

REPORT NUMBER: SINCAP-CAL-22-002

**NEW CAR ASSESSMENT PROGRAM (NCAP)
MOVING DEFORMABLE BARRIER SIDE IMPACT TEST**

**Nissan Motor Co. LTD
2022 Nissan Pathfinder
4-door SUV**

NHTSA No: M20225207

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



April 7, 2023

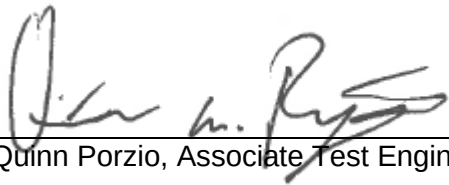
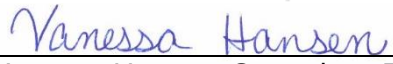
FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
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1200 NEW JERSEY AVE SE
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Prepared by:	 Quinn Porzio, Associate Test Engineer	Date:	<u>April 7, 2023</u>
Approved by:	 Vanessa Hansen, Operations Program Manager	Date:	<u>April 7, 2023</u>

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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15. Supplementary Notes																																																					
16. Abstract A 55/28, (61.90kph / 38.5 mph), 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2022 Nissan Pathfinder four door SUV in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. This test was conducted at Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on May 18, 2022. The impact velocity of the Moving Deformable Barrier (MDB) was 61.68 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21.7°C. The target vehicle's maximum post-test static crush was 195 mm located at level 2. The test vehicle's occupant performance data is as follows: <table border="1"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th colspan="3">Driver ATD (ES-2re)</th> </tr> <tr> <th>Units</th> <th>IARV</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td>N/A</td> <td>1000</td> <td>84.441</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>44</td> <td>23.286</td> </tr> <tr> <td>Total Abdominal Force</td> <td>N</td> <td>2500</td> <td>613.432</td> </tr> <tr> <td>Pubic Symphysis Force</td> <td>N</td> <td>6000</td> <td>1084.861</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th colspan="3">Passenger ATD (SID-IIs)</th> </tr> <tr> <th>Units</th> <th>IARV</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td>N/A</td> <td>1000</td> <td>88.450</td> </tr> <tr> <td>Lower Spine Resultant Acceleration</td> <td>G</td> <td>82</td> <td>33.096</td> </tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td> <td>N</td> <td>5525</td> <td>2048.78</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38*</td> <td>14.617</td> </tr> <tr> <td>Maximum Abdominal Rib Deflection</td> <td>mm</td> <td>45*</td> <td>11.087</td> </tr> </tbody> </table> * Proposed IARV The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.				Measurement Description	Driver ATD (ES-2re)			Units	IARV	Result	Head Injury Criteria (HIC ₃₆)	N/A	1000	84.441	Maximum Thoracic Rib Deflection	mm	44	23.286	Total Abdominal Force	N	2500	613.432	Pubic Symphysis Force	N	6000	1084.861	Measurement Description	Passenger ATD (SID-IIs)			Units	IARV	Result	Head Injury Criteria (HIC ₃₆)	N/A	1000	88.450	Lower Spine Resultant Acceleration	G	82	33.096	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2048.78	Maximum Thoracic Rib Deflection	mm	38*	14.617	Maximum Abdominal Rib Deflection	mm	45*	11.087
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TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
1	Test Purpose and Procedure	1-1
2	Summary of Test Results	2-1
3	Occupant and Vehicle Information	3-1
<u>Data Sheet</u>		<u>Page</u>
1	General Test and Vehicle Parameter Data	3-2
2	Seat, Seat Belt, Steering Wheel Adjustment and Fuel System Data	3-6
3	Dummy Longitudinal Clearance Dimensions	3-10
4	Dummy Lateral Clearance Dimensions	3-11
5	Camera and Instrumentation Data	3-12
6	Test Vehicle Accelerometer Locations	3-13
7	MDB Accelerometer Locations	3-14
8	Post-Test Observations	3-15
9	MDB Summary of Results	3-17
10	Test Vehicle Profile Measurements	3-18
11	Test Vehicle Exterior Crush Measurements	3-19
12	MDB Exterior Static Crush Measurements	3-22
13	Vehicle and MDB Damage Profile Distances	3-23
14	FMVSS No. 301 Static Rollover Results	3-24
15	Dummy/Vehicle Temperature and Humidity Stabilization Data	3-25
<u>Appendix</u>		<u>Page</u>
A	Photographs	A-1
B	Vehicle and Dummy Response Data Plots	B-1
C	Dummy Configuration and Performance Verification Data	C-1
D	Test Equipment and Instrumentation Calibration Data	D-1

SECTION 1

TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test is part of the MY 2022 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number 693JJ920D000016. The purpose of this test is to generate comparative side impact performance in a 2022 Nissan Pathfinder four door SUV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated March 2020.

SECTION 2

SUMMARY OF TEST RESULTS

A 2022 Nissan Pathfinder four door SUV was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.68 km/h. The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by the Calspan Corporation's Transportation Test Operations Center in Buffalo, New York on May 18, 2022. Pre-test and post-test photographs of the test vehicle, the MDB and the dummies (ES-2re and SID-IIs) are included in this report.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the OCWS Side Impact Laboratory Test Procedure, dated March 2020. The side impact event was documented by 9 high-speed and 2 real-time cameras. Camera locations are included in this report.

The Dummies were instrumented in the following manner:

DRIVER ATD (ES-2re)

Primary and redundant head CG tri-axial accelerometers

Chest upper rib, middle rib, and lower rib y-axis displacement potentiometers

Abdomen forward, middle, and rear y-axis load cells

Lower spine (T12) tri-axial accelerometers

Public symphysis y-axis load cell

PASSENGER ATD (SID-IIs)

Primary and redundant head CG tri-axial accelerometers

Chest upper rib, middle rib, and lower rib y-axis displacement potentiometers

Abdomen upper rib and lower rib y-axis displacement potentiometers

Lower spine (T12) tri-axial accelerometers

Acetabulum and iliac wing y-axis load cells

Appendix B contains the vehicle and dummy response data. Dummy configuration and performance verification data can be found in APPENDIX C of this report. Appendix D of this report contains the test equipment and instrumentation calibration data.

DUMMY INJURY VALUES

Measurement Description	Driver ATD (ES-2re)		
	Units	Threshold	Result
Head Injury Criteria (HIC36)		1000	84.441
Maximum Thorax Rib Deflection	mm	44	23.286
Combined Abdominal Force	N	2500	613.432
Pubic Symphysis Force	N	6000	1084.861

Measurement Description	Passenger ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC36)		1000	88.450
Lower Spine (T12) Resultant Acceleration	G	82	33.096
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2048.778
Maximum Thoracic Rib Deflection	mm	38*	14.617
Maximum Abdominal Rib Deflection	mm	45*	11.087

*Proposed IARV

SUPPLEMENTAL RESTRAINT INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Mounted	Deployed	Mounted	Deployed
Frontal Air bag	Yes	No		
Knee Air bag	Yes	No		
Side Air bag 1 - Curtain	Yes	Yes	Yes	Yes
Side Air bag 2 – Torso/Pelvis Air bag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Other				

GENERAL COMMENTS:

1. P1 serial number – F033
2. P4 serial number – DG8012

Data Anomalies:

The following channel was questionable for

- Left B-Pillar Lower Y Acceleration, Exceeded calibration range and saturated at 10.5 ms ,
- Left B-Pillar Middle Y Acceleration, Exceeded calibration range and saturated at 11.2 ms
- Left Rear Seat Track/Structure Y Acceleration, Exceeded calibration range at 18.6 ms 28.2 ms

SECTION 3

OCCUPANT AND VEHICLE INFORMATION

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, Seat Belt, Steering Wheel Adjustment and Fuel System Data

Data Sheet No. 3 – Dummy Longitudinal Clearance Dimensions

Data Sheet No. 4 – Dummy Lateral Clearance Dimensions

Data Sheet No. 5 – Camera and Instrumentation Data

Data Sheet No. 6 – Test Vehicle Accelerometer Locations

Data Sheet No. 7 – MDB Accelerometer Locations

Data Sheet No. 8 – Post-Test Observations

Data Sheet No. 9 – MDB Summary of Results

Data Sheet No. 10 – Test Vehicle Profile Measurements

Data Sheet No. 11 – Test Vehicle Exterior Crush Measurements

Data Sheet No. 12 – MDB Exterior Static Crush Measurements

Data Sheet No. 13 – Vehicle and MDB Damage Profile Distances

Data Sheet No. 14 – FMVSS No. 301 Static Rollover Results

Data Sheet No. 15 – Dummy/Vehicle Temperature and Humidity Stabilization Data

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2022 Nissan Pathfinder four door SUV
Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20225207
Test Date: 05/18/2022

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20225207
Model Year	2022
Make	Nissan
Model	Pathfinder
Body Style	SUV
VIN	5N1DR3BAXNC244822
Body Color	Black
Odometer Reading (km/mi)	18 miles
Engine Displacement (L)	3.5
Type/No. Cylinders	V6
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	9-Speed
Overdrive	Yes
Final Drive	Front Wheel Drive
Roof Rack	Yes
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	Yes
Anti-Lock Brakes (ABS)	Yes

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks (ADL)	Yes
Power Window Auto-Reverse	No
Other Optional Feature	-
Driver Front Air bag	Yes
Driver Curtain Air bag	Yes
Driver Head/Torso Air bag	No
Driver Torso Air bag	No
Driver Torso/Pelvis Air bag	Yes
Driver Pelvis Air bag	No
Driver Knee Air bag	Yes
Rear Pass. Curtain Air bag	Yes
Rear Pass. Head/Torso Air bag	No
Rear Pass. Torso Air bag	No
Rear Pass. Torso/Pelvis Air bag	Yes
Rear Pass. Pelvis Air bag	No
Driver Seat Belt Pretensioners	Yes
Rear Pass. Seat Belt Pretensioners	Yes
Driver Load Limiter	Yes
Rear Pass. Load Limiter	Yes
Other Safety Restraint	-

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

No

DATA FROM CERTIFICATION LABEL

Manufactured By	Nissan Motor Co. LTD
Date of Manufacture	03/22
Vehicle Type	MPV

GVWR (kg)	2676
GAWR Front (kg)	1335
GAWR Rear (kg)	1530

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total
Designated Seating Capacity (DSC)	2	3	3	8
Capacity Weight (VCW) (kg)				589
DSC X 68.04 kg				544.32
Cargo Weight (RCLW) (kg)				44.68

(A)

(B)

(A-B)

VEHICLE SEAT TYPE

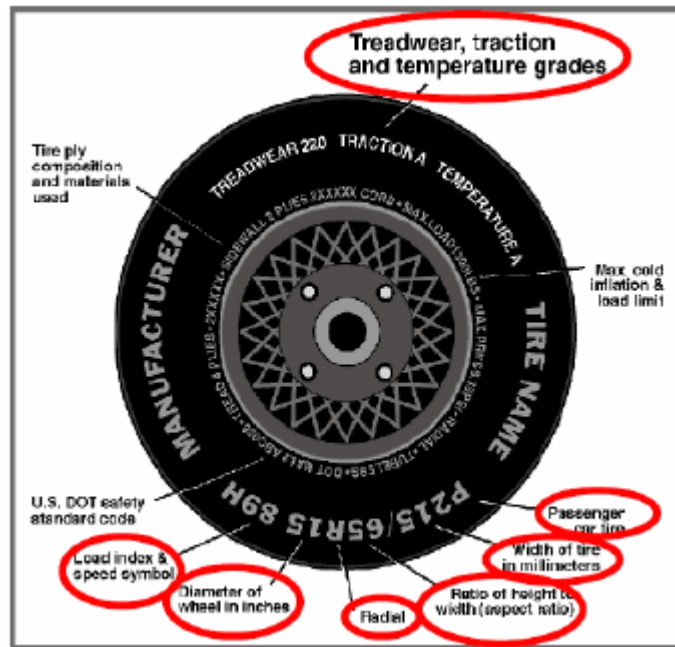
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						W/ Lever	W/ Knob
Front Seat	X						X
Rear or Second Row Seat			X			X	
Third Row seat		X			X		

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

Test Vehicle:	<u>2022 Nissan Pathfinder four door SUV</u>	NHTSA No.:	<u>M20225207</u>
Test Program:	<u>NCAP Side MDB Impact Test</u>	Test Date:	<u>05/18/2022</u>

VEHICLE TIRE INFORMATION

Collected for year, make, model, & VIN, all items circled in red, tire manufacturer and tire name.



TIRE SIDEWALL 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	KUMHO	KUMHO
Tire Model	CRUGEN	CRUGEN
Treadwear	640	640
Traction	A	A
Temperature Grade	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	000F0YA8E0922	000F0YA8E0922
DOT Safety Code Right	000F0YA8E0922	000F0YA8E0922

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

Test Vehicle:	2022 Nissan Pathfinder four door SUV	NHTSA No.:	M20225207
Test Program:	NCAP Side MDB Impact Test	Test Date:	05/18/2022

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	246	238	253	240
Tire Placard	kPa	230	230	230	230
Owner's Manual	kPa	230	230	230	230
As Tested	kPa	230	230	230	230

MDB TIRE SPECIFICATIONS

	Units	Requirement	LF	RF	LR	RR
Tire Size		P205/75R15	P205/75R15	P205/75R15	P205/75R15	P205/75R15
Tire Pressure	kPa	200 ± 21	221	221	221	221

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	564	438		600	508		614	508	
Right	kg	546	431		558	477		559	473	
Ratio	%	56	44		54	46		54	46	
Totals	kg	1110	869	1979	1158	985	2143	1173	981	2154

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1979	(A)
Sum of Actual Weight of 1 ES2re and 1 P572 ATD (SID-IIs)	kg	127	(B)
Rated Cargo / Luggage Weight (RCLW)	kg	44.68	(C)
Calculated Target Vehicle Test Weight (TVTW)	kg	2150.68	(A+B+C)

Does the measured As Test Vehicle Weight lie within the required weight range

(i.e. Calculated Test Vehicle Target Weight – 4.5 kg to – 9 kg)? ☒ Yes ☐ No

TEST VEHICLE ATTITUDES AND CG

Measurement Description	Units	Fully Loaded	As Tested	Meets Requirement**
LF	mm	920	919	Yes
RF	mm	929	926	Yes
RR	mm	961	956	Yes
LR	mm	952	951	Yes
Vehicle CG (Aft of Front Axle)	mm	1318	1331	
Vehicle CG (Left+)/Right(-) from Longitudinal Centerline)	mm	36	29	

*** The "As Tested" vehicle attitude measurements must be equal to or within ± 10mm of the "Fully Loaded" vehicle attitude measurements at each wheel well. Indicate "Yes" or "No" for "Meets Requirements".

Test height adjustable suspension setting, if applicable:

N/A

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

Test Vehicle:	2022 Nissan Pathfinder four door SUV	NHTSA No.:	M20225207
Test Program:	NCAP Side MDB Impact Test	Test Date:	05/18/2022

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Trunk Carpeting	13
Jack	4
Right Rear Window	5
Ballast / Equipment Added	2

TEST SURFACE MARKINGS

	Distance from 63° Impact Angle Line (mm)
Fore 25 mm target	994
Aft 25 mm target	995
Pre-Impact Angle Line	236

Parallel Track Target	X Location (mm)	Y Location (mm)
A	0	0
B	2955	1555
C	2955	4455
D	0	3000

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

Test Vehicle:	2022 Nissan Pathfinder four door SUV	NHTSA No.:	M20225207
Test Program:	NCAP Side MDB Impact Test	Test Date:	05/18/2022

SEAT POSITIONING

The driver's seat, front center seat (if applicable), and right front passenger's seat should be set to the mid-track, lowest, mid-angle position. The struck-side rear passenger's seat, rear center seat, and non-struck side rear passengers' seats should be set to the rear-most, lowest, mid-angle position.

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	17.2	10.3	13.8
Front Passenger Seat	Not Adjustable		
Front Center Seat*			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat*	Fixed	Fixed	Fixed

**if applicable*

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCR P Height (mm)	SCR P Height Position	SCR P Height (mm)		
				Rearmost	Mid- Fore/Aft	Forward- Most
Driver Seat	13.8	12	Max	58	68	80
			Mid	29.5	40	52
			Min	1	12	24
Front Passenger Seat	Not Adjustable		Max	-	-	-
			Mid	-	-	-
			Min	-	-	-
Front Center Seat*			Max	-	-	-
			Mid	-	-	-
			Min	-	-	-
Struck Side Rear Seat	Fixed	Fixed	Max	-	-	-
			Mid	-	-	-
			Min	-	-	-
Non-Struck Side Rear Seat	Fixed	Fixed	Max	-	-	-
			Mid	-	-	-
			Min	-	-	-
Rear Center Seat*	Fixed	Fixed	Max	-	-	-
			Mid	-	-	-
			Min	-	-	-

**if applicable*

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

Test Vehicle:	2022 Nissan Pathfinder four door SUV	NHTSA No.:	M20225207
Test Program:	NCAP Side MDB Impact Test	Test Date:	05/18/2022

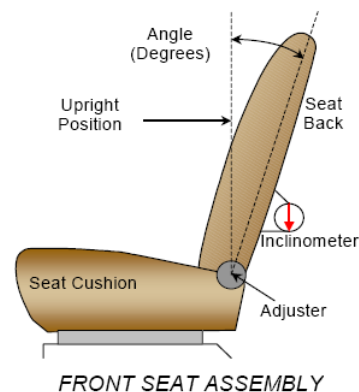
SEAT FORE / AFT POSITION

Seat	Total Fore / Aft Travel		Test Position from Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	260	Power	130	Power
Front Passenger Seat	260	27 (0-26)	130	13
Front Center Seat*				
Struck Side Rear Seat	140	15 (0-14)	140	14
Non-Struck Side Rear Seat	140	15 (0-14)	140	14
Rear Center Seat*	140	15 (0-14)	140	14

**if applicable*

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned to the manufacturer's designated design angle. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back. The struck side rear seat back is positioned such that the dummy's head is level. The rear center and non-struck side rear outboard seat backs are positioned in a similar manner as the struck-side rear seat back.



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detents*
Driver Seat w/ Seated Dummy	83	Power	5.2	Power
Front Passenger Seat	74.3	41 (0-40)	5.2	9
Front Center Seat*				
Struck Side Rear Seat w/ Seated Dummy	19.9	11 (0-10)	6.4	0
Non-Struck Side Rear Seat	19.9	11 (0-10)	6.4	0
Rear Center Seat*	19.9	11 (0-10)	6.4	0

**if applicable*

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

Test Vehicle:	2022 Nissan Pathfinder four door SUV	NHTSA No.:	M20225207
Test Program:	NCAP Side MDB Impact Test	Test Date:	05/18/2022

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1. For this test zero is defined as the uppermost position.

	Total # of Positions	Placed in Position #
Driver Seat	4 (0-3)	0
Rear Seat	Fixed	Fixed

HEAD RESTRAINT ADJUSTMENT

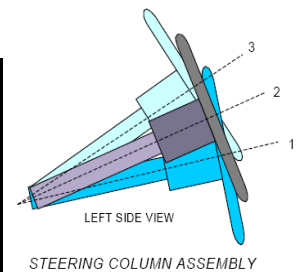
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	6	Uppermost
Rear Seat	3	Lowest

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the center of its geometric locus it describes when it moves through its full range of motion.

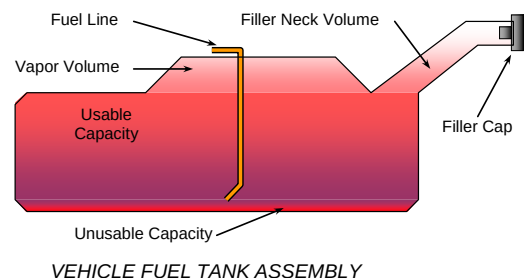
	Degrees	Fore/Aft Position (mm)
Lowermost – Position 1	22.1	
Geometric Center – Position 2	24.2	
Uppermost – Position 3	27.0	
Telescoping Steering Wheel Travel		45
Test Position	24.2	22.5



FUEL PUMP

Describe the fuel pump type, details about how it operates, and the location of the fuel filler neck.

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.



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

Test Vehicle:	<u>2022 Nissan Pathfinder four door SUV</u>	NHTSA No.:	<u>M20225207</u>
Test Program:	<u>NCAP Side MDB Impact Test</u>	Test Date:	<u>05/18/2022</u>

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	70
Usable Capacity of "Optional Tank" (see Form No. 1)	N/A
Usable Capacity of Standard Tank (see Owner's Manual)	70
Usable Capacity of Optional Tank (see Owner's Manual)	N/A
93% of Usable Capacity	65.1
Actual Amount of Solvent Used in Test	65.1
1/3 of Usable Capacity	23.3

Is the Actual Amount of Solvent Used in the test equal to 93% $\pm$ 1% of the Usable Capacity stated in Form No. 1? ☒ Yes ☐ No

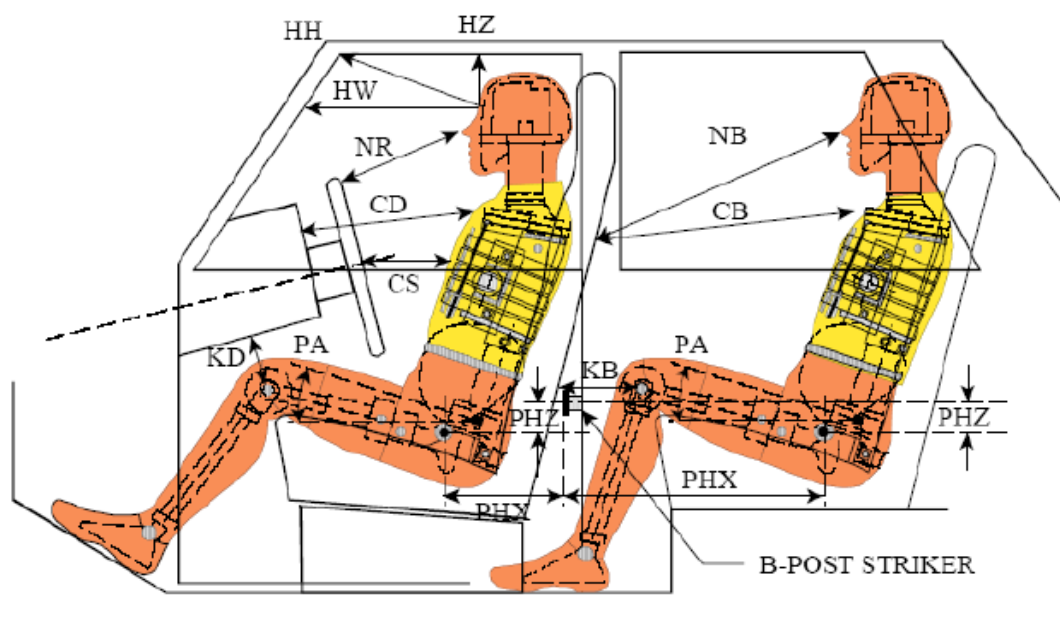
DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2022 Nissan Pathfinder four door SUV

NHTSA No.: M20225207

Test Program: NCAP Side MDB Impact Test

Test Date: 05/18/2022



LEFT SIDE VIEW

NOTE: 2-DOOR VEHICLE SHOWN.
 REAR DUMMY PHX & PHZ
 MEASUREMENTS FOR A 4-DOOR
 VEHICLE WOULD USE THE C-POST
 STRIKER AS A REFERENCE POINT

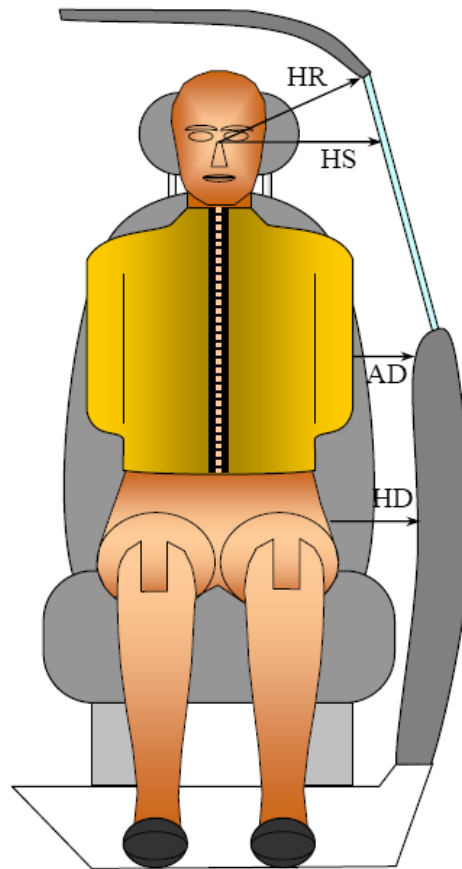
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Description	Driver (Serial No. F033)		Passenger (Serial No.DG8012)	
			Length (mm)	Angle	Length (mm)	Angle
HH		Header to Header	422			
HW		Header to Windshield	646			
HZ	HZ	Head to Roof Liner	213		319	
NR	NB	Nose to Rim/Seat Back	435		610	
CD	CB	Chest to Dash/Seat Back	588		600	
CS		Chest to Steering Wheel	371			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	164	30.6	328	28.8
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	145	45.5	328	28.7
PAX°	PAX°	Pelvic Tilt Angle X		-21.0		21.6
	PAY°	Pelvic Tilt Angle Y				0.2
PHX	PHX	Hip Point to Striker (X-Axis)	233		337	
PHZ	PHZ	Hip Point to Striker (Z-Axis)	152		194	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20225207
 Test Date: 05/18/2022



FRONT VIEW OF DUMMY

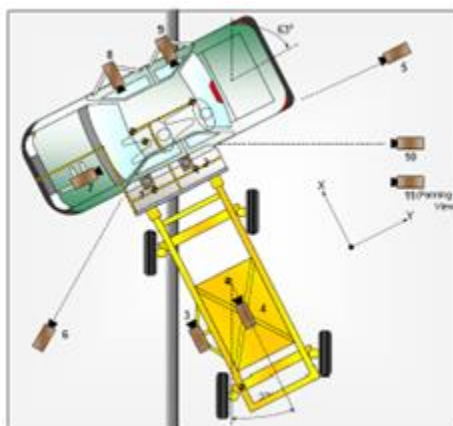
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver (Serial No. F033)	Passenger (Serial No. DG8012)
HR	Head to Side Header	mm	241	285
HS	Head to Side Window	mm	368	398
AD	Arm to Door	mm	139	184
HD	Hip Point to Door	mm	170	211

DATA SHEET NO. 5 **CAMERA AND INSTRUMENTATION DATA**

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20225207
 Test Date: 05/18/2022



CAMERA LOCATIONS AND DATA

No.	Camera View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Overhead Overall	0	0	-8133	12.5	1000
2	Overhead Close-up	0	0	-8133	28	1000
3	Left Impact Point (MDB)	-1470	0	-847	25	1000
4	Side Overall (MDB)	-1140	878	-1587	8	1000
5	Rear	0	9601	-1559	28	1000
6	Left Front	-1960	-6015	1639	24	1000
7	Driver Front (OB)				25	1000
8	Driver Side (OB)				12.5	1000
9	Passenger Side (OB)				12.5	1000
10	Real-time Left Rear				Zoom	60
11	Real-time In run				Zoom	60

Notes: *Reference: Impact Point projected to Ground*
+X = To Front of MDB, +Y = To Right of MDB, +Z = Down
**All measurements accurate to ± 6 mm.*

If applicable, explain why camera(s) did not operate as intended: All cameras operated normally

INSTRUMENTATION

Driver Dummy Channels	16
Passenger Dummy Channels	22
Vehicle Structure Accelerometers	24
MDB Accelerometers	7
Total	69

DATA SHEET NO. 6 **TEST VEHICLE ACCELEROMETER LOCATIONS**

Test Vehicle: 2022 Nissan Pathfinder four door SUV

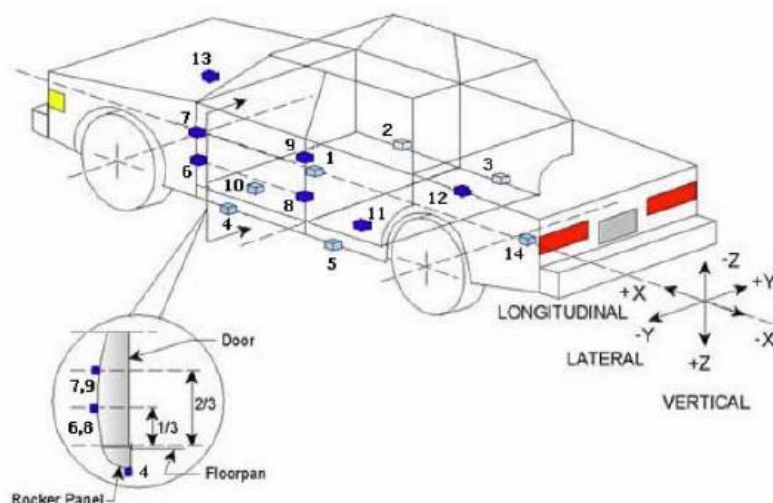
NHTSA No.:

M20225207

Test Program: NCAP Side MDB Impact Test

Test Date:

05/18/2022



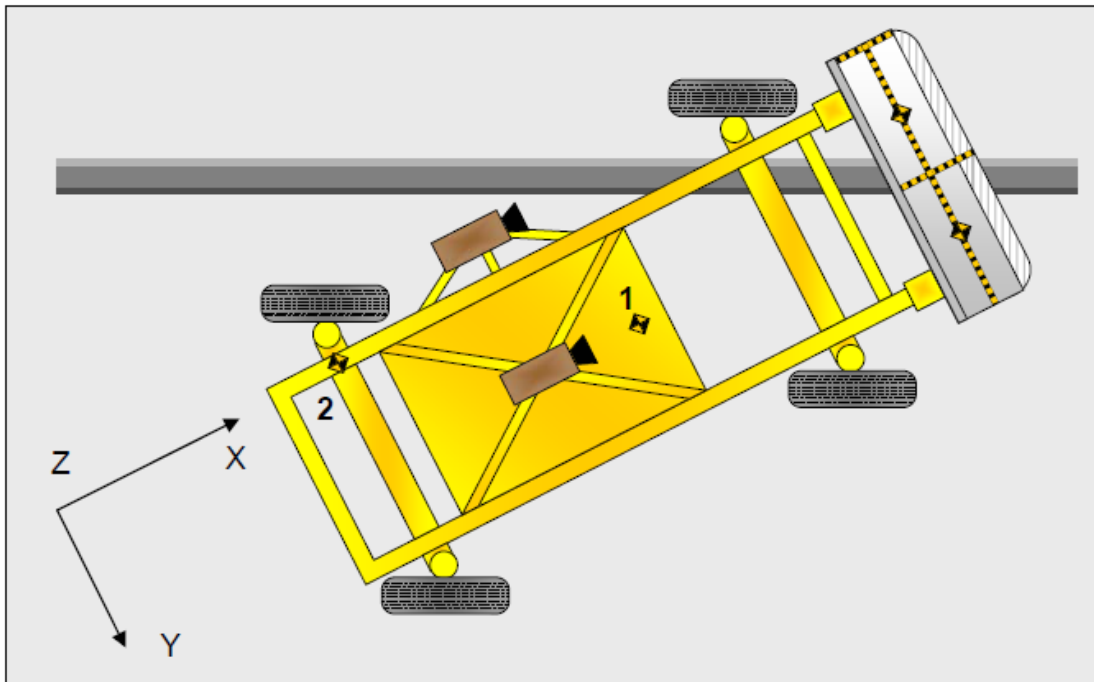
TEST VEHICLE ACCELEROMETER LOCATIONS

No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2394	10	254
2	Right Sill at Front Seat	3151	714	230
3	Right Sill at Rear Seat	2187	718	212
4	Left Sill at Front Door	3226	-710	227
5	Left Sill at Rear Door	2187	-714	219
6	A-Post Lower	3565	-646	-15
7	A-Post Middle	3385	-690	-523
8	B-Post Lower	2368	-719	153
9	B-Post Middle	2349	-731	-257
10	Front Seat Track	2678	-572	182
11	Rear Seat Structure	1928	-672	166
12	Rt. Rear Occ. Compartment	2250	410	256
13	Engine Block	4073	118	-296
14	Rear Above Axle	676	9	111

Reference: X – Rear surface of vehicle (+ forward)
Y – Vehicle centerline (+ to right)
Z – Ground plane (+ down)

DATA SHEET NO. 7
MDB ACCELEROMETER LOCATIONS

Test Vehicle:	<u>2022 Nissan Pathfinder four door SUV</u>	NHTSA No.:	<u>M20225207</u>
Test Program:	<u>NCAP Side MDB Impact Test</u>	Test Date:	<u>05/18/2022</u>



MDB ACCELEROMETER LOCATIONS

No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	MDB CG	1859	0	-330
2	MDB Rear	386	-660	-660

Reference: X – Face of MDB (+ forward)
Y – MDB centerline (+ to right)
Z – Ground plane (+ down)

Width between left and right contact switches (mm):

1490

DATA SHEET NO. 8 POST-TEST OBSERVATIONS

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20225207
 Test Date: 05/18/2022

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Face	Curtain Airbag	Curtain Airbag
Top of Head	Curtain Airbag	Curtain Airbag
Left Side of Head	Curtain Airbag	Curtain Airbag
Back of Head	Curtain Airbag & Head Restraint	Head Restraint
Left Shoulder	Curtain & Torso/Pelvis Airbag	Torso/Pelvis Airbag & Seat Bolster
Upper Torso	Torso/Pelvis Airbag & Seat Bolster	Torso/Pelvis Airbag & Seat Bolster
Lower Torso	Torso/Pelvis Airbag & Seat Bolster	Torso/Pelvis Airbag & Seat Bolster
Left Hip	Torso/Pelvis Airbag & Seat Pan	Torso/Pelvis Airbag & Seat Pan
Left Knee	Door Panel	Door Panel

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/ Other
	Front	Rear	Front	Rear	
Remained Closed and Operational	No	No	Yes	Yes	Yes
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	No
Latch or Hinge Systems Pulled Out of Their Anchorages	No	No	No	No	No
Disengaged from Latched Position	No	No	No	No	No
Latch Separated from Striker	No	No	No	No	No
Jammed Shut	Yes	Yes	No	No	No
If Door Opened at Striker, Width of Opening at Striker (mm)	0	0	0	0	0

POST-TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	No	No	No	No
Seat Disengagement from Floor Pan	No	No	No	No
Seat Back Movement from Initial Position	No	No	No	No
Seat Back Collapse	No	No	No	No

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	B-Pillar buckled, C-Pillar and A-Pillar slightly buckled
Sill Separation	None
Windshield Damage	None
Side Window Damage	Driver window cracked, rear driver side window shattered
Other Notable Effects	None

DATA SHEET NO. 8 ... (CONTINUED)
POST-TEST OBSERVATIONS

Test Vehicle:	<u>2022 Nissan Pathfinder four door SUV</u>	NHTSA No.:	<u>M20225207</u>
Test Program:	<u>NCAP Side MDB Impact Test</u>	Test Date:	<u>05/18/2022</u>

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Air bag	Yes	No		
Knee Air bag	Yes	No		
Side Air bag 1 - Curtain	Yes	Yes	Yes	Yes
Side Air bag 2 - Torso/Pelvis Air bag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Other				

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		2895
Vertical Impact Reference Line (Aft of Front Axle - Intended Impact Point)	mm		508
Actual Impact Point (Aft of Frontal Axle)	mm		506
Horizontal Offset (+ forward / - rearward)	mm	+/- 50 of Intended Impact Point	+2
Vertical Offset (+ down / - up)	mm	+/- 20 of Intended Impact Point	+3

DATA SHEET NO. 9
MDB SUMMARY OF RESULTS

Test Vehicle: 2022 Nissan Pathfinder four door SUV
Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20225207
Test Date: 05/18/2022

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1250
Overall Length Including Honeycomb Frame	4120
Wheelbase of Framework Carriage	260
CG Location of Front Axle	1120

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	396	291.5	687.5
Right	kg	377.5	301	678.5
Ratio	%	56.6	43.3	100
Totals	kg	773.5	592.5	1366

SPEED AND ANGLE AT IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.10 to 62.70	61.68
Trap No. 2 Velocity (Redundant)	km/h	61.10 to 62.70	61.78
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	63
MDB Crabbed angle to MDB Forward Line of Motion	degrees	26.0 to 28.0	27.0

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

Vertical Location			From Centerline		Maximum Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
A	Center of Bumper	432	800	Right	253
B	Top of Bumper	533	800	Right	144
C	Mid-Level	686	800	Left	113
D	Top of Stack	813	800	Left	133

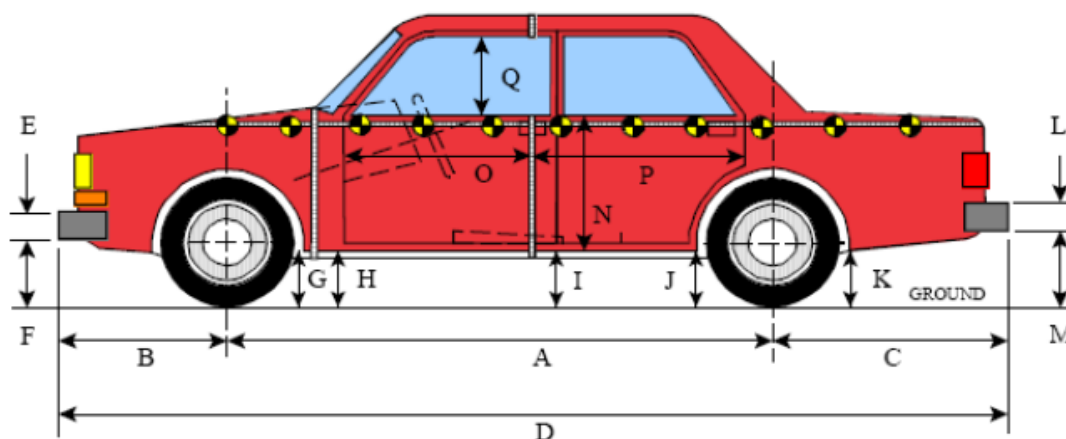
DATA SHEET NO. 10
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2022 Nissan Pathfinder four door SUV

NHTSA No.: M20225207

Test Program: NCAP Side MDB Impact Test

Test Date: 05/18/2022



LEFT SIDE VIEW

All MEASUREMENTS IN (mm) WITH TOLERANCE OF ± 3 mm

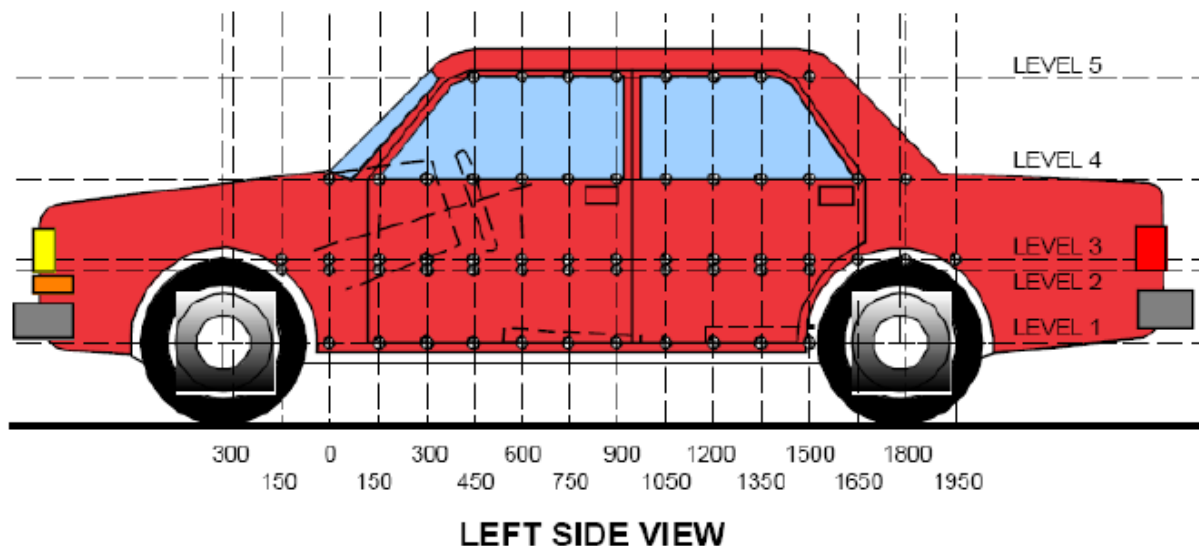
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2895	2891	-4
B	Front Axle to FSOV	980	985	5
C	Rear Axle to RSOV	1124	1128	4
D	Total Length at Centerline	5003	5004	1
E	Front Bumper Thickness	325	325	0
F	Front Bumper Bottom to Ground	305	308	3
G	Sill Height at Front Wheel Well	290	292	2
H	Sill Height at Front Door Leading Edge	288	291	3
I	Sill Height at B Pillar	288	293	5
J1	Sill Height at Rear Wheel Well	276	278	2
J2	Pinch Weld Height at Rear Wheel Well	284	293	9
K	Sill Height Aft of Rear Wheel Well	330	332	2
L	Rear Bumper Thickness	210	210	0
M	Rear Bumper Bottom to Ground	464	467	3
N	Sill Height to Window Bottom of Front Window Sill	914	878	-36
O	Front Door Leading Edge to Impact CL	777	776	-1
P	Rear Door Trailing Edge to Impact CL	1476	1441	-35
Q	Front Window Opening	491	499	8
R	Right Side Length	4948	4951	3
S	Left Side Length	4950	4948	-2
T	Maximum Vehicle Width	1948	1889	-59
U	Front Track Width	1695	1701	6
V	Rear Wheel Track Width	1705	1697	-8

DATA SHEET NO. 11
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20225207
 Test Date: 05/18/2022



MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Units	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	mm	321	22	1050
2	Driver Hip Point	mm	719	195	1350
3	Mid-Door	mm	816	186	1650
4	Window Sill	mm	1171	64	1800
5	Window Top	mm	1674	3	1800

*window top level bent outward from original position

NOTE: The above measurements should be taken along the vertical impact reference line.
 Vehicle measurements forward of the vertical impact reference line are negative.

DATA SHEET NO. 11 ... (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20225207
 Test Date: 05/18/2022

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

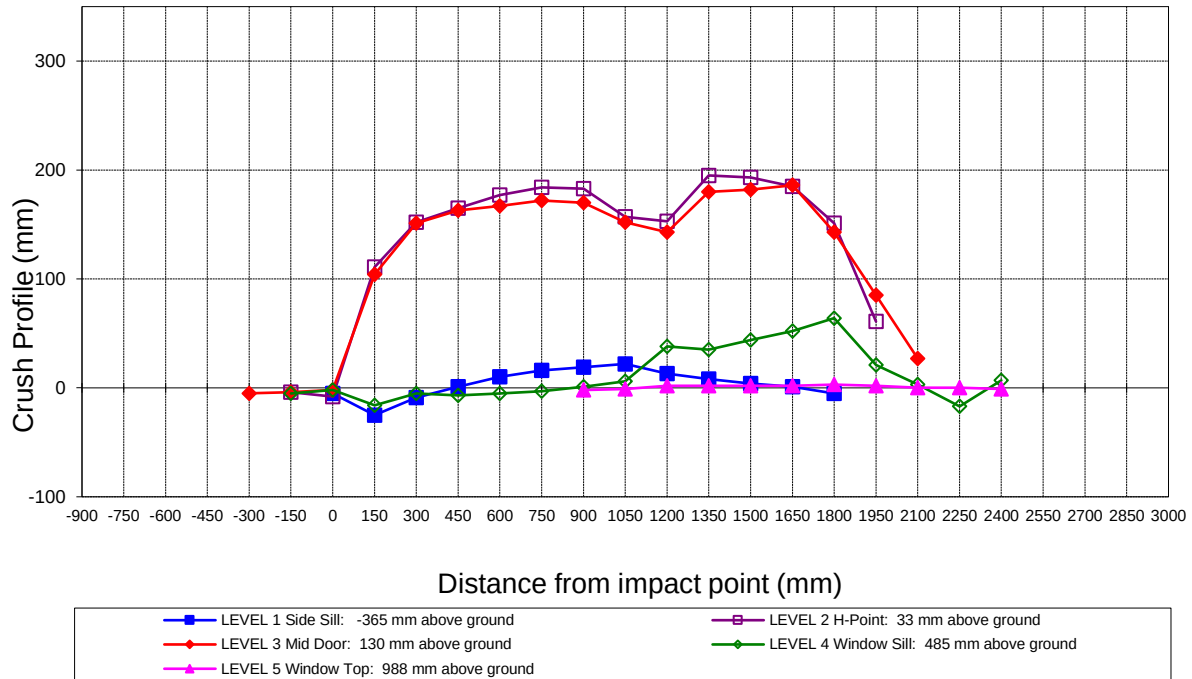
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450															
-300			987					992					-5		
-150		985	974	856			989	978	861			-4	-4	-5	
0	948	973	973	863		953	981	979	865		-5	-8	-6	-2	
150	932	970	971	863		957	859	867	879		-25	111	104	-16	
300	933	964	972	867		942	812	821	872		-9	152	151	-5	
450	938	966	975	867		937	801	812	874		1	165	163	-7	
600	941	968	975	874		931	791	808	879		10	177	167	-5	
750	941	970	975	878		925	786	803	881		16	184	172	-3	
900	940	970	974	883	663	921	787	804	882	665	19	183	170	1	-2
1050	937	969	972	885	670	915	812	820	879	671	22	157	152	6	-1
1200	933	968	970	888	672	920	815	827	850	670	13	153	143	38	2
1350	929	963	965	888	673	921	768	785	853	671	8	195	180	35	2
1500	926	956	958	888	674	922	763	776	844	672	4	193	182	44	2
1650	924	956	955	887	673	923	771	769	835	671	1	185	186	52	2
1800	922	970	968	891	671	927	819	825	827	668	-5	151	143	64	3
1950		979	972	912	668		918	887	891	666		61	85	21	2
2100			988	936	664			961	933	664			27	3	0
2250				940	658				957	658				-17	0
2400				936	649				929	650				7	-1
2550															
2700															
2850															
3000															

NOTE: Pre-test measurements are taken when the vehicle is in the "As Tested" weight condition.
 Vehicle measurements forward of the vertical impact reference line are negative.
 The crush profile grid is established prior to test based on an estimated impact point.

DATA SHEET NO. 11 (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20225207
 Test Date: 05/18/2022



Vehicle Exterior Crush Measurements - Visual Representation

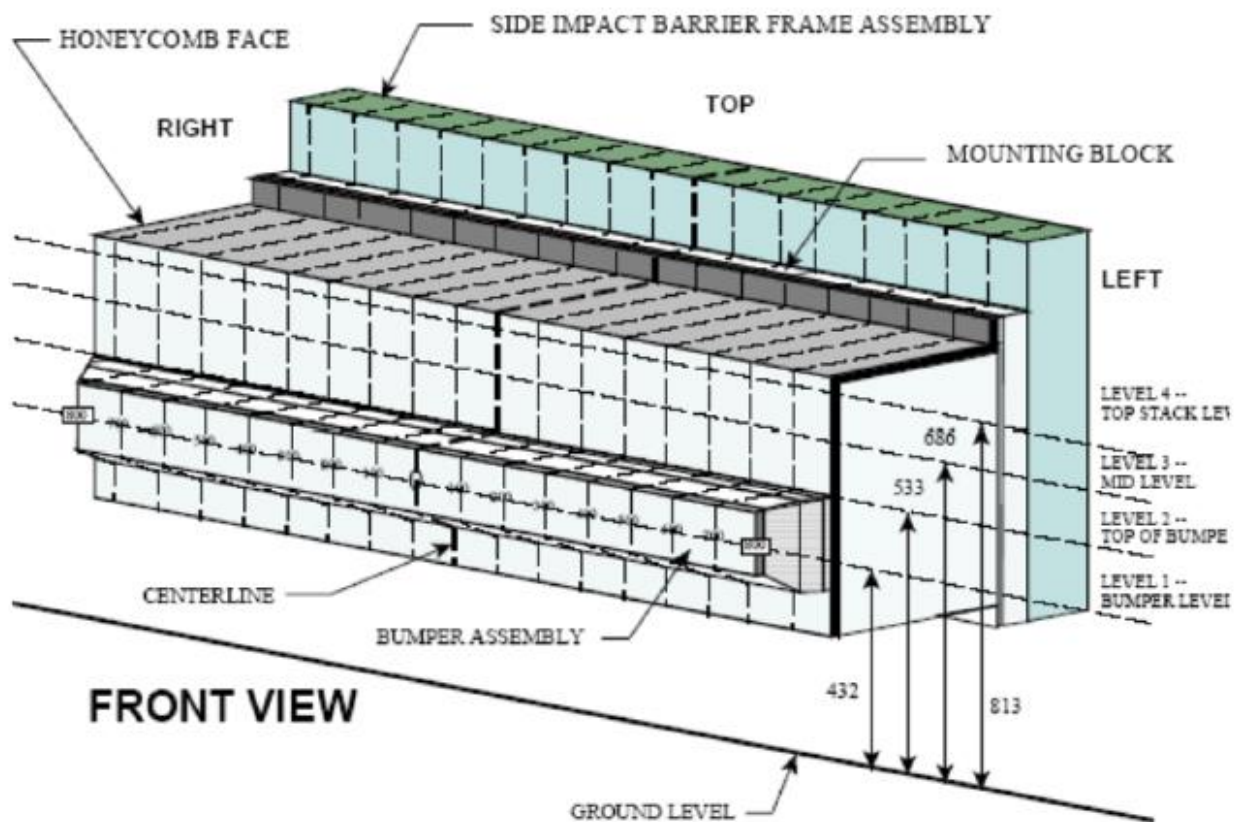
DATA SHEET NO. 12
MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2022 Nissan Pathfinder four door SUV

NHTSA No.: M20225207

Test Program: NCAP Side MDB Impact Test

Test Date: 05/18/2022



NOTE: Dimensions are shown in millimeters, mm

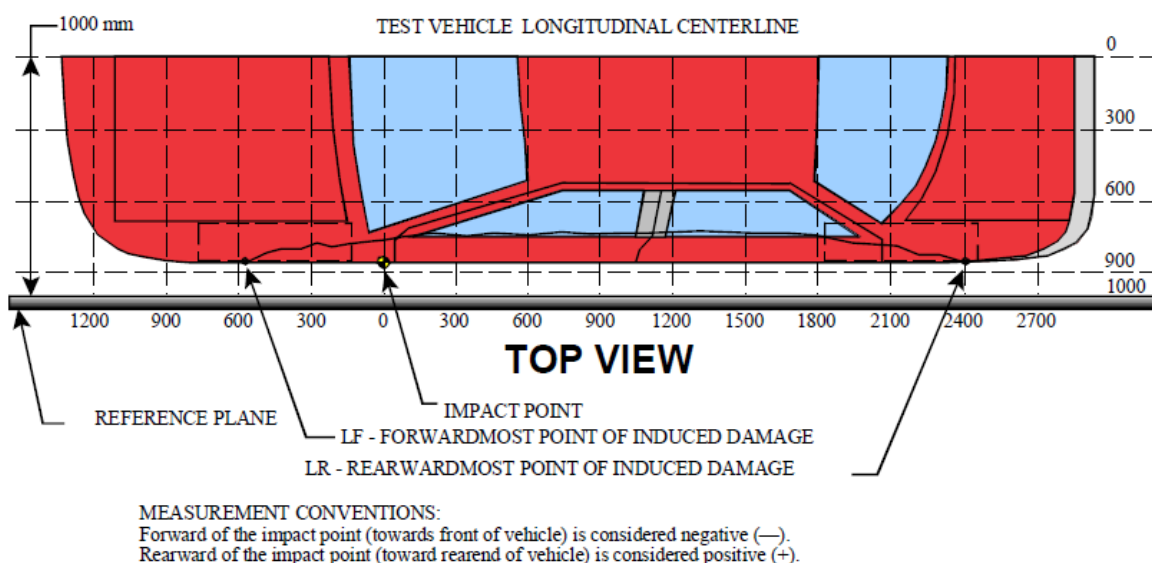
DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	253	250	247	243	241	238	234	232	228	223	220	215	212	208	205	202	205
2	144	143	143	136	130	125	130	120	126	123	121	119	114	115	102	99	99
3	78	59	49	49	60	74	106	88	60	44	41	41	45	53	63	74	113
4	85	47	38	39	45	74	97	96	78	66	65	69	77	83	92	101	133

DATA SHEET NO. 13
VEHICLE AND MDB DAMAGE PROFILE DISTANCES

Test Vehicle:	2022 Nissan Pathfinder four door SUV	NHTSA No.:	M20225207
Test Program:	NCAP Side MDB Impact Test	Test Date:	05/18/2022

For guidance regarding damage profile distance measurements, please refer to the latest version of the *NHTSA Test Reference Guide, Volume 1: Vehicle Tests*.



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Post-Test (mm)	Pre-Test (mm)	Crush (mm)
1	-300	3	8	13	-5
2	180	3	142	29	113
3	660	3	194	25	169
4	1140	3	147	176	29
5	1620	3	230	44	186
6	2100	3	39	12	27

MDB DAMAGE PROFILE DISTANCES

DPD	Distance From Center of MDB	Level	Post-Test (mm)*
1	800 mm left of center	1	205
2	480 mm left of center	1	209
3	160 mm left of center	1	221
4	160 mm right of center	1	233
5	480 mm right of center	1	243
6	800 mm right of center	1	253

DATA SHEET NO. 14
FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: <u>2022 Nissan Pathfinder four door SUV</u>	NHTSA No.: <u>M20225207</u>
Test Program: <u>NCAP Side MDB Impact Test</u>	Test Date: <u>05/18/2022</u>
Test Time: <u>10:30 AM</u>	Temperature: <u>21.7°C</u>

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 Details: No Spillage Occurred

FMVSS NO. 301 STATIC ROLLOVER DATA



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	69	300	369
90° to 180°	67	300	367
180° to 270°	65	300	365
270° to 360°	67	300	367

FMVSS NO. 301 ROLLOVER SPILLAGE TABLE

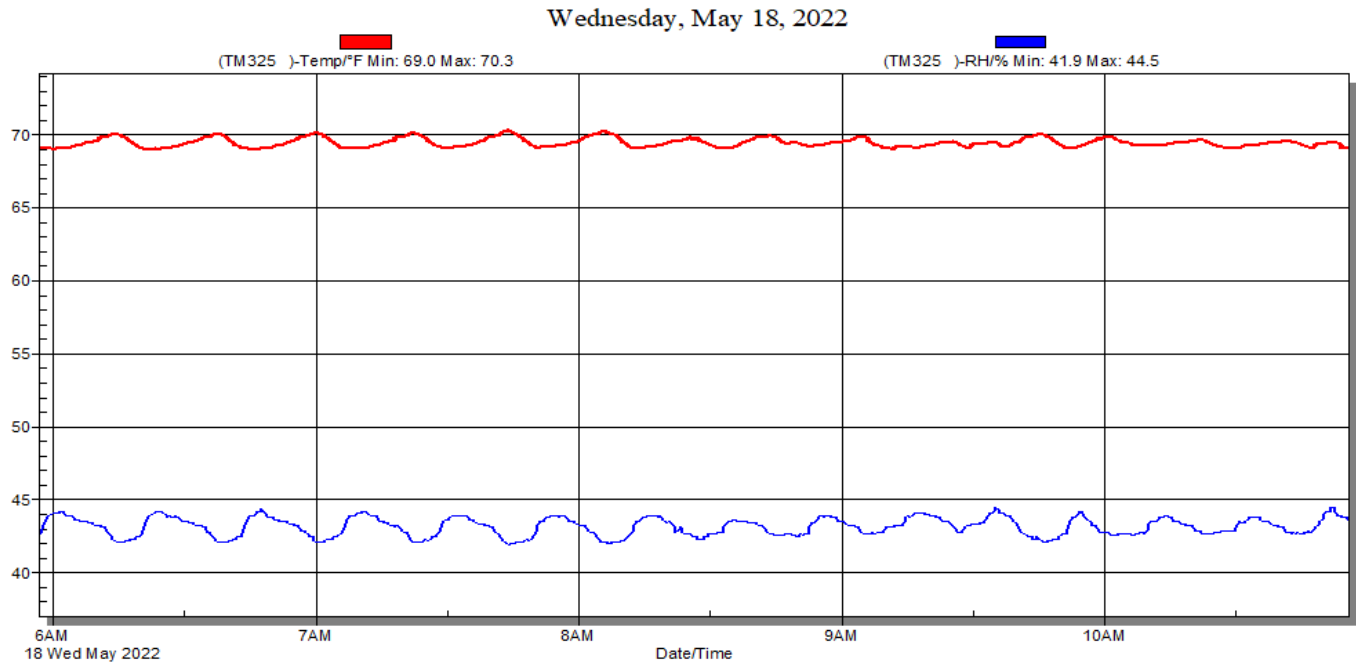
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° to 90°	0	0	0	
90° to 180°	0	0	0	
180° to 270°	0	0	0	
270° to 360°	0	0	0	

ROLLOVER 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. 15
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle:	<u>2022 Nissan Pathfinder four door SUV</u>	NHTSA No.:	<u>M20225207</u>
Test Program:	<u>NCAP Side MDB Impact Test</u>	Test Date:	<u>05/18/2022</u>



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

APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

Fig.	Description	Page
1	As-Delivered Right Front 3/4 View of Test Vehicle	A-5
2	As-Delivered Left Rear 3/4 View of Test Vehicle	A-5
3	Pre-Test Frontal View of Test Vehicle	A-6
4	Post-Test Frontal View of Test Vehicle	A-6
5	Pre-Test Left Front 3/4 View of Test Vehicle	A-7
6	Post-Test Left Front 3/4 View of Test Vehicle	A-7
7	Pre-Test Left Side View of Test Vehicle	A-8
8	Post-Test Left Side View of Test Vehicle	A-8
9	Pre-Test Left Rear 3/4 View of Test Vehicle	A-9
10	Post-Test Left Rear 3/4 View of Test Vehicle	A-9
11	Pre-Test Rear View of Test Vehicle	A-10
12	Post-Test Rear Side View of Test Vehicle	A-10
13	Pre-Test Right Side View of Test Vehicle	A-11
14	Post-Test Right Side View of Test Vehicle	A-11
15	Pre-Test Overhead View of Test Area	A-12
16	Post-Test Overhead View of Test Area	A-12
17	Pre-Test Left Side View of MDB Positioned Against Side of Test Vehicle	A-13
18	Pre-Test Right Side View of MDB Positioned Against Side of Test Vehicle	A-13
19	Pre-Test Close-Up View of Impact Point Target	A-14
20	Post-Test Close-up View of Impact Point Target	A-14
21	Pre-Test Left Front Door Latch Close-Up	A-15
22	Post-Test Left Front Door Latch Close-Up	A-15
23	Pre-Test Left Rear Door Latch Close-Up	A-16
24	Post-Test Left Rear Door Latch Close-Up	A-16
25	Pre-Test Front Close-up View of Driver Dummy	A-17
26	Post-Test Front Close-up View of Driver Dummy	A-17
27	Pre-Test Left Side View of Driver Dummy Showing Belt and Chalking	A-18
28	Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View	A-18
29	Post-Test Left Side View of Driver Dummy Shoulder and Door Top View	A-19
30	Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning	A-19
31	Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint	A-20
32	Pre-Test Frontal View of Driver Seat Pan Prior to Dummy Positioning	A-20
33	Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan	A-21
34	Pre-Test Placement of Driver Dummy's Feet	A-21

Fig.	Description	Page
35	Pre-Test View of Belt Anchorage for Driver Dummy	A-22
36	Pre-Test Left Side View of Steering Wheel	A-22
37	View of Disengaged Parking Brake	A-23
38	Pre-Test View of Parking Brake	A-23
39	Pre-Test Close-Up Left Side View of Driver Seat Track	A-24
40	Pre-Test Close-Up Left Side View of Driver Seat Back	A-24
41	Pre-Test Close-Up View of Driver Seat Back or Head Restraint	A-25
42	Pre-Test Driver Dummy and Door Clearance View	A-25
43	Post-Test Driver Dummy and Door Clearance View	A-26
44	Pre-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment	A-26
45	Post-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment	A-27
46	Pre-Test Driver Inner Door Panel View	A-27
47	Post-Test Driver Inner Door Panel View	A-28
48	Post-Test Driver Dummy Close-Up Head Contact with Vehicle View	A-28
49	Post-Test Driver Dummy Close-Up Head Contact with Side Air bag View	A-29
50	Post-Test Driver Dummy Close-Up Torso Contact with Vehicle Interior View	A-29
51	Post-Test Driver Dummy Close-Up Torso Contact with Side Air bag View	A-30
52	Post-Test Driver Dummy Close-Up Pelvis Contact View	A-30
53	Post-Test Driver Dummy Close-Up Pelvis Contact with Side Air bag View	A-31
54	Post-Test Driver Dummy Close-Up Knee Contact View	A-31
55	Pre-Test Left Side View of Rear Passenger Dummy Showing Belt and Chalking	A-32
56	Pre-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View	A-32
57	Post-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View	A-33
58	Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning	A-33
59	Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint	A-34
60	Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning	A-34
61	Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan	A-35
62	Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck Bracket	A-35
63	Pre-Test View of Rear Passenger Dummy's Head Showing Dummy's Head is Level	A-36
64	Pre-Test Placement of Rear Passenger Dummy's Feet	A-36
65	Pre-Test View of Belt Anchorage for Rear Passenger Dummy	A-37
66	Pre-Test Close-Up Left Side View of Rear Passenger Seat Track	A-37
67	Pre-test Close-Up Left Side View of Rear Passenger Seat Back	A-38
68	Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint	A-38

