee Bolster	A-27
46	Pre-Test Driver's Side Floorpan	A-27
47	Post-Test Driver's Side Floorpan	A-28
48	Post-Test Driver Dummy Face	A-28
49	Post-Test Driver Dummy Contact With Airbag	A-29
50	Post-Test Driver Dummy Contact With Headrest	A-29
51	Pre-Test View of the Steering Wheel	A-30
52	Post-Test View of the Steering Wheel	A-30
53	Pre-Test Passenger Dummy Front View	A-31
54	Post-Test Passenger Dummy Front View	A-31
55	Pre-Test Passenger Dummy Window View	A-32
56	Post-Test Passenger Dummy Window View	A-32
57	Pre-Test Passenger Dummy and Vehicle Interior View	A-33
58	Post-Test Passenger Dummy and Vehicle Interior View	A-33
59	Pre-Test Passenger's Seat Fore-Aft Markings	A-34
60	Post-Test Passenger's Seat Fore-Aft Markings	A-34
61	Pre-Test View of Belt Anchorage for Passenger Dummy	A-35
62	Post-Test View of Belt Anchorage for Passenger Dummy	A-35
63	Pre-Test View of Belt Buckle and Latch Plate for Passenger Dummy	A-36
64	Post-Test View of Belt Buckle and Latch Plate for Passenger Dummy	A-36
65	Pre-Test Passenger Dummy Feet	A-37
66	Post-Test Passenger Dummy Feet	A-37
67	Pre-Test Passenger's Side Knee Bolster	A-38
68	Post-Test Passenger's Side Knee Bolster	A-38
69	Pre-Test Passenger's Side Floorpan	A-39
70	Post-Test Passenger's Side Floorpan	A-39
71	Post-Test Passenger Dummy Face	A-40

Fig.	Description	Page
72	Post-Test Passenger Dummy Contact With Airbag	A-40
73	Post-Test Passenger Dummy Contact With Headrest	A-41
74	Photograph of Ballast Installed in Vehicle	A-41
75	Post-Test Stoddard Solvent Spillage Location View, if Required	A-42
76	Post-Test Speed Trap Read-Out	A-42
77	Vehicle at 0° on Static Rollover Device	A-43
78	Vehicle at 90° on Static Rollover Device	A-43
79	Vehicle at 180° on Static Rollover Device	A-44
80	Vehicle at 270° on Static Rollover Device	A-44
81	Vehicle at 360° on Static Rollover Device	A-45
82	2021 Nissan Rogue Sport Frontal Impact Event	A-45
83	Monroney Label Photograph	A-46

¹NOTE: *The underbody views should include the following vehicle components: fuel pump, fuel lines, sender unit, fuel tank filler pipe and any other visible system components.*

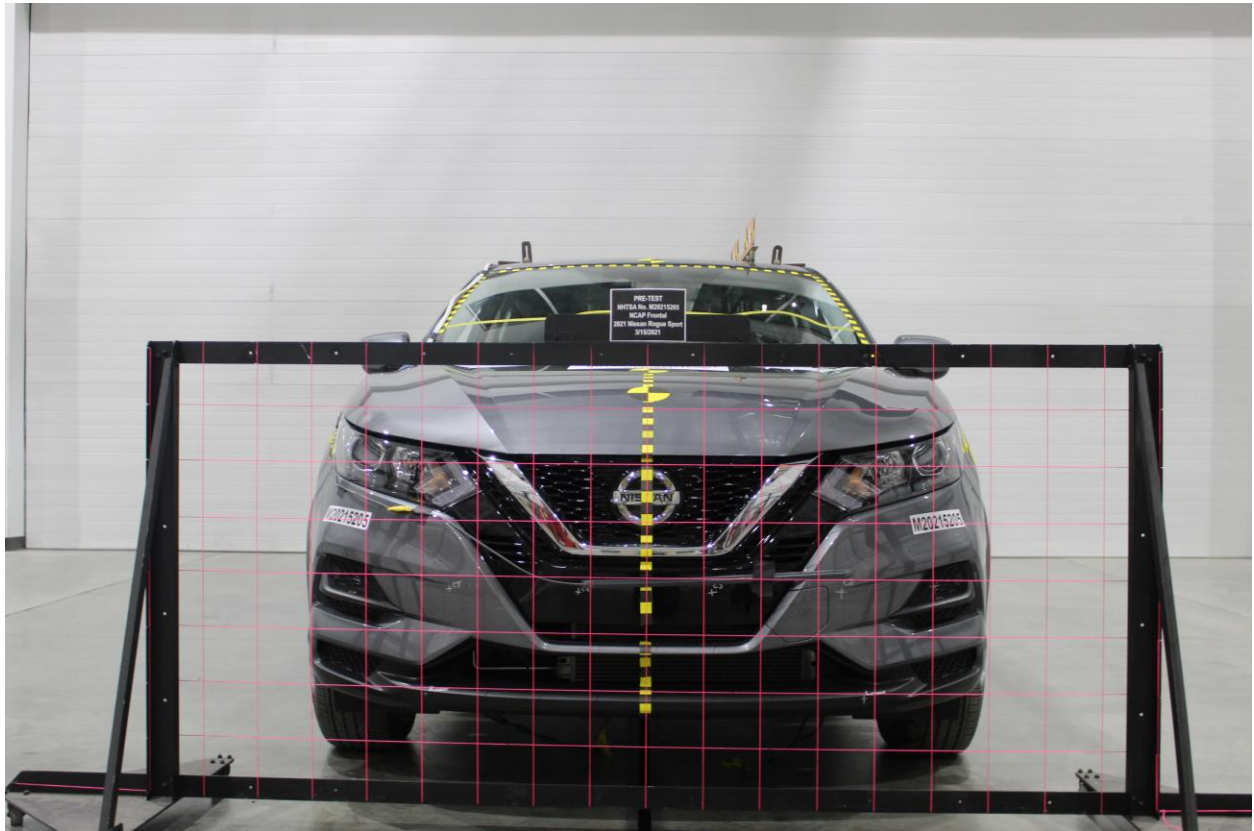


Figure A-1: Load Cell Location



Figure A-2: Pre-Test Load Cell Wall



Figure A-3: Post-Test Load Cell Wall



Figure A-4: Manufacturer's Label



Figure A-5: Tire Placard



Figure A-6: 2021 Nissan Rogue Sport Frontal As Delivered



M20215205

Figure A-7: Left Rear 3-4 View, As Received



Figure A-8: Pre-Test Front View of Test Vehicle

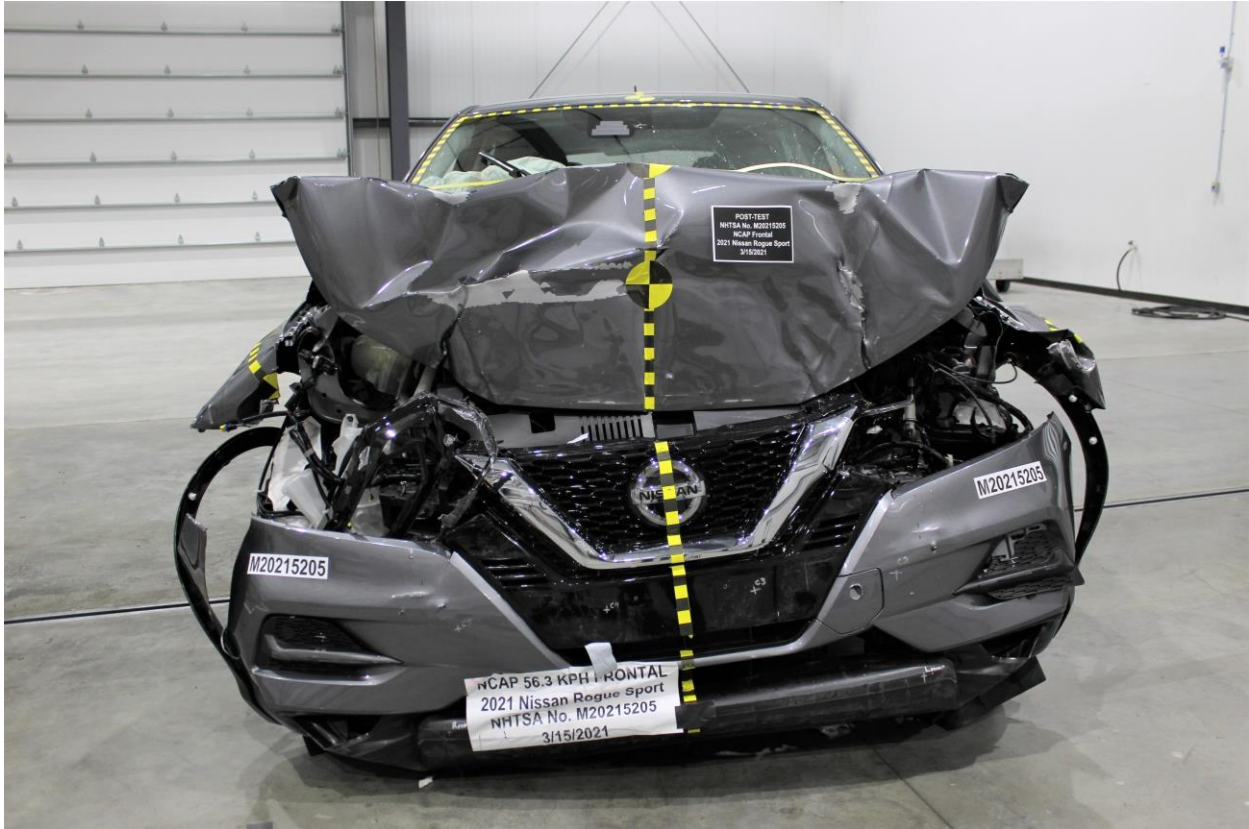


Figure A-9: Post-Test Front View of Test Vehicle



Figure A-10: Pre-Test Left View of Test Vehicle



Figure A-11: Post-Test Left View of Test Vehicle

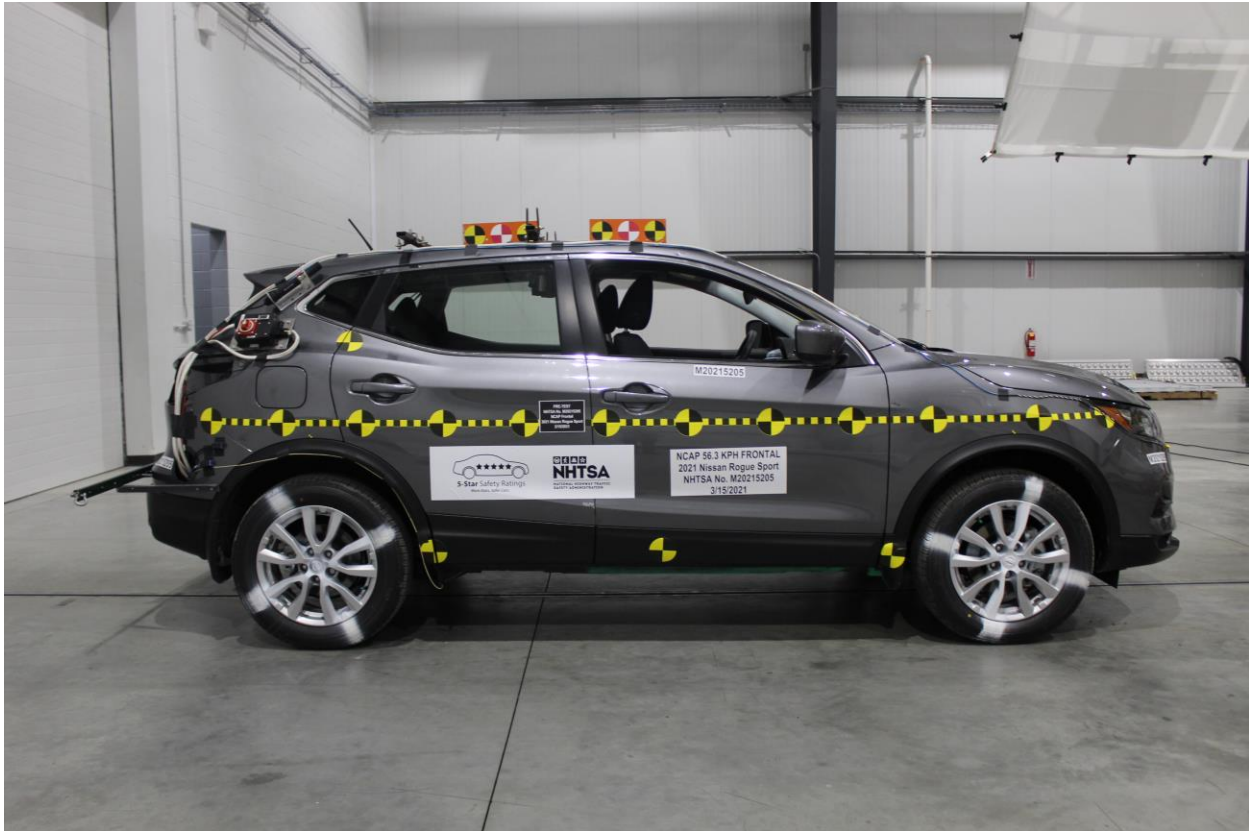


Figure A-12: Pre-Test Right View of Test Vehicle



Figure A-13: Post-Test Right View of Test Vehicle



Figure A-14: Pre-Test Right Front 3-4 View



Figure A-15: Post-Test Right Front 3-4 View



Figure A-16: Pre-Test Left Rear 3-4 View



Figure A-17: Post-Test Left Rear 3-4 View



Figure A-18: Pre-Test Windshield View



Figure A-19: Post-Test Windshield View

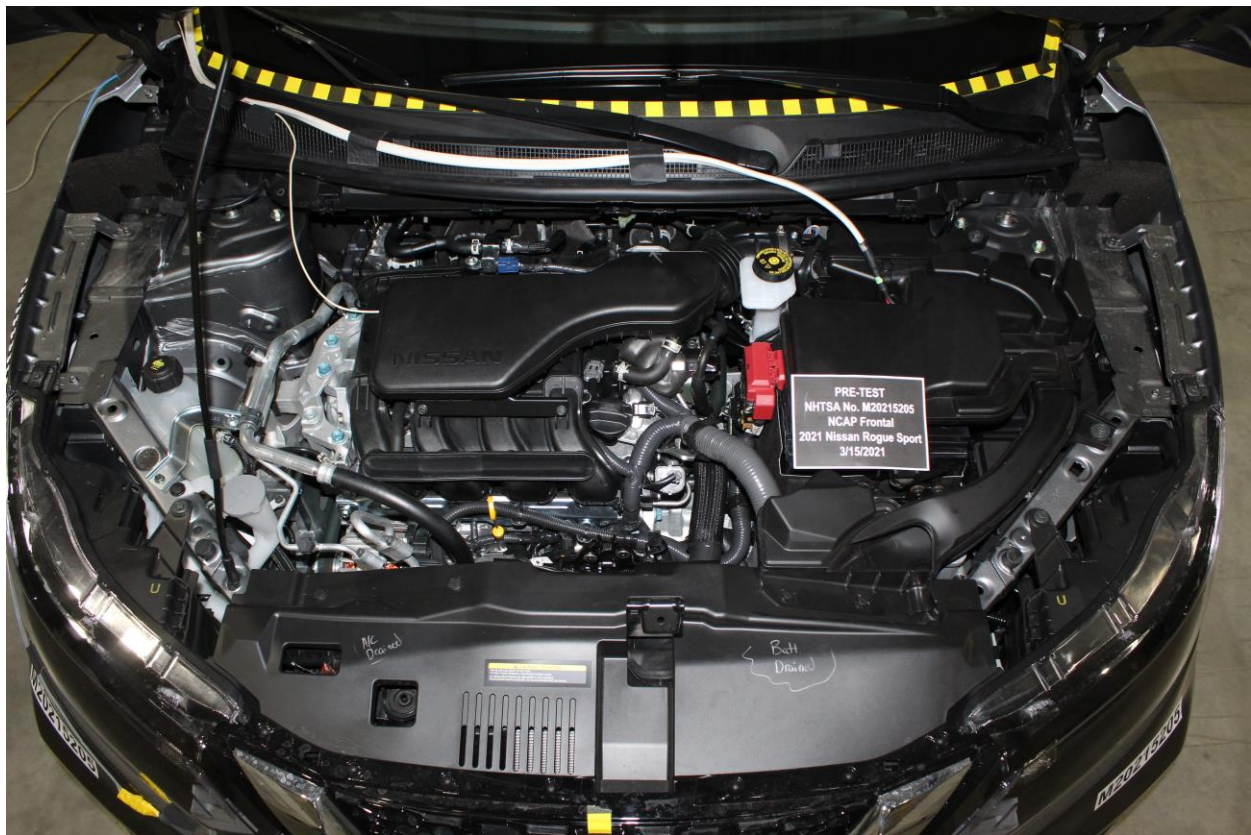


Figure A-20: Pre-Test Engine Compartment View



Figure A-21: Post-Test Engine Compartment View



Figure A-22: Pre-Test Fuel Filler Cap View



Figure A-23: Post-Test Fuel Filler Cap View

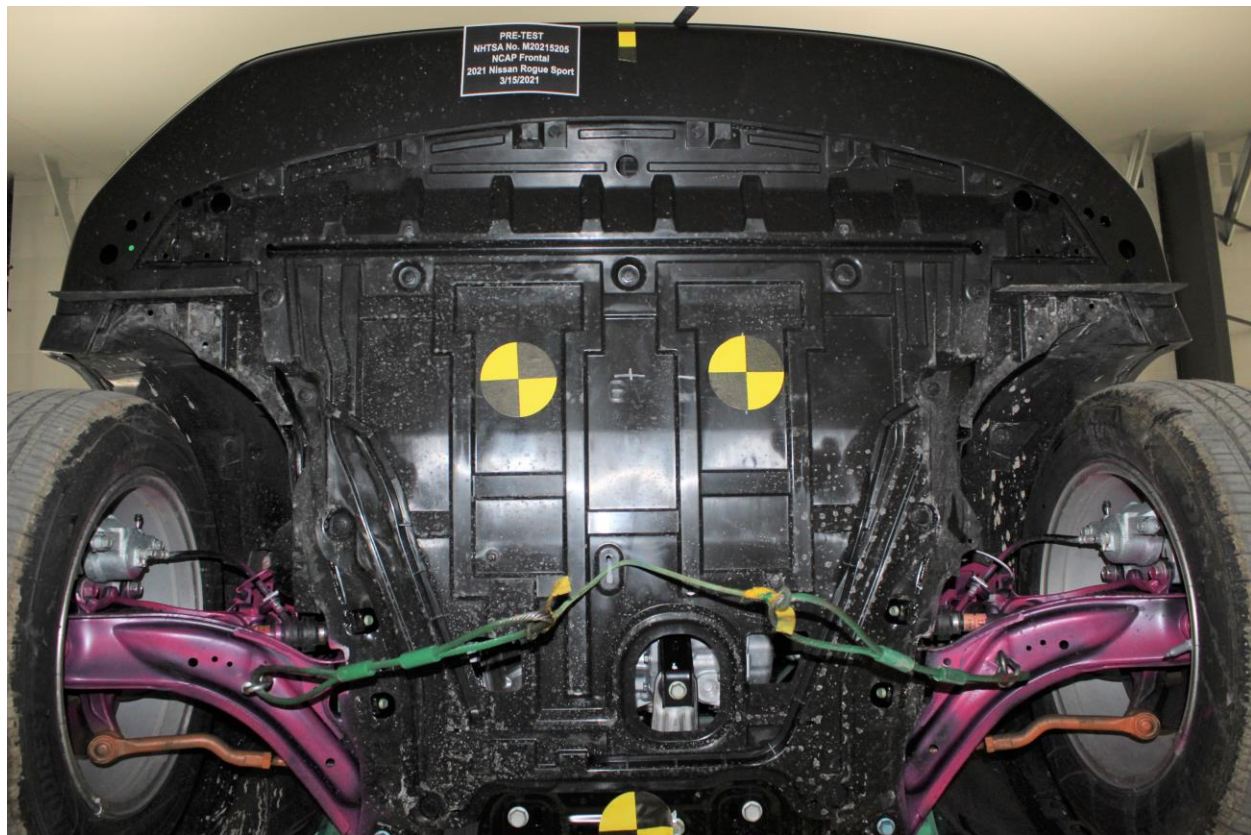


Figure A-24: Pre-Test Front Underbody View

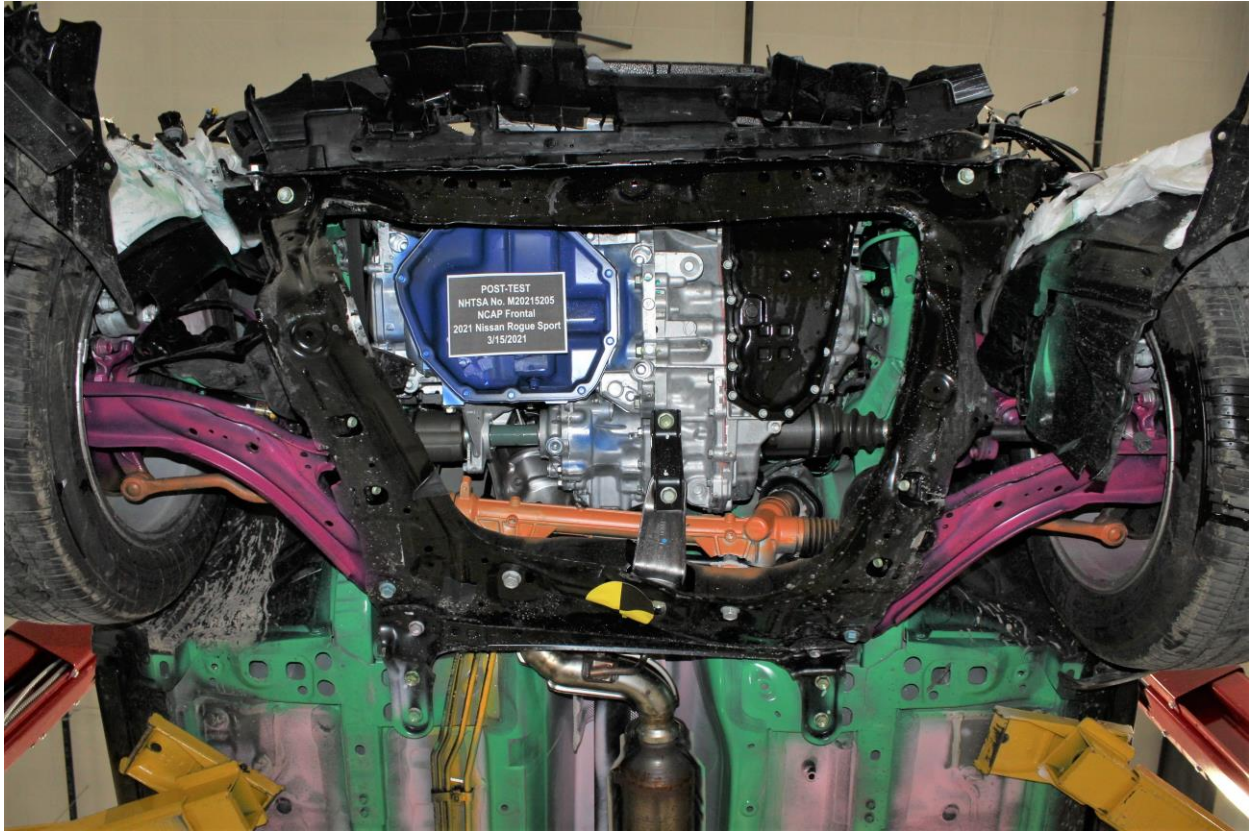


Figure A-25: Post-Test Front Underbody View

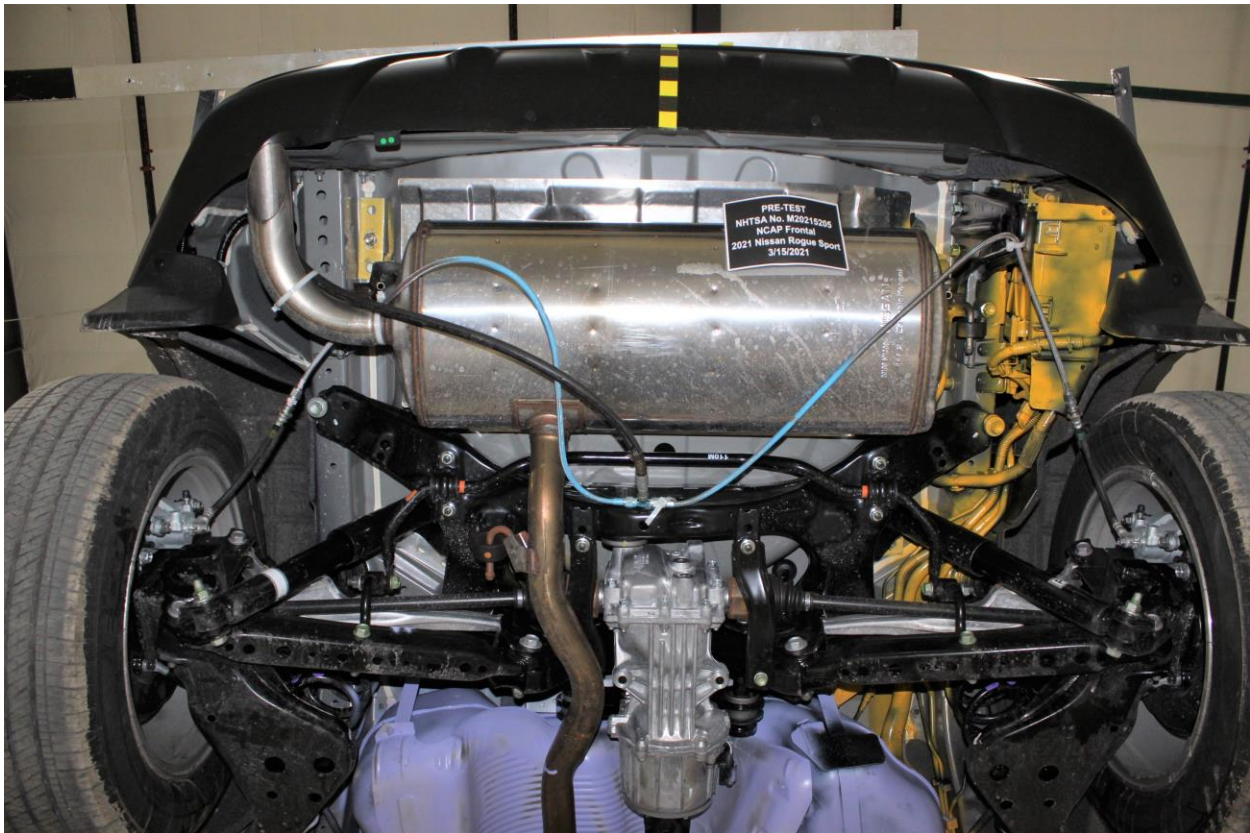


Figure A-26: Pre-Test Rear Underbody View



Figure A-27: Post-Test Rear Underbody View

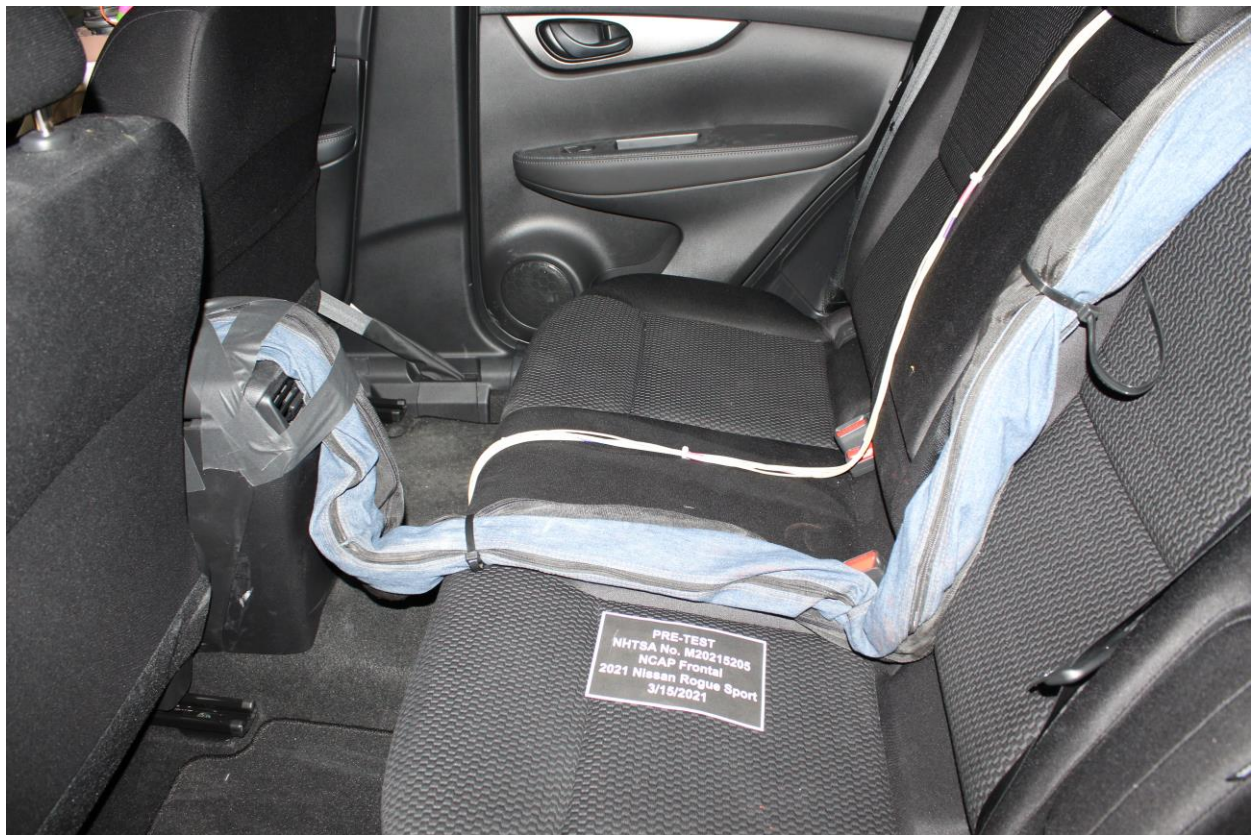


Figure A-28: Pre-Test Dummy Cable Routing



Figure A-29: Post-Test Dummy Cable Routing

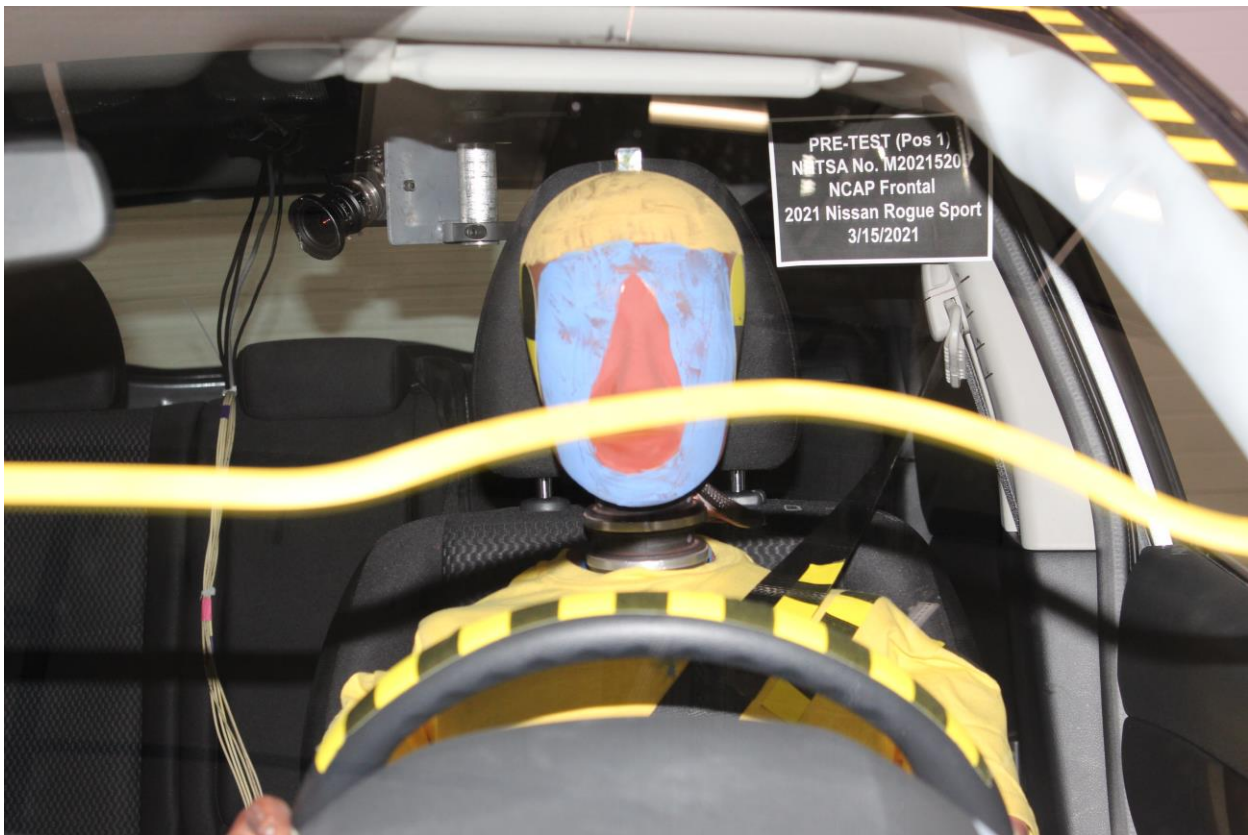


Figure A-30: Pre-Test Driver Dummy Front View



Figure A-31: Post-Test Driver Dummy Front View



Figure A-32: Pre-Test Driver Dummy Window View



Figure A-33: Post-Test Driver Dummy Window View



Figure A-34: Pre-Test Driver Dummy and Vehicle Interior View



Figure A-35: Post-Test Driver Dummy and Vehicle Interior View

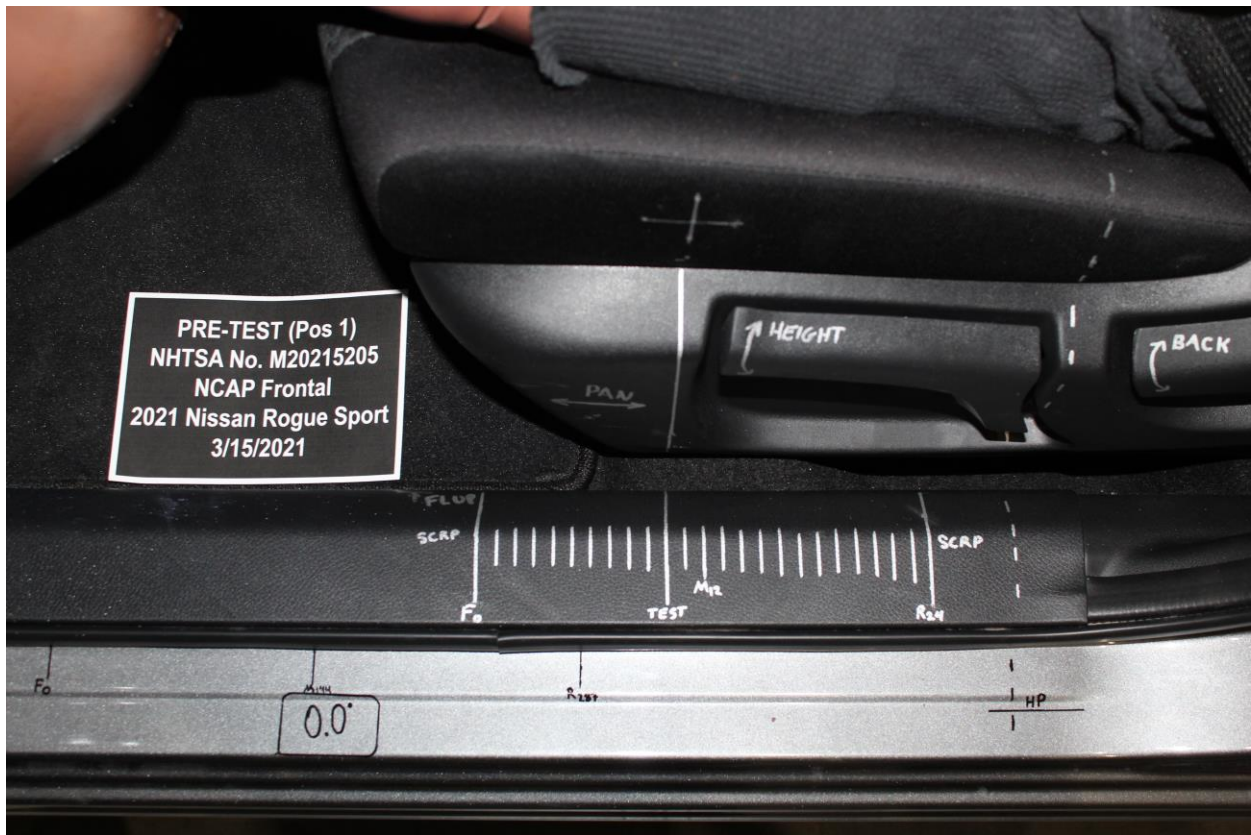


Figure A-36: Pre-Test Driver's Seat Fore-Aft Markings



Figure A-37: Post-Test Driver's Seat Fore-Aft Markings



Figure A-38: Pre-Test View of Belt Anchorage for Driver Dummy



Figure A-39: Post-Test View of Belt Anchorage for Driver Dummy



Figure A-40: Pre-Test View of Belt Buckle and Latch Plate for Driver Dummy



Figure A-41: Post-Test View of Belt Buckle and Latch Plate for Driver Dummy



Figure A-42: Pre-Test Driver Dummy Feet



Figure A-43: Post-Test Driver Dummy Feet



Figure A-44: Pre-Test Driver's Side Knee Bolster



Figure A-45: Post-Test Driver's Side Knee Bolster



Figure A-46: Pre-Test Driver's Side Floorpan



Figure A-47: Post-Test Driver's Side Floorpan



Figure A-48: Post-Test Driver Dummy Face



Figure A-49: Post-Test Driver Dummy Contact With Airbag



Figure A-50: Post-Test Driver Dummy Contact With Headrest



Figure A-51: Pre-Test View of the Steering Wheel



Figure A-52: Post-Test View of the Steering Wheel



Figure A-53: Pre-Test Passenger Dummy Front View



Figure A-54: Post-Test Passenger Dummy Front View



Figure A-55: Pre-Test Passenger Dummy Window View



Figure A-56: Post-Test Passenger Dummy Window View



Figure A-57: Pre-Test Passenger Dummy and Vehicle Interior View



Figure A-58: Post-Test Passenger Dummy and Vehicle Interior View



Figure A-59: Pre-Test Passenger's Seat Fore-Aft Markings



Figure A-60: Post-Test Passenger's Seat Fore-Aft Markings

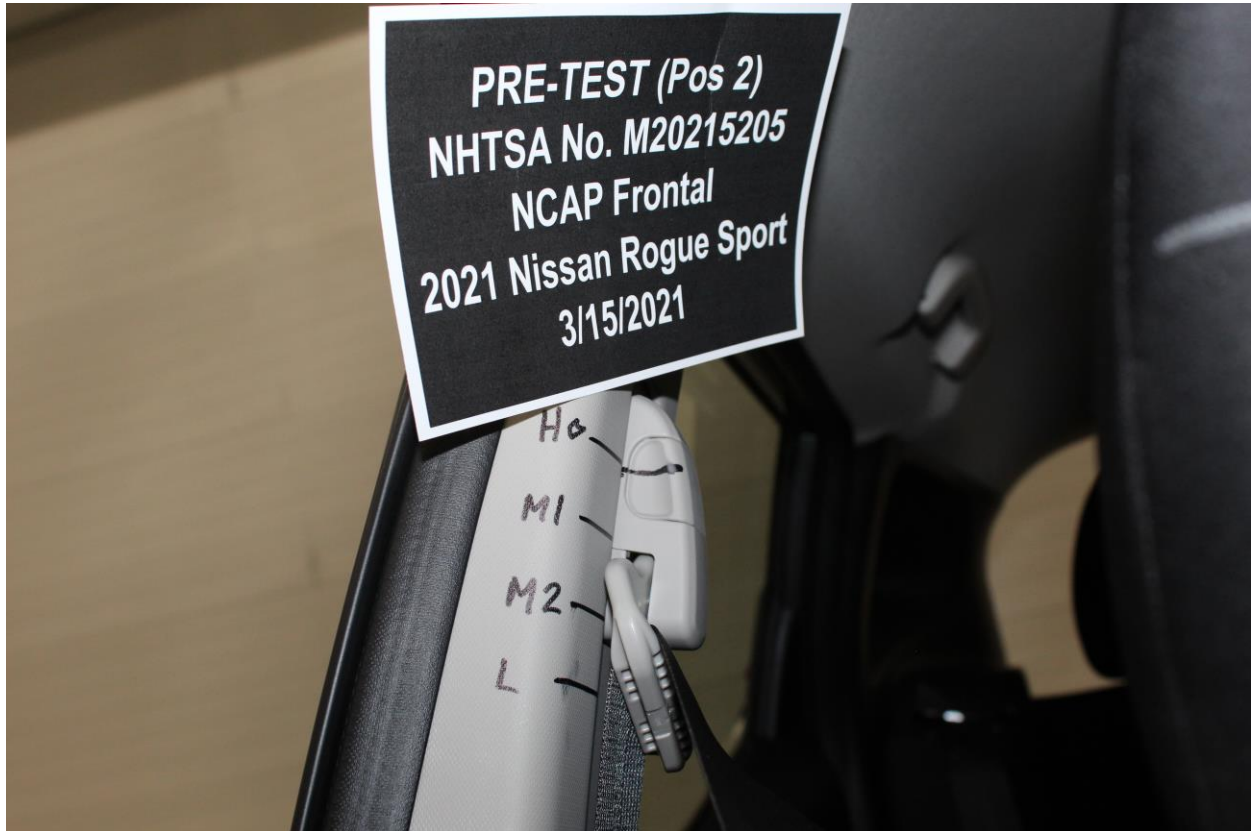


Figure A-61: Pre-Test View of Belt Anchorage for Passenger Dummy



Figure A-62: Post-Test View of Belt Anchorage for Passenger Dummy



Figure A-63: Pre-Test View of Belt Buckle and Latch Plate for Passenger Dummy



Figure A-64: Post-Test View of Belt Buckle and Latch Plate for Passenger Dummy



Figure A-65: Pre-Test Passenger Dummy Feet



Figure A-66: Post-Test Passenger Dummy Feet

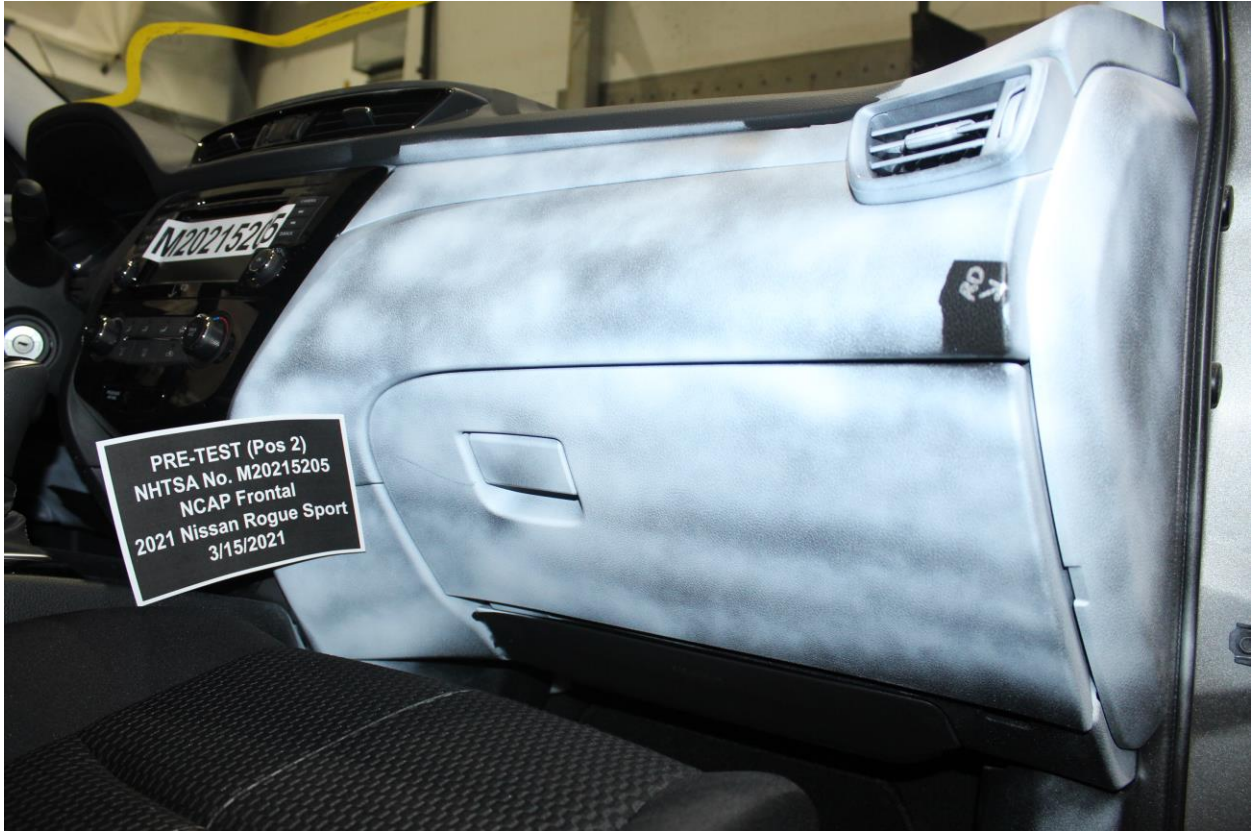


Figure A-67: Pre-Test Passenger's Side Knee Bolster



Figure A-68: Post-Test Passenger's Side Knee Bolster



Figure A-69: Pre-Test Passenger's Side Floorpan



Figure A-70: Post-Test Passenger's Side Floorpan



Figure A-71: Post-Test Passenger Dummy Face



Figure A-72: Post-Test Passenger Dummy Contact With Airbag



Figure A-73: Post-Test Passenger Dummy Contact With Headrest



Figure A-74: Photograph of Ballast Installed in Vehicle

Photo Not Applicable

Figure A-75: Post-Test Stoddard Solvent Spillage Location View, If Required



Figure A-76: Post-Test Speed Trap Read-Out



Figure A-77: Vehicle at 0° on Static Rollover Device

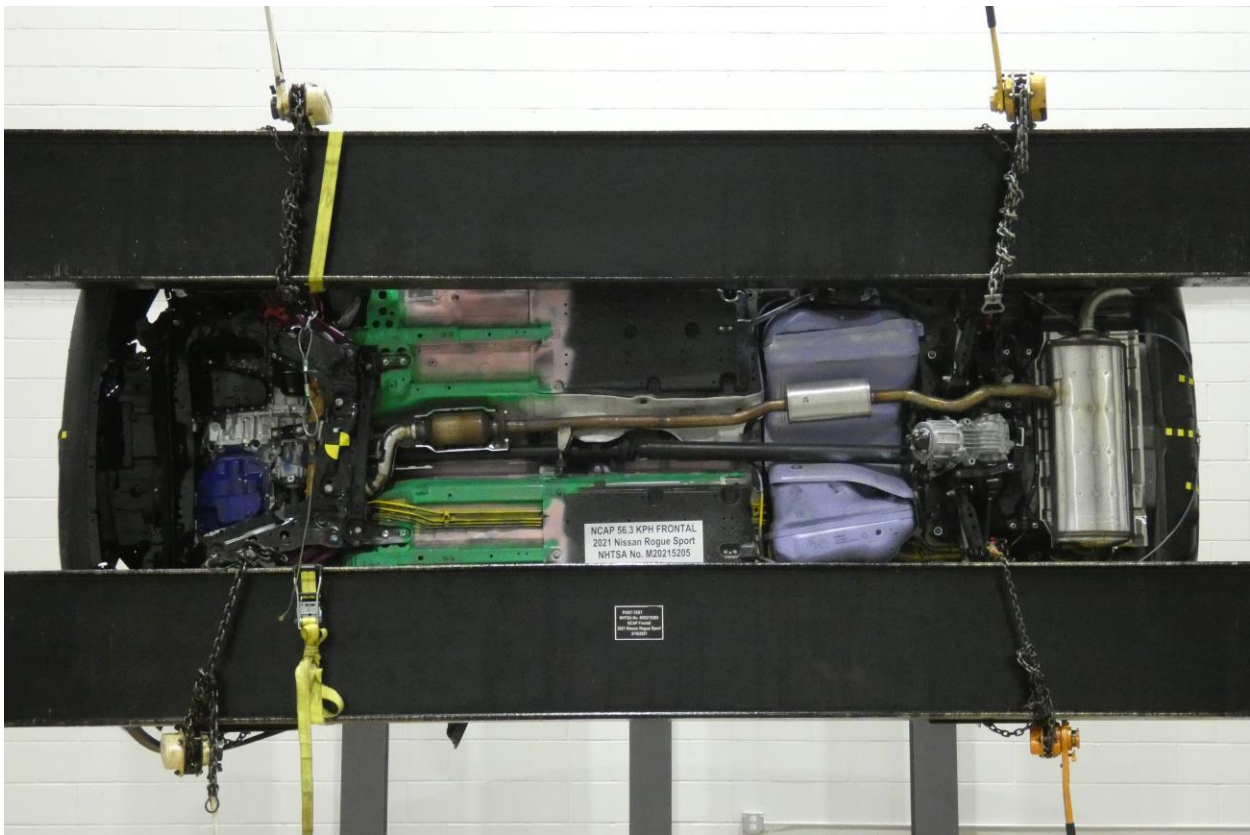


Figure A-78: Vehicle at 90° on Static Rollover Device

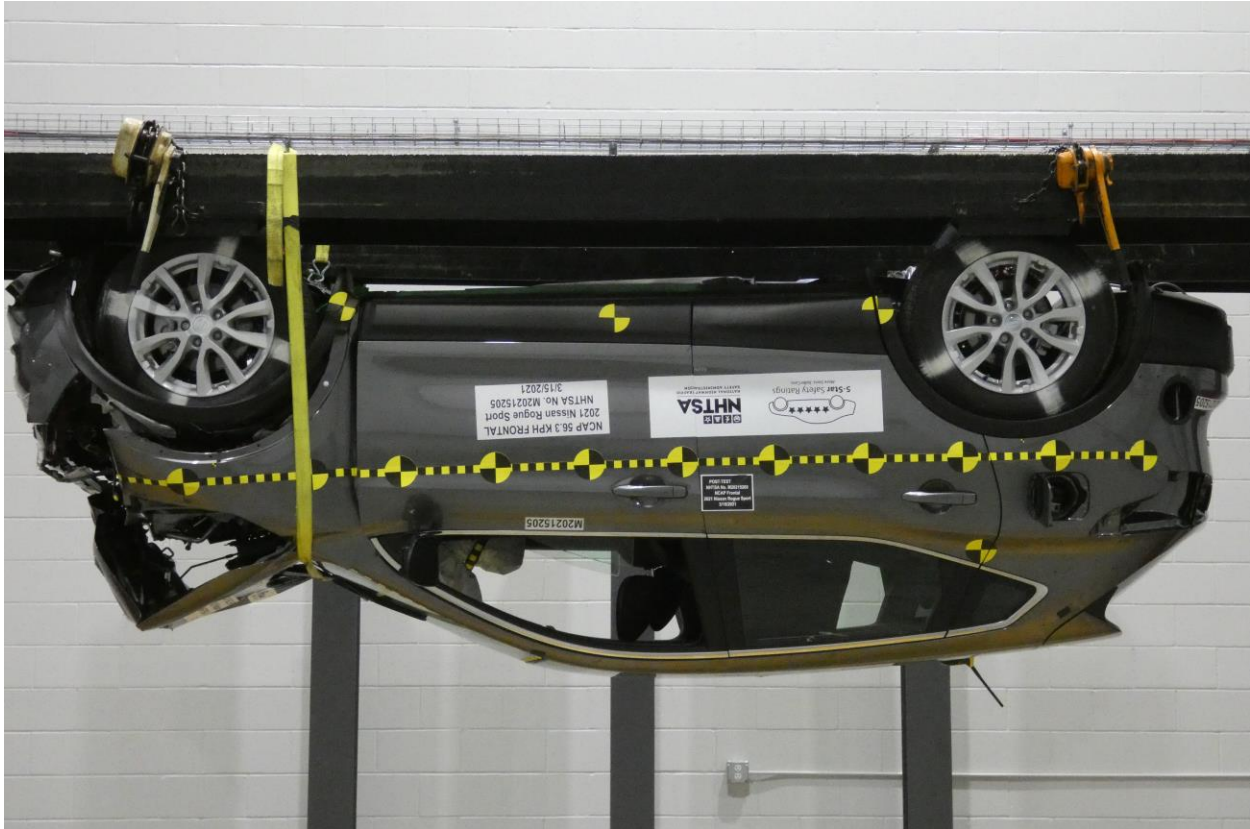


Figure A-79: Vehicle at 180° on Static Rollover Device



Figure A-80: Vehicle at 270° on Static Rollover Device



Figure A-81: Vehicle at 360° on Static Rollover Device



Figure A-82: 2021 Nissan Rogue Sport Frontal Impact Event



2021 NISSAN ROGUE SPORT S AWD



Scan QR code for general model information & options

Standard Equipment Included at No Extra Charge

MECHANICAL & PERFORMANCE
2.0L DRIVEN 16-Valve 4-Cylinder Engine
141 Horsepower and 147 lb-ft of Torque
Eco Mode
XTRONIC CVT Automatic Transmission w/
Manual Shift Mode
Independent Front Strut Suspension
Independent Rear Multi-link Suspension
17" Alloy Wheels
Temporary Spare Tire

SAFETY & SECURITY
Nissan Advanced Air Bag System (AABS)
Front & Rear outboard Seat-mounted
Side-impact & Roof-mounted Curtain
Supplemental Air Bags
Driver and Front-passenger Knee Air Bags
Lower Anchors and Tethers for Children
(LATCH)
4-Wheel Anti-lock Braking System (ABS)
Vehicle Dynamic Control (VDC)
Electronic Brake Force Distribution (EBD)
Brake Assist
Vehicle Security System with Remote
Keyless Entry
Tire Pressure Monitoring System (TPMS)
with Easy-Fill Tire Alert
Intelligent Forward Collision
Warning (FCW)
Automatic Emergency Braking (AEB)
w/ Pedestrian Detection
Rear Automatic Braking (RAB)
Blind Spot Warning (BSW)
Rear Cross Traffic Alert (RCTA)
Lane Departure Warning (LDW)
Intelligent Lane Intervention (ILLI)
High Beam Assist (HBA)

COMFORT & CONVENIENCE
6-way Manual Driver Seat
4-way Manual Front Passenger Seat
60/40 Split Fold-down Rear Seats
2nd-row Seat Air Vents
Power Door Locks w/ Auto-locking Feature
Power Windows w/ Driver One-touch
Auto-up/down
Rear View Monitor
Rear Door Alert
Rear Sonar System
Cruise Control with Steering-wheel-
mounted Controls
Intelligent Engine Brake (i-EB)

*Does not include dealer installed options and accessories, local taxes or license fees. This label has been applied pursuant to federal law. Do not remove prior to delivery to the ultimate purchaser.

