

REPORT NUMBER: NCAP-CAL-22-003

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

**Nissan Motor CO. LTD
2022 Nissan Pathfinder
Four Door SUV**

NHTSA No: M20225205

**PREPARED BY:
CALSPAN CORPORATION
P.O. BOX 400
BUFFALO, NEW YORK 104625**



April 7, 2023

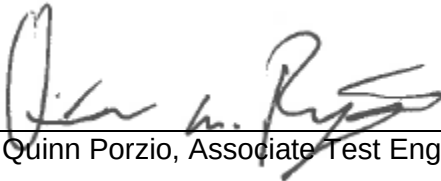
FINAL REPORT

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

This final test report was prepared for the U.S. Department of Transportation, National Highway Safety Traffic Administration, in response to Contract Number 693JJ919D000005.

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Prepared by:		Date:	<u>April 7, 2023</u>
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	Vanessa Hansen, Operations Manager		

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: _____

TECHNICAL REPORT DOCUMENTATION PAGE

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16. Abstract A 56.30 km/h (35 mph), NCAP frontal rigid barrier impact test was conducted on a 2022 Nissan Pathfinder four door SUV in accordance with the specifications of the Office of Crashworthiness Standards Laboratory Procedure for NCAP Full Frontal Rigid Barrier Impact Testing. This test was conducted to obtain data related to FMVSS Nos. 208, 212, 219 (partial), 301, and 305 performance. The test was conducted at Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on May 16, 2022. The impact velocity of the vehicle was 56.33 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 309 mm at C3 to the left side of the front bumper. 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. 137)</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>150.034</td> <td>700</td> <td>311.681</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-27.226</td> <td>52</td> <td>-15.897</td> </tr> <tr> <td>Nij</td> <td></td> <td>1</td> <td>0.310</td> <td>1</td> <td>0.451</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4,170</td> <td>1548.799</td> <td>2,620</td> <td>959.015</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4,000</td> <td>-237.206</td> <td>2,520</td> <td>-411.600</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10,008</td> <td>-691.996</td> <td>6,805</td> <td>-1051.759</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10,008</td> <td>-602.822</td> <td>6,805</td> <td>-1376.093</td> </tr> </tbody> </table>						Measurement Description	Units	Driver ATD (Serial No. 142)		Passenger ATD (Serial No. 137)		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)		700	150.034	700	311.681	Maximum Chest Compression	mm	63	-27.226	52	-15.897	Nij		1	0.310	1	0.451	Neck Tension	N	4,170	1548.799	2,620	959.015	Neck Compression	N	4,000	-237.206	2,520	-411.600	Left Femur Force	N	10,008	-691.996	6,805	-1051.759	Right Femur Force	N	10,008	-602.822	6,805	-1376.093
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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 2022 Nissan Pathfinder four door SUV at a velocity of 56.33 km/h. The test was performed at Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on May 16, 2022. 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 installed on the driver's and passenger's shoulder belts to measure dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 142) and the right-front passenger (position 2) ATD (Serial No. 137) 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 96.9 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 309 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. Left knee contacted the knee air bag and right knee contacted knee airbag and bolster.

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)	150.034	0.310	1548.799	-237.206	37.240	-27.226	-691.996	-602.822
Passenger (5 th)	311.681	0.451	959.015	-411.600	42.056	-15.897	-1051.759	-1376.093

GENERAL COMMENTS:

1. P1 (Driver) serial number - 142
2. P2 (Passenger) serial number - 137

Data Anomalies:

- Engine Top X Acceleration, Questionable data after 30 ms
- Engine Bottom X Acceleration, Questionable data after 74 ms
- Passenger Head Z Primary, Spike at 139 ms not seen in Redundant

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: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
 Test Date: 05/16/2022

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20225205	Traction Control System (TCS)	Yes
Model Year	2022	Power Steering	Yes
Make	Nissan	Power Window Auto-Reverse	No
Model	Pathfinder	Driver Frontal Airbag	Yes
Body Style	SUV	Driver Curtain Airbag	Yes
VIN	5N1DR3BD8NC239595	Driver Head/Torso Airbag	No
Body Color	Gray	Driver Torso Airbag	No
Odometer Reading (km /mi)	171 miles	Driver Torso/Pelvis Airbag	Yes
Engine Displacement (L)	3.5 L	Driver Pelvis Airbag	No
Type / No. Cylinders	V6	Driver Knee Airbag	Yes
Engine Placement	Transverse	Front Pass. Frontal Airbag	Yes
Transmission Type	Automatic	Front Pass. Curtain Airbag	Yes
Transmission Speeds	9-Speed	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	Yes	Front Pass. Knee Airbag	Yes
Running Boards	No	Driver Pretensioner	Yes
Tilt Steering Wheel	Yes	Driver Load Limiter	Yes
Power Seats	Yes	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)	2676
Date of Manufacture	03/22	GAWR Front (kg)	1335
		GAWR Rear (kg)	1530

VEHICLE SEATING AND WEIGHT CAPACITY DATA

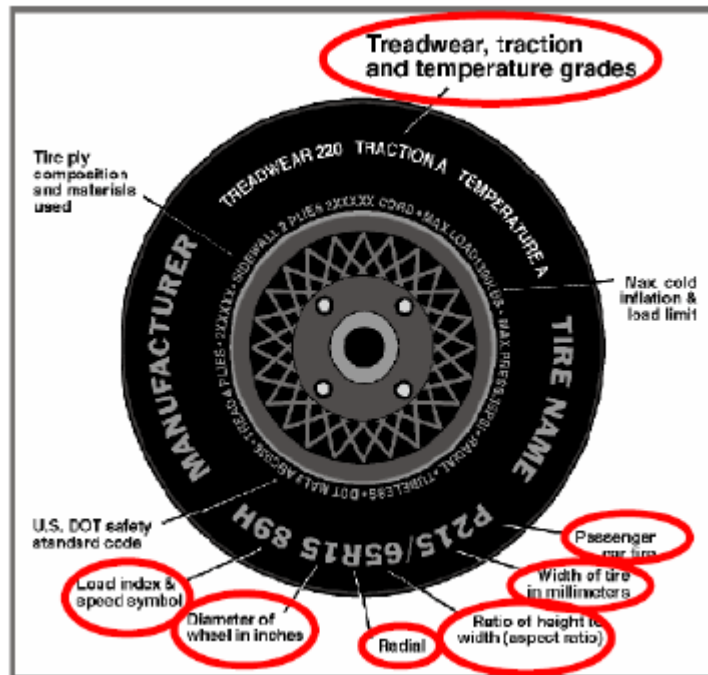
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bucket	Bench	
Number of Occupants	2	2	3	7
Capacity Wt. (VCW) (kg)				521
Cargo Wt. (RCLW) (kg)				44.72

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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
 Test Date: 05/16/2022

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



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	230	230
Recommended Tire Size	255/60R18	255/60R18
Tire Size on Vehicle	255/60R18	255/60R18
Tire Manufacturer	Toyo	Toyo
Tire Model	Open Country A46	Open Country A46
Treadwear	300	300
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Steel, 2 Polyester, 1 Nylon	2 Steel, 2 Polyester, 1 Nylon
Load Index / Speed Symbol	108H	108H
Tire Material	Rubber	Rubber
DOT Safety Code Left	73JC9M43321	73JC9M43321
DOT Safety Code Right	73JC9M43321	73JC9M43321

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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
 Test Date: 05/16/2022

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	463	590		630	522	
Right	kg	549	474		580	523	
Ratio	%	48.7	51.3		53.7	46.3	
Totals	kg	1012	1064	2076	1210	1045	2255

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	2076	(A)
Weight of 1 P572E ATD & 1 P572O ATD	kg	142	(B)
Rated Cargo / Luggage Weight (RCLW)	kg	44.7	(C)
Calculated Vehicle Target Weight (TVTW)	kg	2262.7	(A+B+C)

TEST VEHICLE ATTITUDES AND CG

Condition	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	921	928	973	973	1484
As Tested	mm	915	915	951	950	1342
Post-Test	mm	915	895	985	960	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2895
Total Vehicle Length at Left Side	mm	4954
Total Vehicle Length at Centerline	mm	5005
Total Vehicle Length at Right Side	mm	4954
Weight of Ballast in Cargo Area	kg	0
Weight of Vehicle Components Removed	kg	32
Amount of Stoddard Solvent in Fuel Tank	L	65.1

LIST OF COMPONENTS REMOVED TO MEET TEST WEIGHT:

Trunk carpeting, jack, tail light, spare tire

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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
 Test Date: 05/16/2022

TARGET VEHICLE STRUCTURAL MEASUREMENT

No.	Description	Pre-Test
1	Total Length	5005
2	Total Width	1950
3*	Bumper Top Height	641
4*	Bumper Bottom Height	473
5*	Longitudinal Member Top Height	360
6	Distance Between Longitudinal Members	958
7	Longitudinal Member Width	91
8*	Engine Top Height	971
9*	Engine Bottom Height	229
10	Engine and Gearbox Width	466
11	Front Bumper-Engine Distance	588
12*	Front Shock Absorber Fixing Height	991
13*	Bonnet Leading Edge Height	1029
14	Front Shock Absorber Fixing Width	1337
15	Front Bumper – Front Axle Distance	982
16	Front Axle – A Pillar Distance	579
17	A-Pillar – B-Pillar Distance	1108
18	B-Pillar – Rear Axle Distance	1210
19	B-Pillar – C-Pillar Distance	1057
20*	Roof Sill Bottom Height	1633
21*	Roof Sill Top Height	1689
22*	Floor Sill Bottom Height	449
23*	Floor Sill Top Height	480

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

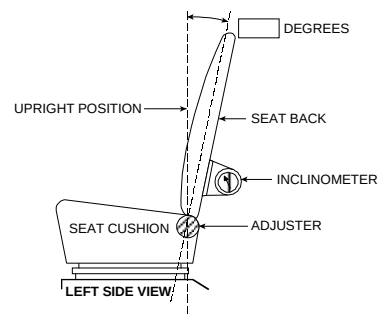
DATA SHEET NO. 2 SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2022 Nissan Pathfinder four door SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
Test Date: 05/16/2022

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	5.2
Passenger Seat Back Angle	0.3

SEAT FORE / AFT POSITIONS

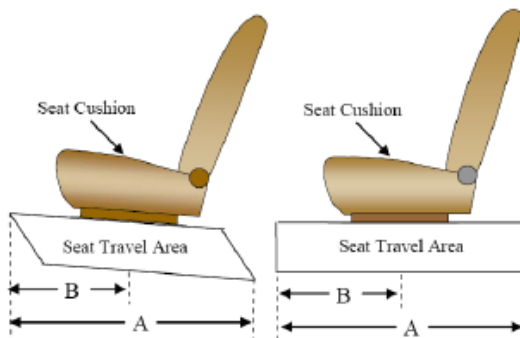
The driver's seat was positioned at the mid-point of fore/aft travel at its lowest position. The passenger's seat was positioned at the most forward position of fore/aft travel. Zero is defined as the forward most position.

Seating Position	Total Fore / Aft Travel	Placed in Position #
Driver Seat	309	155
Passenger Seat	27 (0-26)	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: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Frontal Barrier Impact Test

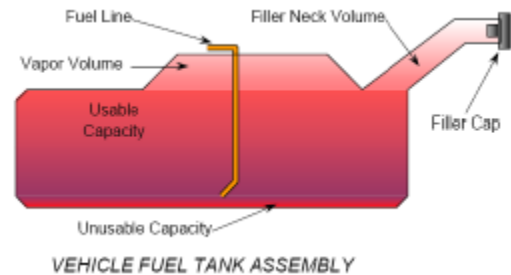
NHTSA No.: M20225205
 Test Date: 05/16/2022

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	70
Usable Capacity of "Optional Tank"	N/A
92%-94% of Usable Capacity	64.4 – 65.8
Actual Amount of Solvent Used	65.1
1/3 of Usable Capacity	23.1

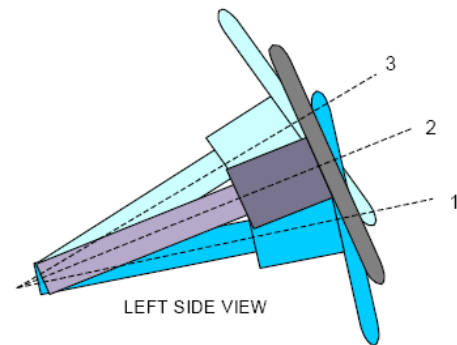
FUEL PUMP

The vehicle is equipped with an electric fuel pump. The fuel filler neck is on the left 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 ASSEMBLY

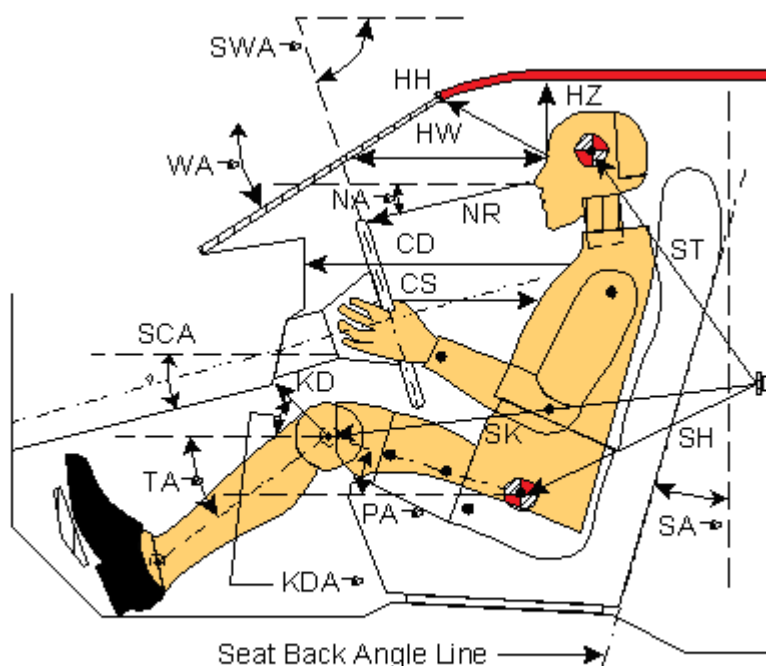
STEERING COLUMN POSITIONS

Description	Degrees	Fore / Aft Position (mm)
Lowermost position No. 1	22.1	
Geometric center position No. 2	25.0	
Uppermost position No. 3	27.8	
Telescoping Steering Wheel Travel		45
Test Position	25.0	22.5

DATA SHEET NO. 3 DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
 Test Date: 05/16/2022



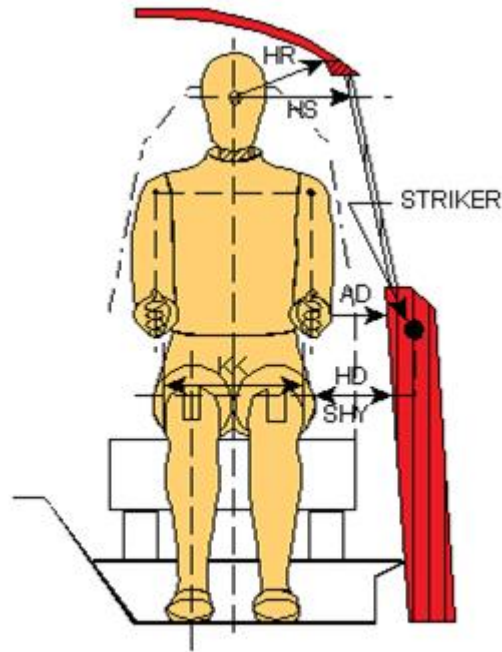
Left Side View

Code	Measurement Description	Driver (SN: 142)		Passenger (SN: 137)	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		60.0		
SWA°	Steering Wheel Angle		25.1		
SCA°	Steering Column Angle		64.9		
SA°	Seat Back Angle (on headrest post)		5.2		0.3
HZ	Head to Roof (Z)	240	90.0	289	90.0
HH	Head to Header	404	31.1	377	51.0
HW	Head to Windshield	725	0.0	714	0.1
NR	Nose to Rim / Dash	383	6.6	391	25.0
CD	Chest to Dash	525		348	
CS	Chest to Steering Hub	248	1.2		
RA	Rim to Abdomen	193	0.5		
KDL	Left Knee to Dash	168	33.8	84	44.6
KDR	Right Knee to Dash	145	37.4	94	45.3
PA°	Pelvic Angle		21.2		20.5
TA°	Tibia Angle		37.3		45.6
SK	Striker to Knee	645	6.0	773	7.8
ST	Striker to Head	497	69.6	482	52.1
SH	Striker to H-Point	335	37.4	497	24.2

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
 Test Date: 05/16/2022



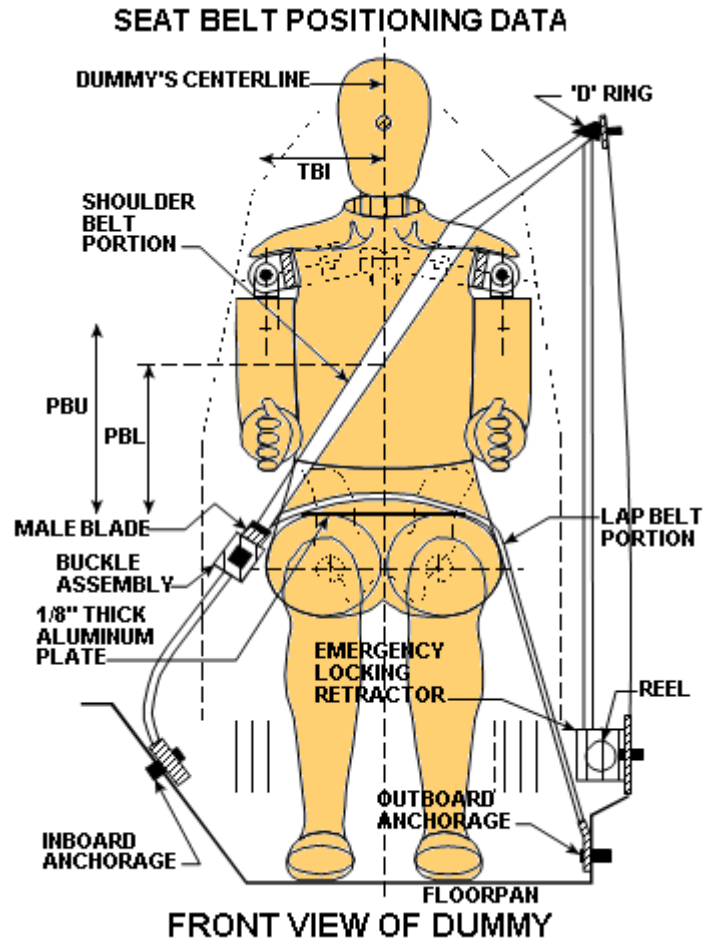
Front View

Code	Description	Driver (SN: 142) (mm)	Passenger (SN: 137) (mm)
AD	Arm to Door	131	87
HD	H-Point to Door	145	255
HR	Head to Side Header	266	322
HS	Head to Side Window	393	425
KK	Knee to Knee	370	165
SHY	Striker to H-Point (Y Direction)	95	335
AA	Ankle to Ankle	375	168

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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
Test Date: 05/16/2022



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU — Top surface of reference to belt upper edge	mm	335	307
PBL — Top surface of reference to belt lower edge	mm	250	203

BELT LENGTH DATA

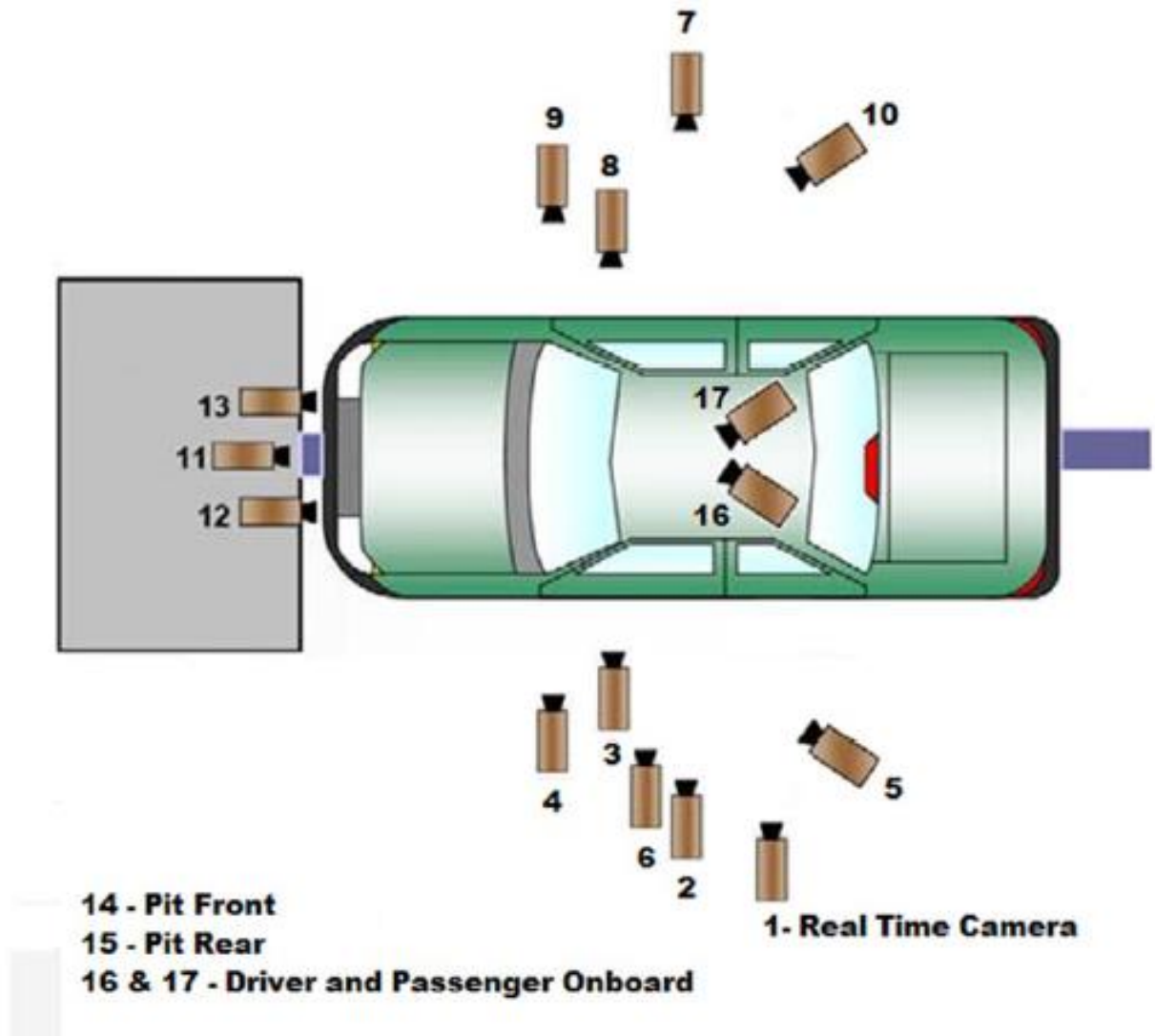
Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	960	1015
Lap Belt Length as measured on ATD	mm	685	795
Remainder of belt on reel	mm	985	820
Total belt length for continuous webbing systems	mm	2630	2630

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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
Test Date: 05/16/2022

CAMERA POSITIONS FOR FRONTAL IMPACTS



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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
 Test Date: 05/16/2022

CAMERA LOCATIONS

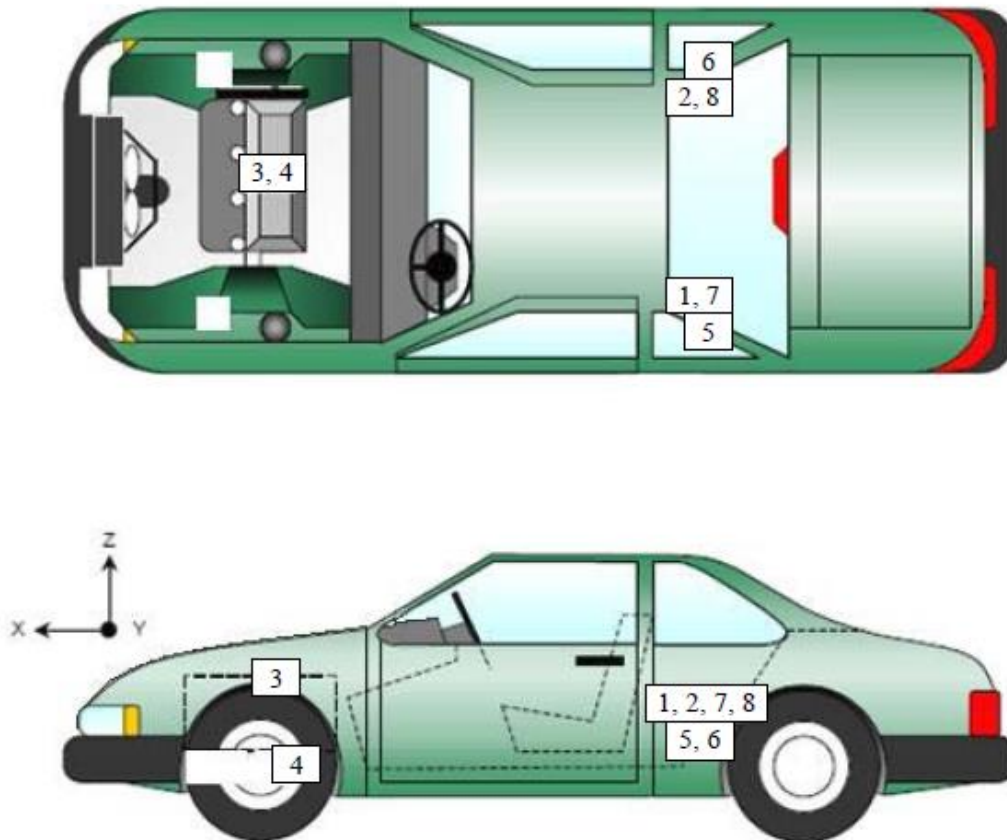
No.	Camera View	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall	-	-	-		60
2	Left Overall	-2053	-8077	-1591	24	1000
3	Driver Close-Up	-1548	-7077	-1678	50	1000
4	Left Front Half	-920	-6735	-1612	28	1000
5	Left Angle	-4153	-4463	-2416	50	1000
6	Steering Column	-1766	-8072	-2412	75	1000
7	Right Overall	-2074	8721	-1592	24	1000
8	Passenger Close-Up	-1542	8242	-2084	50	1000
9	Right Front Half	-1102	6679	-1445	28	1000
10	Right Angle	-4161	4798	-2306	50	1000
11	Windshield	1150	0	-3471	12.5	1000
12	Driver Windshield	940	-400	-2280	25	1000
13	Passenger Windshield	990	400	-2280	25	1000
14	Pit Front	-1147	0	2340	12.5	1000
15	Pit Rear	-2450	0	2343	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: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
 Test Date: 05/16/2022



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Accelerometer – X Direction	2005	-375	132
2	Right Rear Accelerometer – X Direction	2039	373	172
3	Engine Top X	4079	125	-297
4	Engine Bottom X	4185	260	465
5	Left Rear Accelerometer – Z Direction	2005	-375	132
6	Right Rear Accelerometer – Z Direction	2039	373	172
7	Left Rear Accelerometer – X Direction Redundant	2005	-375	132
8	Right Rear Accelerometer – X Direction Redundant	2039	373	172

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

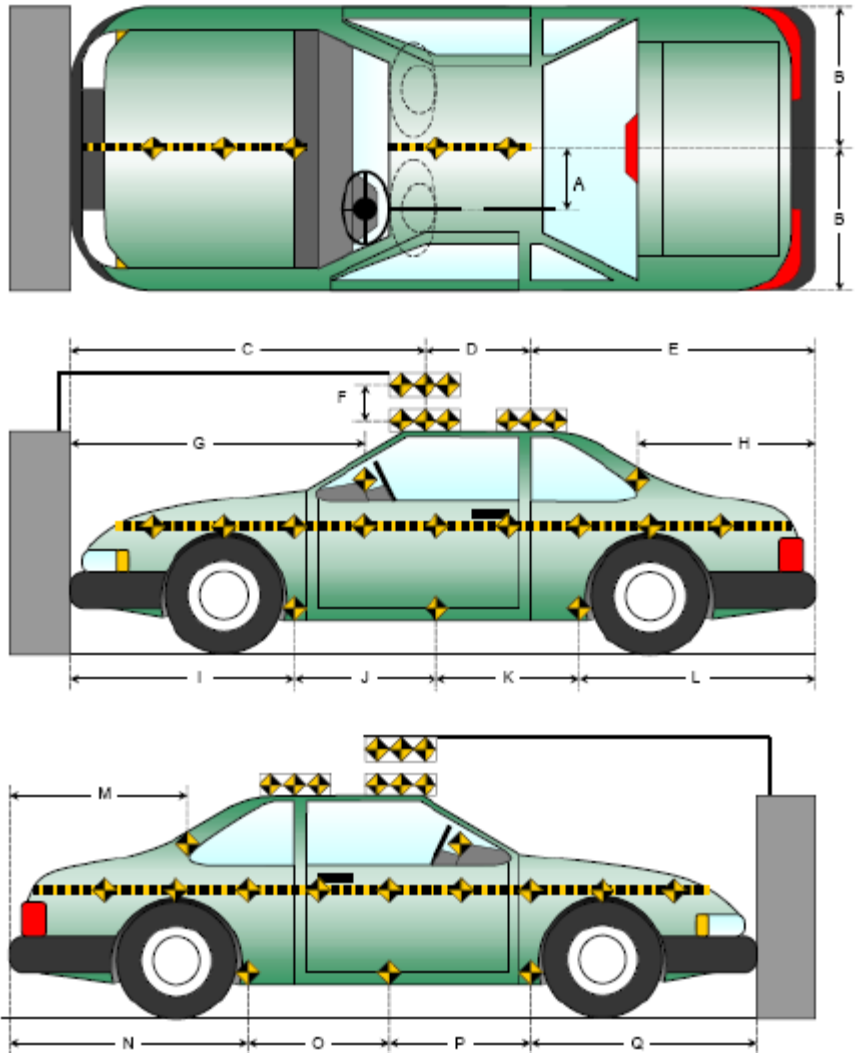
DATA SHEET NO. 8
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
 Test Date: 05/16/2022

Item	Value
A	397
B	975
C	2905
D	610
E	1490
F	192
G	1829
H	1362
I	1463
J	947
K	963
L	1632
M	1363
N	1630
O	967
P	942
Q	1466

All units in millimeters



DATA SHEET NO. 9 **LOAD CELL LOCATIONS ON FIXED BARRIER**

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
 Test Date: 05/16/2022

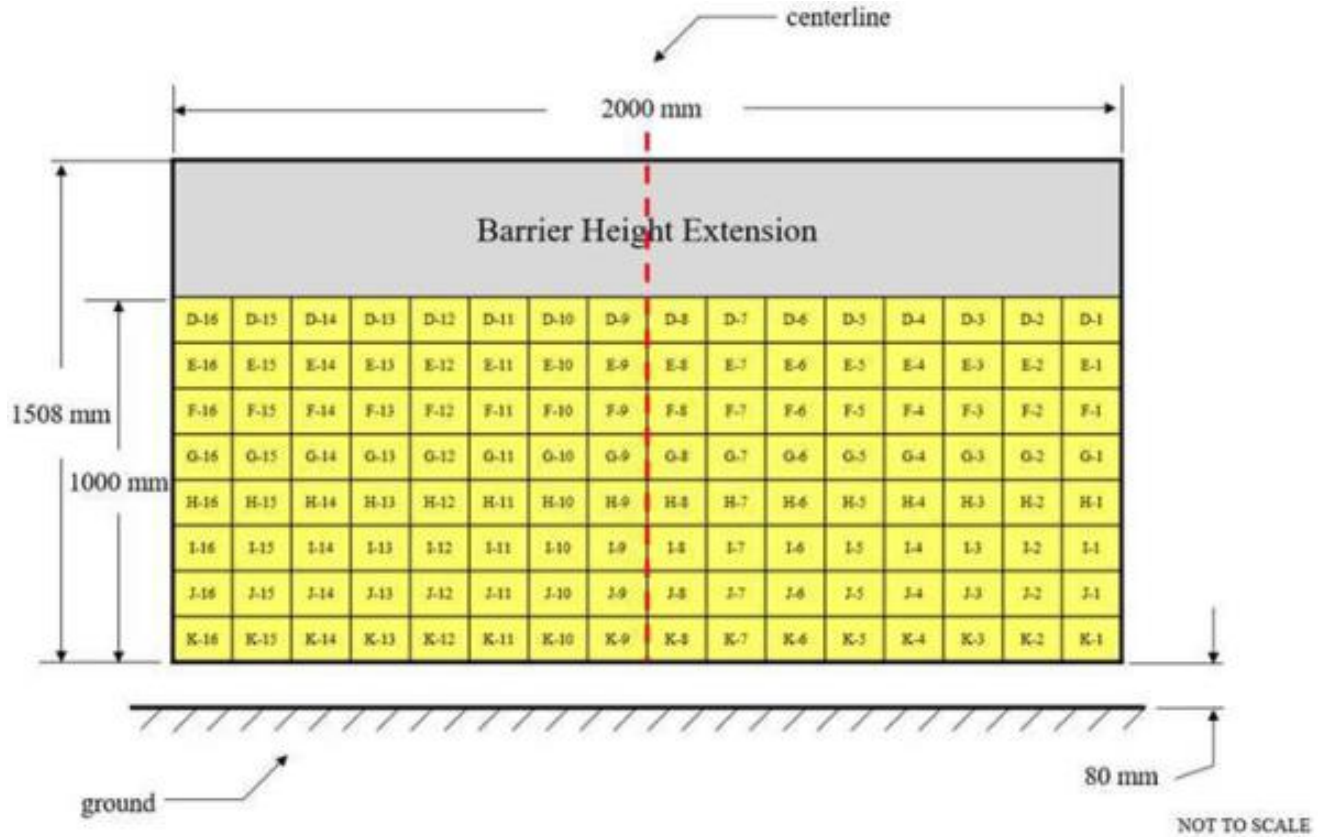


Figure 1 - Load Cell Locations on a 128-Load Cell Barrier with Plywood Height Extension*
 Please note above diagram is not actual representation of load cell barrier used.

DATA SHEET NO. 10
TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
 Test Date: 05/16/2022

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: 2022 Nissan Pathfinder four door SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
Test Date: 05/16/2022

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

Description	Driver	Passenger
Dummy Type / Serial No.	P572E 50 th Male / 142	P572O 5 th Female / 137
Head Contact	Headrest & Frontal airbag	Headrest & Frontal airbag
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 bolster	Knee airbag

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger	Other
Locked / Unlocked Doors	Unlocked	Unlocked	
Front Door Opening	Closed & Operational	Closed & Operational	
Rear Door Opening	Closed & Operational	Closed & Operational	
Trunk/Hatch/Tailgate Opening	Closed & Operational	Closed & Operational	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	Cracked by airbag on passenger side & minor cracks on driver side.
Window Damage	No Damage, window shifted in door
Other	None

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	2054
Center	mm	2009
Right Side	mm	2048
Average	mm	2037

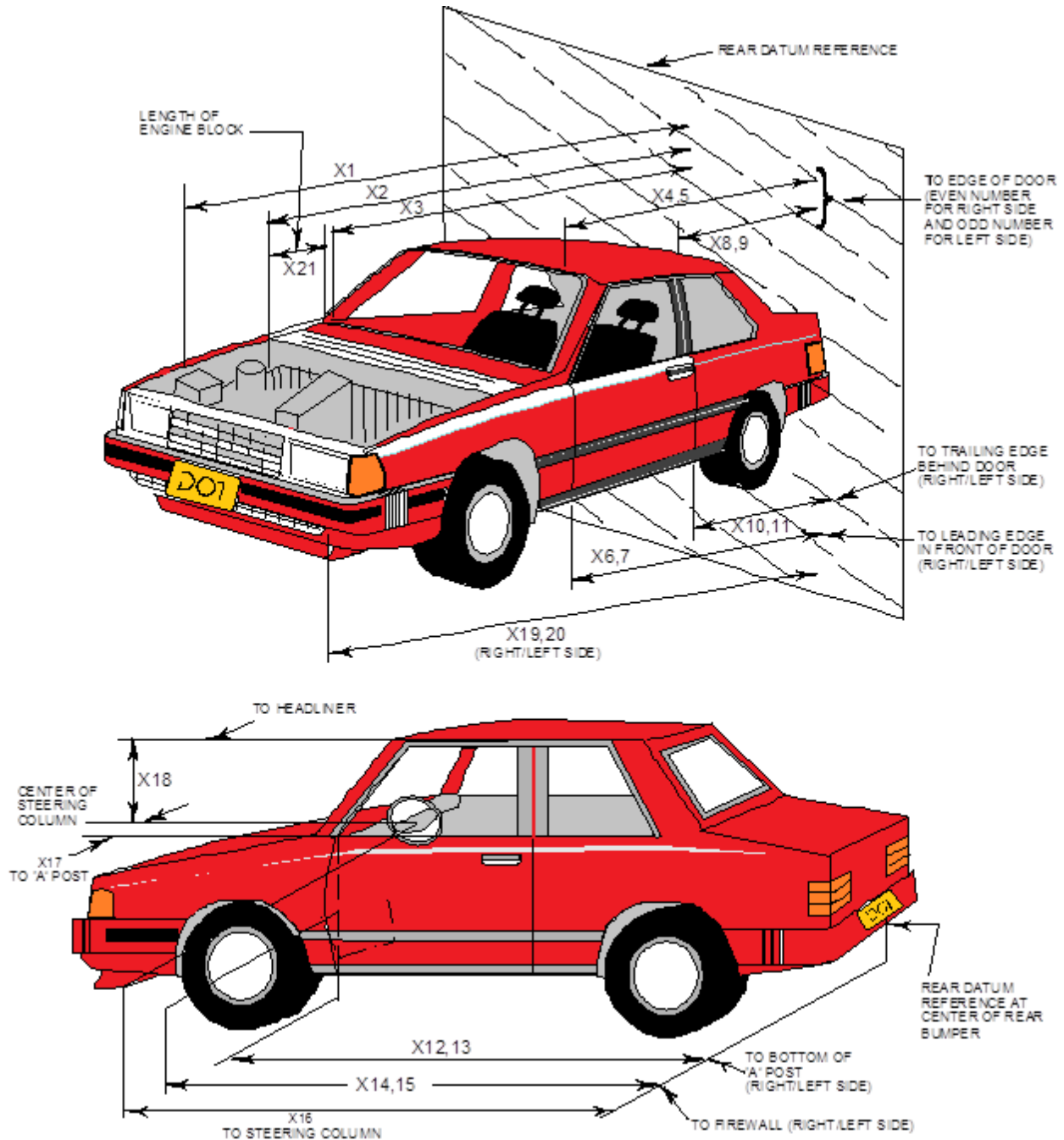
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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: 2022 Nissan Pathfinder four door SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
Test Date: 05/16/2022



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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
 Test Date: 05/16/2022

No.	Measurement Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	5005	4698	-307
2	Rear Surface of Vehicle (RSOV) to Front of Engine	4417	4192	-225
3	RSOV to Firewall	3989	3974	-15
4	RSOV to Upper Leading Edge of Right Door	3436	3436	0
5	RSOV to Upper Leading Edge of Left Door	3440	3438	-2
6	RSOV to Lower Leading Edge of Right Door	3492	3492	0
7	RSOV to Lower Leading Edge of Left Door	3493	3494	1
8	RSOV to Upper Trailing Edge of Right Door	2340	2338	-2
9	RSOV to Upper Trailing Edge of Left Door	2340	2339	-1
10	RSOV to Lower Trailing Edge of Right Door	2381	2382	1
11	RSOV to Lower Trailing Edge of Left Door	2382	2383	1
12	RSOV to Bottom of "A" Post of Right Side	3378	3378	0
13	RSOV to Bottom of "A" Post of Left Side	3377	3378	1
14	RSOV to Firewall, Right Side	3776	3765	-11
15	RSOV to Firewall, Left Side	3773	3752	-21
16	RSOV to Steering Column	3005	3080	75
17	Center of Steering Column to "A" Post	311	305	-6
18	Center of Steering Column to Headliner	454	483	29
19	RSOV to Right Side of Front Bumper	4974	4684	-290
20	RSOV to Left Side of Front Bumper	4975	4760	-215
21	Length of Engine Block	296	296	0
RD	RSOV to Right Side of Dash Panel	3207	3208	1
CD	RSOV to Center of Dash Panel	3111	3115	4
LD	RSOV to Left Side of Dash Panel	3206	3210	4

*UR= Unrecoverable data point
 All Dimensions in mm

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2022 Nissan Pathfinder four door SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
Test Date: 05/16/2022

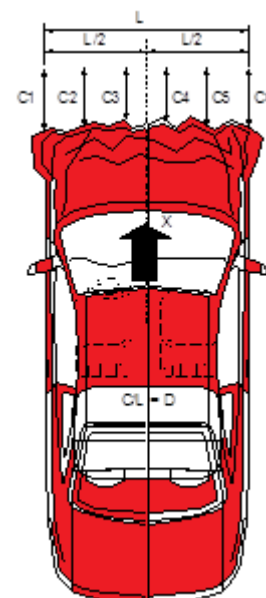
VEHICLE INFORMATION

VIN: 5N1DR3BD8NC239595
Vehicle Size Category: MPV

Wheelbase (mm): 2895
Test Weight (kg): 2255

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): 56.33
Velocity Change (km/h): 67.67
Time of Separation (ms): 148



CRUSH PROFILE

Collision Deformation Classification: 12FDEW2
Midpoint of Damage: C3
Damage Region Length (mm): 1538
Impact Mode: Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	4789	4505	284
C2	Crush Zone 2 at Left Side	mm	4961	4658	303
C3	Crush Zone 3 at Left Side	mm	5001	4692	309
C4	Crush Zone 4 at Right Side	mm	5001	4692	309
C5	Crush Zone 5 at Right Side	mm	4959	4652	307
C6	Crush Zone 6 at Right Side	mm	4787	4558	229
L	C1 to C6	mm	1489	1538	-49

DATA SHEET NO. 14
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2022 Nissan Pathfinder four door SUV
Test Program: NCAP Frontal Barrier Impact Test

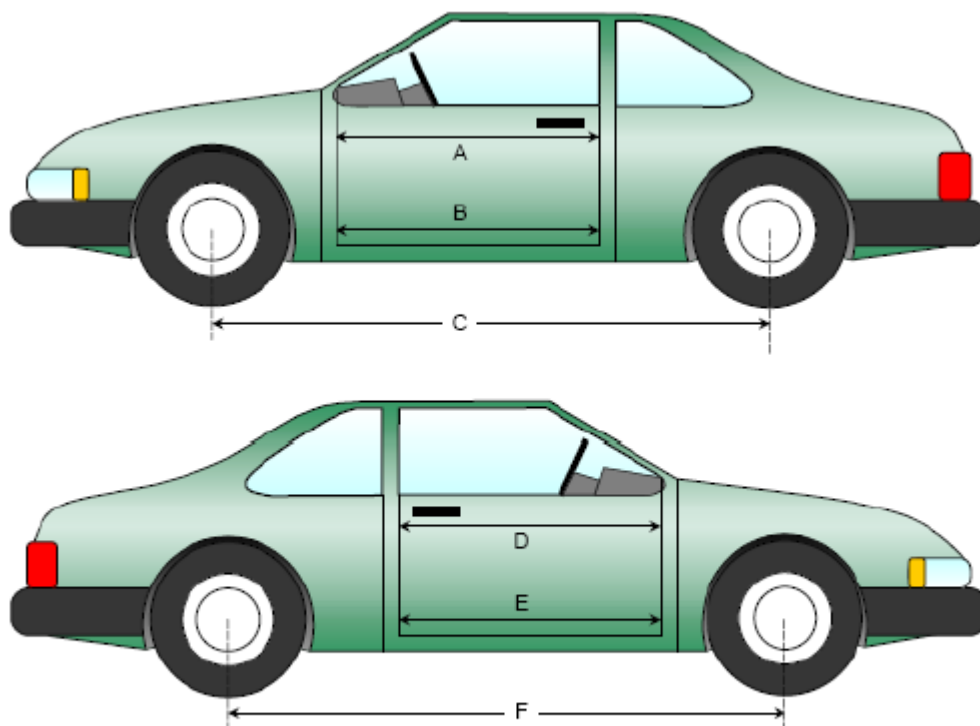
NHTSA No.: M20225205
Test Date: 05/16/2022

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1043	1045	2
B	Left Side Lower	mm	954	955	1
D	Right Side Upper	mm	1044	1045	1
E	Right Side Lower	mm	957	958	1

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2895	2859	-36
F	Right Side Wheelbase	mm	2895	2906	11



Left & Right Side Views

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

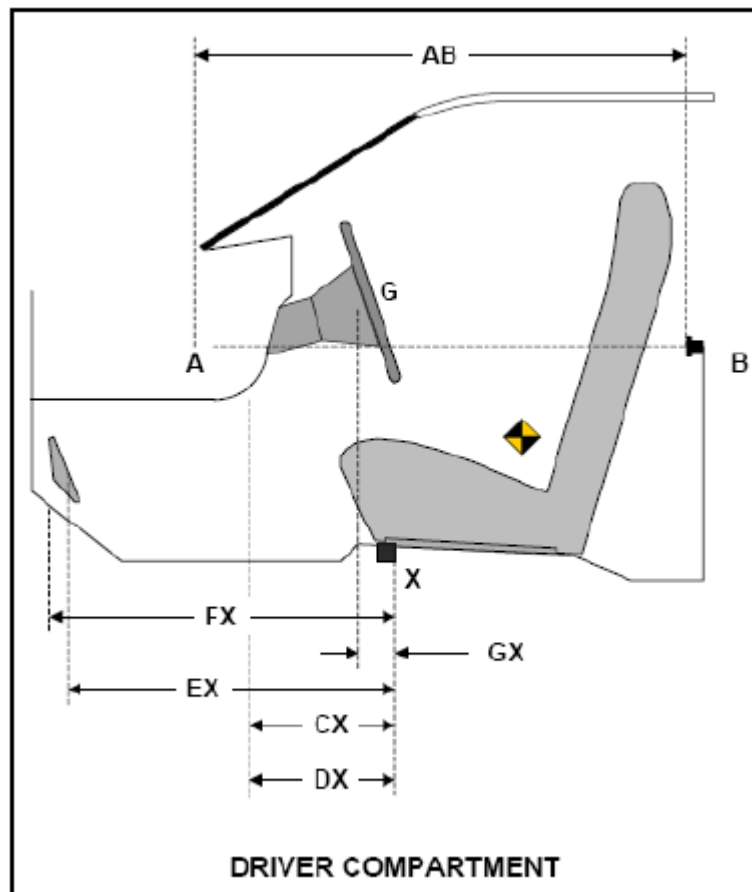
Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
 Test Date: 05/16/2022

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	808	808	0
CX	Left Knee Bolster to X	mm	218	219	1
DX	Right Knee Bolster to X	mm	197	179	-18
EX	Brake Pedal to X	mm	484	525	41
FX	Foot Rest to X	mm	469	469	0
GX	Center of Steering Column Wheel Hub to X	mm	-21	58	79

X = Front of Seat Track (Stationary)



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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
 Test Date: 05/16/2022

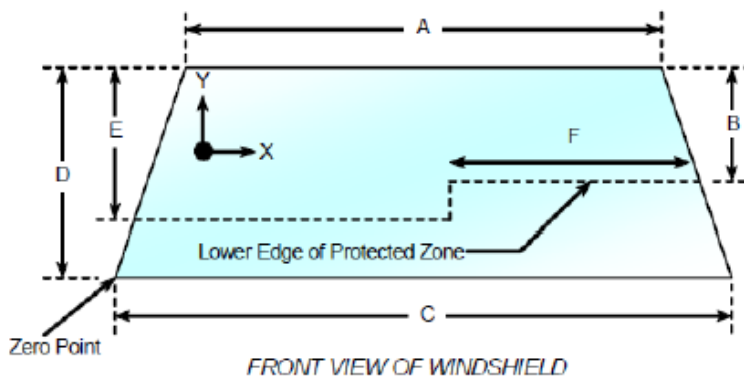
Windshield Mounting Details: A 0.8 mm trim surrounds the top and side of windshield while a plastic shroud is on the bottom.