Fig.	Description	Page
69	Pre-Test Rear Passenger Dummy and Door Clearance View	A-39
70	Post-Test Rear Passenger Dummy and Door Clearance View	A-39
71	Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment	A-40
72	Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment	A-40
73	Pre-Test Rear Passenger Inner Door Panel View	A-41
74	Post-Test Rear Passenger Inner Door Panel View Showing Rear Passenger Dummy Contact Locations	A-41
75	Post-Test Rear Passenger Dummy Close-Up Head Contact with Vehicle View	A-42
76	Post-Test Rear Passenger Dummy Close-Up Head Contact with Side Air bag View	A-42
77	Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle Interior View	A-43
78	Post-Test Rear Passenger Dummy Close-Up Torso Contact with Side Air bag View	A-43
79	Post-Test Rear Passenger Dummy Close-Up Pelvis Contact View	A-44
80	Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Side Air bag View	A-44
81	Post-Test Rear Passenger Dummy Close-Up Knee Contact View	A-45
82	Pre-Test View of Fuel Filler Cap or Fuel Filler Neck	A-45
83	Post-Test View of Fuel Filler Cap or Fuel Filler Neck	A-46
84	Pre-Test Front View of MDB Impactor Face	A-46
85	Post-Test Front View of MDB Impactor Face	A-47
86	Pre-Test Top View of MDB Impactor Face	A-47
87	Post-Test Top View of MDB Impactor Face	A-48
88	Pre-Test Left Side View of MDB Impactor Face	A-48
89	Post-Test Left Side View of MDB Impactor Face	A-49
90	Pre-Test Right Side View of MDB Impactor Face	A-49
91	Post-Test Right Side View of MDB Impactor Face	A-50
92	Close-Up View of Vehicle's Certification Label	A-50
93	Close-Up View of Vehicle's Tire Information Placard or Label	A-51
94	Pre-Test Ballast View	A-51
95	Post-Test Primary and Redundant Speed Trap Read-Out	A-52
96	FMVSS No. 301 Static Rollover 0 Degrees	A-52
97	FMVSS No. 301 Static Rollover 90 Degrees	A-53
98	FMVSS No. 301 Static Rollover 180 Degrees	A-53
99	FMVSS No. 301 Static Rollover 270 Degrees	A-54
100	FMVSS No. 301 Static Rollover 360 Degrees	A-54
101	Impact Event	A-55
102	Monroney Label	A-55
103	Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-56
104	Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-56



M20225207

Figure A-1: As-Delivered Right Front 3/4 View of Test Vehicle



M20225207

Figure A-2: As-Delivered Left Rear 3/4 View of Test Vehicle



Figure A-3: Pre-Test Frontal View of Test Vehicle

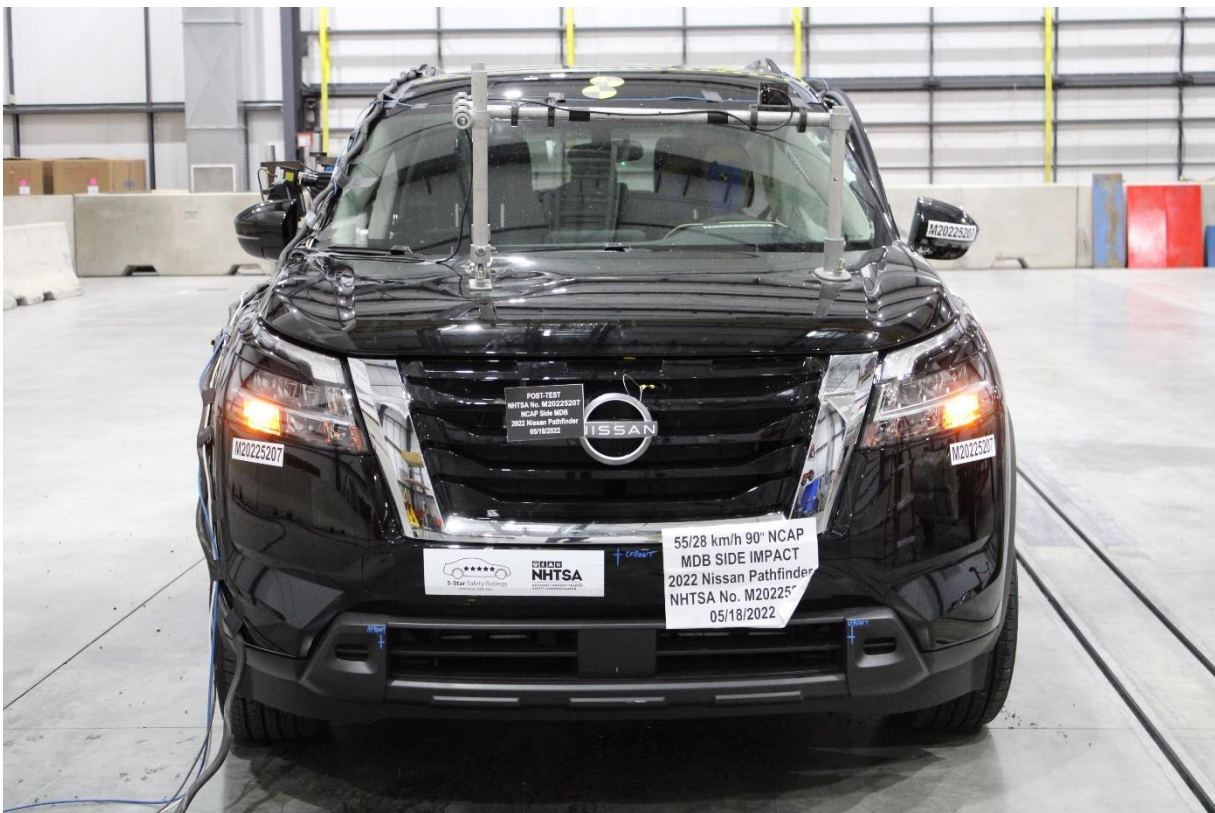


Figure A-4: Post-Test Frontal View of Test Vehicle



Figure A-5: Pre-Test Left Front $\frac{3}{4}$ View of Test Vehicle



Figure A-6: Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle



Figure A-7: Pre-Test Left Side View of Test Vehicle



Figure A-8: Post-Test Left Side View of Test Vehicle



Figure A-9: Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



Figure A-10: Post-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



Figure A-11: Pre-Test Rear View of Test Vehicle



Figure A-12: Post-Test Rear Side View of Test Vehicle



Figure A-13: Pre-Test Right Side View of Test Vehicle



Figure A-14: Post-Test Right Side View of Test Vehicle

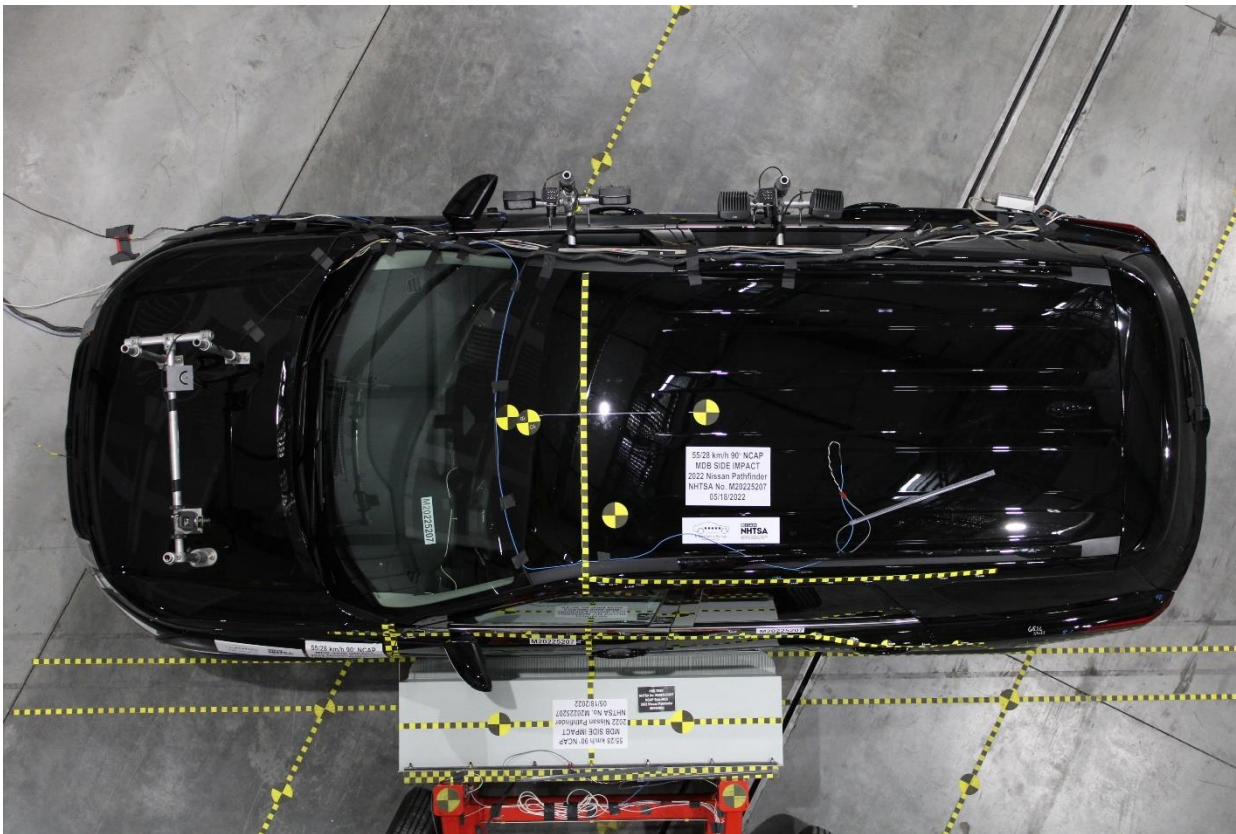


Figure A-15: Pre-Test Overhead View of the Test Area

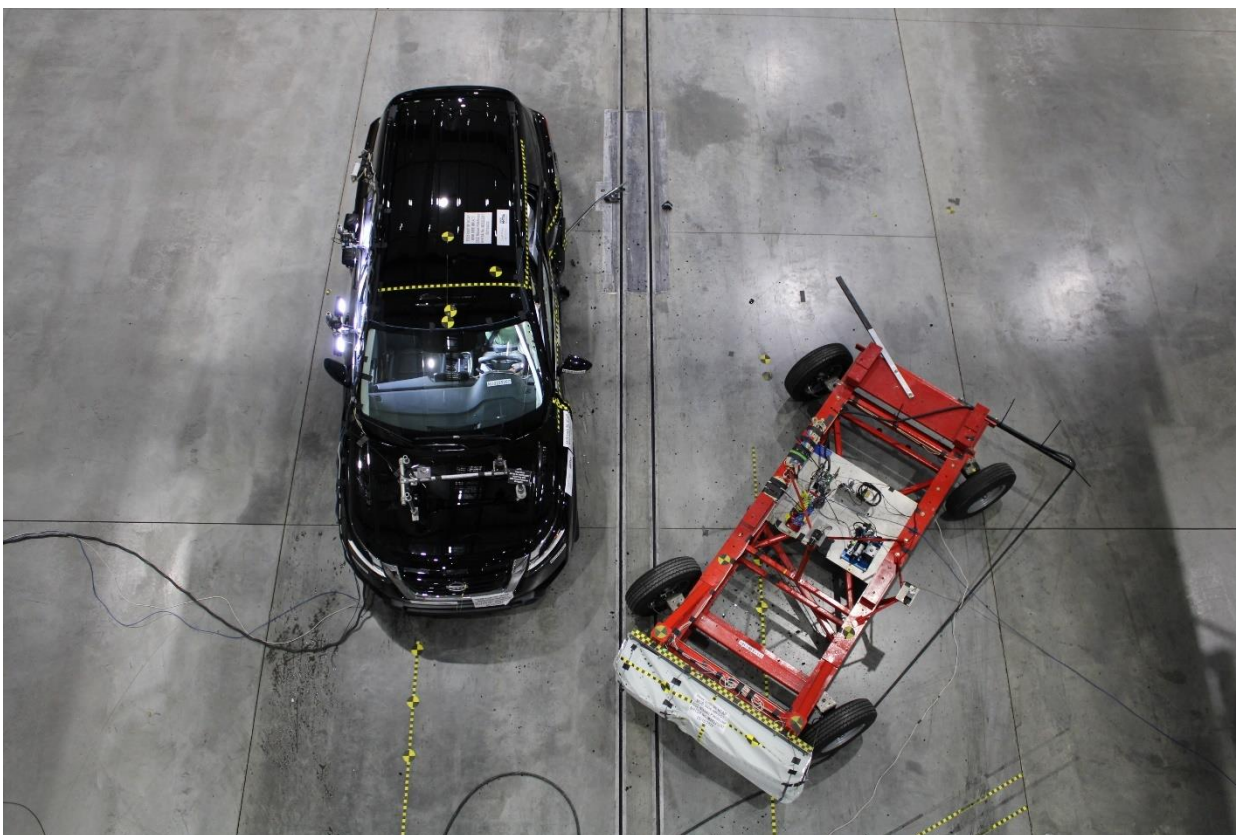


Figure A-16: Post-Test Overhead View of Test Area



Figure A-17: Pre-Test Left Side View of MDB Positioned Against Side of Test Vehicle



Figure A-18: Pre-Test Right Side View of MDB Positioned Against Side of Test Vehicle



Figure A-19: Pre-Test Close-up View of Impact Point Target



Figure A-20: Post-Test Close-up View of Impact Point Target



Figure A-21: Pre-Test Left Front Door Latch Close-Up



Figure A-22: Post-Test Left Front Door Latch Close-Up



Figure A-23: Pre-Test Left Rear Door Latch Close-Up



Figure A-24: Post-Test Left Rear Door Latch Close-Up



Figure A-25: Pre-Test Front Close-up View of Driver Dummy



Figure A-26: Post-Test Front Close-up View of Driver Dummy



Figure A-27: Pre-Test Left Side View of Driver Dummy Showing Belt and Chalking



Figure A-28: Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View



Figure A-29: Post-Test Left Side View of Driver Dummy Shoulder and Door Top View



Figure A-30: Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning



Figure A-31: Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint



Figure A-32: Pre-Test Frontal View of Driver Seat Pan Prior to Dummy Positioning



Figure A-33: Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan



Figure A-34: Pre-Test Placement of Driver Dummy's Feet



Figure A-35: Pre-Test View of Belt Anchorage for Driver Dummy



Figure A-36: Pre-Test Left Side View of Steering Wheel



Figure A-37: View of Disengaged Parking Brake



Figure A-38: Pre-Test View of Parking Brake



Figure A-39: Pre-Test Close-Up Left Side View of Driver Seat Track



Figure A-40: Pre-Test Close-Up Left Side View of Driver Seat Back



Figure A-41: Pre-Test Close-Up View of Driver Seat Back or Head Restraint



Figure A-42: Pre-Test Driver Dummy and Door Clearance View



Figure A-43: Post-Test Driver Dummy and Door Clearance View



Figure A-44: Pre-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment



Figure A-45: Post-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment



Figure A-46: Pre-Test Driver Inner Door Panel View



Figure A-47: Post-Test Driver Inner Door Panel View Showing Driver Dummy Contact Locations



Figure A-48: Post-Test Driver Dummy Close-Up Head Contact with Vehicle View



Figure A-49: Post-Test Driver Dummy Close-Up Head Contact with Side Air bag View



Figure A-50: Post-Test Driver Dummy Close-Up Torso Contact with Vehicle Interior View



Figure A-51: Post-Test Driver Dummy Close-Up Torso Contact with Side Air bag View



Figure A-52: Post-Test Driver Dummy Close-Up Pelvis Contact View



Figure A-53: Post-Test Driver Dummy Close-Up Pelvis Contact with Side Air bag View



Figure A-54: Post-Test Driver Dummy Close-Up Knee Contact View



Figure A-55: Pre-Test Left Side View of Rear Passenger Dummy Showing Belt and Chalking



Figure A-56: Pre-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View



Figure A-57: Post-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View



Figure A-58: Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning



Figure A-59: Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint



Figure A-60: Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning



Figure A-61: Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan

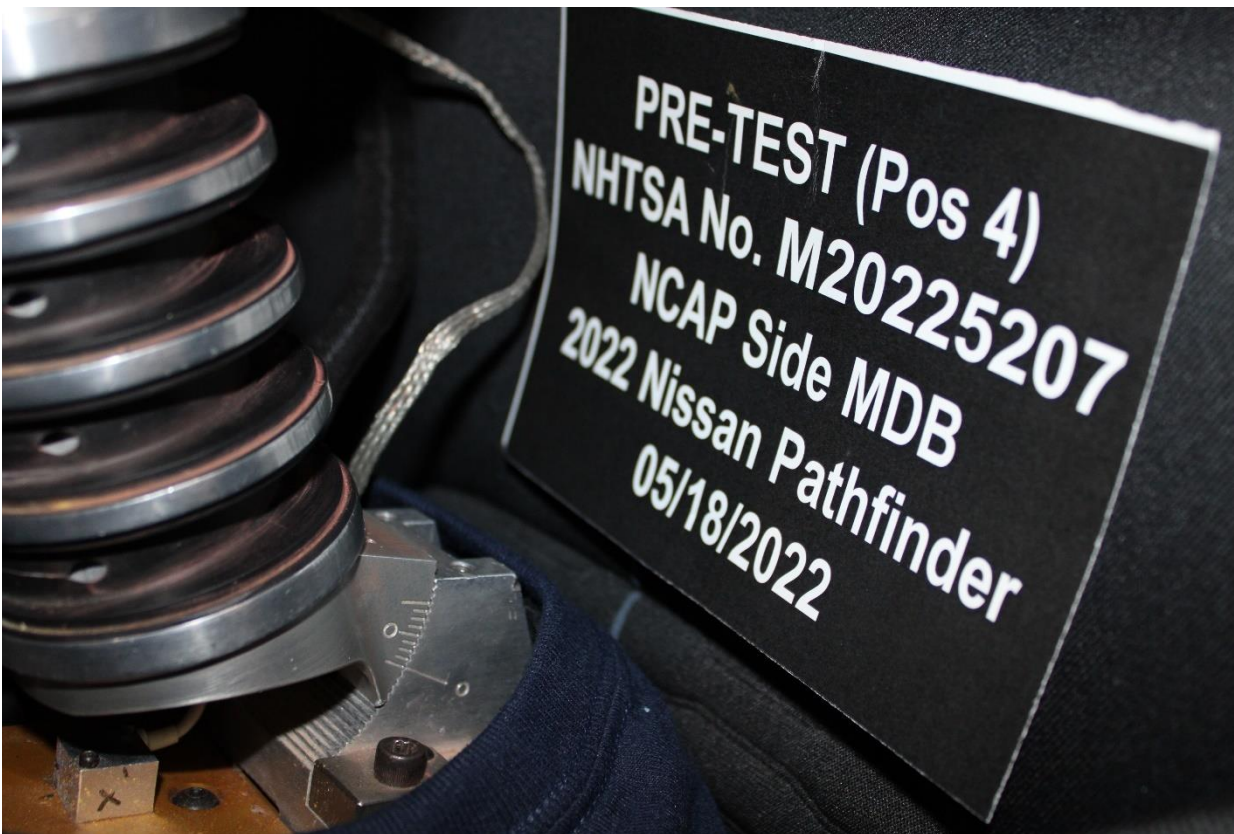


Figure A-62: Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck Bracket

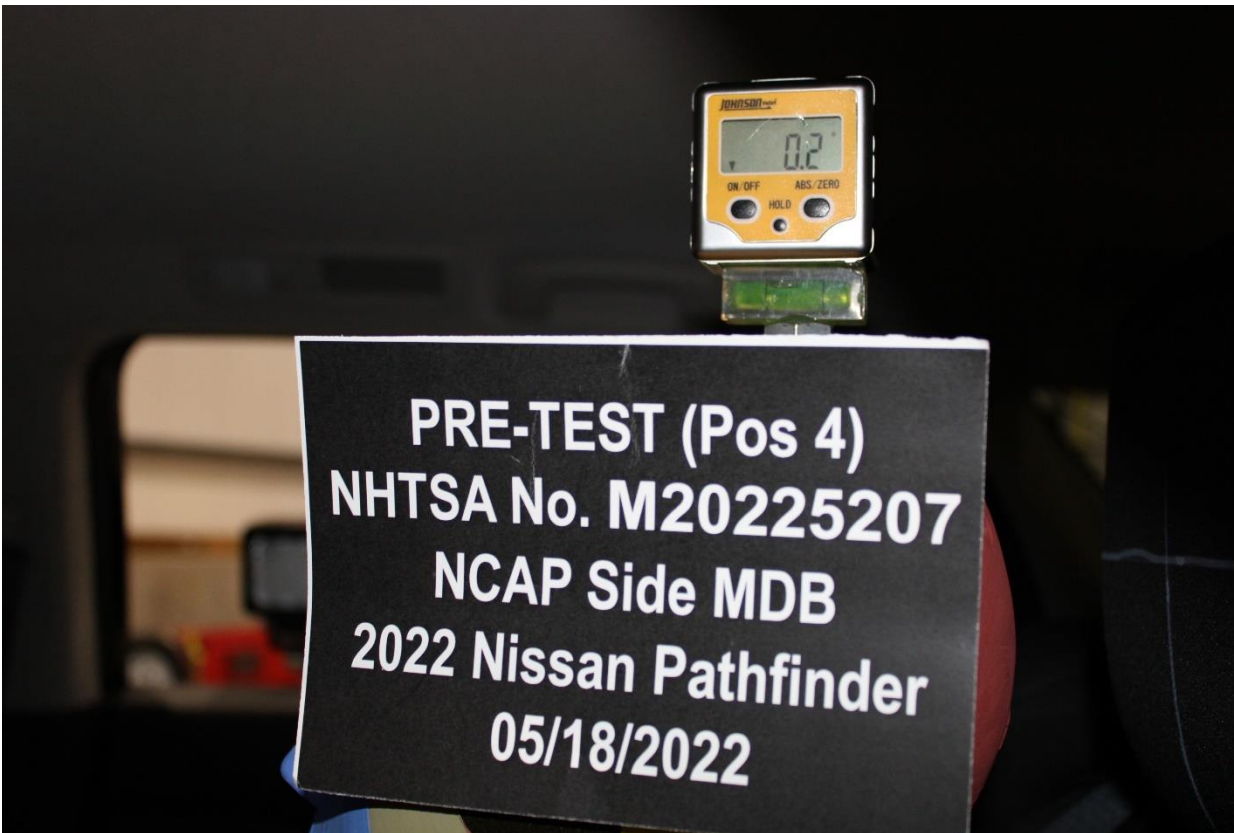


Figure A-63: Pre-Test View of Rear Passenger Dummy's Head Showing Dummy's Head is Level



Figure A-64: Pre-Test Placement of Rear Passenger Dummy's Feet



Figure A-65: Pre-Test View of Belt Anchorage for Rear Passenger Dummy

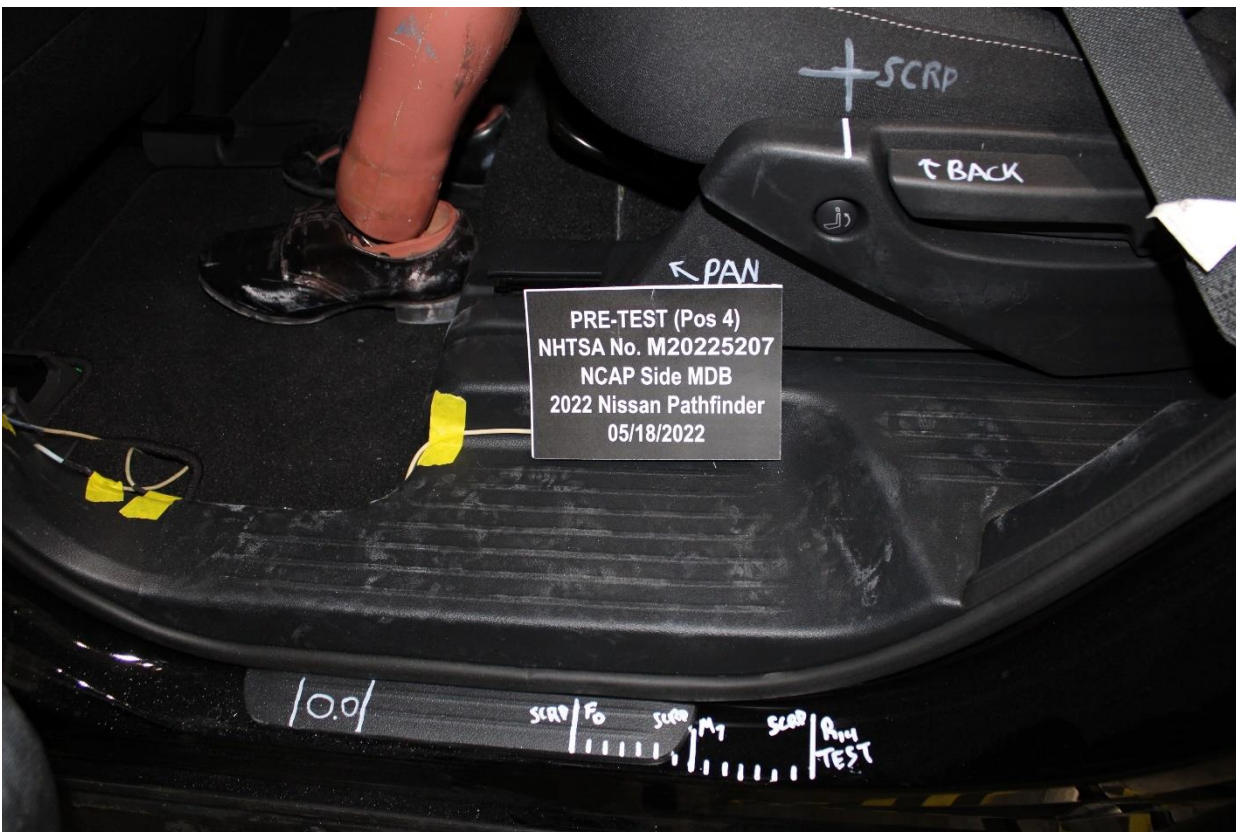


Figure A-66: Pre-Test Close-Up Left Side View of Rear Passenger Seat Track



Figure A-67: Pre-Test Close-Up Left Side View of Rear Passenger Seat Back



Figure A-68: Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint



Figure A-69: Pre-Test Rear Passenger Dummy and Door Clearance View

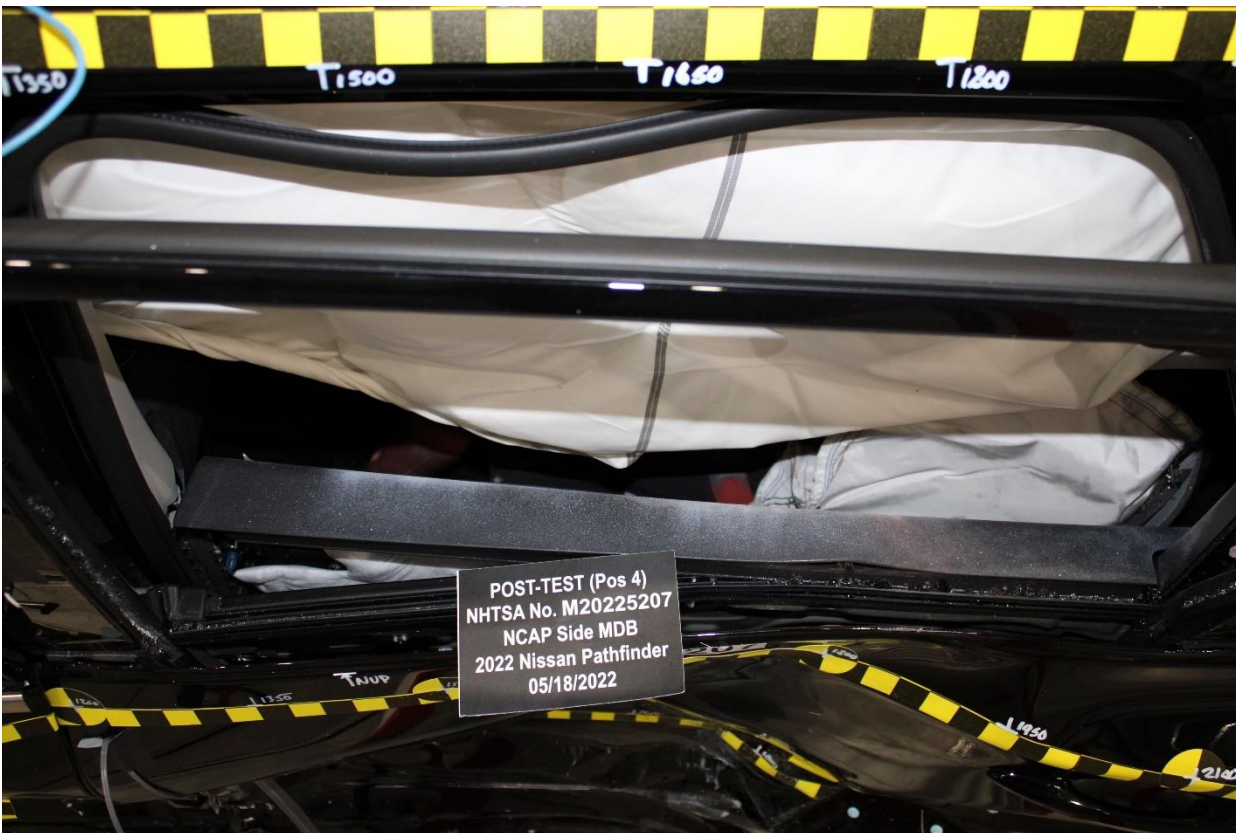


Figure A-70: Post-Test Rear Passenger Dummy and Door Clearance View



Figure A-71: Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



Figure A-72: Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



Figure A-73: Pre-Test Rear Passenger Inner Door Panel View



Figure A-74: Post-Test Rear Passenger Inner Door Panel View Showing Rear Passenger Dummy Contact Locations



Figure A-75: Post-Test Rear Passenger Dummy Close-Up Head Contact with Vehicle View

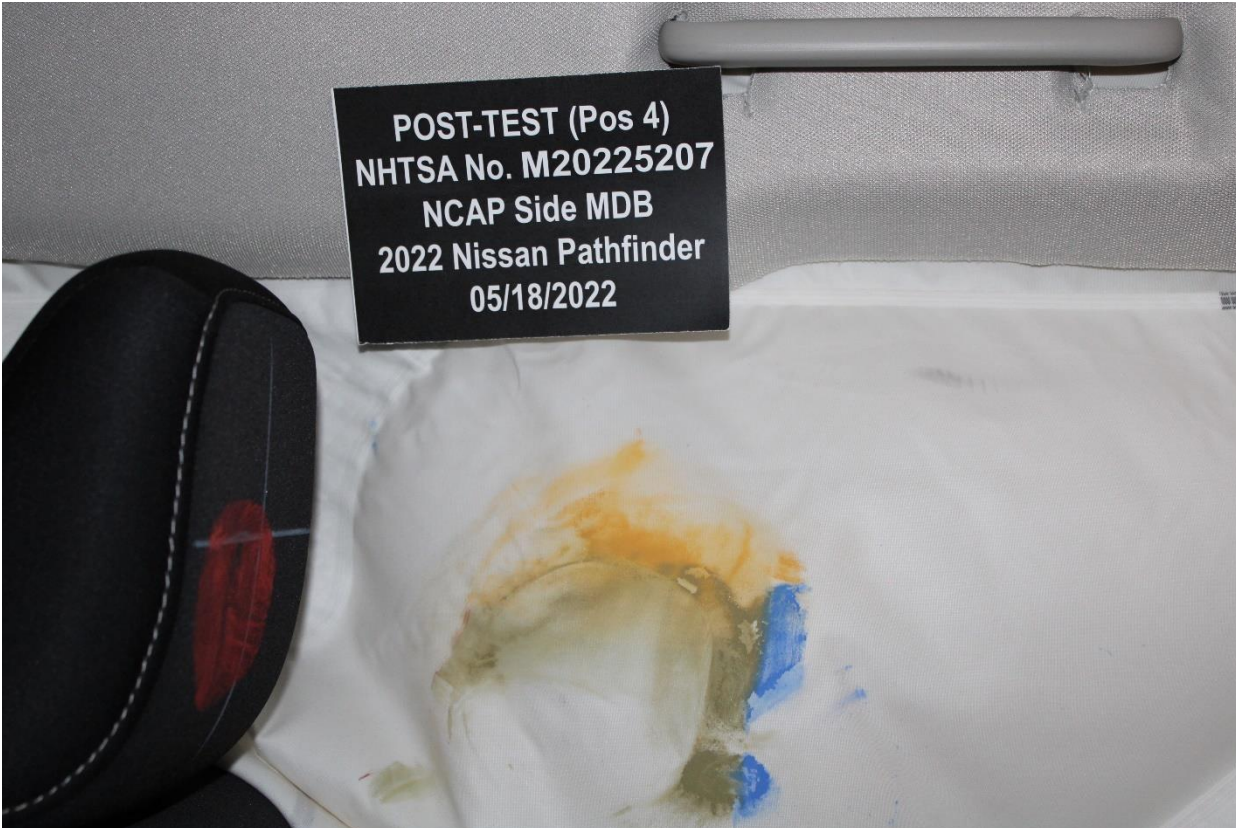


Figure A-76: Post-Test Rear Passenger Dummy Close-Up Head Contact with Side Air bag View

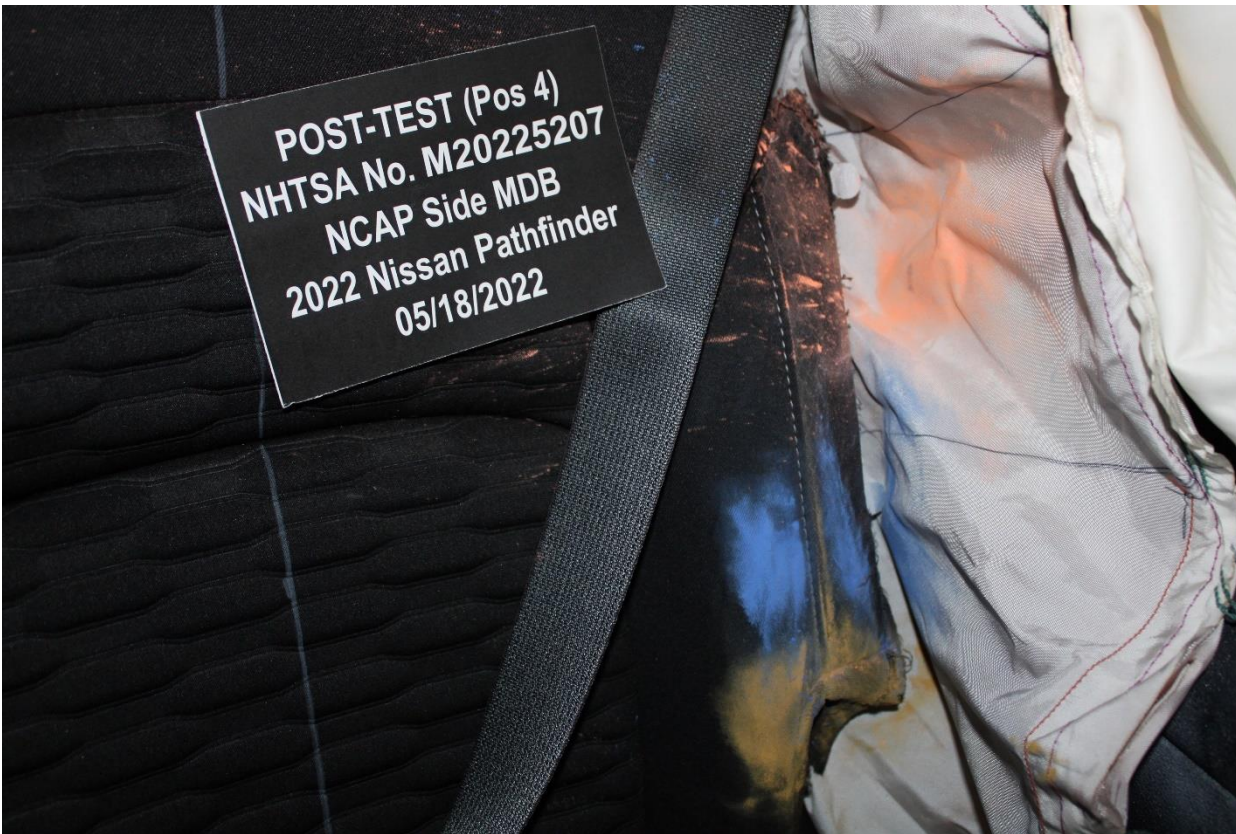


Figure A-77: Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle Interior View



Figure A-78: Post-Test Rear Passenger Dummy Close-Up Torso Contact with Side Air bag View



Figure A-79: Post-Test Rear Passenger Dummy Close-Up Pelvis Contact View

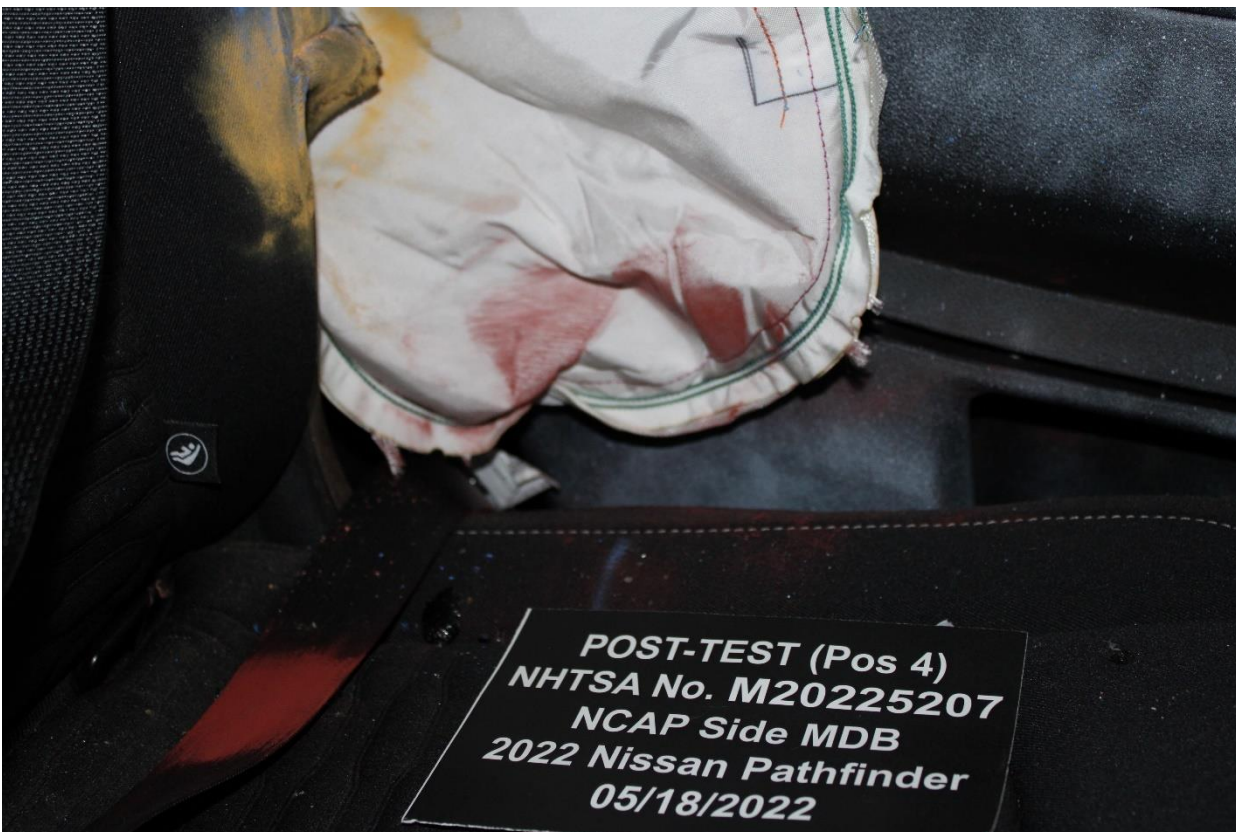


Figure A-80: Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Side Air bag View



Figure A-81: Post-Test Rear Passenger Dummy Close-Up Knee Contact View



Figure A-82: Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



Figure A-83: Post-Test View of Fuel Filler Cap or Fuel Filler Neck



Figure A-84: Pre-Test Front View of MDB Impactor Face



Figure A-85: Post-Test Front View of MDB Impactor Face



Figure A-86: Pre-Test Top View of MDB Impactor Face



Figure A-87: Post-Test Top View of MDB Impactor Face



Figure A-88: Pre-Test Left Side View of MDB Impactor Face



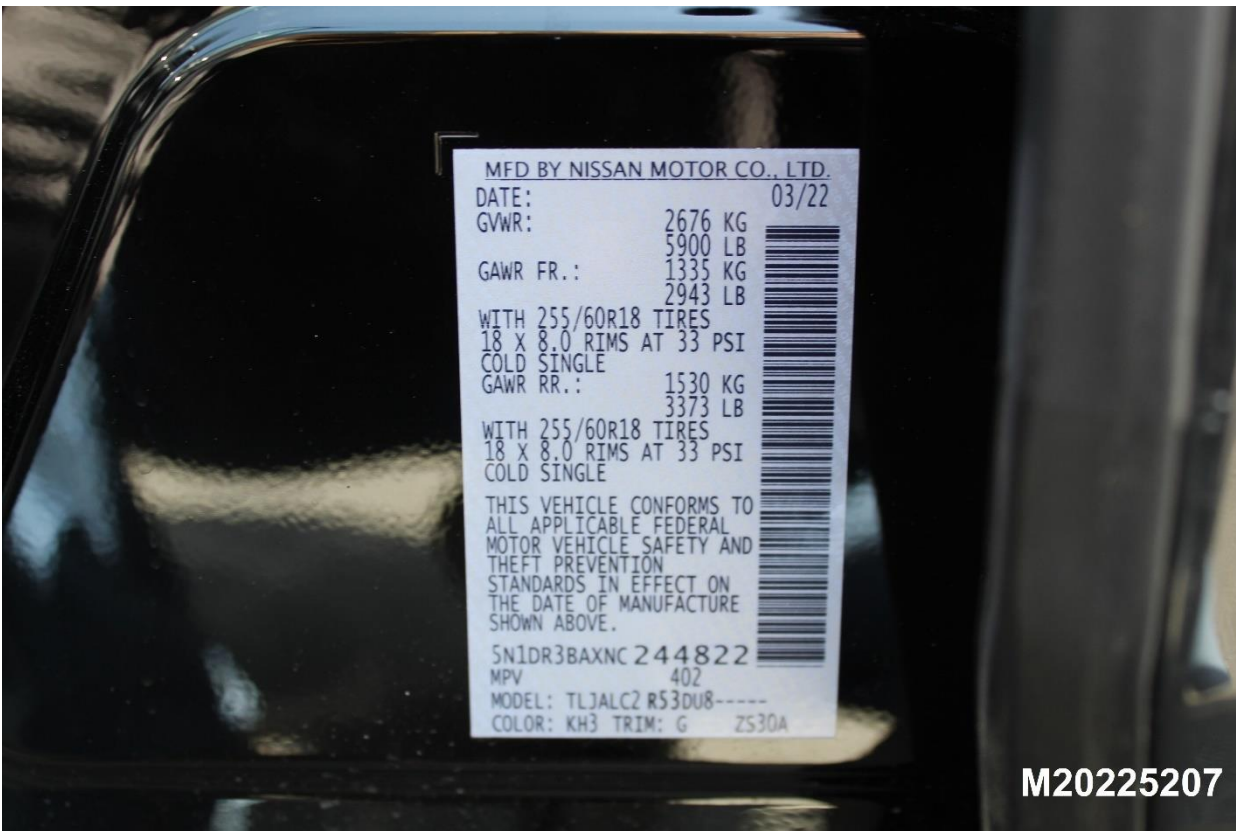
Figure A-89: Post-Test Left Side View of MDB Impactor Face



Figure A-90: Pre-Test Right Side View of MDB Impactor Face



Figure A-91: Post-Test Right Side View of MDB Impactor Face



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Figure A-92: Close-Up View of Vehicle's Certification Label

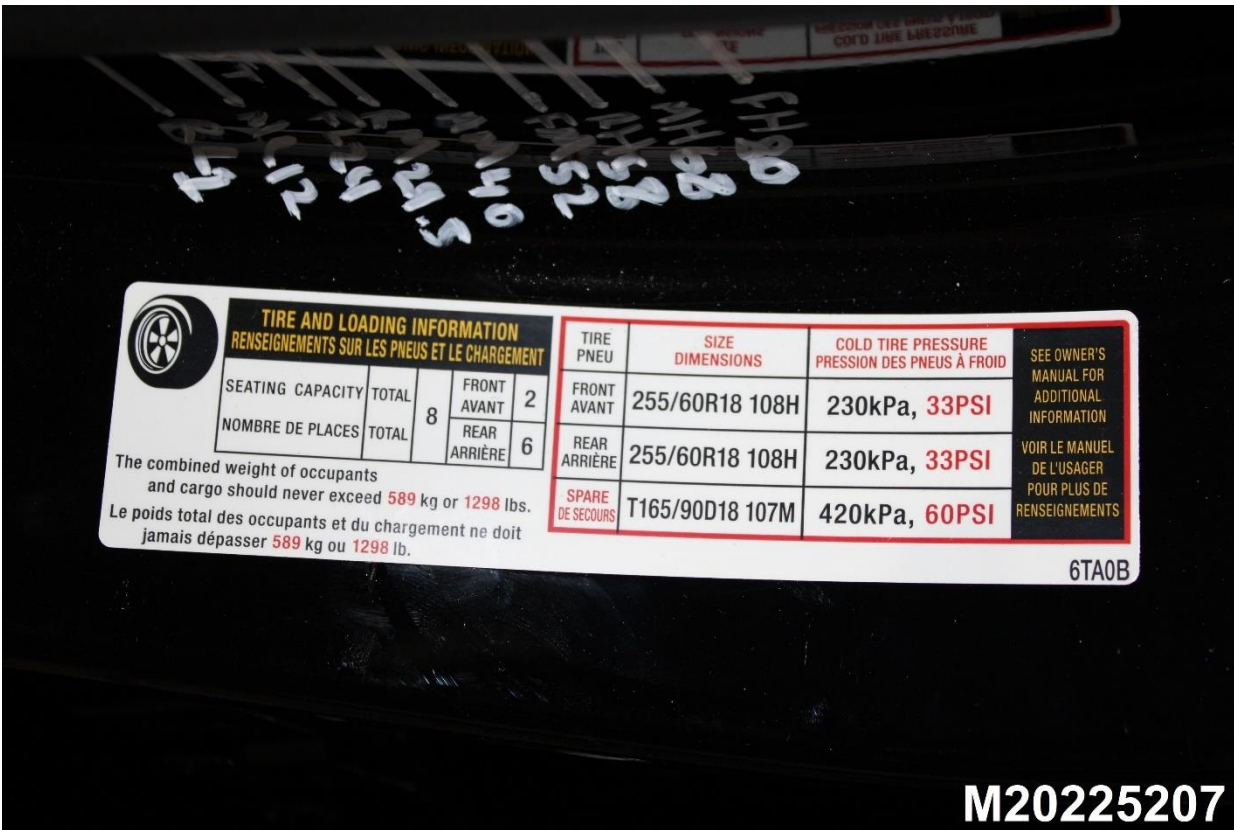


Figure A-93: Close-Up View of Vehicle's Tire Information Placard or Label



Figure A-94: Pre-Test Ballast View



Figure A-95: Post-Test Primary and Redundant Speed Trap Read-Out



Figure A-96: FMVSS No. 301 Static Rollover 0 Degrees

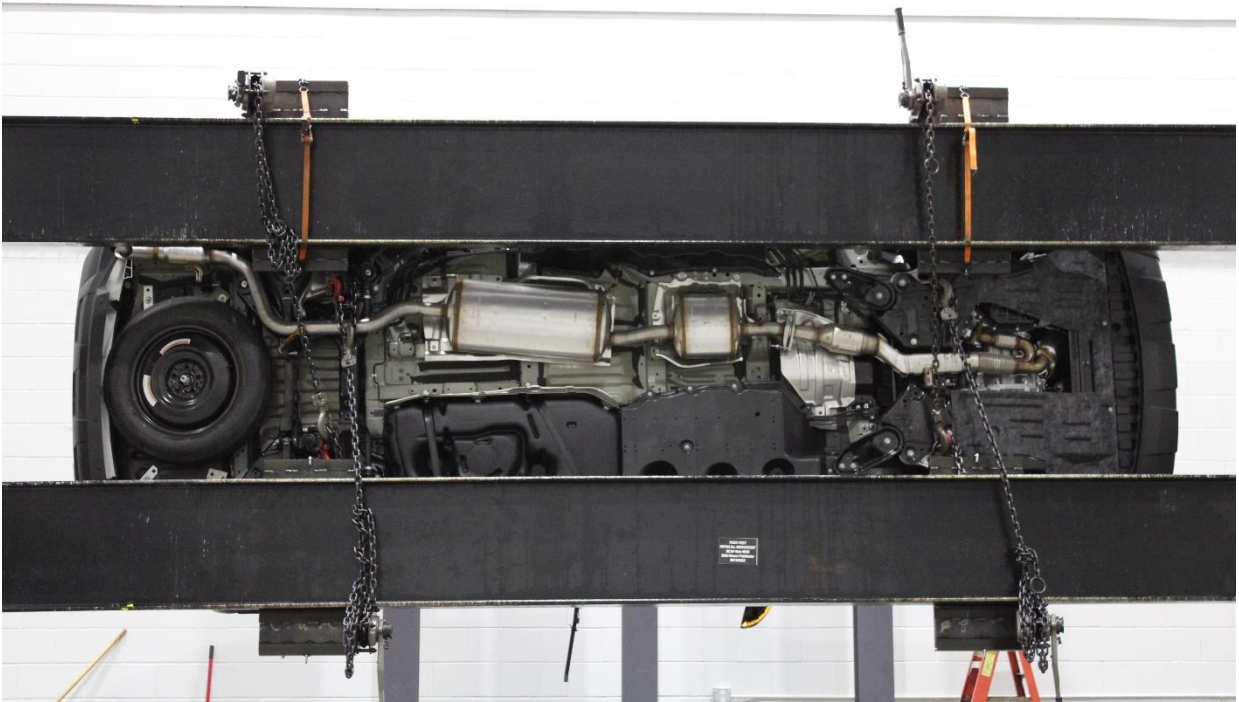


Figure A-97: FMVSS No. 301 Static Rollover 90 Degrees



Figure A-98: FMVSS No. 301 Static Rollover 180 Degrees





Figure A-101: Impact Event

2022 NISSAN PATHFINDER SV 2WD

Scan QR code for general model information & options

Standard Equipment Included at No Extra Charge

MECHANICAL & PERFORMANCE

- SL DCHC 24-Valve 6-Cylinder Engine
- 34 hp, 259 lb-ft torque
- 9-Speed Automatic Transmission
- Manual Mode with Paddle Shifters
- Electronic Parking Brake with Auto-hold
- Front and Rear Disc Brakes
- 18" Painted Alloy Wheels
- Temporary Spare Tire
- Drive 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 (I-LI)
- Blind Spot Intervention (BSI)
- Intelligent Forward Collision Warning (I-FCW)

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® Services powered by SiriusXM®
- Apple CarPlay®
- Android Auto™
- SiriusXM® Radio
- 8" Color Touch-screen Display
- Wi-Fi Hotspot*
- 7" Advanced Drive-Assist Display®
- Rear Air Vents
- Tri-zone Automatic Temperature Control

COMFORT & CONVENIENCE CONT.

- Nissan Intelligent Key® 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 connected/legit

††Optional Equipment Replaces Standard Where Applicable

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

Manufacturer's Suggested Retail Base Price: \$36,670.00

Options Included by Manufacturer

- Splash Guards: 190.00
- Cross Bars: 360.00
- Carpeted Floor Mats: Bench Seat: 255.00

DESTINATION CHARGES: 1,225.00

Total†: \$38,730.00

EPA DOT Fuel Economy and Environment

Fuel Economy

23 MPG combined city/hwy

21 city 26 highway

4.3 gallons per 100 miles

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

Annual fuel Cost \$1,550

Fuel Economy & Greenhouse Gas Rating (Smog Rating)

1 5 10 1 10 Best

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 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 1-888-327-4239

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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

Dealer: DUVRE NISSAN 137 KETTERING LOOP ONTARIO, CA 91761

VIN: 6N1CR3B8XG240822 **EXT:** SUPER BLACK

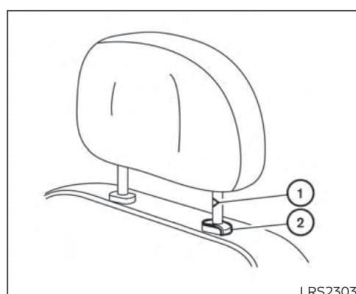
MODEL: 2512 24832 2WD **INT:** CHAFCAL

OPT: H-COBB/06L02 **EMS:** 36 STATE EMISSIONS

This vehicle is equipped with bumpers that can withstand an impact of 2.5 miles per hour with no damage to the vehicle's body and safety systems, although the bumper and related components may sustain damage. The bumper system on this vehicle conforms to the current federal bumper standard of 2.5 miles per hour.

TransitMethodTRUCK

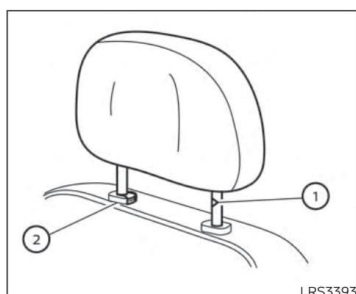
Figure A-102: Monroney Label



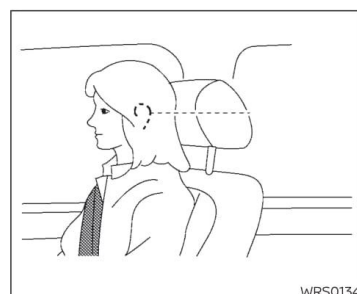
Type A (if so equipped)

INSTALL

1. Align the head restraint/headrest stalks with the holes in the seat. Make sure that the head restraint/headrest is facing the correct direction. The stalk with the notch (notches) ① must be installed in the hole with the lock knob ②.
2. Push and hold the lock knob and push the head restraint/headrest down.
3. Properly adjust the head restraint/headrest before an occupant uses the seating position.



Type B (if so equipped)



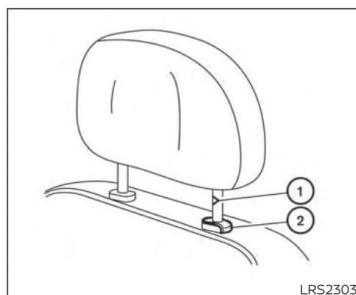
ADJUST

For adjustable head restraint/headrest

Adjust the head restraint/headrest so the center is level with the center of your ears. If your ear position is still higher than the recommended alignment, place the head restraint/headrest at the highest position.

1-16 **Safety-Seats, seat belts and supplemental restraint system**

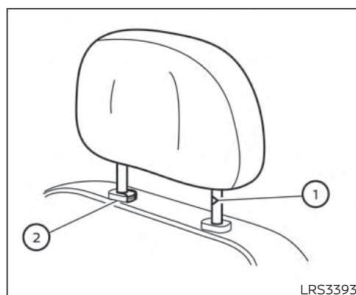
Figure A-103: Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual



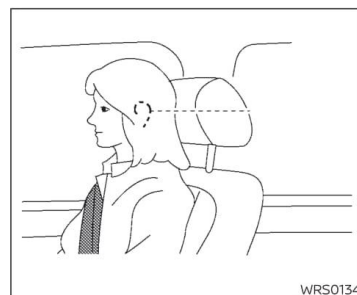
Type A (if so equipped)

INSTALL

1. Align the head restraint/headrest stalks with the holes in the seat. Make sure that the head restraint/headrest is facing the correct direction. The stalk with the notch (notches) ① must be installed in the hole with the lock knob ②.
2. Push and hold the lock knob and push the head restraint/headrest down.
3. Properly adjust the head restraint/headrest before an occupant uses the seating position.



Type B (if so equipped)



ADJUST

For adjustable head restraint/headrest

Adjust the head restraint/headrest so the center is level with the center of your ears. If your ear position is still higher than the recommended alignment, place the head restraint/headrest at the highest position.

