

**REPORT NUMBER: NCAP-MGA-24-030**

**NEW CAR ASSESSMENT PROGRAM (NCAP)  
Frontal Barrier Impact Test**

**TOYOTA MOTOR MANUFACTURING DE GUANAJUATO, S.A. DE C.V.  
2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck  
NHTSA No.: M20245103**

**MGA RESEARCH CORPORATION  
5000 Warren Road  
Burlington, WI 53105**



**Test Date: September 18, 2024**

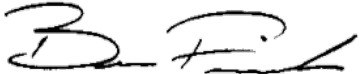
**Final Report Date: January 3, 2025**

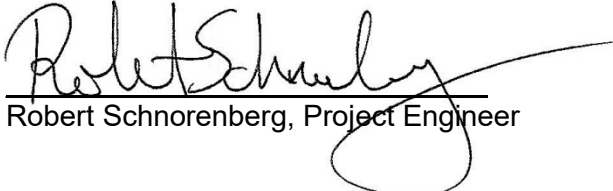
**FINAL REPORT**

**U.S. DEPARTMENT OF TRANSPORTATION  
National Highway Traffic Safety Administration  
Office of Crashworthiness Standards  
Mail Code: NRM-110  
1200 New Jersey Ave, SE  
Washington, DC 20590**

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Approval Date: January 3, 2025

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: \_\_\_\_\_

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

Date: \_\_\_\_\_

## TECHNICAL REPORT DOCUMENTATION PAGE

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<b>9. Performing Organization Name and Address</b> MGA Research Corporation 5000 Warren Road Burlington, WI 53105		<b>8. Performing Organization Report No.</b> NCAP-MGA-24-030																																																							
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<b>16. Abstract</b> A 56.3 km/h NCAP Frontal Rigid Barrier Impact Test was conducted on a 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck in accordance with the specifications of the Office of Crashworthiness Standards Laboratory Procedure for NCAP Full Frontal Rigid Barrier Impact Testing. The test was conducted at MGA Research Corporation in Burlington, Wisconsin on September 18, 2024.  The impact velocity of the vehicle was 56.33 km/h and the ambient temperature at the barrier face at the time of impact was 21.7°C. The target vehicle post-test maximum crush was 526 mm located to the right of the vehicle centerline. The test vehicle's performance was as follows:																																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th rowspan="2">Units</th> <th colspan="2">Driver ATD</th> <th colspan="2">Passenger ATD</th> </tr> <tr> <th>Threshold</th> <th>Result</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC<sub>15</sub>)</td> <td></td> <td>700</td> <td>248.443</td> <td>700</td> <td>251.640</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>33.626</td> <td>52</td> <td>15.156</td> </tr> <tr> <td>Nij</td> <td></td> <td>1</td> <td>0.428</td> <td>1</td> <td>0.640</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>2027.898</td> <td>2620</td> <td>1507.276</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>155.660</td> <td>2520</td> <td>164.611</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>1288.078</td> <td>6805</td> <td>2049.516</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>2016.233</td> <td>6805</td> <td>2018.636</td> </tr> </tbody> </table>						Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC <sub>15</sub> )		700	248.443	700	251.640	Maximum Chest Compression	mm	63	33.626	52	15.156	Nij		1	0.428	1	0.640	Neck Tension	N	4170	2027.898	2620	1507.276	Neck Compression	N	4000	155.660	2520	164.611	Left Femur Force	N	10008	1288.078	6805	2049.516	Right Femur Force	N	10008	2016.233	6805	2018.636
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<b>17. Key Words</b>  35 mph Frontal Barrier Impact Test New Car Assessment Program (NCAP)			<b>18. Distribution Statement</b> Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division 1200 New Jersey Ave, SE Washington, DC 20590																																																						
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## **SECTION 1 PURPOSE AND SUMMARY OF TEST**

### **PURPOSE**

This 56.3 km/h frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under contract number 693JJ919D000006. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for consumer information purposes.

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

### **SUMMARY**

A load cell barrier consisting of 176 load cells was impacted by a 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck at a velocity of 56.33 km/h. The test was performed at MGA Research Corporation on September 18, 2024. Pre-test and post-test photographs of the vehicle and dummies can be found in Appendix A.

Two (2) real-time cameras and sixteen (16) high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in this report.

One Part 572E 50<sup>th</sup> percentile male anthropomorphic test device (ATD), was placed in the driver seating position and one Part 572O 5<sup>th</sup> percentile female test device (ATD) was placed in the right-front passenger seating position according to dummy placement instructions specified in the Laboratory Procedure for NCAP Full Frontal Rigid Barrier Impact Testing.

Both ATDs were fully instrumented with head, chest and pelvis tri-axial accelerometers, chest displacement potentiometers, upper neck transducers, right/left femur load cells, and lower leg instrumentation.

The driver (position 1) ATD (Serial No. 064) and the right-front passenger (position 2) ATD (Serial No. 142) were qualified previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

The 278 channels of data were recorded on a data acquisition system. Appendix B contains the dummy response data traces.

There was 100 percent windshield retention and no intrusion into the protected zone of the windshield during the event. There was no Stoddard Solvent leakage after the event or during any phase of the static rollover.

The maximum static crush of the vehicle was 526 mm located to the right of the vehicle centerline and both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

The driver's visible contact points were as follows: The driver's head contacted the airbag. The driver's head also contacted the headrest. The driver's knees contacted the knee airbag.

The passenger's visible contact points were as follows: The passenger's head contacted the airbag. The passenger's head also contacted the headrest. The passenger's knees contacted the knee airbag.

The occupant data is summarized below:

<b>ATD position</b>	<b>HIC<sub>15</sub></b>	<b>Nij</b>	<b>Neck Tension (N)</b>	<b>Neck Comp. (N)</b>	<b>3ms Chest Clip (g)</b>	<b>Chest Disp. (mm)</b>	<b>Left Femur (N)</b>	<b>Right Femur (N)</b>
Driver (50 <sup>th</sup> )	248.443	0.428	2027.898	155.660	41.781	33.626	1288.078	2016.233
Passenger (5 <sup>th</sup> )	251.640	0.640	1507.276	164.611	51.004	15.156	2049.516	2018.636

The test data can be found on the NHTSA website at [www.nhtsa.gov](http://www.nhtsa.gov)

#### **TEST NOTES**

None.

MGA does not endorse or certify products. The manufacturer's name appears solely for identification purposes.

**SECTION 2**  
**OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS**

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

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck NHTSA No.: M20245103  
 Test Program: NCAP Frontal Barrier Impact Test Test Date: 9/18/2024

**TEST VEHICLE INFORMATION AND OPTIONS**

NHTSA No.	M20245103	Traction Control System (TCS)	Yes
Model Year	2024	Power Steering	Yes
Make	Toyota	Power Window Auto-Reverse	Yes
Model	Tacoma SR5 4x4 Double	Driver Frontal Airbag	Yes
Body Style	Pickup Truck	Driver Curtain Airbag	Yes
VIN	3TYLB5JN1RT029374	Driver Head/Torso Airbag	No
Body Color	Celestial Silver	Driver Torso Airbag	No
Odometer (km/mi)	146 km / 91 mi	Driver Torso/Pelvis Airbag	Yes
Engine Displacement (L)	2.4	Driver Pelvis Airbag	No
Type/No. Cylinders	Inline 4	Driver Knee Airbag	Yes
Engine Placement	Longitudinal	Front Pass. Frontal Airbag	Yes
Transmission Type	Automatic	Front Pass. Curtain Airbag	Yes
Transmission Speeds	8	Front Pass. Head/Torso Airbag	No
Overdrive	Yes	Front Pass. Torso Airbag	No
Final Drive	AWD	Front Pass. Torso/Pelvis Airbag	Yes
Roof Rack	No	Front Pass. Pelvis Airbag	No
Sunroof/T-Top	No	Front Pass. Knee Airbag	Yes
Running Boards	No	Driver Pretensioner	Yes
Tilt Steering Wheel	Yes	Driver Load Limiter	Yes
Power Seats	No	Front Pass. Pretensioner	Yes
Anti-Lock Brakes (ABS)	Yes	Front Pass. Load Limiter	Yes
Automatic Door Locks (ADLs)	Yes	Other	N/A

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

**DATA FROM CERTIFICATION LABEL**

Manufactured By	TOYOTA MOTOR MANUFACTURING DE GUANAJUATO, S.A. DE C.V.	GVWR (kg)	2725
		GAWR Front (kg)	1580
Date of Manufacture	06/24	GAWR Rear (kg)	1485

**VEHICLE SEATING AND WEIGHT CAPACITY DATA**

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench		
Designated Seating Capacity (DSC)	2	3		5
Capacity Weight (VCW) (kg)				545
Cargo Weight (RCLW) (kg)				136

\* Rated Cargo and Luggage Weight (RCLW) limited to maximum of 300 lbs (136 kg).

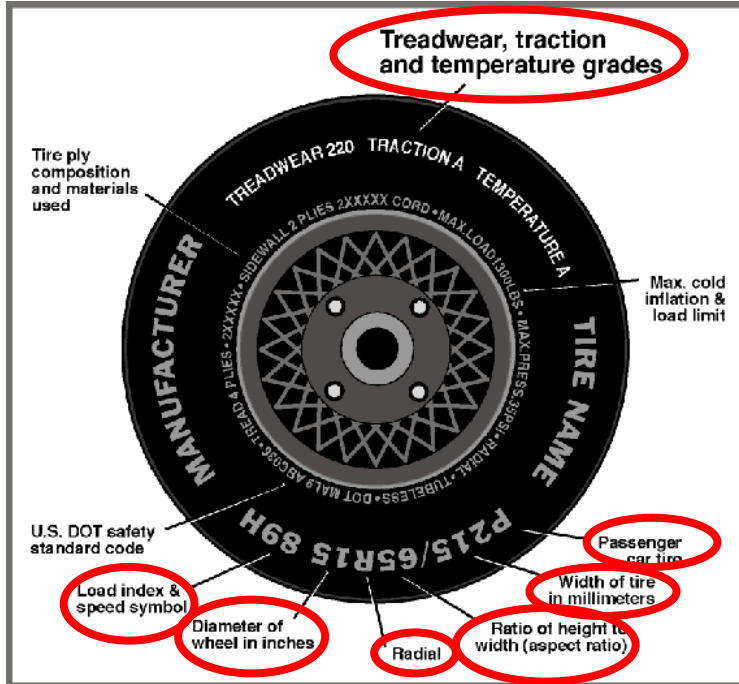
\* Rated Cargo and Luggage Weight (RCLW) reduced by 9 kg to account for Load Carrying Capacity Reduction Label.

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

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20245103  
 Test Date: 9/18/2024

**VEHICLE TIRE INFORMATION**



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	240	240
Recommended Tire Size	245/70R17	245/70R17
Tire Size on Vehicle	245/70R17	245/70R17
Tire Manufacturer	Toyo	Toyo
Tire Model	Open Country	Open Country
Treadwear	300	300
Traction	B	B
Temperature Grade	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Steel, 2 Polyester, 1 Nylon	2 Steel, 2 Polyester, 1 Nylon
Load Index/Speed Symbol	110T	110T
Tire Material	Rubber	Rubber
DOT Safety Code Left	1CMWX 22W2 4923	1CMWX 22W2 4923
DOT Safety Code Right	1CMWX 22W2 4923	1CMWX 22W2 4923

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

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck NHTSA No.: M20245103  
 Test Program: NCAP Frontal Barrier Impact Test Test Date: 9/18/2024

**TEST VEHICLE WEIGHTS**

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	623.0	420.5		644.0	540.5	
Right	kg	612.0	455.5		634.0	563.5	
Ratio	%	58.5%	41.5%		53.7%	46.3%	
Totals	kg	1235.0	876.0	2111.0	1278.0	1104.0	2382.0

**TARGET TEST WEIGHT CALCULATION**

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	2111.0
Weight of 1 P572E ATD & 1 P572O ATD	kg	141
Rated Cargo/Luggage Weight (RCLW)	kg	136
Calculated Test Vehicle Target Weight (TVTW)	kg	2388.0

**TEST VEHICLE ATTITUDES AND CG**

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	915	925	952	962	1532
As Tested	mm	910	915	910	919	1711
Post Test	mm	843	850	919	918	

**GENERAL TEST VEHICLE DATA**

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	3691
Total Vehicle Length at Left Side	mm	5554
Total Vehicle Length at Centerline	mm	5744
Total Vehicle Length at Right Side	mm	5555
Weight of Ballast in Cargo Area	kg	82
Weight of Vehicle Components Removed	kg	0
Amount of Stoddard Solvent in Fuel Tank	L	63.5

List of components removed to meet test weight: None.

List of components removed for instrumentation, data box, and equipment installation: None.

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

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck NHTSA No.: M20245103  
 Test Program: NCAP Frontal Barrier Impact Test Test Date: 9/18/2024

**TARGET VEHICLE STRUCTURAL MEASUREMENT**

	Elements	Pre-Test (mm)
1	Total Length	5744
2	Total Width	1838
3	Bumper Top Height	556
4	Bumper Bottom Height	433
5	Longitudinal Member Top Height	660
6	Distance between Longitudinal Members	780
7	Longitudinal Member Width	75
8	Engine Top Height	1154
9	Engine Bottom Height	324
10	Engine and Gearbox Width	409
11	Front Bumper-Engine Distance	612
12	Front Shock Absorber Fixing Height	840
13	Bonnet Leading Edge Height	1148
14	Front Shock Absorber Fixing Width	969
15	Front Bumper – Front Axle Distance	778
16	Front Axle – A-Pillar Distance	705
17	A-Pillar – B-Pillar Distance	1063
18	B-Pillar – Rear Axle Distance	1923
19	B-Pillar – C-Pillar Distance	974
20	Roof Sill Bottom Height	1633
21	Roof Sill Top Height	1710
22	Floor Sill Bottom Height	404
23	Floor Sill Top Height	518

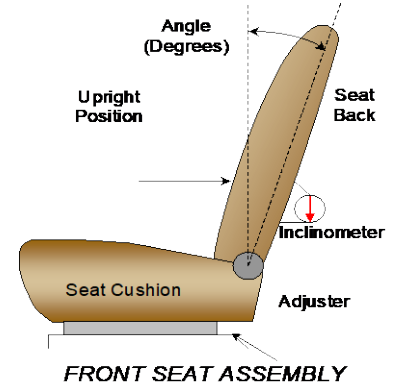
**DATA SHEET NO. 2**  
**SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA**

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20245103  
 Test Date: 9/18/2024

**NOMINAL DESIGN RIDING POSITION**

The driver seat back is positioned as close as possible to the manufacturer’s design angle. For the passenger seat back, seat back is adjusted following Appendix F, “Driver & Passenger Dummy Seating & Positioning Procedures” in the NCAP Test Procedure dated May 2018.



	Degrees
Driver Seat Back Angle	6.3° on outboard headrest post
Passenger Seat Back Angle	-1.7° on outboard headrest post

**SEAT FORE/AFT POSITIONS**

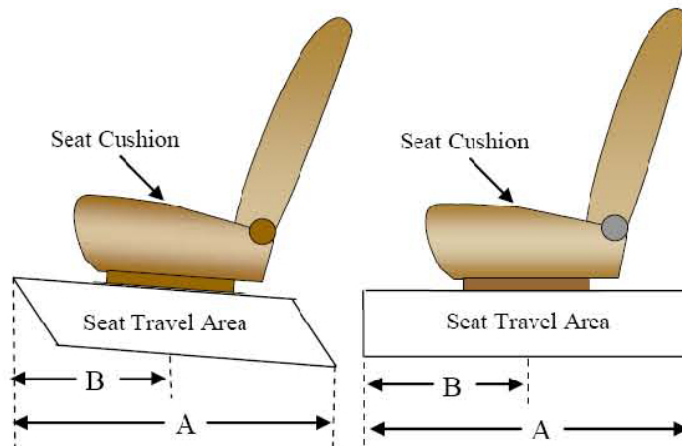
The driver and passenger seat fore/aft positions are adjusted following Appendix F, “Driver & Passenger Dummy Seating & Positioning Procedures” in the NCAP Test Procedure dated May 2018.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	292 mm / 25 detents (1st as 1)	152 mm / 10th detent (1st as 0)
Passenger Seat	220 mm / 23 detents (1st as 1)	0 mm / 0th detent (1st as 0)

**SEAT BELT UPPER ANCHORAGES**

The seat belt upper anchorages are set following the manufacturer’s specified position as listed in Form 1.

	Total # of Positions	Placed in Position #
Driver Seat	4 (1st as 1)	0 (1st as 0)
Passenger Seat	4 (1st as 1)	0 (1st as 0)



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

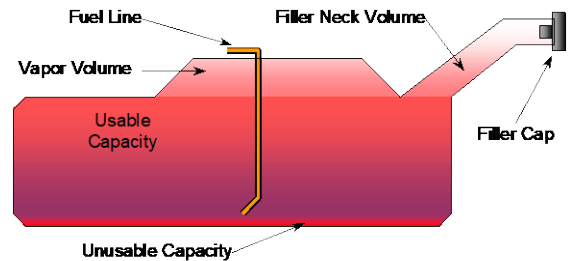
Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck NHTSA No.: M20245103  
 Test Program: NCAP Frontal Barrier Impact Test Test Date: 9/18/2024

**FUEL TANK CAPACITY DATA**

	<b>Liters</b>
Usable Capacity of "Standard Tank"	68.3
Usable Capacity of "Optional Tank"	
92-94% of Usable Capacity	62.8 to 64.2
Actual Amount of Solvent used	63.5
1/3 of Usable Capacity	22.8

**FUEL PUMP**

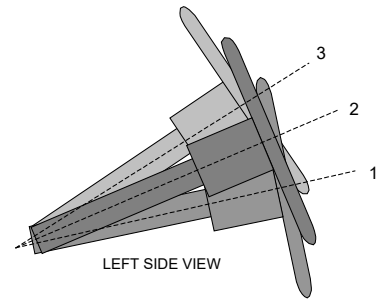
The vehicle is equipped with an electronic fuel pump. The fuel pump will run when the engine is running. The pump will also briefly run when the ignition key is turned to the "on" position. The filler neck is located on the driver's side.



VEHICLE FUEL TANK ASSEMBLY

**STEERING COLUMN ADJUSTMENT**

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured.



STEERING COLUMN ASSEMBLY

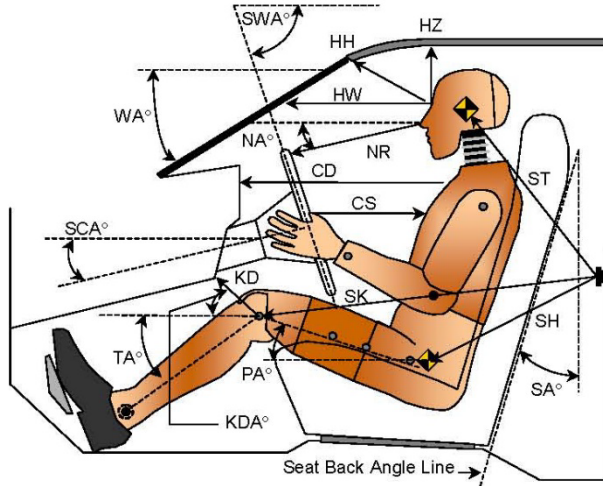
**STEERING COLUMN POSITION**

	<b>Degrees</b>	<b>Fore/Aft Position (mm)</b>
Lowermost Position 1	73.1	
Geometric Center Position 2	71.1	
Uppermost Position 3	69.0	
Telescoping Steering Wheel Travel		57
Test Position	71.1	29

**DATA SHEET NO. 3**  
**DUMMY LONGITUDINAL CLEARANCE DIMENSIONS**

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck  
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20245103  
Test Date: 9/18/2024



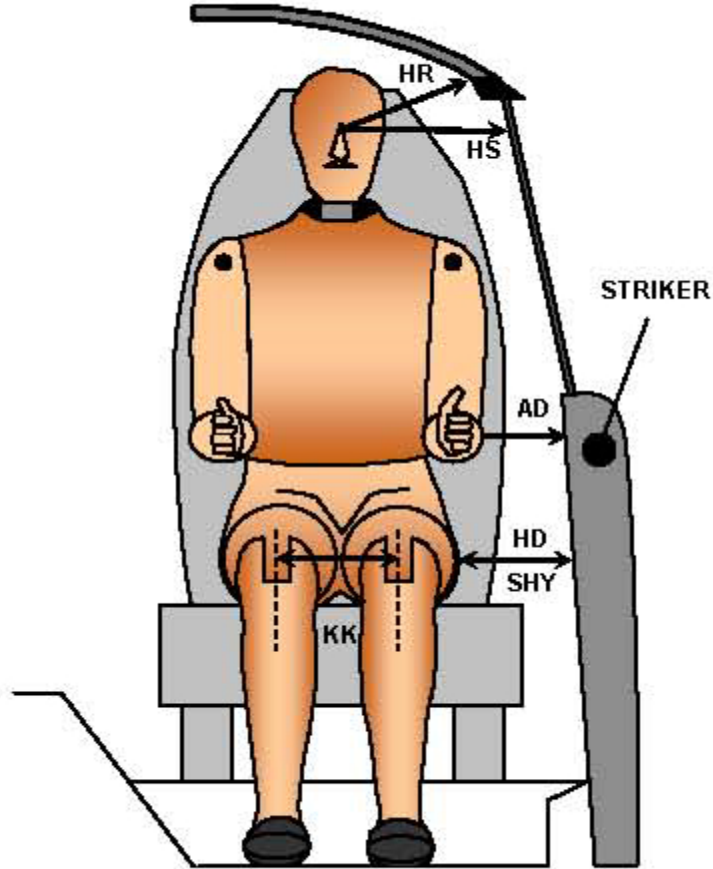
**LEFT SIDE VIEW**

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		31.9		
SWA°	Steering Wheel Angle		71.1		
SCA°	Steering Column Angle		18.9		
SA°	Seat Back Angle		6.3		-1.7
HZ	Head to Roof (Z)	232	90	242	90
HH	Head to Header	463	20.1	402	37.4
HW	Head to Windshield	758	0	712	0
NR	Nose to Rim	421	7.9		
CD	Chest to Dash	561		404	
CS	Chest to Steering Hub	345	2.3		
RA	Rim to Abdomen	236	0		
KDL	Left Knee to Dash	202	40.5	108	57.6
KDR	Right Knee to Dash	200	47.2	109	47.7
PA°	Pelvic Angle		23.3		20.8
TA°	Tibia Angle		29.4		43.4
SK	Striker to Knee	577	96.8	664	96.6
ST	Striker to Head	473	8.4	445	27.3
SH	Striker to H-Point	287	133.6	376	116.7

**DATA SHEET NO. 4  
DUMMY LATERAL CLEARANCE DIMENSIONS**

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20245103  
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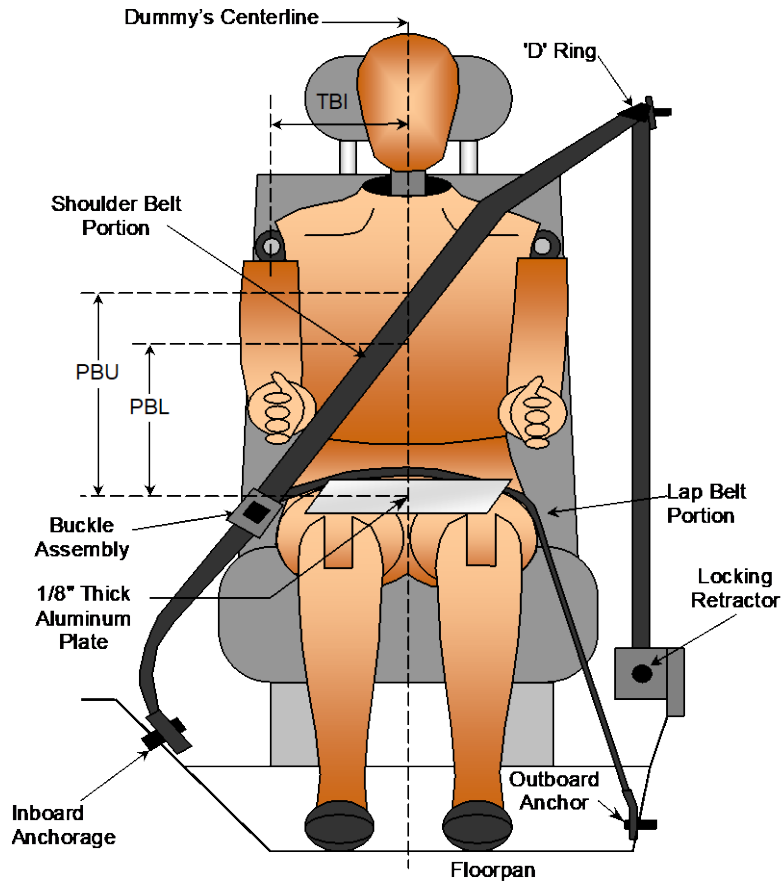
**FRONT VIEW OF DUMMY**

Code	Measurement Description	Units	Driver	Passenger
AD	Arm to Door	mm	125	82
HD	H-Point to Door	mm	152	184
HR	Head to Side Header	mm	251	288
HS	Head to Side Window	mm	340	360
KK	Knee to Knee	mm	348	234
SHY	Striker to H-Point (Y Direction)	mm	229	275
AA	Ankle to Ankle	mm	344	167

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

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20245103  
 Test Date: 9/18/2024



**FRONT VIEW OF DUMMY**

**SEAT BELT POSITIONING MEASUREMENTS**

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	335	280
PBL - Top surface of reference to belt lower edge	mm	255	175

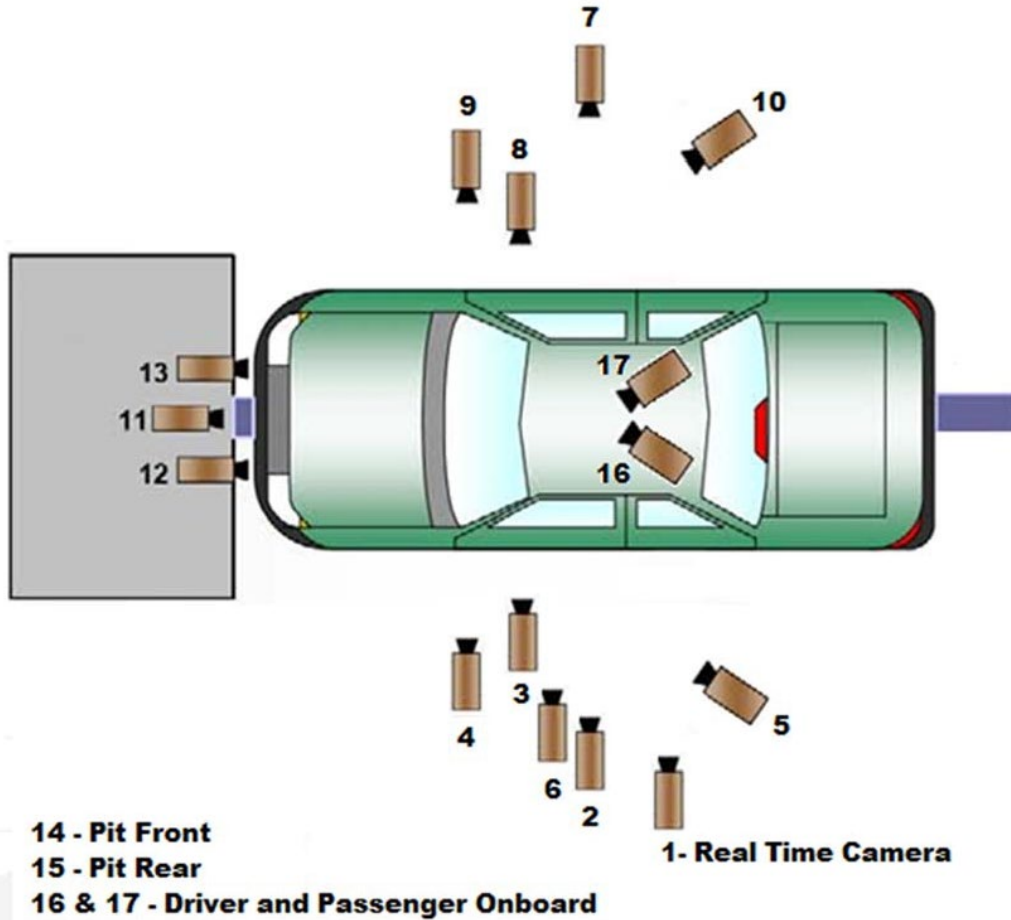
**BELT LENGTH DATA**

Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as measured on ATD	mm	805	897
Lap Belt Length as measured on ATD	mm	695	782
Remainder of belt on reel	mm	1000	821
Total Belt Length for Continuous Webbing Systems	mm	3000	3000

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

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck    NHTSA No.: M20245103  
Test Program: NCAP Frontal Barrier Impact Test    Test Date: 9/18/2024

**CAMERA POSITIONS FOR FRONTAL IMPACTS**



*\*\*Camera locations are approximate and not to scale*

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

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck NHTSA No.: M20245103  
 Test Program: NCAP Frontal Barrier Impact Test Test Date: 9/18/2024

**CAMERA LOCATIONS**

No.	Camera View	Coordinates* (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall					30
2	Left Overall	-2820	-5750	-1470	12	1000
3	Driver Close-Up	-1680	-7050	-2140	50	1000
4	Left Front Half	-1240	-5990	-1460	24	1000
5	Left Angle	-7300	-5850	-2350	75	1000
6	Steering Column	-1100	-5720	-1220	50	1000
7	Right Overall	-2488	6030	-1470	12	1000
8	Passenger Close-Up	-1690	6930	-2290	50	1000
9	Right Front Half	-1110	5900	-1440	24	1000
10	Right Angle	-7350	6070	-2330	75	1000
11	Windshield	150	0	-2310	12	1000
12	Driver Windshield	200	-5550	-2230	25	1000
13	Passenger Windshield	200	370	-2230	25	1000
14	Pit Front	-790	0	3340	24	1000
15	Pit Rear	-3250	0	3340	24	1000
16	Driver Onboard				12	1000
17	Passenger Onboard				12	1000
18	Real-Time Pan View					30

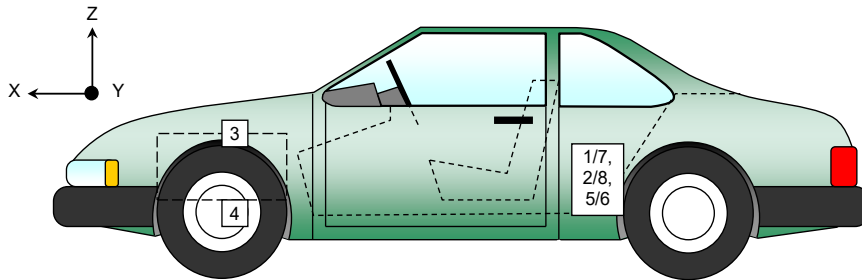
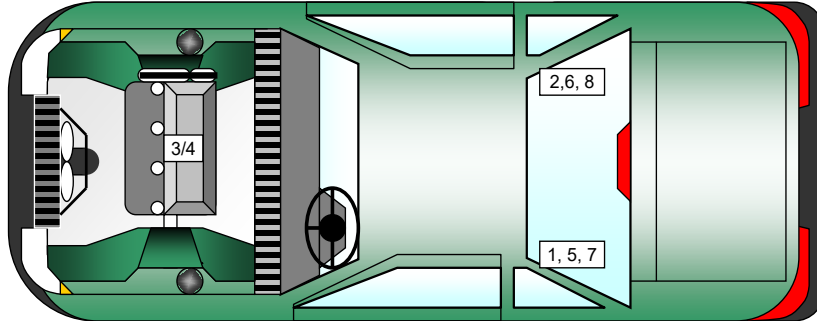
\*COORDINATES:

- +X = forward of impact plane
- +Y = right of monorail centerline
- +Z = below ground level

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

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20245103  
 Test Date: 9/18/2024



**VEHICLE ACCELEROMETER PRE-TEST LOCATIONS**

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Crossmember Accelerometer – X Direction	2866	-390	-570
2	Right Rear Crossmember Accelerometer – X Direction	2870	398	-566
3	Engine Top X	4965	25	-1135
4	Engine Bottom X	4706	79	-324
5	Left Rear Crossmember Accelerometer – Z Direction	2866	-390	-570
6	Right Rear Crossmember Accelerometer – Z Direction	2870	398	-566
7	Left Rear Crossmember Accelerometer Redundant – X Direction	2866	-390	-570
8	Right Rear Crossmember Accelerometer Redundant – X Direction	2870	398	-566

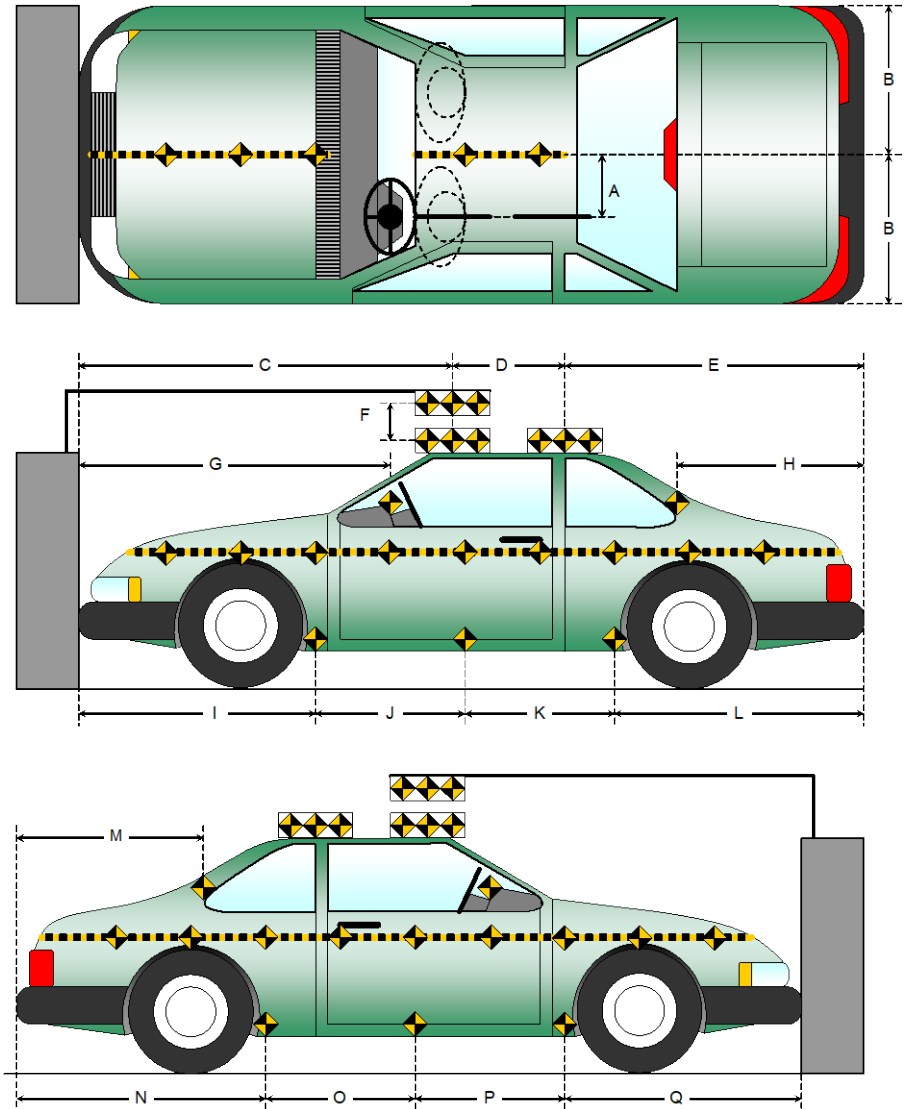
Reference Points: X - Rear Surface of Vehicle (+ forward)  
 Y - Vehicle Centerline (+ to right)  
 Z - Ground Plane (+ down)

**DATA SHEET NO. 8  
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS**

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20245103  
 Test Date: 9/18/2024

Item	Value (mm)
A	384
B	919
C	2527
D	610
E	2608
F	151
G	
H	2143
I	1424
J	1052
K	1031
L	2238
M	2145
N	2238
O	1034
P	1049
Q	1423



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

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck NHTSA No.: M20245103  
 Test Program: NCAP Frontal Barrier Impact Test Test Date: 9/18/2024

**ADVANCED RESEARCH LOAD CELL BARRIER**

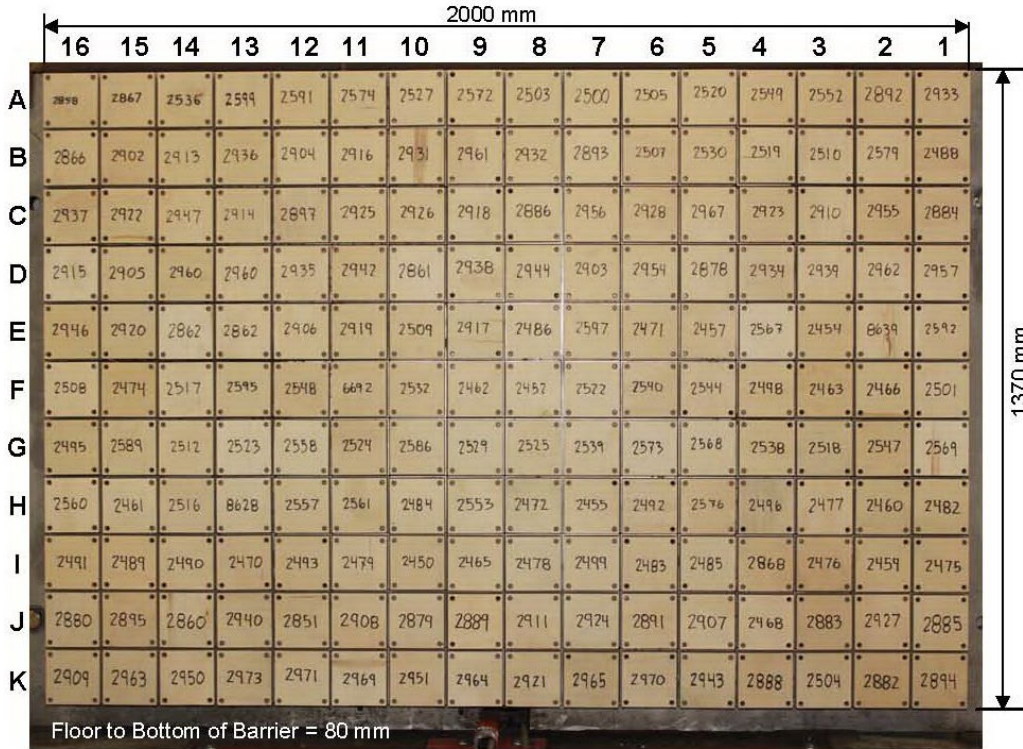


Photo for Reference Only

Centerline

A-16	A-15	A-14	A-13	A-12	A-11	A-10	A-09	A-08	A-07	A-06	A-05	A-04	A-03	A-02	A-01
B-16	B-15	B-14	B-13	B-12	B-11	B-10	B-09	B-08	B-07	B-06	B-05	B-04	B-03	B-02	B-01
C-16	C-15	C-14	C-13	C-12	C-11	C-10	C-09	C-08	C-07	C-06	C-05	C-04	C-03	C-02	C-01
D-16	D-15	D-14	D-13	D-12	D-11	D-10	D-09	D-08	D-07	D-06	D-05	D-04	D-03	D-02	D-01
E-16	E-15	E-14	E-13	E-12	E-11	E-10	E-09	E-08	E-07	E-06	E-05	E-04	E-03	E-02	E-01
F-16	F-15	F-14	F-13	F-12	F-11	F-10	F-09	F-08	F-07	F-06	F-05	F-04	F-03	F-02	F-01
G-16	G-15	G-14	G-13	G-12	G-11	G-10	G-09	G-08	G-07	G-06	G-05	G-04	G-03	G-02	G-01
H-16	H-15	H-14	H-13	H-12	H-11	H-10	H-09	H-08	H-07	H-06	H-05	H-04	H-03	H-02	H-01
I-16	I-15	I-14	I-13	I-12	I-11	I-10	I-09	I-08	I-07	I-06	I-05	I-04	I-03	I-02	I-01
J-16	J-15	J-14	J-13	J-12	J-11	J-10	J-09	J-08	J-07	J-06	J-05	J-04	J-03	J-02	J-01
K-16	K-15	K-14	K-13	K-12	K-11	K-10	K-09	K-08	K-07	K-06	K-05	K-04	K-03	K-02	K-01

Load Cells are 121 mm x 121 mm with a 7 mm gap in between each load cell.

**DATA SHEET NO. 10**  
**TEST VEHICLE SUMMARY OF RESULTS**

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck NHTSA No.: M20245103  
 Test Program: NCAP Frontal Barrier Impact Test Test Date: 9/18/2024

**INSTRUMENTATION**

Instrumentation	Number of Channels Collected
Driver Dummy Data Channels	47
Passenger Dummy Data Channels	47
Vehicle Structure Accelerometers	8
Barrier Channels	176
<b>Total</b>	<b>278</b>

**CAMERA COVERAGE**

Type of Camera	Number Used in this Test
High-Speed Vehicle Onboard	14
High-Speed Offboard	2
Real-Time	2
<b>Total</b>	<b>18</b>

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

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck NHTSA No.: M20245103  
 Test Program: NCAP Frontal Barrier Impact Test Test Date: 9/18/2024

**TEST DUMMY INFORMATION AND CONTACT LOCATIONS**

Description	Driver	Passenger
Dummy Type / Serial No.	HIII 50% / 064	HIII 5% / 142
Head Contact	Frontal Airbag, Headrest	Frontal Airbag, Headrest
Upper Torso Contact	Frontal Airbag	Frontal Airbag
Lower Torso Contact	None	None
Left Knee Contact	Knee Airbag	Knee Airbag
Right Knee Contact	Knee Airbag	Knee Airbag

**DOOR OPENING, TRUNK OPENING, AND SEAT TRACK INFORMATION**

Description	Driver	Passenger
Locked/Unlocked Doors	Doors were unlocked	Doors were unlocked
Front Door Opening	Remained closed and unlocked; opened without tools	Remained closed and unlocked; opened without tools
Rear Door Opening	Remained closed and unlocked; opened without tools	Remained closed and unlocked; opened without tools
Trunk/Hatch/Tailgate Opening	Remained closed; opened without tools	
Seat Track Shift (mm)	0	0
Seat Back Movement	None	None

**OTHER VEHICLE POST-TEST OBSERVATIONS**

Critical Areas of Performance	Observations and Conclusions
Windshield Damage	None
Window Damage	None
Other Notable Effects	LF/RF tire deflated

**VEHICLE REBOUND FROM BARRIER**

Measured Parameter	Units	Value
Left Side	mm	630
Center	mm	560
Right Side	mm	600
Average	mm	597

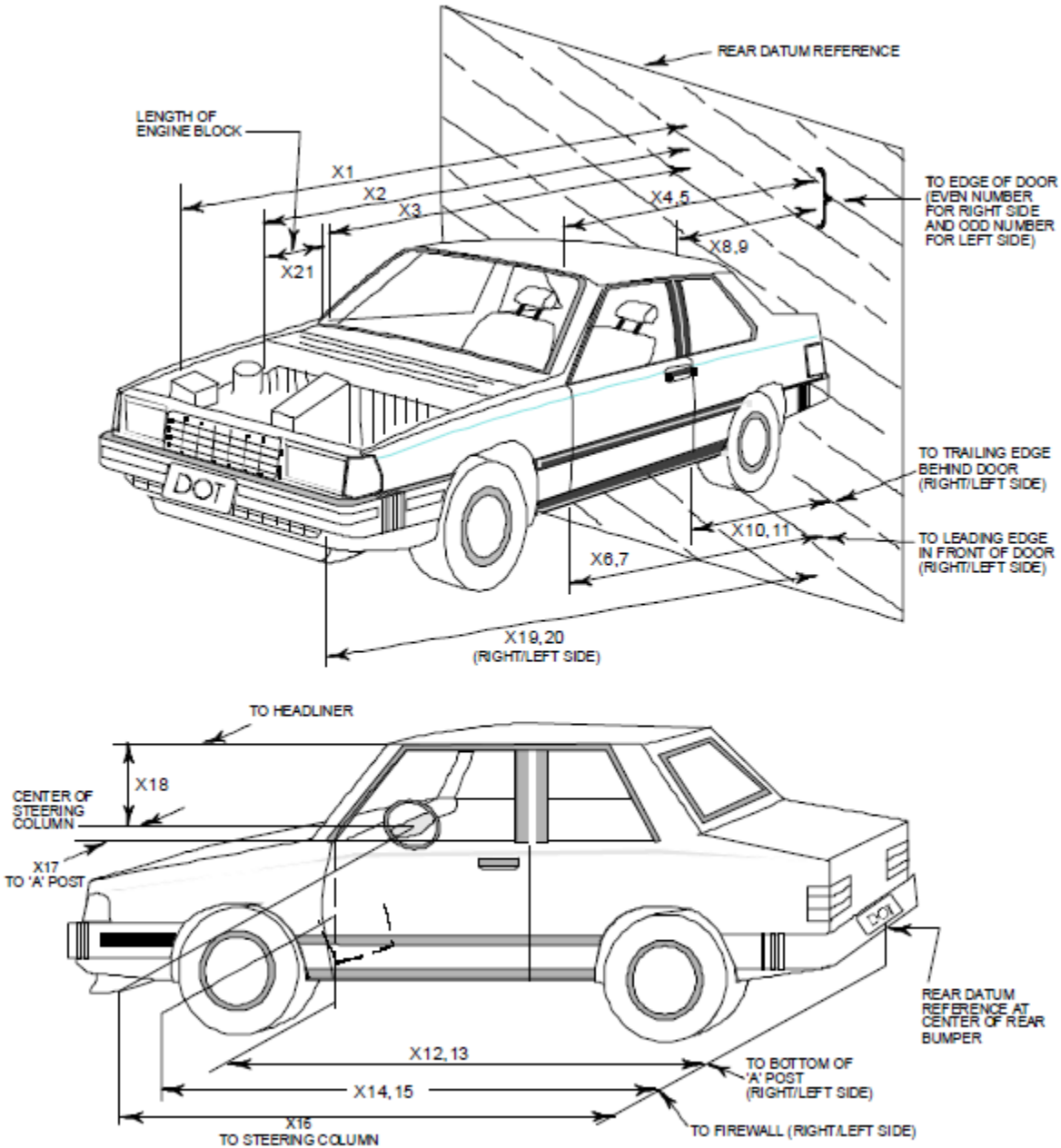
**SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION**

Restraint Type	Driver		Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	Yes	Yes	Yes
Curtain Side Airbag	Yes	Yes	Yes	Yes
Torso/Pelvis Side Airbag	Yes	No	Yes	No
Knee Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Other				

## DATA SHEET NO. 12 VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20245103  
 Test Date: 9/18/2024



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

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20245103  
 Test Date: 9/18/2024

No.	Measurement Description	Pre-Test	Post-Test	Change
1	Total Length of Vehicle at Centerline	5744	5220	-524
2	RSOV to Front of Engine	5015	4900	-115
3	RSOV to Firewall	4428	4530	102
4	RSOV to Upper Leading Edge of Right Door	4191	4206	15
5	RSOV to Upper Leading Edge of Left Door	4190	4207	17
6	RSOV to Lower Leading Edge of Right Door	4203	4226	23
7	RSOV to Lower Leading Edge of Left Door	4203	4225	22
8	RSOV to Upper Trailing Edge of Right Door	3047	3070	23
9	RSOV to Upper Trailing Edge of Left Door	3048	3070	22
10	RSOV to Lower Trailing Edge of Right Door	3083	3111	28
11	RSOV to Lower Trailing Edge of Left Door	3083	3107	24
12	RSOV to Bottom of "A" Post of Right Side	4321	4344	23
13	RSOV to Bottom of "A" Post of Left Side	4321	4343	22
14	RSOV to Firewall, Right Side	4412	4429	17
15	RSOV to Firewall, Left Side	4409	4419	10
16	RSOV to Steering Column	3673	3748	75
17	Center of Steering Column to "A" Post	253	279	26
18	Center of Steering Column to Headliner	431	457	26
19	RSOV to Right Side of Front Bumper	5555	5249	-306
20	RSOV to Left Side of Front Bumper	5554	5357	-197
21	Length of Engine Block	418	418	0
RD	RSOV to Right Side of Dash Panel	3925	3949	24
CD	RSOV to Center of Dash Panel	3848	3883	35
LD	RSOV to Left Side of Dash Panel	3922	3951	29

All dimensions in mm

**DATA SHEET NO. 13**  
**ACCIDENT INVESTIGATION DIVISION DATA**

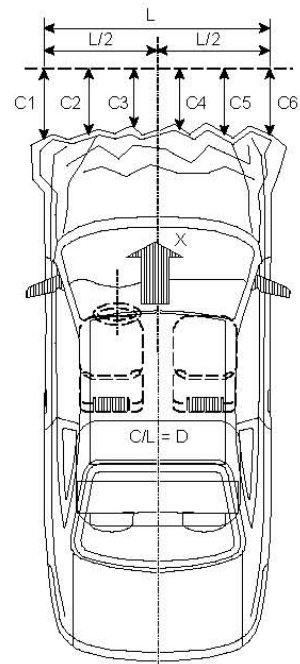
Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck NHTSA No.: M20245103  
 Test Program: NCAP Frontal Barrier Impact Test Test Date: 9/18/2024

**VEHICLE INFORMATION**

VIN: 3TYLB5JN1RT029374 Wheelbase (mm): 3691  
 Vehicle Size Category: Truck Test Weight (kg): 2382.0

**ACCELEROMETER DATA**

Accelerometer Locations: As per Data Sheet No. 7  
 Cal. Procedure/Interval: MGA Procedure / 6 month  
 Integration Algorithm: Trapezoidal  
 Linearity: > 99%  
 Impact Velocity (km/h): 56.33  
 Velocity Change (km/h): 62.0  
 Time of Separation (msec) 106



**CRUSH PROFILE**

Collision Deformation Classification: 12FDEW2  
 Midpoint of Damage: Centerline  
 Damage Region Length (mm): 1509  
 Impact Mode: Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Exterior Crush
C1	Crush zone 1 at left side	mm	1446	1643	197
C2	Crush zone 2 at left side	mm	1276	1775	499
C3	Crush zone 3 at left side	mm	1261	1779	518
C4	Crush zone 4 at right side	mm	1260	1786	526
C5	Crush zone 5 at right side	mm	1276	1795	519
C6	Crush zone 6 at right side	mm	1445	1751	306
L	C1 TO C6	mm	1509	1611	102

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

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck  
 Test Program: NCAP Frontal Barrier Impact Test

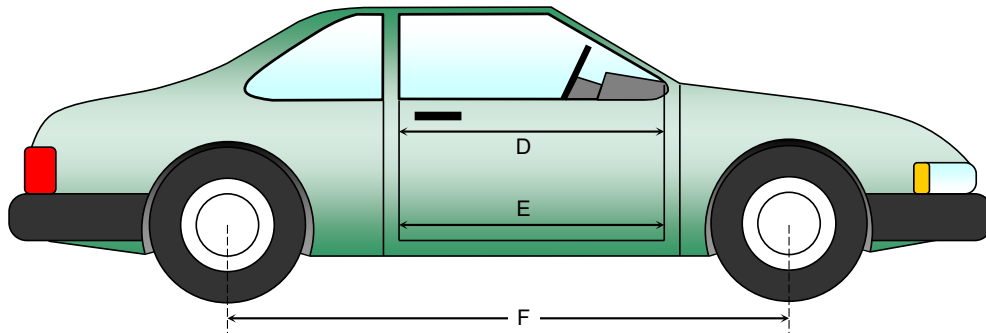
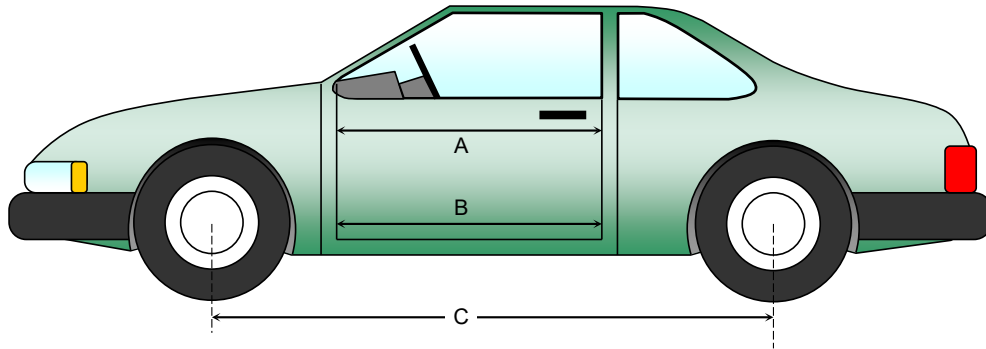
NHTSA No.: M20245103  
 Test Date: 9/18/2024

**DOOR OPENING WIDTH**

Item	Description	Units	Pre-Test	Post-Test	Change
A	Left Side Upper	mm	1034	1034	0
B	Left Side Lower	mm	896	896	0
D	Right Side Upper	mm	1036	1035	-1
E	Right Side Lower	mm	905	904	-1

**WHEELBASE MEASUREMENTS**

Item	Description	Units	Pre-Test	Post-Test	Change
C	Left Side Wheelbase	mm	3691	3655	-36
F	Right Side Wheelbase	mm	3690	3669	-21



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

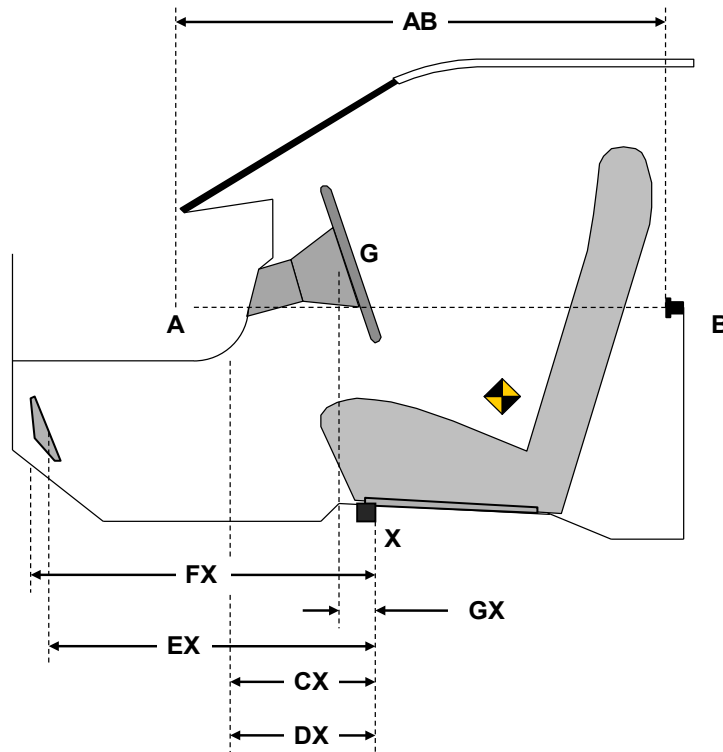
Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20245103  
 Test Date: 9/18/2024

**DRIVER COMPARTMENT INTRUSION**

Item	Description	Units	Pre-Test	Post-Test	Change
AB	Door Opening (Inside Window Jam)	mm	823	824	1
CX	Left Knee Bolster to X	mm	306	318	12
DX	Right Knee Bolster to X	mm	297	300	3
EX	Brake Pedal to X	mm	569	563	-6
FX	Foot Rest to X	mm	624	619	-5
GX	Center of Steering Column Wheel Hub to X	mm	47	101	54

X = Front of Seat Track (stationary)



**DRIVER COMPARTMENT**

**DATA SHEET NO. 15**  
**SUMMARY OF INDICANT FMVSS NO. 212 AND FMVSS NO. 219 (PARTIAL) DATA**

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck NHTSA No.: M20245103  
 Test Program: NCAP Frontal Barrier Impact Test Test Date: 9/18/2024

**WINDSHIELD MOUNTING DETAILS**

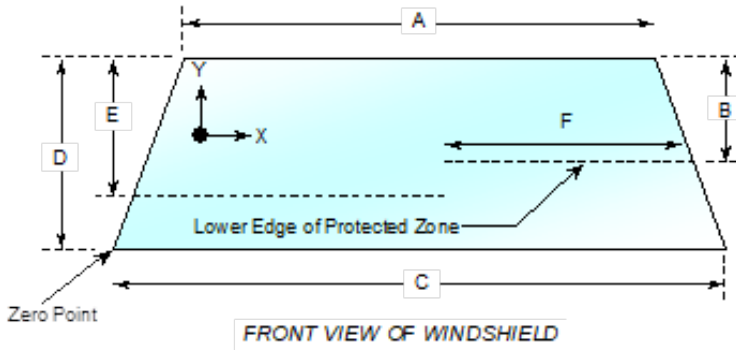
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

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

Temperature of windshield molding during test: 21.7°C.

