RESEARCH FMVSS 214
MOVING DEFORMABLE BARRIER SIDE IMPACT

GENERAL MOTORS DE MEXICO, S. DE R.L. DE C.V.
2020 GMC Terrain

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Report Date: October 28, 2021

FINAL REPORT

PREPARED FOR:
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TRC TEST NUMBER: 210204

Project Manager, John Shultz

Report Approved October 28, 2021:

Transportation Research Center Inc.

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Project Engineer
Vehicle Research & Test Center

Technical Report Documentation Page

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16. Abstract

A 48/24 km/h 90° Moving Deformable Barrier Research Side Impact Test was conducted on the subject 2020 GMC Terrain in accordance with the specifications of the Laboratory Test Procedure for the Moving Deformable Barrier test. This test was conducted by Transportation Research Center Inc. in East Liberty, Ohio, on February 4, 2021.

The impact velocity of the Moving Deformable Barrier (MDB) was 53.27 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21.8°C. The target vehicle post test maximum crush was 198 mm at level 3. The test vehicle's performance was as follows:

	Driver ATD (WorldSID-50M)	
Measurement Description	**Units**	**Result**
Head Injury Criterion (HIC15)	N/A	49
Brain Injury Criterion (BrIC)	N/A	0.49
Peak Shoulder Force	N	-1265.15
Peak Thoracic Rib Deflection	mm	15.45
Peak Abdominal Rib Deflection	mm	13.65
Pubic Symphysis Force	N	-382.49
Peak Resultant Sacro-Iliac Force	N	1729.57

	Passenger ATD (WorldSID-5F)	
Measurement Description	**Units**	**Result**
Head Injury Criterion (HIC15)	N/A	152
Brain Injury Criterion (BrIC)	N/A	0.57
Peak Shoulder Force	N	1615.25
Peak Thoracic Rib Deflection	mm	6.48
Peak Abdominal Rib Deflection	mm	12.51
Pubic Symphysis Force	N	-1565.61
Peak Resultant Sacro-Iliac Force	N	2385.48

17. Key Words	18. Distribution Statement
Side Impact MDB WorldSID-50M WorldSID-05F	Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, NPO-411 1200 New Jersey Ave, SE Washington, DC 20590

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SECTION 1

PURPOSE AND TEST PROCEDURE

PURPOSE AND TEST PROCEDURE

This moving deformable barrier side impact test is a part of the Federal Motor Vehicle Safety Standard 214 Side Impact Protection program. It was conducted for the National Highway Traffic Safety Administration's (NHTSA) under 693JJ918D000019 by Transportation Research Center Inc.. The purpose of this test was to evaluate the repeatability, reproducibility, and durability of the WorldSID 50th percentile male ATD (WorldSID-50M) equipped with RibEye™, to determine whether the dummy is a viable option to replace the EuroSID-2 dummy with rib extension modifiers (ES-2re) in future side impact moving deformable barrier crash tests conducted by NHTSA. The test was conducted using NHTSA's 'LABORATORY TEST PROCEDURE FOR FMVSS No. 214, DYNAMIC SIDE IMPACT PROTECTION – Moving Deformable Barrier Test' dated September 2012 as a guideline. WorldSID-50M dummy was used instead of the ES-2re listed in the test procedure."

SECTION 2

SUMMARY OF TEST RESULTS

A 2020 GMC Terrain 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 53.27 km/h (33.10 mph). 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 Transportation Research Center Inc. in East Liberty, Ohio, on February 4, 2021. Pre-test and post-test photographs of the test vehicle and the MDB and the dummies (WorldSID-50M and WorldSID-05F with RibEye) are included in Appendix A.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the Research Side Impact Moving Barrier Test Procedure, dated July 2017. The WorldSID-50M was seated per NHTSA report https://rosap.ntl.bts.gov/view/dot/41900. The side impact event was documented by 11 cameras. Camera locations are included in this report.

The dummies were instrumented in the following manner:

DRIVER ATD (WorldSID-50M)
Head CG tri-axial accelerometer
Head angular rate sensor
Upper and lower neck load cells
Shoulder load cell
RibEye measurement system in thorax ribs 1-3 and abdominal ribs 1 and 2, with three LEDs per rib
Upper (T1), middle (T4), and lower spine (T12) tri-axial accelerometers
Lumbar load cell
Pelvic tri-axial accelerometers
Pubic load cell
Left and right sacroiliac load cells
Left femur load cell

PASSENGER ATD (WorldSID-05F)
Head CG tri-axial accelerometer
Head angular rate sensor
Upper and lower neck load cells
Shoulder load cell
RibEye measurement system in thorax ribs 1-3 and abdominal ribs 1 and 2, with three LEDs per rib
Upper (T1), middle (T4), and lower spine (T12) tri-axial accelerometers
Lumbar load cell
Pelvic tri-axial accelerometers
Pubic load cell
Left and right sacroiliac load cells
Left femur load cell

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. Worksheets and plots found in Appendix E describe dummy positions in detail.

Dummy injury readings were recorded as follows:

	Driver ATD (WorldSID-50M)	
Measurement Description	**Units**	**Result**
Head Injury Criterion (HIC15)	N/A	49
Brain Injury Criterion (BrIC)	N/A	0.49
Peak Shoulder Force	N	-1265.15
Peak Thoracic Rib Deflection	mm	15.45
Peak Abdominal Rib Deflection	mm	13.65
Pubic Symphysis Force	N	-382.49
Peak Resultant Sacro-Iliac Force	N	1729.57

	Passenger ATD (WorldSID-05F)	
Measurement Description	**Units**	**Result**
Head Injury Criterion (HIC15)	N/A	152
Brain Injury Criterion (BrIC)	N/A	0.57
Peak Shoulder Force	N	1615.25
Peak Thoracic Rib Deflection	mm	6.48
Peak Abdominal Rib Deflection	mm	12.51
Pubic Symphysis Force	N	-1565.61
Peak Resultant Sacro-Iliac Force	N	2385.48

Supplemental restraint information is given below:

Restraint Type	**Left Front (Driver) Occupant Location 1**		**Left Rear (Passenger) Occupant Location 4**	
	Mounted	**Deployed**	**Mounted**	**Deployed**
Frontal Airbag	Yes	No		
Knee Airbag	No	N/A		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	Yes	Yes	No	N/A
Side Pelvis Airbag	No	N/A	No	N/A
Seat Belt Pretensioner	Yes	Yes	No	N/A
Seat Belt Load Limiter	Yes	No	No	N/A
Other Safety Restraint	No	N/A	No	N/A

GENERAL COMMENTS

All doors remained closed throughout the test. No fuel spillage occurred during the impact and the static rollover test was not performed.

Data Acquisition Explanations

None

Ribeye Error Codes:

1 if the top sensor is blocked or sees too much ambient light

2 if the bottom sensor is blocked or sees too much ambient light

3 if both top and bottom sensors are blocked or see too much ambient light

4 if the middle sensor is blocked or sees too much ambient light

5 if the middle and top sensors are blocked or see too much ambient light

6 if the middle and bottom sensors are blocked or see too much ambient light

7 if all three sensors are blocked or see too much ambient light

8 if a divide-by-zero condition occurred in the data processing

9 if data goes past the end of the calibration curves

**error codes may be positive or negative in data and will occur to all x, y, and z channels*

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

TEST VEHICLE INFORMATION AND OPTIONS

Model Year	2020
Make	GMC
Model	Terrain
Body Style	MPV
VIN	3GKALMEV3LL336051
Body Color	Ebony Twilight Metallic
Odometer Reading (km/mi)	154 mi
Engine Displacement (L)	1.5
Type/No. Cylinders	Straight/4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	9
Overdrive	Yes
Final Drive	FWD
Roof Rack	No
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

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

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

DATA FROM CERTIFICATION LABEL

Manufactured By	GENERAL MOTORS DE MEXICO, S. DE R.L. DE C.V.
Date of Manufacturer	08/20
Vehicle Type	MPV

GVWR (kg)	2025
GAWR Front (kg)	1175
GAWR Rear (kg)	1200

VEHICLE SEATING AND WEIGHT CAPACITY DATA

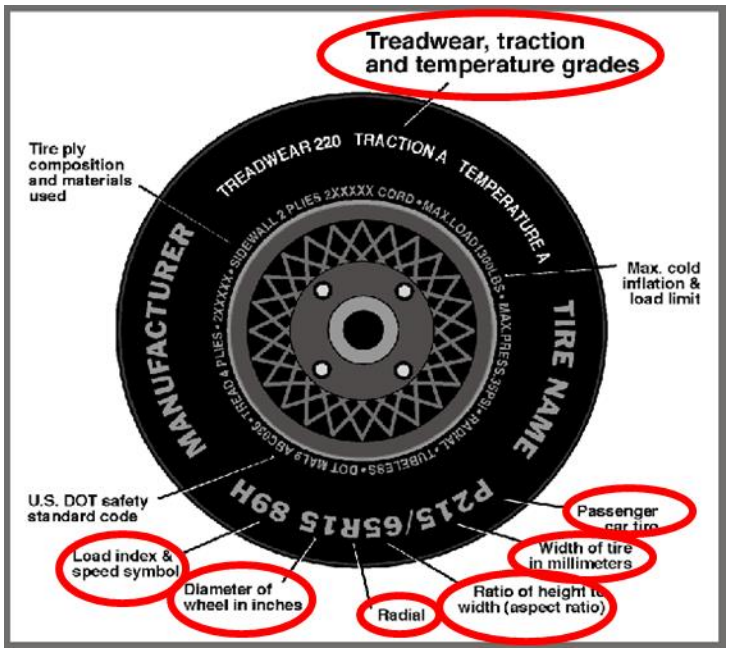
	Front	Rear	Third	Total
Designated Seating Capacity (DSC)	2	3	N/A	5
Vehicle Capacity Weight (VCW) (kg)				462.0
DSC X 68.04 kg				340.2
Rated Cargo and Luggage Weight (RCLW) (kg)				121.8

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	Yes	N/A	N/A	N/A	N/A	Yes	N/A
Rear or Second Row Seat	N/A	N/A	Yes	Yes	N/A	Yes	N/A
Third row seat	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	240	240
Recommended Tire Size	225/65R17 H	225/65R17 H
Tire Size on Vehicle	225/65R17	225/65R17
Tire Manufacturer	Michelin	Michelin
Tire Model	Primacy A/S	Primacy A/S
Treadwear	540	540
Traction	B	B
Temperature Grades	A	A
Tire Plies Sidewall	2	2
Tire Plies Body	5	5
Load Index/Speed Symbol	102H	102H
Tire Material	Polyester, Steel, Polyamide	Polyester, Steel, Polyamide
DOT Safety Code Left	M33T 08FX 3120	M33T 08FX 3120
DOT Safety Code Right	M33T 08FX 3120	M33T 08FX 3120

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

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	228	228	228	228
Tire Placard	kPa	240	240	240	240
Owner's Manual	kPa	240	240	240	240
As Tested	kPa	240	240	240	240

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 kPa	207	207	207	207

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	460.8	335.4		501.6	454.8		517.4	449.2	
Right	kg	444.8	298.6		430.0	391.0		443.4	375.4	
Ratio	%	58.8	41.2		52.4	47.6		53.8	46.2	
Totals	kg	905.6	634.0	1539.6	931.6	845.8	1777.4	960.8	824.2	1785.4

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	1539.6	(A)
Weight of 1 WorldSID (75kg) & 1 SID-IIs (49kg) ATD	kg	124.0	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	121.8	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1785.4	(A+B+C)

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight – 4.5 kg to 9 kg)? X YES □ NO

TEST VEHICLE ATTITUDES AND CG

	Units	Fully Loaded	As Tested	Meets Requirement***
LF	mm	875	869	Yes
RF	mm	872	877	Yes
RR	mm	896	889	Yes
LR	mm	875	871	Yes
Vehicle CG (Aft of Front Axle)	mm	1261	1299	
Vehicle CG (Left(+)/Right(-) from Longitudinal Centerline)	mm	+66	+60	

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

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

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

Test height adjustable suspension setting, if applicable: N/A

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Ballast: Steel plate mounted in the cargo area	57.4
Components removed: None	0.0

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

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

SCRL ANGLE RANGE

Seat	SCRL(°)		
	Max.	Min.	Mid
Driver Seat	18.4	14.3	16.4
Front Passenger Seat	15.8	11.3	13.5
Front Center Seat*	N/A	N/A	N/A
Struck Side Rear Seat	N/A	N/A	16.3
Non-Struck Side Rear Seat	N/A	N/A	17.5
Rear Center Seat*	N/A	N/A	14.9

* If applicable.

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid Fore/Aft	Forward-Most
Driver Seat	16.4	281	Max	310	306	302
			Mid	285	281	277
			Min	260	256	252
Front Passenger Seat	13.5	211	Max	249	249	250
			Mid	210	211	210
			Min	198	197	198
Front Center Seat*	N/A	N/A	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A
Struck Side Rear Seat	16.3	279	Max	N/A	N/A	N/A
			Mid	N/A	279	N/A
			Min	N/A	N/A	N/A
Non-Struck Side Rear Seat	17.5	280	Max	N/A	N/A	N/A
			Mid	N/A	280	N/A
			Min	N/A	N/A	N/A
Rear Center Seat*	14.9	350	Max	N/A	N/A	N/A
			Mid	N/A	350	N/A
			Min	N/A	N/A	N/A

* If applicable.

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

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position from Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	240	24	120	13
Front Passenger Seat	240	25	120	13
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat	0	Fixed	N/A	Fixed
Non-Struck Side Rear Seat	0	Fixed	N/A	Fixed
Rear Center Seat*	0	Fixed	N/A	Fixed

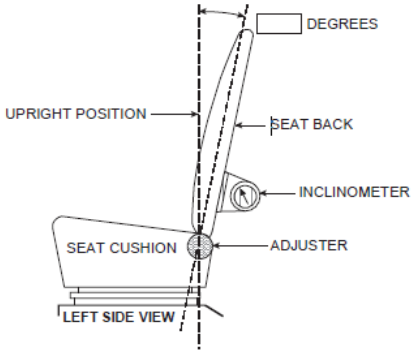
* If applicable.

NORMAL DESIGN RIDING POSITION

For adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.

Driver seat: The driver's seat back was positioned according to the manufacturer's information as provided on Form 1; resulting in a head rest post angle of 10.6° rearward measured at the head rest post. The seat was positioned at mid-track fore and aft travel. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back.

Rear Passenger Seat: The left rear passenger seat back is adjusted to most upright position. The seat track travel was fixed.



FRONT SEAT ASSEMBLY

Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detent*
Driver Seat w/ Seated Dummy	65.6	34	-10.6	10
Front Passenger Seat	39.3	19	-10.4	5
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat	3.5	2	22.2	1
Non-Struck Side Rear Seat	4.8	2	22.4	1
Rear Center Seat*	3.5	2	22.4	1

* If applicable.

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted with the information provided by the manufacturer on Form No. 1

	Total # of Positions	Placed in Position #
Driver Seat	1; Fixed	Fixed
Rear Seat	1; Fixed	Fixed

HEAD RESTRAINT ADJUSTMENT

Head restraints are adjusted to the lowest and most full rearward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	9	9, Uppermost
Rear Seat	1; Fixed	Fixed

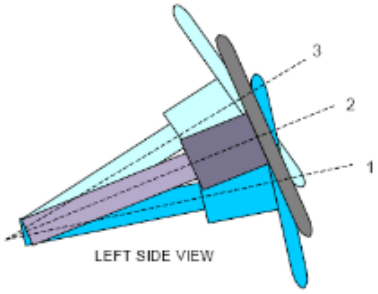
DATA SHEET NO. 2 (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel geometric locus it describes when moved through its full range of motion.

	Degrees	Fore/Aft Position, mm
Lowermost, Position No. 1	24.7	0
Geometric Center, Position No. 2	23.0	23
Uppermost, Position No. 3	20.1	45
Telescoping Steering Wheel Travel		45
Test Position	23.0	23

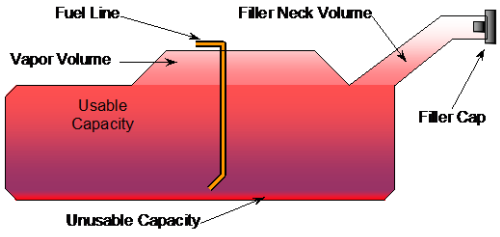


STEERING COLUMN ASSEMBLY

FUEL PUMP

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

The fuel pump will activate when the ignition is in the 'Run' position. When the working fuel system pressure is achieved; the pump will turn OFF.



VEHICLE FUEL TANK ASSEMBLY

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	56.0
Usable Capacity of "Optional" Tank (see Form No. 1)	59.0
Usable Capacity of Standard Tank (see Owner's Manual)	56.0
Usable Capacity of Optional Tank (see Owner's Manual)	59.0
93% of Usable Capacity	52.1
Actual Amount of Solvent Used in Test	52.1
1/3 of Usable Capacity	18.7

Is the Actual Amount of Solvent Used in the test equal to 93% +/- 1% of the Usable Capacity stated on Form No. 1? ☒ YES ☐ NO

TABLE 1 WORLDSID-50M AND WORLDSID-05F INSTRUMENTATION DATA

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

Driver Dummy Serial Number: EB8888

Location		Positive Direction		Negative Direction	
		Max.	Time (ms)	Max.	Time (ms)
Head Acceleration (g)	X	7.91	234.45	-16.58	61.60
	Y	23.75	62.05	-1.66	255.75
	Z	4.24	64.35	-11.46	42.90
	R	28.32	61.15		
Head Angular Rate (deg/sec)	X	552.38	106.00	-1055.82	43.00
	Y	532.86	204.45	-408.62	126.05
	Z	517.83	116.35	-895.70	62.75
Upper Neck Force (N)	X	162.39	87.35	-137.05	154.80
	Y	207.28	35.20	-62.98	96.30
	Z	410.54	45.05	-315.63	76.95
Upper Neck Moment (Nm)	X	6.11	94.55	-17.37	34.90
	Y	9.96	161.85	-22.39	64.95
	Z	12.15	68.20	-7.06	283.90
Lower Neck Force (N)	X	167.85	237.40	-277.00	62.50
	Y	371.67	39.45	-87.67	93.90
	Z	497.75	44.45	-346.19	64.85
Lower Neck Moment (Nm)	X	33.61	62.30	-11.88	96.80
	Y	31.01	154.25	-29.18	236.95
	Z	11.58	71.00	-7.46	283.95
Driver Shoulder Force (N)	X	36.33	282.60	-453.30	49.00
	Y	75.89	106.45	-1265.15	23.30
	Z	479.80	27.70	-193.44	106.70
Shoulder Rear Ribeye Position (mm)	X	-38.96	46.30	-56.29	156.40
	Y	-72.50	25.60	-85.76	129.40
	Z	-41.99	110.80	-69.62	57.40
Length of Change (mm)		10.59	24.75	-1.84	150.55
Shoulder Middle Ribeye Position (mm)	X	-4.36	46.30	-23.75	153.10
	Y	-79.45	26.45	-97.05	129.45
	Z	-42.44	109.50	-75.00	55.70
Length of Change (mm)		15.47	26.45	-1.87	128.65
Shoulder Front Ribeye Position (mm)	X	31.73	44.55	11.01	156.70
	Y	-66.07	28.70	-85.34	93.50
	Z	-47.85	109.50	-77.45	55.55
Length of Change (mm)		10.97	28.65	-2.44	93.50

TABLE 1 WORLDSID-50M AND WORLDSID-05F INSTRUMENTATION DATA

(CONTINUED)

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

Driver Dummy Serial Number: EB8888

Location		Positive Direction		Negative Direction	
		Max.	Time (ms)	Max.	Time (ms)
Thorax Rib 1 Rear Ribeye Position (mm)	X	-25.55	36.80	-37.21	57.40
	Y	-88.50	26.70	-101.22	153.80
	Z	1.13	154.50	-7.37	50.05
Length of Change (mm)		11.32	28.85	-1.73	153.80
Thorax Rib 1 Middle Ribeye Position (mm)	X	14.91	37.20	0.49	59.05
	Y	-92.16	27.30	-110.15	115.50
	Z	1.33	155.55	-7.74	50.60
Length of Change (mm)		15.45	27.20	-2.04	115.20
Thorax Rib 1 Front Ribeye Position (mm)	X	53.43	36.00	37.60	297.95
	Y	-82.63	27.30	-100.97	110.60
	Z	-0.66	153.60	-9.48	27.70
Length of Change (mm)		10.49	26.50	-2.31	110.55
Thorax Rib 2 Rear Ribeye Position (mm)	X	-18.04	35.85	-30.53	62.00
	Y	-87.44	33.80	-99.88	99.00
	Z	42.38	33.90	35.85	59.90
Length of Change (mm)		13.52	34.60	-0.46	112.95
Thorax Rib 2 Middle Ribeye Position (mm)	X	22.96	36.80	5.89	61.45
	Y	-95.33	33.30	-110.68	79.60
	Z	43.42	34.40	36.15	58.60
Length of Change (mm)		12.43	32.75	-1.03	79.70
Thorax Rib 2 Front Ribeye Position (mm)	X	60.96	35.40	42.71	61.70
	Y	-88.03	32.50	-104.12	82.75
	Z	47.80	34.20	40.92	58.20
Length of Change (mm)		6.52	26.60	-2.41	82.75
Thorax Rib 3 Rear Ribeye Position (mm)	X	-40.39	37.40	-50.04	61.40
	Y	-80.66	34.00	-94.14	120.50
	Z	-34.24	32.90	-41.08	60.95
Length of Change (mm)		13.92	33.90	-0.49	73.80
Thorax Rib 3 Middle Ribeye Position (mm)	X	-2.88	36.70	-18.78	65.60
	Y	-86.02	33.70	-101.97	75.85
	Z	-32.96	33.00	-39.68	58.80
Length of Change (mm)		13.06	32.85	-0.72	70.60

TABLE 1 WORLDSID-50M AND WORLDSID-05F INSTRUMENTATION DATA

(CONTINUED)

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

Driver Dummy Serial Number: EB8888

Location		Positive Direction		Negative Direction	
		Max.	Time (ms)	Max.	Time (ms)
Thorax Rib 3 Front Ribeye Position (mm)	X	31.70	35.10	12.61	67.50
	Y	-77.87	34.70	-93.51	210.60
	Z	-34.23	-32.75	-40.32	57.50
Length of Change (mm)		5.50	28.90	-2.39	210.75
Abdomen Rib 1 Rear Ribeye Position (mm)	X	-23.14	37.65	-34.22	84.15
	Y	-84.23	33.70	-96.44	244.35
	Z	0.17	32.60	-9.58	68.40
Length of Change (mm)		12.30	33.80	-1.26	244.40
Abdomen Rib 1 Middle Ribeye Position (mm)	X	16.39	37.00	-0.57	84.15
	Y	-89.86	33.70	-106.16	281.80
	Z	0.60	33.50	-10.30	69.50
Length of Change (mm)		12.44	31.95	-2.09	281.90
Abdomen Rib 1 Front Ribeye Position (mm)	X	51.19	36.20	32.05	82.60
	Y	-81.85	34.70	-97.57	184.50
	Z	-1.22	34.90	-11.42	69.20
Length of Change (mm)		6.00	26.45	-1.31	184.50
Abdomen Rib 2 Rear Ribeye Position (mm)	X	-4.31	38.40	-18.31	85.70
	Y	-81.27	31.25	-94.27	233.90
	Z	35.58	31.40	22.89	114.70
Length of Change (mm)		12.76	36.10	-2.02	192.35
Abdomen Rib 2 Middle Ribeye Position (mm)	X	33.83	38.60	13.23	85.45
	Y	-88.69	34.95	-105.47	291.90
	Z	34.37	263.15	19.32	113.55
Length of Change (mm)		13.65	30.20	-2.04	291.80
Abdomen Rib 2 Front Ribeye Position (mm)	X	67.34	36.55	44.92	85.75
	Y	-81.42	37.90	-98.22	262.75
	Z	36.39	265.60	21.73	110.60
Length of Change (mm)		7.39	30.20	-1.92	262.85
T1 Acceleration (g)	X	6.79	39.20	-3.76	17.60
	Y	26.24	19.85	-2.76	256.10
	Z	9.29	61.90	-12.54	20.25
	R	28.63	19.95		

TABLE 1 WORLDSID-50M AND WORLDSID-05F INSTRUMENTATION DATA

(CONTINUED)

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021
Driver Dummy Serial Number: EB8888

Location		Positive Direction		Negative Direction	
		Max.	Time (ms)	Max.	Time (ms)
T4 Acceleration (g)	X	4.23	17.70	-6.48	38.90
	Y	4.51	16.20	-21.70	23.45
	Z	5.70	83.15	-2.16	266.70
	R	22.06	23.45		
T12 Acceleration (g)	X	4.57	37.75	-3.72	126.90
	Y	28.74	32.35	-3.76	76.30
	Z	11.41	18.15	-4.12	38.65
	R	28.84	32.35		
Pubic Symphysis (N)	Y	50.22	94.45	-382.49	31.15
Left Sacro-Iliac Force (N)	X	166.17	15.70	-311.02	36.95
	Y	35.99	137.75	-1685.48	32.80
	Z	167.83	116.65	-355.45	21.25
Left Sacro-Iliac Moment (Nm)	X	22.85	18.90	-34.51	28.00
	Y	26.43	38.10	-7.16	15.65
	Z	31.98	15.65	-12.55	60.95
Right Sacro-Iliac Force (N)	X	172.52	62.65	-288.48	15.80
	Y	53.82	111.45	-1067.93	32.85
	Z	286.35	47.15	-101.51	86.95
Right Sacro-Iliac Moment (Nm)	X	19.79	19.40	-21.37	29.00
	Y	13.96	37.30	-2.99	64.85
	Z	32.88	15.65	-9.21	62.65
Lumbar Force (N)	X	189.99	107.25	-343.12	15.70
	Y	288.74	34.45	-58.65	174.00
	Z	930.66	44.05	-277.35	85.05
Lumbar Moment (Nm)	X	16.21	74.00	-6.79	18.80
	Y	11.95	15.80	-10.30	39.65
	Z	6.94	24.30	-5.36	174.85
Pelvis Acceleration (g)	X	20.35	20.80	-10.73	35.25
	Y	31.07	30.75	-6.78	72.00
	Z	19.97	15.55	-5.83	19.25
	R	32.58	30.75		

TABLE 1 WORLDSID-50M AND WORLDSID-05F INSTRUMENTATION DATA

(CONTINUED)

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

Driver Dummy Serial Number: EB8888

Location		Positive Direction		Negative Direction	
		Max.	Time (ms)	Max.	Time (ms)
Left Femur Force (N)	X	247.91	39.05	-67.38	18.10
	Y	49.24	18.25	-78.76	67.45
	Z	329.14	22.35	-477.33	33.20
Left Femur Moment (Nm)	X	52.63	59.75	-38.03	34.80
	Y	10.28	56.00	-34.89	92.85
	Z	20.26	18.85	-16.08	84.10
Left Femoral Neck Force (N)	X	317.31	18.50	-297.62	90.05
	Y	136.84	94.45	-377.55	59.55
	Z	322.11	59.20	-543.52	23.90
Left Outer Knee Force (N)	Y	911.83	32.30	-33.18	74.65
Left Inner Knee Force (N)	Y	4224.54	59.30	-34.01	78.55

TABLE 1 WORLDSID-50M AND WORLDSID-05F INSTRUMENTATION DATA

(CONTINUED)

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021
Passenger Dummy Serial Number: DK1774

Location		Positive Direction		Negative Direction	
		Max.	Time (ms)	Max.	Time (ms)
Head Acceleration (g)	X	3.36	197.95	-12.87	86.40
	Y	42.23	71.25	-5.47	205.40
	Z	4.11	199.30	-18.57	72.20
	R	46.79	71.25		
Head Angular Rate (deg/sec)	X	1002.40	64.85	-222.73	79.25
	Y	308.88	61.55	-378.04	75.30
	Z	596.74	92.55	-1205.29	71.80
Upper Neck Force (N)	X	137.83	58.95	-63.15	80.70
	Y	125.18	67.55	-227.33	97.15
	Z	100.66	198.10	-559.77	72.60
Upper Neck Moment (Nm)	X	1.19	169.30	-49.82	70.50
	Y	2.14	104.40	-19.79	79.65
	Z	12.55	81.00	-7.21	224.20
Lower Neck Force (N)	X	122.48	56.10	-193.15	84.25
	Y	519.18	71.40	-104.73	253.30
	Z	95.57	199.15	-433.47	72.65
Lower Neck Moment (Nm)	X	14.73	71.00	-20.23	101.00
	Y	2.63	300.00	-12.70	59.45
	Z	10.17	80.15	-8.82	220.85
Driver Shoulder Force (N)	X	192.22	51.65	-152.40	79.50
	Y	1615.25	63.65	-93.09	131.85
	Z	70.85	119.60	-724.66	63.50
Shoulder Rear Ribeye Position (mm)	X	-30.38	98.30	-45.59	59.60
	Y	-49.21	66.40	-66.72	280.60
	Z	-37.11	119.80	-57.31	88.10
Length of Change (mm)		10.98	73.15	-0.92	280.50
Shoulder Middle Ribeye Position (mm)	X	1.41	97.60	-13.80	57.70
	Y	-52.29	66.40	-77.61	230.90
	Z	-37.84	119.85	-61.12	89.60
Length of Change (mm)		23.55	66.45	-1.49	230.90
Shoulder Front Ribeye Position (mm)	X	31.41	96.00	18.16	118.70
	Y	-42.99	72.30	-67.57	283.25
	Z	-43.72	119.80	-65.88	69.10
Length of Change (mm)		17.59	68.65	-0.65	283.10

TABLE 1 WORLDSID-50M AND WORLDSID-05F INSTRUMENTATION DATA

(CONTINUED)

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

Passenger Dummy Serial Number: DK1774

Location		Positive Direction		Negative Direction	
		Max.	Time (ms)	Max.	Time (ms)
Thorax Rib 1 Rear Ribeye Position (mm)	X	-24.62	135.70	-29.75	55.30
	Y	-75.63	59.00	-80.38	-15.95
	Z	-7.37	87.80	-15.74	58.05
Length of Change (mm)		4.29	66.45	-0.07	-15.95
Thorax Rib 1 Middle Ribeye Position (mm)	X	2.51	135.70	-2.71	56.25
	Y	-85.90	65.15	-92.35	40.40
	Z	-7.67	103.55	-17.53	58.20
Length of Change (mm)		6.04	65.05	-0.14	38.10
Thorax Rib 1 Front Ribeye Position (mm)	X	34.12	66.65	29.78	56.30
	Y	-71.90	60.95	-77.79	183.70
	Z	-6.18	184.45	-14.65	58.20
Length of Change (mm)		5.24	57.50	-0.70	183.75
Thorax Rib 2 Rear Ribeye Position (mm)	X	-10.57	118.30	-13.60	58.00
	Y	-74.51	63.00	-78.44	-1.20
	Z	32.11	83.30	26.73	64.90
Length of Change (mm)		3.34	63.80	-0.17	-1.25
Thorax Rib 2 Middle Ribeye Position (mm)	X	20.51	72.10	16.76	54.10
	Y	-80.94	62.80	-92.82	-19.40
	Z	31.01	83.20	24.17	65.70
Length of Change (mm)		6.48	62.70	-0.14	-1.15
Thorax Rib 2 Front Ribeye Position (mm)	X	50.58	112.95	46.34	57.25
	Y	-74.74	63.00	-79.37	112.95
	Z	36.64	82.80	30.98	64.90
Length of Change (mm)		3.41	63.45	-0.29	112.90
Thorax Rib 3 Rear Ribeye Position (mm)	X	-40.61	117.90	-44.47	66.60
	Y	-75.27	216.65	-78.26	51.70
	Z	-31.22	142.75	-40.96	62.50
Length of Change (mm)		1.99	216.65	-0.77	215.10
Thorax Rib 3 Middle Ribeye Position (mm)	X	-13.27	116.60	-17.15	66.55
	Y	-86.69	208.30	-89.81	52.40
	Z	-29.61	288.70	-41.67	63.05
Length of Change (mm)		1.80	208.30	-1.01	51.75

TABLE 1 WORLDSID-50M AND WORLDSID-05F INSTRUMENTATION DATA

(CONTINUED)

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021
Passenger Dummy Serial Number: DK1774

Location		Positive Direction		Negative Direction	
		Max.	Time (ms)	Max.	Time (ms)
Thorax Rib 3 Front Ribeye Position (mm)	X	11.33	116.60	8.17	67.70
	Y	-75.74	61.50	-78.41	51.75
	Z	-32.81	285.20	-43.48	64.50
Length of Change (mm)		1.45	64.85	-0.82	51.85
Abdomen Rib 1 Rear Ribeye Position (mm)	X	-22.83	118.55	-31.67	62.45
	Y	-72.53	61.70	-78.38	196.75
	Z	-6.24	143.05	-16.41	63.80
Length of Change (mm)		2.44	61.35	-0.45	196.90
Abdomen Rib 1 Middle Ribeye Position (mm)	X	4.69	87.65	-3.77	63.70
	Y	-81.80	60.40	-89.85	288.00
	Z	-7.28	143.40	-19.57	63.80
Length of Change (mm)		7.04	60.55	-0.74	287.95
Abdomen Rib 1 Front Ribeye Position (mm)	X	32.00	86.70	26.61	64.70
	Y	-70.15	59.90	-78.41	289.90
	Z	-6.48	155.35	-17.62	63.80
Length of Change (mm)		7.73	60.50	-0.63	289.85
Abdomen Rib 2 Rear Ribeye Position (mm)	X	-3.17	293.35	-10.43	62.30
	Y	-71.18	60.70	-81.65	298.30
	Z	32.51	174.80	19.44	62.60
Length of Change (mm)		6.34	60.55	-1.13	299.50
Abdomen Rib 2 Middle Ribeye Position (mm)	X	22.78	78.00	17.43	64.40
	Y	-79.19	60.20	-92.36	211.80
	Z	30.00	172.00	14.20	62.55
Length of Change (mm)		12.51	60.40	-0.43	211.75
Abdomen Rib 2 Front Ribeye Position (mm)	X	51.65	56.45	47.74	139.20
	Y	-68.57	59.70	-81.21	185.70
	Z	32.64	165.95	18.66	62.50
Length of Change (mm)		10.71	61.20	-0.74	185.70
T1 Acceleration (g)	X	4.01	50.70	-12.07	59.70
	Y	45.93	62.45	-3.76	207.45
	Z	9.82	71.80	-0.29	-34.10
	R	47.04	62.35		

TABLE 1 WORLDSID-50M AND WORLDSID-05F INSTRUMENTATION DATA

(CONTINUED)

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021
Passenger Dummy Serial Number: DK1774

Location		Positive Direction		Negative Direction	
		Max.	Time (ms)	Max.	Time (ms)
T4 Acceleration (g)	X	2.60	188.95	-9.84	59.55
	Y	42.62	63.05	-3.83	207.10
	Z	7.54	72.05	-2.10	56.25
	R	43.40	61.90		
T12 Acceleration (g)	X	6.94	57.60	-7.32	72.25
	Y	54.56	53.55	-4.88	102.20
	Z	11.13	52.65	-1.92	142.65
	R	55.58	53.50		
Pubic Symphysis (N)	Y	11.23	262.20	-1565.61	43.10
Left Sacro-Iliac Force (N)	X	1331.77	50.40	-27.13	29.15
	Y	27.77	219.40	-1914.04	50.50
	Z	523.43	50.55	-117.93	75.90
Left Sacro-Iliac Moment (Nm)	X	18.30	39.75	-54.37	53.15
	Y	6.43	37.95	-28.04	50.65
	Z	7.84	164.65	-34.00	50.60
Right Sacro-Iliac Force (N)	X	674.10	50.45	-67.67	102.85
	Y	368.19	65.25	-450.85	44.60
	Z	639.15	53.90	-83.00	83.80
Right Sacro-Iliac Moment (Nm)	X	51.87	55.25	-4.02	156.05
	Y	6.93	39.50	-16.62	81.45
	Z	3.53	102.15	-29.65	50.80
Lumbar Force (N)	X	67.47	83.15	-522.43	50.60
	Y	1532.18	53.95	-52.48	161.90
	Z	206.12	125.05	-652.27	54.30
Lumbar Moment (Nm)	X	93.42	59.85	-9.36	158.45
	Y	28.56	50.65	-5.81	85.55
	Z	8.03	89.55	-14.73	52.75
Pelvis Acceleration (g)	X	22.26	54.15	-14.83	46.60
	Y	88.97	44.85	-6.57	55.70
	Z	52.60	44.65	-30.08	52.15
	R	102.53	44.80		

TABLE 1 WORLDSID-50M AND WORLDSID-05F INSTRUMENTATION DATA

(CONTINUED)

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

Passenger Dummy Serial Number: DK1774

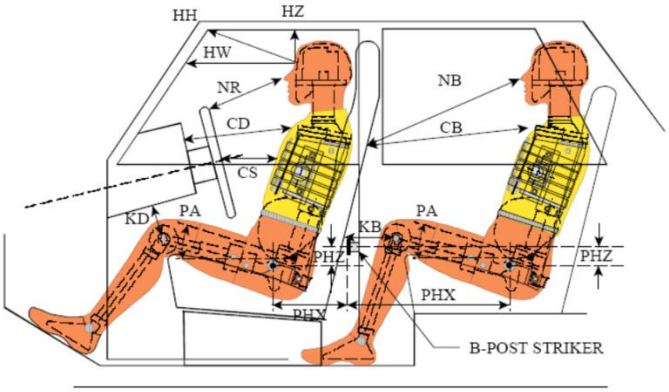
Location		Positive Direction		Negative Direction	
		Max.	Time (ms)	Max.	Time (ms)
Left Femur Force (N)	X	10.04	-48.85	-1205.94	43.55
	Y	195.34	41.00	-200.78	50.25
	Z	565.30	46.60	-464.23	54.10
Left Femur Moment (Nm)	X	15.49	36.70	-64.37	50.95
	Y	335.67	50.15	-2.65	125.15
	Z	56.40	44.70	-7.50	50.40
Left Femoral Neck Force (N)	X	1007.46	42.65	-25.60	130.65
	Y	3114.52	44.85	-31.52	195.05
	Z	1226.16	43.50	-42.42	115.85
Left Outer Knee Force (N)	Y	8817.16	49.75	-59.78	79.40
Left Inner Knee Force (N)	Y	1776.85	49.75	-296.39	45.50

Positive Direction	
Longitudinal	Forward
Lateral	Rightward
Vertical	Downward

Negative Direction	
Longitudinal	Rearward
Lateral	Leftward
Vertical	Upward

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021



LEFT SIDE VIEW

Code	Measurement Description	Driver WorldSID-50M SN # EB8888		Passenger WorldSID-05F SN # DK1774	
		Length (mm)	Angle	Length (mm)	Angle
HH	Header to Header	474			
HW	Header to Windshield	739			
HZ	Head to Roof Liner	226		295	
NR	Nose to Rim/Seat Back	488		667	
CD	Chest to Dash/Seat Back	647		645	
CS	Chest to Steering Wheel	399			
KD(L)/KDA(L)°	Left Knee to Dash/Seat Back	148	26.3	245	62.6
KD(R)/KDA(R)°	Right Knee to Dash/Seat Back	151	8.3	263	60.5
PAX°	Pelvic Tilt Angle X		1.1		-1.5
PAY°	Pelvic Tilt Angle Y		2.2		21.5
PHX	Hip Point to Striker (X-Axis)	150		209	
PHZ	Hip Point to Striker (Z-Axis)	99		175	
HAX°	Head Tilt Angle X		0.2		0.6
HAY[1]°	Head Tilt Angle Y		0.7		-0.5
TAX°	Thorax Tilt Angle X		1.3		0.5
TAY°	Thorax Tilt Angle Y		0.3		30.6
	Head Rest Angle		10.6		22.2
	H-Point Tool Angle		42.3		49.3
	Torso Angle		14.4		50.0
	Windshield Angle		60.1		

Note: All measurements are in millimeters. 2-door vehicle shown. Rear dummy HX, HZ, PHX and PHZ measurements for 4-door vehicle would use the C-post striker as a reference point.

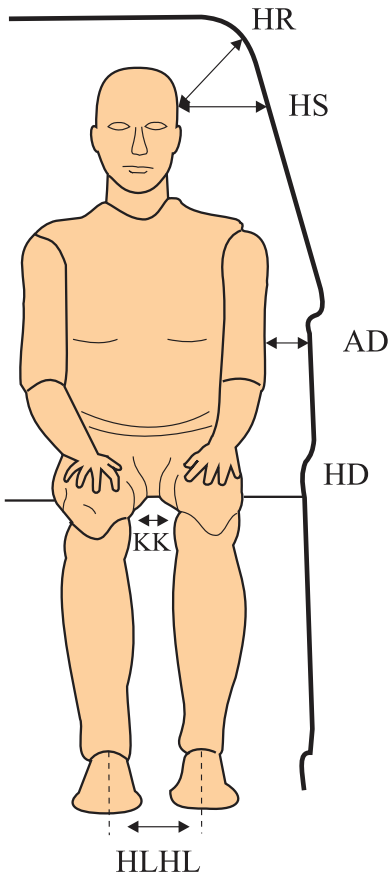
All tilt sensor angles are recorded digitally

WorldSID-50M neck was adjusted1 notches

WorldSID-5F neck was adjusted -6 notches down

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

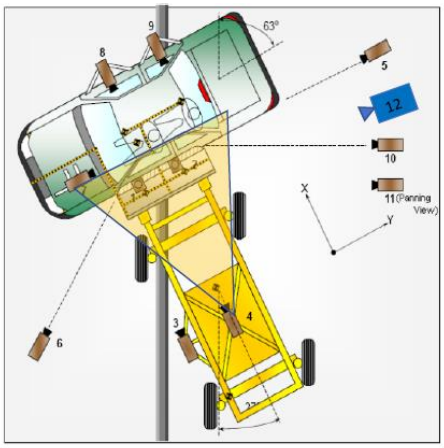


Code	Measurement Description	Driver WorldSID-50M SN # EB8888	Passenger WorldSID-05F SN # DK1774
HR	Head to Side Header	223	267
HS	Head to Side Window	330	367
AD	Arm to Door	140	153
HD	Hip Point to Door	88	102
KK	Knee to Knee	443	321
HLHL	Heel to Heel	334	187

Note: All measurements are in millimeters.

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021



CAMERA LOCATIONS AND DATA

Camera No.	View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Overhead Wide View	-1578	0	-5692	8.5	1000
2	Overhead Close-Up View	-1387	0	-5692	28	1000
3	Impact Point	-1522	-907	-861	25	1000
4	Struck-Side View at Impact	-2250	0	-1429	12.5	1000
5	Rear Impact View of Struck Side	0	8762	-1474	20	1000
6	Front Oblique Impact View of Struck Side	-1852	-2924	-1422	20	1000
7	Driver Dummy Front View (Onboard)				25	1000
8	Driver Dummy Side View (Onboard)				8.5	1000
9	Rear Passenger Dummy Side View (Onboard)				8.5	1000
10	Real-Time Rear View of Impact				Zoom	1000
11	Real-Time Pan View of Impact				Zoom	30
12	Real-Time Left Rear View of Impact				Zoom	30

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

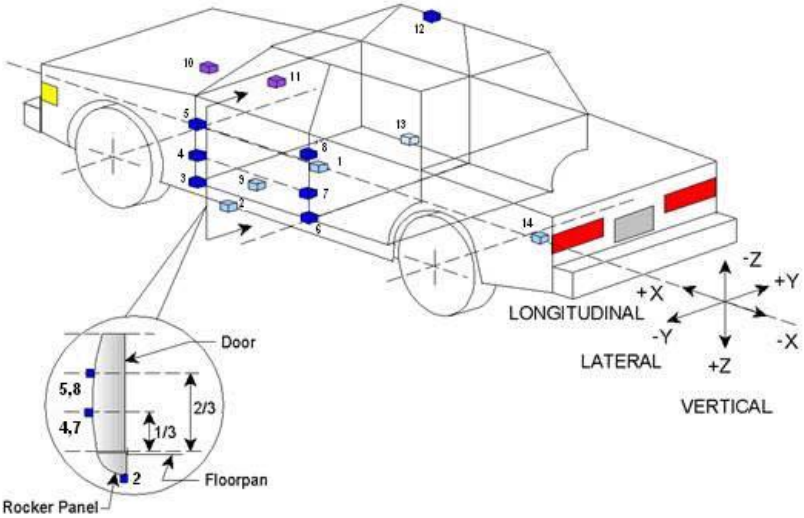
If applicable, explain why camera(s) did not operate as intended: Camera 6; failed to record

INSTRUMENTATION

Driver Dummy Channels	135
Passenger Dummy Channels	135
Vehicle Structure Accelerometers	37
MDB Accelerometers	5
Contact Channels	10
TOTAL	322

DATA SHEET NO. 6
VEHICLE ACCELEROMETER DATA

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021



Location		Coordinates (mm)			Positive Direction		Negative Direction	
		X	Y	Z	Max	Time (ms)	Max	Time (ms)
1	Vehicle CG	2230	-14	-76				
	Longitudinal (g)				3.14	52.95	-5.40	33.50
	Lateral (g)				22.16	10.60	-60.77	17.35
	Vertical (g)				10.65	16.50	-7.46	24.50
	Resultant (g)				61.36	17.35		
2	Vehicle CG ARS	2243	-43	-76				
	Longitudinal (g)				86.09	43.95	-101.28	209.25
	Lateral (g)				18.95	29.75	-95.20	37.60
	Vertical (g)				65.09	74.45	-3.48	-17.75
3	Right Sill at Front Seat	2799	642	-189				
	Longitudinal (g)				3.69	23.35	-7.58	34.75
	Lateral (g)				19.32	12.40	-2.50	187.05
	Vertical (g)				5.97	63.65	-8.15	14.35
	Resultant (g)				21.22	12.60		
4	Right Side Sill At Rear Seat	1882	686	-127				
	Longitudinal (g)				3.82	23.95	-5.86	34.20
	Lateral (g)				22.76	10.35	-2.04	172.00
	Vertical (g)				4.41	59.80	-8.79	15.75
	Resultant (g)				22.77	10.35		
5	Left Side Sill At Front Seat	2859	-624	-176				
	Lateral (g)				23.33	11.05	-2.28	69.20
6	Left Side Sill At Rear Seat	1898	-638	-149				
	Lateral (g)				38.65	8.40	-2.45	76.30

DATA SHEET NO. 6 (CONTINUED)
VEHICLE ACCELEROMETER DATA

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

Location		Coordinates (mm)			Positive Direction		Negative Direction	
		X	Y	Z	Max	Time (ms)	Max	Time (ms)
7	Lower A-Post	3185	-696	-113				
	Lateral (g)				39.39	8.85	-27.42	15.40
8	Middle A-Post	3148	-723	-637				
	Lateral (g)				29.48	13.75	-7.78	17.65
9	Lower B-Post	2211	-734	-118				
	Lateral (g)				92.54	9.40	-104.92	14.10
10	Middle B-Post	2159	-709	-504				
	Lateral (g)				99.52	11.40	-45.00	15.45
11	Front Seat Track	2353	-558	-54				
	Lateral (g)				17.48	10.65	-9.61	20.05
12	Rear Seat Structure	1768	-416	-28				
	Lateral (g)				1.77	59.80	-22.92	28.00
13	Right Rear Occupant Compartment	2006	397	-163				
	Lateral (g)				22.29	10.50	-2.64	100.00
14	Engine Block	3866	-23	-313				
	Longitudinal (g)				4.62	29.30	-6.70	45.80
	Lateral (g)				28.09	27.60	-5.75	113.30
15	Rear Floorpan Above Axle	1134	1	-101				
	Longitudinal (g)				4.89	31.60	-6.92	36.90
	Lateral (g)				23.77	26.90	-1.86	102.00
	Vertical (g)				3.29	6.40	-4.08	53.85
	Resultant (g)				24.70	26.95		
16	Rear Deck	221	-5	-95				
	Longitudinal (g)				13.08	84.85	-19.37	39.25
	Lateral (g)				27.86	41.45	-4.76	86.70
	Vertical (g)				5.04	19.20	-4.59	37.45
	Resultant (g)				32.83	39.25		
17	Rear Deck ARS	222	-34	-99				
	Longitudinal (g)				97.01	30.55	-99.09	213.50
	Lateral (g)				118.86	66.95	-134.15	38.00
	Vertical (g)				106.88	82.60	-26.98	18.30
18	Left Front Door Mid Centerline	2622	-769	-197				
	Lateral (g)				143.50	9.80	-94.32	18.20
19	Left Front Door Mid Rear	2346	-762	-216				
	Lateral (g)				109.31	1.80	-33.46	17.45
20	Left Front Door Upper Centerline	2621	-761	-448				
	Lateral (g)				113.67	37.35	-78.92	26.30

DATA SHEET NO. 6 (CONTINUED)
VEHICLE ACCELEROMETER DATA

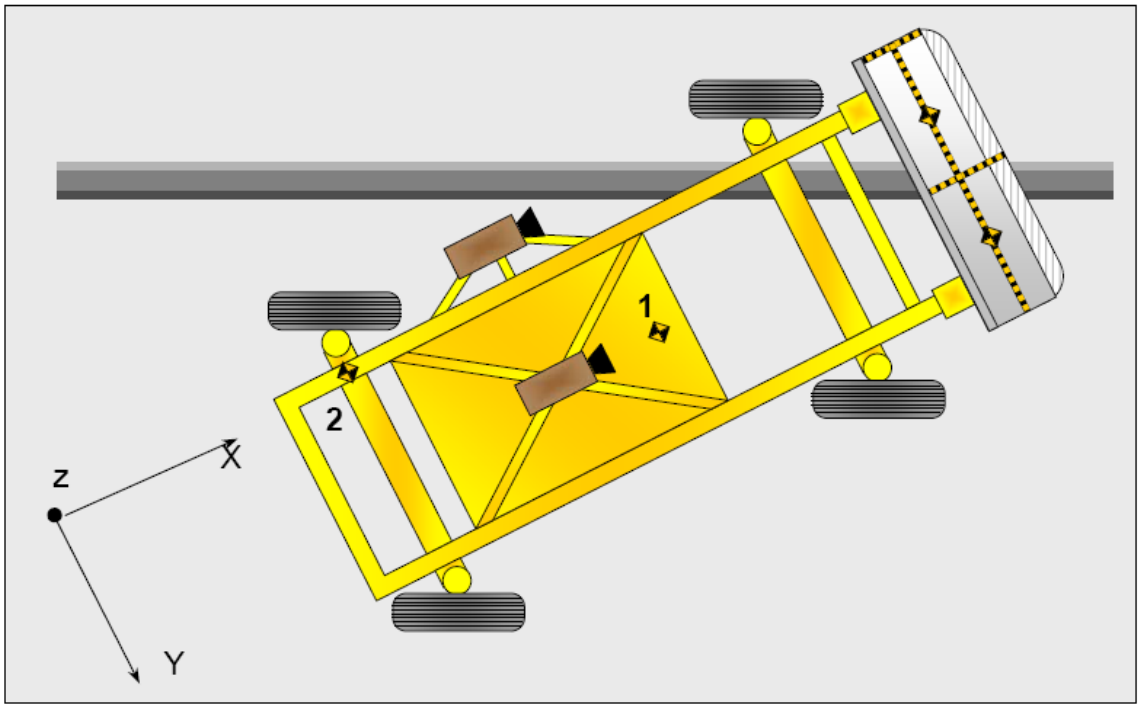
Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

Location		Coordinates (mm)			Positive Direction		Negative Direction	
		X	Y	Z	Max	Time (ms)	Max	Time (ms)
21	Left Rear Door Mid Rear	1468	-762	-366				
	Lateral (g)				95.89	20.60	-48.20	13.60
22	Left Rear Door Upper Centerline	1654	-750	-540				
	Lateral (g)				48.31	31.85	-45.61	26.10

*0,0,0 located at rear bumper

DATA SHEET NO. 7
MDB ACCELEROMETER DATA

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021



MDB ACCELEROMETER LOCATIONS

Location		Coordinates (mm)			Positive Direction		Negative Direction	
		X	Y	Z	Max	Time (ms)	Max	Time (ms)
1	MDB CG	-2179	0	-505				
	Longitudinal (g)				2.90	101.75	-21.59	21.55
	Lateral (g)				4.35	65.05	-9.33	35.75
	Vertical (g)				5.26	28.00	-6.42	43.90
	Resultant (g)				21.86	21.60		
2	MDB Rear	-3648	-650	-618				
	Longitudinal (g)				2.18	86.05	-23.36	33.60
	Lateral (g)				3.77	62.20	-2.79	38.65

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

DATA SHEET NO. 8
POST TEST OBSERVATIONS

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Front Seat Dummy (WorldSID-50M)	Rear Seat Dummy (WorldSID-05F)
Face	SCAB	SCAB
Top of Head	Head liner, SCAB	SCAB, Headrest
Left Side of Head	SCAB	SCAB
Back of head	Headrest	None
Left Shoulder	SAB, Door panel	Door panel
Upper Torso	Seatback bolster, SAB	C-pillar trim, Door panel
Lower Torso	Seatback bolster	C-pillar trim, Door panel
Left Hip	SAB, Door panel	Door panel
Left Knee	Door panel	Door panel

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/ Other Door
	Front	Rear	Front	Rear	
Remained Closed and Operational	No	No	Yes	Yes	Yes
Total Separation from Vehicle at Hinges or Latches	No	Latch	No	No	No
Latch or Hinge Systems Pulled Out of Their Anchorages	No	No	No	No	No
Disengaged from Latched Position	No	Yes	No	No	No
Latch Separated from Striker	No	Yes	No	No	No
Jammed Shut	Yes	N/A	No	No	No
If Door Opened at Striker, Record Width of Opening at Striker (mm)	N/A	73 mm 211 mm	N/A	N/A	N/A

* Indicate “Yes”, “No”, or “NA”.

POST-TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	No	N/A	No	N/A
Seat Disengagement from Floor pan	No	N/A	No	N/A
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	Good
Sill Separation	None
Windshield Damage	None
Side Window Damage	Left rear pass window broken out
Other Notable Effects	None

DATA SHEET NO. 8 (CONTINUED)
POST TEST OBSERVATIONS

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side (Driver)		Struck Side (Rear Passenger)	
	Mounted	Deployed	Mounted	Deployed
Front Airbag	Yes	No		
Knee Airbag	No	N/A		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	No	N/A	No	N/A
Side Pelvis Airbag	No	N/A	No	N/A
Seat Belt Pretensioner	Yes	Yes	No	N/A
Seat Belt Load Limiter	Yes	No	No	N/A
Other	No	N/A	No	N/A

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		2730
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		425
Actual Impact Point (Aft of Front Axle)	mm		411
Horizontal Offset (+ forward / - rearward)	mm	+/- 50 of Intended Impact Point	+14
Vertical Offset (+ down / - up)	mm	+/- 20 of Intended Impact Point	-1

DATA SHEET NO. 9
MDB SUMMARY OF RESULTS

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1252
Overall Length Including Honeycomb Frame	4115
Wheel Base of Framework Carriage	2591
CG Location of Front Axle	1112

MDB WEIGHTS

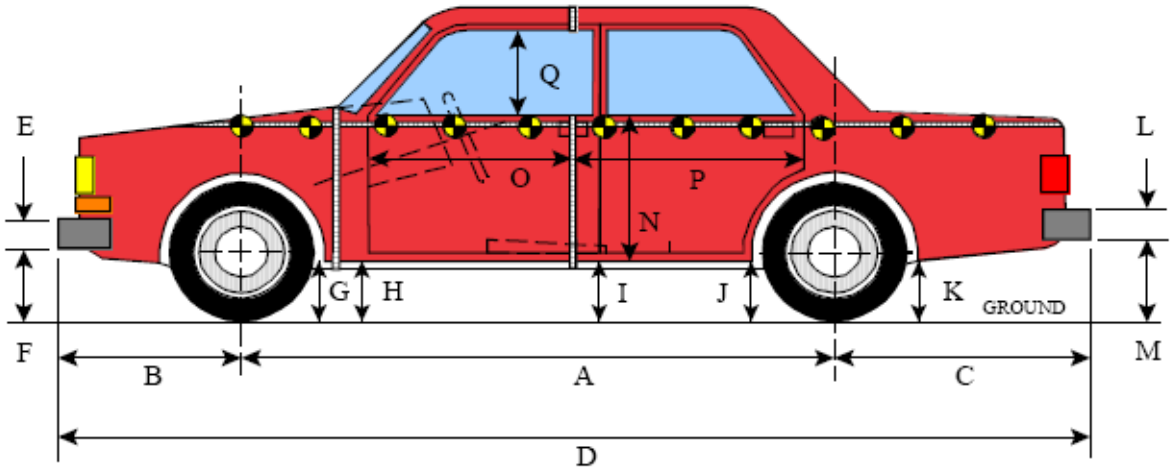
	Units	Front Axle	Rear Axle	Total
Left	kg	425.2	258.6	683.8
Right	kg	353.4	327.0	680.4
Ratio	%	57.1	42.9	100.0
Totals	kg	778.6	585.6	1364.2

SPEED AND ANGLE AT IMPACT DATA

Measured Parameter	Units	Tolerance	Value
Trap No. 1 Velocity (Primary)	km/h	52.1 to 53.7	53.27
Trap No. 2 Velocity (Redundant)	km/h	52.1 to 53.7	53.28
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 to 28	27

DATA SHEET NO. 10
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021



LEFT SIDE VIEW
All MEASUREMENTS IN (mm) WITH TOLERANCE OF ± 3mm

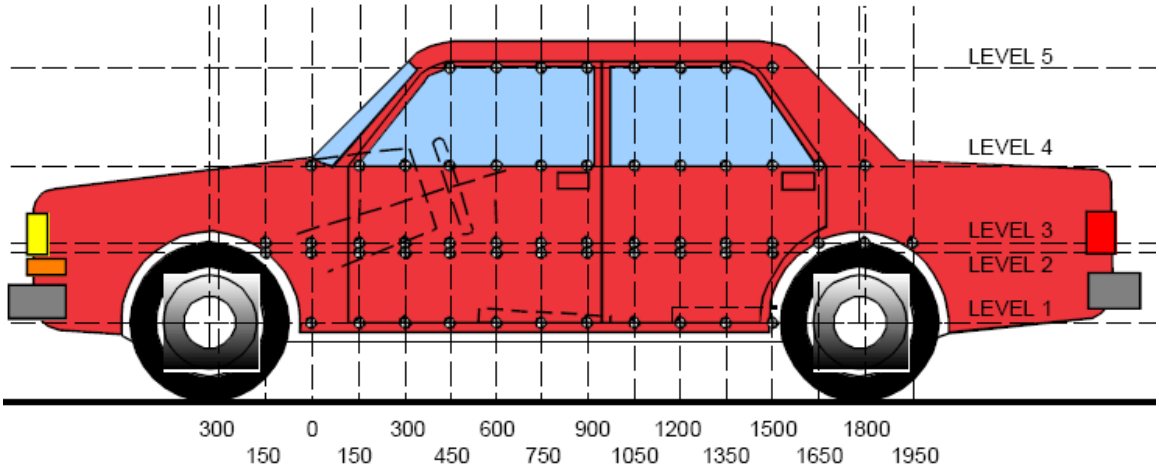
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2730	2720	10
B	Front Axle to FSOV	920	920	0
C	Rear Axle to RSOV	970	970	0
D	Total Length at Centerline	4620	4605	15
E	Front Bumper Thickness	90	90	0
F	Front Bumper Bottom to Ground	505	488	17
G	Sill Height at Front Wheel Well	420	450	-30
H	Sill Height at Front Door Leading Edge	430	460	-30
I	Sill Height at B Pillar	465	545	-80
J1	Sill Height at Rear Wheel Well	475	610	-135
J2	Pinch Weld Height at Rear Wheel Well	225	280	-55
K	Sill Height Aft of Rear Wheel Well	487	574	-87
L	Rear Bumper Thickness	165	165	0
M	Rear Bumper Bottom to Ground	454	530	-76
N	Sill Height to Bottom of Front Window Sill	900	830	70
O	Front Door Leading Edge to Impact CL	787	735	52
P	Rear Door Trailing Edge to Impact CL	1402	1360	42
Q	Front Window Opening	442	440	2
R	Right Side Length	4340	4340	0
S	Left Side Length	4340	4310	30
T	Maximum Vehicle Width at B-Pillars	1815	1720	95
U	Maximum Vehicle Width	1830	1830	0

**All Dimensions in mm

DATA SHEET NO. 11
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021



LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	295	25	1050
2	Occupant H-Point	667	194	1650
3	Mid-Door	728	198	1650
4	Window Sill	1065	74	1800
5	Window Top	1581	2	2400

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)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

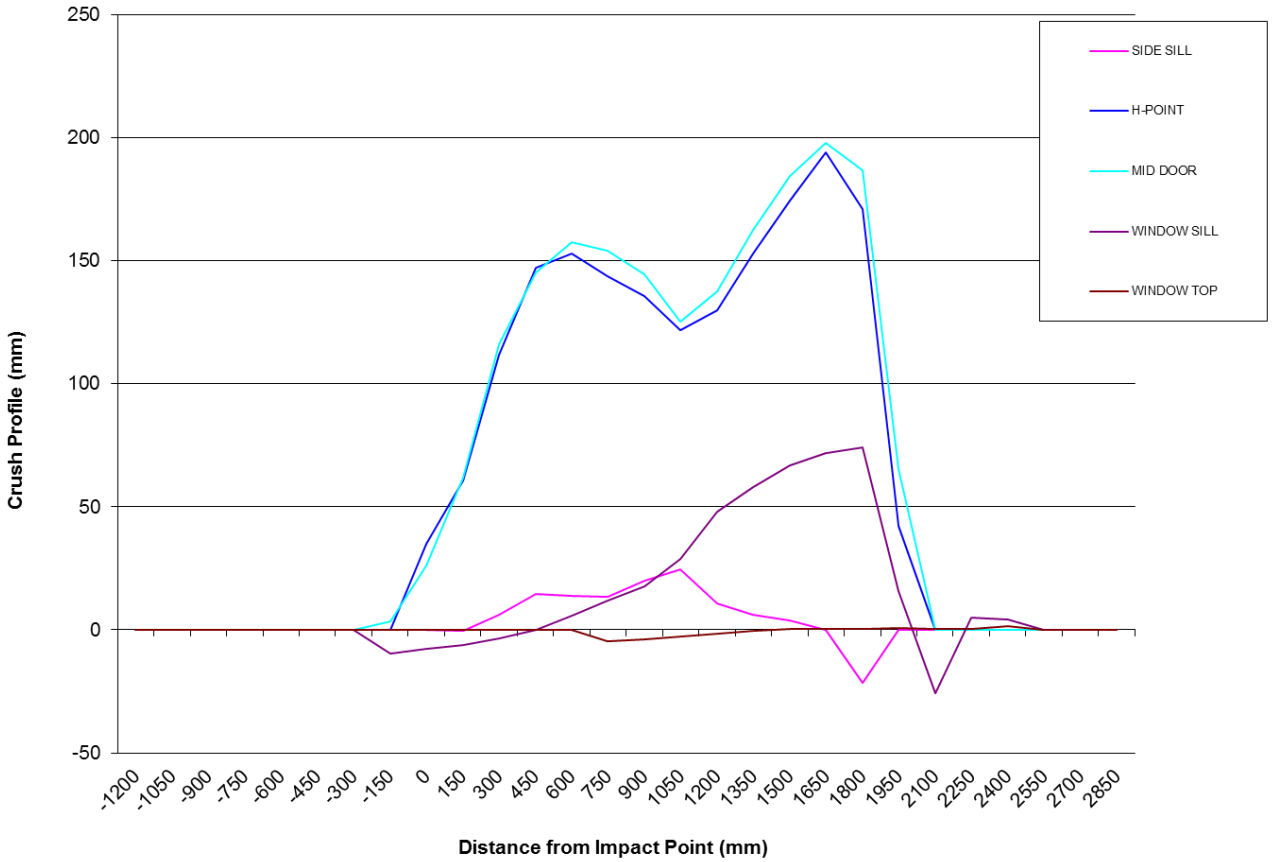
Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021

	Pre-Test					Post-Test					Difference				
	1	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
-150			907	799				904	809				3	-10	
0		904	905	805			869	879	813			35	26	-8	
150	874	894	896	807		875	834	835	813		-1	60	61	-6	
300	864	892	895	820		857	780	778	824		7	112	117	-4	
450	861	891	894	833		847	744	748	833		14	147	146	0	
600	861	891	893	846		847	738	735	841		14	153	158	5	
750	861	891	892	856	596	847	748	738	844	600	14	143	154	12	-4
900	862	892	892	859	602	842	756	748	841	605	20	136	144	18	-3
1050	862	892	893	861	604	837	770	767	832	607	25	122	126	29	-3
1200	863	893	892	861	604	852	763	755	813	606	11	130	137	48	-2
1350	865	895	894	863	604	859	742	731	804	605	6	153	163	59	-1
1500	867	897	895	863	607	863	723	711	797	607	4	174	184	66	0
1650	866	901	899	863	611	866	707	701	791	611	0	194	198	72	0
1800	864	909	907	864	614	886	738	720	790	613	-22	171	187	74	1
1950		910	913	890	612		868	848	875	611		42	65	15	1
2100				883	604				908	604				-25	0
2250				864	595				859	595				5	0
2400				863	586				859	584				4	2

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 the test based on an estimated impact point. The vertical impact reference line was set at (0, 0, 0).

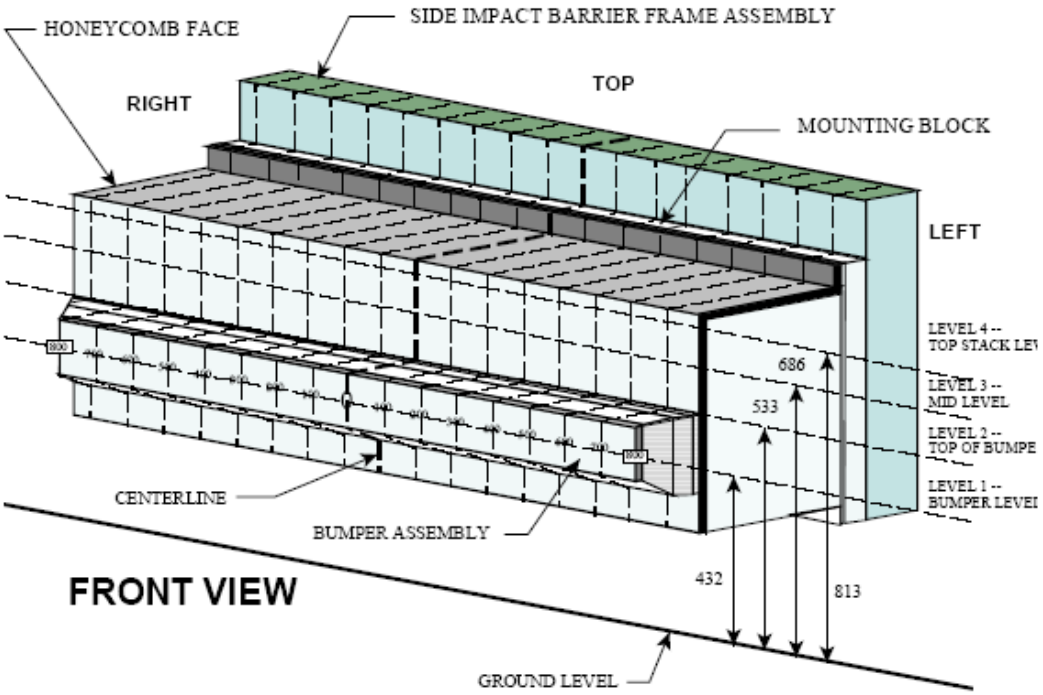
DATA SHEET NO. 11 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021



DATA SHEET NO. 12
MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021



NOTE: Dimensions are shown in millimeters, mm

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

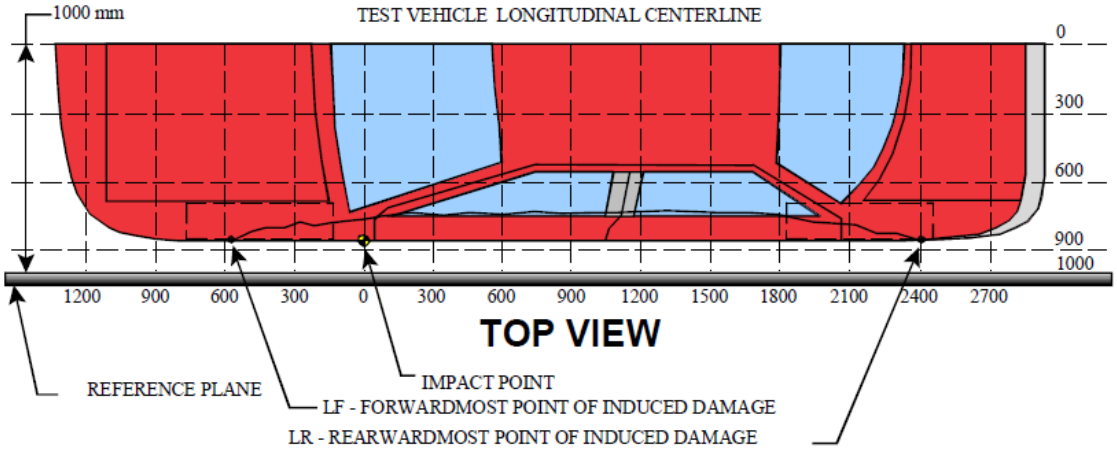
Vertical Location			From Centerline		Maximum Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	800	Right	182
B	Top of Bumper	533	800	Right	86
C	Mid-Level	686	800	Left	70
D	Top of Stack	813	800	Left	73

DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
1	182	173	163	159	155	153	149	145	142	138	133	130	126	122	119	125	137
2	86	82	79	76	72	68	67	66	61	58	52	49	45	42	40	42	59
3	25	11	16	10	19	32	40	31	34	11	6	6	7	10	15	29	70
4	41	13	25	18	11	25	45	52	29	15	17	17	20	22	33	38	73

DATA SHEET NO. 13
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021



MEASUREMENT CONVENTIONS:
Forward of the impact point (towards front of vehicle) is considered negative (—).
Rearward of the impact point (toward rearend of vehicle) is considered positive (+).

VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Post-Test (mm)	Pre-Test (mm)	Crush (mm)
1	2400	4	859	863	4
2	1950	3	848	913	65
3	1350	3	731	894	163
4	900	3	748	892	144
5	300	3	778	895	117
6	-150	3	904	907	3

MDB DAMAGE PROFILE DISTANCES

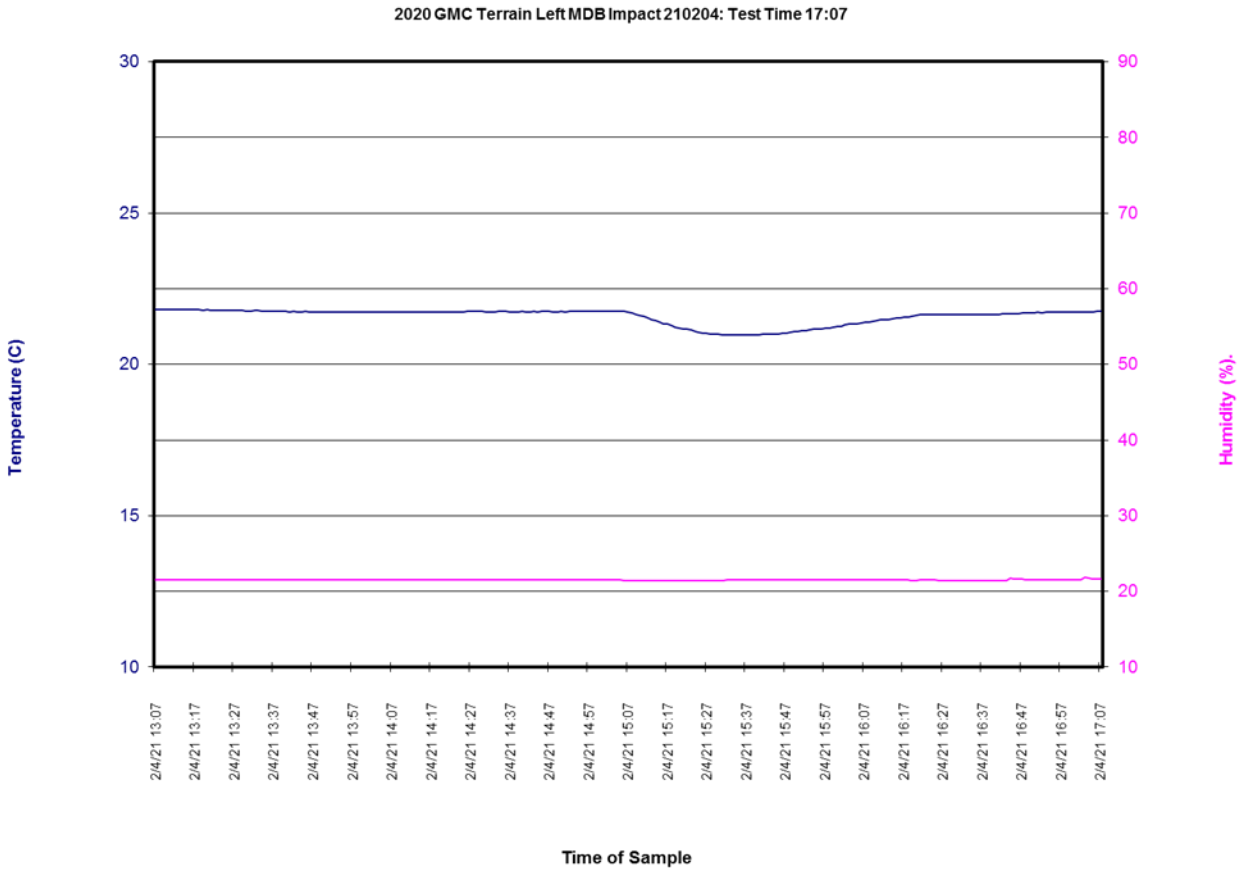
DPD	Distance From Center of MDB	Level	Post-Test (mm)*
1	800 mm left of center	1	137
2	500 mm left of center	1	122
3	200 mm left of center	1	133
4	200 mm right of center	1	149
5	500 mm right of center	1	159
6	800 mm right of center	1	182

DATA SHEET NO. 14

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

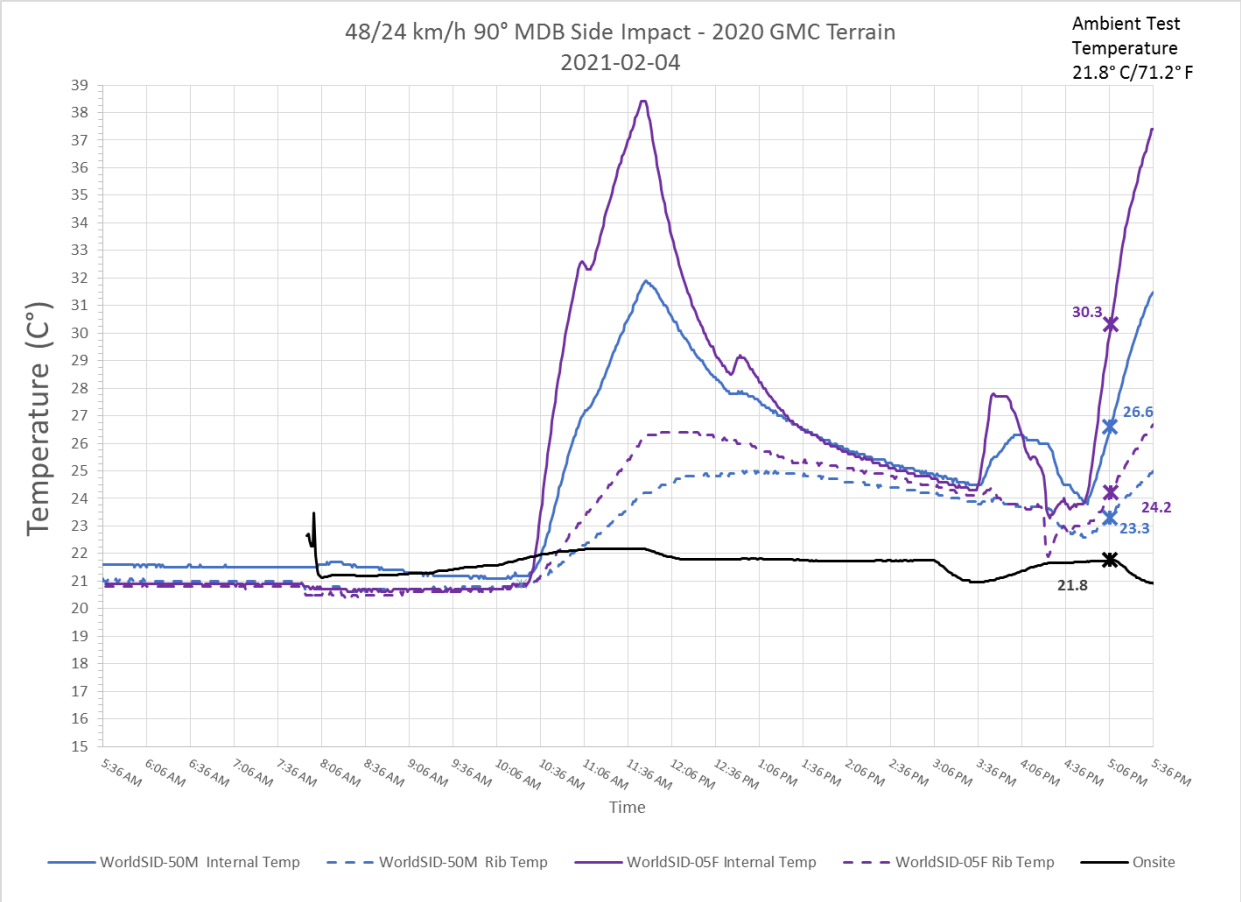
Test Vehicle: 2020 GMC Terrain

Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021



DATA SHEET NO. 14 (CONTINUED)
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle: 2020 GMC Terrain
Test Program: Moving Deformable Barrier Side Impact Test Date: 2/4/2021



APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

TABLE OF PHOTOGRAPHS (CONTINUED)

TABLE OF PHOTOGRAPHS (CONTINUED)

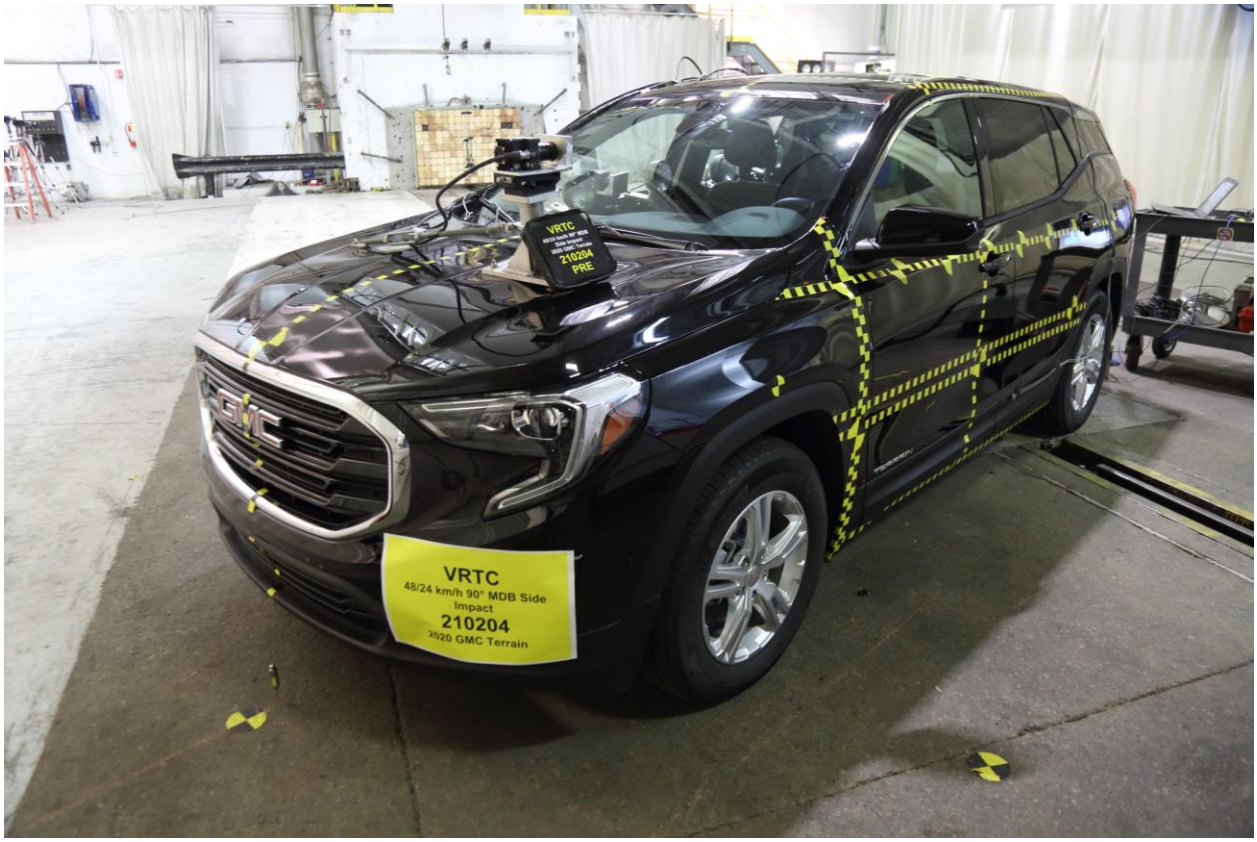
TABLE OF PHOTOGRAPHS (CONTINUED)

001 As-Delivered Right Front ¾ View of Test Vehicle

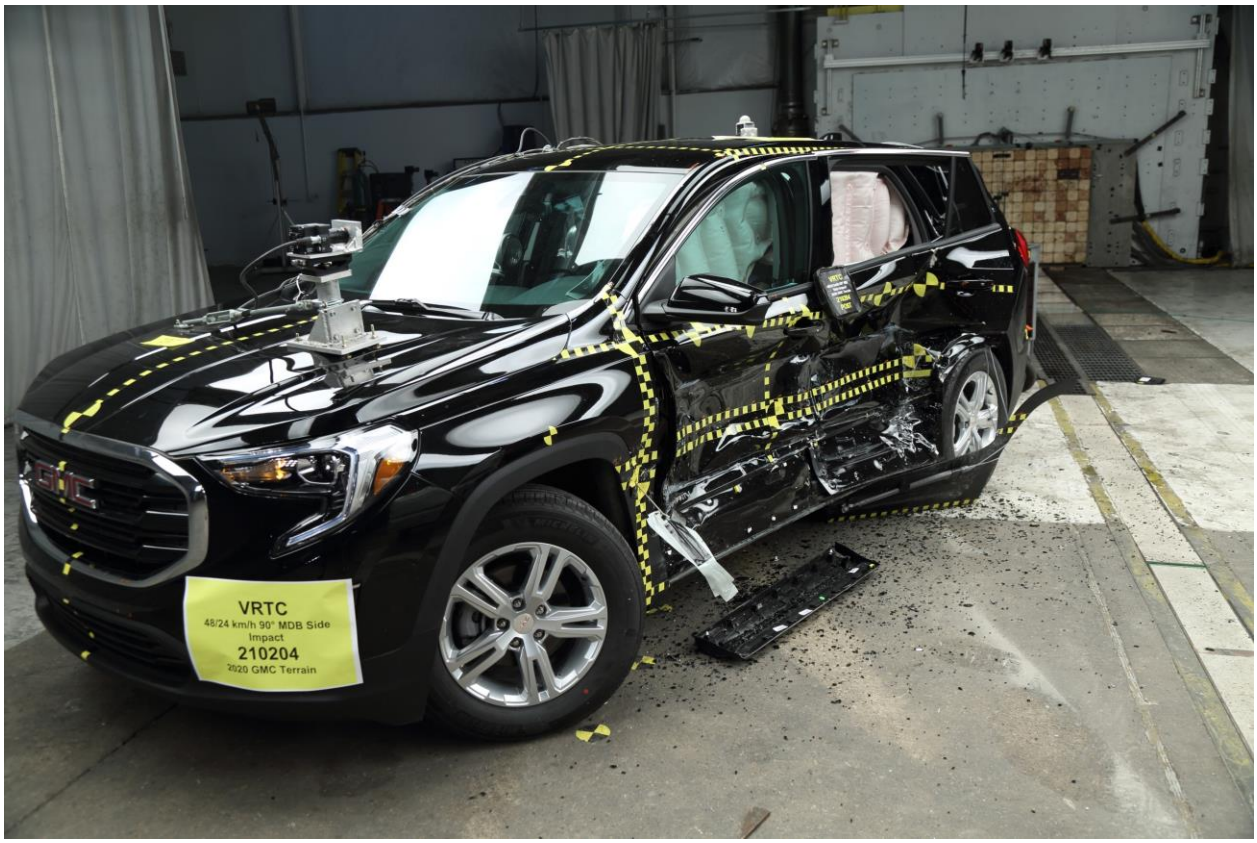
002 As-Delivered Left Rear ¾ View of Test Vehicle

003 Pre-Test Frontal View of Test Vehicle

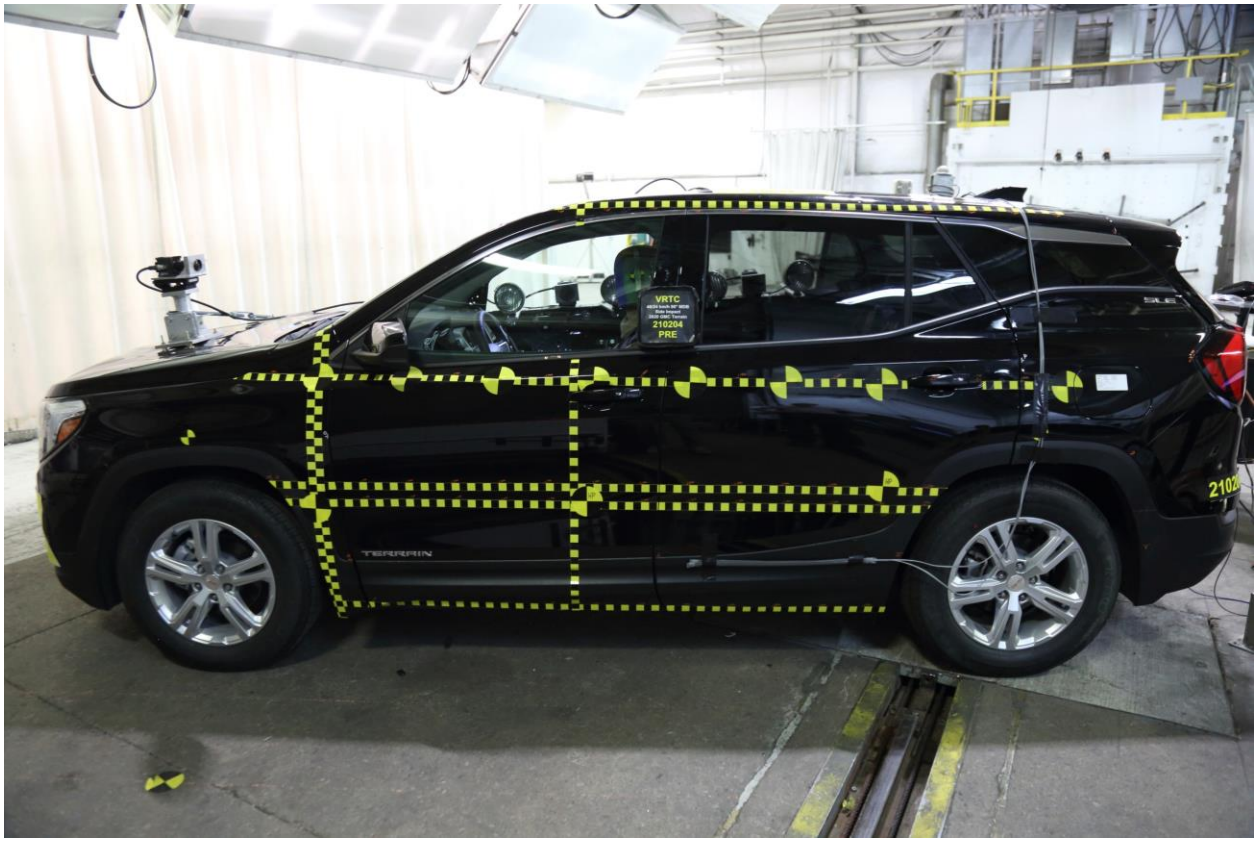
004 Post-Test Frontal View of Test Vehicle



005 Pre-Test Left Front ¾ View of Test Vehicle



006 Post-Test Left Front ¾ View of Test Vehicle



007 Pre-Test Left Side View of Test Vehicle

008 Post-Test Left Side View of Test Vehicle

009 Pre-Test Left Rear ¾ View of Test Vehicle

010 Post-Test Left Rear ¾ View of Test Vehicle

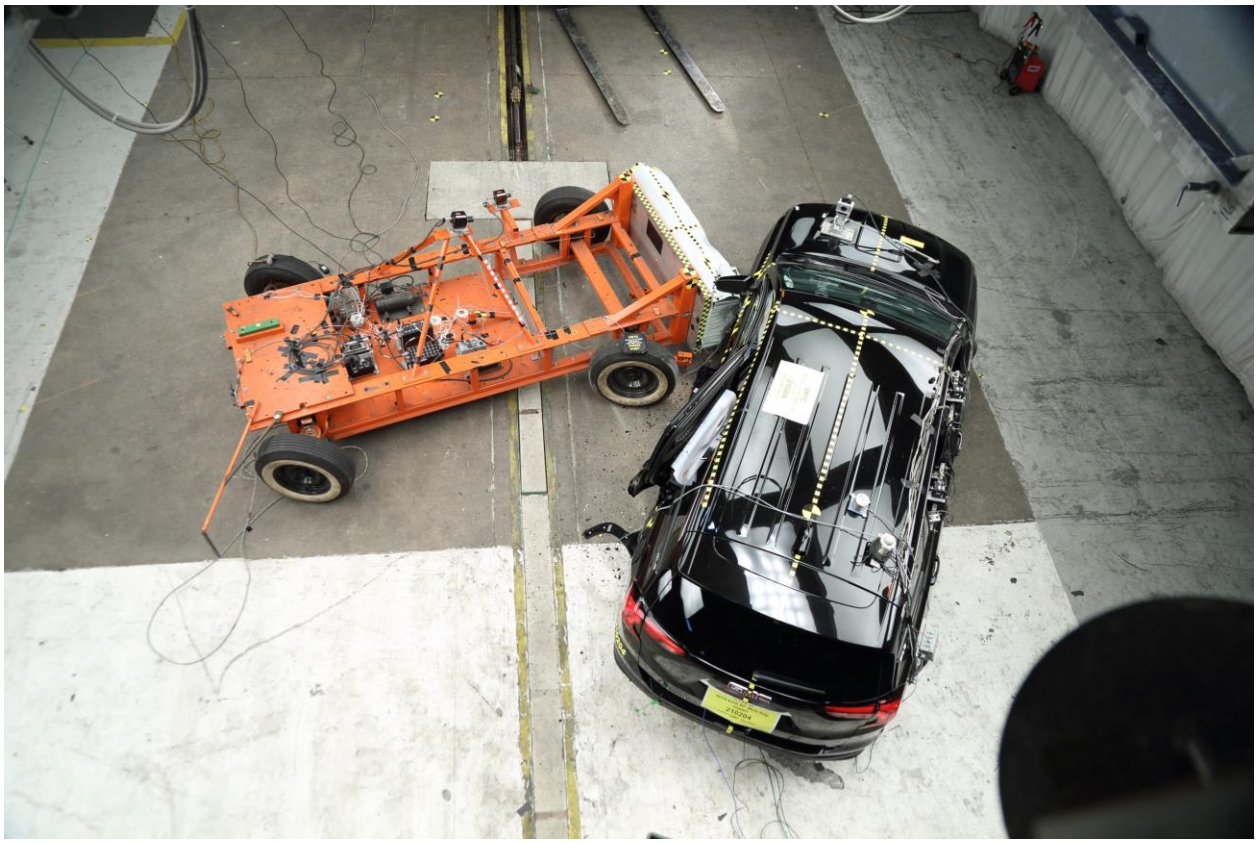
011 Pre-Test Rear View of Test Vehicle

012 Post-Test Rear View of Test Vehicle

013 Pre-Test Right Side View of Test Vehicle

014 Post-Test Right Side View of Test Vehicle

015 Pre-Test Overhead View of Test Area



016 Post-Test Overhead View of Test Area

017 Pre-Test Left Side View of MDB Positioned Against Side of Test Vehicle

018 Pre-Test Right Side View MDB Positioned Against Side of Test Vehicle

019 Pre-Test Close-Up View of Impact Point Target

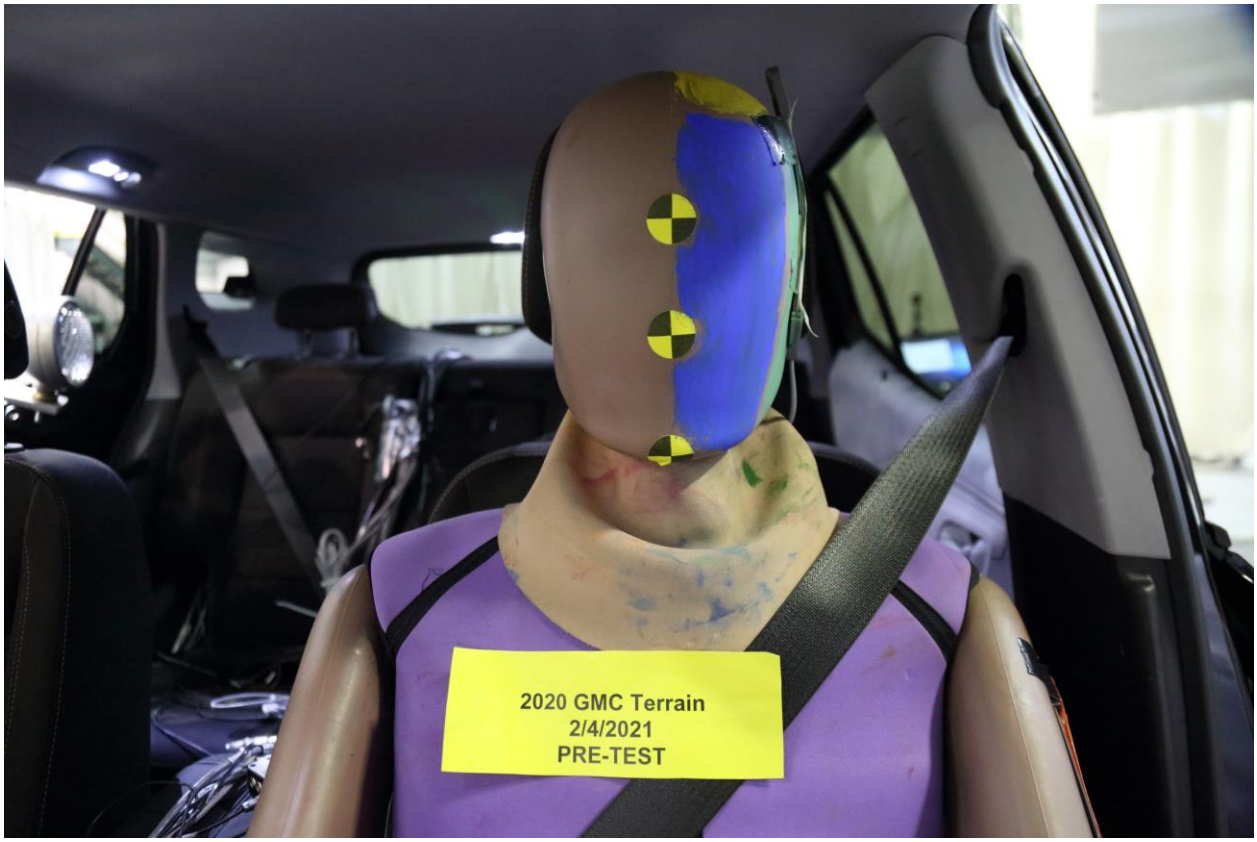
020 Post-Test Close-Up View of Impact Point Target

021 Pre-Test Left Front Door Latch Close-Up

022 Post-Test Left Front Door Latch Close-Up

023 Pre-Test Left Rear Door Latch Close-Up

024 Post-Test Left Rear Door Latch Close-Up



025 Pre-Test Front Close-Up View of Driver Dummy

026 Post-Test Front Close-Up View of Driver Dummy

027 Pre-Test Left Side View of Driver Dummy Showing Belt and Chalking

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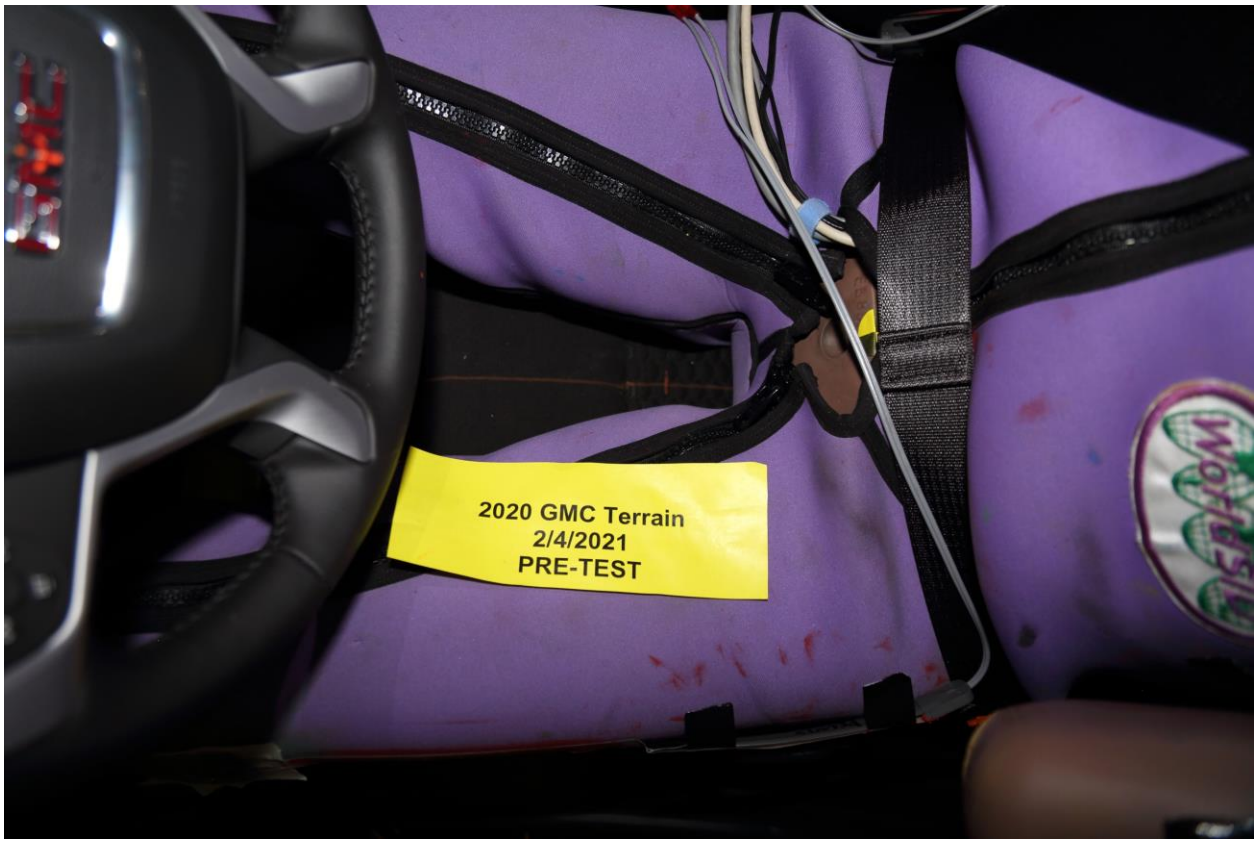
028 Pre-Test Left Side View of Driver Dummy Shoulder and Door Top

029 Post-Test Left Side View of Driver Dummy Shoulder and Door Top

030 Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning

031 Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint

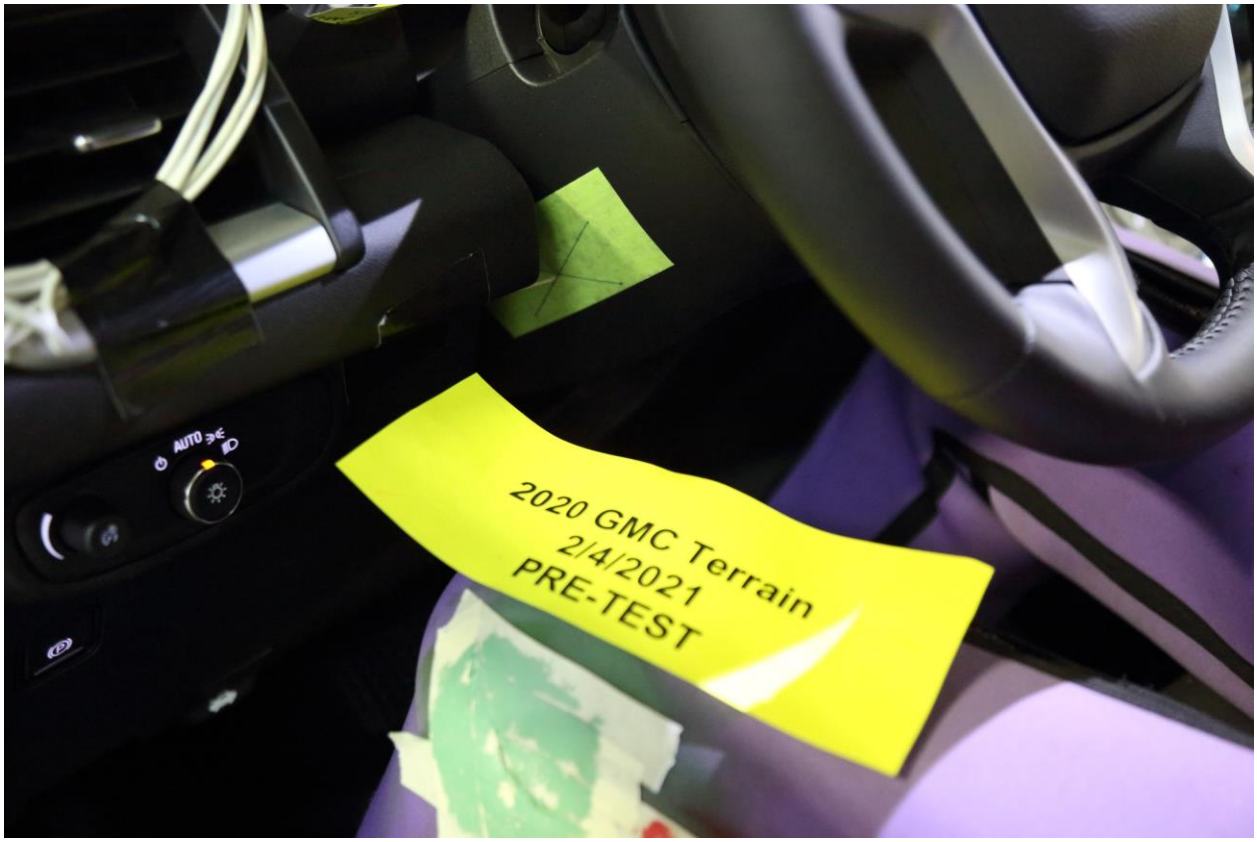
032 Pre-Test Frontal View of Driver Seat Pan Prior to Dummy Positioning



033 Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan

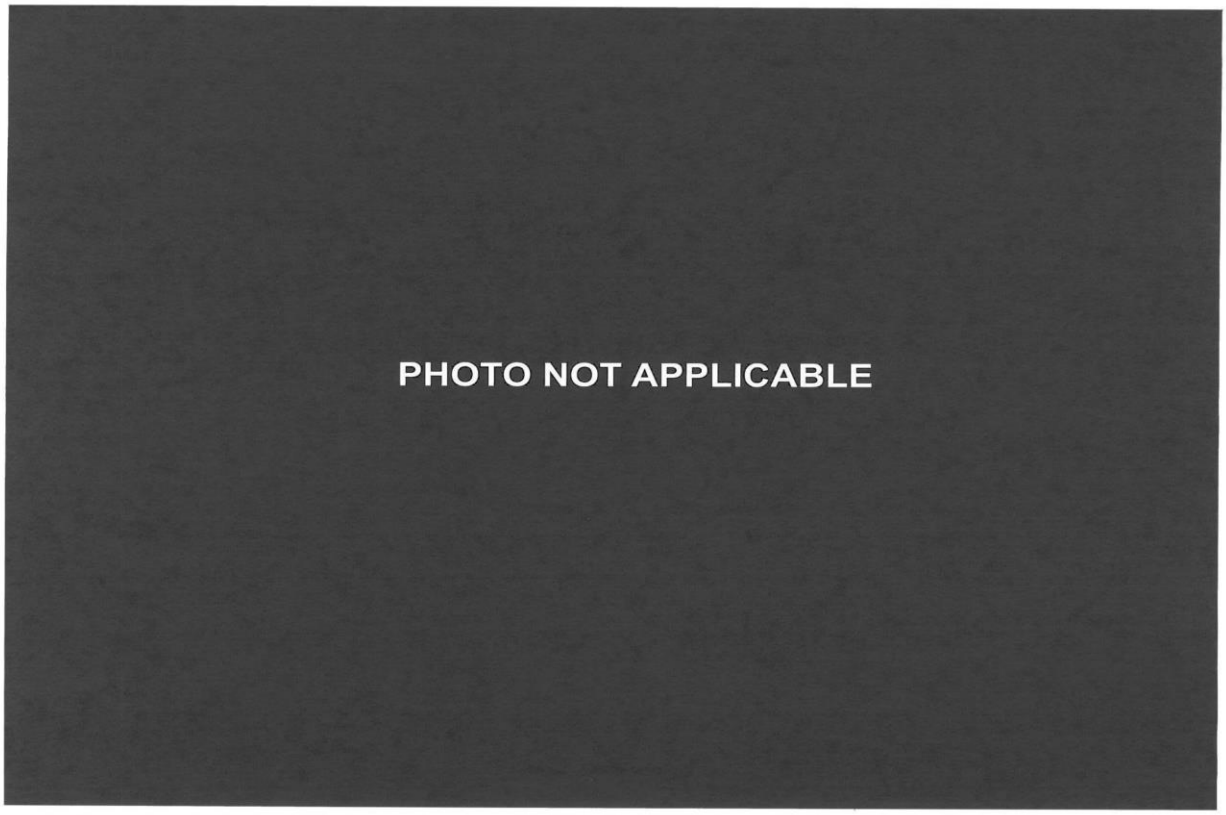
034 Pre-Test Placement of Driver's Dummy Feet

035 Pre-Test View of Belt Anchorage for Driver Dummy



036 Pre-Test Left Side View of Steering Wheel

037 View of Disengaged Parking Brake



038 Pre-Test View of Parking Brake

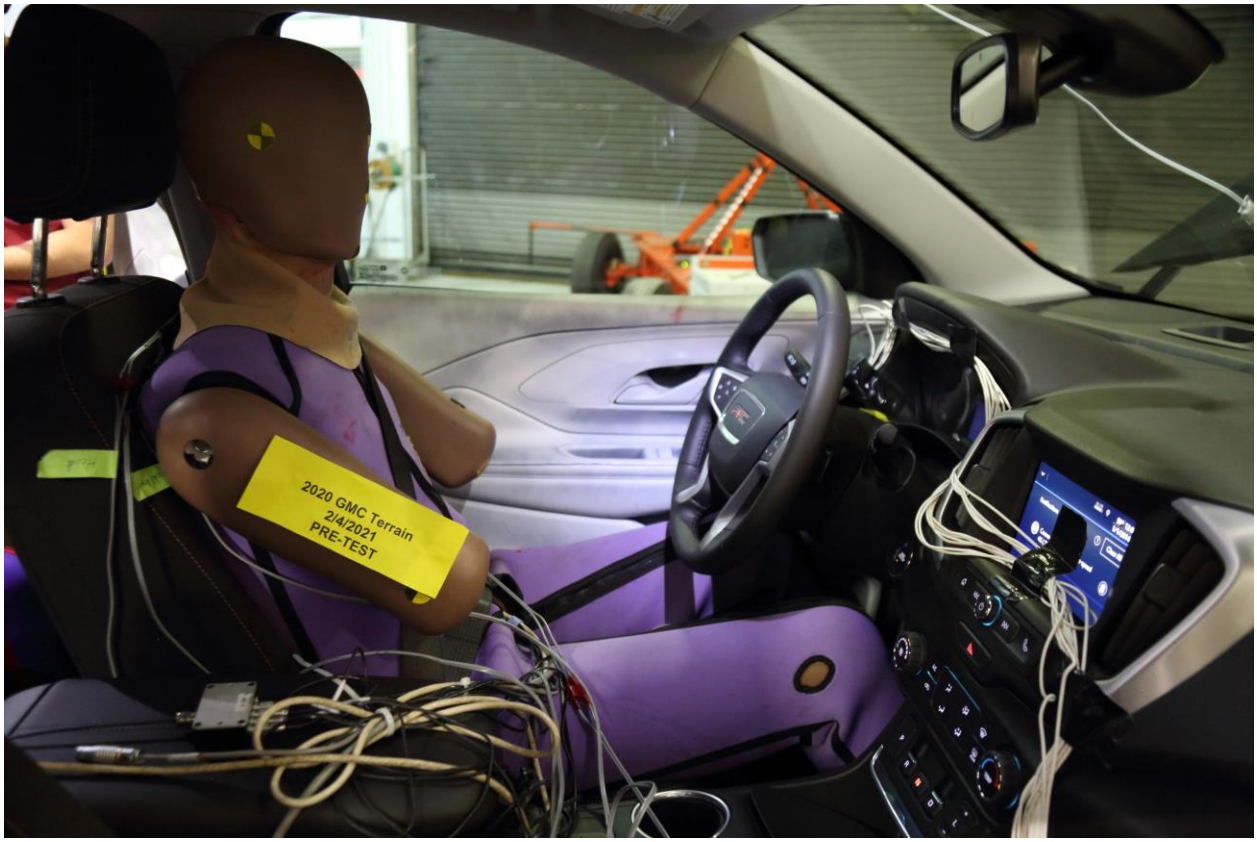
039 Pre-Test Close-Up Left Side View of Driver Seat Track

040 Pre-Test Close-Up Left Side View of Driver Seat Back

041 Pre-Test Close-Up View of Driver Seat Back or Head Restraint

042 Pre-Test Driver Dummy and Door Clearance View

043 Post-Test Driver Dummy and Door Clearance View



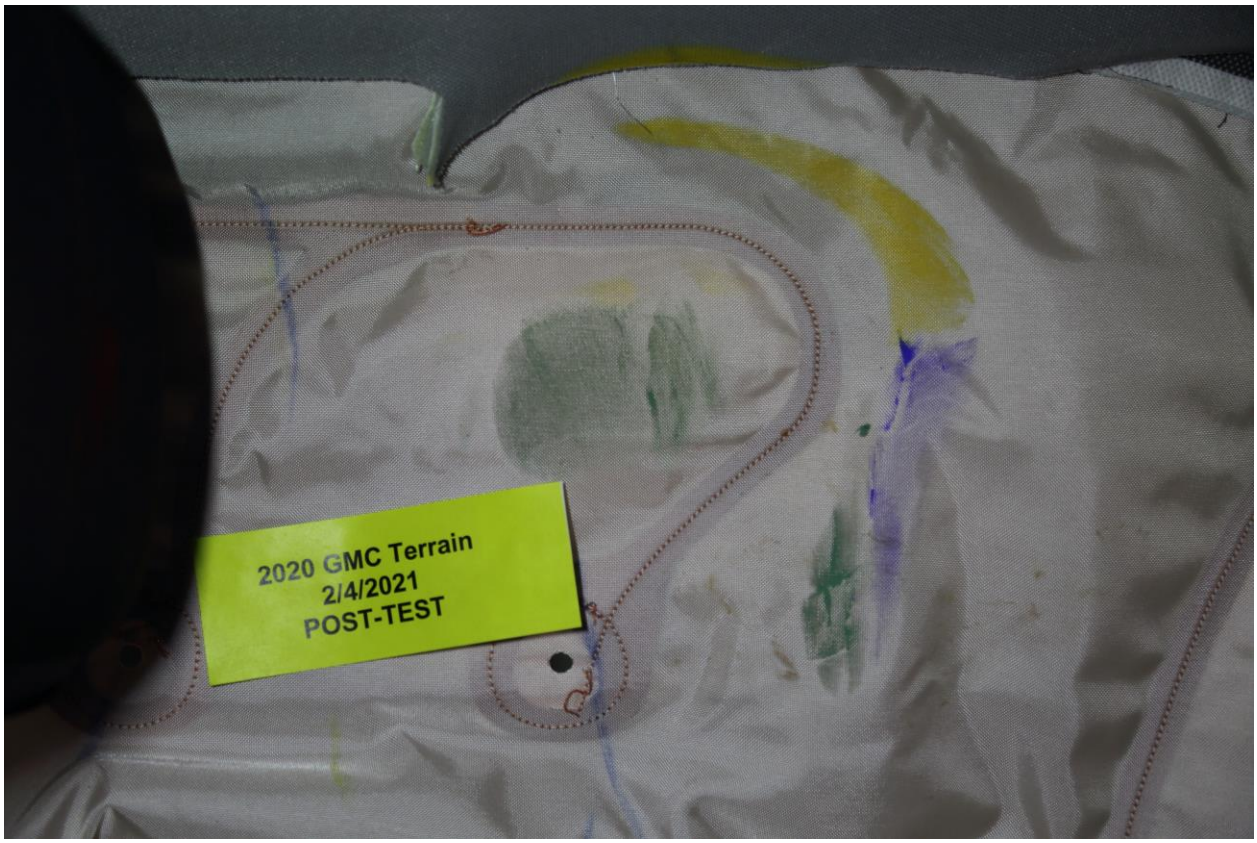
044 Pre-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment

045 Post-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment

046 Pre-Test Driver Inner Door Panel View

047 Post-Test Driver Inner Door Panel View Showing Driver Dummy Contact Locations

048 Post-Test Driver Dummy Close-Up Head Contact with Vehicle View



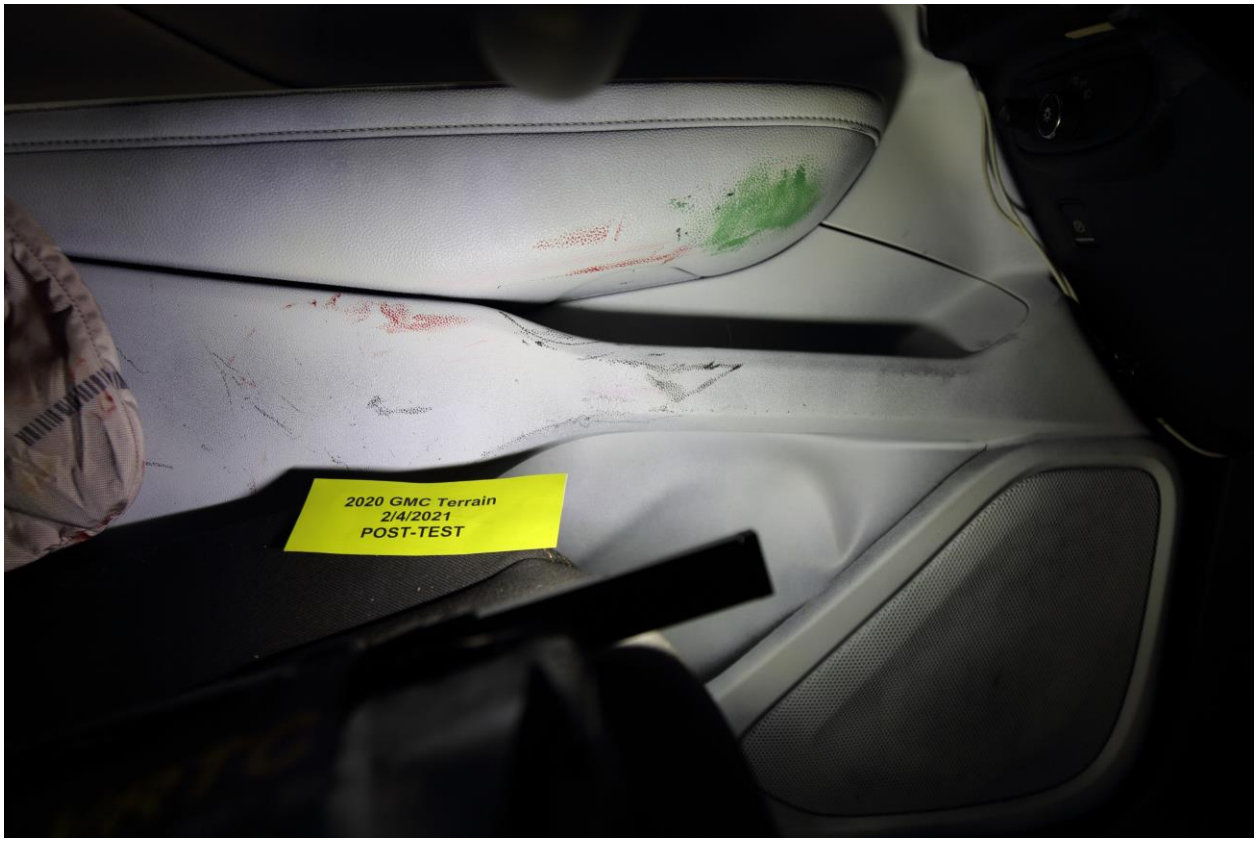
049 Post-Test Driver Dummy Close-Up Head Contact with Side Airbag View

050 Post-Test Driver Dummy Close-Up Torso Contact with Vehicle Interior View

051 Post-Test Driver Dummy Close-Up Torso Contact with Side Airbag View

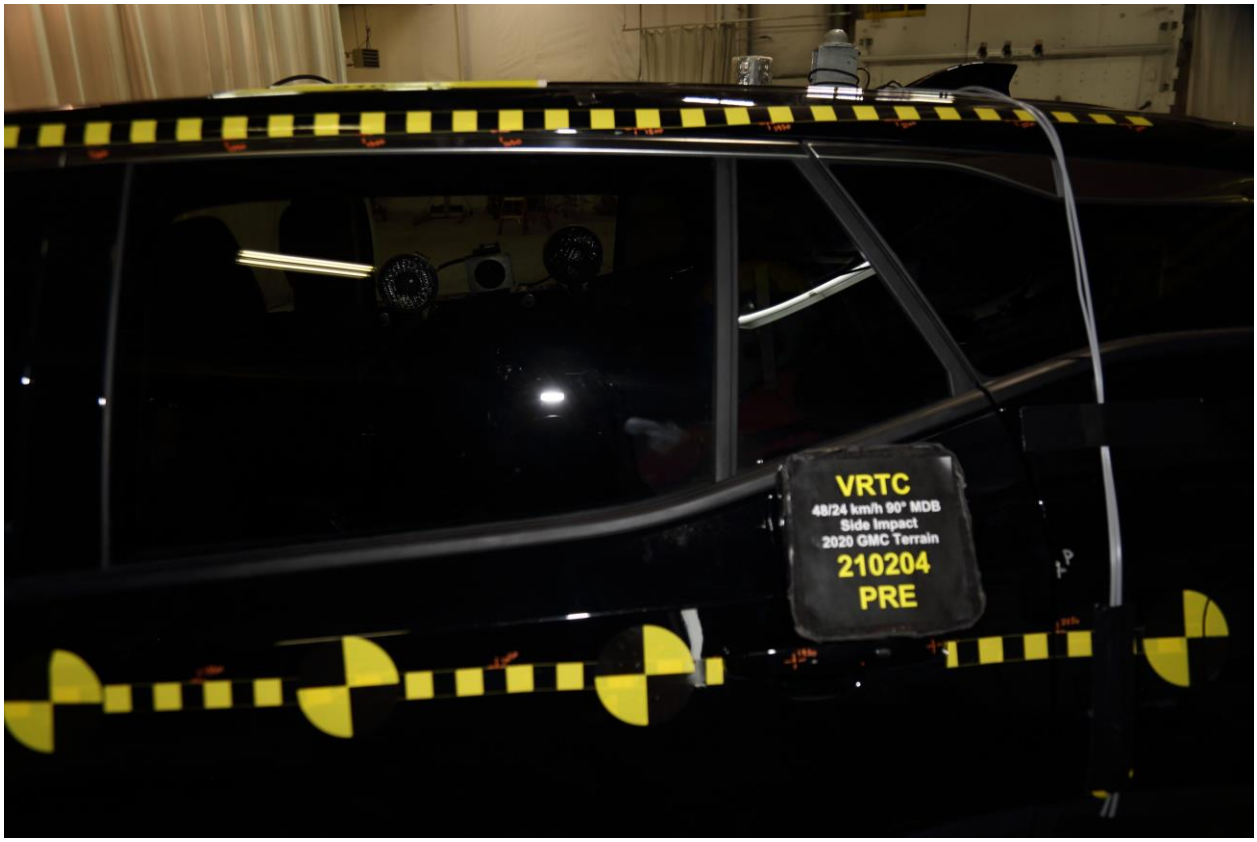
052 Post-Test Driver Dummy Close-Up Pelvis Contact View

053 Post-Test Driver Dummy Close-Up Pelvis Contact with Side Airbag View



054 Post-Test Driver Dummy Close-Up Knee Contact View

055 Pre-Test Left Side View of Passenger Dummy Showing Belt and Chalking

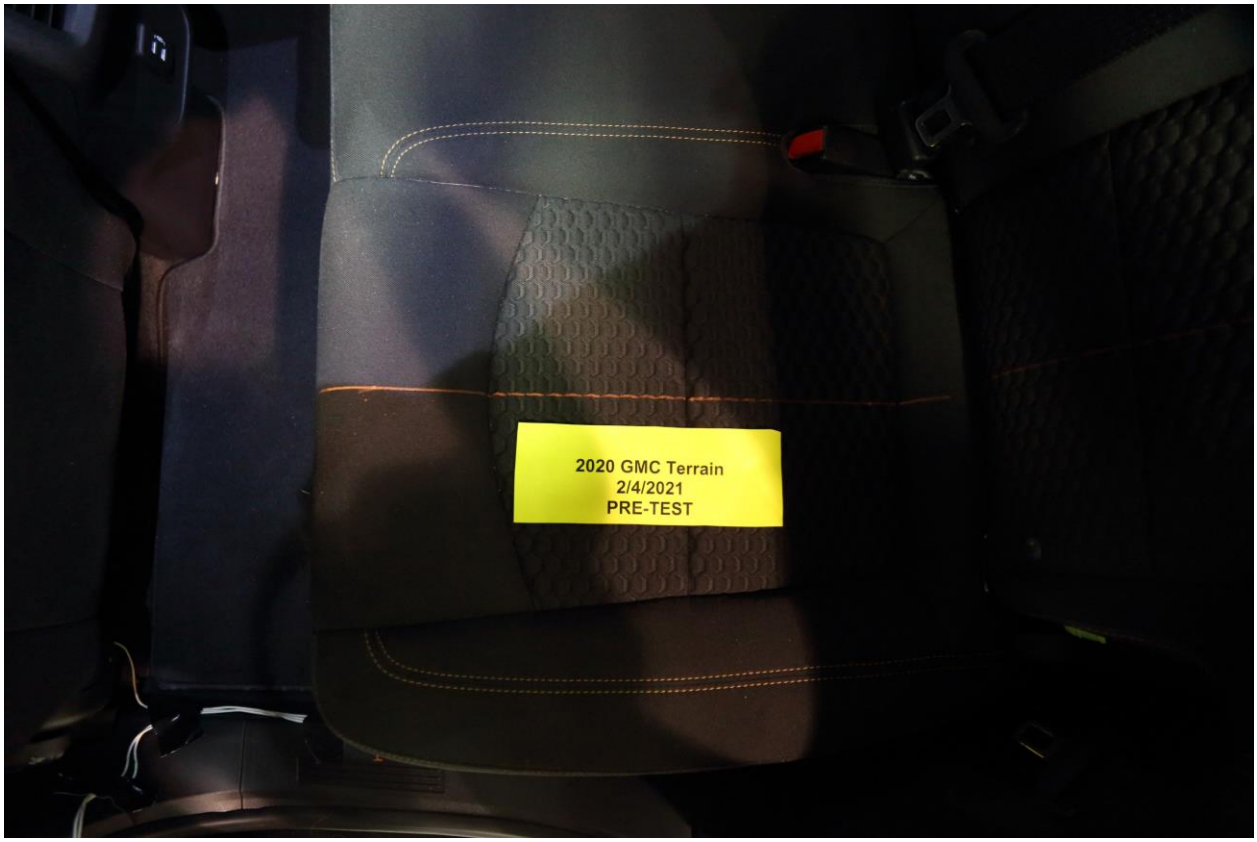


056 Pre-Test Left Side View of Passenger Dummy Shoulder and Door Top View

057 Post-Test Left Side View of Passenger Dummy Shoulder and Door Top View

058 Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning

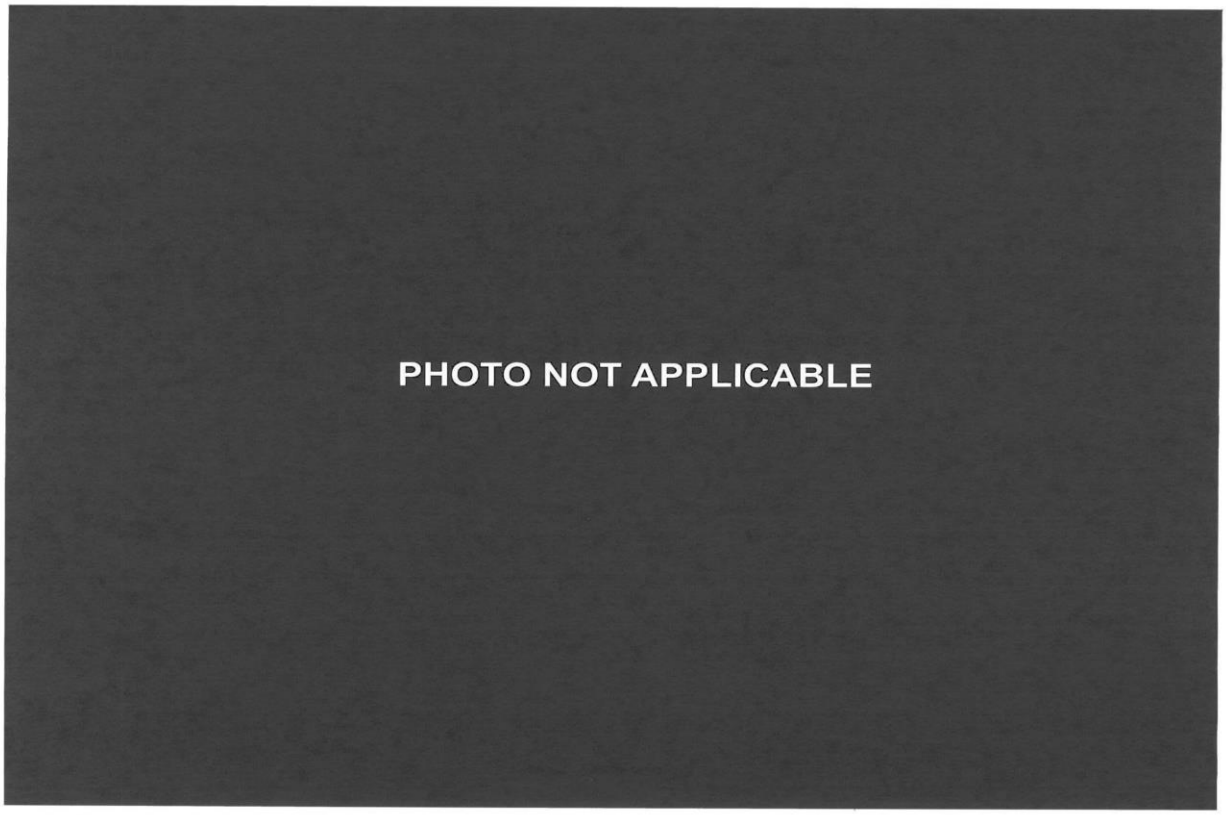
059 Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint



060 Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning

061 Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan

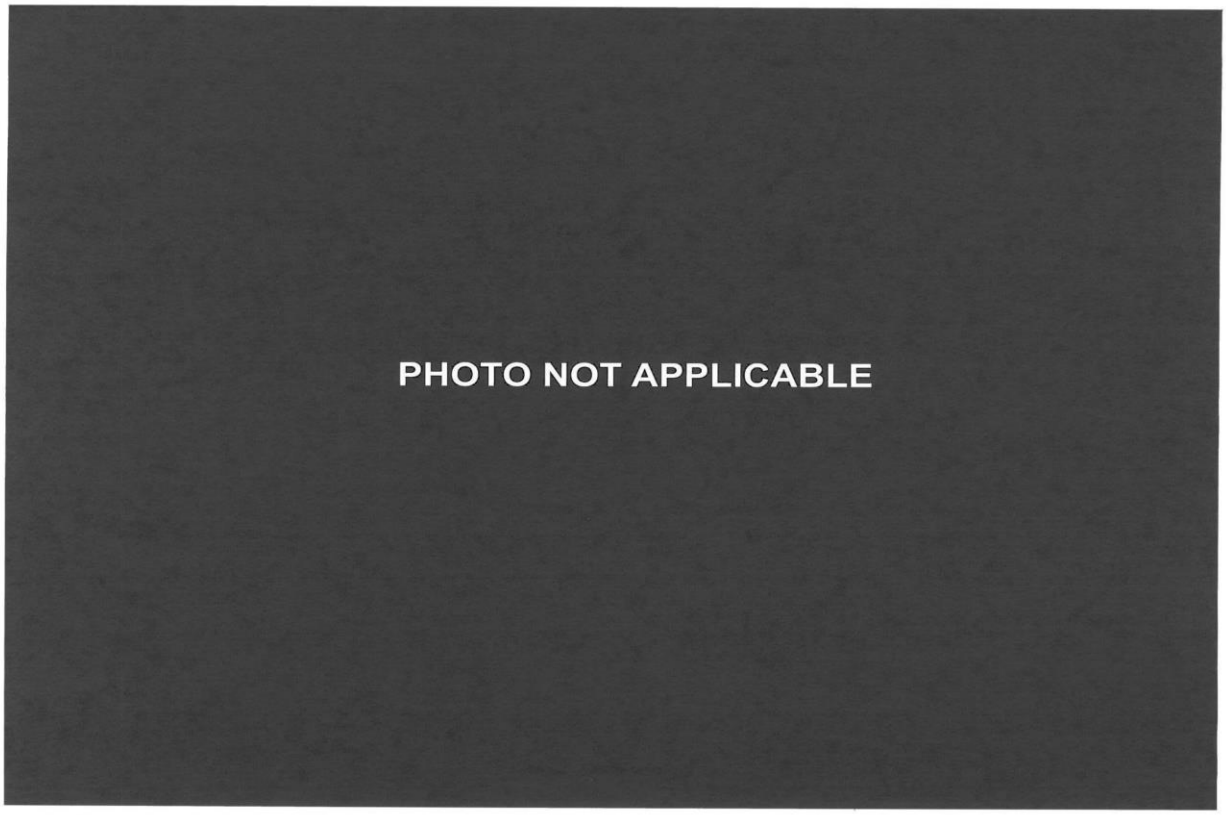
062 Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck Bracket



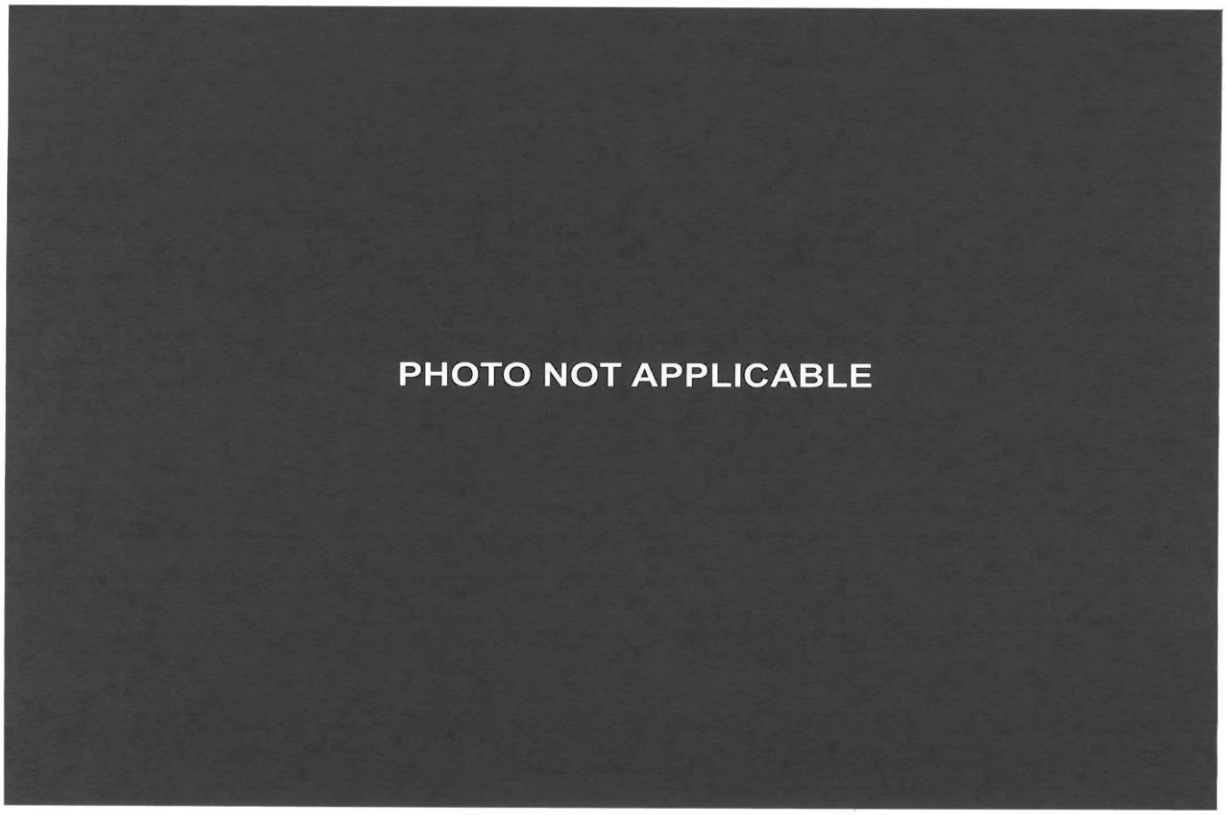
063 Pre-Test View of Rear Passenger Dummy's Head Showing Dummy Head is Level

064 Pre-Test Placement of Rear Passenger Dummy's Feet

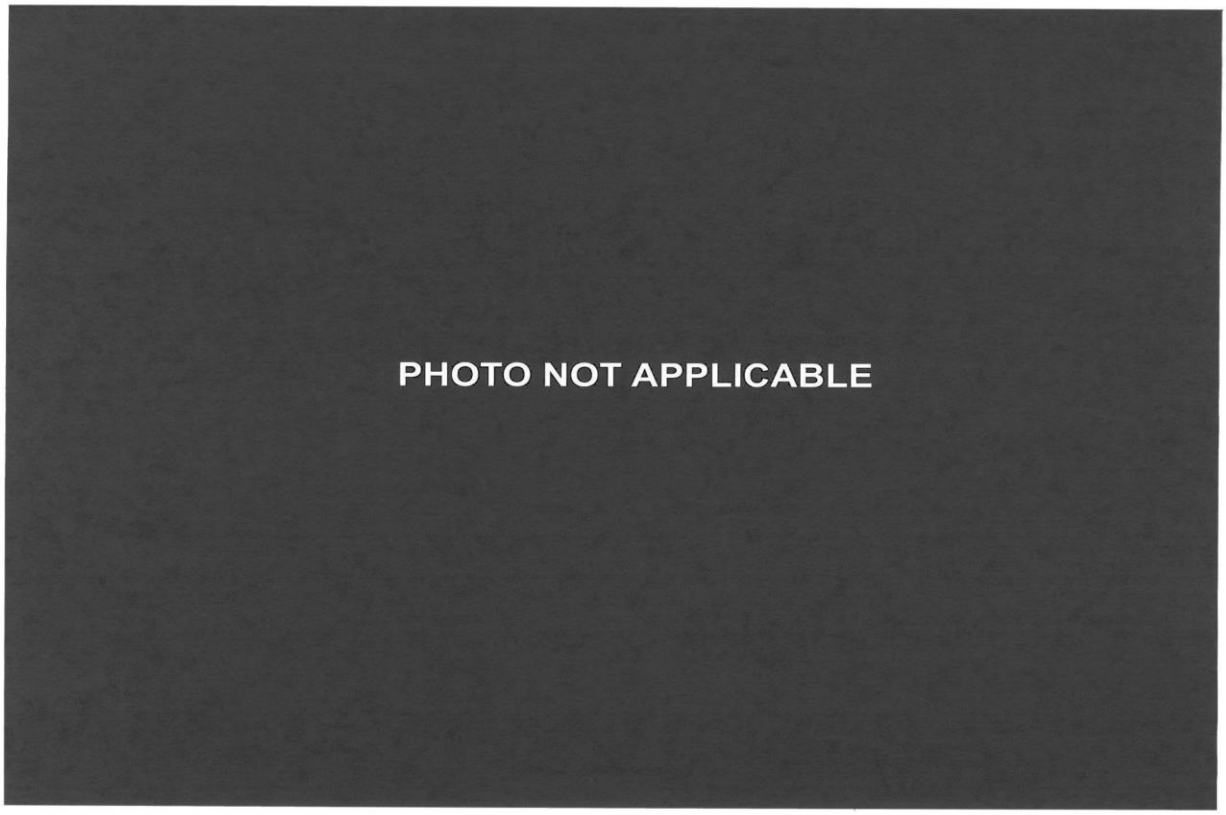
065 Pre-Test View of Belt Anchorage for Rear Passenger Dummy



066 Pre-Test Close-Up Left Side View of Rear Passenger Seat Track



067 Pre-test Close-Up Left Side View of Rear Passenger Seat Back



068 Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint

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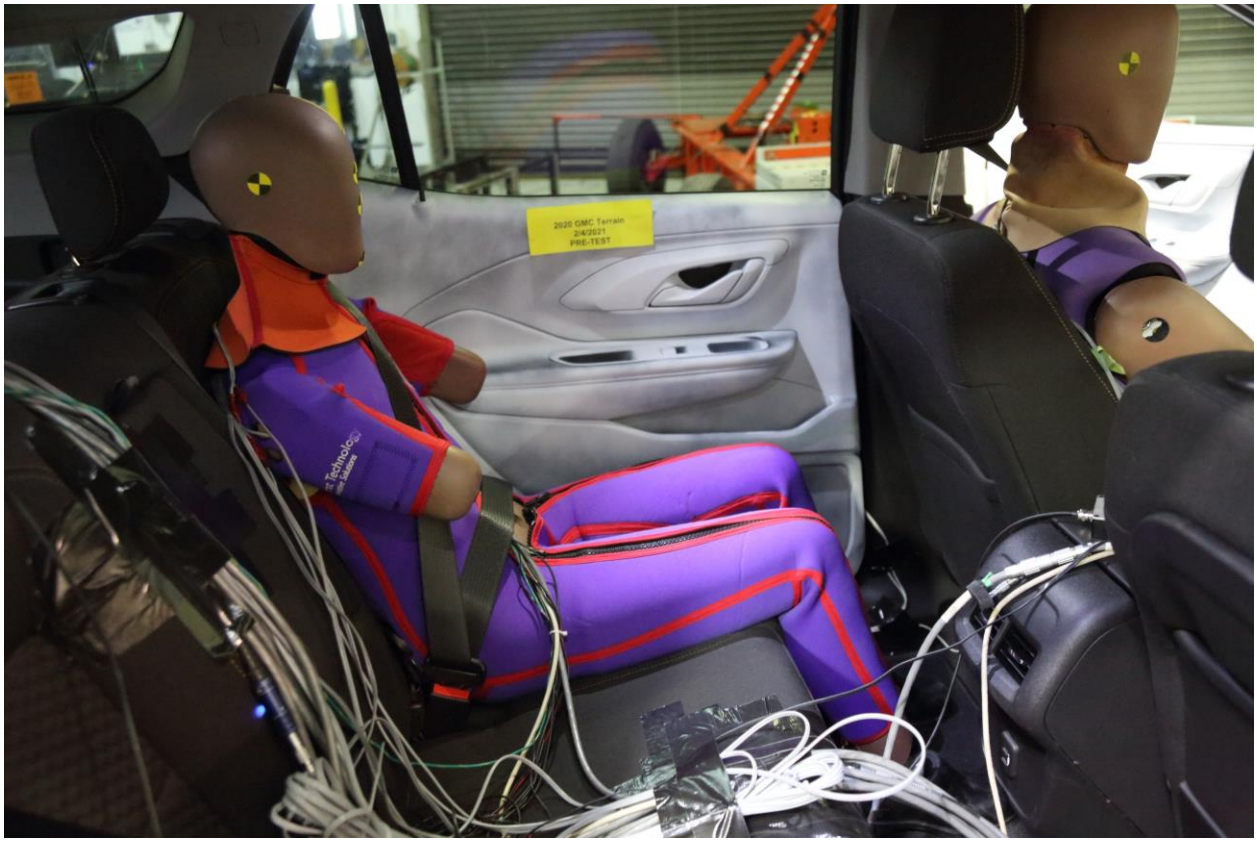
069 Pre-Test Rear Passenger Dummy and Door Clearance View