1-16 **Safety-Seats, seat belts and supplemental restraint system**

Figure A-104: Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual-Rear Restraints Not Adjustable

APPENDIX B
VEHICLE & DUMMY RESPONSE DATA TRACES

Table of Data Plots

Driver Dummy Instrumentation Plots

Fig.	Description	Page
Plot 1	Driver Head Acceleration (X) Primary vs. Time	B-5
Plot 2	Driver Head Acceleration (Y) Primary vs. Time	B-5
Plot 3	Driver Head Acceleration (Z) Primary vs. Time	B-5
Plot 4	Driver Head Resultant Acceleration Primary vs. Time	B-5
Plot 5	Driver Upper Thorax Rib Deflection (Y) vs. Time	B-6
Plot 6	Driver Middle Thorax Rib Deflection (Y) vs. Time	B-6
Plot 7	Driver Lower Thorax Rib Deflection (Y) vs. Time	B-6
Plot 8	Driver Thorax Rib Deflection Maximum vs. Time	B-6
Plot 9	Driver Anterior Abdominal Force (Y) vs. Time	B-7
Plot 10	Driver Middle Abdominal Force (Y) vs. Time	B-7
Plot 11	Driver Posterior Abdominal Force (Y) vs. Time	B-7
Plot 12	Driver Total Abdominal Force (Y) vs. Time	B-7
Plot 13	Driver Pubic Symphysis Force (Y) vs. Time	B-8
Plot 14	Passenger Head Acceleration (X) vs. Time Primary	B-8
Plot 15	Passenger Head Acceleration (Y) vs. Time Primary	B-8
Plot 16	Passenger Head Acceleration (Z) vs. Time Primary	B-8
Plot 17	Passenger Head Resultant Acceleration Primary vs. Time	B-9
Plot 18	Passenger Lower Spine T12 Acceleration (X) vs. Time	B-9
Plot 19	Passenger Lower Spine T12 Acceleration (Y) vs. Time	B-9
Plot 20	Passenger Lower Spine T12 Acceleration (Z) vs. Time	B-9
Plot 21	Passenger Lower Spine T12 Resultant Acceleration vs. Time	B-10
Plot 22	Passenger Iliac Force on Impact Side (Y) vs. Time	B-10
Plot 23	Passenger Acetabulum Force on Impact Side (Y) vs. Time	B-10
Plot 24	Passenger Total Pelvic Force on Impact Side (Y) vs. Time	B-10

The following additional dummy and vehicle response data can be obtained from the Research and Development section of the NHTSA website. The website can be found at www.NHTSA.gov

Additional Driver & Passenger Dummy Instrumentation Data

Driver Lower Spine T12 Acceleration (X)
Driver Lower Spine T12 Acceleration (Y)
Driver Lower Spine T12 Acceleration (Z)
Passenger Upper Thorax Rib Deflection (Y)
Passenger Middle Thorax Rib Deflection (Y)
Passenger Lower Thorax Rib Deflection (Y)
Passenger Upper Abdomen Rib Deflection (Y)
Passenger Lower Abdomen Rib Deflection (Y)
Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Passenger Head Acceleration Redundant (X)
Passenger Head Acceleration Redundant (Y)
Passenger Head Acceleration Redundant (Z)

Vehicle Instrumentation Data

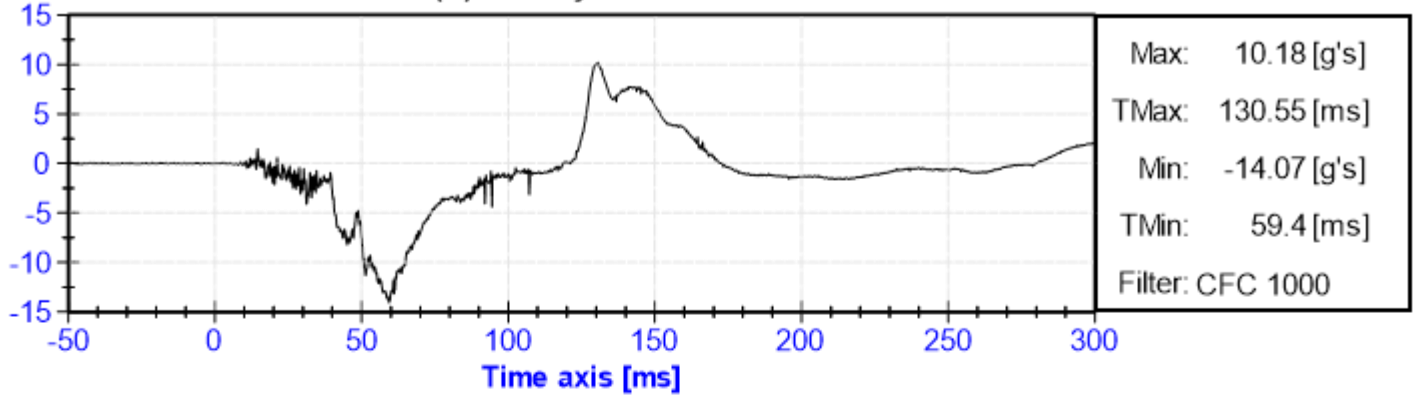
Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Right Side Sill at Front Seat Acceleration (X)
Right Side Sill at Front Seat Acceleration (Y)
Right Side Sill at Front Seat Acceleration (Z)
Right Side Sill at Rear Seat Acceleration (X)
Right Side Sill at Rear Seat Acceleration (Y)
Right Side Sill at Rear Seat Acceleration (Z)
Left Side Sill at Front Seat Acceleration (Y)
Left Side Sill at Rear Seat Acceleration (Y)
Lower A-Post Acceleration (Y)
Middle A-Post Acceleration (Y)
Lower B-Post Acceleration (Y)
Middle B-Post Acceleration (Y)
Front Seat Track Acceleration (Y)
Rear Seat Structure Acceleration (Y)
Right Rear Occupant Compartment Acceleration (Y)
Engine Block (X)
Engine Block (Y)
Rear Floorpan Above Axle Acceleration (X)
Rear Floorpan Above Axle Acceleration (Y)
Rear Floorpan Above Axle Acceleration (Z)

MDB Instrumentation Data

MDB Center of Gravity Acceleration (X)
MDB Center of Gravity Acceleration (Y)
MDB Center of Gravity Acceleration (Z)
MDB Rear Acceleration (X)
MDB Rear Acceleration (Y)
Left MDB Contact Switch
Right MDB Contact Switch

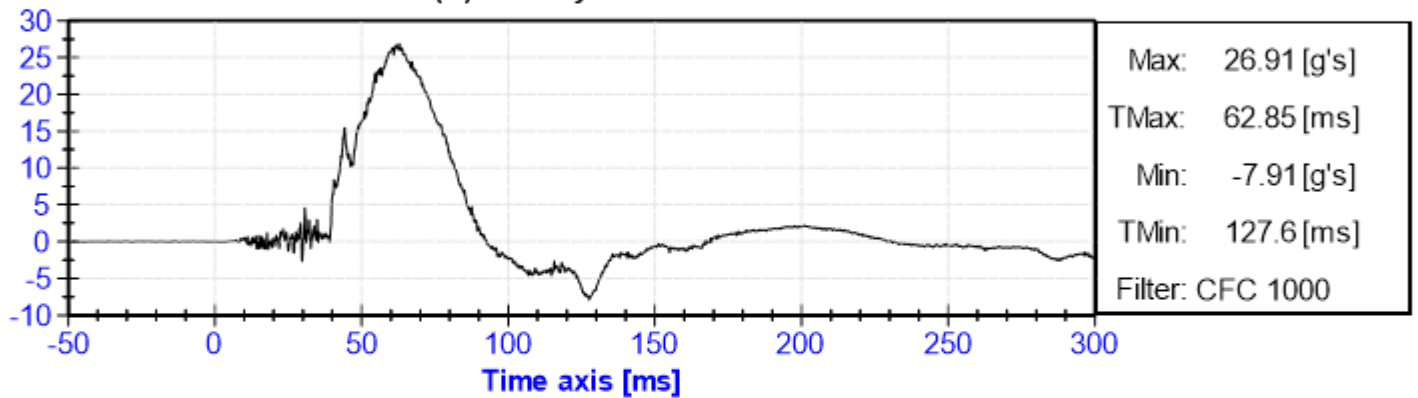
ACCELERATION [g's]

Driver Head Acceleration (X) Primary vs. Time



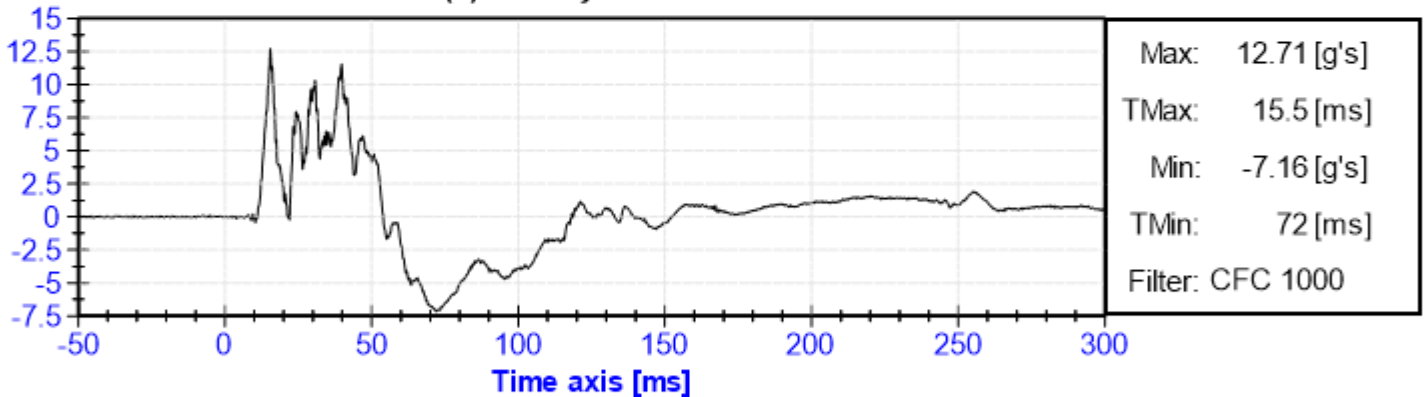
ACCELERATION [g's]

Driver Head Acceleration (Y) Primary vs. Time



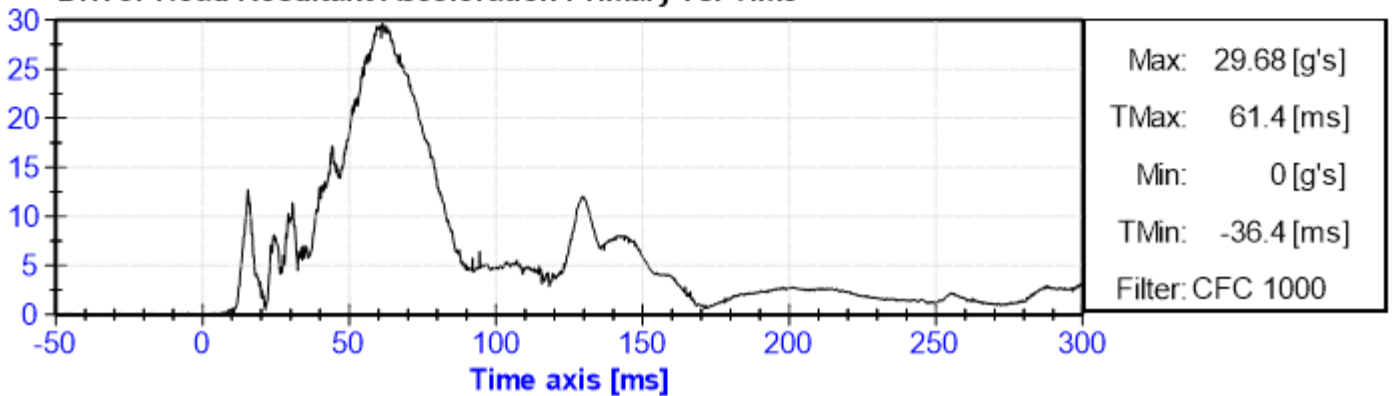
ACCELERATION [g's]

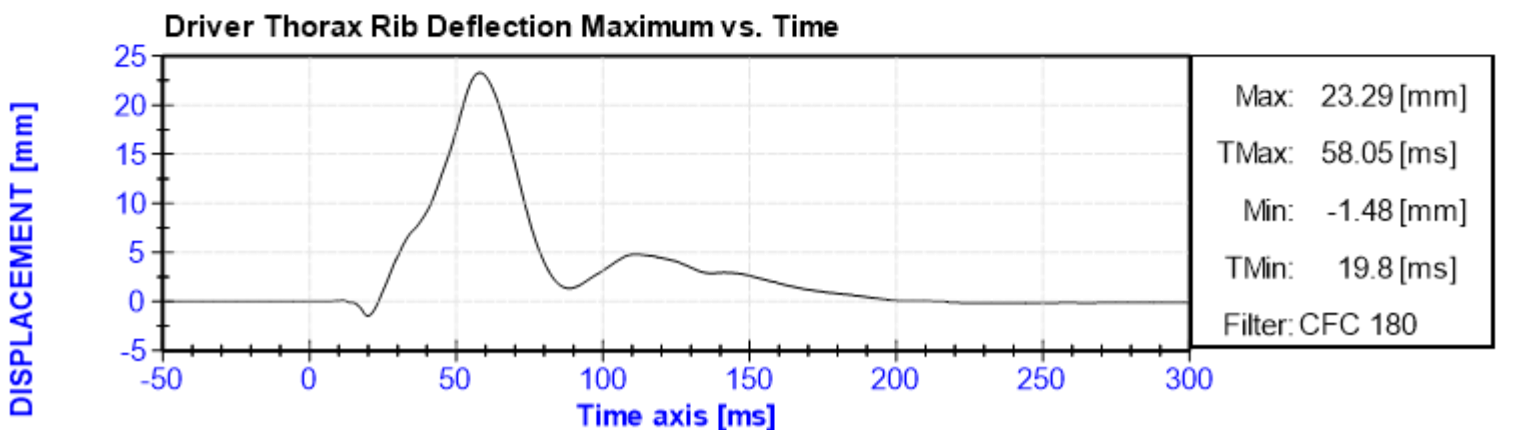
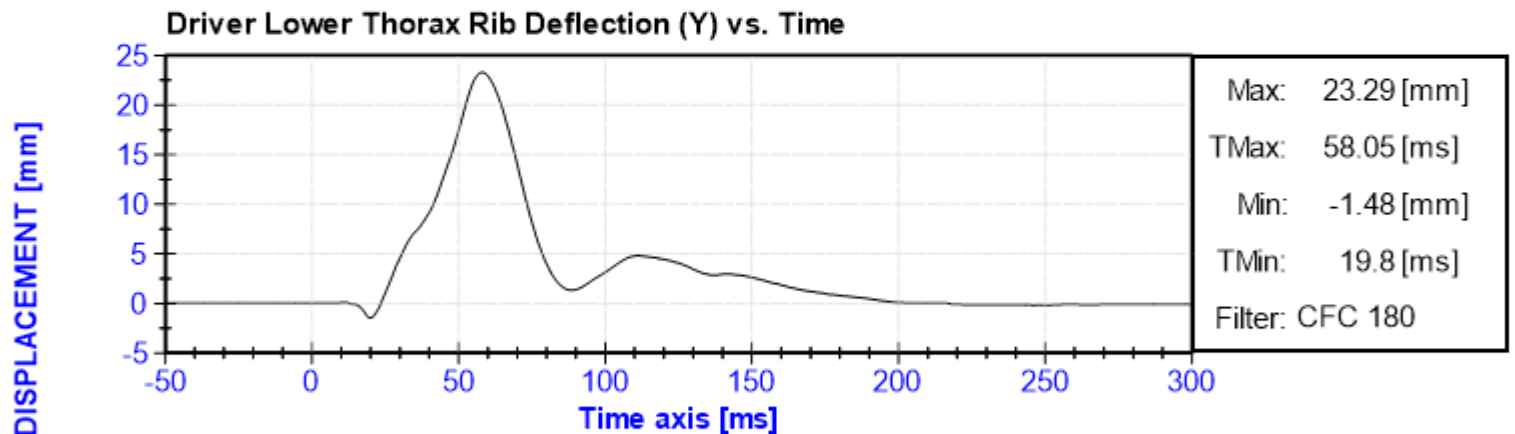
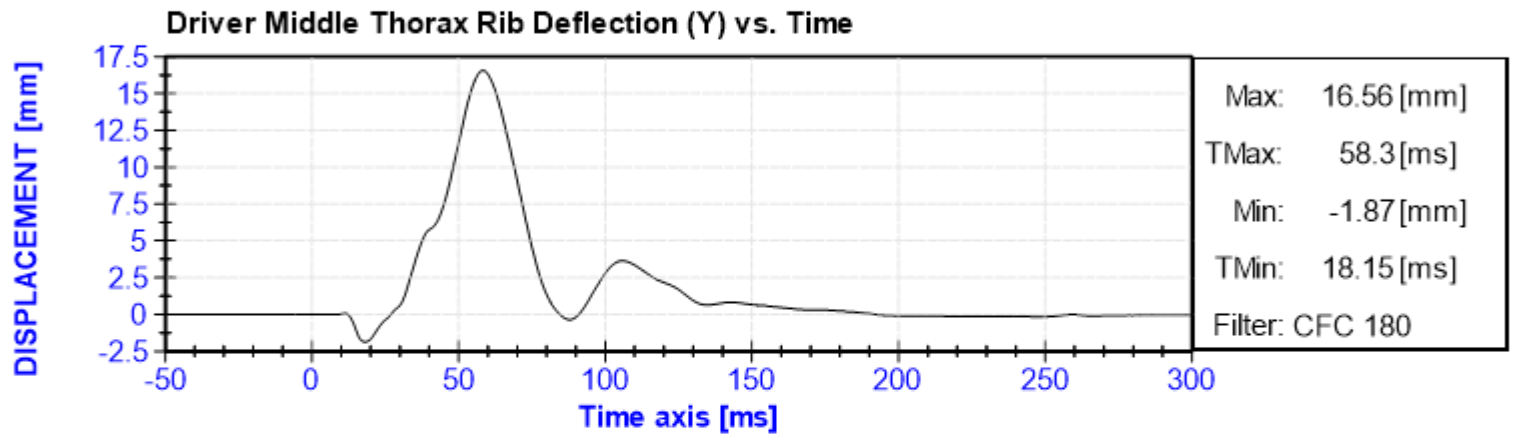
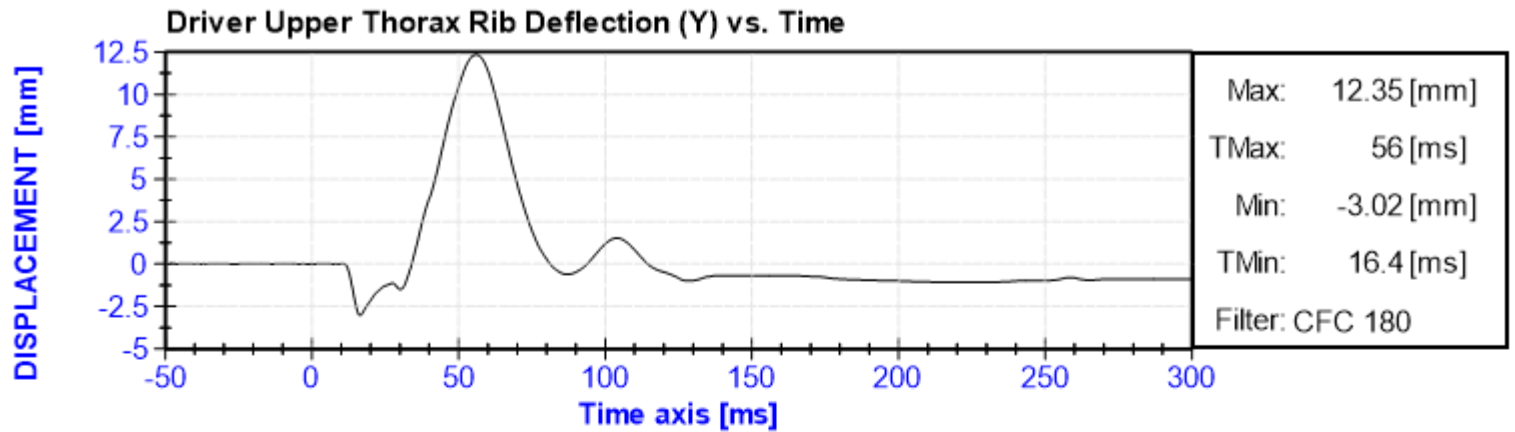
Driver Head Acceleration (Z) Primary vs. Time

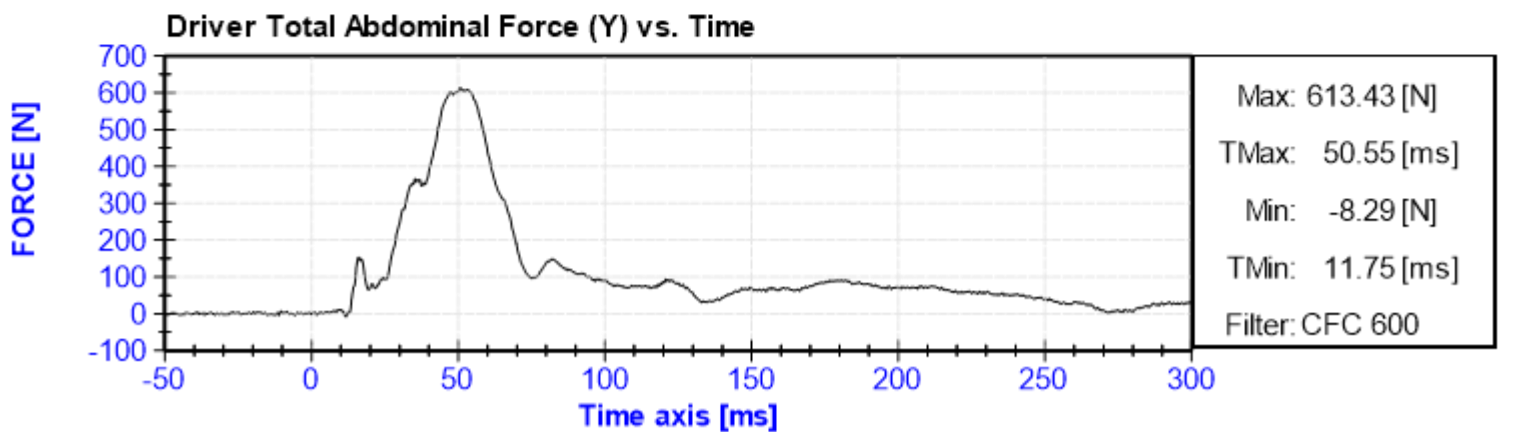
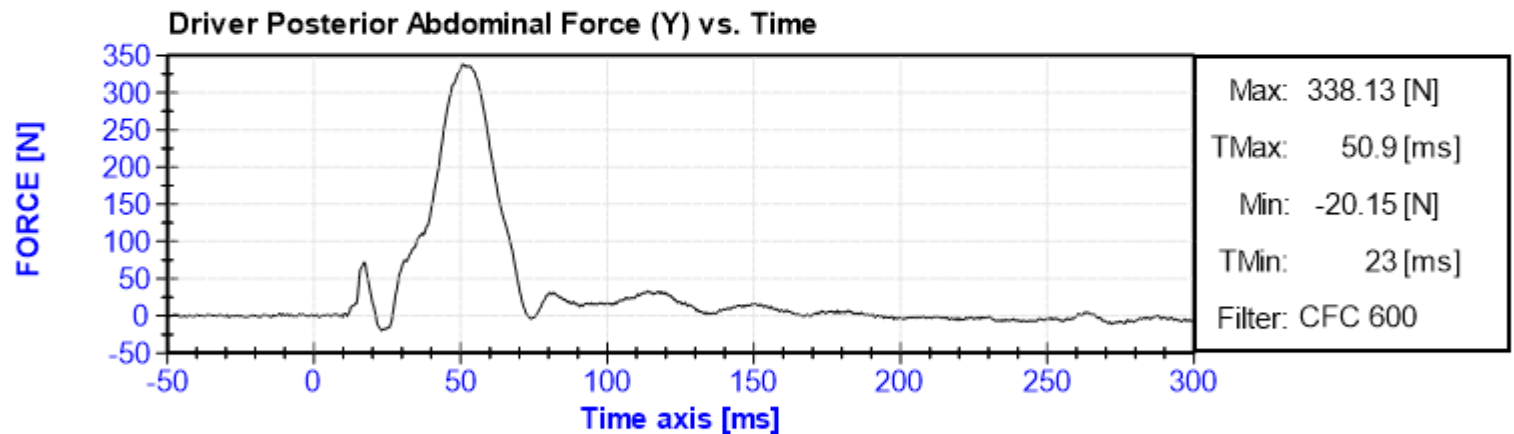
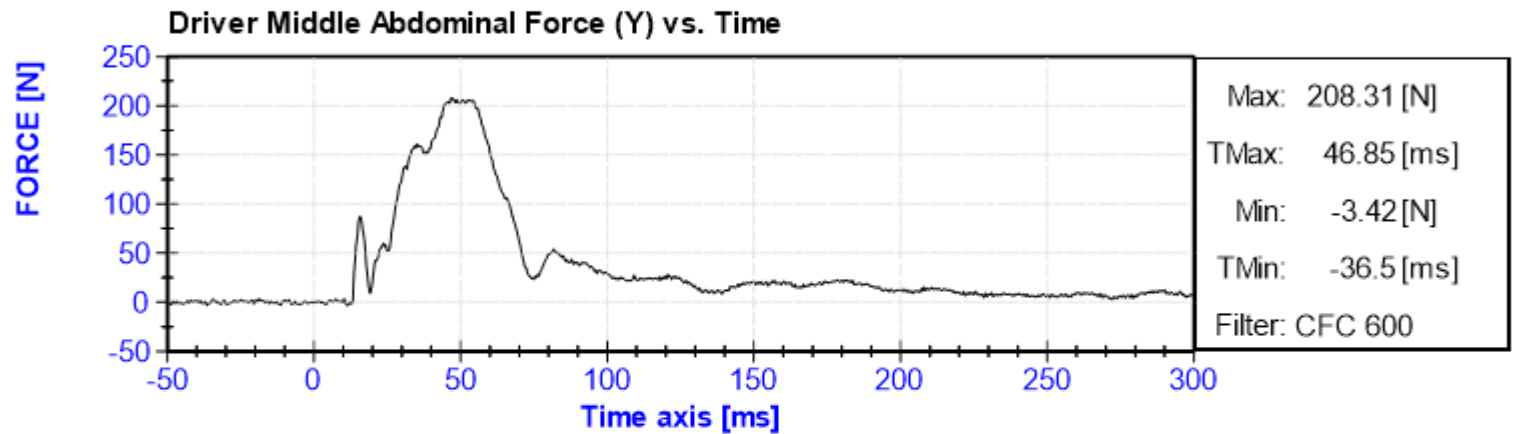
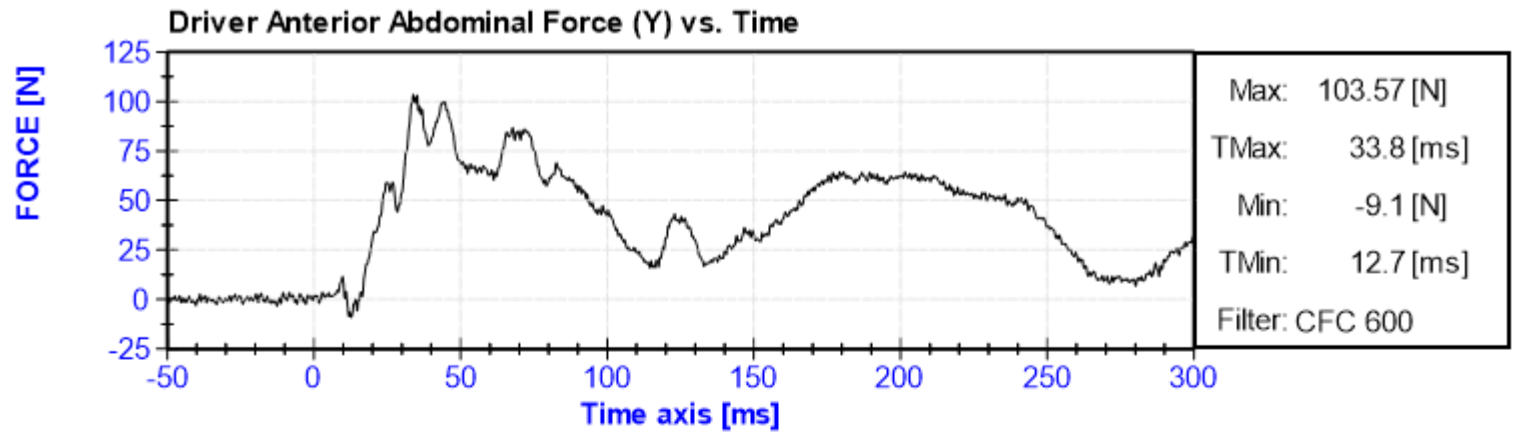


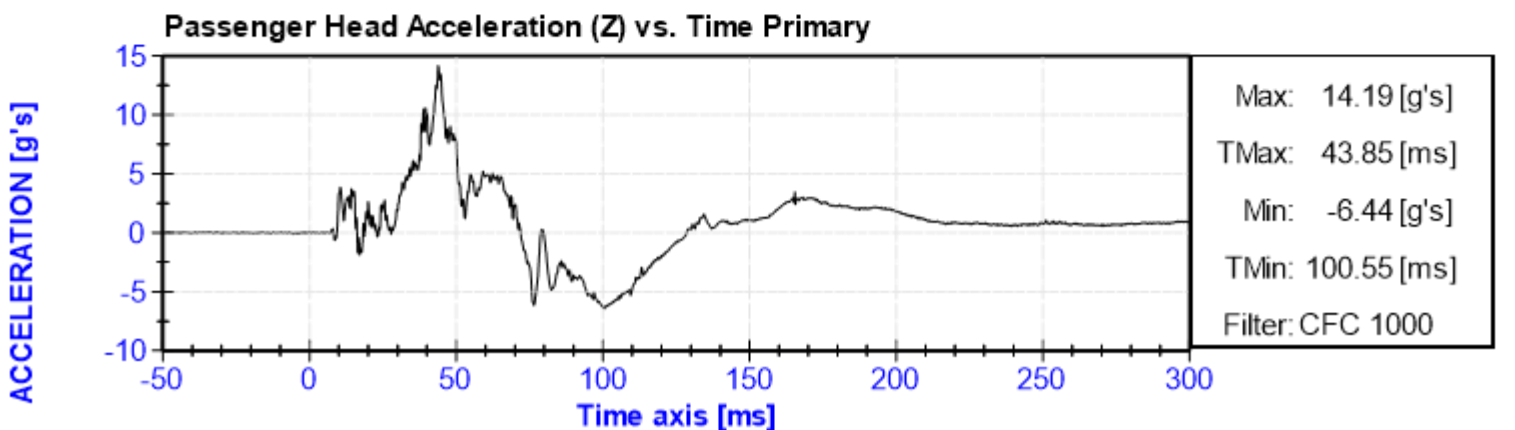
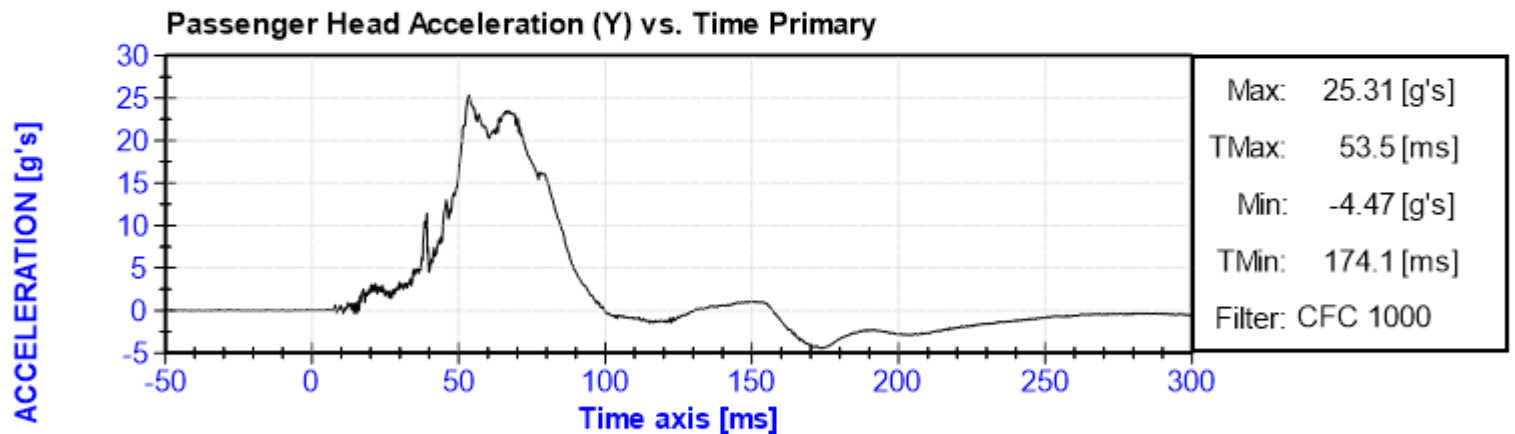
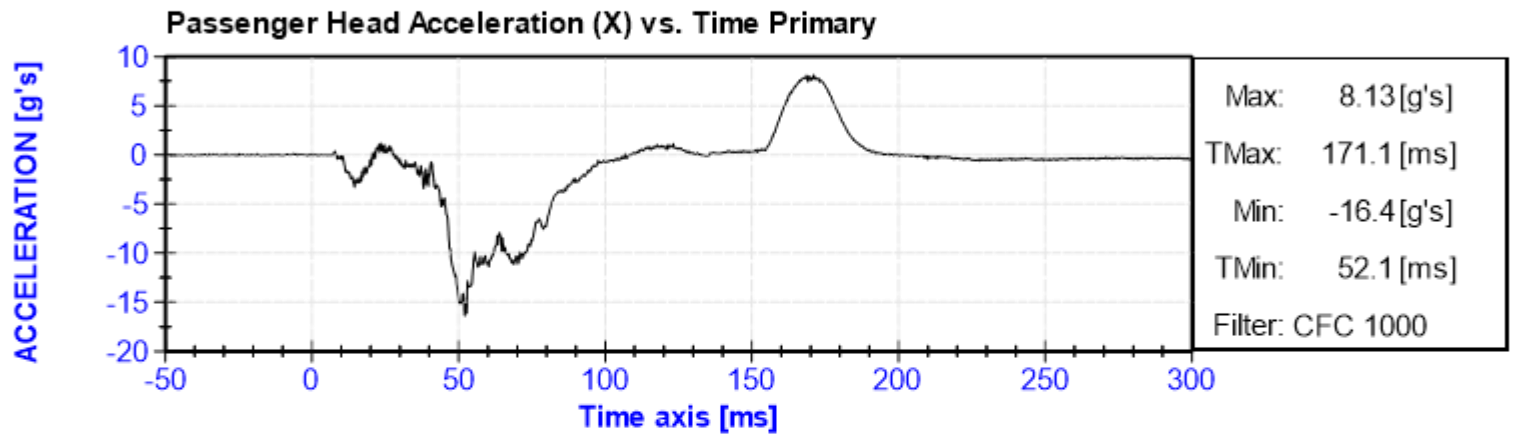
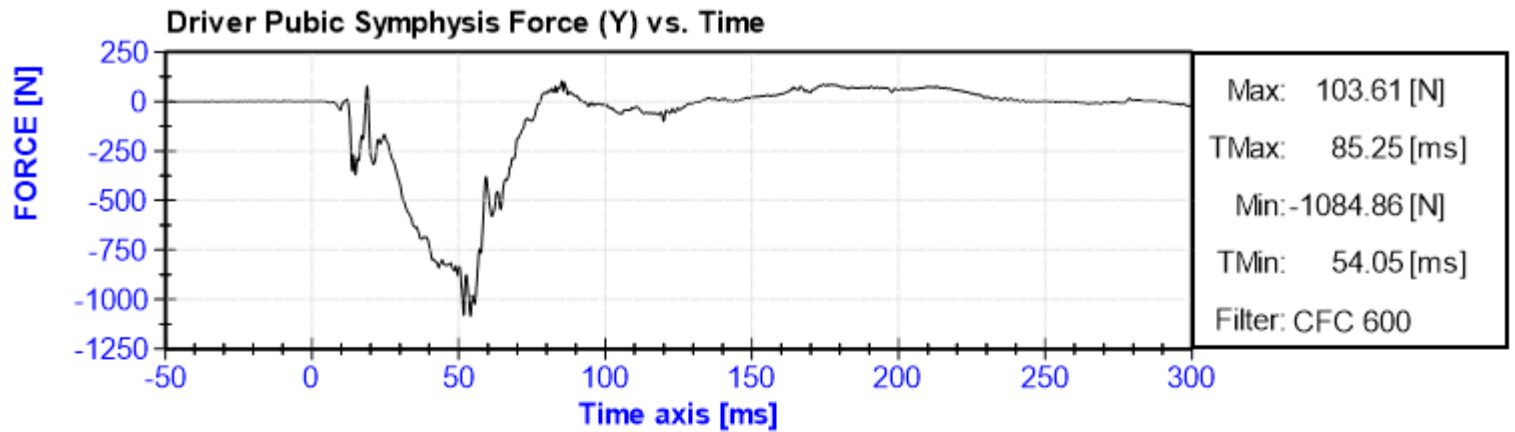
ACCELERATION [g's]

Driver Head Resultant Acceleration Primary vs. Time



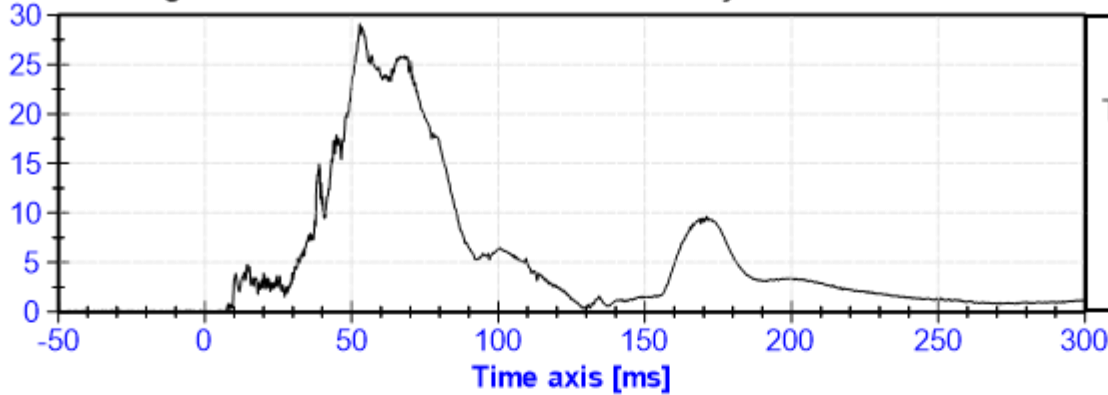






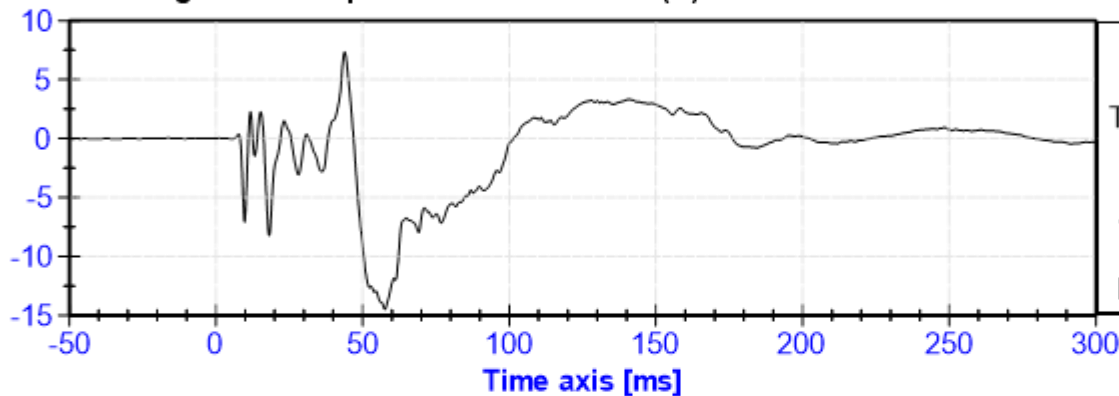
ACCELERATION [g's]

Passenger Head Resultant Acceleration Primary vs. Time



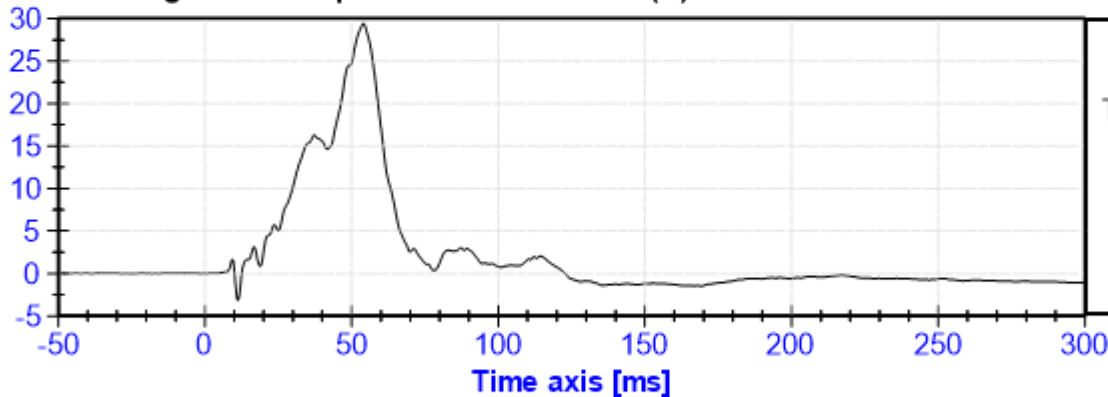
ACCELERATION [g's]

Passenger Lower Spine T12 Acceleration (X) vs. Time



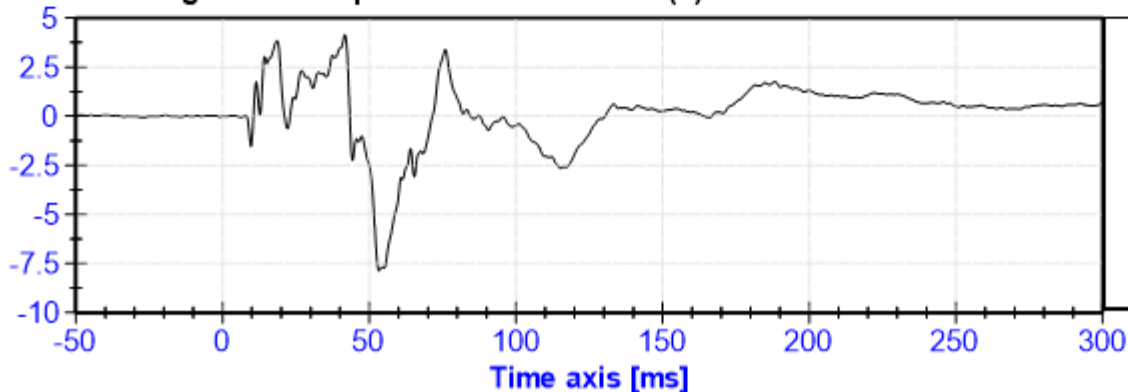
ACCELERATION [g's]

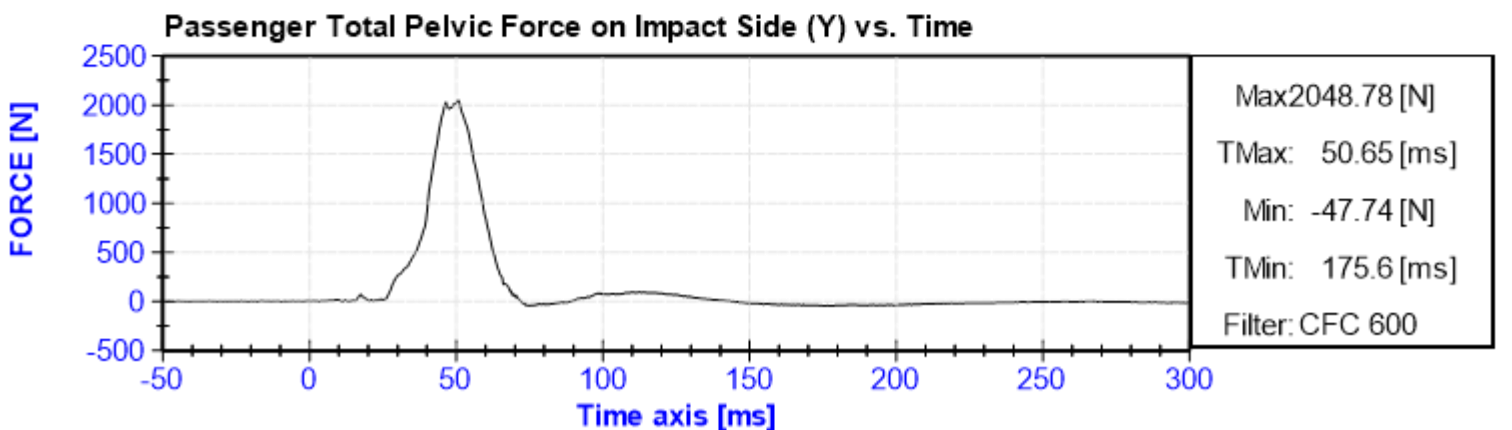
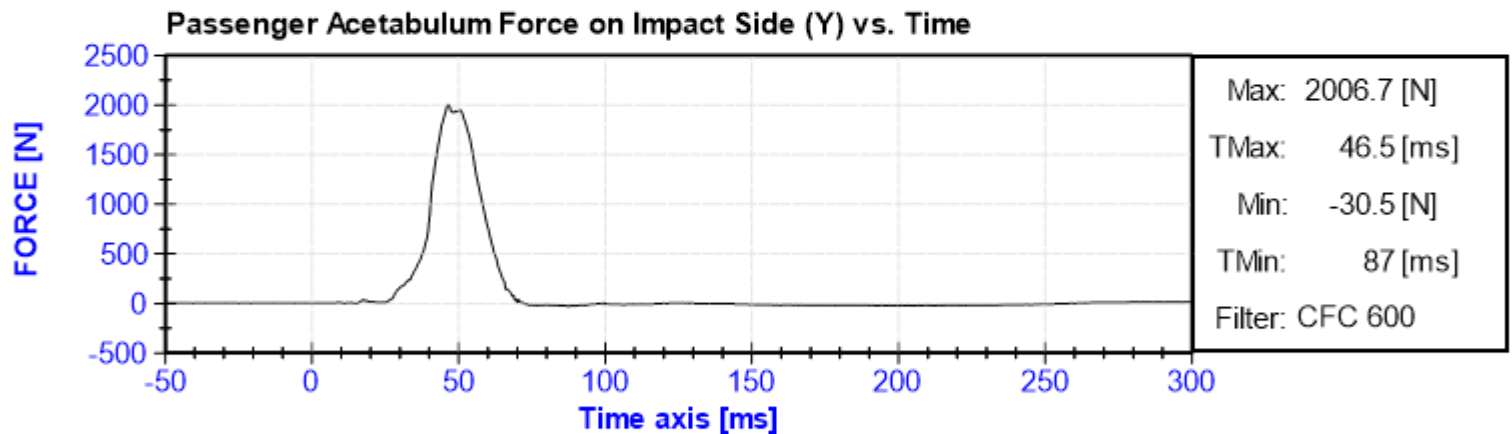
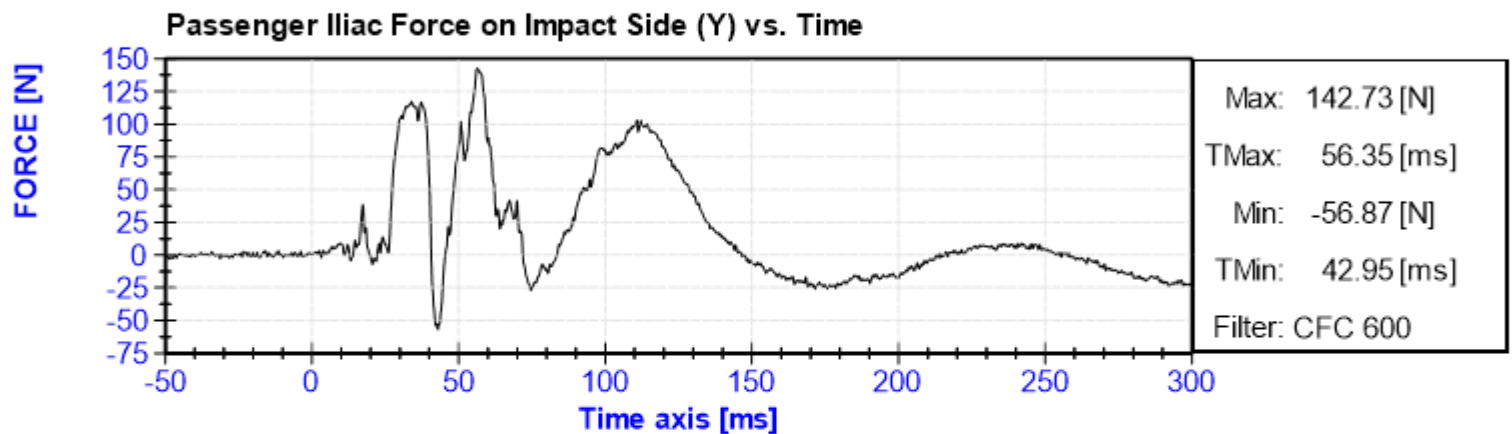
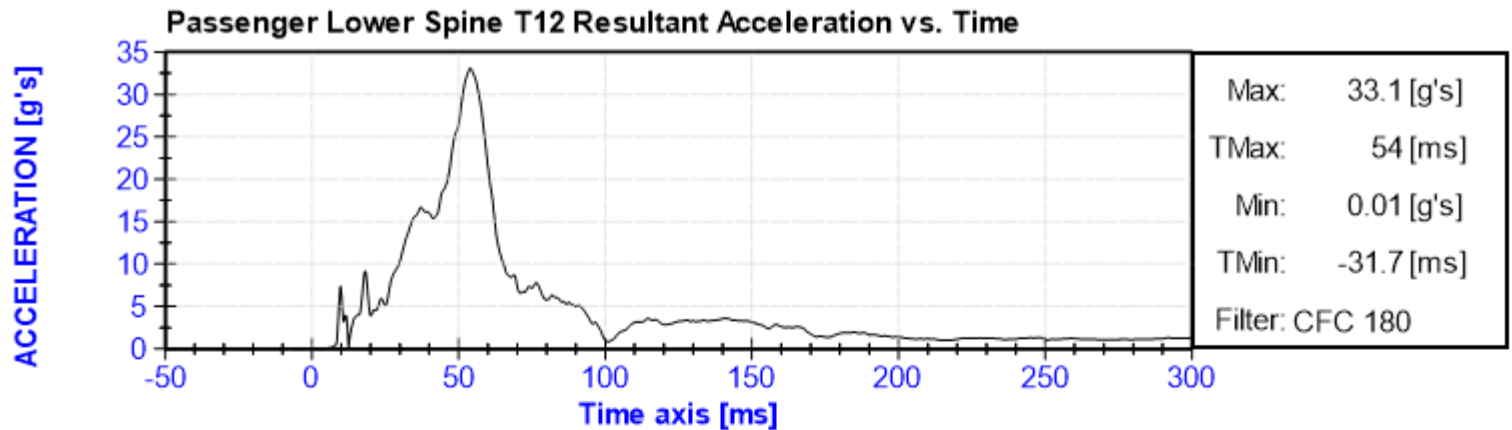
Passenger Lower Spine T12 Acceleration (Y) vs. Time



ACCELERATION [g's]

Passenger Lower Spine T12 Acceleration (Z) vs. Time





APPENDIX C

DUMMY PERFORMANCE CALIBRATION TEST DATA

CALIBRATION TEST RESULTS

PRE-TEST

EUROSID 2 (ES-2RE) MALE – DRIVER ATD

SERIAL NO: F033

(CONFIGURED FOR LEFT SIDE IMPACT)

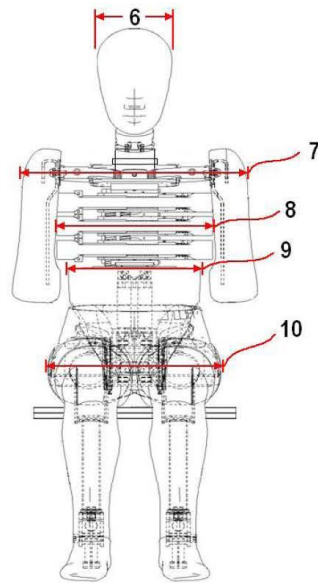


External Measurements - EuroSID-2re

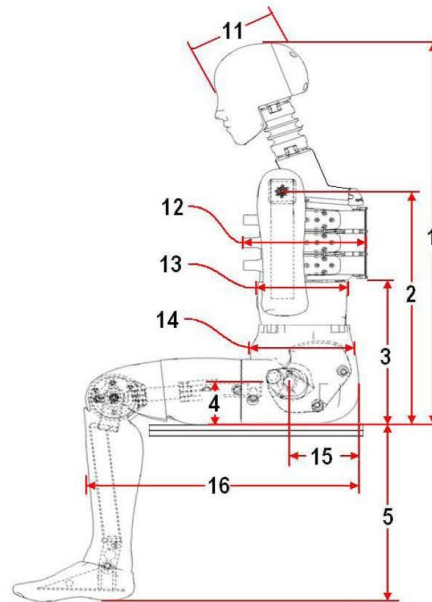
Technician: K. Brogan

Date: 04/07/2022

Dummy Serial Number: F033



FRONT VIEW



SIDE VIEW

Dim. No.	Description	Specification (mm)		Result (mm)	Pass/Fail
1	Sitting Height	900	918	908	Pass
2	Seat to Shoulder Joint	558	572	565	Pass
3	Seat to Lower Face of Thoracic Spine Box	346	356	351	Pass
4	Seat to Hip Joint (center of bolt)	97	103	100	Pass
5	Sole to Seat, Sitting	333	451	420	Pass
6	Head Width	152	158	155	Pass
7	Shoulder/Arm Width	461	479	470	Pass
8	Thorax Width	322	332	330	Pass
9	Abdomen Width	273	287	285	Pass
10	Pelvis Lap Width	359	373	365	Pass
11	Head Depth	196	206	200	Pass
12	Thorax Depth	262	272	265	Pass
13	Abdomen Depth	194	204	200	Pass
14	Pelvis Depth	235	245	240	Pass
15	Back of Buttocks to Hip Joint (center of bolt)	150	160	156	Pass
16	Back of Buttocks to Front Knee	597	615	610	Pass

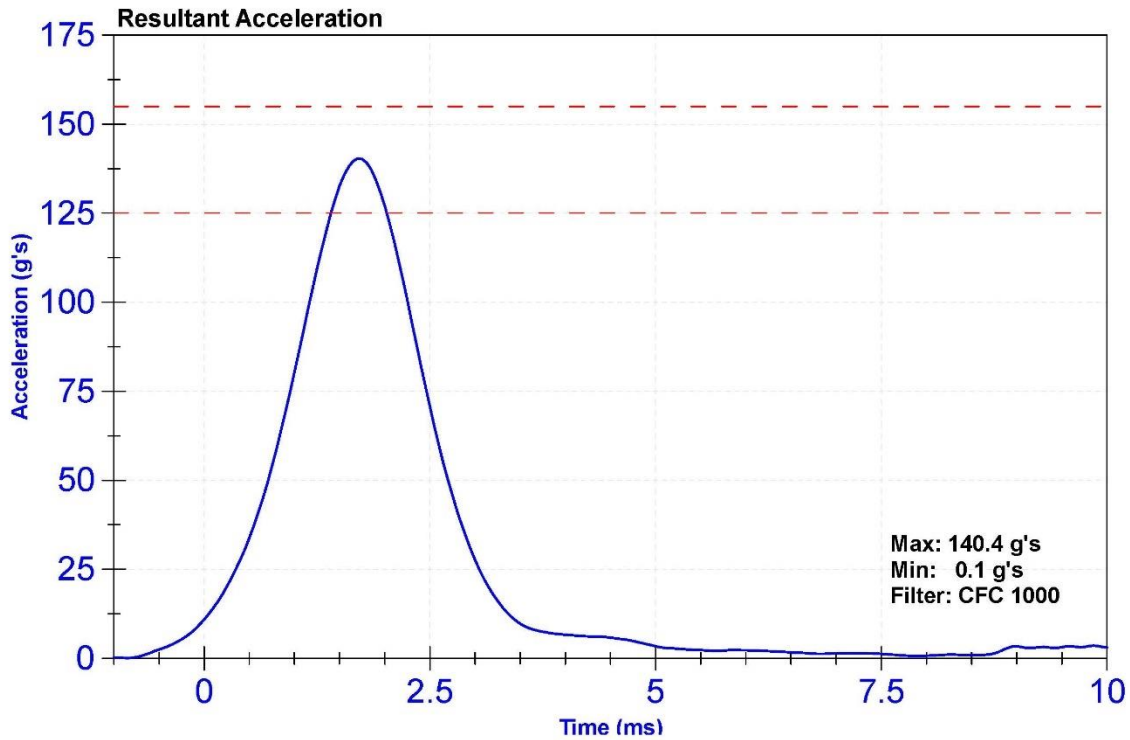
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

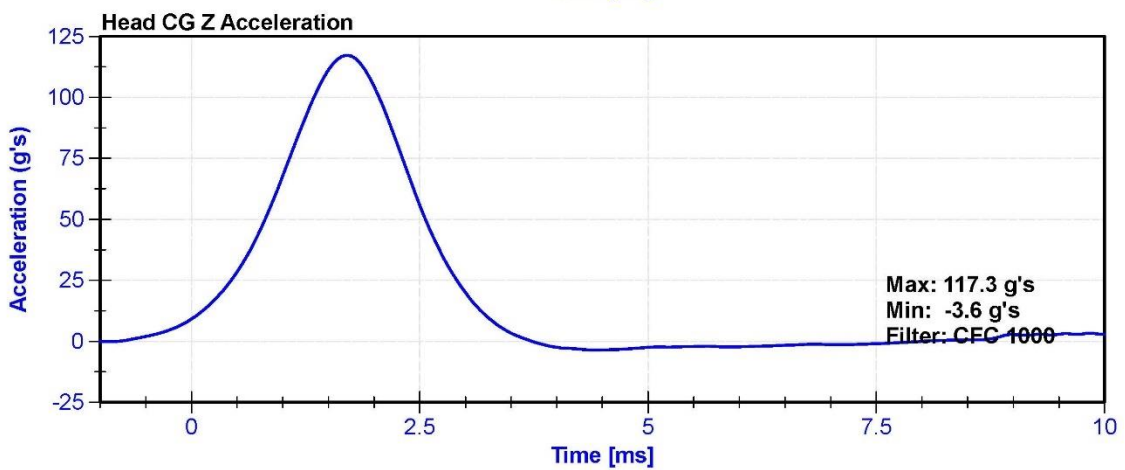
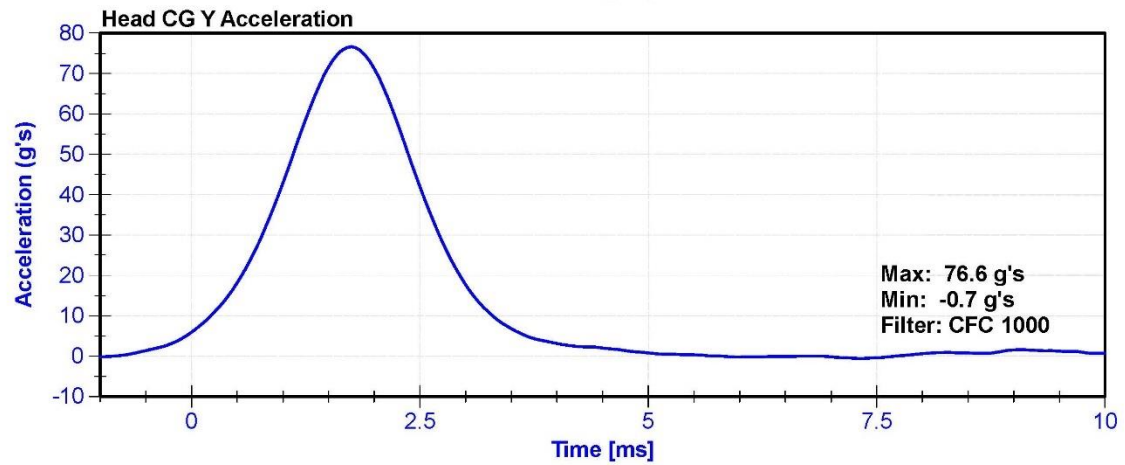
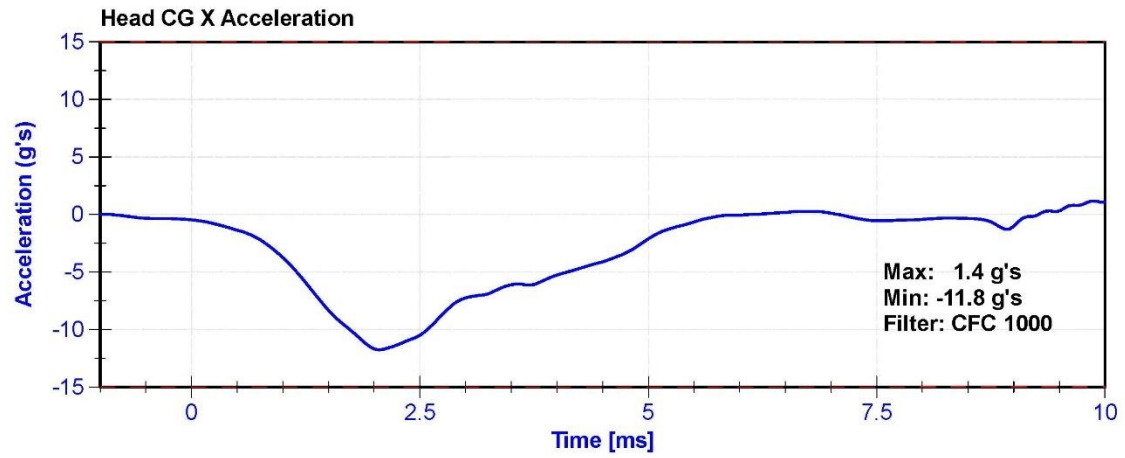
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.6	Pass
Humidity	10	70	%	28.1	Pass
Resultant Acceleration	125	155	g's	140.4	Pass
Oscillation	0	15	%	2.54	Pass
Fore-Aft Acceleration	-15	15	g's	-11.8	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	Endevco	P63861	1/31/2022	7/30/2022
Y Accelerometer	Endevco	P51303	1/31/2022	7/30/2022
Z Accelerometer	Endevco	P49216	1/31/2022	7/30/2022





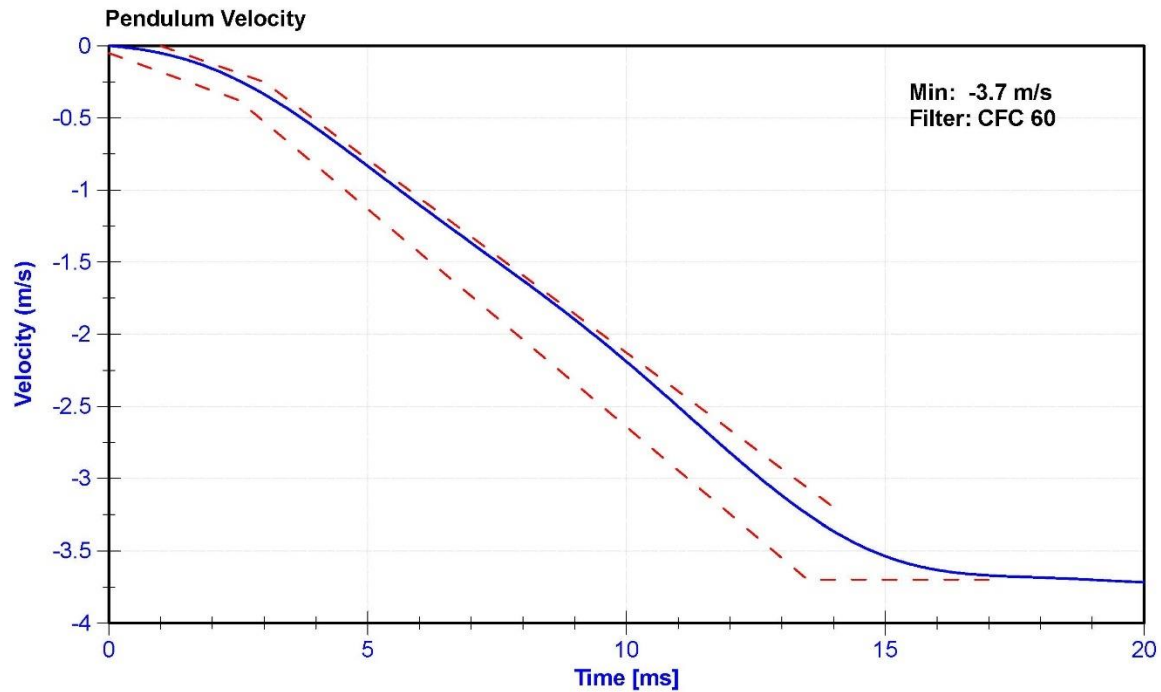
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

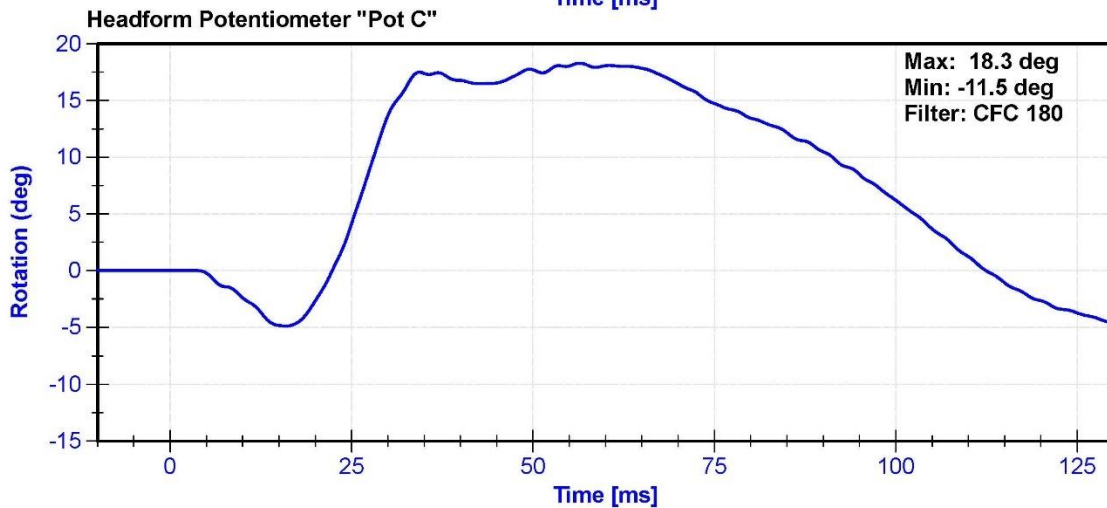
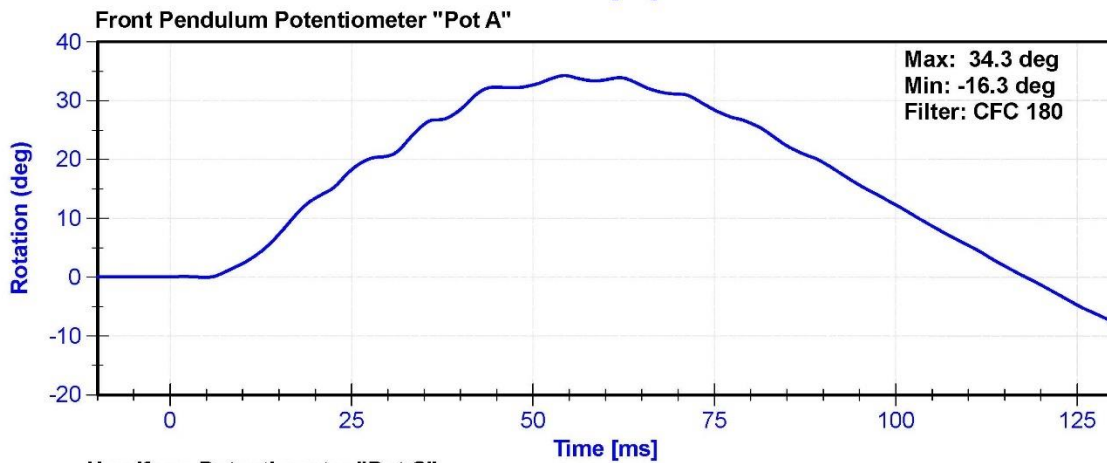
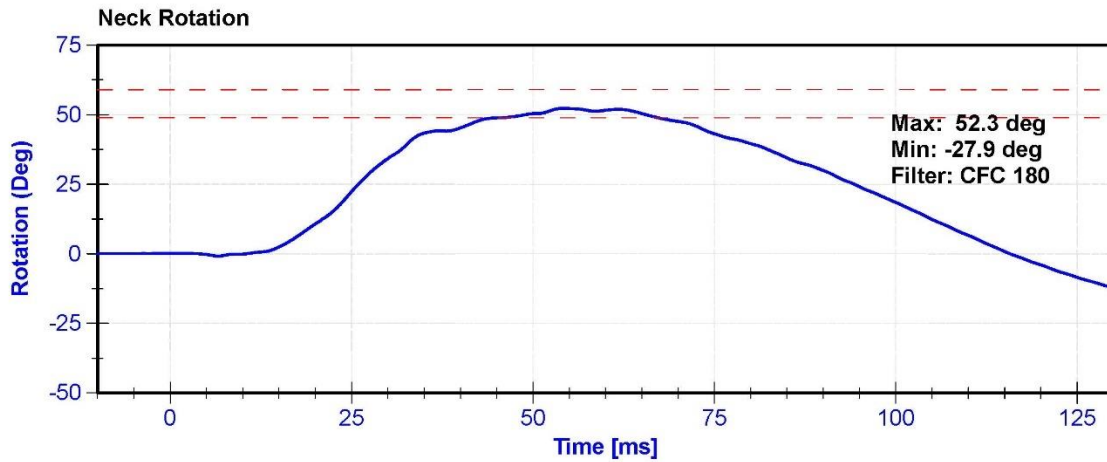
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.7	Pass
Humidity	10	70	%	32.3	Pass
Velocity	3.3	3.5	m/s	3.41	Pass
Lateral Neck Rotation	49	59	deg	52.3	Pass
Time at Maximum Rotation	54	66	ms	54.1	Pass
Time of Rotation Decay from Maximum	53	88	ms	61.7	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	C16503	10/28/2021	10/28/2022
Front Pendulum Potentiometer	Sfernice	094	10/1/2021	10/1/2022
Headform Potentiometer	Sfernice	095	10/1/2021	10/1/2022