**WINDSHIELD PERIPHERY MEASUREMENTS**

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2064	2064	100
Right Side	2064	2064	100
Total	4128	4128	100



Item	Units	Value
A	mm	1216
B	mm	305
C	mm	1454
D	mm	729
E	mm	400
F	mm	535

**AREA OF PROTECTED ZONE FAILURES**

A. Provide coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one that is normally in contact with the windshield. **None**

X	Y

B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component. **None**

X	Y

**DATA SHEET NO. 16**  
**FMVSS NO. 301 BARRIER IMPACT AND STATIC ROLLOVER RESULTS**

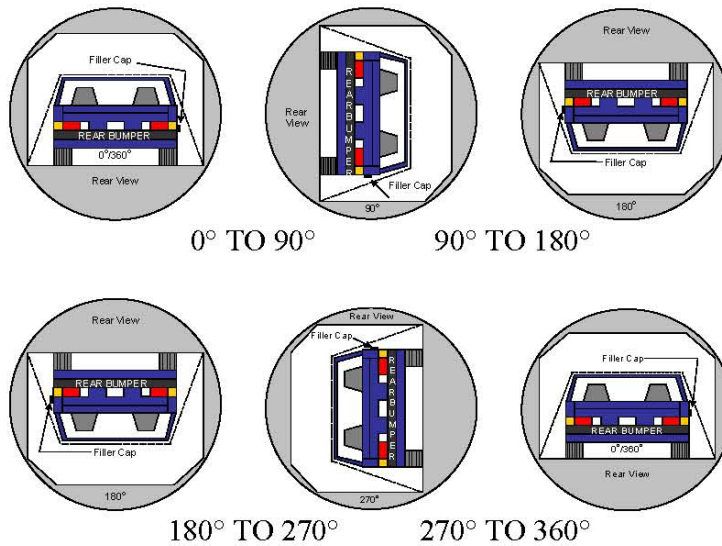
Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck NHTSA No.: M20245103  
 Test Program: NCAP Frontal Barrier Impact Test Test Date: 9/18/2024

**FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA**

Temperature at Time of Impact: 21.7°C Test Time: 11:40 a.m.

- A. From impact until vehicle motion ceases: (Maximum Allowable = 1 ounce) 0.0 oz.  
 B. For the 5 minute period after motion ceases: (Maximum Allowable = 5 ounces) 0.0 oz.  
 C. For the following 25 minutes: (Maximum Allowable = 1 ounce / minute) None  
 D. Spillage Details: None

**FMVSS 301 STATIC ROLLOVER RESULTS**



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent spillage: **None**

**SOLVENT COLLECTION TIME TABLE IN SECONDS**

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	91	300	391
90° to 180°	93	300	393
180° to 270°	80	300	380
270° to 360°	87	300	387

**DATA SHEET NO. 16 (CONTINUED)**  
**FMVSS NO. 301 BARRIER IMPACT AND STATIC ROLLOVER RESULTS**

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck    NHTSA No.: M20245103  
 Test Program: NCAP Frontal Barrier Impact Test    Test Date: 9/18/2024

**FMVSS 301 SPILLAGE TABLE (UNITS IN OUNCES)**

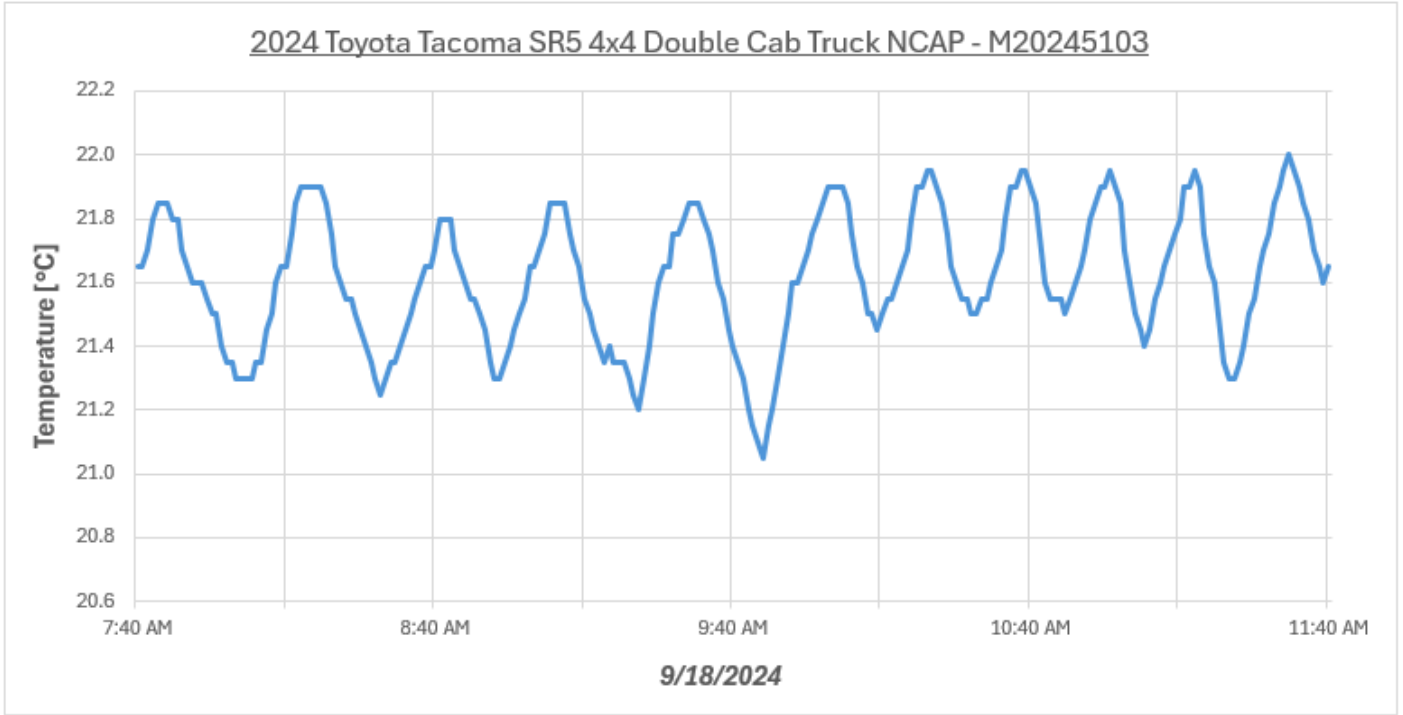
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eight Minute
0° to 90°	0	0	0	
90° to 180°	0	0	0	
180° to 270°	0	0	0	
270° to 360°	0	0	0	

**SOLVENT SPILLAGE LOCATION TABLE**

Test Phase	Spillage Location
0° to 90°	
90° to 180°	
180° to 270°	
270° to 360°	

**DATA SHEET NO. 17**  
**DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA**

Test Vehicle: 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck    NHTSA No.: M20245103  
 Test Program: NCAP Frontal Barrier Impact Test    Test Date: 9/18/2024



Serial #	Description	Maximum	Average	Minimum	Units
W1443497	VSC Start Room A - Temp (1038)	22.00	21.62	21.05	°C

**APPENDIX A  
PHOTOGRAPHS**

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Photo No. 001 - Load Cell Location



Photo No. 002 - Pre-Test Load Cell Wall

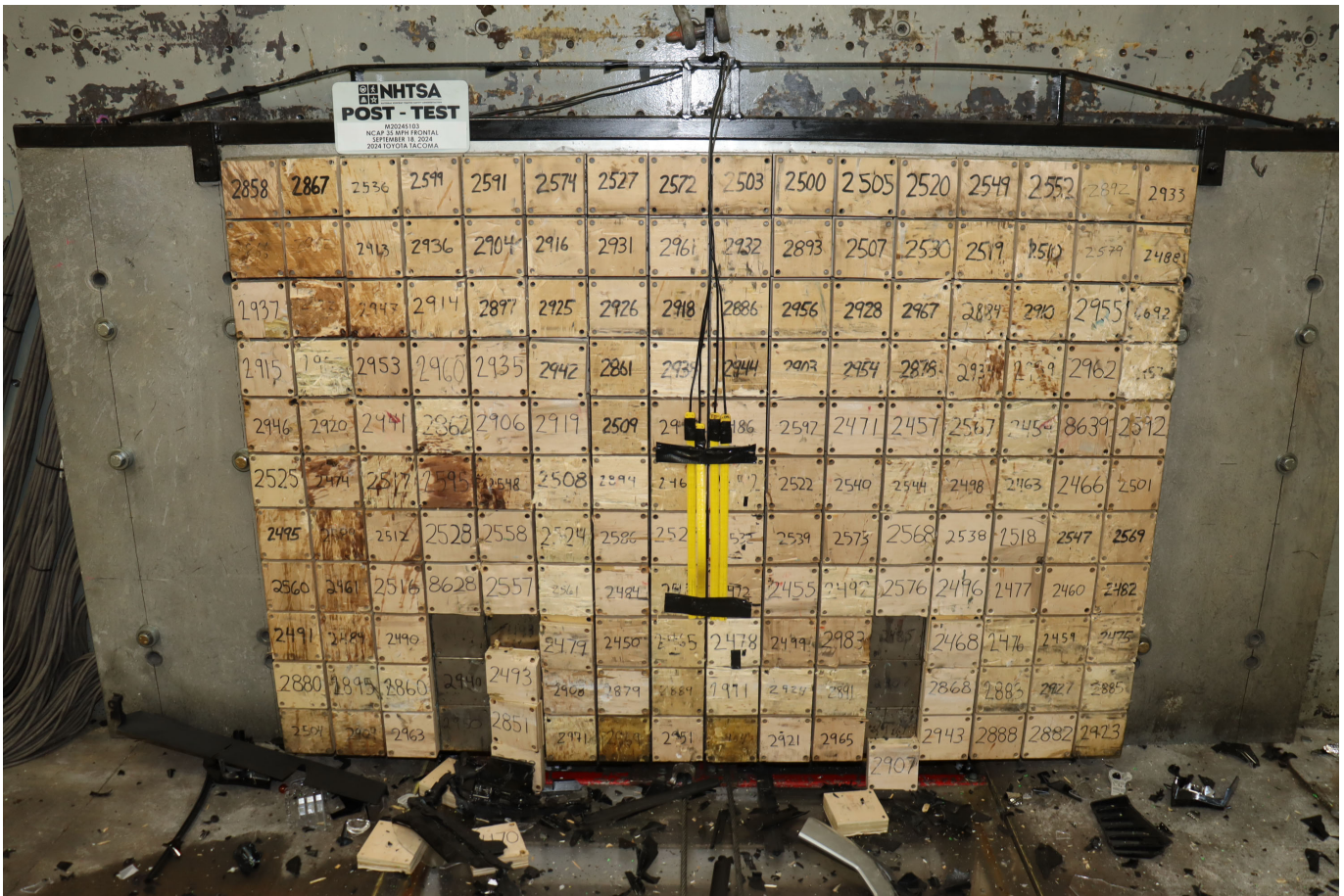


Photo No. 003 - Post-Test Load Cell Wall



Photo No. 004 - Manufacturer's Label

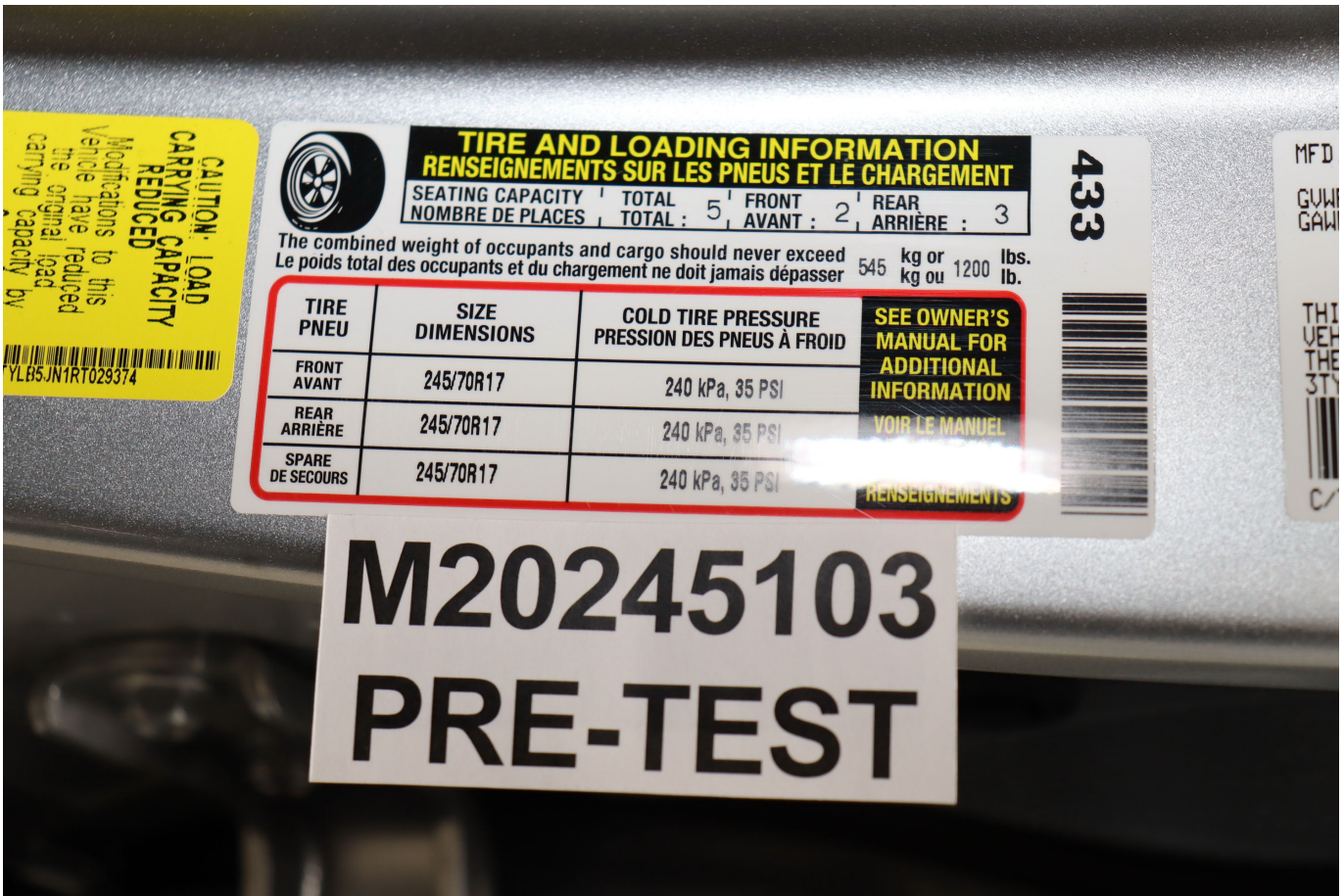


Photo No. 005 - Tire Placard



Photo No. 005a - Vehicle Load Carrying Capacity Reduction Label



Photo No. 006 - 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck Frontal As Delivered



Photo No. 007 - Left Rear 3-4 View, As Received



Photo No. 008 - Pre-Test Front View of Test Vehicle



Photo No. 009 - Post-Test Front View of Test Vehicle



Photo No. 010 - Pre-Test Left View of Test Vehicle



Photo No. 011 - Post-Test Left View of Test Vehicle



Photo No. 012 - Pre-Test Right View of Test Vehicle



Photo No. 013 - Post-Test Right View of Test Vehicle



Photo No. 014 - Pre-Test Right Front 3-4 View



Photo No. 015 - Post-Test Right Front 3-4 View



Photo No. 016 - Pre-Test Left Rear 3-4 View



Photo No. 017 - Post-Test Left Rear 3-4 View



Photo No. 018 - Pre-Test Windshield View



Photo No. 019 - Post-Test Windshield View

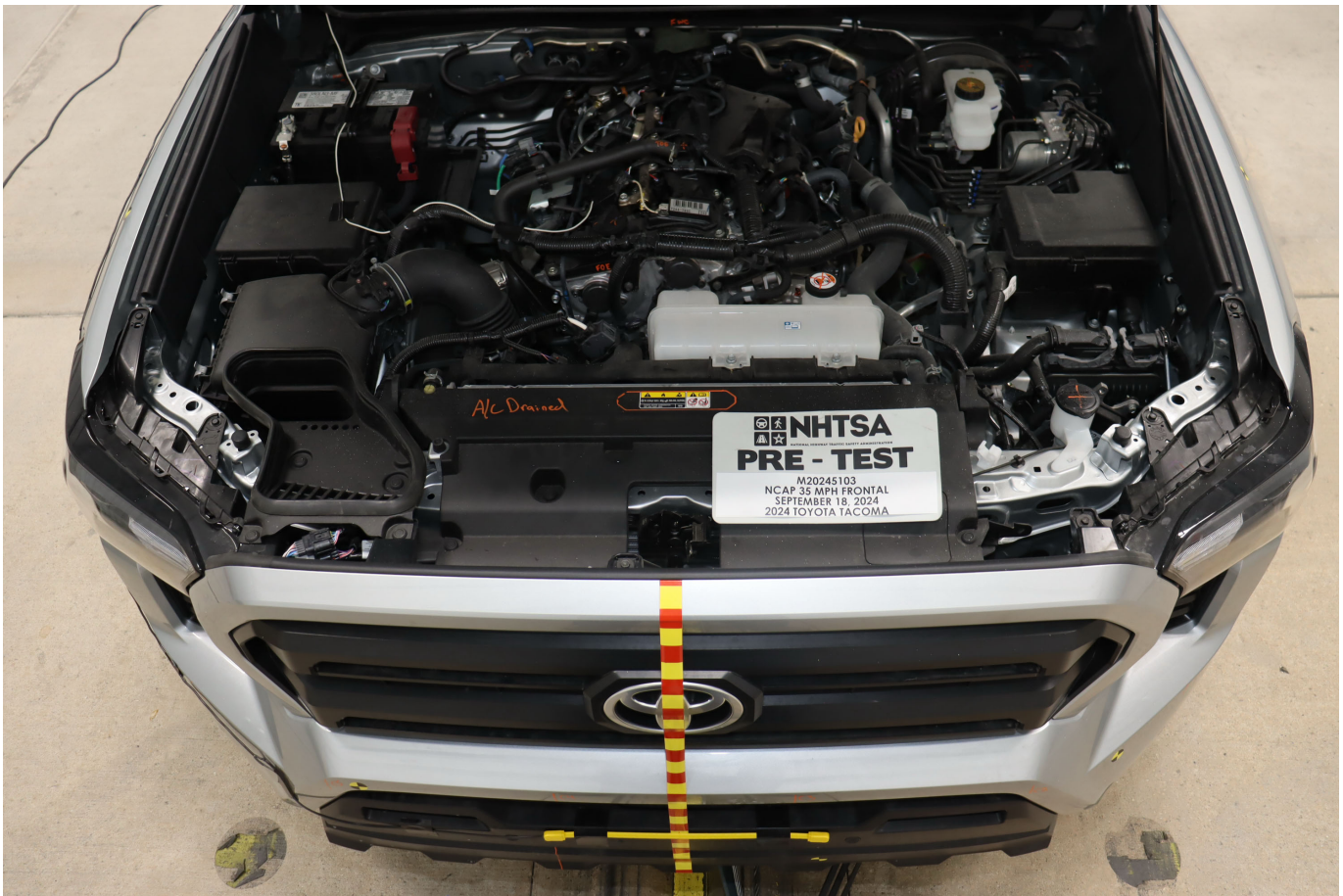


Photo No. 020 - Pre-Test Engine Compartment View



Photo No. 021 - Post-Test Engine Compartment View



Photo No. 022 - Pre-Test Fuel Filler Cap View



Photo No. 023 - Post-Test Fuel Filler Cap View

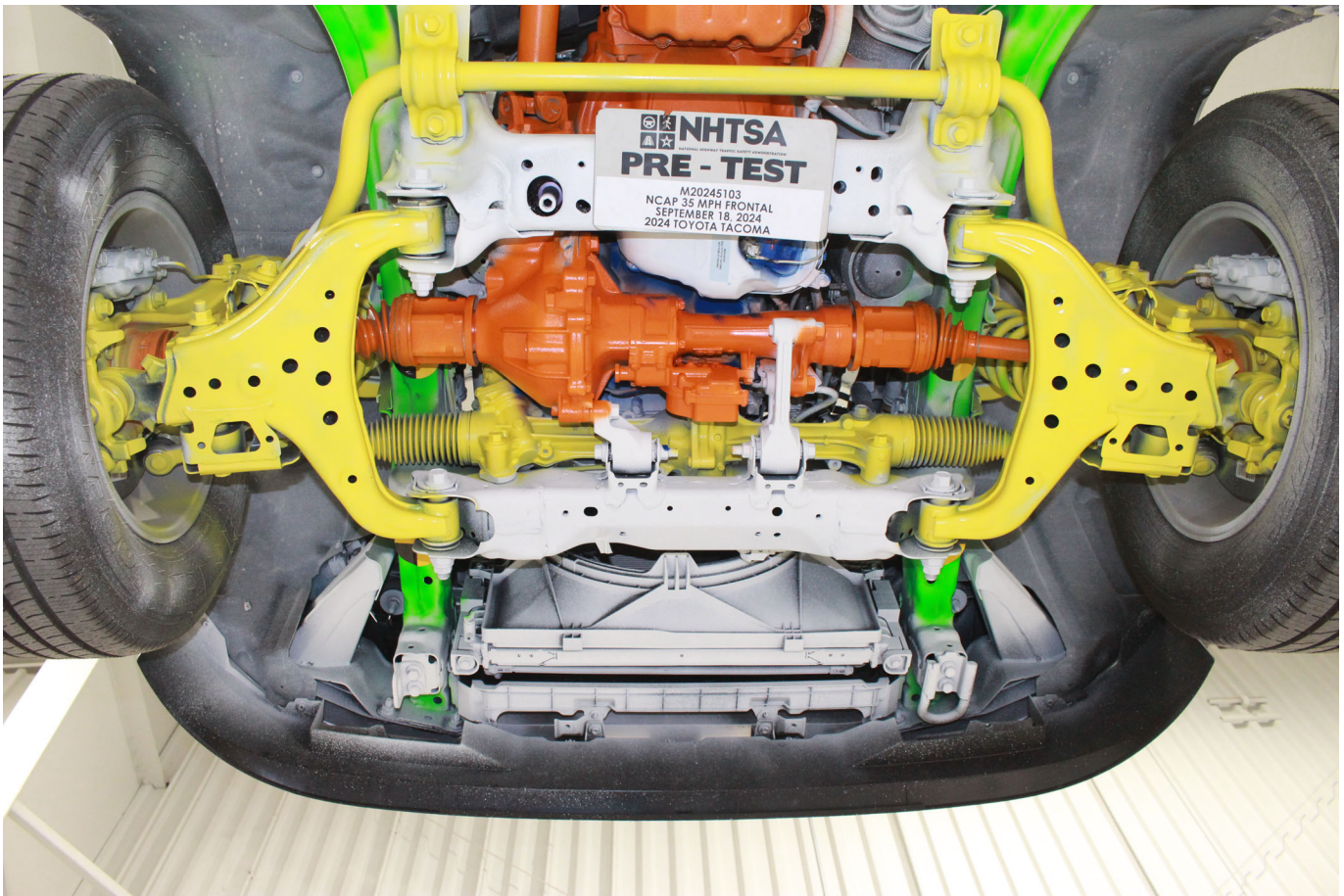


Photo No. 024 - Pre-Test Front Underbody View

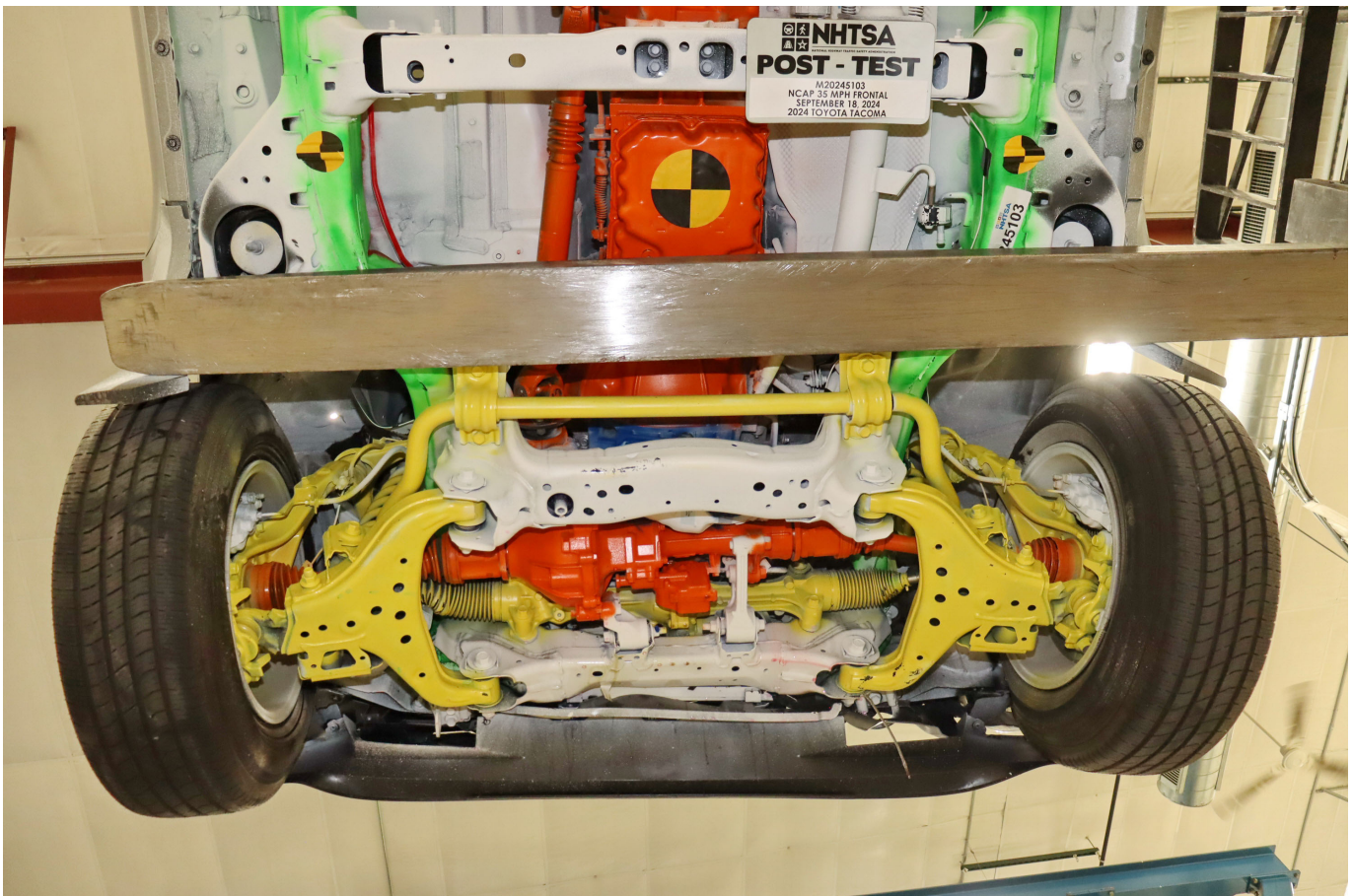


Photo No. 025 - Post-Test Front Underbody View

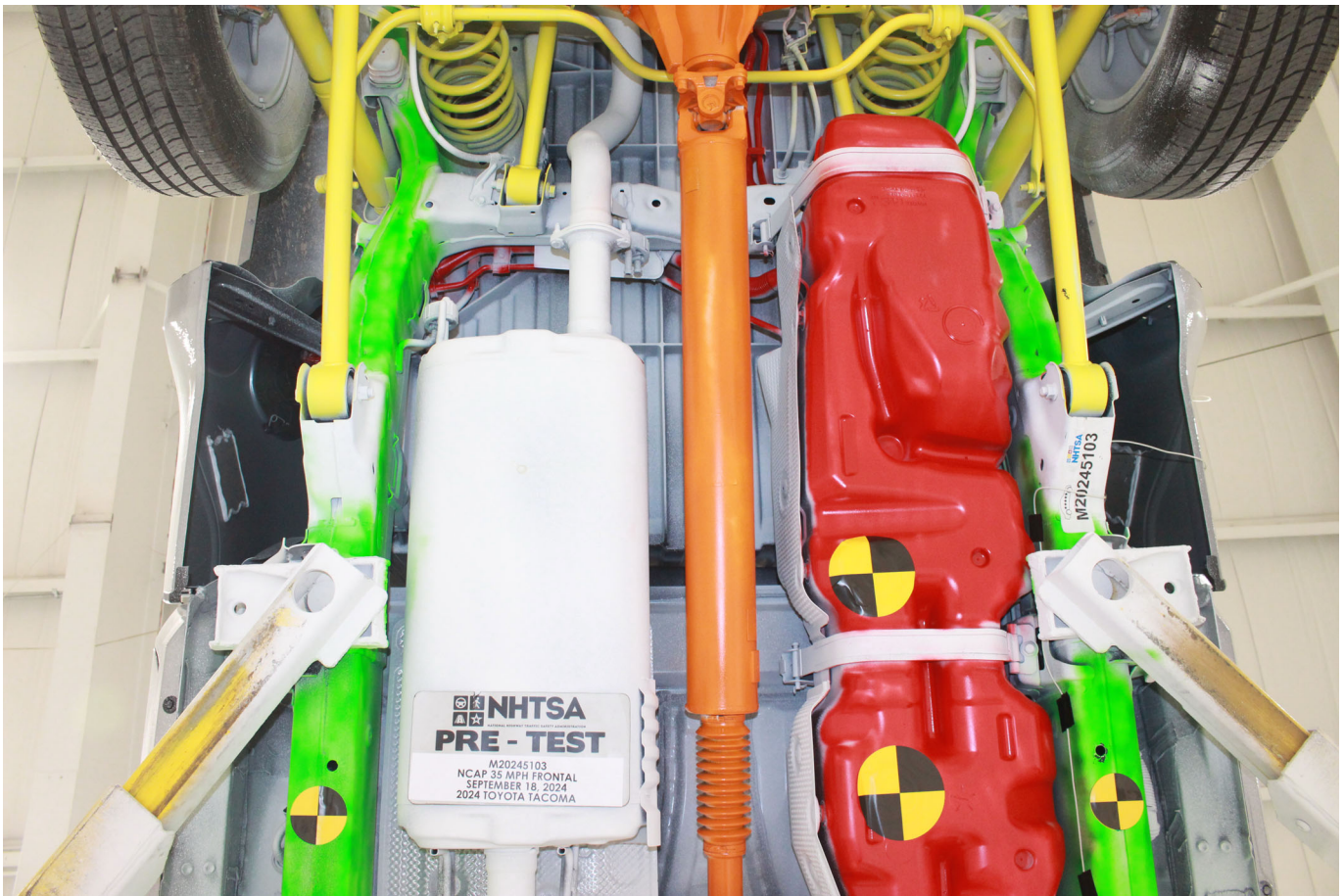


Photo No. 026 - Pre-Test Rear Underbody View

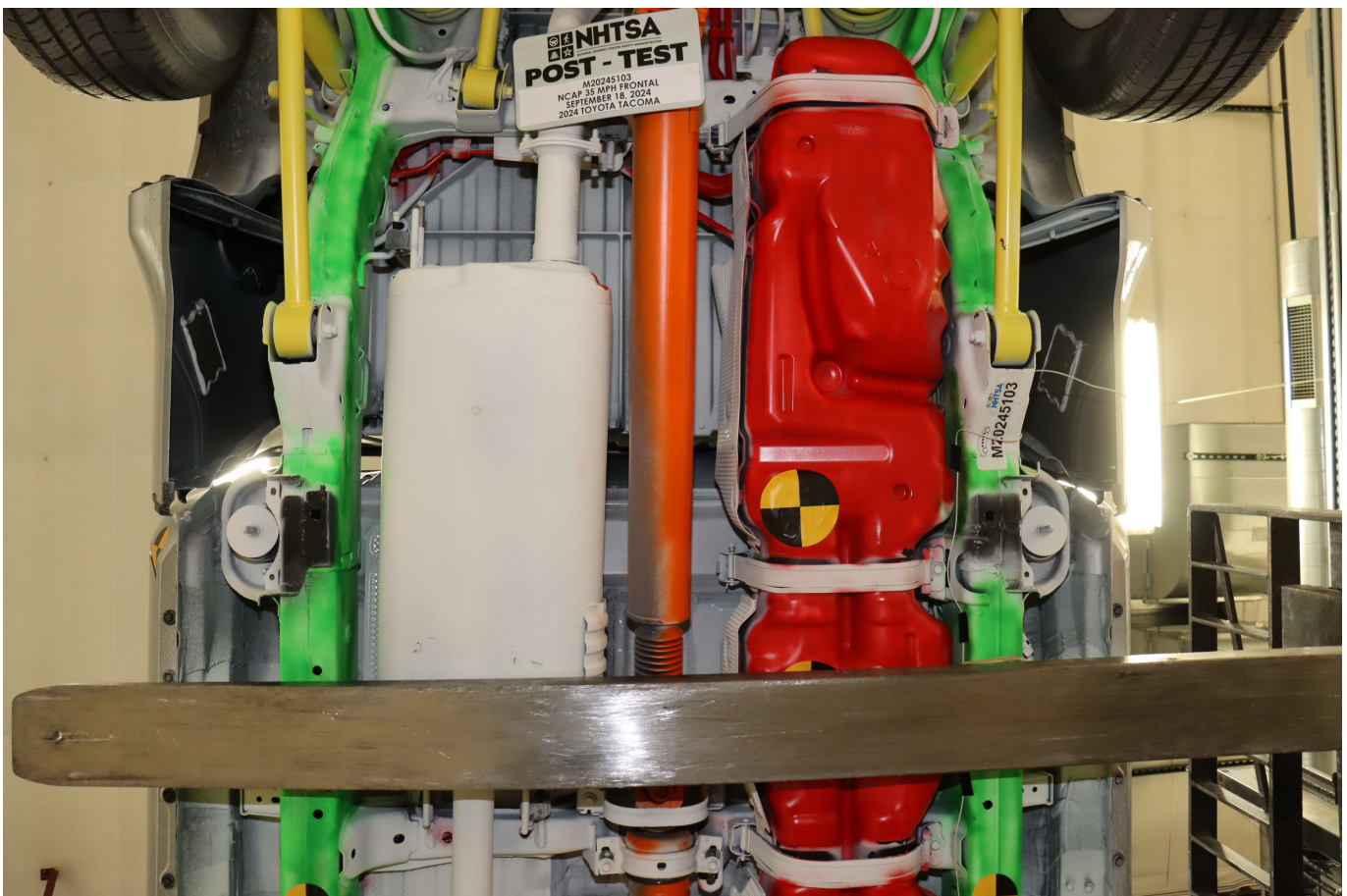


Photo No. 027 - Post-Test Rear Underbody View



Photo No. 028 - Pre-Test Dummy Cable Routing



Photo No. 029 - Post-Test Dummy Cable Routing



Photo No. 030 - Pre-Test Driver Dummy Front View



Photo No. 031 - Post-Test Driver Dummy Front View



Photo No. 032 - Pre-Test Driver Dummy Window View



Photo No. 033 - Post-Test Driver Dummy Window View



Photo No. 034 - Pre-Test Driver Dummy and Vehicle Interior View



Photo No. 035 - Post-Test Driver Dummy and Vehicle Interior View



Photo No. 036 - Pre-Test Driver's Seat Fore-Aft Markings



Photo No. 037 - Post-Test Driver's Seat Fore-Aft Markings



Photo No. 038 - Pre-Test View of Belt Anchorage for Driver Dummy



Photo No. 039 - Post-Test View of Belt Anchorage for Driver Dummy



Photo No. 040 - Pre-Test View of Belt Buckle and Latch Plate for Driver Dummy



Photo No. 041 - Post-Test View of Belt Buckle and Latch Plate for Driver Dummy



Photo No. 042 - Pre-Test Driver Dummy Feet



Photo No. 043 - Post-Test Driver Dummy Feet



Photo No. 044 - Pre-Test Driver's Side Knee Bolster



Photo No. 045 - Post-Test Driver's Side Knee Bolster



Photo No. 046 - Pre-Test Driver's Side Floorpan

**PHOTOGRAPH NOT AVAILABLE**

Photo No. 047 - Post-Test Driver's Side Floorpan



Photo No. 048 - Post-Test Driver Dummy Face

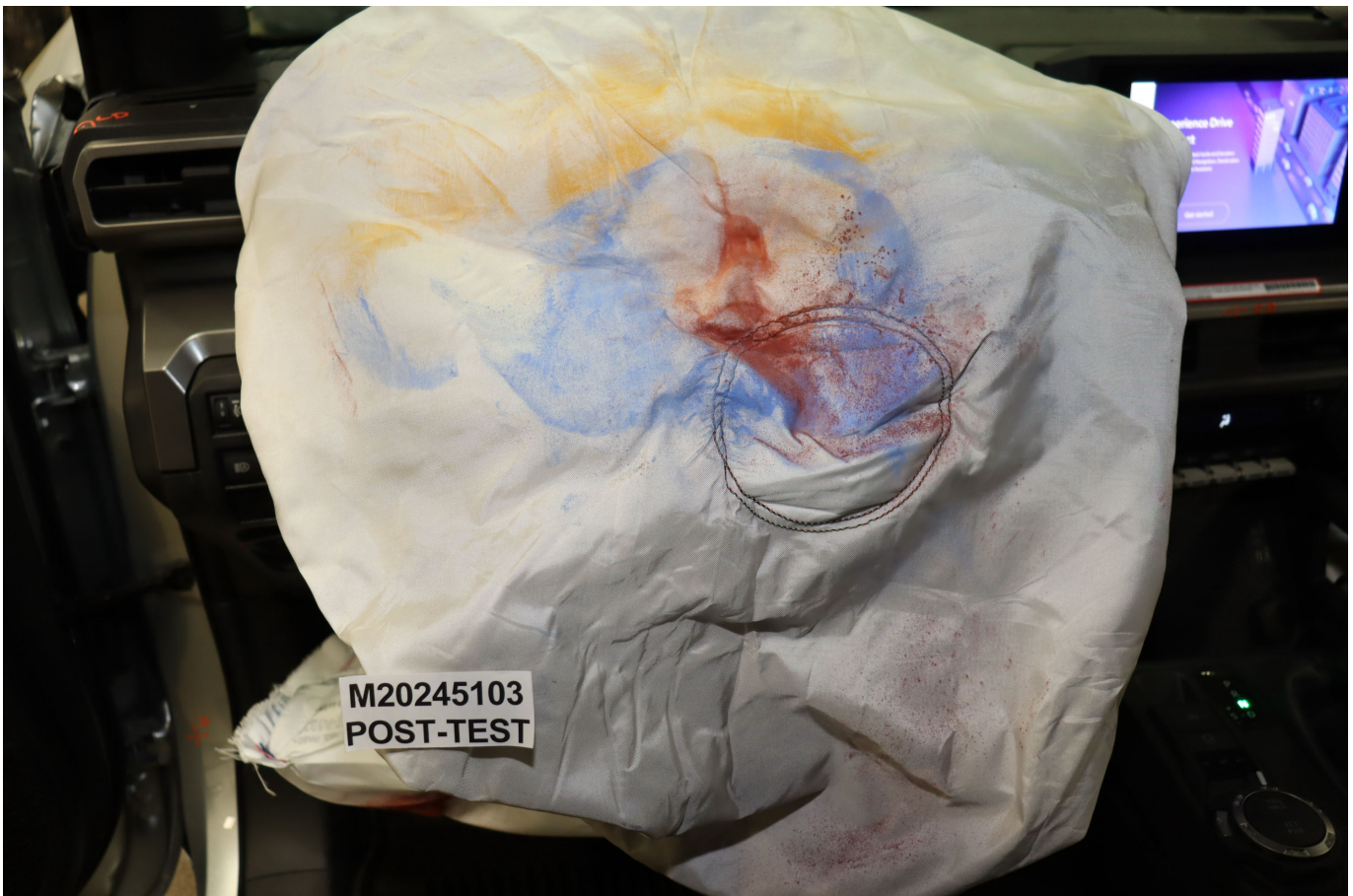


Photo No. 049 - Post-Test Driver Dummy Contact with Airbag



Photo No. 050 - Post-Test Driver Dummy Contact with Headrest



Photo No. 051 - Pre-Test View of the Steering Wheel



Photo No. 052 - Post-Test View of the Steering Wheel



Photo No. 053 - Pre-Test Passenger Dummy Front View



Photo No. 054 - Post-Test Passenger Dummy Front View



Photo No. 055 - Pre-Test Passenger Dummy Window View



Photo No. 056 - Post-Test Passenger Dummy Window View



Photo No. 057 - Pre-Test Passenger Dummy and Vehicle Interior View



Photo No. 058 - Post-Test Passenger Dummy and Vehicle Interior View



Photo No. 059 - Pre-Test Passenger's Seat Fore-Aft Markings



Photo No. 060 - Post-Test Passenger's Seat Fore-Aft Markings



Photo No. 061 - Pre-Test View of Belt Anchorage for Passenger Dummy



Photo No. 062 - Post-Test View of Belt Anchorage for Passenger Dummy



Photo No. 063 - Pre-Test View of Belt Buckle and Latch Plate for Passenger Dummy



Photo No. 064 - Post-Test View of Belt Buckle and Latch Plate for Passenger Dummy



Photo No. 065 - Pre-Test Passenger Dummy Feet



Photo No. 066 - Post-Test Passenger Dummy Feet



Photo No. 067 - Pre-Test Passenger's Side Knee Bolster

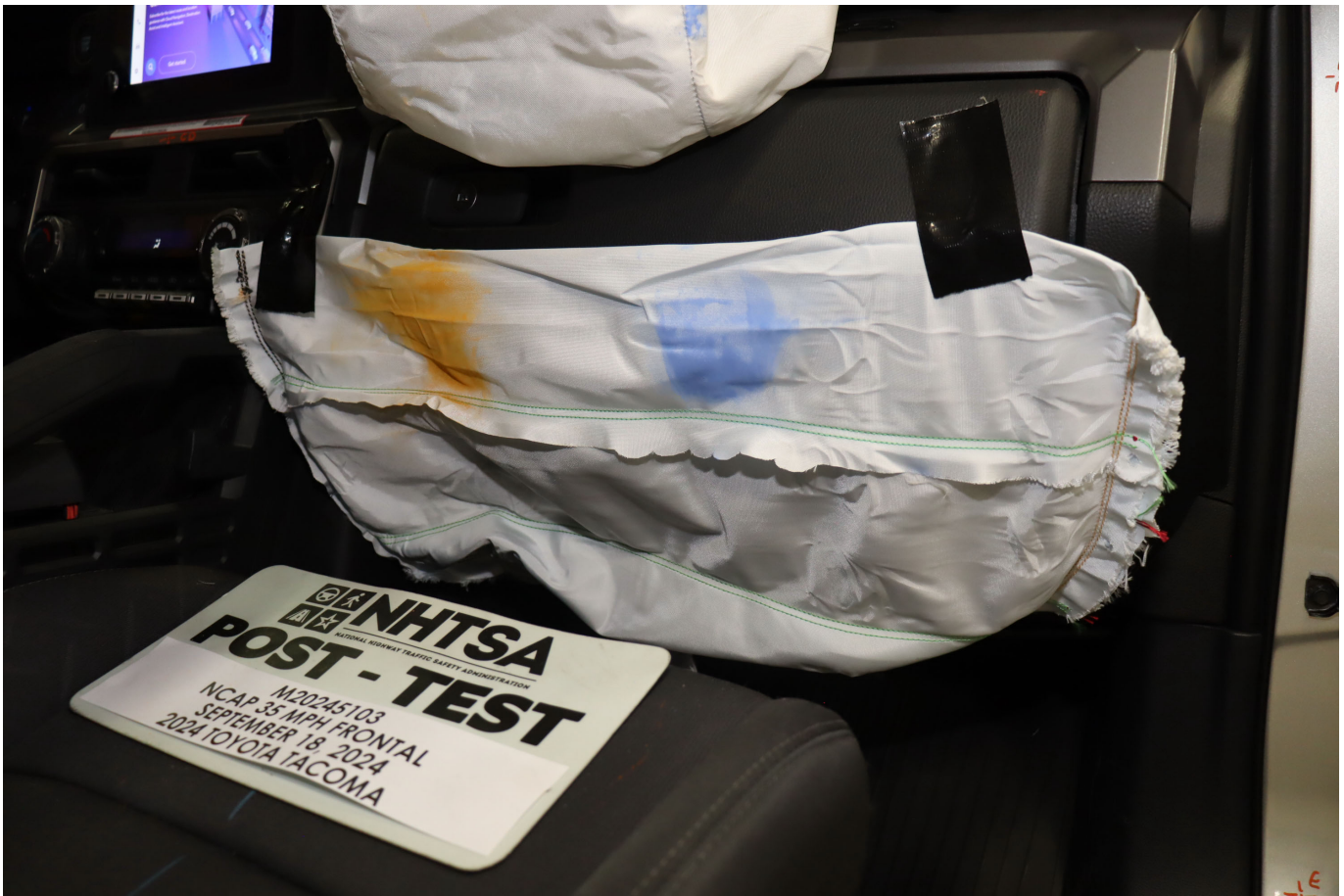


Photo No. 068 - Post-Test Passenger's Side Knee Bolster



Photo No. 069 - Pre-Test Passenger's Side Floorpan

# PHOTOGRAPH NOT AVAILABLE

Photo No. 070 - Post-Test Passenger's Side Floorpan



Photo No. 071 - Post-Test Passenger Dummy Face



Photo No. 072 - Post-Test Passenger Dummy Contact with Airbag



Photo No. 073 - Post-Test Passenger Dummy Contact with Headrest



Photo No. 074 - Photograph of Ballast Installed in Vehicle

**PHOTOGRAPH NOT APPLICABLE**

Photo No. 075 - Post-Test Stoddard Solvent Spillage Location View



Photo No. 076 - Post-Test Speed Trap Read-Out



Photo No. 077 - Vehicle at 0 Degrees on Static Rollover Device

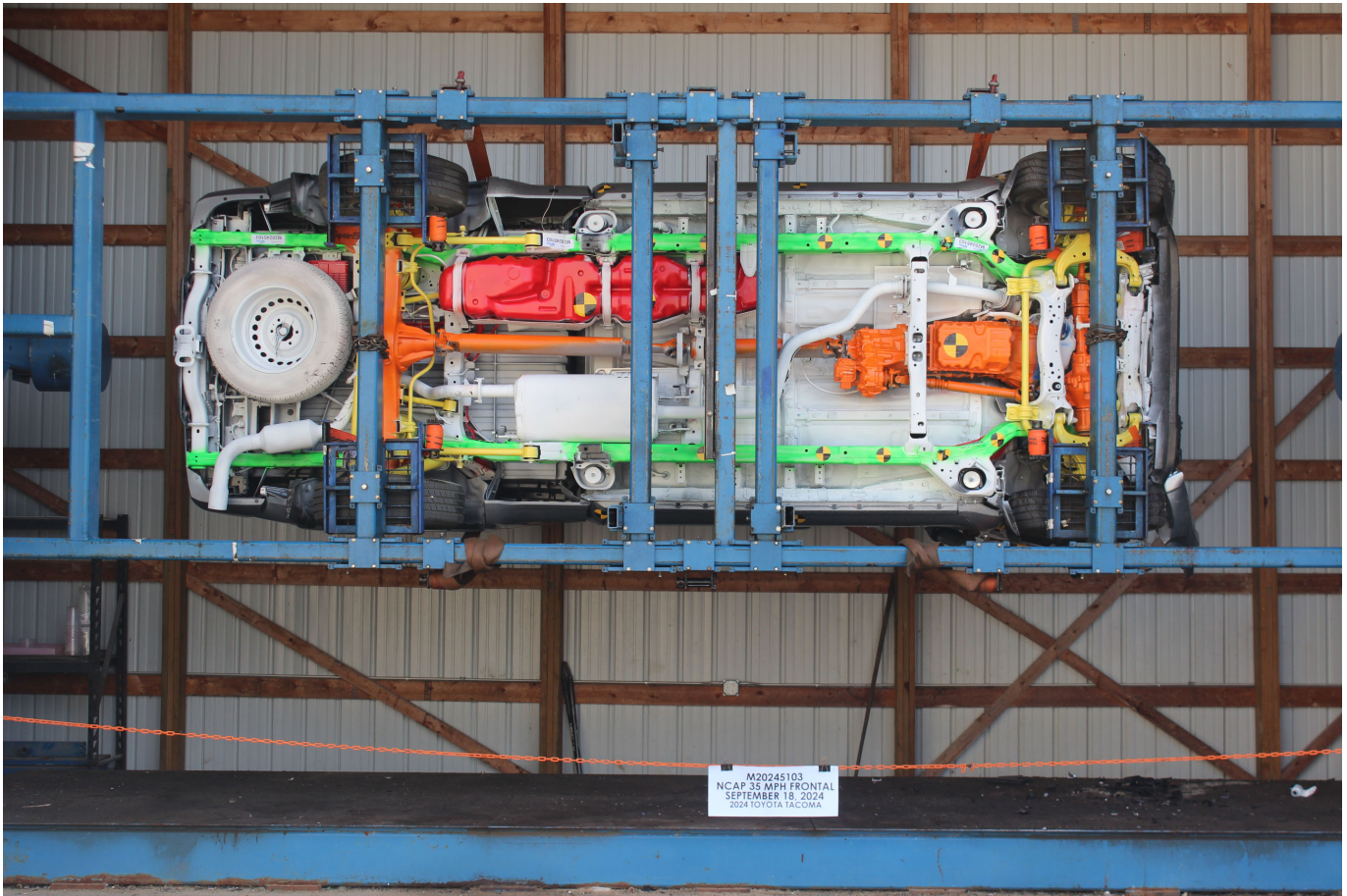


Photo No. 078 - Vehicle at 90 Degrees on Static Rollover Device



Photo No. 079 - Vehicle at 180 Degrees on Static Rollover Device



Photo No. 080 - Vehicle at 270 Degrees on Static Rollover Device



Photo No. 081 - Vehicle at 360 Degrees on Static Rollover Device



Photo No. 082 - 2024 Toyota Tacoma SR5 4x4 Double Cab Pickup Truck Frontal Impact Event

**TOYOTA**

DESC.: **TACOMA SR5**      **4X4 DBL CAB LONG BED**  
 VIN: **3TYLB5JN1RT029374**  
 YR/MDL: 2024/7570A  
 CLR: CELESTIAL SILVER/FF20 (01J9/20)  
 FINAL ASSEMBLY POINT: GUANAJUATO, MEXICO

**GOVERNMENT 5-STAR SAFETY RATINGS**

This vehicle has not been rated by the government for overall vehicle score, frontal crash, side crash or rollover risk.

