

REPORT NUMBER: 214D-CAL-24-007

**SAFETY COMPLIANCE TESTING FOR FMVSS 214
DYNAMIC SIDE IMPACT PROTECTION
RIGID POLE TEST**

**Honda of Canada MFG.
2024 Honda CR-V 1.5T
5 Door SUV**

NHTSA No: C20245301

**PREPARED BY:
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March 4, 2024

FINAL REPORT

**PREPARED FOR:
U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
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WASHINGTON, D.C. 20590**

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number 693JJ923D000043.

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TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. 214P-CAL-24-007		2. Government Accession No.		3. Recipient's Catalog No.																								
4. Title and Subtitle Final Report of 214P Compliance Test Side Impact Protection Testing of a 2024 Honda CR-V 1.5T 5 Door SUV NHTSA No.: C20245301				5. Report Date March 4, 2024																								
				6. Performing Organization Code CAL																								
7. Author(s) Claire Hejaily, Test Engineer Vanessa Hansen, Test Engineer				8. Performing Organization Report No. CAL-DOT-2024-007																								
9. Performing Organization Name and Address Calspan Corporation Transportation Test Operations P.O. Box 400 Buffalo, New York 14225				10. Work Unit No.																								
				11. Contract or Grant No. 693JJ923D000043																								
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance 1200 New Jersey Ave., SE Room W43-304 Washington, D.C. 20590				13. Type of Report and Period Covered: Final Test Report February 12, 2024 - March 4, 2024																								
				14. Sponsoring Agency Code NEF-240																								
15. Supplementary Notes																												
16. Abstract A 31.00 km/h (19.3 mph), 75° oblique compliance test was conducted on the subject 2024 Honda CR-V 1.5T 5 Door SUV in accordance with the specifications of the Office of Vehicle Safety Compliance TP-214P-01 for the determination of FMVSS No.214 Side Impact Protection compliance. This test was conducted at Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on February 12, 2024. The impact velocity of the vehicle was 31.06 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle was 21°C. The target vehicle's maximum post-test static crush was 285 mm located at level 3. 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></td> <td>1000</td> <td>348.304</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>44</td> <td>25.767</td> </tr> <tr> <td>Total Abdominal Force</td> <td>N</td> <td>2500</td> <td>1044.882</td> </tr> <tr> <td>Pubic Symphysis Force</td> <td>N</td> <td>6000</td> <td>1950.972</td> </tr> </tbody> </table> 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 (HIC36)		1000	348.304	Maximum Thoracic Rib Deflection	mm	44	25.767	Total Abdominal Force	N	2500	1044.882	Pubic Symphysis Force	N	6000	1950.972
Measurement Description	Driver ATD (ES-2re)																											
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Maximum Thoracic Rib Deflection	mm	44	25.767																									
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Pubic Symphysis Force	N	6000	1950.972																									
17. Key Words Compliance Testing Side Impact Protection Pole Test ES-2re SID-IIs				18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services (TIS) Room E12-100 East Bldg. 1200 New Jersey Ave. Washington, D.C. 20590 Telephone No. (202) 366-2588																								
19. Security Class. (of this report) UNCLASSIFIED		20. Security Class. (of this page) UNCLASSIFIED		21. No. of Pages 109	22. Price																							

Form DOT F1700.7 (8-72)

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SECTION 1

PURPOSE AND SUMMARY OF TEST

PURPOSE

This side impact test was conducted as part of the FY 2024 FMVSS 214 Side Impact Protection Compliance Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. 693JJ923D000043. The purpose of this test was to evaluate side impact protection in a 2024 Honda CR-V 1.5T 5 Door SUV. The side impact test was conducted in accordance with the Office of Vehicle Safety Compliance's Laboratory Test Procedure, TP-214P-01 dated September 2012.

SUMMARY

A rigid pole side impact test was conducted on a 2024 Honda CR-V 1.5T 5 Door SUV. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 31.06 km/h. The test was conducted by Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on February 12, 2024. Pre-test and post-test photographs of the test vehicle and side impact dummy (ES2re) are included in Appendix I of this report.

One Part 572U (ES-2re) dummy was placed in the driver designated seating position according to instructions specified in the TP-214P-01 Test Procedure, dated September 2012. The side impact event was documented by nine High Speed Cameras and one real time camera.

The ES2re male dummy was instrumented accordingly:

- 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

Appendix II contains the dummy response data. Dummy configuration and performance verification data can be found in Appendix IV of this report. Appendix V identifies all serial numbers, manufacturers, and calibration dates for test equipment, dummy sensors, potentiometers, and load cells used to collect data during the test.

Injury readings for the ES2re dummy were recorded as follows:

INJURY READINGS

Measurement Description	Driver ATD (ES2re)		
	Units	IARV	Result
Head Injury Criteria (HIC36)		1000	348.304
Upper Rib Deflection	mm	44	25.767
Mid Rib Deflection	mm	44	22.325
Lower Rib Deflection	mm	44	20.226
Abdominal Load (front)	N		231.245
Abdominal Load (mid)	N		333.960
Abdominal Load (rear)	N		480.584
Total Abdominal Force	N	2500	1044.882
Pubic Symphysis Force	N	6000	1950.972

SECTION 2

OCCUPANT AND VEHICLE INFORMATION

This section contains information reporting for the following Data Sheets:

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DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2024 Honda CR-V 1.5T 5 Door SUV
 Test Facility: Calspan

NHTSA No.: C20245301
 Test Date: 02/12/2024

TEST VEHICLE INFORMATION AND OPTIONS

Make	Honda	Anti-Lock Brakes (ABS)	Yes
Model	CR-V 1.5T	All-Wheel Drive (AWD)	Yes
Body Style	SUV	Traction Control System (TCS)	Yes
VIN	2HKRS4H25RH405236	Electric Stability Control (ECS)	Yes
Body Color	Meteorite Gray	Curtain Airbags	Yes
Engine Displacement (L)	1.5	Torso Airbags – Front Seats	Yes
Type / No. Cylinders	I4	Torso Airbags – Rear Seats	Yes
Engine Placement	Transverse	Combination/Head Torso Bag	No
Transmission Type	Automatic	Pelvic Airbag – Front Seats	No
Transmission Speeds	CVT	Pelvis Airbag – Rear Seats	No
Overdrive	Yes	Knee Airbag – Driver	Yes
Final Drive	All Wheel Drive	Knee Airbag – Front Passenger	Yes
Odometer Reading (mi)	1059	Seat Belt Pretensioners – Front Seats	Yes
		Seat Belt Pretensioners – Rear Seats	Yes
		Seat Belt Load Limiter – Front Seats	Yes
		Seat Belt Load Limiter – Rear Seats	Yes
		Tire Pressure Monitoring System (TPMS)	Yes
		Tilt Steering Wheel	Yes
		Automatic Door Locks (ADL)	Yes
		Power Window Auto-reverse	Yes
		Power Seats	No
		Other Safety Restraint	N/A

DATA FROM CERTIFICATION LABEL

Manufactured By	In Canada By Honda of Canada MFG.	GVWR (kg)	2175
Date of Manufacture	07/23	GVWR Front (kg)	1120
Vehicle Type	MPV	GVWR Rear (kg)	1120

VEHICLE SEATING AND WEIGHT CAPACITY DATA

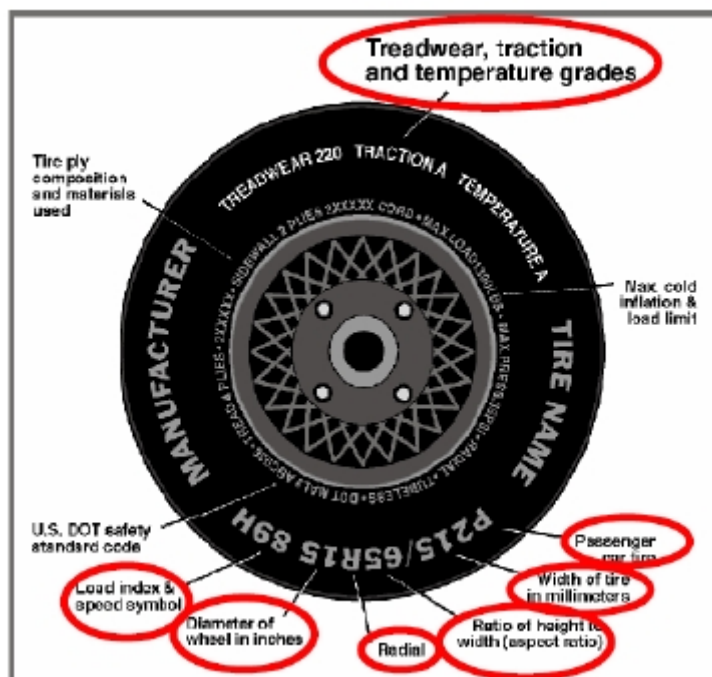
Measured Parameter	Front	Rear	Third	Total
Type of Seats (Bench or Bucket)	Bucket	Split Bench	N/A	
Designated Seating Capacity (DSC)	2	3	N/A	5
Capacity Weight (VCW) (kg)				385
Cargo Weight (RCLW) (kg)				44.8

DATA SHEET NO. 2 VEHICLE TIRE INFORMATION

Test Vehicle: 2024 Honda CR-V 1.5T 5 Door SUV
Test Facility: Calspan

NHTSA No.: C20245301
Test Date: 02/12/2024

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



VEHICLE TIRE INFORMATION

Tire Placard	Front	Rear
Recommended Cold Pressure (kPa)	230	220
Recommended Tire Size	235/65R17	235/65R17
Tire Sidewall	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Tire Size on Vehicle	235/65R17	235/65R17
Tire Manufacturer Model	Bridgestone	Bridgestone
Tire Name	Ecopia	Ecopia
Tire Type	All Season	All Season
Tire Width	235	235
Aspect Ratio	65	65
Radial	Yes	Yes
Wheel Diameter	17"	17"
Load Index / Speed Symbol	104H	104H
Treadwear	700	700
Traction Grade	A	A
Temperature Grades	A	A

DATA SHEET NO. 3
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2024 Honda CR-V 1.5T 5 Door SUV
Test Facility: Calspan

NHTSA No.: C20245301
Test Date: 02/12/2024

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	221	221	221	221
Tire Placard	kPa	230	230	220	220

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			Fully Loaded			As Tested		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	492	334		502	410		510	392	
Right	kg	443	350		471	365		474	363	
Ratio	%	57.8	42.2		55.7	44.3		56.6	43.4	
Totals	kg	935	684	1619	973	775	1748	984	755	1739

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	1619	(A)
Weight of Test Dummy	kg	81	(B)
Rated Cargo / Luggage Weight (RCLW)	kg	44.8	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1744.8	(A+B+C)

TEST VEHICLE ATTITUDES AND CG

Measurement Description	Units	As Delivered	Fully Loaded	As Tested
Driver Door Sill Angle	Deg	+0.05	-0.15	-0.15
Front Passenger Sill Angle	Deg	+0.65	-0.45	-0.35
Front Bumper-Line Angle	Deg	+0.20	0.00	0.00
Rear Bumper-Line Angle	Deg	+0.15	-0.25	-0.15

ND = Nose Down (-), NU = Nose Up (+), LD = Left Down (-), LU = Left Up (+)

CALCULATION OF VERTICAL IMPACT REFERENCE LINE

Measured Parameter	Units	Value
Test Vehicle Wheelbase	mm	2701
Vertical Impact Reference Line Aft of Front Axle	mm	1274

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Trunk Carpeting	9
Spare Tire	16
Jack	3
Right Passenger Rear Window	4
Ballast (if any)	15.9

DATA SHEET NO. 4
SEAT AND SEAT BELT ANCHORAGE ADJUSTMENT DATA

Test Vehicle: 2024 Honda CR-V 1.5T 5 Door SUV
Test Facility: Calspan

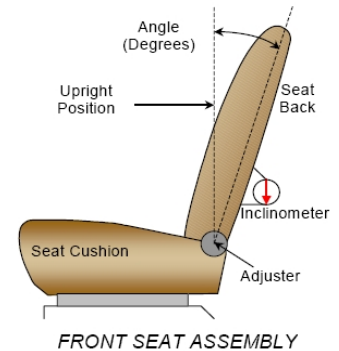
NHTSA No.: C20245301
Test Date: 02/12/2024

SEAT BACK ANGLE ADJUSTMENT

The driver and passenger seat backs are positioned to the manufacturer's designated angle provided in the Form1.

	Units	Seat Back Angle
Driver Seat	Degrees	-9.9
Front Passenger Seat	Degrees	10.1

*Measurement taken on headrest post.



SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	SCR P Height Position	SCR P Height (mm)		
			Rearmost	Mid-Fore / Aft	Forward-Most
Driver Seat	16.28	Max	-	-	-
		Mid	-	-	-
		Min	14	26	39
Front Passenger Seat	Fixed	Max			
		Mid			
		Min			

SEAT FORE / AFT POSITION

Seat	Total Fore / Aft Travel		Placed in Position #	
	mm	Detents*	mm	Detents*
Driver Seat	240	25 (0-24)	120	12
Front Passenger Seat	220	23 (0-22)	110	11

SEAT BELT ANCHORAGE ADJUSTMENT

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

HEAD RESTRAINT ADJUSTMENT

Seat	Total # of Positions	Placed in Position #
Driver Seat	5 (0-4)	Uppermost

DATA SHEET NO. 5 FUEL SYSTEMS AND STEERING WHEEL POSITION DATA

Test Vehicle: 2024 Honda CR-V 1.5T 5 Door SUV
Test Facility: Calspan

NHTSA No.: C20245301
Test Date: 02/12/2024

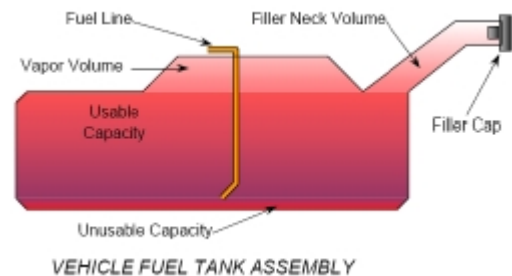
FUEL TANK CAPACITY DATA

Description	Liters
Usable Capacity of (Form No.1)	53.4
Usable Capacity of (Owner's Manual)	53.0
92 - 94% of Usable Capacity	48.76 - 49.82
Actual Amount of Solvent Used in Test	49.6

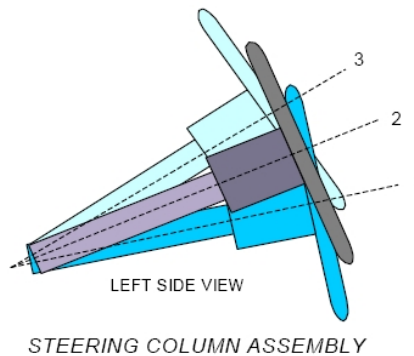
FUEL PUMP

Describe the operation of the fuel pump.

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



STEERING COLUMN POSITIONS

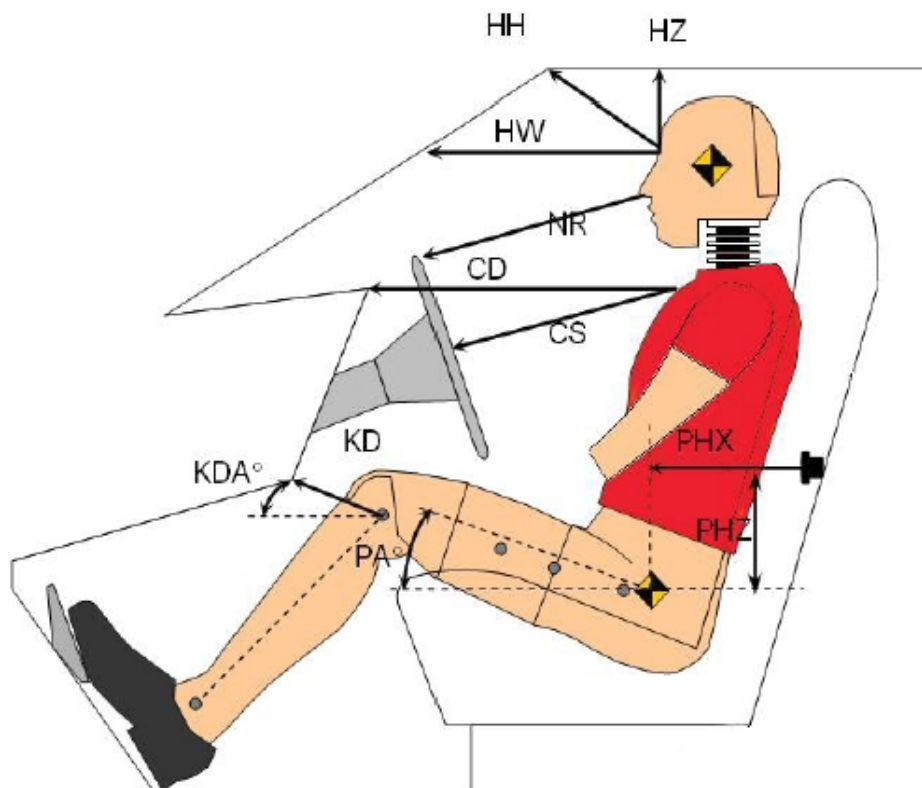


	Degrees	Fore / Aft Position (mm)
Lowermost - Position No. 1	22.05	
Geometric center - Position No. 2	24.83	
Uppermost - Position No. 3	27.60	
Telescoping Steering Wheel Travel		50
Test Position	24.85	25

DATA SHEET NO. 6
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2024 Honda CR-V 1.5T 5 Door SUV
 Test Facility: Calspan

NHTSA No.: C20245301
 Test Date: 02/12/2024



Left Side View

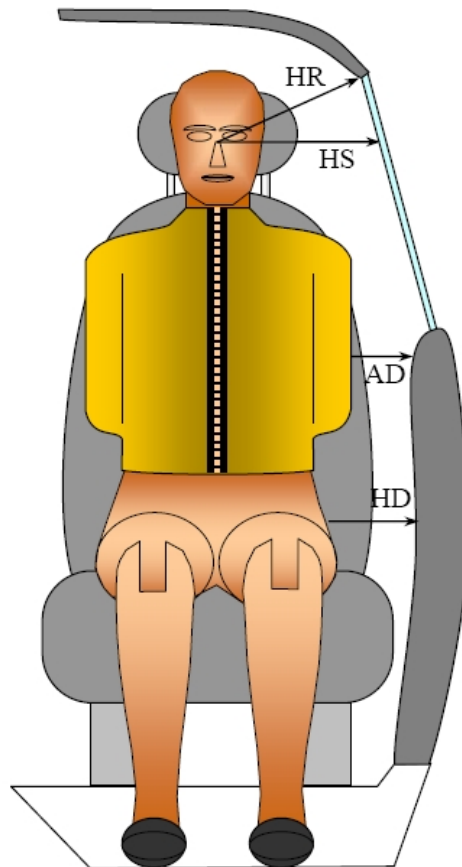
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	431	
HW	Head to Windshield	634	
HZ	Head to Roof Liner	202	
NR	Nose to Rim	465	
CD	Chest to Dash	589	
CS	Chest to Steering Wheel	375	
KD(L) / KDA(L)°	Left Knee to Dash	216	32.4
KD(R) / KDA(R)°	Right Knee to Dash	214	33.2
PAX°	Pelvic Tilt Angle (X-Axis)		24.8
PAY°	Pelvic Tilt Angle (Y-Axis)		-0.8
PHX	Hip Point to Striker (X-Axis)	234	
PHZ	Hip Point to Striker (Z-Axis)	215	

DATA SHEET NO. 7
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2024 Honda CR-V 1.5T 5 Door SUV
Test Facility: Calspan

NHTSA No.: C20245301
Test Date: 02/12/2024



FRONT VIEW OF DUMMY

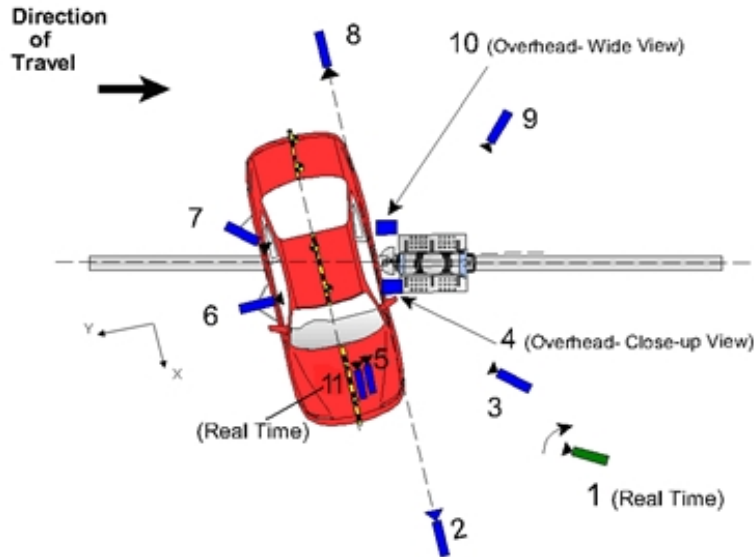
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver
HR	Head to Side Header	mm	231
HS	Head to Side Window	mm	354
AD	Arm to Door	mm	109
HD	H-Point to Door	mm	171

DATA SHEET NO. 8 LOCATION OF CAMERA

Test Vehicle: 2024 Honda CR-V 1.5T 5 Door SUV
Test Facility: Calspan

NHTSA No.: C20245301
Test Date: 02/12/2024



CAMERA LOCATIONS AND DATA

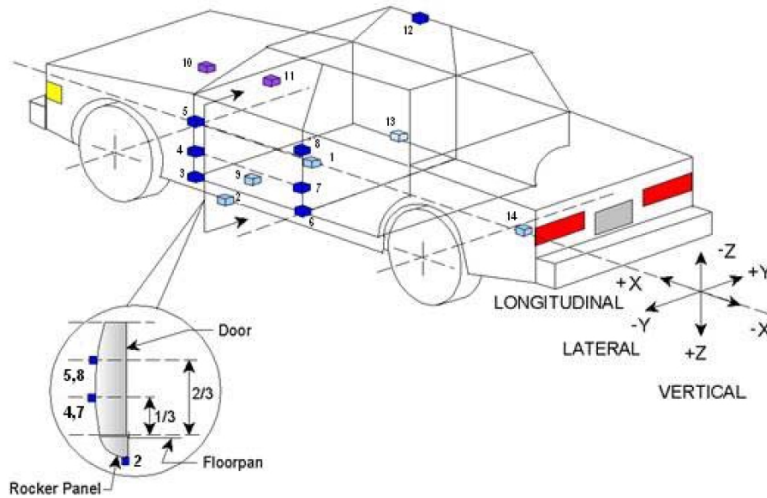
No.	Camera View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Real-time (24 - 30 fps) pan view of impact				Zoom	60
2	Front ground level - impact view	7332	0	-1531	28	1000
3	Impact side 45° - forward pole view	4386	1082	-1420	24	1000
4	Overhead Close-up view of impact	0	0	-8992	28	1000
5	Onboard - dummy front view				25	1000
6	Onboard - dummy side view				12.5	1000
7	Onboard - dummy rear oblique view				12.5	1000
8	Rear ground level - impact view	-8611	0	-1542	28	1000
9	Impact side 45° - rearward pole view	-5892	3679	-1518	24	1000
10	Overhead wide - view of impact	0	-135	-8992	16	1000

Notes: Reference - From Point of Impact for X and Y; from Ground for Z
+X = Forward of vehicle, +Y = Right of vehicle, +Z = Down
* All measurements accurate to ± 6 mm. Vehicle is at a 75° angle to the rigid pole.

DATA SHEET NO. 9 **TEST VEHICLE ACCELEROMETER LOCATIONS**

Test Vehicle: 2024 Honda CR-V 1.5T 5 Door SUV
 Test Facility: Calspan

NHTSA No.: C20245301
 Test Date: 02/12/2024



TEST VEHICLE ACCELEROMETER LOCATIONS

No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2067	7	112
2	Left Floor Sill	2894	-688	90
3	A-Pillar Sill	3238	-646	49
4	A-Pillar Low	3325	-645	-142
5	A-Pillar Mid	3127	-679	-603
6	B-Pillar Sill	2123	-686	42
7	B-Pillar Low	2156	-693	-203
8	B-Pillar Mid	2077	-677	-600
9	Seat	2366	-576	56
10	Engine	3865	140	-322
11	Firewall	3434	112	-272
12	Roof	2194	602	-1103
13	Right Floor Sill	2888	690	87
14	Rear Deck	541	-82	144

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

DATA SHEET NO. 10
TEST VEHICLE ACCELEROMETER DATA SUMMARY

Test Vehicle: 2024 Honda CR-V 1.5T 5 Door SUV
Test Facility: Calspan

NHTSA No.: C20245301
Test Date: 02/12/2024

Loc. No	Description	Axes	Units	Positive Direction		Negative Direction	
				Max	Time (ms)	Max	Time (ms)
1	Vehicle CG	X	g	4.28	31.45	-8.55	20.20
	Vehicle CG	Y	g	25.27	16.20	-0.99	153.10
	Vehicle CG	Z	g	17.52	45.00	-20.20	30.45
	Vehicle CG Resultant	N/A	g	32.18	30.40	0.03	-48.10
2	Floor Sill (Left)	Y	g	54.11	16.00	-3.10	36.70
3	A Pillar Sill	Y	g	32.16	17.45	-11.67	20.25
4	A Pillar Low	Y	g	29.74	32.25	-18.41	38.10
5	A Pillar Mid	Y	g	143.06	53.40	-87.16	31.45
6	B Pillar Sill	Y	g	177.26	19.50	-107.56	23.85
7	B Pillar Low	Y	g	139.97	16.45	-47.11	13.25
8	B Pillar Mid	Y	g	85.82	9.70	-146.68	13.15
9	Seat	Y	g	49.86	40.25	-70.52	46.30
10	Engine Top	X	g	9.23	104.95	-12.99	40.30
	Engine Top	Y	g	19.62	39.75	-2.40	160.45
11	Firewall	Y	g	14.72	54.45	-0.95	238.35
12	Roof	Y	g	39.14	39.20	-1.77	295.65
13	Floor Sill (Right)	Y	g	23.33	17.40	-1.52	40.30
14	Rear Deck	X	g	9.41	34.80	-12.74	38.25
	Rear Deck	Y	g	26.29	37.15	-2.92	143.85

DATA SHEET NO. 11
DUMMY INJURY RESPONSE DATA
(Subpart U, ES-2re)

Test Vehicle: 2024 Honda CR-V 1.5T 5Door SUV

NHTSA No.: C20245301

Test Facility: Calspan

Test Date: 02/12/2024

Dummy Serial No. DG5348

Description	Axes	Positive Direction		Negative Direction	
		MAX	TIME (ms)	MAX	TIME (ms)
HEAD ACCELERATION (g)					
Longitudinal	X	17.56	111.25	-19.60	61.85
Lateral	Y	51.30	52.85	-11.87	110.25
Vertical	Z	10.52	45.95	-6.93	65.45
Resultant	N/A	54.26	52.90		
HIC36 (t1, t2)	N/A	348.30		t1 = 40.40	t2 = 68.10
THORAX DEFLECTION (mm)					
Upper Rib	Y	25.77	62.15	-1.66	18.30
Middle Rib	Y	22.33	61.30	-1.23	81.55
Lower Rib	Y	20.23	52.10	-1.07	282.90
ABDOMINAL FORCES (N)					
Front	Y	231.24	50.55	-13.65	172.65
Middle	Y	333.96	50.50	-7.15	114.55
Rear	Y	480.58	51.20	-10.57	97.30
SUM	N/A	1044.88	50.60		
PELVIS FORCES (N)					
Pubic Symphysis	Y	36.18	181.35	-1950.97	56.60

Reference: Positive Direction - Longitudinal (X) = forward
 - Lateral (Y) = to right
 - Vertical (Z) = down

DATA SHEET NO. 12
POST-TEST OBSERVATIONS

Test Vehicle: 2024 Honda CR-V 1.5T 5 Door SUV
Test Facility: Calspan

NHTSA No.: C20245301
Test Date: 02/12/2024

IMPACT POINT DATA

Measured Parameter	Units	Value
Vertical Impact Ref Line - Aft of Front Axle, Intended Impact Pt	mm	1274
Actual Impact Point - Aft of Front Axle	mm	1278
Difference	mm	4

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Driver Seat Dummy (ES2-re)
Head Contact	Curtain Airbag, Headrest
Upper Torso Contact	Torso/Pelvis Airbag, Seatback
Lower Torso Contact	Seatback
Left Knee Contact	Driver Door Panel Trim
Left Hip Contact	Seat Pan Cushion, Torso/Pelvis Airbag

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)	N/A	N/A	N/A	N/A	N/A

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

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	A & B-Pillars buckled
Sill Separation	None
Windshield Damage	Cracked throughout; separation along A-Pillar and roof line
Side Window Damage	Driver window shattered
Other Notable Effects	None

DATA SHEET NO. 12 ... (CONTINUED)
POST-TEST OBSERVATIONS

Test Vehicle: 2024 Honda CR-V 1.5T 5 Door SUV
 Test Facility: Calspan

NHTSA No.: C20245301
 Test Date: 02/12/2024

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

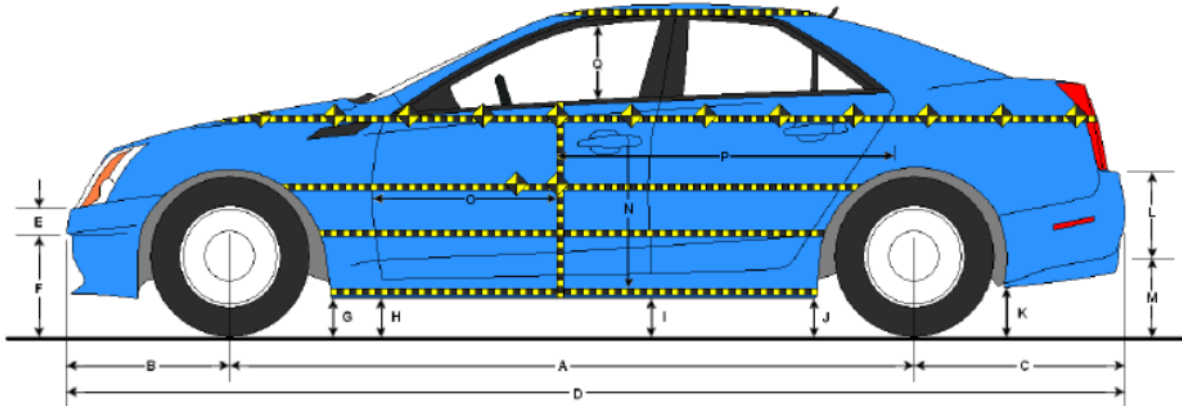
Restraint Type	Struck Side Front Occupant	
	Mounted	Deployed
Front Airbag	Yes	No
Knee Airbag	Yes	No
Head Airbag*	Yes	Yes
Side Airbag 2 - Torso/Pelvis Airbag	Yes	Yes
Seat Belt Pretensioner	Yes	Yes
Seat Belt Load Limiter	Yes	Yes
Other		

*Head Airbag was a curtain airbag

DATA SHEET NO. 13
VEHICLE PRE TEST AND POST TEST MEASUREMENTS

Test Vehicle: 2024 Honda CR-V 1.5T 5 Door SUV
 Test Facility: Calspan

NHTSA No.: C20245301
 Test Date: 02/12/2024



LEFT SIDE VIEW

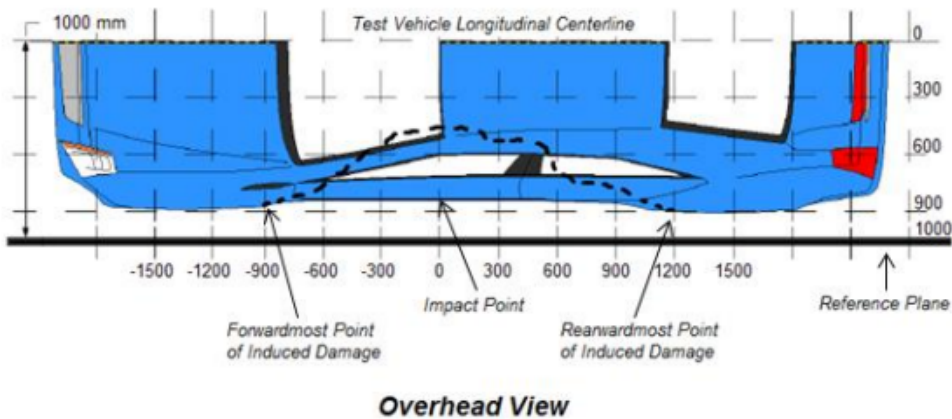
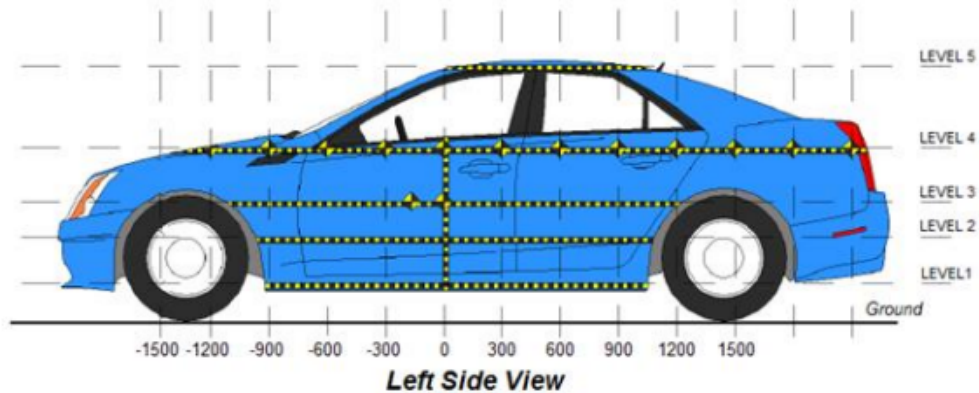
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

No.	Measurement Description	Pre-Test	Post-Test	Difference
A	Vehicle Wheelbase	2700	2673	27
B	Front Axle to FSOV	983	996	-13
C	Rear Axle to RSOV	1000	1001	-2
D	Total Vehicle Length at Centerline	4683	4670	13
E	Front Bumper Thickness	116	116	0
F	Front Bumper Bottom to Ground	433	444	-11
G	Sill Height at Front Wheel Well	275	278	-3
H	Sill Height at Front Door Leading Edge	275	278	-3
I	Sill Height at B Pillar	280	312	-32
J1	Sill Height at Rear Wheel Well	287	303	-16
J2	Pinch Weld Height at Rear Wheel Well	262	275	-13
K	Sill Height Aft of Rear Wheel Well	275	279	-4
L	Rear Bumper Thickness	152	152	0
M	Rear Bumper Bottom to Ground	451	441	10
N	Sill Height to Window Bottom Sill	868	884	-16
O	Front Door Leading Edge to Impact CL	801	761	39
P	Rear Door Trailing Edge to Impact CL	1367	1304	63
Q	Front Window Opening	409	404	5
R	Right Side Length	4609	4608	1
S	Left Side Length	4608	4587	21
T	Vehicle Width at B-Pillars	1870	1777	93

DATA SHEET NO. 14
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2024 Honda CR-V 1.5T 5 Door SUV
 Test Facility: Calspan

NHTSA No.: C20245301
 Test Date: 02/12/2024



MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Units	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	mm	331	213	0
2	Occupant H-Point	mm	686	278	0
3	Mid-Door	mm	763	285	0
4	Window Sill	mm	1073	242	0
5	Window Top	mm	1581	55	0

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. 14
VEHICLE EXTERIOR CRUSH MEASUREMENTS (CONTINUED)

Test Vehicle: 2024 Honda CR-V 1.5T 5 Door SUV
 Test Facility: Calspan

NHTSA No.: C20245301
 Test Date: 02/12/2024

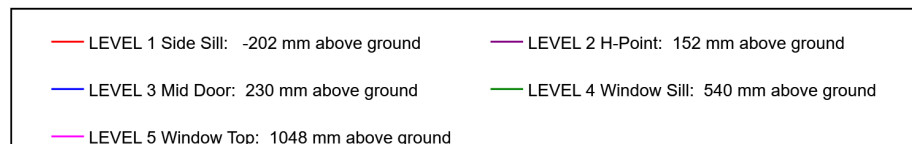
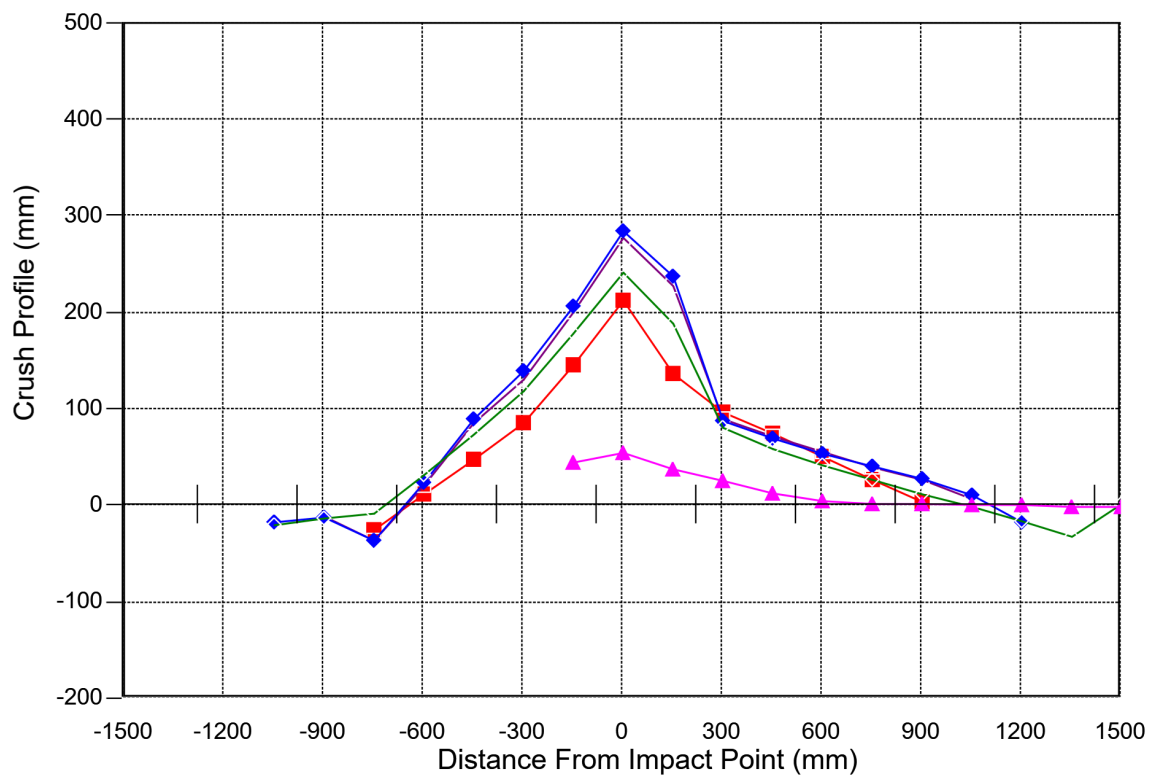
EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1500															
-1350															
-1200															
-1050			934	823				951	843				-17	-20	
-900		932	931	833			943	943	846			-11	-12	-13	
-750	913	928	931	844		938	964	967	852		-25	-36	-36	-8	
-600	916	927	932	883		904	906	908	851		12	21	24	32	
-450	919	927	932	868		871	841	842	794		48	86	90	74	
-300	921	927	933	876		835	796	793	757		86	131	140	119	
-150	922	927	933	881	632	776	726	726	702	587	146	201	207	179	45
0	922	926	932	881	645	709	648	647	639	590	213	278	285	242	55
150	922	925	932	881	650	785	697	694	692	612	137	228	238	189	38
300	922	923	929	883	651	825	833	841	802	625	97	90	88	81	26
450	919	921	927	882	650	844	849	857	823	637	75	72	70	59	13
600	915	921	926	884	647	864	865	872	842	642	51	56	54	42	5
750	910	923	928	884	644	883	883	887	857	642	27	40	41	27	2
900	906	928	932	884	642	902	901	904	872	640	4	27	28	12	2
1050		932	932	884	636		925	921	885	635		7	11	-1	1
1200			934	883	628			951	899	627			-17	-16	1
1350				882	617				914	618				-32	-1
1500				877	603				875	604				2	-1

DATA SHEET NO. 14
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS (CONTINUED)

Test Vehicle: 2024 Honda CR-V 1.5T 5 Door SUV
Test Facility: Calspan

NHTSA No.: C20245301
Test Date: 02/12/2024

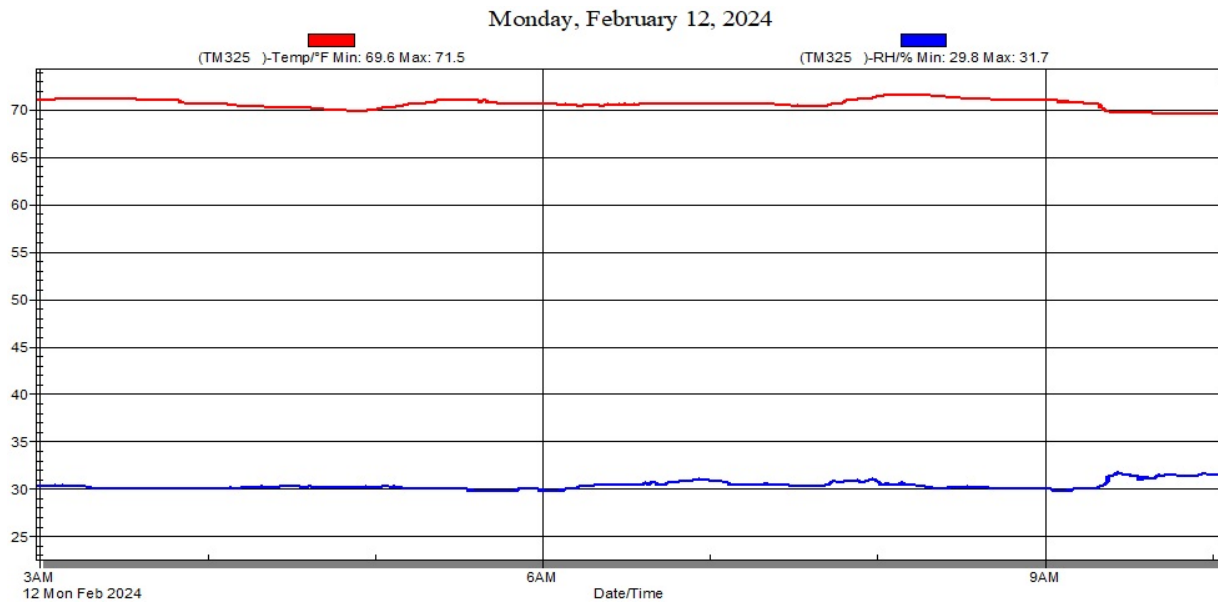


Vehicle Exterior Crush Measurements - Visual Representation

DATA SHEET NO. 16
DUMMY / VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle: 2024 Honda CR-V 1.5T 5 Door SUV
Test Facility: Calspan

NHTSA No.: C20245301
Test Date: 02/12/2024



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

APPENDIX I
PHOTOGRAPHS

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Figure A-1: Pre-Test Frontal View of Test Vehicle

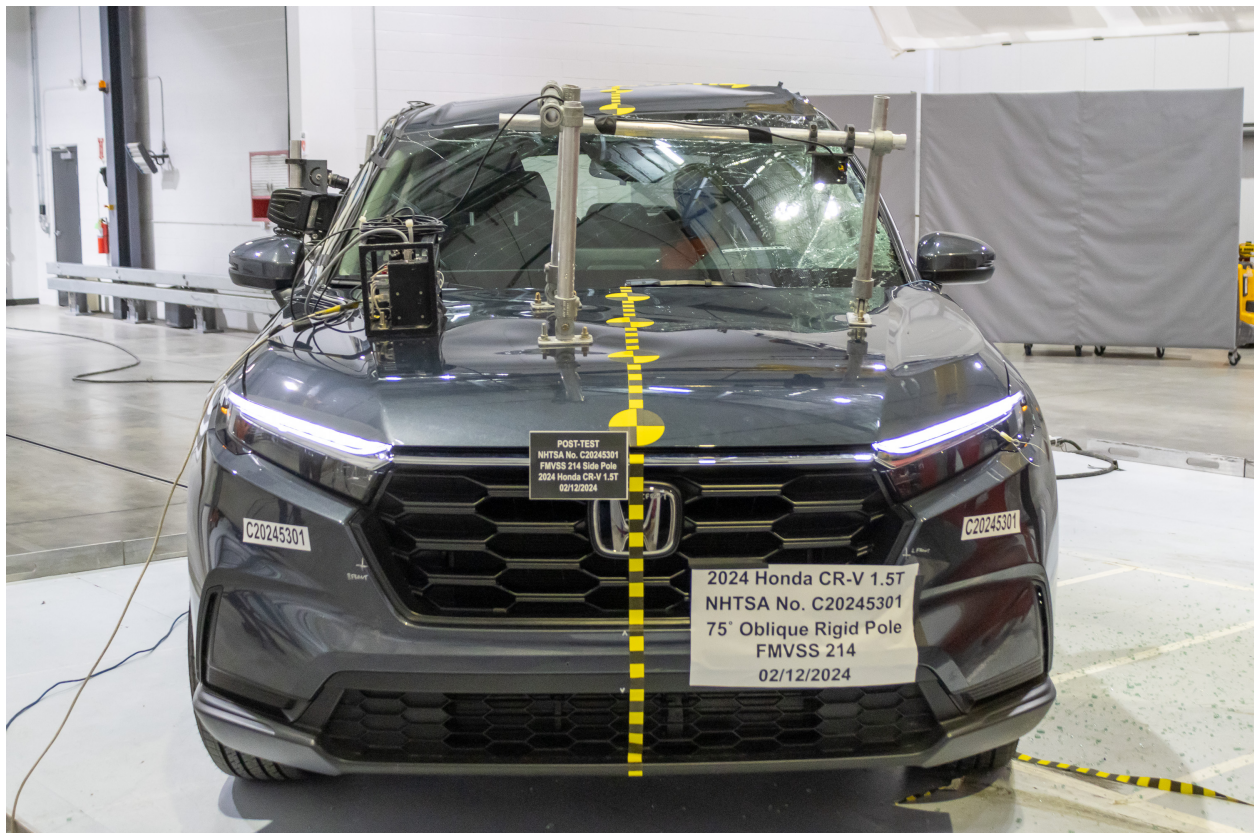


Figure A-2: Post Test Frontal View of Test Vehicle



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



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



Figure A-5: Pre-Test Impacted Side View of Test Vehicle



Figure A-6: Post-Test Impacted Side View of Test Vehicle



Figure A-7: Pre-Test Left $\frac{3}{4}$ Front View of Vehicle and Pole



Figure A-8: Pre-Test Left $\frac{3}{4}$ Rear View of Vehicle and Pole



Figure A-9: Pre-Test Overhead View of Test Vehicle

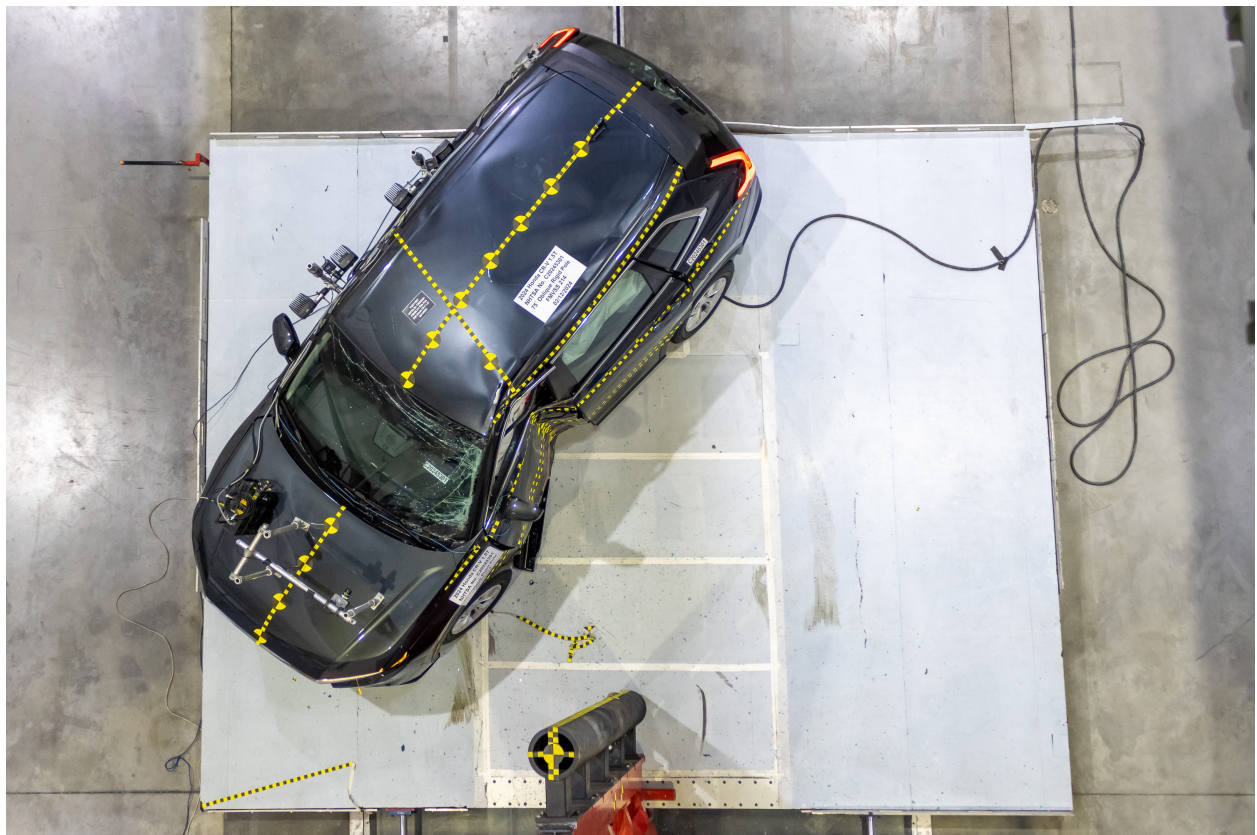


Figure A-10: Post-Test Overhead View of Test Vehicle



Figure A-11: Pre-Test Dummy Through Opposite Window



Figure A-12: Post-Test Dummy Through Opposite Window



Figure A-13: Pre-Test Close-Up of Dummy with Door Closed (Impact Side)