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	2472	2319	93.8
Right Side	2472	2472	100
Total	4944	4791	96.9



Item	Units	Value
A	mm	1382
B	mm	453
C	mm	1438
D	mm	1062
E	mm	551
F	mm	643

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: 2022 Nissan Pathfinder four door SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
Test Date: 05/16/2022

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21.9 ° C

Test Time: 10:36 AM

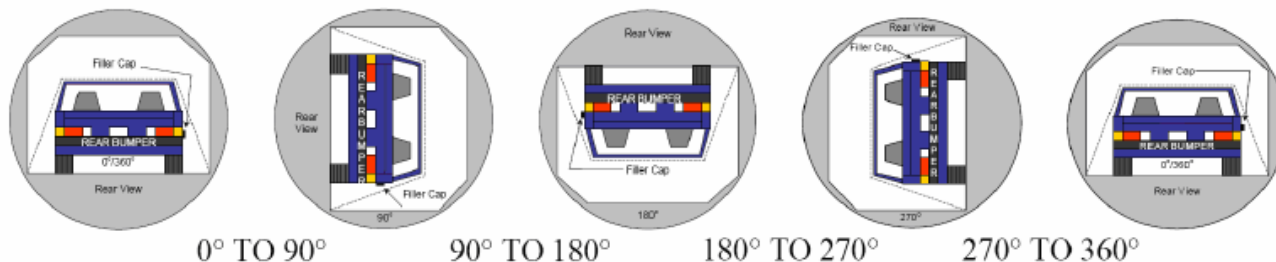
STODDARD SOLVENT SPILLAGE MEASUREMENTS

- 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: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
 Test Date: 05/16/2022



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°	68	300	368
90° to 180°	67	300	367
180° to 270°	63	300	363
270° to 360°	65	300	365

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	

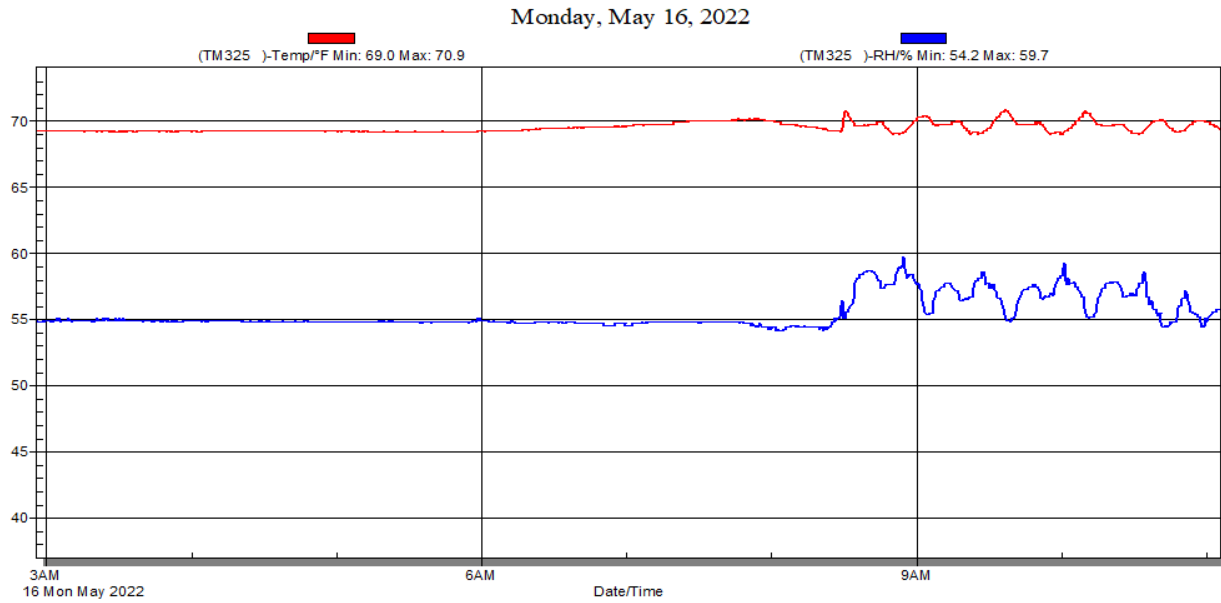
SOLVENT SPILLAGE LOCATION TABLE

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: 2022 Nissan Pathfinder four door SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20225205
Test Date: 05/16/2022



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

APPENDIX A
PHOTOGRAPHS

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Fig.	Description	Page
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Fig.	Description	Page
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82	2022 Nissan Pathfinder Frontal Impact Event	A-45
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¹**NOTE:** *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.*

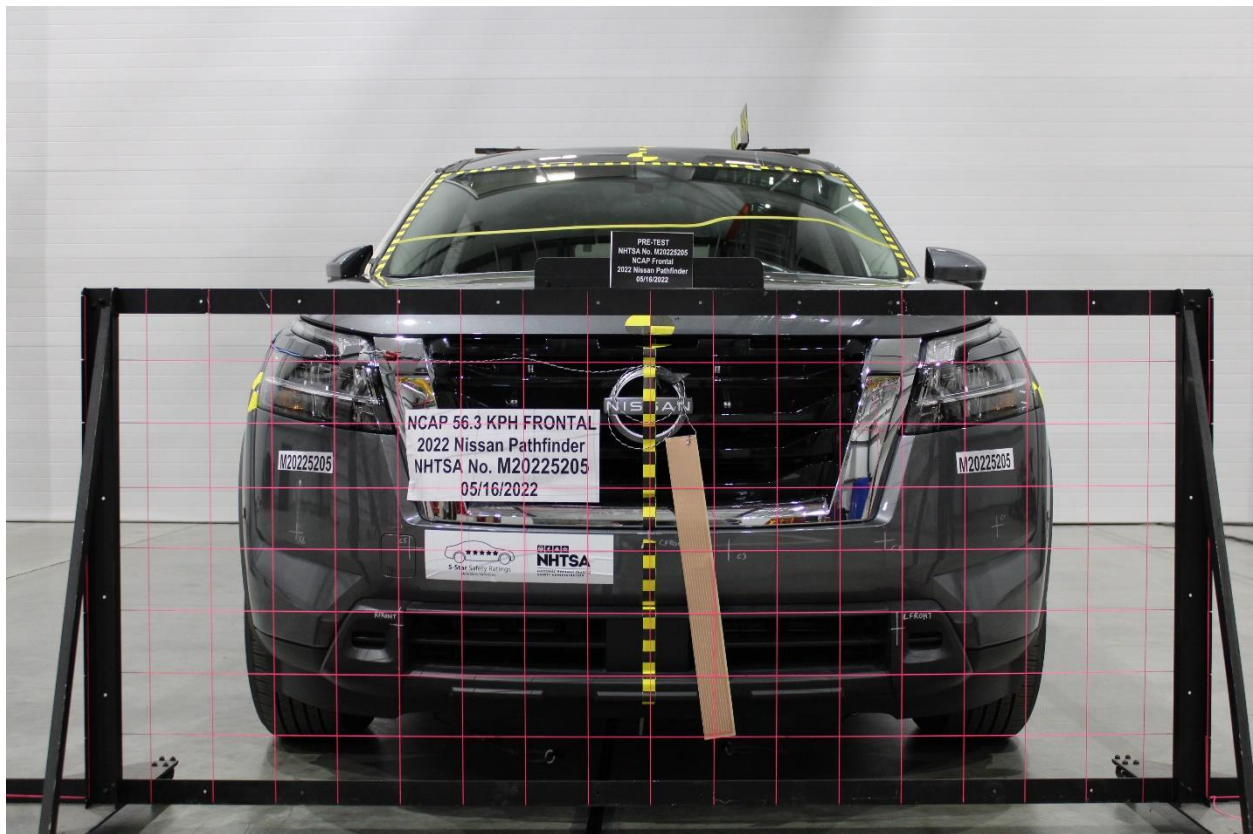


Figure A-1: Load Cell Location



Figure A-2: Pre-Test Load Cell Wall



Figure A-3: Post-Test Load Cell Wall

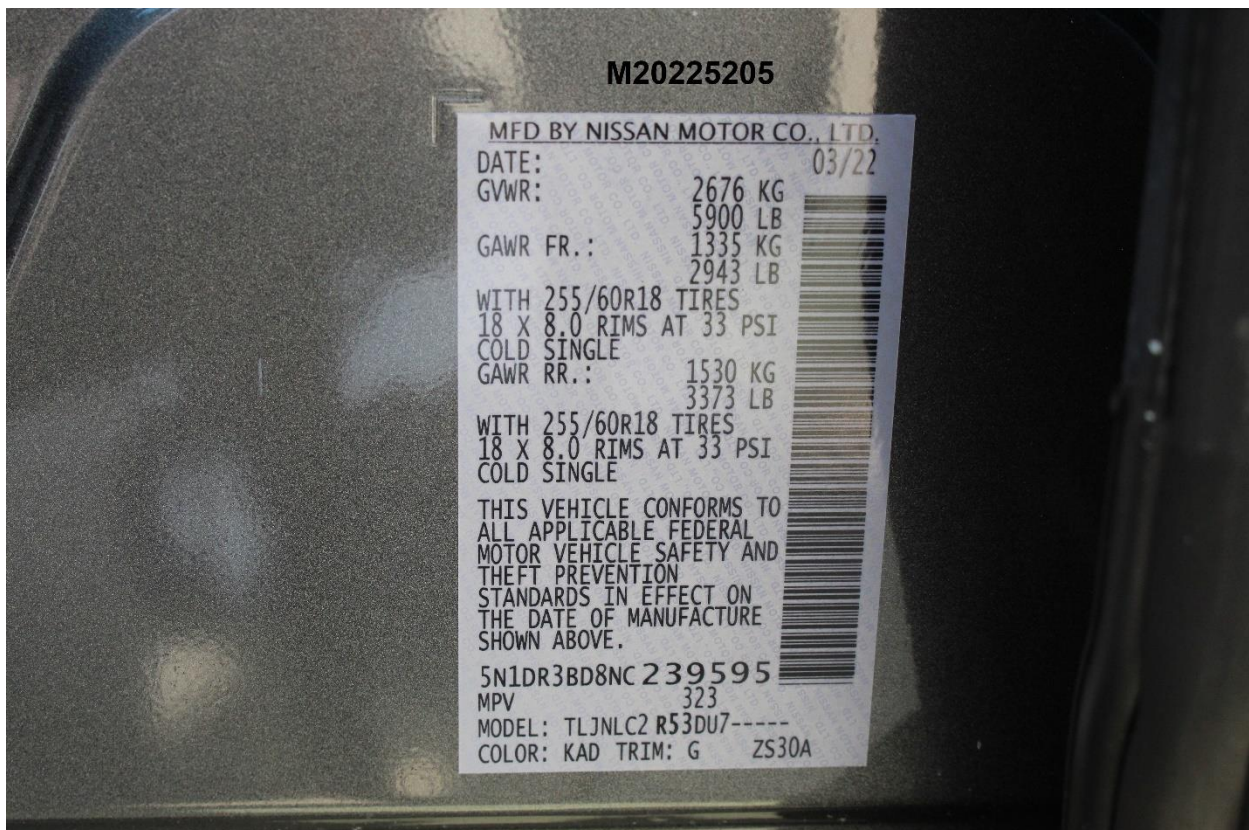


Figure A-4: Manufacturer's Label

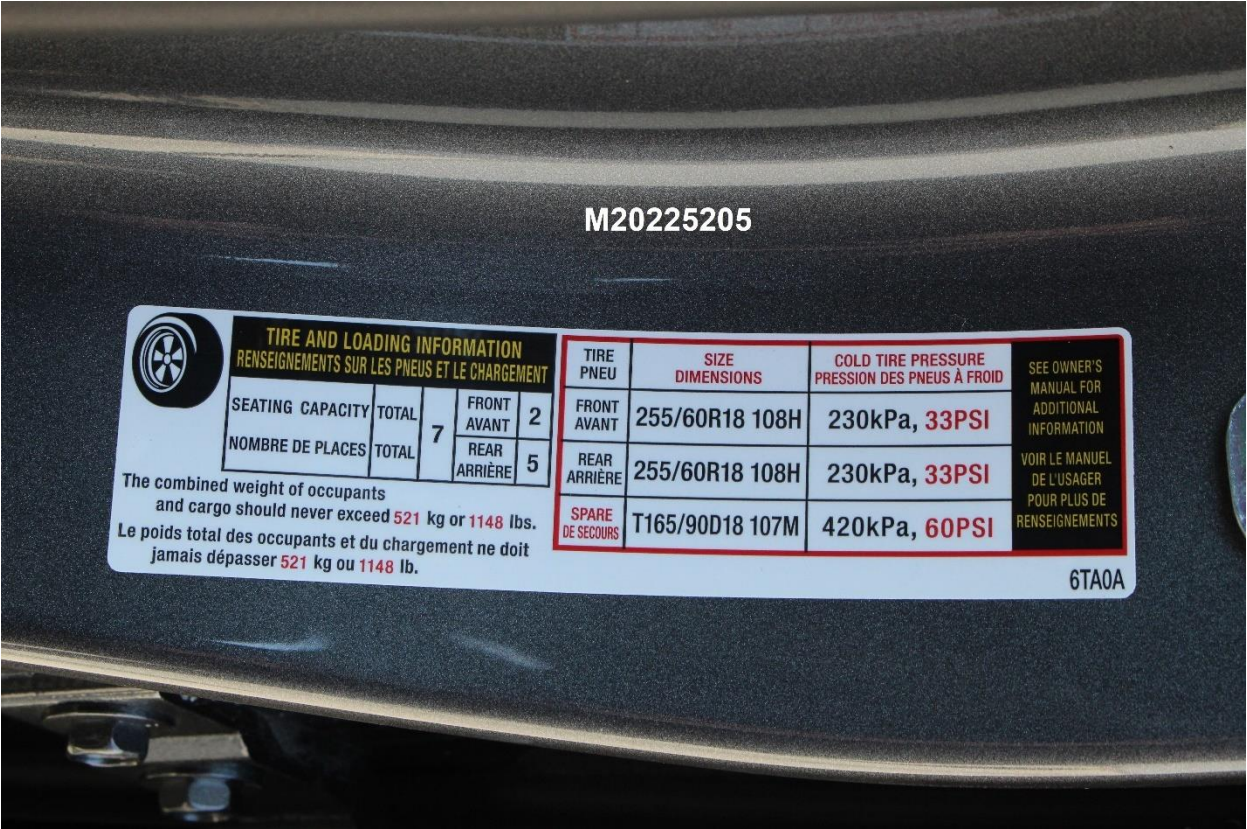


Figure A-5: Tire Placard



Figure A-6: 2022 Nissan Pathfinder Frontal As Delivered



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



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

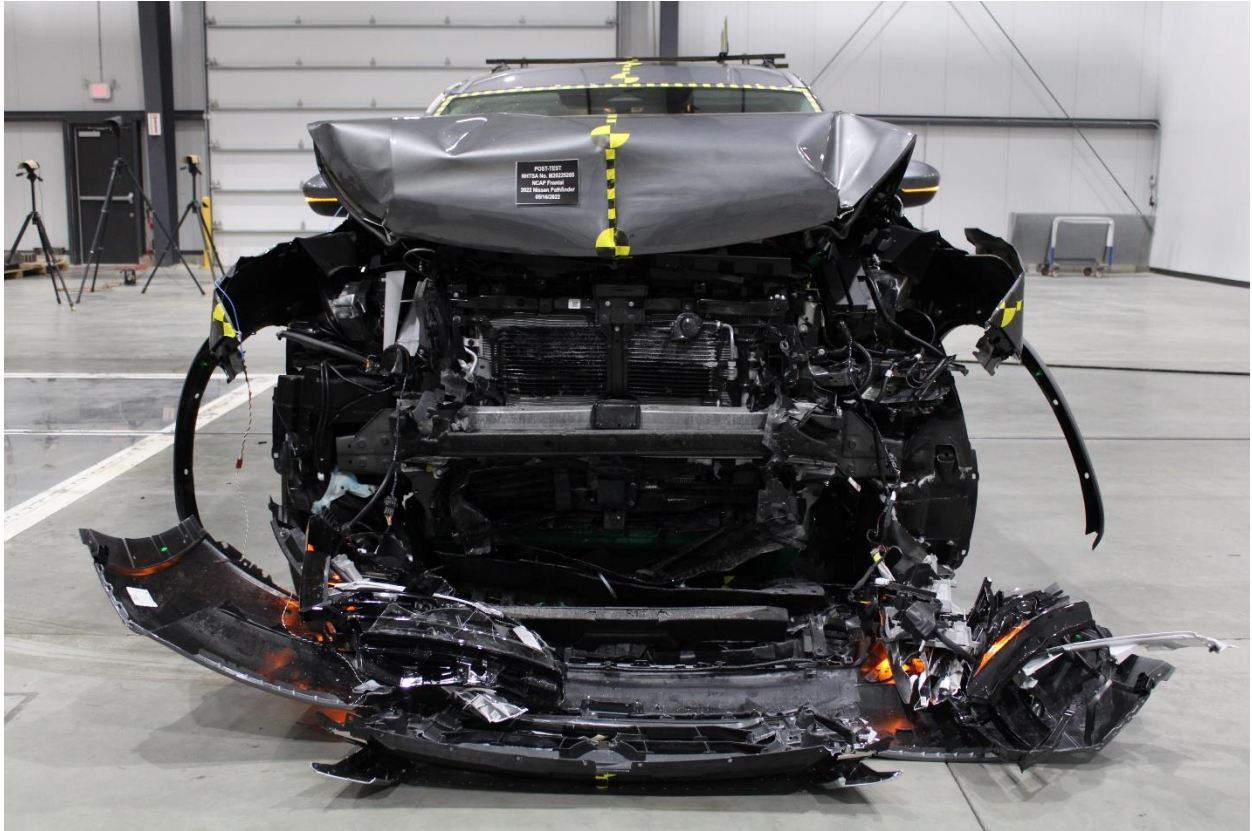


Figure A-9: Post-Test Front View of Test Vehicle



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

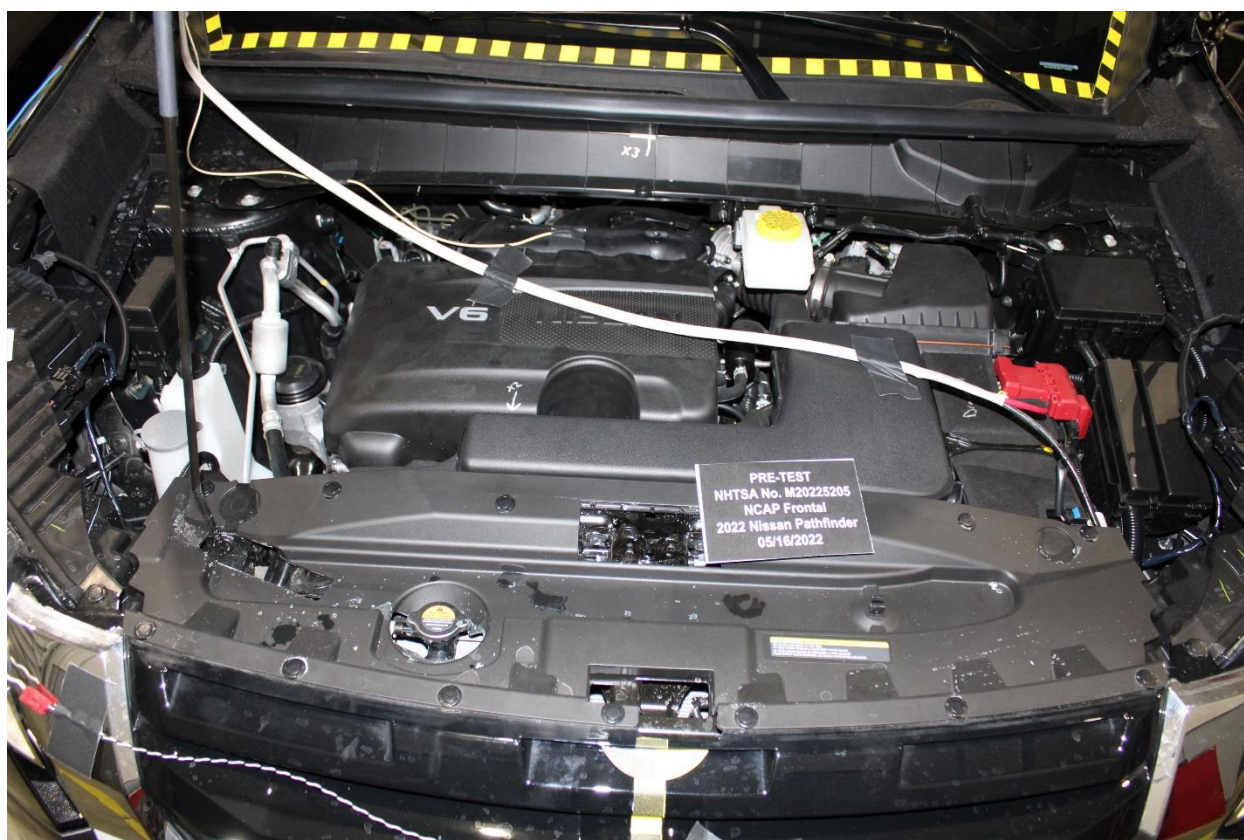


Figure A-20: Pre-Test Engine Compartment View



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

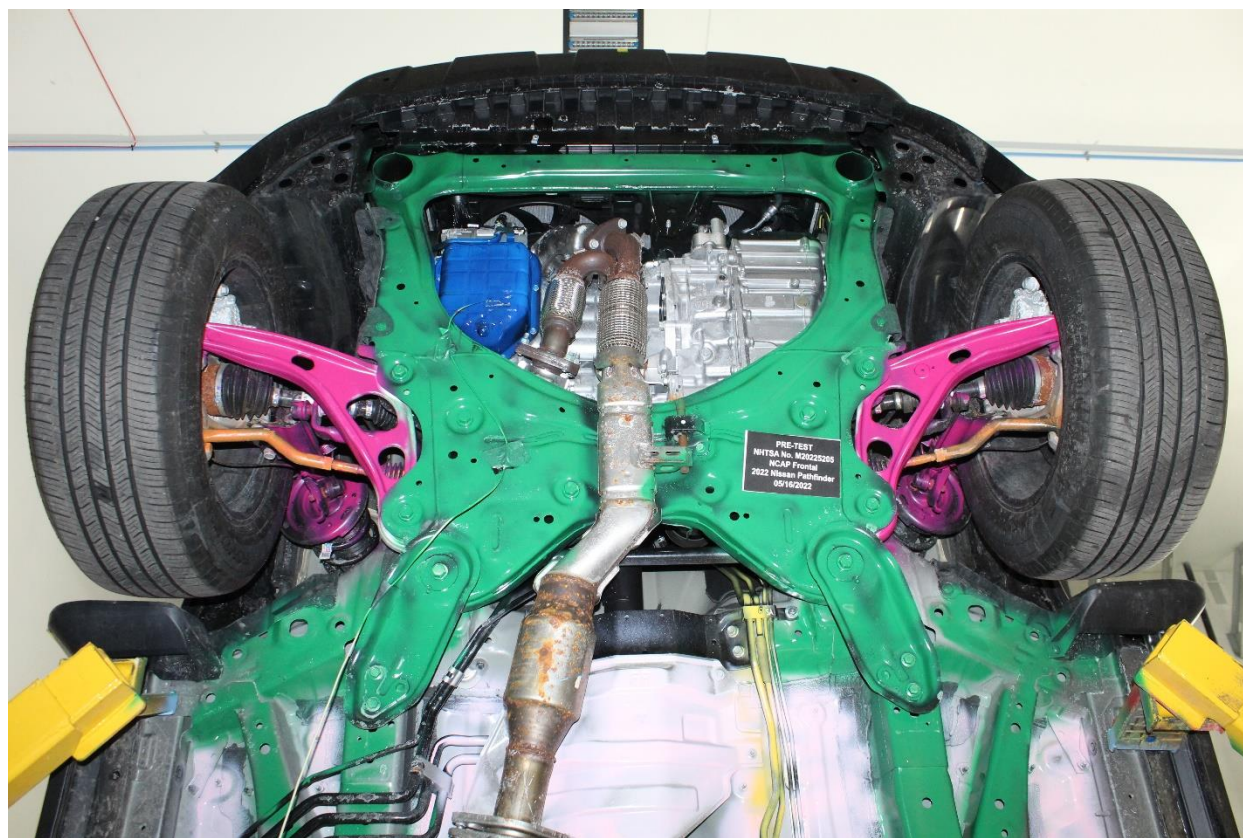


Figure A-24: Pre-Test Front Underbody View

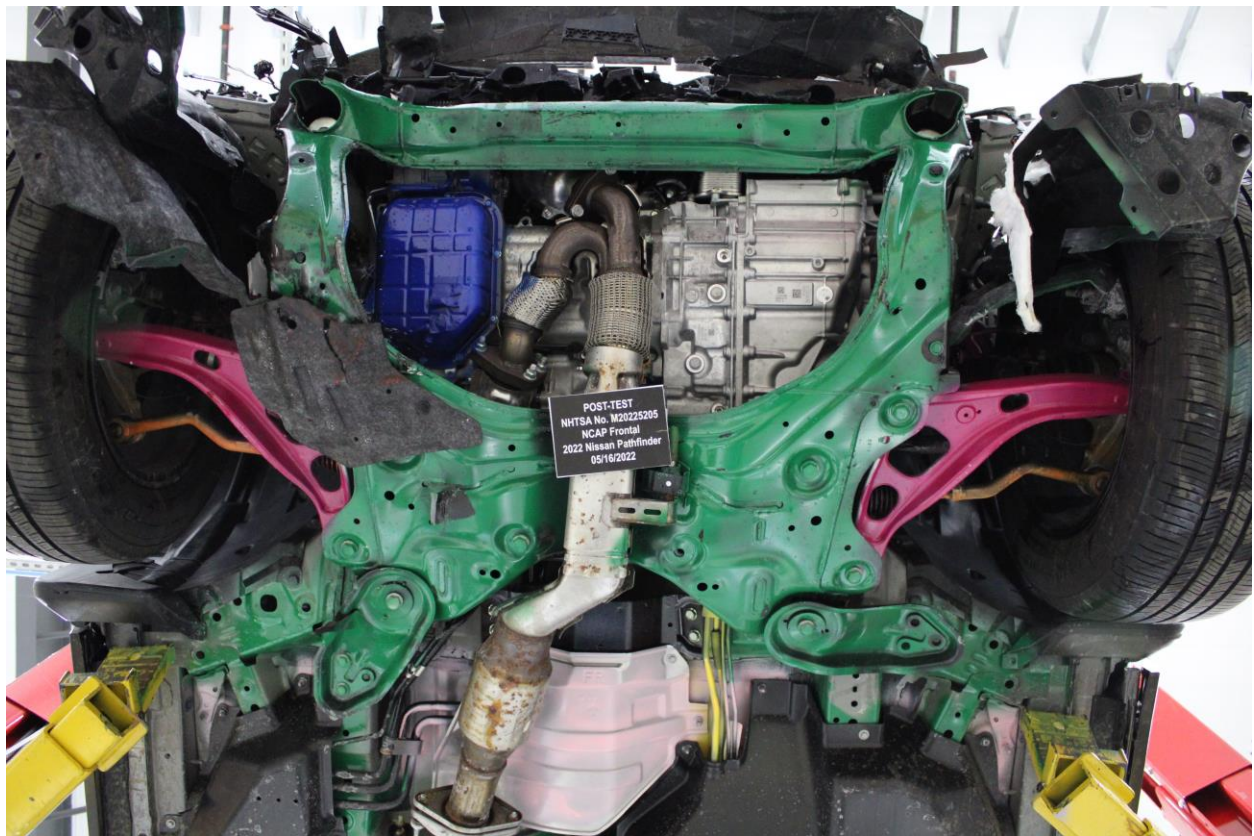


Figure A-25: Post-Test Front Underbody View



Figure A-26: Pre-Test Rear Underbody View

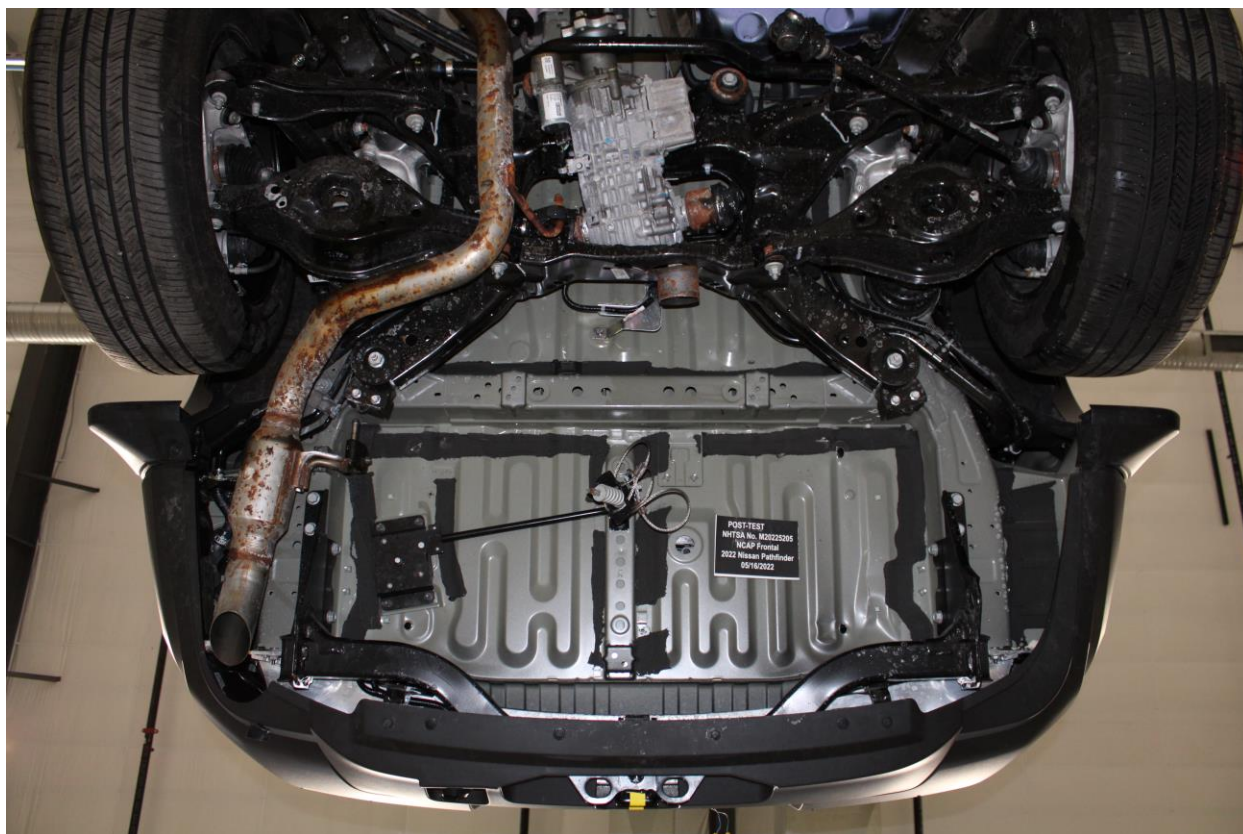


Figure A-27: Post-Test Rear Underbody View



Figure A-28: Pre-Test Dummy Cable Routing



Figure A-29: Post-Test Dummy Cable Routing

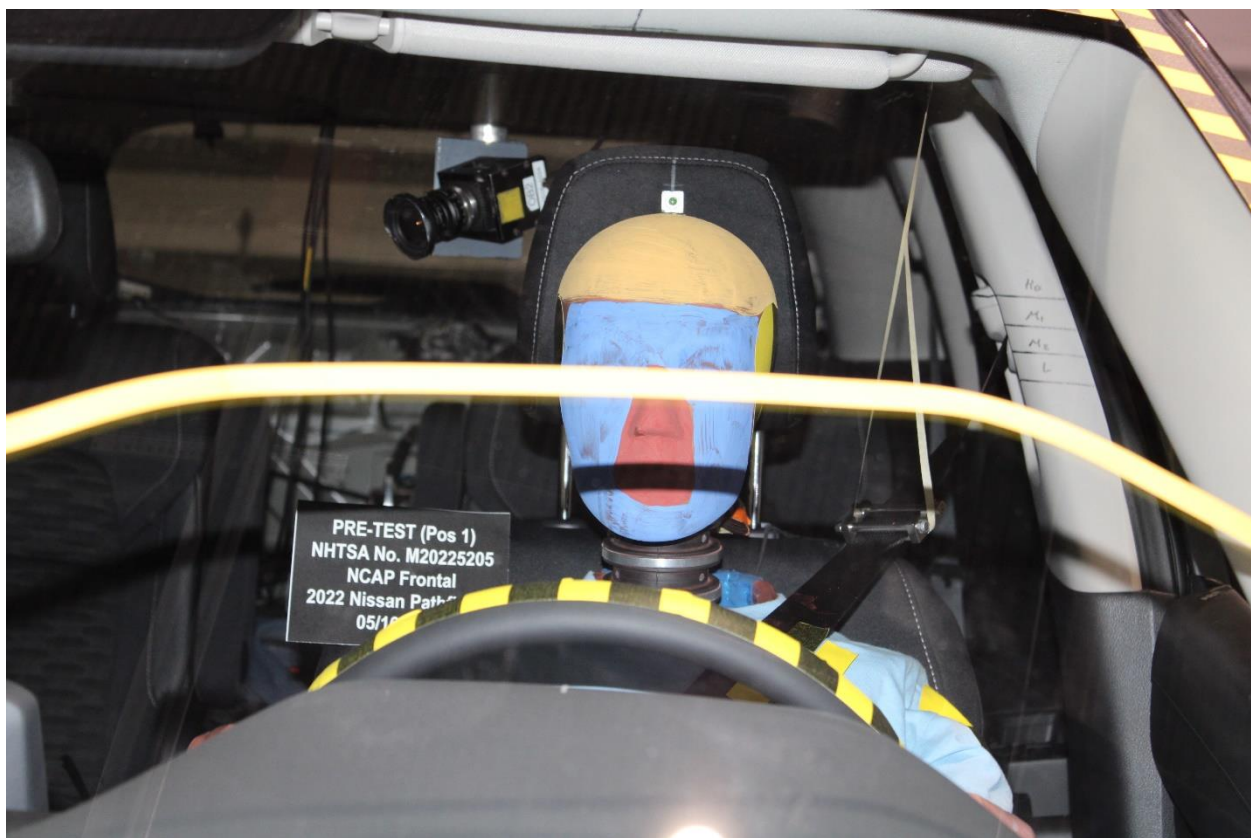


Figure A-30: Pre-Test Driver Dummy Front View

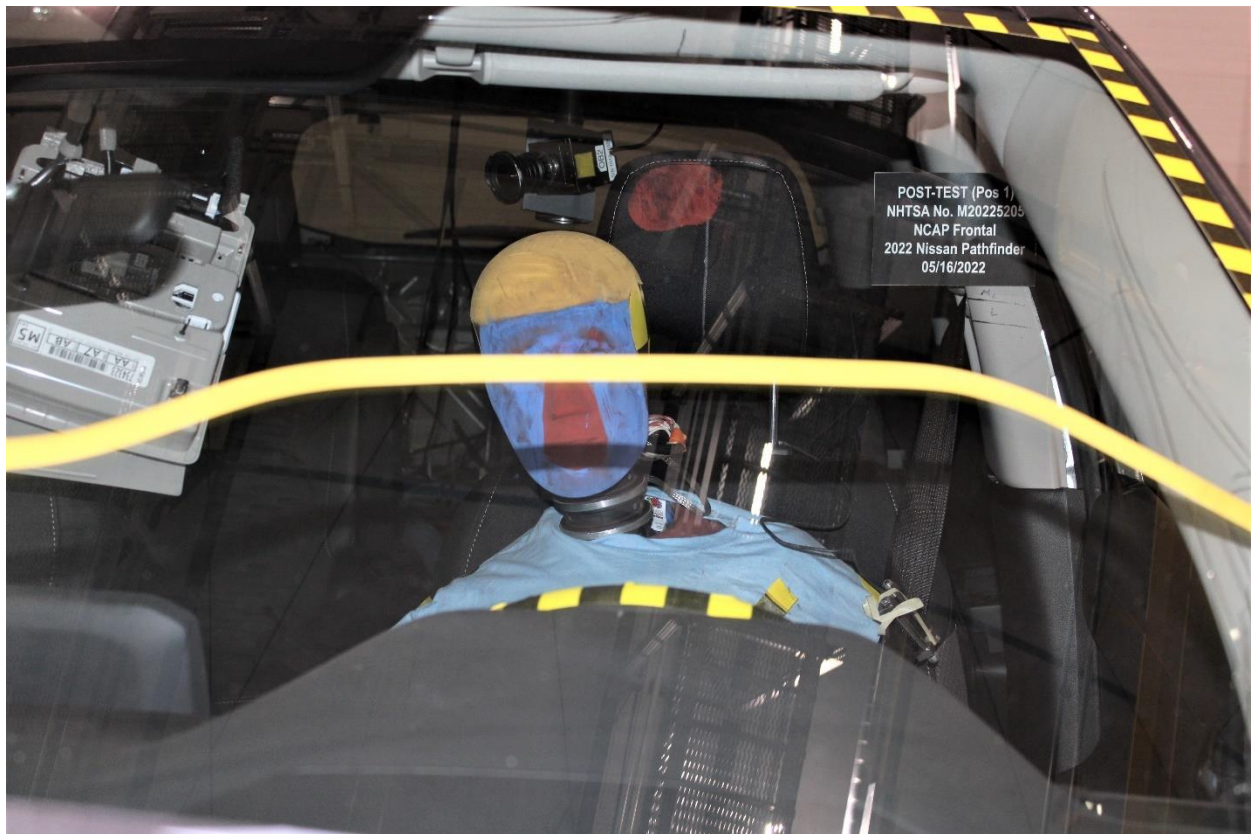


Figure A-31: Post-Test Driver Dummy Front View



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

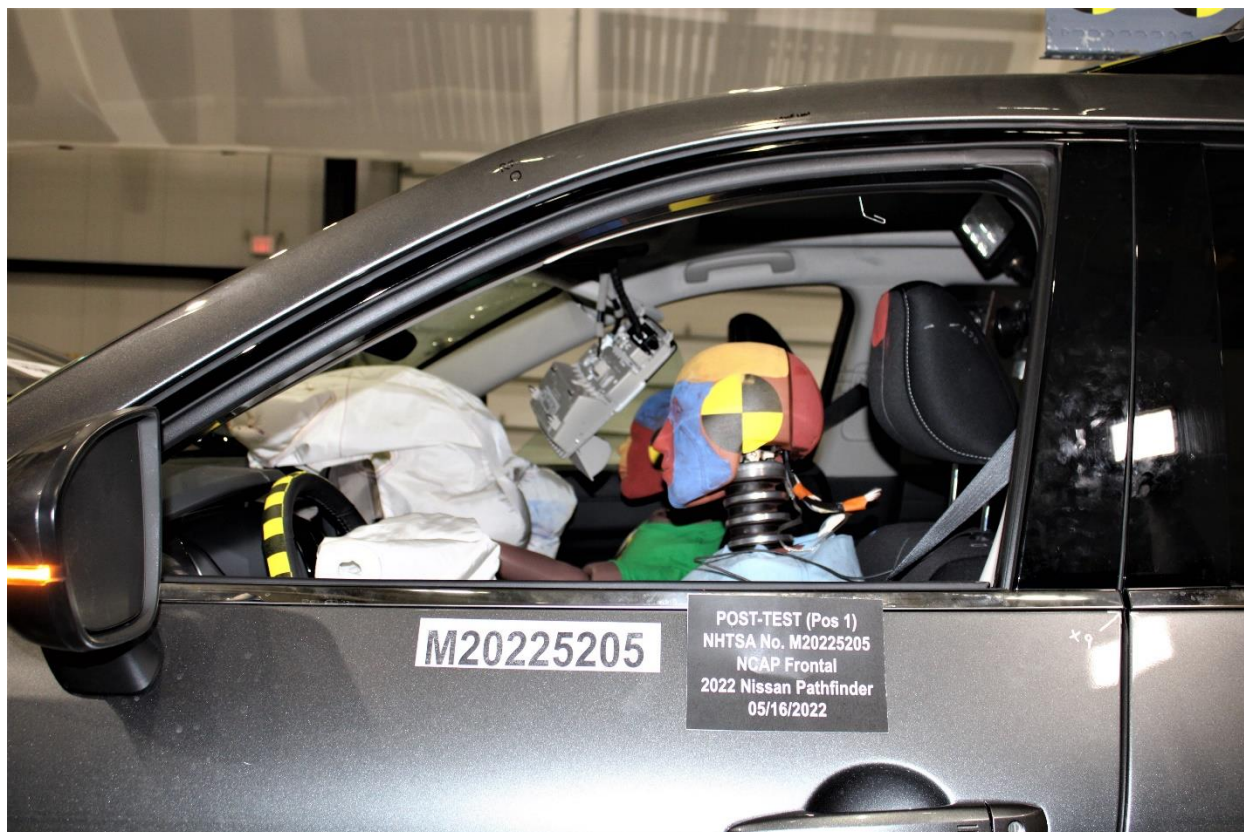


Figure A-33: Post-Test Driver Dummy Window View



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

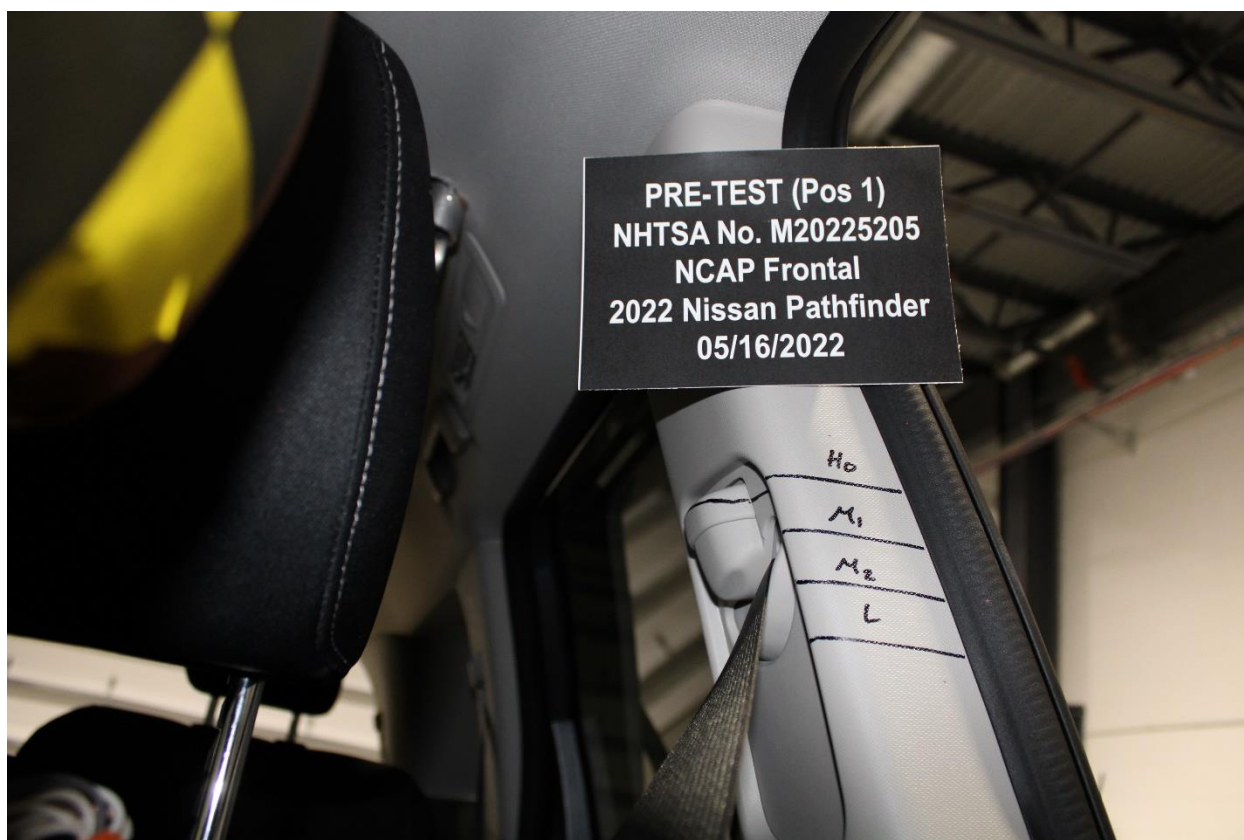


Figure A-38: Pre-Test View of Belt Anchorage for Driver Dummy



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

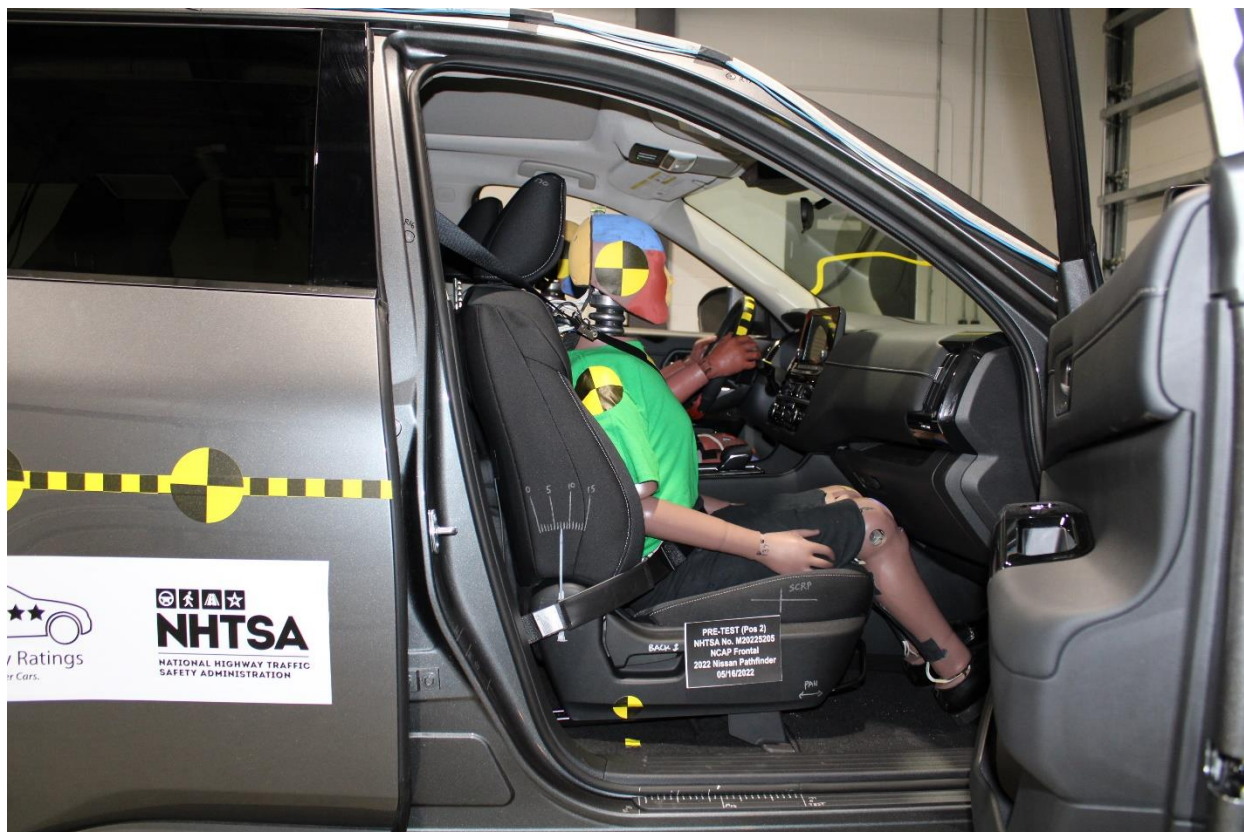


Figure A-57: Pre-Test Passenger Dummy and Vehicle Interior View



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

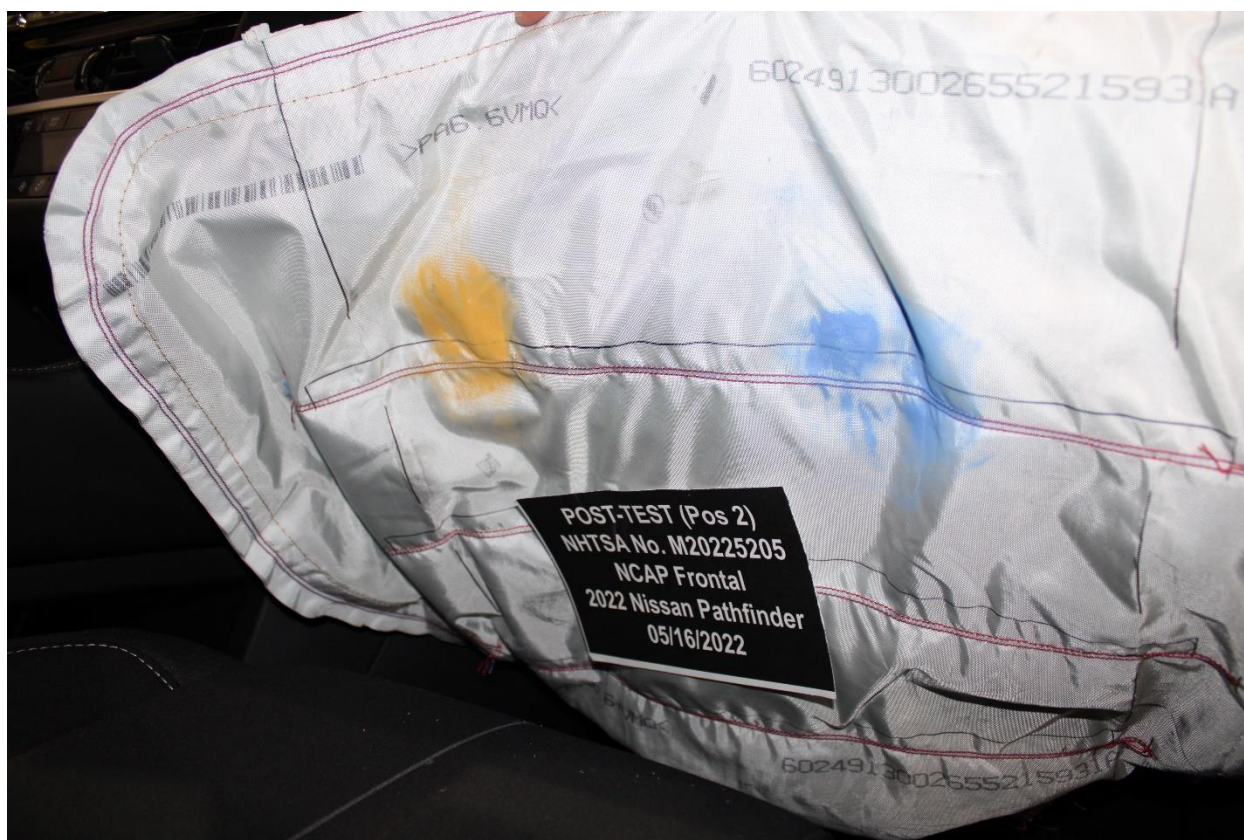


Figure A-68: Post-Test Passenger's Side Knee Bolster



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

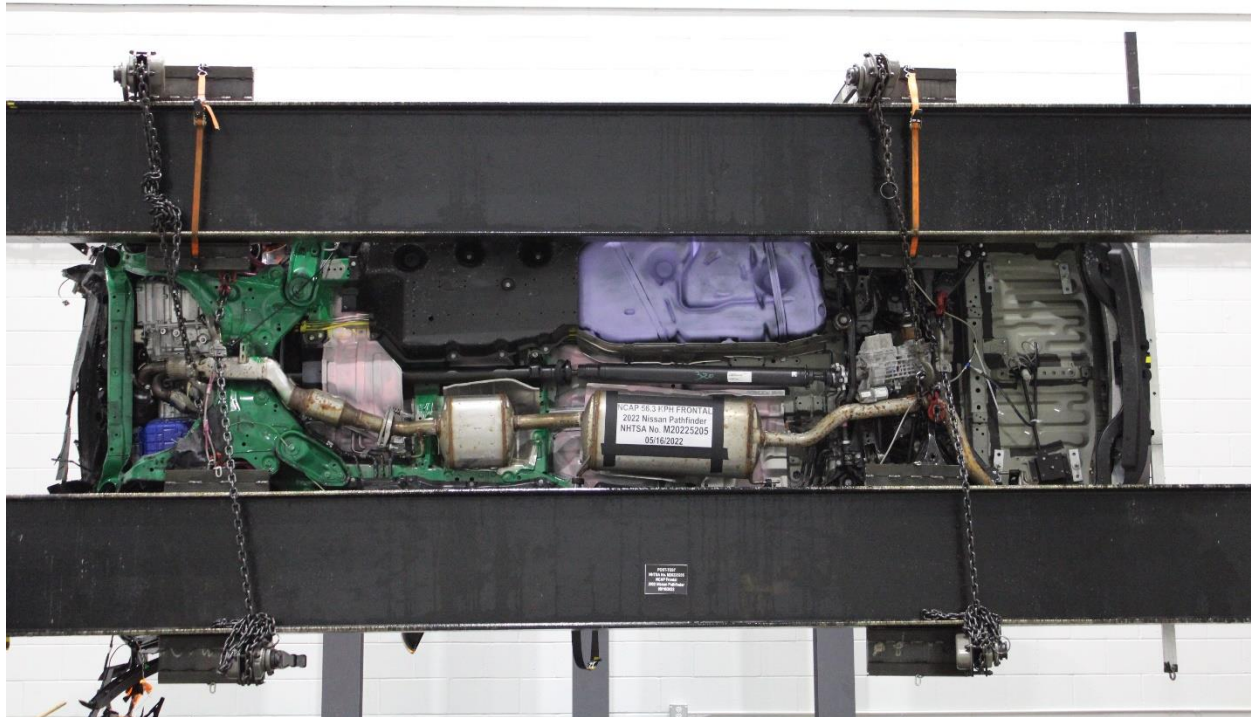


Figure A-80: Vehicle at 270° on Static Rollover Device



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



Figure A-82: 2022 Nissan Pathfinder Frontal Impact Event

2022 NISSAN PATHFINDER SV 4WD

Scan QR code for general model information & options.

Standard Equipment Included at No Extra Charge

MECHANICAL & PERFORMANCE
3.5L DOHC 24-Valve 6-Cylinder Engine
284 hp, 259 lb-ft torque
9-Speed Automatic Transmission
Intelligent 4x4 (I-4x4)
Manual Mode with Paddle Shifters
Electronic Parking Brake with Auto-hold
Front and Rear Disc Brakes
18" Painted Alloy Wheels
Temporary Spare Tire
Drive and Terrain Mode Selector
Idle Stop/Start

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 Supplemental Knee Air Bags
Lower Anchors and Tethers for Children (LATCH)
Brake Assist (BA)
Automatic Emergency Braking (AEB) with Pedestrian Detection
Blind Spot Warning (BSW)
Rear Cross Traffic Alert (RCTA)
Lane Departure Warning (LDW)
High Beam Assist (HBA)
Rear Automatic Braking (RAB)
Intelligent Lane Intervention (ILL)
Blind Spot Intervention® (BSI)
Intelligent Forward Collision Warning (IFCW)

COMFORT & CONVENIENCE
10-way Power Driver Seat with 2-way Power Lumbar Support
4-way Manual Front Passenger Seat
60/40 Split Folding & Reclining 2nd-row Seat with Remote-fold
NissanConnect®
NissanConnect® Services powered by:
SiriusXM®+
Apple CarPlay®
Android Auto™ +
SiriusXM® Radio+
8" Color Touchscreen Display
Wi-Fi Hotspot+
7" Advanced Drive-Assist Display®

COMFORT & CONVENIENCE CONT.
Rear Air Vents
Tri-zone Automatic Temperature Control
Nissan Intelligent Keys with 2-door Request Switch & Push Button Ignition
Remote Engine Start System with Intelligent Climate Control
Power Windows with Auto-up/down Cloth Seats
Quick Comfort™ Heated Front Seats
Leather-wrapped Steering Wheel
2 Rear Charge Only USB Connection Ports
Under Luggage Floor Storage
Rear Sonar System
ProPILOT Assist
Intelligent Cruise Control (ICC) with Full Speed Range and Hold

EXTERIOR
Intelligent Auto Headlights
LED Low and High Beam Headlights
LED Daytime Running Lights
LED Tail Lamps
Dual Power Heated Outside Mirrors with LED Turn Signal Indicators
Rear Privacy Glass
Roof Rails

*For more information, see dealer, owner's manual, or www.NissanUSA.com connect4nissan
+Optional Equipment Replaces Standard Where Applicable

Manufacturer's Suggested Retail Base Price: \$38,570.00

Options Included by Manufacturer SV Premium Package: 2,170.00
Power Panoramic Moonroof
Power Locks w/ Position Memory
Tow Hitch w/ Harness
(Up to 6,000 lb Capacity)**
2nd Row Captain's Chairs+
2nd Row Removable Center Console
Splash Guards
Cross Bars
Carpeted Floor Mats: Captain's Chairs

DESTINATION CHARGES: 1,225.00

Total* \$42,800.00

**Towing varies by configuration. See Nissan Towing Guide and Owner's Manual for additional information. Cargo and load capacity limited by weight and distribution. Always secure cargo.

Fuel Economy and Environment

Fuel Economy
23 MPG
combined city highway
4.3 gallons per 100 miles

SMALL SUVs range from 16 to 125 MPG. The best vehicle rates 142 MPG.

You spend \$1,250 more in fuel costs over 5 years
compared to the average new vehicle.

Fuel Economy & Greenhouse Gas Rating (Passenger only) Smog Rating (Passenger only)
5 Best

This vehicle emits 335 g/mi CO₂ per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also creates emissions, known as well-to-wheel (WTW) emissions.

Annual fuel Cost \$1,550
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 \$6,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$2.35 per gallon. MPGe is miles per gallon gasoline equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuelconomy.gov
Calculates personalized estimates and compares vehicles.

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
Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.		
Side Crash	Front seat Rear seat	Not Rated
Based on the risk of injury in a side impact.		
Rollover	Not Rated	
Based on the risk of rollover in a single-vehicle crash.		

