

REPORT NUMBER: NCAP-MGA-21-046

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

**NISSAN MOTOR CO., LTD.
2021 Infiniti QX50 LUXE AWD 5-Door SUV
NHTSA No.: O20215201**

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



Test Date: May 25, 2021

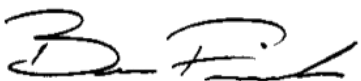
Final Report Date: August 30, 2021

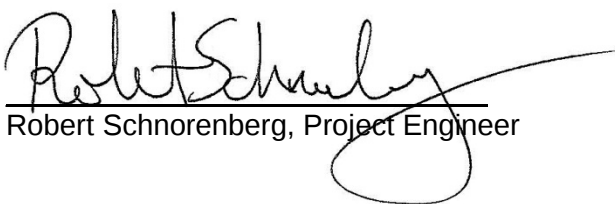
FINAL REPORT

**U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Crashworthiness Standards
1200 New Jersey Ave, SE
Room W43-410
Washington, DC 20590**

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Approval Date: August 30, 2021

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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

Date: _____

TECHNICAL REPORT DOCUMENTATION PAGE

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16. Abstract A 56.3 km/h NCAP Frontal Rigid Barrier Impact Test was conducted on a 2021 Infiniti QX50 LUXE AWD 5-Door SUV 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 May 25, 2021. The impact velocity of the vehicle was 56.32 km/h and the ambient temperature at the barrier face at the time of impact was 21.2°C. The target vehicle post-test maximum crush was 508 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 (HIC₁₅)</td> <td></td> <td>700</td> <td>236</td> <td>700</td> <td>333</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>28</td> <td>52</td> <td>16</td> </tr> <tr> <td>Nij</td> <td></td> <td>1</td> <td>0.26</td> <td>1</td> <td>0.31</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>1091</td> <td>2620</td> <td>714</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>187</td> <td>2520</td> <td>213</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>688</td> <td>6805</td> <td>2243</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>578</td> <td>6805</td> <td>2765</td> </tr> </tbody> </table>						Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)		700	236	700	333	Maximum Chest Compression	mm	63	28	52	16	Nij		1	0.26	1	0.31	Neck Tension	N	4170	1091	2620	714	Neck Compression	N	4000	187	2520	213	Left Femur Force	N	10008	688	6805	2243	Right Femur Force	N	10008	578	6805	2765
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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 2021 Infiniti QX50 LUXE AWD 5-Door SUV at a velocity of 56.32 km/h. The test was performed at MGA Research Corporation on May 25, 2021. 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 50th percentile male anthropomorphic test device (ATD), was placed in the driver seating position and one Part 572O 5th 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. 351) and the right-front passenger (position 2) ATD (Serial No. DH1659) were qualified previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

The 630 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 508 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:

ATD position	HIC ₁₅	Nij	Neck Tension (N)	Neck Comp. (N)	3ms Chest Clip (g)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)
Driver (50 th)	236	0.26	1091	187	35.4	28	688	578
Passenger (5 th)	333	0.31	714	213	39.0	16	2243	2765

The test data can be found on the NHTSA website at www.nhtsa.gov

TEST NOTES

Top Of Engine X recorded no valid data after 16 ms.

Driver Shoulder Belt load cell was not installed.

Driver Lap Belt load cell was not installed.

Passenger Shoulder Belt load cell was not installed.

Passenger Lap Belt load cell was not installed.

Barrier C-01 Fx recorded no valid data.

Barrier C-02 Fx recorded no valid data.

Barrier C-08 Fx recorded questionable data.

Barrier K-03 Fx recorded questionable data.

Barrier K-15 My recorded no valid data.

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: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20215201
 Test Date: 5/25/2021

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	O20215201	Traction Control System (TCS)	Yes
Model Year	2021	Power Steering	Yes
Make	Infiniti	Power Window Auto-Reverse	Yes
Model	QX50 LUXE AWD	Driver Frontal Airbag	Yes
Body Style	5-Door SUV	Driver Curtain Airbag	Yes
VIN	3PCA5J5BB3MF112148	Driver Head/Torso Airbag	No
Body Color	Graphite Shadow	Driver Torso Airbag	No
Odometer (km/mi)	129 km / 80 mi	Driver Torso/Pelvis Airbag	Yes
Engine Displacement (L)	2.0 L	Driver Pelvis Airbag	No
Type/No. Cylinders	Inline 4	Driver Knee Airbag	Yes
Engine Placement	Lateral	Front Pass. Frontal Airbag	Yes
Transmission Type	Automatic	Front Pass. Curtain Airbag	Yes
Transmission Speeds	CVT	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	Yes	Front Pass. Knee Airbag	Yes
Running Boards	No	Driver Pretensioner	Yes
Tilt Steering Wheel	Yes	Driver Load Limiter	Yes
Power Seats	Yes	Front Pass. Pretensioner	Yes
Anti-Lock Brakes (ABS)	Yes	Front Pass. Load Limiter	Yes
Automatic Door Locks (ADLs)	Yes	Other	N/A

Does owner's manual provide instructions to turn off automatic door locks?	No
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DATA FROM CERTIFICATION LABEL

Manufactured By	NISSAN MOTOR CO., LTD.	GVWR (kg)	2302
Date of Manufacture	11/20	GAWR Front (kg)	1280
		GAWR Rear (kg)	1140

VEHICLE SEATING AND WEIGHT CAPACITY DATA

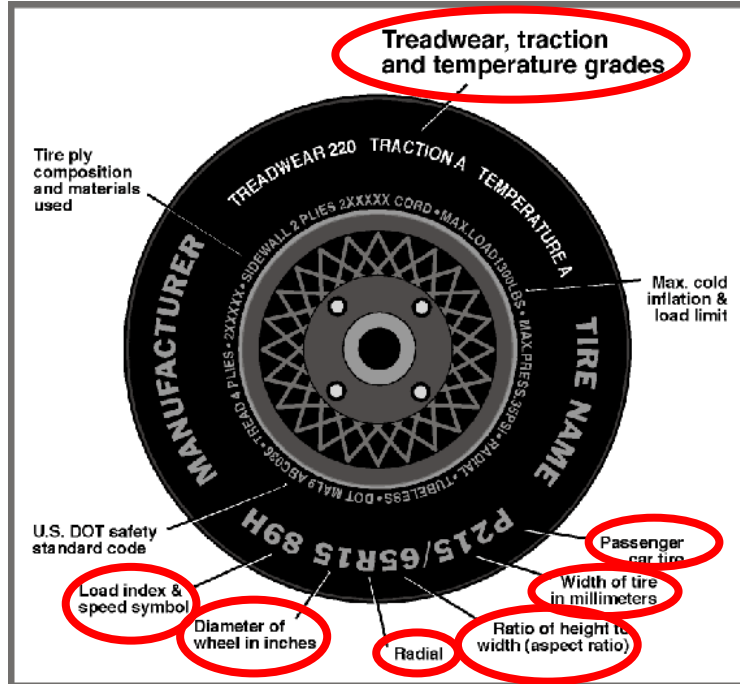
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Contoured		
Designated Seating Capacity (DSC)	2	3		5
Capacity Weight (VCW) (kg)				390
Cargo Weight (RCLW) (kg)				50

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

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
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NHTSA No.: O20215201
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VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	230	230
Recommended Tire Size	P235/55R19	P235/55R19
Tire Size on Vehicle	P235/55R19	P235/55R19
Tire Manufacturer	Bridgestone	Bridgestone
Tire Model	Ecopia H/L 423 Pius	Ecopia H/L 423 Pius
Treadwear	600	600
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	2 Rayon	2 Rayon
Tire Plies Body	1 Rayon, 2 Steel, 1 Nylon	1 Rayon, 2 Steel, 1 Nylon
Load Index/Speed Symbol	101V	101V
Tire Material	Rubber	Rubber
DOT Safety Code Left	1V6 1VEC31 4120	1V6 1VEC31 4120
DOT Safety Code Right	1V6 1VEC31 4120	1V6 1VEC31 4120

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

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
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TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	534.5	395.5		567.5	458.0	
Right	kg	539.5	373.5		566.5	435.5	
Ratio	%	58.3%	41.7%		55.9%	44.1%	
Totals	kg	1074.0	769.0	1843.0	1134.0	893.5	2027.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1843.0
Weight of 1 P572E ATD & 1 P572O ATD	kg	141
Rated Cargo/Luggage Weight (RCLW)	kg	50
Calculated Test Vehicle Target Weight (TVTW)	kg	2034.0

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	777	777	783	792	1167
As Tested	mm	770	772	760	768	1232
Post Test	mm	757	639	768	748	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2796
Total Vehicle Length at Left Side	mm	4578
Total Vehicle Length at Centerline	mm	4670
Total Vehicle Length at Right Side	mm	4578
Weight of Ballast in Cargo Area	kg	0
Weight of Vehicle Components Removed	kg	12
Amount of Stoddard Solvent in Fuel Tank	L	56.0

List of components removed to meet test weight: None.

List of components removed for instrumentation, data box, and equipment installation: Cargo area cover/trim/divider.

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

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20215201
 Test Date: 5/25/2021

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	4670
2	Total Width	1902
3	Bumper Top Height	590
4	Bumper Bottom Height	414
5	Longitudinal Member Top Height	N/A
6	Distance between Longitudinal Members	N/A
7	Longitudinal Member Width	N/A
8	Engine Top Height	855
9	Engine Bottom Height	261
10	Engine and Gearbox Width	764
11	Front Bumper-Engine Distance	N/A
12	Front Shock Absorber Fixing Height	945
13	Bonnet Leading Edge Height	909
14	Front Shock Absorber Fixing Width	74
15	Front Bumper – Front Axle Distance	947
16	Front Axle – A-Pillar Distance	494
17	A-Pillar – B-Pillar Distance	1120
18	B-Pillar – Rear Axle Distance	1179
19	B-Pillar – C-Pillar Distance	681
20	Roof Sill Bottom Height	1550
21	Roof Sill Top Height	1648
22	Floor Sill Bottom Height	280
23	Floor Sill Top Height	370

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

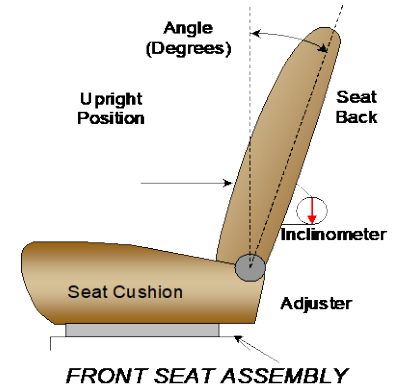
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 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20215201
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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	0.6° on outboard headrest post
Passenger Seat Back Angle	0.2° on outboard headrest post



SEAT FORE/AFT POSITIONS

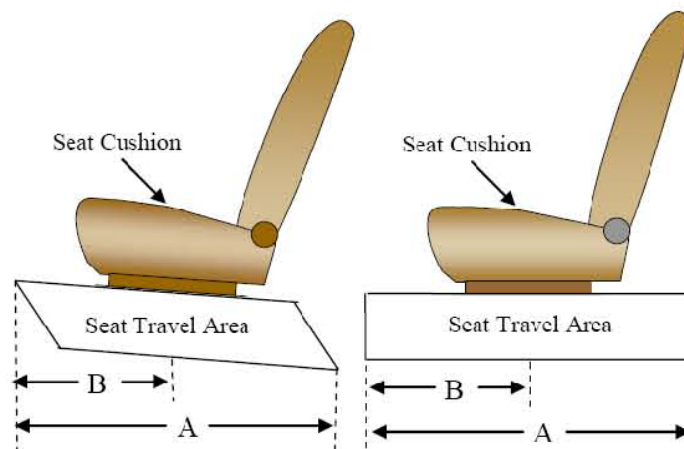
The driver and passenger seat fore/aft positions are adjusted following Appendix F, "Driver & Passenger Dummy Seating & Positioning Procedures" in the NCAP Test Procedure dated May 2018.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	302 mm	151 mm
Passenger Seat	260 mm	0 mm

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 (1 st as 1)	0 (1 st as 0)
Passenger Seat	4 (1 st as 1)	0 (1 st as 0)



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

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

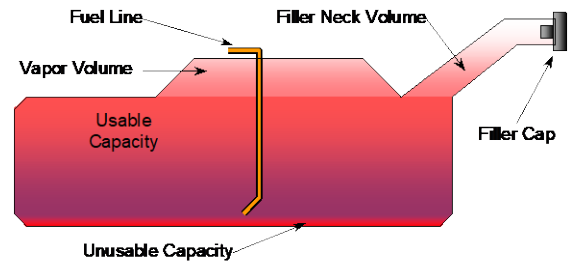
NHTSA No.: O20215201
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FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard Tank"	60.2
Usable Capacity of "Optional Tank"	
92-94% of Usable Capacity	55.4 to 56.6
Actual Amount of Solvent used	56.0
1/3 of Usable Capacity	20.1

FUEL PUMP

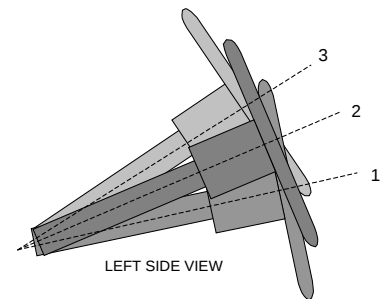
The vehicle is equipped with an electronic fuel pump. The fuel pump will run when the engine is running. The pump will also run for 1.0 seconds after the ignition is switched to "ON" and for 1.5 seconds after the engine stops running. The filler neck is located on the driver's side.



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

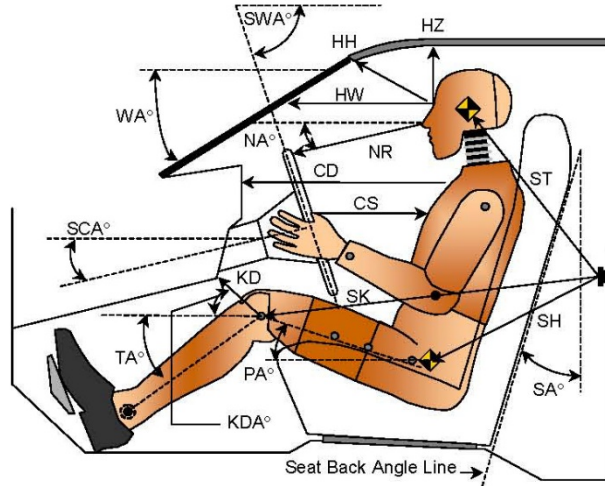
STEERING COLUMN POSITION

	Degrees	Fore/Aft Position (mm)
Lowermost Position 1	67.6	
Geometric Center Position 2	64.8	
Uppermost Position 3	62.0	
Telescoping Steering Wheel Travel		55
Test Position	64.8	28

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
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NHTSA No.: O20215201
 Test Date: 5/25/2021



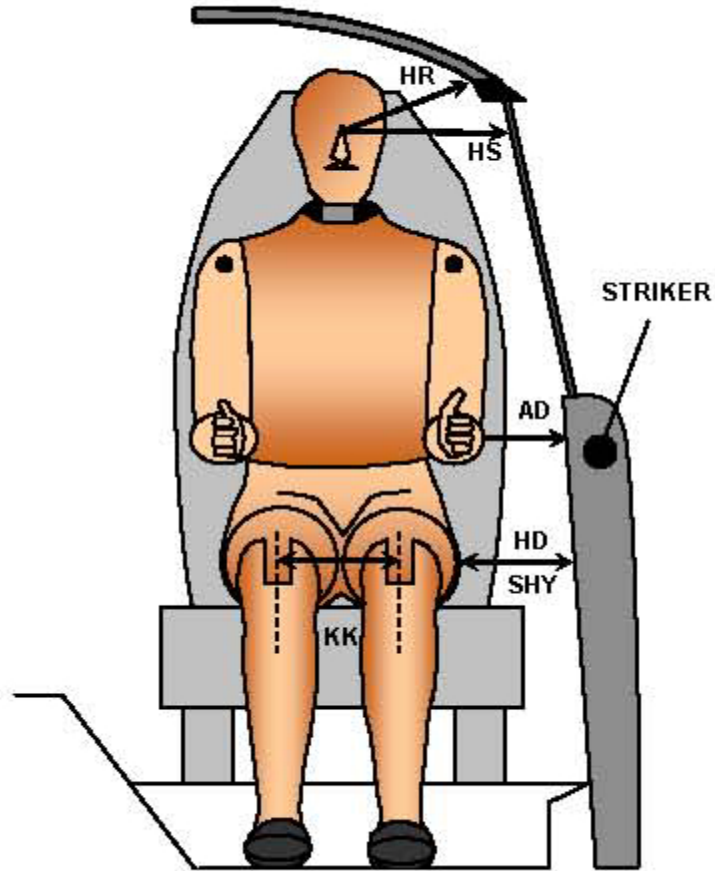
LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		27.4		
SWA°	Steering Wheel Angle		64.8		
SCA°	Steering Column Angle		25.2		
SA°	Seat Back Angle		0.6		0.2
HZ	Head to Roof (Z)	201	90	204	90
HH	Head to Header	388	23.4	320	45.5
HW	Head to Windshield	703	0	670	0
NR	Nose to Rim	385	17.7		
CD	Chest to Dash	528		395	
CS	Chest to Steering Hub	299	3.8		
RA	Rim to Abdomen	177	0		
KDL	Left Knee to Dash	213	28.3	75	38.5
KDR	Right Knee to Dash	195	26.8	100	36.9
PA°	Pelvic Angle		24.1		21.9
TA°	Tibia Angle		52.4		59.3
SK	Striker to Knee	596	94.3	692	96.6
ST	Striker to Head	491	12.6	490	27.7
SH	Striker to H-Point	279	123.2	378	100.1

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
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NHTSA No.: O20215201
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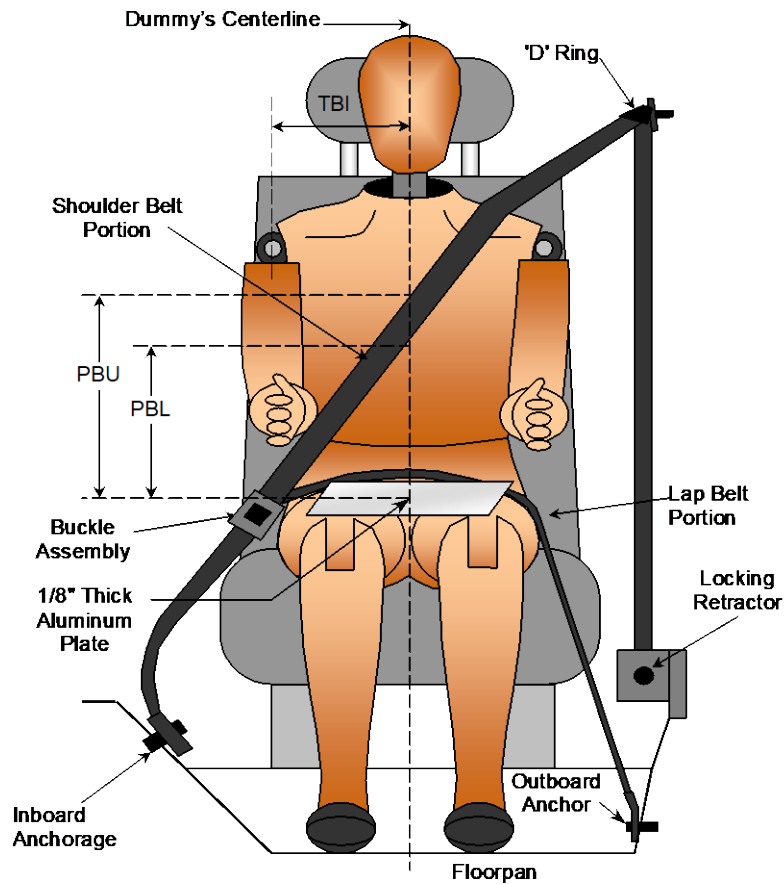
FRONT VIEW OF DUMMY

Code	Measurement Description	Driver	Passenger
		Length (mm)	
AD	Arm to Door	121	76
HD	H-Point to Door	156	164
HR	Head to Side Header	235	262
HS	Head to Side Window	345	370
KK	Knee to Knee	360	230
SHY	Striker to H-Point (Y Direction)	317	330
AA	Ankle to Ankle	339	168

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

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
Test Program: NCAP Frontal Barrier Impact Test

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FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	350	295
PBL - Top surface of reference to belt lower edge	mm	270	210

BELT LENGTH DATA

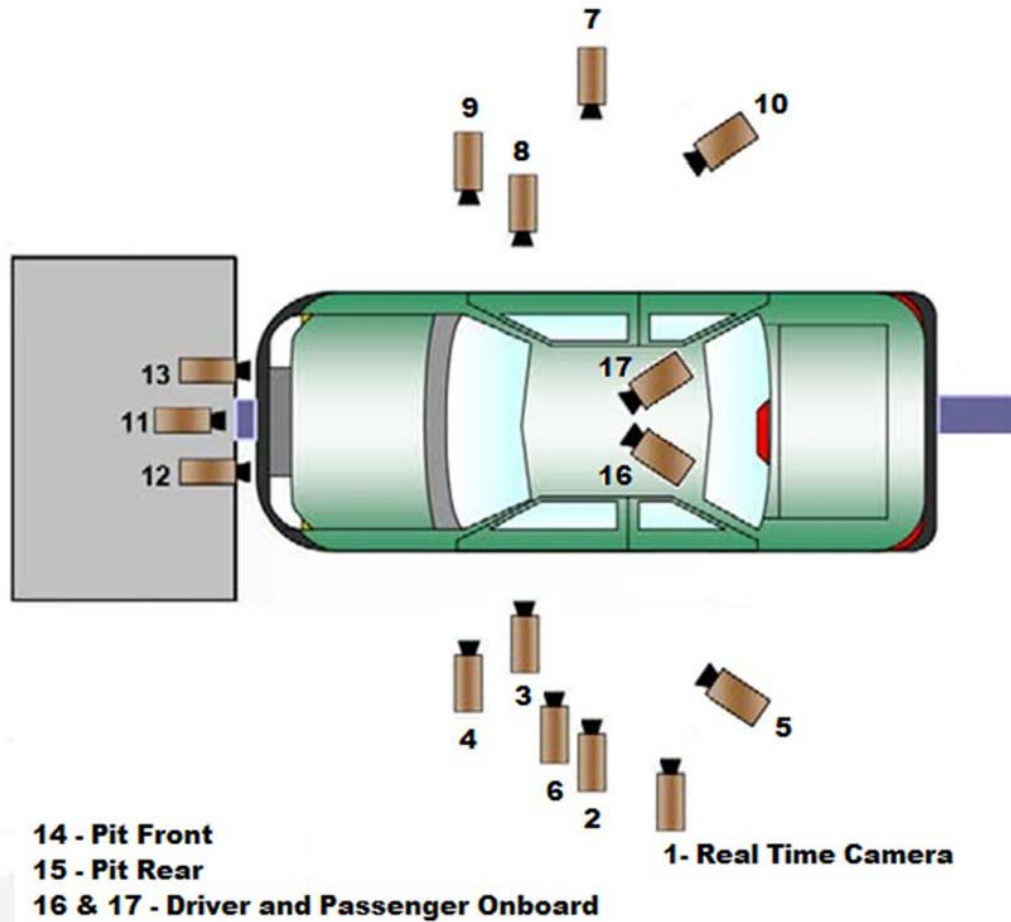
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as measured on ATD	mm	880	970
Lap Belt Length as measured on ATD	mm	620	730
Remainder of belt on reel	mm	750	550
Total Belt Length for Continuous Webbing Systems	mm	3000	3000

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

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20215201
Test Date: 5/25/2021

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: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20215201
 Test Date: 5/25/2021

CAMERA LOCATIONS

No.	Camera View	Coordinates* (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall					30
2	Left Overall	-2200	-5820	-1430	12	1000
3	Driver Close-Up	-1670	-6990	-1850	50	1000
4	Left Front Half	-1260	-5390	-1420	24	1000
5	Left Angle	-7300	-5730	-1950	75	1000
6	Steering Column	-1010	-5230	-1250	50	1000
7	Right Overall	-2100	5750	-1330	24	1000
8	Passenger Close-Up	-1680	6980	-1840	50	1000
9	Right Front Half	-1300	5490	-1320	24	1000
10	Right Angle	-7560	5460	-1900	75	1000
11	Windshield	140	0	-2310	12	1000
12	Driver Windshield	180	-370	-2230	25	1000
13	Passenger Windshield	180	370	-2230	25	1000
14	Pit Front	-810	0	3340	24	1000
15	Pit Rear	-2870	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

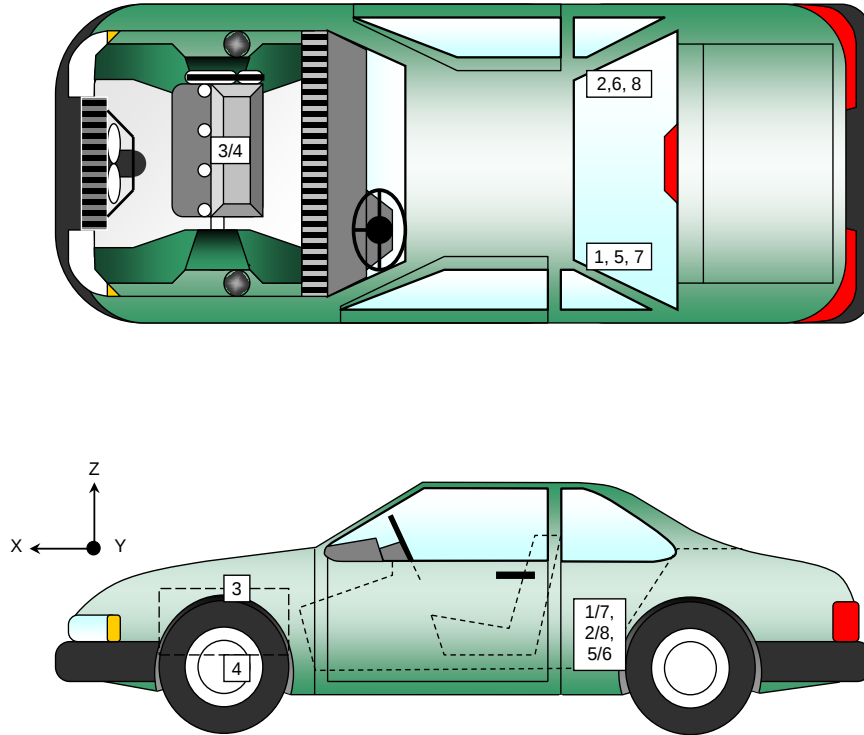
+Y = right of monorail centerline

+Z = below ground level

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

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20215201
Test Date: 5/25/2021



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Crossmember Accelerometer – X Direction	1762	-390	-335
2	Right Rear Crossmember Accelerometer – X Direction	1762	390	-331
3	Engine Top X	3885	15	-855
4	Engine Bottom X	3936	0	-272
5	Left Rear Crossmember Accelerometer – Z Direction	1762	-390	-335
6	Right Rear Crossmember Accelerometer – Z Direction	1762	390	-331
7	Left Rear Crossmember Accelerometer Redundant – X Direction	1762	-360	-335
8	Right Rear Crossmember Accelerometer Redundant – X Direction	1762	360	-331

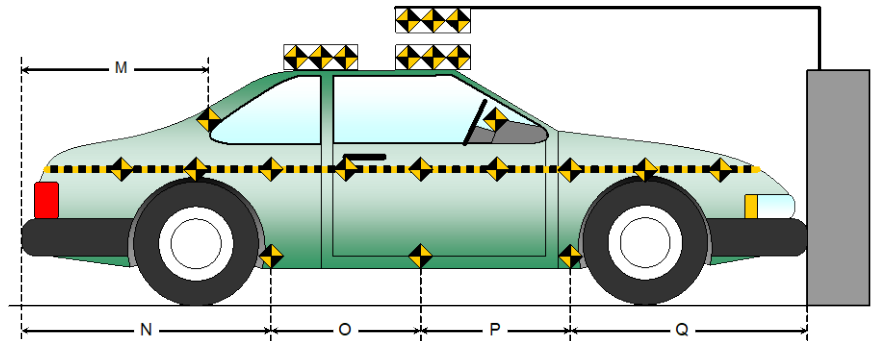
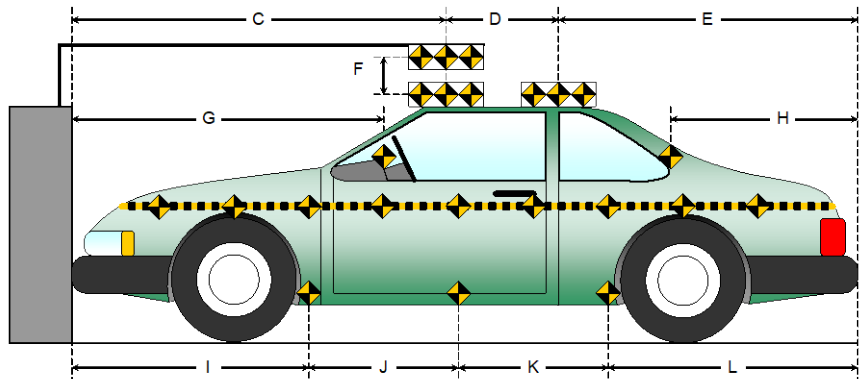
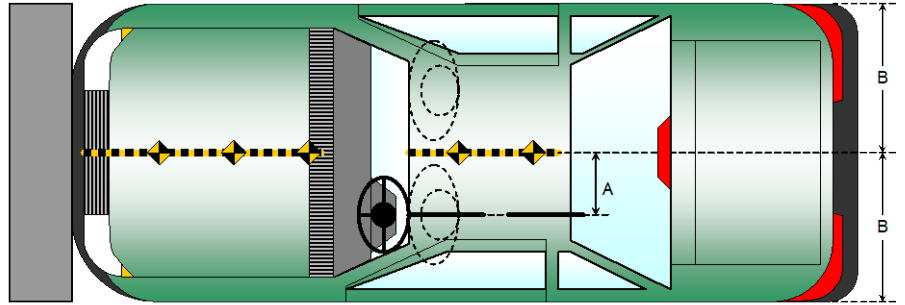
Reference Points: X - Rear Surface of Vehicle (+ forward)
Y - Vehicle Centerline (+ to right)
Z - Ground Plane (+ down)

DATA SHEET NO. 8
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20215201
 Test Date: 5/25/2021

Item	Value (mm)
A	375
B	951
C	2370
D	610
E	1690
F	105
G	
H	1276
I	1445
J	917
K	917
L	1391
M	1276
N	1391
O	917
P	917
Q	1445



DATA SHEET NO. 9
LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20215201
Test Date: 5/25/2021

ADVANCED RESEARCH LOAD CELL BARRIER

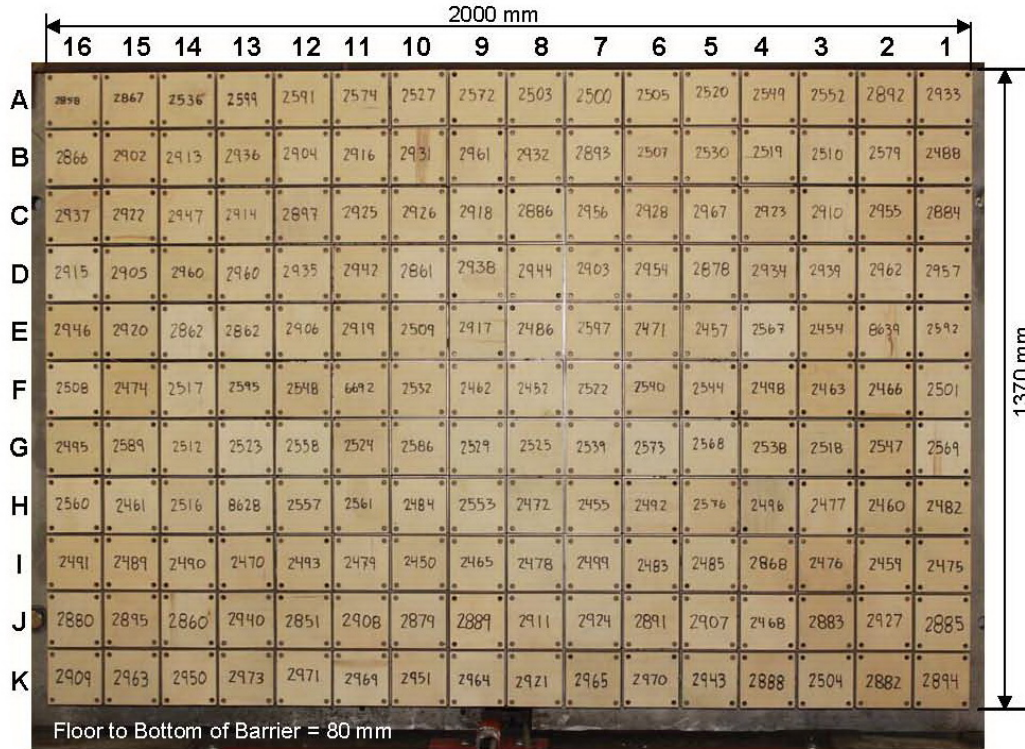


Photo for Reference Only

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: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20215201
Test Date: 5/25/2021

INSTRUMENTATION

Instrumentation	Number of Channels Collected
Driver Dummy Data Channels	47
Passenger Dummy Data Channels	47
Vehicle Structure Accelerometers	8
Barrier Channels	528
Total	630

CAMERA COVERAGE

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

DATA SHEET NO. 11
POST-TEST OBSERVATIONS

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20215201
Test Date: 5/25/2021

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

Description	Driver	Passenger
Dummy Type / Serial No.	HIIL 50% / 351	HIIL 5% / DH1659
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 locked	Doors were locked
Front Door Opening	Remained closed and locked; opened without tools	Remained closed and locked; opened without tools
Rear Door Opening	Remained closed and locked; opened without tools	Remained closed and locked; 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	Cracked
Window Damage	None
Other Notable Effects	None

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	2805
Center	mm	2795
Right Side	mm	2795
Average	mm	2798

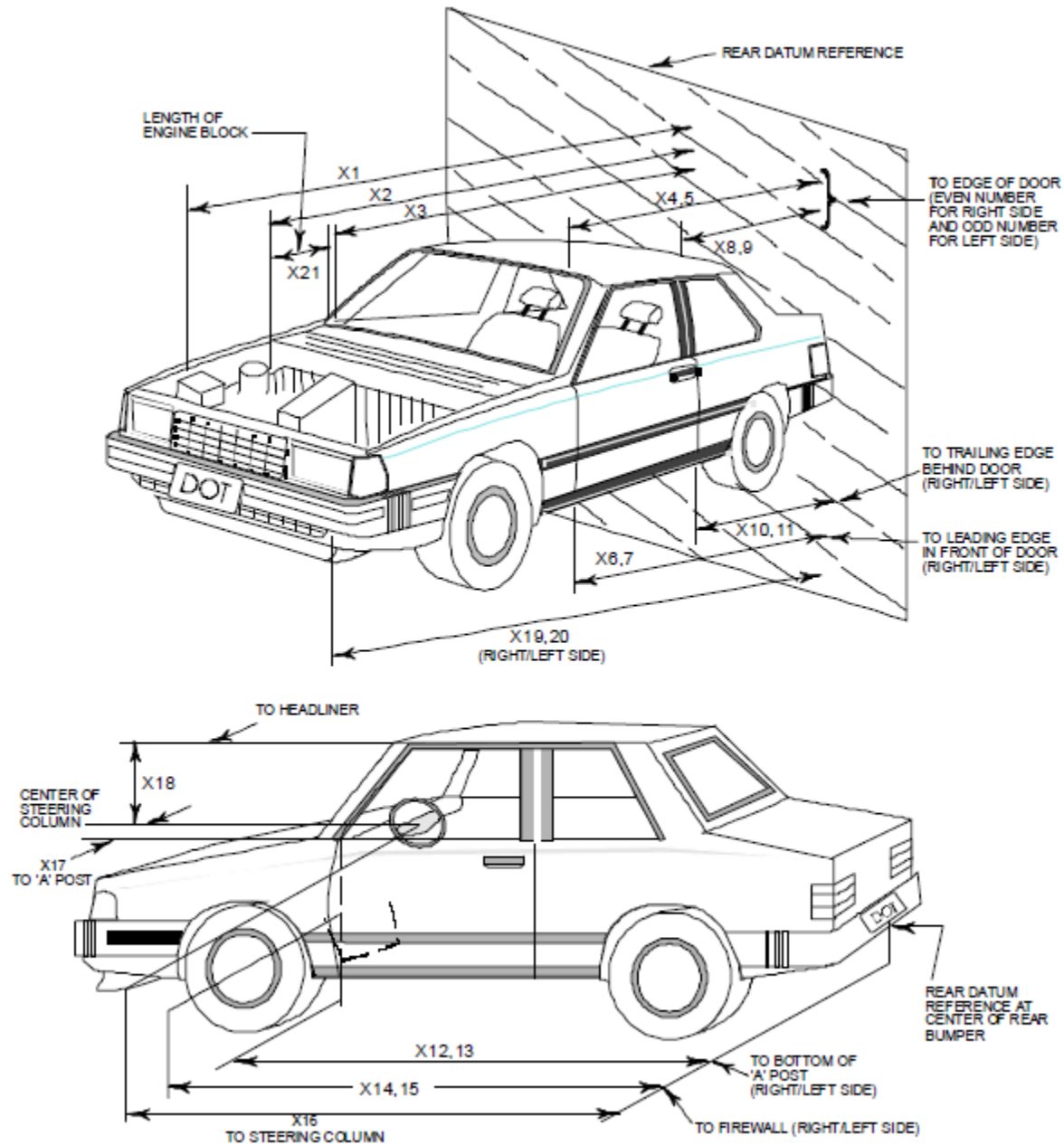
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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	
Other				

DATA SHEET NO. 12 **VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20215201
 Test Date: 5/25/2021



DATA SHEET NO. 12 (CONTINUED)
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20215201
Test Date: 5/25/2021

No.	Measurement Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	4670	4221	449
2	RSOV to Front of Engine	4060	3846	214
3	RSOV to Firewall	3664	3541	123
4	RSOV to Upper Leading Edge of Right Door	3188	3194	-6
5	RSOV to Upper Leading Edge of Left Door	3188	3184	4
6	RSOV to Lower Leading Edge of Right Door	3170	3153	17
7	RSOV to Lower Leading Edge of Left Door	3178	3146	32
8	RSOV to Upper Trailing Edge of Right Door	2091	2071	20
9	RSOV to Upper Trailing Edge of Left Door	2091	2076	15
10	RSOV to Lower Trailing Edge of Right Door	2105	2069	36
11	RSOV to Lower Trailing Edge of Left Door	2105	2076	29
12	RSOV to Bottom of "A" Post of Right Side	3178	3111	67
13	RSOV to Bottom of "A" Post of Left Side	3178	3126	52
14	RSOV to Firewall, Right Side	3769	3617	152
15	RSOV to Firewall, Left Side	3769	3705	64
16	RSOV to Steering Column	2698	2754	-56
17	Center of Steering Column to "A" Post	381	371	10
18	Center of Steering Column to Headliner	444	442	2
19	RSOV to Right Side of Front Bumper	4578	4125	453
20	RSOV to Left Side of Front Bumper	4578	4159	419
21	Length of Engine Block	N/A	N/A	N/A
RD	RSOV to Right Side of Dash Panel	2986	3030	-44
CD	RSOV to Center of Dash Panel	3020	3000	20
LD	RSOV to Left Side of Dash Panel	2987	3006	-19

All Dimensions in mm

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20215201
Test Date: 5/25/2021

VEHICLE INFORMATION

VIN: 3PCAJ5BB3MF112148
Vehicle Size Category: MPV

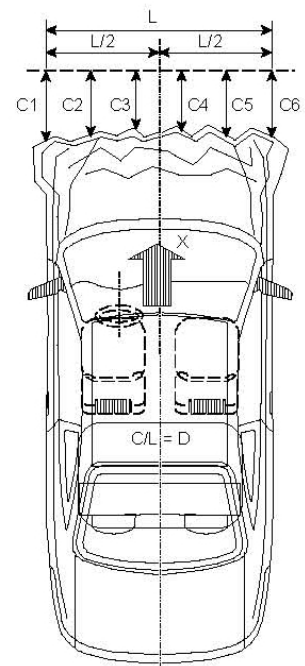
Wheelbase (mm): 2796
Test Weight (kg): 2027.5

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): 56.32
Velocity Change (km/h): 65.5
Time of Separation (msec): 106

CRUSH PROFILE

Collision Deformation Classification: 12FDEW3
Midpoint of Damage: Centerline
Damage Region Length (mm): 1160
Impact Mode: Frontal



No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4578	4159	419
C2	Crush zone 2 at left side	mm	4660	4158	502
C3	Crush zone 3 at left side	mm	4670	4168	502
C4	Crush zone 4 at right side	mm	4670	4164	506
C5	Crush zone 5 at right side	mm	4660	4152	508
C6	Crush zone 6 at right side	mm	4578	4125	453
L	C1 TO C6	mm	1160	1170	-10

DATA SHEET NO. 14
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
Test Program: NCAP Frontal Barrier Impact Test

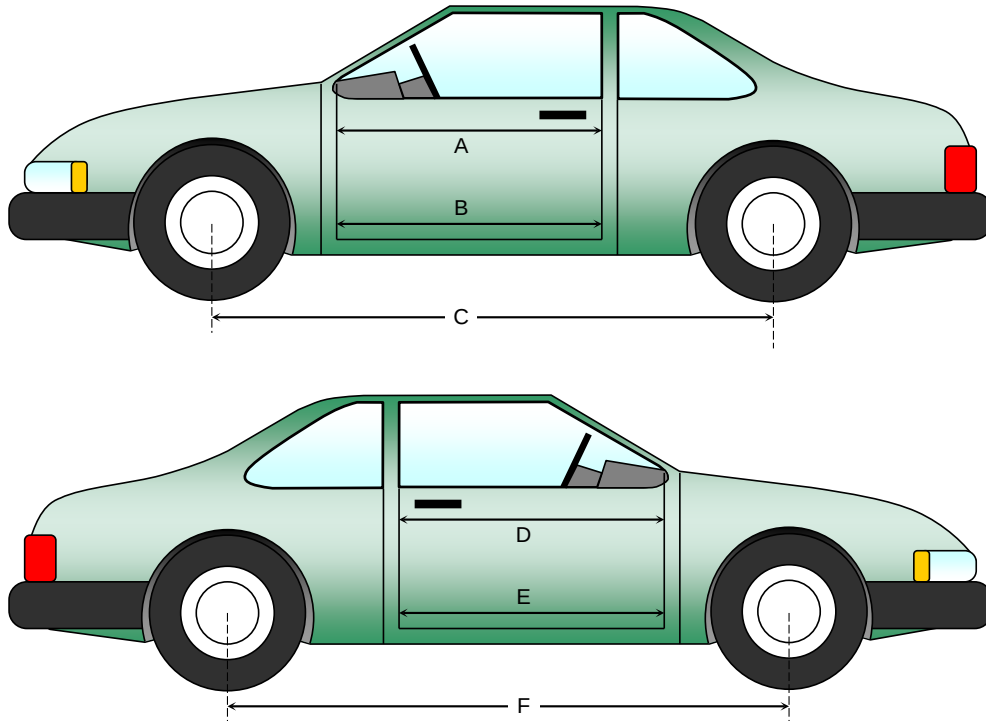
NHTSA No.: O20215201
Test Date: 5/25/2021

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	995	995	0
B	Left Side Lower	mm	841	841	0
D	Right Side Upper	mm	995	995	0
E	Right Side Lower	mm	840	841	-1

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2796	2730	66
F	Right Side Wheelbase	mm	2796	2735	61



DATA SHEET NO. 14 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

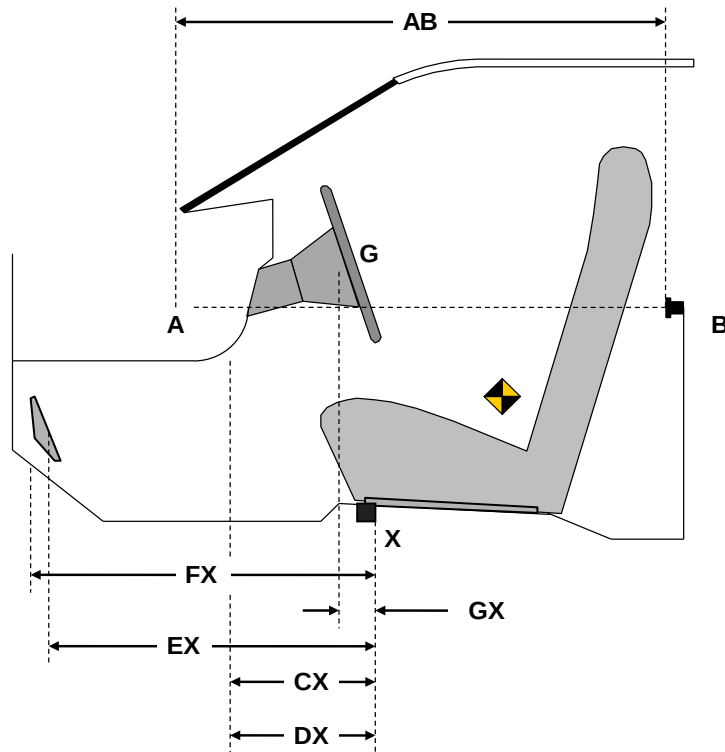
Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20215201
 Test Date: 5/25/2021

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	796	796	0
CX	Left Knee Bolster to X	mm	362	376	-14
DX	Right Knee Bolster to X	mm	364	341	23
EX	Brake Pedal to X	mm	550	564	-14
FX	Foot Rest to X	mm	568	558	10
GX	Center of Steering Column Wheel Hub to X	mm	27	90	-63

X = Front of Seat Track (stationary)



DRIVER COMPARTMENT

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

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20215201
 Test Date: 5/25/2021

WINDSHIELD MOUNTING DETAILS

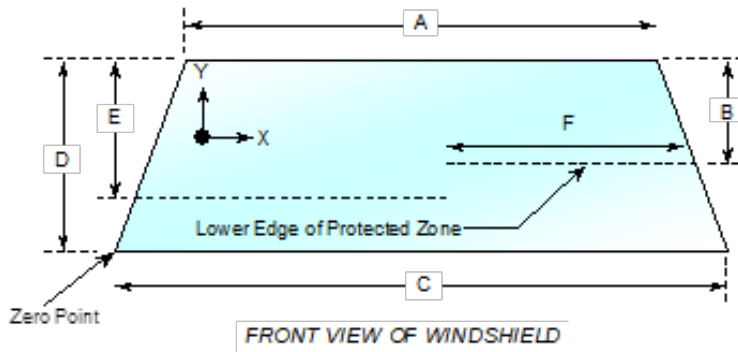
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

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: 21.2°C.