Figure A-14: Post-Test Close-Up of Dummy with Door Closed (Impact Side)



Figure A-15: Pre-Test Dummy with Door Open



Figure A-16: Pre-Test Dummy Shoulder and Door Top View



Figure A-17: Post-Test Dummy Shoulder and Door Top View



Figure A-18: Pre-Test Interior of Front Door Closed (through opposite window)



Figure A-19: Post-Test Interior of Front Door Showing Dummy Impact Locations



Figure A-20: Impact Event



Figure A-21: Post-Test Impact Zone Close-Up View



Figure A-22: Post-Test $\frac{3}{4}$ Front View of Impact Zone



Figure A-23: Post-Test ¾ Rear View of Impact Zone



Figure A-24: Post-Test Close-Up View of Impact Point Target



Figure A-25: Close-Up View of Vehicle's Certification Label

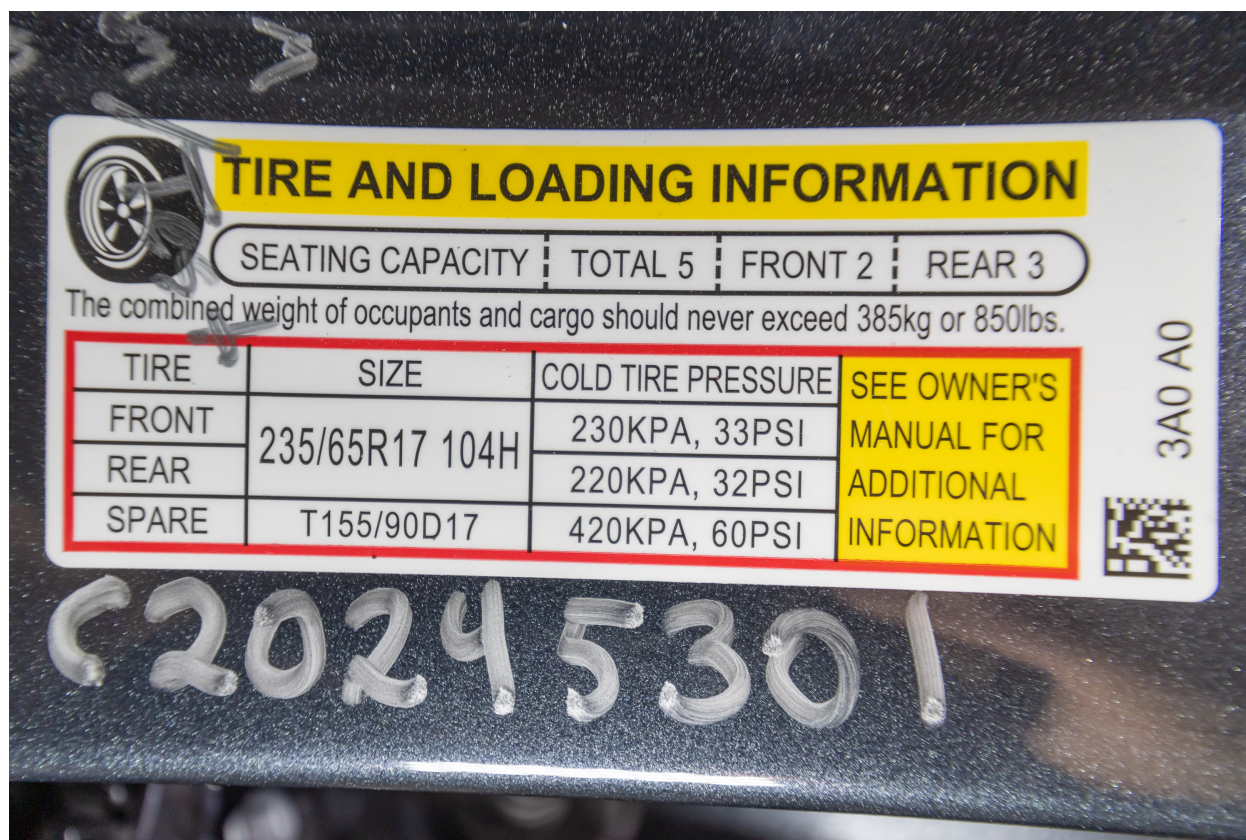


Figure A-26: Close-Up View of Vehicle's Tire Placard Label

APPENDIX II

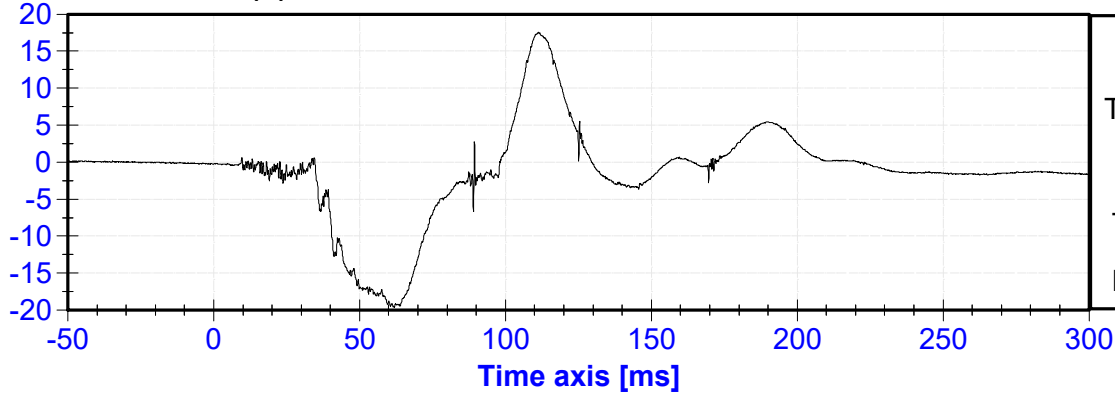
ES-2re DUMMY RESPONSE DATA TRACES

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18	ES-2re Pubic Symphysis Force (Y) vs. Time	II-7

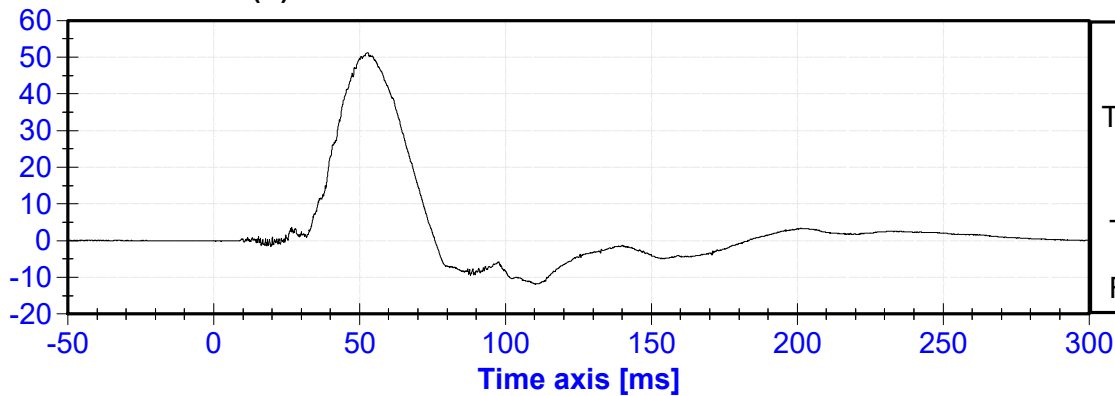
ACCELERATION [g's]

ES-2re Head (X) Acceleration vs. Time



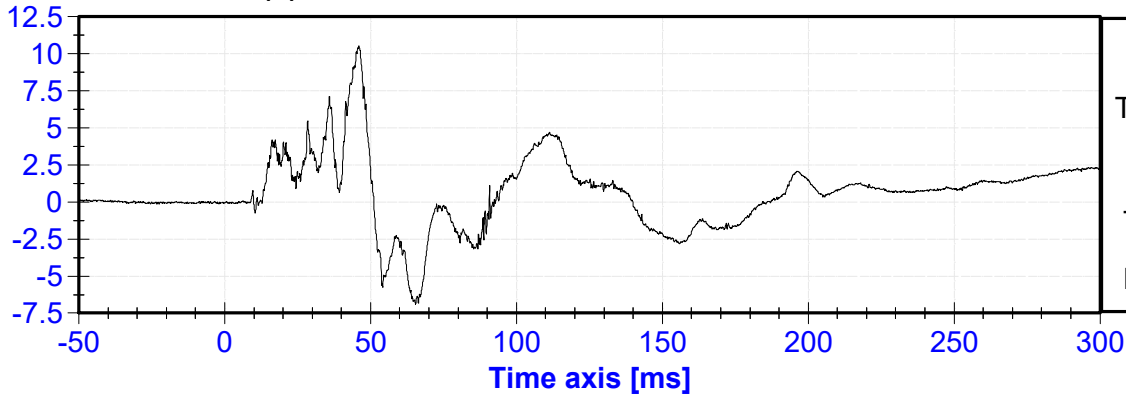
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ES-2re Head (Y) Acceleration vs. Time



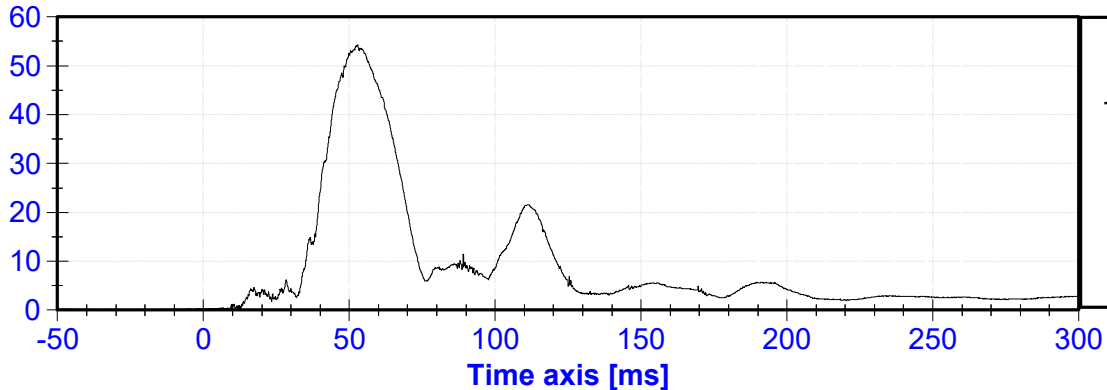
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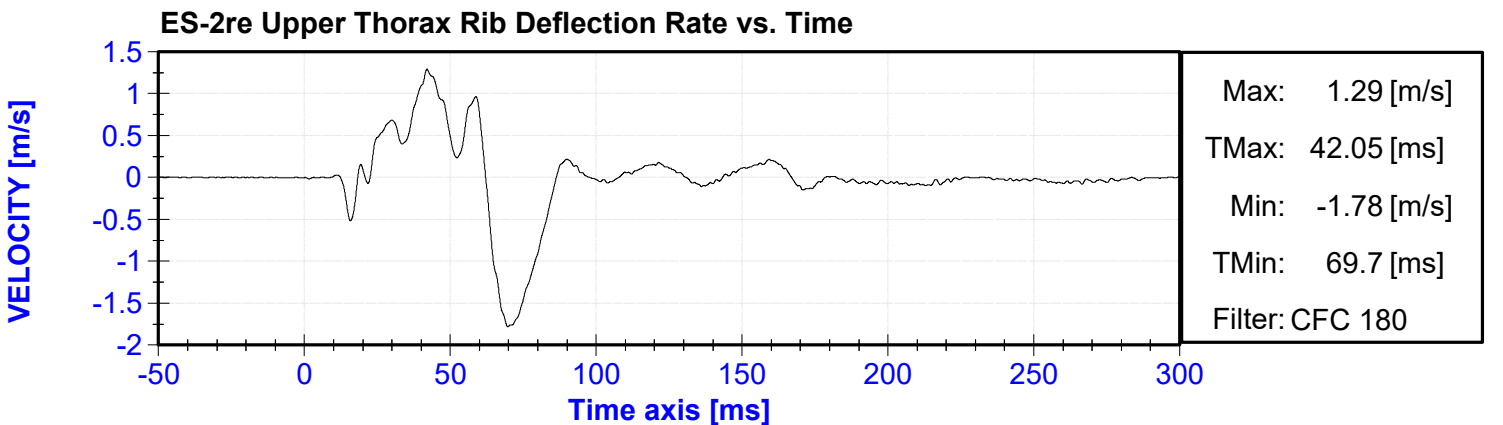
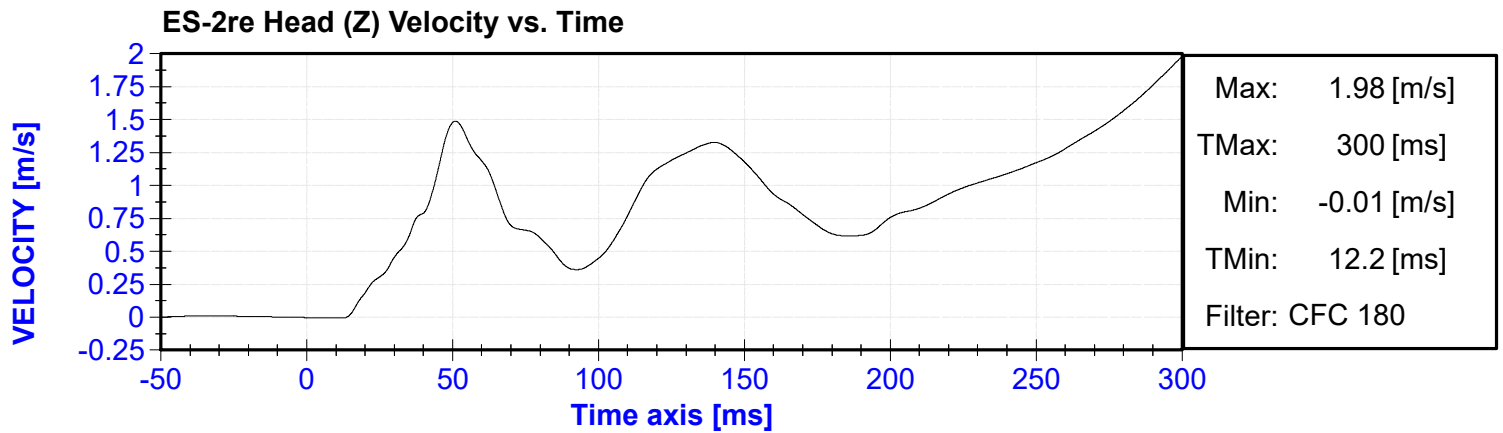
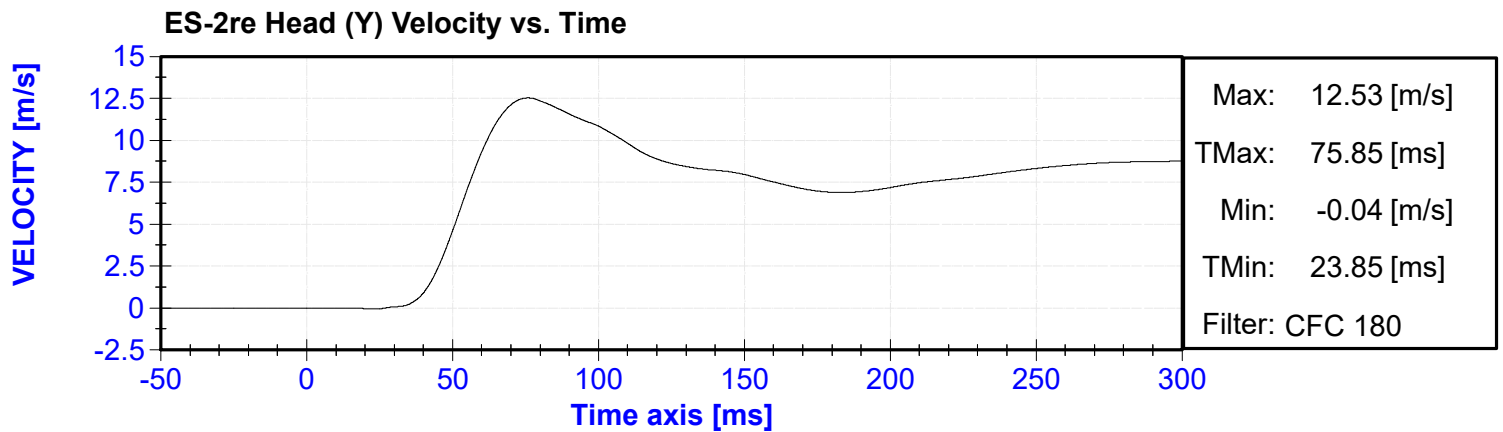
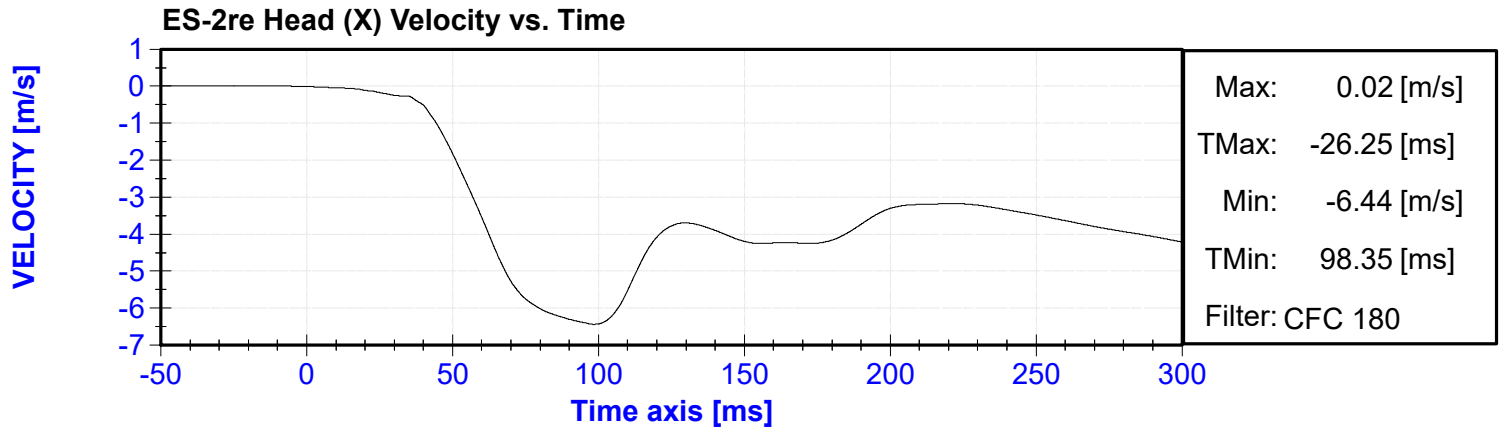
ES-2re Head (Z) Acceleration vs. Time



ACCELERATION [g's]

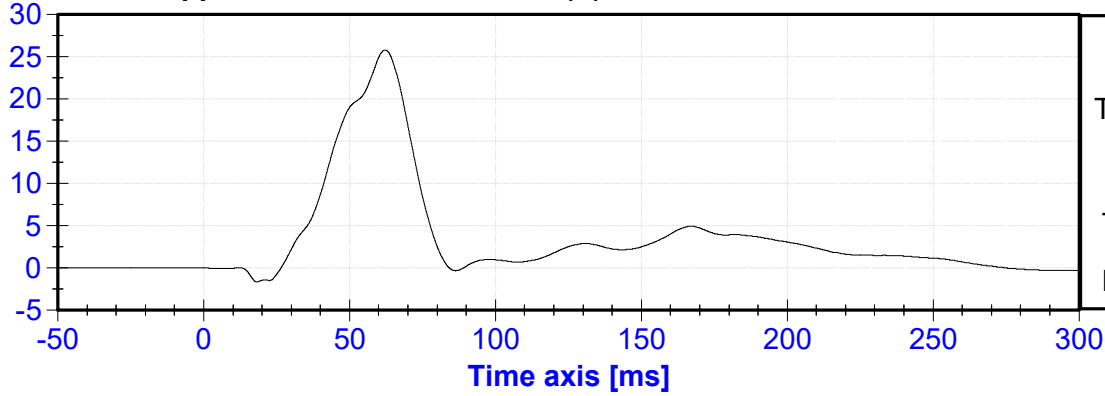
ES-2re Head Resultant Acceleration vs. Time





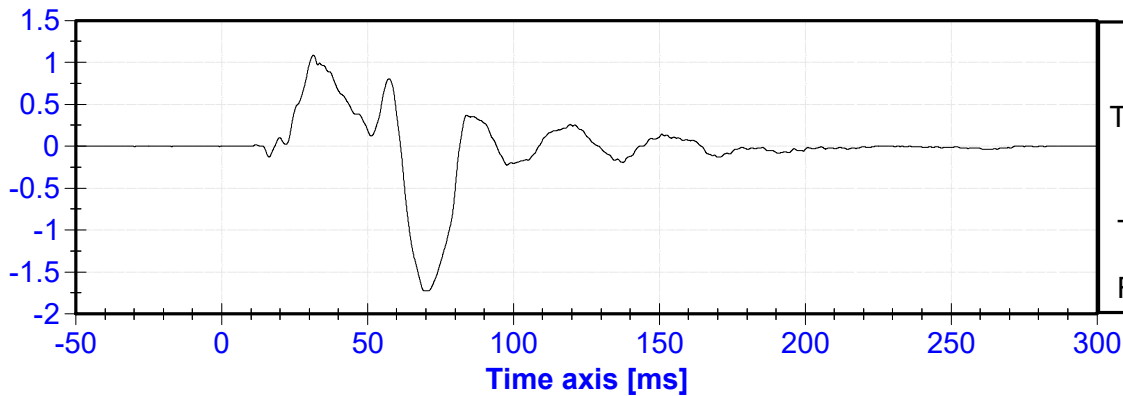
DISPLACEMENT [mm]

ES-2re Upper Thorax Rib Deflection (Y) vs. Time



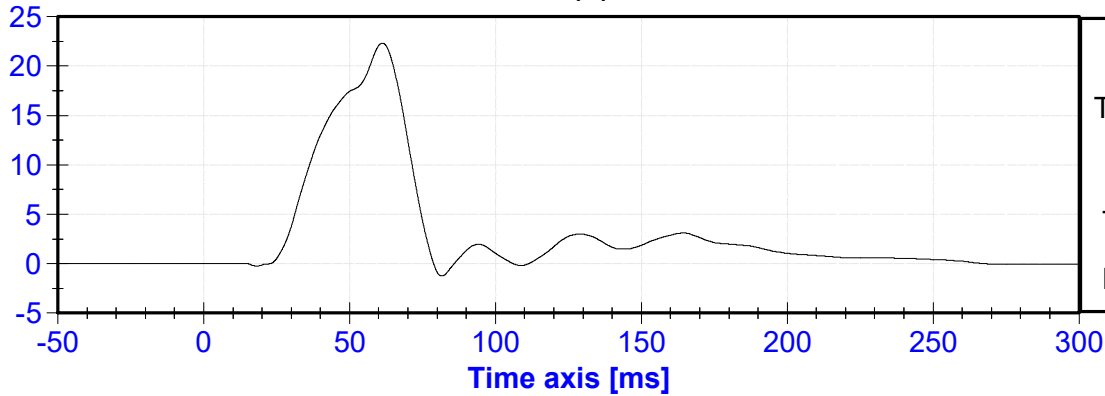
VELOCITY [m/s]

ES-2re Middle Thorax Rib Deflection Rate vs. Time



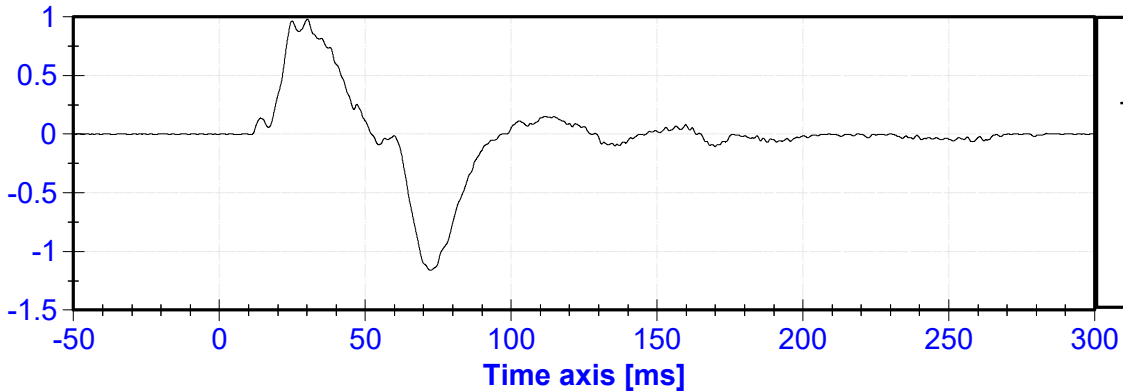
DISPLACEMENT [mm]

ES-2re Middle Thorax Rib Deflection (Y) vs. Time



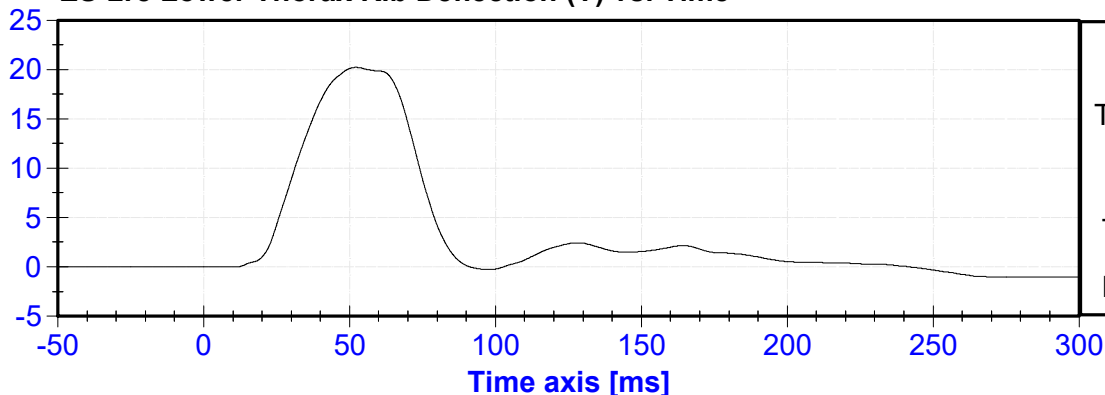
VELOCITY [m/s]

ES-2re Lower Thorax Rib Deflection Rate vs. Time



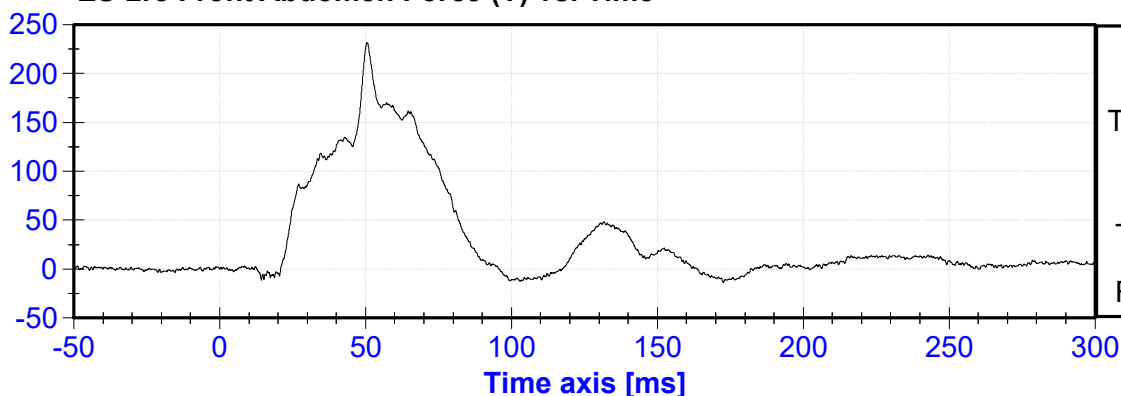
ES-2re Lower Thorax Rib Deflection (Y) vs. Time

DISPLACEMENT [mm]



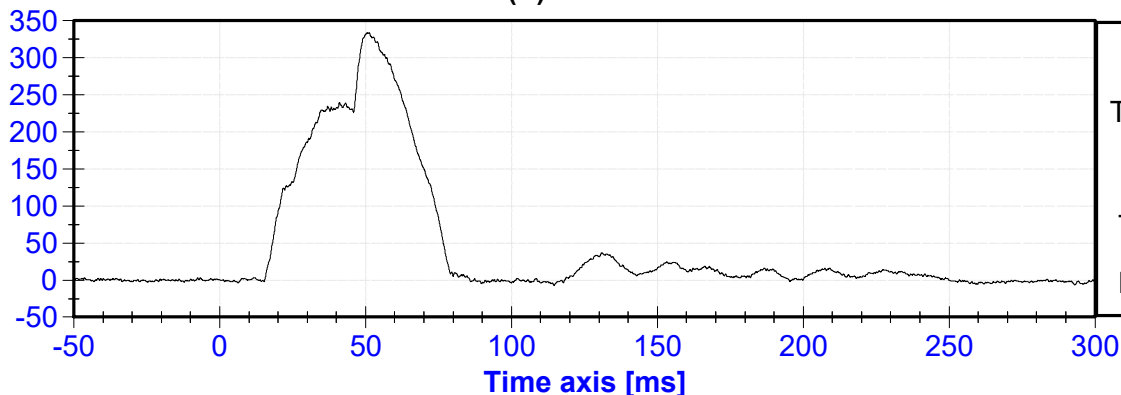
ES-2re Front Abdomen Force (Y) vs. Time

FORCE [N]



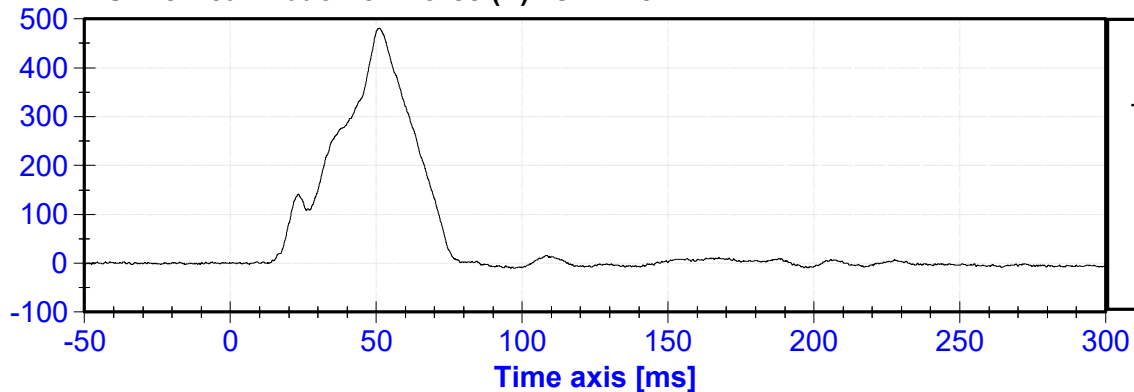
ES-2re Middle Abdomen Force (Y) vs. Time

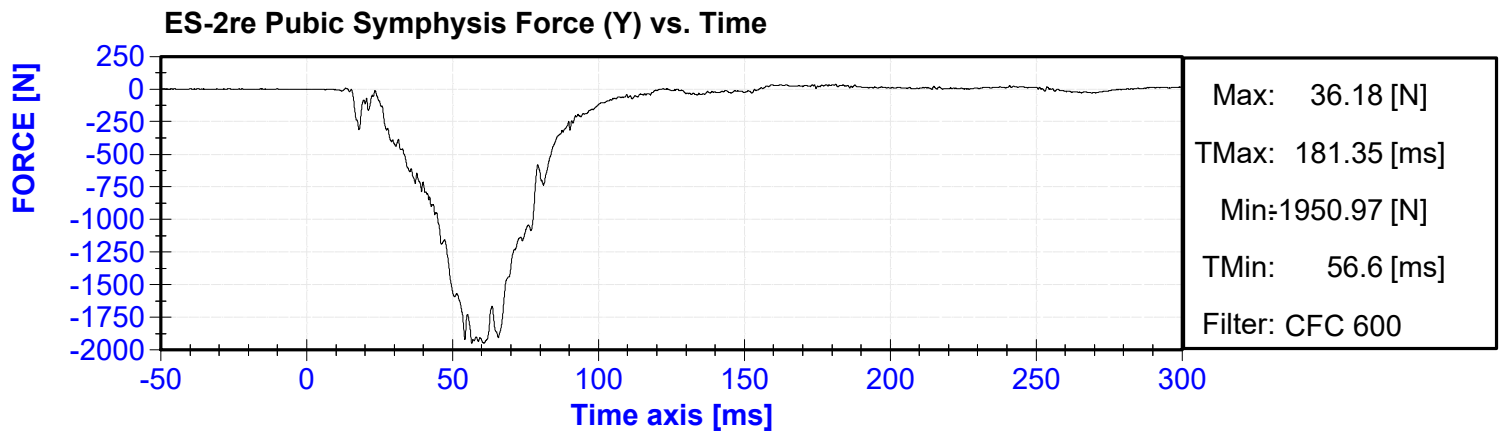
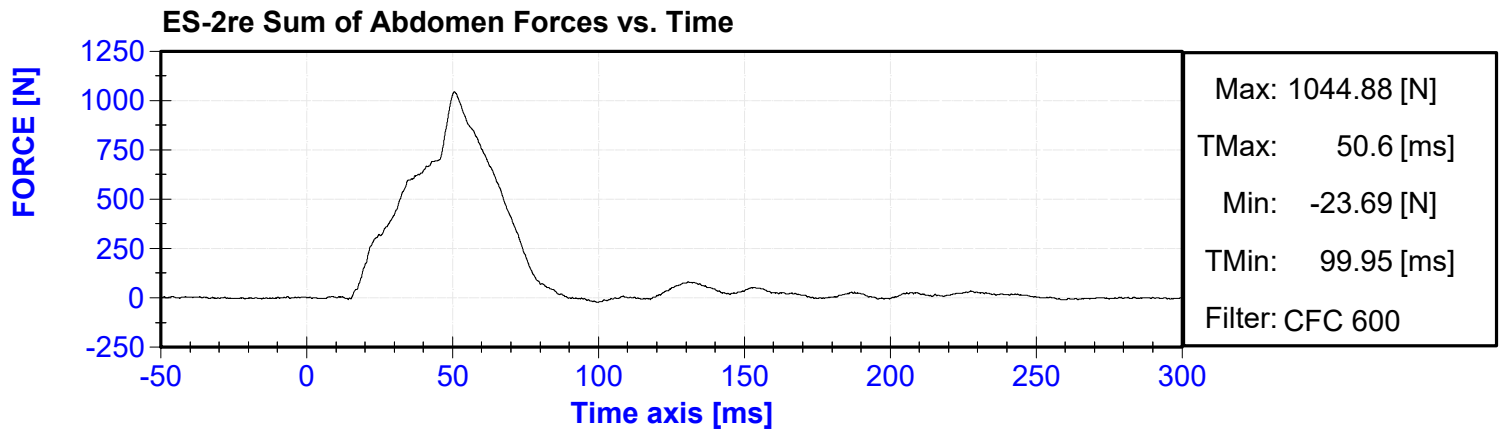
FORCE [N]



ES-2re Rear Abdomen Force (Y) vs. Time

FORCE [N]



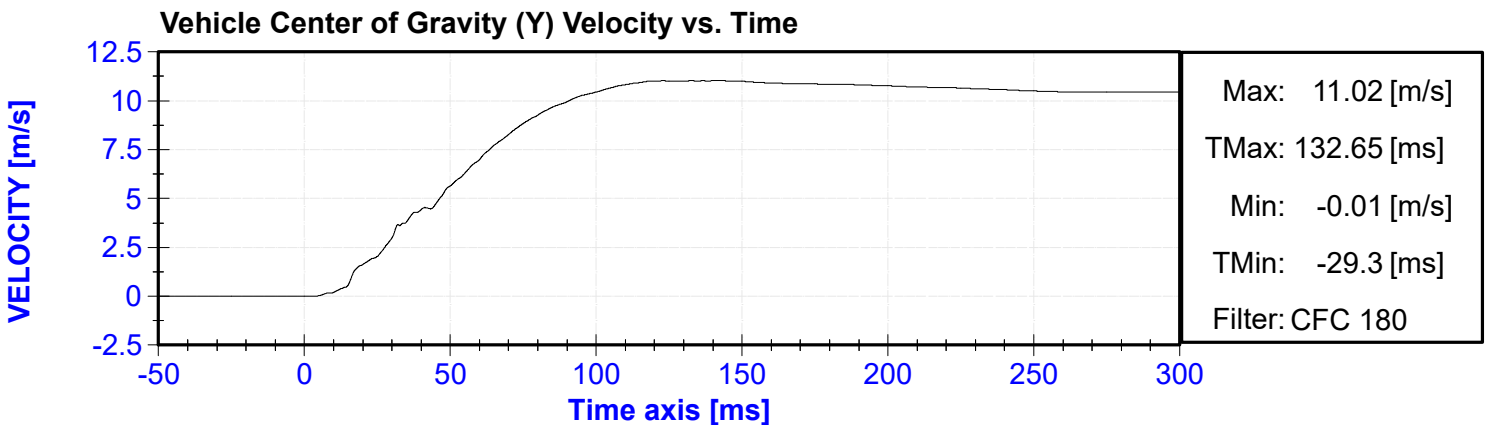
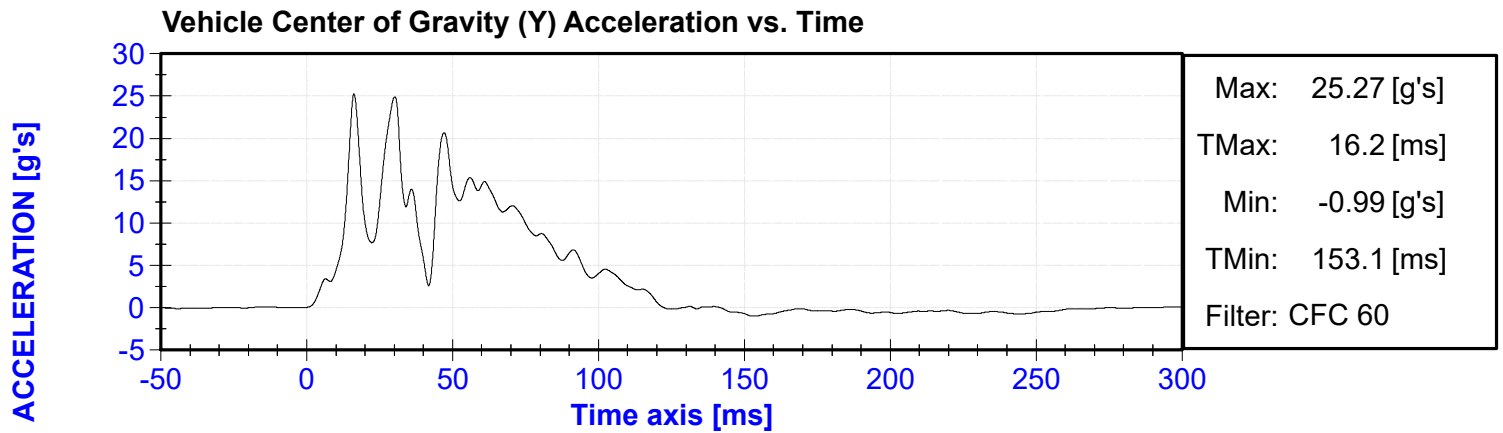
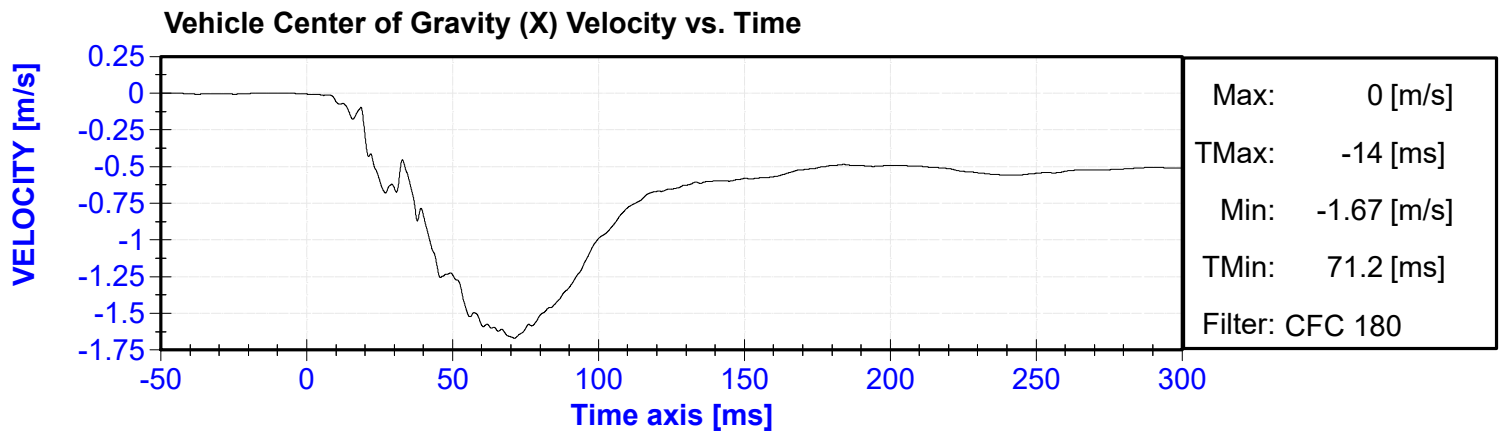
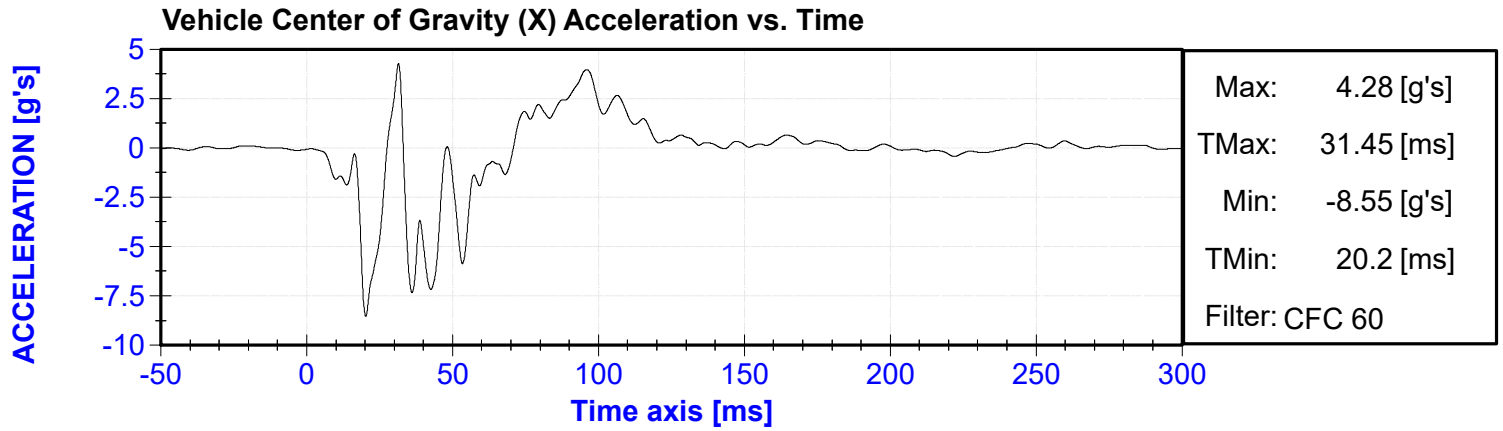


APPENDIX III

VEHICLE ACCELEROMETER RESPONSE DATA

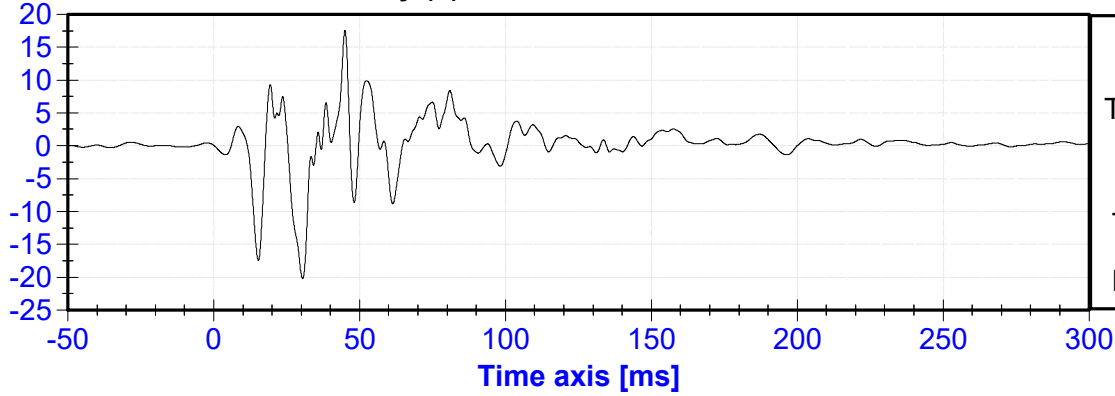
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42	Rear Deck (X) Acceleration vs. Time	III-13
43	Rear Deck (X) Velocity vs. Time	III-13
44	Rear Deck (Y) Acceleration vs. Time	III-13
45	Rear Deck (Y) Velocity vs. Time	III-14



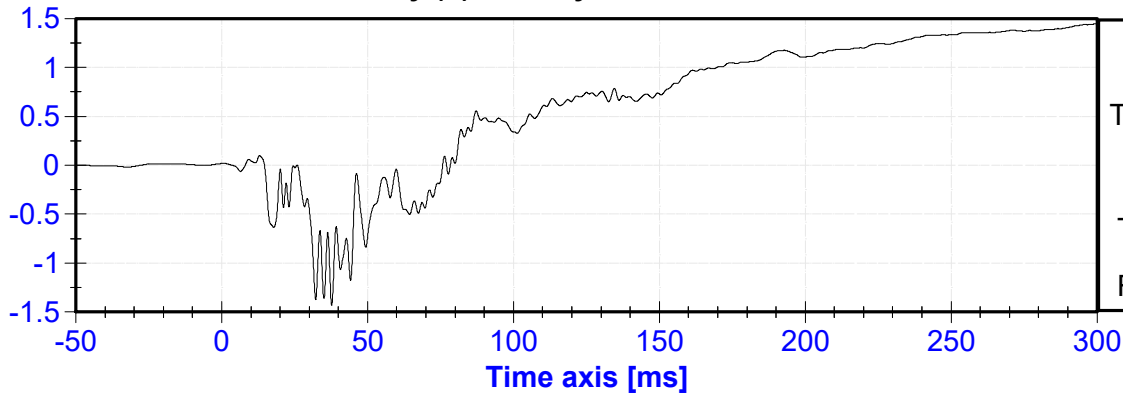
ACCELERATION [g's]