COMFORT & CONVENIENCE CONT.

Hill Start Assist
Intelligent Trace Control (I-TC)
Active Ride Control (ARC)
NissanConnect®
Apple CarPlay®
Android Auto™
Satellite Radio w/ Advanced
Audio Features
7" Color Touch-screen Display
Bluetooth® Hands-free Phone System+
Streaming Audio via Bluetooth®
Hands-free Text Messaging Assistant+

EXTERIOR
LED Daytime Running Lights (DRL)
Auto On/Off Halogen Headlights w/ LED
Signature
Approach Lighting
Rear Spoiler
Dual Power Outside Mirrors

+For more information, see dealer,
owner's manual, or www.NissanUSA.com/
connectlegal
++Optional Equipment Replaces
Standard Where Applicable

Manufacturer's Suggested
Retail Base Price: \$25,260.00

Options Included by Manufacturer
Splash Guards 170.00
Floor Mats, 1-piece Cargo Area Protector,
and First Aid Kit 290.00

DESTINATION CHARGES 1,095.00

Total* \$26,815.00

Fuel Economy and Environment

27 **24** **30**
combined city/hwy city highway
3.7 gallons per 100 miles

Annual fuel cost
\$1,500

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 27 MPG and costs \$1,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$2.70 per gallon. MPG is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

You spend \$0
more in fuel costs over 5 years
compared to the average new vehicle.

Annual fuel cost
\$1,500

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 27 MPG and costs \$1,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$2.70 per gallon. MPG is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score Not Rated
Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.

Frontal Crash	Driver Passenger	Not Rated Not Rated
Side Crash	Front seat Rear seat	Not Rated Not Rated
Rollover		★★★★

Star ratings range from 1 to 5 stars (*****), with 5 being the highest.
Source: National Highway Traffic Safety Administration (NHTSA)
www.safercar.gov or 1-888-327-4236

DELIVERY

VEHICLE COLORS:
EXT: GUN METALLIC
INT: CHARCOAL

FINAL ASSEMBLY POINT:
TACOMA
TRANSPORT METHOD:
TRUCK

DEALER:
GERALD NISSAN, INC.
1575 W. OGDEN AVE.
NAPERVILLE, IL 60540

This Vehicle qualifies for Nissan's
Security+Plus Extended Protection Plan
The only service agreement backed by Nissan Extended Services North America!
Ask your dealer for details, or call 1-800-NISSAN-1 for more information

VIN: JN1B1JAW9M042109
EMS: 50 STATE EMISSIONS
MDL: 701-422/09 KAD-G
OPT: C-892L9C03

20210114233520AS3089

Figure A-83: Monroney Label Photograph

APPENDIX B
VEHICLE & DUMMY RESPONSE DATA TRACES

Table of Data Plots

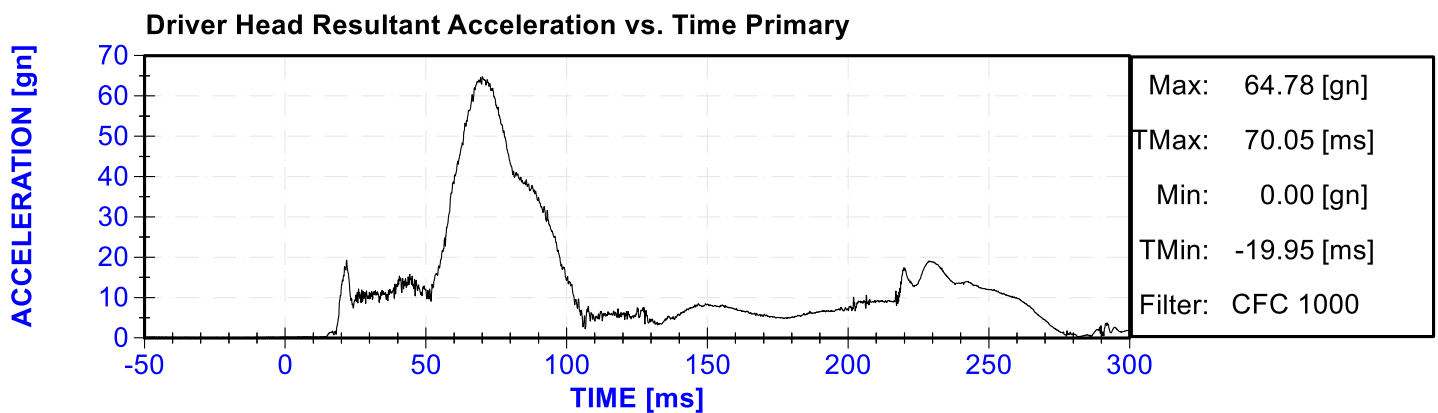
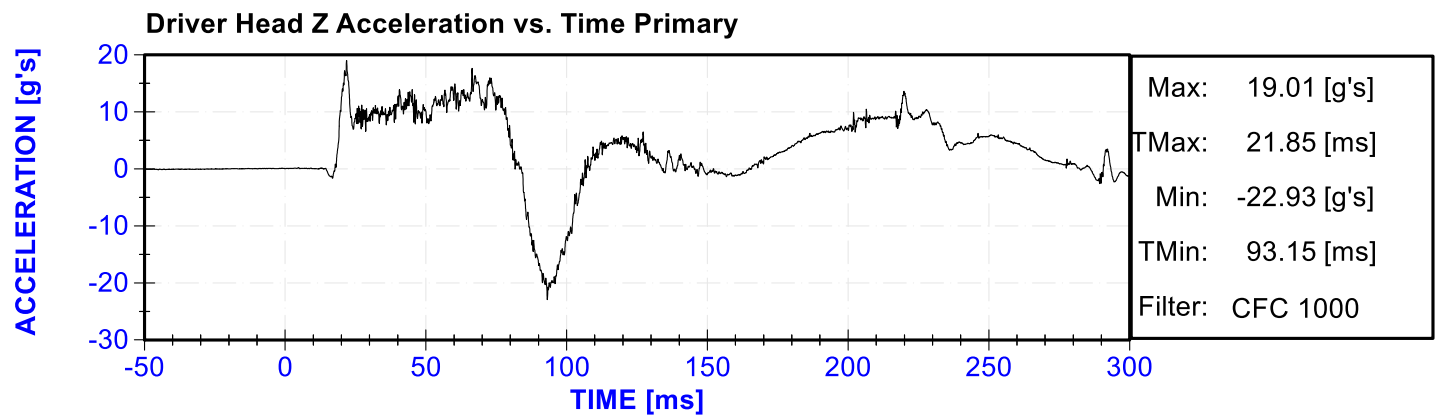
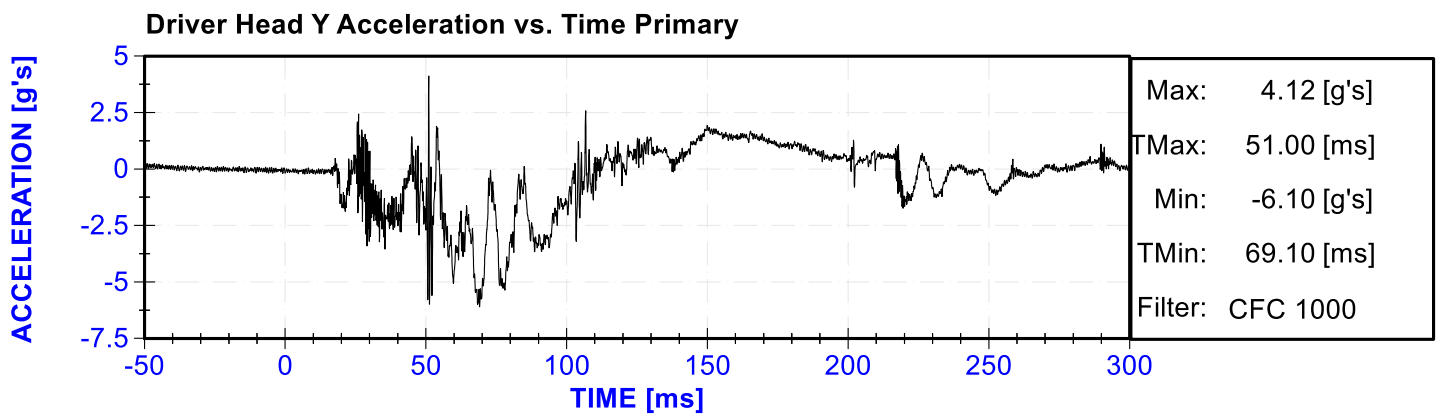
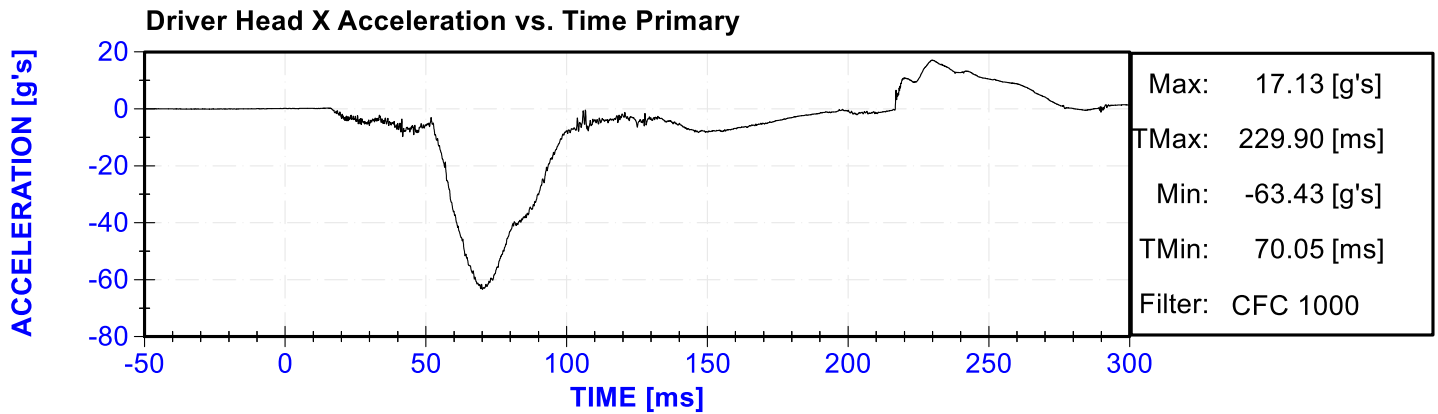
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Plot 1	Driver Head X Acceleration vs. Time Primary	B-5
Plot 2	Driver Head Y Acceleration vs. Time Primary	B-5
Plot 3	Driver Head Z Acceleration vs. Time Primary	B-5
Plot 4	Driver Head Resultant Acceleration vs. Time Primary	B-5
Plot 5	Driver Chest X Deflection vs. Time	B-6
Plot 6	Driver Chest X Acceleration vs. Time Primary	B-6
Plot 7	Driver Chest Y Acceleration vs. Time Primary	B-6
Plot 8	Driver Chest Z Acceleration vs. Time Primary	B-6
Plot 9	Driver Chest Resultant Acceleration vs. Time Primary	B-7
Plot 10	Driver Upper Neck Force X vs. Time Primary	B-7
Plot 11	Driver Upper Neck Force Z vs. Time Primary	B-7
Plot 12	Driver Upper Neck Moment Y vs. Time Primary	B-7
Plot 13	Driver Nij vs. Time Primary	B-8
Plot 14	Driver Left Femur Force vs. Time	B-8
Plot 15	Driver Right Femur Force vs. Time	B-8
Plot 16	Passenger Head X Acceleration vs. Time Primary	B-8
Plot 17	Passenger Head Y Acceleration vs. Time Primary	B-9
Plot 18	Passenger Head Z Acceleration vs. Time Primary	B-9
Plot 19	Passenger Head Resultant Acceleration vs. Time Primary	B-9
Plot 20	Passenger Chest X Deflection vs. Time	B-9
Plot 21	Passenger Chest X Acceleration vs. Time Primary	B-10
Plot 22	Passenger Chest Y Acceleration vs. Time Primary	B-10
Plot 23	Passenger Chest Z Acceleration vs. Time Primary	B-10
Plot 24	Passenger Chest Resultant Acceleration vs. Time Primary	B-10
Plot 25	Passenger Upper Neck Force X vs. Time Primary	B-11
Plot 26	Passenger Upper Neck Force Z vs. Time Primary	B-11
Plot 27	Passenger Upper Neck Moment Y vs. Time Primary	B-11
Plot 28	Passenger Nij vs. Time Primary	B-11
Plot 29	Passenger Left Femur Force vs. Time	B-12
Plot 30	Passenger Right Femur Force vs. Time	B-12

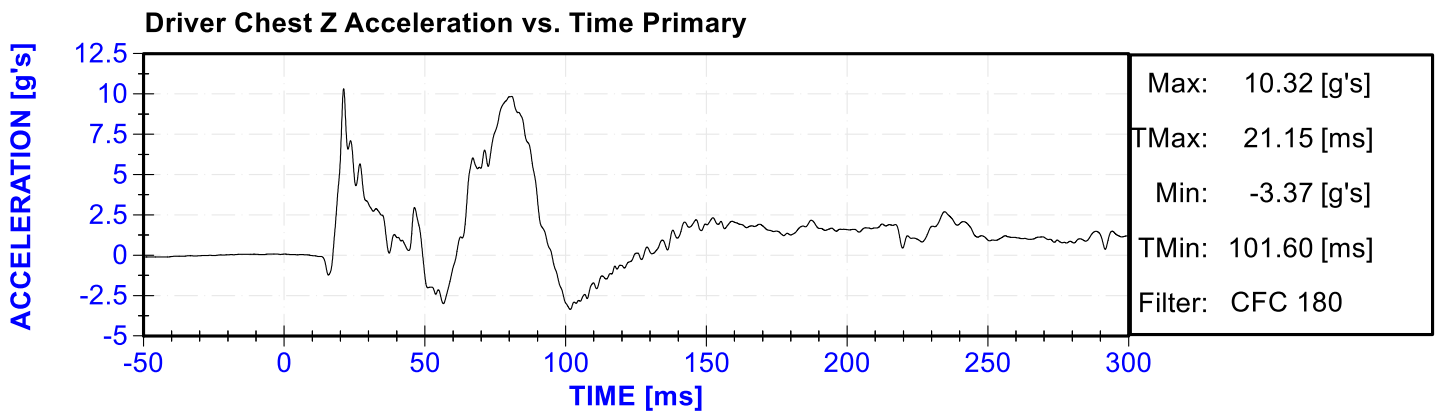
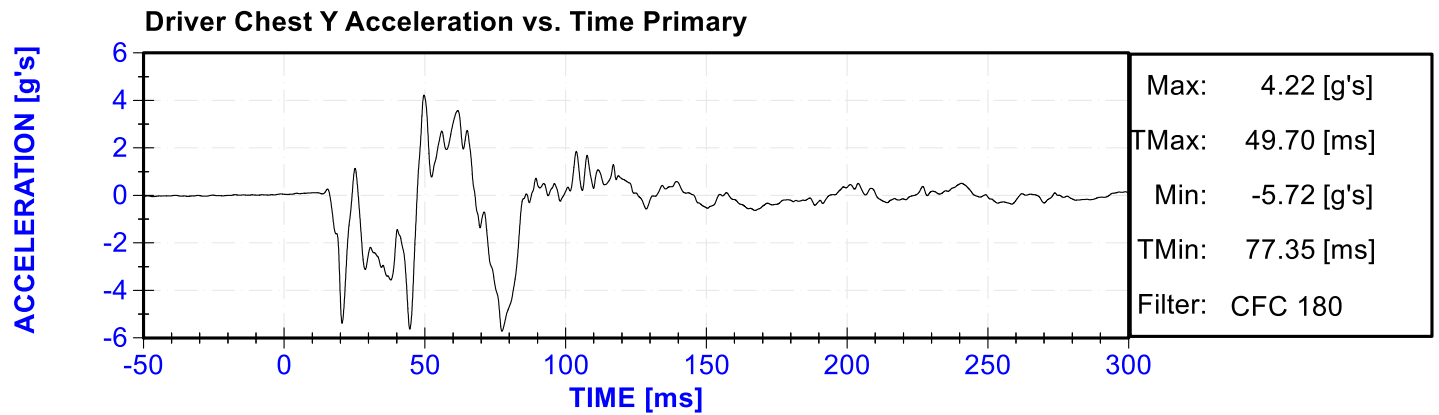
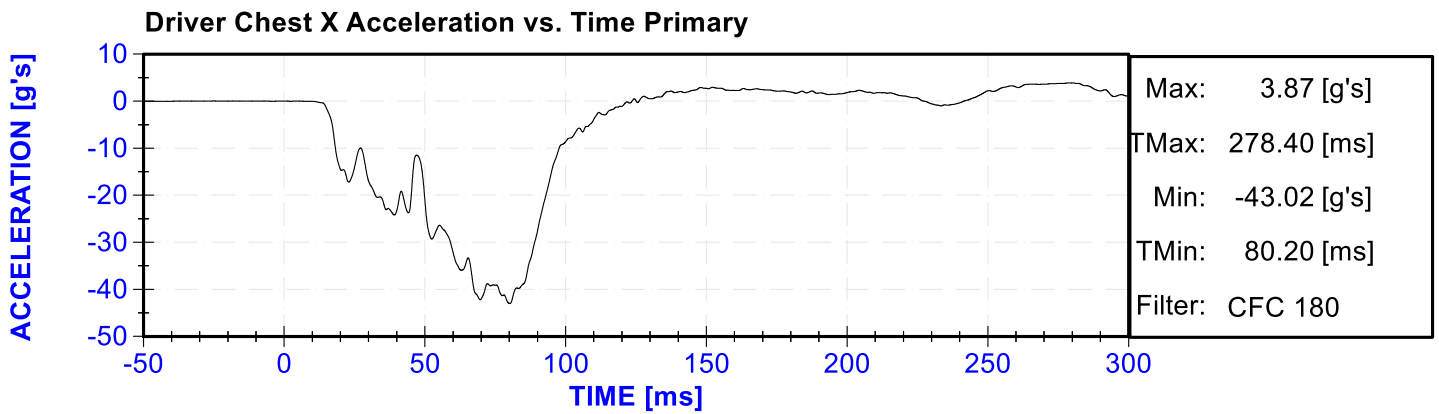
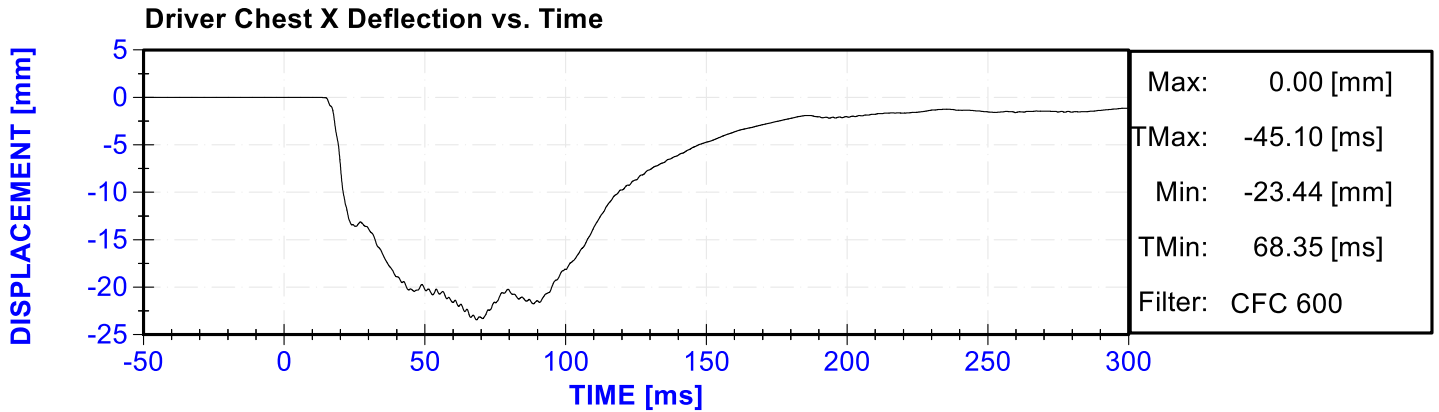
The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.NHTSA.gov

Driver Head X Acceleration Redundant
 Driver Head Y Acceleration Redundant
 Driver Head Z Acceleration Redundant
 Driver Upper Neck Force Y
 Driver Upper Neck Moment X
 Driver Upper Neck Moment Z
 Driver Chest X Acceleration Redundant
 Driver Chest Y Acceleration Redundant
 Driver Chest Z Acceleration Redundant
 Driver Pelvis X
 Driver Pelvis Y
 Driver Pelvis Z
 Driver Left Femur Redundant
 Driver Right Femur Redundant
 Driver Left Upper Tibia Moment X
 Driver Left Upper Tibia Moment Y

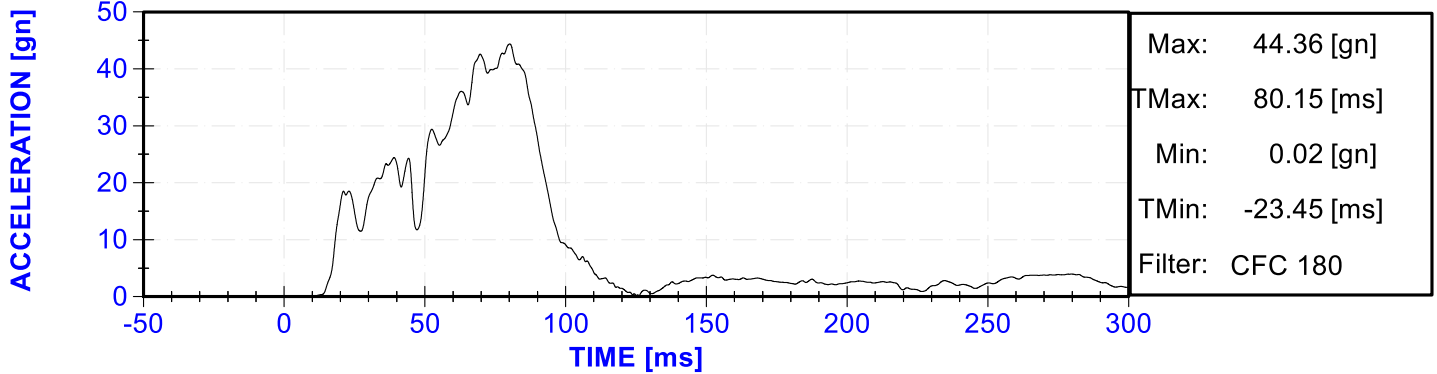
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Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
Driver Right Upper Tibia Moment X
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Driver Right Lower Tibia Moment X
Driver Right Lower Tibia Moment Y
Driver Right Lower Tibia Force Z
Driver Left Foot Fore Z
Driver Left Foot Aft X
Driver Left Foot Aft Z
Driver Right Foot Fore Z
Driver Right Foot Aft X
Driver Right Foot Aft Z
Driver Shoulder Belt Force
Driver Lap Belt Force
Driver Head Angular Velocity X
Driver Head Angular Velocity Y
Driver Head Angular Velocity Z
Passenger Head X Acceleration Redundant
Passenger Head Y Acceleration Redundant
Passenger Head Z Acceleration Redundant
Passenger Upper Neck Force X
Passenger Upper Neck Force Z
Passenger Upper Neck Moment Y
Passenger Chest X Acceleration Redundant
Passenger Chest Y Acceleration Redundant
Passenger Chest Z Acceleration Redundant
Passenger Pelvis X
Passenger Pelvis Y
Passenger Pelvis Z
Passenger Left Femur Redundant
Passenger Right Femur Redundant
Passenger Left Upper Tibia Moment X
Passenger Left Upper Tibia Moment Y
Passenger Left Upper Tibia Force Z
Passenger Left Lower Tibia Moment X
Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Upper Tibia Moment X
Passenger Right Upper Tibia Moment Y
Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
Passenger Left Foot Fore Z
Passenger Left Foot Aft X
Passenger Left Foot Aft Z

Passenger Right Foot Fore Z
Passenger Right Foot Aft X
Passenger Right Foot Aft Z
Passenger Shoulder Belt Force
Passenger Lap Belt Force
Passenger Head Angular Velocity X
Passenger Head Angular Velocity Y
Passenger Head Angular Velocity Z
Left Rear Seat Crossmember X
Left Rear Seat Crossmember Z
Right Rear Seat Crossmember X
Right Rear Seat Crossmember Z
Left Rear Seat Crossmember X Redundant
Right Rear Seat Crossmember X Redundant
Vehicle Engine Top X
Vehicle Engine Bottom X
Load Cell Barrier Forces and Moments

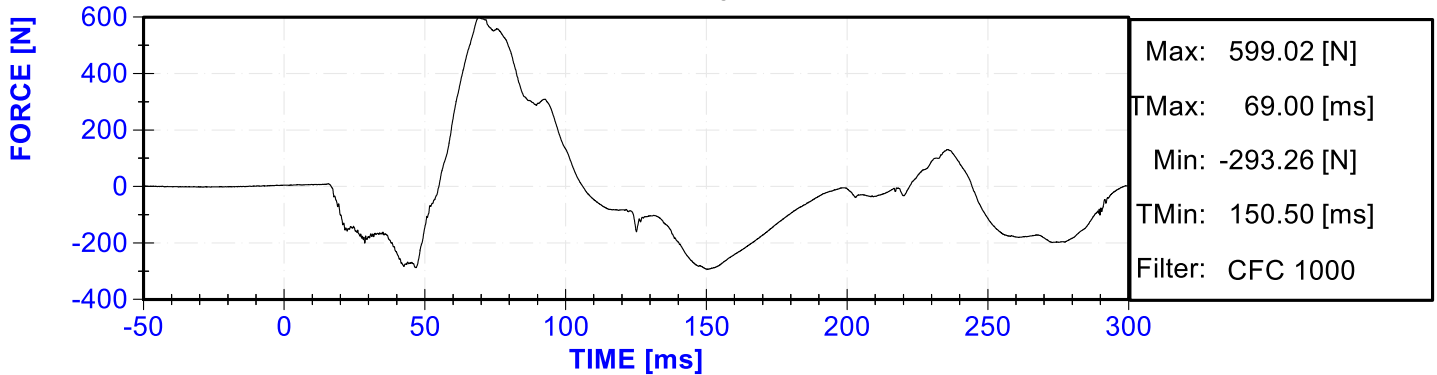




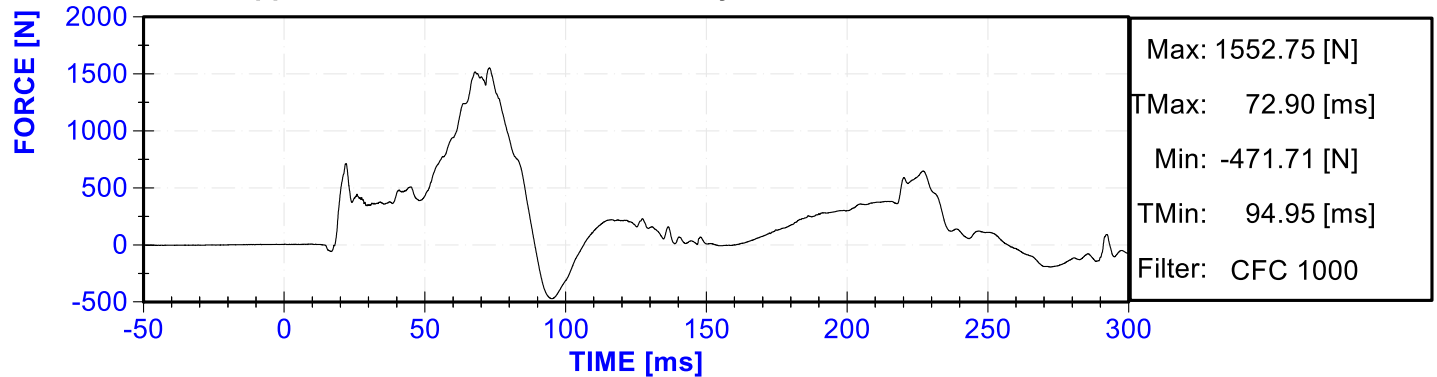
Driver Chest Resultant Acceleration vs. Time Primary



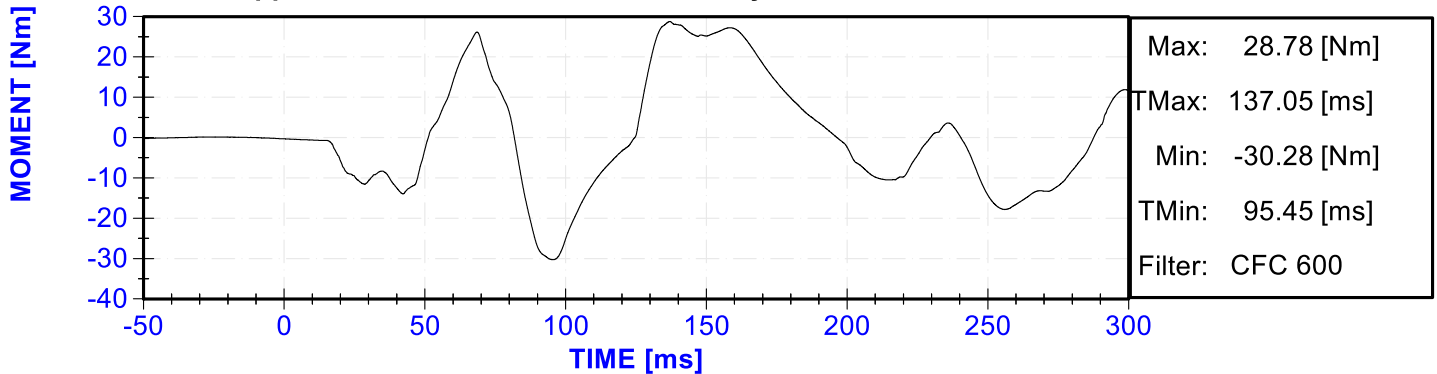
Driver Upper Neck Force X vs. Time Primary

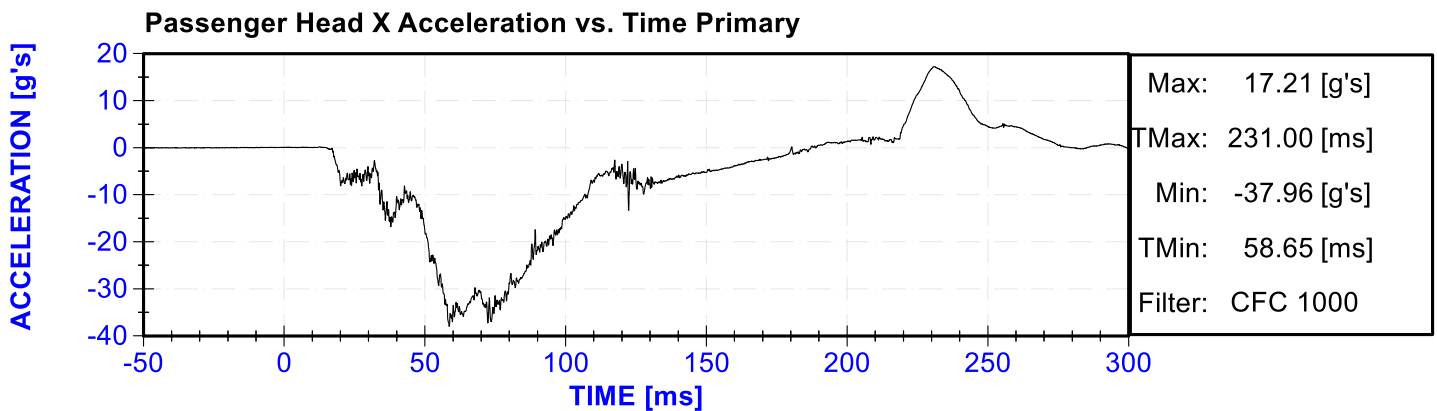
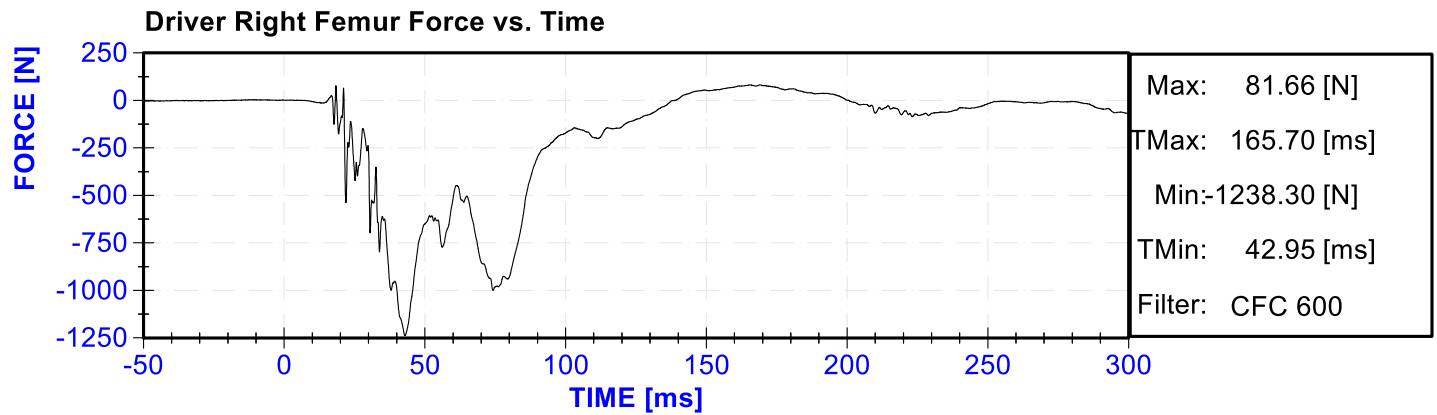
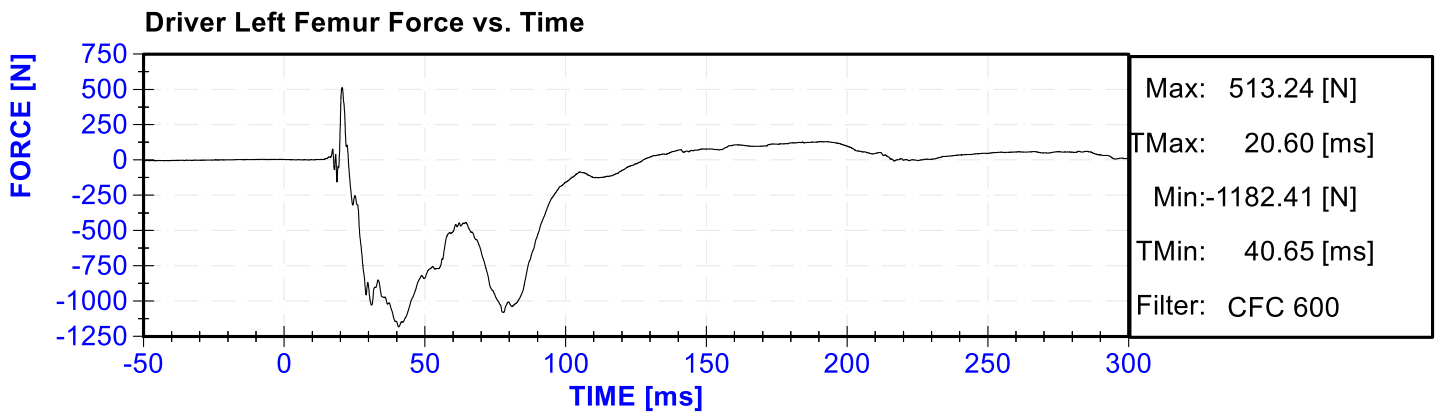
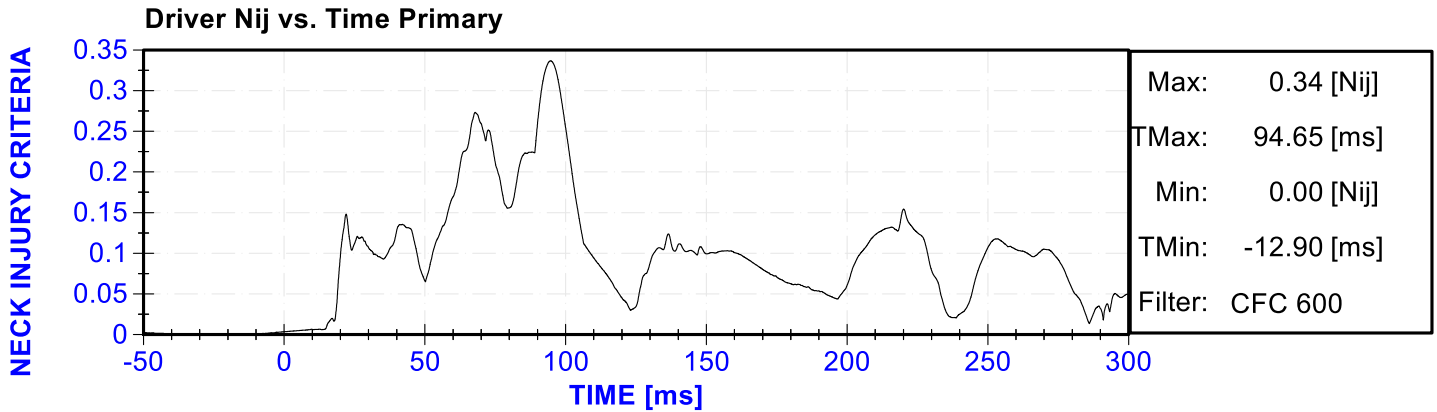


Driver Upper Neck Force Z vs. Time Primary

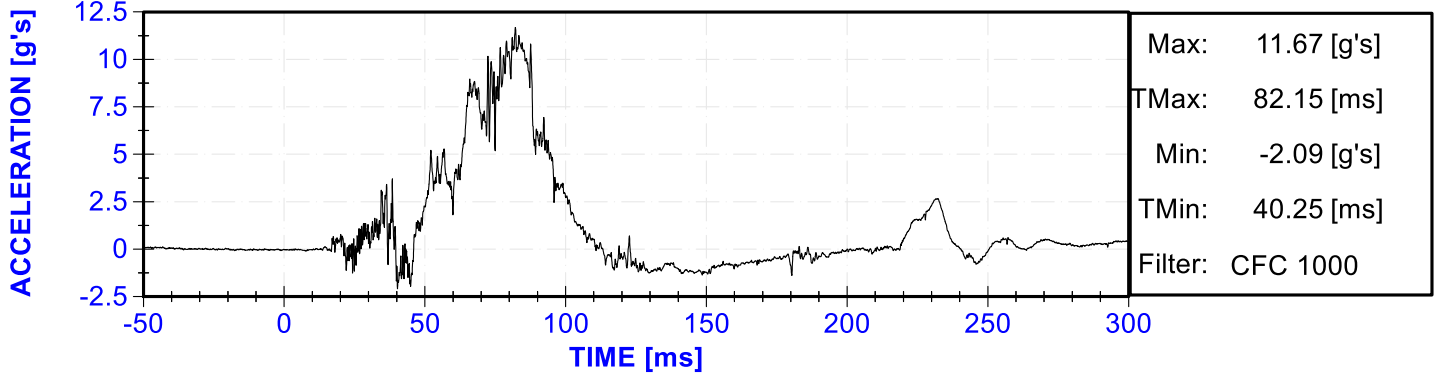


Driver Upper Neck Moment Y vs. Time Primary

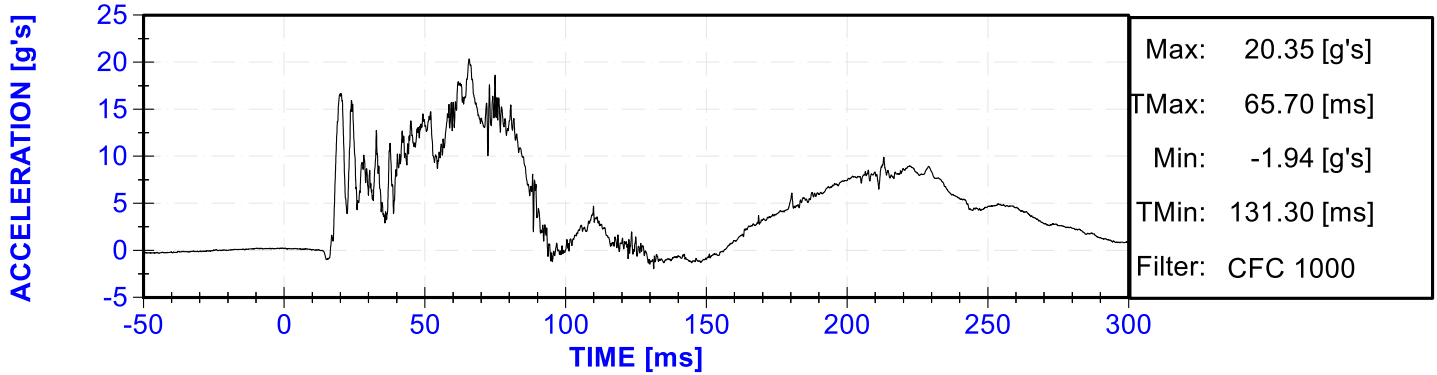




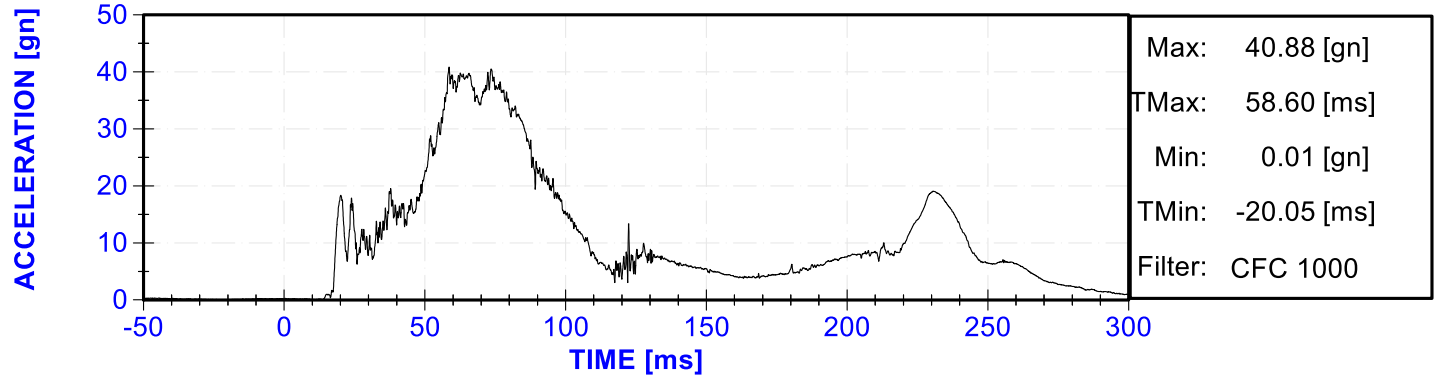
Passenger Head Y Acceleration vs. Time Primary