070 Post-Test Rear Passenger Dummy and Door Clearance View

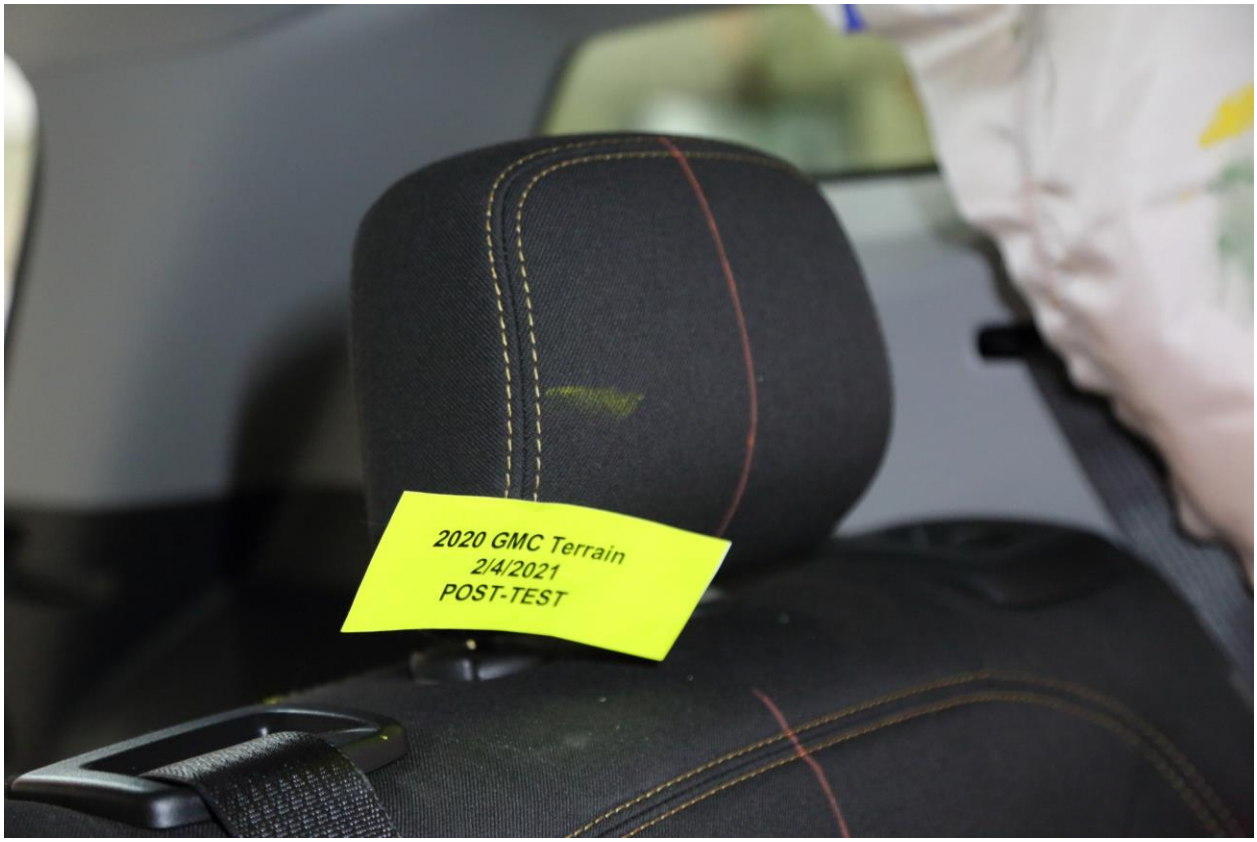


071 Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment

072 Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment

073 Pre-Test Rear Passenger Inner Door Panel View

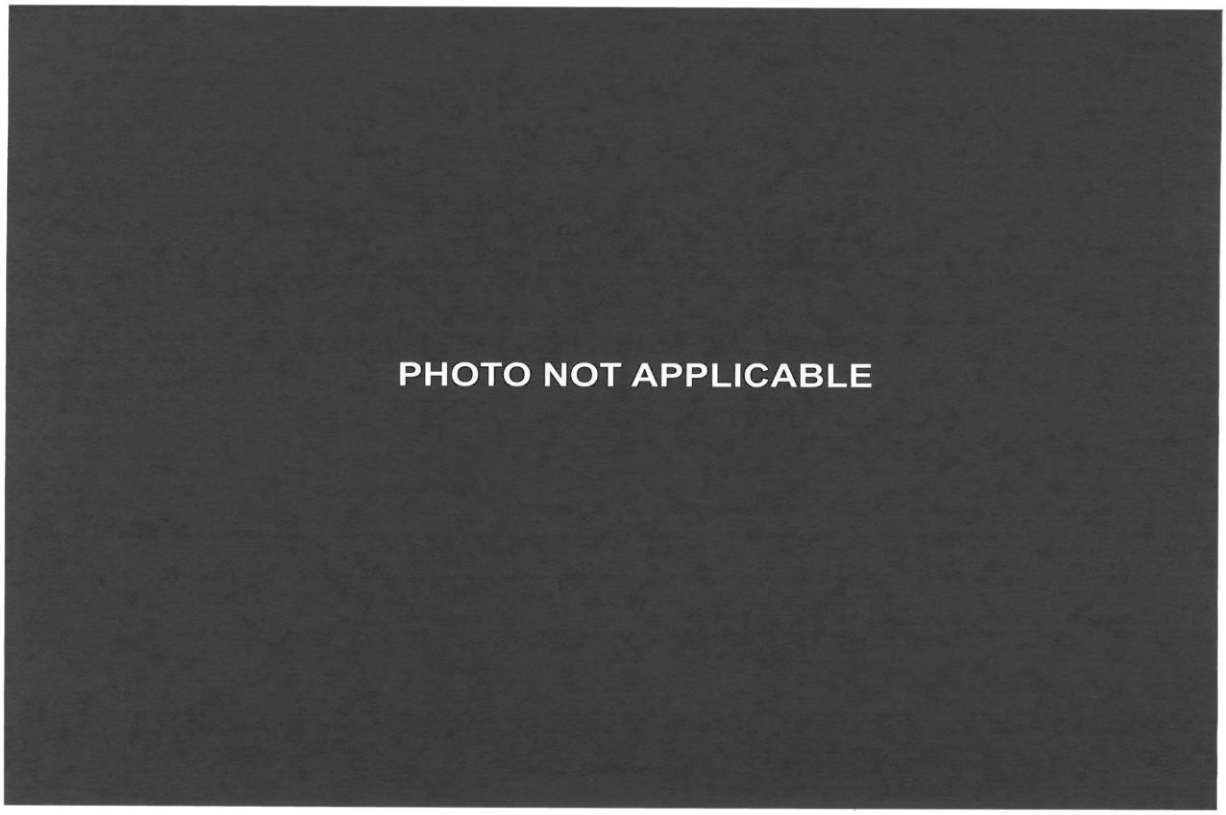
074 Post-Test Rear Passenger Inner Door Panel View



075 Post-Test Rear Passenger Dummy Close-Up Head Contact with Vehicle View

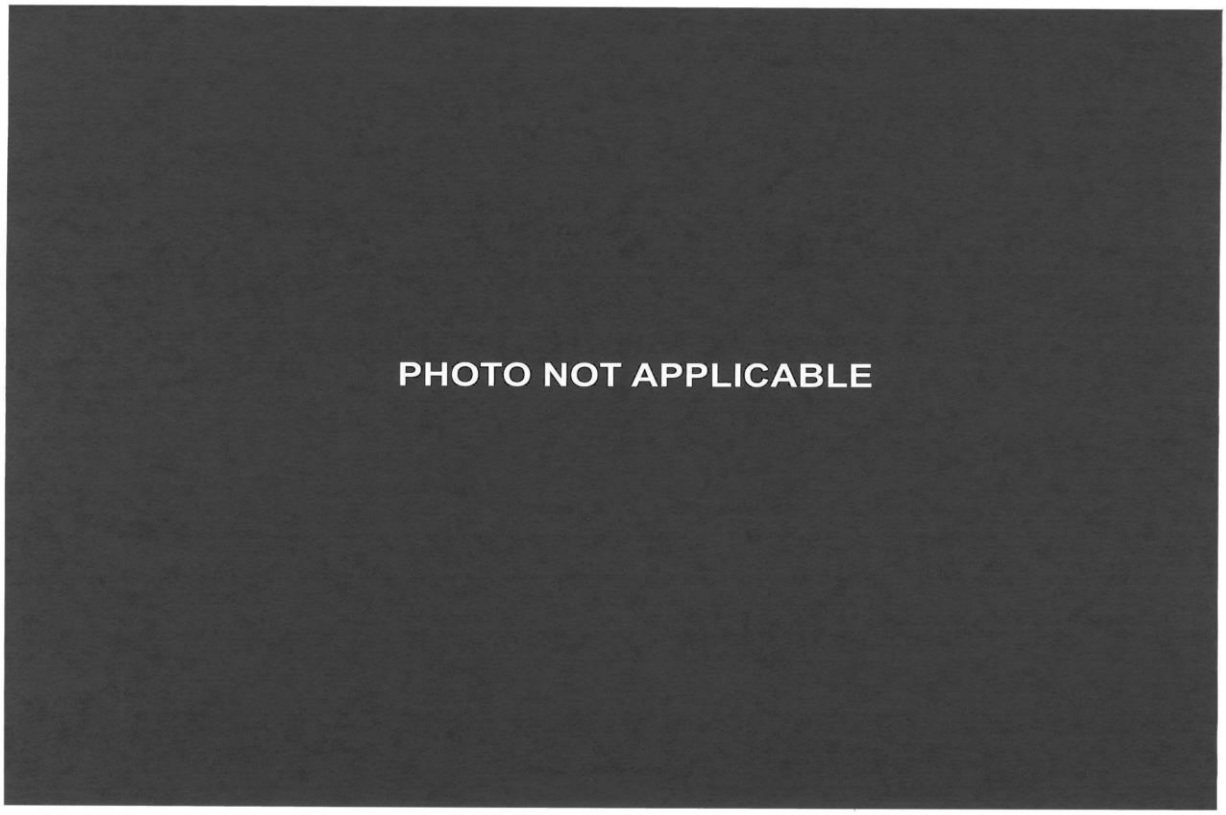
076 Post-Test Rear Passenger Dummy Close-Up Head Contact with Side Airbag View

077 Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle Interior View

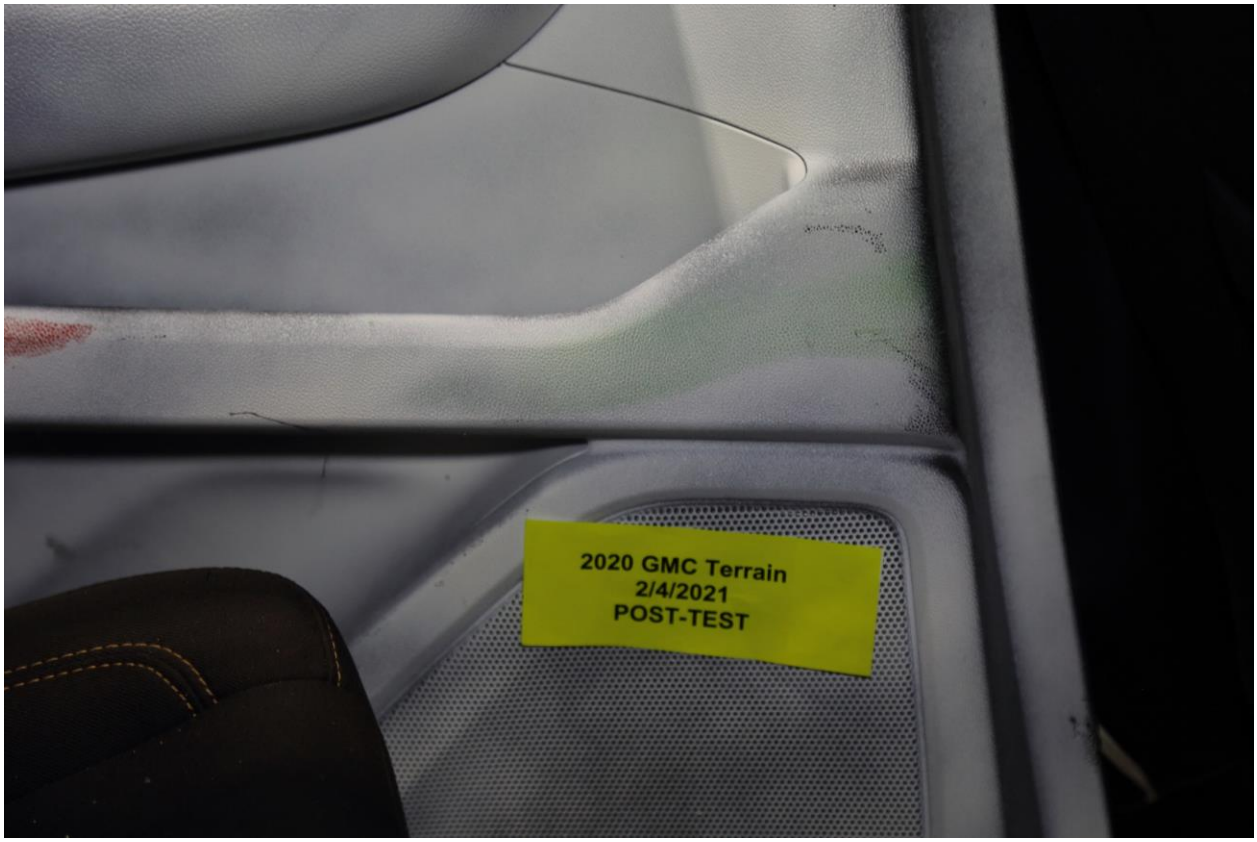


078 Post-Test Rear Passenger Dummy Close-Up Torso Contact with Side Airbag View

079 Post-Test Rear Passenger Dummy Close-Up Pelvis Contact View



080 Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Side Airbag View



081 Post-Test Rear Passenger Dummy Close-Up Knee Contact View

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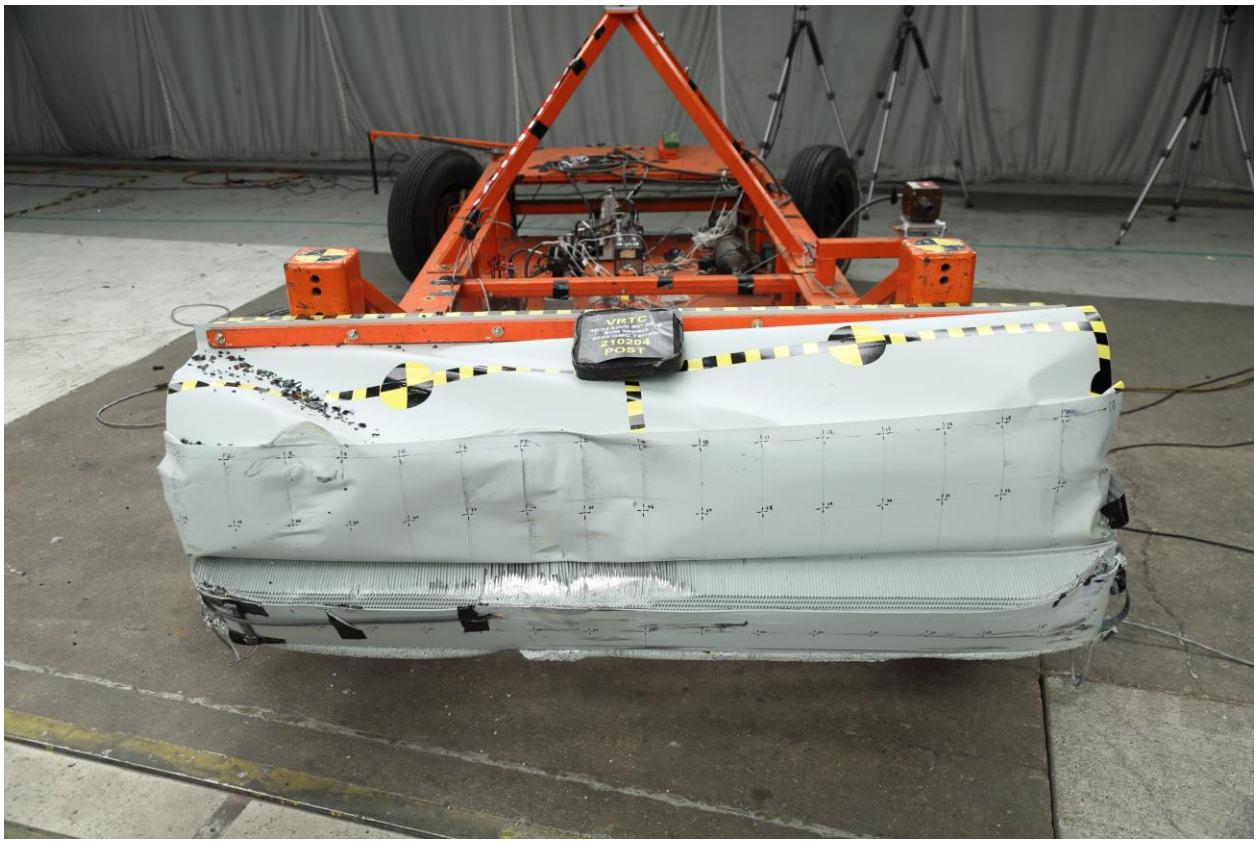
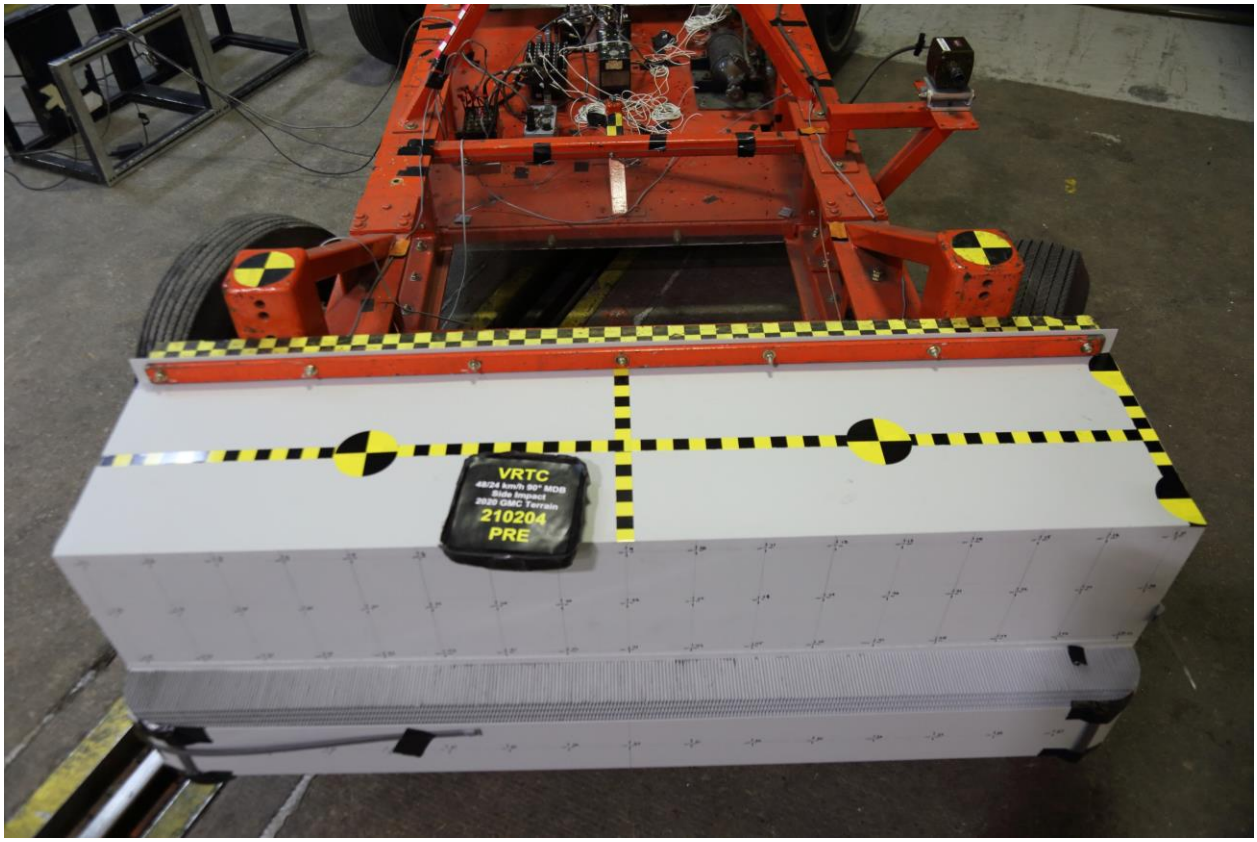
082 Pre-Test View of Fuel Filler Cap or Fuel Filler Neck

083 Post-Test View of Fuel Filler Cap or Fuel Filler Neck

084 Pre-Test Front View of MDB Impactor Face

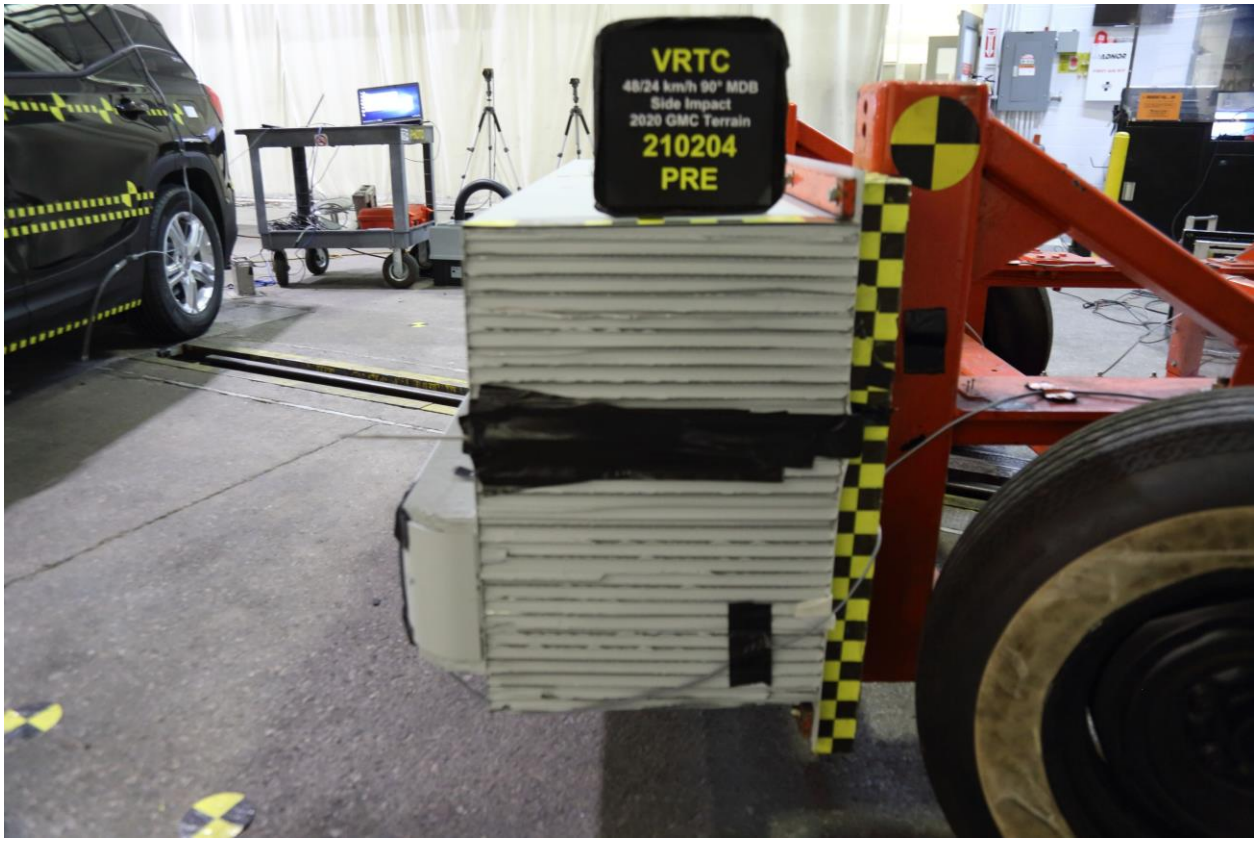


085 Post-Test Front View of MDB Impactor Face



086 Pre-Test Top View of MDB Impactor Face

087 Post-Test Top View of MDB Impactor Face



088 Pre-Test Left Side View of MDB Impactor Face

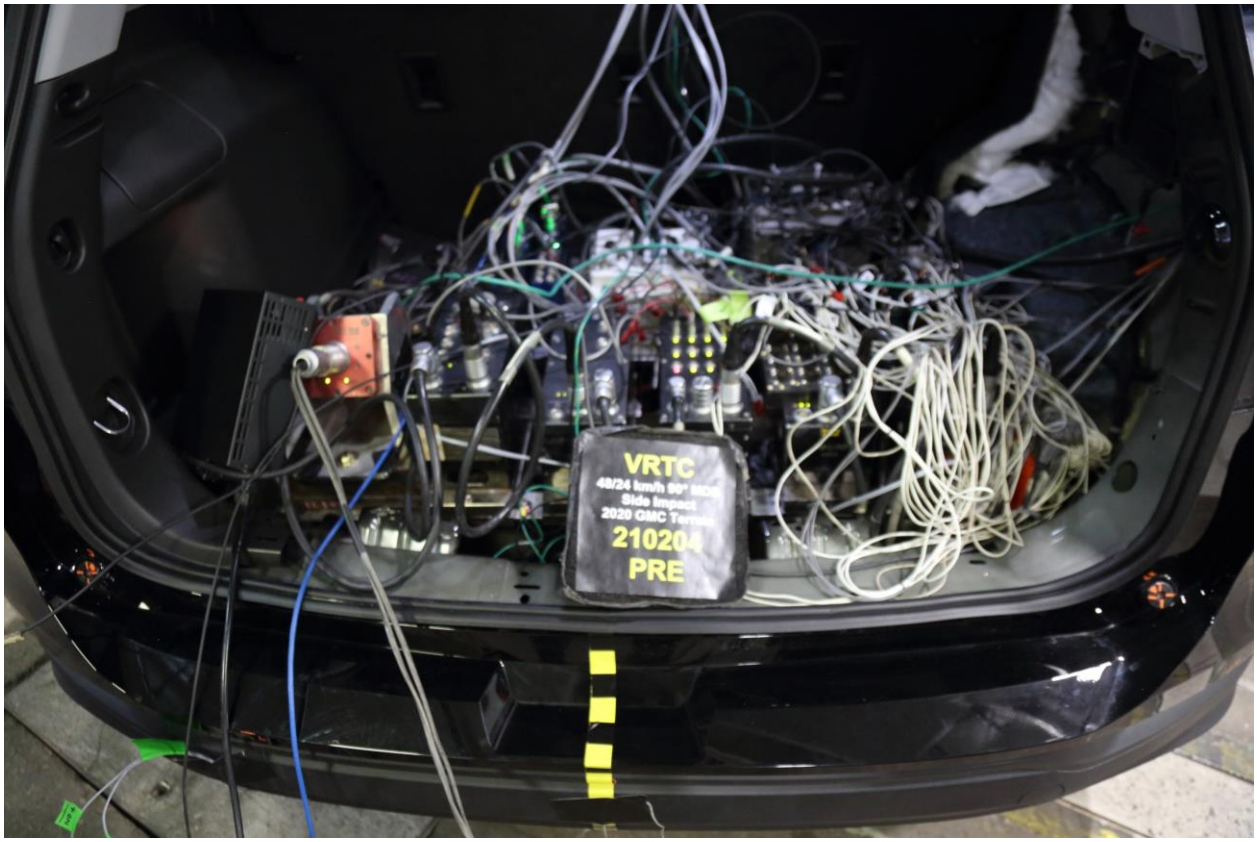
089 Post-Test Left Side View of MDB Impactor Face

090 Pre-Test Right Side View of MDB Impactor Face

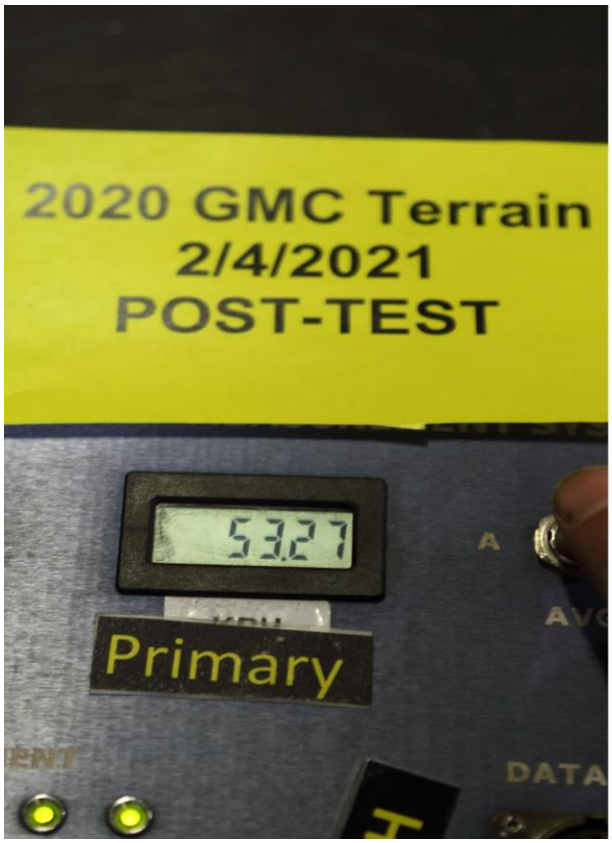
091 Post-Test Right Side View of MDB Impactor Face

092 Close-Up View of Vehicle's Certification Label

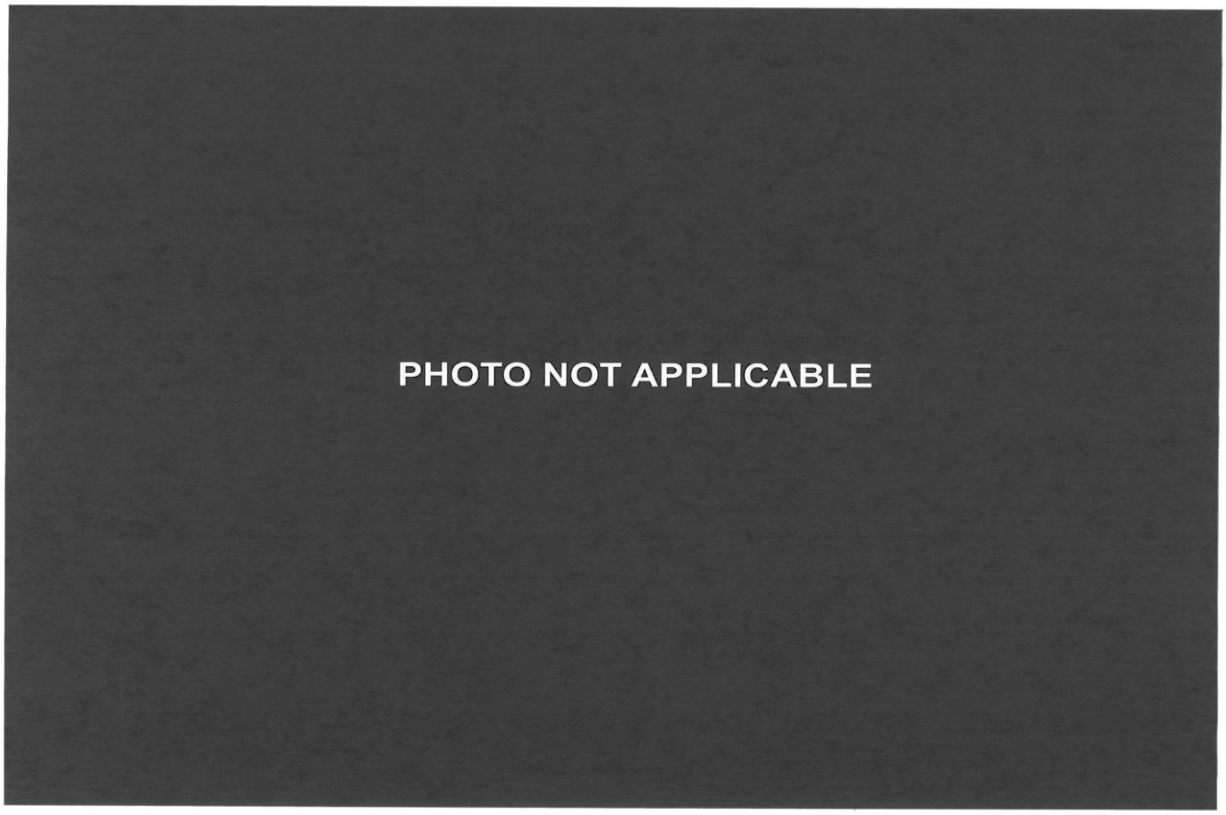
093 Close-Up View of Vehicle's Tire Information Placard or Label



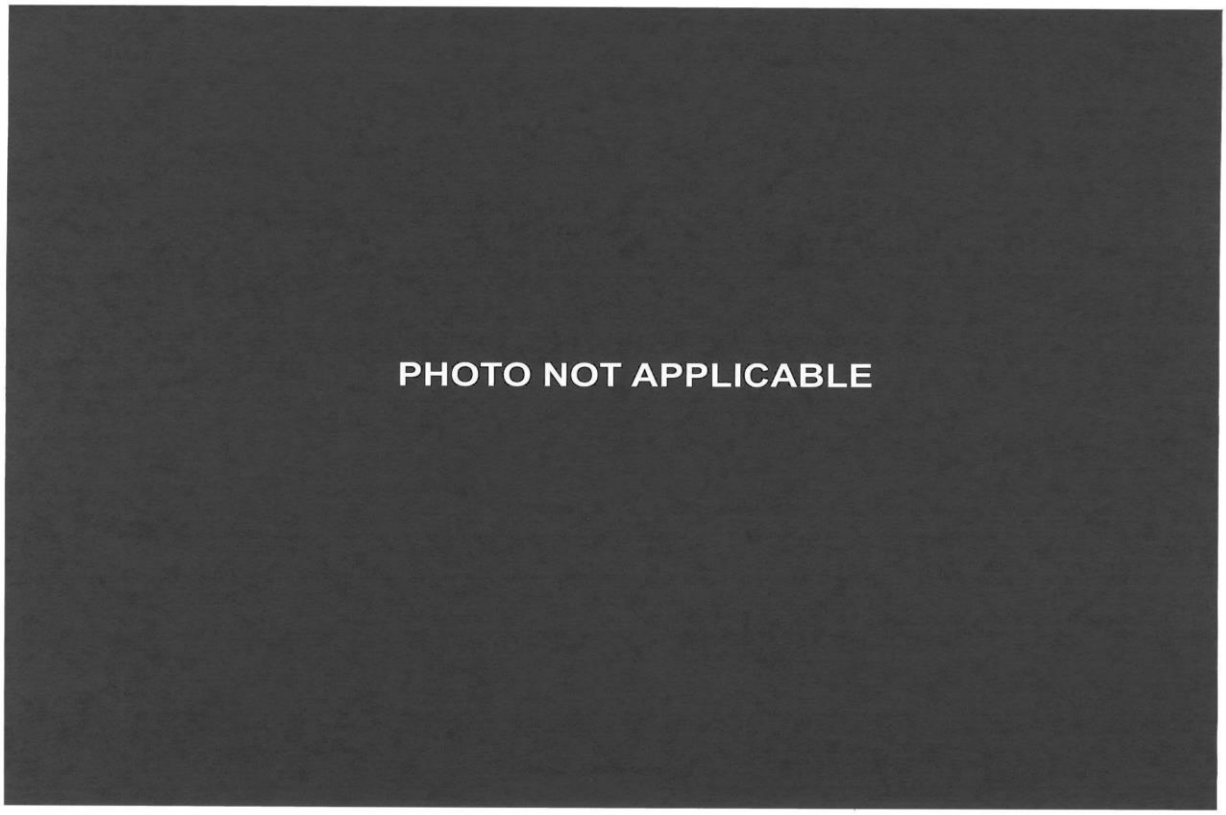
094 Pre-Test Ballast View



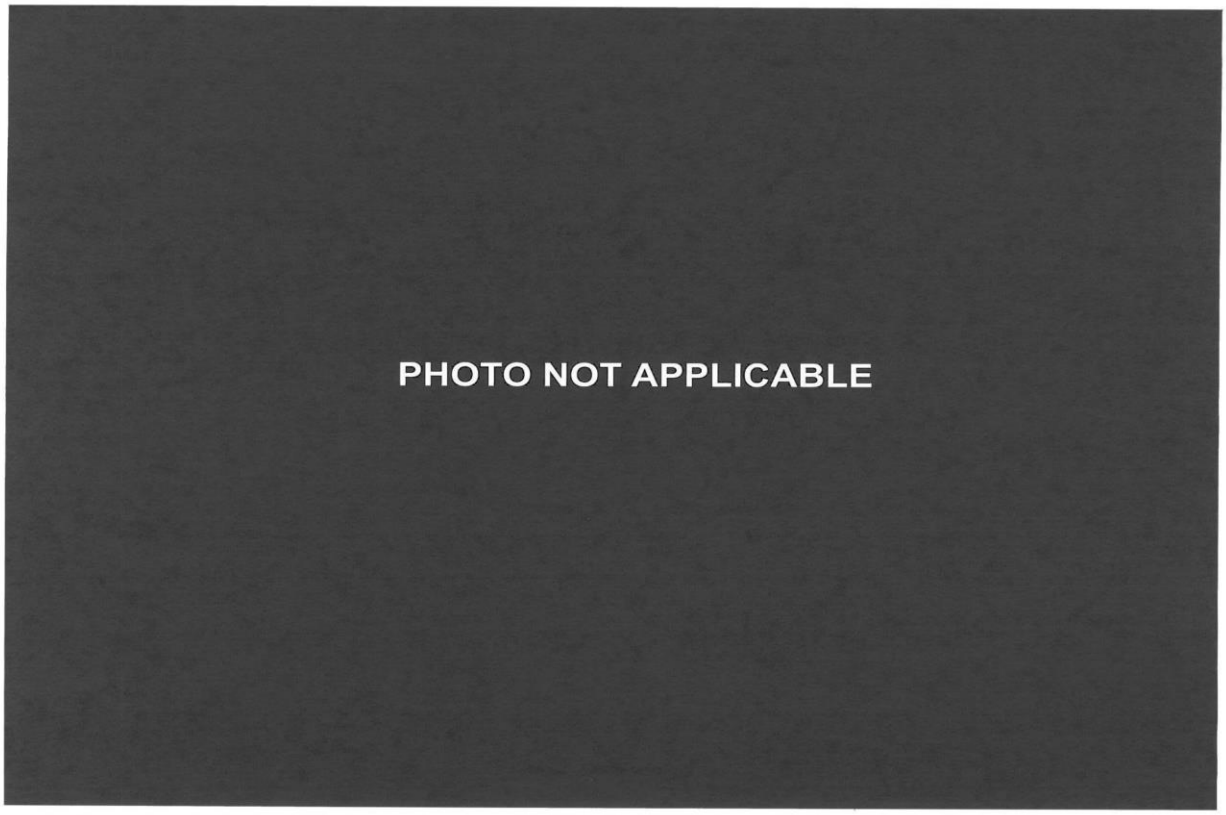
095 No. Post-Test Primary and Redundant Speed Trap Read-Out



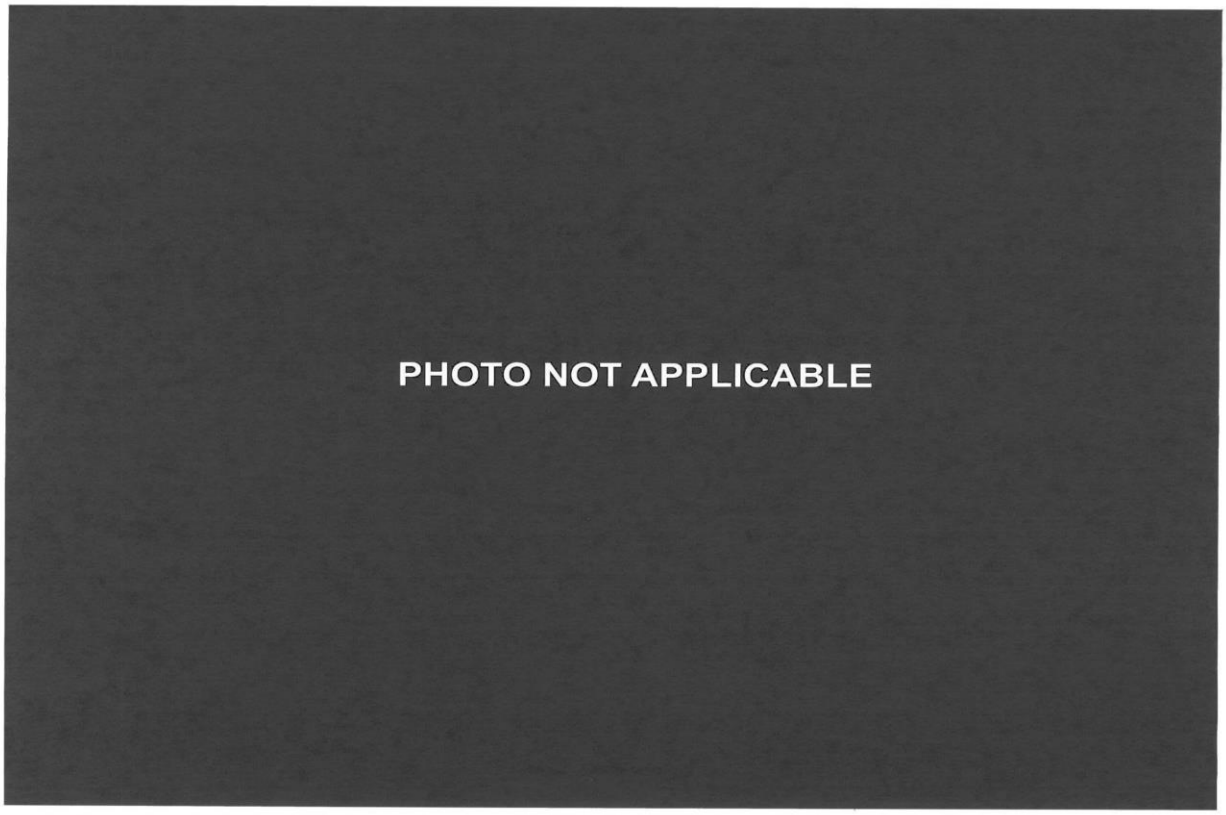
096 FMVSS No. 301 Static Rollover 0 Degrees



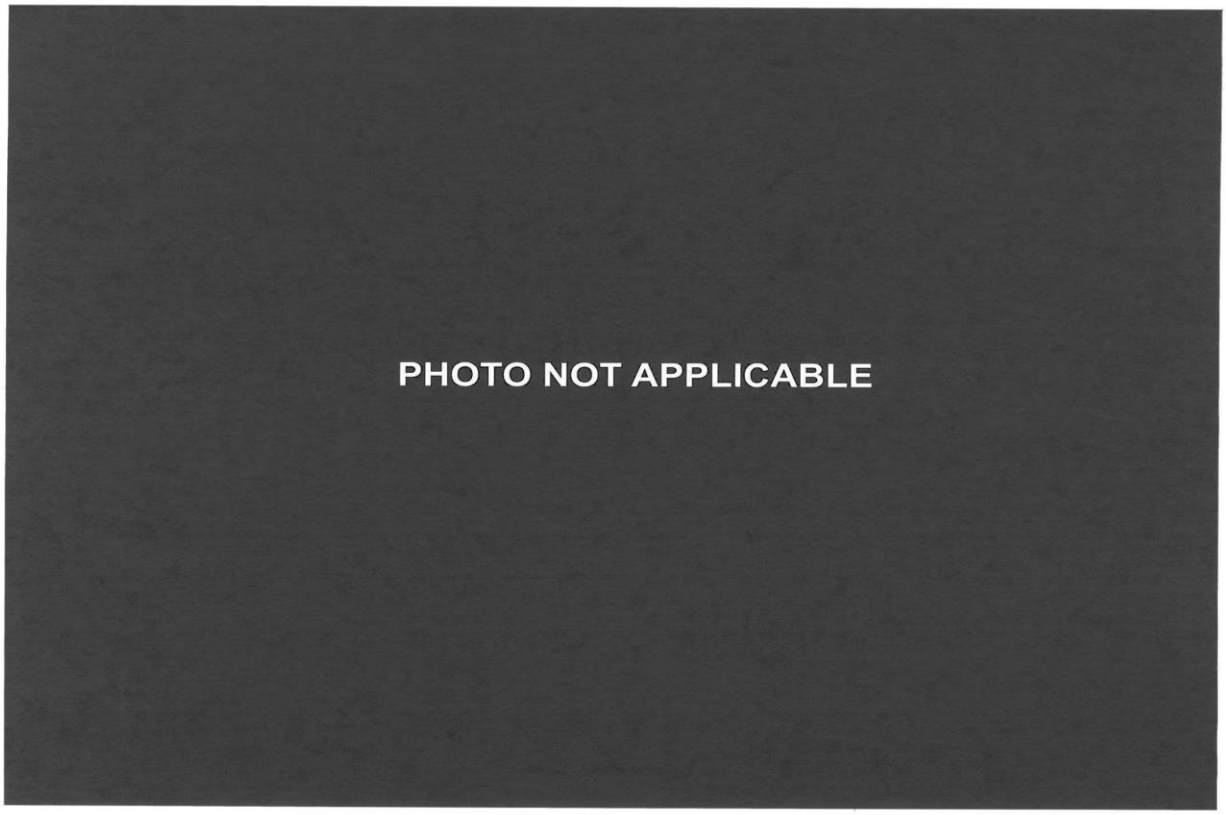
097 FMVSS No. 301 Static Rollover 90 Degrees



098 FMVSS No. 301 Static Rollover 180 Degrees

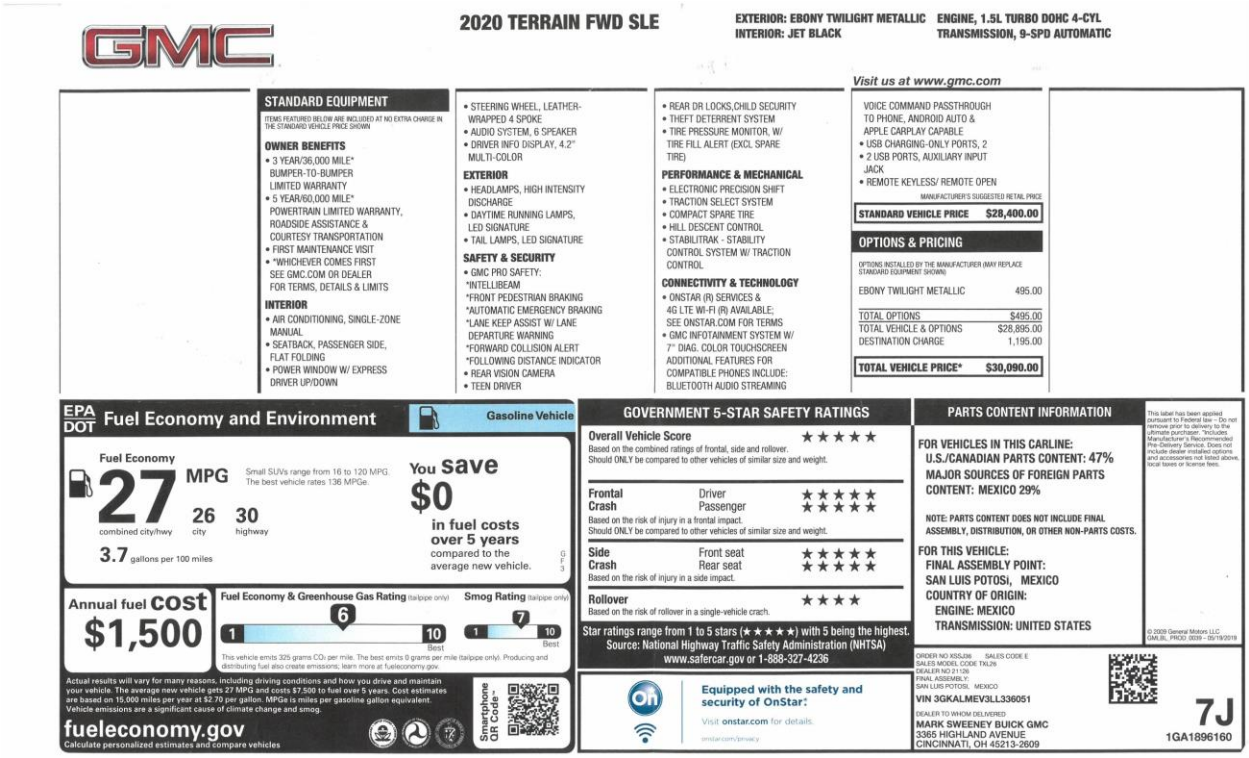


099 FMVSS No. 301 Static Rollover 270 Degrees



100 FMVSS No. 301 Static Rollover 360 Degrees

101 Impact Event



GMC

2020 TERRAIN FWD SLE

EXTERIOR: EBONY TWILIGHT METALLIC
INTERIOR: JET BLACK

ENGINE, 1.5L TURBO DOHC 4-CYL
TRANSMISSION, 9-SPD AUTOMATIC

Visit us at www.gmc.com

STANDARD EQUIPMENT

ITEMS FEATURED BELOW ARE INCLUDED AT NO EXTRA CHARGE IN THE STANDARD VEHICLE PRICE SHOWN

OWNER BENEFITS
- 3 YEAR/36,000 MILE* BUMPER-TO-BUMPER LIMITED WARRANTY
- 5 YEAR/60,000 MILE* POWERTRAIN LIMITED WARRANTY, ROADSIDE ASSISTANCE & COURTESY TRANSPORTATION
- FIRST MAINTENANCE VISIT
- *WHICHEVER COMES FIRST SEE GMC.COM OR DEALER FOR TERMS, DETAILS & LIMITS

INTERIOR
- AIR CONDITIONING, SINGLE-ZONE MANUAL
- SEATBACK, PASSENGER SIDE, FLAT FOLDING
- POWER WINDOW W/ EXPRESS DRIVER UP/DOWN
- STEERING WHEEL, LEATHER-WRAPPED 4 SPOKE
- AUDIO SYSTEM, 6 SPEAKER
- DRIVER INFO DISPLAY, 4.2" MULTI-COLOR

EXTERIOR
- HEADLAMPS, HIGH INTENSITY DISCHARGE
- DAYTIME RUNNING LAMPS, LED SIGNATURE
- TAIL LAMPS, LED SIGNATURE

SAFETY & SECURITY
- GMC PRO SAFETY: *INTELLIBEAM *FRONT PEDESTRIAN BRAKING *AUTOMATIC EMERGENCY BRAKING *LANE KEEP ASSIST W/ LANE DEPARTURE WARNING *FORWARD COLLISION ALERT *FOLLOWING DISTANCE INDICATOR
- REAR VISION CAMERA
- TEEN DRIVER
- REAR DR LOCKS,CHILD SECURITY
- THEFT DETERRENT SYSTEM
- TIRE PRESSURE MONITOR, W/ TIRE FILL ALERT (EXCL SPARE TIRE)

PERFORMANCE & MECHANICAL
- ELECTRONIC PRECISION SHIFT
- TRACTION SELECT SYSTEM
- COMPACT SPARE TIRE
- HILL DESCENT CONTROL
- STABILITRAK - STABILITY CONTROL SYSTEM W/ TRACTION CONTROL

CONNECTIVITY & TECHNOLOGY
- ONSTAR (R) SERVICES & 4G LTE WI-FI (R) AVAILABLE; SEE ONSTAR.COM FOR TERMS
- GMC INFOTAINMENT SYSTEM W/ 7" DIAG. COLOR TOUCHSCREEN ADDITIONAL FEATURES FOR COMPATIBLE PHONES INCLUDE: BLUETOOTH AUDIO STREAMING VOICE COMMAND PASSTHROUGH TO PHONE, ANDROID AUTO & APPLE CARPLAY CAPABLE
- USB CHARGING-ONLY PORTS, 2
- 2 USB PORTS, AUXILIARY INPUT JACK
- REMOTE KEYLESS/ REMOTE OPEN

MANUFACTURER'S SUGGESTED RETAIL PRICE

STANDARD VEHICLE PRICE	**$28,400.00**

OPTIONS & PRICING

OPTIONS INSTALLED BY THE MANUFACTURER (MAY REPLACE STANDARD EQUIPMENT SHOWN)

EBONY TWILIGHT METALLIC	495.00
TOTAL OPTIONS	$495.00
TOTAL VEHICLE & OPTIONS	$28,895.00
DESTINATION CHARGE	1,195.00
TOTAL VEHICLE PRICE*	**$30,090.00**

EPA DOT Fuel Economy and Environment — Gasoline Vehicle

Fuel Economy: **27** MPG (combined city/hwy) — 26 city, 30 highway
Small SUVs range from 16 to 120 MPG. The best vehicle rates 136 MPGe.
3.7 gallons per 100 miles

You save **$0** in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost **$1,500**

Fuel Economy & Greenhouse Gas Rating (tailpipe only): 6 (1 Worst, 10 Best)
Smog Rating (tailpipe only): 7 (1 Worst, 10 Best)
This vehicle emits 325 grams CO_2 per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions; learn more at fueleconomy.gov.

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 27 MPG and costs $7,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at $2.70 per gallon. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fueleconomy.gov
Calculate personalized estimates and compare vehicles

Smartphone QR Code™

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score ★★★★★
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 ★★★★★
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 ★★★★★
Based on the risk of injury in a side impact.

Rollover ★★★★
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 1-888-327-4236

Equipped with the safety and security of OnStar.
Visit onstar.com for details.

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE:
U.S./CANADIAN PARTS CONTENT: 47%
MAJOR SOURCES OF FOREIGN PARTS CONTENT: MEXICO 29%

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

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT:
SAN LUIS POTOSI, MEXICO
COUNTRY OF ORIGIN:
ENGINE: MEXICO
TRANSMISSION: UNITED STATES

This label has been applied pursuant to Federal law – Do not remove prior to delivery to the ultimate purchaser. See Manufacturer's Recommended Pre-Delivery Service. Does not include dealer installed options and accessories not listed above, local taxes or license fees.

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ORDER NO XSSJ36 SALES CODE E
SALES MODEL CODE TKL26
DEALER NO 21126
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SAN LUIS POTOSI, MEXICO
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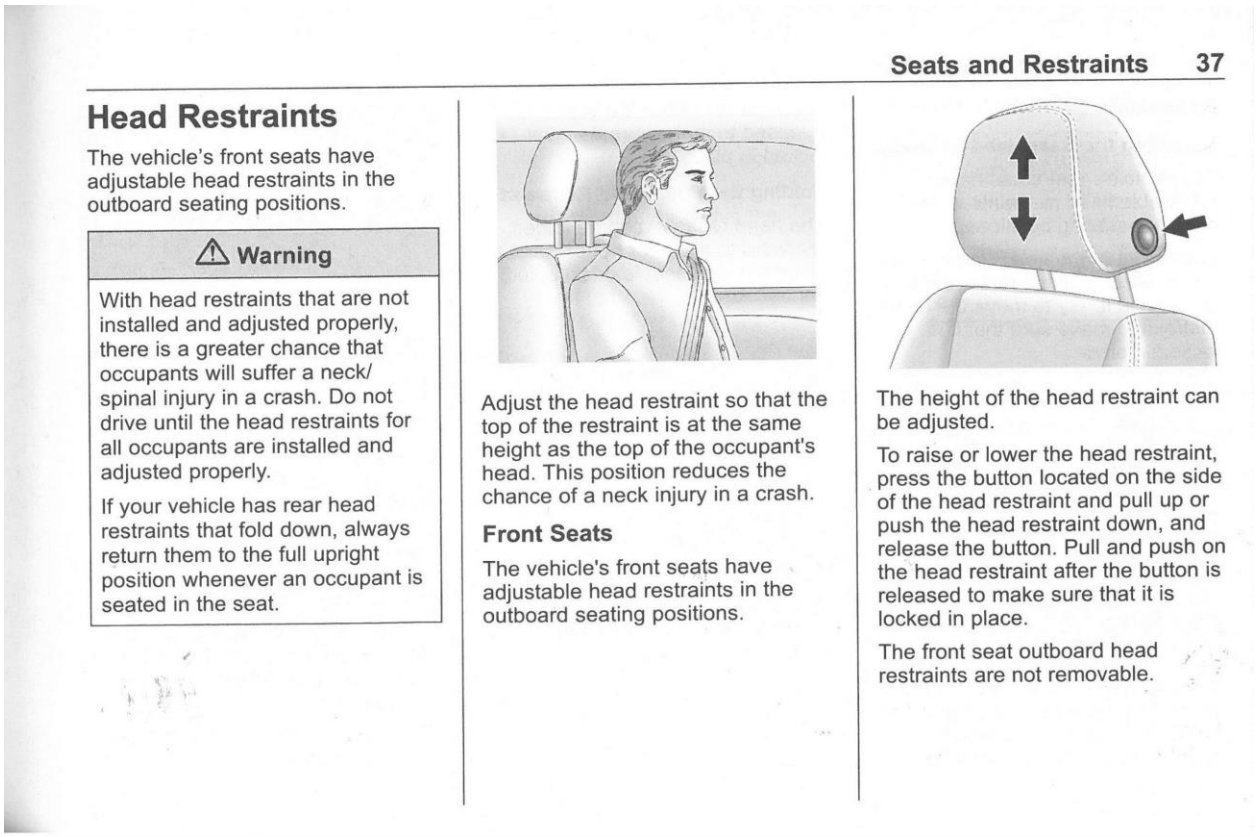
DEALER TO WHOM DELIVERED
MARK SWEENEY BUICK GMC
3365 HIGHLAND AVENUE
CINCINNATI, OH 45213-2609

7J
1GA1896160

102 Monroney Label



Head Restraints

The vehicle's front seats have adjustable head restraints in the outboard seating positions.

⚠ Warning

With head restraints that are not installed and adjusted properly, there is a greater chance that occupants will suffer a neck/ spinal injury in a crash. Do not drive until the head restraints for all occupants are installed and adjusted properly.

If your vehicle has rear head restraints that fold down, always return them to the full upright position whenever an occupant is seated in the seat.

Adjust the head restraint so that the top of the restraint is at the same height as the top of the occupant's head. This position reduces the chance of a neck injury in a crash.

Front Seats

The vehicle's front seats have adjustable head restraints in the outboard seating positions.

The height of the head restraint can be adjusted.

To raise or lower the head restraint, press the button located on the side of the head restraint and pull up or push the head restraint down, and release the button. Pull and push on the head restraint after the button is released to make sure that it is locked in place.

The front seat outboard head restraints are not removable.

103 Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

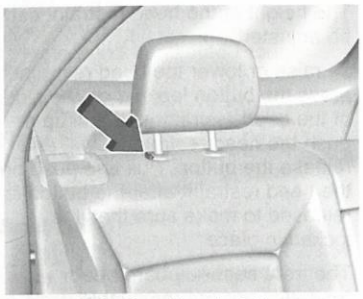
38 Seats and Restraints

Rear Seats

Adjusting the Rear Head Restraint

The vehicle's rear seats have adjustable head restraints in the outboard seating positions.

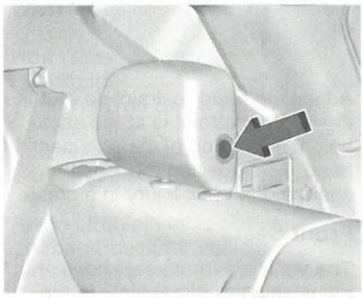
The height of the head restraint can be adjusted. Pull the head restraint up to raise it. Try to move the head restraint to make sure that it is locked in place.



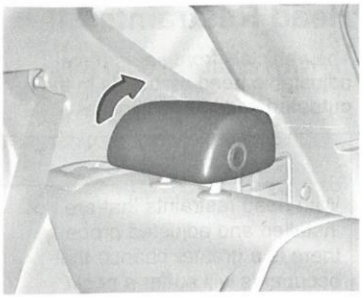
To lower the head restraint, press the button, located on the top of the seatback, and push the head restraint down. Try to move the head restraint after the button is released to make sure that it is locked in place.

Folding the Rear Head Restraint

The head restraint can be folded rearward to allow for better visibility when the rear seat is unoccupied.



To fold the head restraint, press the button on the side of the head restraint.



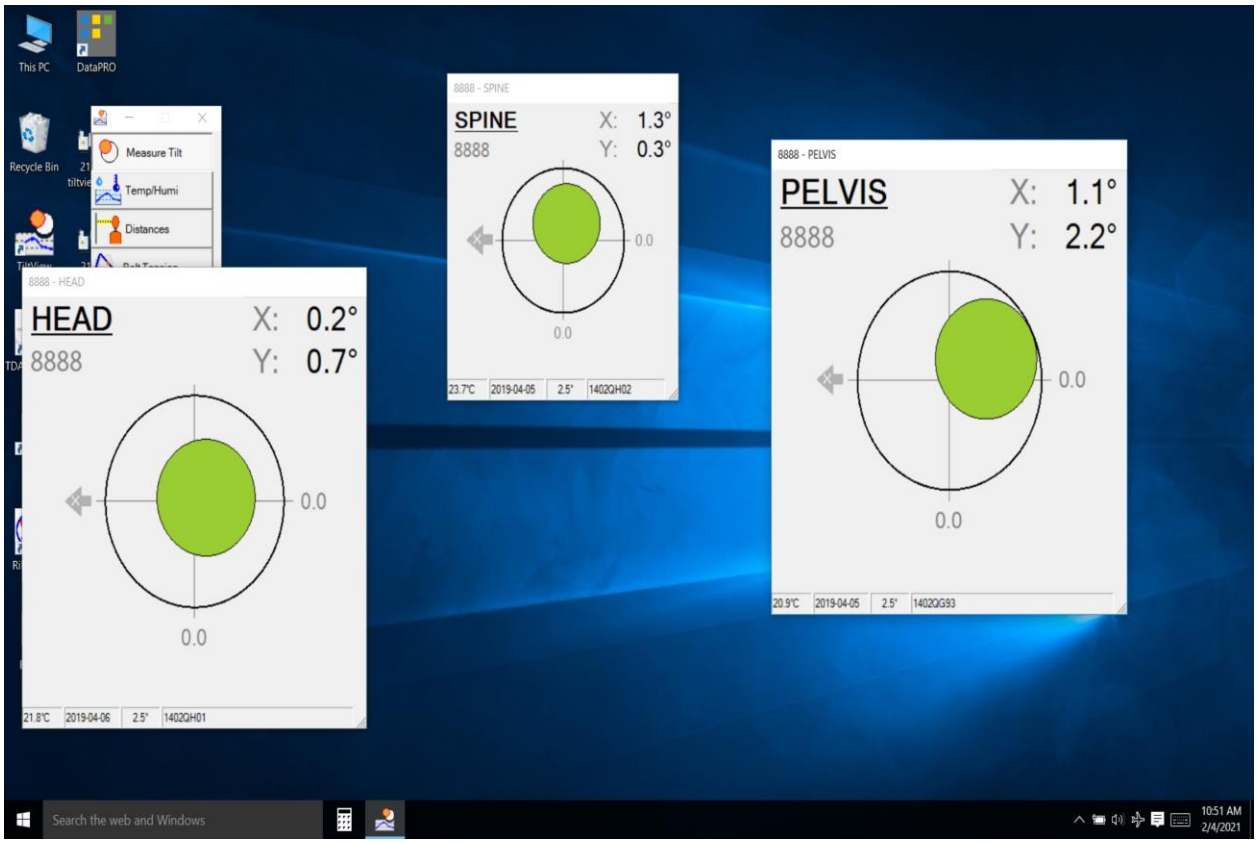
The head restraint will fold rearward automatically.

When an occupant or child restraint is in the seat, always return the head restraint to the full upright position. Pull the head restraint up and forward until it locks into place. Push and pull on the head restraint to make sure that it is locked.

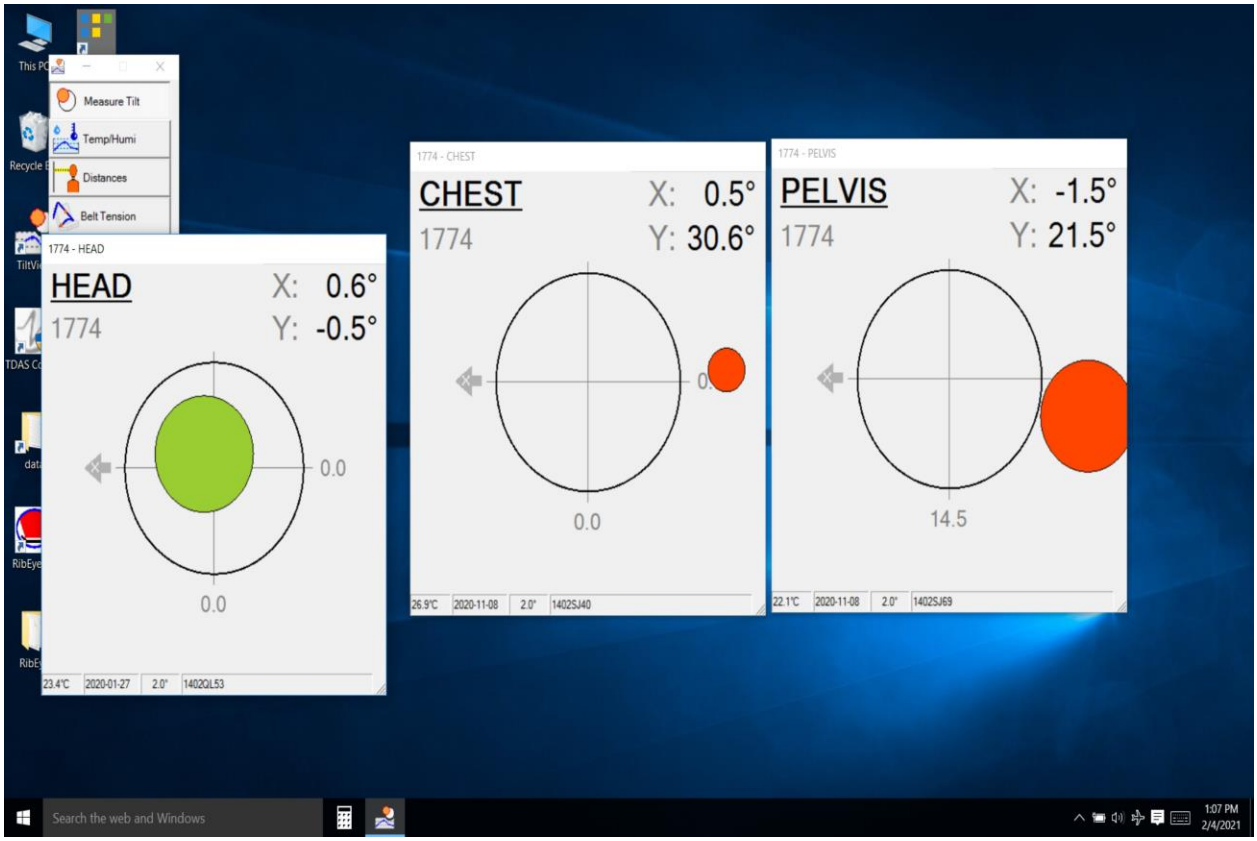
Always adjust the head restraint so that the top of the restraint is at the same height as the top of the occupant's head.

Rear outboard head restraints are not removable.

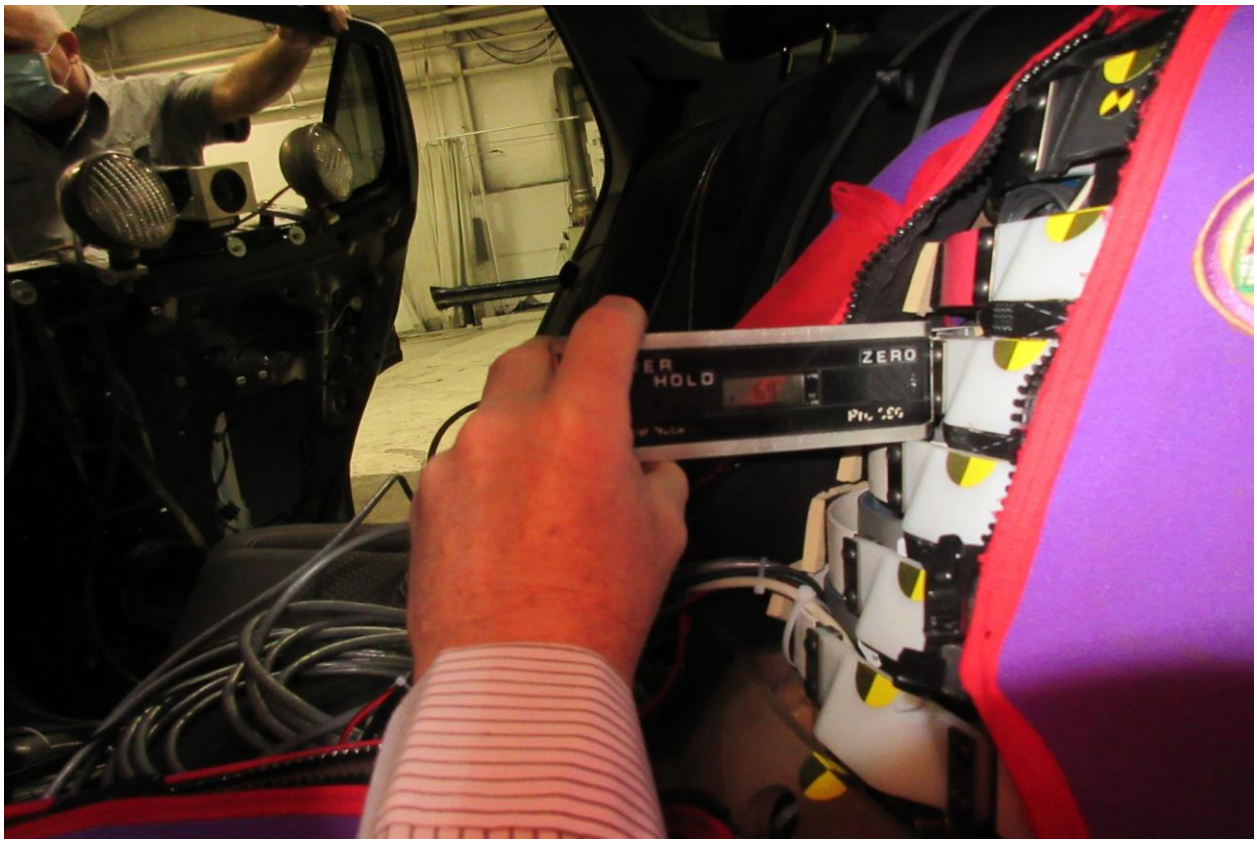
104 Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual



105 WorldSID-50M Pre-Test Tilt Sensor View



No. 106 WorldSID-05F Pre-Test Tilt Sensor View



No. 107 WorldSID-05F Thorax Rib 2 Inclinometer

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

Driver & Passenger Dummy Instrumentation Plots

TABLE OF DATA PLOTS, CONTINUED

Driver & Passenger Dummy Instrumentation Plots

TABLE OF DATA PLOTS, CONTINUED

Driver & Passenger Dummy Instrumentation Plots

TABLE OF DATA PLOTS, CONTINUED

Driver & Passenger Dummy Instrumentation Plots

TABLE OF DATA PLOTS, CONTINUED

Driver & Passenger Dummy Instrumentation Plots

TABLE OF DATA PLOTS, CONTINUED

Driver & Passenger Dummy Instrumentation Plots

TABLE OF DATA PLOTS, CONTINUED

Driver & Passenger Dummy Instrumentation Plots

TABLE OF DATA PLOTS, CONTINUED

Driver & Passenger Dummy Instrumentation Plots

TABLE OF DATA PLOTS, CONTINUED

Driver & Passenger Dummy Instrumentation Plots

TABLE OF DATA PLOTS, CONTINUED

Driver & Passenger Dummy Instrumentation Plots

VRTC

Test Date: 02/04/2021

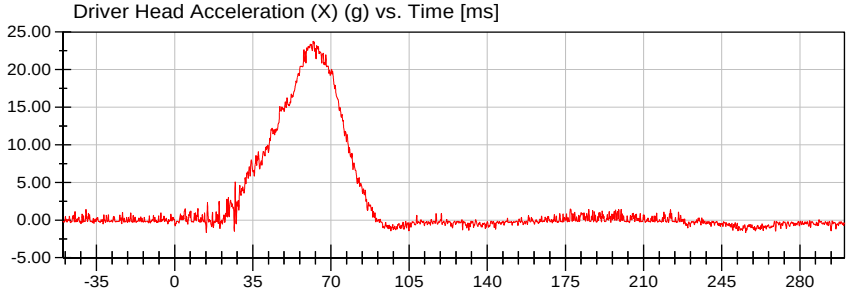
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Head Acceleration (X) (g) vs. Time [ms]



<Max>

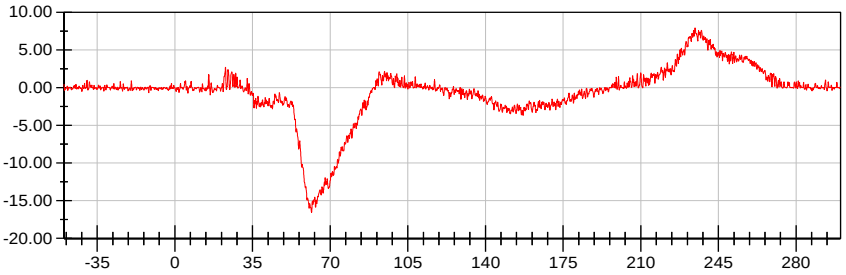
23.75 g at 62.05 ms

<Min>

-1.66 g at 255.75 ms

CFC_1000

Driver Head Acceleration (Y) (g) vs. Time [ms]



<Max>

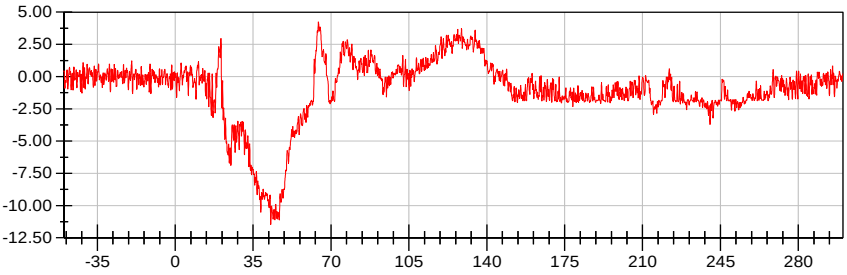
7.91 g at 234.45 ms

<Min>

-16.58 g at 61.60 ms

CFC_1000

Driver Head Acceleration (Z) (g) vs. Time [ms]



<Max>

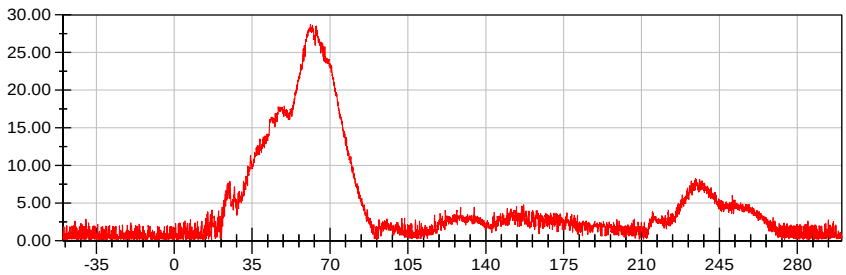
4.24 g at 64.35 ms

<Min>

-11.46 g at 42.90 ms

CFC_1000

Driver Head Acceleration Resultant (g) vs. Time [ms]



<Max>

28.72 g at 61.20 ms

<Min>

0.17 g at -49.40 ms

Prefiltered_> CFC 1000

VRTC

Test Date: 02/04/2021

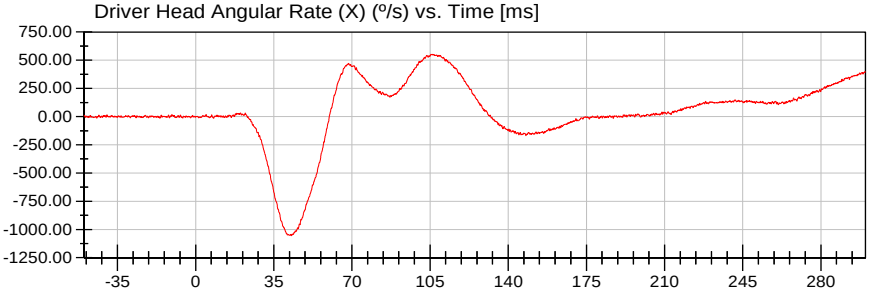
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Driver Head Angular Rate (X) (º/s) vs. Time [ms]



<Max>

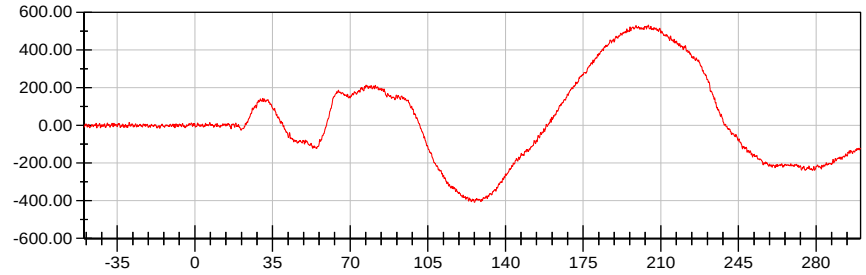
552.37 º/s at 106.00 ms

<Min>

-1,055.82 º/s at 43.00 ms

CFC_1000

Driver Head Angular Rate (Y) (º/s) vs. Time [ms]



<Max>

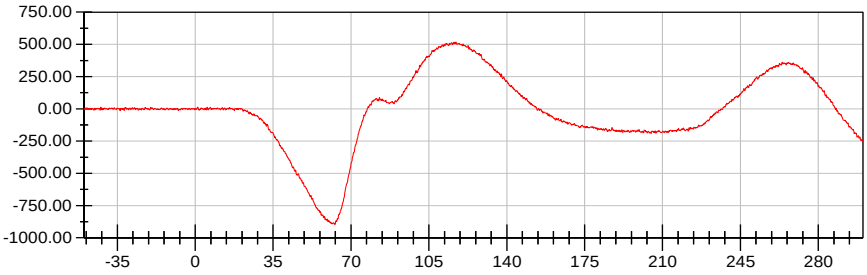
532.86 º/s at 204.45 ms

<Min>

-408.62 º/s at 126.05 ms

CFC_1000

Driver Head Angular Rate (Z) (º/s) vs. Time [ms]



<Max>

517.83 º/s at 116.35 ms

<Min>

-895.70 º/s at 62.75 ms

CFC_1000

VRTC

Test Date: 02/04/2021

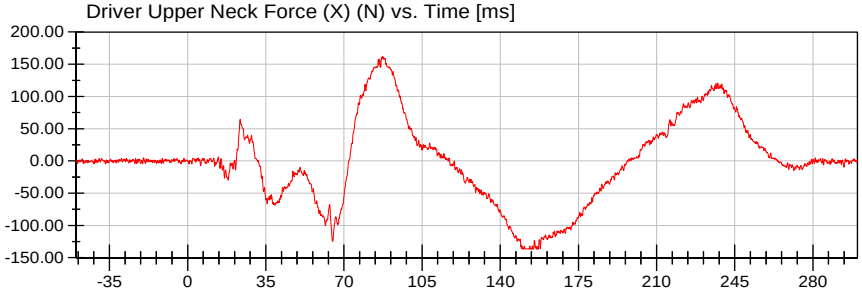
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Upper Neck Force (X) (N) vs. Time [ms]



<Max>

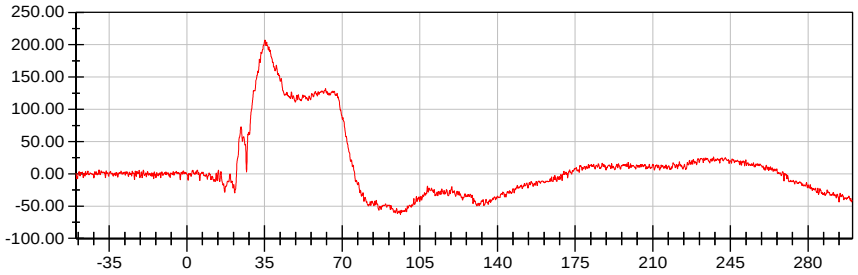
162.39 N at 87.35 ms

<Min>

-137.05 N at 154.80 ms

CFC_1000

Driver Upper Neck Force (Y) (N) vs. Time [ms]



<Max>

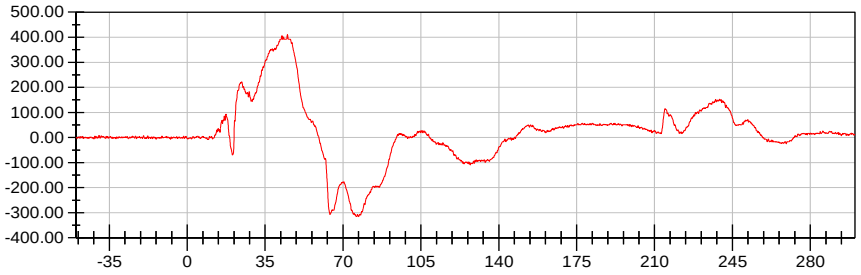
207.28 N at 35.20 ms

<Min>

-62.98 N at 96.30 ms

CFC_1000

Driver Upper Neck Force (Z) (N) vs. Time [ms]



<Max>

410.54 N at 45.05 ms

<Min>

-315.63 N at 76.95 ms

CFC_1000

VRTC

Test Date: 02/04/2021

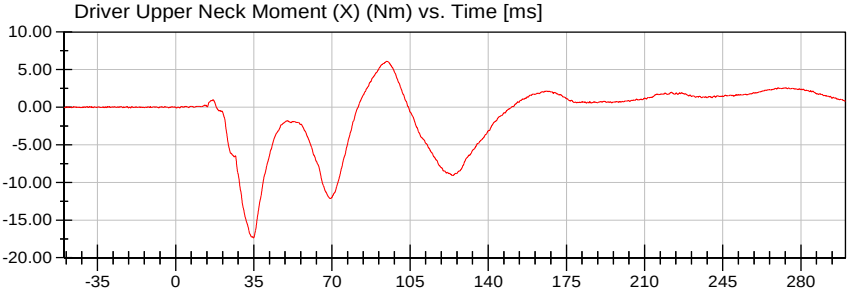
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Upper Neck Moment (X) (Nm) vs. Time [ms]



<Max>

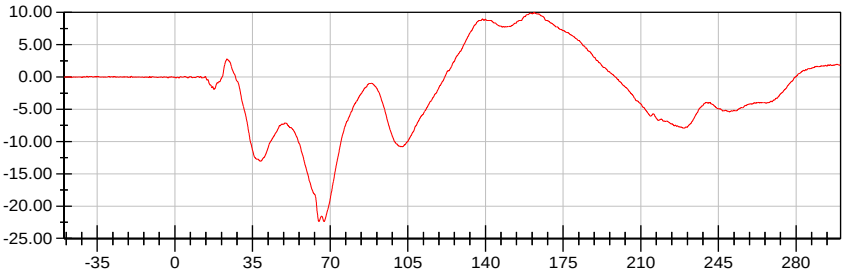
6.10 Nm at 94.55 ms

<Min>

-17.37 Nm at 34.90 ms

CFC_600

Driver Upper Neck Moment (Y) (Nm) vs. Time [ms]



<Max>

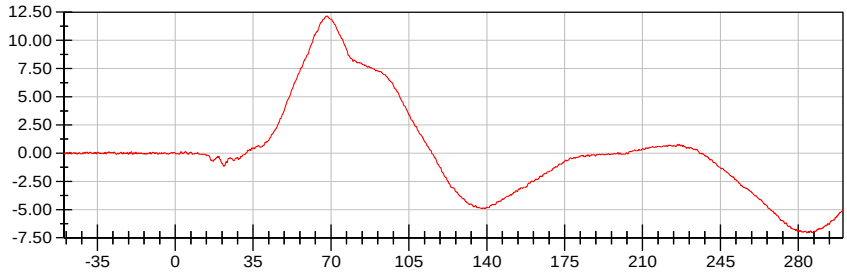
9.96 Nm at 161.85 ms

<Min>

-22.39 Nm at 64.95 ms

CFC_600

Driver Upper Neck Moment (Z) (Nm) vs. Time [ms]



<Max>

12.15 Nm at 68.20 ms

<Min>

-7.06 Nm at 283.90 ms

CFC_600

VRTC

Test Date: 02/04/2021

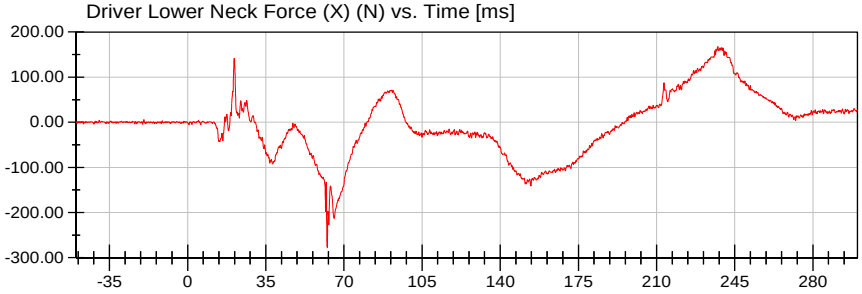
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Lower Neck Force (X) (N) vs. Time [ms]



<Max>

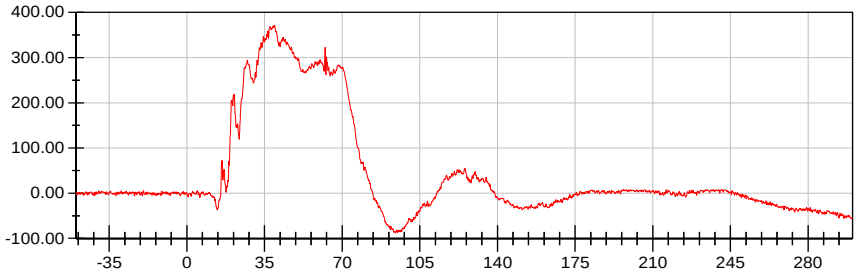
167.85 N at 237.40 ms

<Min>

-276.99 N at 62.50 ms

CFC_1000

Driver Lower Neck Force (Y) (N) vs. Time [ms]



<Max>

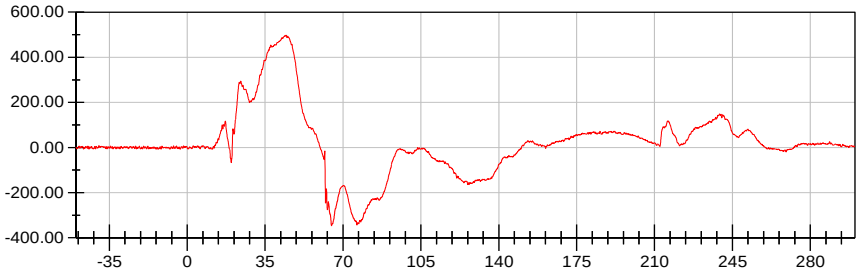
371.67 N at 39.45 ms

<Min>

-87.67 N at 93.90 ms

CFC_1000

Driver Lower Neck Force (Z) (N) vs. Time [ms]



<Max>

497.75 N at 44.45 ms

<Min>

-346.19 N at 64.85 ms

CFC_1000

VRTC

Test Date: 02/04/2021

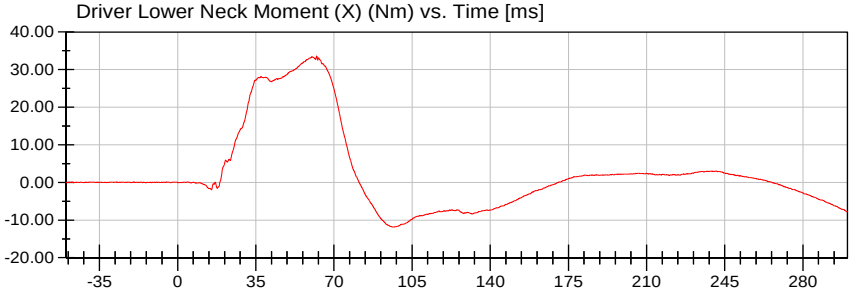
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Lower Neck Moment (X) (Nm) vs. Time [ms]



<Max>

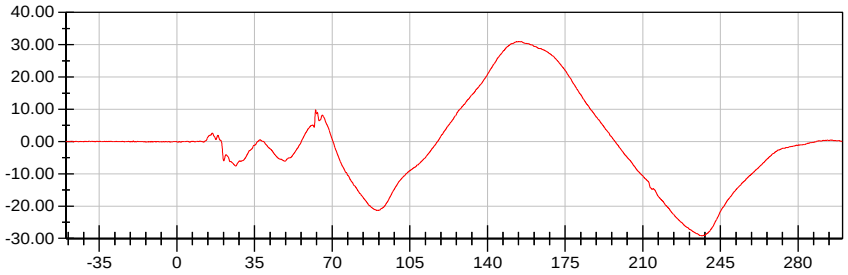
33.61 Nm at 62.30 ms

<Min>

-11.88 Nm at 96.80 ms

CFC_600

Driver Lower Neck Moment (Y) (Nm) vs. Time [ms]



<Max>

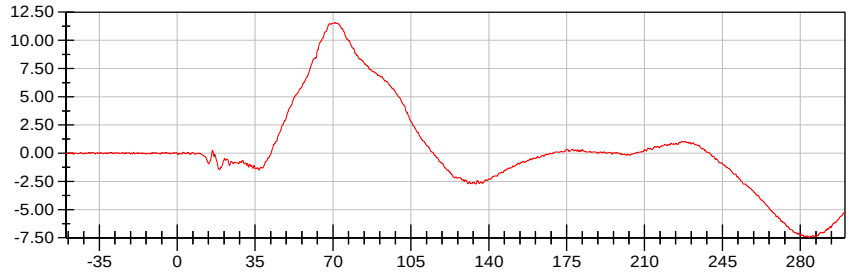
31.01 Nm at 154.25 ms

<Min>

-29.18 Nm at 236.95 ms

CFC_600

Driver Lower Neck Moment (Z) (Nm) vs. Time [ms]



<Max>

11.58 Nm at 71.00 ms

<Min>

-7.46 Nm at 283.95 ms

CFC_600

VRTC

Test Date: 02/04/2021

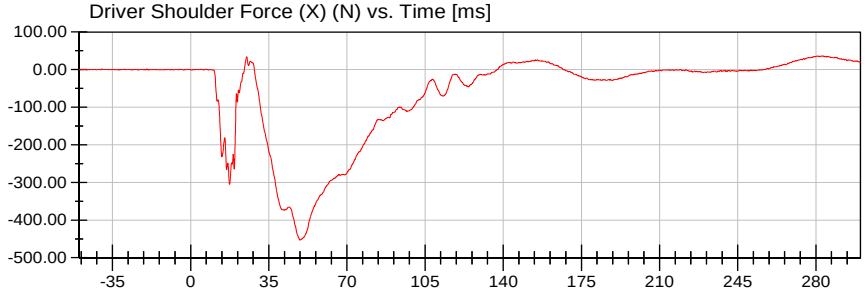
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Shoulder Force (X) (N) vs. Time [ms]



<Max>

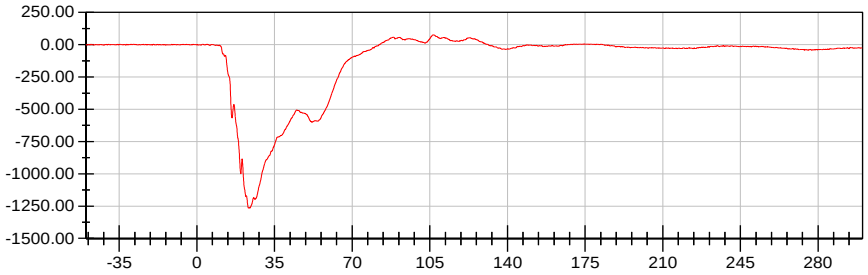
36.33 N at 282.60 ms

<Min>

-453.30 N at 49.00 ms

CFC_600

Driver Shoulder Force (Y) (N) vs. Time [ms]



<Max>

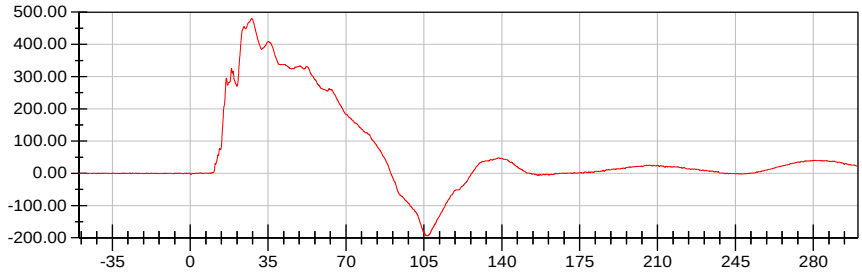
75.89 N at 106.45 ms

<Min>

-1,265.15 N at 23.30 ms

CFC_600

Driver Shoulder Force (Z) (N) vs. Time [ms]



<Max>

479.80 N at 27.70 ms

<Min>

-193.44 N at 106.70 ms

CFC_600

VRTC

Test Date: 02/04/2021

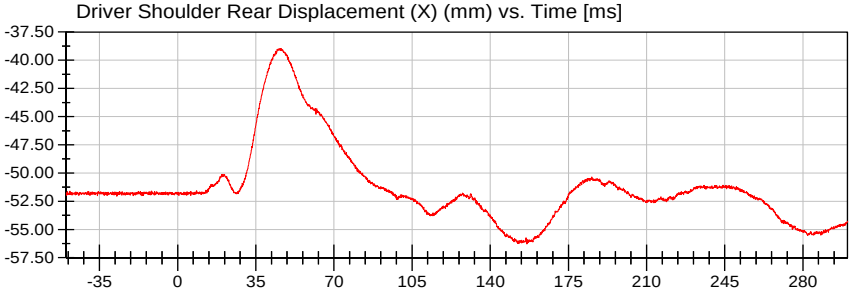
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Shoulder Rear Displacement (X) (mm) vs. Time [ms]



<Max>

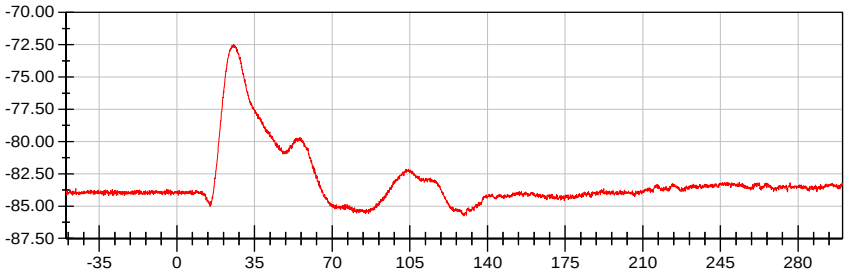
-38.95 mm at 46.30 ms

<Min>

-56.29 mm at 156.40 ms

Unfiltered

Driver Shoulder Rear Displacement (Y) (mm) vs. Time [ms]



<Max>

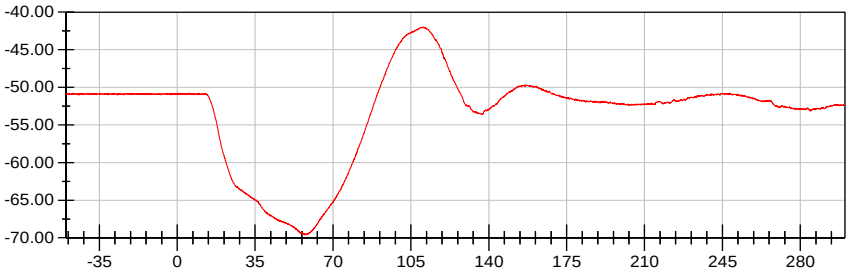
-72.50 mm at 25.60 ms

<Min>

-85.76 mm at 129.40 ms

Unfiltered

Driver Shoulder Rear Displacement (Z) (mm) vs. Time [ms]



<Max>

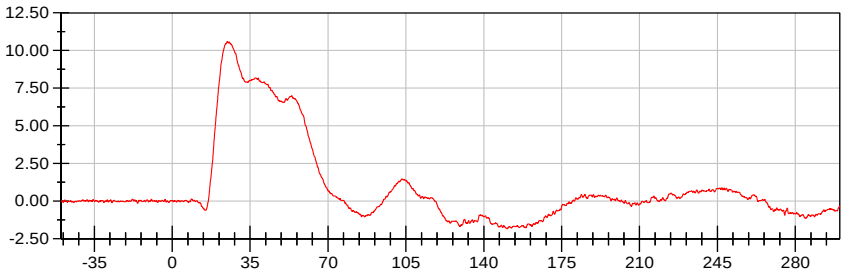
-41.99 mm at 110.80 ms

<Min>

-69.62 mm at 57.40 ms

Unfiltered

Driver Shoulder Rear Length Change (mm) vs. Time [ms]



<Max>

10.59 mm at 24.75 ms

<Min>

-1.84 mm at 150.55 ms

CFC_600

VRTC

Test Date: 02/04/2021

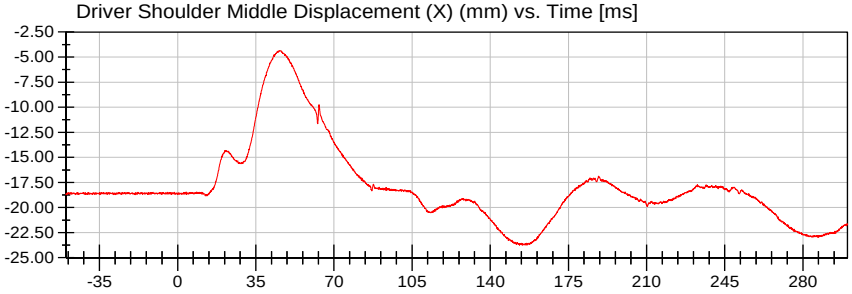
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Shoulder Middle Displacement (X) (mm) vs. Time [ms]



<Max>

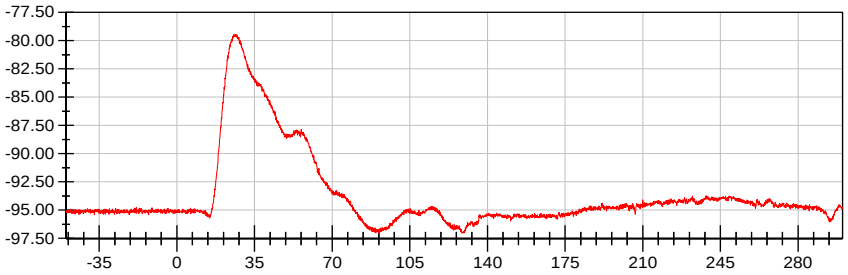
-4.36 mm at 46.30 ms

<Min>

-23.75 mm at 153.10 ms

Unfiltered

Driver Shoulder Middle Displacement (Y) (mm) vs. Time [ms]



<Max>

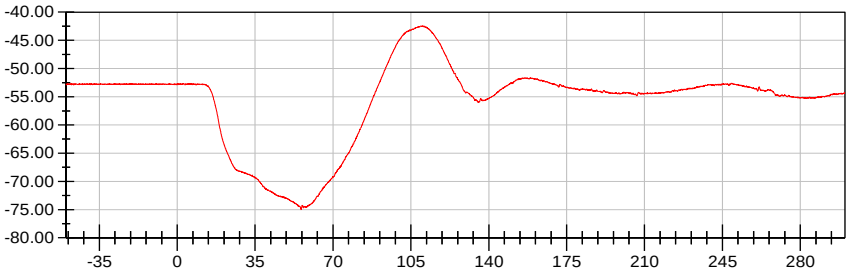
-79.45 mm at 26.45 ms

<Min>

-97.05 mm at 129.45 ms

Unfiltered

Driver Shoulder Middle Displacement (Z) (mm) vs. Time [ms]



<Max>

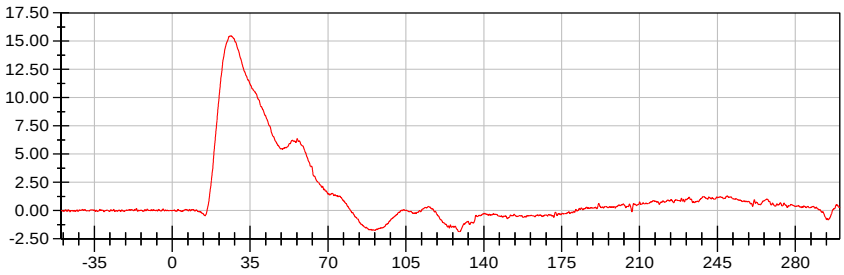
-42.44 mm at 109.50 ms

<Min>

-75.00 mm at 55.70 ms

Unfiltered

Driver Shoulder Middle Length Change (mm) vs. Time [ms]



<Max>

15.47 mm at 26.45 ms

<Min>

-1.87 mm at 128.65 ms

CFC_600

VRTC

Test Date: 02/04/2021

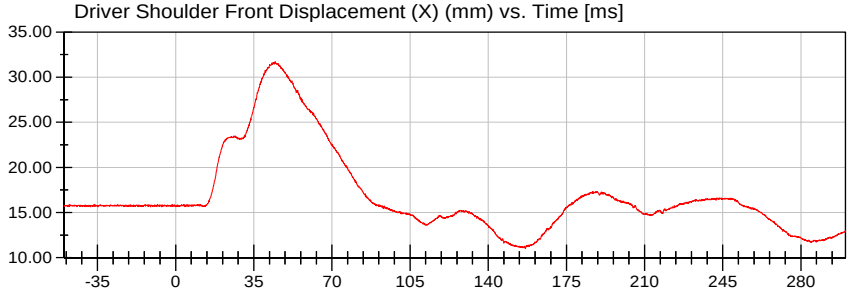
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Shoulder Front Displacement (X) (mm) vs. Time [ms]



<Max>

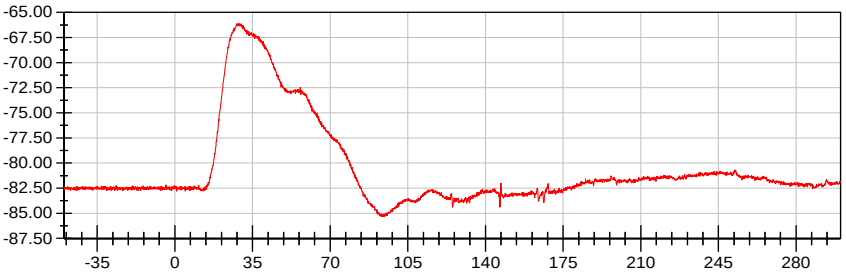
31.73 mm at 44.55 ms

<Min>

11.01 mm at 156.70 ms

Unfiltered

Driver Shoulder Front Displacement (Y) (mm) vs. Time [ms]



<Max>

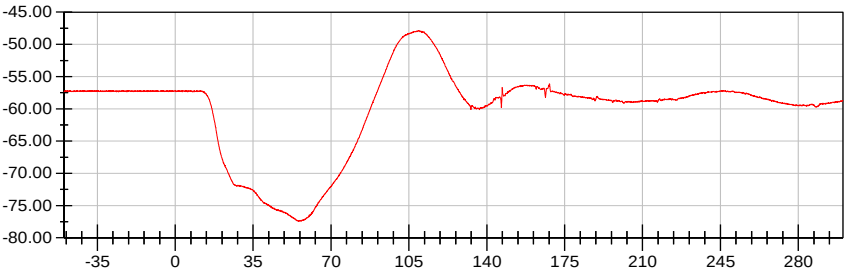
-66.07 mm at 28.70 ms

<Min>

-85.33 mm at 93.50 ms

Unfiltered

Driver Shoulder Front Displacement (Z) (mm) vs. Time [ms]



<Max>

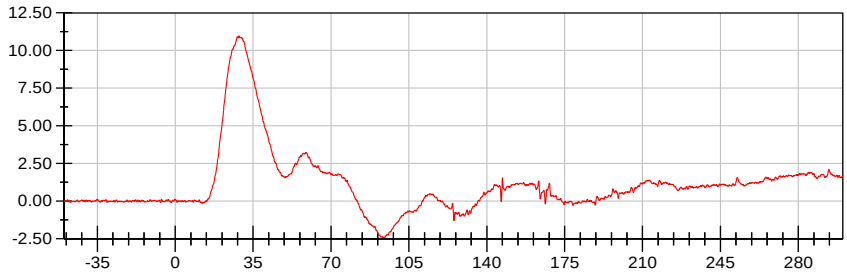
-47.85 mm at 109.50 ms

<Min>

-77.45 mm at 55.55 ms

Unfiltered

Driver Shoulder Front Length Change (mm) vs. Time [ms]



<Max>

10.97 mm at 28.65 ms

<Min>

-2.44 mm at 93.50 ms

CFC_600

VRTC

Test Date: 02/04/2021

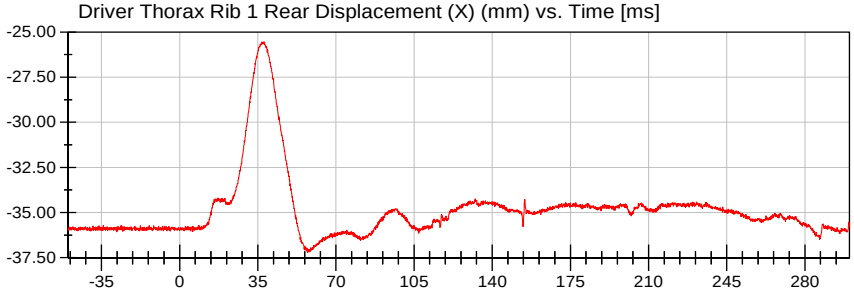
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Thorax Rib 1 Rear Displacement (X) (mm) vs. Time [ms]



<Max>

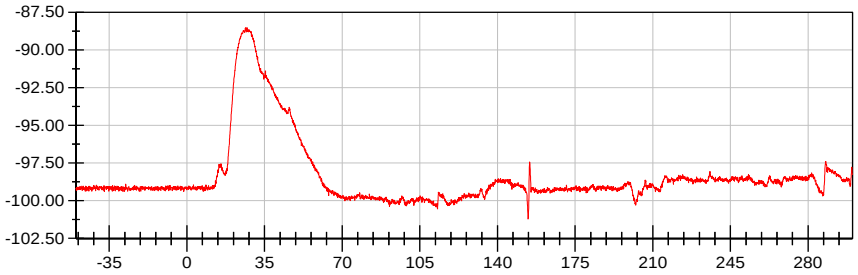
-25.54 mm at 36.80 ms

<Min>

-37.21 mm at 57.40 ms

Unfiltered

Driver Thorax Rib 1 Rear Displacement (Y) (mm) vs. Time [ms]



<Max>

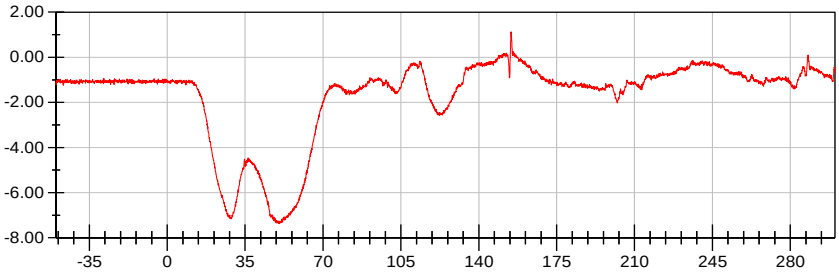
-88.50 mm at 26.70 ms

<Min>

-101.22 mm at 153.80 ms

Unfiltered

Driver Thorax Rib 1 Rear Displacement (Z) (mm) vs. Time [ms]



<Max>

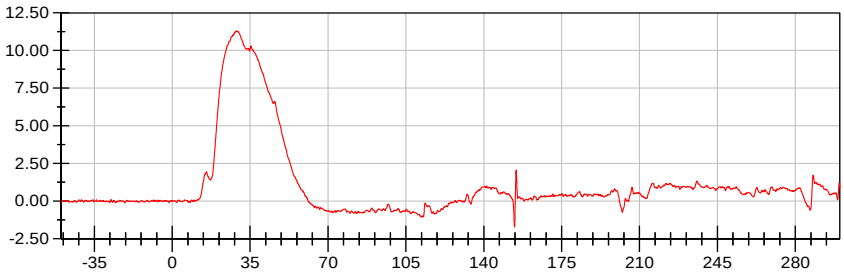
1.13 mm at 154.50 ms

<Min>

-7.37 mm at 50.05 ms

Unfiltered

Driver Thorax Rib 1 Rear Length Change (mm) vs. Time [ms]



<Max>

11.32 mm at 28.85 ms

<Min>

-1.73 mm at 153.80 ms

CFC_600

VRTC

Test Date: 02/04/2021

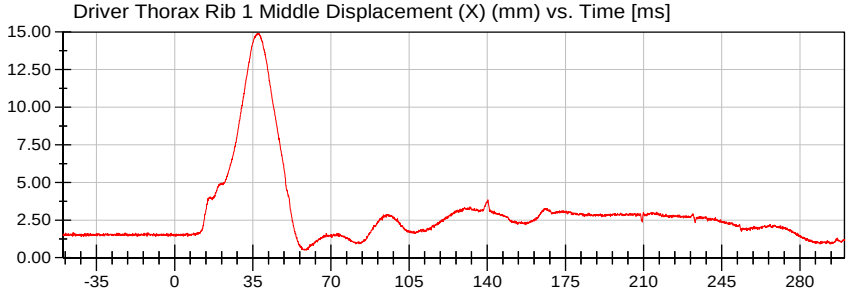
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Thorax Rib 1 Middle Displacement (X) (mm) vs. Time [ms]



<Max>

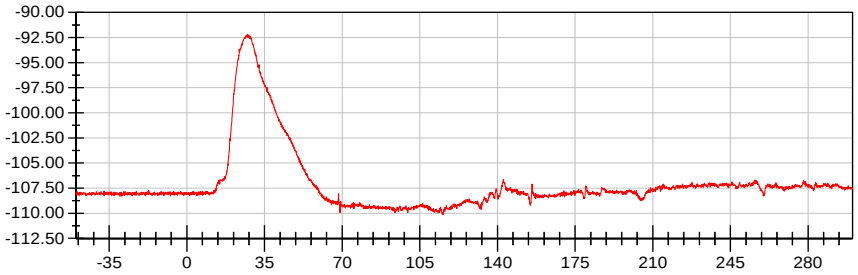
14.91 mm at 37.20 ms

<Min>

0.49 mm at 59.05 ms

Unfiltered

Driver Thorax Rib 1 Middle Displacement (Y) (mm) vs. Time [ms]



<Max>

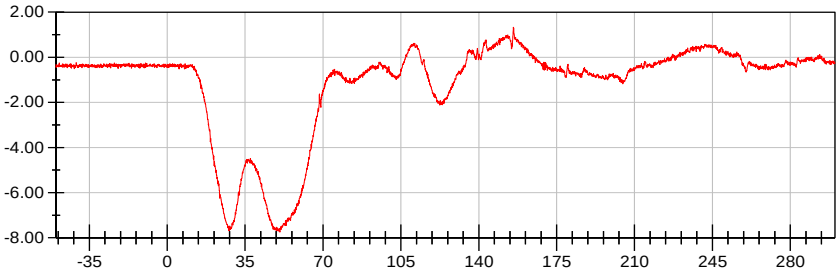
-92.16 mm at 27.30 ms

<Min>

-110.15 mm at 115.50 ms

Unfiltered

Driver Thorax Rib 1 Middle Displacement (Z) (mm) vs. Time [ms]



<Max>

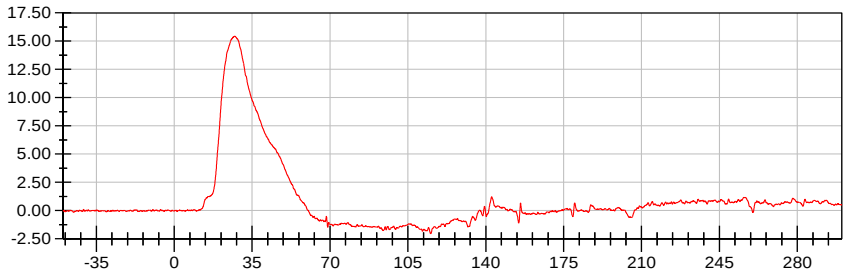
1.33 mm at 155.55 ms

<Min>

-7.74 mm at 50.60 ms

Unfiltered

Driver Thorax Rib 1 Middle Length Change (mm) vs. Time [ms]



<Max>

15.45 mm at 27.20 ms

<Min>

-2.04 mm at 115.20 ms

CFC_600

VRTC

Test Date: 02/04/2021

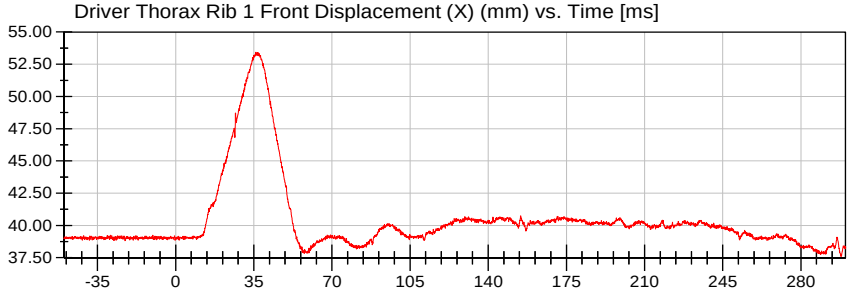
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Thorax Rib 1 Front Displacement (X) (mm) vs. Time [ms]



<Max>

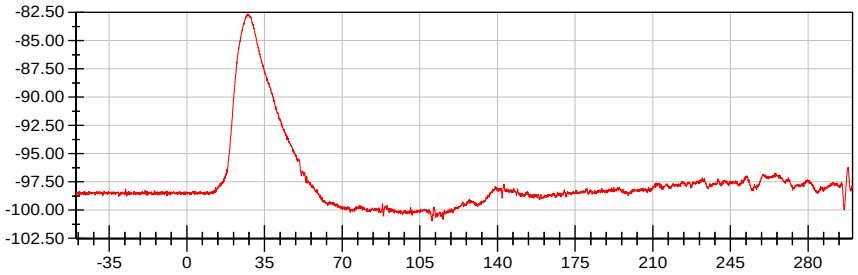
53.43 mm at 36.00 ms

<Min>

37.60 mm at 297.95 ms

Unfiltered

Driver Thorax Rib 1 Front Displacement (Y) (mm) vs. Time [ms]



<Max>

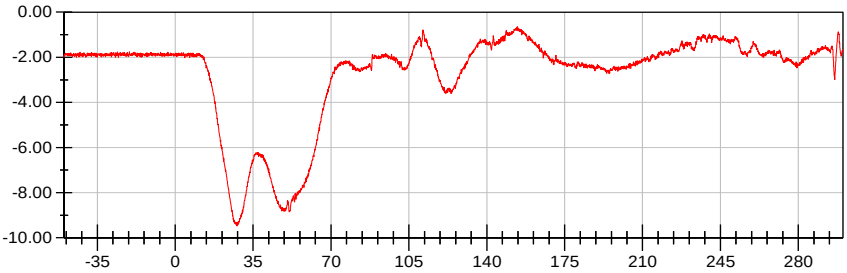
-82.63 mm at 27.30 ms

<Min>

-100.97 mm at 110.60 ms

Unfiltered

Driver Thorax Rib 1 Front Displacement (Z) (mm) vs. Time [ms]



<Max>

-0.66 mm at 153.60 ms

<Min>

-9.48 mm at 27.70 ms

Unfiltered

Driver Thorax Rib 1 Front Length Change (mm) vs. Time [ms]

<Max>

10.49 mm at 26.50 ms

<Min>

-2.31 mm at 110.55 ms

CFC_600

VRTC

Test Date: 02/04/2021

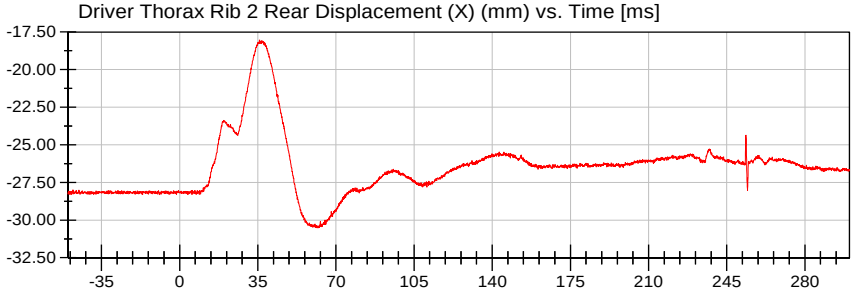
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Thorax Rib 2 Rear Displacement (X) (mm) vs. Time [ms]



<Max>

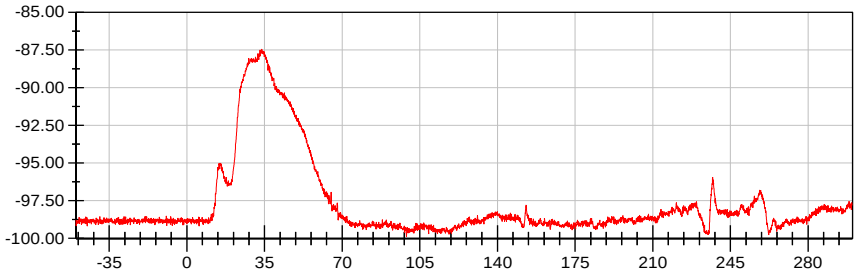
-18.04 mm at 35.85 ms

<Min>

-30.53 mm at 62.00 ms

Unfiltered

Driver Thorax Rib 2 Rear Displacement (Y) (mm) vs. Time [ms]



<Max>

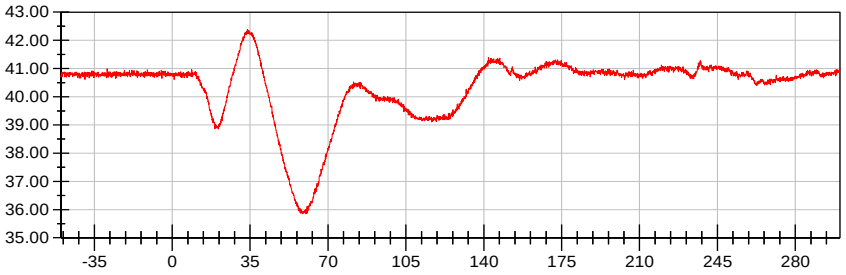
-87.44 mm at 33.80 ms

<Min>

-99.88 mm at 99.00 ms

Unfiltered

Driver Thorax Rib 2 Rear Displacement (Z) (mm) vs. Time [ms]



<Max>

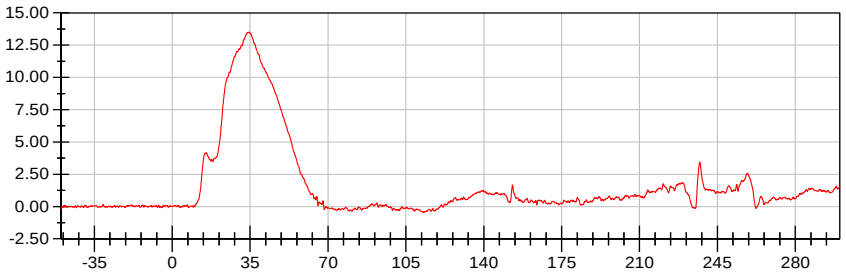
42.38 mm at 33.90 ms

<Min>

35.85 mm at 59.90 ms

Unfiltered

Driver Thorax Rib 2 Rear Length Change (mm) vs. Time [ms]



<Max>

13.52 mm at 34.60 ms

<Min>

-0.46 mm at 112.95 ms

CFC_600

VRTC

Test Date: 02/04/2021

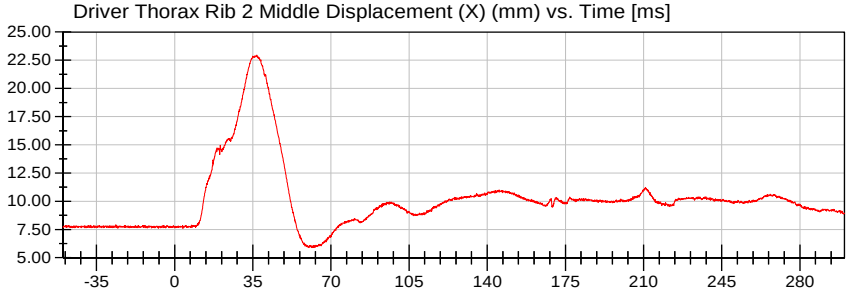
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Thorax Rib 2 Middle Displacement (X) (mm) vs. Time [ms]



<Max>

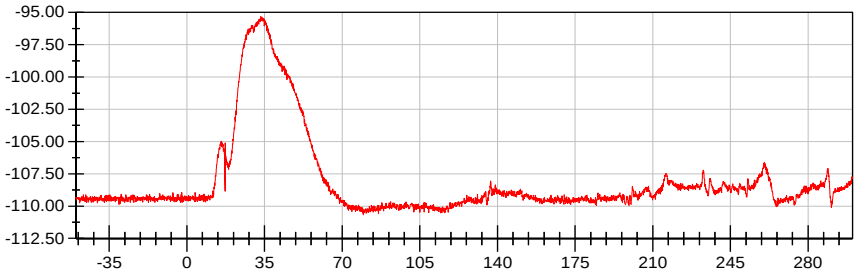
22.96 mm at 36.80 ms

<Min>

5.88 mm at 61.45 ms

Unfiltered

Driver Thorax Rib 2 Middle Displacement (Y) (mm) vs. Time [ms]



<Max>

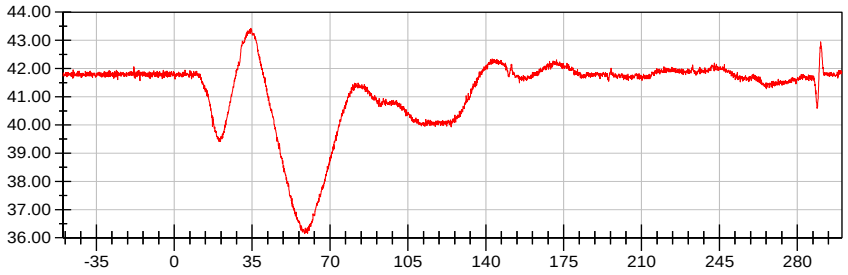
-95.33 mm at 33.30 ms

<Min>

-110.68 mm at 79.60 ms

Unfiltered

Driver Thorax Rib 2 Middle Displacement (Z) (mm) vs. Time [ms]



<Max>

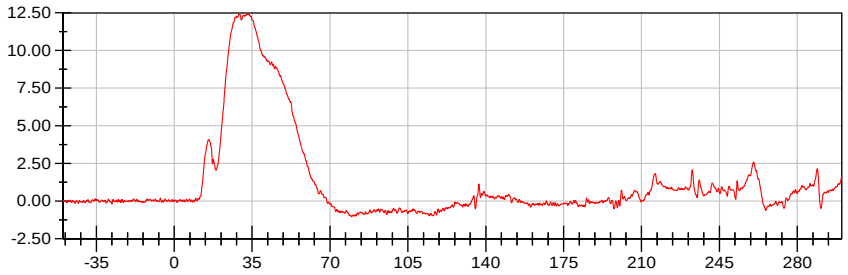
43.42 mm at 34.40 ms

<Min>

36.15 mm at 58.60 ms

Unfiltered

Driver Thorax Rib 2 Middle Length Change (mm) vs. Time [ms]



<Max>

12.43 mm at 32.75 ms

<Min>

-1.03 mm at 79.70 ms

CFC_600

VRTC

Test Date: 02/04/2021

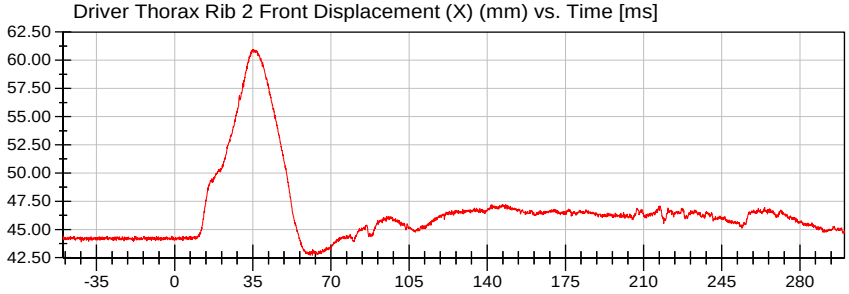
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Driver Thorax Rib 2 Front Displacement (X) (mm) vs. Time [ms]



<Max>

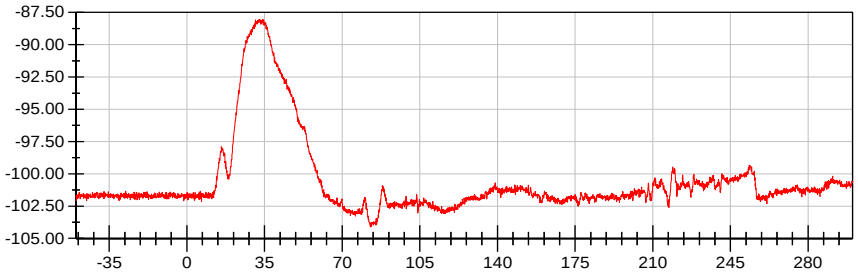
60.96 mm at 35.40 ms

<Min>

42.71 mm at 61.70 ms

Unfiltered

Driver Thorax Rib 2 Front Displacement (Y) (mm) vs. Time [ms]



<Max>

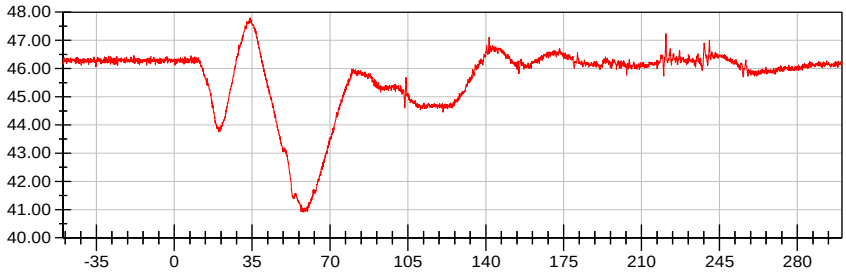
-88.03 mm at 32.50 ms

<Min>

-104.12 mm at 82.75 ms

Unfiltered

Driver Thorax Rib 2 Front Displacement (Z) (mm) vs. Time [ms]



<Max>

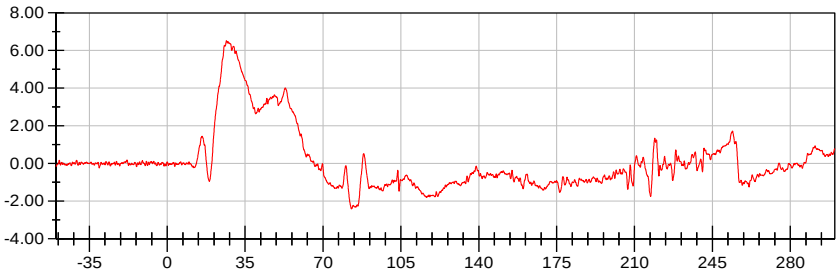
47.80 mm at 34.20 ms

<Min>

40.92 mm at 58.20 ms

Unfiltered

Driver Thorax Rib 2 Front Length Change (mm) vs. Time [ms]



<Max>

6.52 mm at 26.60 ms

<Min>

-2.41 mm at 82.75 ms

CFC_600

VRTC

Test Date: 02/04/2021

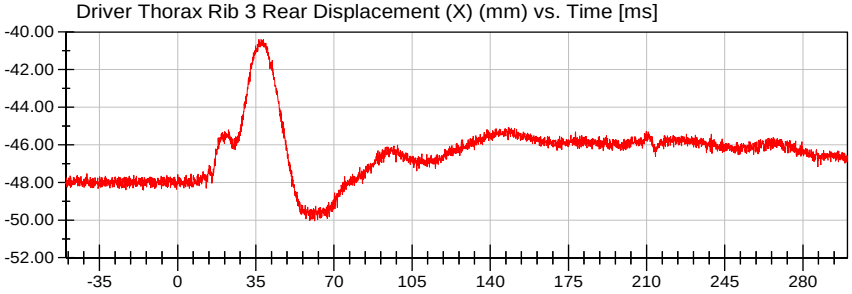
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Thorax Rib 3 Rear Displacement (X) (mm) vs. Time [ms]



<Max>

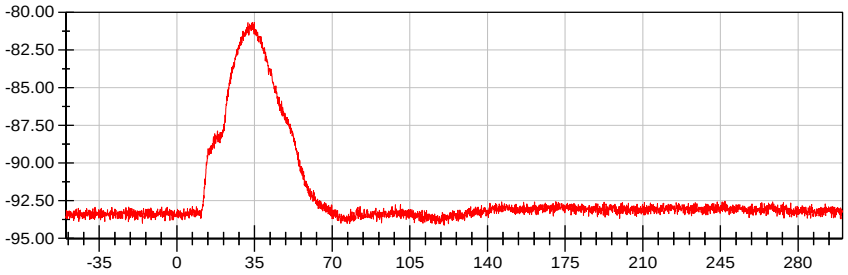
-40.39 mm at 37.40 ms

<Min>

-50.04 mm at 61.40 ms

Unfiltered

Driver Thorax Rib 3 Rear Displacement (Y) (mm) vs. Time [ms]



<Max>

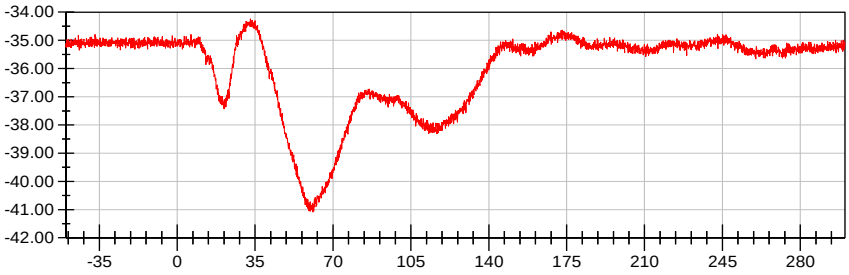
-80.66 mm at 34.00 ms

<Min>

-94.14 mm at 120.50 ms

Unfiltered

Driver Thorax Rib 3 Rear Displacement (Z) (mm) vs. Time [ms]



<Max>

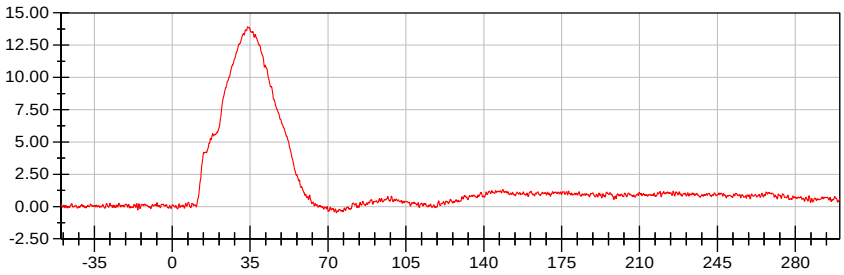
-34.24 mm at 32.90 ms

<Min>

-41.08 mm at 60.95 ms

Unfiltered

Driver Thorax Rib 3 Rear Length Change (mm) vs. Time [ms]



<Max>

13.92 mm at 33.90 ms

<Min>

-0.49 mm at 73.80 ms

CFC_600

VRTC

Test Date: 02/04/2021

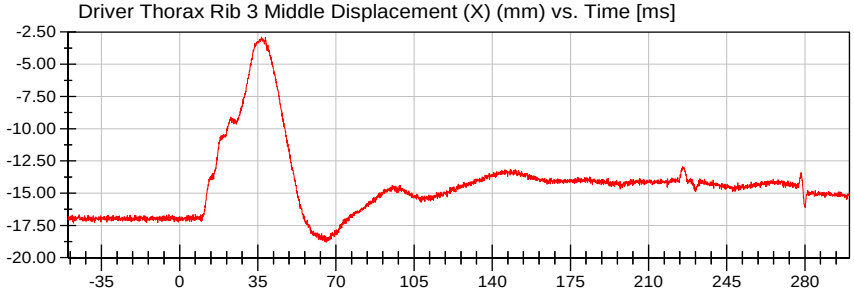
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Thorax Rib 3 Middle Displacement (X) (mm) vs. Time [ms]



<Max>

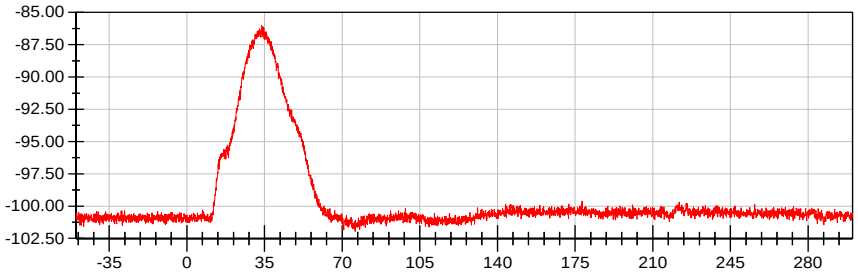
-2.88 mm at 36.70 ms

<Min>

-18.78 mm at 65.60 ms

Unfiltered

Driver Thorax Rib 3 Middle Displacement (Y) (mm) vs. Time [ms]



<Max>

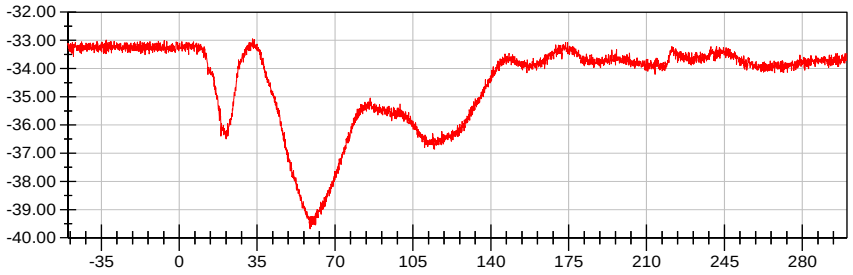
-86.02 mm at 33.70 ms

<Min>

-101.97 mm at 75.85 ms

Unfiltered

Driver Thorax Rib 3 Middle Displacement (Z) (mm) vs. Time [ms]



<Max>

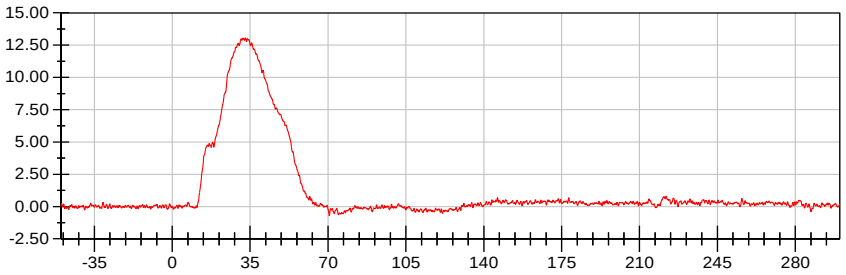
-32.95 mm at 33.00 ms

<Min>

-39.68 mm at 58.80 ms

Unfiltered

Driver Thorax Rib 3 Middle Length Change (mm) vs. Time [ms]



<Max>

13.06 mm at 32.85 ms

<Min>

-0.72 mm at 70.60 ms

CFC_600

VRTC

Test Date: 02/04/2021

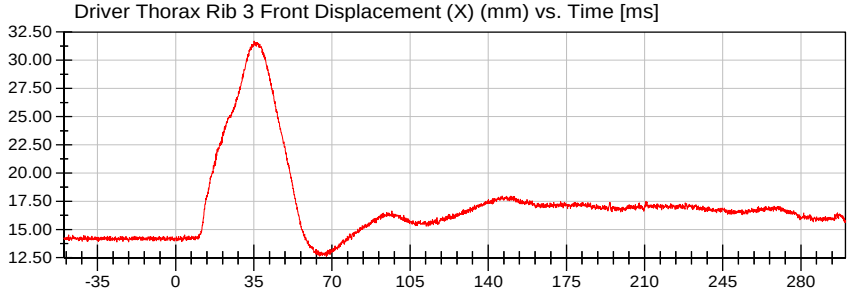
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Thorax Rib 3 Front Displacement (X) (mm) vs. Time [ms]



<Max>

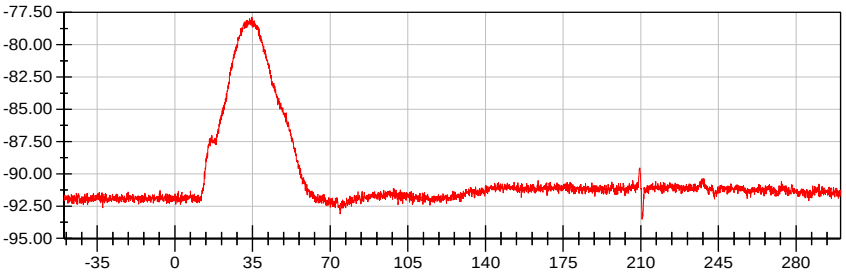
31.70 mm at 35.10 ms

<Min>

12.61 mm at 67.50 ms

Unfiltered

Driver Thorax Rib 3 Front Displacement (Y) (mm) vs. Time [ms]



<Max>

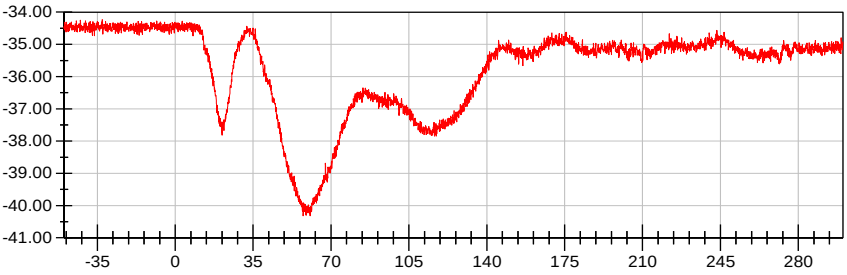
-77.87 mm at 34.70 ms

<Min>

-93.51 mm at 210.60 ms

Unfiltered

Driver Thorax Rib 3 Front Displacement (Z) (mm) vs. Time [ms]