Vehicle Center of Gravity (Z) Acceleration vs. Time



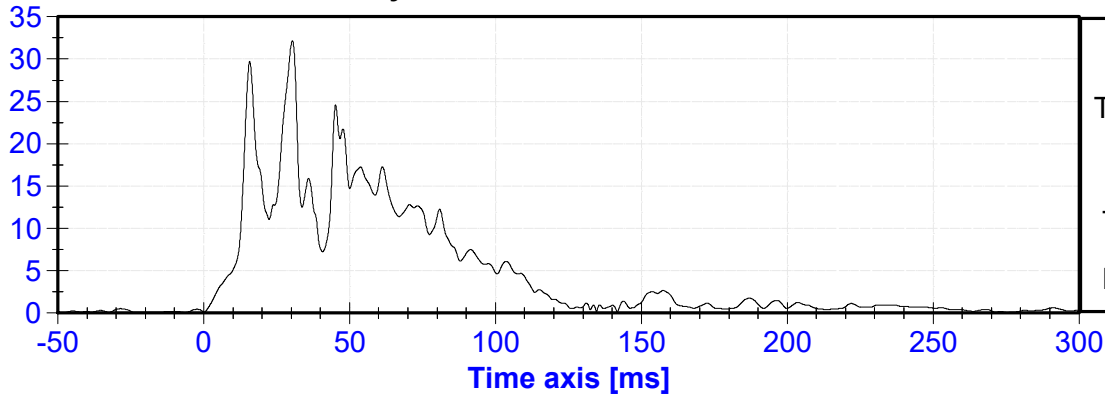
VELOCITY [m/s]

Vehicle Center of Gravity (Z) Velocity vs. Time



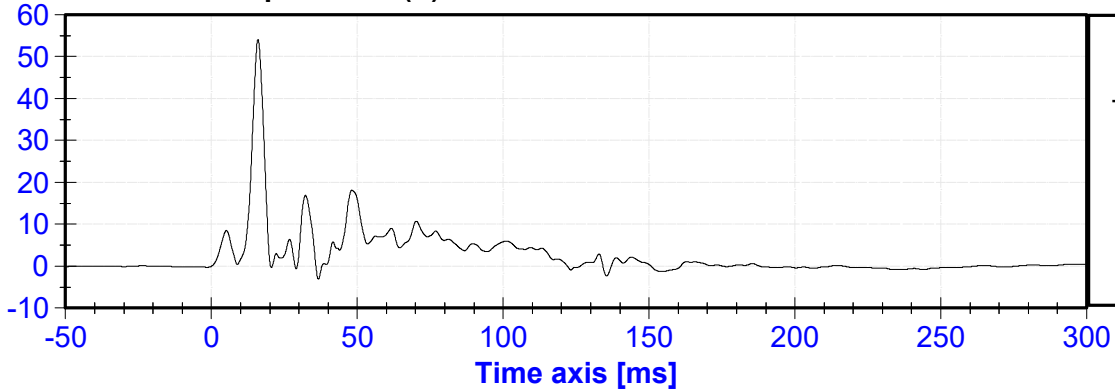
ACCELERATION [g's]

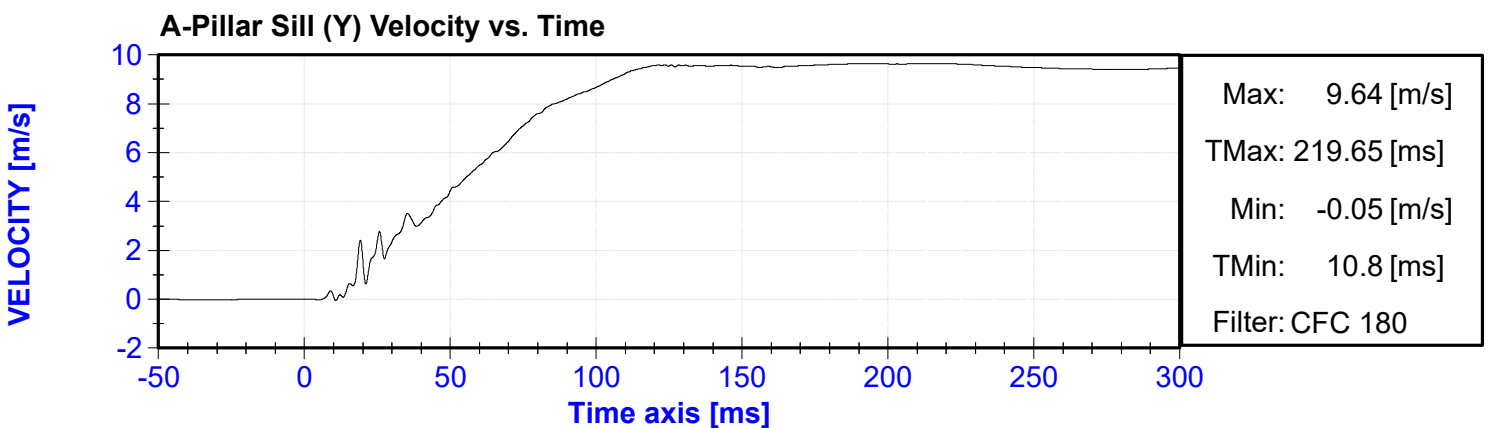
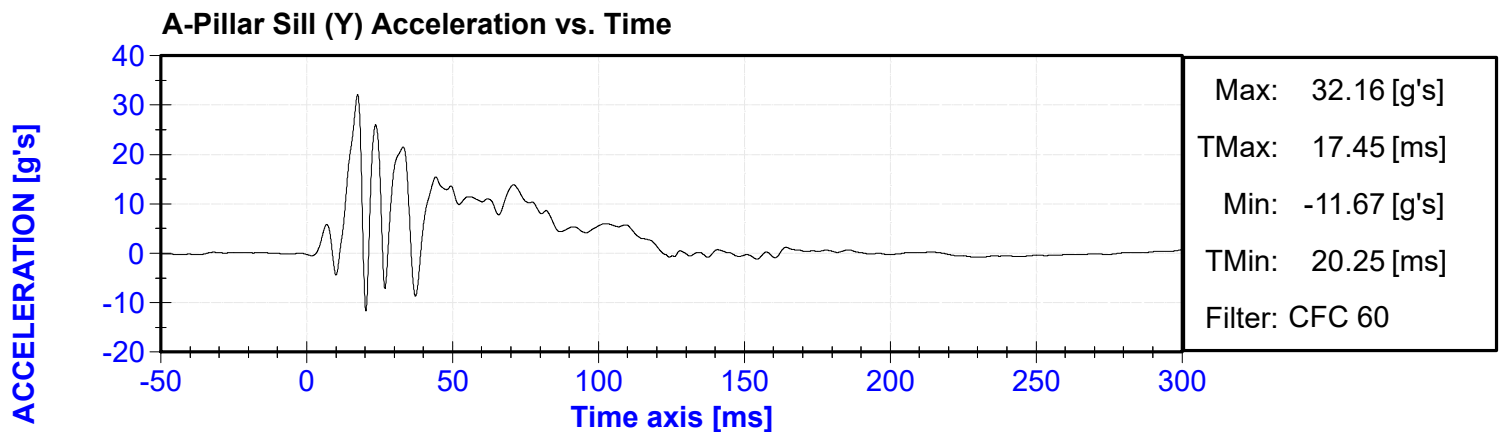
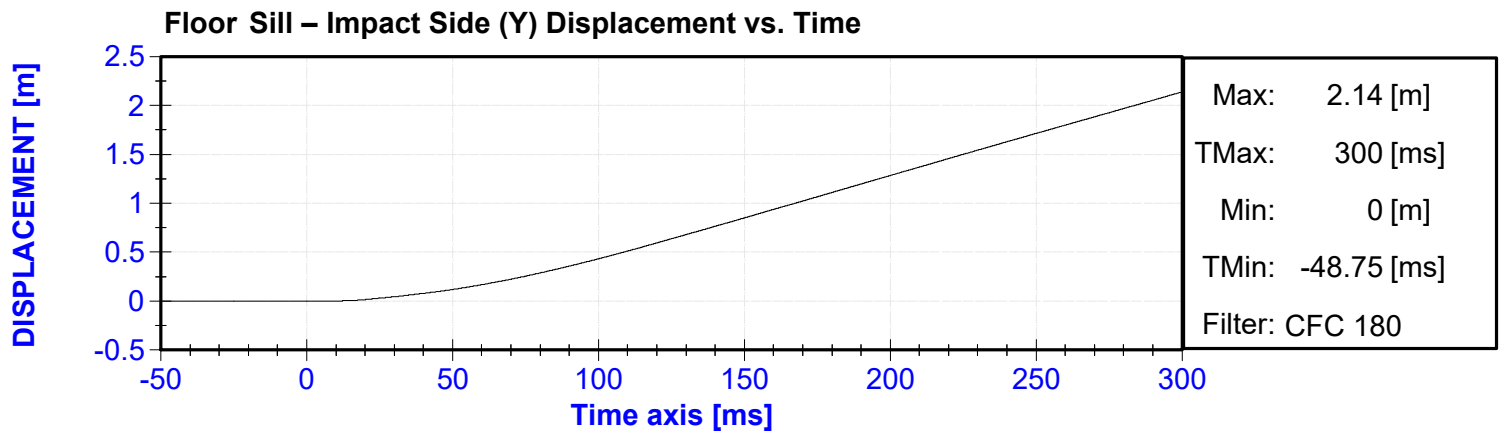
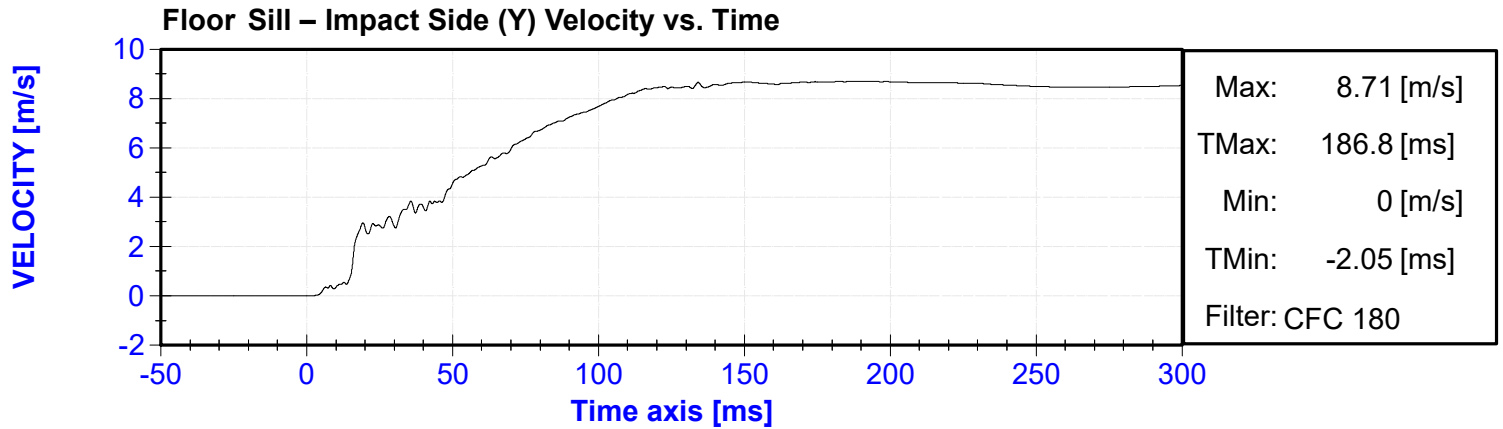
Vehicle Center of Gravity Resultant Acceleration vs. Time

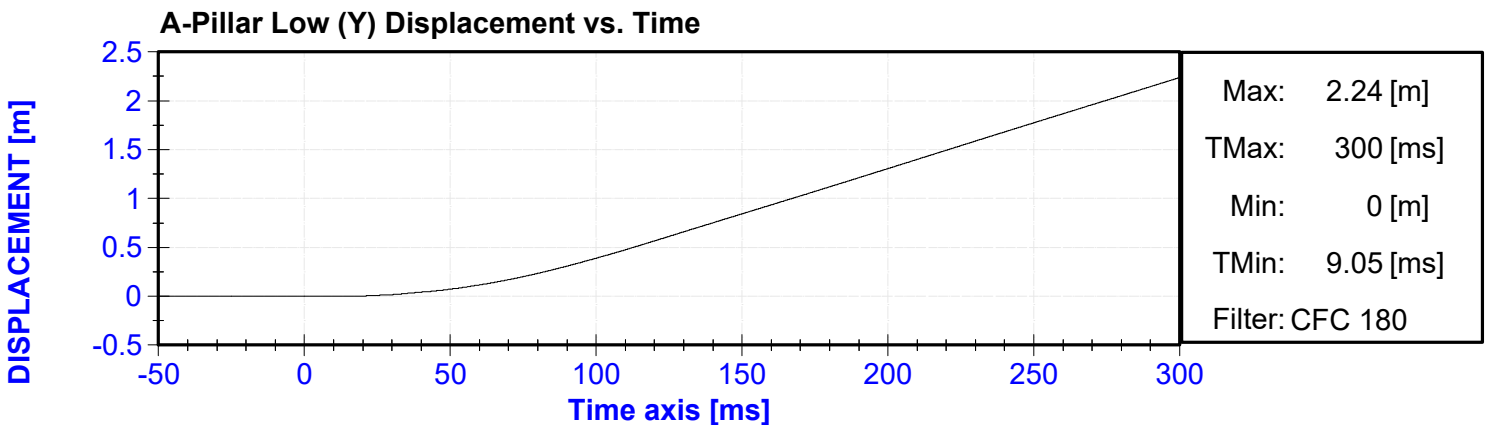
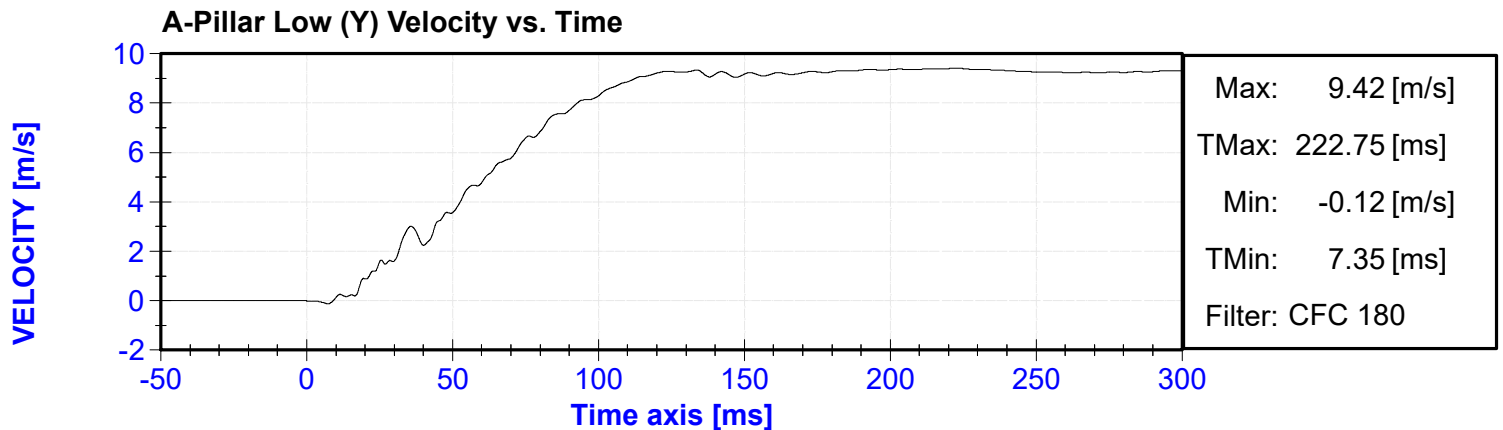
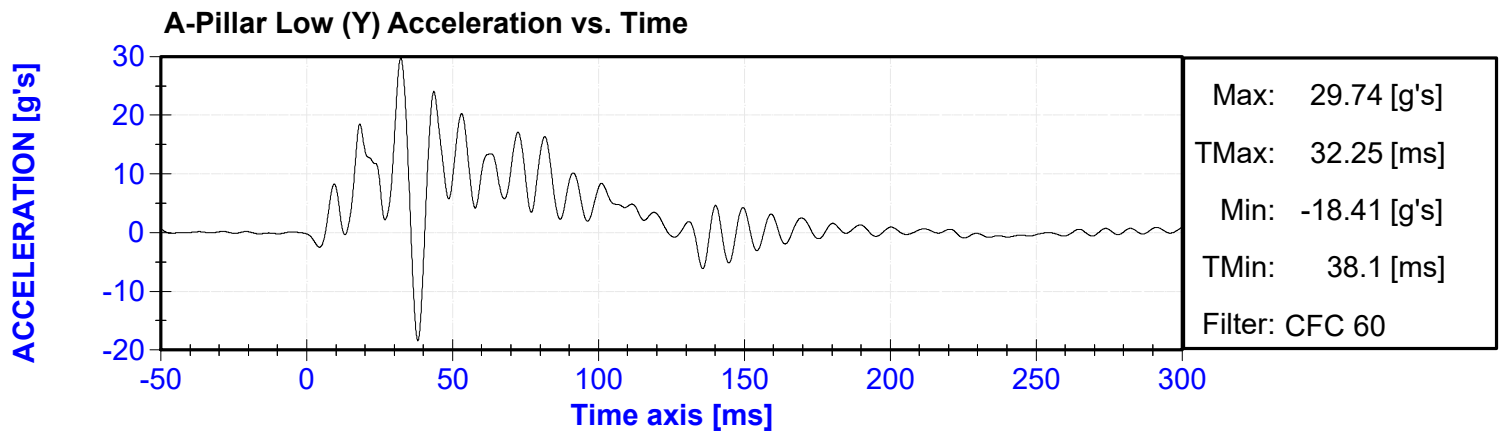
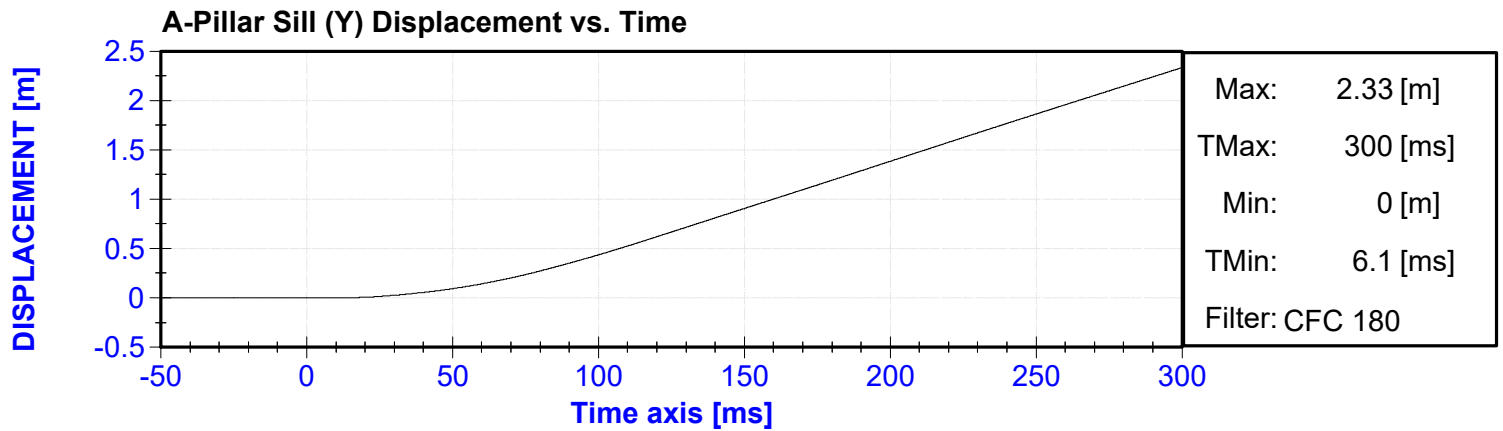


ACCELERATION [g's]

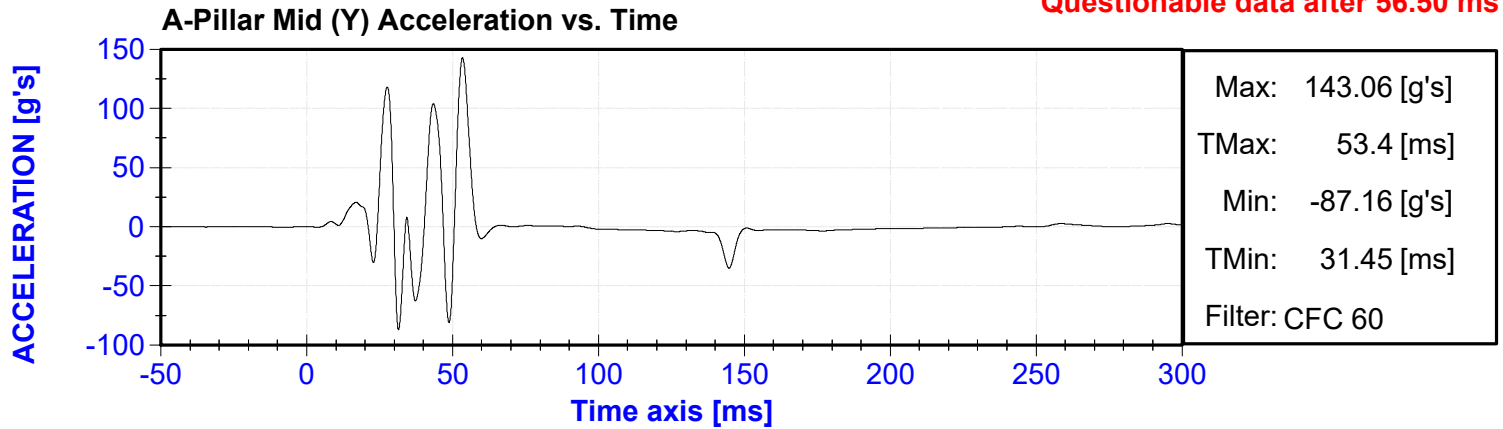
Floor Sill – Impact Side (Y) Acceleration vs. Time



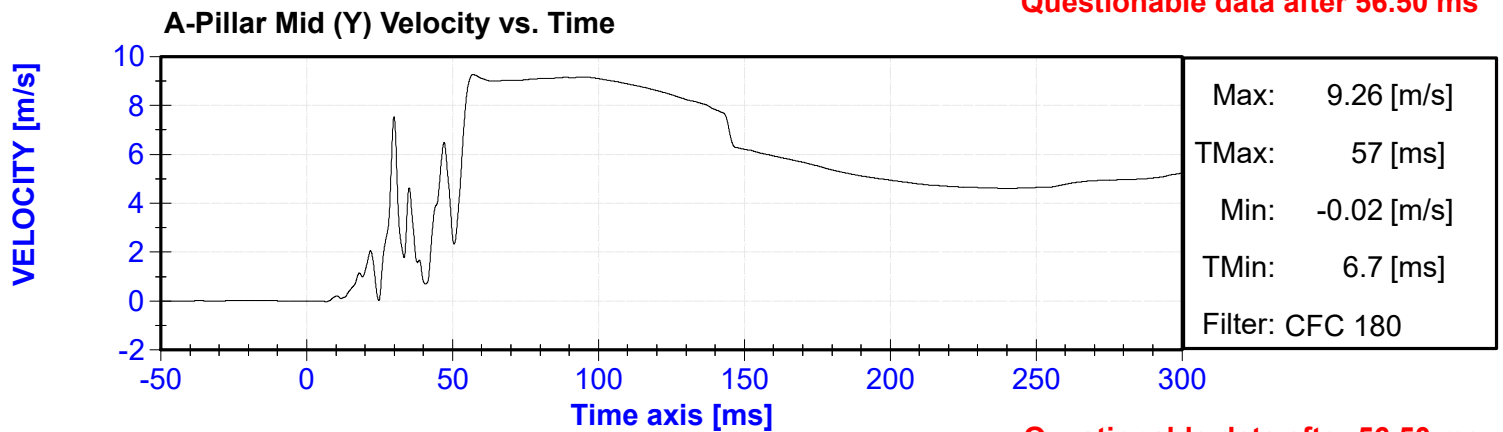




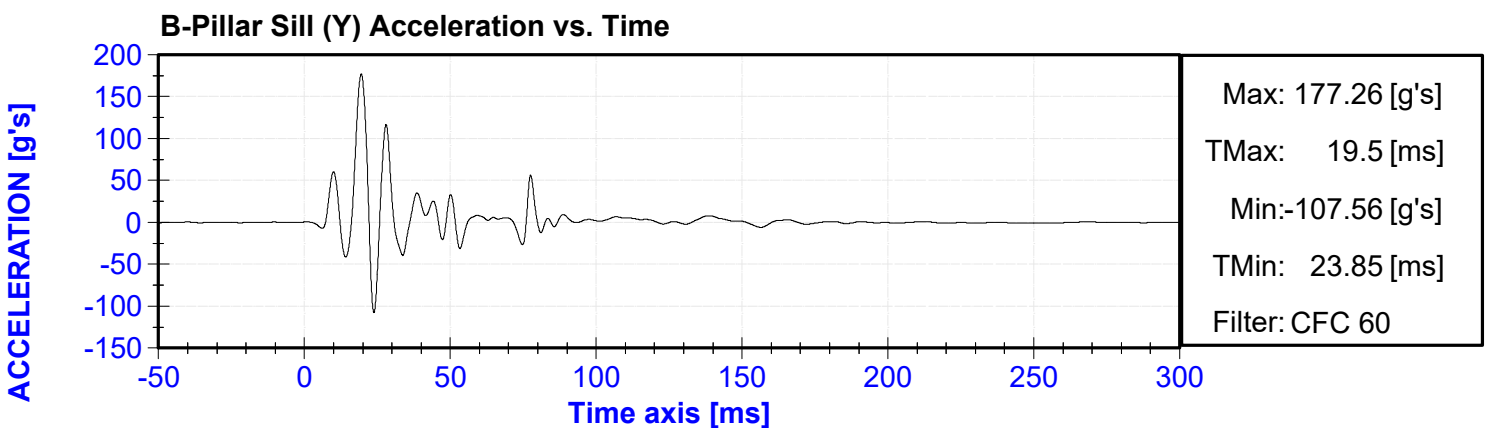
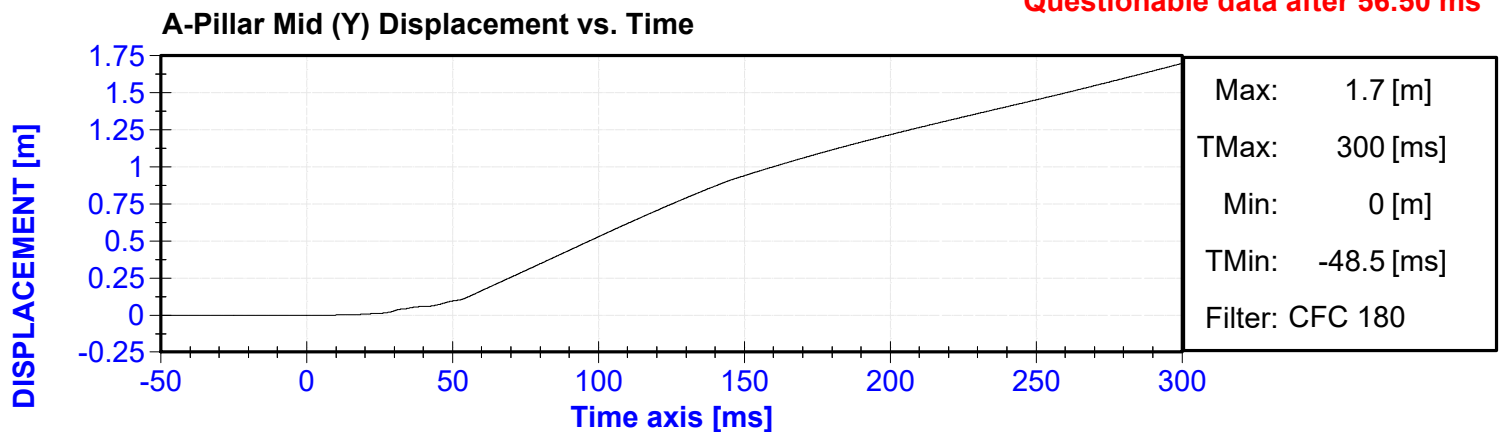
Questionable data after 56.50 ms

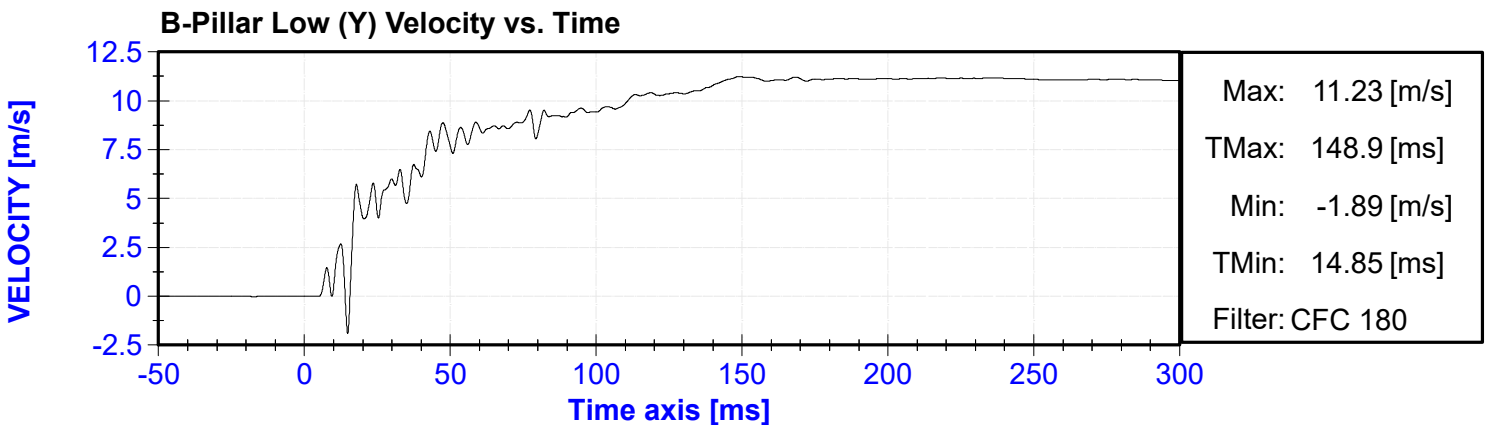
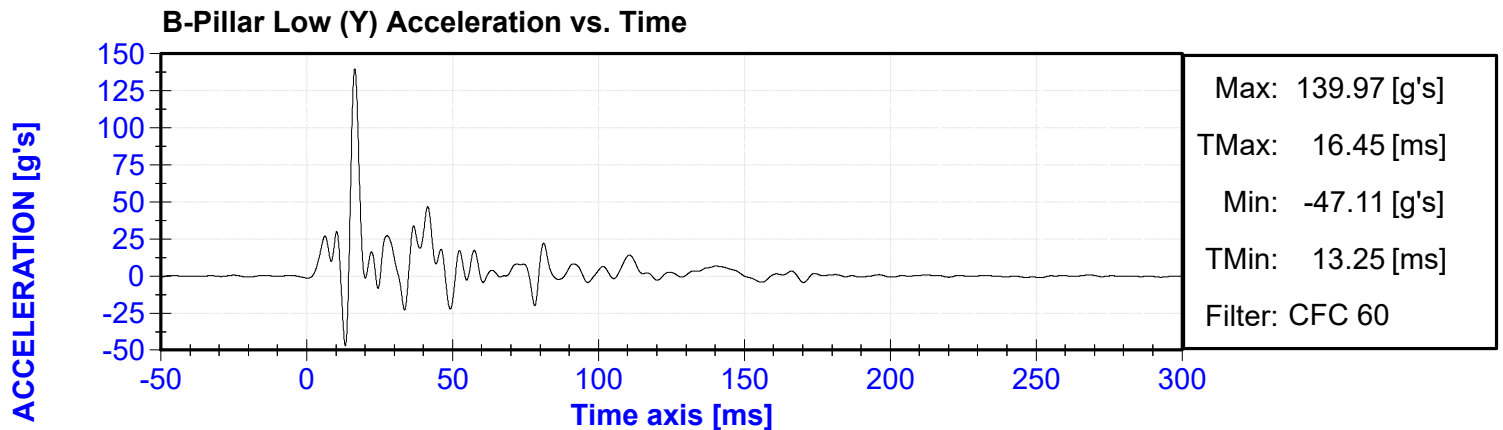
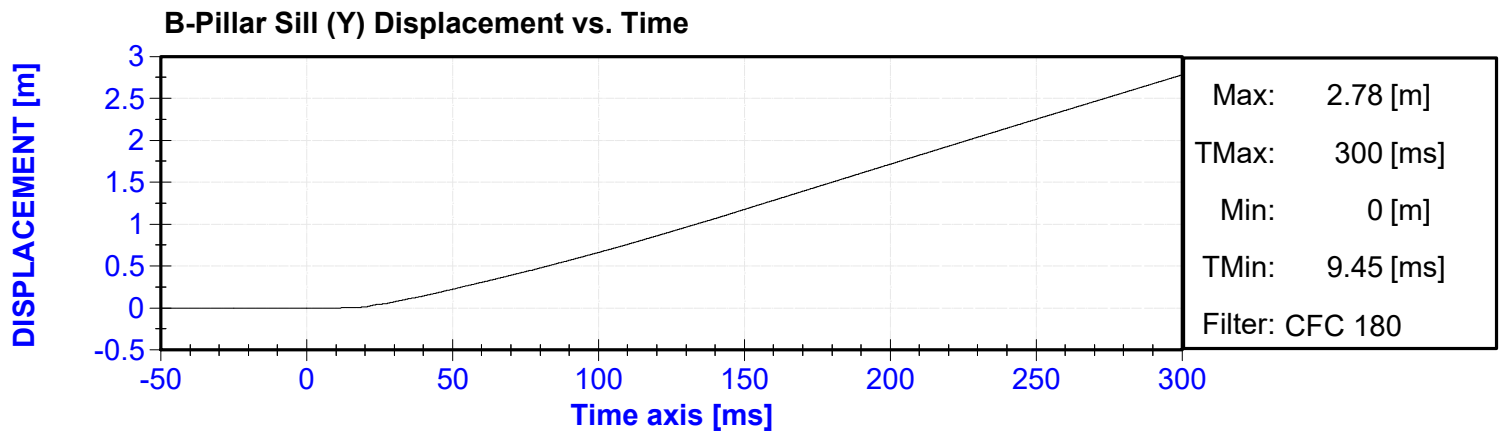
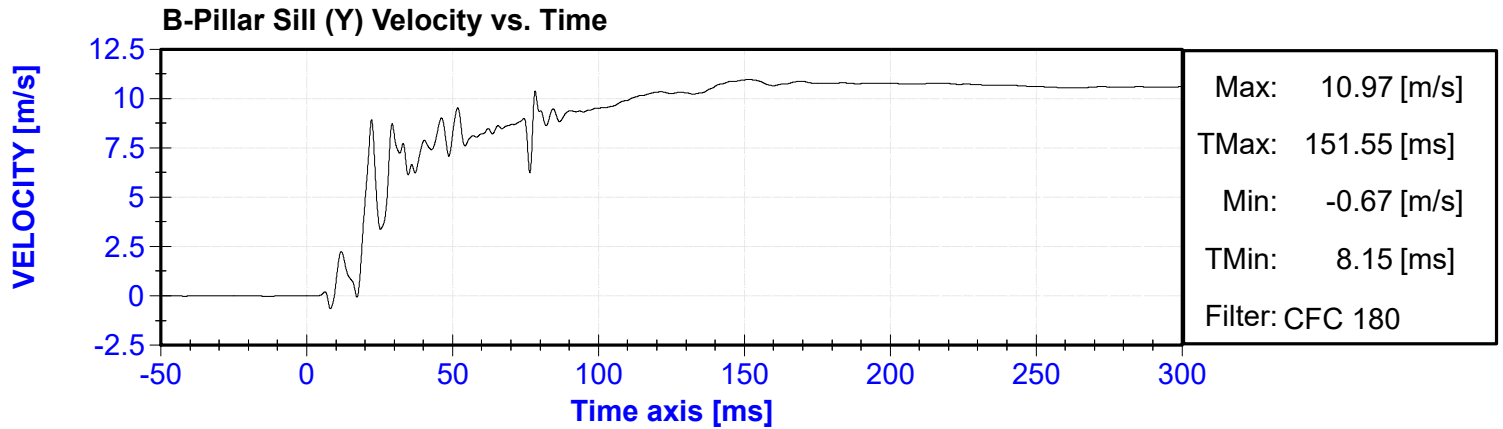


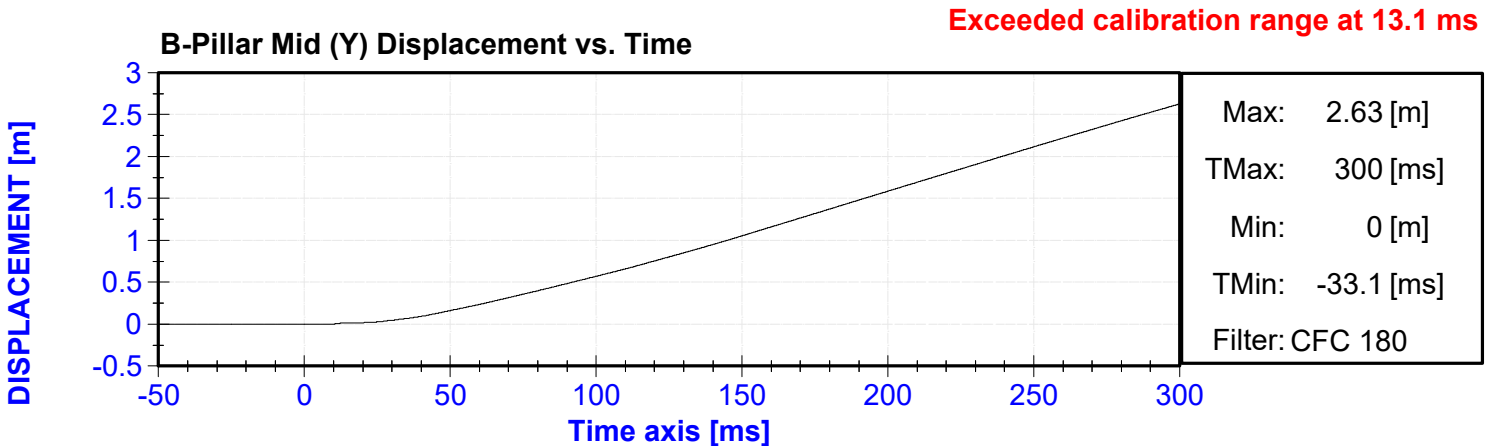
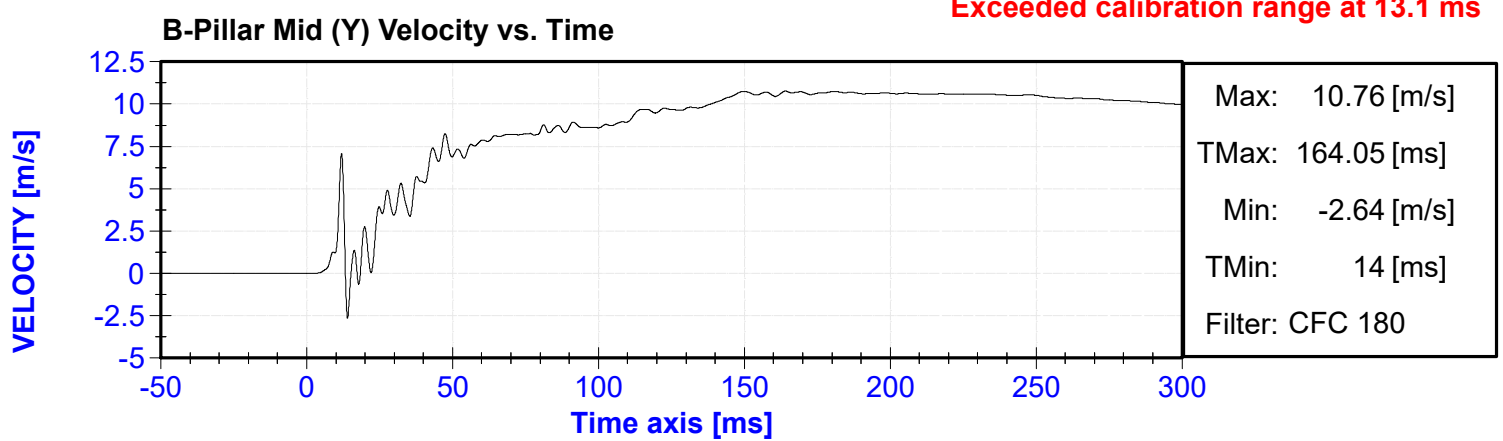
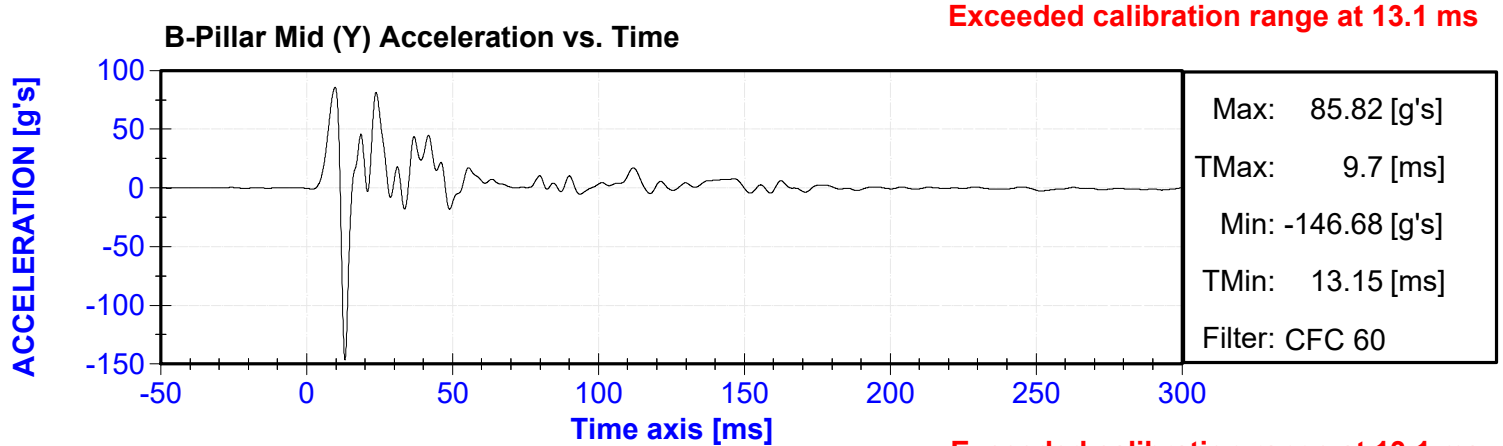
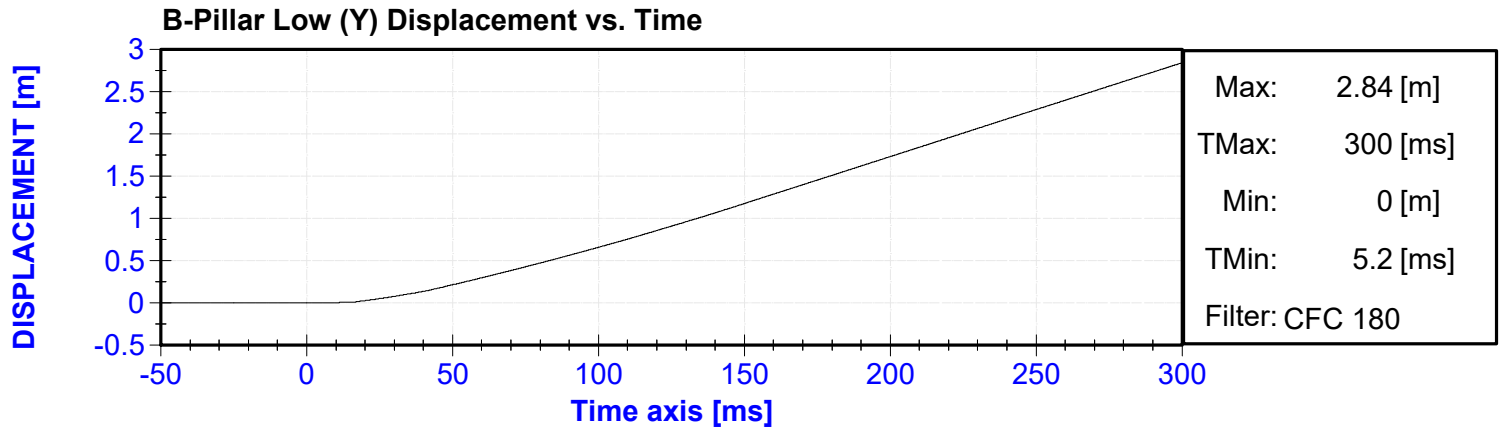
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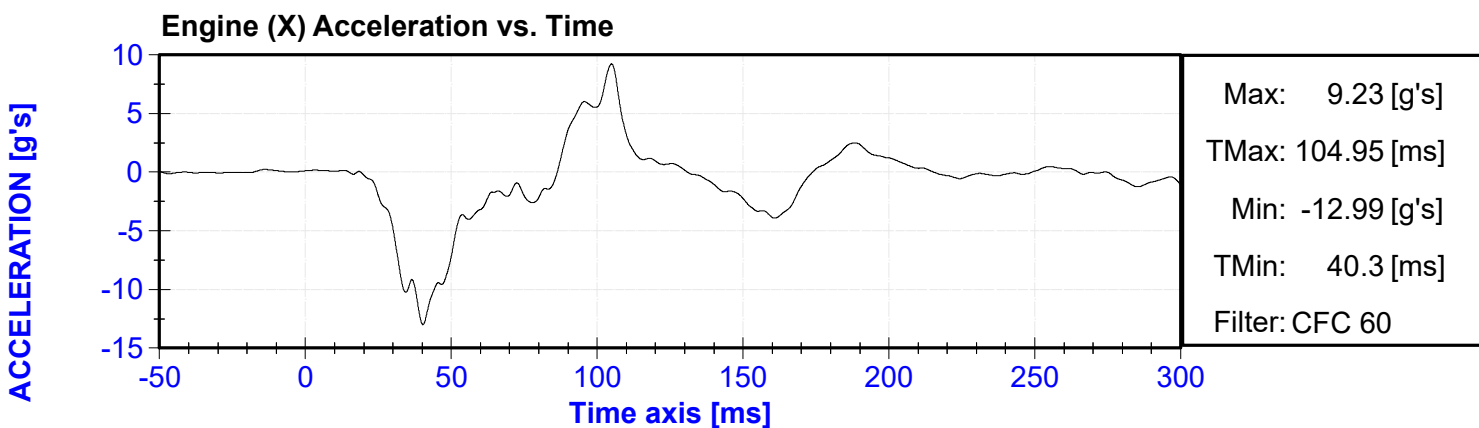
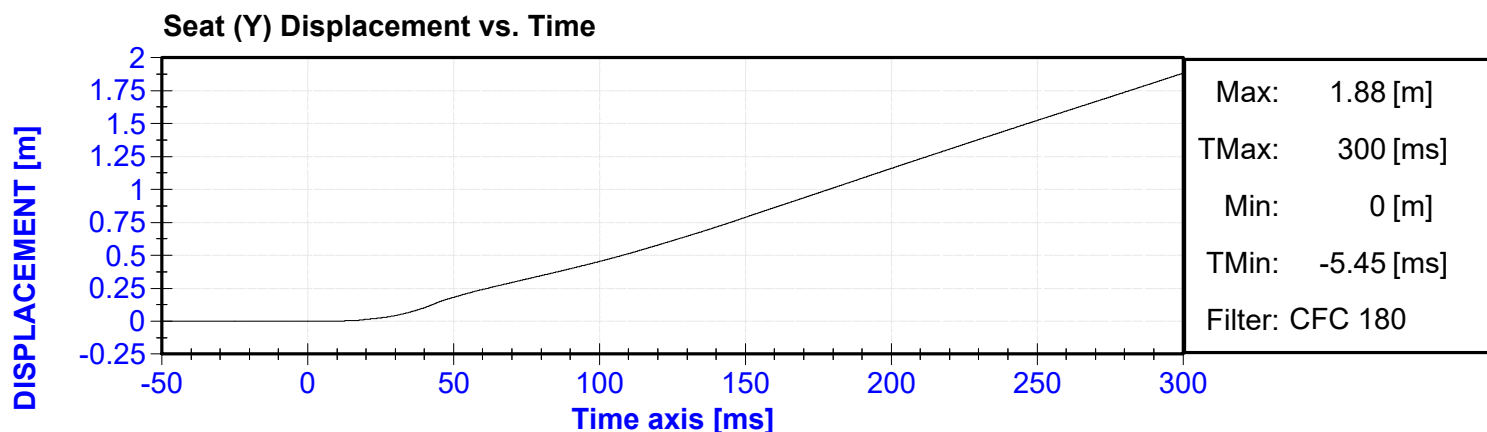
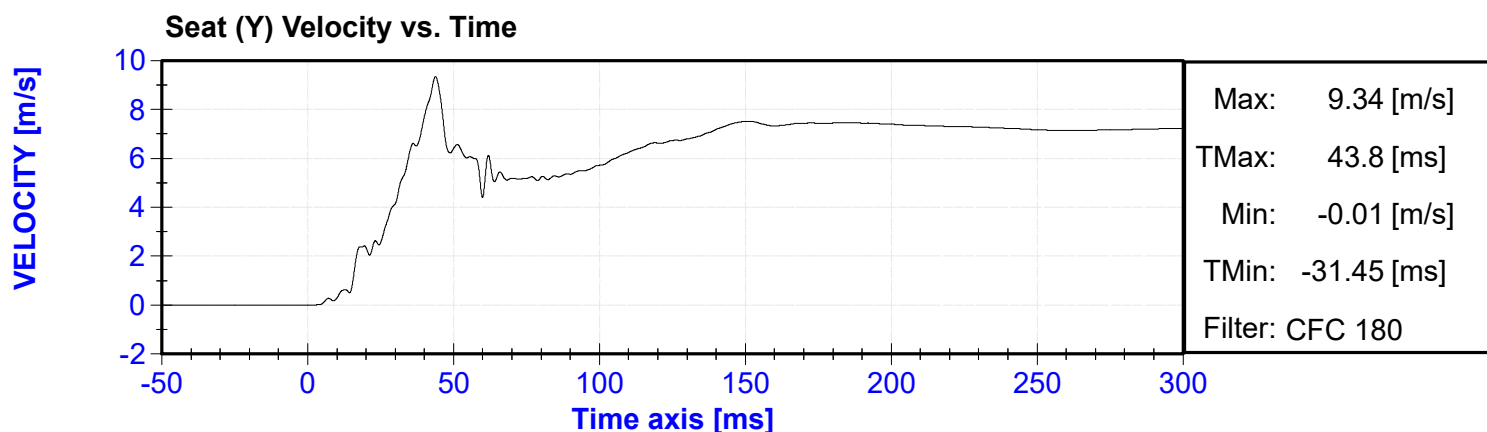
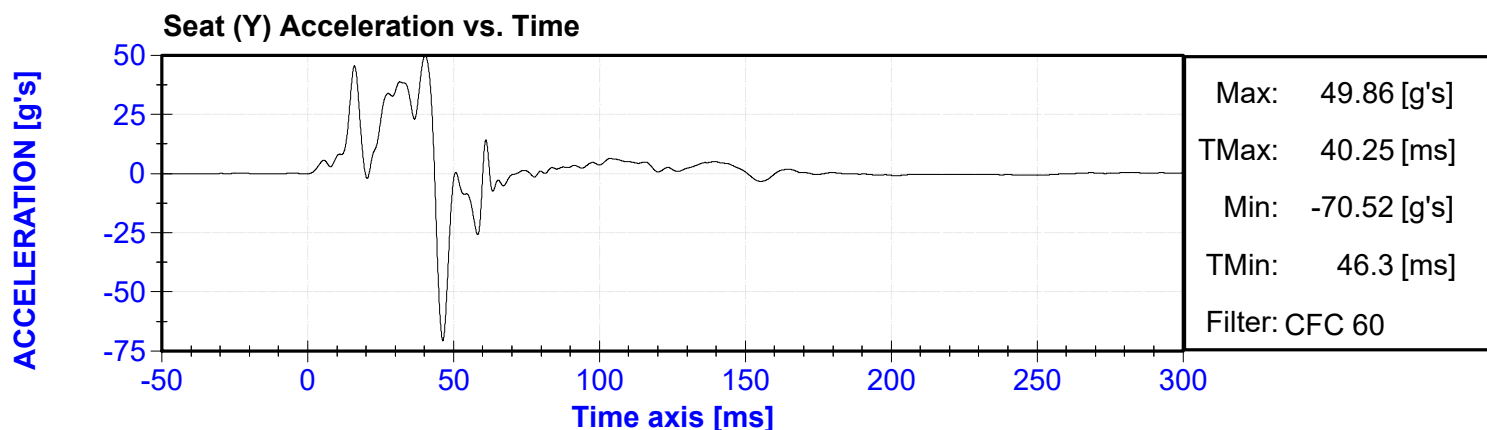