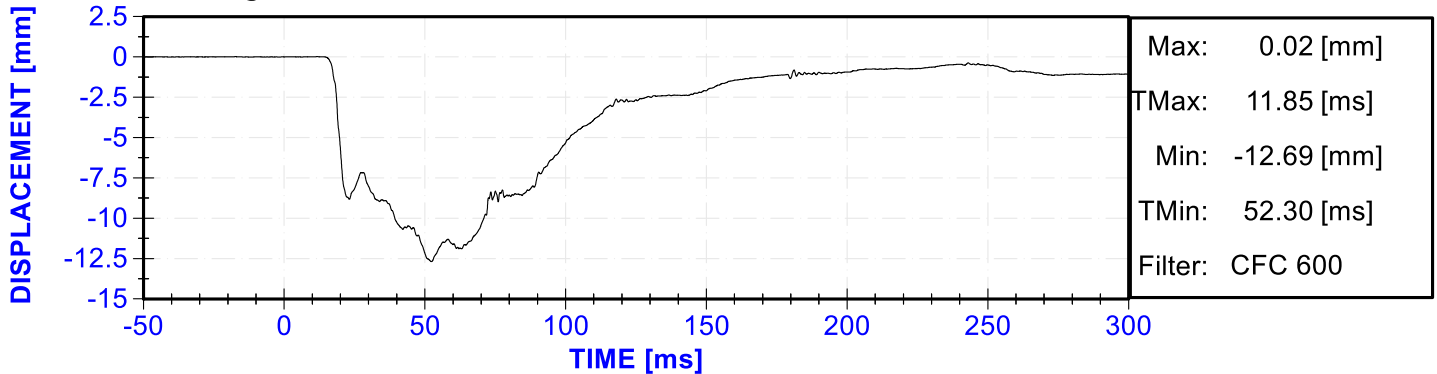
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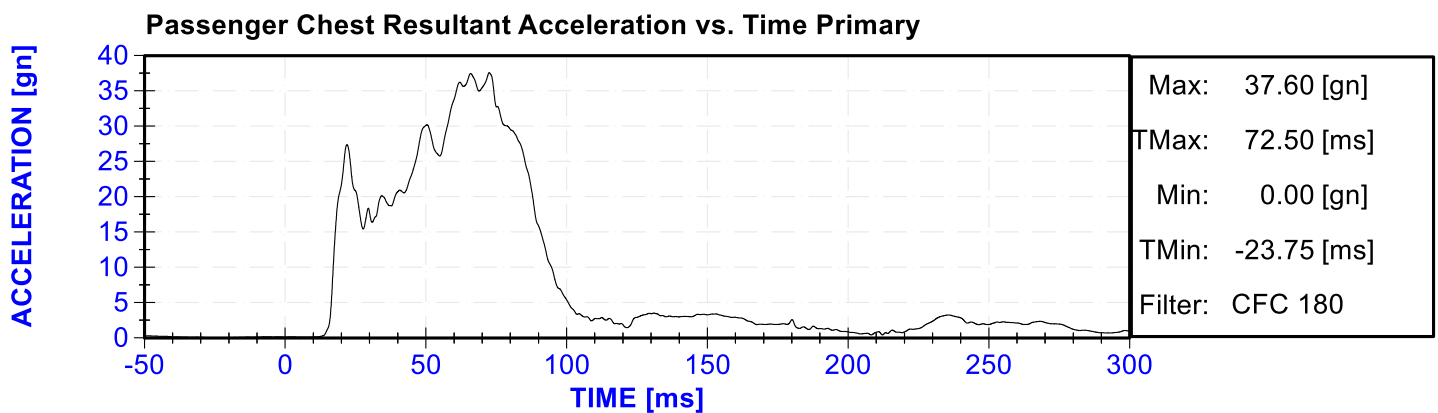
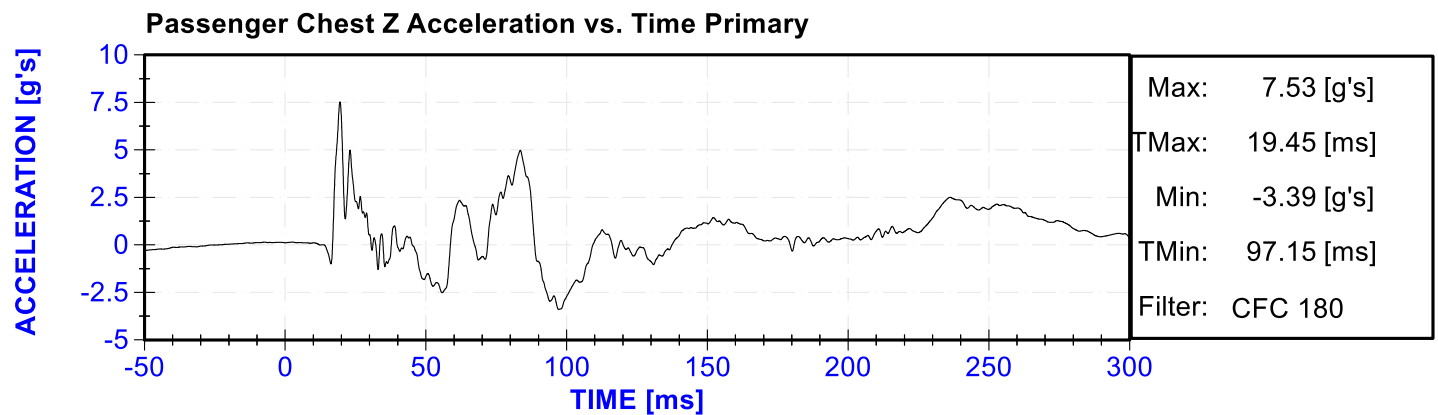
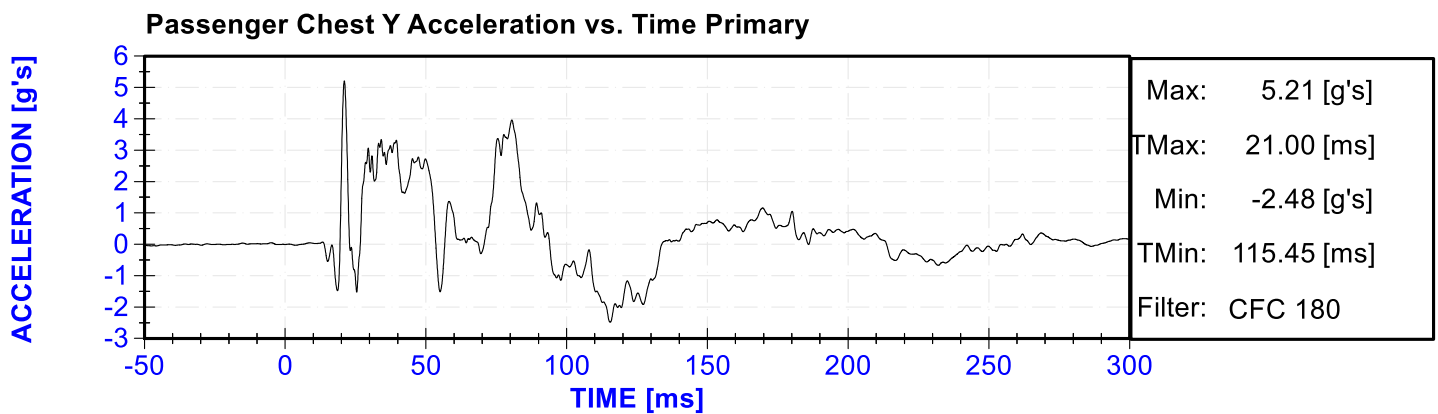
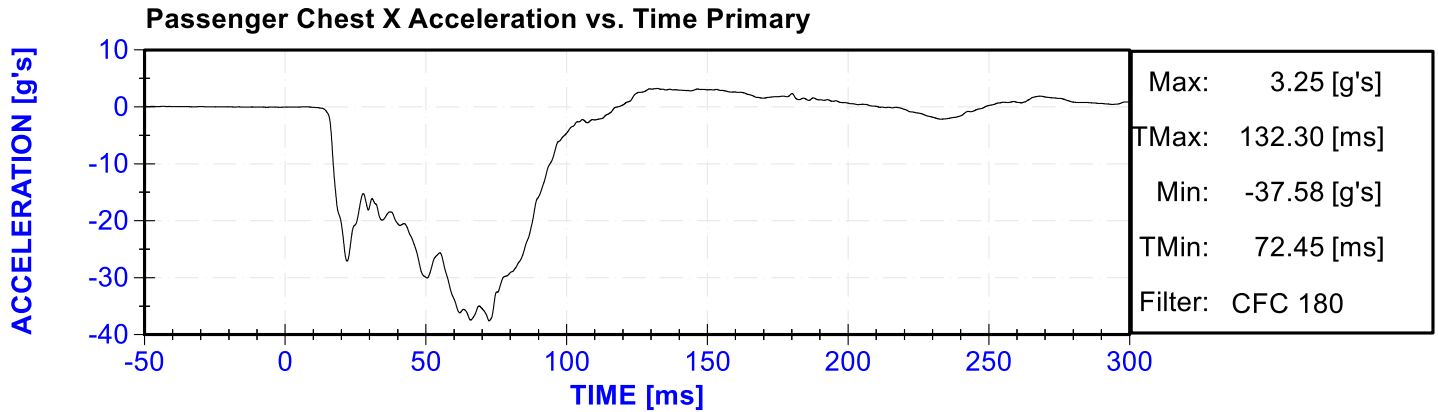


Passenger Head Resultant Acceleration vs. Time Primary

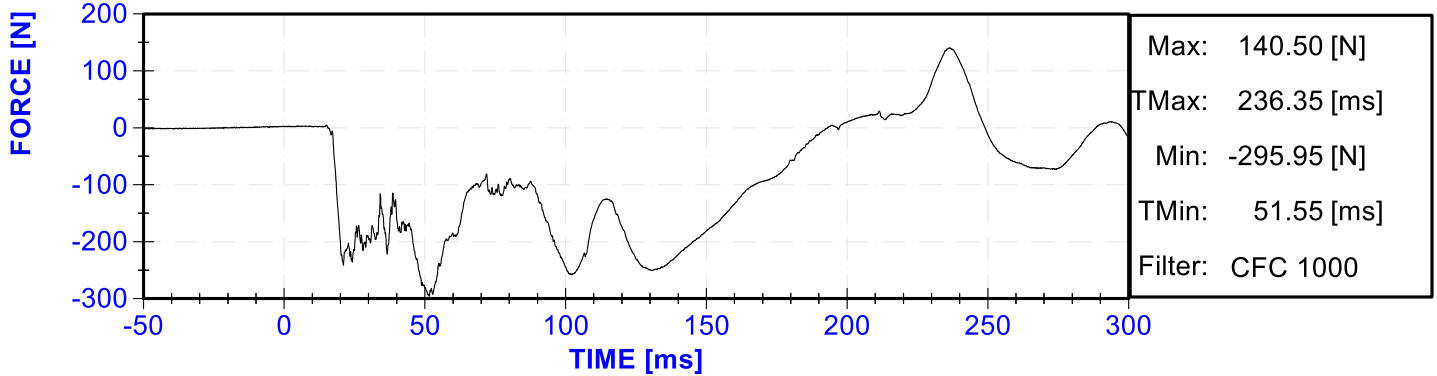


Passenger Chest X Deflection vs. Time

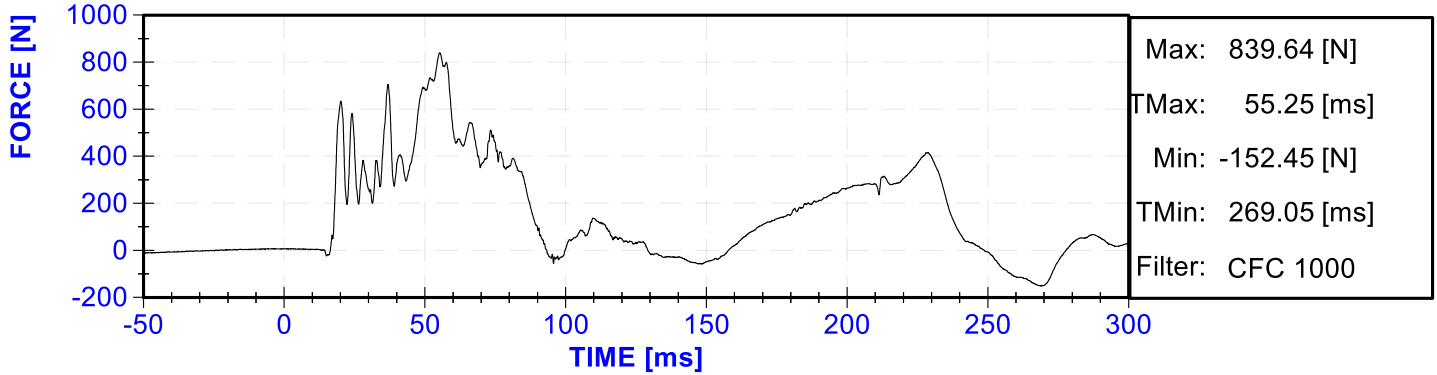




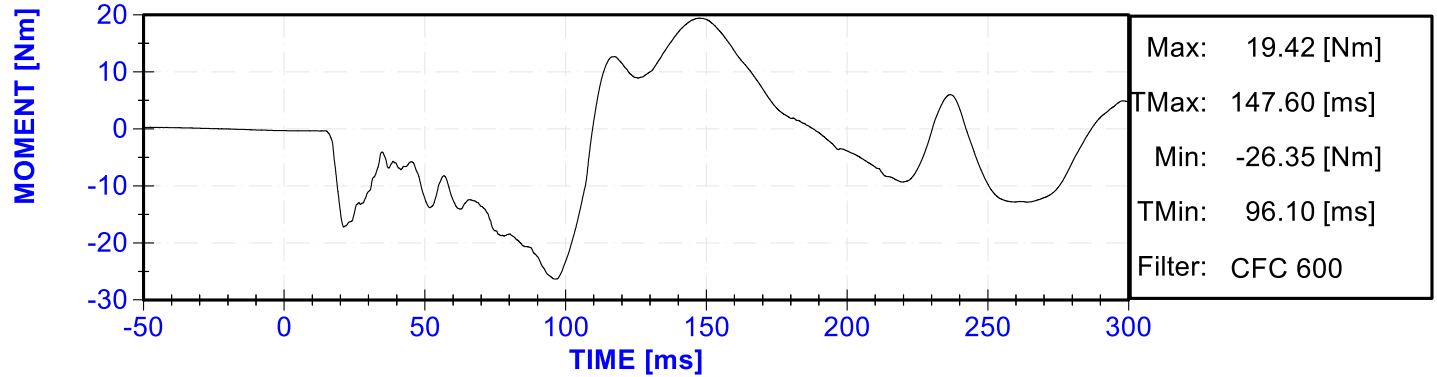
Passenger Upper Neck Force X vs. Time Primary



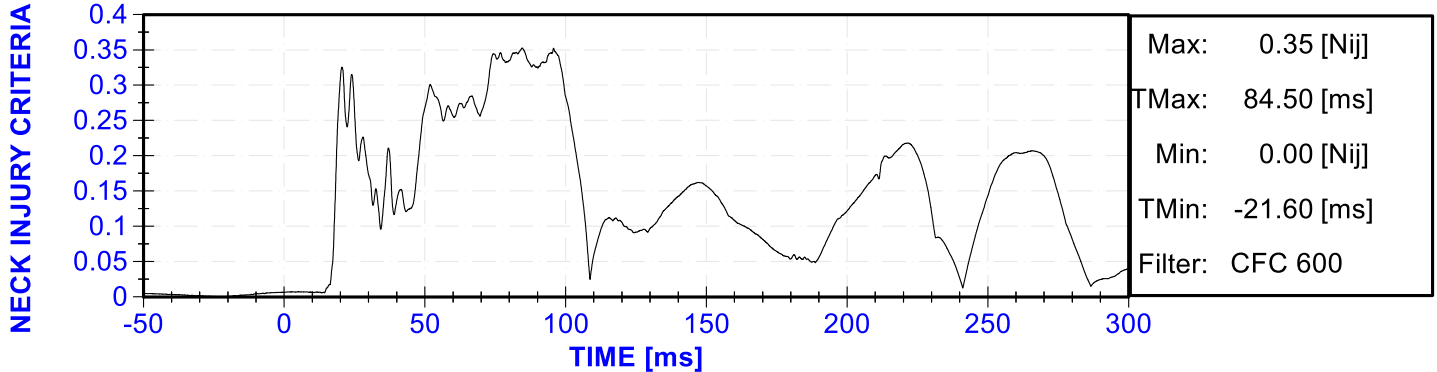
Passenger Upper Neck Force Z vs. Time Primary



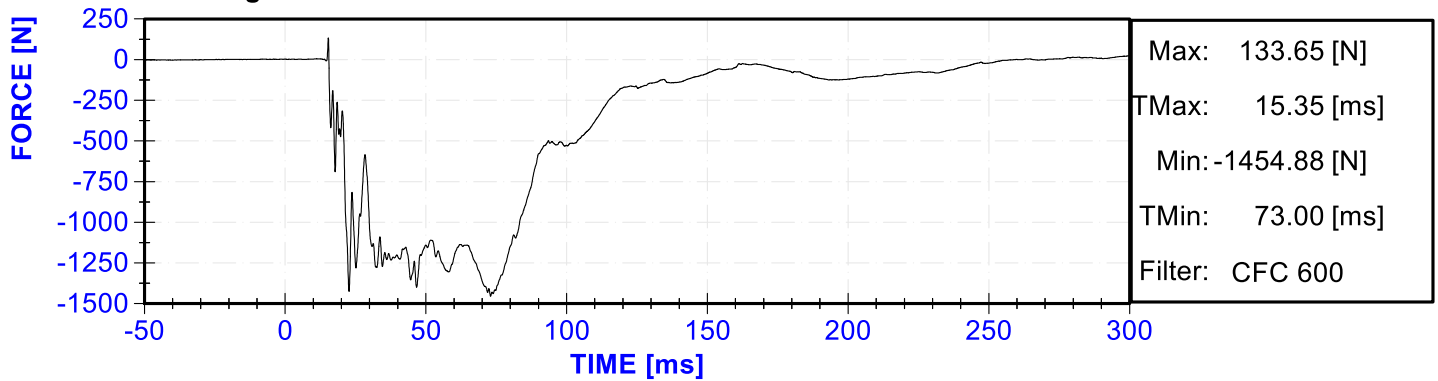
Passenger Upper Neck Moment Y vs. Time Primary



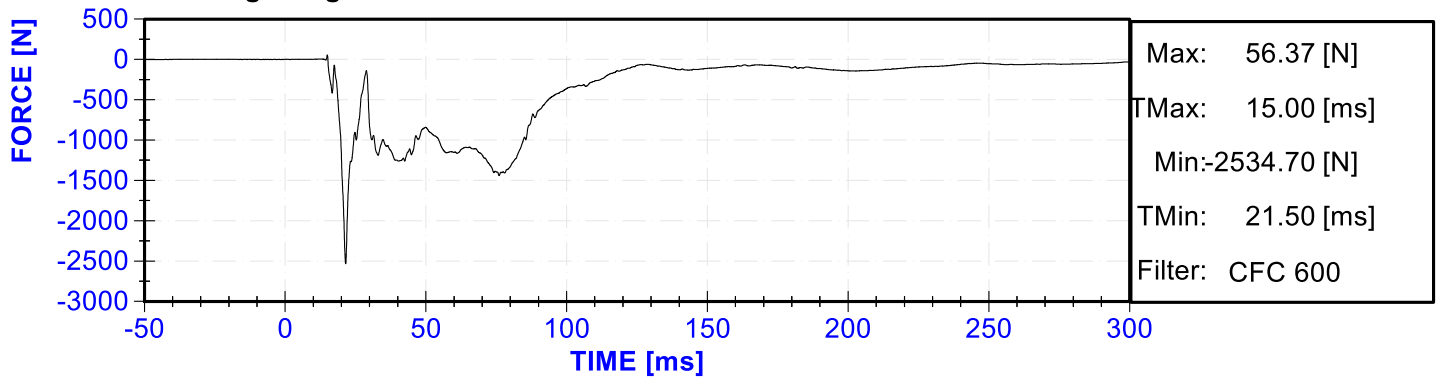
Passenger Nij vs. Time Primary



Passenger Left Femur Force vs. Time



Passenger Right Femur Force vs. Time



APPENDIX C

DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

CALIBRATION TEST RESULTS

PRE-TEST

HYBRID III 50TH PERCENTILE MALE - DRIVER ATD

SERIAL NO: 142

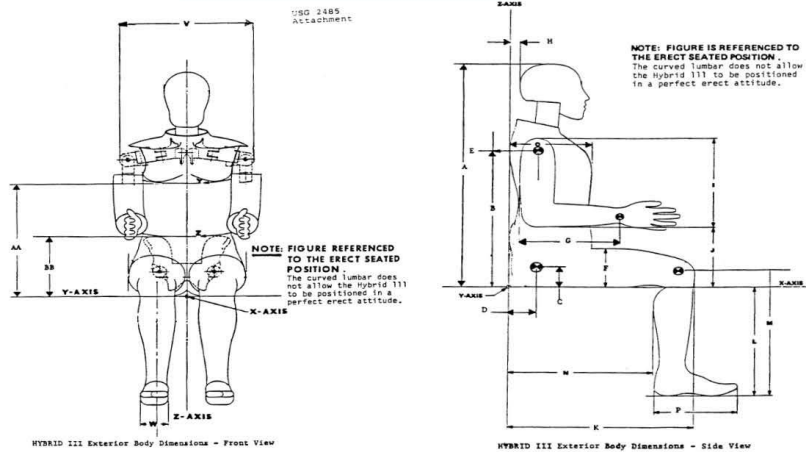


External Measurements - Hybrid 3 - 50th Male

Technician: K. Brogan

Date: 03/11/2021

Dummy Serial Number: 142



Symbol	Description	Specification (in)		Result (in)	Pass/Fail
A	Sitting Height	34.6	35.0	34.7	Pass
B	Shoulder Pivot Height	19.9	20.5	20.3	Pass
C	H-Point Height	3.3	3.5	3.4	Pass
D	H-Point from Backline	5.3	5.5	5.4	Pass
E	Shoulder Pivot from Backline	3.3	3.7	3.5	Pass
F	Thigh Clearance	5.5	6.1	5.9	Pass
G	Back of Elbow to Wrist Pivot	11.4	12.0	11.7	Pass
H	Head Back to Backline	1.6	1.8	1.7	Pass
I	Shoulder to Elbow Length	13.0	13.6	13.4	Pass
J	Elbow Rest Height	7.5	8.3	8.1	Pass
K	Buttock to Knee Length	22.8	23.8	23.0	Pass
L	Popliteal Height	16.9	17.9	17.5	Pass
M	Knee Pivot Height	19.1	19.7	19.4	Pass
N	Buttock Popliteal Length	17.8	18.8	18.3	Pass
O	Chest Depth without Jacket	8.4	9.0	8.6	Pass
P	Foot Length (right)	9.9	10.5	10.1	Pass
V	Shoulder Breadth	16.3	17.2	16.8	Pass
W	Foot Breadth	3.6	4.2	3.8	Pass
Y	Chest Circumference with Jacket	38.2	39.4	38.8	Pass
Z	Waist Circumference	32.9	34.1	33.7	Pass
AA	Reference Location (Chest Circumference)	16.9	17.1	17.0	Pass
BB	Reference Location (Waist Circumference)	8.9	9.1	9.0	Pass

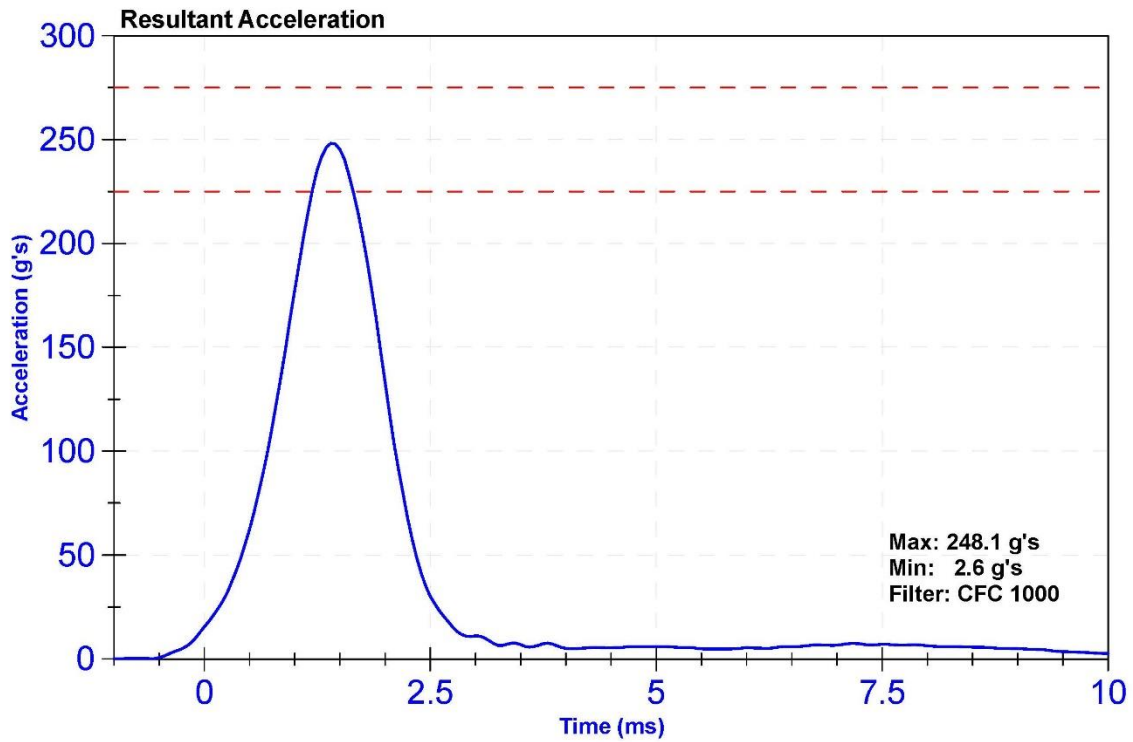
ATD Manufacturer	Humanetics	Test Technician	E. Helenbrook
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

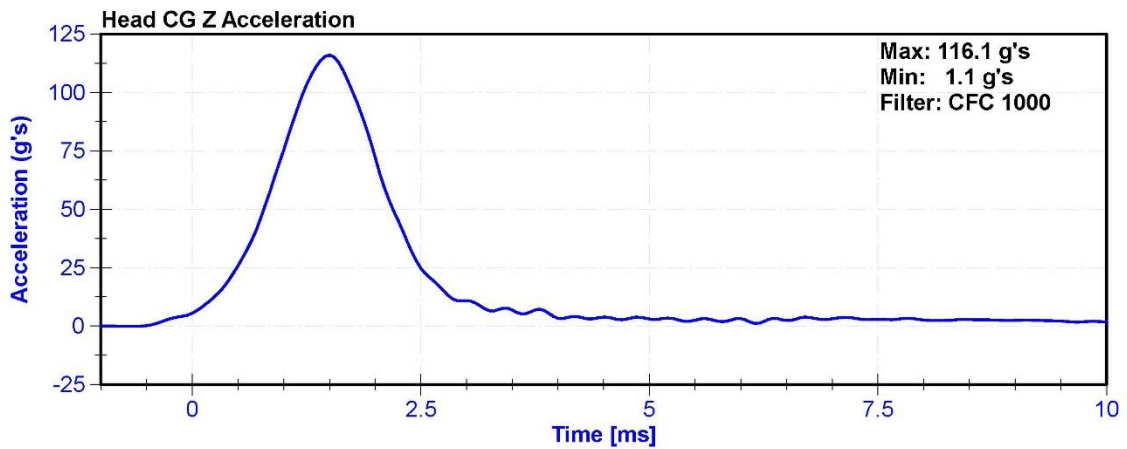
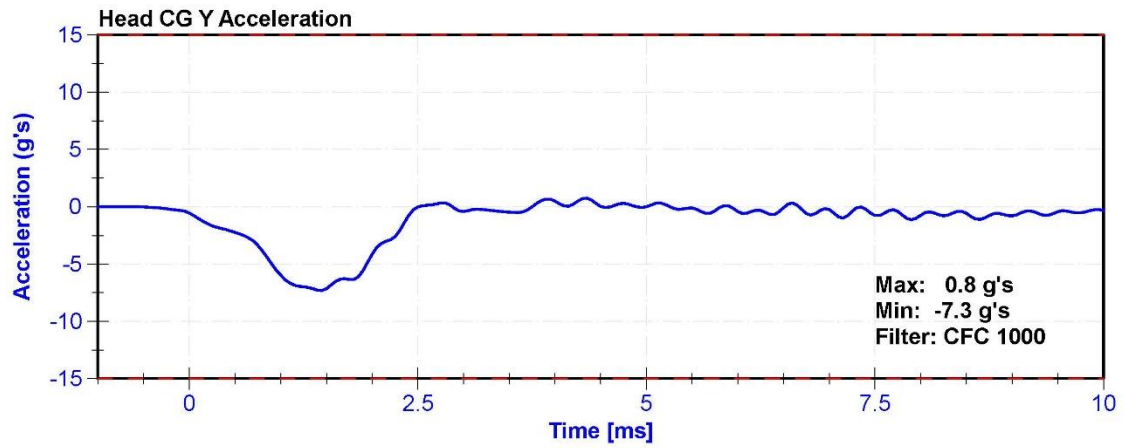
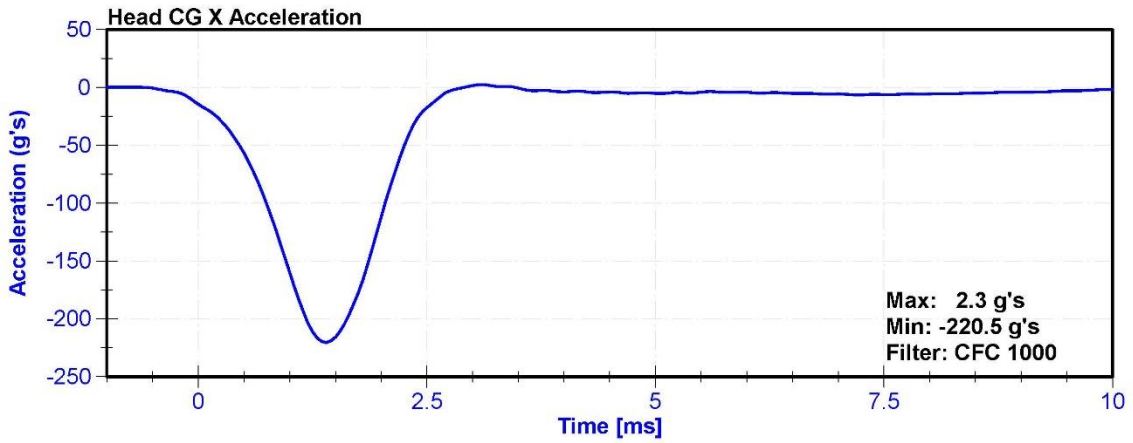
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.5	Pass
Humidity	10	70	%	34.4	Pass
Resultant Acceleration	225	275	g's	248.1	Pass
Oscillation	0	10	%	4.4	Pass
Lateral Acceleration	-15	15	g's	-7.3	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	ENDEVCO 7264	P51681	11/3/2020	5/4/2021
Y Accelerometer	ENDEVCO 7264	P64151	11/3/2020	5/4/2021
Z Accelerometer	ENDEVCO 7264	P52114	11/3/2020	5/4/2021





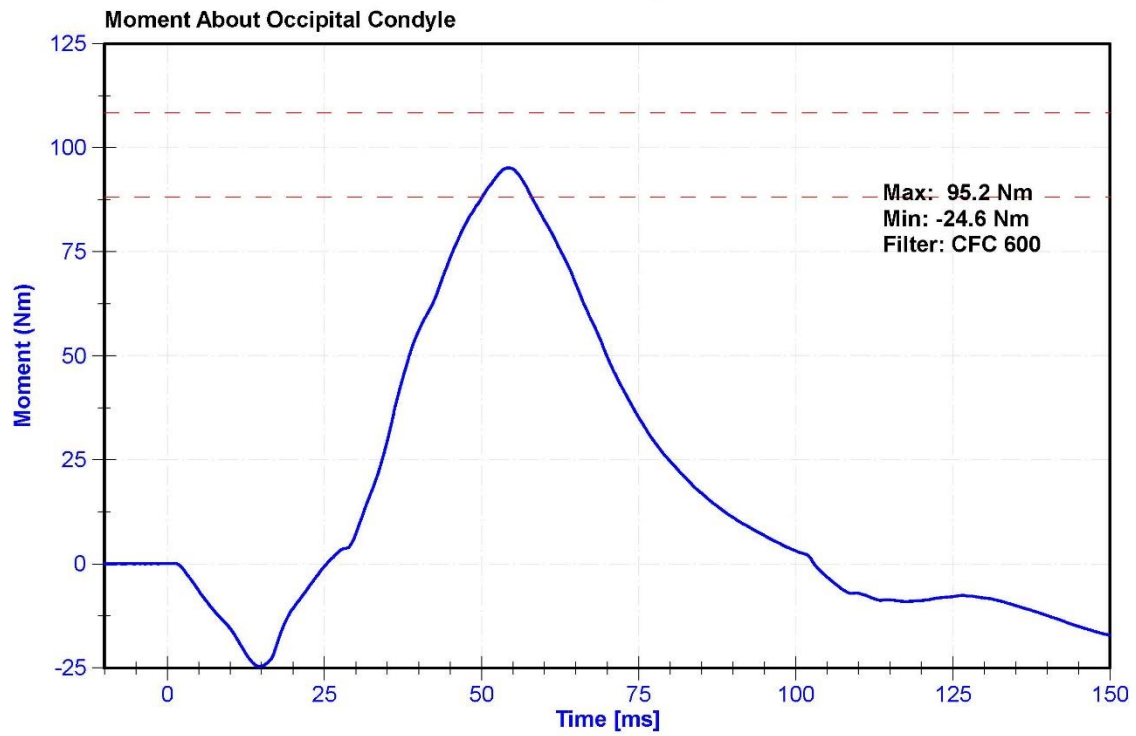
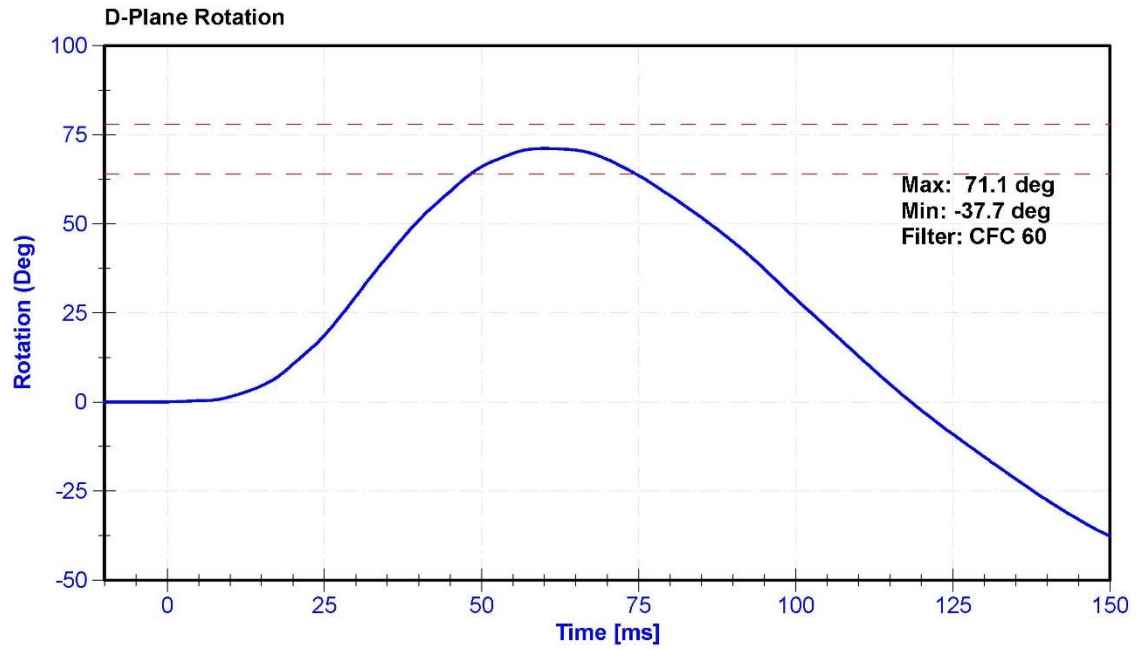
ATD Manufacturer	Humanetics	Test Technician	E. Helenbrook
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

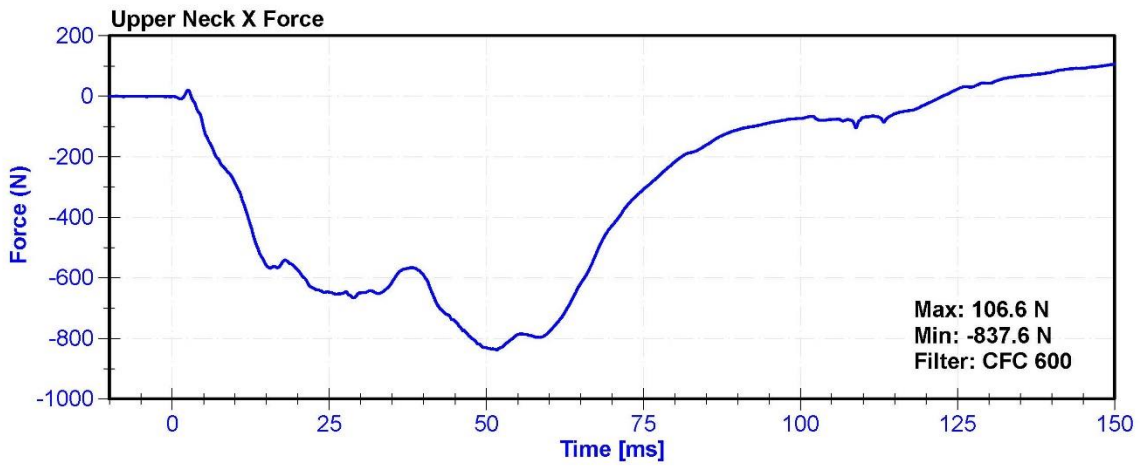
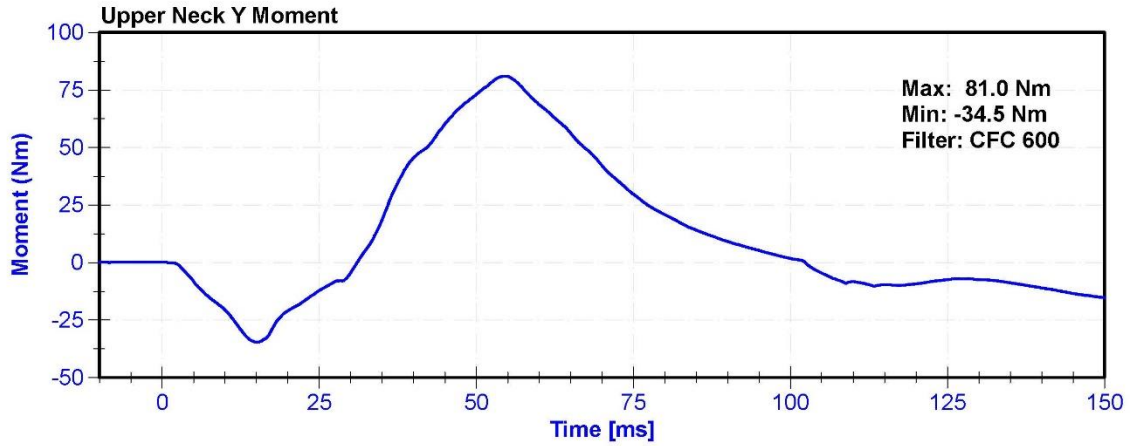
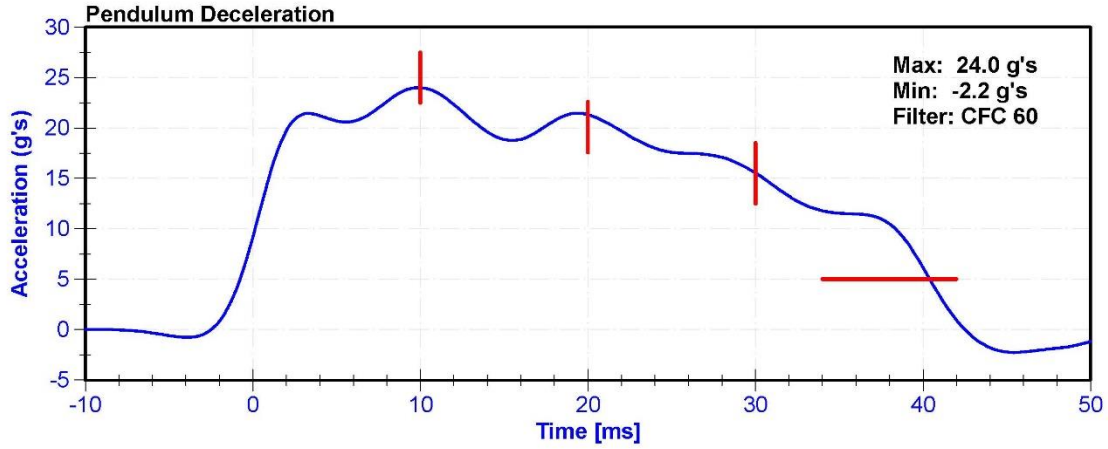
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.5	Pass
Humidity	10	70	%	24.0	Pass
Velocity	6.89	7.13	m/s	6.958	Pass
Pendulum Deceleration at 10ms	22.5	27.5	g's	24.01	Pass
Pendulum Deceleration at 20ms	17.6	22.6	g's	21.33	Pass
Pendulum Deceleration at 30ms	12.5	18.5	g's	15.55	Pass
Max. Pendulum Deceleration After 30ms	0	29	g's	24.0	Pass
Pendulum Deceleration Time to 5 g's	34	42	ms	40.5	Pass
Maximum D Plane Rotation	64	78	deg	71.1	Pass
Time to Maximum Rotation	57	64	ms	60.0	Pass
Rotation Decay to Zero	113	127	ms	118.4	Pass
Moment About Occipital Condyle	88.1	108.4	Nm	95.15	Pass
Time to Maximum Moment	47	58	ms	54.3	Pass
Moment Decay to Zero	97	107	ms	103.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C16503 Striker	2/5/2021	2/5/2022
Pendulum Potentiometer	ETI SP22G	DS-LABPOT1	9/17/2020	9/17/2021
Condyle Potentiometer	ETI SP22G	DS-LABPOT2	9/17/2020	9/17/2021
Upper Neck Load Cell	DENTON 1716A	LC-2186Fx	11/10/2020	11/10/2021





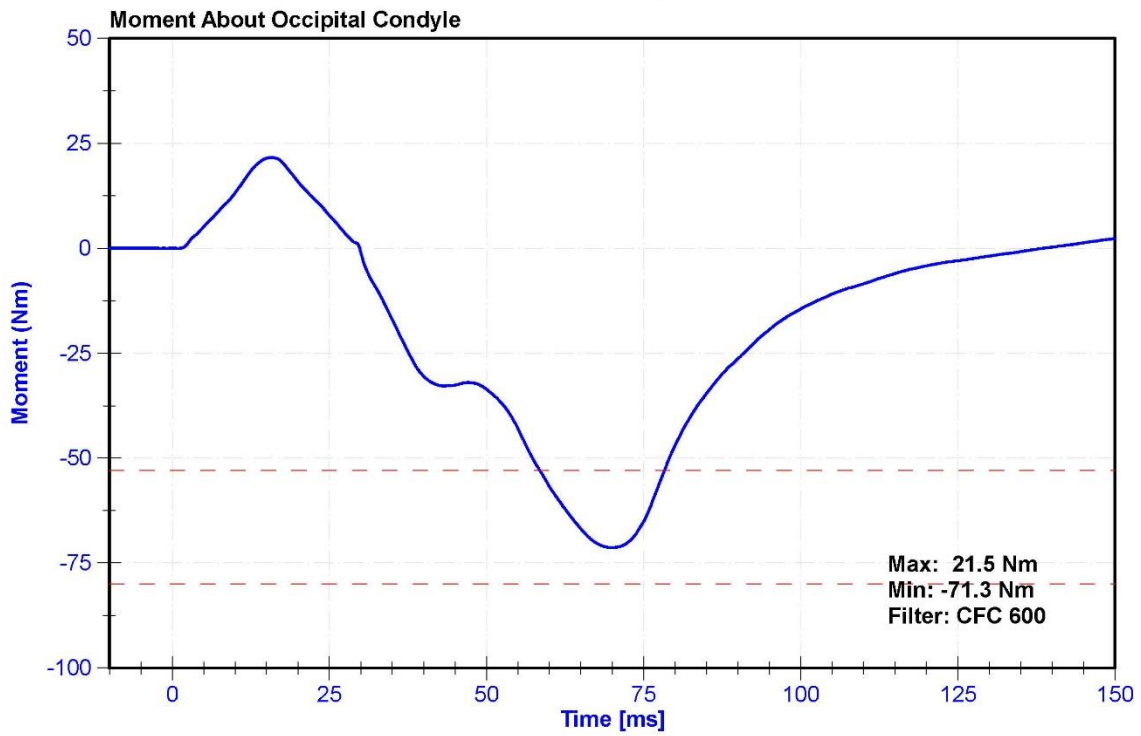
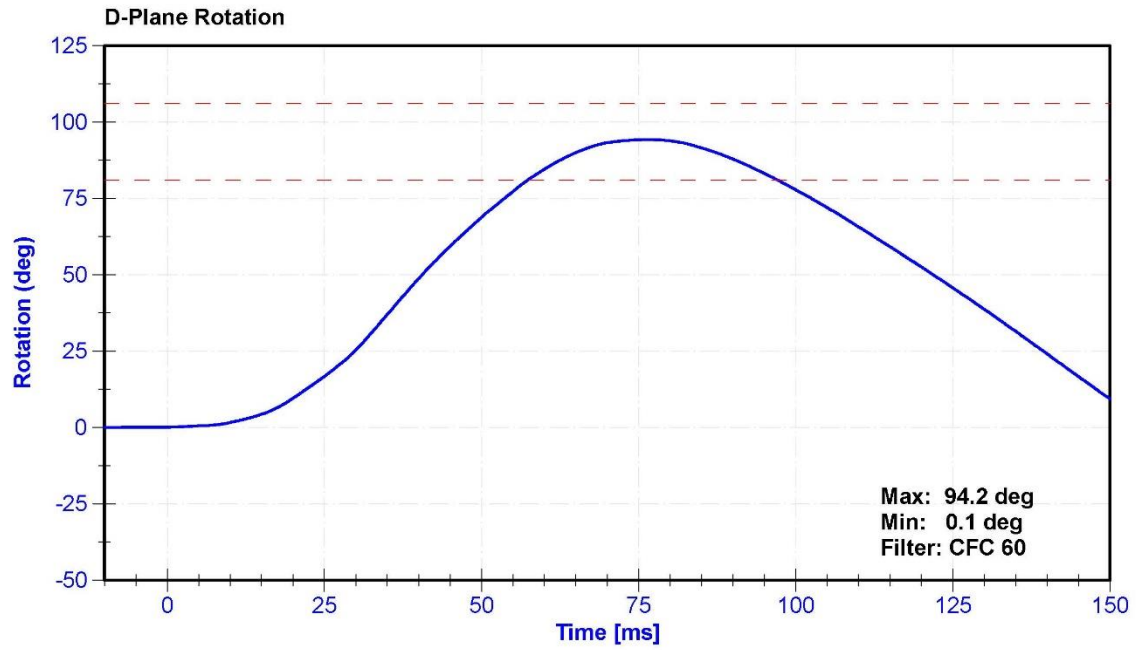
ATD Manufacturer	Humanetics	Test Technician	E. Helenbrook
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

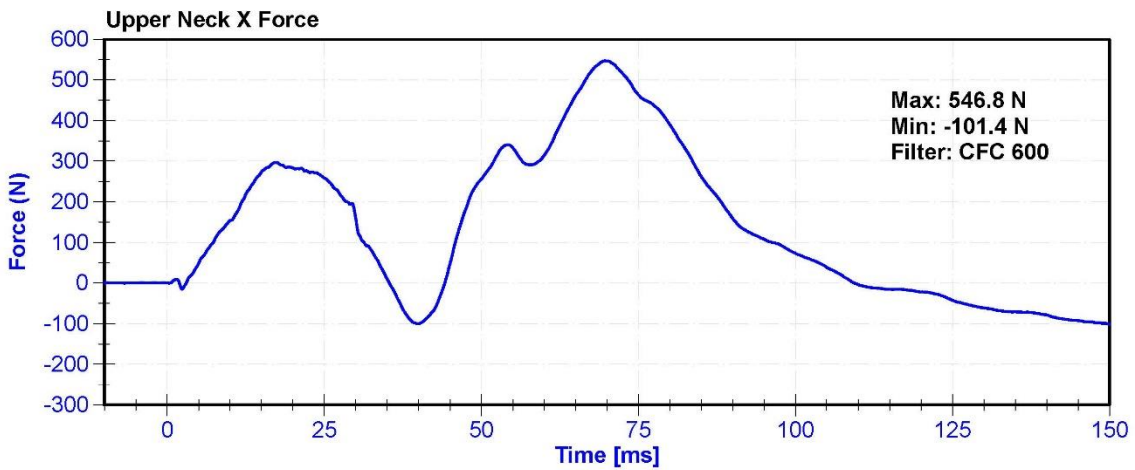
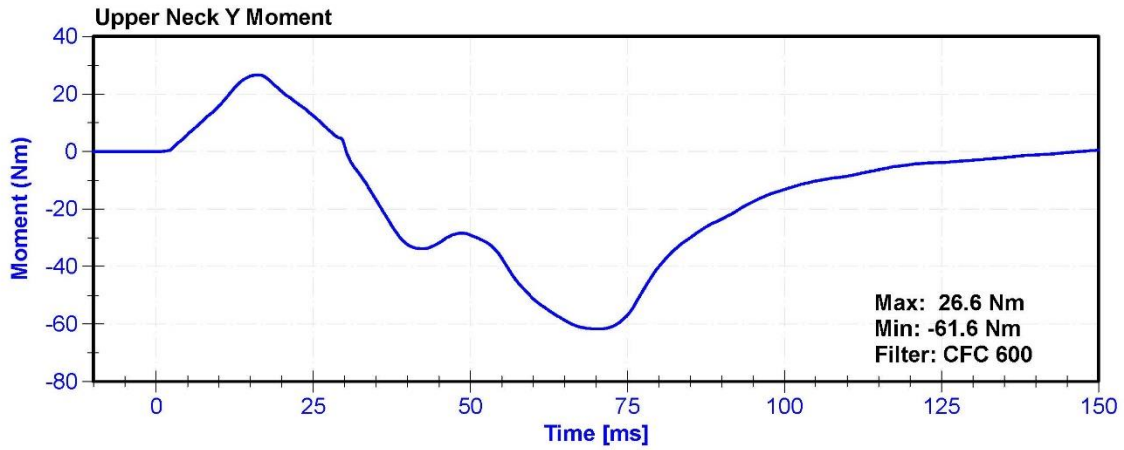
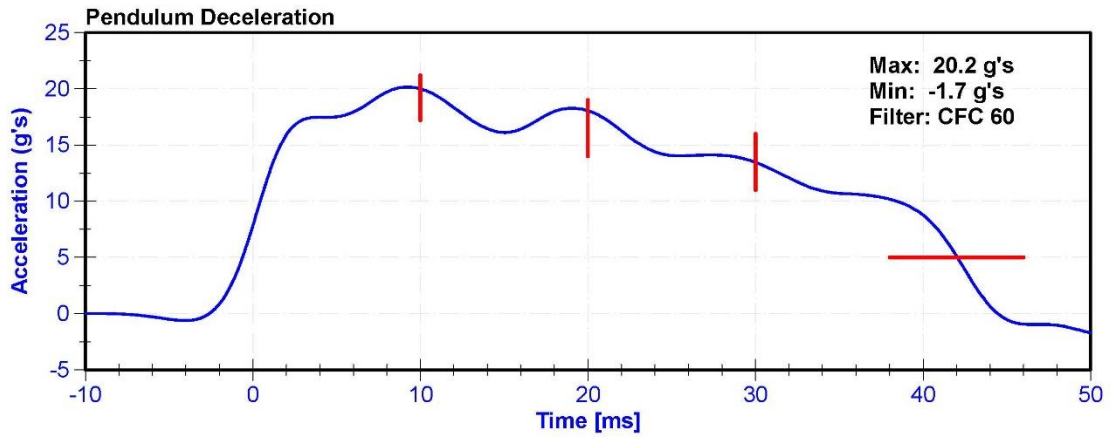
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.4	Pass
Humidity	10	70	%	24.4	Pass
Velocity	5.94	6.19	m/s	6.005	Pass
Pendulum Deceleration at 10ms	17.2	21.2	g's	20.01	Pass
Pendulum Deceleration at 20ms	14	19	g's	18.0	Pass
Pendulum Deceleration at 30ms	11	16	g's	13.5	Pass
Max. Pendulum Deceleration After 30ms	0	22	g's	20.2	Pass
Pendulum Deceleration Time to 5 g's	38	46	ms	42.1	Pass
Maximum D Plane Rotation	81	106	deg	94.2	Pass
Time to Maximum Rotation	72	82	ms	76.4	Pass
Rotation Decay to Zero	147	174	ms	156.2	Pass
Minimum Moment About OC	-80	-52.9	Nm	-71.32	Pass
Time to Minimum Moment	65	79	ms	69.6	Pass
Moment Decay to Zero	120	148	ms	138.7	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C16503 Striker	2/5/2021	2/5/2022
Pendulum Potentiometer	ETI SP22G	DS-LABPOT1	9/17/2020	9/17/2021
Condyle Potentiometer	ETI SP22G	DS-LABPOT2	9/17/2020	9/17/2021
Upper Neck Load Cell	DENTON 1716A	LC-2186Fx	11/10/2020	11/10/2021