Star ratings range from 1 to 5 stars (*****), with 5 being the highest.
Source: National Highway Traffic Safety Administration (NHTSA)
www.safercar.gov or 1-888-327-4235

PARTS CONTENT INFORMATION FOR VEHICLES IN THIS CARLINE: U.S./CANADIAN PARTS CONTENT: 50%

NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT:
SMYRNA, TN, USA
COUNTRY OF ORIGIN:
ENGINE: US
TRANSMISSION: US

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

Dealer: FERGUSON/NISSAN
200 SPRING STREET
BAYRE, PA 18804

VIN: 5N1DR30D9C238956
MODEL: 5070/238956 4WD-6
OPT: P-CSP018X89X8.9

EXT: GUN METALLIC
INT: CHARCOAL
EMB: 50 STATE EMISSIONS

Transport Method: TRUCK 20220222024843455755

Figure A-83: Monroney Label Photograph

APPENDIX B
VEHICLE & DUMMY RESPONSE DATA TRACES

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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
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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
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Plot 29	Passenger Left Femur Force vs. Time	B-12
Plot 30	Passenger Right Femur Force vs. Time	B-12

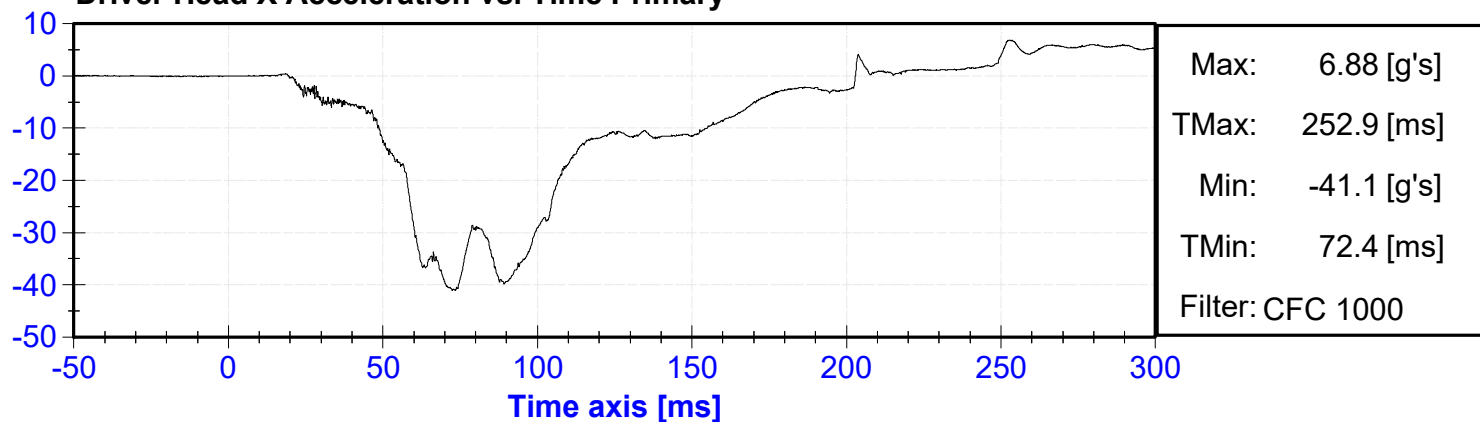
The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.NHTSA.gov

- 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

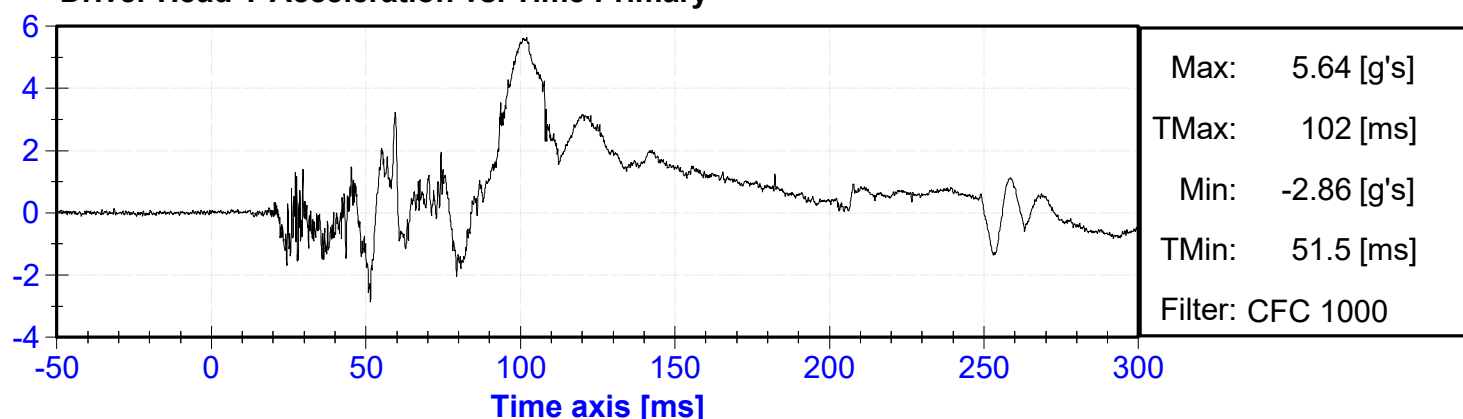
Driver Left Upper Tibia Force Z
Driver Left Lower Tibia Moment X
Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
Driver Right Upper Tibia Moment X
Driver Right Upper Tibia Moment Y
Driver Right Upper Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower Tibia Moment Y
Driver 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

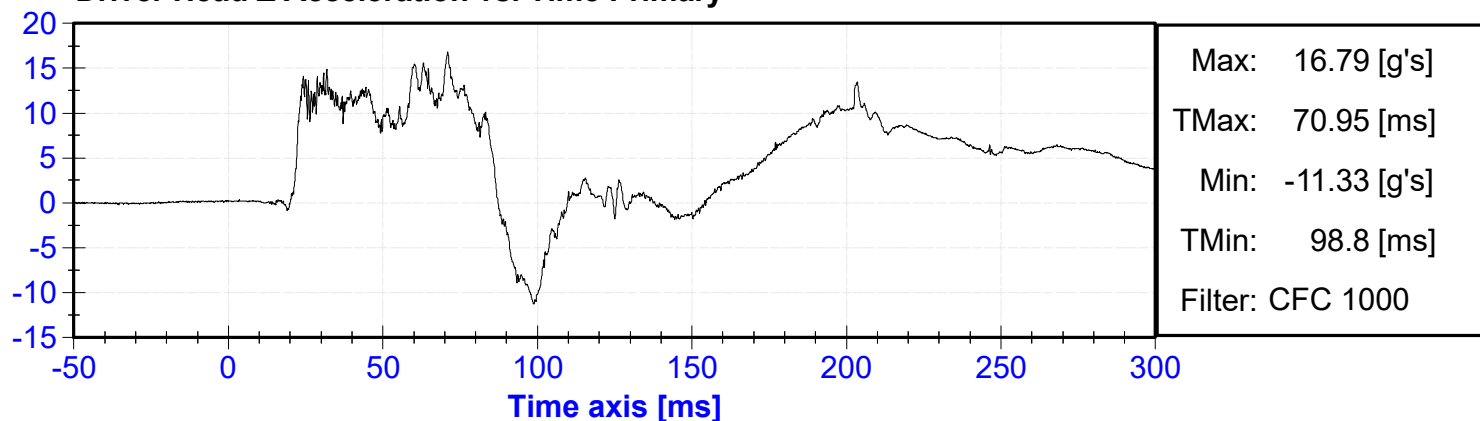
Driver Head X Acceleration vs. Time Primary



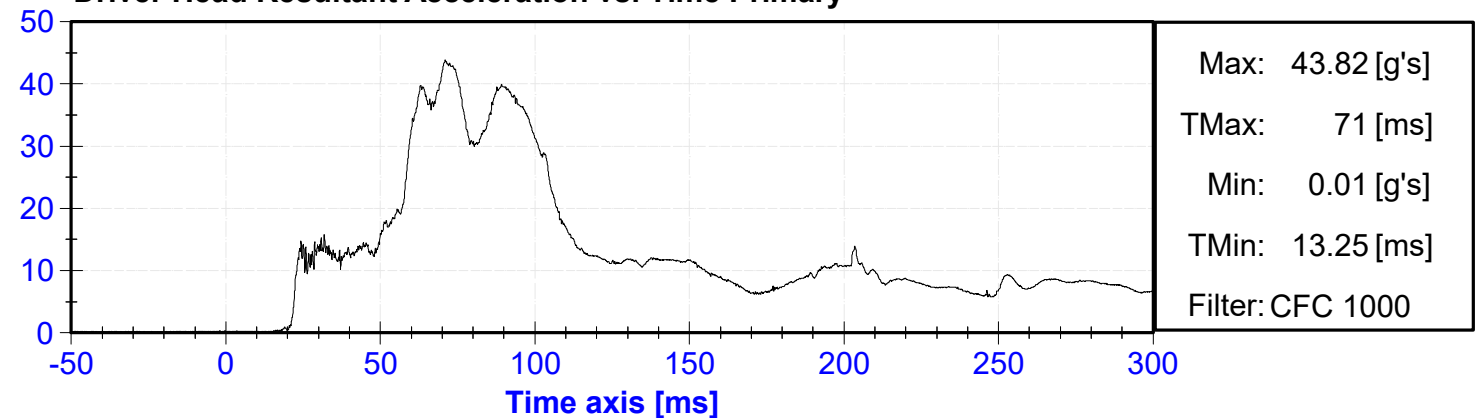
Driver Head Y Acceleration vs. Time Primary



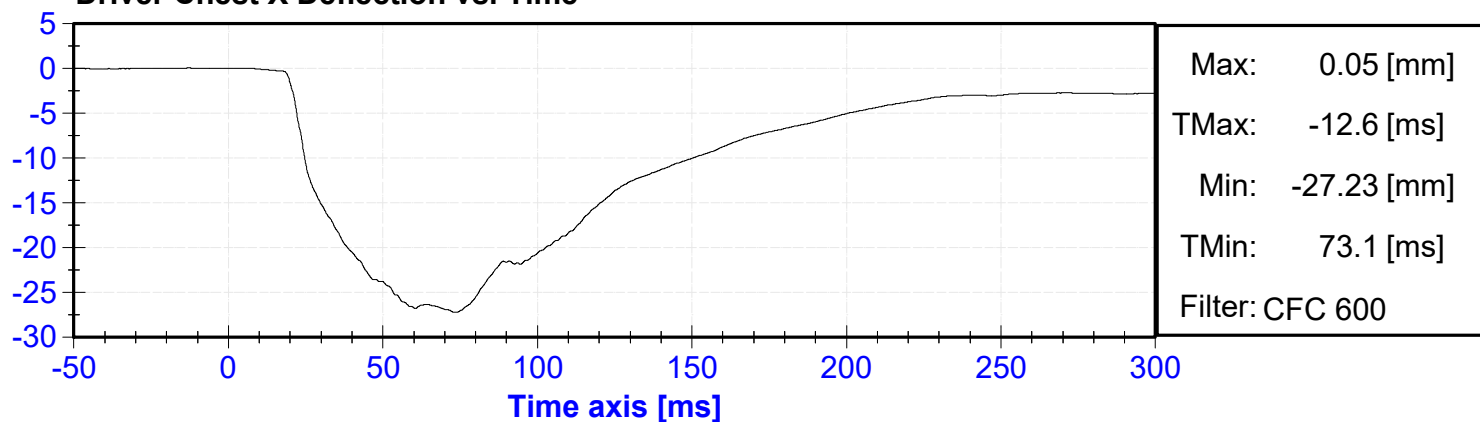
Driver Head Z Acceleration vs. Time Primary



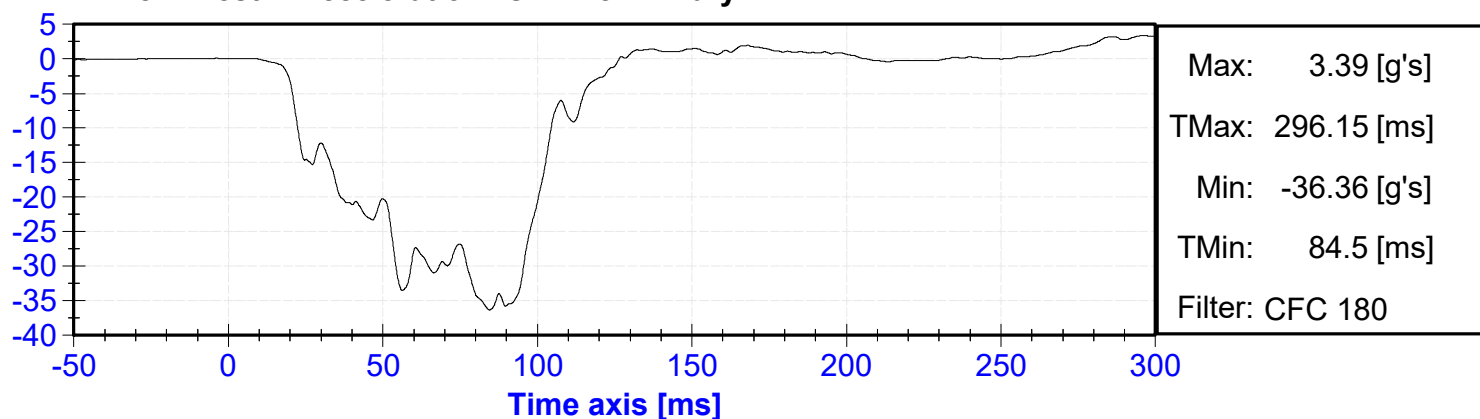
Driver Head Resultant Acceleration vs. Time Primary



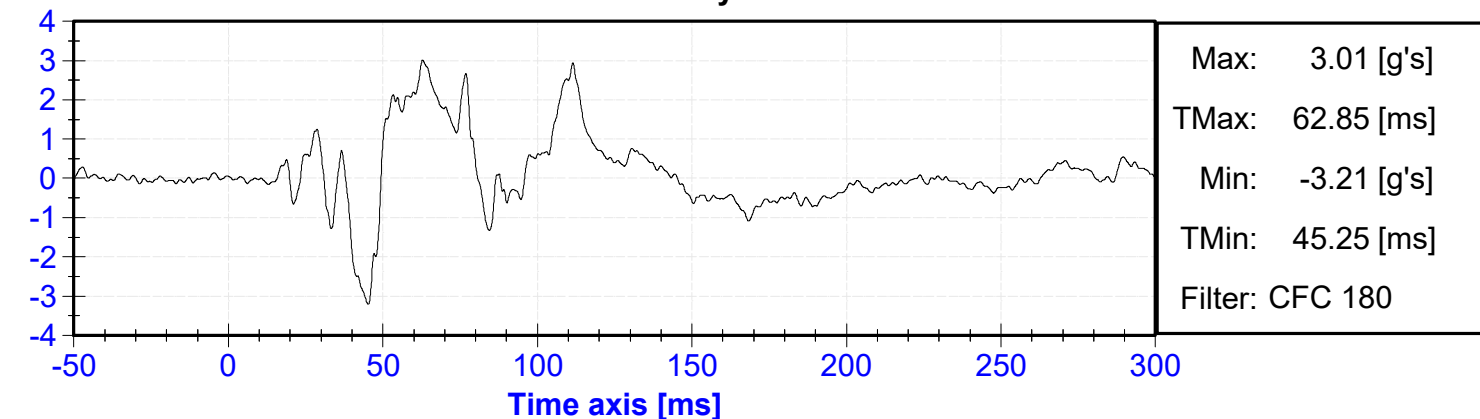
Driver Chest X Deflection vs. Time



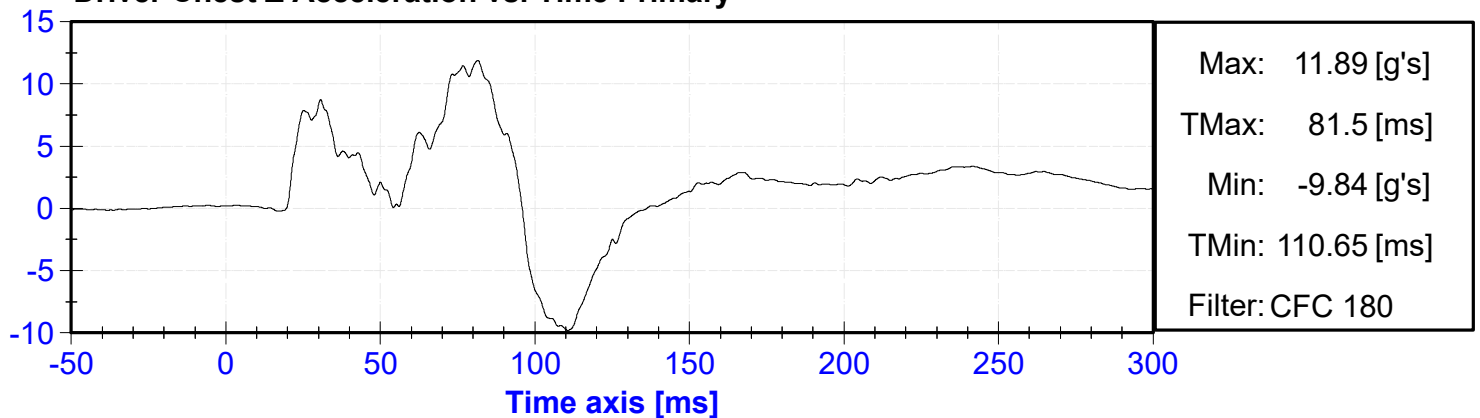
Driver Chest X Acceleration vs. Time Primary



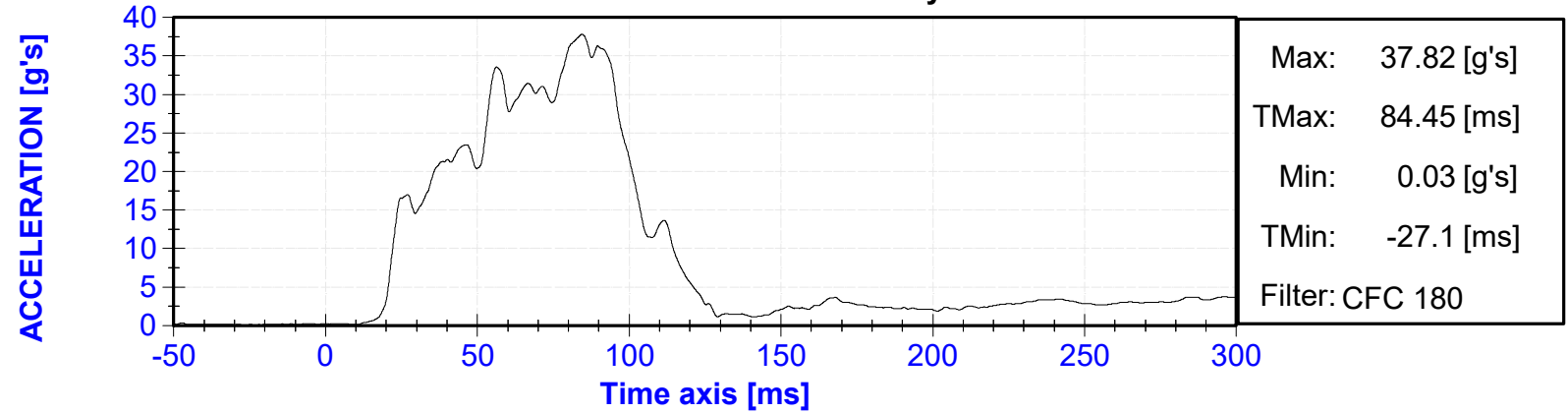
Driver Chest Y Acceleration vs. Time Primary



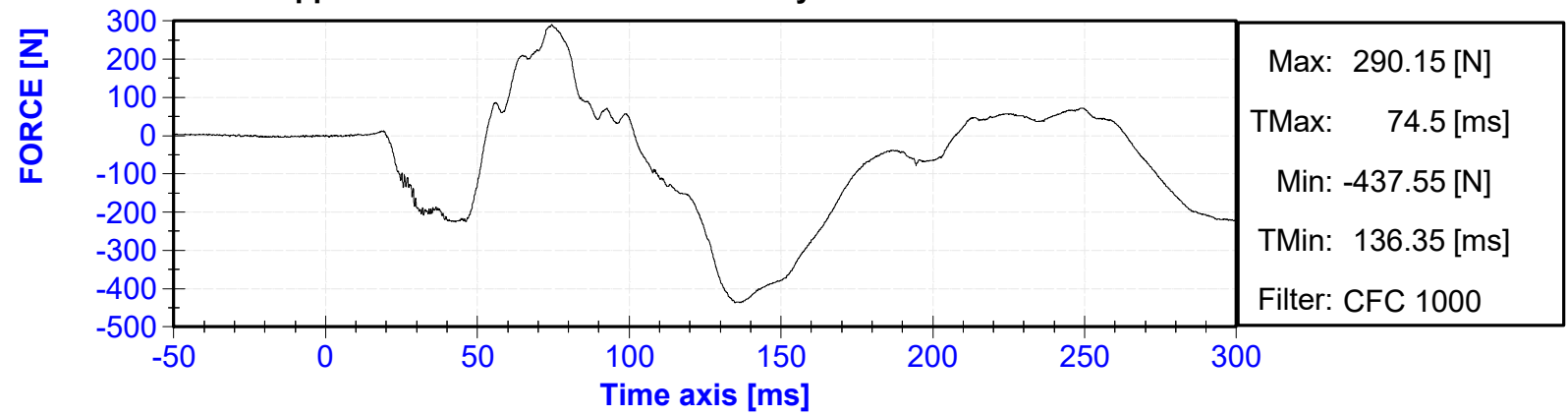
Driver Chest Z Acceleration vs. Time Primary



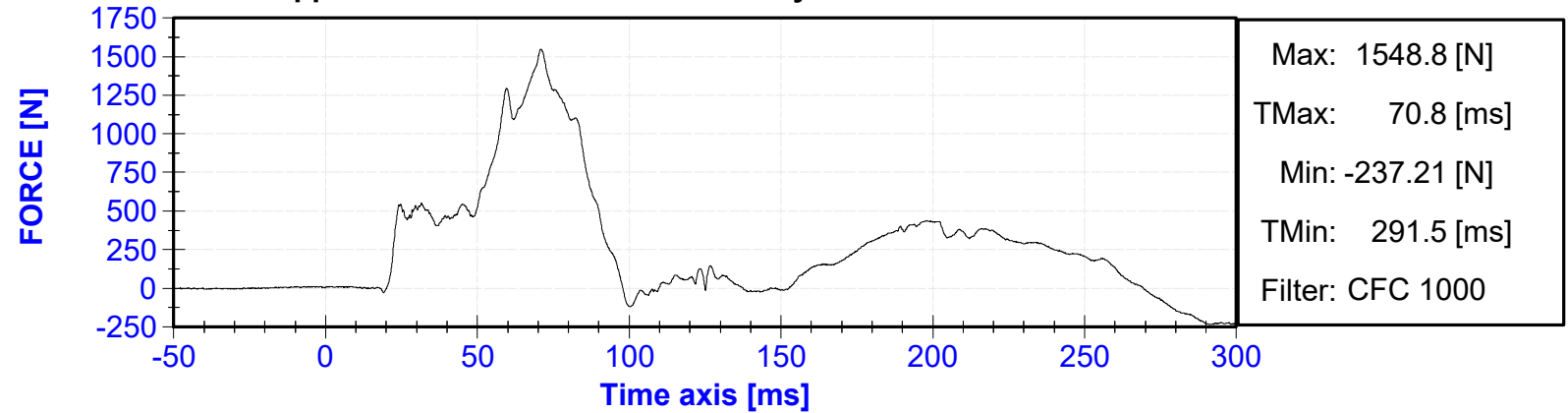
Driver Chest Resultant Acceleration vs. Time Primary



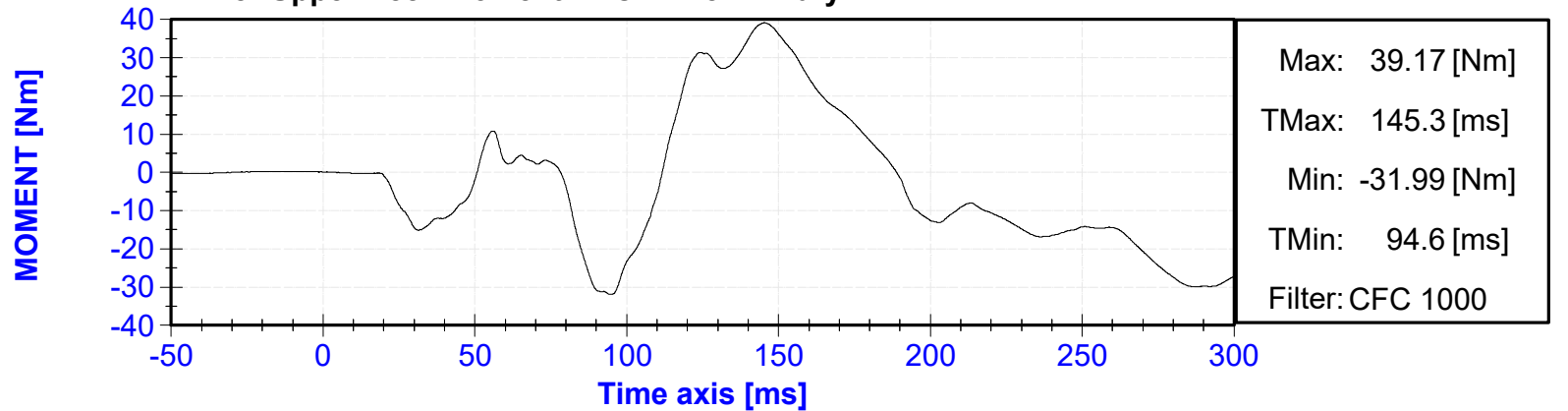
Driver Upper Neck Force X vs. Time Primary



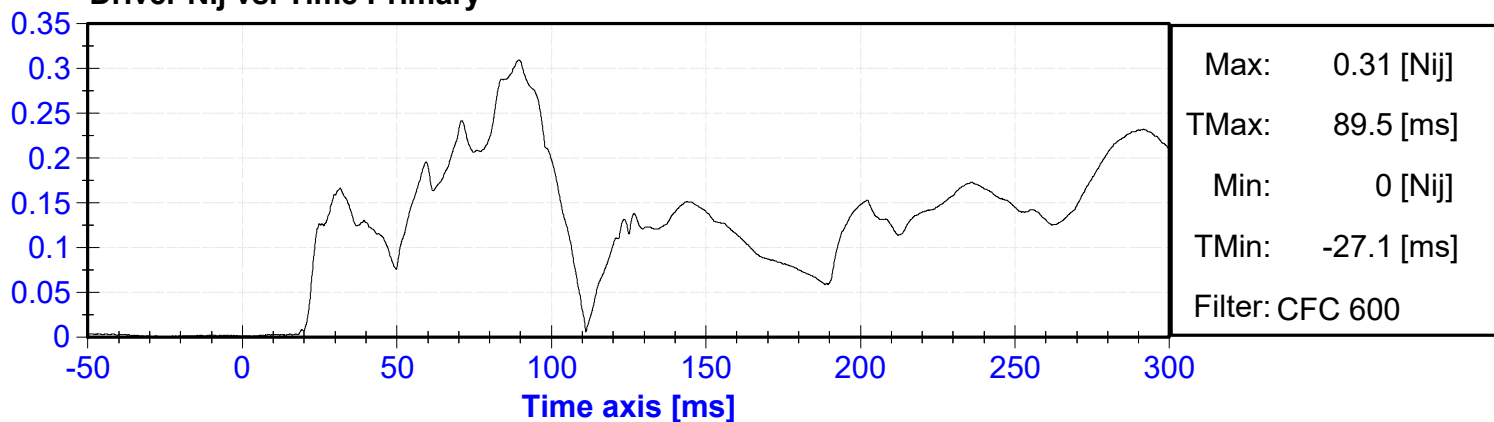
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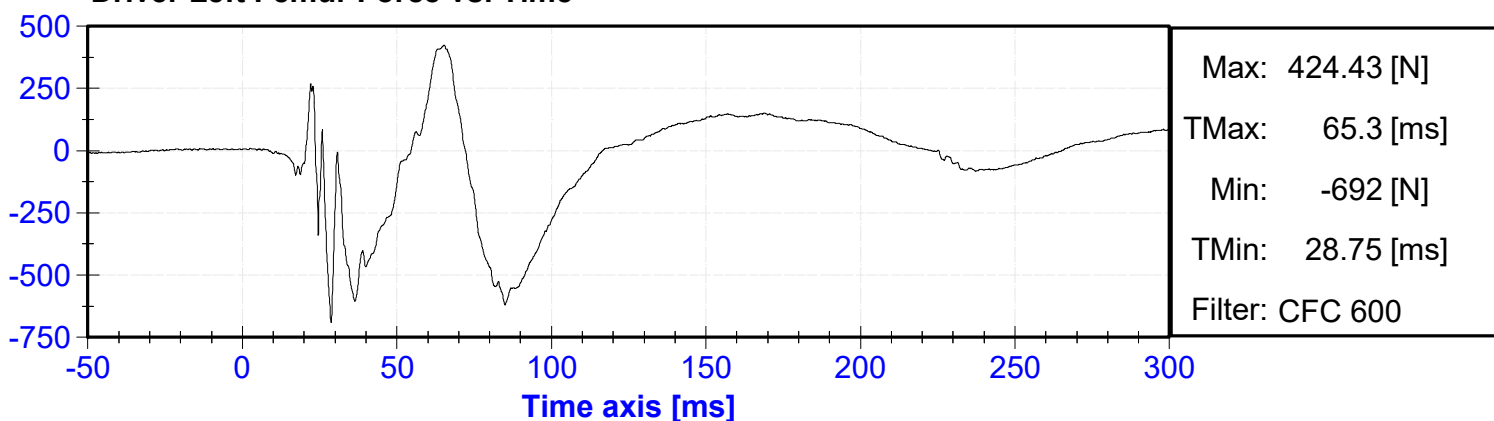
Driver Upper Neck Moment Y vs. Time Primary



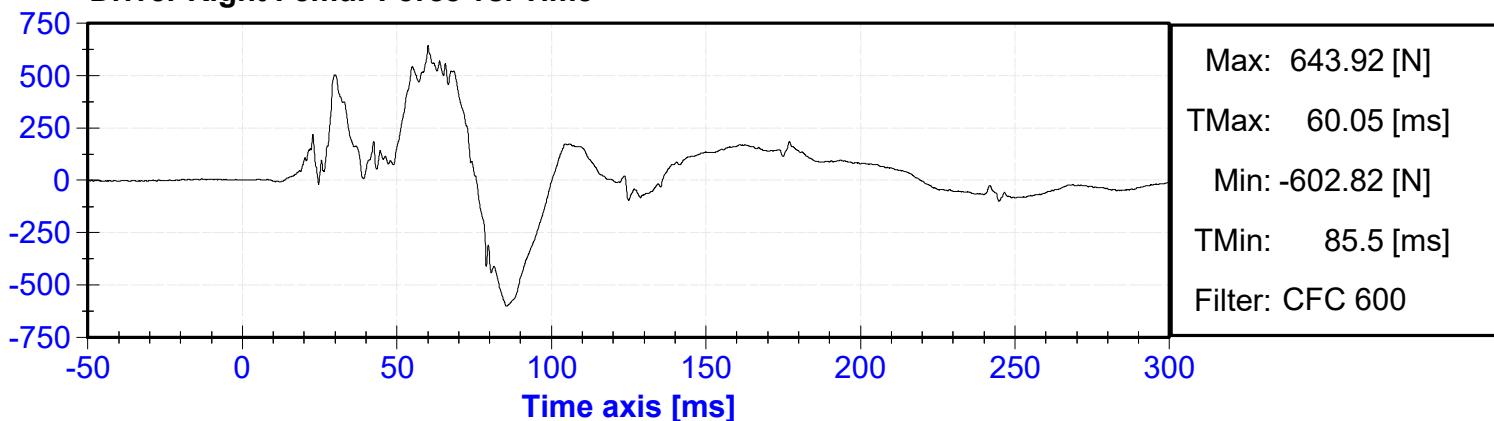
Driver Nij vs. Time Primary



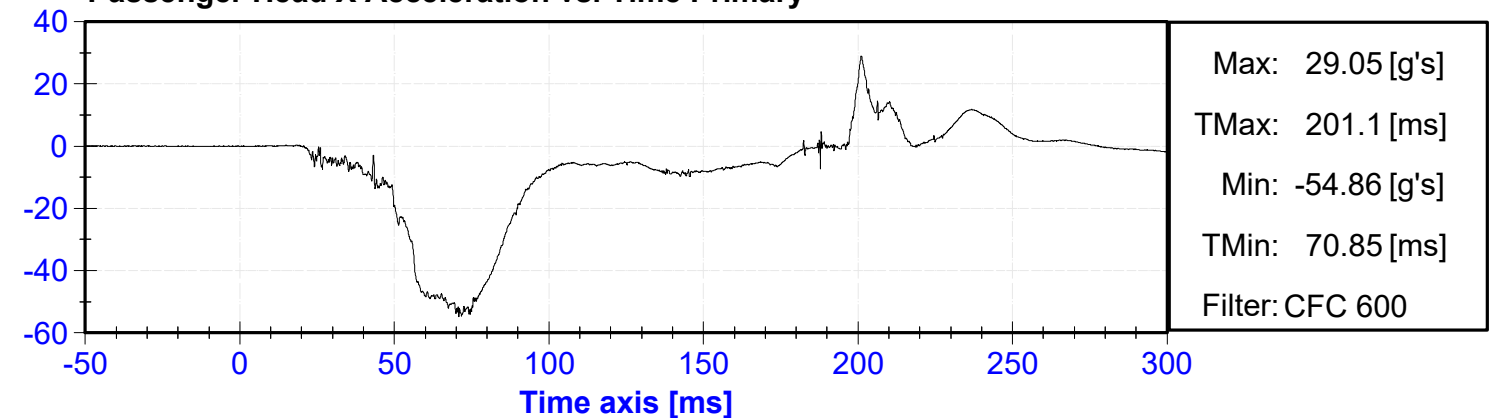
Driver Left Femur Force vs. Time



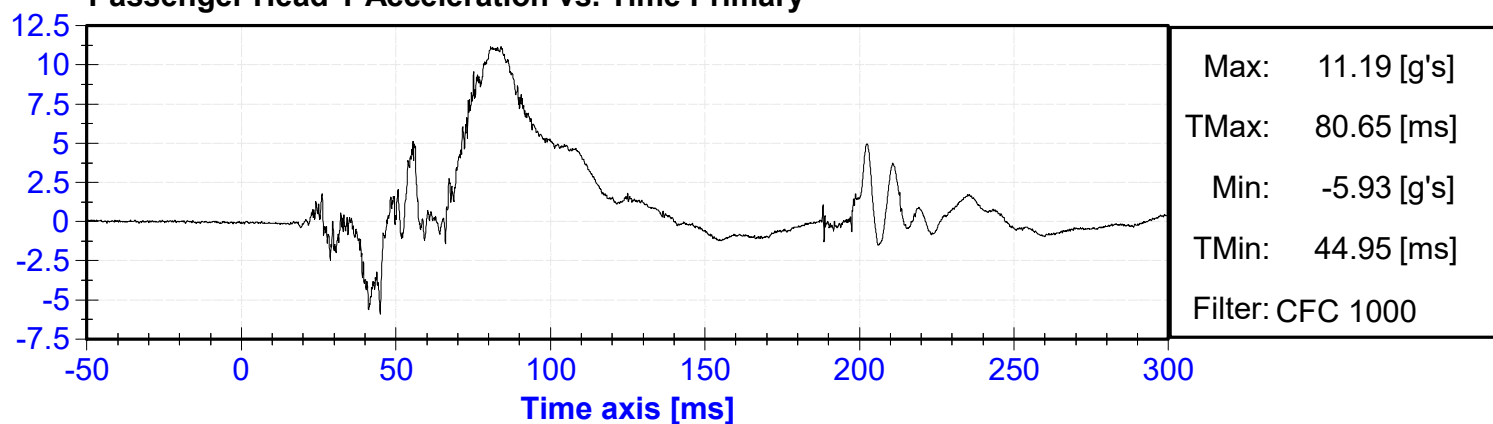
Driver Right Femur Force vs. Time



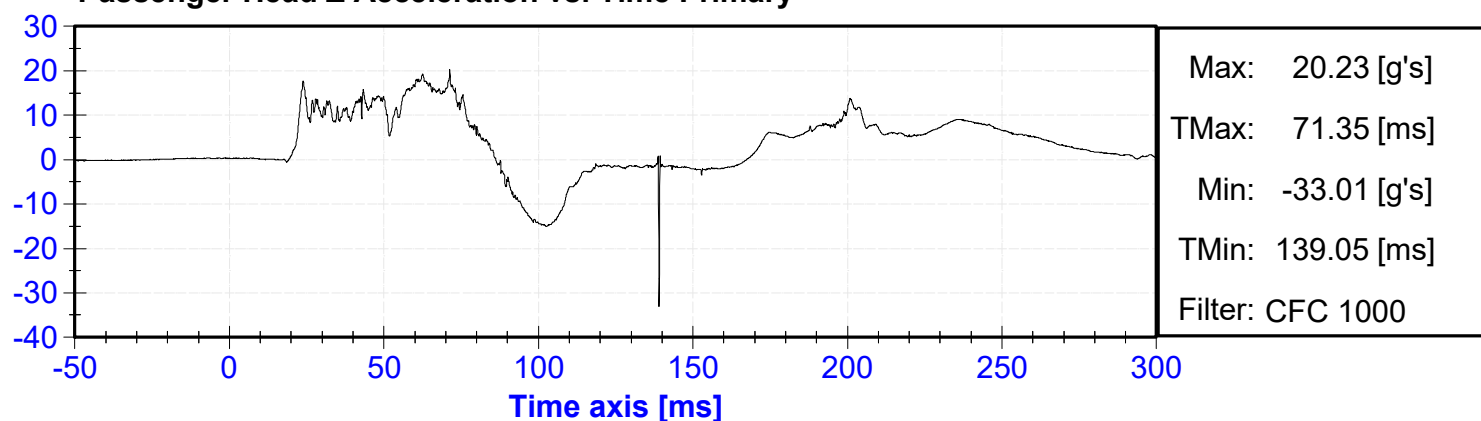
Passenger Head X Acceleration vs. Time Primary



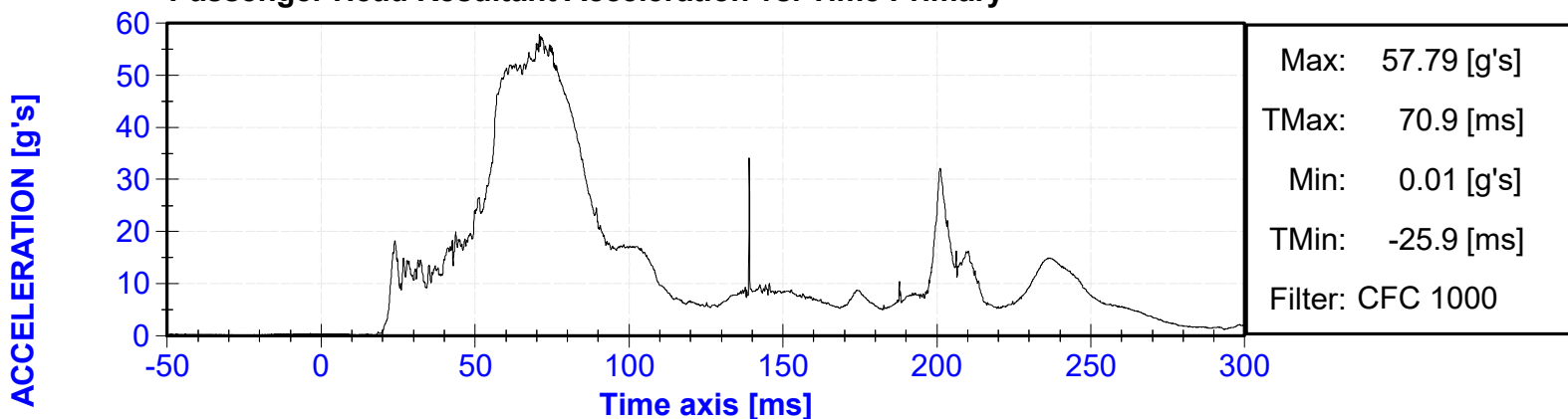
Passenger Head Y Acceleration vs. Time Primary



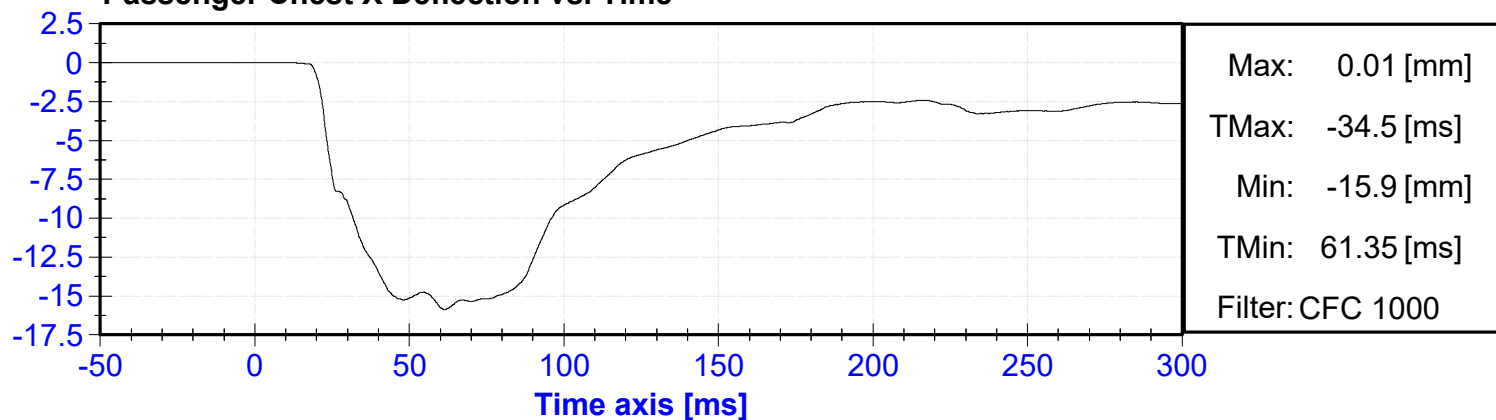
Passenger Head Z Acceleration vs. Time Primary



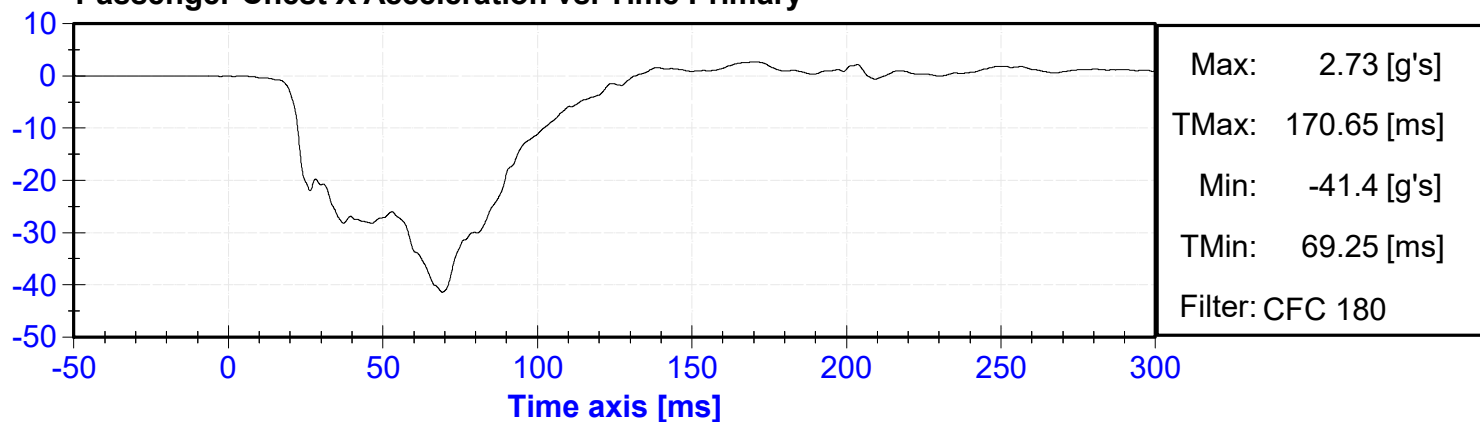
Passenger Head Resultant Acceleration vs. Time Primary



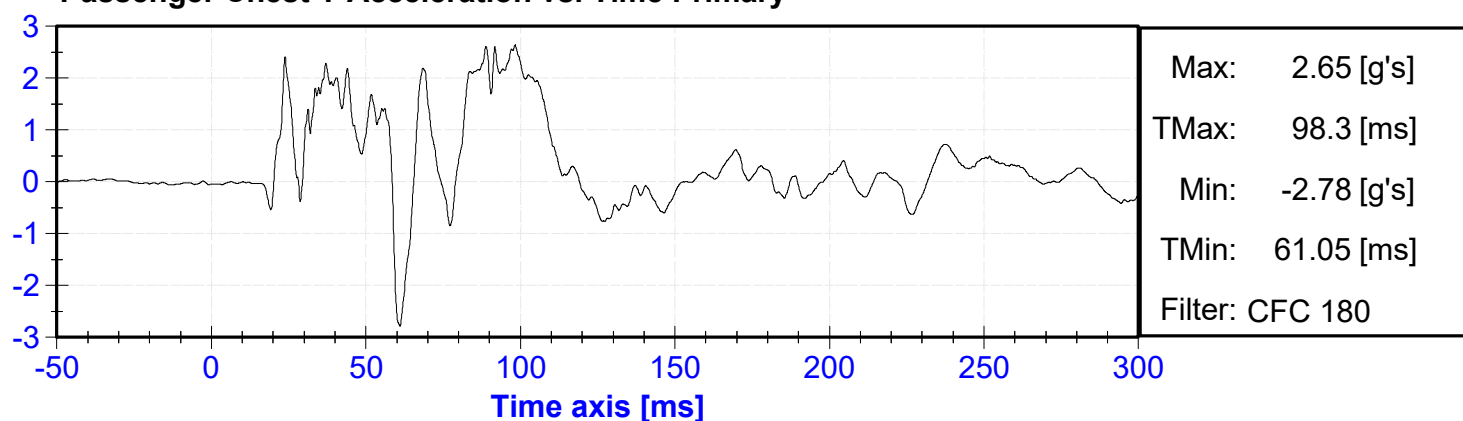
Passenger Chest X Deflection vs. Time



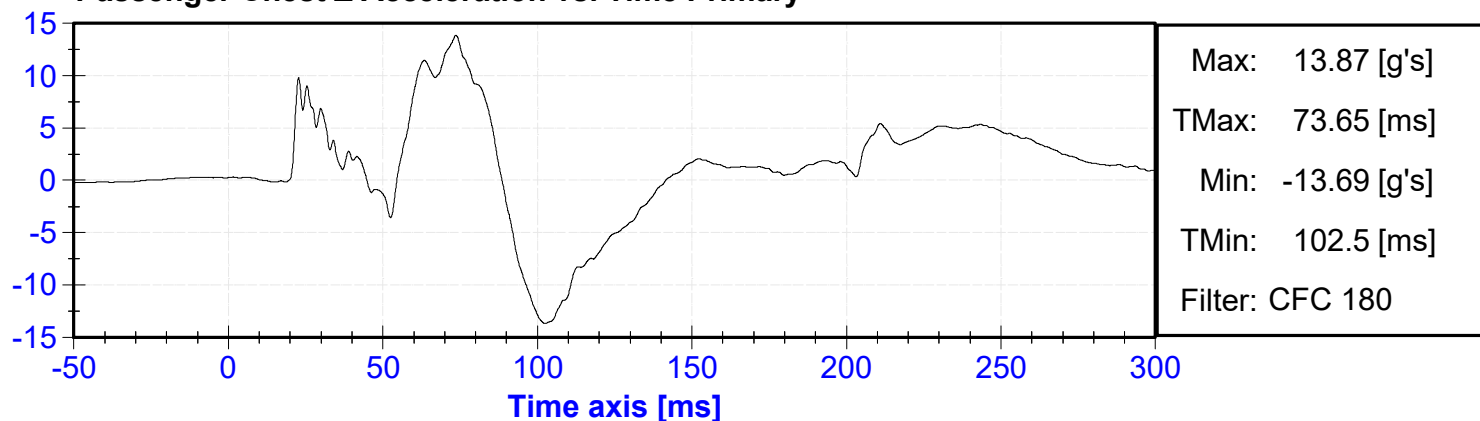
Passenger Chest X Acceleration vs. Time Primary



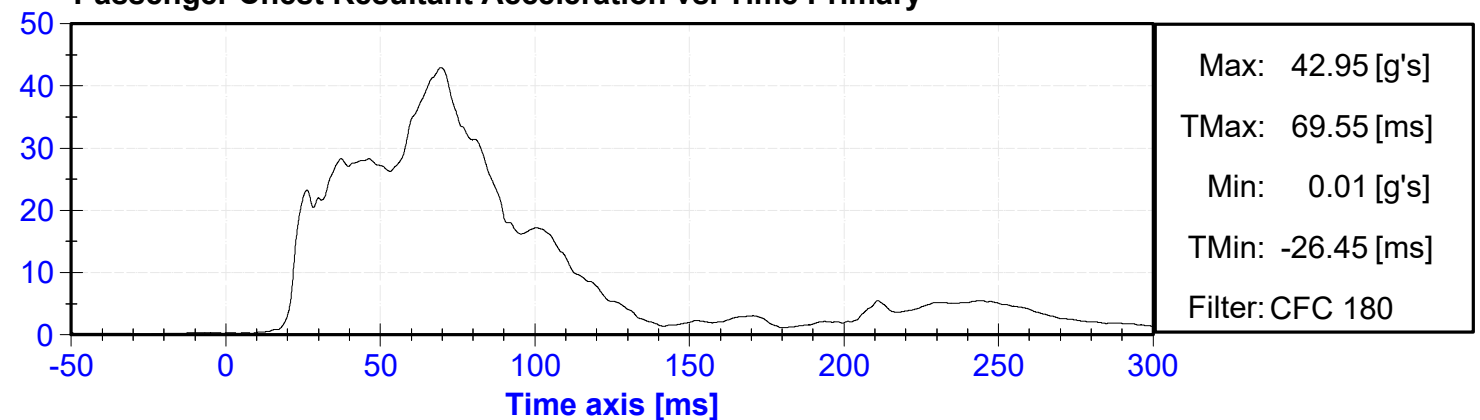
Passenger Chest Y Acceleration vs. Time Primary



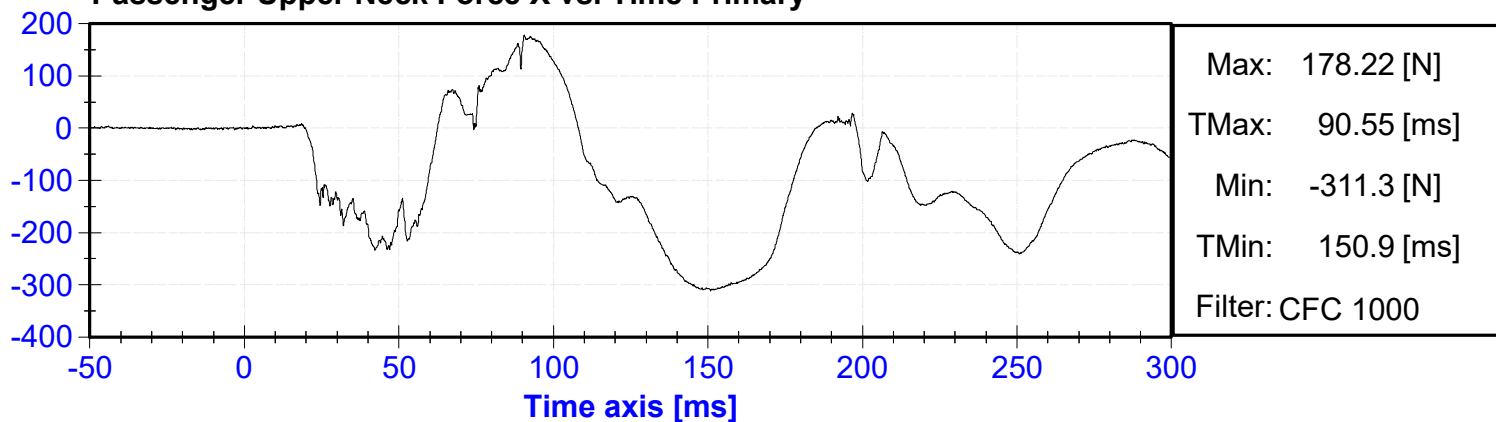
Passenger Chest Z Acceleration vs. Time Primary



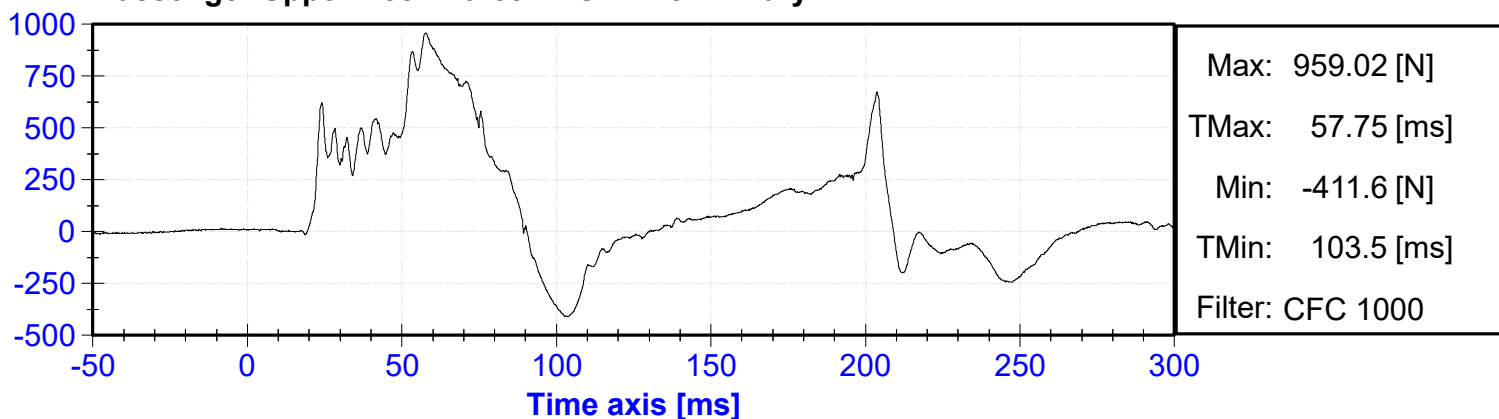
Passenger Chest Resultant Acceleration vs. Time Primary



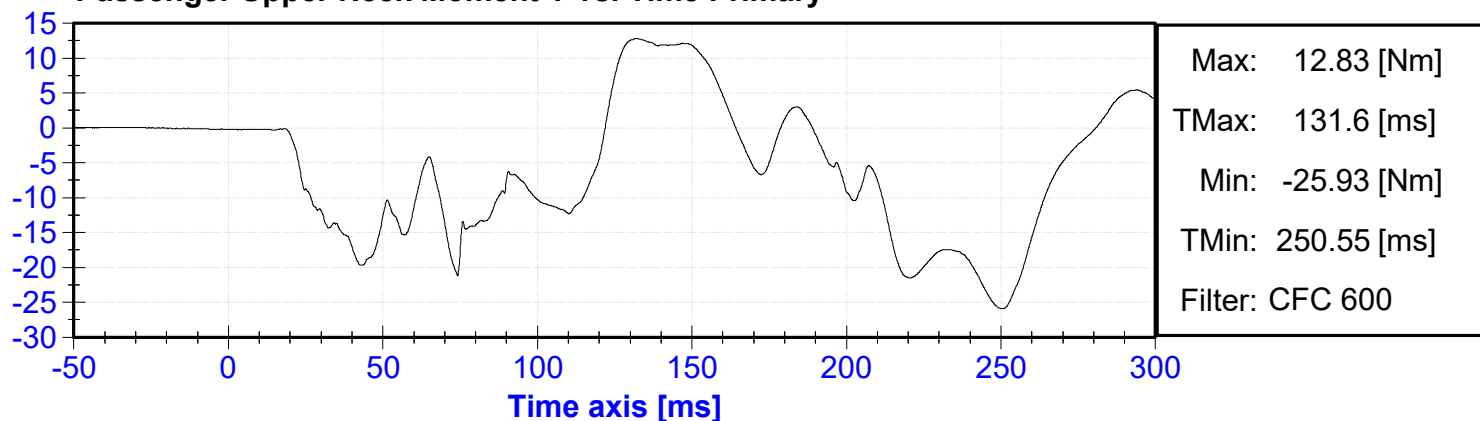
Passenger Upper Neck Force X vs. Time Primary



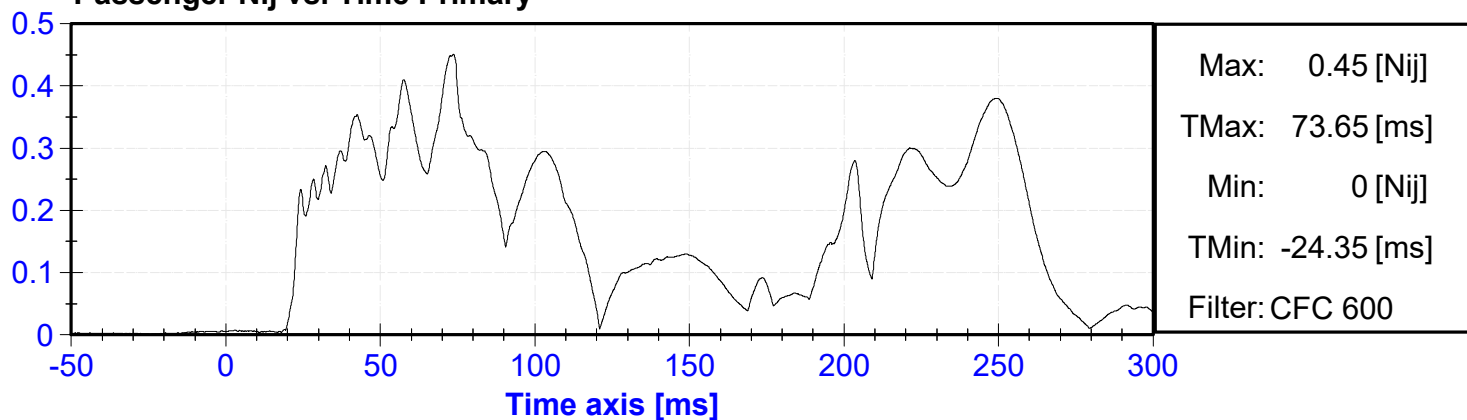
Passenger Upper Neck Force Z vs. Time Primary



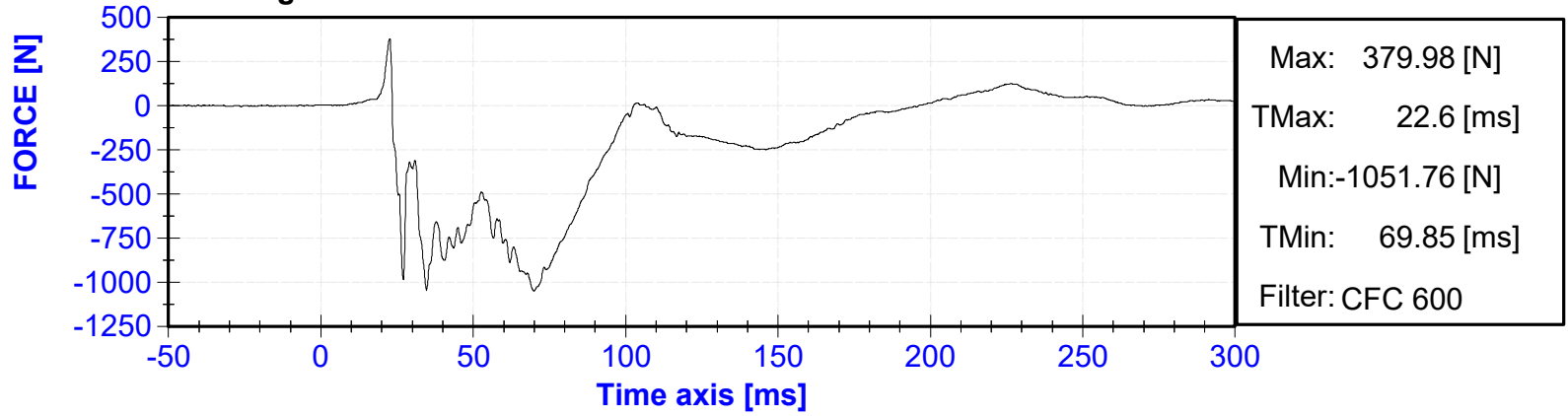
Passenger Upper Neck Moment Y vs. Time Primary