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

**STANDARD EQUIPMENT**  
UNLESS REPLACED BY OPTIONAL EQUIPMENT

**MECHANICAL & PERFORMANCE**

- i-FORCE 2.4L 4cyl Turbocharged Engine
- 8-Spd Automatic Transmission
- 4WD Demand Part-Time 4x4 Sys w/2-Speed Electronically Controlled Transfer Case
- Coil spring multi-link rear suspension
- Tow Hitch Receiver

**SAFETY & CONVENIENCE**

- Toyota Safety Sense 3.0 w/Pre-Collision Star Safety System
- Connected Services Capable. 4G network dependent. See Toyota.com for details.
- Blind Spot Monitor (BSM) w/ Rear Cross-Traffic Alert (RCTA)

**EXTERIOR**

- 17-in Alloy Wheels
- Smart Key System on D+P Doors
- LED Headlights w/ DRL and Fog Lights

**INTERIOR**

- Fabric-Trimmed Seats w/ Driver Lumbar Support
- 8-in Toyota Audio Multimedia w/ 6-Speakers, Wireless Apple CarPlay and Android Auto Compatibility
- SiriusXM w/3-Month Trial

**For Full Product Details:**  
 Please Visit [Toyota.com/Tacoma](http://Toyota.com/Tacoma)  
 \*\*\*Full Tank of Gas\*\*\*

**BASE MANUFACTURER'S SUGGESTED RETAIL PRICE \$40,900.00**

**OPTIONAL EQUIPMENT**

FE	50 State Emissions	
DS	Deck Rail and Cleats	70.00
MG	Mud Guards	60.00
SP	SR5 Upgrade + Cold Weather Package (Double Cab) - includes heated front seats, leather-trimmed heated steering wheel, JBL(R) Premium Audio with JBL(R) FLEX portable speaker, Integrated Trailer Brake Controller (ITBC), and power horizontal rear window	3,740.00
ZT	All Weather Floor Liners	179.00
S9	Phone Cables - Smart USB	70.00
L5	Spray-On Bed Liner	575.00

**EPA DOT Fuel Economy and Environment**      Gasoline Vehicle

**Fuel Economy**

**21** MPG      Small Pickups range from 18 to 37 MPG. The best vehicle rates 140 MPGe.

19 24  
combined city/hwy      city      highway

4.8 gallons per 100 miles

**You spend \$3,000 more in fuel costs over 5 years** compared to the average new vehicle.

**Annual fuel cost \$2,550**

**Fuel Economy & Greenhouse Gas Rating** (tailpipe only)      **Smog Rating** (tailpipe only)

1 4 10      7 10  
Best      Best

This vehicle emits 424 grams CO<sub>2</sub> per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions. Learn more at [fuelEconomy.gov](http://fuelEconomy.gov).

**MANUFACTURER'S SUGGESTED RETAIL PRICE<sup>1</sup> \$45,594.00**

DELIVERY, PROCESSING AND HANDLING FEE 1,495.00

**TOTAL SUGGESTED RETAIL PRICE \$47,089.00**

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 28 MPG and costs \$9,750 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$3.69 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

<sup>1</sup>Manufacturer's suggested retail price excludes delivery, processing and handling fees, license and title fees, applicable federal, state and local taxes, and dealer and distributor options and accessories.

Delivered by Truck to: 31188  
 NORTHWAY TOYOTA  
 737 NEW LOUDON RD  
 LATHAM NY12110

TML1E2N150F0W0

Photo No. 083 - Monroney Label Photograph

**APPENDIX B**  
**DUMMY RESPONSE DATA TRACES**

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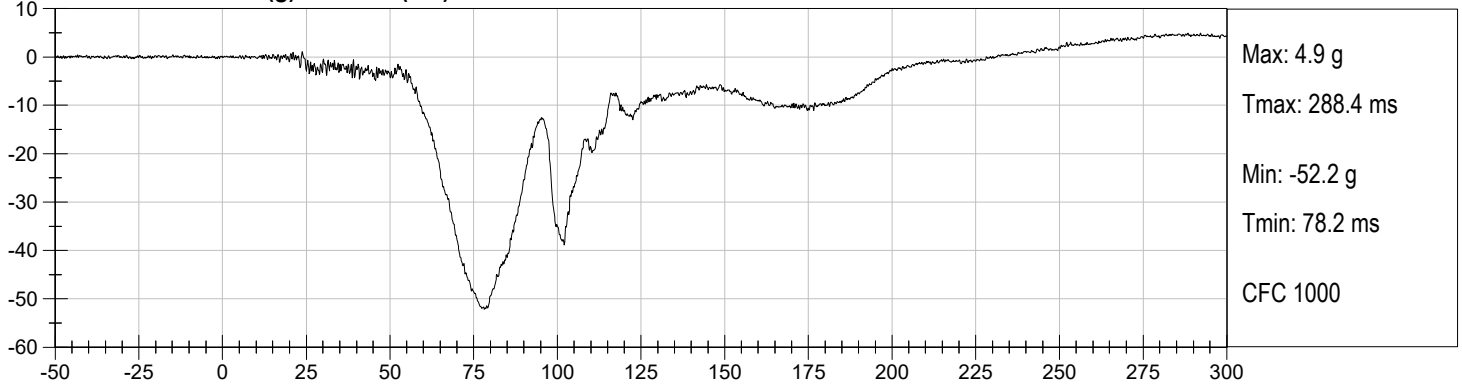
**The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at [www.nhtsa.gov](http://www.nhtsa.gov)**

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

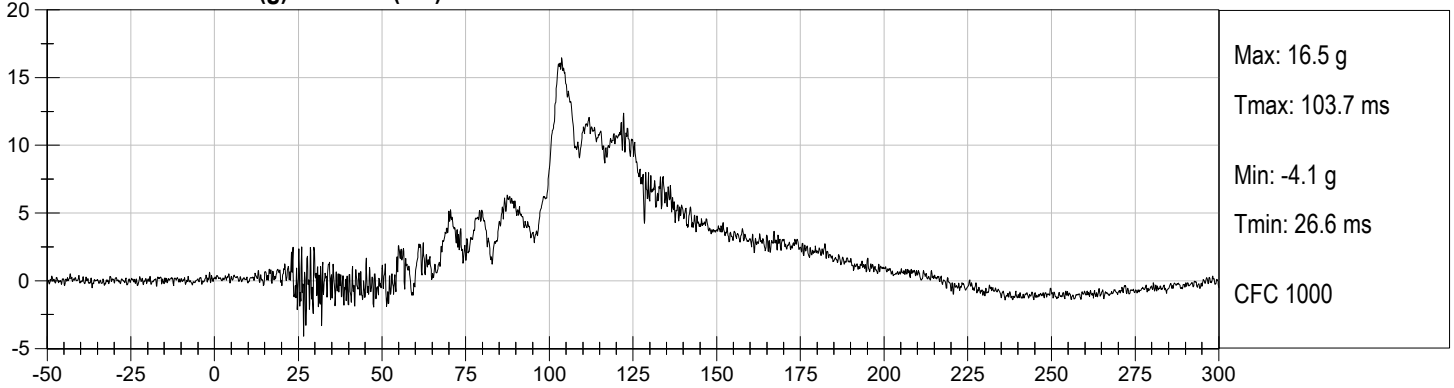
Driver Left Upper Tibia Force Z  
Driver Left Lower Tibia Moment X  
Driver Left Lower Tibia Moment Y  
Driver Left Lower Tibia Force Z  
Driver Right Upper Tibia Moment X  
Driver Right Upper Tibia Moment Y  
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Driver Right Lower Tibia Moment X  
Driver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

Passenger Pelvis Z  
Passenger Left Femur Redundant  
Passenger Right Femur Redundant  
Passenger Left Upper Tibia Moment X  
Passenger Left Upper Tibia Moment Y  
Passenger Left Upper Tibia Force Z  
Passenger Left Lower Tibia Moment X  
Passenger Left Lower Tibia Moment Y  
Passenger Left Lower Tibia Force Z  
Passenger Right Upper Tibia Moment X  
Passenger Right Upper Tibia Moment Y  
Passenger Right Upper Tibia Force Z  
Passenger Right Lower Tibia Moment X  
Passenger Right Lower Tibia Moment Y  
Passenger Right Lower Tibia Force Z  
Passenger Left Foot Fore Z  
Passenger Left Foot Aft X  
Passenger Left Foot Aft Z  
Passenger Right Foot Fore Z  
Passenger Right Foot Aft X  
Passenger Right Foot Aft Z  
Passenger Lap Belt Force  
Passenger Shoulder Belt Force  
Left Rear Seat Crossmember X  
Right Rear Seat Crossmember X  
Vehicle Engine Top X  
Vehicle Engine Bottom X  
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Left Rear Seat Crossmember Xr  
Right Rear Seat Crossmember Xr  
Advanced Research Load Cell Barrier – 528 channels

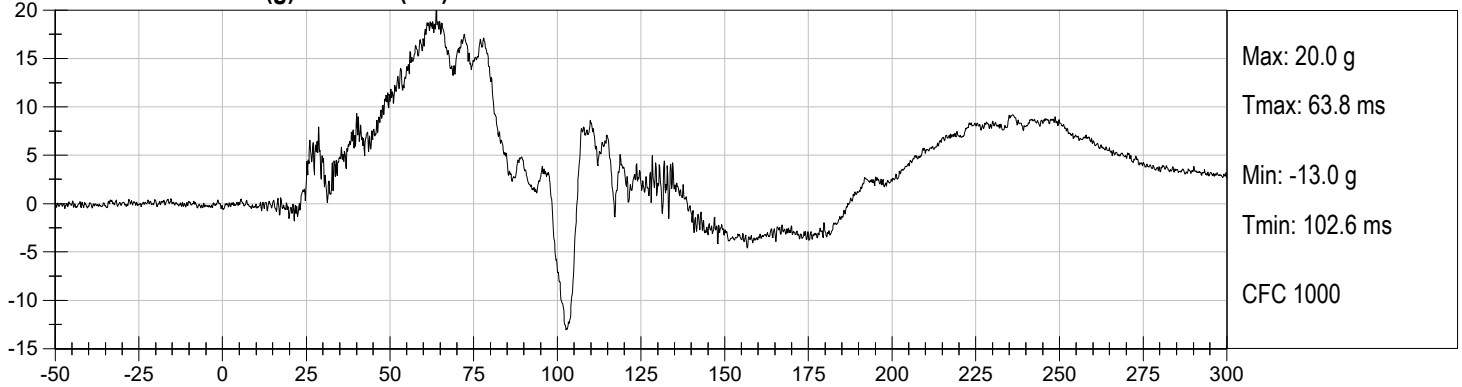
**DRIVER HEAD X (g) vs Time (ms)**



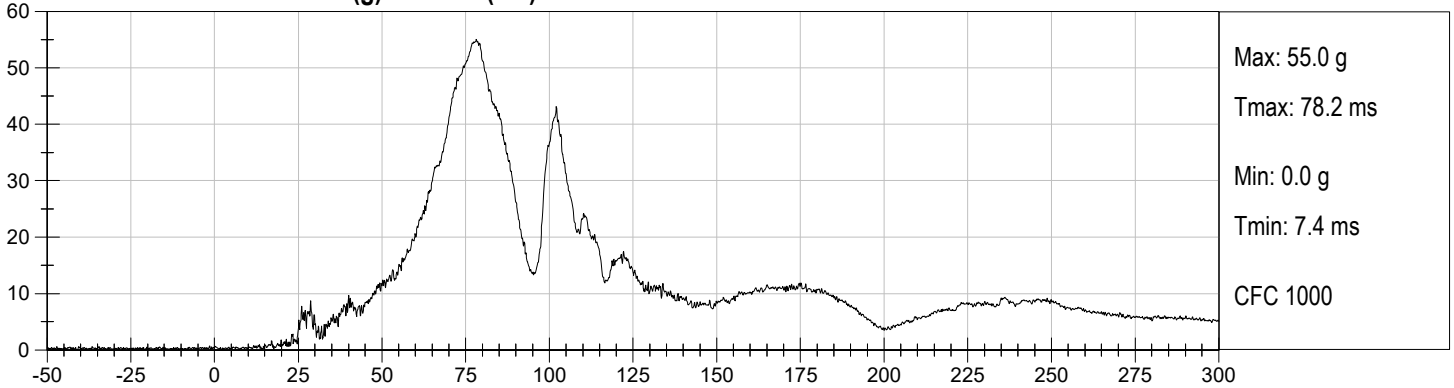
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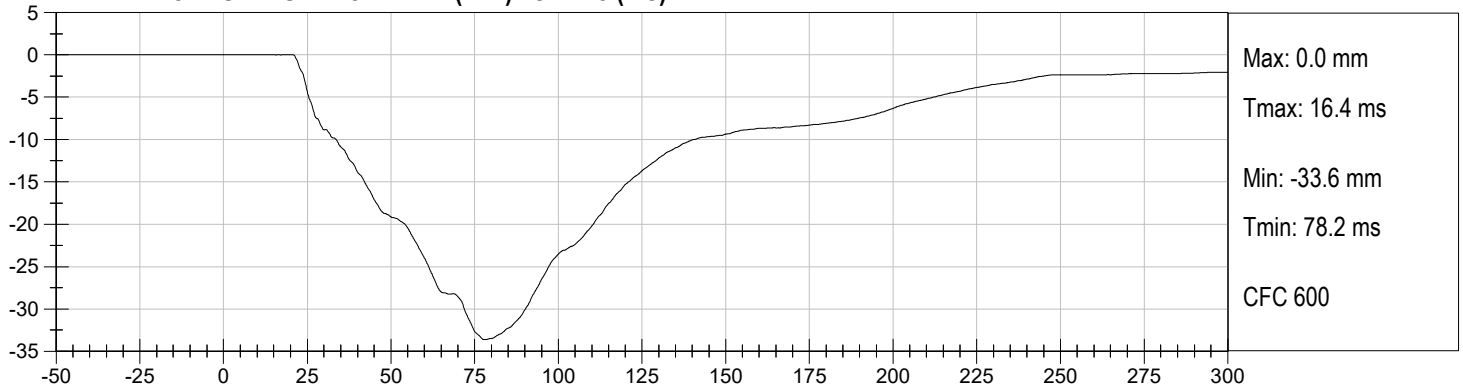
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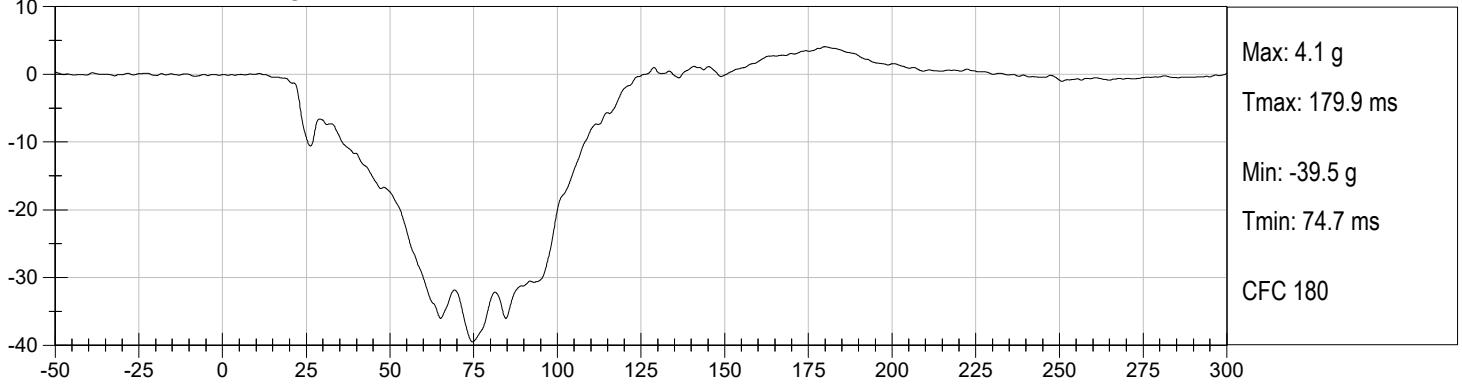
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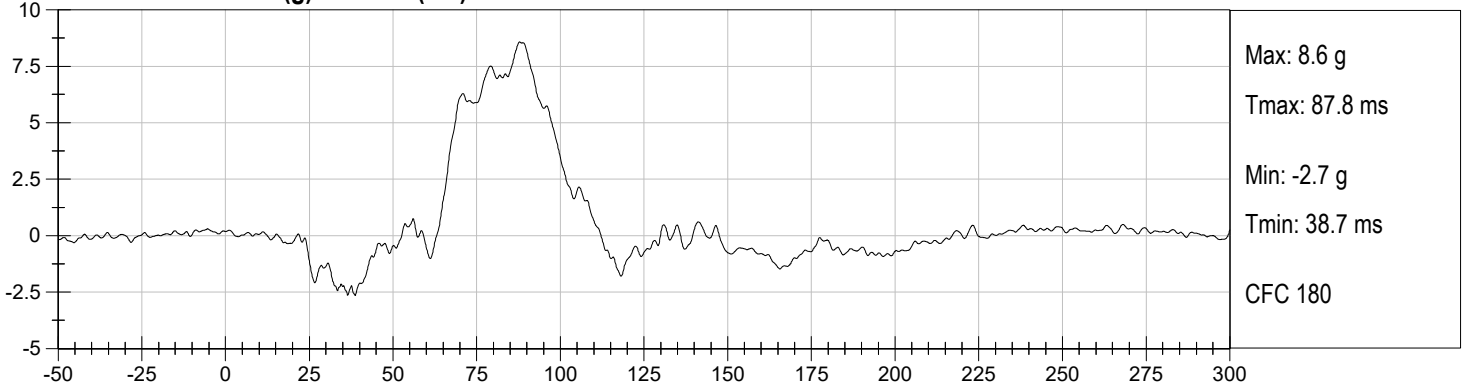
DRIVER CHEST DISPLACEMENT (mm) vs Time (ms)



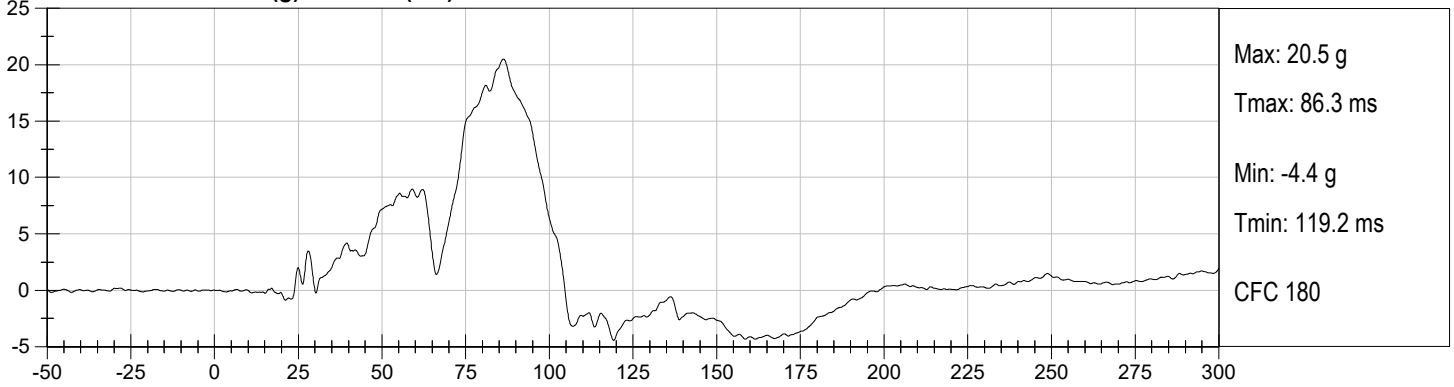
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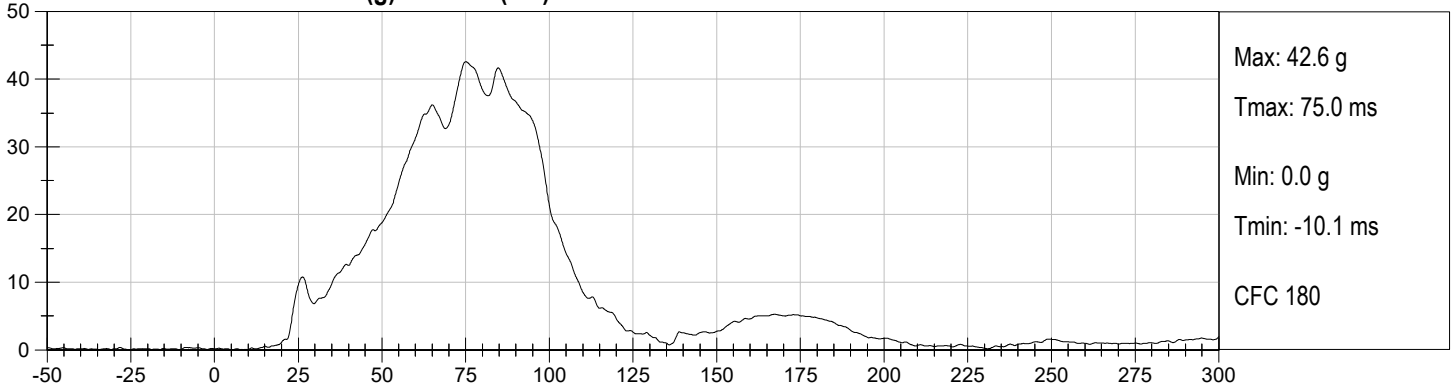
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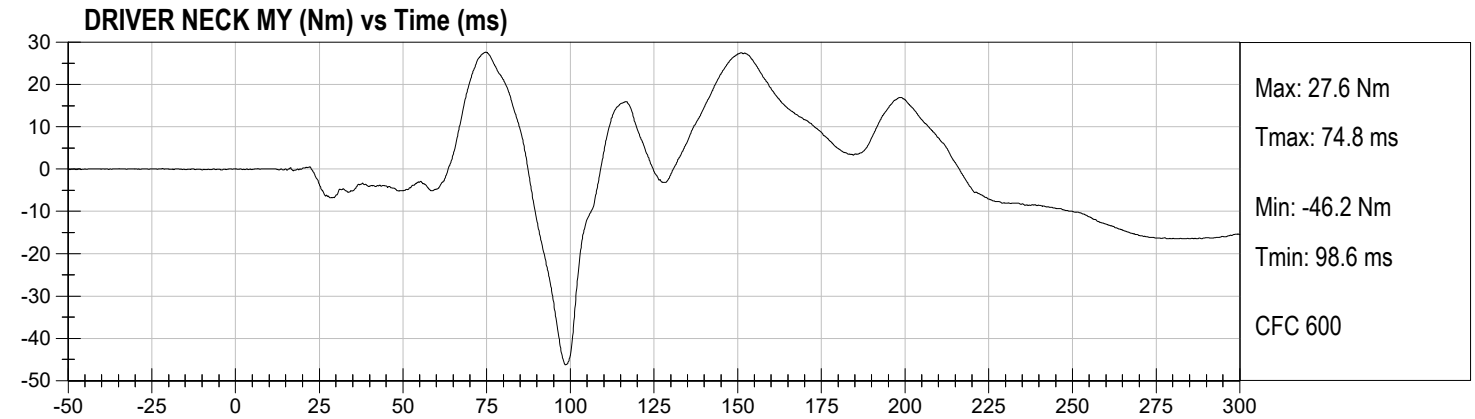
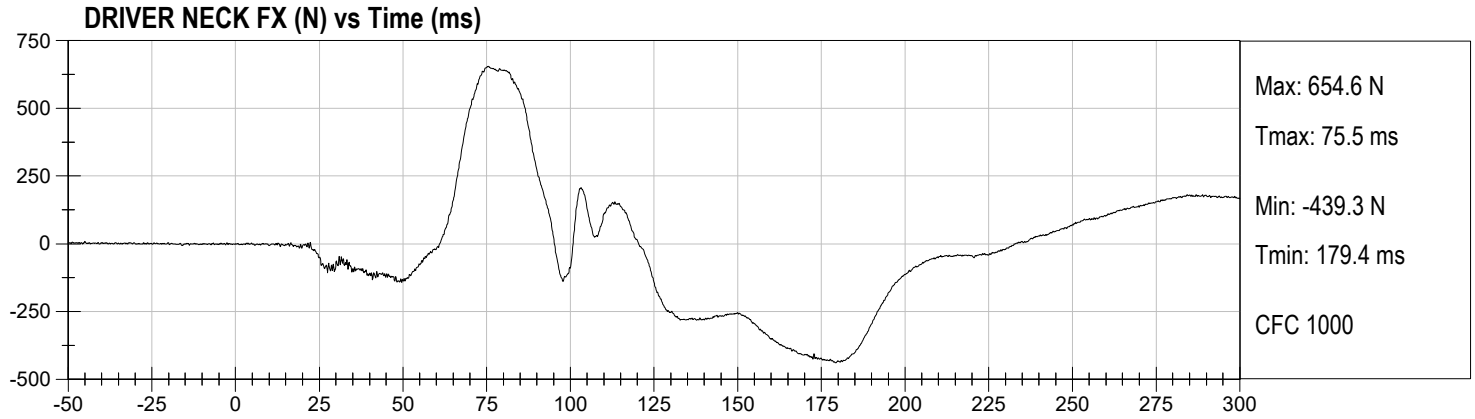


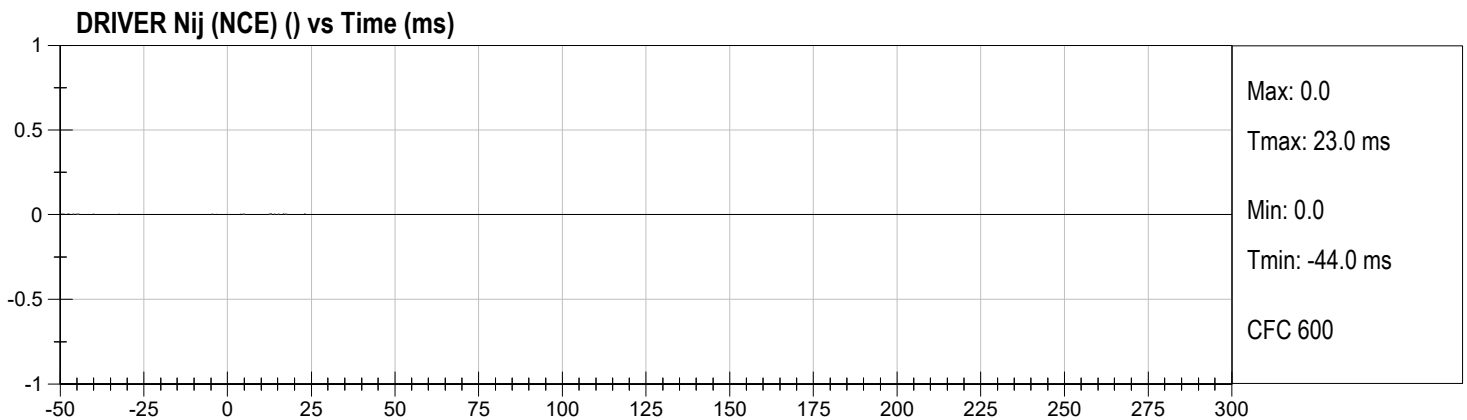
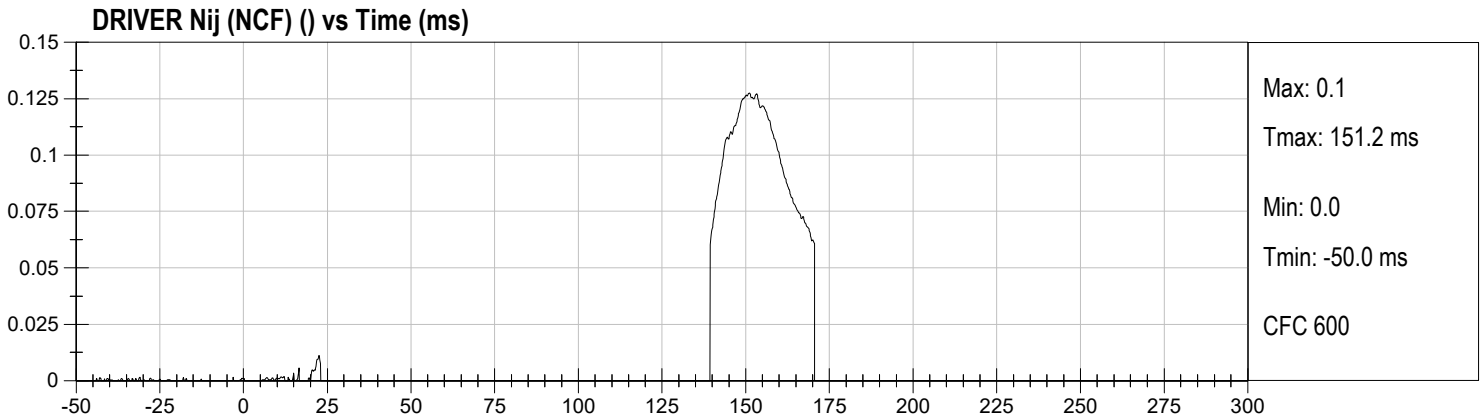
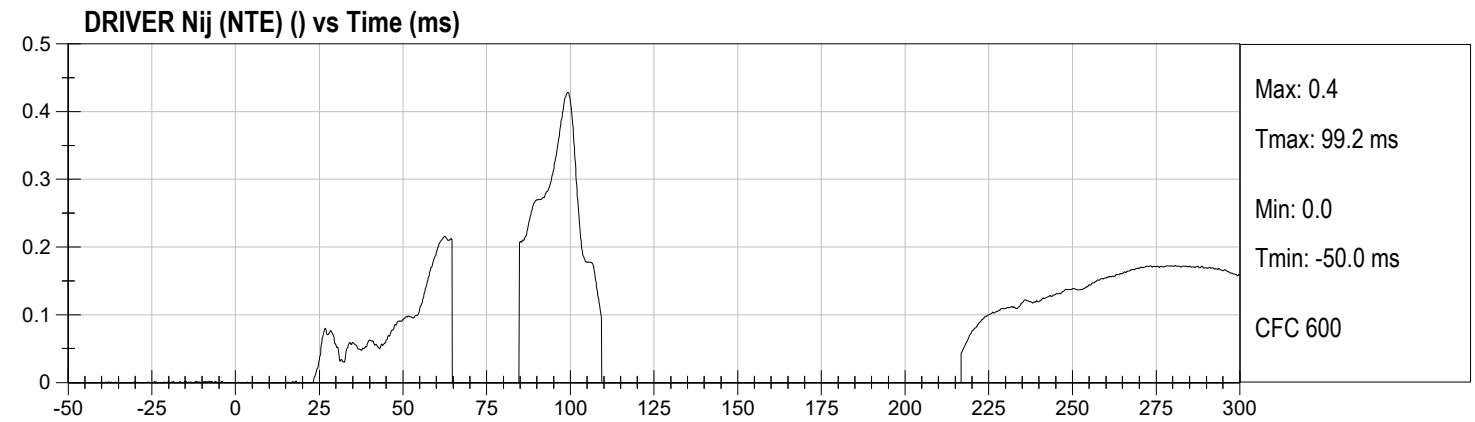
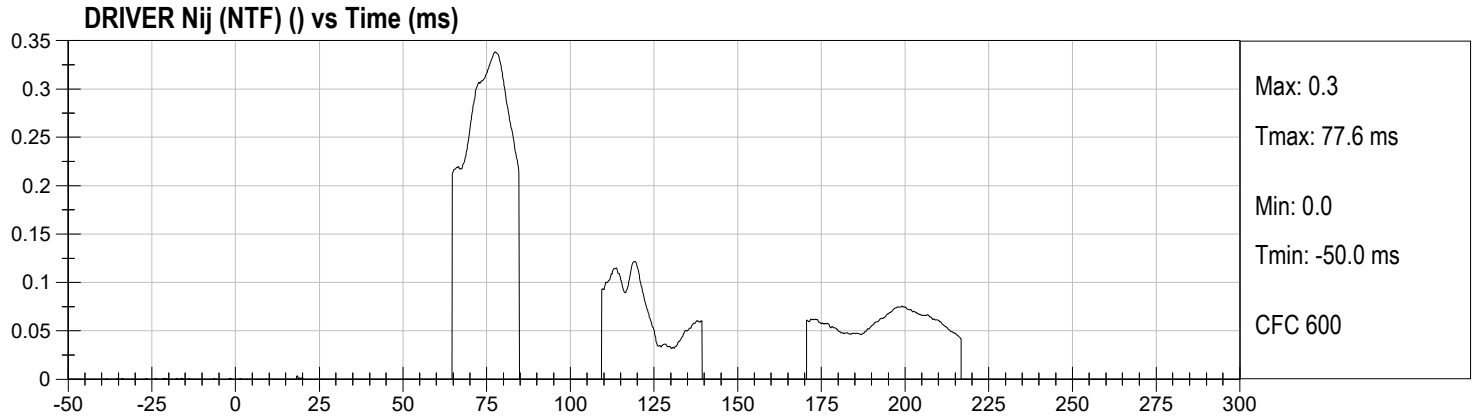
**DRIVER CHEST Z (g) vs Time (ms)**

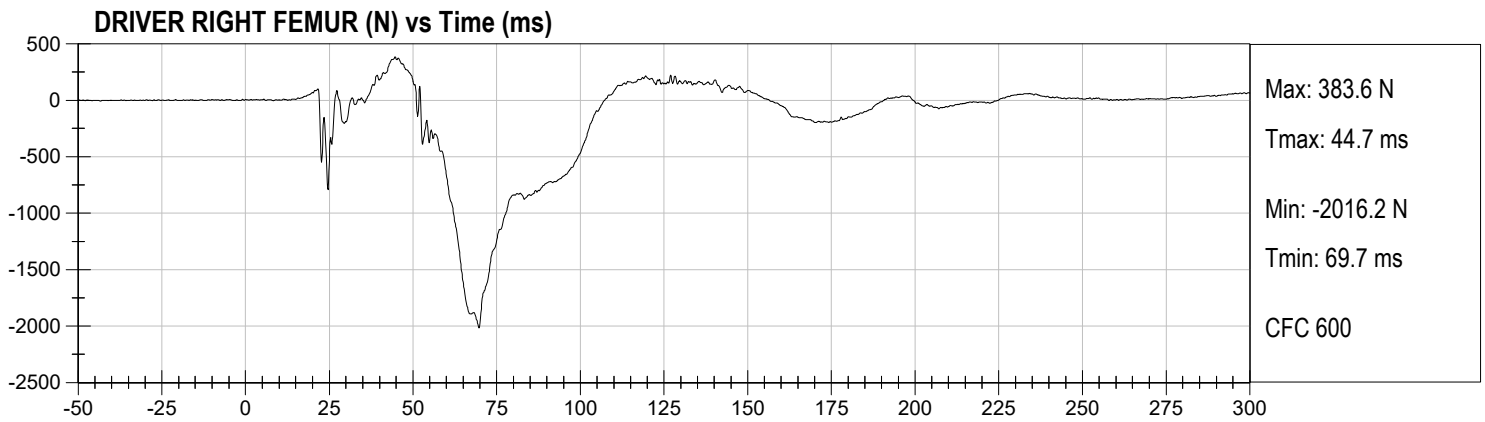
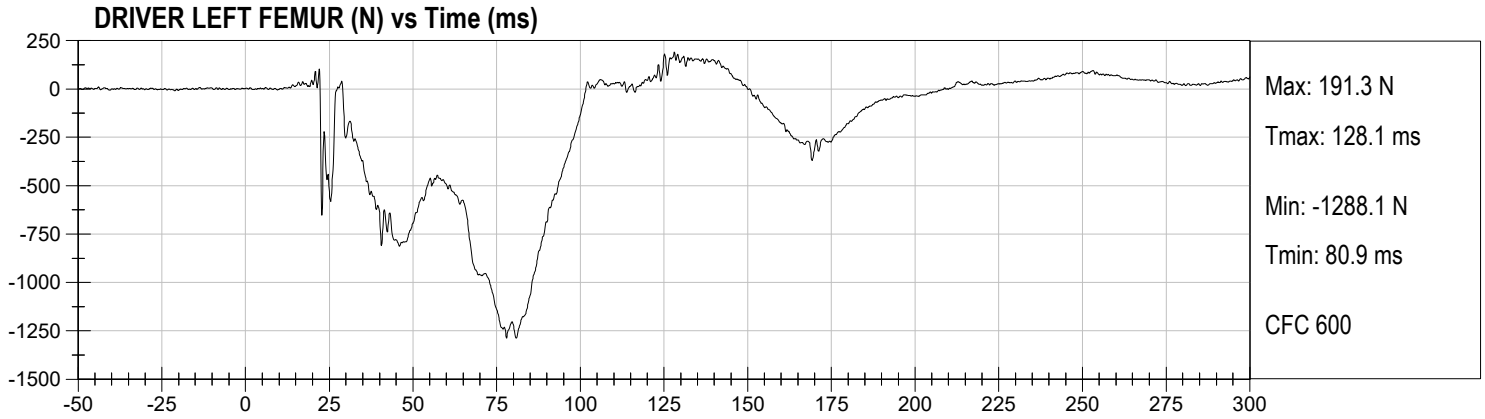


**DRIVER CHEST Resultant (g) vs Time (ms)**

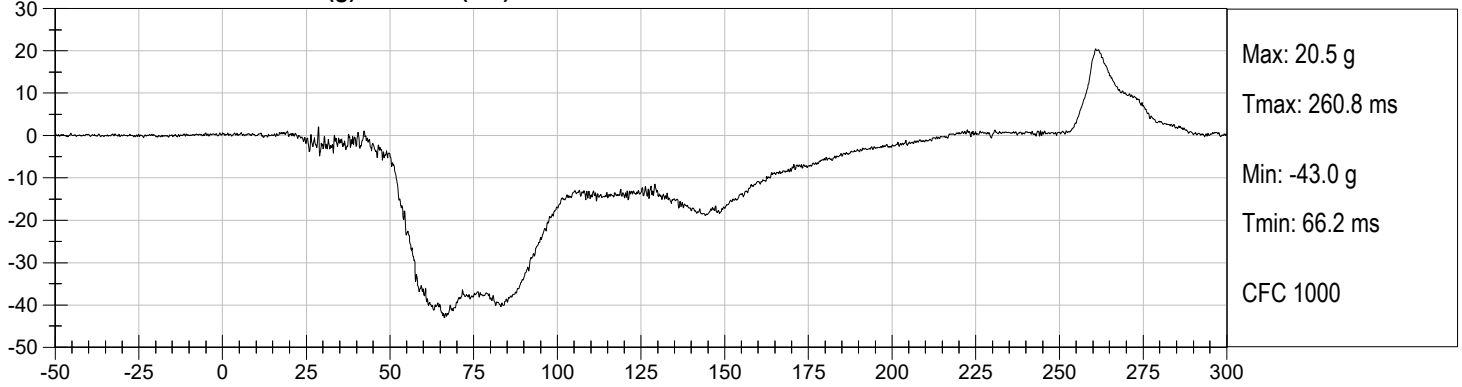




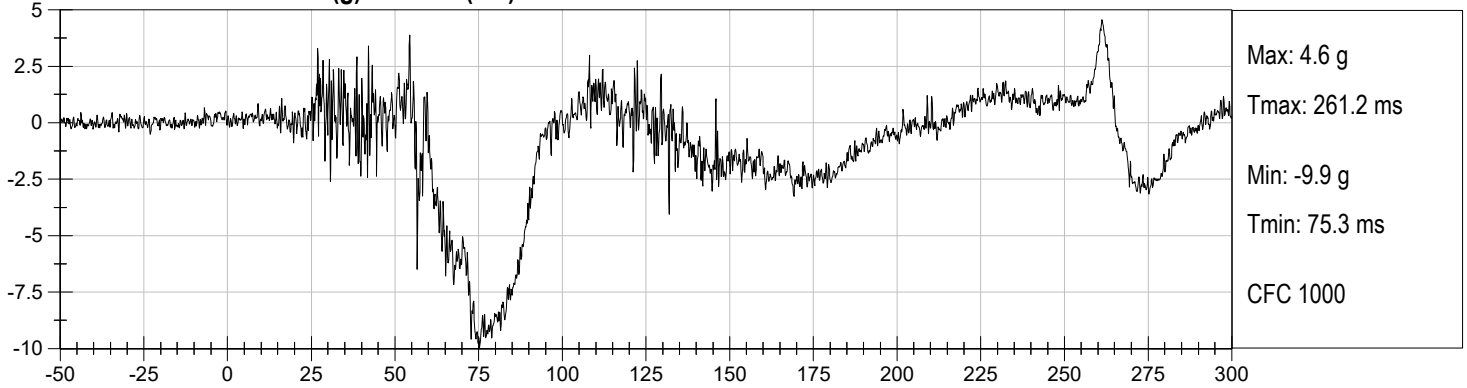




PASSENGER HEAD X (g) vs Time (ms)



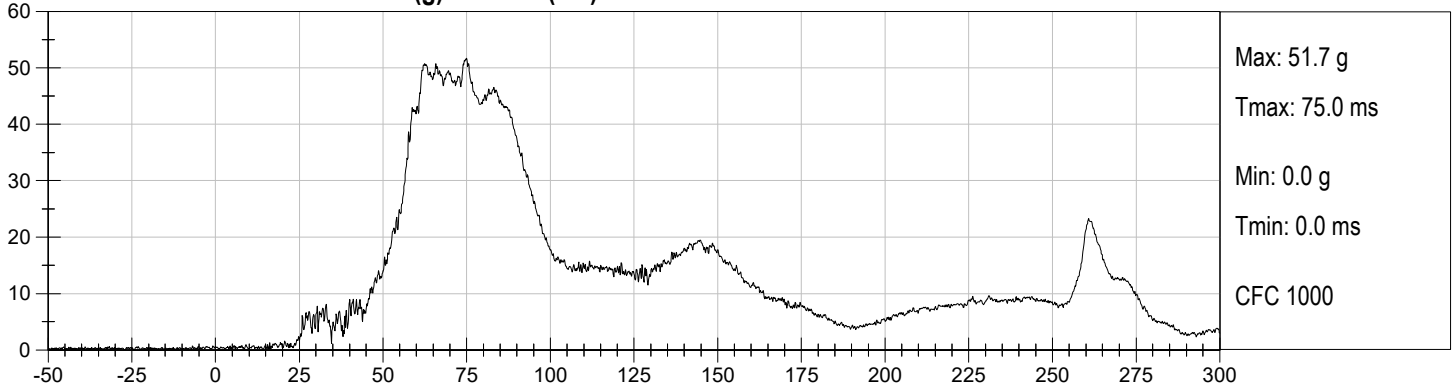
PASSENGER HEAD Y (g) vs Time (ms)



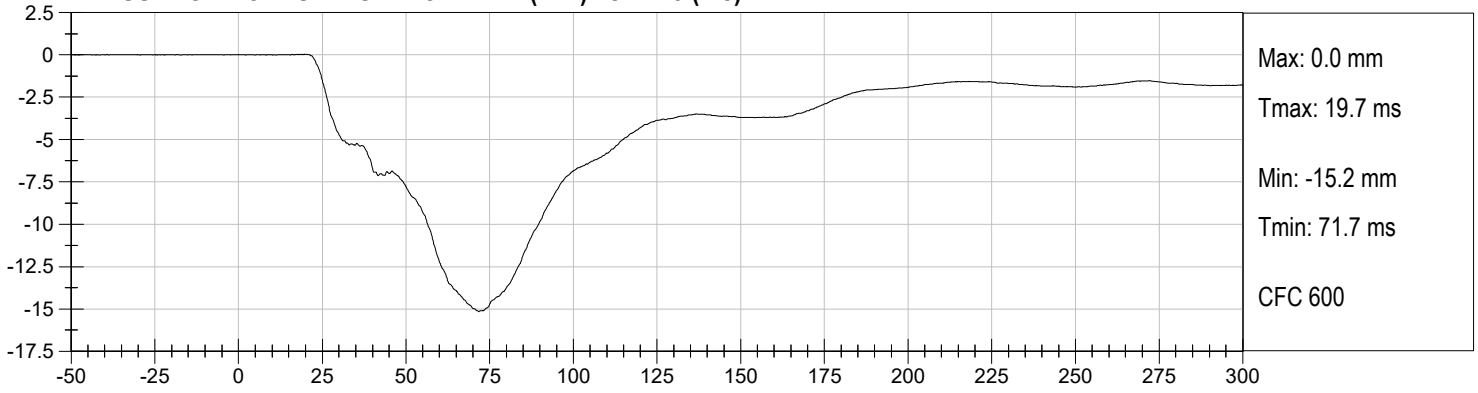
PASSENGER HEAD Z (g) vs Time (ms)



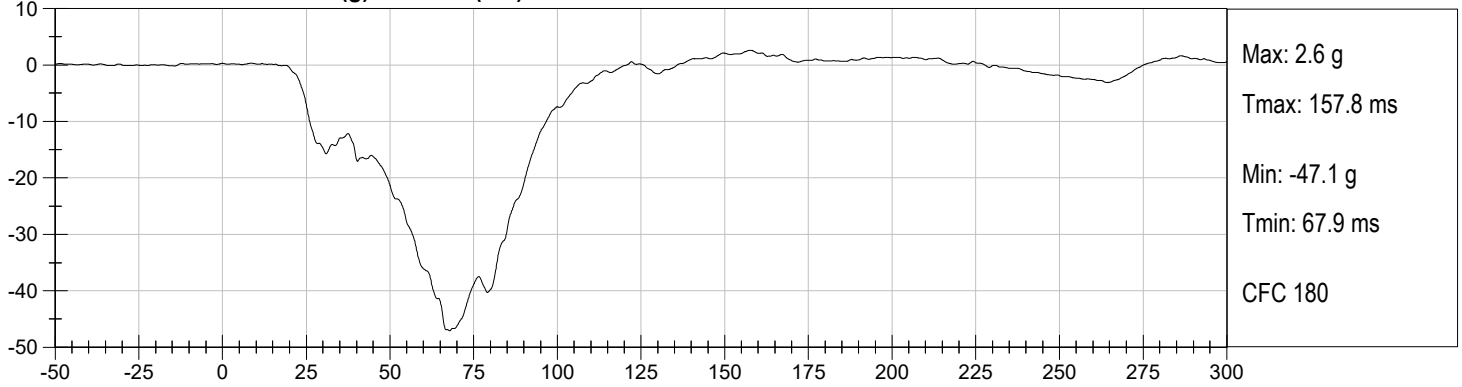
PASSENGER HEAD Resultant (g) vs Time (ms)



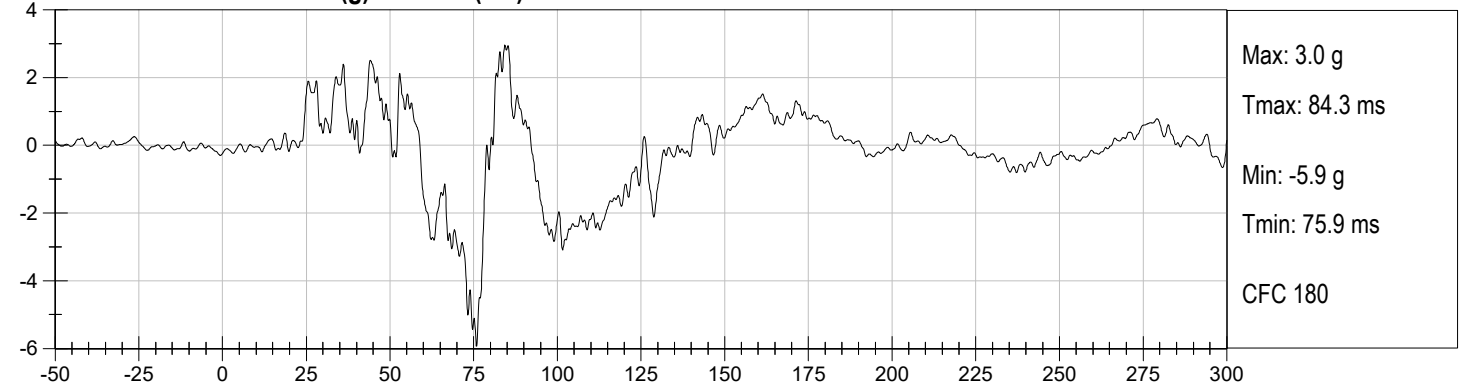
PASSENGER CHEST DISPLACEMENT (mm) vs Time (ms)



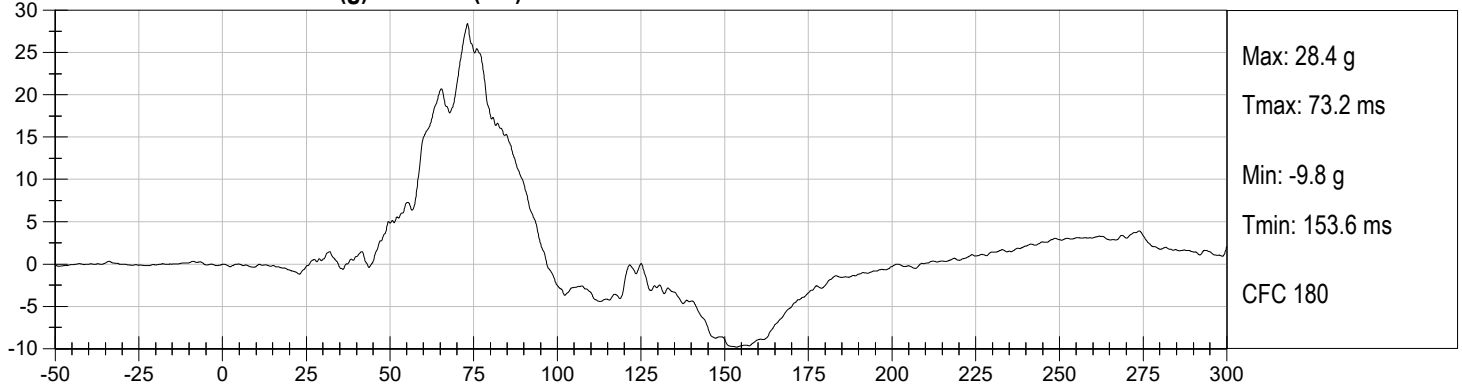
**PASSENGER CHEST X (g) vs Time (ms)**



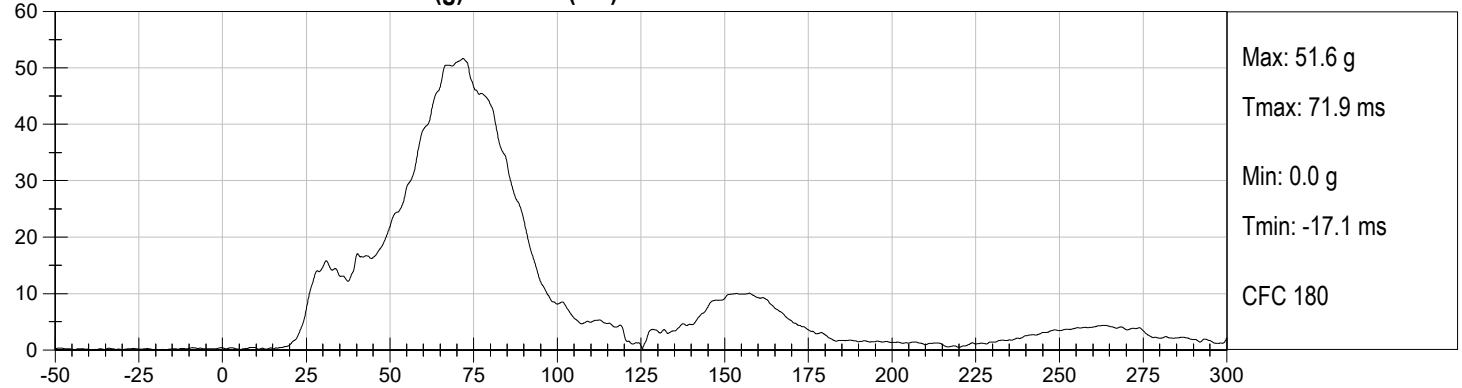
**PASSENGER CHEST Y (g) vs Time (ms)**

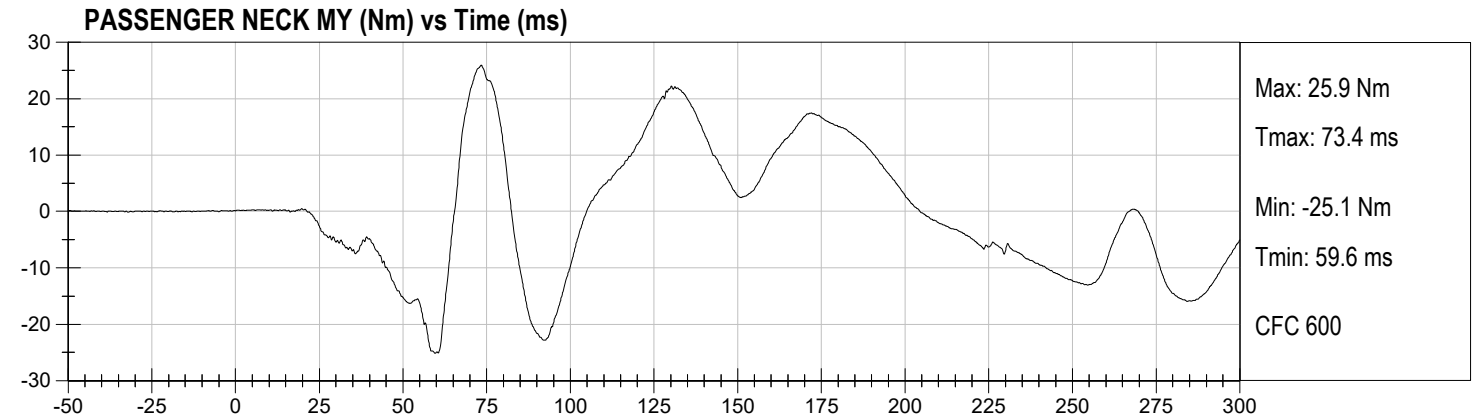
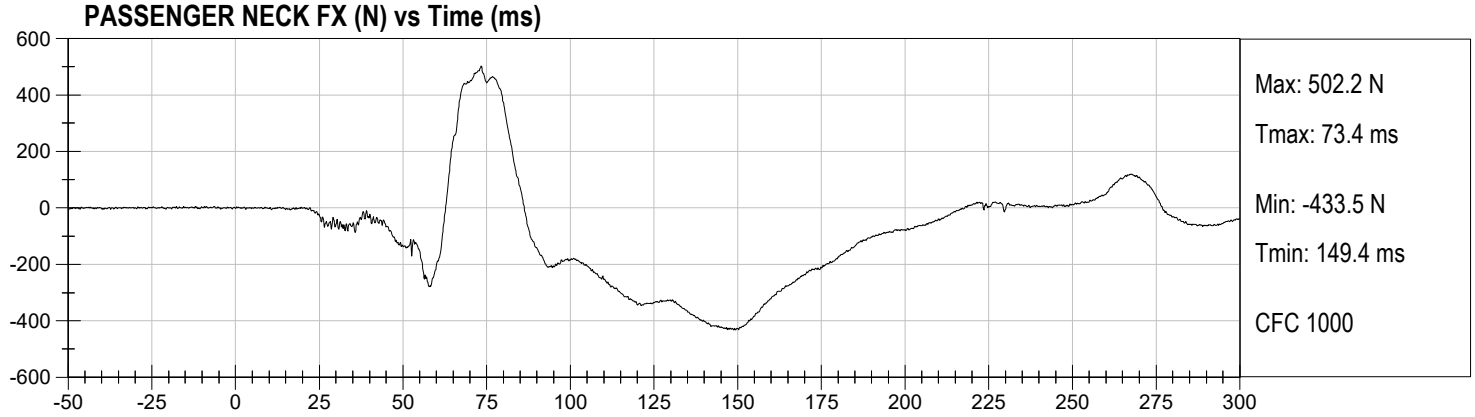