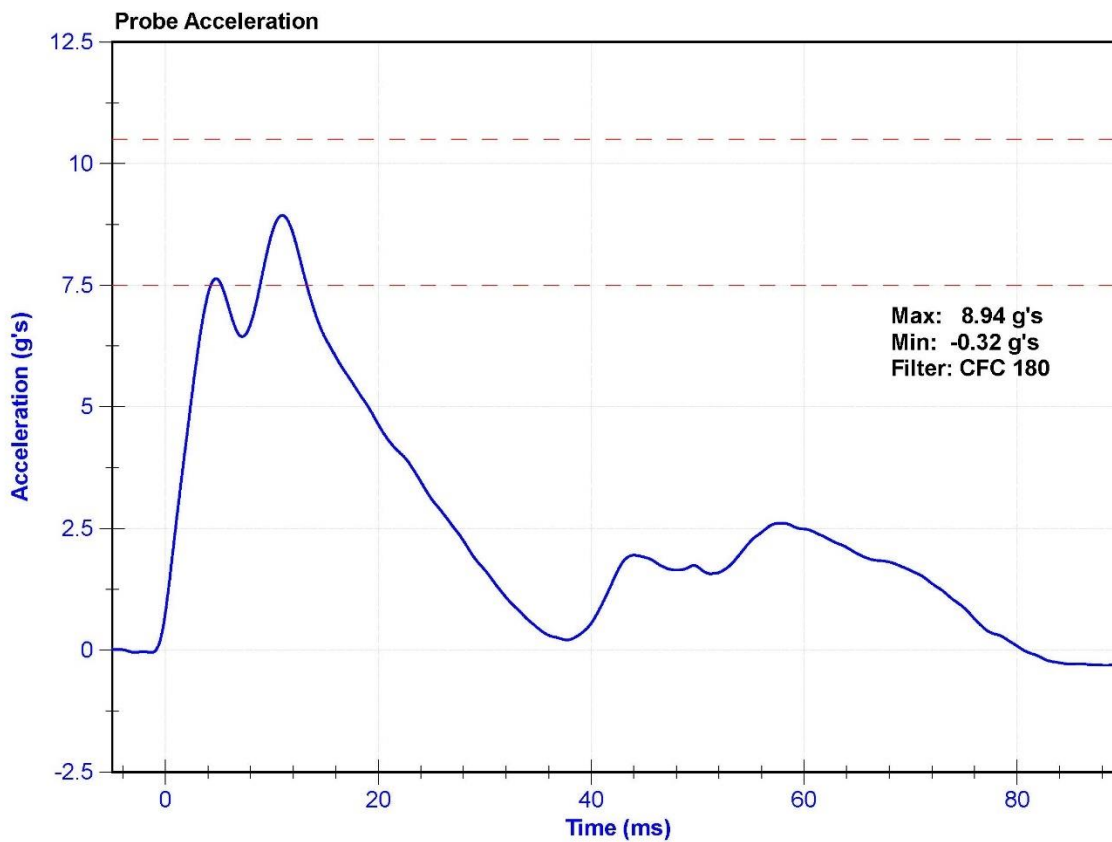
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.8	Pass
Humidity	10	70	%	41.1	Pass
Velocity	4.2	4.4	m/s	4.33	Pass
Probe Acceleration	7.5	10.5	g's	8.94	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	T25885	10/25/2021	4/23/2022



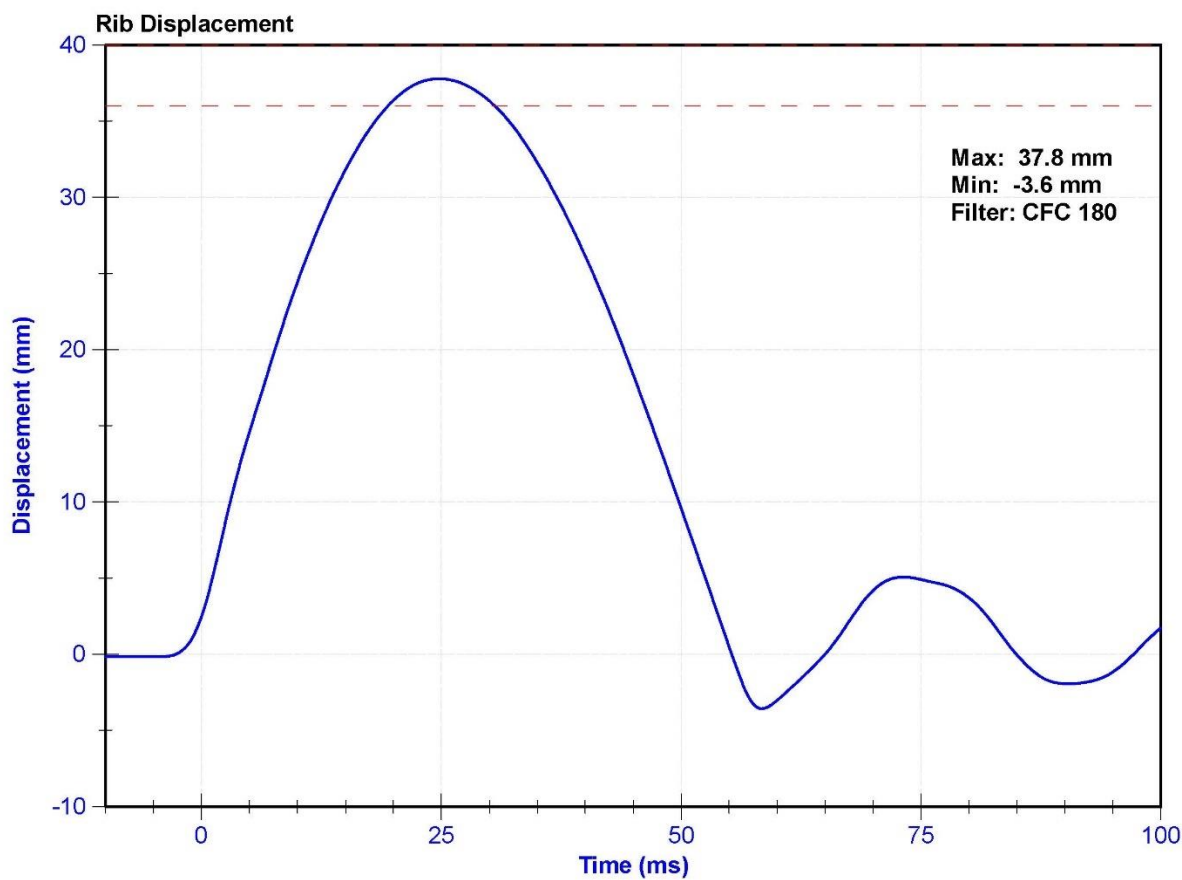
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.6	Pass
Humidity	10	70	%	28.1	Pass
Rib Displacement	36	40	mm	37.8	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	179GFE	2/1/2022	8/2/2022



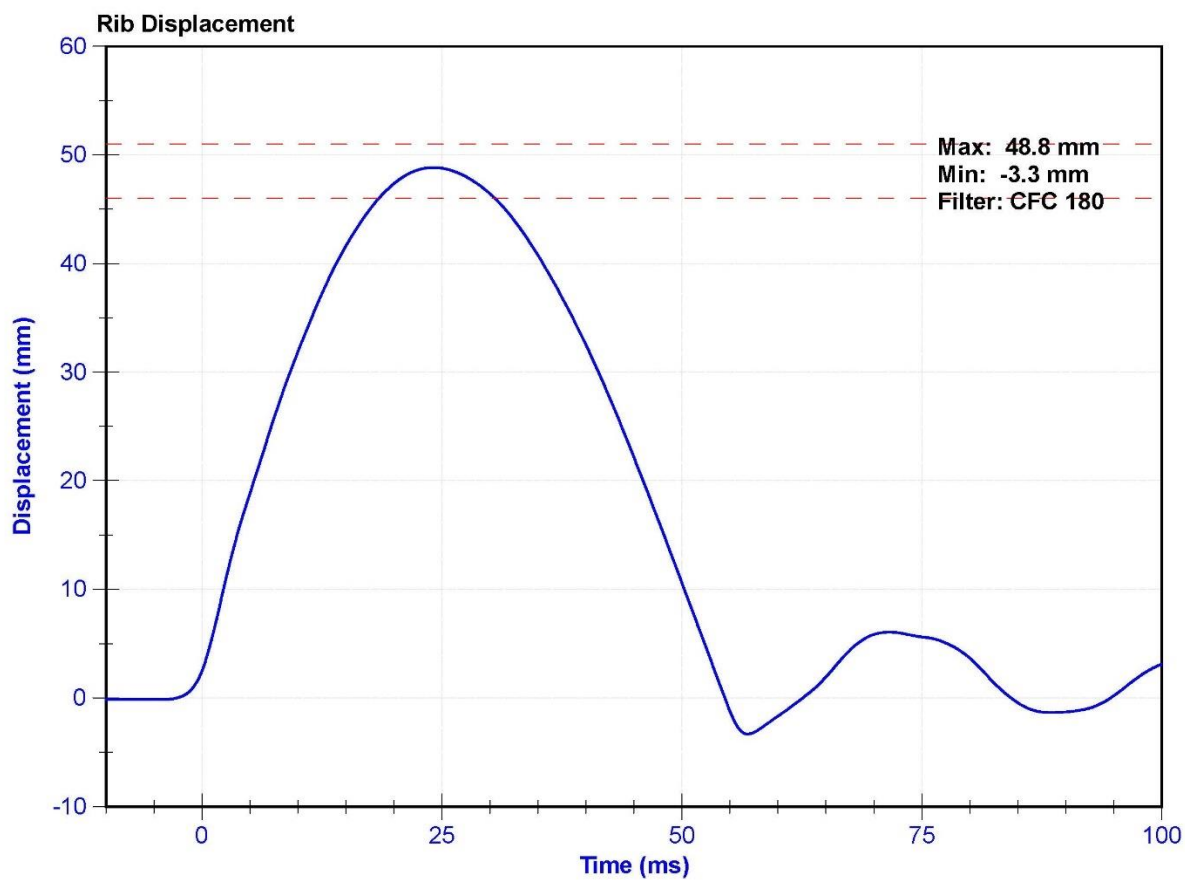
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.6	Pass
Humidity	10	70	%	28.1	Pass
Rib Displacement	46	51	mm	48.8	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	179GFE	2/1/2022	8/2/2022



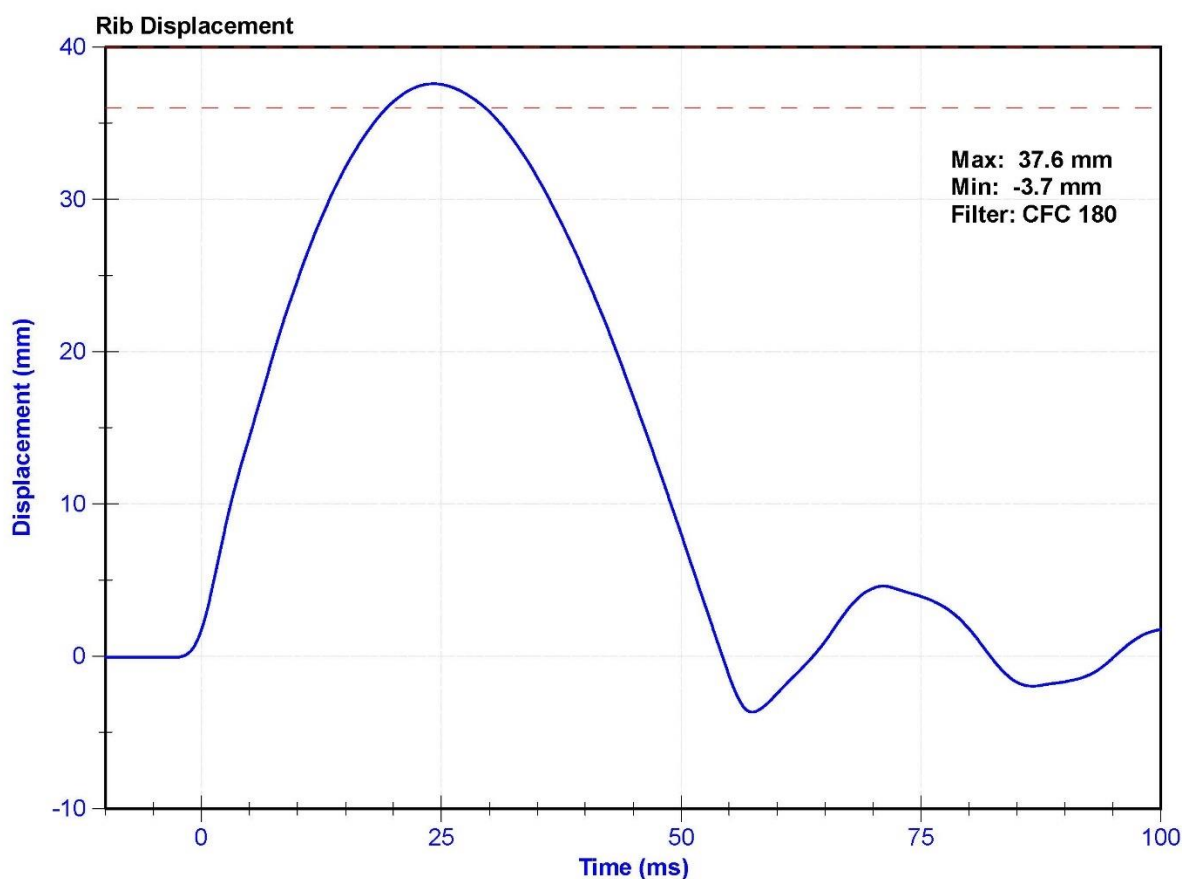
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.6	Pass
Humidity	10	70	%	28.1	Pass
Rib Displacement	36	40	mm	37.6	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	185GFE	2/1/2022	8/2/2022



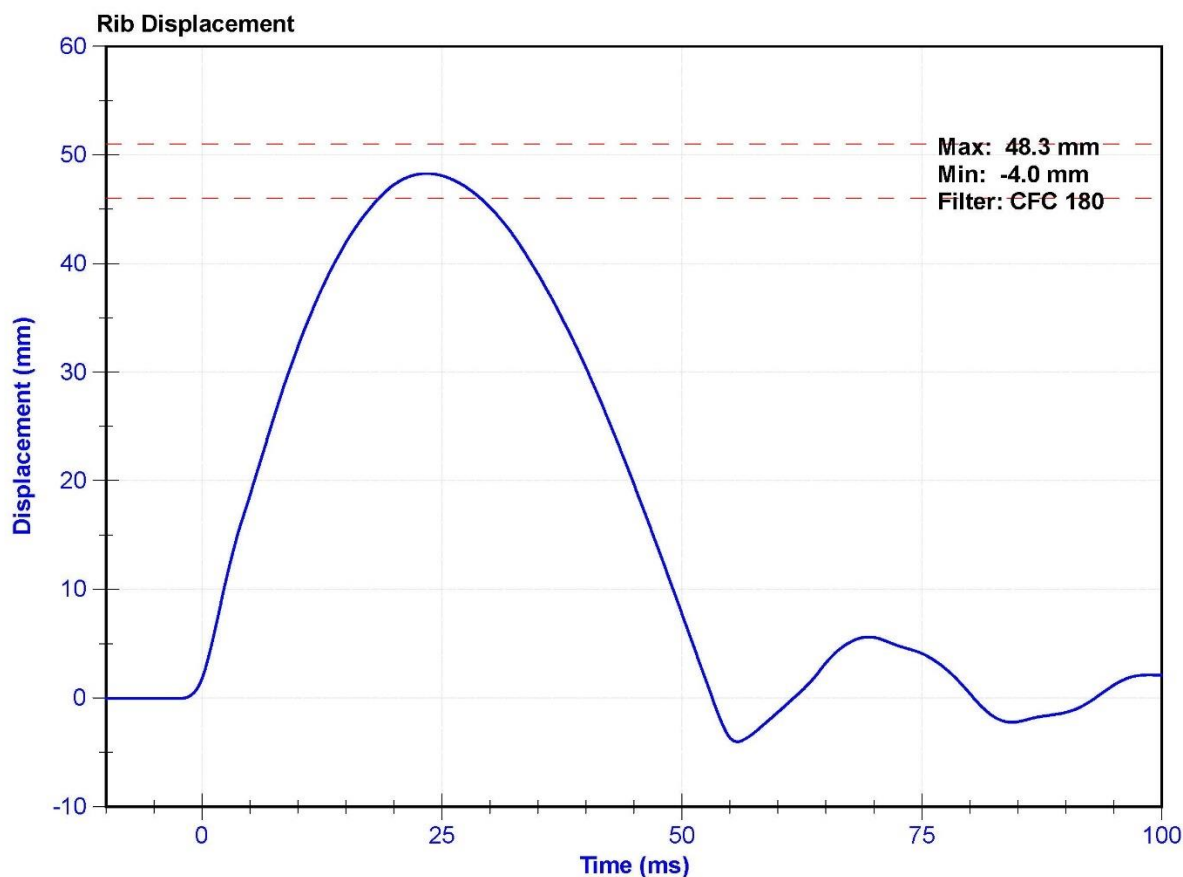
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.6	Pass
Humidity	10	70	%	28.1	Pass
Rib Displacement	46	51	mm	48.3	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	185GFE	2/1/2022	8/2/2022



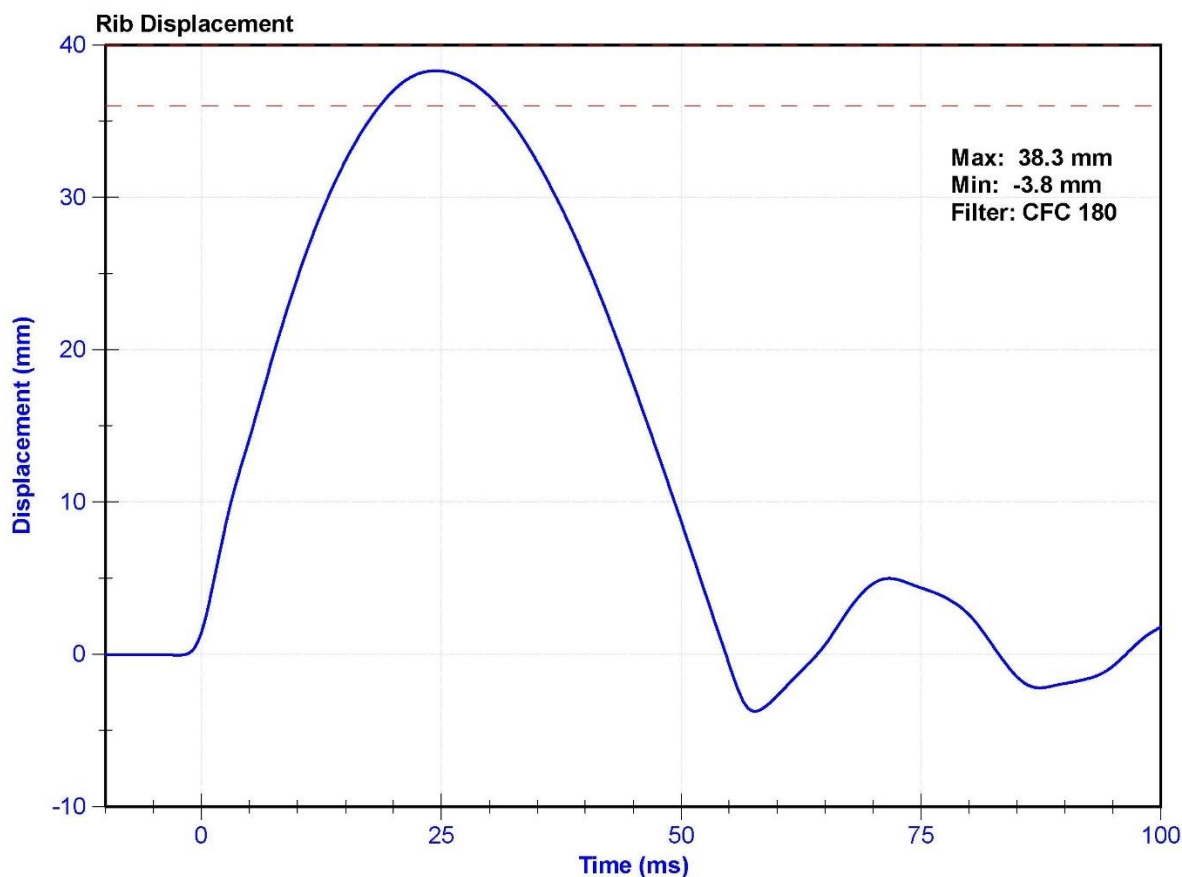
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.6	Pass
Humidity	10	70	%	28.1	Pass
Rib Displacement	36	40	mm	38.3	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	178GFE	2/1/2022	8/2/2022



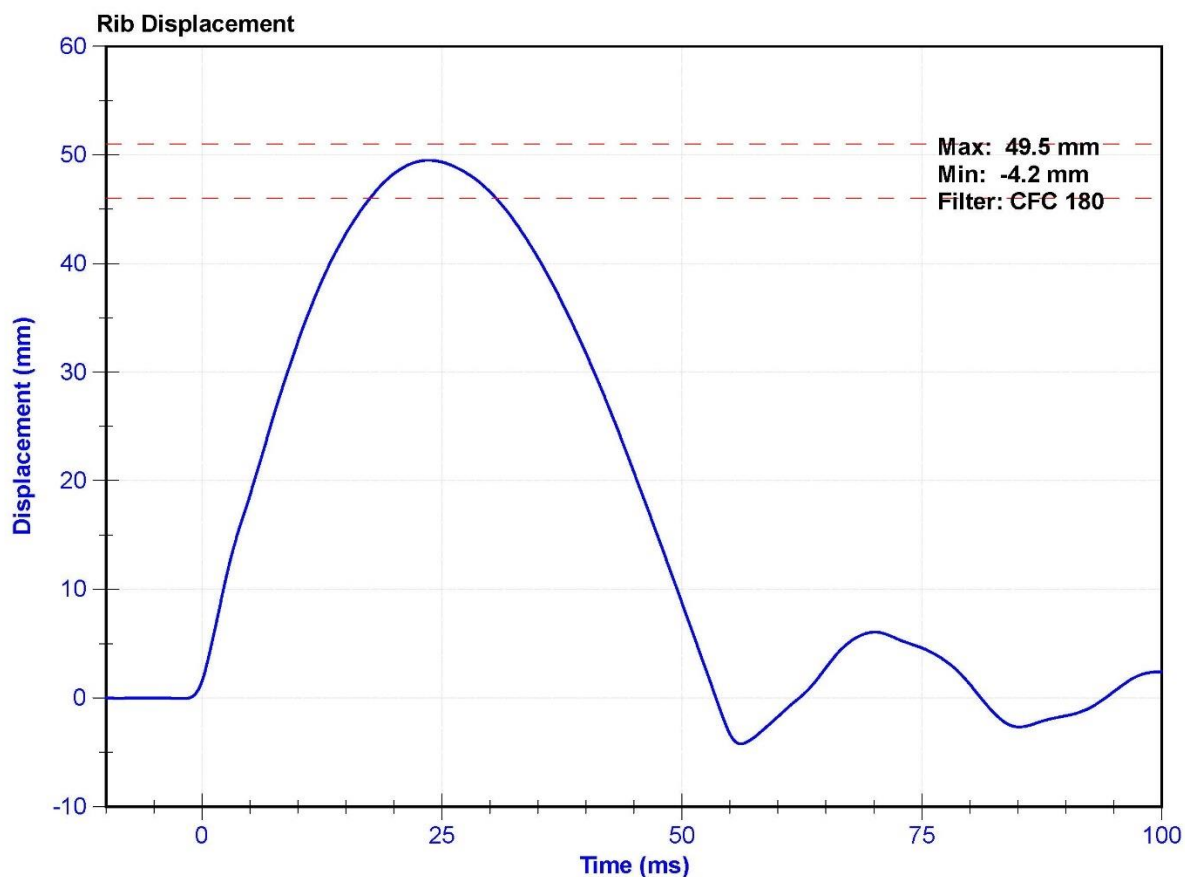
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.6	Pass
Humidity	10	70	%	28.1	Pass
Rib Displacement	46	51	mm	49.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	178GFE	2/1/2022	8/2/2022



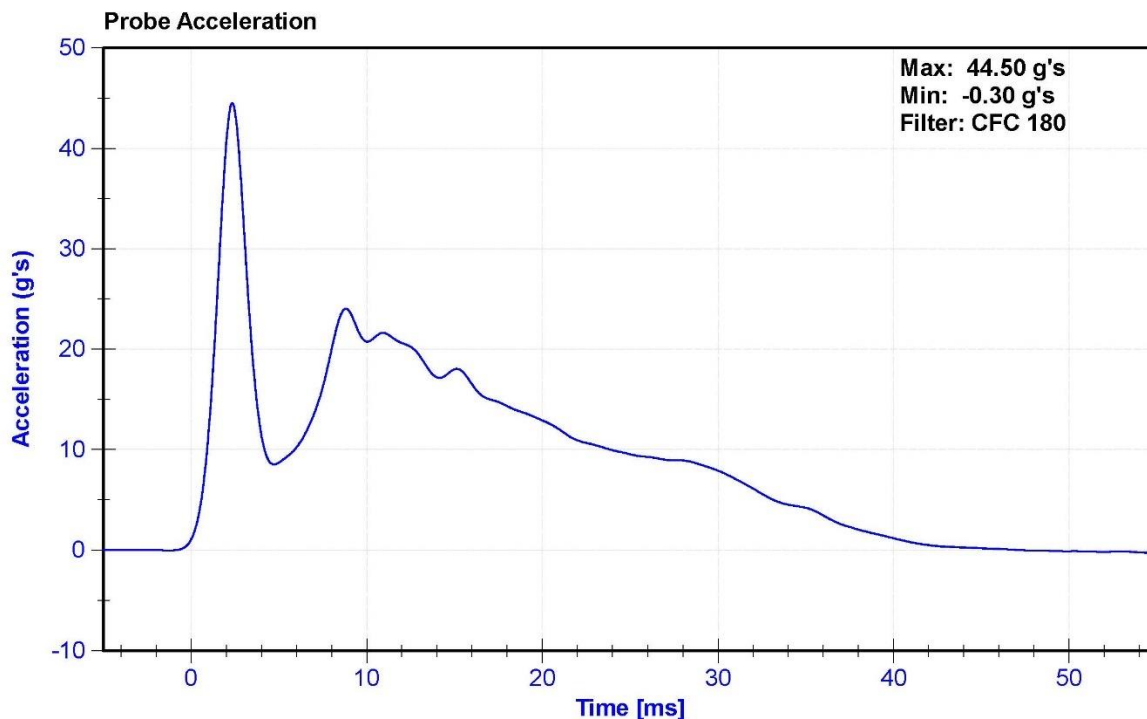
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

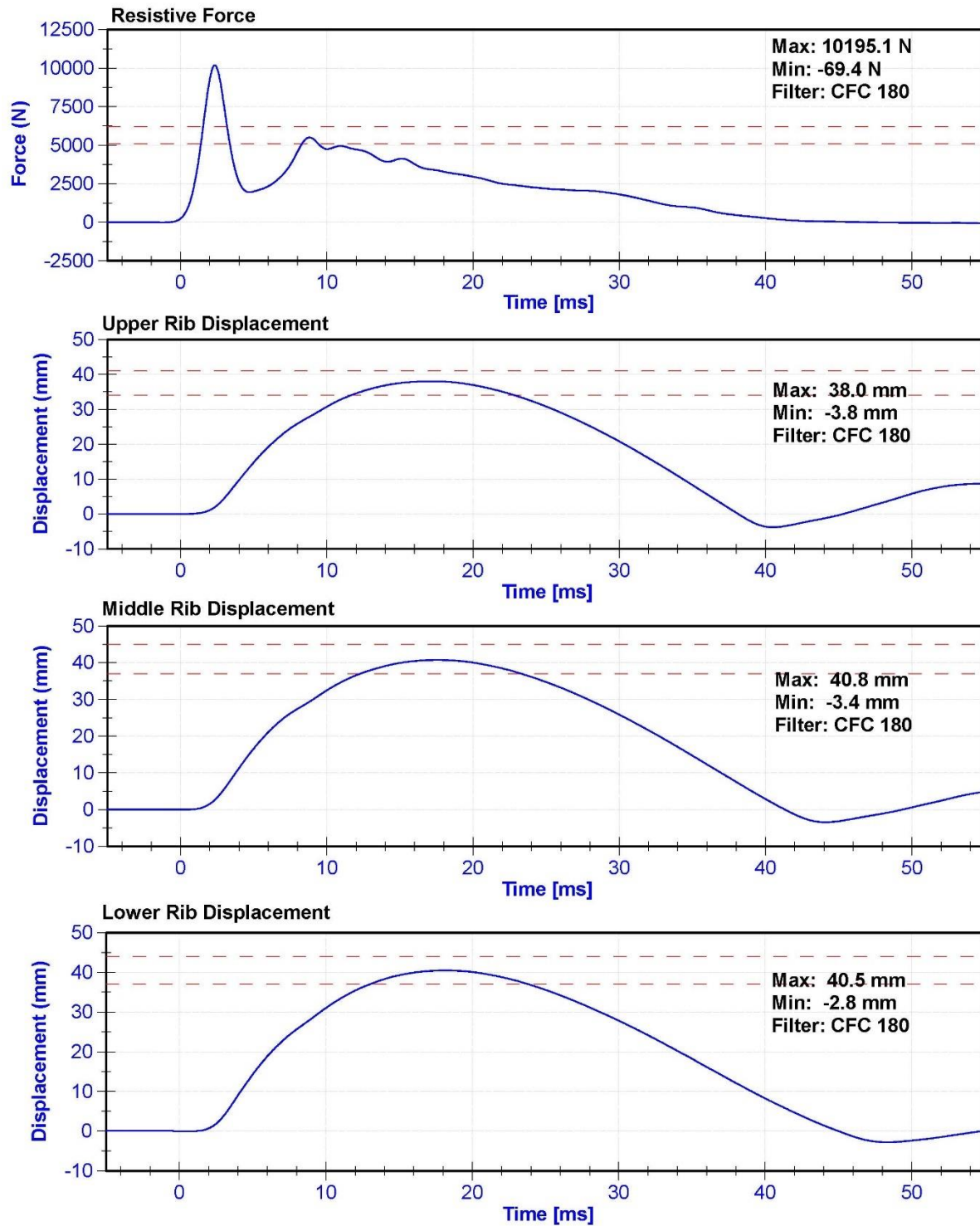
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.8	Pass
Humidity	10	70	%	41.1	Pass
Velocity	5.4	5.6	m/s	5.41	Pass
Resistive Force after 6ms	5100	6200	N	5505.0	Pass
Upper Thorax Rib Deflection	34	41	mm	38.0	Pass
Mid Thorax Rib Deflection	37	45	mm	40.8	Pass
Lower Thorax Rib Deflection	37	44	mm	40.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	T25885	10/25/2021	4/23/2022
Upper Thorax Rib Potentiometer	Honeywell	179GFE	2/1/2022	8/2/2022
Middle Thorax Rib Potentiometer	Honeywell	185GFE	2/1/2022	8/2/2022
Lower Thorax Rib Potentiometer	Honeywell	178GFE	2/1/2022	8/2/2022





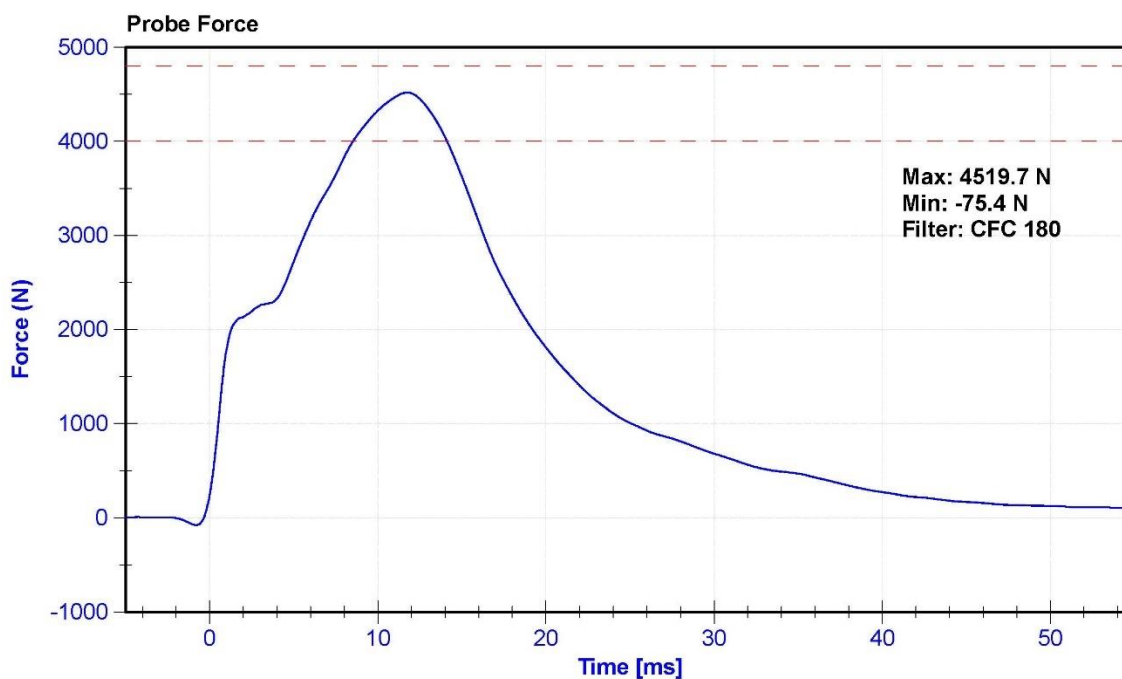
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

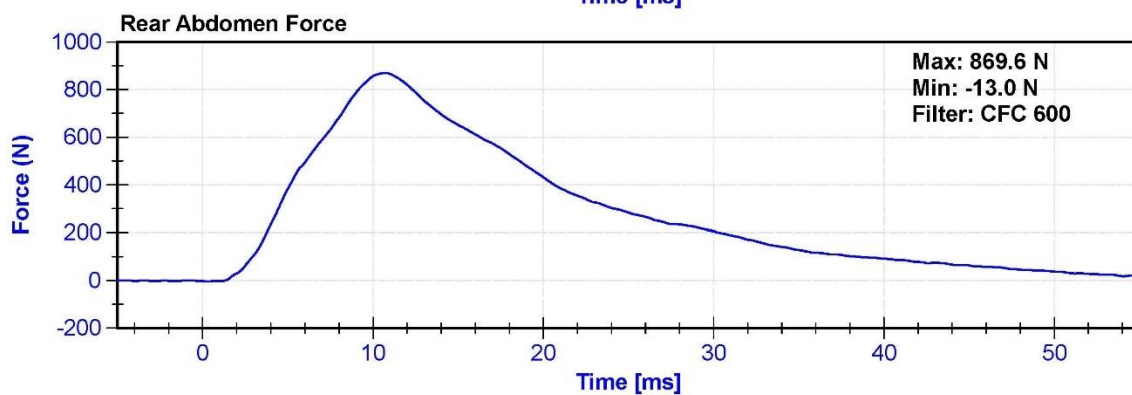
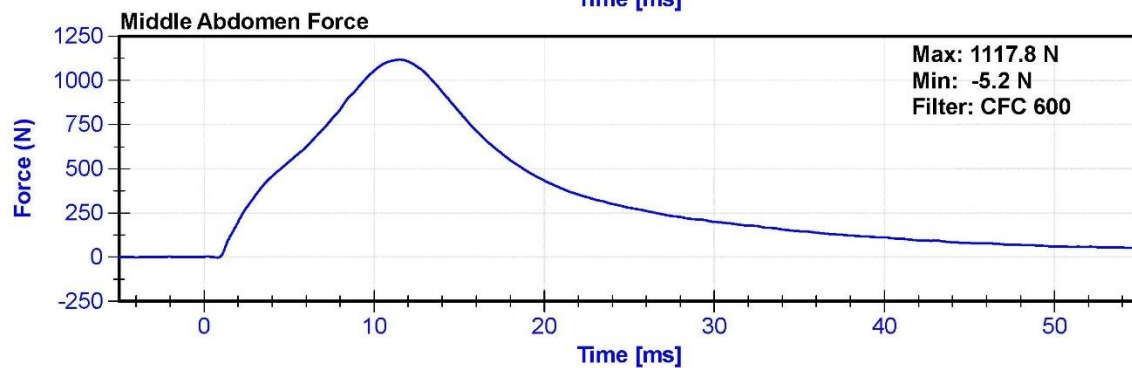
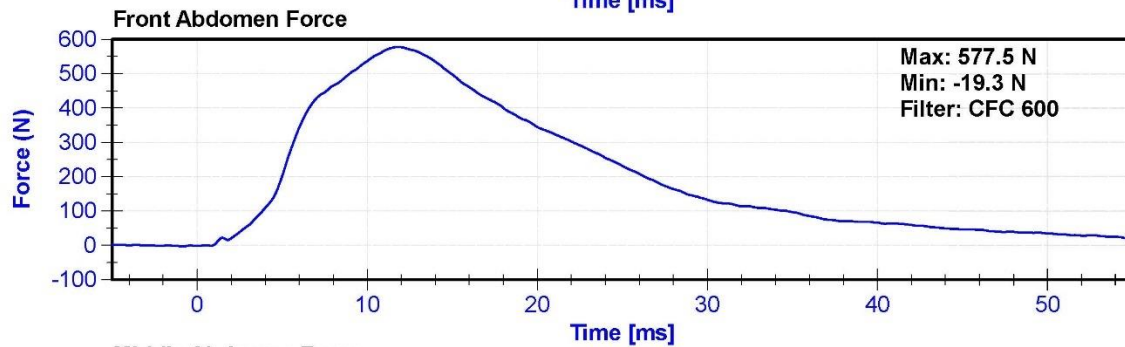
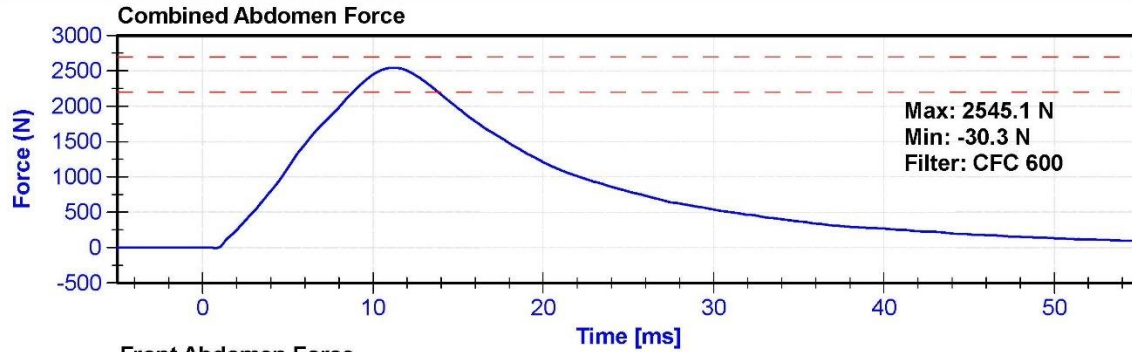
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.8	Pass
Humidity	10	70	%	41.1	Pass
Velocity	3.9	4.1	m/s	4.05	Pass
Combined Abdomen Force	2200	2700	N	2545.1	Pass
Time at Peak Abdomen Force	10.0	12.3	ms	11.20	Pass
Resistive Probe Force	4000	4800	N	4519.7	Pass
Time at Peak Resistive Force	10.6	13.0	ms	11.75	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	4/23/2022
Front Abdomen Load Cell	Denton	1512	8/2/2021	8/2/2022
Middle Abdomen Load Cell	Denton	1526	8/2/2021	8/2/2022
Rear Abdomen Load Cell	Denton	1512	8/2/2021	8/2/2022





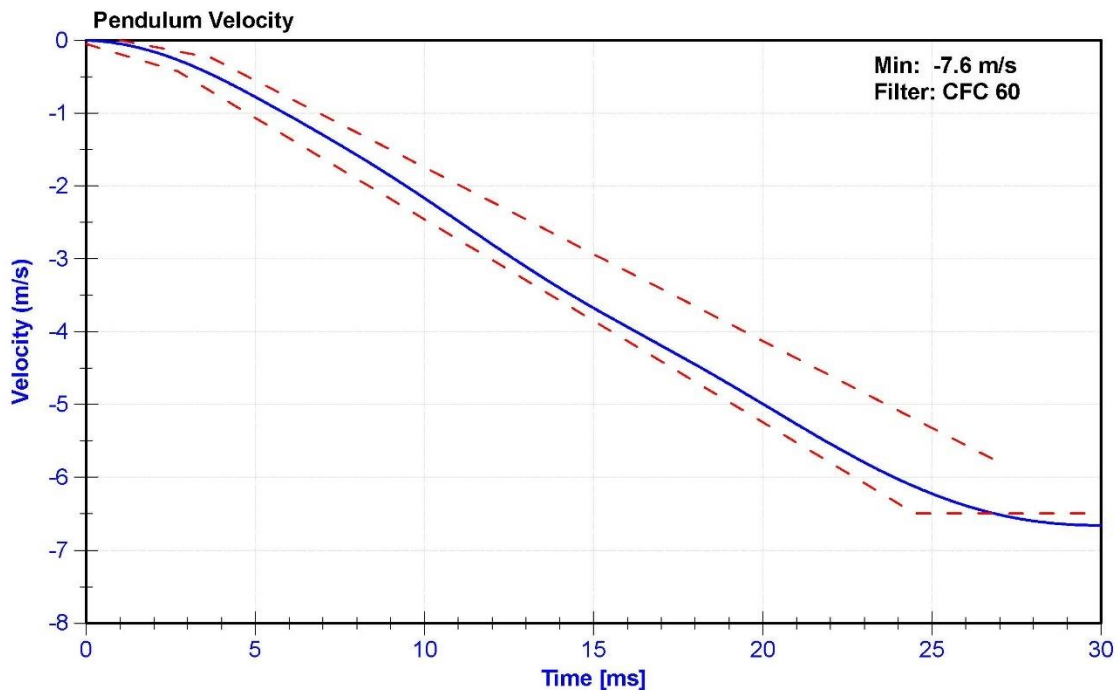
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

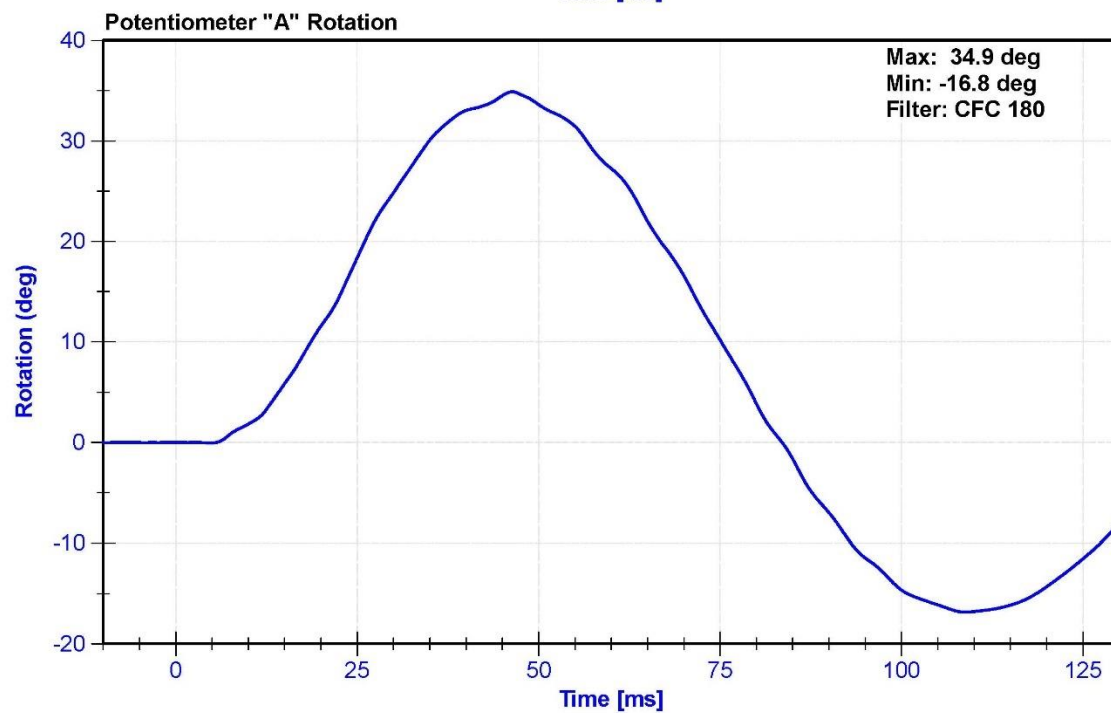
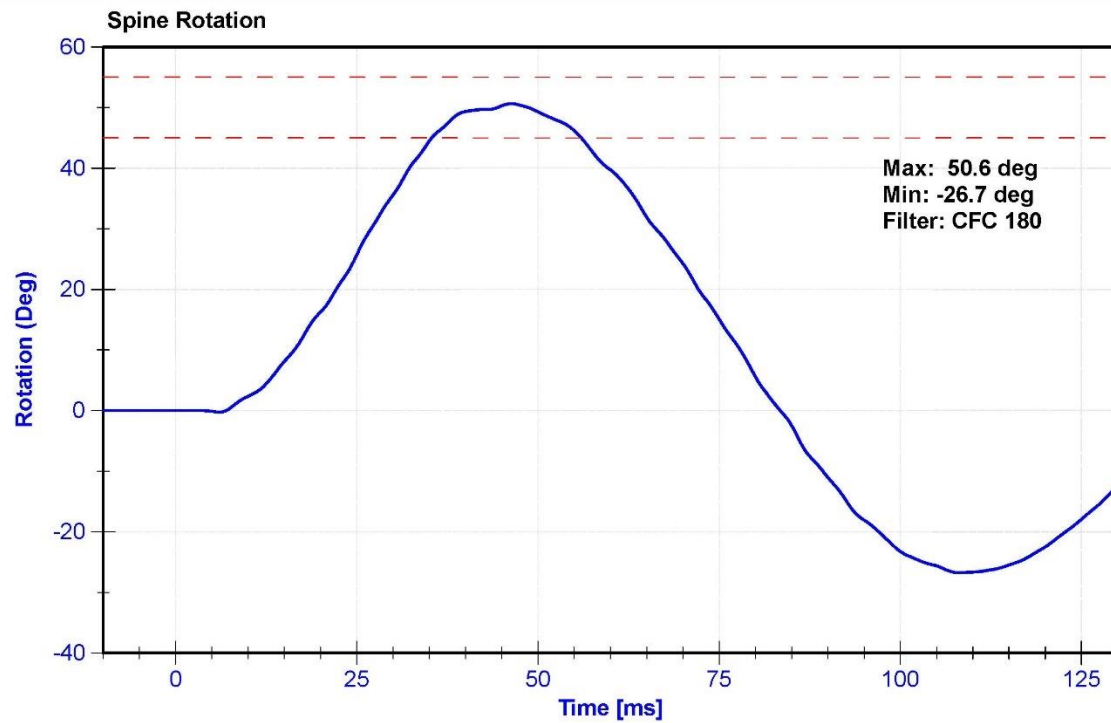
Results

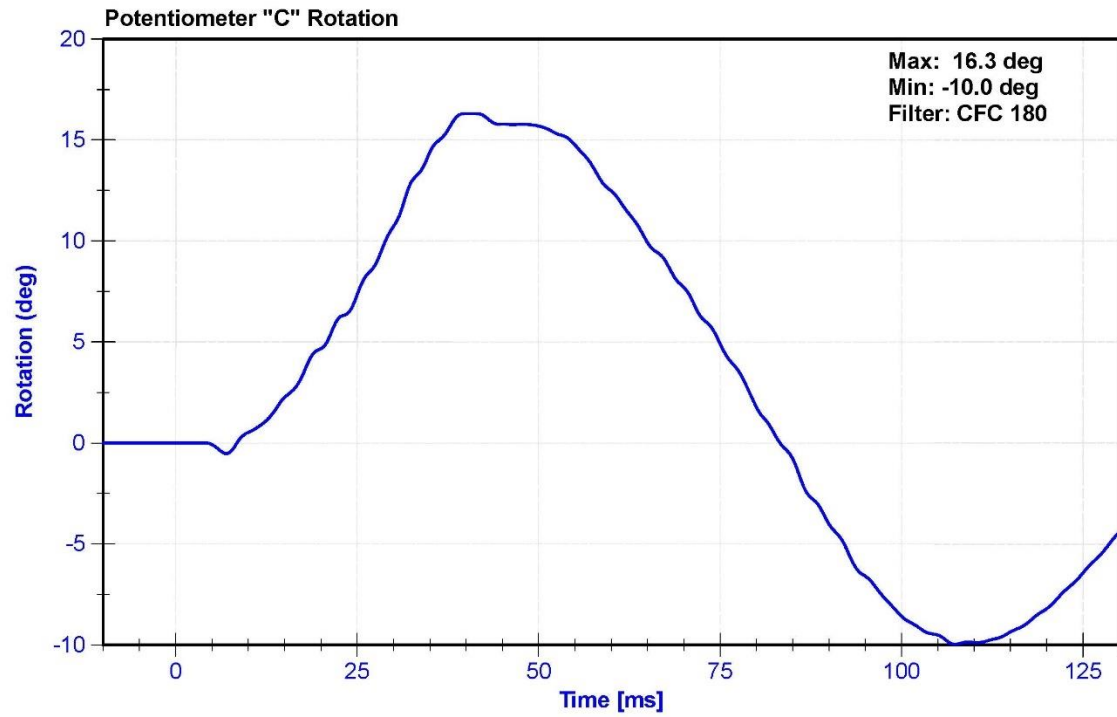
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.7	Pass
Humidity	10	70	%	32.3	Pass
Velocity	5.95	6.15	m/s	6.142	Pass
Lateral Spine Rotation	45	55	deg	50.6	Pass
Time at Maximum Rotation	39	53	ms	46.3	Pass
Time of Decay to Zero Degrees	37	57	ms	37.2	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	C16503	10/28/2021	10/28/2022
Pendulum "A" Potentiometer	Sfernice	094	10/1/2021	10/1/2022
Condyle "B" Potentiometer	Sfernice	095	10/1/2021	10/1/2022







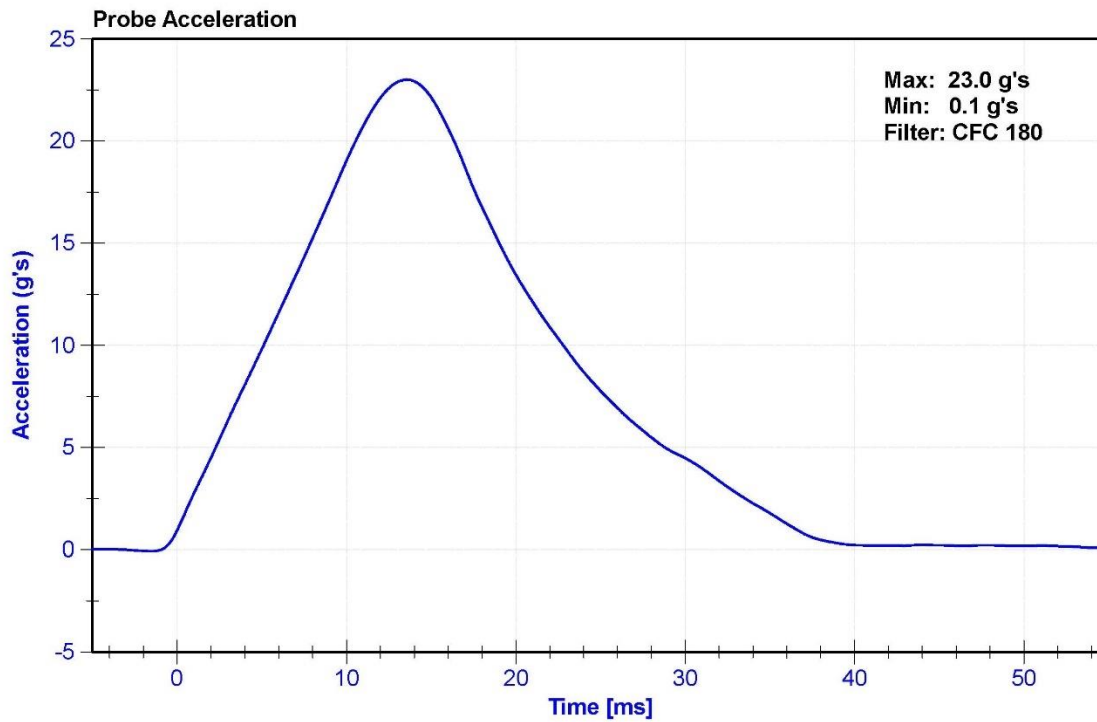
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

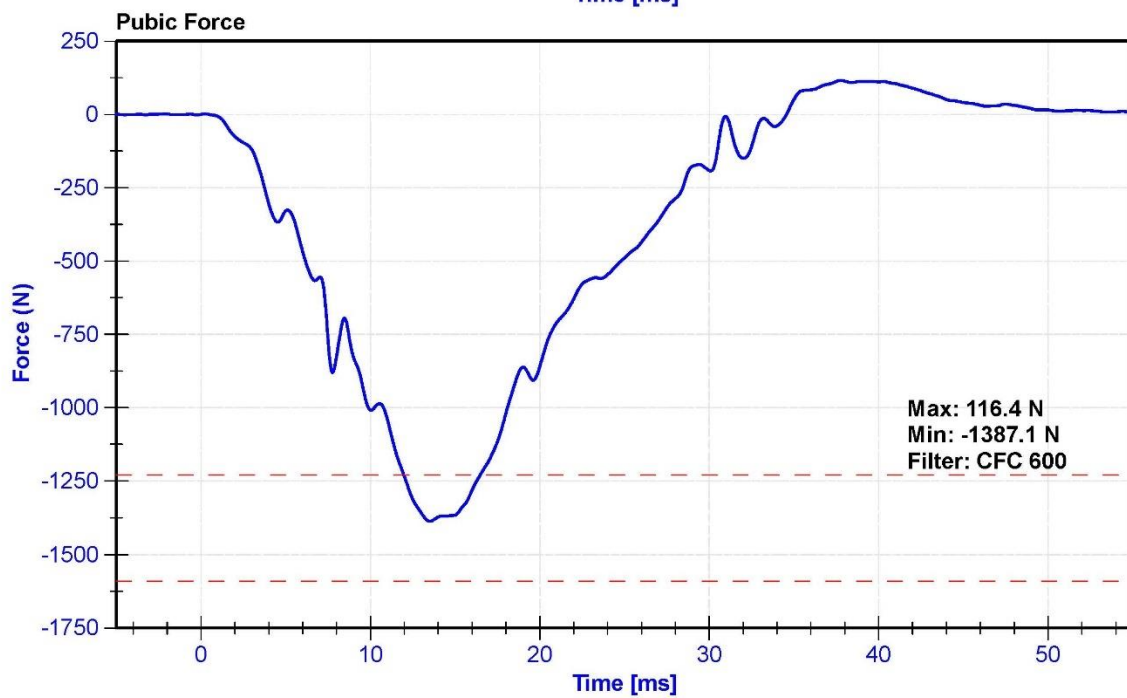
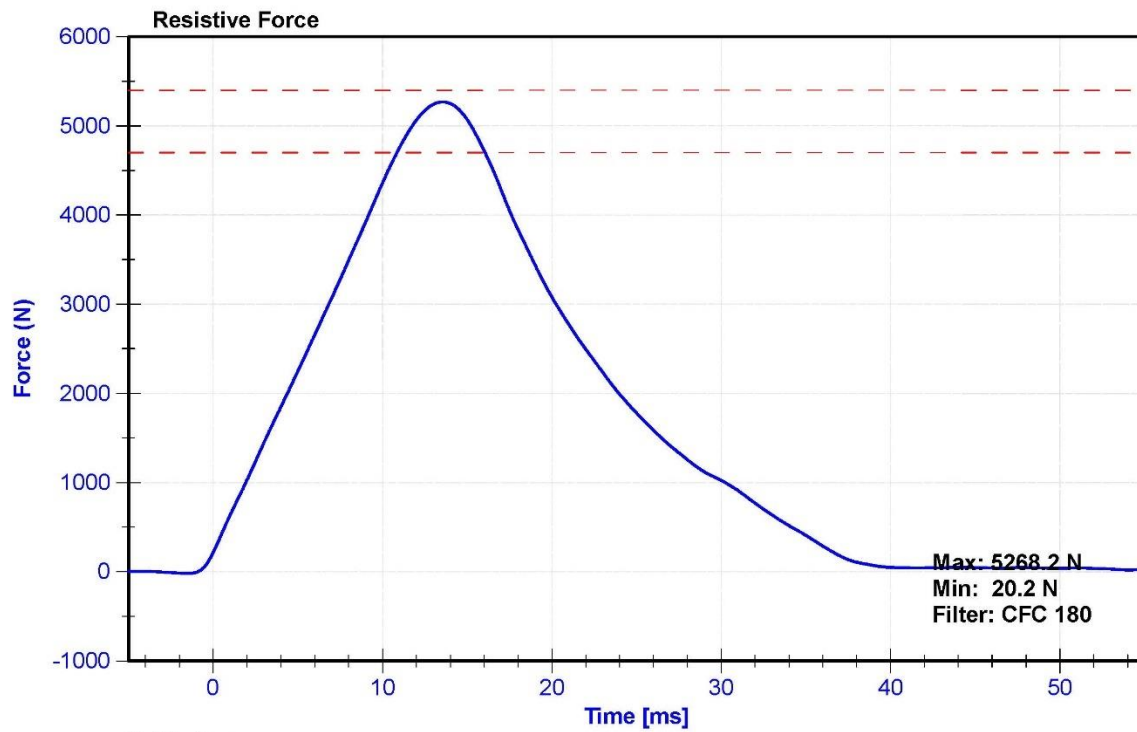
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.8	Pass
Humidity	10	70	%	41.1	Pass
Velocity	4.2	4.4	m/s	4.36	Pass
Resistive Force	4700	5400	N	5268.2	Pass
Time at Peak Resistive Force	11.8	16.1	ms	13.55	Pass
Pubic Force	-1590	-1230	N	-1387.1	Pass
Time at Peak Pubic Force	12.2	17.0	ms	13.50	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	4/23/2022
Pubic Load Cell	Denton	464-FY	8/2/2021	8/2/2022





CALIBRATION TEST RESULTS

PRE-TEST

SID-IIS 5TH PERCENTILE FEMALE - PASSENGER ATD

SERIAL No: DG8012

(CONFIGURED FOR LEFT SIDE IMPACT)

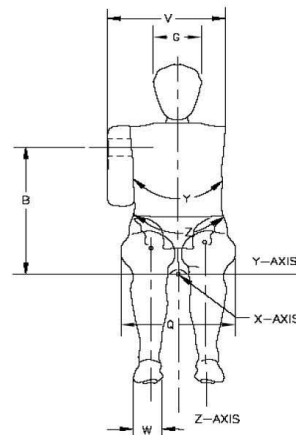
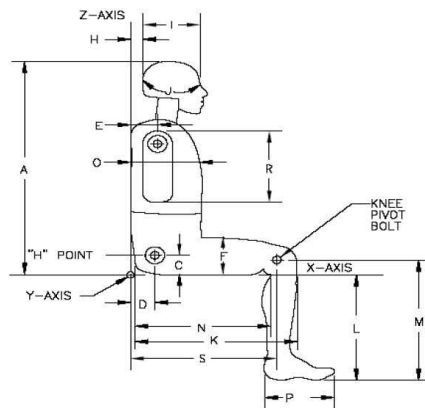