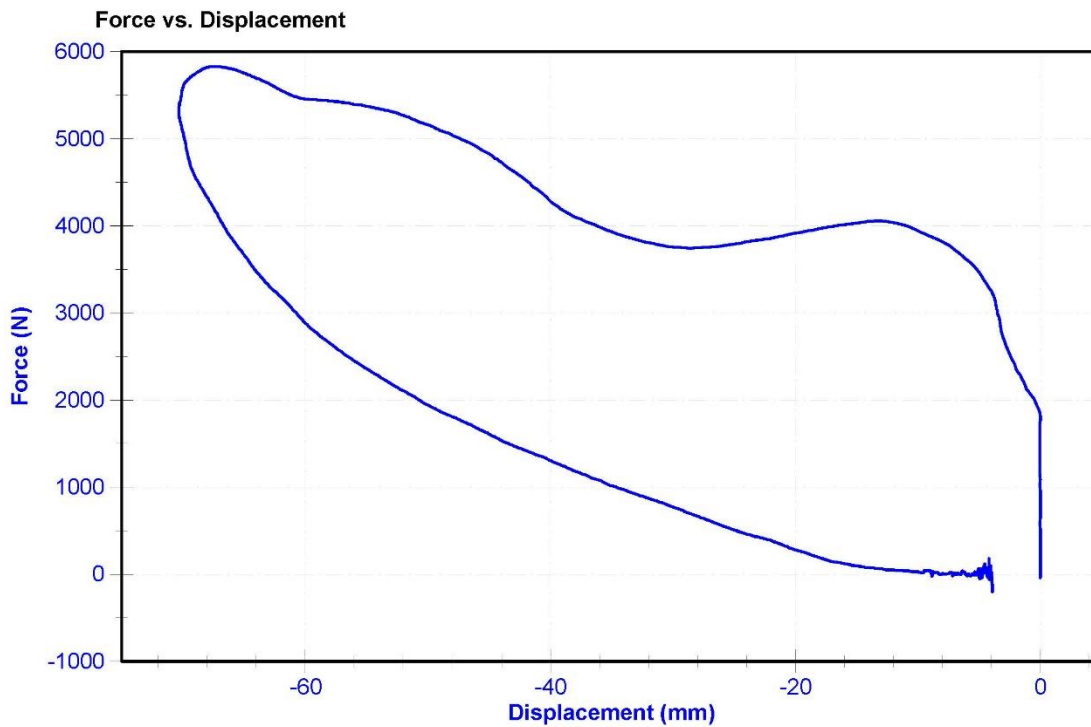
ATD Manufacturer	Humanetics	Test Technician	D.Reinhard
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

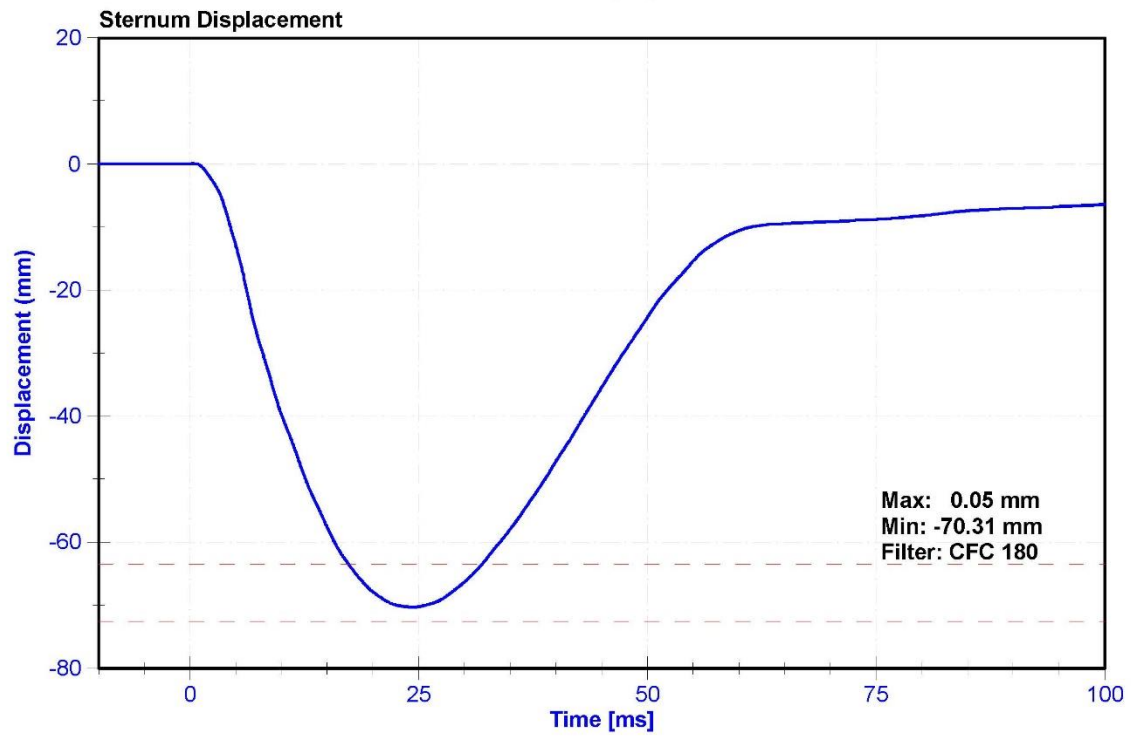
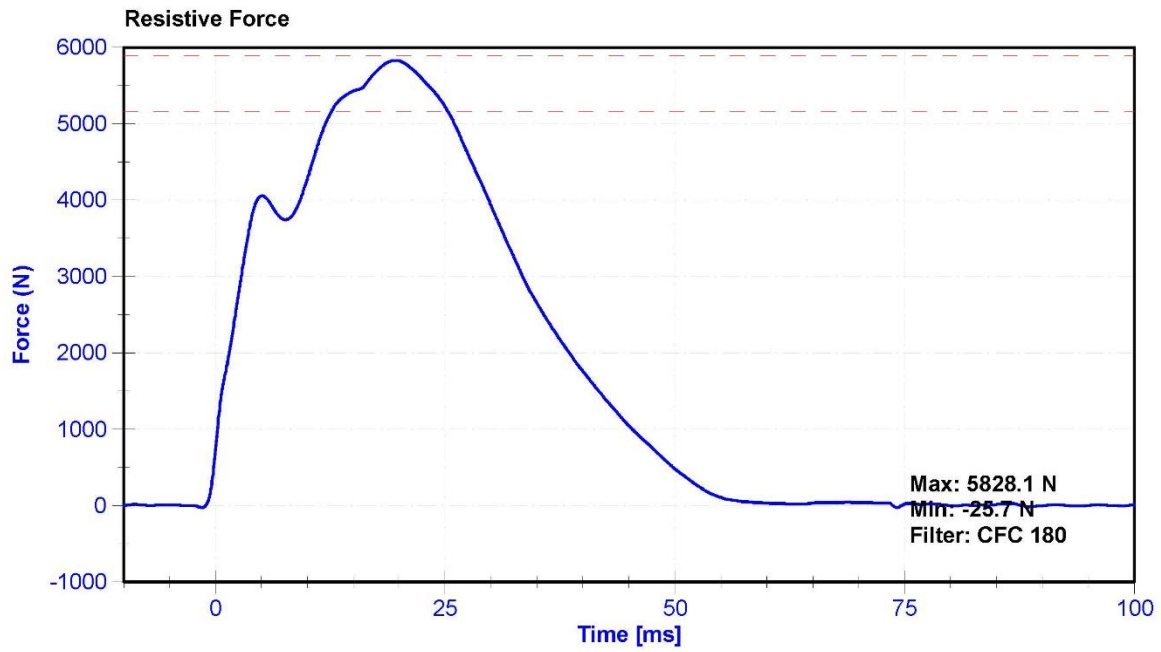
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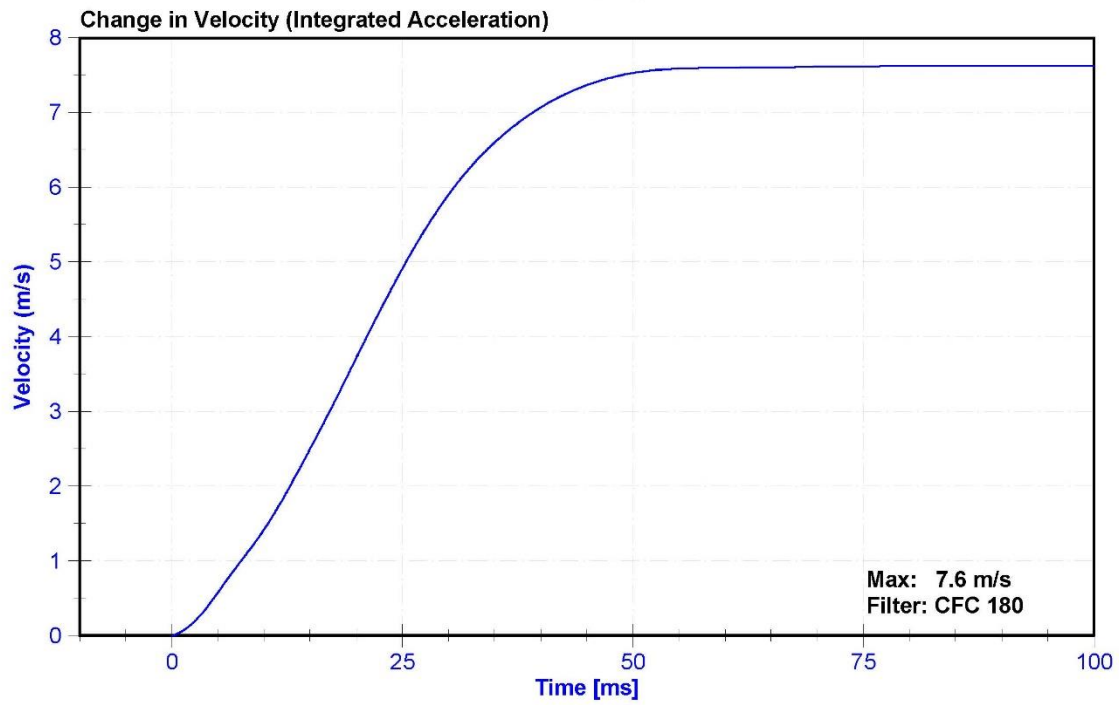
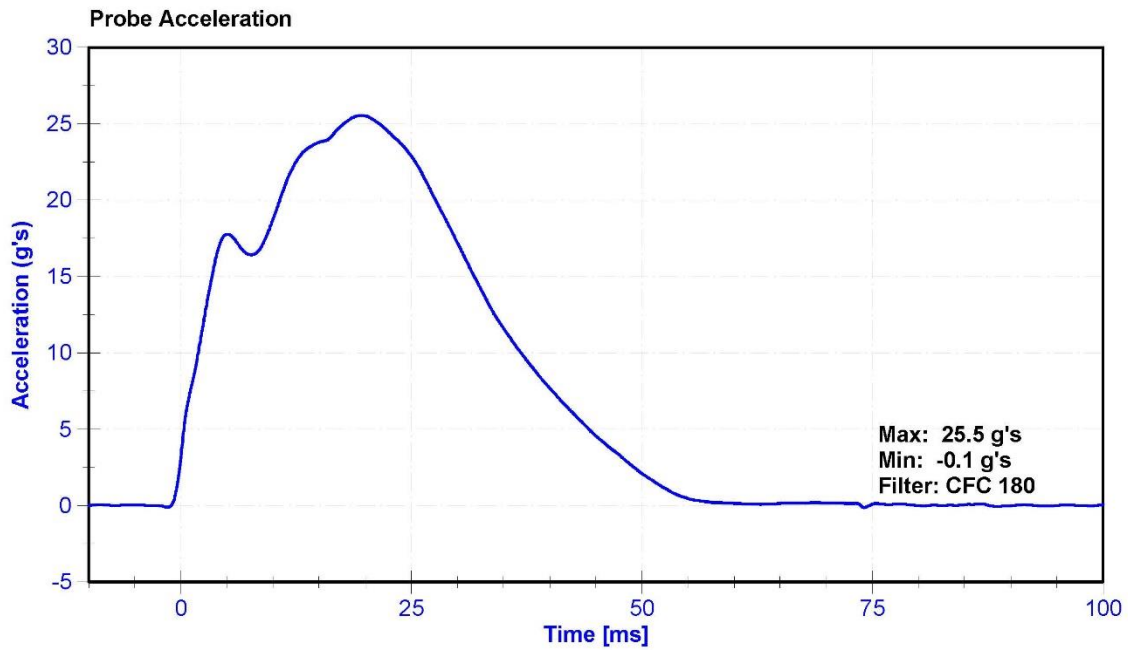
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.8	Pass
Humidity	10	70	%	27	Pass
Velocity	6.59	6.83	m/s	6.655	Pass
Chest Displacement	-72.6	-63.5	mm	-70.31	Pass
Resistive Force	5160	5894	N	5828.1	Pass
Hysteresis	65	85	%	69.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	MSI 64C-2000	A278994	12/3/2020	12/3/2021
Chest Potentiometer	Servo 6209-2038	DS-142	11/19/2020	5/20/2021







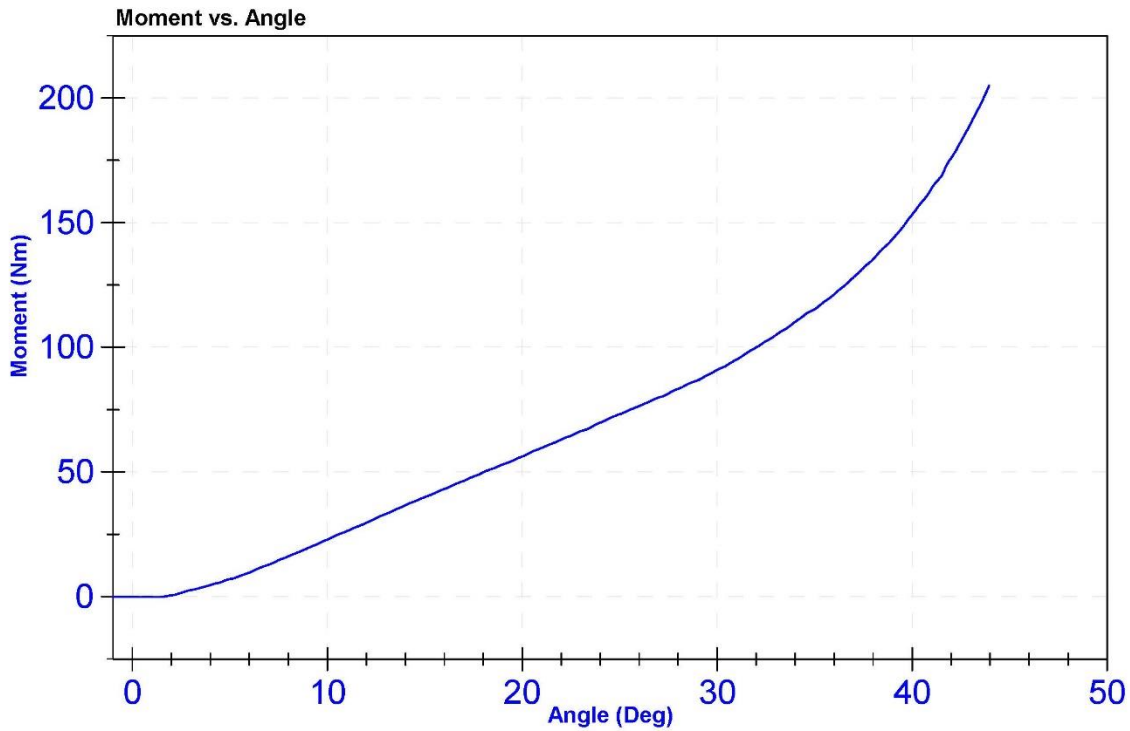
ATD Manufacturer	Humanetics	Test Technician	E. Helenbrook
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.5	Pass
Humidity	10	70	%	25.7	Pass
Average Velocity	5	10	deg/s	7.3	Pass
Angle at 203Nm	40	50	deg	43.8	Pass
Moment at 30 degrees	0	94.9	Nm	91.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Potentiometer	ETI SP22	DS-0008	9/18/2020	9/18/2021
Load Cell	Key Trans 2301-02	LC-115 My	9/12/2020	9/12/2021



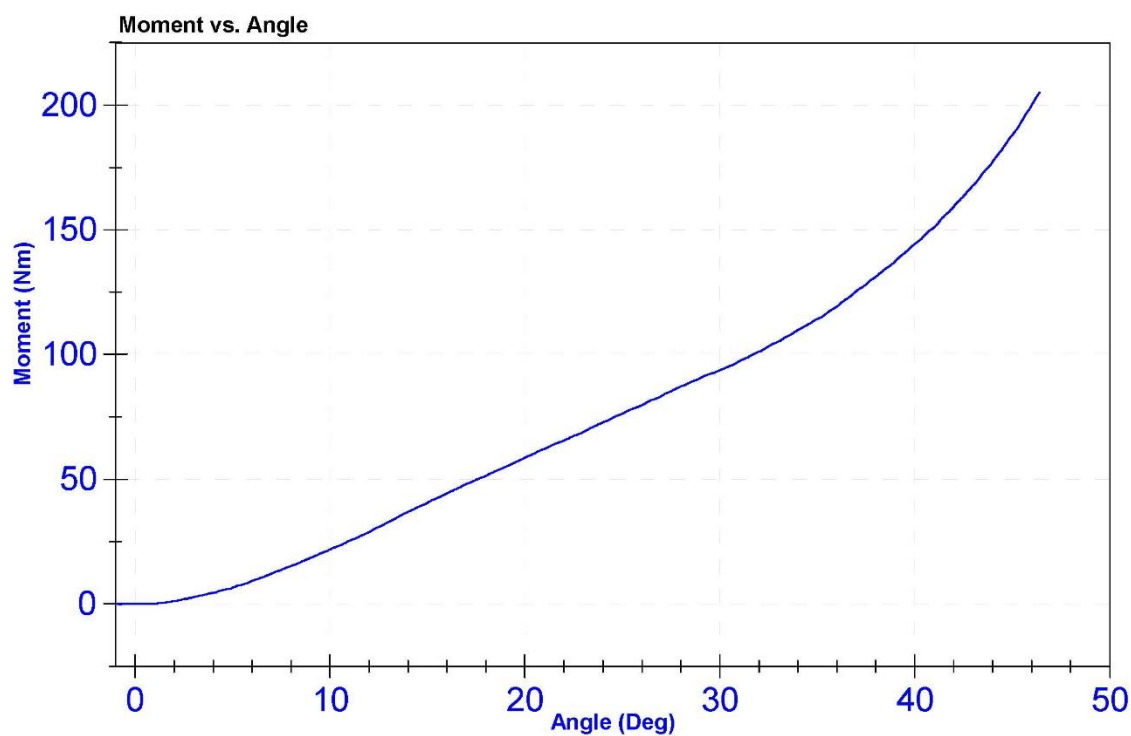
ATD Manufacturer	Humanetics	Test Technician	D.Reinhard
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.5	Pass
Humidity	10	70	%	32.2	Pass
Average Velocity	5	10	deg/s	7.2	Pass
Angle at 203Nm	40	50	deg	46.2	Pass
Moment at 30 degrees	0	94.9	Nm	93.7	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Potentiometer	ETI SP22	DS-0008	9/18/2020	9/18/2021
Load Cell	Key Trans 2301-02	LC-115 My	9/12/2020	9/12/2021



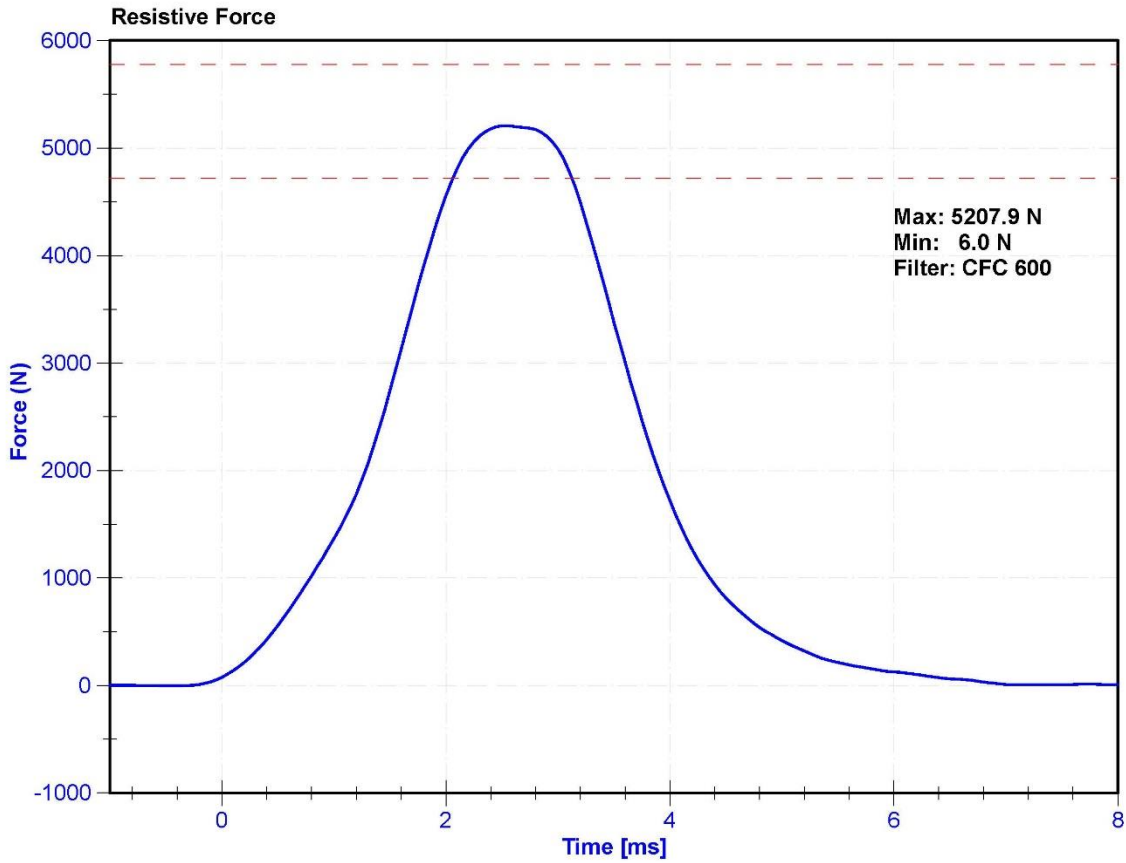
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

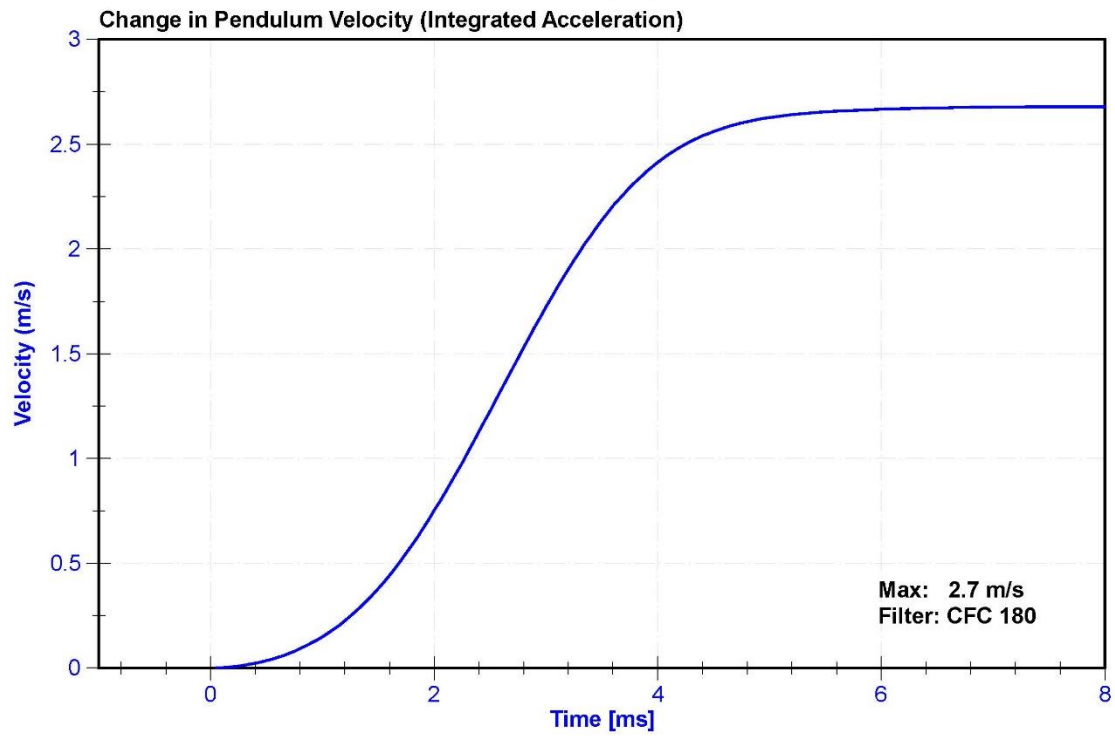
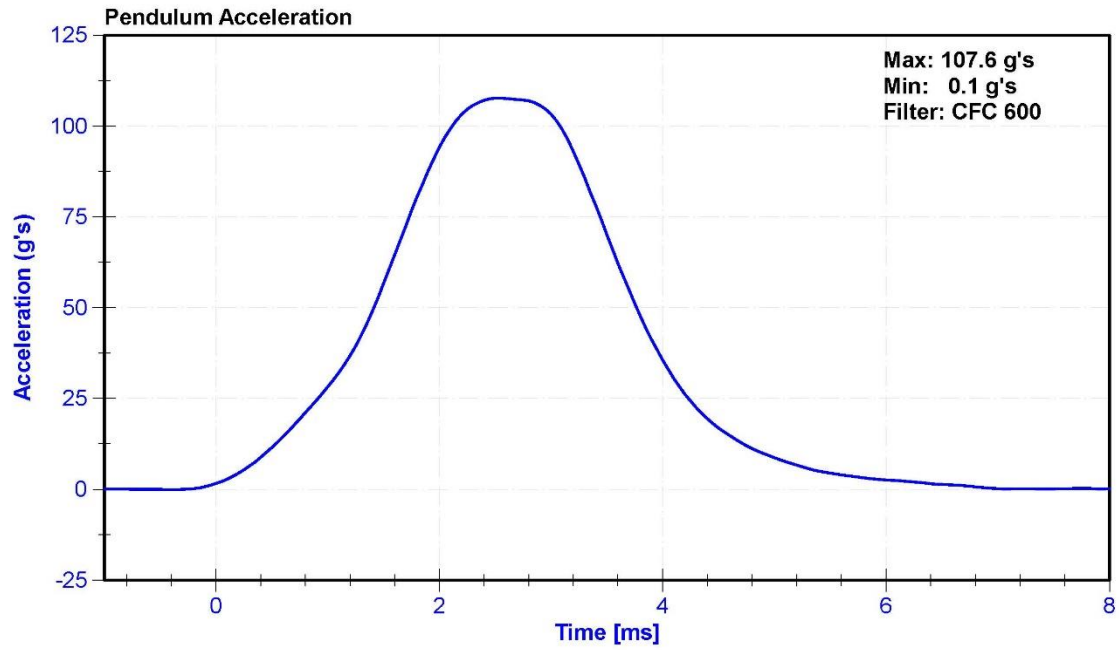
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	20.9	Pass
Humidity	10	70	%	24	Pass
Velocity	2.07	2.13	m/s	2.112	Pass
Maximum Resistive Force	4720	5780	N	5207.9	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	MSI 64C-2000	A278994	12/3/2020	12/3/2021





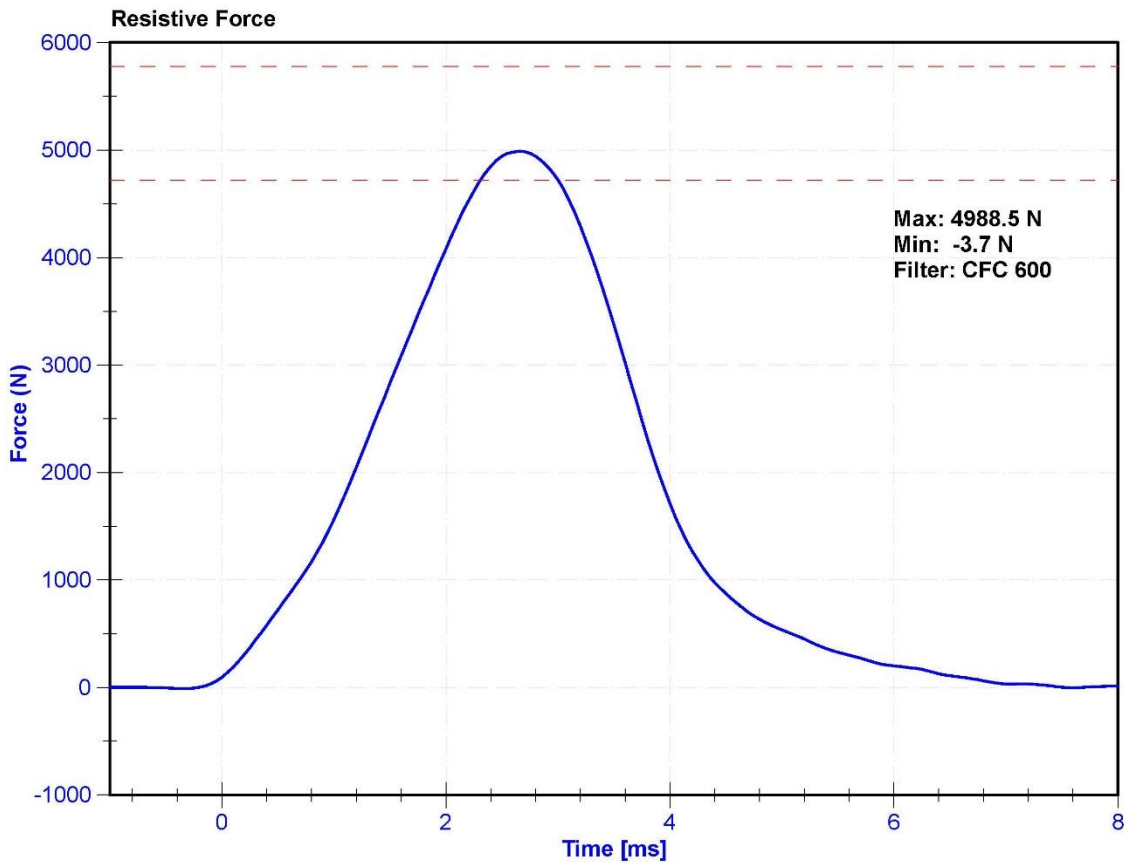
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

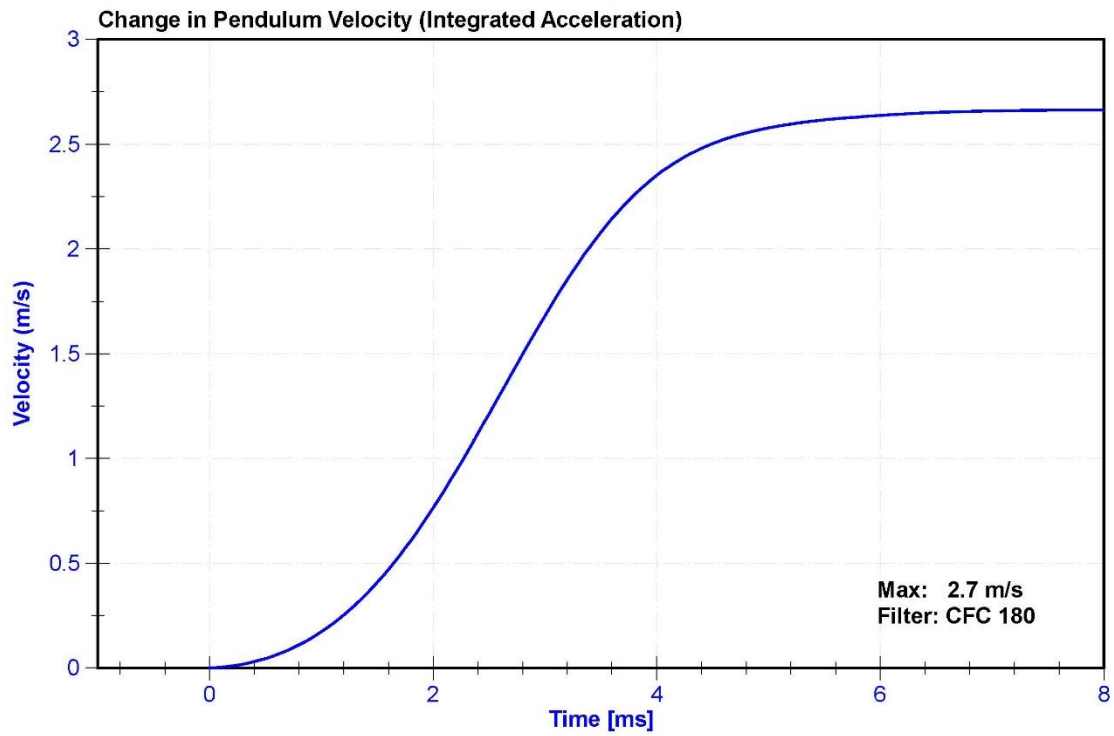
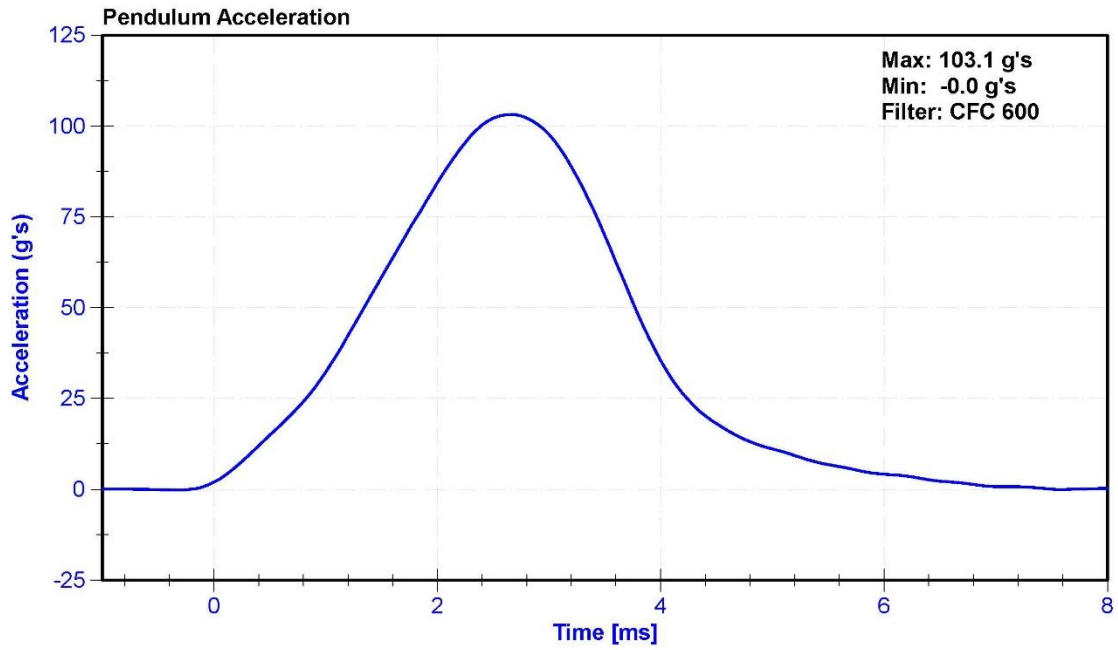
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	20.9	Pass
Humidity	10	70	%	24	Pass
Velocity	2.07	2.13	m/s	2.115	Pass
Maximum Resistive Force	4720	5780	N	4988.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	MSI 64C-2000	A278994	12/3/2020	12/3/2021





CALIBRATION TEST RESULTS

PRE-TEST

HYBRID III 5TH PERCENTILE - PASSENGER ATD

SERIAL NO: 140

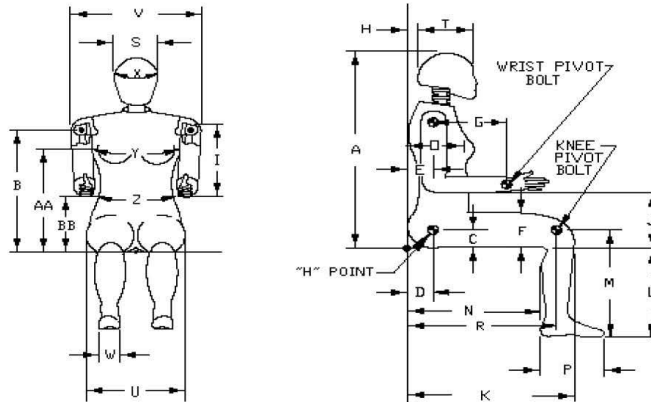


External Measurements - Hybrid 3 - 5th Female

Technician: K. Brogan

Date: 3/10/2021

Dummy Serial Number: 140



Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	775	800	790	Pass
B	Shoulder Pivot Height	432	457	443	Pass
C	H-Point Height	81	86	83	Pass
D	H-Point from Backline	145	150	146	Pass
E	Shoulder Pivot from Backline	69	84	78	Pass
F	Thigh Clearance	119	135	127	Pass
G	Back of Elbow to Wrist Pivot	244	259	252	Pass
H	Head Back to Backline	43	48	45	Pass
I	Shoulder to Elbow Length	277	297	291	Pass
J	Elbow Rest Height	183	203	197	Pass
K	Buttock to Knee Length	521	546	541	Pass
L	Popliteal Height	356	376	366	Pass
M	Knee Pivot Height	394	419	411	Pass
N	Buttock Popliteal Length	414	439	428	Pass
O	Chest Depth without Jacket	175	191	182	Pass
P	Foot Length (right)	219	234	229	Pass
R	Buttock To Knee Pivot Length	457	483	465	Pass
S	Head Breadth	137	147	142	Pass
T	Head Depth	178	188	180	Pass
U	Hip Breadth	300	315	313	Pass
V	Shoulder Breadth	351	366	361	Pass
W	Foot Breadth	79	94	83	Pass
X	Head Circumference	528	549	540	Pass
Y	Chest Circumference with Jacket	851	881	874	Pass
Z	Waist Circumference	460	790	624	Pass
AA	Reference Location (Chest Circumference)	333	358	345	Pass
BB	Reference Location (Waist Circumference)	160	170	165	Pass

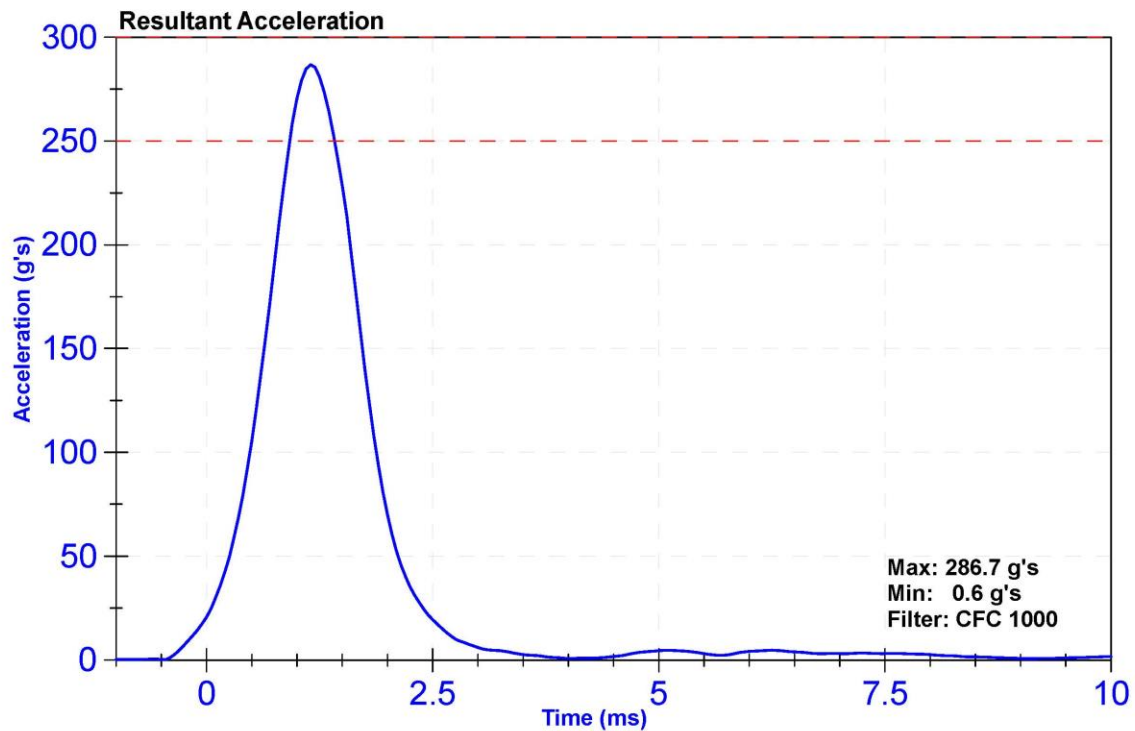
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	140	Laboratory Supervisor	K. Brogan

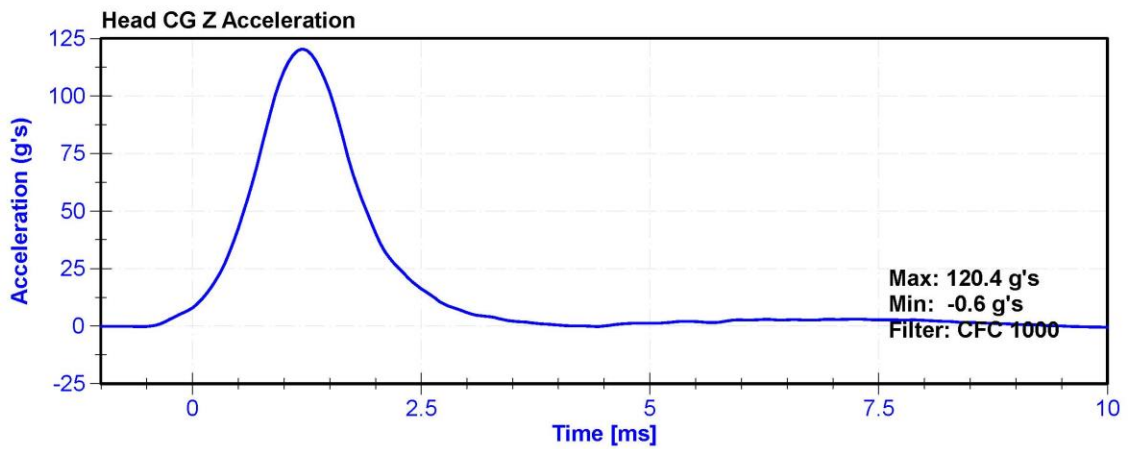
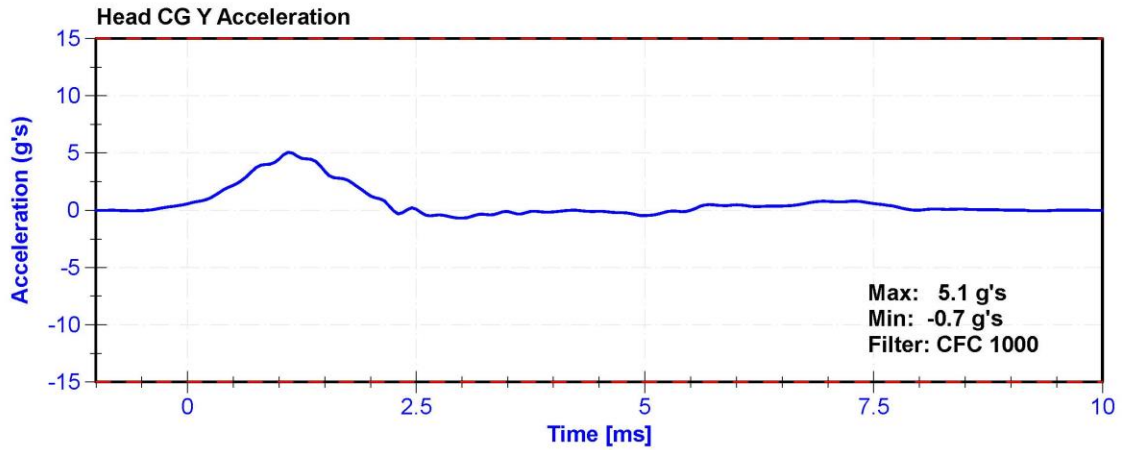
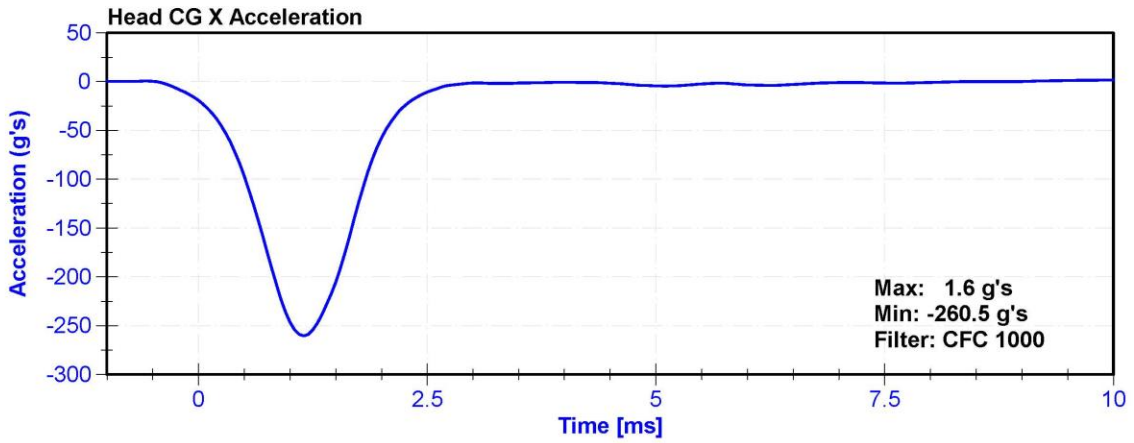
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	20.9	Pass
Humidity	10	70	%	24	Pass
Resultant Acceleration	250	300	g's	286.7	Pass
Oscillation	0	10	%	1.6	Pass
Lateral Acceleration	-15	15	g's	5.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	Endevco 7264C-2KTZ-2-240	P79417	2/24/2021	8/25/2021
Y Accelerometer	Endevco 7264C-2KTZ-2-240	P83335	2/24/2021	8/25/2021
Z Accelerometer	Endevco 7264C-2KTZ-2-240	T11252	2/24/2021	8/25/2021





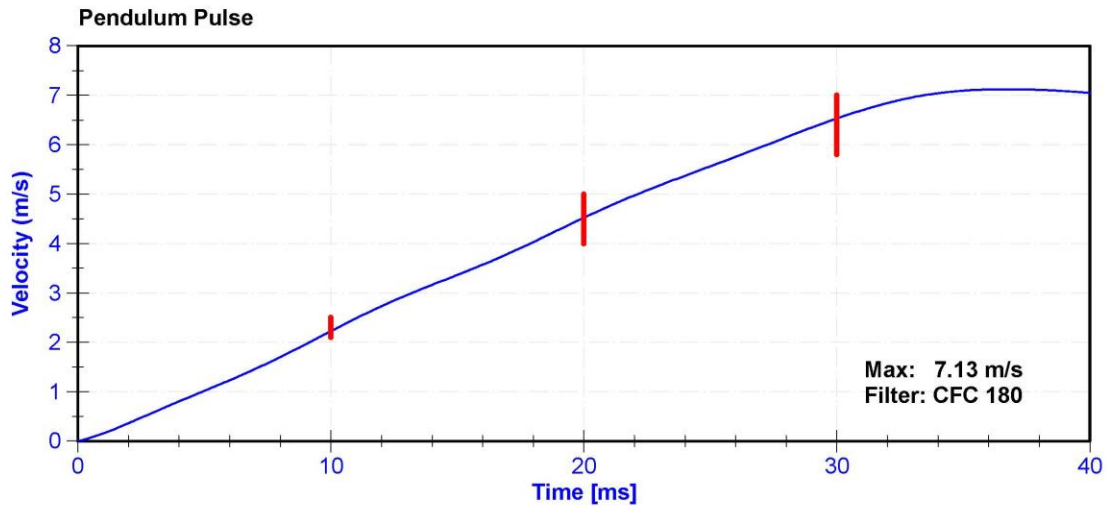
ATD Manufacturer	Humanetics	Test Technician	M. Dudek
ATD Serial Number	140	Laboratory Supervisor	K. Brogan