**PASSENGER CHEST Z (g) vs Time (ms)**

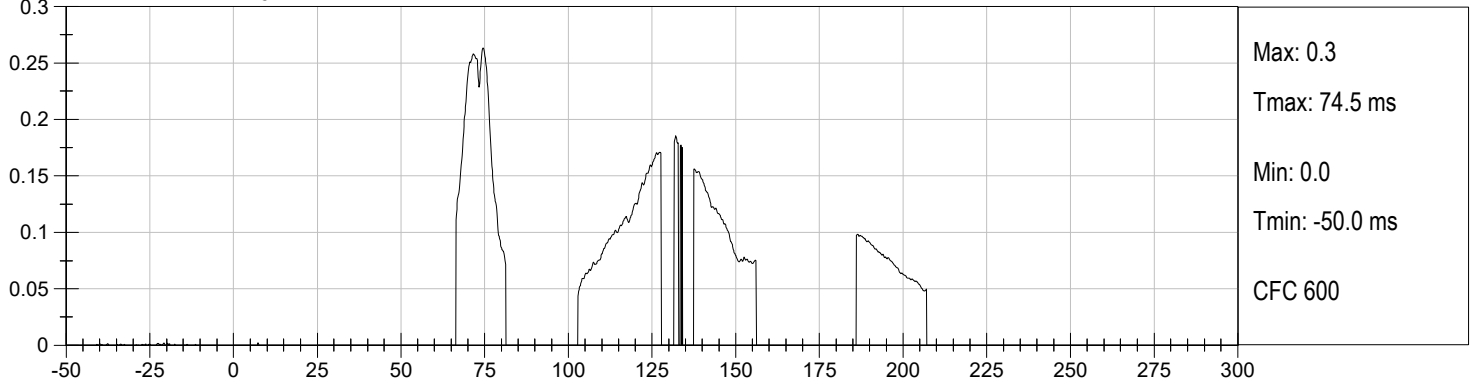


**PASSENGER CHEST Resultant (g) vs Time (ms)**

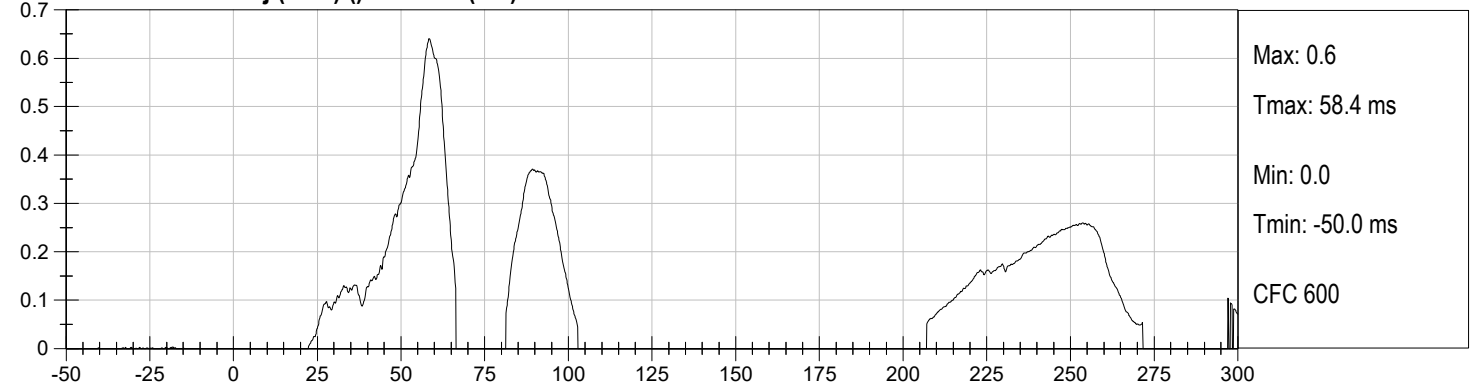




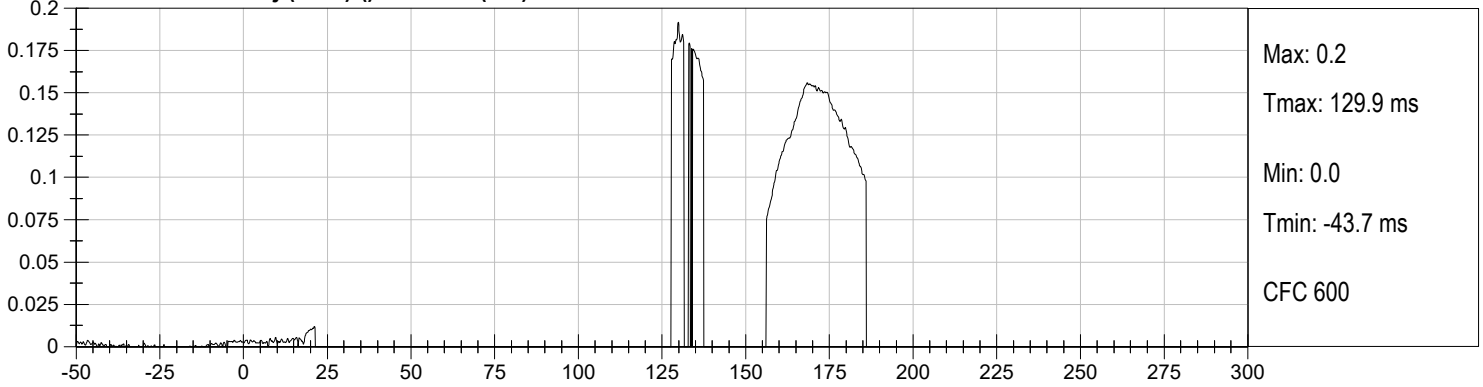
PASSENGER Nij (NTF) () vs Time (ms)



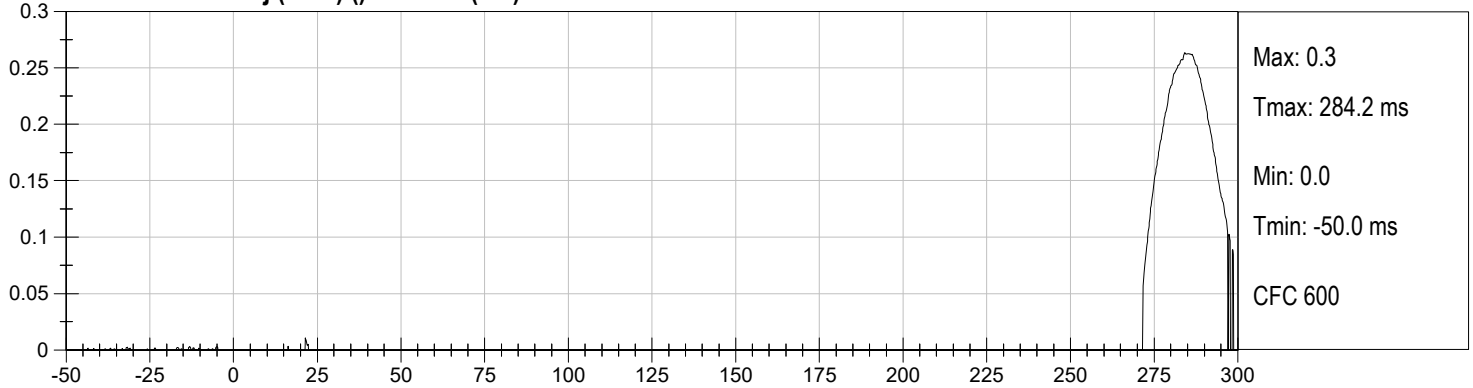
PASSENGER Nij (NTE) () vs Time (ms)

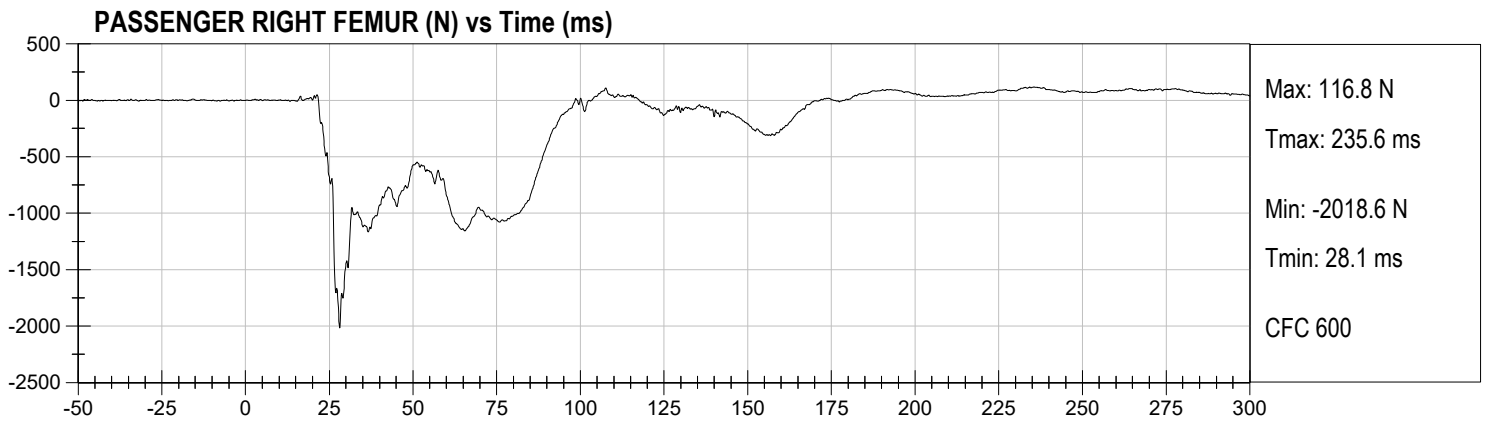
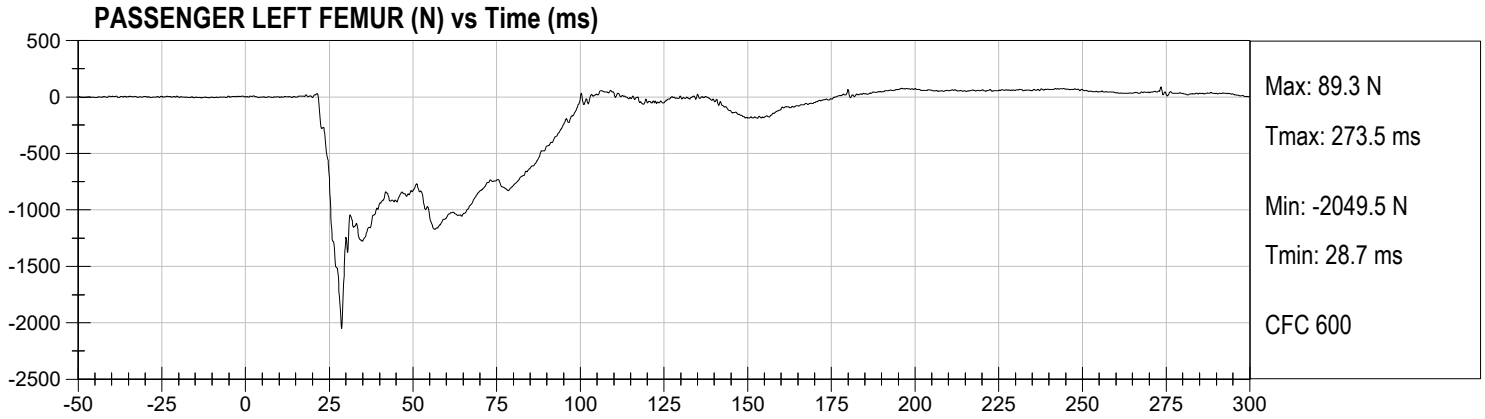


PASSENGER Nij (NCF) () vs Time (ms)



PASSENGER Nij (NCE) () vs Time (ms)





**APPENDIX C**  
**DUMMY QUALIFICATION AND PERFORMANCE VERIFICATION**

**QUALIFICATION TEST RESULTS**

**PRE-TEST**

**HYBRID III 50<sup>TH</sup> PERCENTILE MALE - DRIVER ATD**

**Hybrid III 50th, External Measurements  
SN: 064**

HYBRID III, PART 572, SUBPART E EXTERNAL DIMENSIONS				
DIMENSION	DESCRIPTION	DETAILS	ASSEMBLY DIMENSION (inches)	ACTUAL MEASUREMENT
A	TOTAL SITTING HEIGHT	Seat surface to highest point on top of the head.	34.6-35.0	34.71
B	SHOULDER PIVOT HEIGHT	Centerline of shoulder pivot bolt to the seat surface.	19.9-20.5	20.31
C	H-POINT HEIGHT	Reference	3.3-3.5	3.38
D	H-POINT LOCATION FROM BACKLINE	Reference	5.3-5.5	5.40
E	SHOULDER PIVOT FROM BACKLINE	Center of the shoulder clevis to the rear vertical surface of the fixture.	3.3-3.7	3.46
F	THIGH CLEARANCE	Measured at the highest point on the upper femur segment.	5.5-6.1	6.09
G	BACK OF ELBOW TO WRIST PIVOT	back of the elbow flesh to the wrist pivot in line with the elbow and wrist pivots	11.4-12.0	11.48
H	HEAD BACK TO BACKLINE	Back of Skull cap skin to seat rear vertical surface (Reference)	1.6-1.8	1.75
I	SHOULDER TO- ELBOW LENGTH	Measure from the highest point on top of the shoulder clevis to the lowest part of the flesh on the elbow in line with the elbow pivot bolt.	13.0-13.6	13.08
J	ELBOW REST HEIGHT	Measure from the flesh below the elbow pivot bolt to the seat surface.	7.5-8.3	8.13
K	BUTTOCK TO KNEE LENGTH	The forward most part of the knee flesh to the rear vertical surface of the fixture.	22.8-23.8	23.49
L	POPLITEAL HEIGHT	Seat surface to the plane of the horizontal plane of the bottom of the feet.	16.9-17.9	17.01
M	KNEE PIVOT HEIGHT	Centerline of knee pivot bolt to the horizontal plane of the bottom of the feet.	19.1-19.7	19.22
N	BUTTOCK POPLITEAL LENGTH	The rearmost surface of the lower leg to the same point on the rear surface of the buttocks used for dim. "K".	17.8-18.8	18.20

HYBRID III, SUBPART E EXTERIOR DIMENSIONS, continued				
DIMENSION	DESCRIPTION	DETAILS		ACTUAL MEASUREMENT
O	CHEST DEPTH WITHOUT JACKET	Measured 16.9-17.1 in. above seat surface	8.4-9.0	8.43
P	FOOT LENGTH	Tip of toe to rear of heel	9.9-10.5	10.33
V	SHOULDER BREADTH	Outside edges of right and left shoulder clevises	16.3-17.2	16.65
W	FOOT BREADTH	The widest part of the foot	3.6-4.2	3.94
Y	CHEST CIRCUMFERENCE (WITH CHEST JACKET)	Measured 16.9-17.1 in. above seat surface	38.2-39.4	39.25
Z	WAIST CIRCUMFERENCE	Measured 8.9-9.1 in. above seat surface	32.9-34.1	33.89
AA	REFERENCE LOCATION FOR MEASUREMENT OF CHEST CIRCUMFERENCE	Reference	16.9-17.1	17.00
BB	REFERENCE LOCATION FOR MEASUREMENT OF WAIST CIRCUMFERENCE	Reference	8.9-9.1	9.00

**NOTE:** THE H-POINT IS LOCATED 1.83 INCHES FORWARD AND 2.57 INCHES DOWN FROM THE CENTER OF THE PELVIS ANGLE REFERENCE HOLE.

**MGA RESEARCH CORPORATION**  
**HEAD DROP TEST**  
**HYBRID III 50TH PERCENTILE MALE**

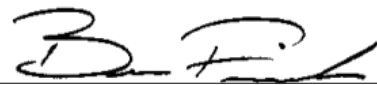
ATD Serial No: 064

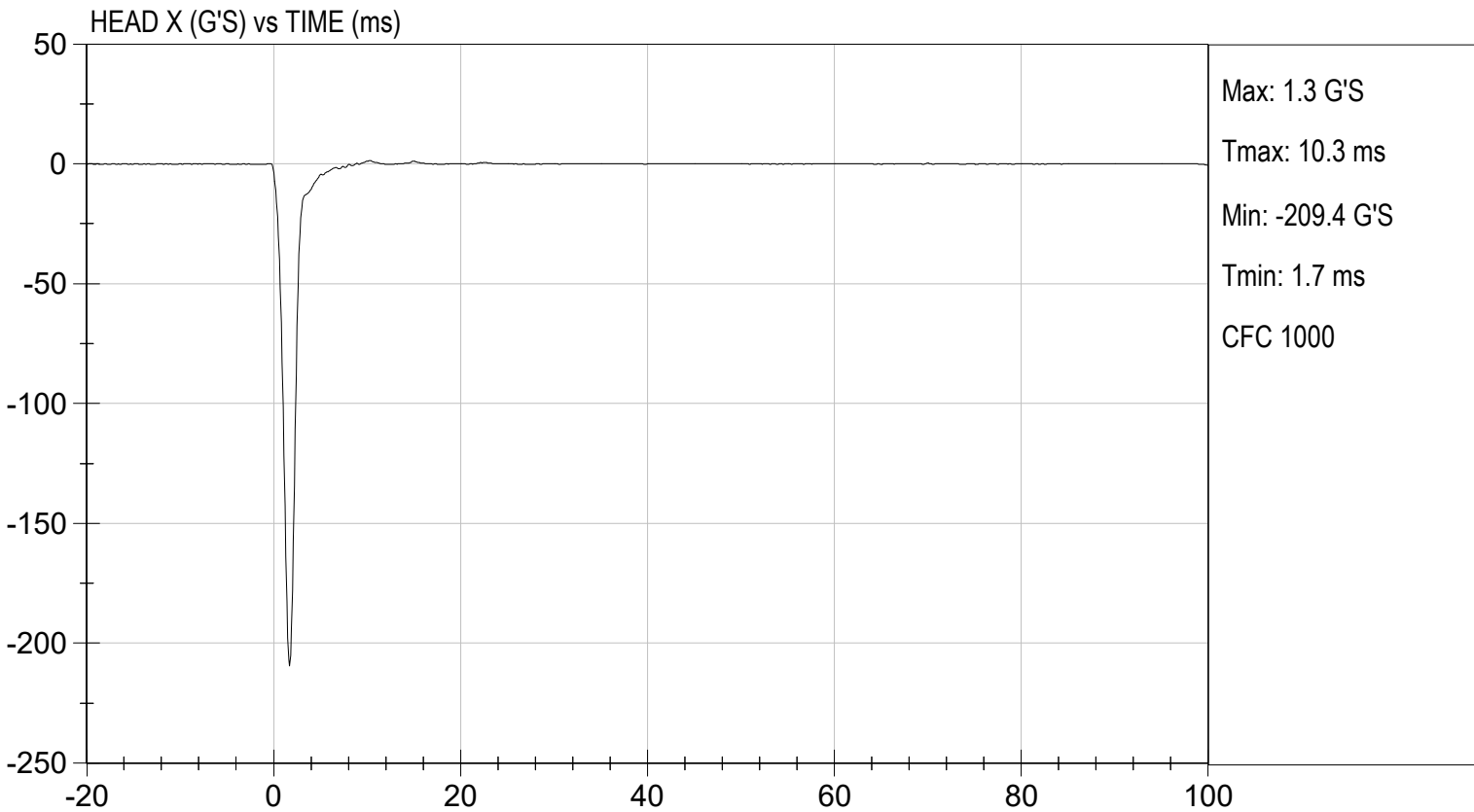
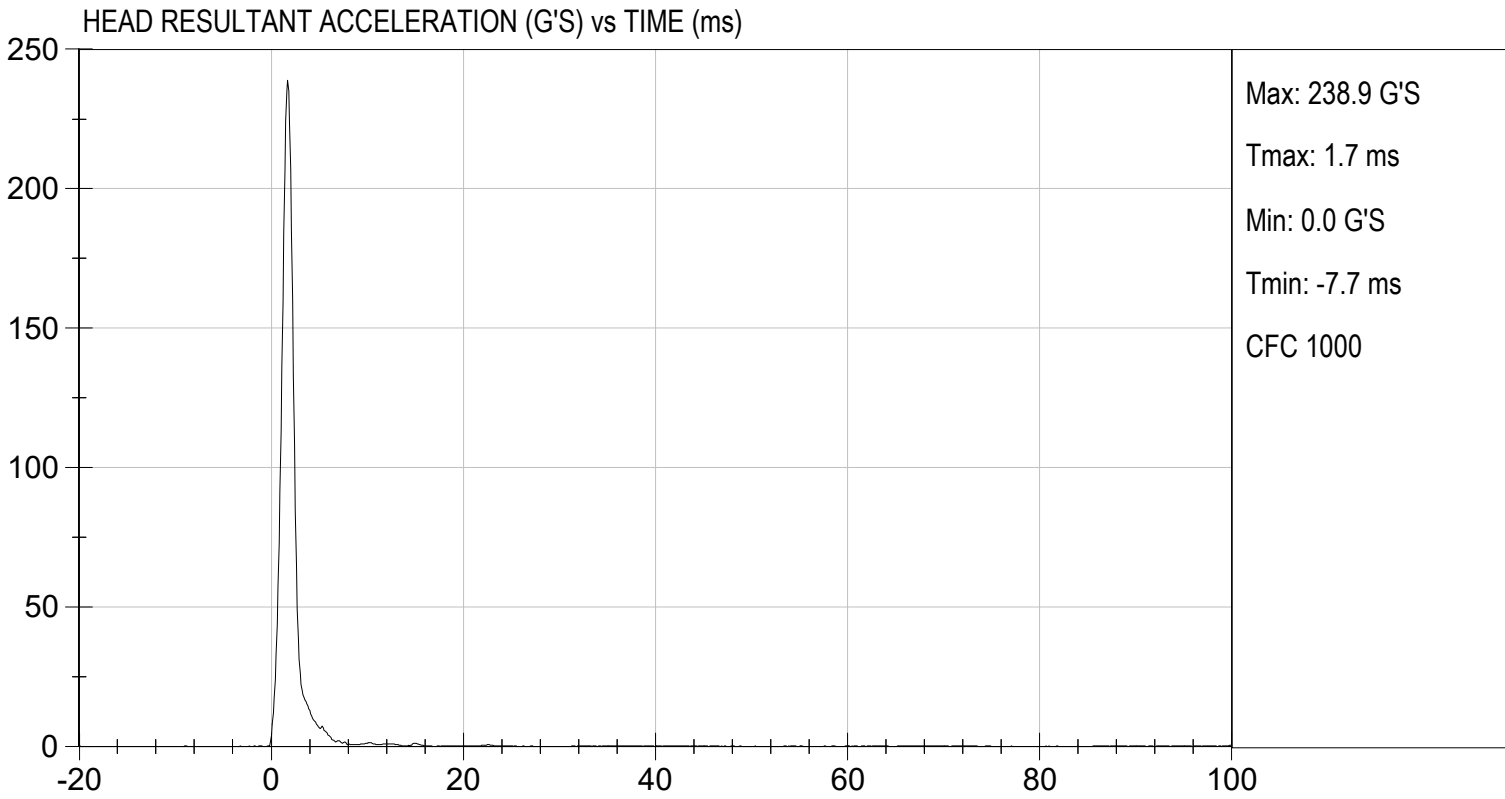
Test ID: D242241

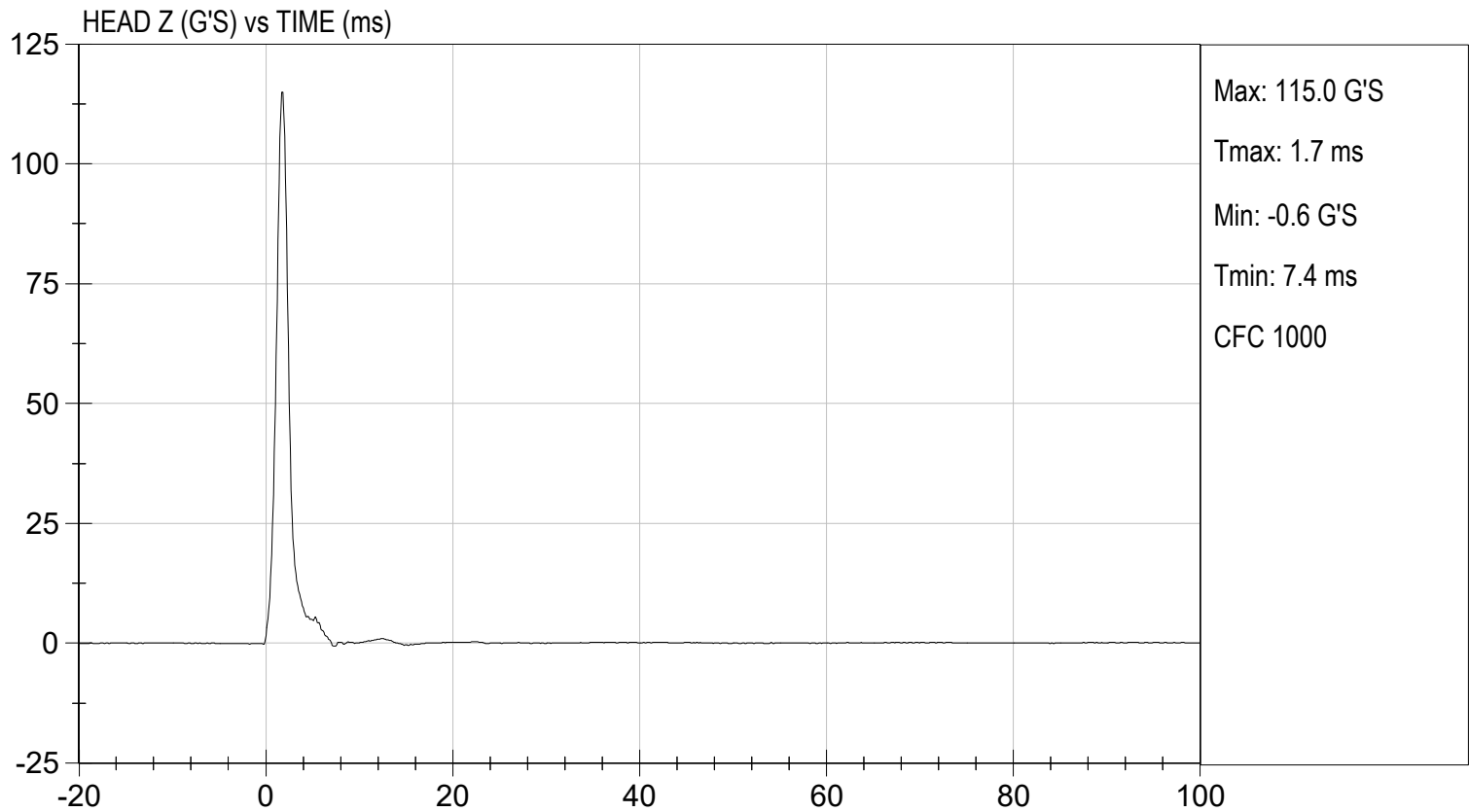
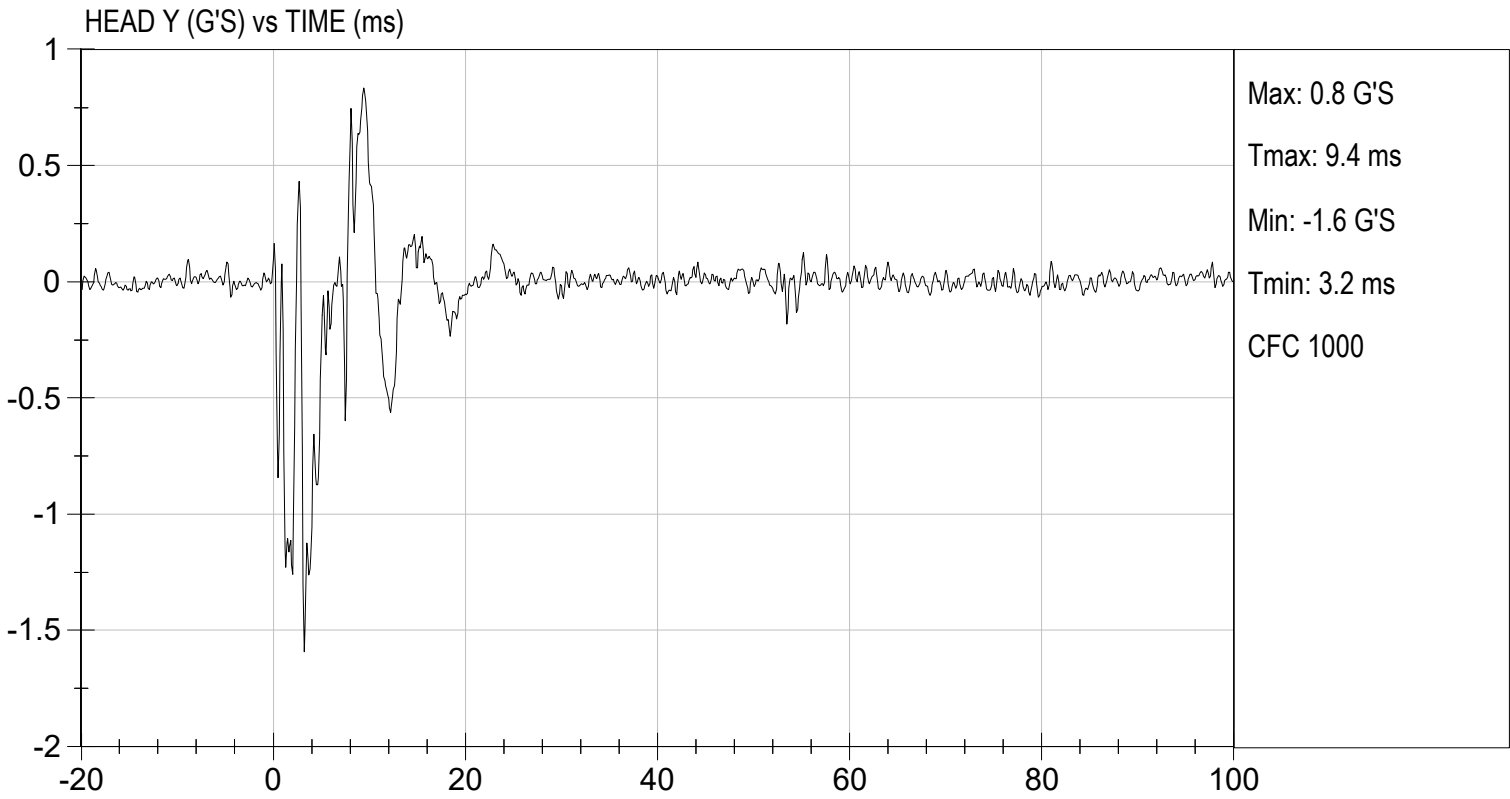
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	49	Pass
Peak Resultant Acceleration	G's	225 to 275	239	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-1.6	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

  
 Laboratory Technician

08/30/2024  
 Test Date

  
 Approved By





**MGA RESEARCH CORPORATION**  
**NECK FLEXION TEST**  
**HYBRID III 50TH PERCENTILE MALE**

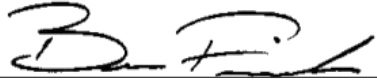
ATD Serial No: 064

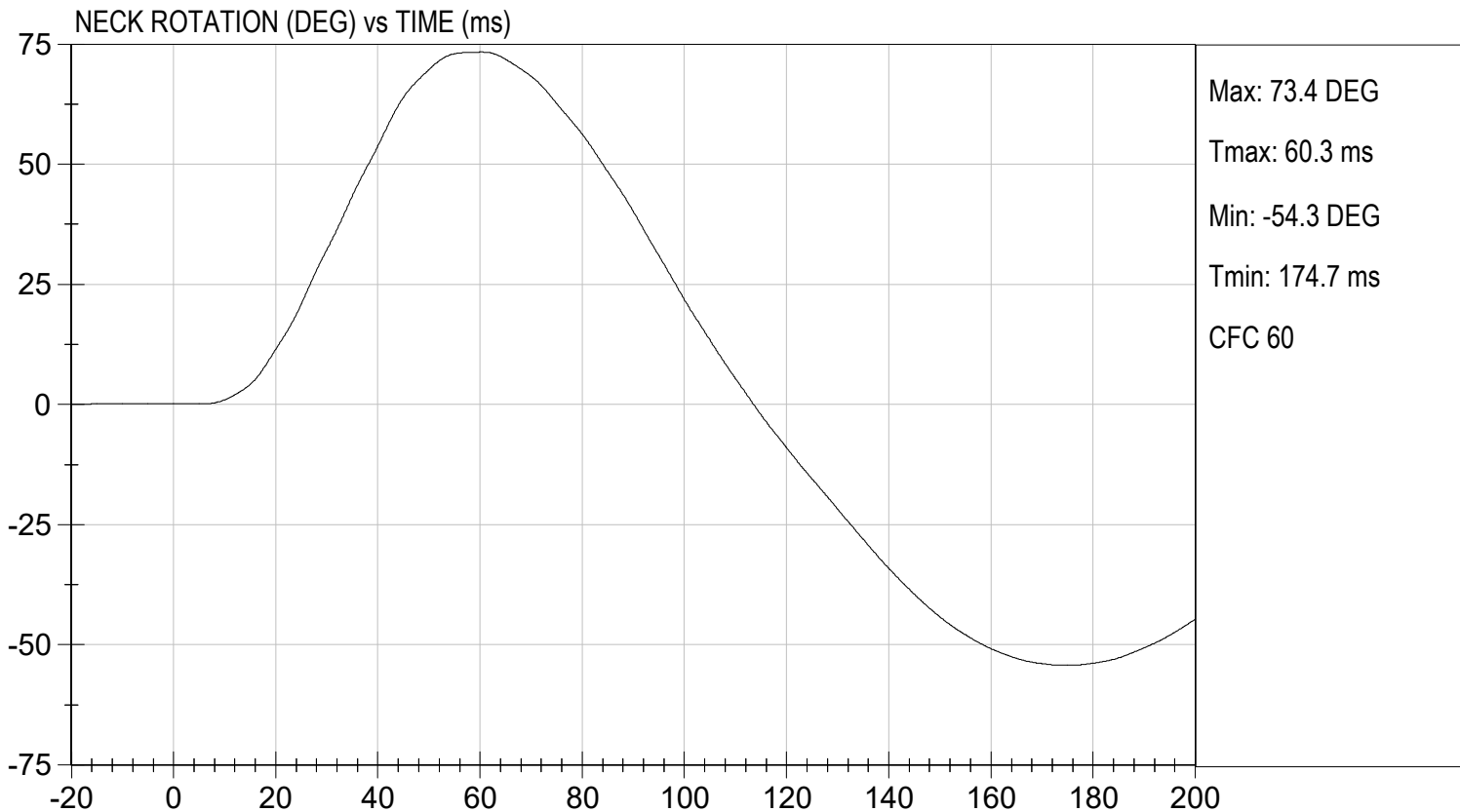
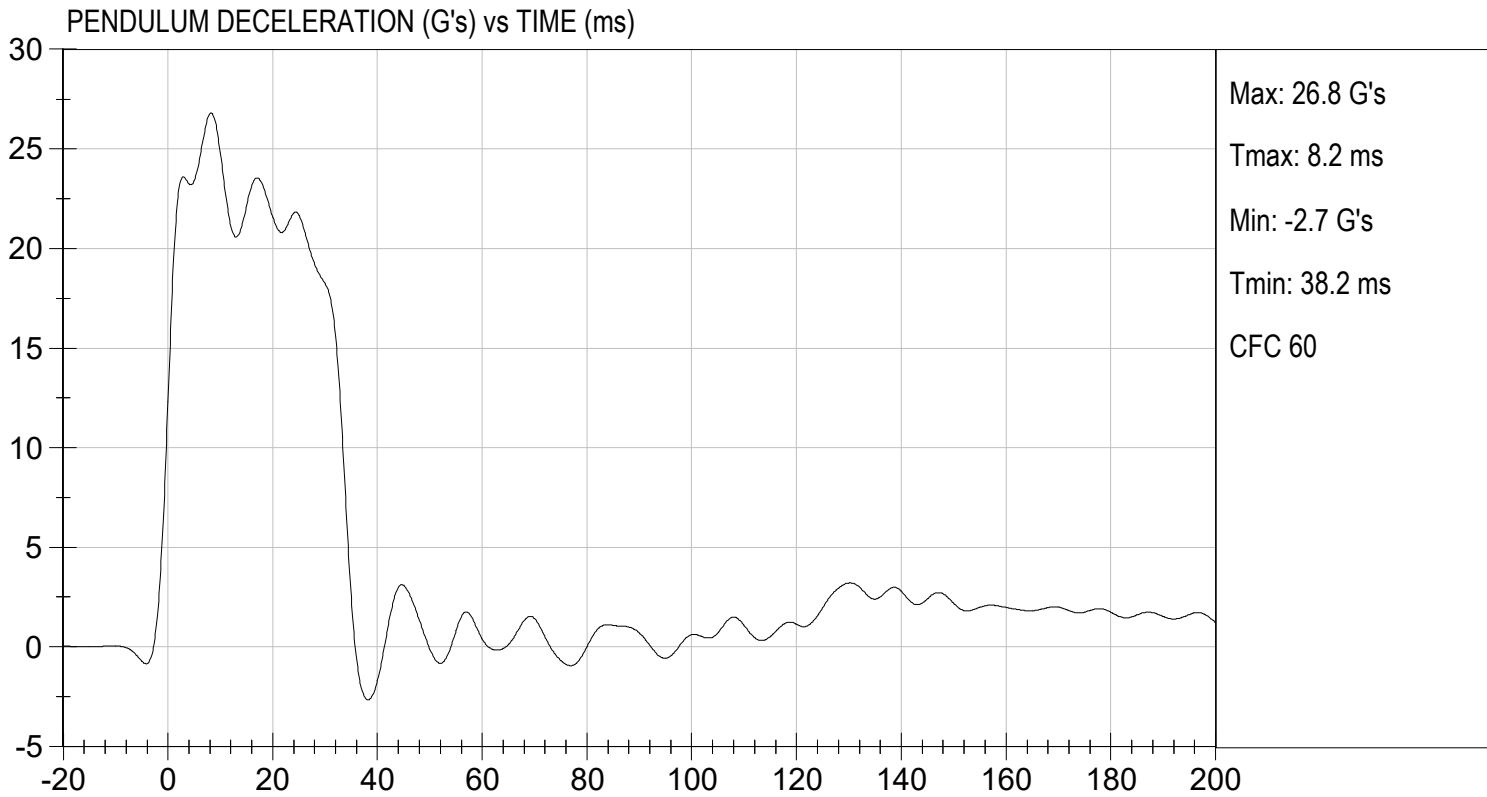
Test I.D.: D242242

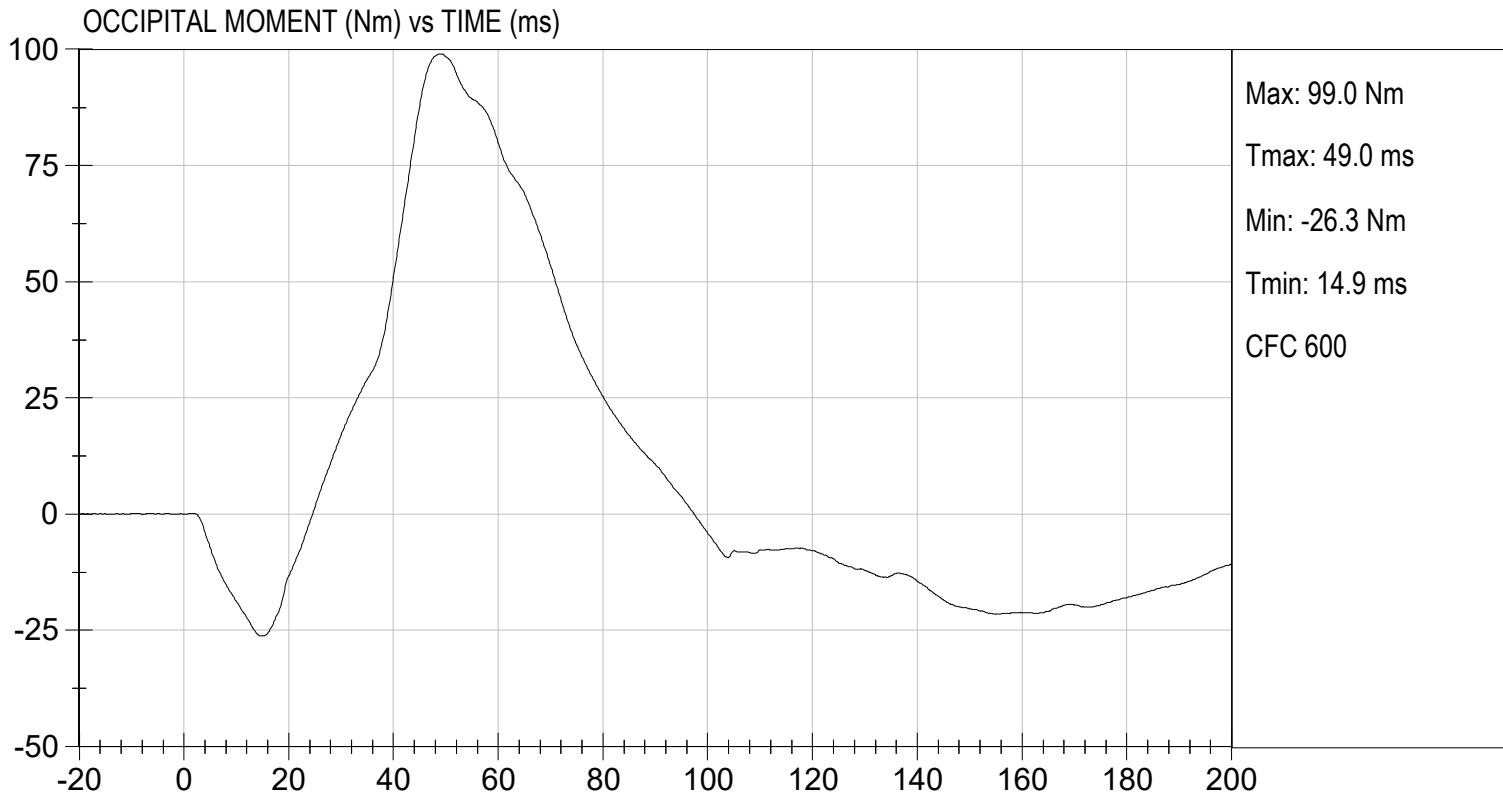
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	47	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.08	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	24.79	Pass
	20 ms	G's	17.60 to 22.60	21.58	Pass
	30 ms	G's	12.50 to 18.50	18.24	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	18.2	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	34.5	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	73.4	Pass
	Time	ms	57.0 to 64.0	60.3	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	113.7	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	99.0	Pass
	Time	ms	47.0 to 58.0	49.0	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	97.6	Pass
Overall Test Results					Pass

  
 Laboratory Technician

08/30/2024  
 Test Date

  
 Approved By





**MGA RESEARCH CORPORATION**  
**NECK EXTENSION TEST**  
**HYBRID III 50TH PERCENTILE MALE**

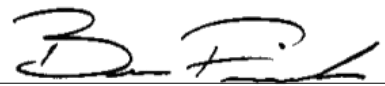
ATD Serial No: 064

Test I.D.: D242243

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	47	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.16	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	20.65	Pass
	20 ms	G's	14.00 to 19.00	17.78	Pass
	30 ms	G's	11.00 to 16.00	14.94	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	16.4	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	40.4	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	99.5	Pass
	Time	ms	72.0 to 82.0	74.3	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	154.5	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-66.6	Pass
	Time	ms	65.0 to 79.0	70.8	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	140.9	Pass
Overall Test Results					Pass

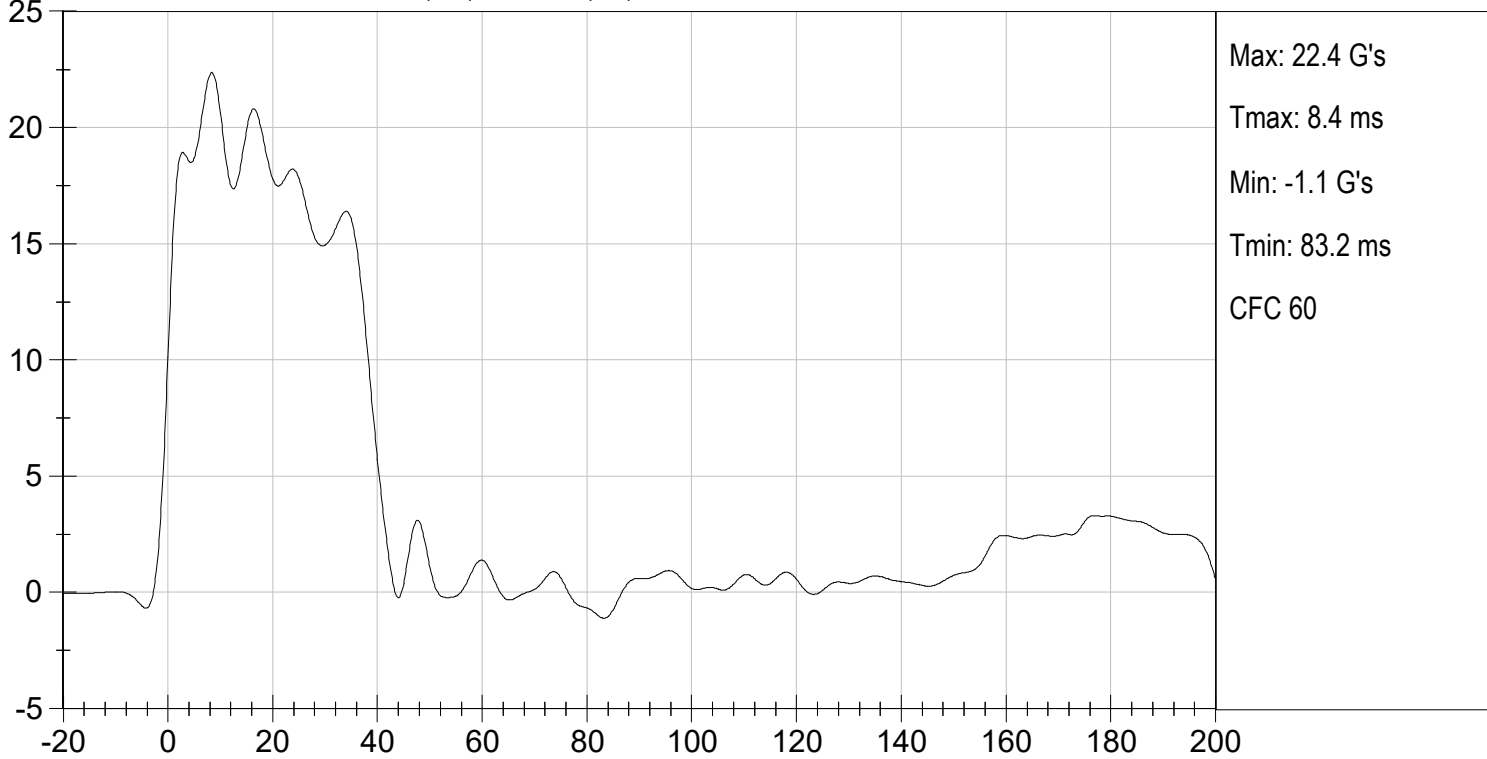
  
 Laboratory Technician

08/30/2024  
 Test Date

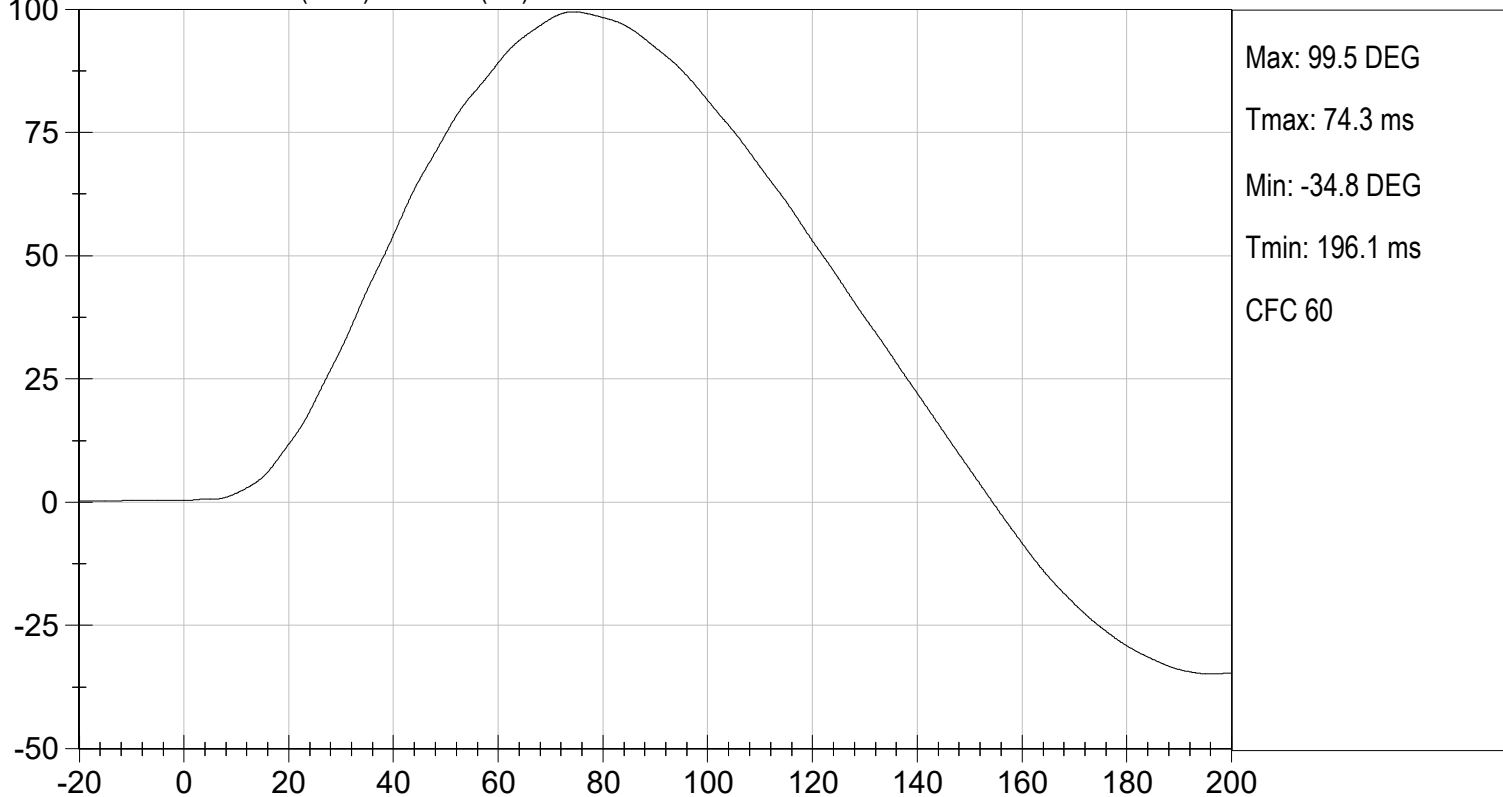
  
 Approved By

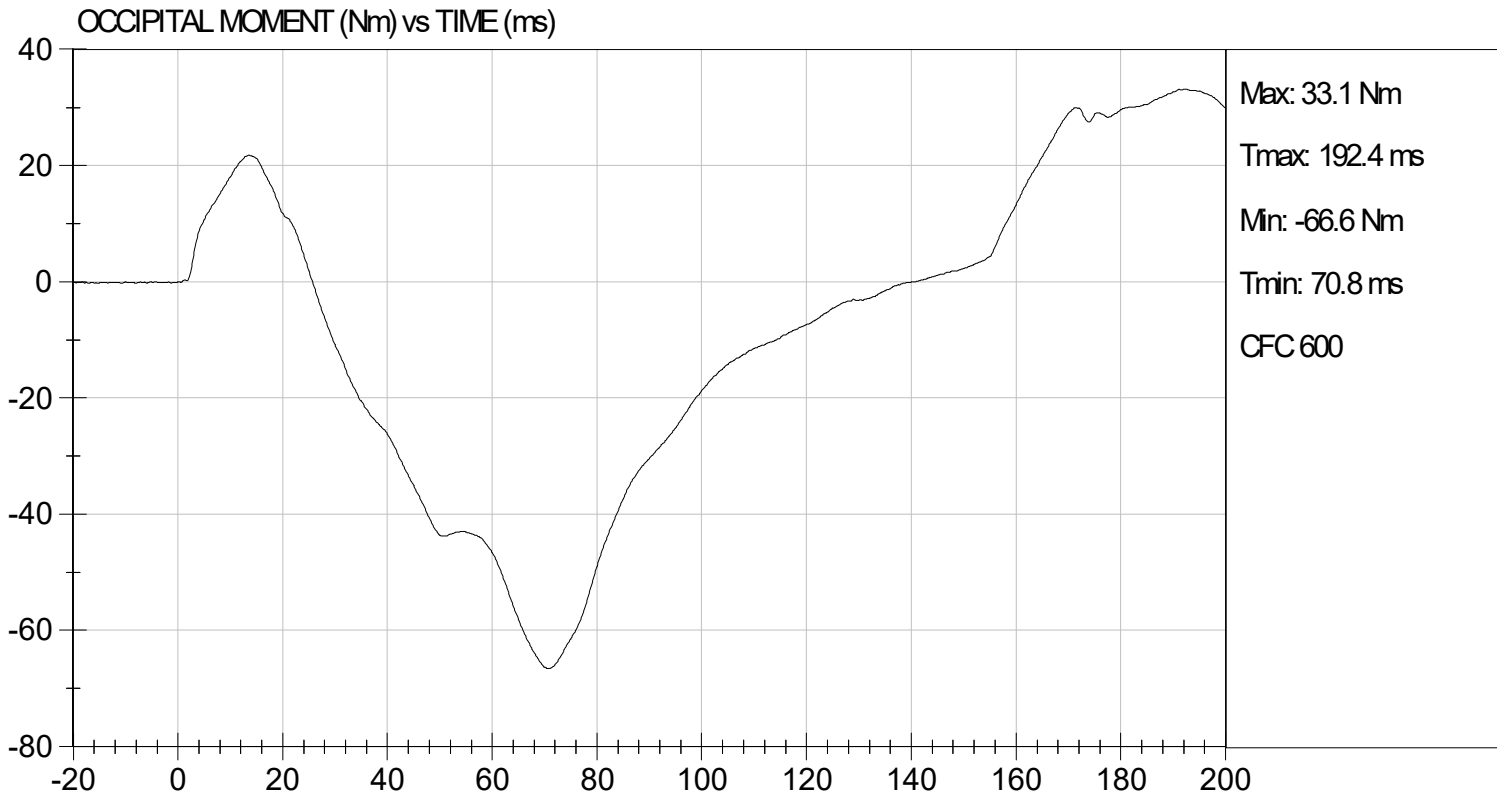


PENDULUM DECELERATION (G's) vs TIME (ms)