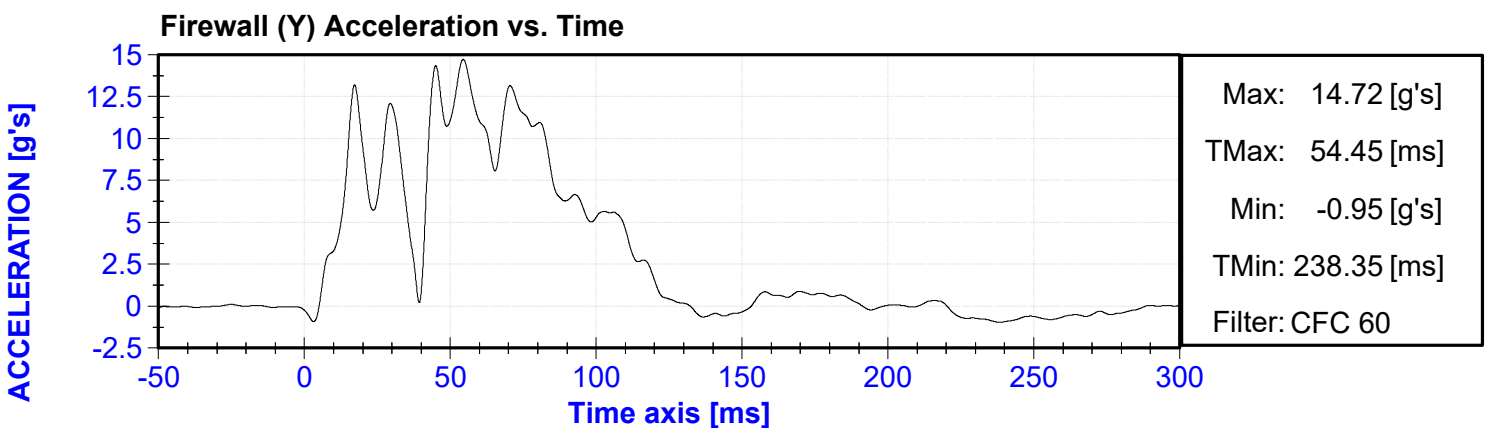
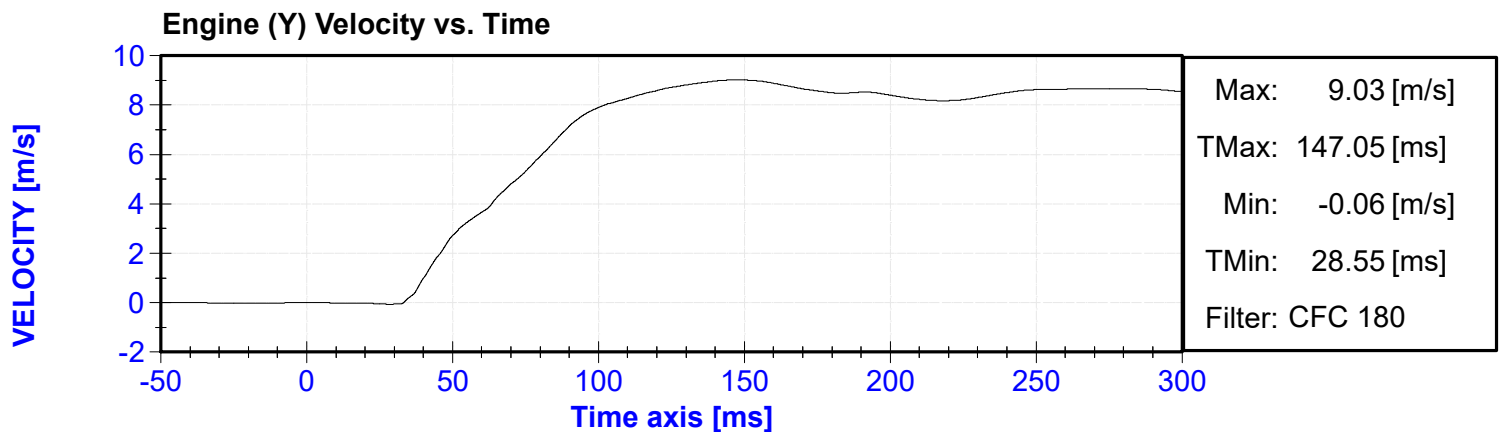
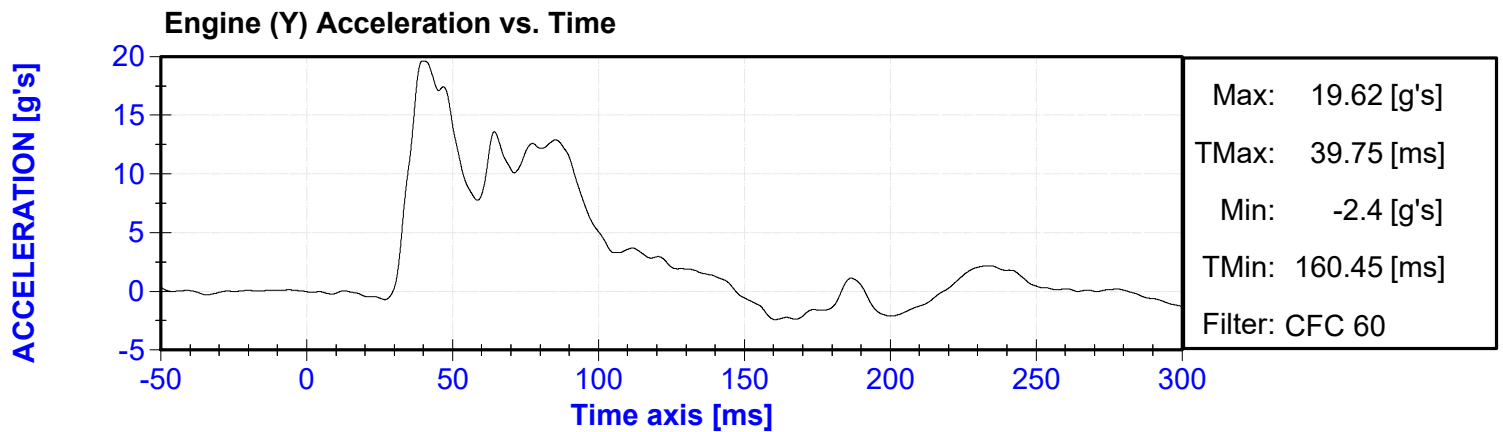
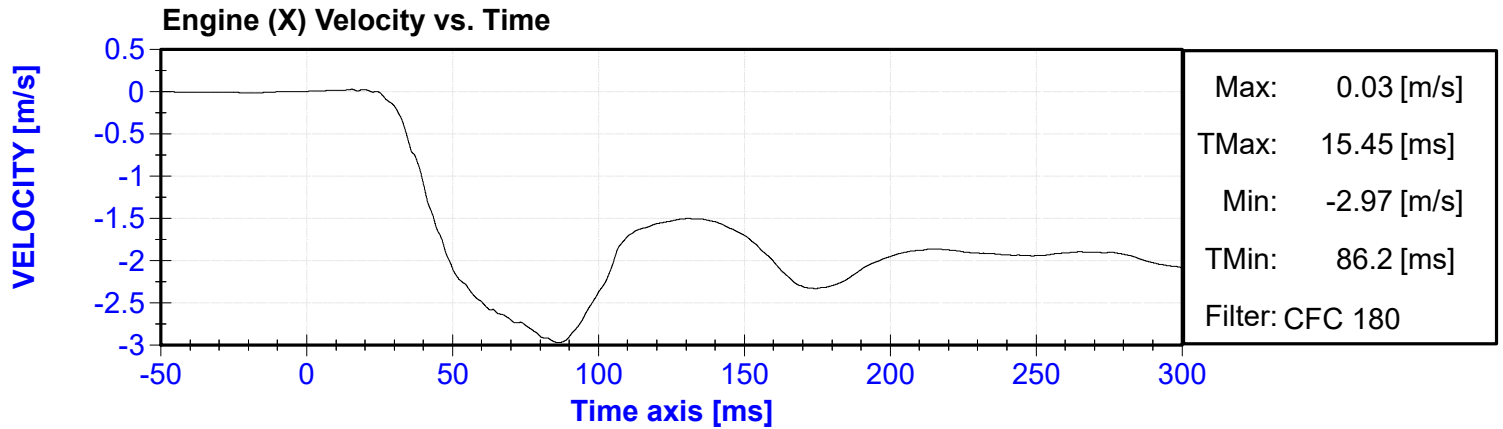
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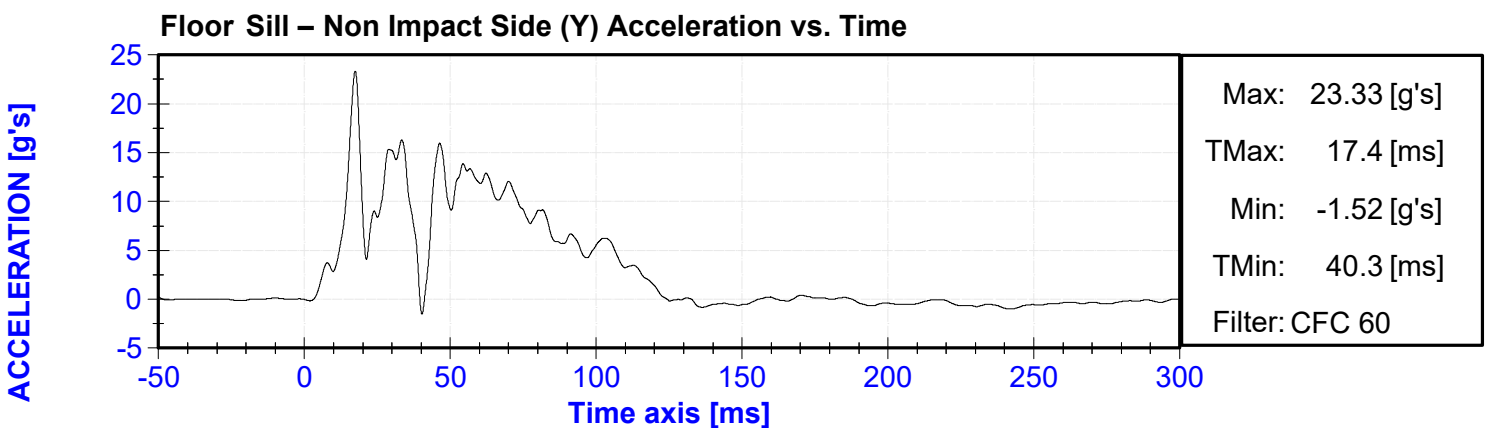
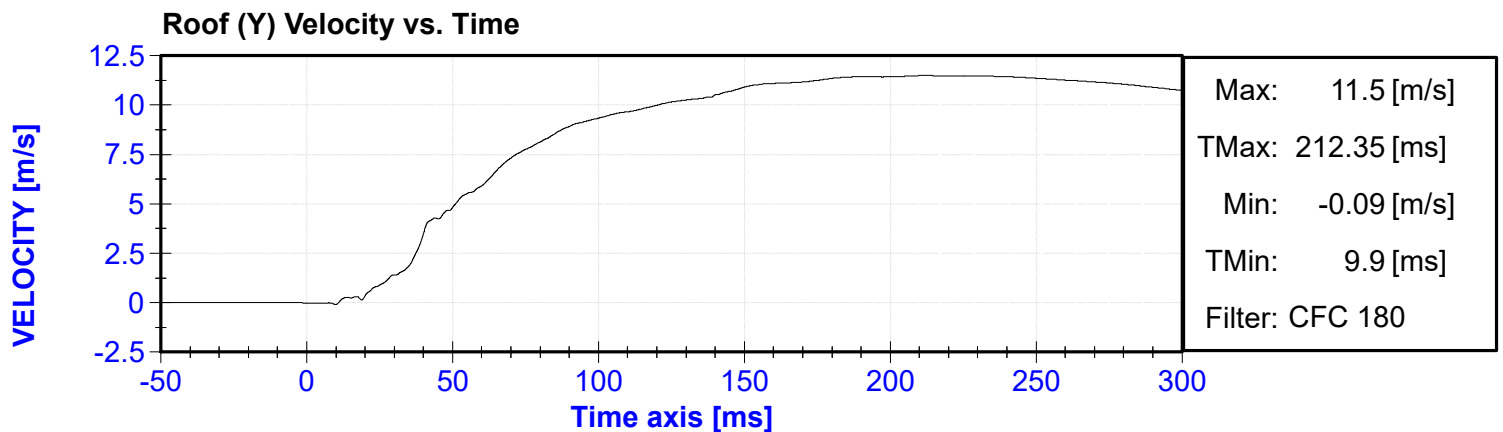
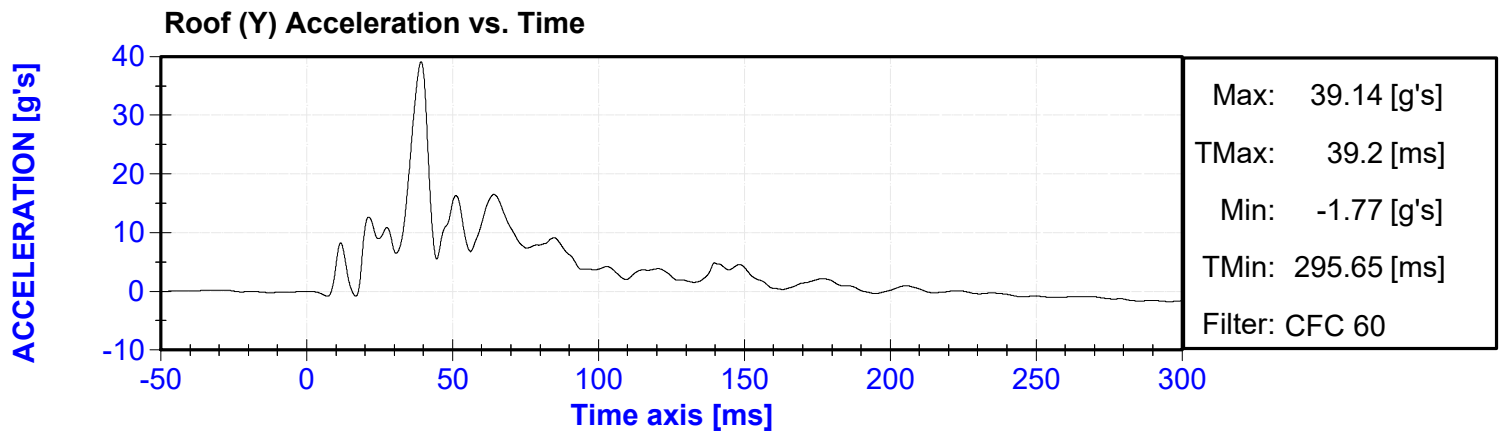
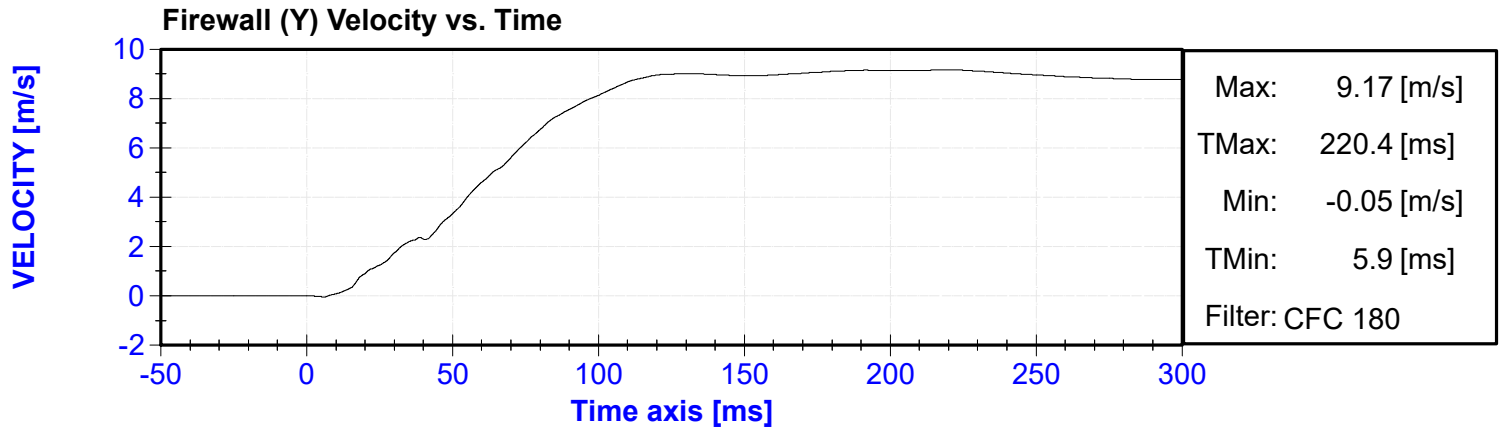


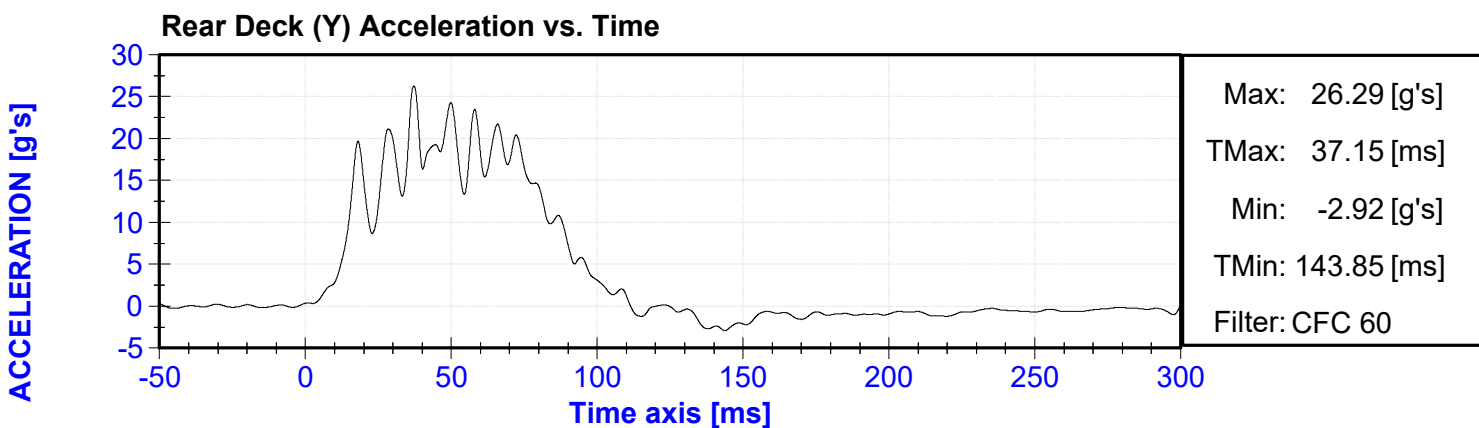
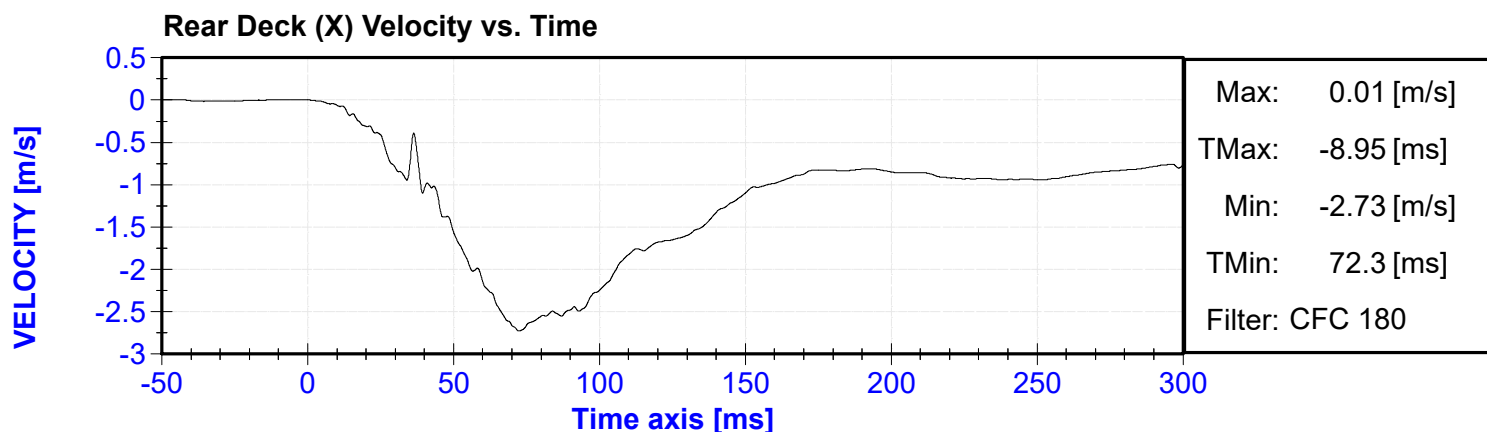
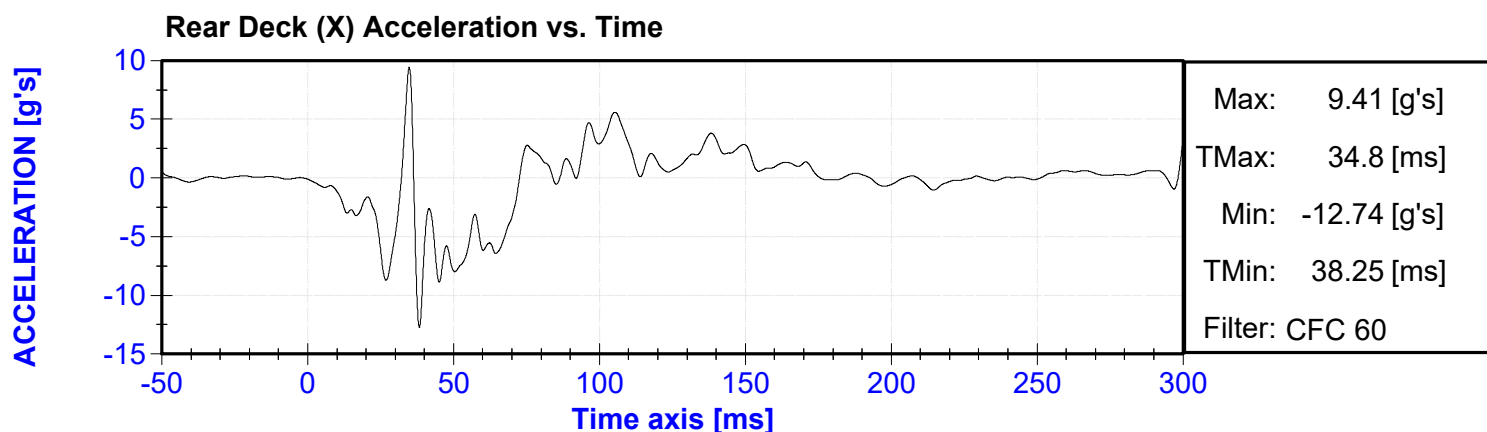
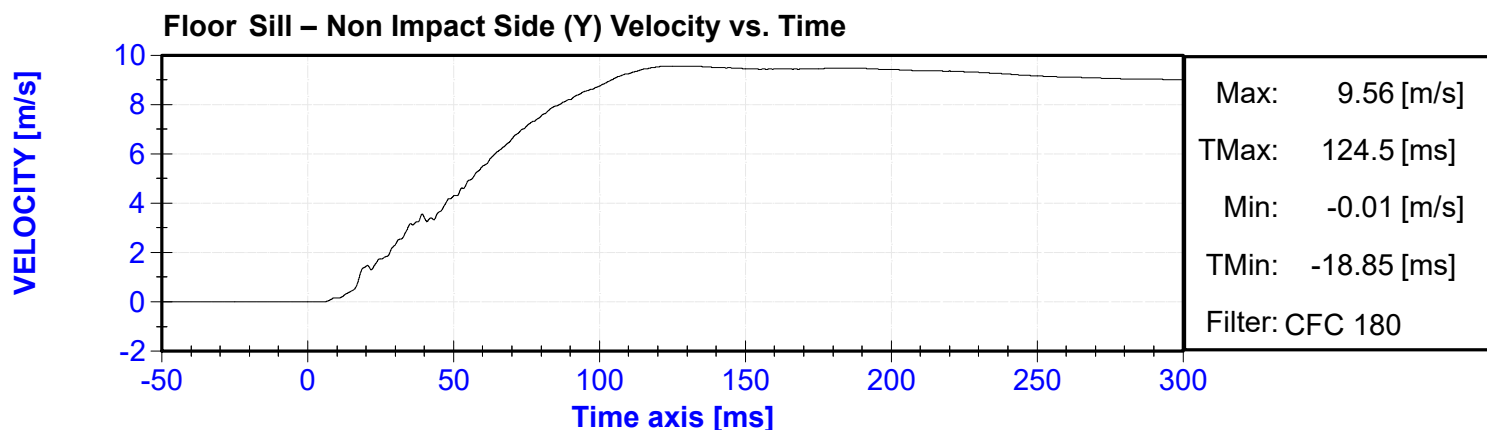


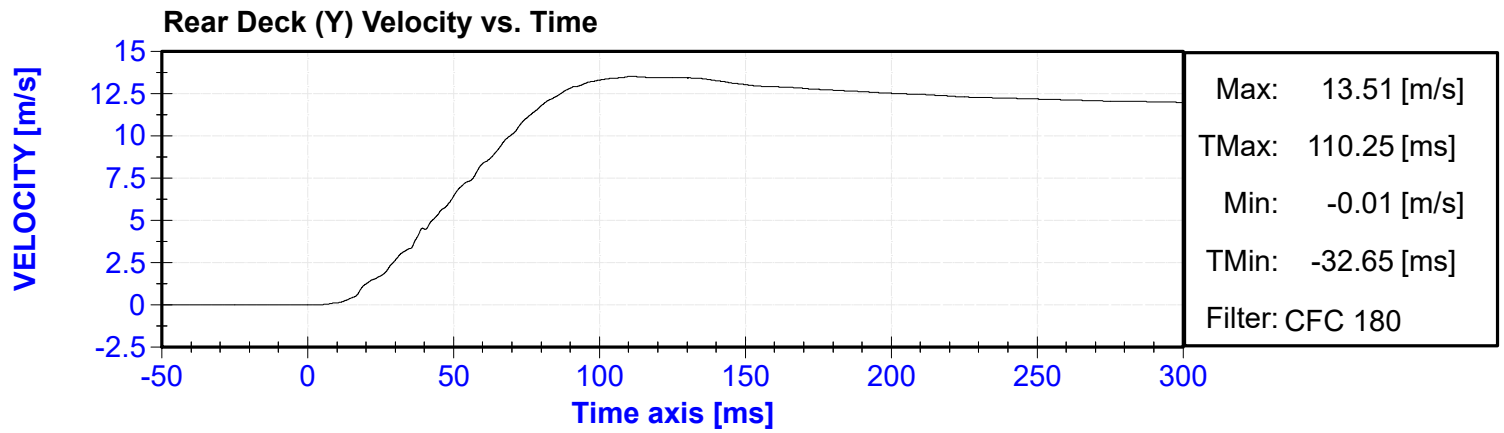












APPENDIX IV

PRE-TEST DUMMY PERFORMANCE CALIBRATION TEST DATA

(Subpart U, ES-2re)

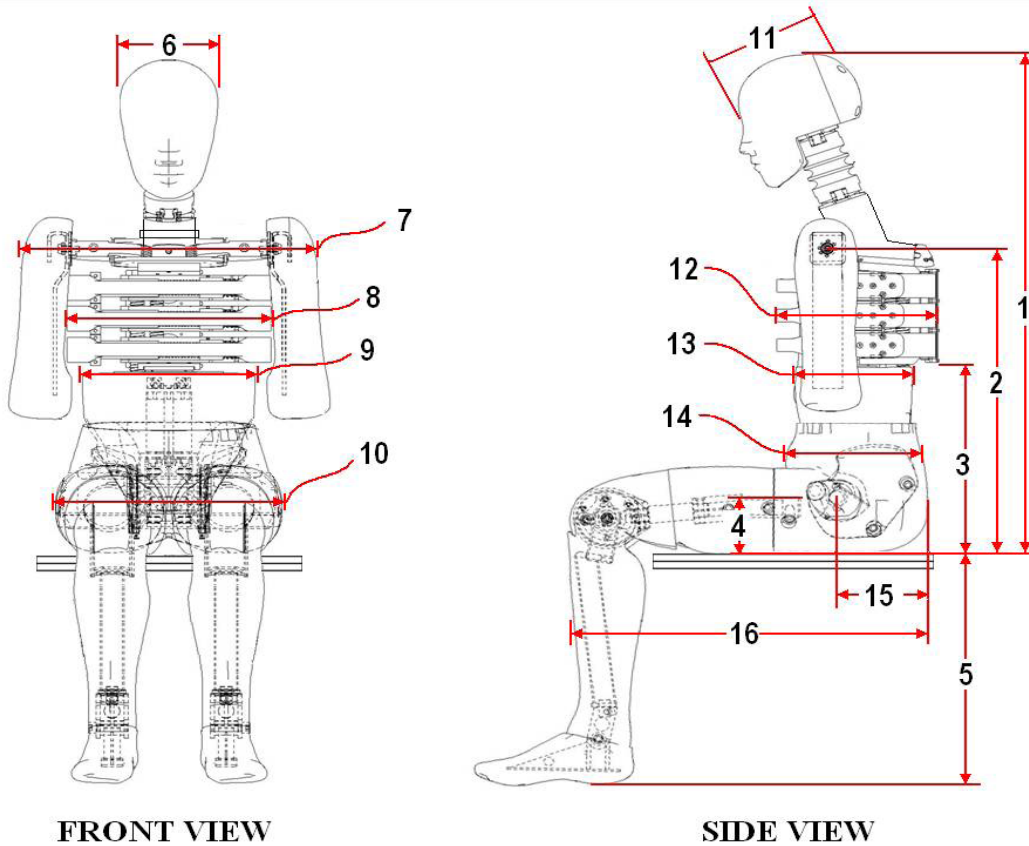


External Measurements - EuroSID-2re

Technician: K. Brogan

Date: 02/9/2024

Dummy Serial Number: DG5348



FRONT VIEW

SIDE VIEW

Dim. No.	Description	Specification (mm)		Result (mm)	Pass/Fail
1	Sitting Height	900	918	915	Pass
2	Seat to Shoulder Joint	558	572	568	Pass
3	Seat to Lower Face of Thoracic Spine Box	346	356	351	Pass
4	Seat to Hip Joint (center of bolt)	97	103	102	Pass
5	Sole to Seat, Sitting	333	451	415	Pass
6	Head Width	152	158	156	Pass
7	Shoulder/Arm Width	461	479	472	Pass
8	Thorax Width	322	332	327	Pass
9	Abdomen Width	273	287	281	Pass
10	Pelvis Lap Width	359	373	368	Pass
11	Head Depth	196	206	200	Pass
12	Thorax Depth	262	272	268	Pass
13	Abdomen Depth	194	204	197	Pass
14	Pelvis Depth	235	245	241	Pass
15	Back of Buttocks to Hip Joint (center of bolt)	150	160	155	Pass
16	Back of Buttocks to Front Knee	597	615	605	Pass

ATD Manufacturer	FTSS	Test Technician	J.Kinderman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantell

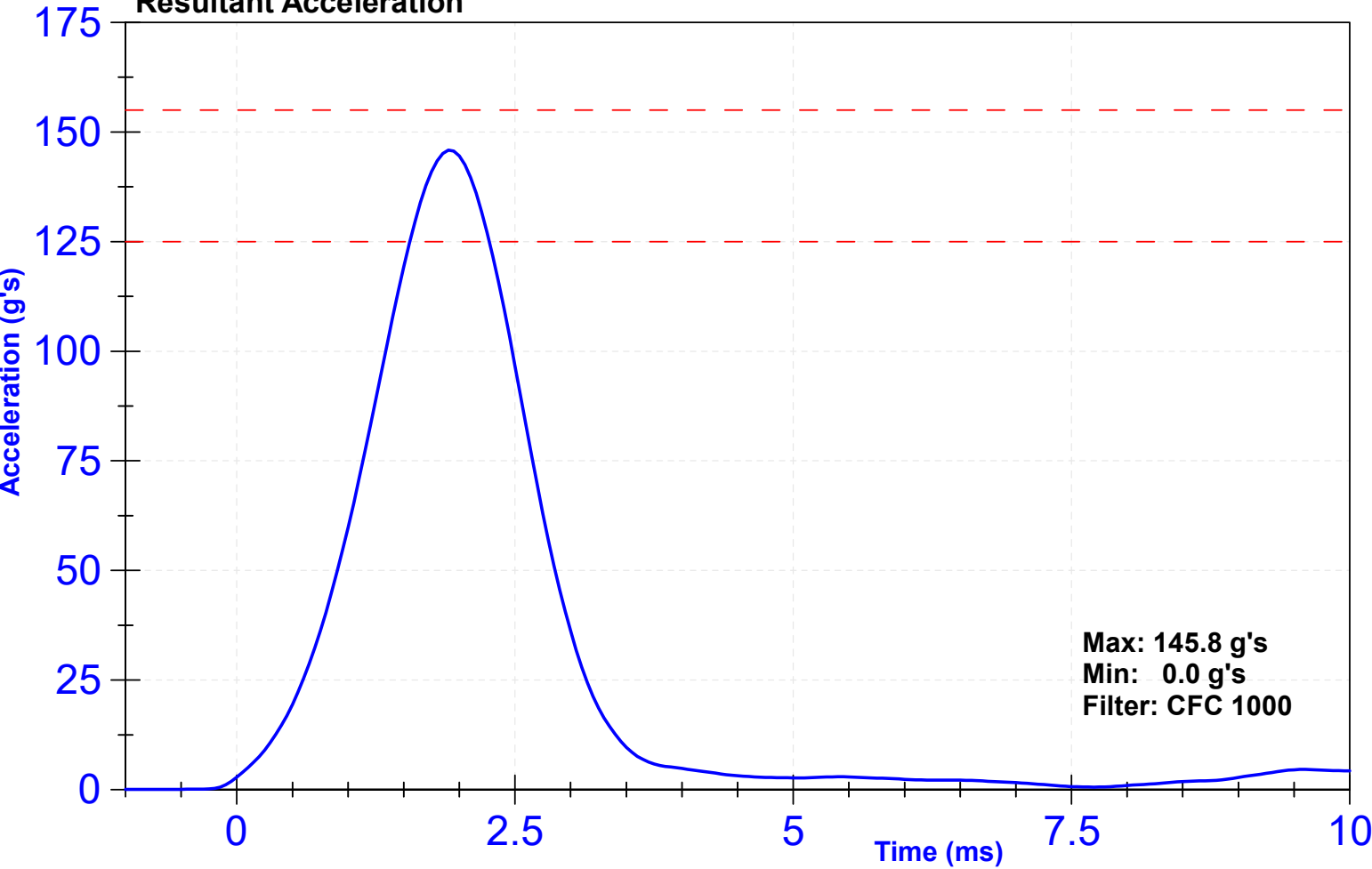
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	30	Pass
Resultant Acceleration	125	155	g's	145.8	Pass
Oscillation	0	15	%	3.16	Pass
Fore-Aft Acceleration	-15	15	g's	8.2	Pass

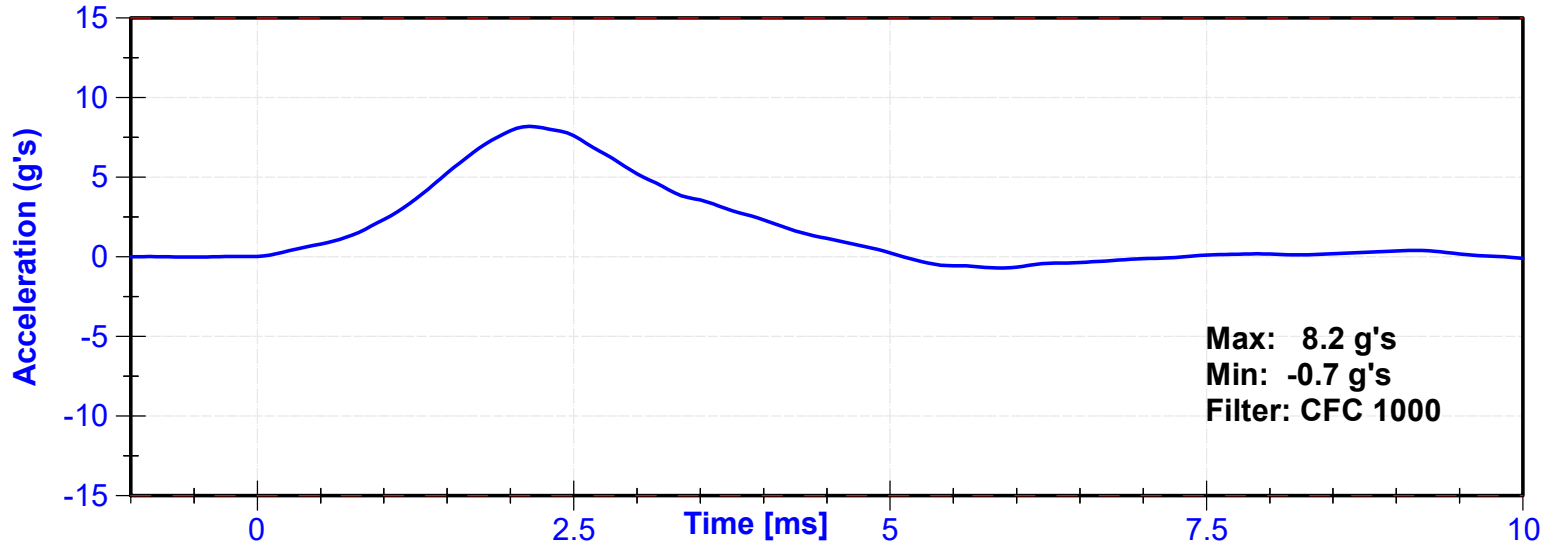
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	Endevco	18613	9/1/2023	2/28/2024
Y Accelerometer	Endevco	18472	9/1/2023	2/28/2024
Z Accelerometer	Endevco	18663	9/1/2023	2/28/2024

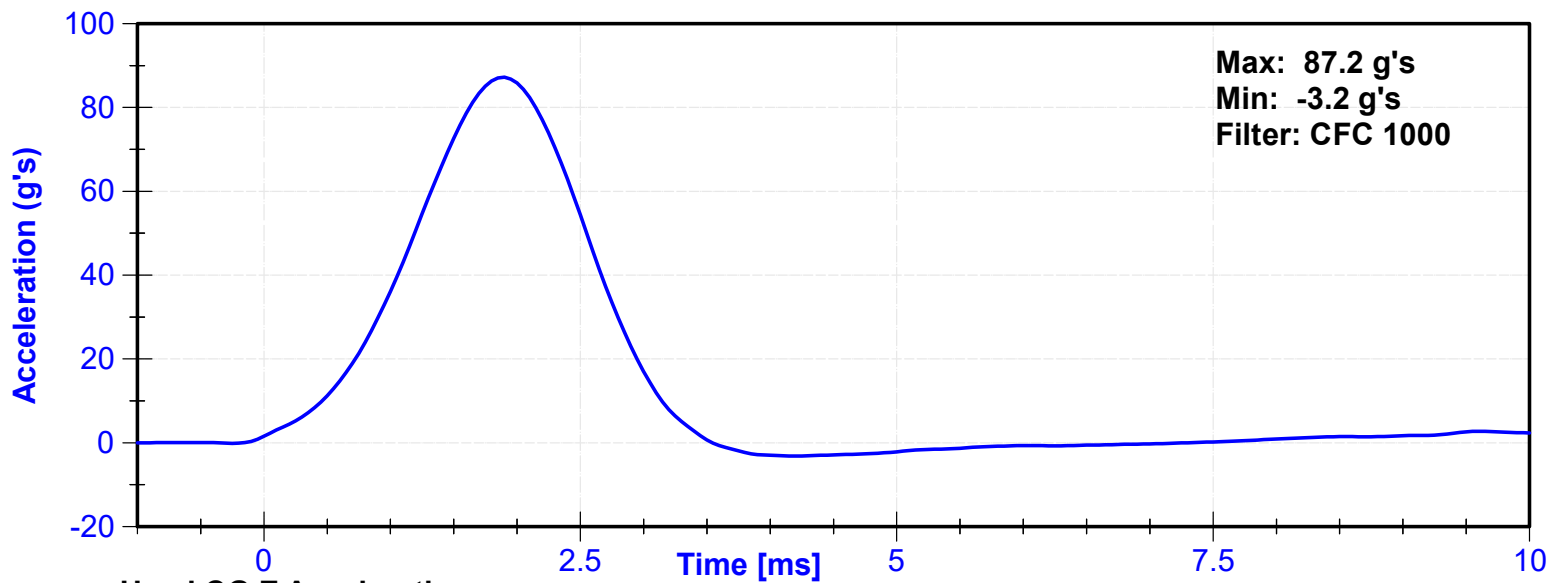
Resultant Acceleration



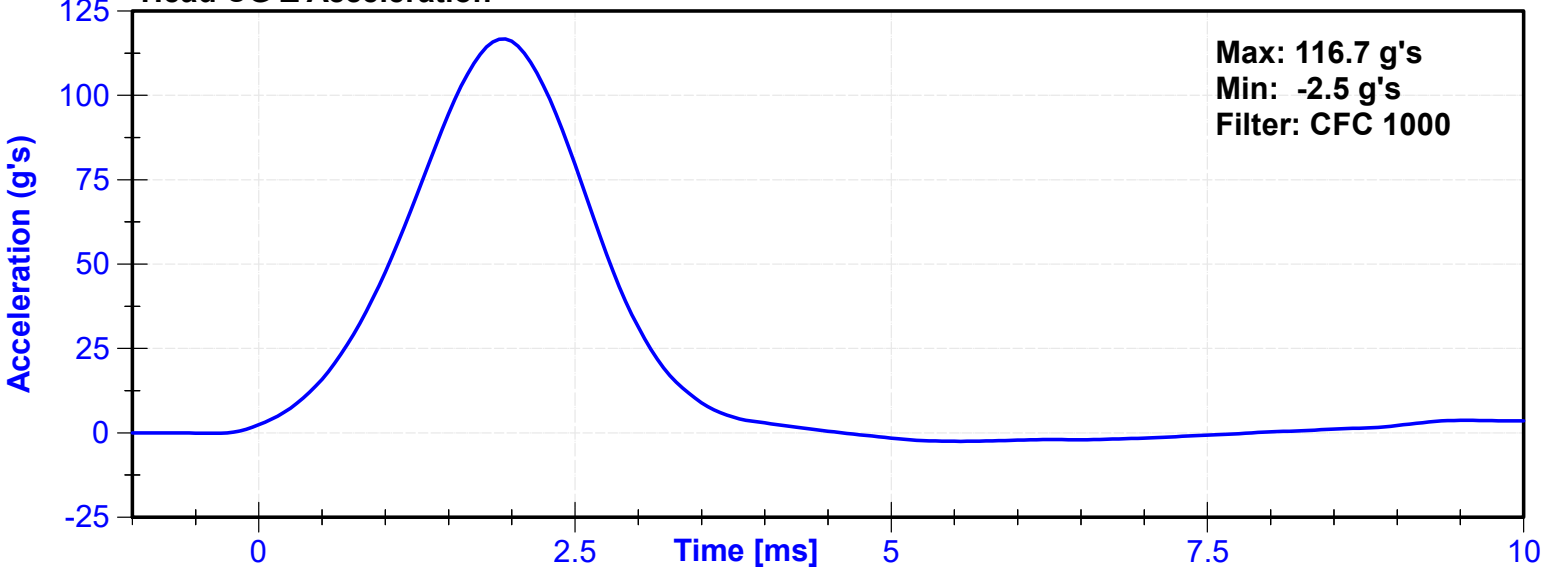
Head CG X Acceleration



Head CG Y Acceleration



Head CG Z Acceleration



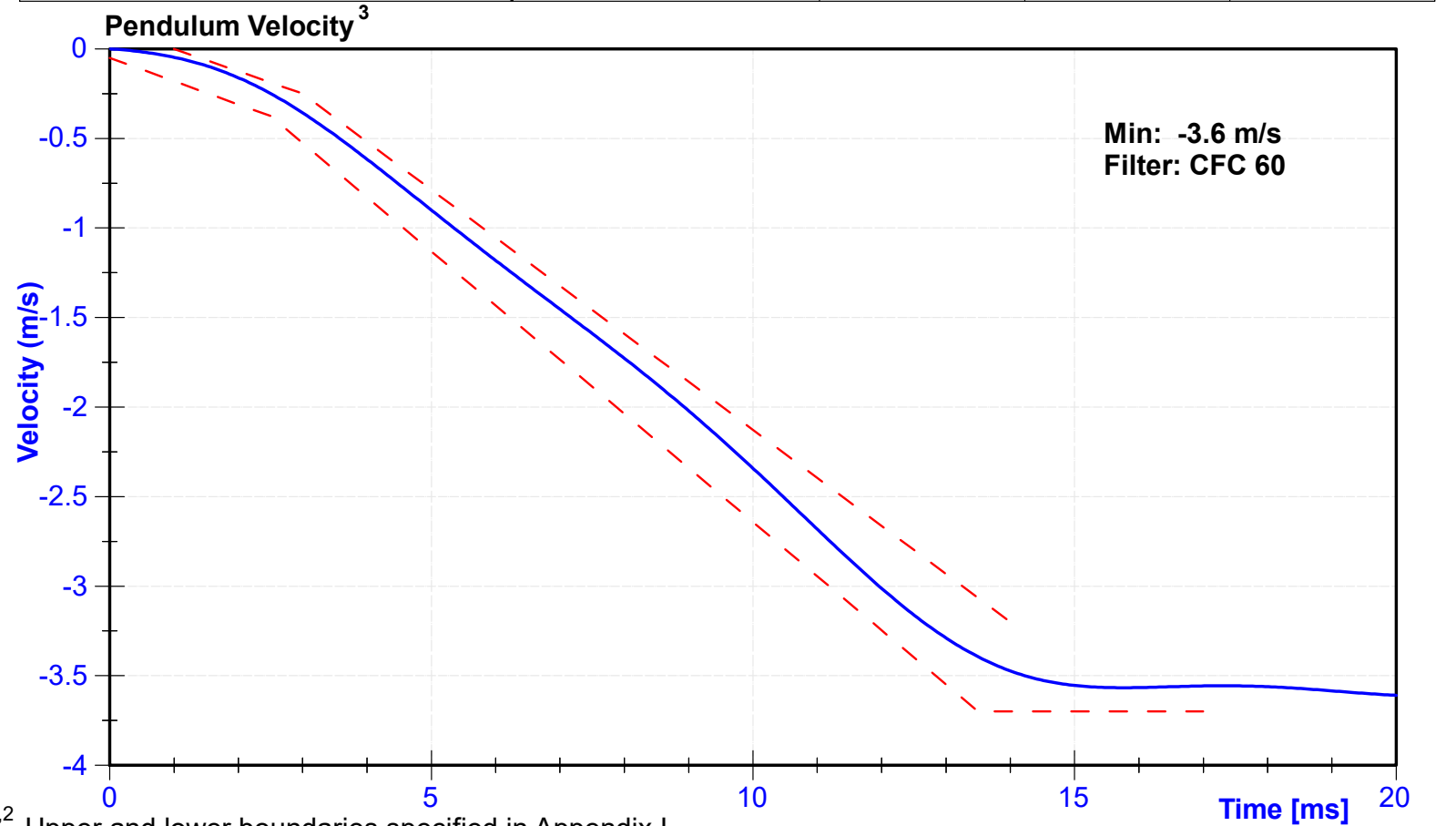
ATD Manufacturer	FTSS	Test Technician	J. Kinderman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantell

Results

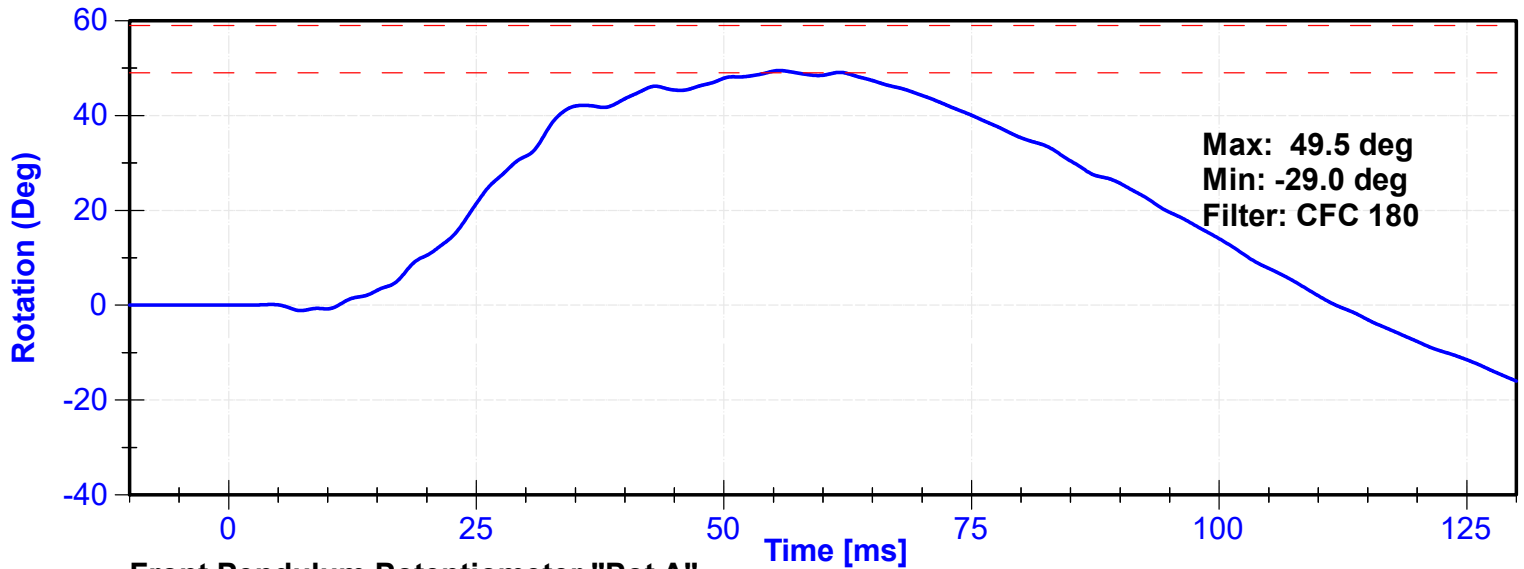
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	29	Pass
Velocity	3.3	3.5	m/s	3.36	Pass
Lateral Neck Rotation	49	59	deg	49.5	Pass
Time at Maximum Rotation	54	66	ms	55.6	Pass
Time of Rotation Decay from Maximum	53	88	ms	56.3	Pass
Pendulum Velocity Overall Corridor	Lower Boundary ¹	Upper Boundary ²	m/s	See Plot ³	Pass

Transducer Calibrations

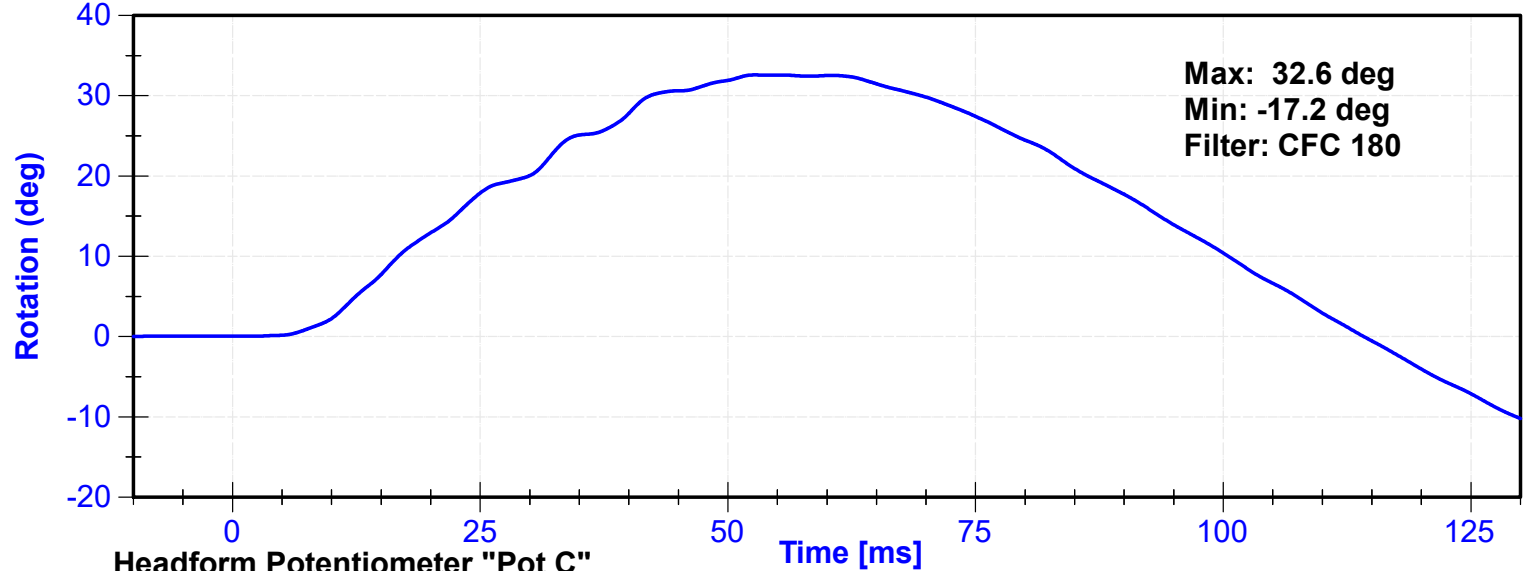
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	C16503	10/31/2023	4/28/2024
Front Pendulum Potentiometer	Sfernice	2247	12/5/2023	12/4/2024
Headform Potentiometer	Sfernice	095	9/29/2023	9/28/2024



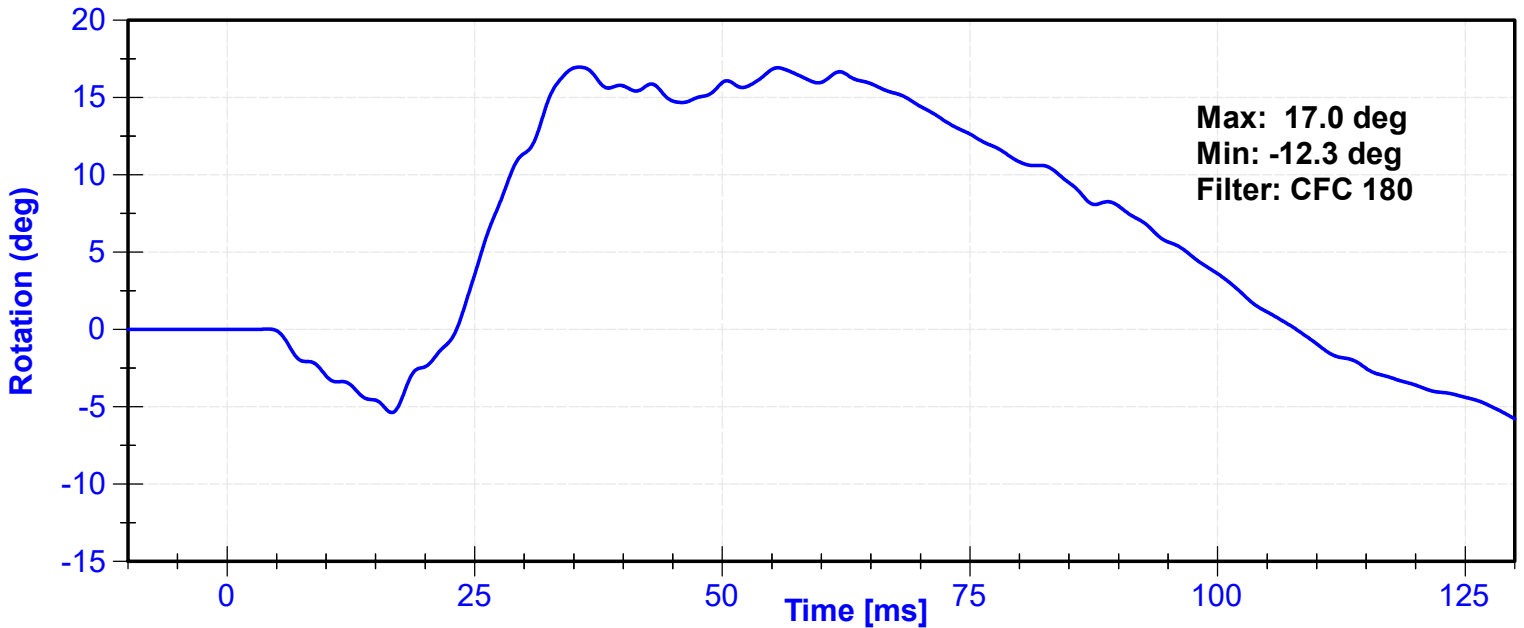
Neck Rotation



Front Pendulum Potentiometer "Pot A"



Headform Potentiometer "Pot C"



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	J.Kinderman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantell

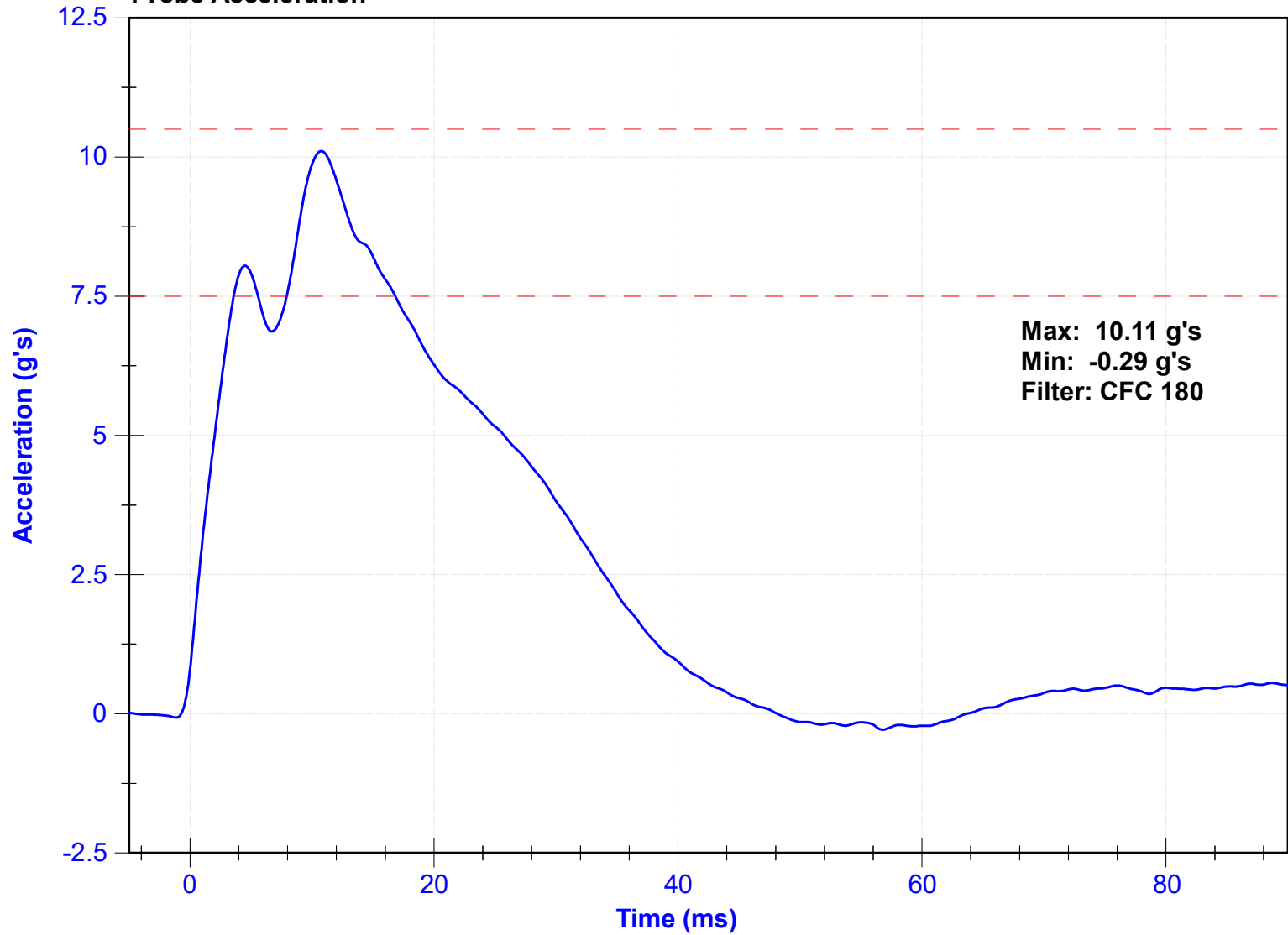
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.7	Pass
Humidity	10	70	%	51	Pass
Velocity	4.2	4.4	m/s	4.27	Pass
Probe Acceleration	7.5	10.5	g's	10.11	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	18587	11/20/2023	11/19/2024

Probe Acceleration



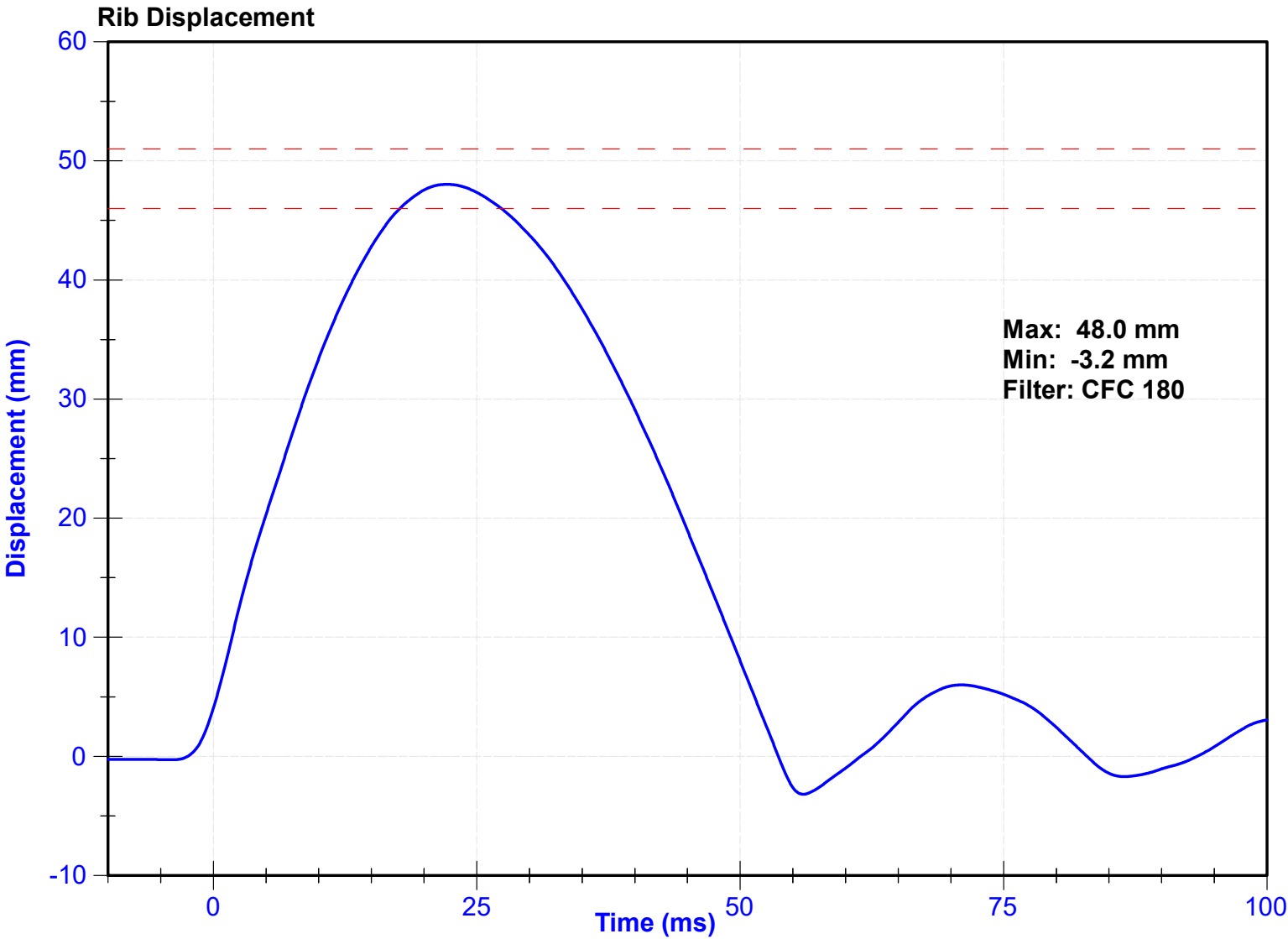
ATD Manufacturer	FTSS	Test Technician	J.Kinderman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantel

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	61	Pass
Rib Displacement	46	51	mm	48.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	268GFE	2/8/2024	8/8/2024



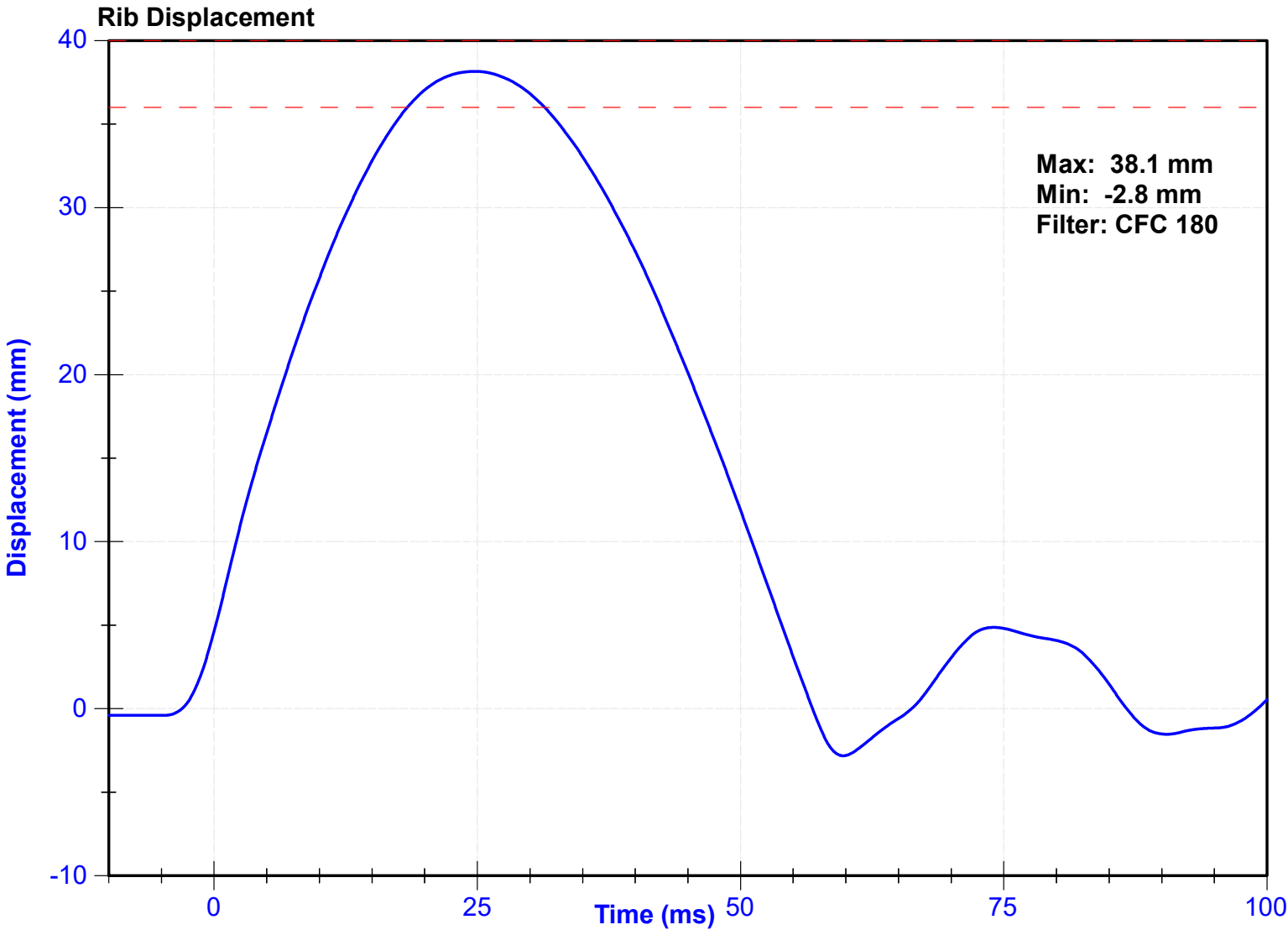
ATD Manufacturer	FTSS	Test Technician	J.Kinderman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantel

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	61	Pass
Rib Displacement	36	40	mm	38.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	268GFE	2/8/2024	8/8/2024



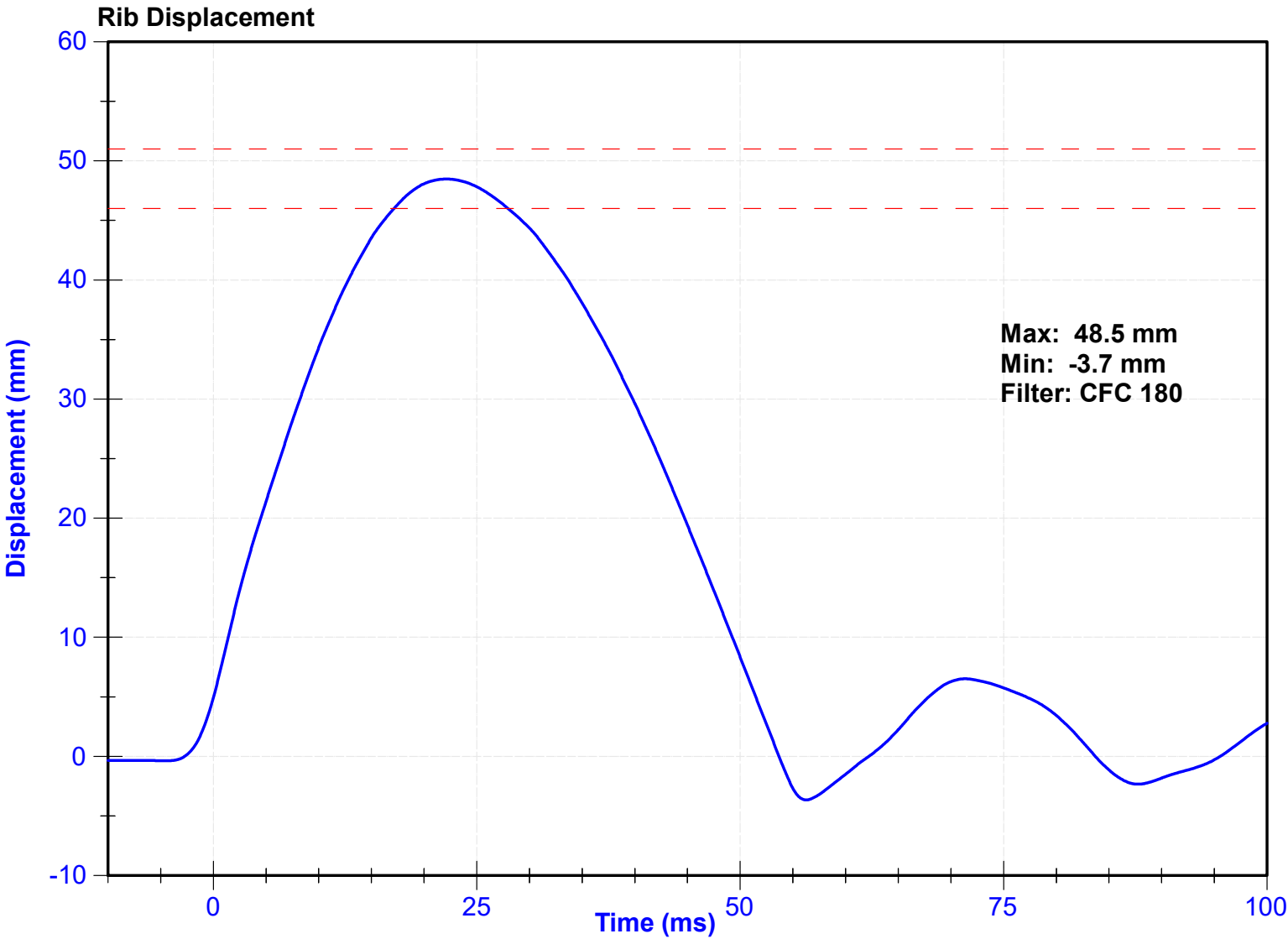
ATD Manufacturer	FTSS	Test Technician	J.Kinderman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantel

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	61	Pass
Rib Displacement	46	51	mm	48.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	269GFE	2/8/2024	8/8/2024



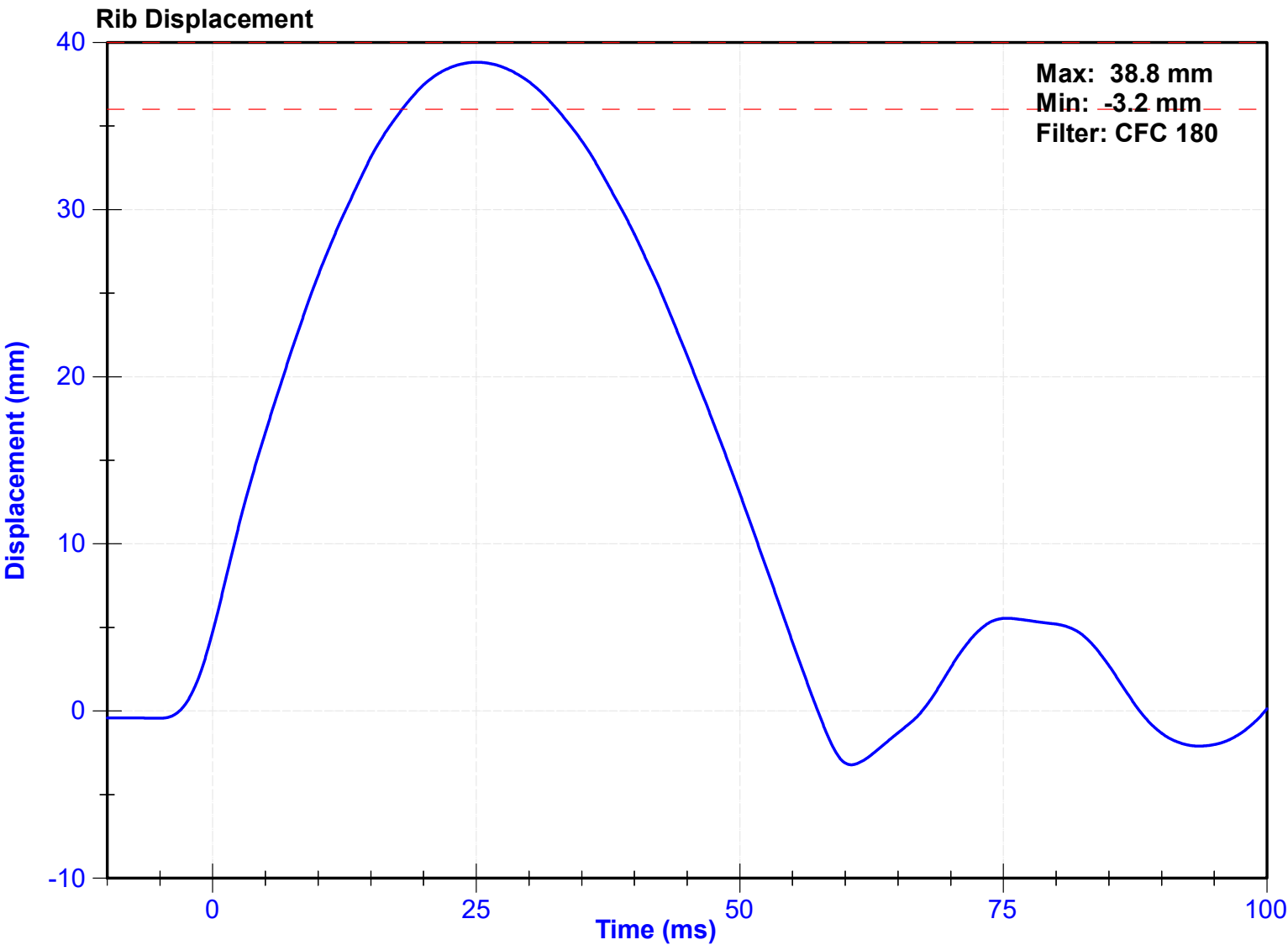
ATD Manufacturer	FTSS	Test Technician	J.Kinderman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantel

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	61	Pass
Rib Displacement	36	40	mm	38.8	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	269GFE	2/8/2024	8/8/2024



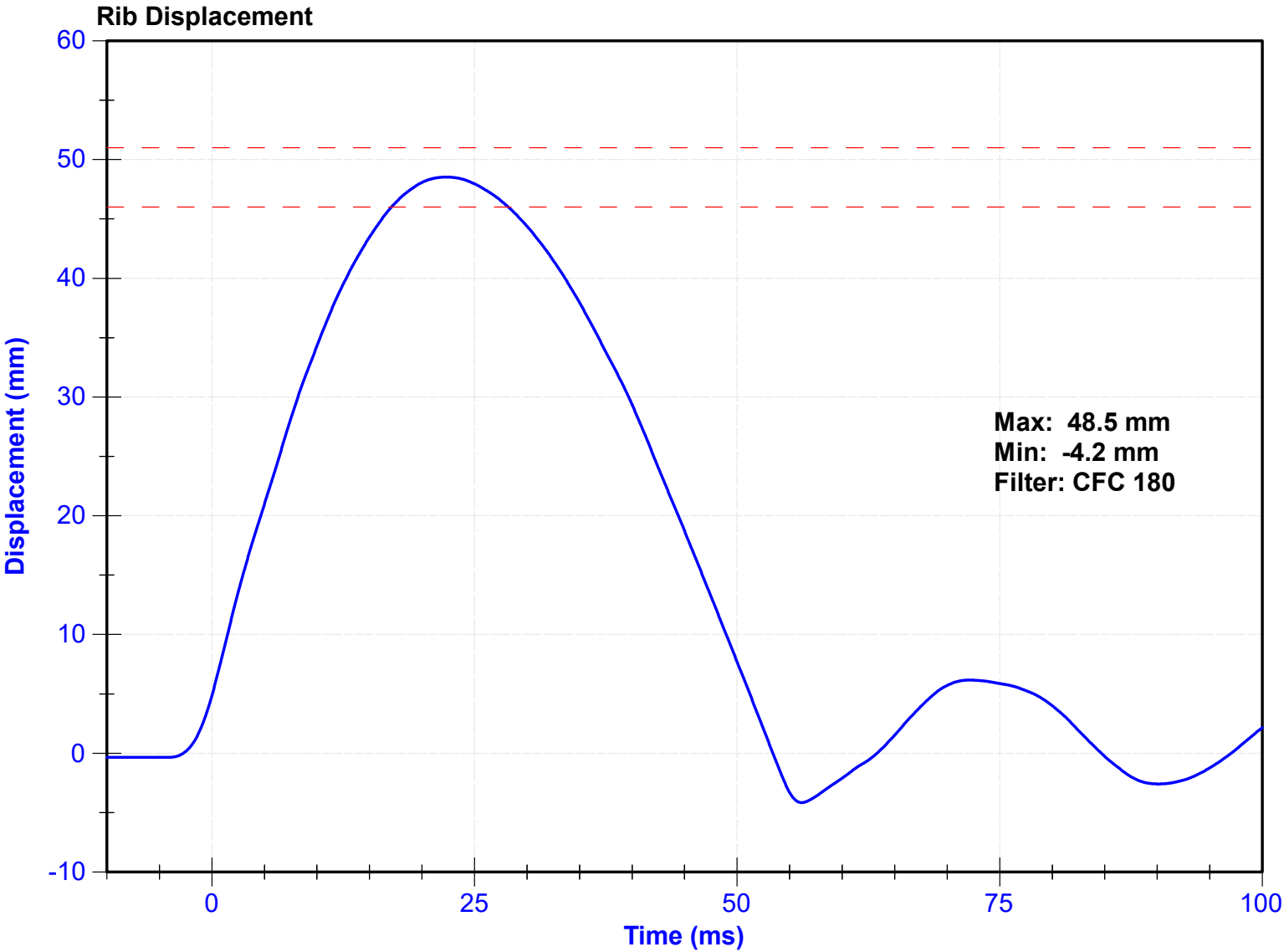
ATD Manufacturer	FTSS	Test Technician	J.Kinderman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantel

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	61	Pass
Rib Displacement	46	51	mm	48.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	270GFE	2/8/2024	8/8/2024



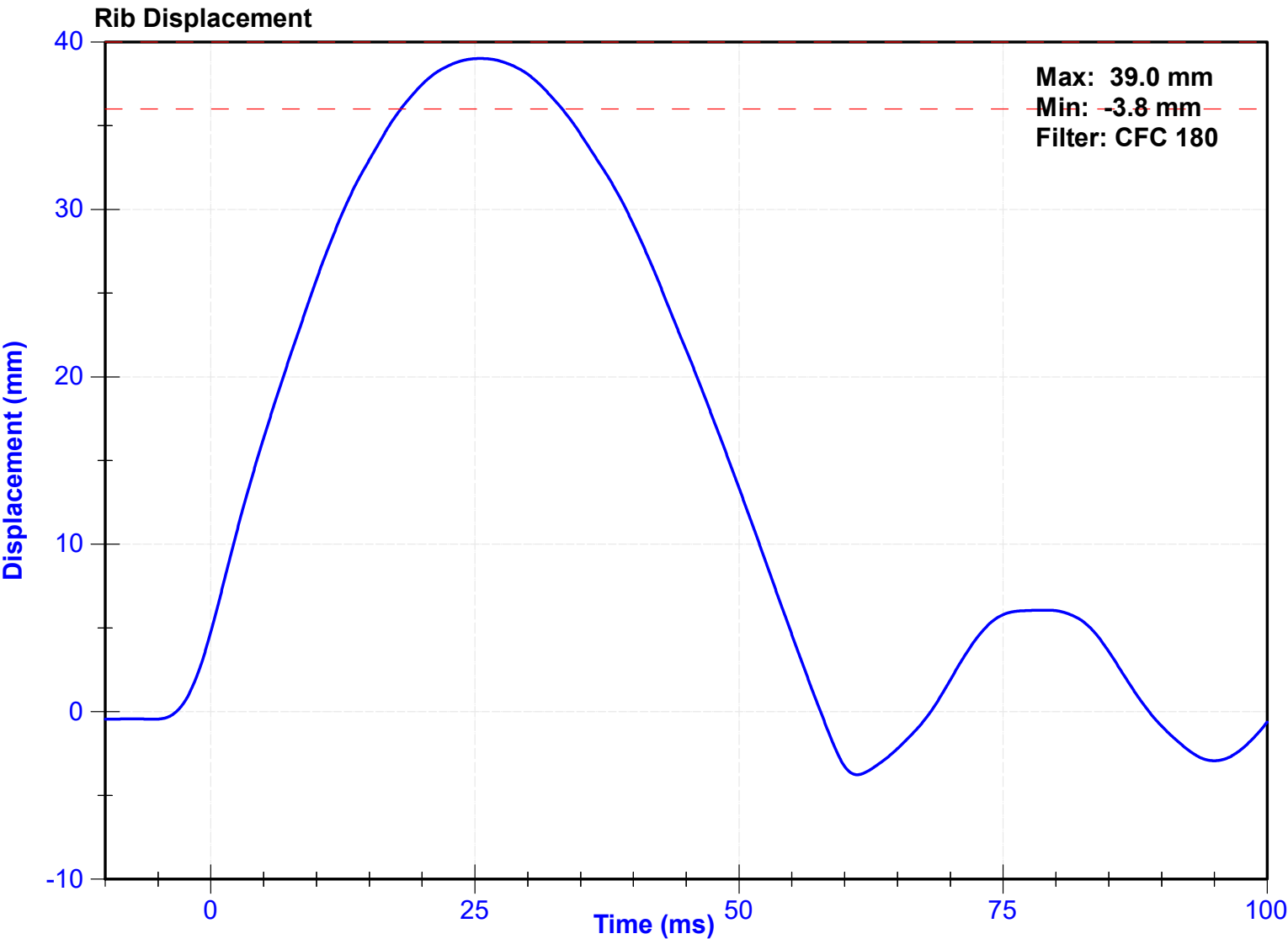
ATD Manufacturer	FTSS	Test Technician	J.Kinderman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantel

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	61	Pass
Rib Displacement	36	40	mm	39.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	270GFE	2/8/2024	8/8/2024



ATD Manufacturer	FTSS	Test Technician	J.Kinderman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantell

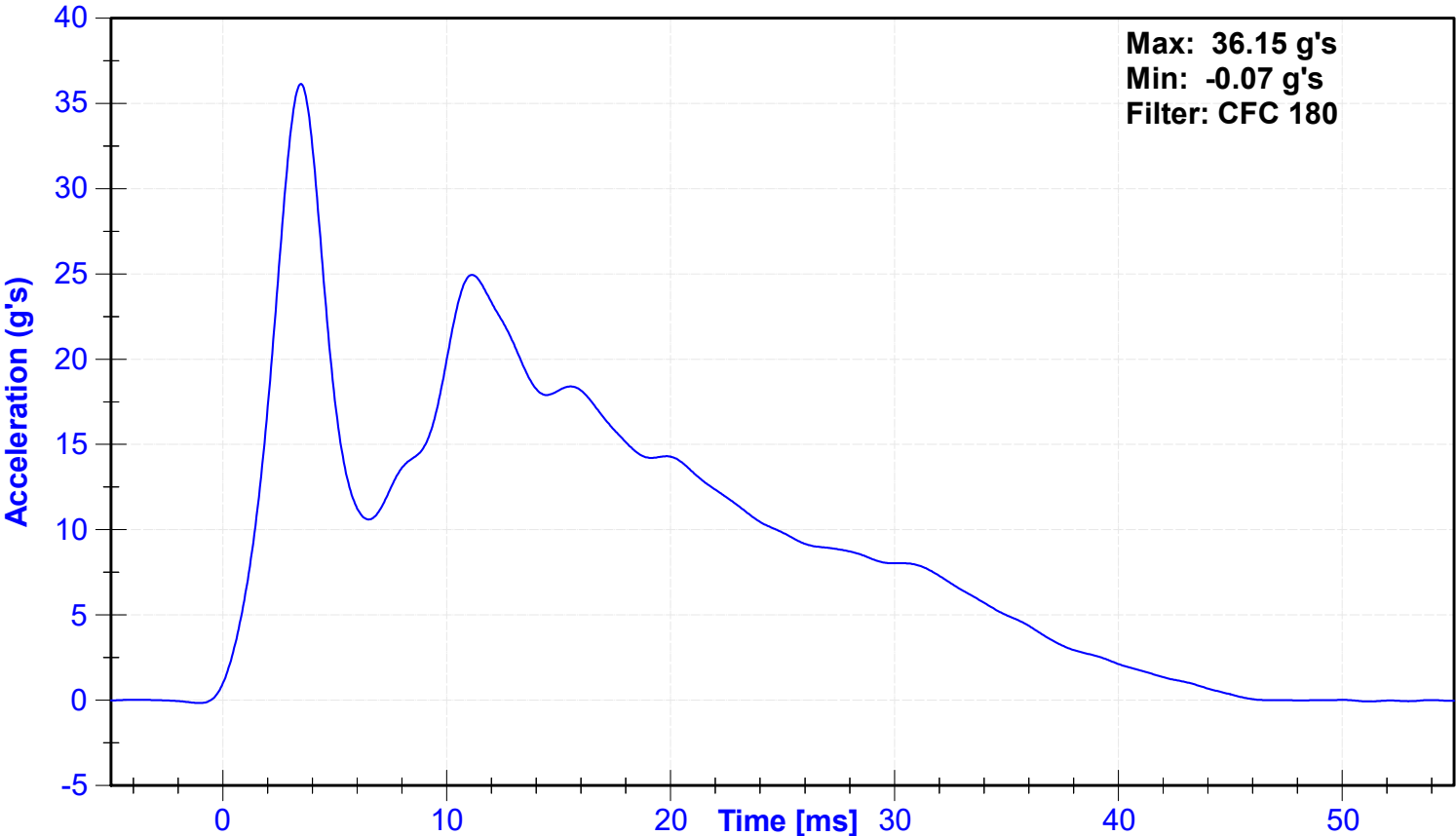
Results

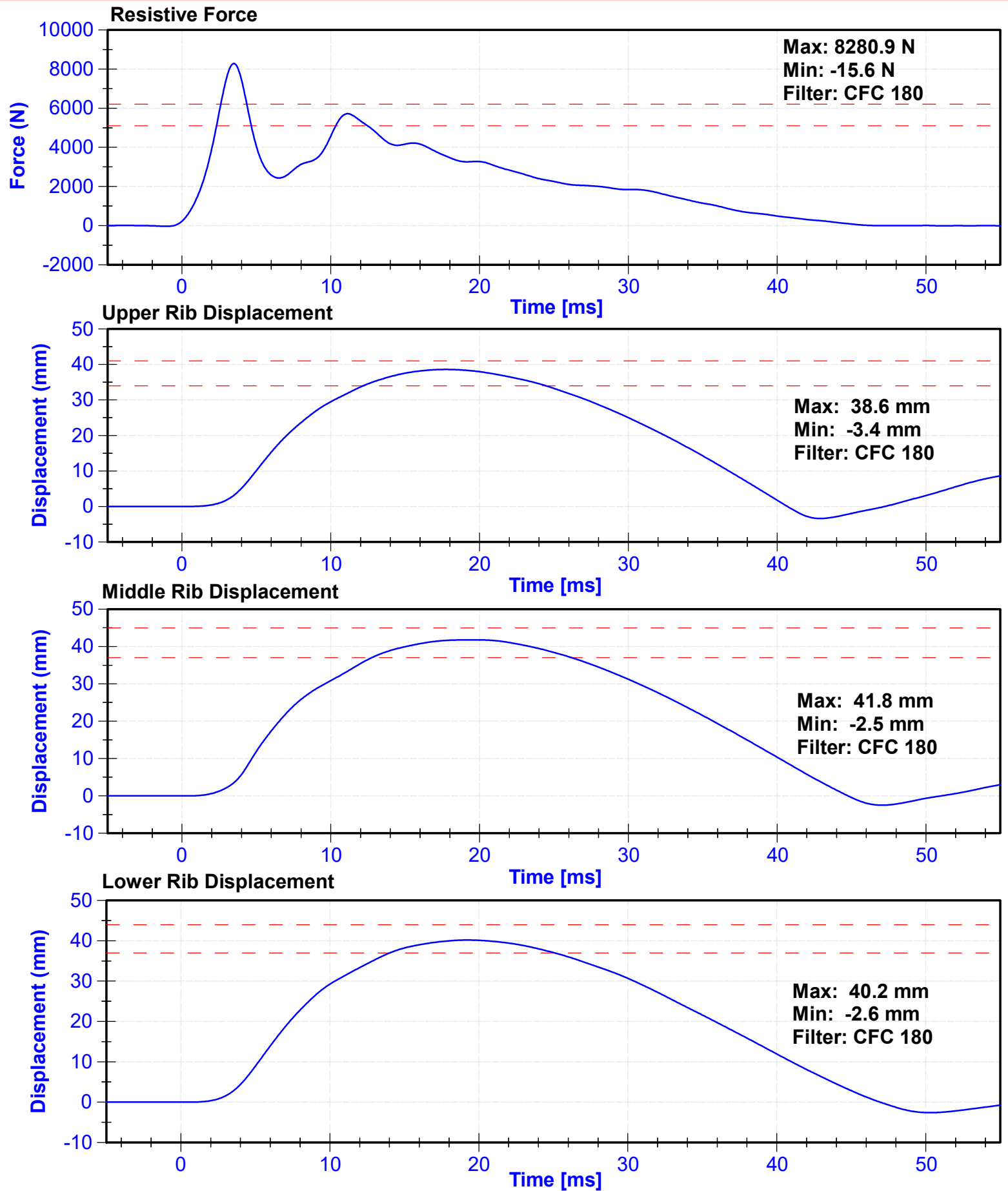
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.7	Pass
Humidity	10	70	%	51	Pass
Velocity	5.4	5.6	m/s	5.53	Pass
Resistive Force after 6ms	5100	6200	N	5716.7	Pass
Upper Thorax Rib Deflection	34	41	mm	38.6	Pass
Mid Thorax Rib Deflection	37	45	mm	41.8	Pass
Lower Thorax Rib Deflection	37	44	mm	40.2	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	18587	11/20/2023	11/19/2024
Upper Thorax Rib Potentiometer	Honeywell	269GFE	2/8/2024	8/8/2024
Middle Thorax Rib Potentiometer	Honeywell	268GFE	2/8/2024	8/8/2024
Lower Thorax Rib Potentiometer	Honeywell	270GFE	2/8/2024	8/8/2024