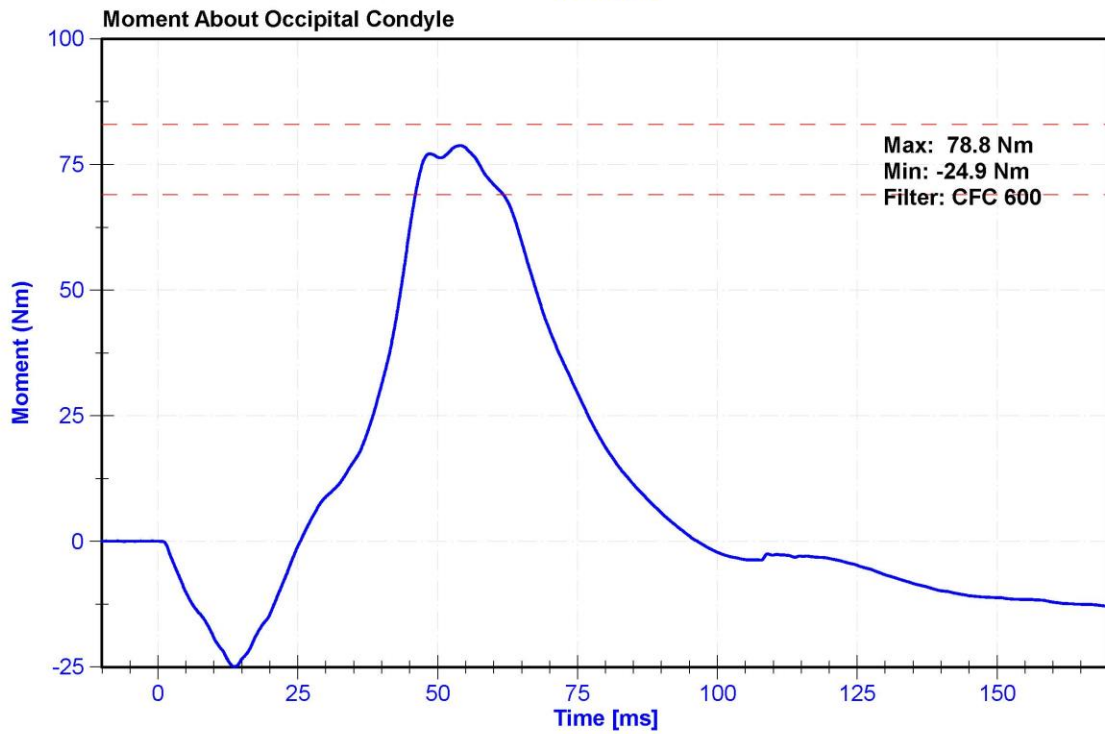
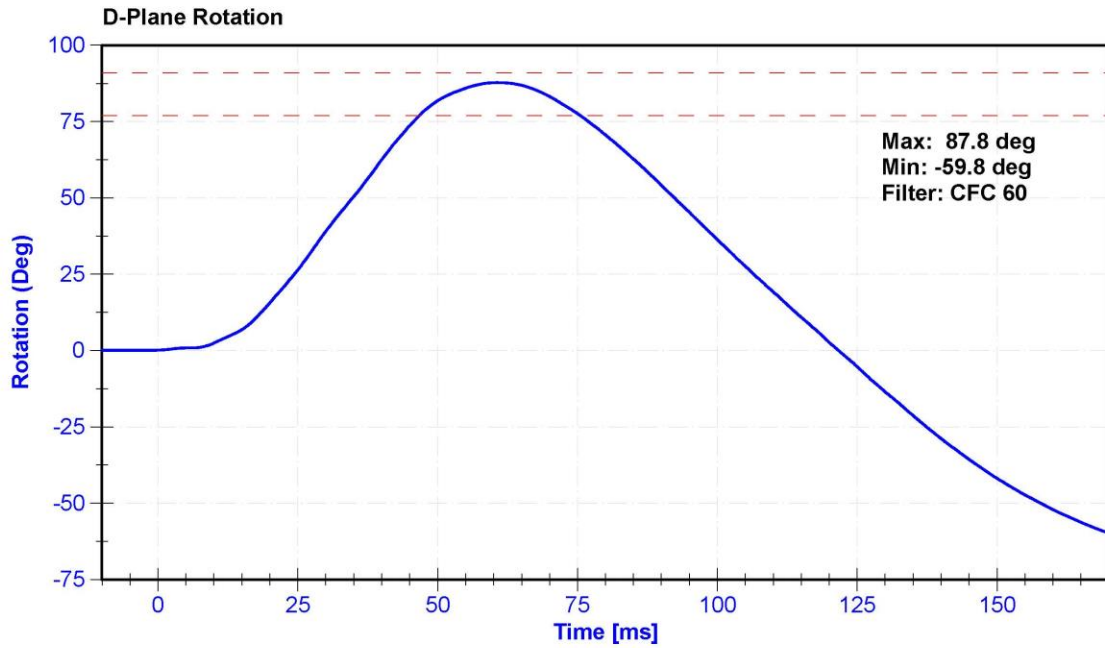
Results

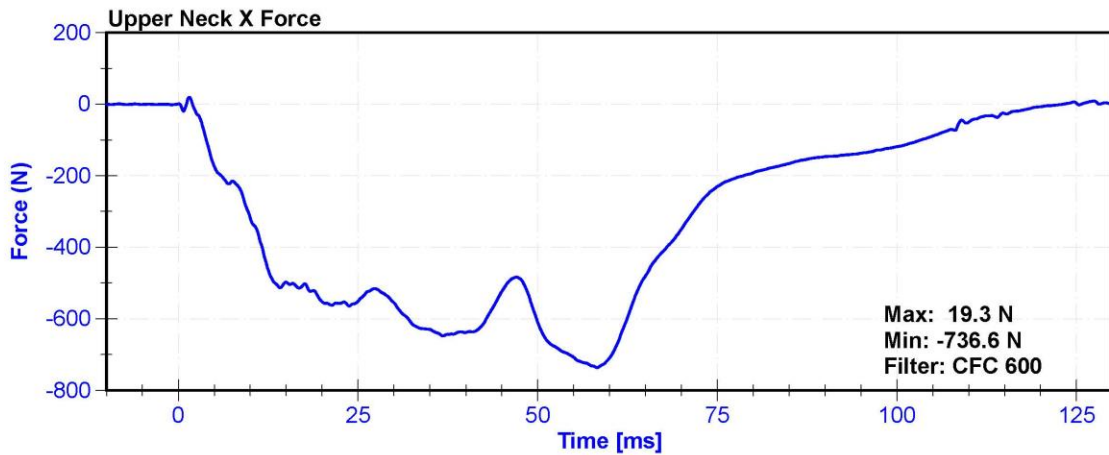
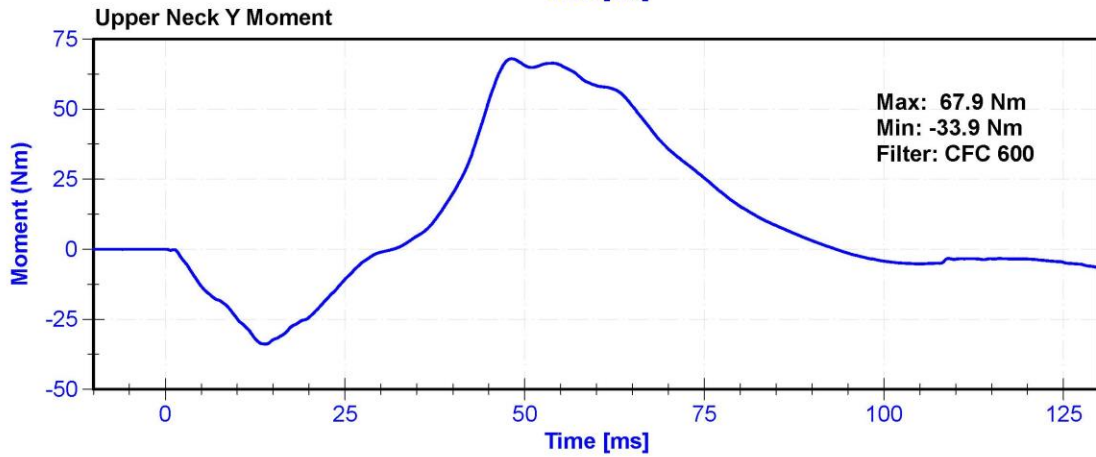
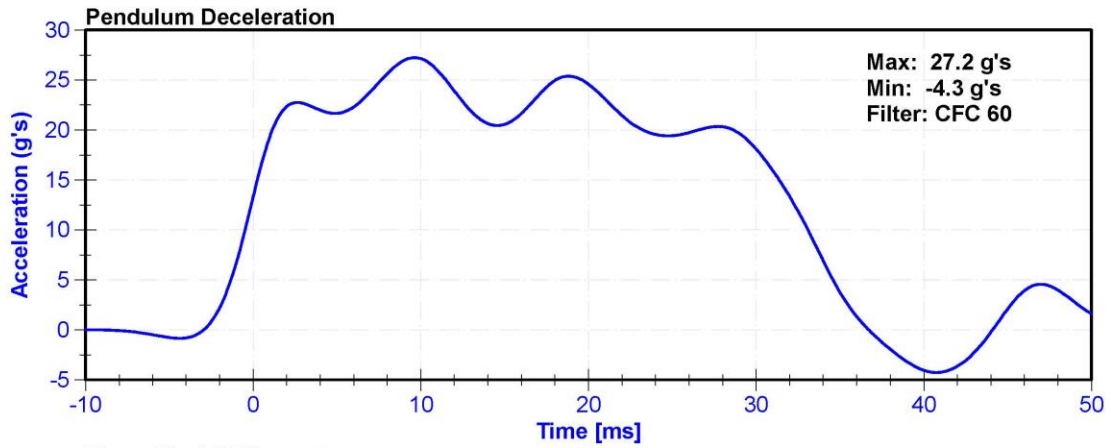
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.0	Pass
Humidity	10	70	%	29.3	Pass
Velocity	6.89	7.13	m/s	7.013	Pass
Pendulum Impulse at 10ms	2.1	2.5	m/s	2.22	Pass
Pendulum Impulse at 20ms	4.0	5.0	m/s	4.52	Pass
Pendulum Impulse at 30ms	5.8	7.0	m/s	6.53	Pass
Max D Plane Rotation	77	91	deg	87.8	Pass
Max Moment During Rotation Interval	69	83	Nm	78.8	Pass
Moment Decay to 10.0 Nm	80	100	ms	86.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C16503 Striker	2/5/2021	2/5/2022
Pendulum Potentiometer	ETI SP22G	DS-LABPOT1	9/17/2020	9/17/2021
Condyle Potentiometer	ETI SP22G	DS-LABPOT2	9/17/2020	9/17/2021
Upper Neck Load Cell	Denton 1716A	LC-1916Fx	11/23/2020	11/23/2021







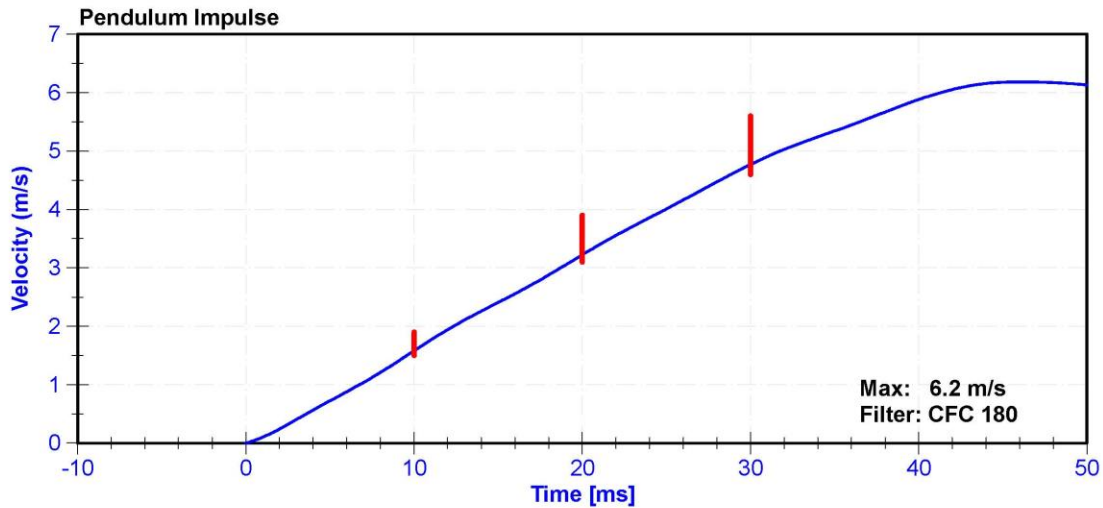
ATD Manufacturer	Humanetics	Test Technician	M. Dudek
ATD Serial Number	140	Laboratory Supervisor	K. Brogan

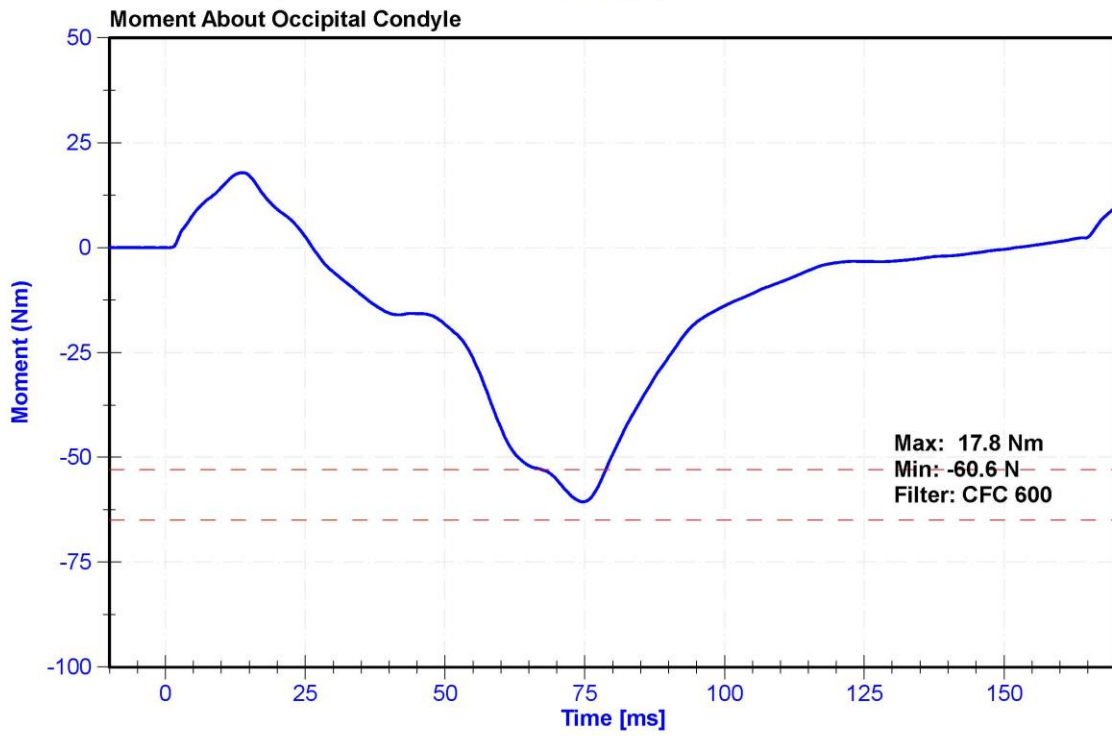
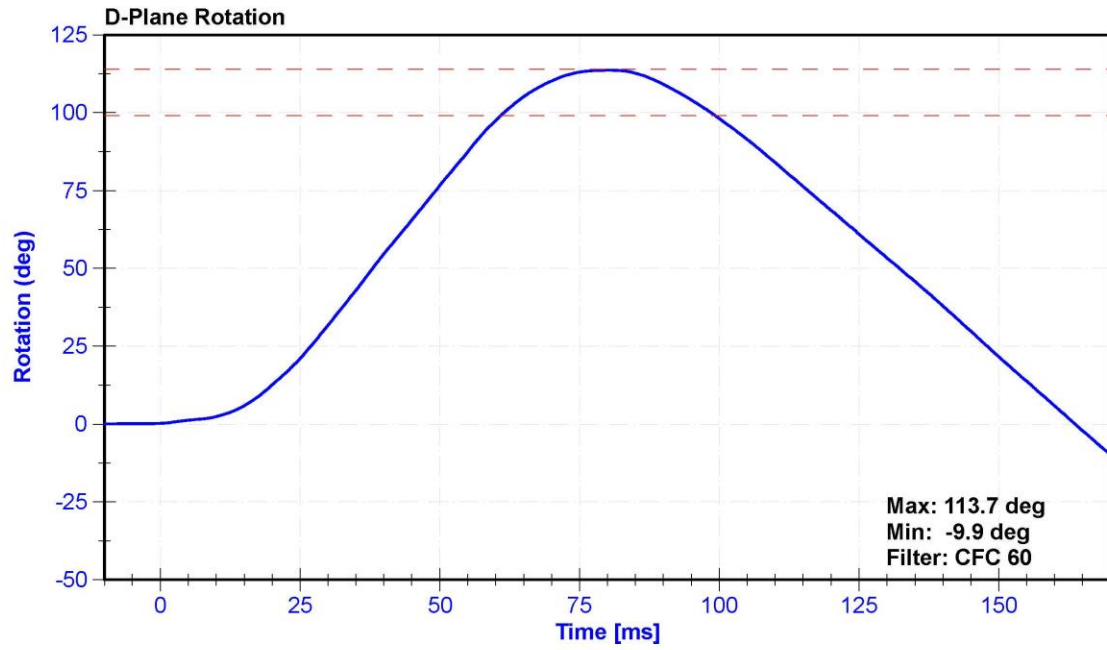
Results

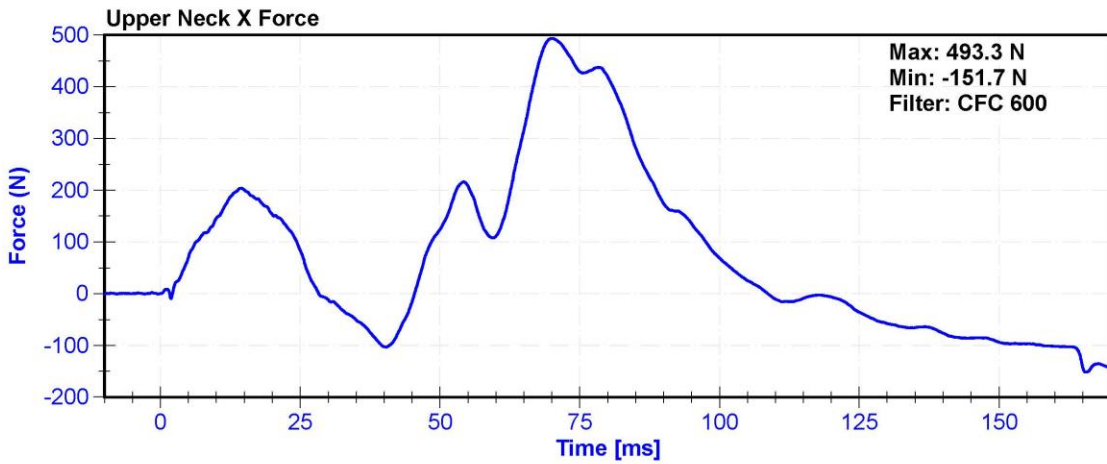
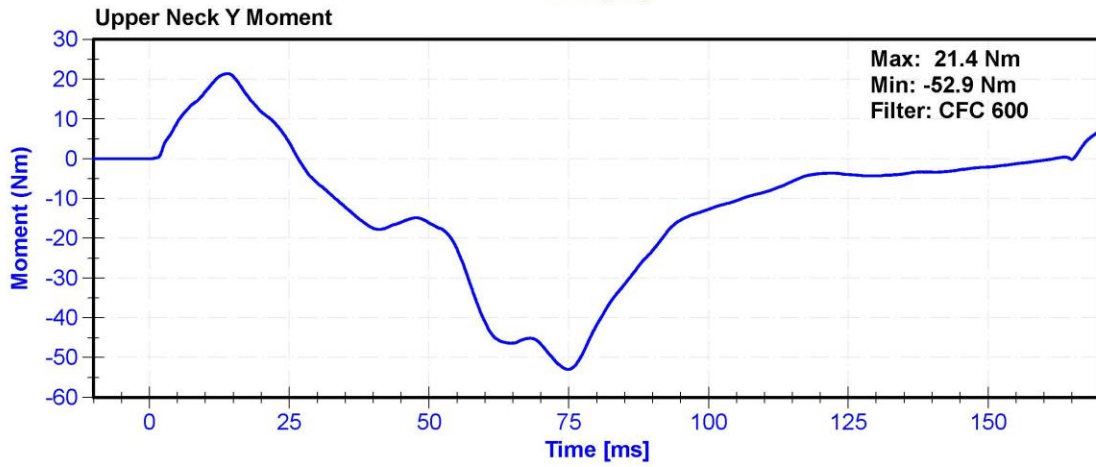
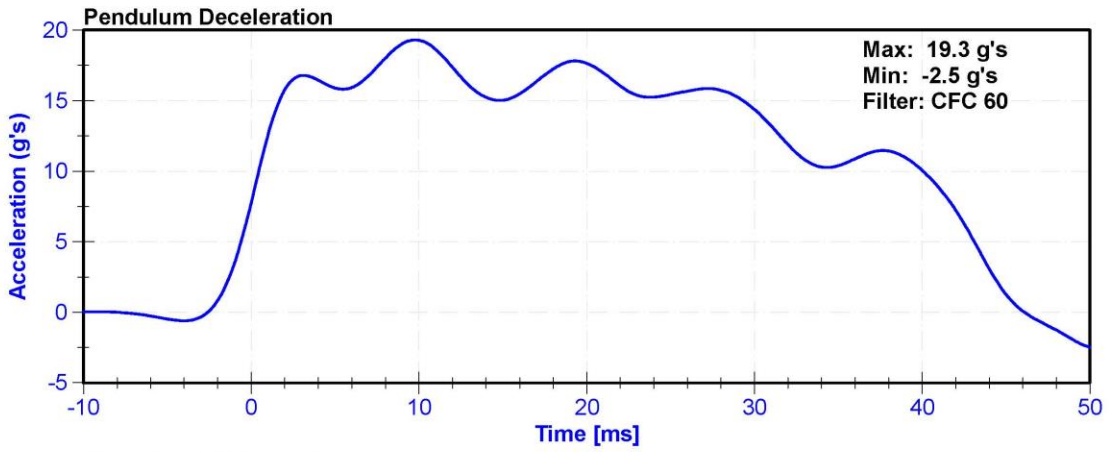
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.0	Pass
Humidity	10	70	%	29.3	Pass
Velocity	5.95	6.19	m/s	6.088	Pass
Pendulum Impulse at 10ms	1.5	1.9	m/s	1.58	Pass
Pendulum Impulse at 20ms	3.1	3.9	m/s	3.22	Pass
Pendulum Impulse at 30ms	4.6	5.6	m/s	4.77	Pass
D Plane Rotation	99	114	deg	113.7	Pass
Moment During Rotation Interval	-65	-53	Nm	-60.6	Pass
Moment Decay to -10Nm	94	114	ms	106.6	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C16503 Striker	2/5/2021	2/5/2022
Pendulum Potentiometer	ETI SP22G	DS-LABPOT1	9/17/2020	9/17/2021
Condyle Potentiometer	ETI SP22G	DS-LABPOT2	9/17/2020	9/17/2021
Upper Neck Load Cell	Denton 1716A	LC-1916Fx	11/23/2020	11/23/2021







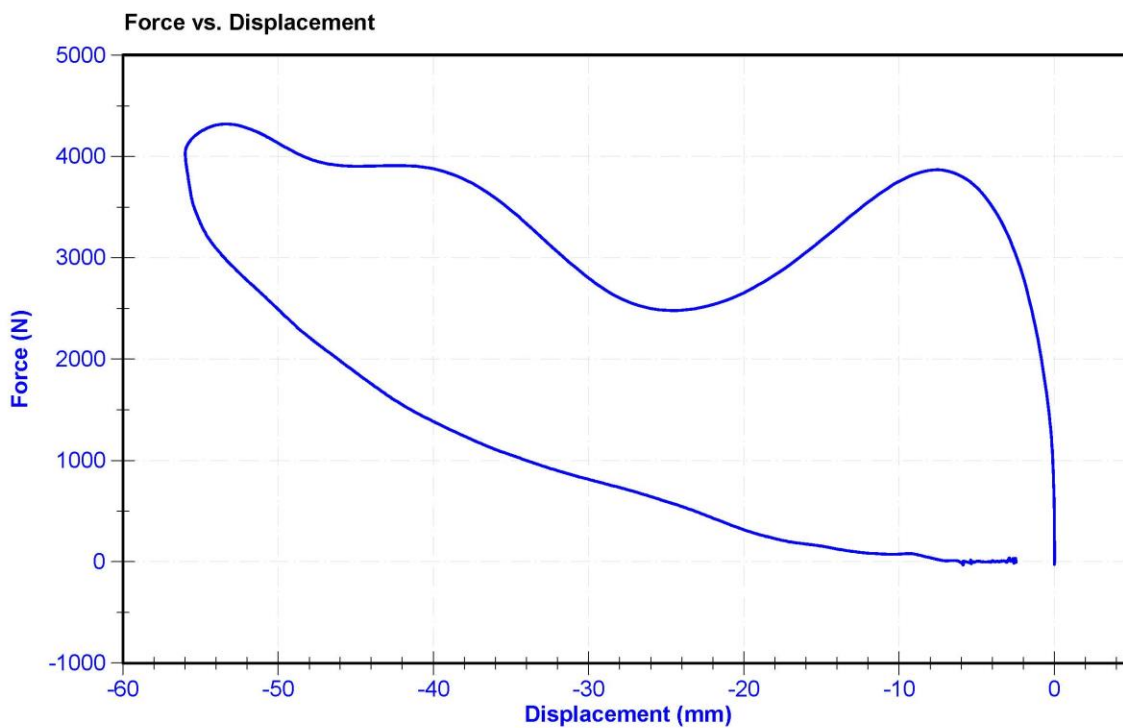
ATD Manufacturer	Humanetics	Test Technician	D.Reinhard
ATD Serial Number	140	Laboratory Supervisor	K. Brogan

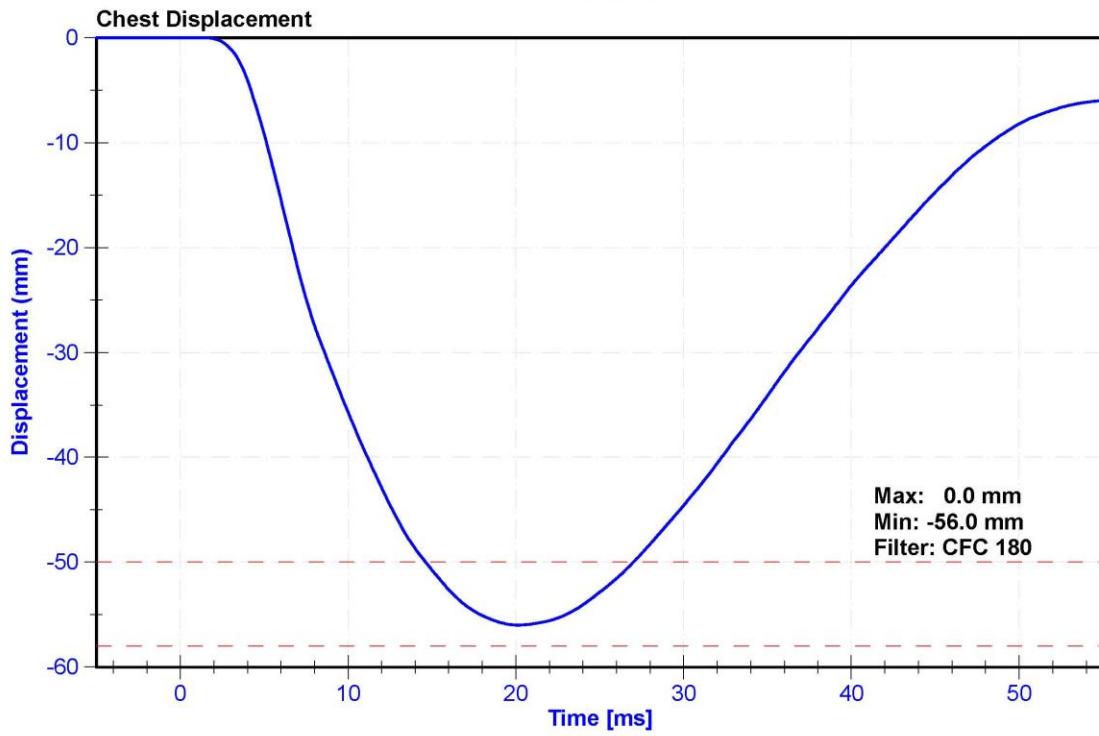
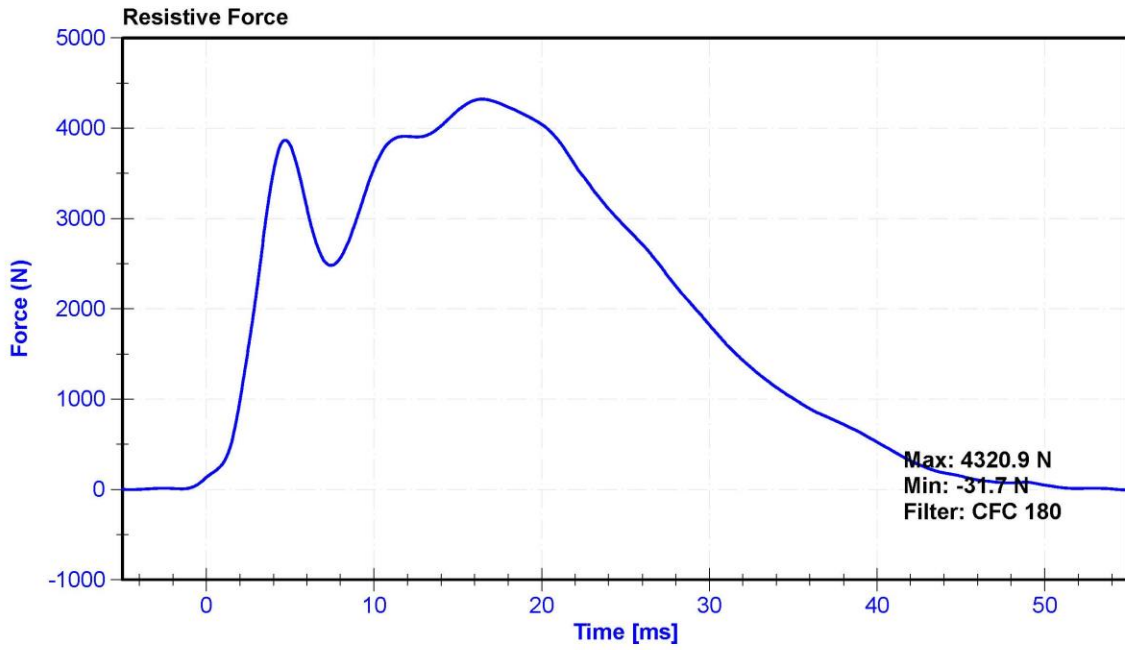
Results

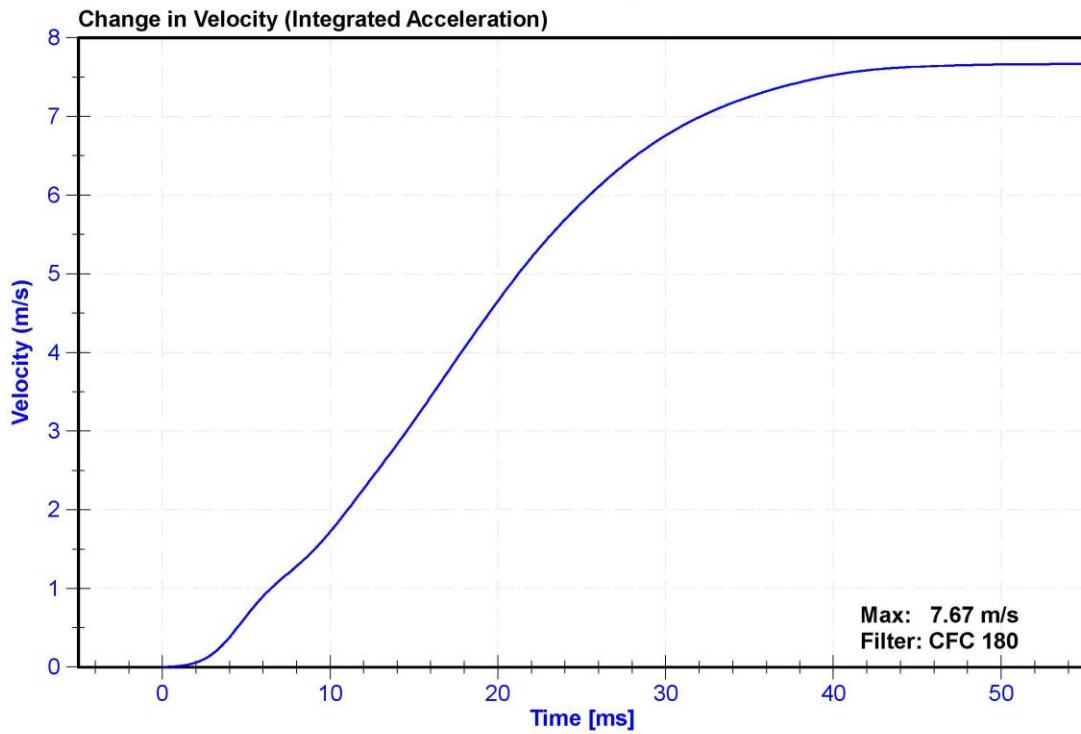
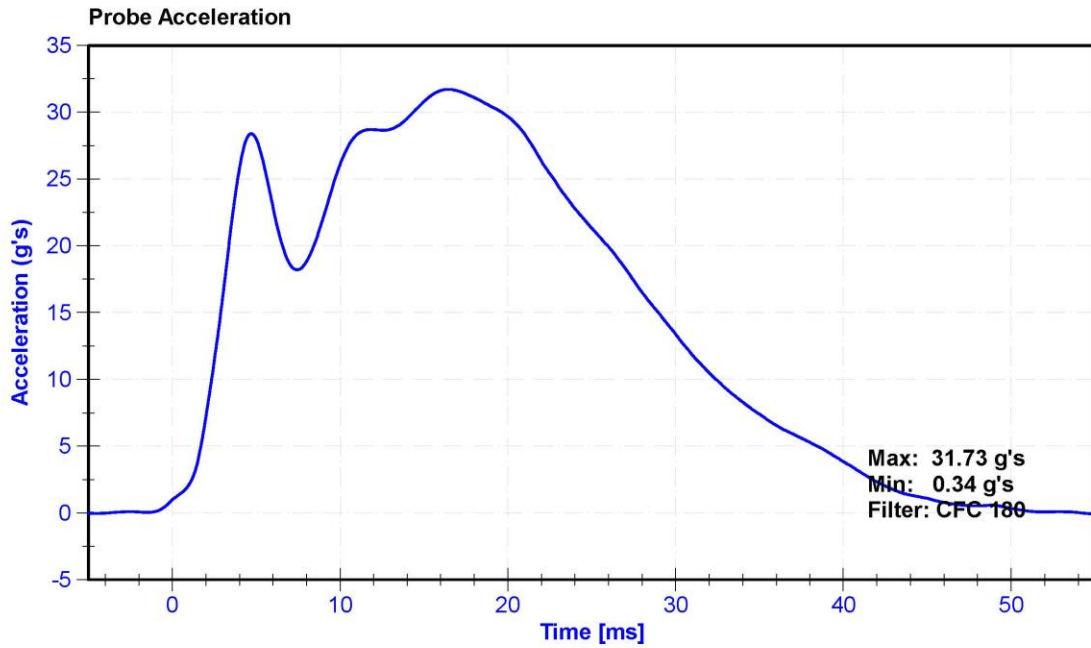
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.8	Pass
Humidity	10	70	%	27	Pass
Velocity	6.59	6.83	m/s	6.728	Pass
Chest Deflection	-58	-50	mm	-56.0	Pass
Maximum Resistive Force (50 to 58mm)	3900	4400	N	4320.9	Pass
Maximum Resistive Force (18 to 50mm)	0	4600	N	4128.6	Pass
Hysteresis	69	85	%	71.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	MSI 64C-2000	A278994	12/3/2020	12/3/2021
Chest Potentiometer	SERVO 14CBI-3615	DS-140GFE	2/24/2021	8/25/2021







ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	140	Laboratory Supervisor	K. Brogan

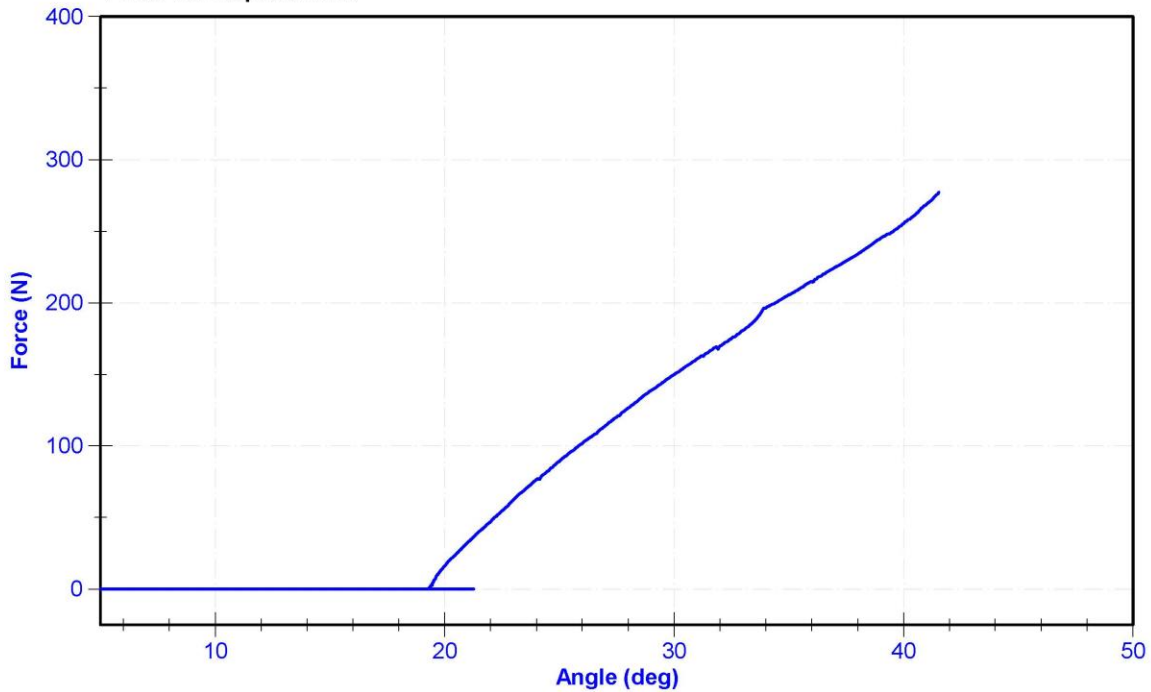
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.6	25.6	°C	20.9	Pass
Humidity	10	70	%	24	Pass
Initial Angle	0	20	deg	19.2	Pass
Force at 45 Degrees	320	390	N	330.7	Pass
Return Angle Relative to Initial	0	8	deg	8.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Potentiometer	Seika.de N4C-1	DS-1905226	10/12/2020	10/12/2021
Load Cell	Interface SML-200	LC-493319	10/8/2020	10/8/2021

Force vs. Displacement



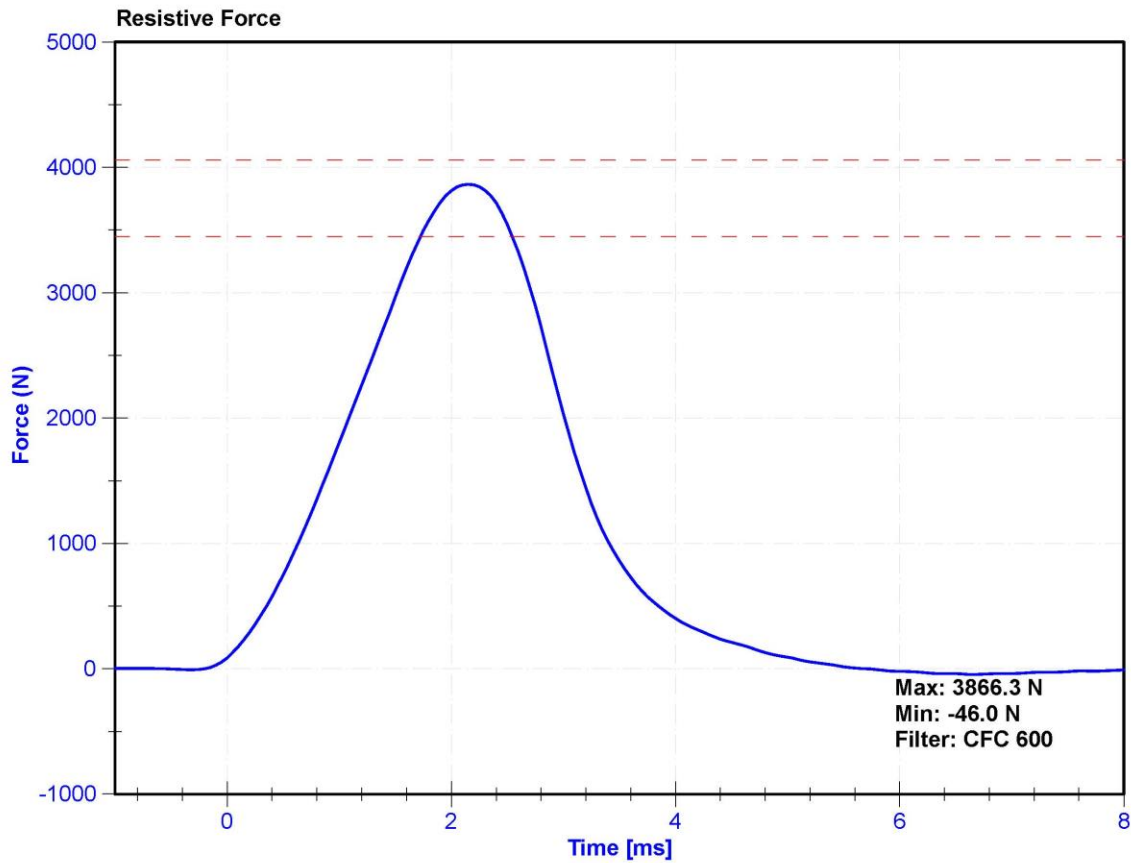
ATD Manufacturer	Humanetics	Test Technician	M. Dudek
ATD Serial Number	140	Laboratory Supervisor	K. Brogan

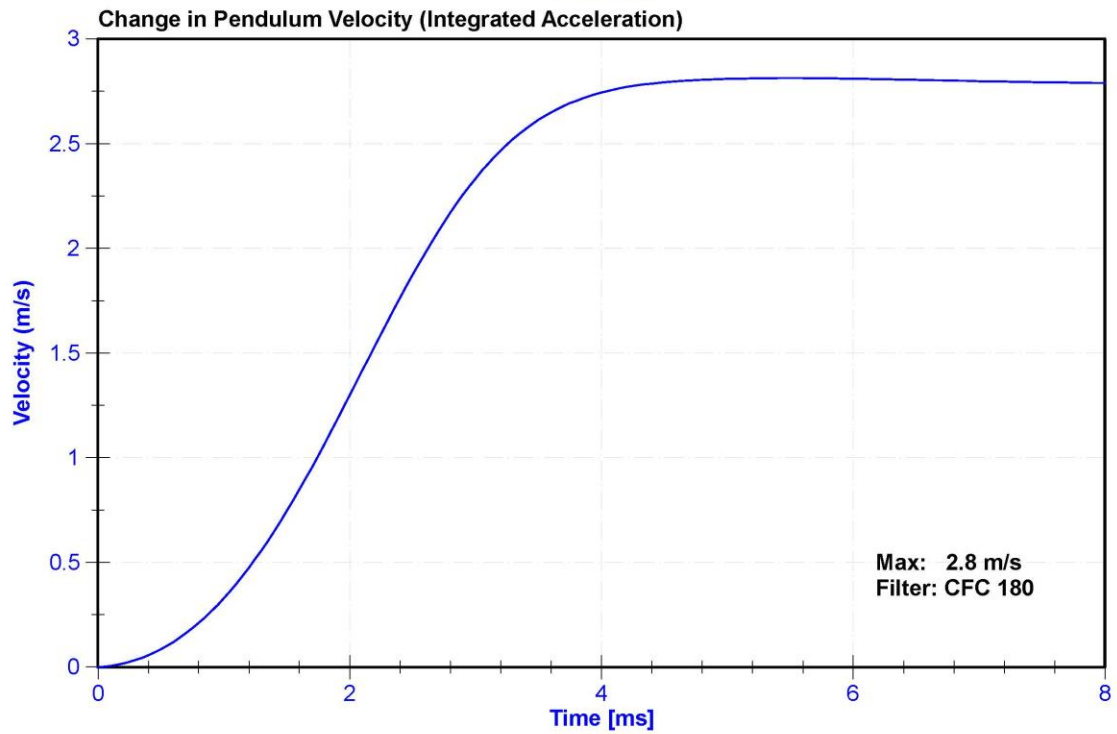
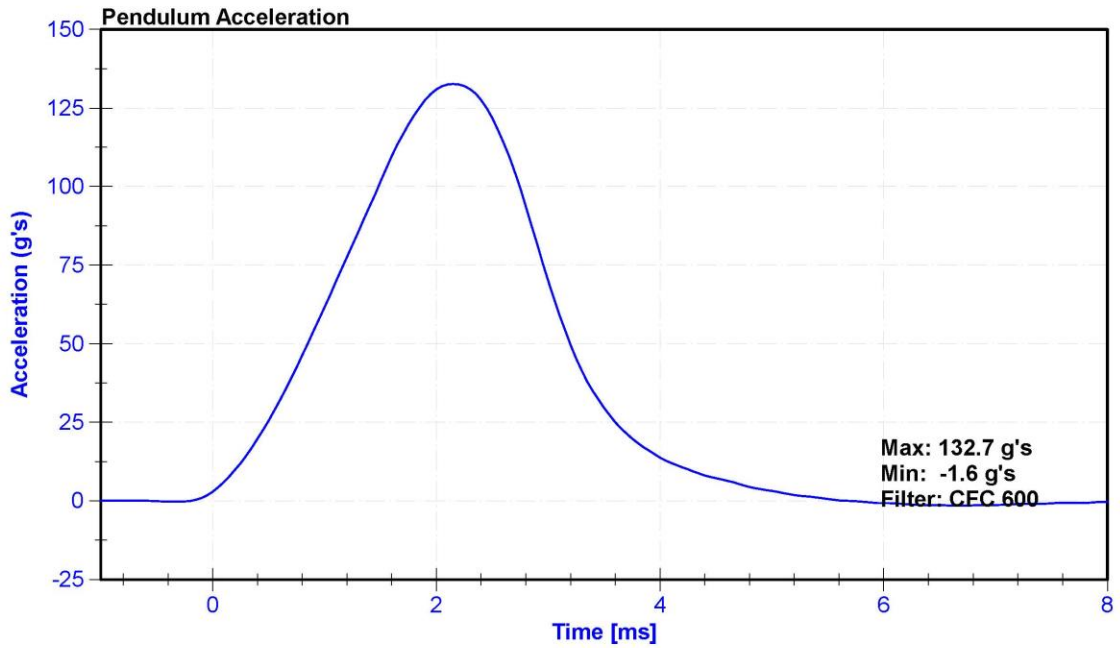
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	22.0	Pass
Humidity	10	70	%	29.3	Pass
Velocity	2.07	2.13	m/s	2.099	Pass
Resistive Force	3450	4060	N	3866.3	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	MSI 64C-2000	A278994	12/3/2020	12/3/2021





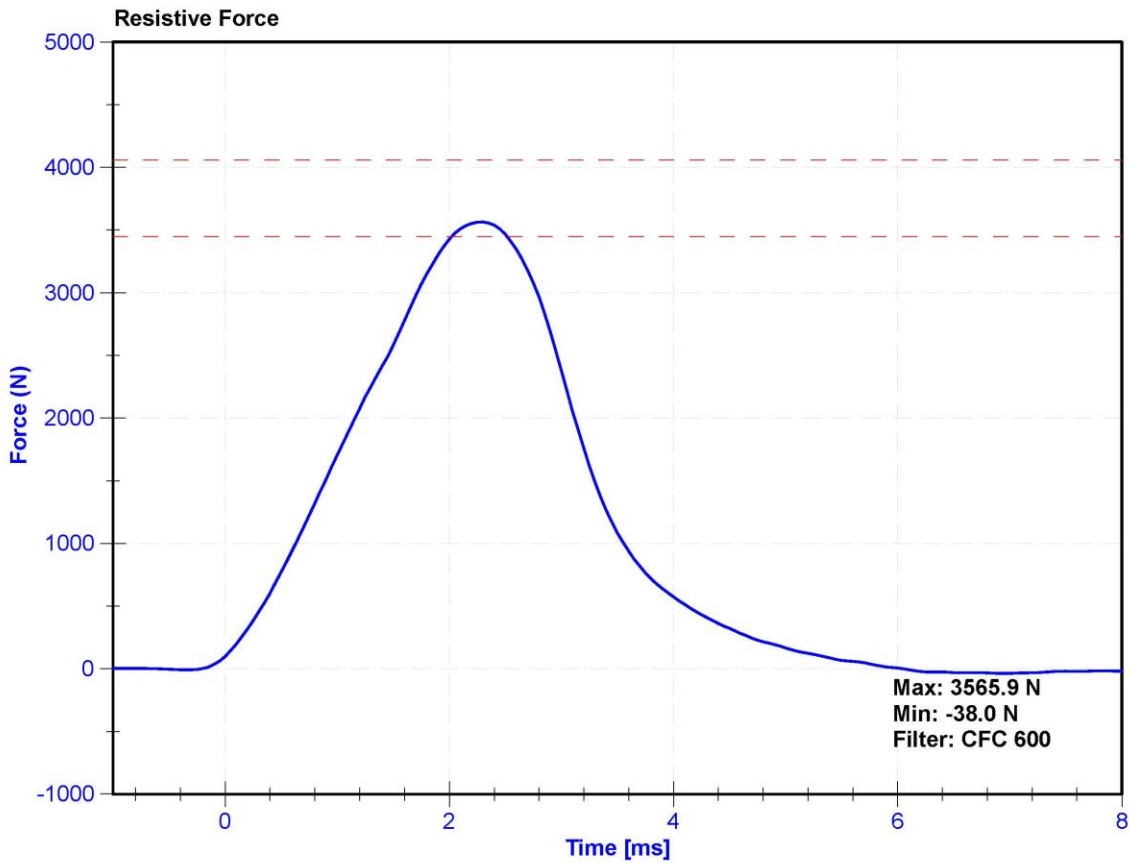
ATD Manufacturer	Humanetics	Test Technician	M. Dudek
ATD Serial Number	140	Laboratory Supervisor	K. Brogan