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2295	2295	100
Right Side	2295	2295	100
Total	4590	4590	100



Item	Units	Value
A	mm	1240
B	mm	518
C	mm	1462
D	mm	944
E	mm	531
F	mm	482

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 301 BARRIER IMPACT AND STATIC ROLLOVER

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20215201
 Test Date: 5/25/2021

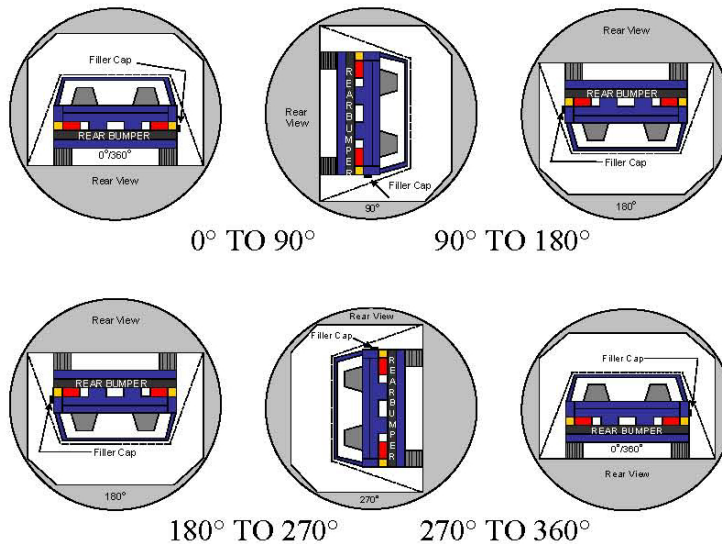
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21.2°C

Test Time: 11:33 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°	111	300	411
90° to 180°	110	300	410
180° to 270°	107	300	407
270° to 360°	112	300	412

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

Test Vehicle: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20215201
 Test Date: 5/25/2021

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	

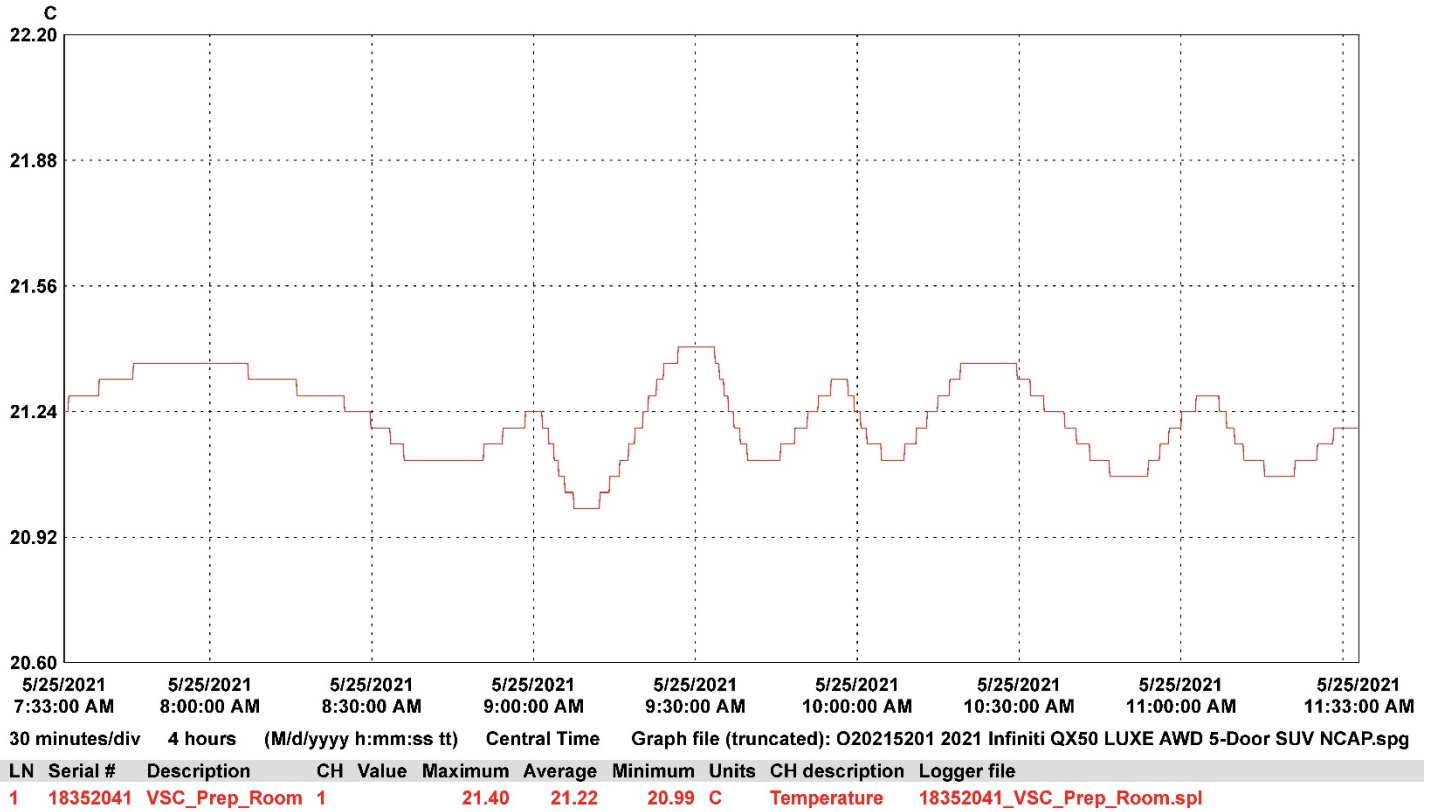
SOLVENT SPILLAGE LOCATION TABLE

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: 2021 Infiniti QX50 LUXE AWD 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20215201
 Test Date: 5/25/2021



**APPENDIX A
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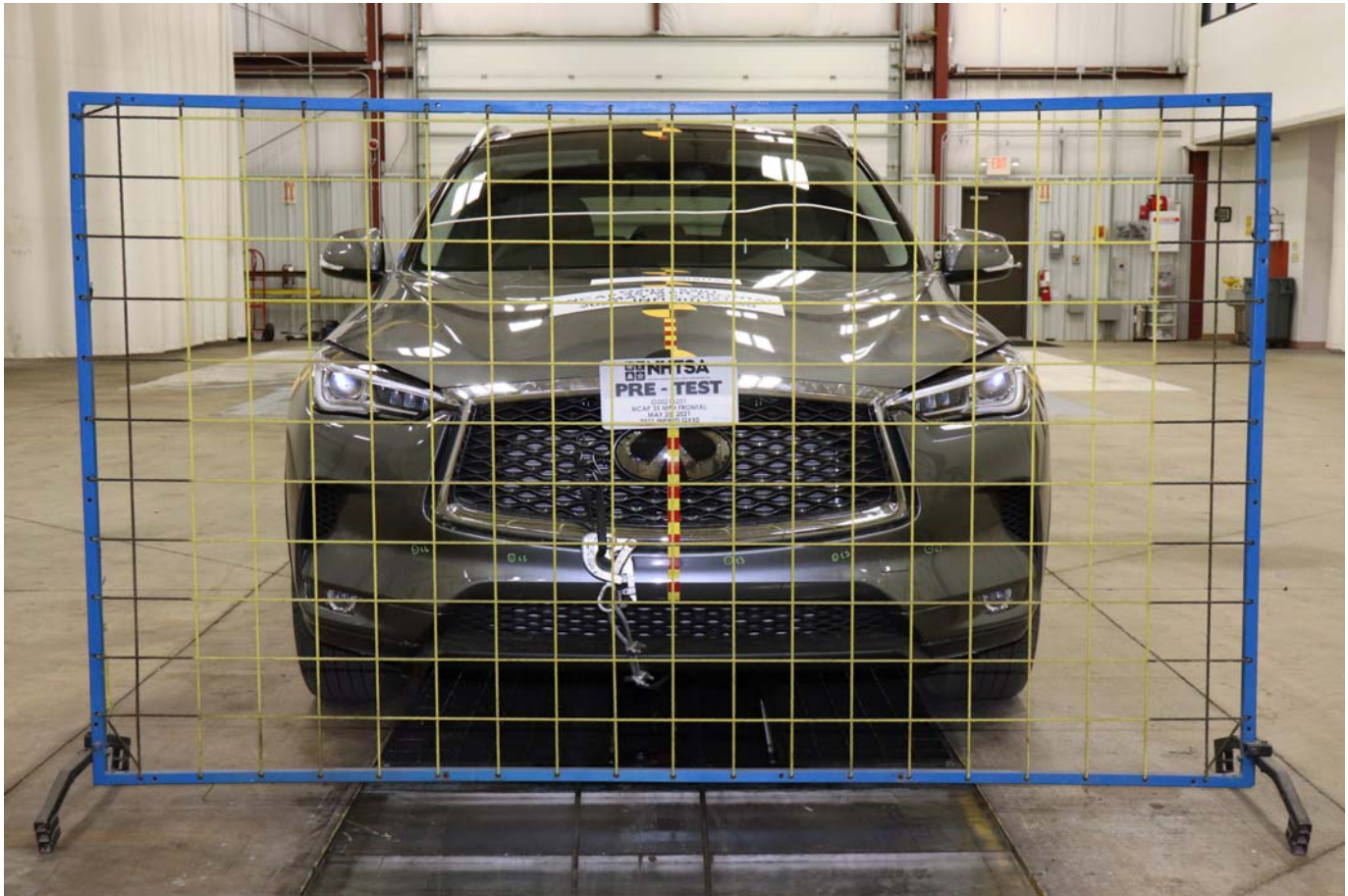


Photo No. 001 - Load Cell Location



Photo No. 002 - Pre-Test Load Cell Wall



Photo No. 003 - Post-Test Load Cell Wall



Photo No. 004 - Manufacturer Label



Photo No. 005 - Tire Placard



Photo No. 006 - 2021 Infiniti QX50 LUXE AWD 5-Door SUV Frontal As Delivered



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

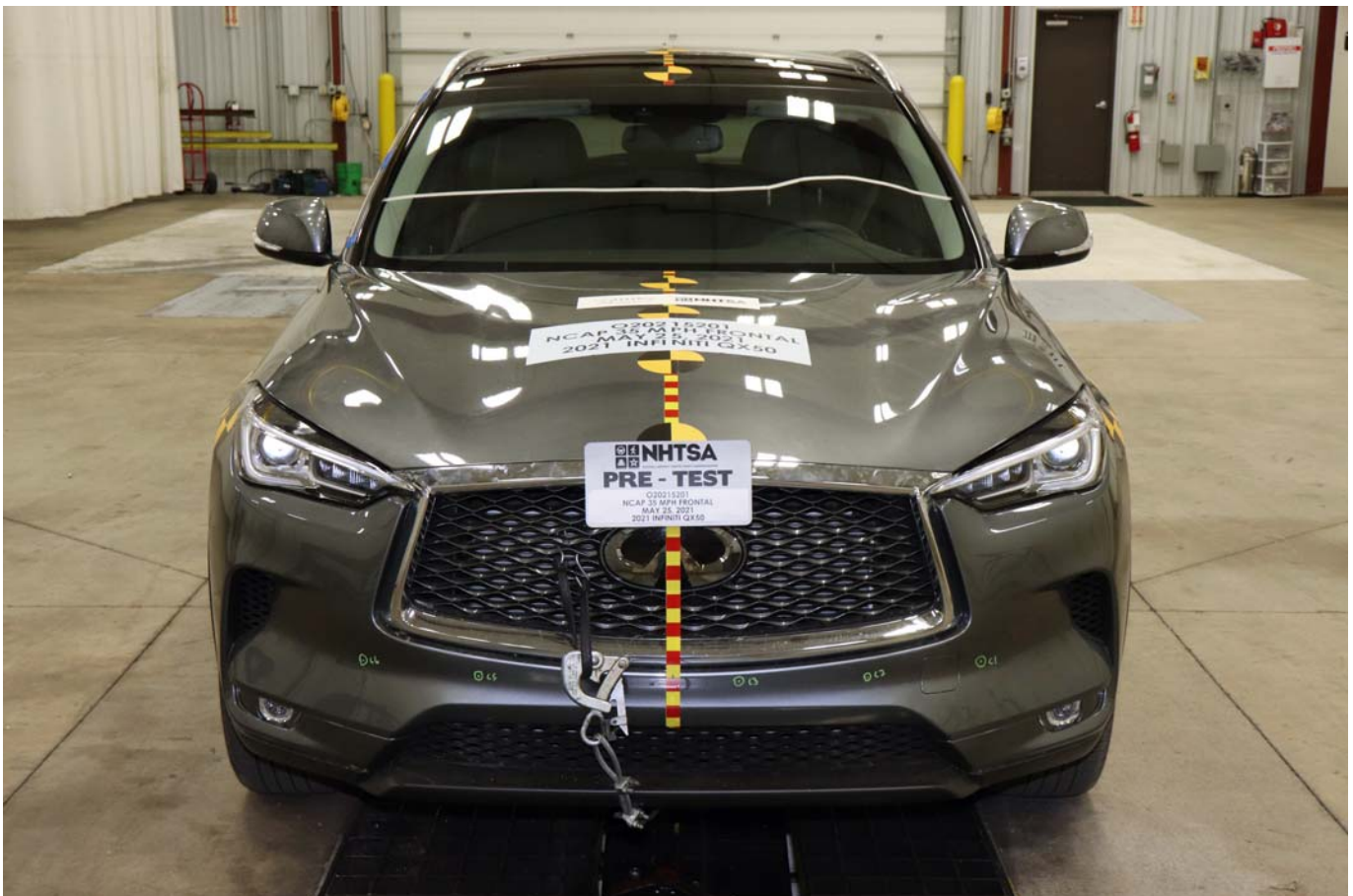


Photo No. 008 - Pre-Test Front View of Test Vehicle

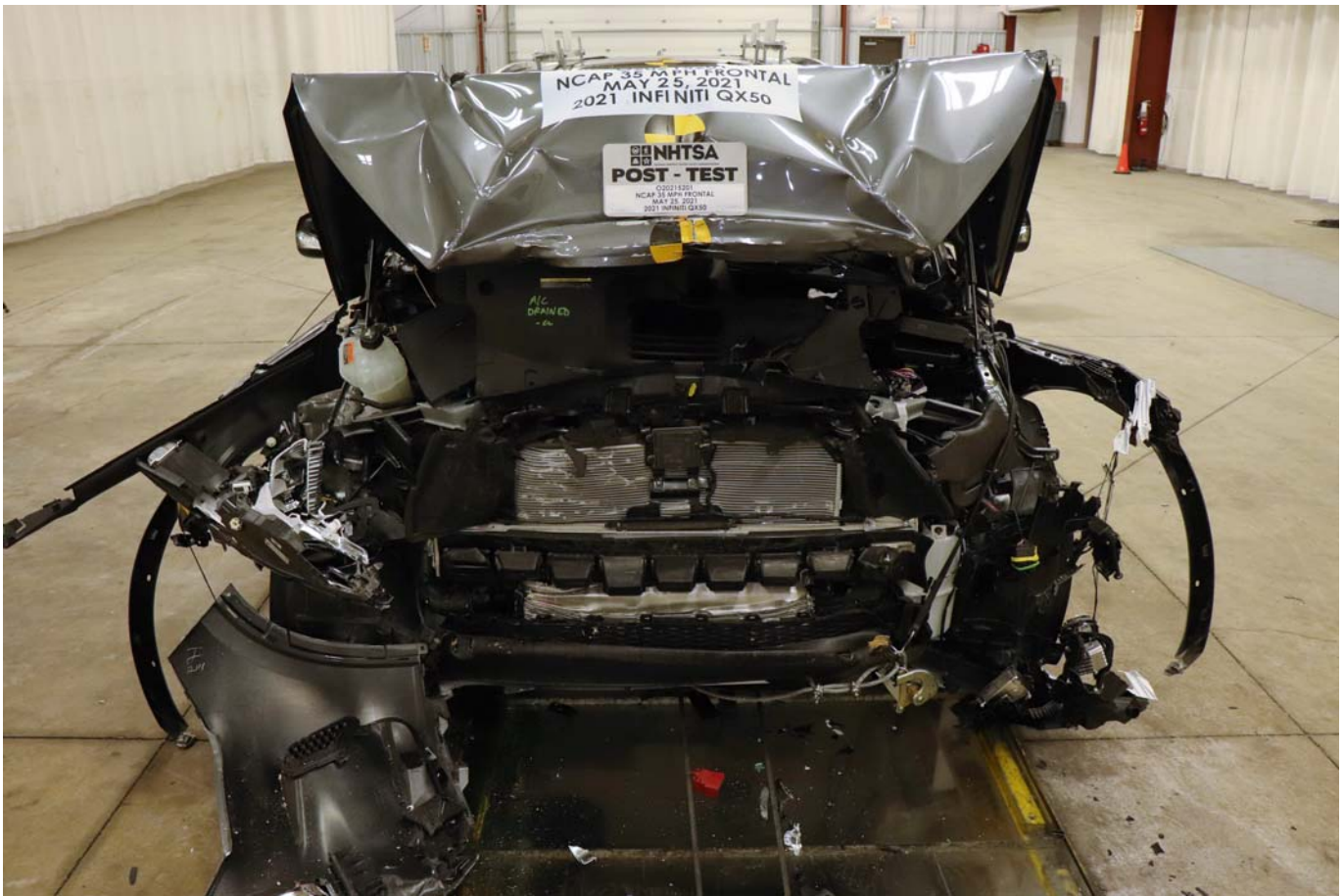


Photo No. 009 - Post-Test Front View of Test Vehicle



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



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

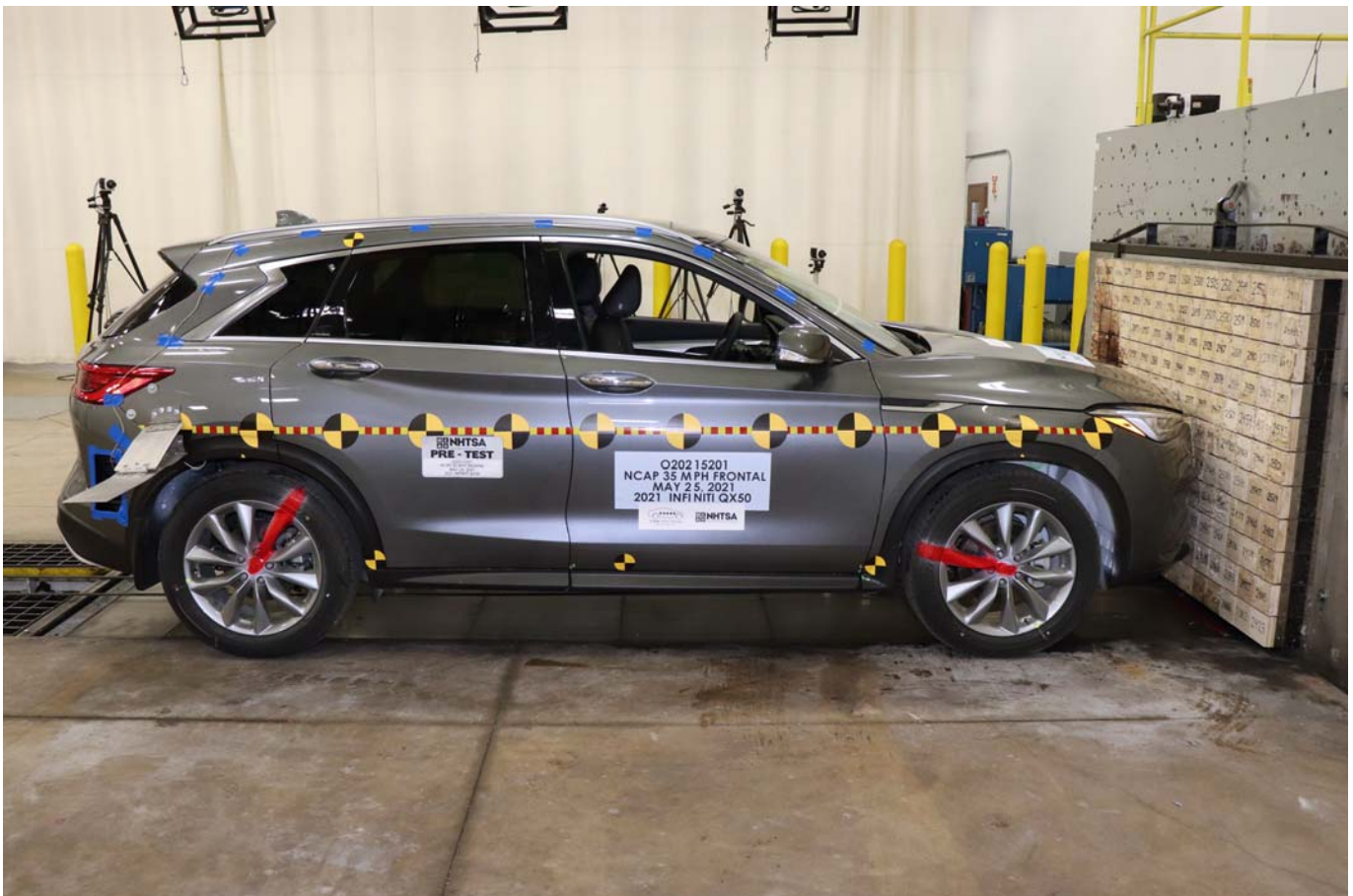


Photo No. 012 - Pre-Test Right View of Test Vehicle



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

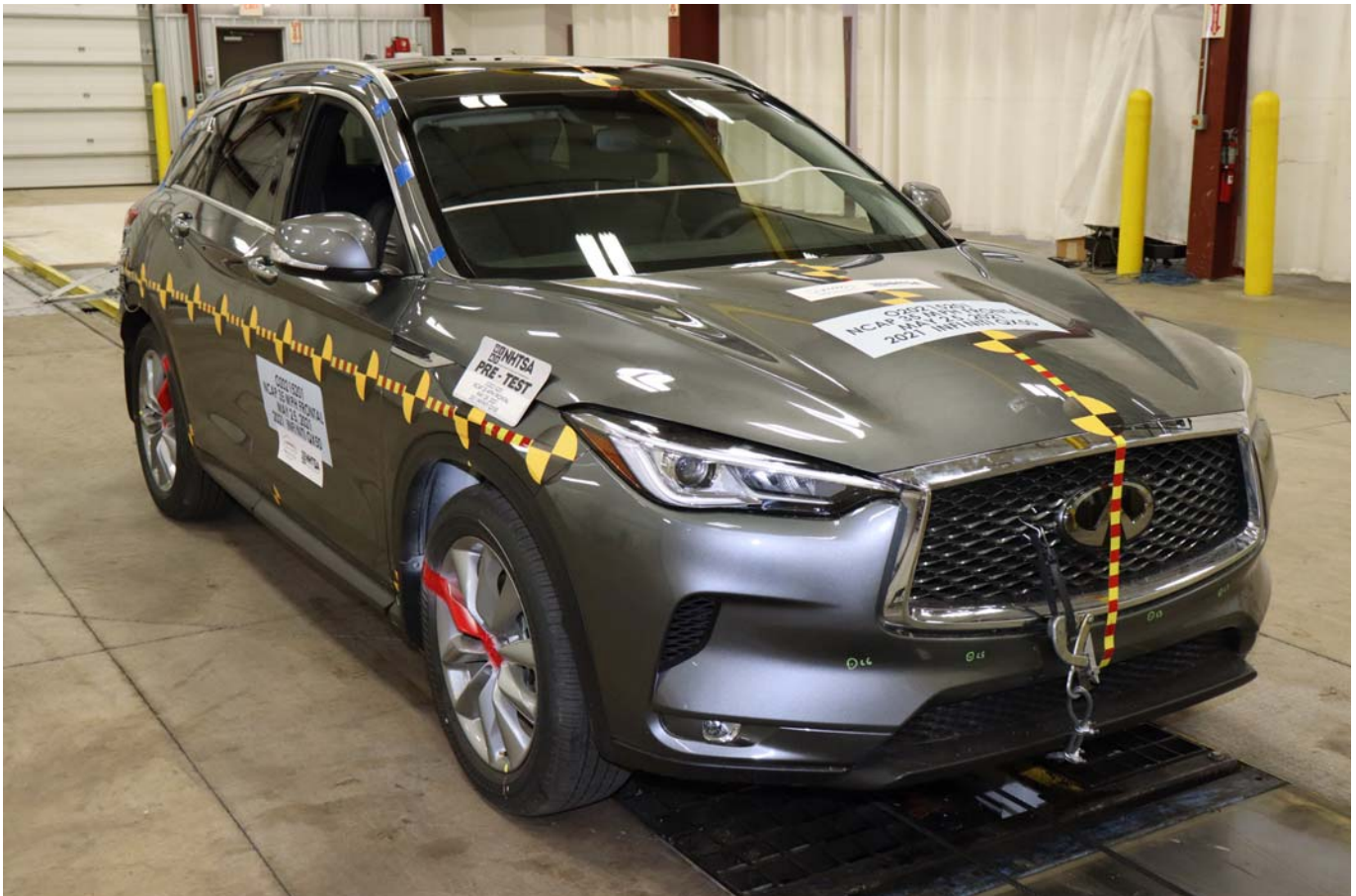


Photo No. 014 - Pre-Test Right Front 3-4 View

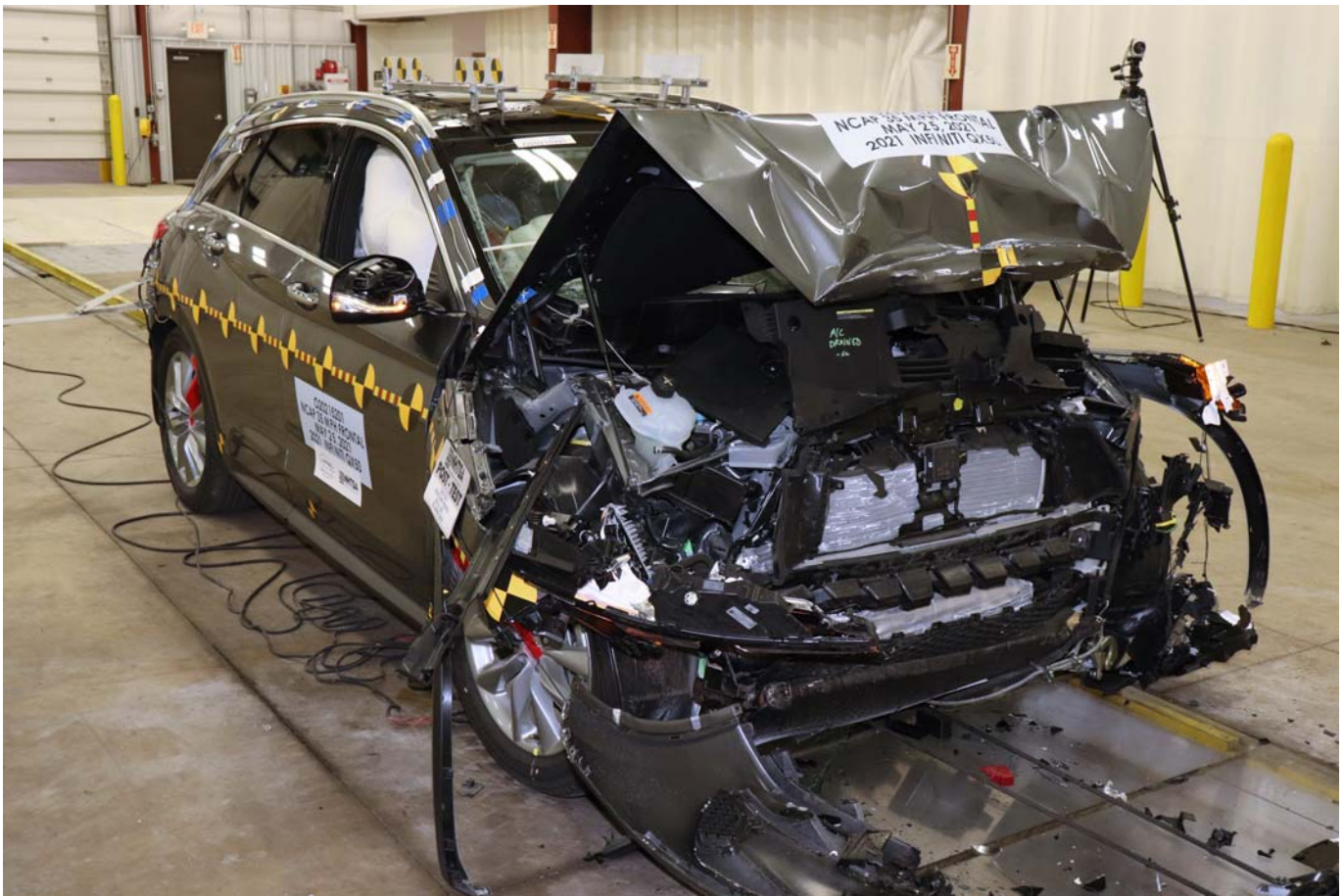


Photo No. 015 - Post-Test Right Front 3-4 View



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

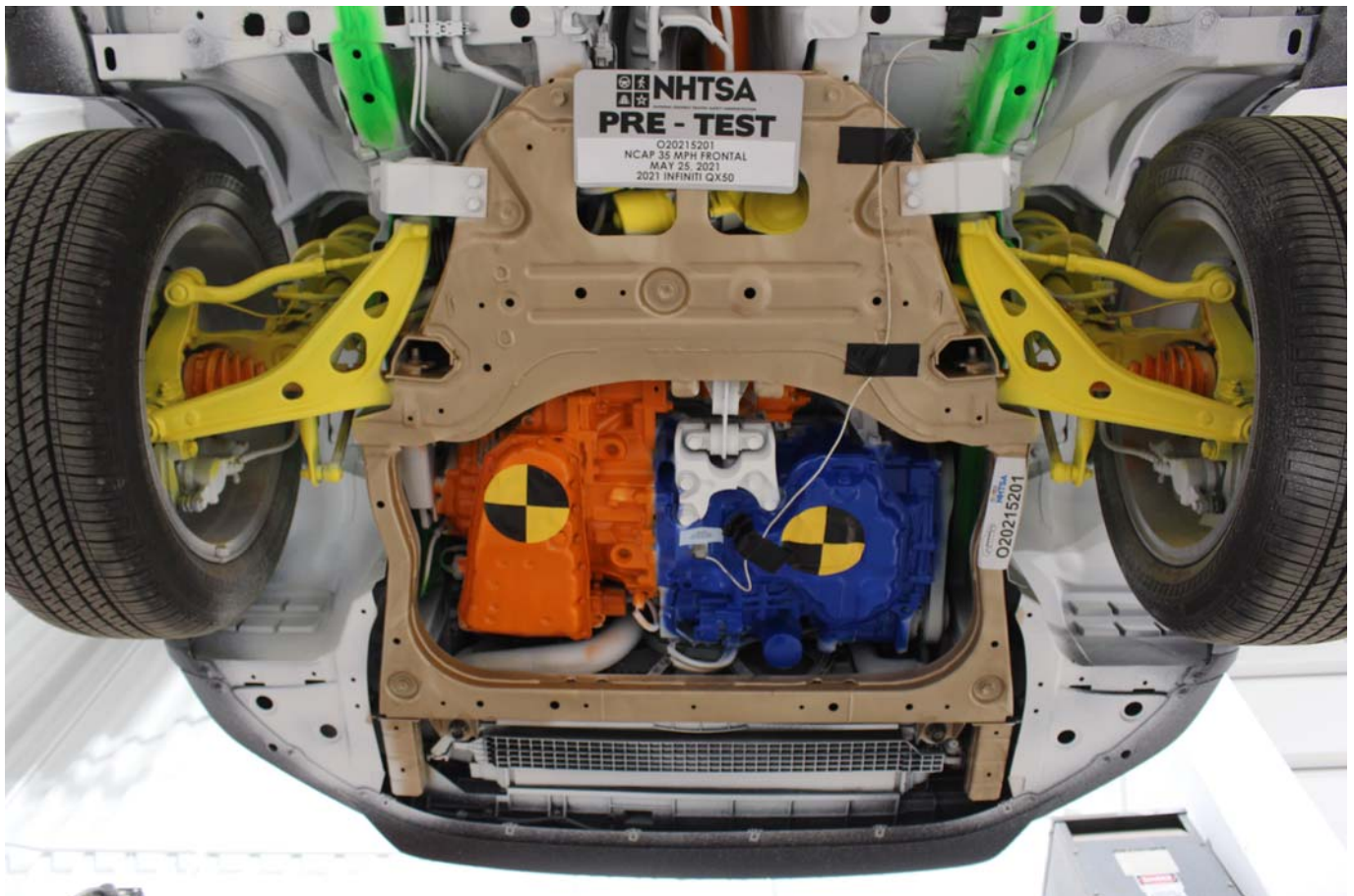


Photo No. 024 - Pre-Test Front Underbody View

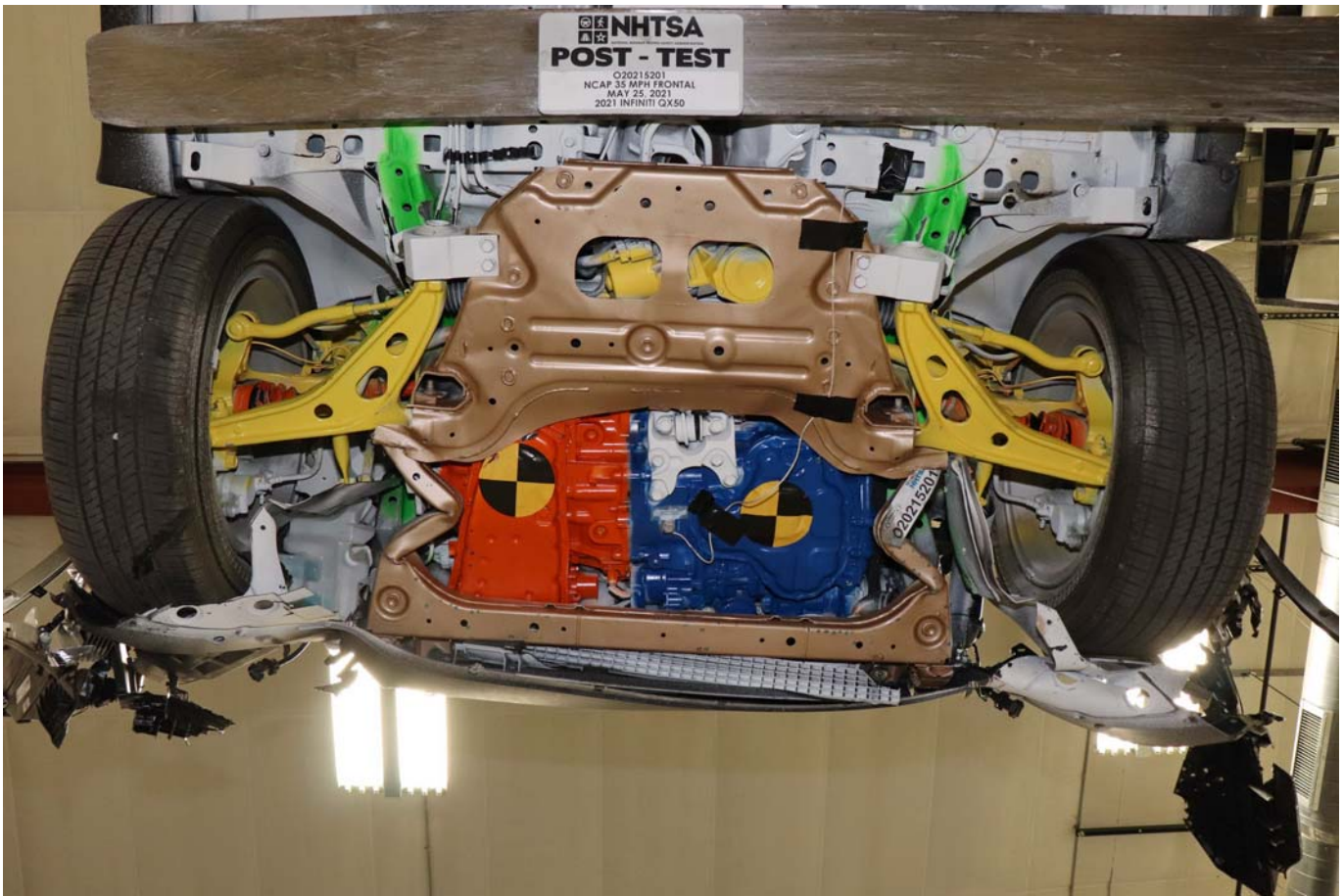


Photo No. 025 - Post-Test Front Underbody View

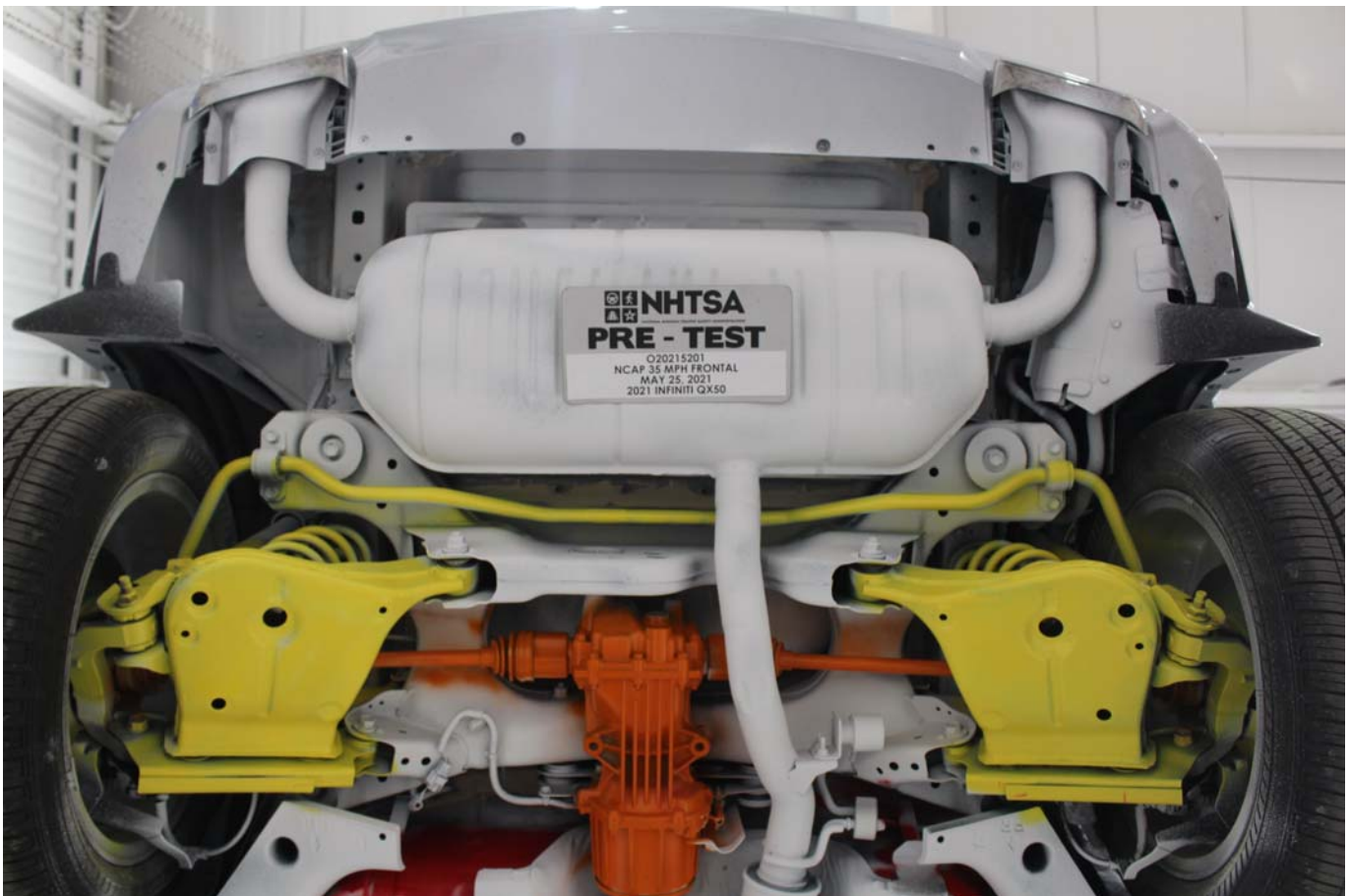


Photo No. 026 - Pre-Test Rear Underbody View

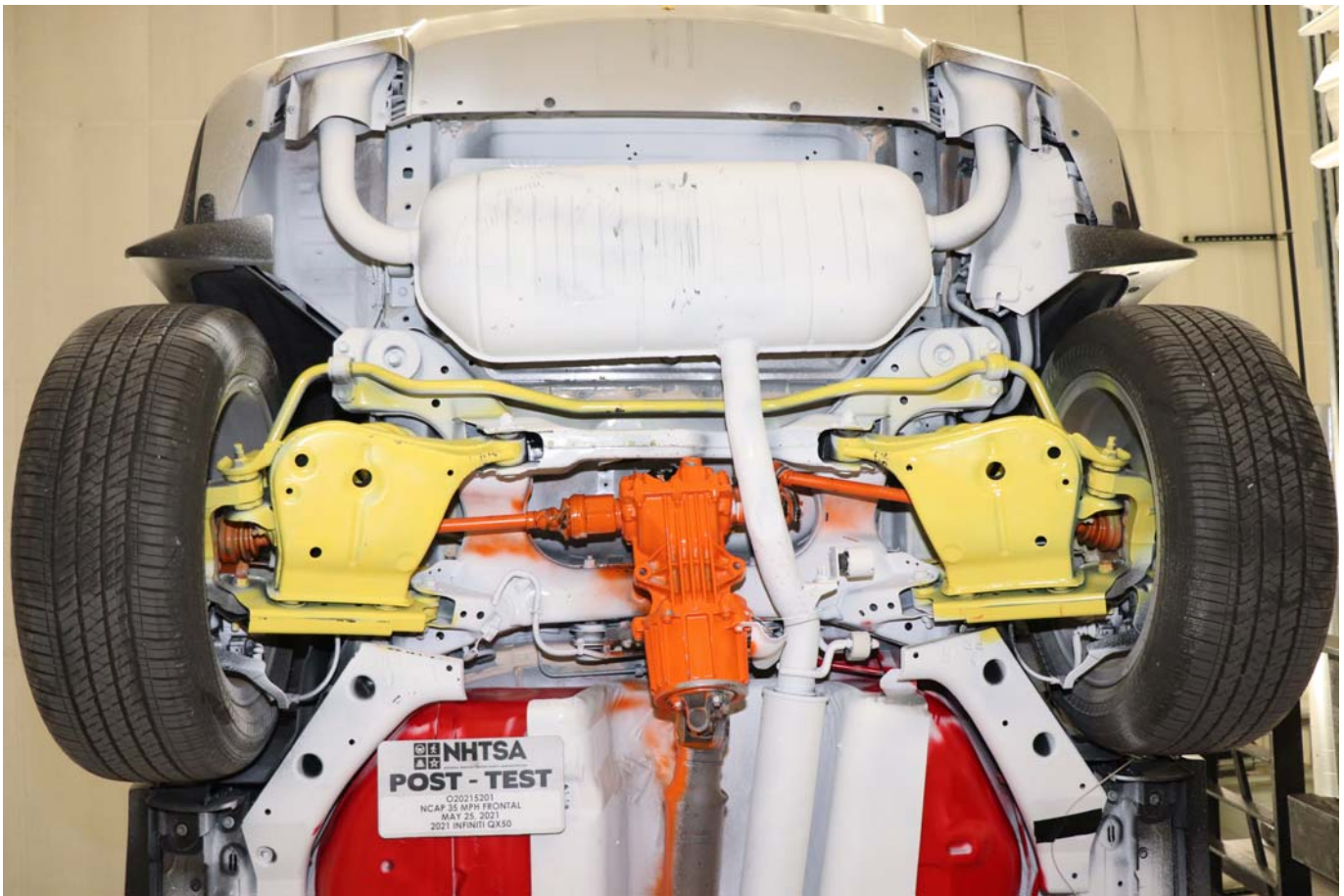


Photo No. 027 - Post-Test Rear Underbody View



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



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



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



Photo No. 037 - Post-Test Driver 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 Side Knee Bolster



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



Photo No. 046 - Pre-Test Driver Side Floorpan

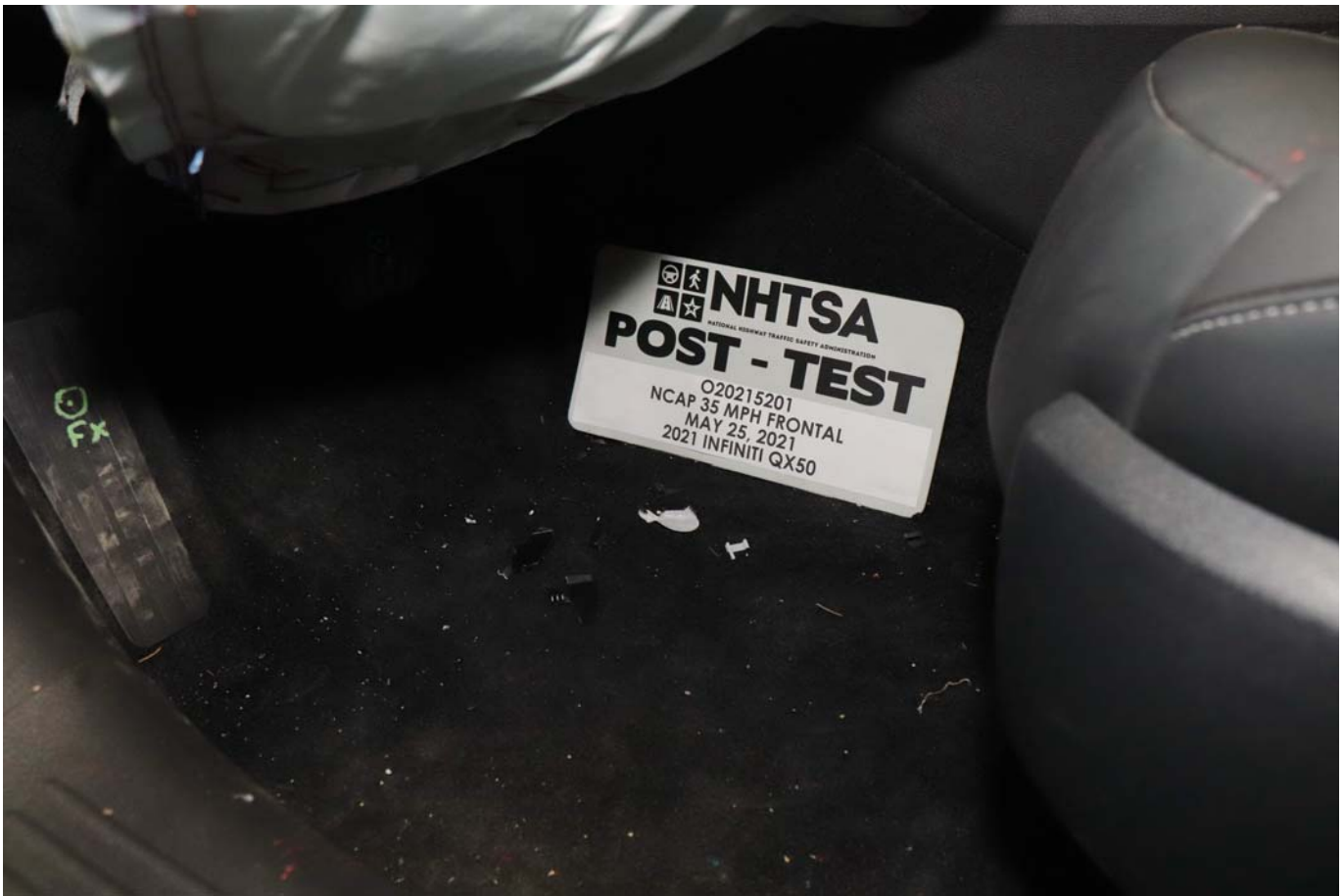


Photo No. 047 - Post-Test Driver Side Floorpan



Photo No. 048 - Post-Test Driver Dummy Face

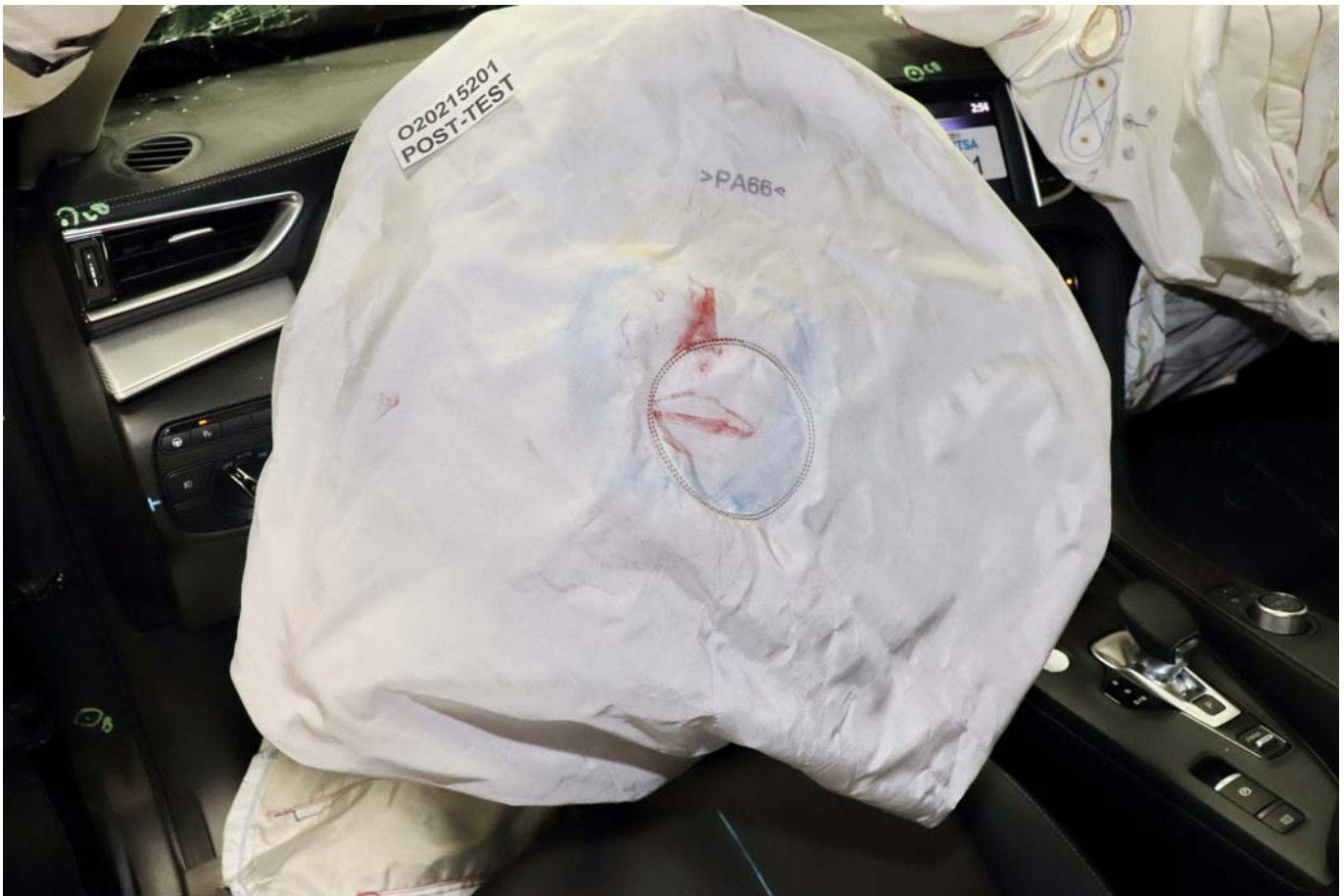


Photo No. 049 - Post-Test Driver Dummy Contact with Airbag



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



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



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



Photo No. 060 - Post-Test Passenger 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 Side Knee Bolster