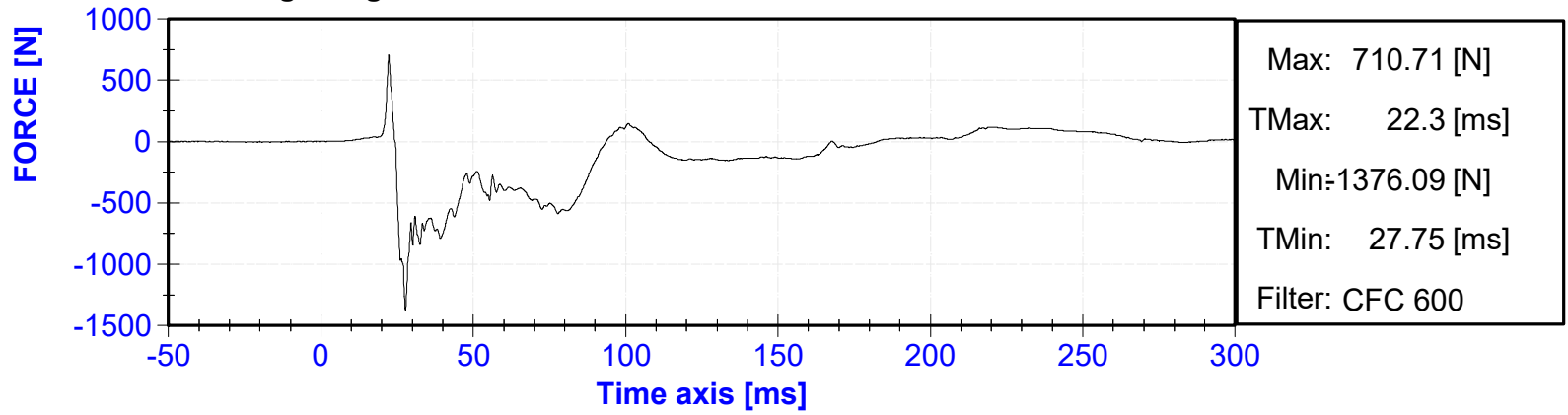
Passenger Nij vs. Time Primary



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

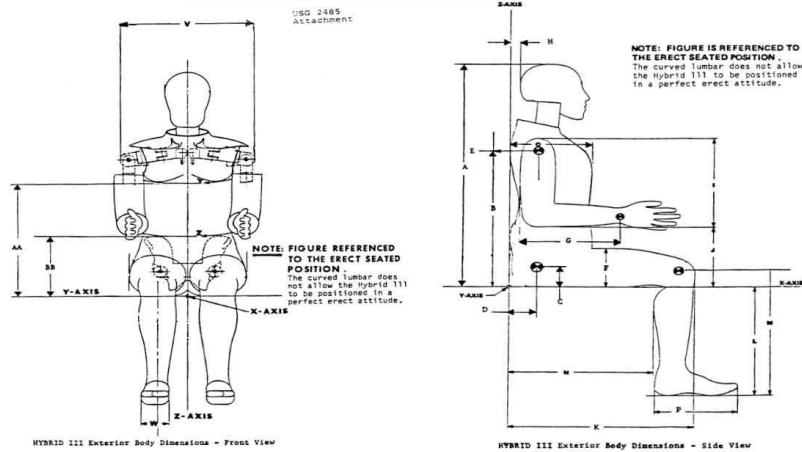


External Measurements - Hybrid 3 - 50th Male

Technician: K. Brogan

Date: 05/10/2022

Dummy Serial Number: 142



Symbol	Description	Specification (in)		Result (in)	Pass/Fail
A	Sitting Height	34.6	35.0	34.8	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	5.8	Pass
G	Back of Elbow to Wrist Pivot	11.4	12.0	11.8	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	23.2	Pass
L	Popliteal Height	16.9	17.9	17.4	Pass
M	Knee Pivot Height	19.1	19.7	19.4	Pass
N	Buttock Popliteal Length	17.8	18.8	18.0	Pass
O	Chest Depth without Jacket	8.4	9.0	8.8	Pass
P	Foot Length (right)	9.9	10.5	10.2	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	39.0	Pass
Z	Waist Circumference	32.9	34.1	33.5	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

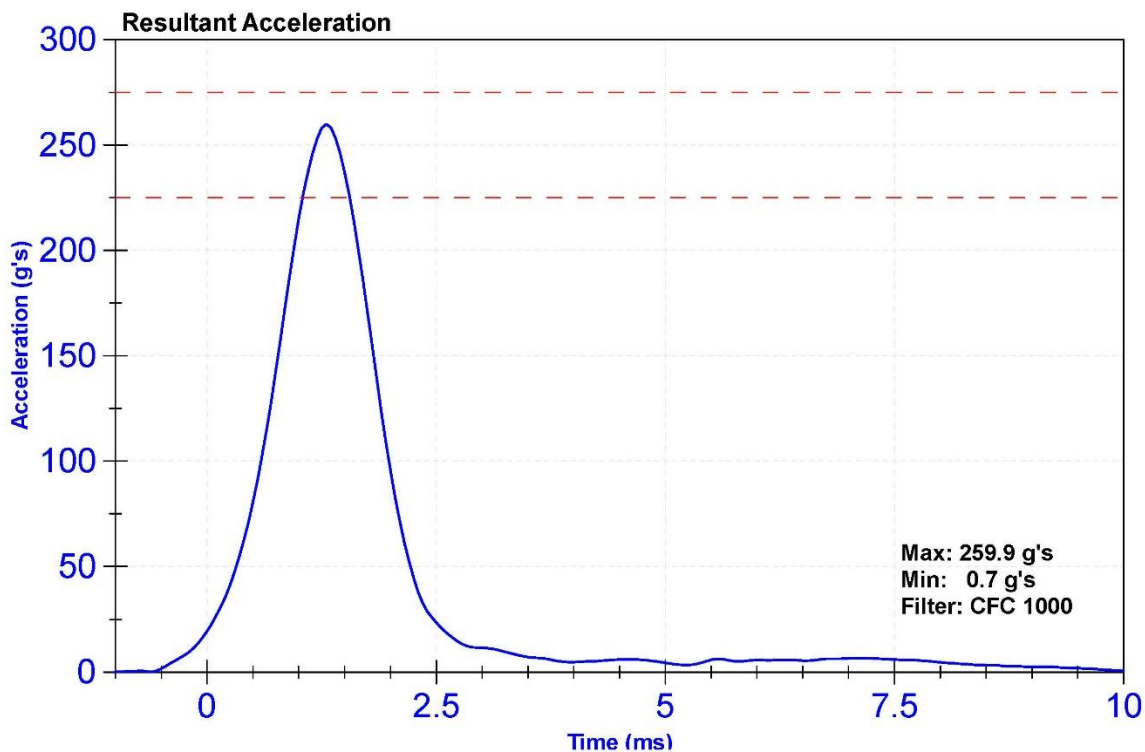
ATD Manufacturer	Humanetics	Test Technician	B. Kirchner
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

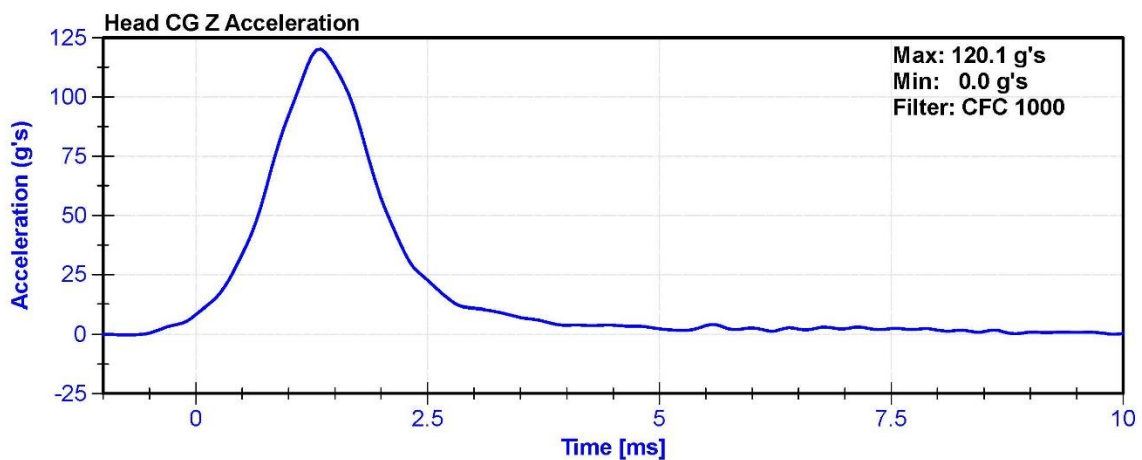
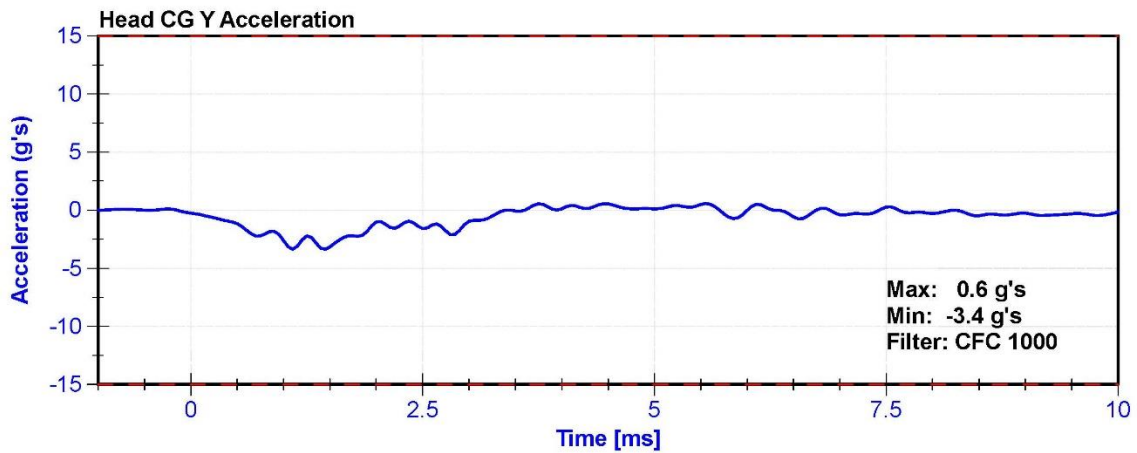
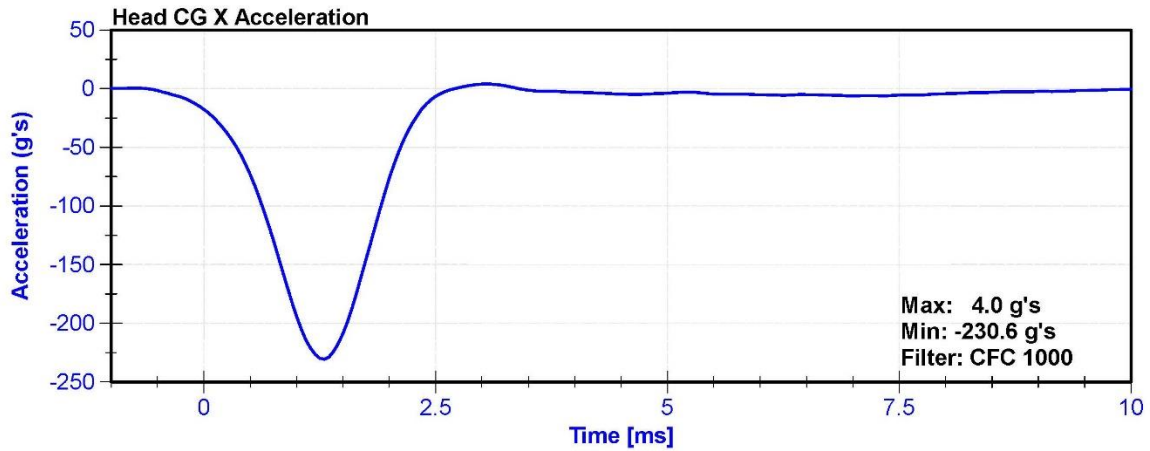
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.2	Pass
Humidity	10	70	%	36.6	Pass
Resultant Acceleration	225	275	g's	259.9	Pass
Oscillation	0	10	%	2.5	Pass
Lateral Acceleration	-15	15	g's	-3.4	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	Endevco	P51681	5/10/2022	11/6/2022
Y Accelerometer	Endevco	P64151	5/10/2022	11/6/2022
Z Accelerometer	Endevco	P52114	5/10/2022	11/6/2022





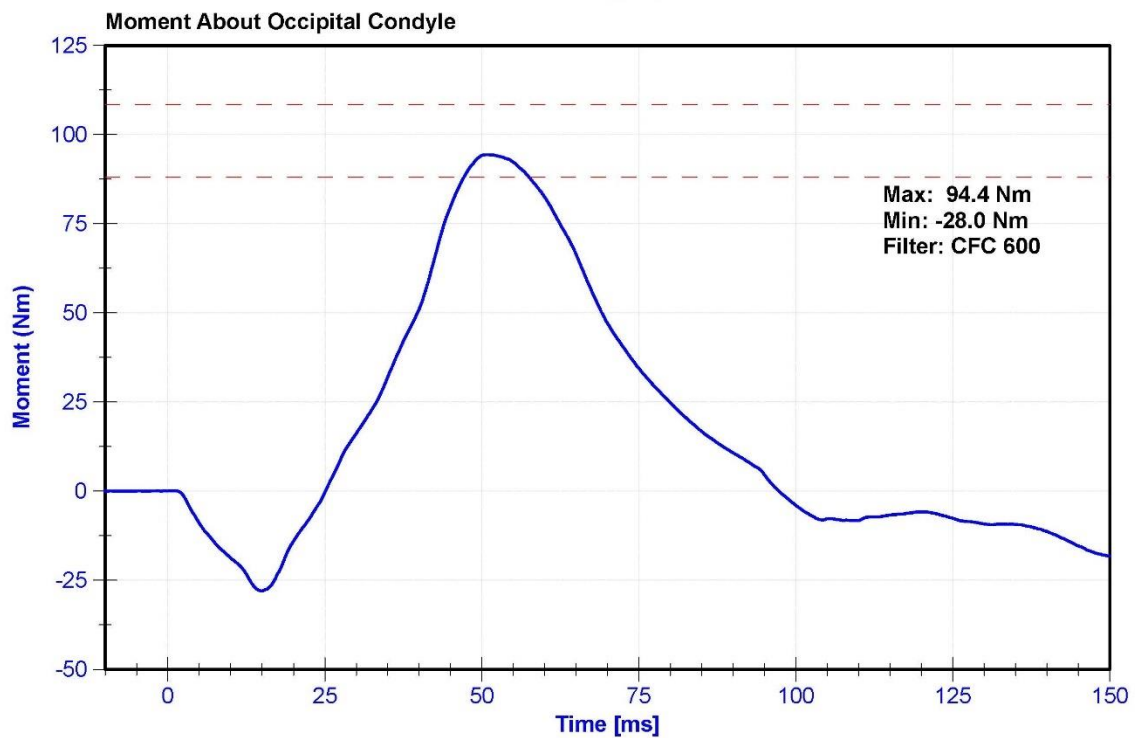
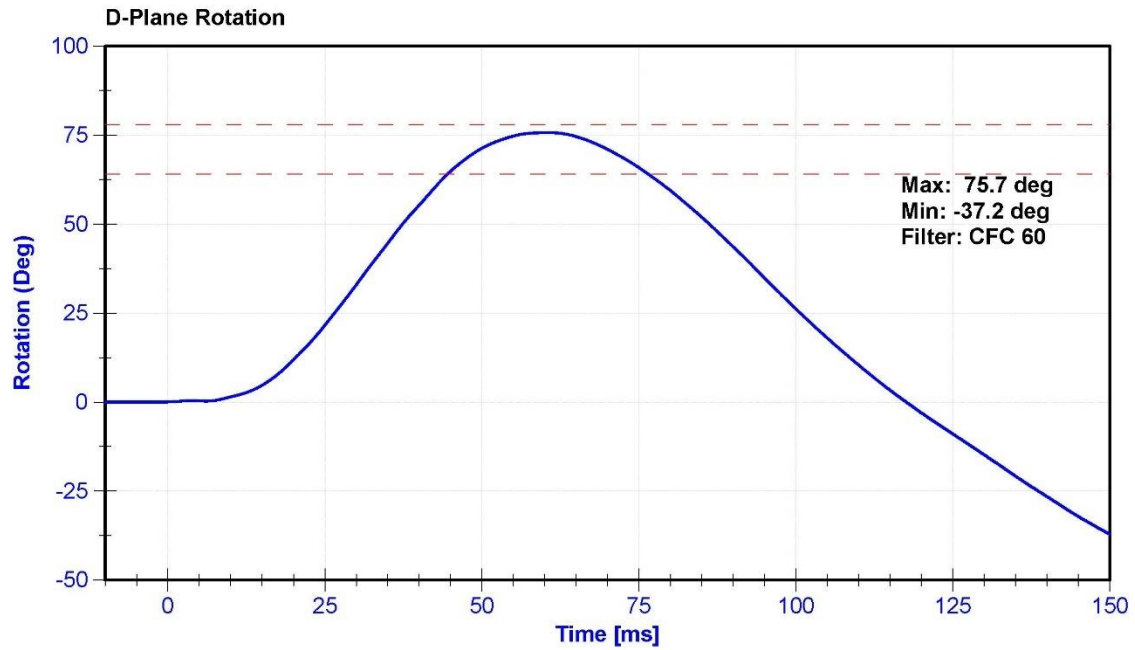
ATD Manufacturer	Humanetics	Test Technician	C. Mantell
ATD Serial Number	142	Laboratory Supervisor	C. Mantell

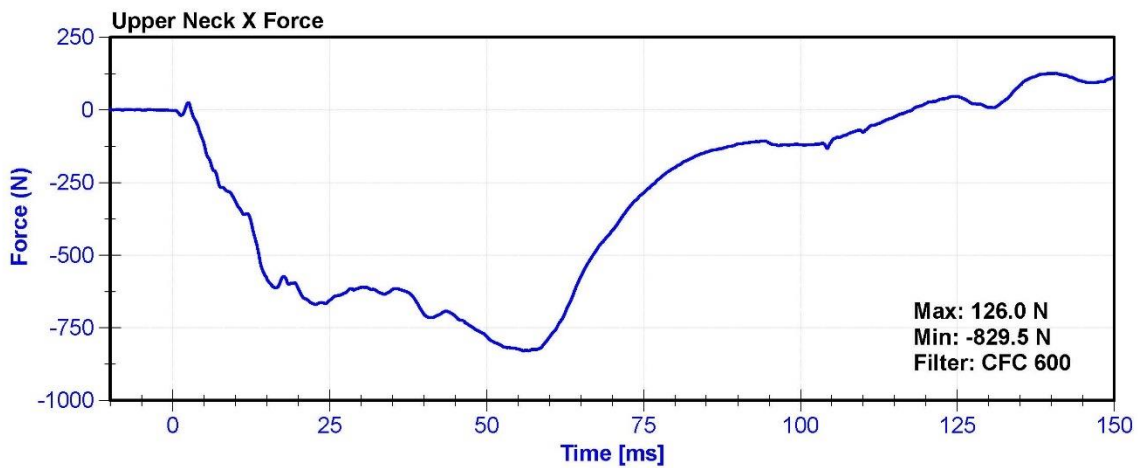
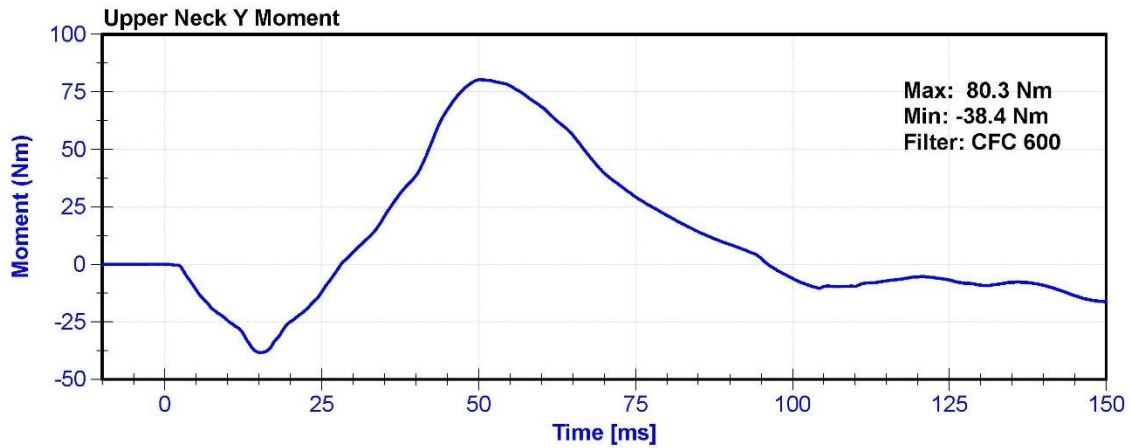
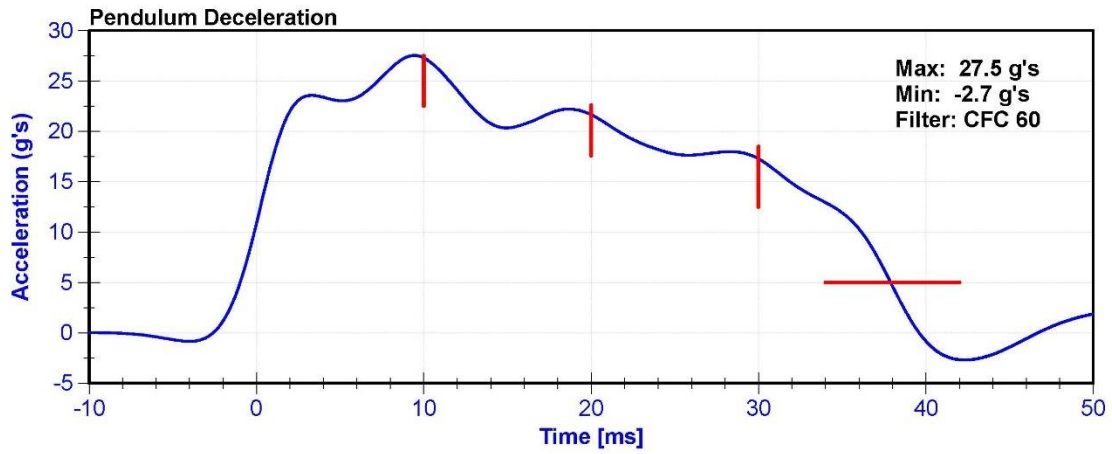
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.7	Pass
Humidity	10	70	%	44.3	Pass
Velocity	6.89	7.13	m/s	6.950	Pass
Pendulum Deceleration at 10ms	22.5	27.5	g's	27.29	Pass
Pendulum Deceleration at 20ms	17.6	22.6	g's	21.66	Pass
Pendulum Deceleration at 30ms	12.5	18.5	g's	17.28	Pass
Max. Pendulum Deceleration After 30ms	0	29	g's	27.5	Pass
Pendulum Deceleration Time to 5 g's	34	42	ms	37.9	Pass
Maximum D Plane Rotation	64	78	deg	75.7	Pass
Time to Maximum Rotation	57	64	ms	60.4	Pass
Rotation Decay to Zero	113	127	ms	117.6	Pass
Moment About Occipital Condyle	88.1	108.4	Nm	94.36	Pass
Time to Maximum Moment	47	58	ms	51.0	Pass
Moment Decay to Zero	97	107	ms	97.4	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	7231CT	10/28/2021	10/28/2022
Pendulum Potentiometer	ETI	LABPOT1	5/9/2022	5/9/2023
Condyle Potentiometer	ETI	LABPOT2	5/9/2022	5/9/2023
Upper Neck Load Cell	FTSS	280-FX	9/14/2021	9/14/2022





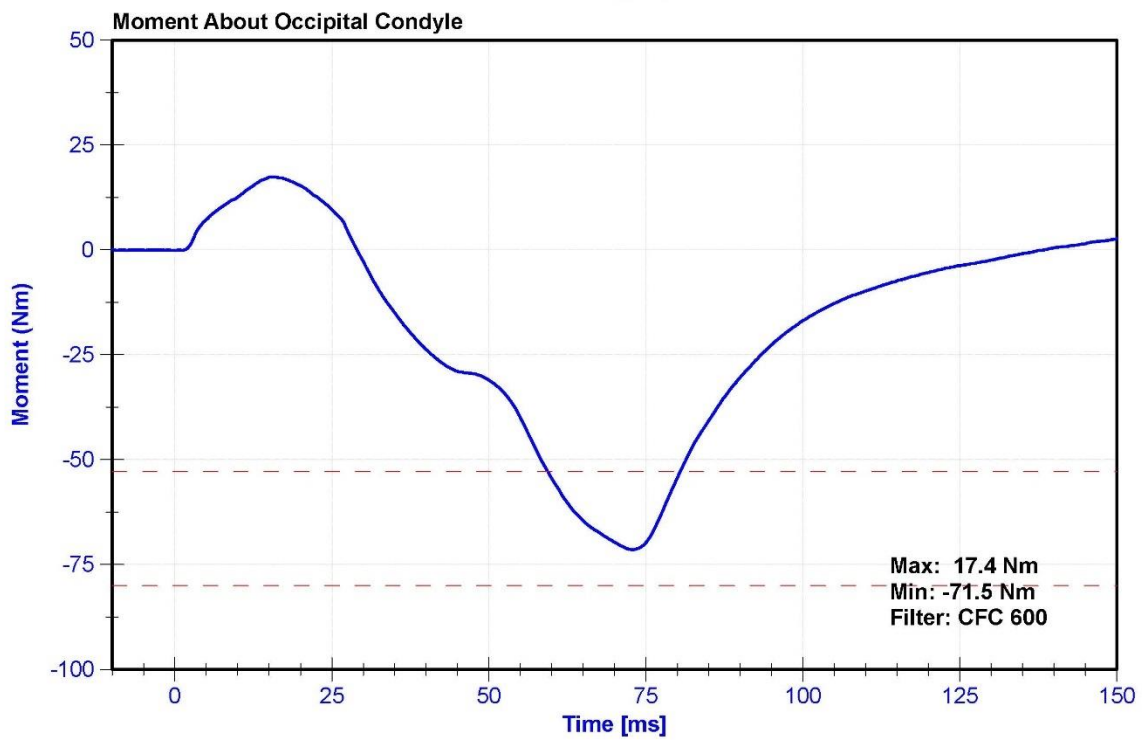
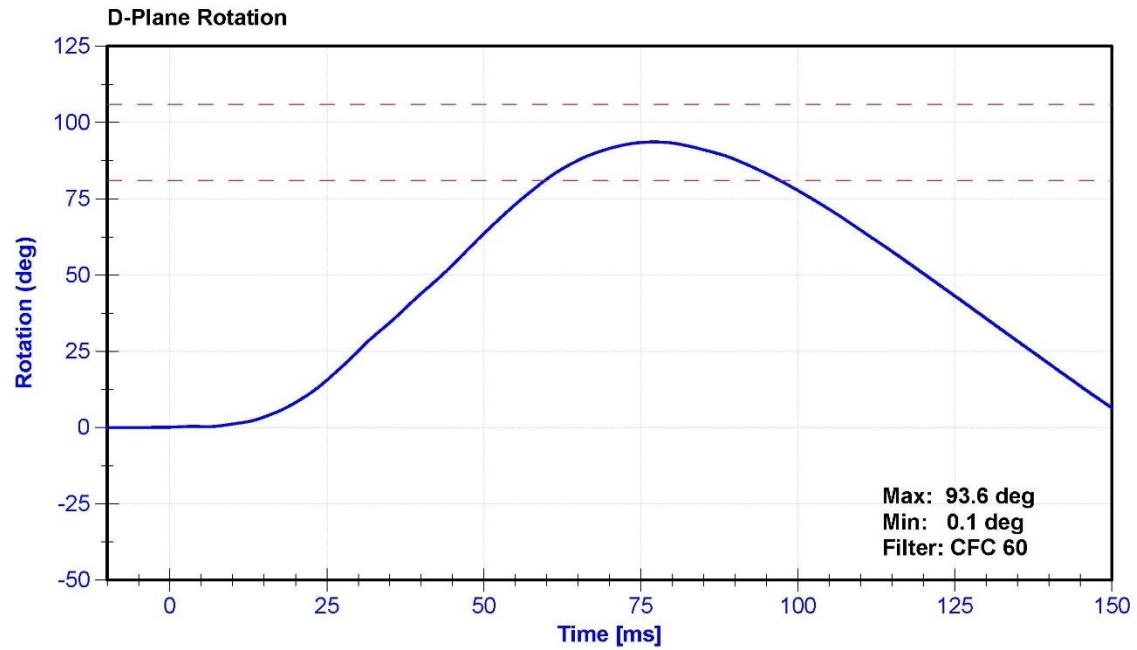
ATD Manufacturer	Humanetics	Test Technician	C. Mantell
ATD Serial Number	142	Laboratory Supervisor	C. Mantell

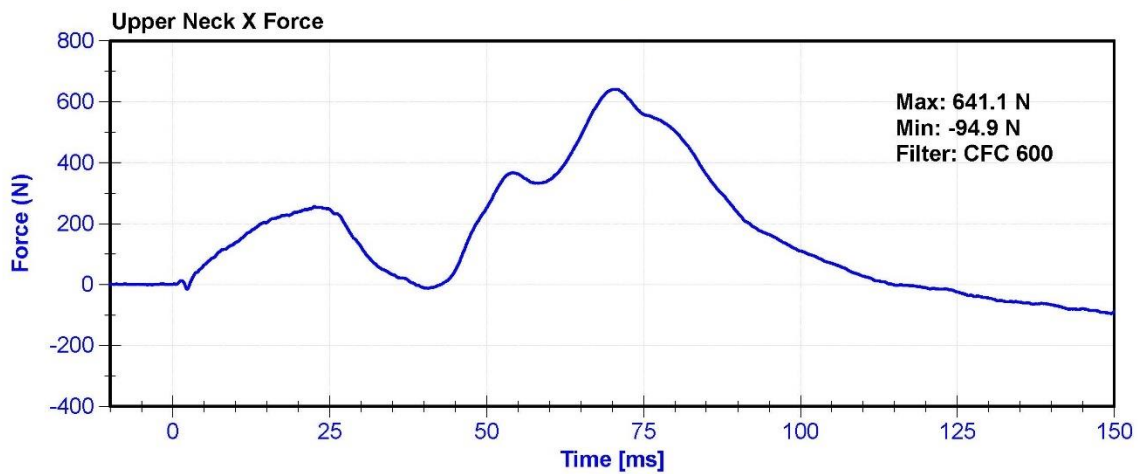
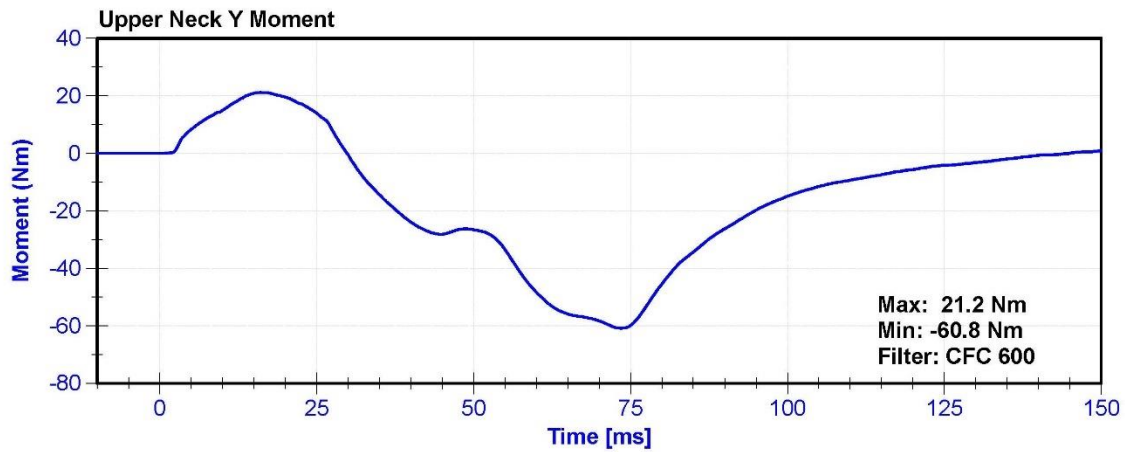
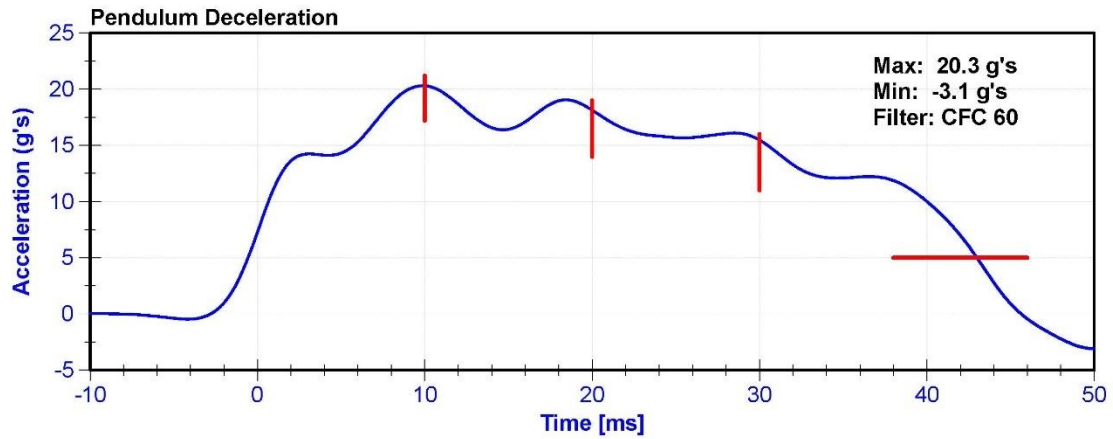
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.7	Pass
Humidity	10	70	%	44.3	Pass
Velocity	5.94	6.19	m/s	6.079	Pass
Pendulum Deceleration at 10ms	17.2	21.2	g's	20.30	Pass
Pendulum Deceleration at 20ms	14	19	g's	18.1	Pass
Pendulum Deceleration at 30ms	11	16	g's	15.5	Pass
Max. Pendulum Deceleration After 30ms	0	22	g's	20.3	Pass
Pendulum Deceleration Time to 5 g's	38	46	ms	43.0	Pass
Maximum D Plane Rotation	81	106	deg	93.6	Pass
Time to Maximum Rotation	72	82	ms	77.1	Pass
Rotation Decay to Zero	147	174	ms	154.6	Pass
Minimum Moment About OC	-80	-52.9	Nm	-71.48	Pass
Time to Minimum Moment	65	79	ms	72.9	Pass
Moment Decay to Zero	120	148	ms	138.4	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	C16503	10/28/2021	10/28/2022
Pendulum Potentiometer	ETI	LABPOT1	5/9/2022	5/9/2023
Condyle Potentiometer	ETI	LABPOT2	5/9/2022	5/9/2023
Upper Neck Load Cell	FTSS	280-FX	9/14/2021	9/14/2022





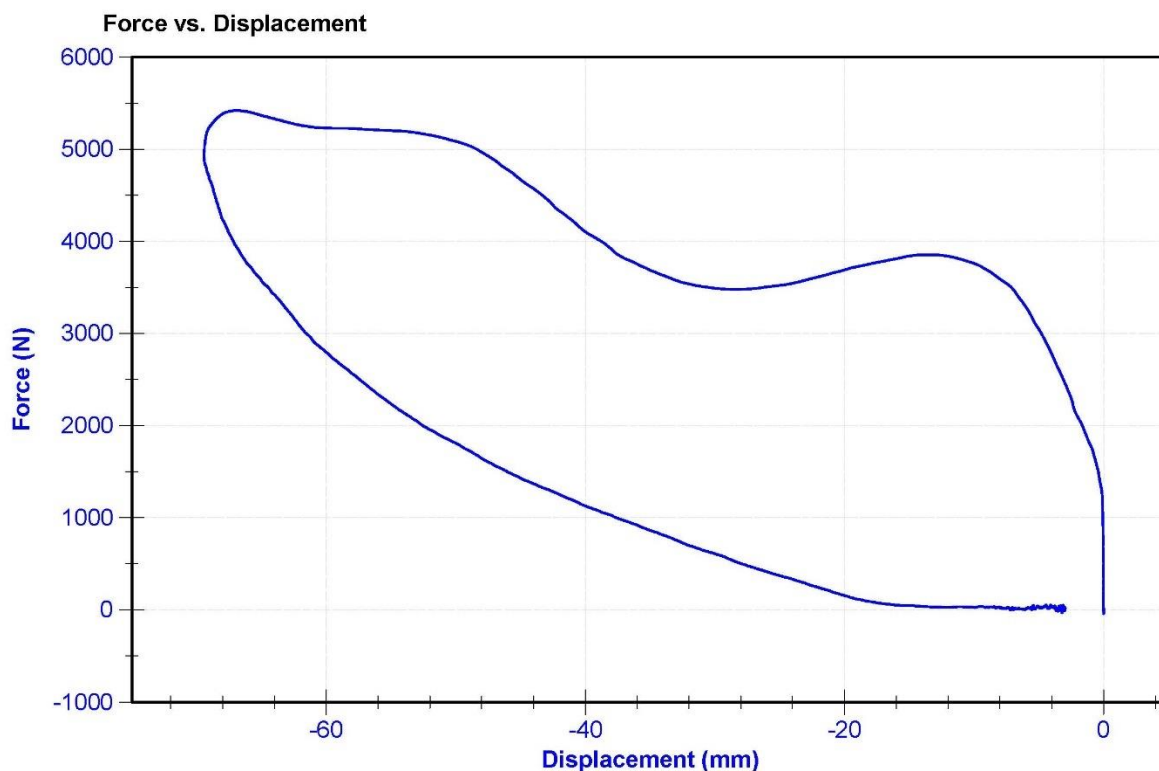
ATD Manufacturer	Humanetics	Test Technician	B. Kirchner
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

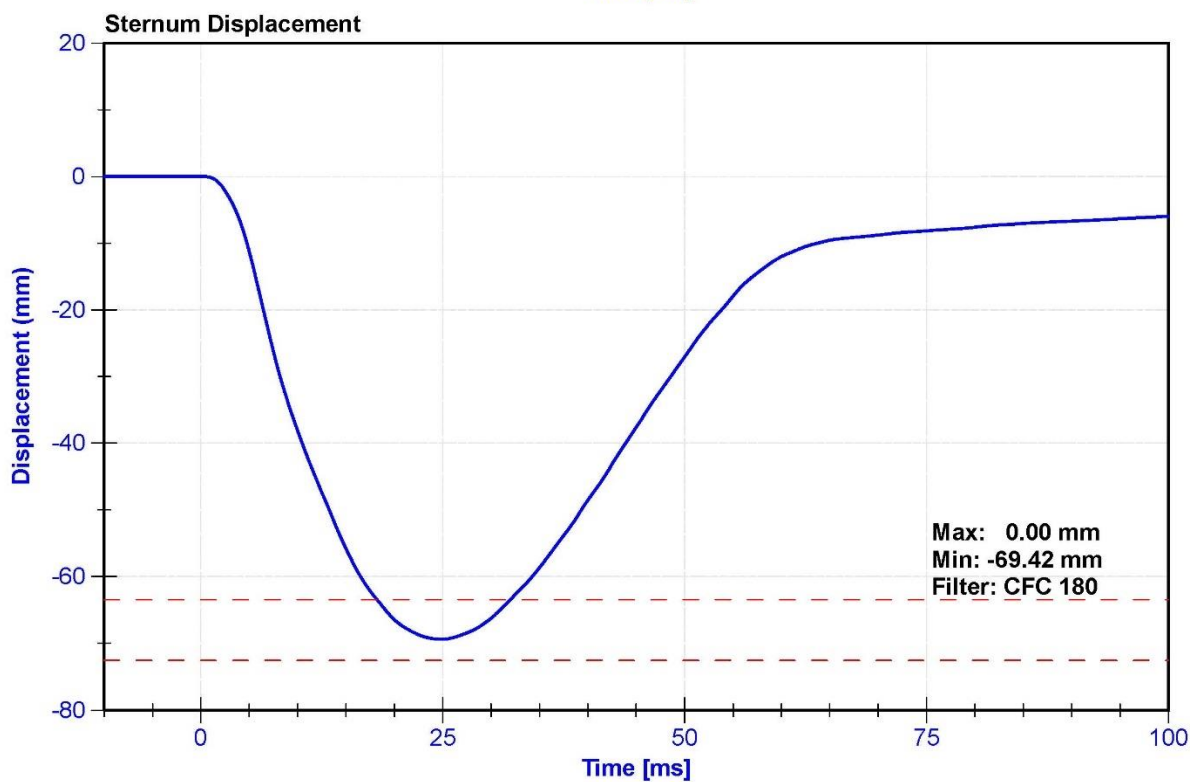
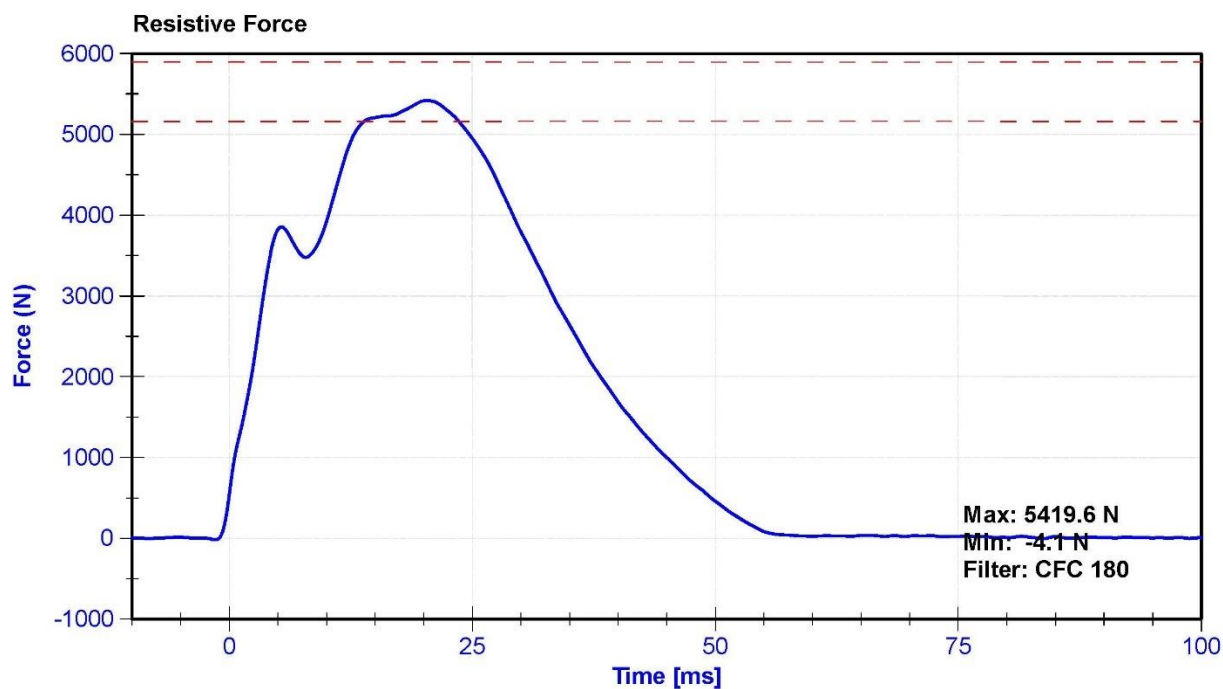
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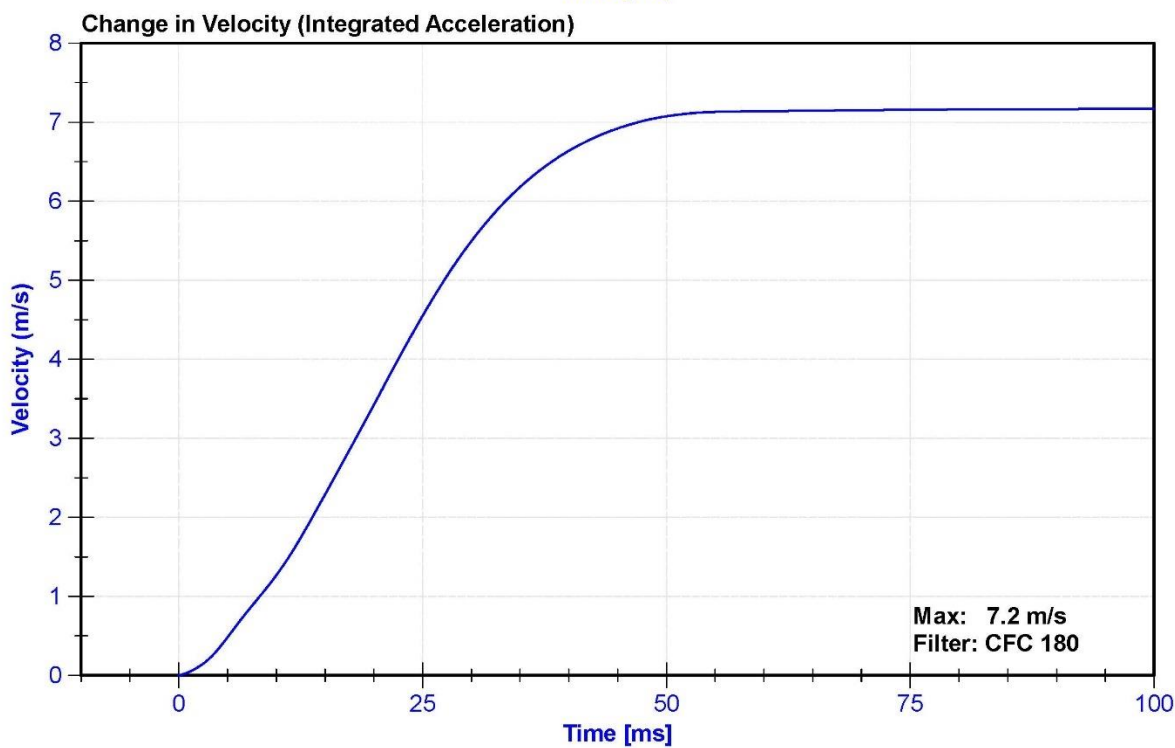
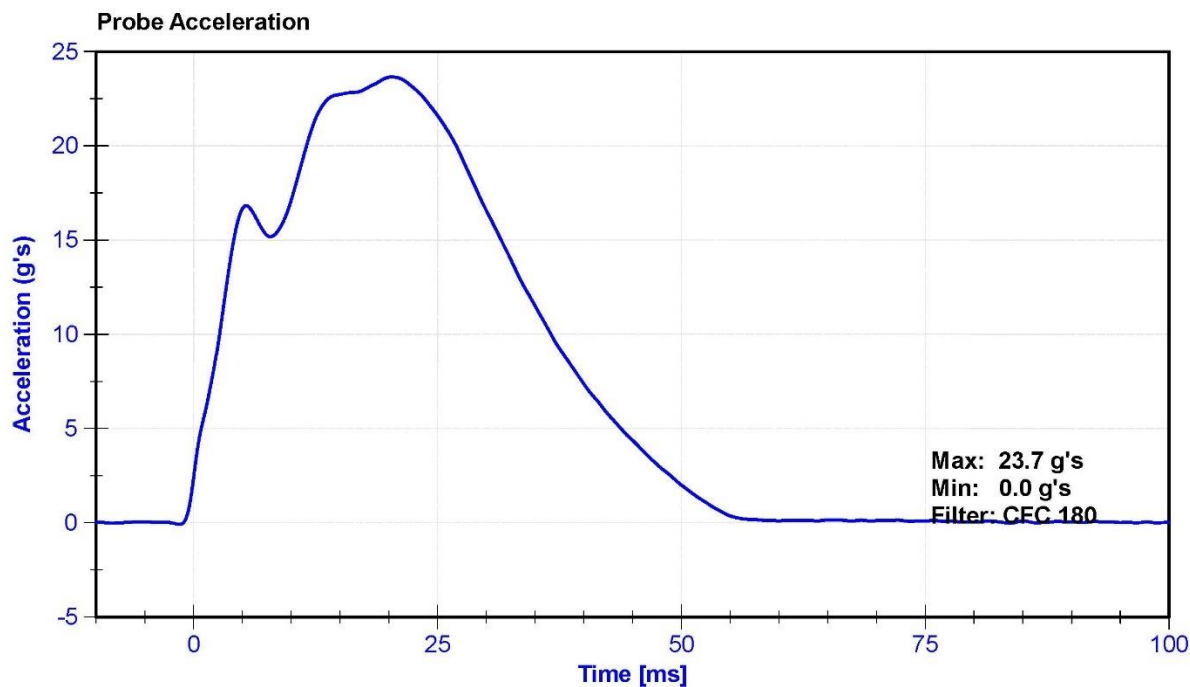
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.2	Pass
Humidity	10	70	%	24.9	Pass
Velocity	6.59	6.83	m/s	6.644	Pass
Chest Displacement	-72.6	-63.5	mm	-69.42	Pass
Resistive Force	5160	5894	N	5419.6	Pass
Hysteresis	65	85	%	70.8	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	P51736	10/25/2021	10/25/2022
Chest Potentiometer	Servo	142GFE	11/16/2021	5/17/2022







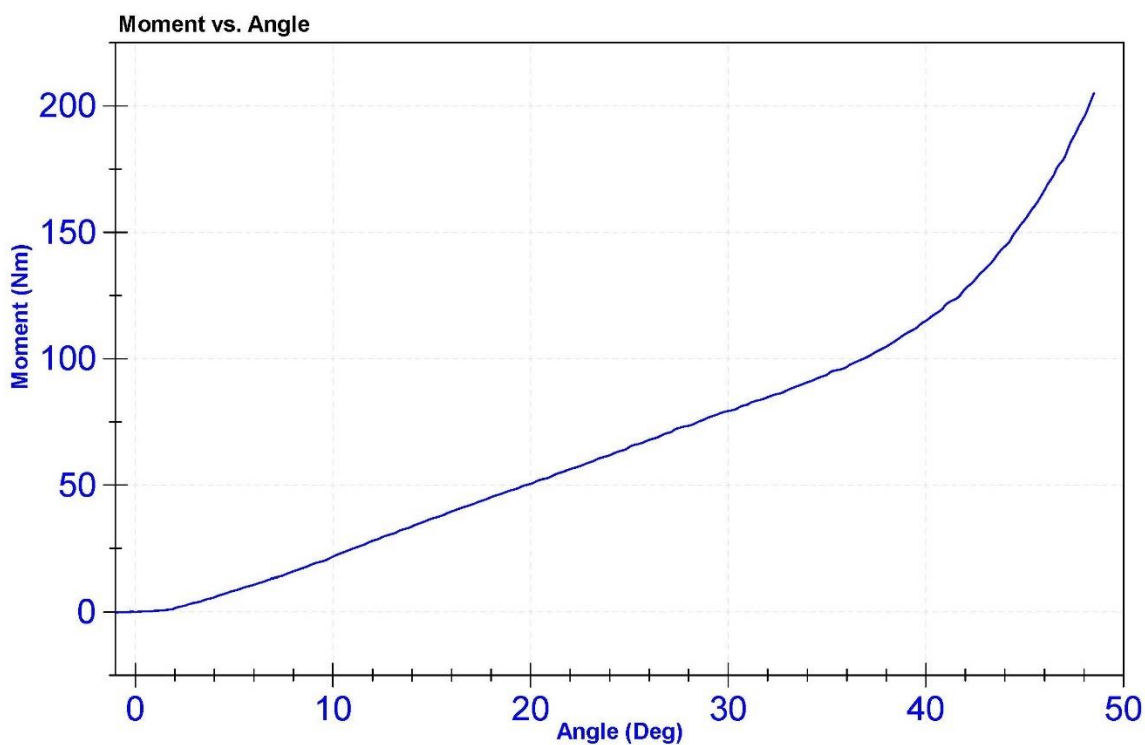
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.8	Pass
Humidity	10	70	%	28	Pass
Average Velocity	5	10	deg/s	7.5	Pass
Angle at 203Nm	40	50	deg	48.4	Pass
Moment at 30 degrees	0	94.9	Nm	79.3	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Potentiometer	ETI SP22	DS-0008	9/27/2021	9/27/2022
Load Cell	Key Trans 2301-02	LC-115 My	2021-08-13	2022-08-13



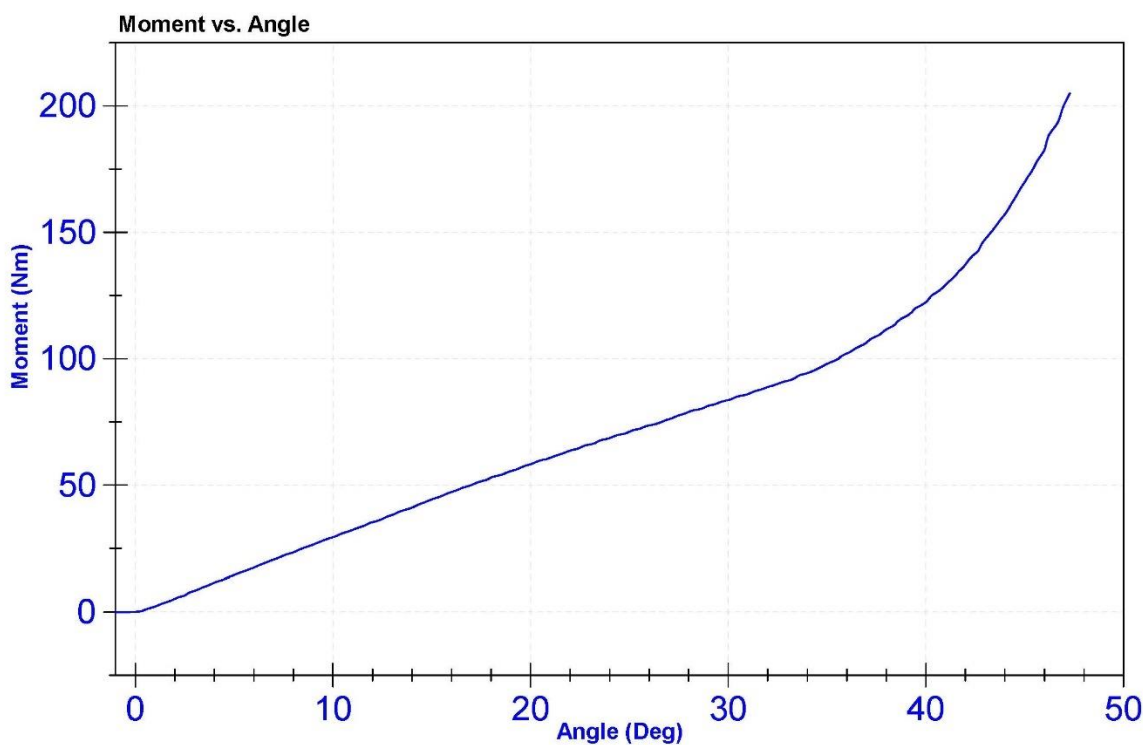
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.8	Pass
Humidity	10	70	%	28	Pass
Average Velocity	5	10	deg/s	7.4	Pass
Angle at 203Nm	40	50	deg	47.2	Pass
Moment at 30 degrees	0	94.9	Nm	83.6	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Potentiometer	ETI SP22	DS-0008	9/27/2021	9/27/2022
Load Cell	Key Trans 2301-02	LC-115 My	2021-08-13	2022-08-13