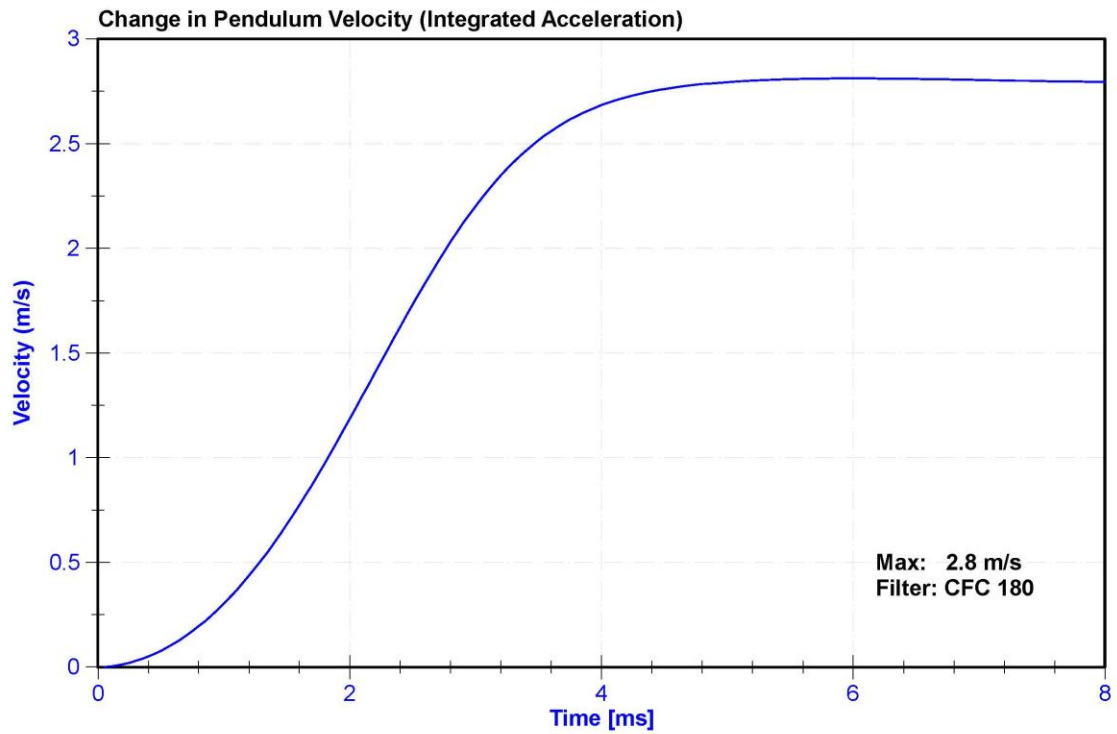
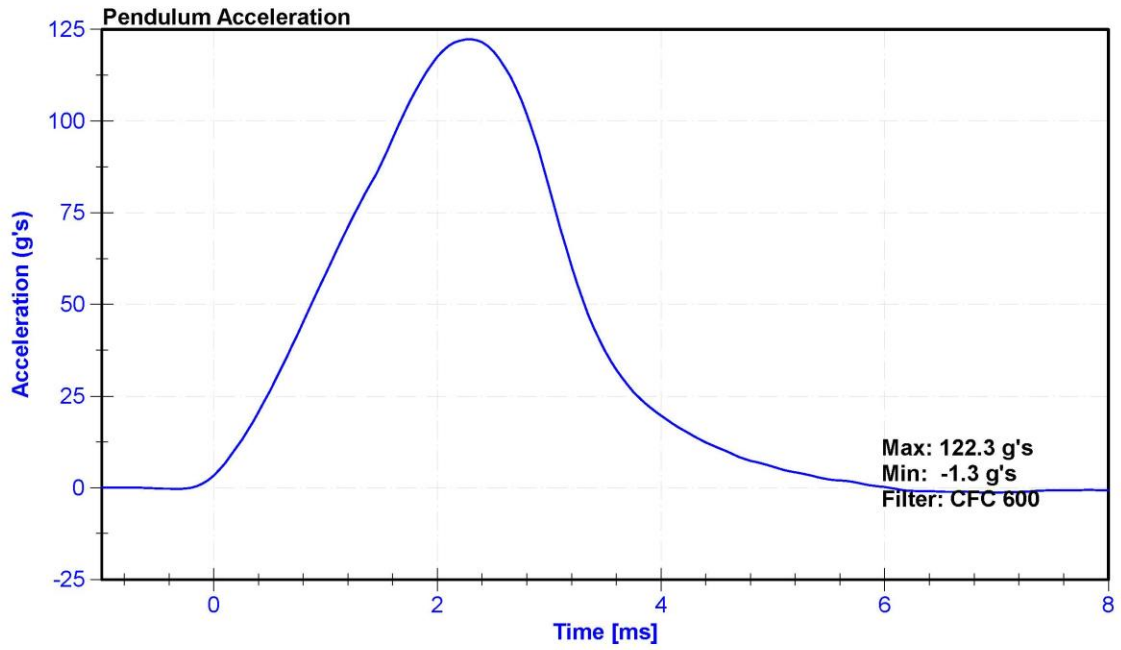
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	22.0	Pass
Humidity	10	70	%	29.3	Pass
Velocity	2.07	2.13	m/s	2.102	Pass
Resistive Force	3450	4060	N	3565.9	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	MSI 64C-2000	A278994	12/3/2020	12/3/2021





CALIBRATION TEST RESULTS

POST-TEST

HYBRID III 50TH PERCENTILE MALE - DRIVER ATD

SERIAL NO: 142

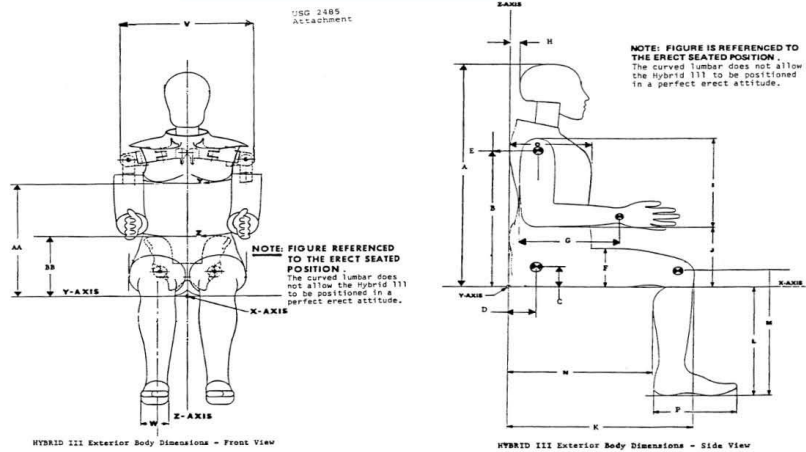


External Measurements - Hybrid 3 - 50th Male

Technician: K. Brogan

Date: 03/15/2021

Dummy Serial Number: 142



Symbol	Description	Specification (in)		Result (in)	Pass/Fail
A	Sitting Height	34.6	35.0	34.7	Pass
B	Shoulder Pivot Height	19.9	20.5	20.3	Pass
C	H-Point Height	3.3	3.5	3.4	Pass
D	H-Point from Backline	5.3	5.5	5.4	Pass
E	Shoulder Pivot from Backline	3.3	3.7	3.6	Pass
F	Thigh Clearance	5.5	6.1	6.0	Pass
G	Back of Elbow to Wrist Pivot	11.4	12.0	11.7	Pass
H	Head Back to Backline	1.6	1.8	1.7	Pass
I	Shoulder to Elbow Length	13.0	13.6	13.4	Pass
J	Elbow Rest Height	7.5	8.3	8.1	Pass
K	Buttock to Knee Length	22.8	23.8	23.0	Pass
L	Popliteal Height	16.9	17.9	17.5	Pass
M	Knee Pivot Height	19.1	19.7	19.4	Pass
N	Buttock Popliteal Length	17.8	18.8	18.3	Pass
O	Chest Depth without Jacket	8.4	9.0	8.6	Pass
P	Foot Length (right)	9.9	10.5	10.1	Pass
V	Shoulder Breadth	16.3	17.2	16.8	Pass
W	Foot Breadth	3.6	4.2	3.8	Pass
Y	Chest Circumference with Jacket	38.2	39.4	38.8	Pass
Z	Waist Circumference	32.9	34.1	33.7	Pass
AA	Reference Location (Chest Circumference)	16.9	17.1	17.0	Pass
BB	Reference Location (Waist Circumference)	8.9	9.1	9.0	Pass

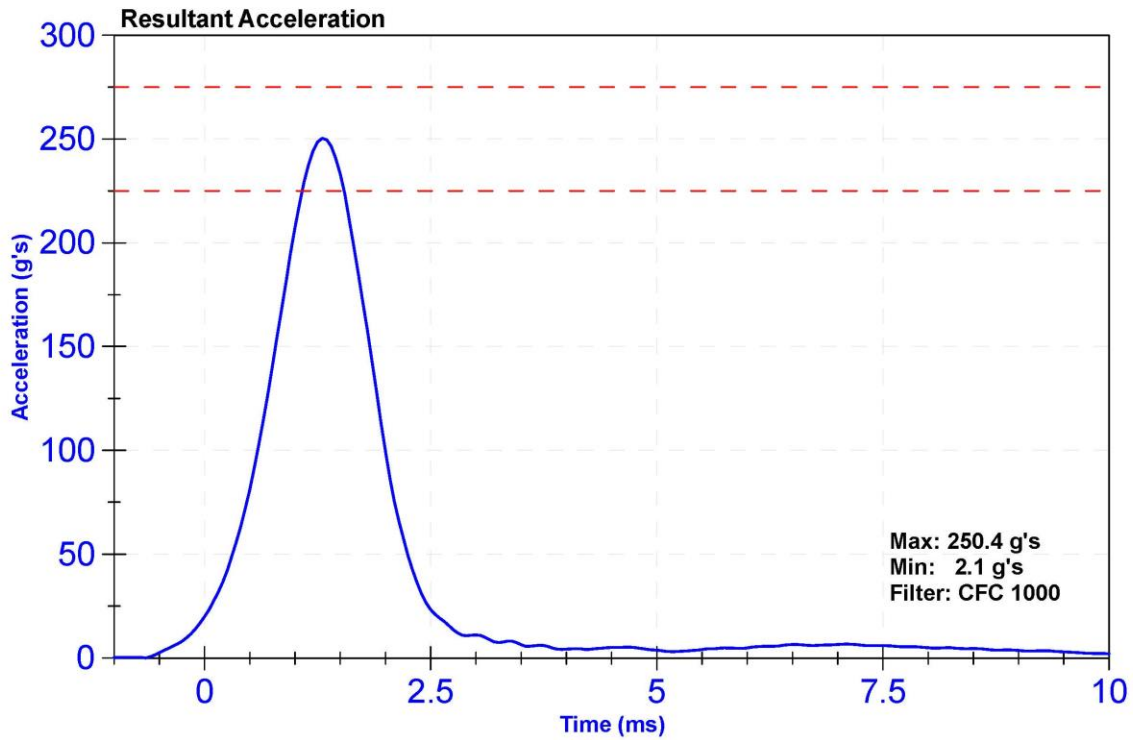
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

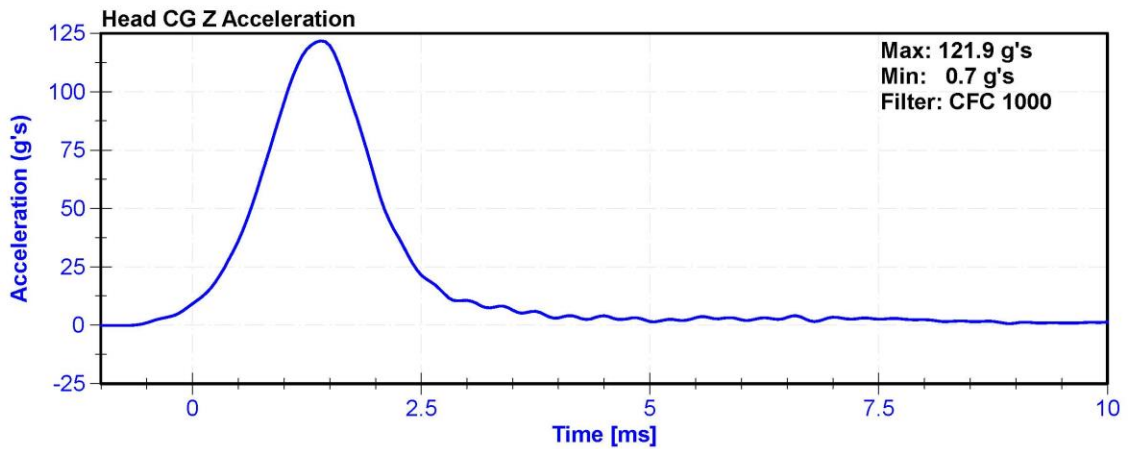
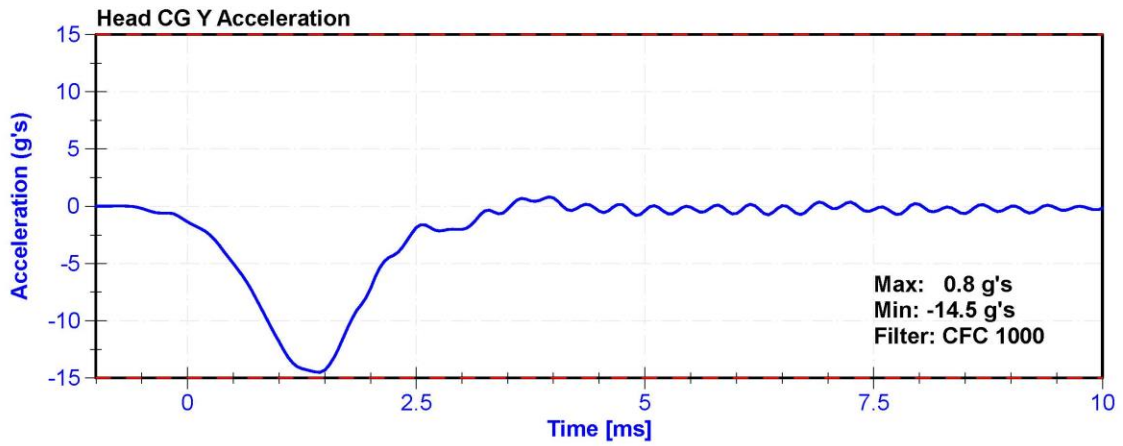
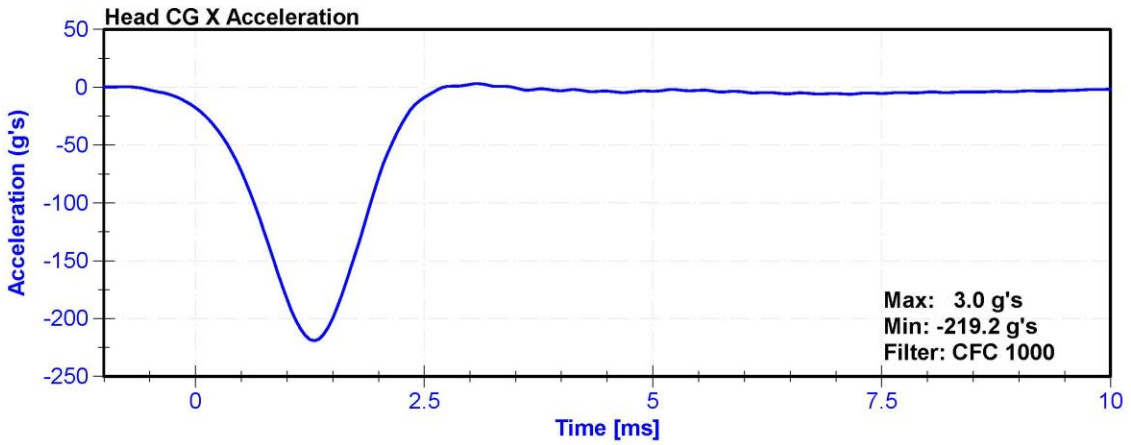
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	20.9	Pass
Humidity	10	70	%	24	Pass
Resultant Acceleration	225	275	g's	250.4	Pass
Oscillation	0	10	%	4.4	Pass
Lateral Acceleration	-15	15	g's	-14.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	ENDEVCO 7264	P51681	11/3/2020	5/4/2021
Y Accelerometer	ENDEVCO 7264	P64151	11/3/2020	5/4/2021
Z Accelerometer	ENDEVCO 7264	P52114	11/3/2020	5/4/2021





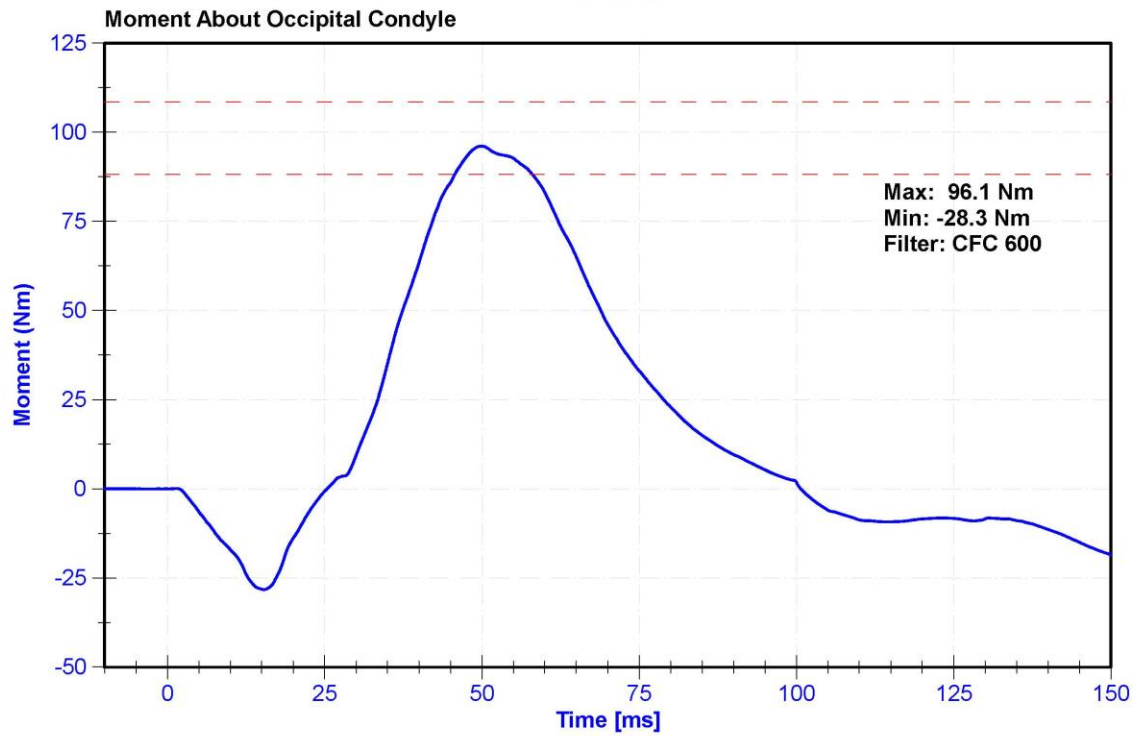
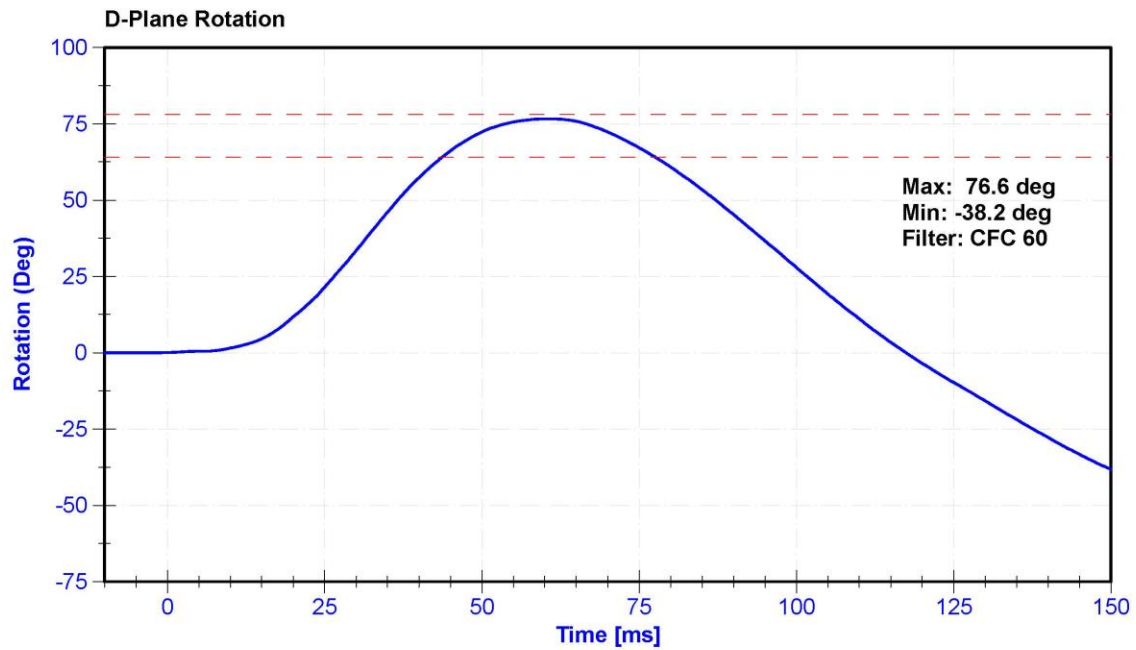
ATD Manufacturer	Humanetics	Test Technician	E. Helenbrook
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

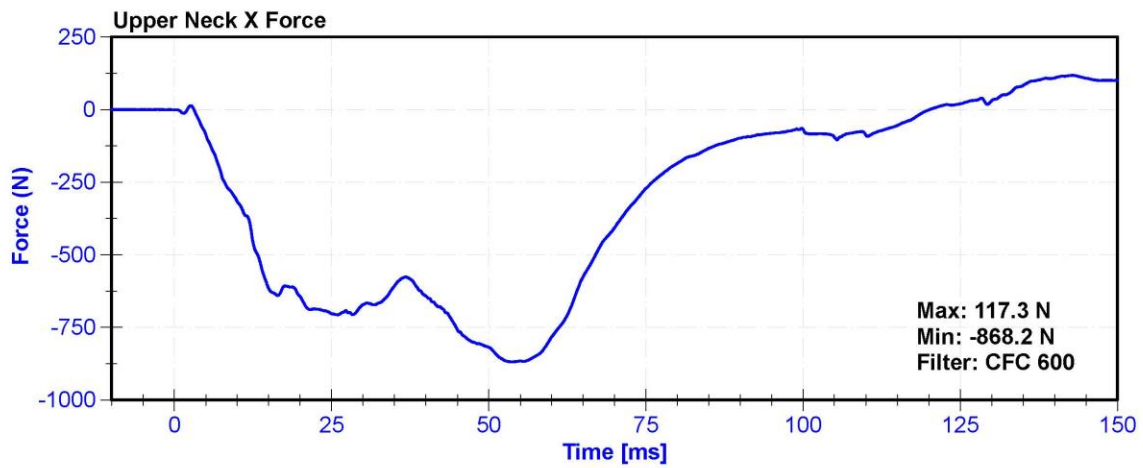
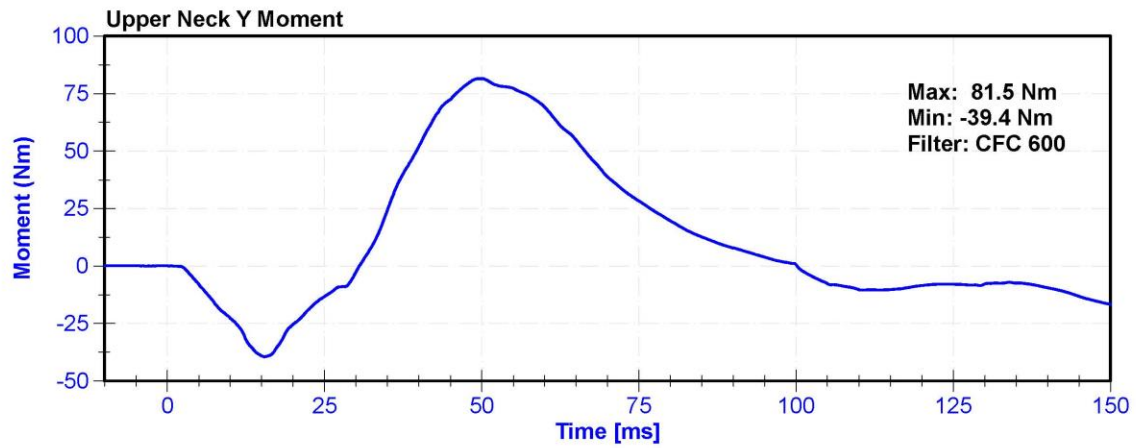
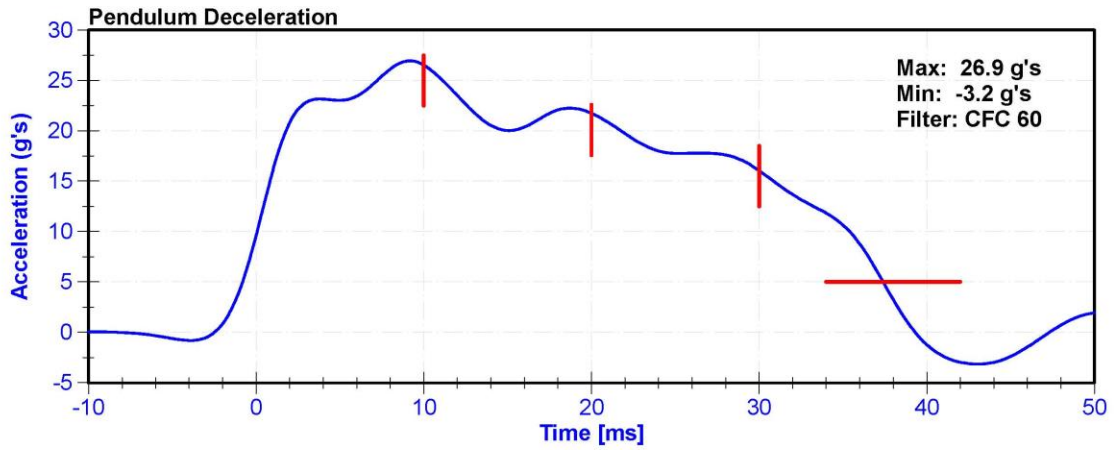
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.5	Pass
Humidity	10	70	%	25.7	Pass
Velocity	6.89	7.13	m/s	6.958	Pass
Pendulum Deceleration at 10ms	22.5	27.5	g's	26.53	Pass
Pendulum Deceleration at 20ms	17.6	22.6	g's	21.74	Pass
Pendulum Deceleration at 30ms	12.5	18.5	g's	16.05	Pass
Max. Pendulum Deceleration After 30ms	0	29	g's	26.9	Pass
Pendulum Deceleration Time to 5 g's	34	42	ms	37.4	Pass
Maximum D Plane Rotation	64	78	deg	76.6	Pass
Time to Maximum Rotation	57	64	ms	60.5	Pass
Rotation Decay to Zero	113	127	ms	117.5	Pass
Moment About Occipital Condyle	88.1	108.4	Nm	96.06	Pass
Time to Maximum Moment	47	58	ms	50.1	Pass
Moment Decay to Zero	97	107	ms	100.7	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C16503 Striker	2/5/2021	2/5/2022
Pendulum Potentiometer	ETI SP22G	DS-LABPOT1	9/17/2020	9/17/2021
Condyle Potentiometer	ETI SP22G	DS-LABPOT2	9/17/2020	9/17/2021
Upper Neck Load Cell	DENTON 1716A	LC-2186Fx	11/10/2020	11/10/2021





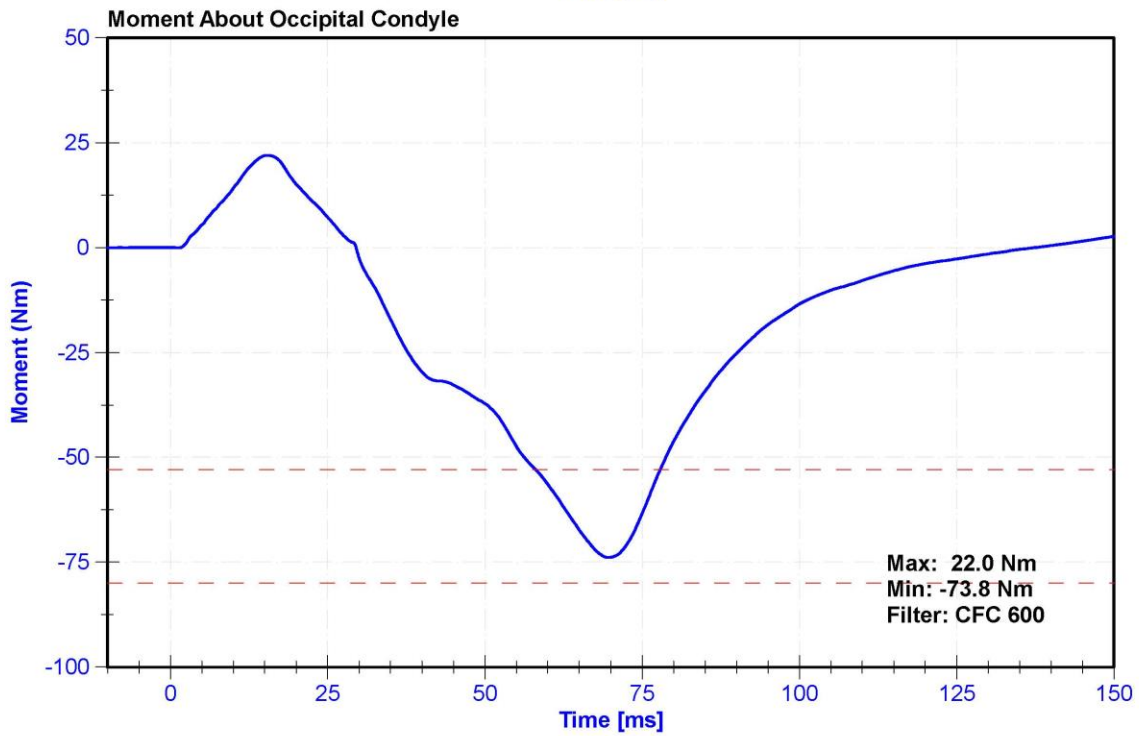
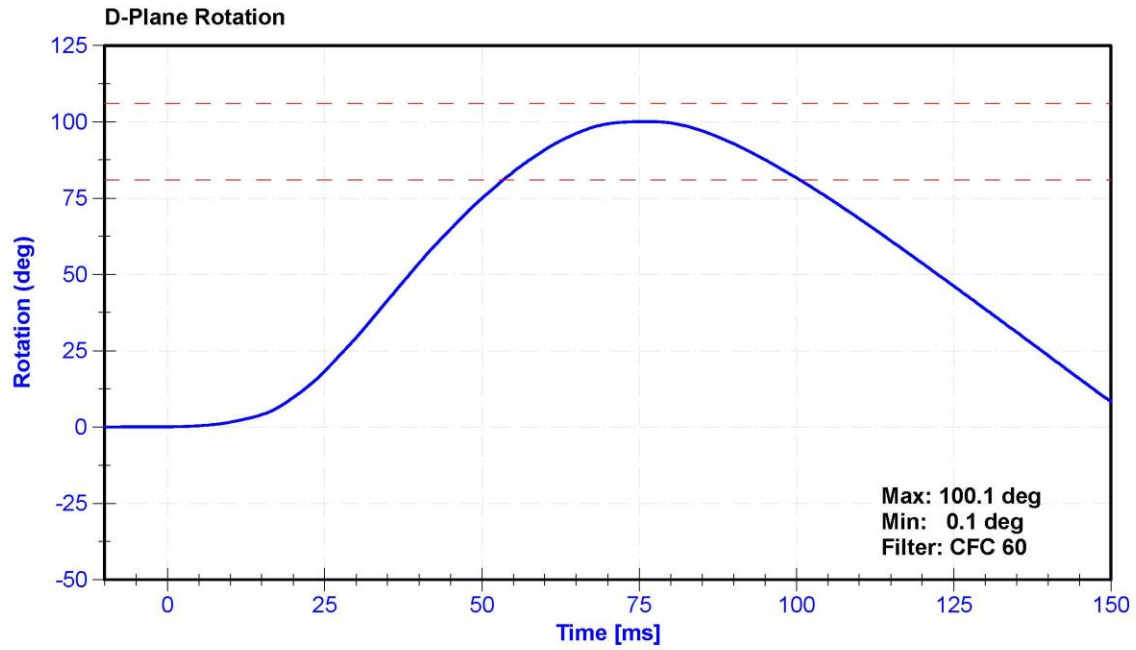
ATD Manufacturer	Humanetics	Test Technician	E. Helenbrook
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

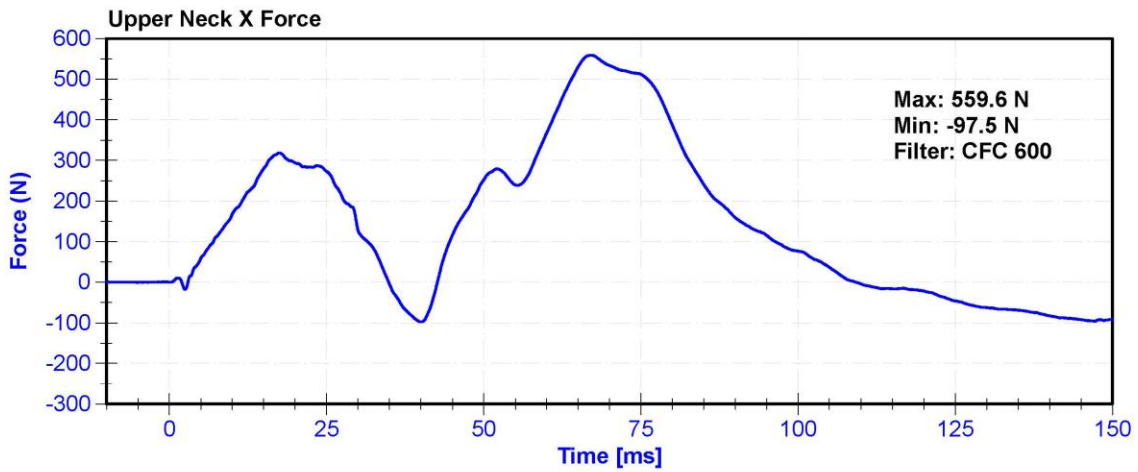
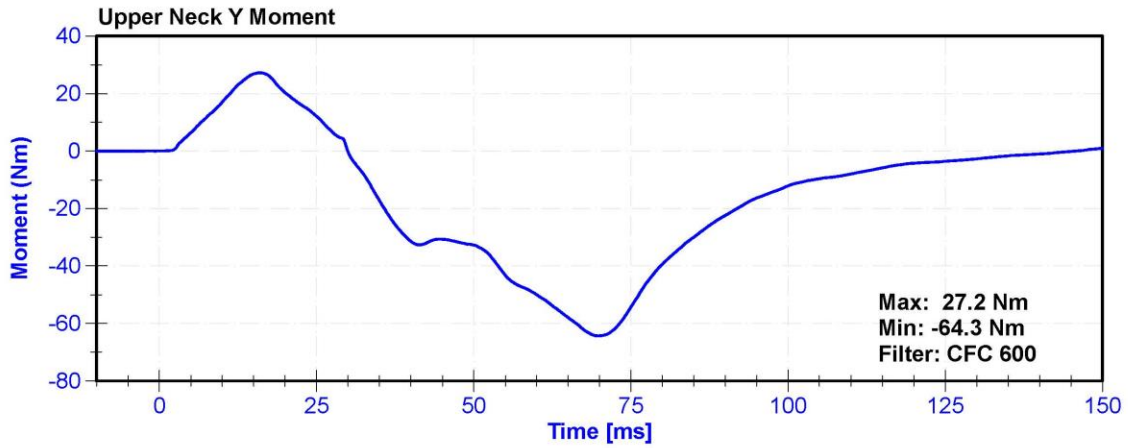
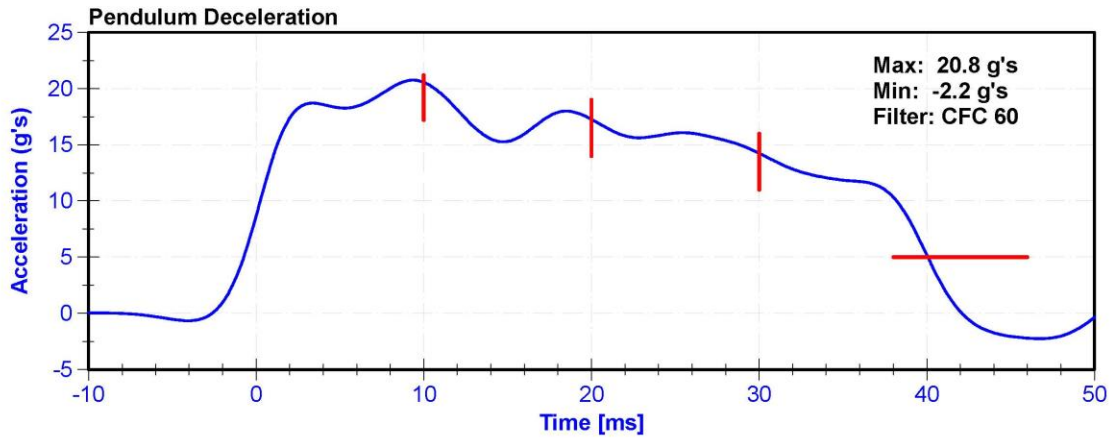
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.5	Pass
Humidity	10	70	%	25.7	Pass
Velocity	5.94	6.19	m/s	6.005	Pass
Pendulum Deceleration at 10ms	17.2	21.2	g's	20.56	Pass
Pendulum Deceleration at 20ms	14	19	g's	17.3	Pass
Pendulum Deceleration at 30ms	11	16	g's	14.3	Pass
Max. Pendulum Deceleration After 30ms	0	22	g's	20.8	Pass
Pendulum Deceleration Time to 5 g's	38	46	ms	40.1	Pass
Maximum D Plane Rotation	81	106	deg	100.1	Pass
Time to Maximum Rotation	72	82	ms	76.0	Pass
Rotation Decay to Zero	147	174	ms	155.6	Pass
Minimum Moment About OC	-80	-52.9	Nm	-73.85	Pass
Time to Minimum Moment	65	79	ms	69.6	Pass
Moment Decay to Zero	120	148	ms	137.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C16503 Striker	2/5/2021	2/5/2022
Pendulum Potentiometer	ETI SP22G	DS-LABPOT1	9/17/2020	9/17/2021
Condyle Potentiometer	ETI SP22G	DS-LABPOT2	9/17/2020	9/17/2021
Upper Neck Load Cell	DENTON 1716A	LC-2186Fx	11/10/2020	11/10/2021





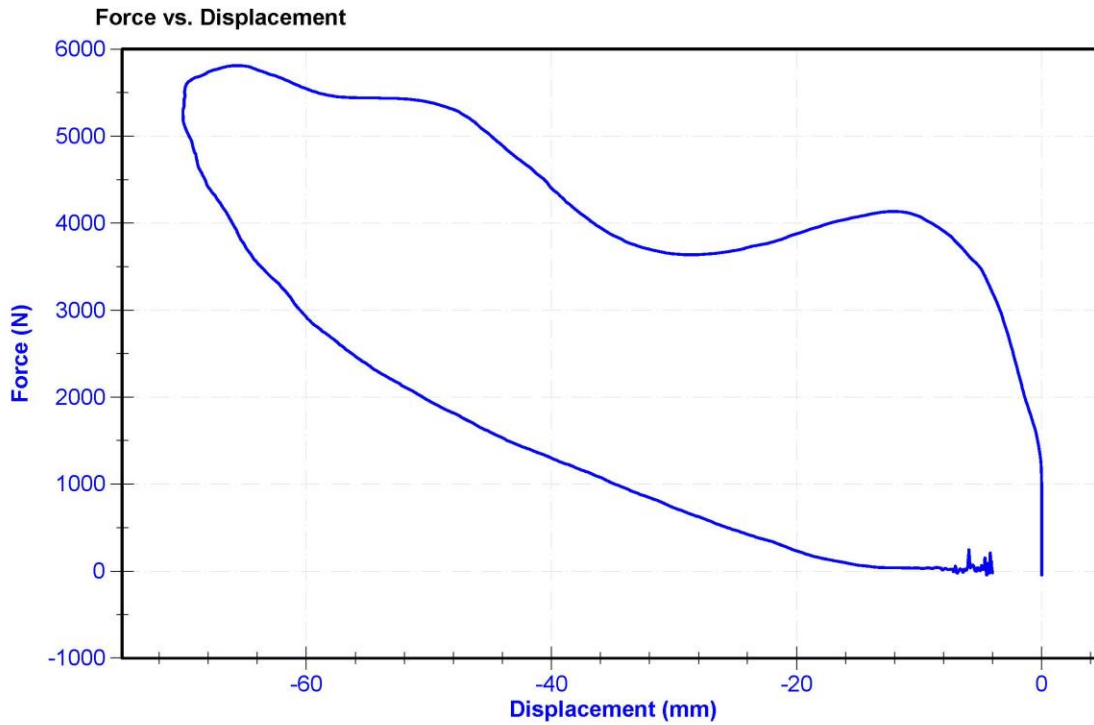
ATD Manufacturer	Humanetics	Test Technician	M. Dudek
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

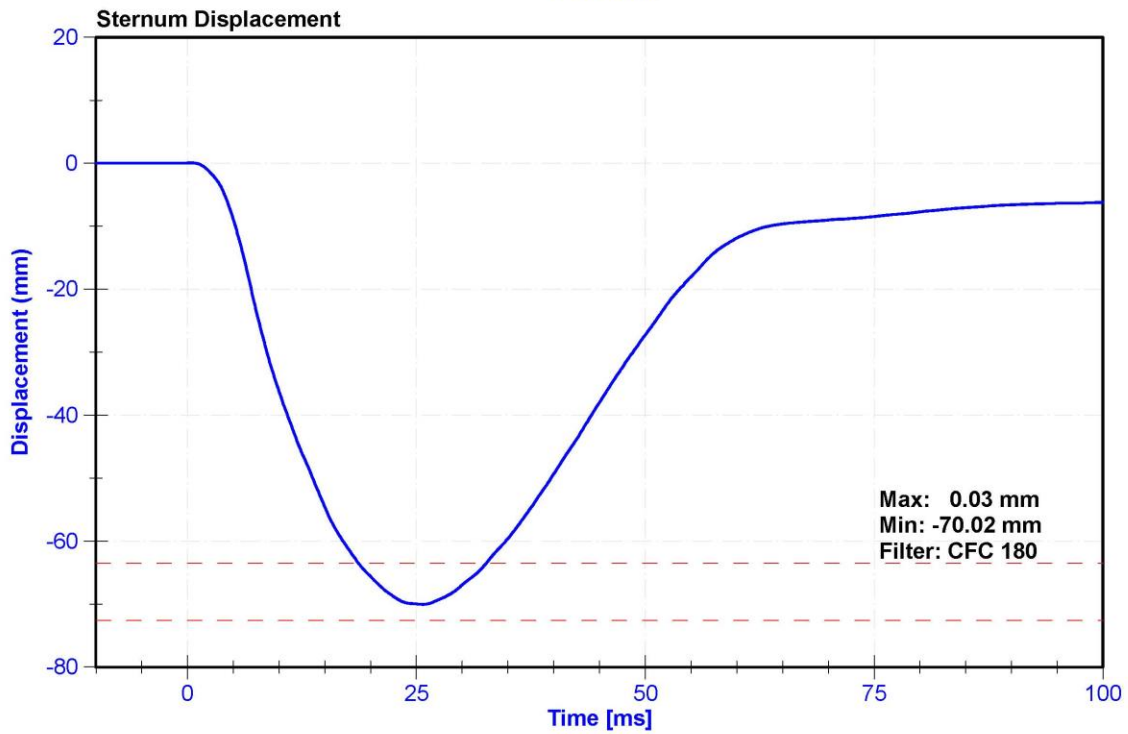
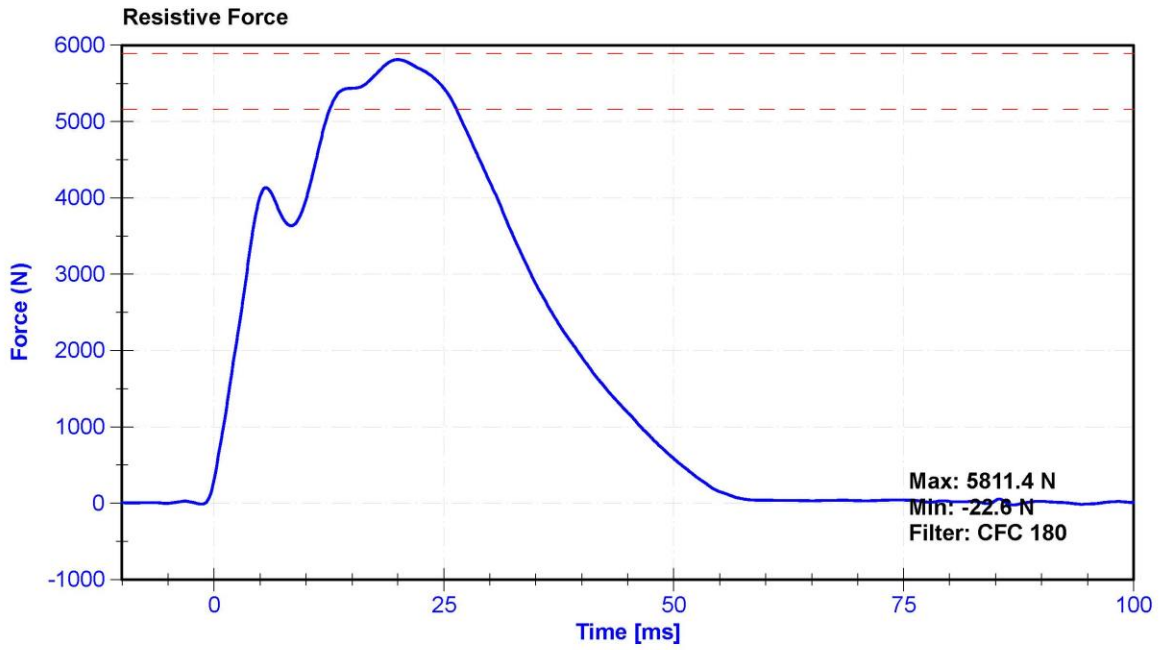
Results

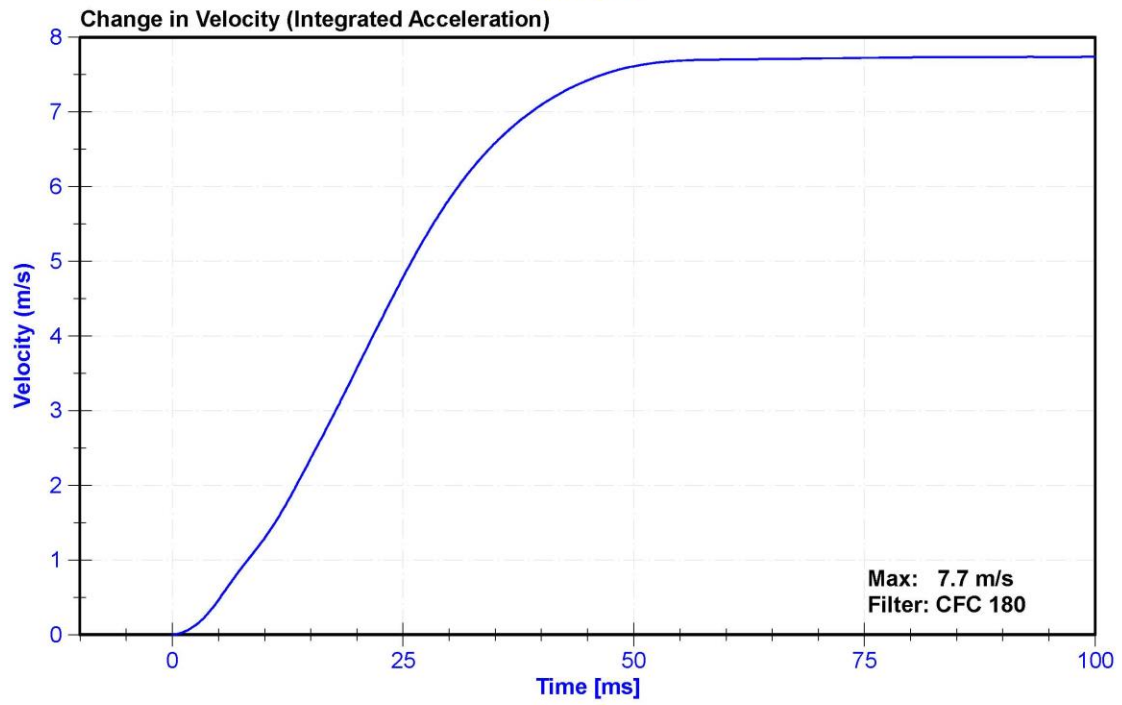
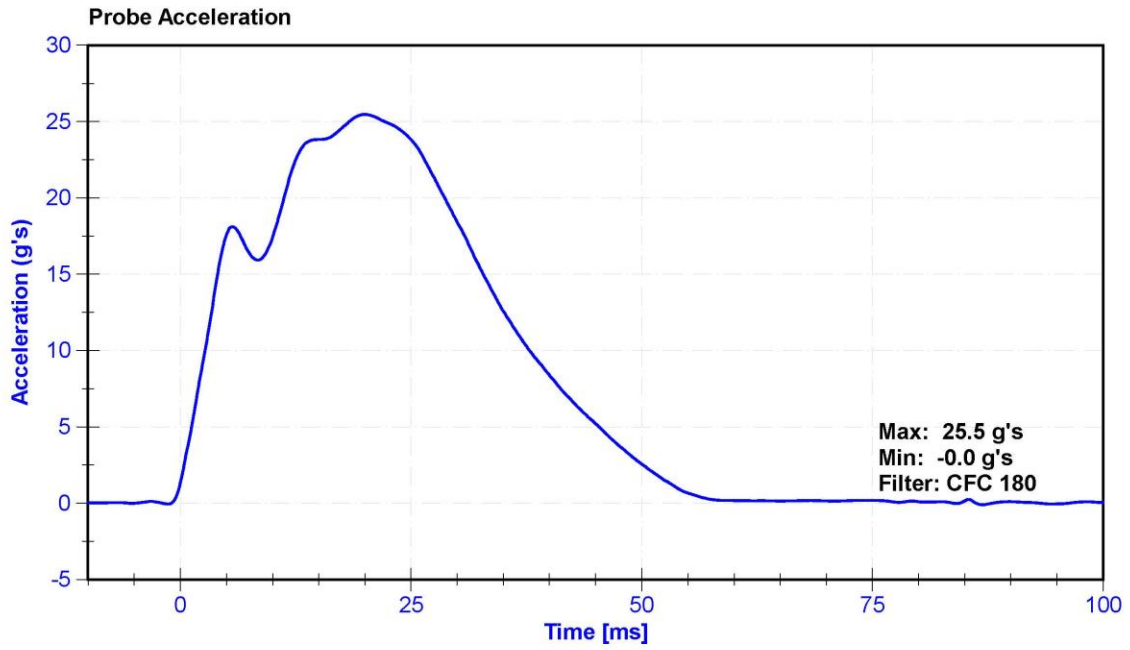
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.6	Pass
Humidity	10	70	%	19.4	Pass
Velocity	6.59	6.83	m/s	6.641	Pass
Chest Displacement	-72.6	-63.5	mm	-70.02	Pass
Resistive Force	5160	5894	N	5811.4	Pass
Hysteresis	65	85	%	69.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	MSI 64C-2000	A278994	12/3/2020	12/3/2021
Chest Potentiometer	Servo 6209-2038	DS-142	11/19/2020	5/20/2021