<Max>

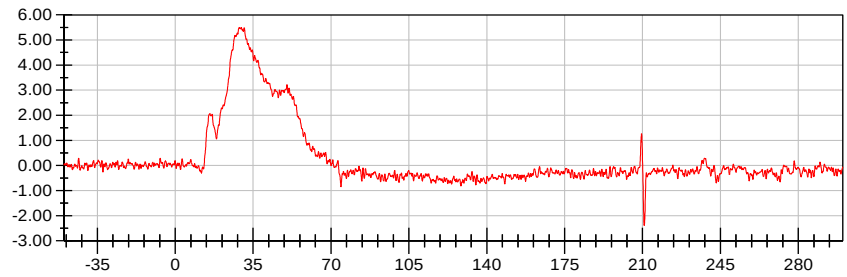
-34.23 mm at -32.75 ms

<Min>

-40.32 mm at 57.50 ms

Unfiltered

Driver Thorax Rib 3 Front Length Change (mm) vs. Time [ms]



<Max>

5.50 mm at 28.90 ms

<Min>

-2.39 mm at 210.75 ms

CFC_600

VRTC

Test Date: 02/04/2021

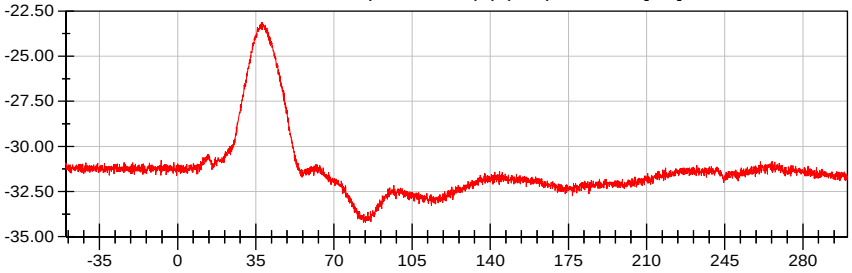
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Abdomen Rib 1 Rear Displacement (X) (mm) vs. Time [ms]



<Max>

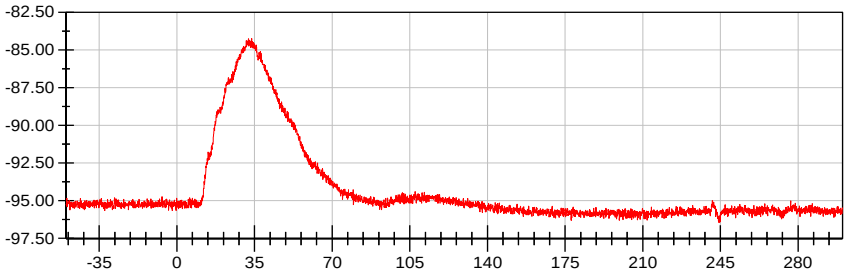
-23.14 mm at 37.65 ms

<Min>

-34.22 mm at 84.15 ms

Unfiltered

Driver Abdomen Rib 1 Rear Displacement (Y) (mm) vs. Time [ms]



<Max>

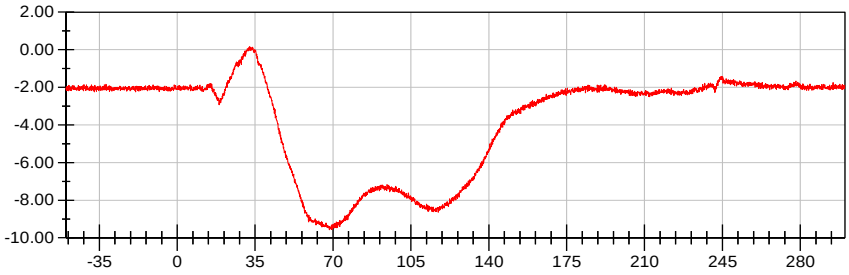
-84.23 mm at 33.70 ms

<Min>

-96.44 mm at 244.35 ms

Unfiltered

Driver Abdomen Rib 1 Rear Displacement (Z) (mm) vs. Time [ms]



<Max>

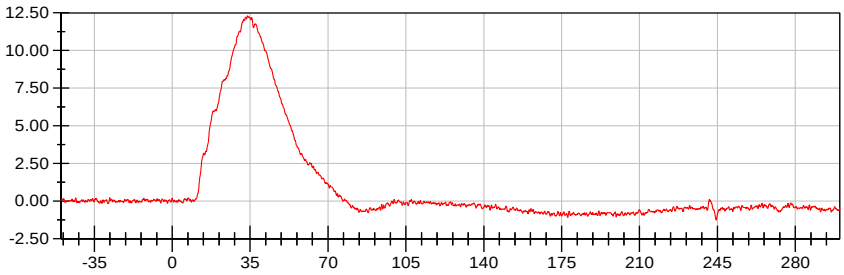
0.17 mm at 32.60 ms

<Min>

-9.58 mm at 68.40 ms

Unfiltered

Driver Abdomen Rib 1 Rear Length Change (mm) vs. Time [ms]



<Max>

12.30 mm at 33.80 ms

<Min>

-1.26 mm at 244.40 ms

CFC_600

VRTC

Test Date: 02/04/2021

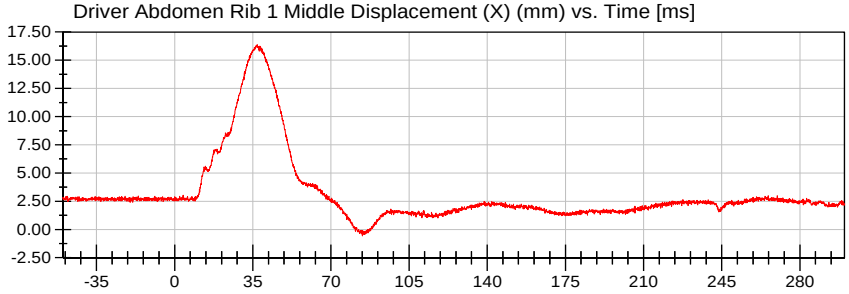
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Abdomen Rib 1 Middle Displacement (X) (mm) vs. Time [ms]



<Max>

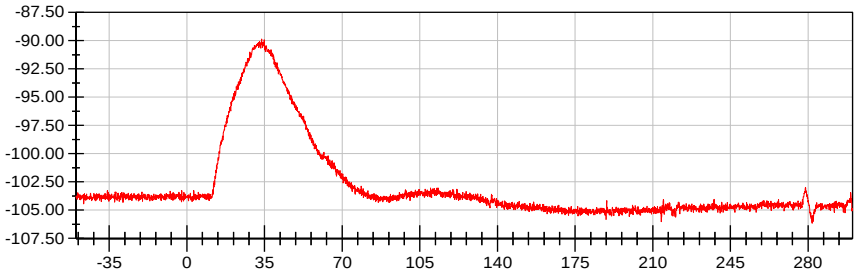
16.39 mm at 37.00 ms

<Min>

-0.57 mm at 84.15 ms

Unfiltered

Driver Abdomen Rib 1 Middle Displacement (Y) (mm) vs. Time [ms]



<Max>

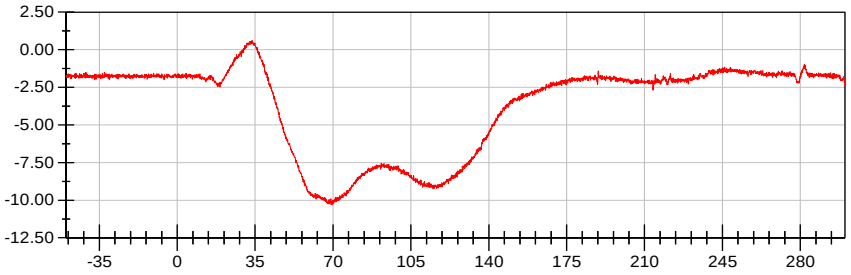
-89.86 mm at 33.70 ms

<Min>

-106.16 mm at 281.80 ms

Unfiltered

Driver Abdomen Rib 1 Middle Displacement (Z) (mm) vs. Time [ms]



<Max>

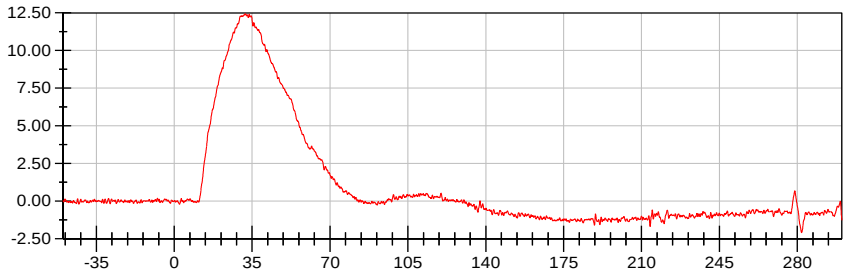
0.60 mm at 33.50 ms

<Min>

-10.30 mm at 69.50 ms

Unfiltered

Driver Abdomen Rib 1 Middle Length Change (mm) vs. Time [ms]



<Max>

12.44 mm at 31.95 ms

<Min>

-2.09 mm at 281.90 ms

CFC_600

VRTC

Test Date: 02/04/2021

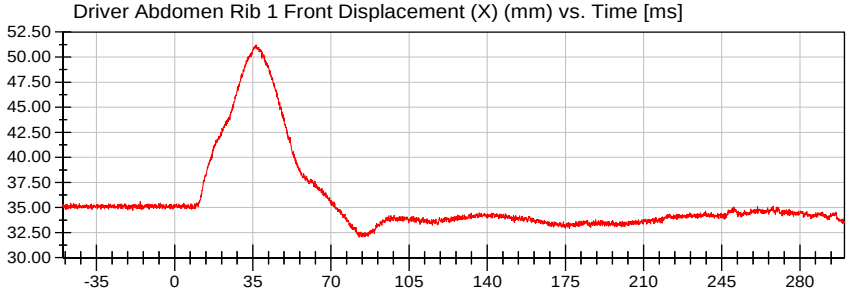
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Abdomen Rib 1 Front Displacement (X) (mm) vs. Time [ms]



<Max>

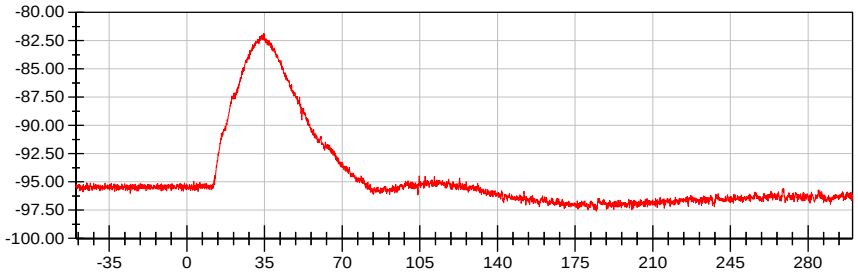
51.19 mm at 36.20 ms

<Min>

32.05 mm at 82.60 ms

Unfiltered

Driver Abdomen Rib 1 Front Displacement (Y) (mm) vs. Time [ms]



<Max>

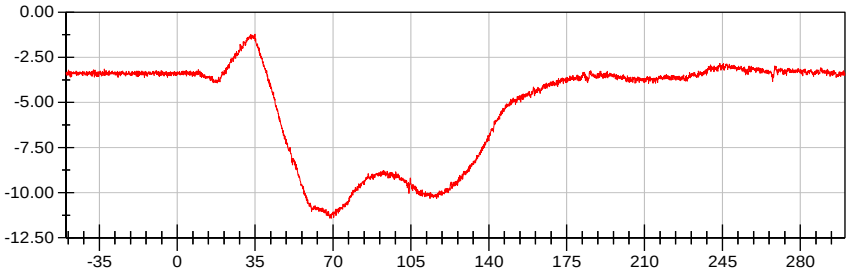
-81.85 mm at 34.70 ms

<Min>

-97.57 mm at 184.50 ms

Unfiltered

Driver Abdomen Rib 1 Front Displacement (Z) (mm) vs. Time [ms]



<Max>

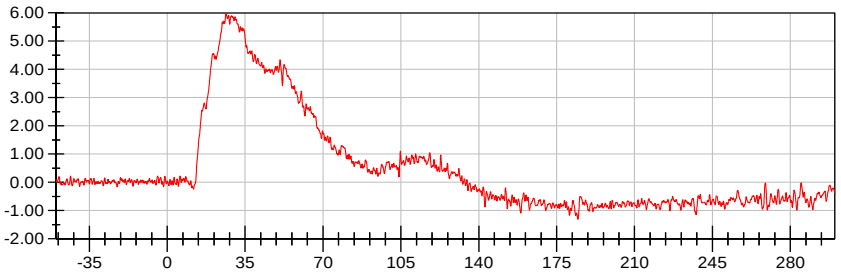
-1.21 mm at 34.90 ms

<Min>

-11.42 mm at 69.20 ms

Unfiltered

Driver Abdomen Rib 1 Front Length Change (mm) vs. Time [ms]



<Max>

6.00 mm at 26.45 ms

<Min>

-1.31 mm at 184.50 ms

CFC_600

VRTC

Test Date: 02/04/2021

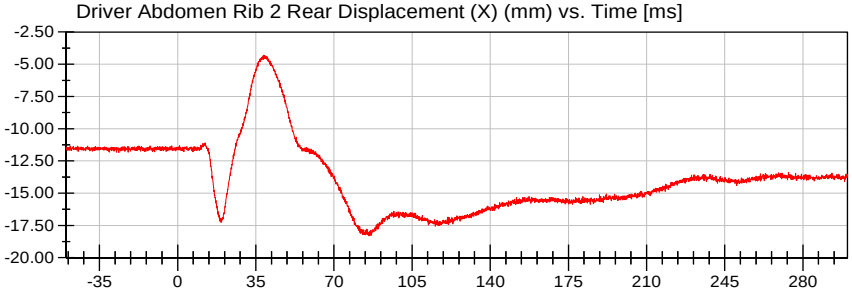
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Abdomen Rib 2 Rear Displacement (X) (mm) vs. Time [ms]



<Max>

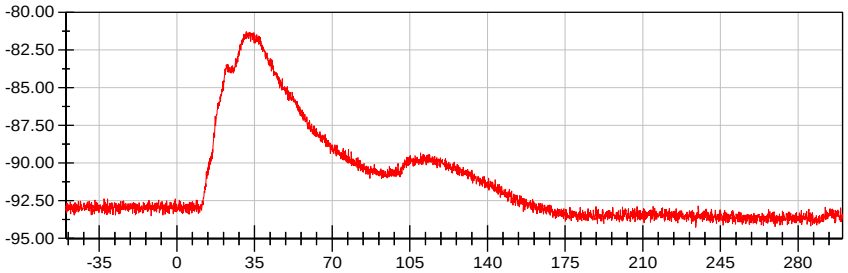
-4.31 mm at 38.40 ms

<Min>

-18.31 mm at 85.70 ms

Unfiltered

Driver Abdomen Rib 2 Rear Displacement (Y) (mm) vs. Time [ms]



<Max>

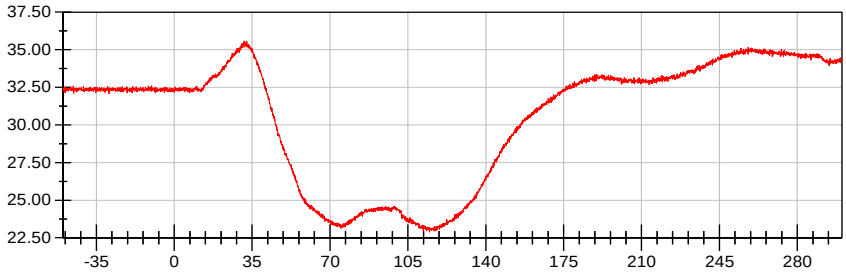
-81.27 mm at 31.25 ms

<Min>

-94.27 mm at 233.90 ms

Unfiltered

Driver Abdomen Rib 2 Rear Displacement (Z) (mm) vs. Time [ms]



<Max>

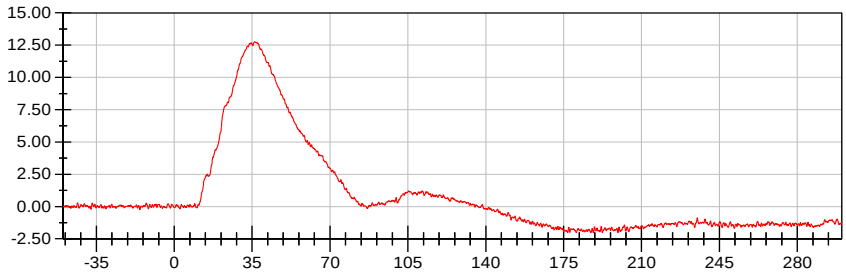
35.58 mm at 31.40 ms

<Min>

22.89 mm at 114.70 ms

Unfiltered

Driver Abdomen Rib 2 Rear Length Change (mm) vs. Time [ms]



<Max>

12.76 mm at 36.10 ms

<Min>

-2.02 mm at 192.35 ms

CFC_600

VRTC

Test Date: 02/04/2021

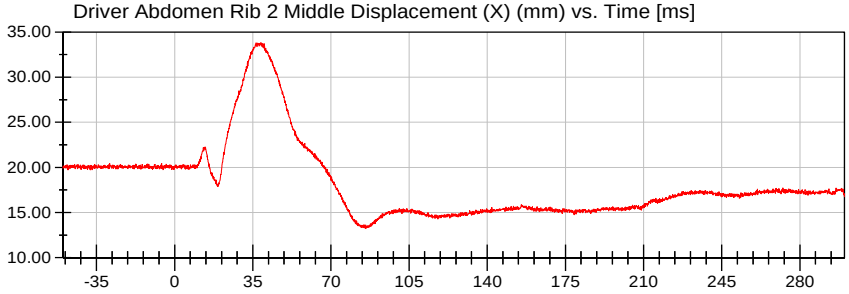
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Abdomen Rib 2 Middle Displacement (X) (mm) vs. Time [ms]



<Max>

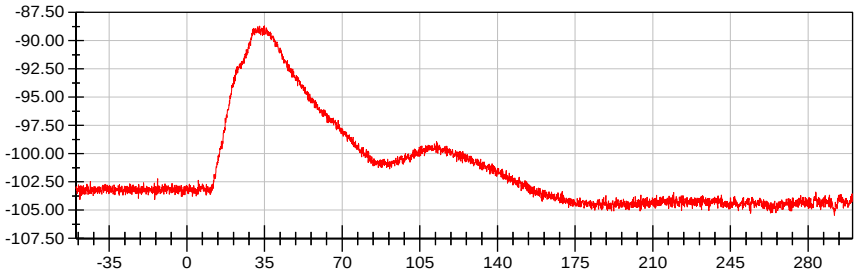
33.83 mm at 38.60 ms

<Min>

13.23 mm at 85.45 ms

Unfiltered

Driver Abdomen Rib 2 Middle Displacement (Y) (mm) vs. Time [ms]



<Max>

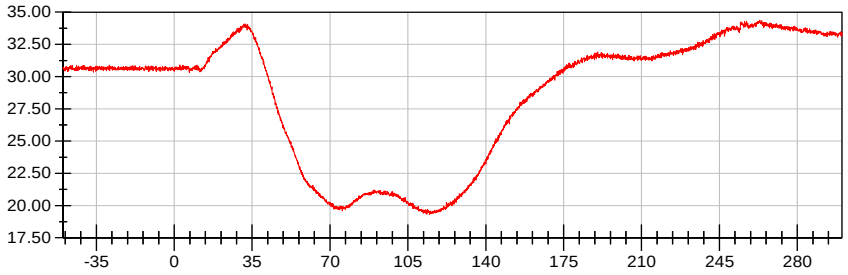
-88.69 mm at 34.95 ms

<Min>

-105.47 mm at 291.90 ms

Unfiltered

Driver Abdomen Rib 2 Middle Displacement (Z) (mm) vs. Time [ms]



<Max>

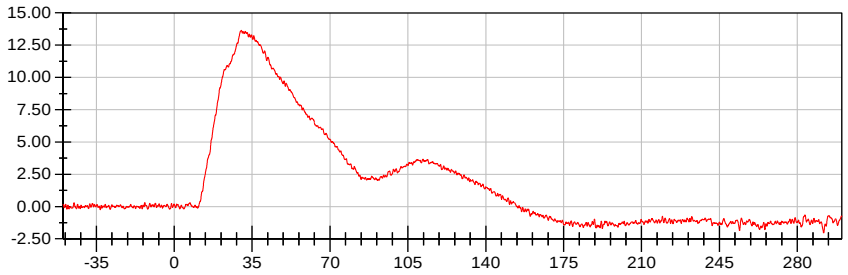
34.37 mm at 263.15 ms

<Min>

19.32 mm at 113.55 ms

Unfiltered

Driver Abdomen Rib 2 Middle Length Change (mm) vs. Time [ms]



<Max>

13.65 mm at 30.20 ms

<Min>

-2.04 mm at 291.80 ms

CFC_600

VRTC

Test Date: 02/04/2021

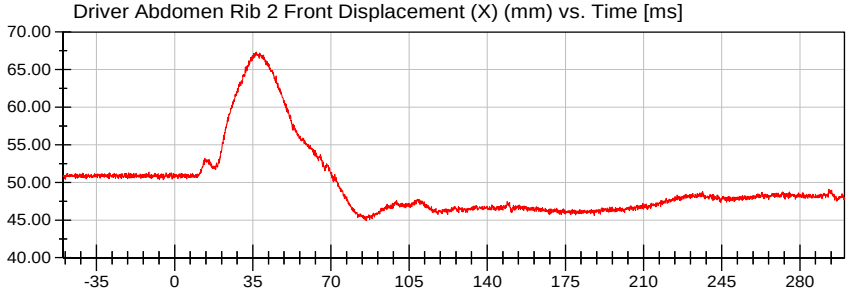
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Abdomen Rib 2 Front Displacement (X) (mm) vs. Time [ms]



<Max>

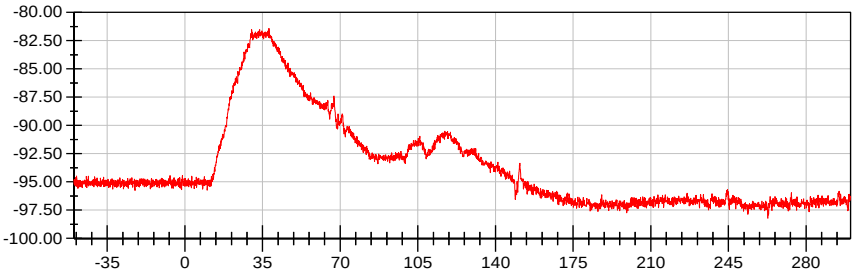
67.34 mm at 36.55 ms

<Min>

44.92 mm at 85.75 ms

Unfiltered

Driver Abdomen Rib 2 Front Displacement (Y) (mm) vs. Time [ms]



<Max>

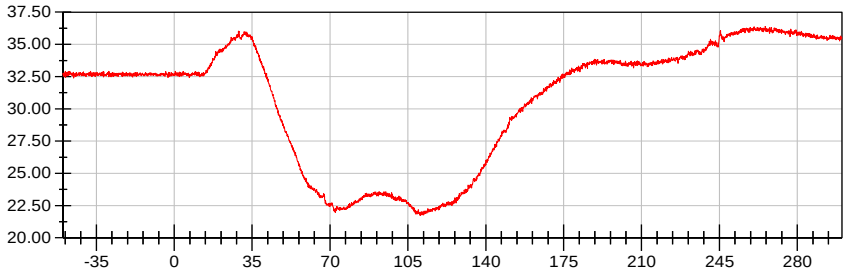
-81.42 mm at 37.90 ms

<Min>

-98.22 mm at 262.75 ms

Unfiltered

Driver Abdomen Rib 2 Front Displacement (Z) (mm) vs. Time [ms]



<Max>

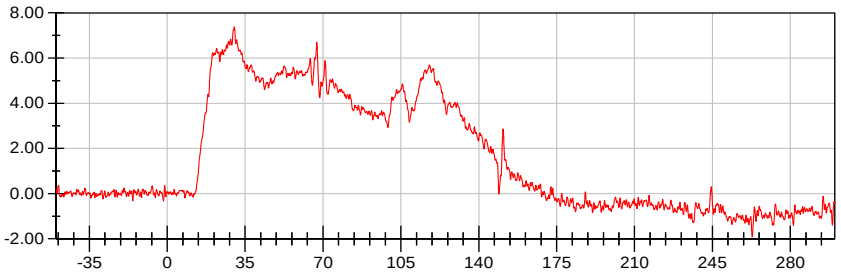
36.39 mm at 265.60 ms

<Min>

21.73 mm at 110.60 ms

Unfiltered

Driver Abdomen Rib 2 Front Length Change (mm) vs. Time [ms]



<Max>

7.39 mm at 30.20 ms

<Min>

-1.92 mm at 262.85 ms

CFC_600

VRTC

Test Date: 02/04/2021

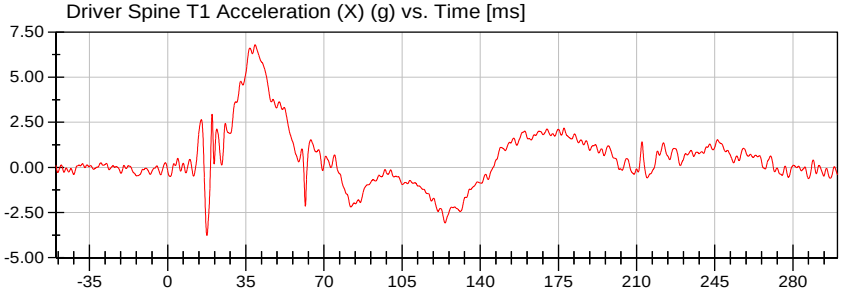
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Spine T1 Acceleration (X) (g) vs. Time [ms]



<Max>

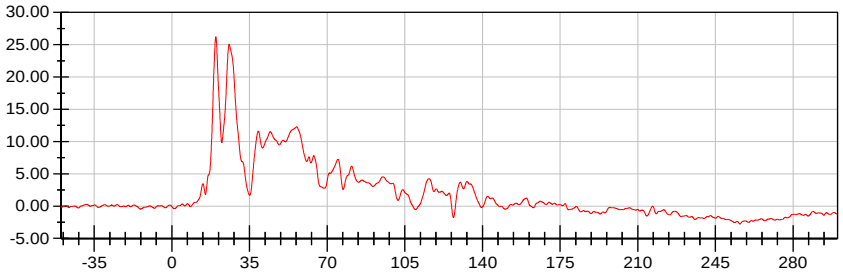
6.79 g at 39.20 ms

<Min>

-3.76 g at 17.60 ms

CFC_180

Driver Spine T1 Acceleration (Y) (g) vs. Time [ms]



<Max>

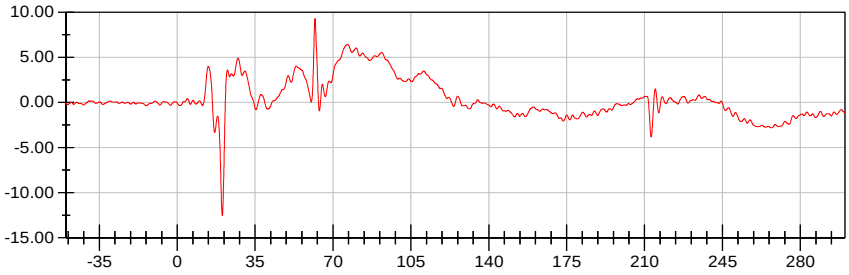
26.24 g at 19.85 ms

<Min>

-2.76 g at 256.10 ms

CFC_180

Driver Spine T1 Acceleration (Z) (g) vs. Time [ms]



<Max>

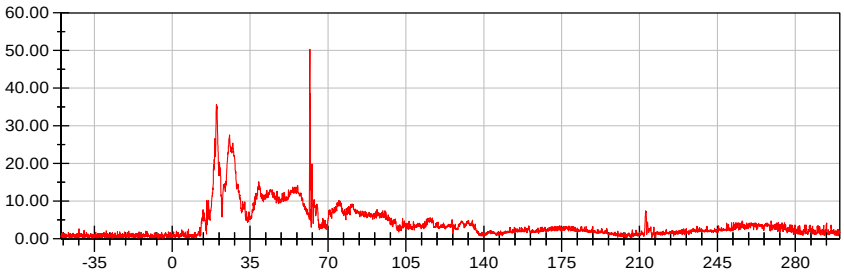
9.29 g at 61.90 ms

<Min>

-12.54 g at 20.25 ms

CFC_180

Driver Spine T1 Acceleration Resultant (g) vs. Time [ms]



<Max>

50.28 g at 61.85 ms

<Min>

0.17 g at -27.10 ms

Prefiltered_> CFC 1000

VRTC

Test Date: 02/04/2021

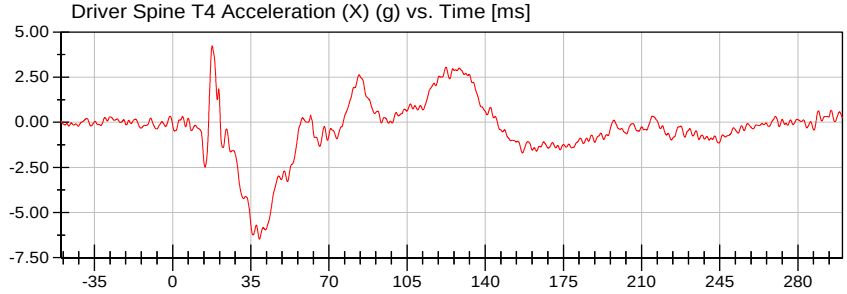
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Spine T4 Acceleration (X) (g) vs. Time [ms]



<Max>

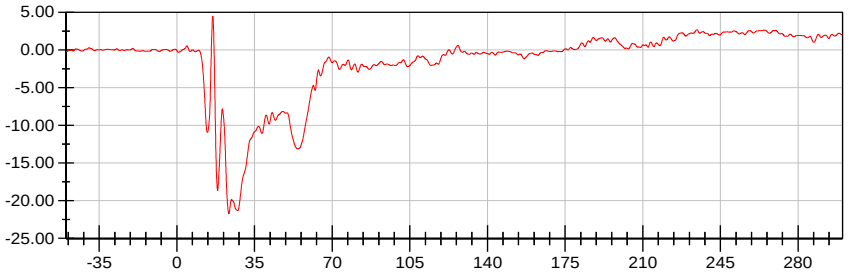
4.23 g at 17.70 ms

<Min>

-6.48 g at 38.90 ms

CFC_180

Driver Spine T4 Acceleration (Y) (g) vs. Time [ms]



<Max>

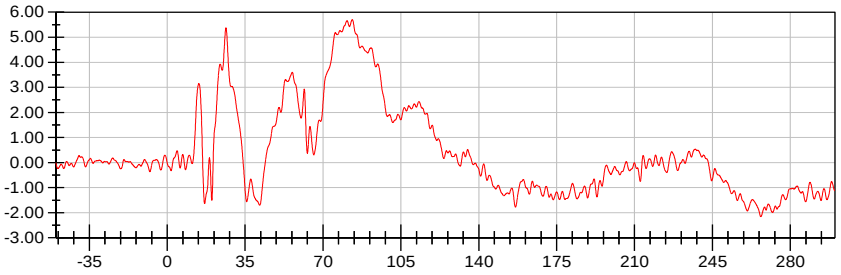
4.50 g at 16.20 ms

<Min>

-21.70 g at 23.45 ms

CFC_180

Driver Spine T4 Acceleration (Z) (g) vs. Time [ms]



<Max>

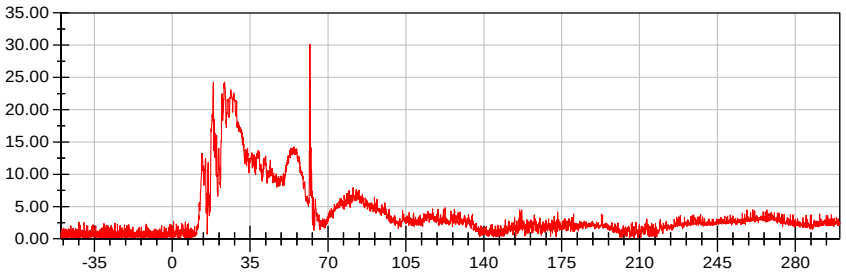
5.70 g at 83.15 ms

<Min>

-2.16 g at 266.70 ms

CFC_180

Driver Spine T4 Acceleration Resultant (g) vs. Time [ms]



<Max>

30.08 g at 61.85 ms

<Min>

0.16 g at -5.60 ms

Prefiltered_> CFC 1000

VRTC

Test Date: 02/04/2021

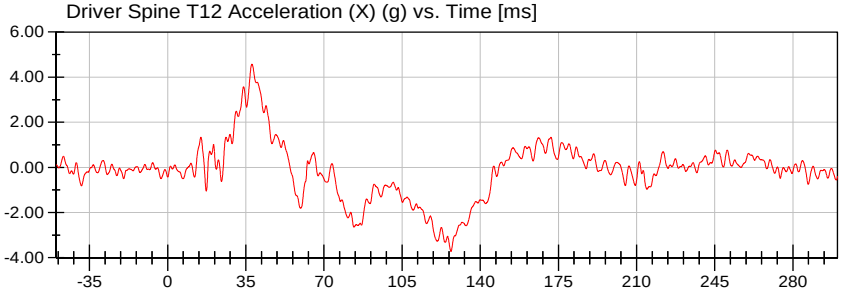
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Spine T12 Acceleration (X) (g) vs. Time [ms]



<Max>

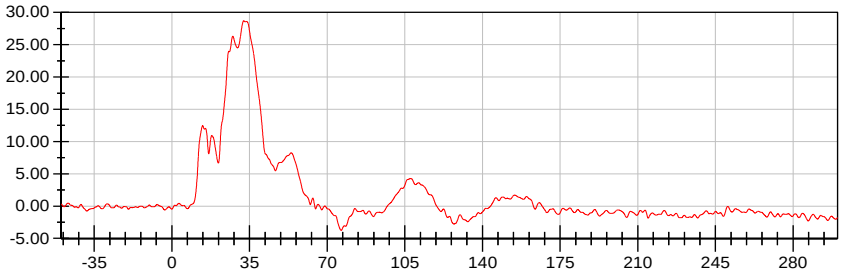
4.57 g at 37.75 ms

<Min>

-3.72 g at 126.90 ms

CFC_180

Driver Spine T12 Acceleration (Y) (g) vs. Time [ms]



<Max>

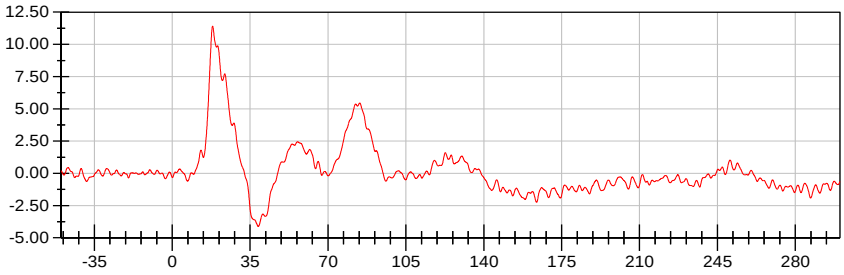
28.74 g at 32.35 ms

<Min>

-3.76 g at 76.30 ms

CFC_180

Driver Spine T12 Acceleration (Z) (g) vs. Time [ms]



<Max>

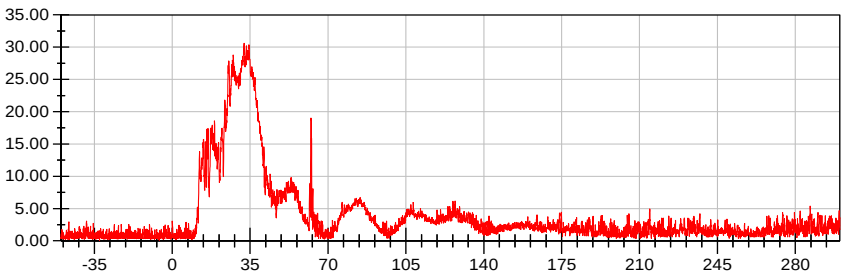
11.41 g at 18.15 ms

<Min>

-4.12 g at 38.65 ms

CFC_180

Driver Spine T12 Acceleration Resultant (g) vs. Time [ms]



<Max>

30.60 g at 32.30 ms

<Min>

0.12 g at -32.65 ms

Prefiltered_> CFC 1000

VRTC

Test Date: 02/04/2021

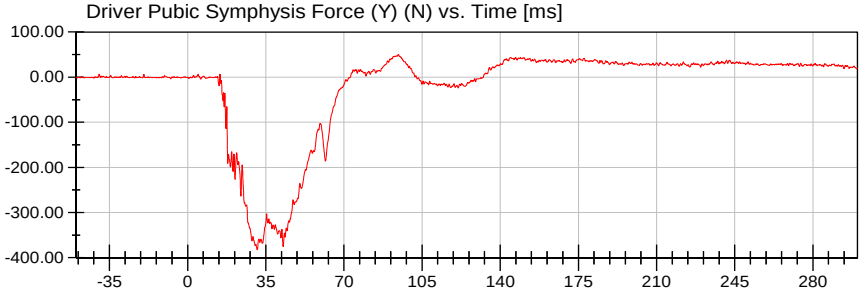
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Pubic Symphysis Force (Y) (N) vs. Time [ms]



<Max>

50.22 N at 94.45 ms

<Min>

-382.49 N at 31.15 ms

CFC_600

VRTC

Test Date: 02/04/2021

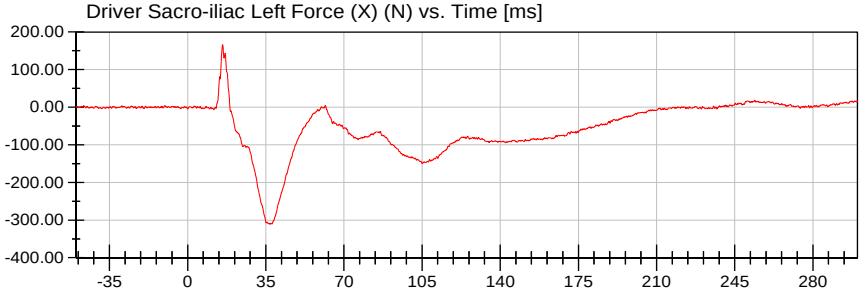
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Sacro-iliac Left Force (X) (N) vs. Time [ms]



<Max>

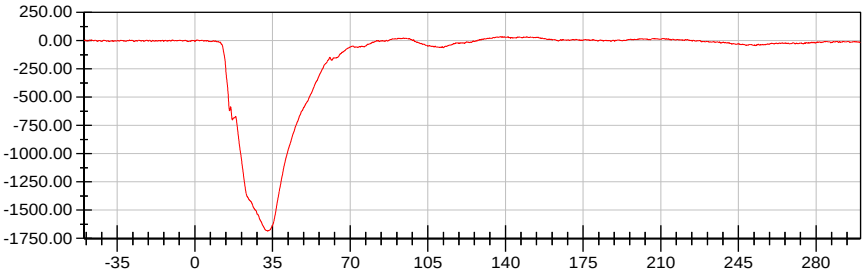
166.17 N at 15.70 ms

<Min>

-311.02 N at 36.95 ms

CFC_600

Driver Sacro-iliac Left Force (Y) (N) vs. Time [ms]



<Max>

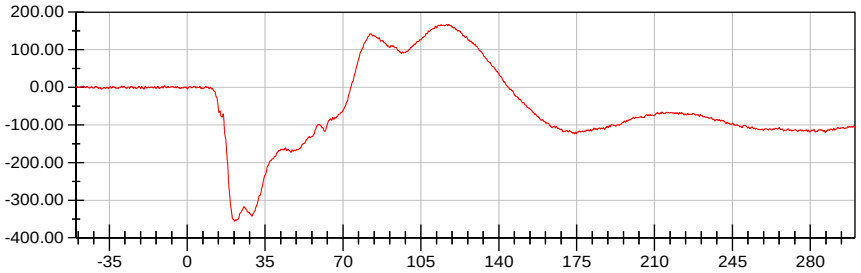
35.99 N at 137.75 ms

<Min>

-1,685.48 N at 32.80 ms

CFC_600

Driver Sacro-iliac Left Force (Z) (N) vs. Time [ms]



<Max>

167.83 N at 116.65 ms

<Min>

-355.45 N at 21.25 ms

CFC_600

VRTC

Test Date: 02/04/2021

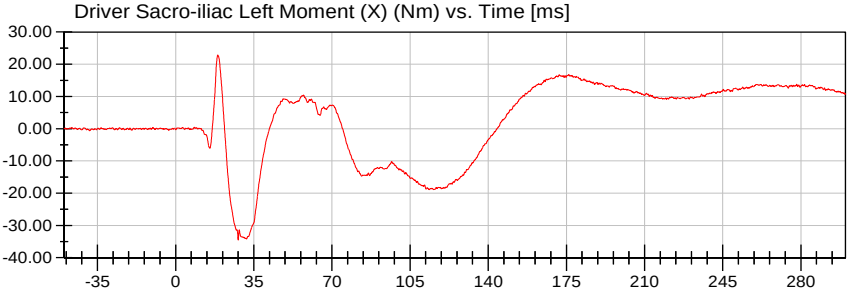
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Sacro-iliac Left Moment (X) (Nm) vs. Time [ms]



<Max>

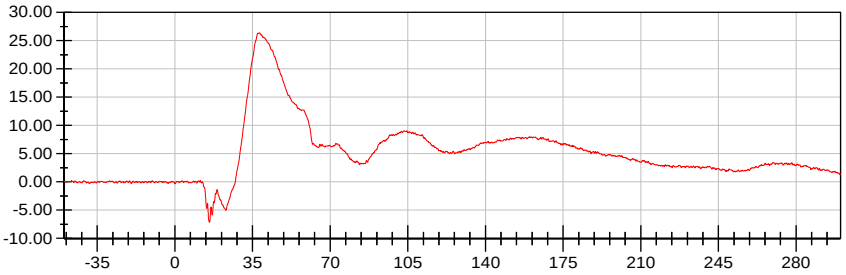
22.85 Nm at 18.90 ms

<Min>

-34.51 Nm at 28.00 ms

CFC_600

Driver Sacro-iliac Left Moment (Y) (Nm) vs. Time [ms]



<Max>

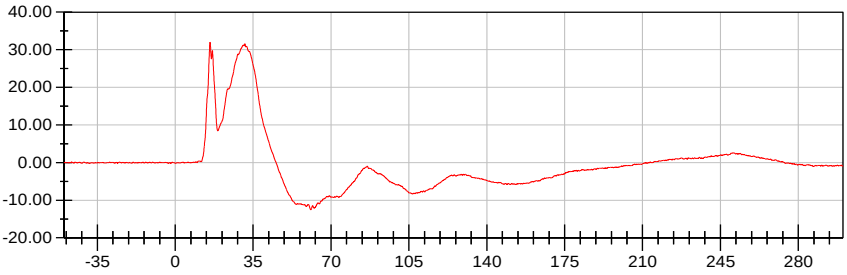
26.43 Nm at 38.10 ms

<Min>

-7.16 Nm at 15.65 ms

CFC_600

Driver Sacro-iliac Left Moment (Z) (Nm) vs. Time [ms]



<Max>

31.98 Nm at 15.65 ms

<Min>

-12.55 Nm at 60.95 ms

CFC_600

VRTC

Test Date: 02/04/2021

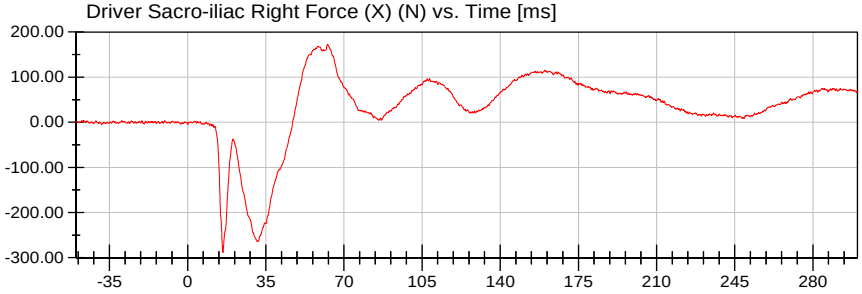
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Sacro-iliac Right Force (X) (N) vs. Time [ms]



<Max>

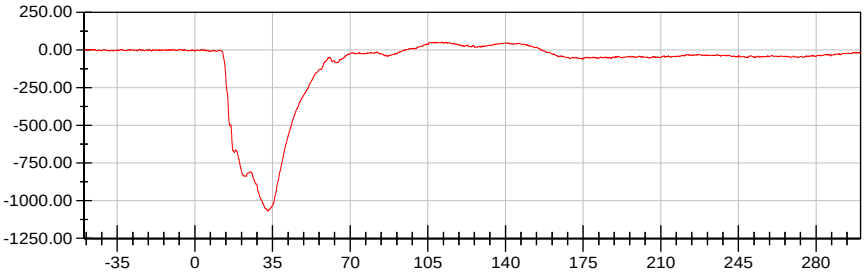
172.52 N at 62.65 ms

<Min>

-288.48 N at 15.80 ms

CFC_600

Driver Sacro-iliac Right Force (Y) (N) vs. Time [ms]



<Max>

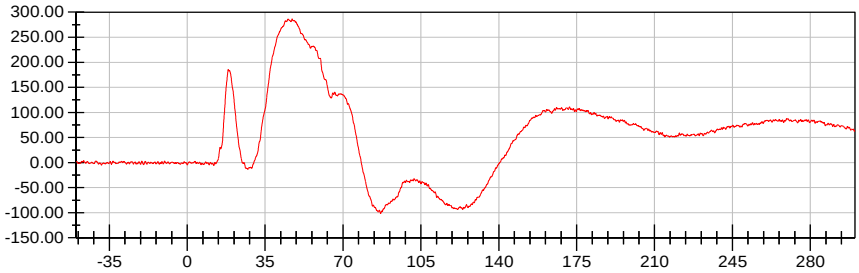
53.82 N at 111.45 ms

<Min>

-1,067.93 N at 32.85 ms

CFC_600

Driver Sacro-iliac Right Force (Z) (N) vs. Time [ms]



<Max>

286.35 N at 47.15 ms

<Min>

-101.51 N at 86.95 ms

CFC_600

VRTC

Test Date: 02/04/2021

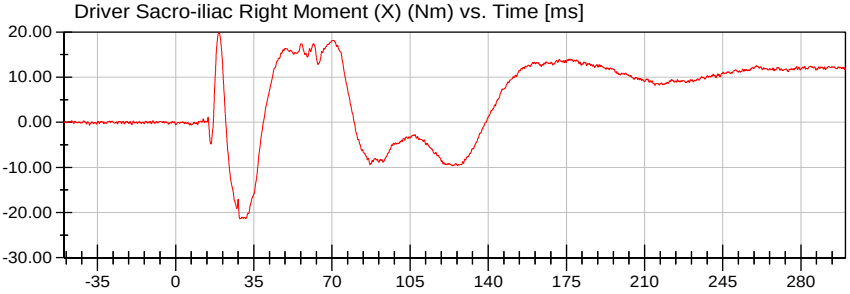
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Sacro-iliac Right Moment (X) (Nm) vs. Time [ms]



<Max>

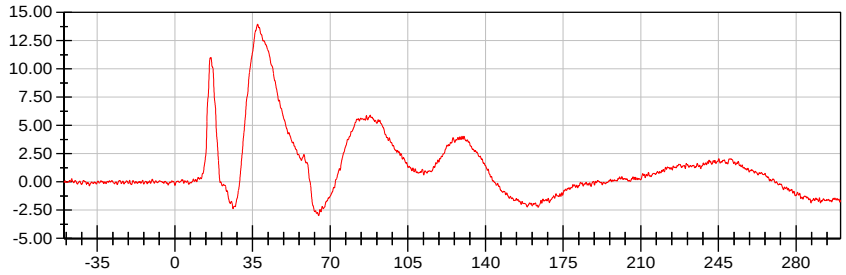
19.79 Nm at 19.40 ms

<Min>

-21.37 Nm at 29.00 ms

CFC_600

Driver Sacro-iliac Right Moment (Y) (Nm) vs. Time [ms]



<Max>

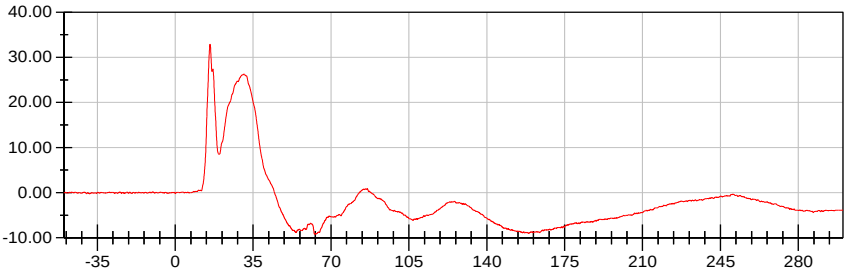
13.96 Nm at 37.30 ms

<Min>

-2.99 Nm at 64.85 ms

CFC_600

Driver Sacro-iliac Right Moment (Z) (Nm) vs. Time [ms]



<Max>

32.88 Nm at 15.65 ms

<Min>

-9.21 Nm at 62.65 ms

CFC_600

VRTC

Test Date: 02/04/2021

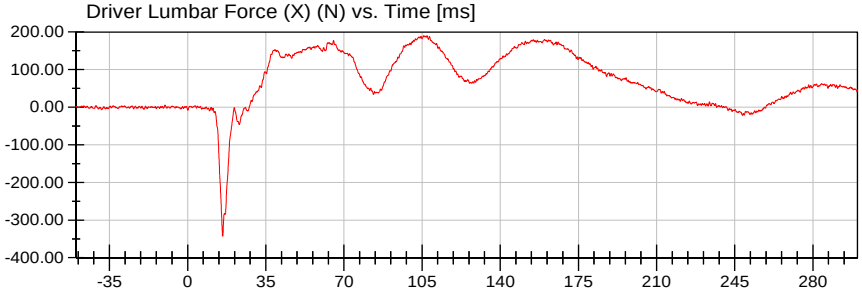
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Lumbar Force (X) (N) vs. Time [ms]



<Max>

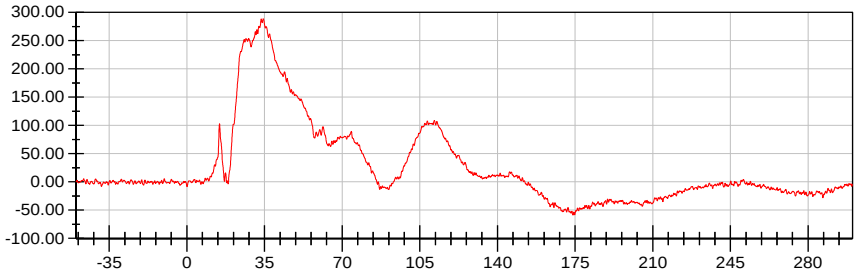
189.99 N at 107.25 ms

<Min>

-343.12 N at 15.70 ms

CFC_600

Driver Lumbar Force (Y) (N) vs. Time [ms]



<Max>

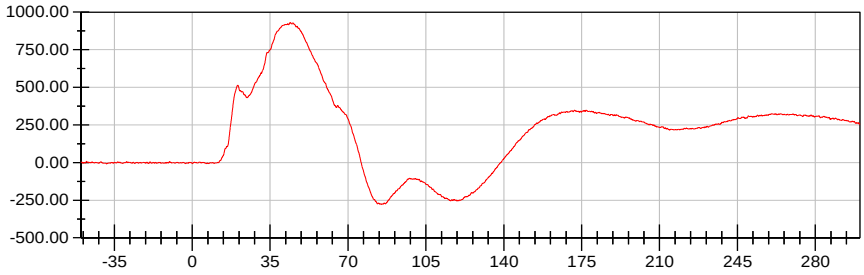
288.74 N at 34.45 ms

<Min>

-58.65 N at 174.00 ms

CFC_600

Driver Lumbar Force (Z) (N) vs. Time [ms]



<Max>

930.66 N at 44.05 ms

<Min>

-277.35 N at 85.05 ms

CFC_600

VRTC

Test Date: 02/04/2021

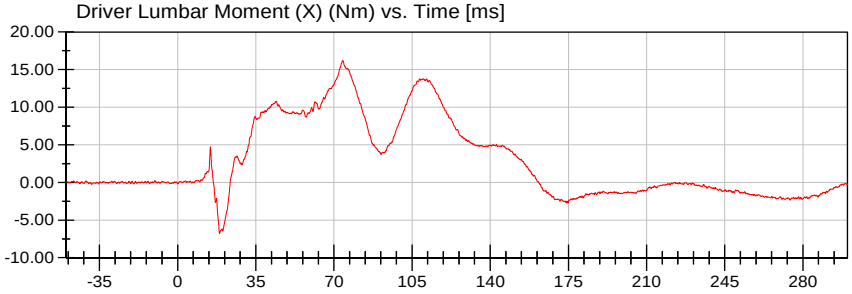
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Lumbar Moment (X) (Nm) vs. Time [ms]



<Max>

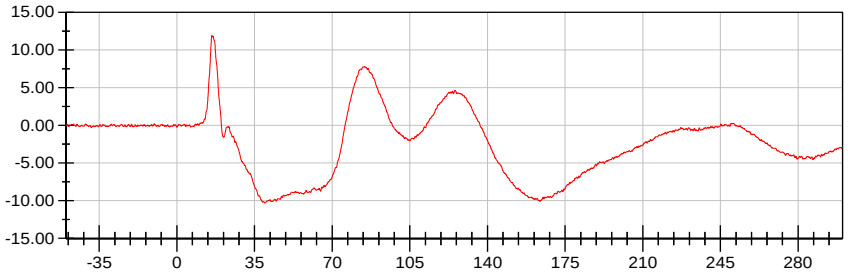
16.21 Nm at 74.00 ms

<Min>

-6.79 Nm at 18.80 ms

CFC_600

Driver Lumbar Moment (Y) (Nm) vs. Time [ms]



<Max>

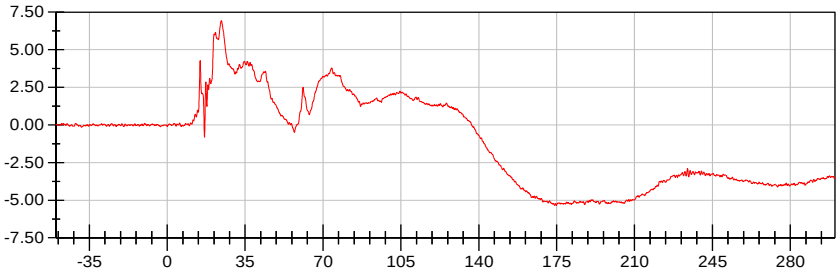
11.95 Nm at 15.80 ms

<Min>

-10.29 Nm at 39.65 ms

CFC_600

Driver Lumbar Moment (Z) (Nm) vs. Time [ms]



<Max>

6.94 Nm at 24.30 ms

<Min>

-5.36 Nm at 174.85 ms

CFC_600

VRTC

Test Date: 02/04/2021

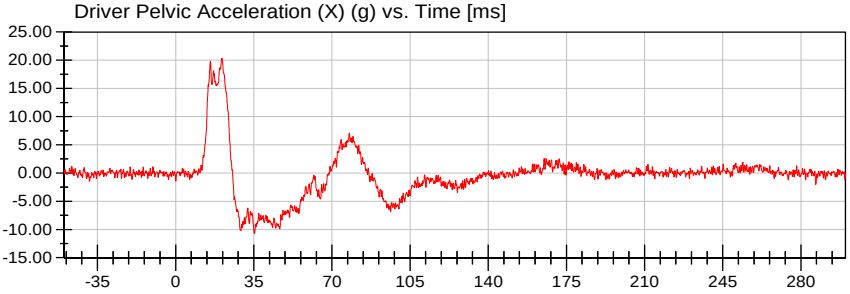
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Pelvic Acceleration (X) (g) vs. Time [ms]



<Max>

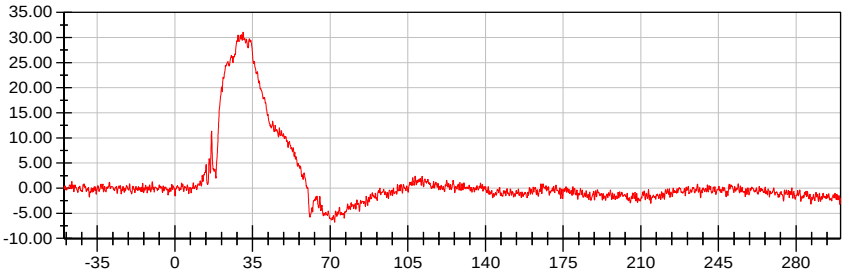
20.35 g at 20.80 ms

<Min>

-10.73 g at 35.25 ms

CFC_1000

Driver Pelvic Acceleration (Y) (g) vs. Time [ms]



<Max>

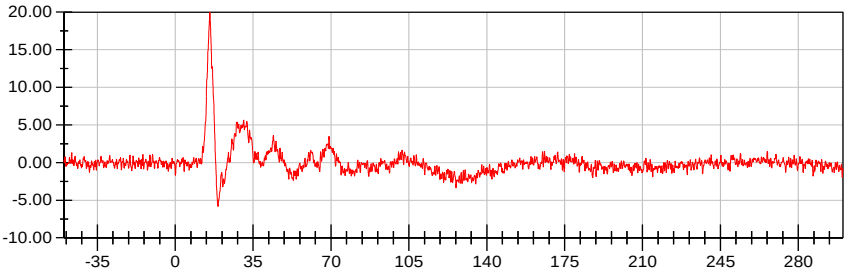
31.07 g at 30.75 ms

<Min>

-6.78 g at 72.00 ms

CFC_1000

Driver Pelvic Acceleration (Z) (g) vs. Time [ms]



<Max>

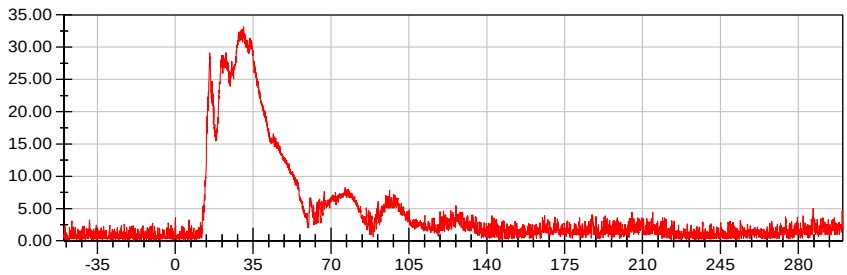
19.97 g at 15.55 ms

<Min>

-5.83 g at 19.25 ms

CFC_1000

Driver Pelvic Acceleration Resultant (g) vs. Time [ms]



<Max>

33.21 g at 30.70 ms

<Min>

0.07 g at -18.55 ms

Prefiltered_> CFC 1000

VRTC

Test Date: 02/04/2021

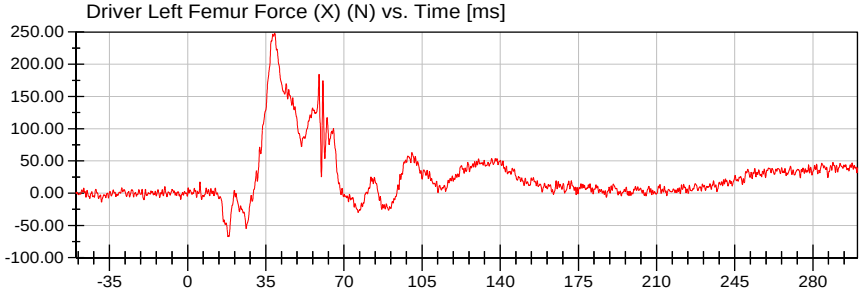
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Left Femur Force (X) (N) vs. Time [ms]



<Max>

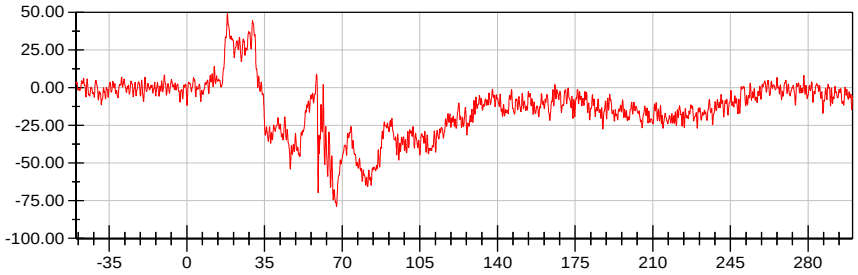
247.91 N at 39.05 ms

<Min>

-67.38 N at 18.10 ms

CFC_600

Driver Left Femur Force (Y) (N) vs. Time [ms]



<Max>

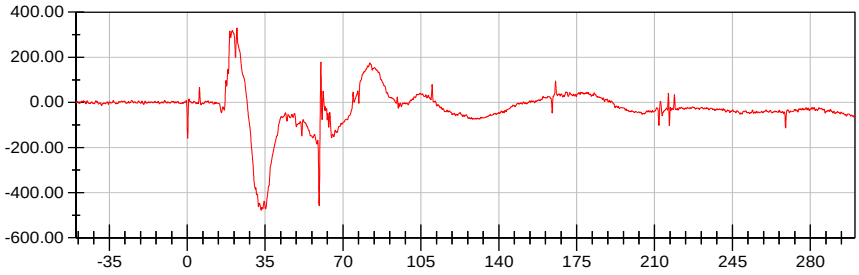
49.24 N at 18.25 ms

<Min>

-78.76 N at 67.45 ms

CFC_600

Driver Left Femur Force (Z) (N) vs. Time [ms]



<Max>

329.14 N at 22.35 ms

<Min>

-477.33 N at 33.20 ms

CFC_600

VRTC

Test Date: 02/04/2021

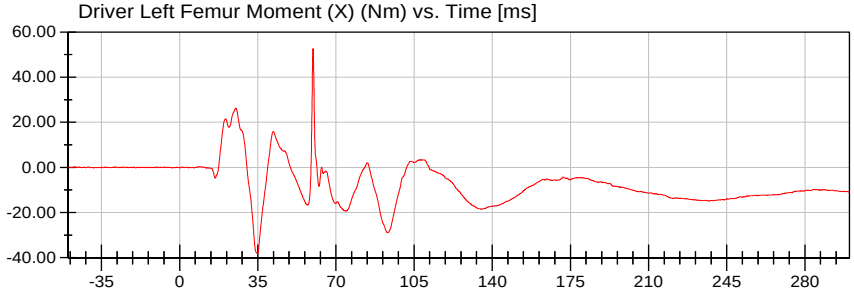
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Left Femur Moment (X) (Nm) vs. Time [ms]



<Max>

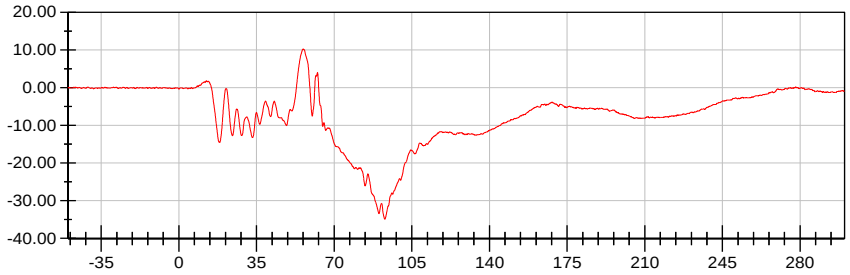
52.63 Nm at 59.75 ms

<Min>

-38.02 Nm at 34.80 ms

CFC_600

Driver Left Femur Moment (Y) (Nm) vs. Time [ms]



<Max>

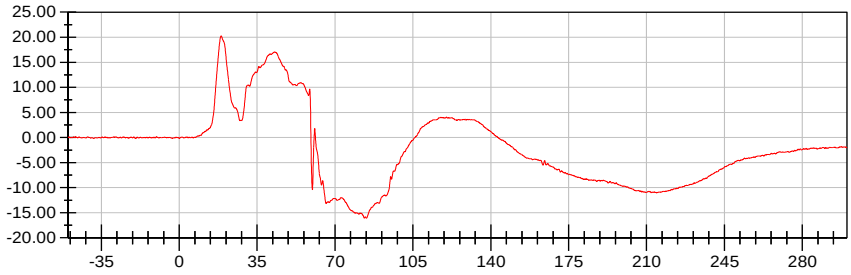
10.28 Nm at 56.00 ms

<Min>

-34.89 Nm at 92.85 ms

CFC_600

Driver Left Femur Moment (Z) (Nm) vs. Time [ms]



<Max>

20.26 Nm at 18.85 ms

<Min>

-16.08 Nm at 84.10 ms

CFC_600

VRTC

Test Date: 02/04/2021

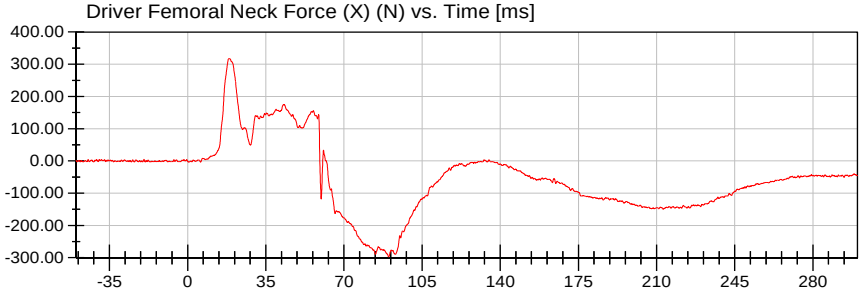
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Femoral Neck Force (X) (N) vs. Time [ms]



<Max>

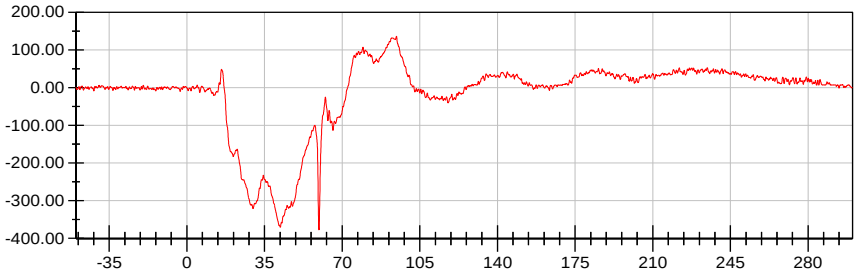
317.31 N at 18.50 ms

<Min>

-297.62 N at 90.05 ms

CFC_600

Driver Femoral Neck Force (Y) (N) vs. Time [ms]



<Max>

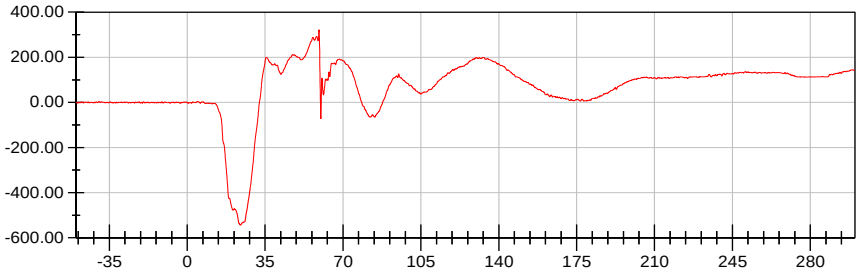
136.84 N at 94.45 ms

<Min>

-377.55 N at 59.55 ms

CFC_600

Driver Femoral Neck Force (Z) (N) vs. Time [ms]



<Max>

322.10 N at 59.20 ms

<Min>

-543.51 N at 23.90 ms

CFC_600

VRTC

Test Date: 02/04/2021

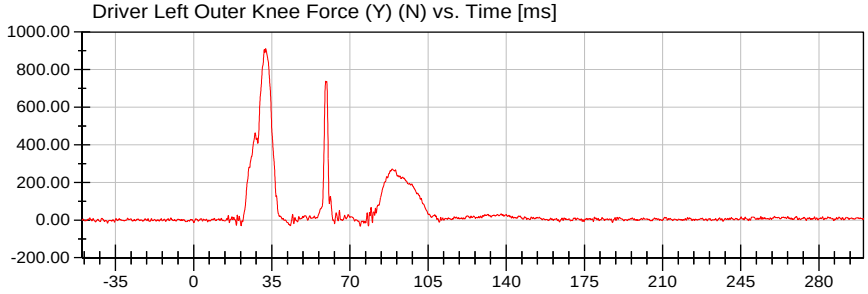
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Driver Left Outer Knee Force (Y) (N) vs. Time [ms]



<Max>

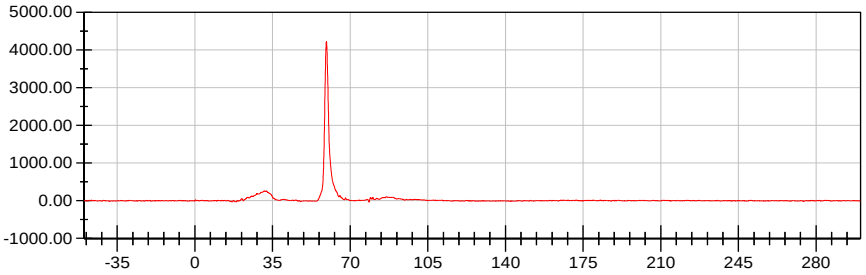
911.83 N at 32.30 ms

<Min>

-33.18 N at 74.65 ms

CFC_600

Driver Left Inner Knee Force (Y) (N) vs. Time [ms]



<Max>

4,224.53 N at 59.30 ms

<Min>

-34.01 N at 78.55 ms

CFC_600

VRTC

Test Date: 02/04/2021

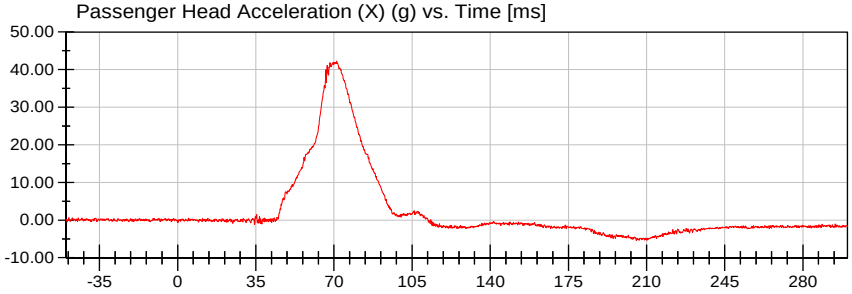
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Head Acceleration (X) (g) vs. Time [ms]



<Max>

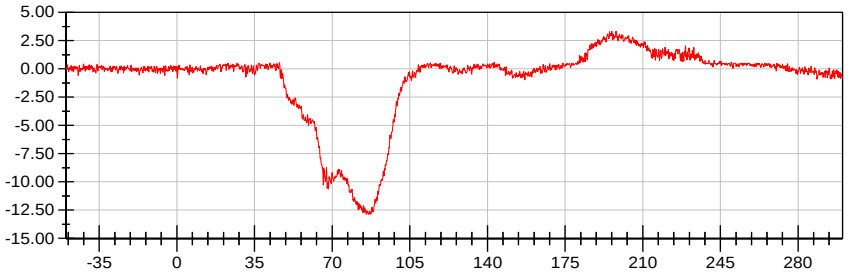
42.23 g at 71.25 ms

<Min>

-5.47 g at 205.40 ms

CFC_1000

Passenger Head Acceleration (Y) (g) vs. Time [ms]



<Max>

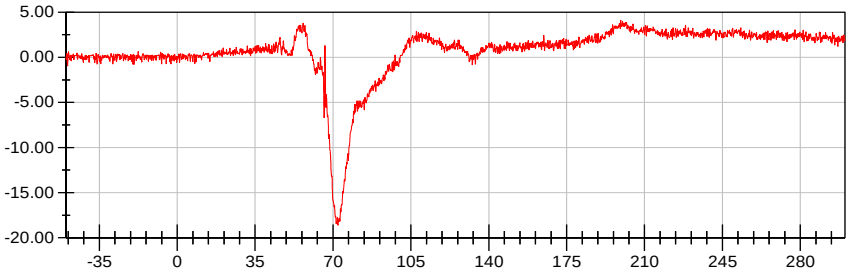
3.35 g at 197.95 ms

<Min>

-12.87 g at 86.40 ms

CFC_1000

Passenger Head Acceleration (Z) (g) vs. Time [ms]



<Max>

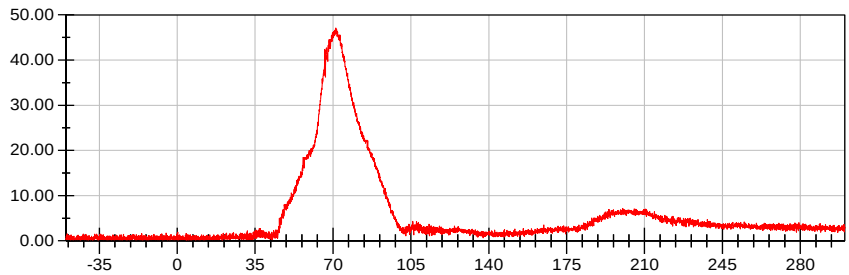
4.11 g at 199.30 ms

<Min>

-18.57 g at 72.20 ms

CFC_1000

Passenger Head Acceleration Resultant (g) vs. Time [ms]



<Max>

47.11 g at 71.25 ms

<Min>

0.18 g at -39.80 ms

Prefiltered_> CFC 1000

VRTC

Test Date: 02/04/2021

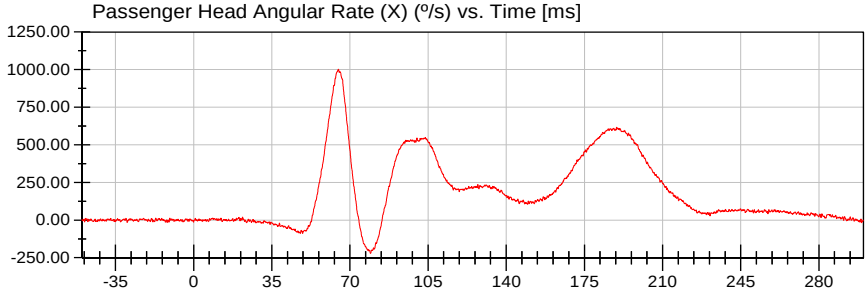
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Head Angular Rate (X) (º/s) vs. Time [ms]



<Max>

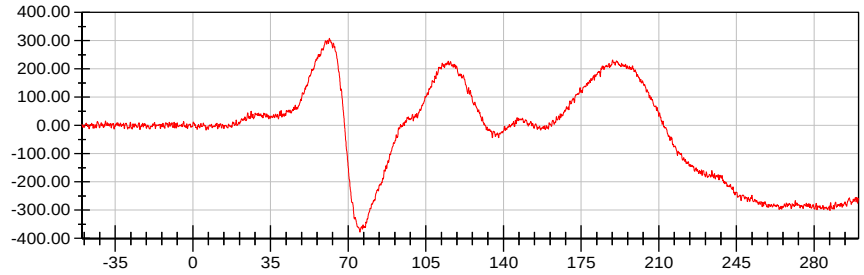
1,002.40 º/s at 64.85 ms

<Min>

-222.73 º/s at 79.25 ms

CFC_1000

Passenger Head Angular Rate (Y) (º/s) vs. Time [ms]



<Max>

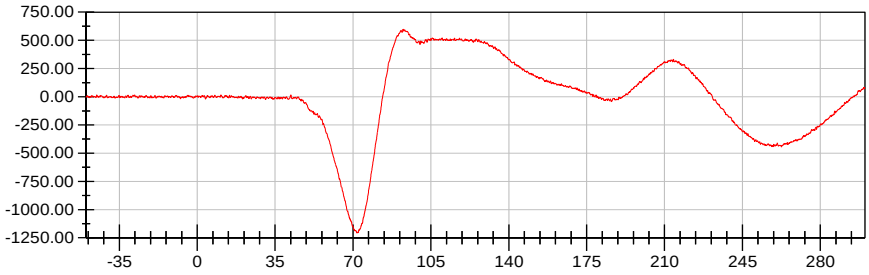
308.88 º/s at 61.55 ms

<Min>

-378.04 º/s at 75.30 ms

CFC_1000

Passenger Head Angular Rate (Z) (º/s) vs. Time [ms]



<Max>

596.74 º/s at 92.55 ms

<Min>

-1,205.29 º/s at 71.80 ms

CFC_1000

VRTC

Test Date: 02/04/2021

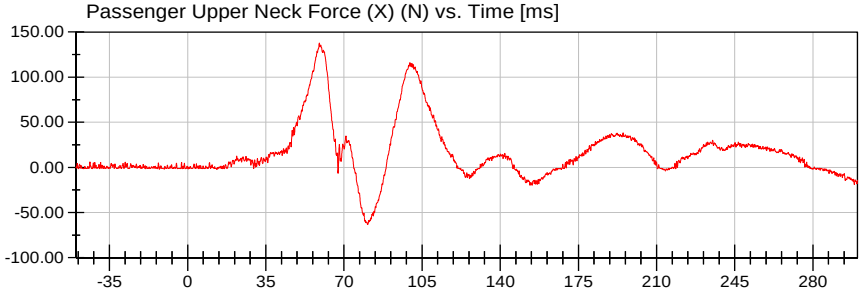
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Upper Neck Force (X) (N) vs. Time [ms]



<Max>

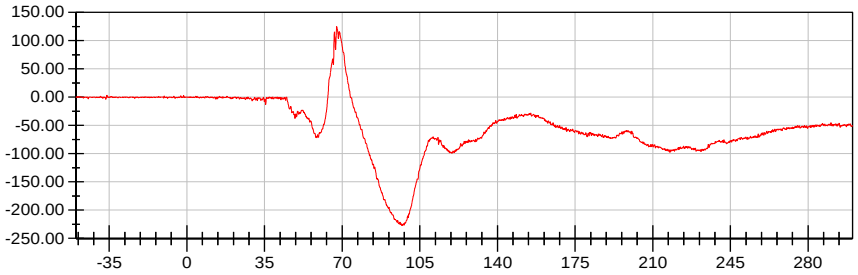
137.83 N at 58.95 ms

<Min>

-63.15 N at 80.70 ms

CFC_1000

Passenger Upper Neck Force (Y) (N) vs. Time [ms]



<Max>

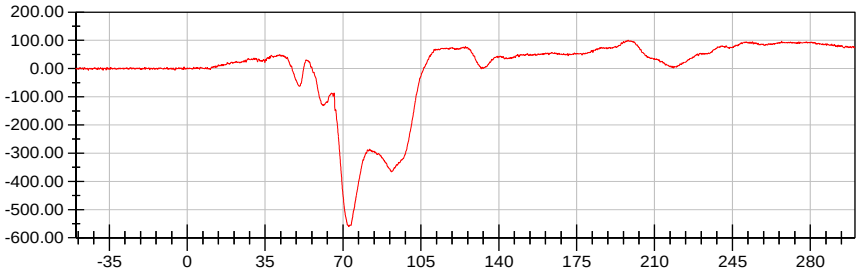
125.18 N at 67.55 ms

<Min>

-227.33 N at 97.15 ms

CFC_1000

Passenger Upper Neck Force (Z) (N) vs. Time [ms]



<Max>

100.66 N at 198.10 ms

<Min>

-559.77 N at 72.60 ms

CFC_1000

VRTC

Test Date: 02/04/2021

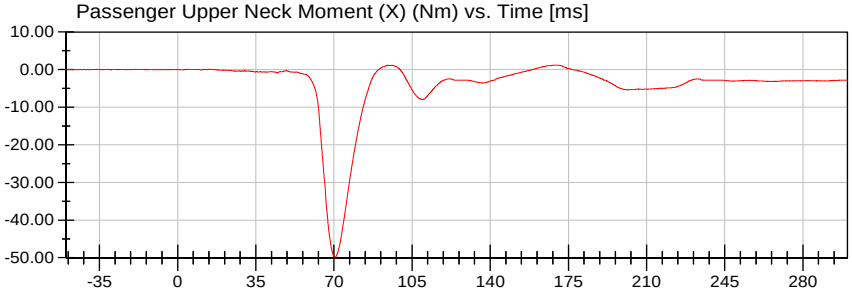
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Upper Neck Moment (X) (Nm) vs. Time [ms]



<Max>

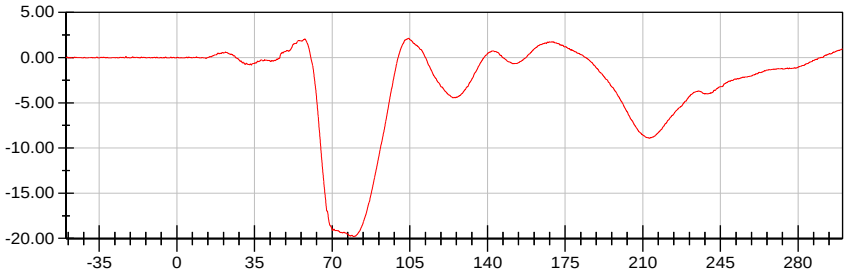
1.19 Nm at 169.30 ms

<Min>

-49.82 Nm at 70.50 ms

CFC_600

Passenger Upper Neck Moment (Y) (Nm) vs. Time [ms]



<Max>

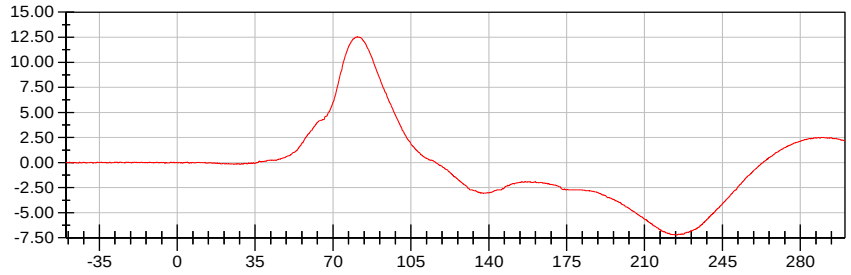
2.14 Nm at 104.40 ms

<Min>

-19.79 Nm at 79.65 ms

CFC_600

Passenger Upper Neck Moment (Z) (Nm) vs. Time [ms]



<Max>

12.55 Nm at 81.00 ms

<Min>

-7.21 Nm at 224.20 ms

CFC_600

VRTC

Test Date: 02/04/2021

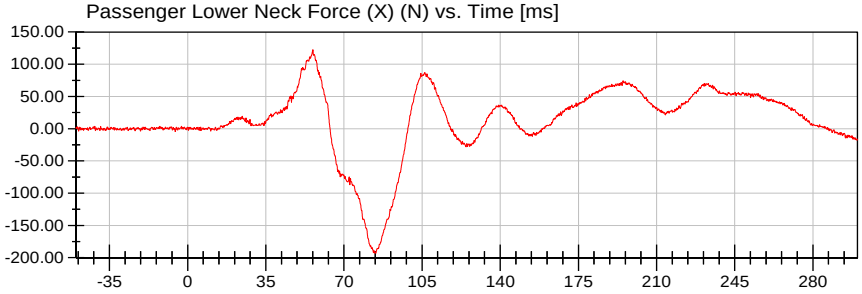
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Passenger Lower Neck Force (X) (N) vs. Time [ms]



<Max>

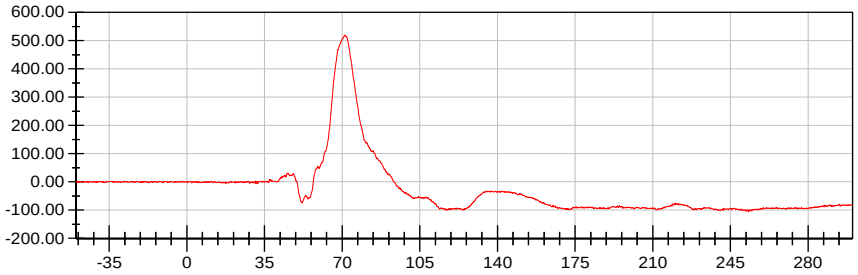
122.48 N at 56.10 ms

<Min>

-193.15 N at 84.25 ms

CFC_1000

Passenger Lower Neck Force (Y) (N) vs. Time [ms]



<Max>

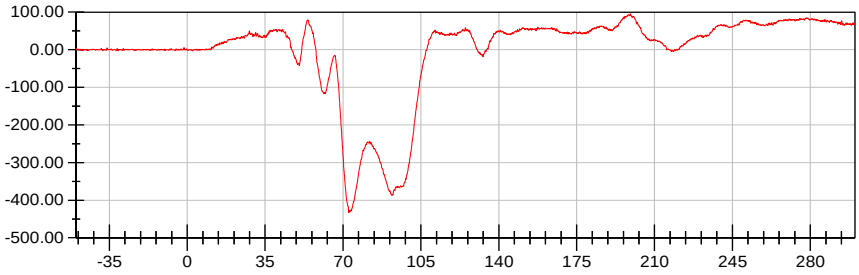
519.18 N at 71.40 ms

<Min>

-104.73 N at 253.30 ms

CFC_1000

Passenger Lower Neck Force (Z) (N) vs. Time [ms]



<Max>

95.57 N at 199.15 ms

<Min>

-433.47 N at 72.65 ms

CFC_1000

VRTC

Test Date: 02/04/2021

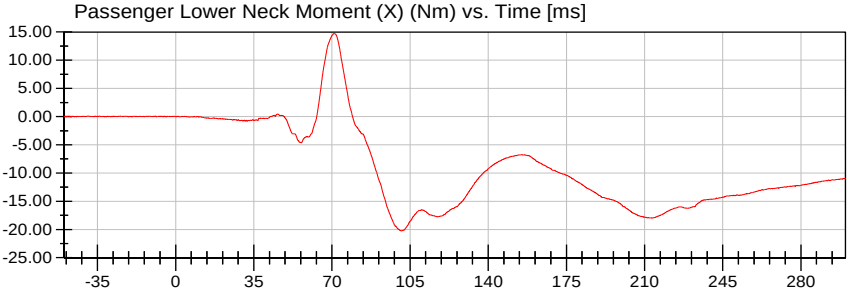
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Lower Neck Moment (X) (Nm) vs. Time [ms]



<Max>

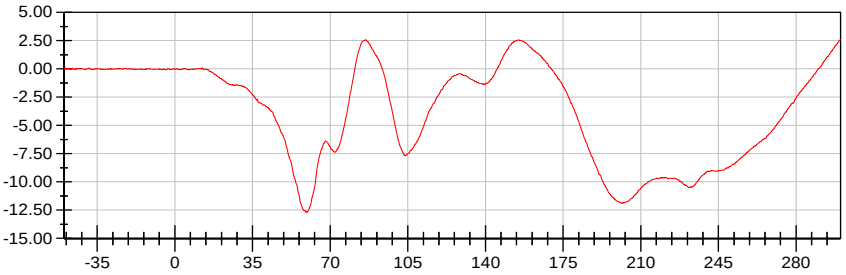
14.73 Nm at 71.00 ms

<Min>

-20.23 Nm at 101.00 ms

CFC_600

Passenger Lower Neck Moment (Y) (Nm) vs. Time [ms]



<Max>

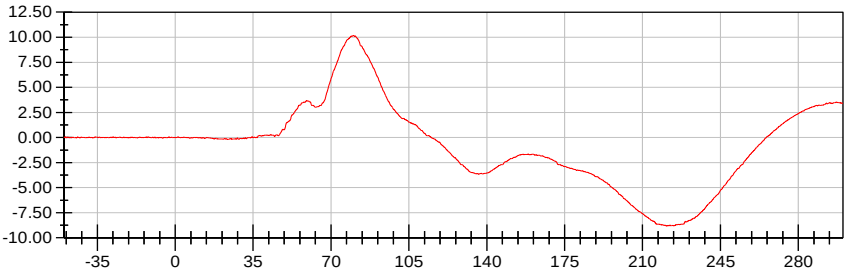
2.63 Nm at 300.00 ms

<Min>

-12.70 Nm at 59.45 ms

CFC_600

Passenger Lower Neck Moment (Z) (Nm) vs. Time [ms]



<Max>

10.17 Nm at 80.15 ms

<Min>

-8.82 Nm at 220.85 ms

CFC_600

VRTC

Test Date: 02/04/2021

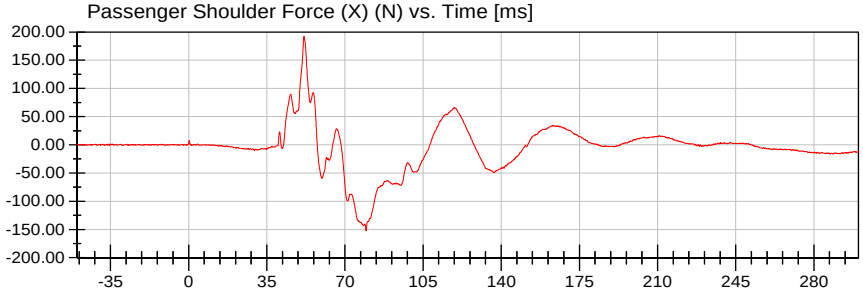
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Shoulder Force (X) (N) vs. Time [ms]



<Max>

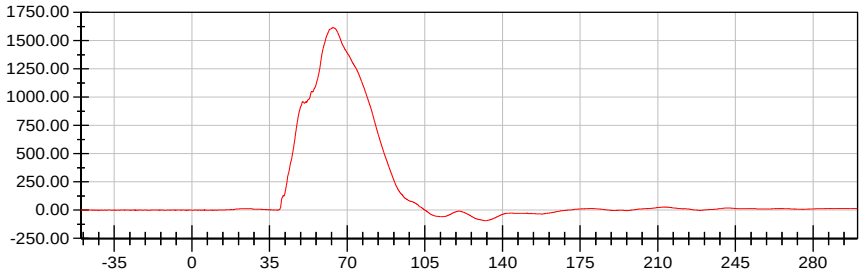
192.22 N at 51.65 ms

<Min>

-152.40 N at 79.50 ms

CFC_600

Passenger Shoulder Force (Y) (N) vs. Time [ms]



<Max>

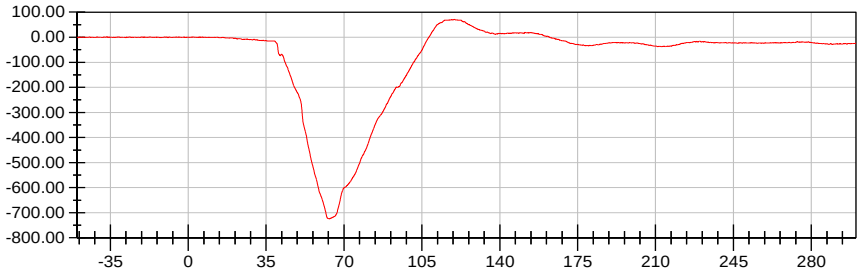
1,615.25 N at 63.65 ms

<Min>

-93.09 N at 131.85 ms

CFC_600

Passenger Shoulder Force (Z) (N) vs. Time [ms]



<Max>

70.85 N at 119.60 ms

<Min>

-724.66 N at 63.50 ms

CFC_600

VRTC

Test Date: 02/04/2021

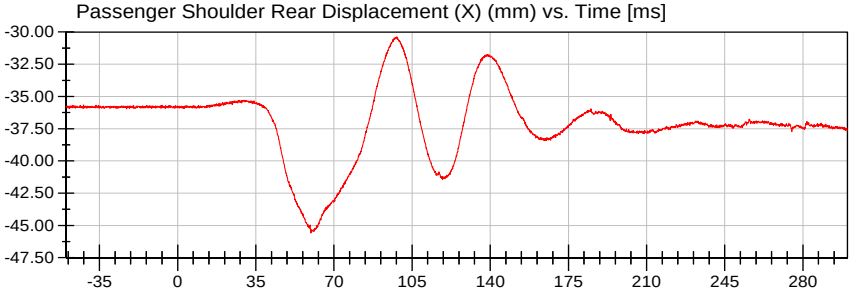
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Passenger Shoulder Rear Displacement (X) (mm) vs. Time [ms]



<Max>

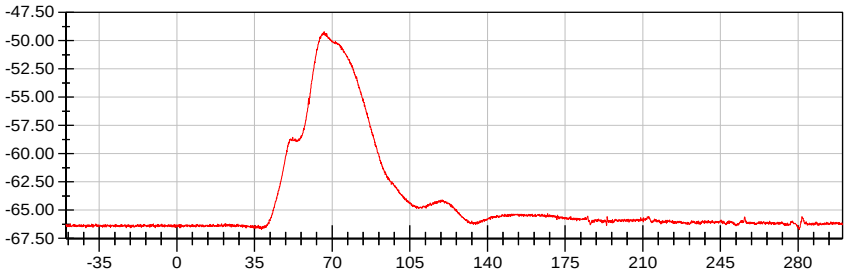
-30.38 mm at 98.30 ms

<Min>

-45.59 mm at 59.60 ms

Unfiltered

Passenger Shoulder Rear Displacement (Y) (mm) vs. Time [ms]



<Max>

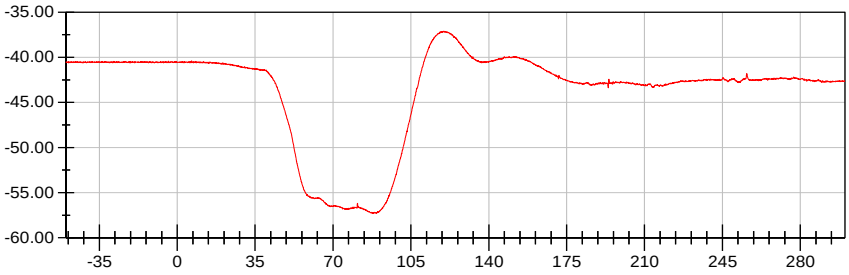
-49.21 mm at 66.40 ms

<Min>

-66.72 mm at 280.60 ms

Unfiltered

Passenger Shoulder Rear Displacement (Z) (mm) vs. Time [ms]



<Max>

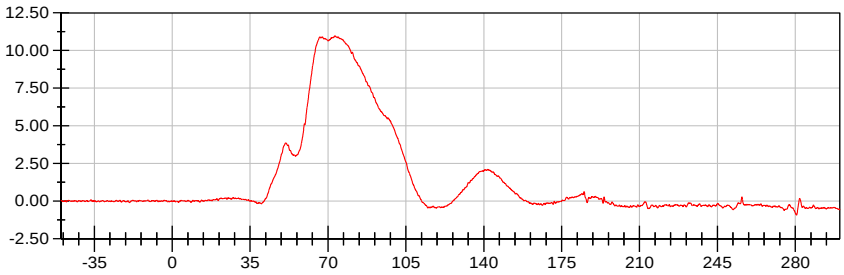
-37.11 mm at 119.80 ms

<Min>

-57.31 mm at 88.10 ms

Unfiltered

Passenger Shoulder Rear Length Change (mm) vs. Time [ms]



<Max>

10.98 mm at 73.15 ms

<Min>

-0.92 mm at 280.50 ms

CFC_600

VRTC

Test Date: 02/04/2021

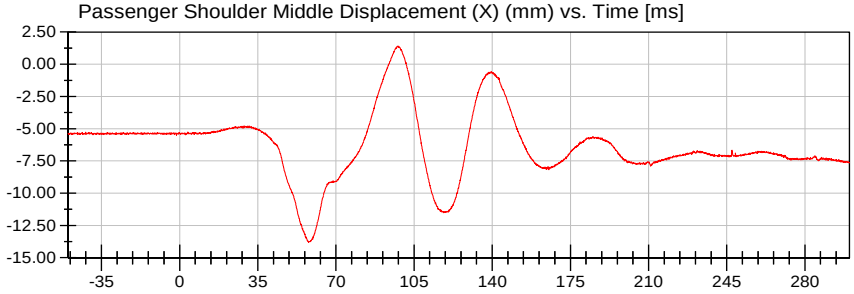
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Passenger Shoulder Middle Displacement (X) (mm) vs. Time [ms]



<Max>

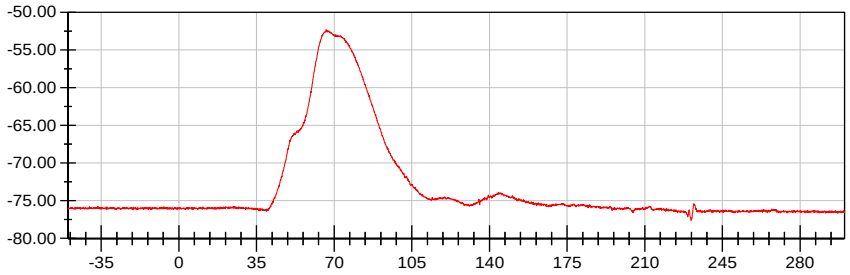
1.41 mm at 97.60 ms

<Min>

-13.80 mm at 57.70 ms

Unfiltered

Passenger Shoulder Middle Displacement (Y) (mm) vs. Time [ms]



<Max>

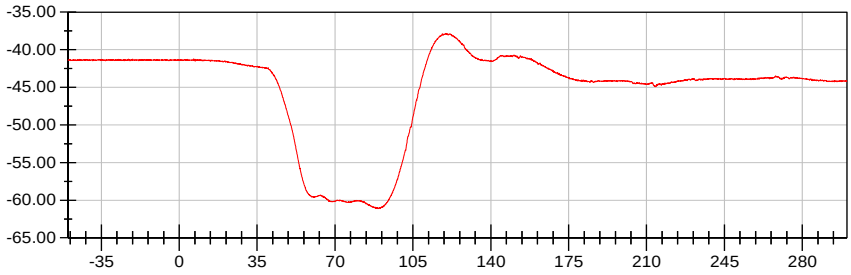
-52.29 mm at 66.40 ms

<Min>

-77.61 mm at 230.90 ms

Unfiltered

Passenger Shoulder Middle Displacement (Z) (mm) vs. Time [ms]



<Max>

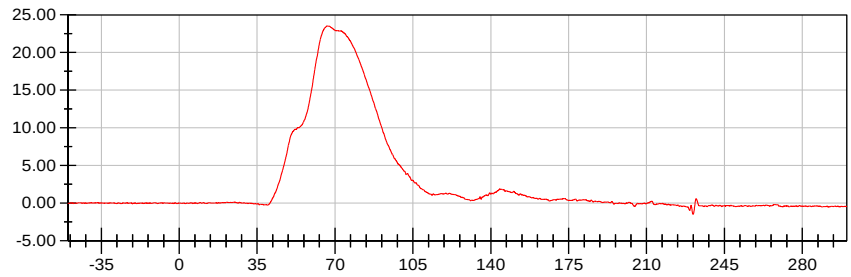
-37.84 mm at 119.85 ms

<Min>

-61.12 mm at 89.60 ms

Unfiltered

Passenger Shoulder Middle Length Change (mm) vs. Time [ms]



<Max>

23.55 mm at 66.45 ms

<Min>

-1.48 mm at 230.90 ms

CFC_600

VRTC

Test Date: 02/04/2021

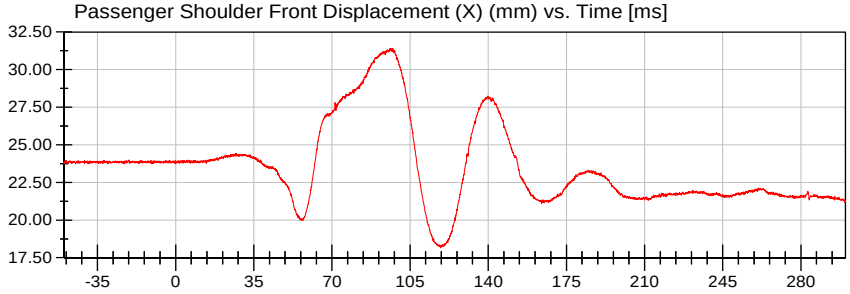
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Shoulder Front Displacement (X) (mm) vs. Time [ms]



<Max>

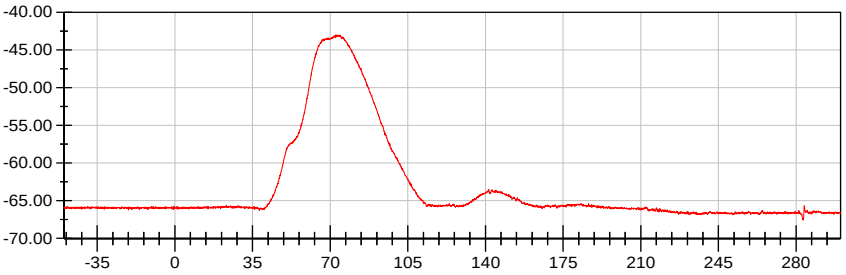
31.41 mm at 96.00 ms

<Min>

18.16 mm at 118.70 ms

Unfiltered

Passenger Shoulder Front Displacement (Y) (mm) vs. Time [ms]



<Max>

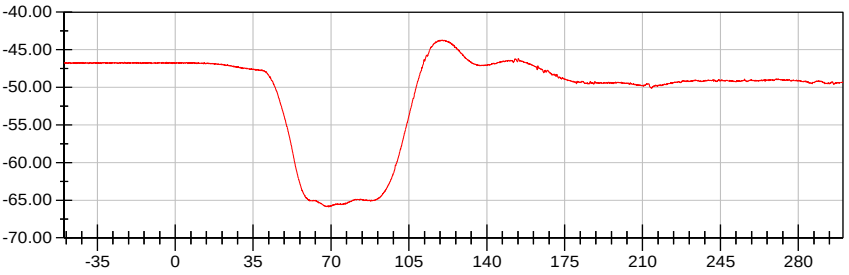
-42.99 mm at 72.30 ms

<Min>

-67.57 mm at 283.25 ms

Unfiltered

Passenger Shoulder Front Displacement (Z) (mm) vs. Time [ms]



<Max>

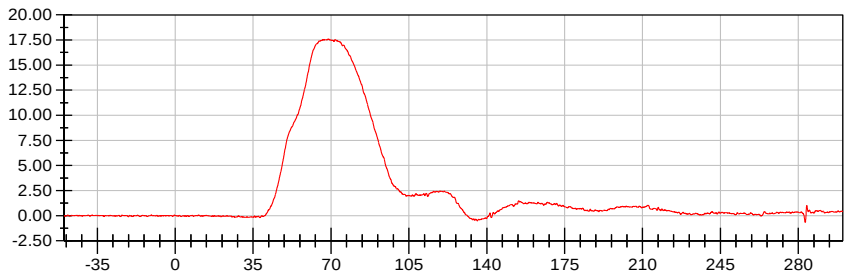
-43.72 mm at 119.80 ms

<Min>

-65.88 mm at 69.10 ms

Unfiltered

Passenger Shoulder Front Length Change (mm) vs. Time [ms]



<Max>

17.59 mm at 68.65 ms

<Min>

-0.65 mm at 283.10 ms

CFC_600

VRTC

Test Date: 02/04/2021

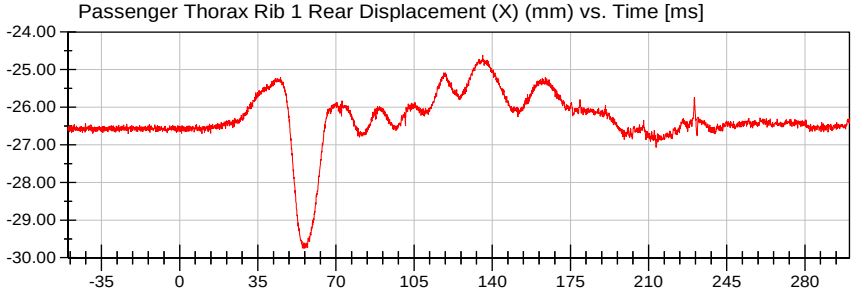
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Thorax Rib 1 Rear Displacement (X) (mm) vs. Time [ms]



<Max>

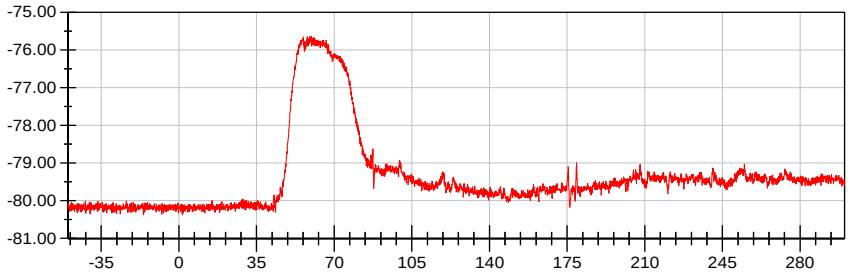
-24.62 mm at 135.70 ms

<Min>

-29.75 mm at 55.30 ms

Unfiltered

Passenger Thorax Rib 1 Rear Displacement (Y) (mm) vs. Time [ms]



<Max>

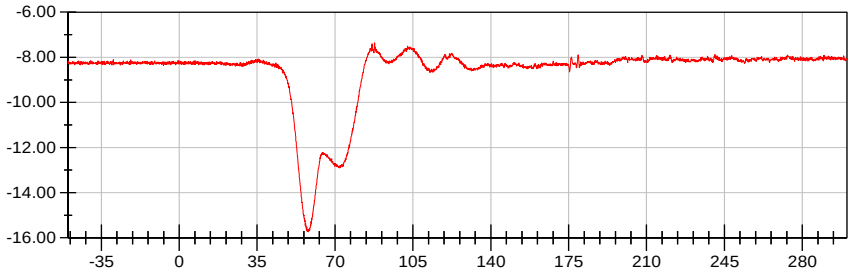
-75.63 mm at 59.00 ms

<Min>

-80.38 mm at -15.95 ms

Unfiltered

Passenger Thorax Rib 1 Rear Displacement (Z) (mm) vs. Time [ms]



<Max>

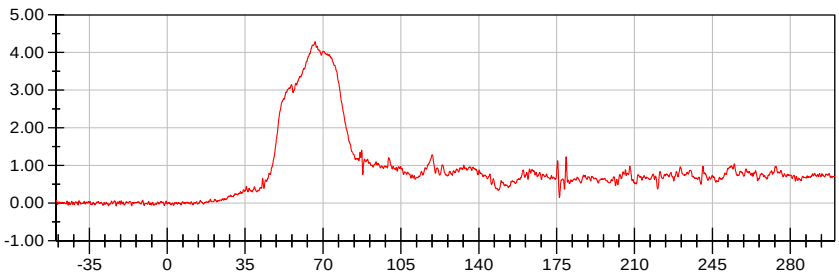
-7.37 mm at 87.80 ms

<Min>

-15.74 mm at 58.05 ms

Unfiltered

Passenger Thorax Rib 1 Rear Length Change (mm) vs. Time [ms]



<Max>

4.29 mm at 66.45 ms

<Min>

-0.07 mm at -15.95 ms

CFC_600

VRTC

Test Date: 02/04/2021

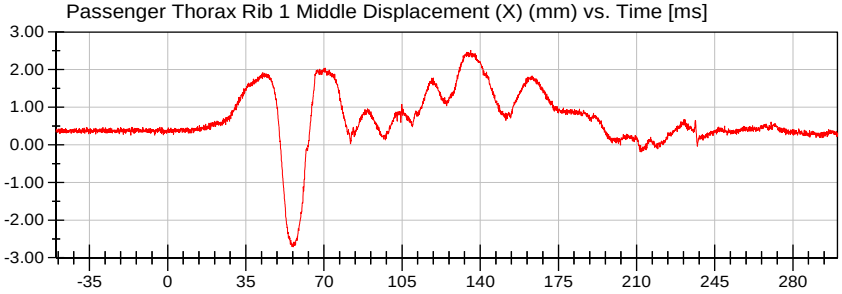
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Passenger Thorax Rib 1 Middle Displacement (X) (mm) vs. Time [ms]



<Max>

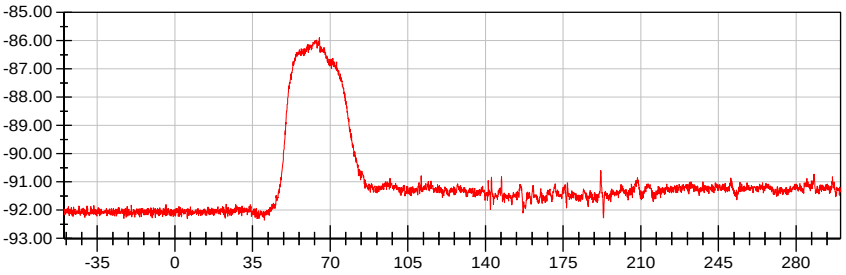
2.51 mm at 135.70 ms

<Min>

-2.71 mm at 56.25 ms

Unfiltered

Passenger Thorax Rib 1 Middle Displacement (Y) (mm) vs. Time [ms]



<Max>

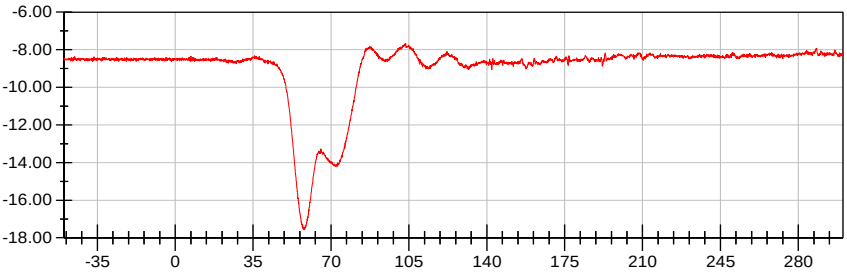
-85.90 mm at 65.15 ms

<Min>

-92.35 mm at 40.40 ms

Unfiltered

Passenger Thorax Rib 1 Middle Displacement (Z) (mm) vs. Time [ms]



<Max>

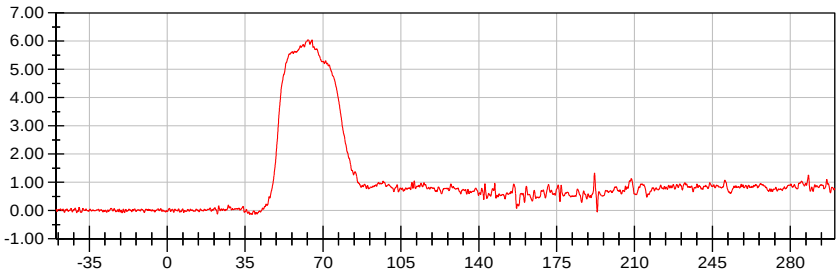
-7.67 mm at 103.55 ms

<Min>

-17.53 mm at 58.20 ms

Unfiltered

Passenger Thorax Rib 1 Middle Length Change (mm) vs. Time [ms]



<Max>

6.04 mm at 65.05 ms

<Min>

-0.14 mm at 38.10 ms

CFC_600

VRTC

Test Date: 02/04/2021

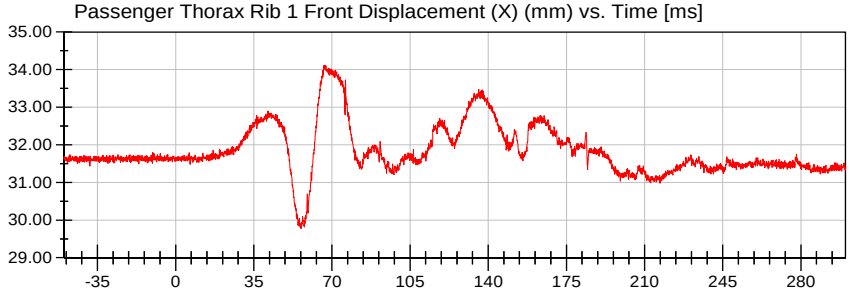
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Passenger Thorax Rib 1 Front Displacement (X) (mm) vs. Time [ms]



<Max>

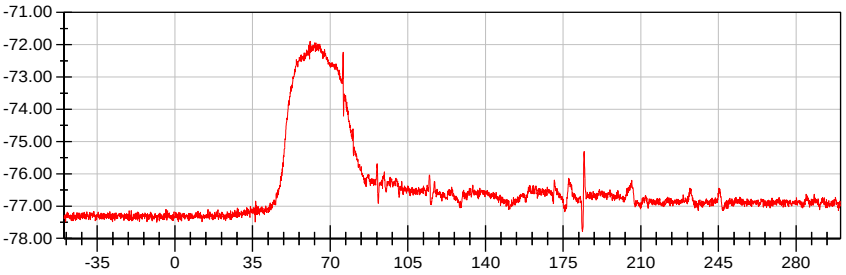
34.12 mm at 66.65 ms

<Min>

29.78 mm at 56.30 ms

Unfiltered

Passenger Thorax Rib 1 Front Displacement (Y) (mm) vs. Time [ms]



<Max>

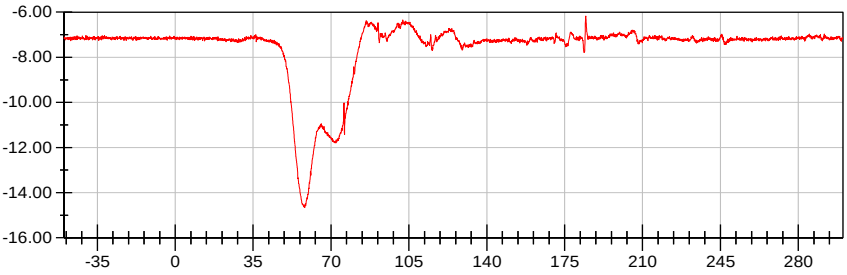
-71.89 mm at 60.95 ms

<Min>

-77.79 mm at 183.70 ms

Unfiltered

Passenger Thorax Rib 1 Front Displacement (Z) (mm) vs. Time [ms]



<Max>

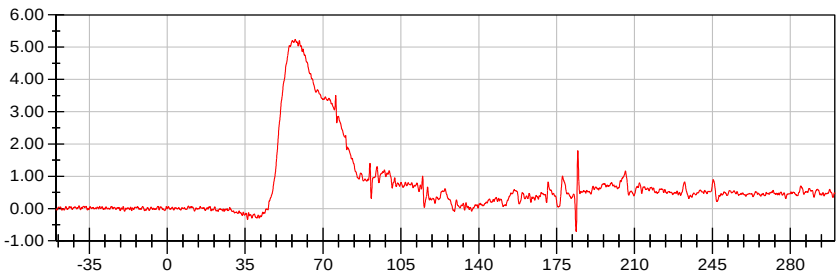
-6.18 mm at 184.45 ms

<Min>

-14.65 mm at 58.20 ms

Unfiltered

Passenger Thorax Rib 1 Front Length Change (mm) vs. Time [ms]



<Max>

5.24 mm at 57.50 ms

<Min>

-0.70 mm at 183.75 ms

CFC_600

VRTC

Test Date: 02/04/2021

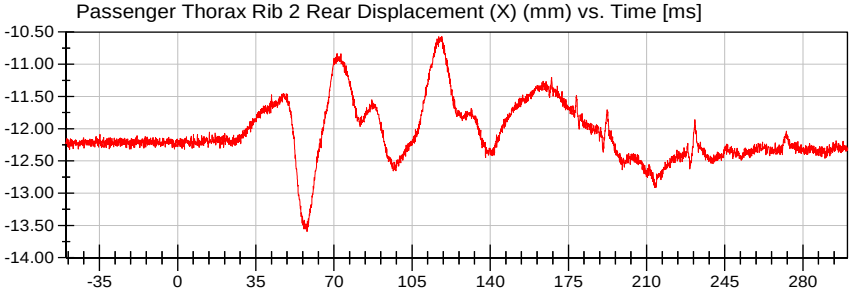
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Thorax Rib 2 Rear Displacement (X) (mm) vs. Time [ms]



<Max>

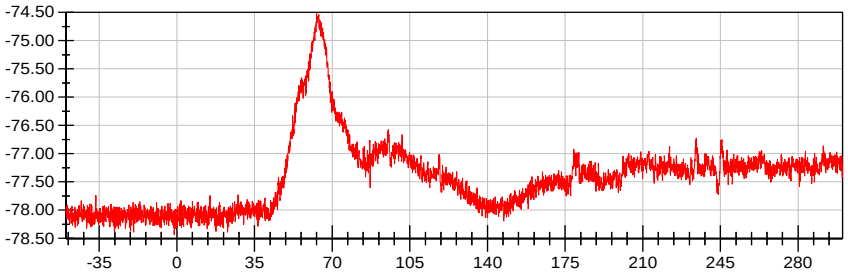
-10.57 mm at 118.30 ms

<Min>

-13.60 mm at 58.00 ms

Unfiltered

Passenger Thorax Rib 2 Rear Displacement (Y) (mm) vs. Time [ms]



<Max>

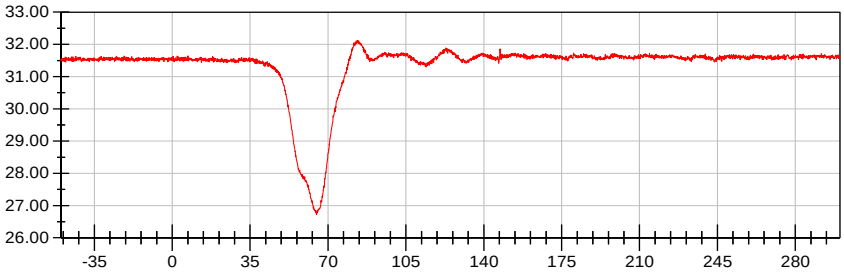
-74.51 mm at 63.00 ms

<Min>

-78.44 mm at -1.20 ms

Unfiltered

Passenger Thorax Rib 2 Rear Displacement (Z) (mm) vs. Time [ms]



<Max>

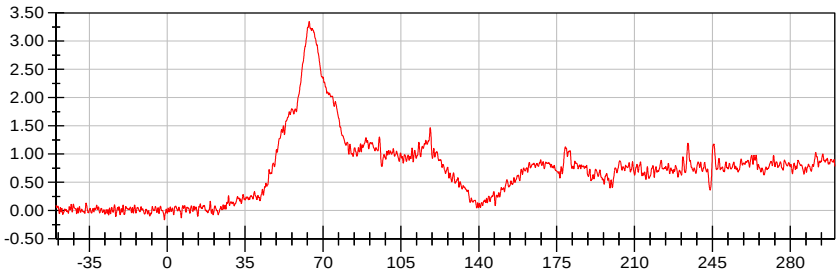
32.11 mm at 83.30 ms

<Min>

26.73 mm at 64.90 ms

Unfiltered

Passenger Thorax Rib 2 Rear Length Change (mm) vs. Time [ms]



<Max>

3.34 mm at 63.80 ms

<Min>

-0.17 mm at -1.25 ms

CFC_600

VRTC

Test Date: 02/04/2021

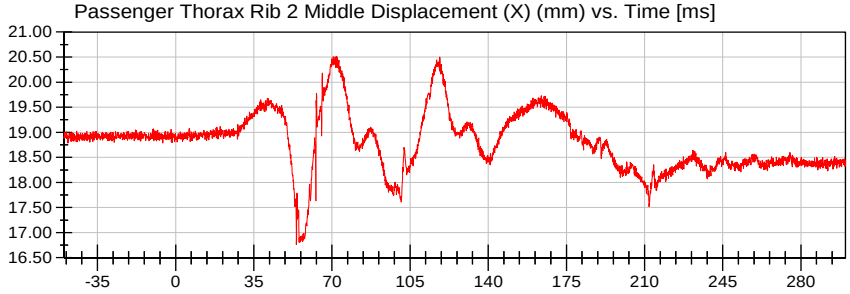
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Thorax Rib 2 Middle Displacement (X) (mm) vs. Time [ms]



<Max>

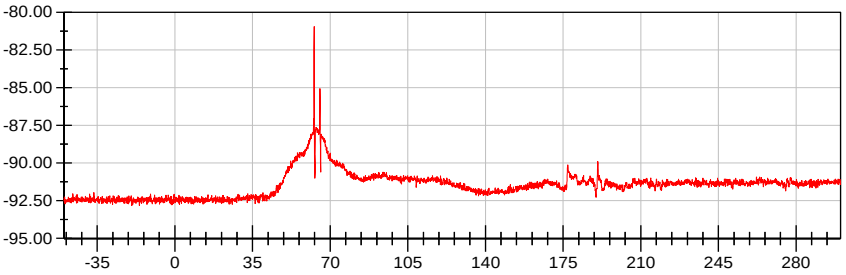
20.51 mm at 72.10 ms

<Min>

16.76 mm at 54.10 ms

Unfiltered

Passenger Thorax Rib 2 Middle Displacement (Y) (mm) vs. Time [ms]



<Max>

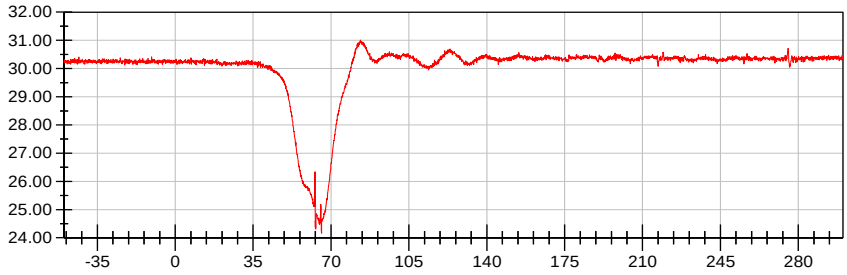
-80.94 mm at 62.80 ms

<Min>

-92.82 mm at -19.40 ms

Unfiltered

Passenger Thorax Rib 2 Middle Displacement (Z) (mm) vs. Time [ms]



<Max>

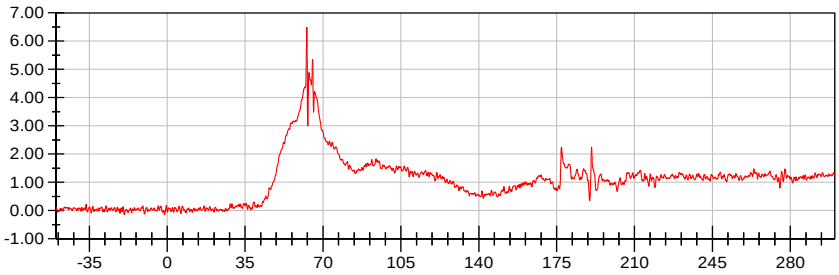
31.01 mm at 83.20 ms

<Min>

24.17 mm at 65.70 ms

Unfiltered

Passenger Thorax Rib 2 Middle Length Change (mm) vs. Time [ms]



<Max>

6.48 mm at 62.70 ms

<Min>

-0.14 mm at -1.15 ms

CFC_600

VRTC

Test Date: 02/04/2021

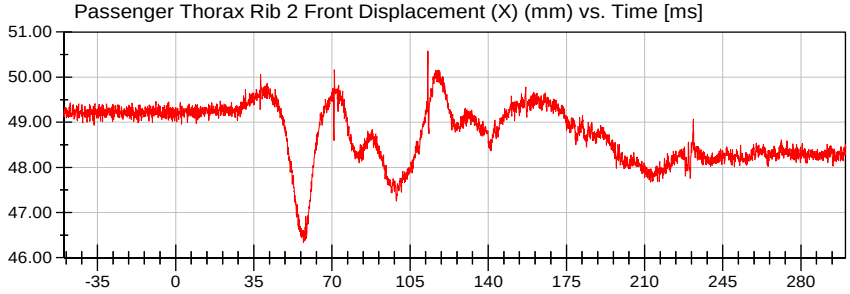
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Passenger Thorax Rib 2 Front Displacement (X) (mm) vs. Time [ms]



<Max>

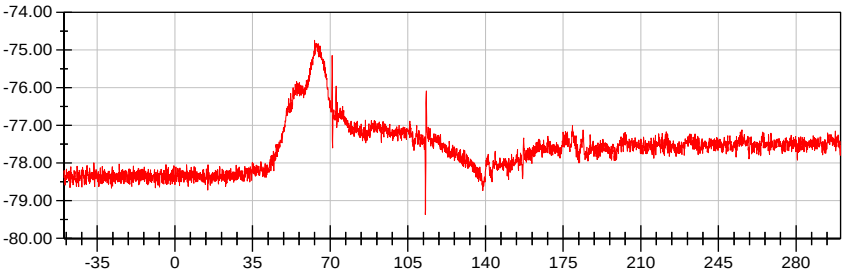
50.58 mm at 112.95 ms

<Min>

46.34 mm at 57.25 ms

Unfiltered

Passenger Thorax Rib 2 Front Displacement (Y) (mm) vs. Time [ms]



<Max>

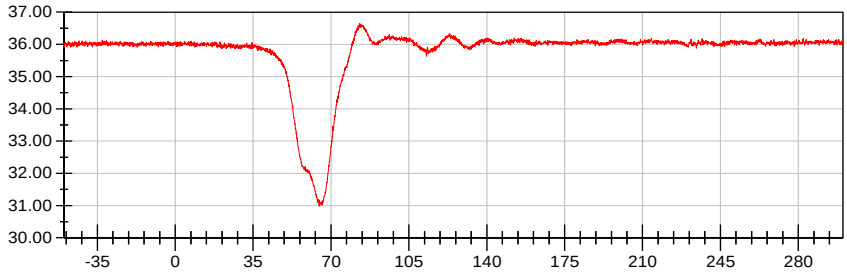
-74.74 mm at 63.00 ms

<Min>

-79.37 mm at 112.95 ms

Unfiltered

Passenger Thorax Rib 2 Front Displacement (Z) (mm) vs. Time [ms]



<Max>

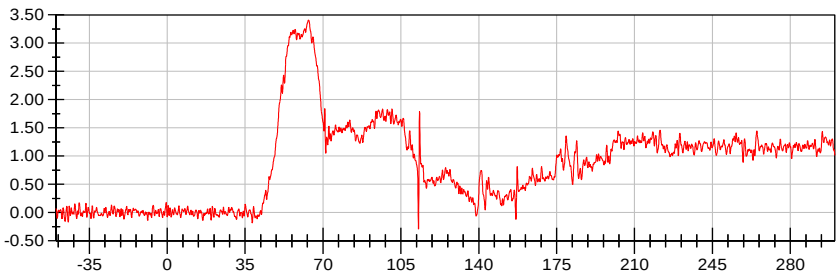
36.64 mm at 82.80 ms

<Min>

30.98 mm at 64.90 ms

Unfiltered

Passenger Thorax Rib 2 Front Length Change (mm) vs. Time [ms]



<Max>

3.41 mm at 63.45 ms

<Min>

-0.29 mm at 112.90 ms

CFC_600

VRTC

Test Date: 02/04/2021

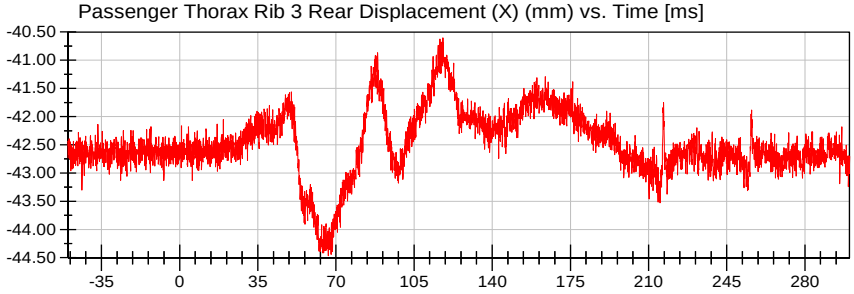
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Passenger Thorax Rib 3 Rear Displacement (X) (mm) vs. Time [ms]



<Max>

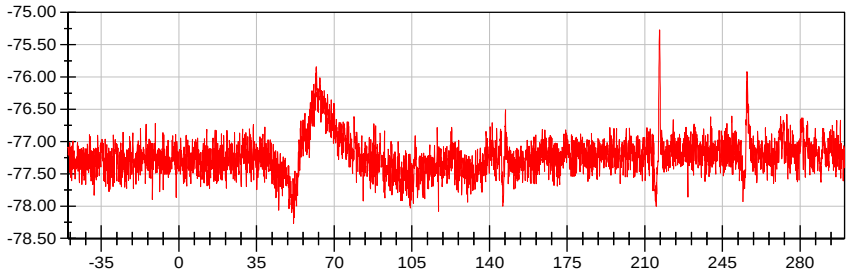
-40.61 mm at 117.90 ms

<Min>

-44.47 mm at 66.60 ms

Unfiltered

Passenger Thorax Rib 3 Rear Displacement (Y) (mm) vs. Time [ms]



<Max>

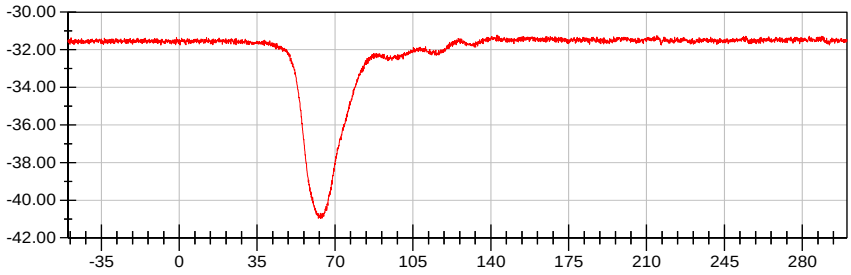
-75.27 mm at 216.65 ms

<Min>

-78.26 mm at 51.70 ms

Unfiltered

Passenger Thorax Rib 3 Rear Displacement (Z) (mm) vs. Time [ms]



<Max>

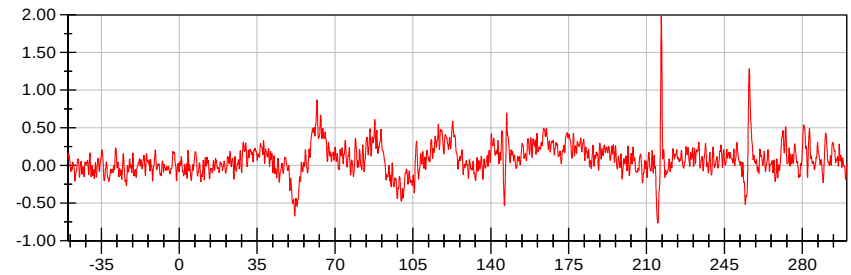
-31.22 mm at 142.75 ms

<Min>

-40.96 mm at 62.50 ms

Unfiltered

Passenger Thorax Rib 3 Rear Length Change (mm) vs. Time [ms]



<Max>

1.99 mm at 216.65 ms

<Min>

-0.77 mm at 215.10 ms

CFC_600

VRTC

Test Date: 02/04/2021

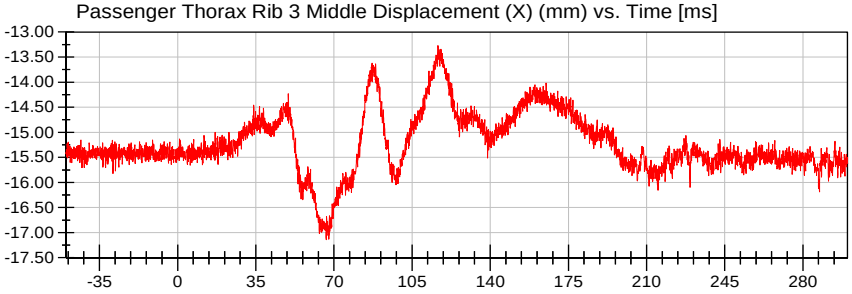
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Passenger Thorax Rib 3 Middle Displacement (X) (mm) vs. Time [ms]



<Max>

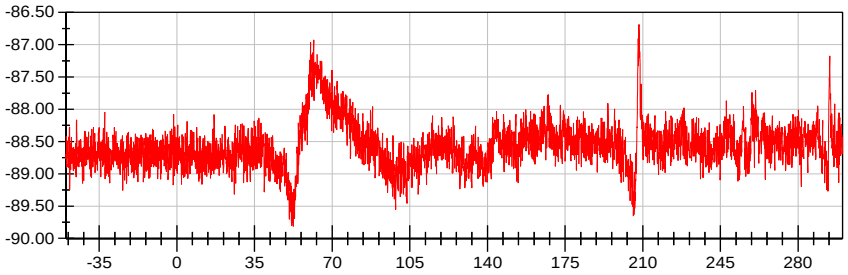
-13.27 mm at 116.60 ms

<Min>

-17.14 mm at 66.55 ms

Unfiltered

Passenger Thorax Rib 3 Middle Displacement (Y) (mm) vs. Time [ms]



<Max>

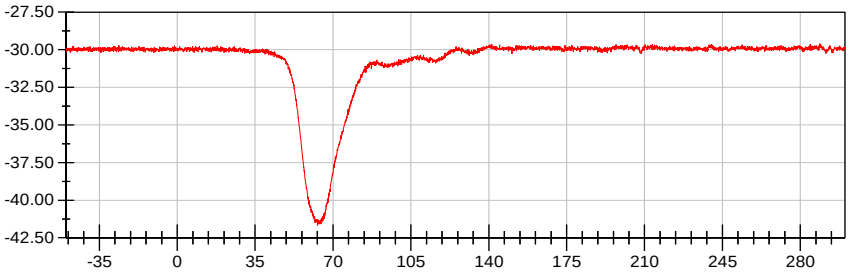
-86.69 mm at 208.30 ms

<Min>

-89.81 mm at 52.40 ms

Unfiltered

Passenger Thorax Rib 3 Middle Displacement (Z) (mm) vs. Time [ms]



<Max>

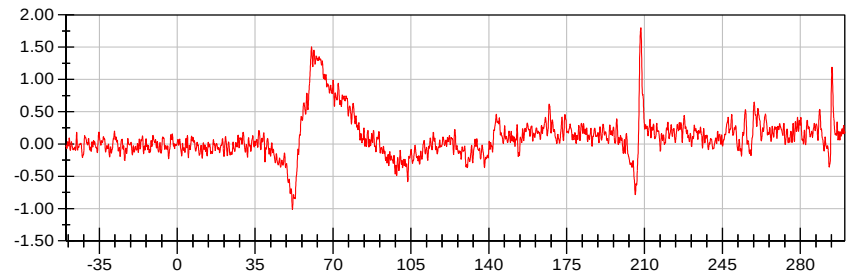
-29.61 mm at 288.70 ms

<Min>

-41.67 mm at 63.05 ms

Unfiltered

Passenger Thorax Rib 3 Middle Length Change (mm) vs. Time [ms]



<Max>

1.80 mm at 208.30 ms

<Min>

-1.01 mm at 51.75 ms

CFC_600

VRTC

Test Date: 02/04/2021

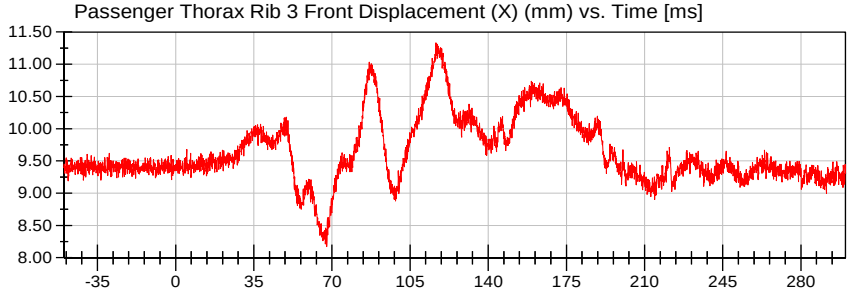
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Thorax Rib 3 Front Displacement (X) (mm) vs. Time [ms]



<Max>

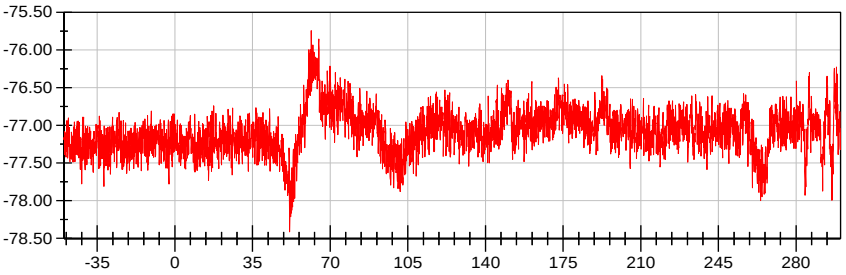
11.33 mm at 116.60 ms

<Min>

8.17 mm at 67.70 ms

Unfiltered

Passenger Thorax Rib 3 Front Displacement (Y) (mm) vs. Time [ms]



<Max>

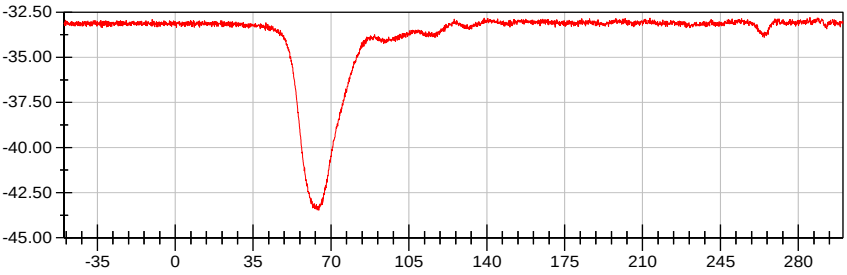
-75.74 mm at 61.50 ms

<Min>

-78.41 mm at 51.75 ms

Unfiltered

Passenger Thorax Rib 3 Front Displacement (Z) (mm) vs. Time [ms]



<Max>

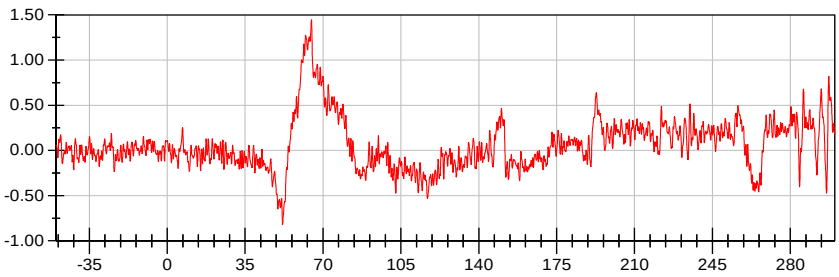
-32.81 mm at 285.20 ms

<Min>

-43.48 mm at 64.50 ms

Unfiltered

Passenger Thorax Rib 3 Front Length Change (mm) vs. Time [ms]



<Max>

1.45 mm at 64.85 ms

<Min>

-0.82 mm at 51.85 ms

CFC_600

VRTC

Test Date: 02/04/2021

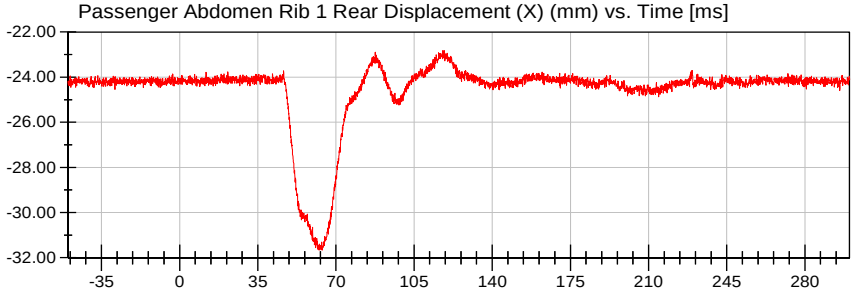
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Passenger Abdomen Rib 1 Rear Displacement (X) (mm) vs. Time [ms]



<Max>

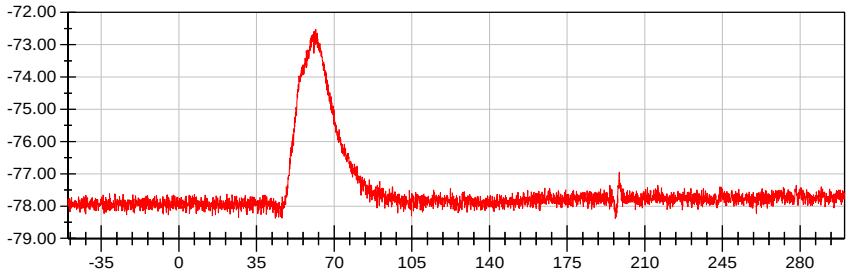
-22.83 mm at 118.55 ms

<Min>

-31.67 mm at 62.45 ms

Unfiltered

Passenger Abdomen Rib 1 Rear Displacement (Y) (mm) vs. Time [ms]