External Measurements - SID-IIs

Technician: J.Pericak

Date: 04/06/2022

Dummy Serial Number: DG8012



Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	772	788	780	Pass
B	Shoulder Pivot Height	437	453	445	Pass
C	H-point Height	79	89	85	Pass
D	H-point from seatback	141	151	145	Pass
E	Shoulder Pivot from Backline	97	107	105	Pass
F	Thigh Clearance	119	135	125	Pass
G	Head Breadth	140	148	145	Pass
H	Head Back from Backline	40	46	42	Pass
I	Head Depth	178	188	184	Pass
J	Head Circumference	541	551	545	Pass
K	Buttock to Knee Length	514	540	536	Pass
L	Popliteal Height	343	369	355	Pass
M	Knee Pivot to floor height	392	409	400	Pass
N	Buttock Popliteal Length	416	442	430	Pass
O	Chest Depth w/o jacket	195	211	209	Pass
P	Foot Length	216	232	225	Pass
Q	Hip Breadth (w/pelvic plugs)	313	323	320	Pass
R	Arm Length	249	259	250	Pass
S	Knee Joint to seatback	477	493	485	Pass
V	Shoulder Width	341	357	348	Pass
W	Foot Width	78	94	85	Pass
Y	Chest Circumference w/jacket	851	881	870	Pass
Z	Waist Circumference	761	791	775	Pass

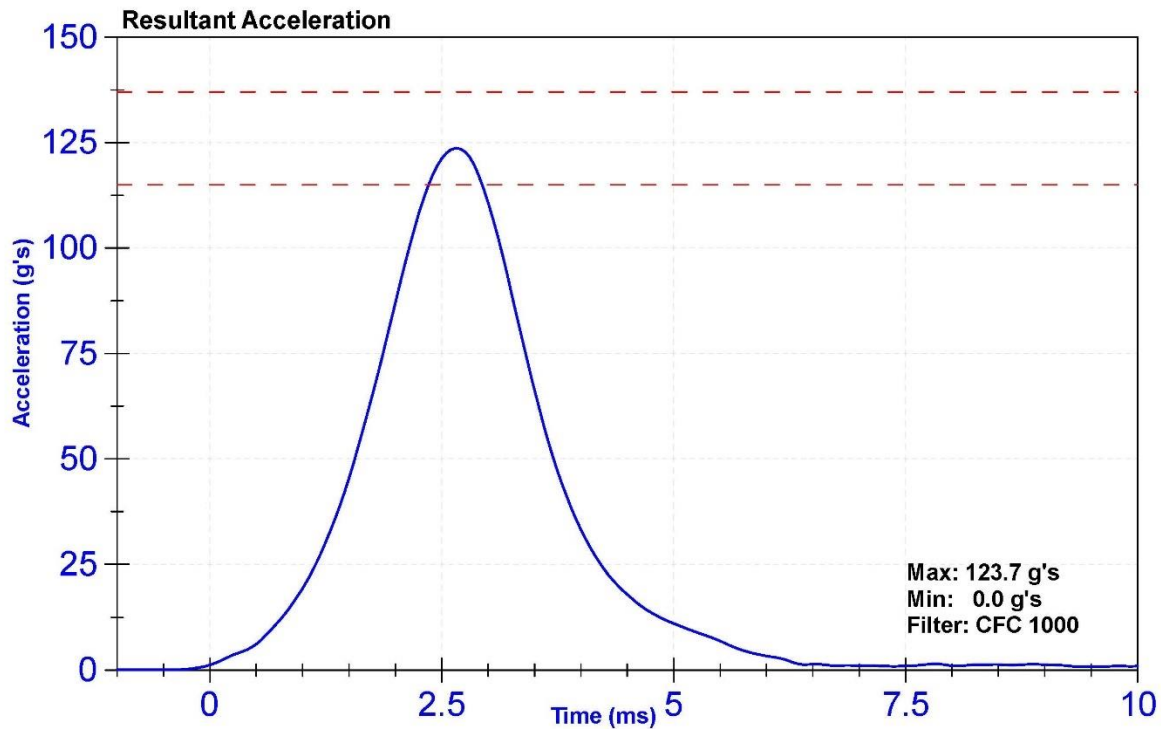
ATD Manufacturer	FTSS	Test Technician	D.Reinhard
ATD Serial Number	DG8012	Laboratory Supervisor	K. Brogan

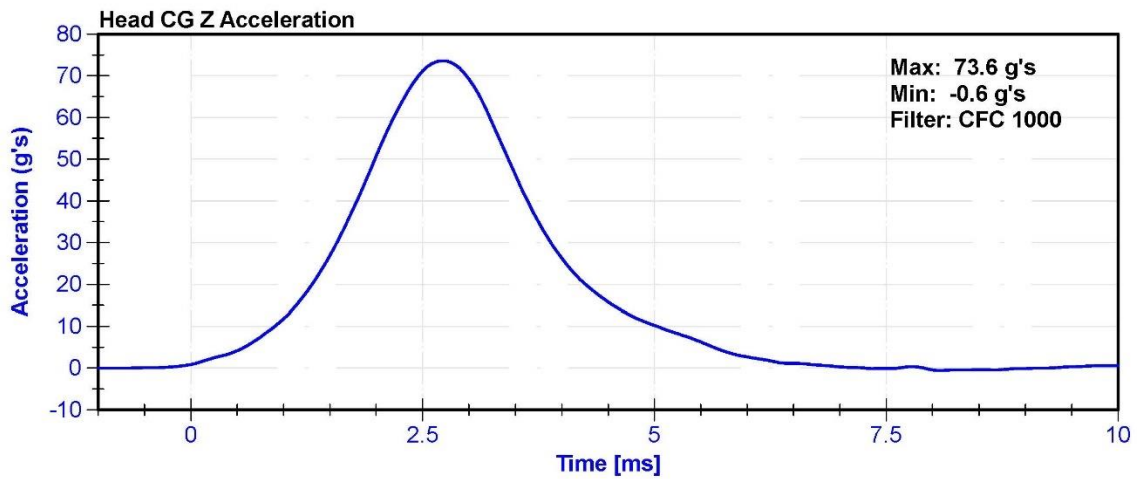
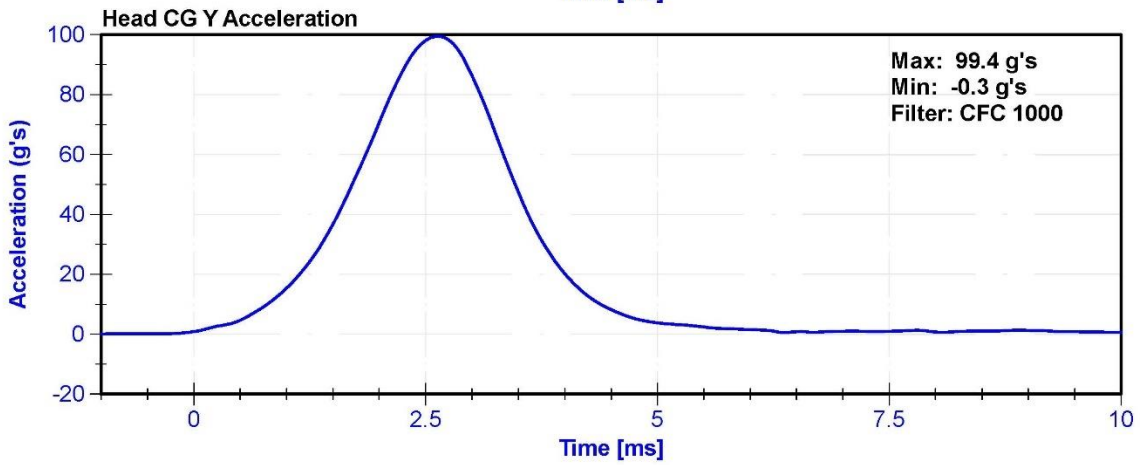
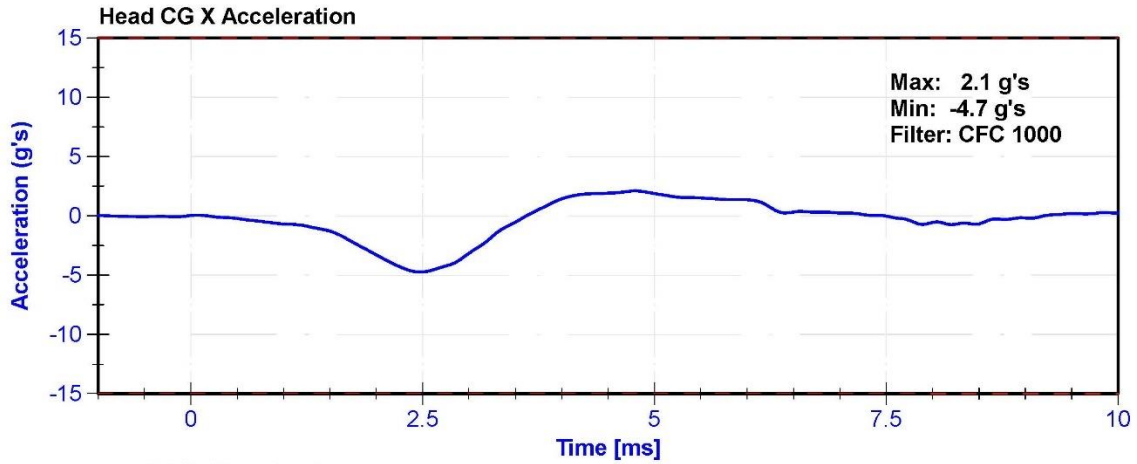
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.6	Pass
Humidity	10	70	%	31	Pass
Resultant Acceleration	115	137	g's	123.7	Pass
Oscillation	0	15	%	1.2	Pass
Fore-Aft Acceleration	-15	15	g's	-4.7	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	Endevco	P74788	1/10/2022	7/9/2022
Y Accelerometer	Endevco	P83432	1/10/2022	7/9/2022
Z Accelerometer	Endevco	P83319	1/10/2022	7/9/2022





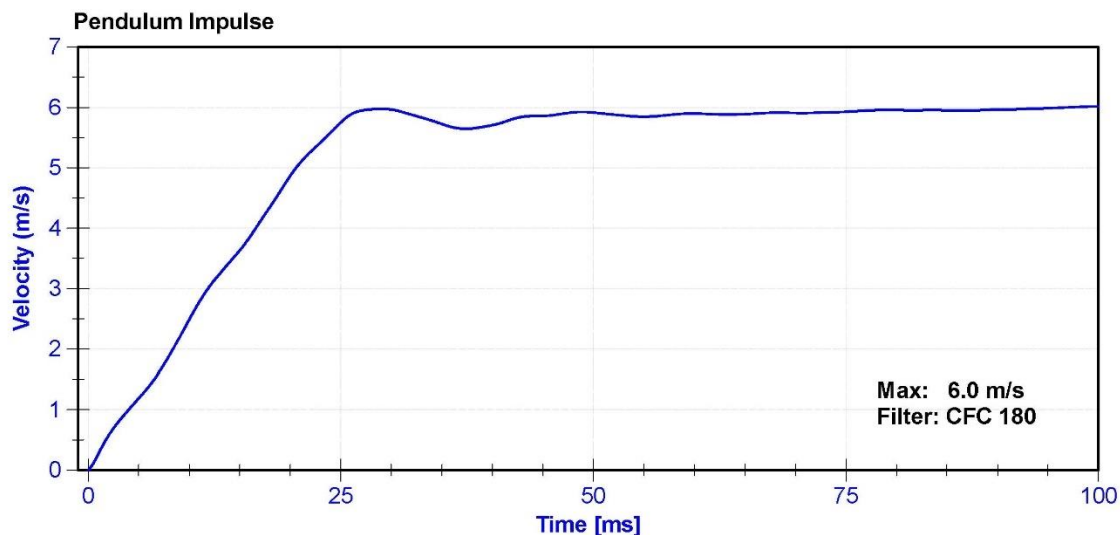
ATD Manufacturer	FTSS	Test Technician	D. Reinhard
ATD Serial Number	DG8012	Laboratory Supervisor	K. Brogan

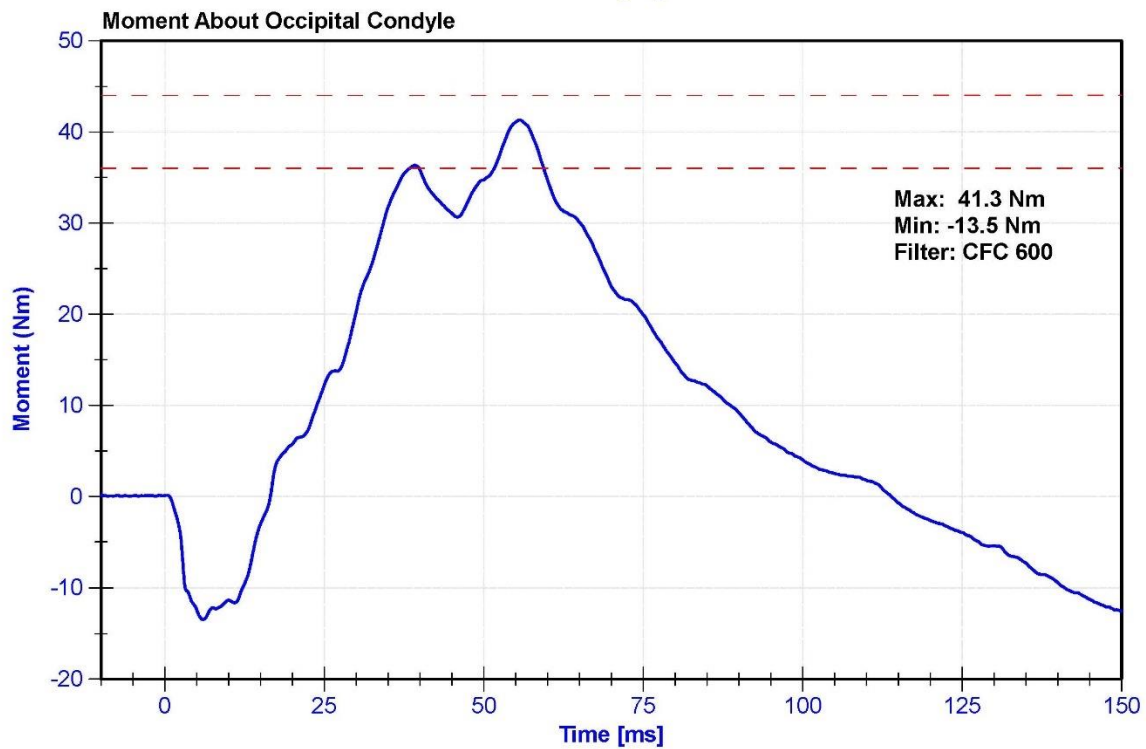
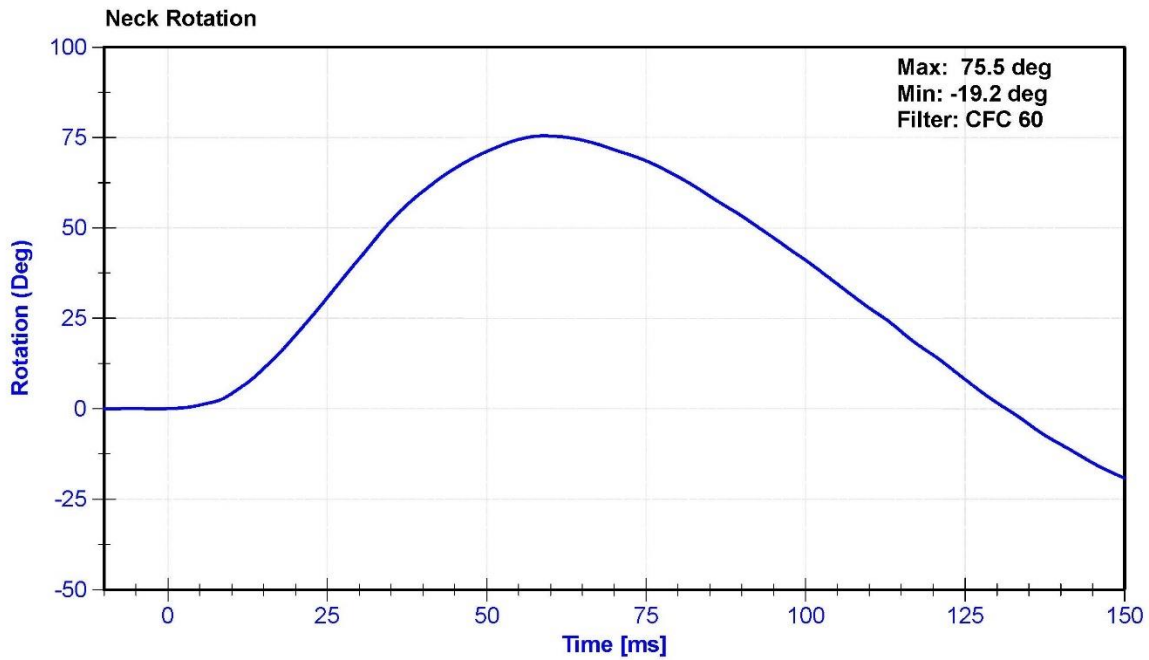
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.8	Pass
Humidity	10	70	%	29	Pass
Velocity	5.51	5.63	m/s	5.595	Pass
Pendulum Impulse at 10ms	2.2	2.8	m/s	2.49	Pass
Pendulum Impulse at 15ms	3.3	4.1	m/s	3.63	Pass
Pendulum Impulse at 20ms	4.4	5.4	m/s	4.87	Pass
Pendulum Impulse at 25ms	5.4	6.1	m/s	5.75	Pass
Pendulum Impulse from 25 to 100ms	5.5	6.2	m/s	6.01	Pass
Neck Rotation	71	81	deg	75.5	Pass
Time at Maximum Rotation	50	70	ms	59.0	Pass
Moment about the OC	36	44	Nm	41.3	Pass
Moment Decay to 0 Nm	102	126	ms	113.9	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	7231CT	10/28/2021	10/28/2022
Pendulum Potentiometer	Servo	4961	2/23/2022	2/23/2023
Condyle Potentiometer	Servo	DS185	11/12/2021	11/12/2022
Upper Neck Load Cell	Denton	1037	06/29/2021	06/29/2022





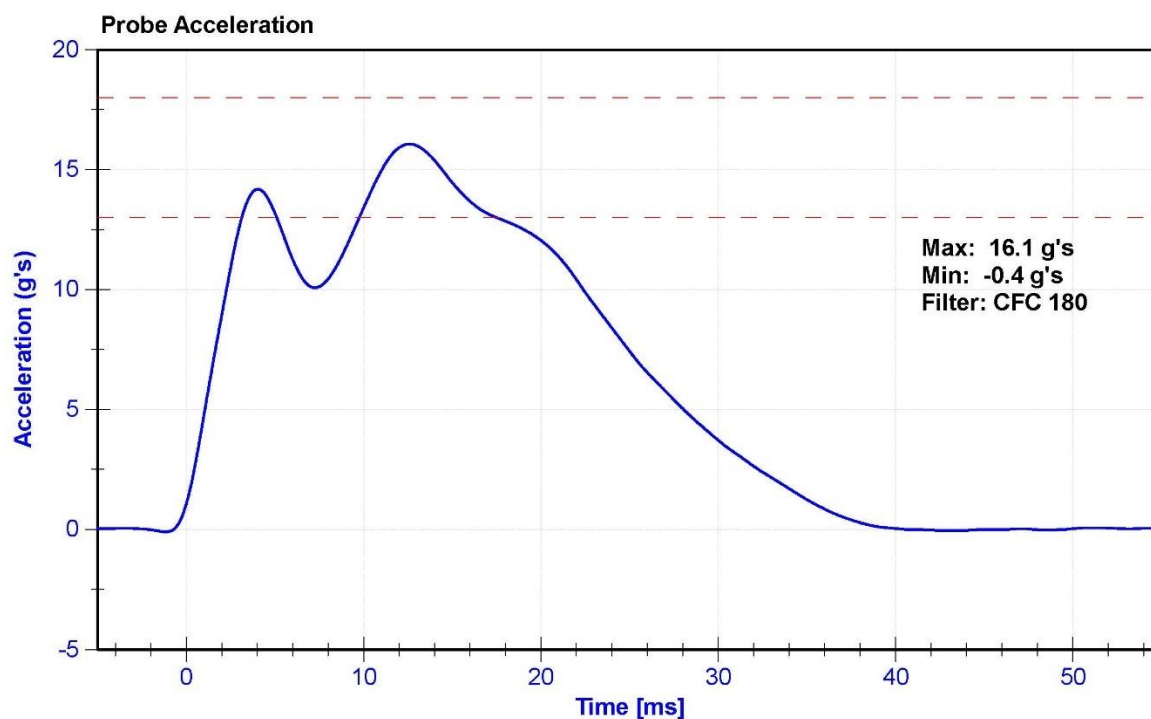
ATD Manufacturer	FTSS	Test Technician	D.Reinhard
ATD Serial Number	DG8012	Laboratory Supervisor	K. Brogan

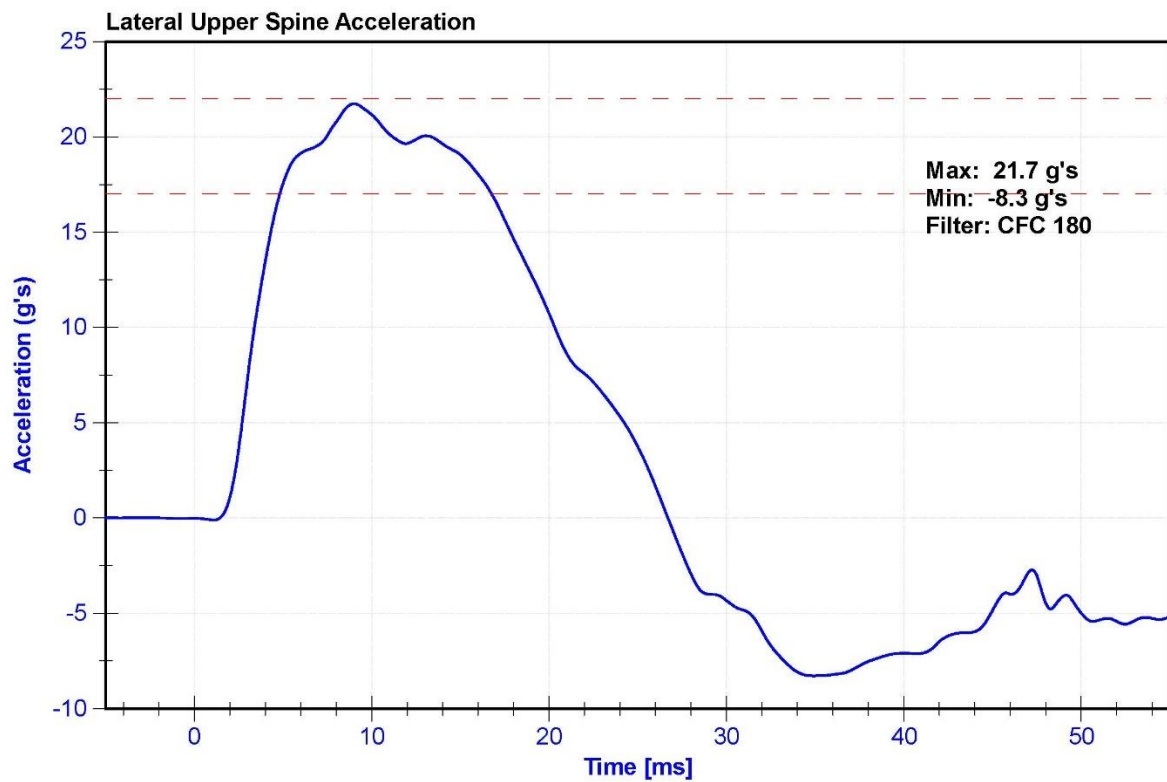
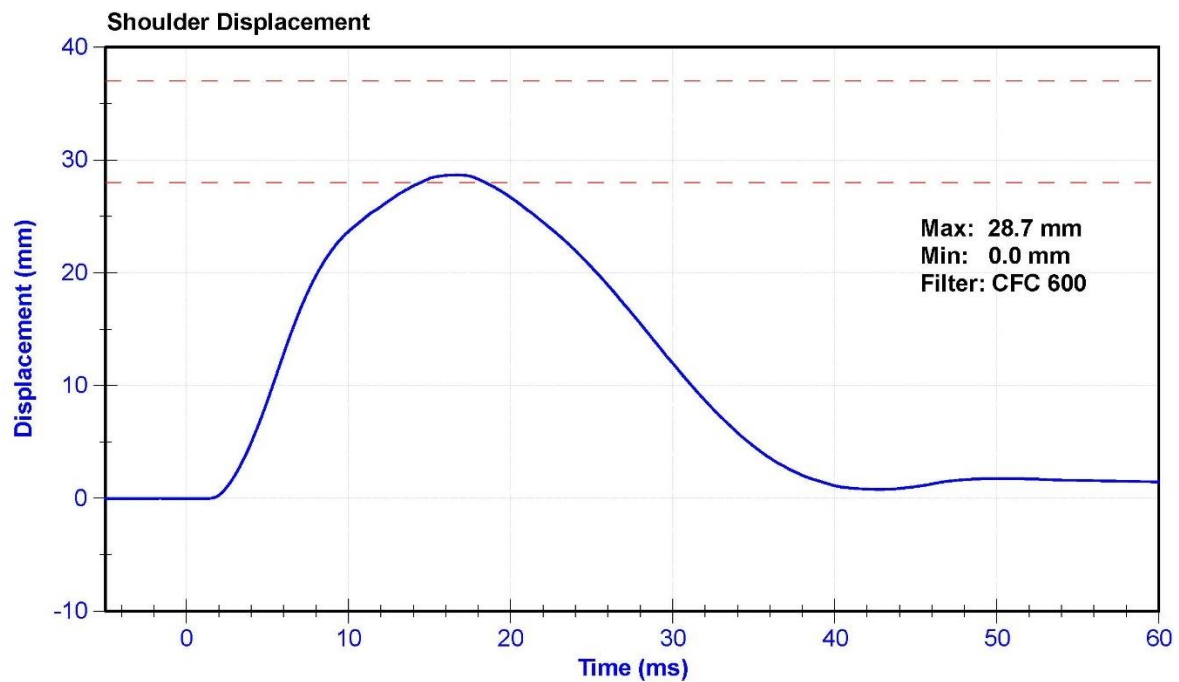
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.8	Pass
Humidity	10	70	%	27.3	Pass
Velocity	4.2	4.4	m/s	4.35	Pass
Probe Acceleration	13	18	g's	16.1	Pass
Shoulder Deflection	28	37	mm	28.7	Pass
Lateral Upper Spine Acceleration	17	22	g's	21.7	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	4/23/2022
Shoulder Potentiometer	Servo	045GFE	1/12/2022	7/13/2022
Upper Spine Y Accelerometer	Endevco	P64148	1/10/2022	7/9/2022





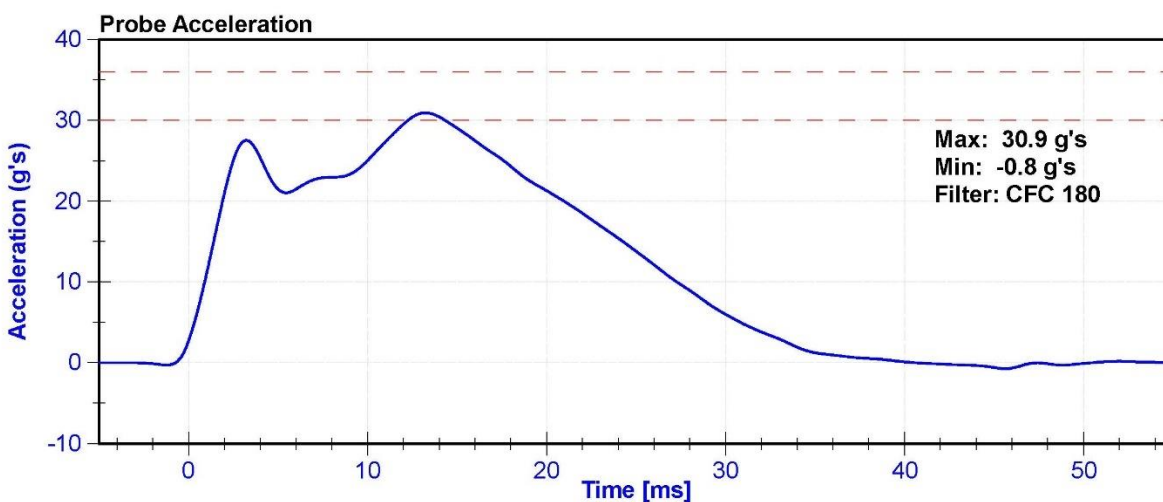
ATD Manufacturer	FTSS	Test Technician	D.Reinhard
ATD Serial Number	DG8012	Laboratory Supervisor	K. Brogan

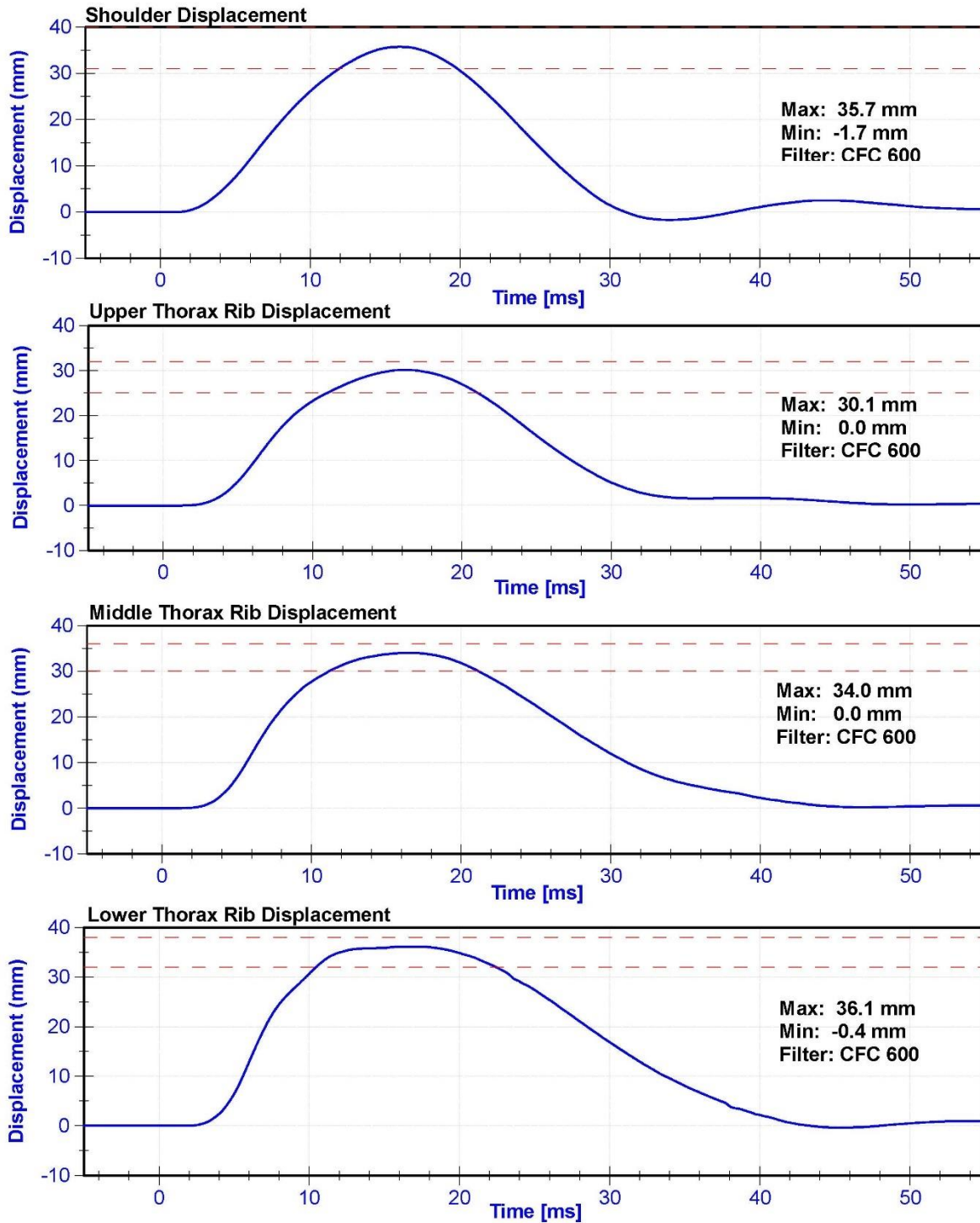
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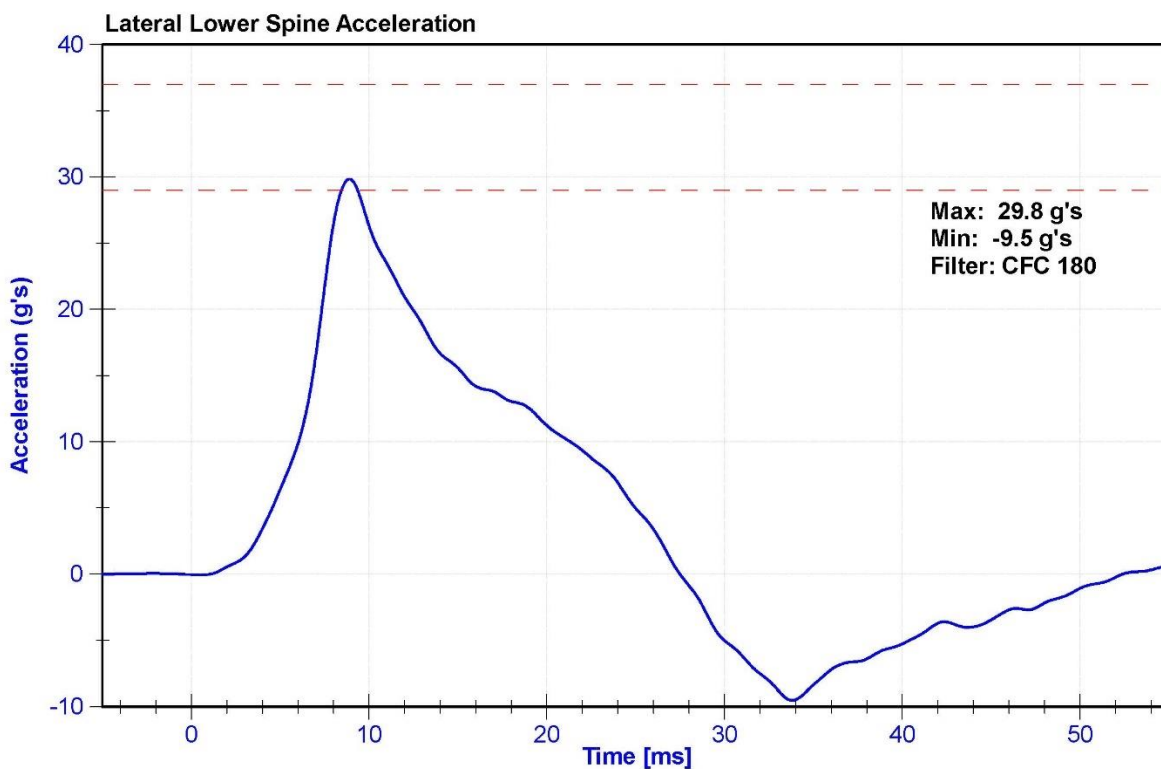
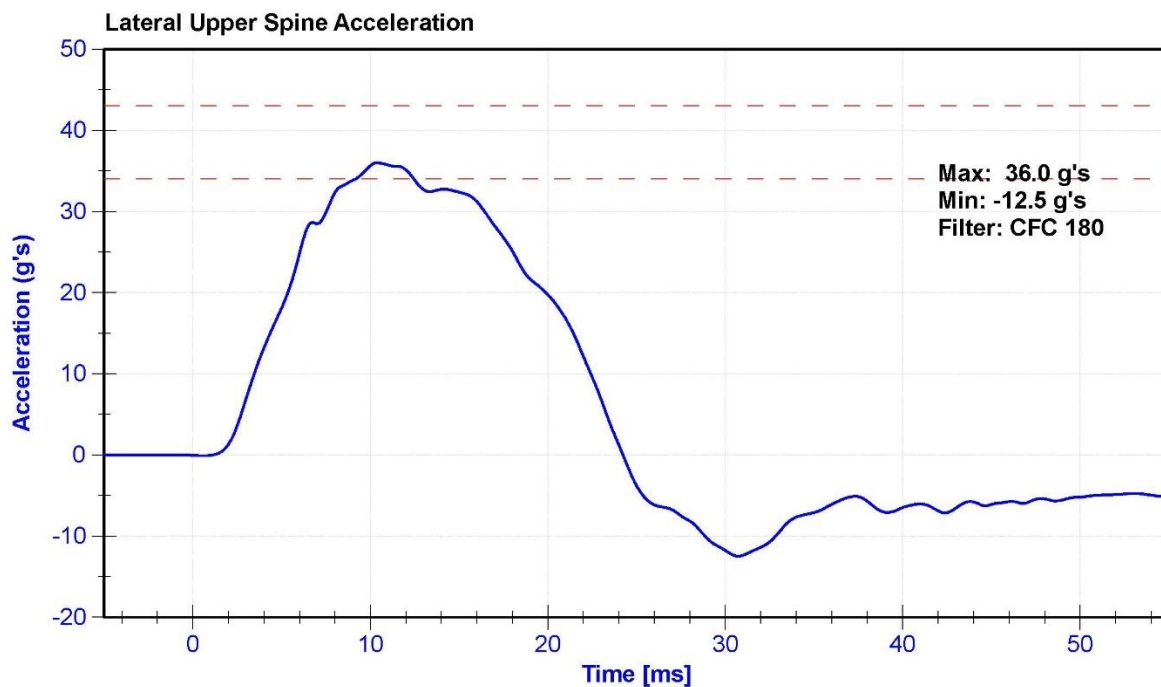
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	27.3	Pass
Velocity	6.6	6.8	m/s	6.68	Pass
Probe Acceleration after 5 ms	30	36	g's	30.9	Pass
Lateral Upper Spine Acceleration	34	43	g's	36.0	Pass
Lateral Lower Spine Acceleration	29	37	g's	29.8	Pass
Shoulder Deflection	31	40	mm	35.7	Pass
Upper Thorax Rib Deflection	25	32	mm	30.1	Pass
Mid Thorax Rib Deflection	30	36	mm	34.0	Pass
Lower Thorax Rib Deflection	32	38	mm	36.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	4/23/2022
Upper Spine T1 Y Accelerometer	Endevco	P64148	1/10/2022	7/9/2022
Upper Spine T12 Y Accelerometer	Endevco	P51327	1/10/2022	7/9/2022
Shoulder Potentiometer	Servo	045GFE	1/12/2022	7/13/2022
Upper Thorax Rib Potentiometer	Servo	1199GFE	1/12/2022	7/13/2022
Middle Thorax Rib Potentiometer	Servo	1246GFE	1/13/2022	7/14/2022
Lower Thorax Rib Potentiometer	Servo	011GFE	1/12/2022	7/13/2022







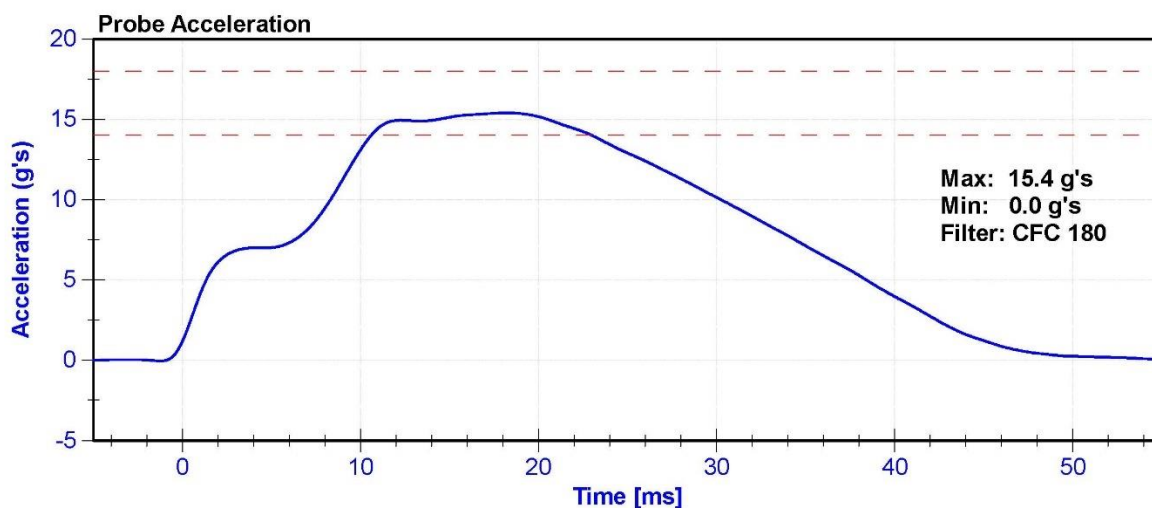
ATD Manufacturer	FTSS	Test Technician	D.Reinhard
ATD Serial Number	DG8012	Laboratory Supervisor	K. Brogan

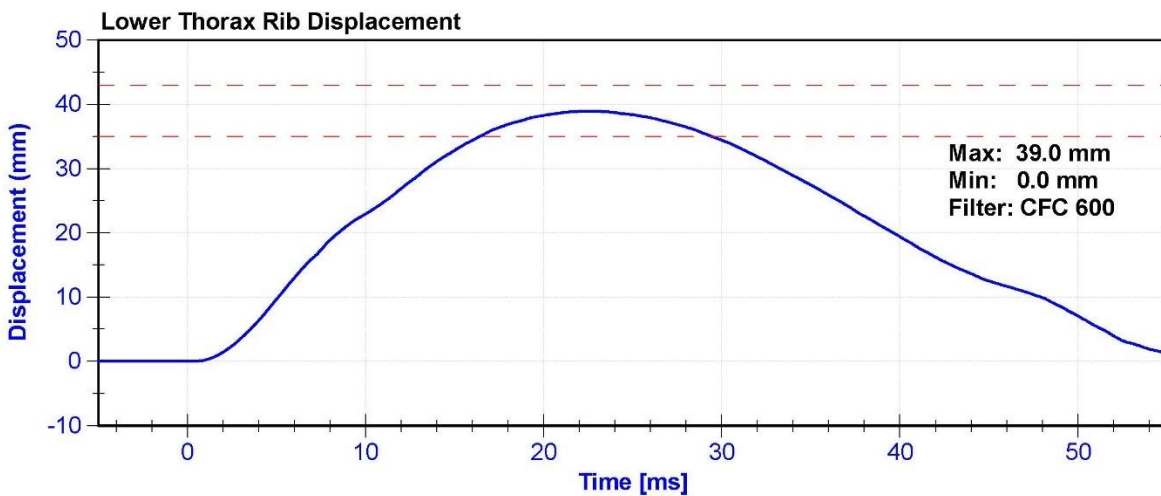
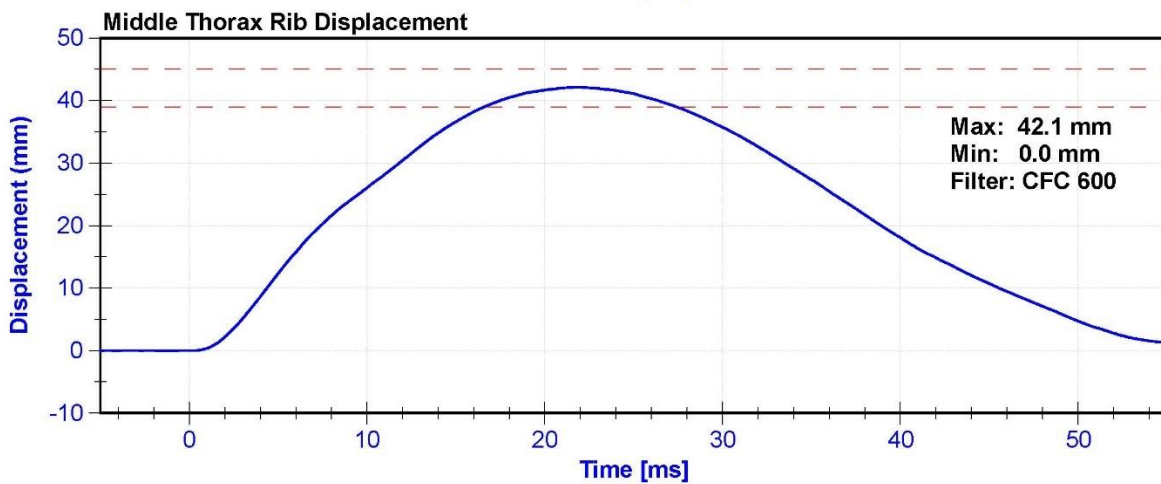
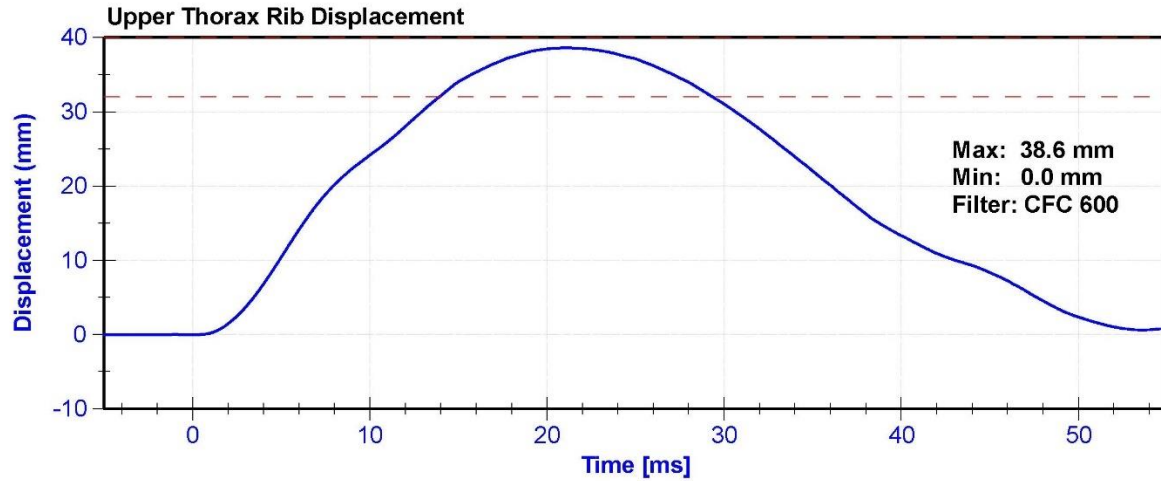
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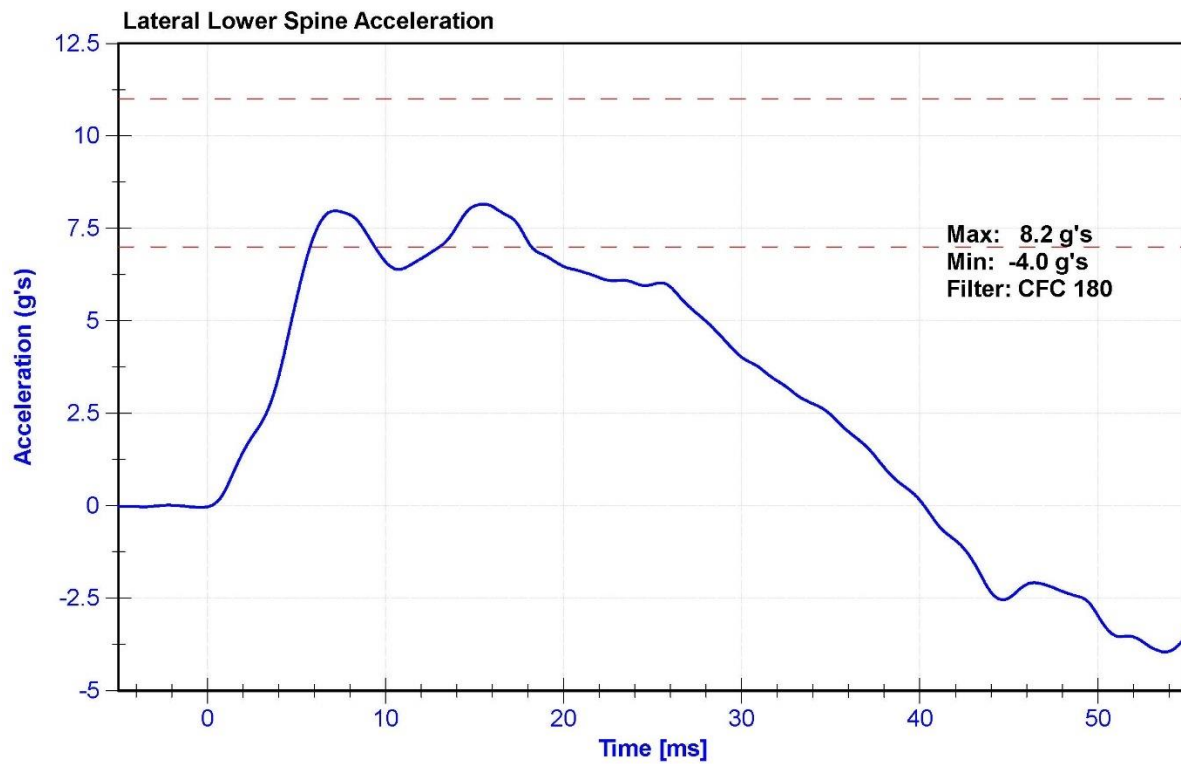
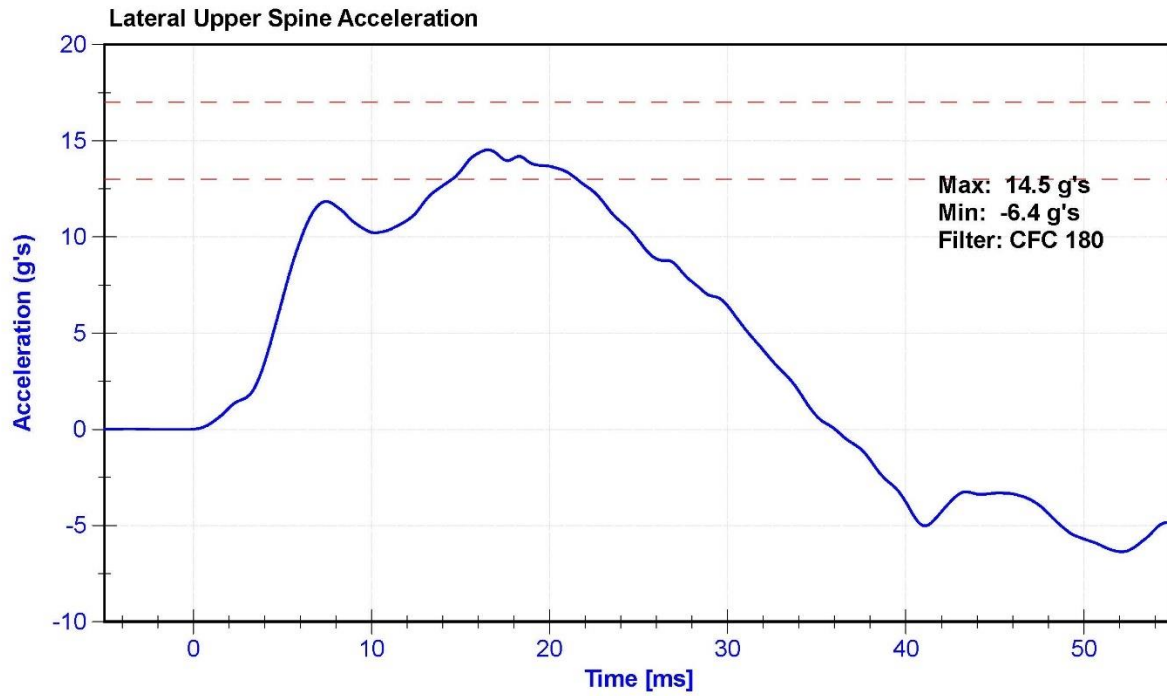
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	27.3	Pass
Velocity	4.2	4.4	m/s	4.31	Pass
Probe Acceleration	14	18	g's	15.4	Pass
Lateral Upper Spine Acceleration	13	17	g's	14.5	Pass
Lateral Lower Spine Acceleration	7	11	g's	8.2	Pass
Upper Thorax Rib Deflection	32	40	mm	38.6	Pass
Middle Thorax Rib Deflection	39	45	mm	42.1	Pass
Lower Thorax Rib Deflection	35	43	mm	39.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	4/23/2022
Upper Spine Y Accelerometer	Endevco	P64148	1/10/2022	7/9/2022
Lower Spine Y Accelerometer	Endevco	P51327	1/10/2022	7/9/2022
Upper Thorax Rib Potentiometer	Servo	1199GFE	1/12/2022	7/13/2022
Middle Thorax Rib Potentiometer	Servo	1246GFE	1/13/2022	7/14/2022
Lower Thorax Rib Potentiometer	Servo	011GFE	1/12/2022	7/13/2022







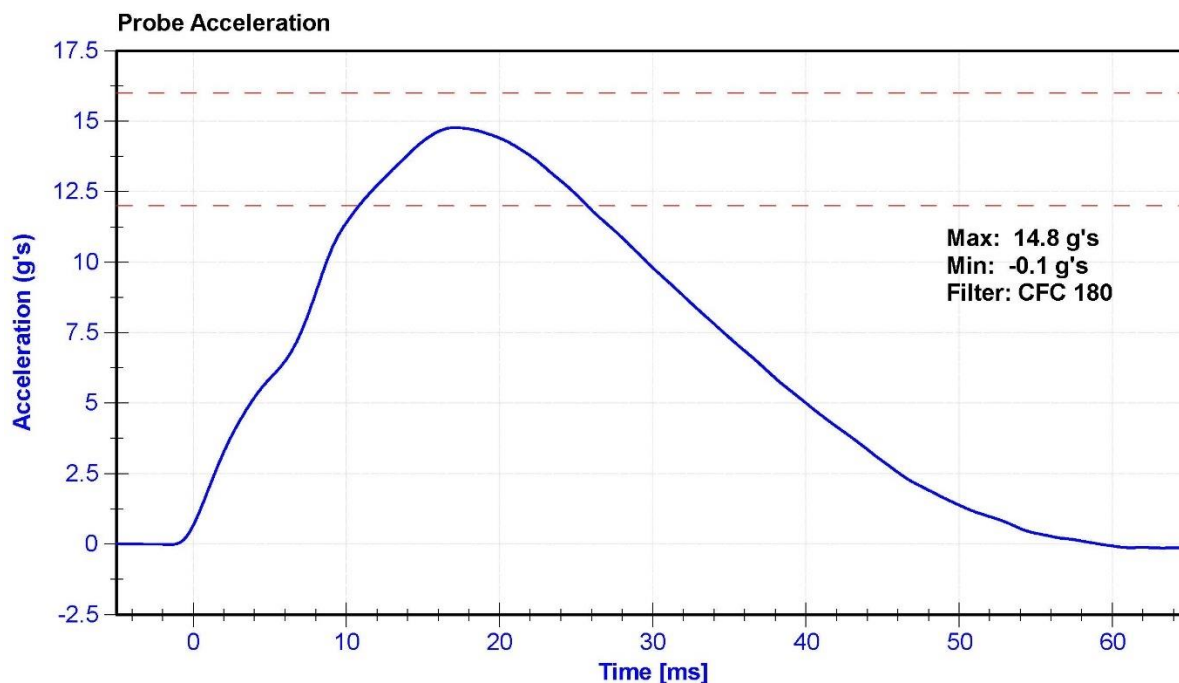
ATD Manufacturer	FTSS	Test Technician	D.Reinhard
ATD Serial Number	DG8012	Laboratory Supervisor	K. Brogan

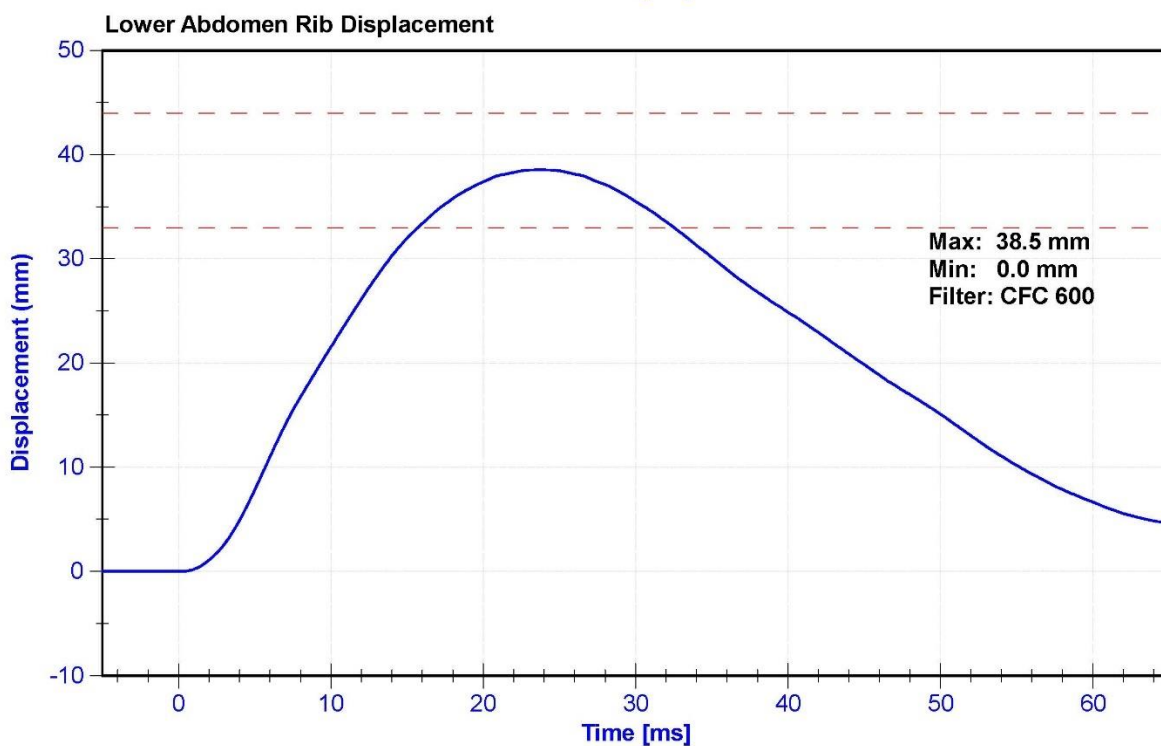
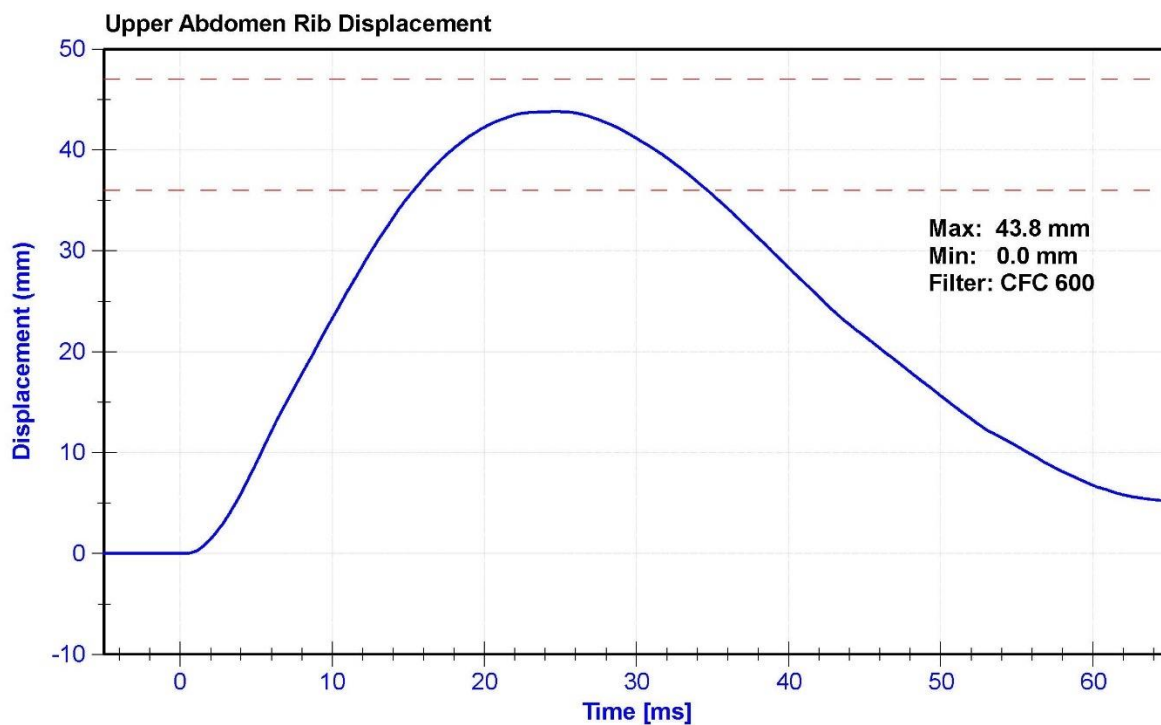
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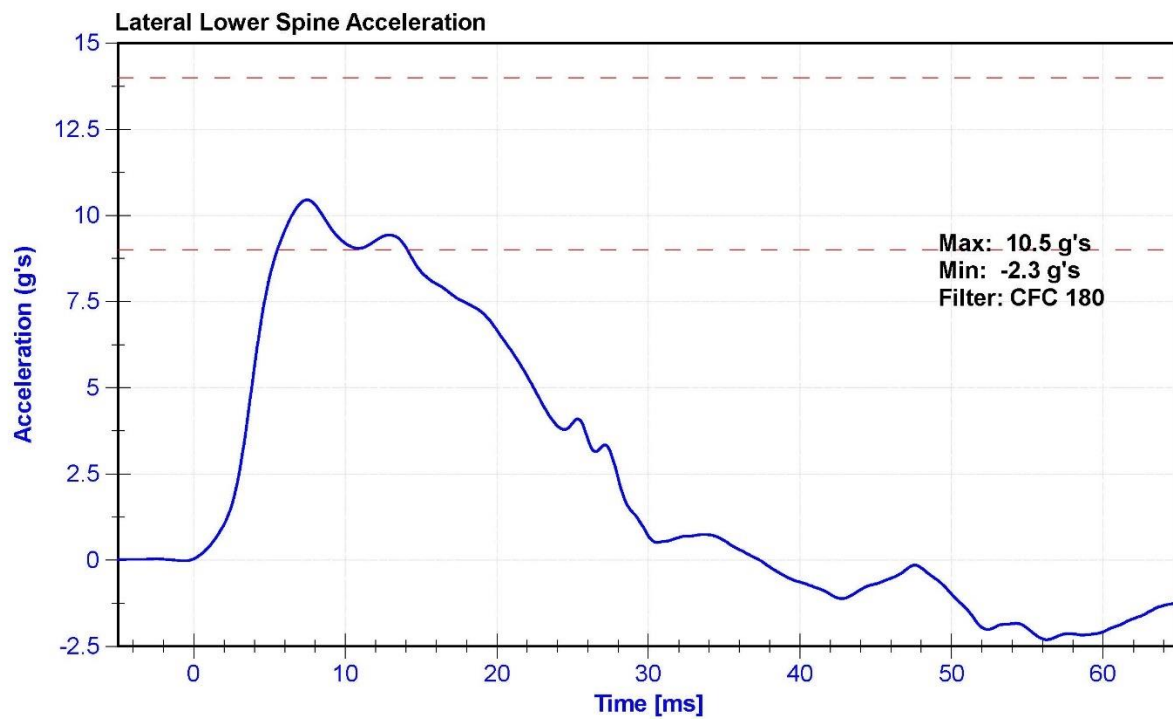
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	27.3	Pass
Velocity	4.2	4.4	m/s	4.31	Pass
Probe Acceleration	12	16	g's	14.8	Pass
Lateral Lower Spine Acceleration	9	14	g's	10.5	Pass
Upper Abdomen Rib Deflection	36	47	mm	43.8	Pass
Lower Abdomen Rib Deflection	33	44	mm	38.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	T25885	10/25/2021	4/23/2022
Lower Spine Y Accelerometer	Endevco	P51327	1/10/2022	7/9/2022
Upper Abdomen Rib Potentiometer	Servo	008GFE	1/12/2022	7/13/2022
Lower Abdomen Rib Potentiometer	Servo	041 GFE	1/12/2022	7/13/2022