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



Photo No. 069 - Pre-Test Passenger Side Floorpan

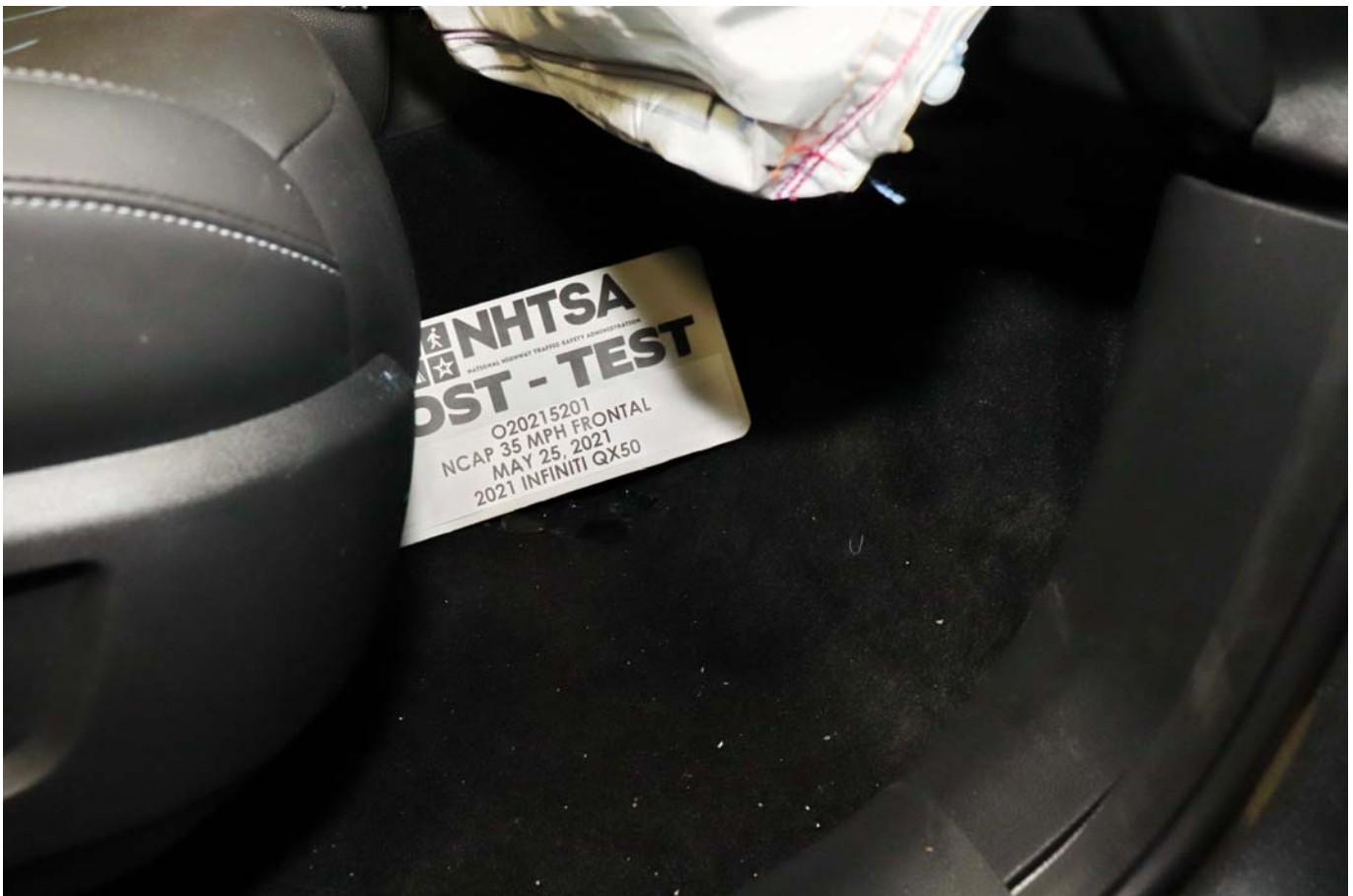


Photo No. 070 - Post-Test Passenger Side Floorpan



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 - 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

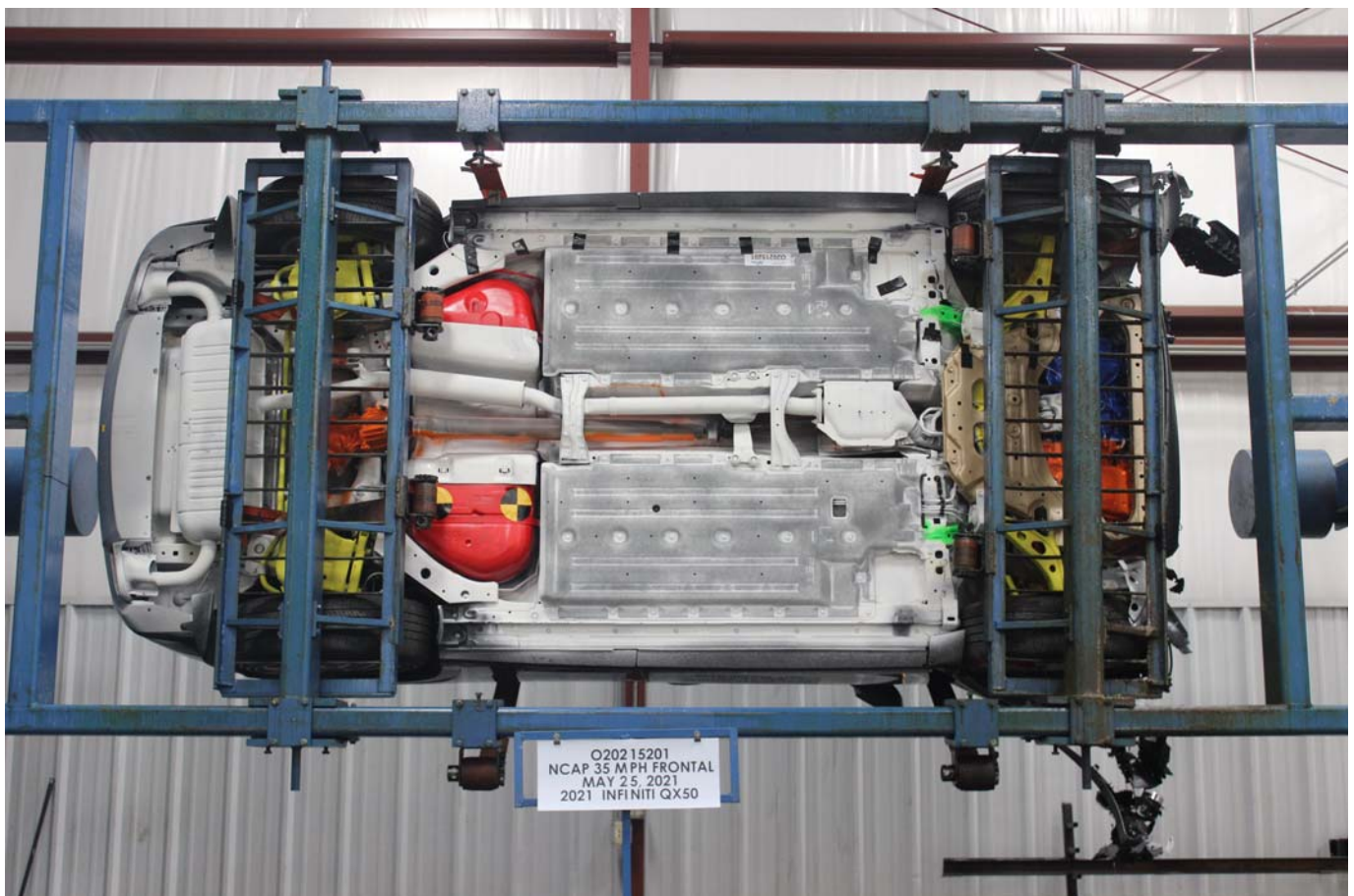


Photo No. 078 - Vehicle at 90 Degrees on Static Rollover Device



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

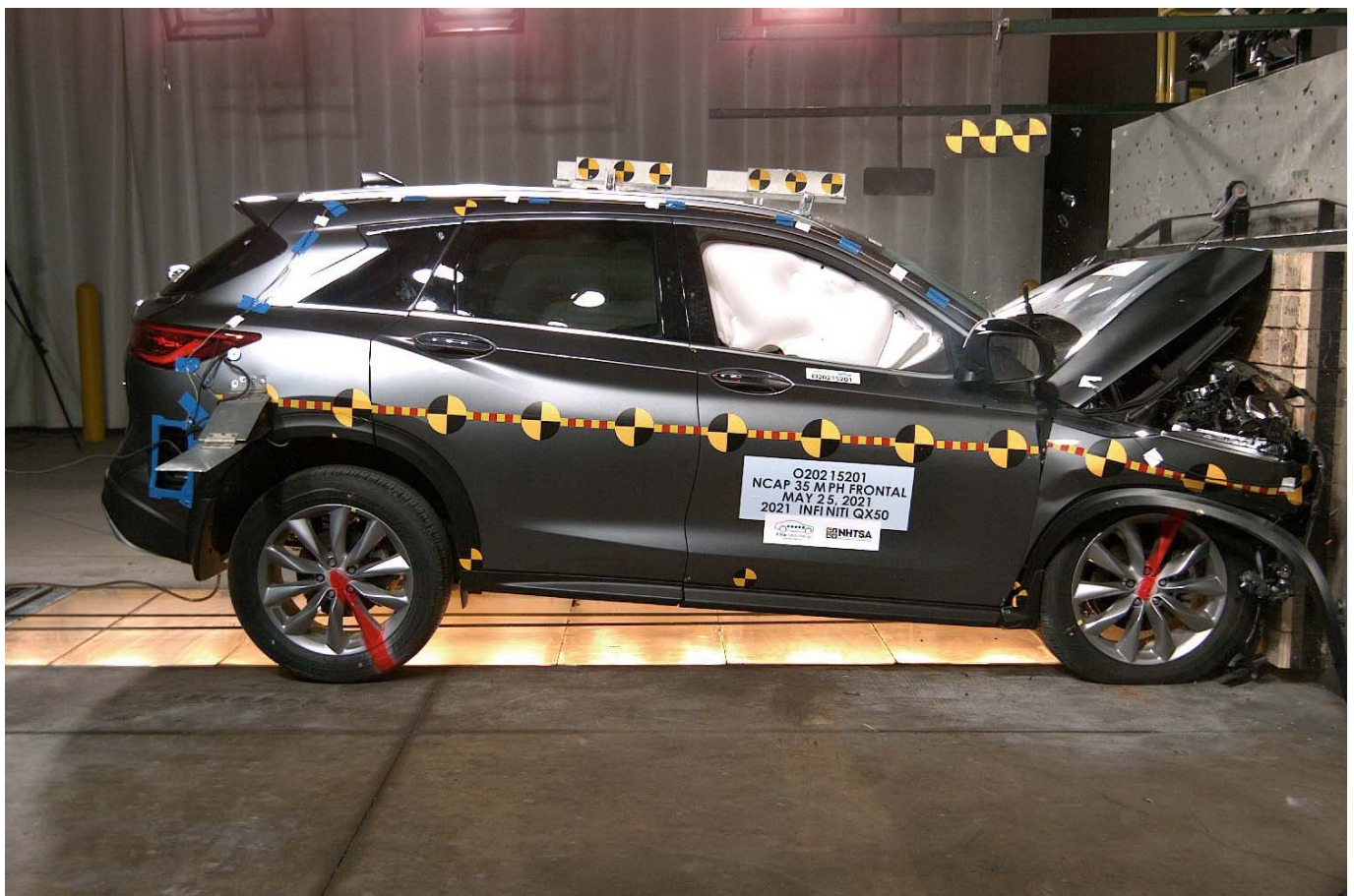


Photo No. 082 - 2021 Infiniti QX50 LUXE AWD 5-Door SUV Frontal Impact Event



2021 INFINITI QX50 LUXE AWD

Standard Equipment Included at No Extra Charge

MECHANICAL & PERFORMANCE:
2.0L Variable Compression Turbo Engine
268 Horsepower and 280 lb-ft Torque
INFINITI Intelligent All-Wheel Drive
All-Season Run-Flat Tires
19-inch Silver Painted
Aluminum Alloy Wheels

COMFORT & CONVENIENCE:
LED Signature Daytime Running Lights
Auto On/Off LED Headlights
LED Front Fog Lights
Panoramic Moonroof
Roof Rails
Power Rear Liftgate
Intelligent Key w/ Push Button Ignition
Textured Aluminum Interior Trim Accents
Remote Engine Start
Tilt and Telescopic Steering Column
Leather-Wrapped Steering Wheel
Paddle Shifters
Auto Dimming Rearview Mirror
w/ HomeLink® Car Garage Door Control
Dual Zone Automatic Climate Control
Leatherette Seating
Power, Heated Front Seats
Driver Power Lumbar
Easy Fill Tire Alert
Rear Seat Slide, Recline,
and Fold Flat Function

DRIVER ASSISTANCE:
Hill Start Assist
Rear Parking Sensors
Intelligent Cruise Control
Distance Control Assist
ProPILOT Assist
Steering Assist
Intelligent Cruise Control w/ full
speed range, stop, and hold

AUDIO & INFOTAINMENT:
INFINITI InTouch™ Dual HD Display System+
Apple CarPlay®
Android Auto™ +
Sirius Eyes Free+
Wi-Fi Hotspot+

SAFETY:
Automatic Collision Notification
and Emergency Call
High Beam Assist
Predictive Forward Collision Warning
Forward Emergency Braking
w/ Pedestrian Detection
Rear Automatic Braking
Rear Cross Traffic Alert
Blind Spot Warning
Blind Spot Intervention®
Lane Departure Warning
Lane Departure Prevention

+For more information, see retailer, owner's
manual or www.infiniti-usa.com/intouch/legal
++Replaces Standard or Optional Equipment

Manufacturer's Suggested Retail Base Price:	\$43,500.00
Options Included by Manufacturer SPLASH GUARDS	225.00
DESTINATION CHARGES	1,025.00
Total*	\$44,750.00

Fuel Economy and Environment

Fuel Economy

25 MPG
combined city/hwy

22 city 28 highway

4.0 gallons per 100 miles

You spend
\$2,250
more in fuel costs
over 5 years
compared to the
average new vehicle.

Annual fuel cost
\$1,950

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

5 **6**

This vehicle emits 367 grams CO₂ per mile. The best emits 0 grams CO₂ per mile (tailpipe only). Producing and distributing fuel also create emissions. Learn more at fuel-economy.gov.

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 27 MPG and costs \$7,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$3.25 per gallon. MPG is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuel-economy.gov
Calculate personalized estimates and compare vehicles

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score Not Rated
Based on the combined ratings of frontal, side and rollover.
Should ONLY be compared to other vehicles of similar size and weight.

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

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

DELIVERY

VEHICLE COLORS:
EXT: GRAPHITE SHADOW
INT: GRAPHITE

FINAL ASSEMBLY POINT:
AGUAS (ABV) MEX

TRANSPORT METHOD:
TRUCK

DEALER:
INFINITI MILWAUKEE
10555 W ARTHUR
WEST ALLIS WI
53227

TOTAL OWNERSHIP EXPERIENCE

Every Infiniti Vehicle includes Infiniti's:

- 4-Year/60,000 Mile Basic Limited Warranty Coverage **
- 6-Year/70,000 Mile Powertrain Limited Warranty Coverage **
- 7-Year/Unlimited Mileage Corrosion Limited Warranty Coverage **
- 24-hour Roadside Assistance **
- Complimentary Service Loan Car ***

** Please see the Infiniti Warranty Information booklet for details.
*** Please ask your Infiniti retailer for details.

VIN: 3PCAJS8B3MF112148
EMS: 50 STATE EMISSIONS
MDL: 81211-112148 KAD-G
OPT: C-982C03L11S55

2F101123130230R172065

Photo No. 083 - Monroney Label Photograph

APPENDIX B
DUMMY RESPONSE DATA TRACES

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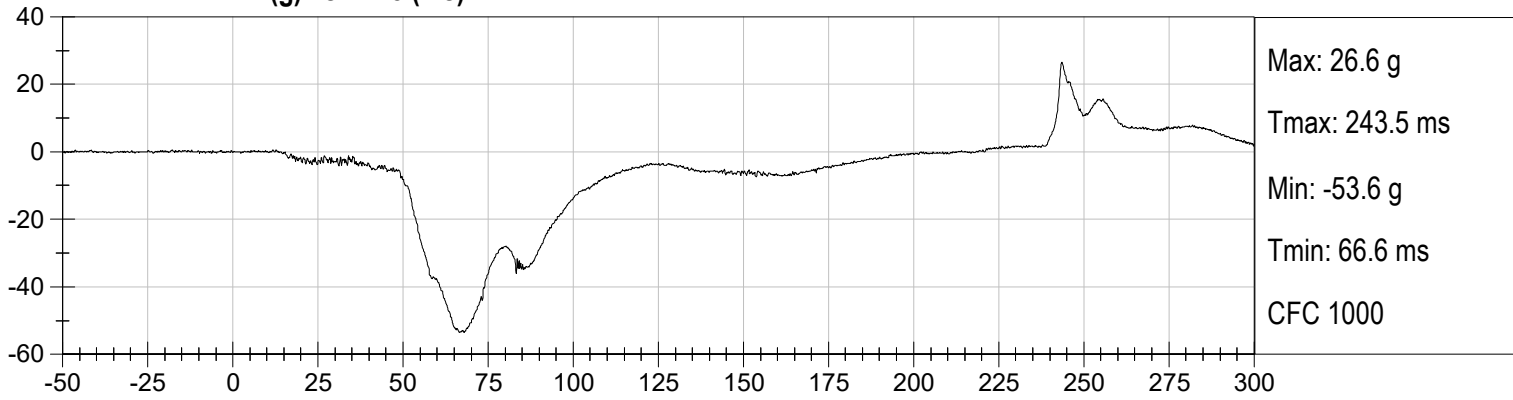
The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.nhtsa.gov

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

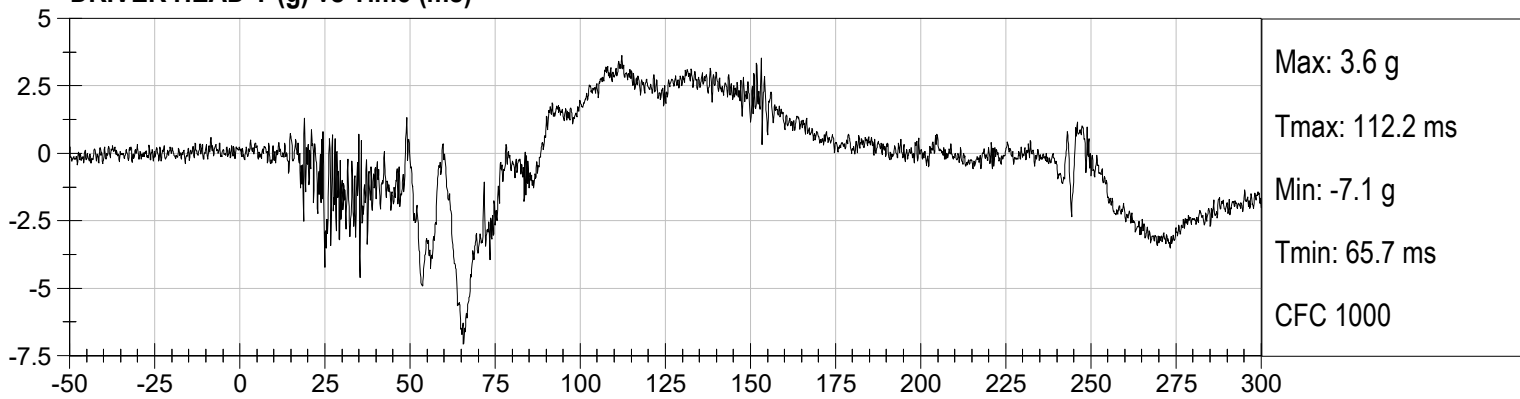
Driver Left Upper Tibia Force Z
Driver Left Lower Tibia Moment X
Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
Driver Right Upper Tibia Moment X
Driver Right Upper Tibia Moment Y
Driver Right Upper Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower Tibia Moment Y
Driver Right Lower Tibia Force Z
Driver Left Foot Fore Z
Driver Left Foot Aft X
Driver Left Foot Aft Z
Driver Right Foot Fore Z
Driver Right Foot Aft X
Driver Right Foot Aft Z
Driver 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
Left Rear Seat Crossmember Z
Right Rear Seat Crossmember Z
Left Rear Seat Crossmember Xr
Right Rear Seat Crossmember Xr
Advanced Research Load Cell Barrier – 528 channels

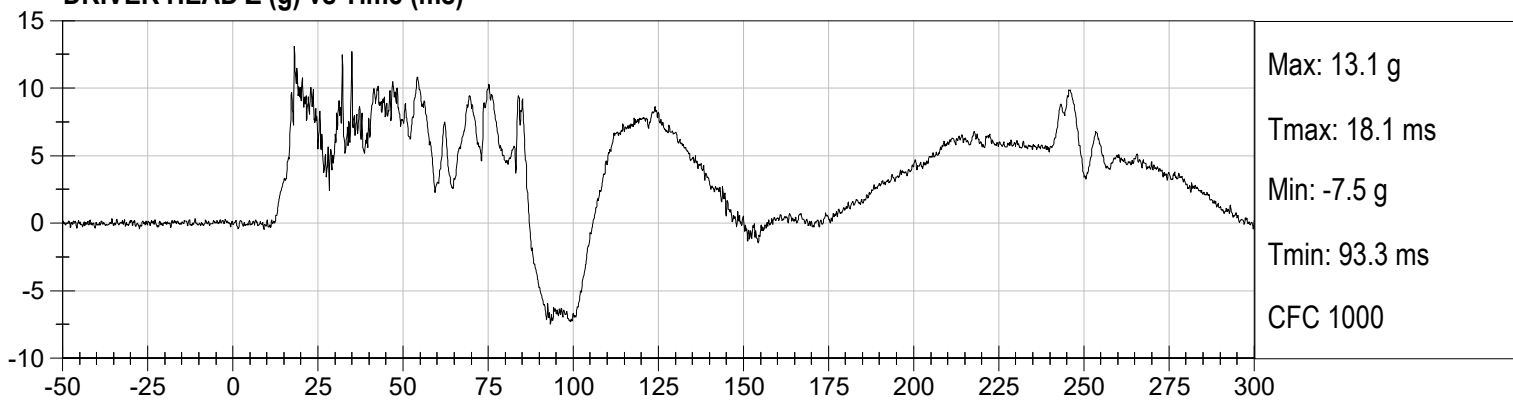
DRIVER HEAD X (g) vs Time (ms)



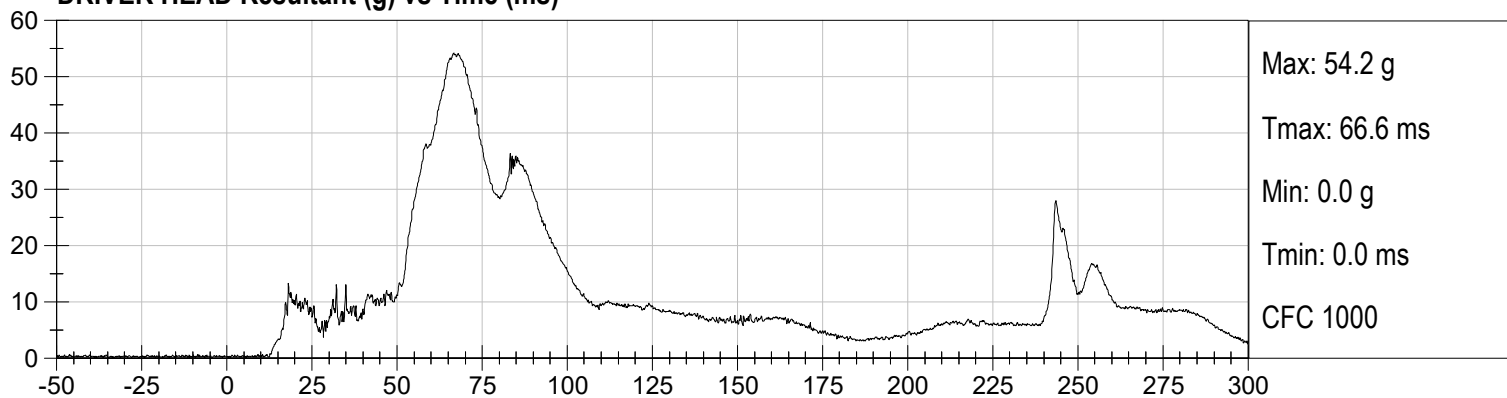
DRIVER HEAD Y (g) vs Time (ms)



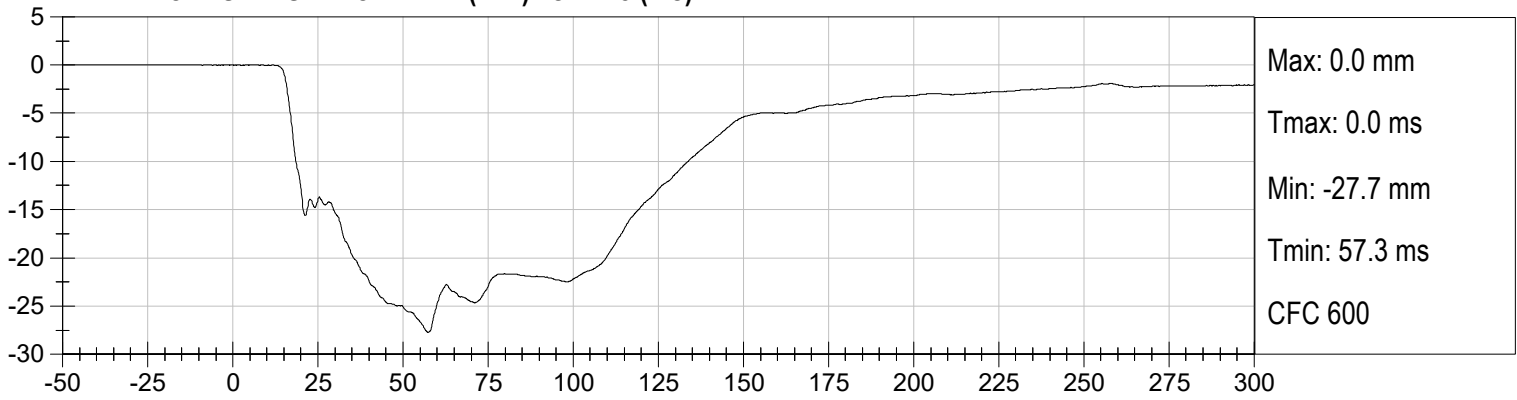
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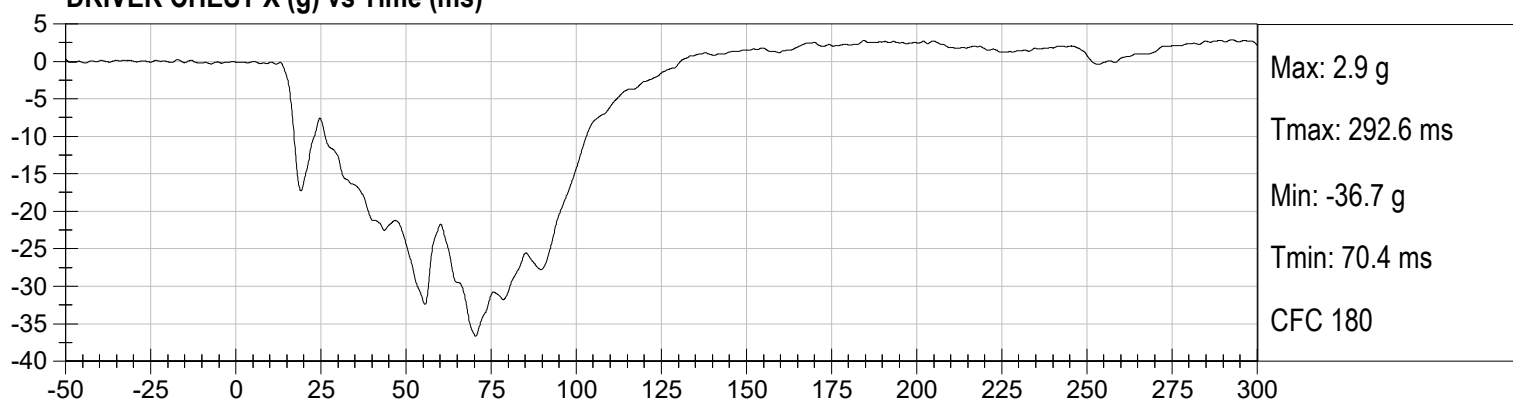
DRIVER HEAD Resultant (g) vs Time (ms)



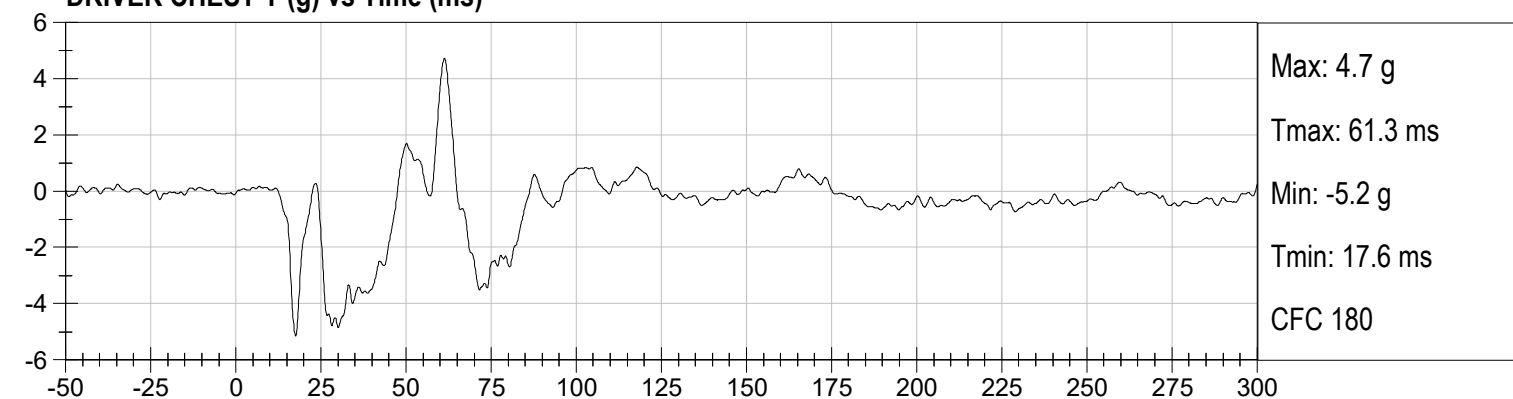
DRIVER CHEST DISPLACEMENT (mm) vs Time (ms)



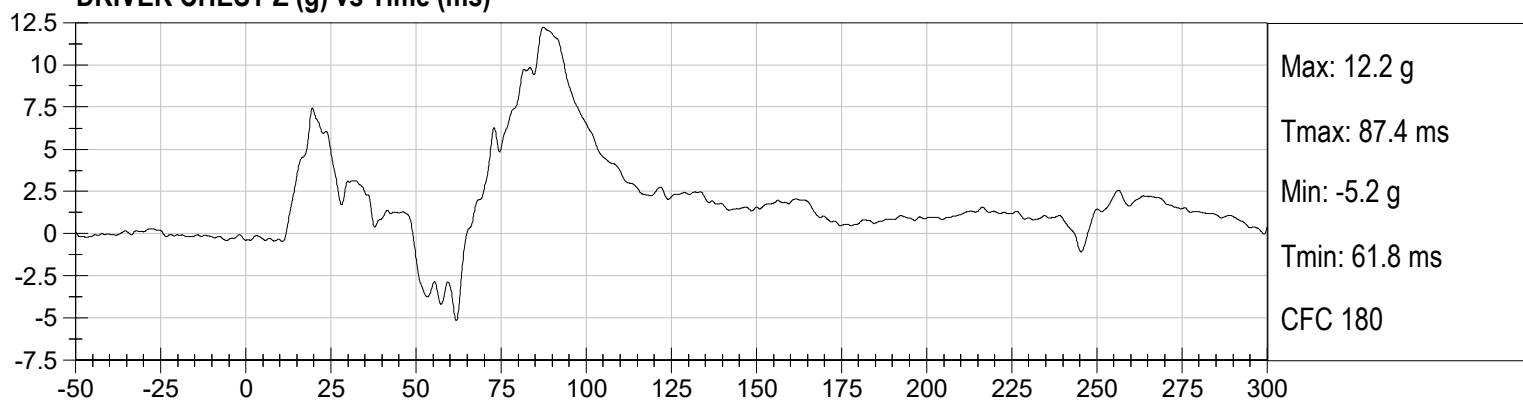
DRIVER CHEST X (g) vs Time (ms)



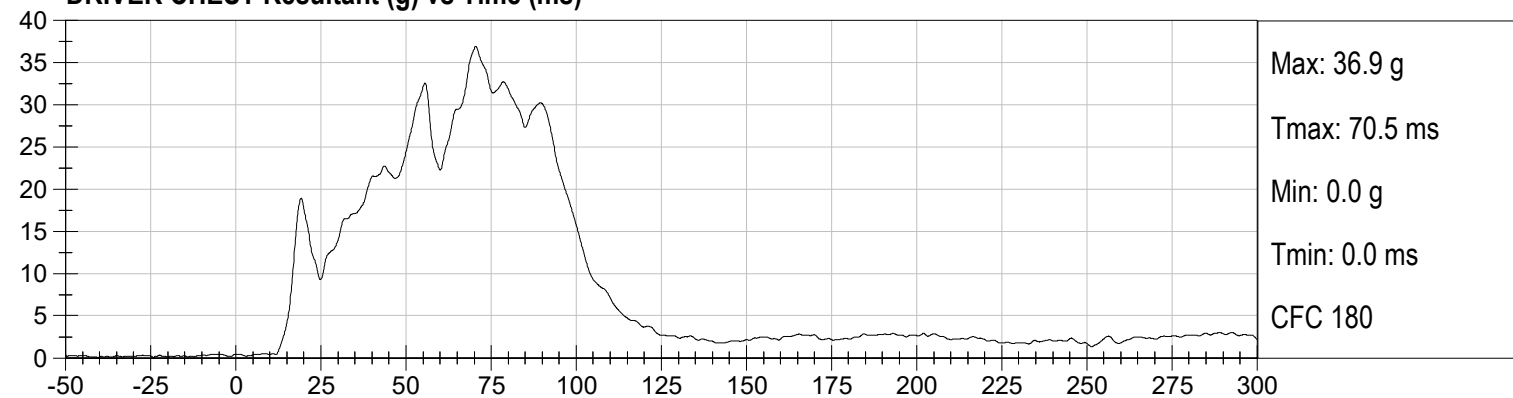
DRIVER CHEST Y (g) vs Time (ms)



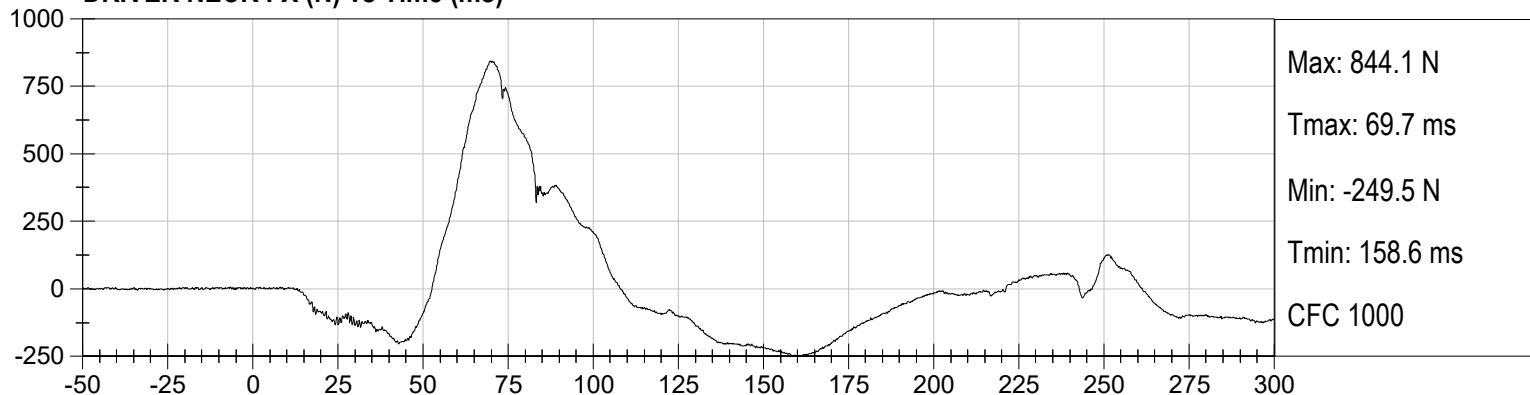
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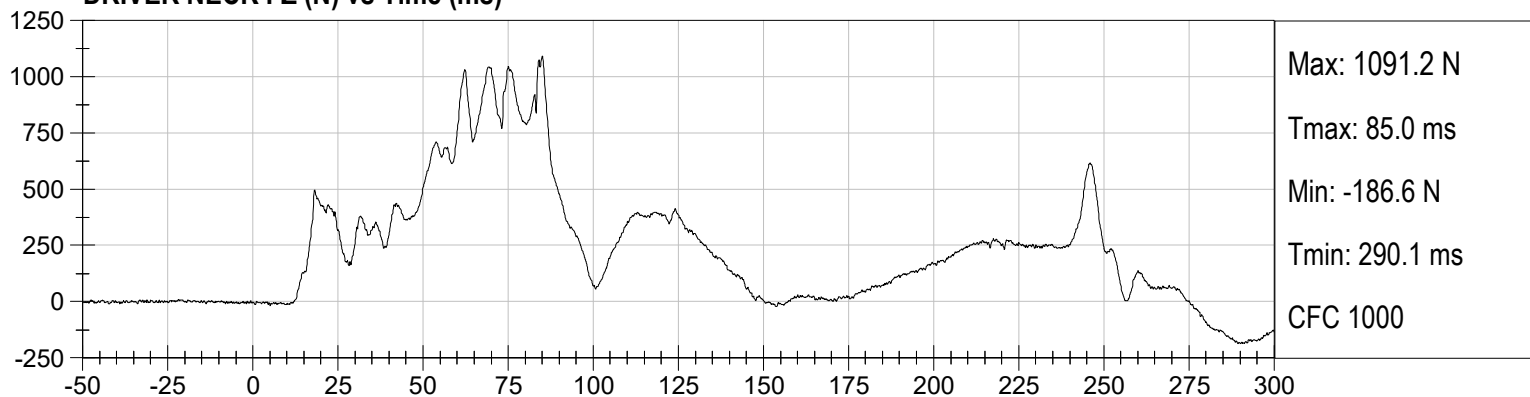
DRIVER CHEST Resultant (g) vs Time (ms)



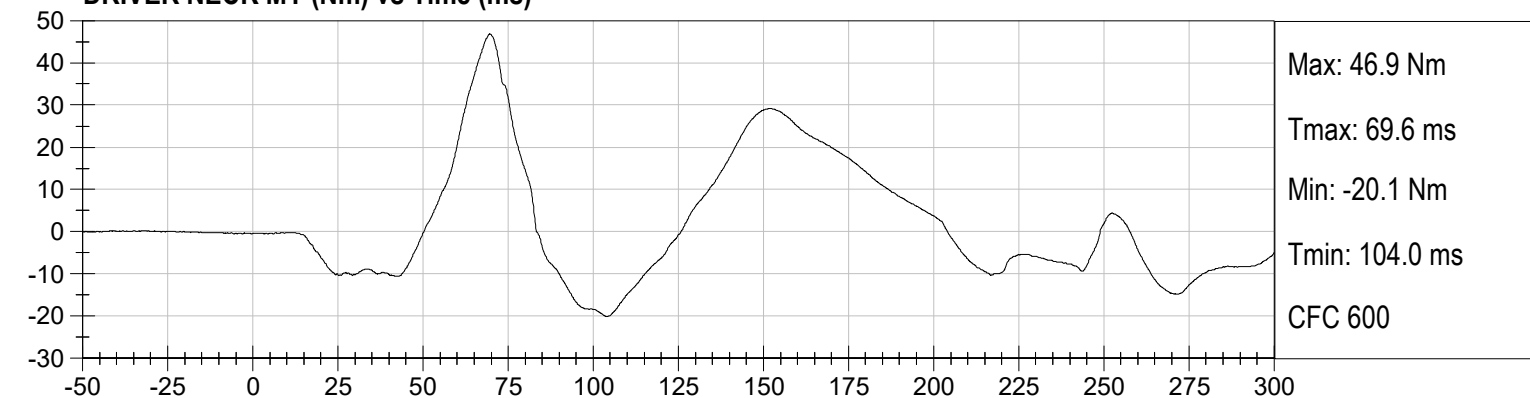
DRIVER NECK FX (N) vs Time (ms)



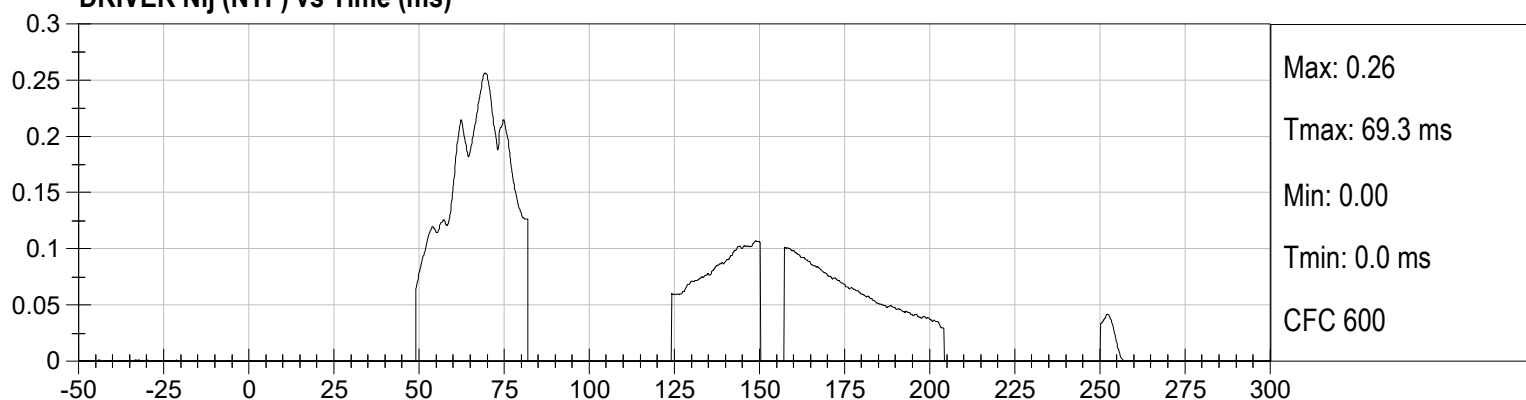
DRIVER NECK FZ (N) vs Time (ms)



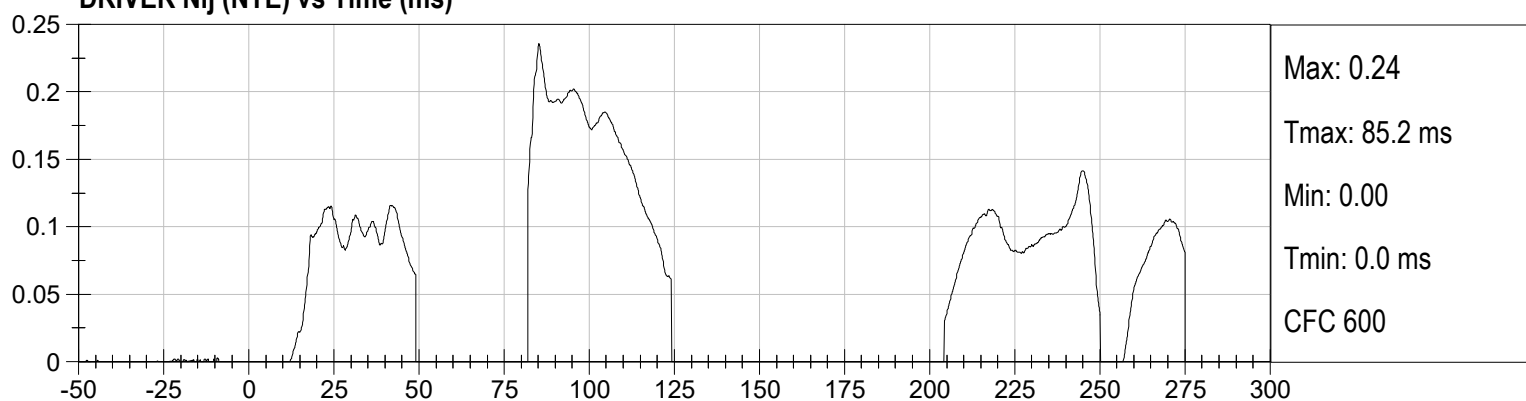
DRIVER NECK MY (Nm) vs Time (ms)



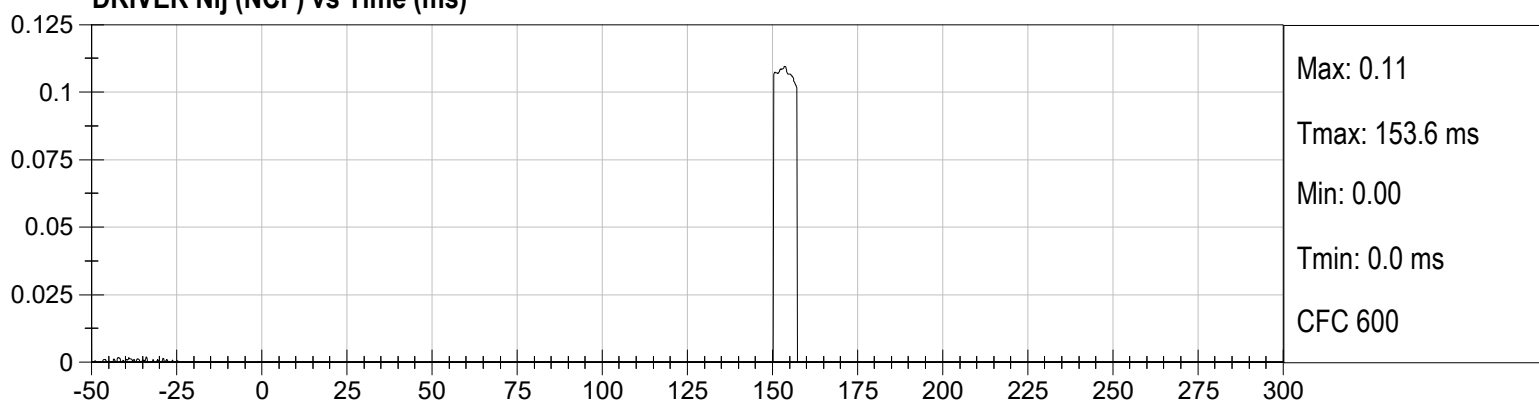
DRIVER Nij (NTF) vs Time (ms)



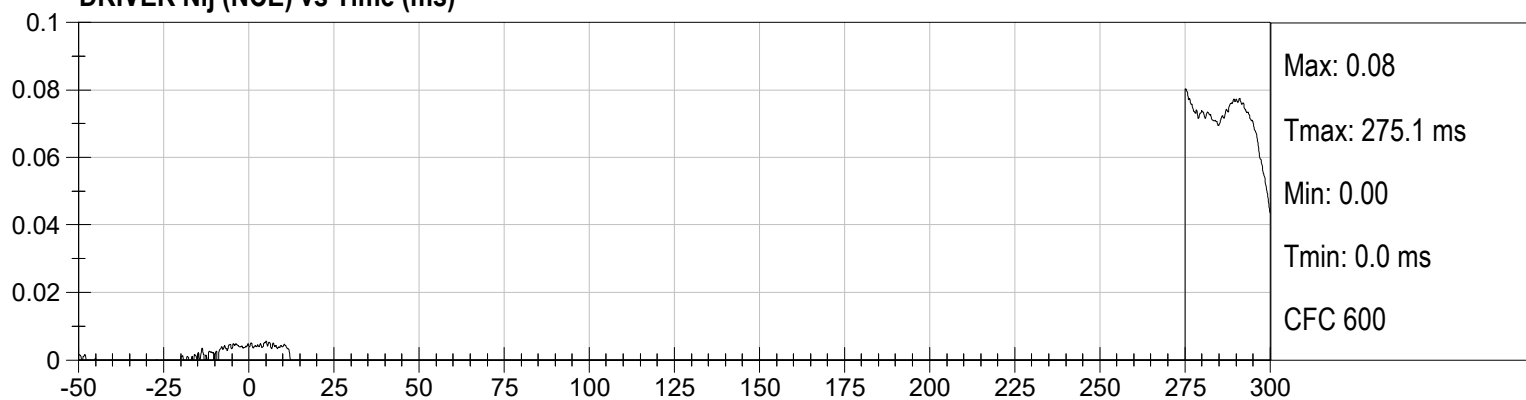
DRIVER Nij (NTE) vs Time (ms)