<Max>

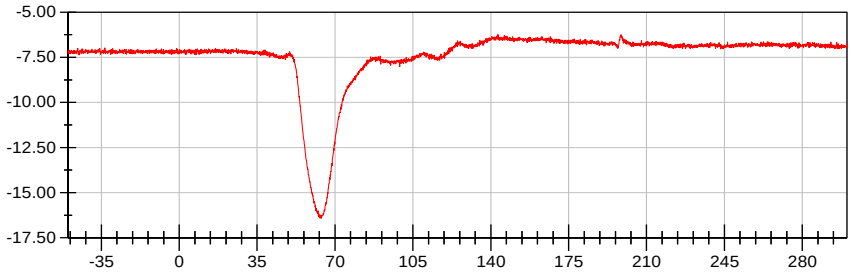
-72.53 mm at 61.70 ms

<Min>

-78.38 mm at 196.75 ms

Unfiltered

Passenger Abdomen Rib 1 Rear Displacement (Z) (mm) vs. Time [ms]



<Max>

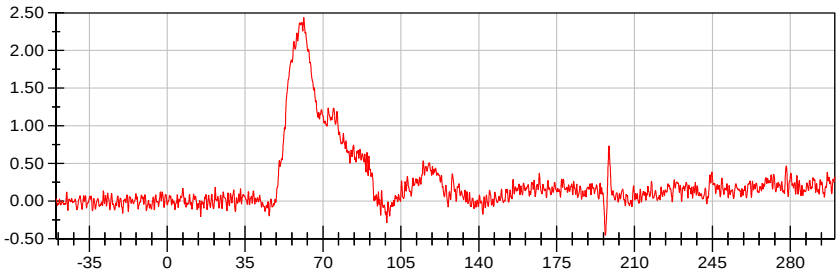
-6.24 mm at 143.05 ms

<Min>

-16.41 mm at 63.80 ms

Unfiltered

Passenger Abdomen Rib 1 Rear Length Change (mm) vs. Time [ms]



<Max>

2.44 mm at 61.35 ms

<Min>

-0.45 mm at 196.90 ms

CFC_600

VRTC

Test Date: 02/04/2021

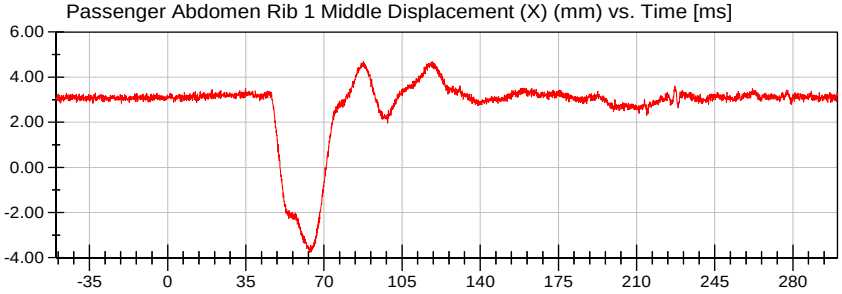
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Abdomen Rib 1 Middle Displacement (X) (mm) vs. Time [ms]



<Max>

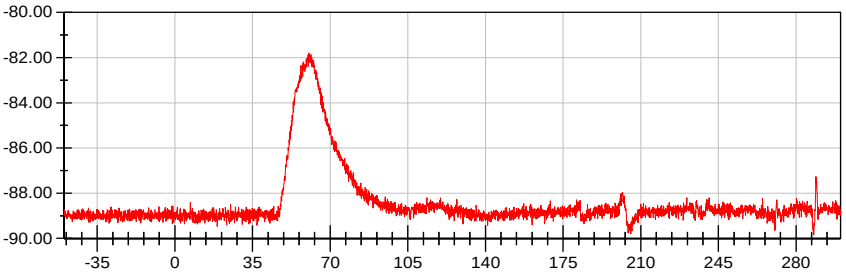
4.69 mm at 87.65 ms

<Min>

-3.77 mm at 63.70 ms

Unfiltered

Passenger Abdomen Rib 1 Middle Displacement (Y) (mm) vs. Time [ms]



<Max>

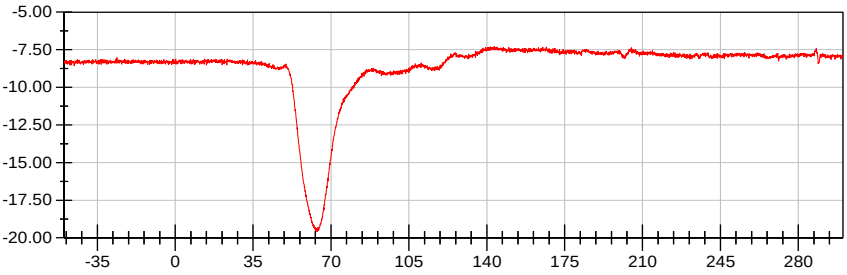
-81.80 mm at 60.40 ms

<Min>

-89.85 mm at 288.00 ms

Unfiltered

Passenger Abdomen Rib 1 Middle Displacement (Z) (mm) vs. Time [ms]



<Max>

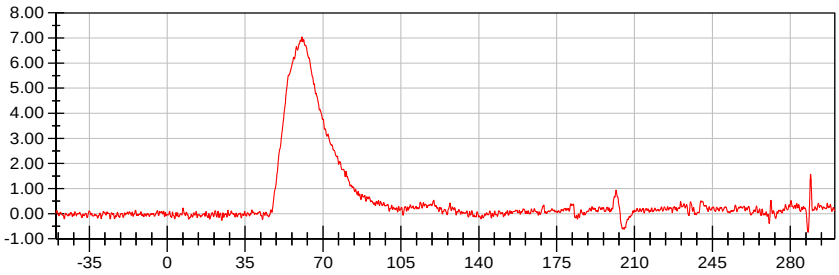
-7.28 mm at 143.40 ms

<Min>

-19.57 mm at 63.80 ms

Unfiltered

Passenger Abdomen Rib 1 Middle Length Change (mm) vs. Time [ms]



<Max>

7.04 mm at 60.55 ms

<Min>

-0.74 mm at 287.95 ms

CFC_600

VRTC

Test Date: 02/04/2021

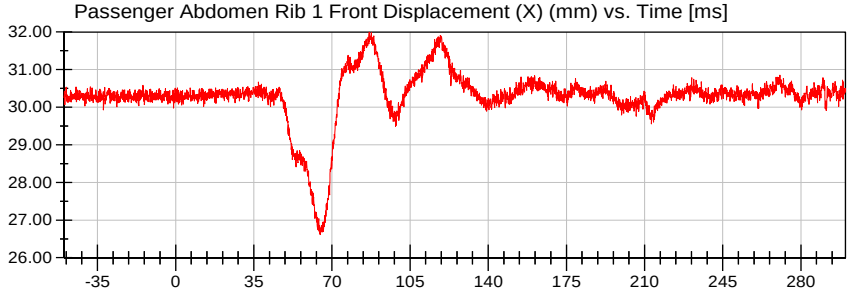
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Abdomen Rib 1 Front Displacement (X) (mm) vs. Time [ms]



<Max>

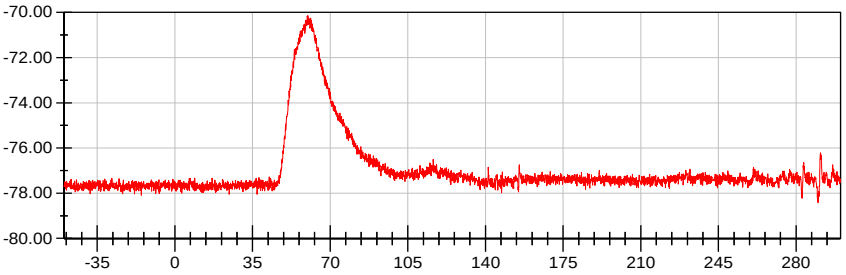
32.00 mm at 86.70 ms

<Min>

26.61 mm at 64.70 ms

Unfiltered

Passenger Abdomen Rib 1 Front Displacement (Y) (mm) vs. Time [ms]



<Max>

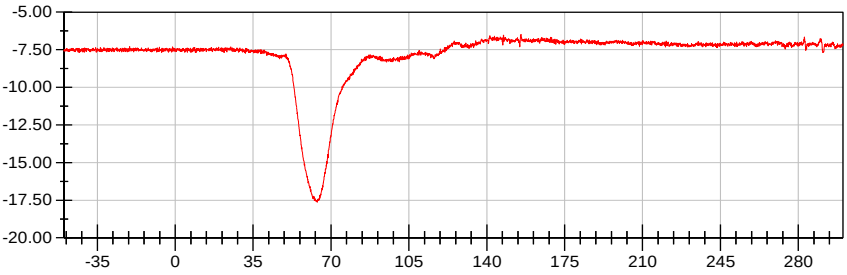
-70.15 mm at 59.90 ms

<Min>

-78.41 mm at 289.90 ms

Unfiltered

Passenger Abdomen Rib 1 Front Displacement (Z) (mm) vs. Time [ms]



<Max>

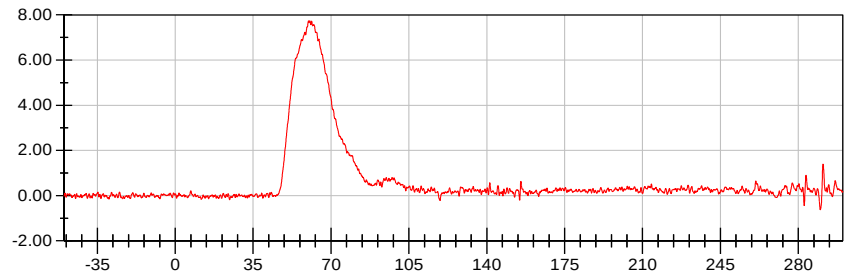
-6.48 mm at 155.35 ms

<Min>

-17.62 mm at 63.80 ms

Unfiltered

Passenger Abdomen Rib 1 Front Length Change (mm) vs. Time [ms]



<Max>

7.73 mm at 60.50 ms

<Min>

-0.63 mm at 289.85 ms

CFC_600

VRTC

Test Date: 02/04/2021

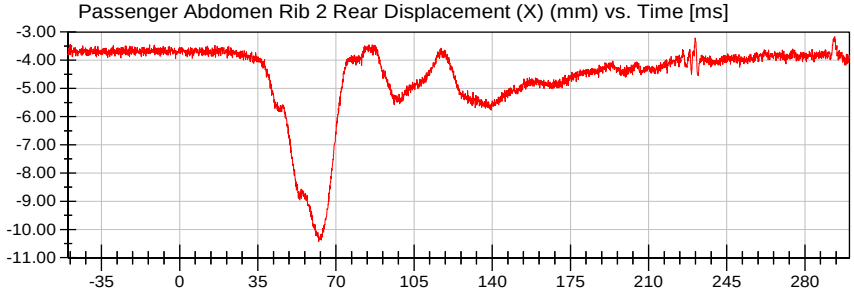
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Passenger Abdomen Rib 2 Rear Displacement (X) (mm) vs. Time [ms]



<Max>

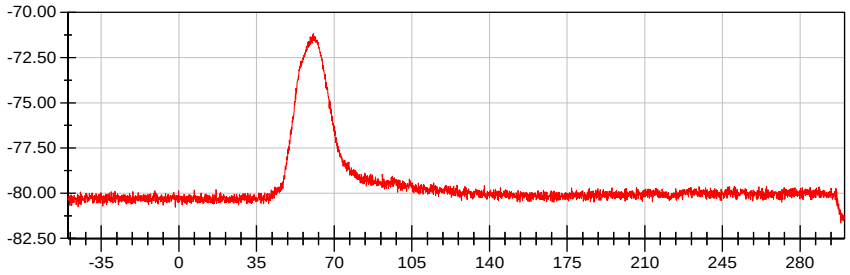
-3.17 mm at 293.35 ms

<Min>

-10.43 mm at 62.30 ms

Unfiltered

Passenger Abdomen Rib 2 Rear Displacement (Y) (mm) vs. Time [ms]



<Max>

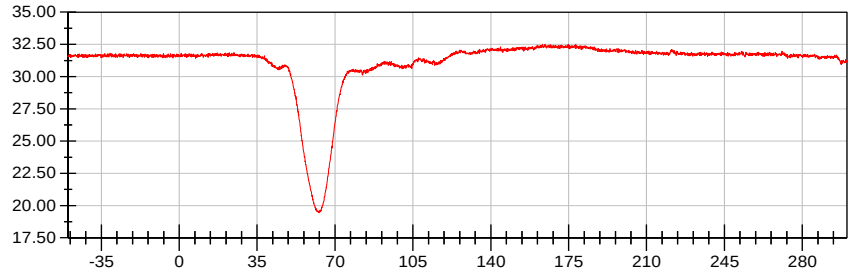
-71.18 mm at 60.70 ms

<Min>

-81.65 mm at 298.30 ms

Unfiltered

Passenger Abdomen Rib 2 Rear Displacement (Z) (mm) vs. Time [ms]



<Max>

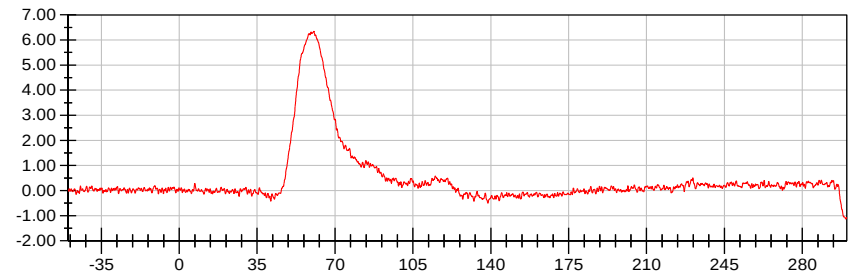
32.51 mm at 174.80 ms

<Min>

19.44 mm at 62.60 ms

Unfiltered

Passenger Abdomen Rib 2 Rear Length Change (mm) vs. Time [ms]



<Max>

6.34 mm at 60.55 ms

<Min>

-1.13 mm at 299.50 ms

CFC_600

VRTC

Test Date: 02/04/2021

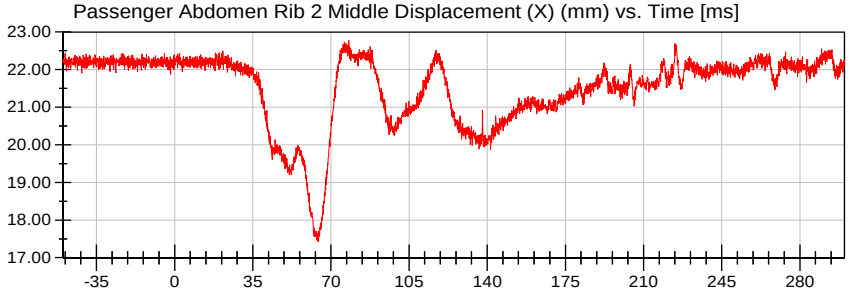
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Passenger Abdomen Rib 2 Middle Displacement (X) (mm) vs. Time [ms]



<Max>

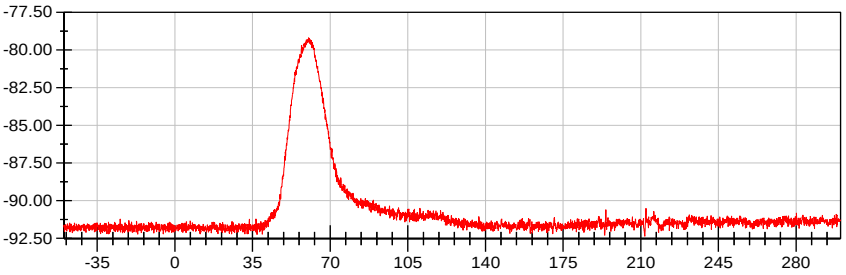
22.77 mm at 78.00 ms

<Min>

17.42 mm at 64.40 ms

Unfiltered

Passenger Abdomen Rib 2 Middle Displacement (Y) (mm) vs. Time [ms]



<Max>

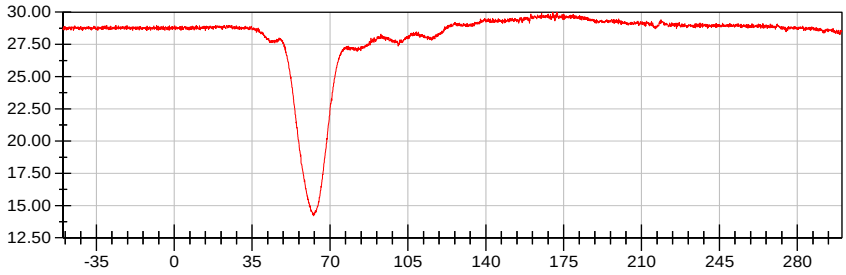
-79.19 mm at 60.20 ms

<Min>

-92.36 mm at 211.80 ms

Unfiltered

Passenger Abdomen Rib 2 Middle Displacement (Z) (mm) vs. Time [ms]



<Max>

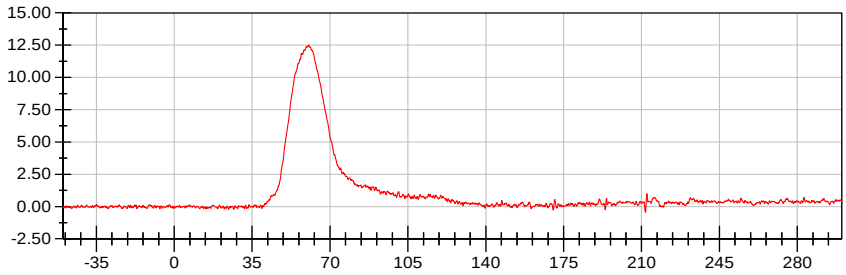
30.00 mm at 172.00 ms

<Min>

14.20 mm at 62.55 ms

Unfiltered

Passenger Abdomen Rib 2 Middle Length Change (mm) vs. Time [ms]



<Max>

12.51 mm at 60.40 ms

<Min>

-0.43 mm at 211.75 ms

CFC_600

VRTC

Test Date: 02/04/2021

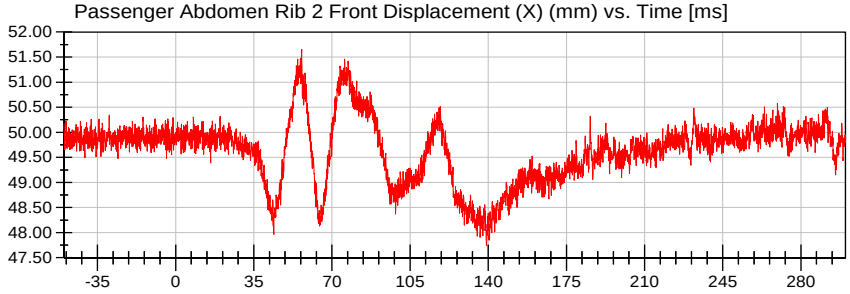
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Passenger Abdomen Rib 2 Front Displacement (X) (mm) vs. Time [ms]



<Max>

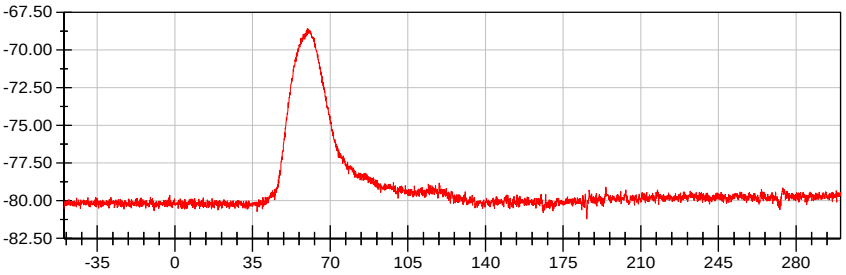
51.65 mm at 56.45 ms

<Min>

47.74 mm at 139.20 ms

Unfiltered

Passenger Abdomen Rib 2 Front Displacement (Y) (mm) vs. Time [ms]



<Max>

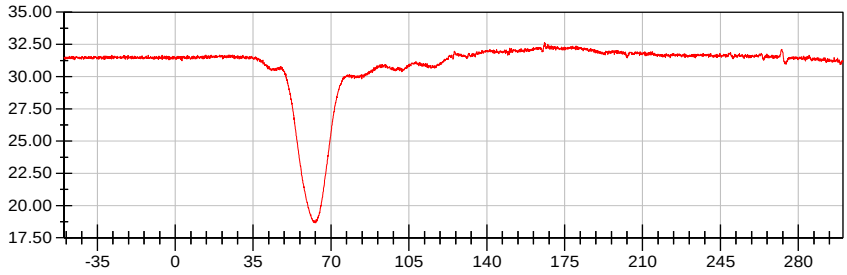
-68.57 mm at 59.70 ms

<Min>

-81.21 mm at 185.70 ms

Unfiltered

Passenger Abdomen Rib 2 Front Displacement (Z) (mm) vs. Time [ms]



<Max>

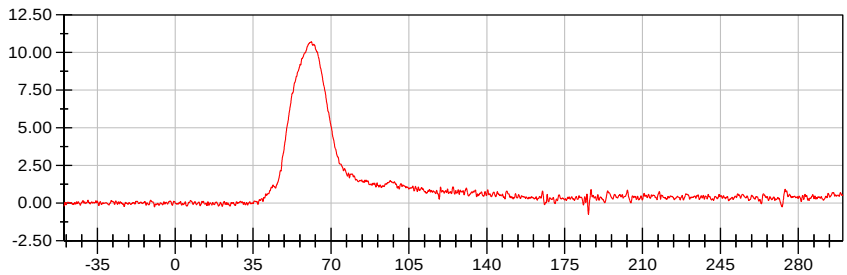
32.64 mm at 165.95 ms

<Min>

18.66 mm at 62.50 ms

Unfiltered

Passenger Abdomen Rib 2 Front Length Change (mm) vs. Time [ms]



<Max>

10.71 mm at 61.20 ms

<Min>

-0.74 mm at 185.70 ms

CFC_600

VRTC

Test Date: 02/04/2021

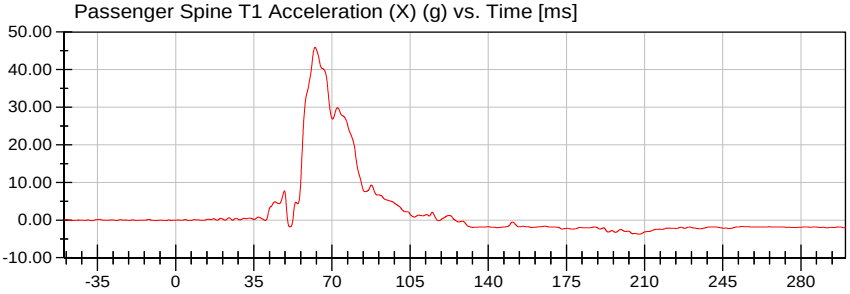
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Spine T1 Acceleration (X) (g) vs. Time [ms]



<Max>

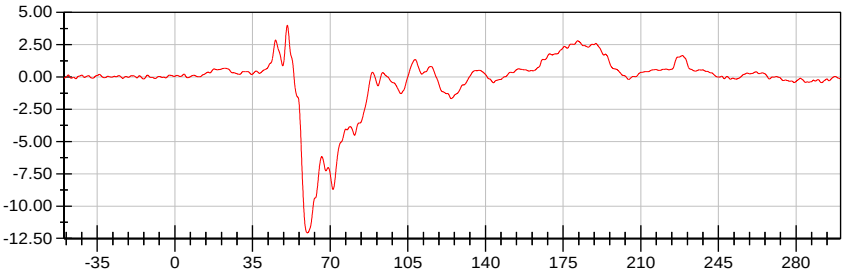
45.93 g at 62.45 ms

<Min>

-3.76 g at 207.45 ms

CFC_180

Passenger Spine T1 Acceleration (Y) (g) vs. Time [ms]



<Max>

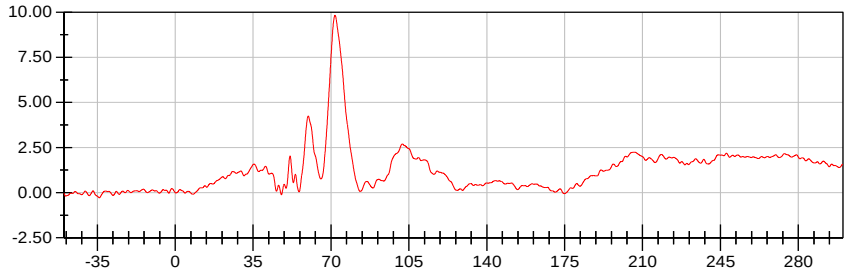
4.01 g at 50.70 ms

<Min>

-12.07 g at 59.70 ms

CFC_180

Passenger Spine T1 Acceleration (Z) (g) vs. Time [ms]



<Max>

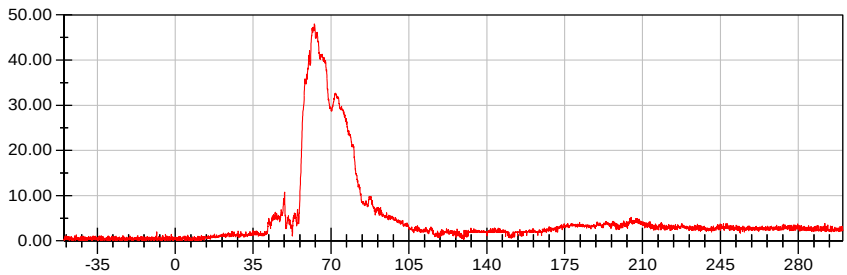
9.82 g at 71.80 ms

<Min>

-0.29 g at -34.10 ms

CFC_180

Passenger Spine T1 Acceleration Resultant (g) vs. Time [ms]



<Max>

47.98 g at 62.50 ms

<Min>

0.08 g at -46.45 ms

Prefiltered_> CFC 1000

VRTC

Test Date: 02/04/2021

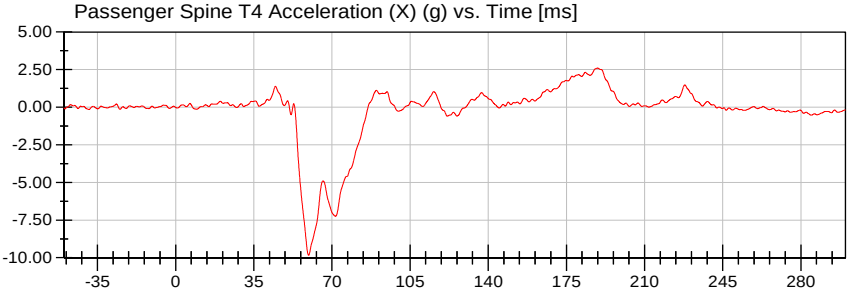
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Spine T4 Acceleration (X) (g) vs. Time [ms]



<Max>

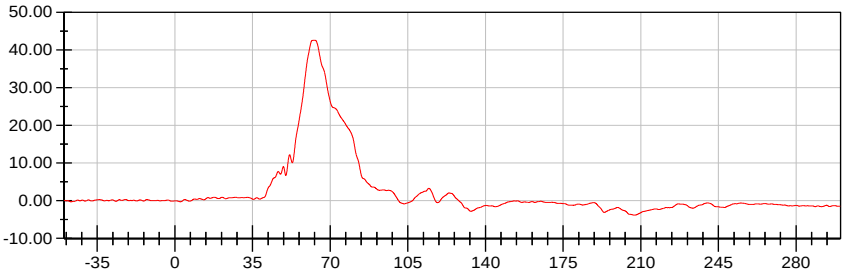
2.60 g at 188.95 ms

<Min>

-9.84 g at 59.55 ms

CFC_180

Passenger Spine T4 Acceleration (Y) (g) vs. Time [ms]



<Max>

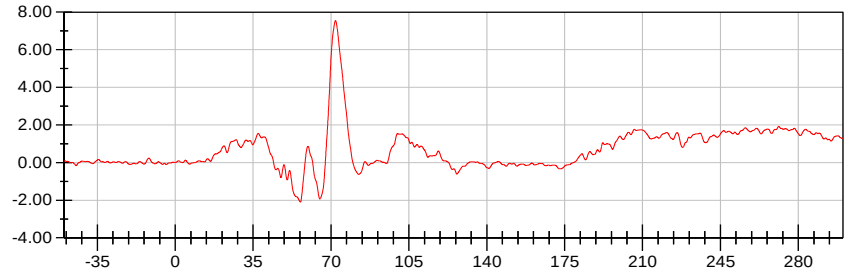
42.62 g at 63.05 ms

<Min>

-3.83 g at 207.10 ms

CFC_180

Passenger Spine T4 Acceleration (Z) (g) vs. Time [ms]



<Max>

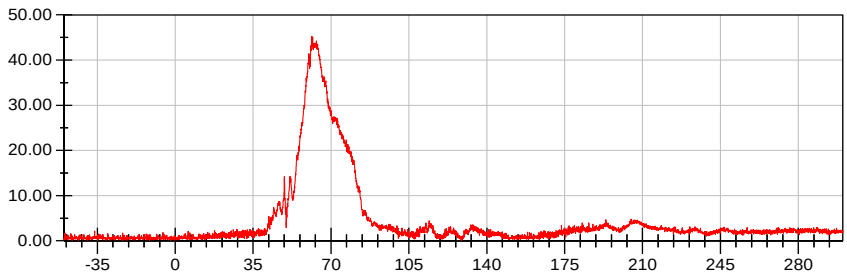
7.54 g at 72.05 ms

<Min>

-2.10 g at 56.25 ms

CFC_180

Passenger Spine T4 Acceleration Resultant (g) vs. Time [ms]



<Max>

45.23 g at 61.40 ms

<Min>

0.11 g at 128.60 ms

Prefiltered_> CFC 1000

VRTC

Test Date: 02/04/2021

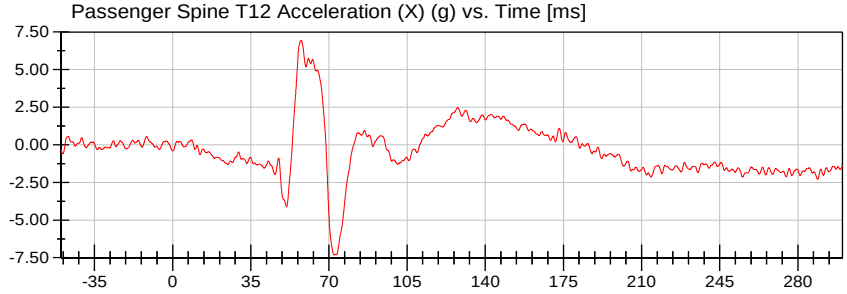
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Spine T12 Acceleration (X) (g) vs. Time [ms]



<Max>

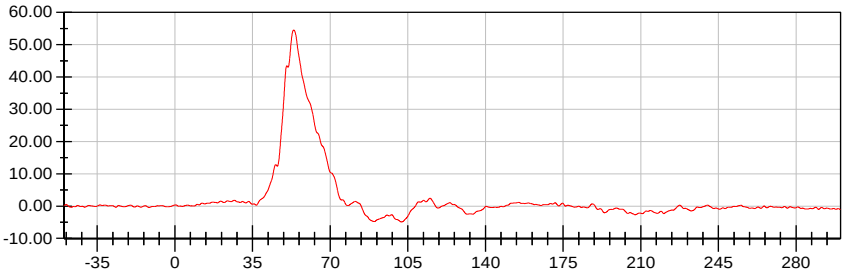
6.94 g at 57.60 ms

<Min>

-7.32 g at 72.25 ms

CFC_180

Passenger Spine T12 Acceleration (Y) (g) vs. Time [ms]



<Max>

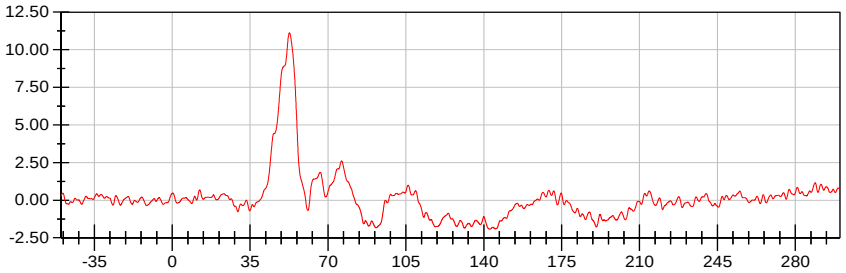
54.56 g at 53.55 ms

<Min>

-4.88 g at 102.20 ms

CFC_180

Passenger Spine T12 Acceleration (Z) (g) vs. Time [ms]



<Max>

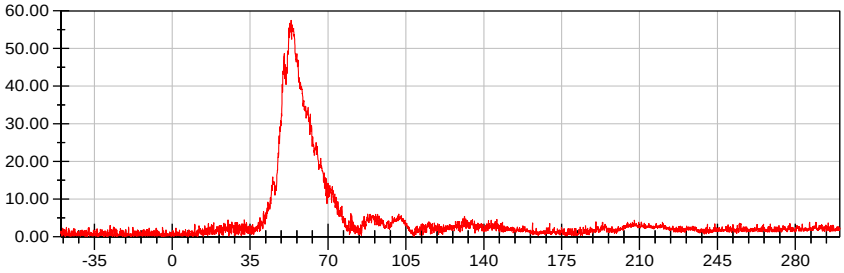
11.13 g at 52.65 ms

<Min>

-1.91 g at 142.65 ms

CFC_180

Passenger Spine T12 Acceleration Resultant (g) vs. Time [ms]



<Max>

57.46 g at 53.45 ms

<Min>

0.05 g at -48.00 ms

Prefiltered_> CFC 1000

VRTC

Test Date: 02/04/2021

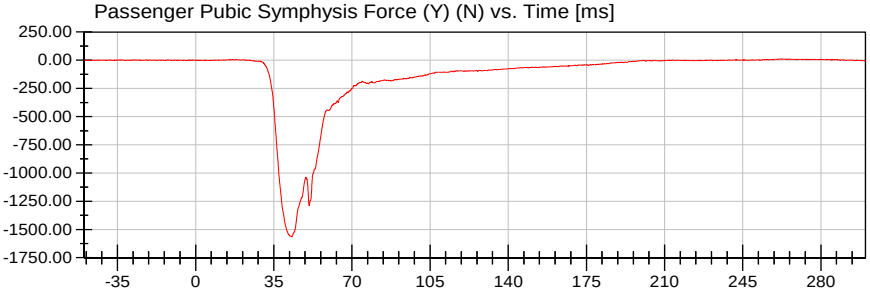
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Passenger Pubic Symphysis Force (Y) (N) vs. Time [ms]



<Max>

11.23 N at 262.20 ms

<Min>

-1,565.61 N at 43.10 ms

CFC_600

VRTC

Test Date: 02/04/2021

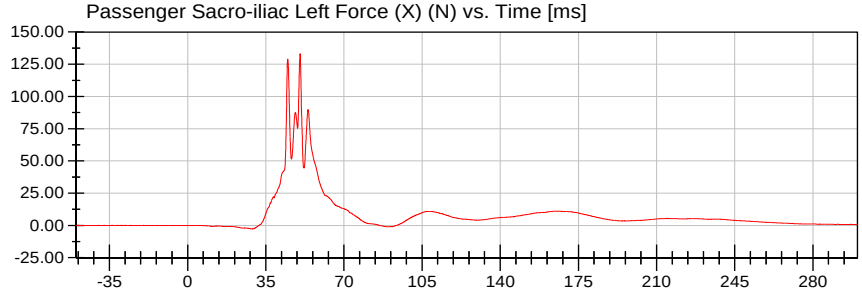
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Passenger Sacro-iliac Left Force (X) (N) vs. Time [ms]



<Max>

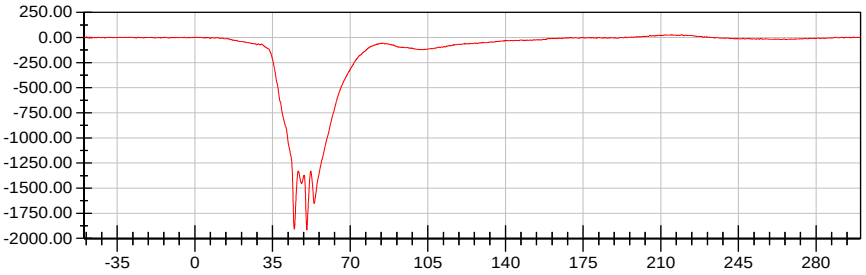
133.18 N at 50.40 ms

<Min>

-2.71 N at 29.15 ms

CFC_600

Passenger Sacro-iliac Left Force (Y) (N) vs. Time [ms]



<Max>

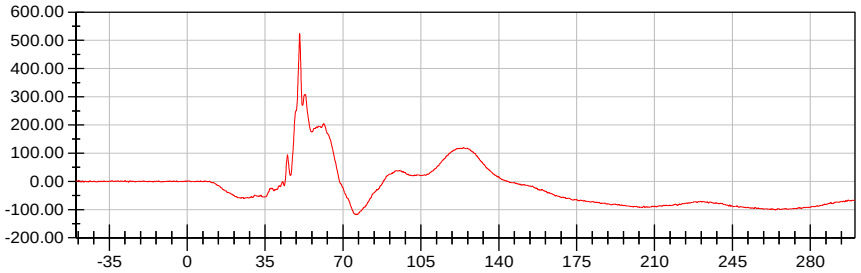
27.77 N at 219.40 ms

<Min>

-1,914.03 N at 50.50 ms

CFC_600

Passenger Sacro-iliac Left Force (Z) (N) vs. Time [ms]



<Max>

523.43 N at 50.55 ms

<Min>

-117.93 N at 75.90 ms

CFC_600

VRTC

Test Date: 02/04/2021

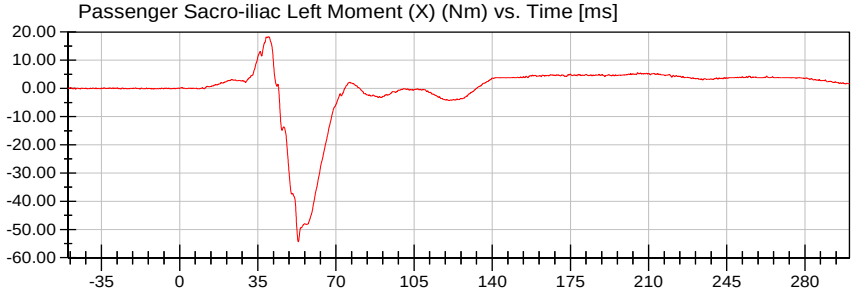
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Passenger Sacro-iliac Left Moment (X) (Nm) vs. Time [ms]



<Max>

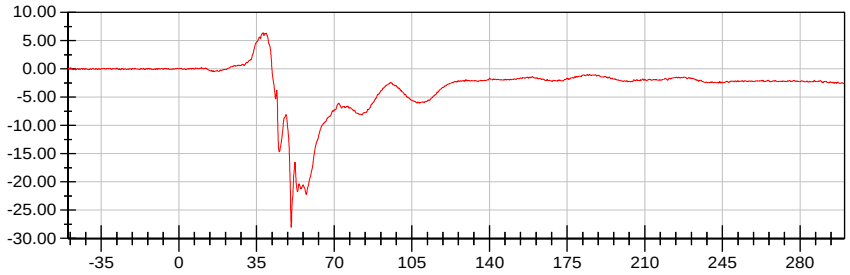
18.30 Nm at 39.75 ms

<Min>

-54.37 Nm at 53.15 ms

CFC_600

Passenger Sacro-iliac Left Moment (Y) (Nm) vs. Time [ms]



<Max>

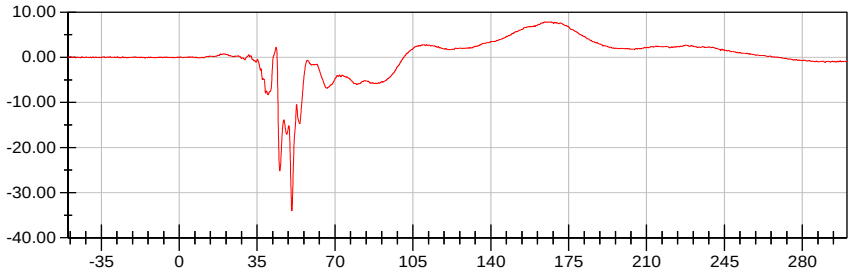
6.43 Nm at 37.95 ms

<Min>

-28.04 Nm at 50.65 ms

CFC_600

Passenger Sacro-iliac Left Moment (Z) (Nm) vs. Time [ms]



<Max>

7.84 Nm at 164.65 ms

<Min>

-34.00 Nm at 50.60 ms

CFC_600

VRTC

Test Date: 02/04/2021

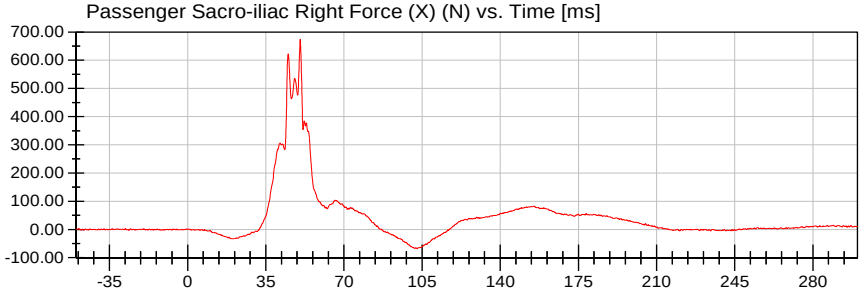
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Sacro-iliac Right Force (X) (N) vs. Time [ms]



<Max>

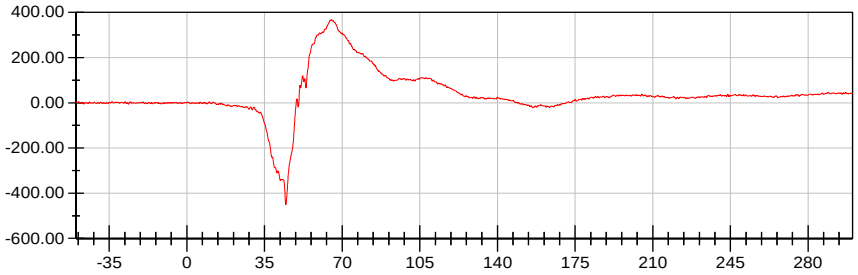
674.10 N at 50.45 ms

<Min>

-67.67 N at 102.85 ms

CFC_600

Passenger Sacro-iliac Right Force (Y) (N) vs. Time [ms]



<Max>

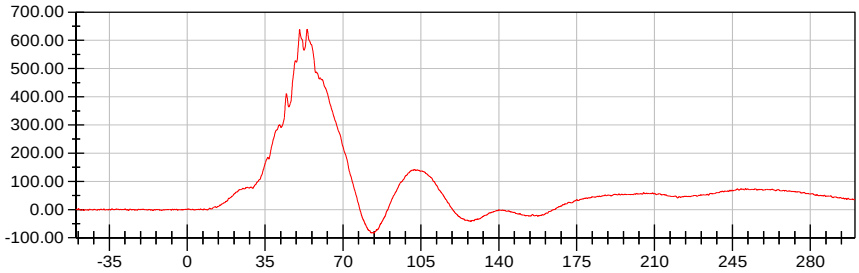
368.19 N at 65.25 ms

<Min>

-450.85 N at 44.60 ms

CFC_600

Passenger Sacro-iliac Right Force (Z) (N) vs. Time [ms]



<Max>

639.15 N at 53.90 ms

<Min>

-82.99 N at 83.80 ms

CFC_600

VRTC

Test Date: 02/04/2021

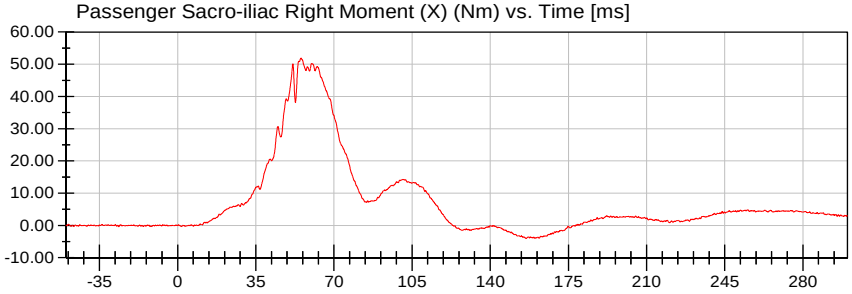
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Passenger Sacro-iliac Right Moment (X) (Nm) vs. Time [ms]



<Max>

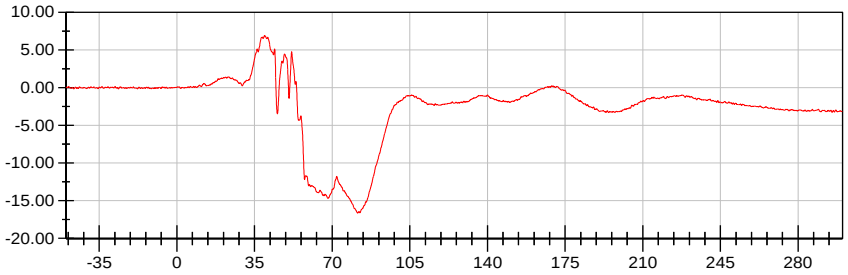
51.87 Nm at 55.25 ms

<Min>

-4.02 Nm at 156.05 ms

CFC_600

Passenger Sacro-iliac Right Moment (Y) (Nm) vs. Time [ms]



<Max>

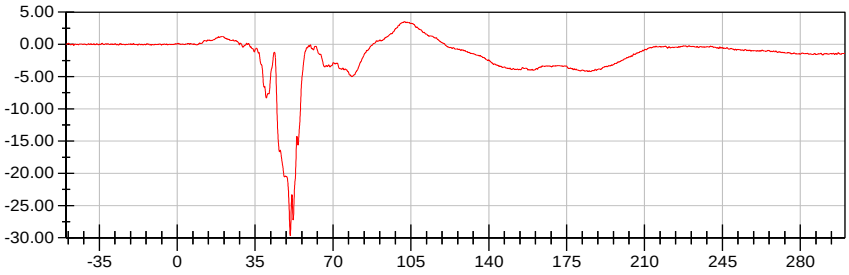
6.93 Nm at 39.50 ms

<Min>

-16.62 Nm at 81.45 ms

CFC_600

Passenger Sacro-iliac Right Moment (Z) (Nm) vs. Time [ms]



<Max>

3.53 Nm at 102.15 ms

<Min>

-29.65 Nm at 50.80 ms

CFC_600

VRTC

Test Date: 02/04/2021

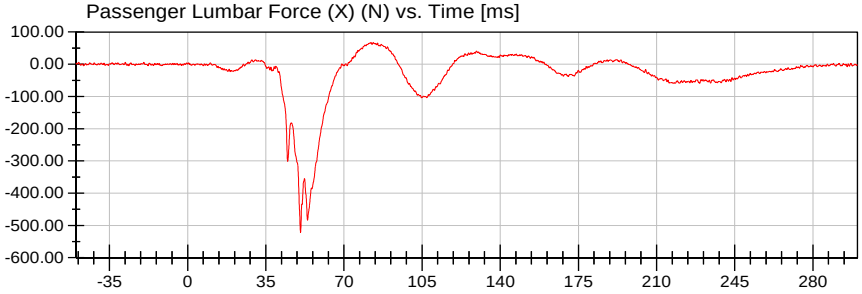
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Passenger Lumbar Force (X) (N) vs. Time [ms]



<Max>

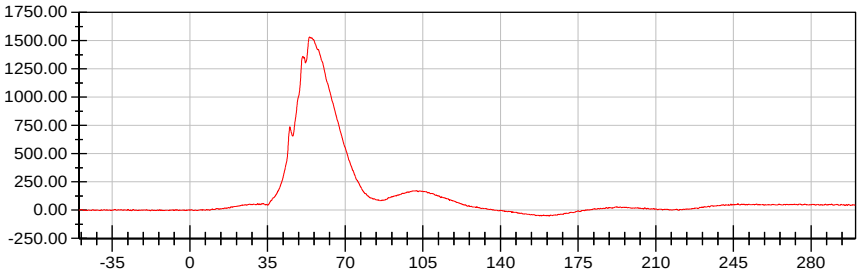
67.47 N at 83.15 ms

<Min>

-522.43 N at 50.60 ms

CFC_600

Passenger Lumbar Force (Y) (N) vs. Time [ms]



<Max>

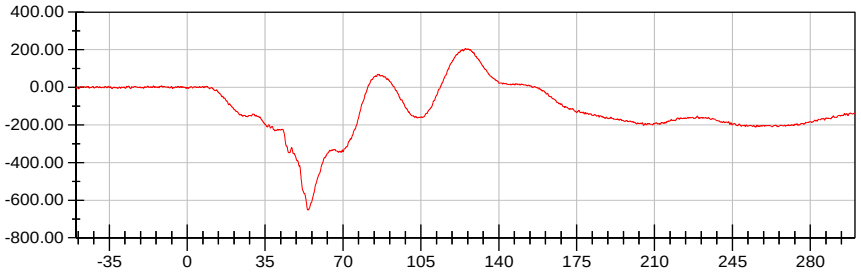
1,532.18 N at 53.95 ms

<Min>

-52.48 N at 161.90 ms

CFC_600

Passenger Lumbar Force (Z) (N) vs. Time [ms]



<Max>

206.12 N at 125.05 ms

<Min>

-652.26 N at 54.30 ms

CFC_600

VRTC

Test Date: 02/04/2021

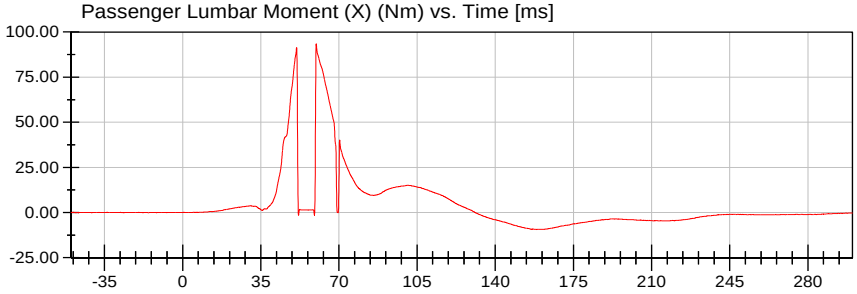
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Lumbar Moment (X) (Nm) vs. Time [ms]



<Max>

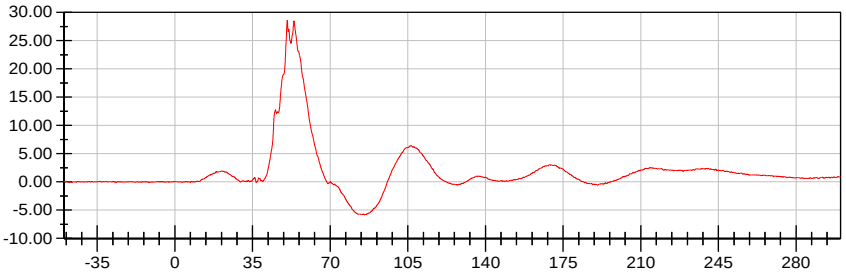
93.42 Nm at 59.85 ms

<Min>

-9.36 Nm at 158.45 ms

CFC_600

Passenger Lumbar Moment (Y) (Nm) vs. Time [ms]



<Max>

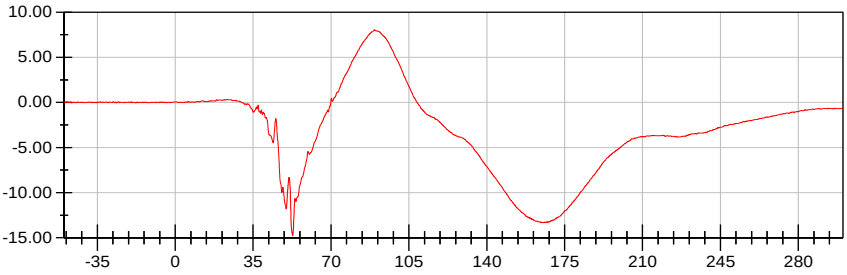
28.56 Nm at 50.65 ms

<Min>

-5.81 Nm at 85.55 ms

CFC_600

Passenger Lumbar Moment (Z) (Nm) vs. Time [ms]



<Max>

8.03 Nm at 89.55 ms

<Min>

-14.73 Nm at 52.75 ms

CFC_600

VRTC

Test Date: 02/04/2021

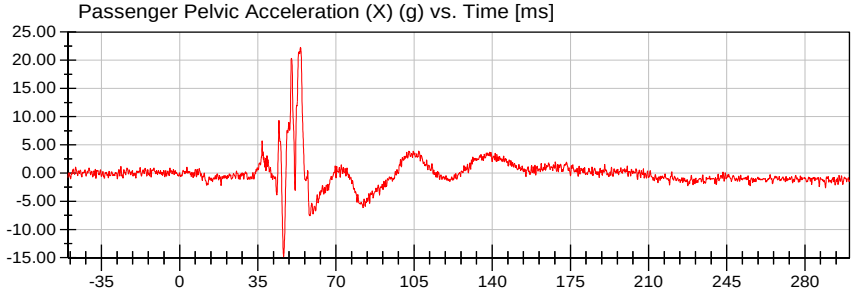
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

Passenger Pelvic Acceleration (X) (g) vs. Time [ms]



<Max>

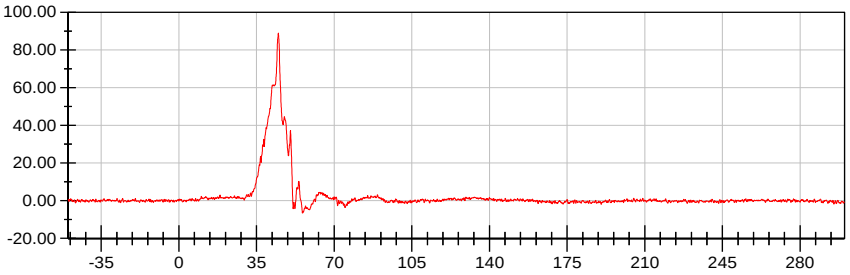
22.26 g at 54.15 ms

<Min>

-14.83 g at 46.60 ms

CFC_1000

Passenger Pelvic Acceleration (Y) (g) vs. Time [ms]



<Max>

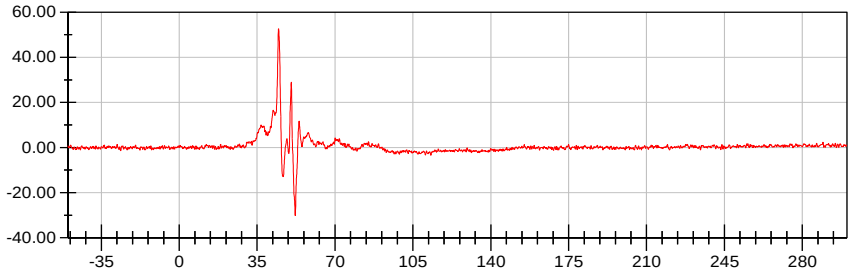
88.97 g at 44.85 ms

<Min>

-6.57 g at 55.70 ms

CFC_1000

Passenger Pelvic Acceleration (Z) (g) vs. Time [ms]



<Max>

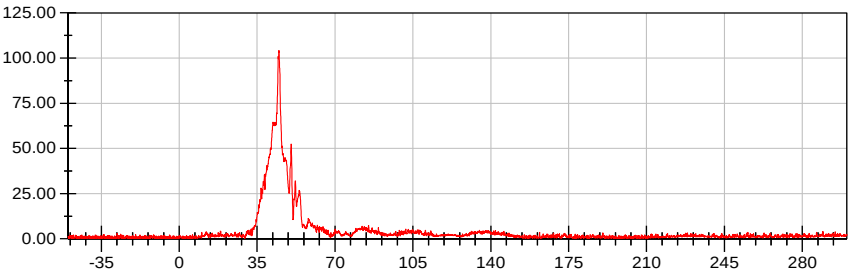
52.60 g at 44.65 ms

<Min>

-30.08 g at 52.15 ms

CFC_1000

Passenger Pelvic Acceleration Resultant (g) vs. Time [ms]



<Max>

104.07 g at 44.80 ms

<Min>

0.16 g at -48.35 ms

Prefiltered_> CFC 1000

VRTC

Test Date: 02/04/2021

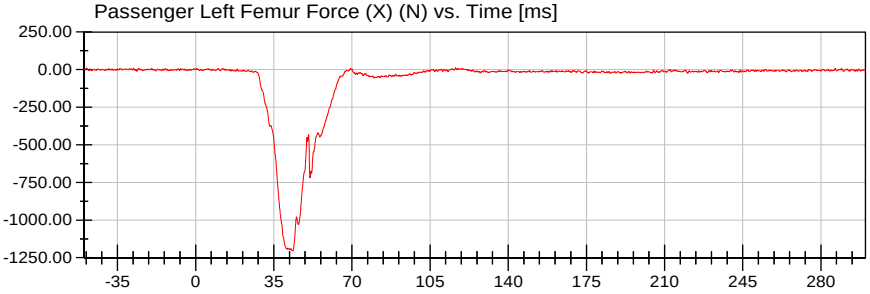
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Left Femur Force (X) (N) vs. Time [ms]



<Max>

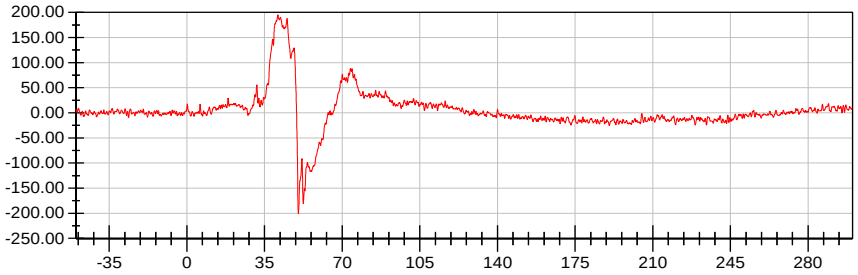
10.04 N at -48.85 ms

<Min>

-1,205.94 N at 43.55 ms

CFC_600

Passenger Left Femur Force (Y) (N) vs. Time [ms]



<Max>

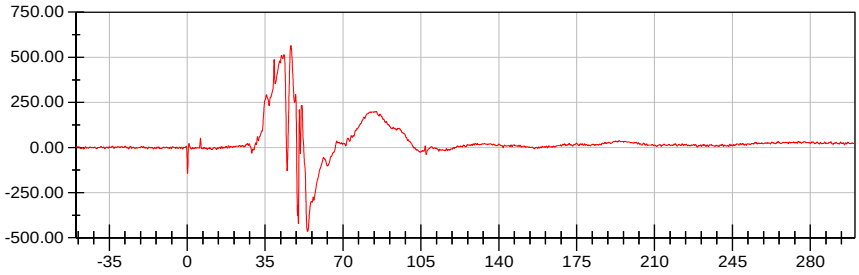
195.34 N at 41.00 ms

<Min>

-200.78 N at 50.25 ms

CFC_600

Passenger Left Femur Force (Z) (N) vs. Time [ms]



<Max>

565.30 N at 46.60 ms

<Min>

-464.23 N at 54.10 ms

CFC_600

VRTC

Test Date: 02/04/2021

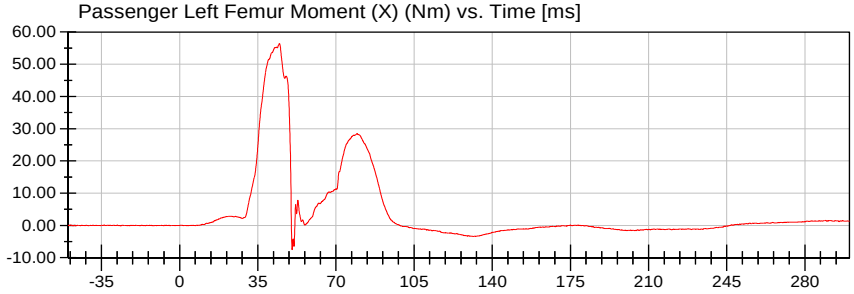
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Left Femur Moment (X) (Nm) vs. Time [ms]



<Max>

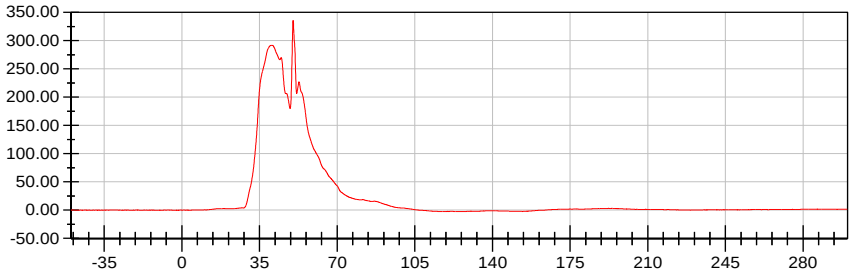
56.39 Nm at 44.70 ms

<Min>

-7.50 Nm at 50.40 ms

CFC_600

Passenger Left Femur Moment (Y) (Nm) vs. Time [ms]



<Max>

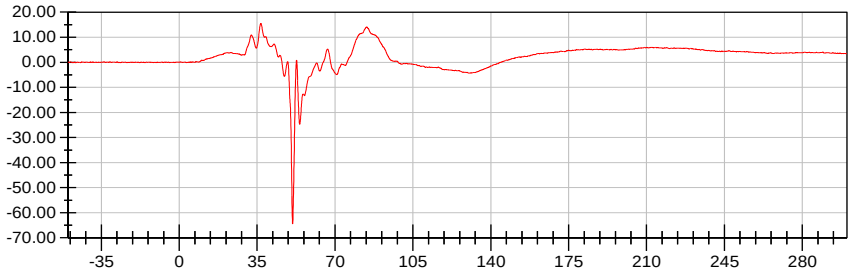
335.67 Nm at 50.15 ms

<Min>

-2.65 Nm at 125.15 ms

CFC_600

Passenger Left Femur Moment (Z) (Nm) vs. Time [ms]



<Max>

15.49 Nm at 36.70 ms

<Min>

-64.37 Nm at 50.95 ms

CFC_600

VRTC

Test Date: 02/04/2021

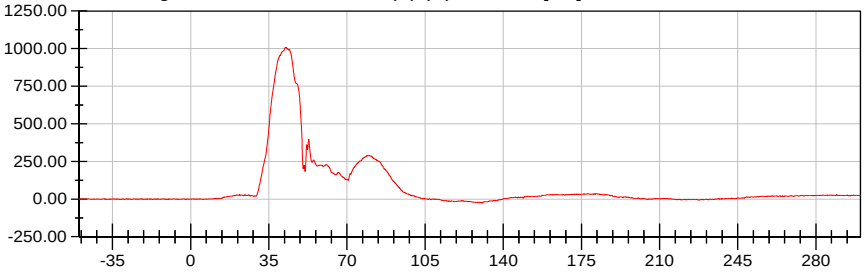
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Femoral Neck Force (X) (N) vs. Time [ms]



<Max>

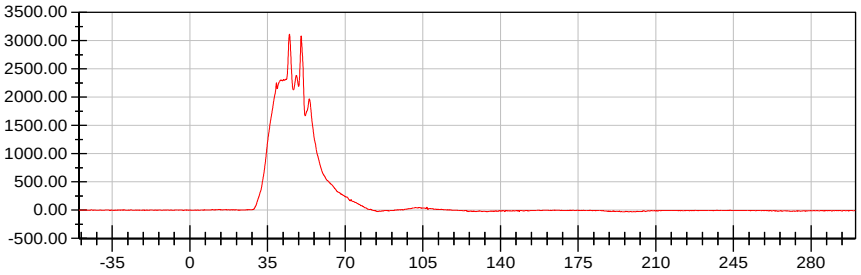
1,007.46 N at 42.65 ms

<Min>

-25.60 N at 130.65 ms

CFC_600

Passenger Femoral Neck Force (Y) (N) vs. Time [ms]



<Max>

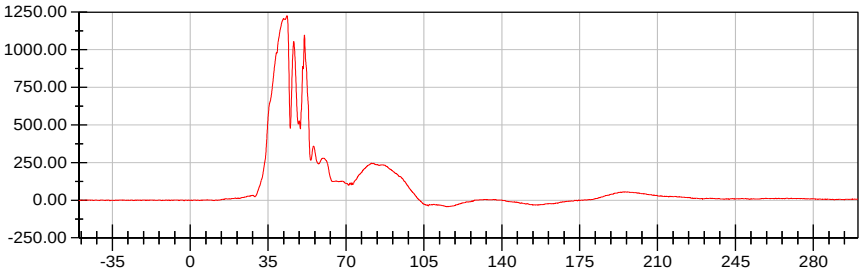
3,114.52 N at 44.85 ms

<Min>

-31.52 N at 195.05 ms

CFC_600

Passenger Femoral Neck Force (Z) (N) vs. Time [ms]



<Max>

1,226.16 N at 43.50 ms

<Min>

-42.42 N at 115.85 ms

CFC_600

VRTC

Test Date: 02/04/2021

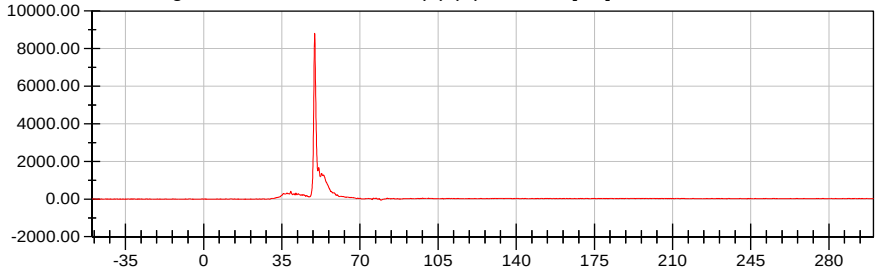
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Passenger Left Outer Knee Force (Y) (N) vs. Time [ms]



<Max>

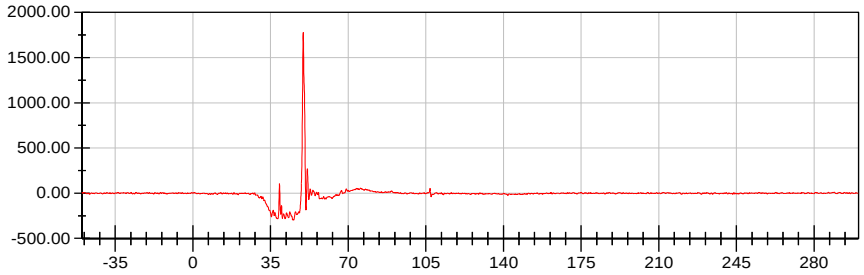
8,817.16 N at 49.75 ms

<Min>

-59.78 N at 79.40 ms

CFC_600

Passenger Left Inner Knee Force (Y) (N) vs. Time [ms]



<Max>

1,776.85 N at 49.75 ms

<Min>

-296.39 N at 45.50 ms

CFC_600

VRTC

Test Date: 02/04/2021

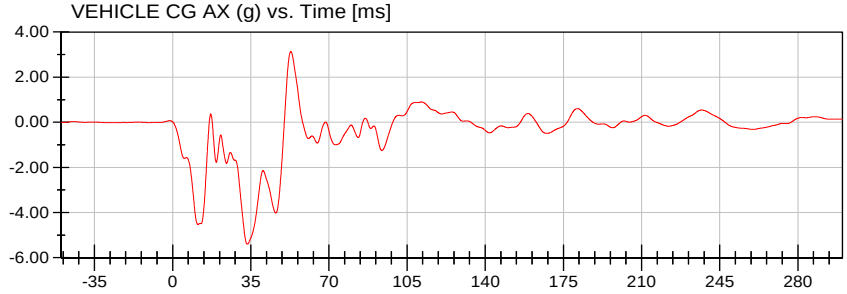
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

VEHICLE CG AX (g) vs. Time [ms]



<Max>

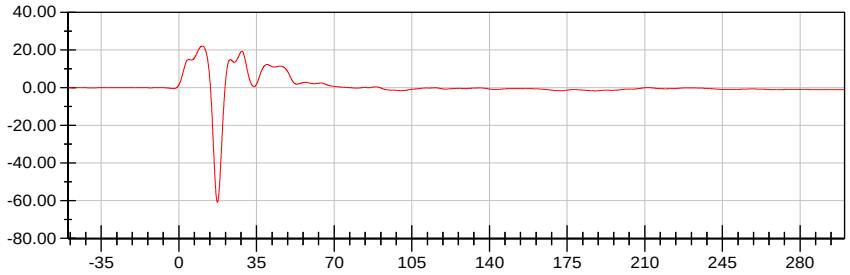
3.14 g at 52.95 ms

<Min>

-5.40 g at 33.50 ms

CFC_60

VEHICLE CG AY (g) vs. Time [ms]



<Max>

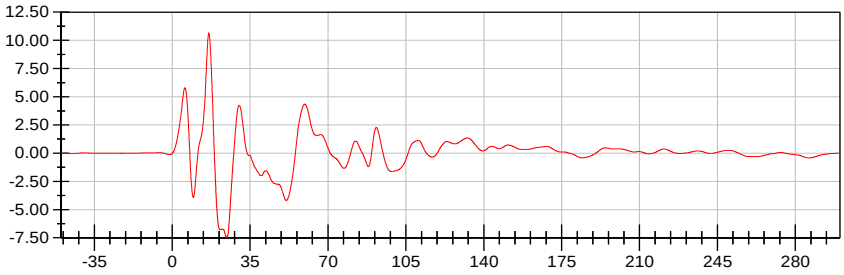
22.16 g at 10.60 ms

<Min>

-60.77 g at 17.35 ms

CFC_60

VEHICLE CG AZ (g) vs. Time [ms]



<Max>

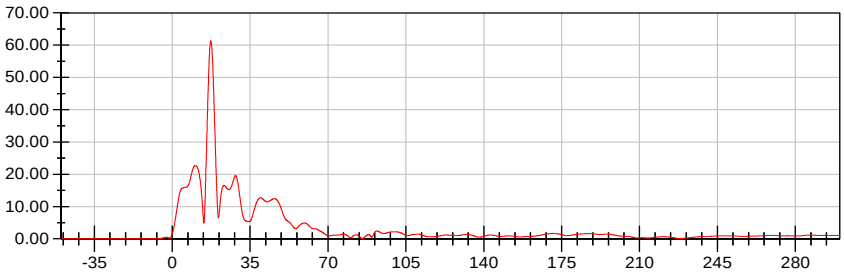
10.65 g at 16.50 ms

<Min>

-7.46 g at 24.50 ms

CFC_60

VEHICLE CG A RESULTANT (g) vs. Time [ms]



<Max>

61.36 g at 17.35 ms

<Min>

0.00 g at -36.80 ms

CFC_60

VRTC

Test Date: 02/04/2021

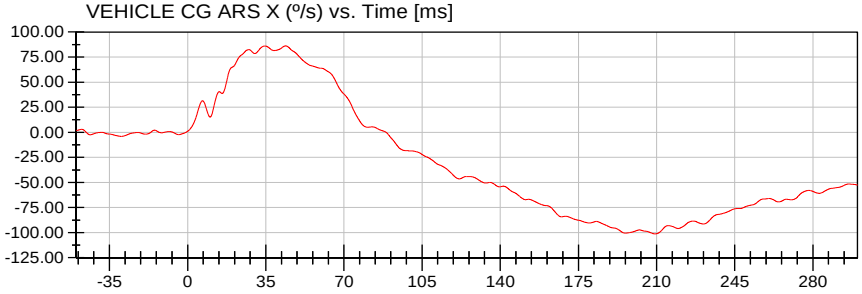
Test Lab: CTF

Test Number: 210204 ()

Position #1 (11WS)

Position #4 (14WF)

VEHICLE CG ARS X (º/s) vs. Time [ms]



<Max>

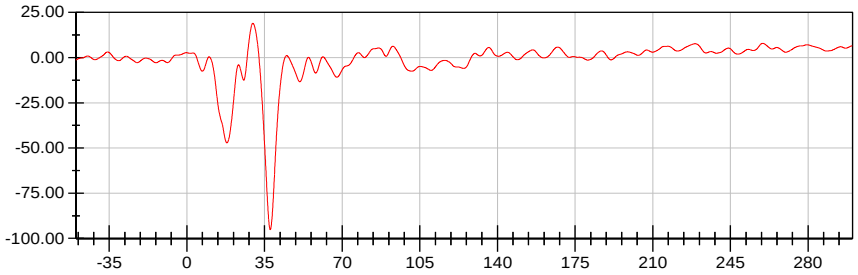
86.09 º/s at 43.95 ms

<Min>

-101.28 º/s at 209.25 ms

CFC_60

VEHICLE CG ARS Y (º/s) vs. Time [ms]



<Max>

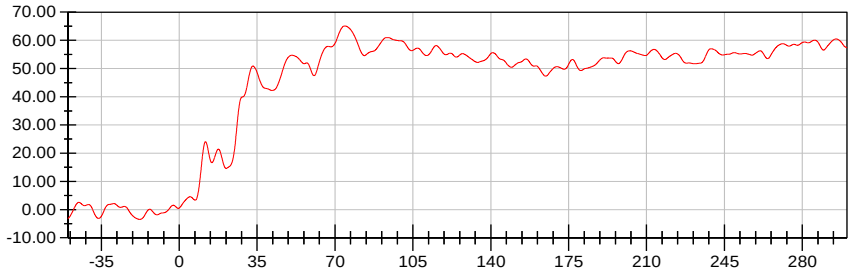
18.95 º/s at 29.75 ms

<Min>

-95.20 º/s at 37.60 ms

CFC_60

VEHICLE CG ARS Z (º/s) vs. Time [ms]



<Max>

65.09 º/s at 74.45 ms

<Min>

-3.48 º/s at -17.75 ms

CFC_60

VRTC

Test Date: 02/04/2021

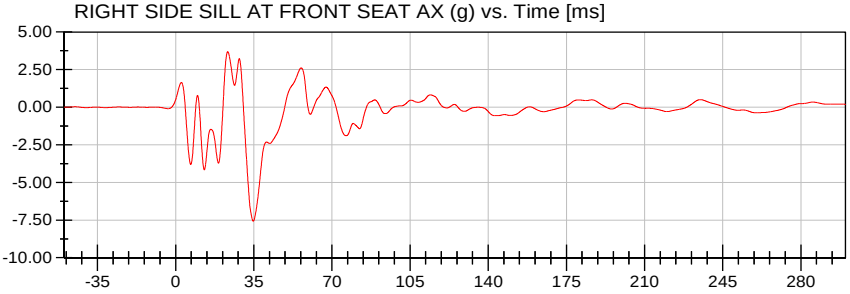
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

RIGHT SIDE SILL AT FRONT SEAT AX (g) vs. Time [ms]



<Max>

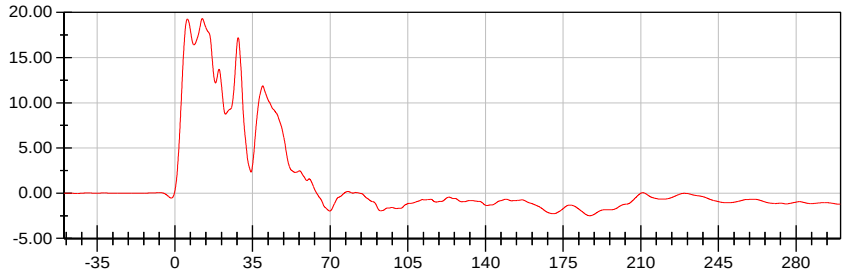
3.69 g at 23.35 ms

<Min>

-7.58 g at 34.75 ms

CFC_60

RIGHT SIDE SILL AT FRONT SEAT AY (g) vs. Time [ms]



<Max>

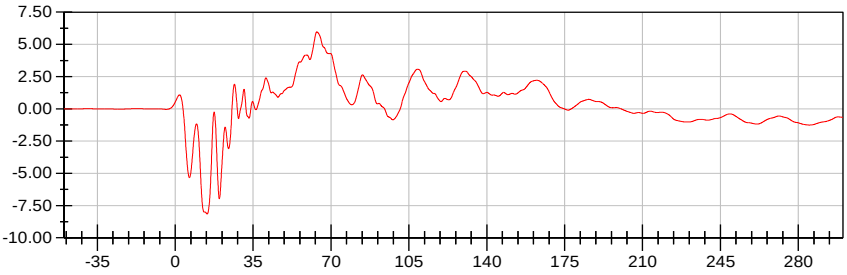
19.32 g at 12.40 ms

<Min>

-2.50 g at 187.05 ms

CFC_60

RIGHT SIDE SILL AT FRONT SEAT AZ (g) vs. Time [ms]



<Max>

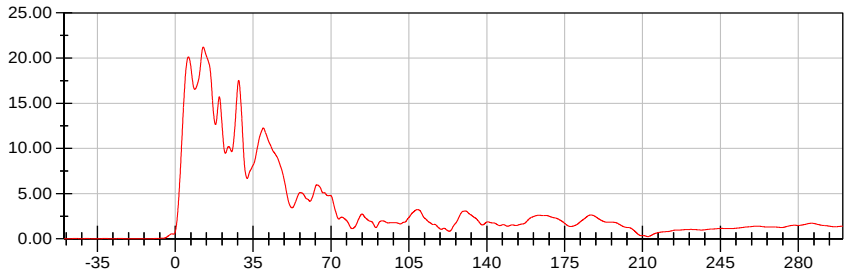
5.96 g at 63.65 ms

<Min>

-8.15 g at 14.35 ms

CFC_60

RIGHT SIDE SILL AT FRONT SEAT A RESULTANT (g) vs. Time [ms]



<Max>

21.22 g at 12.60 ms

<Min>

0.00 g at -14.05 ms

CFC_60

VRTC

Test Date: 02/04/2021

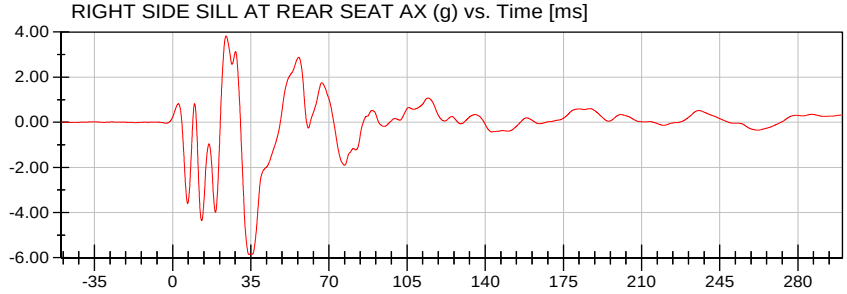
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

RIGHT SIDE SILL AT REAR SEAT AX (g) vs. Time [ms]



<Max>

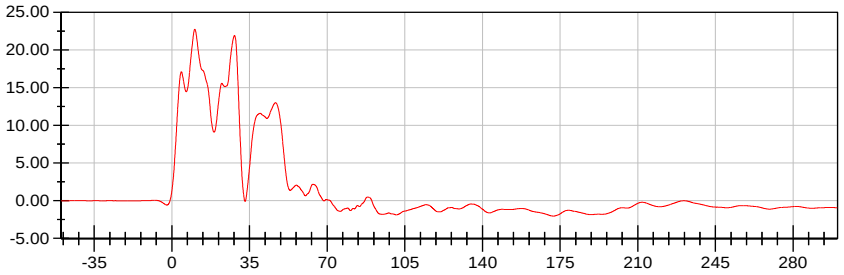
3.82 g at 23.95 ms

<Min>

-5.86 g at 34.20 ms

CFC_60

RIGHT SIDE SILL AT REAR SEAT AY (g) vs. Time [ms]



<Max>

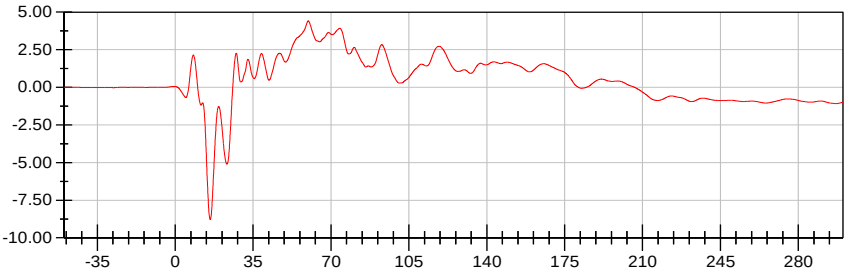
22.76 g at 10.35 ms

<Min>

-2.04 g at 172.00 ms

CFC_60

RIGHT SIDE SILL AT REAR SEAT AZ (g) vs. Time [ms]



<Max>

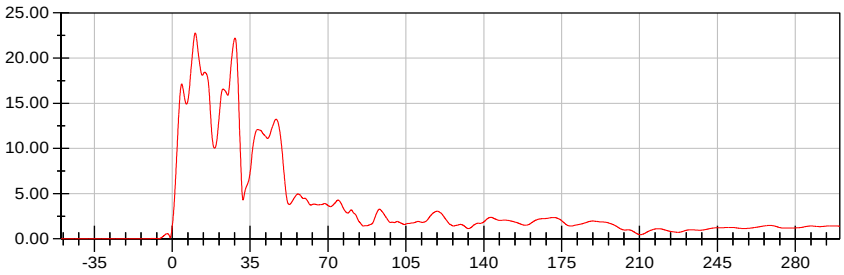
4.41 g at 59.80 ms

<Min>

-8.79 g at 15.75 ms

CFC_60

RRIGHT SIDE SILL AT REAR SEAT A ESULTANT (g) vs. Time [ms]



<Max>

22.77 g at 10.35 ms

<Min>

0.00 g at -6.00 ms

CFC_60

VRTC

Test Date: 02/04/2021

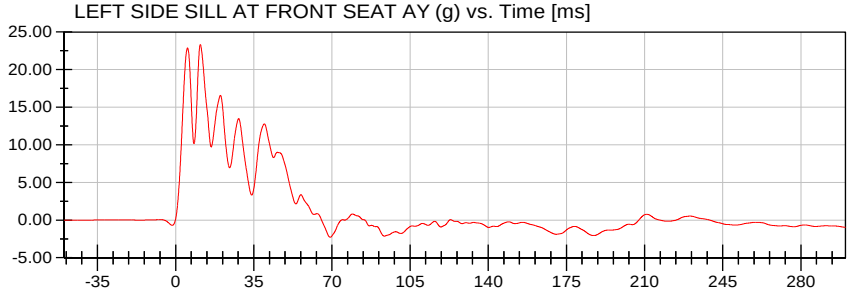
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

LEFT SIDE SILL AT FRONT SEAT AY (g) vs. Time [ms]



<Max>

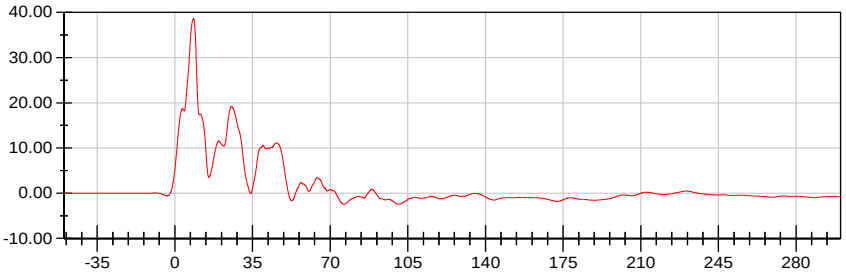
23.33 g at 11.05 ms

<Min>

-2.28 g at 69.20 ms

CFC_60

LEFT SIDE SILL AT REAR SEAT AY (g) vs. Time [ms]



<Max>

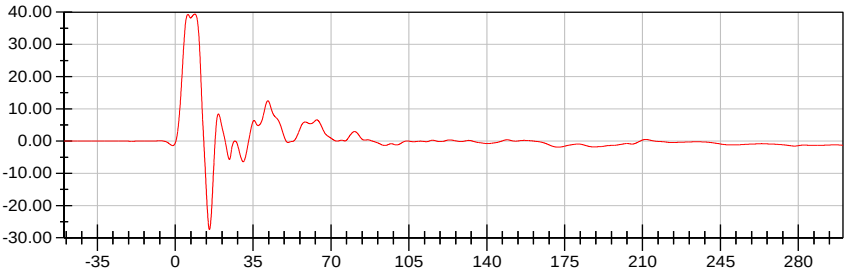
38.65 g at 8.40 ms

<Min>

-2.45 g at 76.30 ms

CFC_60

LEFT LOWER A-PILLAR AY (g) vs. Time [ms]



<Max>

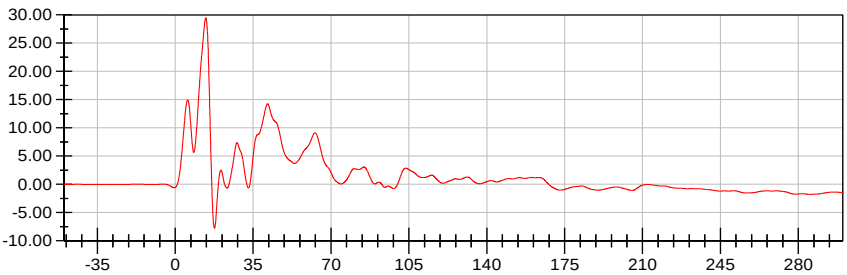
39.39 g at 8.85 ms

<Min>

-27.42 g at 15.40 ms

CFC_60

LEFT MIDDLE A-PILLAR AY (g) vs. Time [ms]



<Max>

29.47 g at 13.75 ms

<Min>

-7.78 g at 17.65 ms

CFC_60

VRTC

Test Date: 02/04/2021

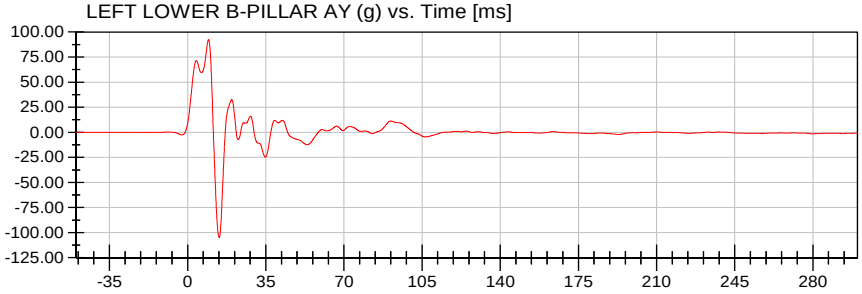
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

LEFT LOWER B-PILLAR AY (g) vs. Time [ms]



<Max>

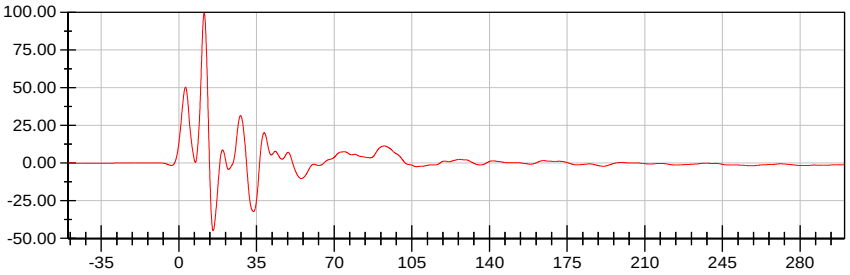
92.54 g at 9.40 ms

<Min>

-104.92 g at 14.10 ms

CFC_60

LEFT MIDDLE B-PILLAR AY (g) vs. Time [ms]



<Max>

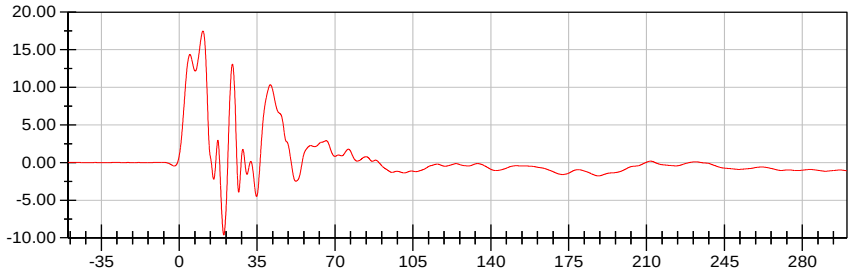
99.52 g at 11.40 ms

<Min>

-45.00 g at 15.45 ms

CFC_60

FRONT SEAT TRACK AY (g) vs. Time [ms]



<Max>

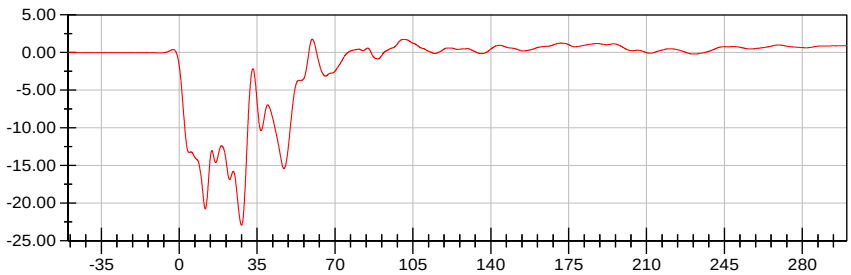
17.48 g at 10.65 ms

<Min>

-9.61 g at 20.05 ms

CFC_60

LEFT REAR SEAT STRUCTURE AY (g) vs. Time [ms]



<Max>

1.77 g at 59.80 ms

<Min>

-22.92 g at 28.00 ms

CFC_60

VRTC

Test Date: 02/04/2021

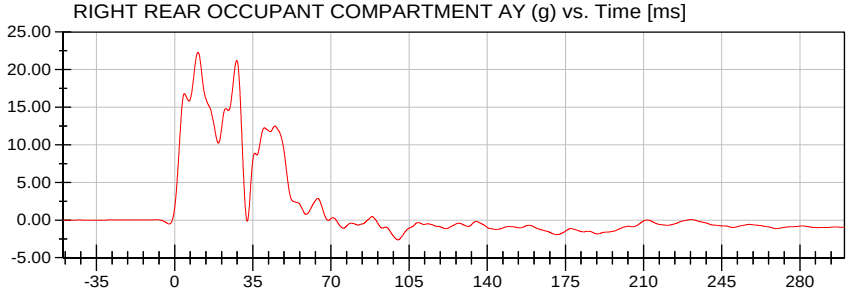
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

RIGHT REAR OCCUPANT COMPARTMENT AY (g) vs. Time [ms]



<Max>

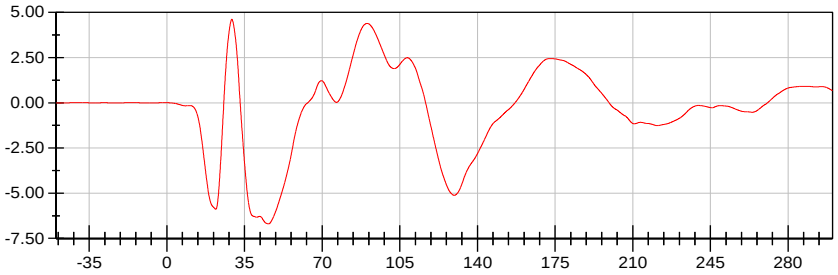
22.29 g at 10.50 ms

<Min>

-2.64 g at 100.00 ms

CFC_60

ENGINE BLOCK AX (g) vs. Time [ms]



<Max>

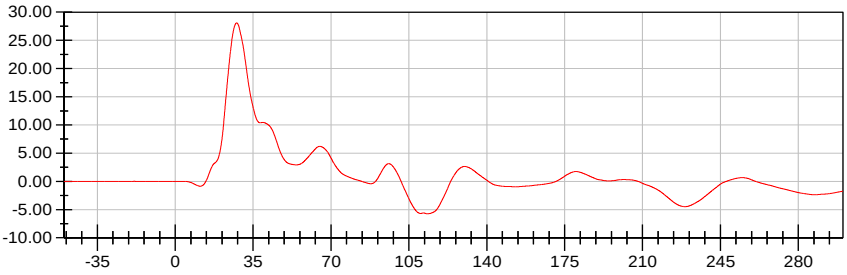
4.62 g at 29.30 ms

<Min>

-6.69 g at 45.80 ms

CFC_60

ENGINE BLOCK AY (g) vs. Time [ms]



<Max>

28.09 g at 27.60 ms

<Min>

-5.74 g at 113.30 ms

CFC_60

VRTC

Test Date: 02/04/2021

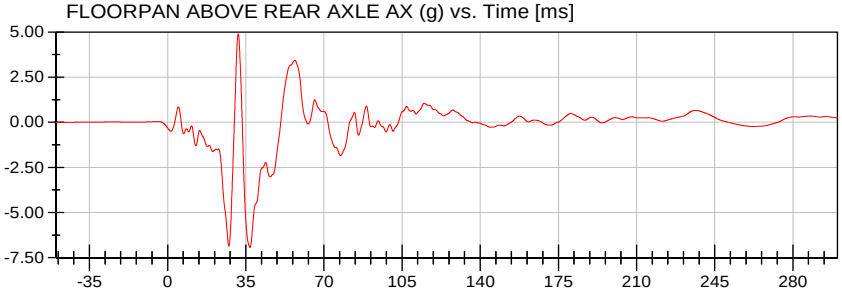
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

FLOORPAN ABOVE REAR AXLE AX (g) vs. Time [ms]



<Max>

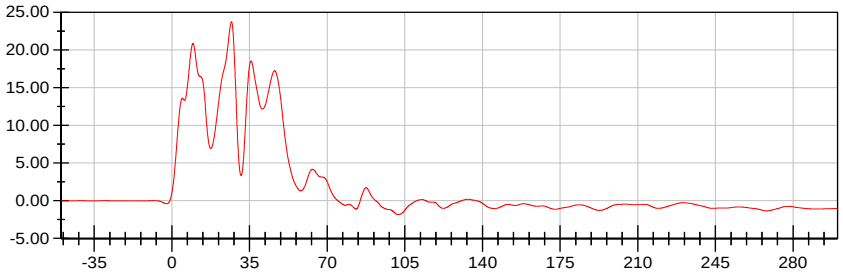
4.89 g at 31.60 ms

<Min>

-6.92 g at 36.90 ms

CFC_60

FLOORPAN ABOVE REAR AXLE AY (g) vs. Time [ms]



<Max>

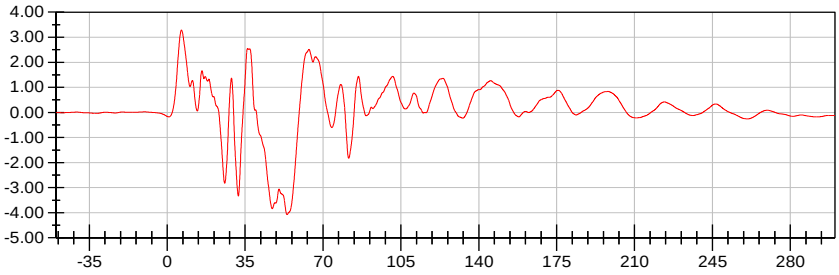
23.77 g at 26.90 ms

<Min>

-1.86 g at 102.00 ms

CFC_60

FLOORPAN ABOVE REAR AXLE AZ (g) vs. Time [ms]



<Max>

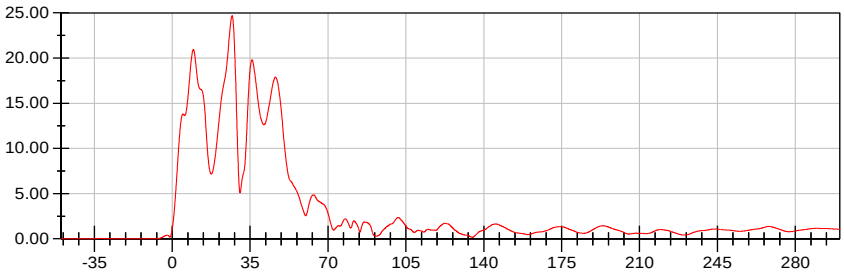
3.29 g at 6.40 ms

<Min>

-4.08 g at 53.85 ms

CFC_60

FLOORPAN ABOVE REAR AXLE A RESULTANT (g) vs. Time [ms]



<Max>

24.70 g at 26.95 ms

<Min>

0.00 g at -38.75 ms

CFC_60

VRTC

Test Date: 02/04/2021

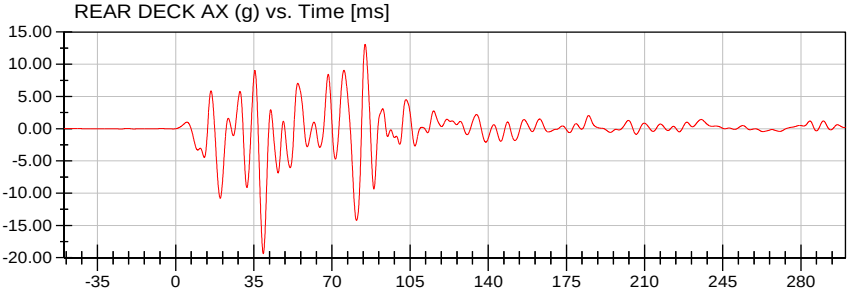
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

REAR DECK AX (g) vs. Time [ms]



<Max>

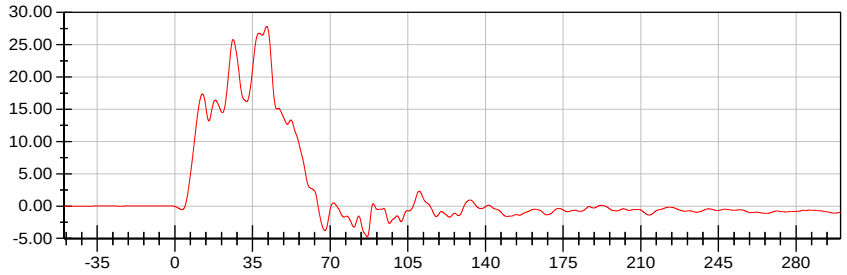
13.08 g at 84.85 ms

<Min>

-19.37 g at 39.25 ms

CFC_60

REAR DECK AY (g) vs. Time [ms]



<Max>

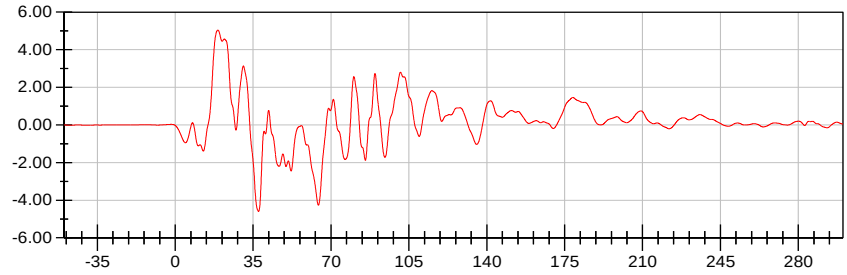
27.86 g at 41.45 ms

<Min>

-4.76 g at 86.70 ms

CFC_60

REAR DECK AZ (g) vs. Time [ms]



<Max>

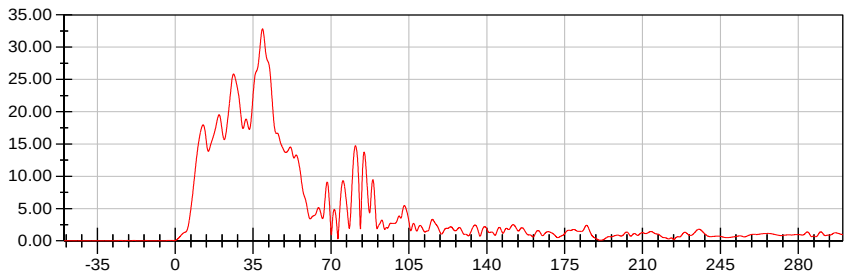
5.04 g at 19.20 ms

<Min>

-4.59 g at 37.45 ms

CFC_60

REAR DECK A RESULTANT (g) vs. Time [ms]



<Max>

32.83 g at 39.25 ms

<Min>

0.00 g at -23.00 ms

CFC_60

VRTC

Test Date: 02/04/2021

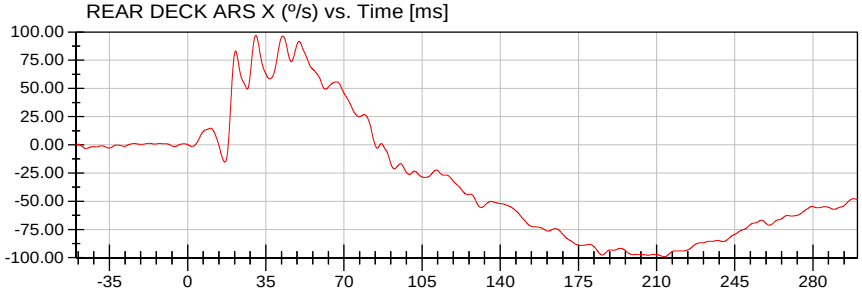
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

REAR DECK ARS X (º/s) vs. Time [ms]



<Max>

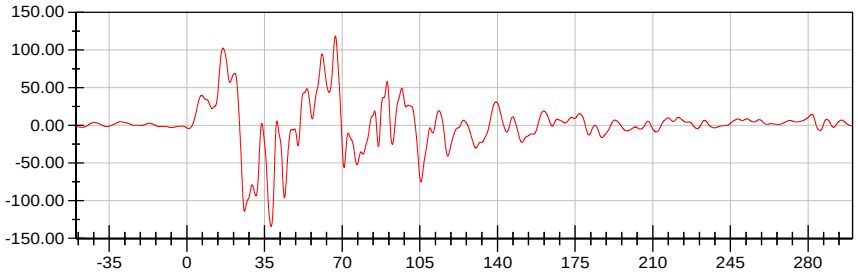
97.01 º/s at 30.55 ms

<Min>

-99.09 º/s at 213.50 ms

CFC_60

REAR DECK ARS Y (º/s) vs. Time [ms]



<Max>

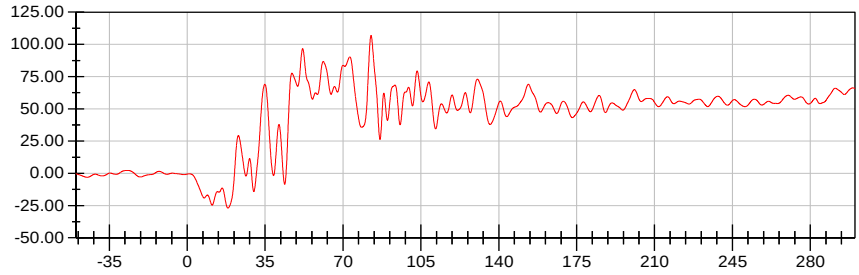
118.86 º/s at 66.95 ms

<Min>

-134.15 º/s at 38.00 ms

CFC_60

REAR DECK ARS Z (º/s) vs. Time [ms]



<Max>

106.88 º/s at 82.60 ms

<Min>

-26.98 º/s at 18.30 ms

CFC_60

VRTC

Test Date: 02/04/2021

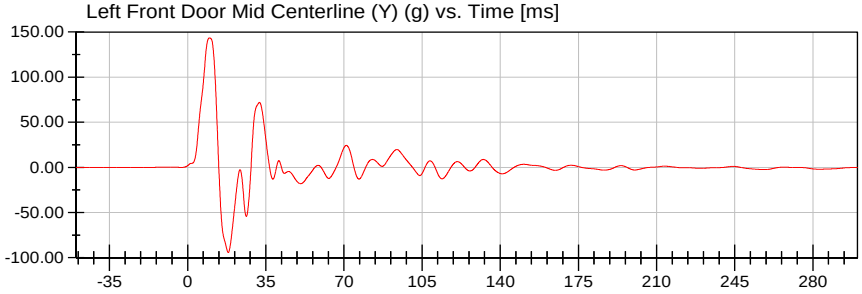
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Left Front Door Mid Centerline (Y) (g) vs. Time [ms]



<Max>

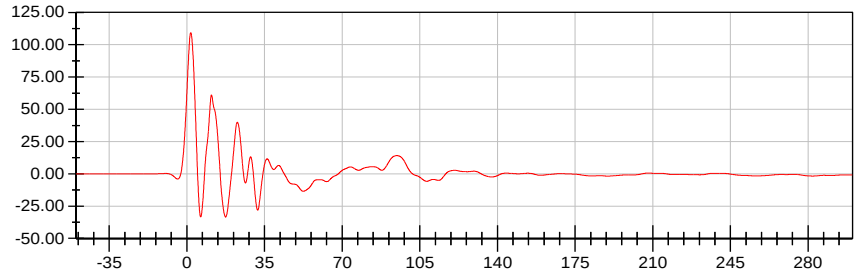
143.50 g at 9.80 ms

<Min>

-94.32 g at 18.20 ms

CFC_60

Left Front Door Mid Rear (Y) (g) vs. Time [ms]



<Max>

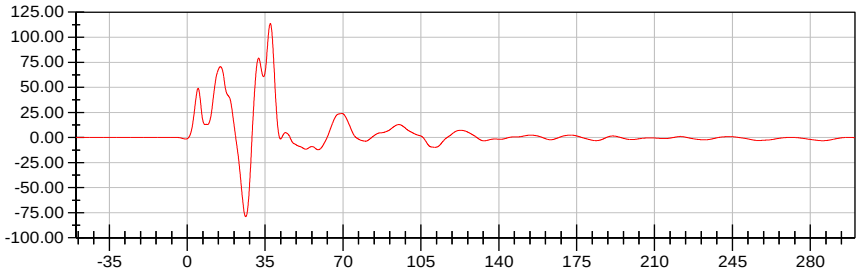
109.31 g at 1.80 ms

<Min>

-33.46 g at 17.45 ms

CFC_60

Left Front Door Upper Centerline (Y) (g) vs. Time [ms]



<Max>

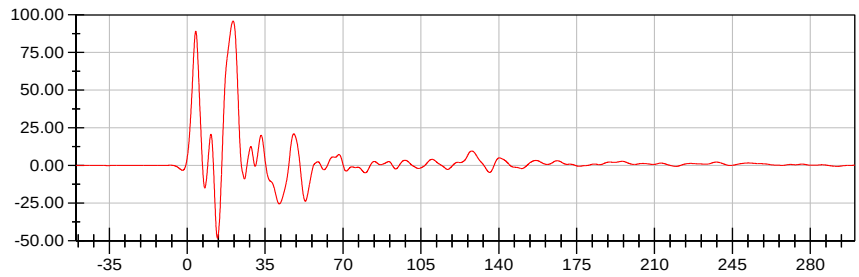
113.67 g at 37.35 ms

<Min>

-78.92 g at 26.30 ms

CFC_60

Left Rear Door Mid Rear (Y) (g) vs. Time [ms]



<Max>

95.89 g at 20.60 ms

<Min>

-48.20 g at 13.60 ms

CFC_60

VRTC

Test Date: 02/04/2021

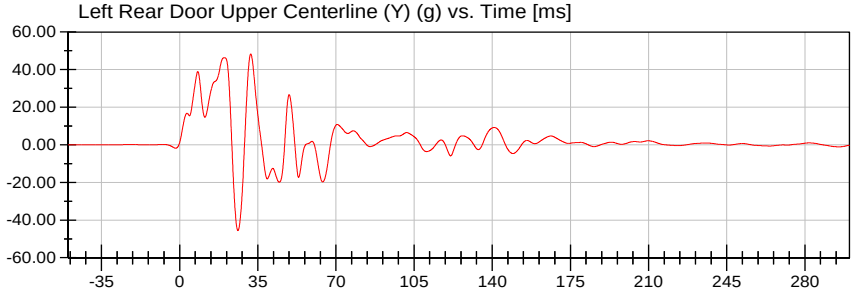
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Left Rear Door Upper Centerline (Y) (g) vs. Time [ms]



<Max>

48.31 g at 31.85 ms

<Min>

-45.61 g at 26.10 ms

CFC_60

VRTC

Test Date: 02/04/2021

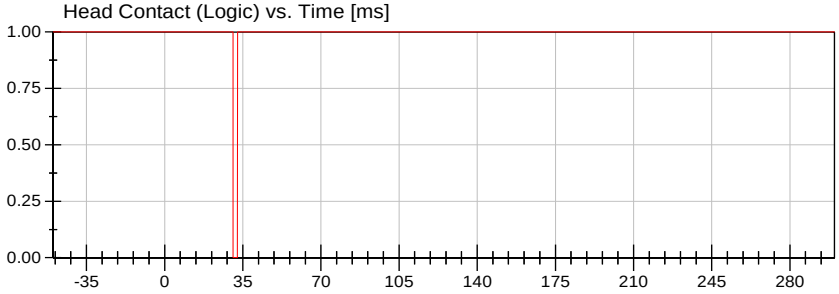
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Head Contact (Logic) vs. Time [ms]



<Max>

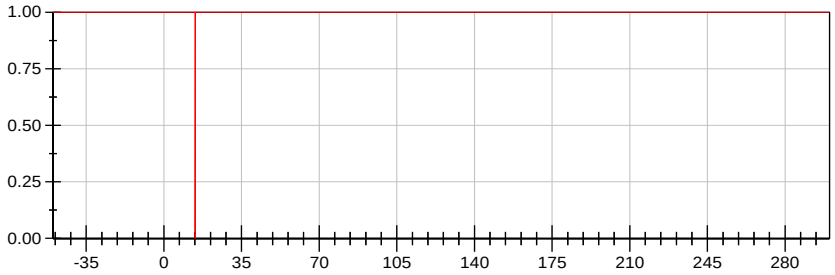
1.00 Logic at -50.00 ms

<Min>

0.00 Logic at 30.70 ms

Unfiltered

Shoulder Contact (Logic) vs. Time [ms]



<Max>

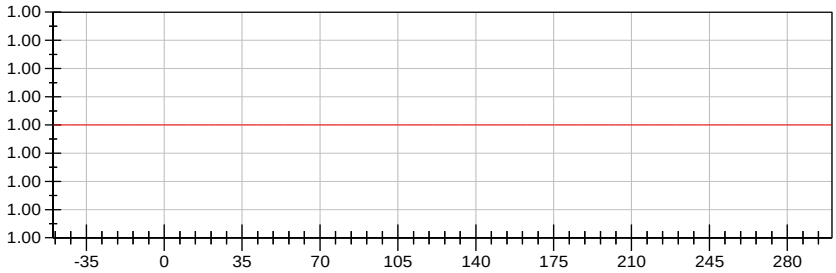
1.00 Logic at -50.00 ms

<Min>

0.00 Logic at 14.10 ms

Unfiltered

Thorax Contact (Logic) vs. Time [ms]



<Max>

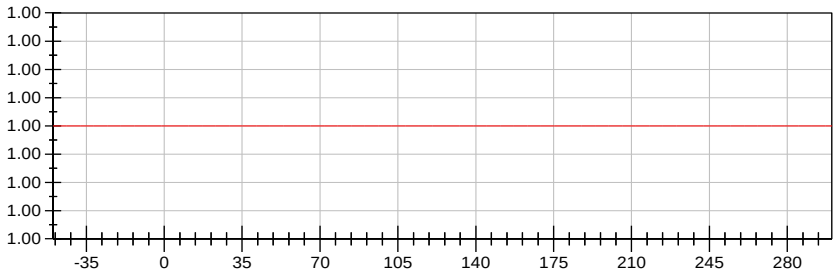
1.00 Logic at -50.00 ms

<Min>

1.00 Logic at -50.00 ms

Unfiltered

Pelvis Contact (Logic) vs. Time [ms]



<Max>

1.00 Logic at -50.00 ms

<Min>

1.00 Logic at -50.00 ms

Unfiltered

VRTC

Test Date: 02/04/2021

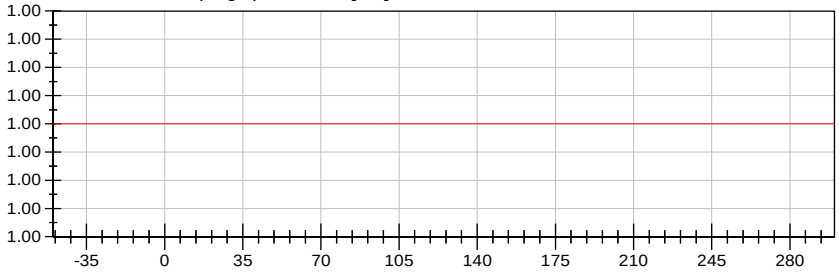
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

Head Contact (Logic) vs. Time [ms]



<Max>

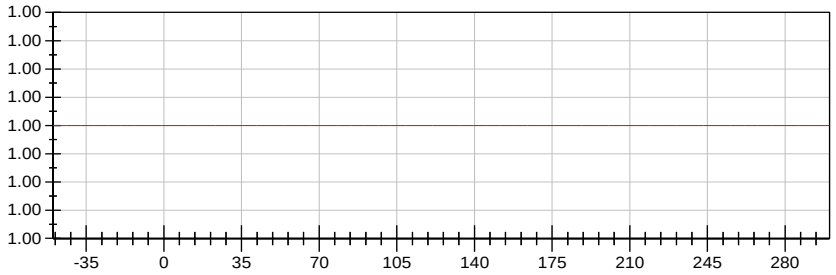
1.00 Logic at -50.00 ms

<Min>

1.00 Logic at -50.00 ms

Unfiltered

Shoulder Contact (Logic) vs. Time [ms]



<Max>

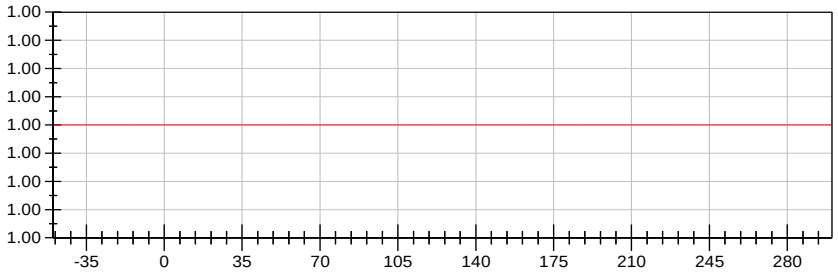
1.00 Logic at -50.00 ms

<Min>

1.00 Logic at -50.00 ms

Unfiltered

Thorax Contact (Logic) vs. Time [ms]



<Max>

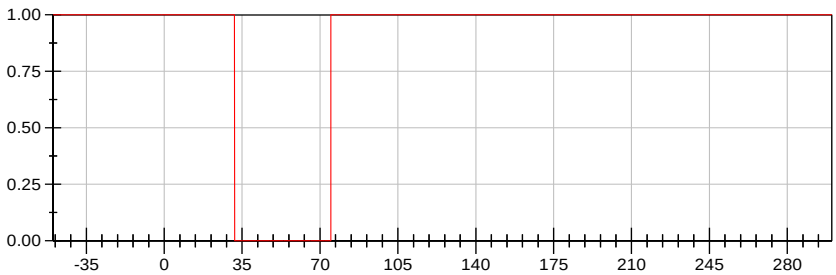
1.00 Logic at -50.00 ms

<Min>

1.00 Logic at -50.00 ms

Unfiltered

Pelvis Contact (Logic) vs. Time [ms]



<Max>

1.00 Logic at -50.00 ms

<Min>

0.00 Logic at 31.60 ms

Unfiltered

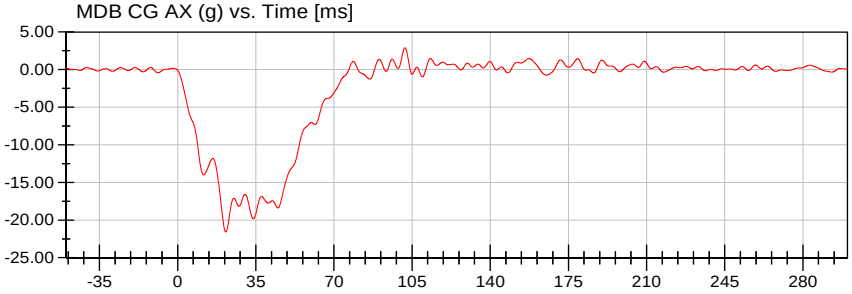
VRTC

Test Lab: CTF
Test Number: 210204 ()

Position #1 (11WS)
Position #4 (14WF)

Test Date: 02/04/2021

MDB CG AX (g) vs. Time [ms]



<Max>

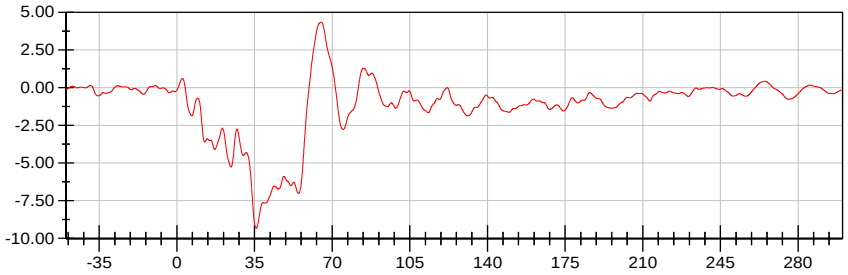
2.90 g at 101.75 ms

<Min>

-21.59 g at 21.55 ms

CFC_60

MDB CG AY (g) vs. Time [ms]



<Max>

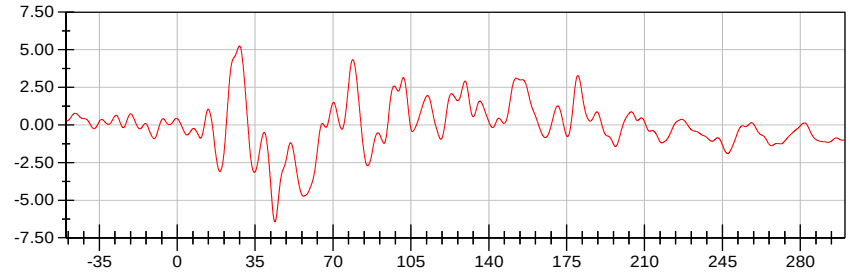
4.35 g at 65.05 ms

<Min>

-9.33 g at 35.75 ms

CFC_60

MDB CG AZ (g) vs. Time [ms]



<Max>

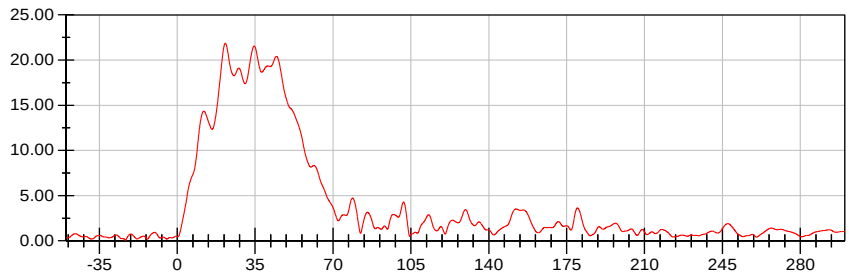
5.26 g at 28.00 ms

<Min>

-6.42 g at 43.90 ms

CFC_60

MDB CG A RESULTANT (g) vs. Time [ms]



<Max>

21.86 g at 21.60 ms

<Min>

0.06 g at -23.30 ms

CFC_60

VRTC

Test Date: 02/04/2021

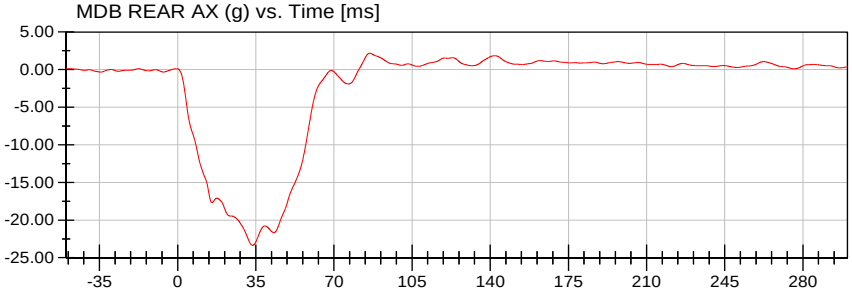
Test Lab: CTF

Position #1 (11WS)

Position #4 (14WF)

Test Number: 210204 ()

MDB REAR AX (g) vs. Time [ms]



<Max>

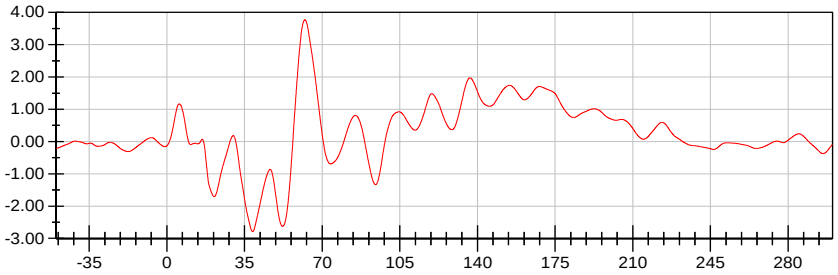
2.17 g at 86.05 ms

<Min>

-23.36 g at 33.60 ms

CFC_60

MDB REAR AY (g) vs. Time [ms]



<Max>

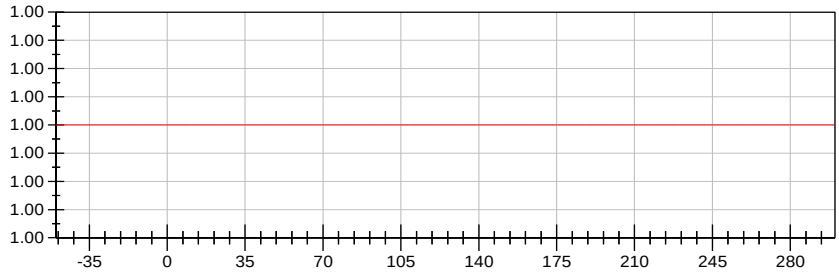
3.77 g at 62.20 ms

<Min>

-2.79 g at 38.65 ms

CFC_60

LEFT MDB CONTACT (Logic) vs. Time [ms]



<Max>

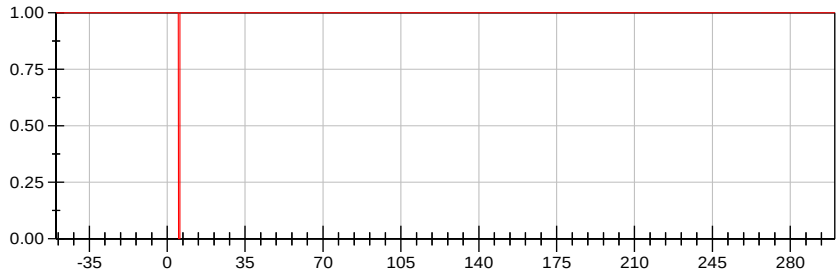
1.00 Logic at -50.00 ms

<Min>

1.00 Logic at -50.00 ms

Unfiltered

RIGHT MDB CONTACT (Logic) vs. Time [ms]