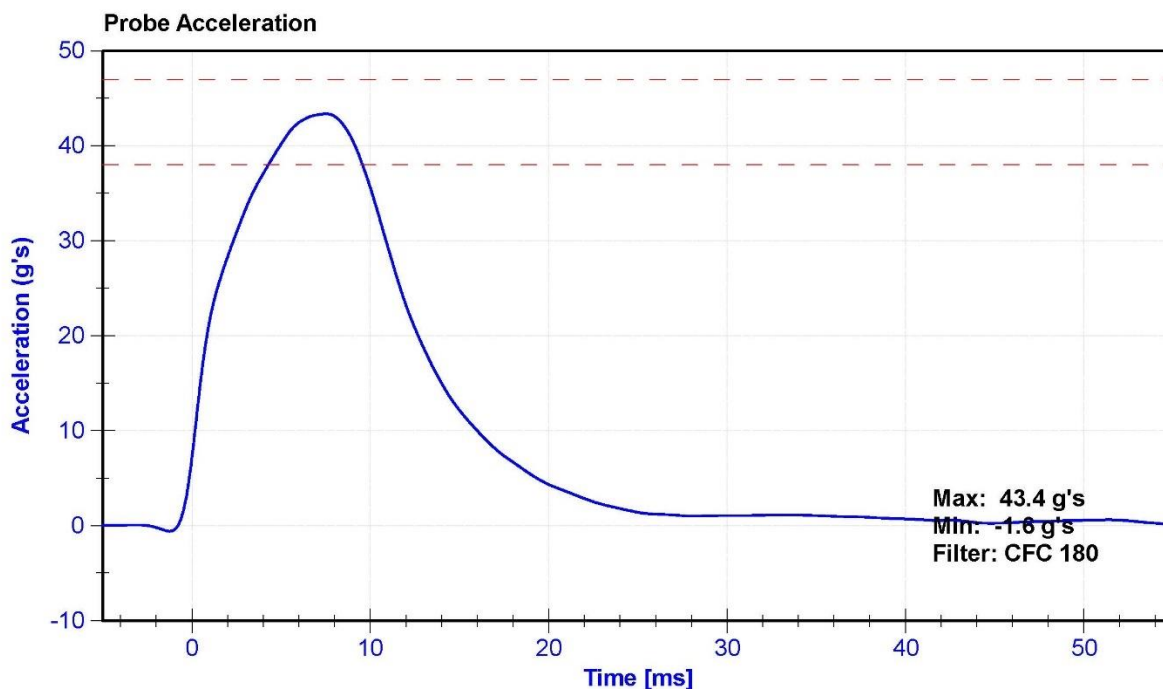
ATD Manufacturer	FTSS	Test Technician	D.Reinhard
ATD Serial Number	DG8012	Laboratory Supervisor	K. Brogan

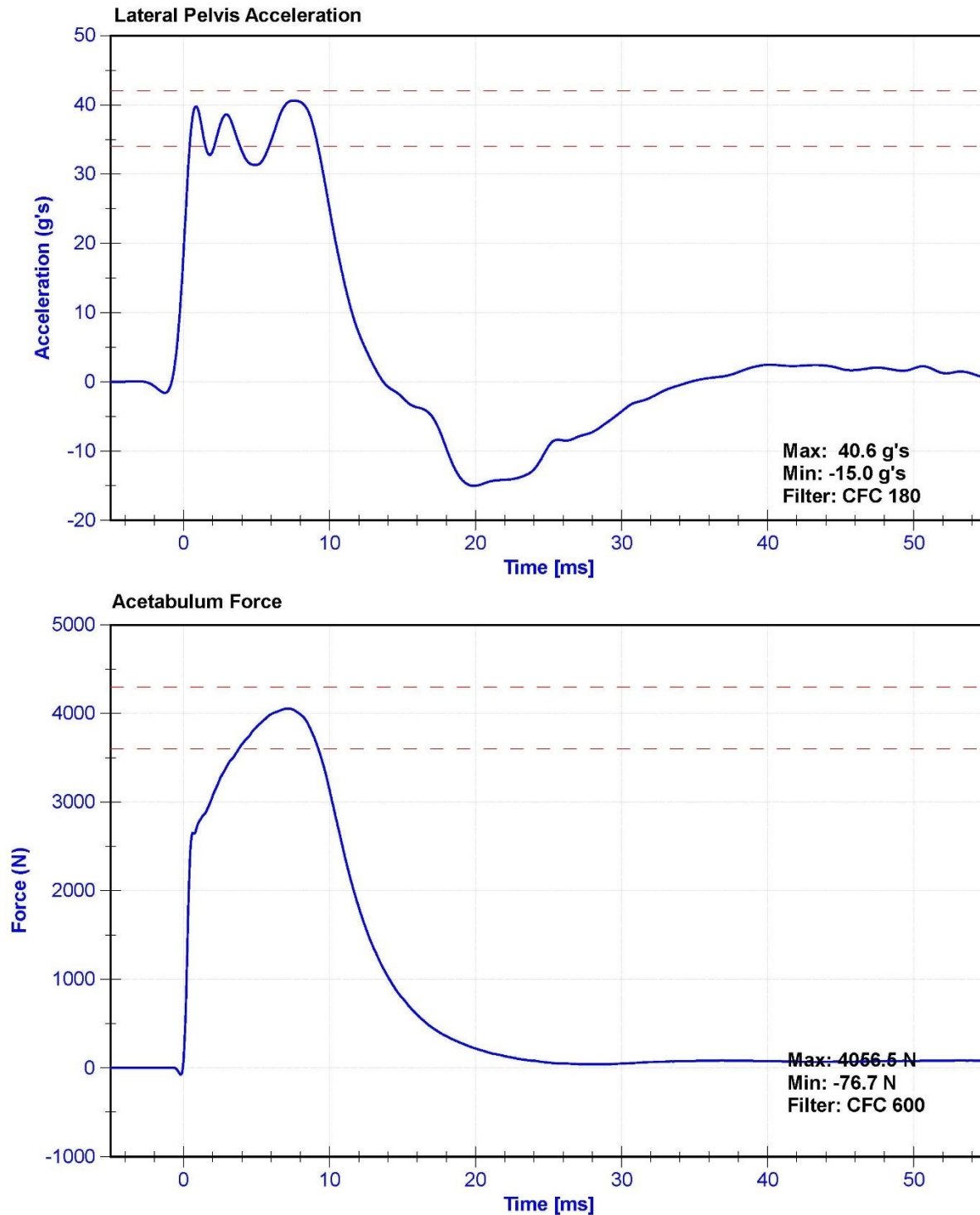
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	27.3	Pass
Velocity	6.6	6.8	m/s	6.61	Pass
Probe Acceleration	38	47	g's	43.4	Pass
Lateral Pelvis Acceleration after 6ms	34	42	g's	40.6	Pass
Acetabulum Force	3600	4300	N	4056.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	4/23/2022
Pelvis Y Accelerometer	Endevco	P51875	1/10/2022	7/9/2022
Acetabulum Load Cell	Denton	276-FY	9/14/2021	9/14/2022
Certification Plug	SACO			N/A
Crash Test Plug	SACO			N/A







DC-2012
cert
4-4-22

SID-11s Pelvis Plug Certification Test

Plug S/N 14063

Test Number 13537

Report Number 13582

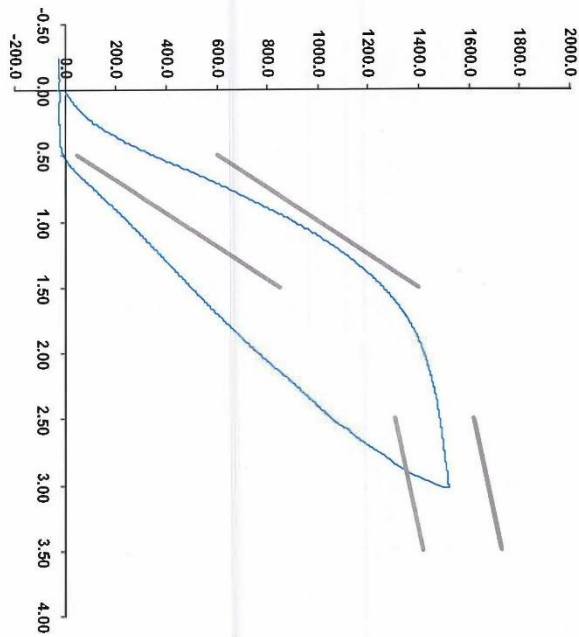
Test Date 5/25/2020 11:19:31 AM

Force (-N) vs Extension (-mm)

Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	50	600
Force @ 1.5 mm (N)	850	1,400
Force @ 2.5 mm (N)	1,306	1,618
Force @ 3.0 mm (N)	1,381	1,673

Testing Machine STM-20 5965542
Load Cell S/N (F1360947), Units (LBS) 1000
Crosshead Speed (mm/min) or Rate 12.7
Extension or Position Measured by XHD_100 (XHD100)

Notes:



Operator 14061

Part Number 180-4450

Template No 107 08-Jul-21
SACO Research

By : _____ Date : _____

SACO Research 41735 Elm St. #401 Murrieta, CA 92562 Tel 310-694-2082 FAX



Dog sled
Crash
4-4-22

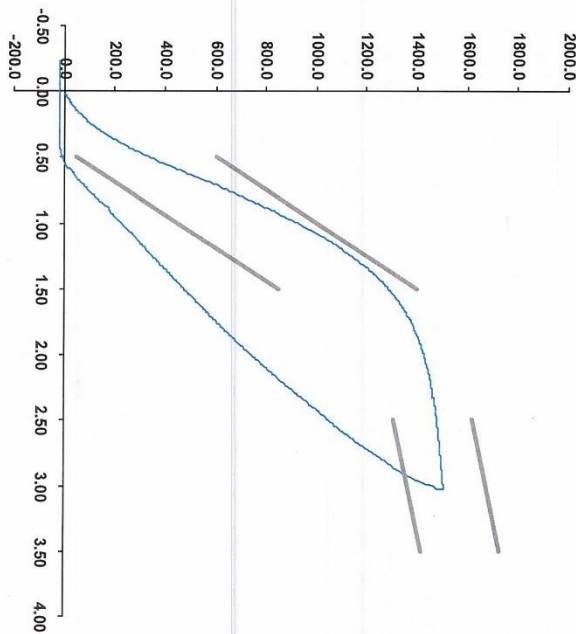
SID-Its Pelvis Plug Certification Test

Plug S/N 13831
Test Number 13292
Report Number 13337
Test Date 5/15/2020 11:31:02 AM

Test Results	Spec Min	Spec Max
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Force @ 1.5 mm (N)	850	1,400
Force @ 2.5 mm (N)	1,306	1,618
Force @ 3.0 mm (N)	1,361	1,673

Testing Machine STM-20 5965542
Load Cell S/N (F1350947), Units (LBS) 1000
Crosshead Speed (mm/min) or Rate 12.7
Extension or Position Measured by XHD_100 (XHD100)

Notes:



Operator DC
Part Number 180-4450
Template No 107 08-Jul-21
SACO Research

By : _____ Date : _____
SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 FAX



SID-11s Pelvis Plug Certification Test

Plug S/N 13025

Test Number 10344

Report Number 10379

Test Date 7/30/2019 12:52:12 PM

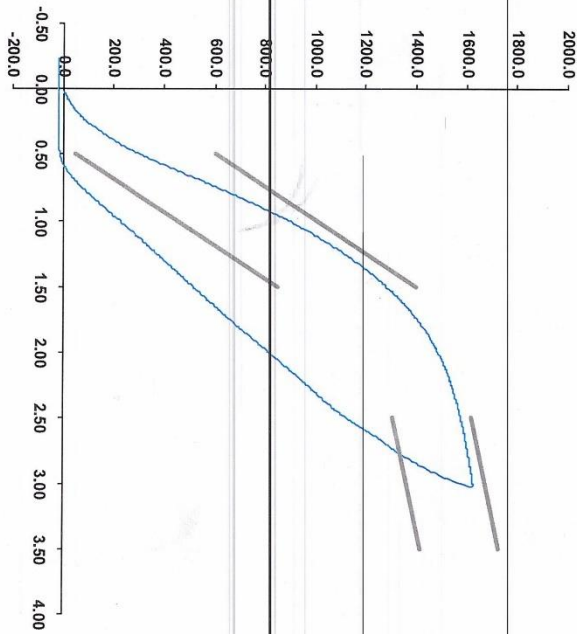
Force (-N) vs Extension (-mm)

DG-6012
Not Imp
4-6-22

Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	50	600
Force @ 1.5 mm (N)	850	1,400
Force @ 2.5 mm (N)	1,306	1,618
Force @ 3.0 mm (N)	1,361	1,673

Testing Machine STM-20 5965542
Load Cell S/N (F1360947), Units (LBS) 1000
Crosshead Speed (mm/min) or Rate 12.7
Extension or Position Measured by XHD_100 (XHD100)

Notes:



Operator

Part Number 180-4450

Template No 107 08-Jul-21
SACO Research

By: _____ Date: _____
SACO Research 41735 Elm St. #401 Murrieta, CA 92562 Tel 310-694-2082 FAX

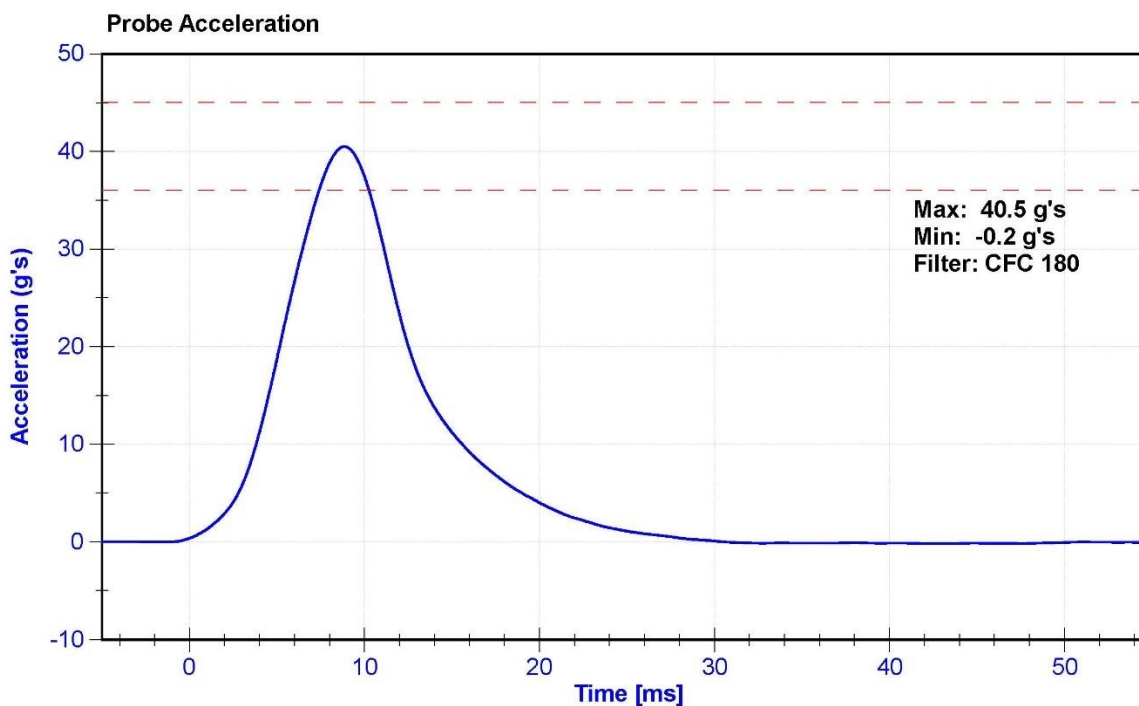
ATD Manufacturer	FTSS	Test Technician	D.Reinhard
ATD Serial Number	DG8012	Laboratory Supervisor	K. Brogan

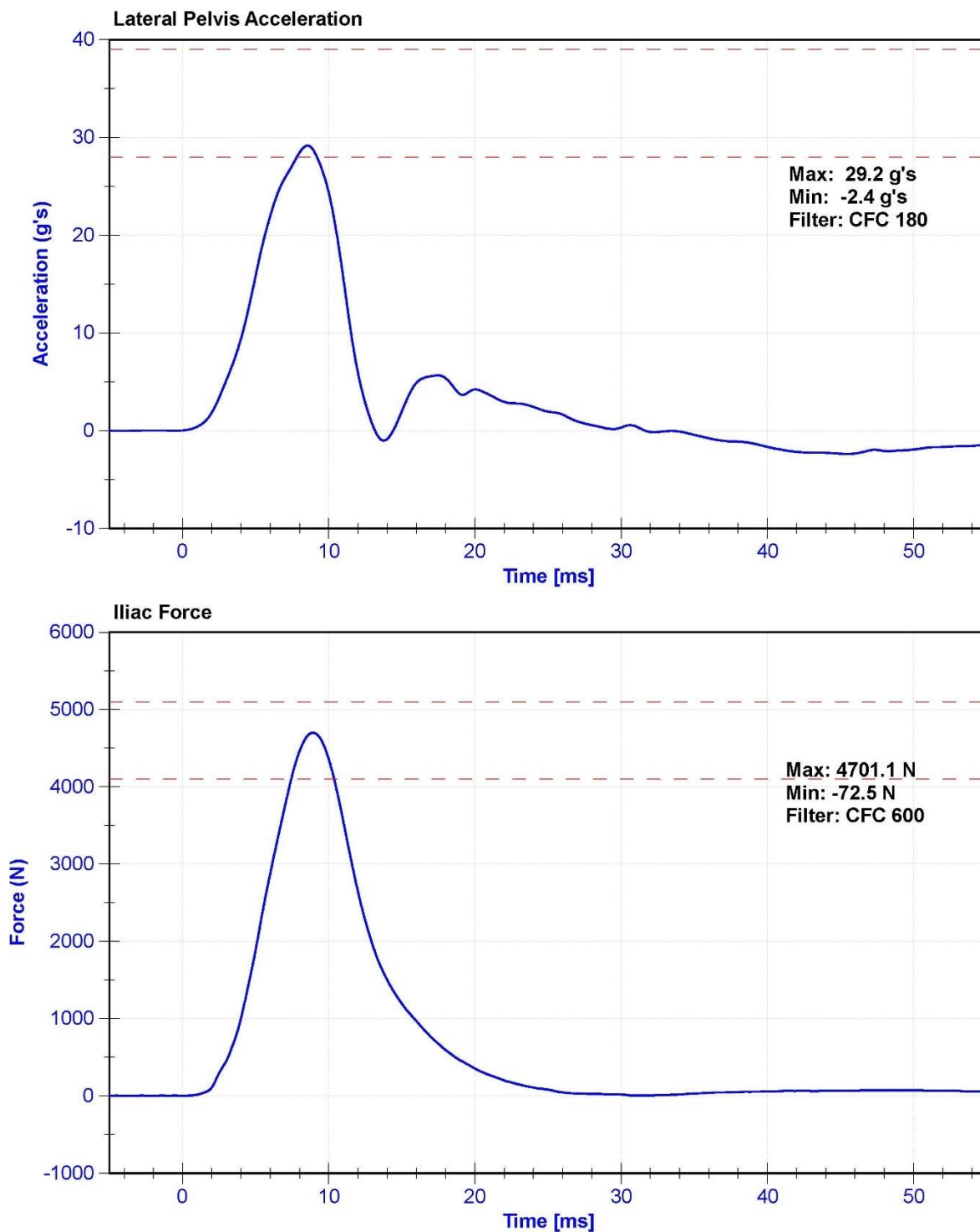
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.6	Pass
Humidity	10	70	%	27.3	Pass
Velocity	4.2	4.4	m/s	4.37	Pass
Probe Acceleration	36	45	g's	40.5	Pass
Lateral Pelvis Acceleration	28	39	g's	29.2	Pass
Iliac Force	4100	5100	N	4701.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	4/23/2022
Pelvis Y Accelerometer	Endevco	P51875	1/10/2022	7/9/2022
Iliac Load Cell	Denton	290-FY	9/14/2021	9/14/2022





CALIBRATION TEST RESULTS

POST-TEST

EUROSID 2 (ES-2RE) MALE – DRIVER ATD

SERIAL NO: F033

(CONFIGURED FOR LEFT SIDE IMPACT)

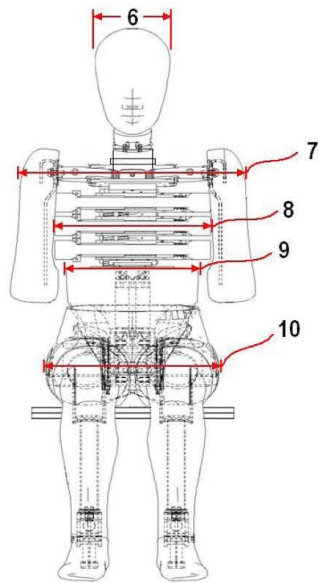


External Measurements - EuroSID-2re

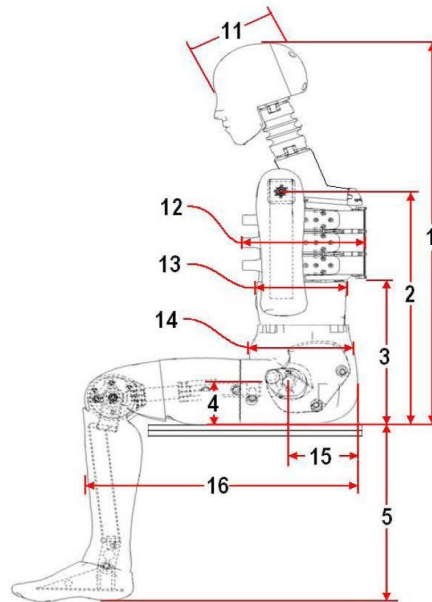
Technician: K. Brogan

Date: 05/23/2022

Dummy Serial Number: F033



FRONT VIEW



SIDE VIEW

Dim. No.	Description	Specification (mm)		Result (mm)	Pass/Fail
1	Sitting Height	900	918	910	Pass
2	Seat to Shoulder Joint	558	572	565	Pass
3	Seat to Lower Face of Thoracic Spine Box	346	356	350	Pass
4	Seat to Hip Joint (center of bolt)	97	103	100	Pass
5	Sole to Seat, Sitting	333	451	420	Pass
6	Head Width	152	158	155	Pass
7	Shoulder/Arm Width	461	479	470	Pass
8	Thorax Width	322	332	330	Pass
9	Abdomen Width	273	287	280	Pass
10	Pelvis Lap Width	359	373	365	Pass
11	Head Depth	196	206	200	Pass
12	Thorax Depth	262	272	265	Pass
13	Abdomen Depth	194	204	200	Pass
14	Pelvis Depth	235	245	240	Pass
15	Back of Buttocks to Hip Joint (center of bolt)	150	160	156	Pass
16	Back of Buttocks to Front Knee	597	615	608	Pass

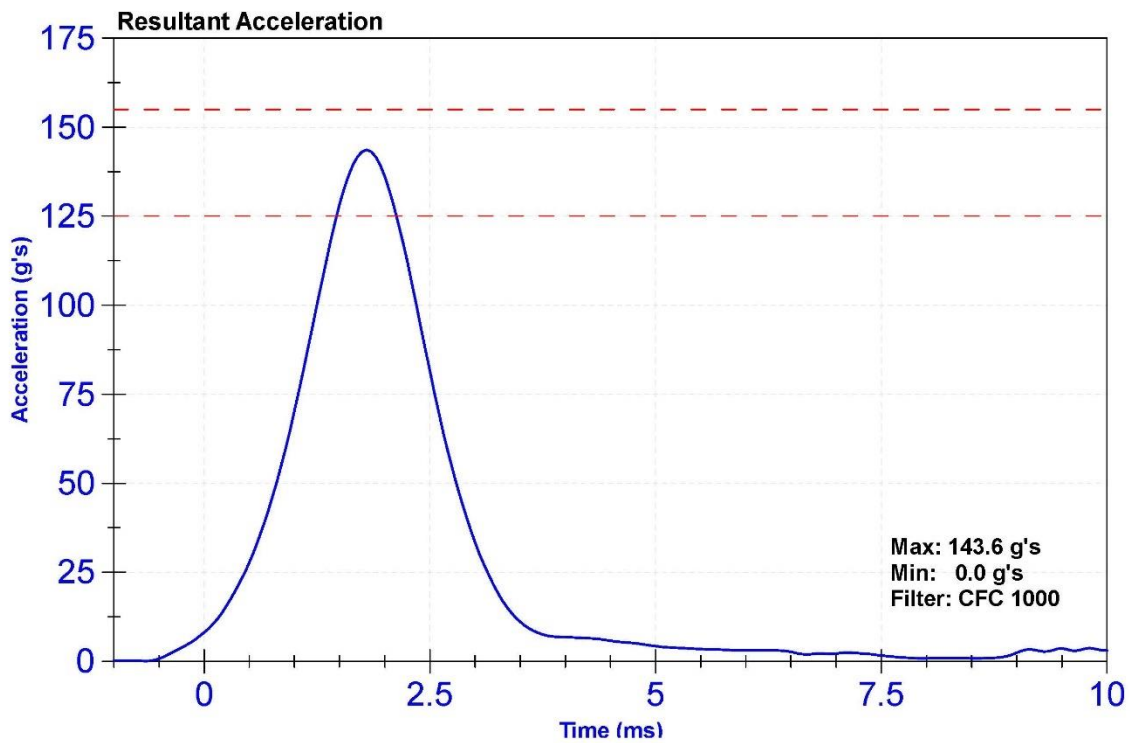
ATD Manufacturer	FTSS	Test Technician	T, Roseman
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

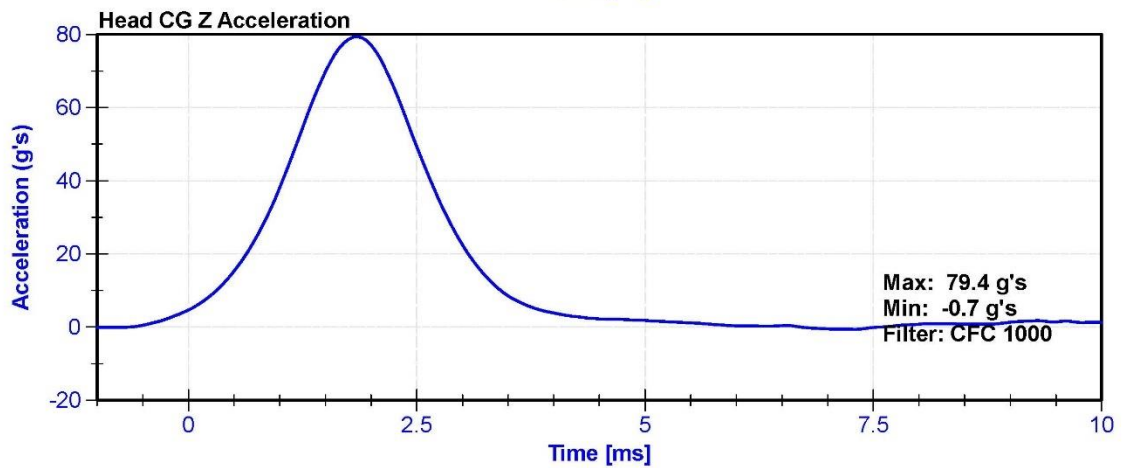
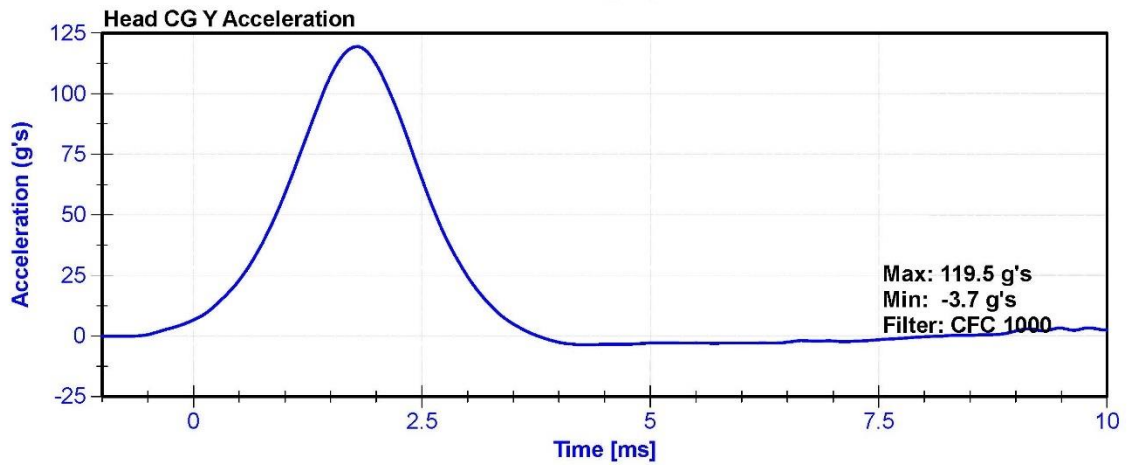
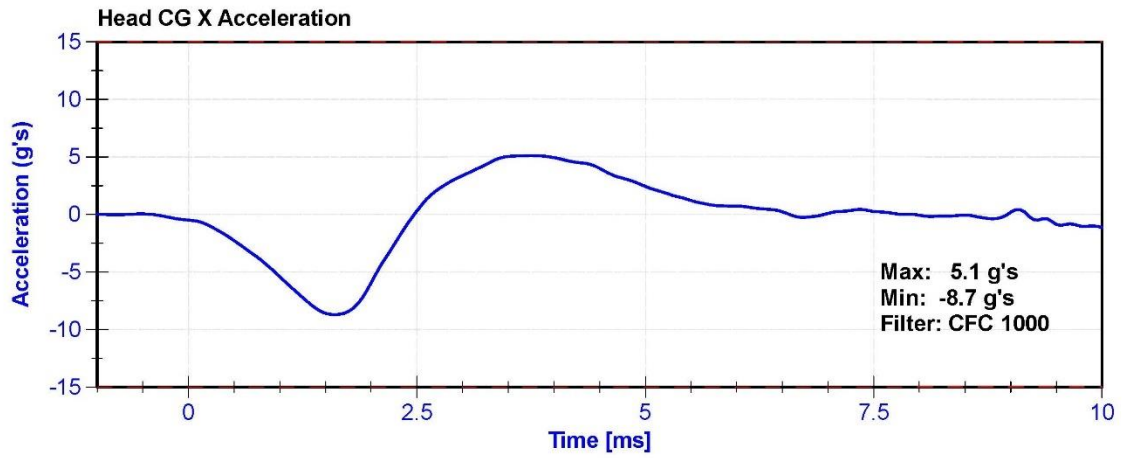
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	52.5	Pass
Resultant Acceleration	125	155	g's	143.6	Pass
Oscillation	0	15	%	2.59	Pass
Fore-Aft Acceleration	-15	15	g's	-8.7	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	Endevco	P63861	1/31/2022	7/30/2022
Y Accelerometer	Endevco	P49216	1/31/2022	7/30/2022
Z Accelerometer	Endevco	P51303	1/31/2022	7/30/2022





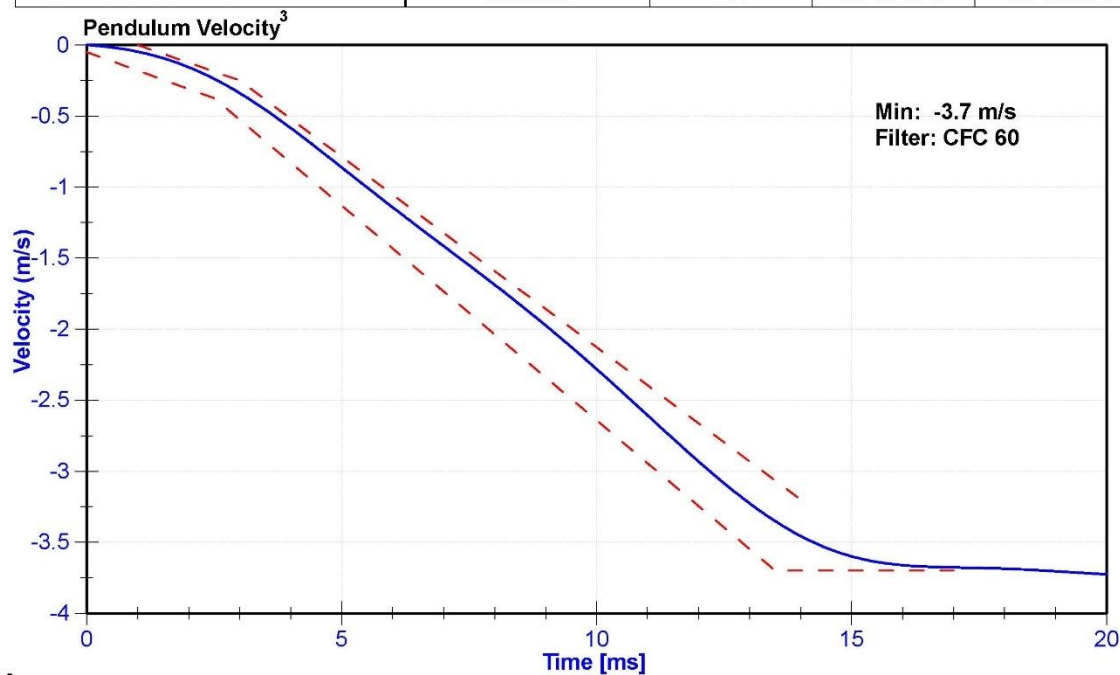
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

Results

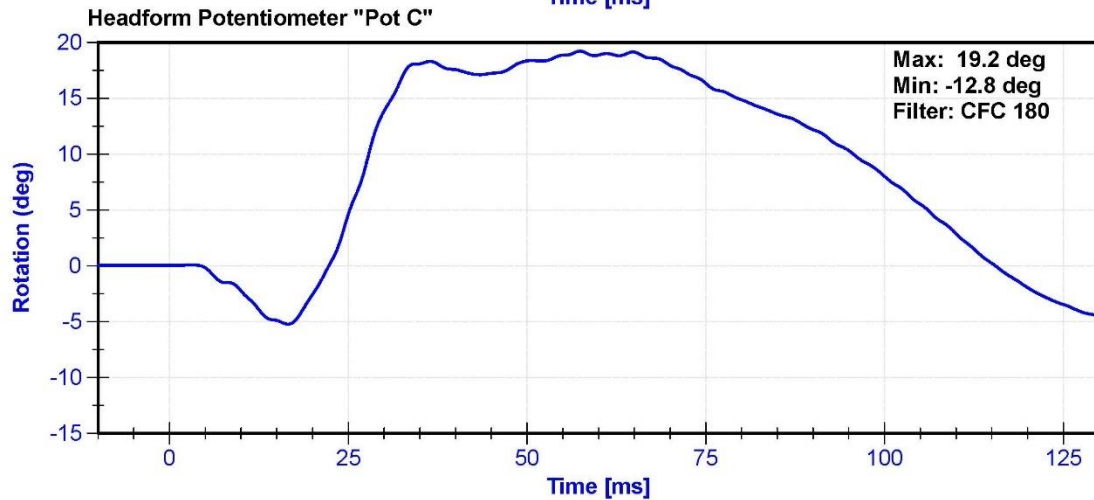
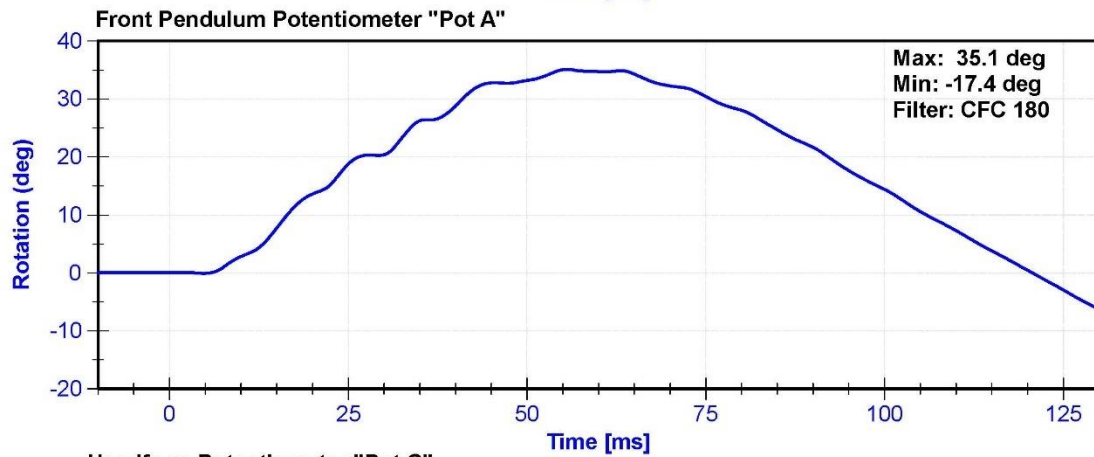
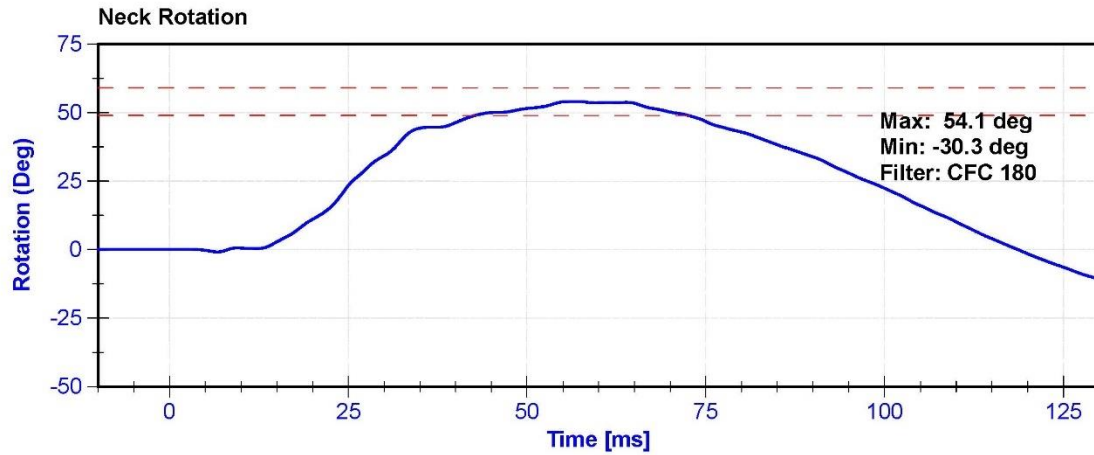
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	52.5	Pass
Velocity	3.3	3.5	m/s	3.42	Pass
Lateral Neck Rotation	49	59	deg	54.1	Pass
Time at Maximum Rotation	54	66	ms	57.1	Pass
Time of Rotation Decay from Maximum	53	88	ms	61.6	Pass
Pendulum Velocity Overall Corridor	Lower Boundary ¹	Upper Boundary ²	m/s	See Plot ³	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	C16503	10/28/2021	10/28/2022
Front Pendulum Potentiometer	Sfernice	094	10/1/2021	10/1/2022
Headform Potentiometer	Sfernice	095	10/1/2021	10/1/2022



^{1,2} Upper and lower boundaries specified in Appendix I



Appendix I

² Upper Boundary Corridor		¹ Lower Boundary Corridor	
Time (ms)	Velocity (m/s)	Time (ms)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.25	2.5	-0.375
14.0	-3.20	13.5	-3.7
		17.0	-3.7

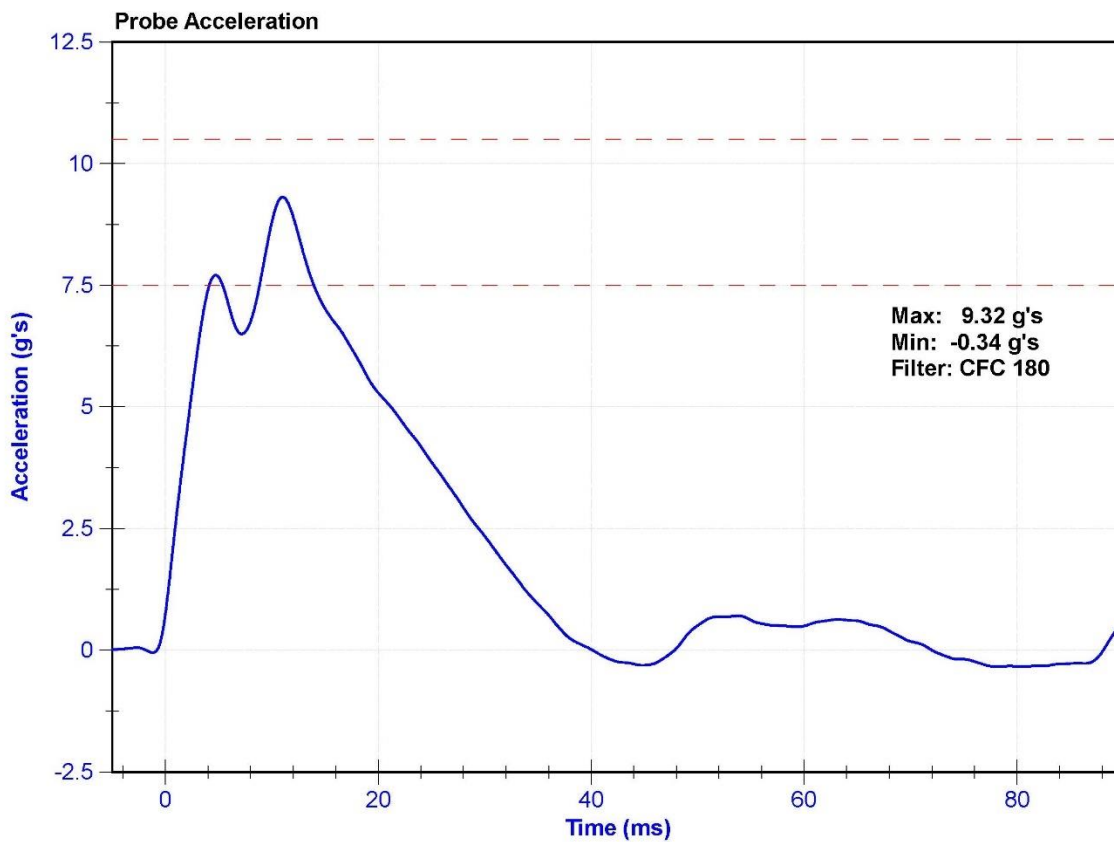
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	40.6	Pass
Velocity	4.2	4.4	m/s	4.36	Pass
Probe Acceleration	7.5	10.5	g's	9.32	Pass

Transducer Calibrations

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



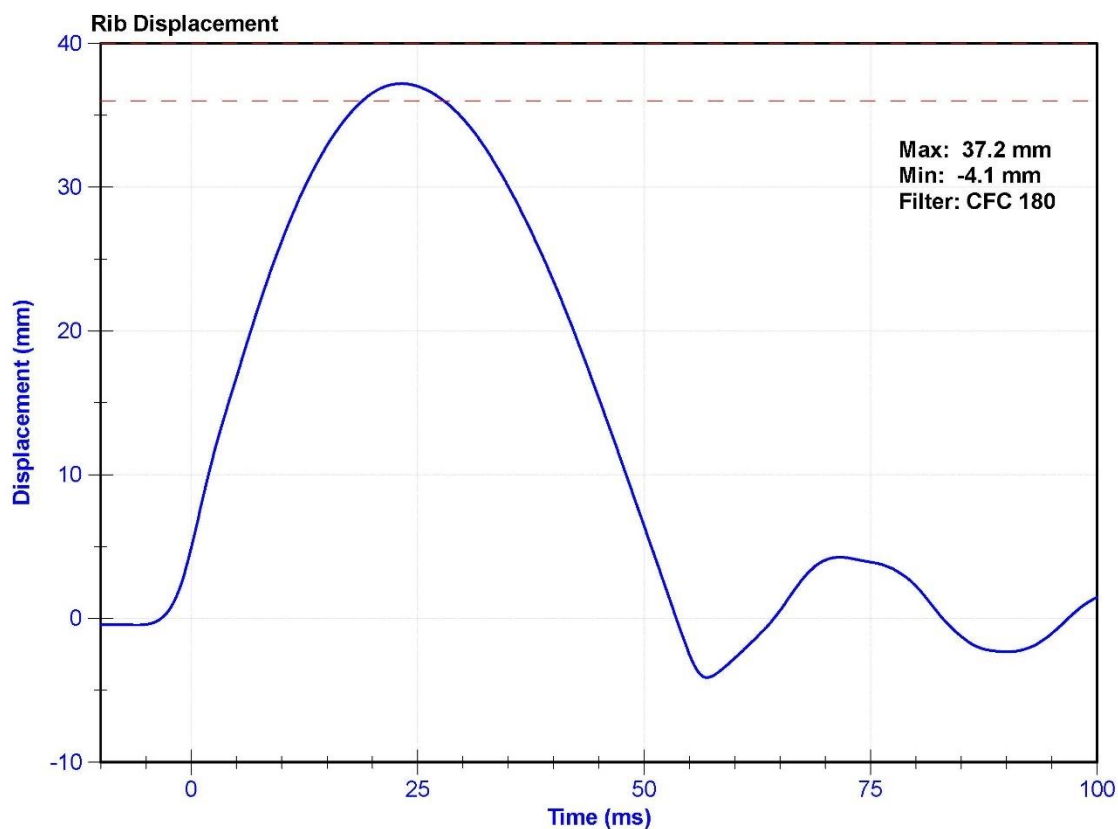
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	52.5	Pass
Rib Displacement	36	40	mm	37.2	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	179GFE	2/1/2022	8/2/2022



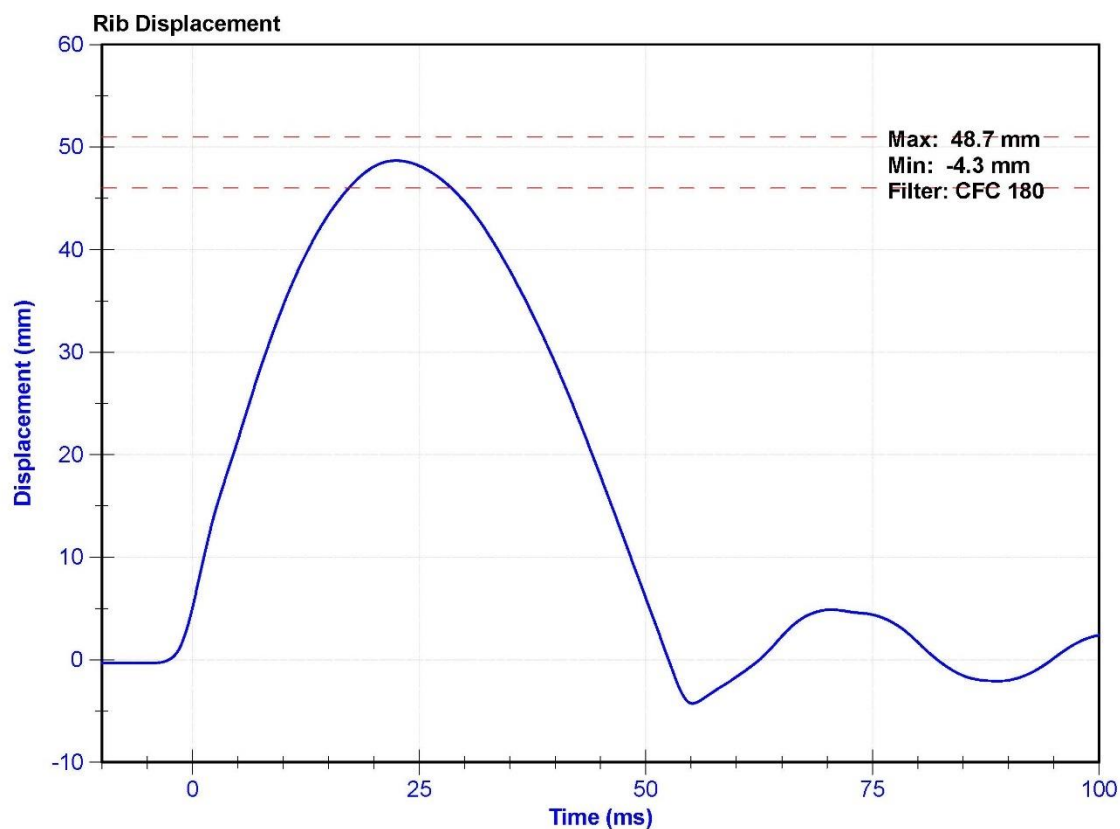
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	52.5	Pass
Rib Displacement	46	51	mm	48.7	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	179GFE	2/1/2022	8/2/2022



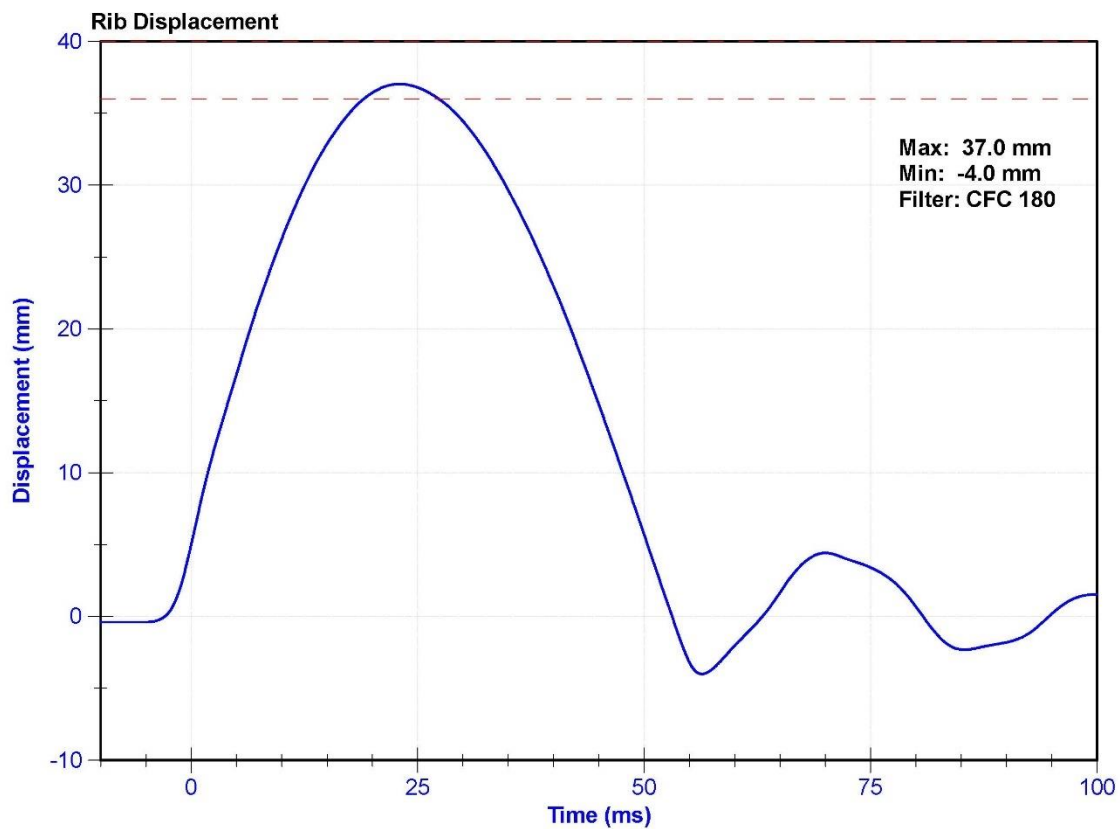
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	52.5	Pass
Rib Displacement	36	40	mm	37.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	185GFE	2/1/2022	8/2/2022



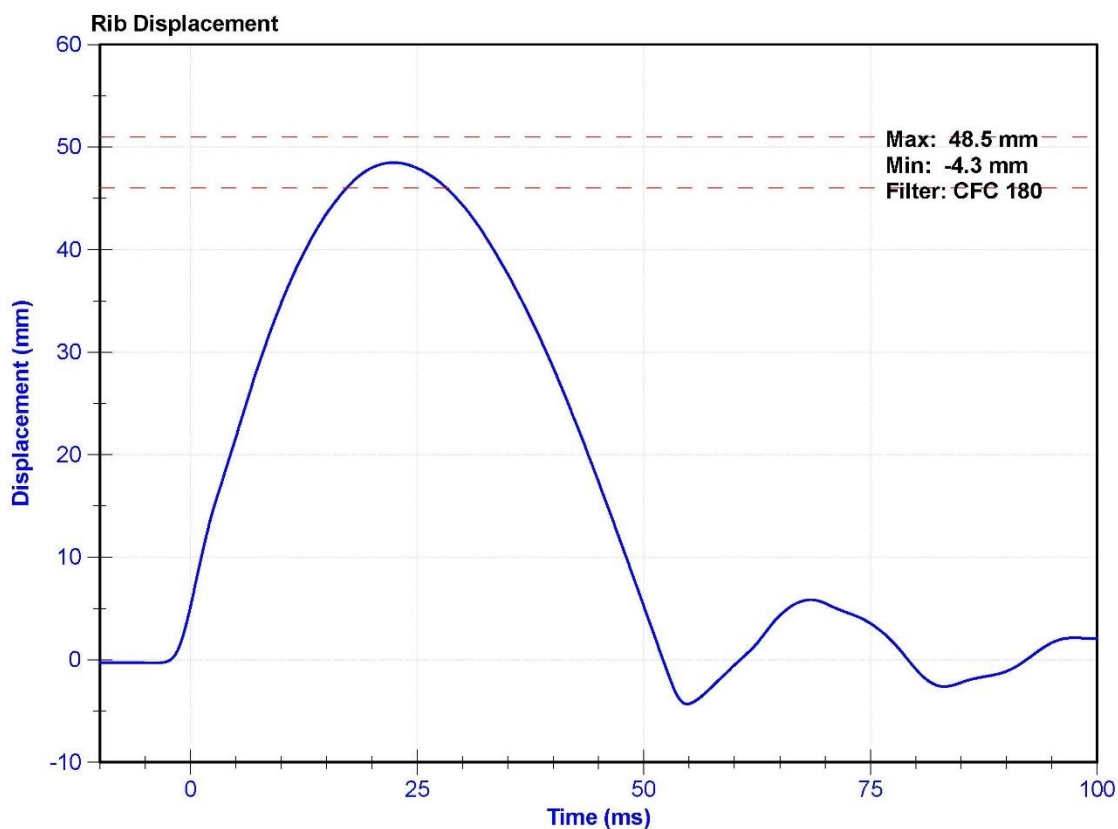
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	52.5	Pass
Rib Displacement	46	51	mm	48.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	185GFE	2/1/2022	8/2/2022



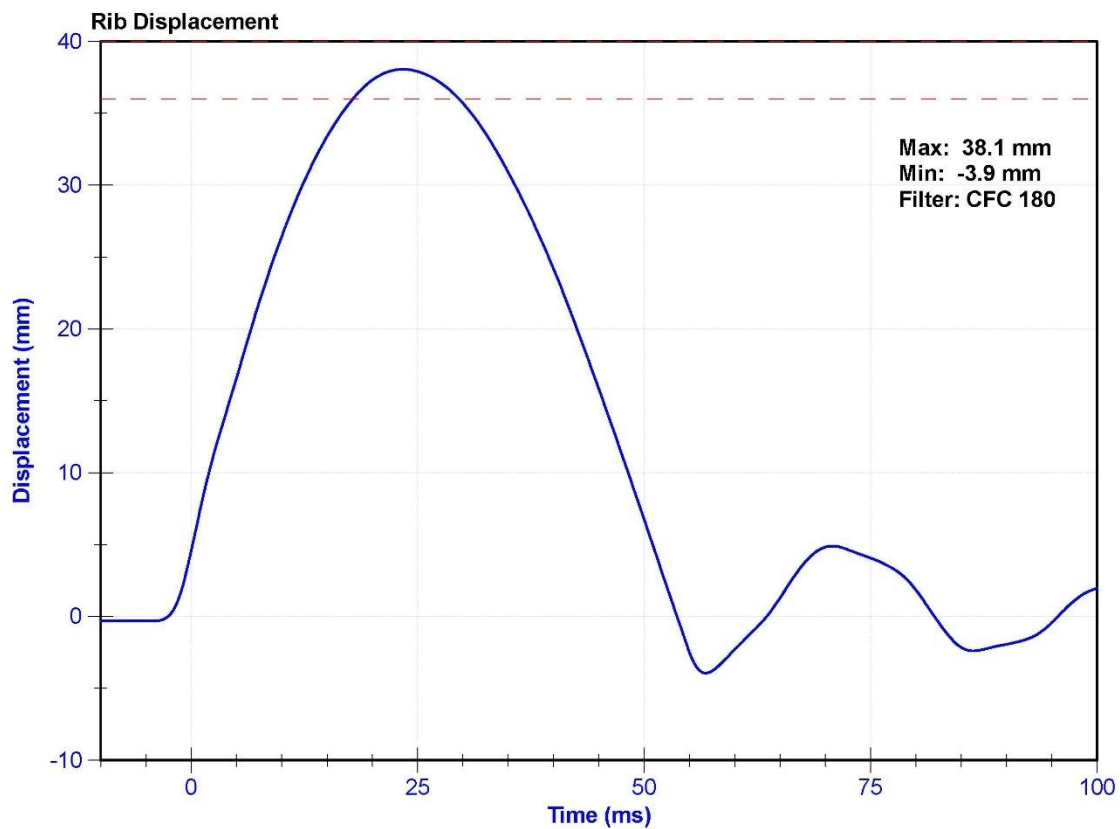
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	52.5	Pass
Rib Displacement	36	40	mm	38.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	178GFE	2/1/2022	8/2/2022



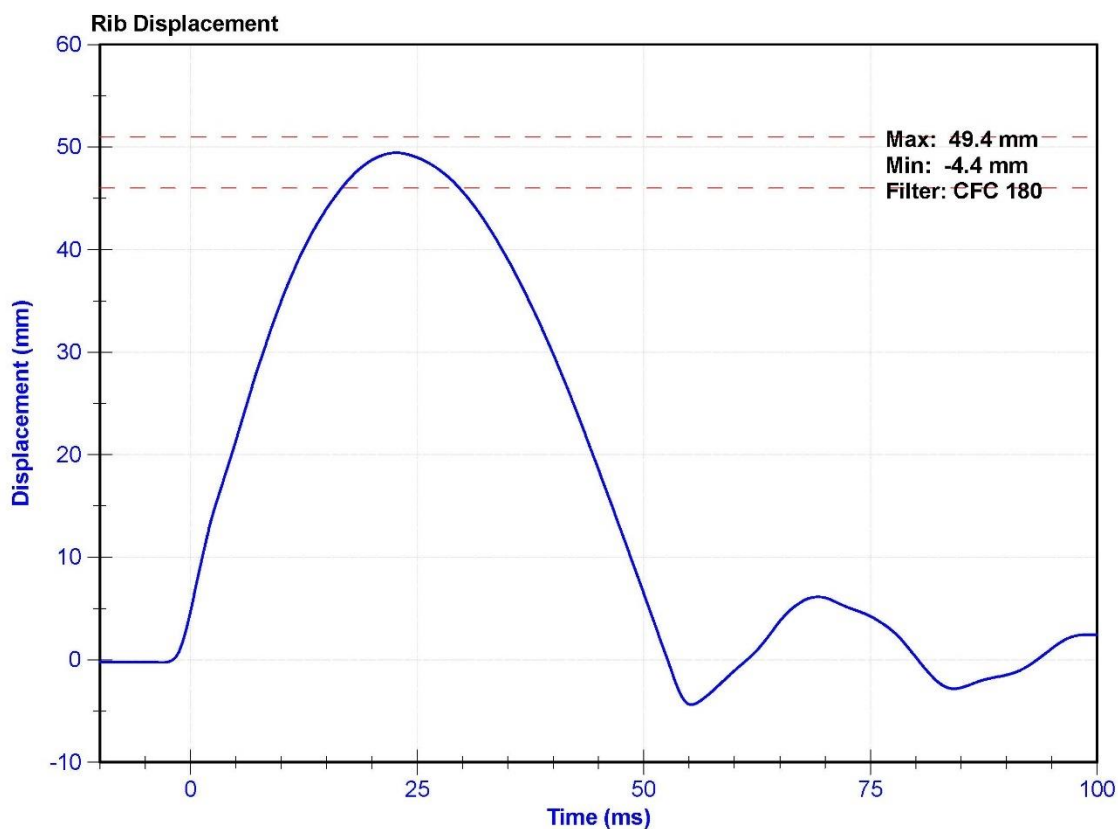
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	52.5	Pass
Rib Displacement	46	51	mm	49.4	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	178GFE	2/1/2022	8/2/2022