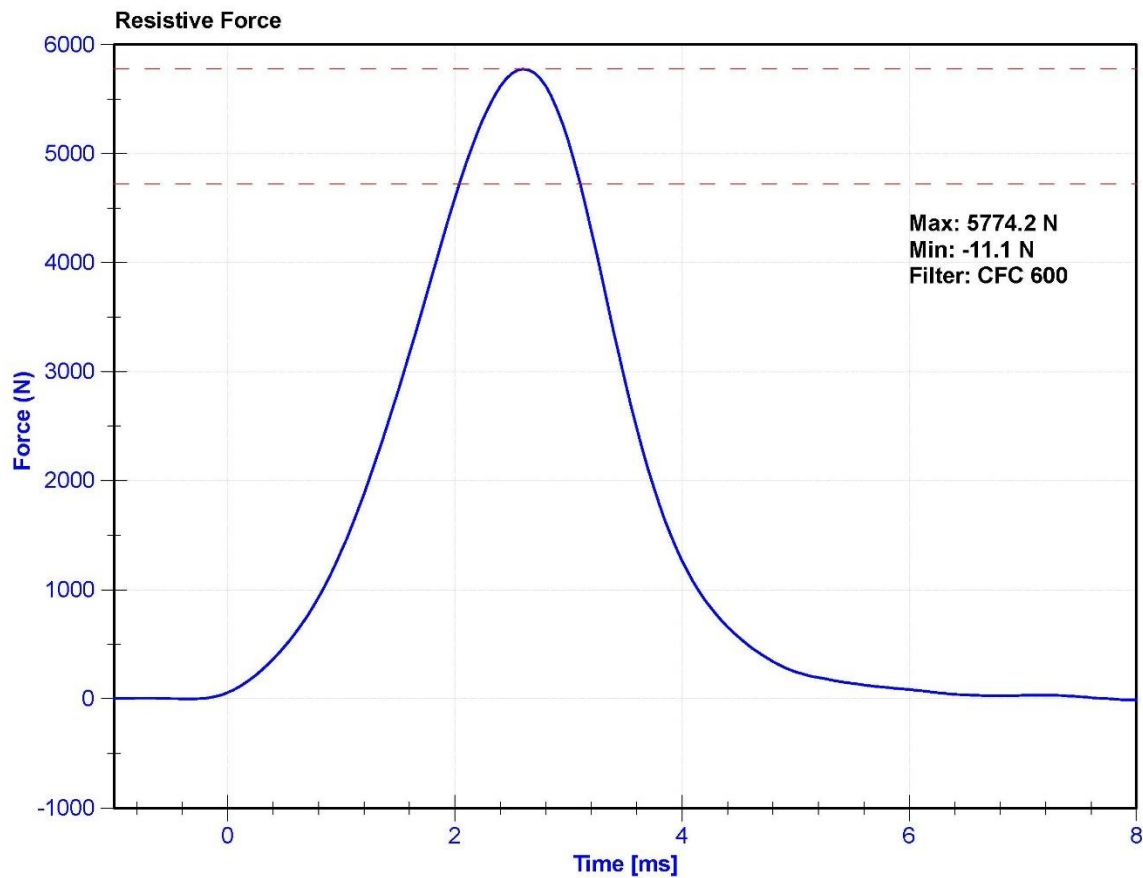
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

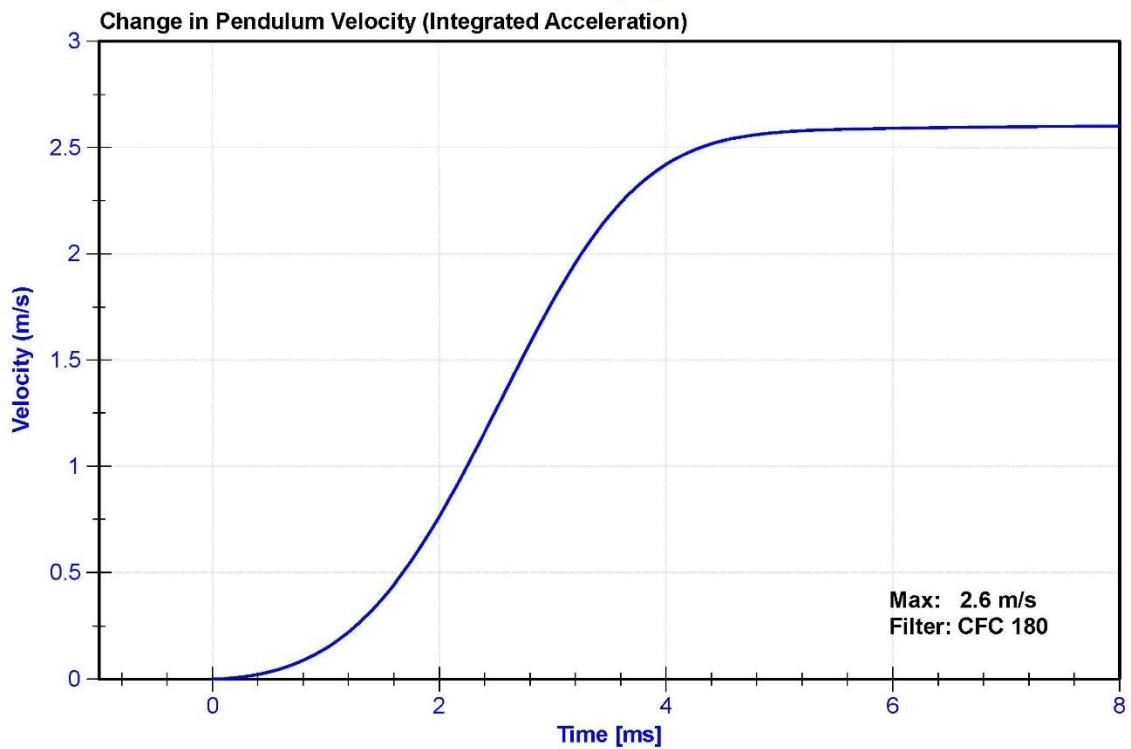
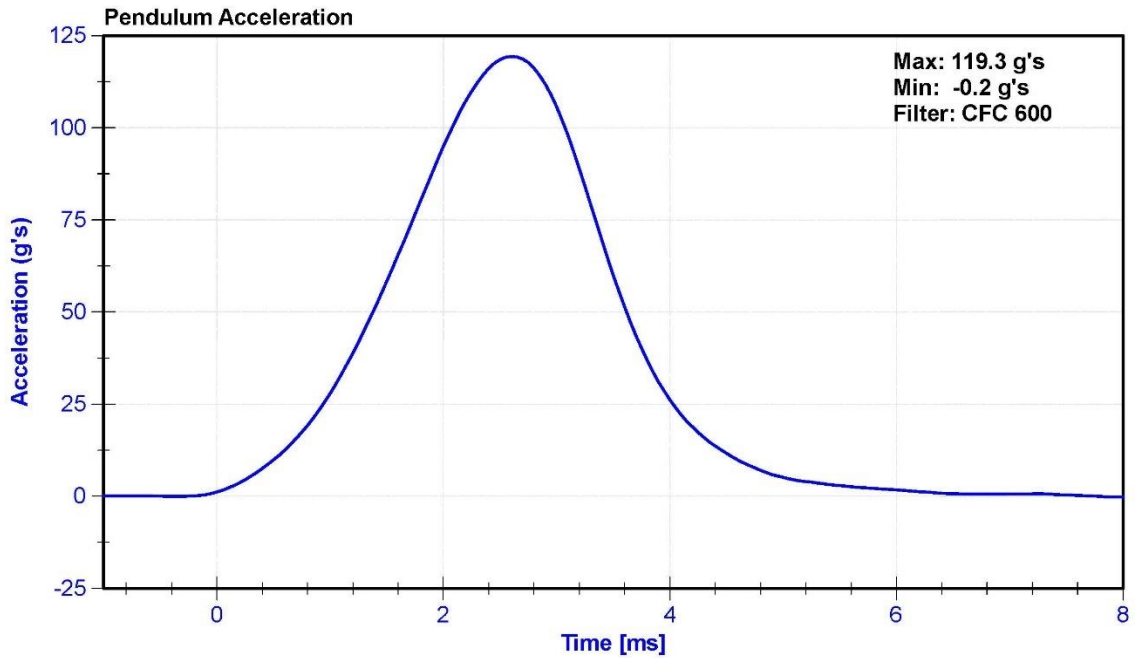
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.8	Pass
Humidity	10	70	%	28	Pass
Velocity	2.07	2.13	m/s	2.115	Pass
Maximum Resistive Force	4720	5780	N	5774.2	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	10/25/2022





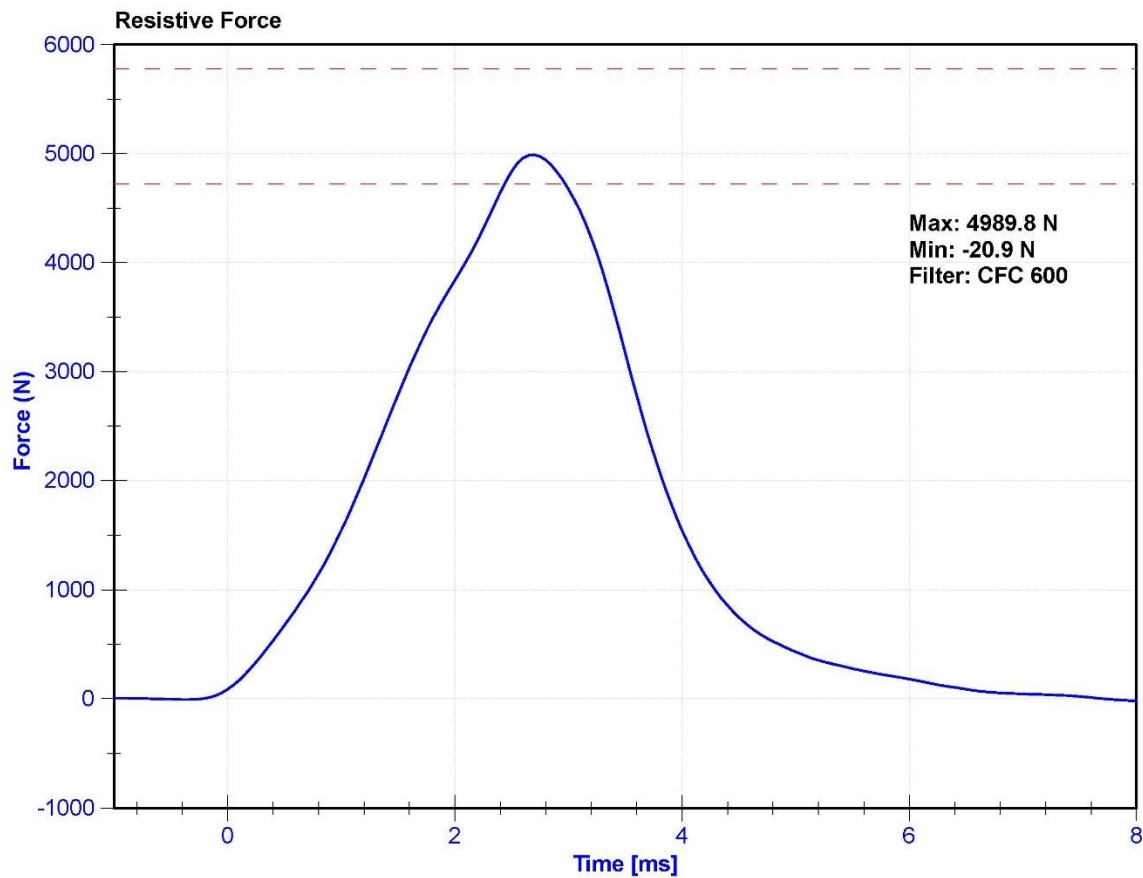
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

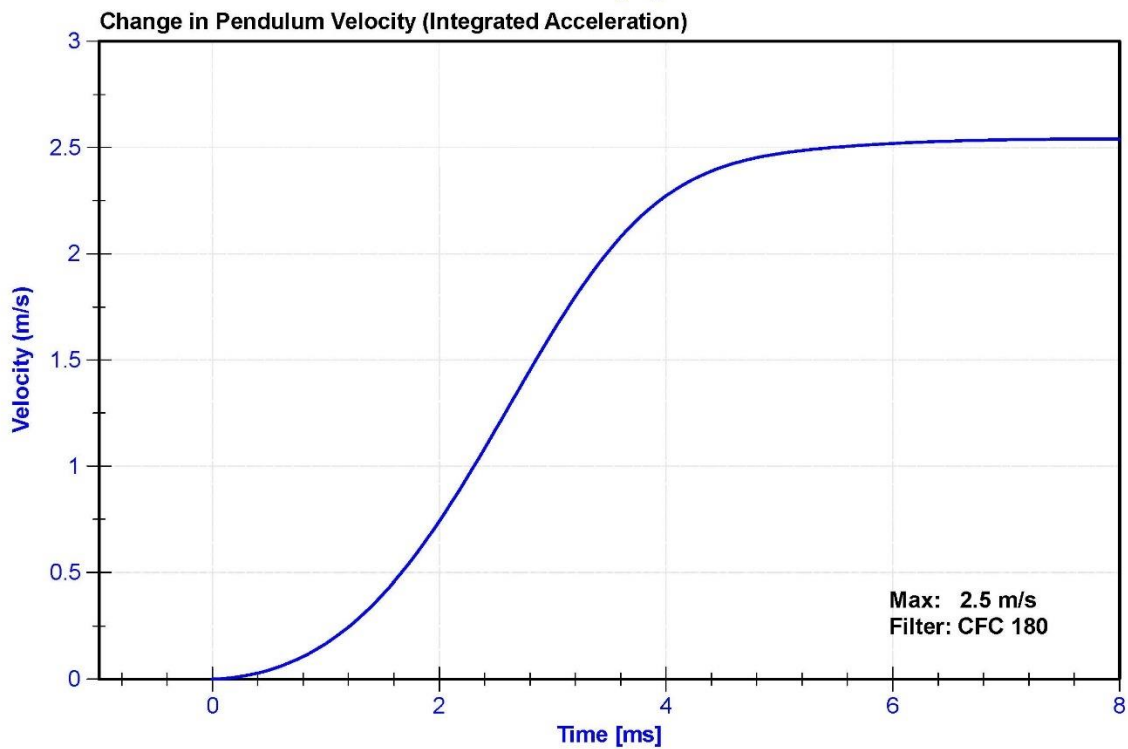
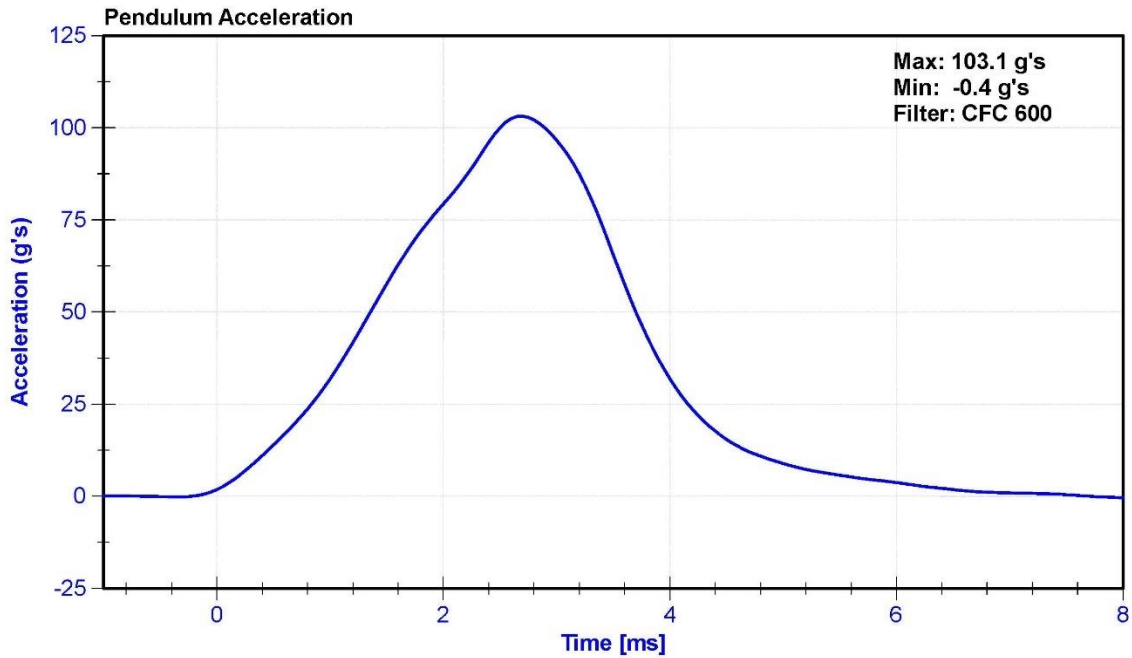
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.8	Pass
Humidity	10	70	%	28	Pass
Velocity	2.07	2.13	m/s	2.104	Pass
Maximum Resistive Force	4720	5780	N	4989.8	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	10/25/2022





CALIBRATION TEST RESULTS

PRE-TEST

HYBRID III 5TH PERCENTILE - PASSENGER ATD

SERIAL NO: 137

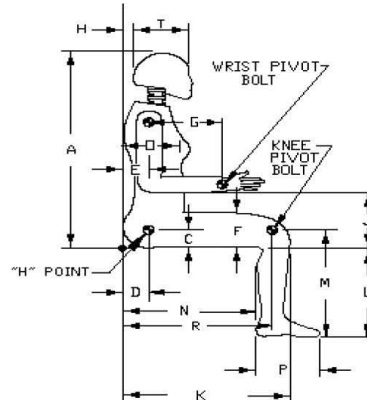
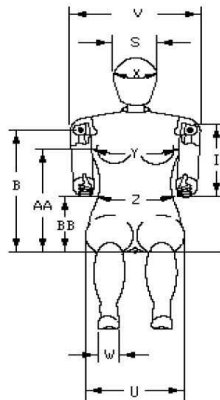


External Measurements - Hybrid 3 - 5th Female

Technician: K. Brogan

Date: 05-12-2022

Dummy Serial Number: 137



Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	775	800	788	Pass
B	Shoulder Pivot Height	432	457	445	Pass
C	H-Point Height	81	86	84	Pass
D	H-Point from Backline	145	150	147	Pass
E	Shoulder Pivot from Backline	69	84	78	Pass
F	Thigh Clearance	119	135	124	Pass
G	Back of Elbow to Wrist Pivot	244	259	250	Pass
H	Head Back to Backline	43	48	45	Pass
I	Shoulder to Elbow Length	277	297	285	Pass
J	Elbow Rest Height	183	203	195	Pass
K	Buttock to Knee Length	521	546	541	Pass
L	Popliteal Height	356	376	365	Pass
M	Knee Pivot Height	394	419	410	Pass
N	Buttock Popliteal Length	414	439	425	Pass
O	Chest Depth without Jacket	175	191	180	Pass
P	Foot Length (right)	219	234	228	Pass
R	Buttock To Knee Pivot Length	457	483	465	Pass
S	Head Breadth	137	147	141	Pass
T	Head Depth	178	188	180	Pass
U	Hip Breadth	300	315	310	Pass
V	Shoulder Breadth	351	366	359	Pass
W	Foot Breadth	79	94	85	Pass
X	Head Circumference	528	549	540	Pass
Y	Chest Circumference with Jacket	851	881	874	Pass
Z	Waist Circumference	460	790	650	Pass
AA	Reference Location (Chest Circumference)	333	358	345	Pass
BB	Reference Location (Waist Circumference)	160	170	165	Pass

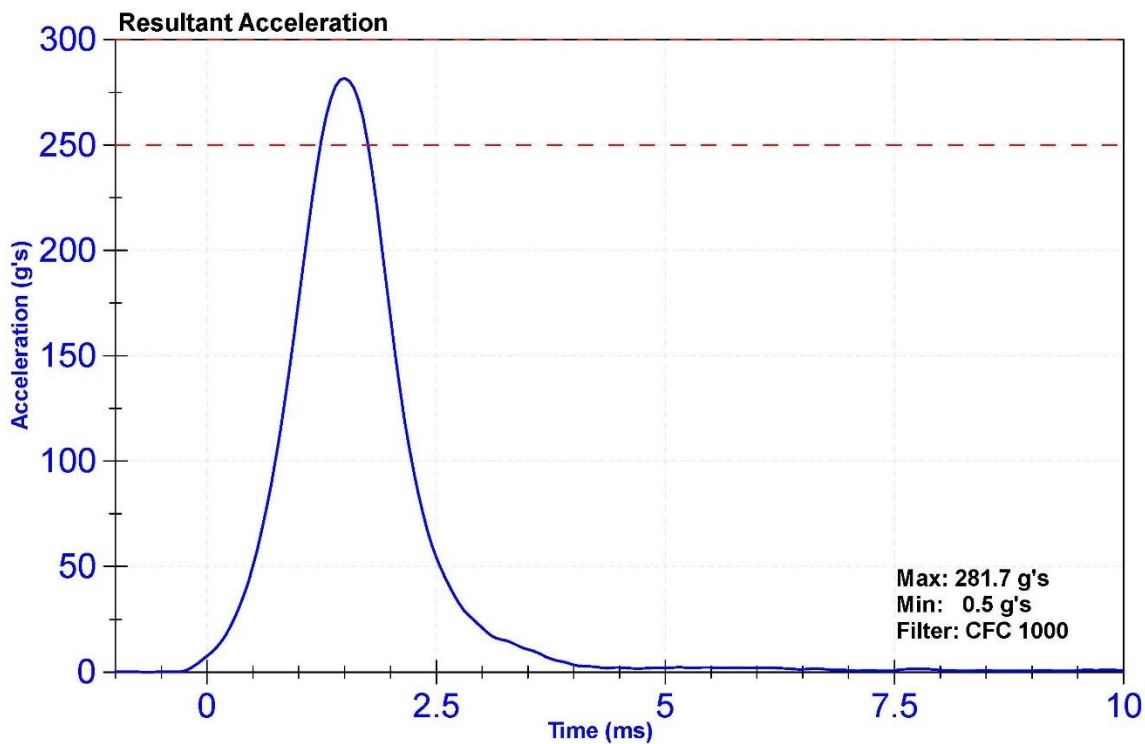
ATD Manufacturer	Humanetics	Test Technician	T. Roseman
ATD Serial Number	137	Laboratory Supervisor	K. Brogan

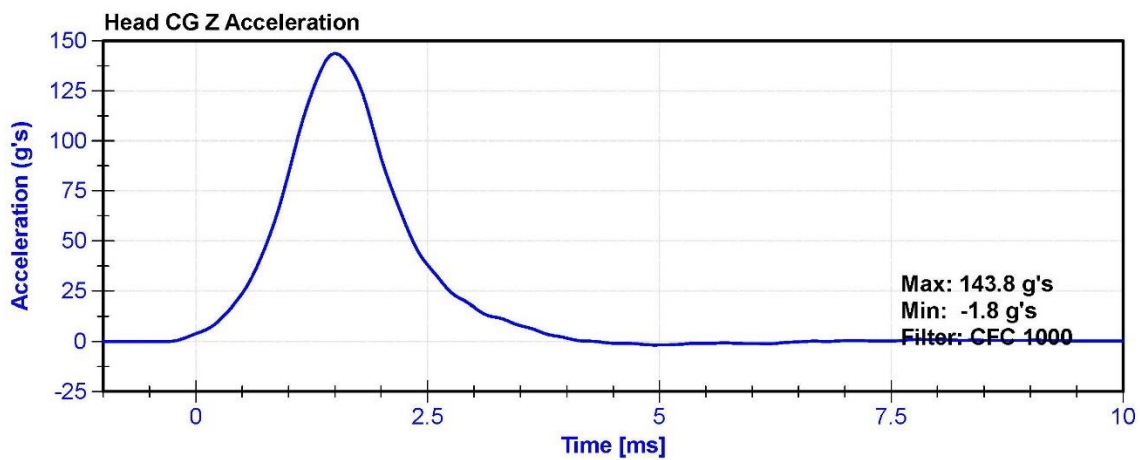
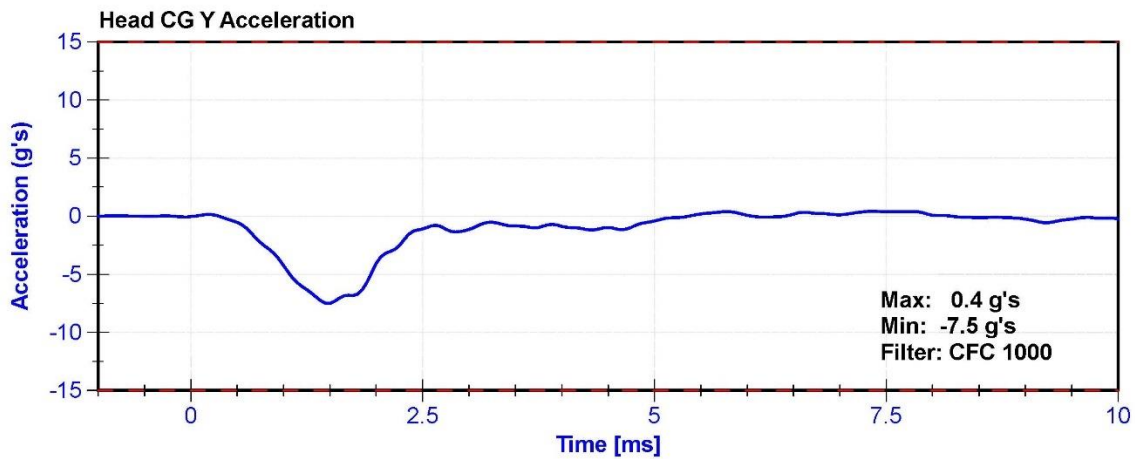
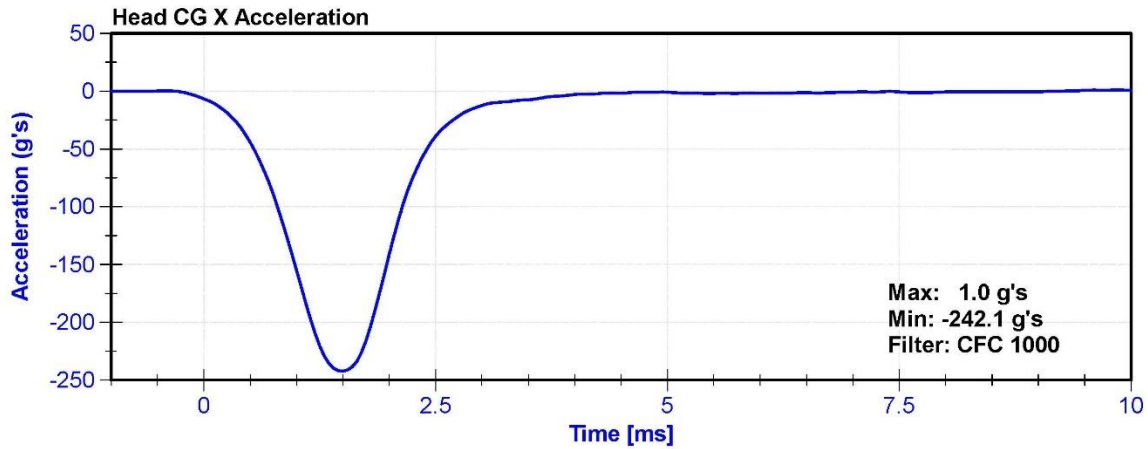
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.2	Pass
Humidity	10	70	%	26.0	Pass
Resultant Acceleration	250	300	g's	281.7	Pass
Oscillation	0	10	%	0.8	Pass
Lateral Acceleration	-15	15	g's	-7.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	Endevco	P79417	2/1/2022	7/31/2022
Y Accelerometer	Endevco	P83335	2/1/2022	7/31/2022
Z Accelerometer	Endevco	P64149	2/1/2022	7/31/2022





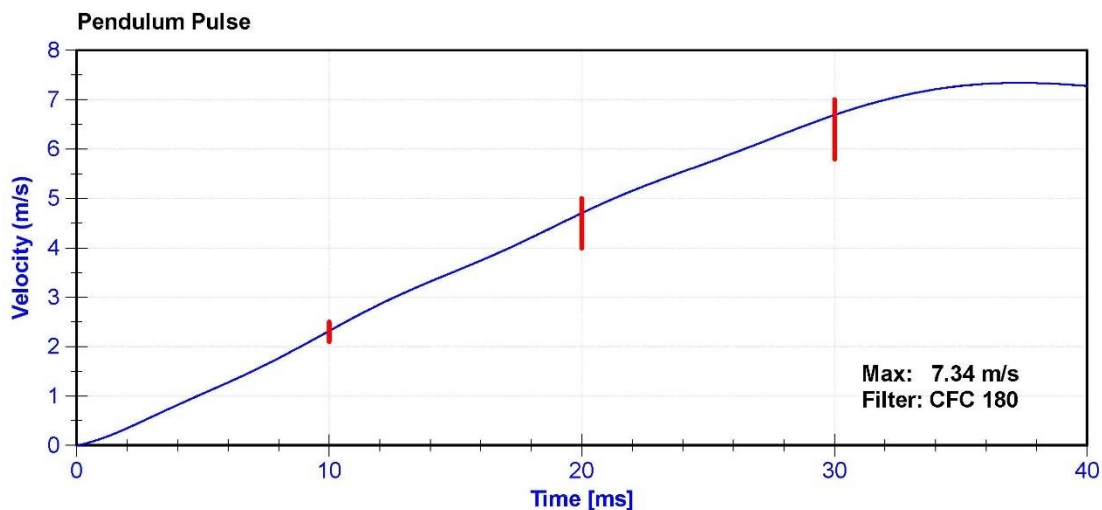
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	137	Laboratory Supervisor	K. Brogan

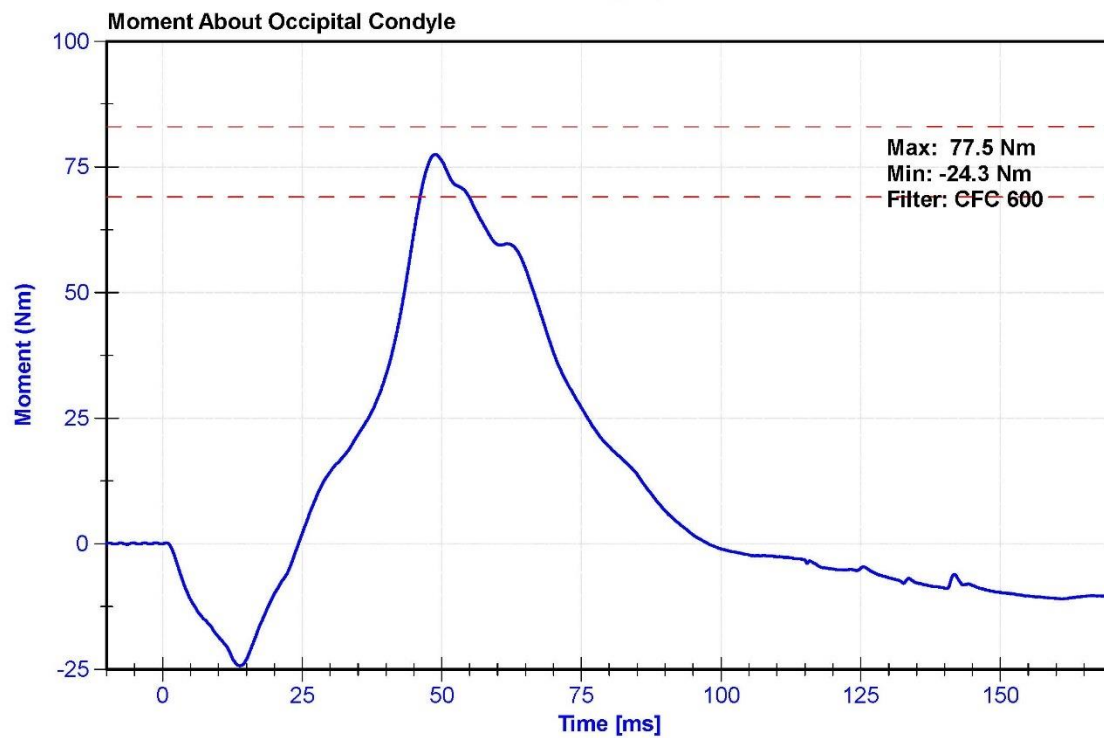
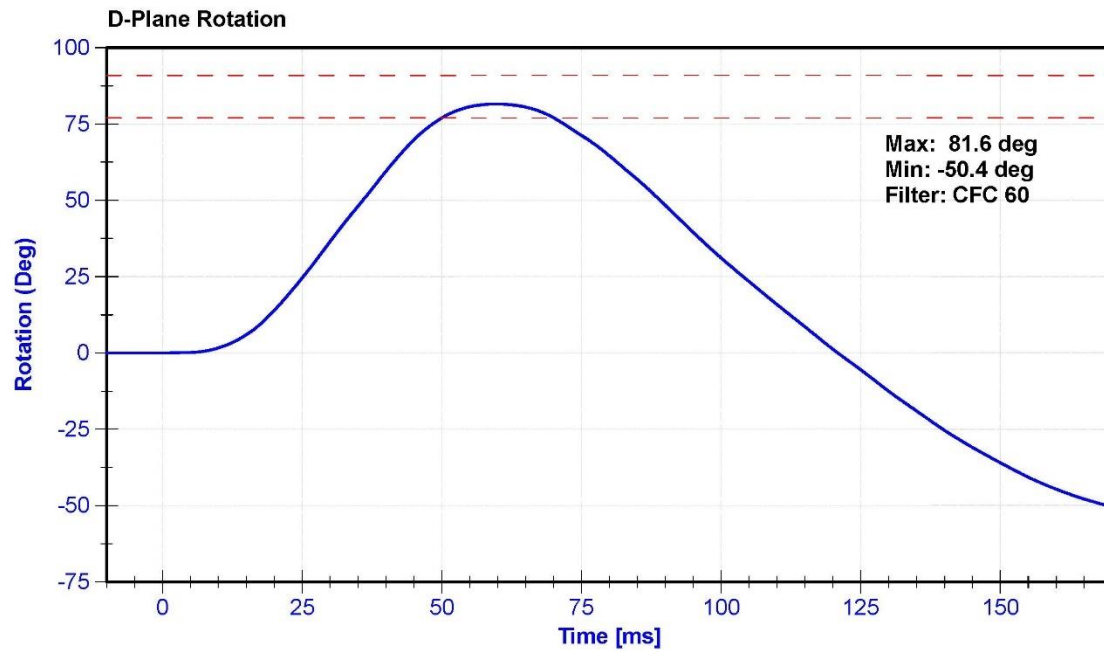
Results

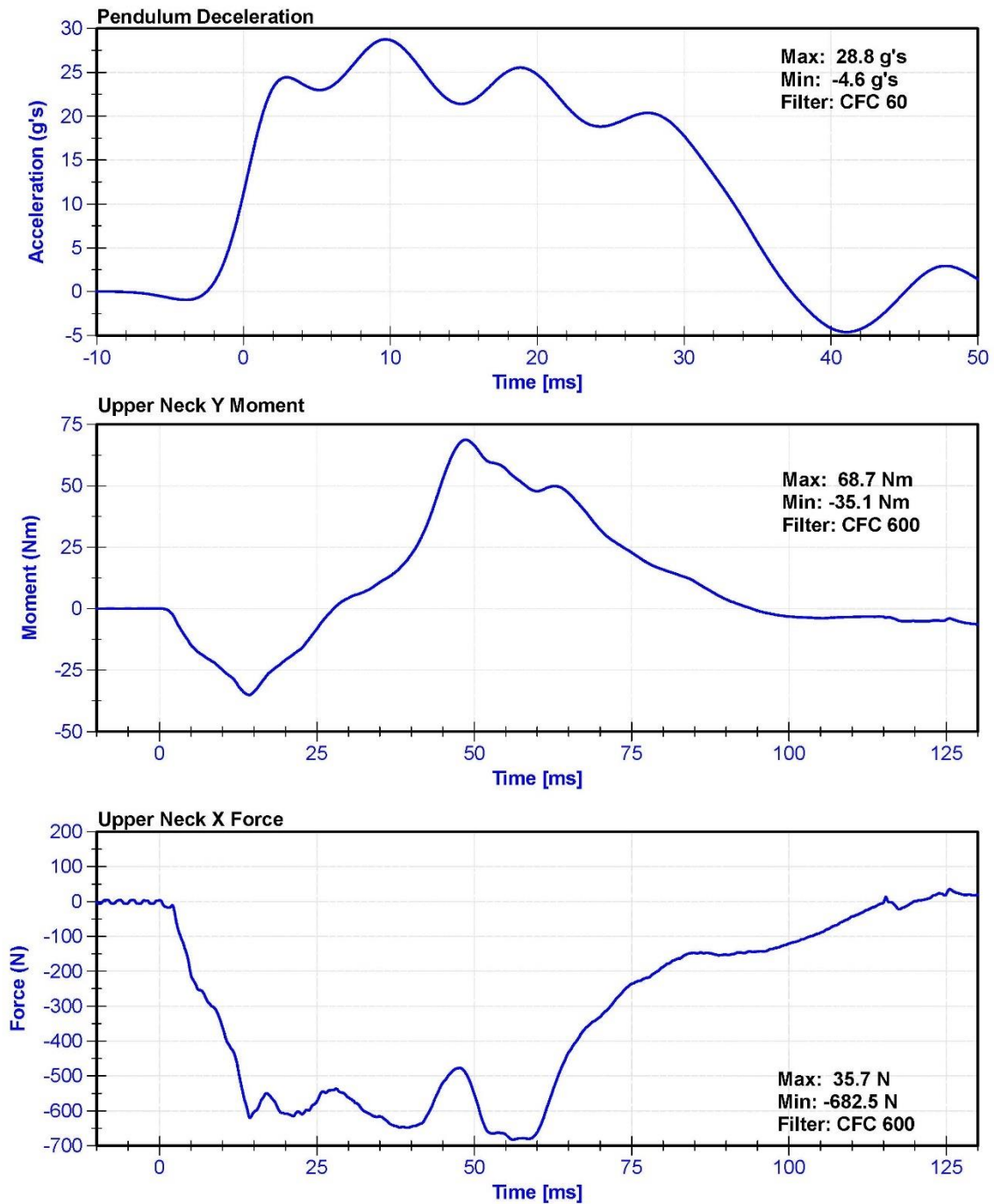
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	41.5	Pass
Velocity	6.89	7.13	m/s	7.016	Pass
Pendulum Impulse at 10ms	2.1	2.5	m/s	2.32	Pass
Pendulum Impulse at 20ms	4.0	5.0	m/s	4.70	Pass
Pendulum Impulse at 30ms	5.8	7.0	m/s	6.69	Pass
Max D Plane Rotation	77	91	deg	81.6	Pass
Max Moment During Rotation Interval	69	83	Nm	77.5	Pass
Moment Decay to 10.0 Nm	80	100	ms	87.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	7231CT	10/28/2021	10/28/2022
Pendulum Potentiometer	ETI	LABPOT1	5/9/2022	5/9/2023
Condyle Potentiometer	ETI	LABPOT2	5/9/2022	5/9/2023
Upper Neck Load Cell	Denton	2184-FX	6/24/2021	6/24/2022







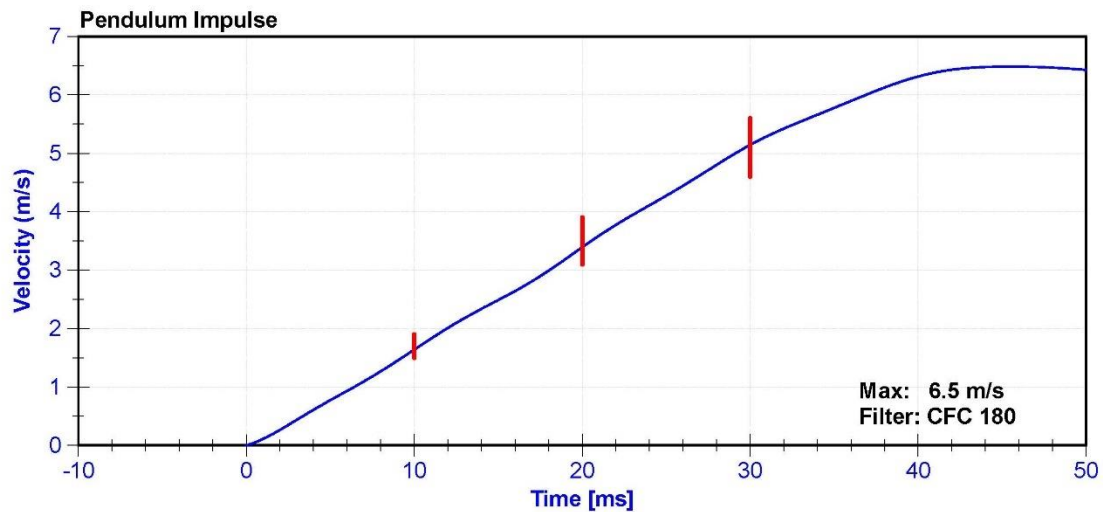
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	137	Laboratory Supervisor	K. Brogan

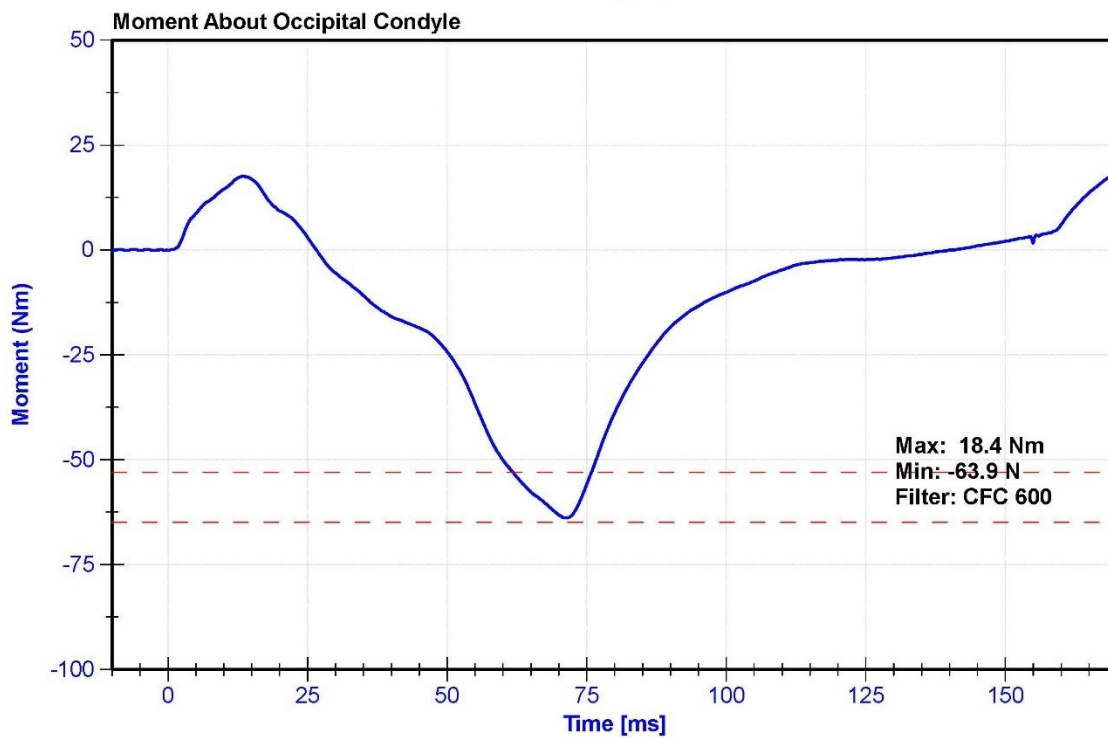
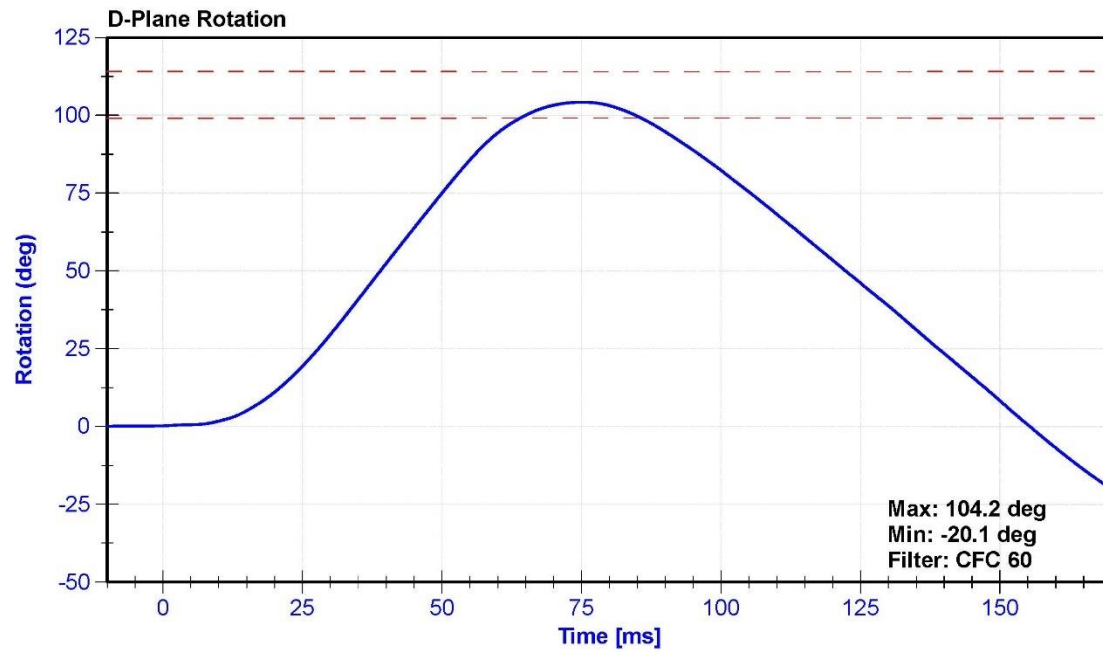
Results

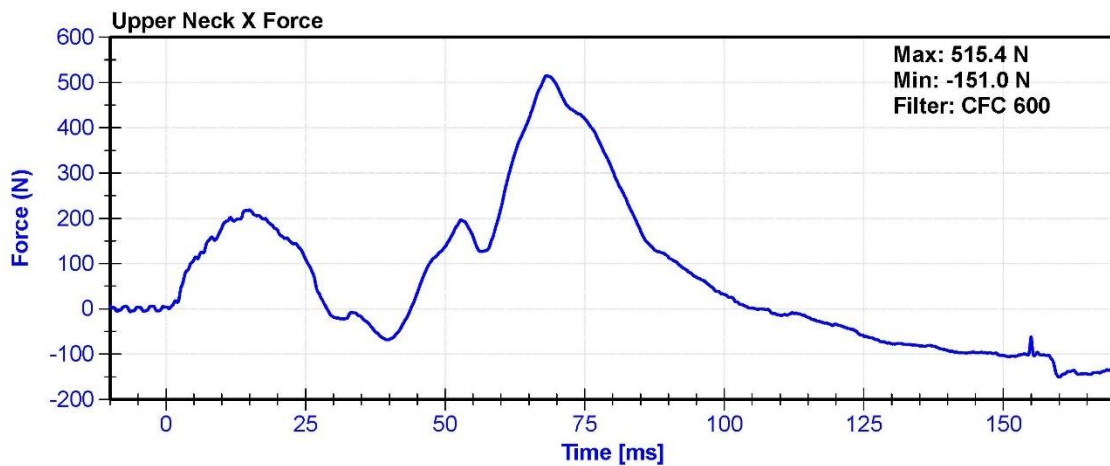
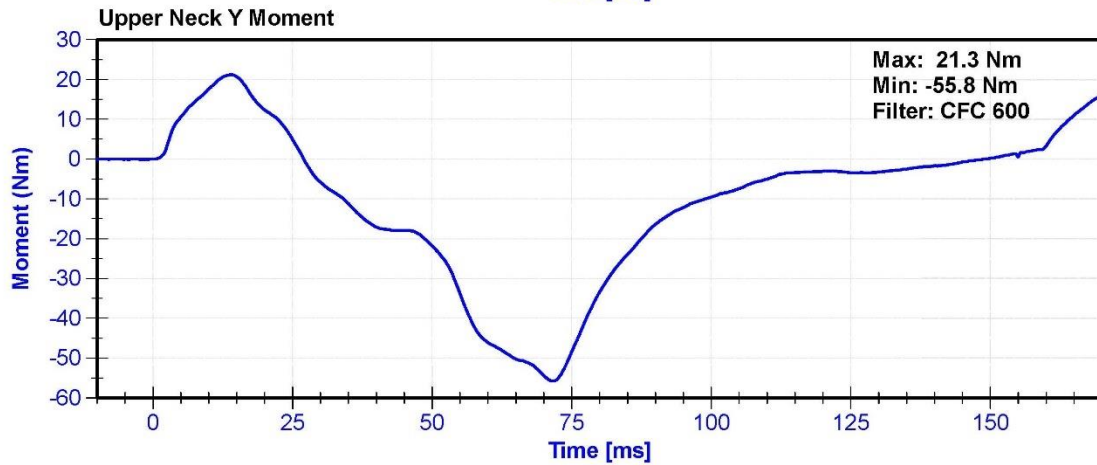
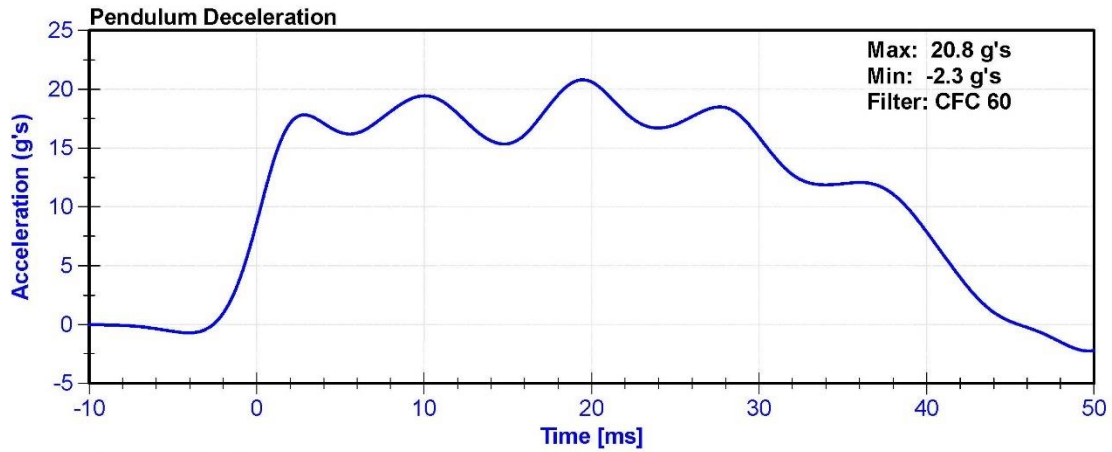
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	41.5	Pass
Velocity	5.95	6.19	m/s	6.142	Pass
Pendulum Impulse at 10ms	1.5	1.9	m/s	1.64	Pass
Pendulum Impulse at 20ms	3.1	3.9	m/s	3.39	Pass
Pendulum Impulse at 30ms	4.6	5.6	m/s	5.14	Pass
D Plane Rotation	99	114	deg	104.2	Pass
Moment During Rotation Interval	-65	-53	Nm	-63.9	Pass
Moment Decay to -10Nm	94	114	ms	100.3	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	C16503	10/28/2021	10/28/2022
Pendulum Potentiometer	ETI	LABPOT1	5/9/2022	5/9/2023
Condyle Potentiometer	ETI	LABPOT2	5/9/2022	5/9/2023
Upper Neck Load Cell	Denton	2184-FX	6/24/2021	6/24/2022







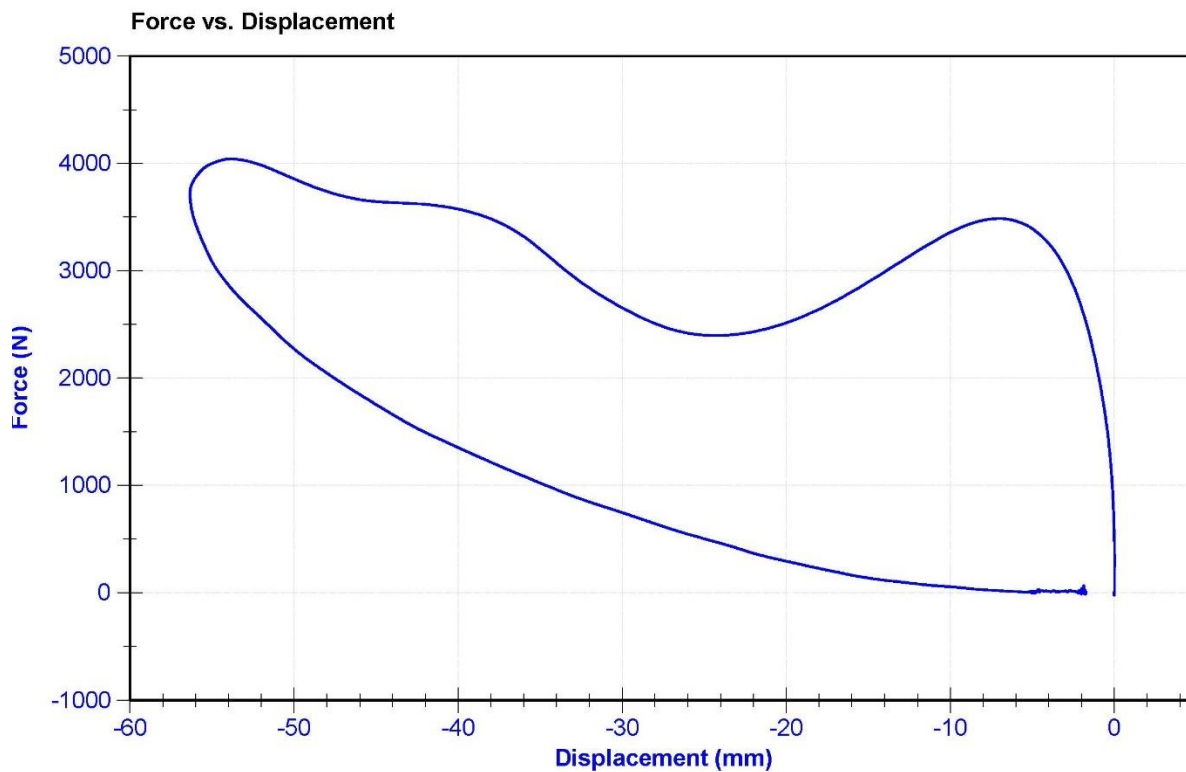
ATD Manufacturer	Humanetics	Test Technician	T. Roseman
ATD Serial Number	137	Laboratory Supervisor	K. Brogan