NECK ROTATION (DEG) vs TIME (ms)





**MGA RESEARCH CORPORATION**  
**THORAX IMPACT**  
**HYBRID III 50TH PERCENTILE MALE**

ATD Serial No: 064

Test I.D: D242244

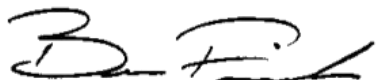
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	50	Pass
Probe Velocity	m/s	6.58 to 6.82	6.68	Pass
Peak Probe Force	N	5159 to 5893	5,308	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	7.07	Pass
Internal Hysteresis	%	69 to 85	71	Pass
Overall Test Results				Pass



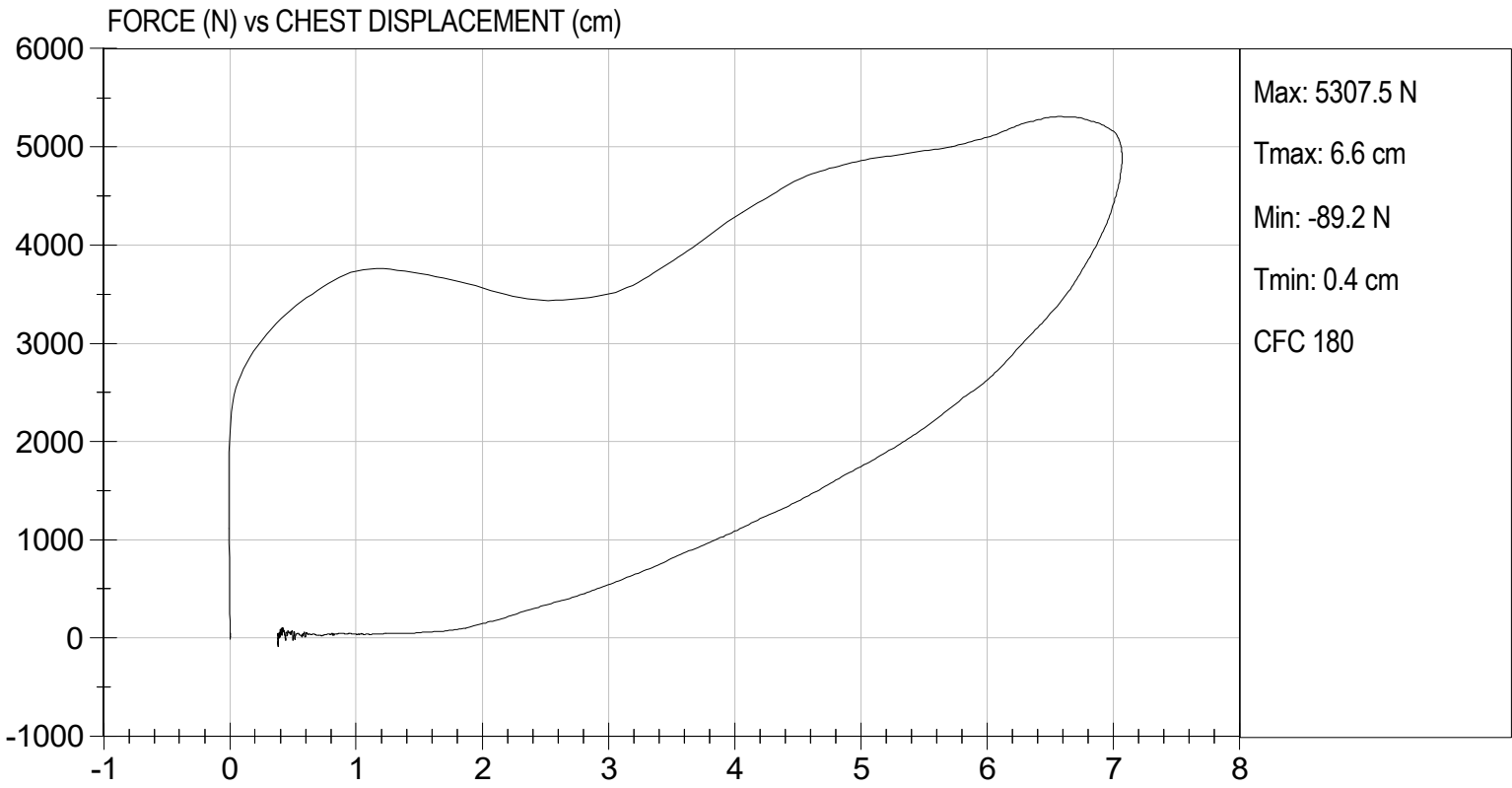
Laboratory Technician

08/30/2024

Test Date



Approved By



**MGA RESEARCH CORPORATION**  
**RIGHT KNEE IMPACT TEST**  
**HYBRID III 50TH PERCENTILE MALE**

ATD Serial No: 064

Test I.D.: D242245

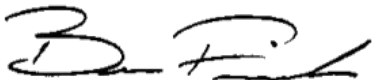
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	47	Pass
Probe Velocity	m/s	2.07 to 2.13	2.10	Pass
Peak Probe Force	N	4715 to 5782	4,921	Pass
Overall Test Results				Pass



Laboratory Technician

08/30/2024

Test Date

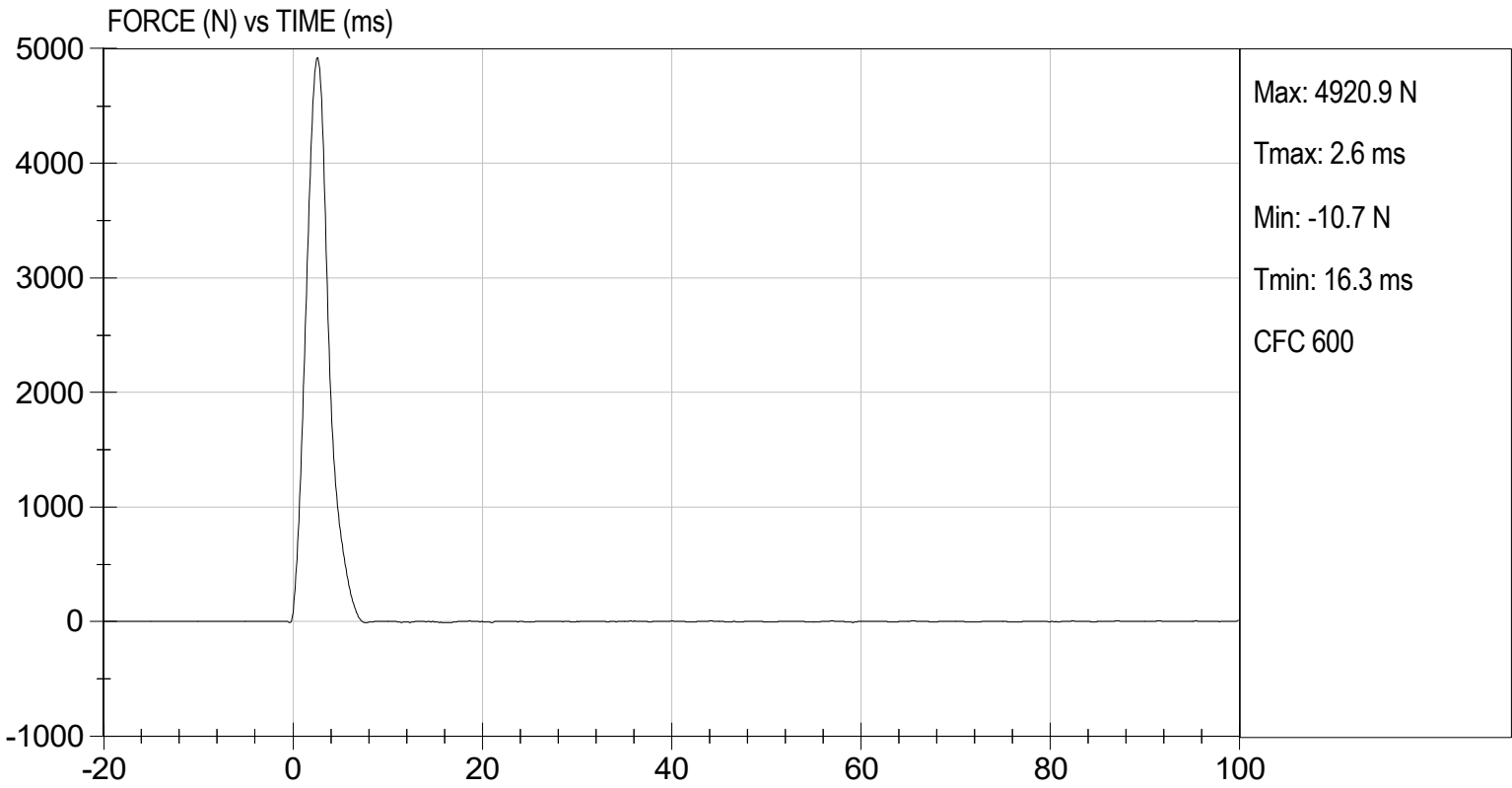


Approved By



TEST DESC: RIGHT KNEE  
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 08/30/2024  
TEST #: D242245



**MGA RESEARCH CORPORATION**  
**LEFT KNEE IMPACT TEST**  
**HYBRID III 50TH PERCENTILE MALE**

ATD Serial No: 064

Test I.D: D242246

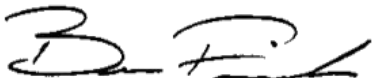
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	47	Pass
Probe Velocity	m/s	2.07 to 2.13	2.10	Pass
Peak Probe Force	N	4715 to 5782	4,842	Pass
			Overall Test Results	Pass



Laboratory Technician

08/30/2024

Test Date

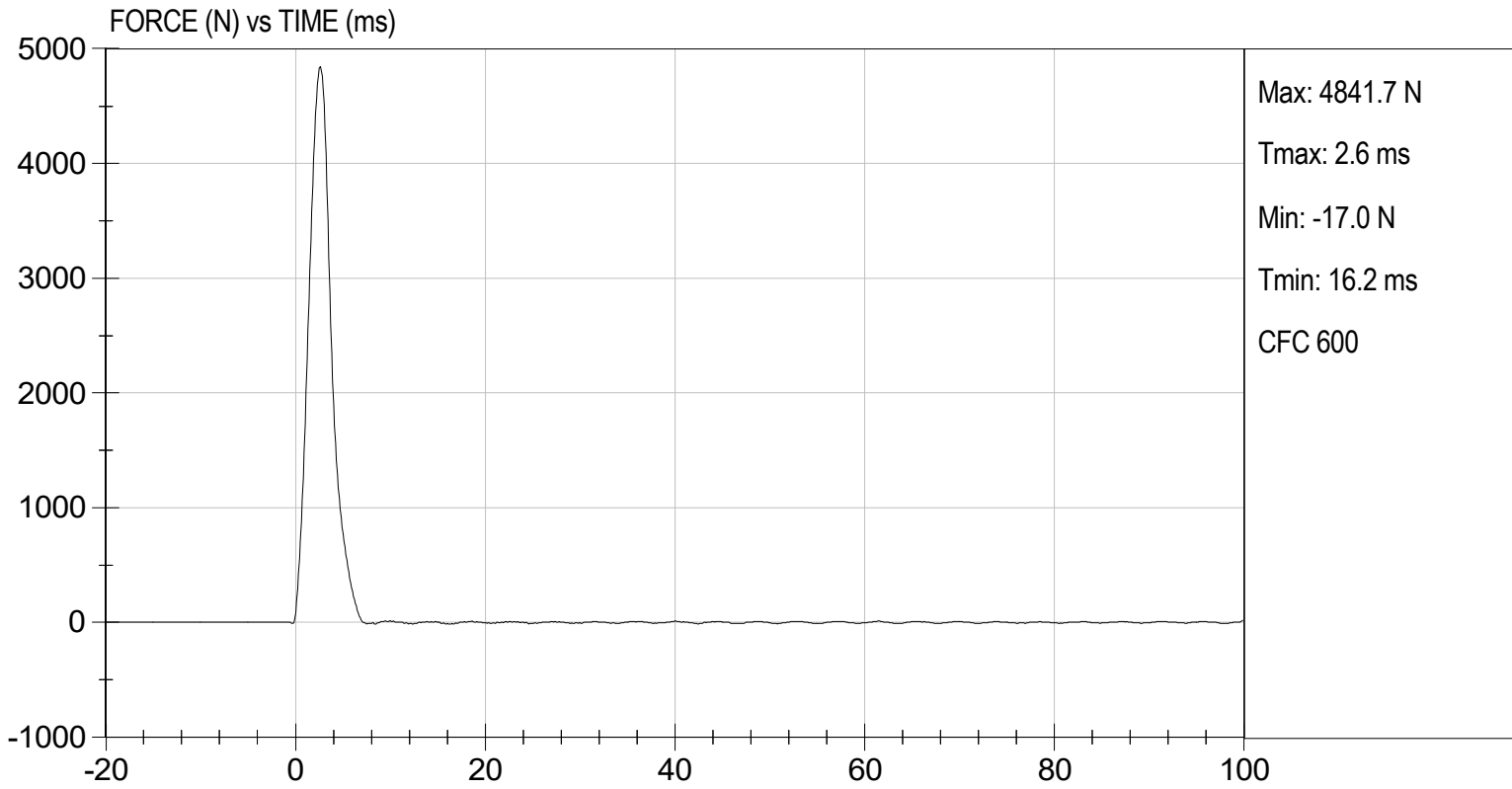


Approved By



TEST DESC: LEFT KNEE  
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 08/30/2024  
TEST #: D242246



**MGA RESEARCH CORPORATION**  
**HIP-FEMUR FLEXION TEST**  
**HYBRID III 50TH PERCENTILE MALE**

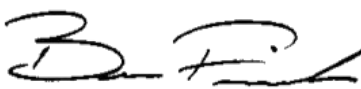
ATD Serial No: 064

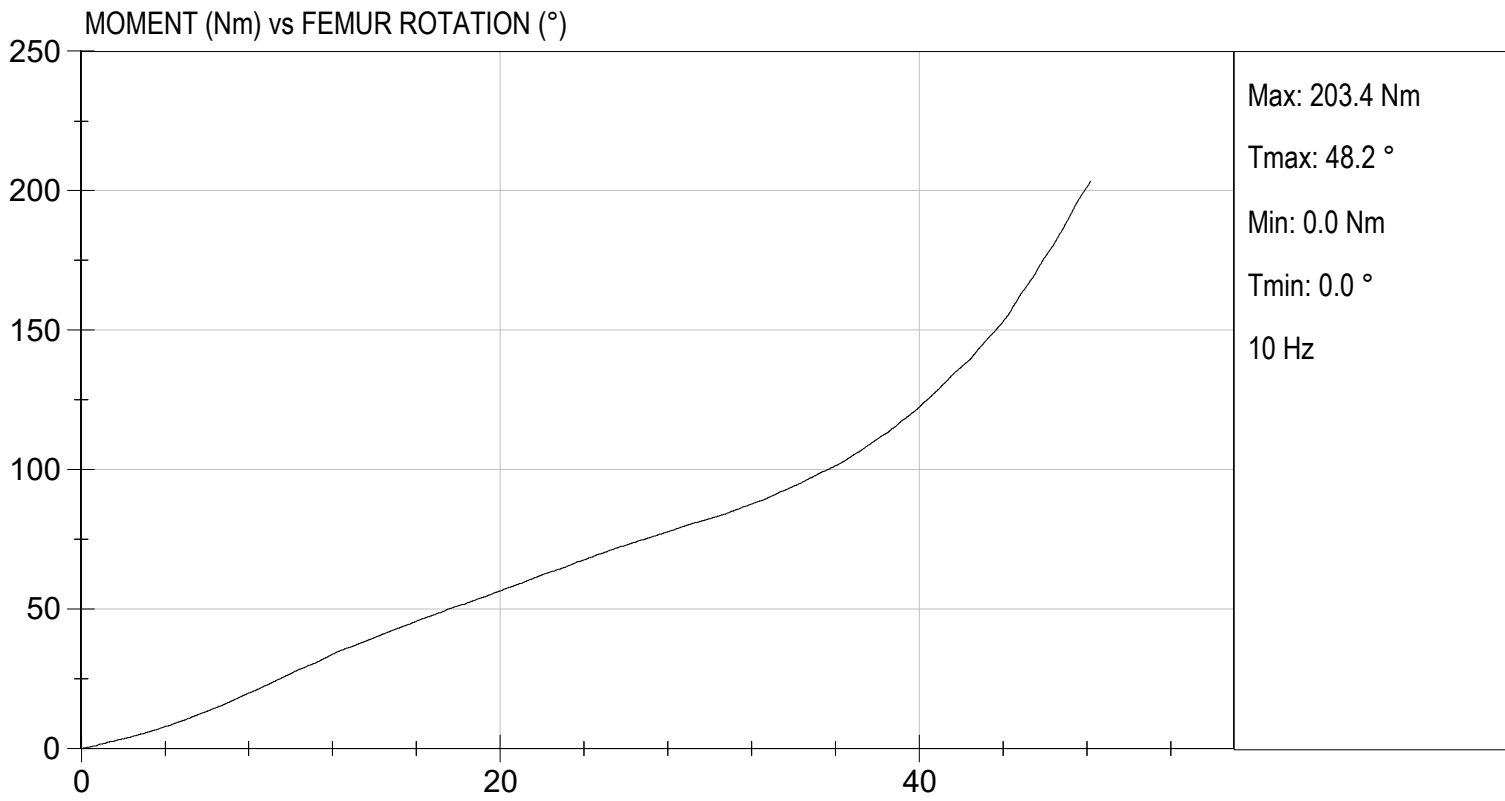
Test I.D: D242240

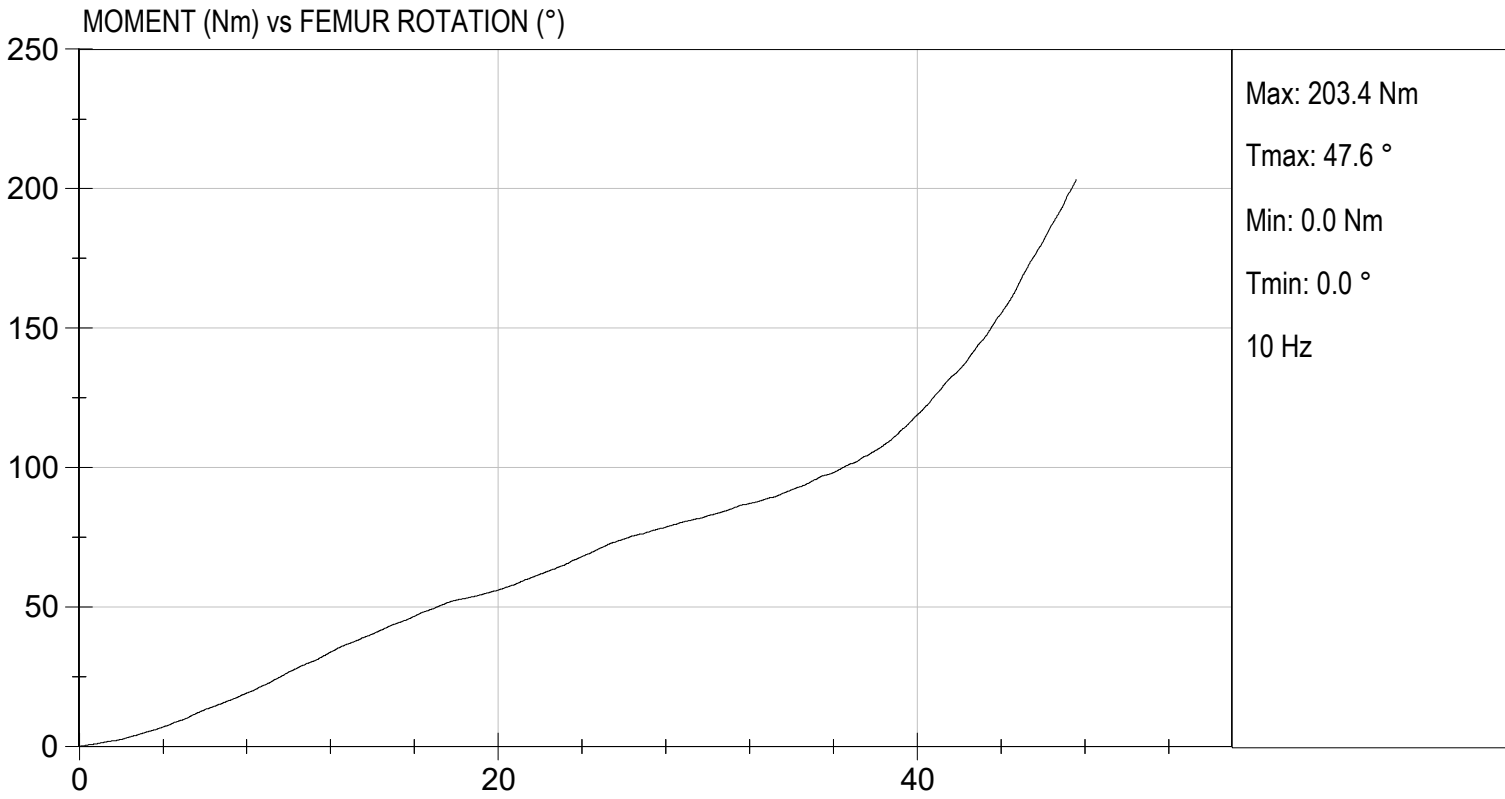
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.3	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	49	49	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.6	6.5	Pass
30 Degrees	Nm	94.9 Nm Max	82.4	82.8	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	48.2	47.6	Pass
Overall Test Results					Pass

  
 Laboratory Technician

08/30/2024  
 Test Date

  
 Approved By





**QUALIFICATION TEST RESULTS**

**POST-TEST**

**HYBRID III 50<sup>TH</sup> PERCENTILE MALE - DRIVER ATD**

**MGA RESEARCH CORPORATION**  
**HEAD DROP TEST**  
**HYBRID III 50TH PERCENTILE MALE**

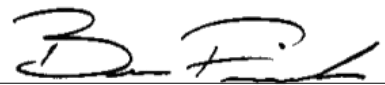
ATD Serial No: 064

Test ID: D242391

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Peak Resultant Acceleration	G's	225 to 275	242	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-1.4	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

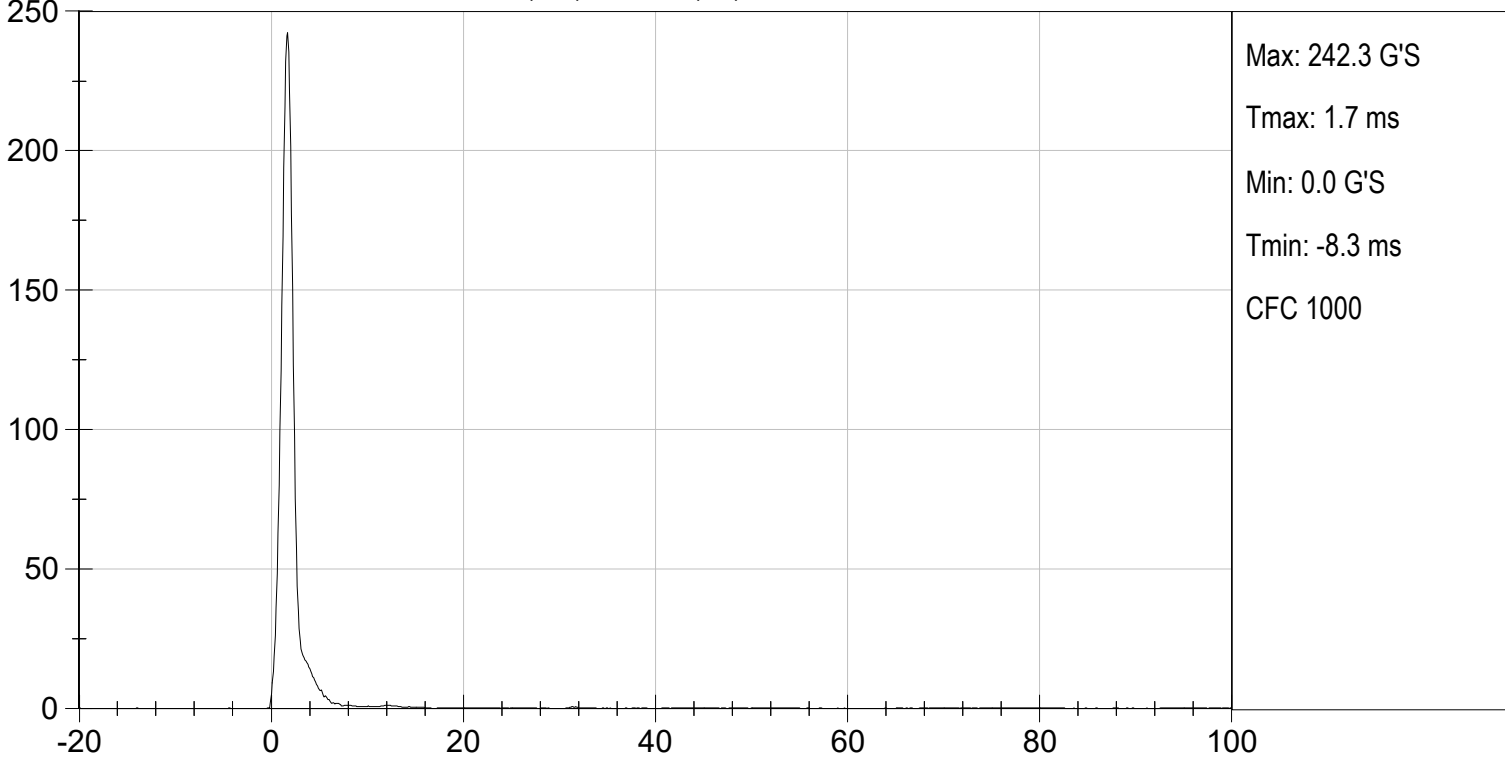
  
 Laboratory Technician

09/19/2024  
 Test Date

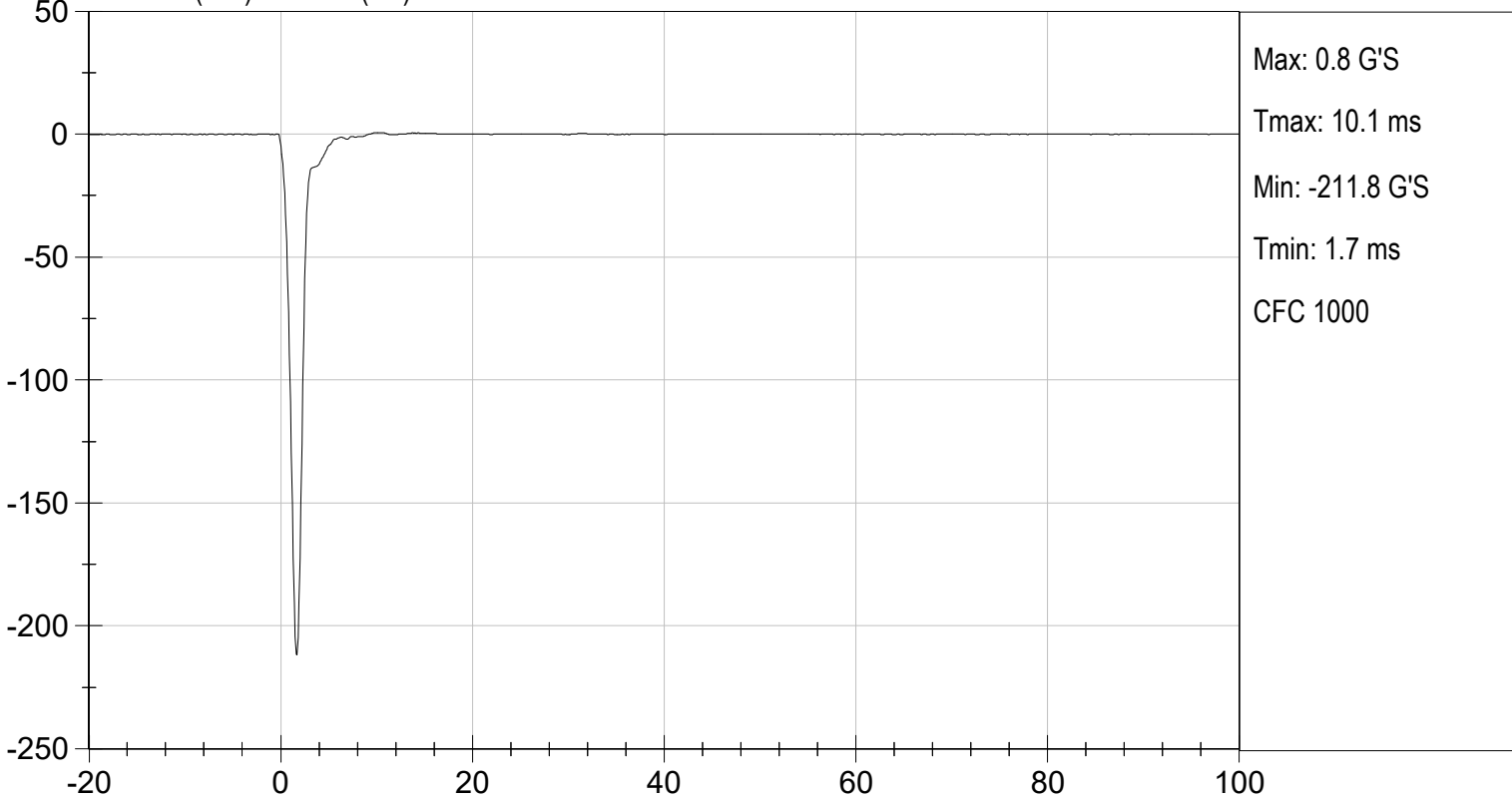
  
 Approved By

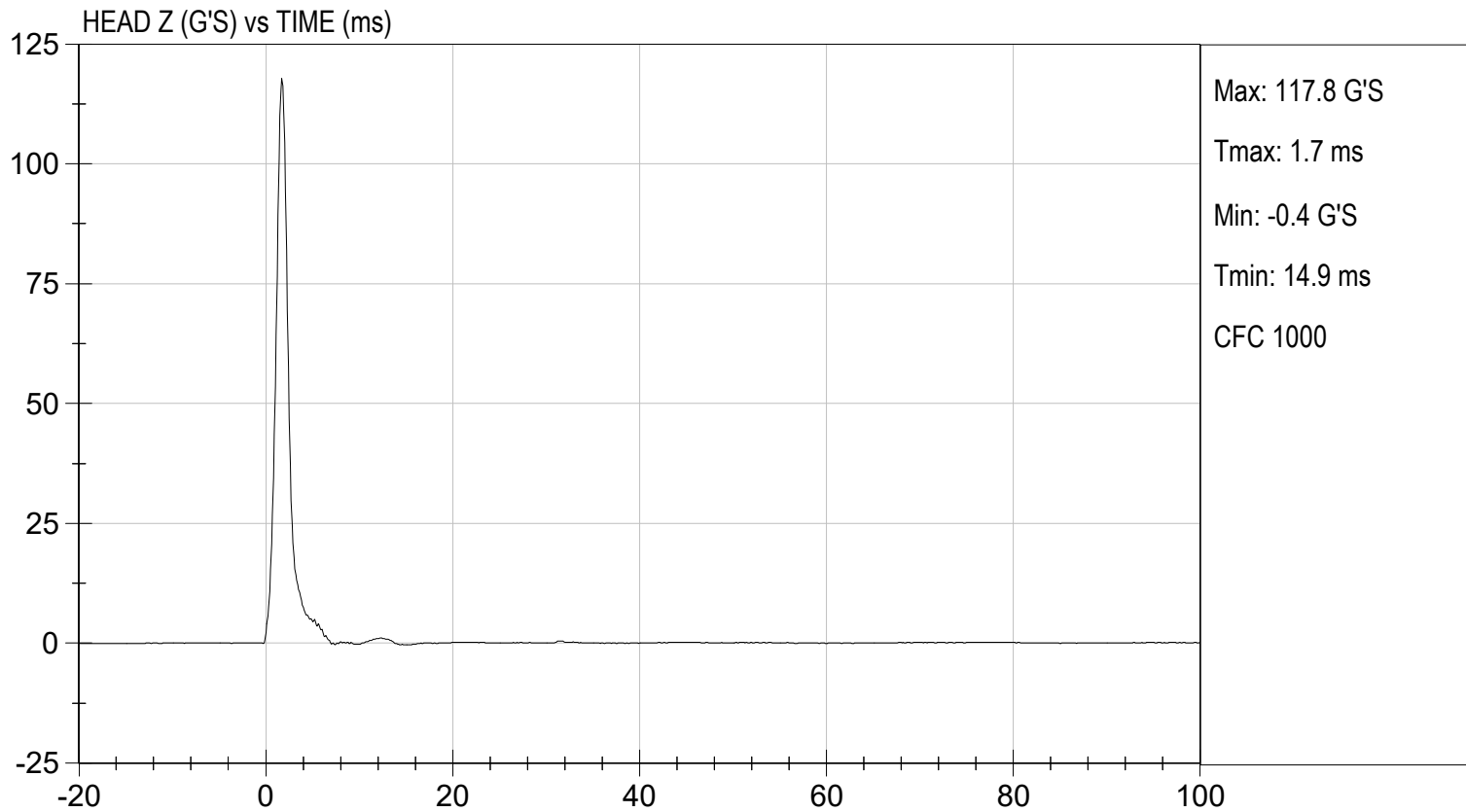
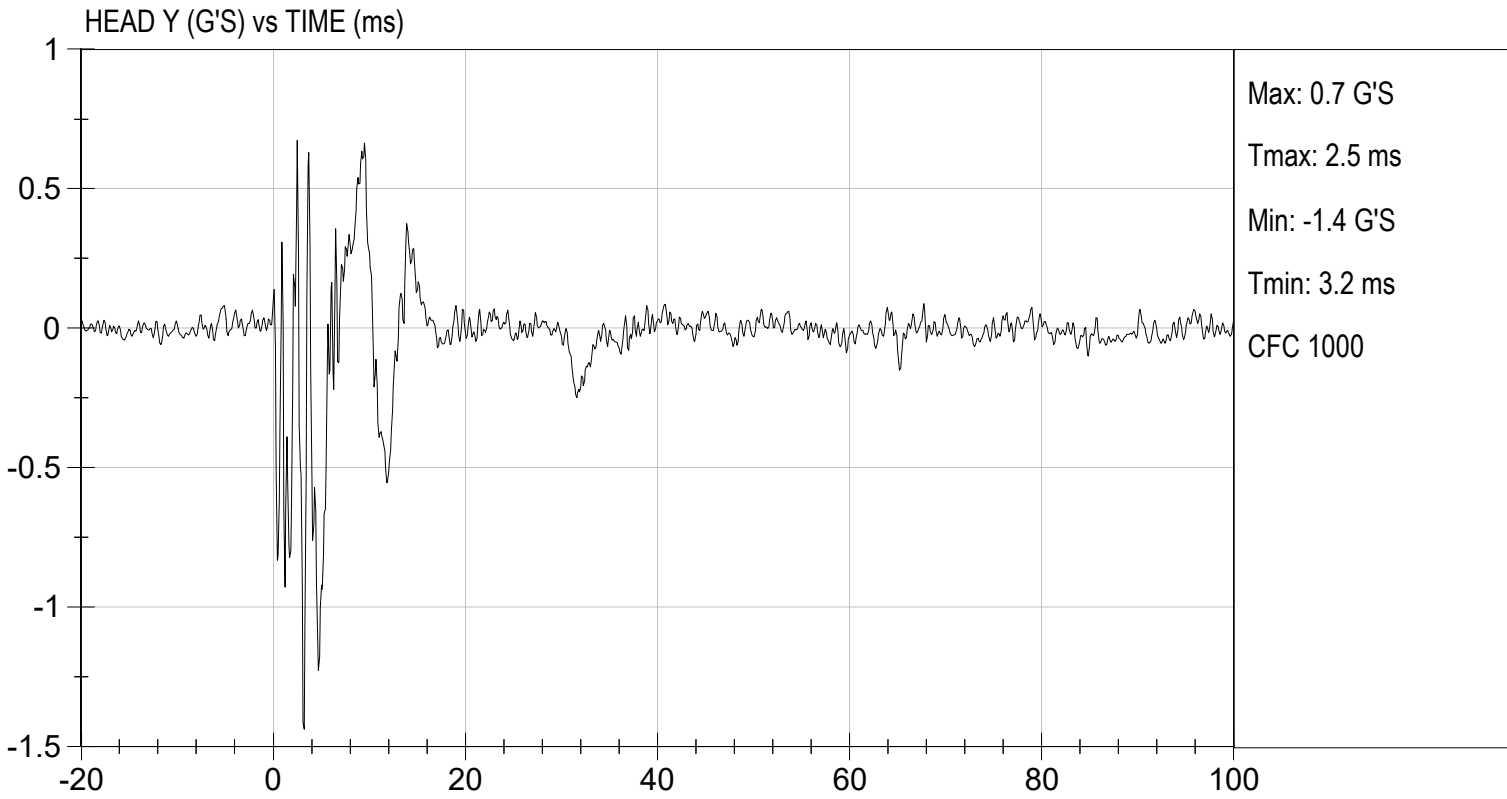


HEAD RESULTANT ACCELERATION (G'S) vs TIME (ms)



HEAD X (G'S) vs TIME (ms)





**MGA RESEARCH CORPORATION  
NECK FLEXION TEST  
HYBRID III 50TH PERCENTILE MALE**

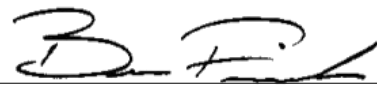
**ATD Serial No:** 064

**Test I.D.:** D242392

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	20.9	Pass
Laboratory Relative Humidity		%	10 to 70	42	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.96	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	23.96	Pass
	20 ms	G's	17.60 to 22.60	20.82	Pass
	30 ms	G's	12.50 to 18.50	16.05	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	16.4	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	37.5	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	73.2	Pass
	Time	ms	57.0 to 64.0	59.2	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	115.6	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	100.1	Pass
	Time	ms	47.0 to 58.0	50.1	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	98.1	Pass
Overall Test Results					Pass

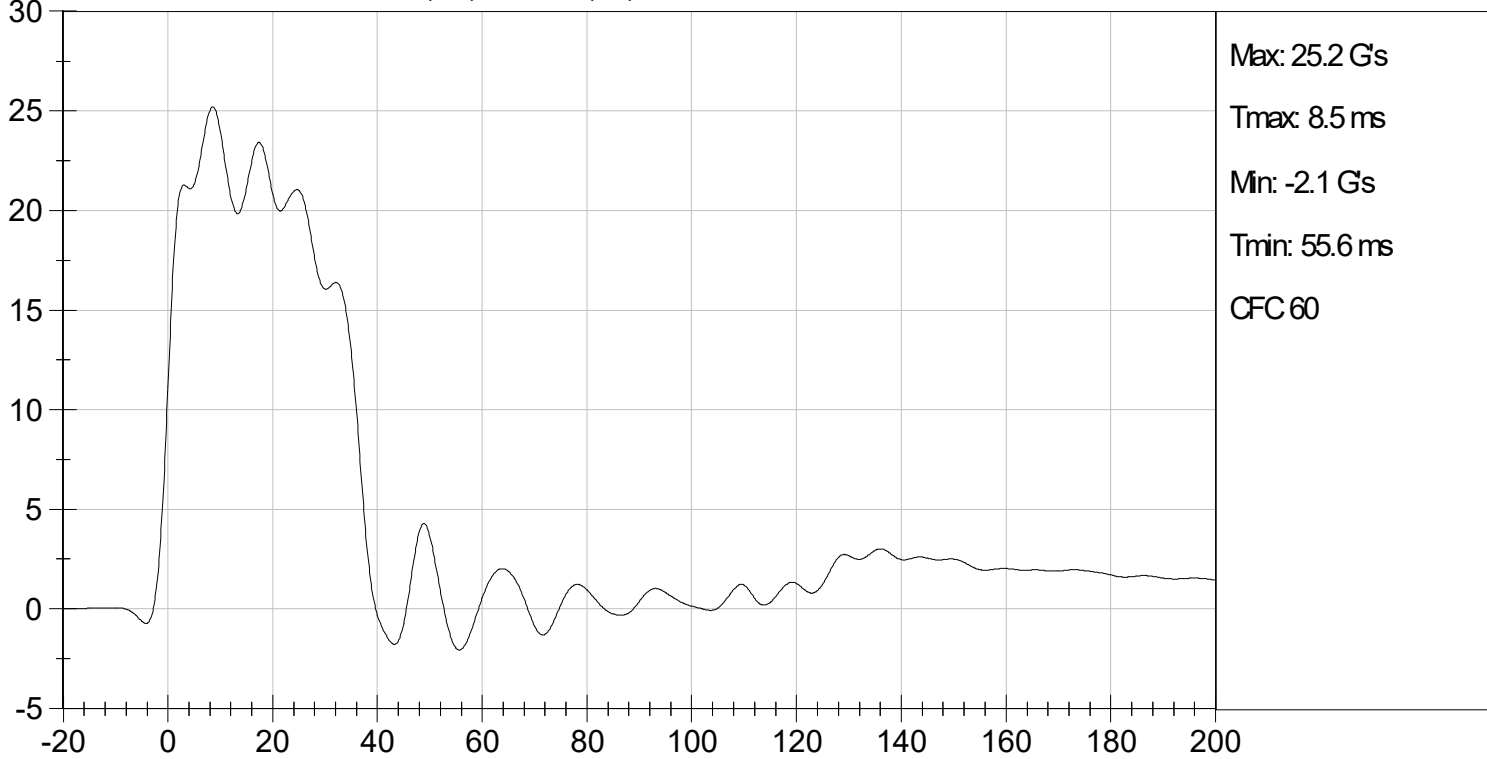
  
Laboratory Technician

09/19/2024  
Test Date

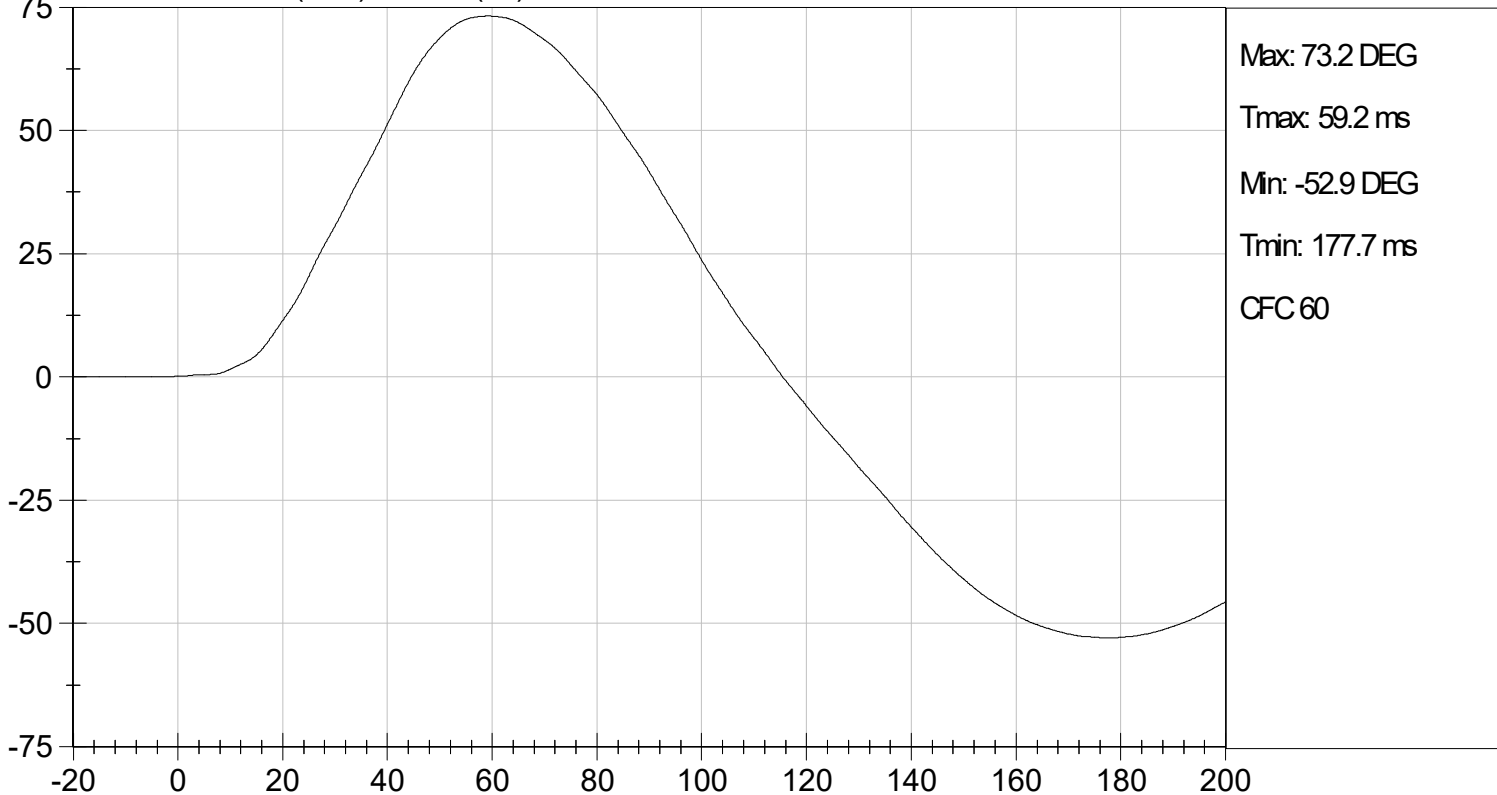
  
Approved By

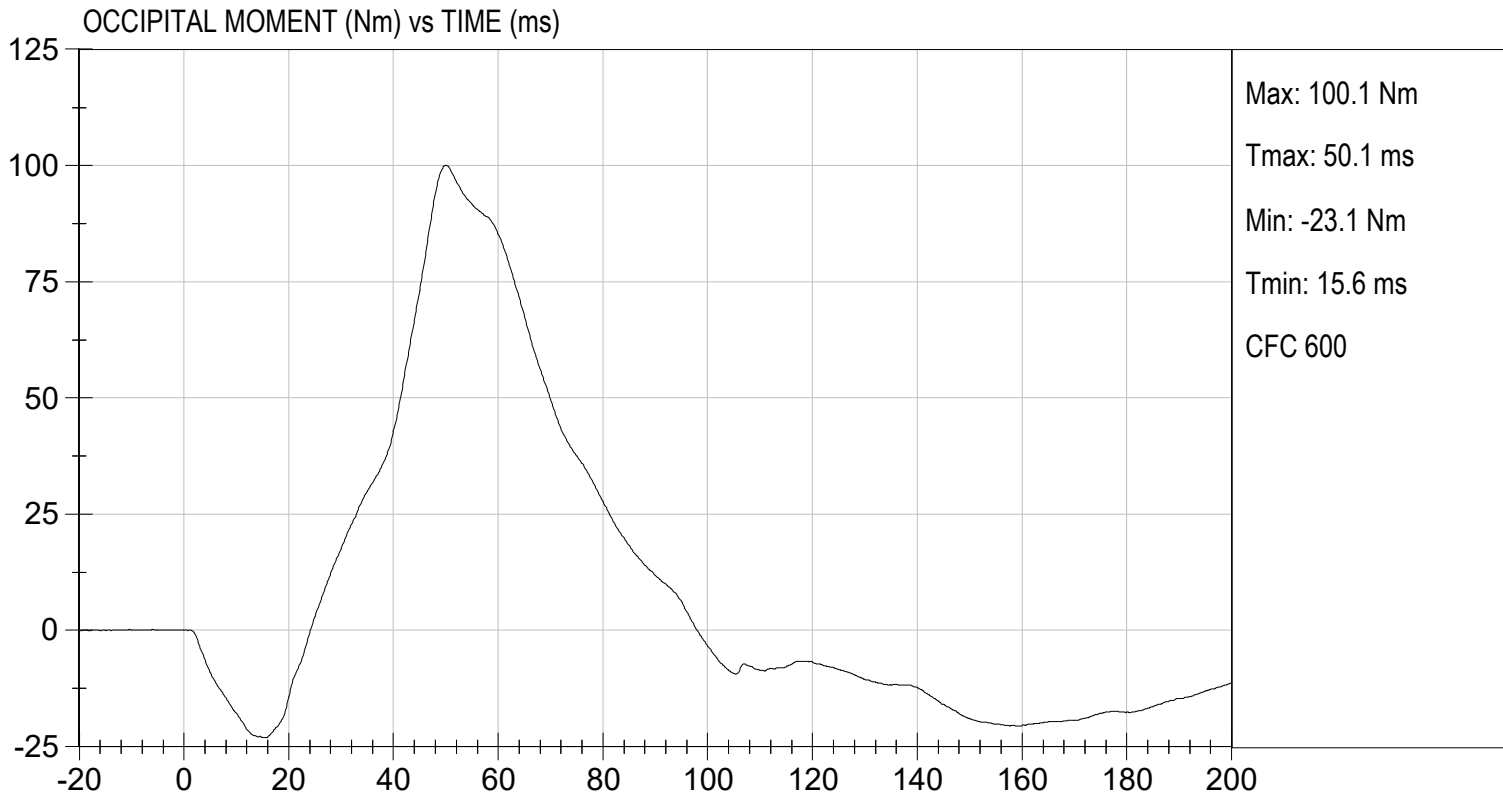


PENDULUM DECELERATION (Gs) vs TIME (ms)



NECK ROTATION (DEG) vs TIME (ms)





**MGA RESEARCH CORPORATION**  
**NECK EXTENSION TEST**  
**HYBRID III 50TH PERCENTILE MALE**

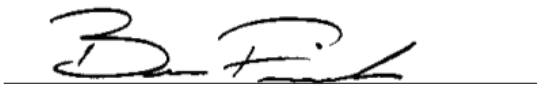
ATD Serial No: 064

Test I.D.: D242393

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	43	Pass
Pendulum Velocity		m/s	5.95 to 6.19	5.98	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	20.67	Pass
	20 ms	G's	14.00 to 19.00	17.25	Pass
	30 ms	G's	11.00 to 16.00	14.36	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	16.1	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	38.9	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	100.1	Pass
	Time	ms	72.0 to 82.0	74.8	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	157.1	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-63.8	Pass
	Time	ms	65.0 to 79.0	72.1	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	140.4	Pass
Overall Test Results					Pass