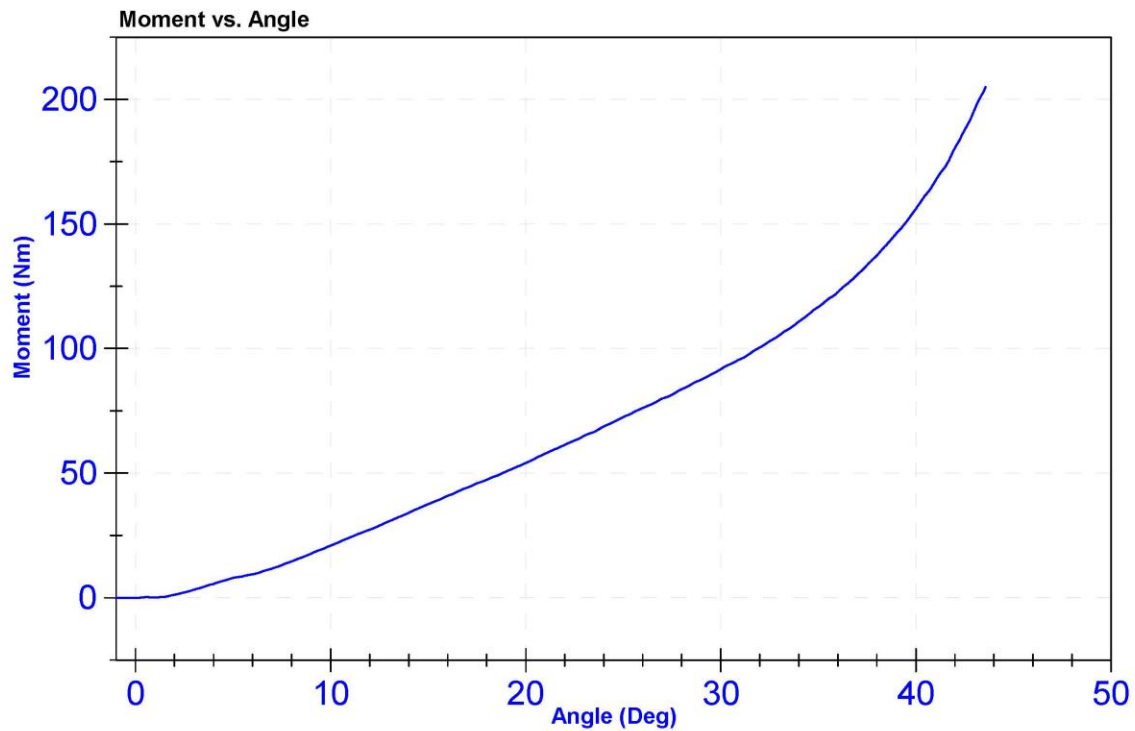
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	20.9	Pass
Humidity	10	70	%	24	Pass
Average Velocity	5	10	deg/s	7.2	Pass
Angle at 203Nm	40	50	deg	43.5	Pass
Moment at 30 degrees	0	94.9	Nm	91.7	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Potentiometer	ETI SP22	DS-0008	9/18/2020	9/18/2021
Load Cell	Key Trans 2301-02	LC-115 My	2020-09-12	2021-09-12



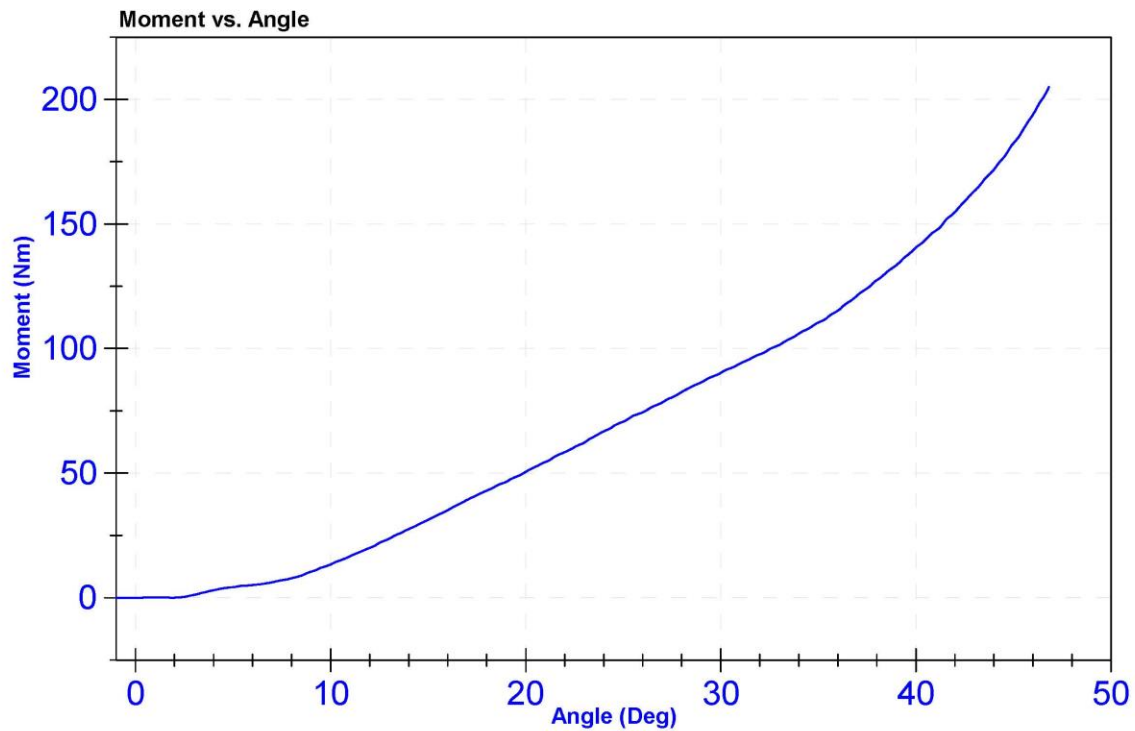
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	20.9	Pass
Humidity	10	70	%	24	Pass
Average Velocity	5	10	deg/s	7.2	Pass
Angle at 203Nm	40	50	deg	46.7	Pass
Moment at 30 degrees	0	94.9	Nm	90.3	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Potentiometer	ETI SP22	DS-0008	9/18/2020	9/18/2021
Load Cell	Key Trans 2301-02	LC-115 My	2020-09-12	2021-09-12



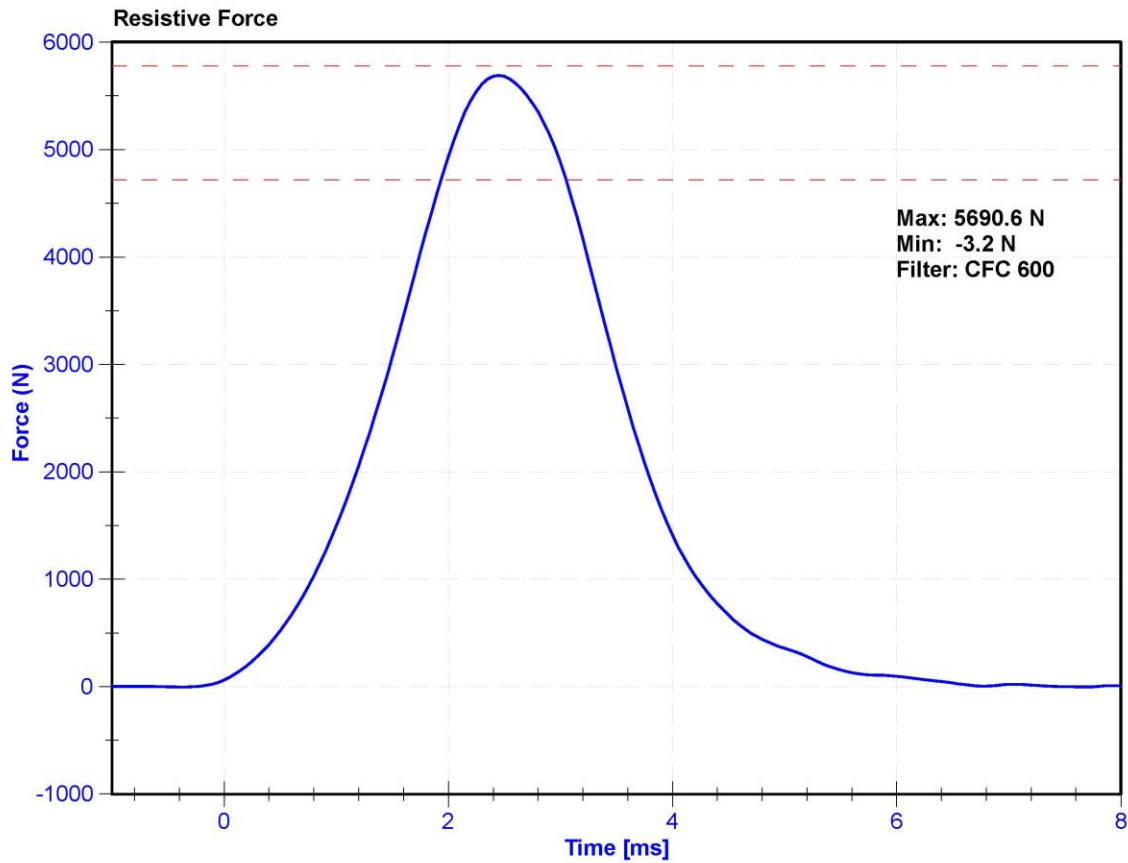
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

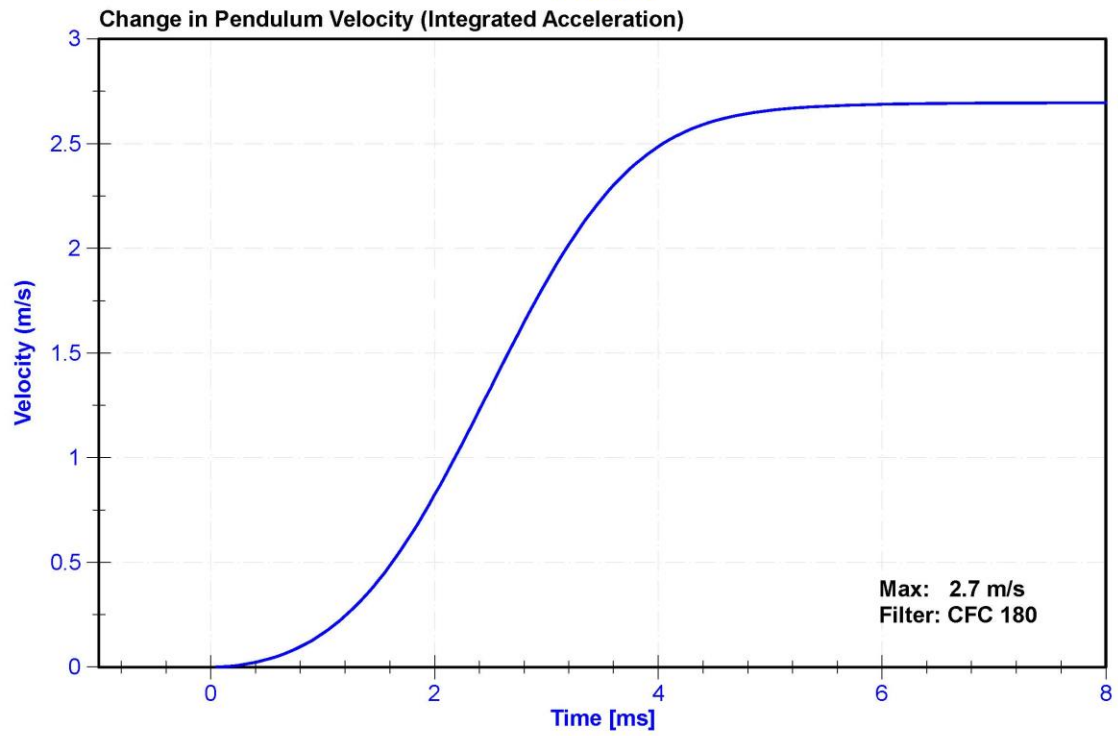
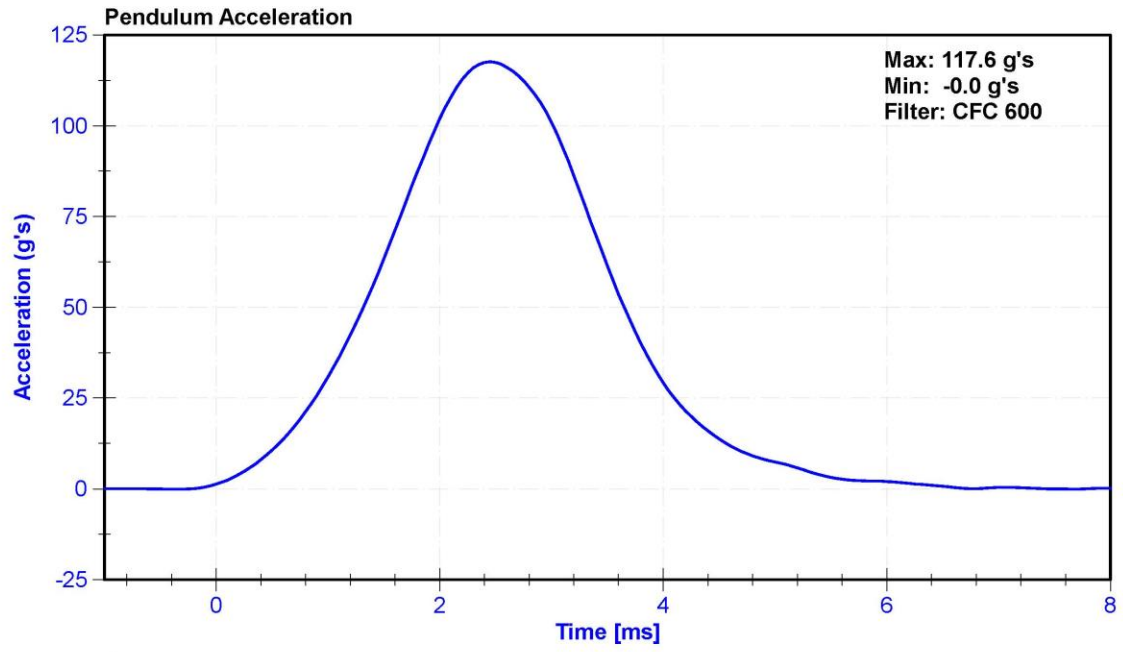
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	20.9	Pass
Humidity	10	70	%	24	Pass
Velocity	2.07	2.13	m/s	2.099	Pass
Maximum Resistive Force	4720	5780	N	5690.6	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	MSI 64C-2000	A278994	12/3/2020	12/3/2021





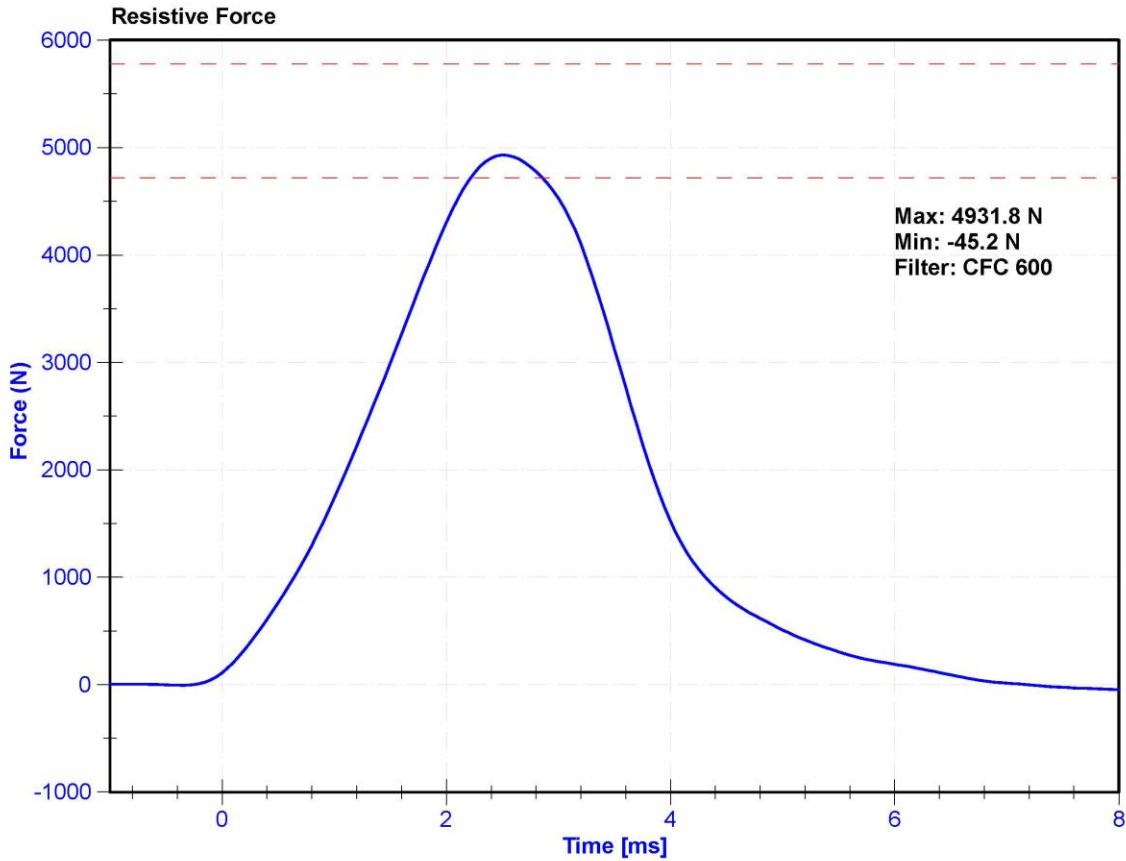
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

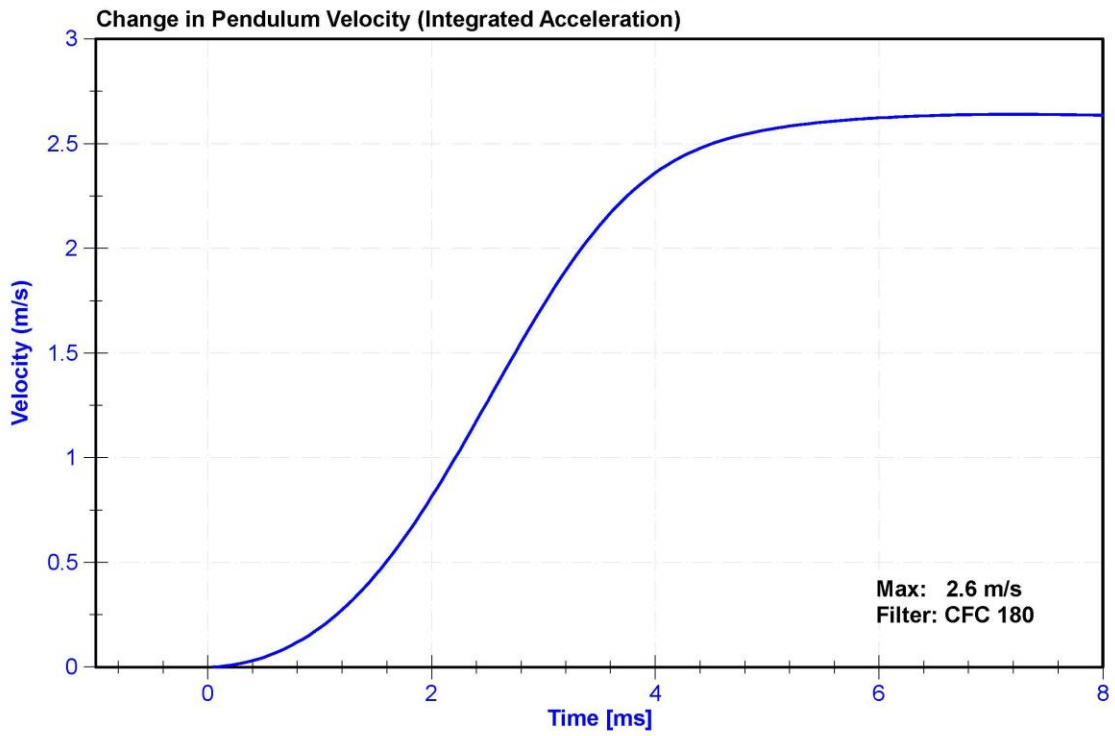
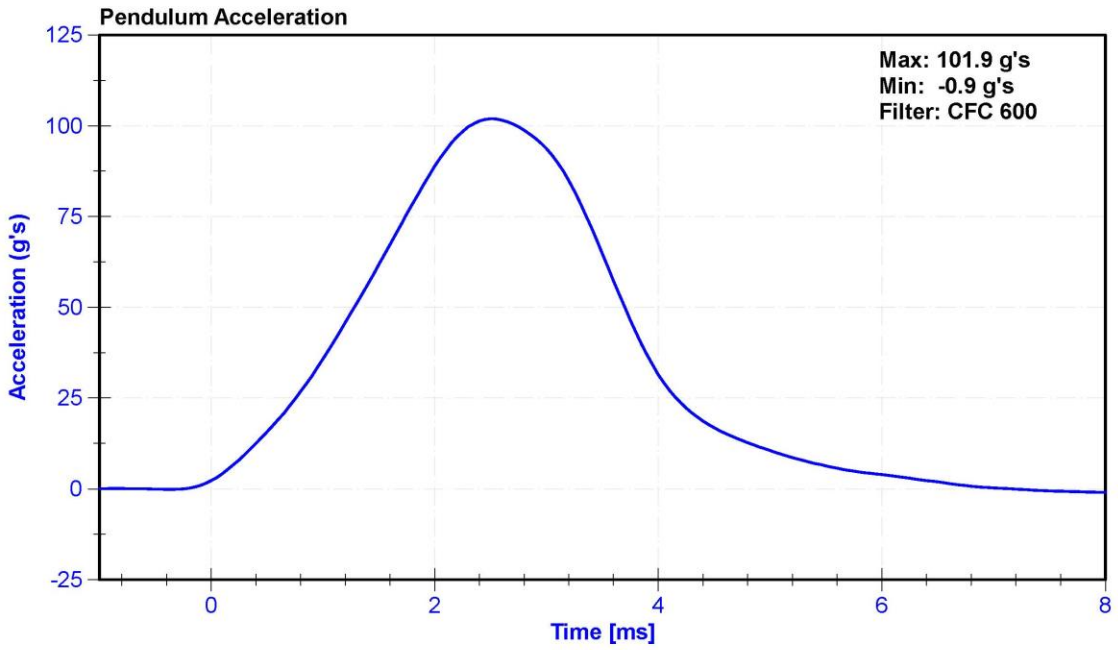
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	20.9	Pass
Humidity	10	70	%	24	Pass
Velocity	2.07	2.13	m/s	2.105	Pass
Maximum Resistive Force	4720	5780	N	4931.8	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	MSI 64C-2000	A278994	12/3/2020	12/3/2021





CALIBRATION TEST RESULTS

POST-TEST

HYBRID III 5TH PERCENTILE FEMALE - PASSENGER ATD

SERIAL NO: 140

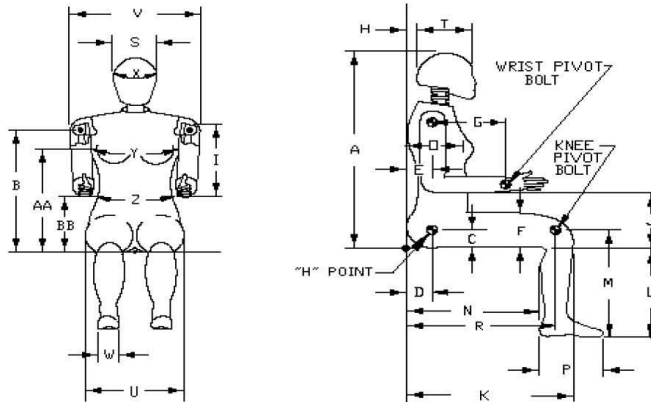


External Measurements - Hybrid 3 - 5th Female

Technician: K. Brogan

Date: 3/15/2021

Dummy Serial Number: 140



Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	775	800	790	Pass
B	Shoulder Pivot Height	432	457	443	Pass
C	H-Point Height	81	86	83	Pass
D	H-Point from Backline	145	150	147	Pass
E	Shoulder Pivot from Backline	69	84	78	Pass
F	Thigh Clearance	119	135	127	Pass
G	Back of Elbow to Wrist Pivot	244	259	253	Pass
H	Head Back to Backline	43	48	45	Pass
I	Shoulder to Elbow Length	277	297	291	Pass
J	Elbow Rest Height	183	203	197	Pass
K	Buttock to Knee Length	521	546	541	Pass
L	Popliteal Height	356	376	366	Pass
M	Knee Pivot Height	394	419	411	Pass
N	Buttock Popliteal Length	414	439	428	Pass
O	Chest Depth without Jacket	175	191	182	Pass
P	Foot Length (right)	219	234	229	Pass
R	Buttock To Knee Pivot Length	457	483	465	Pass
S	Head Breadth	137	147	142	Pass
T	Head Depth	178	188	180	Pass
U	Hip Breadth	300	315	313	Pass
V	Shoulder Breadth	351	366	361	Pass
W	Foot Breadth	79	94	83	Pass
X	Head Circumference	528	549	540	Pass
Y	Chest Circumference with Jacket	851	881	874	Pass
Z	Waist Circumference	460	790	624	Pass
AA	Reference Location (Chest Circumference)	333	358	345	Pass
BB	Reference Location (Waist Circumference)	160	170	165	Pass

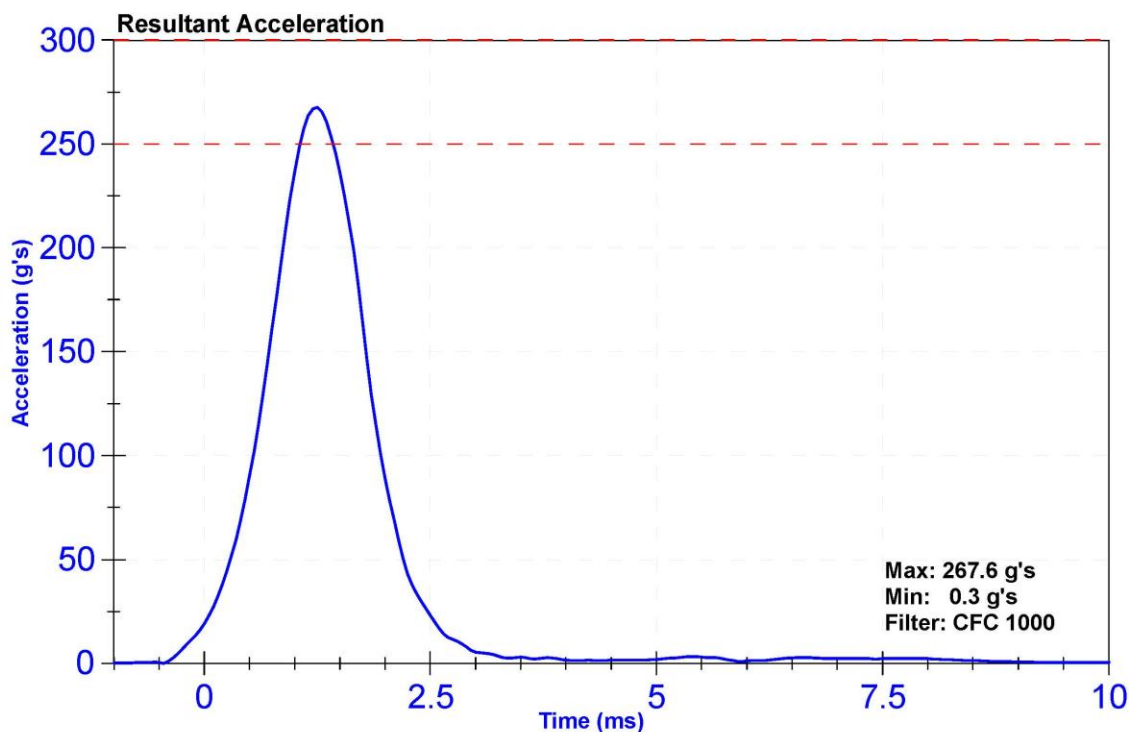
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	140	Laboratory Supervisor	K. Brogan

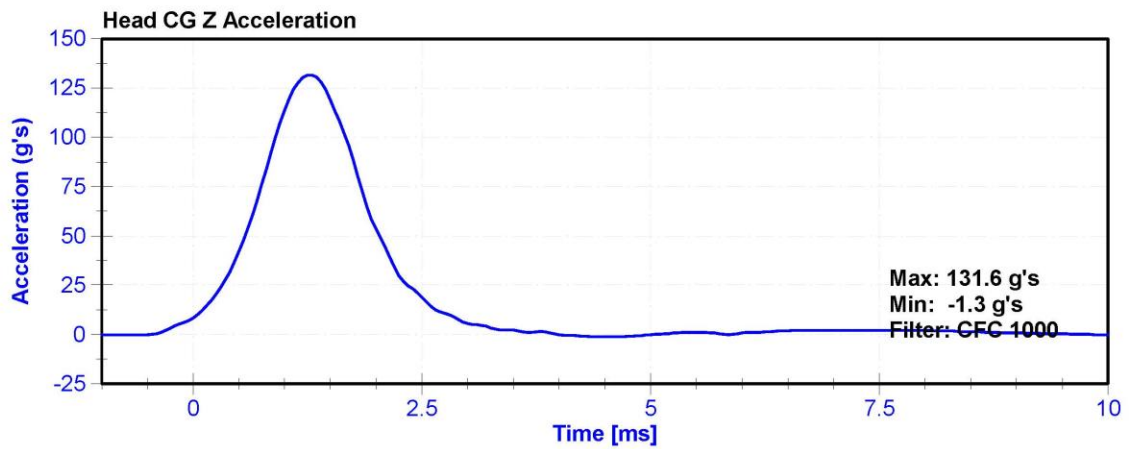
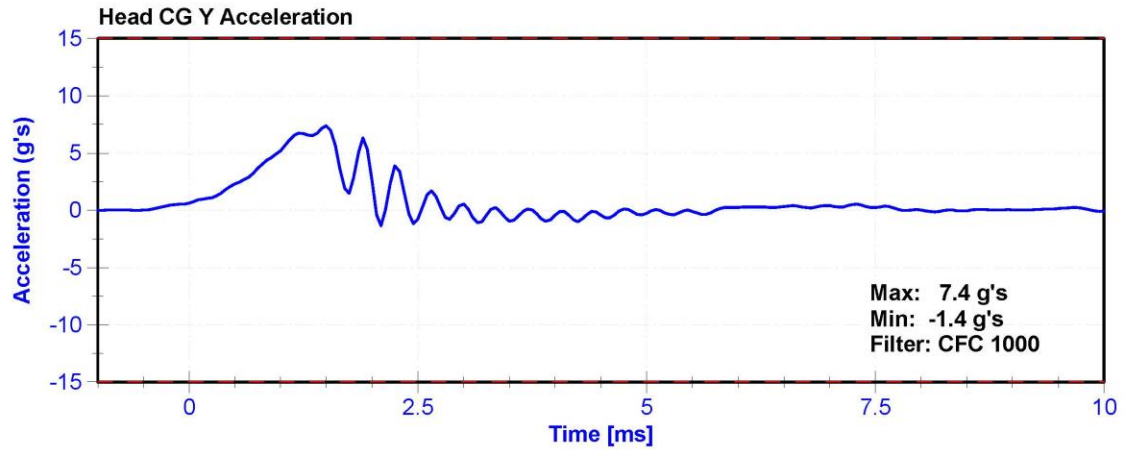
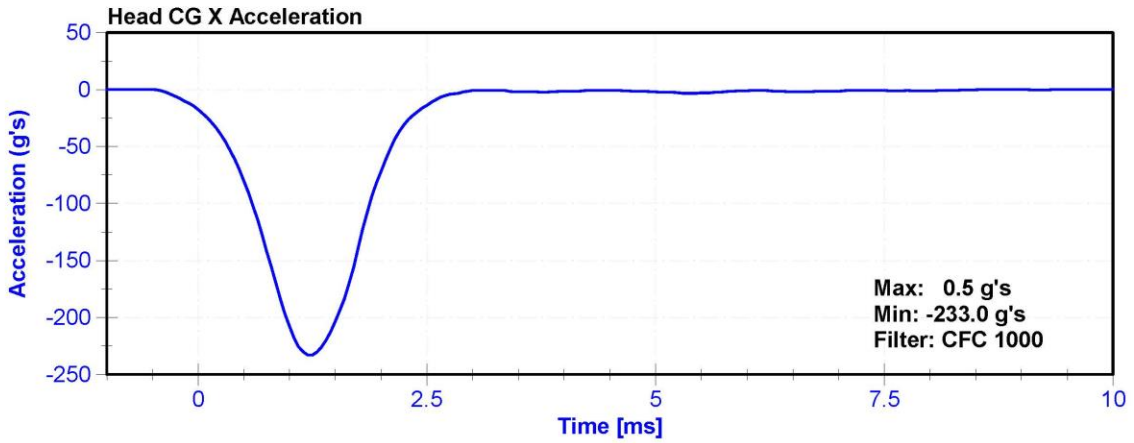
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.2	Pass
Humidity	10	70	%	34.6	Pass
Resultant Acceleration	250	300	g's	267.6	Pass
Oscillation	0	10	%	1.1	Pass
Lateral Acceleration	-15	15	g's	7.4	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	Endevco 7264C-2KTZ-2-240	P79417	2/24/2021	8/25/2021
Y Accelerometer	Endevco 7264C-2KTZ-2-240	P83335	2/24/2021	8/25/2021
Z Accelerometer	Endevco 7264C-2KTZ-2-240	T11252	2/24/2021	8/25/2021





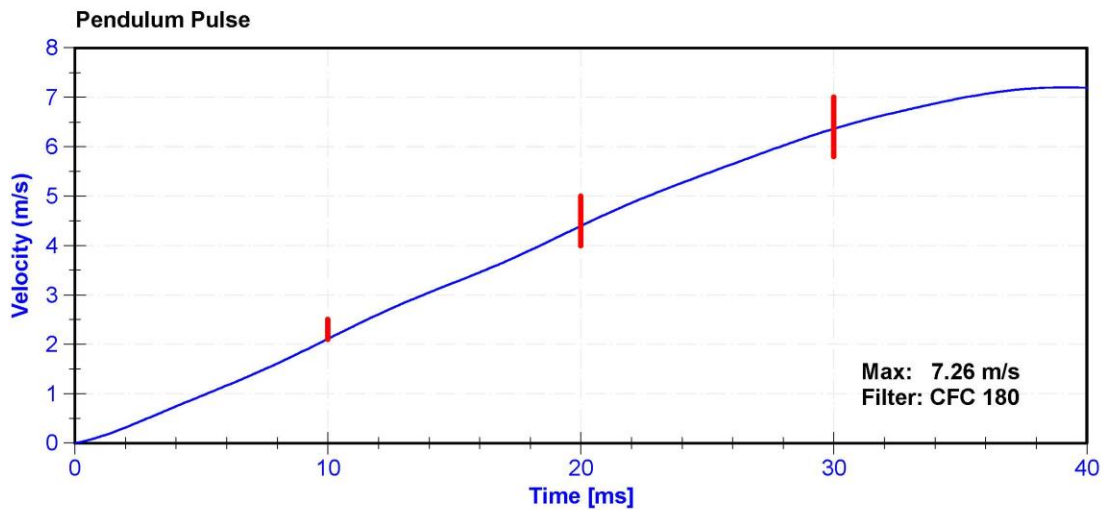
ATD Manufacturer	Humanetics	Test Technician	E. Helenbrook
ATD Serial Number	140	Laboratory Supervisor	K. Brogan

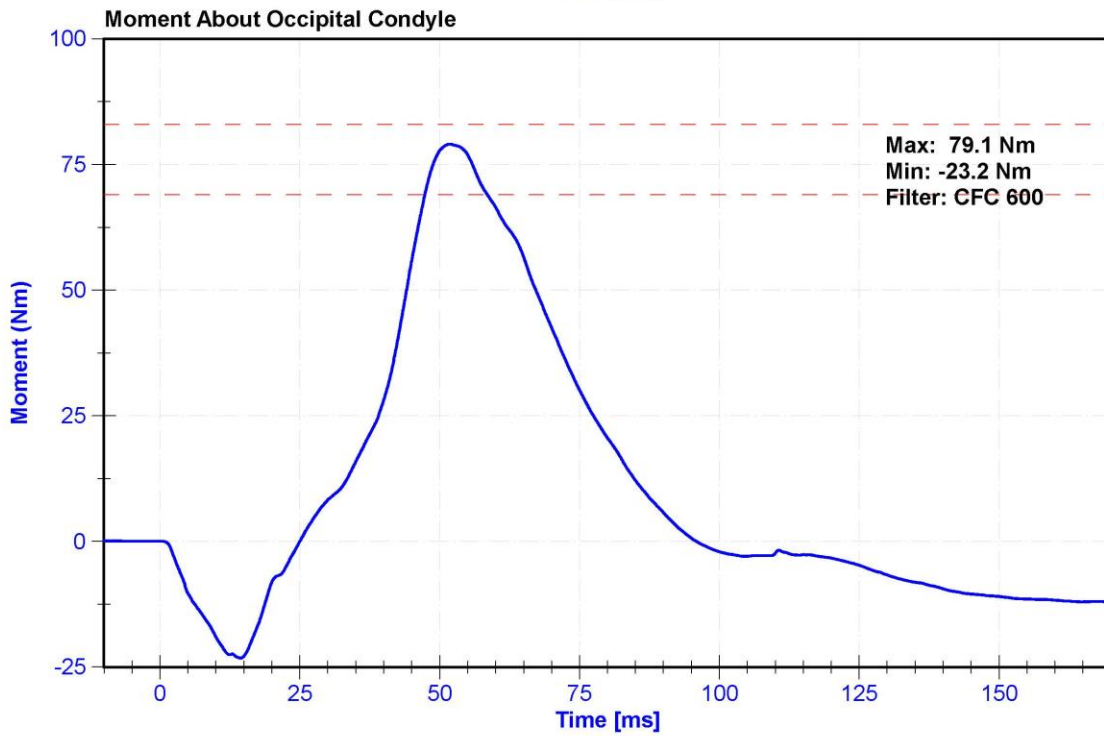
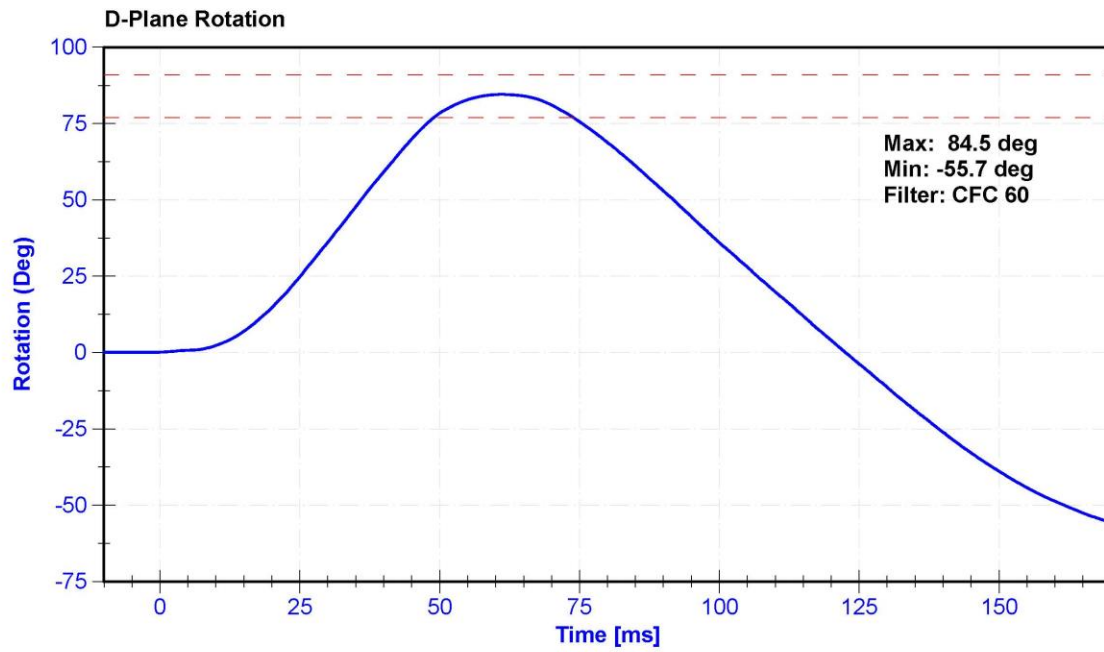
Results

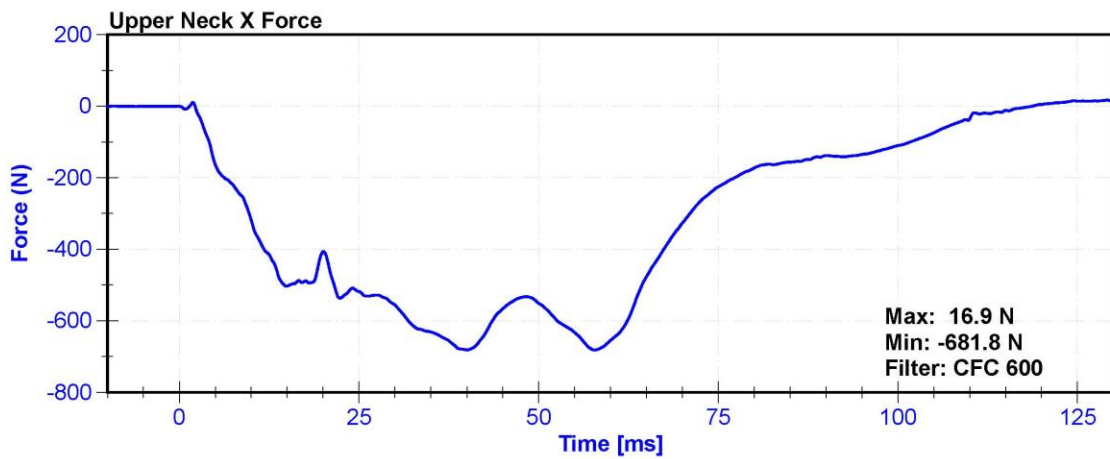
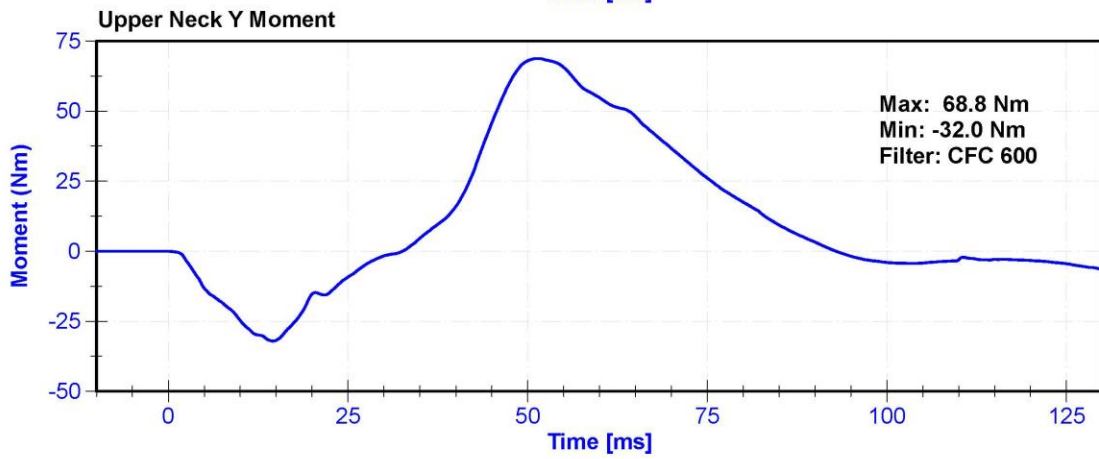
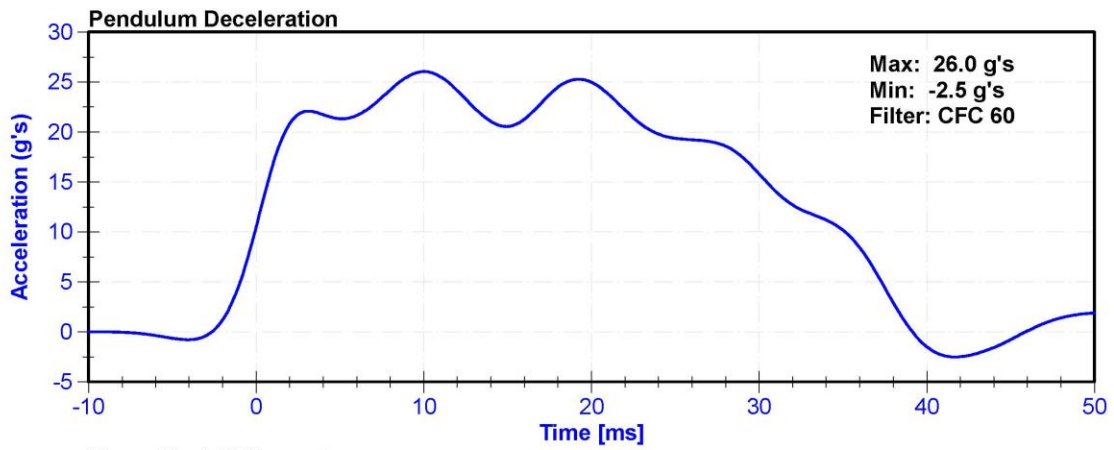
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.5	Pass
Humidity	10	70	%	25.6	Pass
Velocity	6.89	7.13	m/s	7.070	Pass
Pendulum Impulse at 10ms	2.1	2.5	m/s	2.11	Pass
Pendulum Impulse at 20ms	4.0	5.0	m/s	4.40	Pass
Pendulum Impulse at 30ms	5.8	7.0	m/s	6.36	Pass
Max D Plane Rotation	77	91	deg	84.5	Pass
Max Moment During Rotation Interval	69	83	Nm	79.1	Pass
Moment Decay to 10.0 Nm	80	100	ms	86.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C16503 Striker	2/5/2021	2/5/2022
Pendulum Potentiometer	ETI SP22G	DS-LABPOT1	9/17/2020	9/17/2021
Condyle Potentiometer	ETI SP22G	DS-LABPOT2	9/17/2020	9/17/2021
Upper Neck Load Cell	Denton 1716A	LC-1916Fx	11/23/2020	11/23/2021







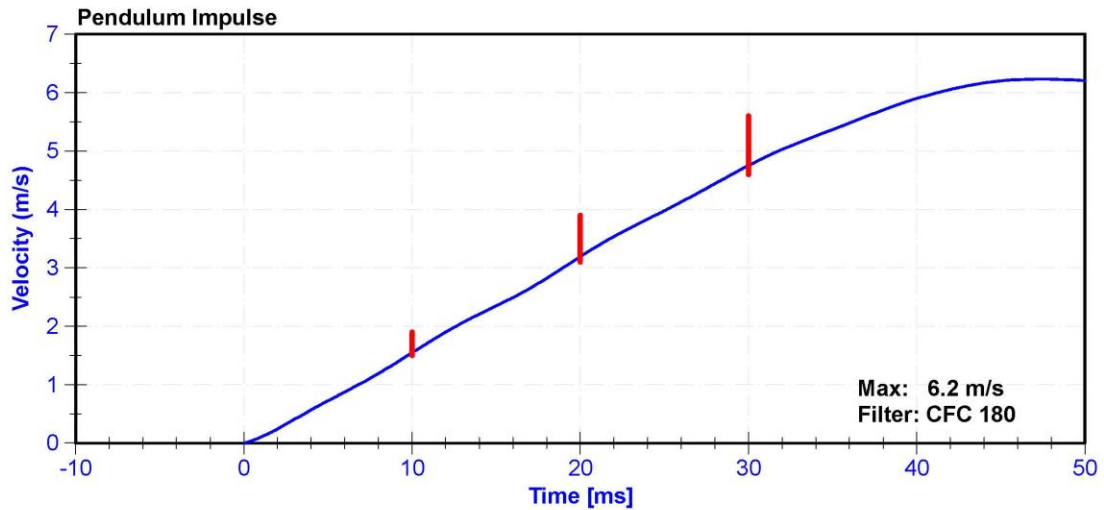
ATD Manufacturer	Humanetics	Test Technician	E. Helenbrook
ATD Serial Number	140	Laboratory Supervisor	K. Brogan