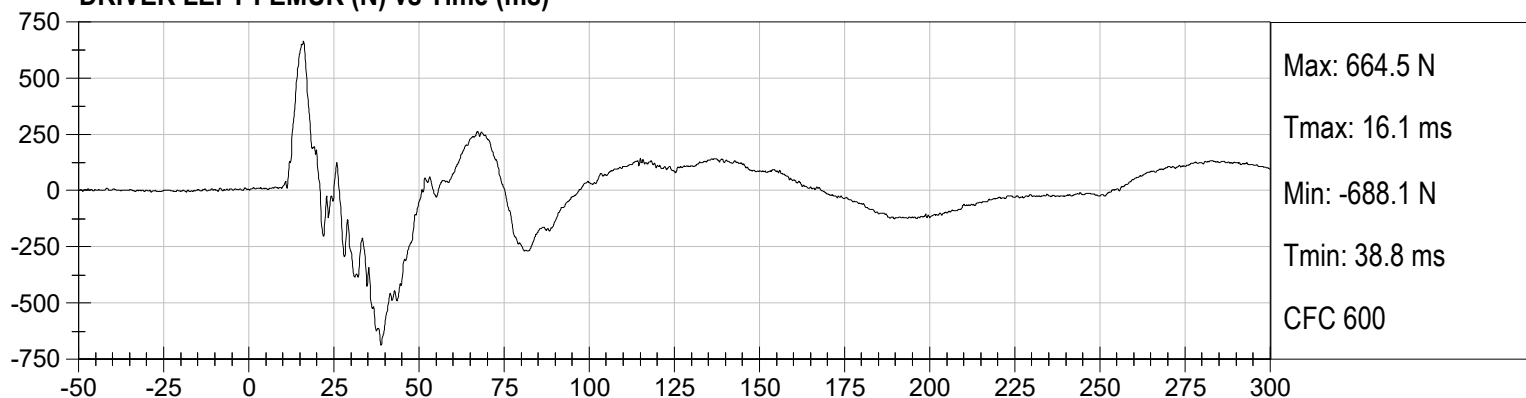
DRIVER Nij (NCF) vs Time (ms)



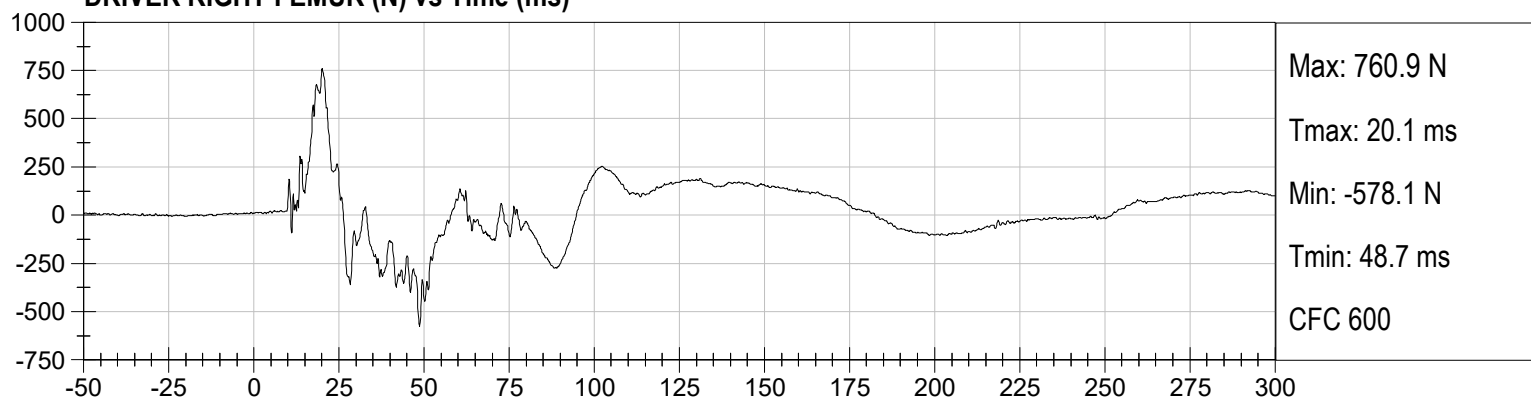
DRIVER Nij (NCE) vs Time (ms)



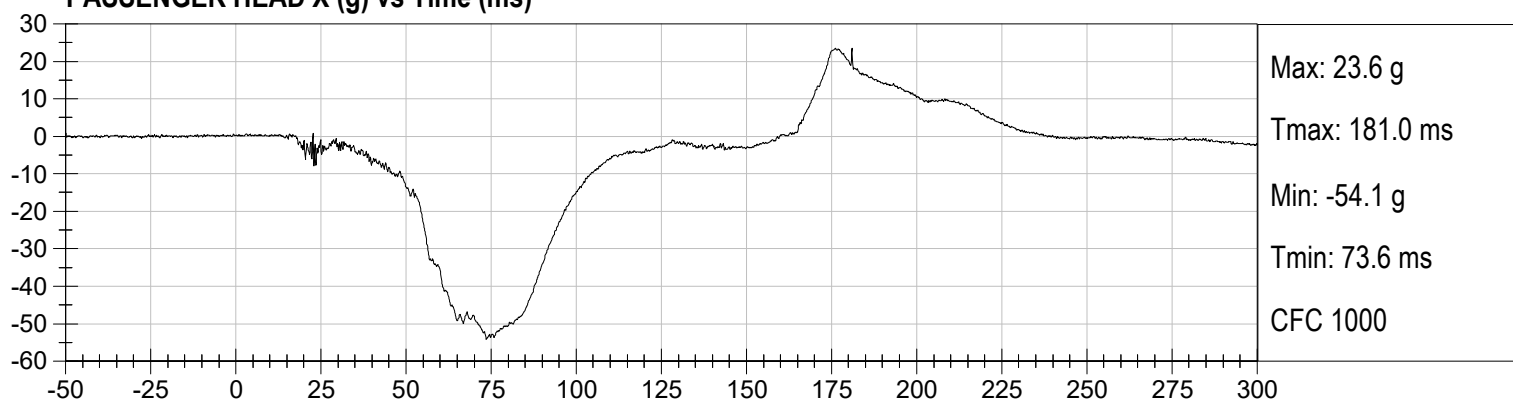
DRIVER LEFT FEMUR (N) vs Time (ms)



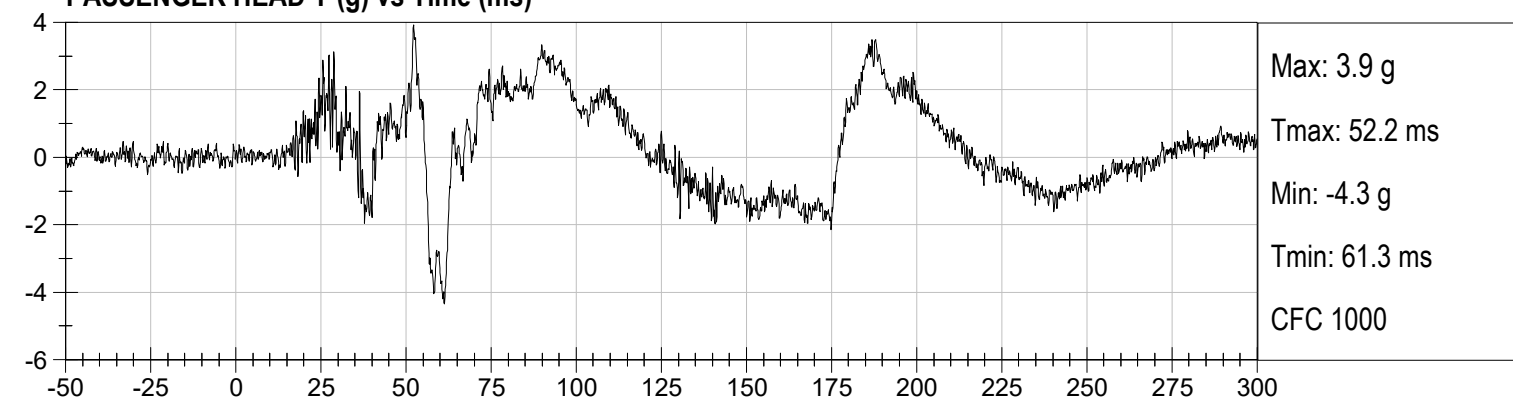
DRIVER RIGHT FEMUR (N) vs Time (ms)



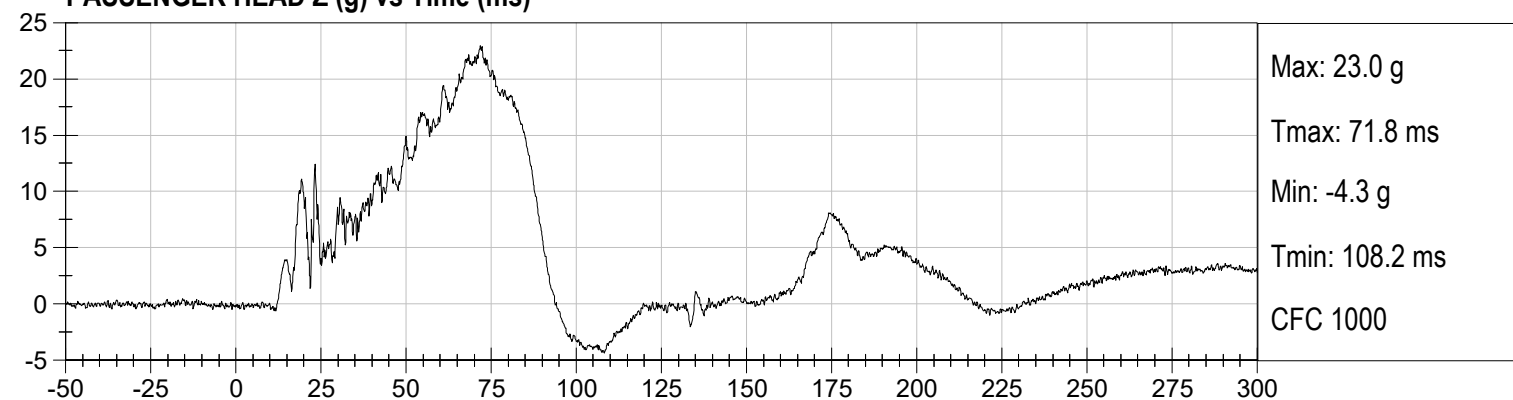
PASSENGER HEAD X (g) vs Time (ms)



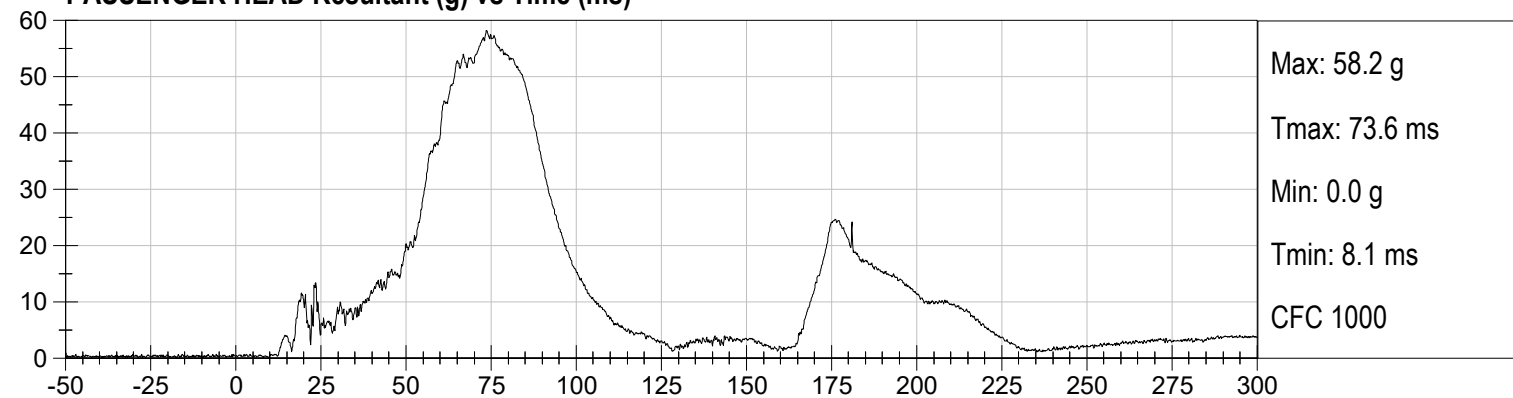
PASSENGER HEAD Y (g) vs Time (ms)

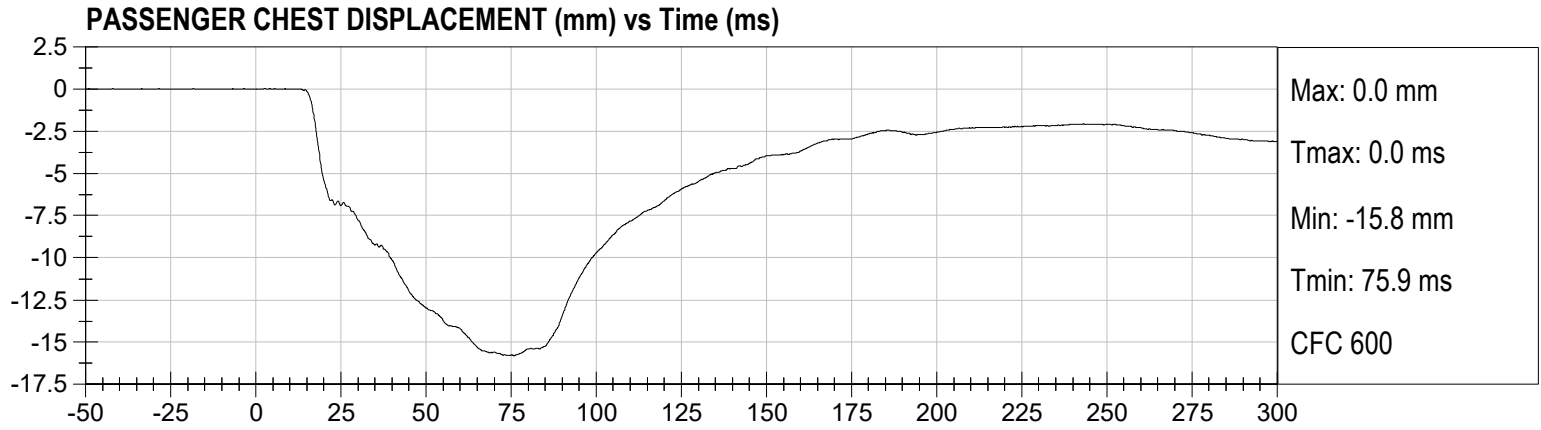


PASSENGER HEAD Z (g) vs Time (ms)

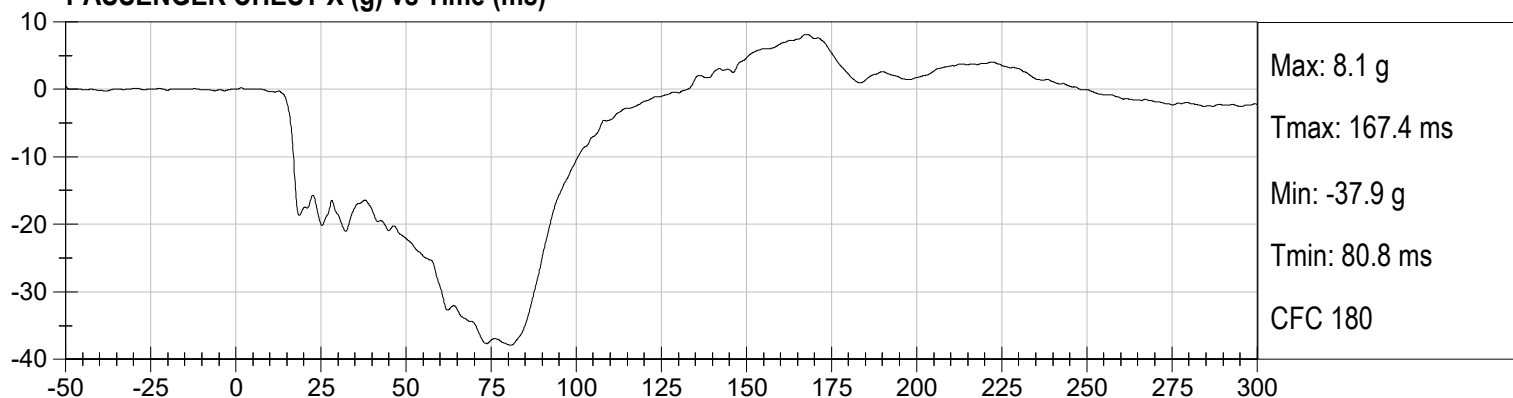


PASSENGER HEAD Resultant (g) vs Time (ms)

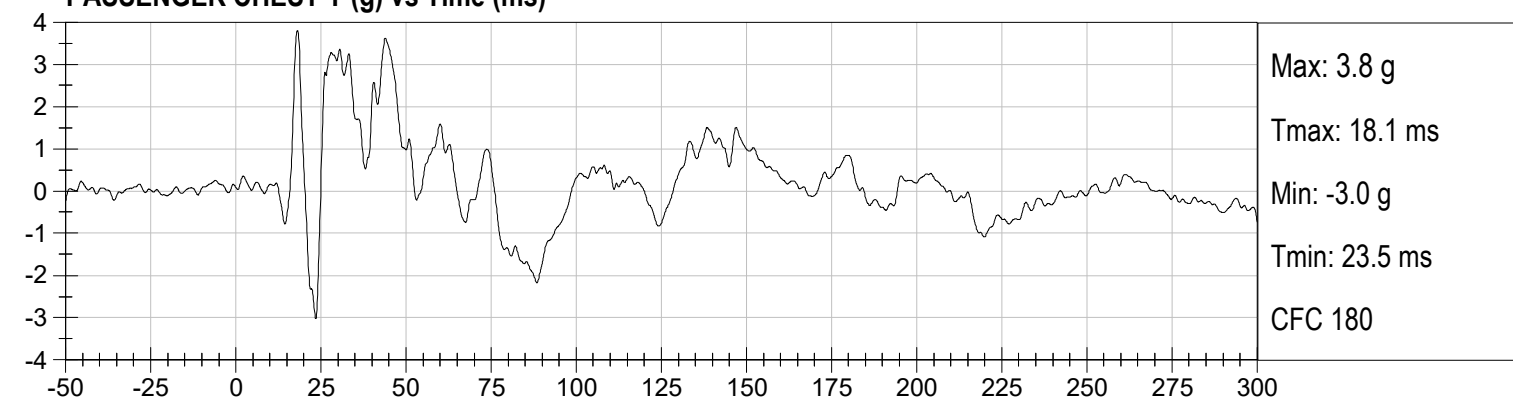




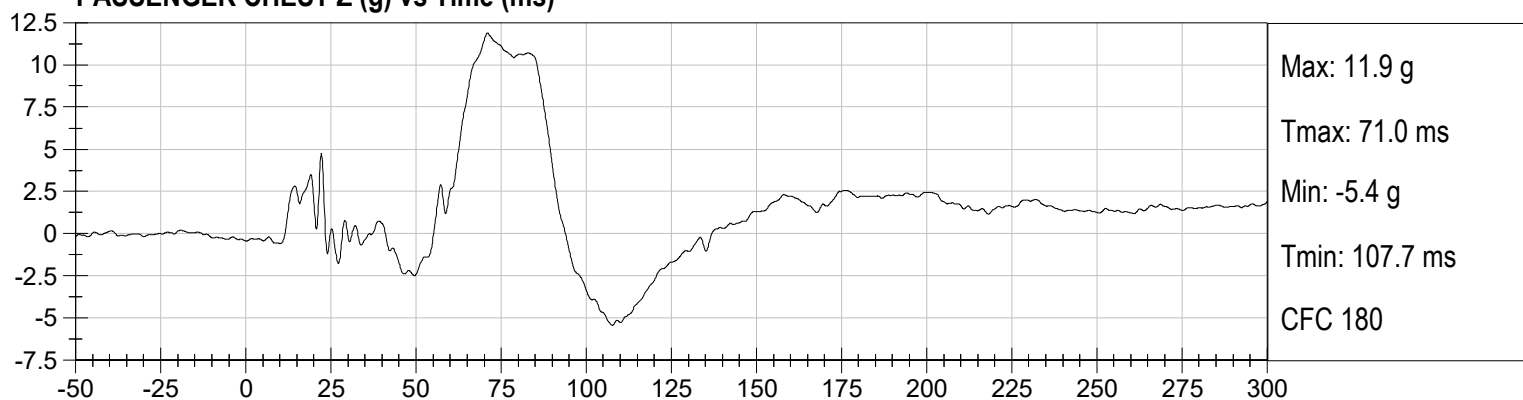
PASSENGER CHEST X (g) vs Time (ms)



PASSENGER CHEST Y (g) vs Time (ms)



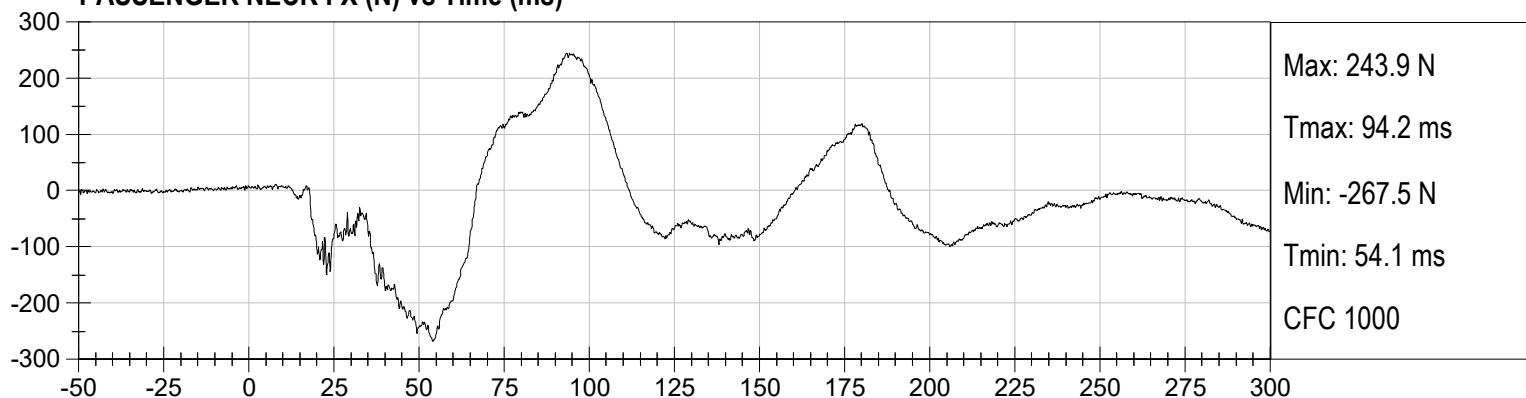
PASSENGER CHEST Z (g) vs Time (ms)



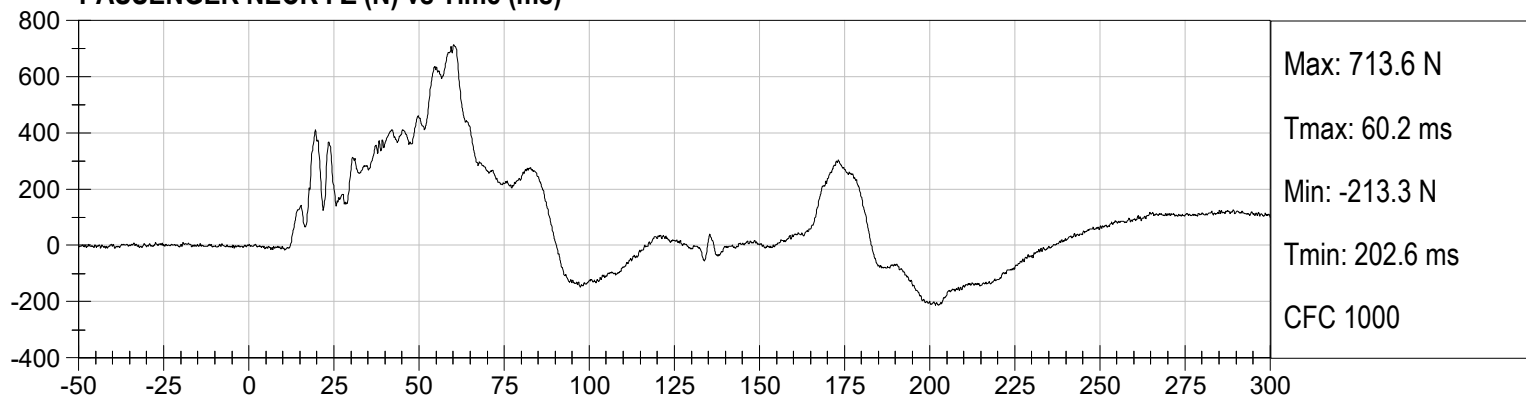
PASSENGER CHEST Resultant (g) vs Time (ms)



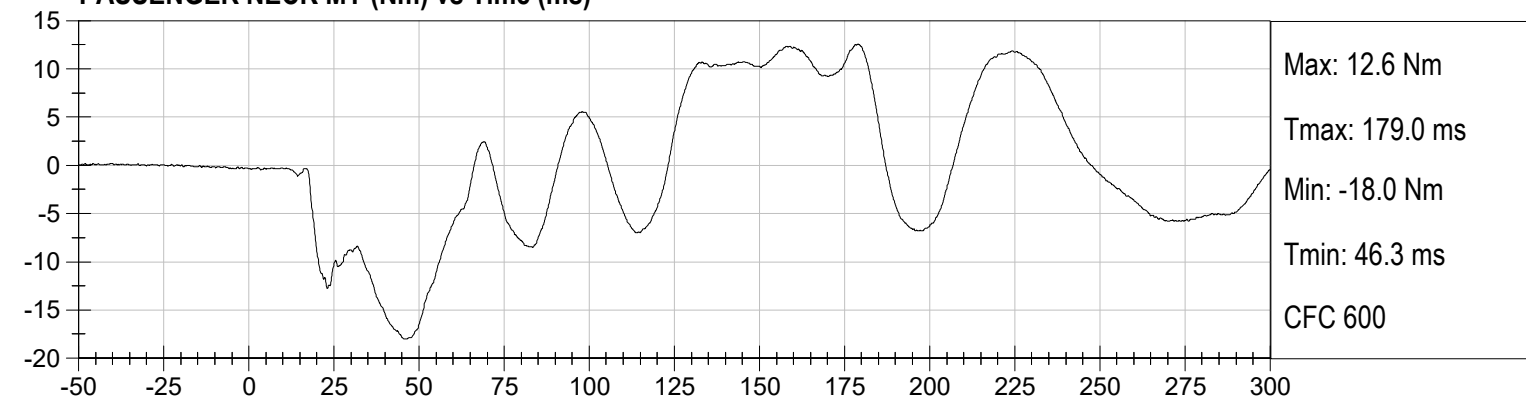
PASSENGER NECK FX (N) vs Time (ms)



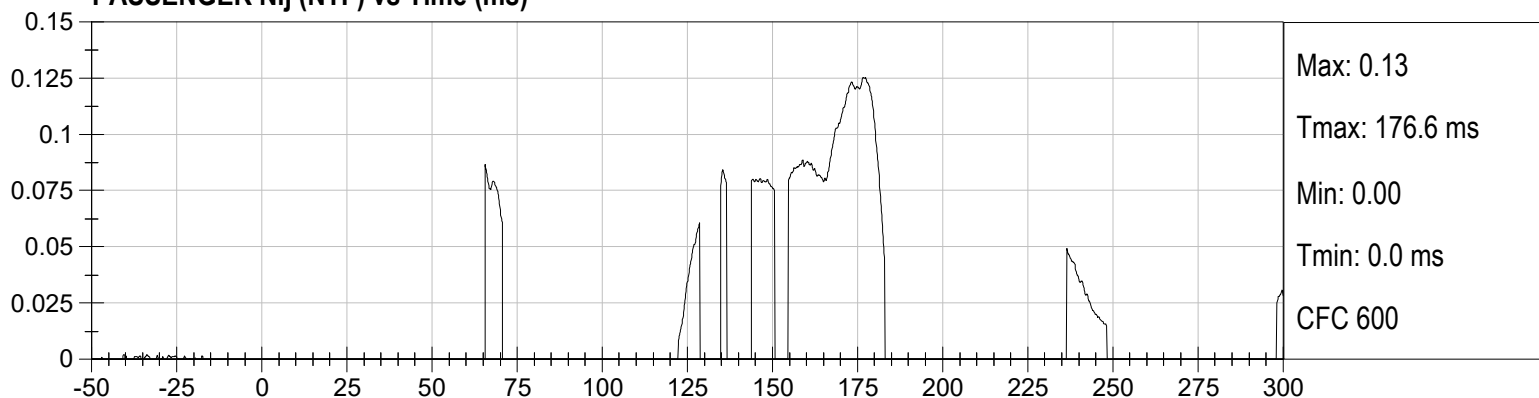
PASSENGER NECK FZ (N) vs Time (ms)



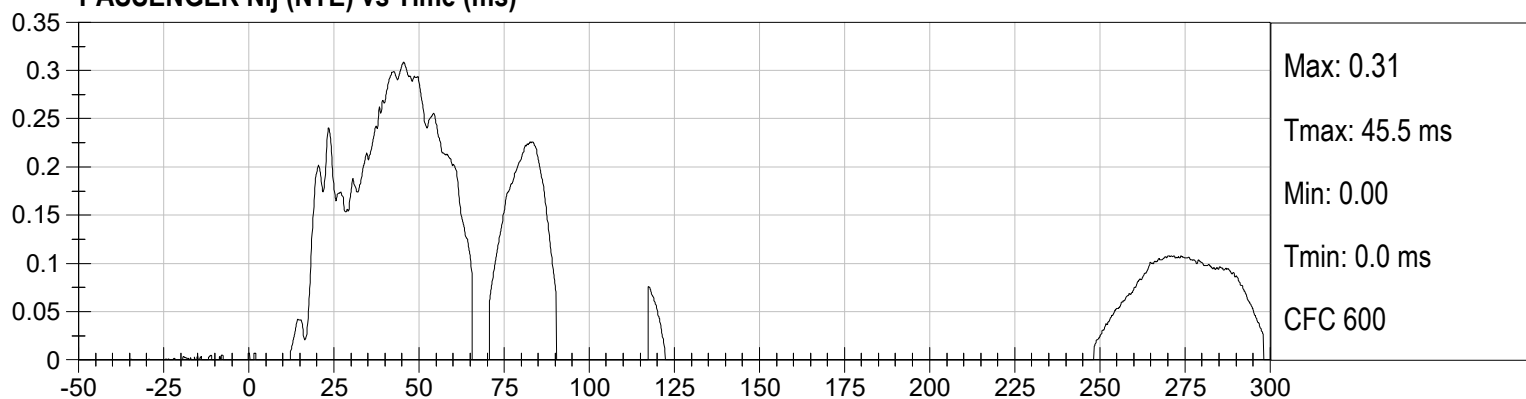
PASSENGER NECK MY (Nm) vs Time (ms)



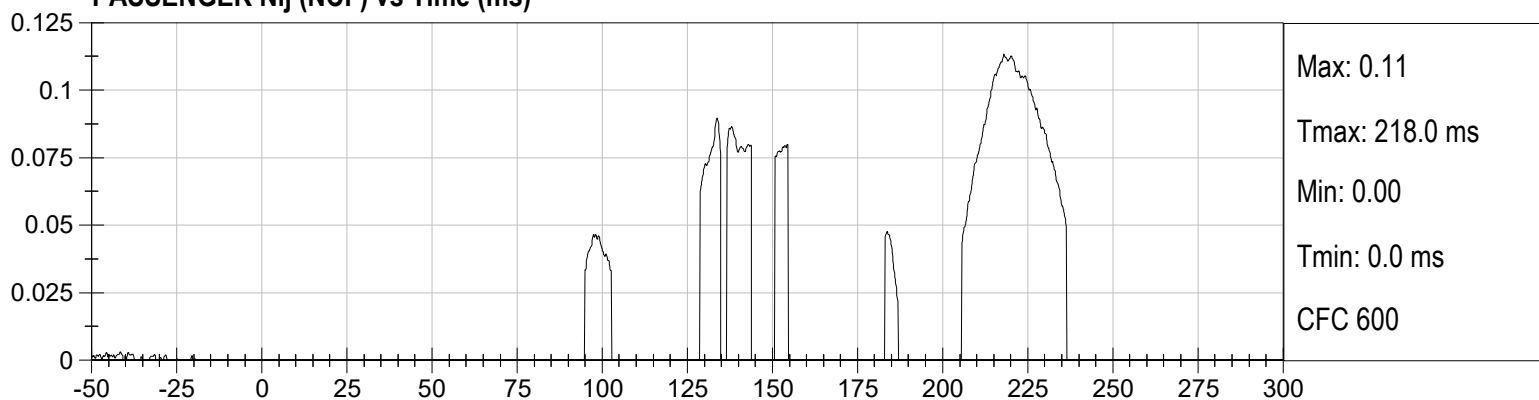
PASSENGER Nij (NTF) vs Time (ms)



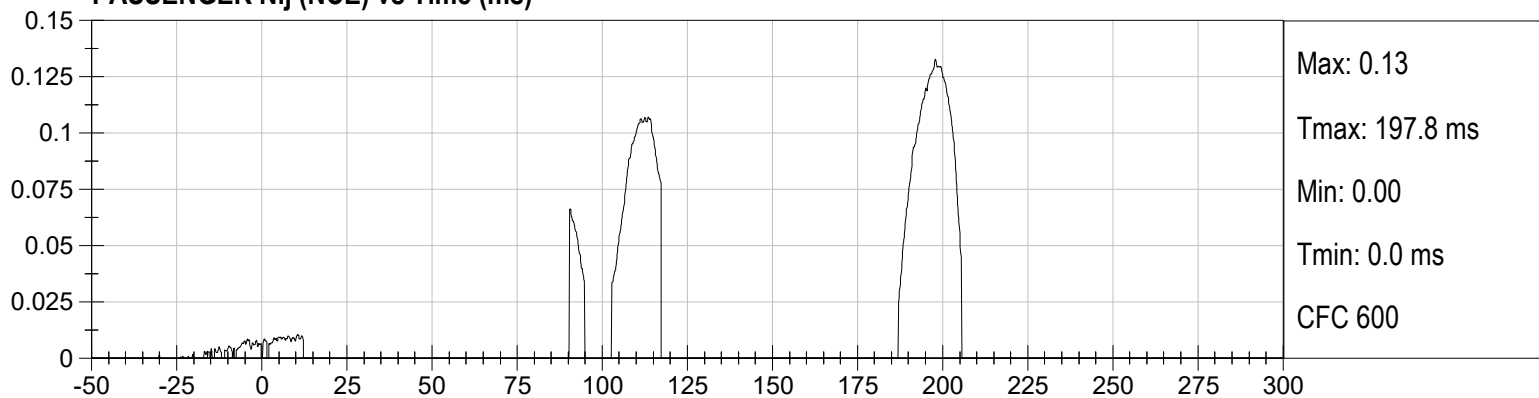
PASSENGER Nij (NTE) vs Time (ms)



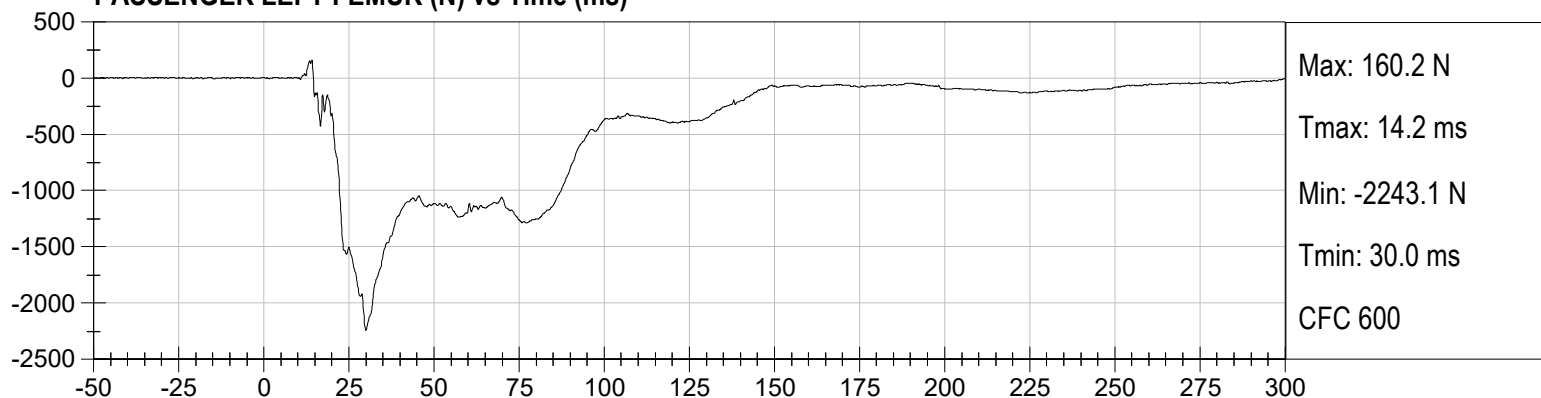
PASSENGER Nij (NCF) vs Time (ms)



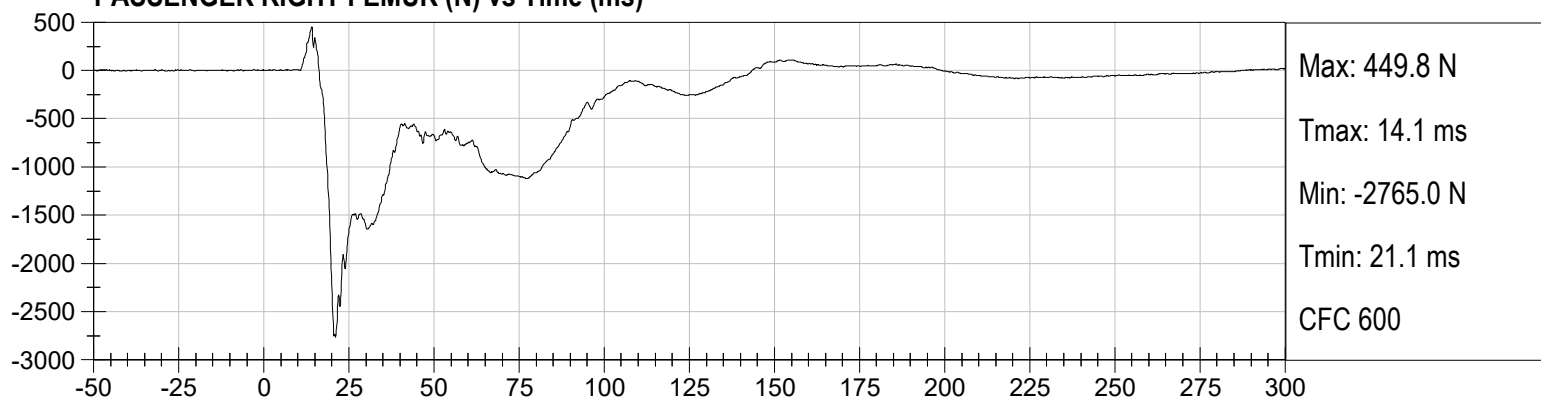
PASSENGER Nij (NCE) vs Time (ms)



PASSENGER LEFT FEMUR (N) vs Time (ms)



PASSENGER RIGHT FEMUR (N) vs Time (ms)



APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

CALIBRATION TEST RESULTS

PRE-TEST

HYBRID III 50TH PERCENTILE MALE - DRIVER ATD

**Hybrid III, 50th External Measurements
SN: 351**

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	34.8
B	SHOULDER PIVOT HEIGHT	Centerline of shoulder pivot bolt to the seat surface.	19.9-20.5	20.0
C	H-POINT HEIGHT	Reference	3.3-3.5	3.4
D	H-POINT LOCATION FROM BACKLINE	Reference	5.3-5.5	5.5
E	SHOULDER PIVOT FROM BACKLINE	Center of the shoulder clevis to the rear vertical surface of the fixture.	3.3-3.7	3.5
F	THIGH CLEARANCE	Measured at the highest point on the upper femur segment.	5.5-6.1	6.0
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	11.8
H	HEAD BACK TO BACKLINE	Back of Skull cap skin to seat rear vertical surface (Reference)	1.6-1.8	1.7
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	13.3
J	ELBOW REST HEIGHT	Measure from the flesh below the elbow pivot bolt to the seat surface.	7.5-8.3	7.8
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	23.8
L	POPLITEAL HEIGHT	Seat surface to the plane of the horizontal plane of the bottom of the feet.	16.9-17.9	17.0
M	KNEE PIVOT HEIGHT	Centerline of knee pivot bolt to the horizontal plane of the bottom of the feet.	19.1-19.7	19.5
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	18.8

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	8.5
P	FOOT LENGTH	Tip of toe to rear of heel	9.9-10.5	10.3
V	SHOULDER BREADTH	Outside edges of right and left shoulder clevises	16.3-17.2	16.5
W	FOOT BREADTH	The widest part of the foot	3.6-4.2	4.0
Y	CHEST CIRCUMFERENCE (WITH CHEST JACKET)	Measured 16.9-17.1 in. above seat surface	38.2-39.4	39.2
Z	WAIST CIRCUMFERENCE	Measured 8.9-9.1 in. above seat surface	32.9-34.1	33.7
AA	REFERENCE LOCATION FOR MEASUREMENT OF CHEST CIRCUMFERENCE	Reference	16.9-17.1	17.0
BB	REFERENCE LOCATION FOR MEASUREMENT OF WAIST CIRCUMFERENCE	Reference	8.9-9.1	9.0

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

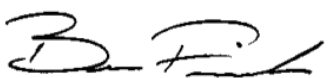
ATD Serial No: 351

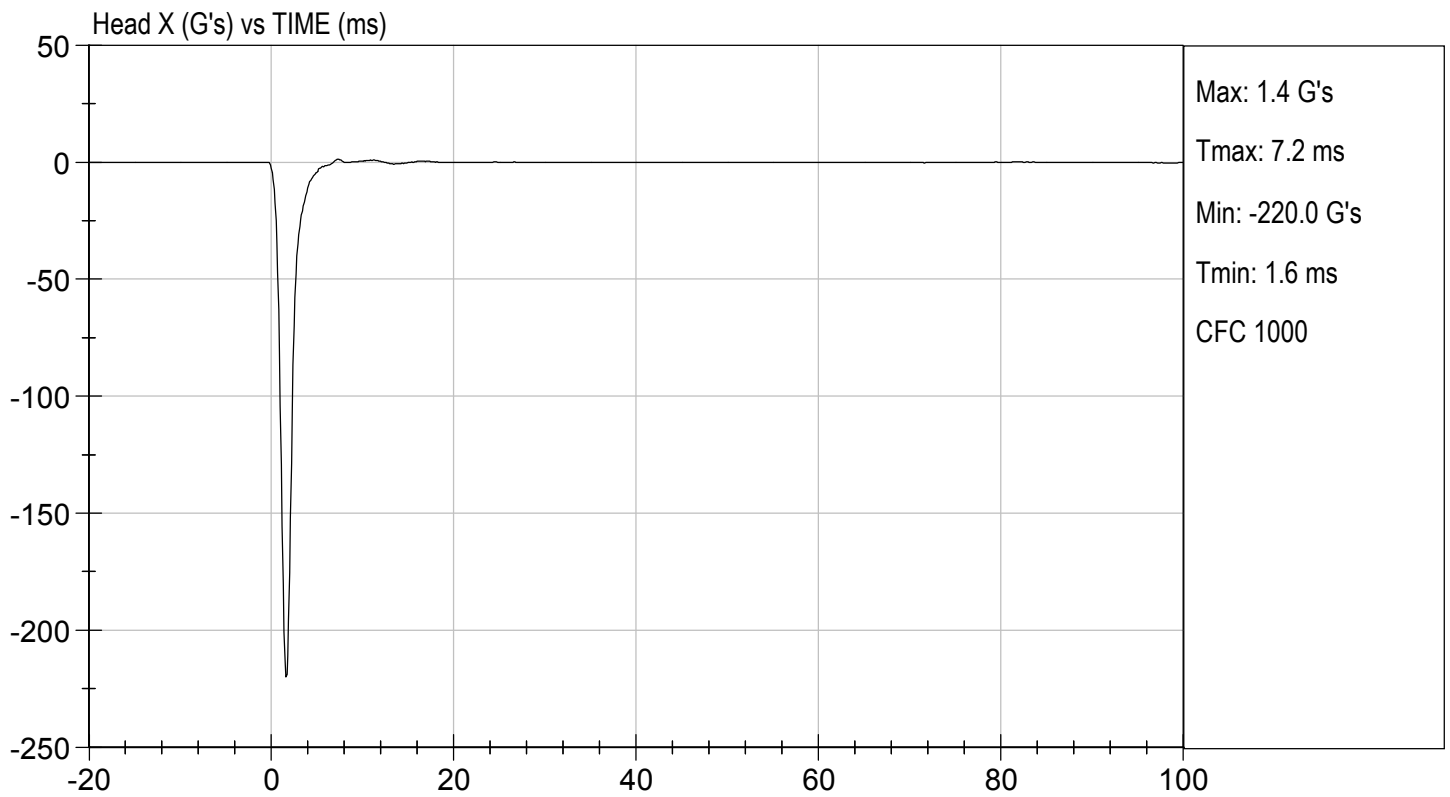
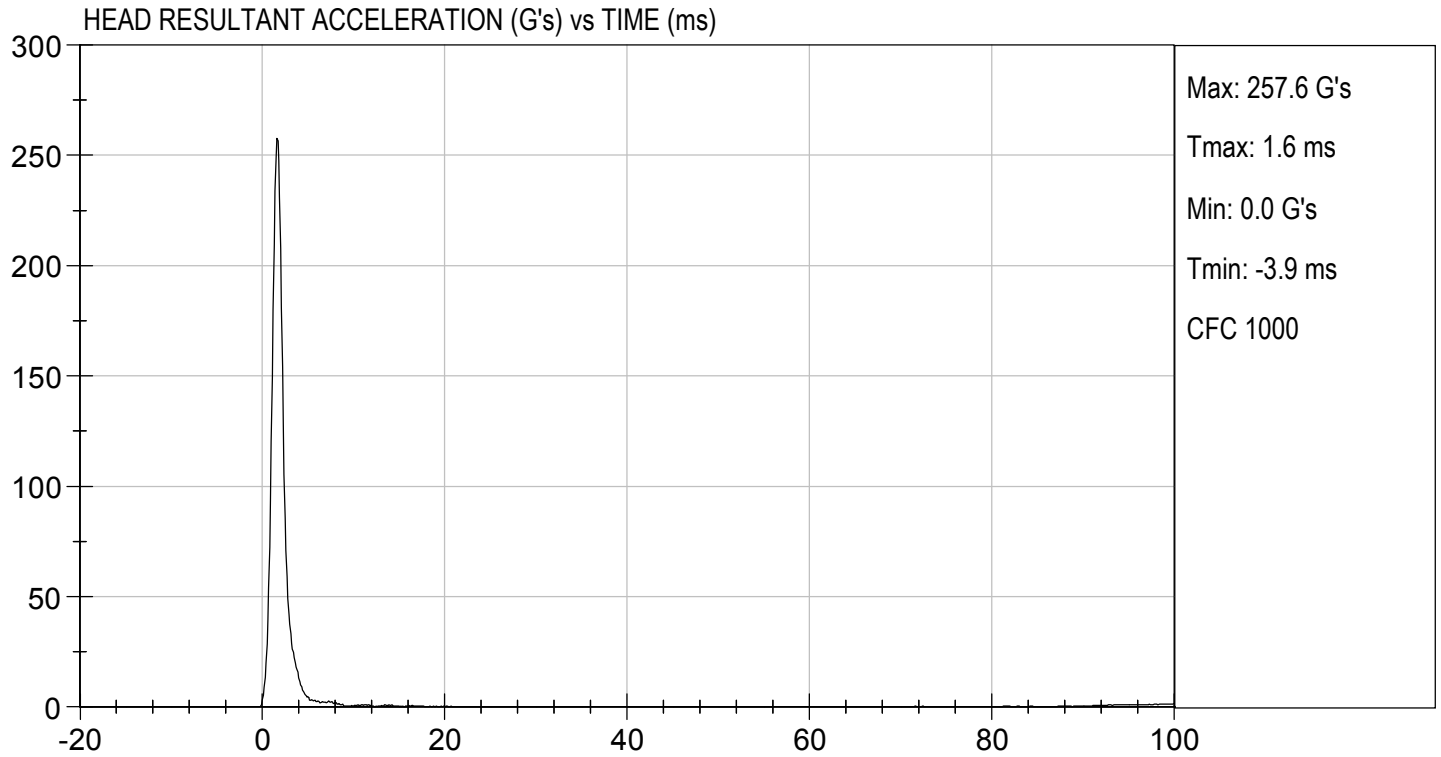
Test ID: D211711