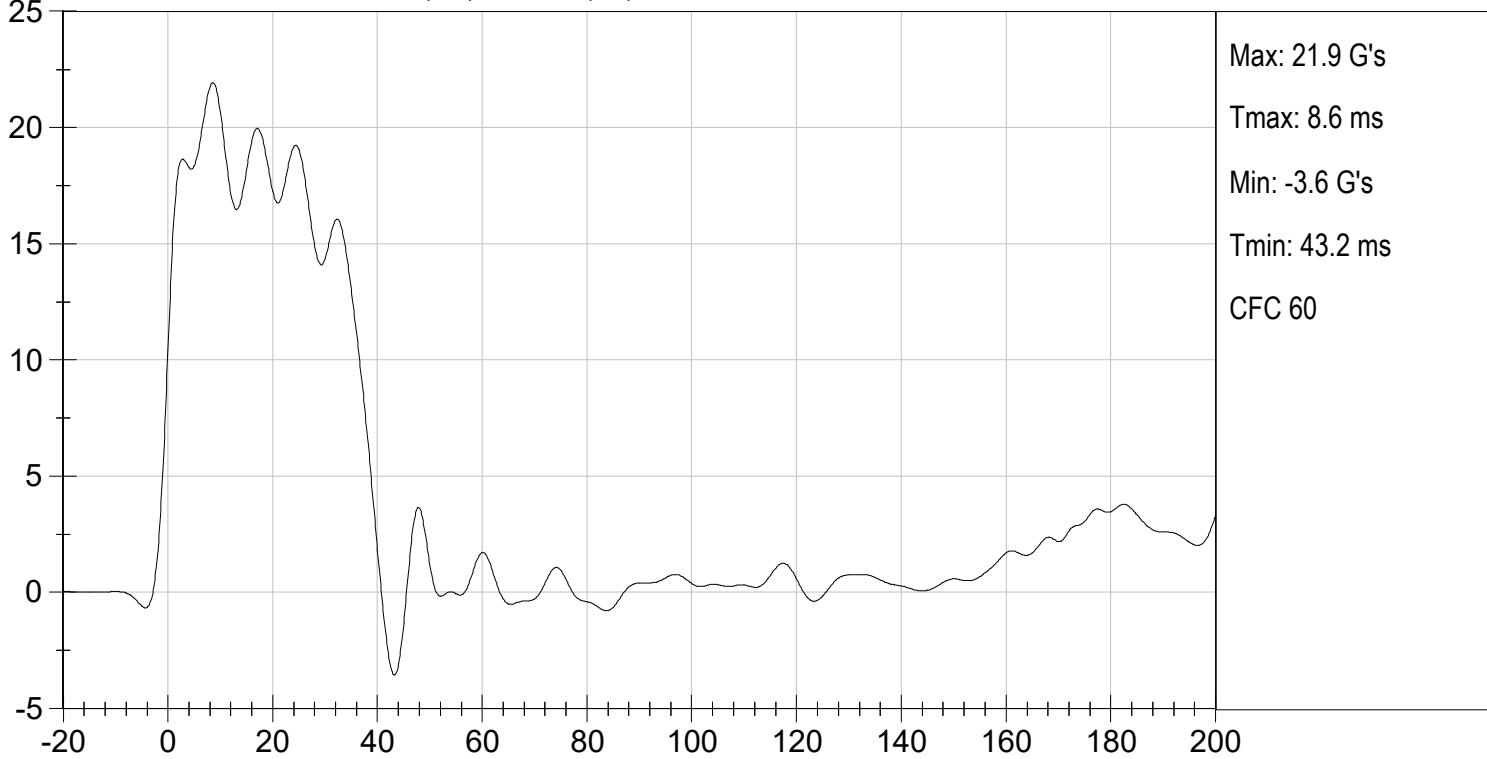
  
 Laboratory Technician

09/19/2024  
 Test Date

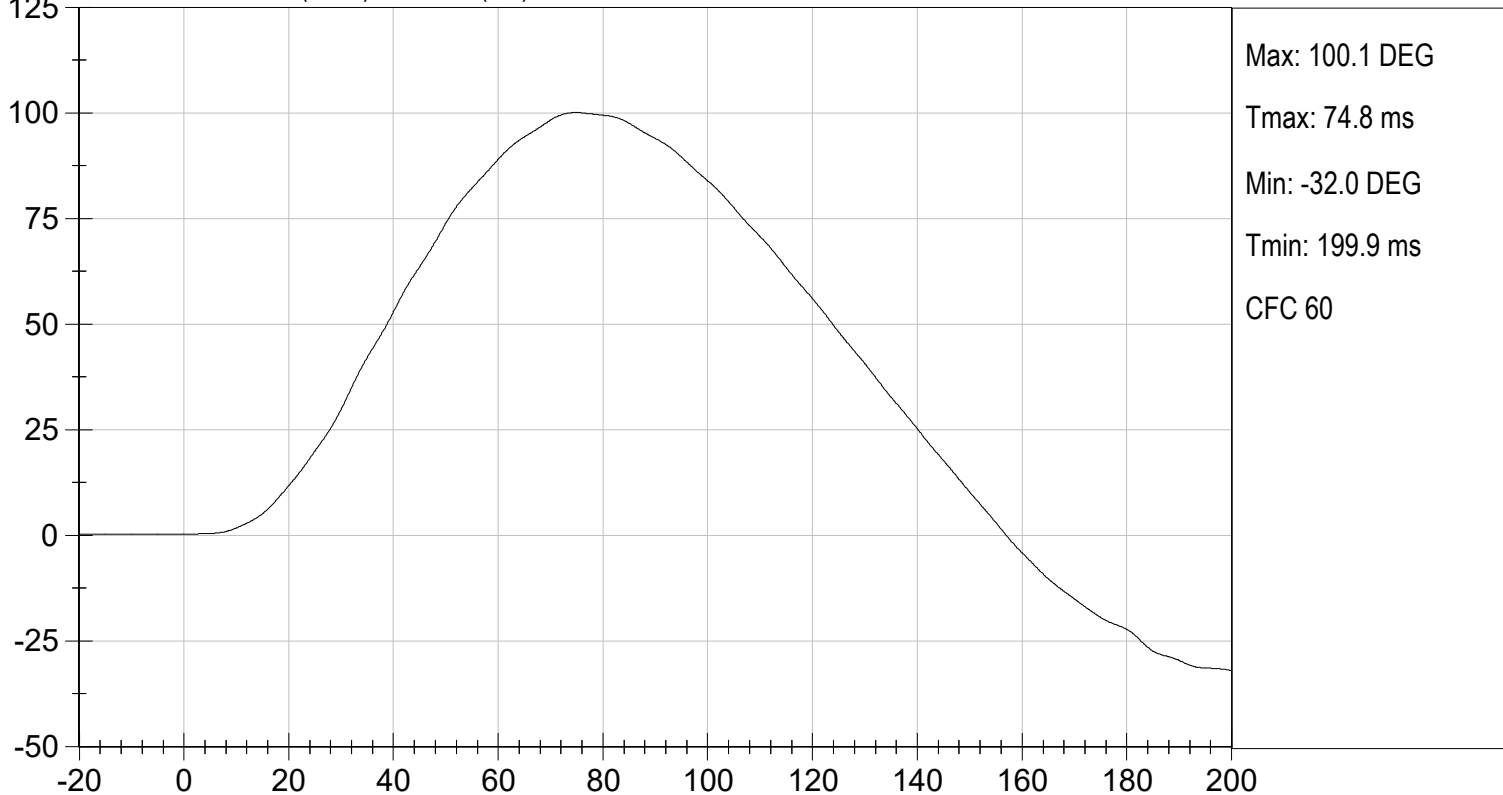
  
 Approved By

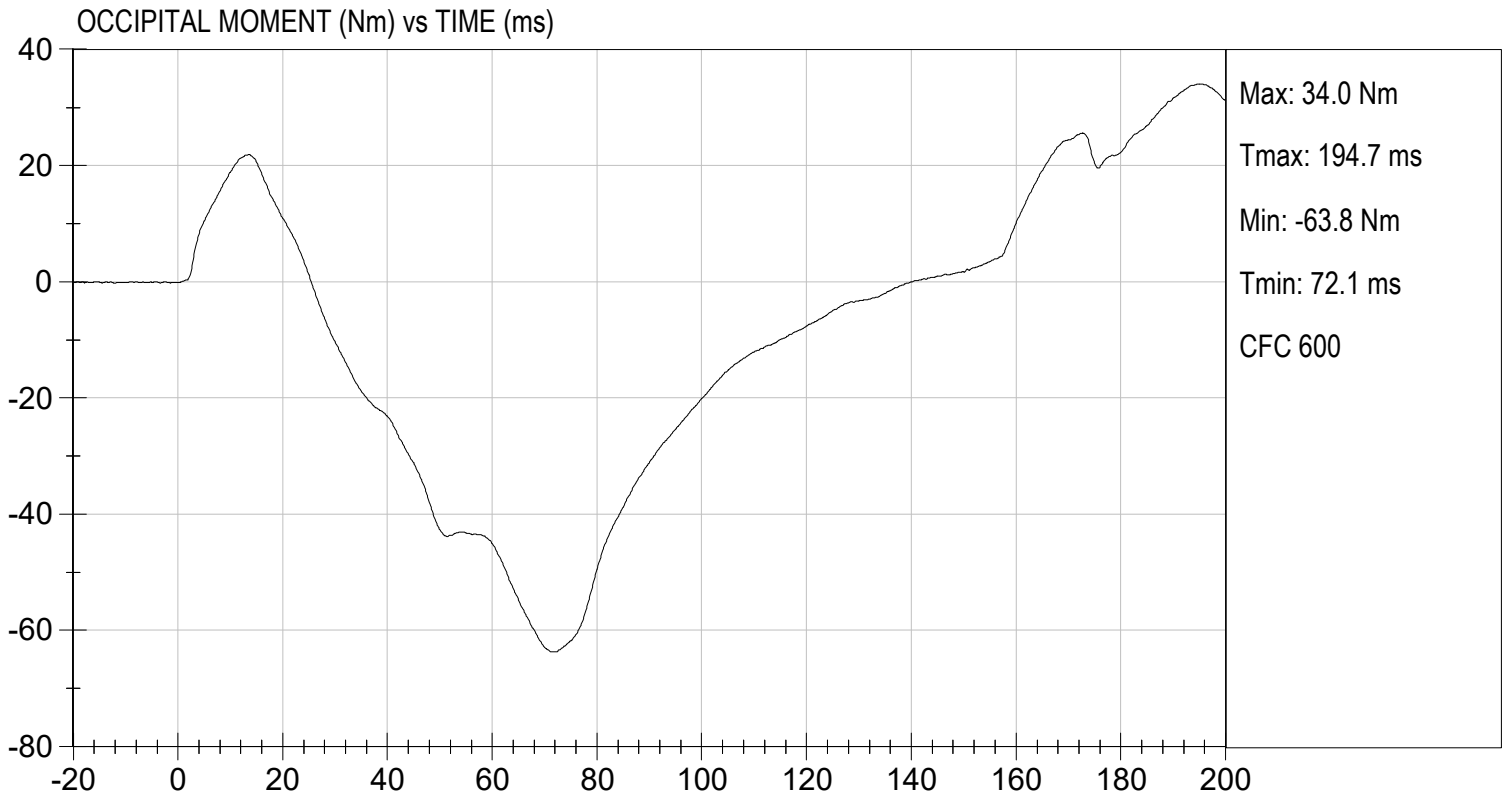


PENDULUM DECELERATION (G's) vs TIME (ms)



NECK ROTATION (DEG) vs TIME (ms)





**MGA RESEARCH CORPORATION**  
**THORAX IMPACT**  
**HYBRID III 50TH PERCENTILE MALE**

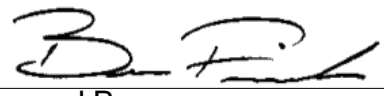
ATD Serial No: 064

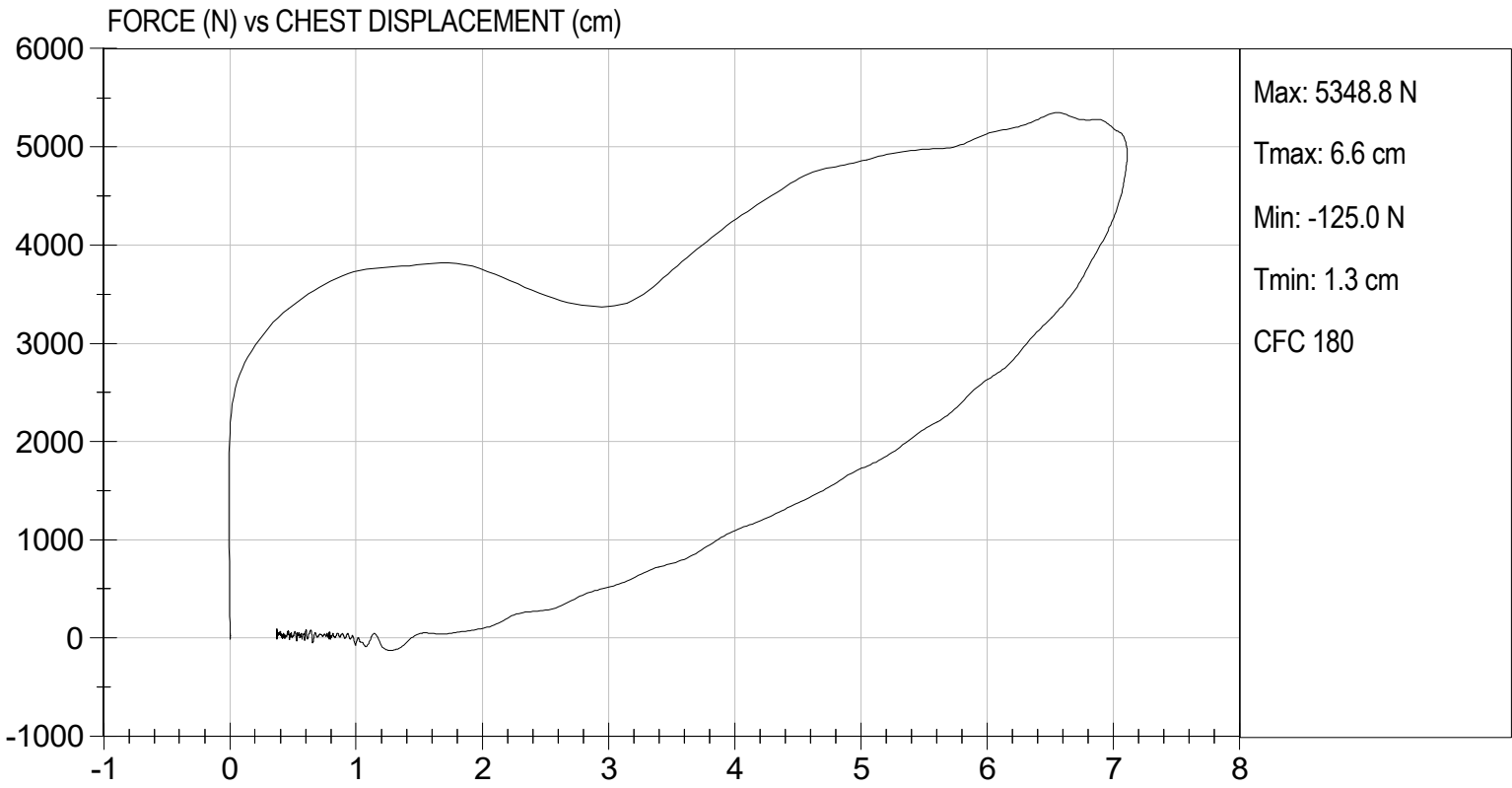
Test I.D: D242394

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Probe Velocity	m/s	6.58 to 6.82	6.68	Pass
Peak Probe Force	N	5159 to 5893	5,349	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	7.11	Pass
Internal Hysteresis	%	69 to 85	72	Pass
Overall Test Results				Pass

  
 Laboratory Technician

09/19/2024  
 Test Date

  
 Approved By



**MGA RESEARCH CORPORATION**  
**RIGHT KNEE IMPACT TEST**  
**HYBRID III 50TH PERCENTILE MALE**

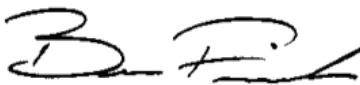
**ATD Serial No:** 064

**Test I.D.:** D242395

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Probe Velocity	m/s	2.07 to 2.13	2.10	Pass
Peak Probe Force	N	4715 to 5782	5,152	Pass
			Overall Test Results	Pass

  
Laboratory Technician

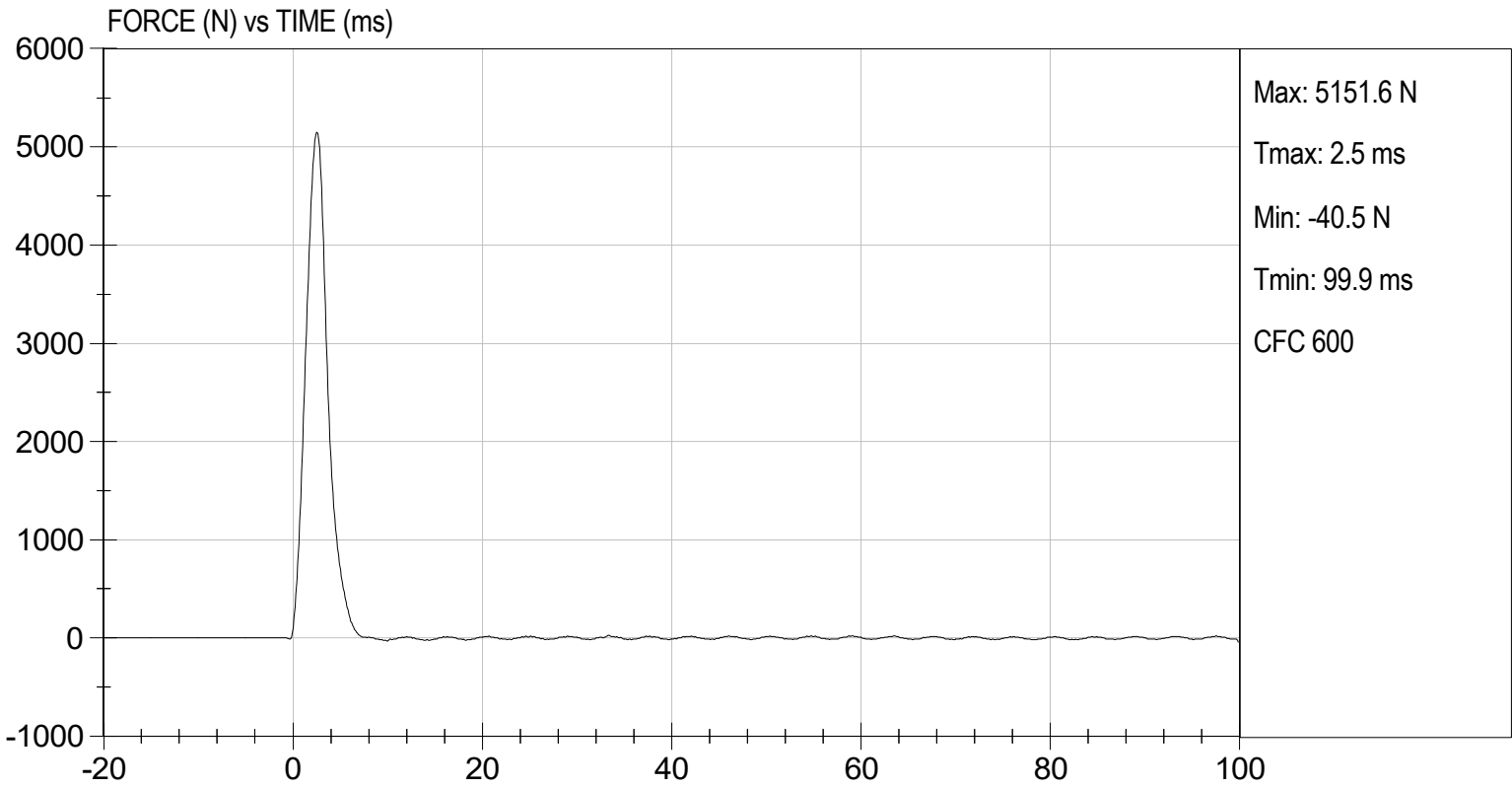
09/19/2024  
Test Date

  
Approved By



TEST DESC: RIGHT KNEE  
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 09/19/2024  
TEST #: D242395



**MGA RESEARCH CORPORATION**  
**LEFT KNEE IMPACT TEST**  
**HYBRID III 50TH PERCENTILE MALE**

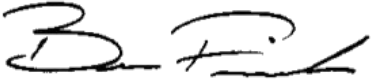
ATD Serial No: 064

Test I.D: D242396

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Probe Velocity	m/s	2.07 to 2.13	2.10	Pass
Peak Probe Force	N	4715 to 5782	4,803	Pass
Overall Test Results				Pass

  
Laboratory Technician

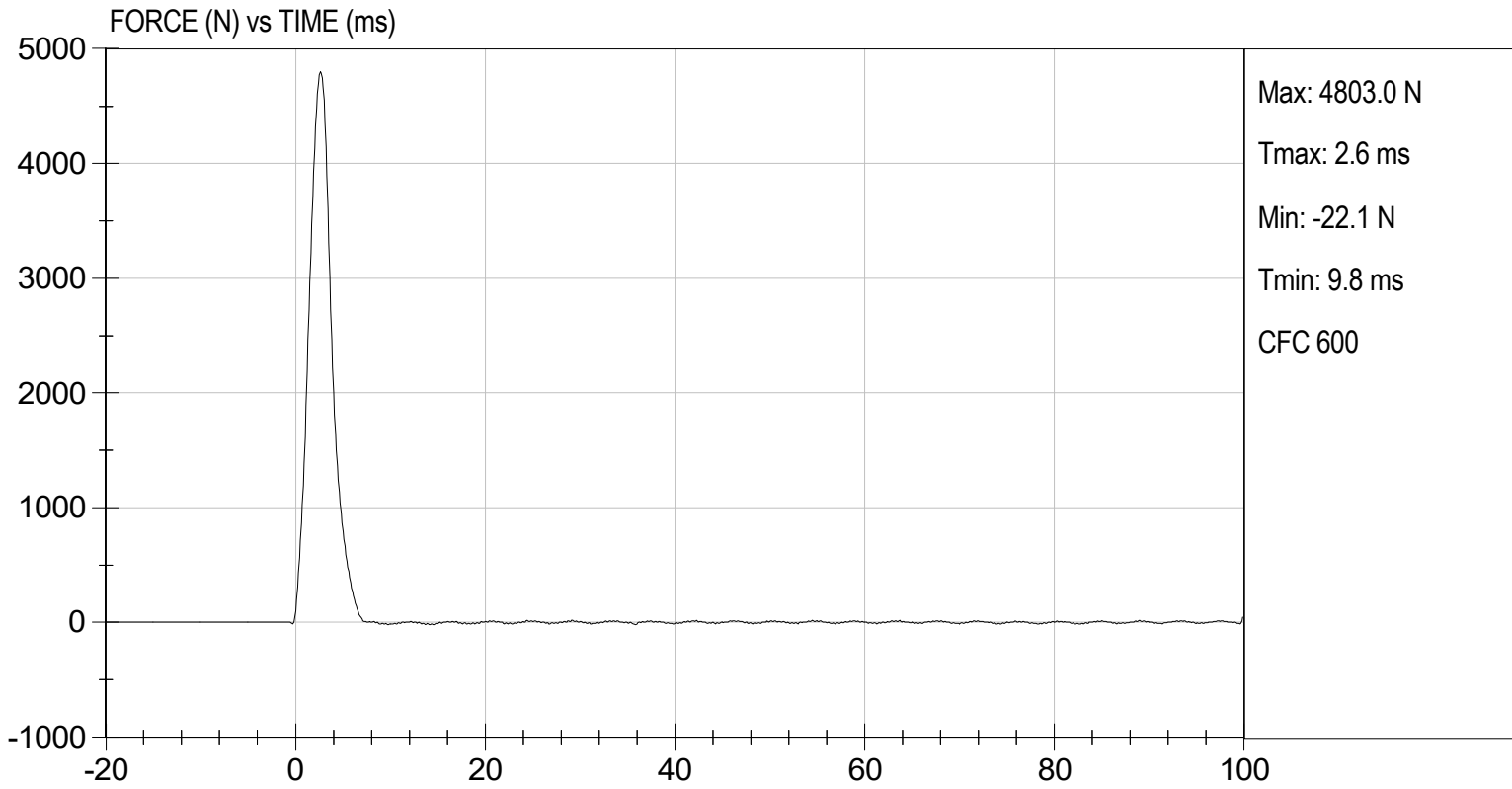
09/19/2024  
Test Date

  
Approved By



TEST DESC: LEFT KNEE  
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 09/19/2024  
TEST #: D242396



**MGA RESEARCH CORPORATION**  
**HIP-FEMUR FLEXION TEST**  
**HYBRID III 50TH PERCENTILE MALE**

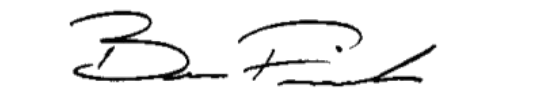
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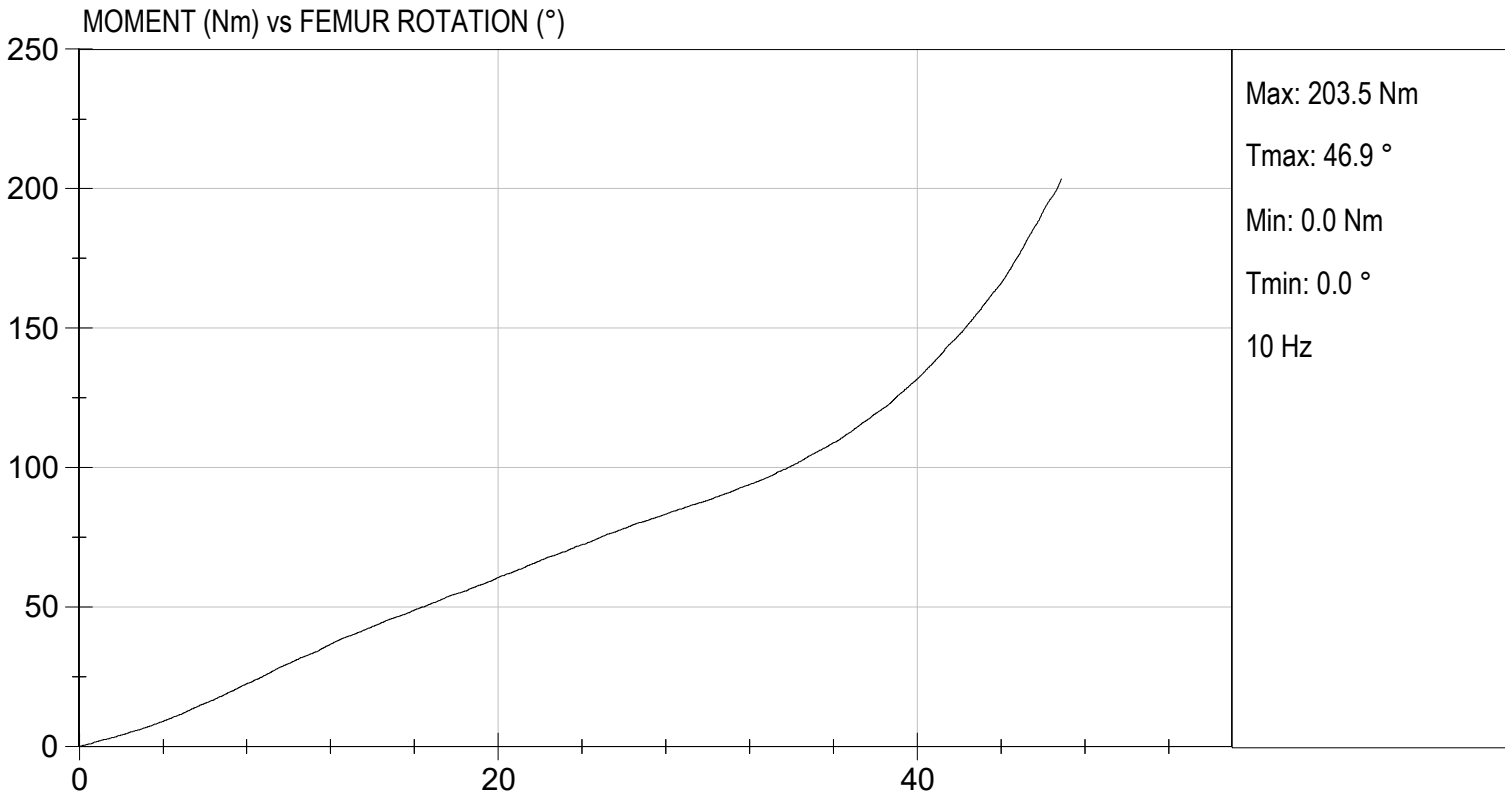
Test I.D: D242390

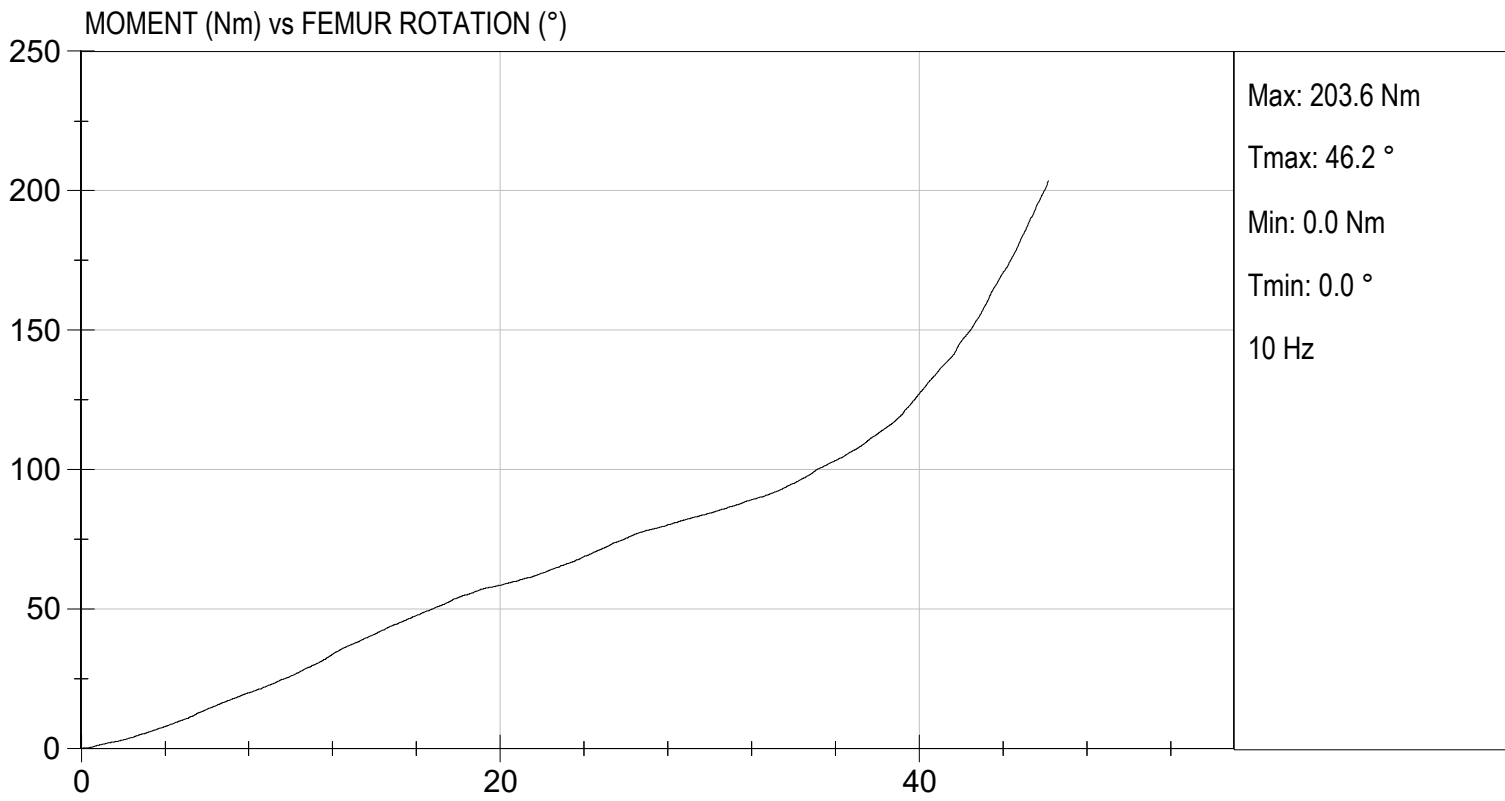
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.3	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	43	43	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.6	6.5	Pass
30 Degrees	Nm	94.9 Nm Max	88.3	84.4	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	46.9	46.2	Pass
Overall Test Results					Pass

  
 Laboratory Technician

09/19/2024  
 Test Date

  
 Approved By





**QUALIFICATION TEST RESULTS**

**PRE-TEST**

**HYBRID III 5<sup>TH</sup> PERCENTILE FEMALE - PASSENGER ATD**

**Hybrid III, 5th External Measurements  
SN: 142**

HYBRID III, PART 572, SUBPART O EXTERNAL DIMENSIONS				
DIMENSION	DESCRIPTION	DETAILS	ASSEMBLY DIMENSION (mm)	ACTUAL MEASUREMENT
A	TOTAL SITTING HEIGHT	Seat surface to highest point on top of the head.	774.7-800.1	775.0
B	SHOULDER PIVOT HEIGHT	Centerline of shoulder pivot bolt to the seat surface.	431.8-457.2	438.2
C	H-POINT HEIGHT	Reference	81.3-86.3	81.8
D	H-POINT LOCATION FROM BACKLINE	Reference	144.8-149.8	148.3
E	SHOULDER PIVOT FROM BACKLINE	Center of the shoulder clevis to the rear vertical surface of the fixture.	68.6-83.8	83.0
F	THIGH CLEARANCE	Measured at the highest point on the upper femur segment.	119.4-134.6	124.4
G	BACK OF ELBOW TO WRIST PIVOT	back of the elbow flesh to the wrist pivot in line with the elbow and wrist pivots	243.9-259.1	245.2
H	HEAD BACK TO BACKLINE	Back of Skull cap skin to seat rear vertical surface (Reference)	43.2-48.2	43.4
I	SHOULDER TO- ELBOW LENGTH	Measure from the highest point on top of the shoulder clevis to the lowest part of the flesh on the elbow in line with the elbow pivot bolt.	276.8-297.2	281.1
J	ELBOW REST HEIGHT	Measure from the flesh below the elbow pivot bolt to the seat surface.	182.8-203.2	197.2
K	BUTTOCK TO KNEE LENGTH	The forward most part of the knee flesh to the rear vertical surface of the fixture.	520.7-546.1	537.2
L	POPLITEAL HEIGHT	Seat surface to the plane of the horizontal plane of the bottom of the feet.	355.6-376	358.8
M	KNEE PIVOT HEIGHT	Centerline of knee pivot bolt to the horizontal plane of the bottom of the feet.	393.7-419.1	403.1
N	BUTTOCK POPLITEAL LENGTH	The rearmost surface of the lower leg to the same point on the rear surface of the buttocks used for dim. "K".	414-439.4	435.2

HYBRID III, SUBPART O EXTERNAL DIMENSIONS, continued				
DIMENSION	DESCRIPTION	DETAILS	ASSEMBLY DIMENSION (mm)	ACTUAL MEASUREMENT
O	CHEST DEPTH WITHOUT JACKET	Measured 304.8 ± 5.1 mm above seat surface	175.3-190.5	181.2
P	FOOT LENGTH	Tip of toe to rear of heel	218.5-233.7	227.3
Q	STANDING HEIGHT	(THEORETICAL)	1501.1	N/A
R	BUTTOCK TO KNEE PIVOT LENGTH	The rear surface of the buttocks to the knee pivot bolt	457.2-482.6	475.0
S	HEAD BREADTH	The widest part of the head	137.1-147.3	138.6
T	HEAD DEPTH	Back of the head to the forehead	177.8-188	181.0
U	HIP BREADTH	The widest part of the hip	299.7-314.9	308.4
V	SHOULDER BREADTH	Outside edges of right and left shoulder clevises	350.5-365.7	362.1
W	FOOT BREADTH	The widest part of the foot	78.8-94	82.8
X	HEAD CIRCUMFERENCE	Measured at the point as in dim. "T"	528.3-548.7	545.2
Y	CHEST CIRCUMFERENCE (WITH CHEST JACKET)	Measured 345.4 ± 12.7 mm above seat surface	850.9-881.3	870.7
Z	WAIST CIRCUMFERENCE	Measured 165.1 ± 5.1 mm above seat surface	759.5-789.9	779.9
AA	REFERENCE LOCATION FOR MEASUREMENT OF CHEST CIRCUMFERENCE	Reference	332.7-358.1	350.1
BB	REFERENCE LOCATION FOR MEASUREMENT OF WAIST CIRCUMFERENCE	Reference	160.1-170.2	170.0

**MGA RESEARCH CORPORATION**  
**HEAD DROP TEST**  
**HYBRID III 5TH PERCENTILE**

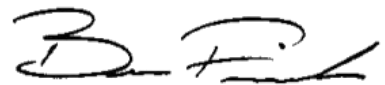
ATD Serial No: 142

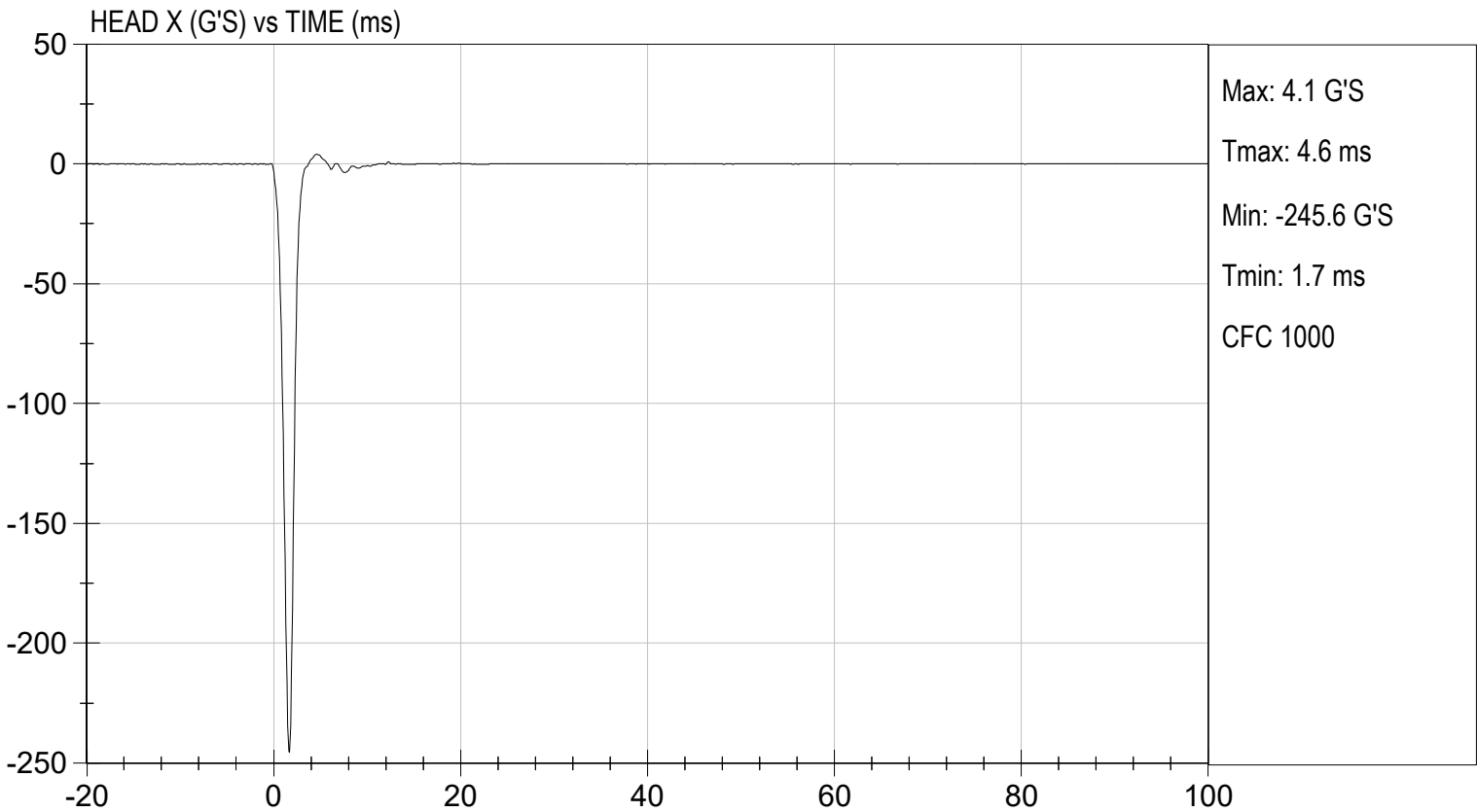
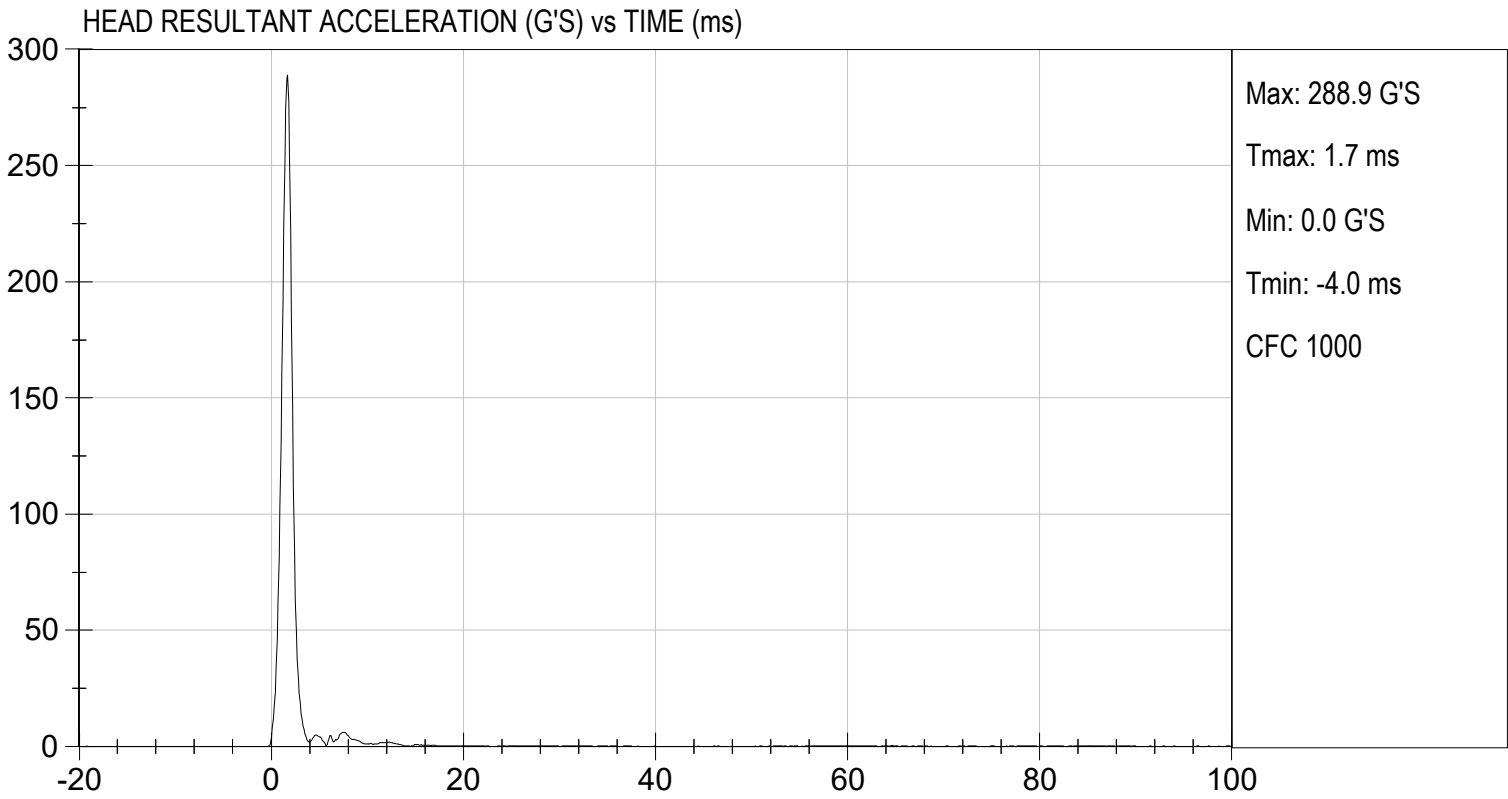
Test ID: D242231

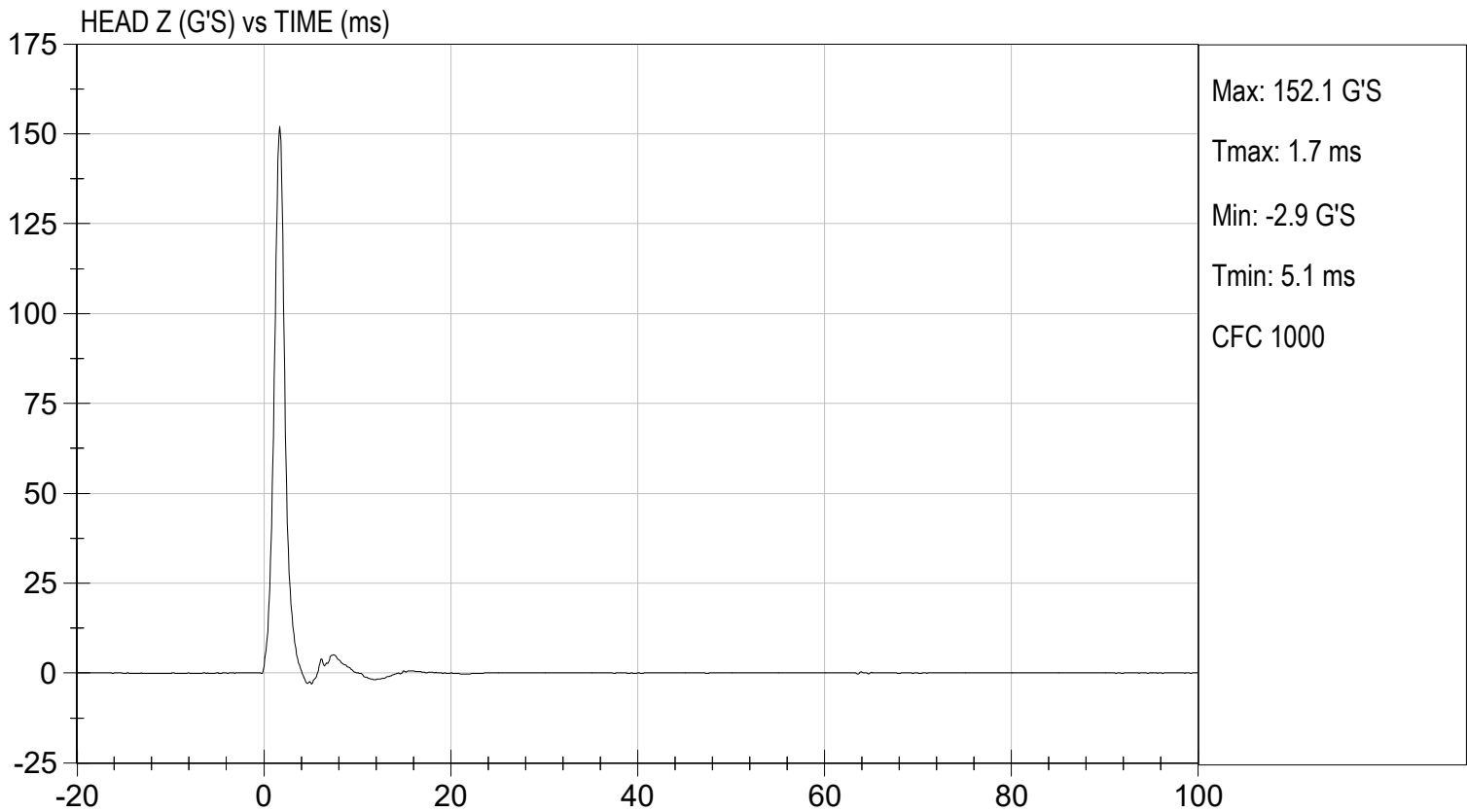
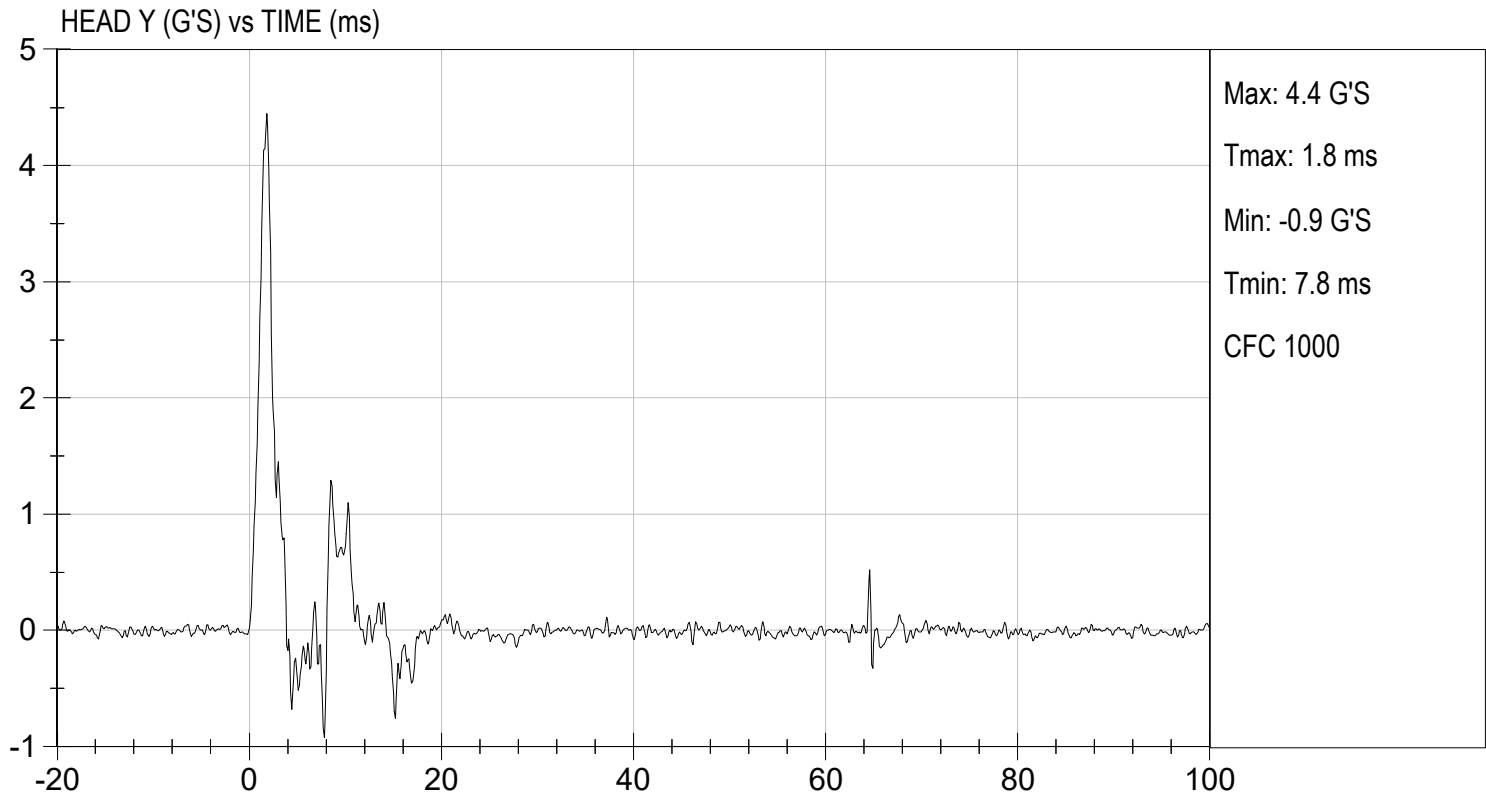
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	47	Pass
Peak Resultant Acceleration	G's	250 to 300	289	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	4.4	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

  
 Laboratory Technician

08/30/2024  
 Test Date

  
 Approved By





**MGA RESEARCH CORPORATION**

**NECK FLEXION TEST**

**HYBRID III 5TH PERCENTILE**

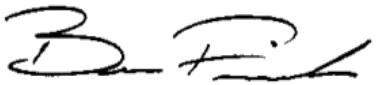
ATD Serial No: 142

Test I.D.: D242232

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	47	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.06	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.3	Pass
	20 ms	m/s	4.0 to 5.0	4.5	Pass
	30 ms	m/s	5.8 to 7.0	6.7	Pass
D Plane Rotation	Max	deg	77 to 91	81	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	75	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	87	Pass
Overall Results					Pass