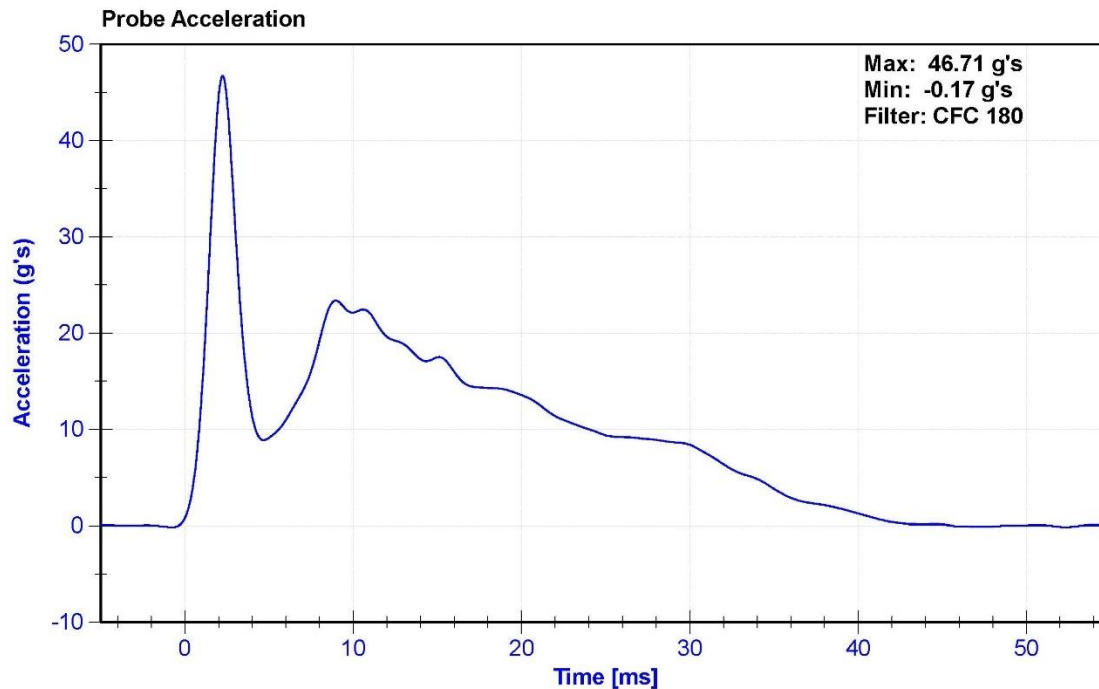
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

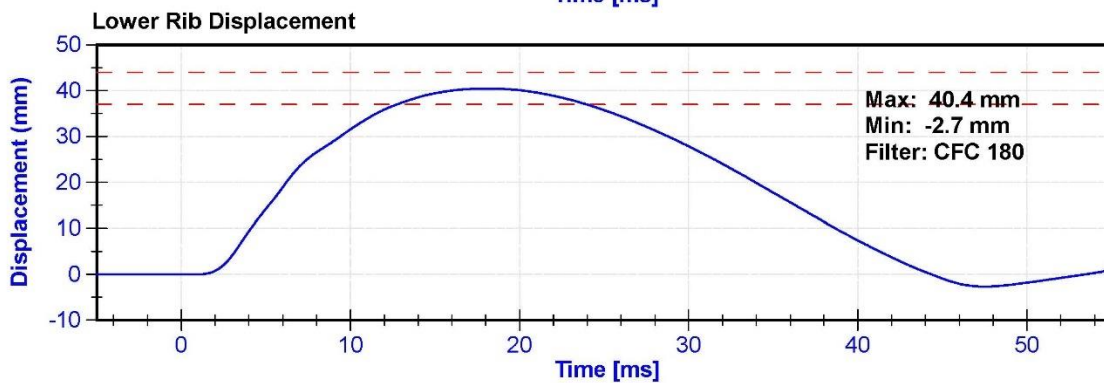
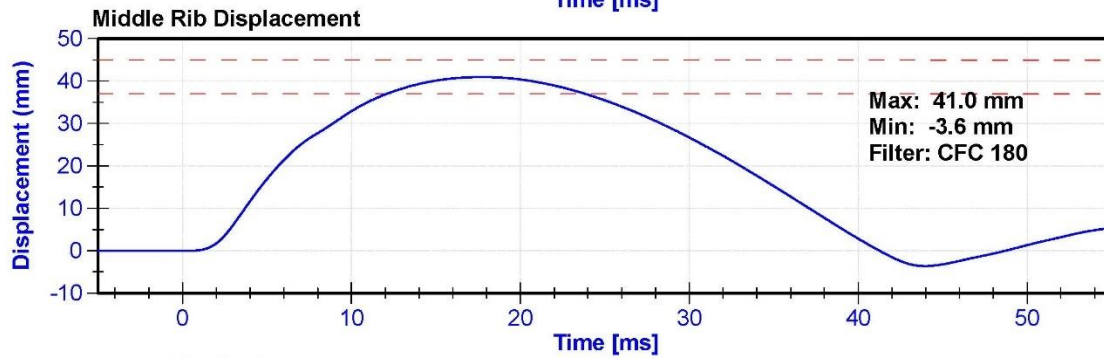
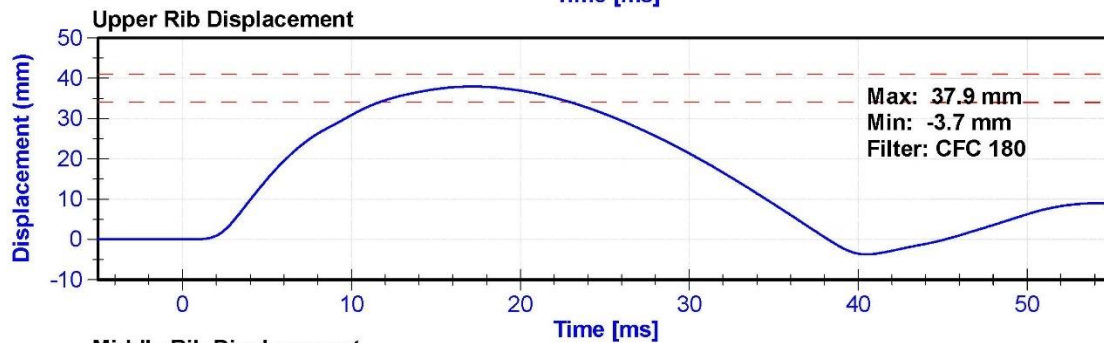
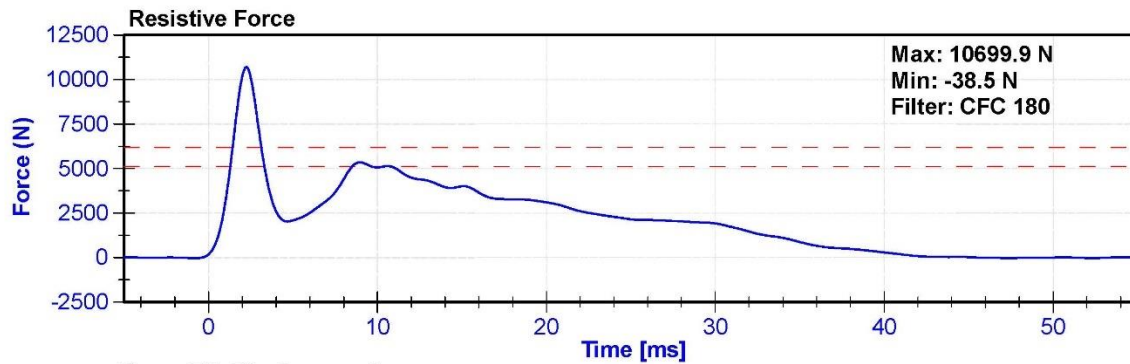
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	40.6	Pass
Velocity	5.4	5.6	m/s	5.50	Pass
Resistive Force after 6ms	5100	6200	N	5352.2	Pass
Upper Thorax Rib Deflection	34	41	mm	37.9	Pass
Mid Thorax Rib Deflection	37	45	mm	41.0	Pass
Lower Thorax Rib Deflection	37	44	mm	40.4	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	T25885	10/25/2021	10/25/2022
Upper Thorax Rib Potentiometer	Honeywell	179GFE	2/1/2022	8/2/2022
Middle Thorax Rib Potentiometer	Honeywell	185GFE	2/1/2022	8/2/2022
Lower Thorax Rib Potentiometer	Honeywell	178GFE	2/1/2022	8/2/2022





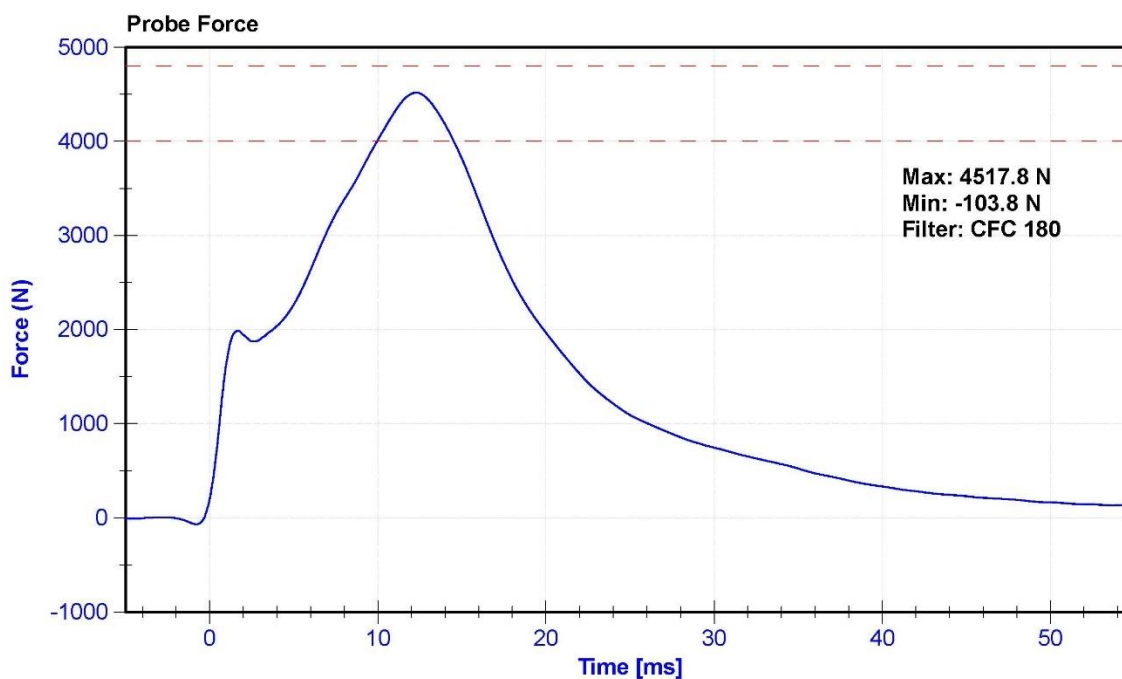
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

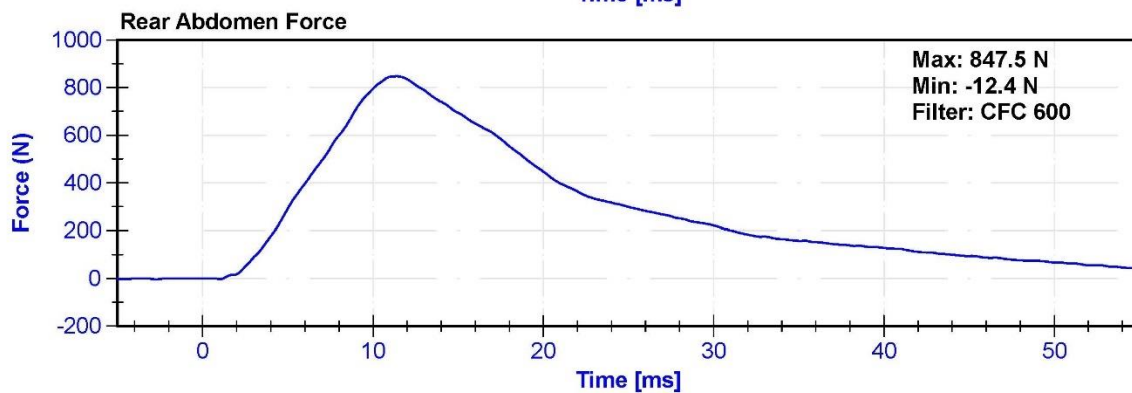
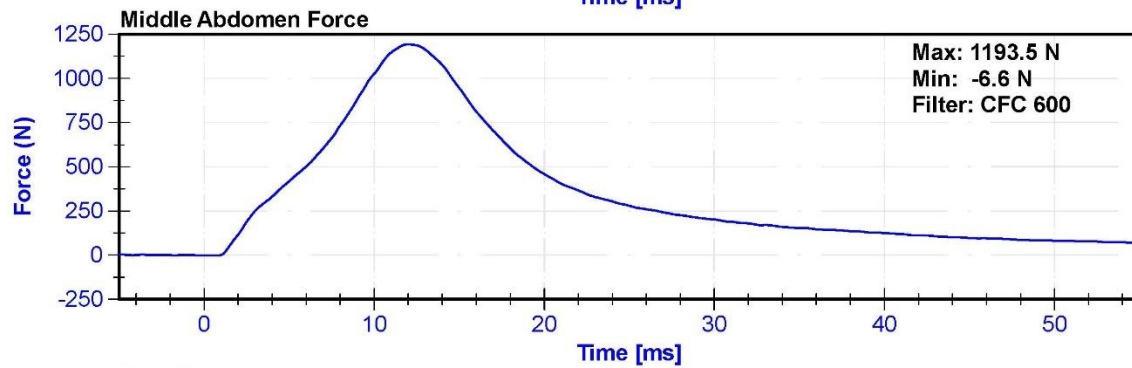
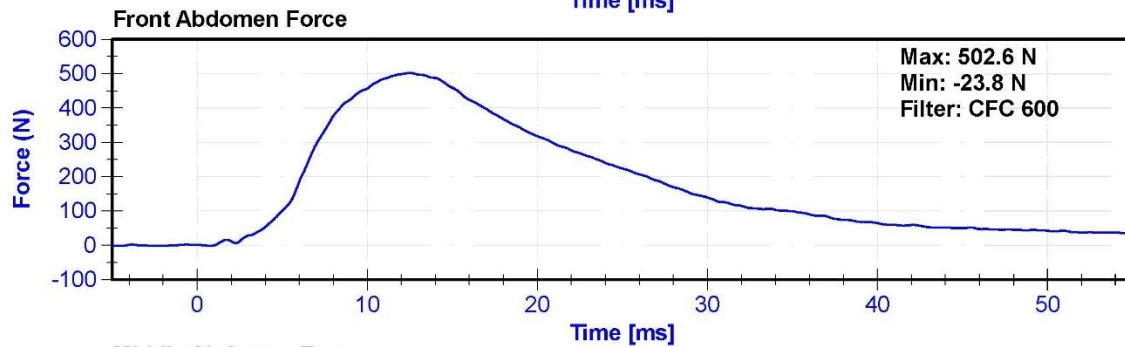
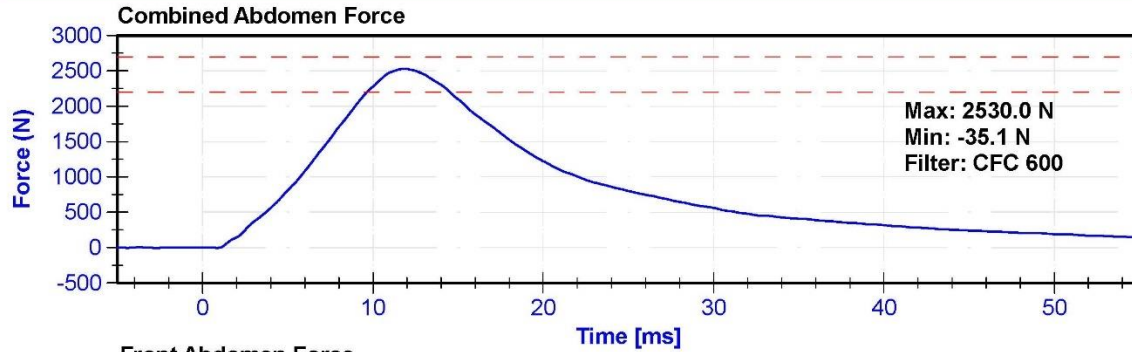
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	40.6	Pass
Velocity	3.9	4.1	m/s	4.01	Pass
Combined Abdomen Force	2200	2700	N	2530.0	Pass
Time at Peak Abdomen Force	10.0	12.3	ms	11.80	Pass
Resistive Probe Force	4000	4800	N	4517.8	Pass
Time at Peak Resistive Force	10.6	13.0	ms	12.30	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	10/25/2022
Front Abdomen Load Cell	Denton	1512	8/2/2021	8/2/2022
Middle Abdomen Load Cell	Denton	1526	8/2/2021	8/2/2022
Rear Abdomen Load Cell	Denton	1516	8/2/2021	8/2/2022





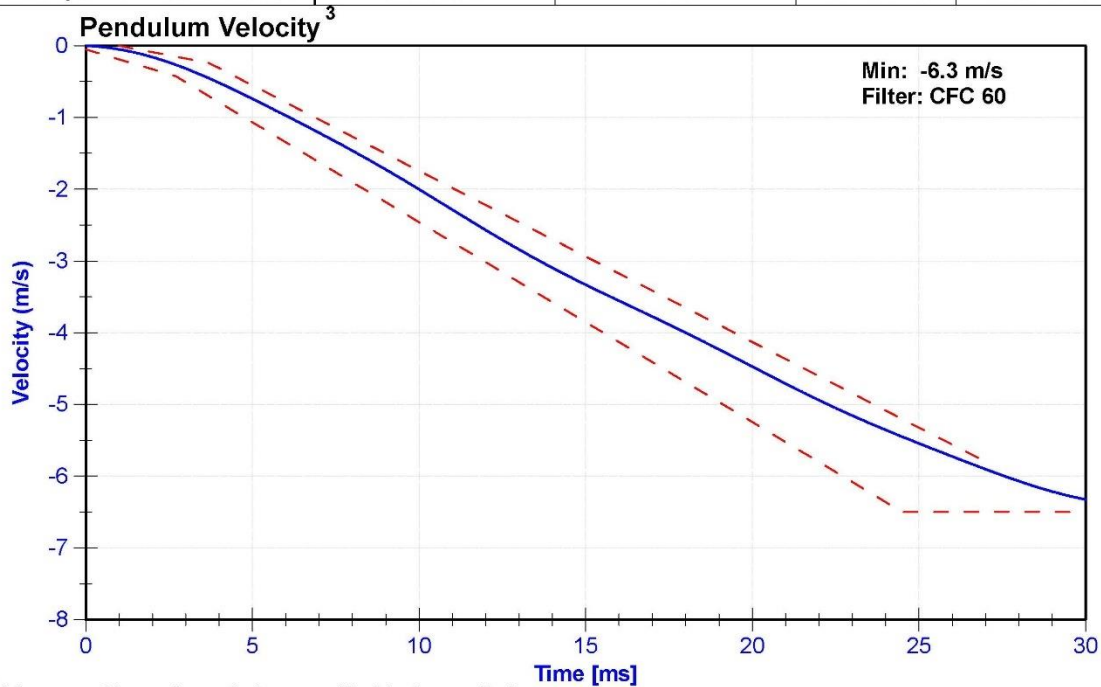
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

Results

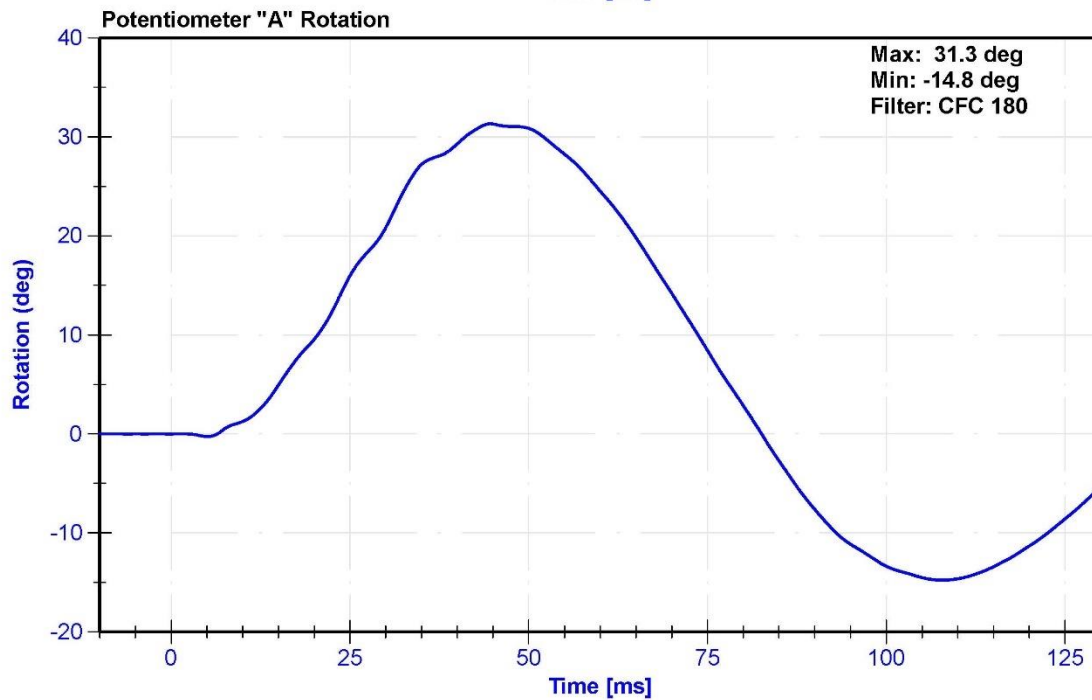
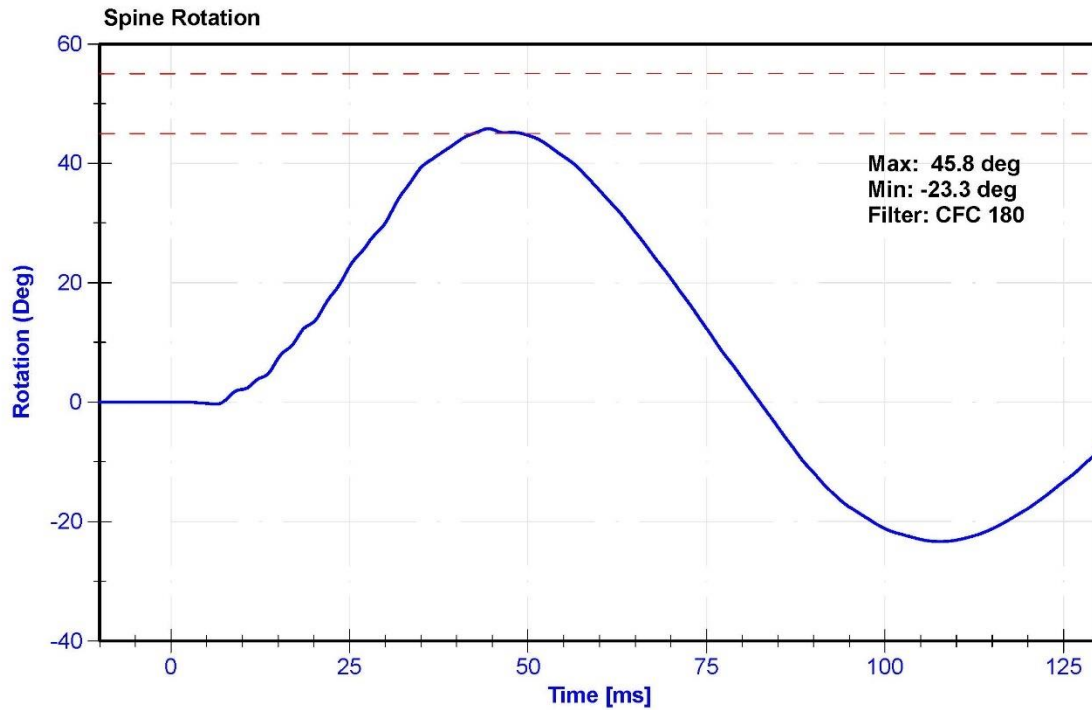
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	52.5	Pass
Velocity	5.95	6.15	m/s	6.027	Pass
Lateral Spine Rotation	45	55	deg	45.8	Pass
Time at Maximum Rotation	39	53	ms	44.4	Pass
Time of Decay to Zero Degrees	37	57	ms	38.1	Pass
Pendulum Velocity Overall Corridor	Lower Boundary ¹	Upper Boundary ²	m/s	See Plot ³	Pass

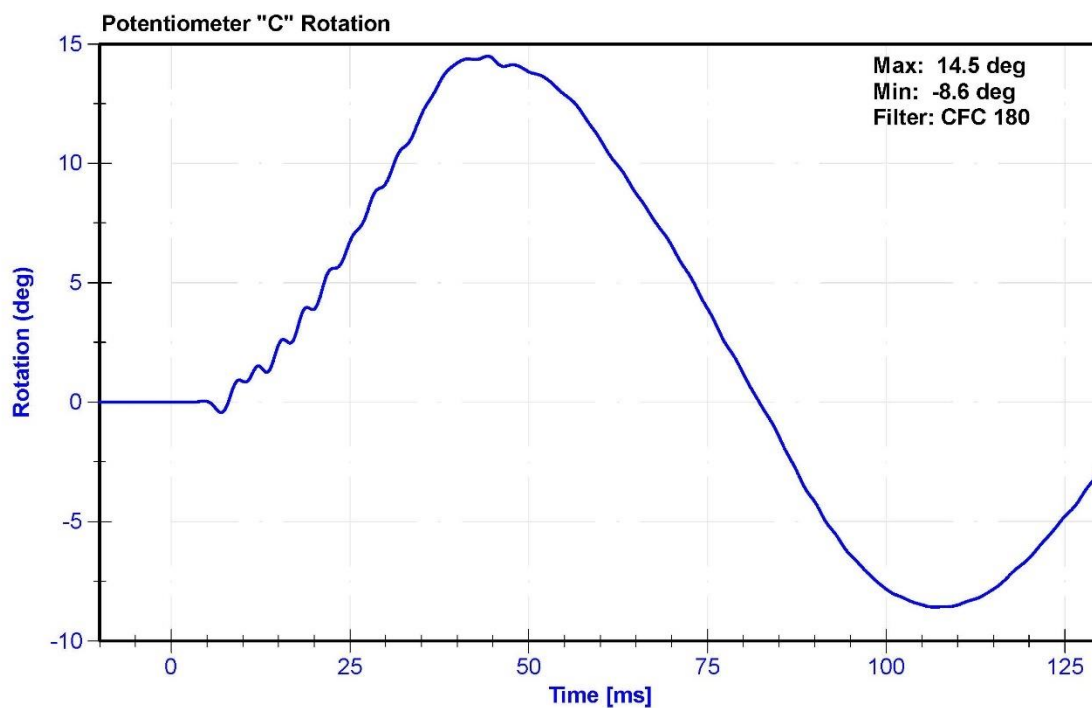
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	C16503	10/28/2021	10/28/2022
Pendulum "A" Potentiometer	Sfernice	094	10/1/2021	10/1/2022
Condyle "B" Potentiometer	Sfernice	095	10/1/2021	10/1/2022



^{1,2} Upper and lower boundaries specified in Appendix I





Appendix I

² Upper Boundary Corridor		¹ Lower Boundary Corridor	
Time (ms)	Velocity (m/s)	Time (ms)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.5
		30.0	-6.5

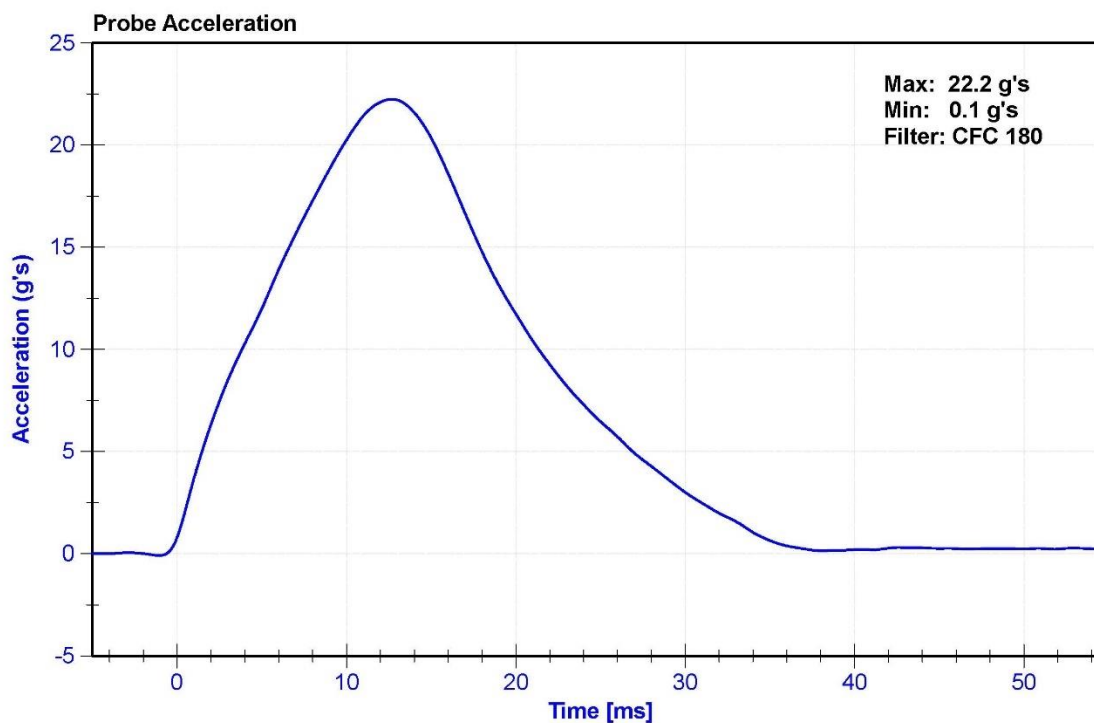
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	F033	Laboratory Supervisor	K. Brogan

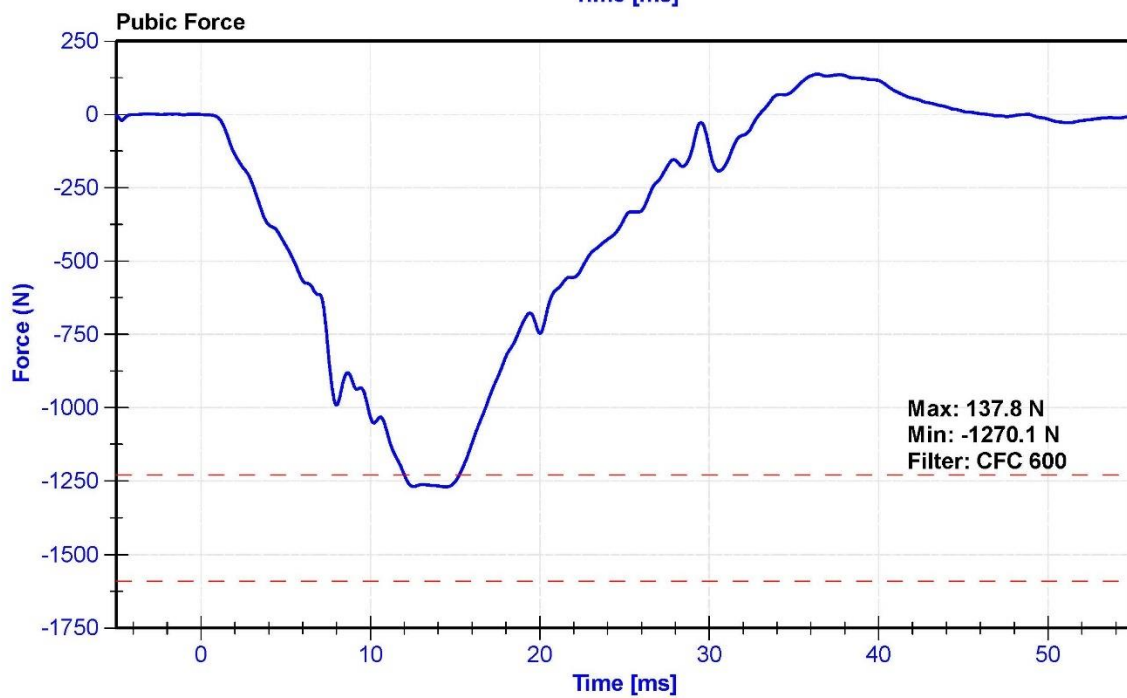
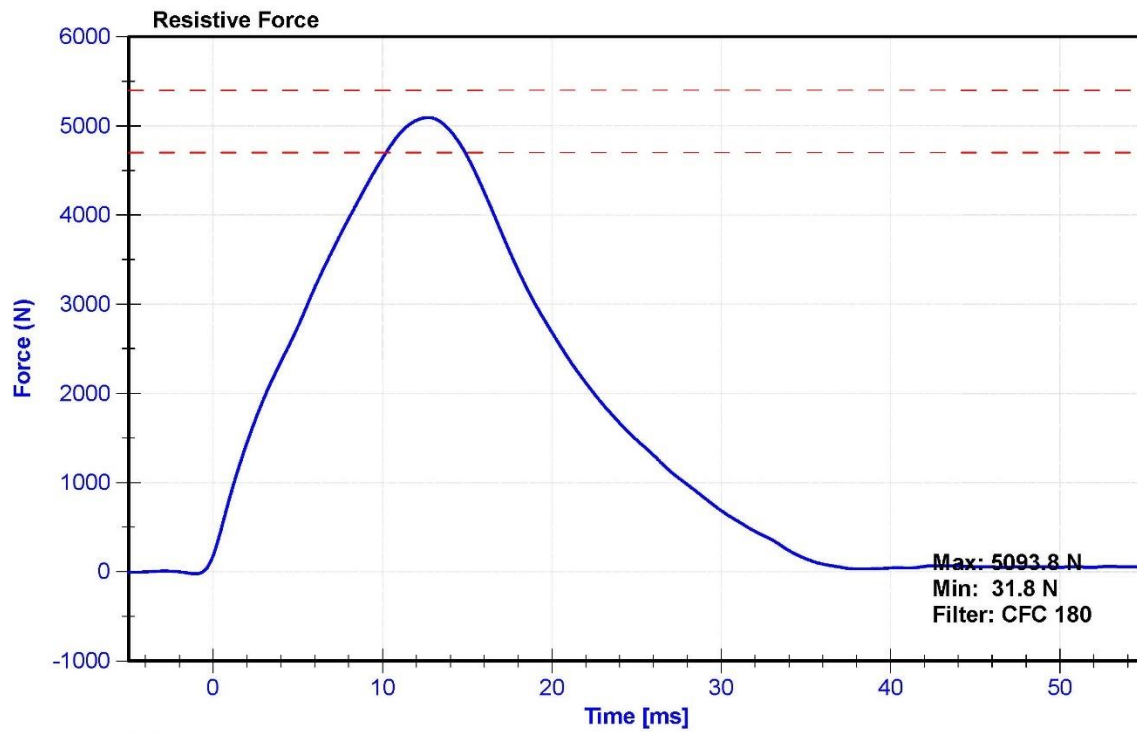
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	40.6	Pass
Velocity	4.2	4.4	m/s	4.35	Pass
Resistive Force	4700	5400	N	5093.8	Pass
Time at Peak Resistive Force	11.8	16.1	ms	12.70	Pass
Pubic Force	-1590	-1230	N	-1270.1	Pass
Time at Peak Pubic Force	12.2	17.0	ms	14.45	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	10/25/2022
Pubic Load Cell	Denton	464-FY	8/2/2021	8/2/2022





CALIBRATION TEST RESULTS

POST-TEST

SID-IIS 5TH PERCENTILE FEMALE - PASSENGER ATD

SERIAL No: DG8012

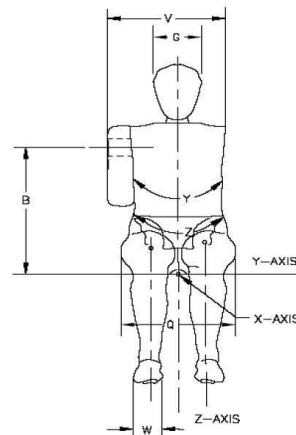
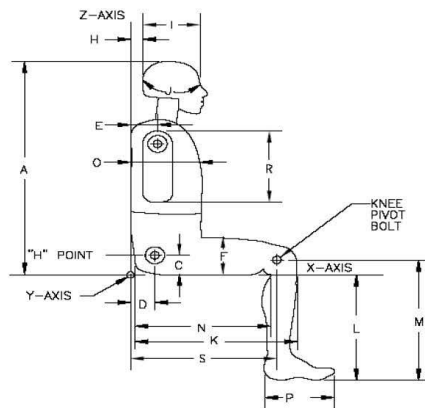


External Measurements - SID-IIs

Technician: **K. Brogan**

Date: **05/19/2022**

Dummy Serial Number: **DG8012**



Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	772	788	780	Pass
B	Shoulder Pivot Height	437	453	445	Pass
C	H-point Height	79	89	85	Pass
D	H-point from seatback	141	151	145	Pass
E	Shoulder Pivot from Backline	97	107	105	Pass
F	Thigh Clearance	119	135	125	Pass
G	Head Breadth	140	148	145	Pass
H	Head Back from Backline	40	46	43	Pass
I	Head Depth	178	188	184	Pass
J	Head Circumference	541	551	545	Pass
K	Buttock to Knee Length	514	540	536	Pass
L	Popliteal Height	343	369	355	Pass
M	Knee Pivot to floor height	392	409	400	Pass
N	Buttock Popliteal Length	416	442	432	Pass
O	Chest Depth w/o jacket	195	211	209	Pass
P	Foot Length	216	232	225	Pass
Q	Hip Breadth (w/pelvic plugs)	313	323	320	Pass
R	Arm Length	249	259	250	Pass
S	Knee Joint to seatback	477	493	485	Pass
V	Shoulder Width	341	357	348	Pass
W	Foot Width	78	94	85	Pass
Y	Chest Circumference w/jacket	851	881	870	Pass
Z	Waist Circumference	761	791	780	Pass

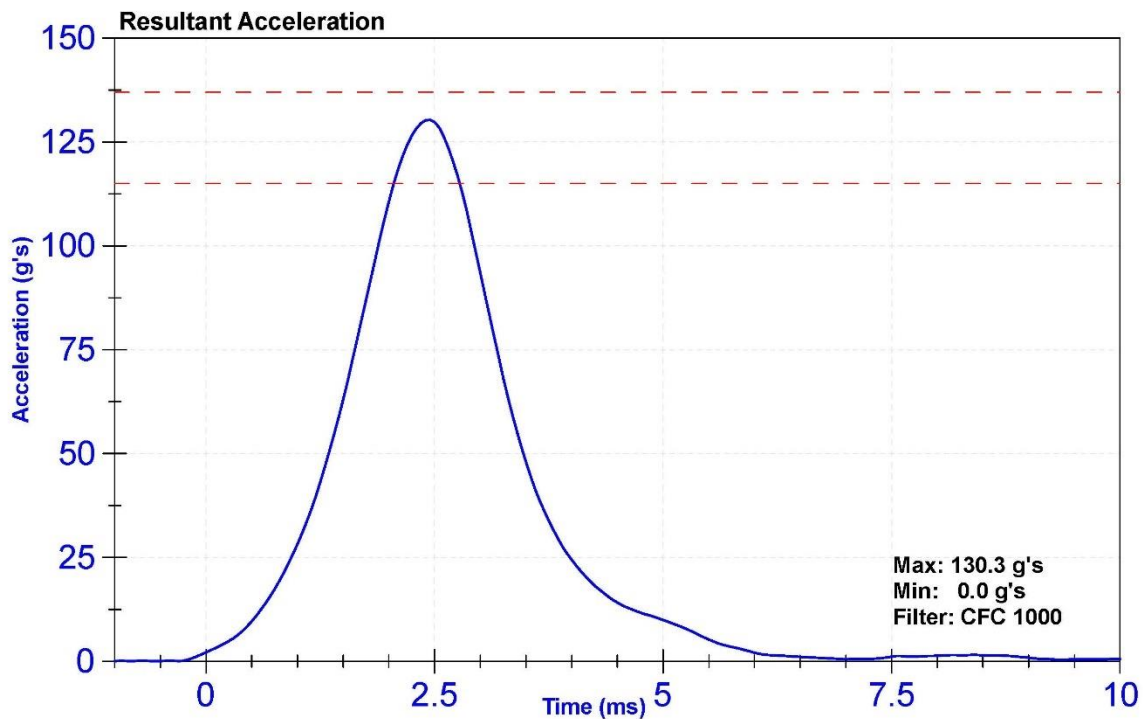
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	DG8012	Laboratory Supervisor	K. Brogan

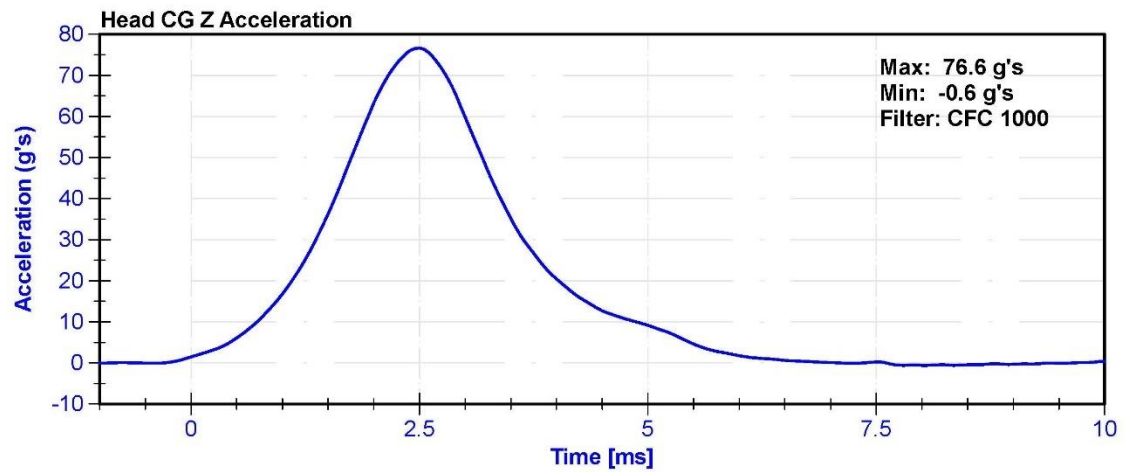
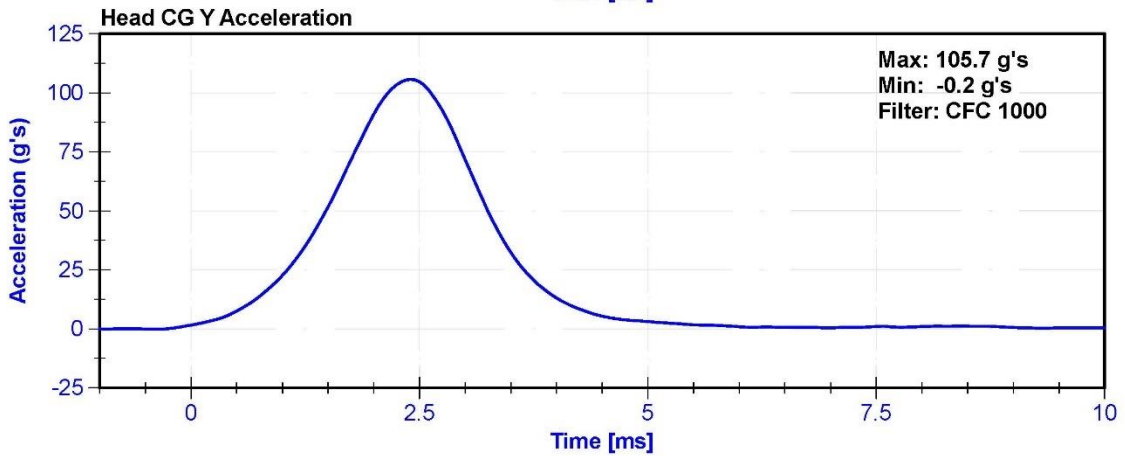
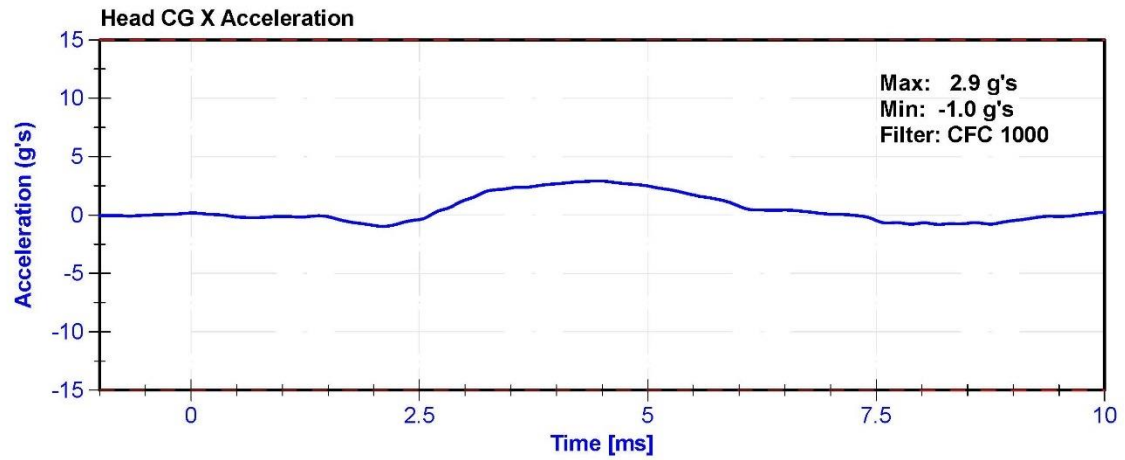
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	35.4	Pass
Resultant Acceleration	115	137	g's	130.3	Pass
Oscillation	0	15	%	1.1	Pass
Fore-Aft Acceleration	-15	15	g's	2.9	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibratio Date	Calibratio Due Date
X Accelerometer	Endevco	P74788	1/10/2022	7/9/2022
Y Accelerometer	Endevco	P83432	1/10/2022	7/9/2022
Z Accelerometer	Endevco	P83319	1/10/2022	7/9/2022





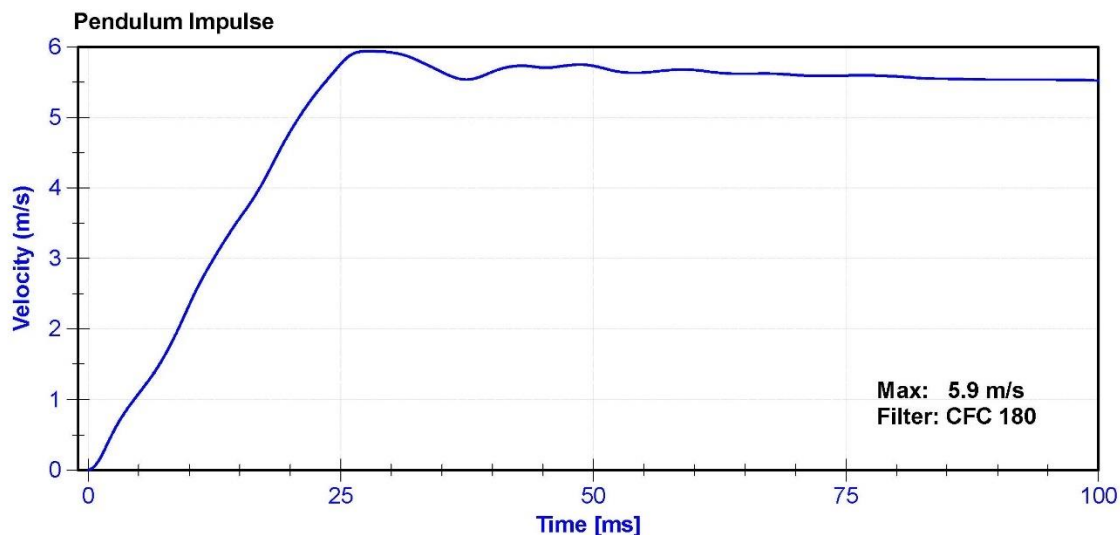
ATD Manufacturer	FTSS	Test Technician	S. Vacanti
ATD Serial Number	DG8012	Laboratory Supervisor	K. Brogan

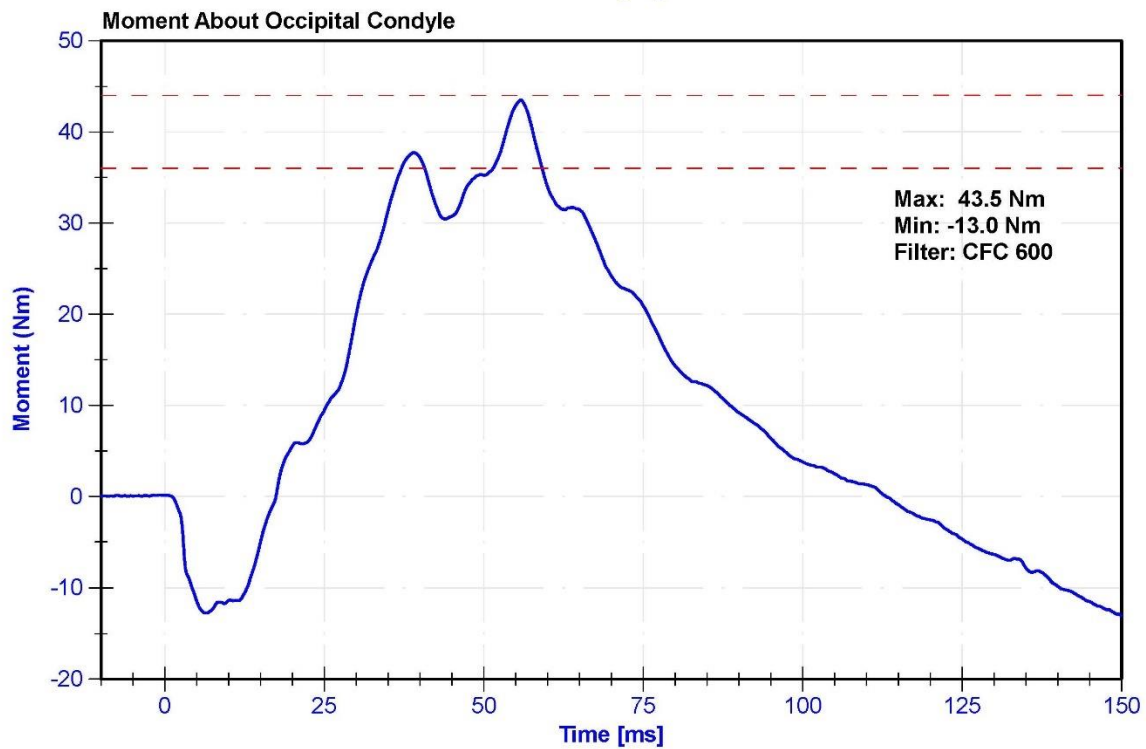
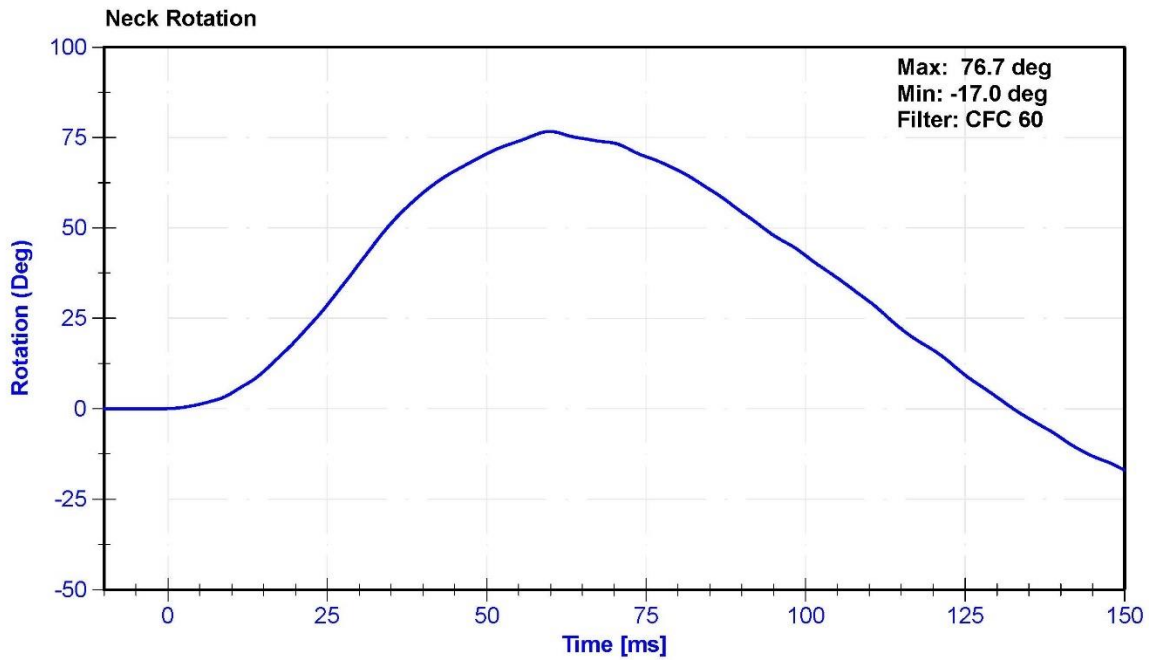
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.5	Pass
Humidity	10	70	%	36.5	Pass
Velocity	5.51	5.63	m/s	5.568	Pass
Pendulum Impulse at 10ms	2.2	2.8	m/s	2.34	Pass
Pendulum Impulse at 15ms	3.3	4.1	m/s	3.58	Pass
Pendulum Impulse at 20ms	4.4	5.4	m/s	4.80	Pass
Pendulum Impulse at 25ms	5.4	6.1	m/s	5.76	Pass
Pendulum Impulse from 25 to 100ms	5.5	6.2	m/s	5.94	Pass
Neck Rotation	71	81	deg	76.7	Pass
Time at Maximum Rotation	50	70	ms	59.9	Pass
Moment about the OC	36	44	Nm	43.5	Pass
Moment Decay to 0 Nm	102	126	ms	113.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	7231CT	10/28/2021	10/28/2022
Pendulum Potentiometer	Servo	4961	2/23/2022	2/23/2023
Condyle Potentiometer	Servo	DS185	11/12/2021	11/12/2022
Upper Neck Load Cell	Denton	1716A-1037-FY	6/29/2021	6/29/2022





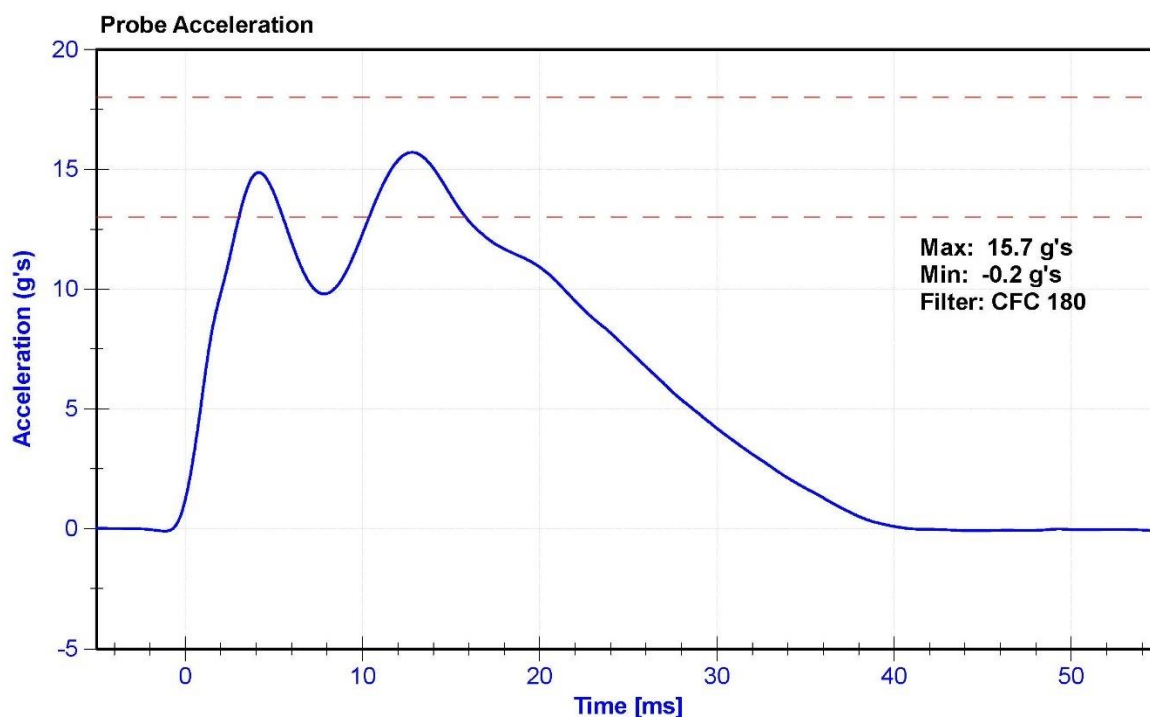
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	DG8012	Laboratory Supervisor	K. Brogan

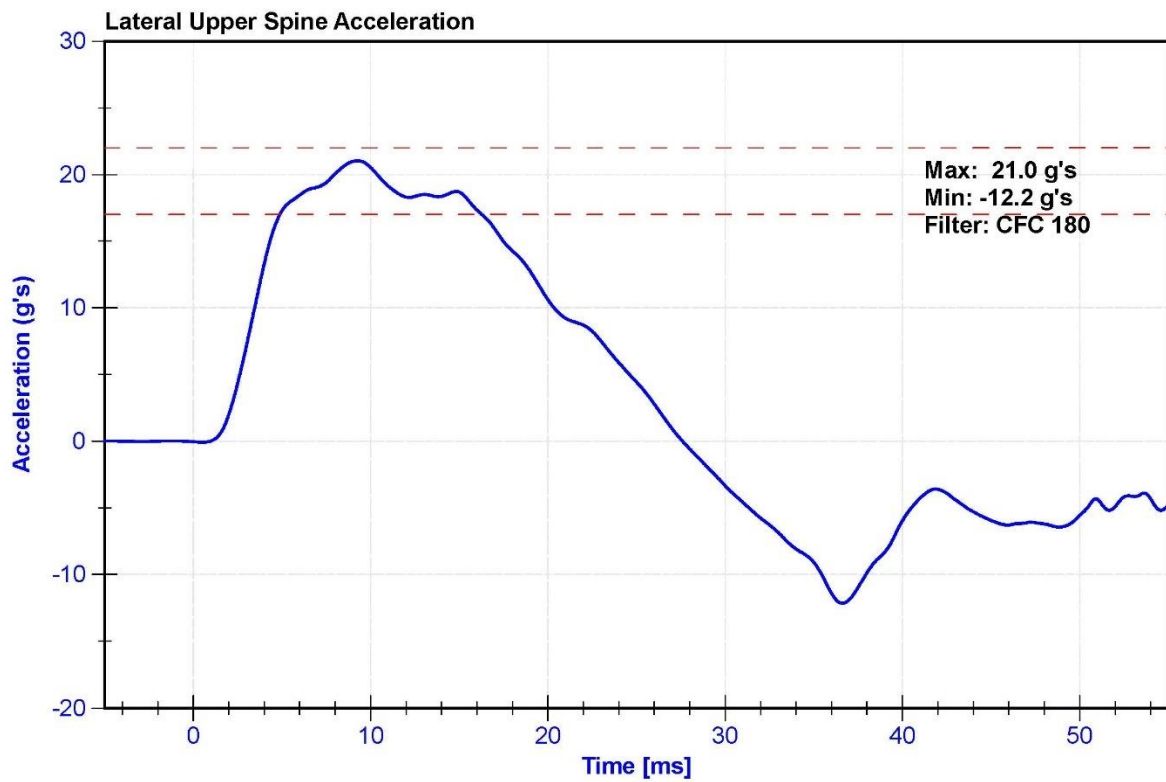
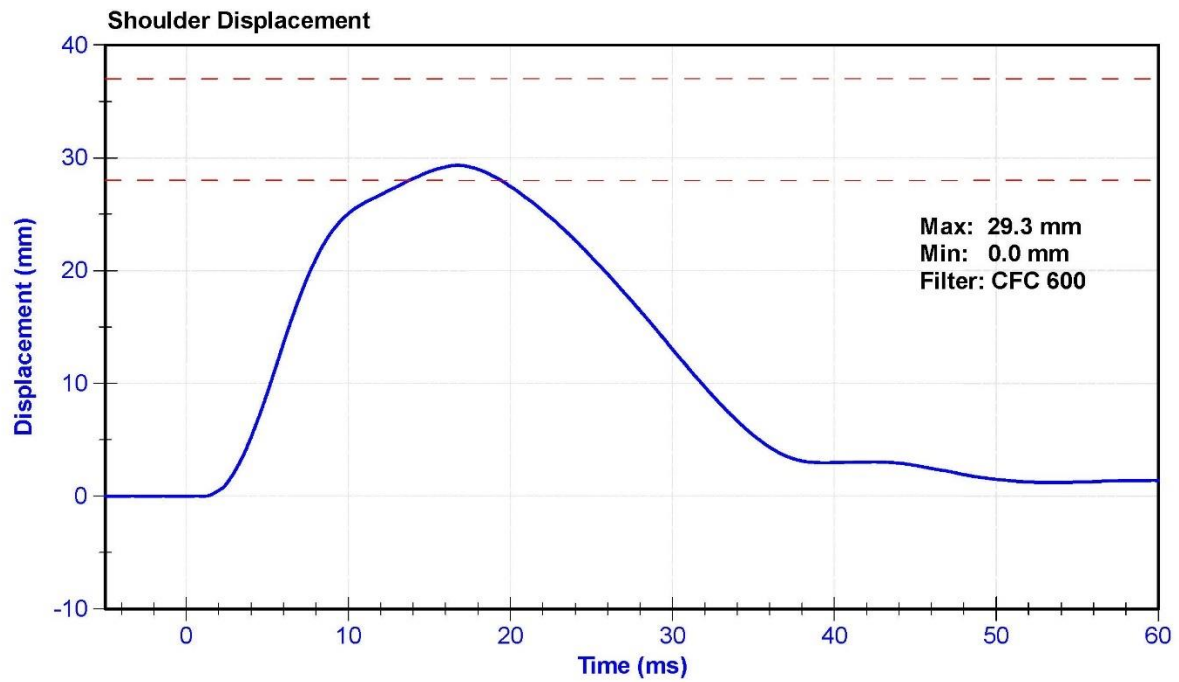
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.5	Pass
Humidity	10	70	%	50.3	Pass
Velocity	4.2	4.4	m/s	4.36	Pass
Probe Acceleration	13	18	g's	15.7	Pass
Shoulder Deflection	28	37	mm	29.3	Pass
Lateral Upper Spine Acceleration	17	22	g's	21.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	P51736	10/25/2021	10/25/2022
Shoulder Potentiometer	Servo	045GFE	1/12/2022	7/13/2022
Upper Spine Y Accelerometer	Endevco	P64148	1/10/2022	7/9/2022