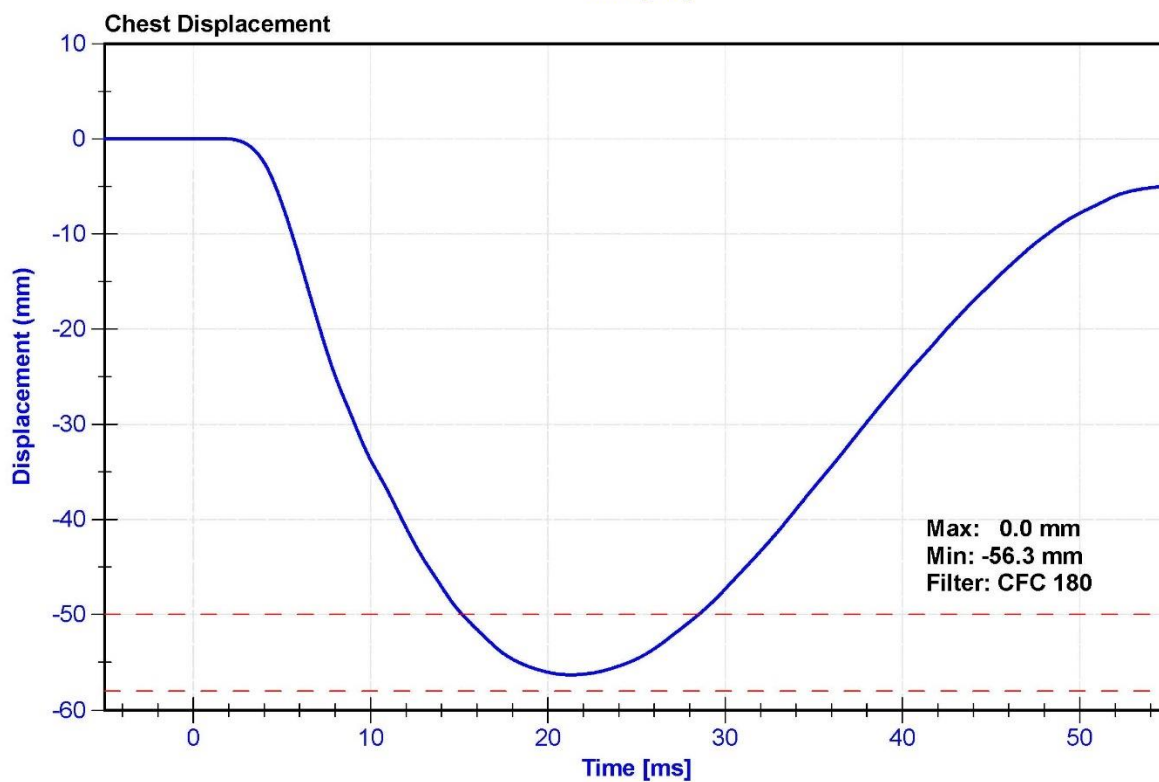
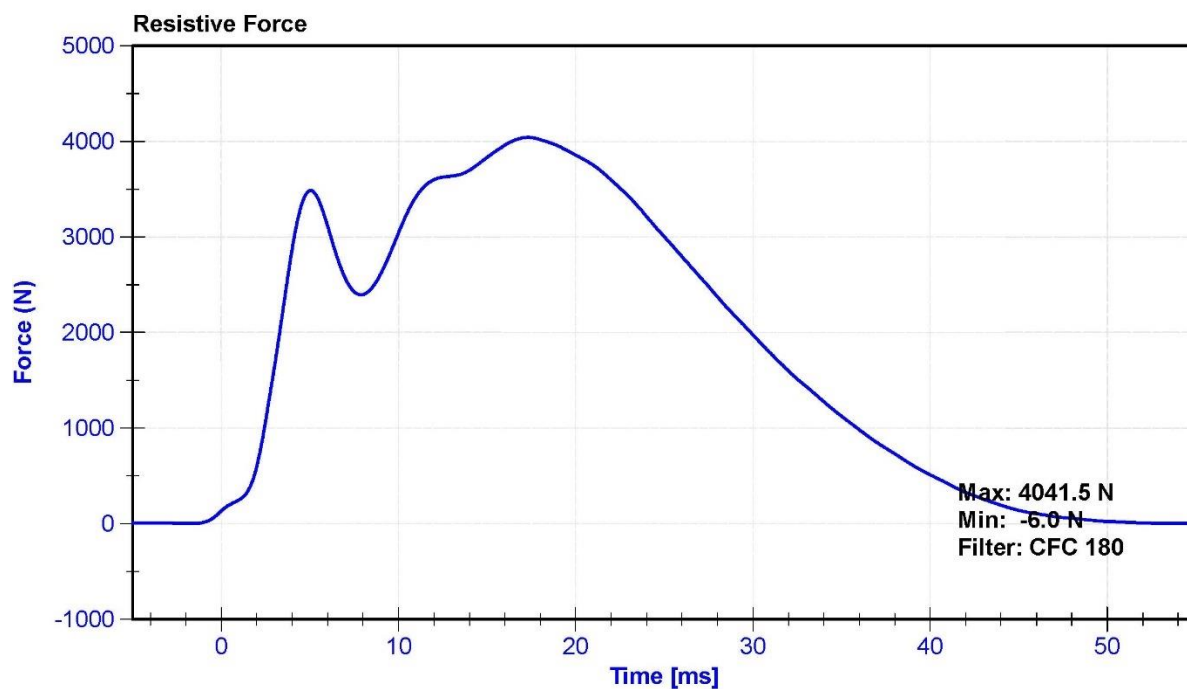
Results

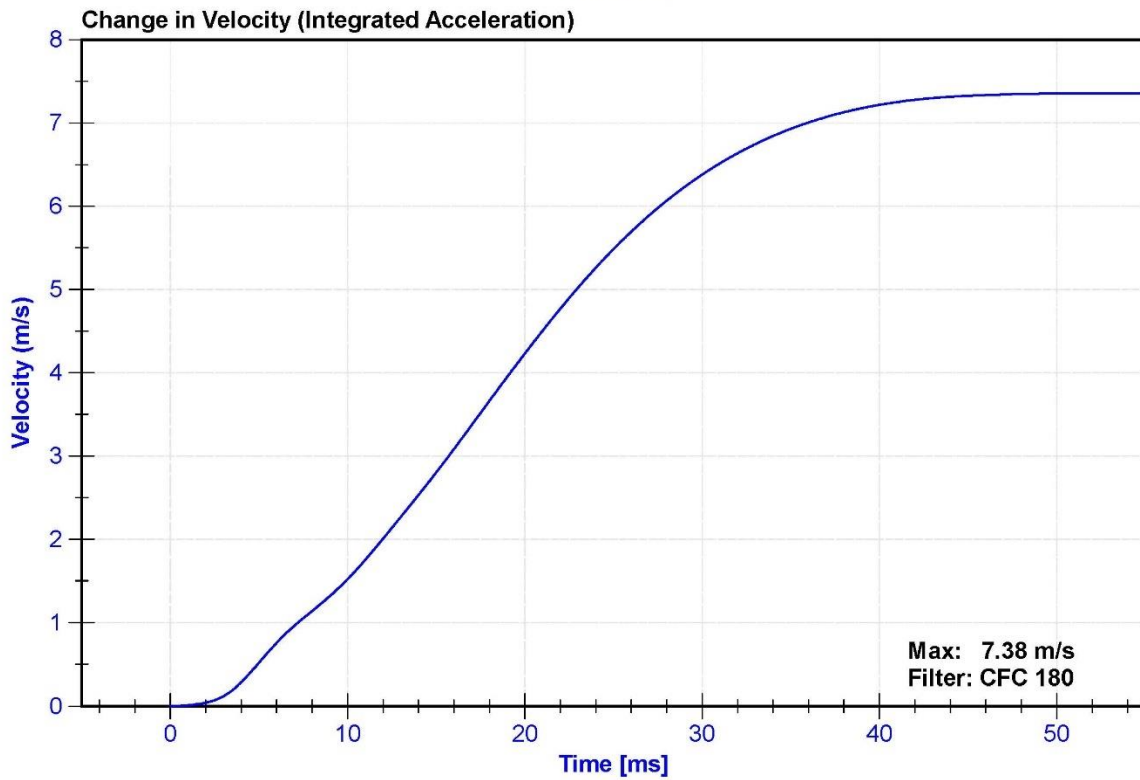
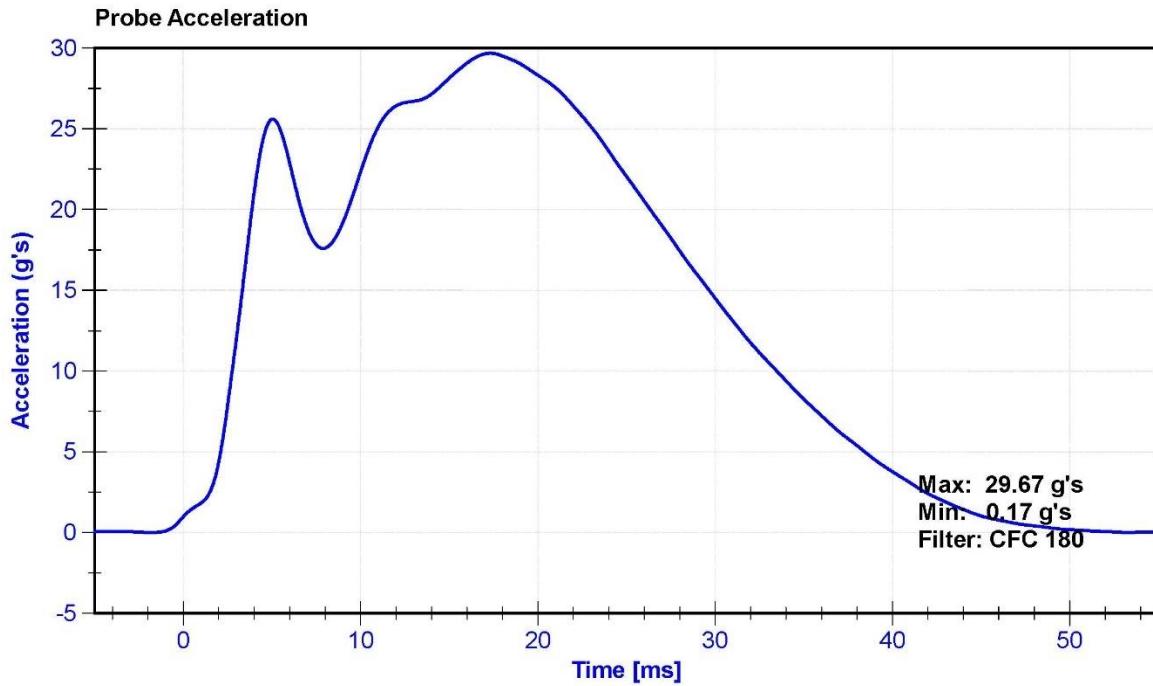
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.0	Pass
Humidity	10	70	%	26.0	Pass
Velocity	6.59	6.83	m/s	6.606	Pass
Chest Deflection	-58	-50	mm	-56.3	Pass
Maximum Resistive Force (50 to 58mm)	3900	4400	N	4041.5	Pass
Maximum Resistive Force (18 to 50mm)	0	4600	N	3852.5	Pass
Hysteresis	69	85	%	70.6	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	P51736	10/25/2021	10/25/2022
Chest Potentiometer	Servo	0720	4/18/2022	10/17/2022







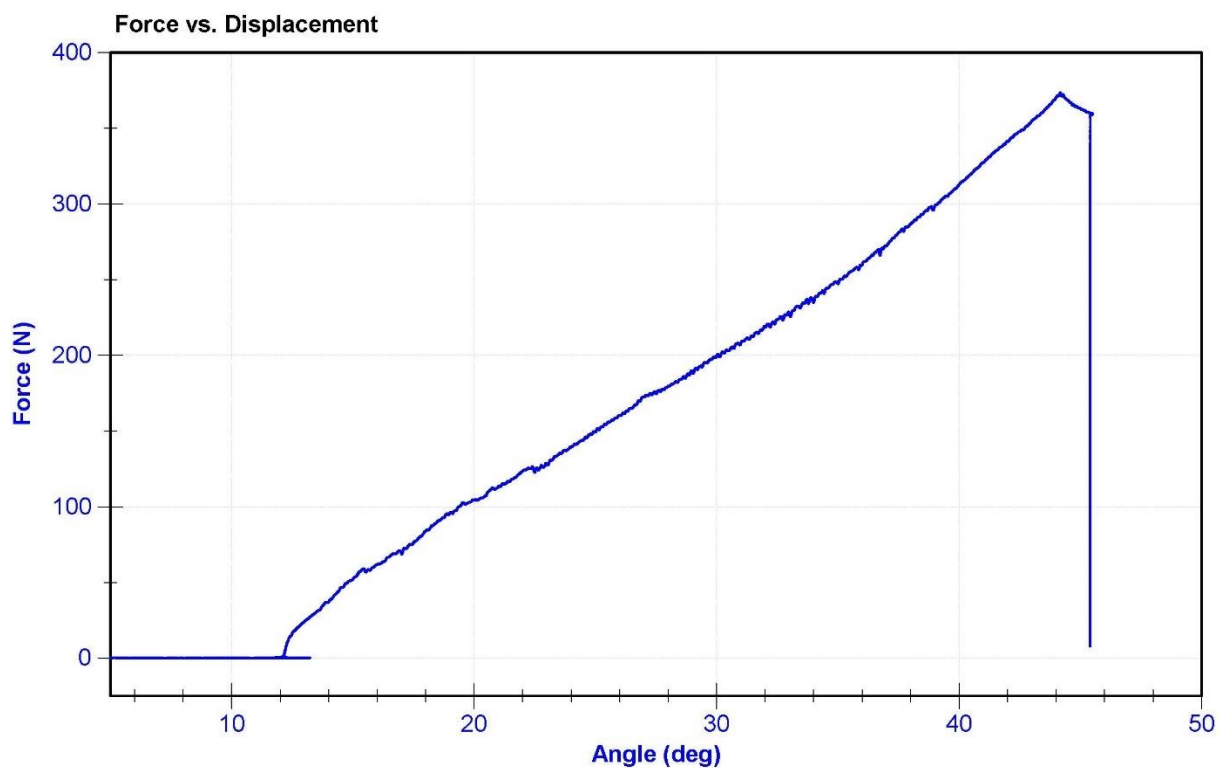
ATD Manufacturer	Humanetics	Test Technician	T. Roseman
ATD Serial Number	137	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.6	25.6	°C	21.2	Pass
Humidity	10	70	%	26.0	Pass
Initial Angle	0	20	deg	12.0	Pass
Force at 45 Degrees	320	390	N	373.4	Pass
Return Angle Relative to Initial	0	8	deg	3.2	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Potentiometer	Rieker	DS-1905226	2021-11-01	2022-11-01
Load Cell	Interface	1134516	2021-08-27	2022-08-27



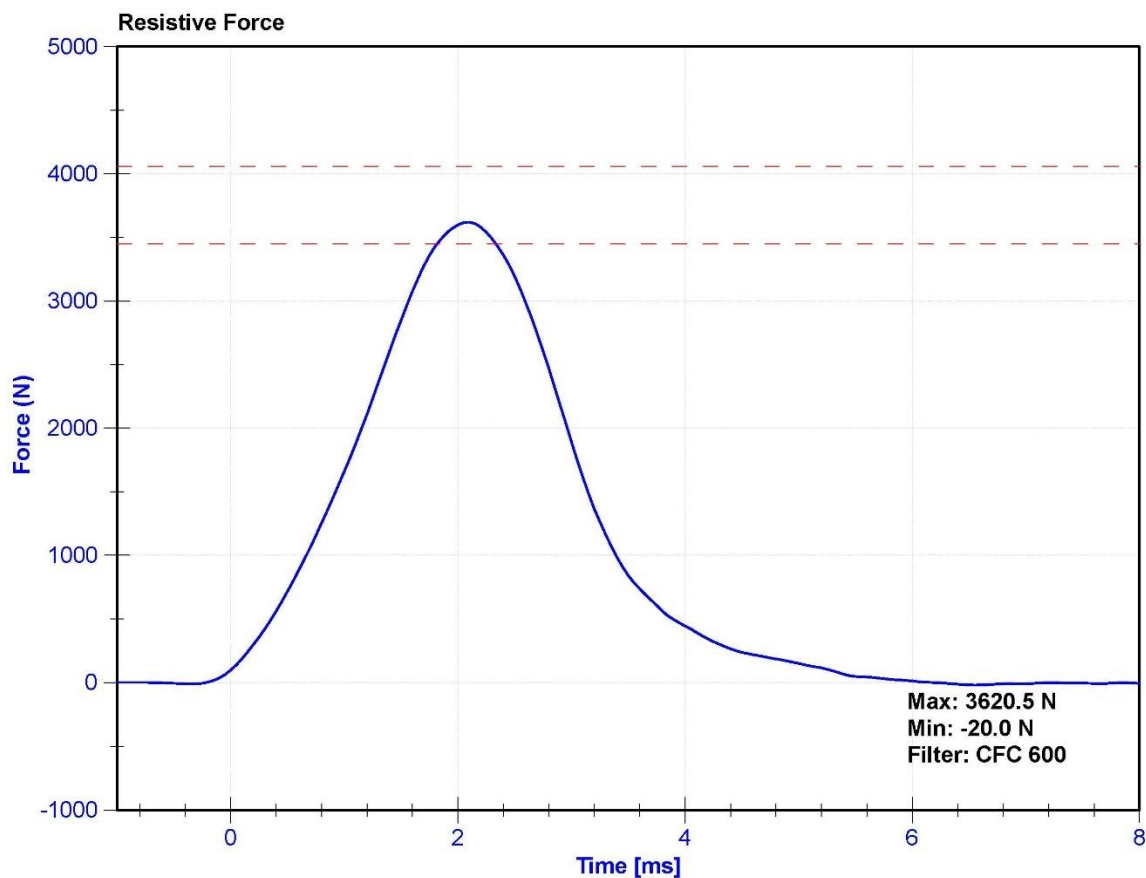
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	137	Laboratory Supervisor	K. Brogan

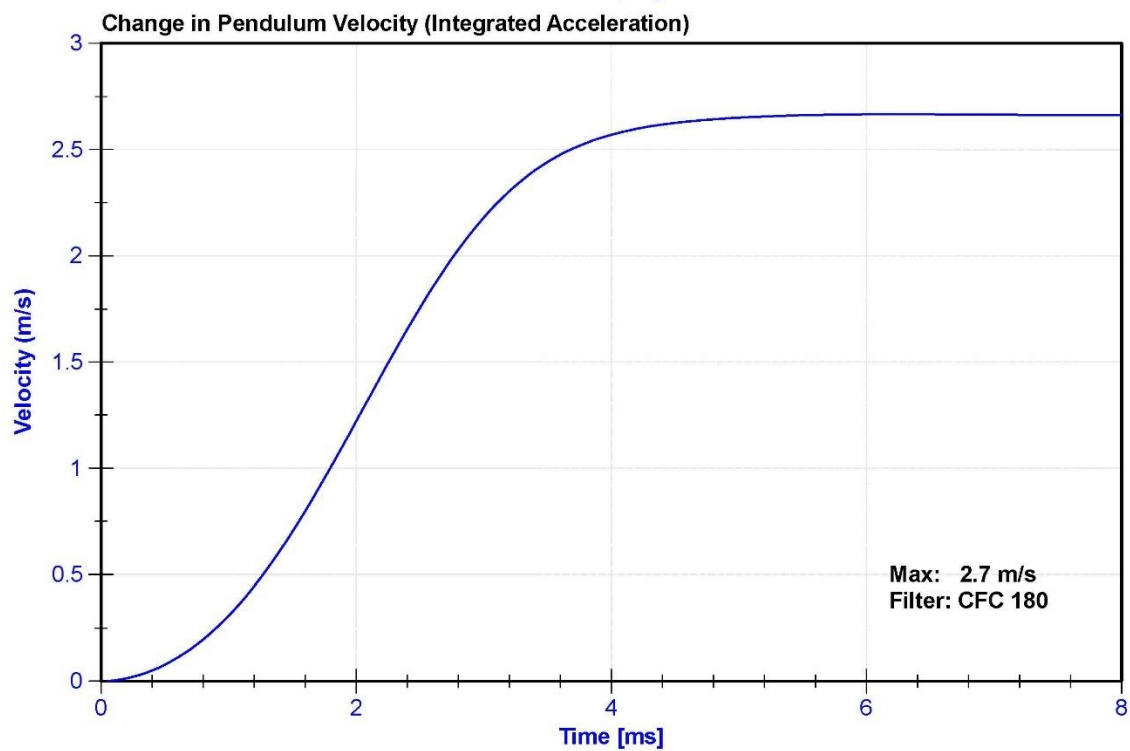
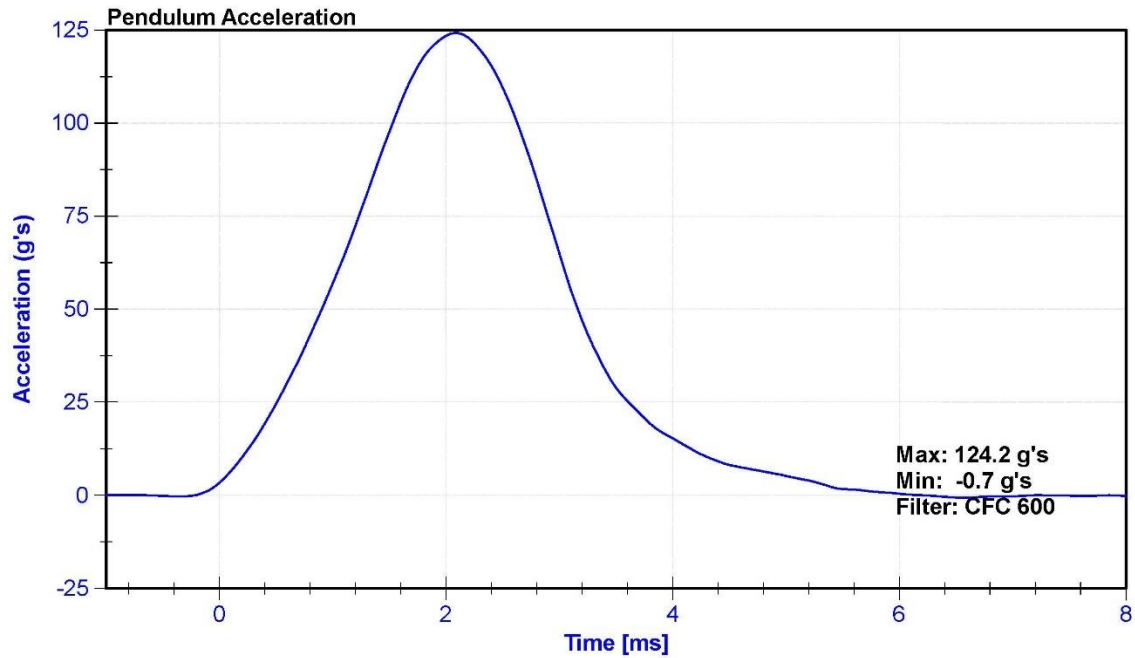
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.8	Pass
Humidity	10	70	%	28	Pass
Velocity	2.07	2.13	m/s	2.099	Pass
Resistive Force	3450	4060	N	3620.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	10/25/2022





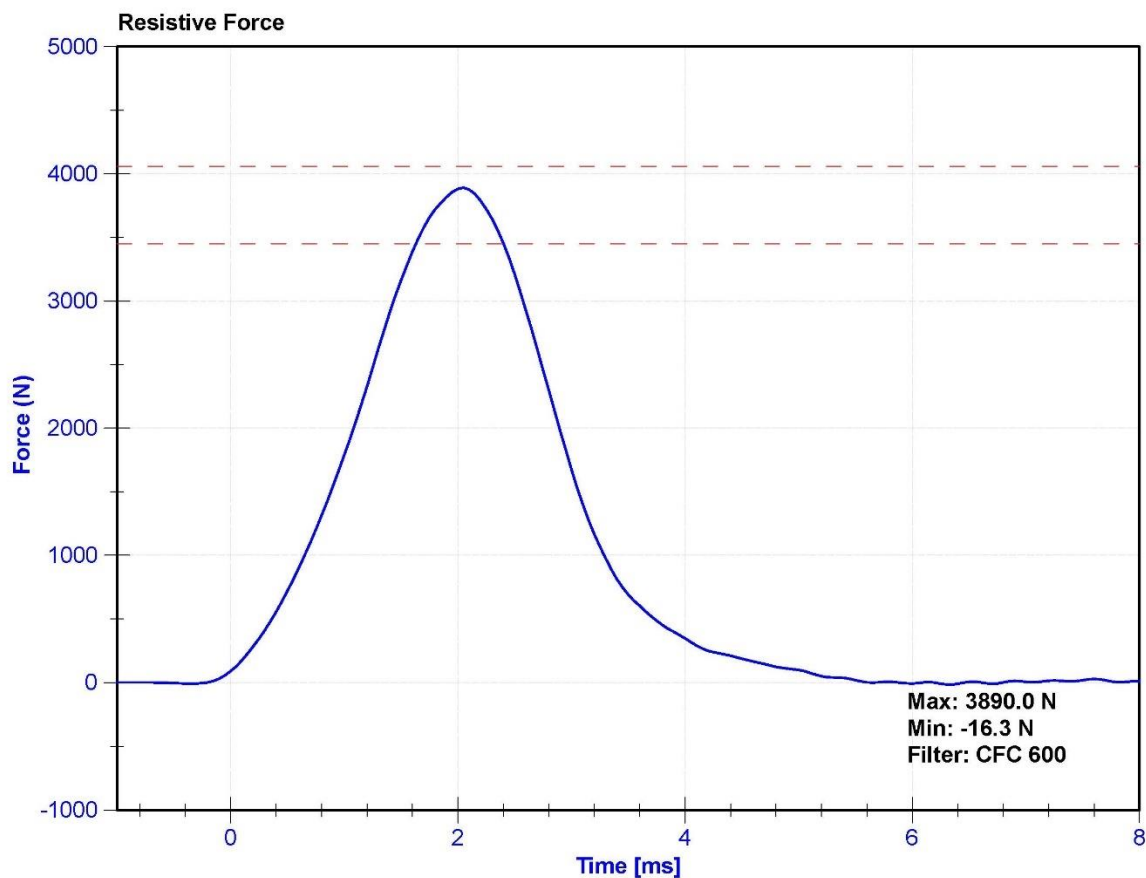
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	137	Laboratory Supervisor	K. Brogan

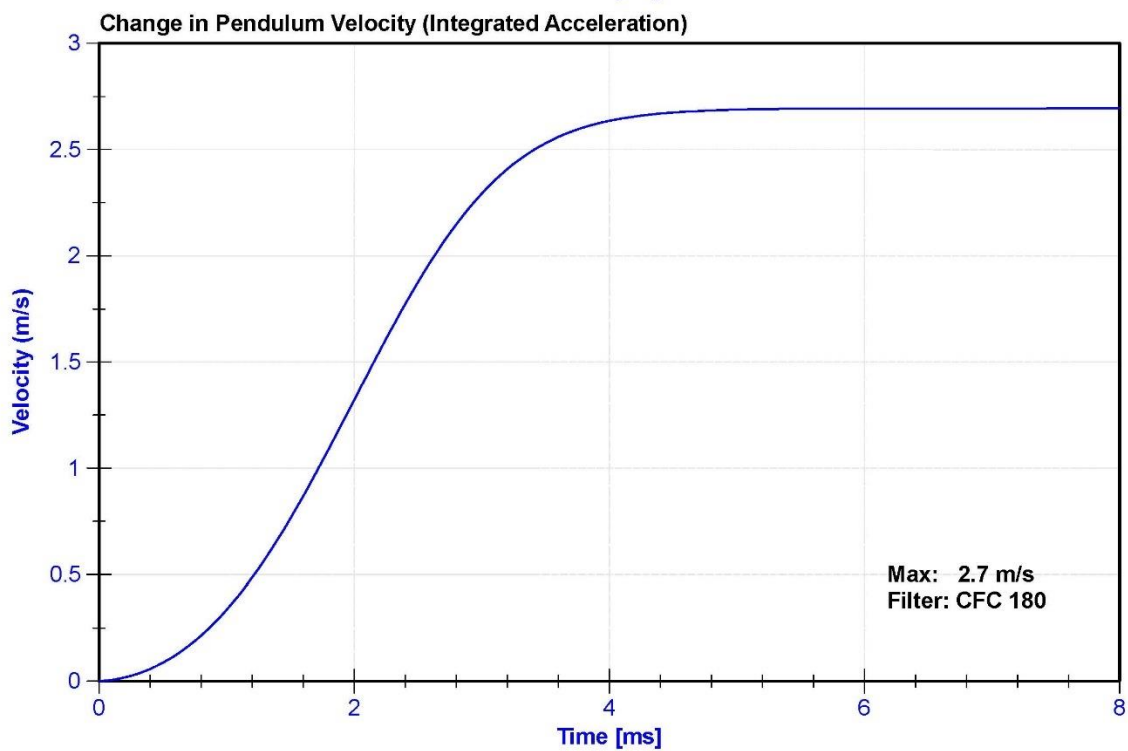
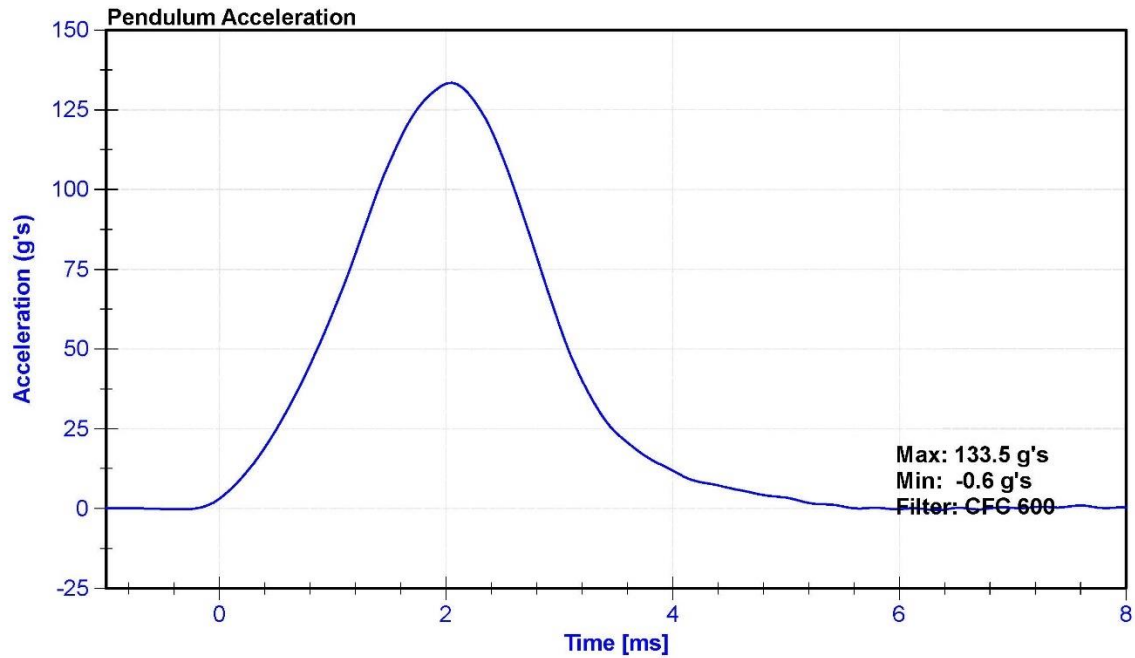
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.8	Pass
Humidity	10	70	%	28	Pass
Velocity	2.07	2.13	m/s	2.102	Pass
Resistive Force	3450	4060	N	3890.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	10/25/2022





CALIBRATION TEST RESULTS

POST-TEST

HYBRID III 50TH PERCENTILE MALE - DRIVER ATD

SERIAL NO: 142

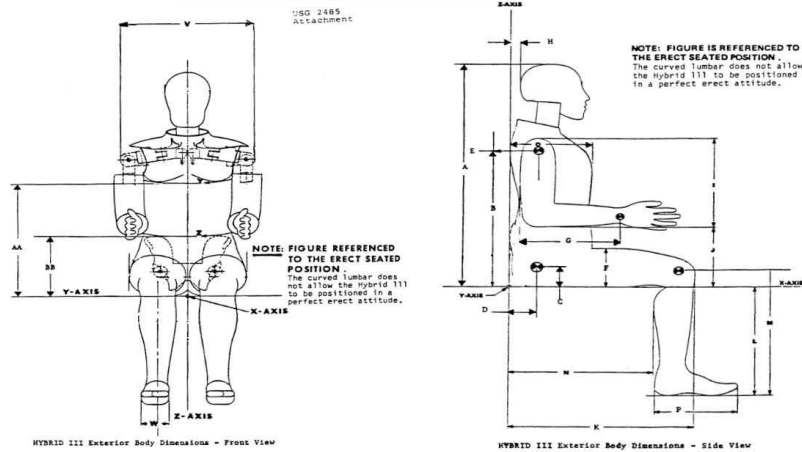


External Measurements - Hybrid 3 - 50th Male

Technician: K. Brogan

Date: 05/17/2022

Dummy Serial Number: 142



Symbol	Description	Specification (in)		Result (in)	Pass/Fail
A	Sitting Height	34.6	35.0	34.8	Pass
B	Shoulder Pivot Height	19.9	20.5	20.2	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	5.8	Pass
G	Back of Elbow to Wrist Pivot	11.4	12.0	11.6	Pass
H	Head Back to Backline	1.6	1.8	1.7	Pass
I	Shoulder to Elbow Length	13.0	13.6	13.5	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	17.2	Pass
M	Knee Pivot Height	19.1	19.7	19.5	Pass
N	Buttock Popliteal Length	17.8	18.8	18.3	Pass
O	Chest Depth without Jacket	8.4	9.0	8.8	Pass
P	Foot Length (right)	9.9	10.5	10.2	Pass
V	Shoulder Breadth	16.3	17.2	16.8	Pass
W	Foot Breadth	3.6	4.2	4.0	Pass
Y	Chest Circumference with Jacket	38.2	39.4	39.0	Pass
Z	Waist Circumference	32.9	34.1	33.5	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

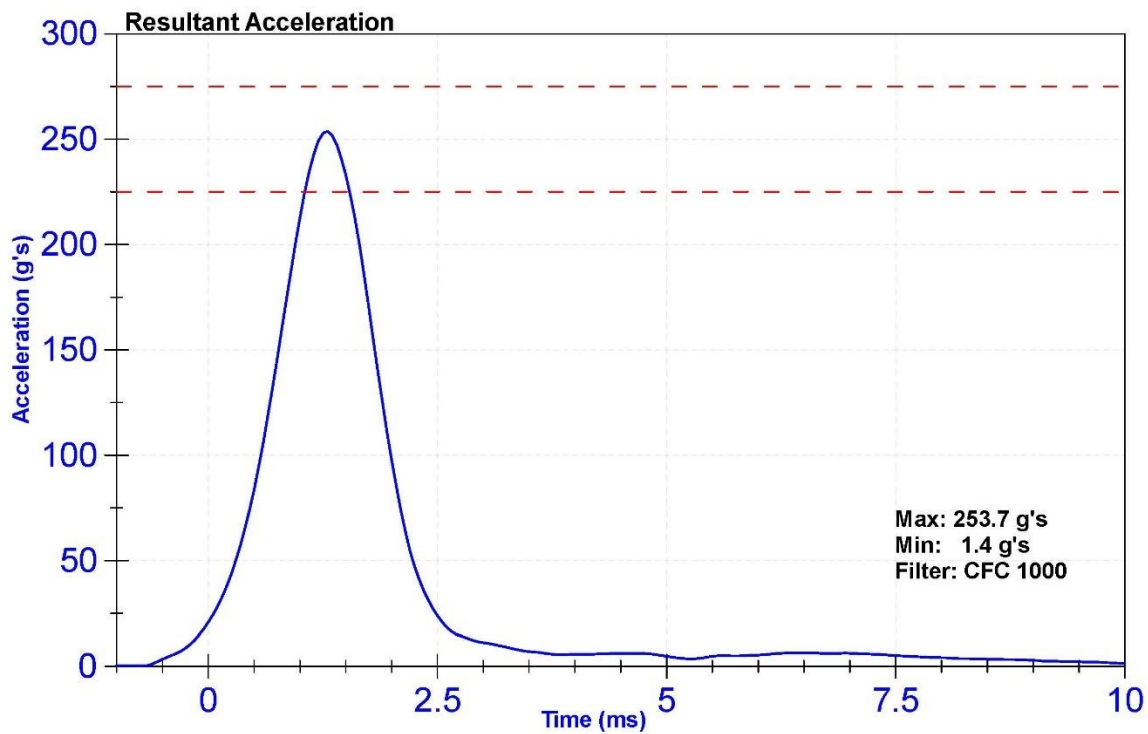
ATD Manufacturer	Humanetics	Test Technician	C. Mantell
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

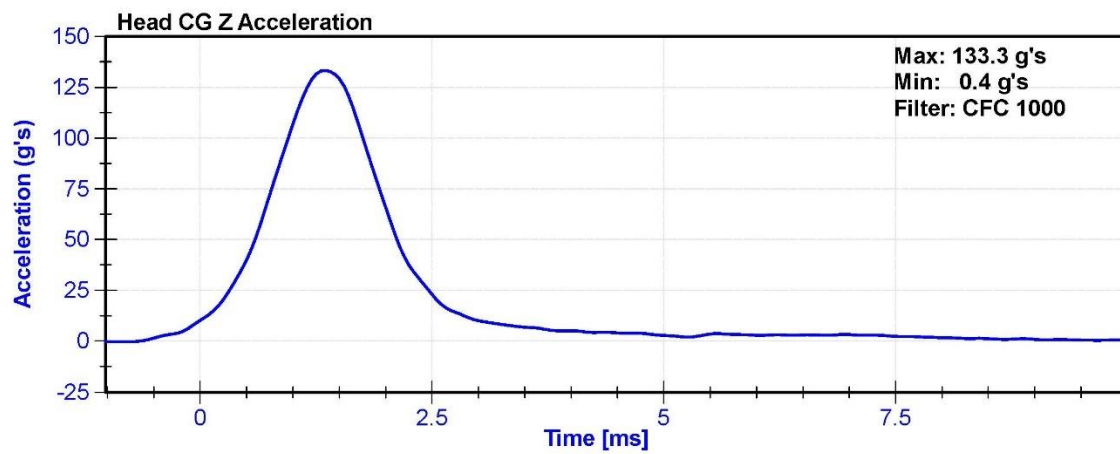
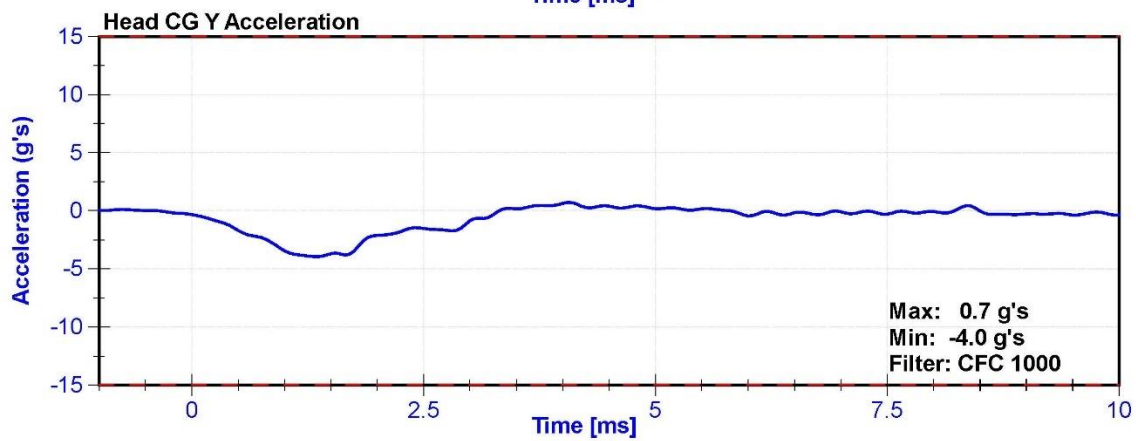
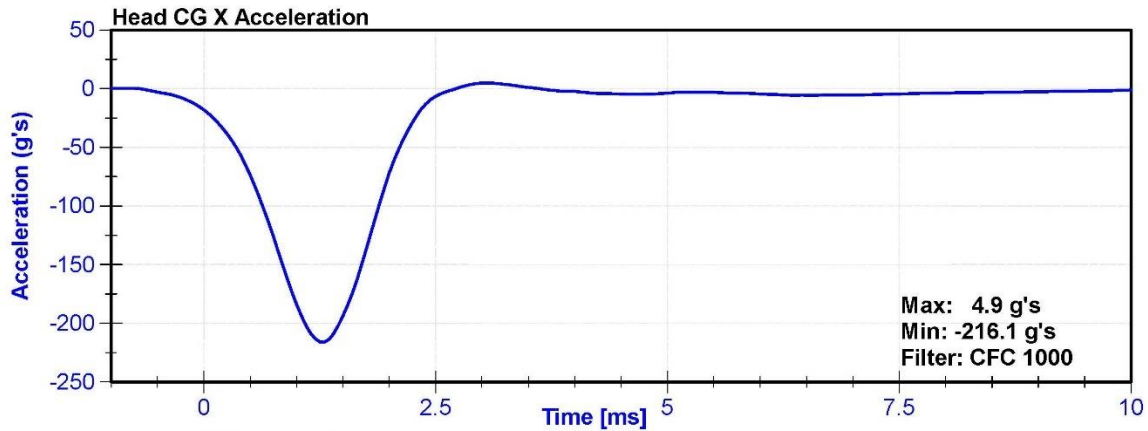
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.4	Pass
Humidity	10	70	%	40.1	Pass
Resultant Acceleration	225	275	g's	253.7	Pass
Oscillation	0	10	%	2.5	Pass
Lateral Acceleration	-15	15	g's	-4.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	Endevco	P51681	5/10/2022	11/6/2022
Y Accelerometer	Endevco	P64151	5/10/2022	11/6/2022
Z Accelerometer	Endevco	P52114	5/10/2022	11/6/2022





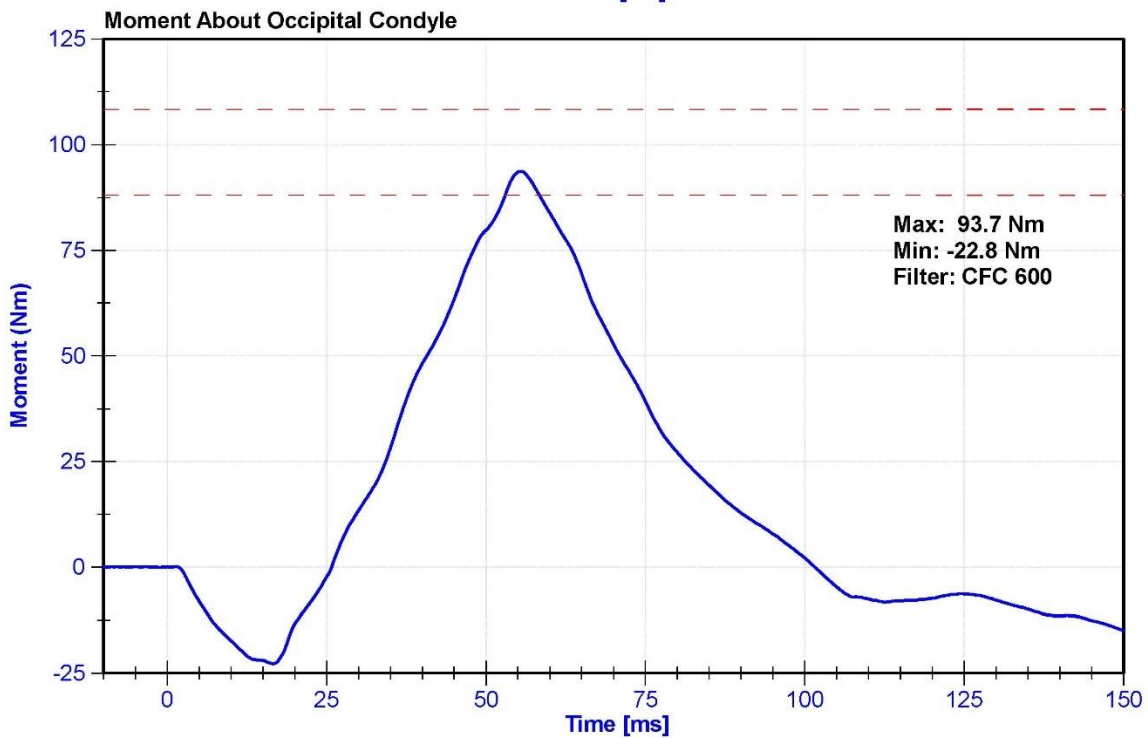
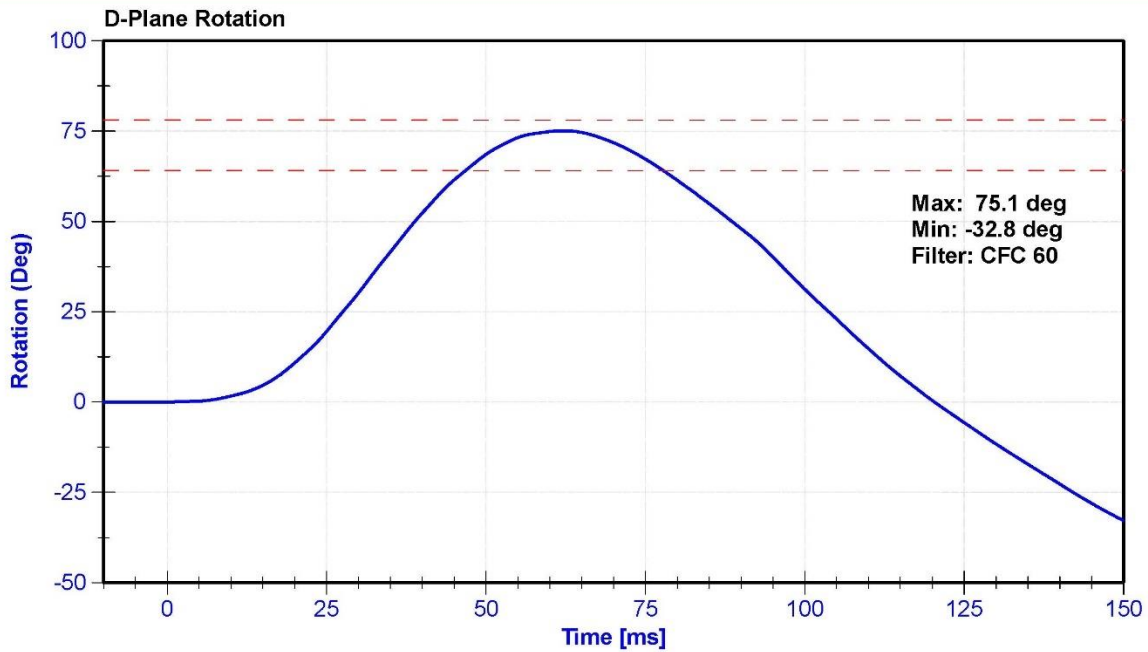
ATD Manufacturer	Humanetics	Test Technician	C. Mantell
ATD Serial Number	142	Laboratory Supervisor	C. Mantell

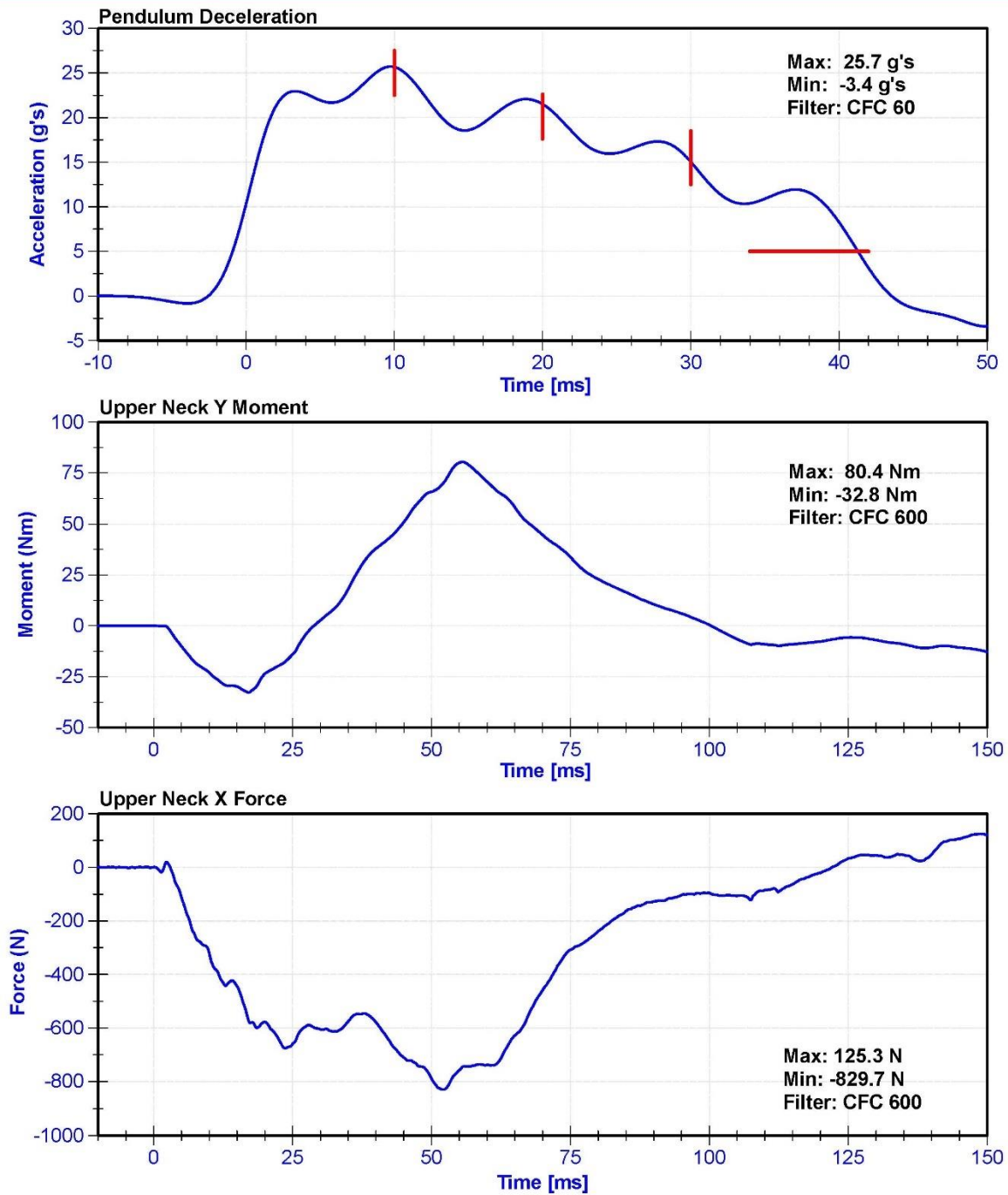
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.2	Pass
Humidity	10	70	%	45.6	Pass
Velocity	6.89	7.13	m/s	6.922	Pass
Pendulum Deceleration at 10ms	22.5	27.5	g's	25.65	Pass
Pendulum Deceleration at 20ms	17.6	22.6	g's	21.49	Pass
Pendulum Deceleration at 30ms	12.5	18.5	g's	15.03	Pass
Max. Pendulum Deceleration After 30ms	0	29	g's	25.7	Pass
Pendulum Deceleration Time to 5 g's	34	42	ms	41.3	Pass
Maximum D Plane Rotation	64	78	deg	75.1	Pass
Time to Maximum Rotation	57	64	ms	62.1	Pass
Rotation Decay to Zero	113	127	ms	120.4	Pass
Moment About Occipital Condyle	88.1	108.4	Nm	93.70	Pass
Time to Maximum Moment	47	58	ms	55.4	Pass
Moment Decay to Zero	97	107	ms	101.6	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	7231CT	10/28/2021	10/28/2022
Pendulum Potentiometer	ETI	LABPOT1	5/9/2022	5/9/2023
Condyle Potentiometer	ETI	LABPOT2	5/9/2022	5/9/2023
Upper Neck Load Cell	FTSS	280-FX	9/14/2021	9/14/2022





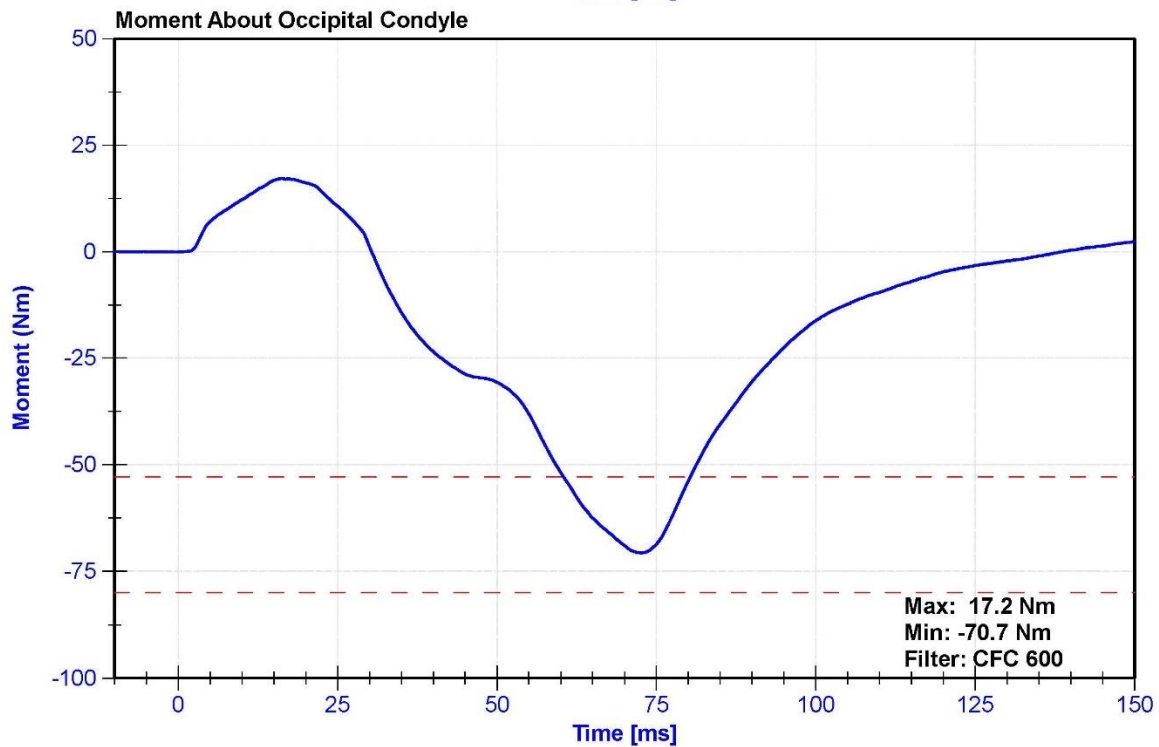
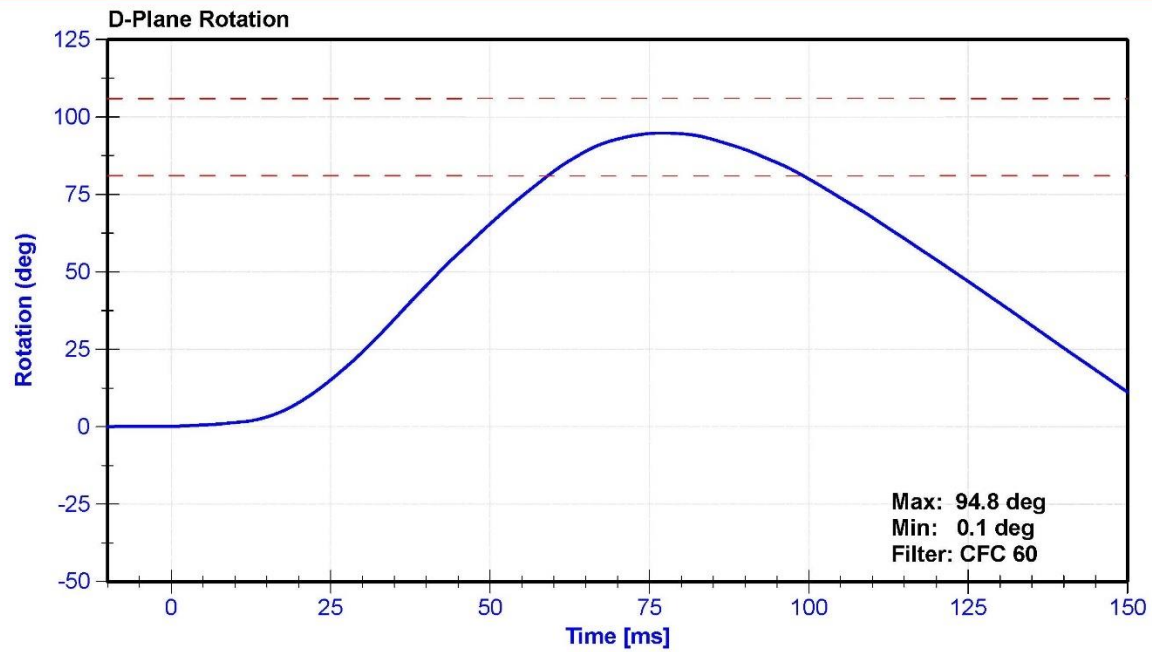
ATD Manufacturer	Humanetics	Test Technician	C. Mantell
ATD Serial Number	142	Laboratory Supervisor	C. Mantell