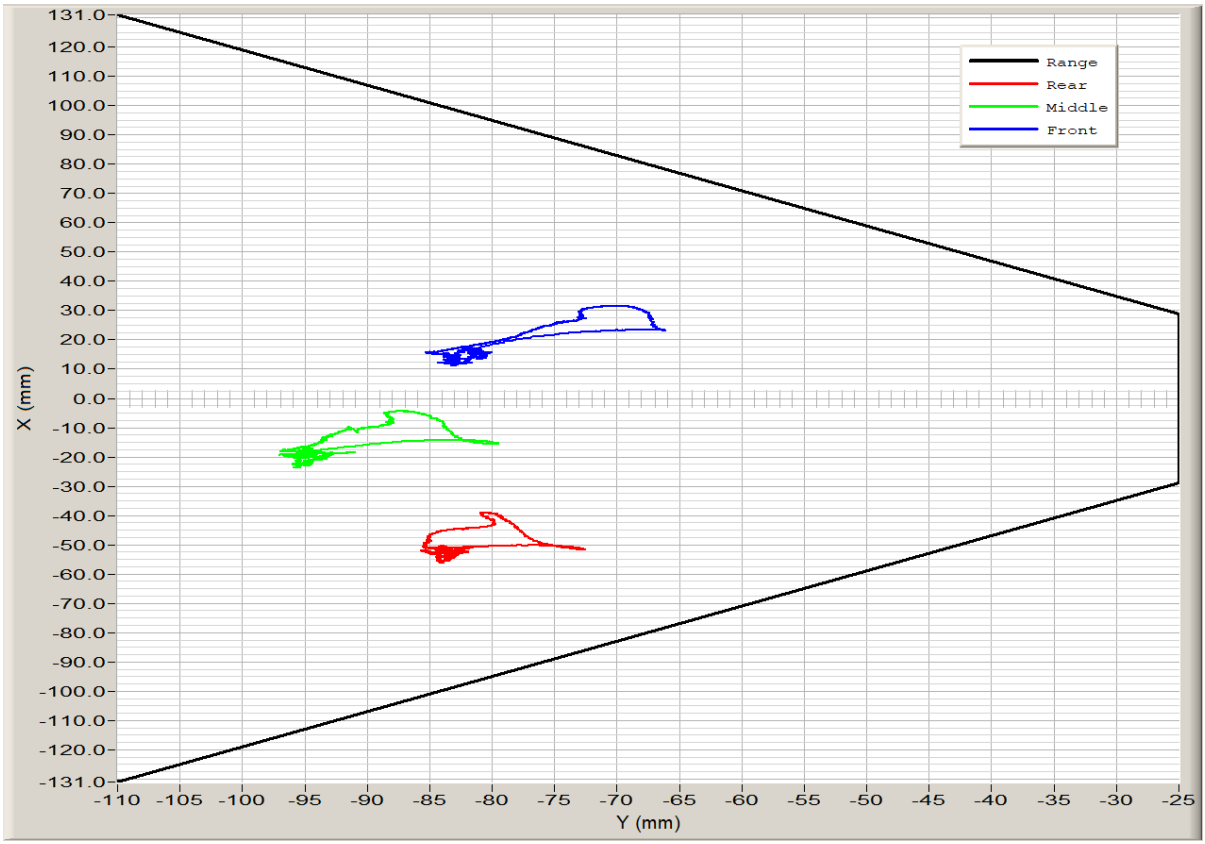
<Max>

1.00 Logic at -50.00 ms

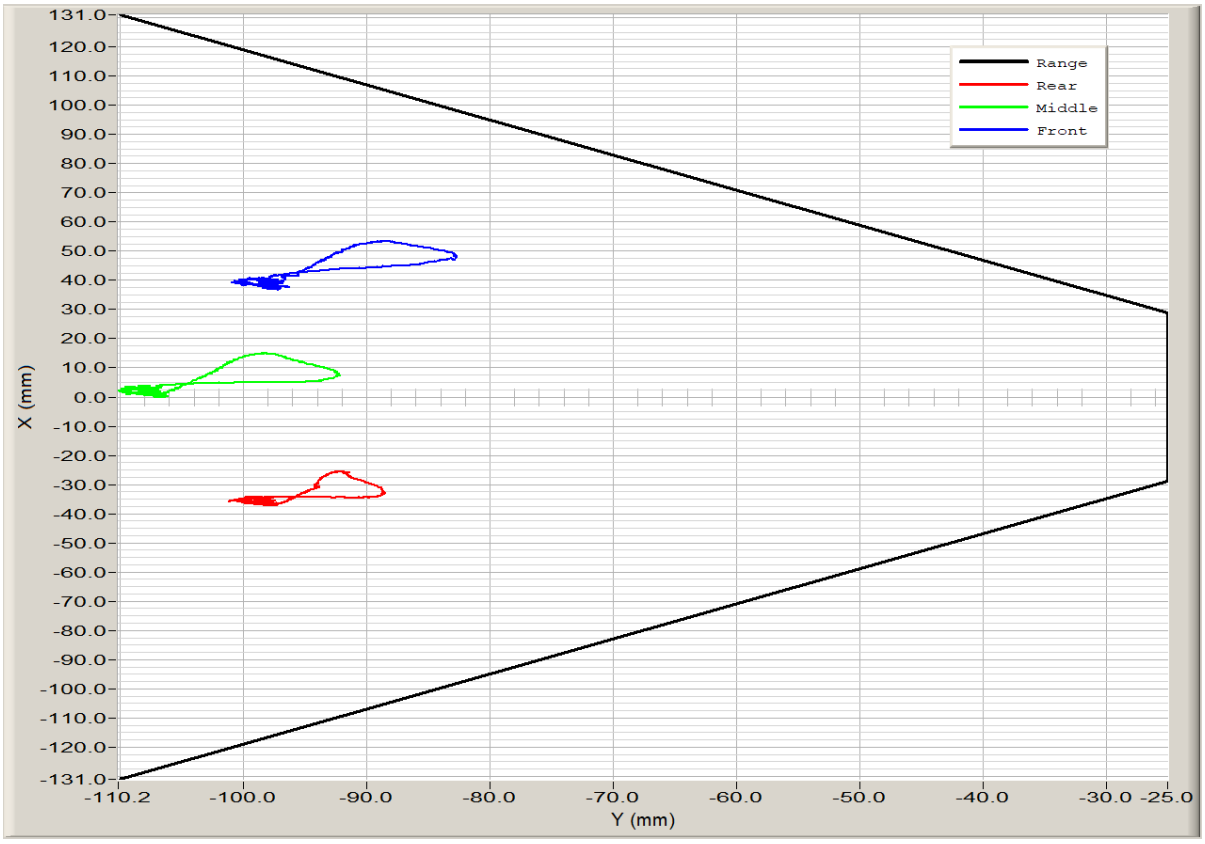
<Min>

0.00 Logic at 5.05 ms

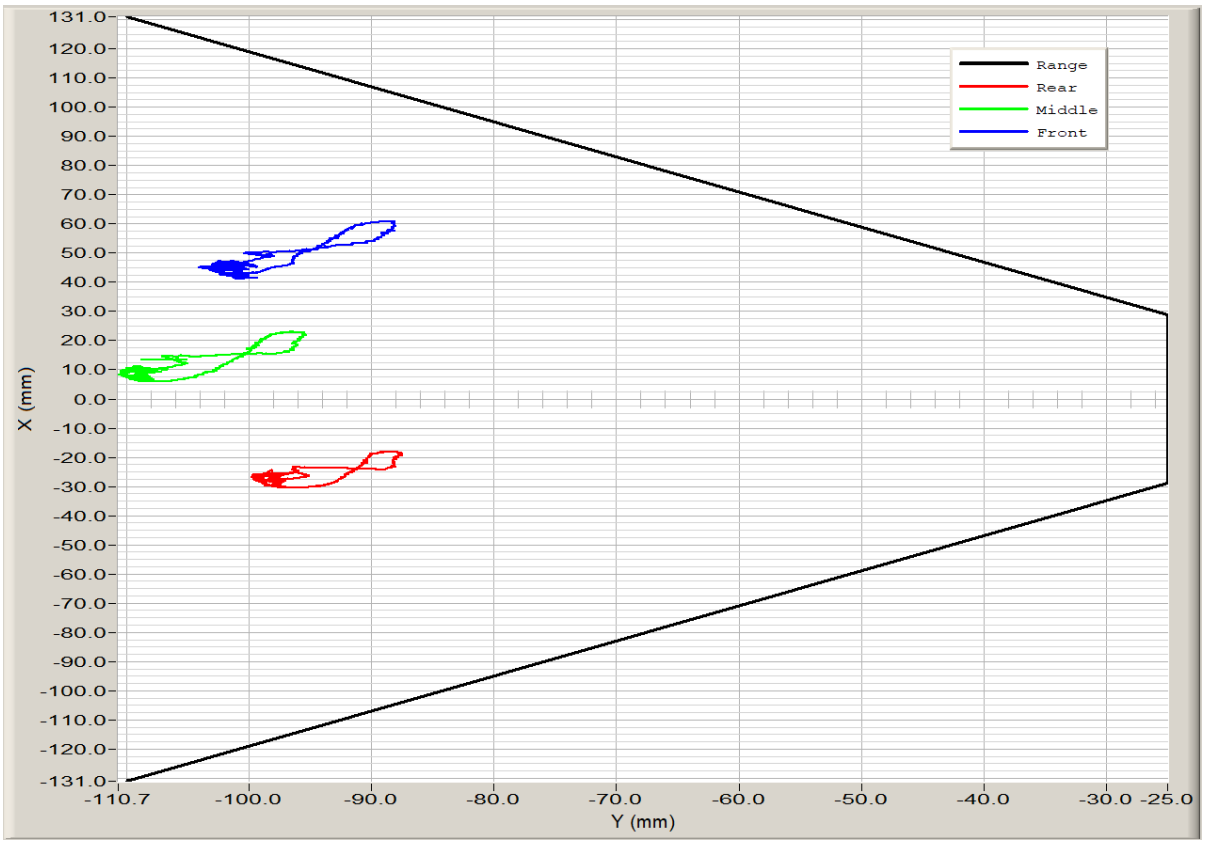
Unfiltered



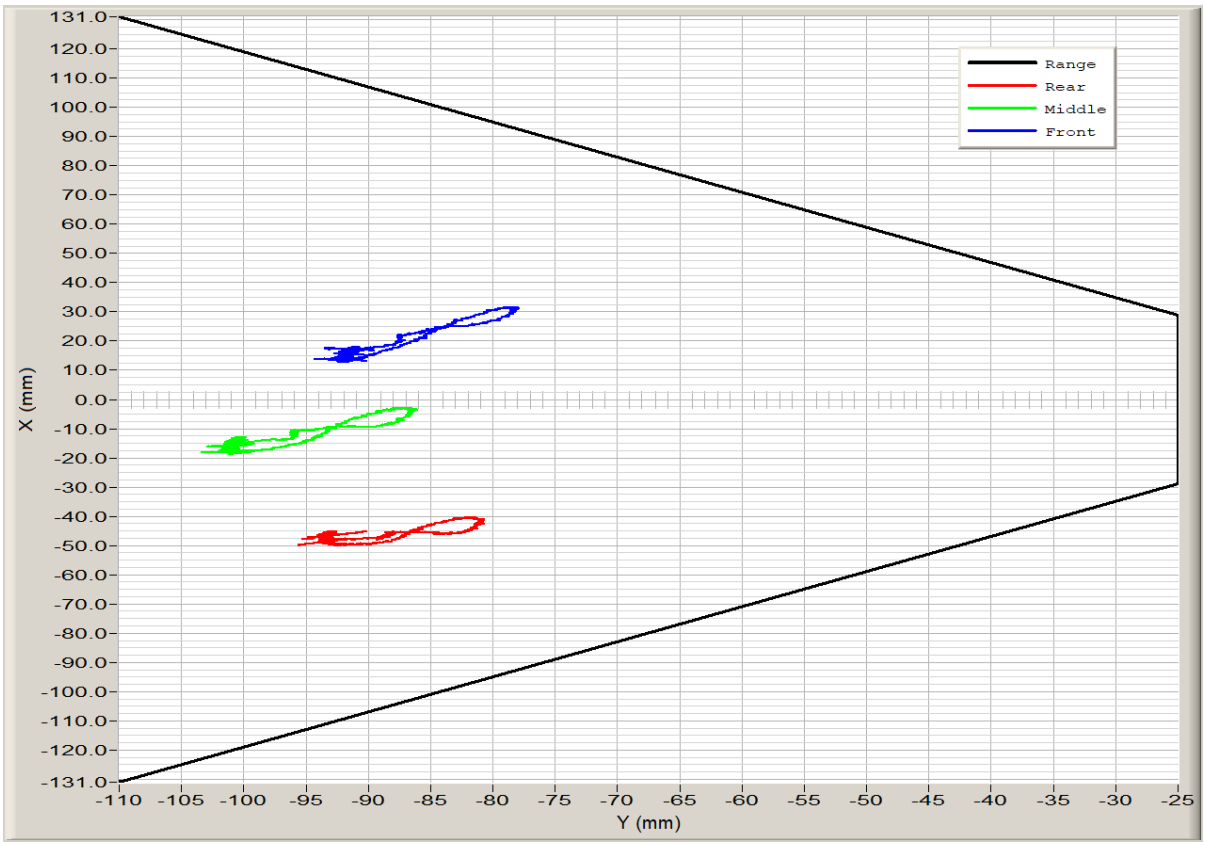
50th_Shoulder_XY



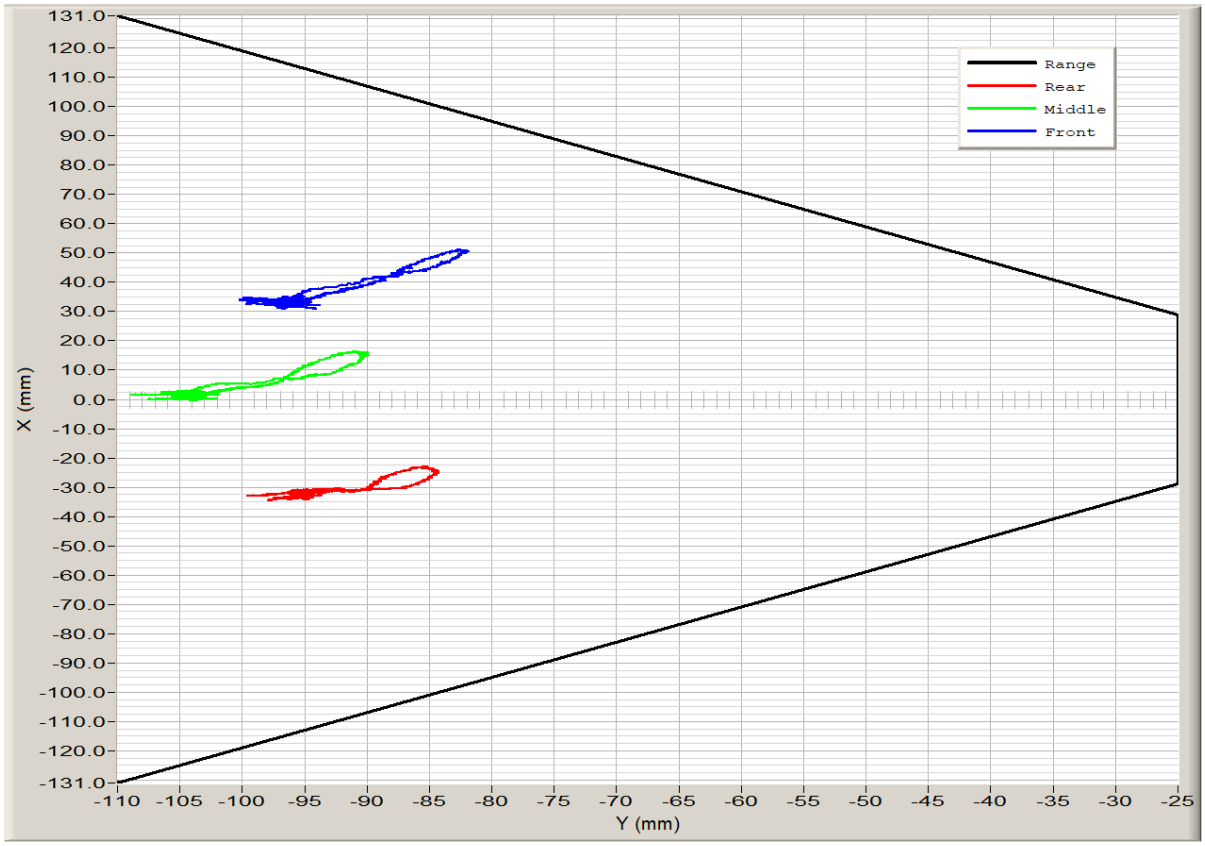
50th_Thorax_1_XY



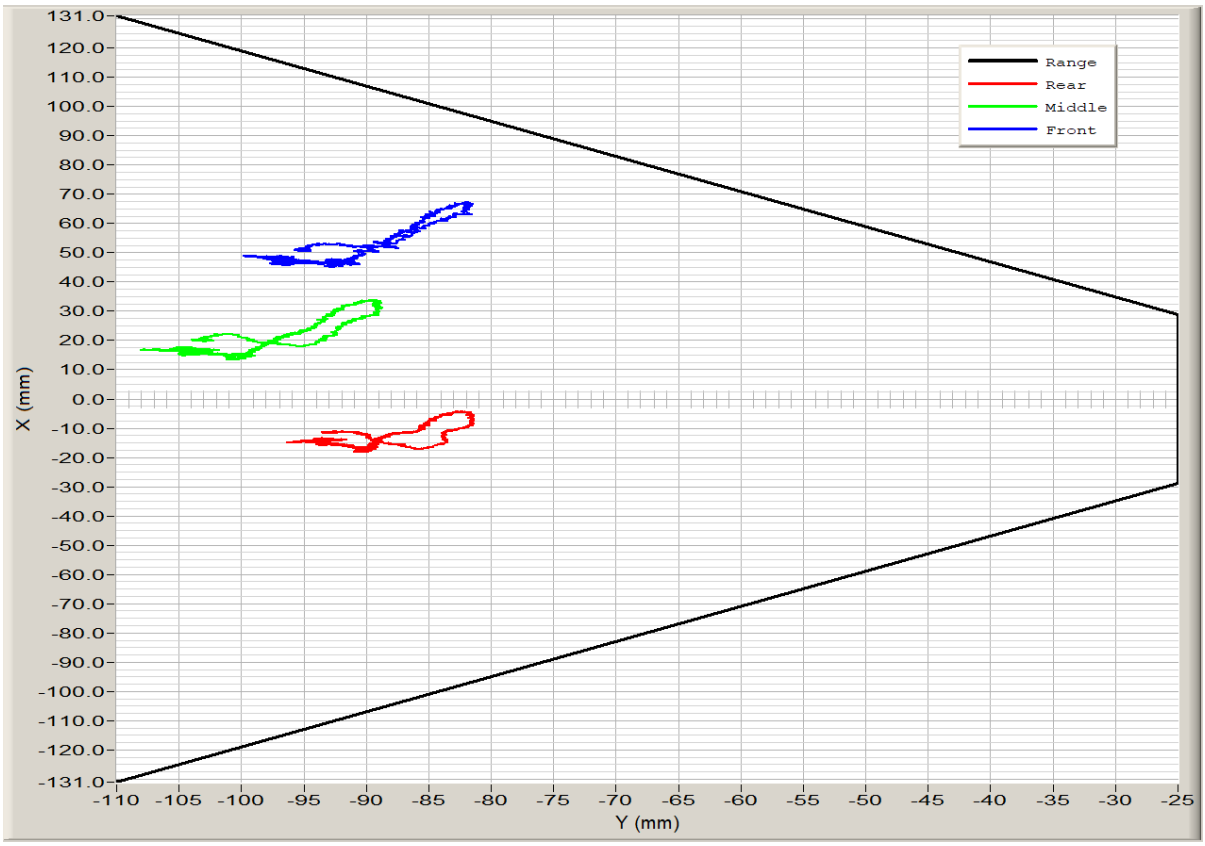
50th_Thorax_2_XY



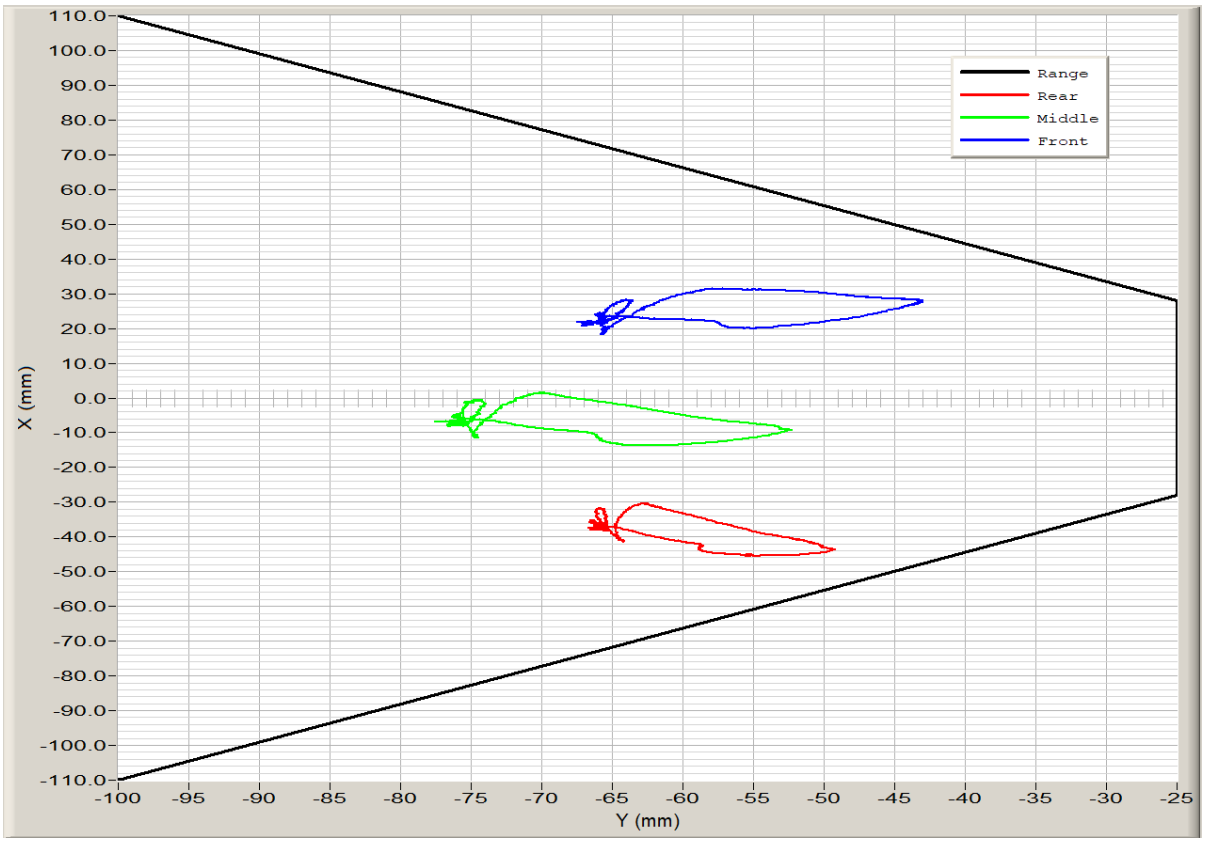
50th_Thorax_3_XY



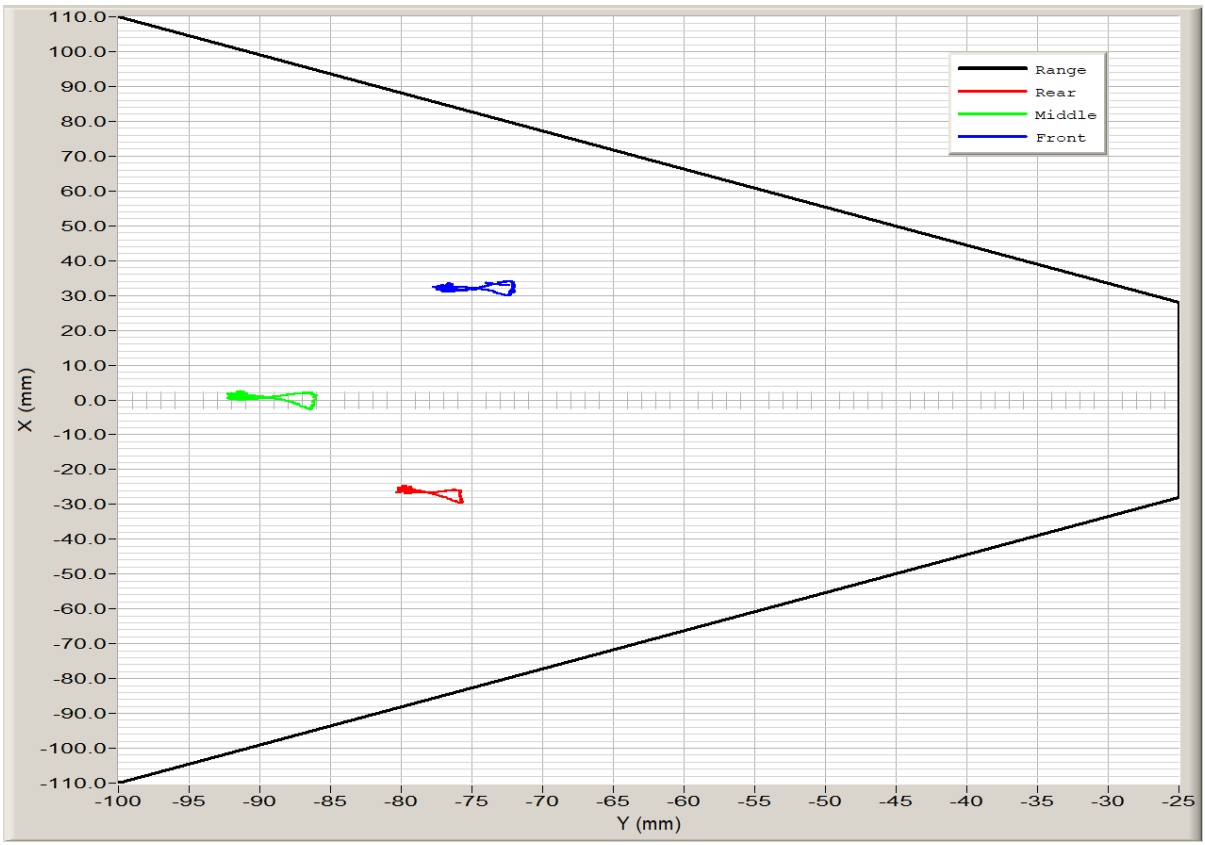
50th_Abdomen_1_XY



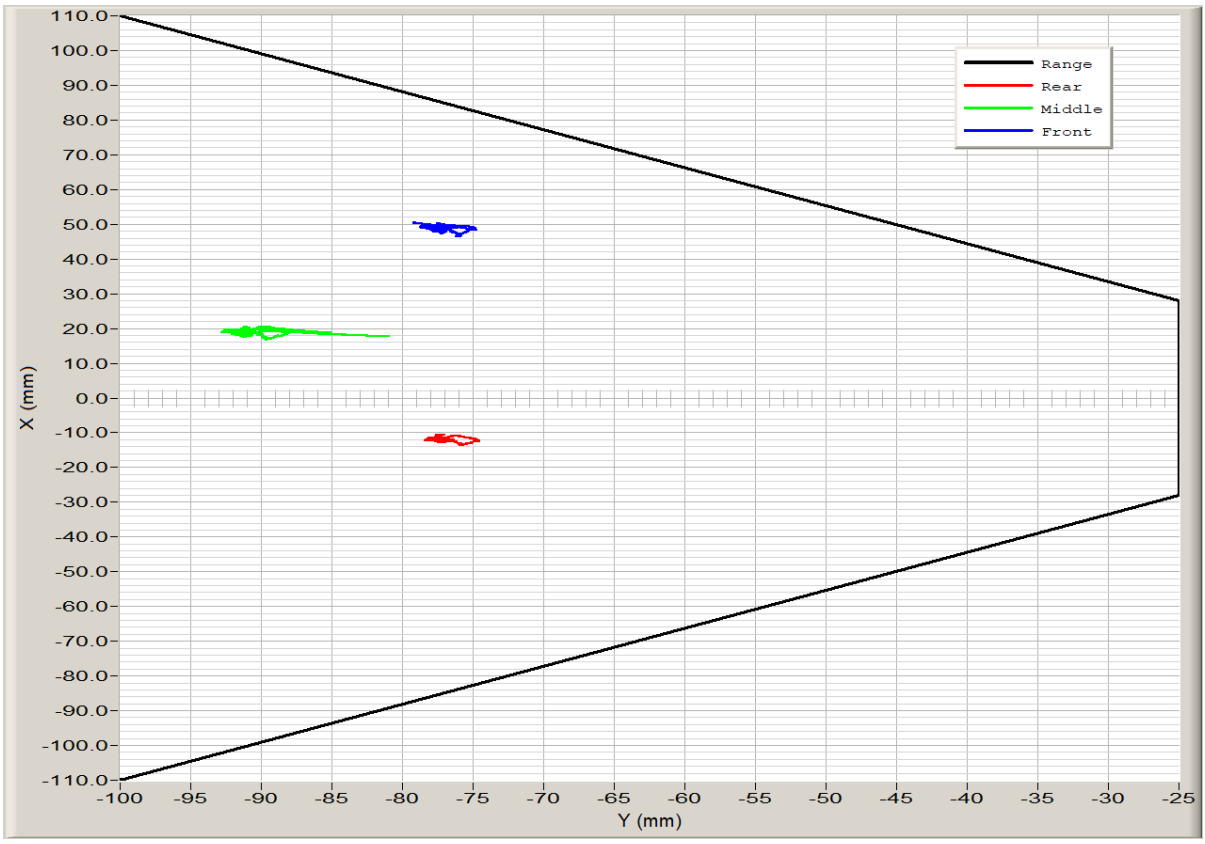
50th_Abdomen_2_XY



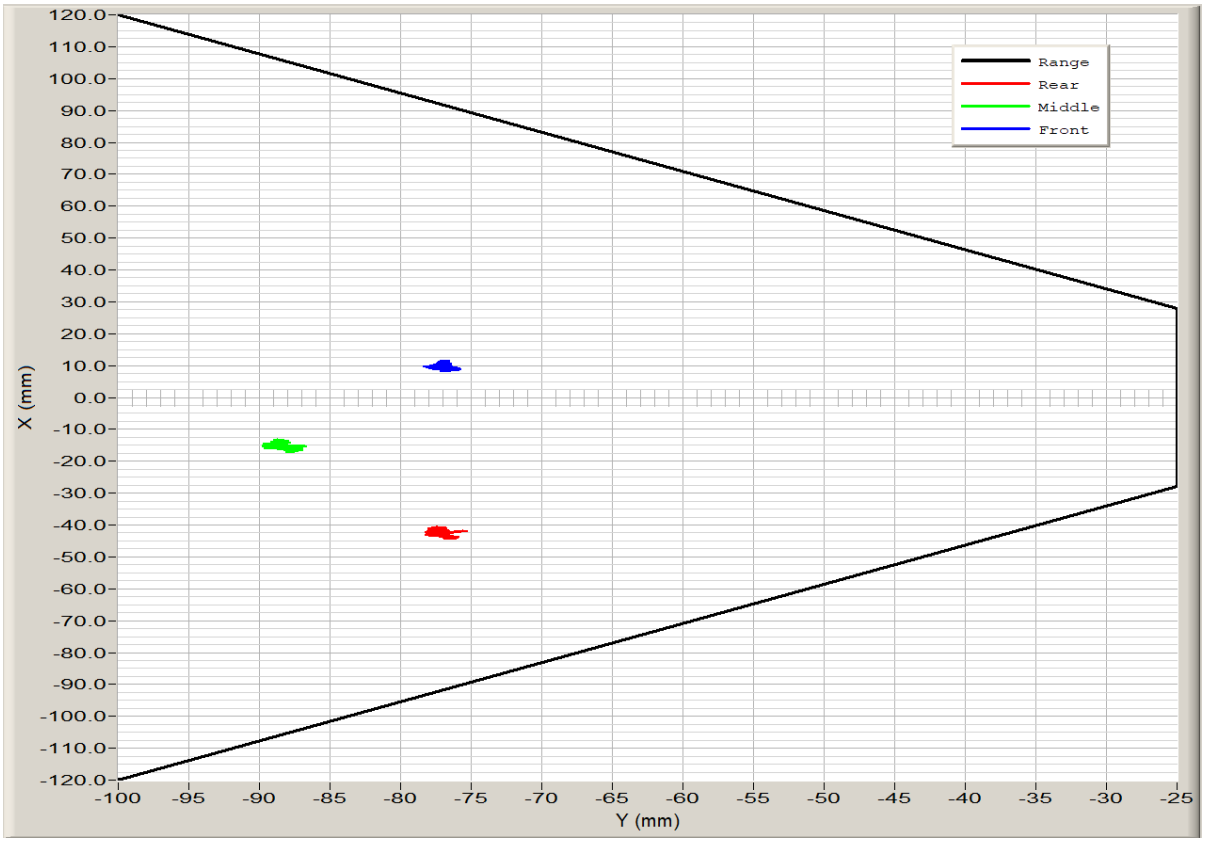
5th_Shoulder_XY



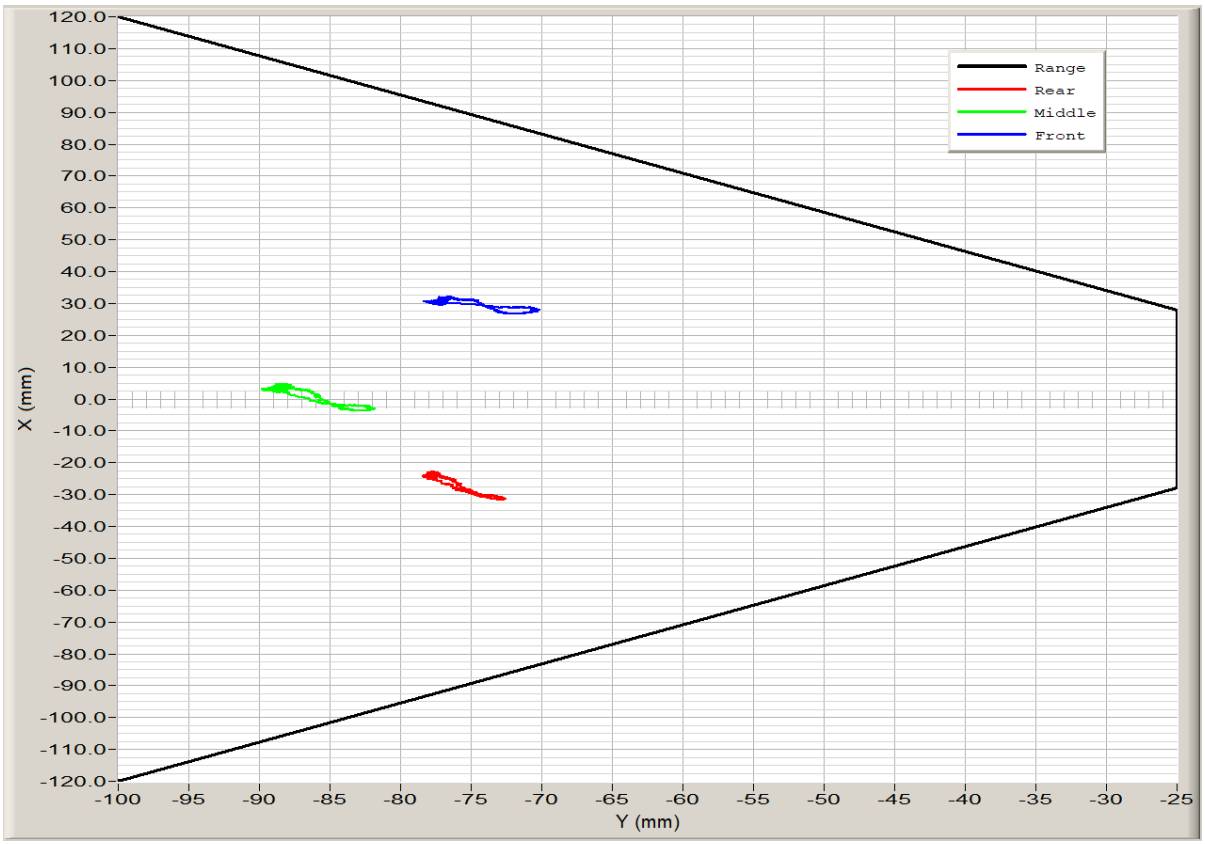
5th_Thorax_1_XY



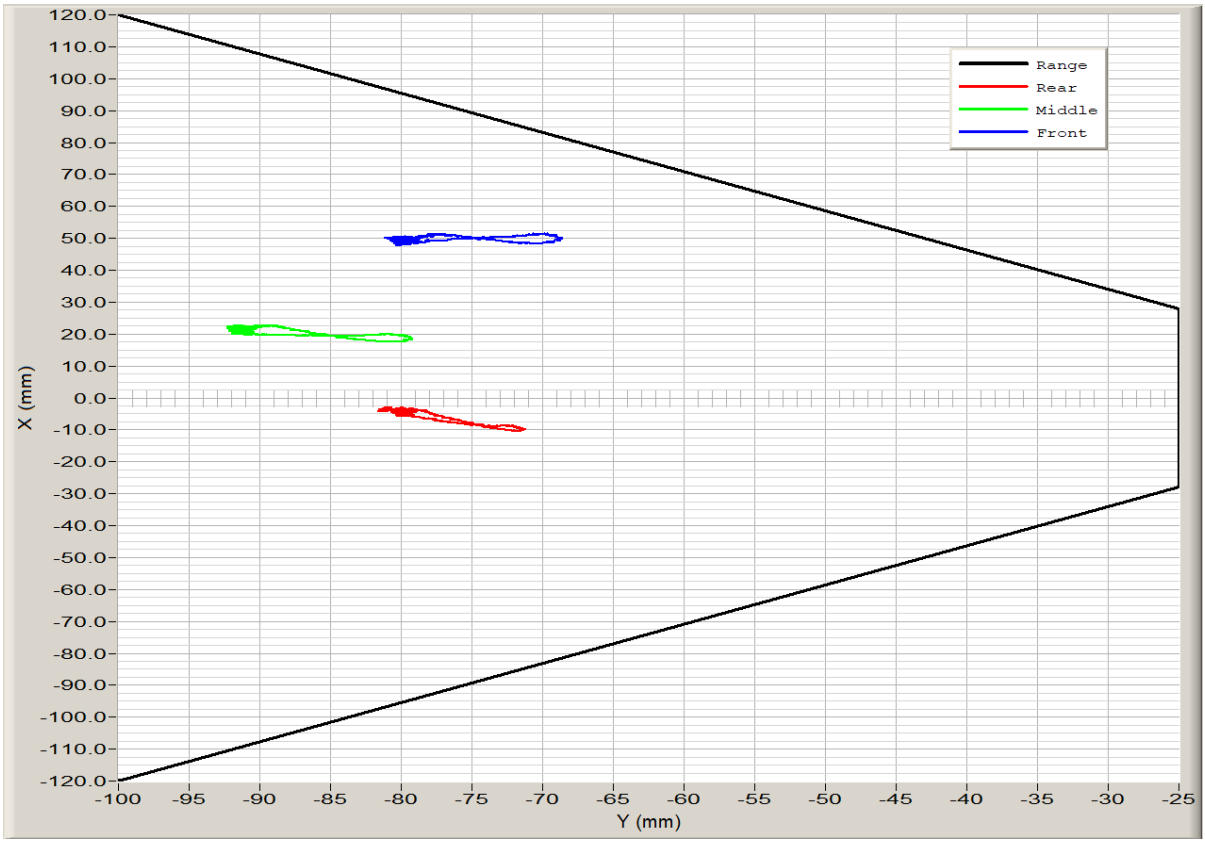
5th_Thorax_2_XY



5th_Thorax_3_XY



5th_Abdomen_1_XY



5th_Abdomen_2_XY

APPENDIX C

DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

TABLE OF QUALIFICATION MEASUREMENTS AND PLOTS

WorldSID-50M (Driver) Dummy

Description

Table 1. External Measurements
Table 2. Front Head Drop Test
- Resultant Head Acceleration (G's) vs. Time (ms)
- Head (X) Acceleration (G's) vs. Time (ms)
- Head (Y) Acceleration (G's) vs. Time (ms)
- Head (Z) Acceleration (G's) vs. Time (ms)

Table 3. Left Lateral Head Drop Test
- Resultant Head Acceleration (G's) vs. Time (ms)
- Head (X) Acceleration (G's) vs. Time (ms)
- Head (Y) Acceleration (G's) vs. Time (ms)
- Head (Z) Acceleration (G's) vs. Time (ms)

Table 4. Right Lateral Head Drop Test
- Resultant Head Acceleration (G's) vs. Time (ms)
- Head (X) Acceleration (G's) vs. Time (ms)
- Head (Y) Acceleration (G's) vs. Time (ms)
- Head (Z) Acceleration (G's) vs. Time (ms)

Table 5. Left Lateral Neck Pendulum Test
- Pendulum Acceleration (G's) vs. Time (ms)
- Pendulum Velocity (m/s) vs. Time (ms)
- Flexion Angle (°) vs. Time (ms)
- Forward Potentiometer Rotation at Base of Pendulum (°) vs. Time (ms)
- Rear Potentiometer Rotation at Base of Pendulum (°) vs. Time (ms)
- Center Headform Potentiometer Rotation at CG (°) vs. Time (ms)
- Neck Force Y (N) vs. Time (ms)
- Neck Force Y (N) Filtered for Total Neck Occiptal Condyle Moment Calculation vs. Time (ms)
- Neck Moment X (Nm) vs. Time (ms)
- Total Neck Occipital Condyle Moment X (Nm) vs. Time (ms)

Table 6. Right Lateral Neck Pendulum Test
- Pendulum Acceleration (G's) vs. Time (ms)
- Pendulum Velocity (m/s) vs. Time (ms)
- Flexion Angle (°) vs. Time (ms)
- Forward Potentiometer Rotation at Base of Pendulum (°) vs. Time (ms)
- Rear Potentiometer Rotation at Base of Pendulum (°) vs. Time (ms)
- Center Headform Potentiometer Rotation at CG (°) vs. Time (ms)
- Neck Force Y (N) vs. Time (ms)
- Neck Force Y (N) Filtered for Total Neck Occiptal Condyle Moment Calculation vs. Time (ms)
- Neck Moment X (Nm) vs. Time (ms)
- Total Neck Occipital Condyle Moment X (Nm) vs. Time (ms)

Table 7. Left Lateral Shoulder Impact Test
- Impactor Acceleration (G's) vs. Time (ms)
- Impactor Force (N) vs. Time (ms)
- Shoulder Displacement (mm) vs. Time (ms)

Table 8. Left Lateral Thorax with Arm Impact Test
- Impactor Acceleration (G's) vs. Time (ms)
- Impactor Force (N) vs. Time (ms)

TABLE OF QUALIFICATION MEASUREMENTS AND PLOTS (CONTUNUED)

WorldSID-50M (Driver) Dummy

Description

Upper Spine Acceleration (G's) vs. Time (ms)
Lower Spine Acceleration (G's) vs. Time (ms)
Upper Thorax Rib Displacement (mm) vs. Time (ms)
Center Thorax Rib Displacement (mm) vs. Time (ms)
Lower Thorax Rib Displacement (mm) vs. Time (ms)

Table 9. Left Lateral Thorax without Arm Impact Test
Impactor Acceleration (G's) vs. Time (ms)
Impactor Force (N) vs. Time (ms)
Upper Spine Acceleration (G's) vs. Time (ms)
Lower Spine Acceleration (G's) vs. Time (ms)
Upper Thorax Rib Displacement (mm) vs. Time (ms)
Center Thorax Rib Displacement (mm) vs. Time (ms)
Lower Thorax Rib Displacement (mm) vs. Time (ms)

Table 10. Left Lateral Abdomen Impact Test
Impactor Acceleration (G's) vs. Time (ms)
Impactor Force (N) vs. Time (ms)
Upper Abdominal Rib Displacement (mm) vs. Time (ms)
Lower Abdominal Rib Displacement (mm) vs. Time (ms)
Lower Spine Acceleration (G's) vs. Time (ms)

Table 11. Left Lateral Pelvis Impact Test
Impactor Acceleration (G's) vs. Time (ms)
Impactor Force (N) vs. Time (ms)
Pelvis Acceleration Y (G's) vs. Time (ms)
Lower Spine Acceleration Y (G's) vs. Time (ms)

TABLE OF QUALIFICATION MEASUREMENTS AND PLOTS

WorldSID-5F (Rear Passenger) Dummy

Description

Table 1. External Measurements
Table 2. Front Head Drop Test
- Resultant Head Acceleration (G's) vs. Time (ms)
- Head (X) Acceleration (G's) vs. Time (ms)
- Head (Y) Acceleration (G's) vs. Time (ms)
- Head (Z) Acceleration (G's) vs. Time (ms)

Table 3. Left Lateral Head Drop Test
- Resultant Head Acceleration (G's) vs. Time (ms)
- Head (X) Acceleration (G's) vs. Time (ms)
- Head (Y) Acceleration (G's) vs. Time (ms)
- Head (Z) Acceleration (G's) vs. Time (ms)

Table 4. Right Lateral Head Drop Test
- Resultant Head Acceleration (G's) vs. Time (ms)
- Head (X) Acceleration (G's) vs. Time (ms)
- Head (Y) Acceleration (G's) vs. Time (ms)
- Head (Z) Acceleration (G's) vs. Time (ms)

Table 5. Left Lateral Neck Pendulum Test
- Pendulum Acceleration (G's) vs. Time (ms)
- Pendulum Velocity (m/s) vs. Time (ms)
- Flexion Angle (°) vs. Time (ms)
- Forward Potentiometer Rotation at Base of Pendulum (°) vs. Time (ms)
- Rear Potentiometer Rotation at Base of Pendulum (°) vs. Time (ms)
- Center Headform Potentiometer Rotation at CG (°) vs. Time (ms)
- Neck Force Y (N) vs. Time (ms)
- Neck Force Y (N) Filtered for Total Neck Occiptal Condyle Moment Calculation vs. Time (ms)
- Neck Moment X (Nm) vs. Time (ms)
- Total Neck Occipital Condyle Moment X (Nm) vs. Time (ms)

Table 6. Right Lateral Neck Pendulum Test
- Pendulum Acceleration (G's) vs. Time (ms)
- Pendulum Velocity (m/s) vs. Time (ms)
- Flexion Angle (°) vs. Time (ms)
- Forward Potentiometer Rotation at Base of Pendulum (°) vs. Time (ms)
- Rear Potentiometer Rotation at Base of Pendulum (°) vs. Time (ms)
- Center Headform Potentiometer Rotation at CG (°) vs. Time (ms)
- Neck Force Y (N) vs. Time (ms)
- Neck Force Y (N) Filtered for Total Neck Occiptal Condyle Moment Calculation vs. Time (ms)
- Neck Moment X (Nm) vs. Time (ms)
- Total Neck Occipital Condyle Moment X (Nm) vs. Time (ms)

Table 7. Left Lateral Shoulder Impact Test
- Impactor Acceleration (G's) vs. Time (ms)
- Impactor Force (N) vs. Time (ms)
- Shoulder Displacement (mm) vs. Time (ms)

Table 8. Left Lateral Thorax with Arm Impact Test
- Impactor Acceleration (G's) vs. Time (ms)
- Impactor Force (N) vs. Time (ms)

TABLE OF QUALIFICATION MEASUREMENTS AND PLOTS (CONTUNUED)

WorldSID-5F (Rear Passenger) Dummy

Description

Upper Spine Acceleration (G's) vs. Time (ms)
Lower Spine Acceleration (G's) vs. Time (ms)
Upper Thorax Rib Displacement (mm) vs. Time (ms)
Center Thorax Rib Displacement (mm) vs. Time (ms)
Lower Thorax Rib Displacement (mm) vs. Time (ms)

Table 9. Left Lateral Thorax without Arm Impact Test
Impactor Acceleration (G's) vs. Time (ms)
Impactor Force (N) vs. Time (ms)
Upper Spine Acceleration (G's) vs. Time (ms)
Lower Spine Acceleration (G's) vs. Time (ms)
Upper Thorax Rib Displacement (mm) vs. Time (ms)
Center Thorax Rib Displacement (mm) vs. Time (ms)
Lower Thorax Rib Displacement (mm) vs. Time (ms)

Table 10. Left Lateral Abdomen Impact Test
Impactor Acceleration (G's) vs. Time (ms)
Impactor Force (N) vs. Time (ms)
Upper Abdominal Rib Displacement (mm) vs. Time (ms)
Lower Abdominal Rib Displacement (mm) vs. Time (ms)
Lower Spine Acceleration (G's) vs. Time (ms)

Table 11. Left Lateral Pelvis Impact Test
Impactor Acceleration (G's) vs. Time (ms)
Impactor Force (N) vs. Time (ms)
Pelvis Acceleration Y (G's) vs. Time (ms)
Lower Spine Acceleration Y (G's) vs. Time (ms)

Pre-Test Calibration Sheets
Driver S/N EB8888

Transportation Research Center Inc.
WorldSID-50M
External Measurements
Serial No. EB8888 Certification No. 05

WorldSID-50M Angular Reference Measurements					
Parameter	Symbol	Tilt Sensor (°)	Inclinometer (°)		
			Center	Left	Right
Head X-Axis	A1	0	n/a	n/a	n/a
Head Y-Axis	A2	2.2	n/a	2	Note 1
Neck Bracket X-Axis	A3	n/a	-0.5	n/a	n/a
Neck Bracket Y-Axis	A4	n/a	-3.1	n/a	n/a
Thorax X-Axis	A5	1.3	n/a	n/a	n/a
Thorax Y-Axis	A6	3.9	n/a	n/a	n/a
Pelvis X-Axis	A7	0.7	n/a	n/a	n/a
Pelvis Y-Axis	A8	10.2	n/a	n/a	n/a
H-point Tool	A9	n/a	n/a	33.1	33.9

WorldSID-50M External Linear Dimensions				
Parameter	Symbol	Specification (mm)		
		Center	Left	Right
Seated Height	L1	870	n/a	n/a
Hip Pivot Height	L2	n/a	89	89
Hip Pivot to Back Line	L3	n/a	187	177
Thigh Clearance	L4	n/a	181	180
Knee Height	L5	n/a	580	583
Knee to Backline	L6	n/a	667	670
Head Back to Seat Back	L7	156	n/a	n/a
Thorax Rib 1 Front to Back	L8	n/a	209	209
Abdomen Rib 2 Front to Back	L9	n/a	223	226
Arm Length	L10	n/a	330	330
Width Across Arms	L11	482	n/a	n/a
Waist Width	L12	341	n/a	n/a

Note 1: No land marks on the right side of head. Unable to align level.

Transportation Research Center Inc.

Front Head Drop
WorldSID 50th Serial No. EB8888 Certification No. 6-2
Test Date: 1/18/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Peak Head Resultant Acceleration	211 - 261 g	219.4 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	3.9 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	1.58 %	Yes

Test meets specifications.

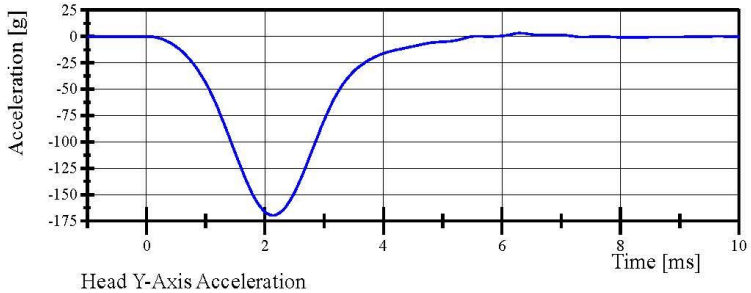
Condition: Used

Comments:
Head Skin S/N: EG2845

Transportation Research Center Inc.

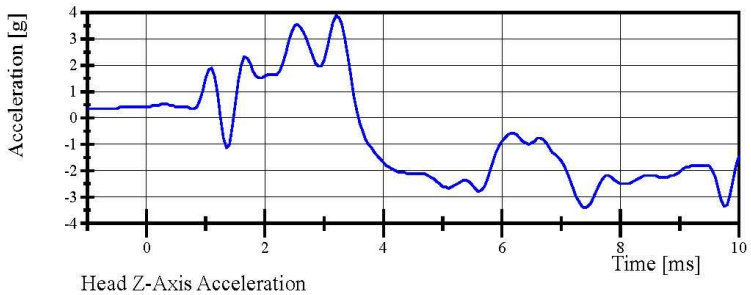
Front Head Drop
WorldSID 50th Serial No. EB8888 Certification No. 6-2
Test Date: 1/18/2021

Head X-Axis Acceleration



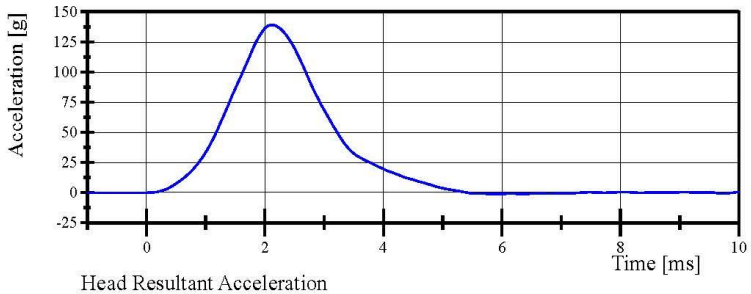
Filter Class: CFC_1000
Max: 3.2 g at 6.3 ms
Min: -169.7 g at 2.2 ms

Head Y-Axis Acceleration



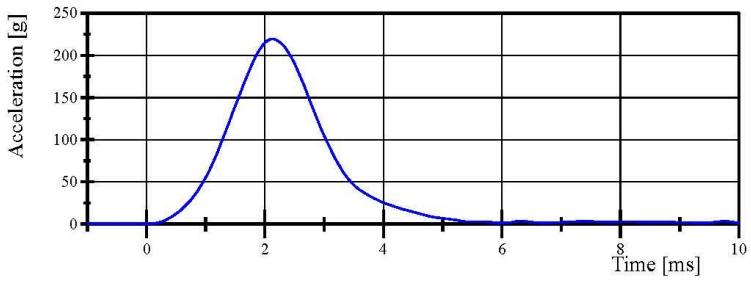
Filter Class: CFC_1000
Max: 3.9 g at 3.2 ms
Min: -3.4 g at 7.4 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 139.2 g at 2.1 ms
Min: -1.3 g at 6.0 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 219.4 g at 2.2 ms
Min: 0.4 g at -1.0 ms

Transportation Research Center Inc.

Left Lateral Head Drop
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/18/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
Peak Head Resultant Acceleration	107 - 126 g	110.9 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-1.1 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	2.87 %	Yes

Test meets specifications.

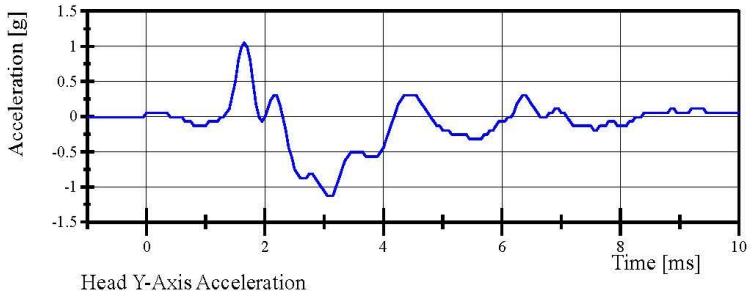
Condition: Used

Comments:
Head Skin S/N: EG2845

Transportation Research Center Inc.

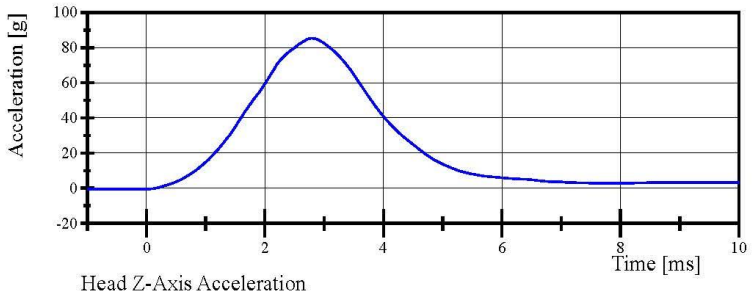
Left Lateral Head Drop
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/18/2021

Head X-Axis Acceleration



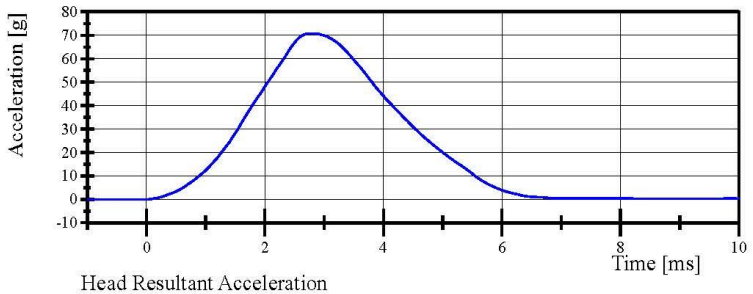
Filter Class: CFC_1000
Max: 1.0 g at 1.7 ms
Min: -1.1 g at 3.1 ms

Head Y-Axis Acceleration



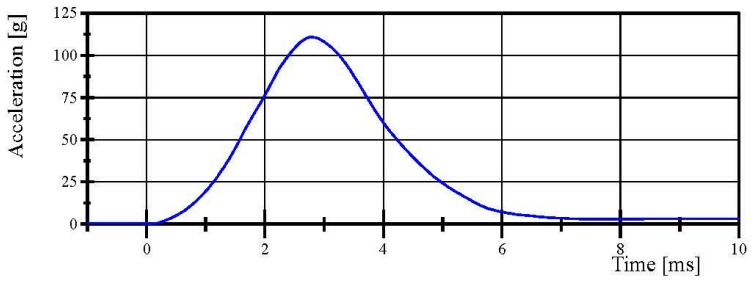
Filter Class: CFC_1000
Max: 85.3 g at 2.8 ms
Min: -0.5 g at -0.5 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 70.8 g at 2.8 ms
Min: -0.1 g at -1.0 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 110.9 g at 2.8 ms
Min: 0.3 g at 0.1 ms

Specification Source: WordSID 50th(WS) VRTC Nov 2020.xlsx
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Transportation Research Center Inc.

Right Lateral Head Drop
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/18/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Peak Head Resultant Acceleration	107 - 126 g	113.8 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-5.8 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	2.64 %	Yes

Test meets specifications.

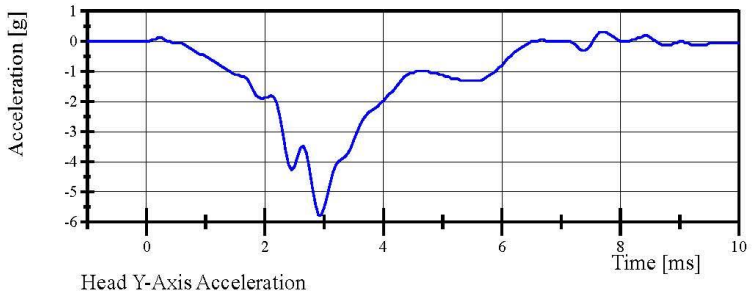
Condition: Used

Comments:
Head Skin S/N: EG2845

Transportation Research Center Inc.

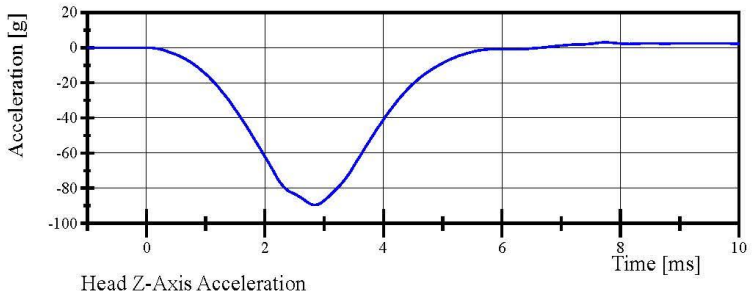
Right Lateral Head Drop
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/18/2021

Head X-Axis Acceleration



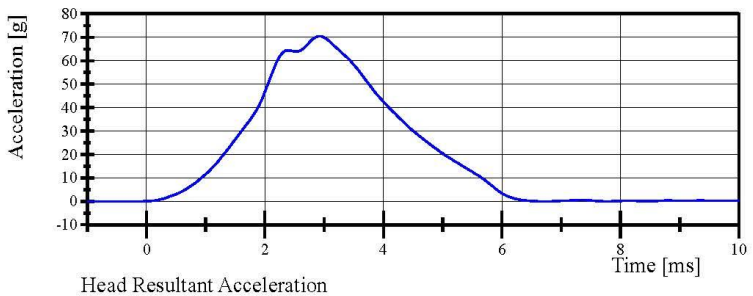
Filter Class: CFC_1000
Max: 0.3 g at 7.7 ms
Min: -5.8 g at 2.9 ms

Head Y-Axis Acceleration



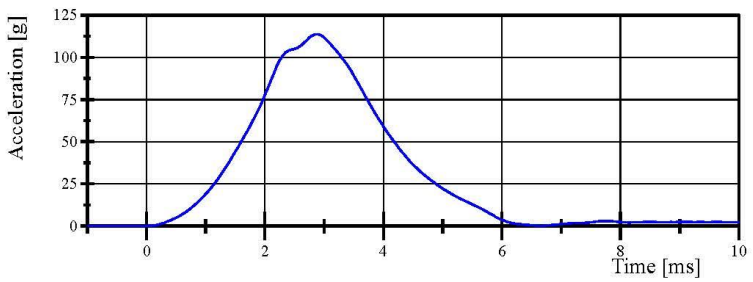
Filter Class: CFC_1000
Max: 3.0 g at 7.8 ms
Min: -89.5 g at 2.9 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 70.5 g at 2.9 ms
Min: -0.1 g at 7.8 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 113.8 g at 2.9 ms
Min: 0.0 g at -0.3 ms

Specification Source: WordSID 50th(WS) VRTC Nov 2020.xlsx
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Transportation Research Center Inc.

Left Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/15/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Pendulum Velocity	(-3.30) - (-3.50) m/s	-3.334 m/s	Yes
Pendulum Integrated Velocity Change at 4 ms	0.87 - 1.09 m/s	0.976 m/s	Yes
Change at 8 ms	1.72 - 2.1 m/s	1.899 m/s	Yes
Change at 12 ms	2.63 - 3.17 m/s	2.884 m/s	Yes
Maximum Headform Flexion	(-50) - (-61) deg	-54.7 deg	Yes
Headform Flexion Decay - from Peak to Zero Degrees	58 - 72 ms	61.0 ms	Yes
Total Neck Occipital Condyles Moment	54 - 67 N·m	62.4 N·m	Yes
Total Neck Occipital Condyles Moment Decay Time to 0 N·m	71 - 87 ms	75.9 ms	Yes
Maximum Forward Pot Rotation			
Peak	(-32) - (-39) °	-35.2 °	Yes
Time of Peak	56 - 68 ms	60.9 ms	Yes
Maximum Rear Pot Rotation			
Peak	(-29) - (-36) °	-31.5 °	Yes
Time of Peak	56 - 68 ms	62.2 ms	Yes
Maximum Headform Angular Rate	(-2,047) - (-2,503) °/s	-2,287.4 °/s	Yes

Test meets specifications.

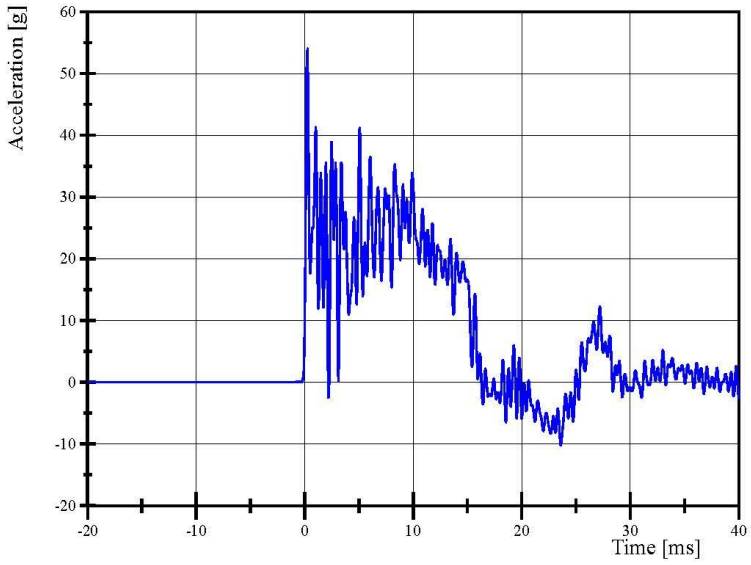
Condition: Used

Comments:
Neck S/N: EE8804

Transportation Research Center Inc.

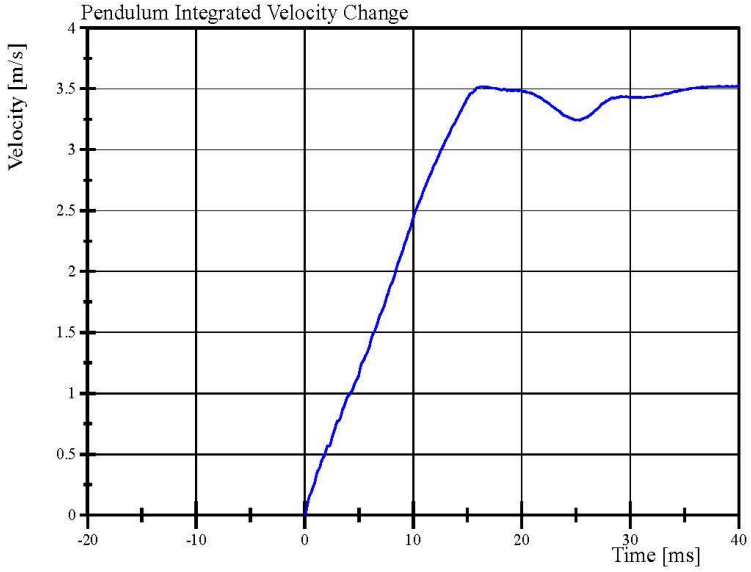
Left Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/15/2021

Pendulum Acceleration



Filter Class: CFC_1000
Max: 54.0 g at 0.3 ms
Min: -10.2 g at 23.6 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_1000
Max: 3.5 m/s at 39.9 ms
Min: 0.0 m/s at -0.0 ms

Specification Source: WordSID 50th(WS) VRTC Nov 2020.xlsx
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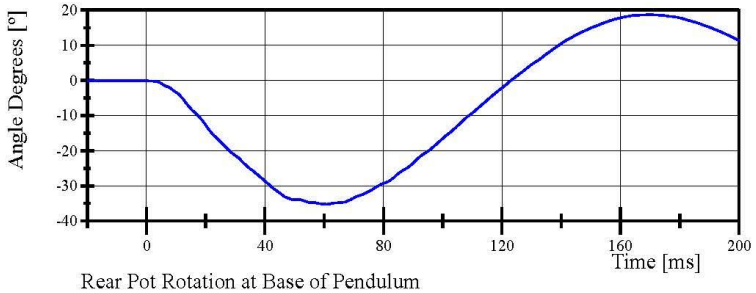
Transportation Research Center Inc.

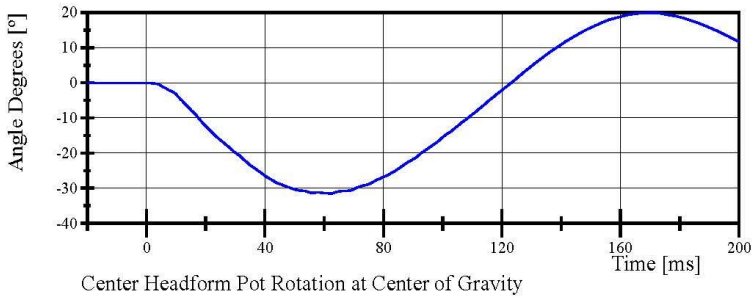
Left Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/15/2021

Forward Pot Rotation at Base of Pendulum



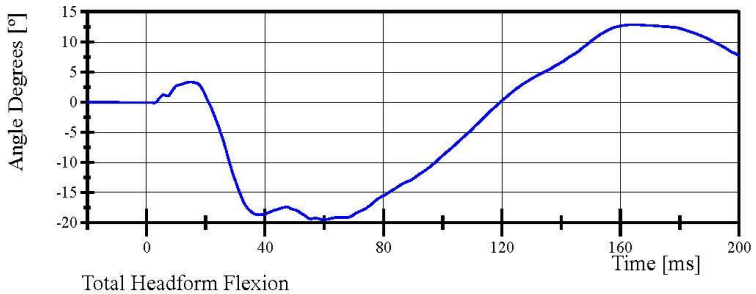
Filter Class: CFC_180
Max: 18.7 ° at 170.1 ms
Min: -35.2 ° at 60.9 ms

Rear Pot Rotation at Base of Pendulum



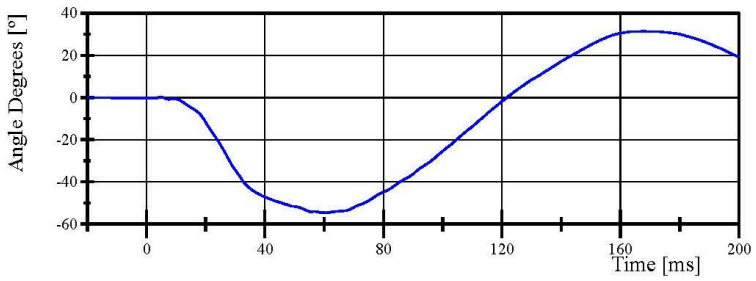
Filter Class: CFC_180
Max: 19.9 ° at 170.9 ms
Min: -31.5 ° at 62.2 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_180
Max: 12.9 ° at 164.5 ms
Min: -19.4 ° at 59.4 ms

Total Headform Flexion

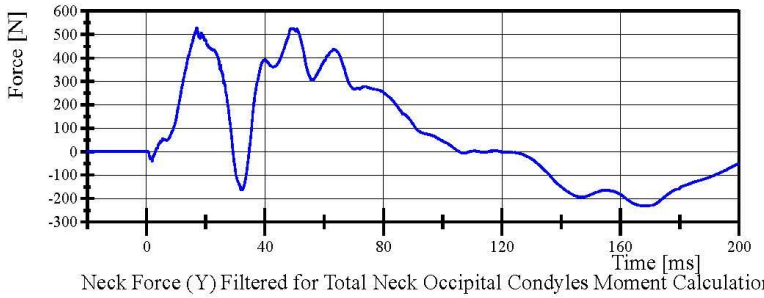


Filter Class: CFC_180
Max: 31.4 ° at 167.8 ms
Min: -54.7 ° at 60.7 ms

Transportation Research Center Inc.

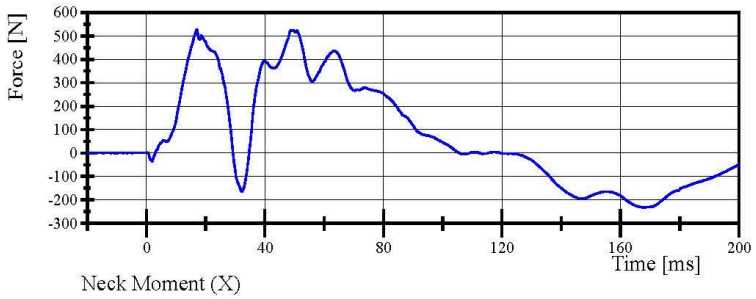
Left Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/15/2021

Neck Force (Y)



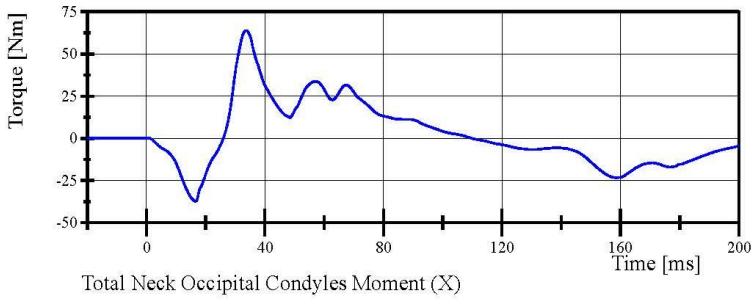
Filter Class: CFC_1000
Max: 528.2 N at 17.0 ms
Min: -232.0 N at 167.8 ms

Neck Force (Y) Filtered for Total Neck Occipital Condyles Moment Calculation



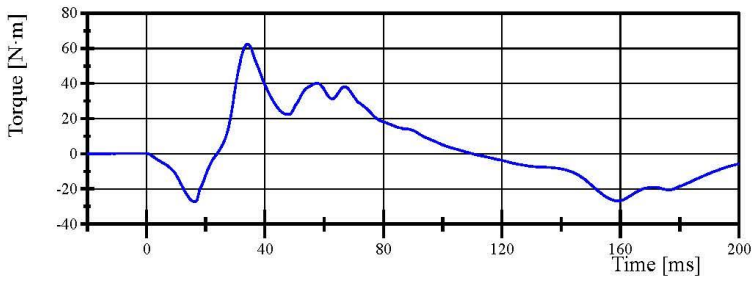
Filter Class: CFC_600
Max: 526.9 N at 17.0 ms
Min: -231.8 N at 167.8 ms

Neck Moment (X)



Filter Class: CFC_600
Max: 64.0 Nm at 33.6 ms
Min: -37.2 Nm at 16.6 ms

Total Neck Occipital Condyles Moment (X)

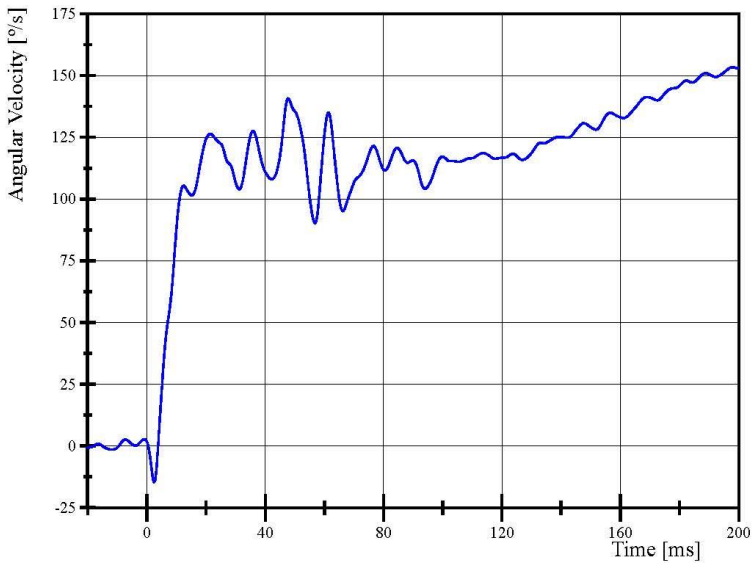


Filter Class: Without_(Constar
Max: 62.4 N·m at 34.1 ms
Min: -27.3 N·m at 16.2 ms

Transportation Research Center Inc.

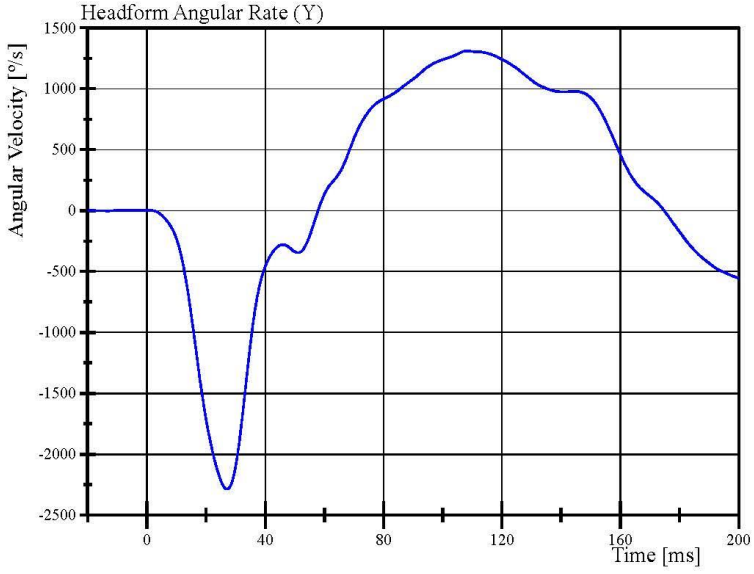
Left Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/15/2021

Pendulum Angular Rate (Y)



Filter Class: CFC_60
Max: 153.4 °/s at 197.9 ms
Min: -14.6 °/s at 2.5 ms

Headform Angular Rate (Y)



Filter Class: CFC_60
Max: 1,309.1 °/s at 108.0 ms
Min: -2,287.4 °/s at 27.1 ms

Transportation Research Center Inc.

Right Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/18/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	41 %	Yes
Pendulum Velocity	3.30 - 3.50 m/s	3.333 m/s	Yes
Pendulum Integrated Velocity Change at 4 ms	(-0.87) - (-1.09) m/s	-1.021 m/s	Yes
Change at 8 ms	(-1.72) - (-2.1) m/s	-1.981 m/s	Yes
Change at 12 ms	(-2.63) - (-3.17) m/s	-3.016 m/s	Yes
Maximum Headform Flexion	50 - 61 deg	53.8 deg	Yes
Headform Flexion Decay - from Peak to Zero Degrees	58 - 72 ms	60.1 ms	Yes
Total Neck Occipital Condyles Moment	(-54) - (-67) N·m	-63.6 N·m	Yes
Total Neck Occipital Condyles Moment Decay Time to 0 N·m	71 - 87 ms	76.7 ms	Yes
Maximum Forward Pot Rotation			
Peak	32 - 39 °	34.8 °	Yes
Time of Peak	56 - 68 ms	60.9 ms	Yes
Maximum Rear Pot Rotation			
Peak	29 - 36 °	30.8 °	Yes
Time of Peak	56 - 68 ms	59.9 ms	Yes
Maximum Headform Angular Rate	2,047 - 2,503 °/s	2,302.2 °/s	Yes

Test meets specifications.

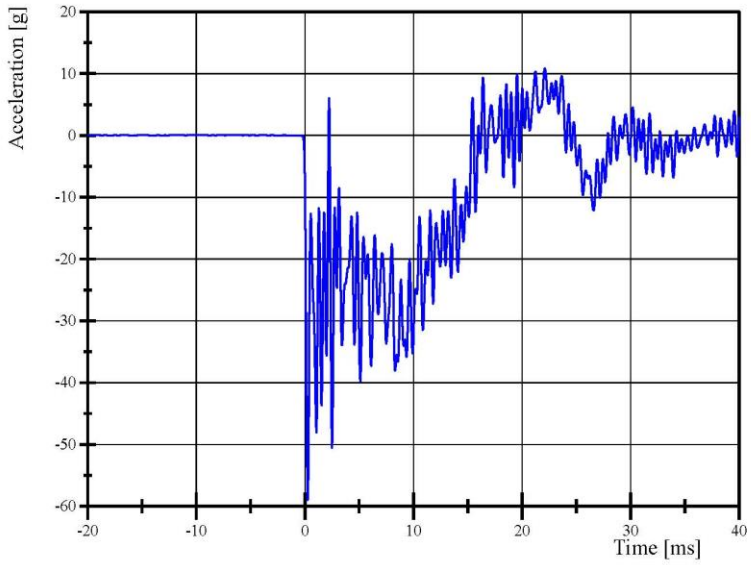
Condition: Used

Comments:
Neck S/N: EE8804

Transportation Research Center Inc.

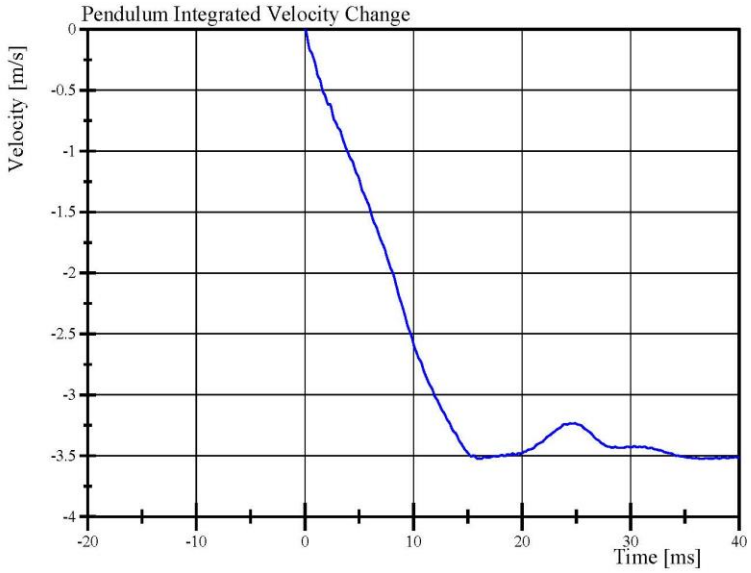
Right Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/18/2021

Pendulum Acceleration



Filter Class: CFC_1000
Max: 10.9 g at 22.1 ms
Min: -59.0 g at 0.3 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_1000
Max: 0.0 m/s at 0.0 ms
Min: -3.5 m/s at 16.3 ms

Specification Source: WordSID 50th(WS) VRTC Nov 2020.xlsx
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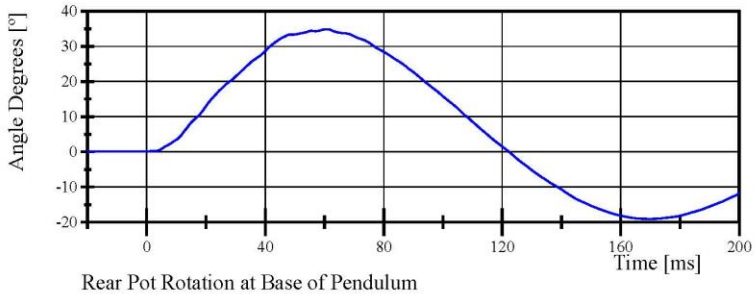
Transportation Research Center Inc.

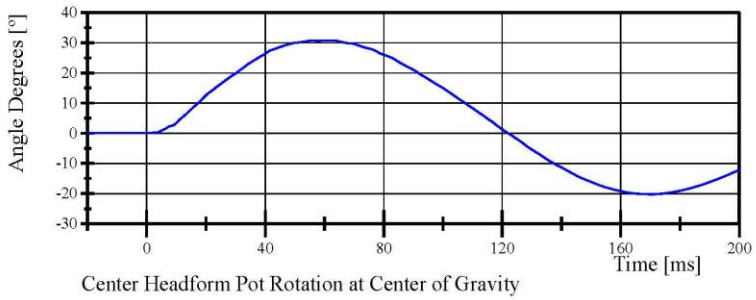
Right Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/18/2021

Forward Pot Rotation at Base of Pendulum



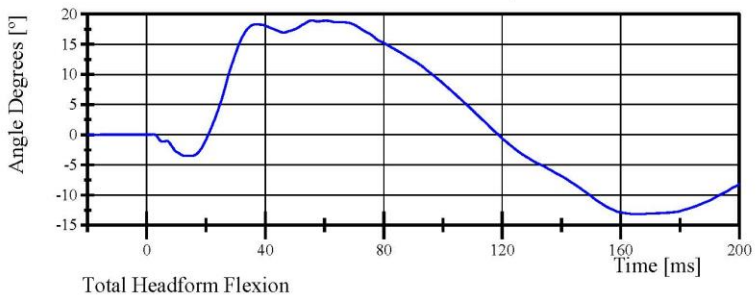
Filter Class: CFC_180
Max: 34.8 ° at 60.9 ms
Min: -19.1 ° at 169.9 ms

Rear Pot Rotation at Base of Pendulum



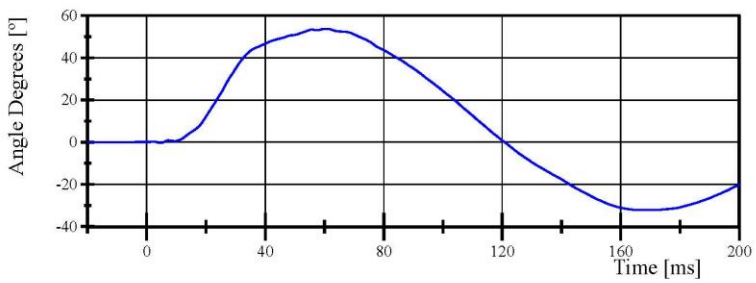
Filter Class: CFC_180
Max: 30.8 ° at 59.9 ms
Min: -20.2 ° at 170.5 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_180
Max: 19.0 ° at 55.8 ms
Min: -13.1 ° at 165.3 ms

Total Headform Flexion

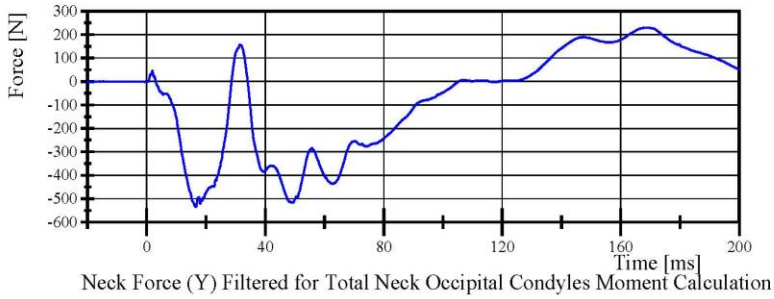


Filter Class: CFC_180
Max: 53.8 ° at 60.7 ms
Min: -32.2 ° at 169.2 ms

Transportation Research Center Inc.

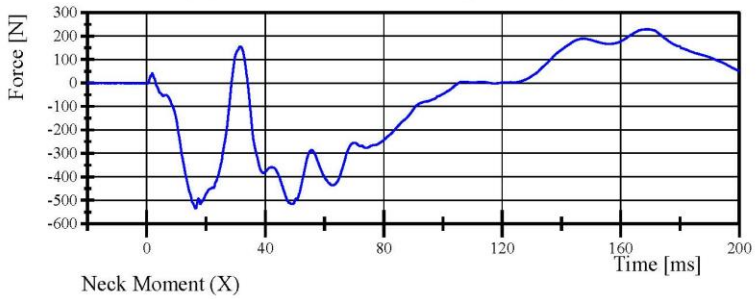
Right Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/18/2021

Neck Force (Y)



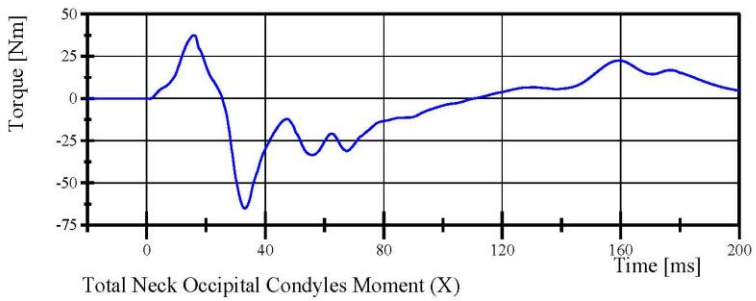
Filter Class: CFC_1000
Max: 229.7 N at 169.2 ms
Min: -534.5 N at 16.5 ms

Neck Force (Y) Filtered for Total Neck Occipital Condyles Moment Calculation



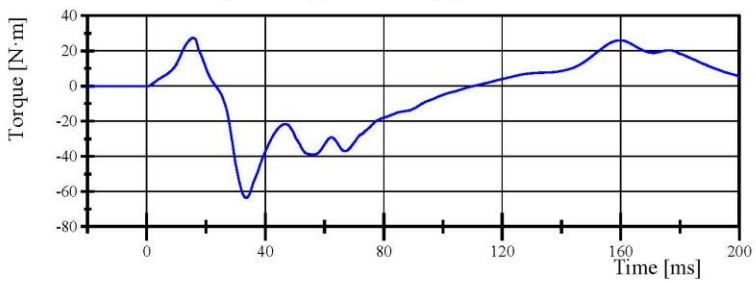
Filter Class: CFC_600
Max: 229.5 N at 169.2 ms
Min: -534.9 N at 16.6 ms

Neck Moment (X)



Filter Class: CFC_600
Max: 37.4 Nm at 16.1 ms
Min: -65.1 Nm at 33.2 ms

Total Neck Occipital Condyles Moment (X)



Filter Class: Without_(Constar
Max: 27.3 N·m at 15.6 ms
Min: -63.6 N·m at 33.6 ms

Specification Source: WordSID 50th(WS) VRTC Nov 2020.xlsx
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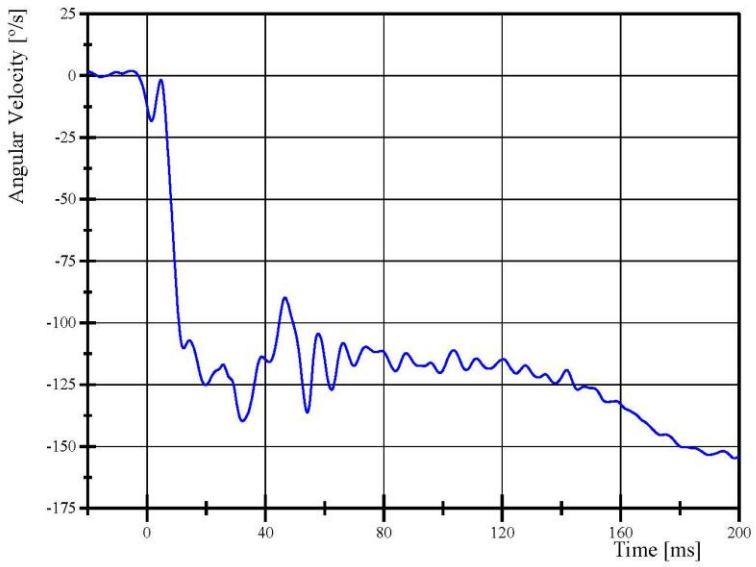
Transportation Research Center Inc.

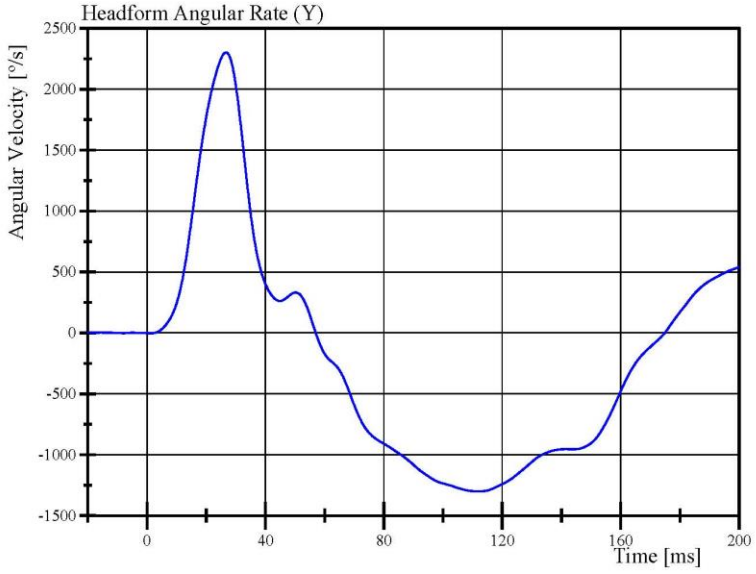
Right Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/18/2021

Pendulum Angular Rate (Y)



Filter Class: CFC_60
Max: 1.9 °/s at -5.3 ms
Min: -154.7 °/s at 198.5 ms

Headform Angular Rate (Y)



Filter Class: CFC_60
Max: 2,302.2 °/s at 26.7 ms
Min: -1,301.7 °/s at 111.9 ms

Specification Source: WordSID 50th(WS) VRTC Nov 2020.xlsx
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Transportation Research Center Inc.

Left Lateral Torsion
WorldSID 50th Serial No. EB8888 Certification No. 6-3
Test Date: 1/19/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 ℃	21.2 ℃	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Pendulum Velocity	5.1 - 5.3 m/s	5.18 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	2.09 - 2.37 m/s	2.149 m/s	Yes
Change at 15 ms	3.19 - 3.63 m/s	3.246 m/s	Yes
Change at 20 ms	4.27 - 4.87 m/s	4.323 m/s	Yes
Peak Fixture Rotation	(-41.5) - (-51) °	-46.61 °	Yes
Decay Time to 0 deg from Peak Angle	35 - 43 ms	39.3 ms	Yes
Peak Head Angular Velocity Z-axis	(-1,345) - (-1,655) °/s	-1,504.4 °/s	Yes
Peak Lower Neck Moment Z-axis	34 - 42 N·m	37.5 N·m	Yes

Test meets specifications.

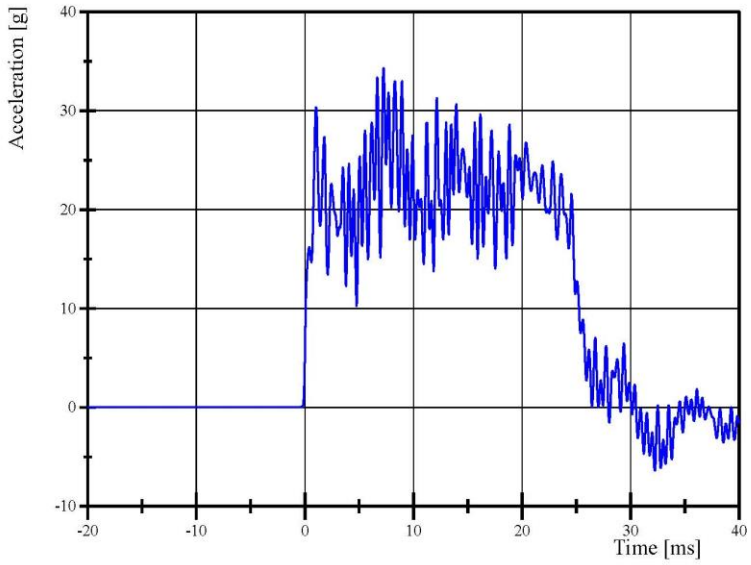
Condition: Used

Comments:
Neck S/N: EE8804

Transportation Research Center Inc.

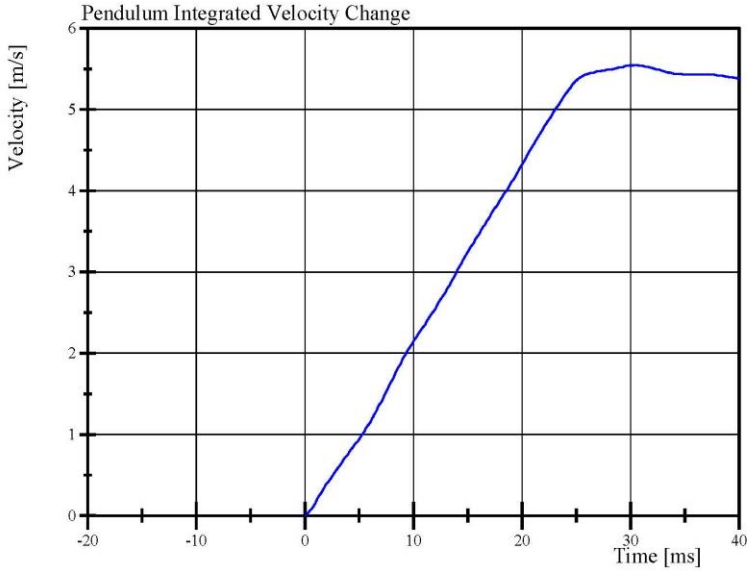
Left Lateral
WorldSID 50th Serial No. EB8888 Certification No. 6-3
Test Date: 1/19/2021

Pendulum Acceleration



Filter Class: CFC_1000
Max: 34.3 g at 7.3 ms
Min: -6.4 g at 32.2 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_1000
Max: 5.5 m/s at 30.5 ms
Min: 0.0 m/s at 0.0 ms

Specification Source: WordSID 50th(WS) VRTC Nov 2020.xlsx
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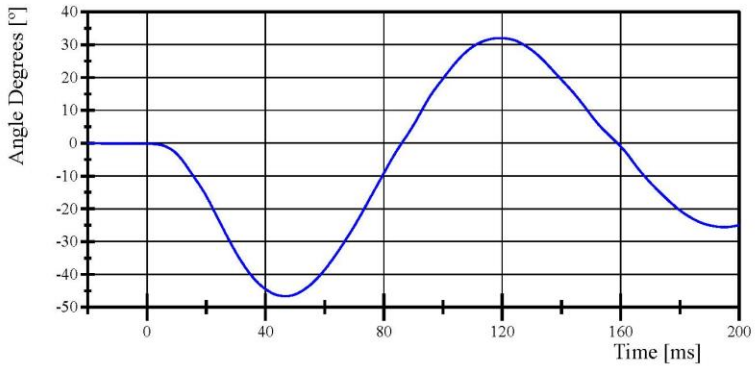
Transportation Research Center Inc.

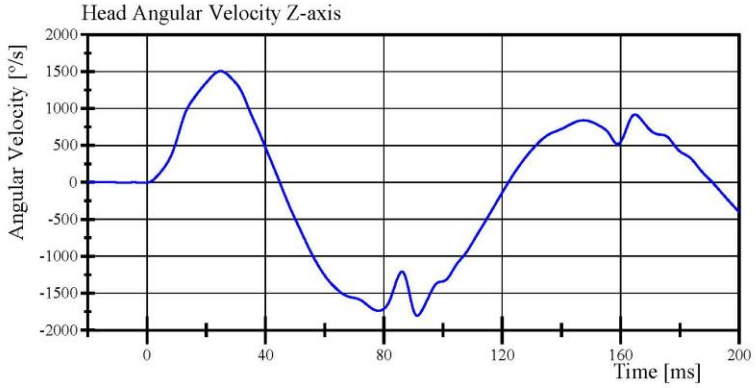
Left Lateral
WorldSID 50th Serial No. EB8888 Certification No. 6-3
Test Date: 1/19/2021

Torsion Fixture Rotation



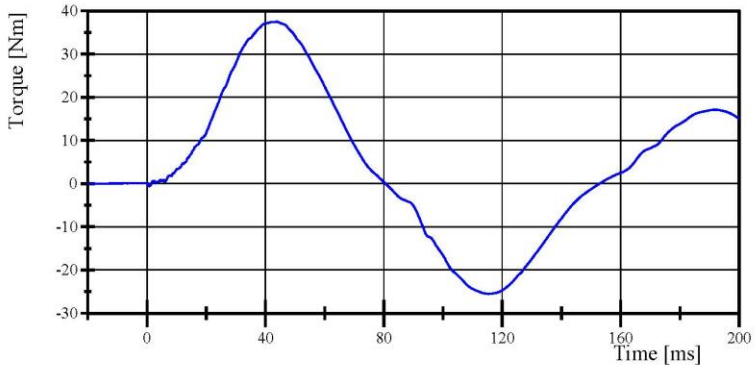
Filter Class: CFC_60
Max: 32.0 ° at 119.2 ms
Min: -46.6 ° at 46.8 ms

Head Angular Velocity Z-axis



Filter Class: CFC_60
Max: 1,504.4 °/s at 24.9 ms
Min: -1,804.8 °/s at 91.3 ms

Lower Neck Moment



Filter Class: CFC_600
Max: 37.5 Nm at 43.9 ms
Min: -25.5 Nm at 115.3 ms

Transportation Research Center Inc.

Right Lateral Torsion
WorldSID 50th Serial No. EB8888 Certification No. 6-2
Test Date: 1/20/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
Pendulum Velocity	5.1 - 5.3 m/s	5.18 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	2.09 - 2.37 m/s	2.241 m/s	Yes
Change at 15 ms	3.19 - 3.63 m/s	3.403 m/s	Yes
Change at 20 ms	4.27 - 4.87 m/s	4.574 m/s	Yes
Peak Fixture Rotation	41.5 - 51 °	46.23 °	Yes
Decay Time to 0 deg from Peak Angle	35 - 43 ms	39.0 ms	Yes
Peak Head Angular Velocity Z-axis	1,345 - 1,655 °/s	1,559.9 °/s	Yes
Peak Lower Neck Moment Z-axis	(-34) - (-42) N·m	-38.3 N·m	Yes

Test meets specifications.

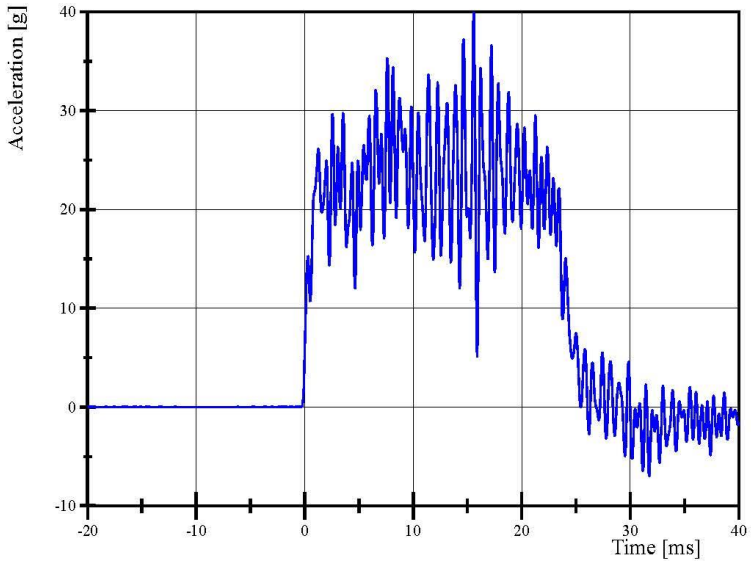
Condition: Used

Comments:
Neck S/N: EE8804

Transportation Research Center Inc.

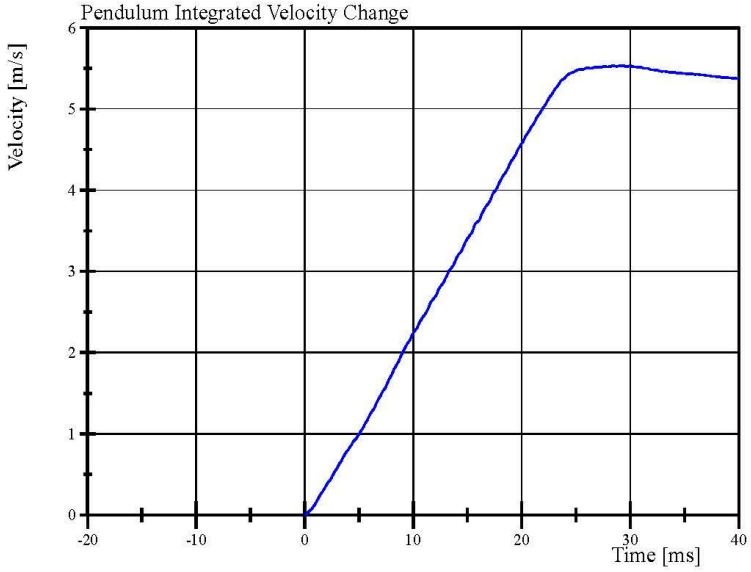
Right Lateral
WorldSID 50th Serial No. EB8888 Certification No. 6-2
Test Date: 1/20/2021

Pendulum Acceleration



Filter Class: CFC_1000
Max: 39.9 g at 15.6 ms
Min: -7.0 g at 31.8 ms

Pendulum Integrated Velocity Change

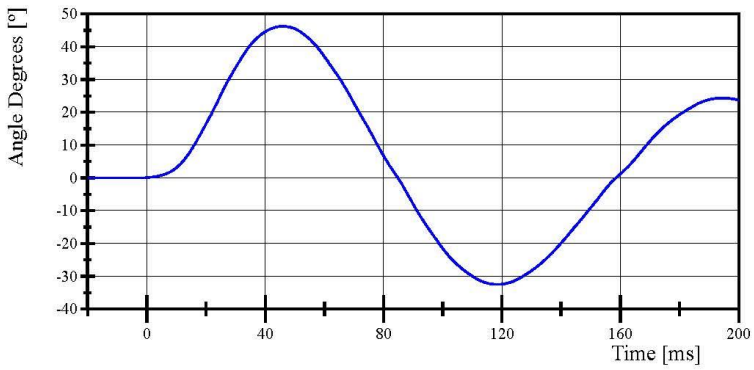


Filter Class: CFC_1000
Max: 5.5 m/s at 29.3 ms
Min: 0.0 m/s at 0.0 ms

Transportation Research Center Inc.

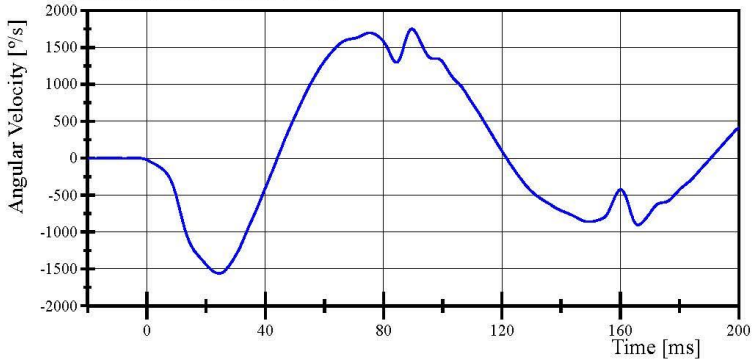
Right Lateral
WorldSID 50th Serial No. EB8888 Certification No. 6-2
Test Date: 1/20/2021

Torsion Fixture Rotation



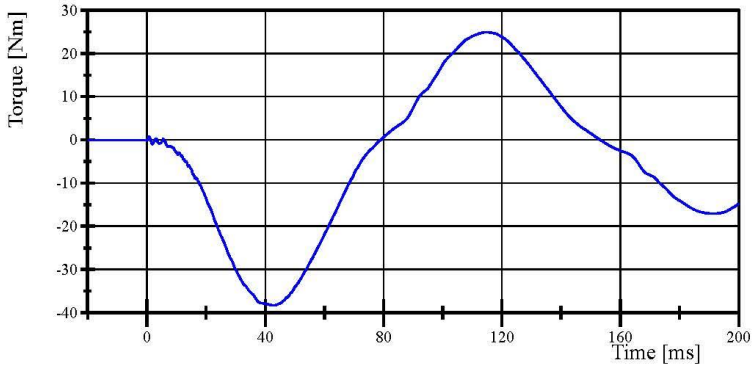
Filter Class: CFC_60
Max: 46.2 ° at 45.9 ms
Min: -32.5 ° at 118.4 ms

Head Angular Velocity Z-axis



Filter Class: CFC_60
Max: 1,749.6 °/s at 89.5 ms
Min: -1,559.9 °/s at 24.5 ms

Lower Neck Moment



Filter Class: CFC_600
Max: 24.9 Nm at 114.8 ms
Min: -38.3 Nm at 42.5 ms

Transportation Research Center Inc.

Left Lateral Shoulder
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/19/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.30 m/s	Yes
Impactor Force	2,600 - 3,300 N	2,978.2 N	Yes
Shoulder Force	(-1,470) - (-1,800) N	-1,628.5 N	Yes
S1 RibEye Max	37 - 46 mm	39.9 mm	Yes

Test meets specifications.

Condition: Used

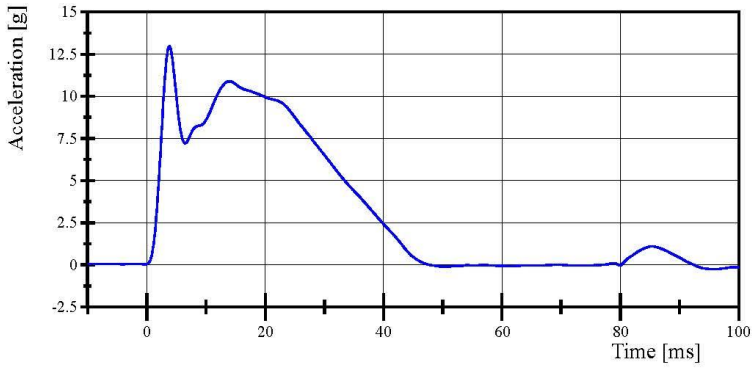
Comments:
Arm S/N: EG3799
Shoulder Rib S/N: DW1916

Tilt:
Head X -0.5
Y -0.6
Spine X 1.00
Y 1.00
Pelvis X 0.6
Y 5.1

Transportation Research Center Inc.

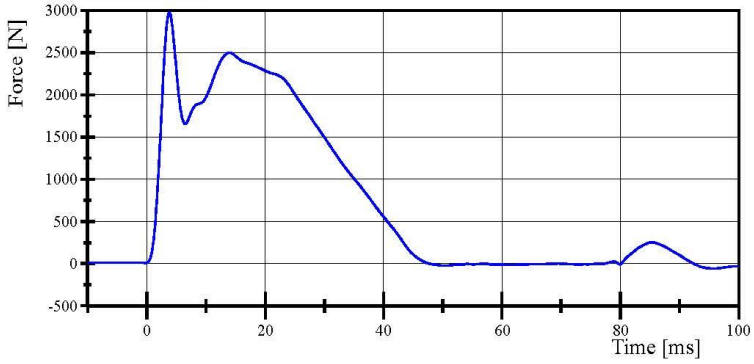
Left Lateral Shoulder
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/19/2021

Impactor Acceleration



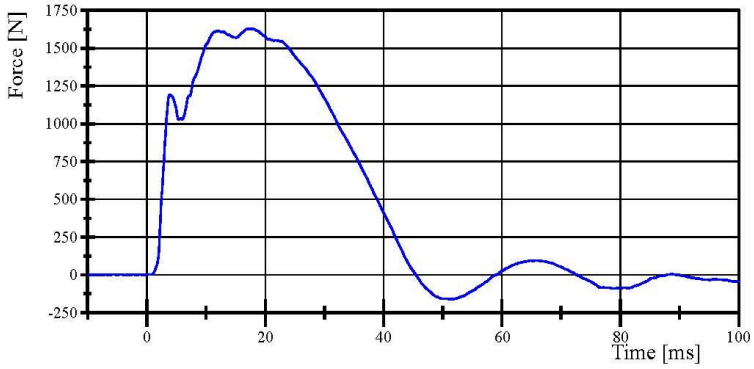
Filter Class: CFC_180
Max: 13.0 g at 3.8 ms
Min: -0.3 g at 95.8 ms

Impactor Force



Filter Class: CFC_180
Max: 2,978.2 N at 3.8 ms
Min: -59.1 N at 95.8 ms

Shoulder Force



Filter Class: CFC_600
Max: 1,628.5 N at 17.6 ms
Min: -162.3 N at 51.3 ms

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Transportation Research Center Inc.

Left Lateral Thorax with Arm
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/20/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Impactor Velocity	6.6 - 6.8 m/s	6.69 m/s	Yes
Impactor Force	5,300 - 6,200 N	5,856.7 N	Yes
Upper Thorax Rib Displacement	35 - 47 mm	41.0 mm	Yes
Center Thorax Rib Displacement	46 - 56 mm	46.8 mm	Yes
Lower Thorax Rib Displacement	33.5 - 40.5 mm	35.57 mm	Yes
Upper Spine Lateral Acceleration	28 - 37 g	35.9 g	Yes
Lower Spine Lateral Acceleration	22 - 28 g	27.0 g	Yes

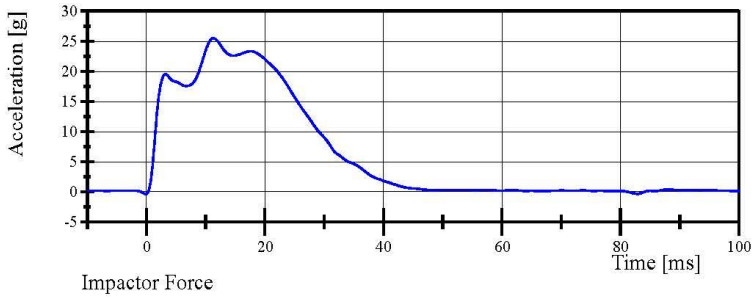
Test meets specifications.

Condition: Used
Comments:
Arm S/N: EG3799
Shoulder Rib S/N: DW1916
Thorax Rib 1 S/N: EB5400
Thorax Rib 2 S/N: EB5401
Thorax Rib 3 S/N: EB5402
RibEye S/N: 125
Tilt:
Head X -0.6
Y -0.5
Spine X -0.1
Y 1.4
Pelvis X -0.5
Y 4.9

Transportation Research Center Inc.

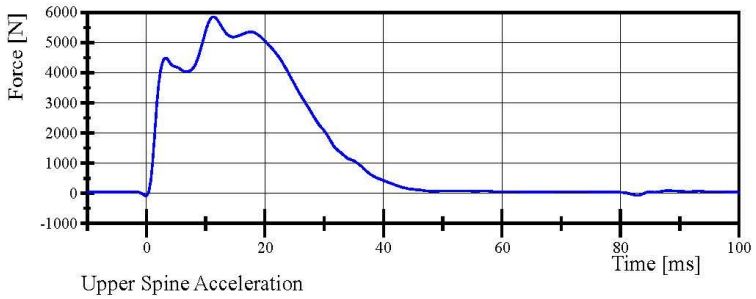
Left Lateral Thorax with Arm
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/20/2021

Impactor Acceleration



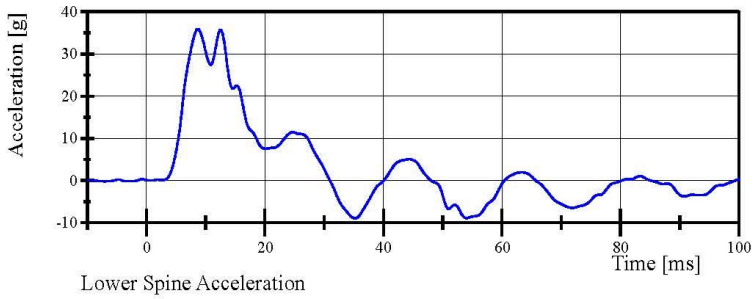
Filter Class: CFC_180
Max: 25.5 g at 11.3 ms
Min: -0.4 g at -0.1 ms

Impactor Force



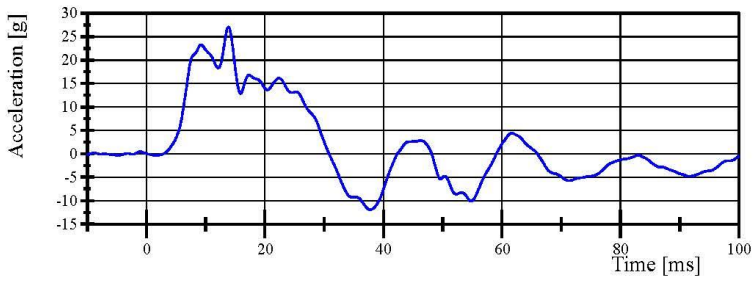
Filter Class: CFC_180
Max: 5,856.7 N at 11.3 ms
Min: -80.7 N at -0.1 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 35.9 g at 8.7 ms
Min: -9.0 g at 35.2 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 27.0 g at 13.9 ms
Min: -11.9 g at 37.8 ms

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Transportation Research Center Inc.

Left Lateral Thorax without Arm
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/20/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.31 m/s	Yes
Impactor Force	3,200 - 3,800 N	3,506.3 N	Yes
Upper Thorax Rib Displacement	33 - 43 mm	36.8 mm	Yes
Center Thorax Rib Displacement	35 - 43 mm	41.3 mm	Yes
Lower Thorax Rib Displacement	32 - 40 mm	36.1 mm	Yes
Upper Spine Lateral Acceleration	14 - 20 g	17.1 g	Yes
Lower Spine Lateral Acceleration	14 - 22 g	16.8 g	Yes

Test meets specifications.

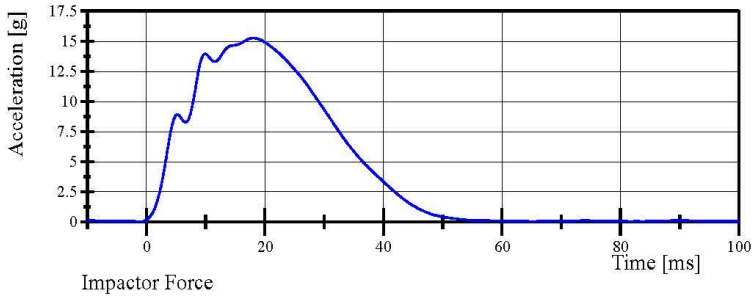
Condition: Used
Comments:
Thorax Rib 1 S/N: EB5400
Thorax Rib 2 S/N: EB5401
Thorax Rib 3 S/N: EB5402
RibEye S/N: 125
Tilt:

Head	**X**	**-0.2**
	Y	**0.0**
Spine	**X**	**0.1**
	Y	**1.8**
Pelvis	**X**	**0.7**
	Y	**4.6**

Transportation Research Center Inc.

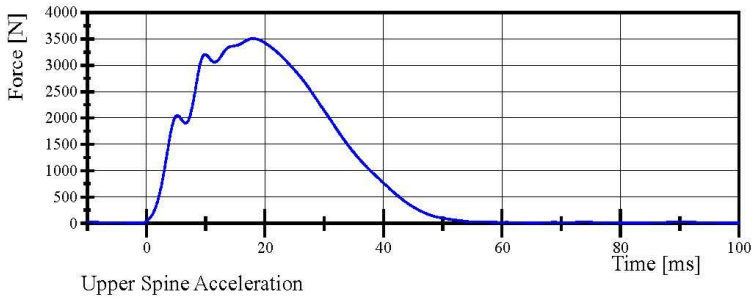
Left Lateral Thorax without Arm
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/20/2021

Impactor Acceleration



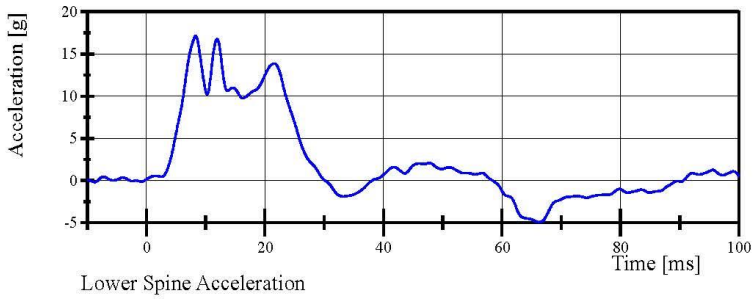
Filter Class: CFC_180
Max: 15.3 g at 18.0 ms
Min: 0.0 g at -1.0 ms

Impactor Force



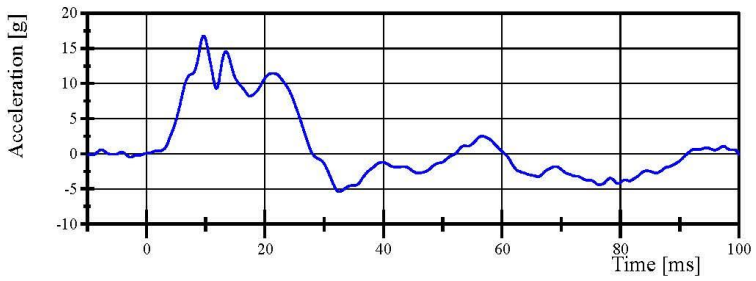
Filter Class: CFC_180
Max: 3,506.3 N at 18.0 ms
Min: 6.4 N at -1.0 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 17.1 g at 8.3 ms
Min: -4.9 g at 66.3 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 16.8 g at 9.7 ms
Min: -5.4 g at 32.5 ms

Specification Source: WordSID 50th(WS) VRTC Nov 2020.xlsx
WorldSID 50th_Qalification Manual 11_09_2020

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Transportation Research Center Inc.

Left Lateral Abdomen
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/20/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Force	2,700 - 3,100 N	2,853.6 N	Yes
Upper Abdominal Rib Displacement	32.5 - 39.5 mm	34.43 mm	Yes
Lower Abdominal Rib Displacement	32 - 38 mm	35.1 mm	Yes
Lower Spine Lateral Acceleration	14.5 - 19.5 g	17.25 g	Yes

Test meets specifications.

Condition: Used

Comments:
Abdomen Rib #1 S/N: DY5252
Abdomen Rib #2 S/N: DY5253

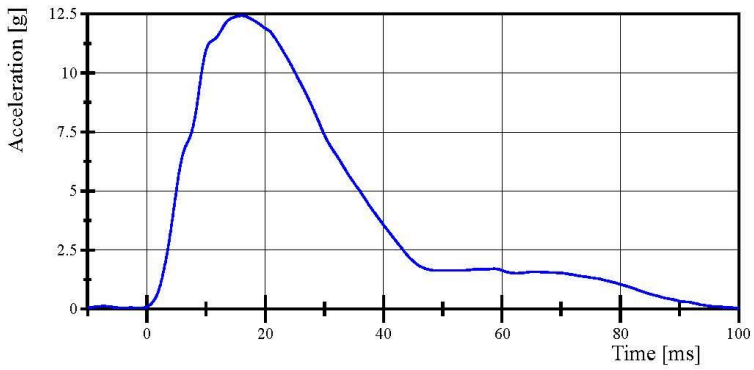
Tilt:

Head	**X**	**0.8**
	Y	**-0.8**
Spine	**X**	**1.5**
	Y	**1.1**
Pelvis	**X**	**0.0**
	Y	**4.5**

Transportation Research Center Inc.

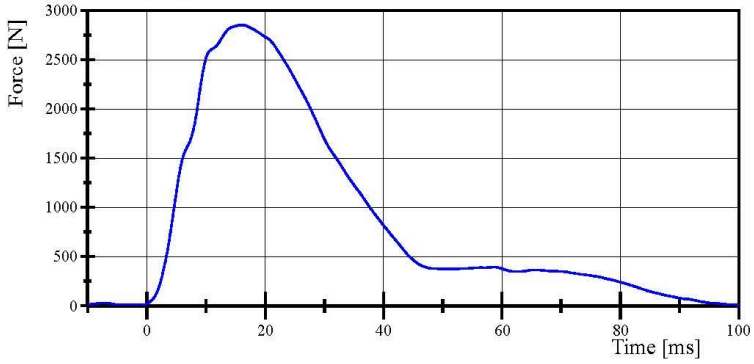
Left Lateral Abdomen
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/20/2021

Impactor Acceleration



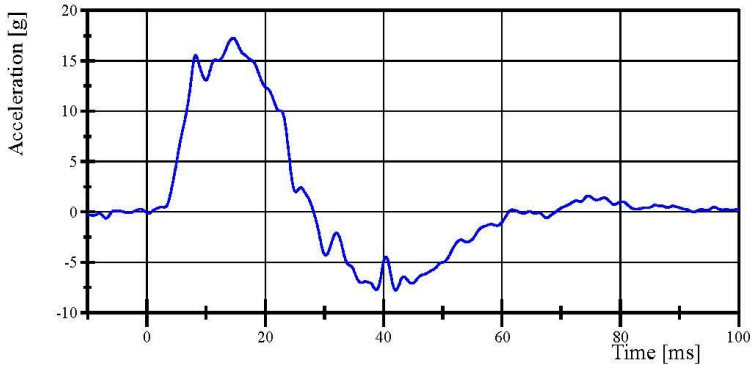
Filter Class: CFC_180
Max: 12.4 g at 16.0 ms
Min: 0.0 g at 100.0 ms

Impactor Force



Filter Class: CFC_180
Max: 2,853.6 N at 16.0 ms
Min: 6.0 N at 100.0 ms

Lower Spine Acceleration (Y)



Filter Class: CFC_180
Max: 17.3 g at 14.6 ms
Min: -7.8 g at 42.1 ms

Specification Source: WordSID 50th(WS) VRTC Nov 2020.xlsx
WorldSID 50th_Qalification Manual 11_09_2020

01.20.2021 12:37:44 987

Transportation Research Center Inc.

Left Lateral Pelvis
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/20/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Impactor Velocity	6.6 - 6.8 m/s	6.74 m/s	Yes
Impactor Force	6,800 - 8,200 N	7,419.5 N	Yes
Pelvis Lateral Acceleration	38.5 - 48.5 g	39.38 g	Yes
Lower Spine Lateral Acceleration	10 - 14 g	11.2 g	Yes
Pubic Lateral Force	(-1,300) - (-1,590) N	-1,384.5 N	Yes
Sacroiliac Lateral Force	(-1,860) - (-2,280) N	-2,018.9 N	Yes

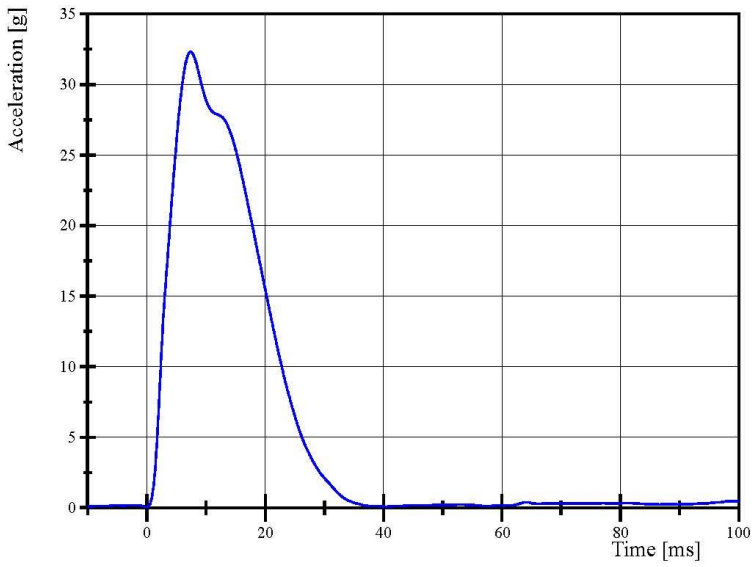
Test meets specifications.

Condition: Used
Comments:
Pelvis S/N: EC3628
Tilt:
Head X 0.3
Y -0.4
Spine X 1.9
Y 1.2
Pelvis X 0.3
Y 5.0

Transportation Research Center Inc.

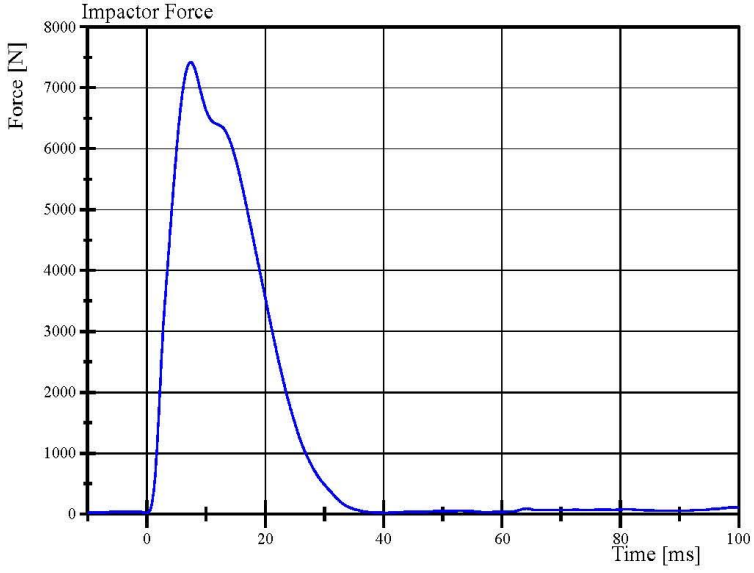
Left Lateral Pelvis
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/20/2021

Impactor Acceleration



Filter Class: CFC_180
Max: 32.3 g at 7.4 ms
Min: 0.1 g at -0.1 ms

Impactor Force



Filter Class: CFC_180
Max: 7,419.5 N at 7.4 ms
Min: 17.4 N at -0.1 ms

Specification Source: WordSID 50th(WS) VRTC Nov 2020.xlsx
WorldSID 50th_Qalification Manual 11_09_2020

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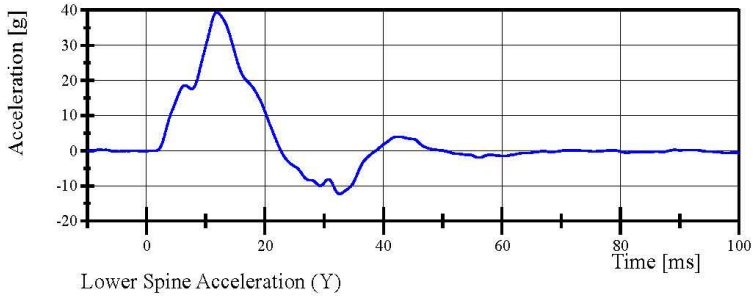
Report Number: EB8888_WSH06

Transportation Research Center Inc.

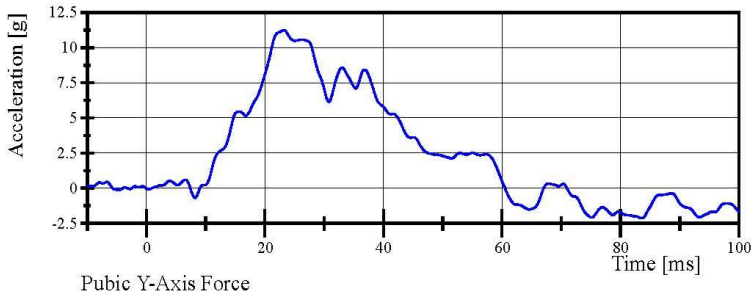
Left Lateral Pelvis
WorldSID 50th Serial No. EB8888 Certification No. 6-1
Test Date: 1/20/2021

Pelvis Y-Axis Acceleration



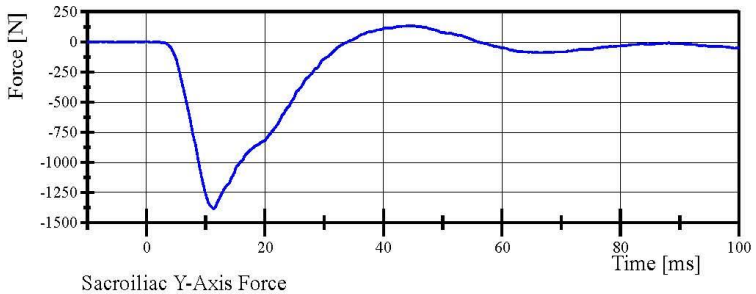
Filter Class: CFC_180
Max: 39.4 g at 11.9 ms
Min: -12.3 g at 32.7 ms

Lower Spine Acceleration (Y)



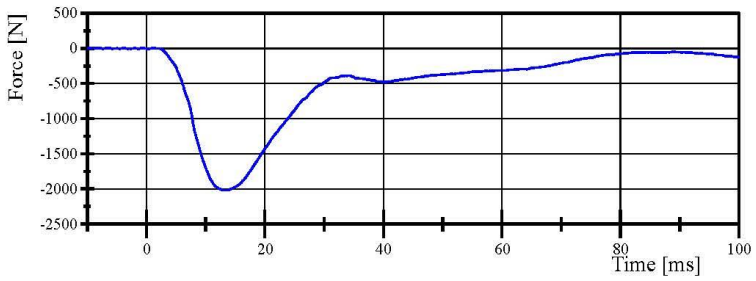
Filter Class: CFC_180
Max: 11.2 g at 23.2 ms
Min: -2.1 g at 83.6 ms

Pubic Y-Axis Force



Filter Class: CFC_600
Max: 133.8 N at 44.9 ms
Min: -1,384.5 N at 11.4 ms

Sacroiliac Y-Axis Force



Filter Class: CFC_600
Max: 5.9 N at -8.0 ms
Min: -2,018.9 N at 13.3 ms

Post-Test Calibration Sheets
Driver S/N EB8888

Transportation Research Center Inc.
WorldSID-50M
External Measurments
Serial No. EB8888 Certification No. 07

WorldSID-50M Angular Reference Measurements					
Parameter	Symbol	Tilt Sensor (°)	Inclinometer (°)		
			Center	Left	Right
Head X-Axis	A1	0	n/a	n/a	n/a
Head Y-Axis	A2	2.2	n/a	2	Note 1
Neck Bracket X-Axis	A3	n/a	-0.5	n/a	n/a
Neck Bracket Y-Axis	A4	n/a	-3.1	n/a	n/a
Thorax X-Axis	A5	1.3	n/a	n/a	n/a
Thorax Y-Axis	A6	3.9	n/a	n/a	n/a
Pelvis X-Axis	A7	0.7	n/a	n/a	n/a
Pelvis Y-Axis	A8	10.2	n/a	n/a	n/a
H-point Tool	A9	n/a	n/a	33.1	33.9

WorldSID-50M External Linear Dimensions				
Parameter	Symbol	Specification (mm)		
		Center	Left	Right
Seated Height	L1	870	n/a	n/a
Hip Pivot Height	L2	n/a	89	89
Hip Pivot to Back Line	L3	n/a	187	177
Thigh Clearance	L4	n/a	181	180
Knee Height	L5	n/a	580	583
Knee to Backline	L6	n/a	667	670
Head Back to Seat Back	L7	156	n/a	n/a
Thorax Rib 1 Front to Back	L8	n/a	209	209
Abdomen Rib 2 Front to Back	L9	n/a	223	226
Arm Length	L10	n/a	330	330
Width Across Arms	L11	482	n/a	n/a
Waist Width	L12	341	n/a	n/a

Note 1: No land marks on the right side of head. Unable to align level.

Transportation Research Center Inc.

Front Head Drop
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/24/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
Peak Head Resultant Acceleration	211 - 261 g	238.8 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	-7.5 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	2.76 %	Yes

Test meets specifications.

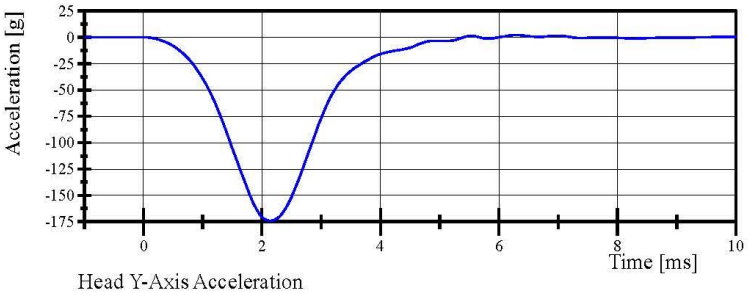
Condition: Used

Comments:
Head Skin S/N: EG2845

Transportation Research Center Inc.

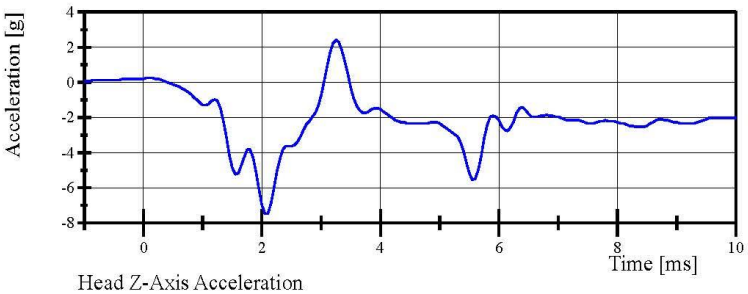
Front Head Drop
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/24/2021

Head X-Axis Acceleration



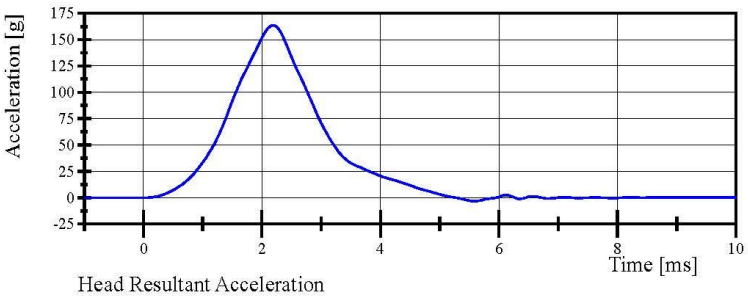
Filter Class: CFC_1000
Max: 2.1 g at 6.3 ms
Min: -174.2 g at 2.2 ms

Head Y-Axis Acceleration



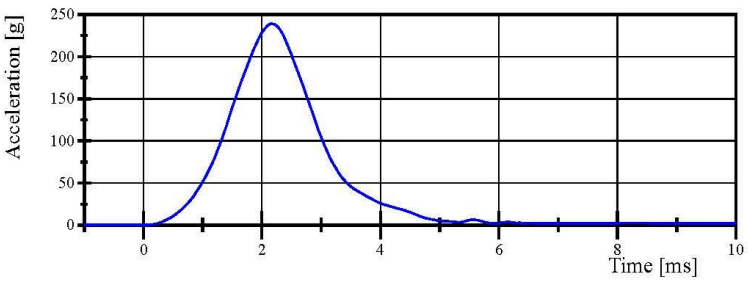
Filter Class: CFC_1000
Max: 2.4 g at 3.3 ms
Min: -7.5 g at 2.1 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 163.7 g at 2.2 ms
Min: -3.3 g at 5.6 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 238.8 g at 2.2 ms
Min: 0.1 g at -1.0 ms

Transportation Research Center Inc.

Left Lateral Head Drop
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/24/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Peak Head Resultant Acceleration	107 - 126 g	117.3 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-1.8 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	2.95 %	Yes

Test meets specifications.

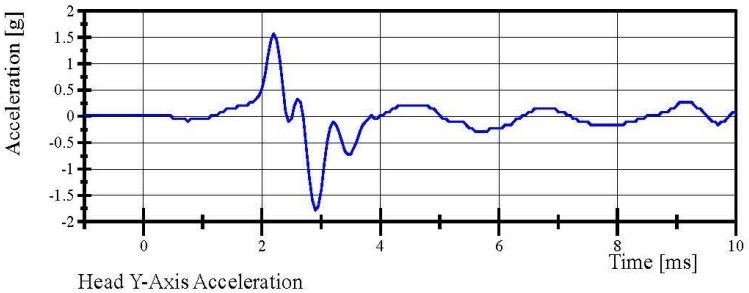
Condition: Used

Comments:
Head Skin S/N: EG2845

Transportation Research Center Inc.

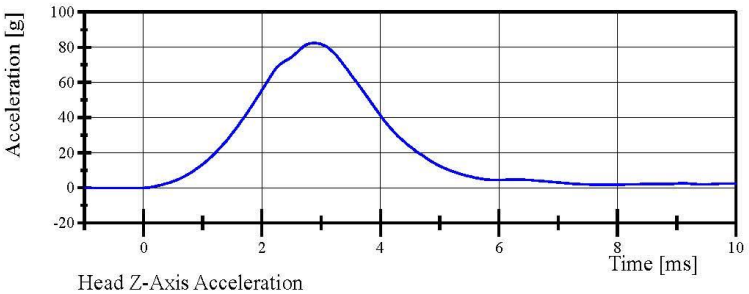
Left Lateral Head Drop
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/24/2021

Head X-Axis Acceleration



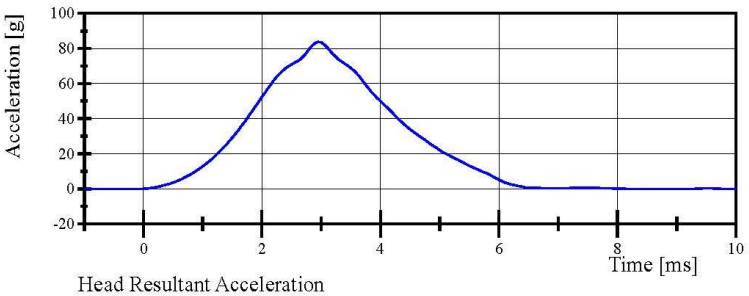
Filter Class: CFC_1000
Max: 1.6 g at 2.2 ms
Min: -1.8 g at 2.9 ms

Head Y-Axis Acceleration



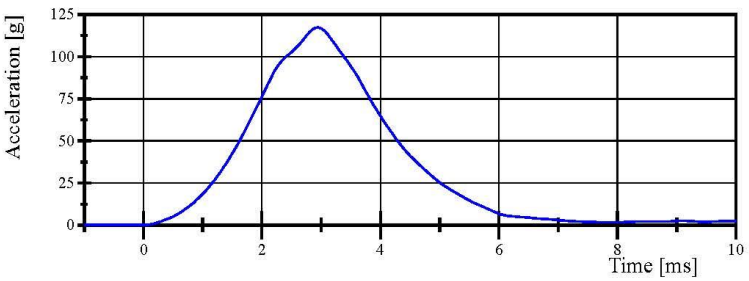
Filter Class: CFC_1000
Max: 82.3 g at 2.9 ms
Min: -0.1 g at -0.9 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 83.7 g at 3.0 ms
Min: -0.0 g at -0.6 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 117.3 g at 3.0 ms
Min: 0.1 g at -1.0 ms

Transportation Research Center Inc.

Right Lateral Head Drop
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/24/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Peak Head Resultant Acceleration	107 - 126 g	115.3 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-3.3 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	1.94 %	Yes

Test meets specifications.

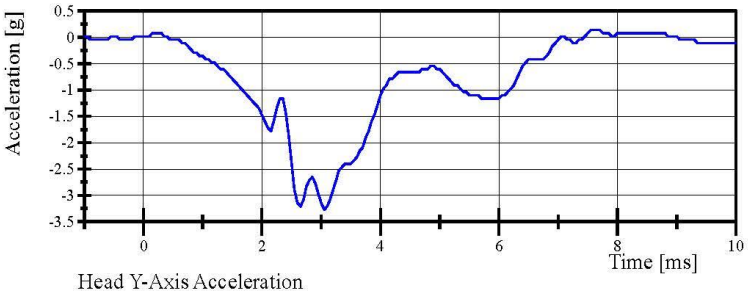
Condition: Used

Comments:
Head Skin S/N: EG2845

Transportation Research Center Inc.

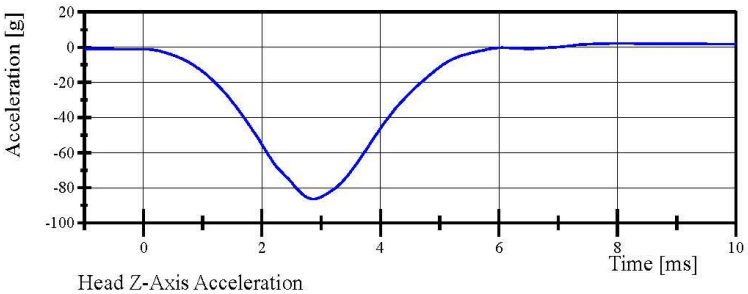
Right Lateral Head Drop
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/24/2021

Head X-Axis Acceleration



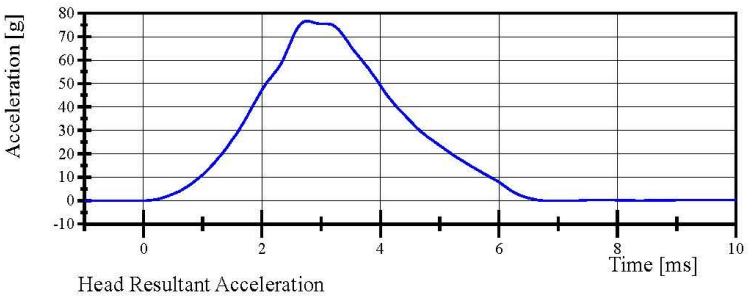
Filter Class: CFC_1000
Max: 0.1 g at 7.6 ms
Min: -3.3 g at 3.1 ms

Head Y-Axis Acceleration



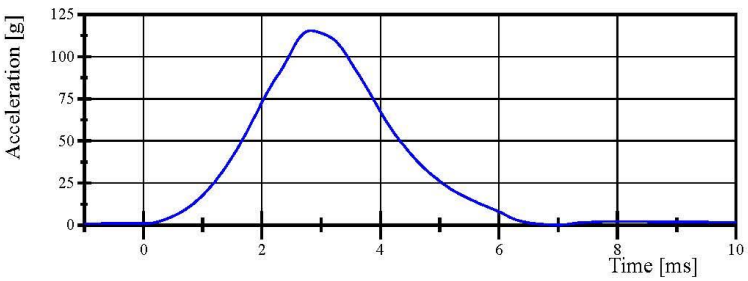
Filter Class: CFC_1000
Max: 2.2 g at 8.0 ms
Min: -86.5 g at 2.9 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 76.7 g at 2.8 ms
Min: -0.2 g at 6.9 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 115.3 g at 2.9 ms
Min: 0.2 g at 7.0 ms

Transportation Research Center Inc.

Left Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/23/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	35 %	Yes
Pendulum Velocity	(-3.30) - (-3.50) m/s	-3.333 m/s	Yes
Pendulum Integrated Velocity Change at 4 ms	0.87 - 1.09 m/s	0.986 m/s	Yes
Change at 8 ms	1.72 - 2.1 m/s	1.904 m/s	Yes
Change at 12 ms	2.63 - 3.17 m/s	2.844 m/s	Yes
Maximum Headform Flexion	(-50) - (-61) deg	-53.5 deg	Yes
Headform Flexion Decay - from Peak to Zero Degrees	58 - 72 ms	59.5 ms	Yes
Total Neck Occipital Condyles Moment	54 - 67 N·m	61.0 N·m	Yes
Total Neck Occipital Condyles Moment Decay Time to 0 N·m	71 - 87 ms	75.4 ms	Yes
Maximum Forward Pot Rotation			
Peak	(-32) - (-39) °	-34.9 °	Yes
Time of Peak	56 - 68 ms	61.1 ms	Yes
Maximum Rear Pot Rotation			
Peak	(-29) - (-36) °	-31.1 °	Yes
Time of Peak	56 - 68 ms	56.7 ms	Yes
Maximum Headform Angular Rate	(-2,047) - (-2,503) °/s	-2,292.5 °/s	Yes

Test meets specifications.

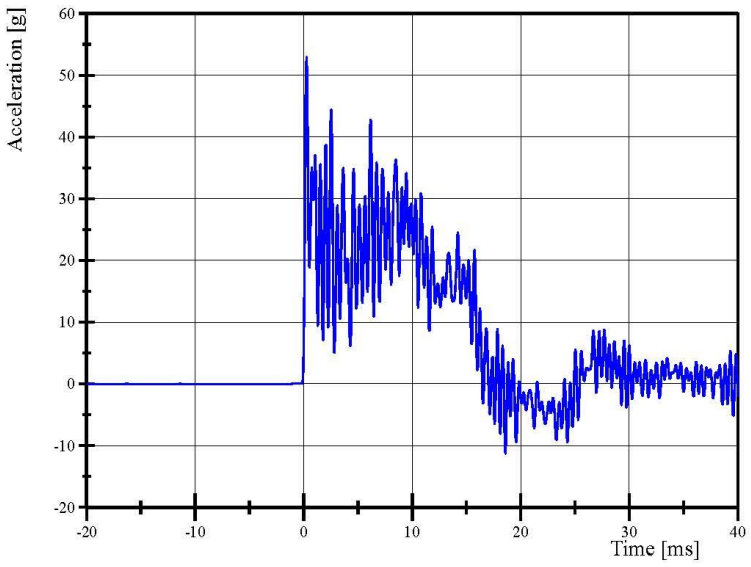
Condition: Used

Comments:
Neck S/N: EE8804

Transportation Research Center Inc.

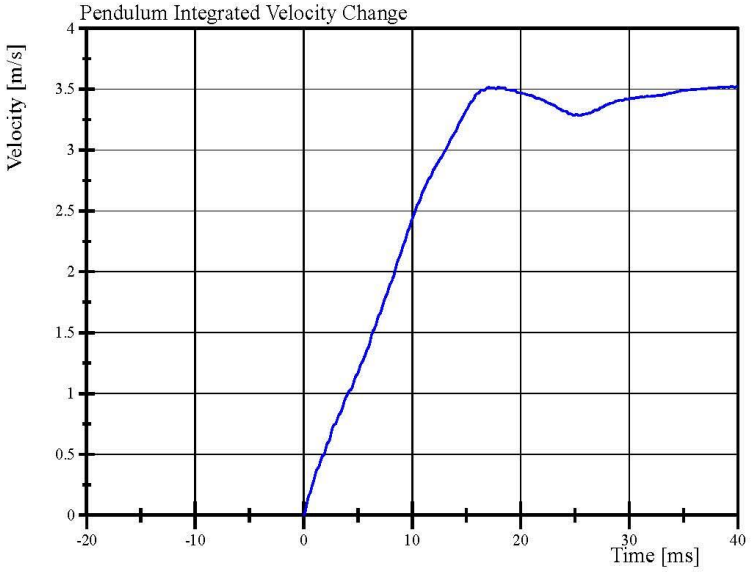
Left Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/23/2021

Pendulum Acceleration



Filter Class: CFC_1000
Max: 53.0 g at 0.3 ms
Min: -11.3 g at 18.6 ms

Pendulum Integrated Velocity Change

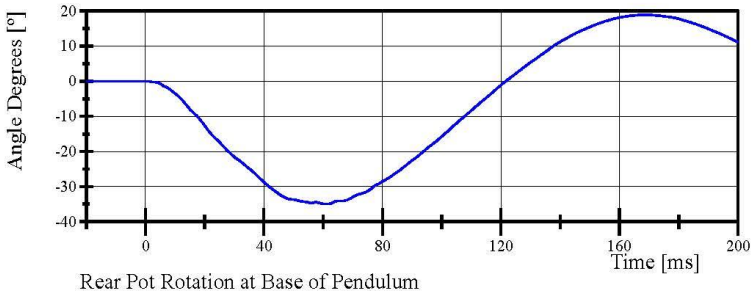


Filter Class: CFC_1000
Max: 3.5 m/s at 39.5 ms
Min: 0.0 m/s at 0.0 ms

Transportation Research Center Inc.

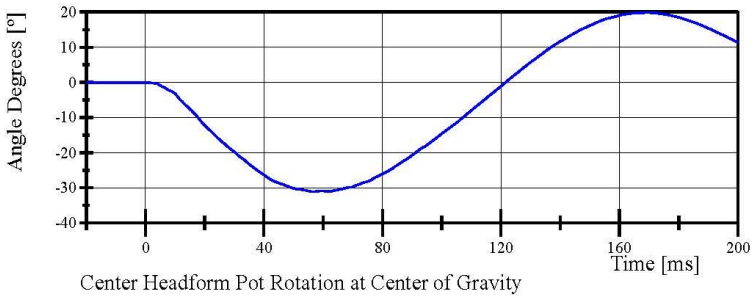
Left Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/23/2021

Forward Pot Rotation at Base of Pendulum



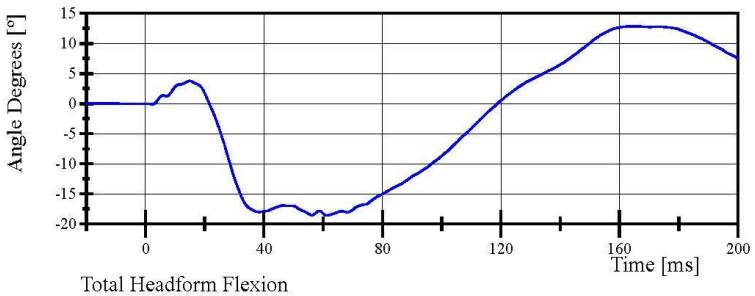
Filter Class: CFC_180
Max: 18.8 ° at 169.2 ms
Min: -34.9 ° at 61.1 ms

Rear Pot Rotation at Base of Pendulum



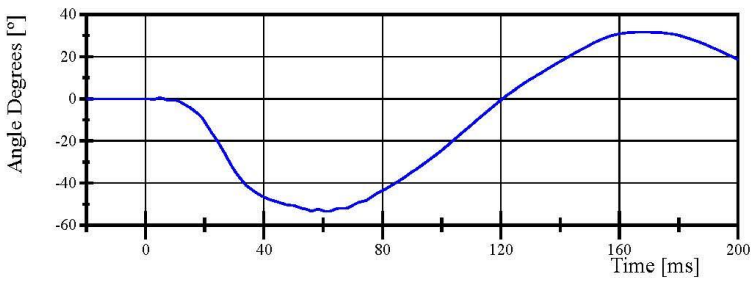
Filter Class: CFC_180
Max: 19.9 ° at 169.5 ms
Min: -31.1 ° at 56.7 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_180
Max: 12.8 ° at 164.7 ms
Min: -18.6 ° at 61.1 ms

Total Headform Flexion

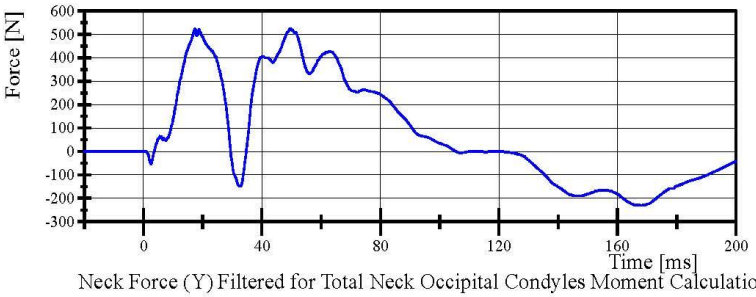


Filter Class: CFC_180
Max: 31.6 ° at 167.0 ms
Min: -53.5 ° at 61.1 ms

Transportation Research Center Inc.

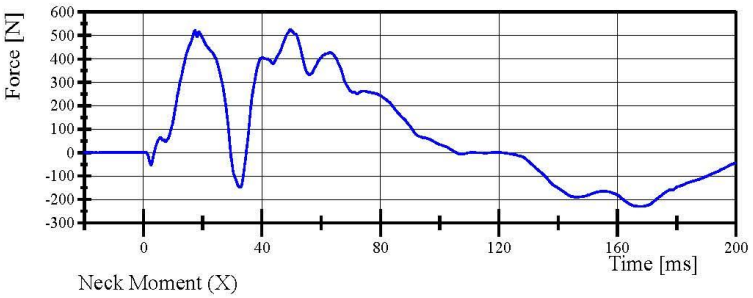
Left Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/23/2021

Neck Force (Y)



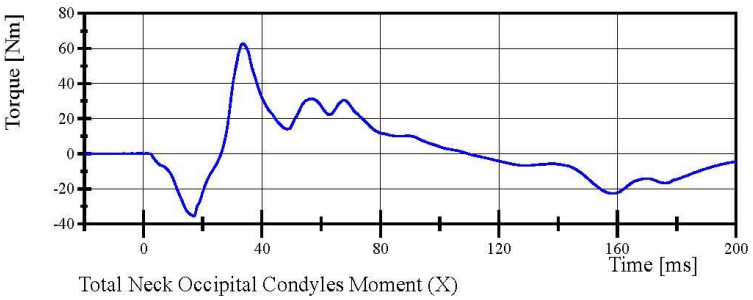
Filter Class: CFC_1000
Max: 525.5 N at 49.6 ms
Min: -230.5 N at 167.7 ms

Neck Force (Y) Filtered for Total Neck Occipital Condyles Moment Calculation



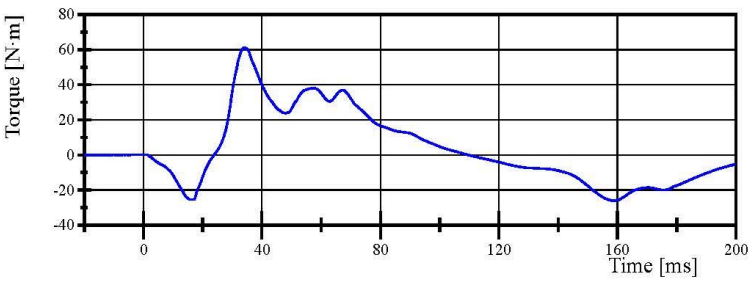
Filter Class: CFC_600
Max: 525.1 N at 49.6 ms
Min: -230.4 N at 168.1 ms

Neck Moment (X)



Filter Class: CFC_600
Max: 62.8 Nm at 33.5 ms
Min: -35.4 Nm at 17.0 ms

Total Neck Occipital Condyles Moment (X)

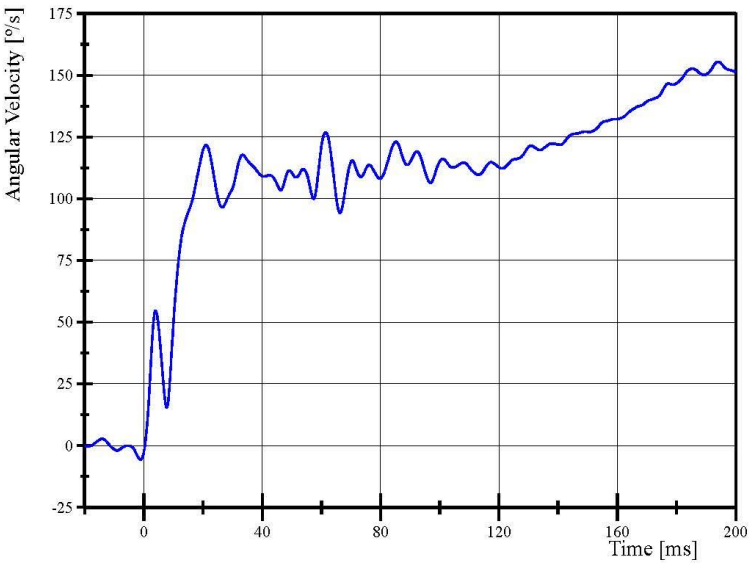


Filter Class: Without_(Constar
Max: 61.0 N·m at 34.2 ms
Min: -26.0 N·m at 158.6 ms

Transportation Research Center Inc.