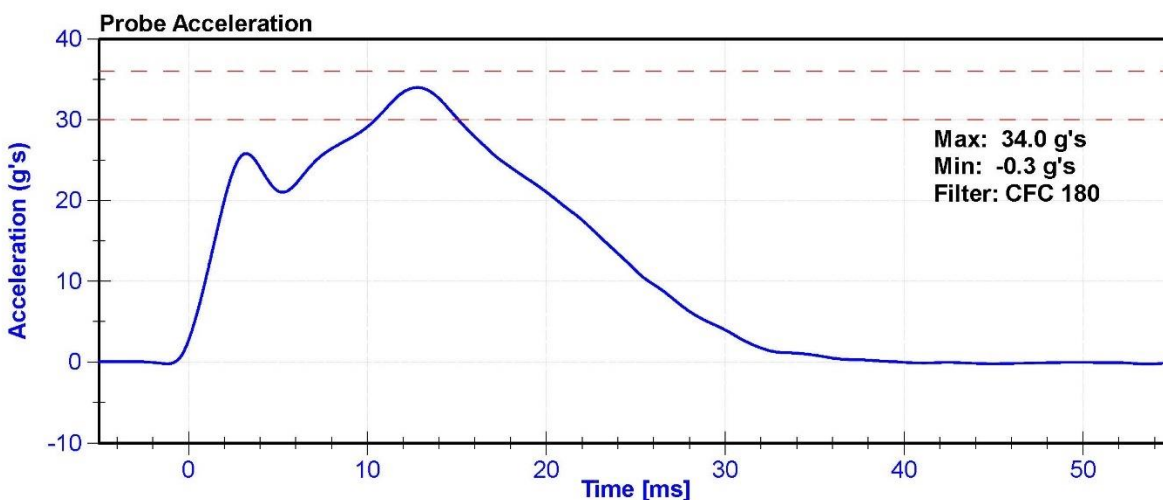
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	DG8012	Laboratory Supervisor	K. Brogan

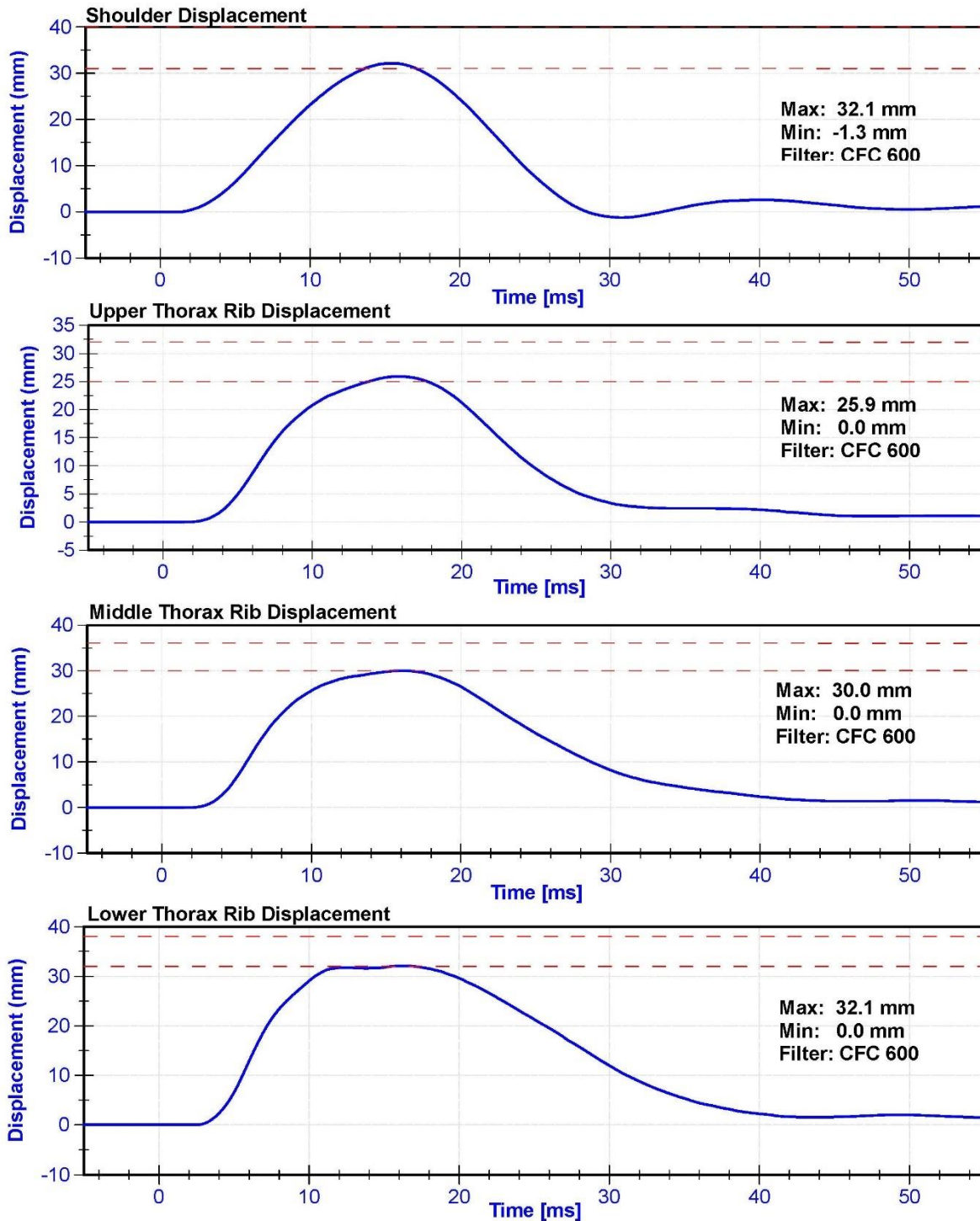
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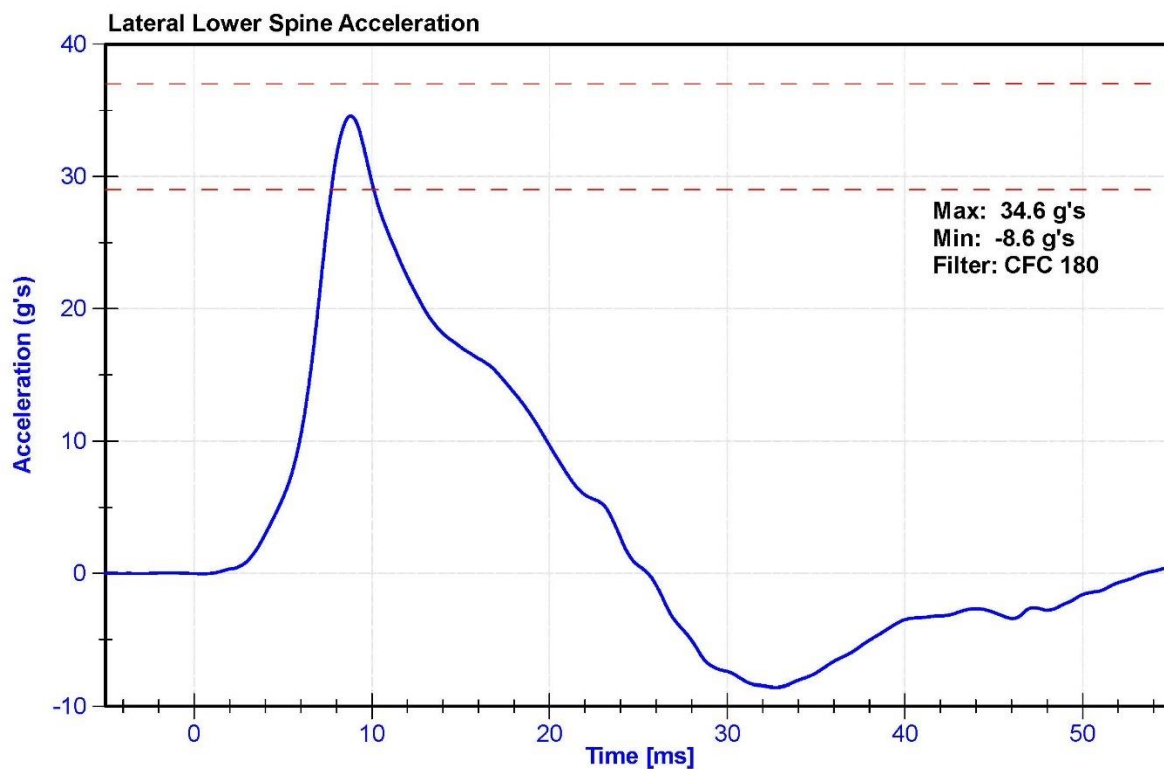
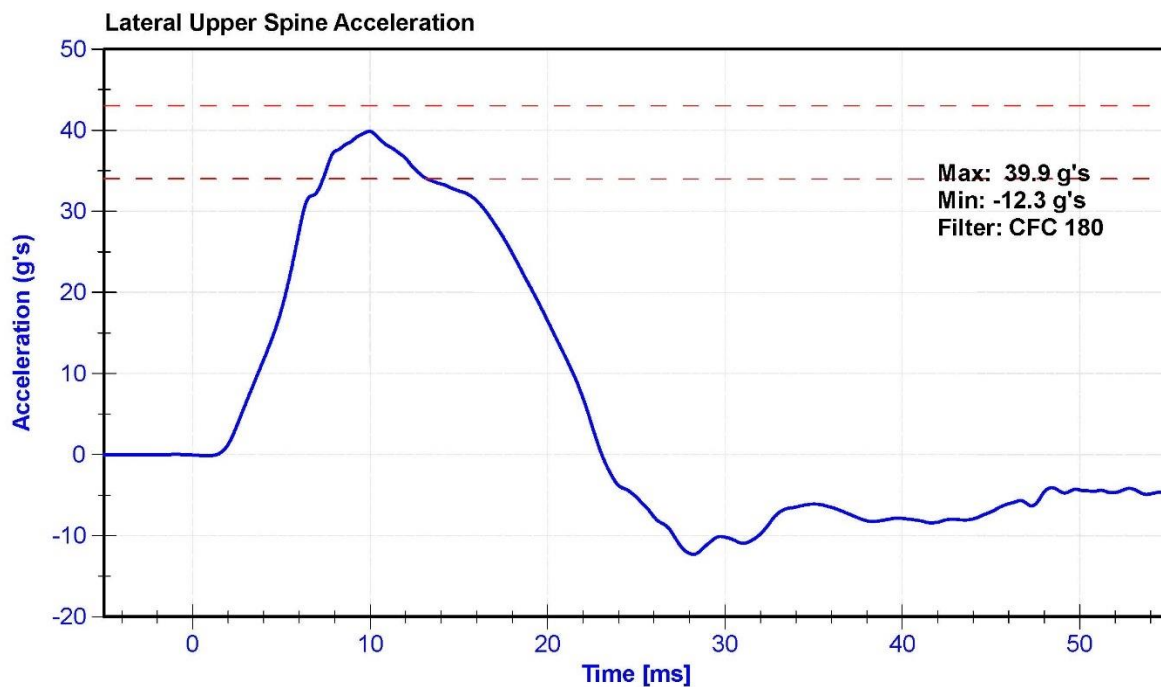
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.5	Pass
Humidity	10	70	%	50.3	Pass
Velocity	6.6	6.8	m/s	6.70	Pass
Probe Acceleration after 5 ms	30	36	g's	34.0	Pass
Lateral Upper Spine Acceleration	34	43	g's	39.9	Pass
Lateral Lower Spine Acceleration	29	37	g's	34.6	Pass
Shoulder Deflection	31	40	mm	32.1	Pass
Upper Thorax Rib Deflection	25	32	mm	25.9	Pass
Mid Thorax Rib Deflection	30	36	mm	30.0	Pass
Lower Thorax Rib Deflection	32	38	mm	32.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	P51736	10/25/2021	10/25/2022
Upper Spine T1 Y Accelerometer	Endevco	P64148	1/10/2022	7/9/2022
Upper Spine T12 Y Accelerometer	Endevco	P51327	1/10/2022	7/9/2022
Shoulder Potentiometer	Servo	045GFE	1/12/2022	7/13/2022
Upper Thorax Rib Potentiometer	Servo	1199GFE	1/12/2022	7/13/2022
Middle Thorax Rib Potentiometer	Servo	1246GFE	1/13/2022	7/14/2022
Lower Thorax Rib Potentiometer	Servo	011GFE	1/12/2022	7/13/2022







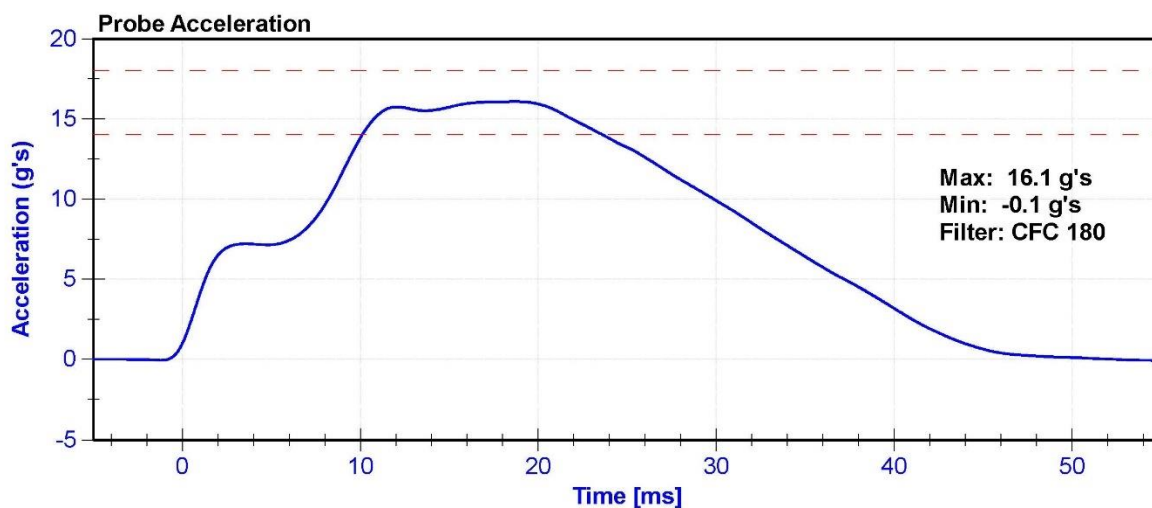
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	DG8012	Laboratory Supervisor	K. Brogan

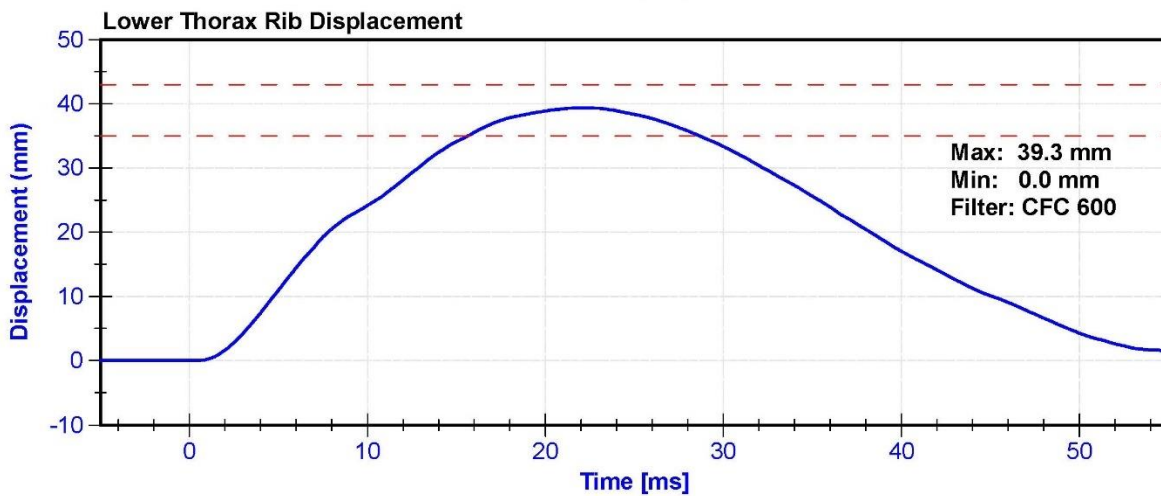
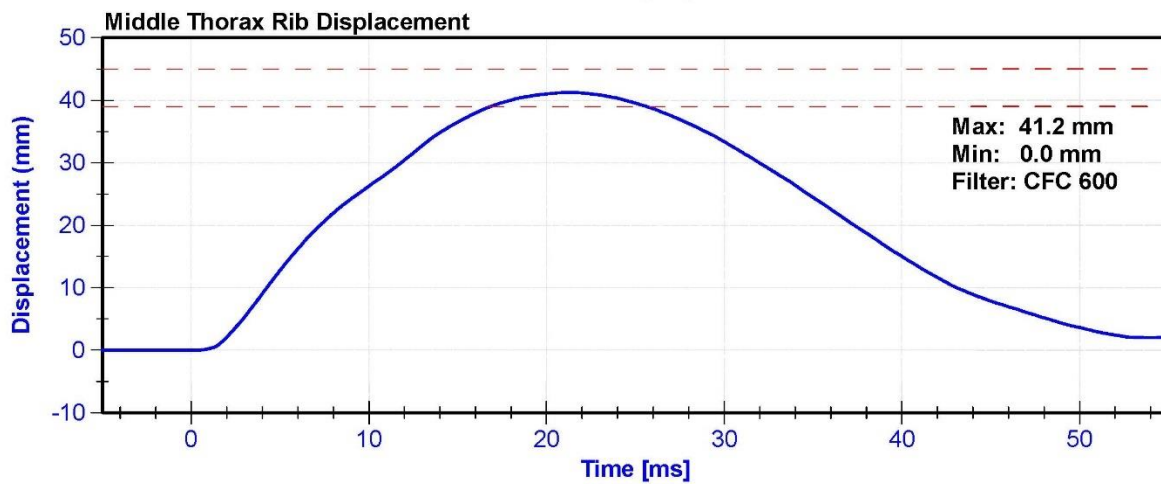
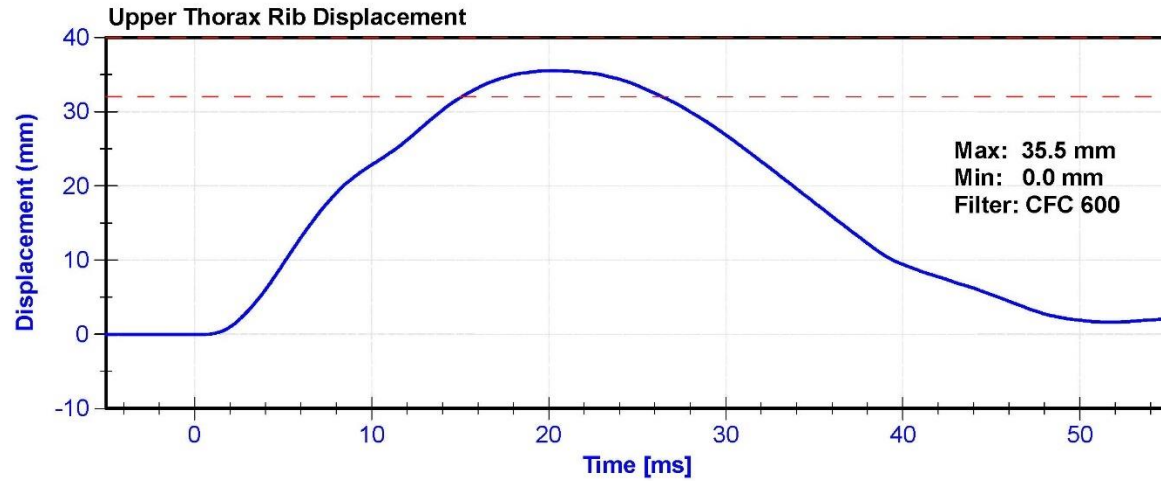
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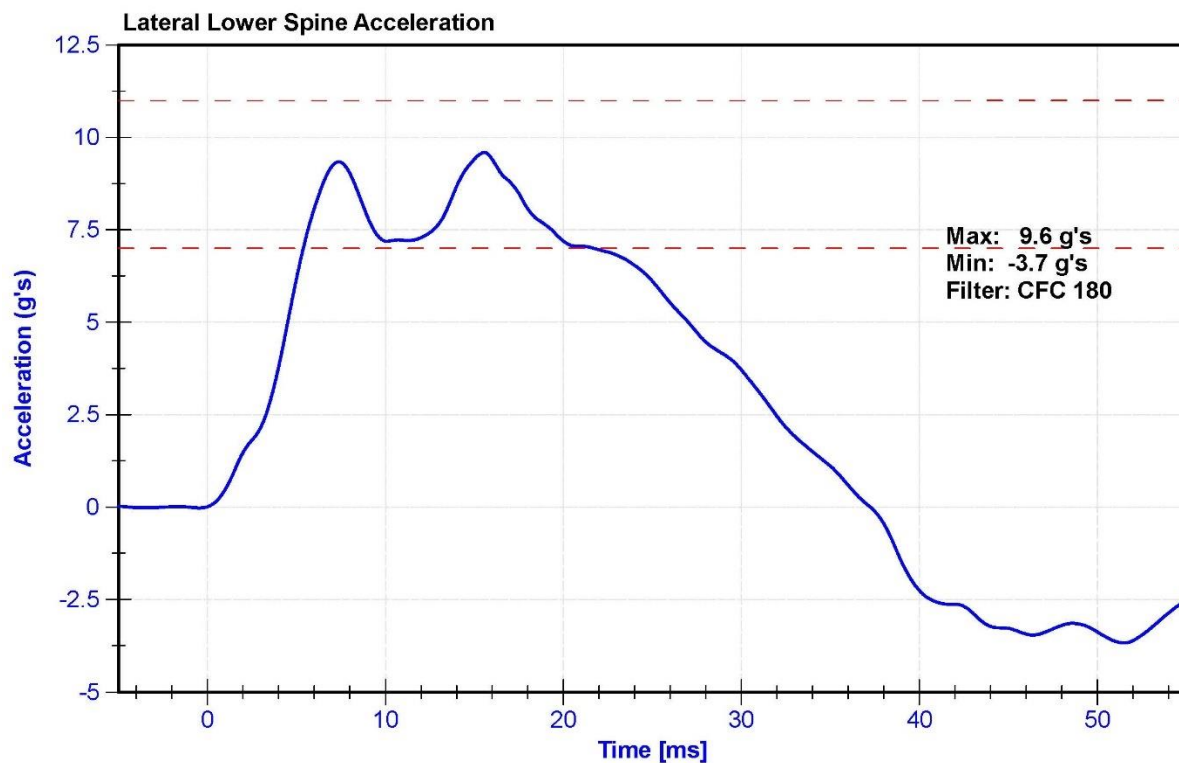
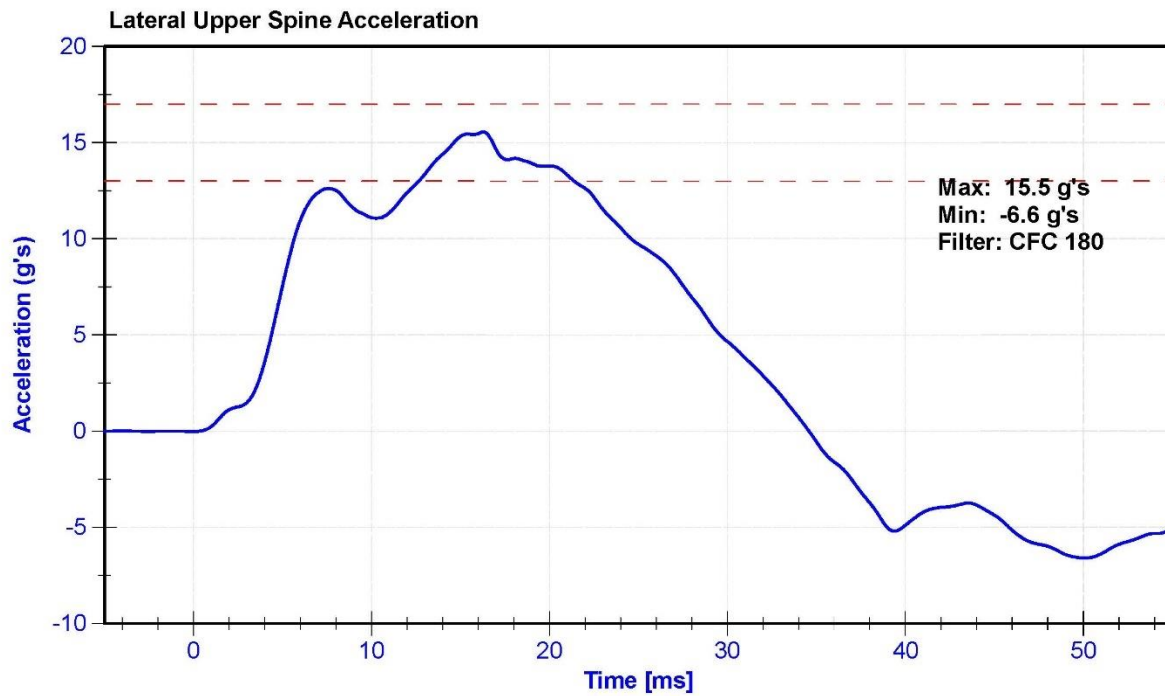
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.5	Pass
Humidity	10	70	%	50.3	Pass
Velocity	4.2	4.4	m/s	4.34	Pass
Probe Acceleration	14	18	g's	16.1	Pass
Lateral Upper Spine Acceleration	13	17	g's	15.5	Pass
Lateral Lower Spine Acceleration	7	11	g's	9.6	Pass
Upper Thorax Rib Deflection	32	40	mm	35.5	Pass
Middle Thorax Rib Deflection	39	45	mm	41.2	Pass
Lower Thorax Rib Deflection	35	43	mm	39.3	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	P51736	10/25/2021	10/25/2022
Upper Spine Y Accelerometer	Endevco	P64148	1/10/2022	7/9/2022
Lower Spine Y Accelerometer	Endevco	P51327	1/10/2022	7/9/2022
Upper Thorax Rib Potentiometer	Servo	1199GFE	1/12/2022	7/13/2022
Middle Thorax Rib Potentiometer	Servo	1246GFE	1/13/2022	7/14/2022
Lower Thorax Rib Potentiometer	Servo	011GFE	1/12/2022	7/13/2022







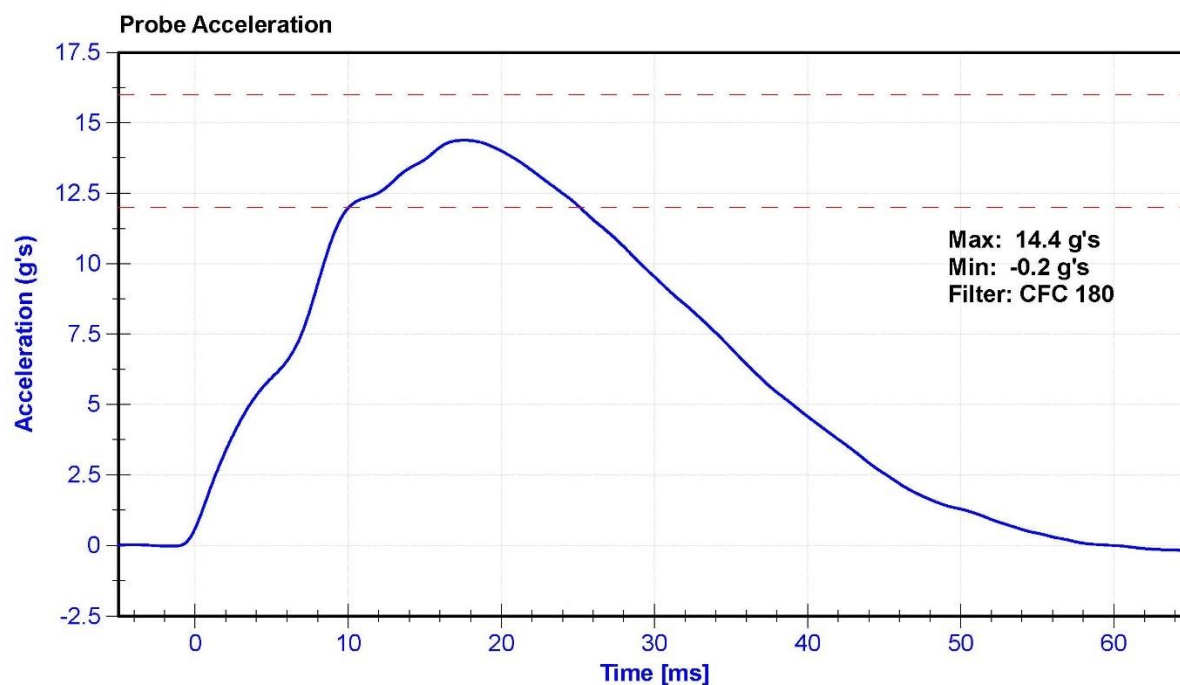
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	DG8012	Laboratory Supervisor	K. Brogan

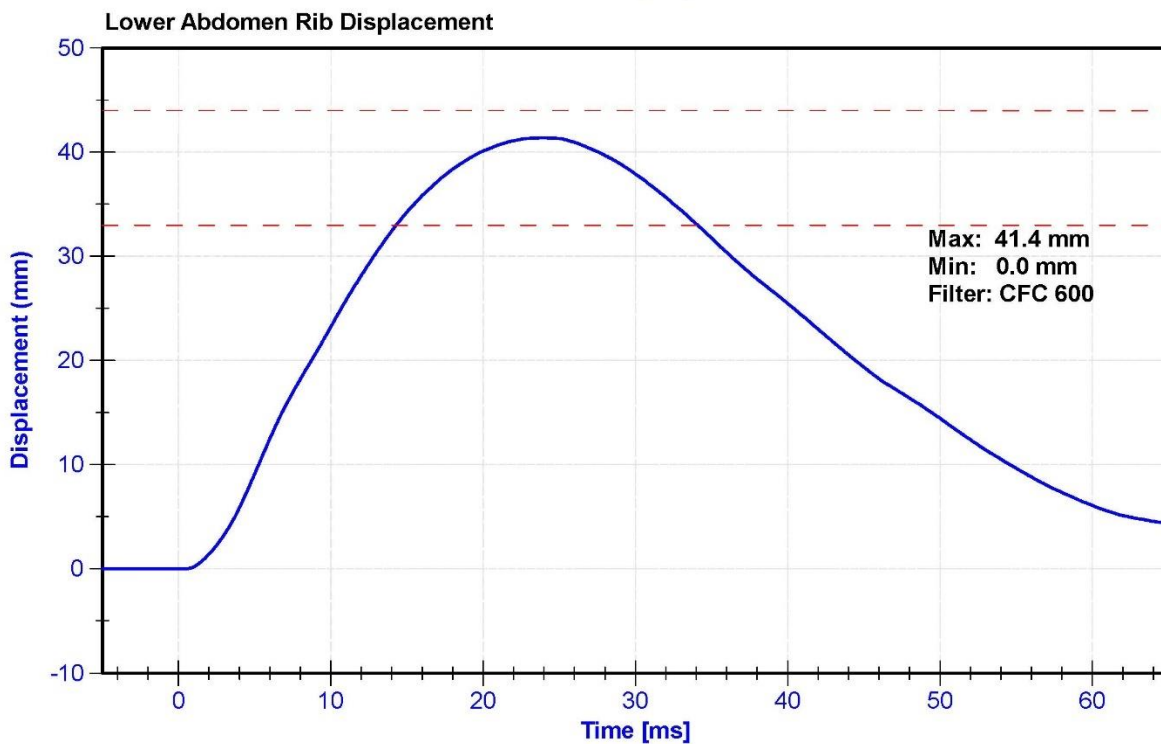
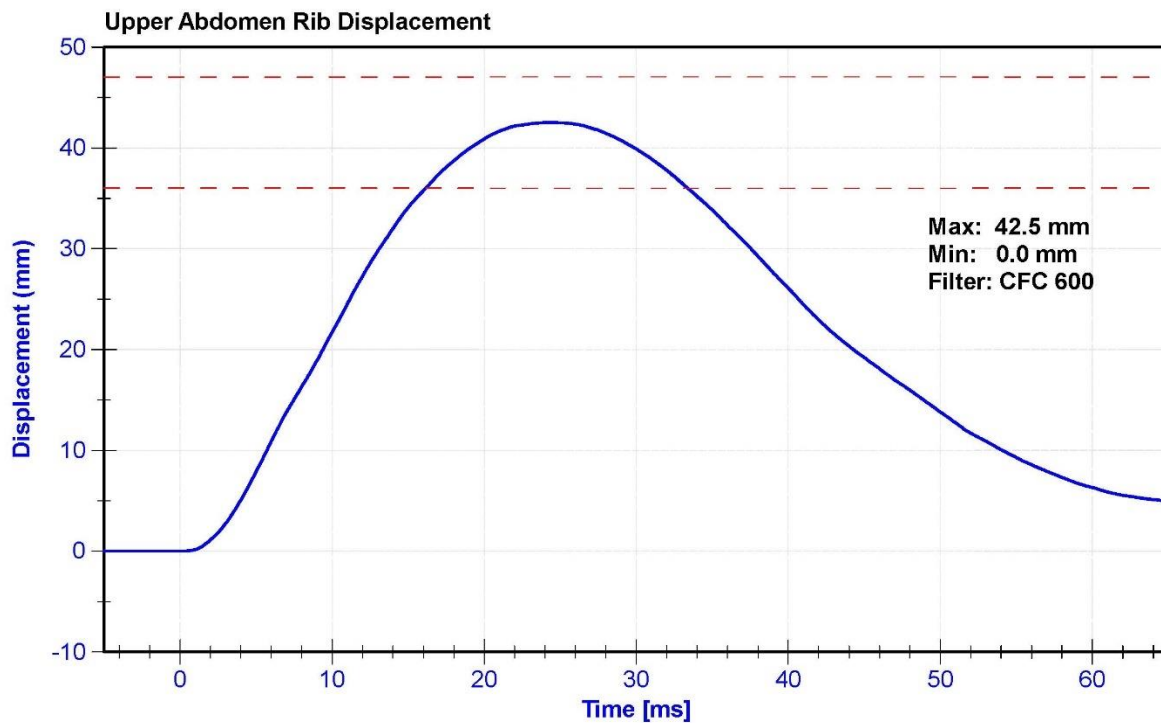
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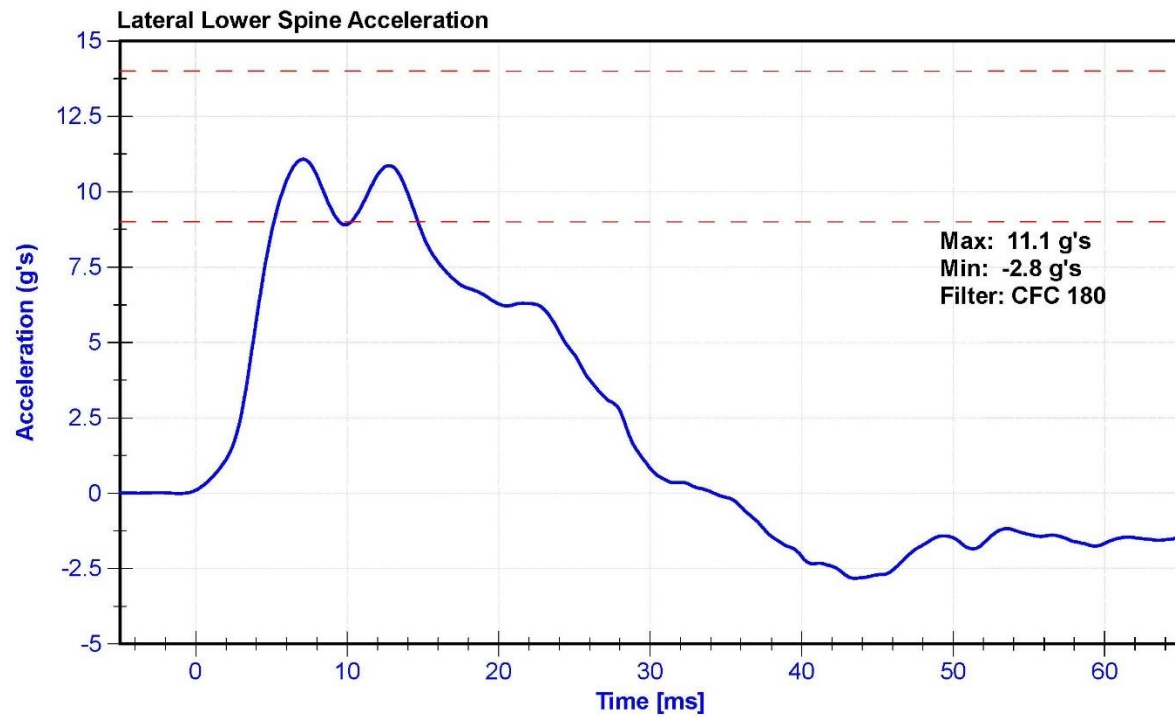
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.5	Pass
Humidity	10	70	%	50.3	Pass
Velocity	4.2	4.4	m/s	4.34	Pass
Probe Acceleration	12	16	g's	14.4	Pass
Lateral Lower Spine Acceleration	9	14	g's	11.1	Pass
Upper Abdomen Rib Deflection	36	47	mm	42.5	Pass
Lower Abdomen Rib Deflection	33	44	mm	41.4	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	P51736	10/25/2021	10/25/2022
Lower Spine Y Accelerometer	Endevco	P51327	1/10/2022	7/9/2022
Upper Abdomen Rib Potentiometer	Servo	008GFE	1/12/2022	7/13/2022
Lower Abdomen Rib Potentiometer	Servo	041 GFE	1/12/2022	7/13/2022







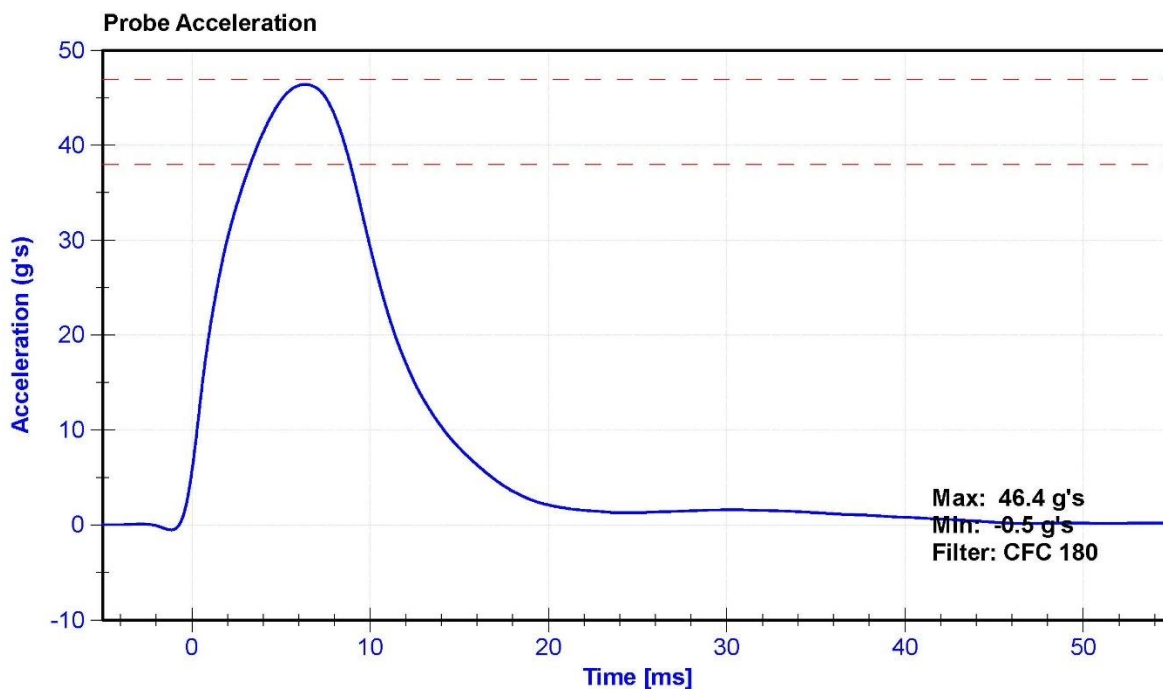
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	DG8012	Laboratory Supervisor	K. Brogan

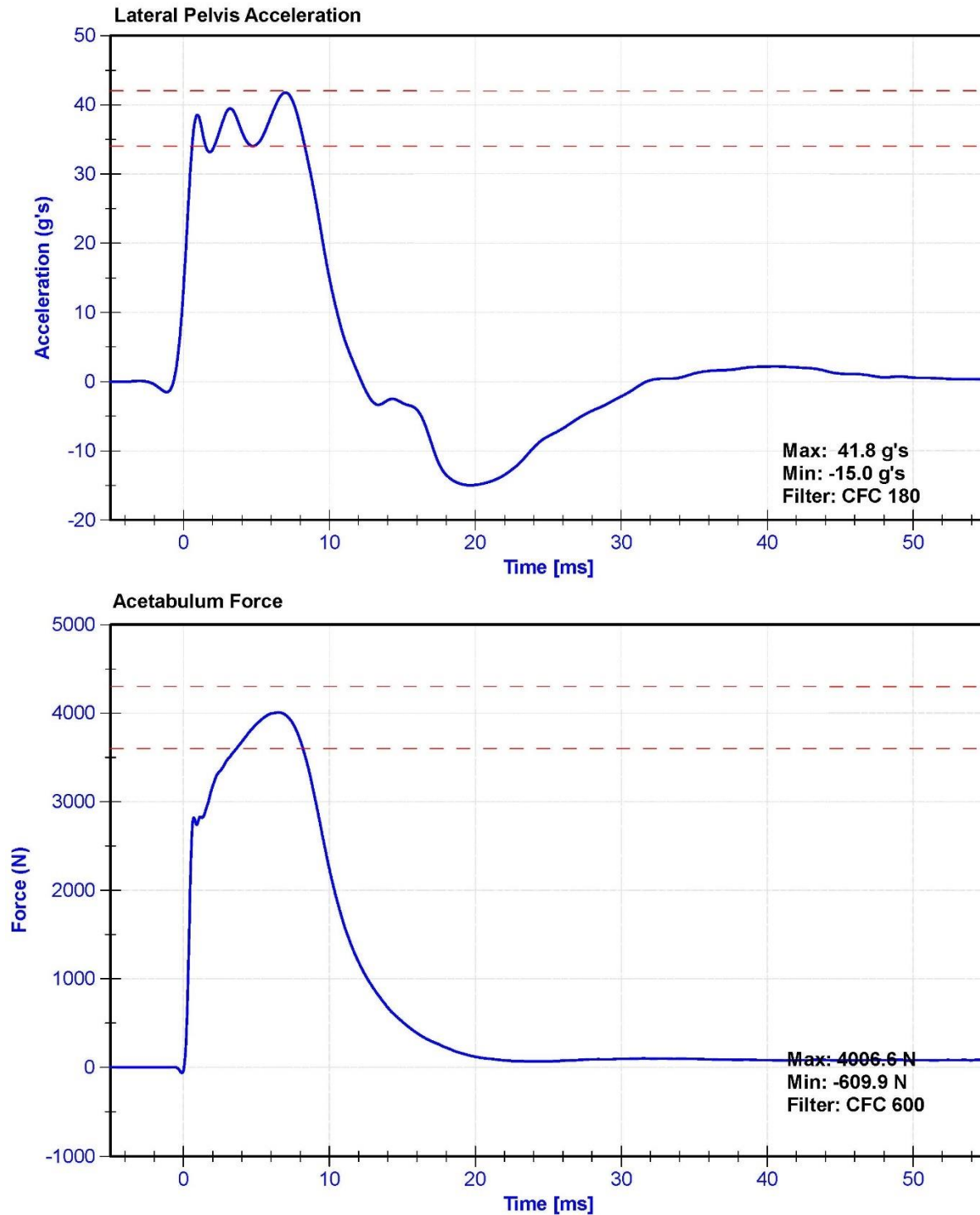
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.5	Pass
Humidity	10	70	%	50.3	Pass
Velocity	6.6	6.8	m/s	6.65	Pass
Probe Acceleration	38	47	g's	46.4	Pass
Lateral Pelvis Acceleration after 6ms	34	42	g's	41.8	Pass
Acetabulum Force	3600	4300	N	4006.6	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	P51736	10/25/2021	10/25/2022
Pelvis Y Accelerometer	Endevco	P51875	1/10/2022	7/9/2022
Acetabulum Load Cell	Denton	276-FY	9/14/2021	9/14/2022
Certification Plug	SACO			N/A
Crash Test Plug	SACO			N/A







CELT

SID-Its Pelvis Plug Certification Test

Plug S/N 14029

Test Number 13503

Report Number 13548

Test Date 5/22/2020 12:53:32 PM

Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	343	600
Force @ 1.5 mm (N)	1,273	1,400
Force @ 2.5 mm (N)	1,481	1,618
Force @ 3.0 mm (N)	1,509	1,673

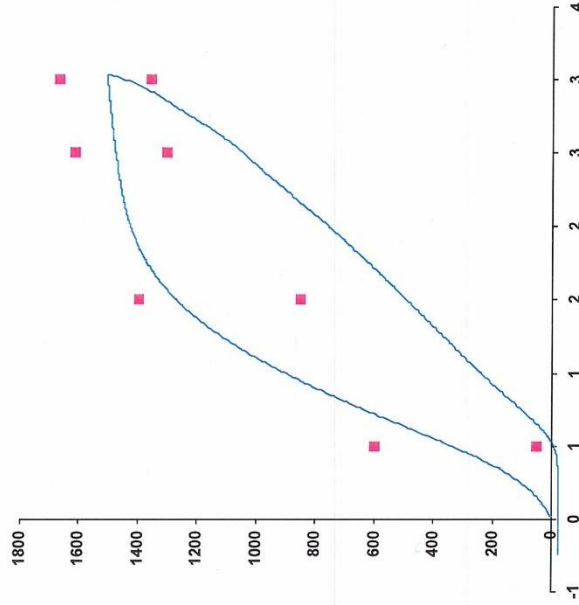
Testing Machine STM-20 5965542

Load Cell S/N (F1360947), Units (LBS) 1000

Crosshead Speed (mm / min) or Rate 12.7
Extension or Position Measured by XHD_100 (XHD100)

Notes:

Force (-N) vs Extension (-mm)



Operator

Part Number 180-4450

Template No 107 08-Jul-21

SACO Research

By : _____ Date : _____
SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 FAX



CRASH

SID-IIs Pelvis Plug Certification Test

Plug S/N 13897

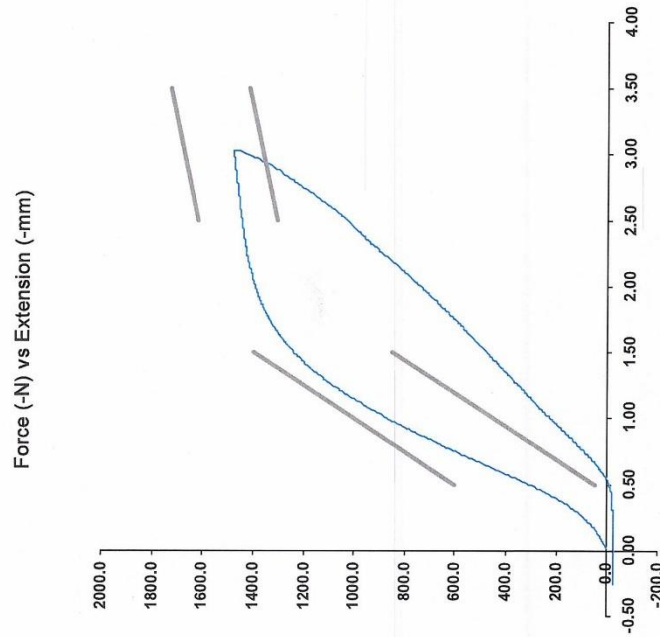
Test Number 13371

Report Number 13416

Test Date 5/20/2020 8:22:29 PM

Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	316	600
Force @ 1.5 mm (N)	1,241	1,400
Force @ 2.5 mm (N)	1,448	1,618
Force @ 3.0 mm (N)	1,479	1,673

Testing Machine STM-20 5965542	
Load Cell S/N (F1360947), Units (LBS)	1000
Preload Value (-N)	22.24
Crosshead Speed (mm / min) or Rate	12.7
Extension or Position Measured by	XHD_100 (XHD100)
Notes:	



Operator	Part Number 180-4450
Template No 107	08-Jul-21
SACO Research	

By : _____ Date : _____
SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 FAX

Non-Impact



SID-Ils Pelvis Plug Certification Test

Plug S/N 13246

Test Number 10668

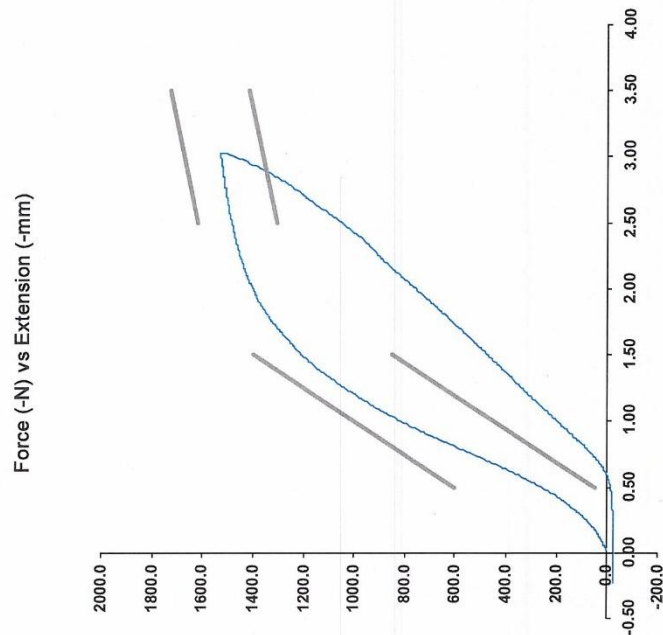
Report Number 10704

Test Date 8/12/2019 8:14:44 AM

Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	50	600
Force @ 1.5 mm (N)	850	1,400
Force @ 2.5 mm (N)	1,306	1,618
Force @ 3.0 mm (N)	1,361	1,673

Testing Machine STM-20 5965542
Load Cell S/N (FI360947), Units (LBS) 1000
Crosshead Speed (mm / min) or Rate 12.7
Extension or Position Measured by XHD_100 (XHD100)

Notes:



Operator	Part Number 180-4450
Template No 107 08-Jul-21 SACO Research	

By : _____ Date : _____
SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 FAX

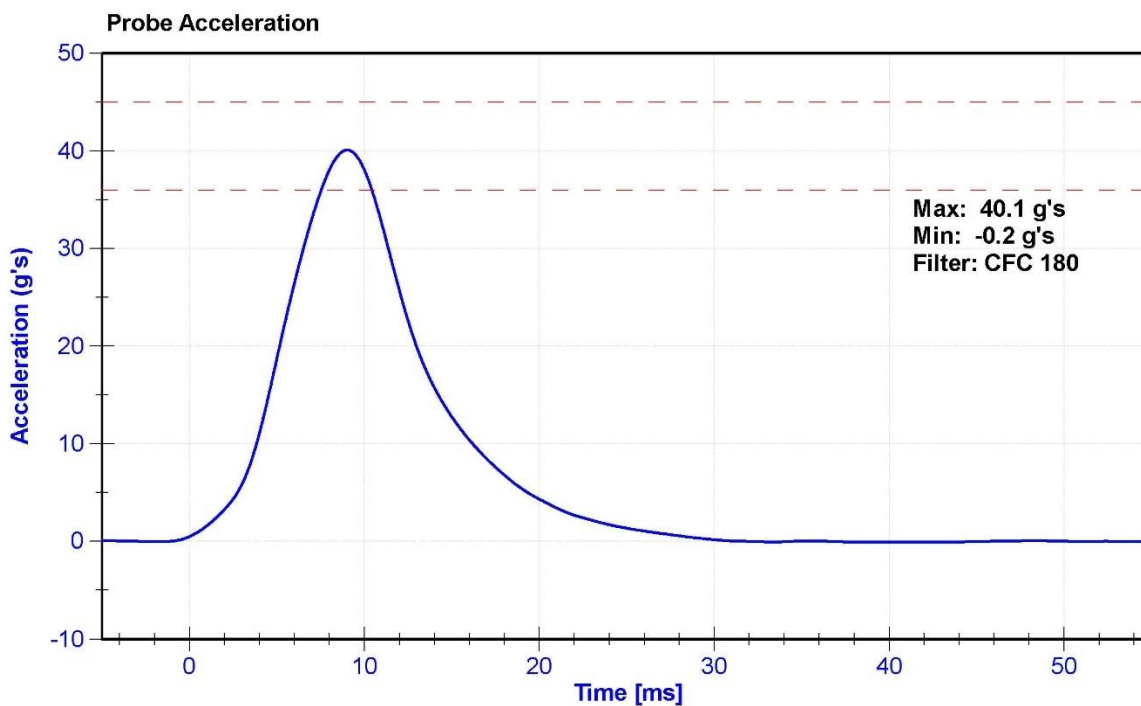
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	DG8012	Laboratory Supervisor	K. Brogan

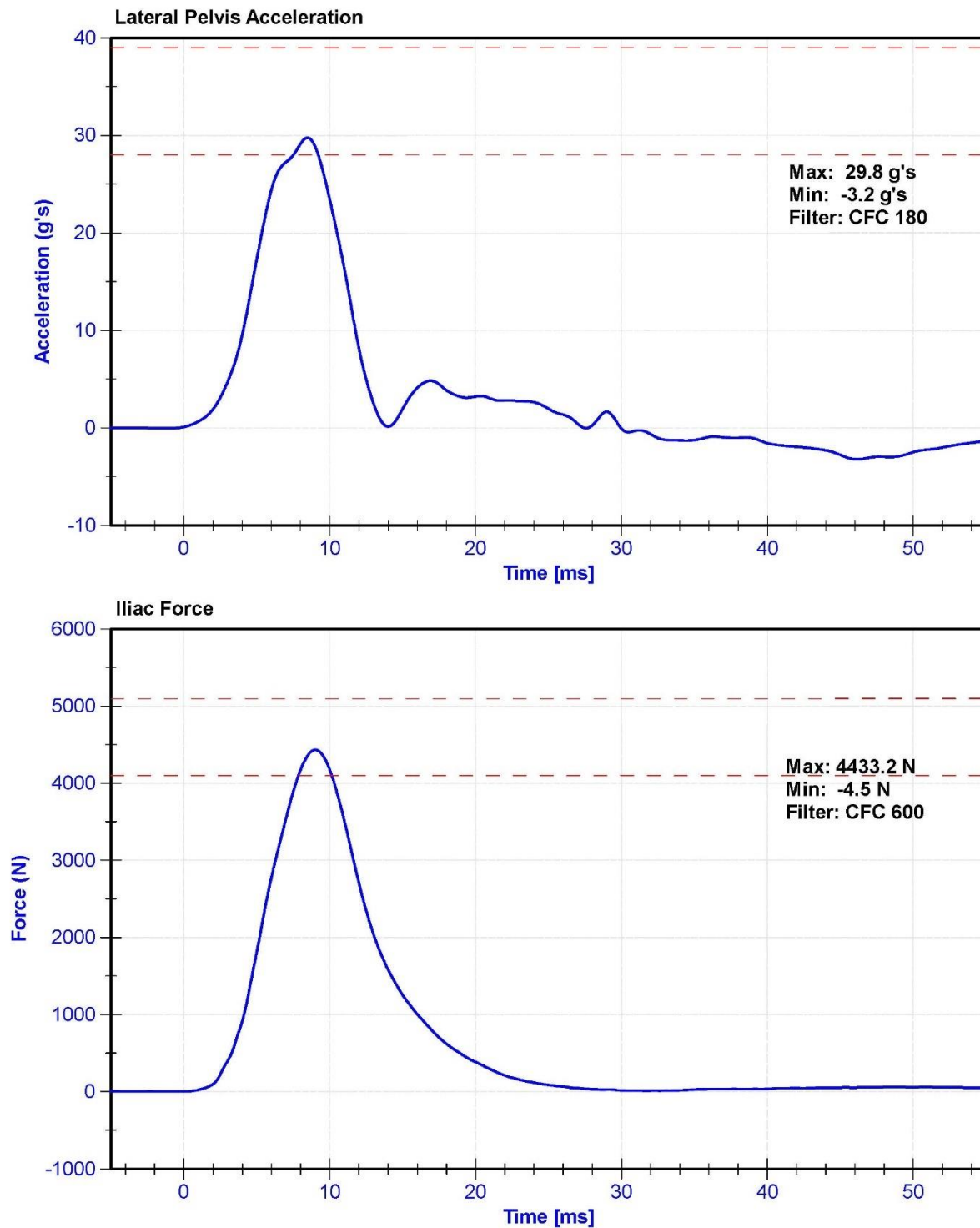
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.4	Pass
Humidity	10	70	%	32.4	Pass
Velocity	4.2	4.4	m/s	4.33	Pass
Probe Acceleration	36	45	g's	40.1	Pass
Lateral Pelvis Acceleration	28	39	g's	29.8	Pass
Iliac Force	4100	5100	N	4433.2	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	P51736	10/25/2021	10/25/2022
Pelvis Y Accelerometer	Endevco	P51875	1/10/2022	7/9/2022
Iliac Load Cell	Denton	290-FY	9/14/2021	9/14/2022





APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

Table 1 – Dummy Instrumentation (ES-2re)

			ES-2re S/N: F033		
			Serial Number	Manufacturer	Calibration Date
Head Accelerometers	Primary	X	P63861	Endevco	1/31/2022
		Y	P49216	Endevco	1/31/2022
		Z	P51303	Endevco	1/31/2022
	Redundant	X	P58868	Endevco	1/31/2022
		Y	P16755	Endevco	1/31/2022
		Z	P52132	Endevco	1/31/2022
Thorax Rib Displacement Potentiometers	Upper	Y	179GFE	Honeywell	2/1/2022
	Middle	Y	185GFE	Honeywell	2/1/2022
	Lower	Y	178GFE	Honeywell	2/1/2022
Abdomen Load Cells	Forward	Y	1512	Denton	8/2/2021
	Middle	Y	1526	Denton	8/2/2021
	Rear	Y	1516	Denton	8/2/2021
Lower Spine Accelerometers (T12)		X	P52009	P52009	Endevco
		Y	P69803	P69803	Endevco
		Z	P52033	P52033	Endevco
Pubic Symphysis Load Cell		Y	464-FY	464-FY	Denton

Table 2 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N: DG8012		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers		Primary	X	P74788	Endevco	1/10/2022
			Y	P83432	Endevco	1/10/2022
			Z	P83319	Endevco	1/10/2022
		Redundant	X	P80334	Endevco	1/10/2022
			Y	P52155	Endevco	1/10/2022
			Z	P83322	Endevco	1/10/2022
Displacement Potentiometers	Thoracic Rib	Upper	Y	1199GFE	Servo	1/12/2022
		Middle	Y	1246GFE	Servo	1/13/2022
		Lower	Y	011GFE	Servo	1/12/2022
	Abdominal Rib	Upper	Y	008GFE	Servo	1/12/2022
		Lower	Y	041 GFE	Servo	1/12/2022
Lower Spine Accelerometers (T12)			X	P71272	Endevco	1/10/2022
			Y	P51327	Endevco	1/10/2022
			Z	P52067	Endevco	1/10/2022
Acetabulum Load Cell			Y	276-FY	Denton	9/14/2021
Iliac Wing Load Cell			Y	290-FY	Denton	9/14/2021
Pelvis Plug (struck side)				13831	SACO	5/15/2020
Pelvis Plug (non-struck side)				13025	SACO	7/30/2019

Table 3 – Vehicle Instrumentation

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	A315860	Measurement Specialties	12/29/2021
	Vehicle Center of Gravity	Y	A372822	Measurement Specialties	2/4/2022
	Vehicle Center of Gravity	Z	A374350	Measurement Specialties	12/29/2021
2	Right Sill at Front Seat	X	A372853	Measurement Specialties	3/28/2022
	Right Sill at Front Seat	Y	A372874	Measurement Specialties	3/28/2022
	Right Sill at Front Seat	Z	A374263	Measurement Specialties	3/28/2022
3	Right Sill at Rear Seat	X	A280966	Measurement Specialties	4/21/2022
	Right Sill at Rear Seat	Y	A284983	Measurement Specialties	4/21/2022
	Right Sill at Rear Seat	Z	A315865	Measurement Specialties	4/21/2022
4	Left Sill at Front Door	Y	A428035	Measurement Specialties	3/2/2022
5	Left Sill at Rear Door	Y	A399999	Measurement Specialties	4/25/2022
6	Left A-Post Lower	Y	A396620	Measurement Specialties	2/17/2022
7	Left A-Post Middle	Y	A399995	Measurement Specialties	2/18/2022
8	Left B-Post Lower	Y	A281011	Measurement Specialties	4/25/2022
9	Left B-Post Middle	Y	A280024	Measurement Specialties	4/25/2022
10	Front Seat Track	Y	A405596	Measurement Specialties	4/14/2022
11	Rear Seat Track or Structure	Y	A315783	Measurement Specialties	12/21/2021
12	Right Rear Occ. Compartment	Y	A284283	Measurement Specialties	4/20/2022
13	Engine Block	X	A400029	Measurement Specialties	2/9/2022
	Engine Block	Y	A400770	Measurement Specialties	2/25/2022
14	Rear Floorpan Above Axle	X	A301875	Measurement Specialties	2/10/2022
	Rear Floorpan Above Axle	Y	A335431	Measurement Specialties	4/6/2022
	Rear Floorpan Above Axle	Z	A400000	Measurement Specialties	2/11/2022

TABLE 4 – MDB Instrumentation

MDB Instrumentation		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	A336631	Measurement Specialties	12/29/2021
MDB Center of Gravity	Y	A352417	Measurement Specialties	12/29/2021
MDB Center of Gravity	Z	A352418	Measurement Specialties	12/29/2021
Left Frame at Rear Axle Centerline	X	A315961	Measurement Specialties	12/30/2021
Left Frame at Rear Axle Centerline	Y	A398329	Measurement Specialties	12/30/2021