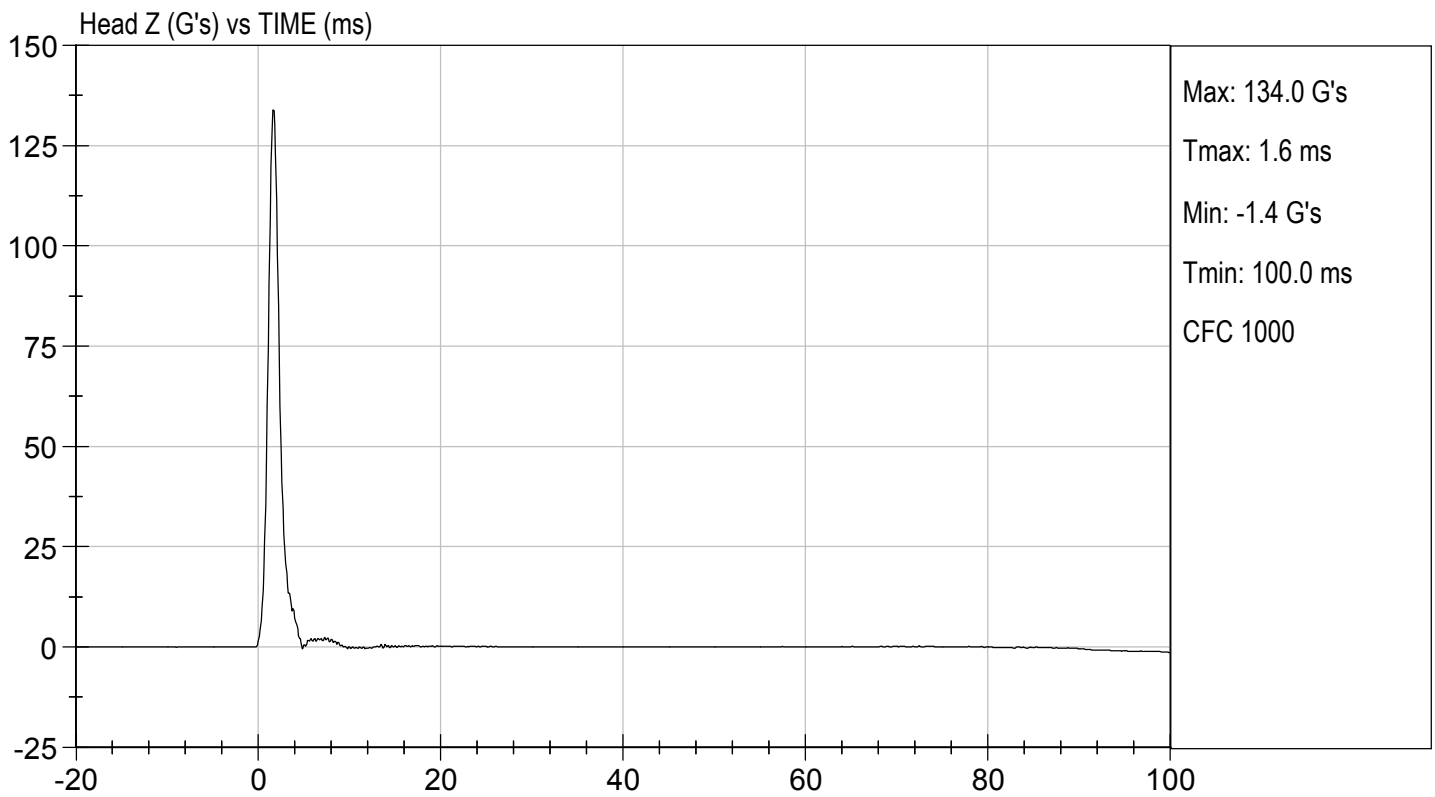
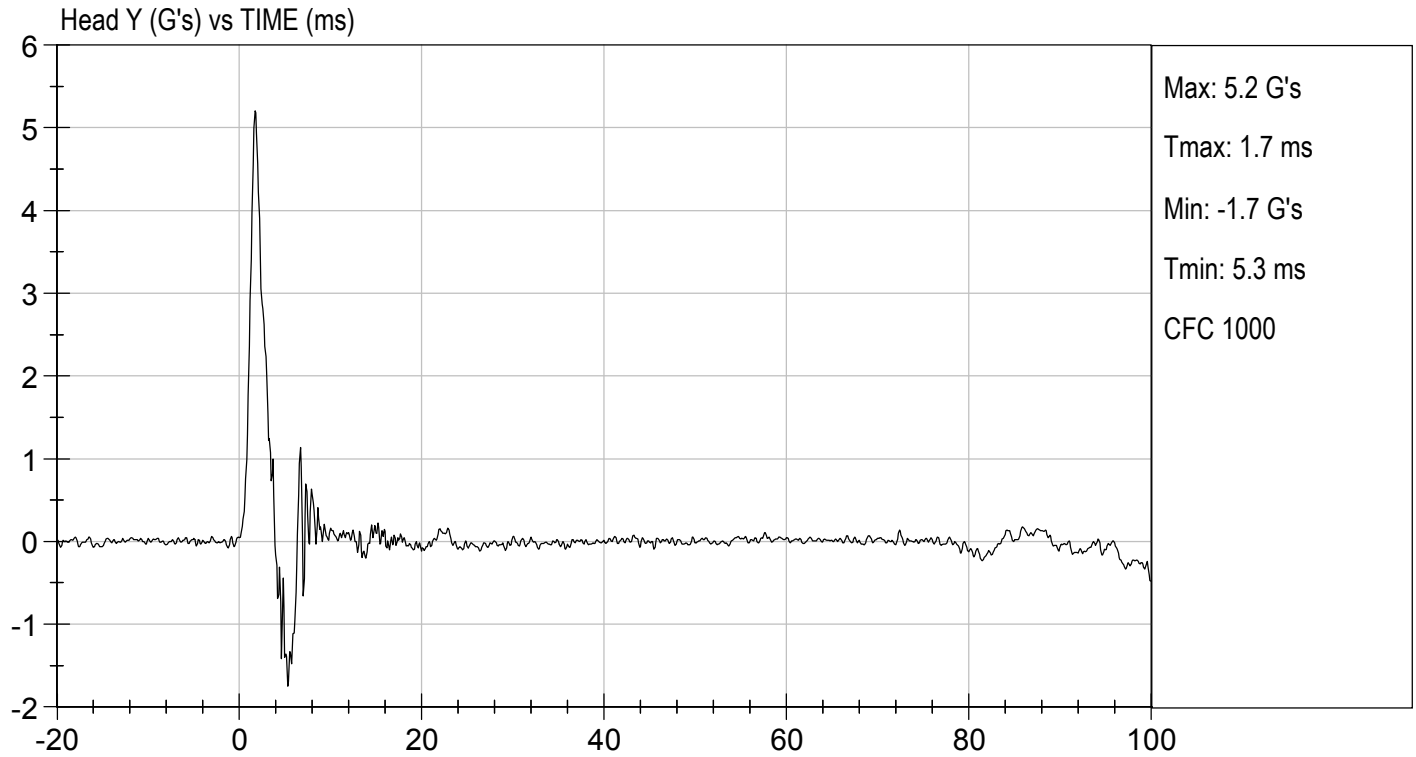
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	27	Pass
Peak Resultant Acceleration	G's	225 to 275	258	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	5.2	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results			Pass	


Laboratory Technician

05/12/2021
Test Date


Approved By





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

ATD Serial No: 351

Test I.D: D211712

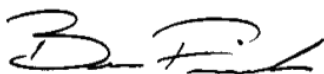
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity		%	10 to 70	27	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.96	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	23.63	Pass
	20 ms	G's	17.60 to 22.60	21.23	Pass
	30 ms	G's	12.50 to 18.50	16.07	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	16.1	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	35.7	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	71.7	Pass
	Time	ms	57.0 to 64.0	59.7	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	116.0	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	92.7	Pass
	Time	ms	47.0 to 58.0	47.4	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	100.7	Pass
Overall Test Results					Pass



Laboratory Technician

05/12/2021

Test Date

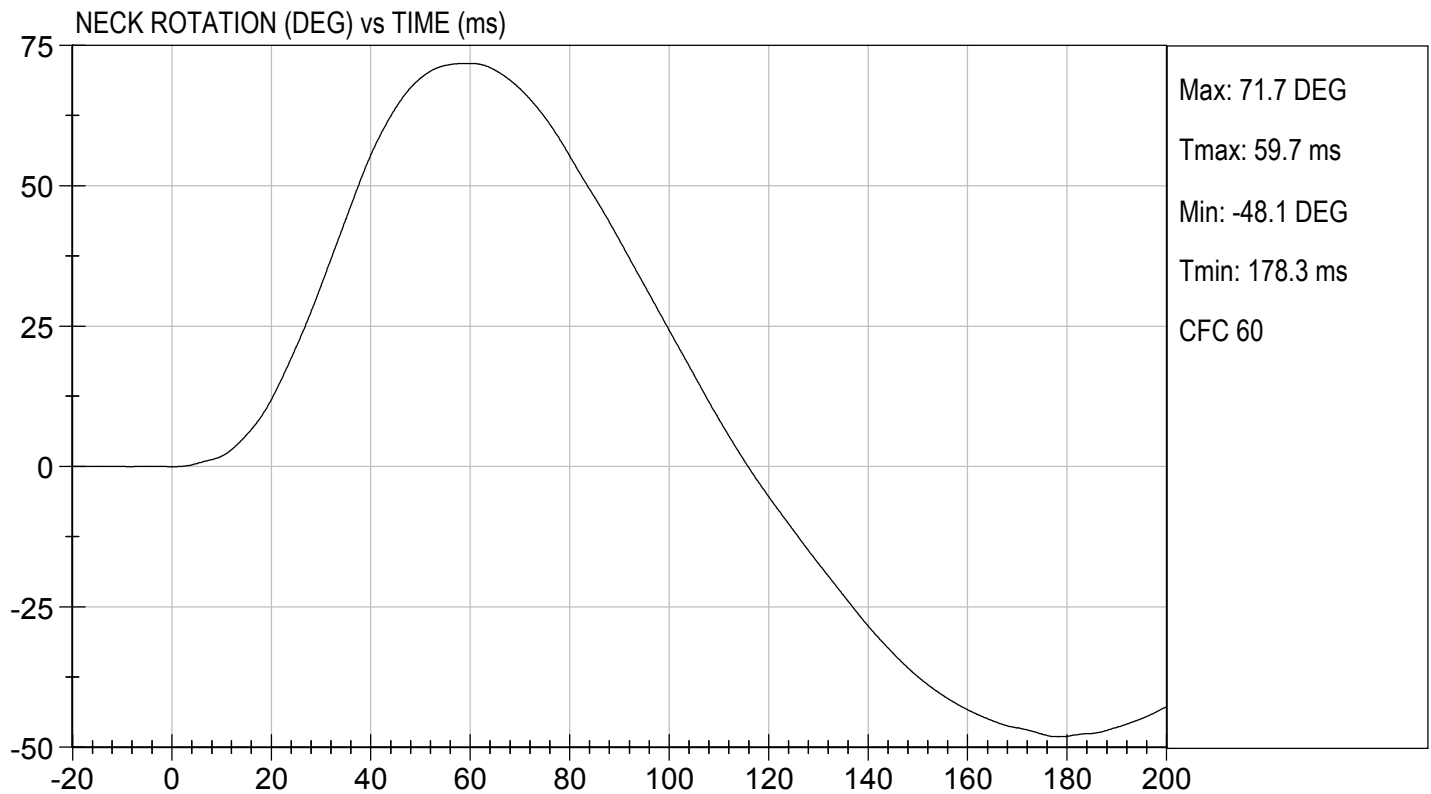
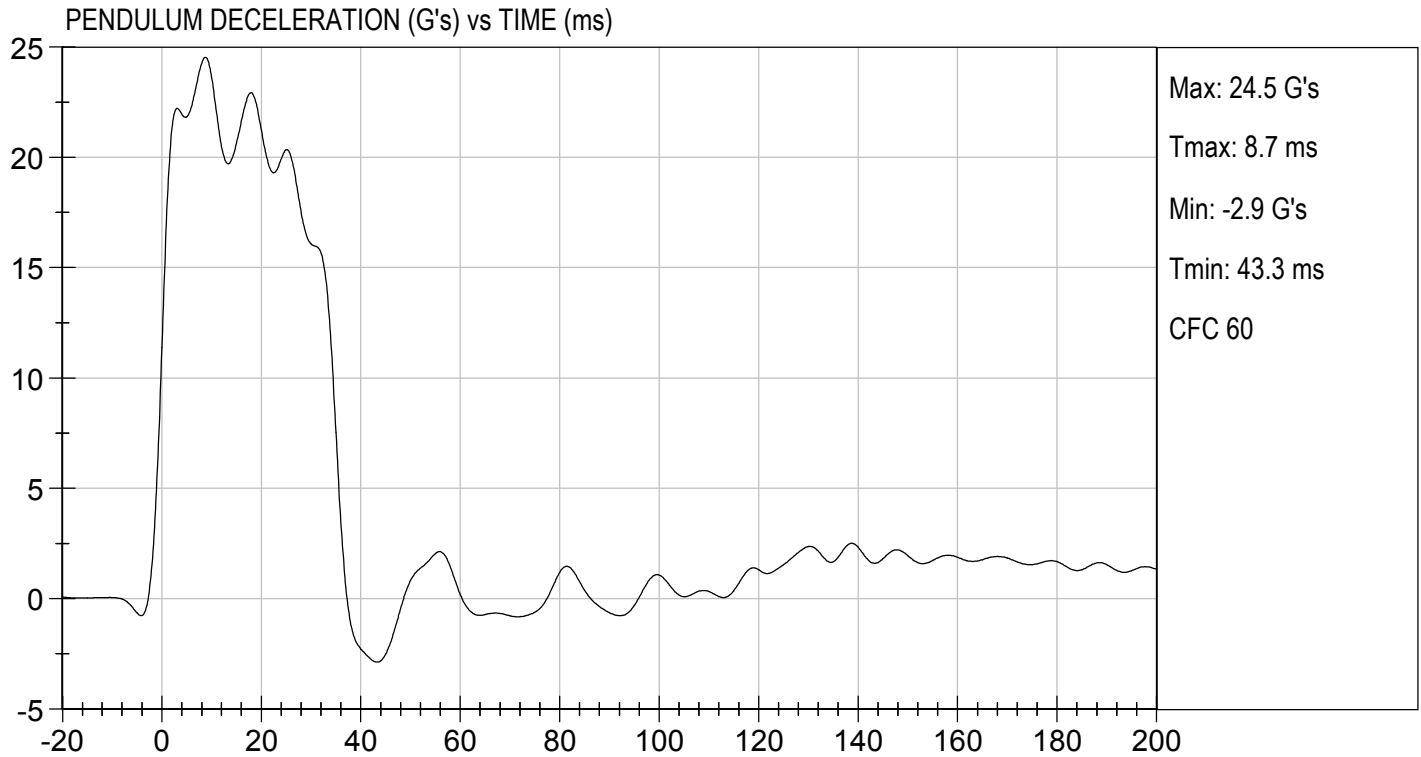


Approved By



TEST DESC: NECK FLEXION
VELOCITY: 22.83 ft/s, 6.96 m/s

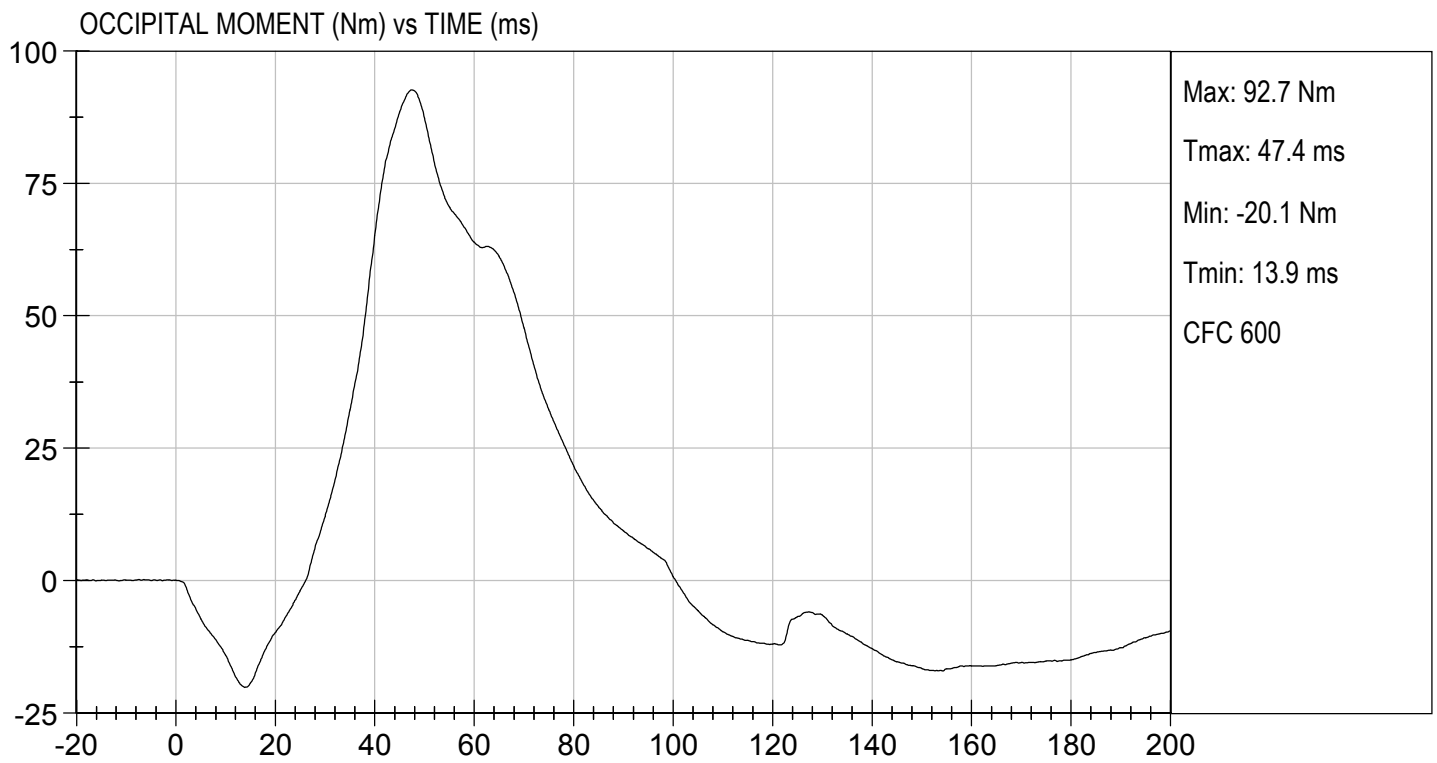
TEST DATE: 05/12/2021
TEST #: D211712





TEST DESC: NECK FLEXION
VELOCITY: 22.83 ft/s, 6.96 m/s

TEST DATE: 05/12/2021
TEST #: D211712



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

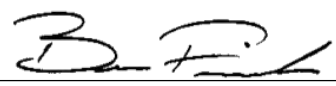
ATD Serial No: 351

Test I.D: D211713

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	27	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.12	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	18.63	Pass
	20 ms	G's	14.00 to 19.00	16.86	Pass
	30 ms	G's	11.00 to 16.00	14.52	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	14.6	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	39.0	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	98.9	Pass
	Time	ms	72.0 to 82.0	79.3	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	163.2	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-59.3	Pass
	Time	ms	65.0 to 79.0	73.1	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	143.6	Pass
Overall Test Results					Pass


 Laboratory Technician

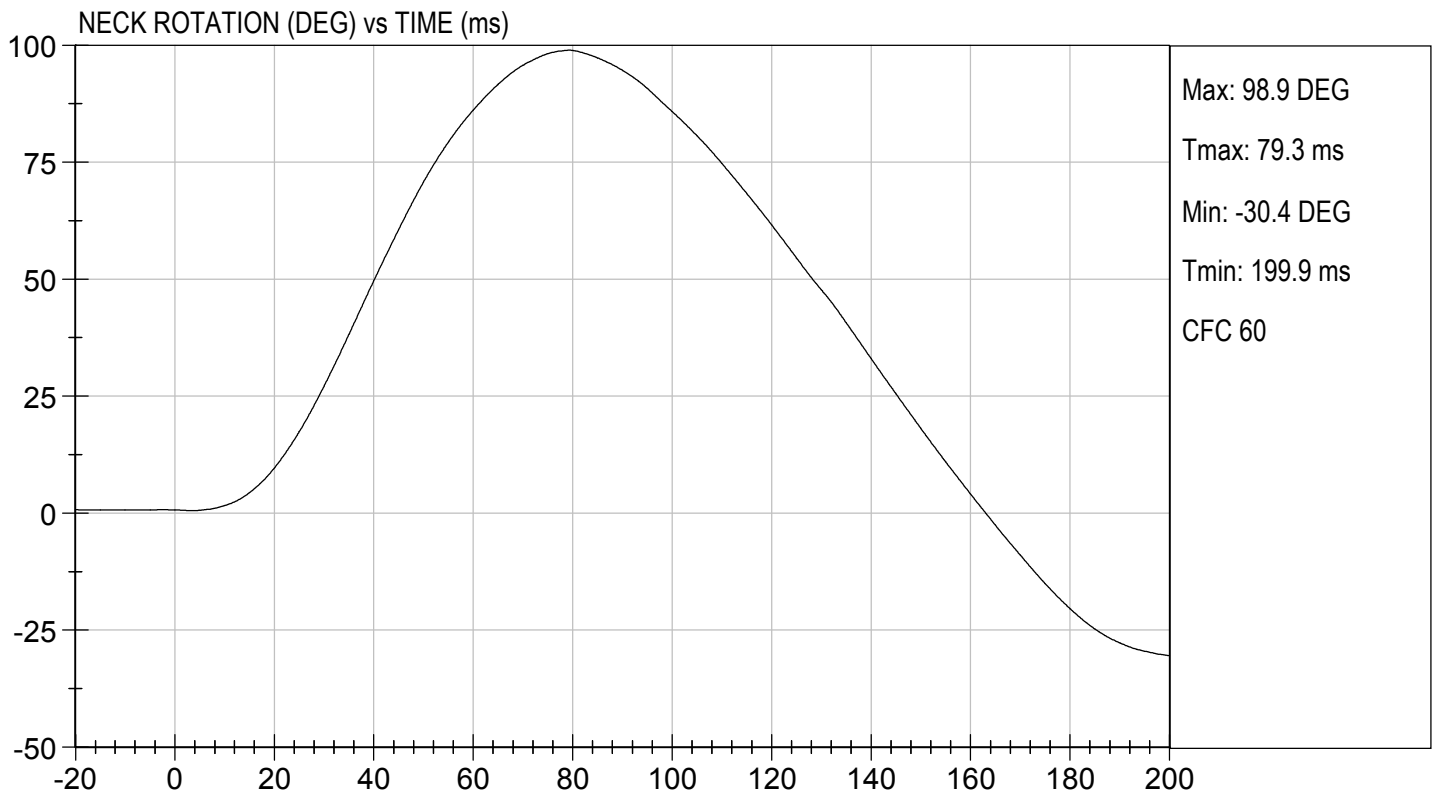
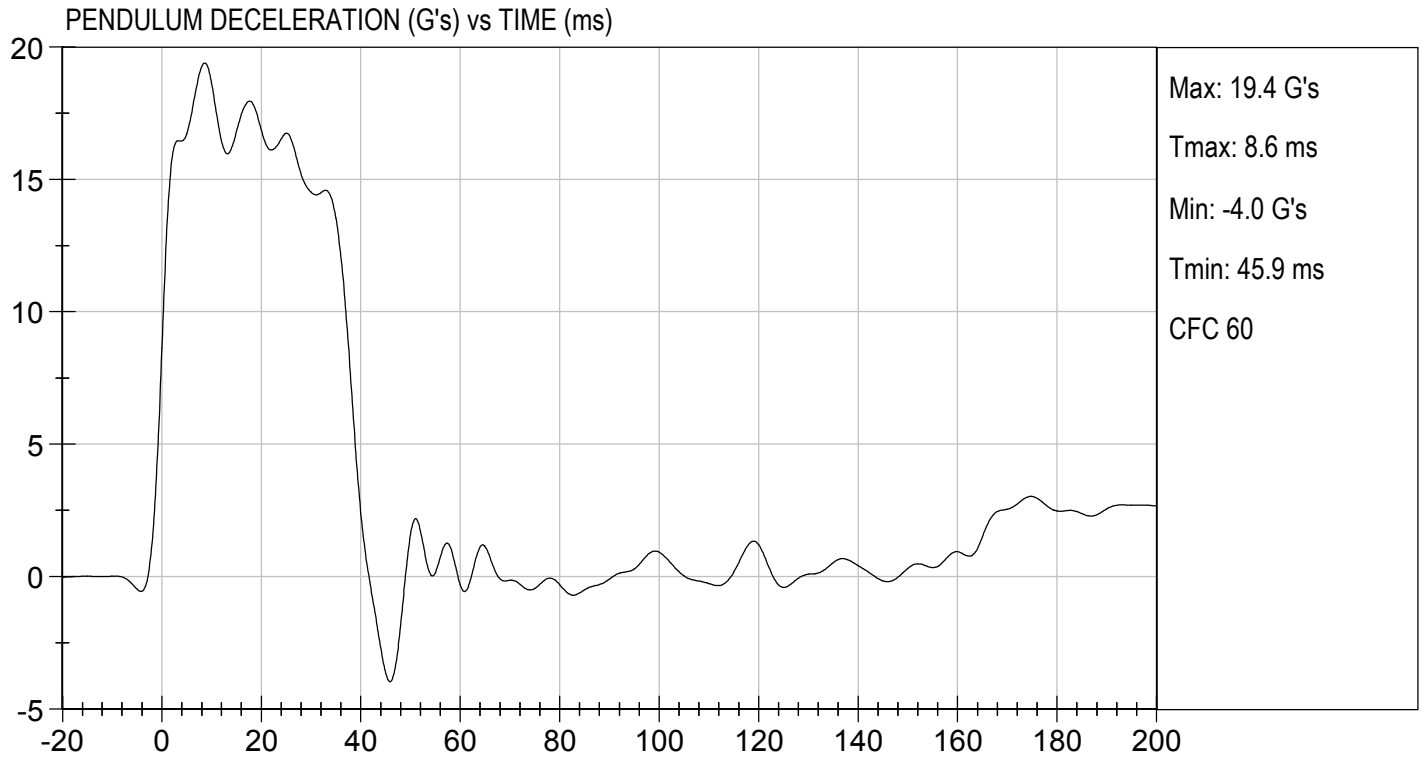
05/13/2021
 Test Date


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TEST DESC: NECK EXTENSION
VELOCITY: 20.08 ft/s, 6.12 m/s

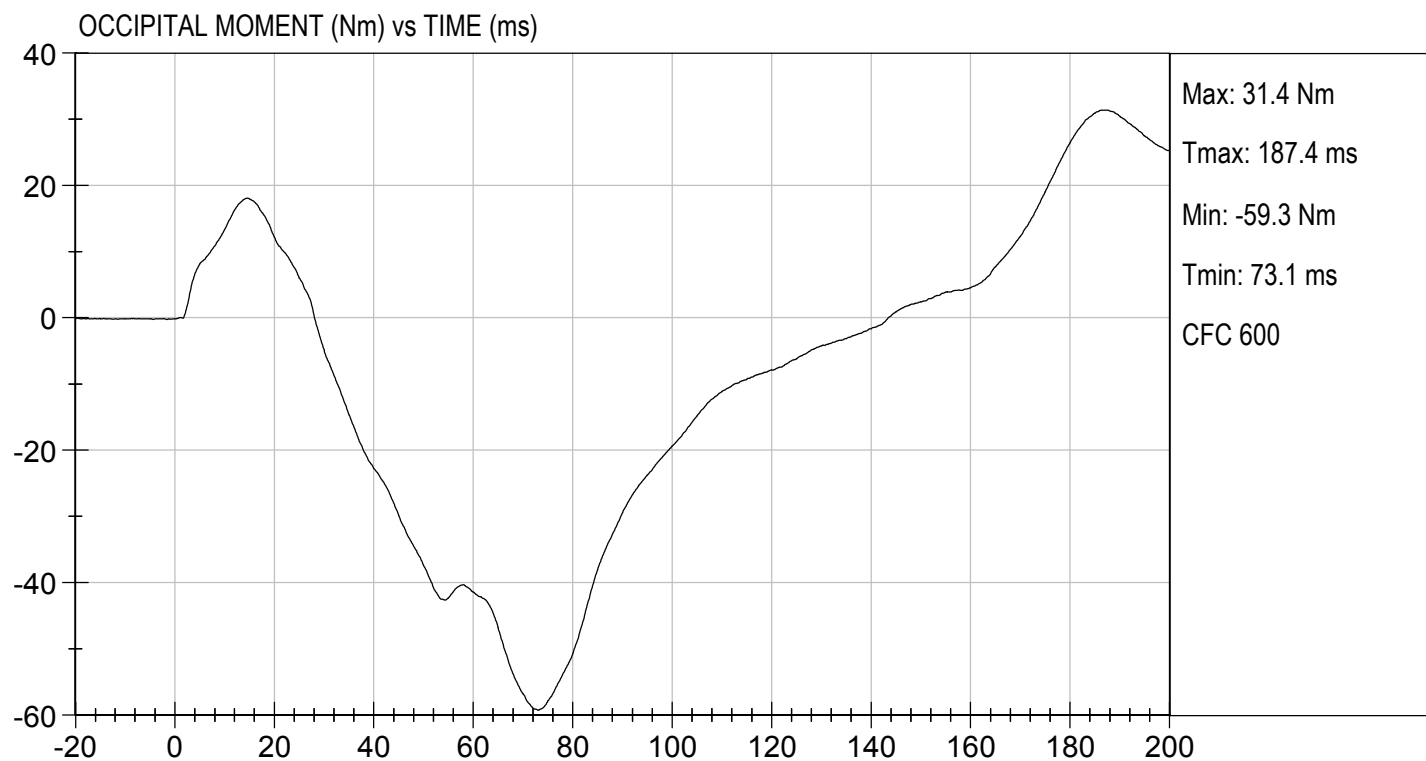
TEST DATE: 05/13/2021
TEST #: D211713





TEST DESC: NECK EXTENSION
VELOCITY: 20.08 ft/s, 6.12 m/s

TEST DATE: 05/13/2021
TEST #: D211713



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

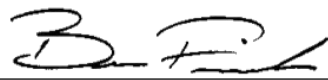
ATD Serial No: 351

Test I.D: D211714

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Probe Velocity	m/s	6.58 to 6.82	6.77	Pass
Peak Probe Force	N	5159 to 5893	5,385	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	7.05	Pass
Internal Hysteresis	%	69 to 85	70	Pass
			Overall Test Results	Pass


Laboratory Technician

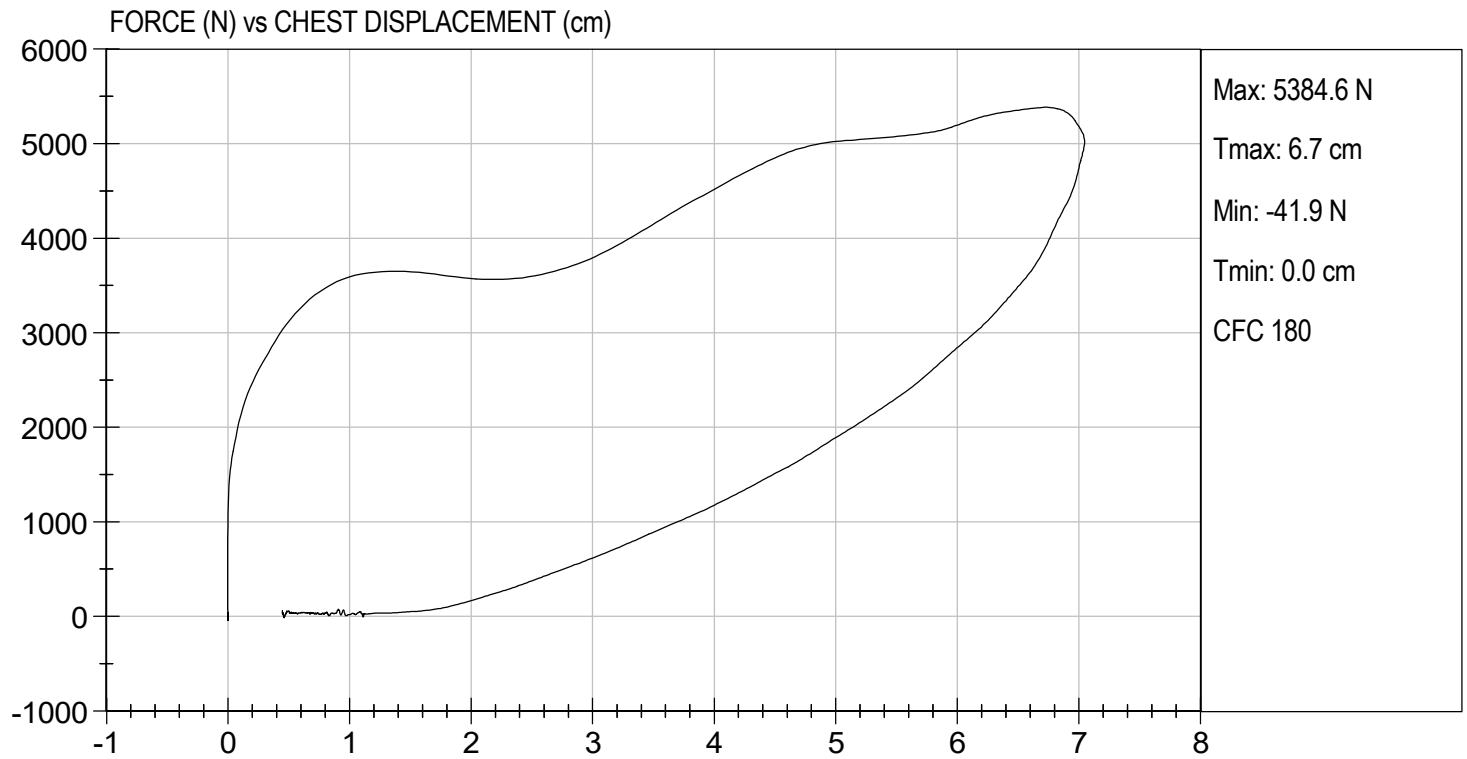
05/13/2021
Test Date


Approved By



TEST DESC: THORAX IMPACT
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 05/13/2021
TEST #: D211714



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

ATD Serial No: 351

Test I.D: D211715

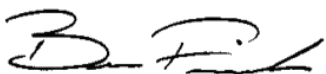
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Probe Velocity	m/s	2.07 to 2.13	2.07	Pass
Peak Probe Force	N	4715 to 5782	5,392	Pass
Overall Test Results				Pass



Laboratory Technician

05/13/2021

Test Date

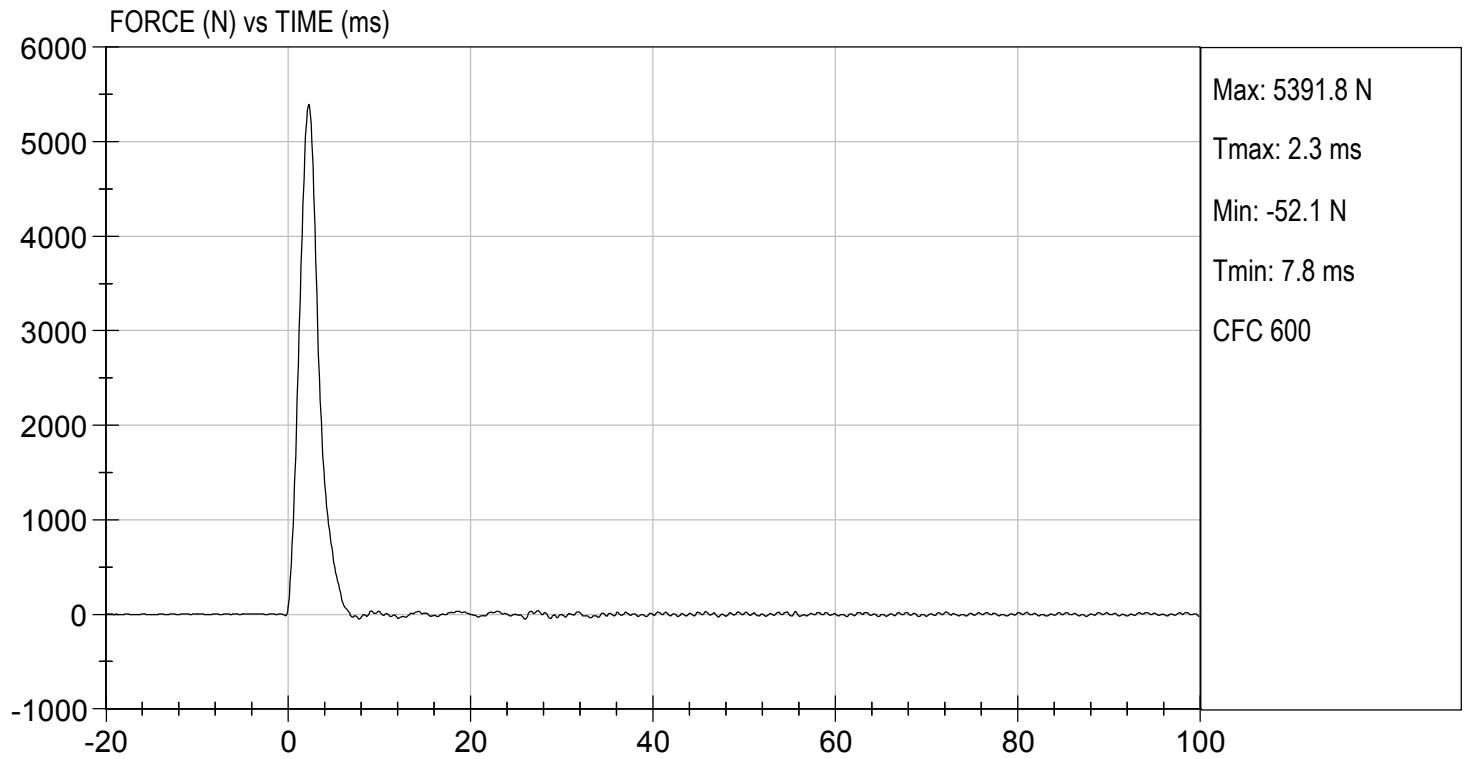


Approved By



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

TEST DATE: 05/13/2021
TEST #: D211715



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

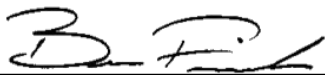
ATD Serial No: 351

Test I.D: D211716

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Probe Velocity	m/s	2.07 to 2.13	2.08	Pass
Peak Probe Force	N	4715 to 5782	4,865	Pass
Overall Test Results				Pass


Laboratory Technician

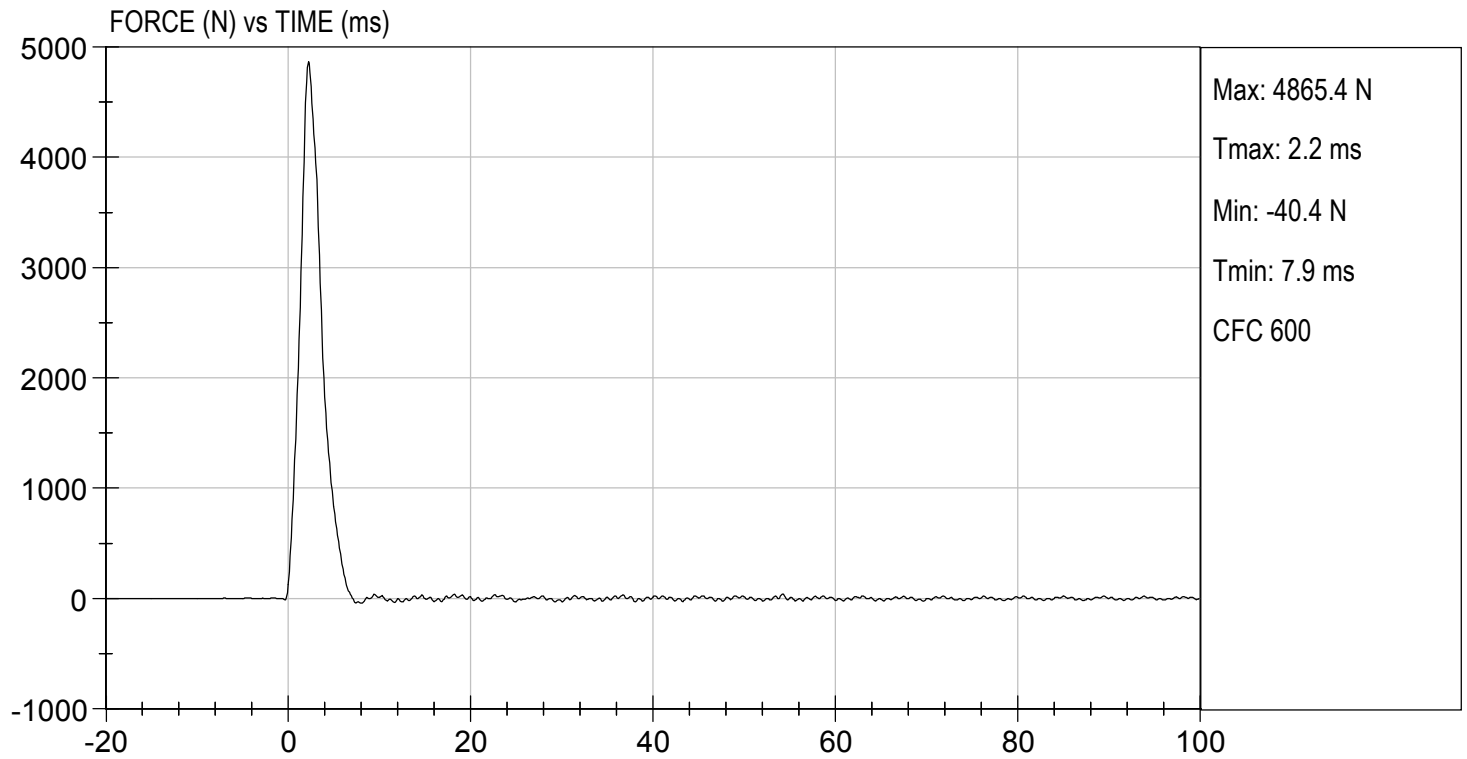
05/13/2021
Test Date


Approved By



TEST DESC: LEFT KNEE
VELOCITY: 6.83 ft/s, 2.08 m/s

TEST DATE: 05/13/2021
TEST #: D211716



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

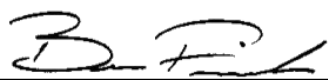
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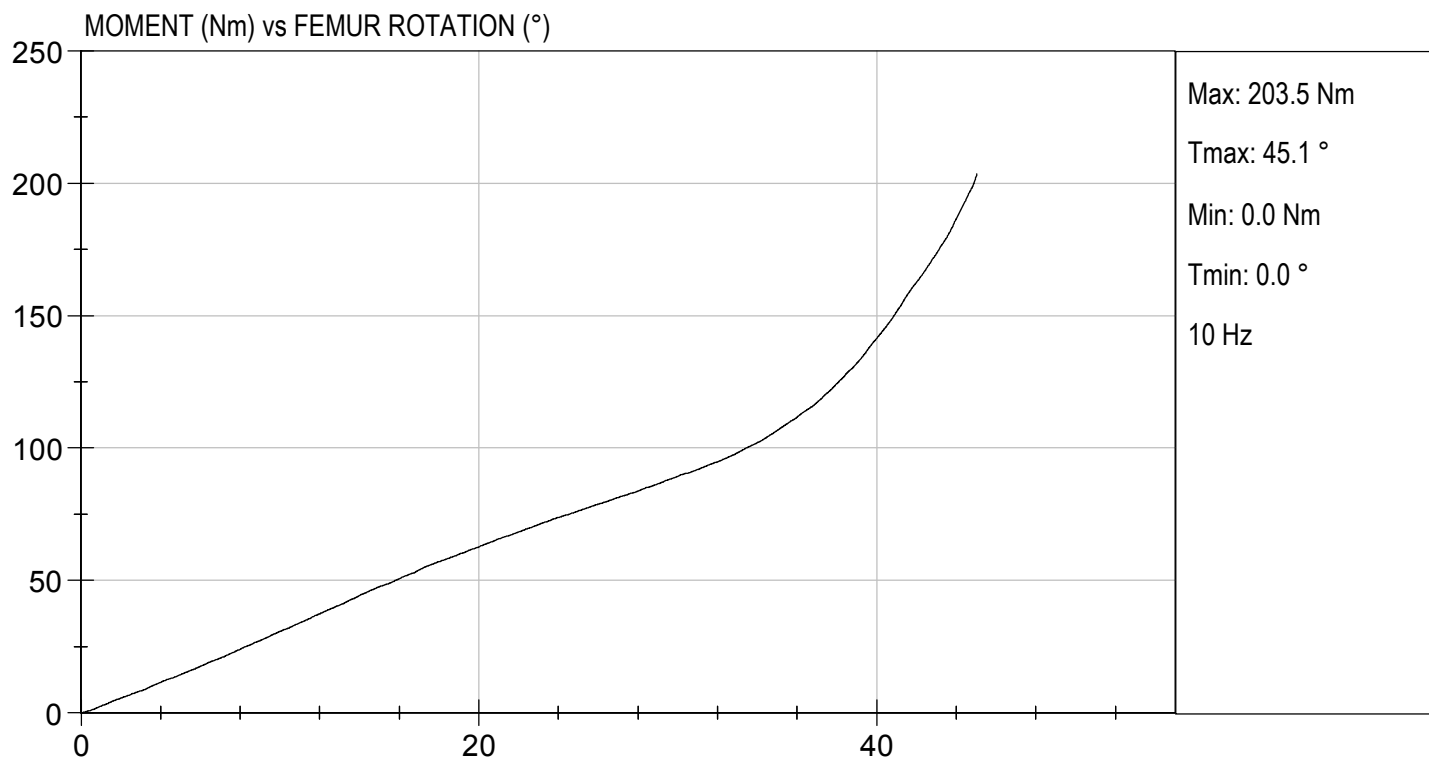
Test I.D: D211710

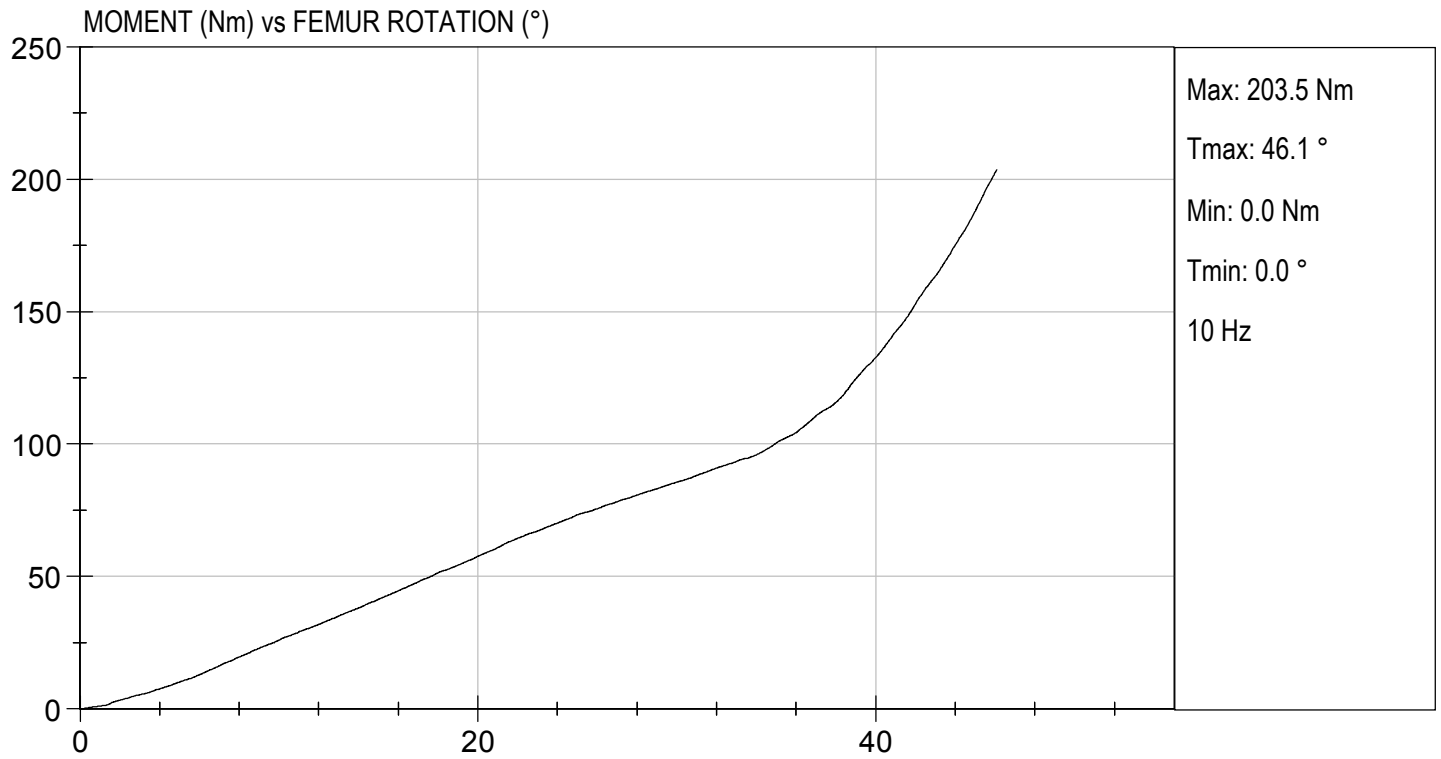
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.4	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	25	25	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.4	6.5	Pass
30 Degrees	Nm	94.9 Nm Max	89.4	85.6	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	45.1	46.1	Pass
Overall Test Results					Pass