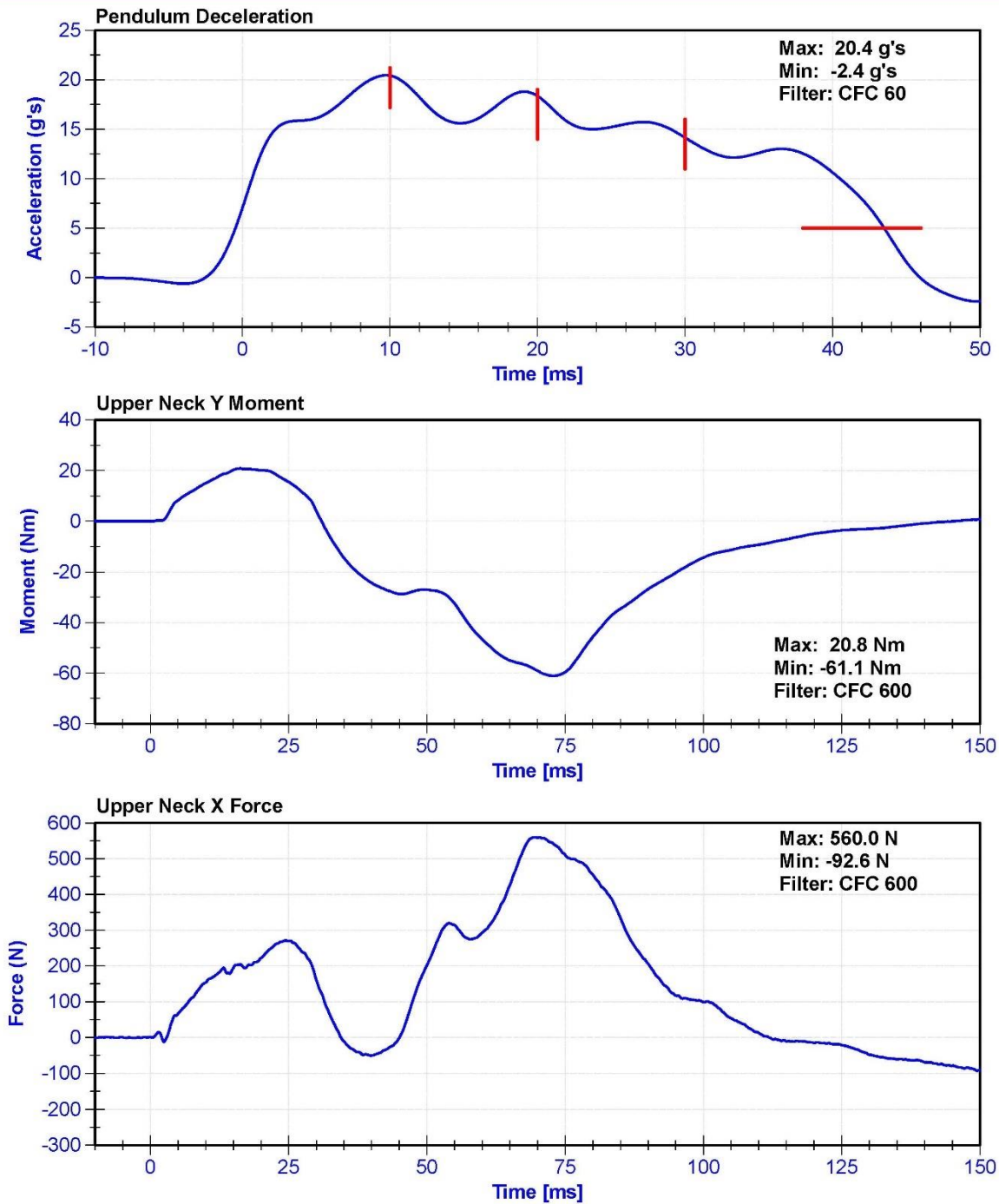
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.5	Pass
Humidity	10	70	%	45.1	Pass
Velocity	5.94	6.19	m/s	6.080	Pass
Pendulum Deceleration at 10ms	17.2	21.2	g's	20.40	Pass
Pendulum Deceleration at 20ms	14	19	g's	18.3	Pass
Pendulum Deceleration at 30ms	11	16	g's	14.1	Pass
Max. Pendulum Deceleration After 30ms	0	22	g's	20.4	Pass
Pendulum Deceleration Time to 5 g's	38	46	ms	43.5	Pass
Maximum D Plane Rotation	81	106	deg	94.8	Pass
Time to Maximum Rotation	72	82	ms	77.0	Pass
Rotation Decay to Zero	147	174	ms	158.1	Pass
Minimum Moment About OC	-80	-52.9	Nm	-70.71	Pass
Time to Minimum Moment	65	79	ms	72.6	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	C16503	10/28/2021	10/28/2022
Pendulum Potentiometer	ETI	LABPOT1	5/9/2022	5/9/2023
Condyle Potentiometer	ETI	LABPOT2	5/9/2022	5/9/2023
Upper Neck Load Cell	FTSS	280-FX	9/14/2021	9/14/2022





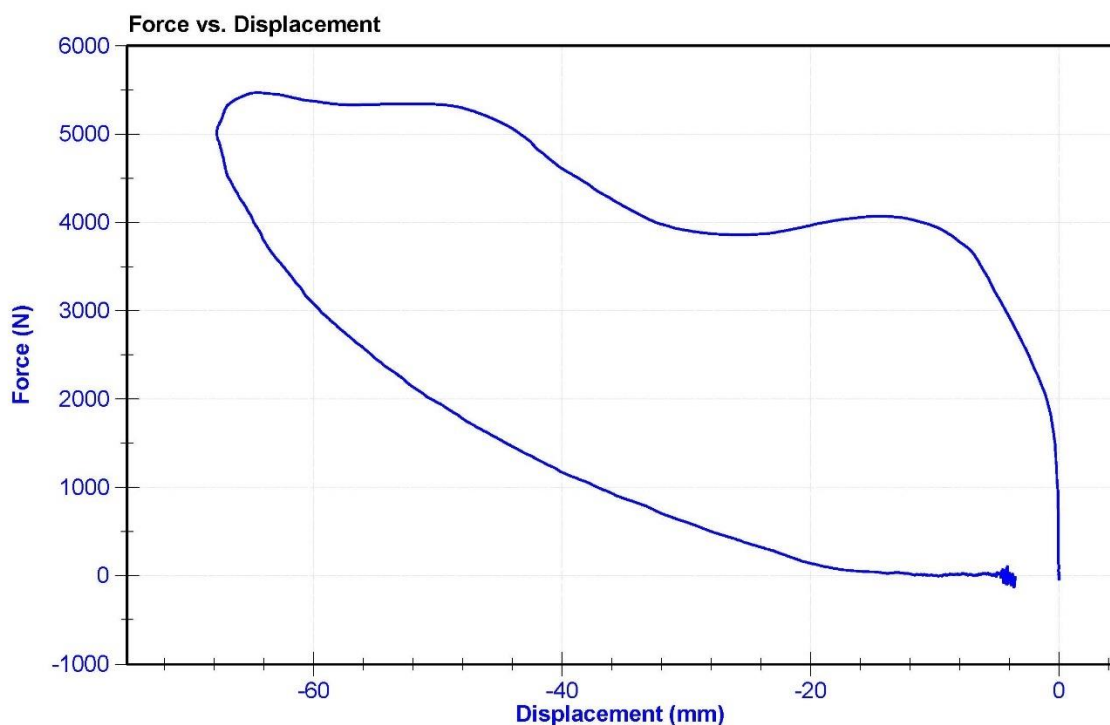
ATD Manufacturer	Humanetics	Test Technician	S. Vacanti
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

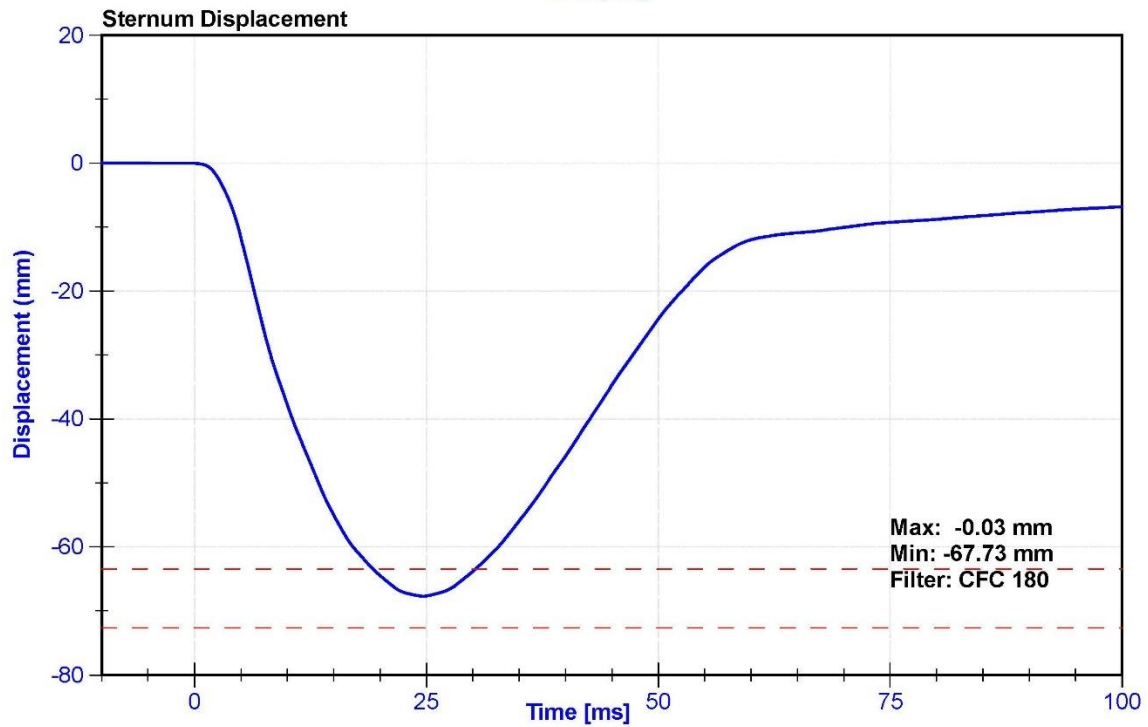
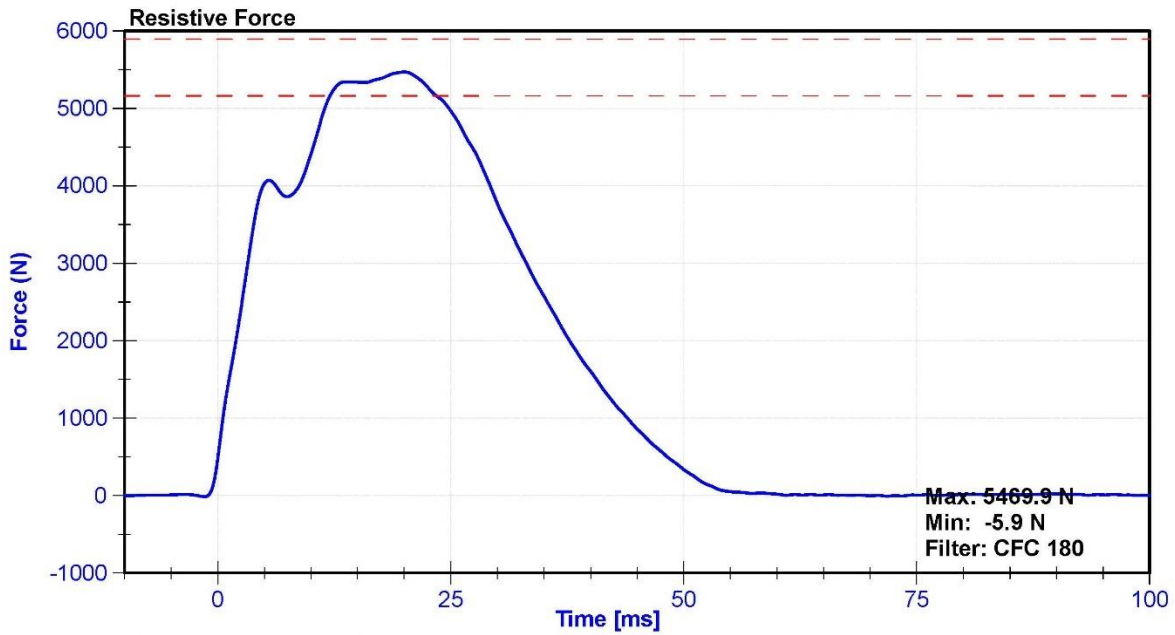
Results

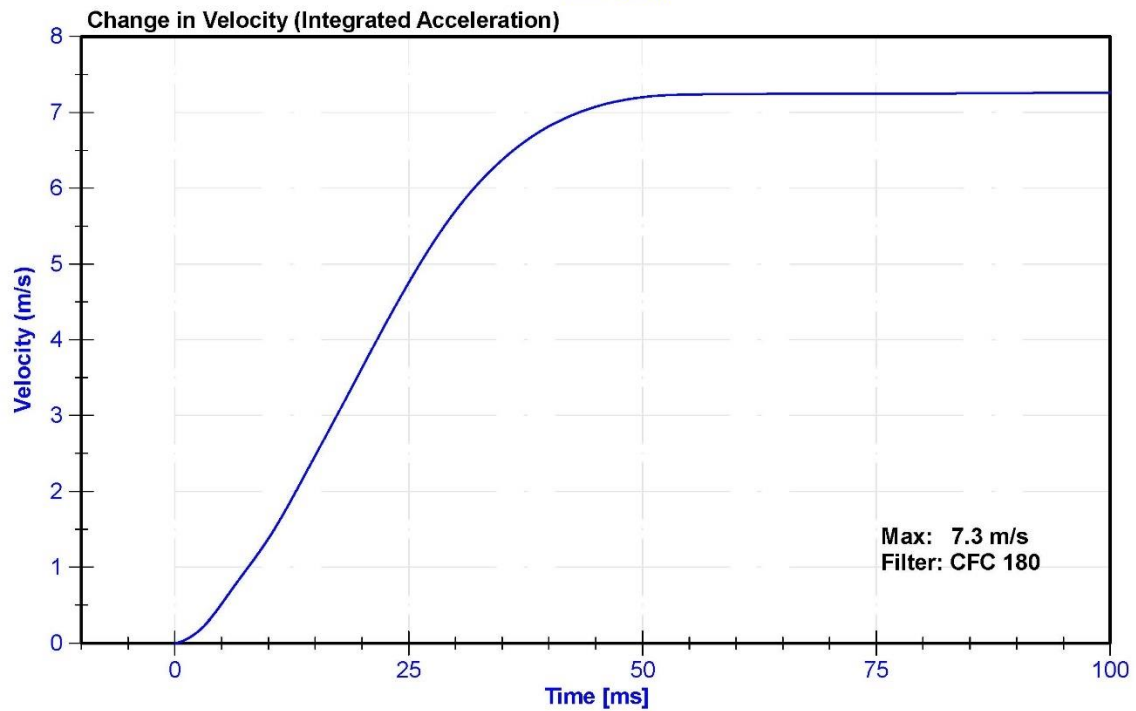
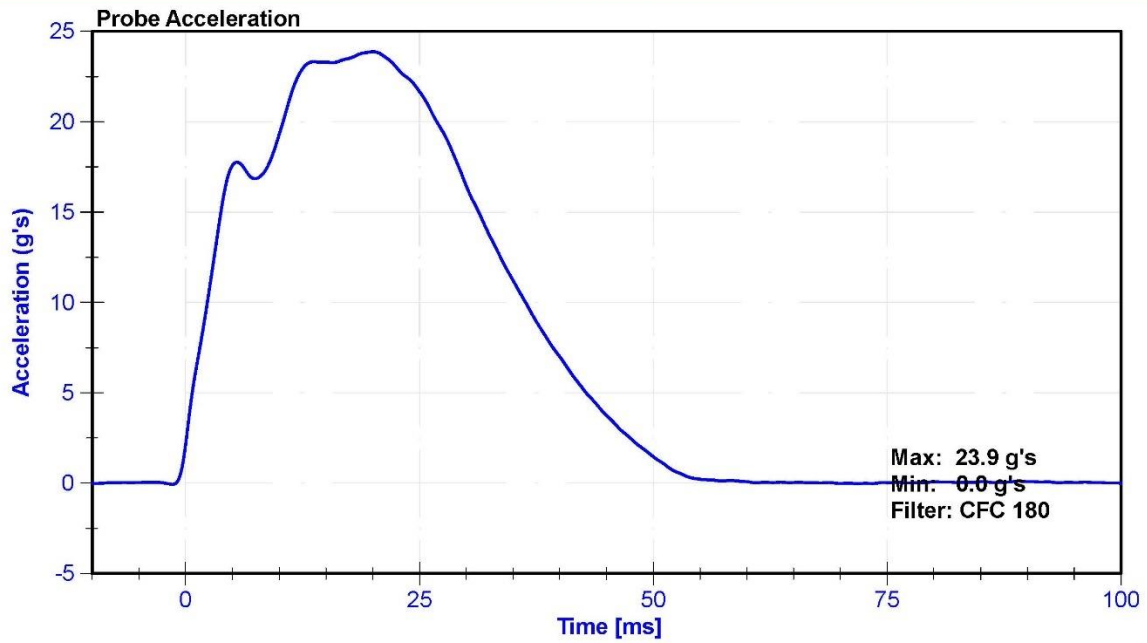
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.4	Pass
Humidity	10	70	%	45.5	Pass
Velocity	6.59	6.83	m/s	6.682	Pass
Chest Displacement	-72.6	-63.5	mm	-67.73	Pass
Resistive Force	5160	5894	N	5469.9	Pass
Hysteresis	65	85	%	72.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	10/25/2022
Chest Potentiometer	JDK	0075	5/10/2022	11/8/2022



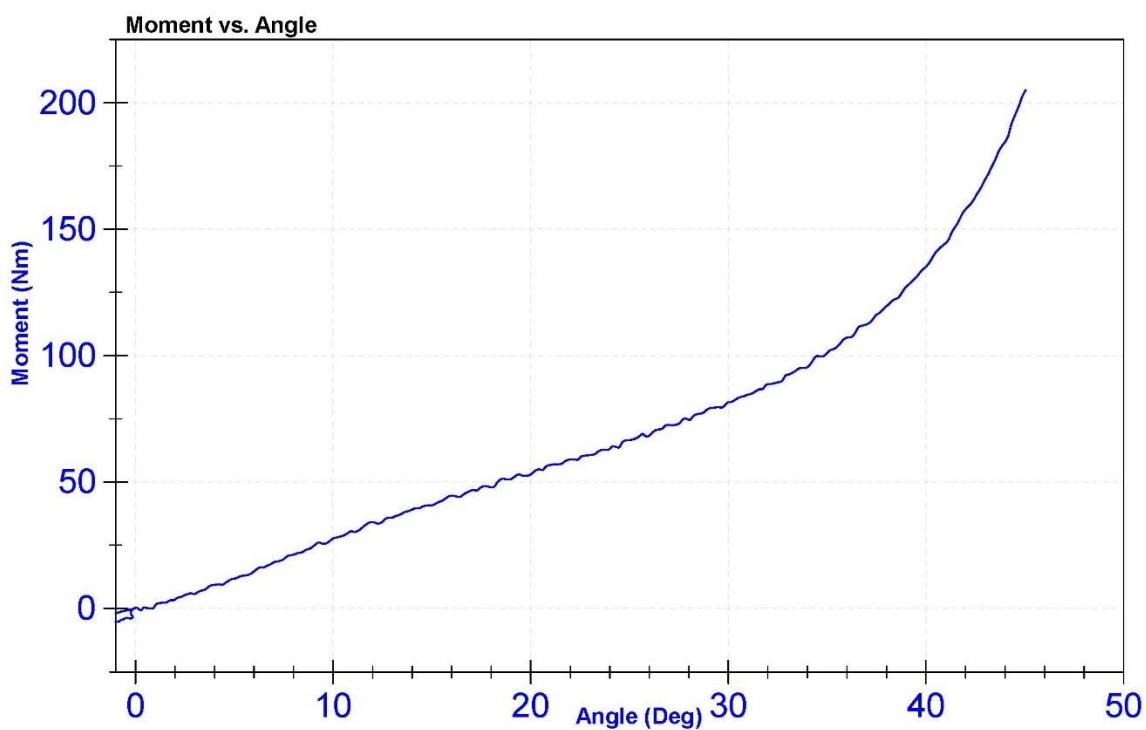




ATD Manufacturer	Humanetics	Test Technician	C. Mantell
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

Test Parameter	Results				
	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.6	Pass
Humidity	10	70	%	42.6	Pass
Average Velocity	5	10	deg/s	7.6	Pass
Angle at 203Nm	40	50	deg	44.9	Pass
Moment at 30 degrees	0	94.9	Nm	81.6	Pass

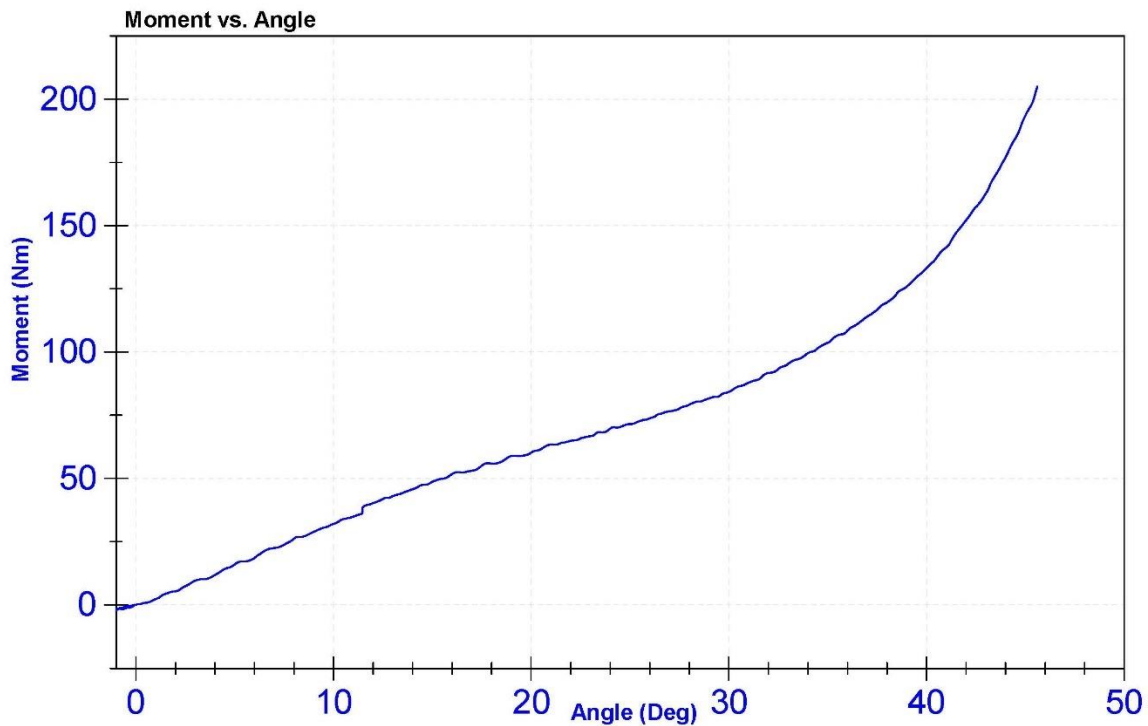
Transducer Calibrations				
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Potentiometer	ETI SP22	DS-0008	9/27/2021	9/27/2022
Load Cell	Key Trans 2301-02	LC-115 My	2021-08-13	2022-08-13



ATD Manufacturer	Humanetics	Test Technician	C. Mantell
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	21.6	Pass
Humidity	10	70	%	42.6	Pass
Average Velocity	5	10	deg/s	7.4	Pass
Angle at 203Nm	40	50	deg	45.5	Pass
Moment at 30 degrees	0	94.9	Nm	84.2	Pass

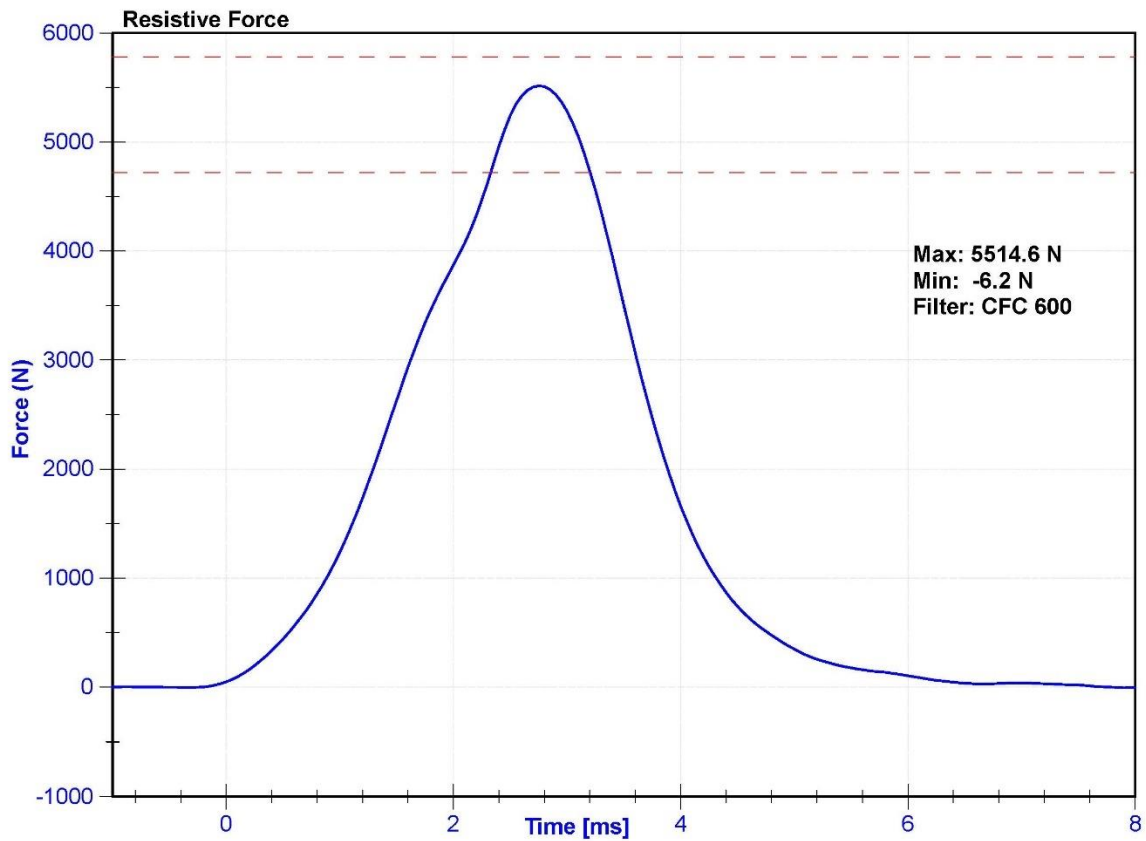
Transducer Calibrations				
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Potentiometer	ETI SP22	DS-0008	9/27/2021	9/27/2022
Load Cell	Key Trans 2301-02	LC-115 My	2021-08-13	2022-08-13

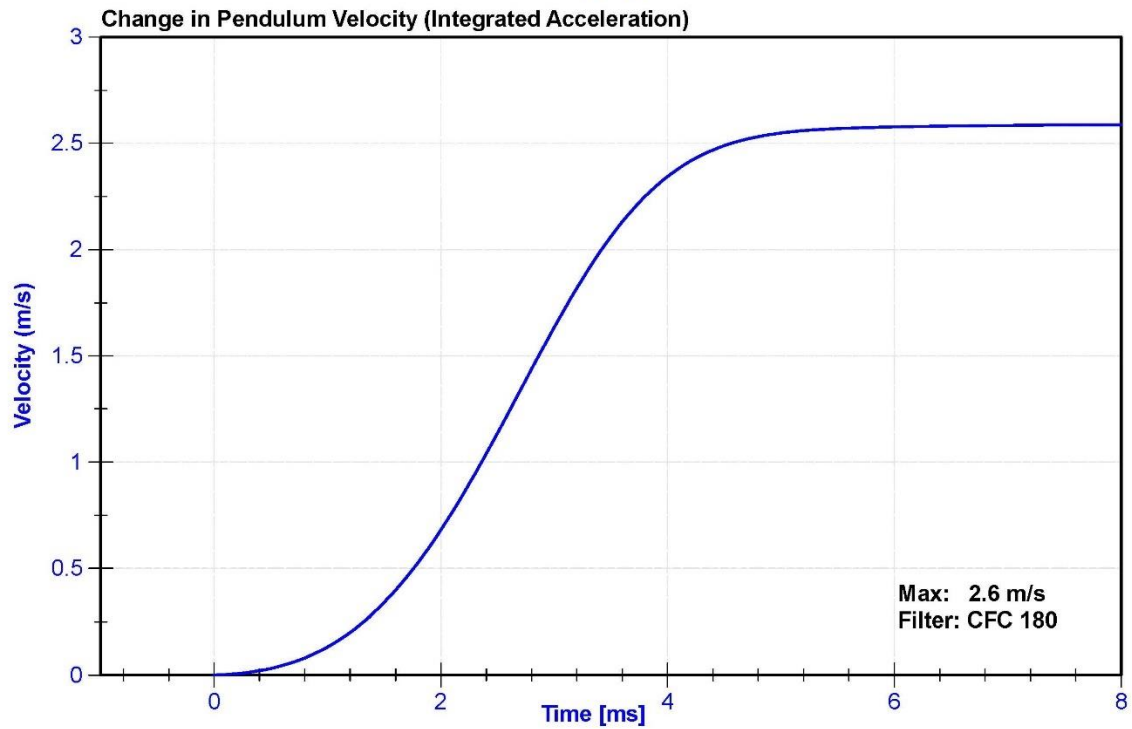
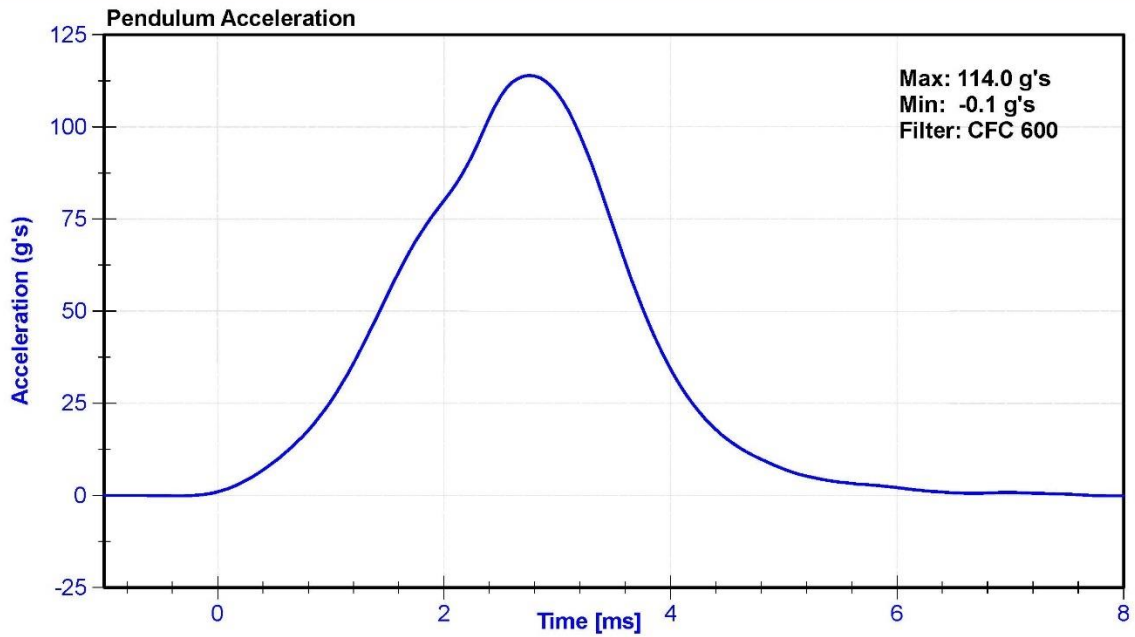


ATD Manufacturer	Humanetics	Test Technician	T. Roseman
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

Results					
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.2	Pass
Humidity	10	70	%	26.0	Pass
Velocity	2.07	2.13	m/s	2.113	Pass
Maximum Resistive Force	4720	5780	N	5514.6	Pass

Transducer Calibrations				
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	10/25/2022





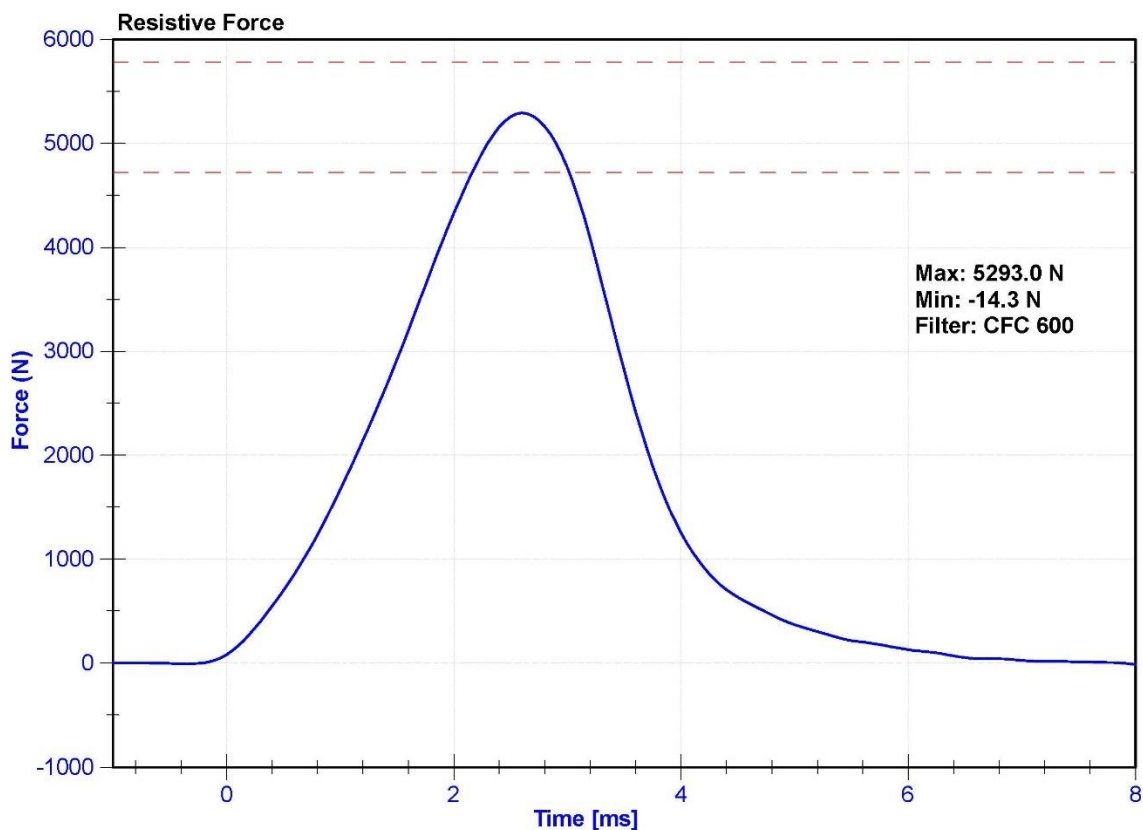
ATD Manufacturer	Humanetics	Test Technician	T. Roseman
ATD Serial Number	142	Laboratory Supervisor	K. Brogan

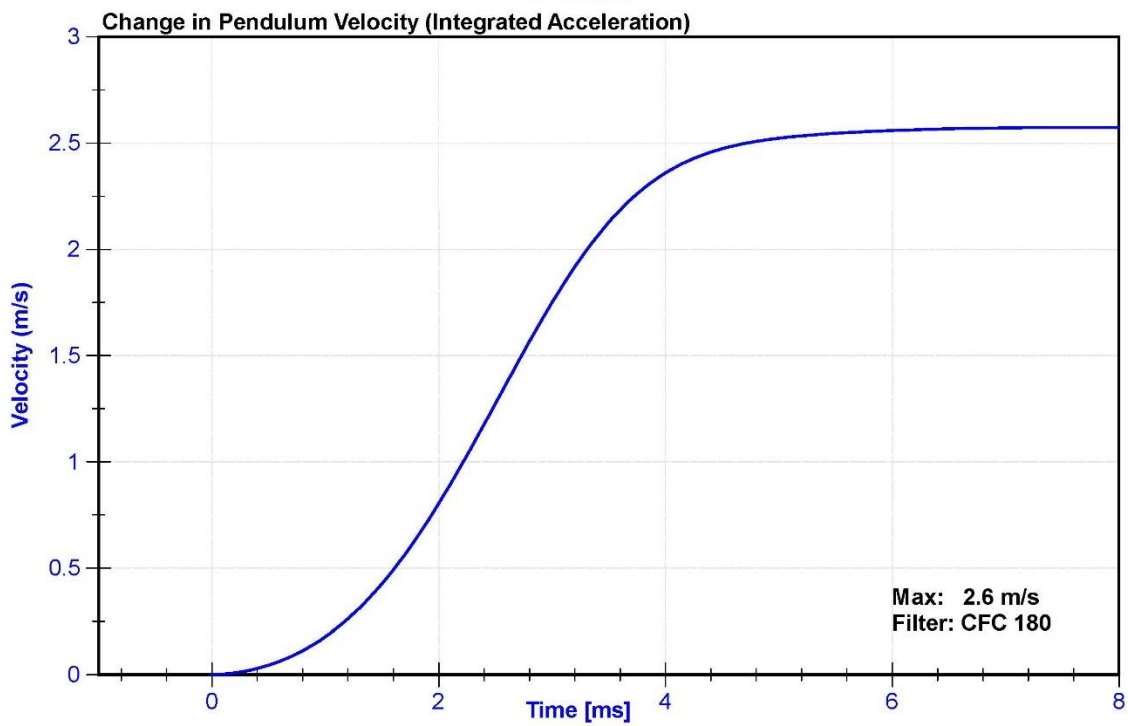
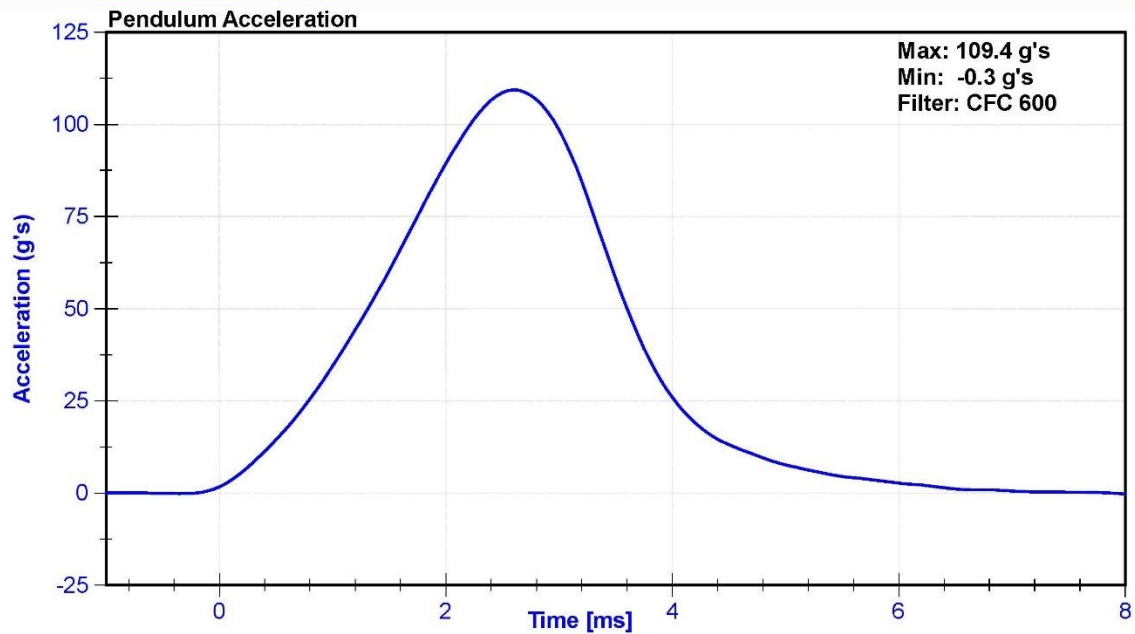
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.2	Pass
Humidity	10	70	%	26.0	Pass
Velocity	2.07	2.13	m/s	2.111	Pass
Maximum Resistive Force	4720	5780	N	5293.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	10/25/2022





CALIBRATION TEST RESULTS

POST-TEST

HYBRID III 5TH PERCENTILE FEMALE - PASSENGER ATD

SERIAL NO: 137

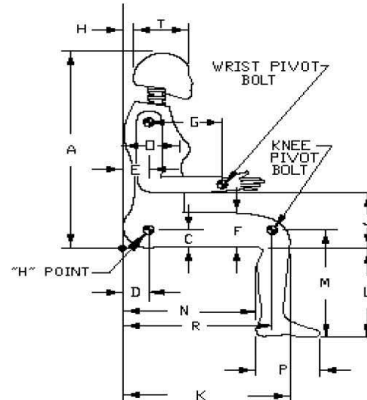
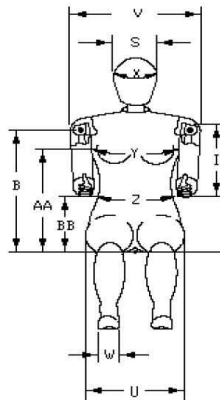


External Measurements - Hybrid 3 - 5th Female

Technician: K. Brogan

Date: 05-18-2022

Dummy Serial Number: 137



Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	775	800	785	Pass
B	Shoulder Pivot Height	432	457	445	Pass
C	H-Point Height	81	86	85	Pass
D	H-Point from Backline	145	150	147	Pass
E	Shoulder Pivot from Backline	69	84	75	Pass
F	Thigh Clearance	119	135	125	Pass
G	Back of Elbow to Wrist Pivot	244	259	250	Pass
H	Head Back to Backline	43	48	45	Pass
I	Shoulder to Elbow Length	277	297	287	Pass
J	Elbow Rest Height	183	203	195	Pass
K	Buttock to Knee Length	521	546	541	Pass
L	Popliteal Height	356	376	365	Pass
M	Knee Pivot Height	394	419	410	Pass
N	Buttock Popliteal Length	414	439	425	Pass
O	Chest Depth without Jacket	175	191	182	Pass
P	Foot Length (right)	219	234	228	Pass
R	Buttock To Knee Pivot Length	457	483	465	Pass
S	Head Breadth	137	147	143	Pass
T	Head Depth	178	188	180	Pass
U	Hip Breadth	300	315	310	Pass
V	Shoulder Breadth	351	366	359	Pass
W	Foot Breadth	79	94	85	Pass
X	Head Circumference	528	549	540	Pass
Y	Chest Circumference with Jacket	851	881	870	Pass
Z	Waist Circumference	460	790	650	Pass
AA	Reference Location (Chest Circumference)	333	358	345	Pass
BB	Reference Location (Waist Circumference)	160	170	165	Pass

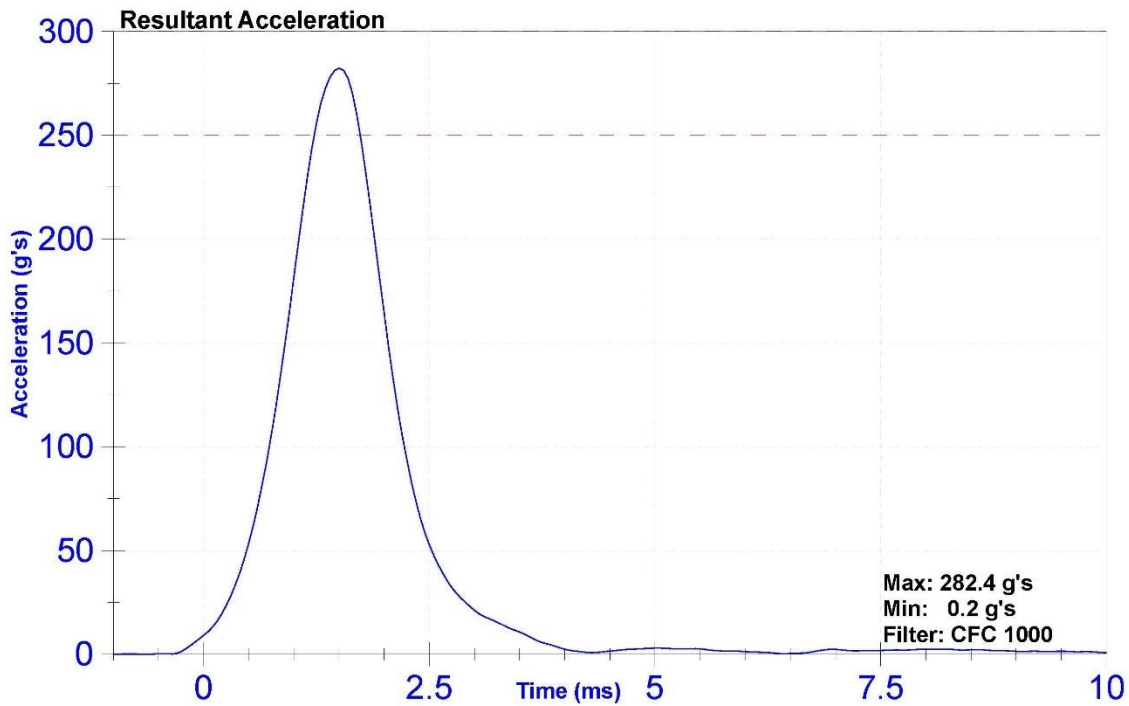
ATD Manufacturer	Humanetics	Test Technician	T. Roseman
ATD Serial Number	137	Laboratory Supervisor	K. Brogan

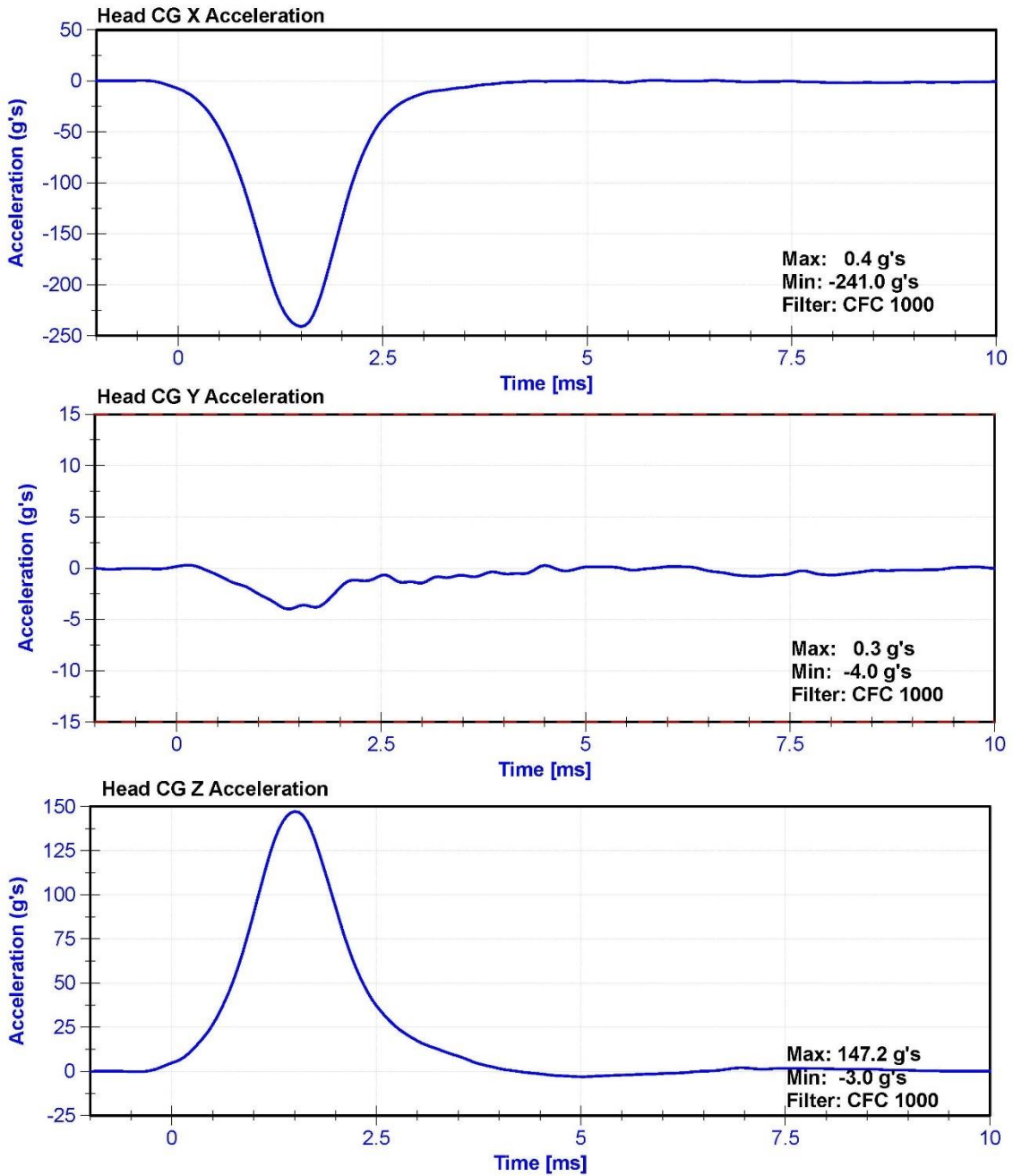
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.2	Pass
Humidity	10	70	%	26.0	Pass
Resultant Acceleration	250	300	g's	282.4	Pass
Oscillation	0	10	%	1.3	Pass
Lateral Acceleration	-15	15	g's	-4.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	Endevco	P79417	2/1/2022	7/31/2022
Y Accelerometer	Endevco	P83335	2/1/2022	7/31/2022
Z Accelerometer	Endevco	P64149	2/1/2022	7/31/2022





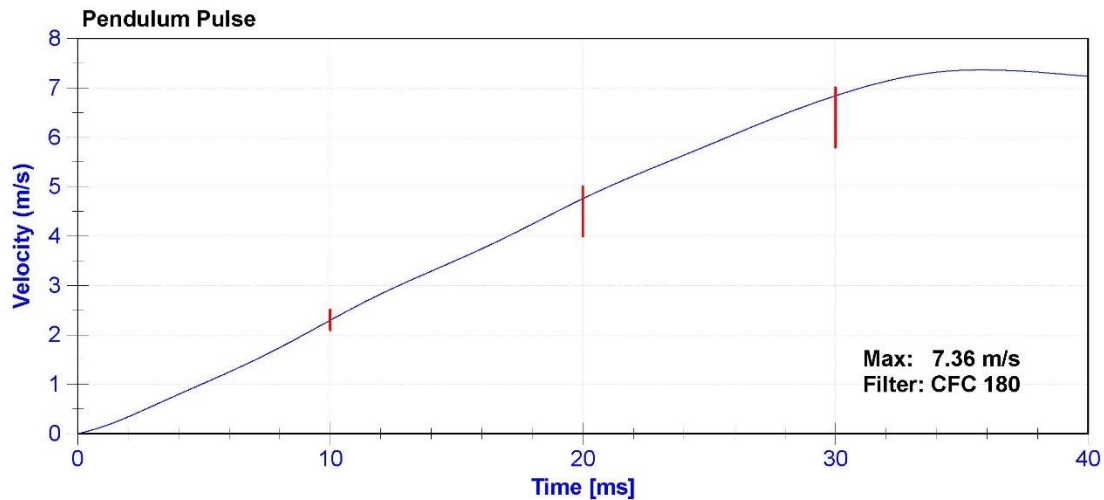
ATD Manufacturer	Humanetics	Test Technician	T. Roseman
ATD Serial Number	137	Laboratory Supervisor	K. Brogan