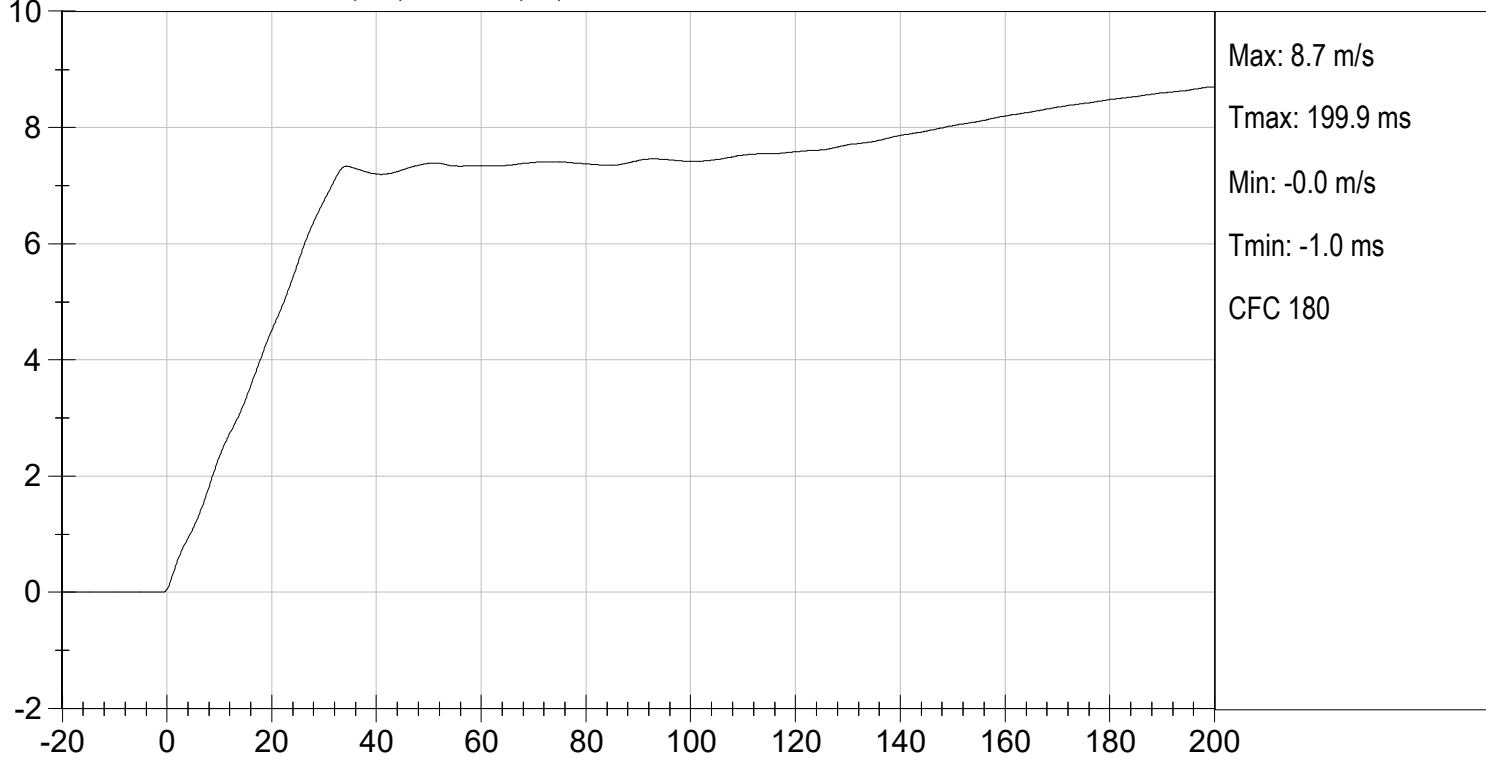
  
 Laboratory Technician

08/30/2024  
 Test Date

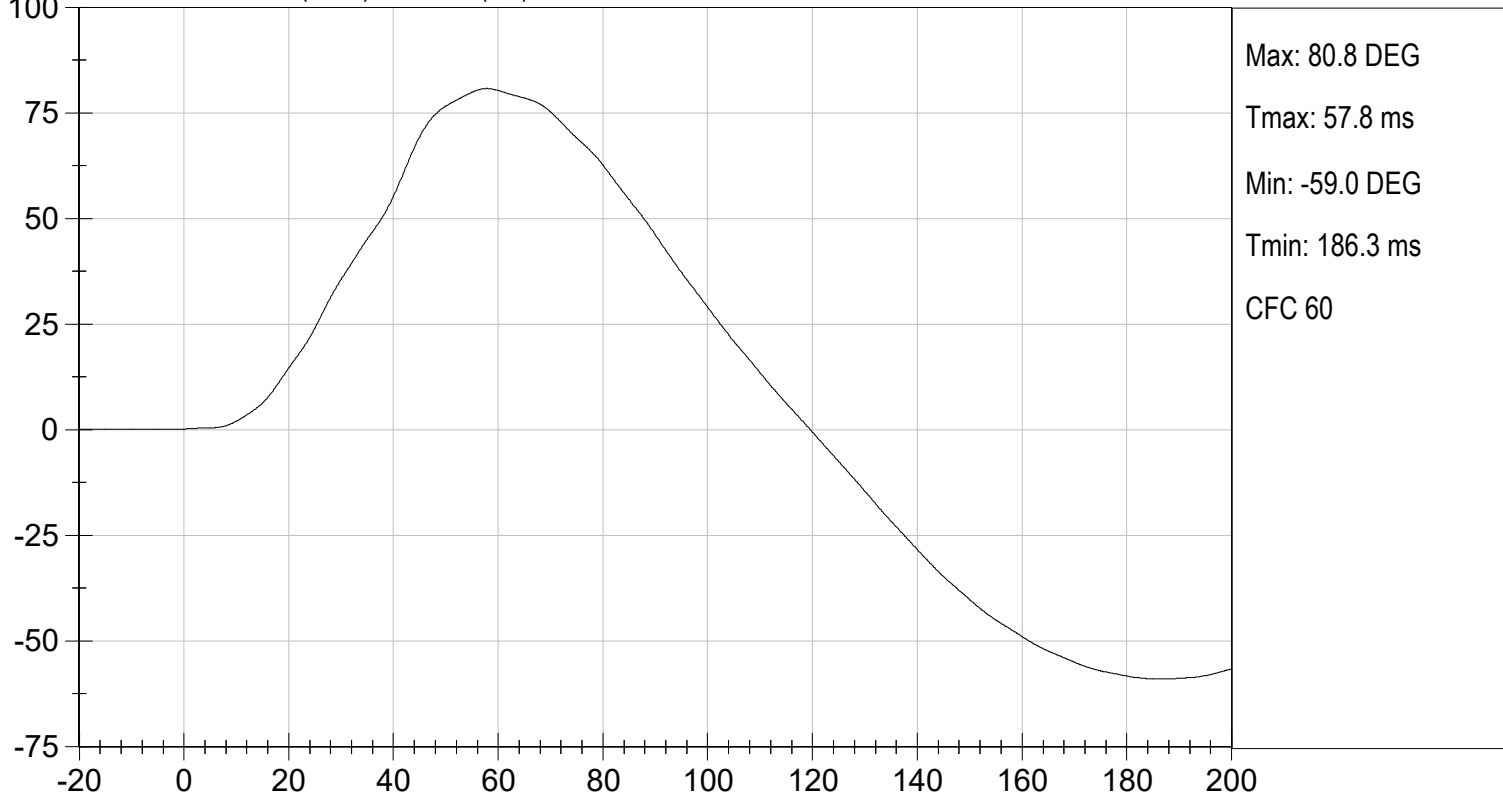
  
 Approved By

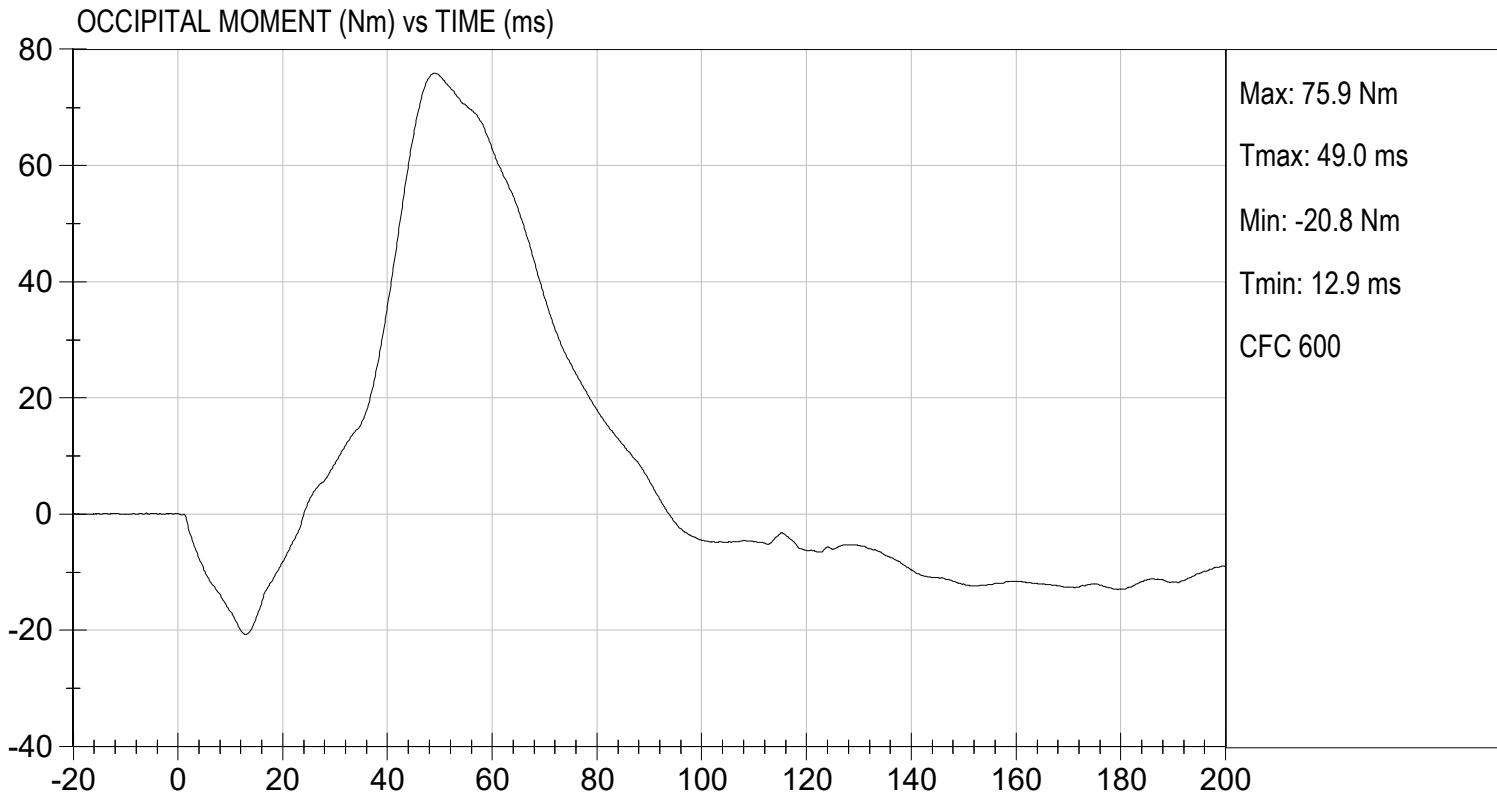


PENDULUM VELOCITY (m/s) vs TIME (ms)



NECK ROTATION (DEG) vs TIME (ms)





**MGA RESEARCH CORPORATION**  
**NECK EXTENSION TEST**  
**HYBRID III 5TH PERCENTILE**

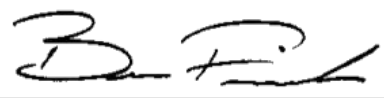
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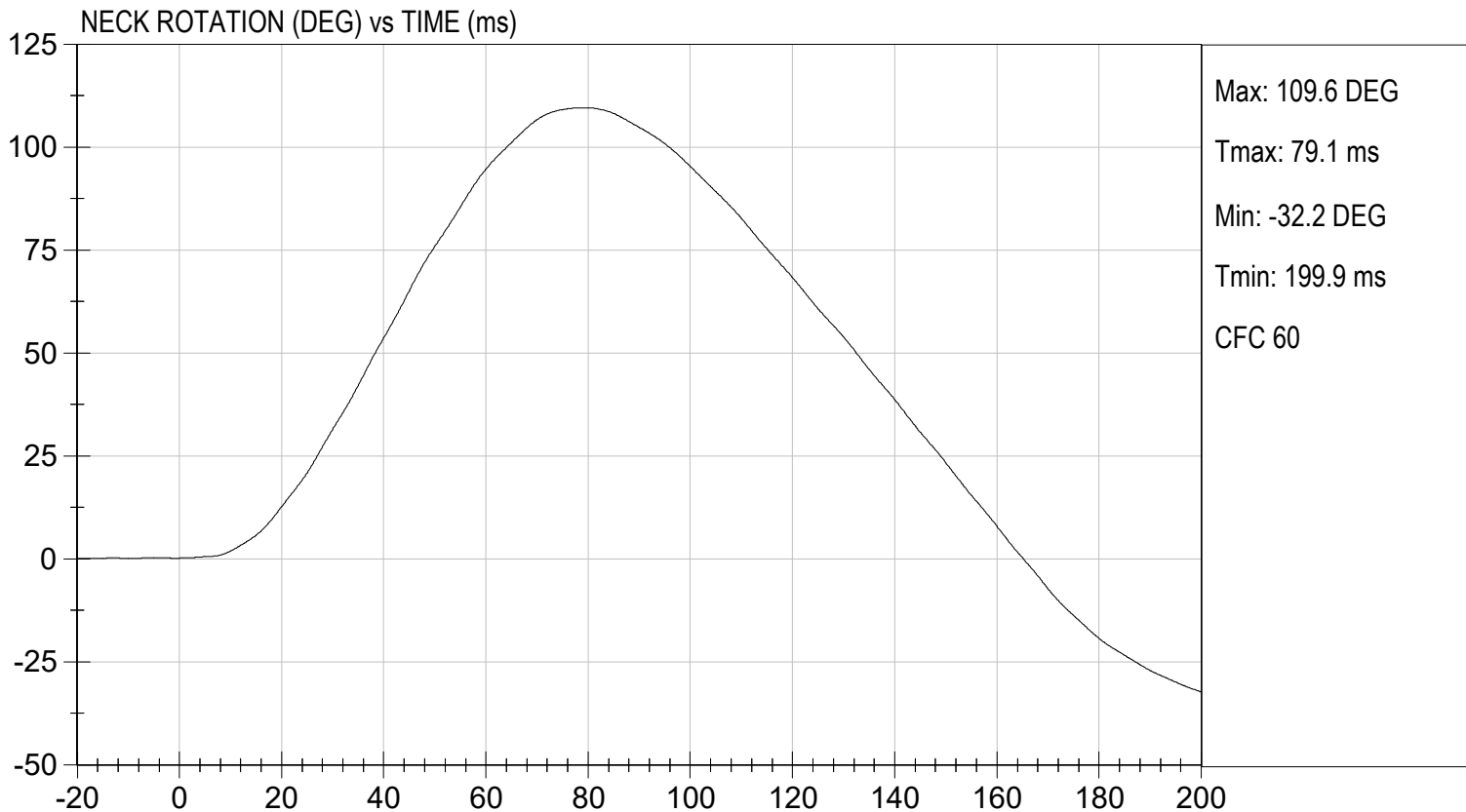
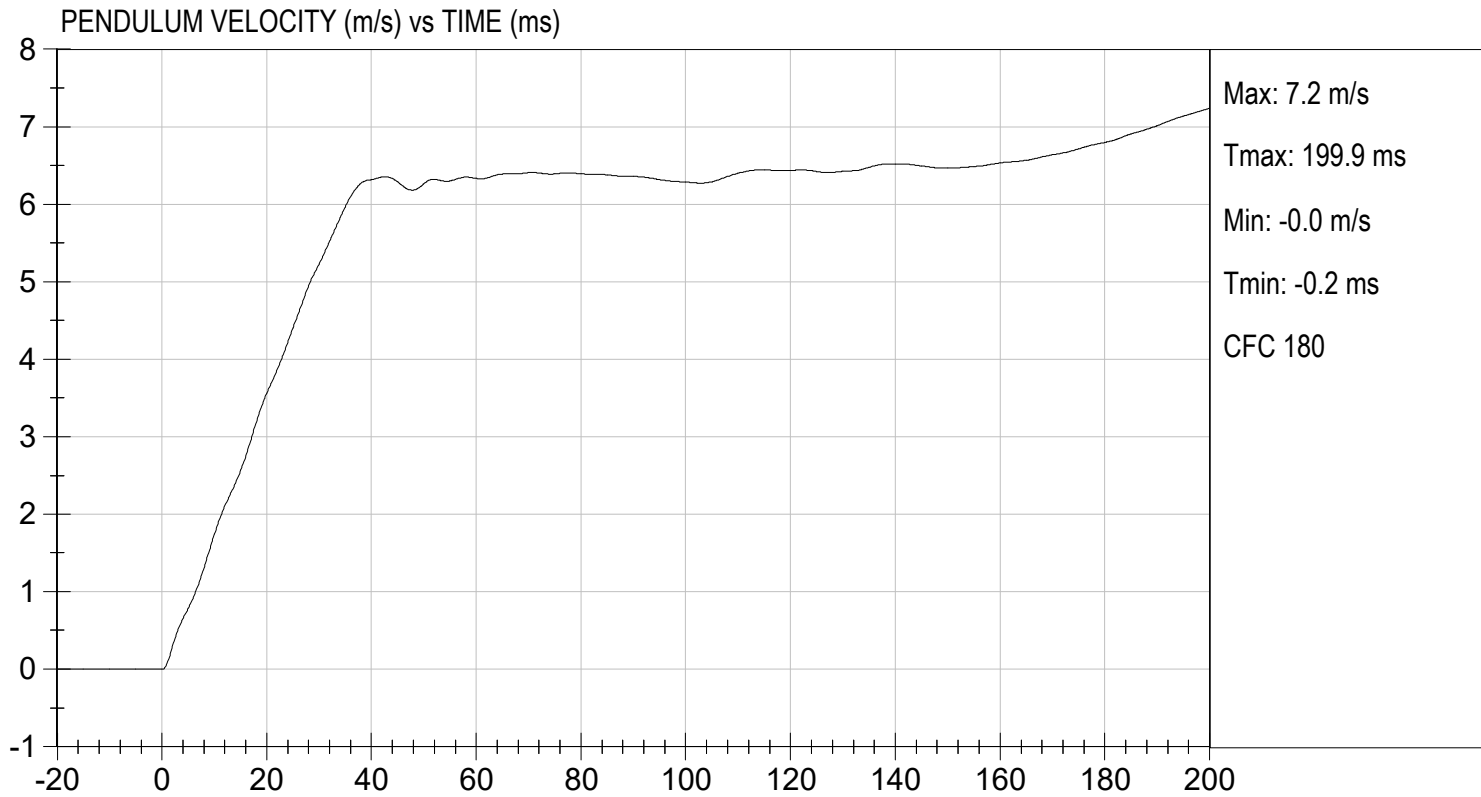
Test I.D: D242233

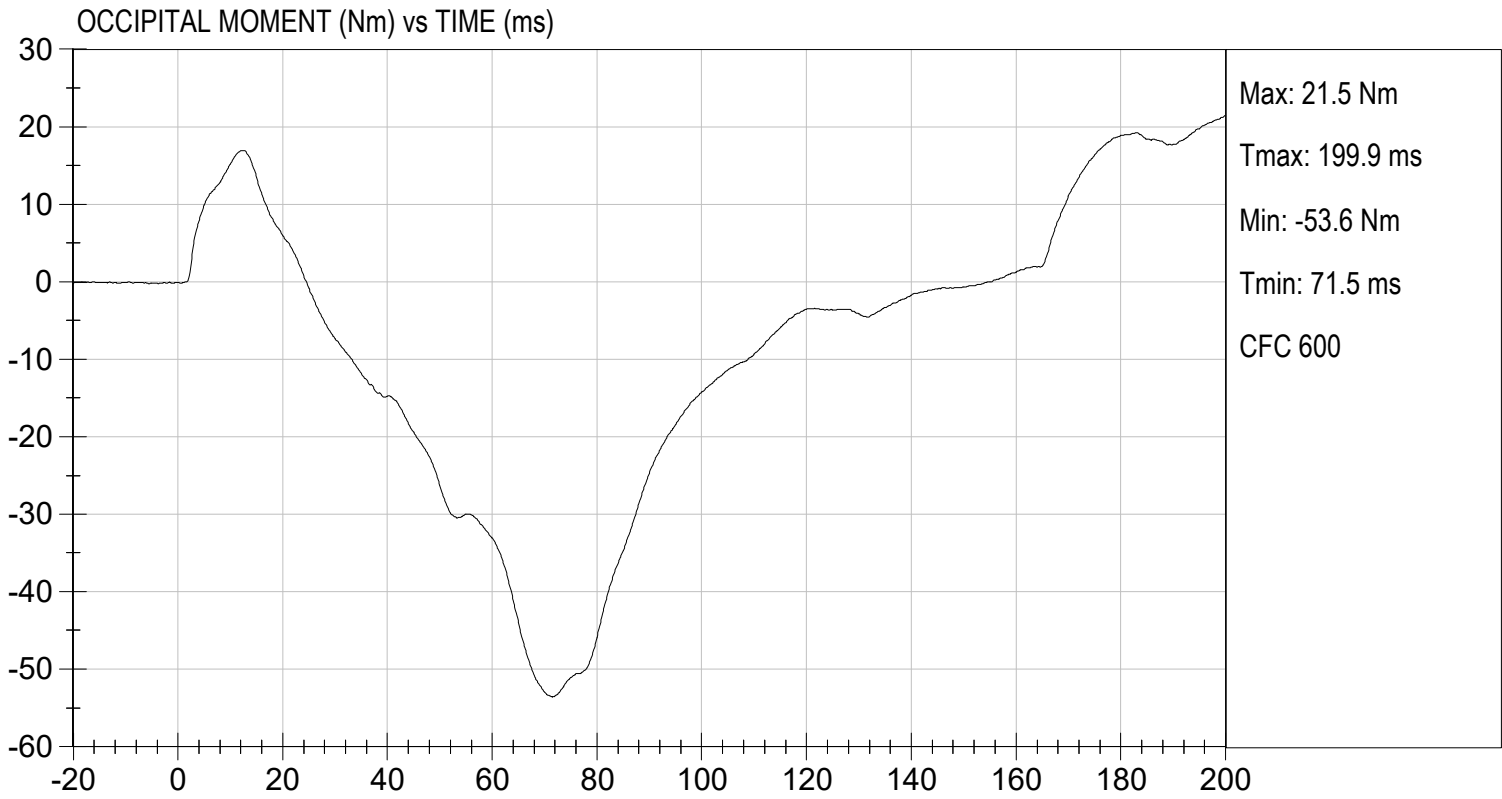
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	49	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.12	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.7	Pass
	20 ms	m/s	3.1 to 3.9	3.6	Pass
	30 ms	m/s	4.6 to 5.6	5.2	Pass
D Plane Rotation	Max	deg	99 to 114	110	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-54	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	109	Pass
<b>Overall Results</b>					<b>Pass</b>

  
 Laboratory Technician

08/30/2024  
 Test Date

  
 Approved By





MGA RESEARCH CORPORATION

THORAX IMPACT

HYBRID III 5TH PERCENTILE

ATD Serial No: 142

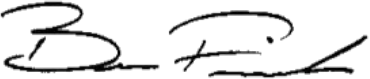
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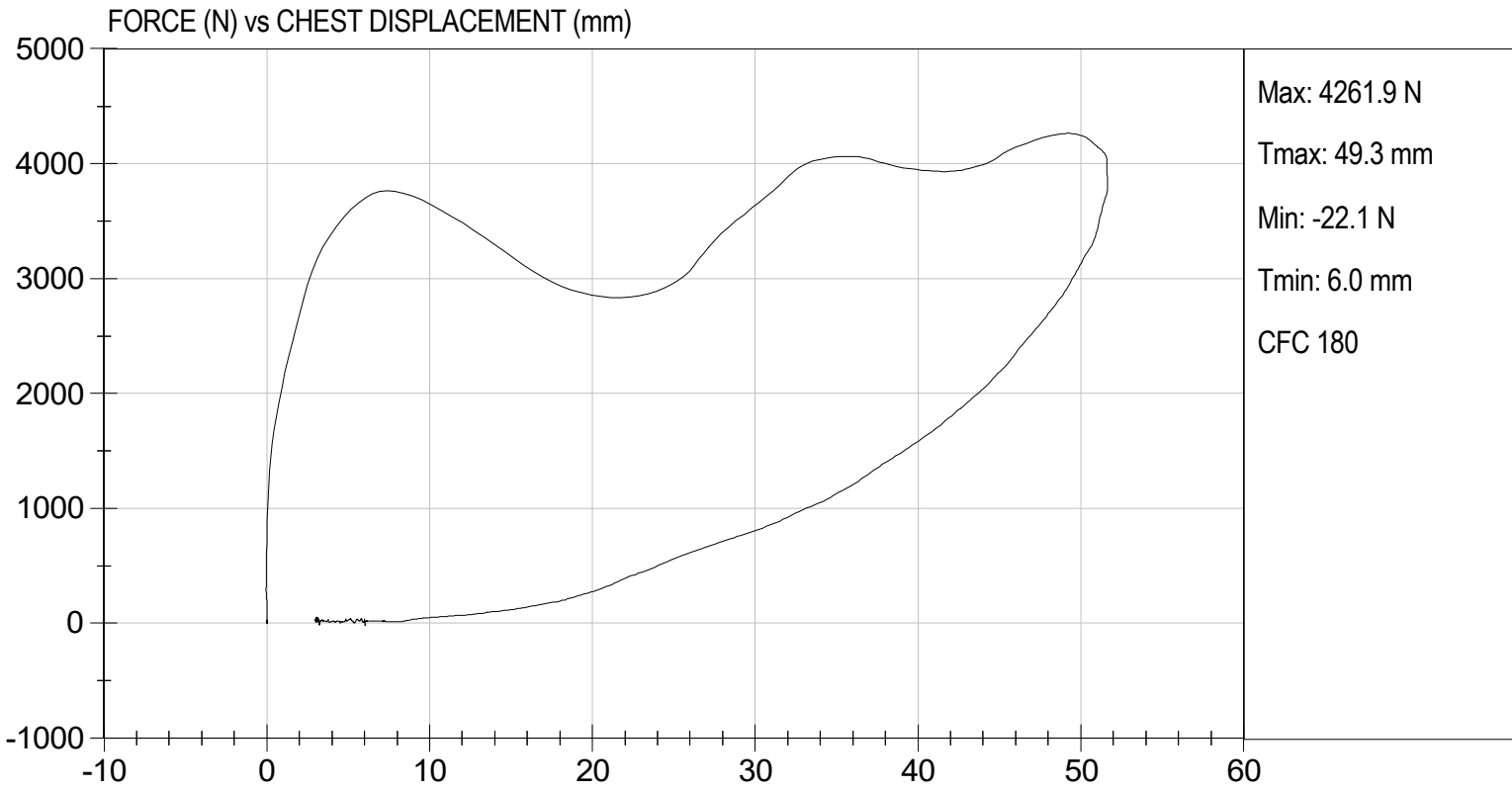
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.2	Pass
Relative Humidity	%	10 to 70	49	Pass
Probe Speed	m/s	6.59 to 6.83	6.68	Pass
Peak Deflection	mm	50 to 58	52	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4246	Pass
Internal Hysteresis	%	69 to 85	75	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4262	Pass
Overall Test Results				Pass

  
Laboratory Technician

08/30/2024

Test Date

  
Approved By



MGA RESEARCH CORPORATION  
RIGHT KNEE IMPACT TEST  
HYBRID III 5TH PERCENTILE

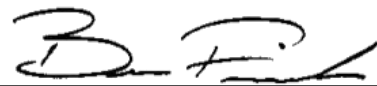
ATD Serial No: 142

Test I.D: D242235

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Probe Speed	m/s	2.07 to 2.13	2.07	Pass
Maximum Force	N	3450 to 4060	3454	Pass
			Overall Test Results	Pass

  
Laboratory Technician

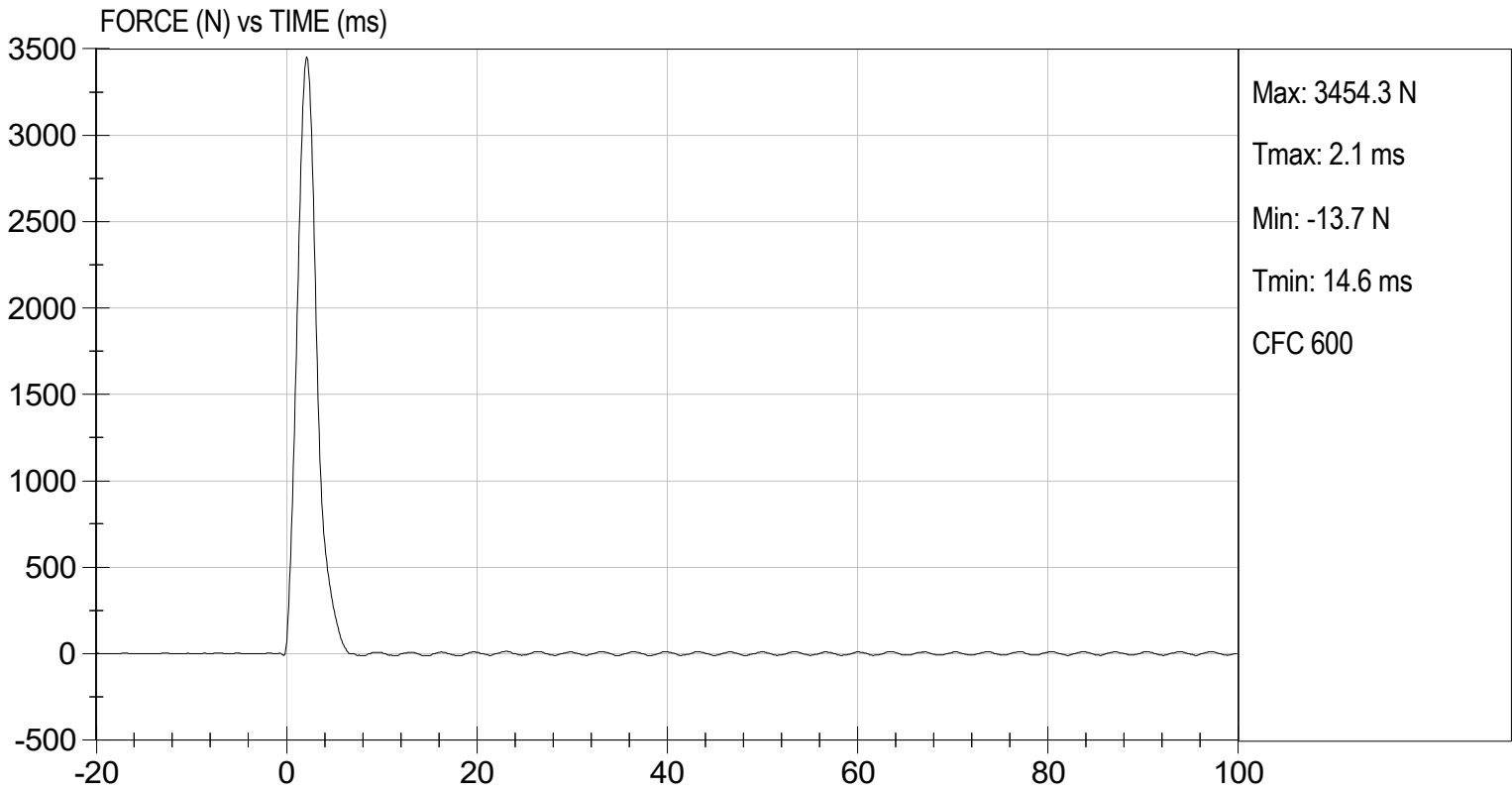
08/30/2024  
Test Date

  
Approved By



TEST DESC: RIGHT KNEE  
VELOCITY: 6.80 ft/s, 2.07 m/s

TEST DATE: 08/30/2024  
TEST #: D242235



MGA RESEARCH CORPORATION

LEFT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

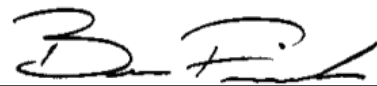
ATD Serial No: 142

Test I.D: D242236

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Probe Speed	m/s	2.07 to 2.13	2.10	Pass
Maximum Force	N	3450 to 4060	3517	Pass
Overall Test Results				Pass

  
Laboratory Technician

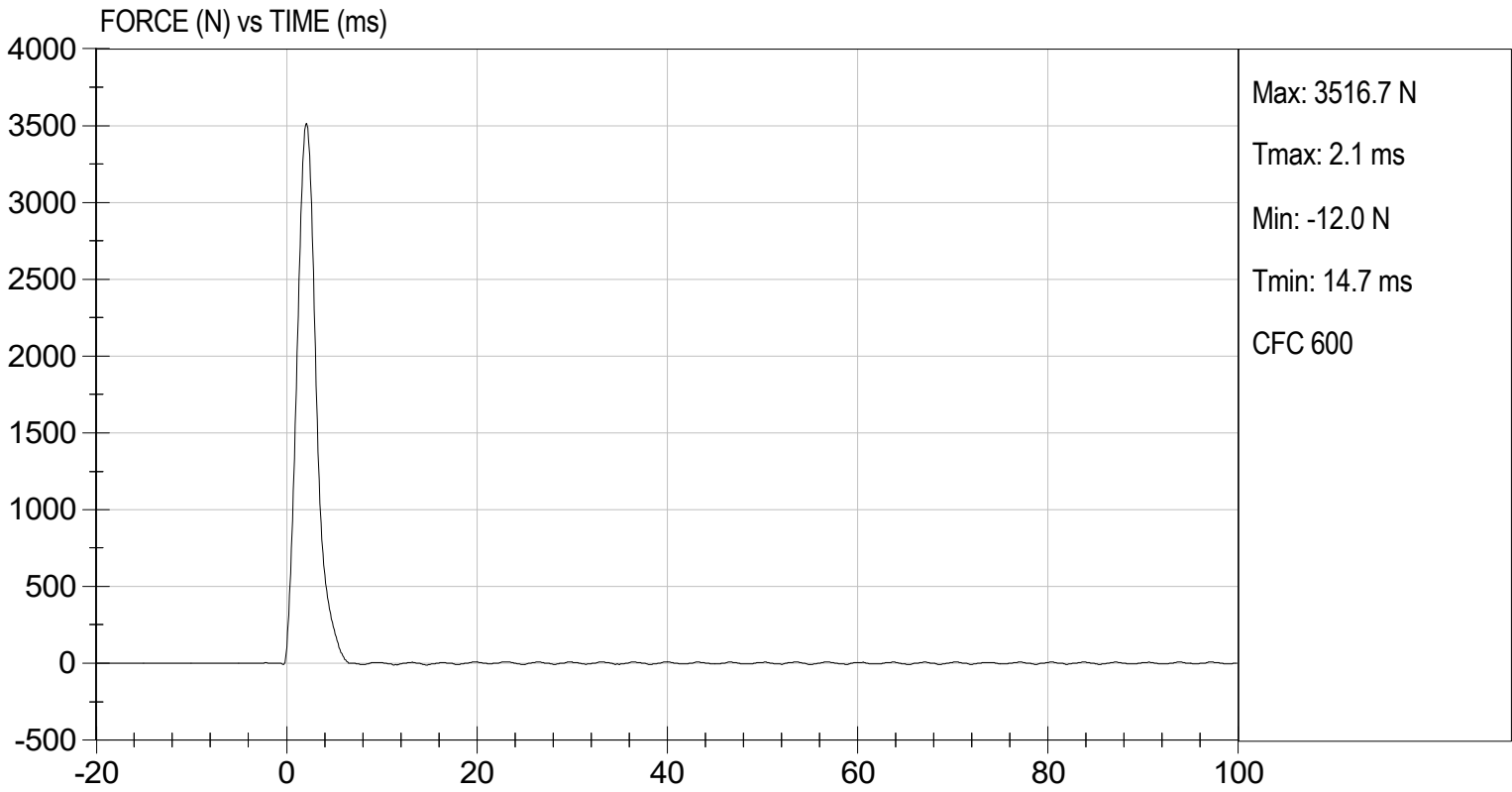
08/30/2024  
Test Date

  
Approved By



TEST DESC: LEFT KNEE  
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 08/30/2024  
TEST #: D242236



MGA RESEARCH CORPORATION

TORSO FLEXION TEST

HYBRID III 5TH PERCENTILE

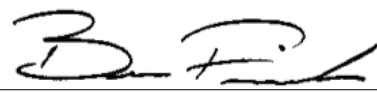
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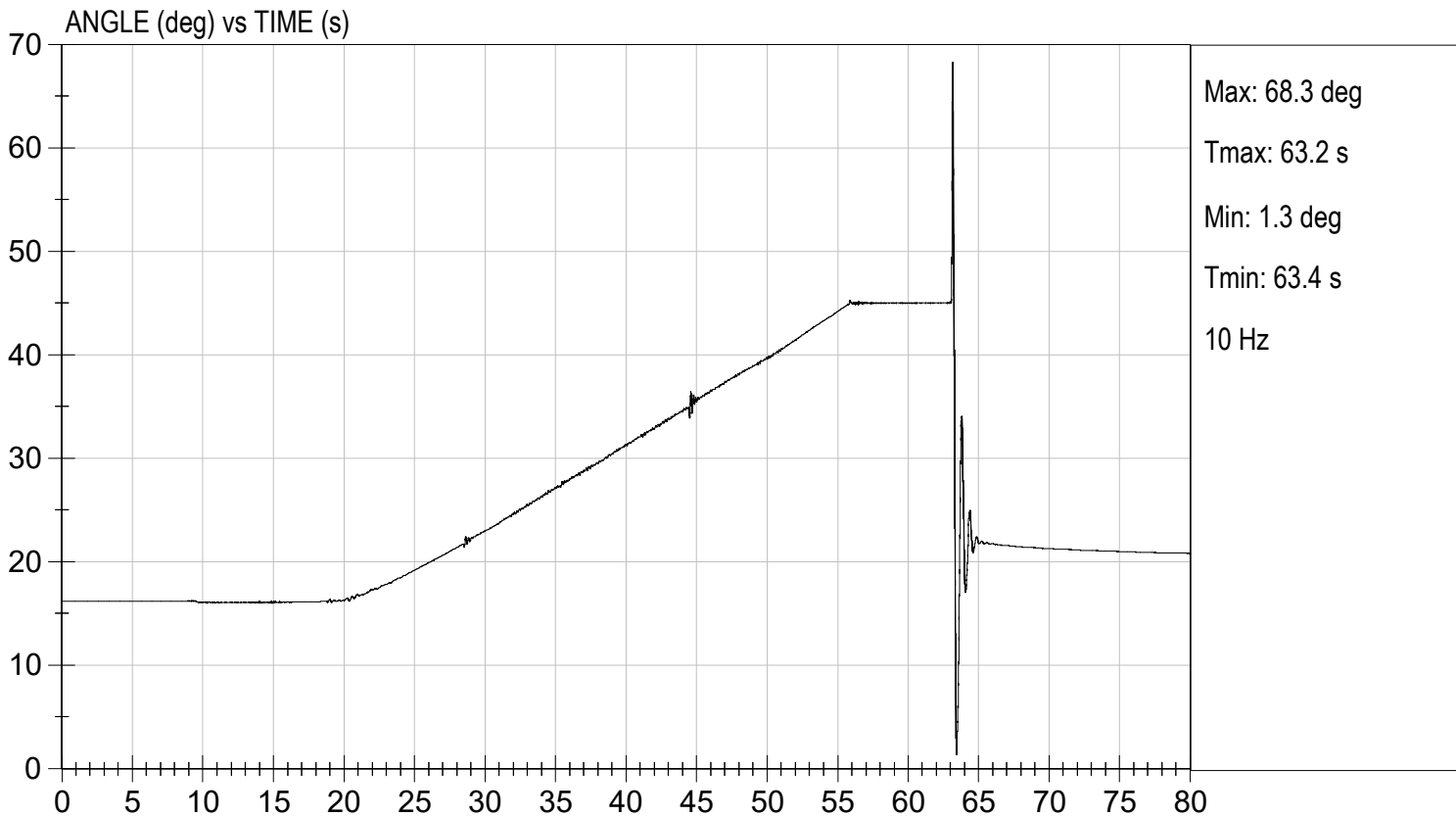
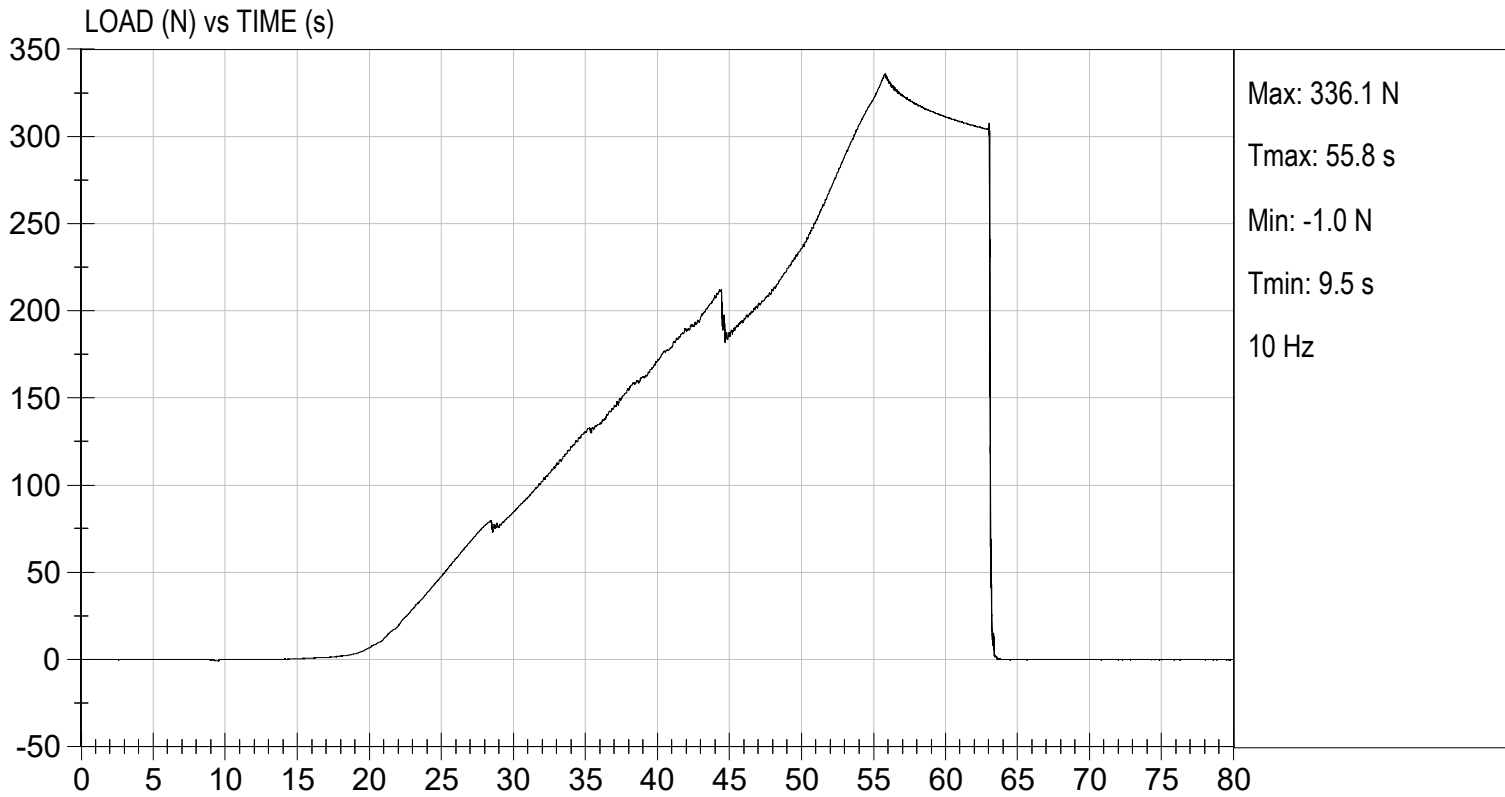
Test I.D: D242237

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	51	Pass
Initial Angle	deg	0 to 20	16	Pass
Return Angle	deg	+/- 8	5	Pass
Force at 45 deg	N	320 to 390	336	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.8	Pass
			Overall Result	Pass

  
Laboratory Technician

08/30/2024  
Test Date

  
Approved By



**QUALIFICATION TEST RESULTS**

**POST-TEST**

**HYBRID III 5<sup>TH</sup> PERCENTILE FEMALE - PASSENGER ATD**

**MGA RESEARCH CORPORATION**  
**HEAD DROP TEST**  
**HYBRID III 5TH PERCENTILE**

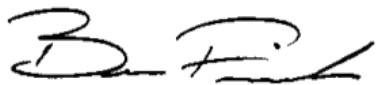
ATD Serial No: 142

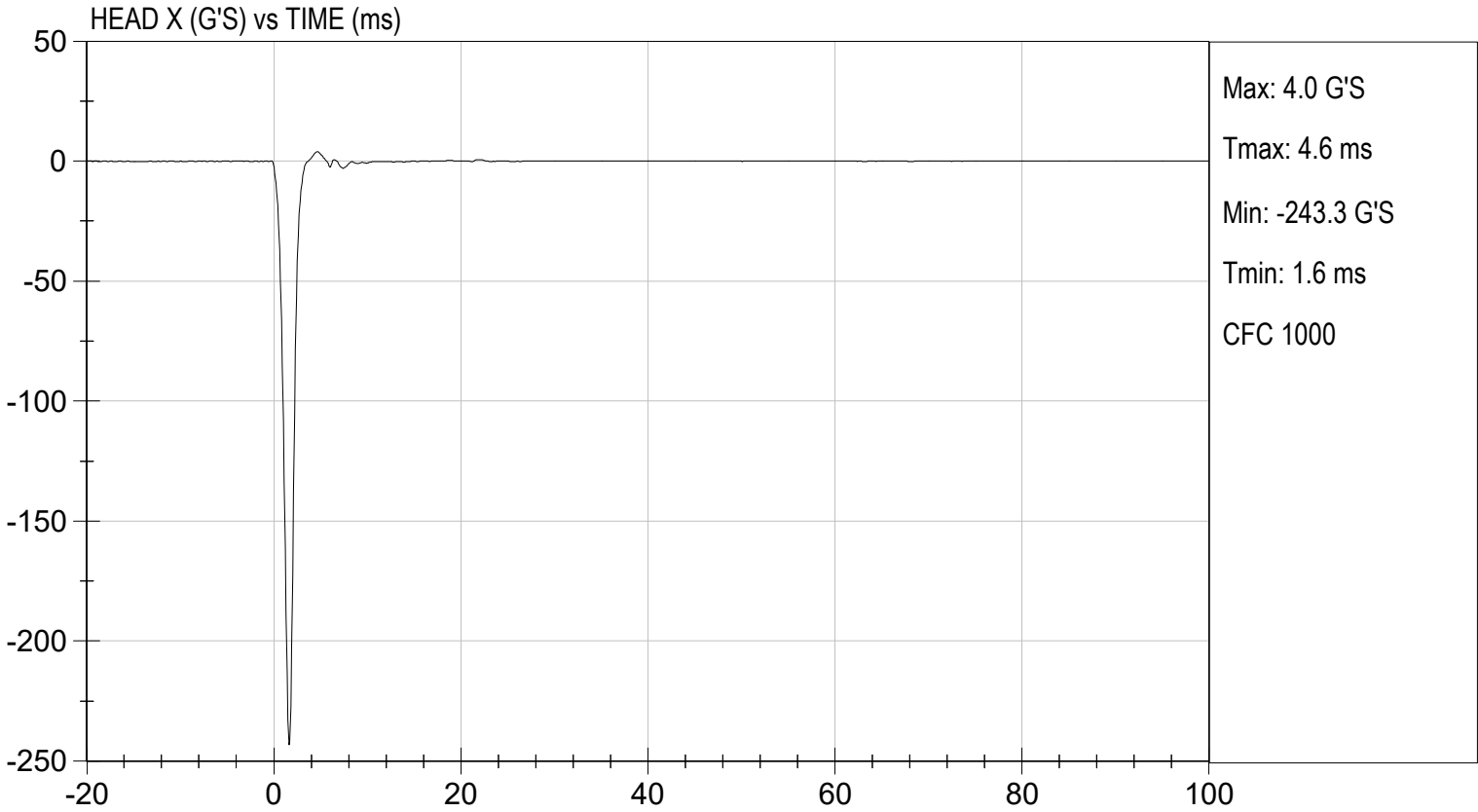
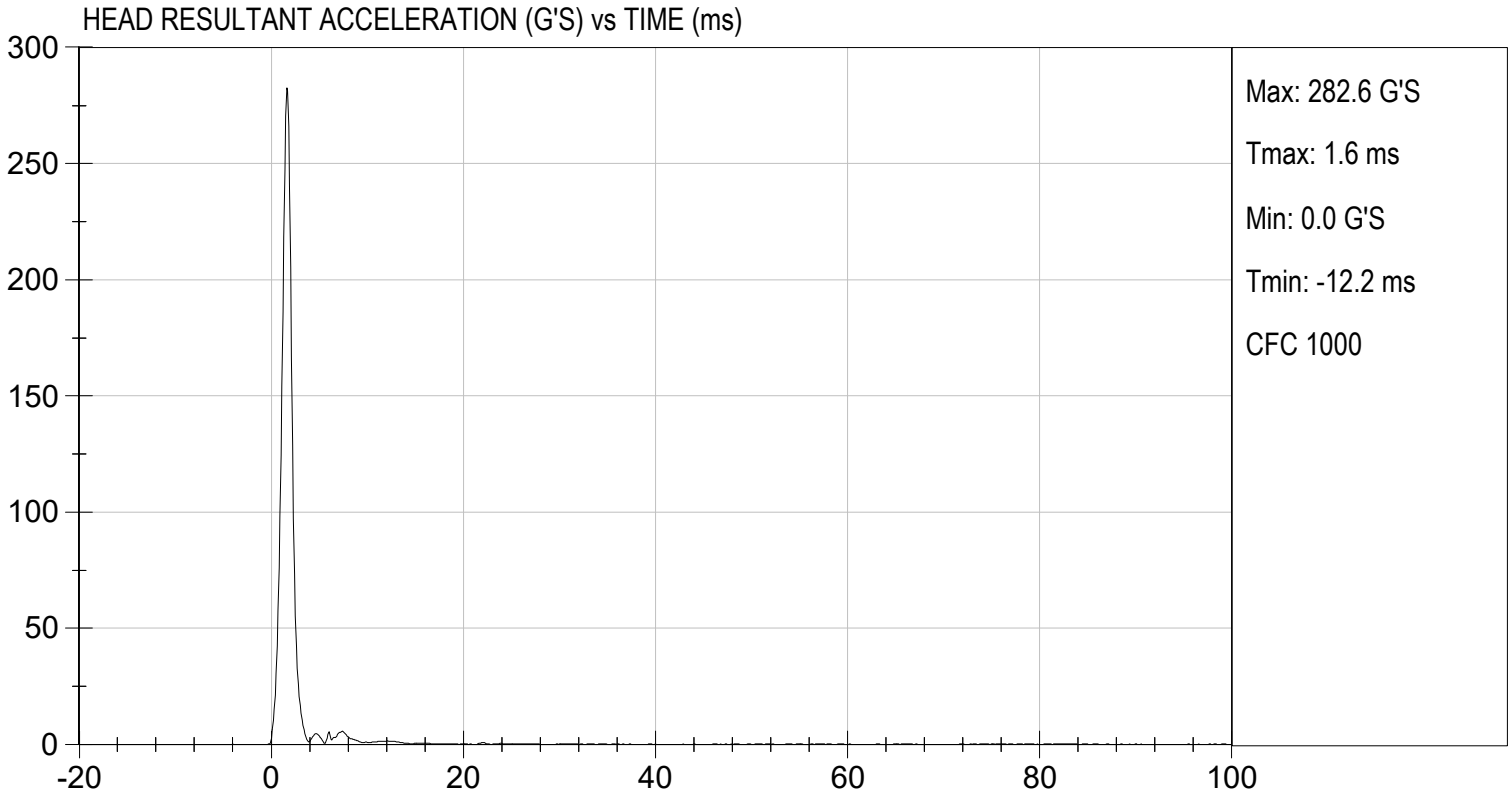
Test ID: D242381

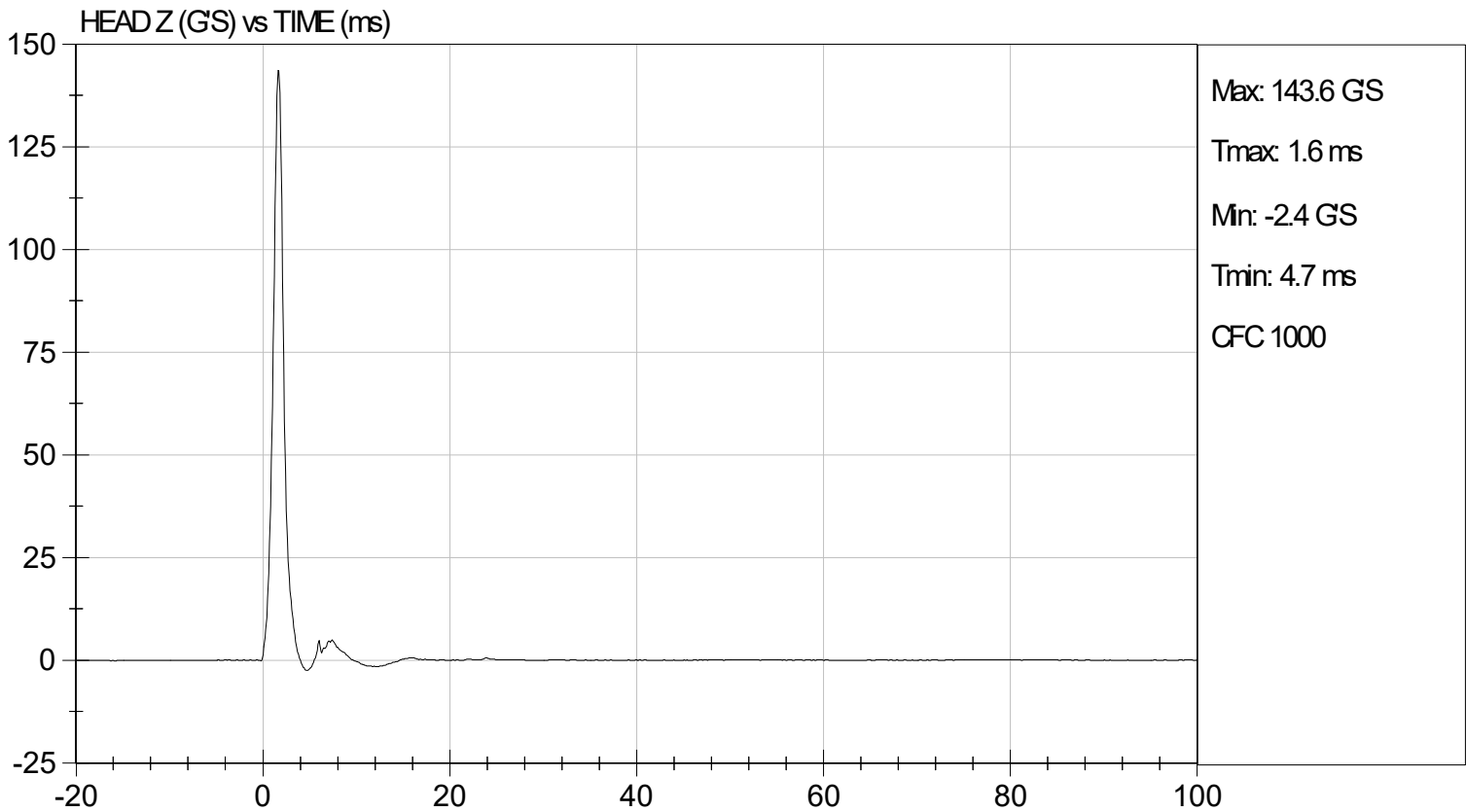
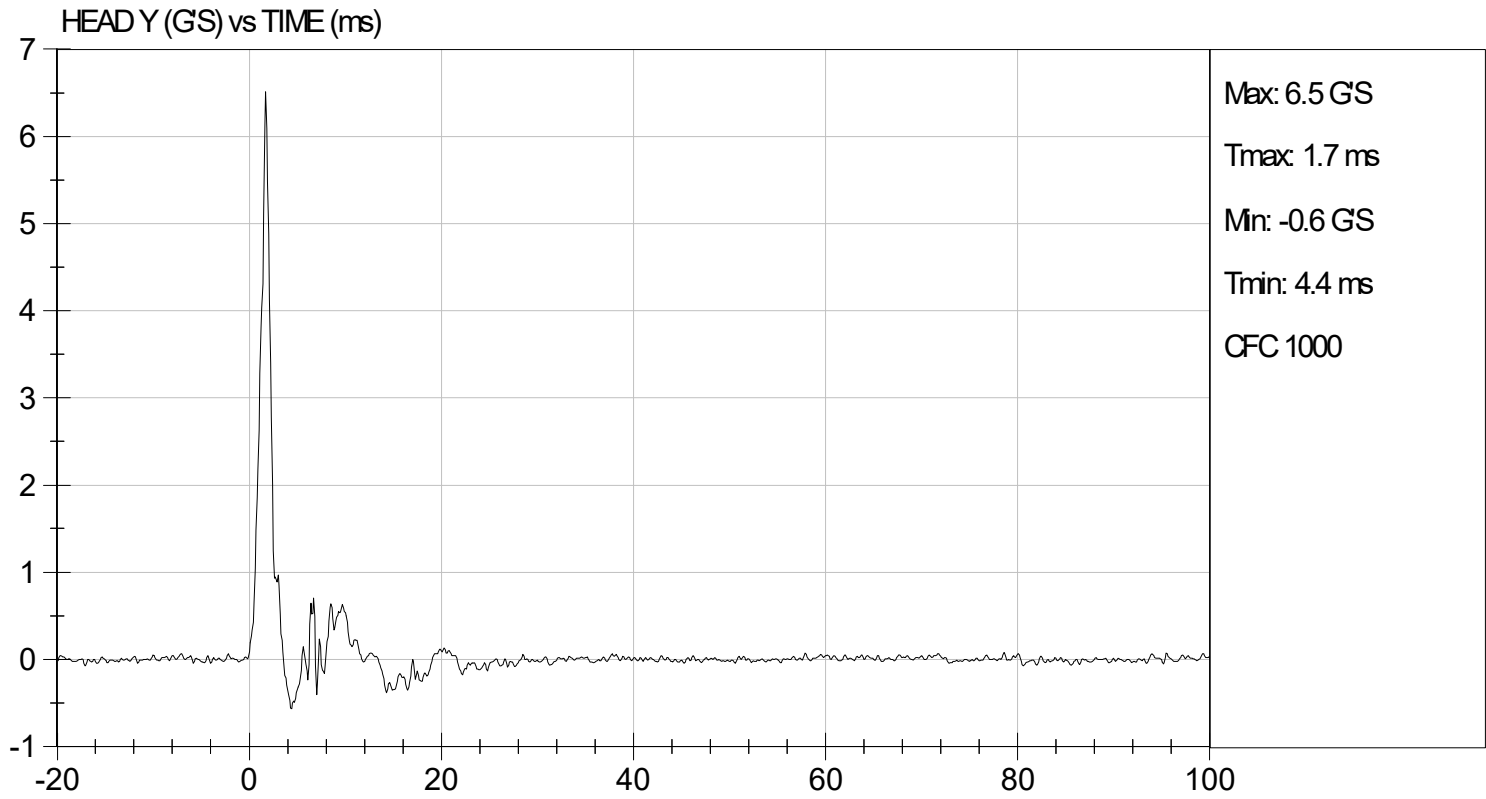
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Peak Resultant Acceleration	G's	250 to 300	283	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	6.5	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