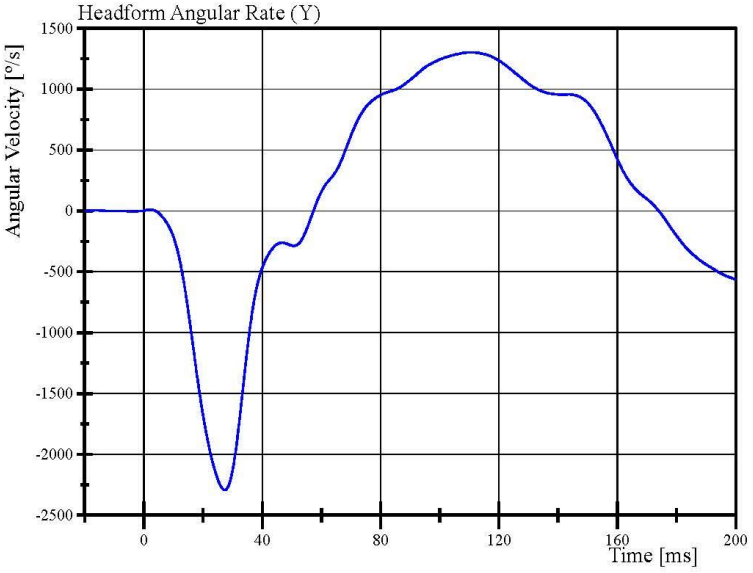
Left Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/23/2021

Pendulum Angular Rate (Y)



Filter Class: CFC_60
Max: 155.6 °/s at 194.0 ms
Min: -5.6 °/s at -1.2 ms

Headform Angular Rate (Y)



Filter Class: CFC_60
Max: 1,302.2 °/s at 110.6 ms
Min: -2,292.5 °/s at 27.3 ms

Transportation Research Center Inc.

Right Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/23/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
Pendulum Velocity	3.30 - 3.50 m/s	3.332 m/s	Yes
Pendulum Integrated Velocity Change at 4 ms	(-0.87) - (-1.09) m/s	-0.951 m/s	Yes
Change at 8 ms	(-1.72) - (-2.1) m/s	-1.869 m/s	Yes
Change at 12 ms	(-2.63) - (-3.17) m/s	-2.864 m/s	Yes
Maximum Headform Flexion	50 - 61 deg	53.0 deg	Yes
Headform Flexion Decay - from Peak to Zero Degrees	58 - 72 ms	59.3 ms	Yes
Total Neck Occipital Condyles Moment	(-54) - (-67) N·m	-62.7 N·m	Yes
Total Neck Occipital Condyles Moment Decay Time to 0 N·m	71 - 87 ms	75.5 ms	Yes
Maximum Forward Pot Rotation			
Peak	32 - 39 °	34.4 °	Yes
Time of Peak	56 - 68 ms	61.5 ms	Yes
Maximum Rear Pot Rotation			
Peak	29 - 36 °	30.7 °	Yes
Time of Peak	56 - 68 ms	62.0 ms	Yes
Maximum Headform Angular Rate	2,047 - 2,503 °/s	2,286.4 °/s	Yes

Test meets specifications.

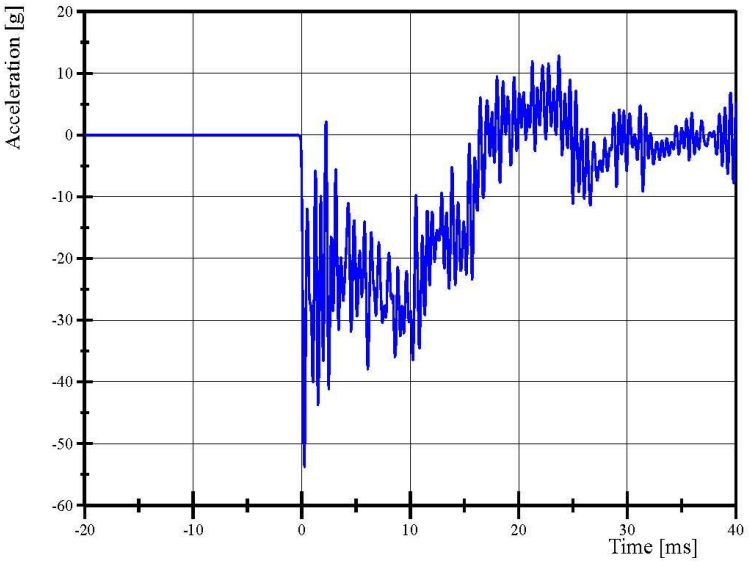
Condition: Used

Comments:
Neck S/N: EE8804

Transportation Research Center Inc.

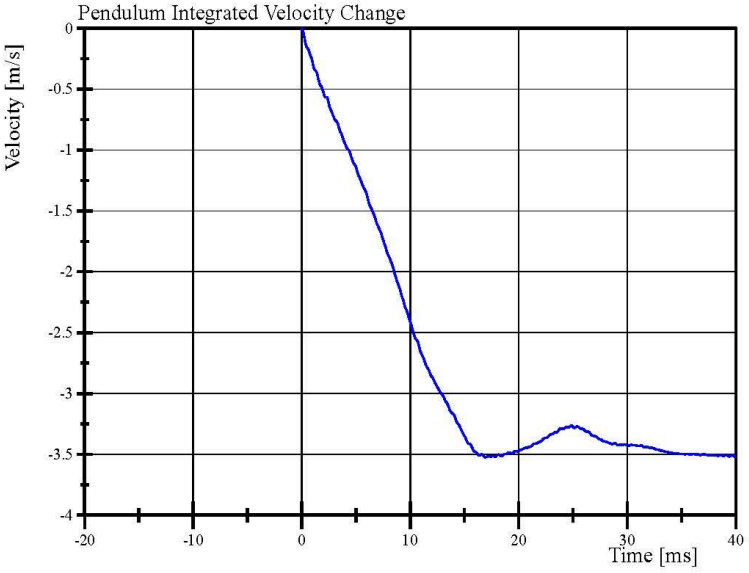
Right Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/23/2021

Pendulum Acceleration



Filter Class: CFC_1000
Max: 12.9 g at 23.7 ms
Min: -53.8 g at 0.3 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_1000
Max: 0.0 m/s at -0.0 ms
Min: -3.5 m/s at 17.0 ms

Specification Source: WordSID 50th(WS) VRTC Nov 2020.xlsx
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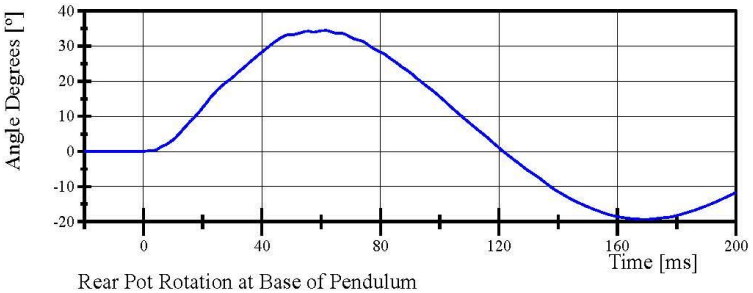
Transportation Research Center Inc.

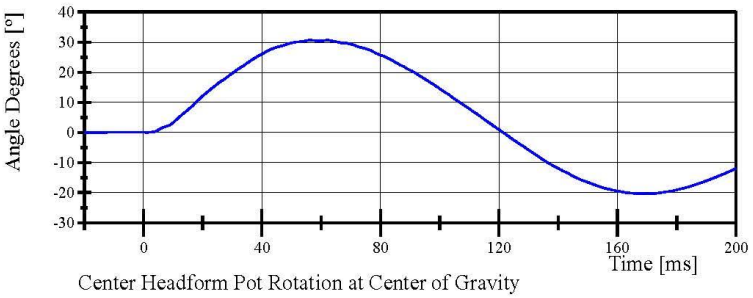
Right Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/23/2021

Forward Pot Rotation at Base of Pendulum



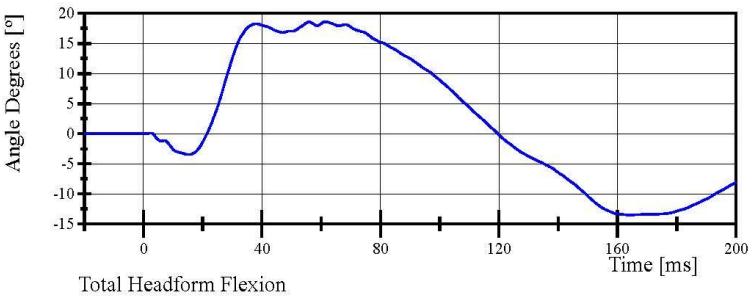
Filter Class: CFC_180
Max: 34.4 ° at 61.5 ms
Min: -19.3 ° at 169.4 ms

Rear Pot Rotation at Base of Pendulum



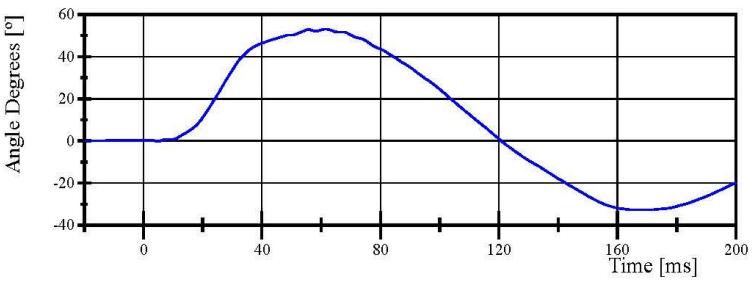
Filter Class: CFC_180
Max: 30.7 ° at 62.0 ms
Min: -20.4 ° at 170.0 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_180
Max: 18.6 ° at 61.4 ms
Min: -13.5 ° at 164.3 ms

Total Headform Flexion



Filter Class: CFC_180
Max: 53.0 ° at 61.5 ms
Min: -32.7 ° at 169.0 ms

Specification Source: WordSID 50th(WS) VRTC Nov 2020.xlsx
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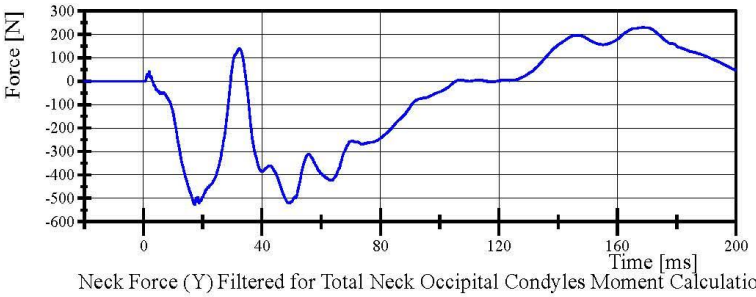
Transportation Research Center Inc.

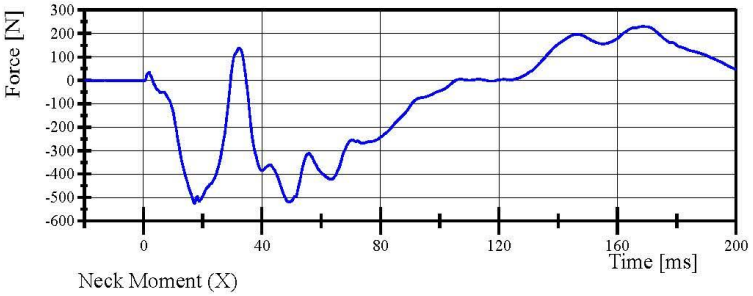
Right Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/23/2021

Neck Force (Y)



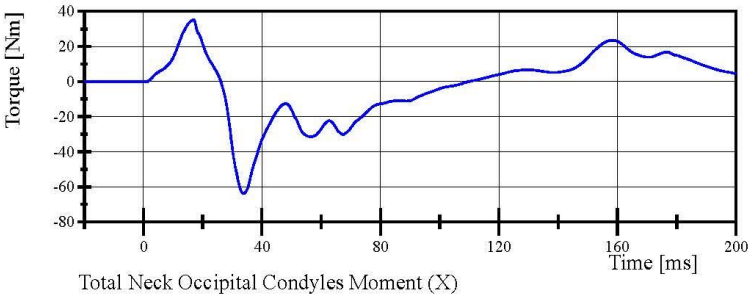
Filter Class: CFC_1000
Max: 229.9 N at 168.4 ms
Min: -527.0 N at 17.3 ms

Neck Force (Y) Filtered for Total Neck Occipital Condyles Moment Calculation



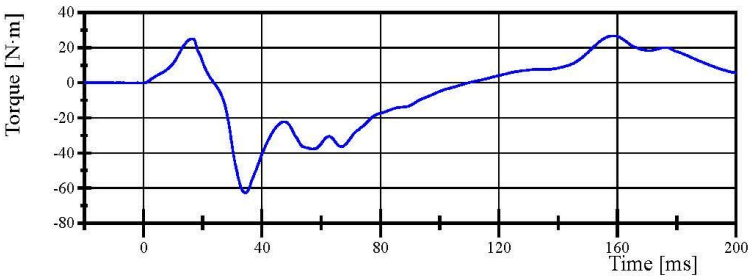
Filter Class: CFC_600
Max: 229.8 N at 168.9 ms
Min: -526.4 N at 17.3 ms

Neck Moment (X)



Filter Class: CFC_600
Max: 35.0 Nm at 16.9 ms
Min: -63.9 Nm at 33.8 ms

Total Neck Occipital Condyles Moment (X)



Filter Class: Without_(Constar
Max: 26.7 N·m at 158.7 ms
Min: -62.7 N·m at 34.3 ms

Specification Source: WordSID 50th(WS) VRTC Nov 2020.xlsx
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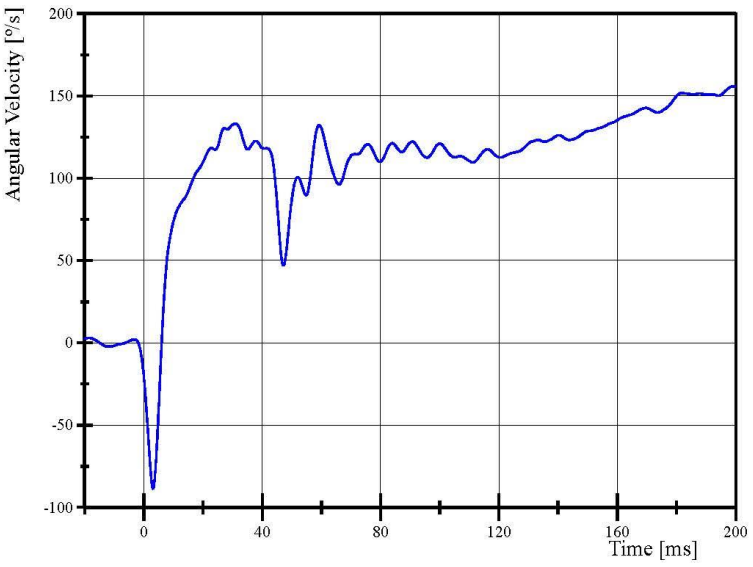
Transportation Research Center Inc.

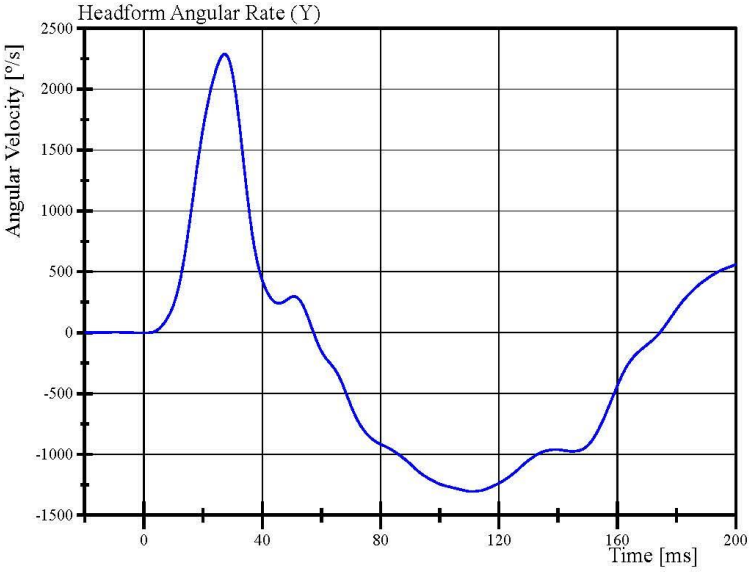
Right Lateral Neck
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/23/2021

Pendulum Angular Rate (Y)



Filter Class: CFC_60
Max: 155.9 °/s at 199.2 ms
Min: -88.6 °/s at 3.1 ms

Headform Angular Rate (Y)



Filter Class: CFC_60
Max: 2,286.4 °/s at 27.3 ms
Min: -1,304.1 °/s at 110.8 ms

Transportation Research Center Inc.

Left Lateral Torsion
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/23/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 ℃	21.3 ℃	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Pendulum Velocity	5.1 - 5.3 m/s	5.18 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	2.09 - 2.37 m/s	2.355 m/s	Yes
Change at 15 ms	3.19 - 3.63 m/s	3.516 m/s	Yes
Change at 20 ms	4.27 - 4.87 m/s	4.670 m/s	Yes
Peak Fixture Rotation	(-41.5) - (-51) °	-47.10 °	Yes
Decay Time to 0 deg from Peak Angle	35 - 43 ms	39.5 ms	Yes
Peak Head Angular Velocity Z-axis	(-1,345) - (-1,655) °/s	-1,548.5 °/s	Yes
Peak Lower Neck Moment Z-axis	34 - 42 N·m	38.3 N·m	Yes

Test meets specifications.

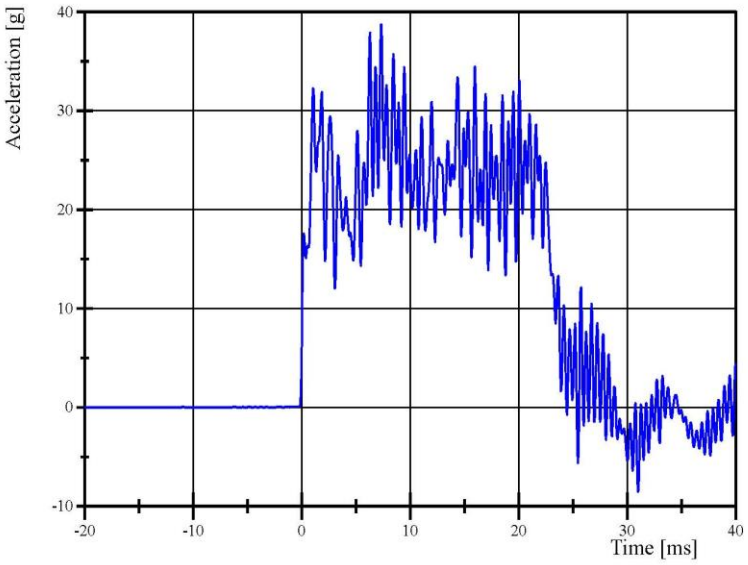
Condition: Used

Comments:
Neck S/N: EE8804

Transportation Research Center Inc.

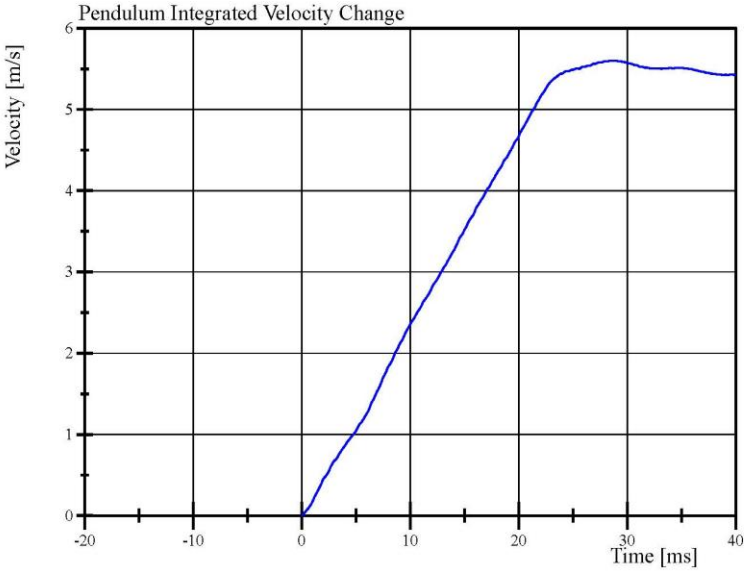
Left Lateral Torsion
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/23/2021

Pendulum Acceleration



Filter Class: CFC_1000
Max: 38.7 g at 7.4 ms
Min: -8.5 g at 31.0 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_1000
Max: 5.6 m/s at 28.5 ms
Min: 0.0 m/s at 0.0 ms

Specification Source: WordSID 50th(WS) VRTC Nov 2020.xlsx
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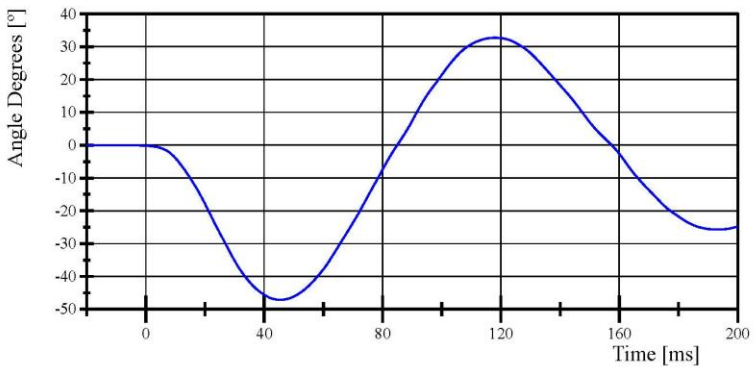
Transportation Research Center Inc.

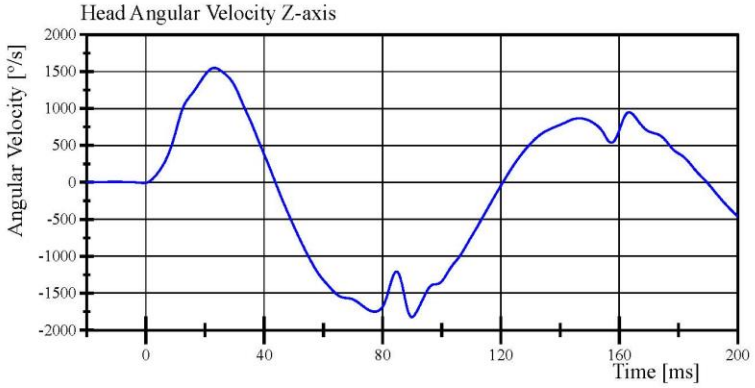
Left Lateral Torsion
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/23/2021

Torsion Fixture Rotation



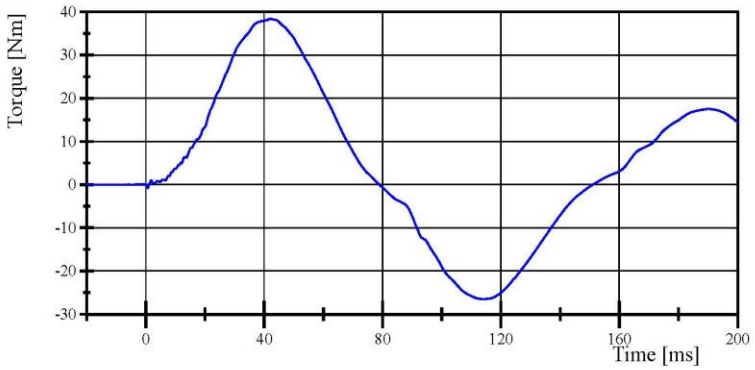
Filter Class: CFC_60
Max: 32.7 ° at 118.0 ms
Min: -47.1 ° at 45.5 ms

Head Angular Velocity Z-axis



Filter Class: CFC_60
Max: 1,548.5 °/s at 23.2 ms
Min: -1,822.7 °/s at 89.9 ms

Lower Neck Moment



Filter Class: CFC_600
Max: 38.3 Nm at 42.4 ms
Min: -26.5 Nm at 113.9 ms

Transportation Research Center Inc.

Right Lateral Torsion
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/23/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 ℃	21.4 ℃	Yes
Relative Humidity	10 - 70 %	35 %	Yes
Pendulum Velocity	5.1 - 5.3 m/s	5.18 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	2.09 - 2.37 m/s	2.352 m/s	Yes
Change at 15 ms	3.19 - 3.63 m/s	3.559 m/s	Yes
Change at 20 ms	4.27 - 4.87 m/s	4.712 m/s	Yes
Peak Fixture Rotation	41.5 - 51 °	46.26 °	Yes
Decay Time to 0 deg from Peak Angle	35 - 43 ms	38.8 ms	Yes
Peak Head Angular Velocity Z-axis	1,345 - 1,655 °/s	1,564.2 °/s	Yes
Peak Lower Neck Moment Z-axis	(-34) - (-42) N·m	-38.9 N·m	Yes

Test meets specifications.

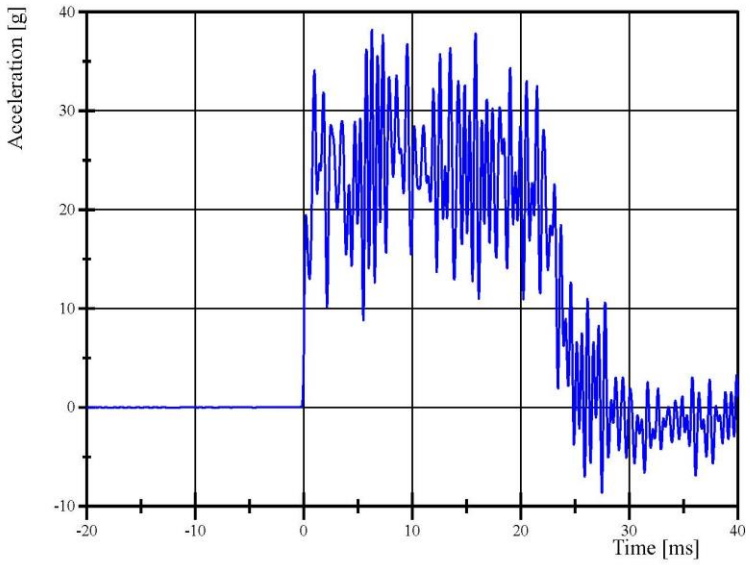
Condition: Used

Comments:
Neck S/N: EE8804

Transportation Research Center Inc.

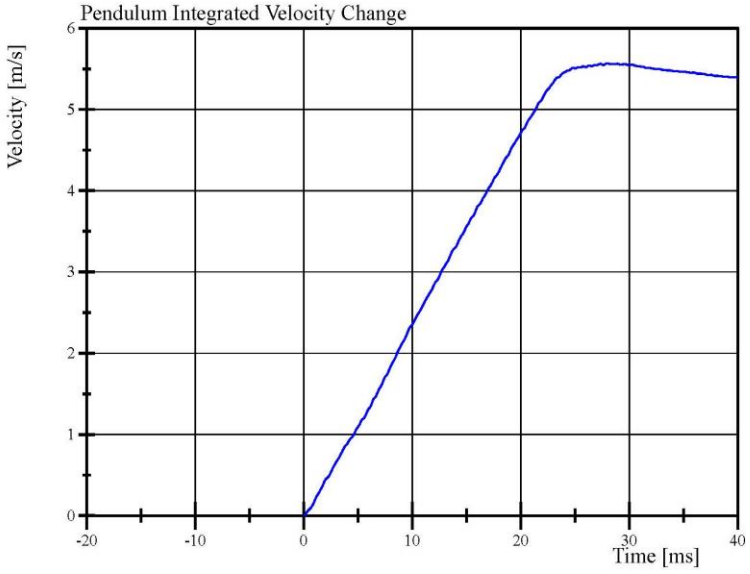
Right Lateral Torsion
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/23/2021

Pendulum Acceleration



Filter Class: CFC_1000
Max: 38.2 g at 6.3 ms
Min: -8.6 g at 27.5 ms

Pendulum Integrated Velocity Change

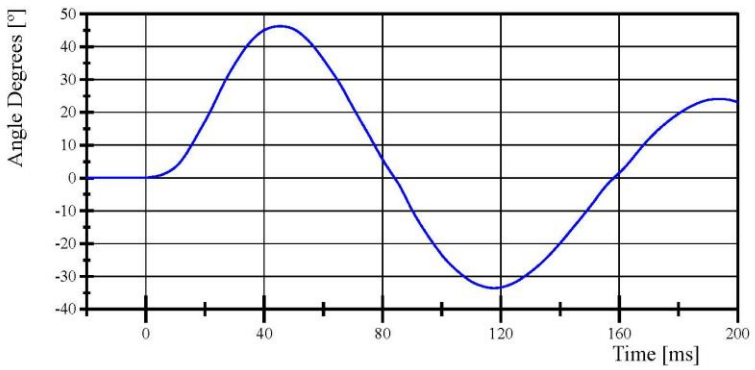


Filter Class: CFC_1000
Max: 5.6 m/s at 28.0 ms
Min: 0.0 m/s at 0.0 ms

Transportation Research Center Inc.

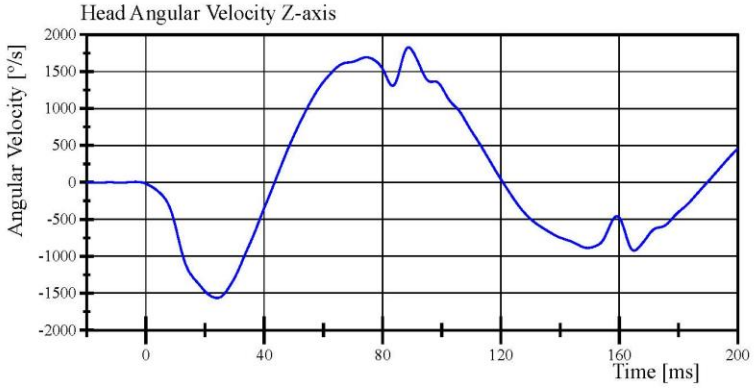
Right Lateral Torsion
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/23/2021

Torsion Fixture Rotation



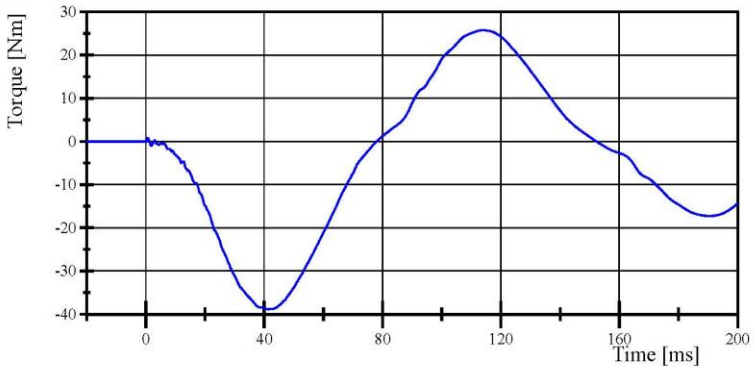
Filter Class: CFC_60
Max: 46.3 ° at 45.3 ms
Min: -33.6 ° at 117.7 ms

Head Angular Velocity Z-axis



Filter Class: CFC_60
Max: 1,826.8 °/s at 88.8 ms
Min: -1,564.2 °/s at 24.1 ms

Lower Neck Moment



Filter Class: CFC_600
Max: 25.8 Nm at 114.1 ms
Min: -38.9 Nm at 41.4 ms

Transportation Research Center Inc.

Left Lateral Shoulder
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/25/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	35 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.30 m/s	Yes
Impactor Force	2,600 - 3,300 N	3,029.0 N	Yes
Shoulder Force	(-1,470) - (-1,800) N	-1,657.3 N	Yes
Shoulder Rib Length Change	37 - 46 mm	38.7 mm	Yes

Test meets specifications.

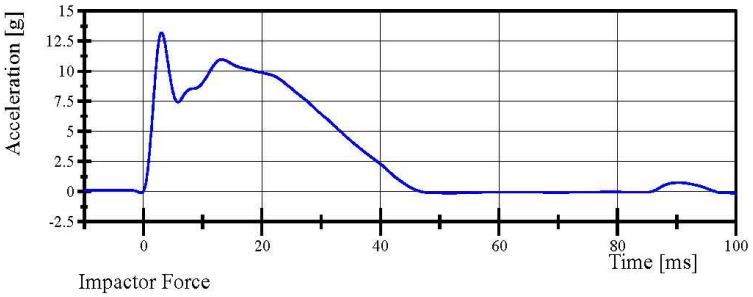
Condition: Used

Comments:
Arm S/N: EG3799
Shoulder Rib S/N: DW1916
RibEye S/N: 124

Transportation Research Center Inc.

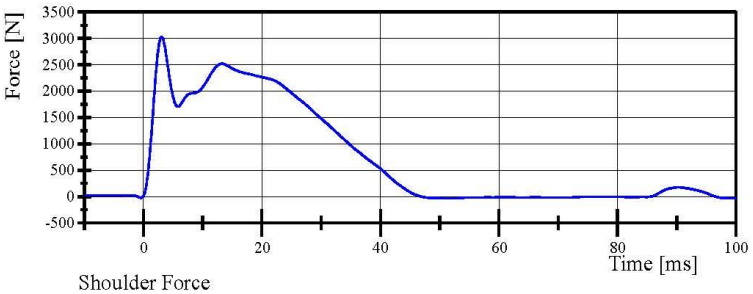
Left Lateral Shoulder
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/25/2021

Impactor Acceleration



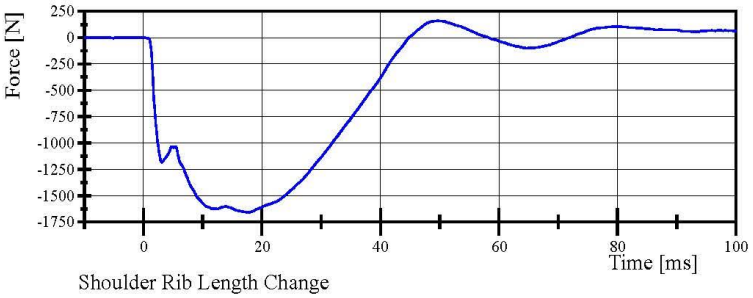
Filter Class: CFC_180
Max: 13.2 g at 3.1 ms
Min: -0.2 g at 100.0 ms

Impactor Force



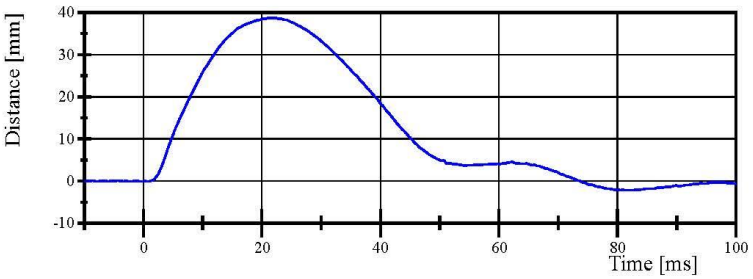
Filter Class: CFC_180
Max: 3,029.0 N at 3.1 ms
Min: -36.2 N at 100.0 ms

Shoulder Force



Filter Class: CFC_600
Max: 158.8 N at 49.8 ms
Min: -1,657.3 N at 17.6 ms

Shoulder Rib Length Change



Filter Class: CFC_600
Max: 38.7 mm at 22.1 ms
Min: -2.2 mm at 81.6 ms

Transportation Research Center Inc.

Left Lateral Thorax with Arm
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/25/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	35 %	Yes
Impactor Velocity	6.6 - 6.8 m/s	6.68 m/s	Yes
Impactor Force	5,300 - 6,200 N	6,073.4 N	Yes
Peak Thorax Rib 1 Length Change	35 - 47 mm	38.0 mm	Yes
Peak Thorax Rib 2 Length Change	46 - 56 mm	47.0 mm	Yes
Peak Thorax Rib 3 Length Change	33.5 - 40.5 mm	35.18 mm	Yes
Peak T4 Acceleration, y-axis	28 - 37 g	36.1 g	Yes
Peak T12 Acceleration, y-axis	22 - 28 g	26.4 g	Yes

Test meets specifications.

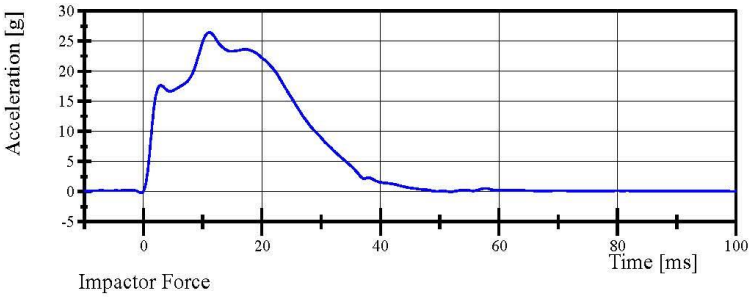
Condition: Used

Comments:
Arm S/N: EG3799
Shoulder Rib S/N: DW1916
Thorax Rib 1 S/N: EB5400
Thorax Rib 2 S/N: EB5401
Thorax Rib 3 S/N: EB5402
RibEye S/N: 124

Transportation Research Center Inc.

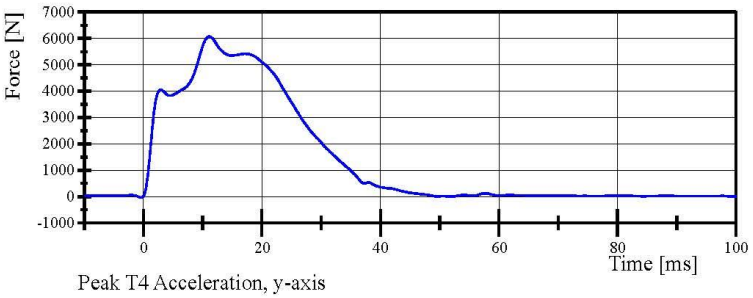
Left Lateral Thorax with Arm
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/25/2021

Impactor Acceleration



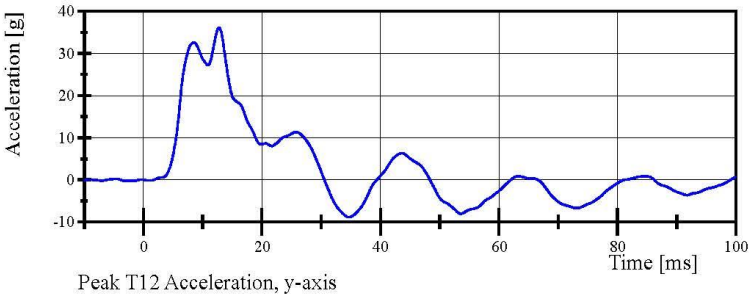
Filter Class: CFC_180
Max: 26.5 g at 11.2 ms
Min: -0.2 g at -0.4 ms

Impactor Force



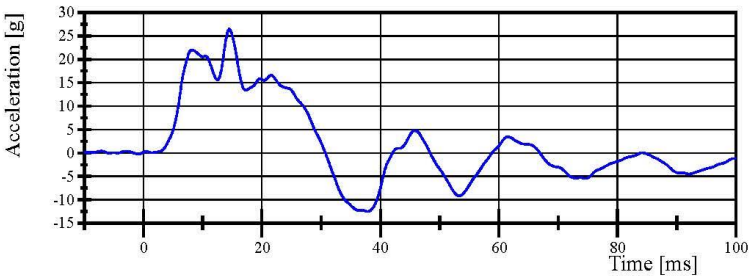
Filter Class: CFC_180
Max: 6,073.4 N at 11.2 ms
Min: -40.8 N at -0.4 ms

Peak T4 Acceleration, y-axis



Filter Class: CFC_180
Max: 36.1 g at 12.8 ms
Min: -8.9 g at 34.7 ms

Peak T12 Acceleration, y-axis

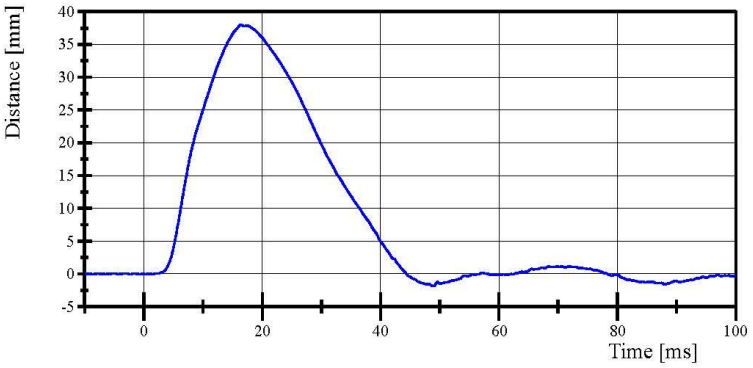


Filter Class: CFC_180
Max: 26.4 g at 14.5 ms
Min: -12.5 g at 37.8 ms

Transportation Research Center Inc.

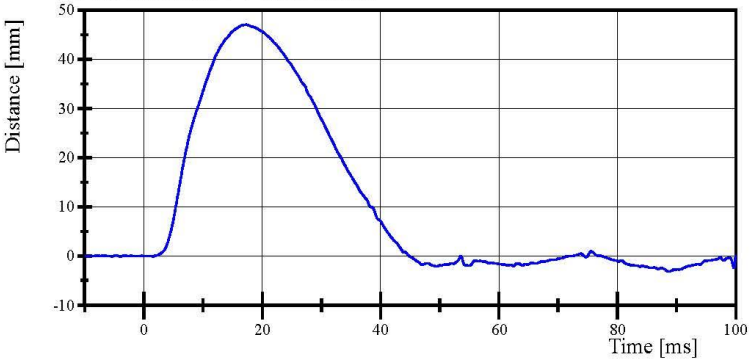
Left Lateral Thorax with Arm
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/25/2021

Peak Thorax Rib 1 Length Change



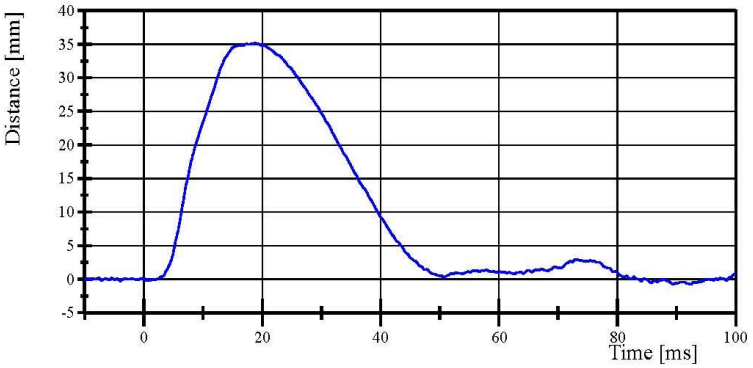
Filter Class: CFC_600
Max: 38.0 mm at 16.4 ms
Min: -1.9 mm at 48.9 ms

Peak Thorax Rib 2 Length Change



Filter Class: CFC_600
Max: 47.0 mm at 17.3 ms
Min: -3.2 mm at 88.7 ms

Peak Thorax Rib 3 Length Change



Filter Class: CFC_600
Max: 35.2 mm at 18.8 ms
Min: -0.8 mm at 92.5 ms

Transportation Research Center Inc.

Left Lateral Thorax without Arm
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/25/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.30 m/s	Yes
Impactor Force	3,200 - 3,800 N	3,560.8 N	Yes
Peak Thorax Rib 1 Length Change	33 - 43 mm	36.2 mm	Yes
Peak Thorax Rib 2 Length Change	35 - 43 mm	39.4 mm	Yes
Peak Thorax Rib 3 Length Change	32 - 40 mm	33.4 mm	Yes
Peak T4 Acceleration, y-axis	14 - 20 g	17.3 g	Yes
Peak T12 Acceleration, y-axis	14 - 22 g	17.8 g	Yes

Test meets specifications.

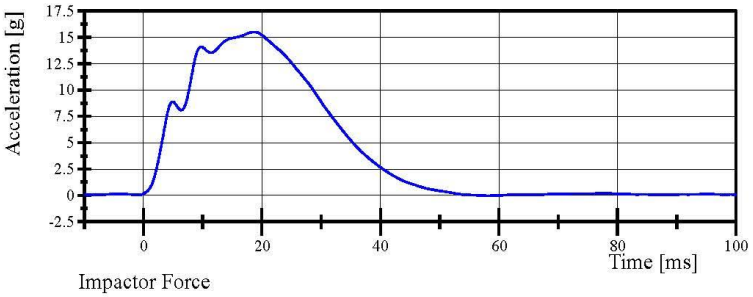
Condition: Used

Comments:
Thorax Rib 1 S/N: EB5400
Thorax Rib 2 S/N: EB5401
Thorax Rib 3 S/N: EB5402
RibEye S/N: 124

Transportation Research Center Inc.

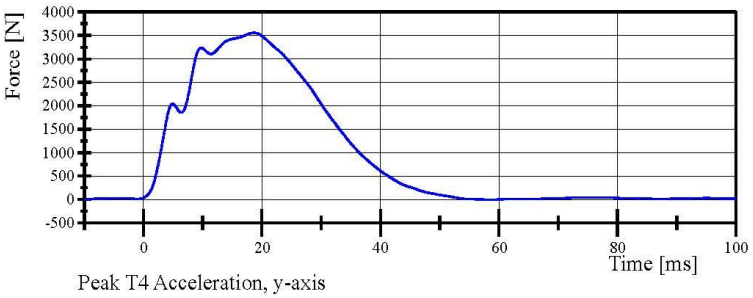
Left Lateral Thorax without Arm
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/25/2021

Impactor Acceleration



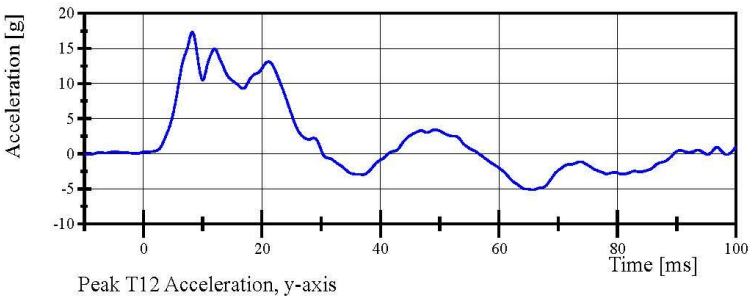
Filter Class: CFC_180
Max: 15.5 g at 18.7 ms
Min: -0.0 g at 58.2 ms

Impactor Force



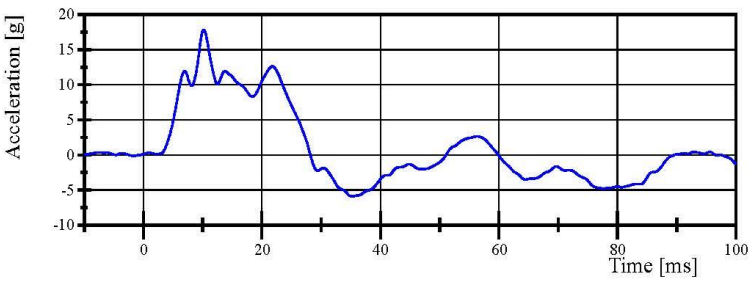
Filter Class: CFC_180
Max: 3,560.8 N at 18.7 ms
Min: -4.9 N at 58.2 ms

Peak T4 Acceleration, y-axis



Filter Class: CFC_180
Max: 17.3 g at 8.3 ms
Min: -5.1 g at 65.8 ms

Peak T12 Acceleration, y-axis



Filter Class: CFC_180
Max: 17.8 g at 10.2 ms
Min: -5.9 g at 35.2 ms

Transportation Research Center Inc.

Left Lateral Abdomen
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/25/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Force	2,700 - 3,100 N	3,045.1 N	Yes
Peak Abdomen Rib 1 Length Change	32.5 - 39.5 mm	34.64 mm	Yes
Peak Abdomen Rib 2 Length Change	32 - 38 mm	33.7 mm	Yes
Peak T12 Acceleration, y-axis	14.5 - 19.5 g	16.77 g	Yes

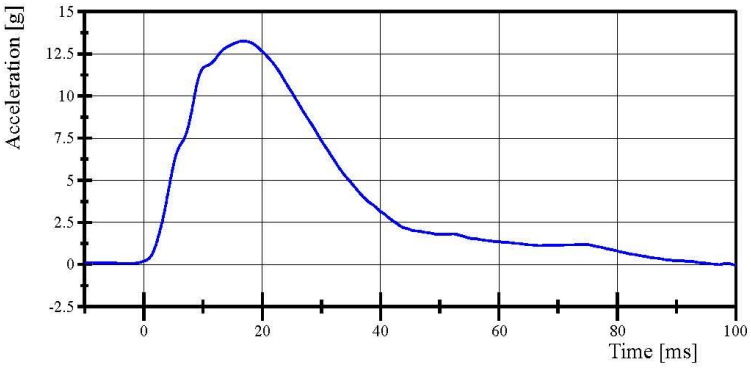
Test meets specifications.

Condition: Used
Comments:
Abdomen Rib #1 S/N: DY5252
Abdomen Rib #2 S/N: DY5253
RibEye S/N: 124

Transportation Research Center Inc.

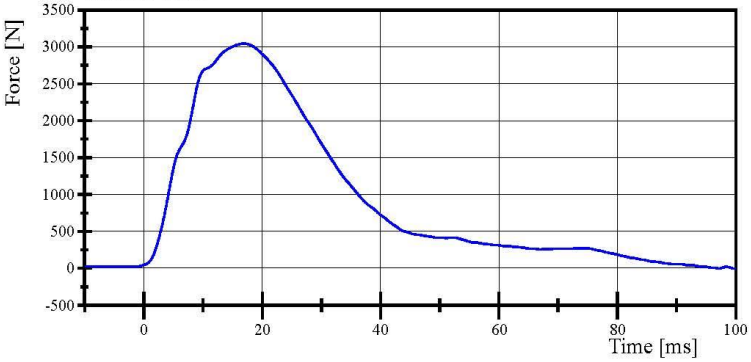
Left Lateral Abdomen
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/25/2021

Impactor Acceleration



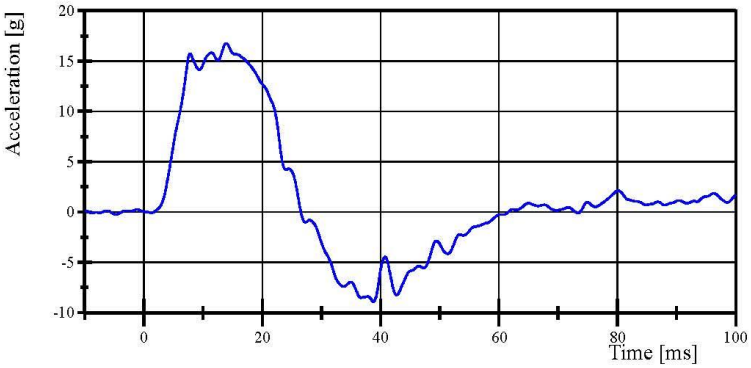
Filter Class: CFC_180
Max: 13.3 g at 16.9 ms
Min: -0.0 g at 100.0 ms

Impactor Force



Filter Class: CFC_180
Max: 3,045.1 N at 16.9 ms
Min: -6.6 N at 100.0 ms

Peak T12 Acceleration, y-axis

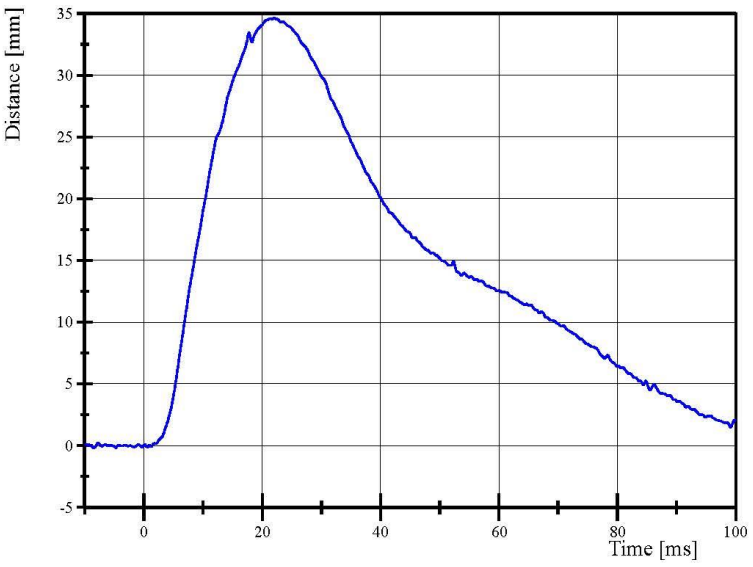


Filter Class: CFC_180
Max: 16.8 g at 13.9 ms
Min: -8.9 g at 38.8 ms

Transportation Research Center Inc.

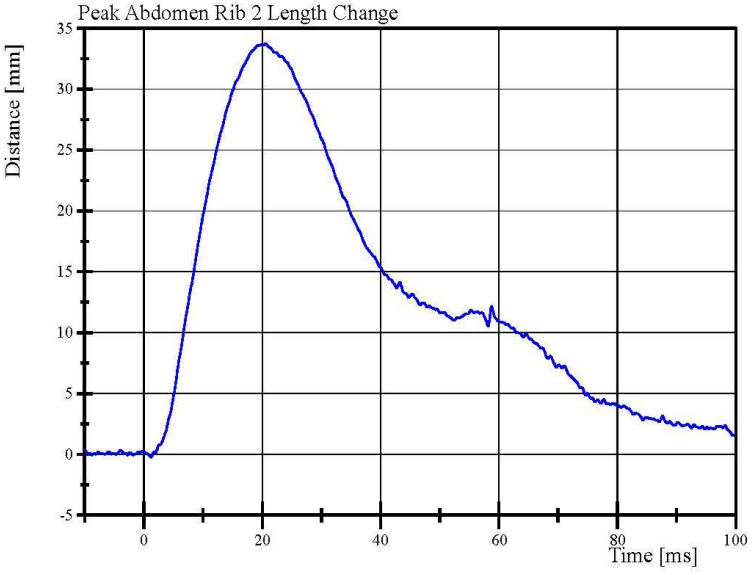
Left Lateral Abdomen
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/25/2021

Peak Abdomen Rib 1 Length Change



Filter Class: CFC_600
Max: 34.6 mm at 22.1 ms
Min: -0.2 mm at -8.4 ms

Peak Abdomen Rib 2 Length Change



Filter Class: CFC_600
Max: 33.7 mm at 20.6 ms
Min: -0.2 mm at 1.2 ms

Transportation Research Center Inc.

Left Lateral Pelvis
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/25/2021

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Impactor Velocity	6.6 - 6.8 m/s	6.71 m/s	Yes
Impactor Force	6,800 - 8,200 N	7,502.0 N	Yes
Pelvis Lateral Acceleration	38.5 - 48.5 g	41.70 g	Yes
Peak T12 Acceleration, y-axis	10 - 14 g	12.6 g	Yes
Pubic Lateral Force	(-1,300) - (-1,590) N	-1,372.9 N	Yes
Sacroiliac Lateral Force	(-1,860) - (-2,280) N	-2,083.6 N	Yes

Test meets specifications.

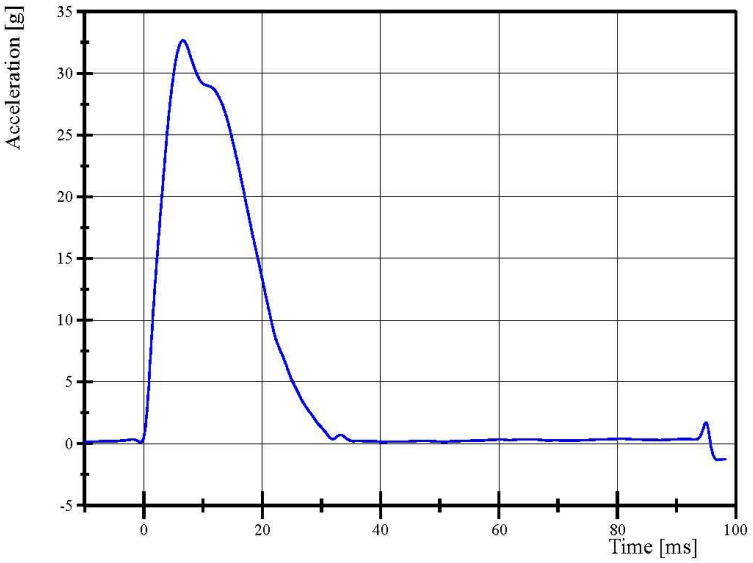
Condition: Used

Comments:
Pelvis S/N: EC3628

Transportation Research Center Inc.

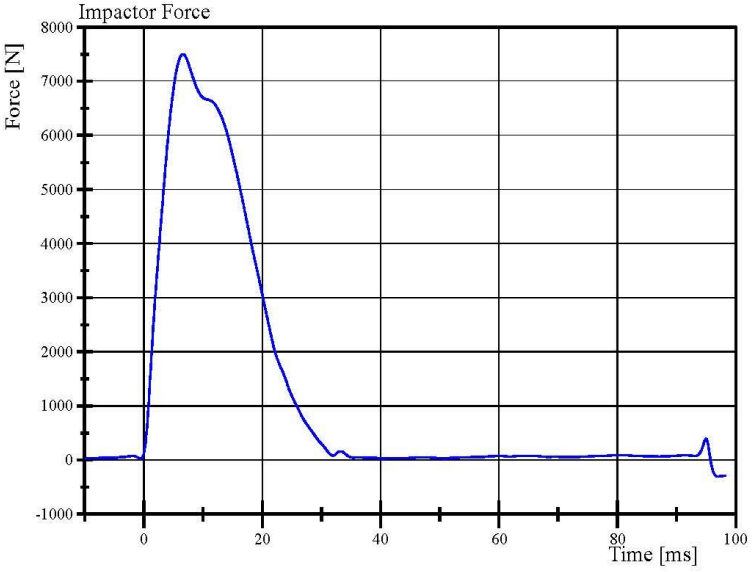
Left Lateral Pelvis
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/25/2021

Impactor Acceleration



Filter Class: CFC_180
Max: 32.7 g at 6.6 ms
Min: -1.3 g at 97.0 ms

Impactor Force



Filter Class: CFC_180
Max: 7,502.0 N at 6.6 ms
Min: -302.4 N at 97.0 ms

Specification Source: WordSID 50th(WS) VRTC Nov 2020.xlsx
WorldSID 50th_Qalification Manual 11_09_2020

02.25.2021 13:58:39 1033

Report Number: EB8888_WSH07

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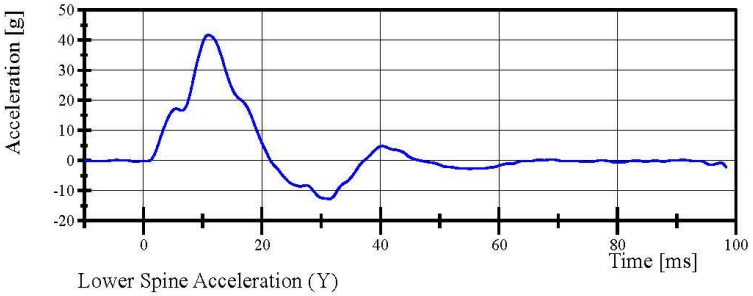
Transportation Research Center Inc.

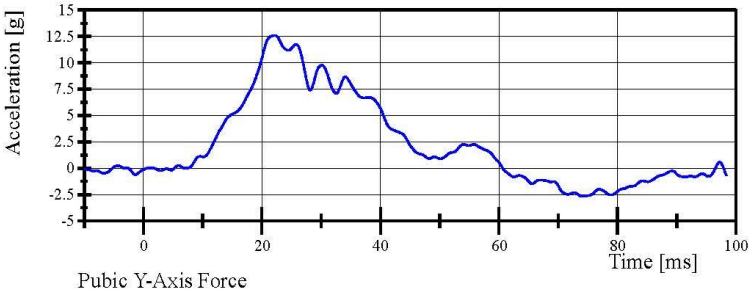
Left Lateral Pelvis
WorldSID 50th Serial No. EB8888 Certification No. 7-1
Test Date: 2/25/2021

Pelvis Y-Axis Acceleration



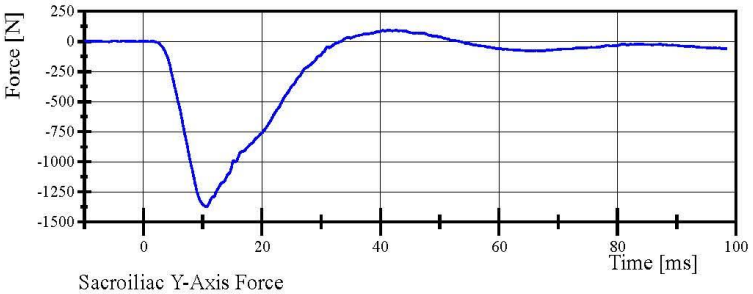
Filter Class: CFC_180
Max: 41.7 g at 11.0 ms
Min: -12.8 g at 31.3 ms

Lower Spine Acceleration (Y)



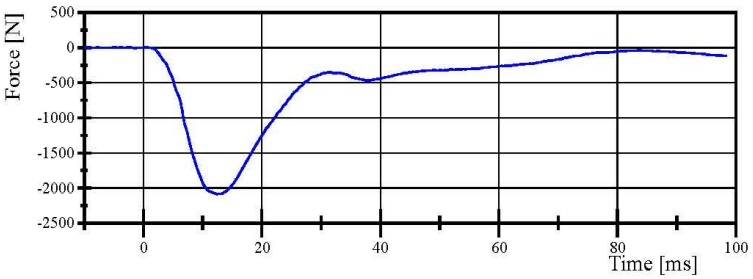
Filter Class: CFC_180
Max: 12.6 g at 22.2 ms
Min: -2.7 g at 74.0 ms

Pubic Y-Axis Force



Filter Class: CFC_600
Max: 92.7 N at 41.3 ms
Min: -1,372.9 N at 10.6 ms

Sacroiliac Y-Axis Force



Filter Class: CFC_600
Max: 3.8 N at -2.6 ms
Min: -2,083.6 N at 12.4 ms

Pre-Test Calibration Sheets
Passenger S/N DK1774

WorldSID-50M Head Front Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components
Head: DK1637

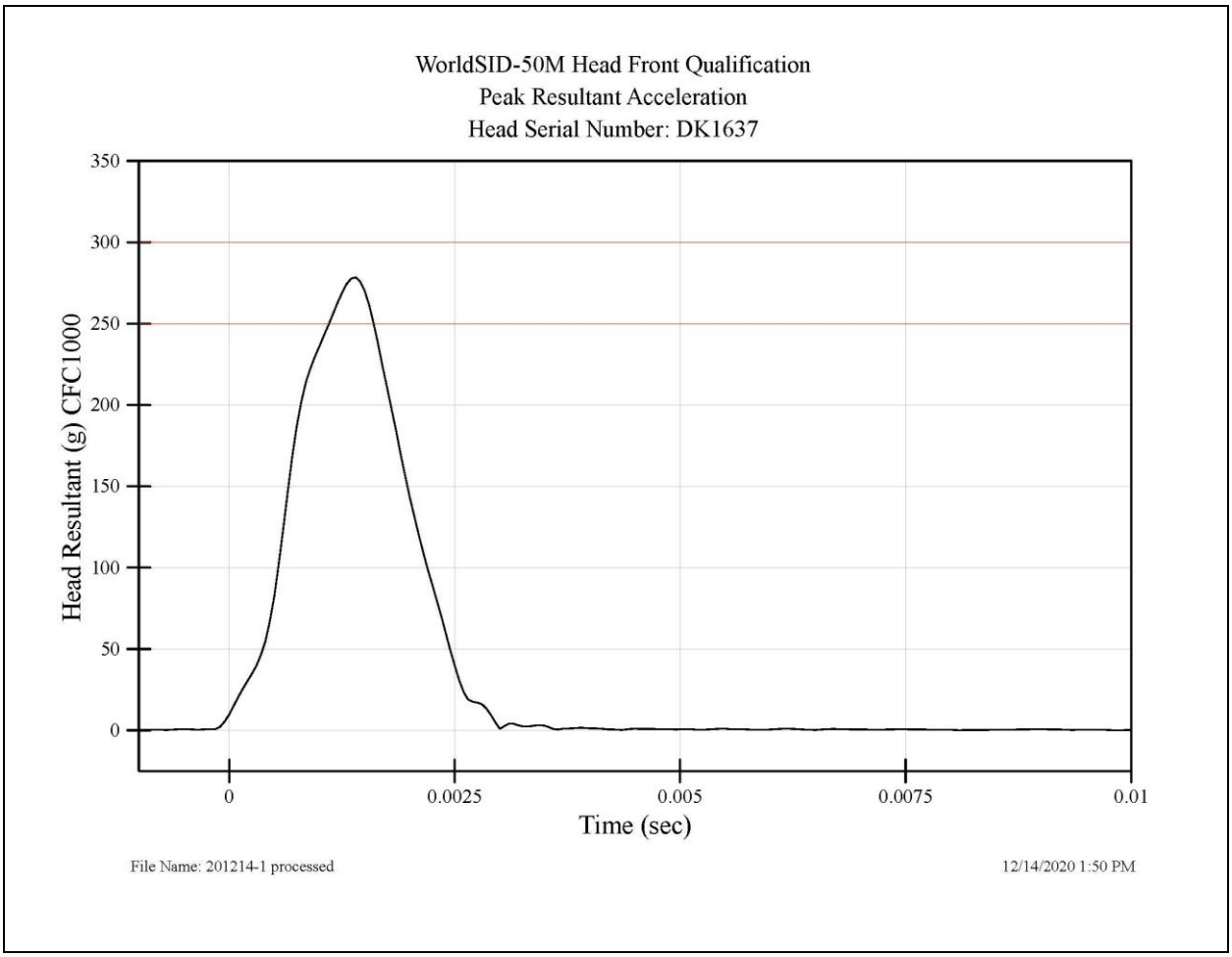
Test ID: 201214-1
Test Date: 12/14/2020
Test Time: 1:50 PM

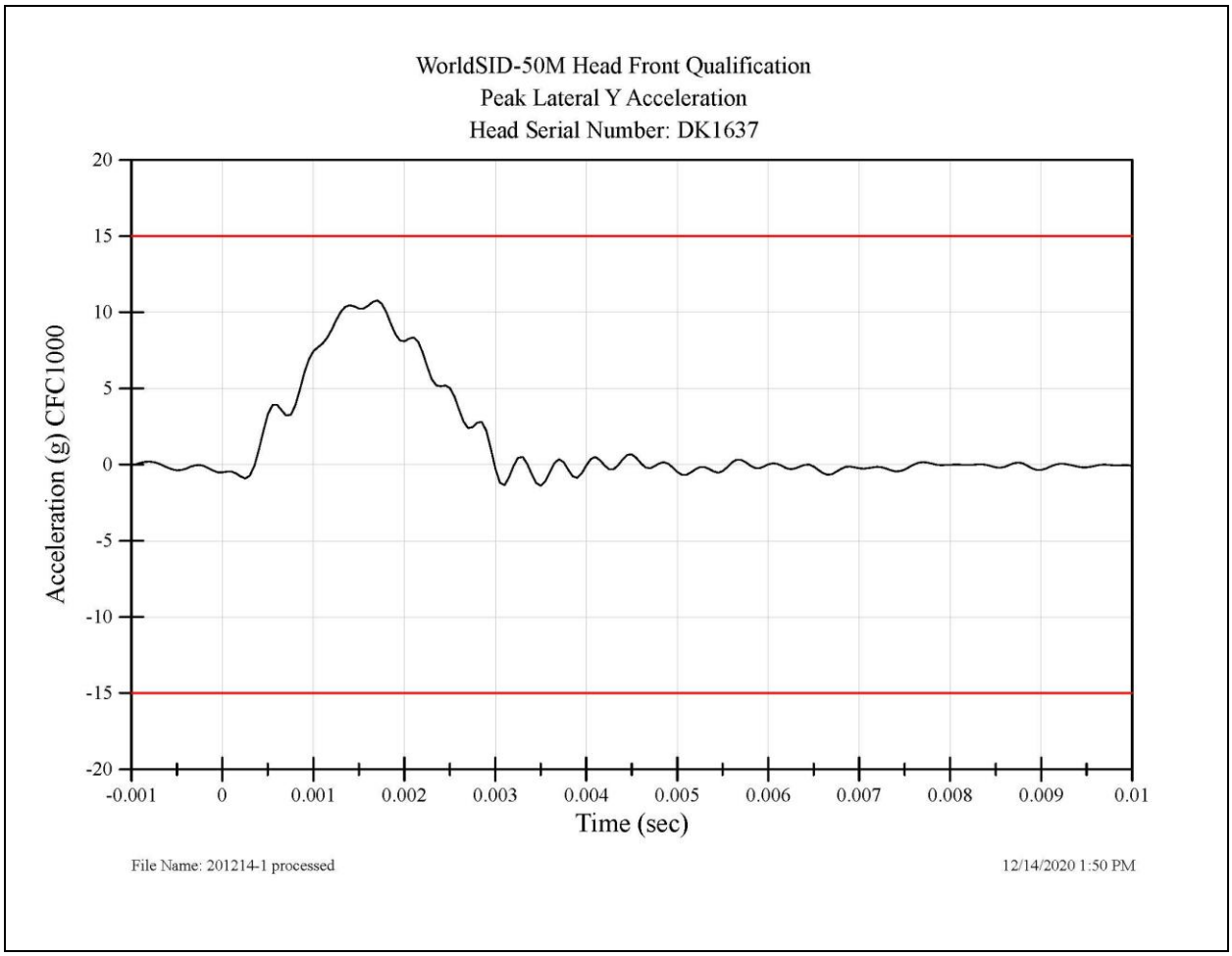
Test Results

Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	20.8	Pass
Test Humidity (%)	10 - 70	31	Pass
Peak Resultant Acceleration (g)	250.0 - 300.0	278.4	Pass
Peak Acceleration, y-axis (g)	-15.00 - 15.00	10.78	Pass
Oscillations occurring after the main acceleration pulse (%)	-10.0 - 10.0	1.45	Pass

* WorldSID-50M Qualification Manual - Humanetics WorldSID Small Female - Rev E

File Name: 201214-1 processed


WorldSID-50M Head Front Qualification
Peak Resultant Acceleration
Head Serial Number: DK1637
Head Resultant (g) CFC1000
350
300
250
200
150
100
50
0
0
0.0025
0.005
0.0075
0.01
Time (sec)
File Name: 201214-1 processed
12/14/2020 1:50 PM


WorldSID-50M Head Front Qualification
Peak Lateral Y Acceleration
Head Serial Number: DK1637
Acceleration (g) CFC1000
20
15
10
5
0
-5
-10
-15
-20
-0.001
0
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009
0.01
Time (sec)
File Name: 201214-1 processed
12/14/2020 1:50 PM

WorldSID-05F Head Left Lateral Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components
Head: DK1637

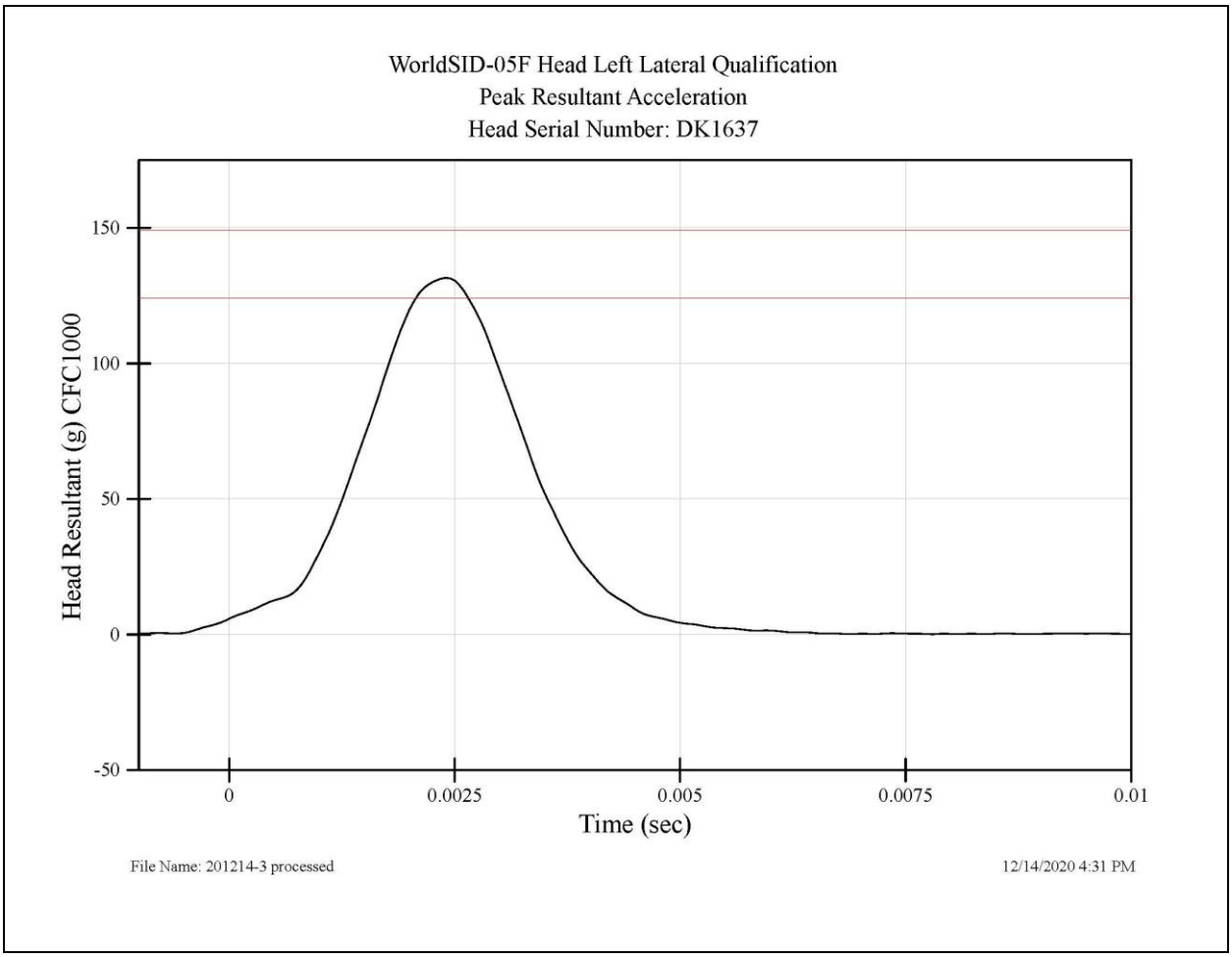
Test ID: 201214-3
Test Date: 12/14/2020
Test Time: 4:31 PM

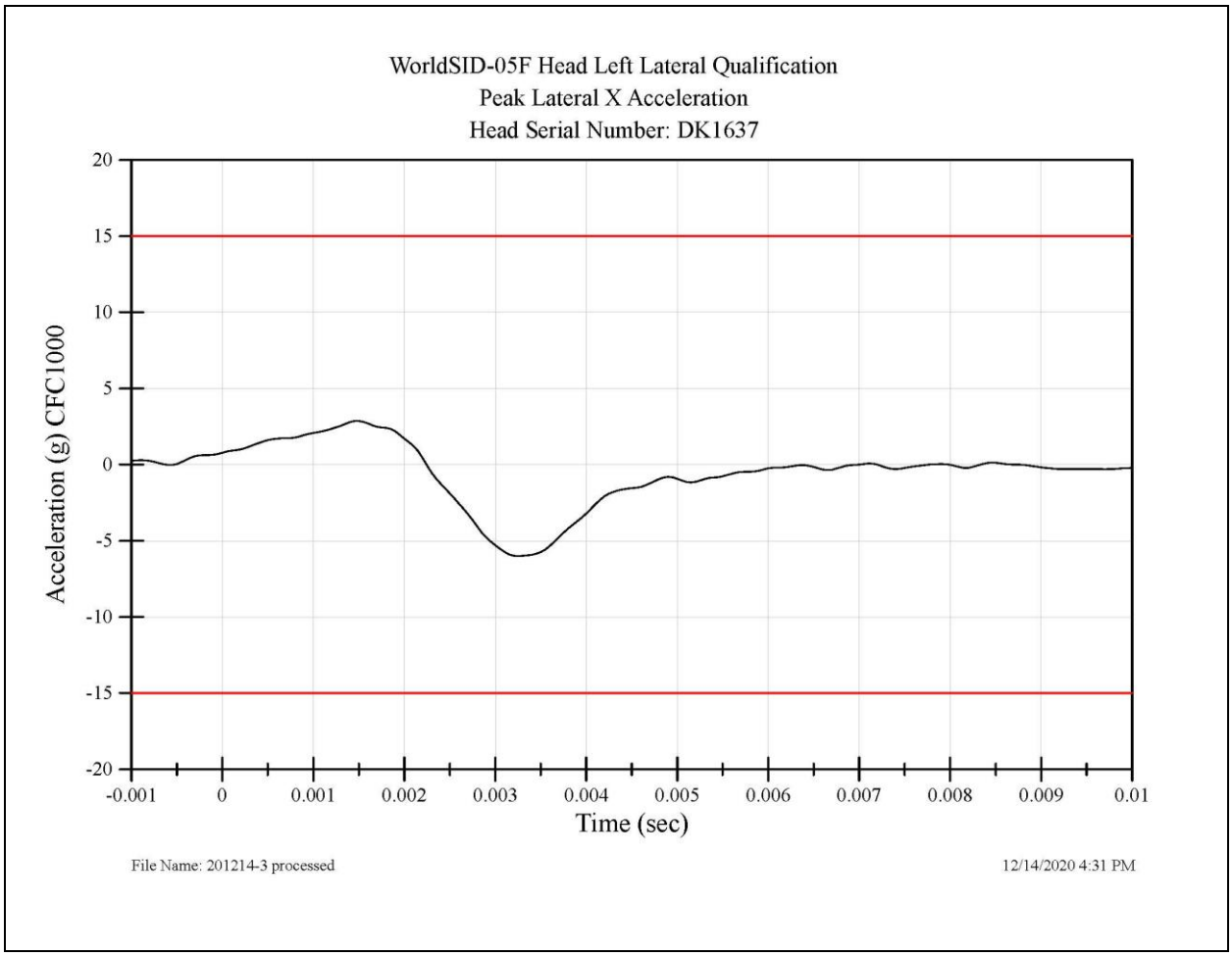
Test Results

Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	20.9	Pass
Test Humidity (%)	10 - 70	30	Pass
Peak Resultant Acceleration (g)	124.0 - 149.0	131.5	Pass
Peak Acceleration, x-axis (g)	-15.00 - 15.00	-6.00	Pass
Oscillations occurring after the main acceleration pulse (%)	-10.0 - 10.0	1.15	Pass

* WorldSID-05F Qualification Manual - Humanetics WorldSID Small Female - Rev E

File Name: 201214-3 processed


WorldSID-05F Head Left Lateral Qualification
Peak Resultant Acceleration
Head Serial Number: DK1637
Head Resultant (g) CFC1000
150
100
50
0
-50
0
0.0025
0.005
0.0075
0.01
Time (sec)
File Name: 201214-3 processed
12/14/2020 4:31 PM


WorldSID-05F Head Left Lateral Qualification
Peak Lateral X Acceleration
Head Serial Number: DK1637
Acceleration (g) CFC1000
20
15
10
5
0
-5
-10
-15
-20
-0.001
0
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009
0.01
Time (sec)
File Name: 201214-3 processed
12/14/2020 4:31 PM

WorldSID-05F Head Right Lateral Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components
Head: DK1637

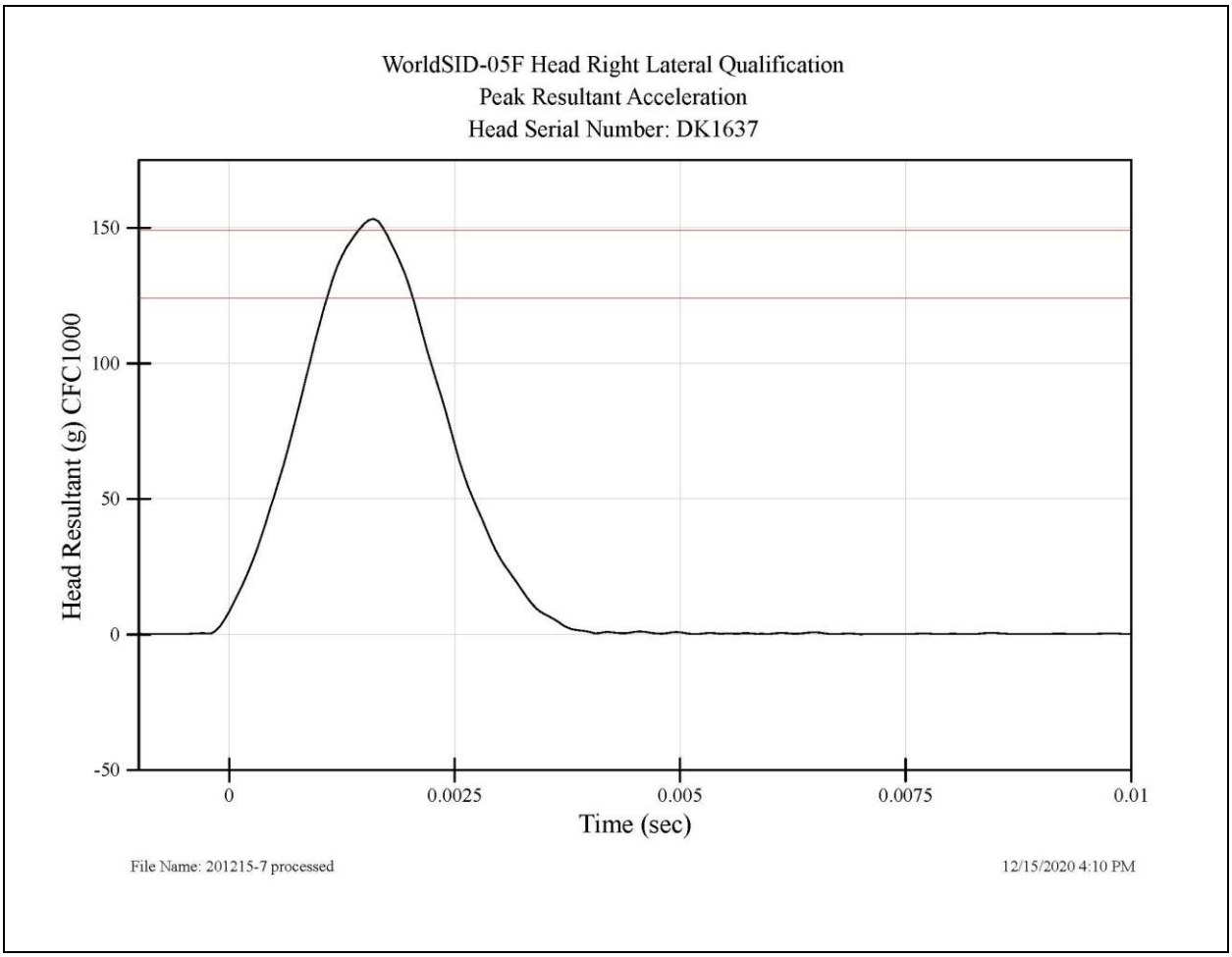
Test ID: 201215-7
Test Date: 12/15/2020
Test Time: 4:10 PM

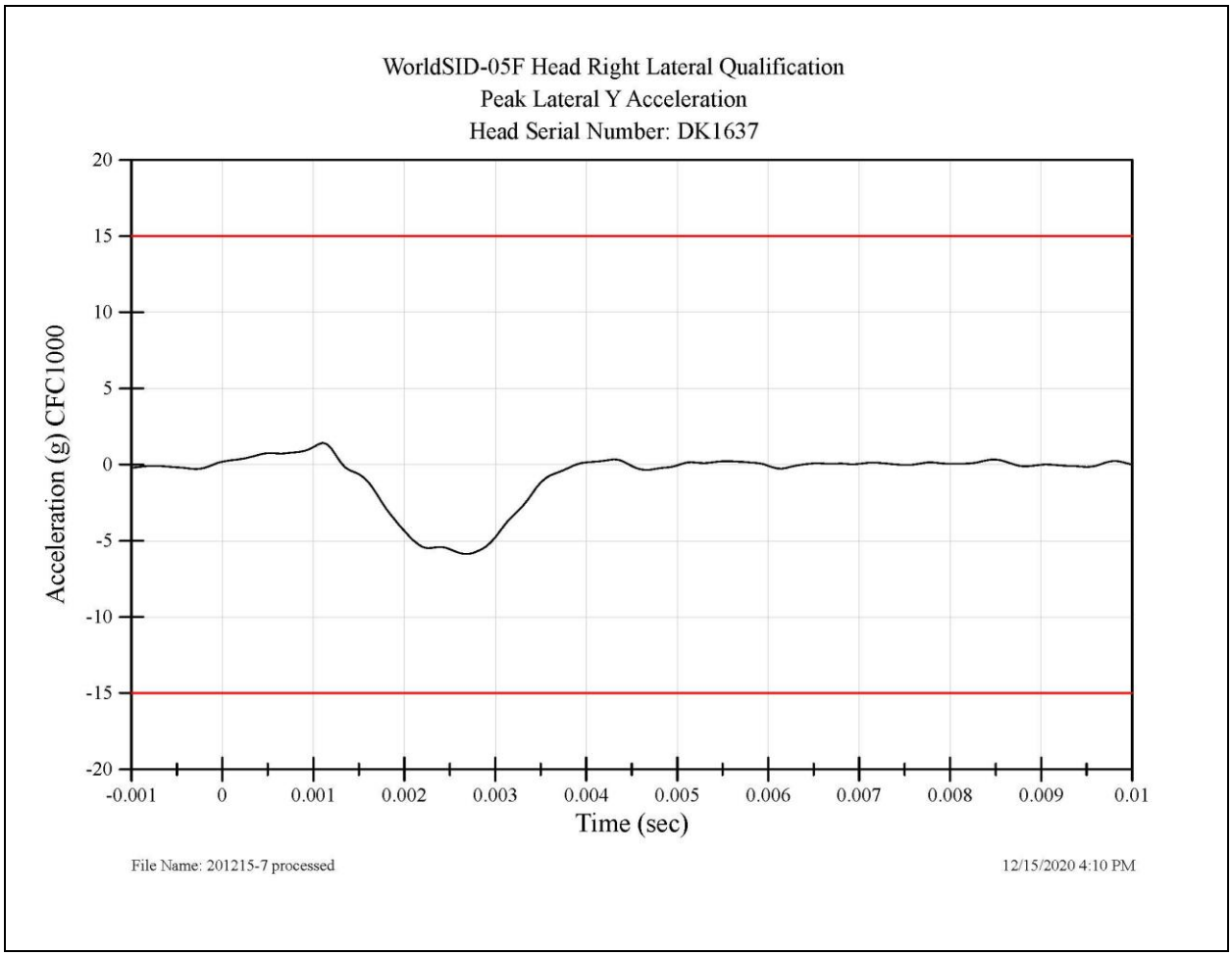
Test Results

Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	21.4	Pass
Test Humidity (%)	10 - 70	25	Pass
Peak Resultant Acceleration (g)	124.0 - 149.0	153.3	Fail
Peak Acceleration, x-axis (g)	-15.00 - 15.00	-5.87	Pass
Oscillations occurring after the main acceleration pulse (%)	-10.0 - 10.0	0.75	Pass

* WorldSID-05F Qualification Manual - Humanetics WorldSID Small Female - Rev E

File Name: 201215-7 processed


WorldSID-05F Head Right Lateral Qualification
Peak Resultant Acceleration
Head Serial Number: DK1637
Head Resultant (g) CFC1000
150
100
50
0
-50
0
0.0025
0.005
0.0075
0.01
Time (sec)
File Name: 201215-7 processed
12/15/2020 4:10 PM


WorldSID-05F Head Right Lateral Qualification
Peak Lateral Y Acceleration
Head Serial Number: DK1637
Acceleration (g) CFC1000
20
15
10
5
0
-5
-10
-15
-20
-0.001
0
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009
0.01
Time (sec)
File Name: 201215-7 processed
12/15/2020 4:10 PM

WorldSID-05F Neck Left Lateral Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components
Neck: DX6209

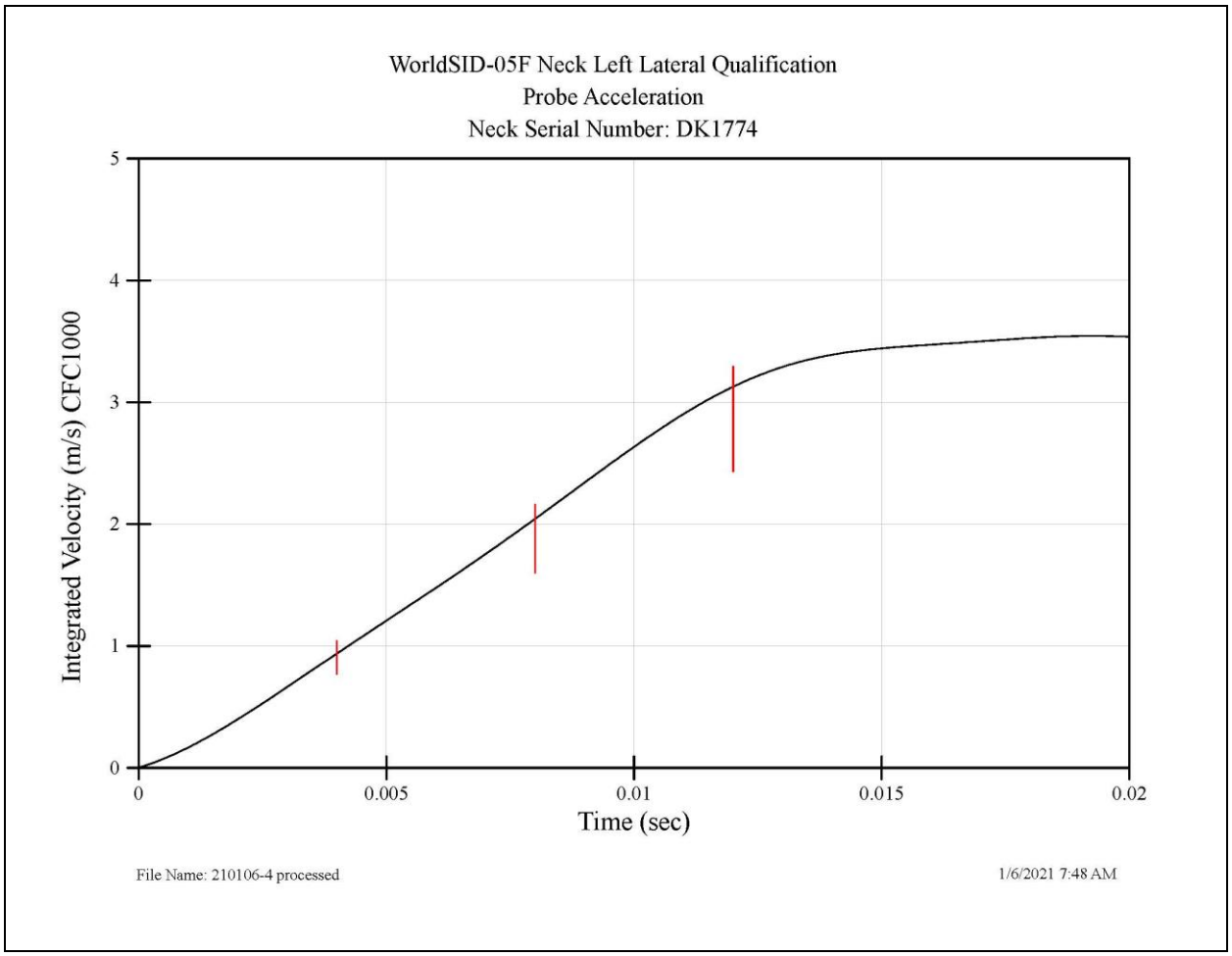
Test ID: 210106-4
Test Date: 1/6/2021
Test Time: 7:48 AM

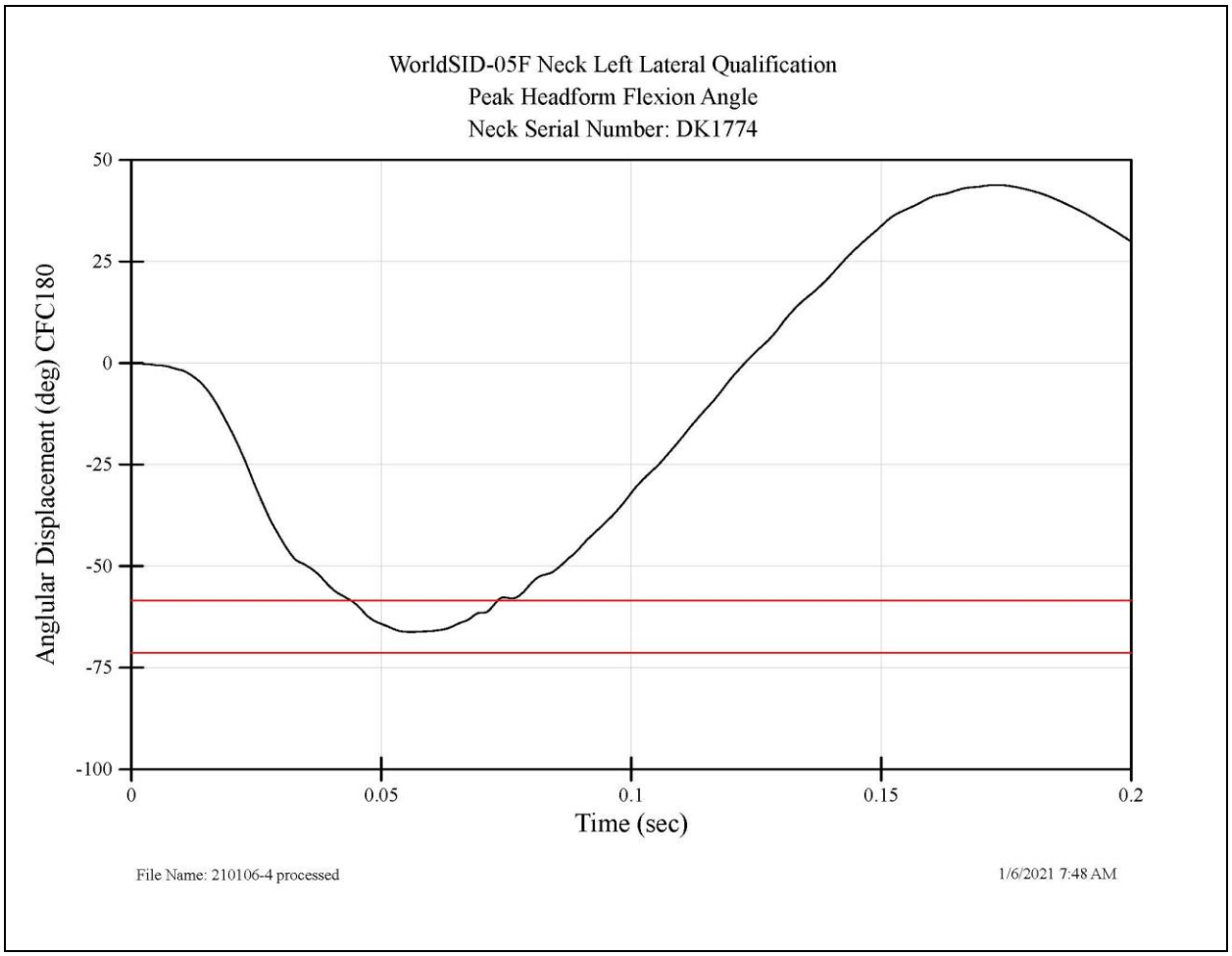
Test Results

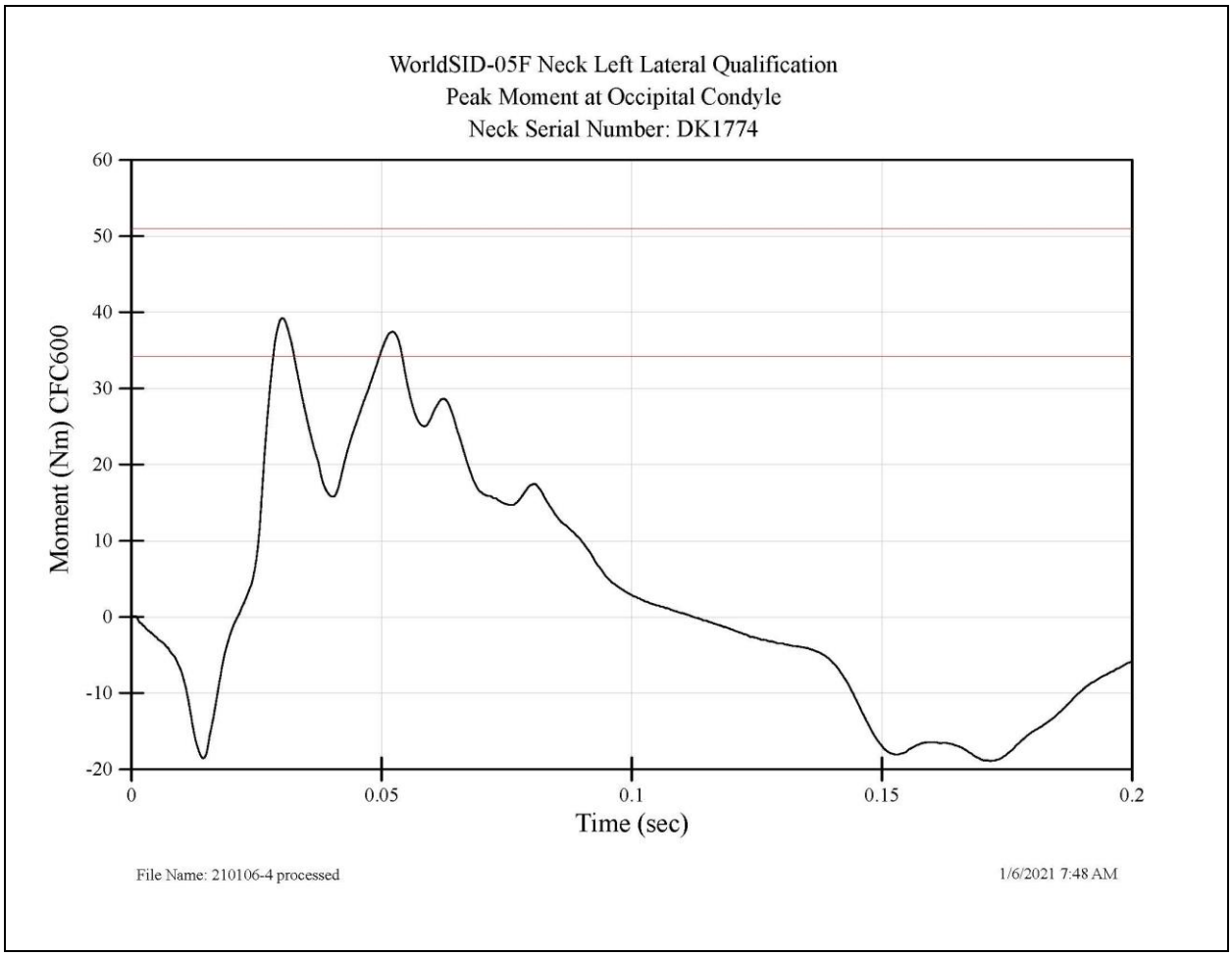
Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	21.1	Pass
Test Humidity (%)	10 - 70	30	Pass
Test Velocity (m/s)	3.30 - 3.50	3.41	Pass
Pendulum Velocity at 4 ms after T0 (m/s)	0.77 - 1.04	0.94	Pass
Pendulum Velocity at 8 ms after T0 (m/s)	1.60 - 2.16	2.04	Pass
Pendulum Velocity at 12 ms after T0 (m/s)	2.43 - 3.29	3.13	Pass
Peak Headform Flexion Angle (deg)	-71.4 - (-58.5)	-66.2	Pass
Peak Headform Flexion Angle Decay Time to 0 degrees (ms)	57.3 - 76.5	66.8	Pass
Peak X-Axis Moment at Occipital Condyle (Nm)	34.2 - 51.0	39.2	Pass
Peak X-Axis Moment at Occipital Condyle Decay Time to 0 Nm (ms)	69.4 - 93.3	82.2	Pass

* WorldSID-05F Qualification Manual - Humanetics WorldSID Small Female - Rev E

File Name: 210106-4 processed


WorldSID-05F Neck Left Lateral Qualification
Probe Acceleration
Neck Serial Number: DK1774
Integrated Velocity (m/s) CFC1000
5
4
3
2
1
0
0
0.005
0.01
0.015
0.02
Time (sec)
File Name: 210106-4 processed
1/6/2021 7:48 AM


WorldSID-05F Neck Left Lateral Qualification
Peak Headform Flexion Angle
Neck Serial Number: DK1774
Anglular Displacement (deg) CFC180
50
25
0
-25
-50
-75
-100
0
0.05
0.1
0.15
0.2
Time (sec)
File Name: 210106-4 processed
1/6/2021 7:48 AM


WorldSID-05F Neck Left Lateral Qualification
Peak Moment at Occipital Condyle
Neck Serial Number: DK1774
Moment (Nm) CFC600
60
50
40
30
20
10
0
-10
-20
0
0.05
0.1
0.15
0.2
Time (sec)
File Name: 210106-4 processed
1/6/2021 7:48 AM

WorldSID-05F Neck Right Lateral Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components
Neck: DX6209

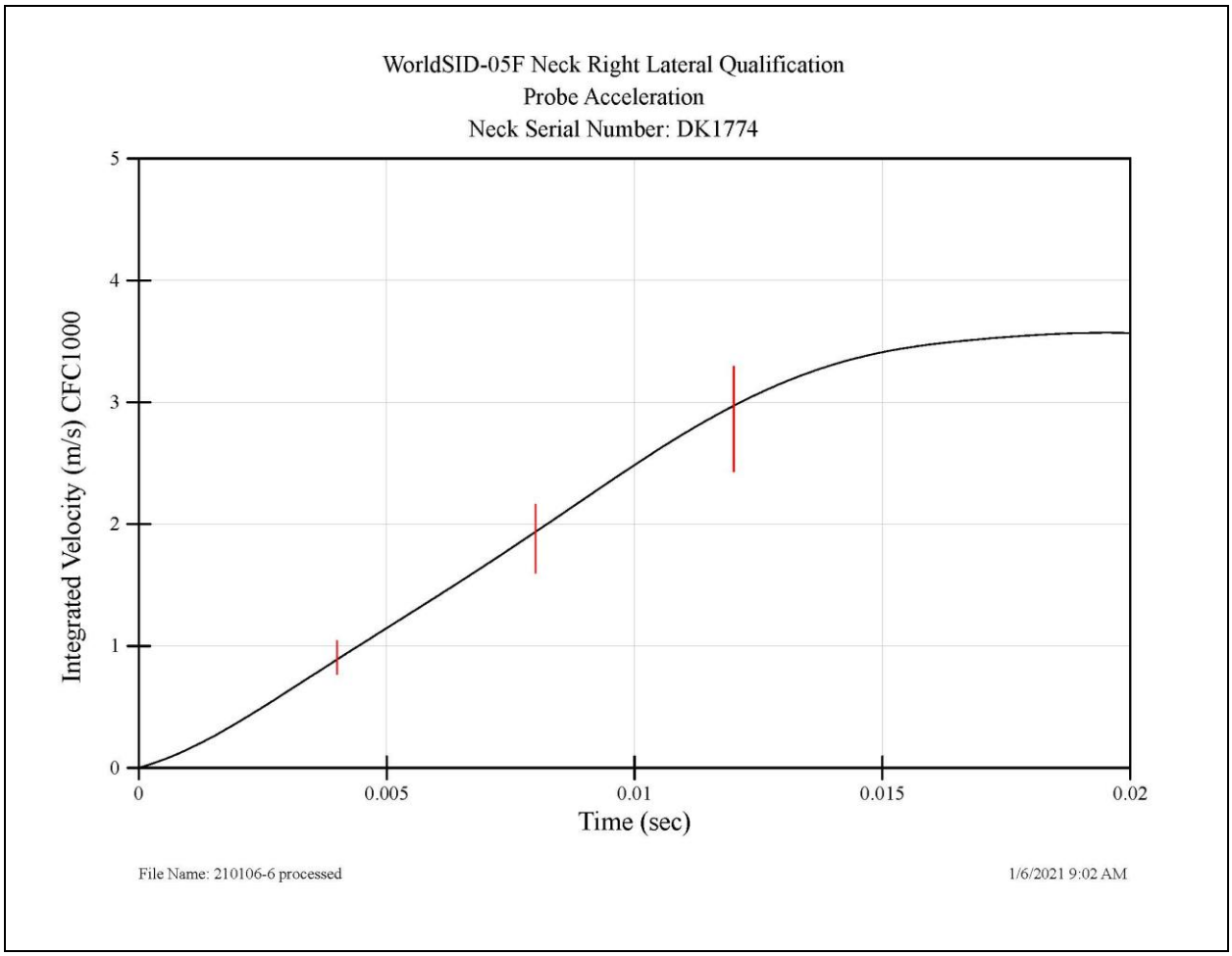
Test ID: 210106-6
Test Date: 1/6/2021
Test Time: 9:02 AM

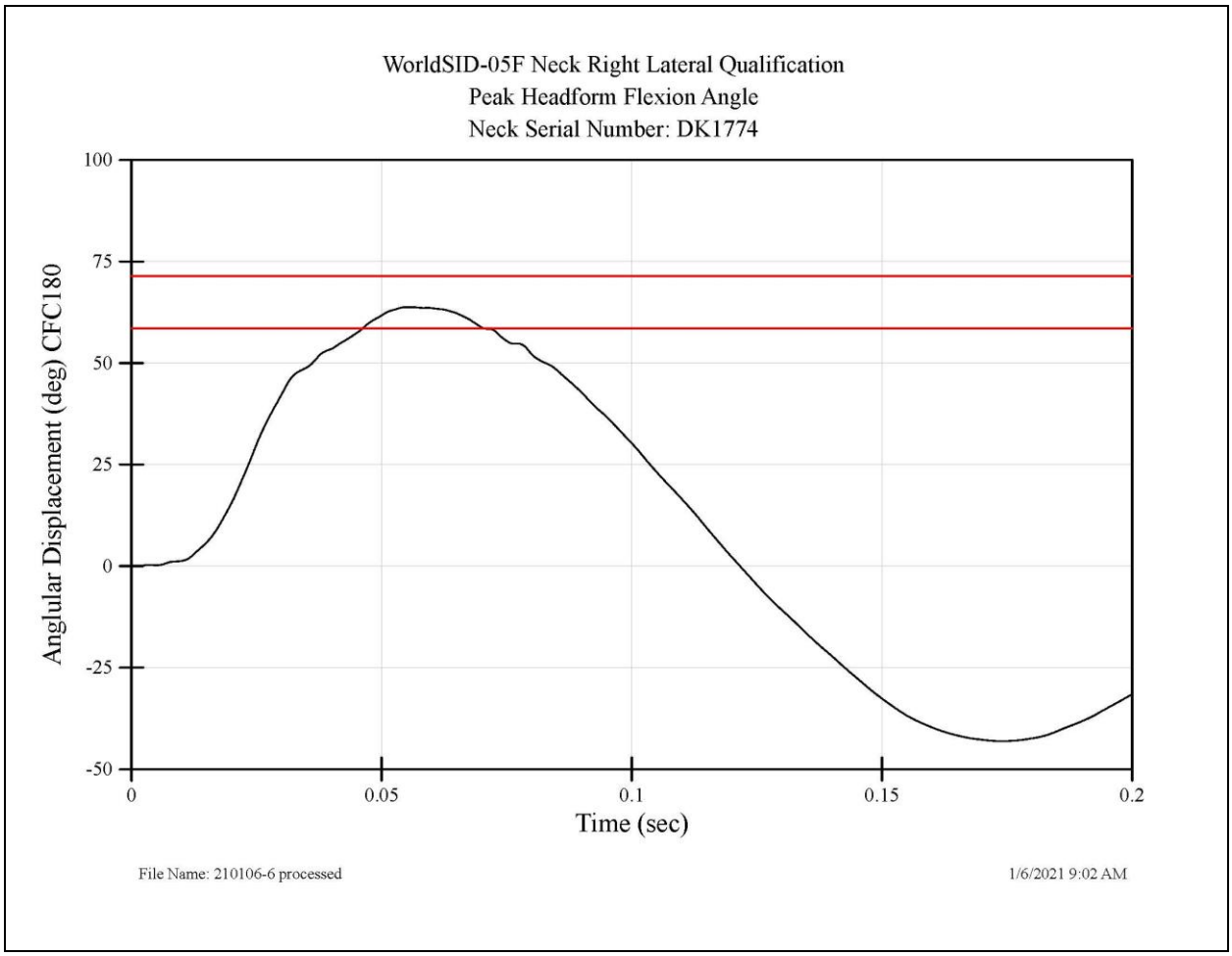
Test Results

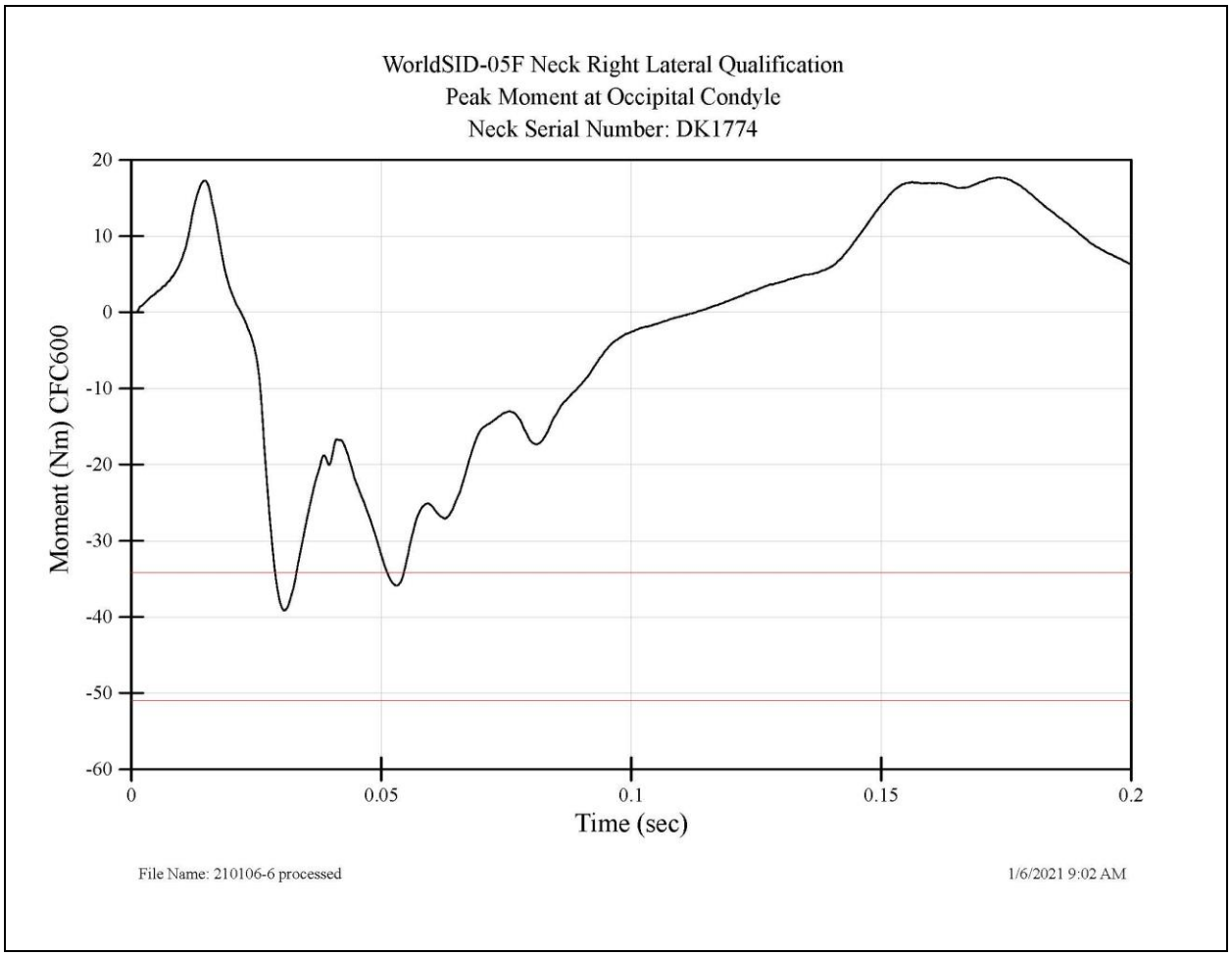
Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	20.8	Pass
Test Humidity (%)	10 - 70	31	Pass
Test Velocity (m/s)	3.30 - 3.50	3.41	Pass
Pendulum Velocity at 4 ms after T0 (m/s)	0.77 - 1.04	0.89	Pass
Pendulum Velocity at 8 ms after T0 (m/s)	1.60 - 2.16	1.93	Pass
Pendulum Velocity at 12 ms after T0 (m/s)	2.43 - 3.29	2.97	Pass
Peak Headform Flexion Angle (deg)	58.5 - 71.4	63.7	Pass
Peak Headform Flexion Angle Decay Time to 0 degrees (ms)	57.3 - 76.5	66.7	Pass
Peak X-Axis Moment at Occipital Condyle (Nm)	-51.0 - (-34.2)	-39.2	Pass
Peak X-Axis Moment at Occipital Condyle Decay Time to 0 Nm (ms)	69.4 - 93.3	82.5	Pass

* WorldSID-05F Qualification Manual - Humanetics WorldSID Small Female - Rev E

File Name: 210106-6 processed


WorldSID-05F Neck Right Lateral Qualification
Probe Acceleration
Neck Serial Number: DK1774
Integrated Velocity (m/s) CFC1000
5
4
3
2
1
0
0
0.005
0.01
0.015
0.02
Time (sec)
File Name: 210106-6 processed
1/6/2021 9:02 AM


WorldSID-05F Neck Right Lateral Qualification
Peak Headform Flexion Angle
Neck Serial Number: DK1774
Anglular Displacement (deg) CFC180
100
75
50
25
0
-25
-50
0
0.05
0.1
0.15
0.2
Time (sec)
File Name: 210106-6 processed
1/6/2021 9:02 AM


WorldSID-05F Neck Right Lateral Qualification
Peak Moment at Occipital Condyle
Neck Serial Number: DK1774
Moment (Nm) CFC600
20
10
0
-10
-20
-30
-40
-50
-60
0
0.05
0.1
0.15
0.2
Time (sec)
File Name: 210106-6 processed
1/6/2021 9:02 AM

WorldSID-05F Shoulder Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components

Shoulder Rib: DM6270	Abdomen Rib 1: DM5165
Thorax Rib 1: DM2783	Abdomen Rib 2: DM5167
Thorax Rib 2: DM2784	RibEye: 161
Thorax Rib 3: DM2787	Impacted Arm: DJ1634

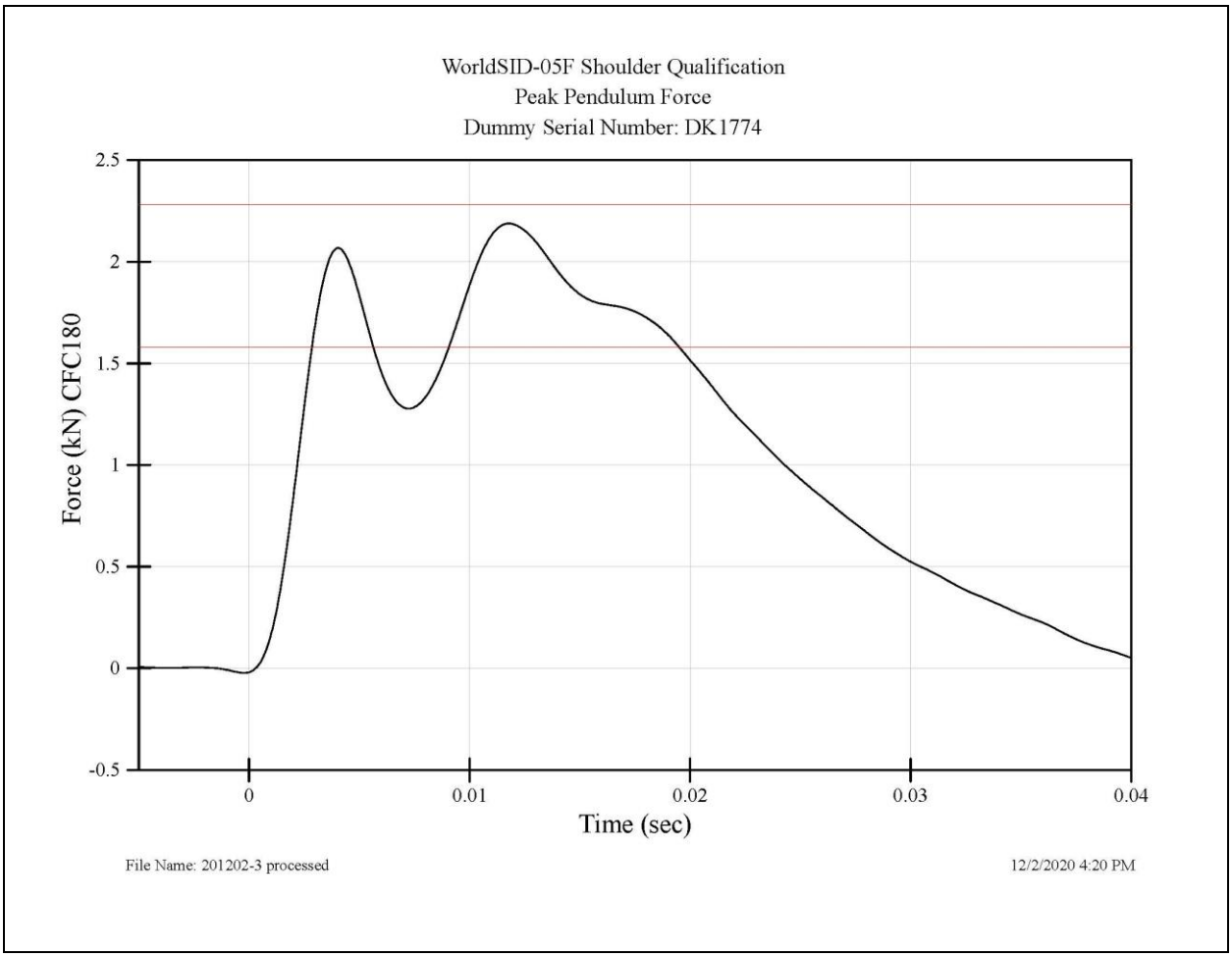
Test ID: 201202-3
Test Date: 12/2/2020
Test Time: 4:20 PM

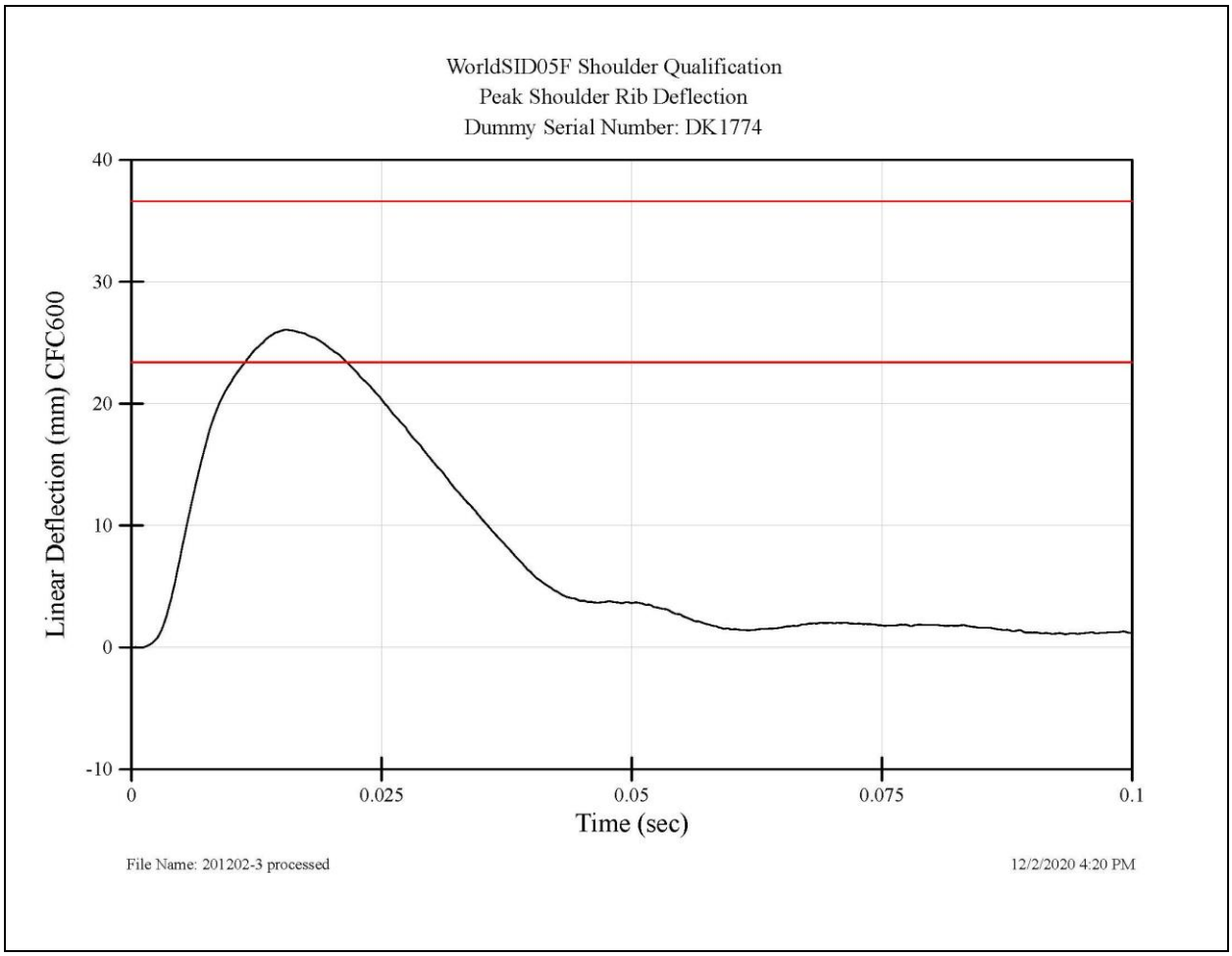
Test Results

Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	21.8	Pass
Test Humidity (%)	10 - 70	29	Pass
Test Velocity (m/s)	4.20 - 4.40	4.303	Pass
Thorax Rib Temperature Sensor (°C)	20.6 - 23.8	23.4	Pass
Peak Probe Force (kN)	1.58 - 2.28	2.19	Pass
Peak Shoulder Rib Length Change (mm)	23.4 - 36.6	26.06	Pass

* WorldSID-05F Qualification Manual - Humanetics WorldSID Small Female - Rev E

File Name: 201202-3 processed


WorldSID-05F Shoulder Qualification
Peak Pendulum Force
Dummy Serial Number: DK1774
Force (kN) CFC180
2.5
2
1.5
1
0.5
0
-0.5
0
0.01
0.02
0.03
0.04
Time (sec)
File Name: 201202-3 processed
12/2/2020 4:20 PM


WorldSID05F Shoulder Qualification
Peak Shoulder Rib Deflection
Dummy Serial Number: DK1774
Linear Deflection (mm) CFC600
40
30
20
10
0
-10
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 201202-3 processed
12/2/2020 4:20 PM

WorldSID-05F Thorax with Arm Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components

Shoulder Rib: DM6270
Thorax Rib 1: DM2783
Thorax Rib 2: DM2784
Thorax Rib 3: DM2787
Abdomen Rib 1: DM5165
Abdomen Rib 2: DM5167
RibEye: 161
Impacted Arm: DJ1634

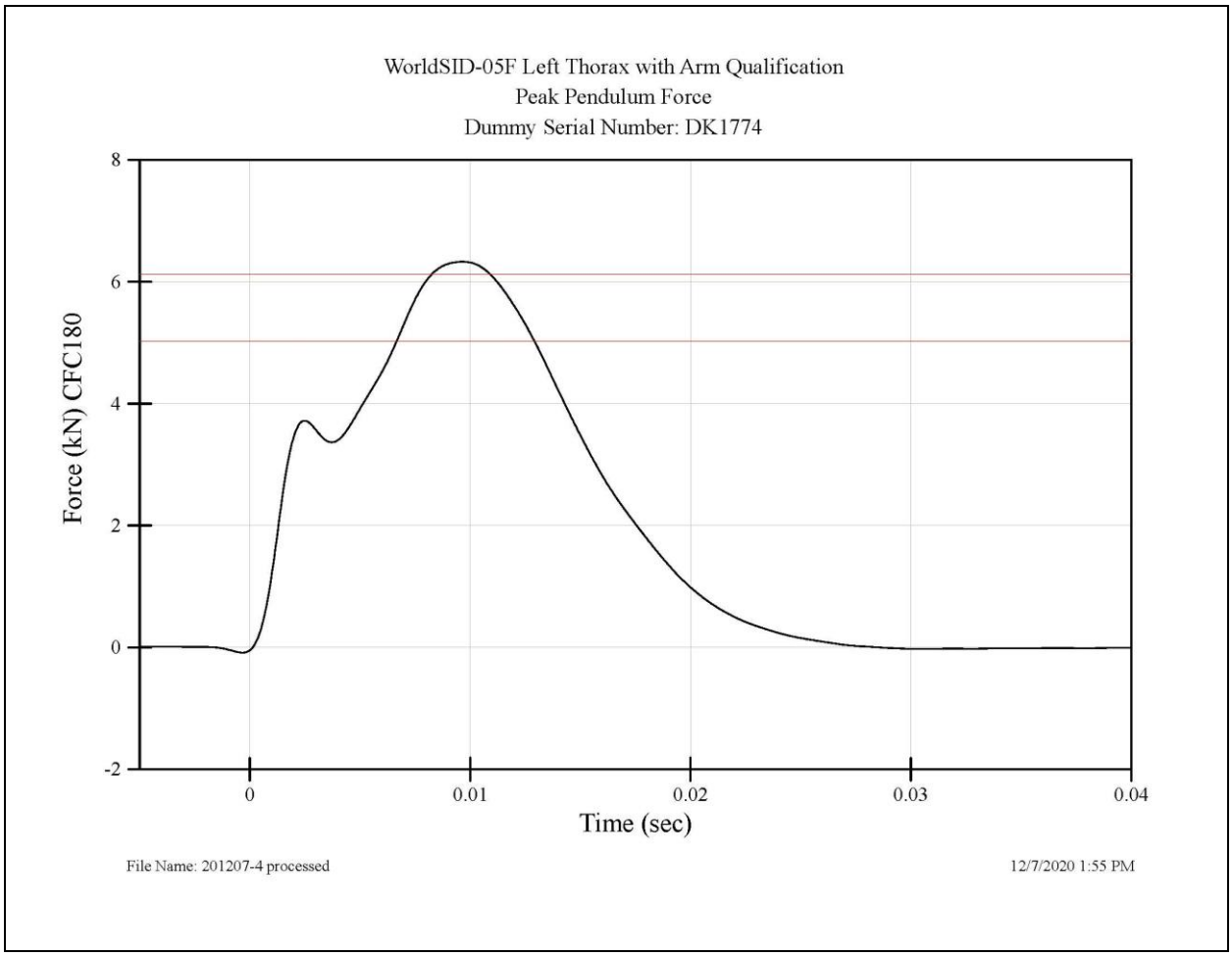
Test ID: 201207-4
Test Date: 12/7/2020
Test Time: 1:55 PM

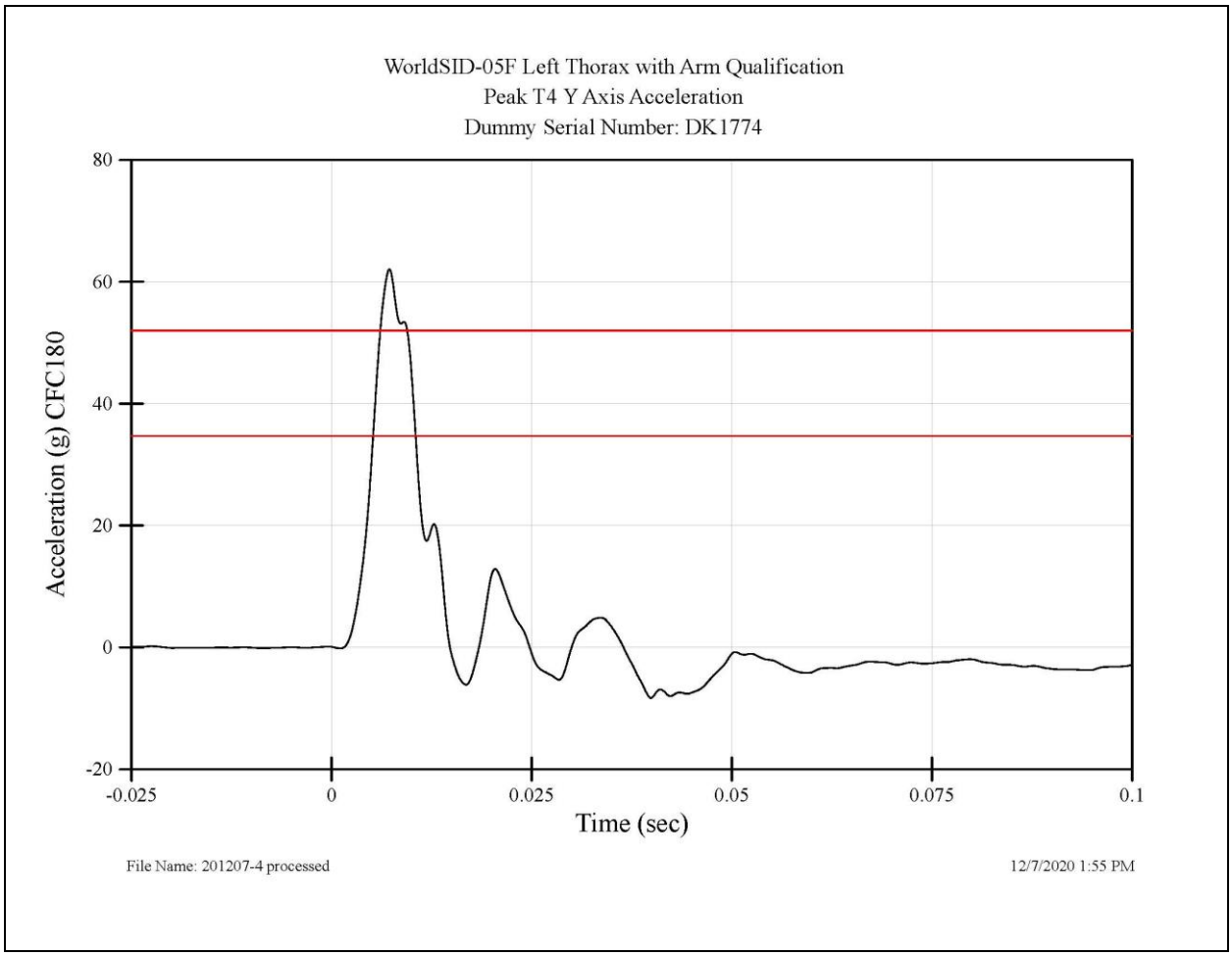
Test Results

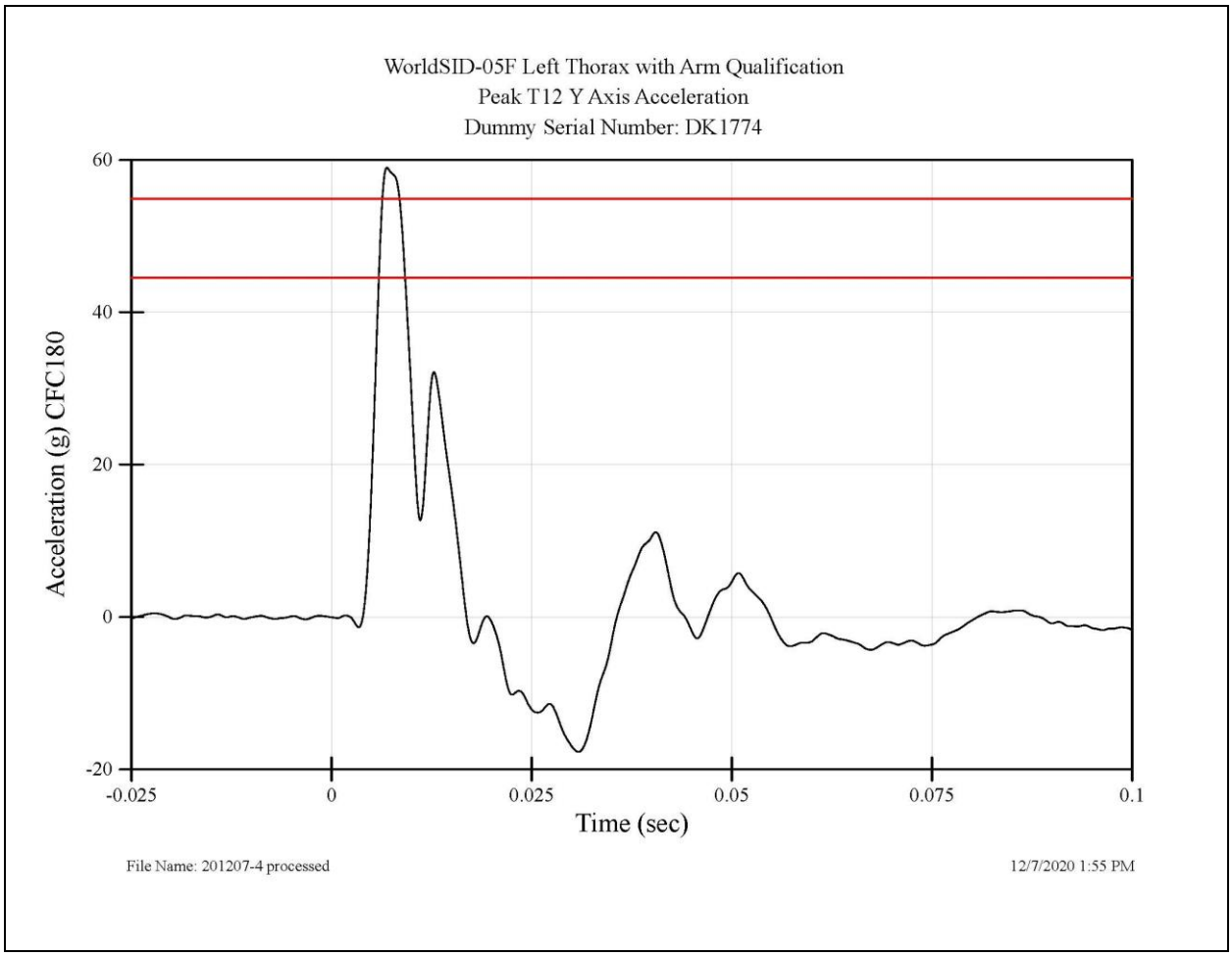
Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	20.9	Pass
Test Humidity (%)	10 - 70	26	Pass
Test Velocity (m/s)	6.60 - 6.80	6.693	Pass
Thorax Rib Temperature Sensor (°C)	20.6 - 23.8	21.5	Pass
Peak Probe Force (kN)	5.02 - 6.13	6.33	Fail
Peak T4 Y Acceleration	34.7 - 52.0	62.07	Fail
Peak T12 Y Acceleration	44.5 - 54.9	58.97	Fail
Peak Thorax Rib 1 Y Length Change (mm)	18.3 - 26.4	15.71	Fail
Peak Thorax Rib 2 Y Length Change (mm)	21.6 - 26.4	18.95	Fail
Peak Thorax Rib 3 Y Length Change (mm)	19.7 - 26.6	15.46	Fail

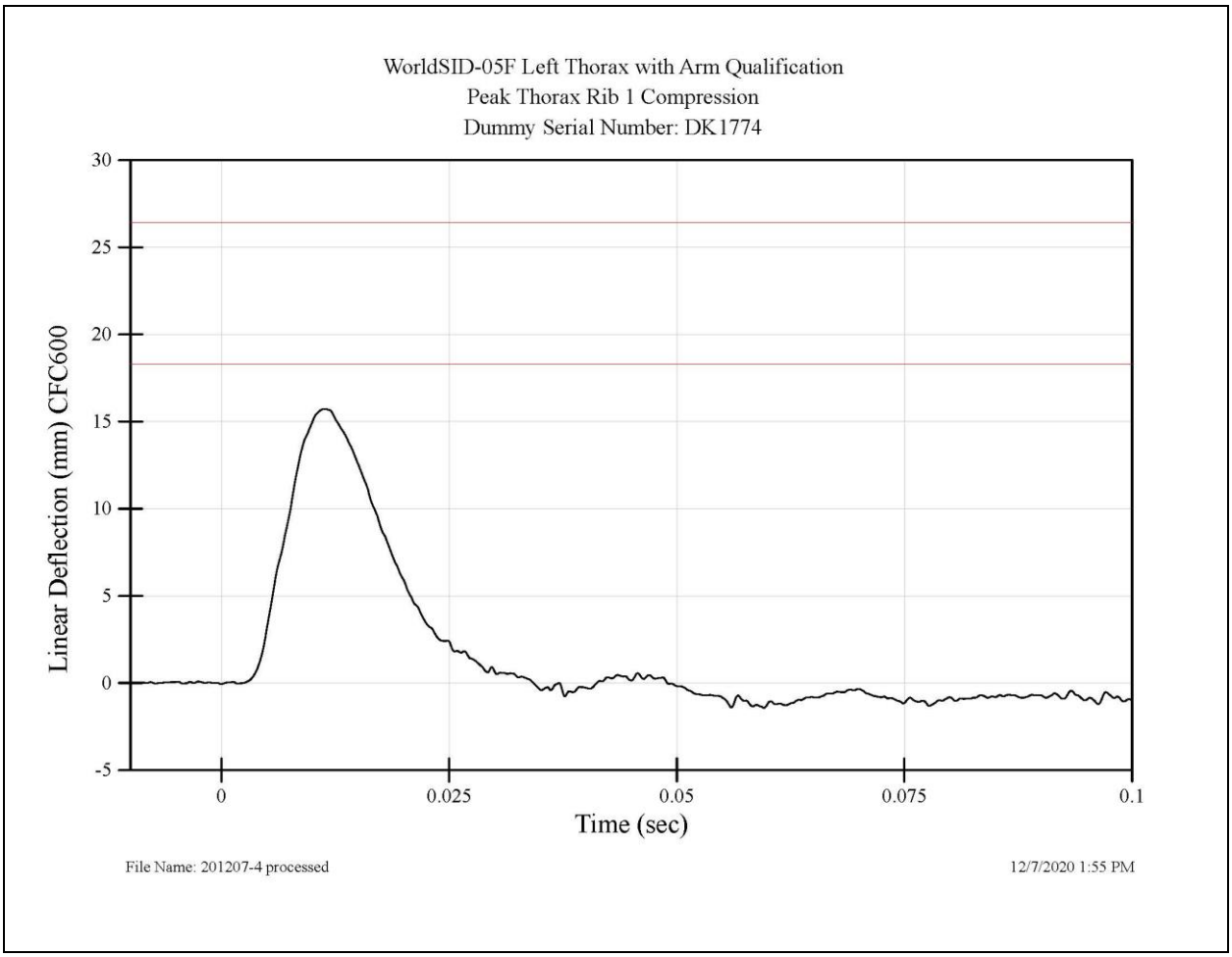
* WorldSID-05F Qualification Manual - Humanetics WorldSID Small Female - Rev E