Probe Acceleration





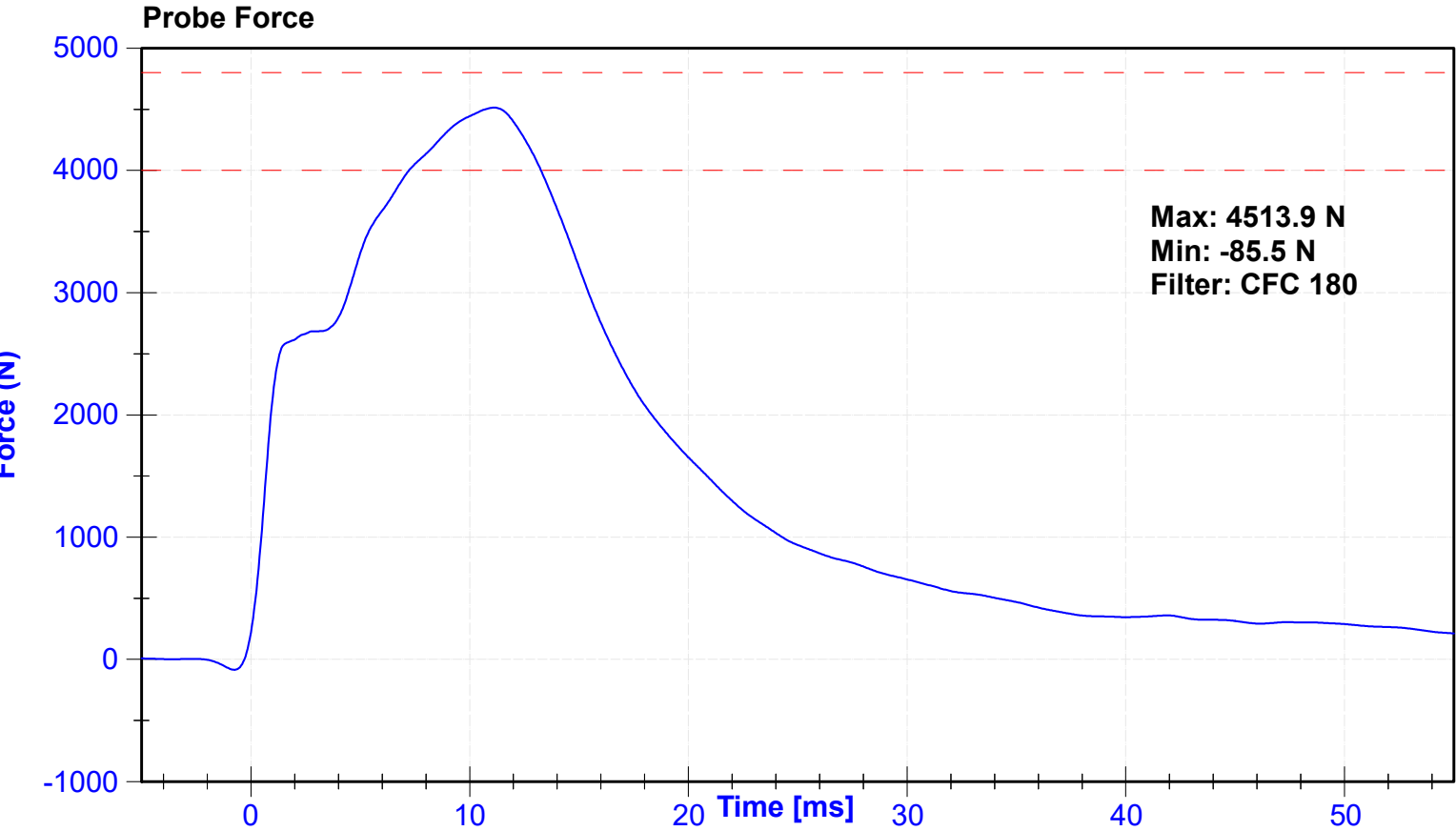
ATD Manufacturer	FTSS	Test Technician	J.Kinderman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantell

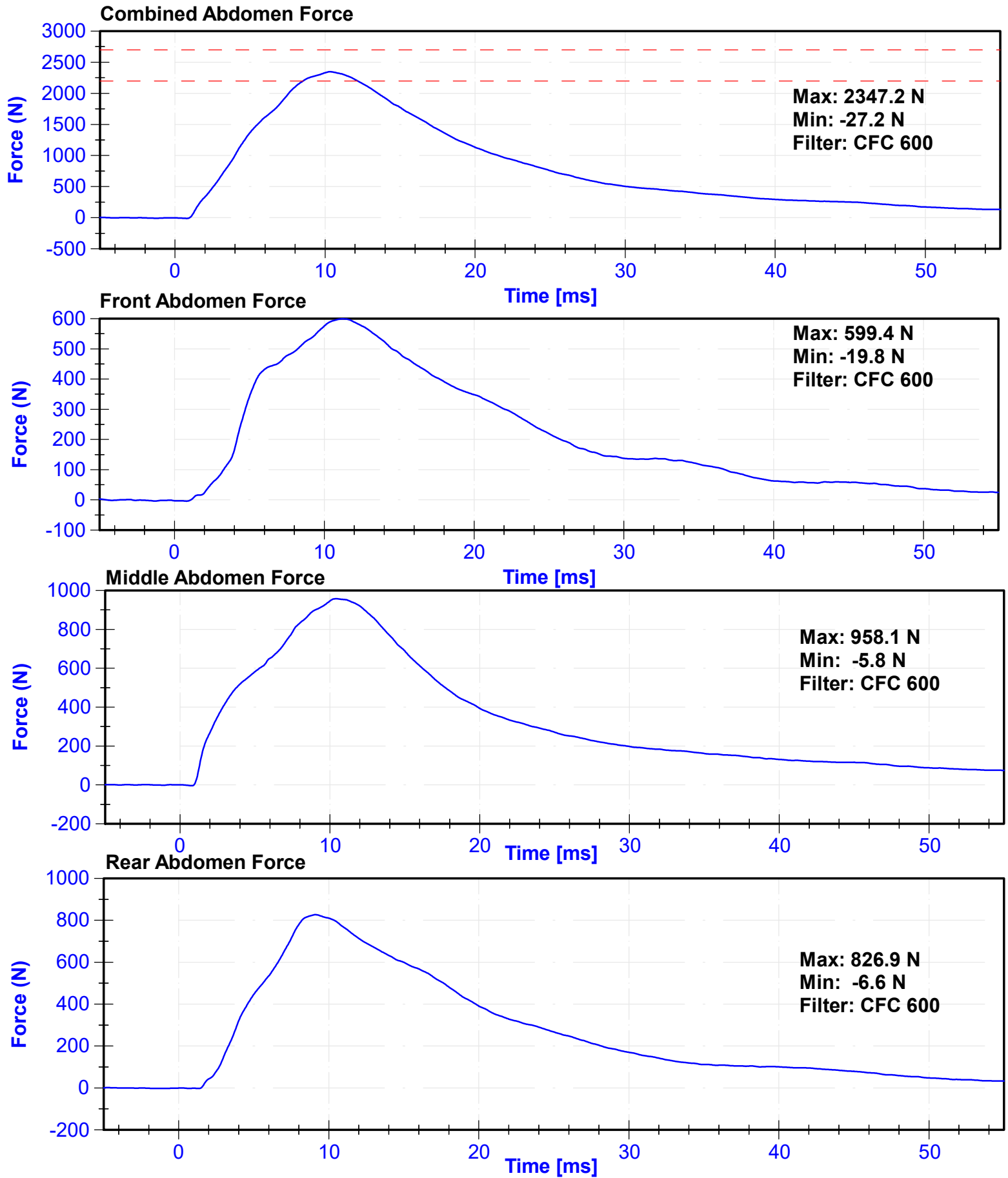
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.7	Pass
Humidity	10	70	%	51	Pass
Velocity	3.9	4.1	m/s	4.02	Pass
Combined Abdomen Force	2200	2700	N	2347.2	Pass
Time at Peak Abdomen Force	10.0	12.3	ms	10.35	Pass
Resistive Probe Force	4000	4800	N	4513.9	Pass
Time at Peak Resistive Force	10.6	13.0	ms	11.15	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18587	11/20/2023	11/19/2024
Front Abdomen Load Cell	Denton	1512	8/15/2023	8/14/2024
Middle Abdomen Load Cell	Denton	1526	8/15/2023	8/14/2024
Rear Abdomen Load Cell	Denton	1516	8/15/2023	8/14/2024





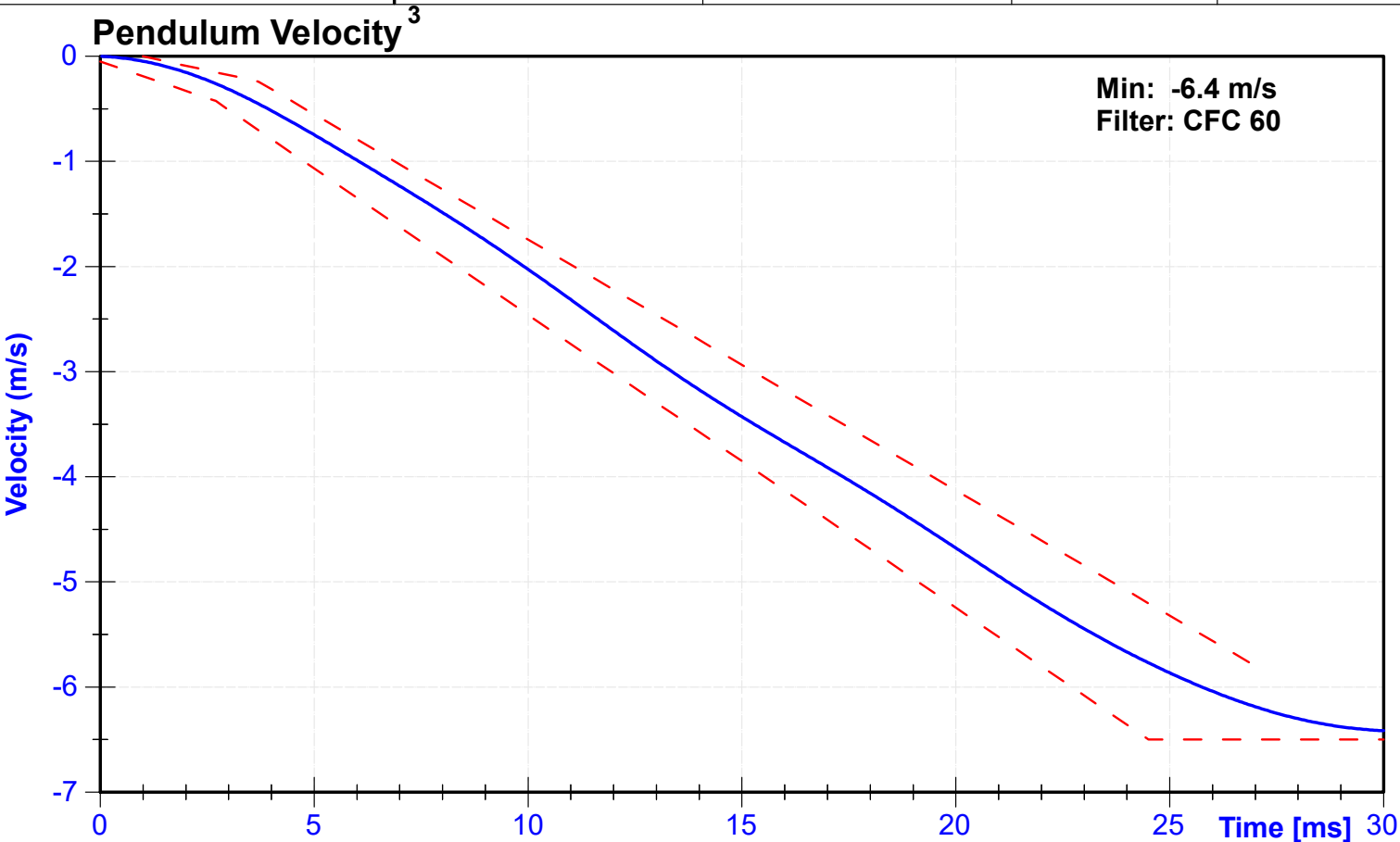
ATD Manufacturer	FTSS	Test Technician	J. Kinderman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantell

Results

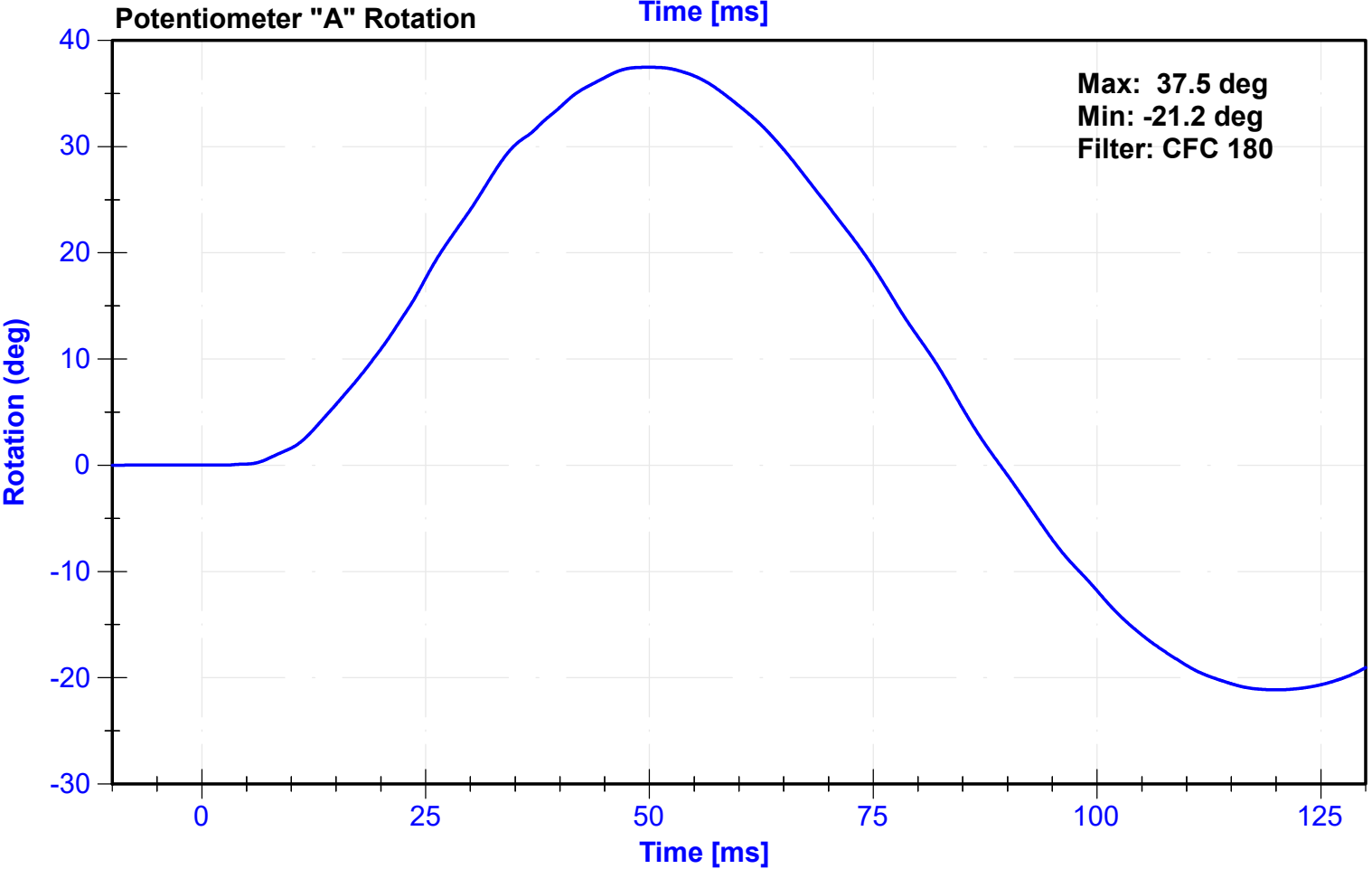
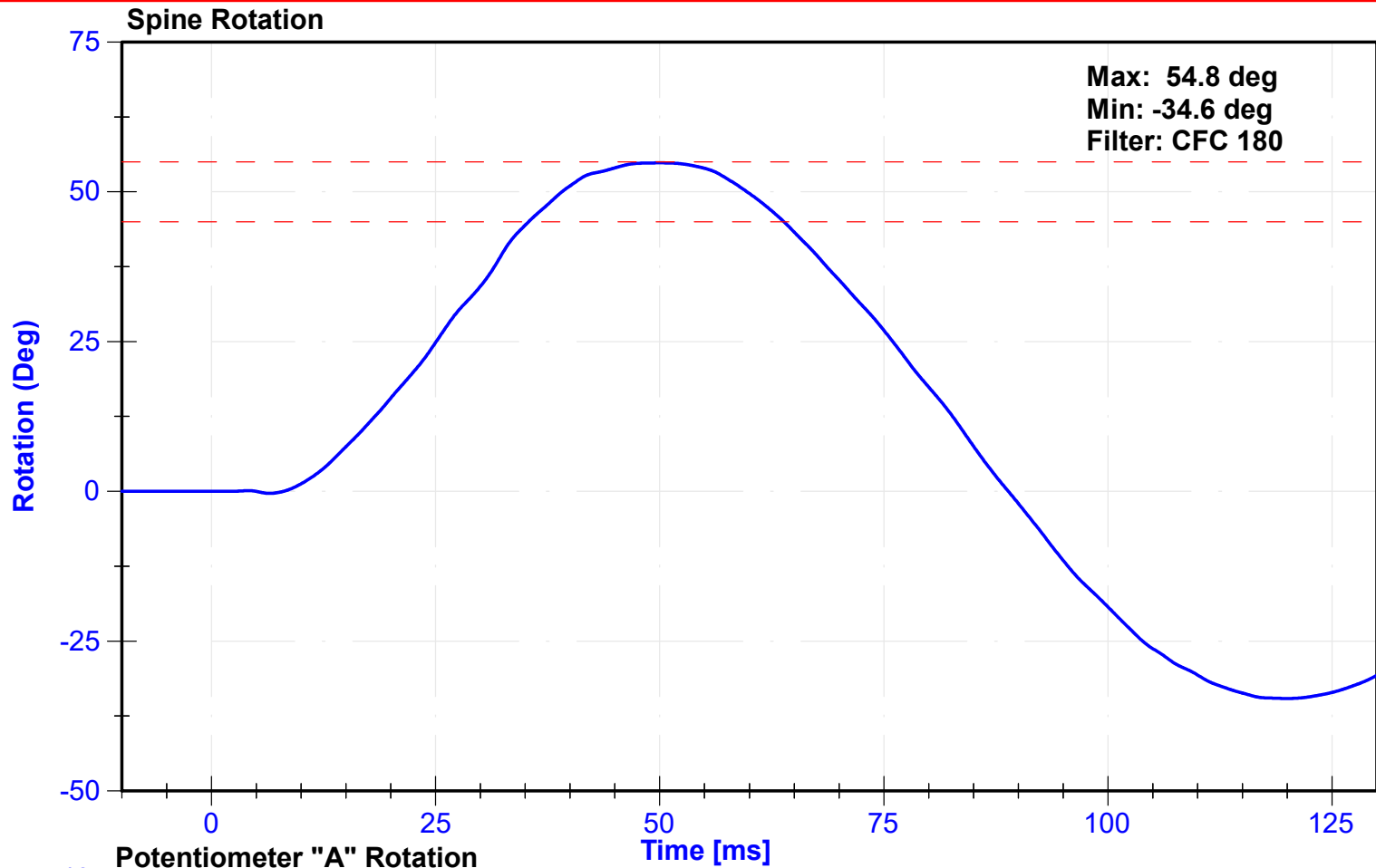
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	29	Pass
Velocity	5.95	6.15	m/s	5.960	Pass
Lateral Spine Rotation	45	55	deg	54.8	Pass
Time at Maximum Rotation	39	53	ms	50.1	Pass
Time of Decay to Zero Degrees	37	57	ms	38.7	Pass
Pendulum Velocity Overall Corridor	Lower Boundary ¹	Upper Boundary ²	m/s	See Plot ³	Pass

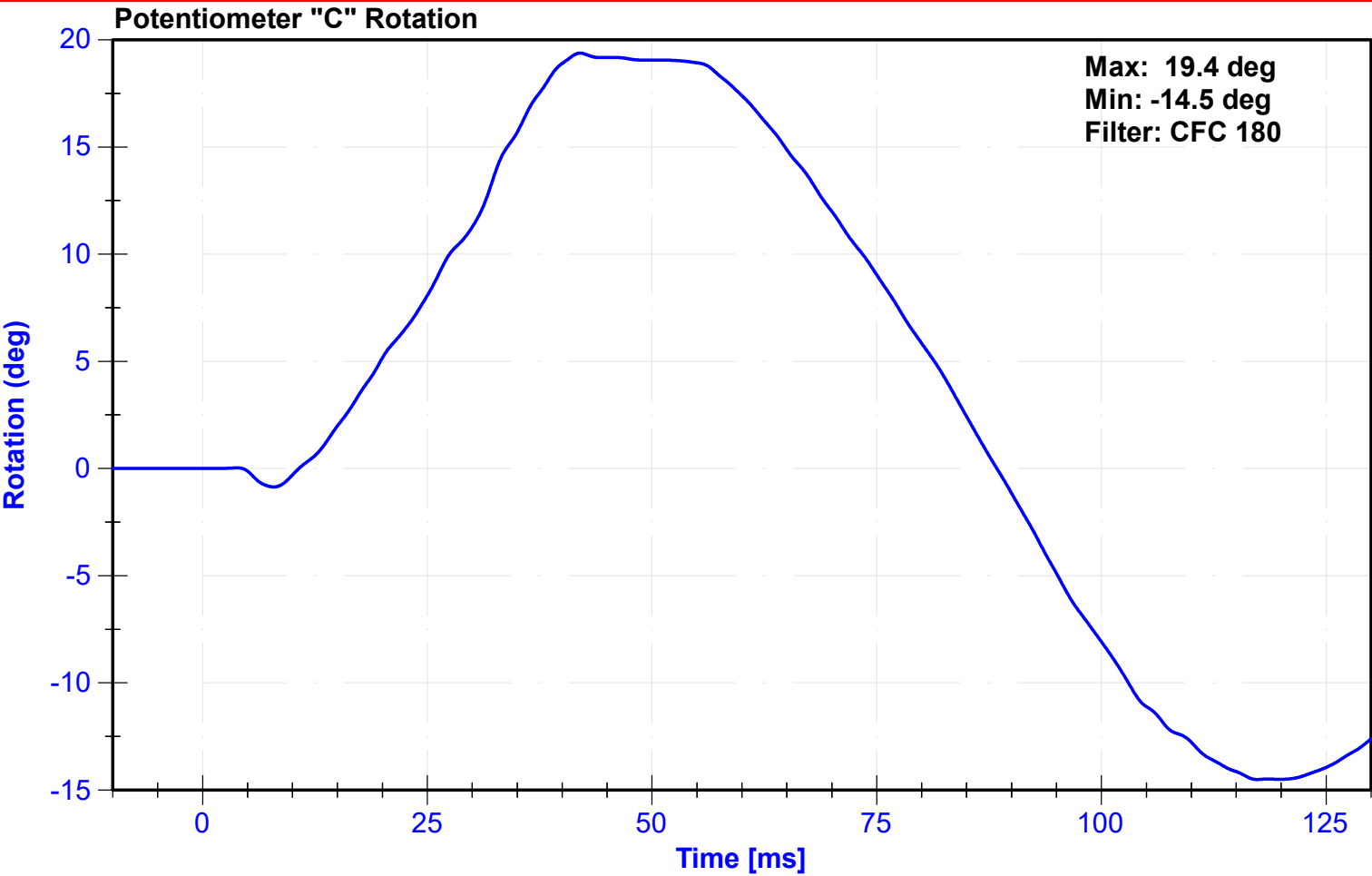
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	C16503	10/31/2023	4/28/2024
Pendulum "A" Potentiometer	Sfernice	2247	12/5/2023	12/4/2024
Condyle "B" Potentiometer	Sfernice	095	9/29/2023	9/28/2024



^{1,2} Upper and lower boundaries specified in Appendix I
IV-19





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	J.Kinderman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantell

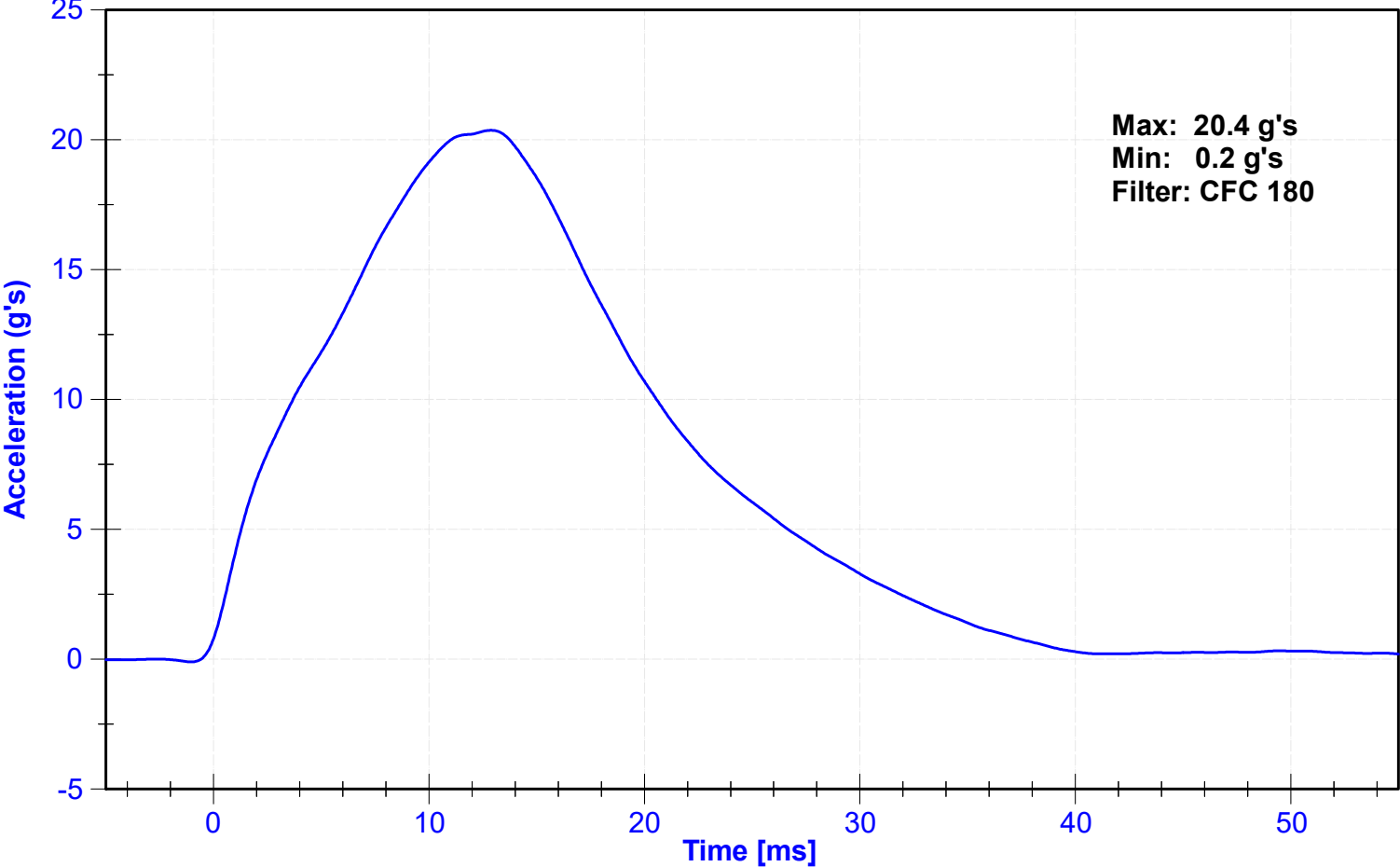
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.7	Pass
Humidity	10	70	%	51	Pass
Velocity	4.2	4.4	m/s	4.28	Pass
Resistive Force	4700	5400	N	4710.6	Pass
Time at Peak Resistive Force	11.8	16.1	ms	12.85	Pass
Pubic Force	-1590	-1230	N	-1230.5	Pass
Time at Peak Pubic Force	12.2	17.0	ms	14.35	Pass

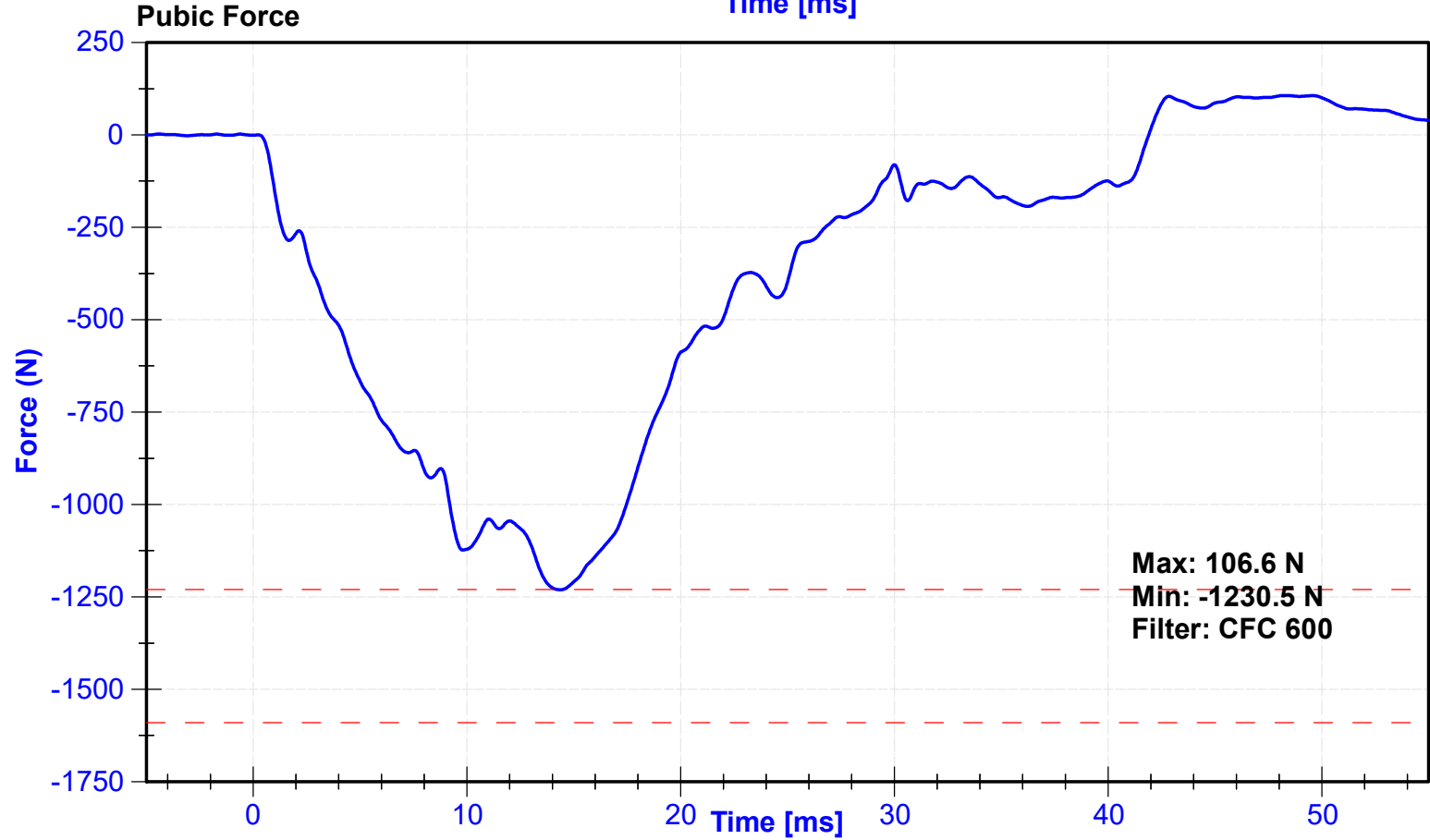
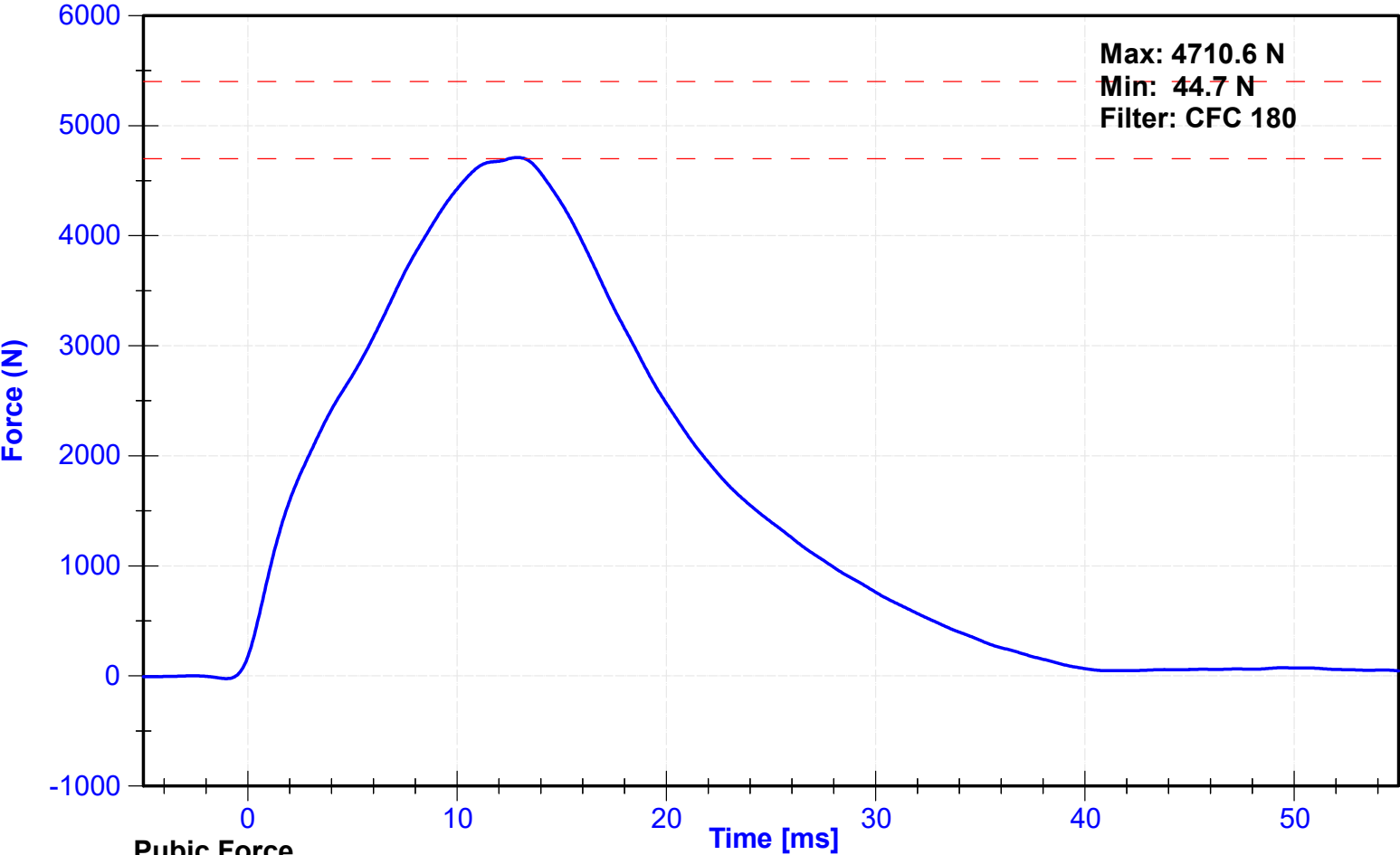
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18587	11/20/2023	11/19/2024
Pubic Load Cell	Denton	464-FY	8/15/2023	8/14/2024

Probe Acceleration



Resistive Force



POST-TEST DUMMY PERFORMANCE CALIBRATION TEST DATA
(Subpart U, ES-2re)

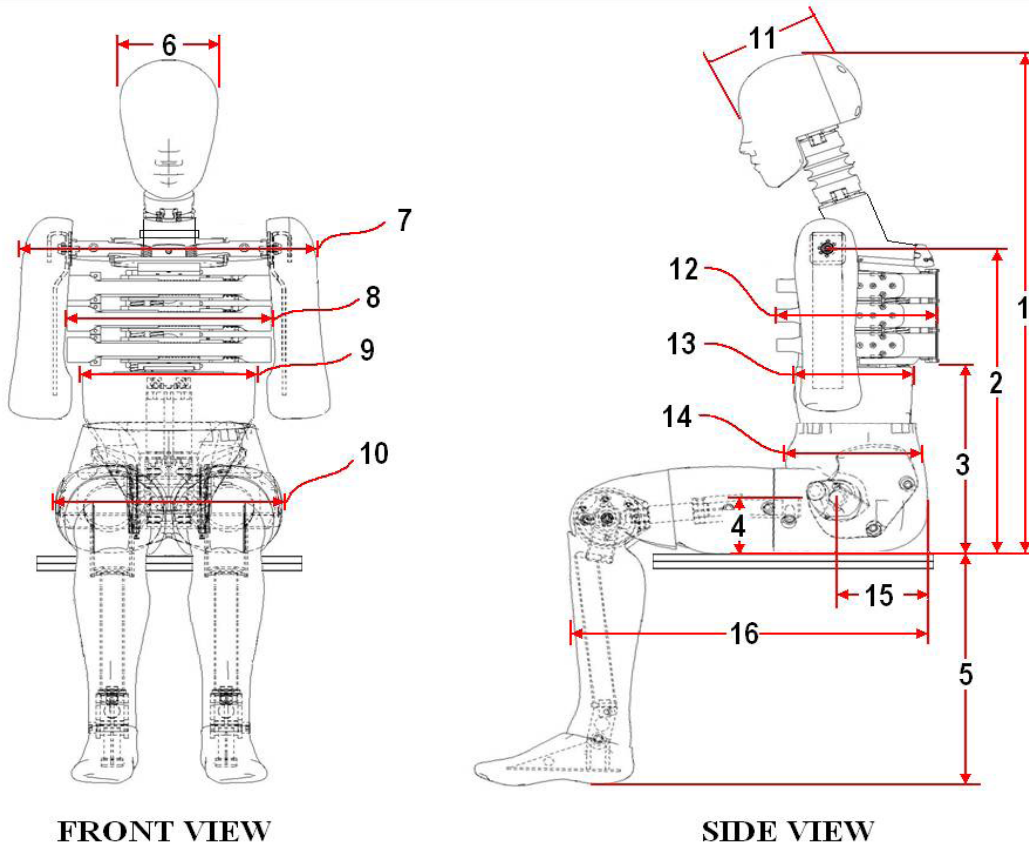


External Measurements - EuroSID-2re

Technician: K. Brogan

Date: 02/14/2024

Dummy Serial Number: DG5348



FRONT VIEW

SIDE VIEW

Dim. No.	Description	Specification (mm)		Result (mm)	Pass/Fail
1	Sitting Height	900	918	915	Pass
2	Seat to Shoulder Joint	558	572	568	Pass
3	Seat to Lower Face of Thoracic Spine Box	346	356	351	Pass
4	Seat to Hip Joint (center of bolt)	97	103	102	Pass
5	Sole to Seat, Sitting	333	451	415	Pass
6	Head Width	152	158	156	Pass
7	Shoulder/Arm Width	461	479	472	Pass
8	Thorax Width	322	332	327	Pass
9	Abdomen Width	273	287	281	Pass
10	Pelvis Lap Width	359	373	368	Pass
11	Head Depth	196	206	200	Pass
12	Thorax Depth	262	272	268	Pass
13	Abdomen Depth	194	204	197	Pass
14	Pelvis Depth	235	245	241	Pass
15	Back of Buttocks to Hip Joint (center of bolt)	150	160	155	Pass
16	Back of Buttocks to Front Knee	597	615	605	Pass

ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantell

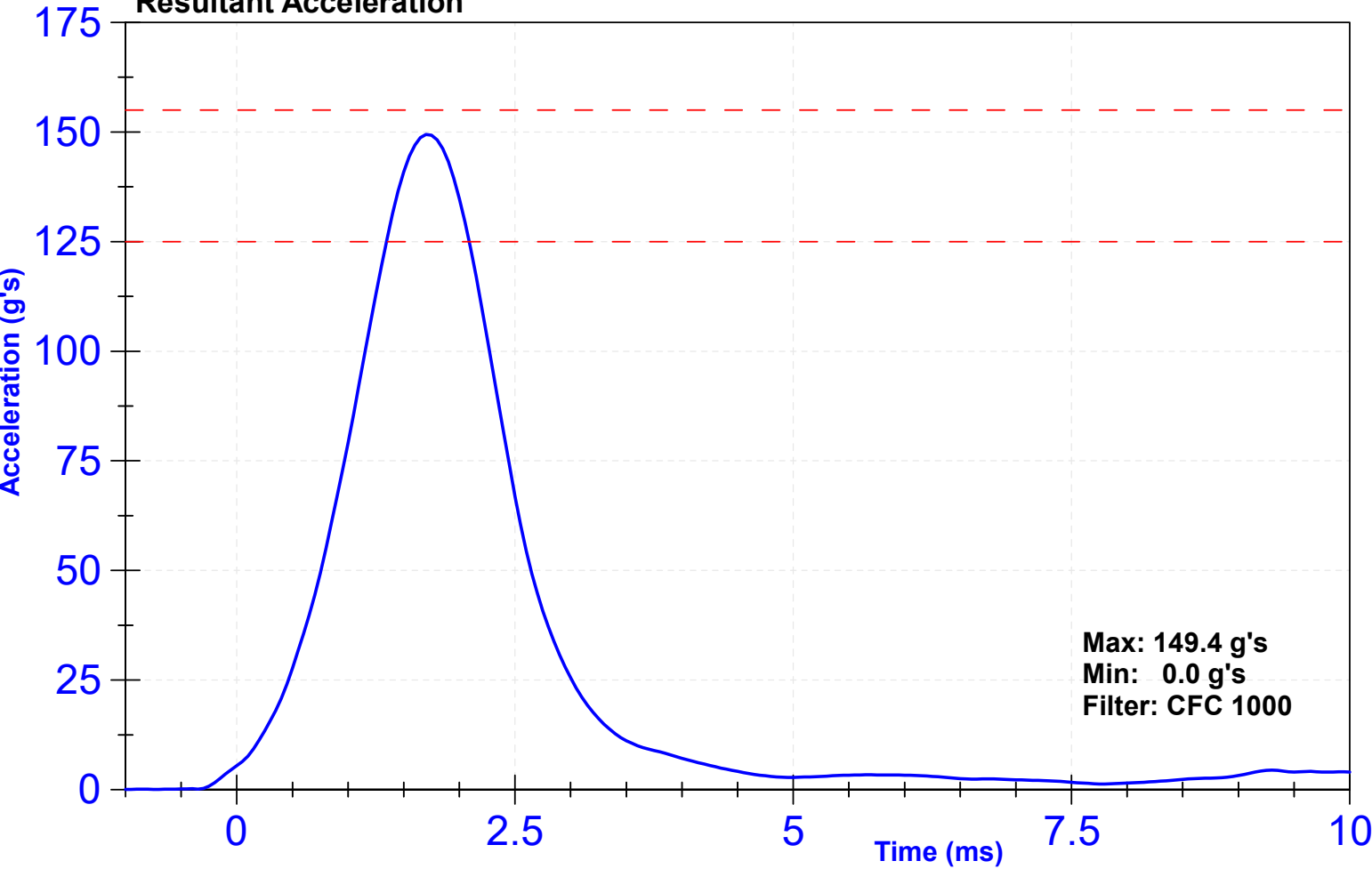
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	30	Pass
Resultant Acceleration	125	155	g's	149.4	Pass
Oscillation	0	15	%	2.98	Pass
Fore-Aft Acceleration	-15	15	g's	-7.5	Pass

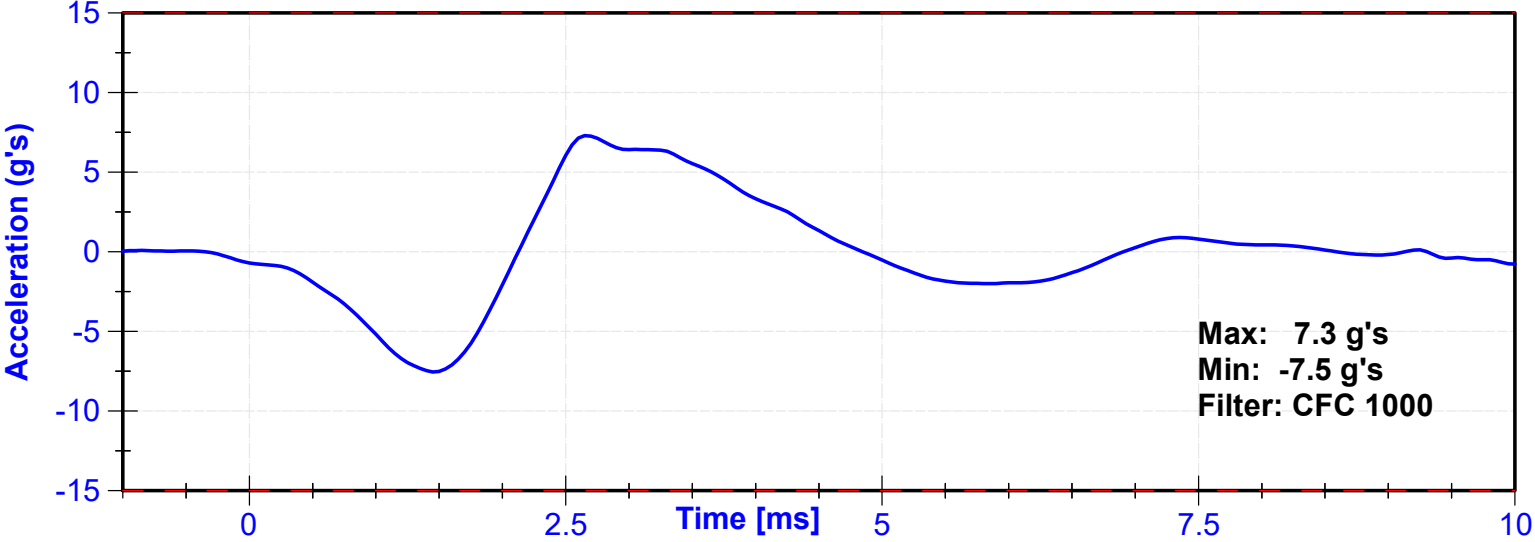
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	Endevco	18666	2/8/2024	8/6/2024
Y Accelerometer	Endevco	18664	2/8/2024	8/6/2024
Z Accelerometer	Endevco	18675	2/7/2024	8/5/2024