 Laboratory Technician

05/13/2021
 Test Date


 Approved By





CALIBRATION TEST RESULTS

POST-TEST

HYBRID III 50TH PERCENTILE MALE - DRIVER ATD

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

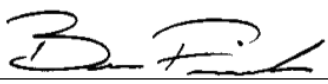
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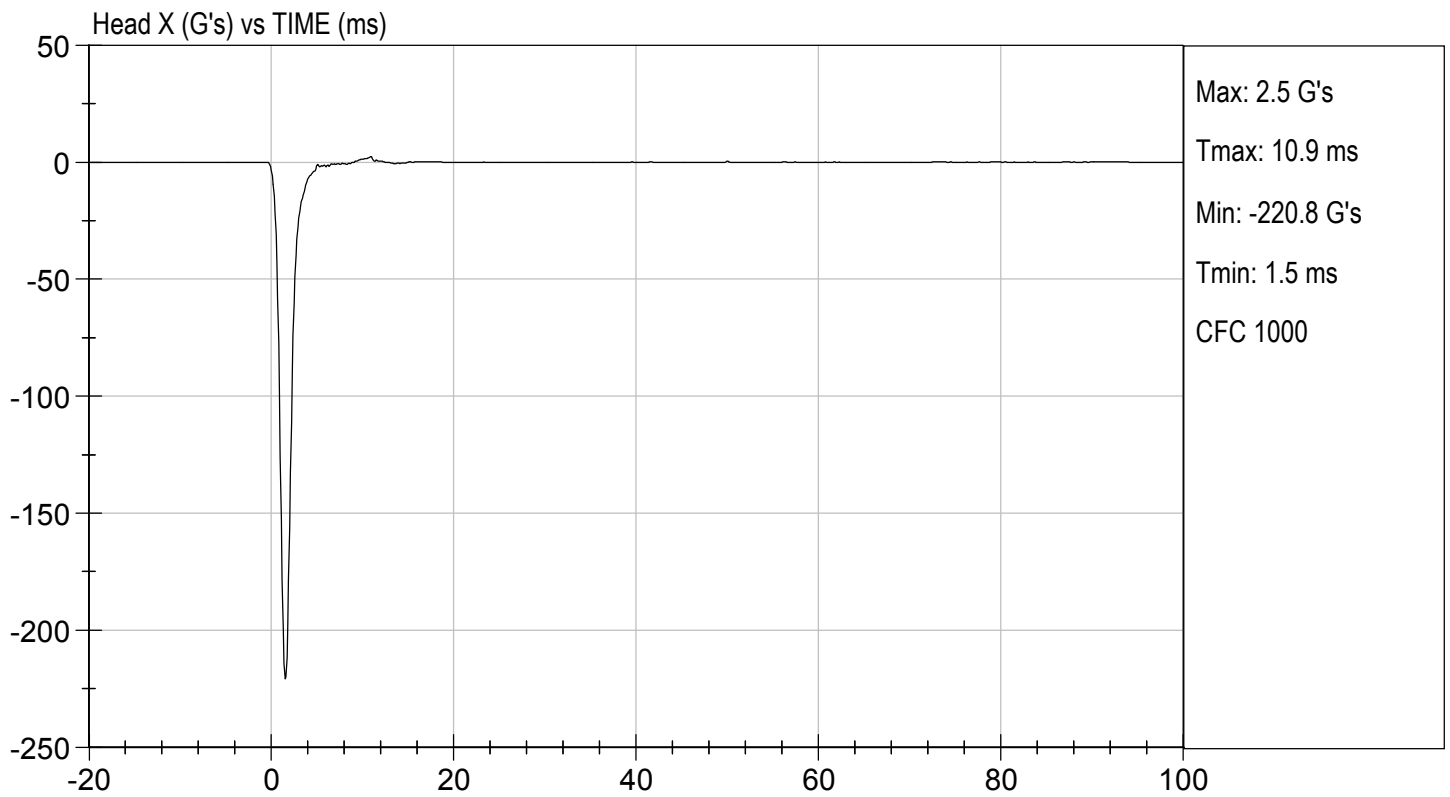
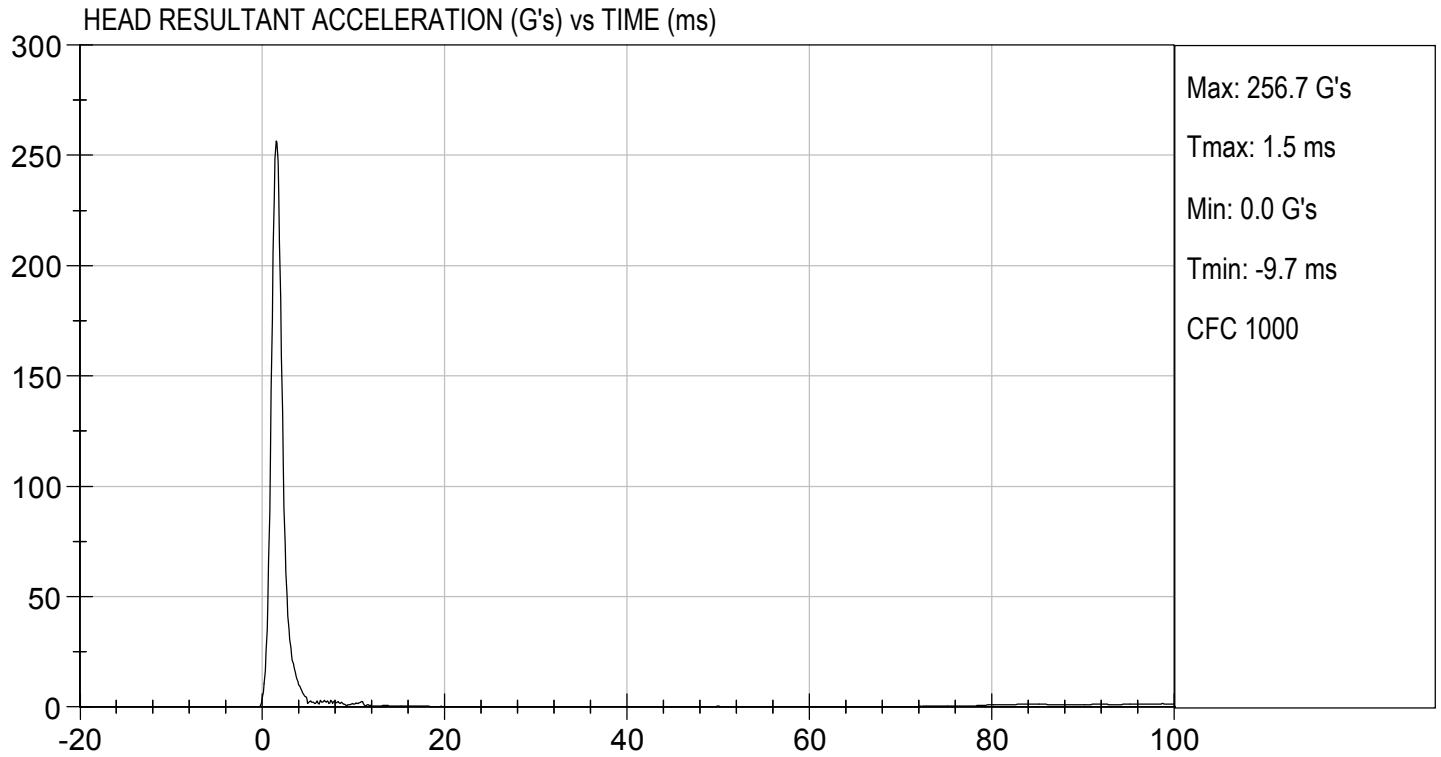
Test ID: D211831

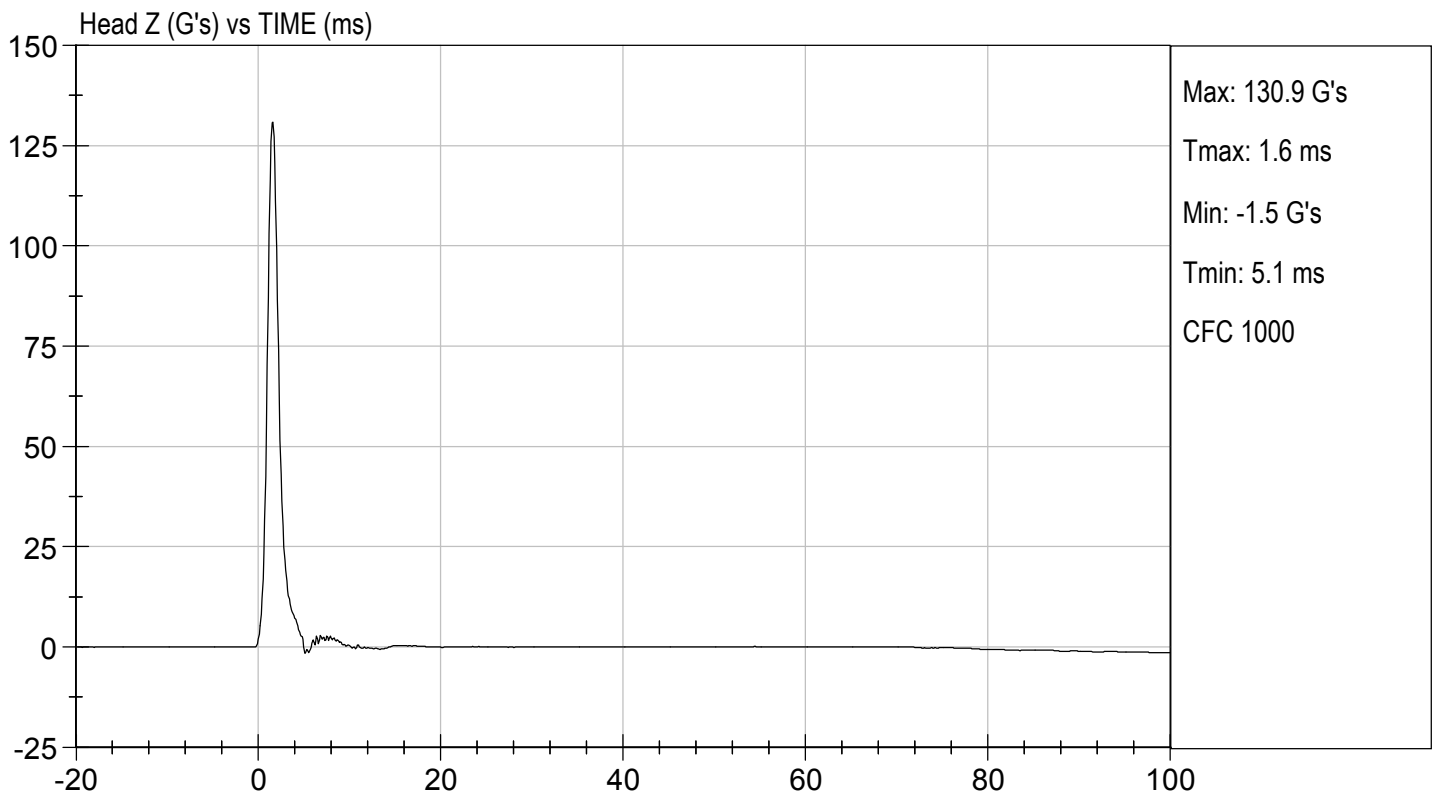
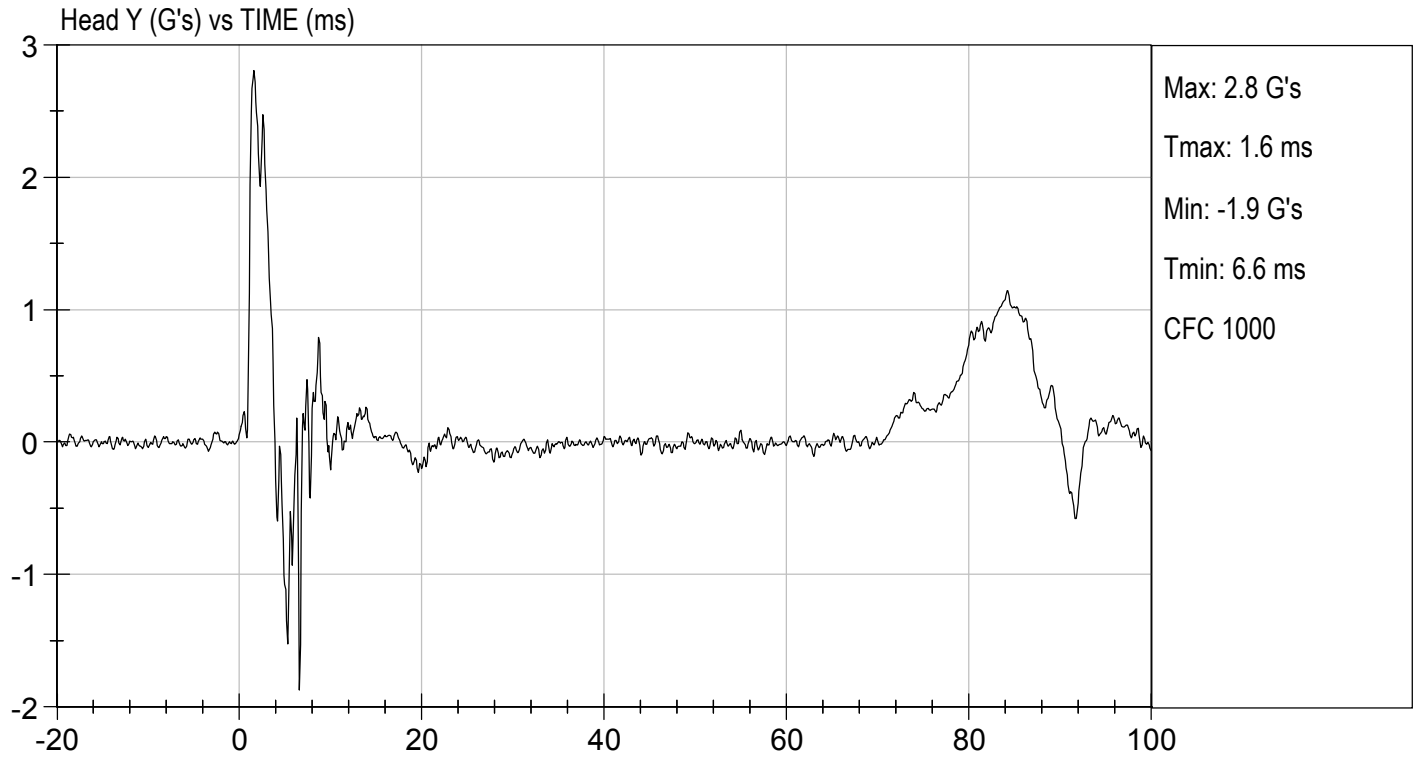
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Peak Resultant Acceleration	G's	225 to 275	257	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	2.8	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

05/26/2021
Test Date


Approved By





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

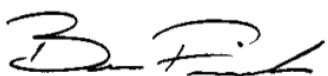
ATD Serial No: 351

Test I.D: D211832

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity		%	10 to 70	46	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	23.25	Pass
	20 ms	G's	17.60 to 22.60	19.83	Pass
	30 ms	G's	12.50 to 18.50	14.05	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	14.6	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	38.1	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	71.2	Pass
	Time	ms	57.0 to 64.0	59.4	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	117.6	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	88.8	Pass
	Time	ms	47.0 to 58.0	50.4	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	101.0	Pass
Overall Test Results					Pass


 Laboratory Technician

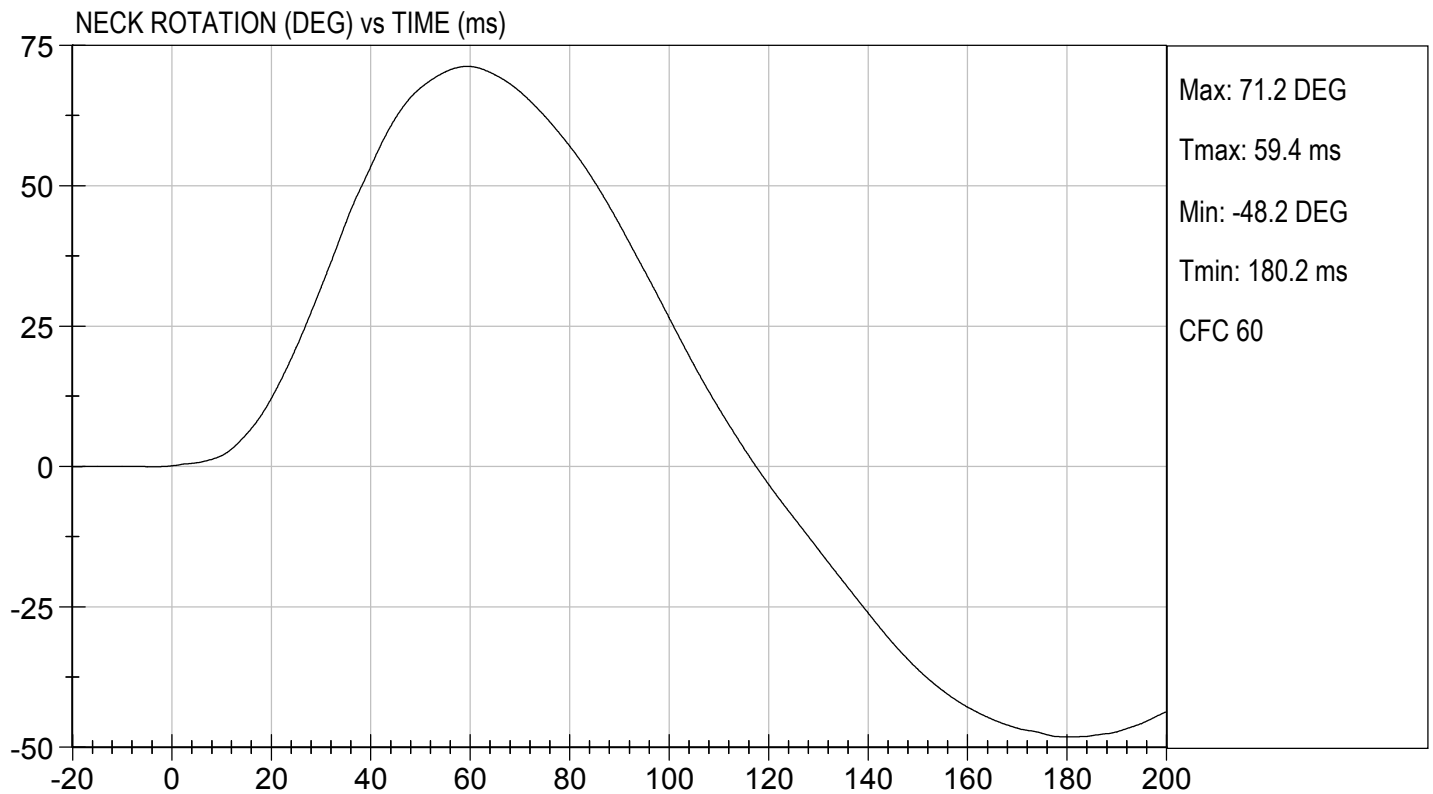
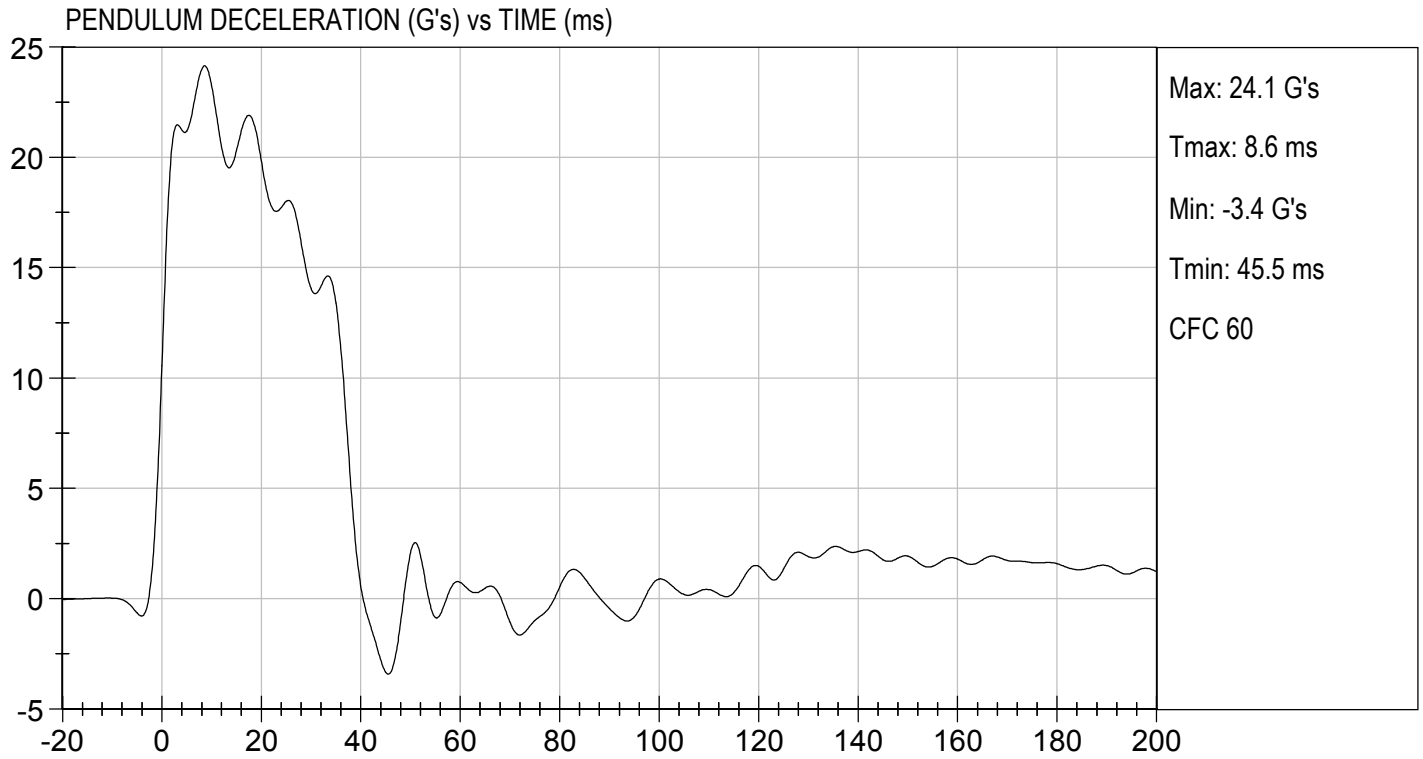
05/26/2021
 Test Date


 Approved By



TEST DESC: NECK FLEXION
VELOCITY: 23.15 ft/s, 7.06 m/s

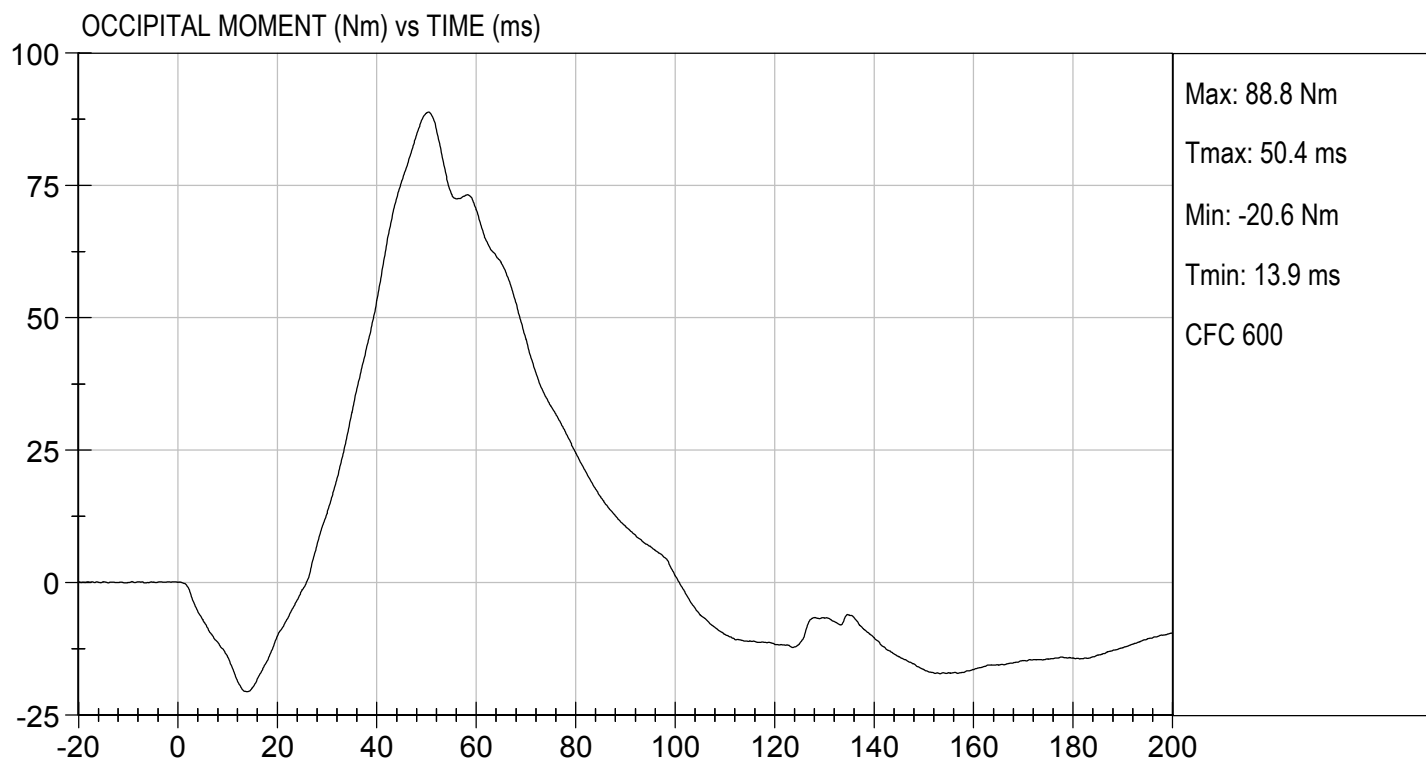
TEST DATE: 05/26/2021
TEST #: D211832





TEST DESC: NECK FLEXION
VELOCITY: 23.15 ft/s, 7.06 m/s

TEST DATE: 05/26/2021
TEST #: D211832



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

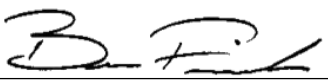
ATD Serial No: 351

Test I.D: D211833

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity		%	10 to 70	46	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.12	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	19.55	Pass
	20 ms	G's	14.00 to 19.00	15.85	Pass
	30 ms	G's	11.00 to 16.00	12.71	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	13.7	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	40.1	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	99.1	Pass
	Time	ms	72.0 to 82.0	80.2	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	162.4	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-64.0	Pass
	Time	ms	65.0 to 79.0	72.8	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	143.7	Pass
Overall Test Results					Pass


 Laboratory Technician

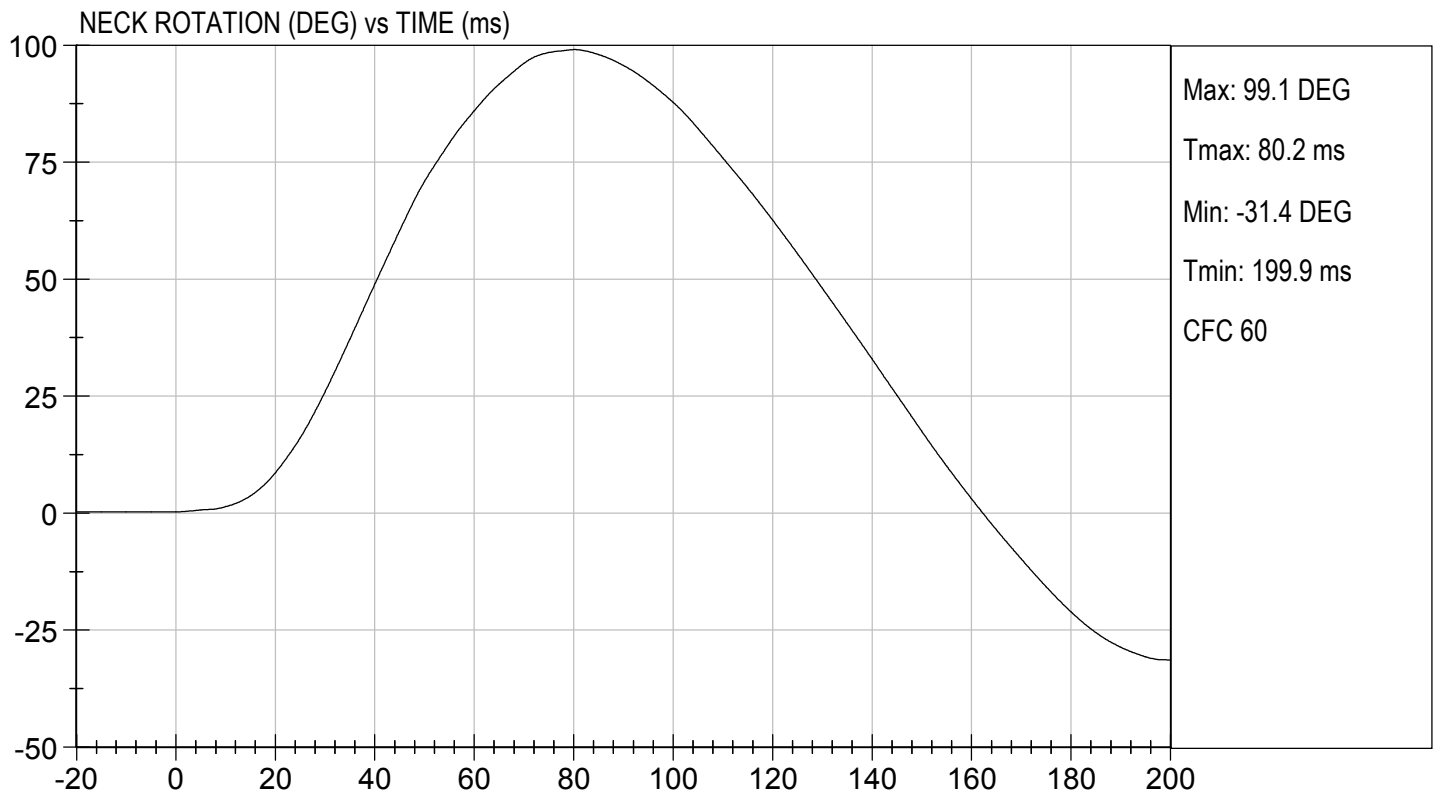
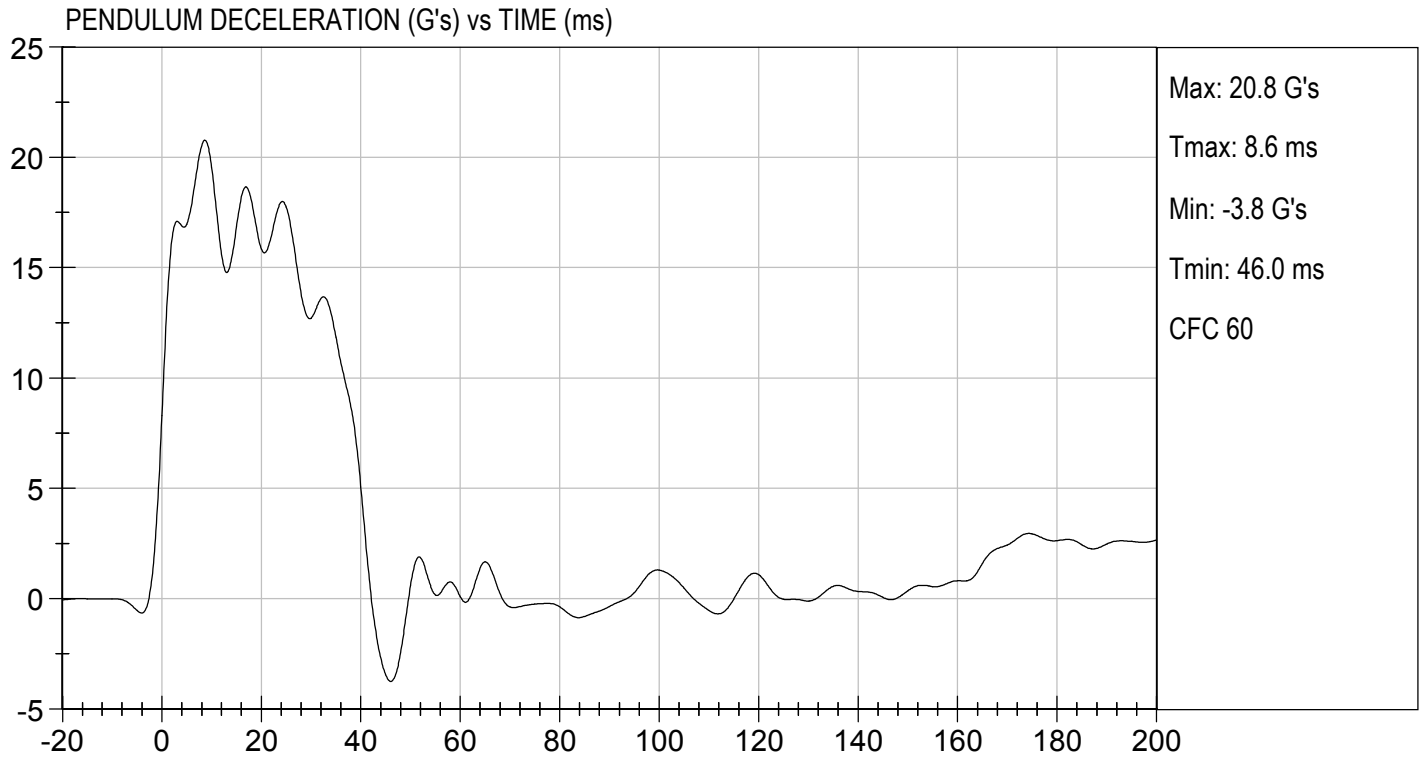
05/26/2021
 Test Date


 Approved By



TEST DESC: NECK EXTENSION
VELOCITY: 20.08 ft/s, 6.12 m/s

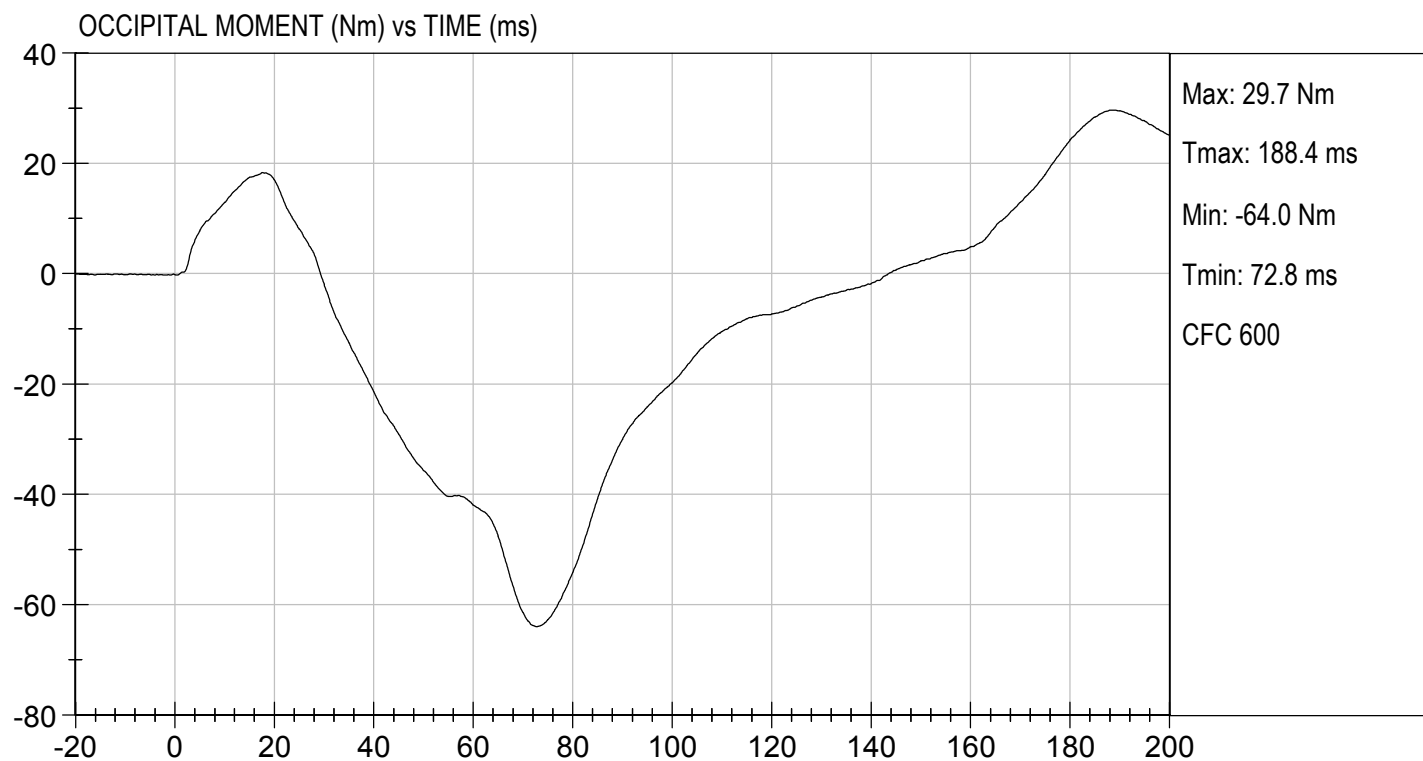
TEST DATE: 05/26/2021
TEST #: D211833





TEST DESC: NECK EXTENSION
VELOCITY: 20.08 ft/s, 6.12 m/s

TEST DATE: 05/26/2021
TEST #: D211833



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

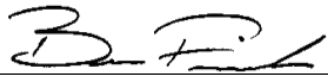
ATD Serial No: 351

Test I.D: D211834

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.5	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	5,295	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	7.13	Pass
Internal Hysteresis	%	69 to 85	69	Pass
			Overall Test Results	Pass


Laboratory Technician

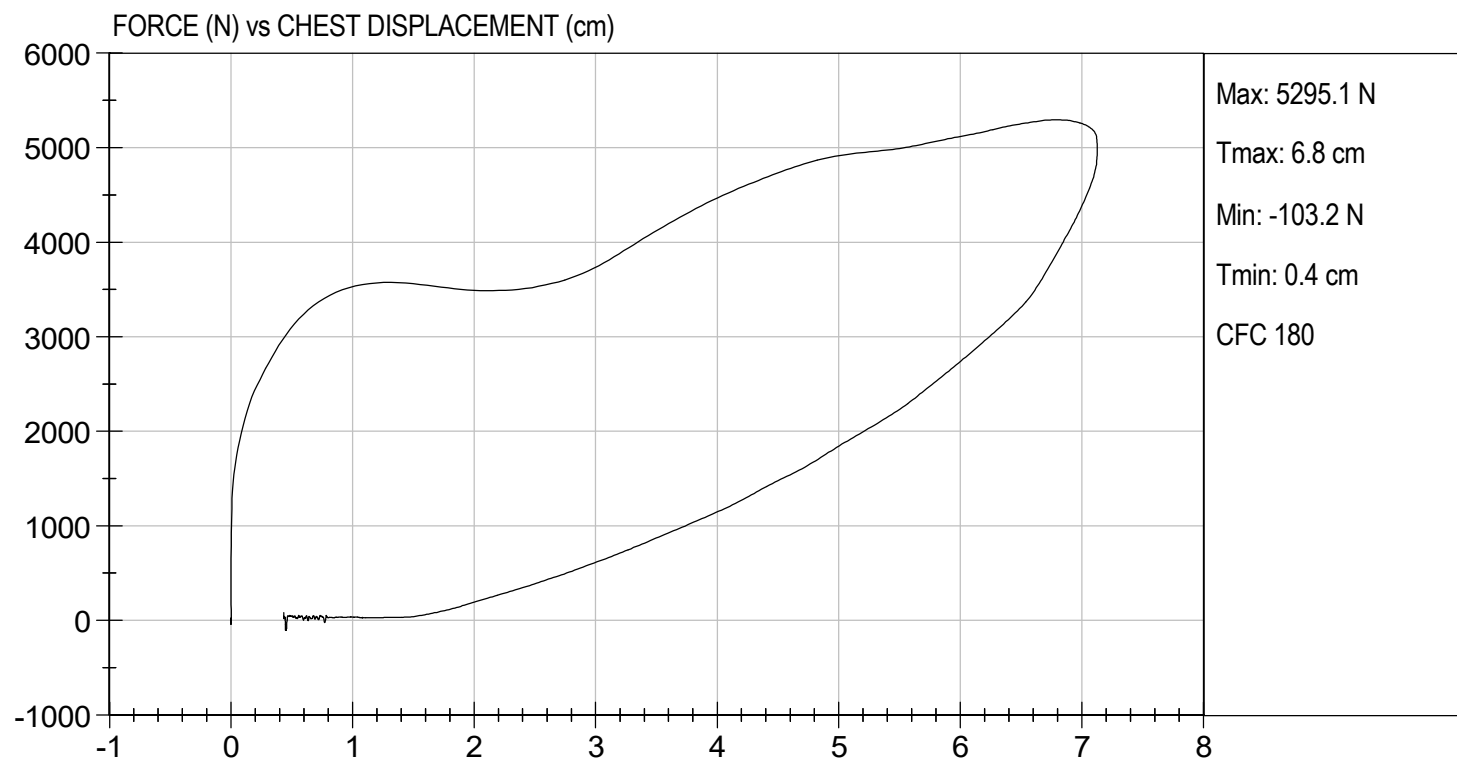
05/26/2021
Test Date


Approved By



TEST DESC: THORAX IMPACT
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 05/26/2021
TEST #: D211834



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

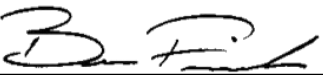
ATD Serial No: 351

Test I.D: D211835

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	40	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	N	4715 to 5782	4,769	Pass
Overall Test Results				Pass


Laboratory Technician

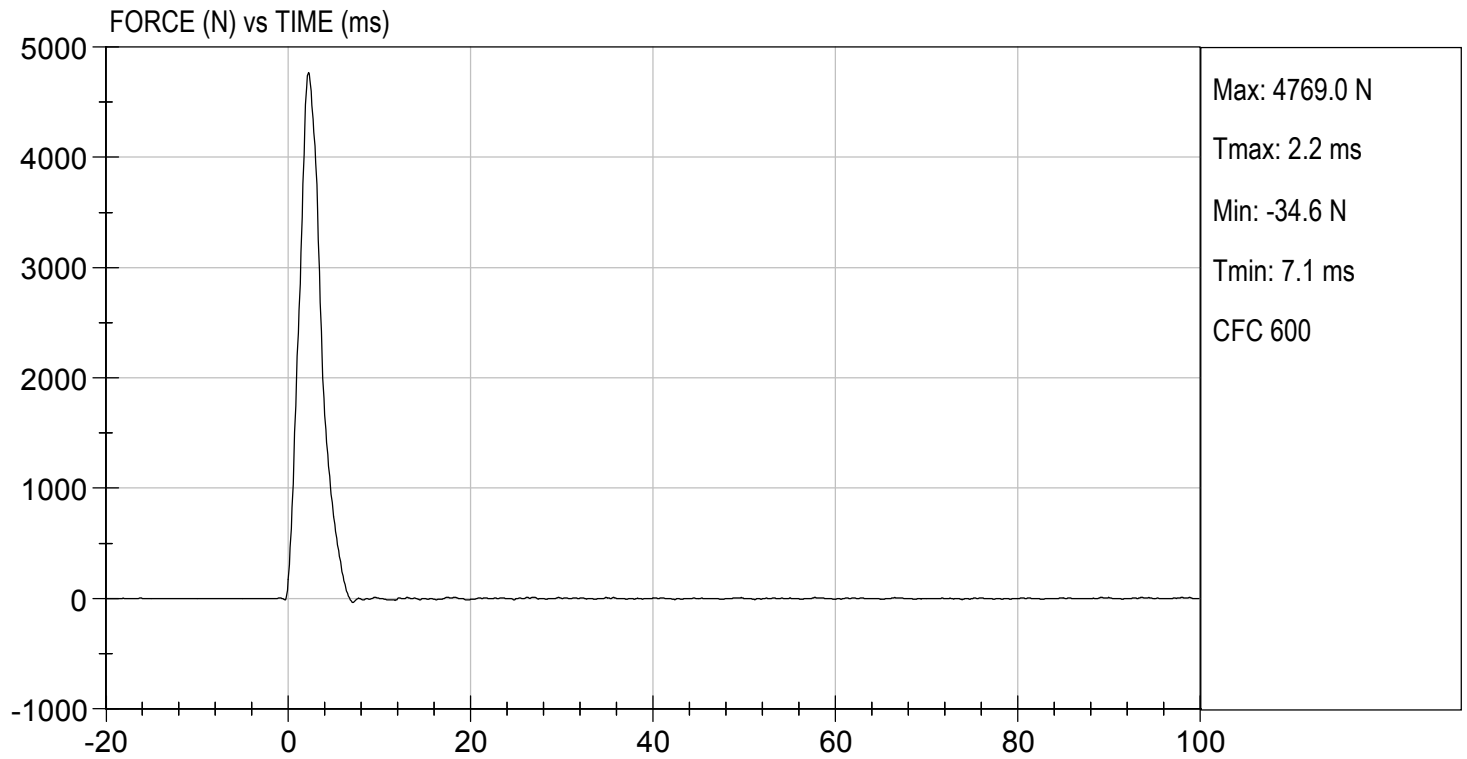
05/26/2021
Test Date


Approved By



TEST DESC: RIGHT KNEE
VELOCITY: 6.92 ft/s, 2.11 m/s

TEST DATE: 05/26/2021
TEST #: D211835



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

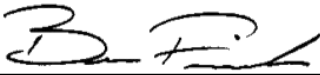
ATD Serial No: 351

Test I.D: D211836

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	40	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	N	4715 to 5782	5,360	Pass
Overall Test Results				Pass