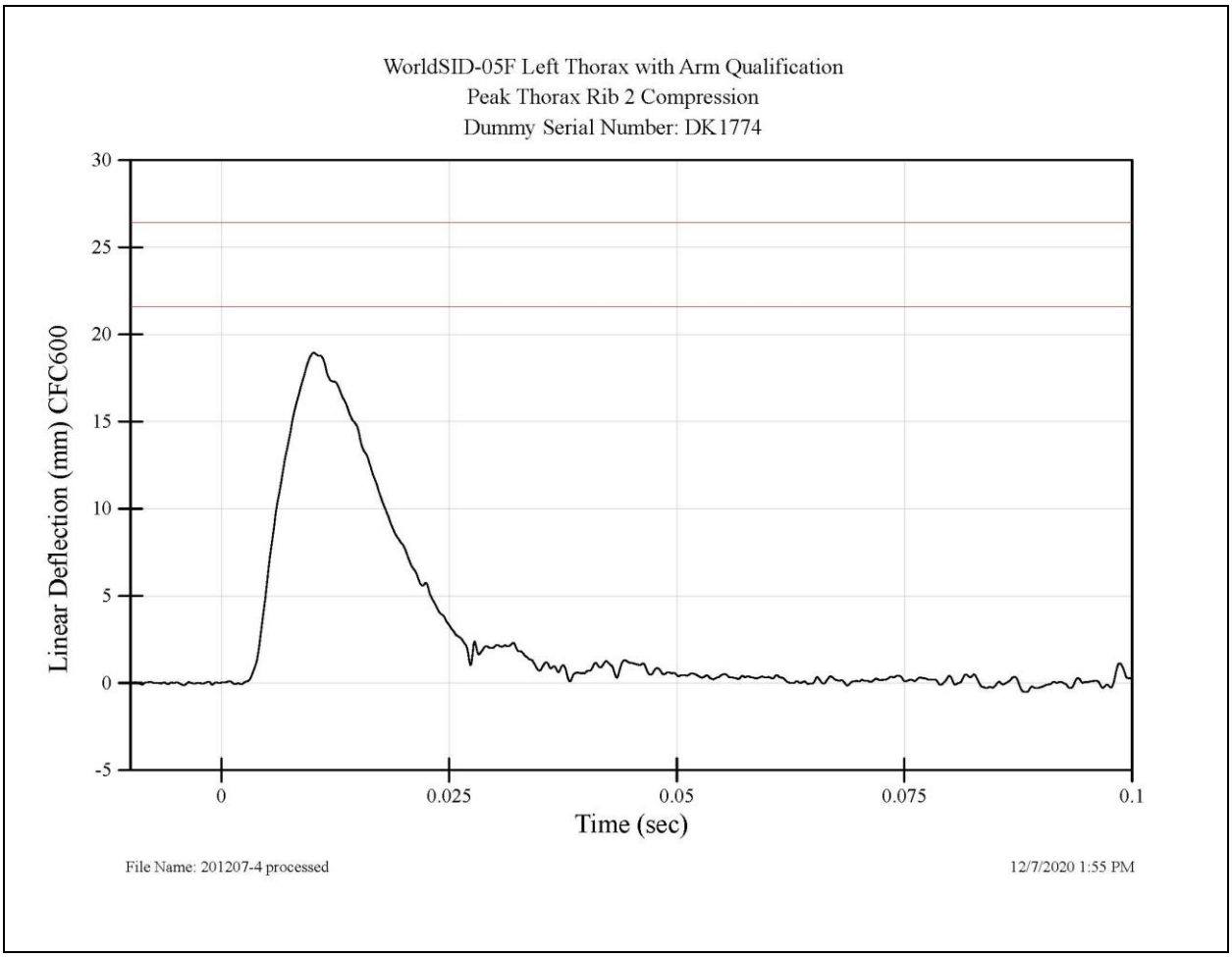
File Name: 201207-4 processed

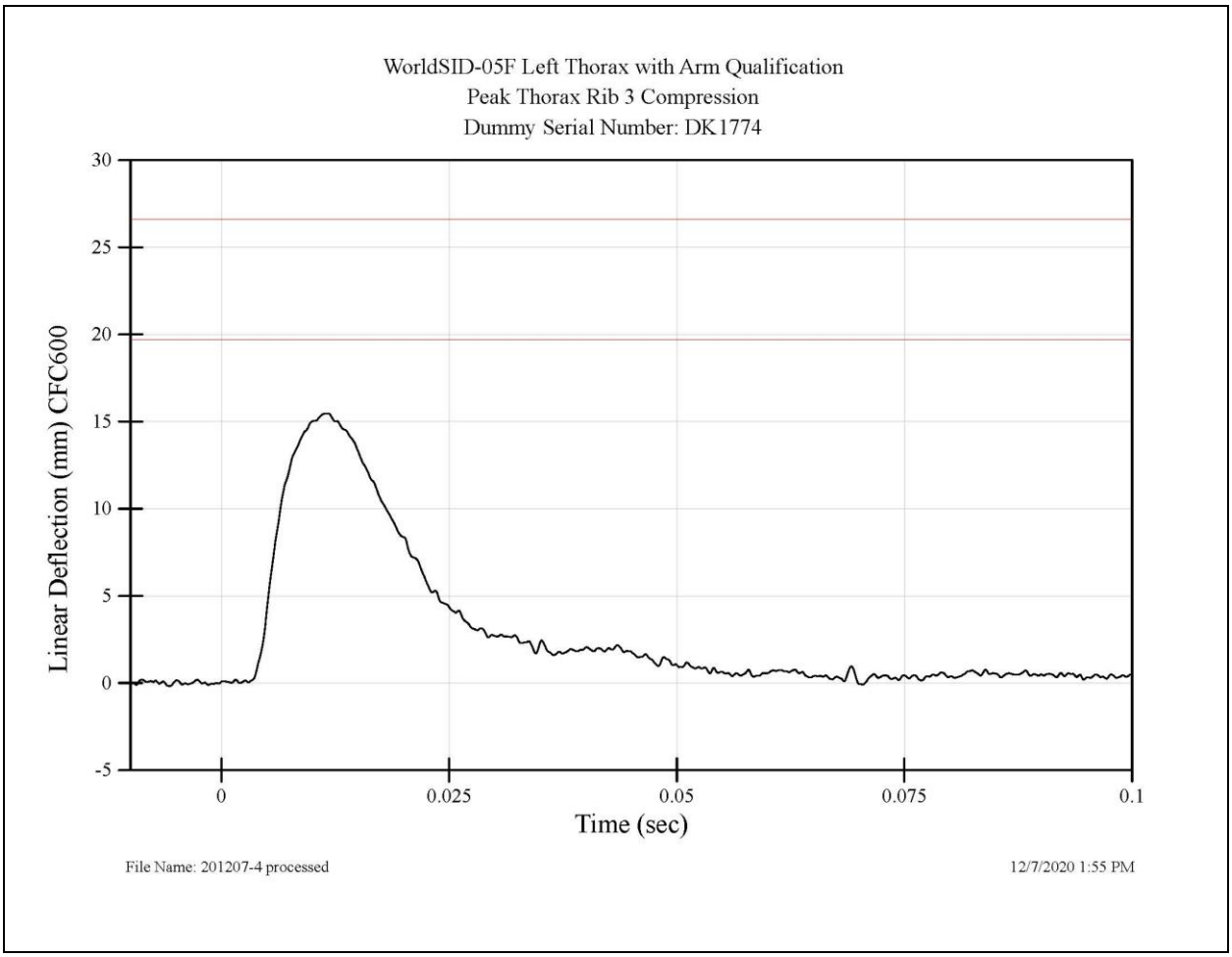

WorldSID-05F Left Thorax with Arm Qualification
Peak Pendulum Force
Dummy Serial Number: DK1774
Force (kN) CFC180
8
6
4
2
0
-2
0
0.01
0.02
0.03
0.04
Time (sec)
File Name: 201207-4 processed
12/7/2020 1:55 PM


WorldSID-05F Left Thorax with Arm Qualification
Peak T4 Y Axis Acceleration
Dummy Serial Number: DK1774
Acceleration (g) CFC180
80
60
40
20
0
-20
-0.025
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 201207-4 processed
12/7/2020 1:55 PM


WorldSID-05F Left Thorax with Arm Qualification
Peak T12 Y Axis Acceleration
Dummy Serial Number: DK1774
60
40
20
0
-20
Acceleration (g) CFC180
-0.025
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 201207-4 processed
12/7/2020 1:55 PM


WorldSID-05F Left Thorax with Arm Qualification
Peak Thorax Rib 1 Compression
Dummy Serial Number: DK1774
Linear Deflection (mm) CFC600
30
25
20
15
10
5
0
-5
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 201207-4 processed
12/7/2020 1:55 PM


WorldSID-05F Left Thorax with Arm Qualification
Peak Thorax Rib 2 Compression
Dummy Serial Number: DK1774
Linear Deflection (mm) CFC600
30
25
20
15
10
5
0
-5
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 201207-4 processed
12/7/2020 1:55 PM


WorldSID-05F Left Thorax with Arm Qualification
Peak Thorax Rib 3 Compression
Dummy Serial Number: DK1774
Linear Deflection (mm) CFC600
30
25
20
15
10
5
0
-5
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 201207-4 processed
12/7/2020 1:55 PM

WorldSID-05F Thorax without Arm Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components

Shoulder Rib: DM6270
Thorax Rib 1: DM2783
Thorax Rib 2: DM2784
Thorax Rib 3: DM2787
Abdomen Rib 1: DM5165
Abdomen Rib 2: DM5167
RibEye: 161

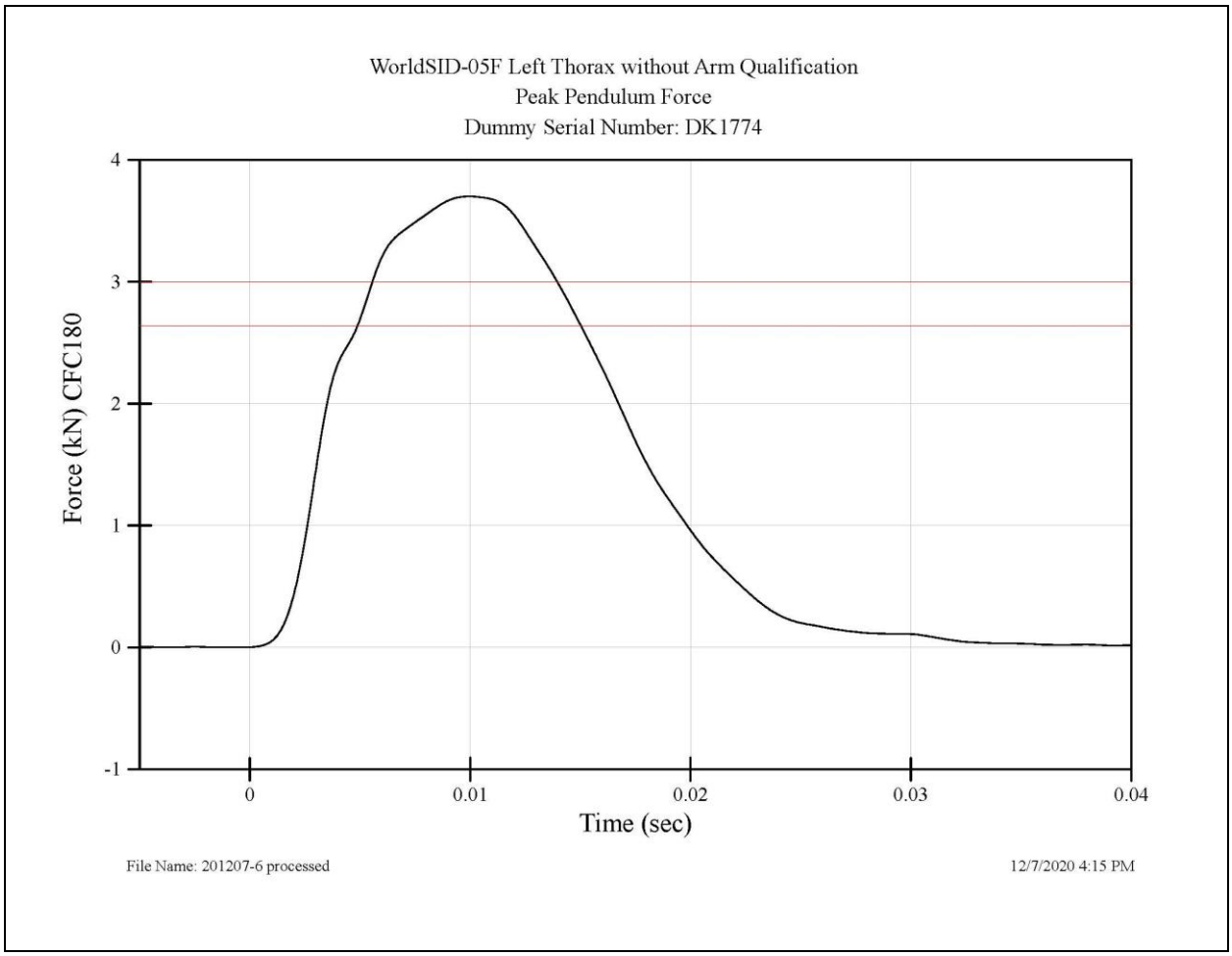
Test ID: 201207-6
Test Date: 12/7/2020
Test Time: 4:15 PM

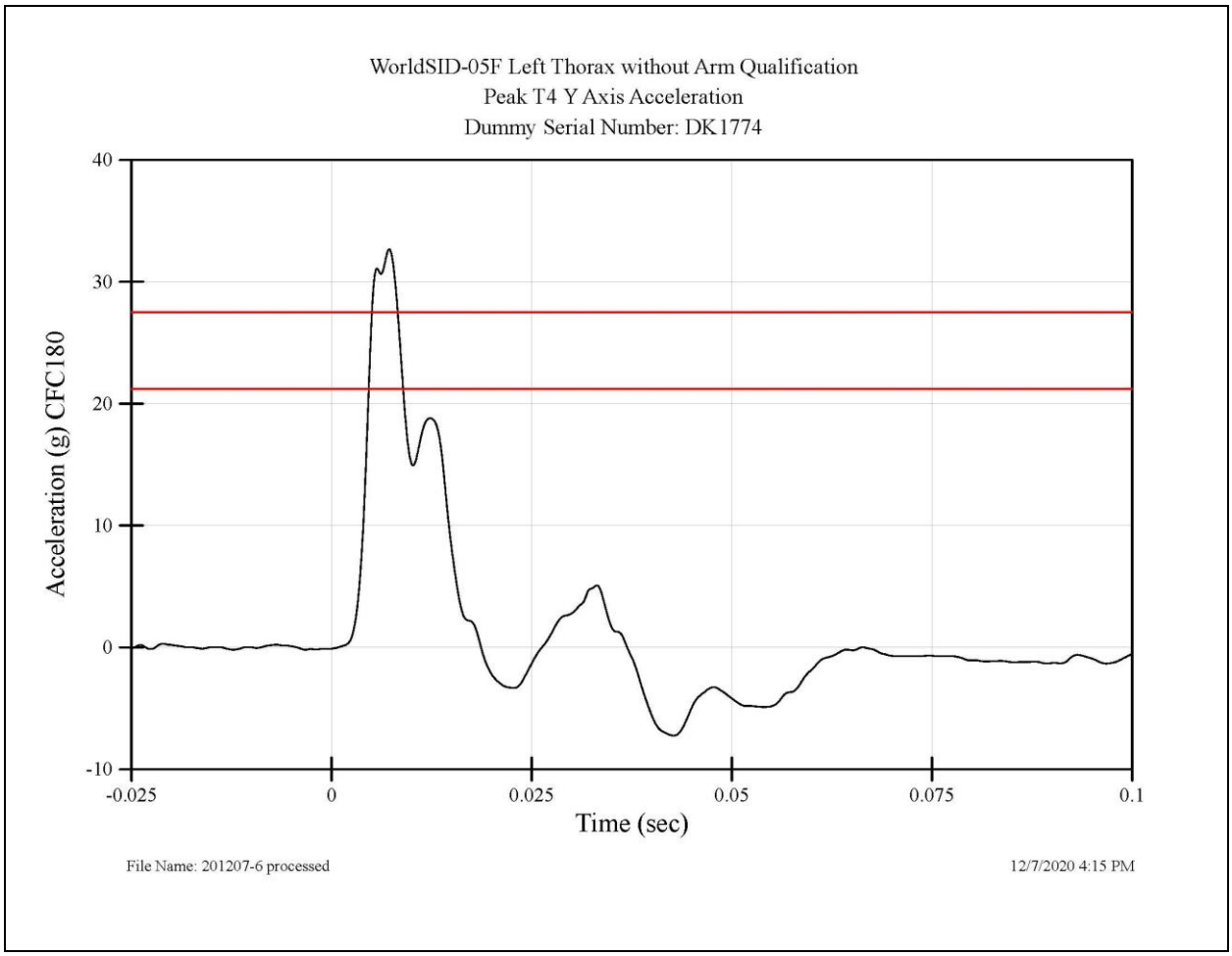
Test Results

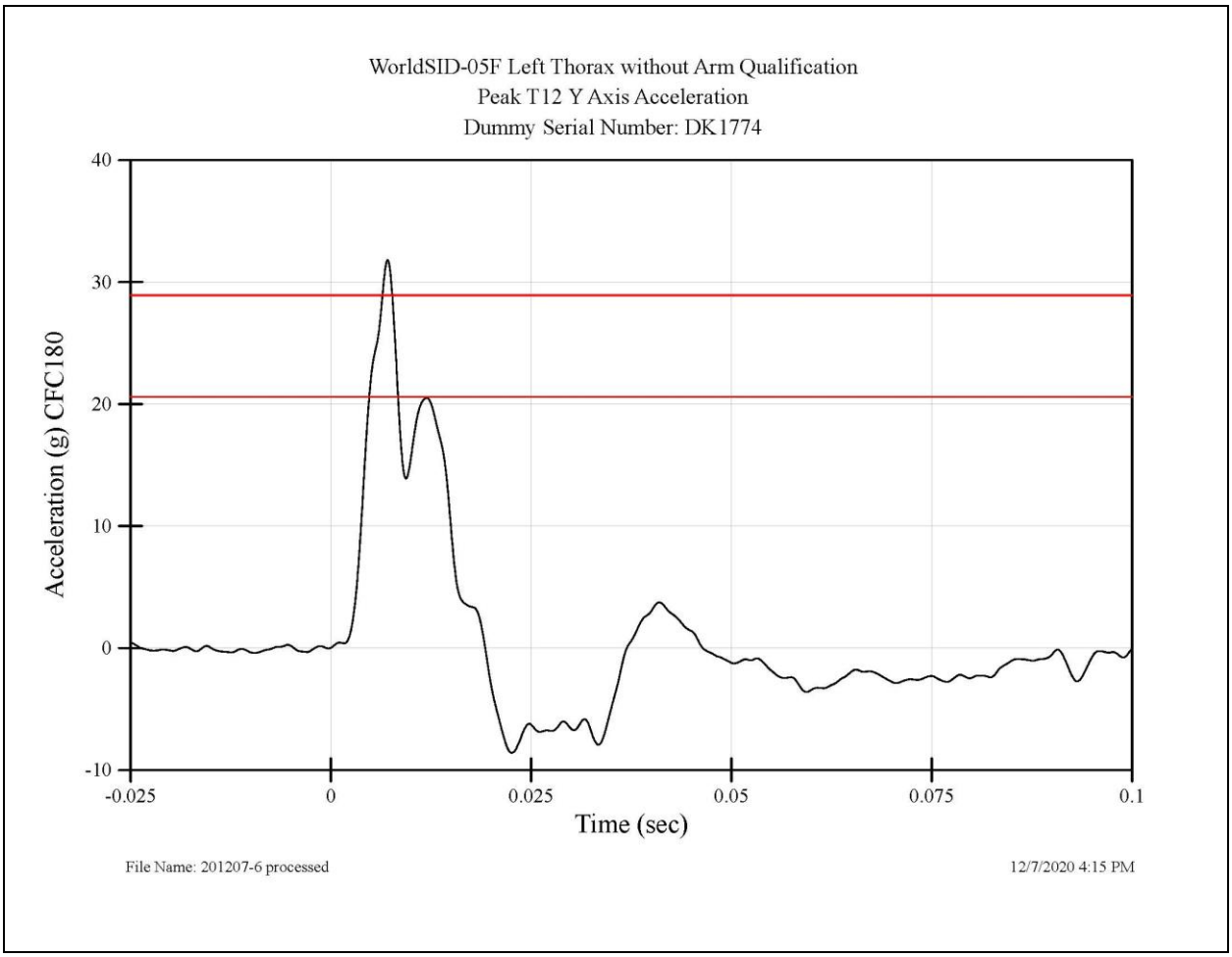
Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	20.9	Pass
Test Humidity (%)	10 - 70	26	Pass
Test Velocity (m/s)	4.30 - 4.50	4.303	Pass
Thorax Rib Temperature Sensor (°C)	20.6 - 23.8	22.3	Pass
Peak Probe Force (kN)	2.64 - 3.22	3.70	Fail
Peak T4 Y Acceleration	21.2 - 27.5	32.67	Fail
Peak T12 Y Acceleration	20.6 - 28.9	31.80	Fail
Peak Thorax Rib 1 Y Length Change (mm)	20.5 - 27.7	17.82	Fail
Peak Thorax Rib 2 Y Length Change (mm)	21.7 - 26.7	18.94	Fail
Peak Thorax Rib 3 Y Length Change (mm)	20.9 - 27.3	18.69	Fail

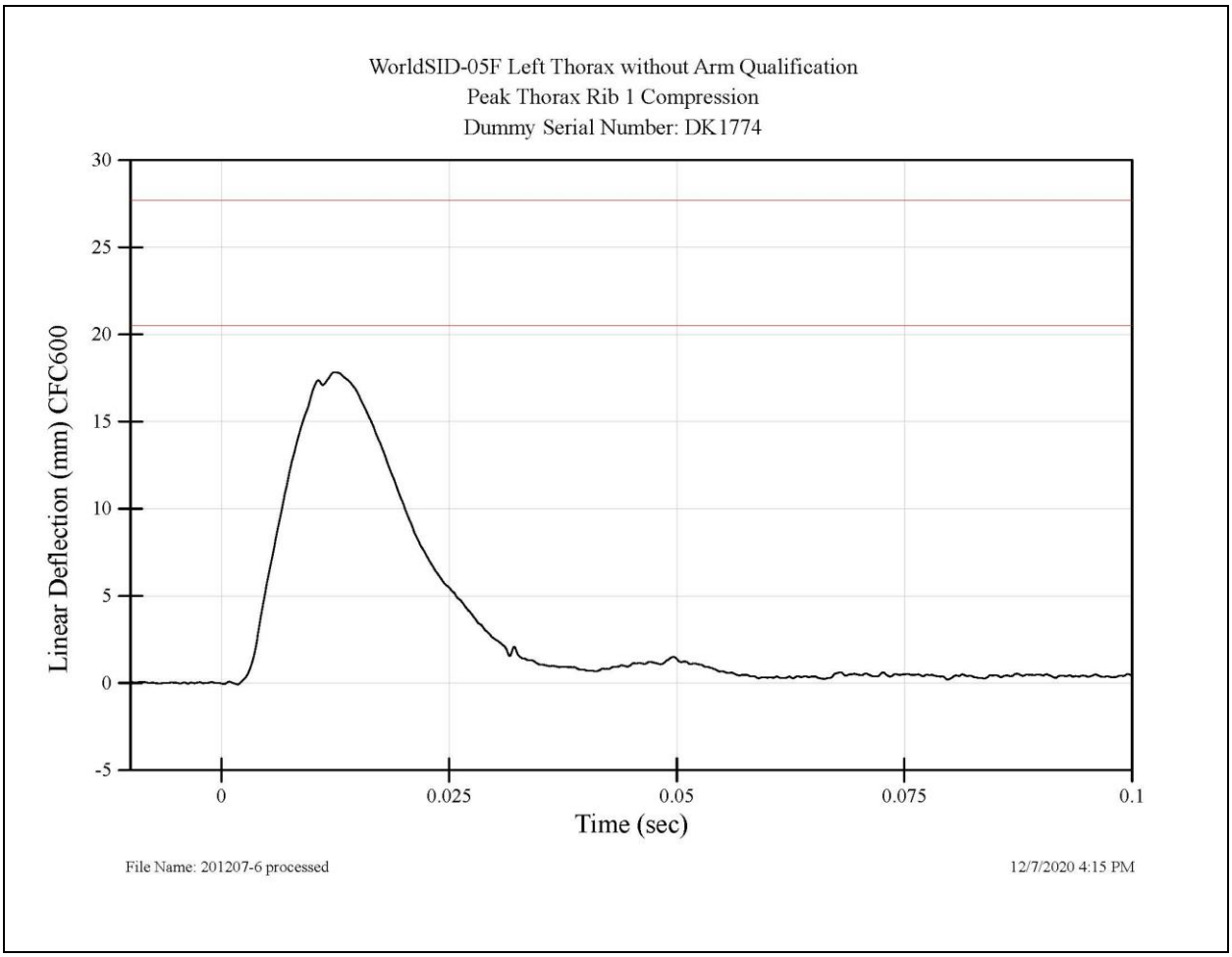
* WorldSID-05F Qualification Manual - Humanetics WorldSID Small Female - Rev E

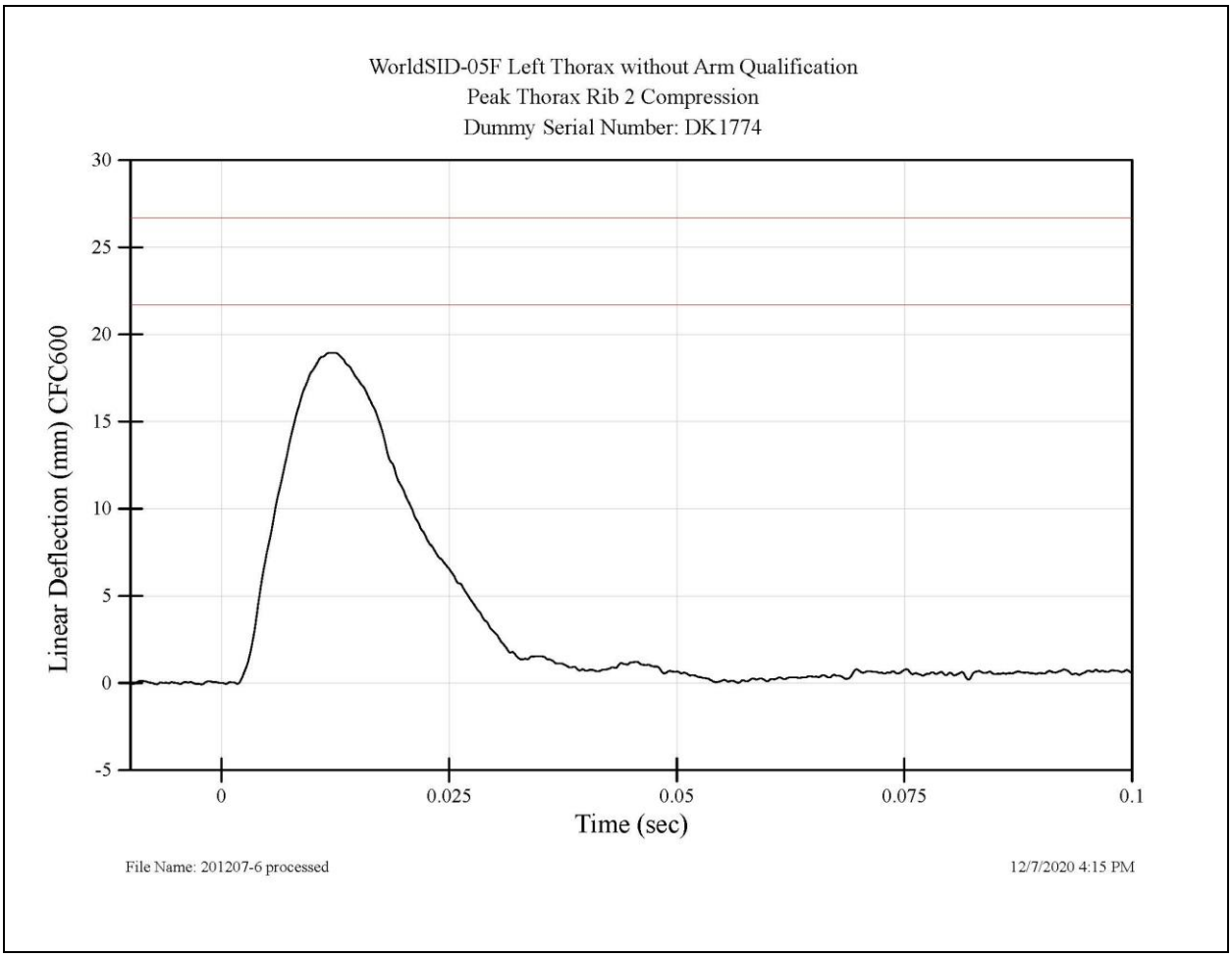
File Name: 201207-6 processed

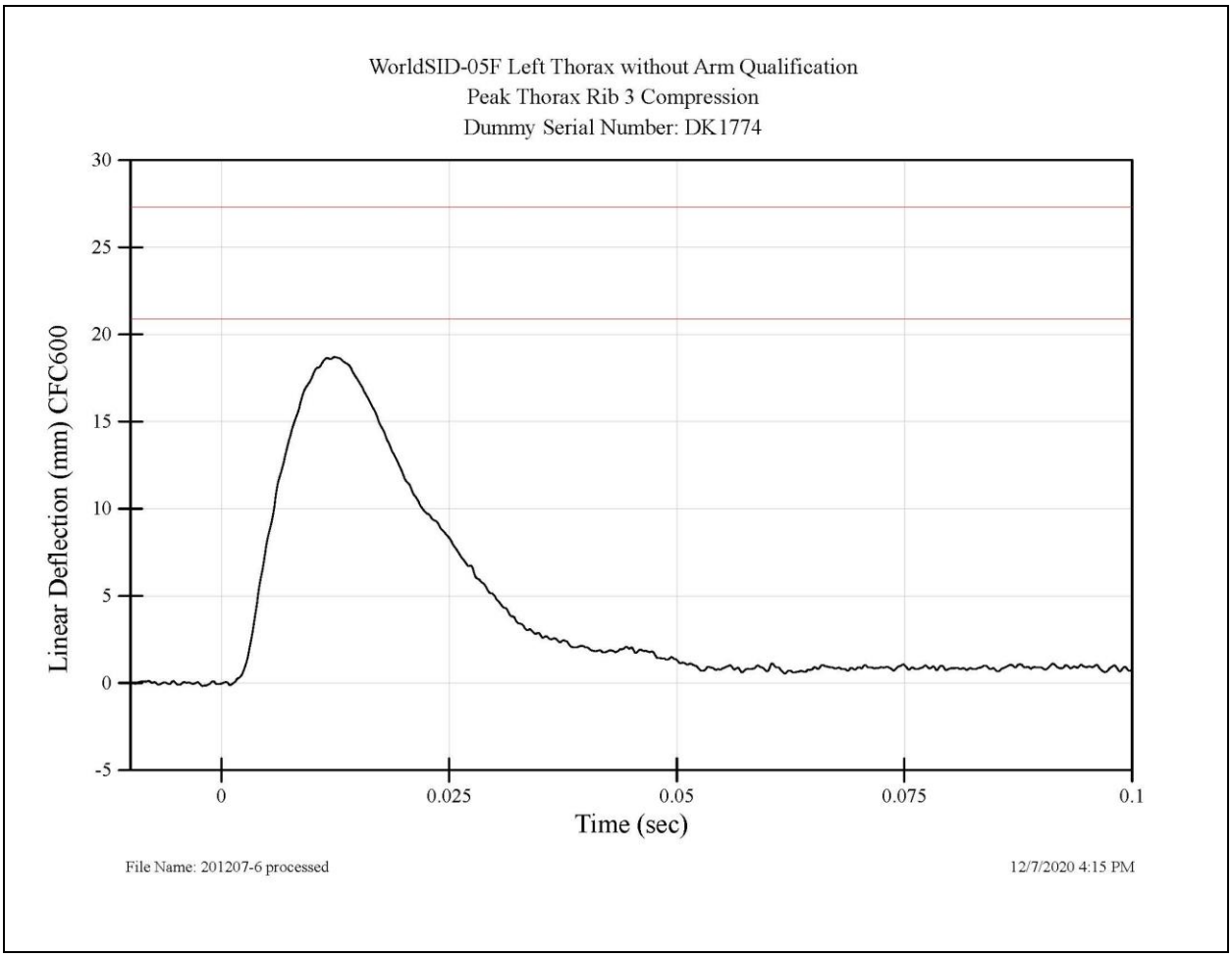

WorldSID-05F Left Thorax without Arm Qualification
Peak Pendulum Force
Dummy Serial Number: DK1774
Force (kN) CFC180
4
3
2
1
0
-1
0
0.01
0.02
0.03
0.04
Time (sec)
File Name: 201207-6 processed
12/7/2020 4:15 PM


WorldSID-05F Left Thorax without Arm Qualification
Peak T4 Y Axis Acceleration
Dummy Serial Number: DK1774
Acceleration (g) CFC180
40
30
20
10
0
-10
-0.025
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 201207-6 processed
12/7/2020 4:15 PM


WorldSID-05F Left Thorax without Arm Qualification
Peak T12 Y Axis Acceleration
Dummy Serial Number: DK1774
Acceleration (g) CFC180
40
30
20
10
0
-10
-0.025
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 201207-6 processed
12/7/2020 4:15 PM


WorldSID-05F Left Thorax without Arm Qualification
Peak Thorax Rib 1 Compression
Dummy Serial Number: DK1774
Linear Deflection (mm) CFC600
30
25
20
15
10
5
0
-5
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 201207-6 processed
12/7/2020 4:15 PM


WorldSID-05F Left Thorax without Arm Qualification
Peak Thorax Rib 2 Compression
Dummy Serial Number: DK1774
Linear Deflection (mm) CFC600
30
25
20
15
10
5
0
-5
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 201207-6 processed
12/7/2020 4:15 PM


WorldSID-05F Left Thorax without Arm Qualification
Peak Thorax Rib 3 Compression
Dummy Serial Number: DK1774
Linear Deflection (mm) CFC600
30
25
20
15
10
5
0
-5
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 201207-6 processed
12/7/2020 4:15 PM

WorldSID-05F Left Abdomen Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components

Shoulder Rib: DM6270
Thorax Rib 1: DM2783
Thorax Rib 2: DM2784
Thorax Rib 3: DM2787
Abdomen Rib 1: DM5165
Abdomen Rib 2: DM5167
RibEye: 161

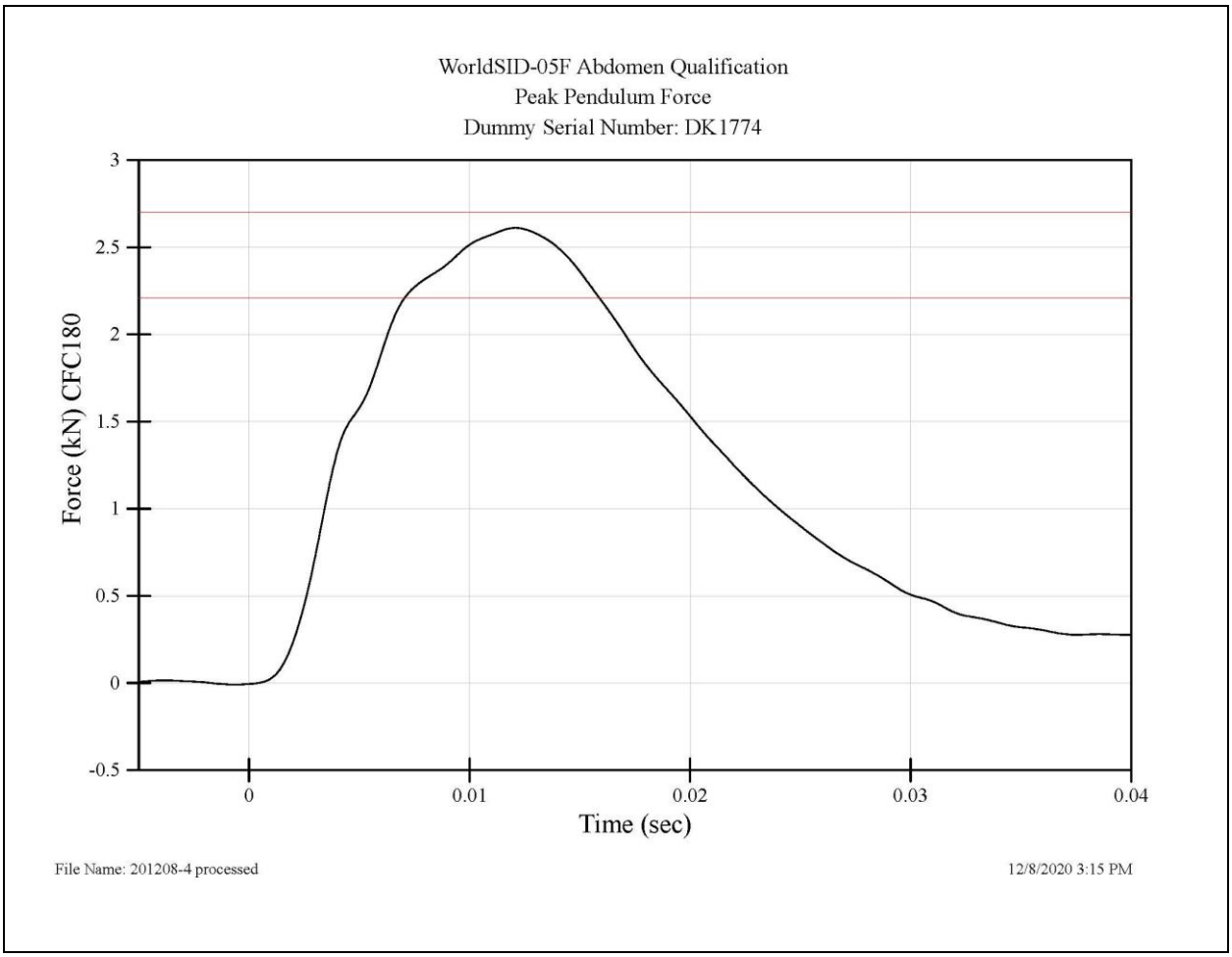
Test ID: 201208-4
Test Date: 12/8/2020
Test Time: 3:15 PM

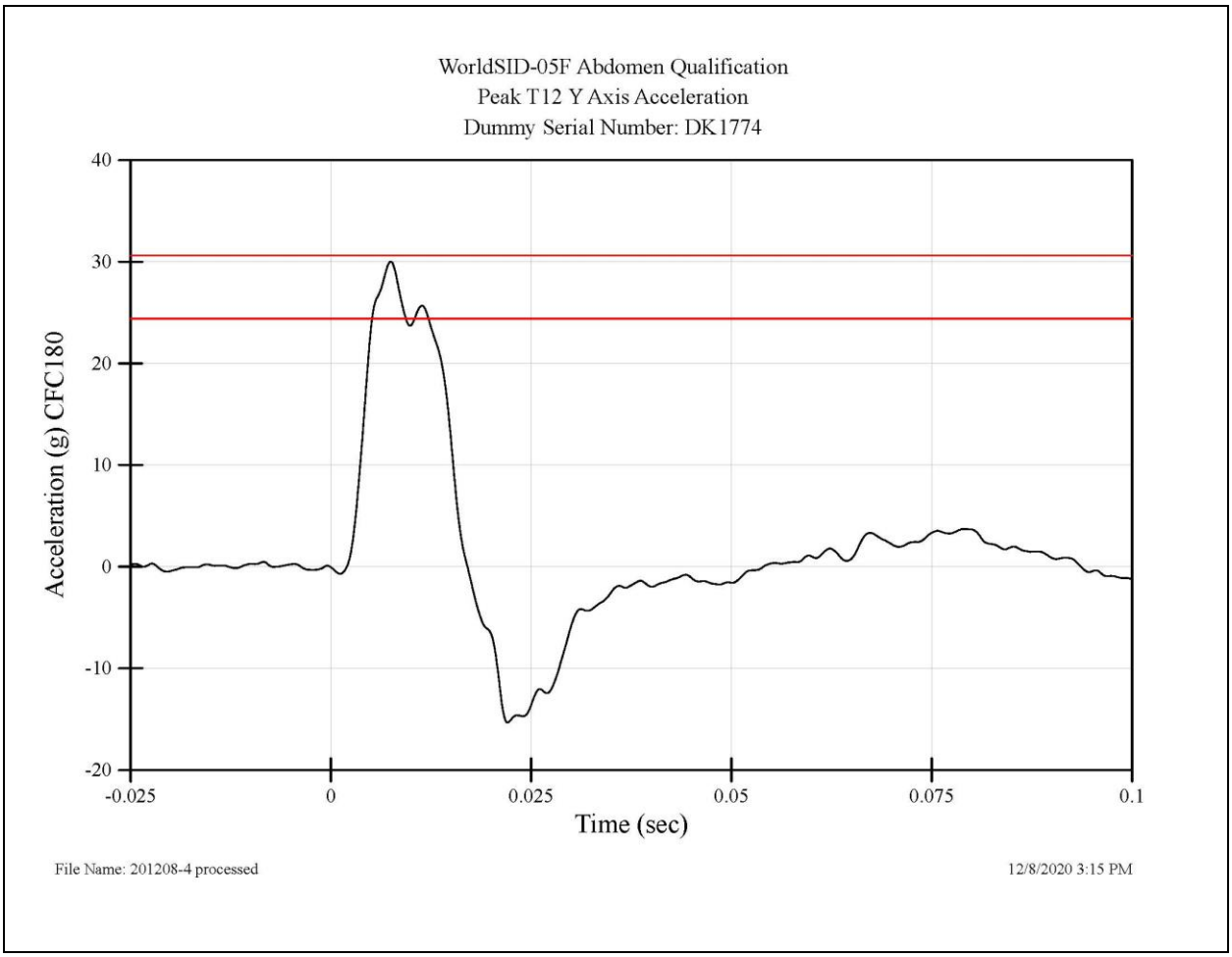
Test Results

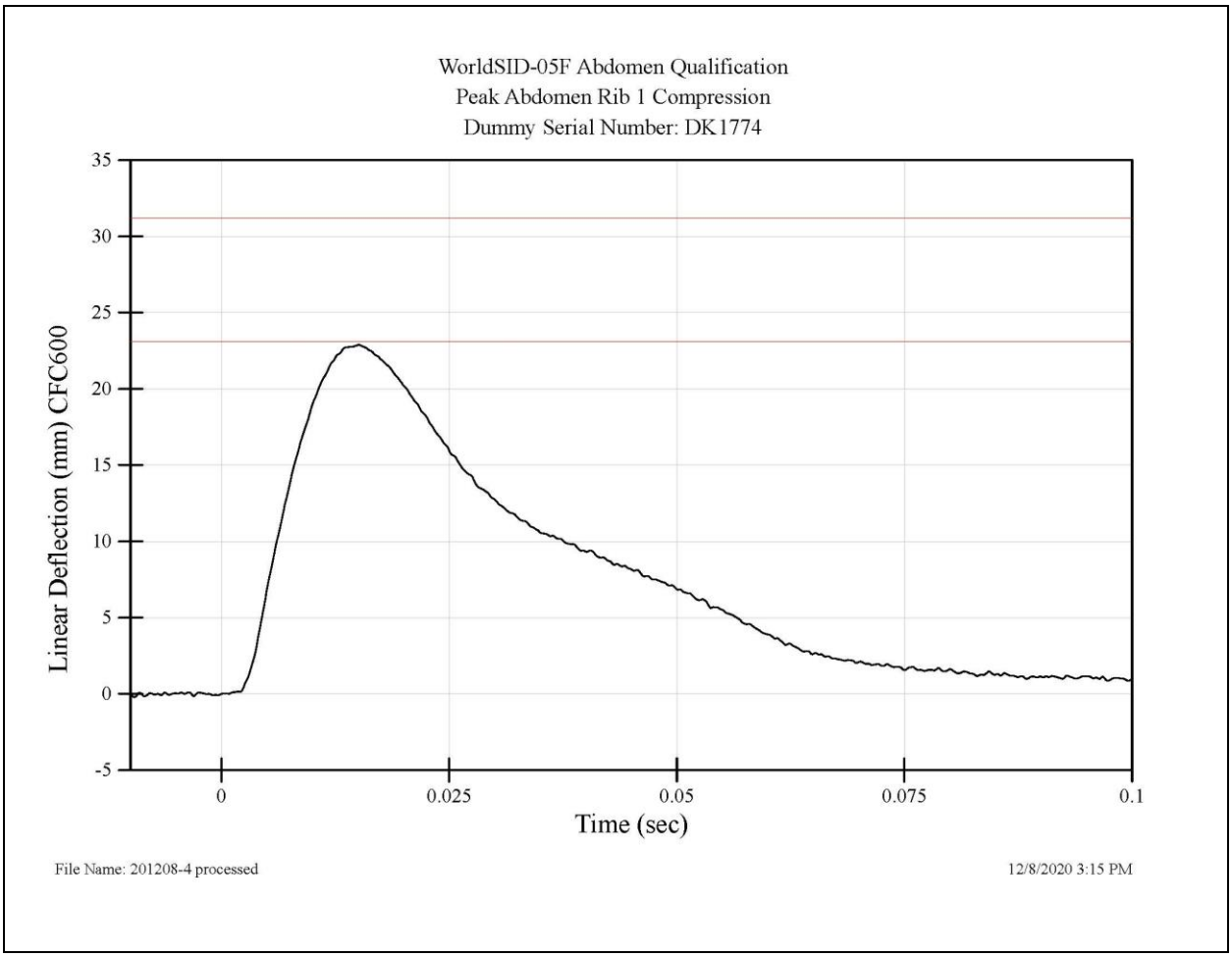
Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	20.9	Pass
Test Humidity (%)	10 - 70	26	Pass
Test Velocity (m/s)	4.20 - 4.40	4.305	Pass
Thorax Rib Temperature Sensor (°C)	20.6 - 23.8	23.0	Pass
Peak Probe Force (kN)	2.21 - 2.70	2.61	Pass
Peak T12 Acceleration (g)	24.4 - 30.6	30.02	Pass
Peak Abdomen Rib 1 Length Change (mm)	23.1 - 31.2	22.88	Fail
Peak Abdomen Rib 2 Length Change (mm)	22.7 - 27.8	22.58	Fail

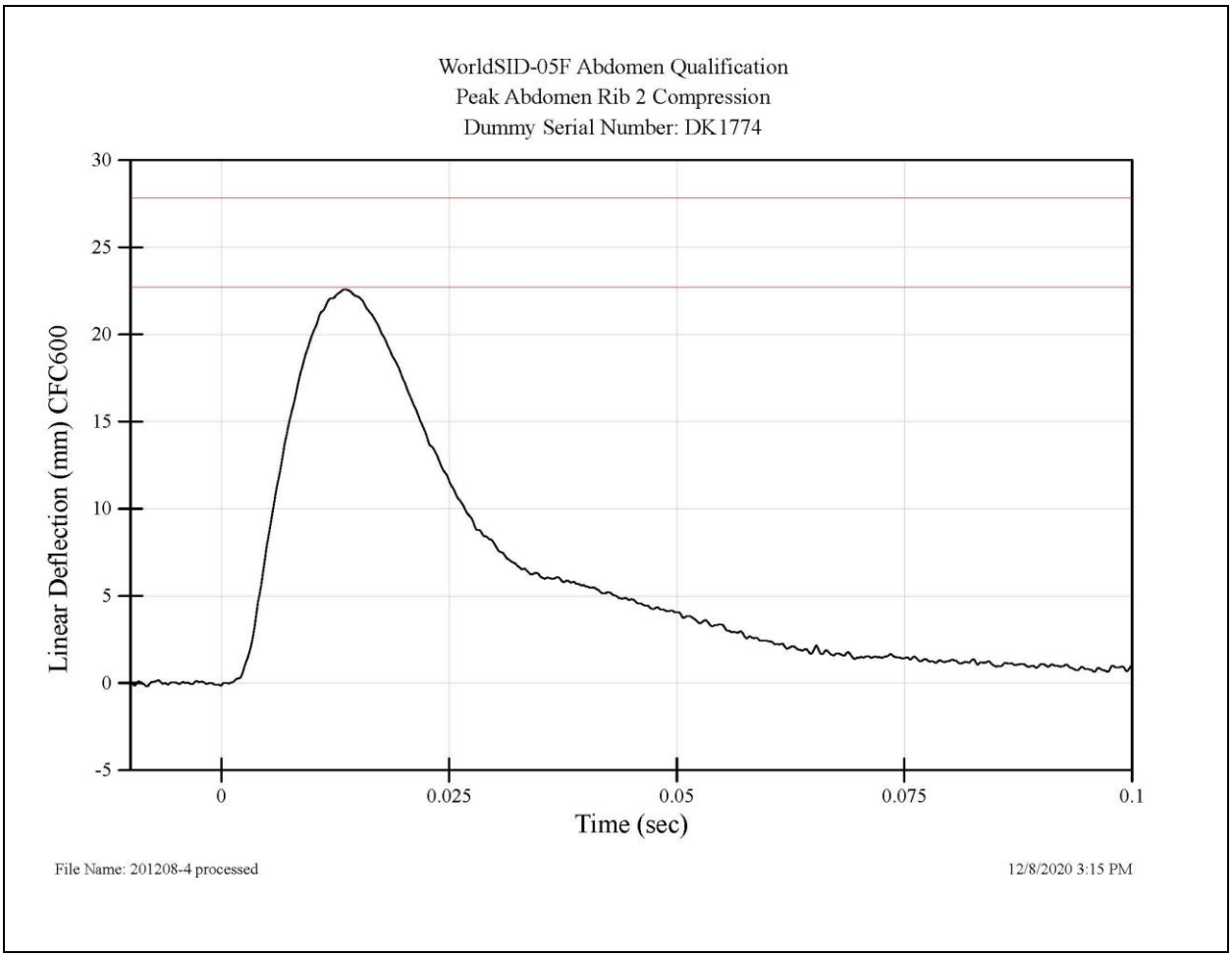
* WorldSID-50M Qualification Manual - Humanetics WorldSID Small Female - Rev E

File Name: 201208-4 processed


WorldSID-05F Abdomen Qualification
Peak Pendulum Force
Dummy Serial Number: DK1774
Force (kN) CFC180
3
2.5
2
1.5
1
0.5
0
-0.5
0
0.01
0.02
0.03
0.04
Time (sec)
File Name: 201208-4 processed
12/8/2020 3:15 PM


WorldSID-05F Abdomen Qualification
Peak T12 Y Axis Acceleration
Dummy Serial Number: DK1774
Acceleration (g) CFC180
40
30
20
10
0
-10
-20
-0.025
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 201208-4 processed
12/8/2020 3:15 PM


WorldSID-05F Abdomen Qualification
Peak Abdomen Rib 1 Compression
Dummy Serial Number: DK1774
Linear Deflection (mm) CFC600
35
30
25
20
15
10
5
0
-5
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 201208-4 processed
12/8/2020 3:15 PM


WorldSID-05F Abdomen Qualification
Peak Abdomen Rib 2 Compression
Dummy Serial Number: DK1774
Linear Deflection (mm) CFC600
30
25
20
15
10
5
0
-5
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 201208-4 processed
12/8/2020 3:15 PM

WorldSID-05F Left Pelvis Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components
Pelvis Bone: DW2458

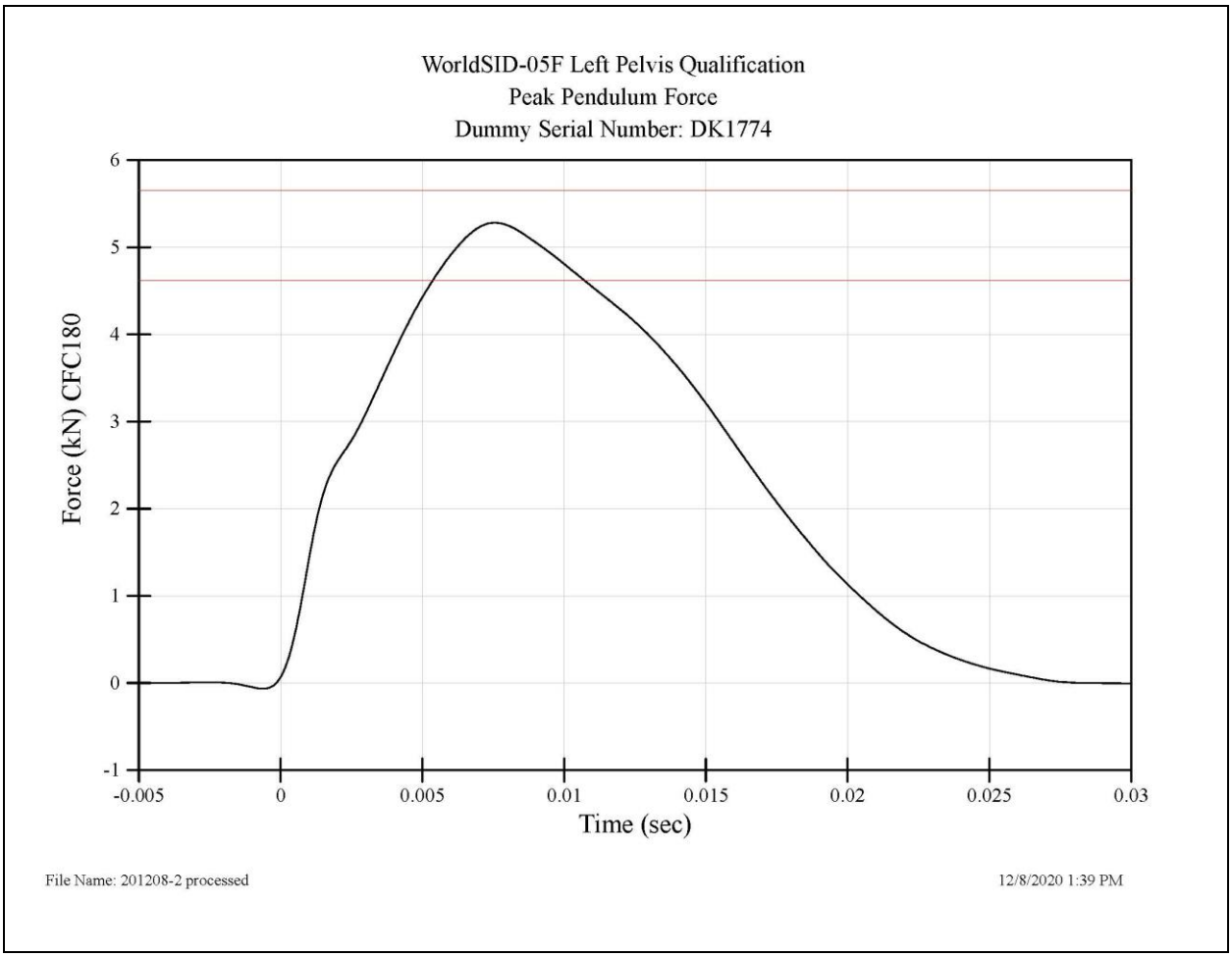
Test ID: 201208-2
Test Date: 12/8/2020
Test Time: 1:39 PM

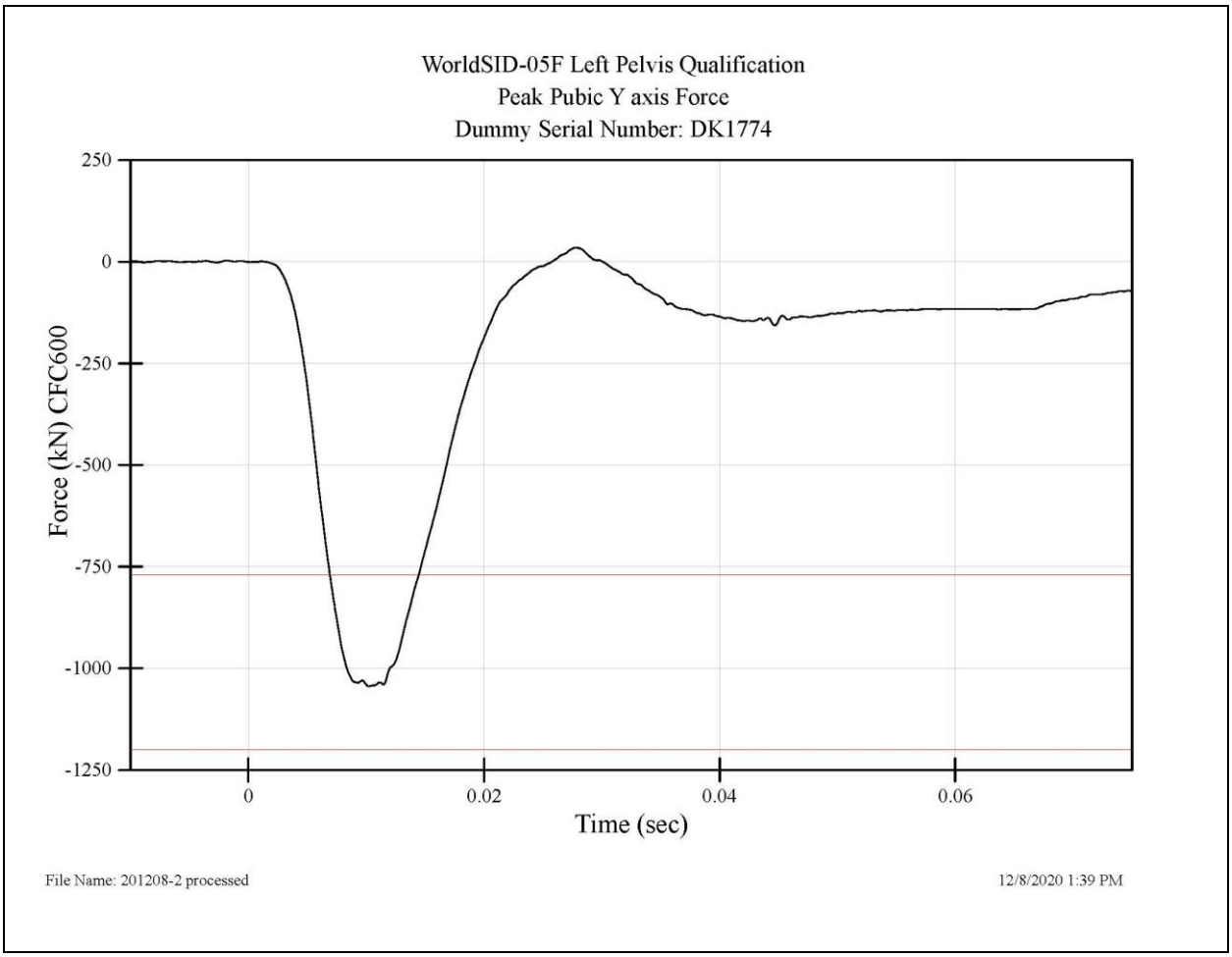
Test Results

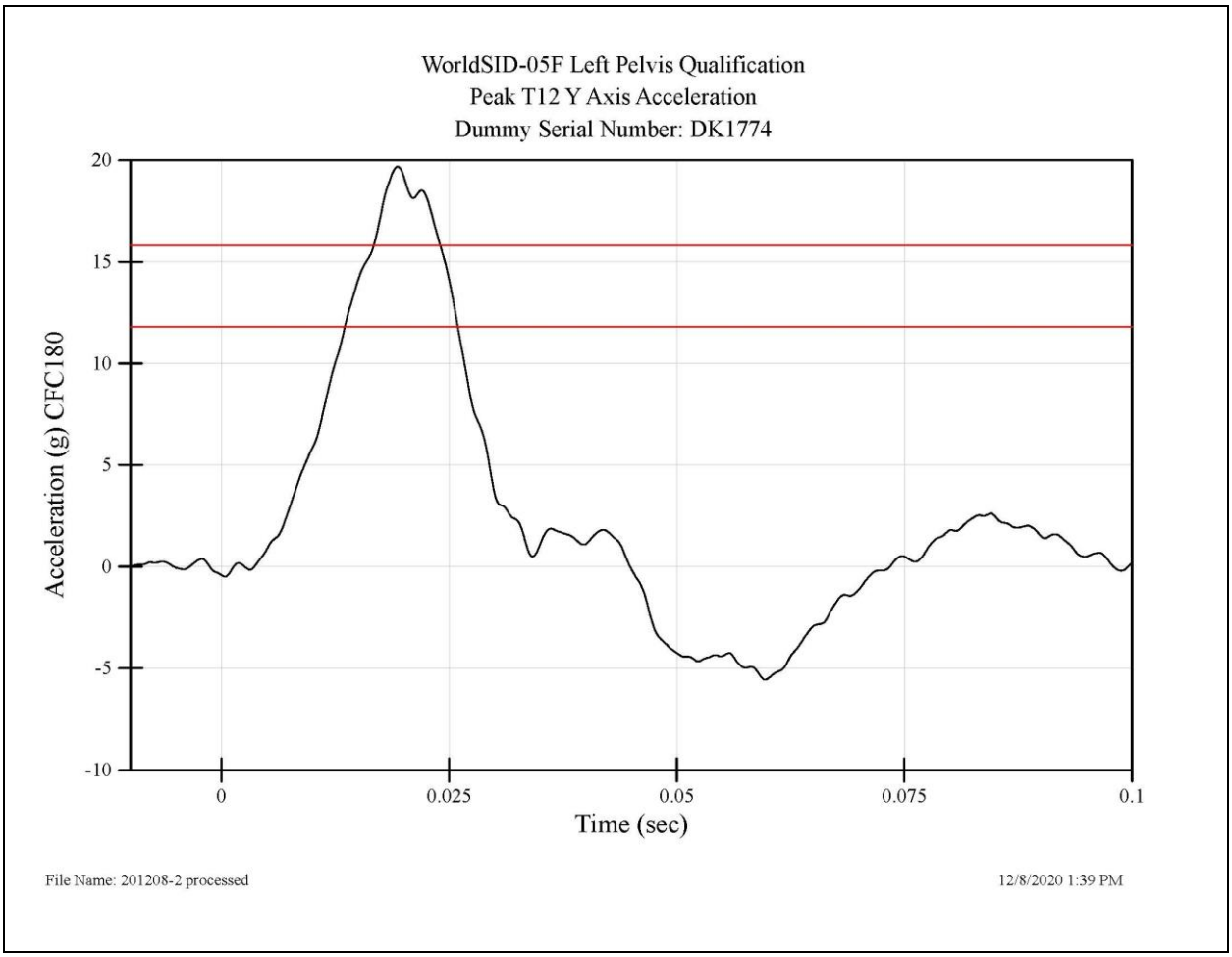
Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	20.9	Pass
Test Humidity (%)	10 - 70	25	Pass
Test Velocity (m/s)	6.60 - 6.80	6.693	Pass
Peak Probe Force (kN)	4.62 - 5.65	5.28	Pass
Peak Pubic Force FY (N)	-1200.0 - (-770.0)	-1044.06	Pass
Peak T12 Acceleration (g)	11.8 - 15.8	19.67	Fail
Peak Pelvis Acceleration (g)	48.6 - 74.4	43.34	Fail

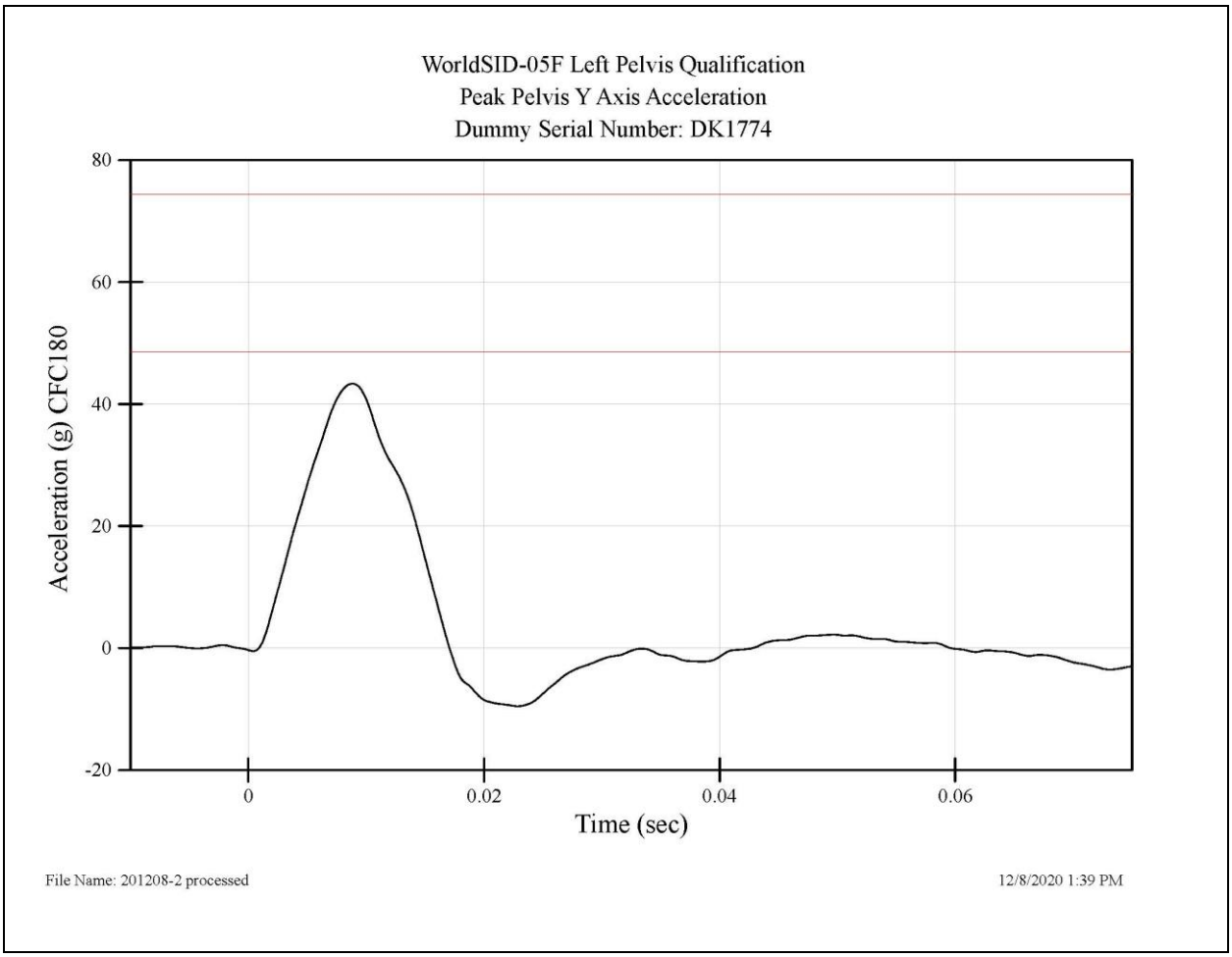
* WorldSID-50M Qualification Manual - Humanetics WorldSID Small Female - Rev E

File Name: 201208-2 processed


WorldSID-05F Left Pelvis Qualification
Peak Pendulum Force
Dummy Serial Number: DK1774
Force (kN) CFC180
6
5
4
3
2
1
0
-1
-0.005
0
0.005
0.01
0.015
0.02
0.025
0.03
Time (sec)
File Name: 201208-2 processed
12/8/2020 1:39 PM


WorldSID-05F Left Pelvis Qualification
Peak Pubic Y axis Force
Dummy Serial Number: DK1774
250
0
-250
-500
-750
-1000
-1250
Force (kN) CFC600
0
0.02
0.04
0.06
Time (sec)
File Name: 201208-2 processed
12/8/2020 1:39 PM


WorldSID-05F Left Pelvis Qualification
Peak T12 Y Axis Acceleration
Dummy Serial Number: DK1774
Acceleration (g) CFC180
20
15
10
5
0
-5
-10
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 201208-2 processed
12/8/2020 1:39 PM


WorldSID-05F Left Pelvis Qualification
Peak Pelvis Y Axis Acceleration
Dummy Serial Number: DK1774
80
60
40
20
0
-20
Acceleration (g) CFC180
0
0.02
0.04
0.06
Time (sec)
File Name: 201208-2 processed
12/8/2020 1:39 PM

Post-Test Calibration Sheets
Passenger S/N DK1774

WorldSID-05F Head Front Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components
Head: DM1000

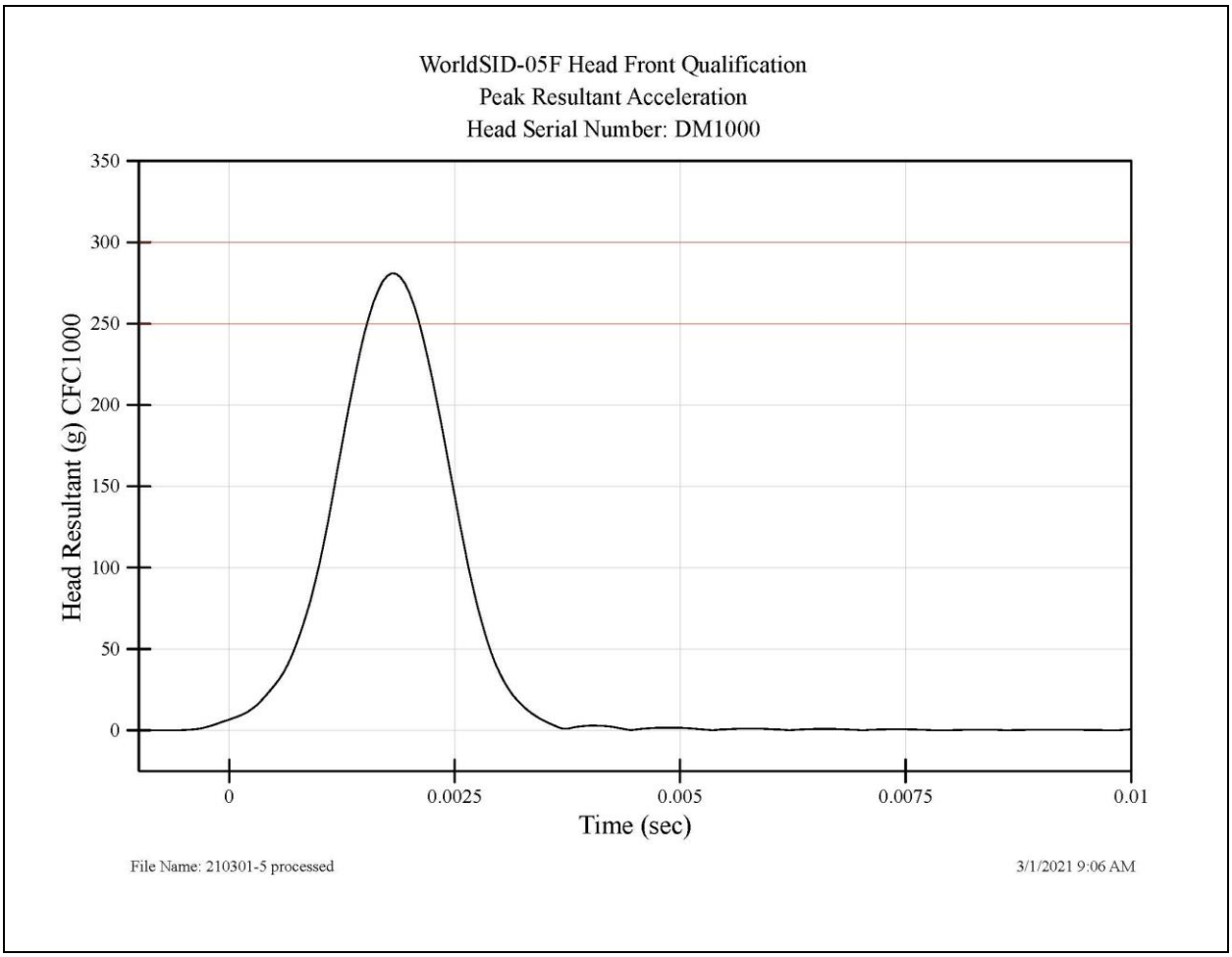
Test ID: 210301-5
Test Date: 3/1/2021
Test Time: 9:06 AM

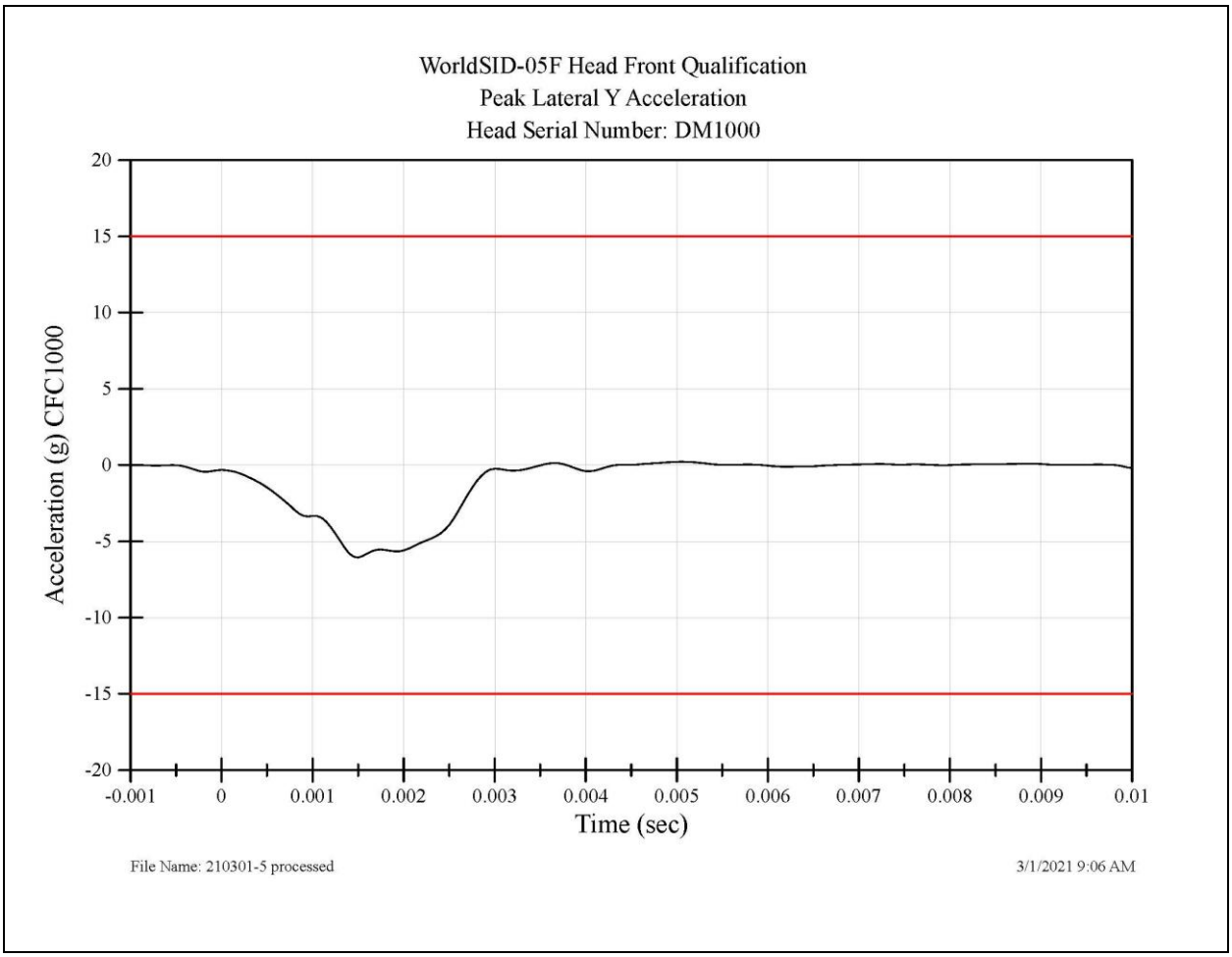
Test Results

Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	21.7	Pass
Test Humidity (%)	10 - 70	51	Pass
Peak Resultant Acceleration (g)	250.0 - 300.0	280.9	Pass
Peak Acceleration, y-axis (g)	-15.00 - 15.00	-6.07	Pass
Oscillations occurring after the main acceleration pulse (%)	-10.0 - 10.0	1.0	Pass

* WorldSID-05F Qualification Manual - Humanetics WorldSID Small Female - Rev E

File Name: 210301-5 processed


WorldSID-05F Head Front Qualification
Peak Resultant Acceleration
Head Serial Number: DM1000
Head Resultant (g) CFC1000
350
300
250
200
150
100
50
0
0
0.0025
0.005
0.0075
0.01
Time (sec)
File Name: 210301-5 processed
3/1/2021 9:06 AM


WorldSID-05F Head Front Qualification
Peak Lateral Y Acceleration
Head Serial Number: DM1000
Acceleration (g) CFC1000
20
15
10
5
0
-5
-10
-15
-20
-0.001
0
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009
0.01
Time (sec)
File Name: 210301-5 processed
3/1/2021 9:06 AM

WorldSID-05F Head Left Lateral Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components
Head: DM1000

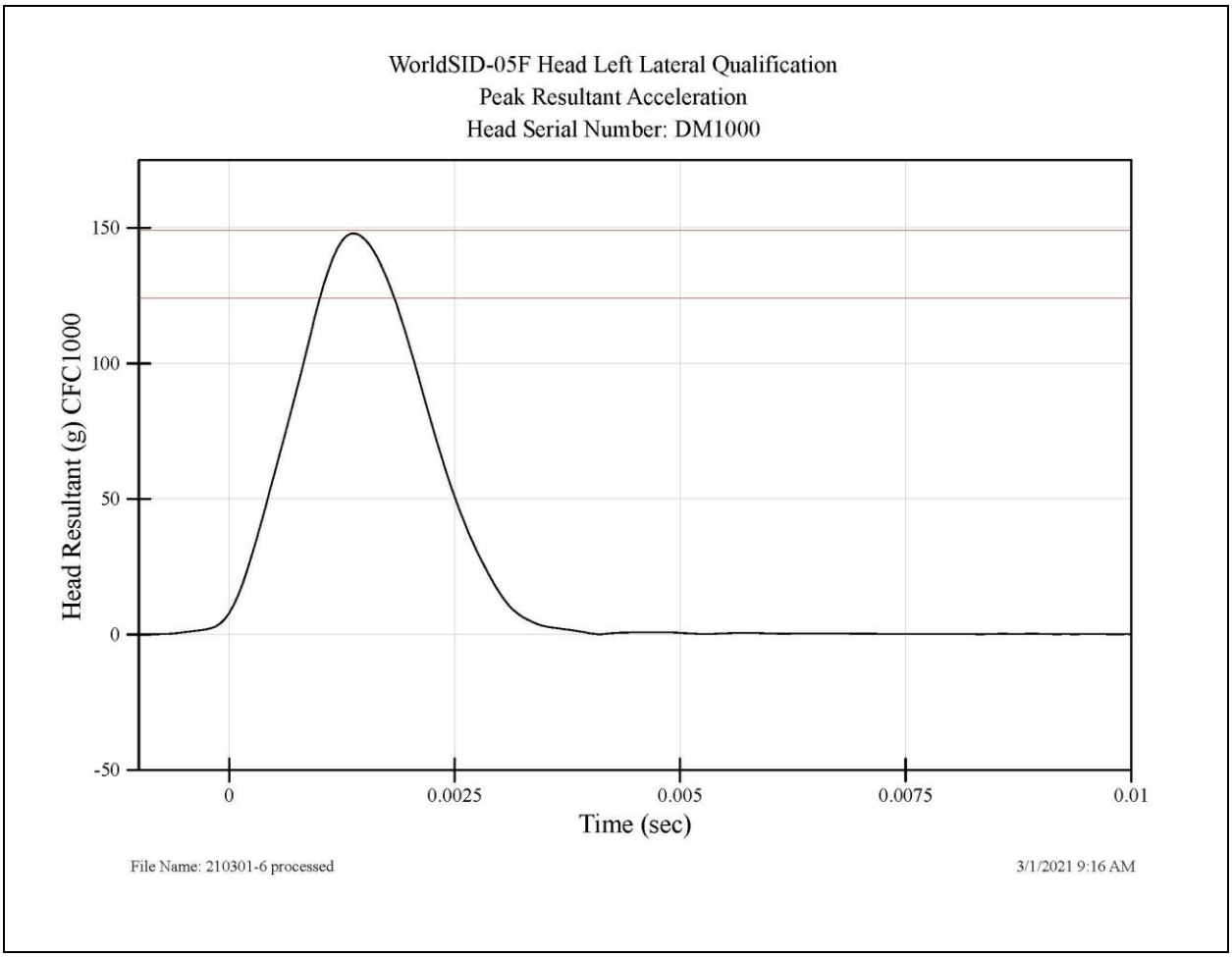
Test ID: 210301-6
Test Date: 3/1/2021
Test Time: 9:16 AM

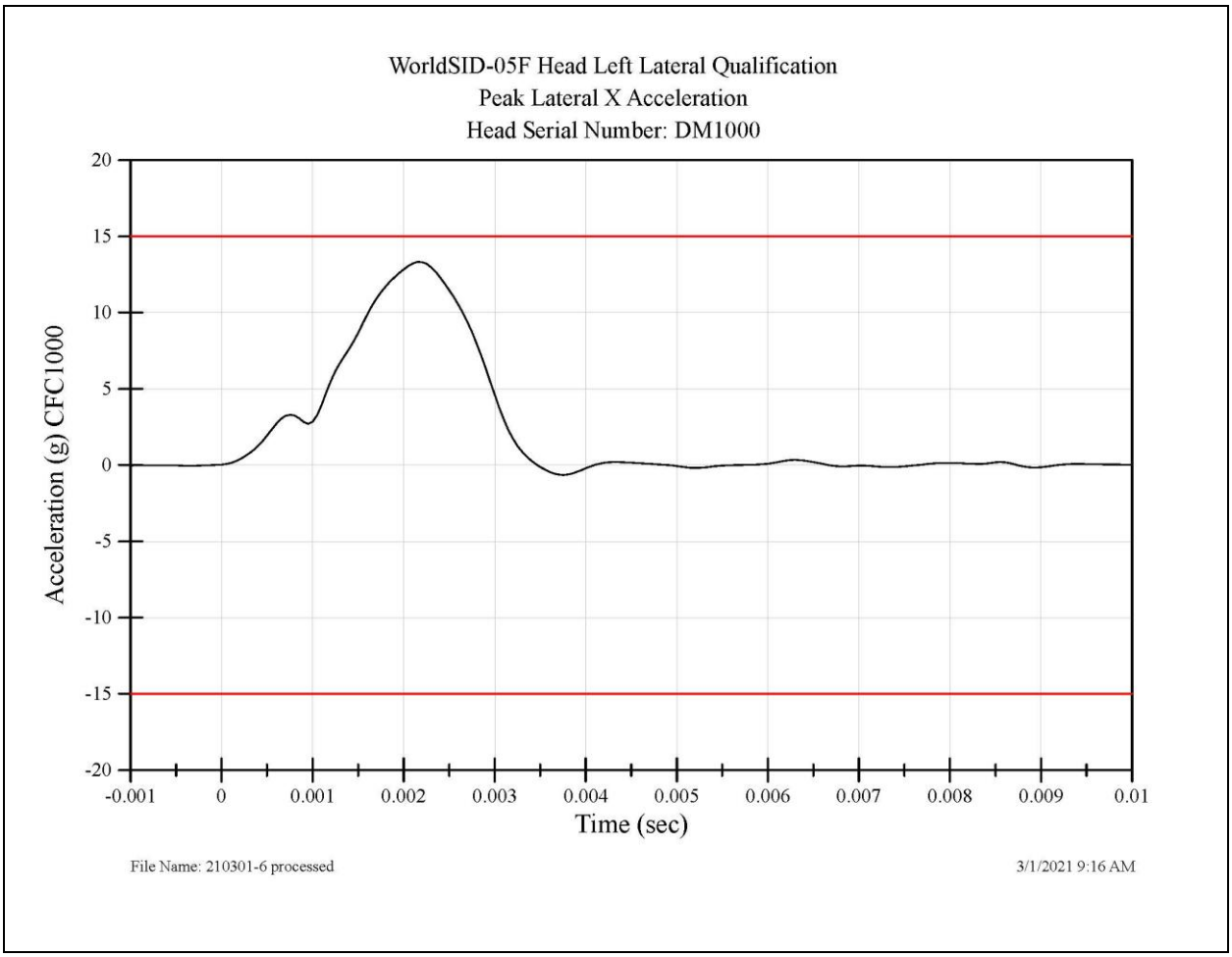
Test Results

Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	21.9	Pass
Test Humidity (%)	10 - 70	52	Pass
Peak Resultant Acceleration (g)	124.0 - 149.0	147.9	Pass
Peak Acceleration, x-axis (g)	-15.00 - 15.00	13.31	Pass
Oscillations occurring after the main acceleration pulse (%)	-10.0 - 10.0	0.6	Pass

* WorldSID-05F Qualification Manual - Humanetics WorldSID Small Female - Rev E

File Name: 210301-6 processed


WorldSID-05F Head Left Lateral Qualification
Peak Resultant Acceleration
Head Serial Number: DM1000
Head Resultant (g) CFC1000
150
100
50
0
-50
0
0.0025
0.005
0.0075
0.01
Time (sec)
File Name: 210301-6 processed
3/1/2021 9:16 AM


WorldSID-05F Head Left Lateral Qualification
Peak Lateral X Acceleration
Head Serial Number: DM1000
Acceleration (g) CFC1000
20
15
10
5
0
-5
-10
-15
-20
-0.001
0
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009
0.01
Time (sec)
File Name: 210301-6 processed
3/1/2021 9:16 AM

WorldSID-05F Head Right Lateral Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components
Head: DM1000

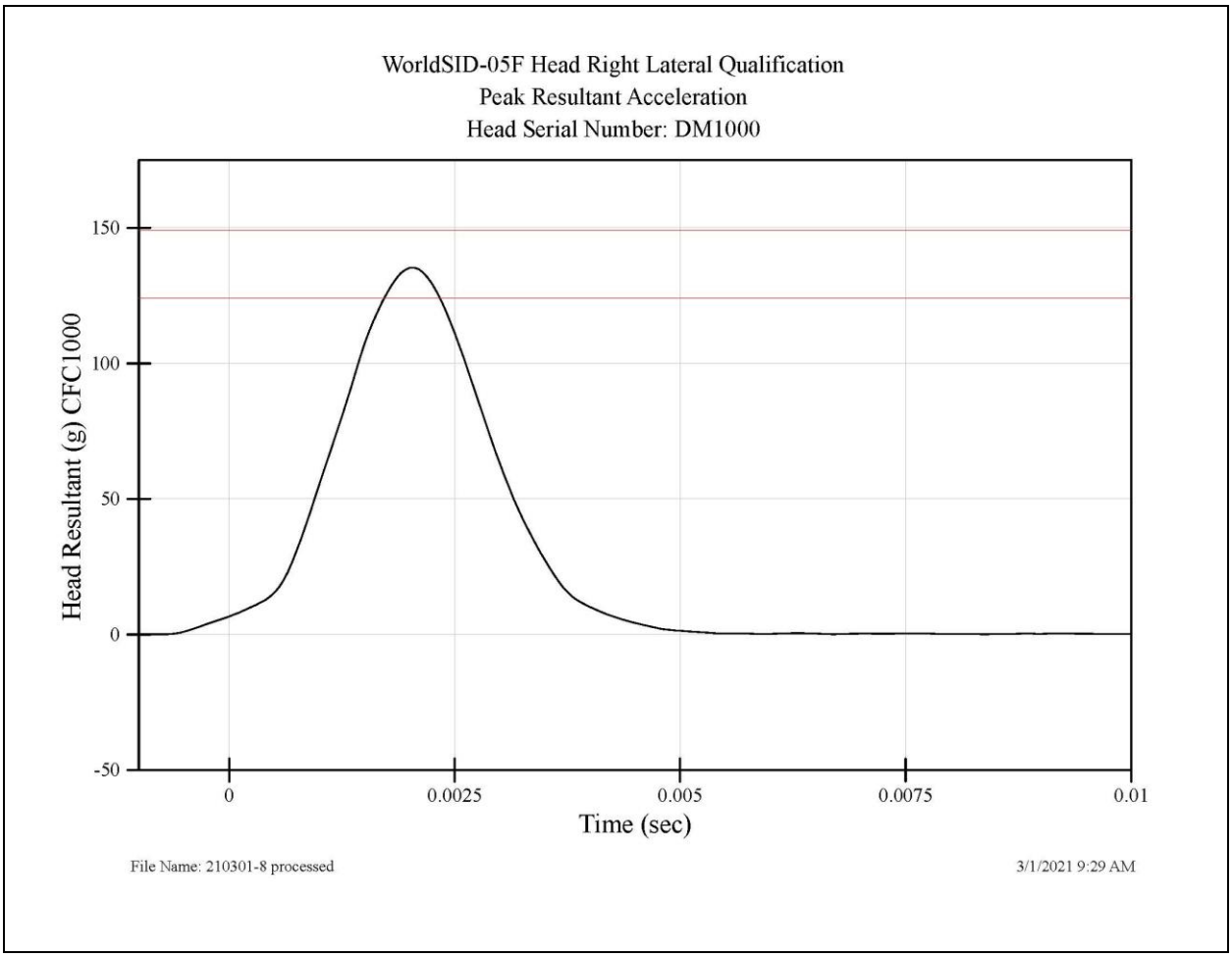
Test ID: 210301-8
Test Date: 3/1/2021
Test Time: 9:29 AM

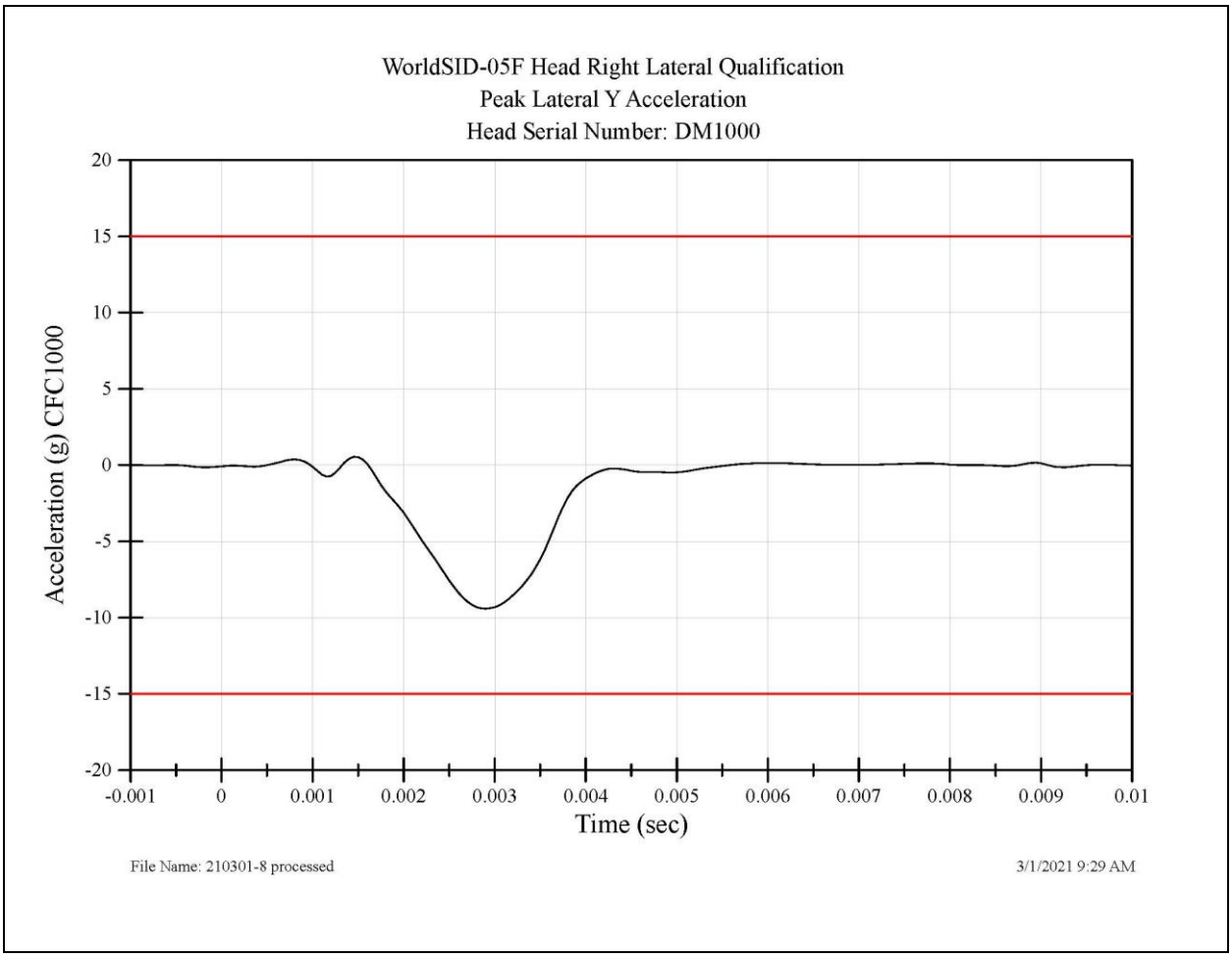
Test Results

Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	21.9	Pass
Test Humidity (%)	10 - 70	52	Pass
Peak Resultant Acceleration (g)	124.0 - 149.0	135.3	Pass
Peak Acceleration, x-axis (g)	-15.00 - 15.00	-9.41	Pass
Oscillations occurring after the main acceleration pulse (%)	-10.0 - 10.0	0.4	Pass

* WorldSID-05F Qualification Manual - Humanetics WorldSID Small Female - Rev E

File Name: 210301-8 processed


WorldSID-05F Head Right Lateral Qualification
Peak Resultant Acceleration
Head Serial Number: DM1000
Head Resultant (g) CFC1000
150
100
50
0
-50
0
0.0025
0.005
0.0075
0.01
Time (sec)
File Name: 210301-8 processed
3/1/2021 9:29 AM


WorldSID-05F Head Right Lateral Qualification
Peak Lateral Y Acceleration
Head Serial Number: DM1000
Acceleration (g) CFC1000
20
15
10
5
0
-5
-10
-15
-20
-0.001
0
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009
0.01
Time (sec)
File Name: 210301-8 processed
3/1/2021 9:29 AM

WorldSID-05F Neck Left Lateral Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components
Neck: DX6209

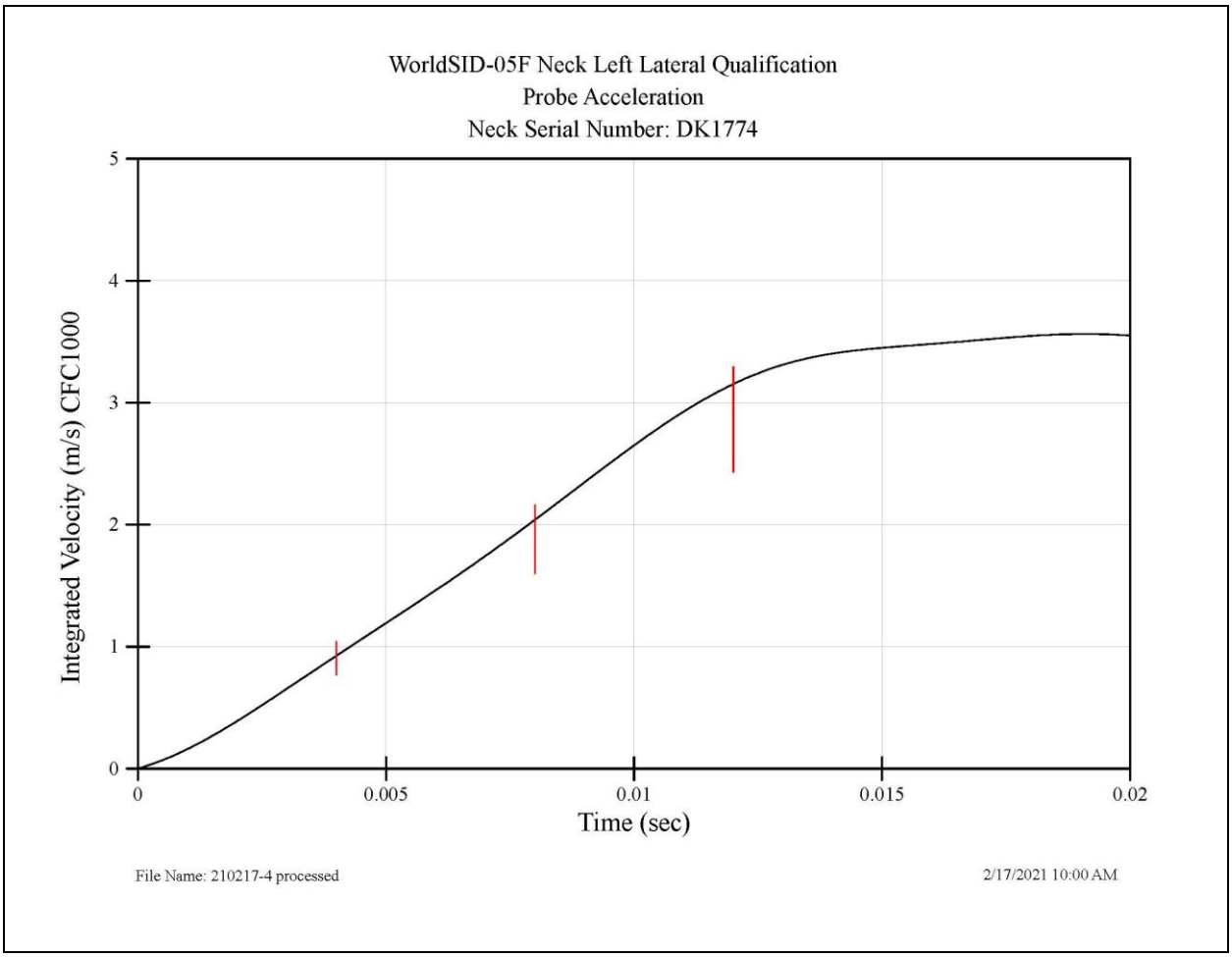
Test ID: 210217-4
Test Date: 2/17/2021
Test Time: 10:00 AM

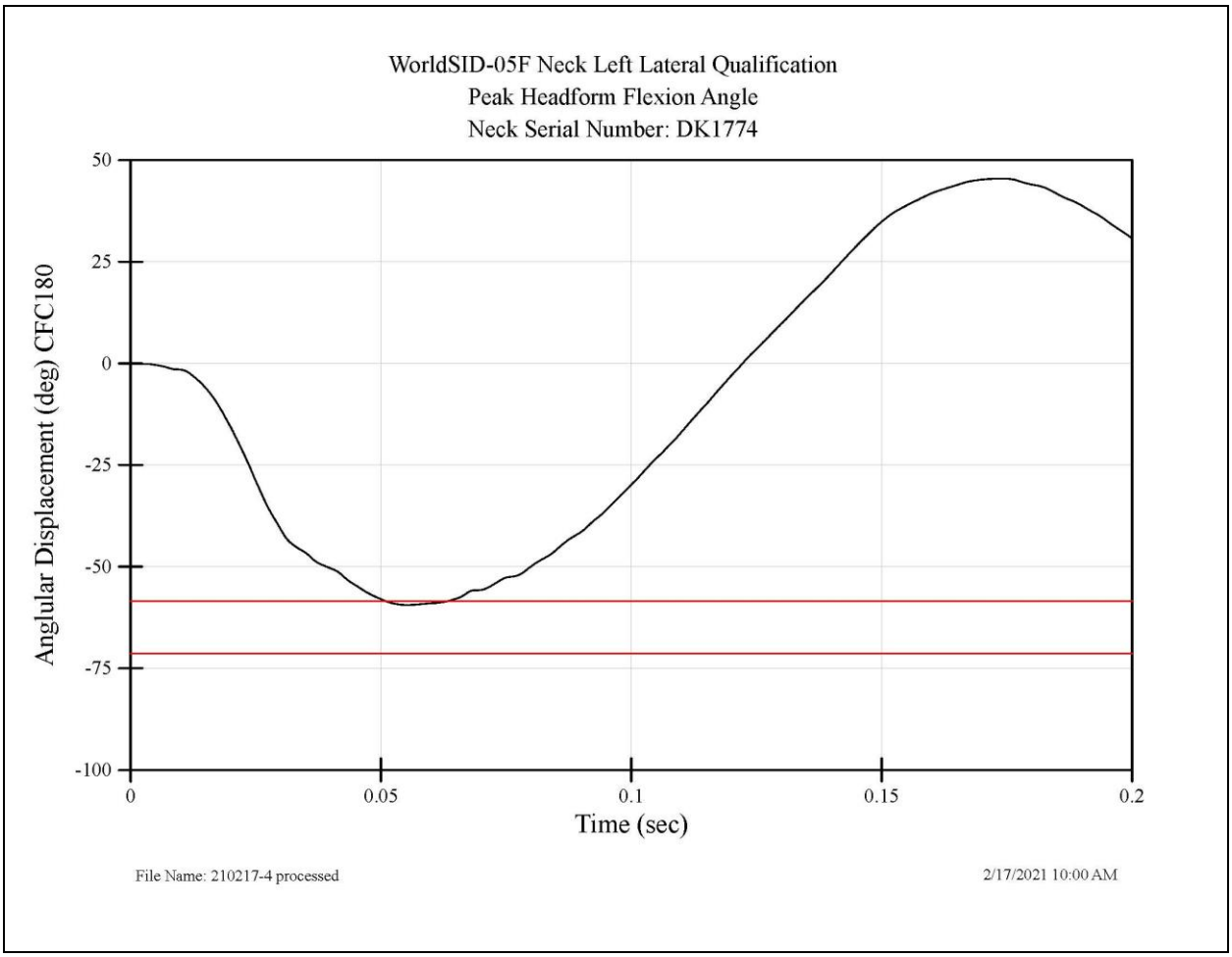
Test Results

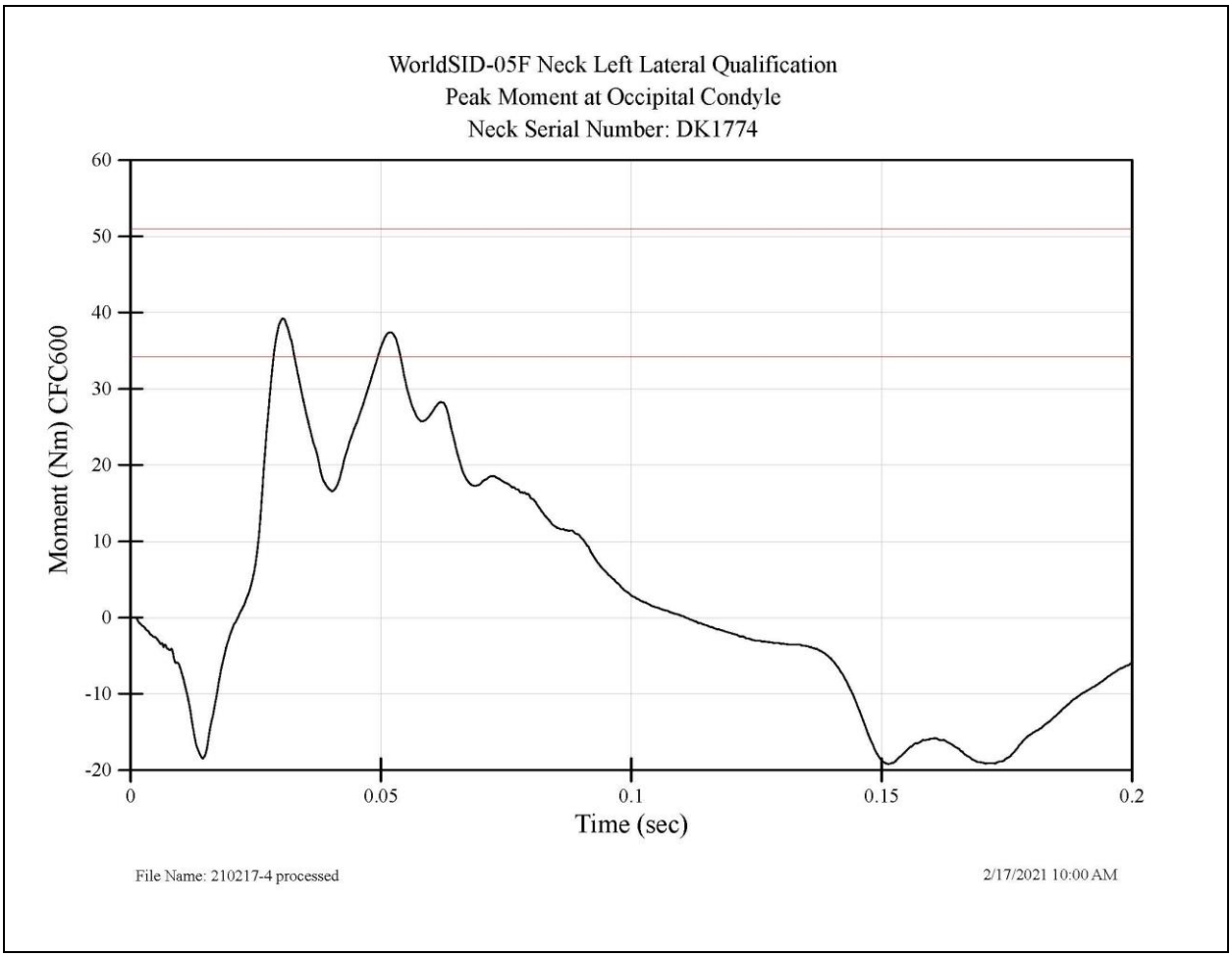
Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	20.8	Pass
Test Humidity (%)	10 - 70	18	Pass
Test Velocity (m/s)	3.30 - 3.50	3.43	Pass
Pendulum Velocity at 4 ms after T0 (m/s)	0.77 - 1.04	0.92	Pass
Pendulum Velocity at 8 ms after T0 (m/s)	1.60 - 2.16	2.04	Pass
Pendulum Velocity at 12 ms after T0 (m/s)	2.43 - 3.29	3.15	Pass
Peak Headform Flexion Angle (deg)	-71.4 - (-58.5)	-59.4	Pass
Peak Headform Flexion Angle Decay Time to 0 degrees (ms)	57.3 - 76.5	67.1	Pass
Peak X-Axis Moment at Occipital Condyle (Nm)	34.2 - 51.0	39.2	Pass
Peak X-Axis Moment at Occipital Condyle Decay Time to 0 Nm (ms)	69.4 - 93.3	80.5	Pass

* WorldSID-05F Qualification Manual - Humanetics WorldSID Small Female - Rev E

File Name: 210217-4 processed


WorldSID-05F Neck Left Lateral Qualification
Probe Acceleration
Neck Serial Number: DK1774
Integrated Velocity (m/s) CFC1000
5
4
3
2
1
0
0
0.005
0.01
0.015
0.02
Time (sec)
File Name: 210217-4 processed
2/17/2021 10:00 AM


WorldSID-05F Neck Left Lateral Qualification
Peak Headform Flexion Angle
Neck Serial Number: DK1774
Anglular Displacement (deg) CFC180
50
25
0
-25
-50
-75
-100
0
0.05
0.1
0.15
0.2
Time (sec)
File Name: 210217-4 processed
2/17/2021 10:00 AM


WorldSID-05F Neck Left Lateral Qualification
Peak Moment at Occipital Condyle
Neck Serial Number: DK1774
Moment (Nm) CFC600
60
50
40
30
20
10
0
-10
-20
0
0.05
0.1
0.15
0.2
Time (sec)
File Name: 210217-4 processed
2/17/2021 10:00 AM

WorldSID-05F Neck Right Lateral Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components
Neck: DX6209

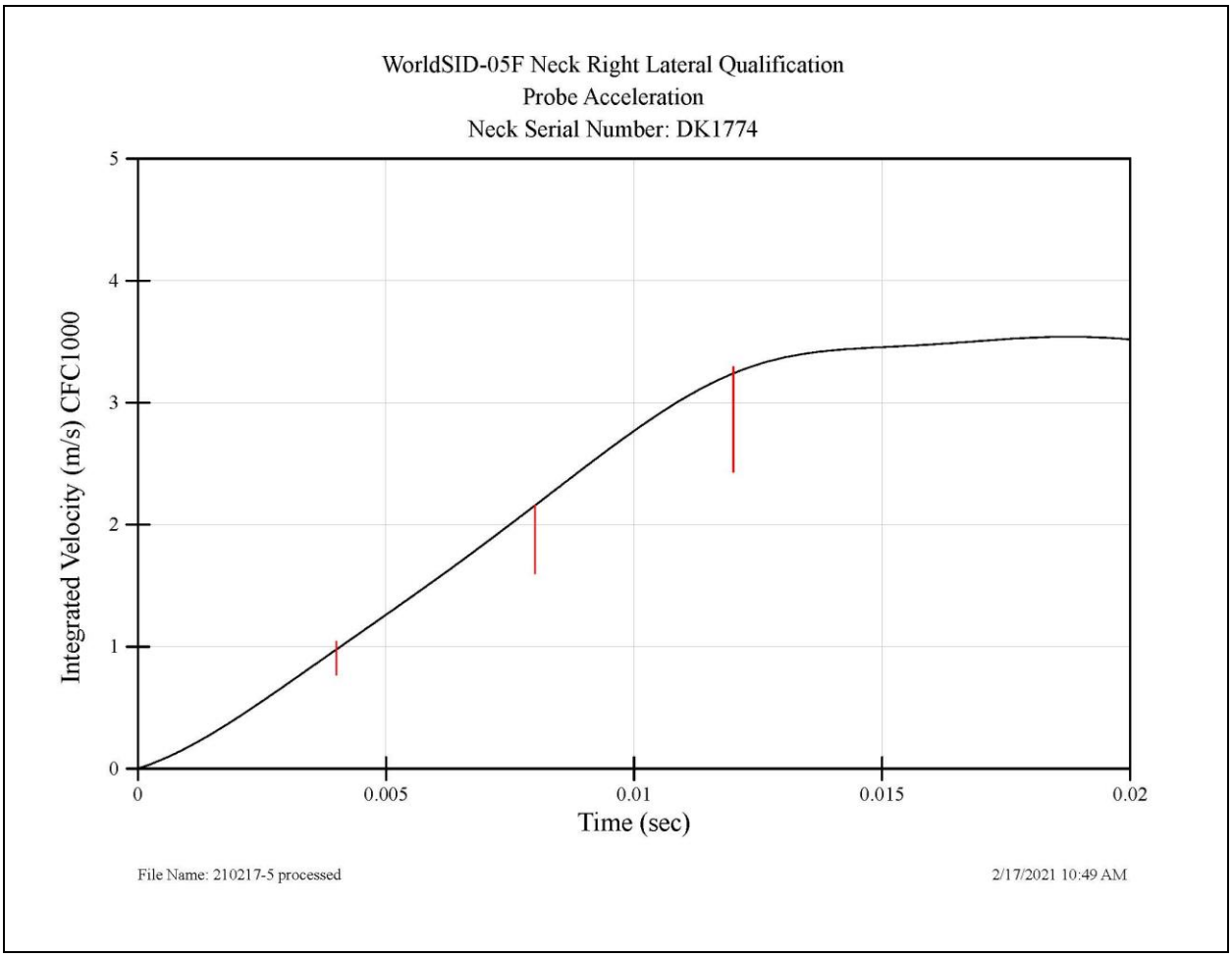
Test ID: 210217-5
Test Date: 2/17/2021
Test Time: 10:49 AM

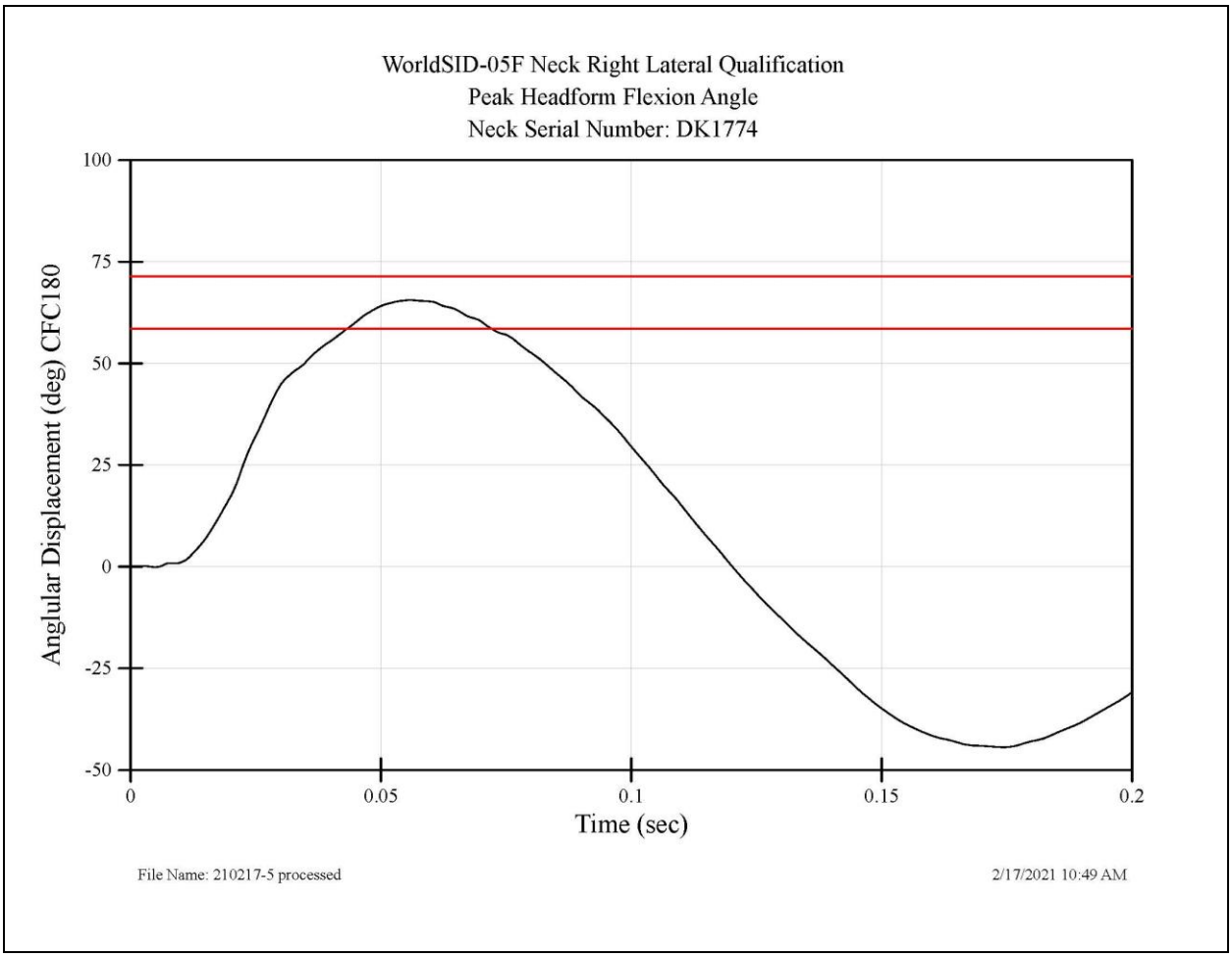
Test Results

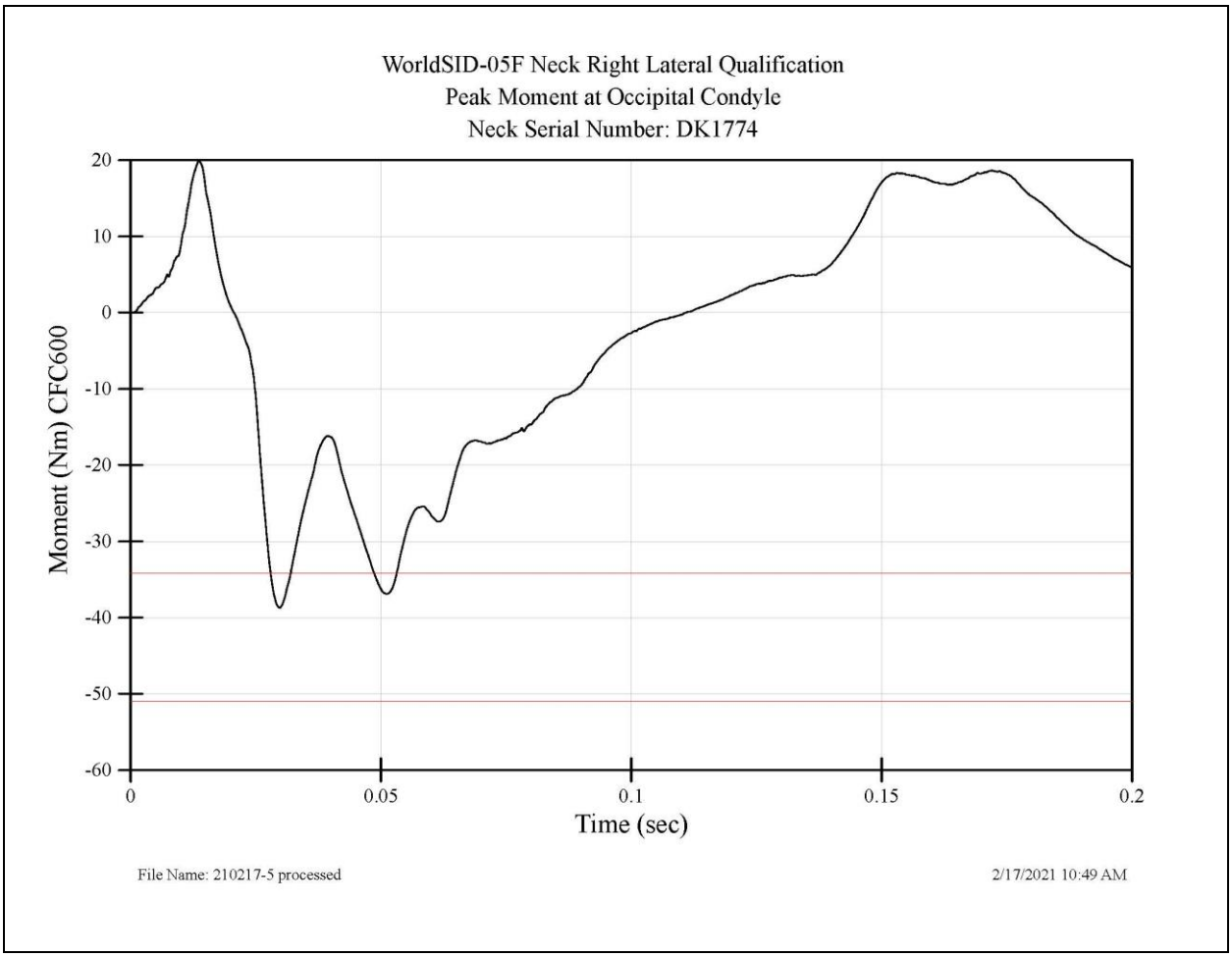
Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	21.2	Pass
Test Humidity (%)	10 - 70	18	Pass
Test Velocity (m/s)	3.30 - 3.50	3.45	Pass
Pendulum Velocity at 4 ms after T0 (m/s)	0.77 - 1.04	0.98	Pass
Pendulum Velocity at 8 ms after T0 (m/s)	1.60 - 2.16	2.16	Pass
Pendulum Velocity at 12 ms after T0 (m/s)	2.43 - 3.29	3.24	Pass
Peak Headform Flexion Angle (deg)	58.5 - 71.4	65.5	Pass
Peak Headform Flexion Angle Decay Time to 0 degrees (ms)	57.3 - 76.5	64.4	Pass
Peak X-Axis Moment at Occipital Condyle (Nm)	-51.0 - (-34.2)	-38.7	Pass
Peak X-Axis Moment at Occipital Condyle Decay Time to 0 Nm (ms)	69.4 - 93.3	81.2	Pass

* WorldSID-05F Qualification Manual - Humanetics WorldSID Small Female - Rev E

File Name: 210217-5 processed


WorldSID-05F Neck Right Lateral Qualification
Probe Acceleration
Neck Serial Number: DK1774
Integrated Velocity (m/s) CFC1000
5
4
3
2
1
0
0
0.005
0.01
0.015
0.02
Time (sec)
File Name: 210217-5 processed
2/17/2021 10:49 AM


WorldSID-05F Neck Right Lateral Qualification
Peak Headform Flexion Angle
Neck Serial Number: DK1774
Anglular Displacement (deg) CFC180
100
75
50
25
0
-25
-50
0
0.05
0.1
0.15
0.2
Time (sec)
File Name: 210217-5 processed
2/17/2021 10:49 AM


WorldSID-05F Neck Right Lateral Qualification
Peak Moment at Occipital Condyle
Neck Serial Number: DK1774
Moment (Nm) CFC600
20
10
0
-10
-20
-30
-40
-50
-60
0
0.05
0.1
0.15
0.2
Time (sec)
File Name: 210217-5 processed
2/17/2021 10:49 AM

WorldSID-05F Shoulder Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components

Shoulder Pad: W5-P01
Shoulder Rib: DM6270
Thorax Rib 1: DM2783
Thorax Rib 2: DM2784
Thorax Rib 3: DM2787
RibEye: 161
Impacted Arm: DJ1634

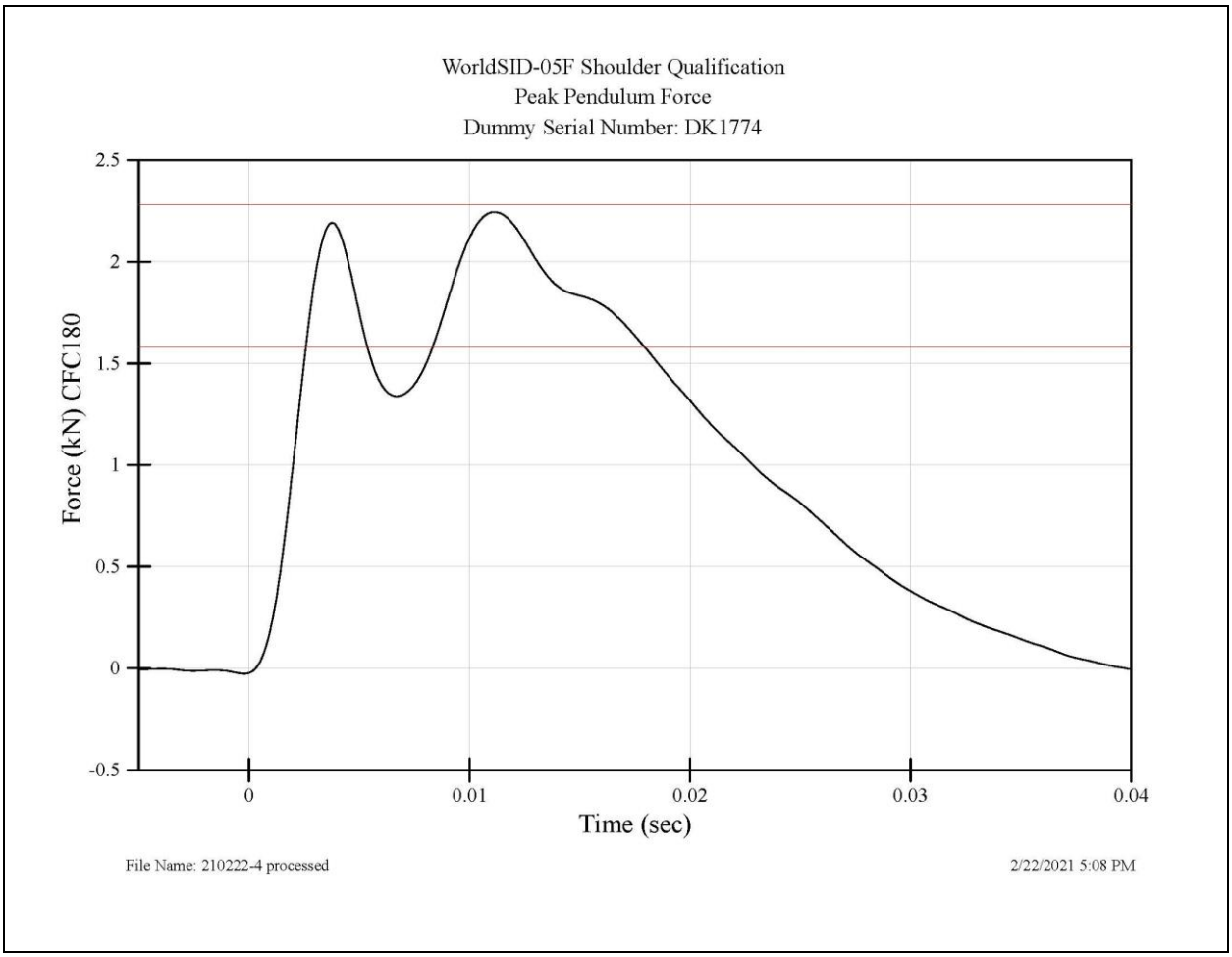
Test ID: 210222-4
Test Date: 2/22/2021
Test Time: 5:08 PM

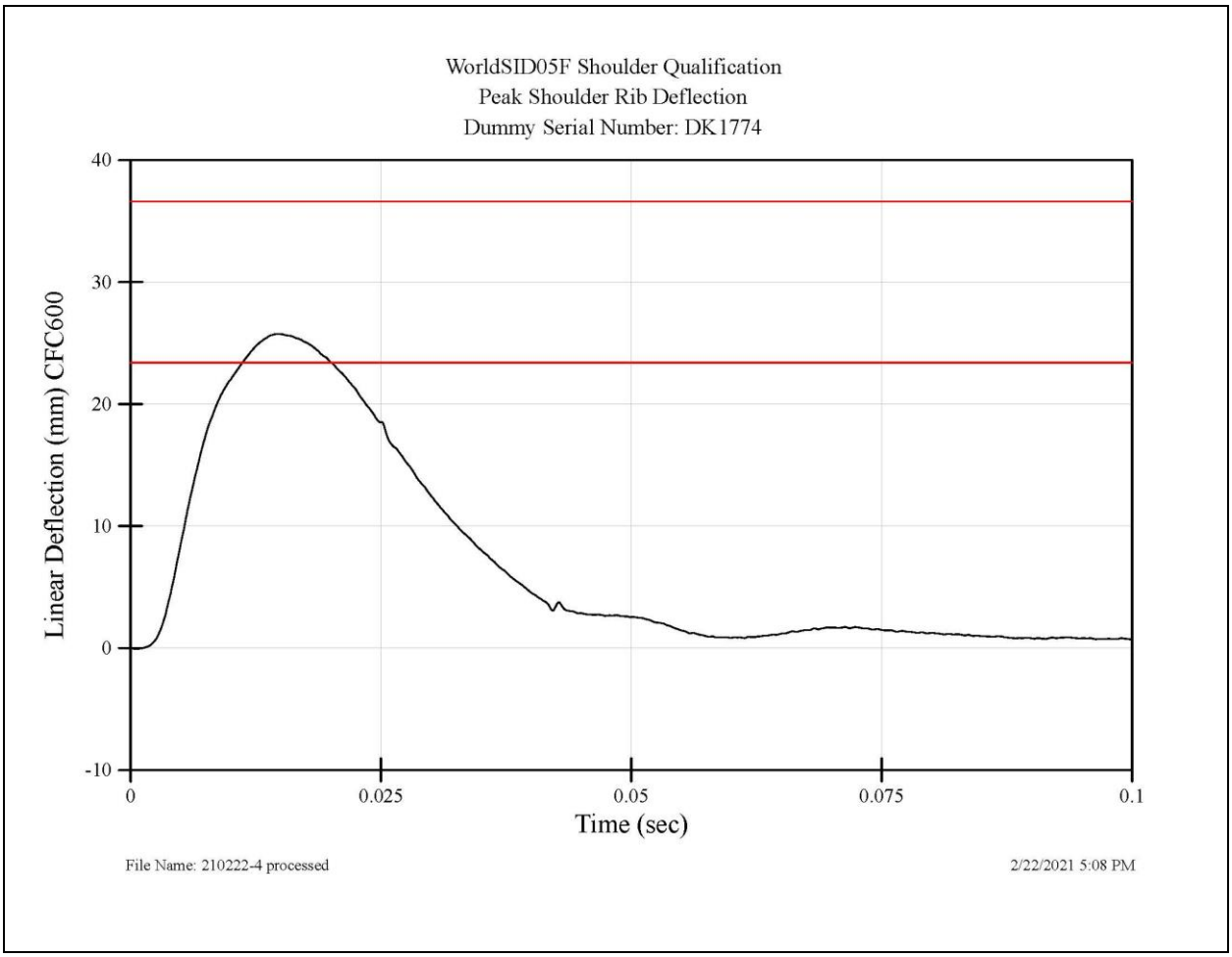
Test Results

Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	21.4	Pass
Test Humidity (%)	10 - 70	58	Pass
Test Velocity (m/s)	4.20 - 4.40	4.305	Pass
Thorax Rib Temperature Sensor (°C)	20.6 - 23.8	23.5	Pass
Peak Probe Force (kN)	1.58 - 2.28	2.24	Pass
Peak Shoulder Rib Length Change (mm)	23.4 - 36.6	25.7	Pass

* WorldSID-05F Qualification Manual - Humanetics WorldSID Small Female - Rev E

File Name: 210222-4 processed


WorldSID-05F Shoulder Qualification
Peak Pendulum Force
Dummy Serial Number: DK1774
Force (kN) CFC180
2.5
2
1.5
1
0.5
0
-0.5
0
0.01
0.02
0.03
0.04
Time (sec)
File Name: 210222-4 processed
2/22/2021 5:08 PM


WorldSID05F Shoulder Qualification
Peak Shoulder Rib Deflection
Dummy Serial Number: DK1774
Linear Deflection (mm) CFC600
40
30
20
10
0
-10
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 210222-4 processed
2/22/2021 5:08 PM

WorldSID-05F Thorax with Arm Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components

Shoulder Rib: DM6270	Abdomen Rib 1: DM5165
Thorax Rib 1: DM2783	Abdomen Rib 2: DM5167
Thorax Rib 2: DM2784	RibEye: 161
Thorax Rib 3: DM2787	Impacted Arm: DJ1634

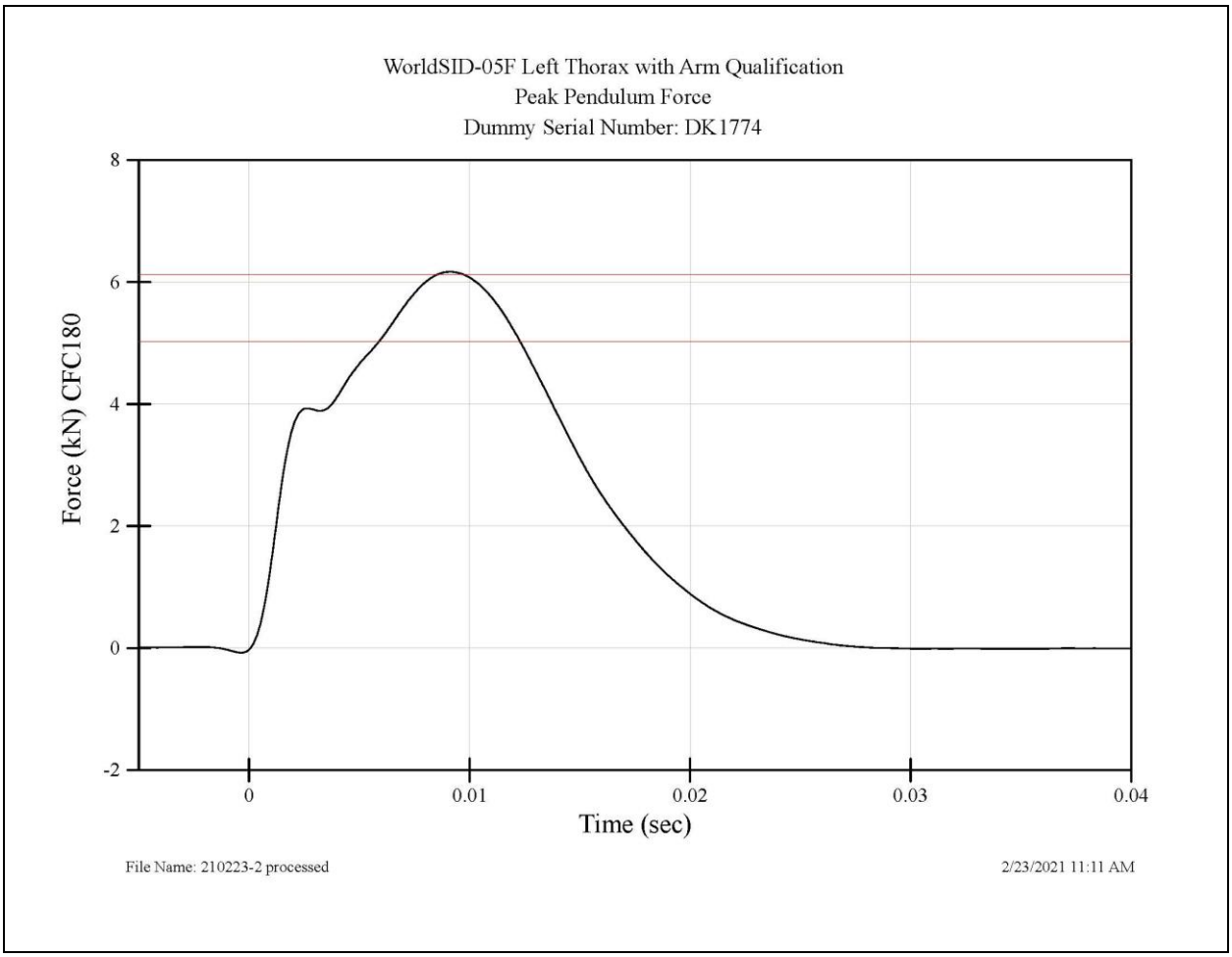
Test ID: 210223-2
Test Date: 2/23/2021
Test Time: 11:11 AM

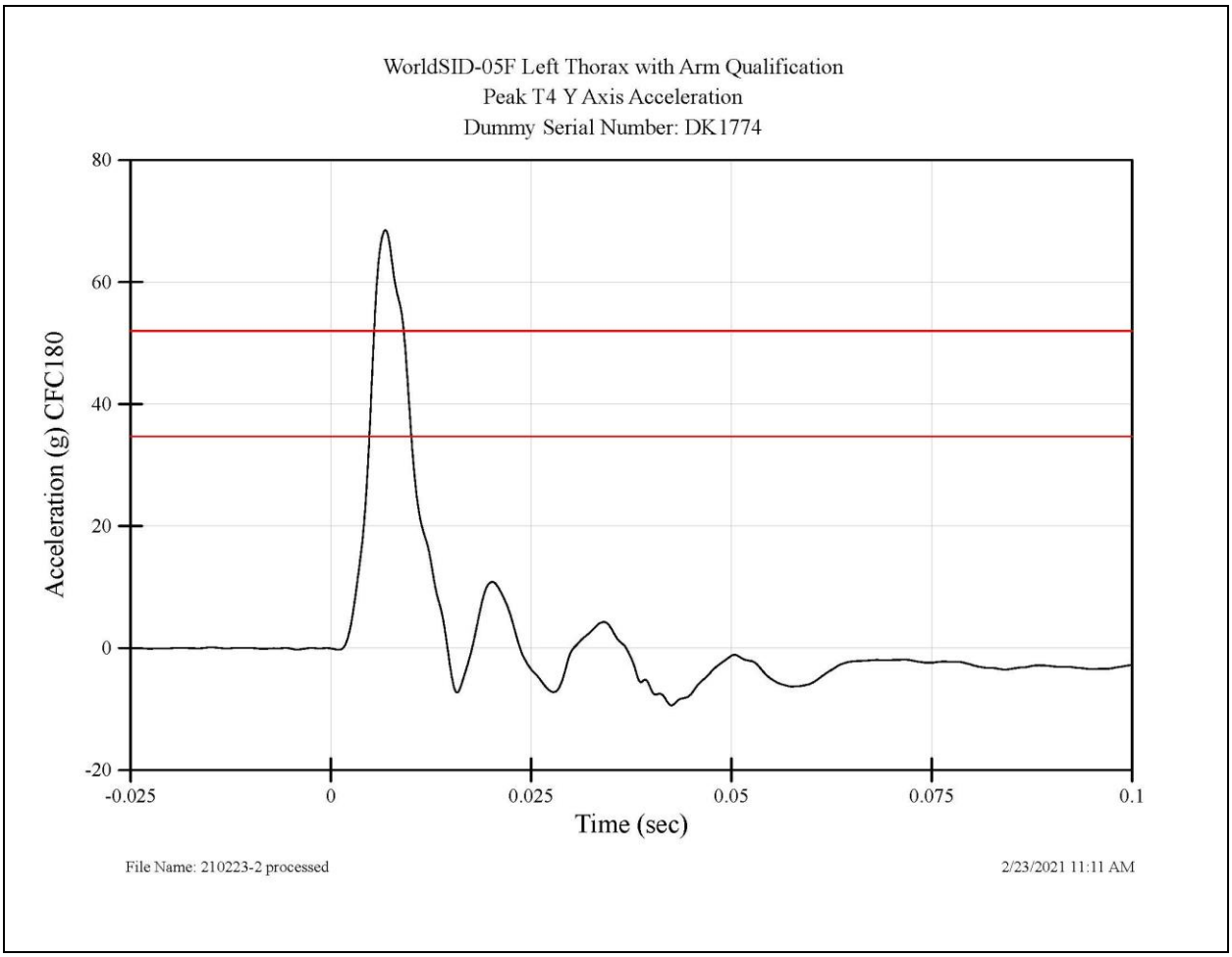
Test Results

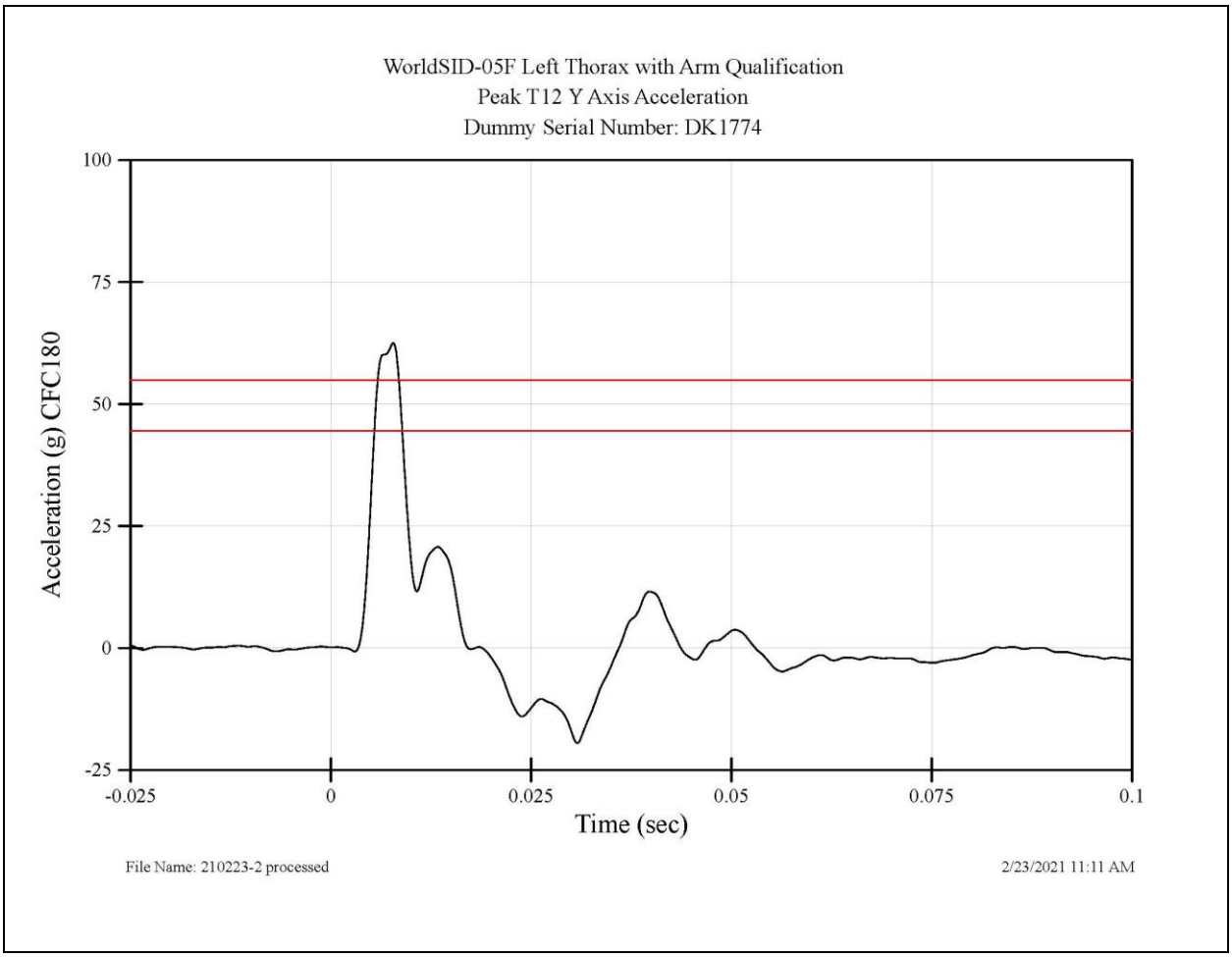
Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	21.4	Pass
Test Humidity (%)	10 - 70	61	Pass
Test Velocity (m/s)	6.60 - 6.80	6.68	Pass
Thorax Rib Temperature Sensor (°C)	20.6 - 23.8	22.0	Pass
Peak Probe Force (kN)	5.02 - 6.13	6.17	Fail
Peak T4 Y Acceleration	34.7 - 52.0	68.5	Fail
Peak T12 Y Acceleration	44.5 - 54.9	62.5	Fail
Peak Thorax Rib 1 Y Length Change (mm)	18.3 - 26.4	17.6	Fail
Peak Thorax Rib 2 Y Length Change (mm)	21.6 - 26.4	18.7	Fail
Peak Thorax Rib 3 Y Length Change (mm)	19.7 - 26.6	14.7	Fail