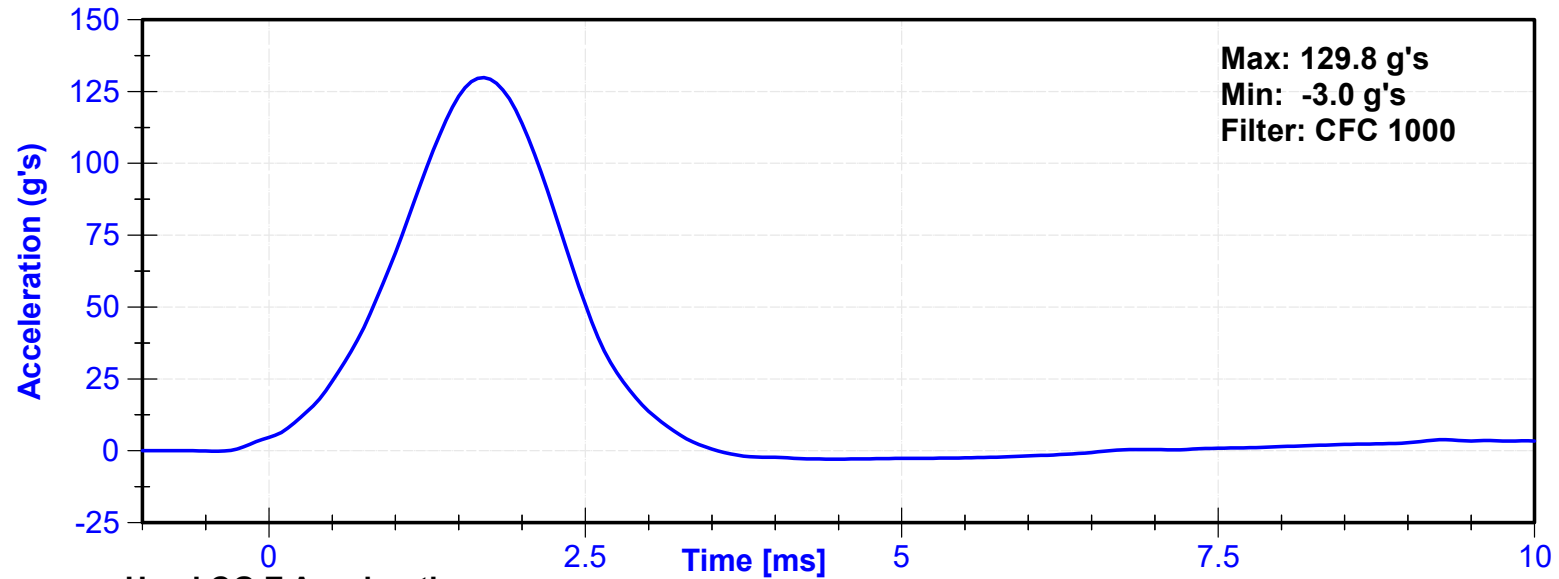
Resultant Acceleration



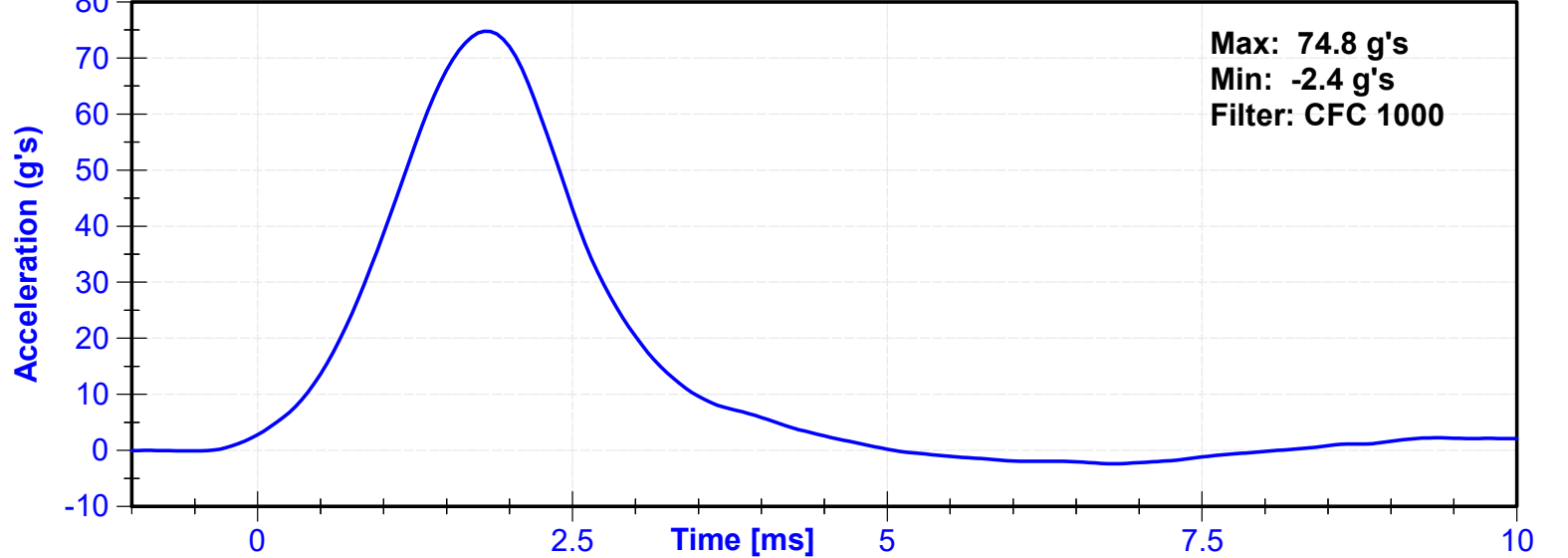
Head CG X Acceleration



Head CG Y Acceleration



Head CG Z Acceleration



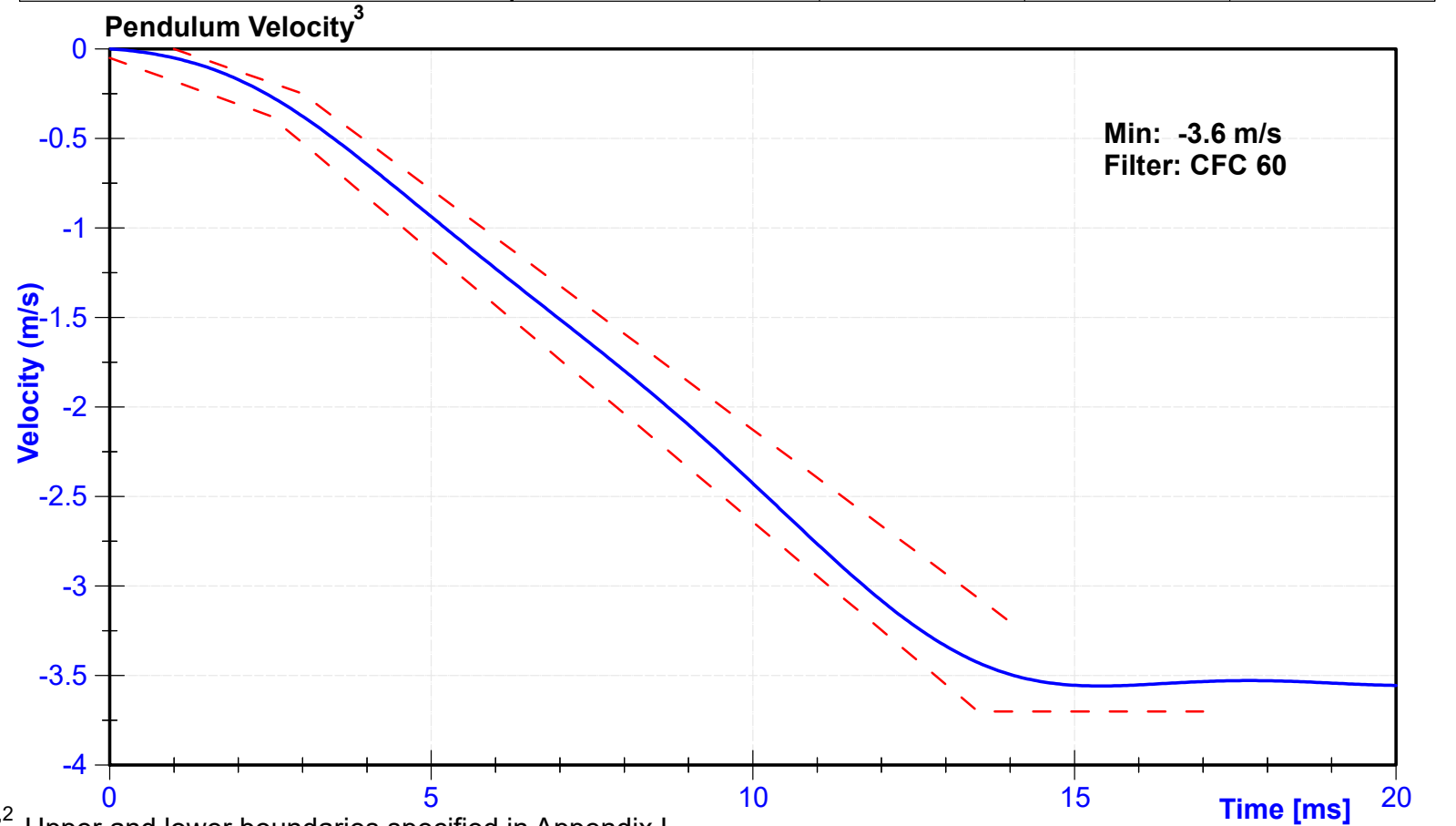
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantell

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	29	Pass
Velocity	3.3	3.5	m/s	3.36	Pass
Lateral Neck Rotation	49	59	deg	49.6	Pass
Time at Maximum Rotation	54	66	ms	56.2	Pass
Time of Rotation Decay from Maximum	53	88	ms	55.8	Pass
Pendulum Velocity Overall Corridor	Lower Boundary ¹	Upper Boundary ²	m/s	See Plot ³	Pass

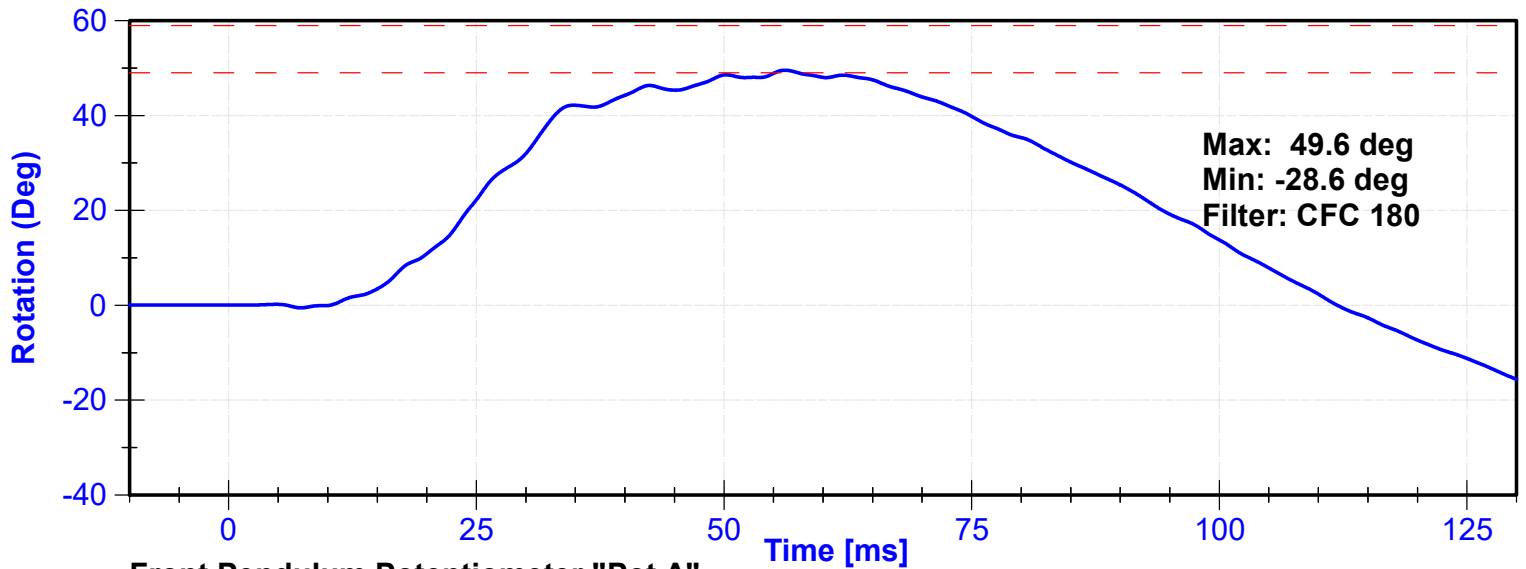
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	C16503	10/31/2023	4/28/2024
Front Pendulum Potentiometer	Sfernice	2247	12/5/2023	12/4/2024
Headform Potentiometer	Sfernice	095	9/29/2023	9/28/2024

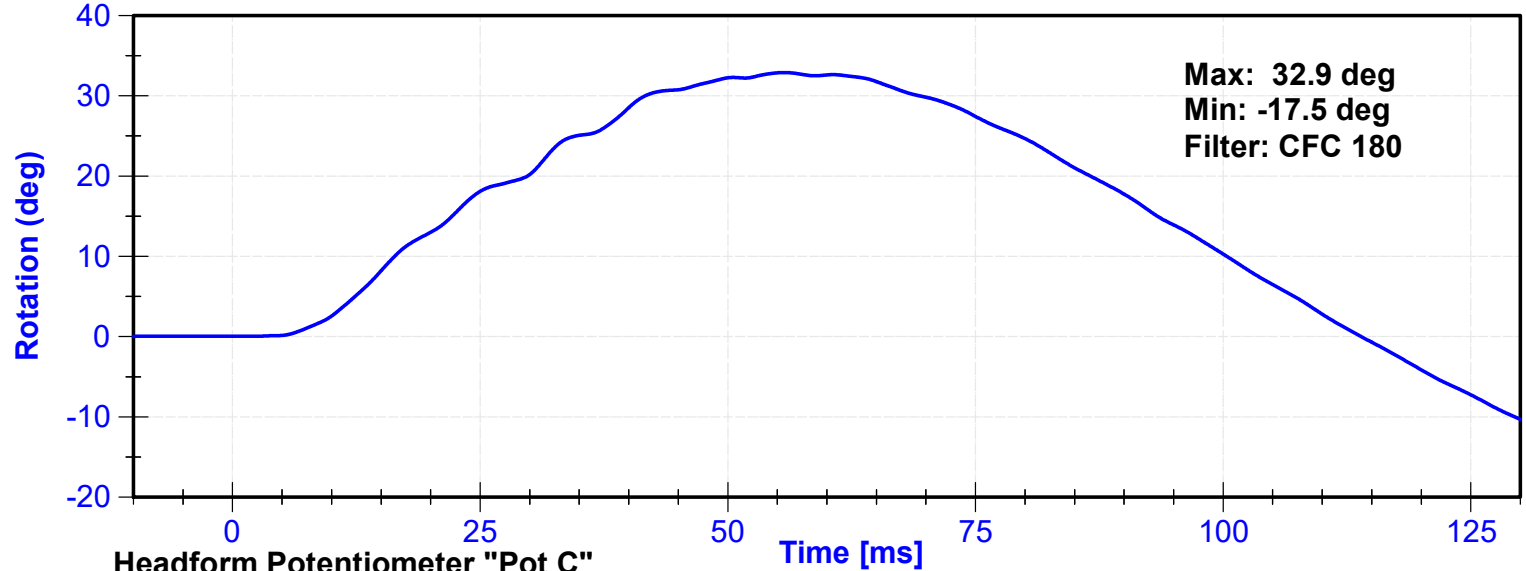


^{1,2} Upper and lower boundaries specified in Appendix I

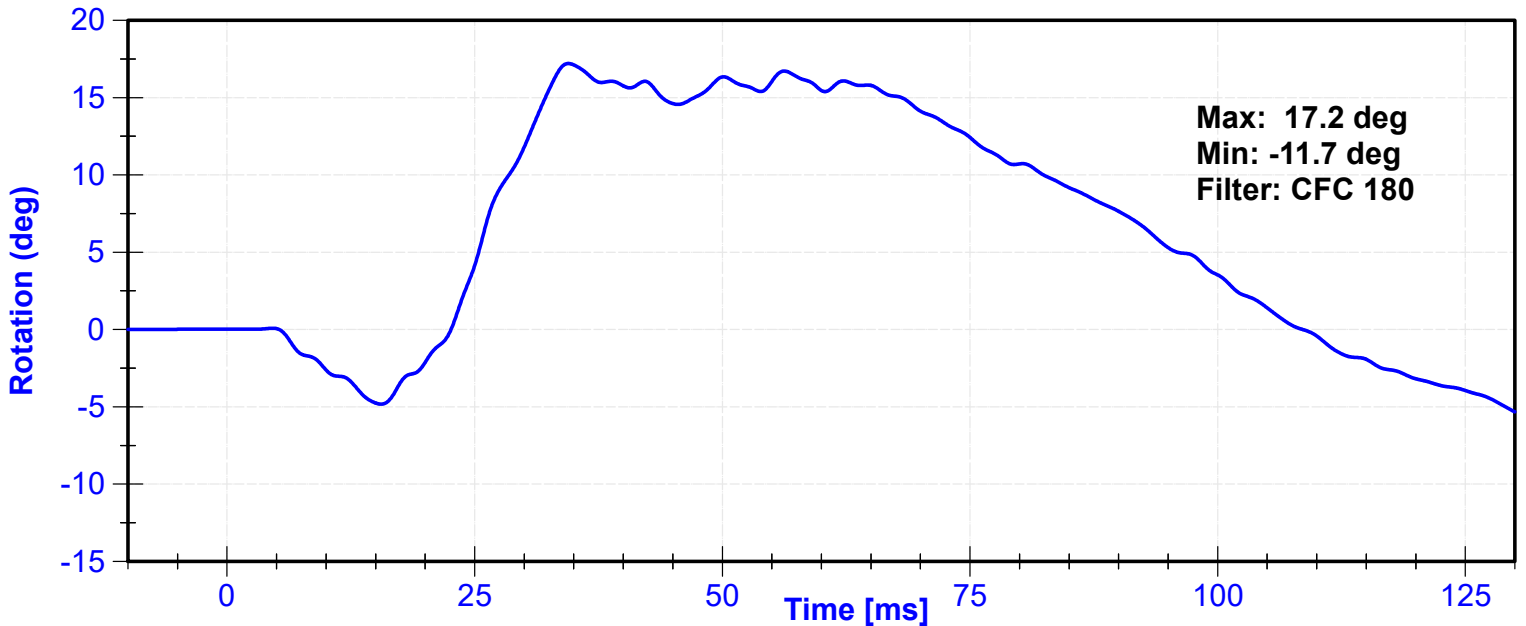
Neck Rotation



Front Pendulum Potentiometer "Pot A"



Headform Potentiometer "Pot C"



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

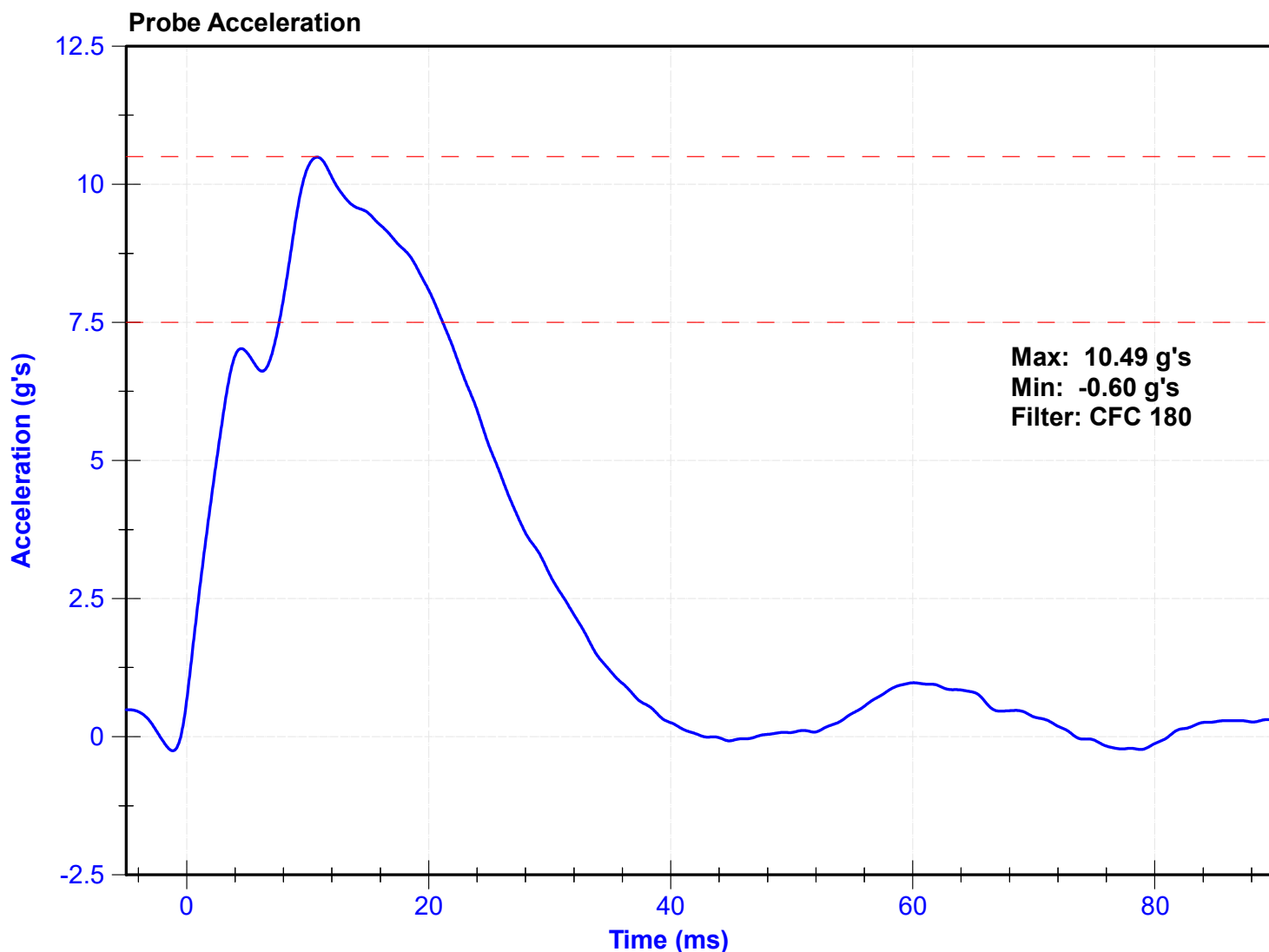
ATD Manufacturer	FTSS	Test Technician	J.Rios
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantell

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.0	Pass
Humidity	10	70	%	18	Pass
Velocity	4.2	4.4	m/s	4.31	Pass
Probe Acceleration	7.5	10.5	g's	10.49	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	18619	9/29/2023	3/27/2024



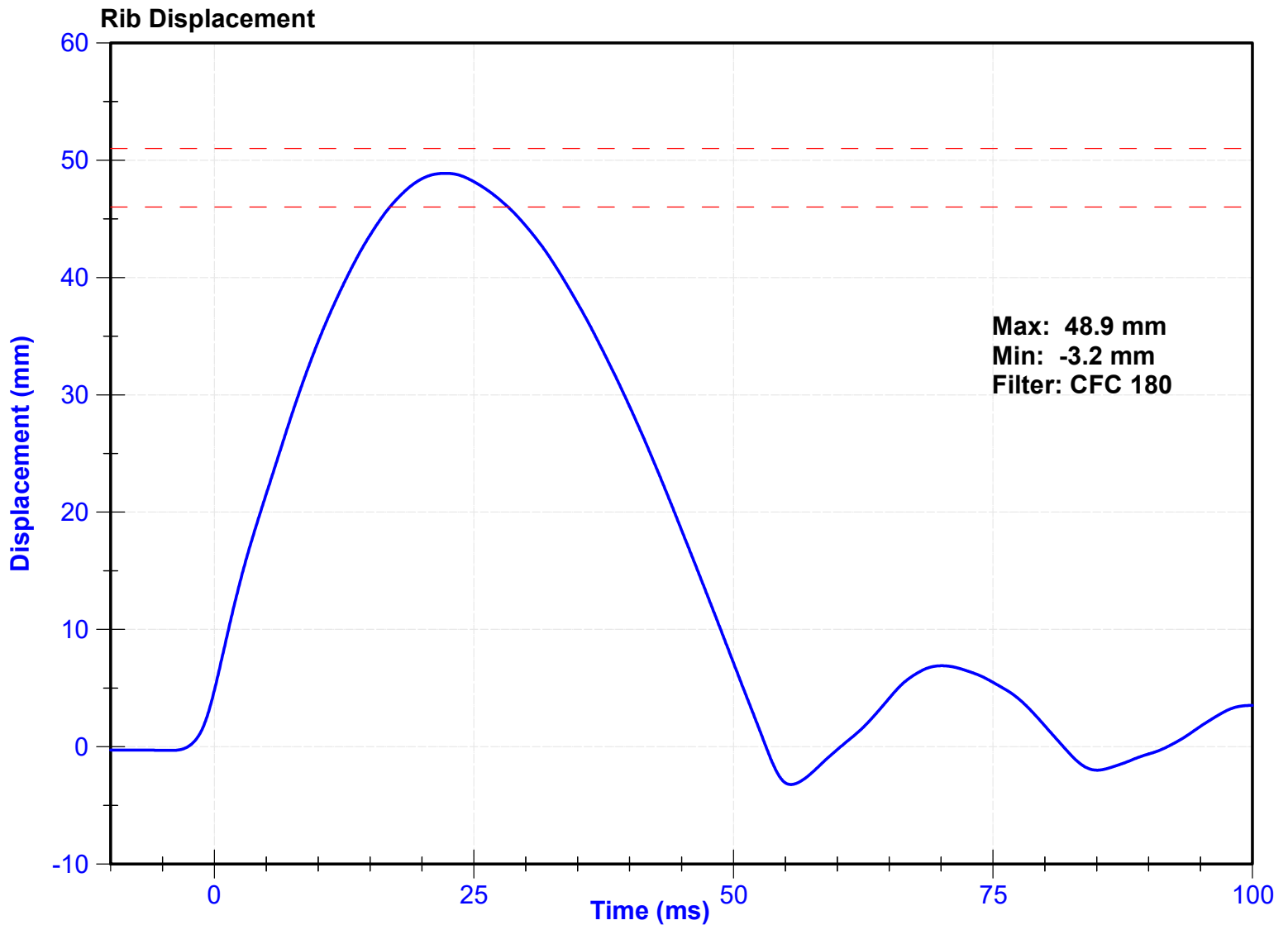
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantel

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	22.2	Pass
Rib Displacement	46	51	mm	48.9	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	268GFE	2/8/2024	8/8/2024



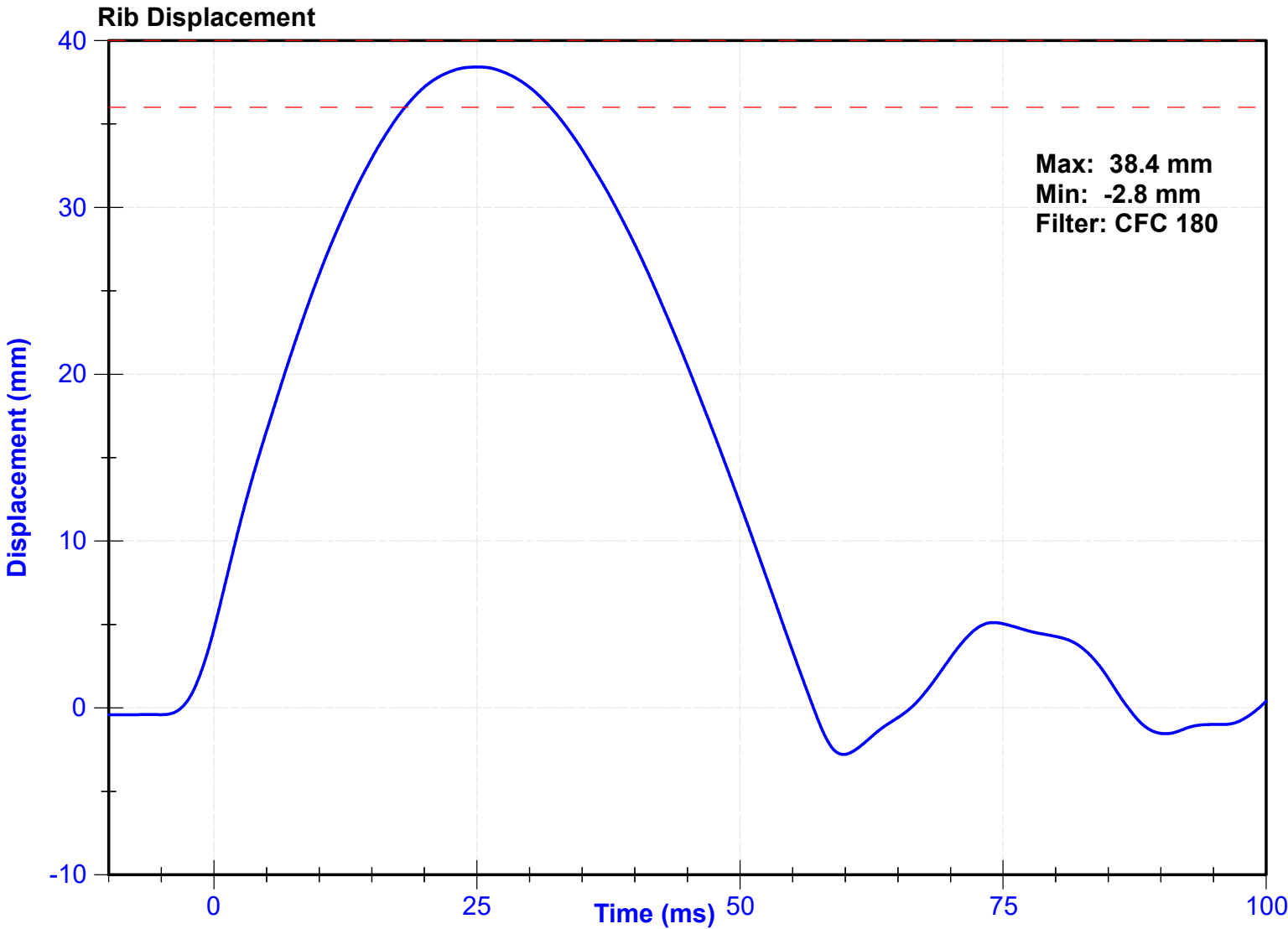
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantel

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	22.2	Pass
Rib Displacement	36	40	mm	38.4	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	268GFE	2/8/2024	8/8/2024



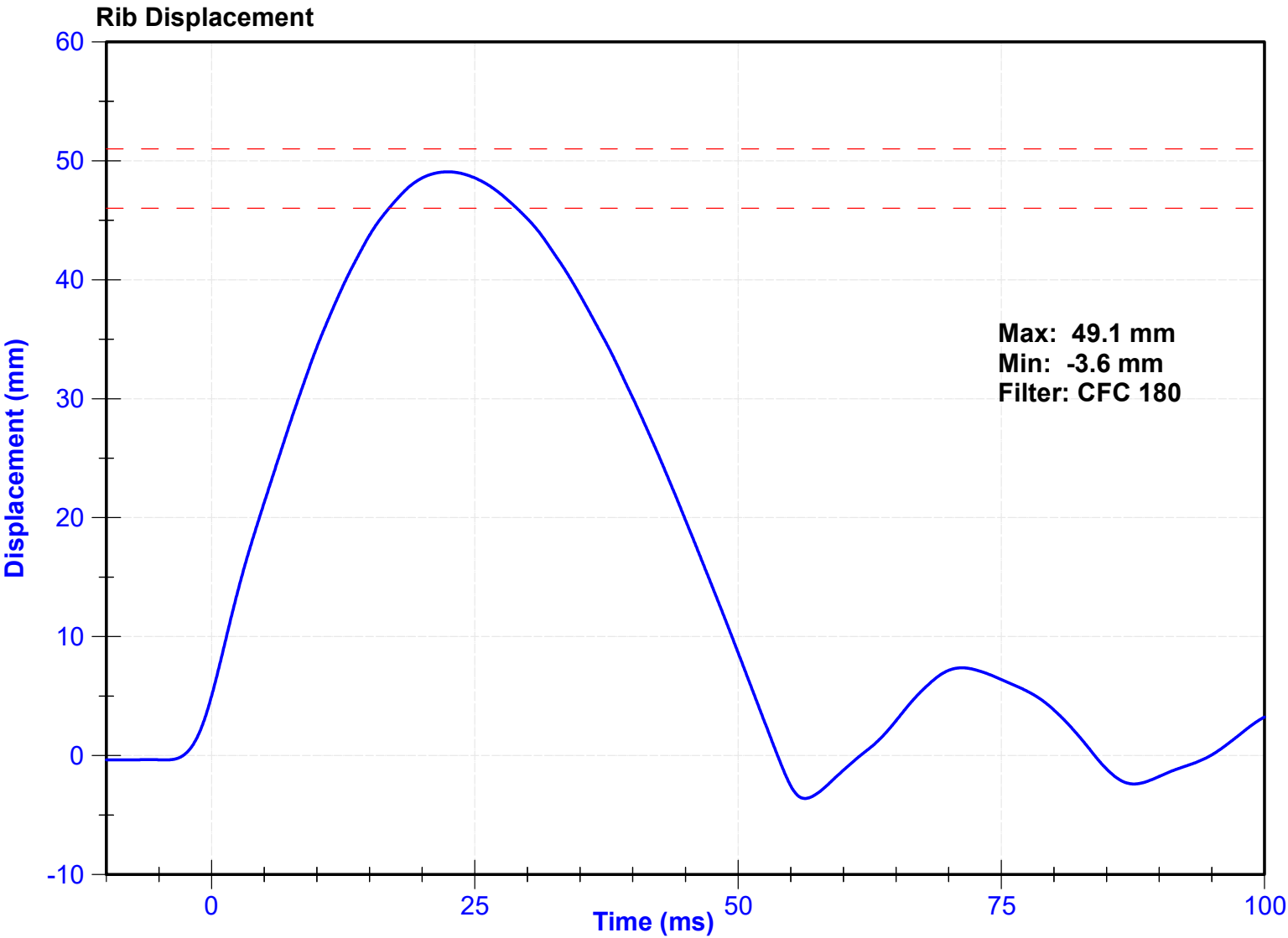
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantel

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	22.2	Pass
Rib Displacement	46	51	mm	49.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	269GFE	2/8/2024	8/8/2024



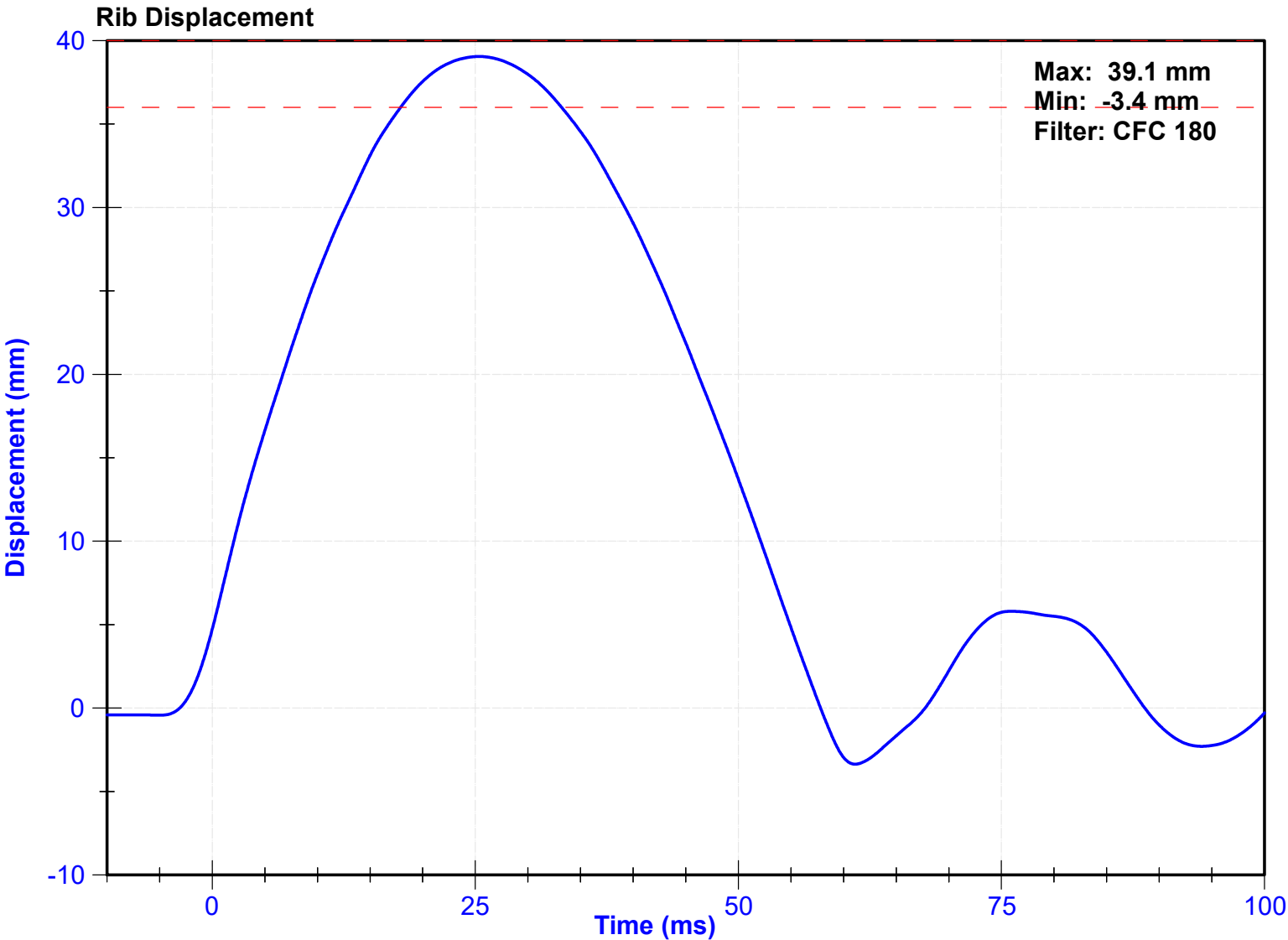
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantel

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	22.2	Pass
Rib Displacement	36	40	mm	39.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	269GFE	2/8/2024	8/8/2024



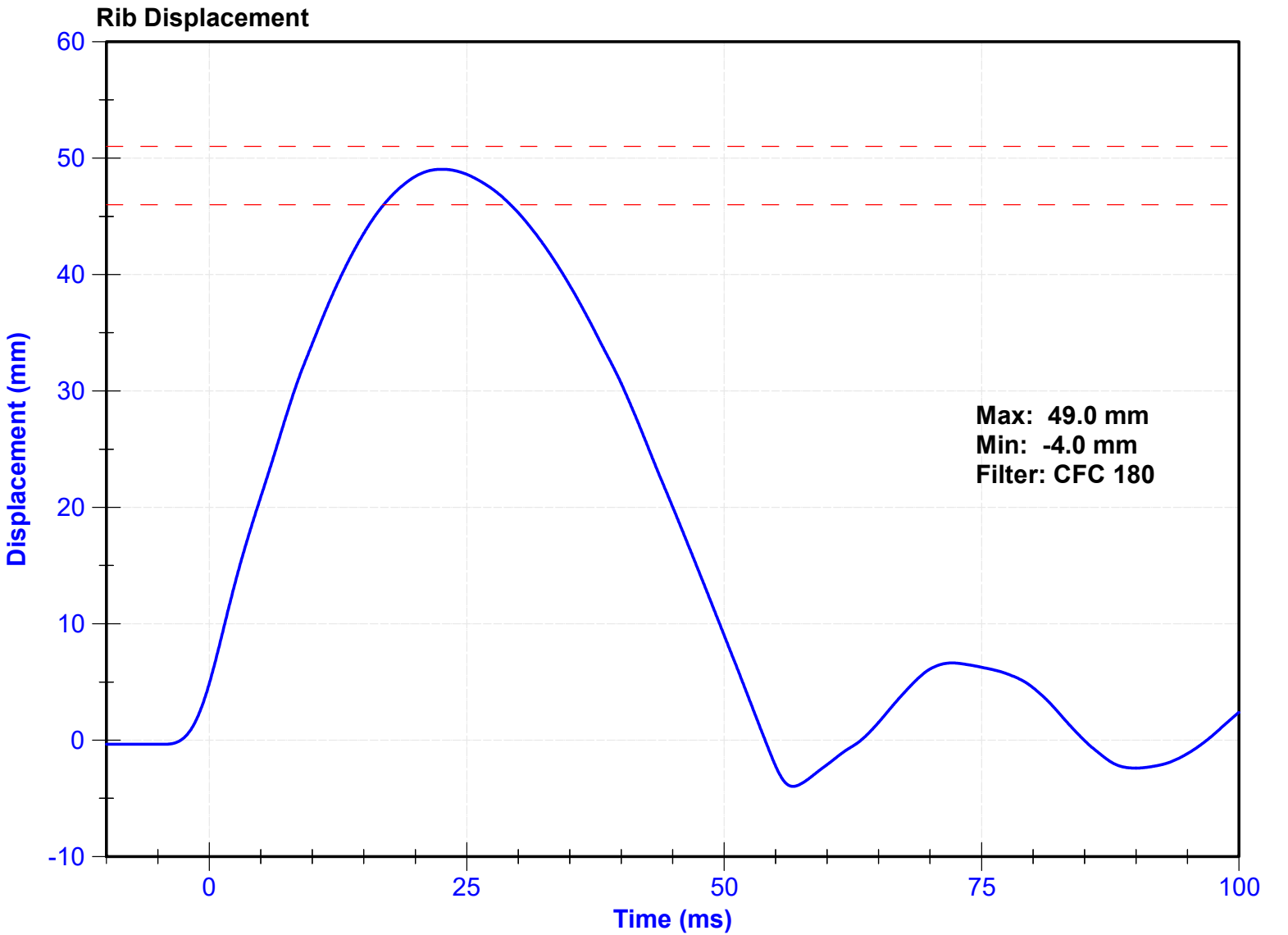
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantel

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	22.2	Pass
Rib Displacement	46	51	mm	49.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	270GFE	2/8/2024	8/8/2024



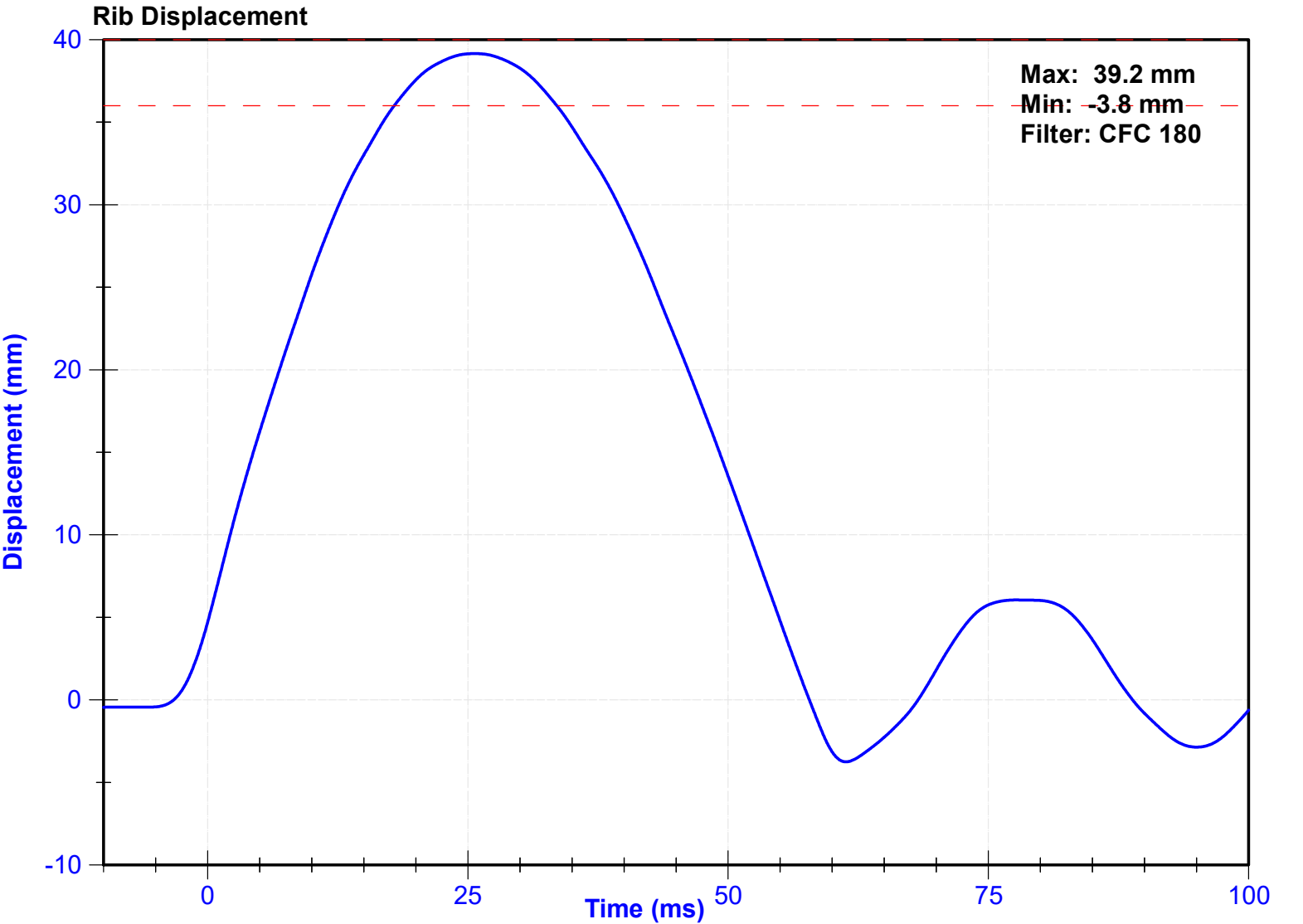
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantel

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	22.2	Pass
Rib Displacement	36	40	mm	39.2	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	270GFE	2/8/2024	8/8/2024



ATD Manufacturer	FTSS	Test Technician	J.Rios
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantell

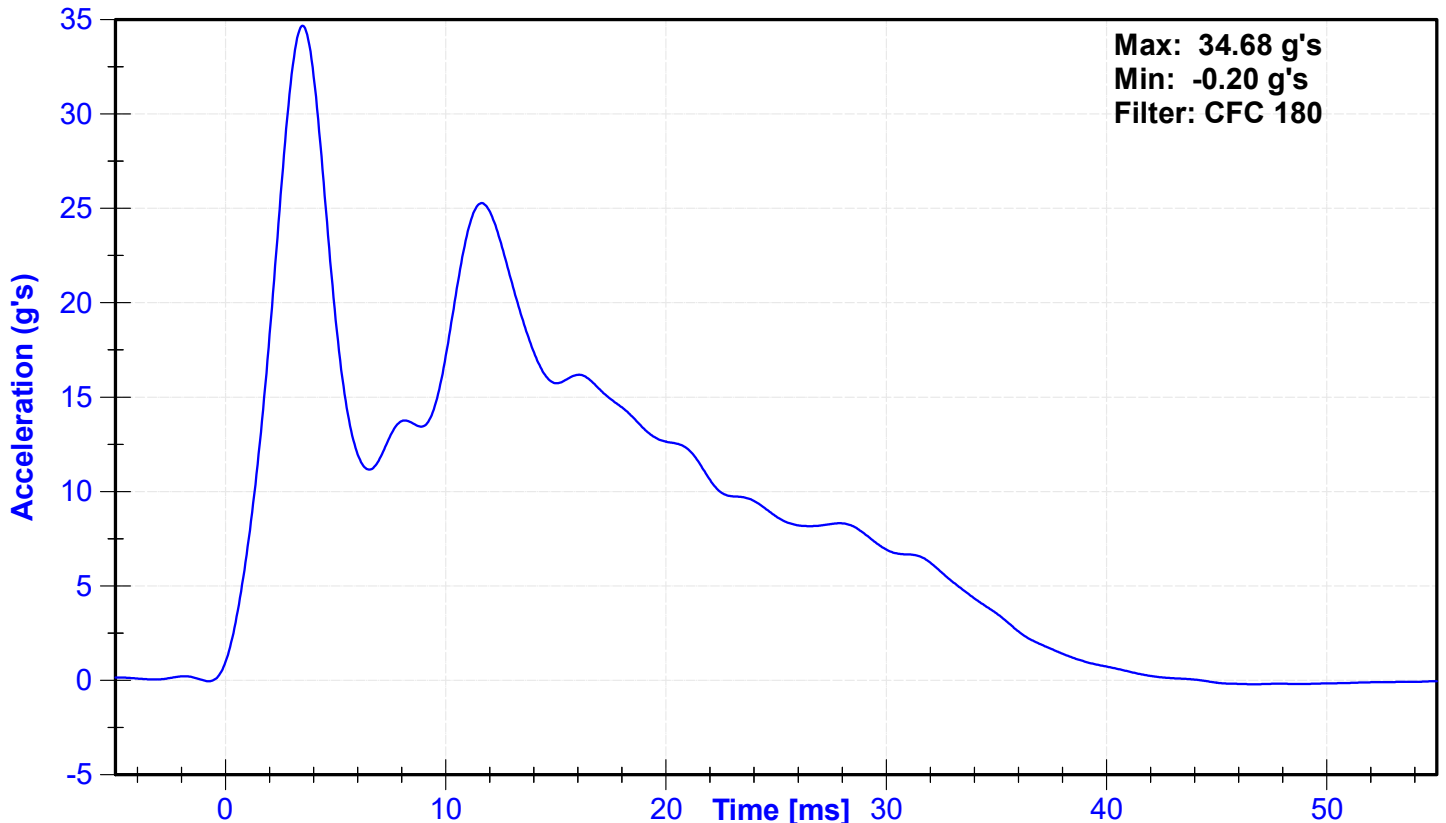
Results

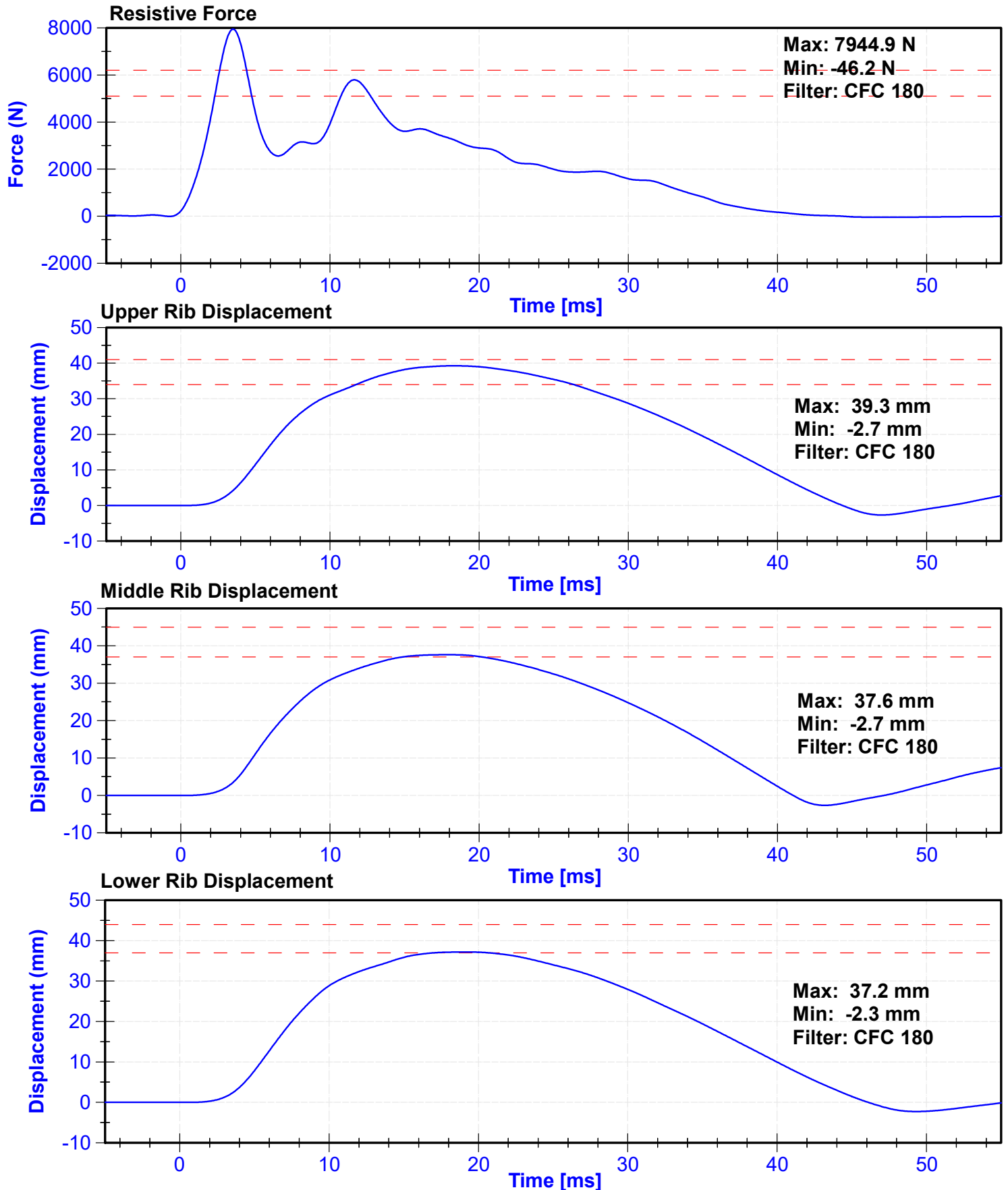
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.0	Pass
Humidity	10	70	%	18	Pass
Velocity	5.4	5.6	m/s	5.53	Pass
Resistive Force after 6ms	5100	6200	N	5791.3	Pass
Upper Thorax Rib Deflection	34	41	mm	39.3	Pass
Mid Thorax Rib Deflection	37	45	mm	37.6	Pass
Lower Thorax Rib Deflection	37	44	mm	37.2	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	18619	9/29/2023	3/27/2024
Upper Thorax Rib Potentiometer	Honeywell	269GFE	2/8/2024	8/8/2024
Middle Thorax Rib Potentiometer	Honeywell	268GFE	2/8/2024	8/8/2024
Lower Thorax Rib Potentiometer	Honeywell	270GFE	2/8/2024	8/8/2024

Probe Acceleration





ATD Manufacturer	FTSS	Test Technician	J.Rios
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantell

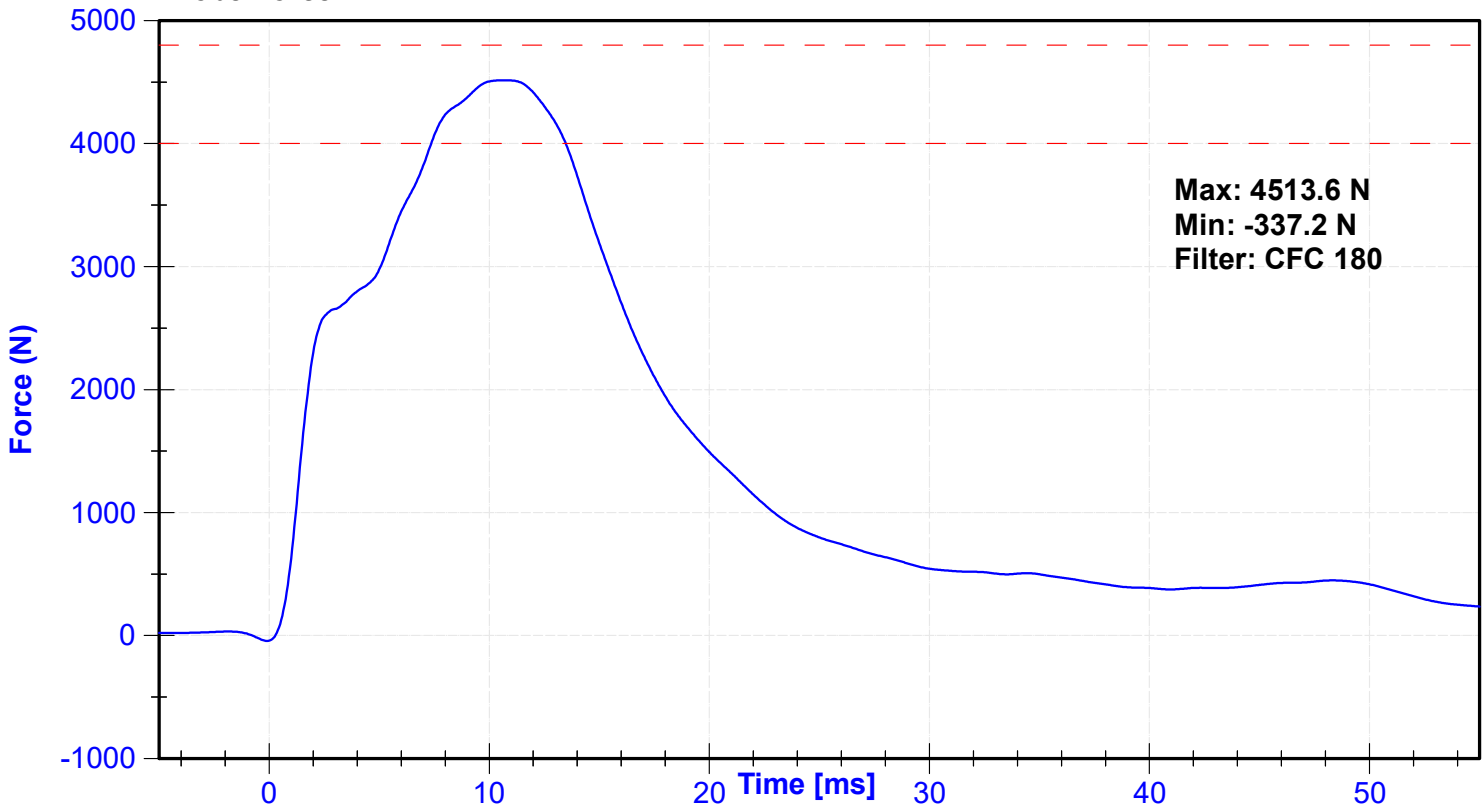
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.0	Pass
Humidity	10	70	%	18	Pass
Velocity	3.9	4.1	m/s	4.04	Pass
Combined Abdomen Force	2200	2700	N	2402.4	Pass
Time at Peak Abdomen Force	10.0	12.3	ms	10.35	Pass
Resistive Probe Force	4000	4800	N	4513.6	Pass
Time at Peak Resistive Force	10.6	13.0	ms	10.70	Pass

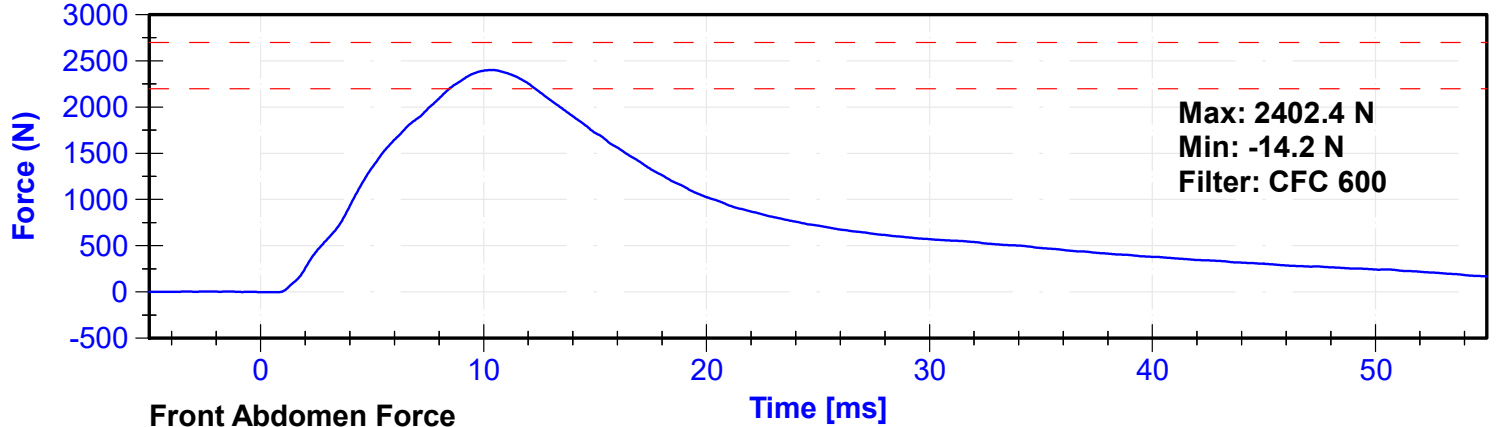
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18619	9/29/2023	3/27/2024
Front Abdomen Load Cell	Denton	1512	8/15/2023	8/14/2024
Middle Abdomen Load Cell	Denton	1526	8/15/2023	8/14/2024
Rear Abdomen Load Cell	Denton	1516	8/15/2023	8/14/2024

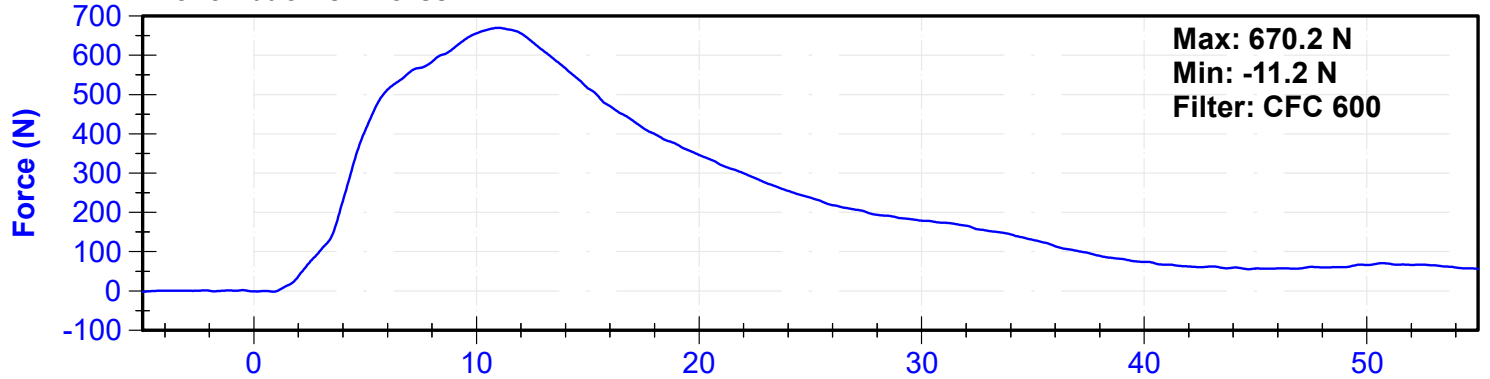
Probe Force



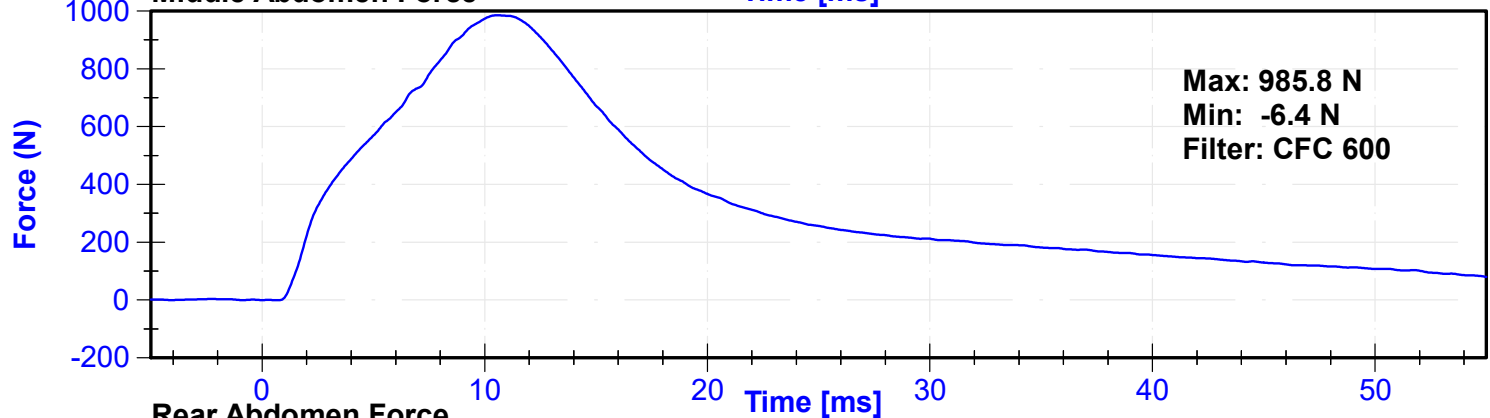
Combined Abdomen Force



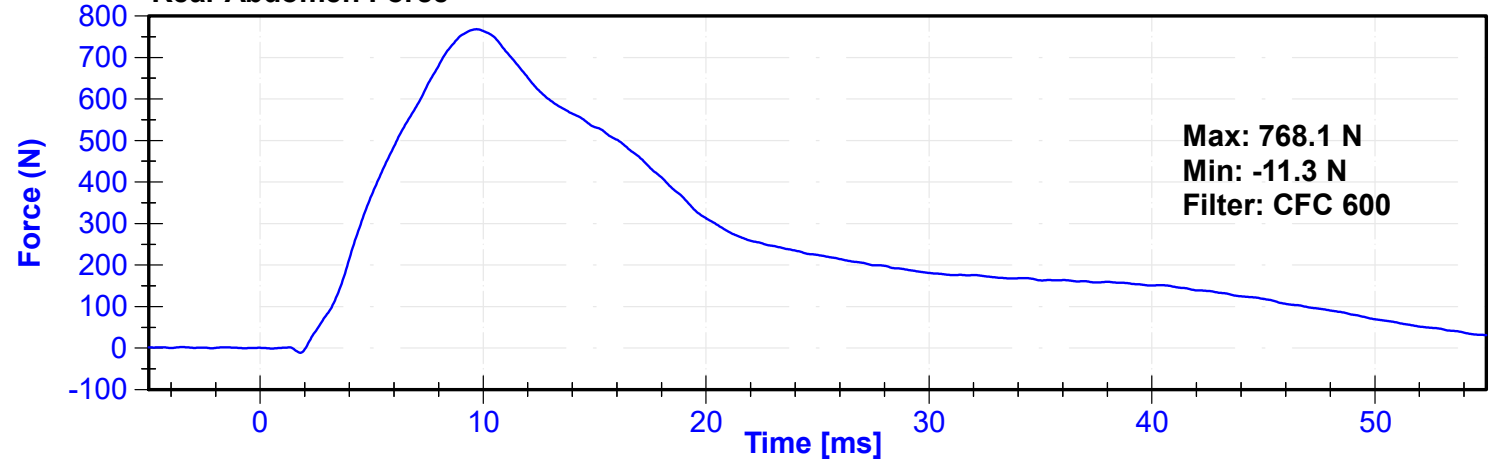
Front Abdomen Force



Middle Abdomen Force



Rear Abdomen Force



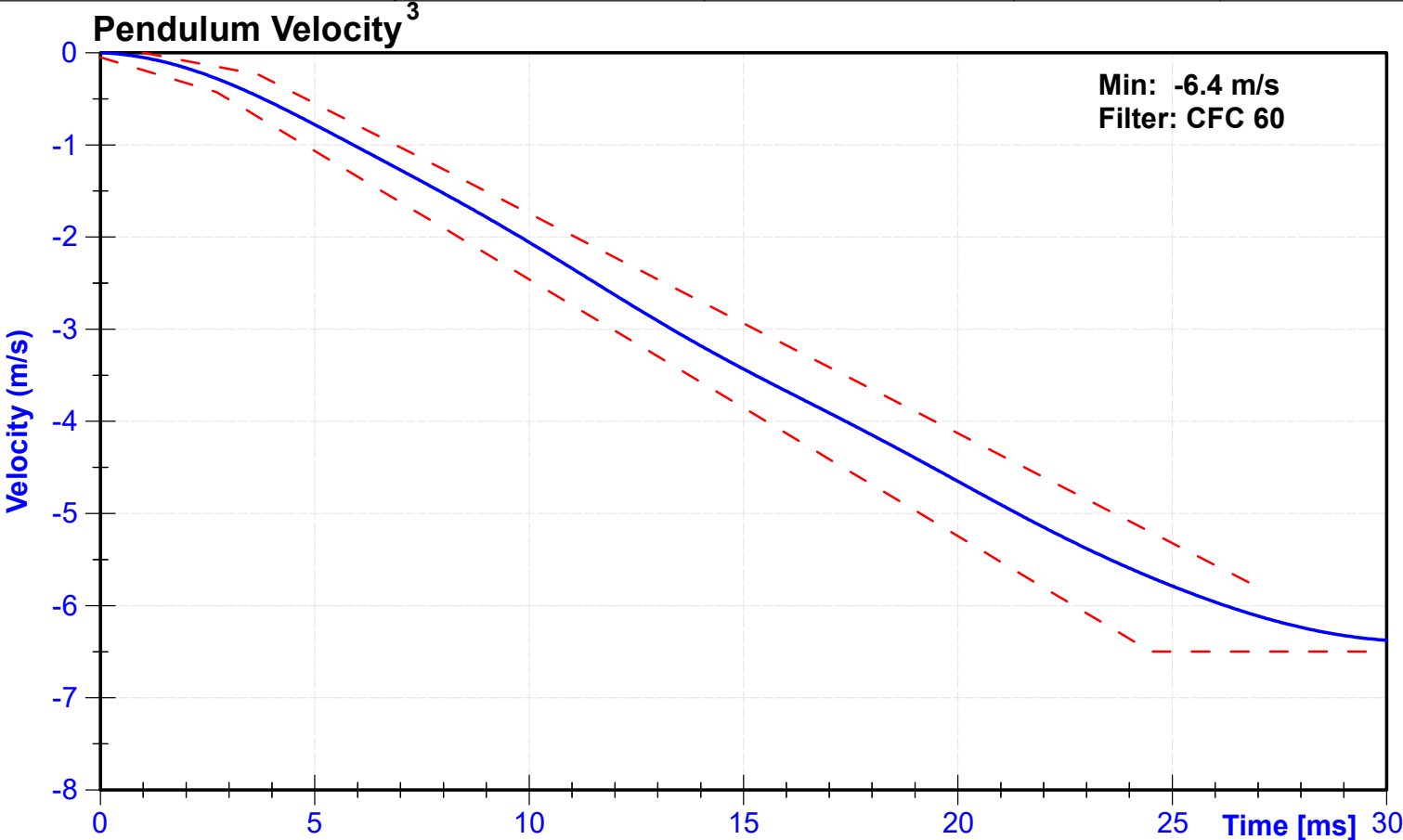
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantell

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	29	Pass
Velocity	5.95	6.15	m/s	5.962	Pass
Lateral Spine Rotation	45	55	deg	52.5	Pass
Time at Maximum Rotation	39	53	ms	47.1	Pass
Time of Decay to Zero Degrees	37	57	ms	39.2	Pass
Pendulum Velocity Overall Corridor	Lower Boundary ¹	Upper Boundary ²	m/s	See Plot ³	Pass

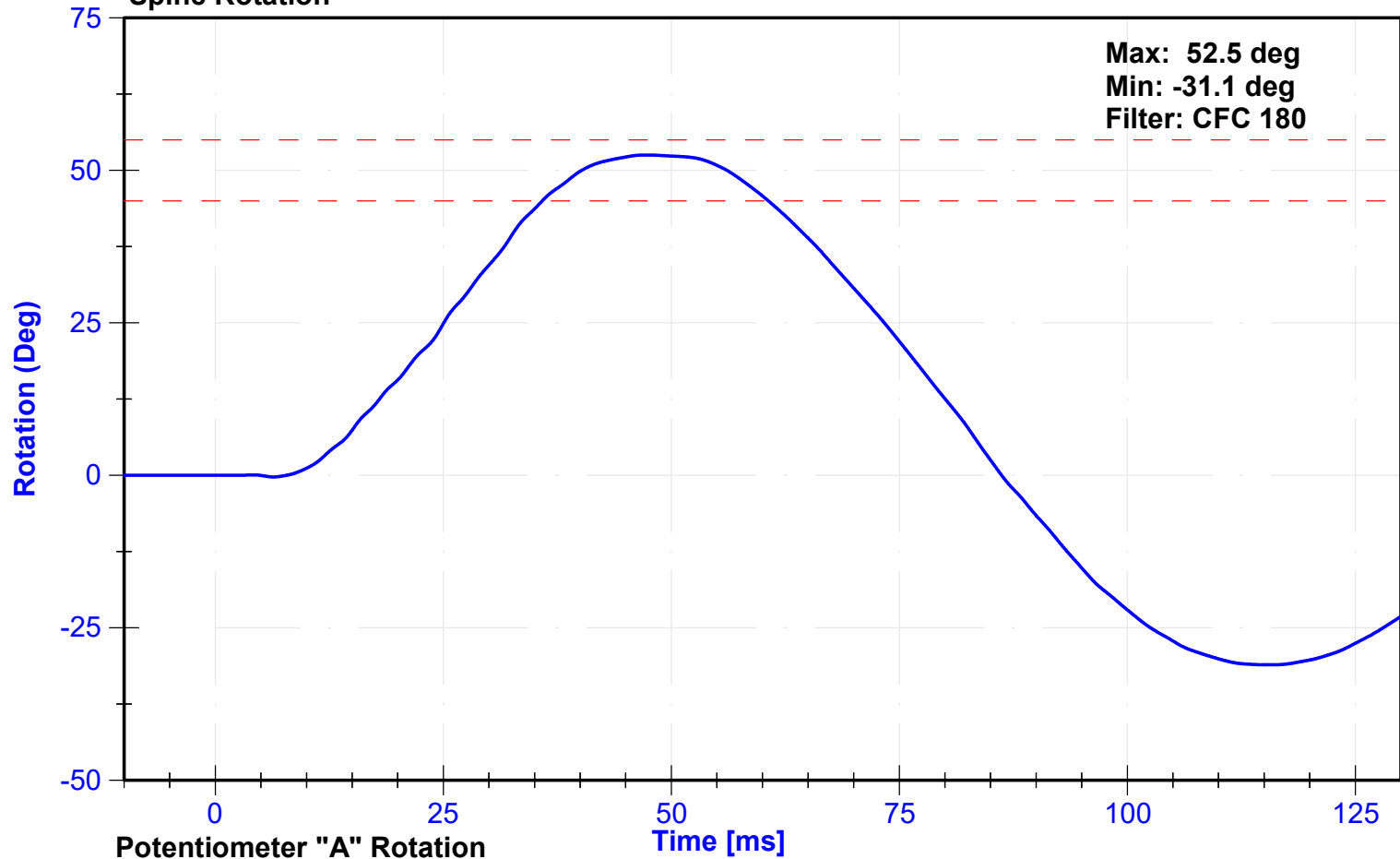
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	C16503	10/31/2023	4/28/2024
Pendulum "A" Potentiometer	Sfernice	2247	12/5/2023	12/4/2024
Condyle "B" Potentiometer	Sfernice	095	9/29/2023	9/28/2024

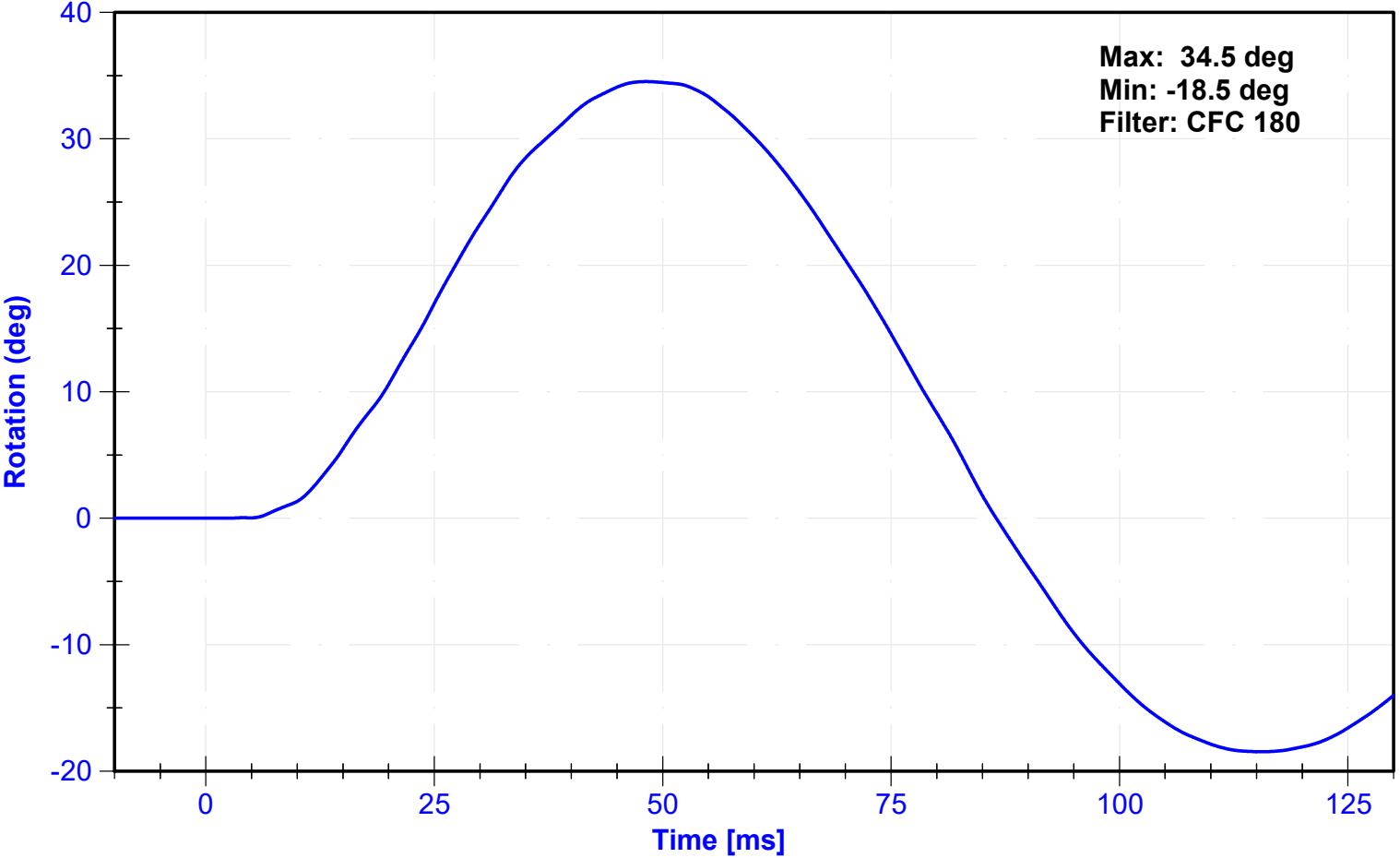


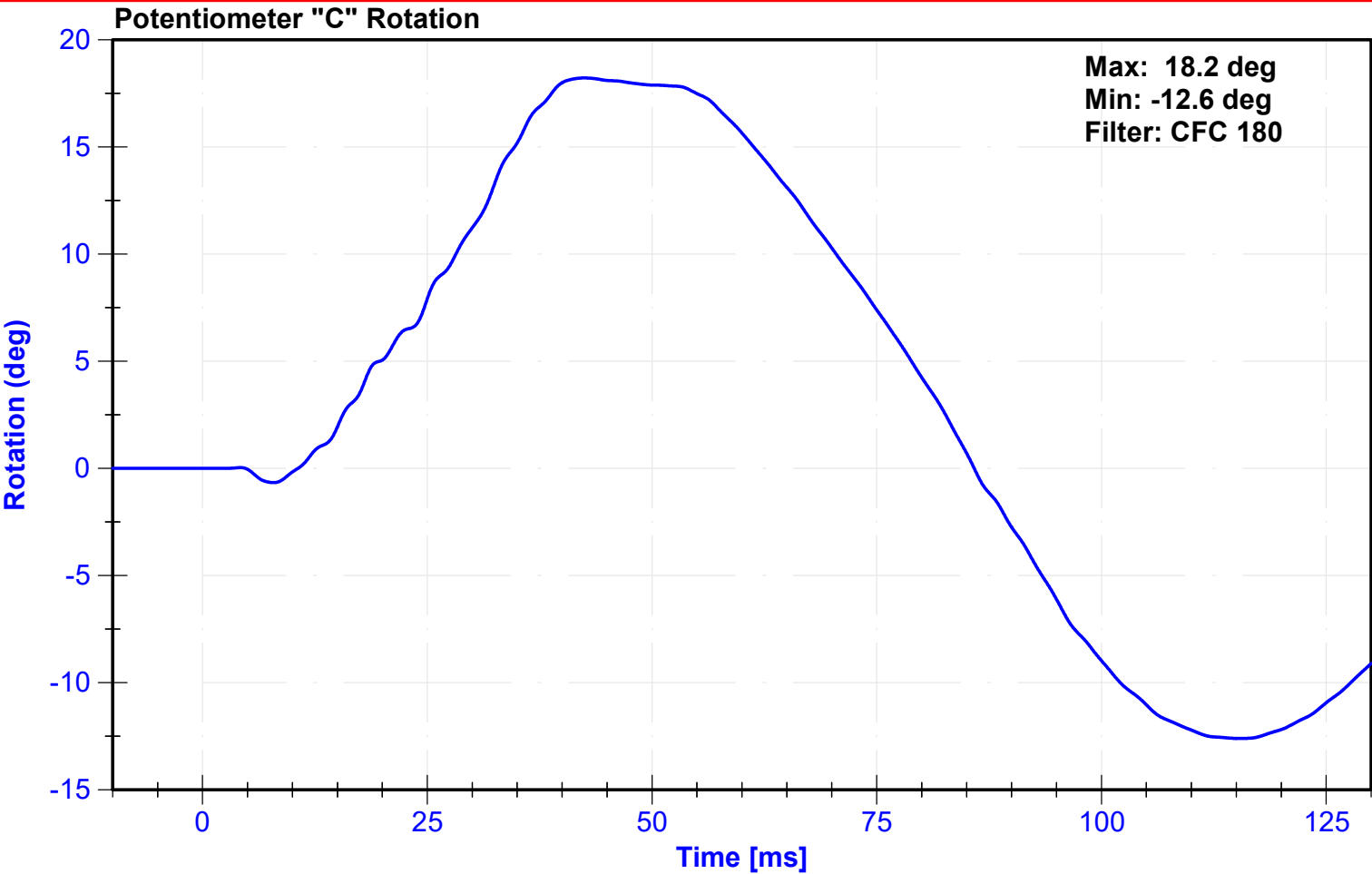
^{1,2} Upper and lower boundaries specified in Appendix I
IV-42

Spine Rotation



Potentiometer "A" Rotation





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	J.Rios
ATD Serial Number	DG5348	Laboratory Supervisor	C. Mantell

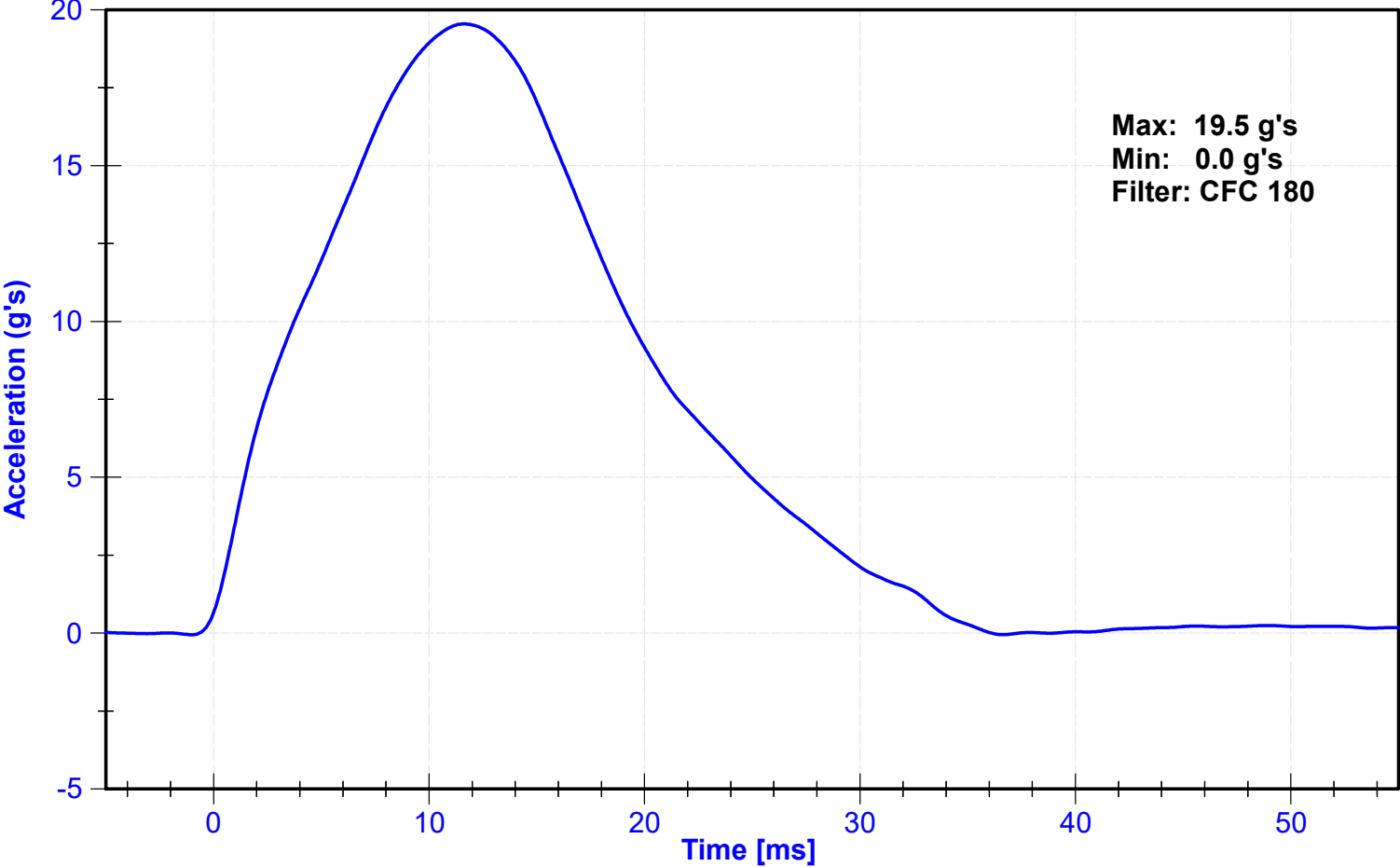
Results

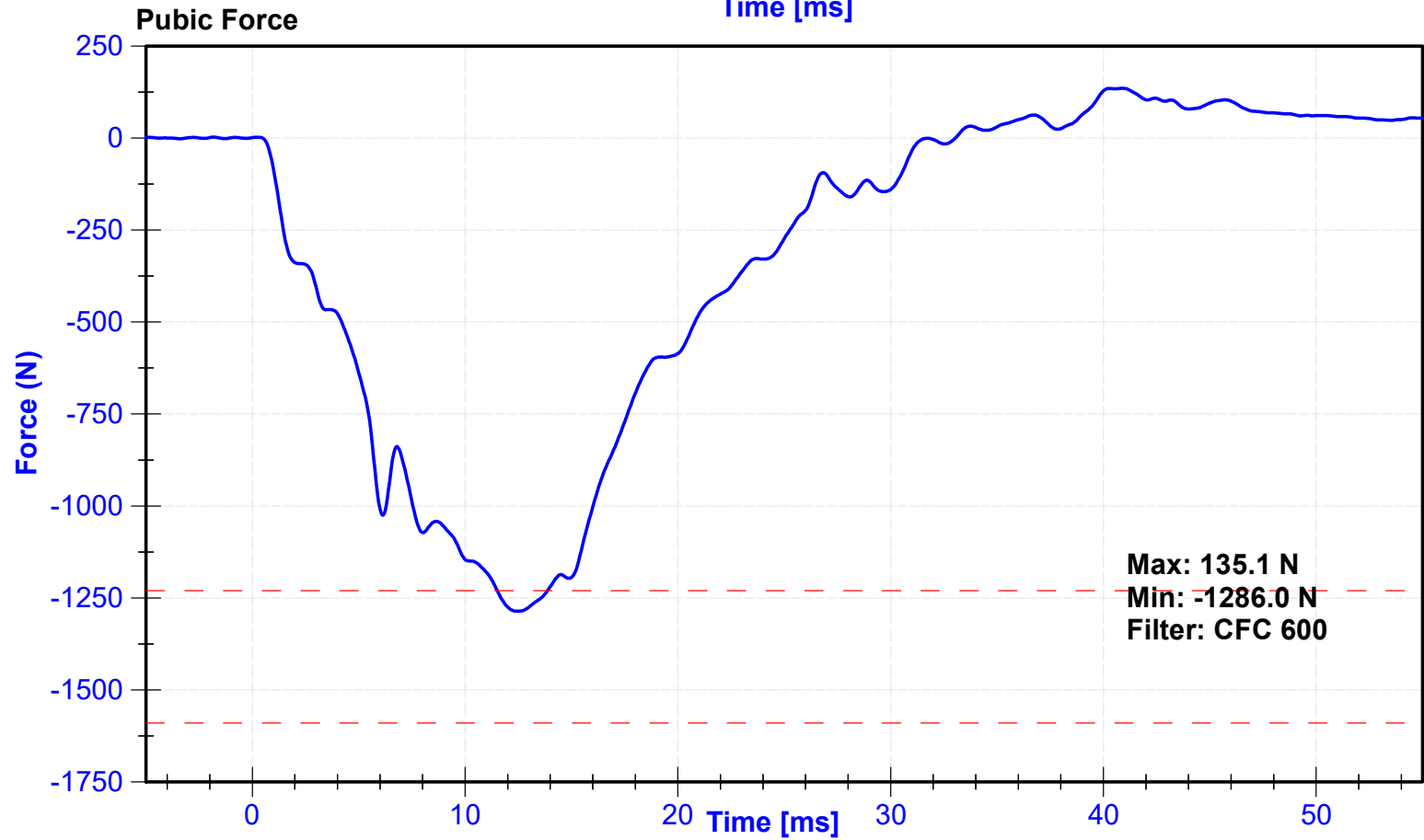
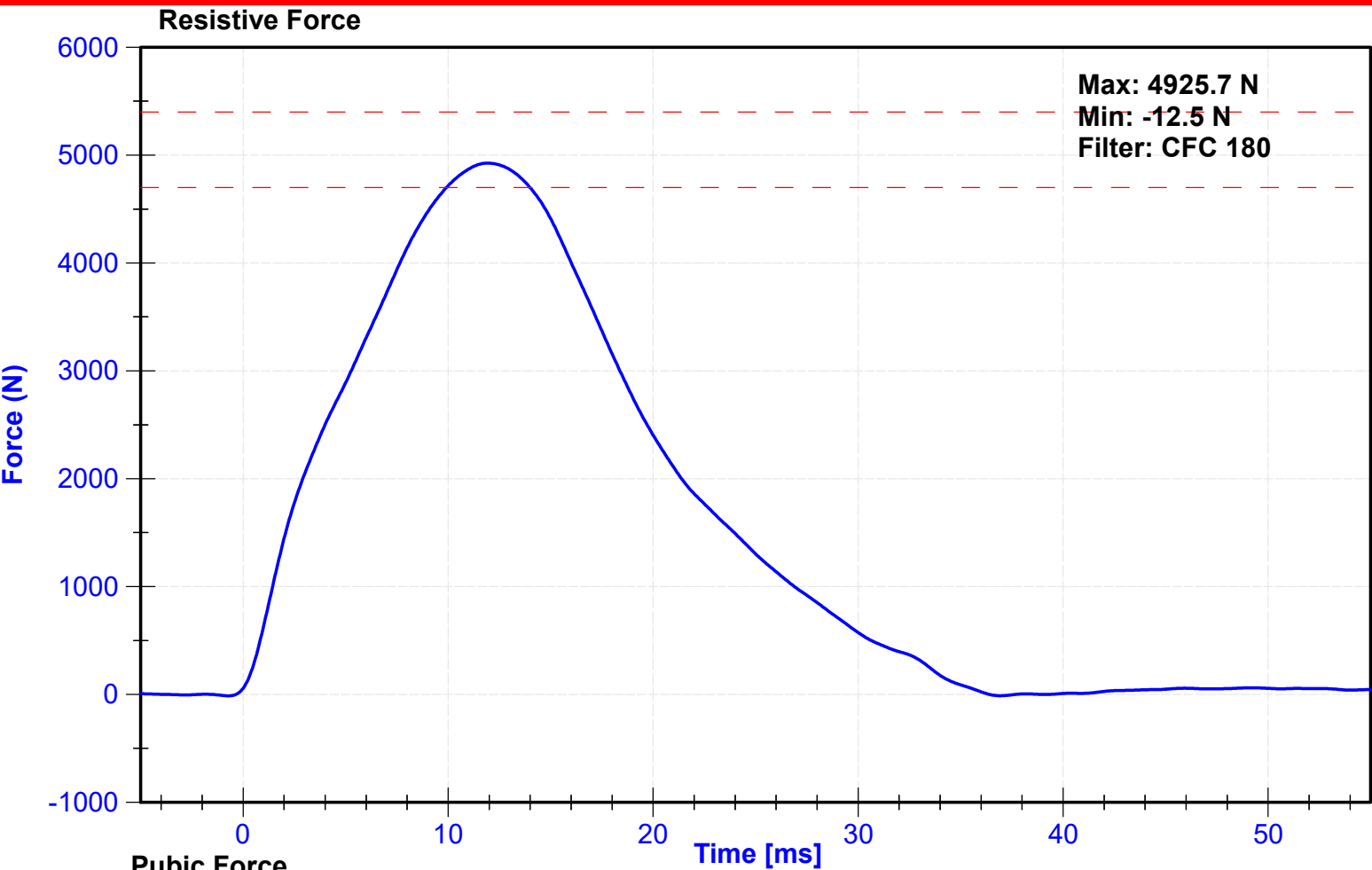
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.0	Pass
Humidity	10	70	%	18	Pass
Velocity	4.2	4.4	m/s	4.29	Pass
Resistive Force	4700	5400	N	4925.7	Pass
Time at Peak Resistive Force	11.8	16.1	ms	11.90	Pass
Pubic Force	-1590	-1230	N	-1286.0	Pass
Time at Peak Pubic Force	12.2	17.0	ms	12.45	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18619	9/29/2023	3/27/2024
Pubic Load Cell	Denton	464-FY	8/15/2023	8/14/2024

Probe Acceleration





APPENDIX V

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

Table 1 – Dummy Instrumentation (ES-2re)

			ES-2re S/N _ DG5348 _		
			Serial Number	Manufacturer	Calibration Date
Head Accelerometers	Primary	X	18613	Endevco	02/08/2024
		Y	18472	Endevco	02/08/2024
		Z	18663	Endevco	02/08/2024
	Redundant	X	18666	Endevco	02/08/2024
		Y	18664	Endevco	02/08/2024
		Z	18675	Endevco	02/07/2024
Thorax Rib Displacement Potentiometers	Upper	Y	269GFE	Honeywell	02/08/2024
	Middle	Y	268GFE	Honeywell	02/08/2024
	Lower	Y	270GFE	Honeywell	02/08/2024
Abdomen Load Cells	Forward	Y	1512	Denton	08/15/2023
	Middle	Y	1526	Denton	08/15/2023
	Rear	Y	1516	Denton	08/15/2023
Lower Spine Accelerometers (T12)		X	18524	Endevco	02/08/2024
		Y	18573	Endevco	02/07/2024
		Z	18657	Endevco	02/08/2024
Pubic Symphysis Load Cell		Y	464-FY	Denton	08/15/2023

Table 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	G22750	Endevco	01/26/2024
Vehicle Center of Gravity	Y	G22751	Endevco	01/26/2024
Vehicle Center of Gravity	Z	G22764	Endevco	01/26/2024
Left Floor Sill	Y	A405569	Measurement Specialties	09/12/2023
A-Pillar Sill	Y	A352342	Measurement Specialties	09/25/2023
A-Pillar Low	Y	A335487	Measurement Specialties	10/11/2023
A-Pillar Mid	Y	A370888	Measurement Specialties	10/10/2023
B-Pillar Sill	Y	A315004	Measurement Specialties	01/12/2024
B-Pillar Low	Y	A315885	Measurement Specialties	01/12/2024
B-Pillar Mid	Y	G22684	Endevco	01/22/2024
Driver Seat	Y	A315772	Measurement Specialties	12/11/2023
Engine Top	X	A315986	Measurement Specialties	10/24/2023
Engine Top	Y	A370962	Measurement Specialties	10/24/2023
Firewall	Y	G22647	Endevco	10/12/2023
Right Roof	Y	A280910	Measurement Specialties	01/12/2024
Right Floor Sill	Y	A280016	Measurement Specialties	01/12/2024
Rear Floorpan	X	A255847	Measurement Specialties	10/04/2023
Rear Floorpan	Y	A315874	Measurement Specialties	10/04/2023