  
 Laboratory Technician

09/19/2024  
 Test Date

  
 Approved By





**MGA RESEARCH CORPORATION**

**NECK FLEXION TEST**

**HYBRID III 5TH PERCENTILE**

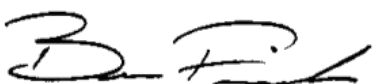
ATD Serial No: 142

Test I.D.: D242382

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity		%	10 to 70	43	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.06	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.1	Pass
	20 ms	m/s	4.0 to 5.0	4.2	Pass
	30 ms	m/s	5.8 to 7.0	6.6	Pass
D Plane Rotation	Max	deg	77 to 91	80	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	71	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	88	Pass
Overall Results					Pass

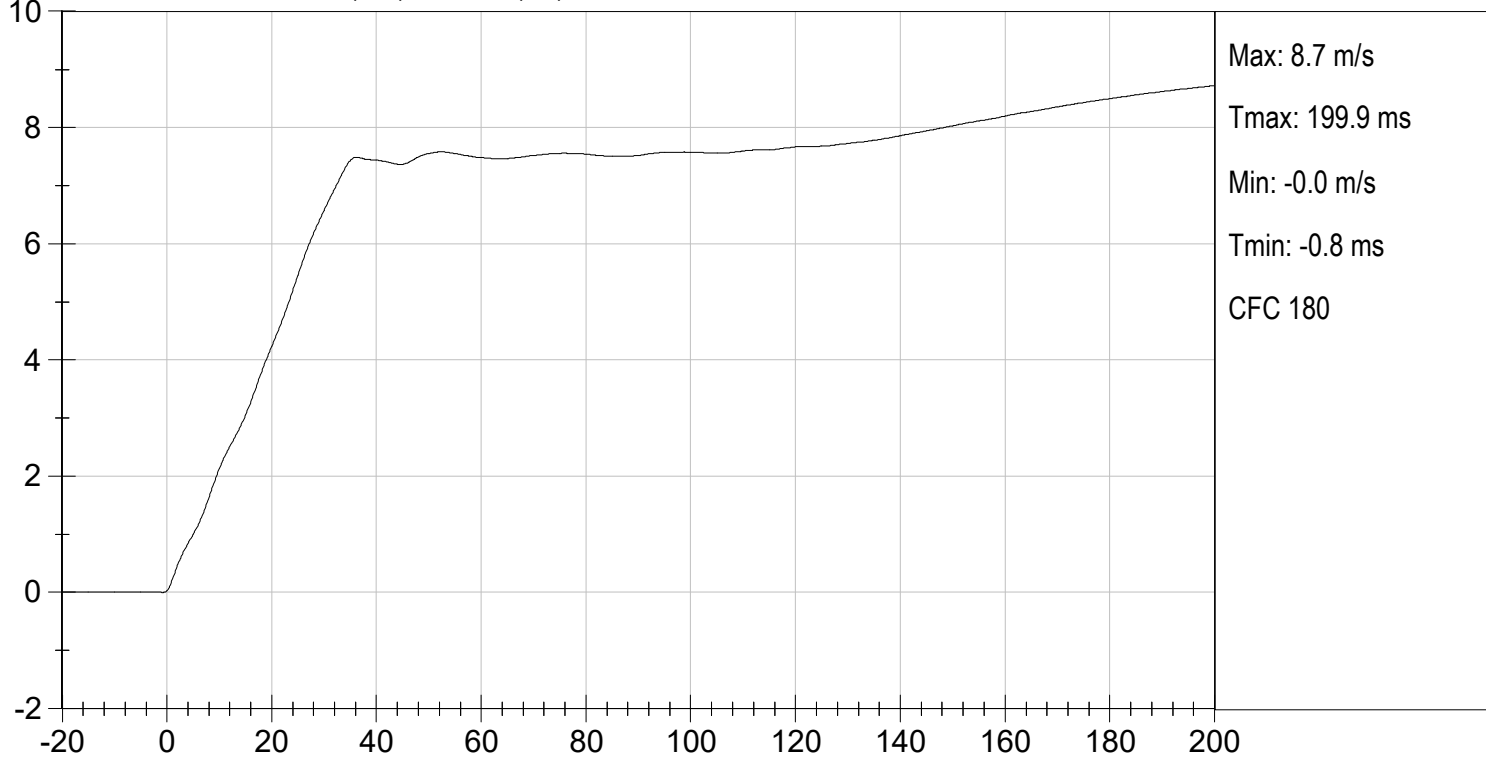
  
 \_\_\_\_\_  
 Laboratory Technician

09/19/2024  
 \_\_\_\_\_  
 Test Date

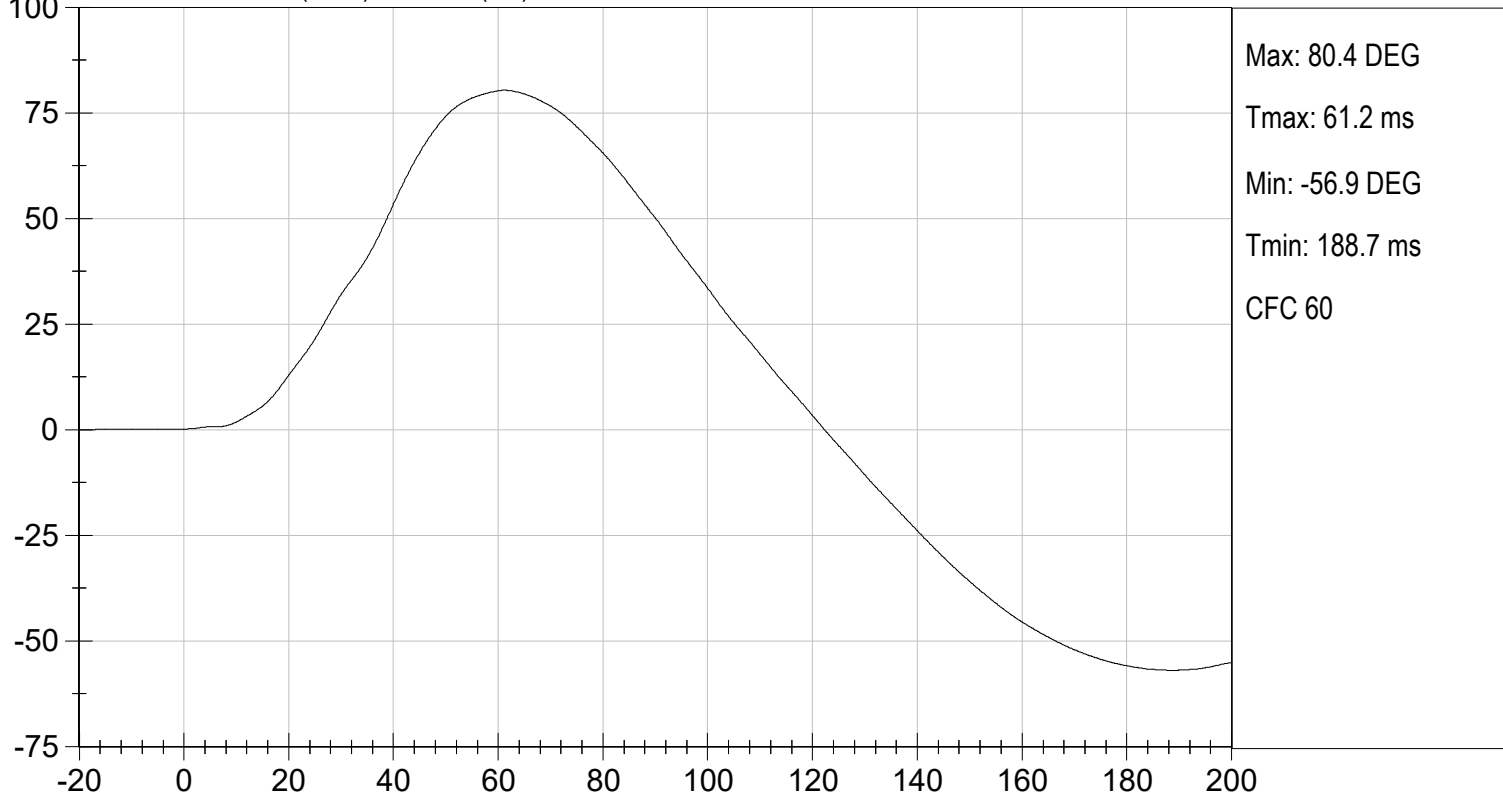
  
 \_\_\_\_\_  
 Approved By

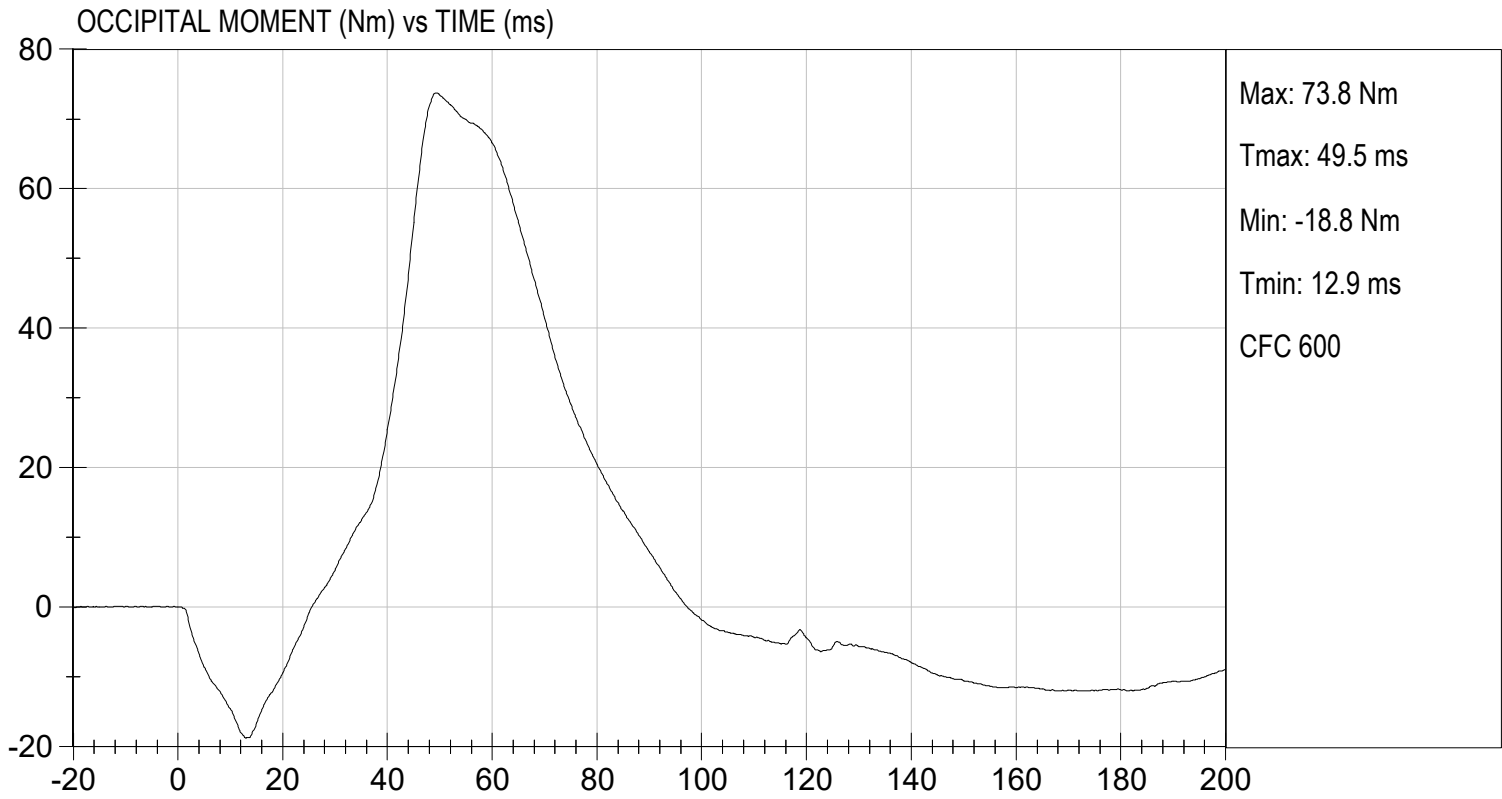


PENDULUM VELOCITY (m/s) vs TIME (ms)



NECK ROTATION (DEG) vs TIME (ms)





**MGA RESEARCH CORPORATION**  
**NECK EXTENSION TEST**  
**HYBRID III 5TH PERCENTILE**

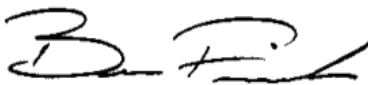
ATD Serial No: 142

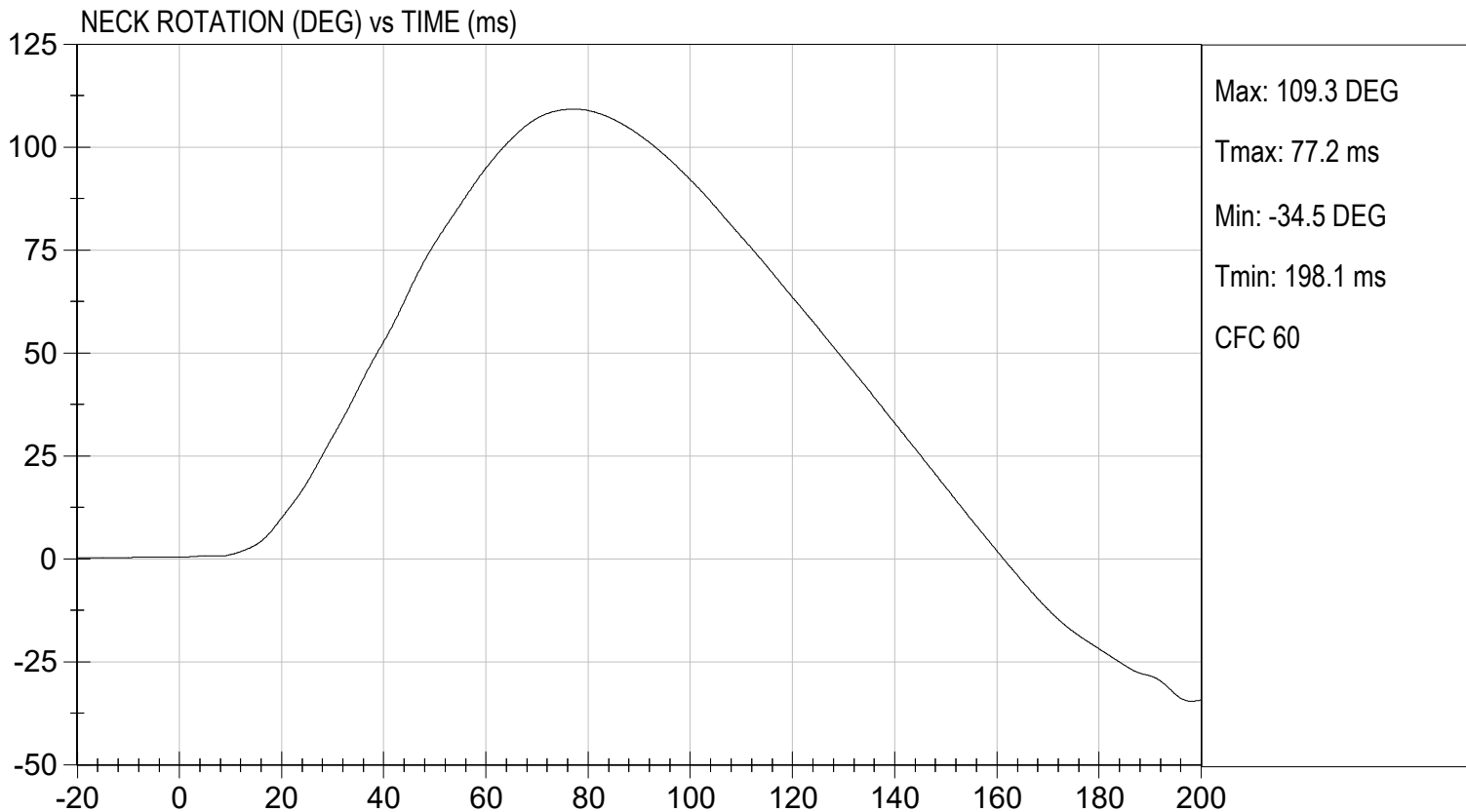
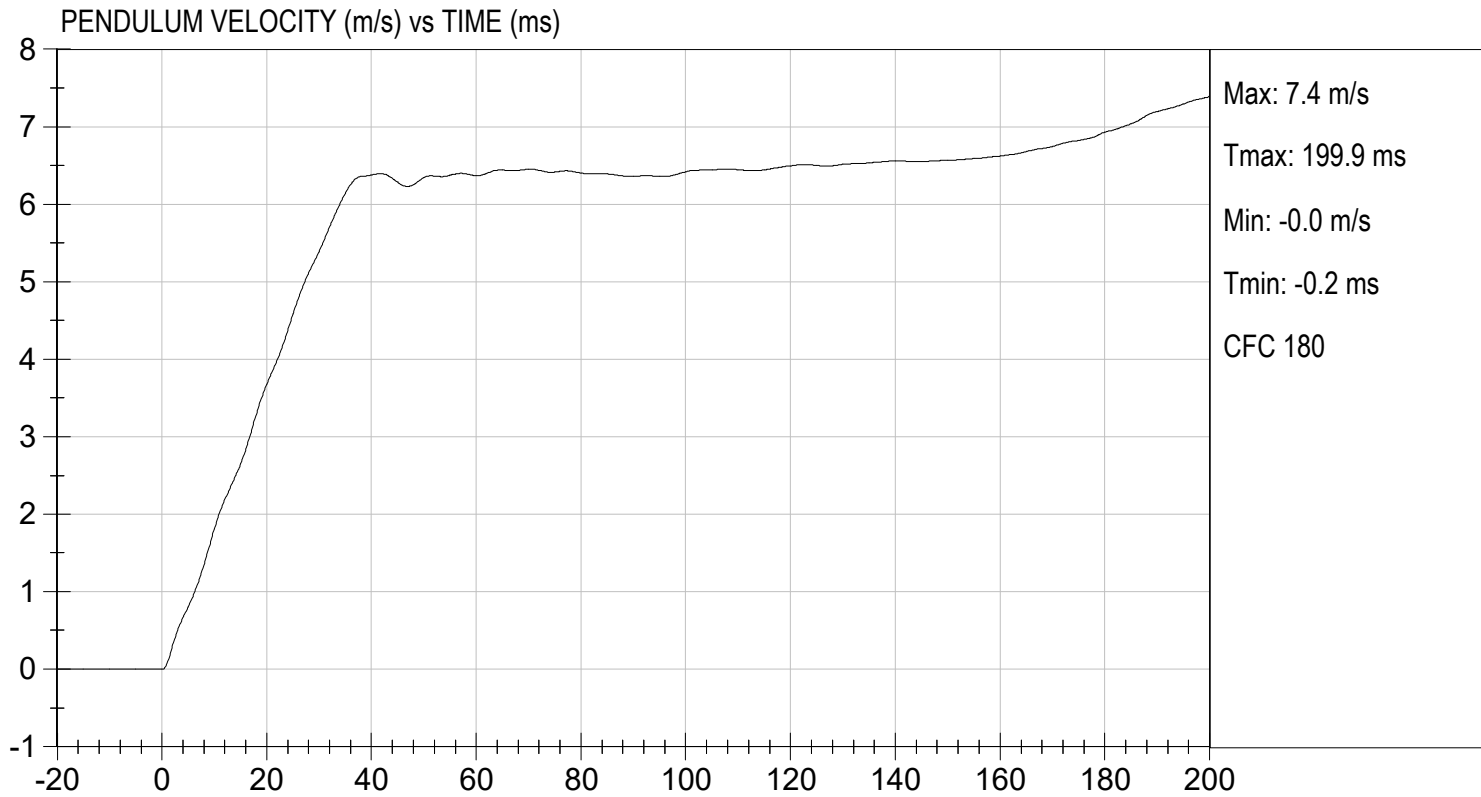
Test I.D: D242383

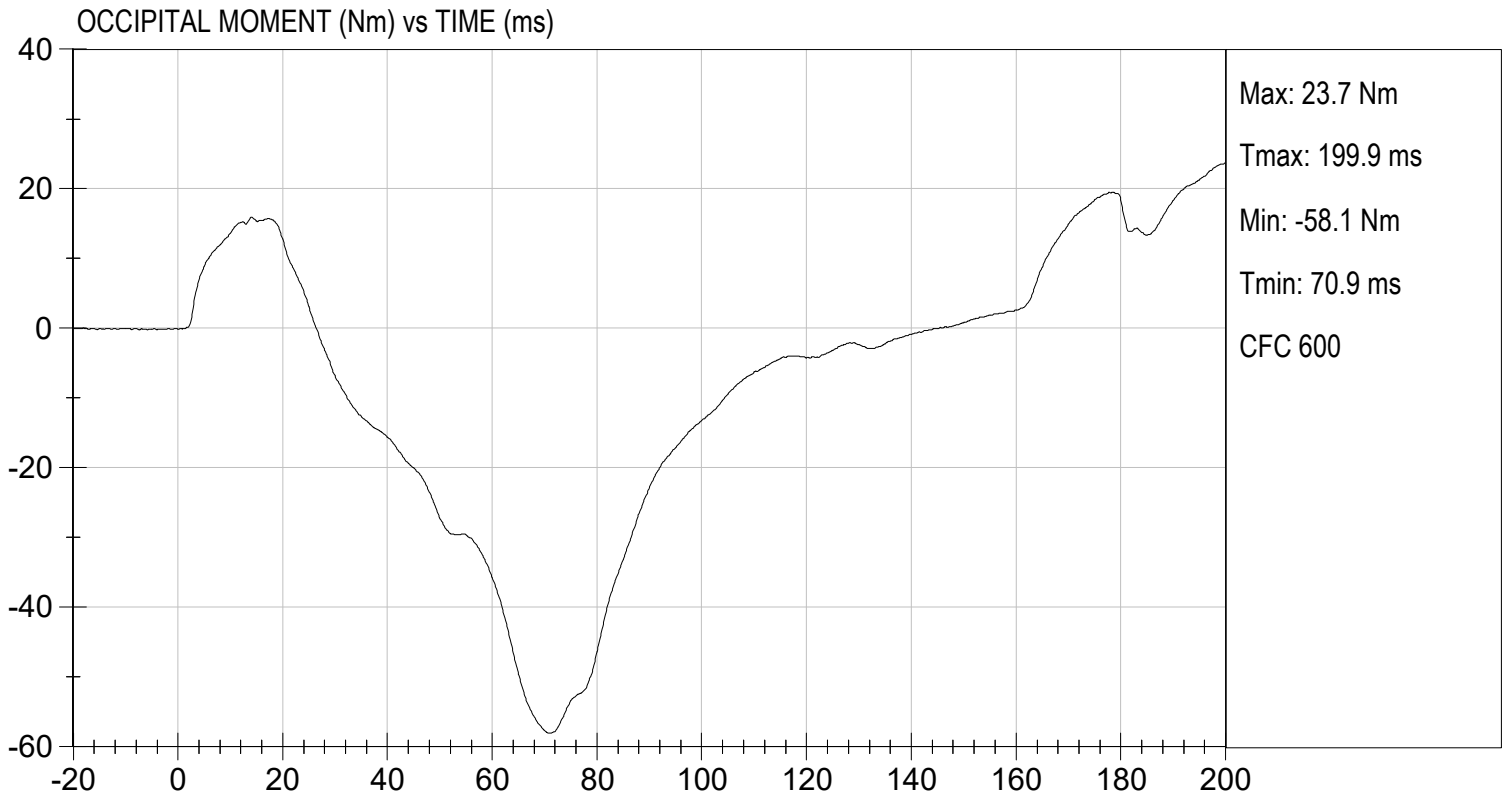
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity		%	10 to 70	43	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.05	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.8	Pass
	20 ms	m/s	3.1 to 3.9	3.7	Pass
	30 ms	m/s	4.6 to 5.6	5.4	Pass
D Plane Rotation	Max	deg	99 to 114	109	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-58	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	105	Pass
<b>Overall Results</b>					<b>Pass</b>

  
 Laboratory Technician

09/19/2024  
 Test Date

  
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THORAX IMPACT

HYBRID III 5TH PERCENTILE

ATD Serial No: 142

Test I.D: D242384

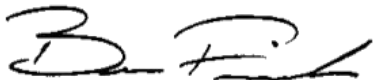
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.2	Pass
Relative Humidity	%	10 to 70	46	Pass
Probe Speed	m/s	6.59 to 6.83	6.68	Pass
Peak Deflection	mm	50 to 58	52	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4252	Pass
Internal Hysteresis	%	69 to 85	75	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4287	Pass
			Overall Test Results	Pass



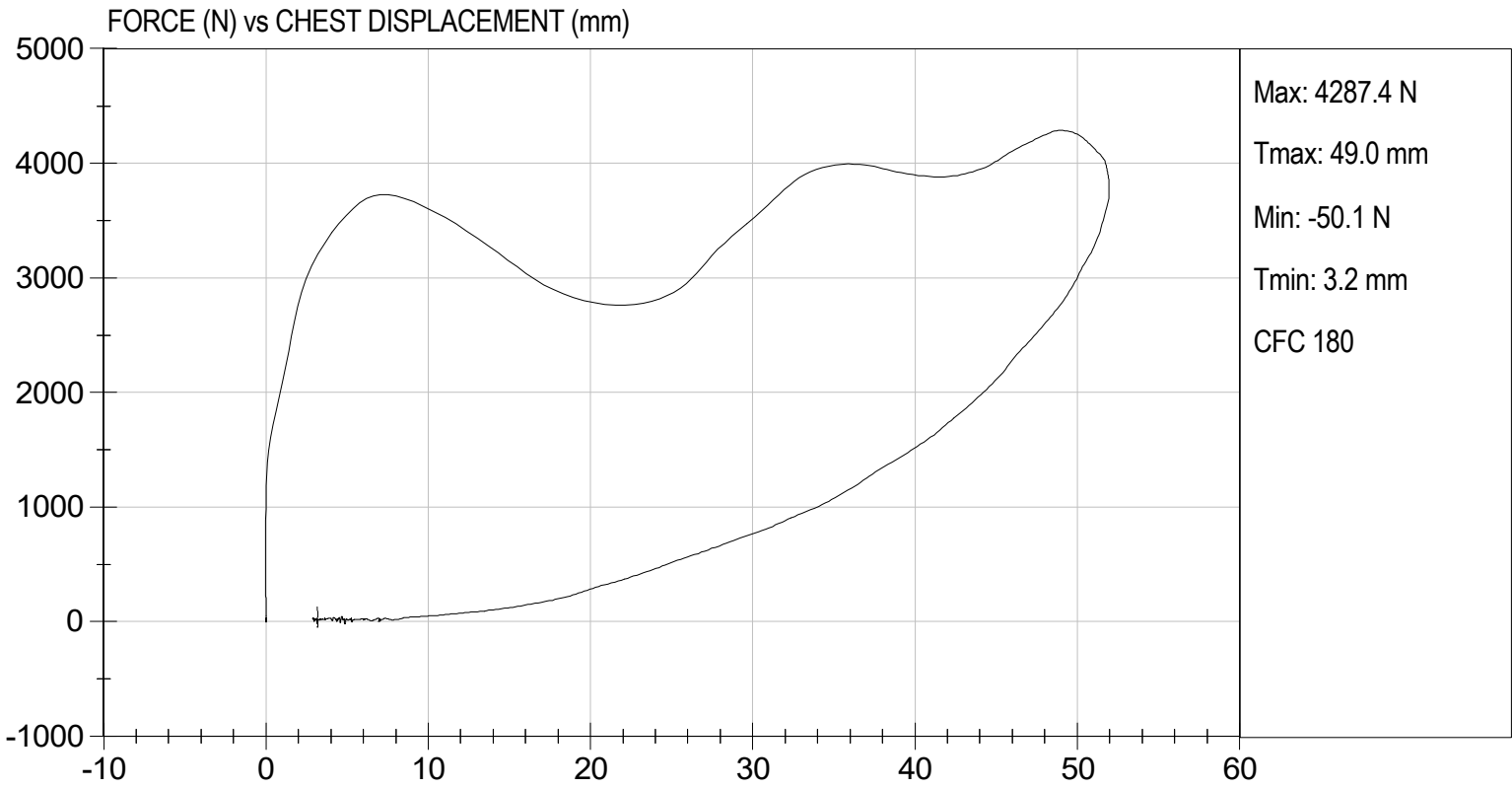
Laboratory Technician

09/19/2024

Test Date



Approved By



MGA RESEARCH CORPORATION  
RIGHT KNEE IMPACT TEST  
HYBRID III 5TH PERCENTILE

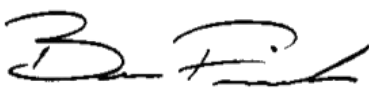
ATD Serial No: 142

Test I.D: D242385

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Probe Speed	m/s	2.07 to 2.13	2.10	Pass
Maximum Force	N	3450 to 4060	3802	Pass
			Overall Test Results	Pass

  
Laboratory Technician

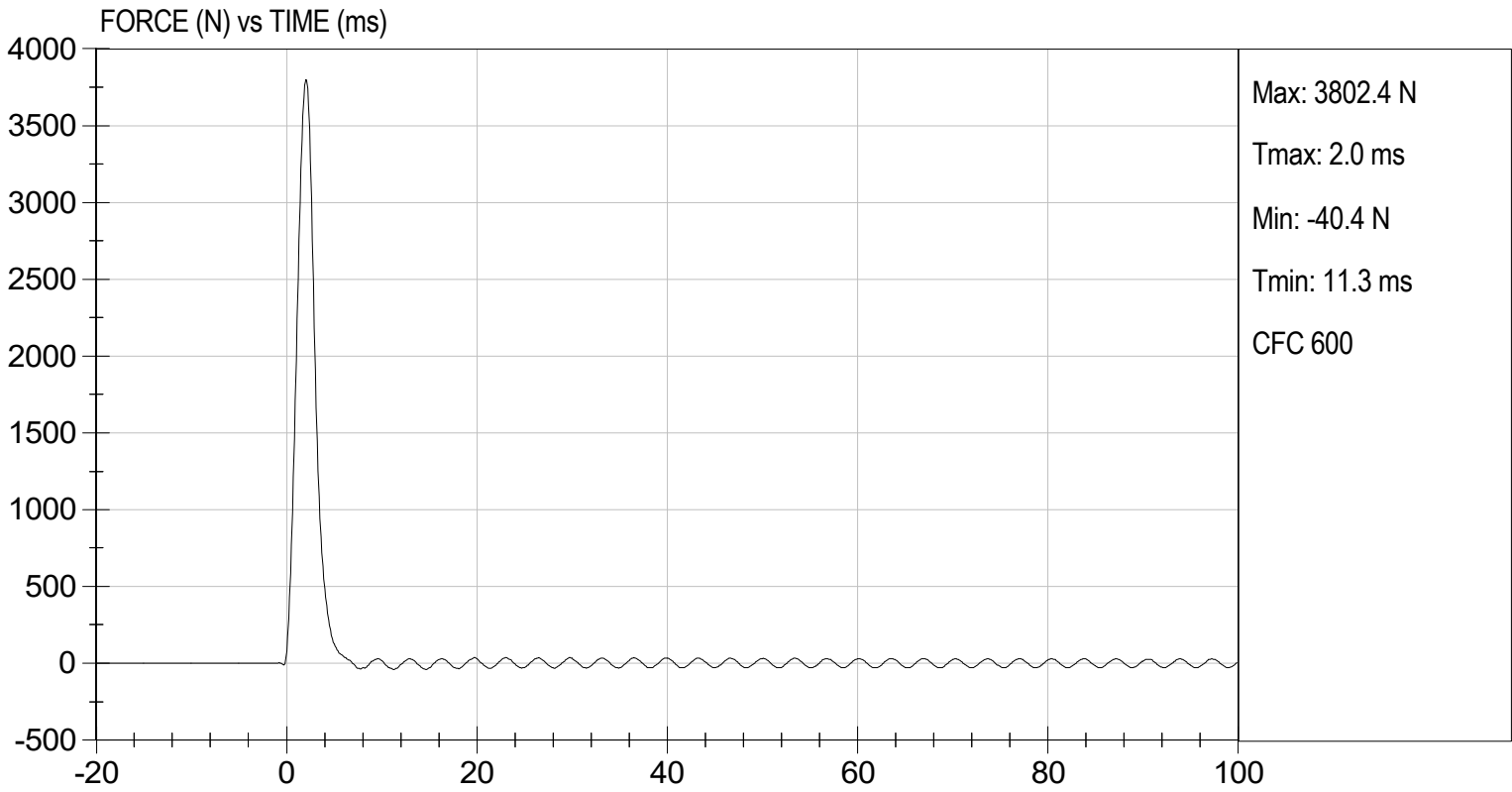
09/19/2024  
Test Date

  
Approved By



TEST DESC: RIGHT KNEE  
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 09/19/2024  
TEST #: D242385



MGA RESEARCH CORPORATION

LEFT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

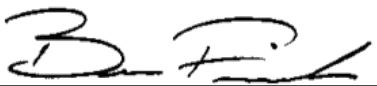
ATD Serial No: 142

Test I.D: D242386

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Probe Speed	m/s	2.07 to 2.13	2.10	Pass
Maximum Force	N	3450 to 4060	3935	Pass
Overall Test Results				Pass

  
Laboratory Technician

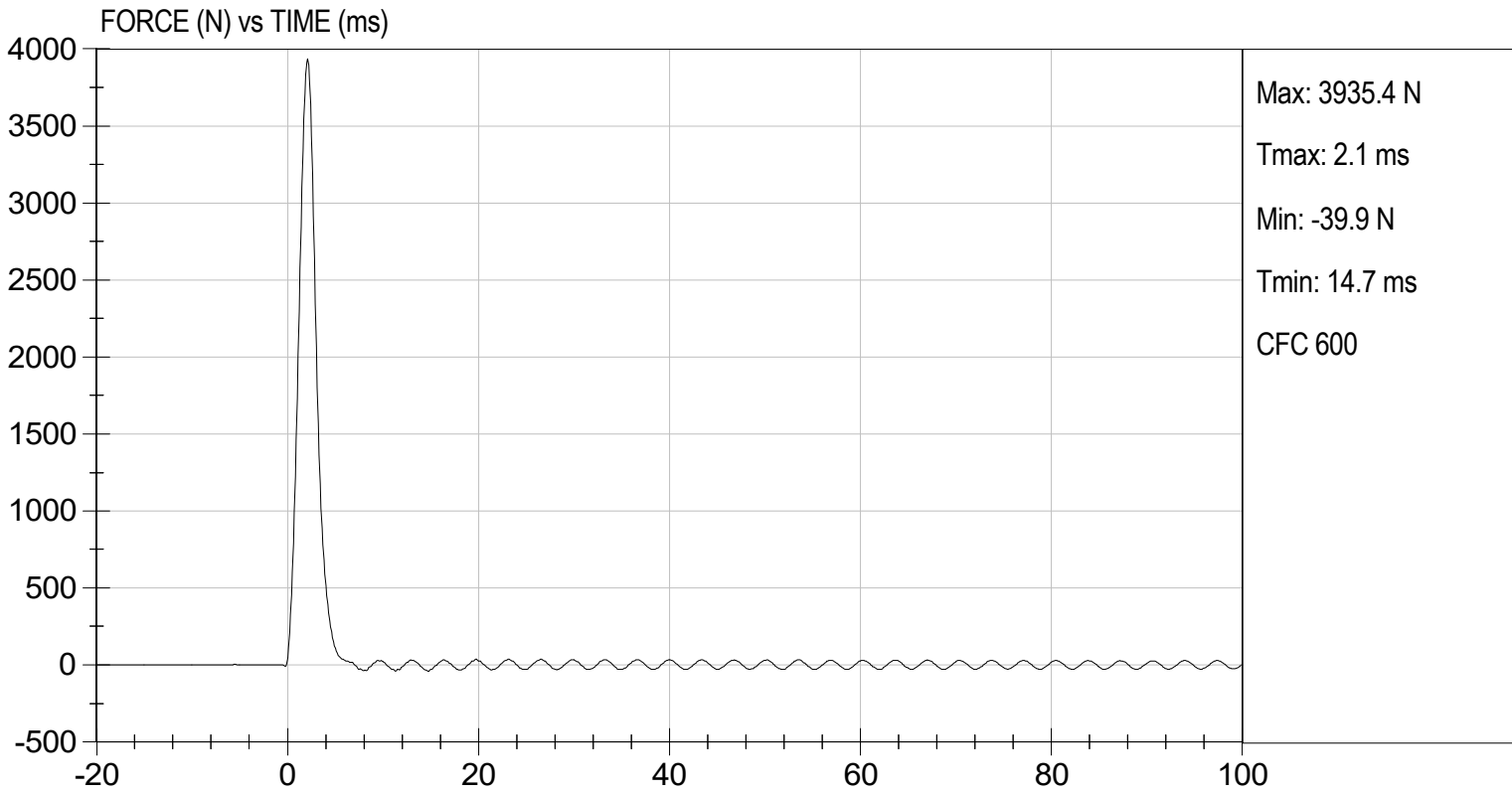
09/19/2024  
Test Date

  
Approved By



TEST DESC: LEFT KNEE  
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 09/19/2024  
TEST #: D242386



MGA RESEARCH CORPORATION

TORSO FLEXION TEST

HYBRID III 5TH PERCENTILE

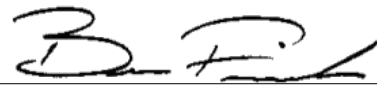
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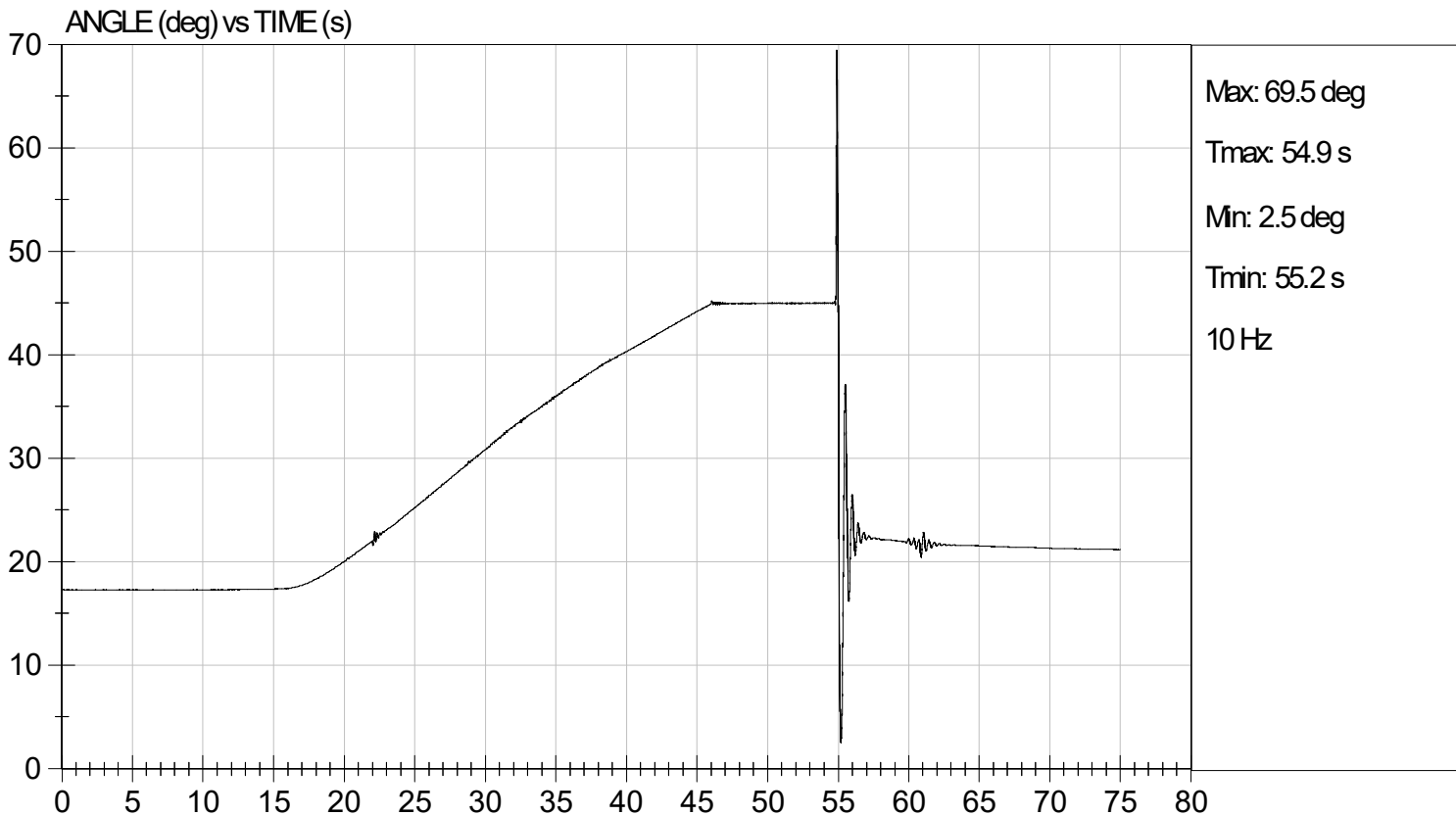
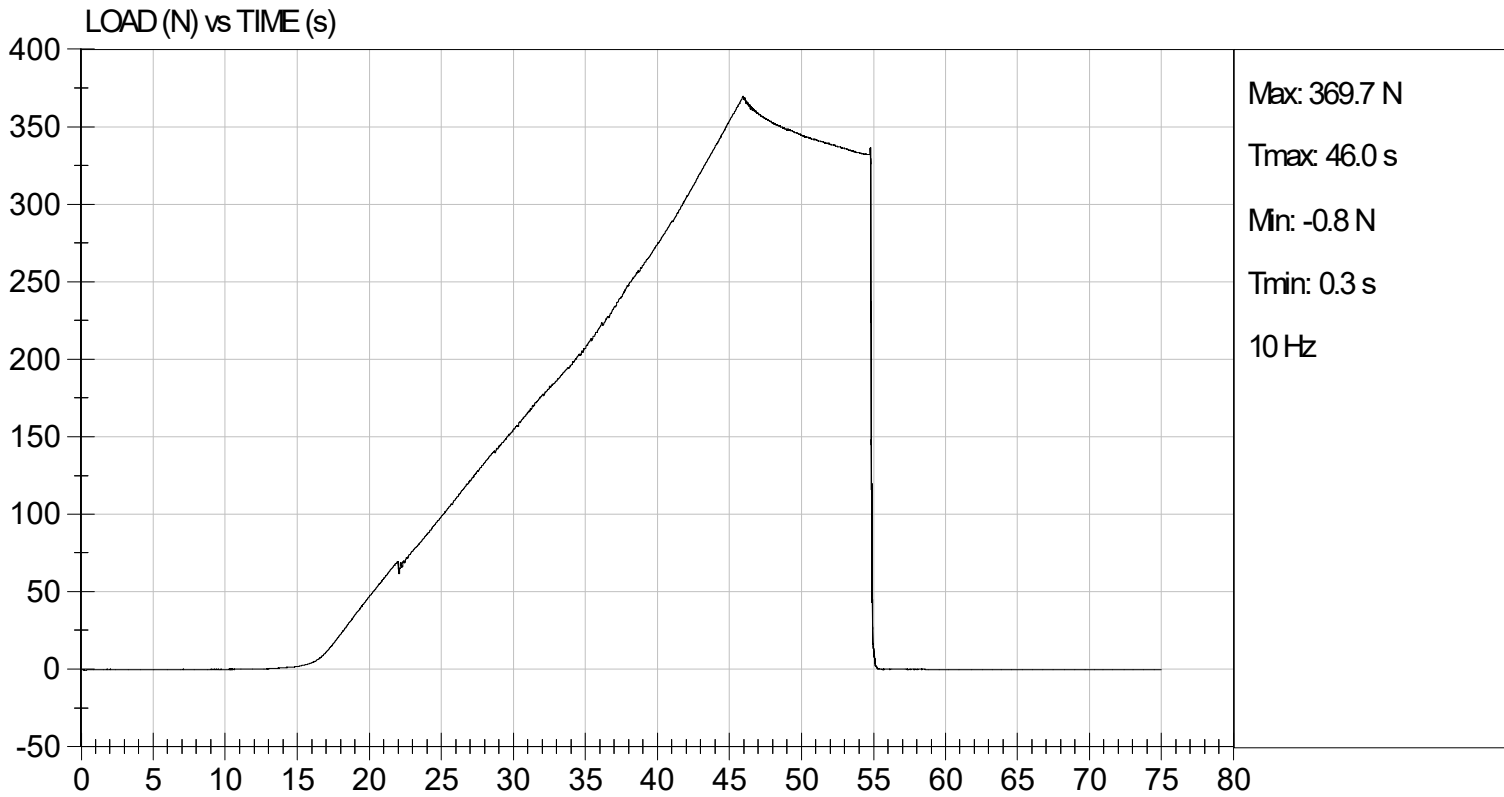
Test I.D: D242387

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Initial Angle	deg	0 to 20	17	Pass
Return Angle	deg	+/- 8	4	Pass
Force at 45 deg	N	320 to 390	370	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	1.0	Pass
			Overall Result	Pass

  
Laboratory Technician

09/19/2024  
Test Date

  
Approved By



**APPENDIX D**  
**TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION**

**TABLE 1 – DRIVER DUMMY INSTRUMENTATION**

Instrument Location			Axis	Hybrid III 50 <sup>th</sup> S/N 064		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers	Primary		X	T30960	Endevco	05/23/2024
			Y	P79743	Endevco	05/23/2024
			Z	P79741	Endevco	05/23/2024
	Redundant		X	P79744	Endevco	05/23/2024
			Y	P94834	Endevco	05/23/2024
			Z	P94856	Endevco	05/23/2024
Head Angular Rate Sensors			X	ARS7325	DTS	11/17/2023
			Y	ARS7340	DTS	11/17/2023
			Z	ARS7354	DTS	11/17/2023
Upper Neck Load Cell			Fx, Fy, Fz Mx, My, Mz	NG2022	Denton	05/24/2024
Chest Accelerometers	Primary		X	P86793	Endevco	05/23/2024
			Y	P88348	Endevco	05/23/2024
			Z	P86792	Endevco	05/23/2024
	Redundant		X	P88667	Endevco	05/23/2024
			Y	P94109	Endevco	05/23/2024
			Z	P88666	Endevco	05/23/2024
Chest Potentiometer			X	064	Humanetics	05/23/2024
Pelvis Accelerometers			X	P97742	Endevco	05/23/2024
			Y	P96038	Endevco	05/23/2024
			Z	P95526	Endevco	05/23/2024
Femur Load Cells	Right	Primary	Z	FG121P	Denton	05/22/2024
		Redundant	Z	FG121R	Denton	05/22/2024
	Left	Primary	Z	FG122P	Denton	05/22/2024
		Redundant	Z	FG122R	Denton	05/22/2024
Tibia Load Cells	Right	Upper	Mx, My, Fz	TG408	Denton	11/28/2024
		Lower	Mx, My, Fz	AG116	Denton	11/28/2024
	Left	Upper	Mx, My, Fz	TG480	Denton	11/28/2024
		Lower	Mx, My, Fz	AG502	Denton	11/28/2024
Foot Accelerometers	Right	Rear	X	T22486	Endevco	05/23/2024
			Z	P97382	Endevco	05/23/2024
		Front	Z	P82120	Endevco	05/23/2024
	Left	Rear	X	T16468	Endevco	05/23/2024
			Z	T32154	Endevco	05/23/2024
		Front	Z	T32190	Endevco	05/23/2024
Seat Belt Load Cells		Lap				
		Shoulder				

**TABLE 2 – FRONT PASSENGER DUMMY INSTRUMENTATION**

Instrument Location			Axis	Hybrid III 5 <sup>th</sup> S/N 142		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers	Primary		X	P94799	Endevco	04/15/2024
			Y	P94800	Endevco	04/15/2024
			Z	P94801	Endevco	04/15/2024
	Redundant		X	P94802	Endevco	04/15/2024
			Y	P94803	Endevco	04/15/2024
			Z	P97377	Endevco	04/15/2024
Head Angular Rate Sensors			X	ARS7371	DTS	11/17/2023
			Y	ARS7357	DTS	11/17/2023
			Z	ARS7366	DTS	11/17/2023
Upper Neck Load Cell			Fx, Fy, Fz Mx, My, Mz	NG2203	Denton	01/22/2024
Chest Accelerometers	Primary		X	P88719	Endevco	04/15/2024
			Y	P94785	Endevco	04/15/2024
			Z	P94793	Endevco	04/15/2024
	Redundant		X	P95322	Endevco	04/15/2024
			Y	P95370	Endevco	04/15/2024
			Z	T30901	Endevco	04/15/2024
Chest Potentiometer			X	142	Humanetics	04/15/2024
Pelvis Accelerometers			X	P94798	Endevco	04/15/2024
			Y	P82646	Endevco	04/15/2024
			Z	P97705	Endevco	04/15/2024
Femur Load Cells	Right	Primary	Z	FG126P	Denton	04/15/2024
		Redundant	Z	FG127P	Denton	04/15/2024
	Left	Primary	Z	FG126R	Denton	04/15/2024
		Redundant	Z	FG127R	Denton	04/15/2024
Tibia Load Cells	Right	Upper	Mx, My, Fz	TG467	Denton	01/22/2024
		Lower	Mx, My, Fz	AG500	Denton	01/22/2024
	Left	Upper	Mx, My, Fz	TG478	Denton	01/22/2024
		Lower	Mx, My, Fz	AG491	Denton	01/22/2024
Foot Accelerometers	Right	Rear	X	P94795	Endevco	04/16/2024
			Z	P94796	Endevco	04/16/2024
		Front	Z	P94797	Endevco	04/16/2024
	Left	Rear	X	P83167	Endevco	04/16/2024
			Z	P83168	Endevco	04/16/2024
		Front	Z	P83169	Endevco	04/15/2024
Seat Belt Load Cells		Lap				
		Shoulder				

**TABLE 3 – VEHICLE INSTRUMENTATION**

Instrument Location			Axis	Serial Number	Manufacturer	Calibration Date
Crossmember / Rear Seat Accelerometers	Left	Primary	X	A337194	MSI	07/19/2024
			Z	A390927	MSI	07/01/2024
		Redundant	X	T29894	Endevco	06/04/2024
	Right	Primary	X	A361014	MSI	07/10/2024
			Z	P79004	Endevco	07/15/2024
		Redundant	X	T39748	Endevco	07/30/2024
Engine Accelerometers		Top	X	A416906	MSI	08/19/2024
		Bottom	X	T39056	Endevco	09/11/2024