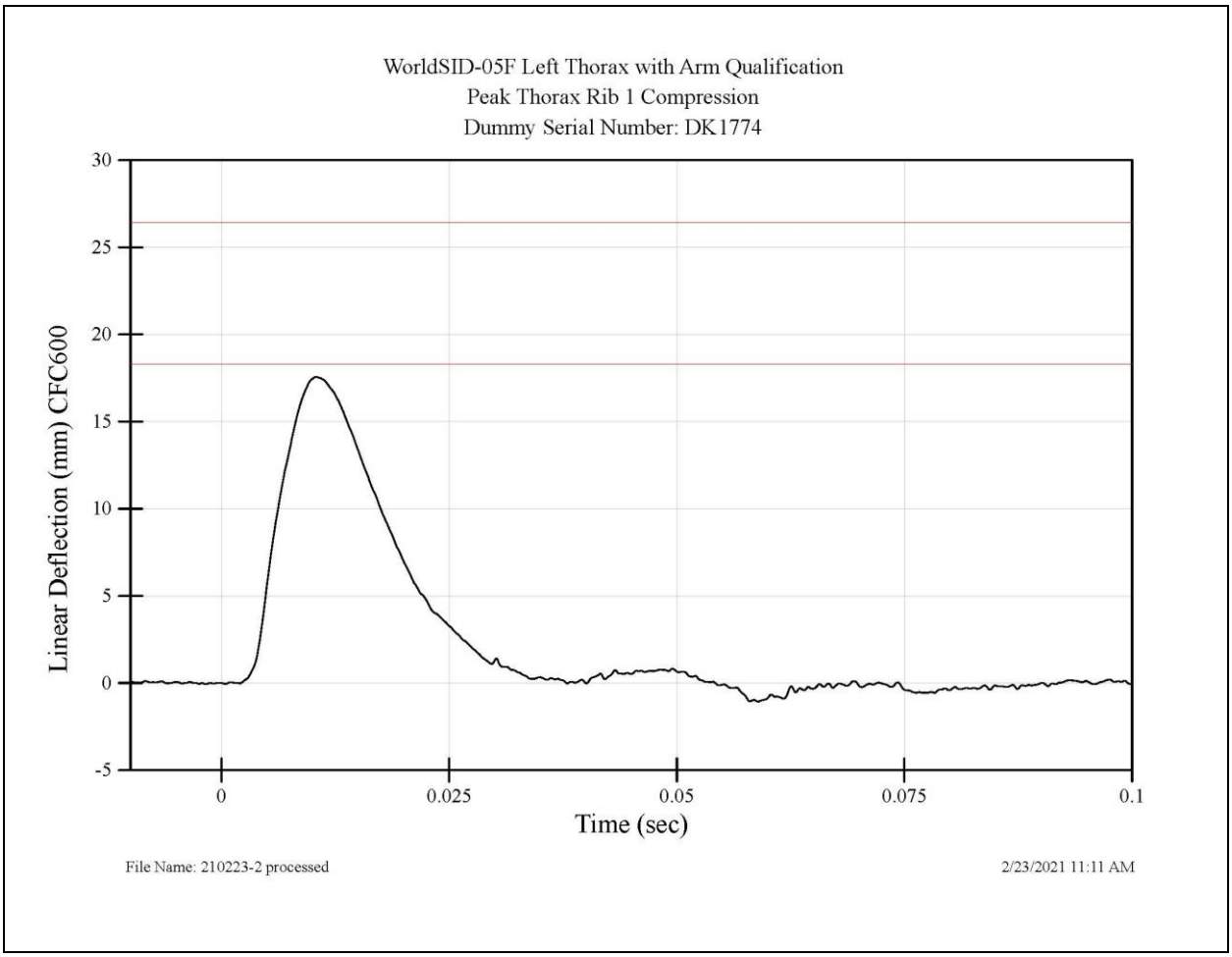
* WorldSID-05F Qualification Manual - Humanetics WorldSID Small Female - Rev E

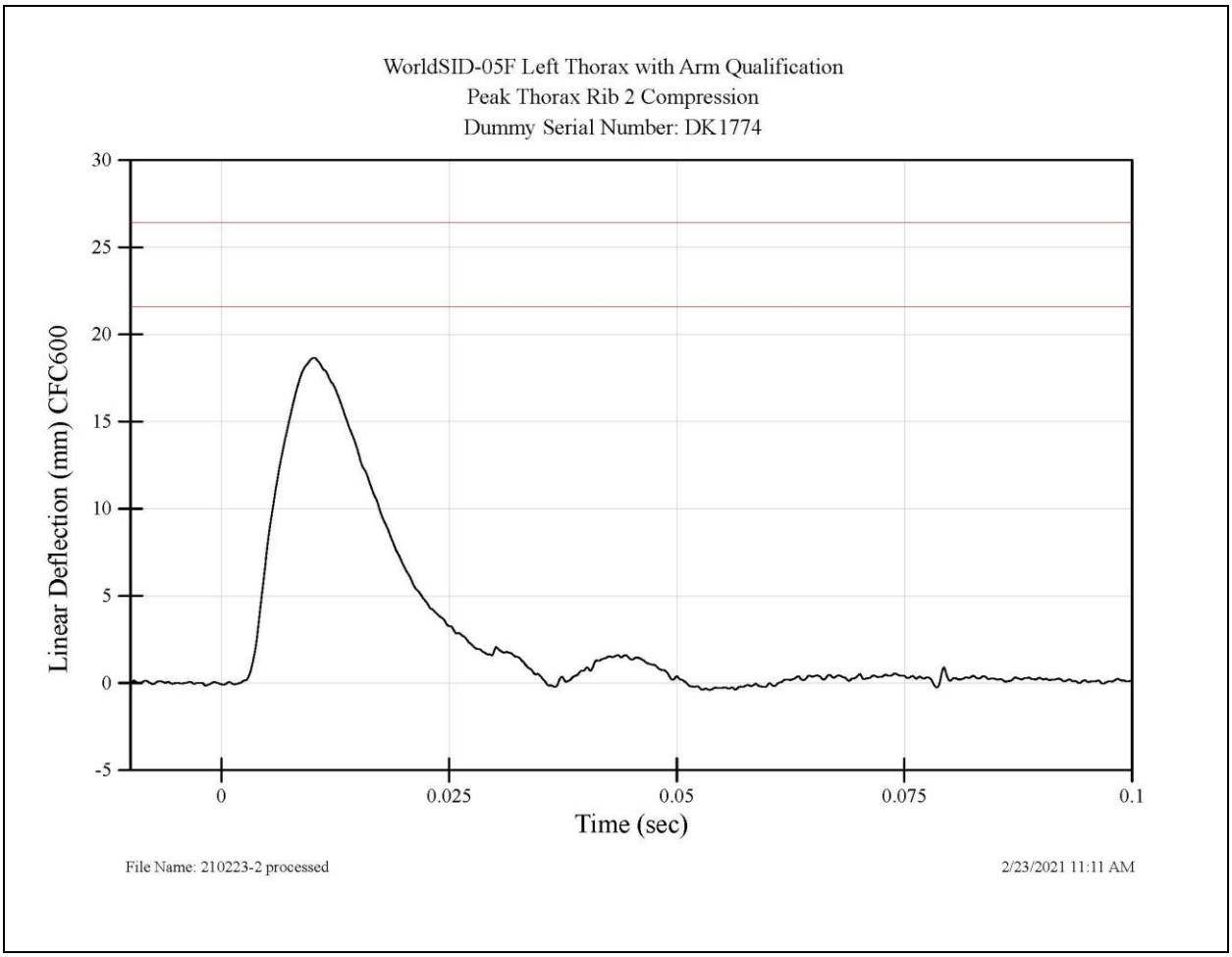
File Name: 210223-2 processed

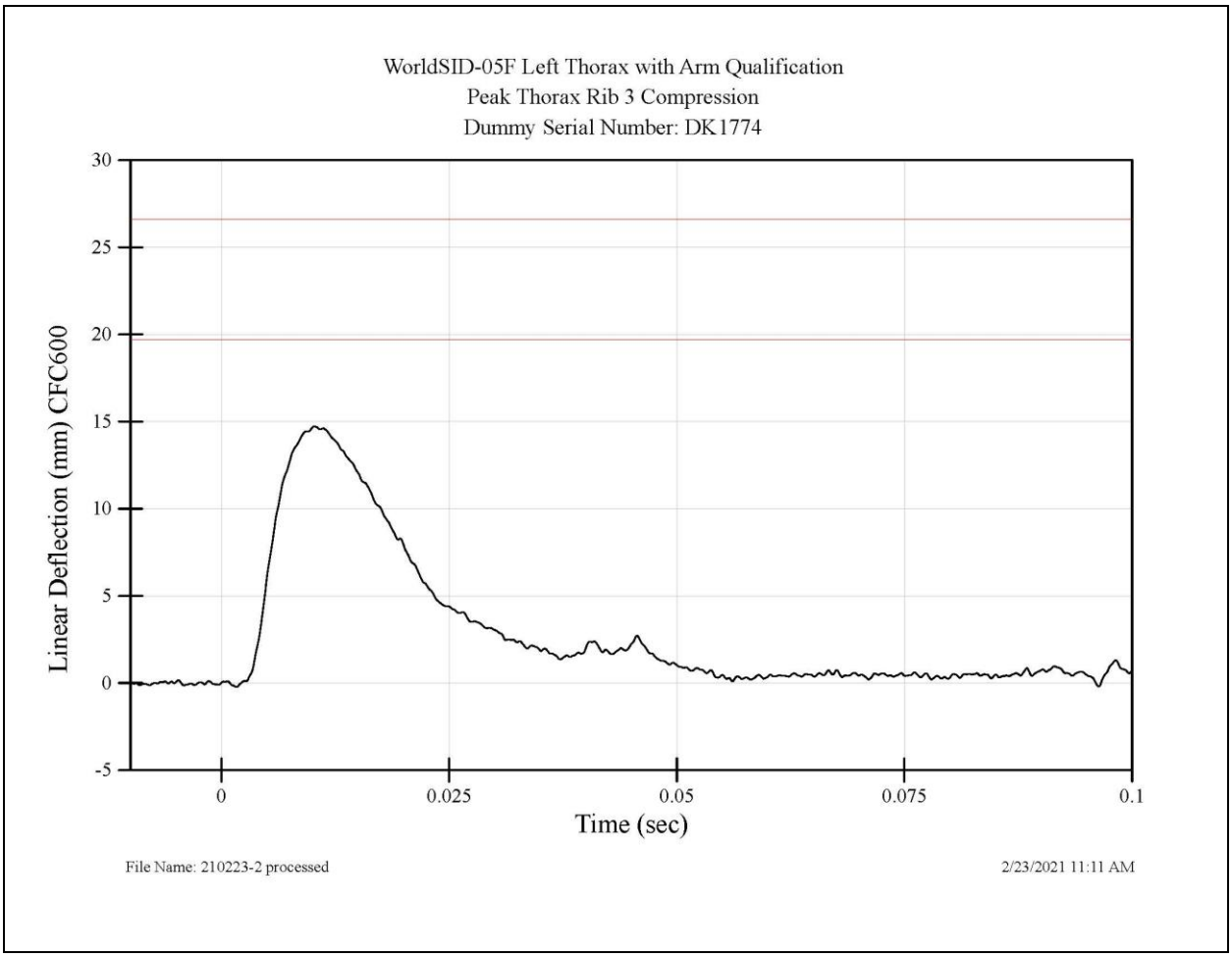

WorldSID-05F Left Thorax with Arm Qualification
Peak Pendulum Force
Dummy Serial Number: DK1774
Force (kN) CFC180
8
6
4
2
0
-2
0
0.01
0.02
0.03
0.04
Time (sec)
File Name: 210223-2 processed
2/23/2021 11:11 AM


WorldSID-05F Left Thorax with Arm Qualification
Peak T4 Y Axis Acceleration
Dummy Serial Number: DK1774
Acceleration (g) CFC180
80
60
40
20
0
-20
-0.025
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 210223-2 processed
2/23/2021 11:11 AM


WorldSID-05F Left Thorax with Arm Qualification
Peak T12 Y Axis Acceleration
Dummy Serial Number: DK1774
Acceleration (g) CFC180
100
75
50
25
0
-25
-0.025
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 210223-2 processed
2/23/2021 11:11 AM


WorldSID-05F Left Thorax with Arm Qualification
Peak Thorax Rib 1 Compression
Dummy Serial Number: DK1774
Linear Deflection (mm) CFC600
30
25
20
15
10
5
0
-5
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 210223-2 processed
2/23/2021 11:11 AM


WorldSID-05F Left Thorax with Arm Qualification
Peak Thorax Rib 2 Compression
Dummy Serial Number: DK1774
Linear Deflection (mm) CFC600
30
25
20
15
10
5
0
-5
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 210223-2 processed
2/23/2021 11:11 AM


WorldSID-05F Left Thorax with Arm Qualification
Peak Thorax Rib 3 Compression
Dummy Serial Number: DK1774
Linear Deflection (mm) CFC600
30
25
20
15
10
5
0
-5
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 210223-2 processed
2/23/2021 11:11 AM

WorldSID-05F Thorax without Arm Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components

Shoulder Rib: DM6270
Thorax Rib 1: DM2783
Thorax Rib 2: DM2784
Thorax Rib 3: DM2787
Abdomen Rib 1: DM5165
Abdomen Rib 2: DM5167
RibEye: 161

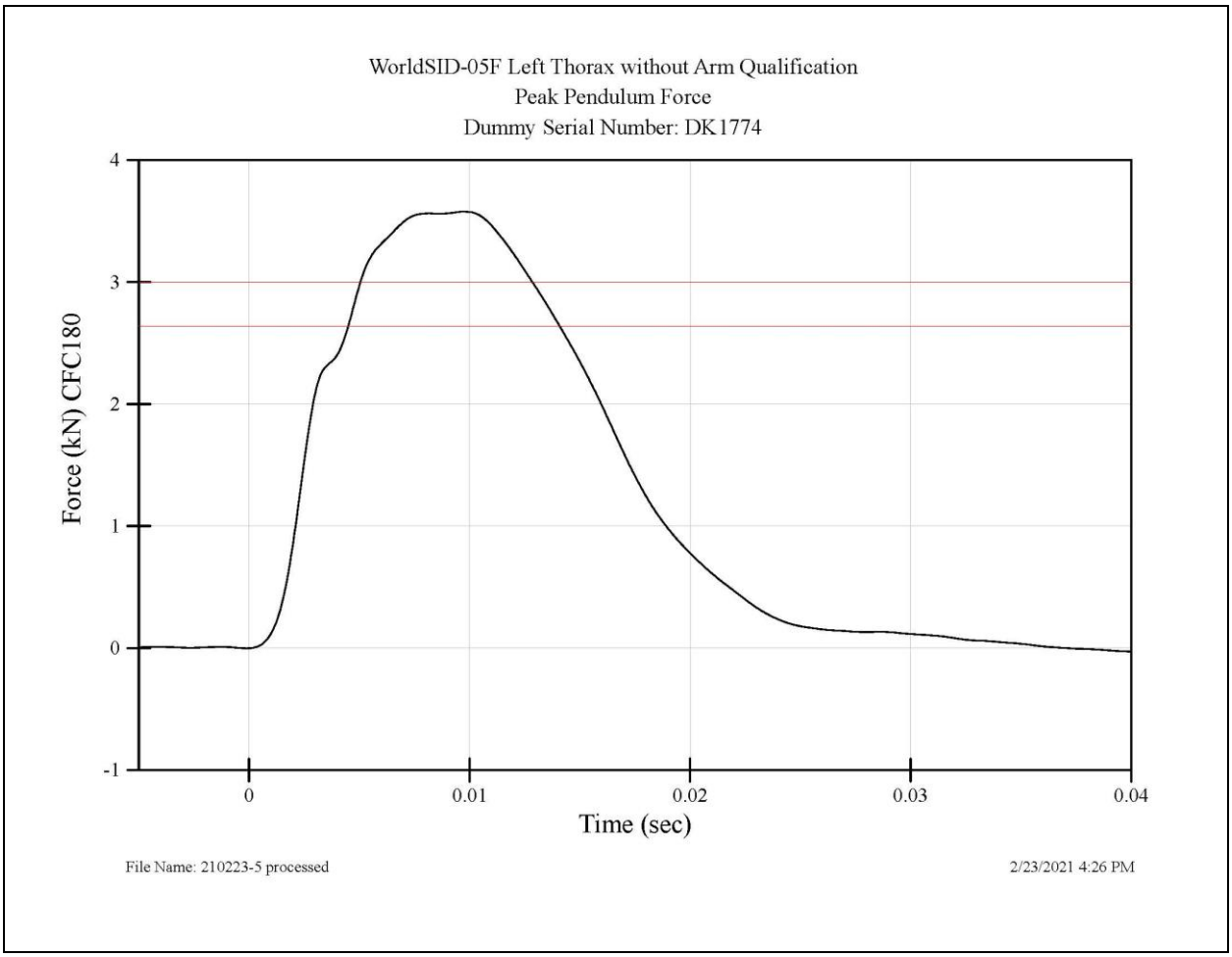
Test ID: 210223-5
Test Date: 2/23/2021
Test Time: 4:26 PM

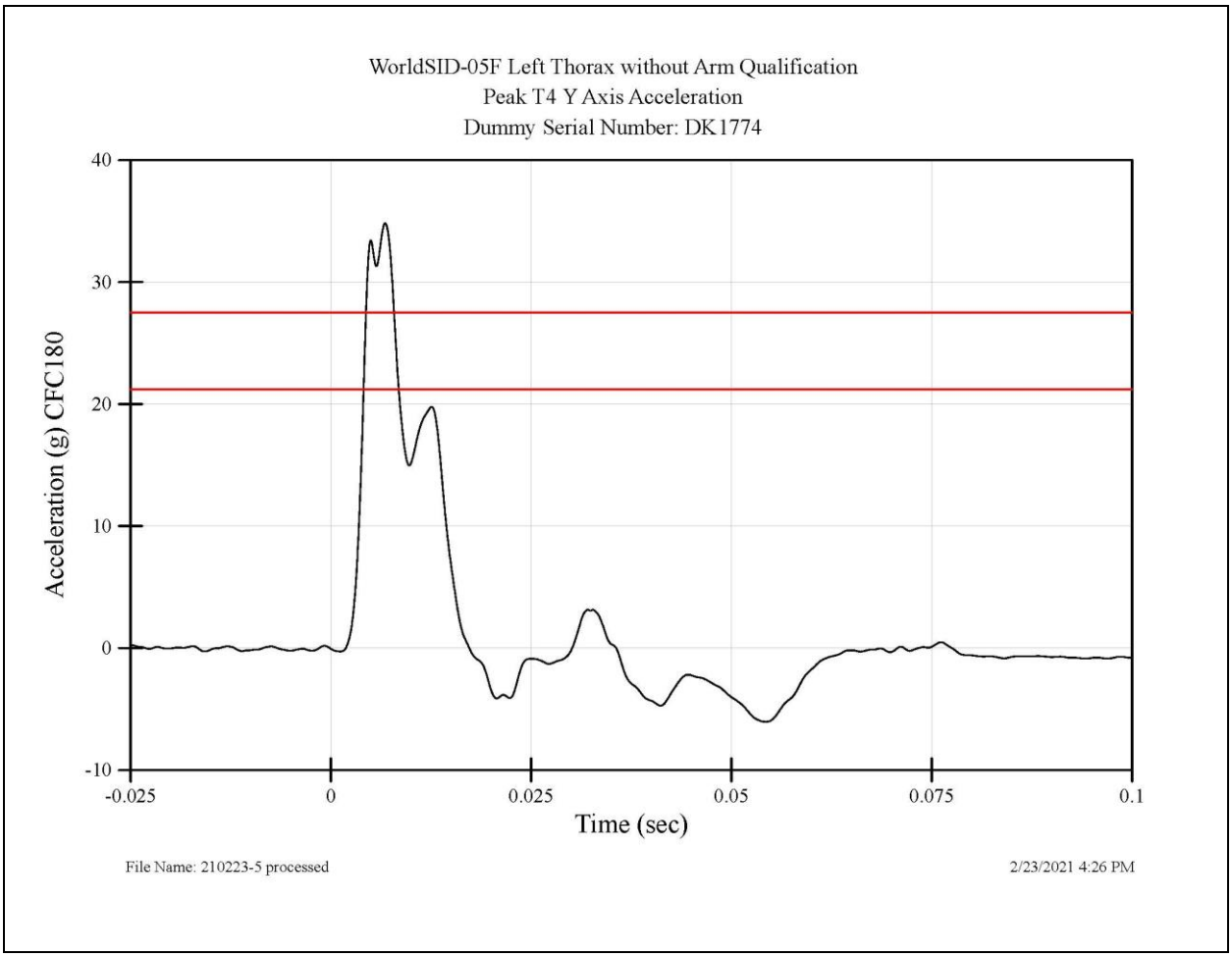
Test Results

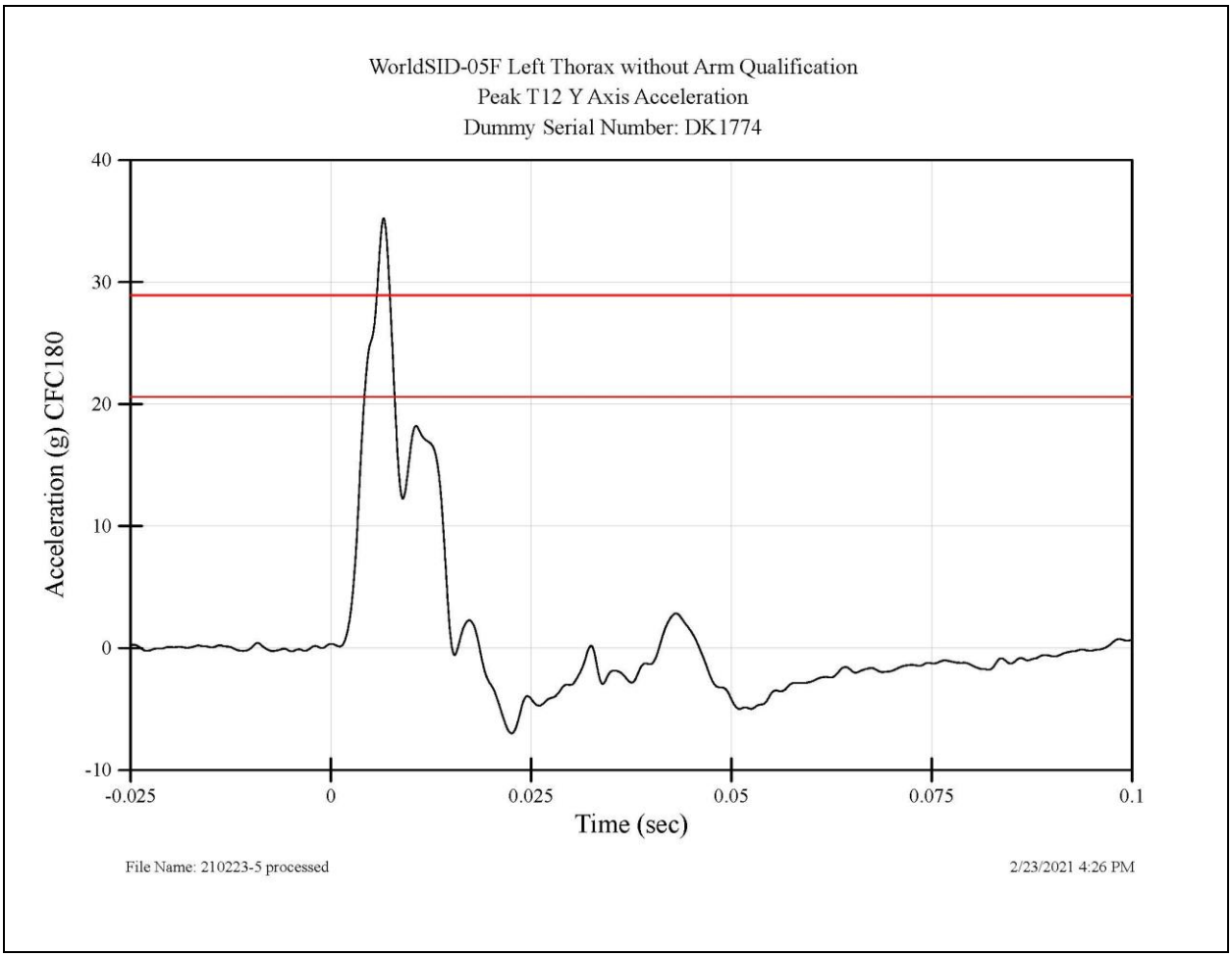
Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	21.1	Pass
Test Humidity (%)	10 - 70	64	Pass
Test Velocity (m/s)	4.20 - 4.40	4.29	Pass
Thorax Rib Temperature Sensor (°C)	20.6 - 23.8	22.5	Pass
Peak Probe Force (kN)	2.64 - 3.22	3.58	Fail
Peak T4 Y Acceleration	21.2 - 27.5	34.8	Fail
Peak T12 Y Acceleration	20.6 - 28.9	35.2	Fail
Peak Thorax Rib 1 Y Length Change (mm)	20.5 - 27.7	18.0	Fail
Peak Thorax Rib 2 Y Length Change (mm)	21.7 - 26.7	19.5	Fail
Peak Thorax Rib 3 Y Length Change (mm)	20.9 - 27.3	17.5	Fail

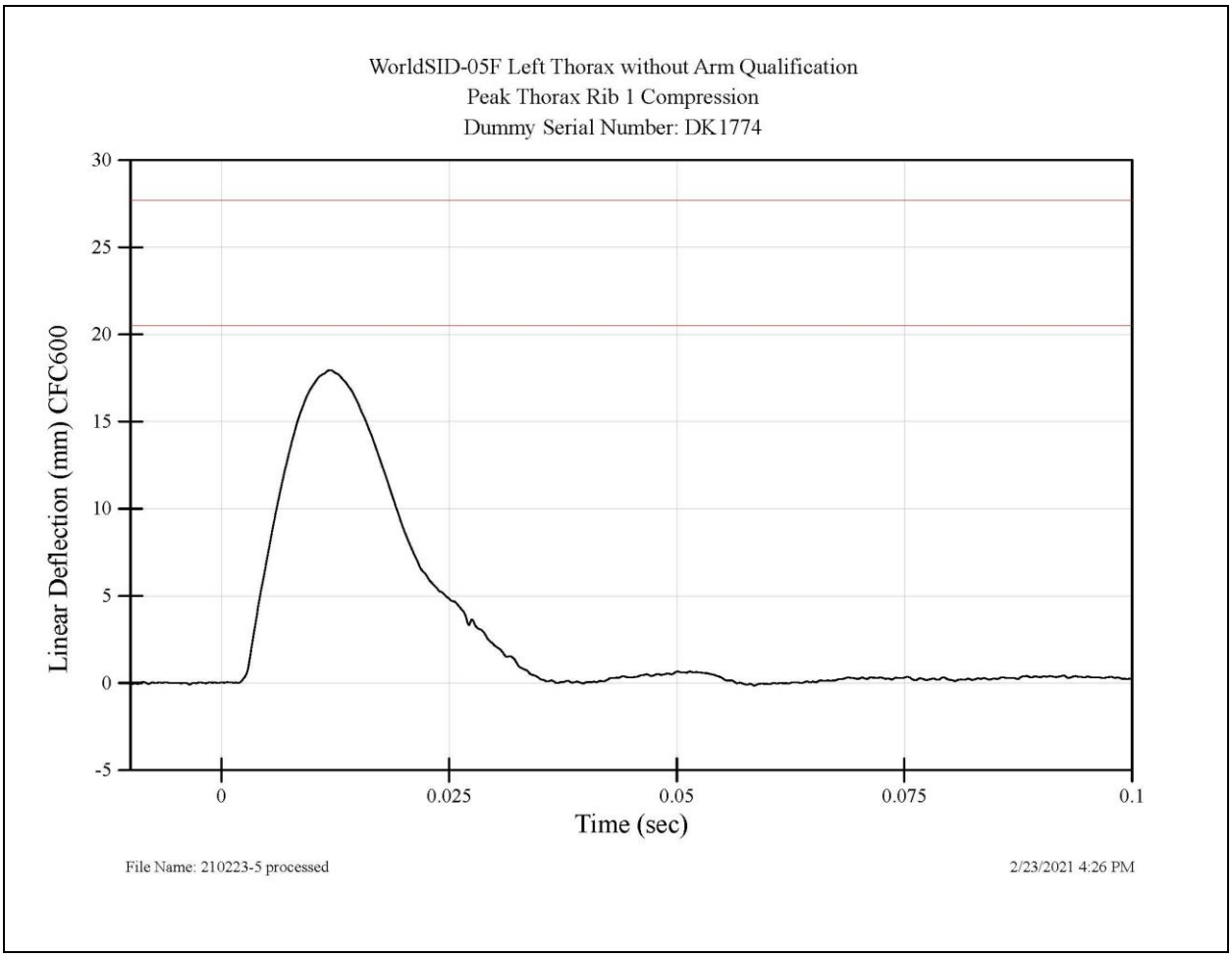
* WorldSID-05F Qualification Manual - Humanetics WorldSID Small Female - Rev E

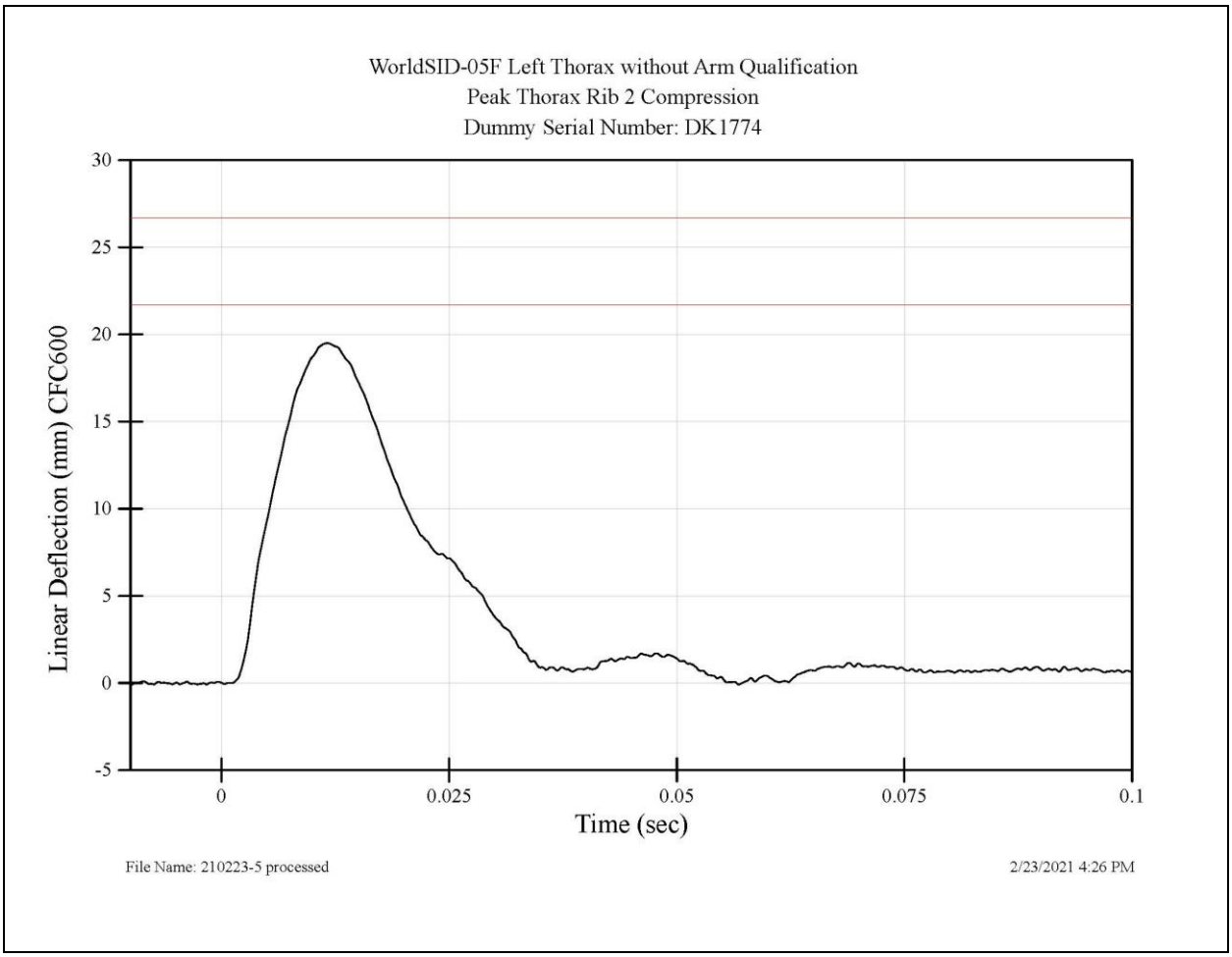
File Name: 210223-5 processed

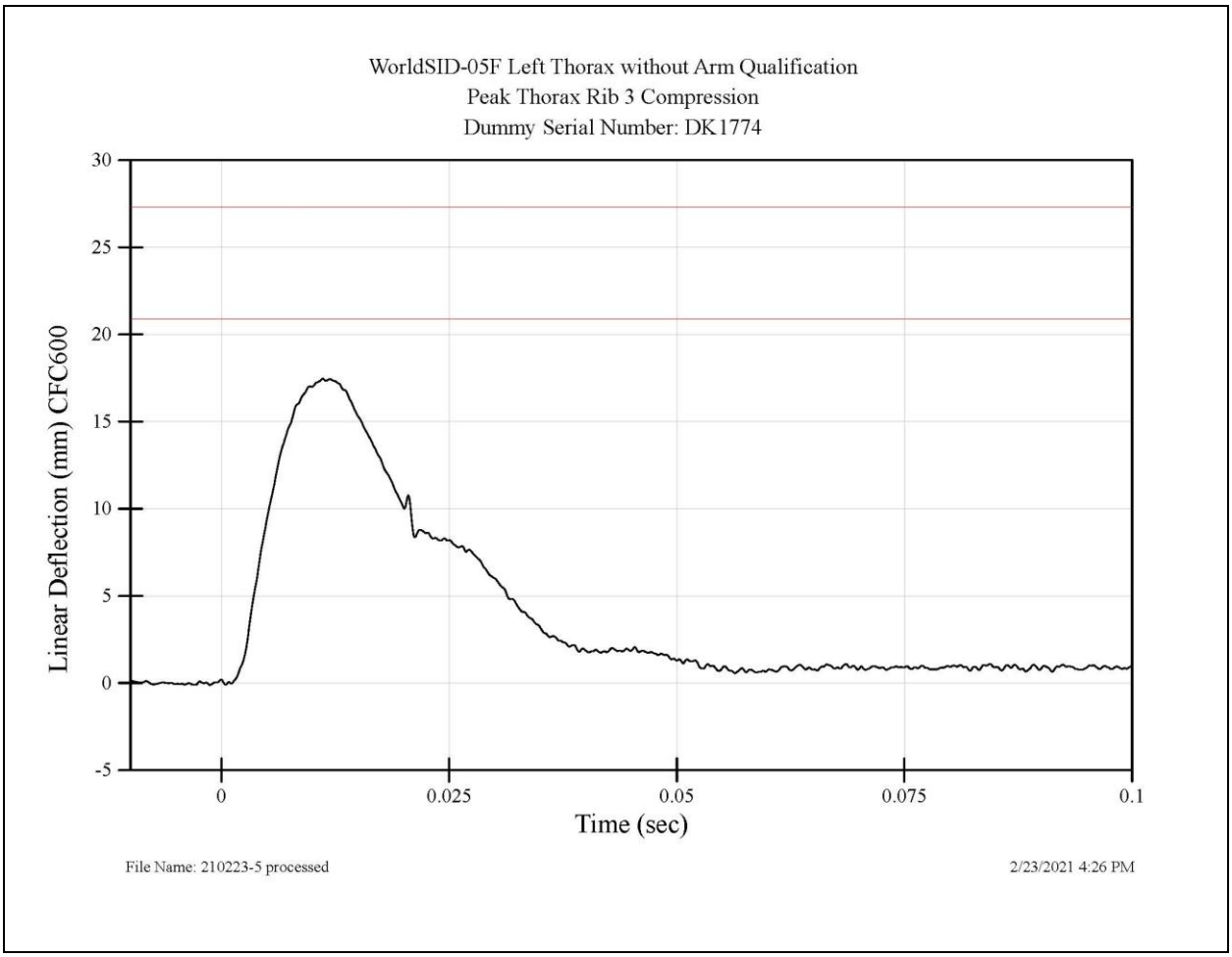

WorldSID-05F Left Thorax without Arm Qualification
Peak Pendulum Force
Dummy Serial Number: DK1774
Force (kN) CFC180
4
3
2
1
0
-1
0
0.01
0.02
0.03
0.04
Time (sec)
File Name: 210223-5 processed
2/23/2021 4:26 PM


WorldSID-05F Left Thorax without Arm Qualification
Peak T4 Y Axis Acceleration
Dummy Serial Number: DK1774
Acceleration (g) CFC180
40
30
20
10
0
-10
-0.025
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 210223-5 processed
2/23/2021 4:26 PM


WorldSID-05F Left Thorax without Arm Qualification
Peak T12 Y Axis Acceleration
Dummy Serial Number: DK1774
Acceleration (g) CFC180
40
30
20
10
0
-10
-0.025
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 210223-5 processed
2/23/2021 4:26 PM


WorldSID-05F Left Thorax without Arm Qualification
Peak Thorax Rib 1 Compression
Dummy Serial Number: DK1774
Linear Deflection (mm) CFC600
30
25
20
15
10
5
0
-5
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 210223-5 processed
2/23/2021 4:26 PM


WorldSID-05F Left Thorax without Arm Qualification
Peak Thorax Rib 2 Compression
Dummy Serial Number: DK1774
Linear Deflection (mm) CFC600
30
25
20
15
10
5
0
-5
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 210223-5 processed
2/23/2021 4:26 PM


WorldSID-05F Left Thorax without Arm Qualification
Peak Thorax Rib 3 Compression
Dummy Serial Number: DK1774
Linear Deflection (mm) CFC600
30
25
20
15
10
5
0
-5
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 210223-5 processed
2/23/2021 4:26 PM

WorldSID-05F Left Abdomen Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components

Shoulder Rib: DM6270
Thorax Rib 1: DM2783
Thorax Rib 2: DM2784
Thorax Rib 3: DM2787
Abdomen Rib 1: DM5165
Abdomen Rib 2: DM5167
RibEye: 161

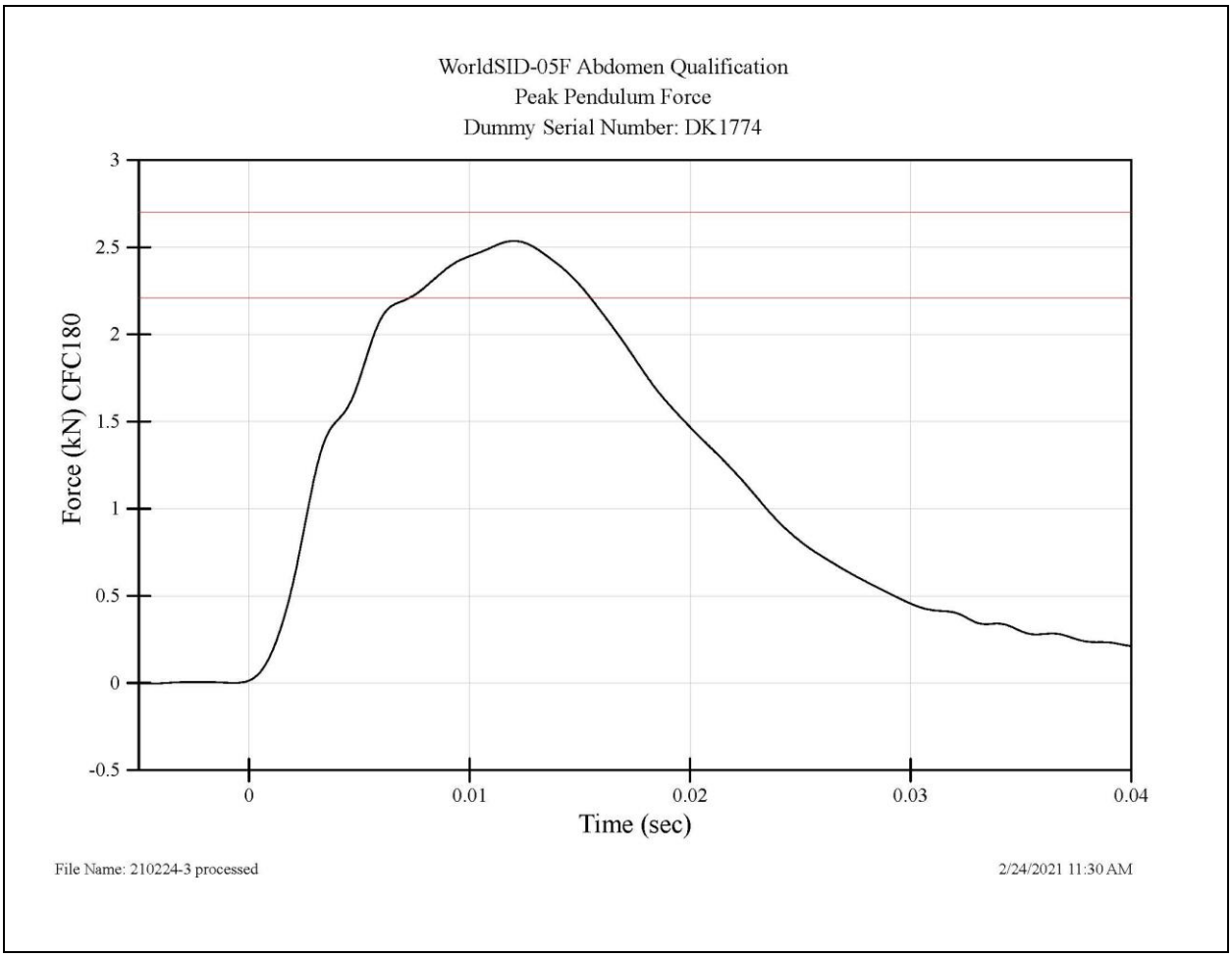
Test ID: 210224-3
Test Date: 2/24/2021
Test Time: 11:30 AM

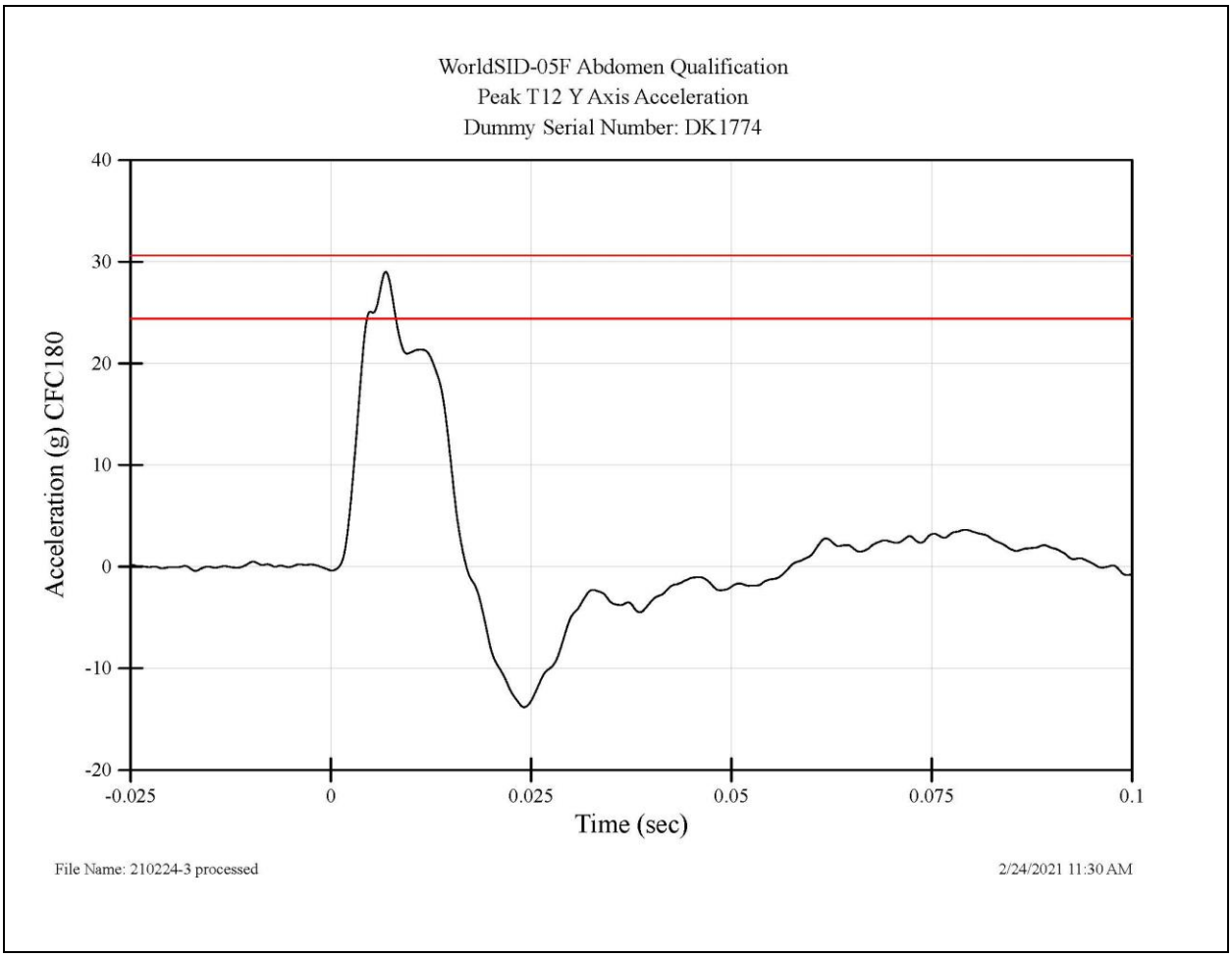
Test Results

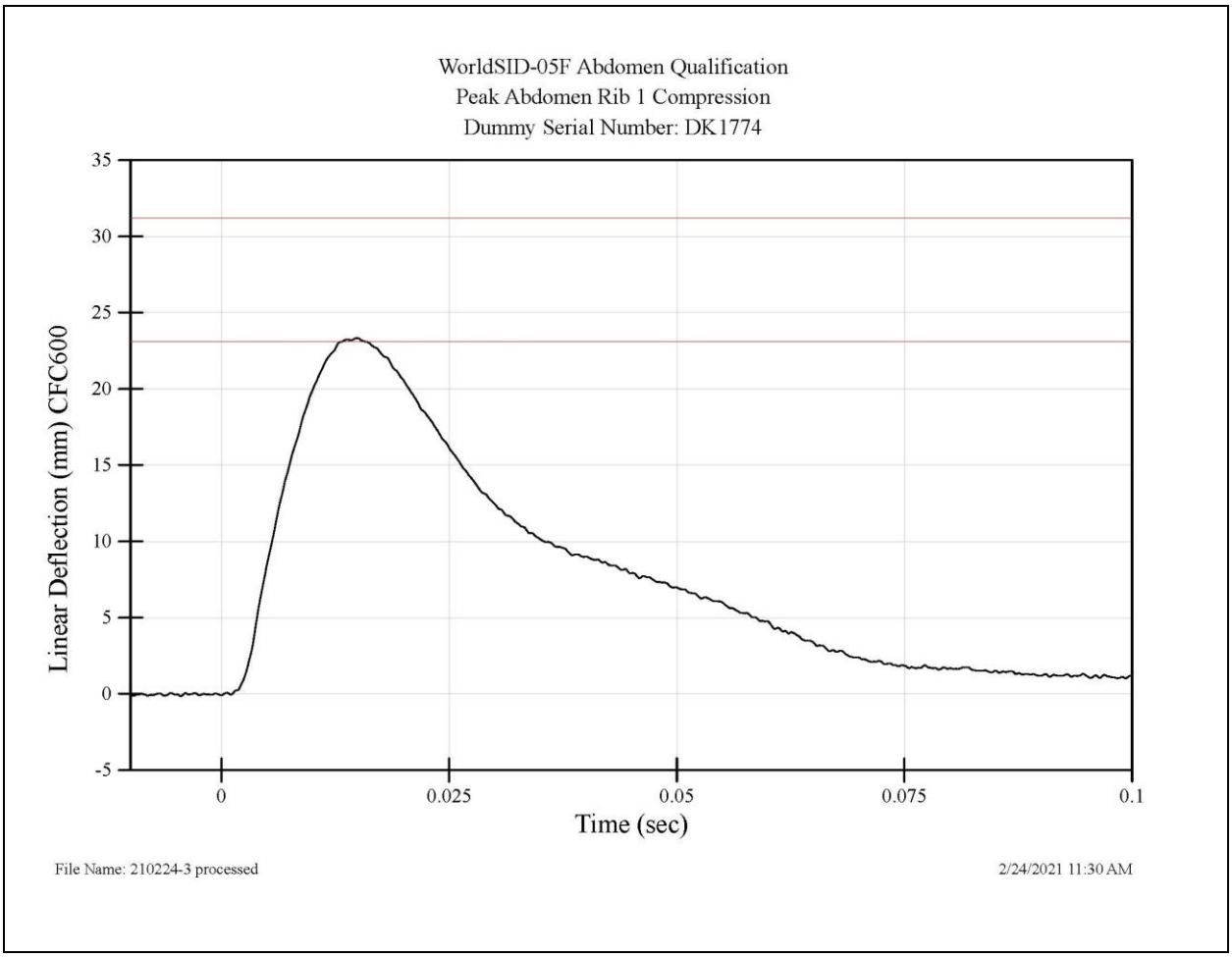
Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	22.2	Pass
Test Humidity (%)	10 - 70	62	Pass
Test Velocity (m/s)	4.20 - 4.40	4.29	Pass
Thorax Rib Temperature Sensor (°C)	20.6 - 23.8	23.6	Pass
Peak Probe Force (kN)	2.21 - 2.70	2.54	Pass
Peak T12 Acceleration (g)	24.4 - 30.6	29.0	Pass
Peak Abdomen Rib 1 Length Change (mm)	23.1 - 31.2	23.3	Pass
Peak Abdomen Rib 2 Length Change (mm)	22.7 - 27.8	24.1	Pass

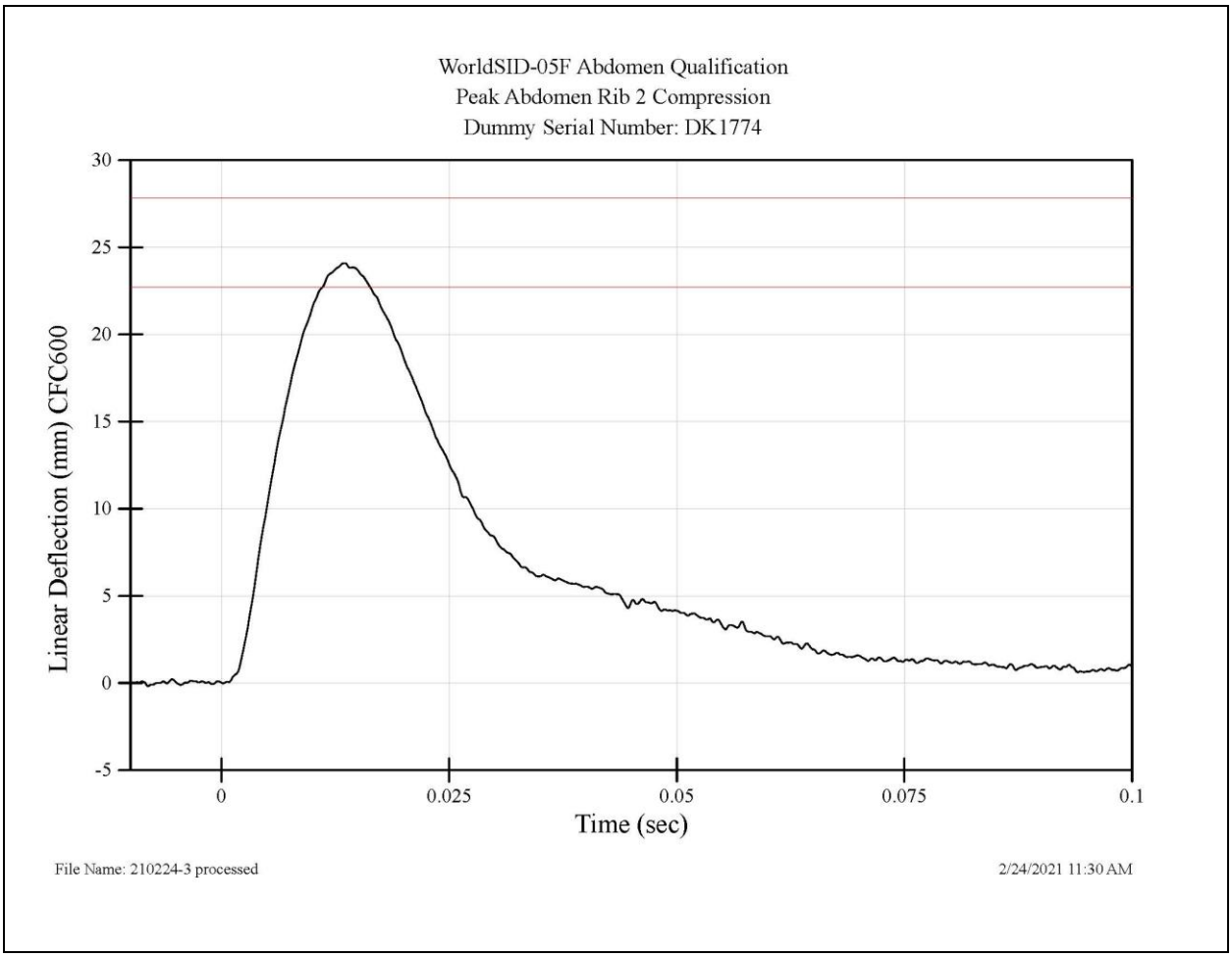
* WorldSID-50M Qualification Manual - Humanetics WorldSID Small Female - Rev E

File Name: 210224-3 processed


WorldSID-05F Abdomen Qualification
Peak Pendulum Force
Dummy Serial Number: DK1774
Force (kN) CFC180
3
2.5
2
1.5
1
0.5
0
-0.5
0
0.01
0.02
0.03
0.04
Time (sec)
File Name: 210224-3 processed
2/24/2021 11:30 AM


WorldSID-05F Abdomen Qualification
Peak T12 Y Axis Acceleration
Dummy Serial Number: DK1774
Acceleration (g) CFC180
40
30
20
10
0
-10
-20
-0.025
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 210224-3 processed
2/24/2021 11:30 AM


WorldSID-05F Abdomen Qualification
Peak Abdomen Rib 1 Compression
Dummy Serial Number: DK1774
Linear Deflection (mm) CFC600
35
30
25
20
15
10
5
0
-5
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 210224-3 processed
2/24/2021 11:30 AM


WorldSID-05F Abdomen Qualification
Peak Abdomen Rib 2 Compression
Dummy Serial Number: DK1774
Linear Deflection (mm) CFC600
30
25
20
15
10
5
0
-5
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 210224-3 processed
2/24/2021 11:30 AM

WorldSID-05F Left Pelvis Qualification
Test Results Summary

Dummy Serial Number: DK1774

Tested Components
Pelvis Bone: DW2458

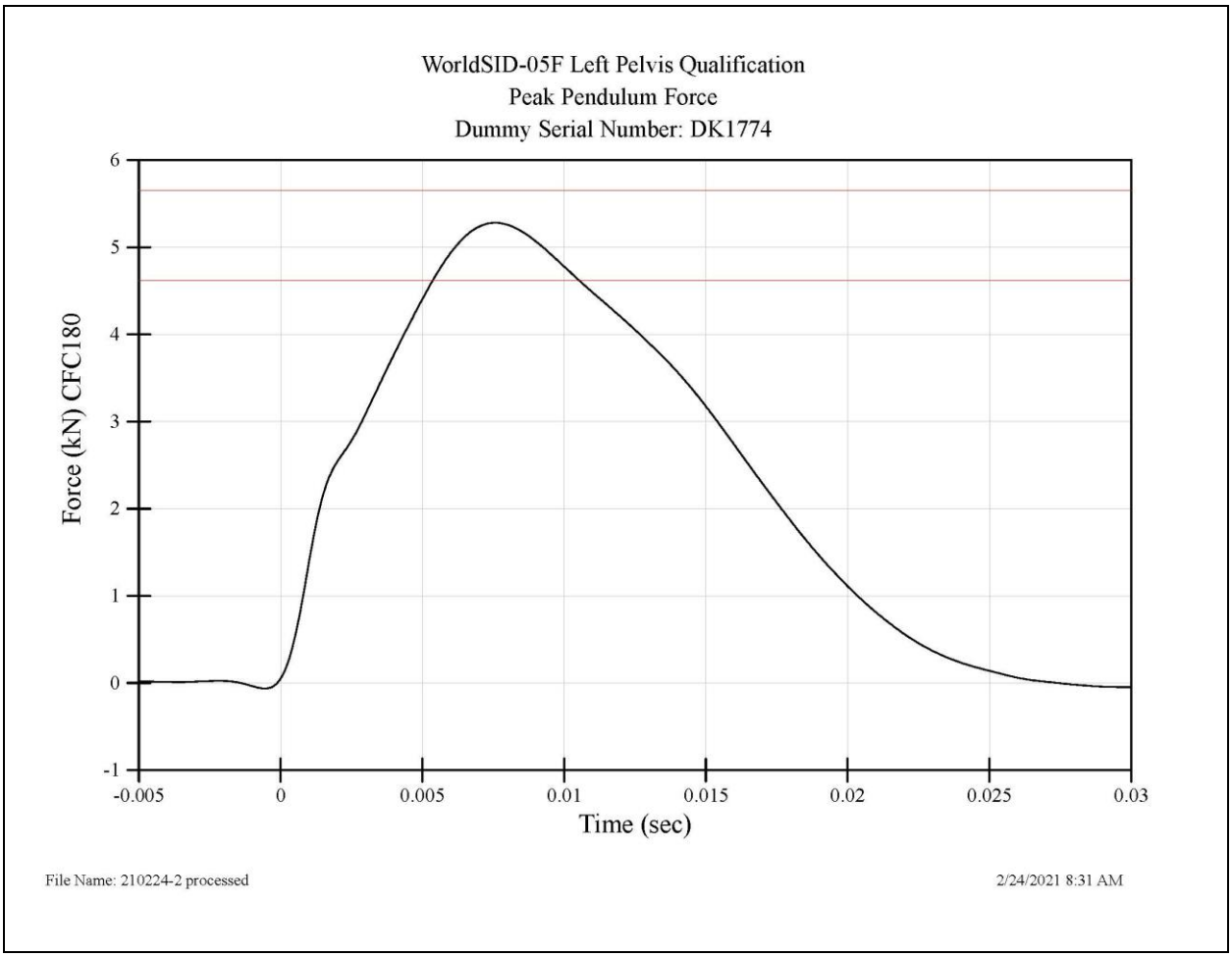
Test ID: 210224-2
Test Date: 2/24/2021
Test Time: 8:38 AM

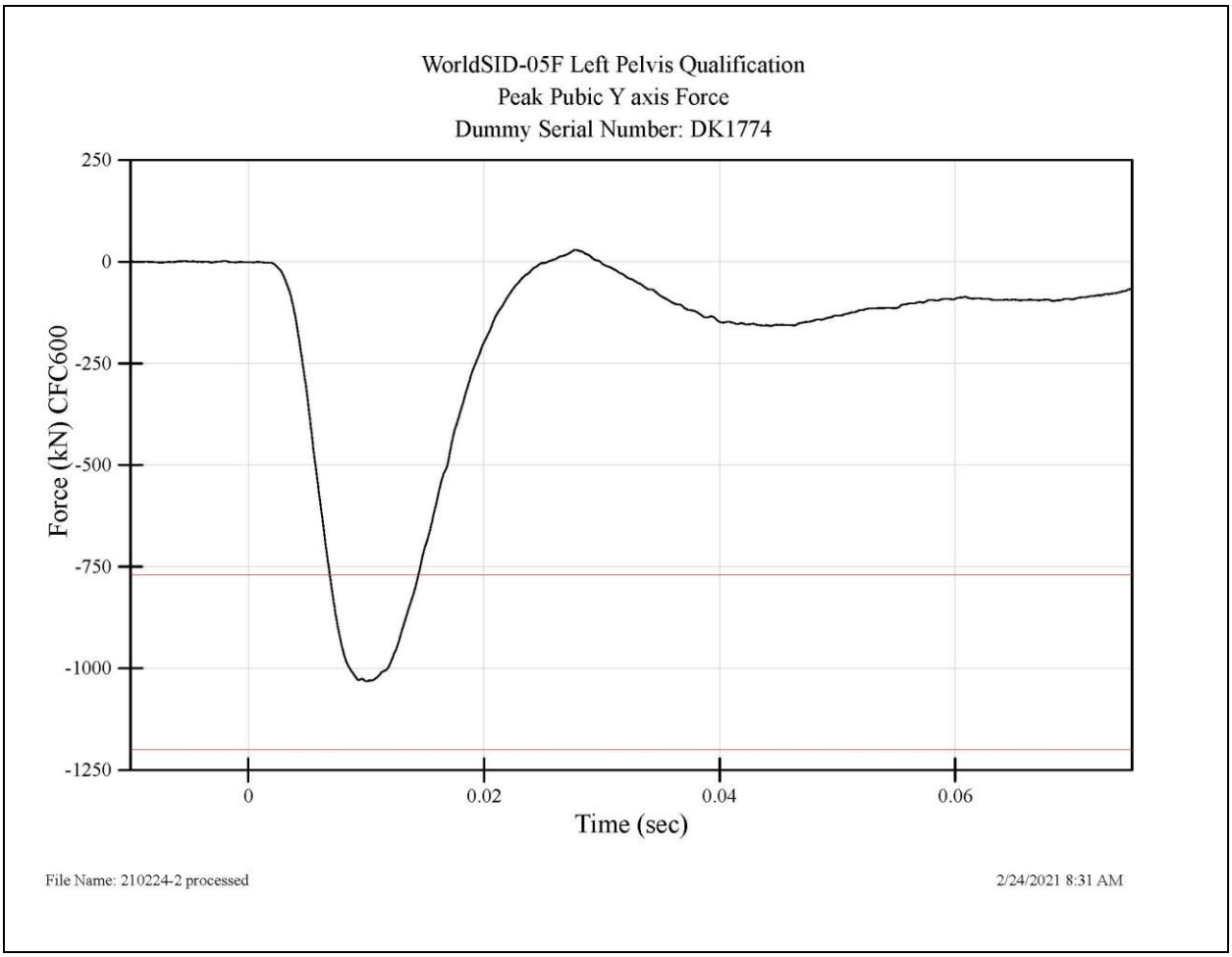
Test Results

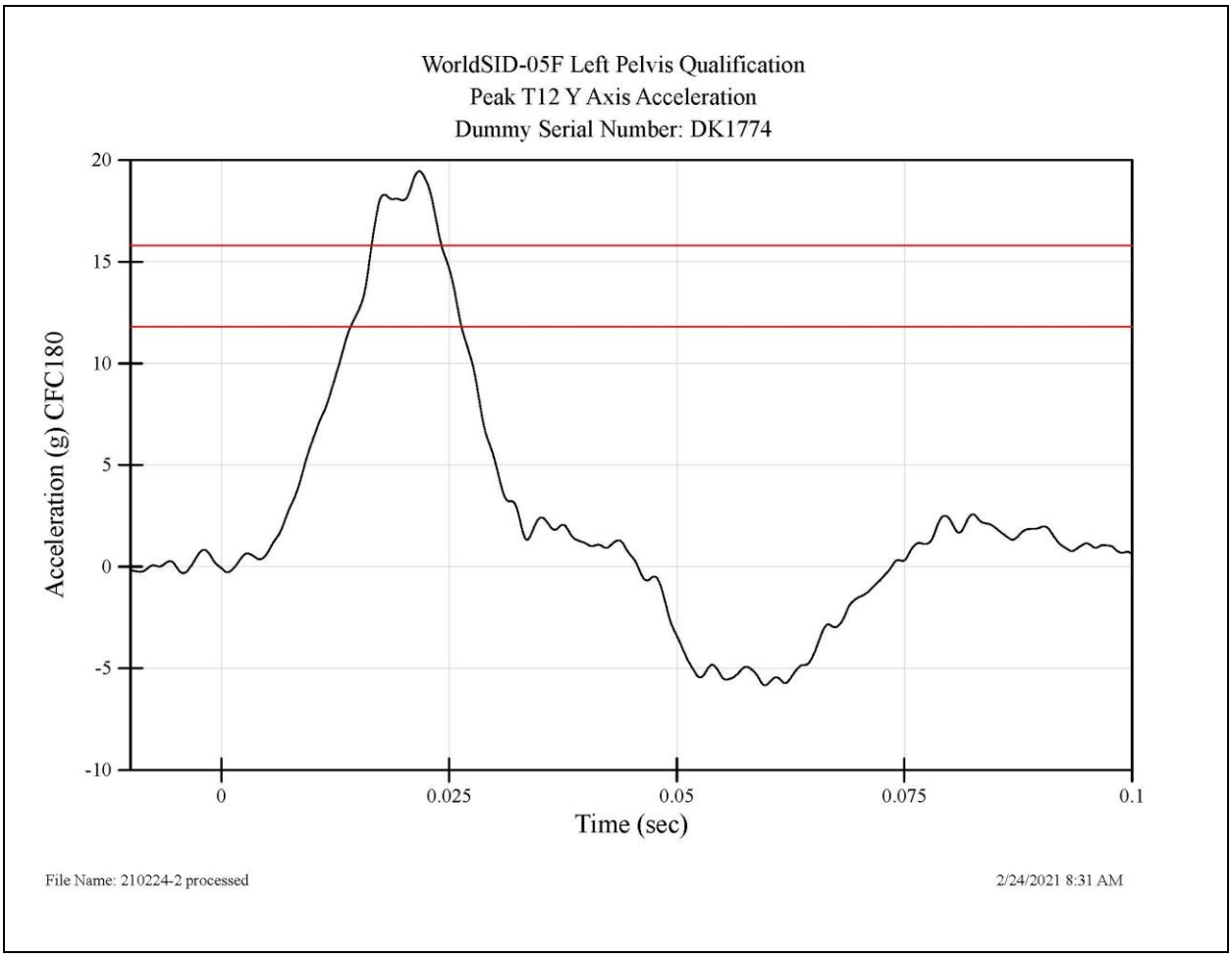
Test Parameter	Specification Range*	Result	Pass/Fail
Test Temperature (°C)	20.6 - 22.2	21.7	Pass
Test Humidity (%)	10 - 70	60	Pass
Test Velocity (m/s)	6.60 - 6.80	6.69	Pass
Peak Probe Force (kN)	4.62 - 5.65	5.28	Pass
Peak Pubic Force FY (N)	-1200.0 - (-770.0)	-1031.8	Pass
Peak T12 Acceleration (g)	11.8 - 15.8	19.4	Fail
Peak Pelvis Acceleration (g)	48.6 - 74.4	45.0	Fail

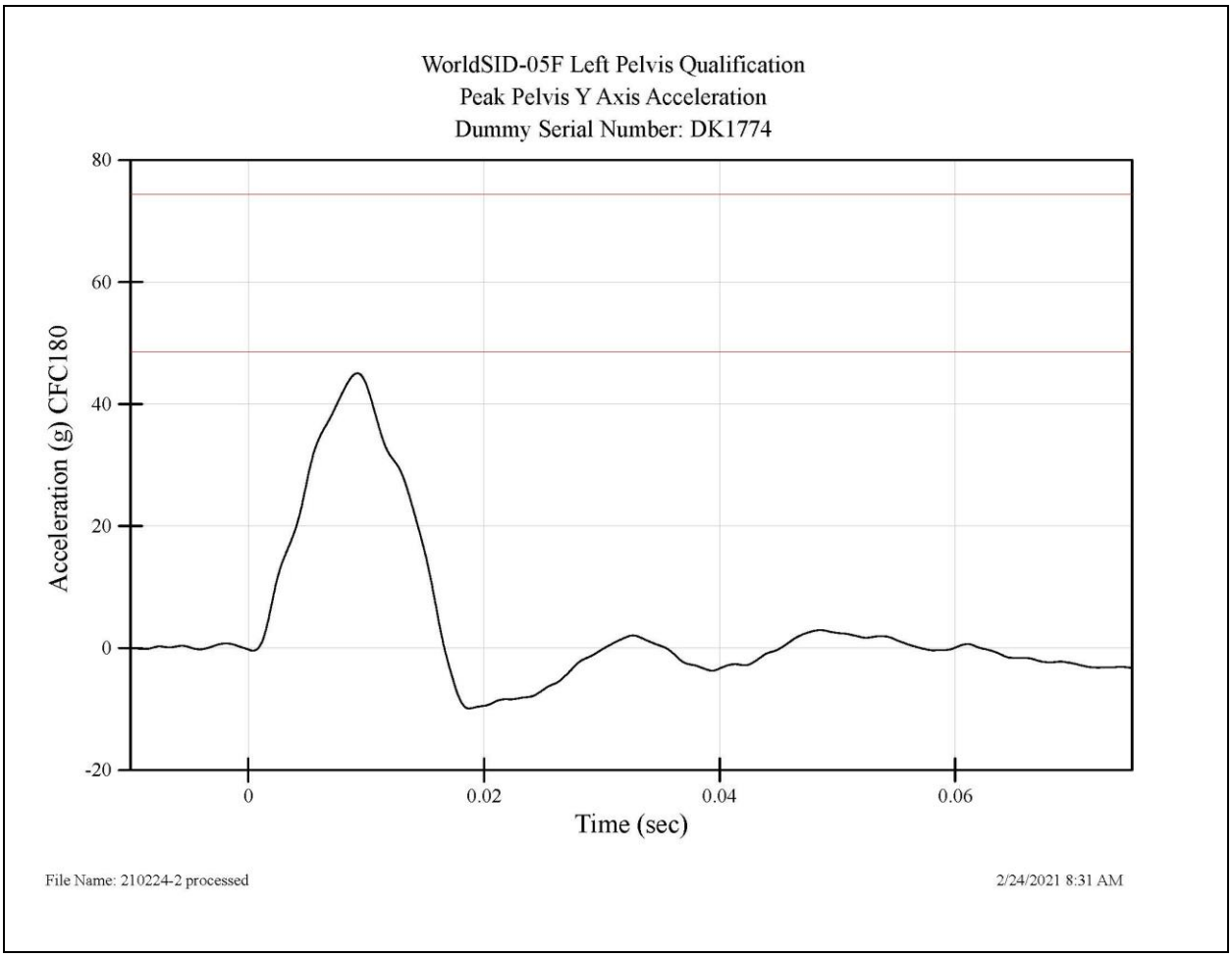
* WorldSID-50M Qualification Manual - Humanetics WorldSID Small Female - Rev E

File Name: 210224-2 processed


WorldSID-05F Left Pelvis Qualification
Peak Pendulum Force
Dummy Serial Number: DK1774
Force (kN) CFC180
6
5
4
3
2
1
0
-1
-0.005
0
0.005
0.01
0.015
0.02
0.025
0.03
Time (sec)
File Name: 210224-2 processed
2/24/2021 8:31 AM


WorldSID-05F Left Pelvis Qualification
Peak Pubic Y axis Force
Dummy Serial Number: DK1774
250
0
-250
-500
-750
-1000
-1250
Force (kN) CFC600
0
0.02
0.04
0.06
Time (sec)
File Name: 210224-2 processed
2/24/2021 8:31 AM


WorldSID-05F Left Pelvis Qualification
Peak T12 Y Axis Acceleration
Dummy Serial Number: DK1774
Acceleration (g) CFC180
20
15
10
5
0
-5
-10
0
0.025
0.05
0.075
0.1
Time (sec)
File Name: 210224-2 processed
2/24/2021 8:31 AM


WorldSID-05F Left Pelvis Qualification
Peak Pelvis Y Axis Acceleration
Dummy Serial Number: DK1774
80
60
40
20
0
-20
Acceleration (g) CFC180
0
0.02
0.04
0.06
Time (sec)
File Name: 210224-2 processed
2/24/2021 8:31 AM

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – DUMMY INSTRUMENTATION (WorldSID-50M with RibEye™)

		WorldSID-50M S/N EB8888		
		Serial Number	**Manufacturer**	**Calibration Date**
Head Accelerometers (g)	X	12324-1	Endevco	22-Jul-2020
	Y	12324-3	Endevco	22-Jul-2020
	Z	12324-2	Endevco	22-Jul-2020
Head Angular Rates Sensors (deg/sec)	X	ARS12047	DTS	4-Aug-2020
	Y	ARS15094	DTS	4-Aug-2020
	Z	ARS11060	DTS	4-Aug-2020
Upper Neck Force (N)	X	DO9753	Humanetics	21-Jul-2020
	Y	DO9753	Humanetics	21-Jul-2020
	Z	DO9753	Humanetics	21-Jul-2020
Upper Neck Moment (Nm)	X	DO9753	Humanetics	21-Jul-2020
	Y	DO9753	Humanetics	21-Jul-2020
	Z	DO9753	Humanetics	21-Jul-2020
Lower Neck Force (N)	X	EB8143	Humanetics	21-Jul-2020
	Y	EB8143	Humanetics	21-Jul-2020
	Z	EB8143	Humanetics	21-Jul-2020
Lower Neck Moment (Nm)	X	EB8143	Humanetics	21-Jul-2020
	Y	EB8143	Humanetics	21-Jul-2020
	Z	EB8143	Humanetics	21-Jul-2020
Upper Spine Accelerometers (T1) (g)	X	EC1630	Humanetics	21-Jul-2020
	Y	EC1630	Humanetics	21-Jul-2020
	Z	EC1630	Humanetics	21-Jul-2020
Middle Spine Accelerometers (T4) (g)	X	12037-3	Endevco	21-Jul-2020
	Y	12037-2	Endevco	21-Jul-2020
	Z	12037-1	Endevco	21-Jul-2020
Lower Spine Accelerometers (T12) (g)	X	12352-3	Endevco	21-Jul-2020
	Y	12352-2	Endevco	21-Jul-2020
	Z	12352-1	Endevco	21-Jul-2020
Shoulder Force (N)	X	12375-3	Endevco	22-Jul-2020
	Y	12375-2	Endevco	22-Jul-2020
	Z	12375-1	Endevco	22-Jul-2020
Pubic Symphysis Force (N)	Y	EC4386	Humanetics	21-Jul-2020
Sacro-Iliac Left Force (N)	X	EG4066	Humanetics	21-Jul-2020
	Y	EG4066	Humanetics	21-Jul-2020
	Z	EG4066	Humanetics	21-Jul-2020
Sacro-Iliac Left Moment (Nm)	X	EG4066	Humanetics	21-Jul-2020
	Y	EG4066	Humanetics	21-Jul-2020
	Z	EG4066	Humanetics	21-Jul-2020

TABLE 1 – DUMMY INSTRUMENTATION (WorldSID-50M with RibEye™) (CONTINUED)

		WorldSID-50M S/N EB8888		
		Serial Number	**Manufacturer**	**Calibration Date**
Sacro-Iliac Right Force (N)	X	EG4066	Humanetics	21-Jul-2020
	Y	EG4066	Humanetics	21-Jul-2020
	Z	EG4066	Humanetics	21-Jul-2020
Sacro-Iliac Right Moment (Nm)	X	EG4066	Humanetics	21-Jul-2020
	Y	EG4066	Humanetics	21-Jul-2020
	Z	EG4066	Humanetics	21-Jul-2020
Lumbar Force (N)	X	EC2349	Humanetics	21-Jul-2020
	Y	EC2349	Humanetics	21-Jul-2020
	Z	EC2349	Humanetics	21-Jul-2020
Lumbar Moment (Nm)	X	EC2349	Humanetics	21-Jul-2020
	Y	EC2349	Humanetics	21-Jul-2020
	Z	EC2349	Humanetics	21-Jul-2020
Pelvis Accelerometers (g)	X	11905-3	Endevco	22-Jul-2020
	Y	11905-2	Endevco	22-Jul-2020
	Z	11905-1	Endevco	22-Jul-2020
Left Femur Force (N)	X	EA4925TPS	Humanetics	29-Jul-2020
	Y	EA4925TPS	Humanetics	29-Jul-2020
	Z	EA4925TPS	Humanetics	29-Jul-2020
Left Femur Moment (Nm)	X	EA4925TPS	Humanetics	29-Jul-2020
	Y	EA4925TPS	Humanetics	29-Jul-2020
	Z	EA4925TPS	Humanetics	29-Jul-2020
Left Femoral Neck Force (N)	X	EB6234T	Humanetics	21-Jul-2020
	Y	EB6234T	Humanetics	21-Jul-2020
	Z	EB6234T	Humanetics	21-Jul-2020
Left Outer Knee Force (N)	Y	93	Humanetics	21-Jul-2020
Left Inner Knee Force (N)	Y	95	Humanetics	21-Jul-2020

TABLE 1 – DUMMY INSTRUMENTATION (WorldSID-50M with RibEye™) (CONTINUED)

			WorldSID-50M S/N EB8888		
			Serial Number	**Manufacturer**	**Calibration Date**
Shoulder RibEye (mm)	Front	X	124	Boxboro Systems	7-Jul-2020
		Y	124	Boxboro Systems	7-Jul-2020
		Z	124	Boxboro Systems	7-Jul-2020
	Middle	X	124	Boxboro Systems	7-Jul-2020
		Y	124	Boxboro Systems	7-Jul-2020
		Z	124	Boxboro Systems	7-Jul-2020
	Rear	X	124	Boxboro Systems	7-Jul-2020
		Y	124	Boxboro Systems	7-Jul-2020
		Z	124	Boxboro Systems	7-Jul-2020
Thorax Rib 1 RibEye (mm)	Front	X	124	Boxboro Systems	7-Jul-2020
		Y	124	Boxboro Systems	7-Jul-2020
		Z	124	Boxboro Systems	7-Jul-2020
	Middle	X	124	Boxboro Systems	7-Jul-2020
		Y	124	Boxboro Systems	7-Jul-2020
		Z	124	Boxboro Systems	7-Jul-2020
	Rear	X	124	Boxboro Systems	7-Jul-2020
		Y	124	Boxboro Systems	7-Jul-2020
		Z	124	Boxboro Systems	7-Jul-2020
Thorax Rib 2 RibEye (mm)	Front	X	124	Boxboro Systems	7-Jul-2020
		Y	124	Boxboro Systems	7-Jul-2020
		Z	124	Boxboro Systems	7-Jul-2020
	Middle	X	124	Boxboro Systems	7-Jul-2020
		Y	124	Boxboro Systems	7-Jul-2020
		Z	124	Boxboro Systems	7-Jul-2020
	Rear	X	124	Boxboro Systems	7-Jul-2020
		Y	124	Boxboro Systems	7-Jul-2020
		Z	124	Boxboro Systems	7-Jul-2020
Thorax Rib 3 RibEye (mm)	Front	X	124	Boxboro Systems	7-Jul-2020
		Y	124	Boxboro Systems	7-Jul-2020
		Z	124	Boxboro Systems	7-Jul-2020
	Middle	X	124	Boxboro Systems	7-Jul-2020
		Y	124	Boxboro Systems	7-Jul-2020
		Z	124	Boxboro Systems	7-Jul-2020
	Rear	X	124	Boxboro Systems	7-Jul-2020
		Y	124	Boxboro Systems	7-Jul-2020
		Z	124	Boxboro Systems	7-Jul-2020

TABLE 1 – DUMMY INSTRUMENTATION (WorldSID-50M with RibEye™) (CONTINUED)

			WorldSID-50M S/N EB8888		
			Serial Number	**Manufacturer**	**Calibration Date**
Abdomen Rib 1 RibEye (mm)	Front	X	124	Boxboro Systems	7-Jul-2020
		Y	124	Boxboro Systems	7-Jul-2020
		Z	124	Boxboro Systems	7-Jul-2020
	Middle	X	124	Boxboro Systems	7-Jul-2020
		Y	124	Boxboro Systems	7-Jul-2020
		Z	124	Boxboro Systems	7-Jul-2020
	Rear	X	124	Boxboro Systems	7-Jul-2020
		Y	124	Boxboro Systems	7-Jul-2020
		Z	124	Boxboro Systems	7-Jul-2020
Abdomen Rib 2 RibEye (mm)	Front	X	124	Boxboro Systems	7-Jul-2020
		Y	124	Boxboro Systems	7-Jul-2020
		Z	124	Boxboro Systems	7-Jul-2020
	Middle	X	124	Boxboro Systems	7-Jul-2020
		Y	124	Boxboro Systems	7-Jul-2020
		Z	124	Boxboro Systems	7-Jul-2020
	Rear	X	124	Boxboro Systems	7-Jul-2020
		Y	124	Boxboro Systems	7-Jul-2020
		Z	124	Boxboro Systems	7-Jul-2020

TABLE 2 – DUMMY INSTRUMENTATION (WorldSID-05F with RibEye™)

		WorldSID-05F S/N DK1774		
		Serial Number	**Manufacturer**	**Calibration Date**
Head Accelerometers (g)	X	12346-3	Endevco	28-Oct-2020
	Y	12346-1	Endevco	28-Oct-2020
	Z	12346-2	Endevco	28-Oct-2020
Head Angular Rates Sensors (deg/sec)	X	ARS11034	DTS	3-Sep-2020
	Y	ARS14271	DTS	4-Aug-2020
	Z	ARS14273	DTS	4-Aug-2020
Upper Neck Force (N)	X	EB8759	Humanetics	27-Oct-2020
	Y	EB8759	Humanetics	27-Oct-2020
	Z	EB8759	Humanetics	27-Oct-2020
Upper Neck Moment (Nm)	X	EB8759	Humanetics	27-Oct-2020
	Y	EB8759	Humanetics	27-Oct-2020
	Z	EB8759	Humanetics	27-Oct-2020
Lower Neck Force (N)	X	DW9074	Humanetics	4-Nov-2020
	Y	DW9074	Humanetics	4-Nov-2020
	Z	DW9074	Humanetics	4-Nov-2020
Lower Neck Moment (Nm)	X	DW9074	Humanetics	4-Nov-2020
	Y	DW9074	Humanetics	4-Nov-2020
	Z	DW9074	Humanetics	4-Nov-2020
Shoulder Force (N)	X	DW9661	Humanetics	3-Sep-2020
	Y	DW9661	Humanetics	3-Sep-2020
	Z	DW9661	Humanetics	3-Sep-2020
Upper Spine Accelerometers (T1) (g)	X	12116-2	Endevco	28-Oct-2020
	Y	12116-1	Endevco	28-Oct-2020
	Z	12116-3	Endevco	28-Oct-2020
Middle Spine Accelerometers (T4) (g)	X	12075-3	Endevco	28-Oct-2020
	Y	12075-2	Endevco	28-Oct-2020
	Z	12075-1	Endevco	28-Oct-2020
Lower Spine Accelerometers (T12) (g)	X	12363-3	Endevco	28-Oct-2020
	Y	12363-2	Endevco	28-Oct-2020
	Z	12363-1	Endevco	28-Oct-2020
Pubic Symphysis Force (N)	Y	EF8492	Humanetics	27-Oct-2020
Sacro-Iliac Left Force (N)	X	EG1102	Humanetics	11-Sep-2020
	Y	EG1102	Humanetics	11-Sep-2020
	Z	EG1102	Humanetics	11-Sep-2020
Sacro-Iliac Left Moment (Nm)	X	EG1102	Humanetics	11-Sep-2020
	Y	EG1102	Humanetics	11-Sep-2020
	Z	EG1102	Humanetics	11-Sep-2020

TABLE 2 – DUMMY INSTRUMENTATION (WorldSID-05F with RibEye™) (CONTINUED)

		WorldSID-05F S/N DK1774		
		Serial Number	**Manufacturer**	**Calibration Date**
Sacro-Iliac Right Force (N)	X	EG1102	Humanetics	11-Sep-2020
	Y	EG1102	Humanetics	11-Sep-2020
	Z	EG1102	Humanetics	11-Sep-2020
Sacro-Iliac Right Moment (Nm)	X	EG1102	Humanetics	11-Sep-2020
	Y	EG1102	Humanetics	11-Sep-2020
	Z	EG1102	Humanetics	11-Sep-2020
Lumbar Force (N)	X	DW9492	Humanetics	29-Jul-2020
	Y	DW9492	Humanetics	29-Jul-2020
	Z	DW9492	Humanetics	29-Jul-2020
Lumbar Moment (Nm)	X	DW9492	Humanetics	29-Jul-2020
	Y	DW9492	Humanetics	29-Jul-2020
	Z	DW9492	Humanetics	29-Jul-2020
Pelvis Accelerometers (g)	X	12398-3	Endevco	28-Oct-2020
	Y	12398-2	Endevco	28-Oct-2020
	Z	12398-1	Endevco	28-Oct-2020
Left Femur Force (N)	X	DZ5708T	Humanetics	27-Oct-2020
	Y	DZ5708T	Humanetics	27-Oct-2020
	Z	DZ5708T	Humanetics	27-Oct-2020
Left Femur Moment (Nm)	X	DZ5708T	Humanetics	27-Oct-2020
	Y	DZ5708T	Humanetics	27-Oct-2020
	Z	DZ5708T	Humanetics	27-Oct-2020
Left Femoral Neck Force (N)	X	DK5906	Humanetics	13-Jul-2020
	Y	DK5906	Humanetics	13-Jul-2020
	Z	DK5906	Humanetics	13-Jul-2020
Left Outer Knee Force (N)	Y	EC4098	Humanetics	27-Oct-2020
Left Inner Knee Force (N)	Y	EG2793	Humanetics	27-Oct-2020

TABLE 2 – DUMMY INSTRUMENTATION (WorldSID-05F with RibEye™) (CONTINUED)

			WorldSID-05F S/N DK1774		
			Serial Number	**Manufacturer**	**Calibration Date**
Shoulder RibEye (mm)	Front	X	161	Boxboro Systems	2-Nov-2020
		Y	161	Boxboro Systems	2-Nov-2020
		Z	161	Boxboro Systems	2-Nov-2020
	Middle	X	161	Boxboro Systems	2-Nov-2020
		Y	161	Boxboro Systems	2-Nov-2020
		Z	161	Boxboro Systems	2-Nov-2020
	Rear	X	161	Boxboro Systems	2-Nov-2020
		Y	161	Boxboro Systems	2-Nov-2020
		Z	161	Boxboro Systems	2-Nov-2020
Thorax Rib 1 RibEye (mm)	Front	X	161	Boxboro Systems	2-Nov-2020
		Y	161	Boxboro Systems	2-Nov-2020
		Z	161	Boxboro Systems	2-Nov-2020
	Middle	X	161	Boxboro Systems	2-Nov-2020
		Y	161	Boxboro Systems	2-Nov-2020
		Z	161	Boxboro Systems	2-Nov-2020
	Rear	X	161	Boxboro Systems	2-Nov-2020
		Y	161	Boxboro Systems	2-Nov-2020
		Z	161	Boxboro Systems	2-Nov-2020
Thorax Rib 2 RibEye (mm)	Front	X	161	Boxboro Systems	2-Nov-2020
		Y	161	Boxboro Systems	2-Nov-2020
		Z	161	Boxboro Systems	2-Nov-2020
	Middle	X	161	Boxboro Systems	2-Nov-2020
		Y	161	Boxboro Systems	2-Nov-2020
		Z	161	Boxboro Systems	2-Nov-2020
	Rear	X	161	Boxboro Systems	2-Nov-2020
		Y	161	Boxboro Systems	2-Nov-2020
		Z	161	Boxboro Systems	2-Nov-2020
Thorax Rib 3 RibEye (mm)	Front	X	161	Boxboro Systems	2-Nov-2020
		Y	161	Boxboro Systems	2-Nov-2020
		Z	161	Boxboro Systems	2-Nov-2020
	Middle	X	161	Boxboro Systems	2-Nov-2020
		Y	161	Boxboro Systems	2-Nov-2020
		Z	161	Boxboro Systems	2-Nov-2020
	Rear	X	161	Boxboro Systems	2-Nov-2020
		Y	161	Boxboro Systems	2-Nov-2020
		Z	161	Boxboro Systems	2-Nov-2020

TABLE 2 – DUMMY INSTRUMENTATION (WorldSID-05F with RibEye™) (CONTINUED)

			WorldSID-05F S/N DK1774		
			Serial Number	**Manufacturer**	**Calibration Date**
Abdomen Rib 1 RibEye (mm)	Front	X	161	Boxboro Systems	2-Nov-2020
		Y	161	Boxboro Systems	2-Nov-2020
		Z	161	Boxboro Systems	2-Nov-2020
	Middle	X	161	Boxboro Systems	2-Nov-2020
		Y	161	Boxboro Systems	2-Nov-2020
		Z	161	Boxboro Systems	2-Nov-2020
	Rear	X	161	Boxboro Systems	2-Nov-2020
		Y	161	Boxboro Systems	2-Nov-2020
		Z	161	Boxboro Systems	2-Nov-2020
Abdomen Rib 2 RibEye (mm)	Front	X	161	Boxboro Systems	2-Nov-2020
		Y	161	Boxboro Systems	2-Nov-2020
		Z	161	Boxboro Systems	2-Nov-2020
	Middle	X	161	Boxboro Systems	2-Nov-2020
		Y	161	Boxboro Systems	2-Nov-2020
		Z	161	Boxboro Systems	2-Nov-2020
	Rear	X	161	Boxboro Systems	2-Nov-2020
		Y	161	Boxboro Systems	2-Nov-2020
		Z	161	Boxboro Systems	2-Nov-2020

TABLE 3 – VEHICLE INSTRUMENTATION

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity (g)	X	T23789	Endevco	6-Jul-2020
	Y	T23815	Endevco	11-Sep-2020
	Z	T23777	Endevco	11-Sep-2020
Vehicle Center of Gravity Angular Rate (deg/sec)	X	ARS7974	DTS	27-Aug-2020
	Y	ARS9194	DTS	27-Aug-2020
	Z	ARS8743	DTS	27-Aug-2020
Right Side Sill At Front Seat (g)	X	T16772	Endevco	20-Nov-2020
	Y	T23885	Endevco	20-Nov-2020
	Z	T11805	Endevco	20-Nov-2020
Right Side Sill At Rear Seat (g)	X	P74456	Endevco	27-Aug-2020
	Y	P58537	Endevco	27-Aug-2020
	Z	P58494	Endevco	20-Nov-2020
Left Side Sill At Front Seat (g)	Y	T16771	Endevco	20-Nov-2020
Left Side Sill At Rear Seat (g)	Y	T16779	Endevco	12-Jan-2021
Left Lower A-Pillar (g)	Y	P76171	Endevco	12-Jan-2021
Left Middle A-Pillar (g)	Y	P76114	Endevco	27-Aug-2020
Left Lower B-Pillar (g)	Y	P44288	Endevco	4-Feb-2021
Left Middle B-Pillar (g)	Y	T11449	Endevco	1-Feb-2021
Front Seat Track (g)	Y	P57192	Endevco	11-Sep-2020
Rear Seat Structure (g)	Y	P83394	Endevco	29-Sep-2020
Right Rear Occupant Compartment (g)	Y	P73587	Endevco	6-Jul-2020
Engine Block (g)	X	T23813	Endevco	11-Sep-2020
	Y	T23832	Endevco	11-Sep-2020
Floorpan Above Rear Axle (g)	X	P75115	Endevco	20-Nov-2020
	Y	P94567	Endevco	20-Nov-2020
	Z	P33547	Endevco	20-Nov-2020
Rear Deck (g)	X	T23797	Endevco	11-Sep-2020
	Y	T23807	Endevco	15-Sep-2020
	Z	T23837	Endevco	15-Sep-2020
Rear Deck Angular Rate (deg/sec)	X	ARS8001	DTS	6-Jul-2020
	Y	ARS8290	DTS	6-Jul-2020
	Z	ARS9185	DTS	6-Jul-2020
Left Front Door Mid Centerline Acceleration (g)	Y	T23816	Endevco	12-Jan-2021
Left Front Door Mid Rear Acceleration (g)	Y	T23828	Endevco	29-Sep-2020
Left Front Door Upper Centerline (g)	Y	T23866	Endevco	15-Sep-2020
Left Rear Door Mid Rear (g)	Y	P75713	Endevco	20-Nov-2020
Left Rear Door Upper Centerline (g)	Y	T11815	Endevco	20-Nov-2020

TABLE 4 – MDB INSTRUMENTATION

MDB Instrumentation		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity (g)	X	T11875	Endevco	27-Aug-2020
	Y	T11867	Endevco	27-Aug-2020
	Z	T11804	Endevco	27-Aug-2020
MDB Rear (g)	X	T23821	Endevco	11-Sep-2020
	Y	T23805	Endevco	11-Sep-2020

Sign Convention
SAE J211 MAR95

Accelerometers:

+X: Forward
+Y: Rightward
+Z: Downward

Potentiometers:

+Chest longitudinal deflection:	Outward
+Chest lateral deflection:	Rightward
+Seat belt displacement:	Outward
+Seat belt extension:	Elongation
+Knee slider displacement:	Distance between femur and tibia increased (in relation to a seated dummy)

Rotation potentiometers:

+About the X-axis:	Left foot-eversion
	Right foot-inversion
+About the Y-axis:	Left/right foot-dorsiflexion
+About the Z-axis:	Left foot-internal
	Right foot-external

Load cells:

+Femur force:	Tension
+Seat belt force:	Tension
+Barrier force:	Tension

Neck load cells:

+X force:	Head pushed rearward
+Y force:	Head pushed leftward
+Z force:	Head pulled upward (tension on neck)
+X moment:	Left ear rotating toward left shoulder
+Y moment:	Chin rotating toward chest
+Z moment:	Chin rotating toward left shoulder

Tibia load cells:

+X force:	Ankle forward, knee rearward
+Y force:	Ankle rightward, knee leftward
+Z force:	Tension
+X moment:	Bottom of tibia moving leftward
+Y moment:	Bottom of tibia moving rearward

Sign Convention (Continued)
SAE J211 MAR95

Lumbar load cells:	+X force:	Chest rearward, pelvis forward
	+Y force:	Chest leftward, pelvis rightward
	+Z force:	Chest upward, pelvis downward
	+X moment:	Left shoulder toward left hip
	+Y moment:	Sternum toward front of legs
	+Z moment:	Right shoulder forward, left shoulder rearward

Frequency Response Classes
SAE J211 MAR95

Typical Test Measurements	Channel Class
Vehicle Structural Accelerations for use in:	
Total vehicle comparison	60
Collision simulation input	60
Component analysis	600
Integration for velocity or displacement	180
Barrier Face Forces	60
Belt Restraint System Loads	60
Anthropomorphic Test Device	
Head accelerations (linear and angular)	1000
Neck	
Forces	1000
Moments	600
Thorax	
Spine accelerations	180
Rib accelerations	1000
Sternum accelerations	1000
Deflections	600
Lumbar	
Forces	1000
Moments	1000
Pelvis	
Accelerations	1000
Forces	1000
Moments	1000
Femur/Knee/Tibia/Ankle	
Forces	600
Moments	600
Displacements	180
Sled Accelerations	60
Steering Column Loads	600
Head Form Accelerations	1000

Channel Number	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
1	11HEAD0000WSACXP	Driver Head Acceleration (X)	1000	+	yes	2000
2	11HEAD0000WSACYP	Driver Head Acceleration (Y)	1000	+	yes	2000
3	11HEAD0000WSACZP	Driver Head Acceleration (Z)	1000	+	yes	2000
3A	11HEAD0000WSACRP	Driver Head Acceleration Resultant	1000			
4	11HEAD0000WSAVXP	Driver Head Angular Rate (X)	1000	+	yes	8000
5	11HEAD0000WSAVYP	Driver Head Angular Rate (Y)	1000	+	yes	8000
6	11HEAD0000WSAVZP	Driver Head Angular Rate (Z)	1000	+	yes	8000
7	11NECKUP00WSFOXP	Driver Upper Neck Force (X)	1000	+	yes	10000
8	11NECKUP00WSFOYP	Driver Upper Neck Force (Y)	1000	+	yes	10000
9	11NECKUP00WSFOZP	Driver Upper Neck Force (Z)	1000	+	yes	12000
10	11NECKUP00WSMOXP	Driver Upper Neck Moment (X)	600	+	yes	300
11	11NECKUP00WSMOYP	Driver Upper Neck Moment (Y)	600	+	yes	300
12	11NECKUP00WSMOZP	Driver Upper Neck Moment (Z)	600	+	yes	200
13	11NECKLO00WSFOXP	Driver Lower Neck Force (X)	1000	+	yes	10000
14	11NECKLO00WSFOYP	Driver Lower Neck Force (Y)	1000	+	yes	10000
15	11NECKLO00WSFOZP	Driver Lower Neck Force (Z)	1000	+	yes	12000
16	11NECKLO00WSMOXP	Driver Lower Neck Moment (X)	600	+	yes	300
17	11NECKLO00WSMOYP	Driver Lower Neck Moment (Y)	600	+	yes	300
18	11NECKLO00WSMOZP	Driver Lower Neck Moment (Z)	600	+	yes	200
19	11SHLDLE00WSFOXP	Driver Shoulder Force (X)	600	+	yes	5000
20	11SHLDLE00WSFOYP	Driver Shoulder Force (Y)	600	+	yes	10000
21	11SHLDLE00WSFOZP	Driver Shoulder Force (Z)	600	+	yes	5000
22	11SHRILEREWSDSX0	Driver Shoulder Rear Displacement (X)	0	+	no	60
23	11SHRILEREWSDSY0	Driver Shoulder Rear Displacement (Y)	0	+	no	60
24	11SHRILEREWSDSZ0	Driver Shoulder Rear Displacement (Z)	0	+	no	60
25	11SHRILEREWSDSLB	Driver Shoulder Rear Length Change	600	+	no	60
26	11SHRILEMIWSDSX0	Driver Shoulder Middle Displacement (X)	0	+	no	60
27	11SHRILEMIWSDSY0	Driver Shoulder Middle Displacement (Y)	0	+	no	60
28	11SHRILEMIWSDSZ0	Driver Shoulder Middle Displacement (Z)	0	+	no	60
29	11SHRILEMIWSDSLB	Driver Shoulder Middle Length Change	600	+	no	60
30	11SHRILEFRWSDSX0	Driver Shoulder Front Displacement (X)	0	+	no	60
31	11SHRILEFRWSDSY0	Driver Shoulder Front Displacement (Y)	0	+	no	60
32	11SHRILEFRWSDSZ0	Driver Shoulder Front Displacement (Z)	0	+	no	60
33	11SHRILEFRWSDSLB	Driver Shoulder Front Length Change	600	+	no	60

Channel Number	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
34	11TRRILUREWSDSX0	Driver Thorax Rib 1 Rear Displacement (X)	0	+	no	60
35	11TRRILUREWSDSY0	Driver Thorax Rib 1 Rear Displacement (Y)	0	+	no	60
36	11TRRILUREWSDSZ0	Driver Thorax Rib 1 Rear Displacement (Z)	0	+	no	60
37	11TRRILUREWSDSLB	Driver Thorax Rib 1 Rear Length Change	600	+	no	60
38	11TRRILUMIWSDSX0	Driver Thorax Rib 1 Middle Displacement (X)	0	+	no	60
39	11TRRILUMIWSDSY0	Driver Thorax Rib 1 Middle Displacement (Y)	0	+	no	60
40	11TRRILUMIWSDSZ0	Driver Thorax Rib 1 Middle Displacement (Z)	0	+	no	60
41	11TRRILUMIWSDSLB	Driver Thorax Rib 1 Middle Length Change	600	+	no	60
42	11TRRILUFRWSDSX0	Driver Thorax Rib 1 Front Displacement (X)	0	+	no	60
43	11TRRILUFRWSDSY0	Driver Thorax Rib 1 Front Displacement (Y)	0	+	no	60
44	11TRRILUFRWSDSZ0	Driver Thorax Rib 1 Front Displacement (Z)	0	+	no	60
45	11TRRILUFRWSDSLB	Driver Thorax Rib 1 Front Length Change	600	+	no	60
46	11TRRILMREWSDSX0	Driver Thorax Rib 2 Rear Displacement (X)	0	+	no	60
47	11TRRILMREWSDSY0	Driver Thorax Rib 2 Rear Displacement (Y)	0	+	no	60
48	11TRRILMREWSDSZ0	Driver Thorax Rib 2 Rear Displacement (Z)	0	+	no	60
49	11TRRILMREWSDSLB	Driver Thorax Rib 2 Rear Length Change	600	+	no	60
50	11TRRILMMIWSDSX0	Driver Thorax Rib 2 Middle Displacement (X)	0	+	no	60
51	11TRRILMMIWSDSY0	Driver Thorax Rib 2 Middle Displacement (Y)	0	+	no	60
52	11TRRILMMIWSDSZ0	Driver Thorax Rib 2 Middle Displacement (Z)	0	+	no	60
53	11TRRILMMIWSDSLB	Driver Thorax Rib 2 Middle Length Change	600	+	no	60
54	11TRRILMFRWSDSX0	Driver Thorax Rib 2 Front Displacement (X)	0	+	no	60
55	11TRRILMFRWSDSY0	Driver Thorax Rib 2 Front Displacement (Y)	0	+	no	60
56	11TRRILMFRWSDSZ0	Driver Thorax Rib 2 Front Displacement (Z)	0	+	no	60
57	11TRRILMFRWSDSLB	Driver Thorax Rib 2 Front Length Change	600	+	no	60

Channel Number	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
58	11TRRILLREWSDSX0	Driver Thorax Rib 3 Rear Displacement (X)	0	+	no	60
59	11TRRILLREWSDSY0	Driver Thorax Rib 3 Rear Displacement (Y)	0	+	no	60
60	11TRRILLREWSDSZ0	Driver Thorax Rib 3 Rear Displacement (Z)	0	+	no	60
61	11TRRILLREWSDSLB	Driver Thorax Rib 3 Rear Length Change	600	+	no	60
62	11TRRILLMIWSDSX0	Driver Thorax Rib 3 Middle Displacement (X)	0	+	no	60
63	11TRRILLMIWSDSY0	Driver Thorax Rib 3 Middle Displacement (Y)	0	+	no	60
64	11TRRILLMIWSDSZ0	Driver Thorax Rib 3 Middle Displacement (Z)	0	+	no	60
65	11TRRILLMIWSDSLB	Driver Thorax Rib 3 Middle Length Change	600	+	no	60
66	11TRRILLFRWSDSX0	Driver Thorax Rib 3 Front Displacement (X)	0	+	no	60
67	11TRRILLFRWSDSY0	Driver Thorax Rib 3 Front Displacement (Y)	0	+	no	60
68	11TRRILLFRWSDSZ0	Driver Thorax Rib 3 Front Displacement (Z)	0	+	no	60
69	11TRRILLFRWSDSLB	Driver Thorax Rib 3 Front Length Change	600	+	no	60
70	11ABRILUREWSDSX0	Driver Abdomen Rib 1 Rear Displacement (X)	0	+	no	60
71	11ABRILUREWSDSY0	Driver Abdomen Rib 1 Rear Displacement (Y)	0	+	no	60
72	11ABRILUREWSDSZ0	Driver Abdomen Rib 1 Rear Displacement (Z)	0	+	no	60
73	11ABRILUREWSDSLB	Driver Abdomen Rib 1 Rear Length Change	600	+	no	60
74	11ABRILUMIWSDSX0	Driver Abdomen Rib 1 Middle Displacement (X)	0	+	no	60
75	11ABRILUMIWSDSY0	Driver Abdomen Rib 1 Middle Displacement (Y)	0	+	no	60
76	11ABRILUMIWSDSZ0	Driver Abdomen Rib 1 Middle Displacement (Z)	0	+	no	60
77	11ABRILUMIWSDSLB	Driver Abdomen Rib 1 Middle Length Change	600	+	no	60
78	11ABRILUFRWSDSX0	Driver Abdomen Rib 1 Front Displacement (X)	0	+	no	60
79	11ABRILUFRWSDSY0	Driver Abdomen Rib 1 Front Displacement (Y)	0	+	no	60
80	11ABRILUFRWSDSZ0	Driver Abdomen Rib 1 Front Displacement (Z)	0	+	no	60
81	11ABRILUFRWSDSLB	Driver Abdomen Rib 1 Front Length Change	600	+	no	60

Channel Number	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
82	11ABRILLREWSDSX0	Driver Abdomen Rib 2 Rear Displacement (X)	0	+	no	60
83	11ABRILLREWSDSY0	Driver Abdomen Rib 2 Rear Displacement (Y)	0	+	no	60
84	11ABRILLREWSDSZ0	Driver Abdomen Rib 2 Rear Displacement (Z)	0	+	no	60
85	11ABRILLREWSDSLB	Driver Abdomen Rib 2 Rear Length Change	600	+	no	60
86	11ABRILLMIWSDSX0	Driver Abdomen Rib 2 Middle Displacement (X)	0	+	no	60
87	11ABRILLMIWSDSY0	Driver Abdomen Rib 2 Middle Displacement (Y)	0	+	no	60
88	11ABRILLMIWSDSZ0	Driver Abdomen Rib 2 Middle Displacement (Z)	0	+	no	60
89	11ABRILLMIWSDSLB	Driver Abdomen Rib 2 Middle Length Change	600	+	no	60
90	11ABRILLFRWSDSX0	Driver Abdomen Rib 2 Front Displacement (X)	0	+	no	60
91	11ABRILLFRWSDSY0	Driver Abdomen Rib 2 Front Displacement (Y)	0	+	no	60
92	11ABRILLFRWSDSZ0	Driver Abdomen Rib 2 Front Displacement (Z)	0	+	no	60
93	11ABRILLFRWSDSLB	Driver Abdomen Rib 2 Front Length Change	600	+	no	60
94	11THSP0100WSACXP	Driver Spine T1 Acceleration (X)	180	+	yes	2000
95	11THSP0100WSACYP	Driver Spine T1 Acceleration (Y)	180	+	yes	2000
96	11THSP0100WSACZP	Driver Spine T1 Acceleration (Z)	180	+	yes	2000
96A	11THSP0100WSACRP	Driver Spine T1 Acceleration Resultant	180			
97	11THSP0400WSACXP	Driver Spine T4 Acceleration (X)	180	+	yes	2000
98	11THSP0400WSACYP	Driver Spine T4 Acceleration (Y)	180	+	yes	2000
99	11THSP0400WSACZP	Driver Spine T4 Acceleration (Z)	180	+	yes	2000
99A	11THSP0400WSACRP	Driver Spine T4 Acceleration Resultant	180			
100	11THSP1200WSACXP	Driver Spine T12 Acceleration (X)	180	+	yes	2000
101	11THSP1200WSACYP	Driver Spine T12 Acceleration (Y)	180	+	yes	2000
102	11THSP1200WSACZP	Driver Spine T12 Acceleration (Z)	180	+	yes	2000
102A	11THSP1200WSACRP	Driver Spine T12 Acceleration Resultant	180			
103	11PUBC0000WSFOYP	Driver Pubic Symphysis Force (Y)	600	+	yes	12000
104	11SACRLE00WSFOXP	Driver Sacro-iliac Left Force (X)	600	+	yes	6000
105	11SACRLE00WSFOYP	Driver Sacro-iliac Left Force (Y)	600	+	yes	12000
106	11SACRLE00WSFOZP	Driver Sacro-iliac Left Force (Z)	600	+	yes	6000
107	11SACRLE00WSMOXP	Driver Sacro-iliac Left Moment (X)	600	+	yes	800
108	11SACRLE00WSMOYP	Driver Sacro-iliac Left Moment (Y)	600	+	yes	400
109	11SACRLE00WSMOZP	Driver Sacro-iliac Left Moment (Z)	600	+	yes	400
110	11SACRRI00WSFOXP	Driver Sacro-iliac Right Force (X)	600	+	yes	6000
111	11SACRRI00WSFOYP	Driver Sacro-iliac Right Force (Y)	600	+	yes	12000
112	11SACRRI00WSFOZP	Driver Sacro-iliac Right Force (Z)	600	+	yes	6000

Channel Number	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
113	11SACRRI00WSMOXP	Driver Sacro-iliac Right Moment (X)	600	+	yes	800
114	11SACRRI00WSMOYP	Driver Sacro-iliac Right Moment (Y)	600	+	yes	400
115	11SACRRI00WSMOZP	Driver Sacro-iliac Right Moment (Z)	600	+	yes	400
116	11LUSP0000WSFOXP	Driver Lumbar Force (X)	600	+	yes	10000
117	11LUSP0000WSFOYP	Driver Lumbar Force (Y)	600	+	yes	10000
118	11LUSP0000WSFOZP	Driver Lumbar Force (Z)	600	+	yes	12000
119	11LUSP0000WSMOXP	Driver Lumbar Moment (X)	600	+	yes	300
120	11LUSP0000WSMOYP	Driver Lumbar Moment (Y)	600	+	yes	300
121	11LUSP0000WSMOZP	Driver Lumbar Moment (Z)	600	+	yes	200
122	11PELV0000WSACXP	Driver Pelvic Acceleration (X)	1000	+	yes	2000
123	11PELV0000WSACYP	Driver Pelvic Acceleration (Y)	1000	+	yes	2000
124	11PELV0000WSACZP	Driver Pelvic Acceleration (Z)	1000	+	yes	2000
124A	11PELV0000WSACRP	Driver Pelvic Acceleration Resultant	1000			
125	11FEMRLE00WSFOXP	Driver Left Femur Force (X)	600	+	yes	15000
126	11FEMRLE00WSFOYP	Driver Left Femur Force (Y)	600	+	yes	15000
127	11FEMRLE00WSFOZP	Driver Left Femur Force (Z)	600	+	yes	15000
128	11FEMRLE00WSMOXP	Driver Left Femur Moment (X)	600	+	yes	350
129	11FEMRLE00WSMOYP	Driver Left Femur Moment (Y)	600	+	yes	200
130	11FEMRLE00WSMOZP	Driver Left Femur Moment (Z)	600	+	yes	350
131	11FEACLE00WSFOXP	Driver Femoral Neck Force (X)	600	+	yes	10000
132	11FEACLE00WSFOYP	Driver Femoral Neck Force (Y)	600	+	yes	25000
133	11FEACLE00WSFOZP	Driver Femoral Neck Force (Z)	600	+	yes	10000
134	11KNEELEOUWSFOYP	Driver Left Outer Knee Force (Y)	600	+	yes	20000
135	11KNEELEINWSFOYP	Driver Left Inner Knee Force (Y)	600	+	yes	20000
136	14HEAD0000WFACXP	Passenger Head Acceleration (X)	1000	+	yes	2000
137	14HEAD0000WFACYP	Passenger Head Acceleration (Y)	1000	+	yes	2000
138	14HEAD0000WFACZP	Passenger Head Acceleration (Z)	1000	+	yes	2000
138A	14HEAD0000WFACRP	Passenger Head Acceleration Resultant	1000			
139	14HEAD0000WFAVXP	Passenger Head Angular Rate (X)	1000	+	yes	8000
140	14HEAD0000WFAVYP	Passenger Head Angular Rate (Y)	1000	+	yes	8000
141	14HEAD0000WFAVZP	Passenger Head Angular Rate (Z)	1000	+	yes	8000
142	14NECKUP00WFFOXP	Passenger Upper Neck Force (X)	1000	+	yes	10000
143	14NECKUP00WFFOYP	Passenger Upper Neck Force (Y)	1000	+	yes	10000
144	14NECKUP00WFFOZP	Passenger Upper Neck Force (Z)	1000	+	yes	12000
145	14NECKUP00WFMOXP	Passenger Upper Neck Moment (X)	600	+	yes	300
146	14NECKUP00WFMOYP	Passenger Upper Neck Moment (Y)	600	+	yes	300
147	14NECKUP00WFMOZP	Passenger Upper Neck Moment (Z)	600	+	yes	200
148	14NECKLO00WFFOXP	Passenger Lower Neck Force (X)	1000	+	yes	10000
149	14NECKLO00WFFOYP	Passenger Lower Neck Force (Y)	1000	+	yes	10000
150	14NECKLO00WFFOZP	Passenger Lower Neck Force (Z)	1000	+	yes	12000
151	14NECKLO00WFMOXP	Passenger Lower Neck Moment (X)	600	+	yes	300
152	14NECKLO00WFMOYP	Passenger Lower Neck Moment (Y)	600	+	yes	300
153	14NECKLO00WFMOZP	Passenger Lower Neck Moment (Z)	600	+	yes	200
154	14SHLDLE00WFFOXP	Passenger Shoulder Force (X)	600	+	yes	4500
155	14SHLDLE00WFFOYP	Passenger Shoulder Force (Y)	600	+	yes	4500
156	14SHLDLE00WFFOZP	Passenger Shoulder Force (Z)	600	+	yes	6000

Channel Number	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
157	14SHRILEREWFDSX0	Passenger Shoulder Rear Displacement (X)	0	+	no	60
158	14SHRILEREWFDSY0	Passenger Shoulder Rear Displacement (Y)	0	+	no	60
159	14SHRILEREWFDSZ0	Passenger Shoulder Rear Displacement (Z)	0	+	no	60
160	14SHRILEREWFDSLB	Passenger Shoulder Rear Length Change	600	+	no	60
161	14SHRILEMIWFDSX0	Passenger Shoulder Middle Displacement (X)	0	+	no	60
162	14SHRILEMIWFDSY0	Passenger Shoulder Middle Displacement (Y)	0	+	no	60
163	14SHRILEMIWFDSZ0	Passenger Shoulder Middle Displacement (Z)	0	+	no	60
164	14SHRILEMIWFDSLB	Passenger Shoulder Middle Length Change	600	+	no	60
165	14SHRILEFRWFDSX0	Passenger Shoulder Front Displacement (X)	0	+	no	60
166	14SHRILEFRWFDSY0	Passenger Shoulder Front Displacement (Y)	0	+	no	60
167	14SHRILEFRWFDSZ0	Passenger Shoulder Front Displacement (Z)	0	+	no	60
168	14SHRILEFRWFDSLB	Passenger Shoulder Front Length Change	600	+	no	60
169	14TRRILUREWFDSX0	Passenger Thorax Rib 1 Rear Displacement (X)	0	+	no	60
170	14TRRILUREWFDSY0	Passenger Thorax Rib 1 Rear Displacement (Y)	0	+	no	60
171	14TRRILUREWFDSZ0	Passenger Thorax Rib 1 Rear Displacement (Z)	0	+	no	60
172	14TRRILUREWFDSLB	Passenger Thorax Rib 1 Rear Length Change	600	+	no	60
173	14TRRILUMIWFDSX0	Passenger Thorax Rib 1 Middle Displacement (X)	0	+	no	60
174	14TRRILUMIWFDSY0	Passenger Thorax Rib 1 Middle Displacement (Y)	0	+	no	60
175	14TRRILUMIWFDSZ0	Passenger Thorax Rib 1 Middle Displacement (Z)	0	+	no	60
176	14TRRILUMIWFDSLB	Passenger Thorax Rib 1 Middle Length Change	600	+	no	60
177	14TRRILUFRWFDSX0	Passenger Thorax Rib 1 Front Displacement (X)	0	+	no	60
178	14TRRILUFRWFDSY0	Passenger Thorax Rib 1 Front Displacement (Y)	0	+	no	60
179	14TRRILUFRWFDSZ0	Passenger Thorax Rib 1 Front Displacement (Z)	0	+	no	60
180	14TRRILUFRWFDSLB	Passenger Thorax Rib 1 Front Length Change	600	+	no	60

Channel Number	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
181	14TRRILMREWFDSX0	Passenger Thorax Rib 2 Rear Displacement (X)	0	+	no	60
182	14TRRILMREWFDSY0	Passenger Thorax Rib 2 Rear Displacement (Y)	0	+	no	60
183	14TRRILMREWFDSZ0	Passenger Thorax Rib 2 Rear Displacement (Z)	0	+	no	60
184	14TRRILMREWFDSLB	Passenger Thorax Rib 2 Rear Length Change	600	+	no	60
185	14TRRILMMIWFDSX0	Passenger Thorax Rib 2 Middle Displacement (X)	0	+	no	60
186	14TRRILMMIWFDSY0	Passenger Thorax Rib 2 Middle Displacement (Y)	0	+	no	60
187	14TRRILMMIWFDSZ0	Passenger Thorax Rib 2 Middle Displacement (Z)	0	+	no	60
188	14TRRILMMIWFDSLB	Passenger Thorax Rib 2 Middle Length Change	600	+	no	60
189	14TRRILMFRWFDSX0	Passenger Thorax Rib 2 Front Displacement (X)	0	+	no	60
190	14TRRILMFRWFDSY0	Passenger Thorax Rib 2 Front Displacement (Y)	0	+	no	60
191	14TRRILMFRWFDSZ0	Passenger Thorax Rib 2 Front Displacement (Z)	0	+	no	60
192	14TRRILMFRWFDSLB	Passenger Thorax Rib 2 Front Length Change	600	+	no	60
193	14TRRILLREWFDSX0	Passenger Thorax Rib 3 Rear Displacement (X)	0	+	no	60
194	14TRRILLREWFDSY0	Passenger Thorax Rib 3 Rear Displacement (Y)	0	+	no	60
195	14TRRILLREWFDSZ0	Passenger Thorax Rib 3 Rear Displacement (Z)	0	+	no	60
196	14TRRILLREWFDSLB	Passenger Thorax Rib 3 Rear Length Change	600	+	no	60
197	14TRRILLMIWFDSX0	Passenger Thorax Rib 3 Middle Displacement (X)	0	+	no	60
198	14TRRILLMIWFDSY0	Passenger Thorax Rib 3 Middle Displacement (Y)	0	+	no	60
199	14TRRILLMIWFDSZ0	Passenger Thorax Rib 3 Middle Displacement (Z)	0	+	no	60
200	14TRRILLMIWFDSLB	Passenger Thorax Rib 3 Middle Length Change	600	+	no	60
201	14TRRILLFRWFDSX0	Passenger Thorax Rib 3 Front Displacement (X)	0	+	no	60
202	14TRRILLFRWFDSY0	Passenger Thorax Rib 3 Front Displacement (Y)	0	+	no	60
203	14TRRILLFRWFDSZ0	Passenger Thorax Rib 3 Front Displacement (Z)	0	+	no	60
204	14TRRILLFRWFDSLB	Passenger Thorax Rib 3 Front Length Change	600	+	no	60

Channel Number	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
205	14ABRILUREWFDSX0	Passenger Abdomen Rib 1 Rear Displacement (X)	0	+	no	60
206	14ABRILUREWFDSY0	Passenger Abdomen Rib 1 Rear Displacement (Y)	0	+	no	60
207	14ABRILUREWFDSZ0	Passenger Abdomen Rib 1 Rear Displacement (Z)	0	+	no	60
208	14ABRILUREWFDSLB	Passenger Abdomen Rib 1 Rear Length Change	600	+	no	60
209	14ABRILUMIWFDSX0	Passenger Abdomen Rib 1 Middle Displacement (X)	0	+	no	60
210	14ABRILUMIWFDSY0	Passenger Abdomen Rib 1 Middle Displacement (Y)	0	+	no	60
211	14ABRILUMIWFDSZ0	Passenger Abdomen Rib 1 Middle Displacement (Z)	0	+	no	60
212	14ABRILUMIWFDSLB	Passenger Abdomen Rib 1 Middle Length Change	600	+	no	60
213	14ABRILUFRWFDSX0	Passenger Abdomen Rib 1 Front Displacement (X)	0	+	no	60
214	14ABRILUFRWFDSY0	Passenger Abdomen Rib 1 Front Displacement (Y)	0	+	no	60
215	14ABRILUFRWFDSZ0	Passenger Abdomen Rib 1 Front Displacement (Z)	0	+	no	60
216	14ABRILUFRWFDSLB	Passenger Abdomen Rib 1 Front Length Change	600	+	no	60
217	14ABRILLREWFDSX0	Passenger Abdomen Rib 2 Rear Displacement (X)	0	+	no	60
218	14ABRILLREWFDSY0	Passenger Abdomen Rib 2 Rear Displacement (Y)	0	+	no	60
219	14ABRILLREWFDSZ0	Passenger Abdomen Rib 2 Rear Displacement (Z)	0	+	no	60
220	14ABRILLREWFDSLB	Passenger Abdomen Rib 2 Rear Length Change	600	+	no	60
221	14ABRILLMIWFDSX0	Passenger Abdomen Rib 2 Middle Displacement (X)	0	+	no	60
222	14ABRILLMIWFDSY0	Passenger Abdomen Rib 2 Middle Displacement (Y)	0	+	no	60
223	14ABRILLMIWFDSZ0	Passenger Abdomen Rib 2 Middle Displacement (Z)	0	+	no	60
224	14ABRILLMIWFDSLB	Passenger Abdomen Rib 2 Middle Length Change	600	+	no	60
225	14ABRILLFRWFDSX0	Passenger Abdomen Rib 2 Front Displacement (X)	0	+	no	60
226	14ABRILLFRWFDSY0	Passenger Abdomen Rib 2 Front Displacement (Y)	0	+	no	60
227	14ABRILLFRWFDSZ0	Passenger Abdomen Rib 2 Front Displacement (Z)	0	+	no	60
228	14ABRILLFRWFDSLB	Passenger Abdomen Rib 2 Front Length Change	600	+	no	60

Channel Number	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
229	14THSP0100WFACXP	Passenger Spine T1 Acceleration (X)	180	+	yes	2000
230	14THSP0100WFACYP	Passenger Spine T1 Acceleration (Y)	180	+	yes	2000
231	14THSP0100WFACZP	Passenger Spine T1 Acceleration (Z)	180	+	yes	2000
231A	14THSP0100WFACRP	Passenger Spine T1 Acceleration Resultant	180			
232	14THSP0400WFACXP	Passenger Spine T4 Acceleration (X)	180	+	yes	2000
233	14THSP0400WFACYP	Passenger Spine T4 Acceleration (Y)	180	+	yes	2000
234	14THSP0400WFACZP	Passenger Spine T4 Acceleration (Z)	180	+	yes	2000
234A	14THSP0400WFACRP	Passenger Spine T4 Acceleration Resultant	180			
235	14THSP1200WFACXP	Passenger Spine T12 Acceleration (X)	180	+	yes	2000
236	14THSP1200WFACYP	Passenger Spine T12 Acceleration (Y)	180	+	yes	2000
237	14THSP1200WFACZP	Passenger Spine T12 Acceleration (Z)	180	+	yes	2000
237A	14THSP1200WFACRP	Passenger Spine T12 Acceleration Resultant	180			
238	14PUBC0000WFFOYP	Passenger Pubic Symphysis Force (Y)	600	+	yes	12000
239	14SACRLE00WFFOXP	Passenger Sacro-iliac Left Force (X)	600	+	yes	200
240	14SACRLE00WFFOYP	Passenger Sacro-iliac Left Force (Y)	600	+	yes	10000
241	14SACRLE00WFFOZP	Passenger Sacro-iliac Left Force (Z)	600	+	yes	5000
242	14SACRLE00WFMOXP	Passenger Sacro-iliac Left Moment (X)	600	+	yes	600
243	14SACRLE00WFMOYP	Passenger Sacro-iliac Left Moment (Y)	600	+	yes	275
244	14SACRLE00WFMOZP	Passenger Sacro-iliac Left Moment (Z)	600	+	yes	300
245	14SACRRI00WFFOXP	Passenger Sacro-iliac Right Force (X)	600	+	yes	5000
246	14SACRRI00WFFOYP	Passenger Sacro-iliac Right Force (Y)	600	+	yes	10000
247	14SACRRI00WFFOZP	Passenger Sacro-iliac Right Force (Z)	600	+	yes	5000
248	14SACRRI00WFMOXP	Passenger Sacro-iliac Right Moment (X)	600	+	yes	600
249	14SACRRI00WFMOYP	Passenger Sacro-iliac Right Moment (Y)	600	+	yes	275
250	14SACRRI00WFMOZP	Passenger Sacro-iliac Right Moment (Z)	600	+	yes	300
251	14LUSP0000WFFOXP	Passenger Lumbar Force (X)	600	+	yes	10000
252	14LUSP0000WFFOYP	Passenger Lumbar Force (Y)	600	+	yes	10000
253	14LUSP0000WFFOZP	Passenger Lumbar Force (Z)	600	+	yes	12000

Channel Number	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
254	14LUSP0000WFMOXP	Passenger Lumbar Moment (X)	600	+	yes	220
255	14LUSP0000WFMOYP	Passenger Lumbar Moment (Y)	600	+	yes	220
256	14LUSP0000WFMOZP	Passenger Lumbar Moment (Z)	600	+	yes	125
257	14PELV0000WFACXP	Passenger Pelvic Acceleration (X)	1000	+	yes	2000
258	14PELV0000WFACYP	Passenger Pelvic Acceleration (Y)	1000	+	yes	2000
259	14PELV0000WFACZP	Passenger Pelvic Acceleration (Z)	1000	+	yes	2000
259A	14PELV0000WFACRP	Passenger Pelvic Acceleration Resultant	1000			
260	14FEMRLE00WFFOXP	Passenger Left Femur Force (X)	600	+	yes	15000
261	14FEMRLE00WFFOYP	Passenger Left Femur Force (Y)	600	+	yes	15000
262	14FEMRLE00WFFOZP	Passenger Left Femur Force (Z)	600	+	yes	15000
263	14FEMRLE00WFMOXP	Passenger Left Femur Moment (X)	600	+	yes	300
264	14FEMRLE00WFMOYP	Passenger Left Femur Moment (Y)	600	+	yes	350
265	14FEMRLE00WFMOZP	Passenger Left Femur Moment (Z)	600	+	yes	350
266	14FEACLE00WFFOXP	Passenger Femoral Neck Force (X)	600	+	yes	10000
267	14FEACLE00WFFOYP	Passenger Femoral Neck Force (Y)	600	+	yes	25000
268	14FEACLE00WFFOZP	Passenger Femoral Neck Force (Z)	600	+	yes	10000
269	14KNEELEINWFFOYP	Passenger Left Outer Knee Force (Y)	600	+	yes	20000
270	14KNEELEOUWFFOYP	Passenger Left Inner Knee Force (Y)	600	+	yes	20000
271	12VEHCCG0000ACXA	VEHICLE CG AX	60	+	yes	2000
272	12VEHCCG0000ACYA	VEHICLE CG AY	60	+	yes	2000
273	12VEHCCG0000ACZA	VEHICLE CG AZ	60	+	yes	2000
273A	12VEHCCG0000ACRA	VEHICLE CG A RESULTANT	60			
274	12VEHCCG0000AVXA	VEHICLE CG ARS X	60	+	yes	8000
275	12VEHCCG0000AVYA	VEHICLE CG ARS Y	60	+	yes	8000
276	12VEHCCG0000AVZA	VEHICLE CG ARS Z	60	+	yes	8000
277	13SILBRIFR00ACXA	RIGHT SIDE SILL AT FRONT SEAT AX	60	+	yes	2000
278	13SILBRIFR00ACYA	RIGHT SIDE SILL AT FRONT SEAT AY	60	+	yes	2000
279	13SILBRIFR00ACZA	RIGHT SIDE SILL AT FRONT SEAT AZ	60	+	yes	2000
279A	13SILBRIFR00ACRA	RIGHT SIDE SILL AT FRONT SEAT A RESULTANT	60			
280	16SILBRIRE00ACXA	RIGHT SIDE SILL AT REAR SEAT AX	60	+	yes	2000
281	16SILBRIRE00ACYA	RIGHT SIDE SILL AT REAR SEAT AY	60	+	yes	2000
282	16SILBRIRE00ACZA	RIGHT SIDE SILL AT REAR SEAT AZ	60	+	yes	2000
282A	16SILBRIRE00ACRA	RIGHT SIDE SILL AT REAR SEAT A ESULTANT	60			
283	11SILBLEFR00ACYA	LEFT SIDE SILL AT FRONT SEAT AY	60	+	yes	2000
284	14SILBLERE00ACYA	LEFT SIDE SILL AT REAR SEAT AY	60	+	yes	2000
285	11APILLO0000ACYA	LEFT LOWER A-PILLAR AY	60	+	yes	2000
286	11APILMI0000ACYA	LEFT MIDDLE A-PILLAR AY	60	+	yes	2000
287	11BPILLO0000ACYA	LEFT LOWER B-PILLAR AY	60	+	yes	2000

Channel Number	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
288	11BPILMI0000ACYA	LEFT MIDDLE B-PILLAR AY	60	+	yes	2000
289	11SETR000000ACYA	FRONT SEAT TRACK AY	60	+	yes	2000
290	14SETRLERE00ACYA	LEFT REAR SEAT STRUCTURE AY	60	+	yes	2000
291	16OCCRIRE000ACYA	RIGHT REAR OCCUPANT COMPARTMENT AY	60	+	yes	2000
292	12ENGNTP0000ACXA	ENGINE BLOCK AX	60	+	yes	2000
293	12ENGNTP0000ACYA	ENGINE BLOCK AY	60	+	yes	2000
294	15FORA000000ACXA	FLOORPAN ABOVE REAR AXLE AX	60	+	yes	2000
295	15FORA000000ACYA	FLOORPAN ABOVE REAR AXLE AY	60	+	yes	2000
296	15FORA000000ACZA	FLOORPAN ABOVE REAR AXLE AZ	60	+	yes	2000
296A	15FORA000000ACRA	FLOORPAN ABOVE REAR AXLE A RESULTANT	60			
297	10FORARD0000ACXA	REAR DECK AX	60	+	yes	2000
298	10FORARD0000ACYA	REAR DECK AY	60	+	yes	2000
299	10FORARD0000ACZA	REAR DECK AZ	60	+	yes	2000
299A	10FORARD0000ACRA	REAR DECK A RESULTANT	60			
300	10FORARD0000AVXA	REAR DECK ARS X	60	+	yes	8000
301	10FORARD0000AVYA	REAR DECK ARS Y	60	+	yes	8000
302	10FORARD0000AVZA	REAR DECK ARS Z	60	+	yes	8000
303	11DOORMIMI71ACYA	Left Front Door Mid Centerline (Y)	60	+	yes	2000
304	11DOORMIRE71ACYA	Left Front Door Mid Rear (Y)	60	+	yes	2000
305	11DOORMIUP71ACYA	Left Front Door Upper Centerline (Y)	60	+	yes	2000
306	14DOORMIRE71ACYA	Left Rear Door Mid Rear (Y)	60	+	yes	2000
307	14DOORMIUP71ACYA	Left Rear Door Upper Centerline (Y)	60	+	yes	2000
308	11HEADCONT00VO00	Head Contact	0	+	no	1
309	11SHOUCONT00VO00	Shoulder Contact	0	+	no	1
310	11THORCONT00VO00	Thorax Contact	0	+	no	1
311	11PELVCONT00VO00	Pelvis Contact	0	+	no	1
312	14HEADCONT00VO00	Head Contact	0	+	no	1
313	14SHOUCONT00VO00	Shoulder Contact	0	+	no	1
314	14THORCONT00VO00	Thorax Contact	0	+	no	1
315	14PELVCONT00VO00	Pelvis Contact	0	+	no	1
316	M0MBARCG0000ACXA	MDB CG AX	60	+	yes	2000
317	M0MBARCG0000ACYA	MDB CG AY	60	+	yes	2000
318	M0MBARCG0000ACZA	MDB CG AZ	60	+	yes	2000
318A	M0MBARCG0000ACRA	MDB CG A RESULTANT	60	+	yes	
319	M0FRAMRE0000ACXA	MDB REAR AX	60	+	yes	2000
320	M0FRAMRE0000ACYA	MDB REAR AY	60	+	yes	2000
321	M0MBARLE0000VO00	LEFT MDB CONTACT	0	+	no	1
322	M0MBARRI0000VO00	RIGHT MDB CONTACT	0	+	no	1

APPENDIX E
SEATING PROCEDURE WORKSHEETS AND PLOTS

Driver WSID 50th Seating Worksheet

Vehicle	2020 GMC Terrain	**Technician**	F. Xu
VIN #	3GKALMEV3LL336051	**Position**	Driver
ATD	EB8888	**Date**	2/4/2021
Test #	210204		

SCRL Angle			**WSID 50th Tilt Sensors**		**X**	**Y**
	Max	18.4	Head	0°±2	0.2	0.7
	Min -	14.3				
	Difference	4.1				
	/2	2.05	T6	0°±2	1.3	0.3
	Min +	2.05				
	Mid Angle	16.35	Pelvis	0°±2	1.1	2.2

Seat Back Angle	W/Level °	24.6	**HEAD REST POST**			**FINAL HEAD REST**	
Seat Pan Angle	W/Level °	15.2	**ANGLE**	10.1		**POST ANGLE**	10.6
Pelvis Angle	WSID 50th 0° +/-2.5°		Manual Inclinometer	40.4	Tilt Sensor		

Collected Points			
Name	**Meas X**	**Meas Y**	**Meas Z**
SBU -	-32.896	2.015	-12.934
SBL -	-28.653	-0.518	22.294
STRIKER -	0.000	0.000	0.000
FOSB -	396.420	198.172	333.102
FISB -	398.132	643.960	330.311
ROSB -	4.150	196.725	336.839
RISB -	-15.910	640.548	334.481
PCP - (Pedal Center Point)	1008.187	603.438	295.593
RHP - (Right Heel Point)	802.833	602.794	445.861
LHP - (Left Heel Point)	809.826	229.975	451.518
S0 -	484.231	416.905	-252.447
TS -	554.373	415.017	-415.106
BS -	416.168	413.245	-91.289
SC1 -	659.504	337.724	-108.116
OSCAR H-POINT -	130.432	222.367	115.582
DR PROJECTED WSID H-POINT AT MID-POSITION -	150.000		96.000
DRIVER STP 15.27 MID-POSITION -	149.800	184.497	165.676
DRIVER STP STEP 18.6 TRIAL 1 -	120.863	183.232	167.949
DR PROJECTED WSID H-POINT STEP 18.6.2 TRIAL 1 -	121.000		98.000
DRIVER STP STEP 18.6 TRIAL 2 -	149.384	183.745	167.740
DR PROJECTED WSID H-POINT STEP 18.6.2 TRIAL 2 -	149.000		98.000
DRIVER STP STEP 18.6 TRIAL 3 -			
DR PROJECTED WSID H-POINT STEP 18.6.2 TRIAL 3 -			
RHDCG -	-15.441	493.879	-563.438
3DLHCG -	3.922	337.221	-559.938
LHDCG -	-19.631	335.498	-560.905
BON -	78.595	414.118	-562.593
TN -	74.411	415.854	-504.195
TC -	58.446	414.834	-434.900
SHLD R1 -	33.750	418.200	-335.208
THX R1 -	70.108	420.225	-258.251
THX R2 -	104.540	419.111	-194.642
THX R3 -	121.624	420.215	-147.071
ABD R1 -	141.841	426.032	-91.316
ABD R2 -	161.270	421.405	-45.086
TPS -	191.808	414.649	-25.062
C1 -	53.081	417.198	-308.355
C2 -	85.240	415.909	-251.682
C3 -	169.249	411.217	-91.300
SHT -	-45.578	201.329	-293.232
E1 -	150.237	179.703	-154.651
P1 -	95.833	178.010	50.385
H-POINT -	149.763	175.954	99.421
H-POINT 2 -	149.434	200.721	96.765

OK -	548.691	183.924	4.195
IK -	549.322	626.264	-8.568
OA -	795.108	234.867	335.017
IA -	810.285	526.263	319.207
OH -	820.767	233.702	453.957
IH -	803.431	566.753	448.394
OP -	-245.470	335.233	-407.478
R -	79.342	413.632	-788.681
H -	528.301	413.851	-712.308
W1 -	817.816	413.896	-561.701
W1 - Outside	834.544	414.229	-562.852
W2 - Outside	1099.673	413.090	-410.265
D1 -	695.974	413.732	-381.426
D2 -	681.245	185.872	-61.454
D3 -	698.323	626.774	-30.213
HRP -	77.975	237.751	-698.369
HSP -	77.767	83.786	-561.661
ADP -	150.405	39.857	-155.515
HDP -	149.636	87.601	99.310

Calculated Measurements

Name	Cal X	Cal Y	Cal Z	Cal 3D Distance	Deg
HZ -			226		
HH -				474	
HW -	739				
NR -				488	
CD -				647	
CS -	399				
CBS -	247				
IKD -				151	
OKD -				148	
HR -				223	
HS -		330			
AD -		140			
HD -		88			
HLHL -				334	
KK -				443	
SH -				252	
HRA -					10.6
H-POINT TOOL ANGLE -					42.3
TORSO ANGLE -					14.4
WINDSHIELD ANGLE -					60.1

Rear Passenger WSID 5th Seating Worksheet

Vehicle	2020 GMC Terrain	**Technician**	F. Xu
VIN #	3GKALMEV3LL336051	**Position**	
ATD	WSID 5F DK1774	**Date**	2/4/2021
SEATING #	Left Rear Seat		

Seat Back Angle	W/Level °	22.5	**HEAD REST**		**FINAL HEAD REST**	
Seat Pan Angle	W/Level °	16.0	**POST ANGLE**	22.2	**POST ANGLE**	22.2
Pelvis Angle			Manual Inclinometer	47.1		

Collected Points			
Name	Meas X	Meas Y	Meas Z
SBU -	-39.198	3.847	-2.344
SBL -	-20.759	2.608	29.892
STRIKER -	0.000	0.000	0.000
FOSB -			
FISB -			
ROSB -			
RISB -			
RHP -			
LHP -			
OSCAR H-POINT -			
LHDCG -	-12.465	368.656	-399.432
BON -	76.810	445.525	-393.110
TN -	78.004	446.478	-356.692
TC -	71.933	446.588	-290.025
C1 -	71.265	446.059	-163.927
SHT -	-23.671	238.894	-164.348
E1 -	162.492	234.497	-102.954
P1 -	160.969	216.384	119.639
H-POINT -	208.598	220.655	175.000
H-POINT 2 -	209.582	251.590	175.996
OK -	581.349	297.886	96.311
IK -	564.069	618.369	105.342
OA -	679.602	324.972	433.135
IA -	678.750	544.517	434.476
OH -	613.586	373.960	529.852
IH -	604.309	560.576	525.698
OP -	-236.330	377.355	-321.519
R -	77.406	445.473	-688.536
SB -	716.448	445.499	-164.342
KBL -	826.132	299.055	95.418
KBR -	827.088	617.902	102.795
HRP -	76.157	270.016	-593.906
HSP -	75.910	78.671	-391.827
ADP -	162.978	81.413	-102.113
HDP -	209.045	118.217	174.281

WS05F Tilt Sensors	X	Y
Head	0.6	-0.5
T6	0.5	30.6
Pelvis	-1.5	21.5

Calculated Measurements					
Name	Cal X	Cal Y	Cal Z	Cal 3D Distance	Deg
HZ -			295		
NB -				667	
CB -				645	
IKB -				263	
OKB -				245	
HR -				267	
HS -		367			
AD -		153			
HD -		102			
HLHL -				187	
KK -				321	
SH -				345	
HRA -					22.2
H-POINT TOOL ANGLE -					49.3
TORSO ANGLE -					50.0
SEATBACK ANGLE -					22.9