Laboratory Technician

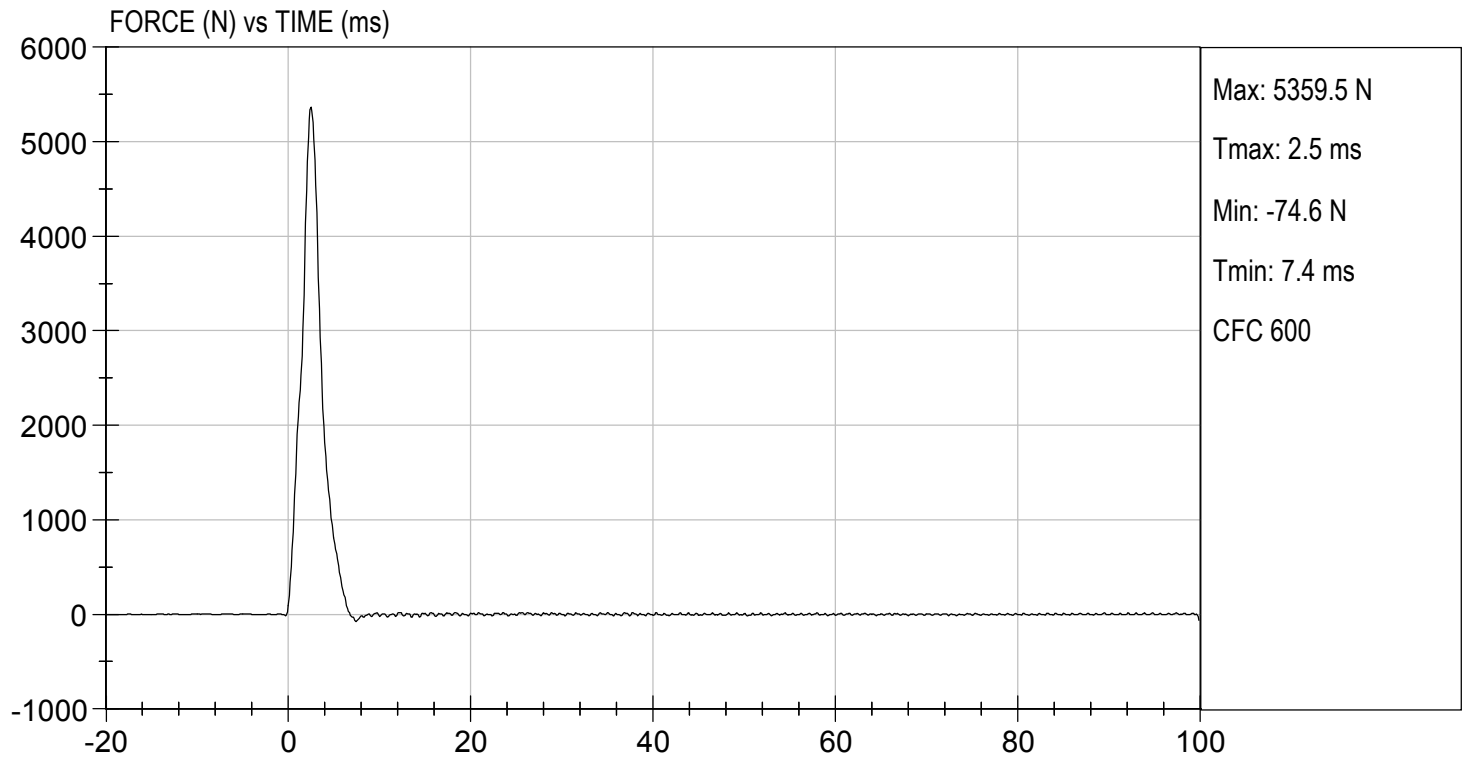
05/26/2021
Test Date


Approved By



TEST DESC: LEFT KNEE
VELOCITY: 6.94 ft/s, 2.12 m/s

TEST DATE: 05/26/2021
TEST #: D211836



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

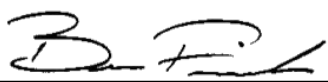
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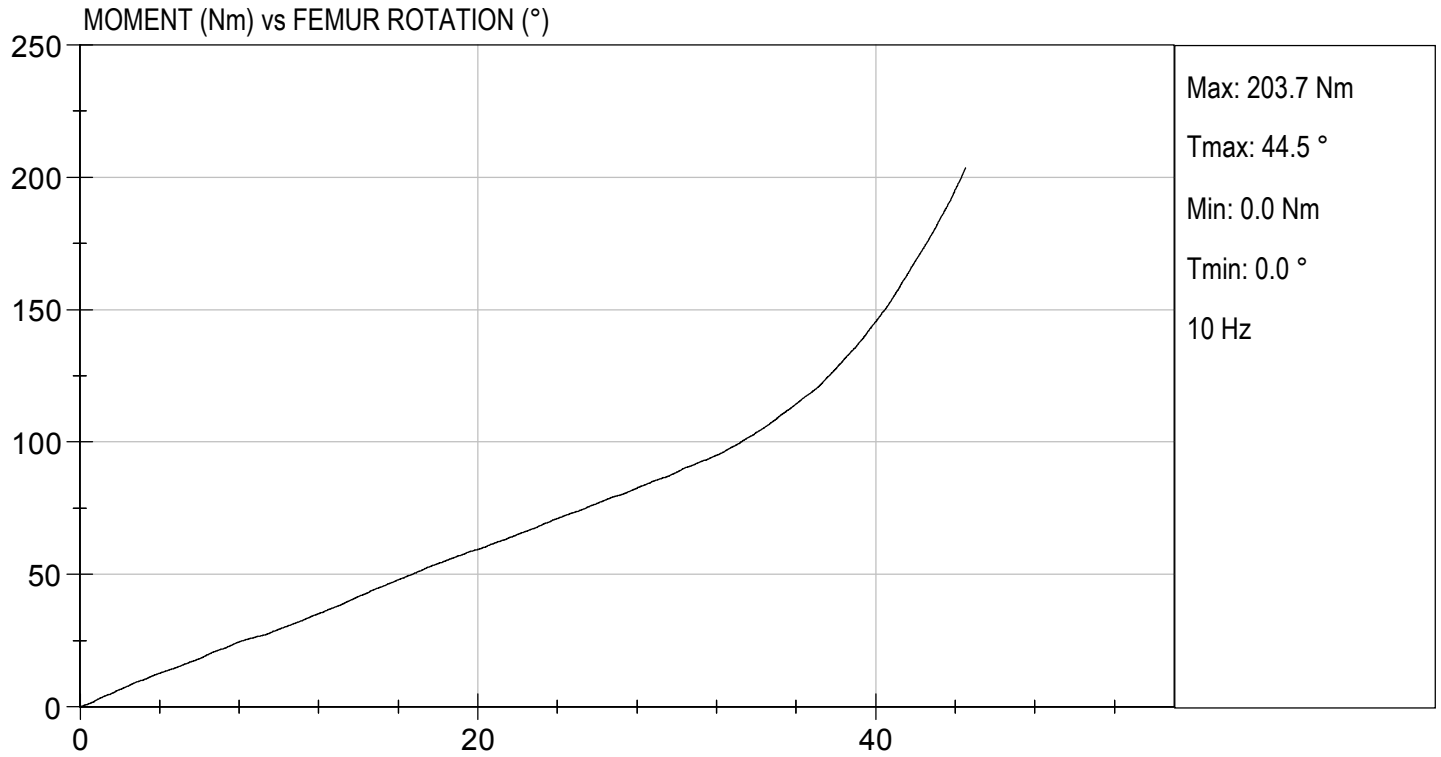
Test I.D: D211830

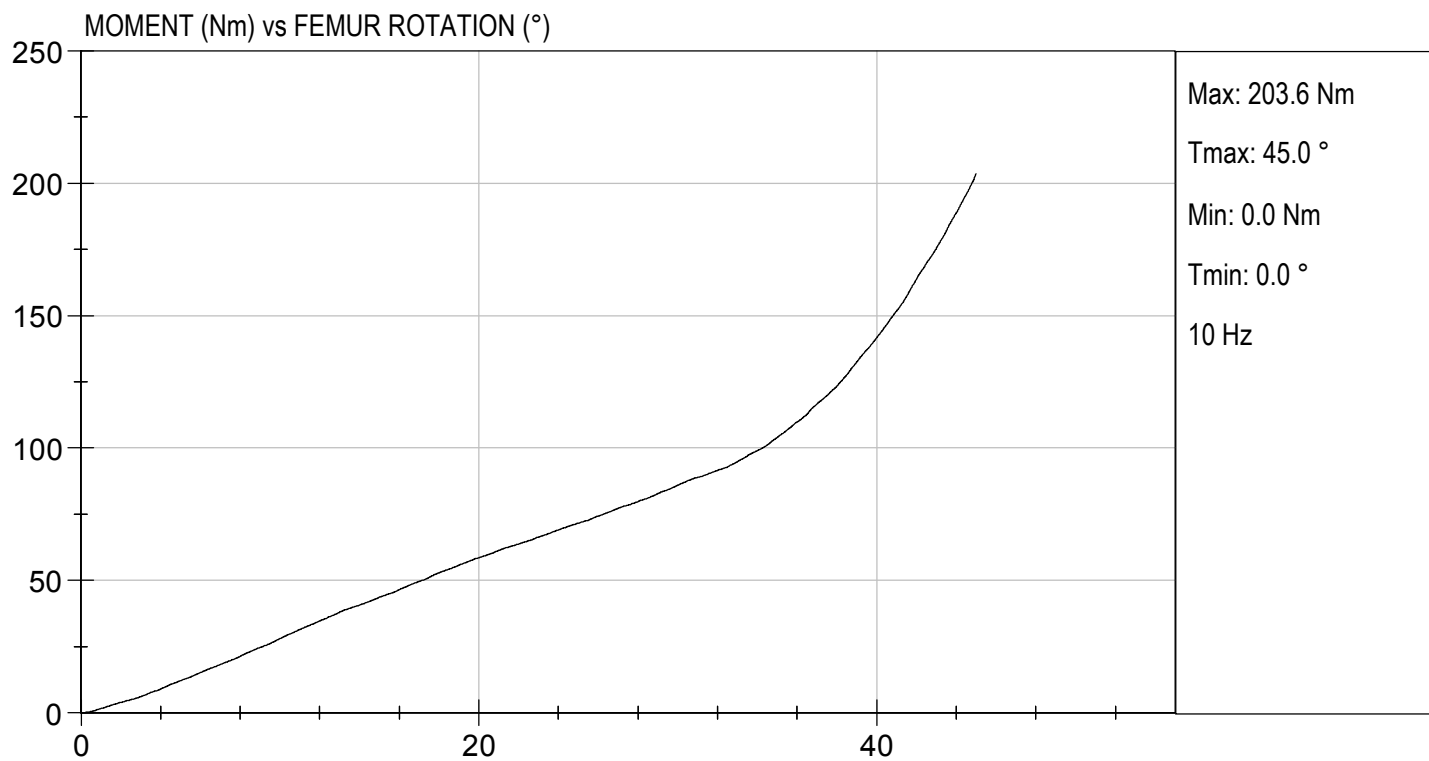
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.5	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	46	46	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.4	6.4	Pass
30 Degrees	Nm	94.9 Nm Max	88.6	86.0	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	44.5	45.0	Pass
Overall Test Results					Pass


 Laboratory Technician

05/26/2021
 Test Date


 Approved By





CALIBRATION TEST RESULTS

PRE-TEST

HYBRID III 5TH PERCENTILE FEMALE - PASSENGER ATD

Hybrid III, 5th External Measurements
SN: DH1659

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	778
B	SHOULDER PIVOT HEIGHT	Centerline of shoulder pivot bolt to the seat surface.	431.8-457.2	440
C	H-POINT HEIGHT	Reference	81.3-86.3	85
D	H-POINT LOCATION FROM BACKLINE	Reference	144.8-149.8	147
E	SHOULDER PIVOT FROM BACKLINE	Center of the shoulder clevis to the rear vertical surface of the fixture.	68.6-83.8	82
F	THIGH CLEARANCE	Measured at the highest point on the upper femur segment.	119.4-134.6	130
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	251
H	HEAD BACK TO BACKLINE	Back of Skull cap skin to seat rear vertical surface (Reference)	43.2-48.2	45
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	285
J	ELBOW REST HEIGHT	Measure from the flesh below the elbow pivot bolt to the seat surface.	182.8-203.2	189
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	543
L	POPLITEAL HEIGHT	Seat surface to the plane of the horizontal plane of the bottom of the feet.	355.6-376	357
M	KNEE PIVOT HEIGHT	Centerline of knee pivot bolt to the horizontal plane of the bottom of the feet.	393.7-419.1	398
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

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	182
P	FOOT LENGTH	Tip of toe to rear of heel	218.5-233.7	221
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	469
S	HEAD BREADTH	The widest part of the head	137.1-147.3	141
T	HEAD DEPTH	Back of the head to the forehead	177.8-188	182
U	HIP BREADTH	The widest part of the hip	299.7-314.9	306
V	SHOULDER BREADTH	Outside edges of right and left shoulder clevises	350.5-365.7	357
W	FOOT BREADTH	The widest part of the foot	78.8-94	83
X	HEAD CIRCUMFERENCE	Measured at the point as in dim. "T"	528.3-548.7	542
Y	CHEST CIRCUMFERENCE (WITH CHEST JACKET)	Measured 345.4 ± 12.7 mm above seat surface	850.9-881.3	865
Z	WAIST CIRCUMFERENCE	Measured 165.1 ± 5.1 mm above seat surface	759.5-789.9	785
AA	REFERENCE LOCATION FOR MEASUREMENT OF CHEST CIRCUMFERENCE	Reference	332.7-358.1	345
BB	REFERENCE LOCATION FOR MEASUREMENT OF WAIST CIRCUMFERENCE	Reference	160.1-170.2	165

MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: DH1659

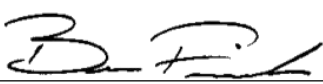
Test ID: D211721

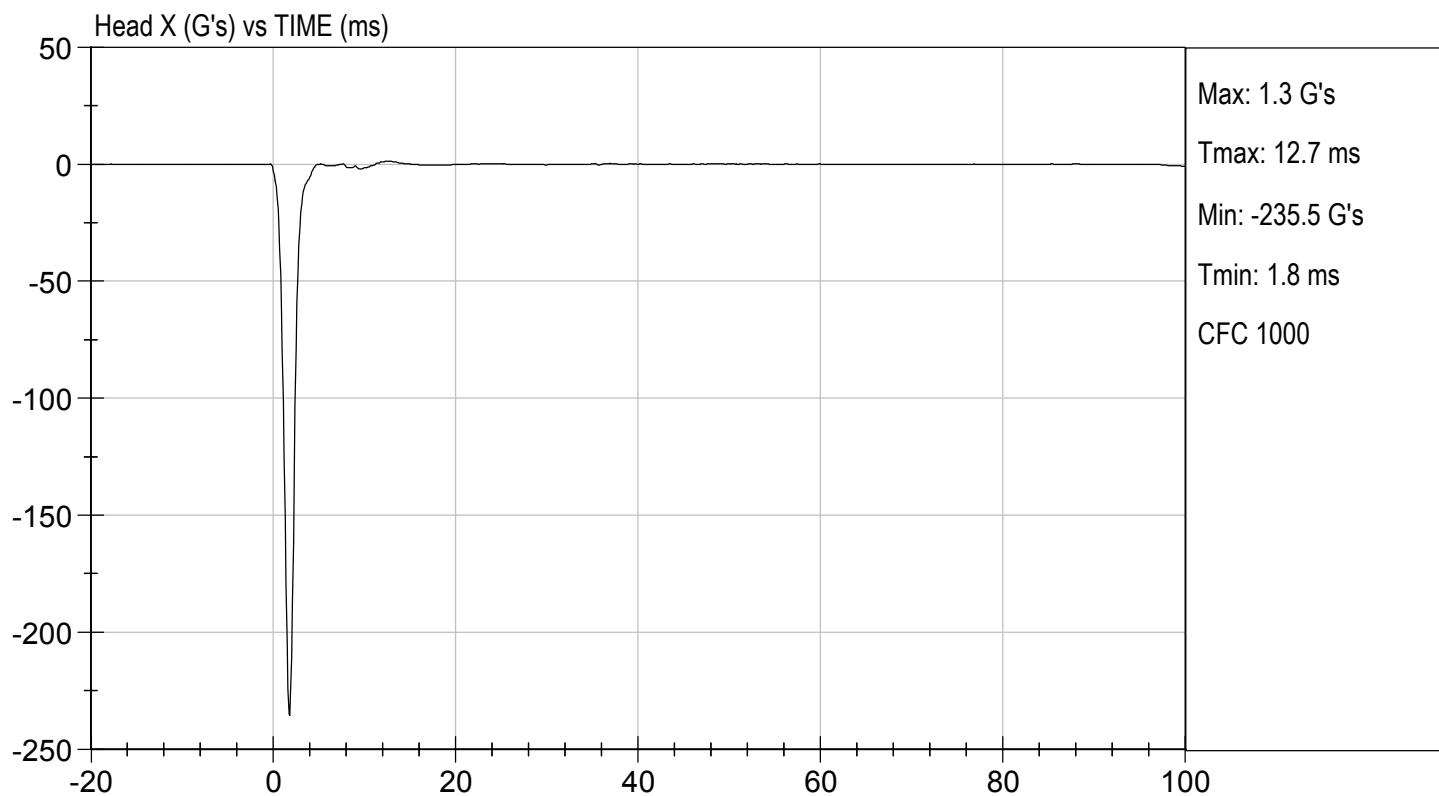
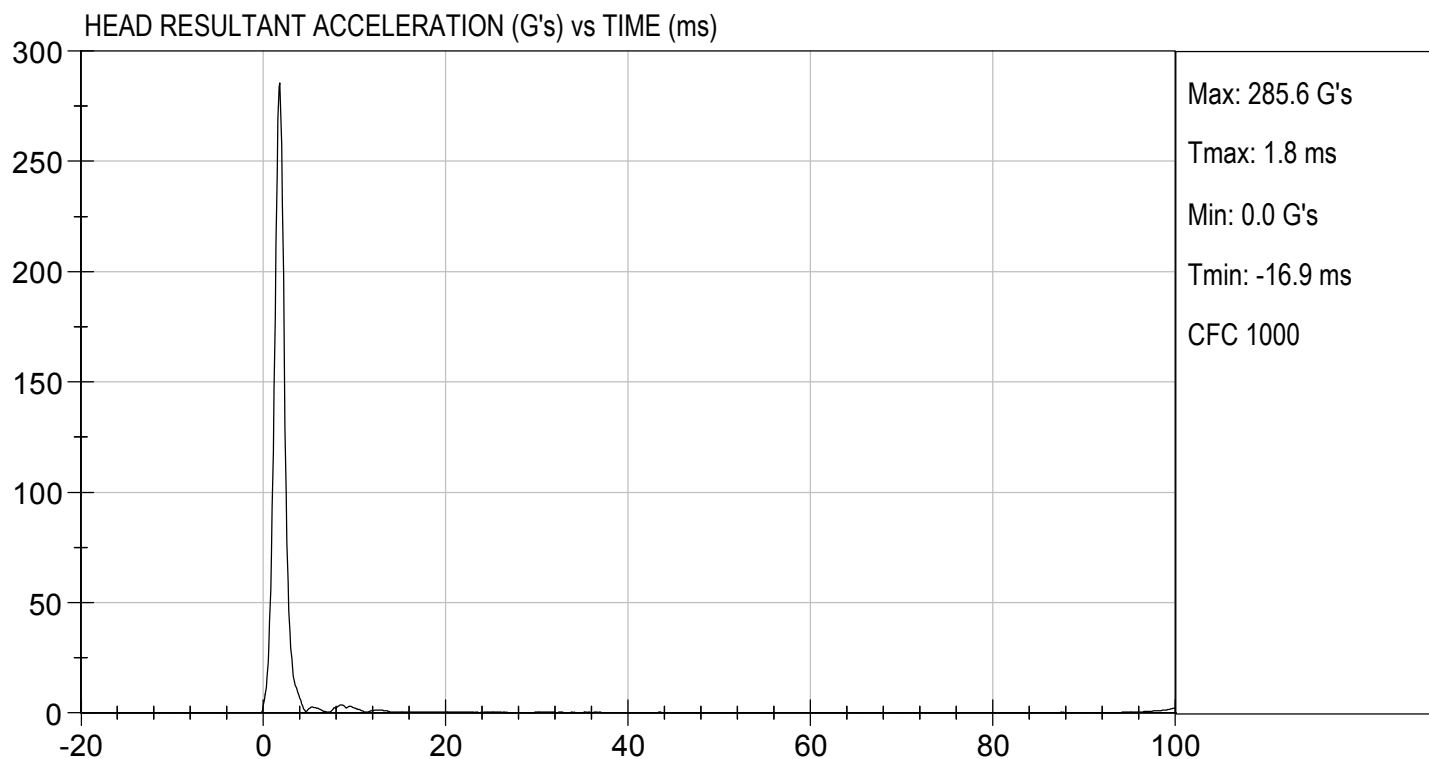
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Peak Resultant Acceleration	G's	250 to 300	286	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-4.5	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
			Overall Test Results	Pass

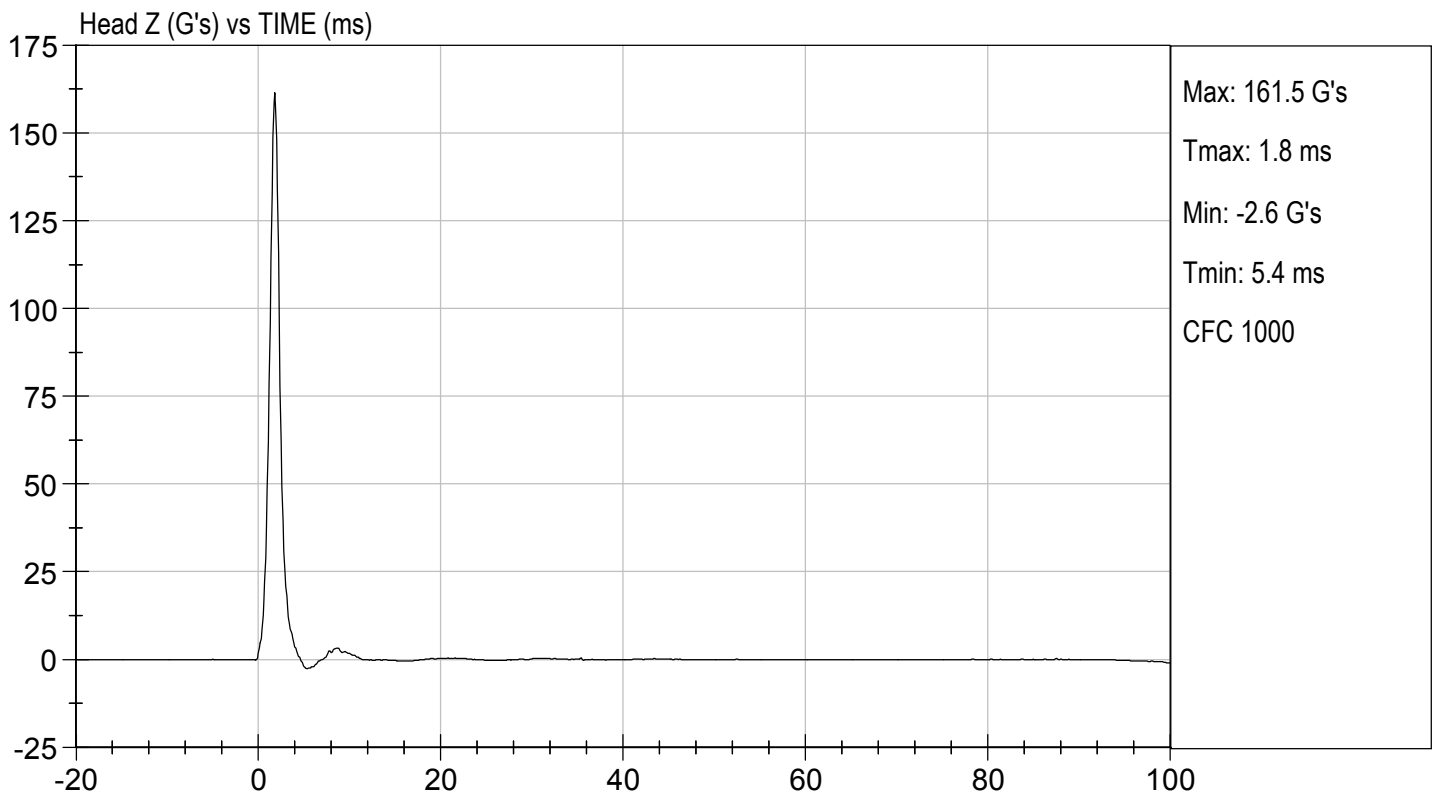
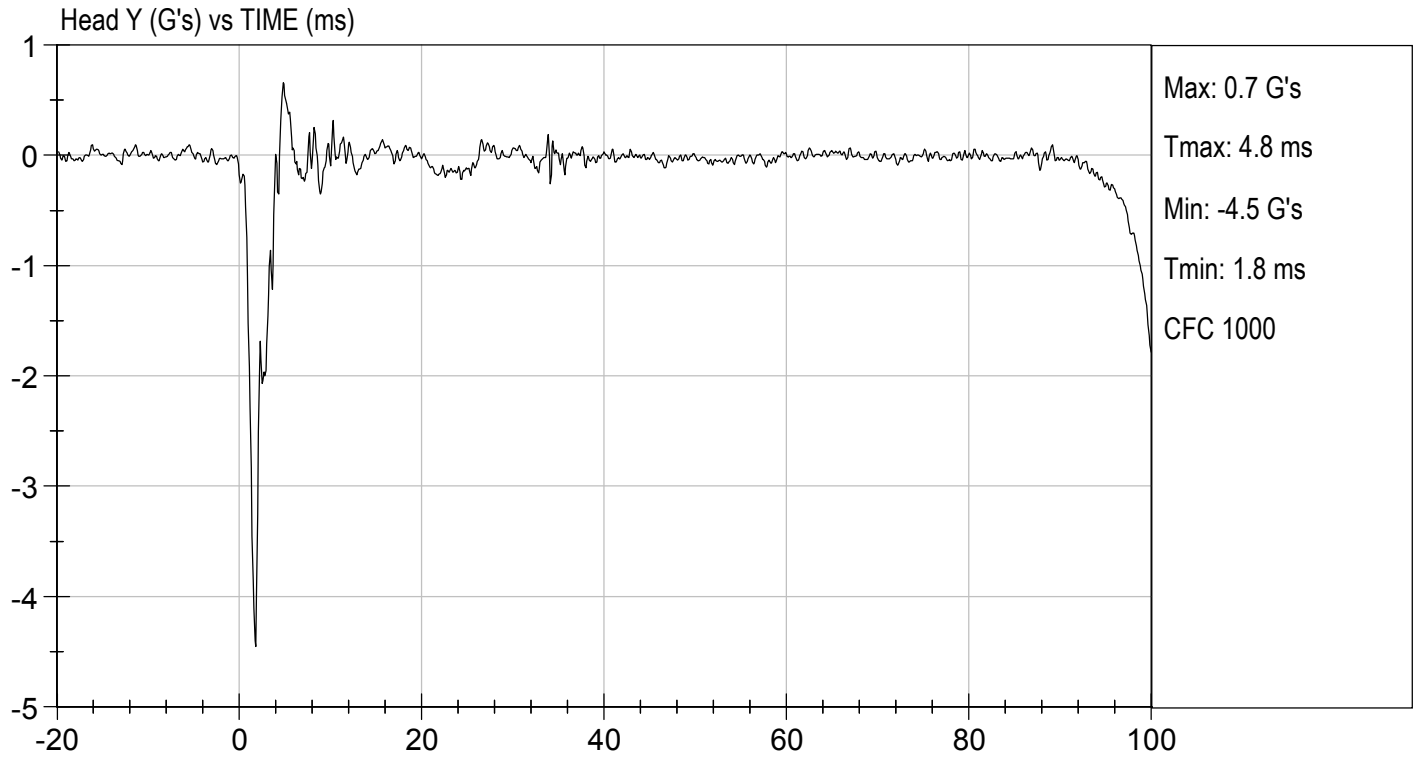

Laboratory Technician

05/19/2021

Test Date


Approved By





MGA RESEARCH CORPORATION

NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: DH1659Test I.D: D211722

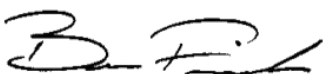
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity		%	10 to 70	46	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.06	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.3	Pass
	20 ms	m/s	4.0 to 5.0	4.7	Pass
	30 ms	m/s	5.8 to 7.0	6.9	Pass
D Plane Rotation	Max	deg	77 to 91	81	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	70	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	83	Pass
Overall Results					Pass



Laboratory Technician

05/19/2021

Test Date

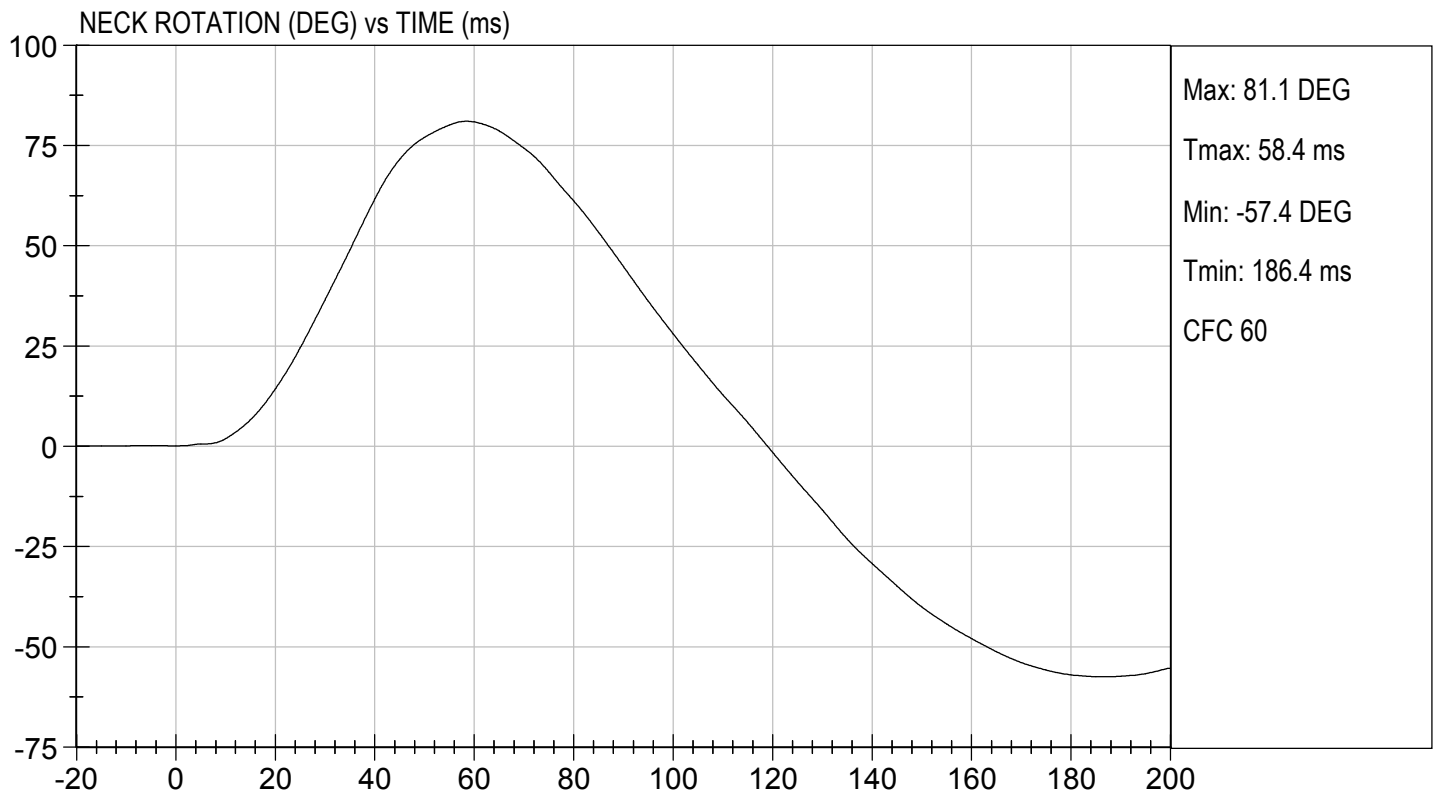
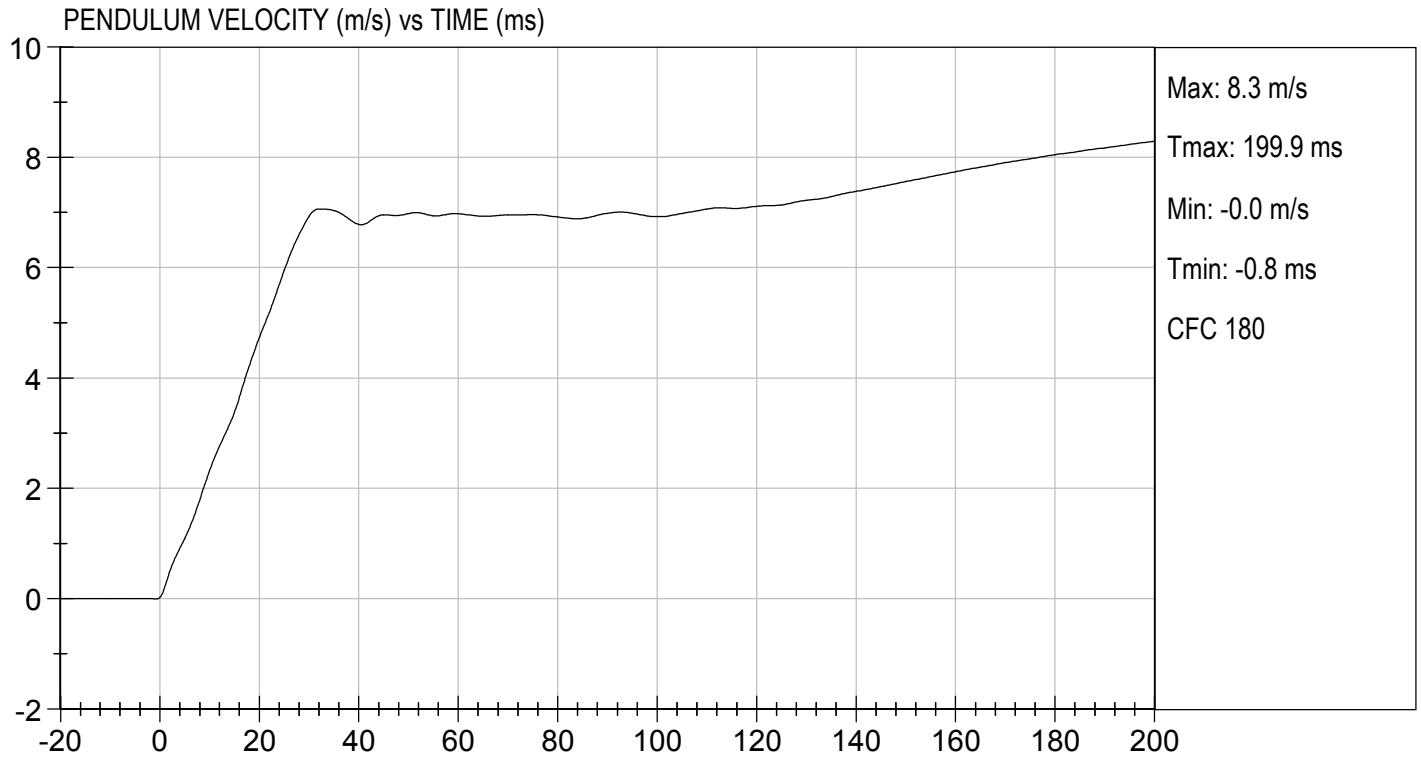


Approved By



TEST DESC: NECK FLEXION
VELOCITY: 23.15 ft/s, 7.06 m/s

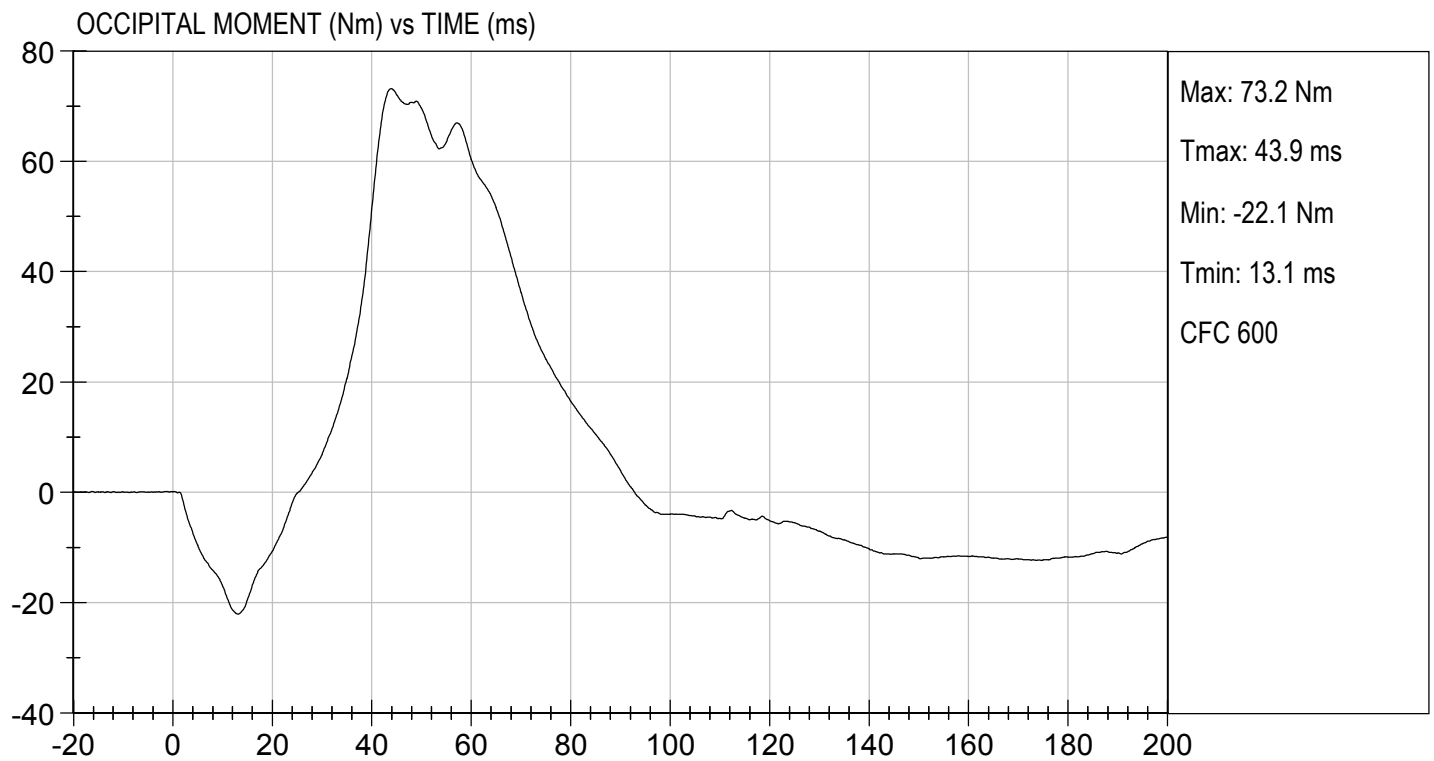
TEST DATE: 05/19/2021
TEST #: D211722





TEST DESC: NECK FLEXION
VELOCITY: 23.15 ft/s, 7.06 m/s

TEST DATE: 05/19/2021
TEST #: D211722



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

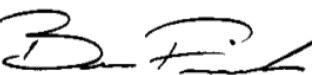
ATD Serial No: DH1659

Test I.D: D211723

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity		%	10 to 70	46	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.12	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.8	Pass
	20 ms	m/s	3.1 to 3.9	3.5	Pass
	30 ms	m/s	4.6 to 5.6	5.3	Pass
D Plane Rotation	Max	deg	99 to 114	108	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-56	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	105	Pass
Overall Results					Pass


 Laboratory Technician

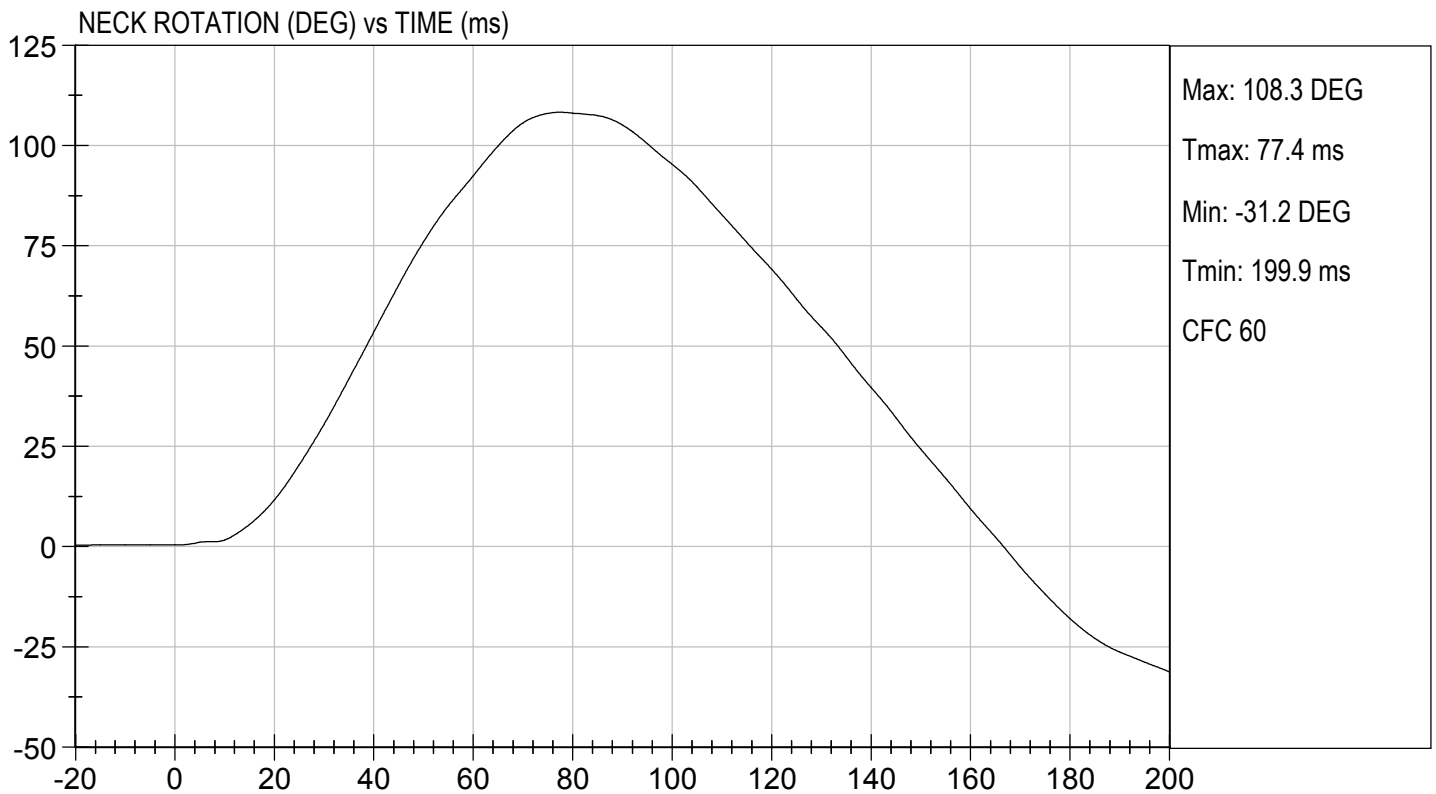
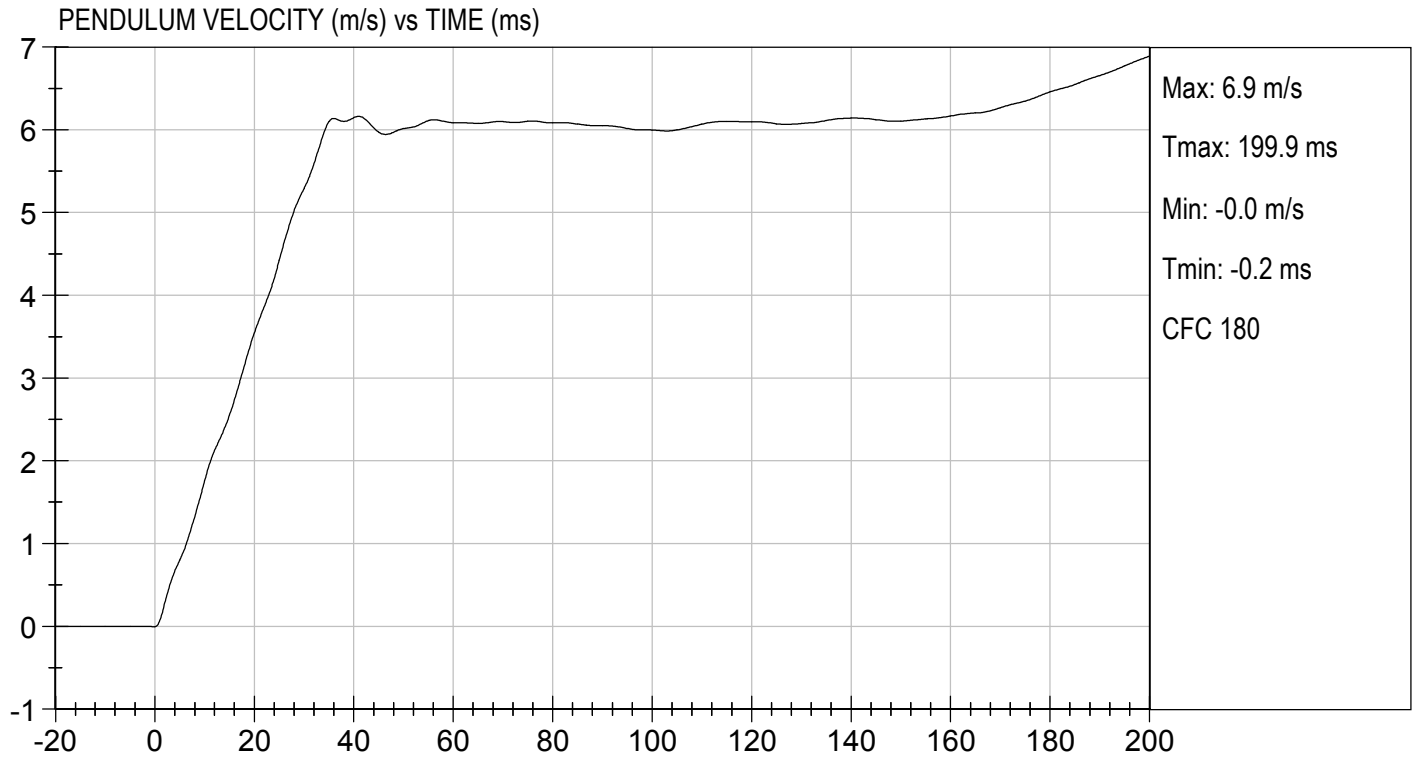
05/19/2021
 Test Date


 Approved By



TEST DESC: NECK EXTENSION
VELOCITY: 20.08 ft/s, 6.12 m/s

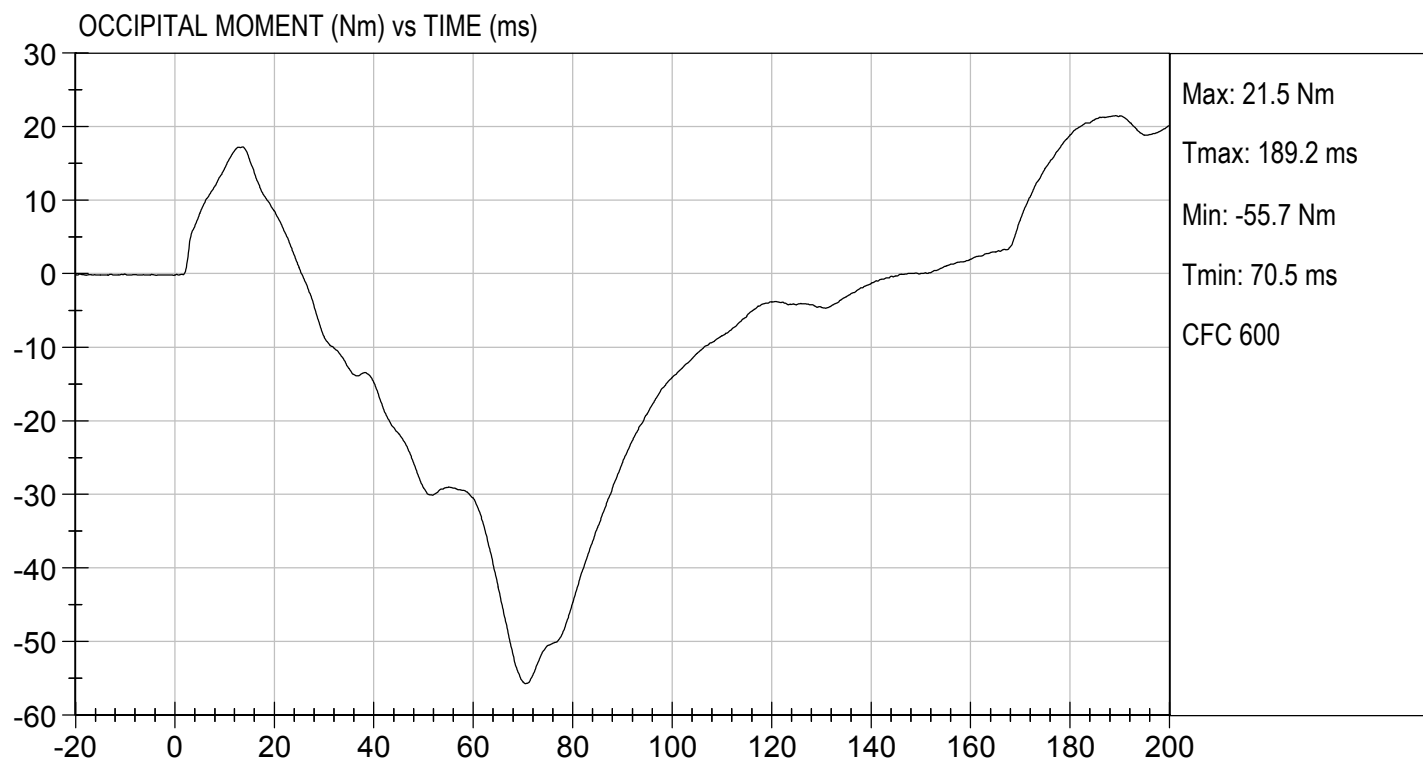
TEST DATE: 05/19/2021
TEST #: D211723





TEST DESC: NECK EXTENSION
VELOCITY: 20.08 ft/s, 6.12 m/s

TEST DATE: 05/19/2021
TEST #: D211723

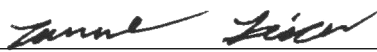


MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: DH1659

Test I.D: D211724

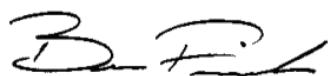
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.3	Pass
Relative Humidity	%	10 to 70	26	Pass
Probe Speed	m/s	6.59 to 6.83	6.77	Pass
Peak Deflection	mm	50 to 58	50	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4076	Pass
Internal Hysteresis	%	69 to 85	74	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4384	Pass
			Overall Test Results	Pass