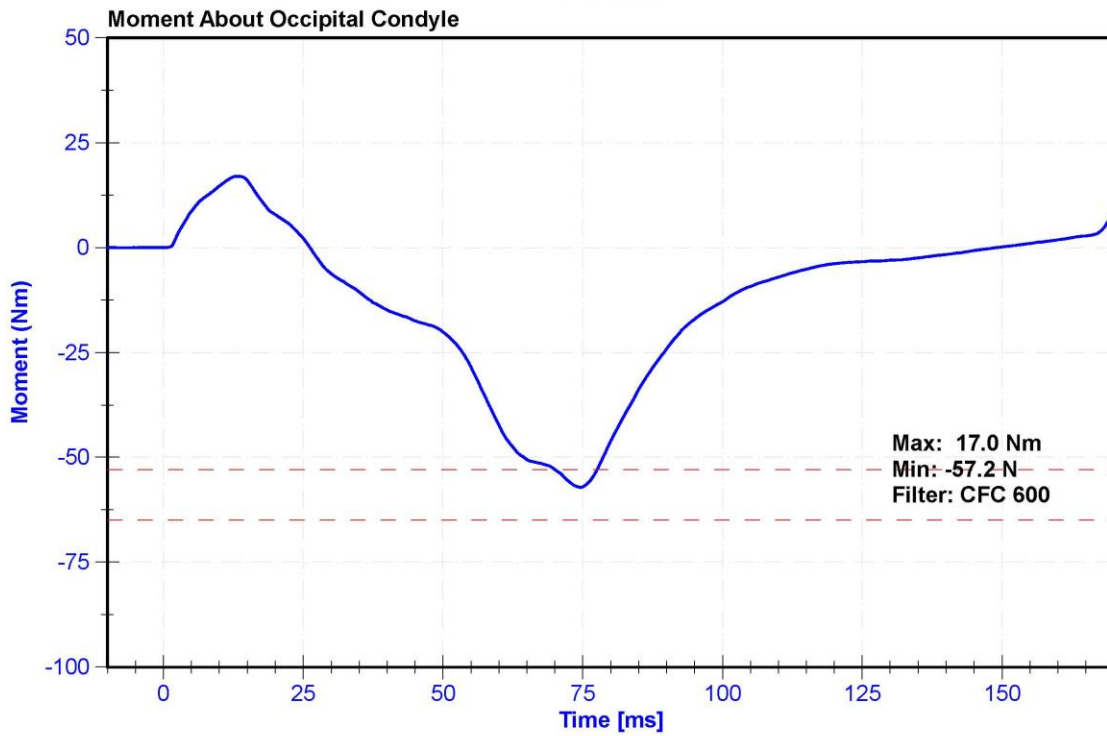
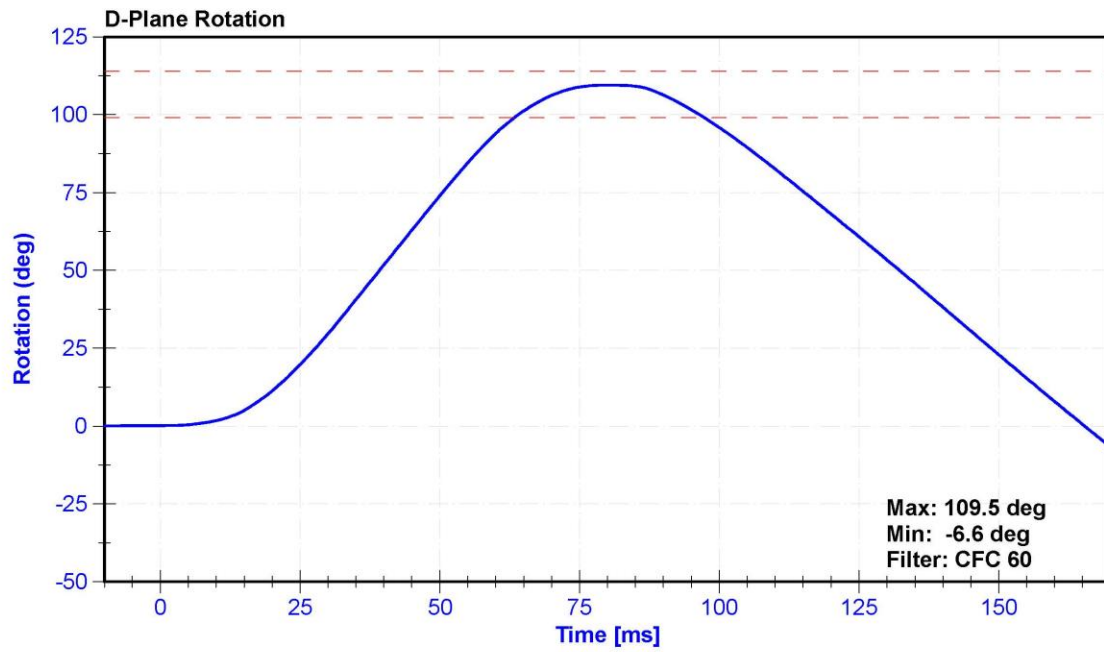
Results

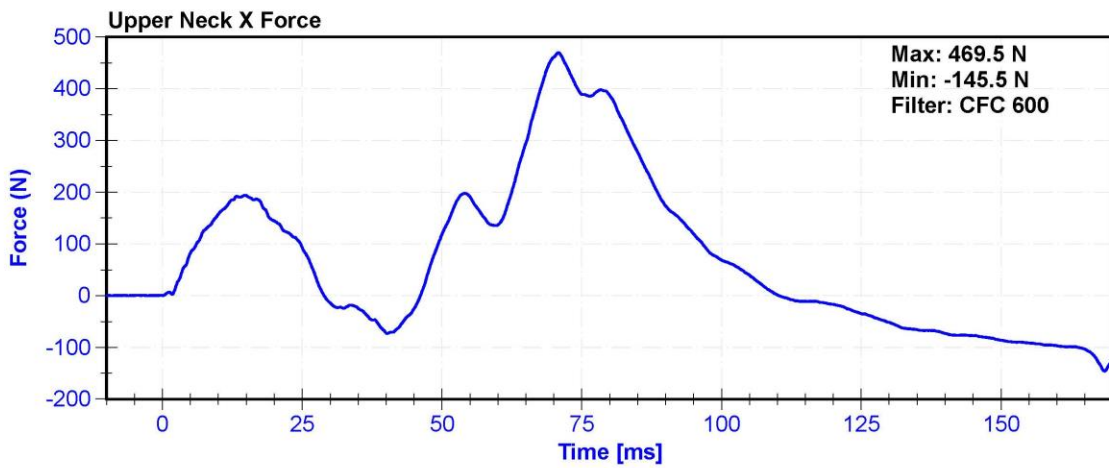
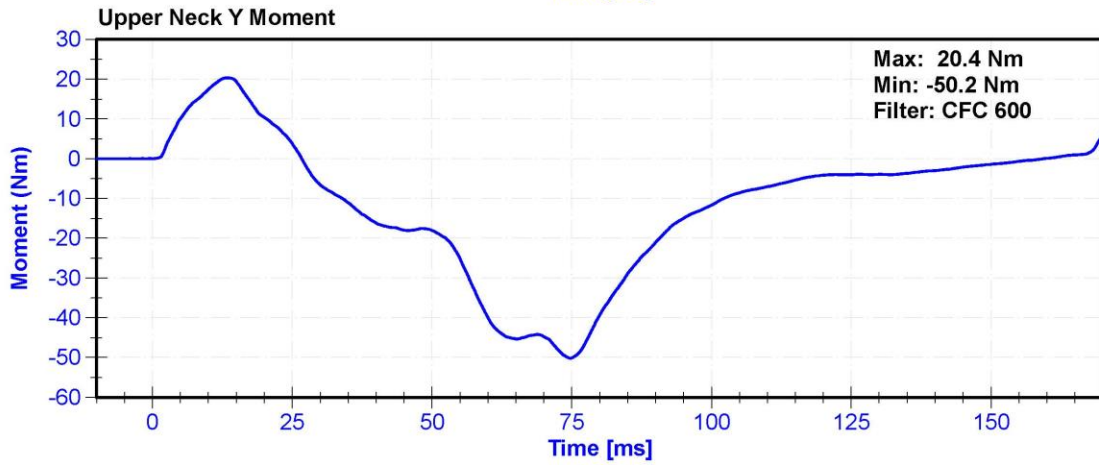
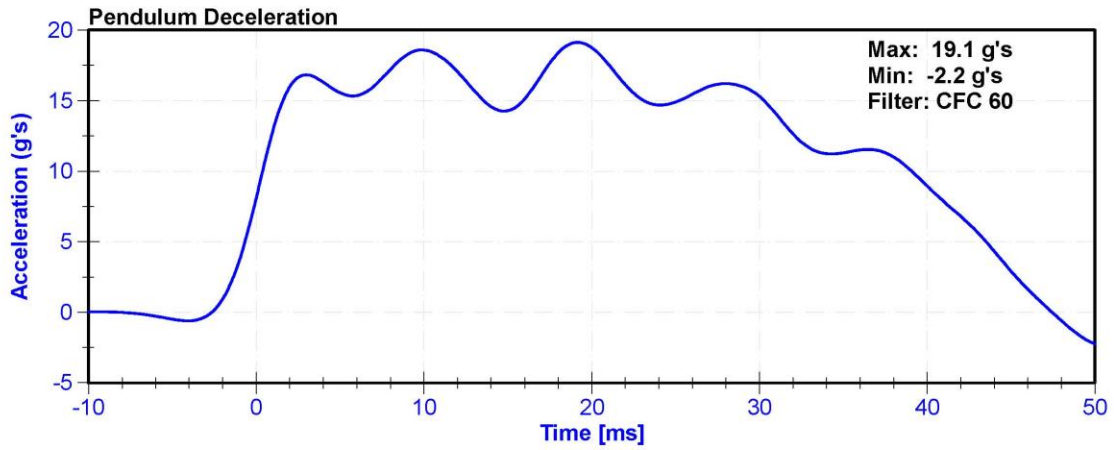
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.5	Pass
Humidity	10	70	%	25.6	Pass
Velocity	5.95	6.19	m/s	6.131	Pass
Pendulum Impulse at 10ms	1.5	1.9	m/s	1.55	Pass
Pendulum Impulse at 20ms	3.1	3.9	m/s	3.19	Pass
Pendulum Impulse at 30ms	4.6	5.6	m/s	4.75	Pass
D Plane Rotation	99	114	deg	109.5	Pass
Moment During Rotation Interval	-65	-53	Nm	-57.2	Pass
Moment Decay to -10Nm	94	114	ms	103.7	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C16503 Striker	2/5/2021	2/5/2022
Pendulum Potentiometer	ETI SP22G	DS-LABPOT1	9/17/2020	9/17/2021
Condyle Potentiometer	ETI SP22G	DS-LABPOT2	9/17/2020	9/17/2021
Upper Neck Load Cell	Denton 1716A	LC-1916Fx	11/23/2020	11/23/2021







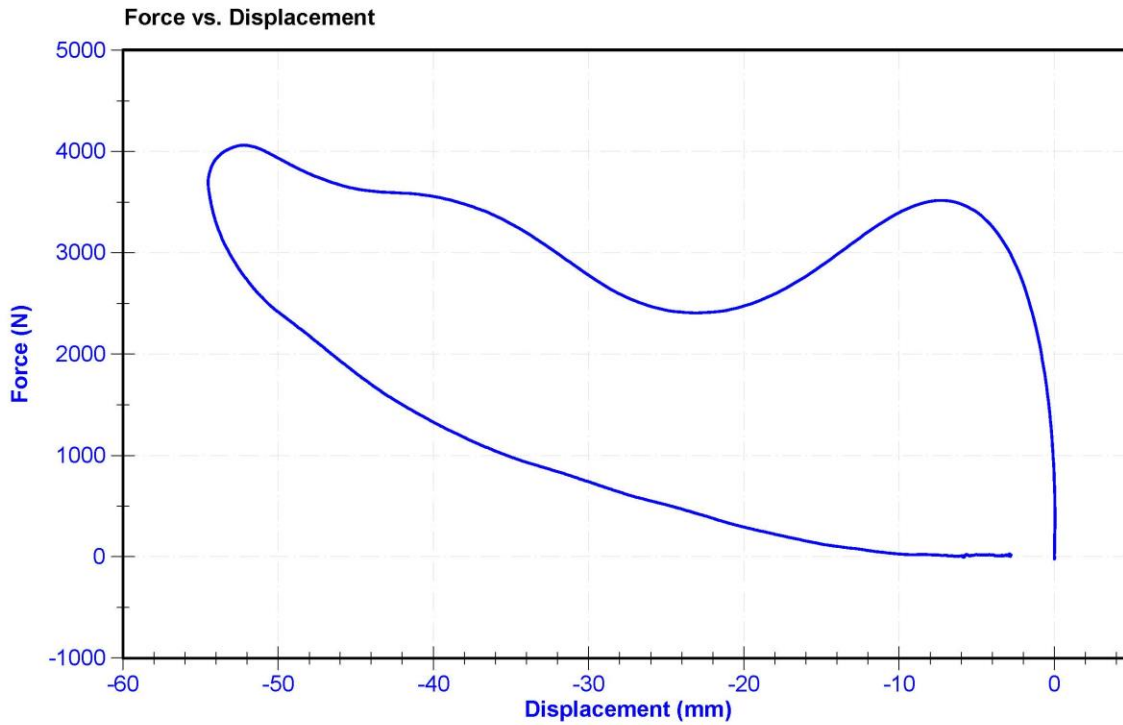
ATD Manufacturer	Humanetics	Test Technician	E. Helenbrook
ATD Serial Number	140	Laboratory Supervisor	K. Brogan

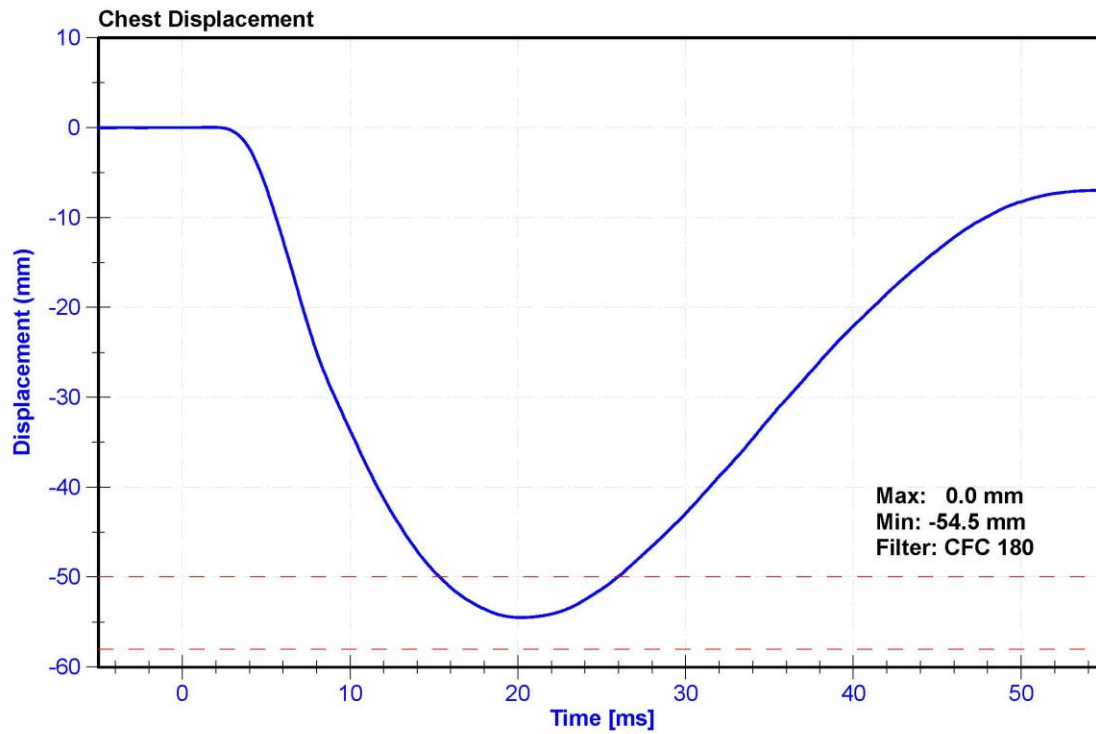
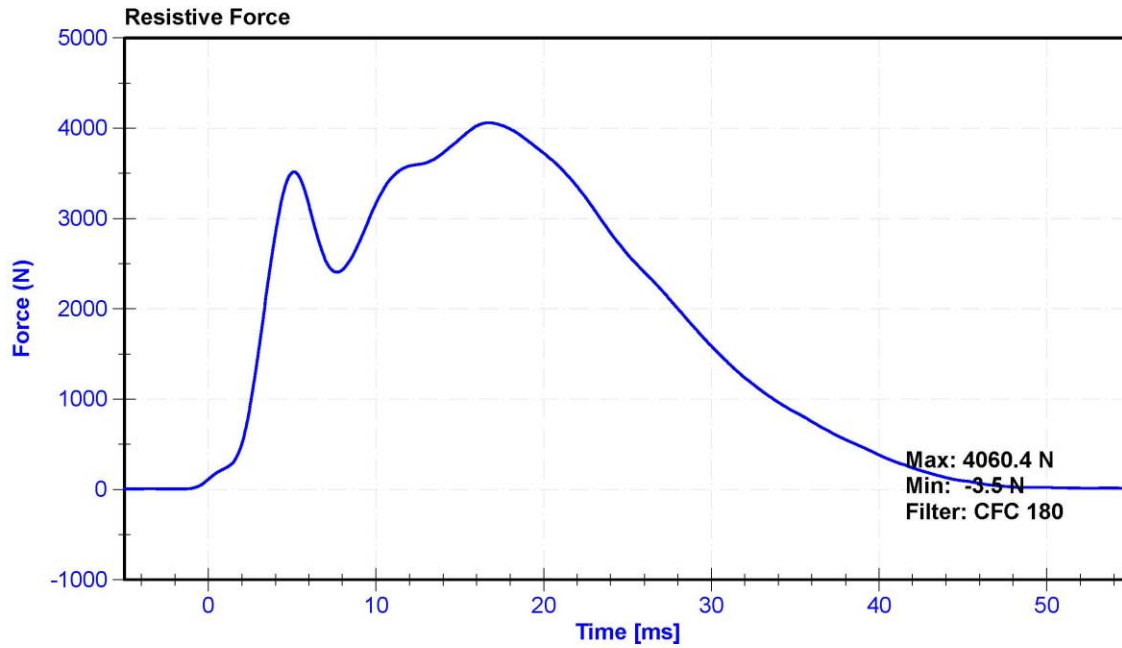
Results

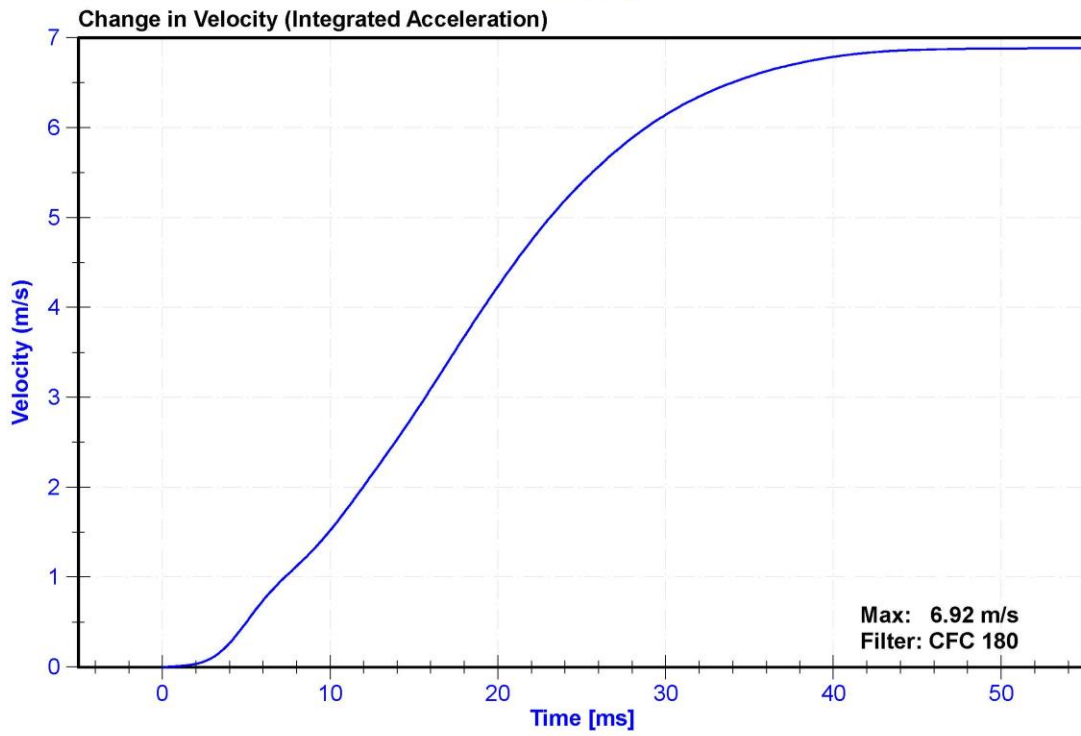
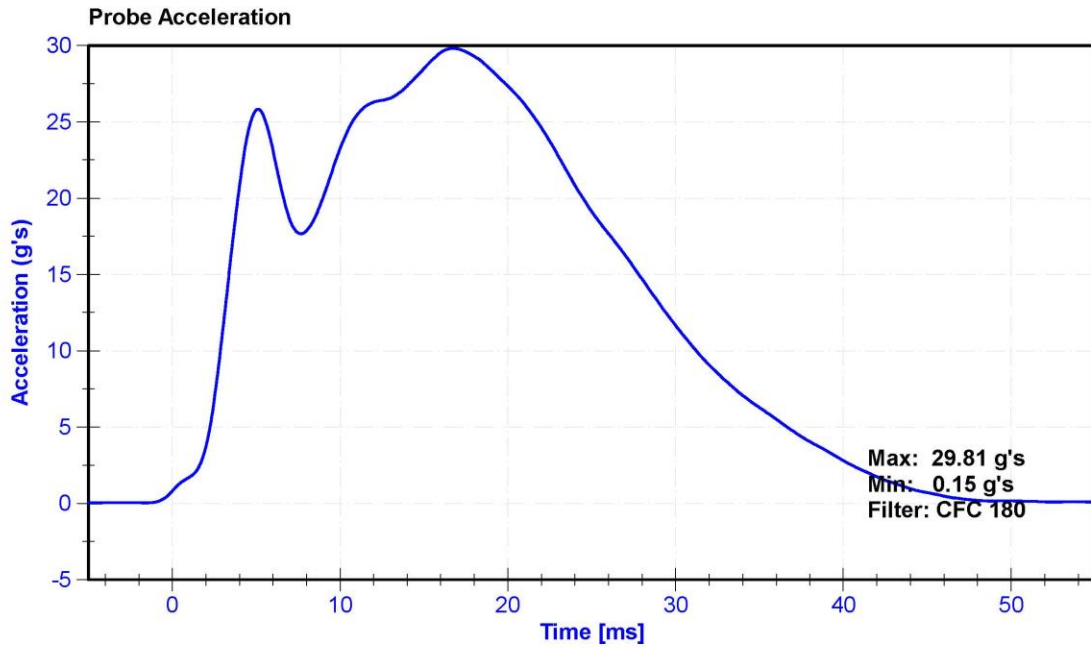
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.8	Pass
Humidity	10	70	%	25.7	Pass
Velocity	6.59	6.83	m/s	6.773	Pass
Chest Deflection	-58	-50	mm	-54.5	Pass
Maximum Resistive Force (50 to 58mm)	3900	4400	N	4060.4	Pass
Maximum Resistive Force (18 to 50mm)	0	4600	N	3927.9	Pass
Hysteresis	69	85	%	72.2	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7264C-2K-TZ2	T25885	2/2/2021	2/2/2022
Chest Potentiometer	SERVO 14CBI-3615	DS-140GFE	2/24/2021	8/25/2021







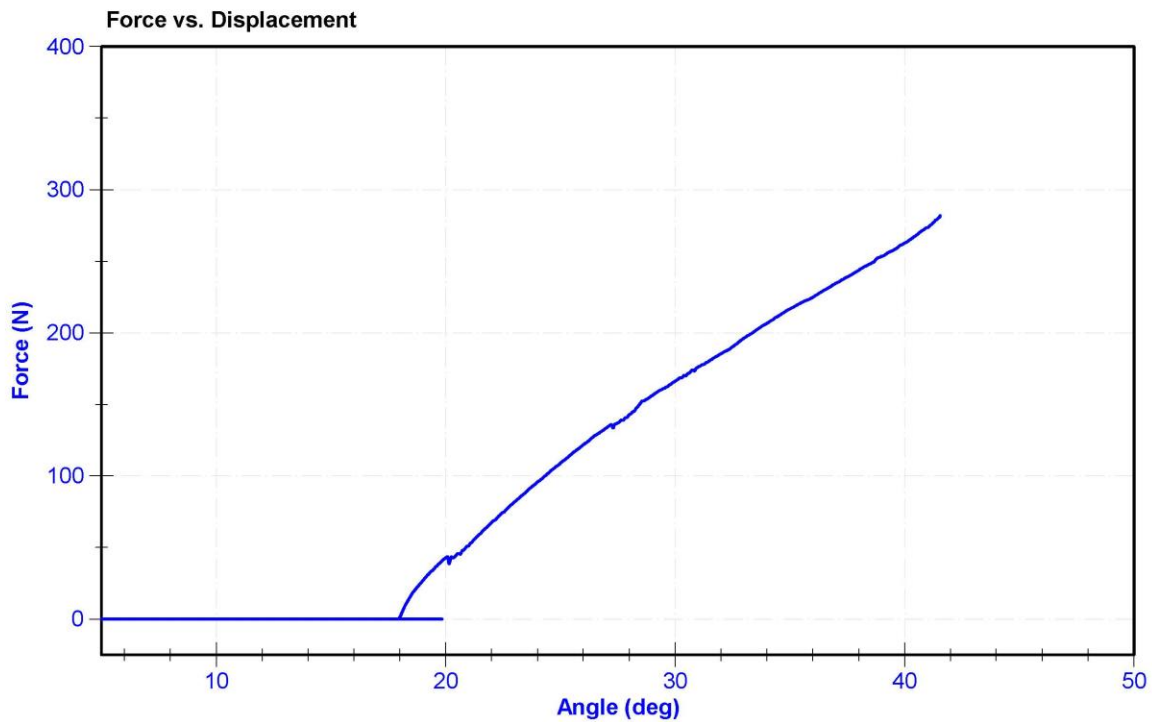
ATD Manufacturer	Humanetics	Test Technician	E. Helenbrook
ATD Serial Number	140	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.6	25.6	°C	20.9	Pass
Humidity	10	70	%	24	Pass
Initial Angle	0	20	deg	18.0	Pass
Force at 45 Degrees	320	390	N	326.4	Pass
Return Angle Relative to Initial	0	8	deg	7.9	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Potentiometer	Seika.de N4C-1	DS-1905226	10/12/2020	10/12/2021
Load Cell	Interface SML-200	LC-493319	10/8/2020	10/8/2021



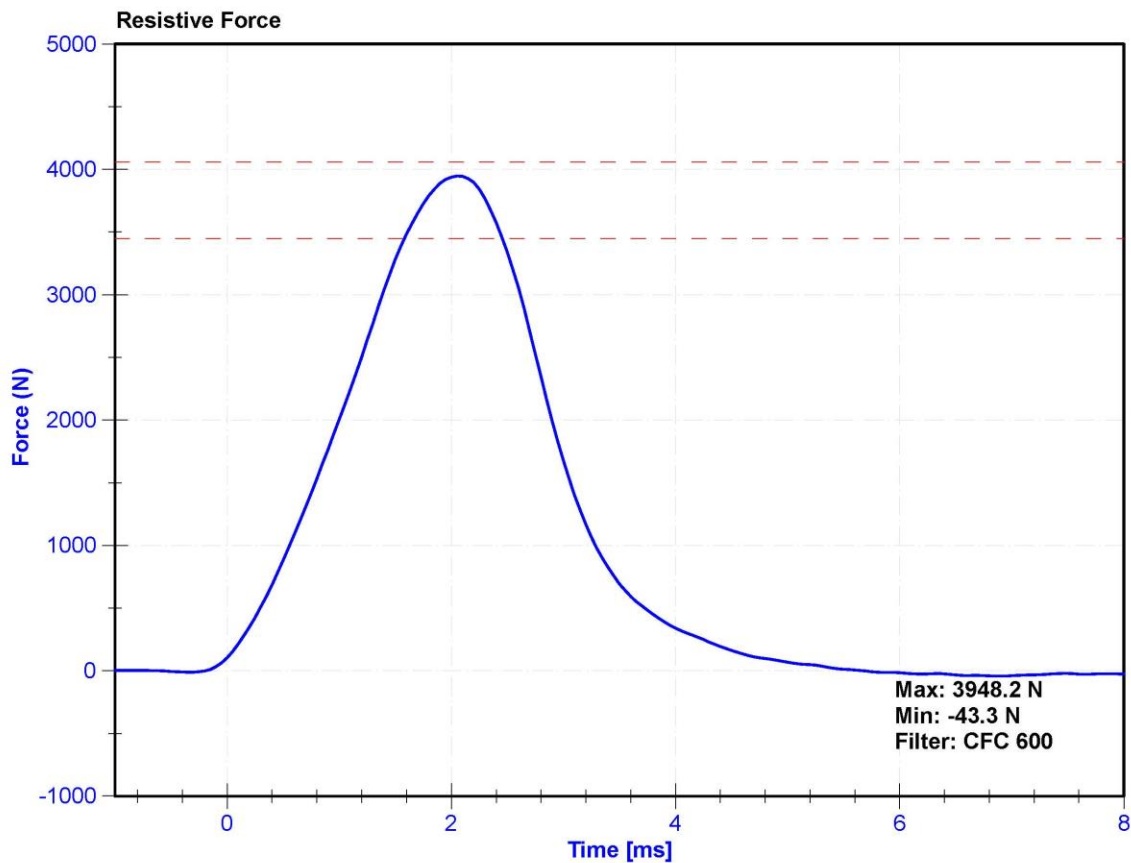
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	140	Laboratory Supervisor	K. Brogan

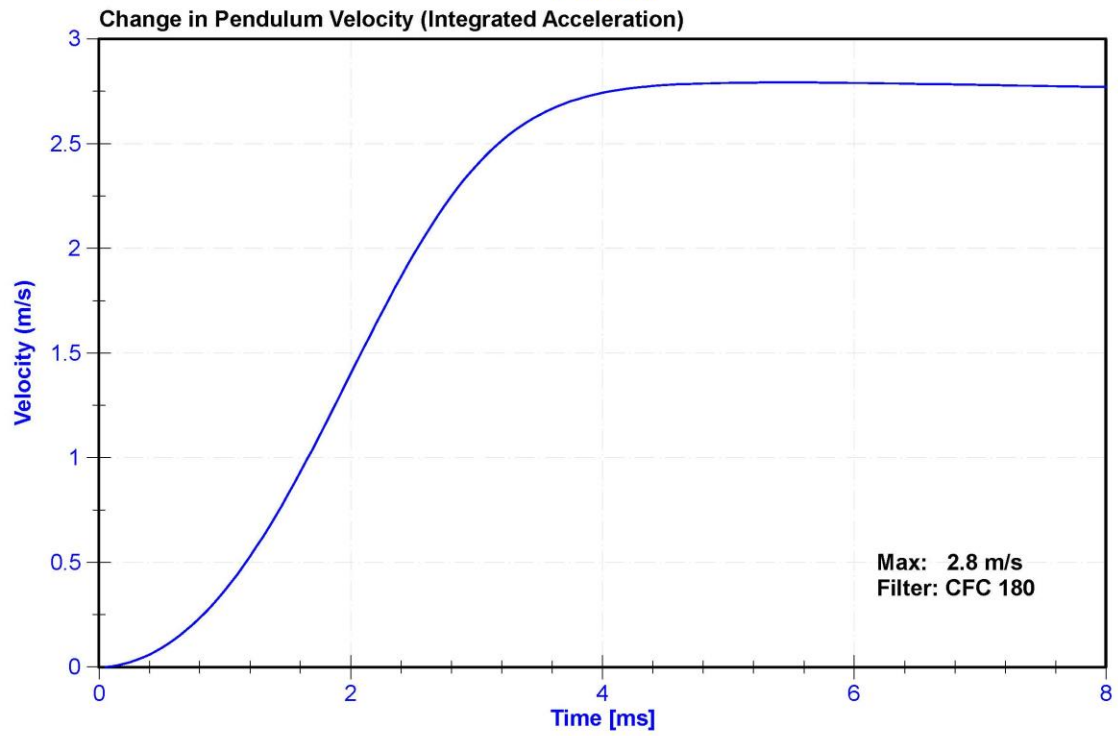
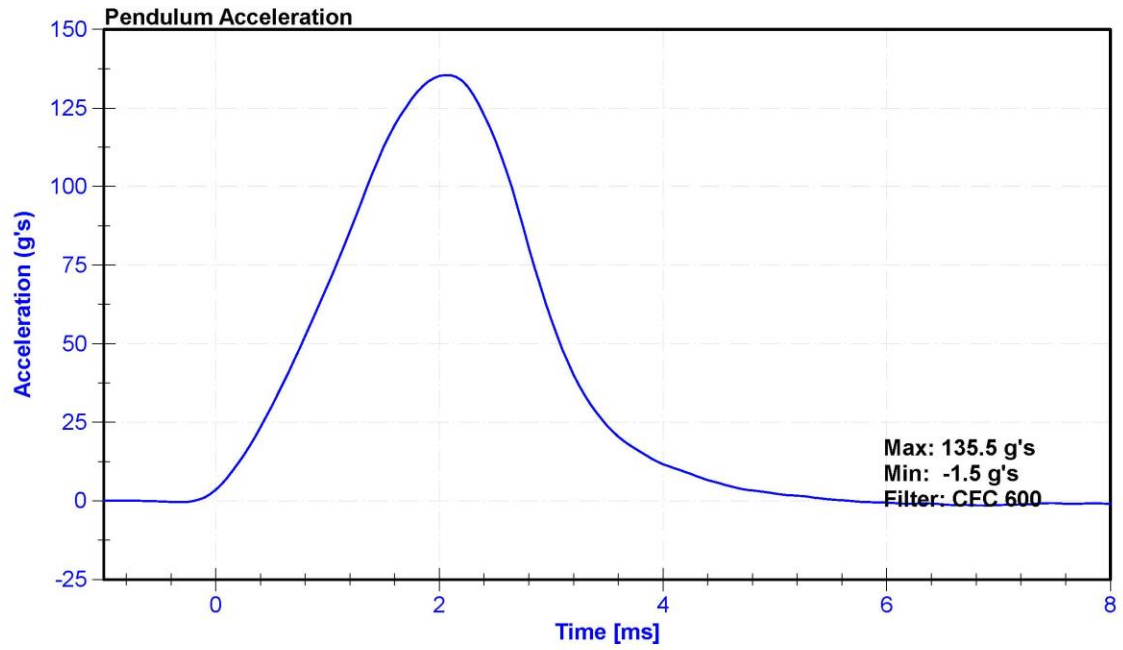
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	20.9	Pass
Humidity	10	70	%	24.0	Pass
Velocity	2.07	2.13	m/s	2.112	Pass
Resistive Force	3450	4060	N	3948.2	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	MSI 64C-2000	A278994	12/3/2020	12/3/2021





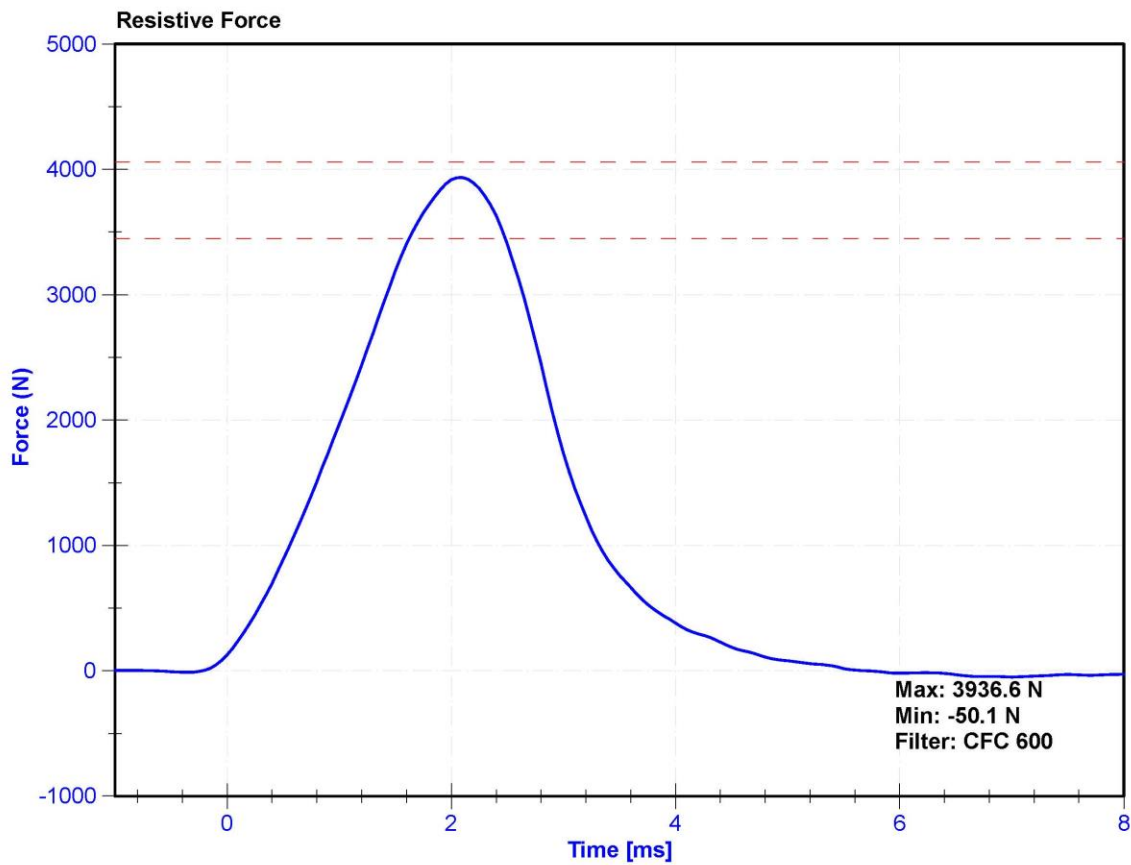
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	140	Laboratory Supervisor	K. Brogan

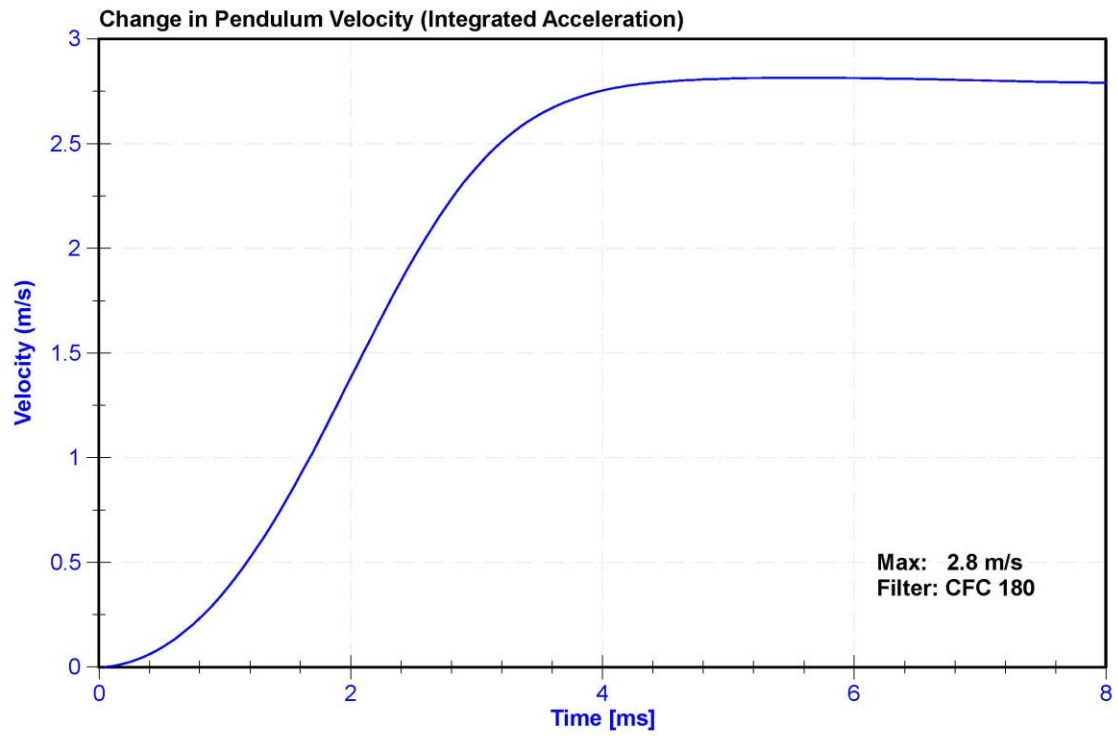
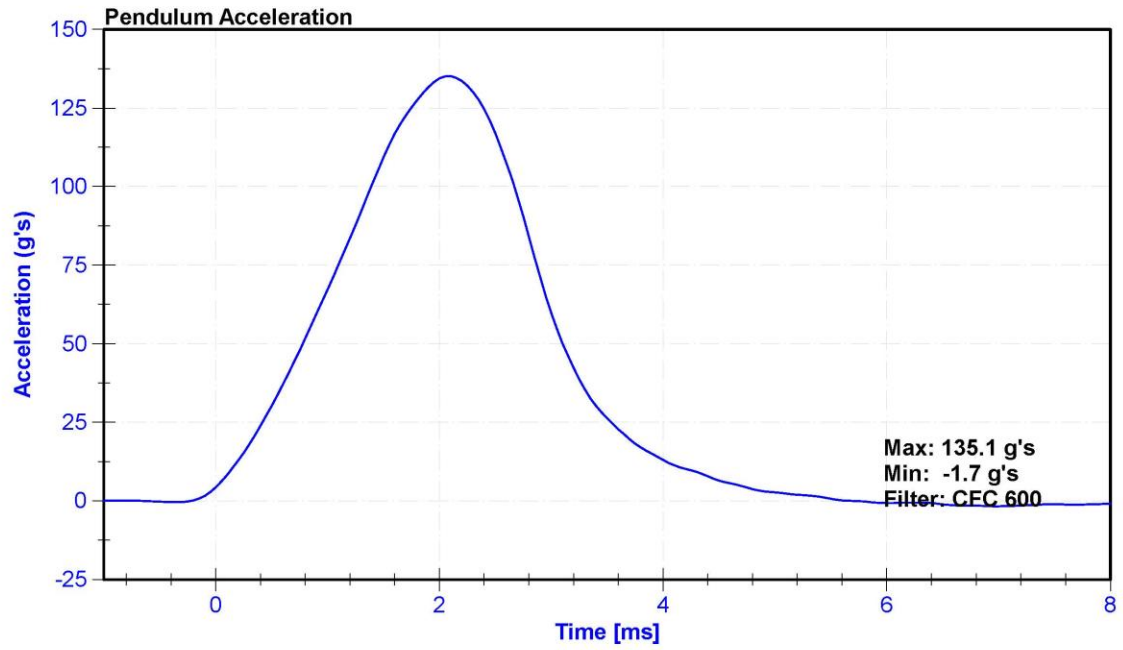
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	20.9	Pass
Humidity	10	70	%	24.0	Pass
Velocity	2.07	2.13	m/s	2.117	Pass
Resistive Force	3450	4060	N	3936.6	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	MSI 64C-2000	A278994	12/3/2020	12/3/2021





APPENDIX D

DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

Table 1 – Driver Dummy Instrumentation

Instrumentation		Axis/Location	Hybrid III 50 th S/N: 142		
			Serial Number	Manufacturer	Calibration Date
Head Accelerometers	Primary	X	P51681	ENDEVCO	11/3/2020
		Y	P64151	ENDEVCO	11/3/2020
		Z	P52114	ENDEVCO	11/3/2020
	Redundant	X	P58833	ENDEVCO	11/3/2020
		Y	P58905	ENDEVCO	11/3/2020
		Z	P63996	ENDEVCO	11/3/2020
Head Angular Rate Sensors		X	ARS-7603 GFE	DTS ARS-PRO-8K	8/4/2020
		Y	ARS-4718 GFE	DTS ARS-PRO-8K	8/4/2020
		Z	ARS-7521 GFE	DTS ARS-PRO-8K	8/4/2020
Upper Neck Load Cell		FX, Fy, Fz MX,MY, MZ	LC-2186Fx	DENTON	11/10/2020
Chest Accelerometers	Primary	X	AC-P51994	ENDEVCO	11/3/2020
		Y	AC-P51991	ENDEVCO	11/3/2020
		Z	AC-P49185	ENDEVCO	11/3/2020
	Redundant	X	AC-P51713	ENDEVCO	11/3/2020
		Y	AC-P68059	ENDEVCO	11/3/2020
		Z	AC-P78824	ENDEVCO	11/3/2020
Chest Potentiometer		X	DS-142	Servo	11/19/2020
Pelvis Accelerometer		X	AC-P58800	ENDEVCO	11/3/2020
		Y	AC-P52157	ENDEVCO	11/3/2020
		Z	AC-P52156	ENDEVCO	11/3/2020
Femur Load Cells - Left	Primary	Z	LC-136Fz1	DENTON	11/10/2020
	Redundant	Z	LC-136Fz2	DENTON	11/10/2020
Femur Load Cells - Right	Primary	Z	LC-DI4211FZ1	DENTON	11/10/2020
	Redundant	Z	LC-DI4211FZ2	DENTON	11/10/2020
Tibia Load Cells - Left	Upper	MX, MY, FZ	3643-93 Fz	DENTON	11/20/2020
	Lower	MX, MY, FZ	36440495-FZ	DENTON	11/20/2020
Tibia Load Cells – Right	Upper	MX, MY, FZ	36430362-FZ	DENTON	11/20/2020
	Lower	MX, MY, FZ	LC-672 FZ	DENTON	7/8/2020
Foot Accelerometers - Left	Rear	X	AC-P50084	ENDEVCO	11/3/2020
	Front	Z	AC-P58779	ENDEVCO	11/3/2020
Foot Accelerometers - Right	Rear	X	AC-P51872	ENDEVCO	11/3/2020
	Front	Z	AC-P58893	ENDEVCO	11/3/2020
Seat belt Load Cells	Lap		N/A	N/A	N/A
	Shoulder		N/A	N/A	N/A

Table 2 – Front Passenger Dummy Instrumentation

Instrumentation		Axis/Location	Hybrid III 5 th S/N: 140		
			Serial Number	Manufacturer	Calibration Date
Head Accelerometers	Primary	X	P79417	ENDEVCO	2/24/2021
		Y	P83335	ENDEVCO	2/24/2021
		Z	T11252	ENDEVCO	2/24/2021
	Redundant	X	P52008	ENDEVCO	2/24/2021
		Y	P52045	ENDEVCO	2/24/2021
		Z	P64149	ENDEVCO	2/24/2021
Head Angular Rate Sensors		X	ARS7370GFE	DTS ARS PRO-18K	8/4/2020
		Y	ARS14921GFE	DTS ARS PRO-18K	8/4/2020
		Z	ARS15212GFE	DTS PRO-8K 2KHz	8/4/2020
Upper Neck Load Cell		FX, Fy, Fz MX,MY, MZ	LC-1916Fx	Denton 1716A	11/23/2020
Chest Accelerometers	Primary	X	T21142	ENDEVCO	2/24/2021
		Y	P83346	ENDEVCO	2/24/2021
		Z	P49190	ENDEVCO	2/24/2021
	Redundant	X	P58794	ENDEVCO	2/24/2021
		Y	AC-P79602	ENDEVCO	2/24/2021
		Z	T11253	ENDEVCO	2/24/2021
Chest Potentiometer		X	DS-140GFE	SERVO	2/24/2021
Pelvis Accelerometer		X	P58735	ENDEVCO	2/24/2021
		Y	P51285	ENDEVCO	2/24/2021
		Z	AC-P77587	ENDEVCO	2/24/2021
Femur Load Cells - Left	Primary	Z	LC-140Fz1	DENTON	7/9/2020
	Redundant	Z	LC-140Fz2	DENTON	7/9/2020
Femur Load Cells - Right	Primary	Z	LC-124Fz1	DENTON	11/23/2020
	Redundant	Z	LC-124Fz2	DENTON	11/23/2020
Tibia Load Cells - Left	Upper	MX, MY, FZ	LC-404Fz	DENTON	11/20/2020
	Lower	MX, MY, FZ	LC-398Fz	DENTON	11/20/2020
Tibia Load Cells – Right	Upper	MX, MY, FZ	LC-364Fz	DENTON	11/20/2020
	Lower	MX, MY, FZ	LC-396Fz	DENTON	11/20/2020
Foot Accelerometers - Left	Rear	X	AC-P78959	ENDEVCO	2/24/2021
	Front	Z	AC-P83418	ENDEVCO	2/24/2021
Foot Accelerometers - Right	Rear	X	P83428	ENDEVCO	2/24/2021
	Front	Z	AC-P80265	ENDEVCO	2/24/2021
Seat belt Load Cells	Lap		N/A	N/A	N/A
	Shoulder		N/A	N/A	N/A

Table 3 – Vehicle Instrumentation

Instrumentation			Axis	Serial Number	Manufacturer	Calibration Date
Crossmember/Rear Seat Accelerometers	Left	Primary	X	1201-1000_A247191	Measurement Specialties	12/21/2020
			Z	1201-1000_A284901	Measurement Specialties	12/21/2020
		Redundant	X	1201-1000_A283682	Measurement Specialties	12/21/2020
	Right	Primary	X	1201-1000_A315097	Measurement Specialties	11/9/2020
			Z	1201-1000_A352326	Measurement Specialties	11/19/2020
		Redundant	X	1201-1000_A315774	Measurement Specialties	11/19/2020
Engine Accelerometers	Top		X	1201-1000_A373234	Measurement Specialties	11/25/2020
	Bottom		X	1201-1000_A282683	Measurement Specialties	12/4/2020