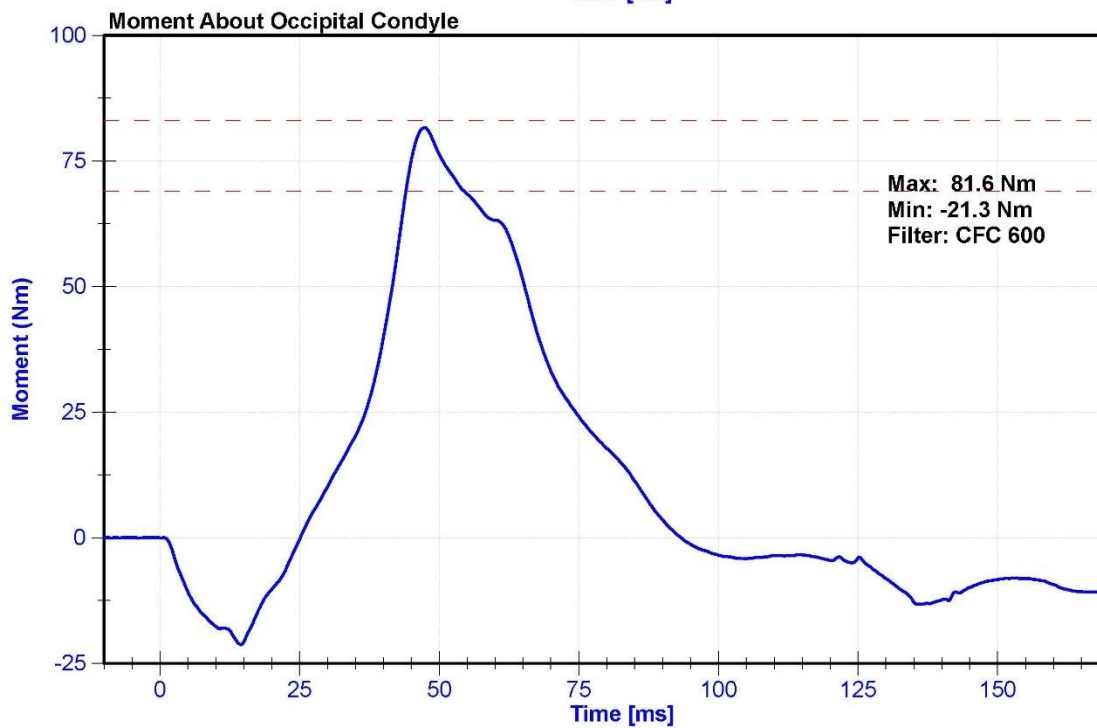
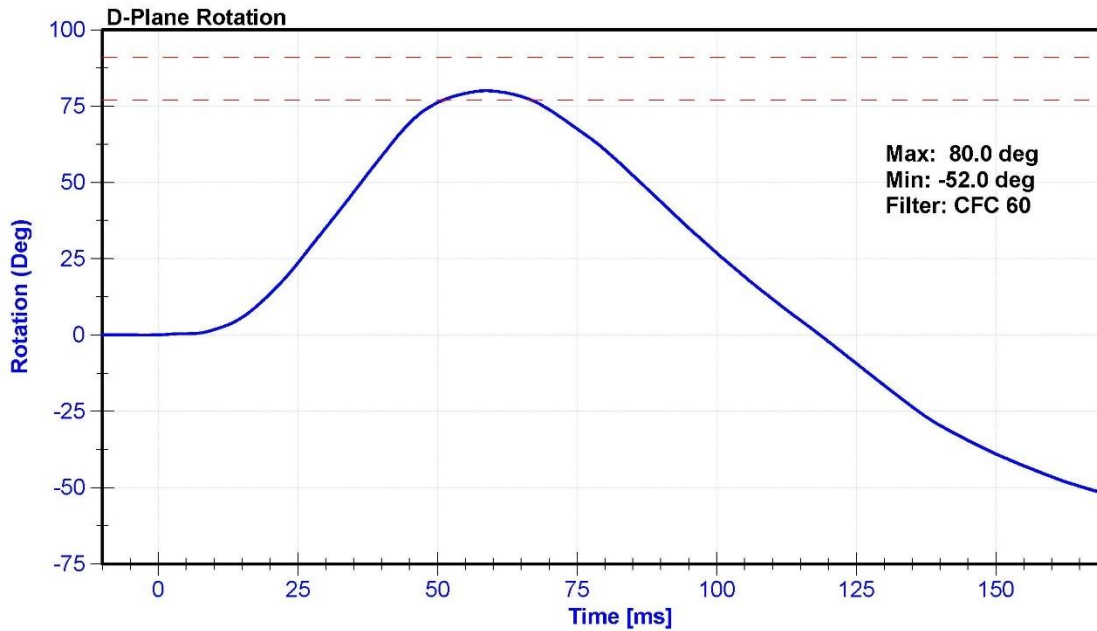
Results

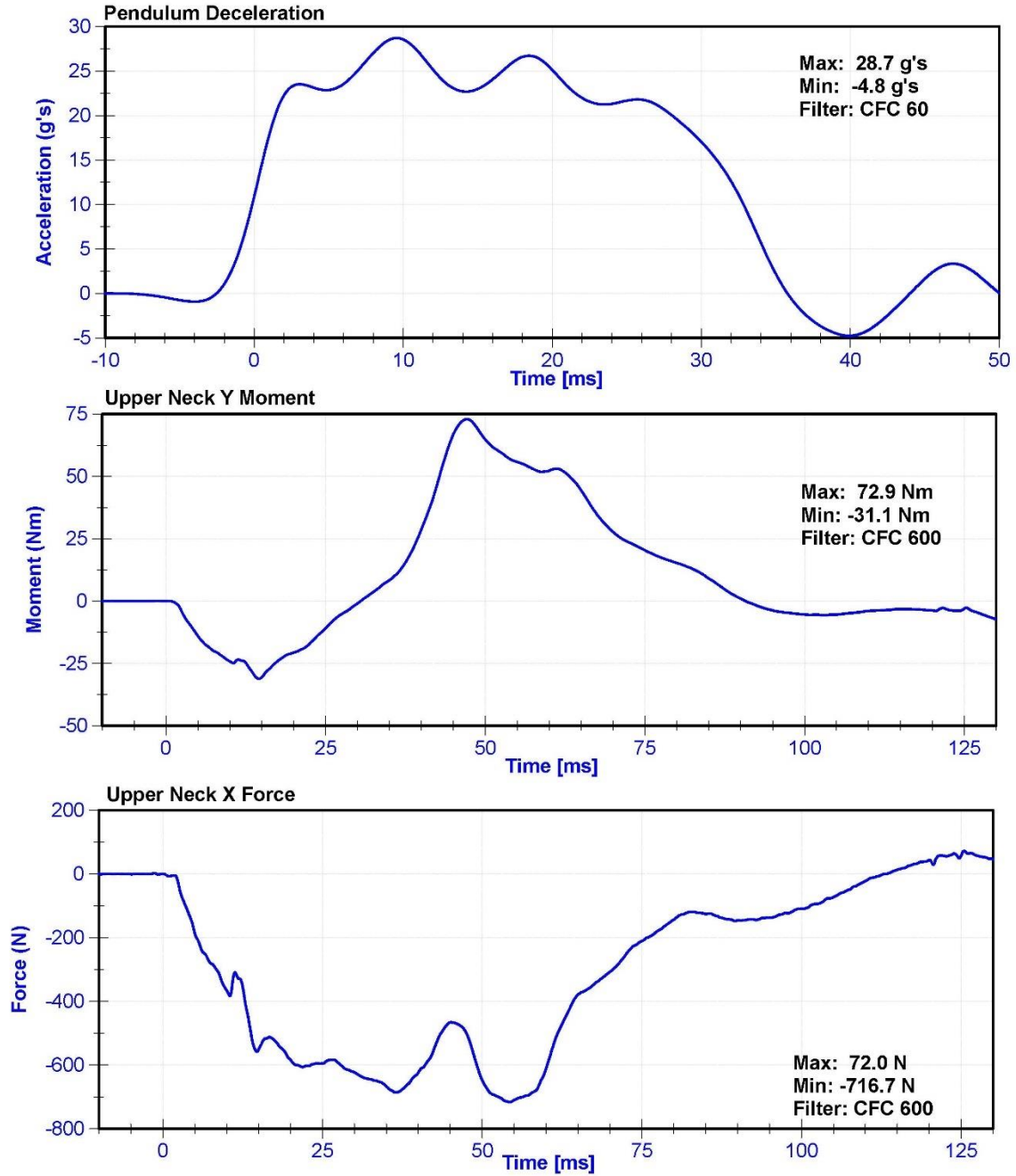
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.2	Pass
Humidity	10	70	%	26.0	Pass
Velocity	6.89	7.13	m/s	7.020	Pass
Pendulum Impulse at 10ms	2.1	2.5	m/s	2.30	Pass
Pendulum Impulse at 20ms	4.0	5.0	m/s	4.76	Pass
Pendulum Impulse at 30ms	5.8	7.0	m/s	6.84	Pass
Max D Plane Rotation	77	91	deg	80.0	Pass
Max Moment During Rotation Interval	69	83	Nm	81.6	Pass
Moment Decay to 10.0 Nm	80	100	ms	85.9	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	7231CT	10/28/2021	10/28/2022
Pendulum Potentiometer	ETI	LABPOT1	5/9/2022	5/9/2023
Condyle Potentiometer	ETI	LABPOT2	5/9/2022	5/9/2023
Upper Neck Load Cell	Denton	2184-FX	6/24/2021	6/24/2022







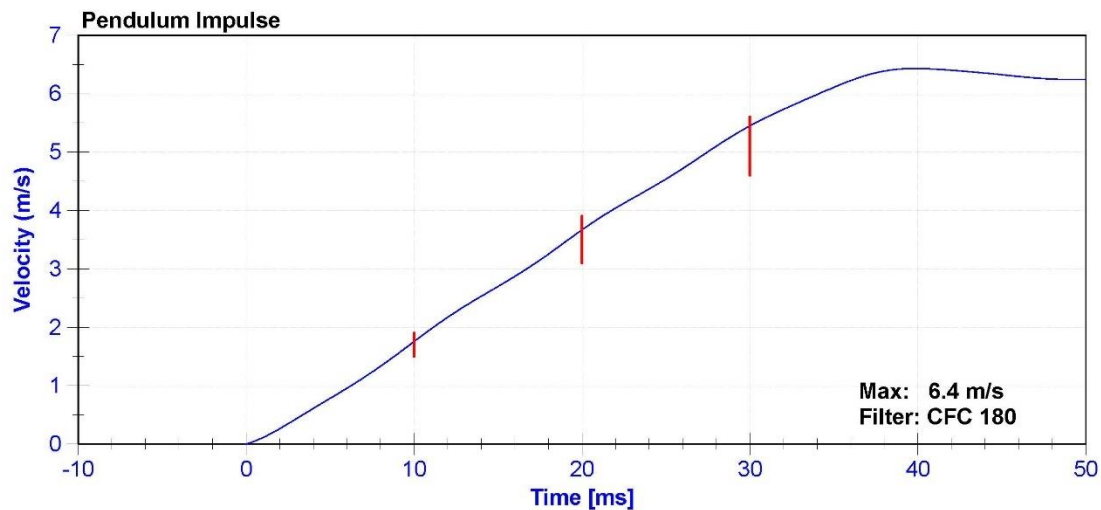
ATD Manufacturer	Humanetics	Test Technician	T. Roseman
ATD Serial Number	137	Laboratory Supervisor	K. Brogan

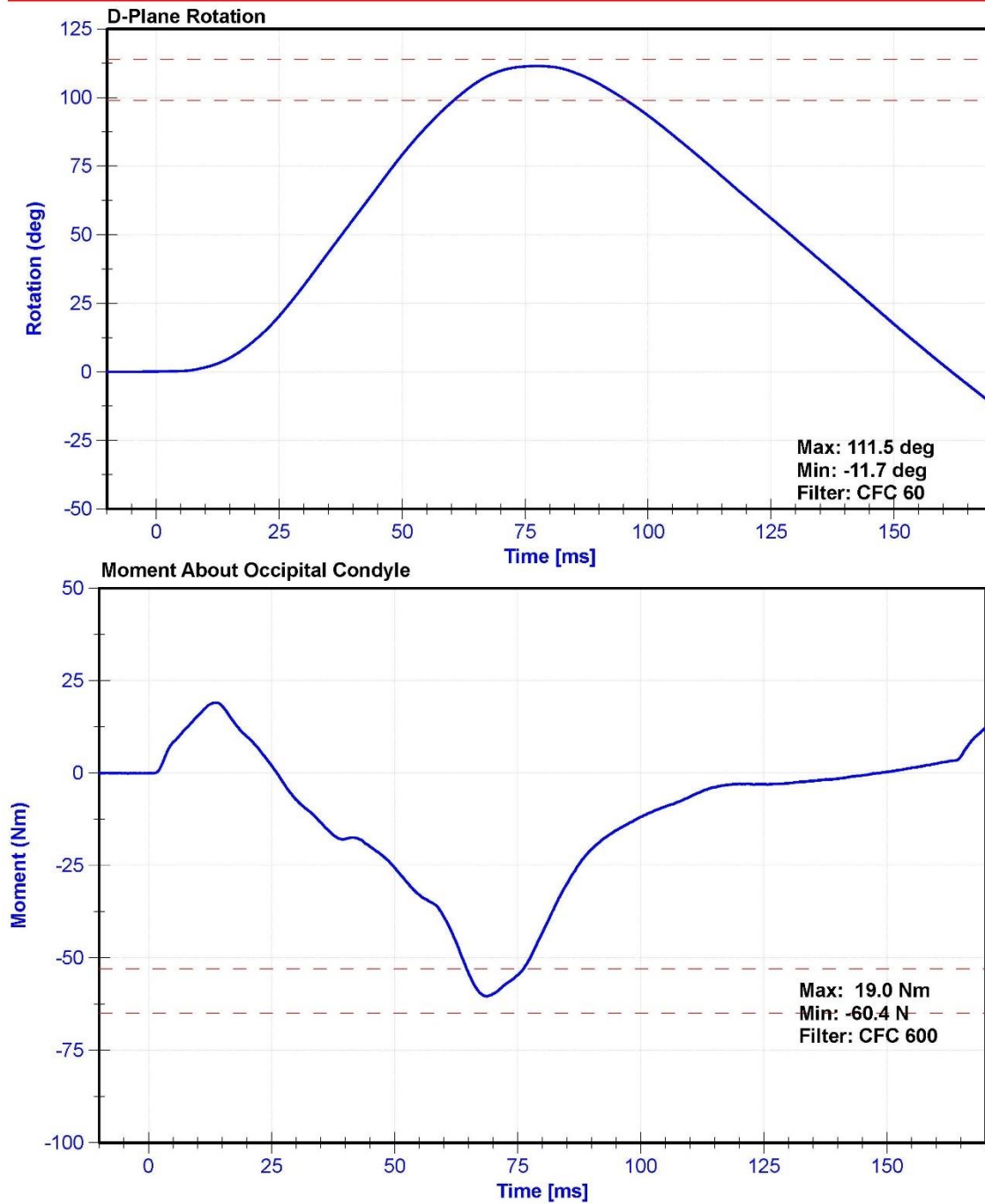
Results

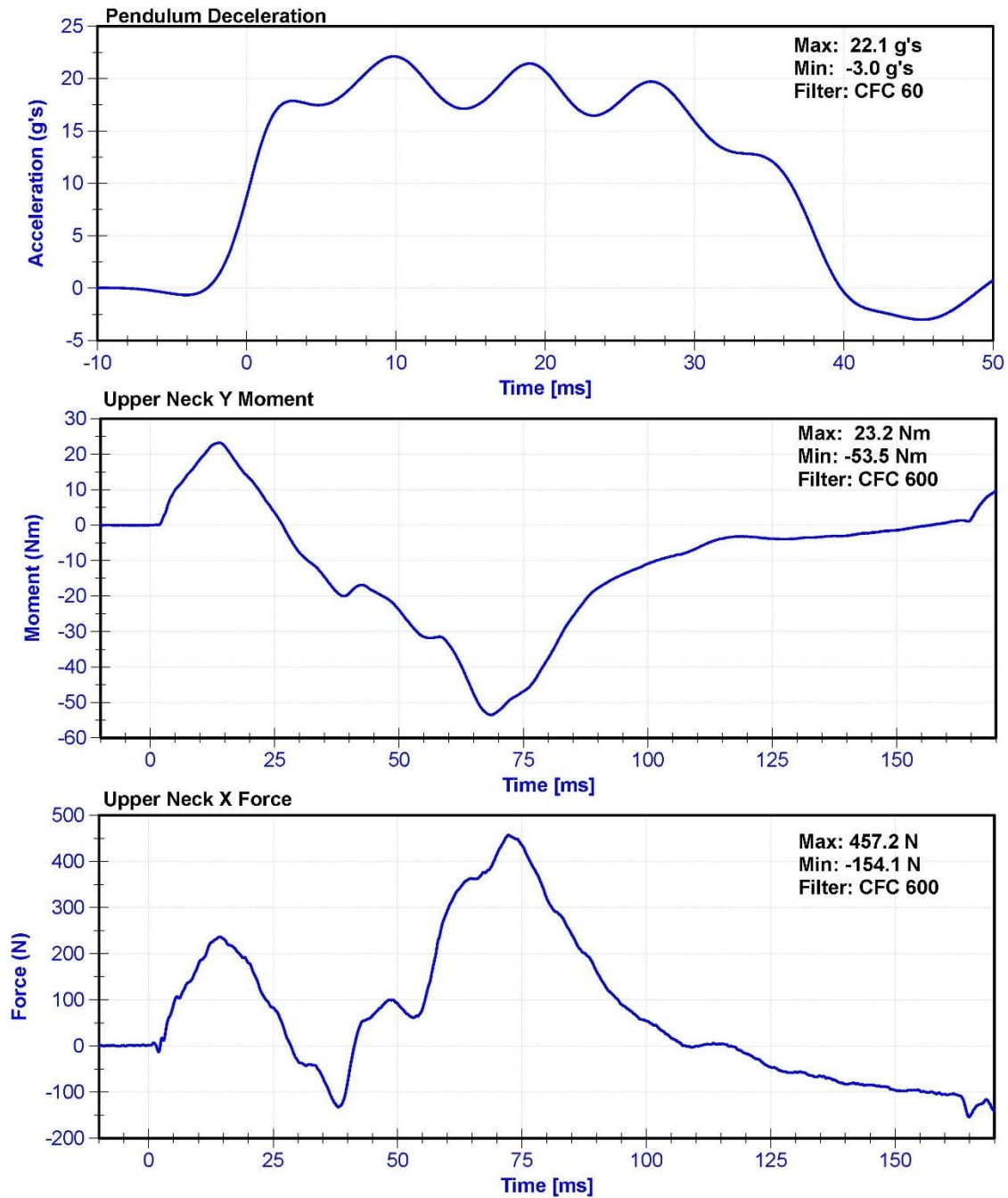
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.2	Pass
Humidity	10	70	%	26.0	Pass
Velocity	5.95	6.19	m/s	6.132	Pass
Pendulum Impulse at 10ms	1.5	1.9	m/s	1.76	Pass
Pendulum Impulse at 20ms	3.1	3.9	m/s	3.67	Pass
Pendulum Impulse at 30ms	4.6	5.6	m/s	5.45	Pass
D Plane Rotation	99	114	deg	111.5	Pass
Moment During Rotation Interval	-65	-53	Nm	-60.4	Pass
Moment Decay to -10Nm	94	114	ms	103.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	C16503	10/28/2021	10/28/2022
Pendulum Potentiometer	ETI	LABPOT1	5/9/2022	5/9/2023
Condyle Potentiometer	ETI	LABPOT2	5/9/2022	5/9/2023
Upper Neck Load Cell	Denton	2184-FX	6/24/2021	6/24/2022





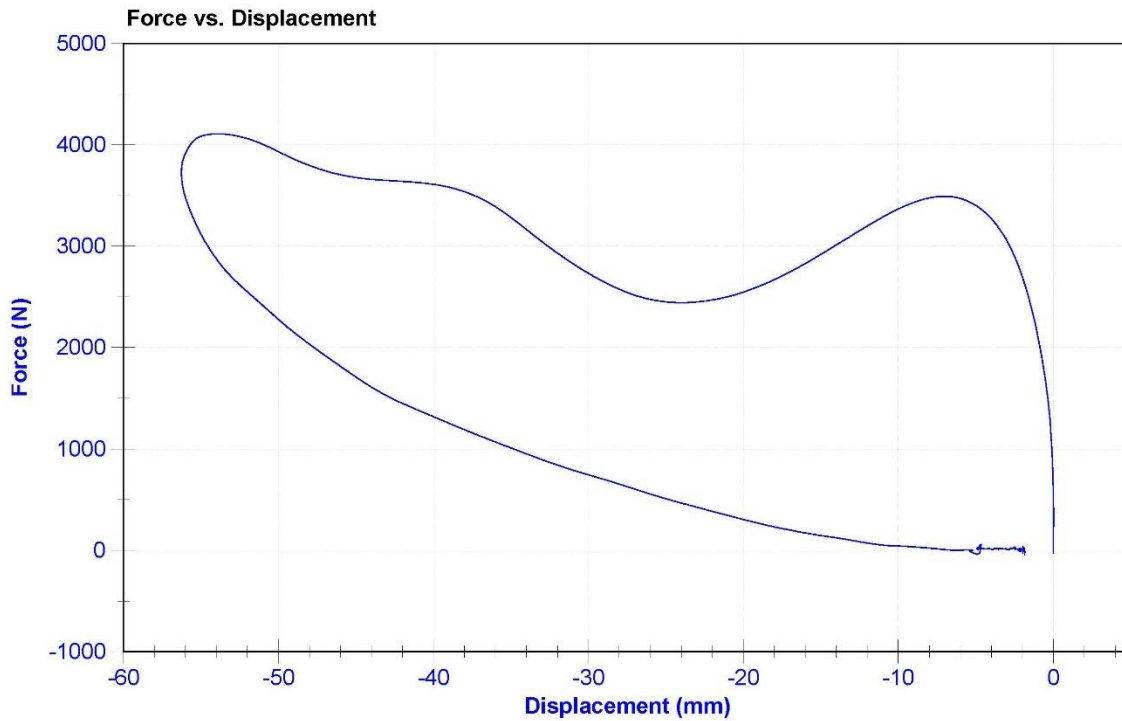


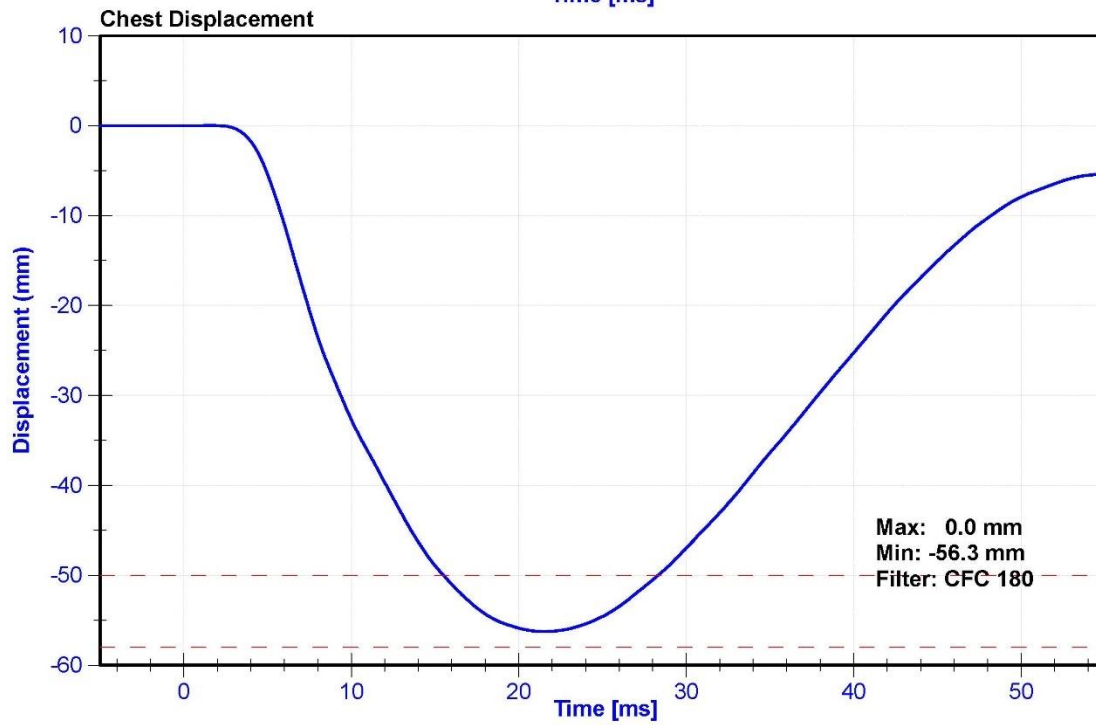
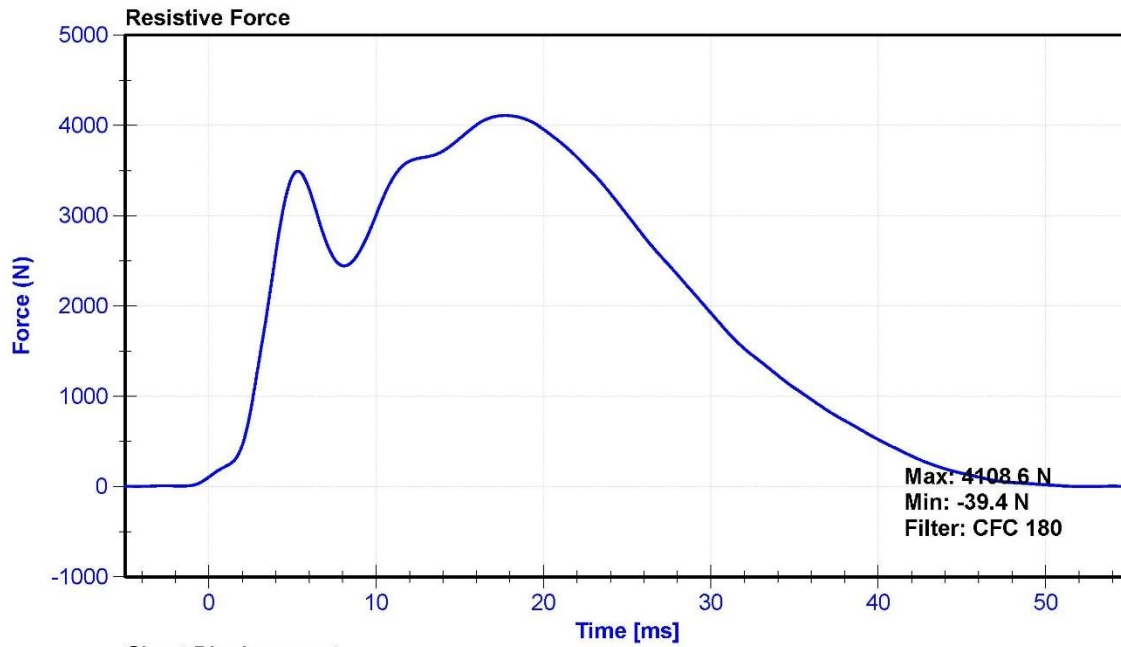
ATD Manufacturer	Humanetics	Test Technician	T. Roseman
ATD Serial Number	137	Laboratory Supervisor	K. Brogan

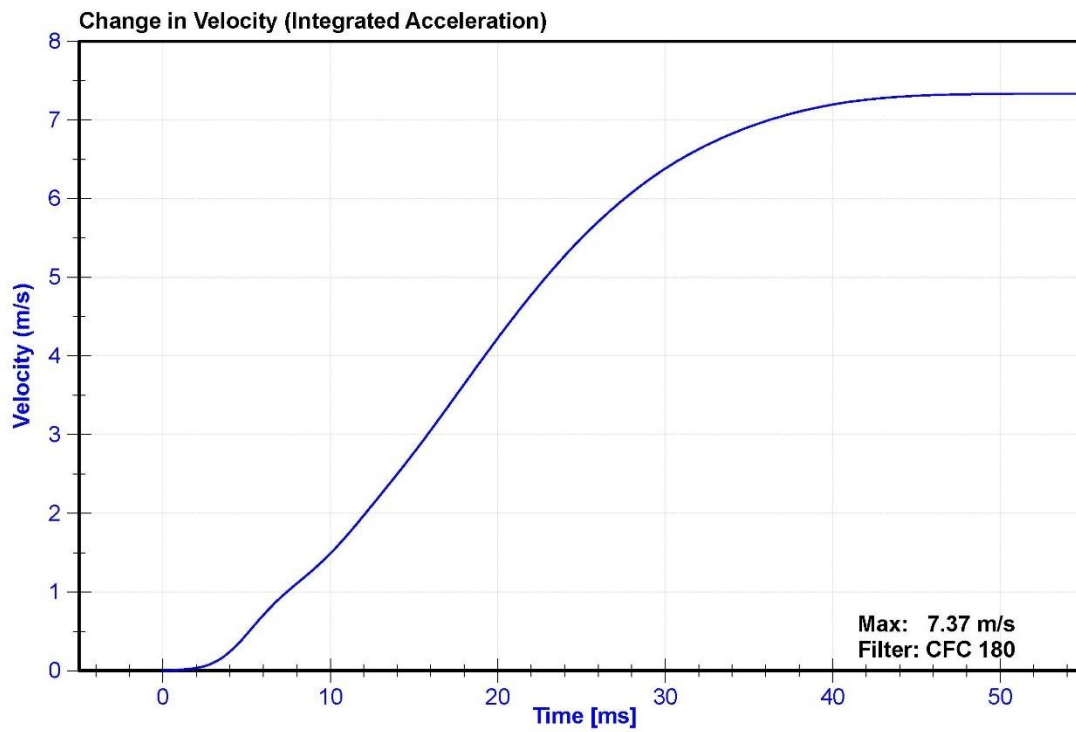
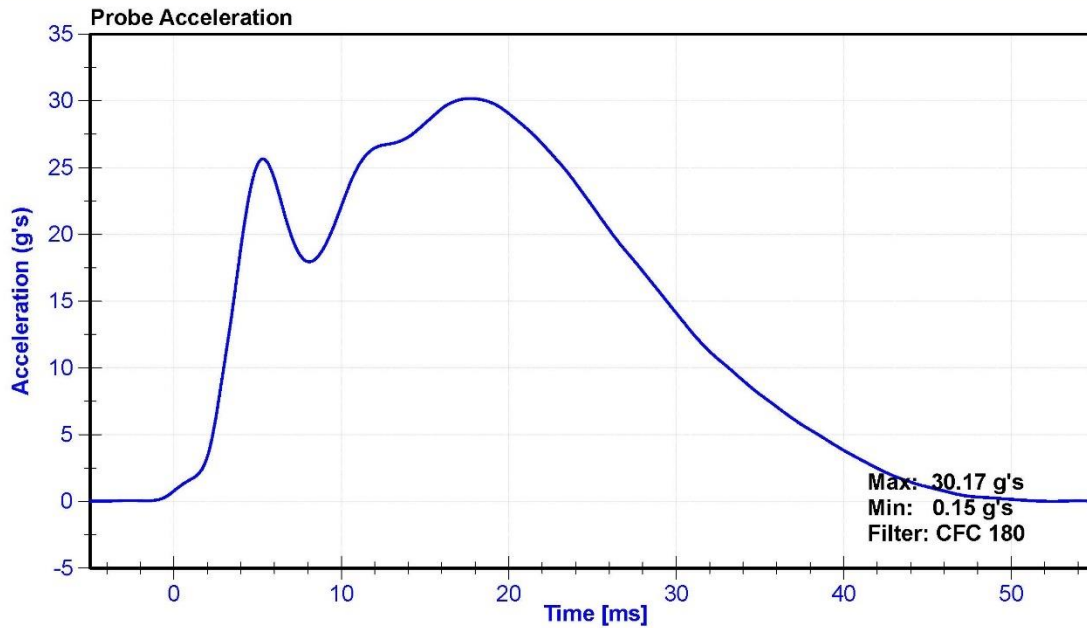
Test Parameter	Results		Unit	Result	Pass/Fail
	Minimum Specification	Maximum Specification			
Temperature	20.6	22.2	°C	21.0	Pass
Humidity	10	70	%	26.0	Pass
Velocity	6.59	6.83	m/s	6.639	Pass
Chest Deflection	-58	-50	mm	-56.3	Pass
Maximum Resistive Force (50 to 58mm)	3900	4400	N	4108.6	Pass
Maximum Resistive Force (18 to 50mm)	0	4600	N	3932.4	Pass
Hysteresis	69	85	%	71.3	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	10/25/2022
Chest Potentiometer	Servo	0720	4/18/2022	10/17/2022







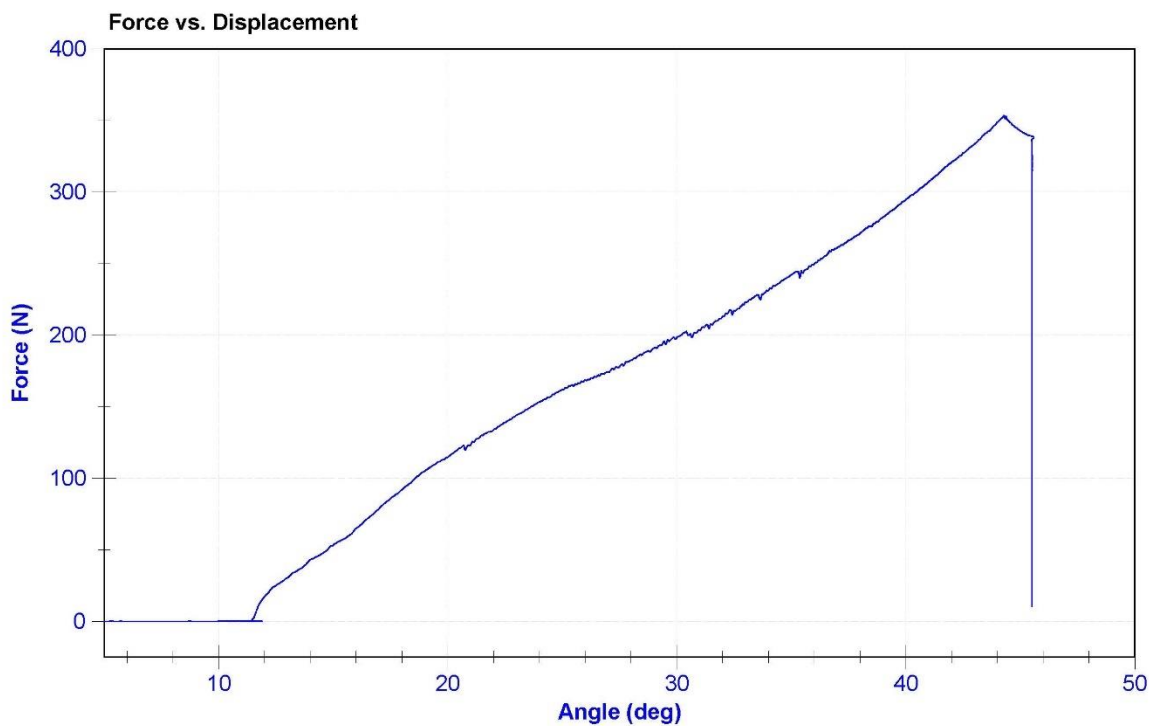
ATD Manufacturer	Humanetics	Test Technician	T. Roseman
ATD Serial Number	137	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.6	25.6	°C	21.2	Pass
Humidity	10	70	%	26.0	Pass
Initial Angle	0	20	deg	11.1	Pass
Force at 45 Degrees	320	390	N	353.6	Pass
Return Angle Relative to Initial	0	8	deg	1.8	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Potentiometer	Rieker	DS-1905226	2021-11-01	2022-11-01
Load Cell	Interface	1134516	2021-08-27	2022-08-27



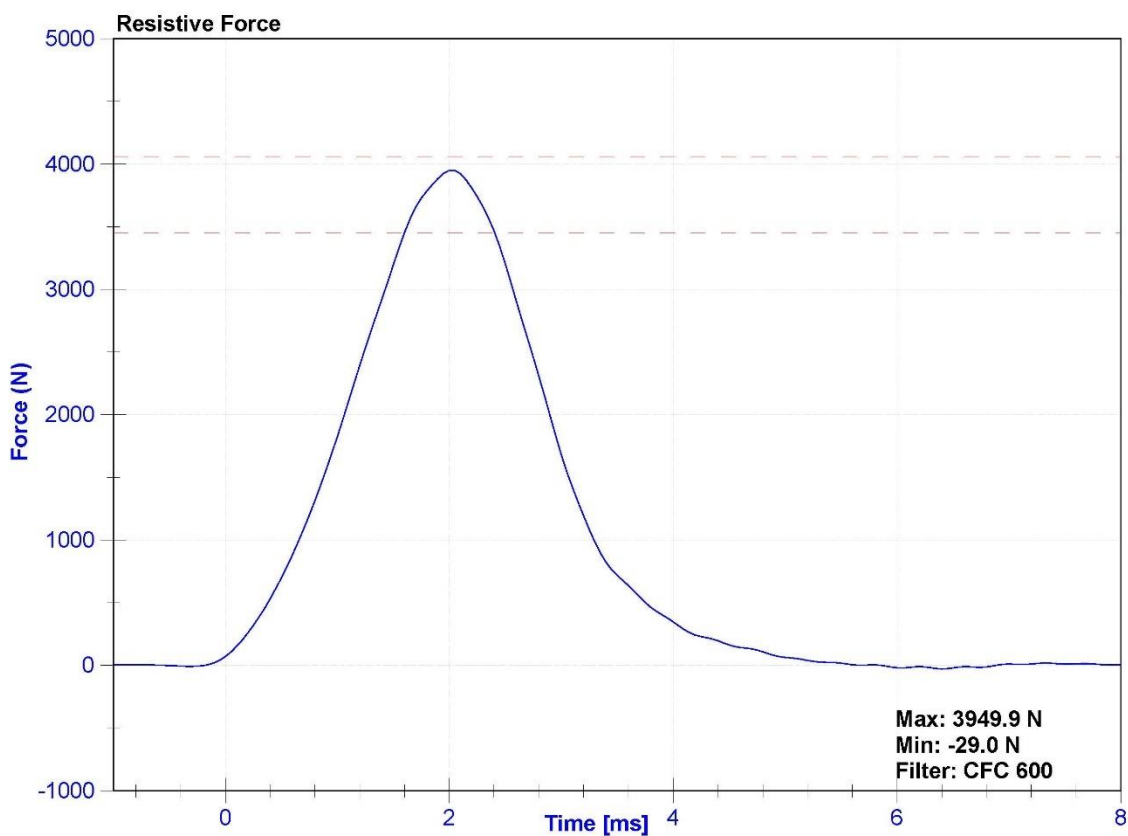
ATD Manufacturer	Humanetics	Test Technician	T. Roseman
ATD Serial Number	137	Laboratory Supervisor	K. Brogan

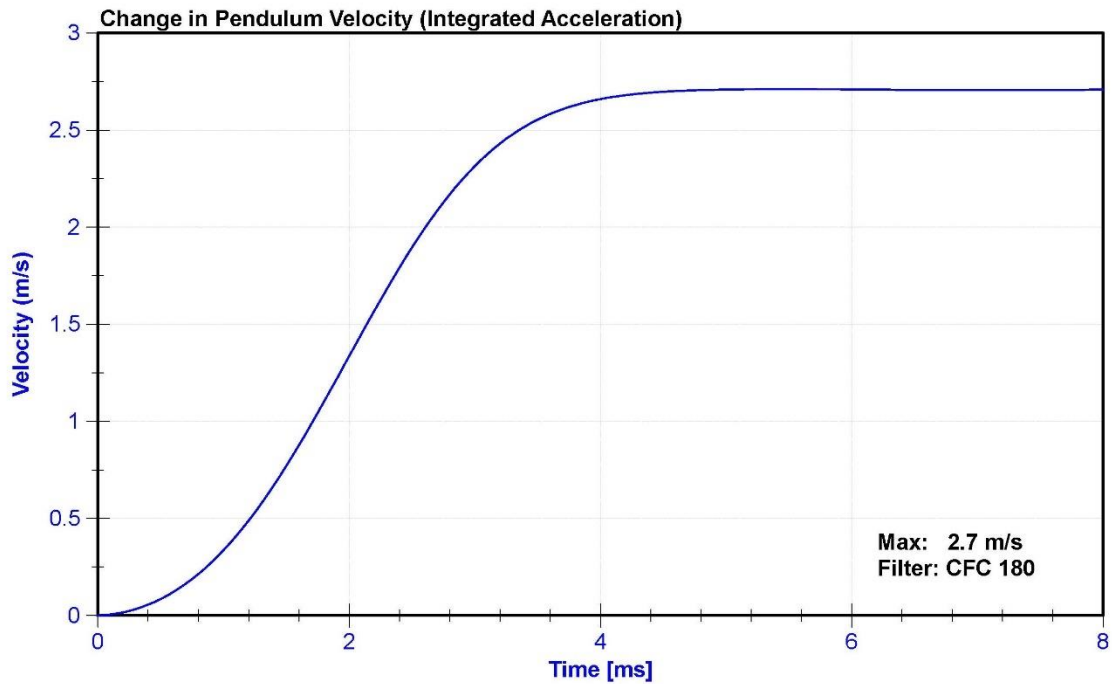
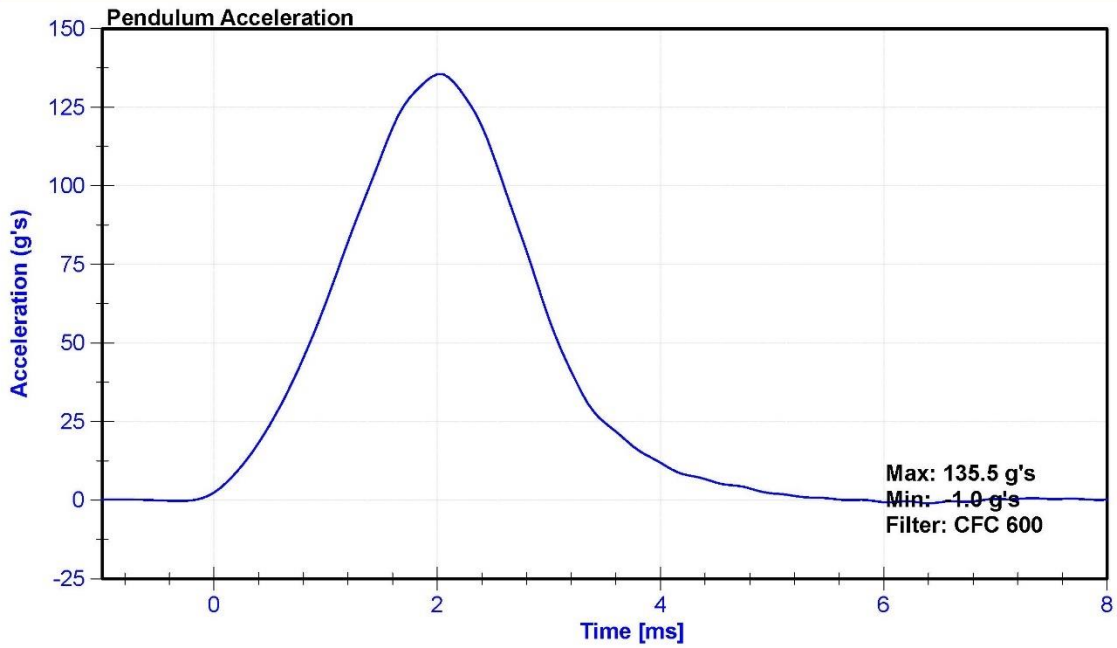
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.2	Pass
Humidity	10	70	%	26.0	Pass
Velocity	2.07	2.13	m/s	2.113	Pass
Resistive Force	3450	4060	N	3949.9	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	10/25/2022





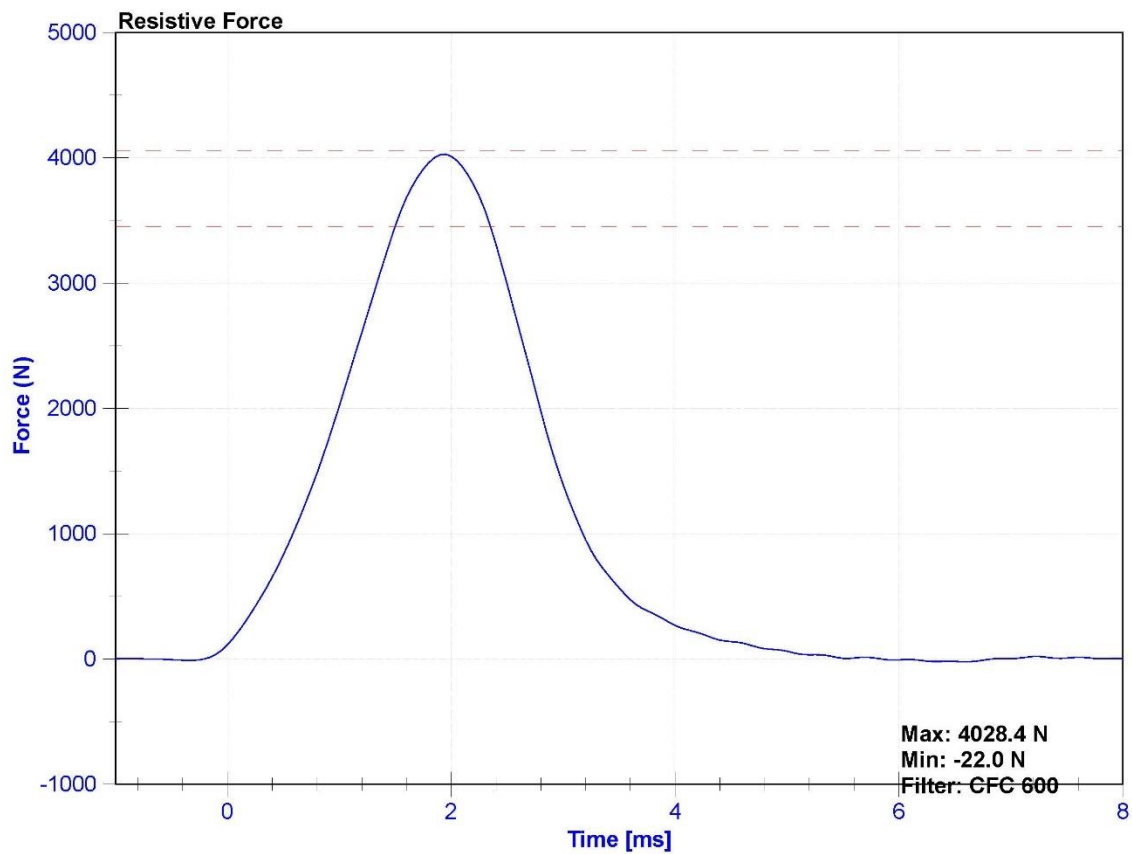
ATD Manufacturer	Humanetics	Test Technician	T. Roseman
ATD Serial Number	137	Laboratory Supervisor	K. Brogan

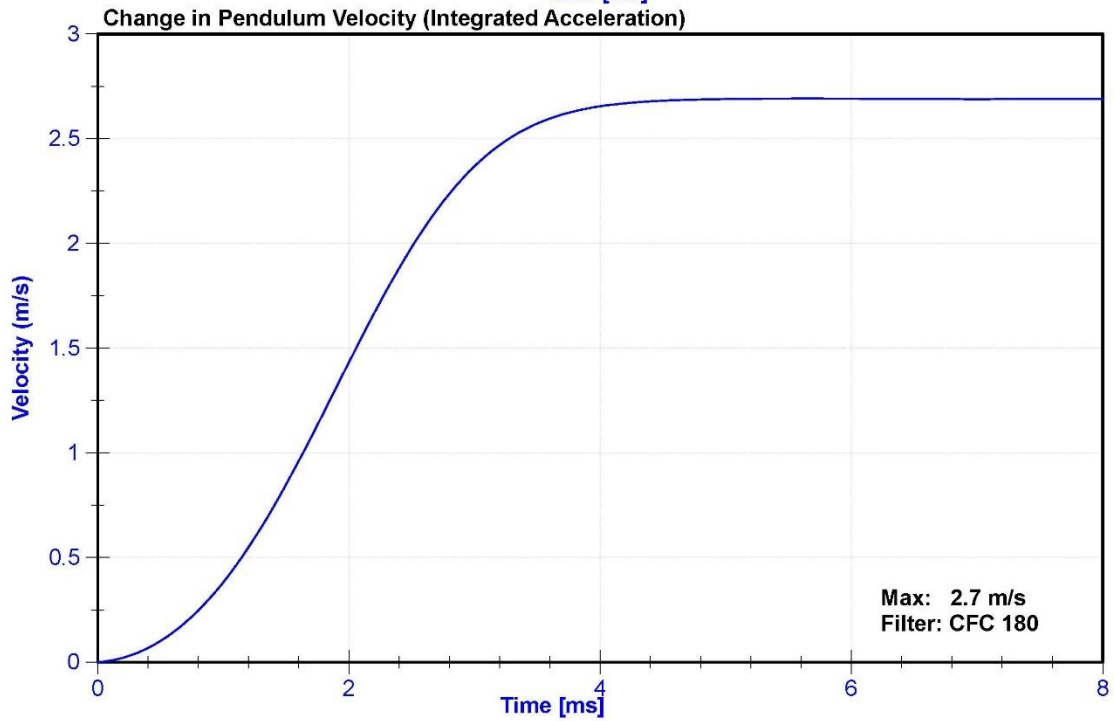
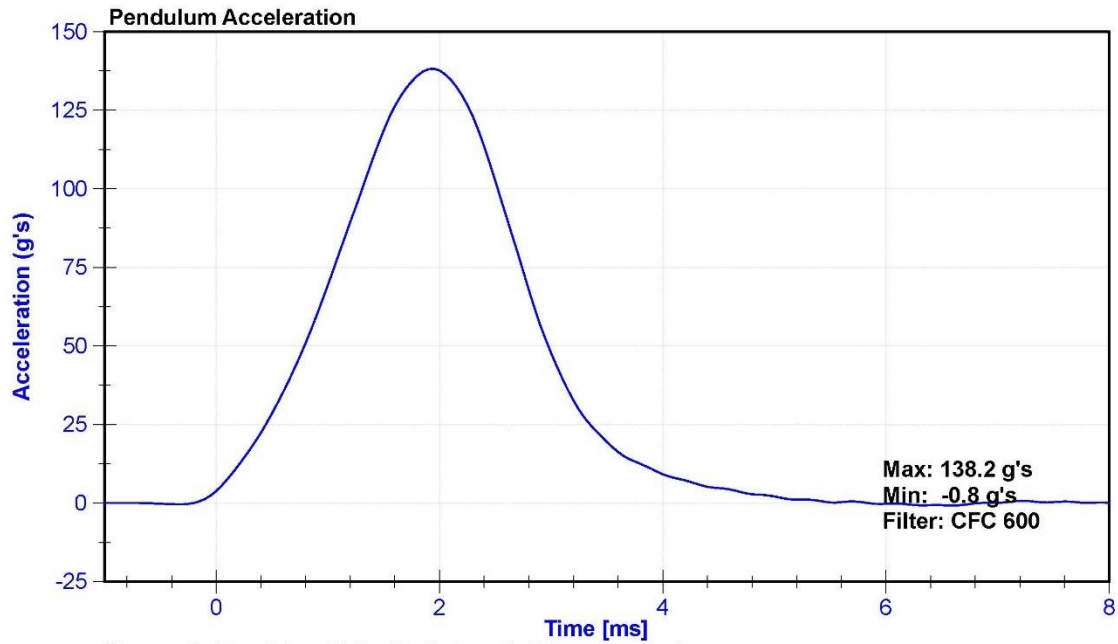
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.2	Pass
Humidity	10	70	%	26.0	Pass
Velocity	2.07	2.13	m/s	2.112	Pass
Resistive Force	3450	4060	N	4028.4	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	10/25/2022





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	5/10/2022
		Y	P64151	Endevco	5/10/2022
		Z	P52114	Endevco	5/10/2022
	Redundant	X	P58833	Endevco	5/10/2022
		Y	P58905	Endevco	5/10/2022
		Z	P63996	Endevco	5/10/2022
Head Angular Rate Sensors		X	7589	DTS ARS	8/9/2021
		Y	7370	DTS ARS	8/9/2021
		Z	13095	DTS ARS	8/9/2021
Upper Neck Load Cell		FX, Fy, Fz MX,MY, MZ	280-FX	FTSS	9/14/2021
Chest Accelerometers	Primary	X	P51991	Endevco	5/10/2022
		Y	P80337	Endevco	5/10/2022
		Z	P49185	Endevco	5/10/2022
	Redundant	X	P68059	Endevco	5/10/2022
		Y	P51713	Endevco	5/10/2022
		Z	P78824	Endevco	5/10/2022
Chest Potentiometer		X	0075	JDK	5/10/2022
Pelvis Accelerometer		X	P58800	Endevco	5/10/2022
		Y	P52157	Endevco	5/10/2022
		Z	P83317	Endevco	5/10/2022
Femur Load Cells - Left	Primary	Z	DT0998-FZ1	Denton	6/30/2021
	Redundant	Z	DT0998-FZ2	Denton	6/30/2021
Femur Load Cells - Right	Primary	Z	117-FZ1	Denton	9/14/2021
	Redundant	Z	117-FZ2	Denton	9/14/2021
Tibia Load Cells - Left	Upper	MX, MY, FZ	371-FZ	Denton	7/30/2021
	Lower	MX, MY, FZ	673-FZ	Denton	7/30/2021
Tibia Load Cells – Right	Upper	MX, MY, FZ	361-FZ	Denton	7/30/2021
	Lower	MX, MY, FZ	362-FZ	Denton	7/30/2021
Foot Accelerometers - Left	Rear	X	P82756	Endevco	5/10/2022
	Front	Z	P51872	Endevco	5/10/2022
Foot Accelerometers - Right	Rear	X	P49195	Endevco	5/10/2022
	Front	Z	P58779	Endevco	5/10/2022
Seat belt Load Cells	Lap		NA	NA	NA
	Shoulder		DK1753	GFE	2/25/2022

Table 2 – Front Passenger Dummy Instrumentation

Instrumentation		Axis/Location	Hybrid III 5 th S/N: 137		
			Serial Number	Manufacturer	Calibration Date
Head Accelerometers	Primary	X	P79417	Endevco	2/1/2022
		Y	P83335	Endevco	2/1/2022
		Z	P64149	Endevco	2/1/2022
	Redundant	X	P52008	Endevco	2/1/2022
		Y	P52045	Endevco	2/1/2022
		Z	P74774	Endevco	2/1/2022
Head Angular Rate Sensors		X	4718	DTS ARS	8/9/2021
		Y	7603	DTS ARS	8/9/2021
		Z	7521	DTS ARS	8/9/2021
Upper Neck Load Cell		FX, Fy, Fz MX,MY, MZ	2184-FX	Denton	6/24/2021
Chest Accelerometers	Primary	X	T21142	Endevco	2/1/2022
		Y	P83346	Endevco	2/1/2022
		Z	P49190	Endevco	2/1/2022
	Redundant	X	P58794	Endevco	2/1/2022
		Y	P69791	Endevco	2/14/2022
		Z	T11253	Endevco	2/1/2022
Chest Potentiometer		X	0720	Servo	4/18/2022
Pelvis Accelerometer		X	P58735	Endevco	1/31/2022
		Y	P77587	Endevco	1/31/2022
		Z	P51285	Endevco	1/31/2022
Femur Load Cells - Left	Primary	Z	119-FZ1	Denton	6/30/2021
	Redundant	Z	119-FZ2	Denton	6/30/2021
Femur Load Cells - Right	Primary	Z	109-FZ1	Denton	6/30/2021
	Redundant	Z	109-FZ2	Denton	6/30/2021
Tibia Load Cells - Left	Upper	MX, MY, FZ	406-FZ	Denton	7/30/2021
	Lower	MX, MY, FZ	360-FZ	Denton	7/30/2021
Tibia Load Cells – Right	Upper	MX, MY, FZ	476-FZ	Denton	7/30/2021
	Lower	MX, MY, FZ	359-FZ	Denton	7/30/2021
Foot Accelerometers - Left	Rear	X	P78959	Endevco	1/31/2022
	Front	Z	P83418	Endevco	1/31/2022
Foot Accelerometers - Right	Rear	X	P83428	Endevco	1/31/2022
	Front	Z	P80265	Endevco	1/31/2022
Seat belt Load Cells	Lap		NA	NA	NA
	Shoulder		295	GFE	2/25/2022

Table 3 – Vehicle Instrumentation

Instrumentation			Axis	Serial Number	Manufacturer	Calibration Date
Crossmember/Rear Seat Accelerometers	Left	Primary	X	A283662	Measurement Specialties	3/22/2022
			Z	A352378	Measurement Specialties	3/22/2022
		Redundant	X	A350921	Measurement Specialties	3/22/2022
	Right	Primary	X	A315110	Measurement Specialties	4/28/2022
			Z	A315985	Measurement Specialties	4/28/2022
		Redundant	X	A315955	Measurement Specialties	4/28/2022
Engine Accelerometers	Top		X	A428030	Measurement Specialties	3/2/2022
	Bottom		X	A427999	Measurement Specialties	3/1/2022