Laboratory Technician

05/14/2021

Test Date

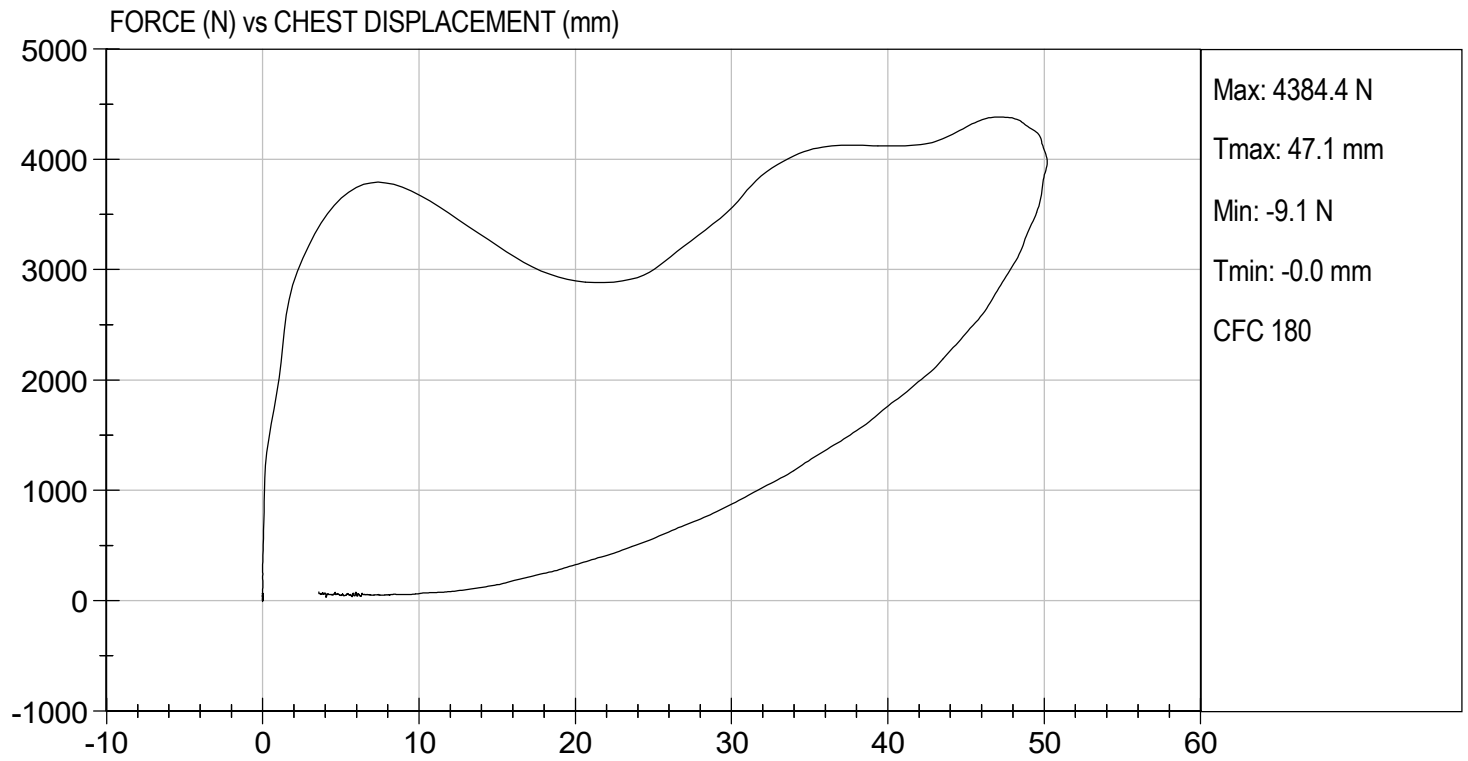


Approved By



TEST DESC: THORAX IMPACT
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 05/14/2021
TEST #: D211724



MGA RESEARCH CORPORATION

RIGHT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

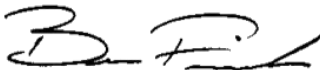
ATD Serial No: DH1659

Test I.D: D211725

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Probe Speed	m/s	2.07 to 2.13	2.13	Pass
Maximum Force	N	3450 to 4060	3632	Pass
Overall Test Results				Pass


Laboratory Technician

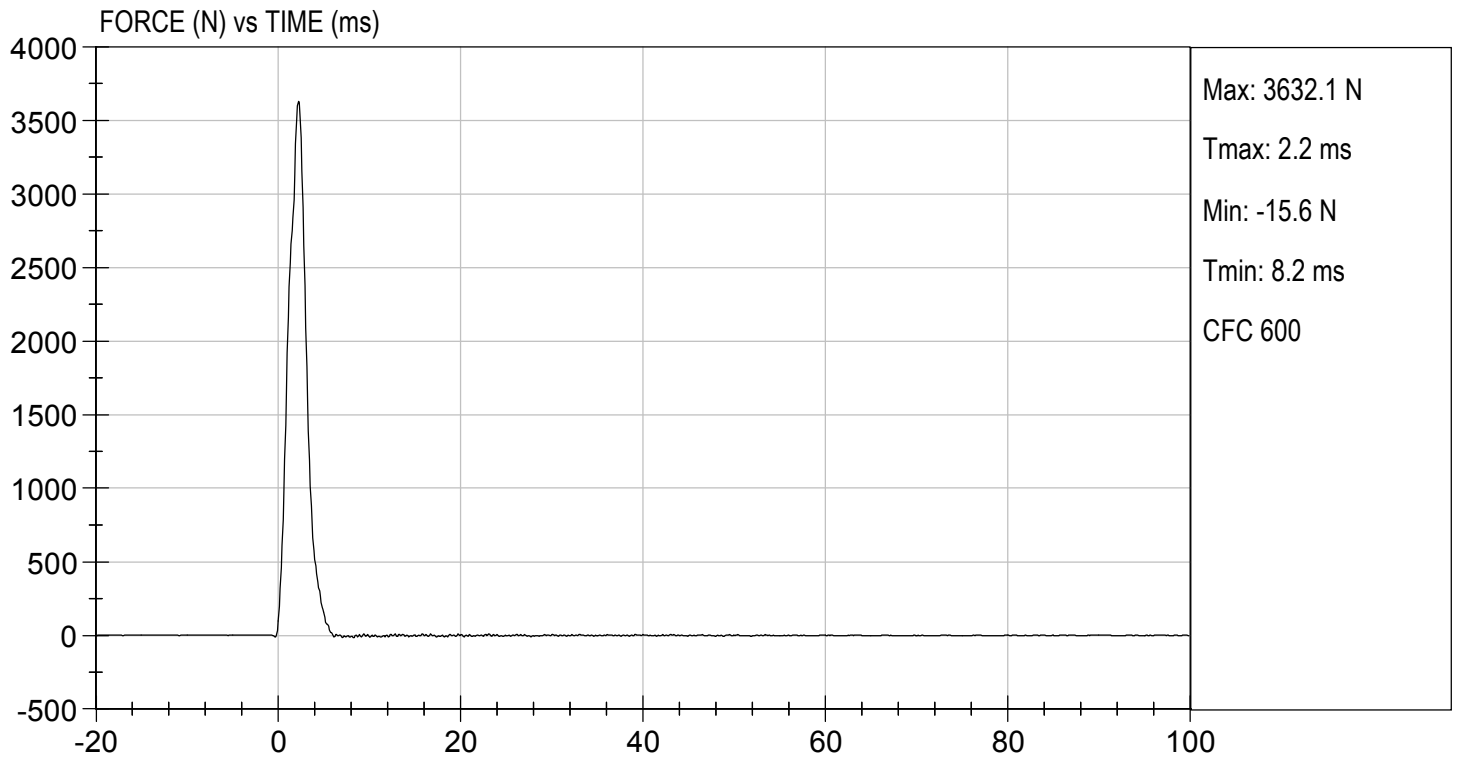
05/19/2021
Test Date


Approved By



TEST DESC: RIGHT KNEE
VELOCITY: 7.00 ft/s, 2.13 m/s

TEST DATE: 05/19/2021
TEST #: D211725



MGA RESEARCH CORPORATION

**LEFT KNEE IMPACT TEST
HYBRID III 5TH PERCENTILE**

ATD Serial No: DH1659

Test I.D: D211726

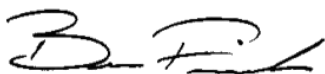
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Probe Speed	m/s	2.07 to 2.13	2.13	Pass
Maximum Force	N	3450 to 4060	3607	Pass
Overall Test Results				Pass



Laboratory Technician

05/19/2021

Test Date

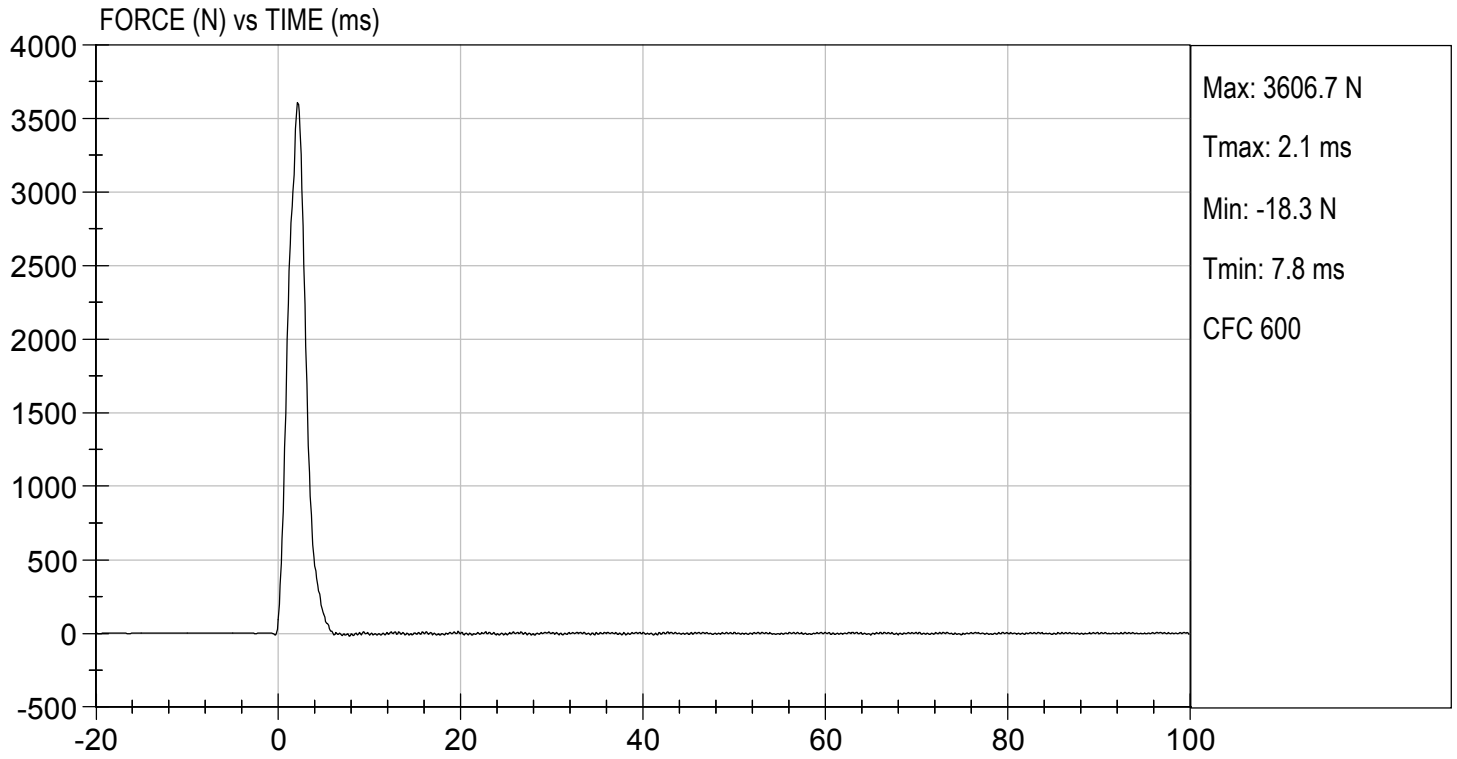


Approved By



TEST DESC: LEFT KNEE
VELOCITY: 7.00 ft/s, 2.13 m/s

TEST DATE: 05/19/2021
TEST #: D211726



MGA RESEARCH CORPORATION

TORSO FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: DH1659

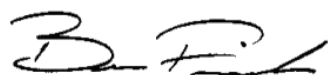
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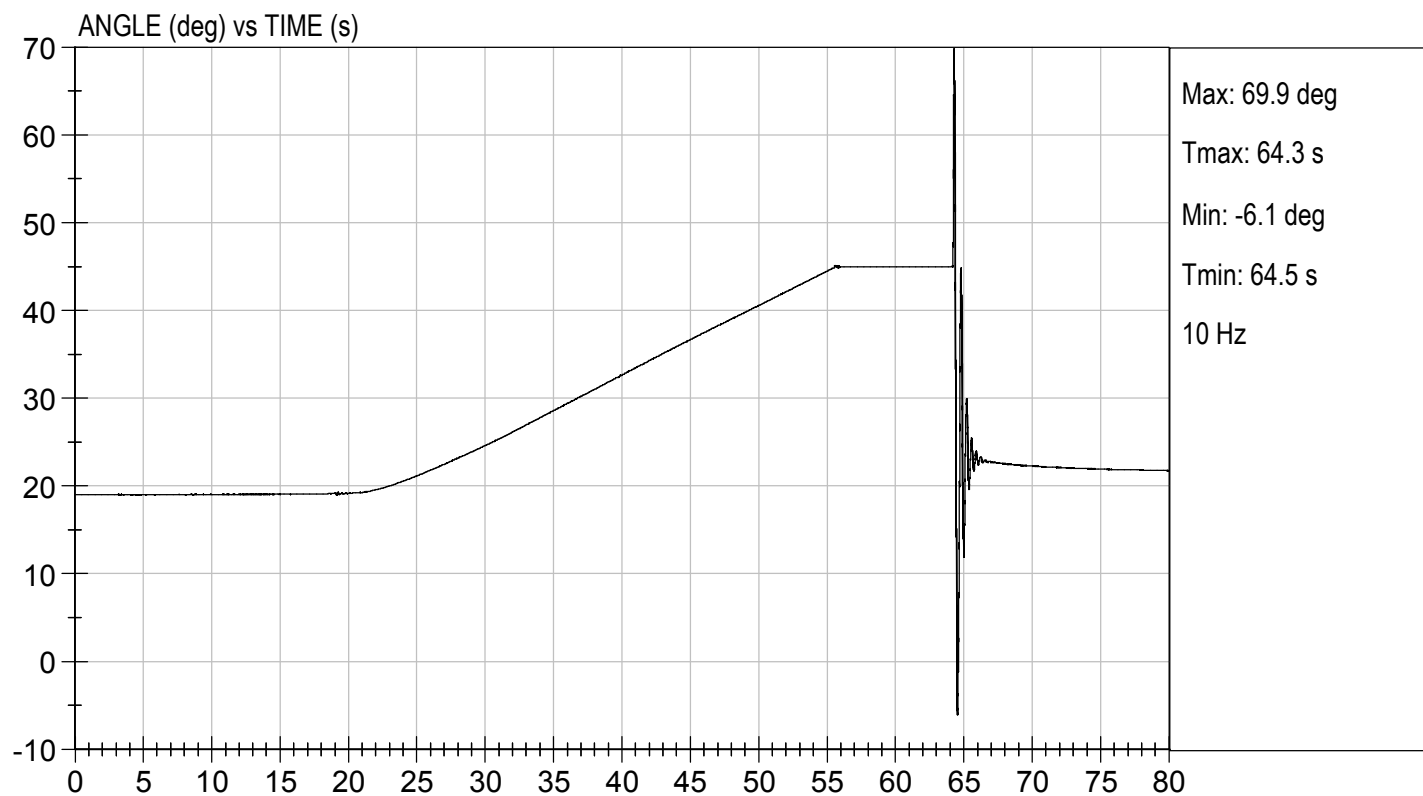
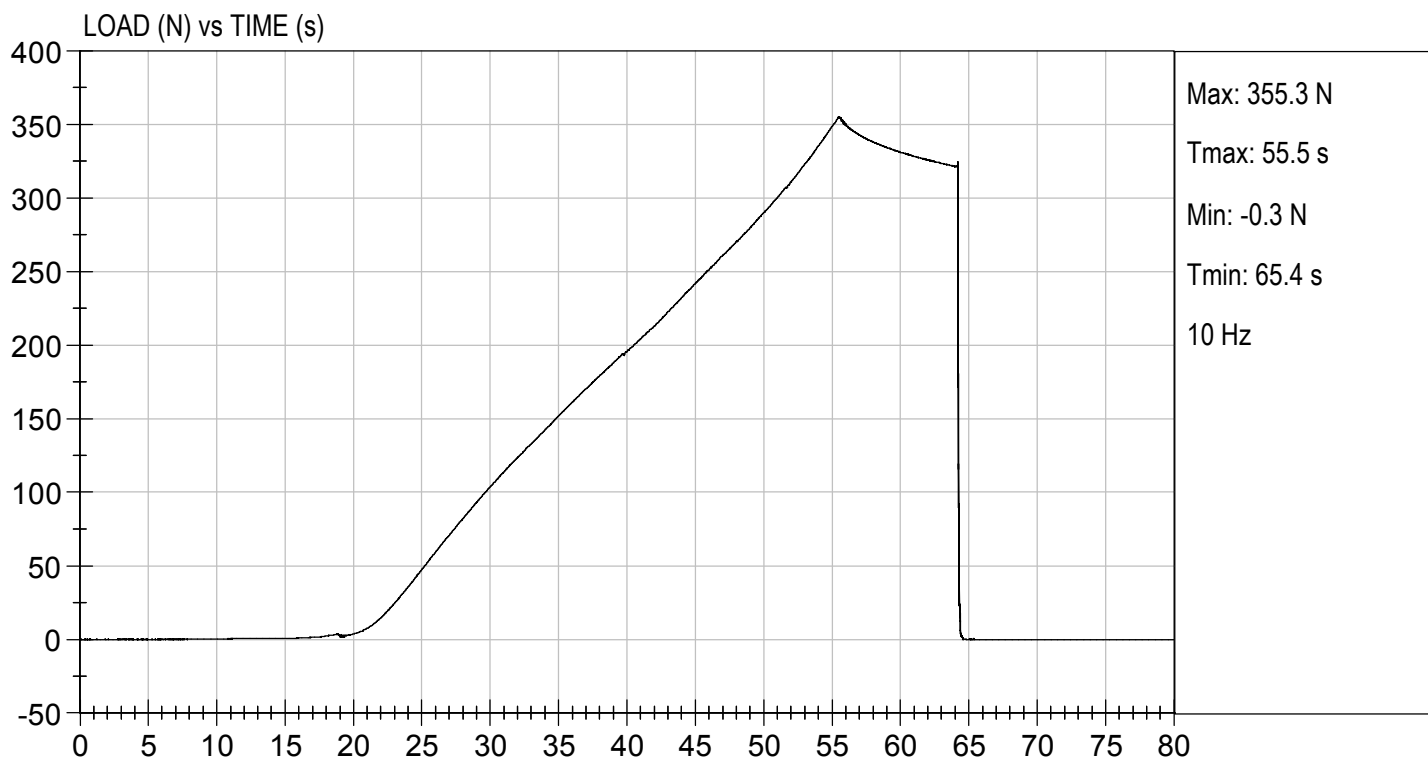
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Initial Angle	deg	0 to 20	19	Pass
Return Angle	deg	+/- 8	2	Pass
Force at 45 deg	N	320 to 390	355	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.8	Pass
Overall Result				Pass


Laboratory Technician

05/19/2021

Test Date


Approved By



CALIBRATION TEST RESULTS

POST-TEST

HYBRID III 5TH PERCENTILE FEMALE - PASSENGER ATD

MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: DH1659

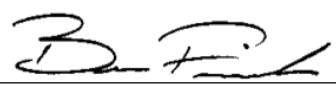
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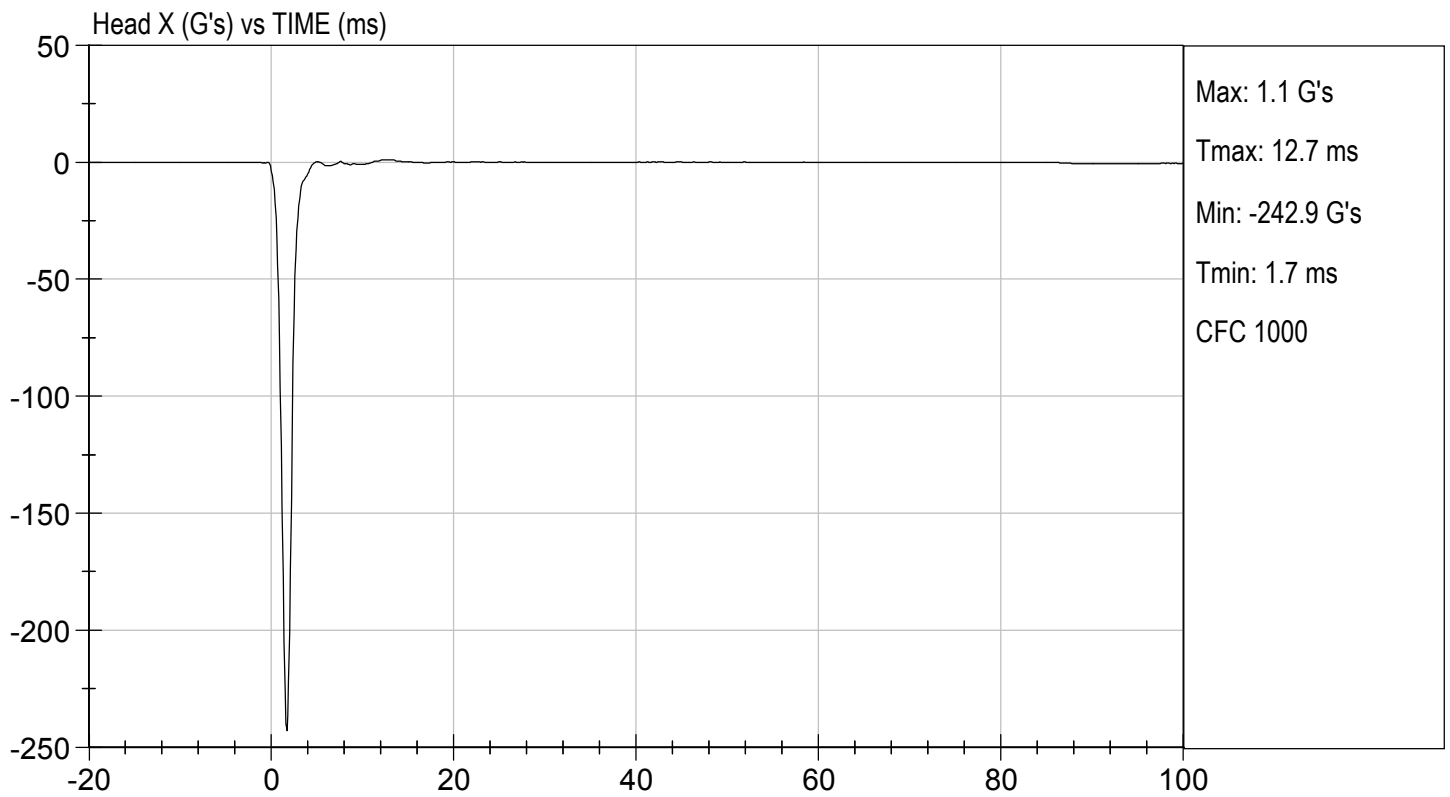
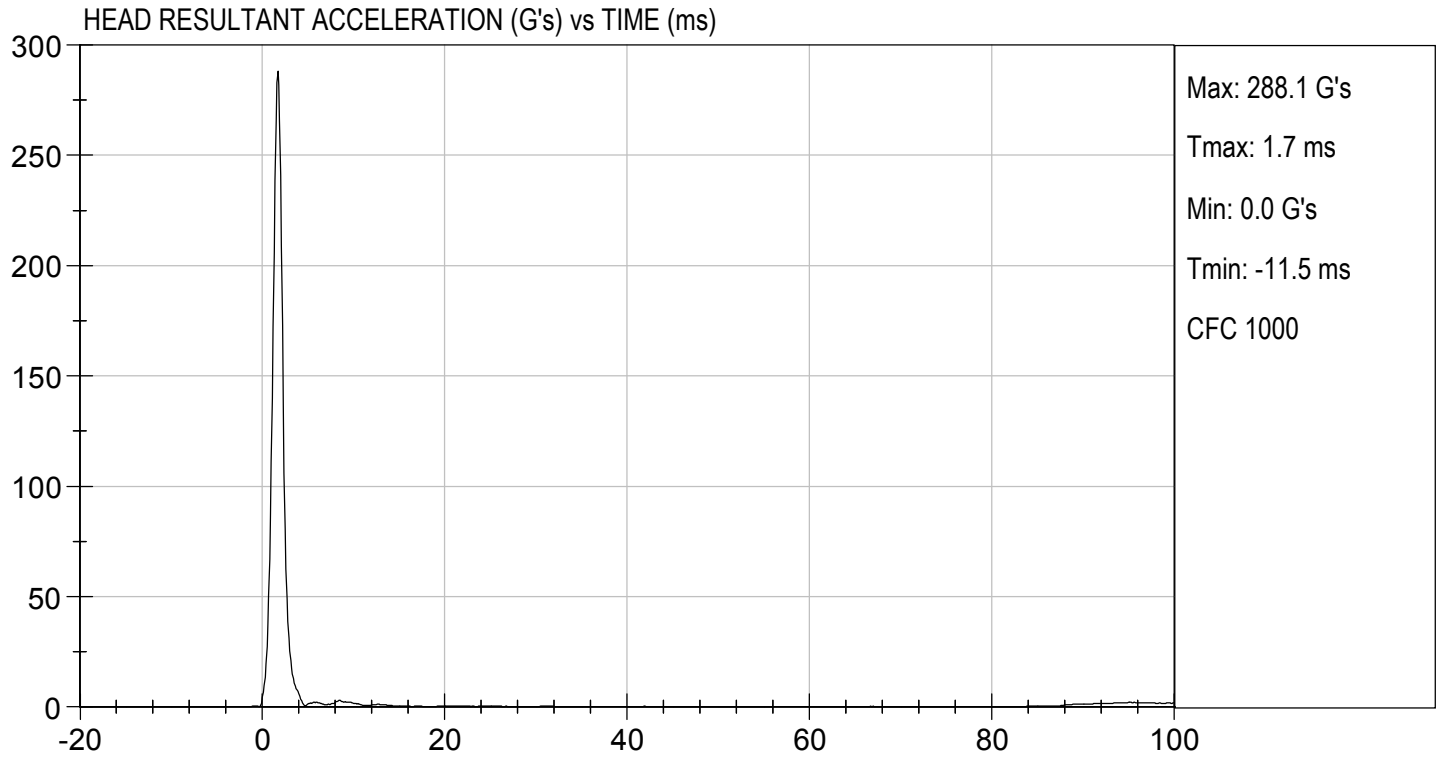
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	34	Pass
Peak Resultant Acceleration	G's	250 to 300	288	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-4.1	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

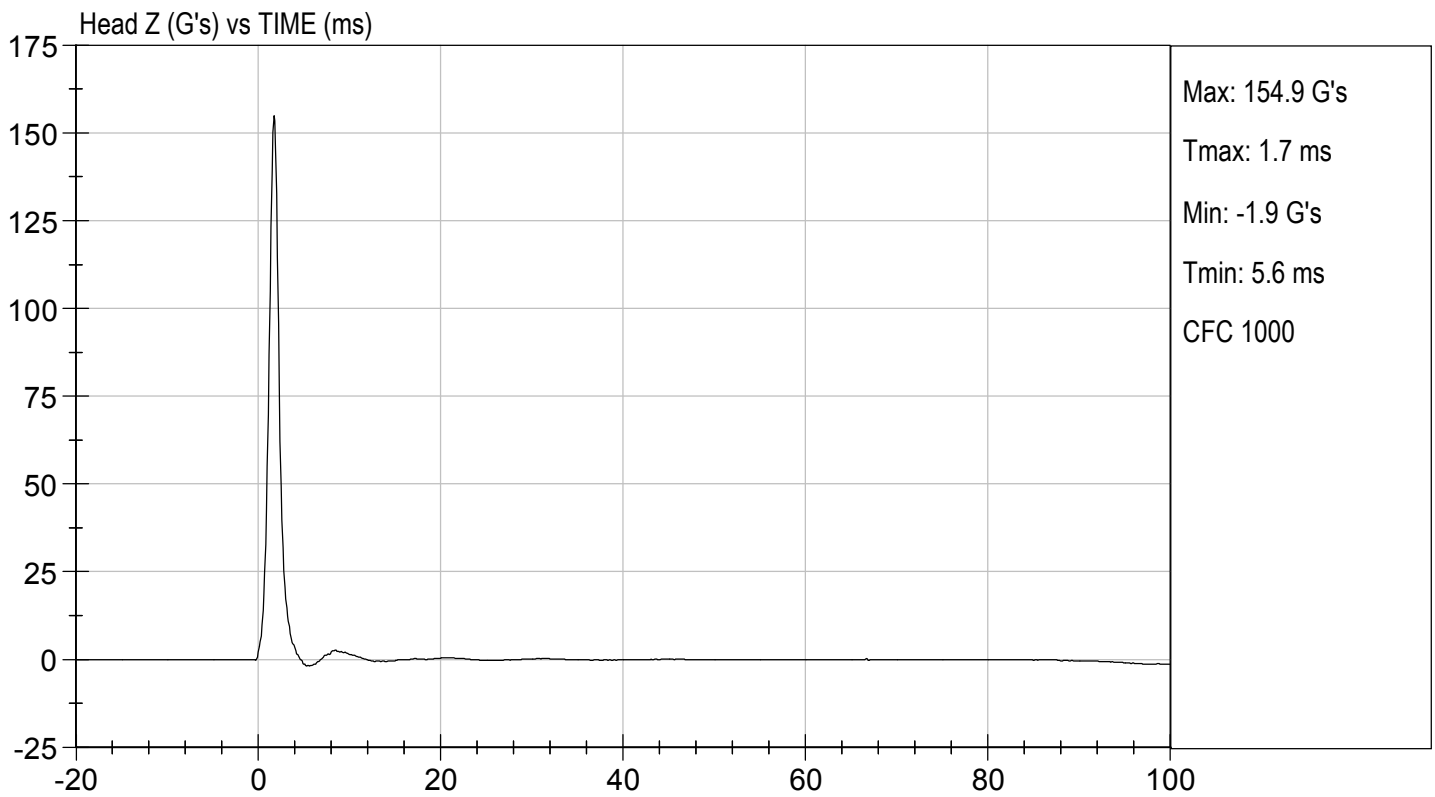
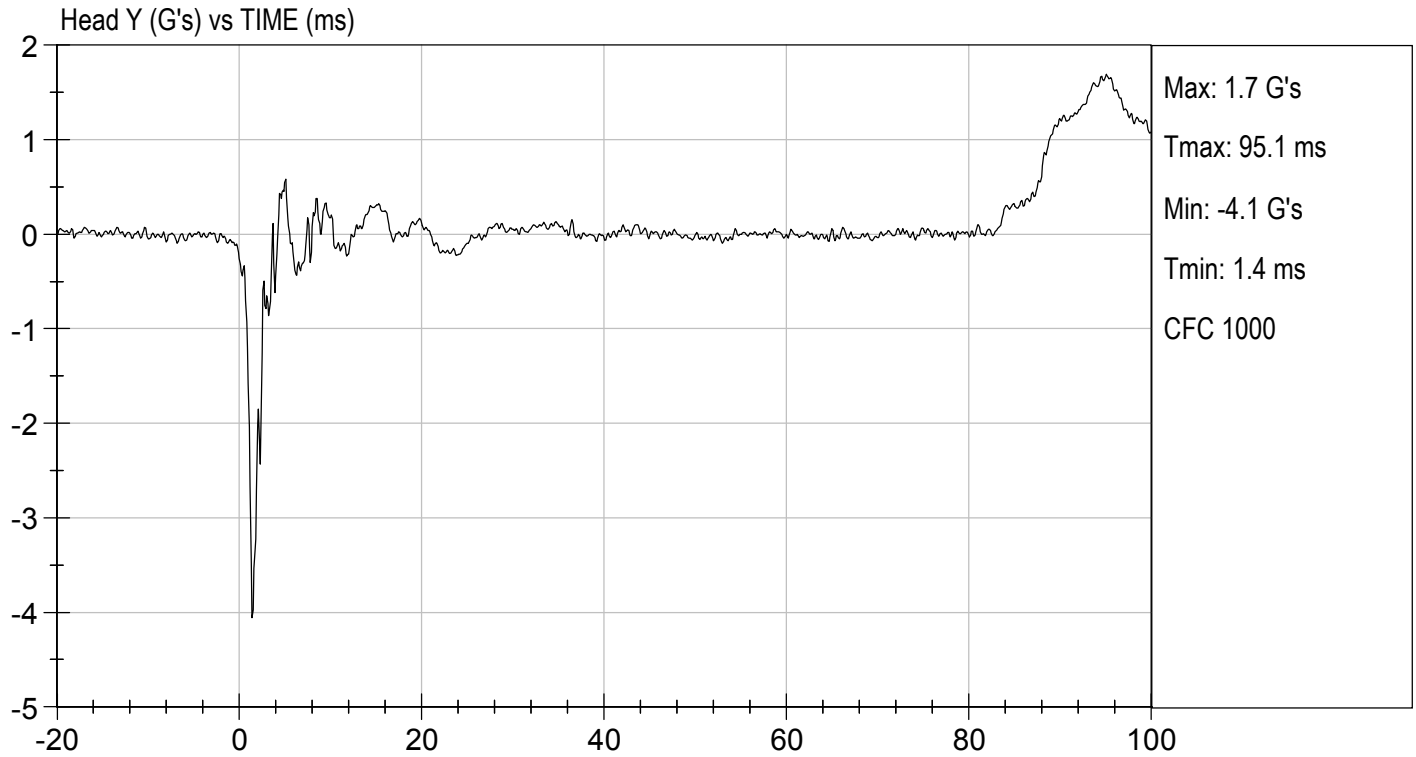

Laboratory Technician

05/27/2021

Test Date


Approved By





MGA RESEARCH CORPORATION

NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: DH1659Test I.D.: D211862

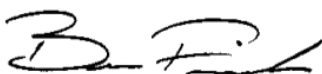
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity		%	10 to 70	36.8	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.06	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.4	Pass
	20 ms	m/s	4.0 to 5.0	4.5	Pass
	30 ms	m/s	5.8 to 7.0	6.4	Pass
D Plane Rotation	Max	deg	77 to 91	83	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	85	Pass
Overall Results					Pass



Laboratory Technician

05/27/2021

Test Date

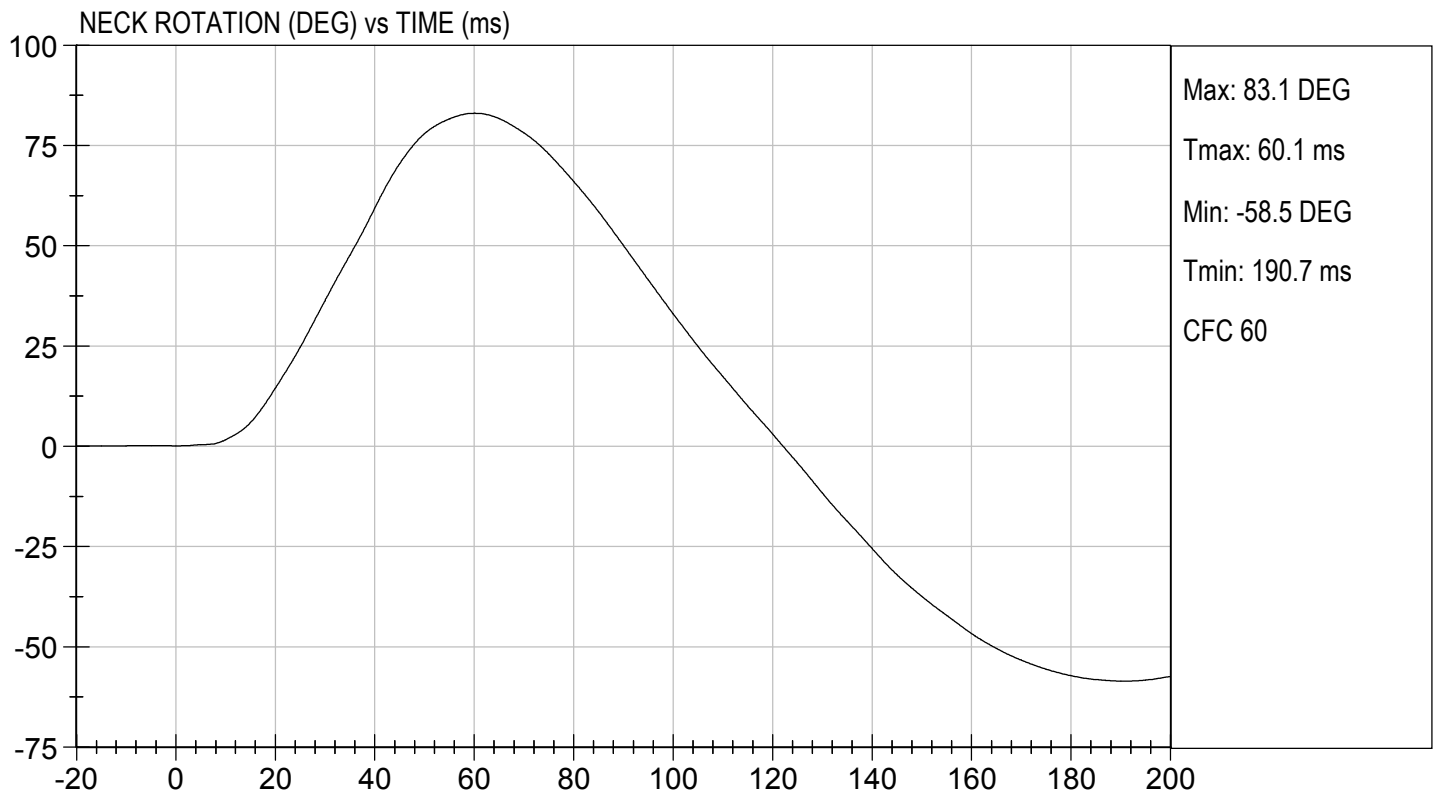
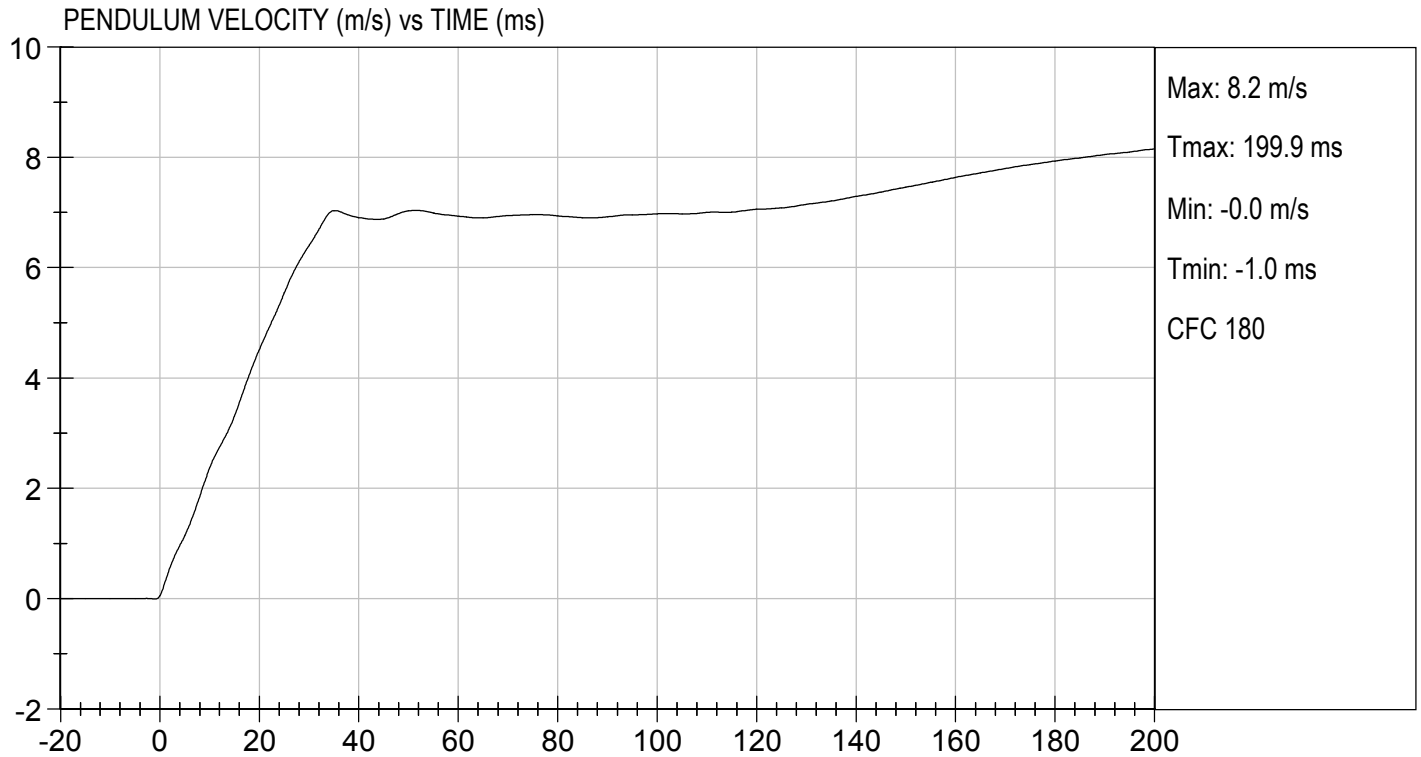


Approved By



TEST DESC: NECK FLEXION
VELOCITY: 23.15 ft/s, 7.06 m/s

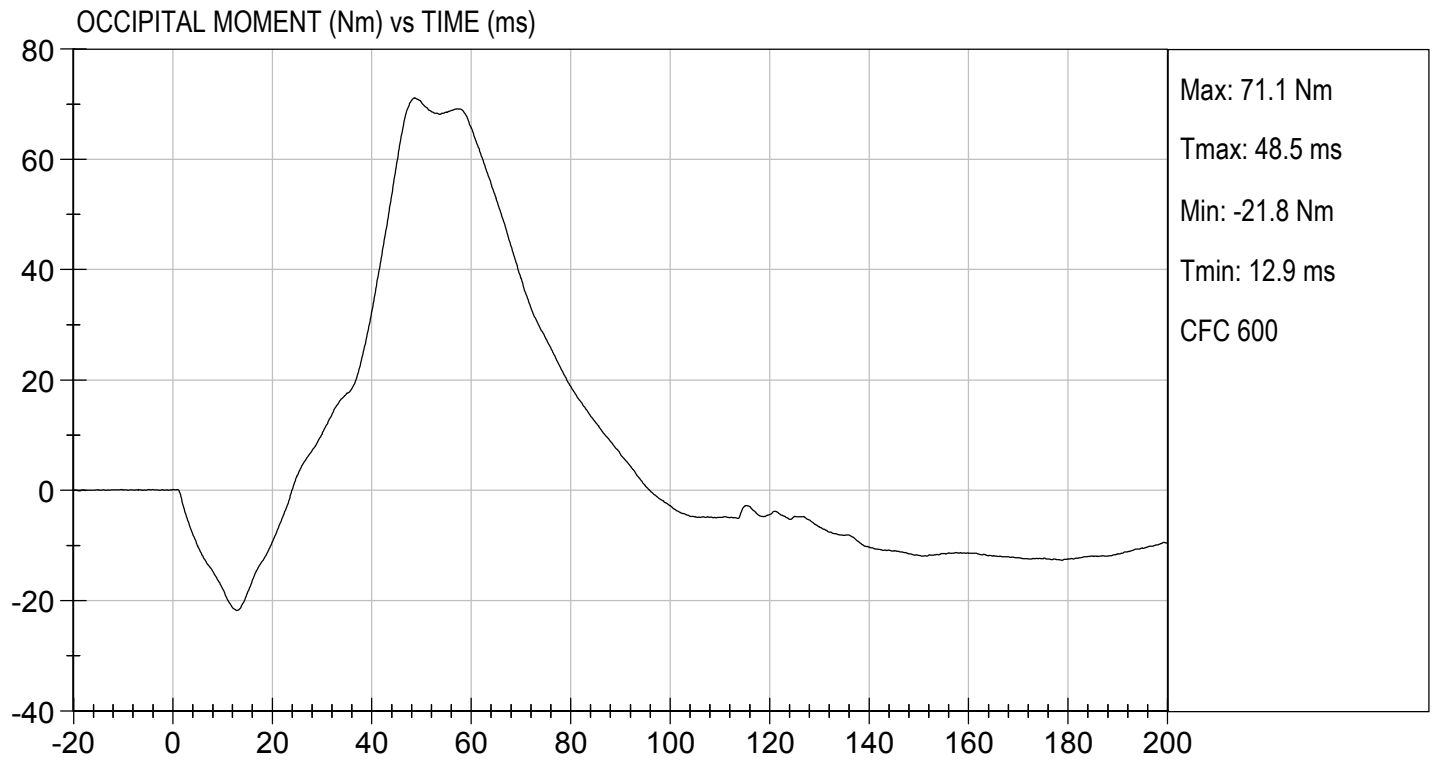
TEST DATE: 05/27/2021
TEST #: D211862





TEST DESC: NECK FLEXION
VELOCITY: 23.15 ft/s, 7.06 m/s

TEST DATE: 05/27/2021
TEST #: D211862



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

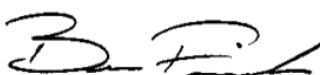
ATD Serial No: DH1659

Test I.D: D211863

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	36.8	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.12	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.8	Pass
	20 ms	m/s	3.1 to 3.9	3.7	Pass
	30 ms	m/s	4.6 to 5.6	5.5	Pass
D Plane Rotation	Max	deg	99 to 114	112	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-60	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	104	Pass
Overall Results					Pass


Laboratory Technician

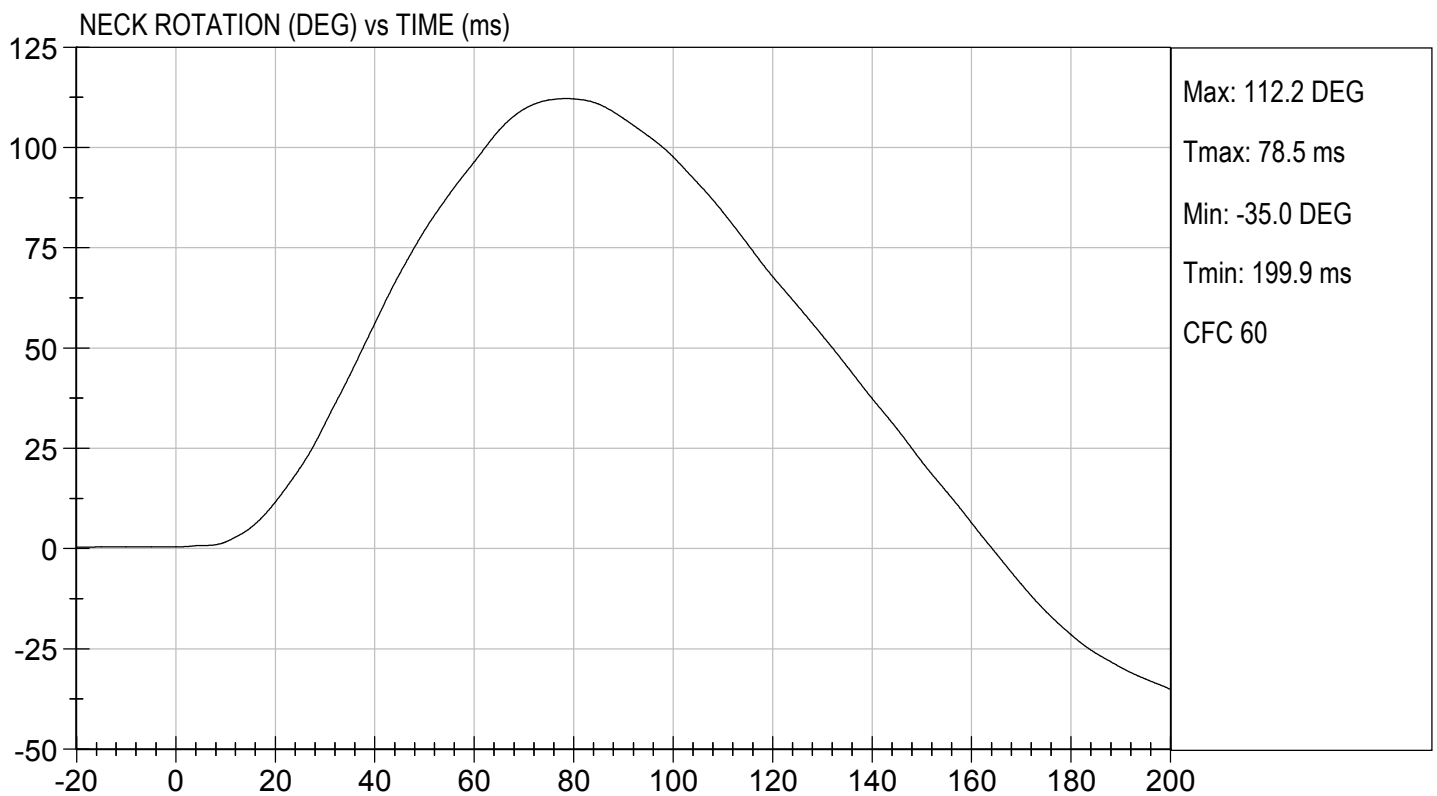
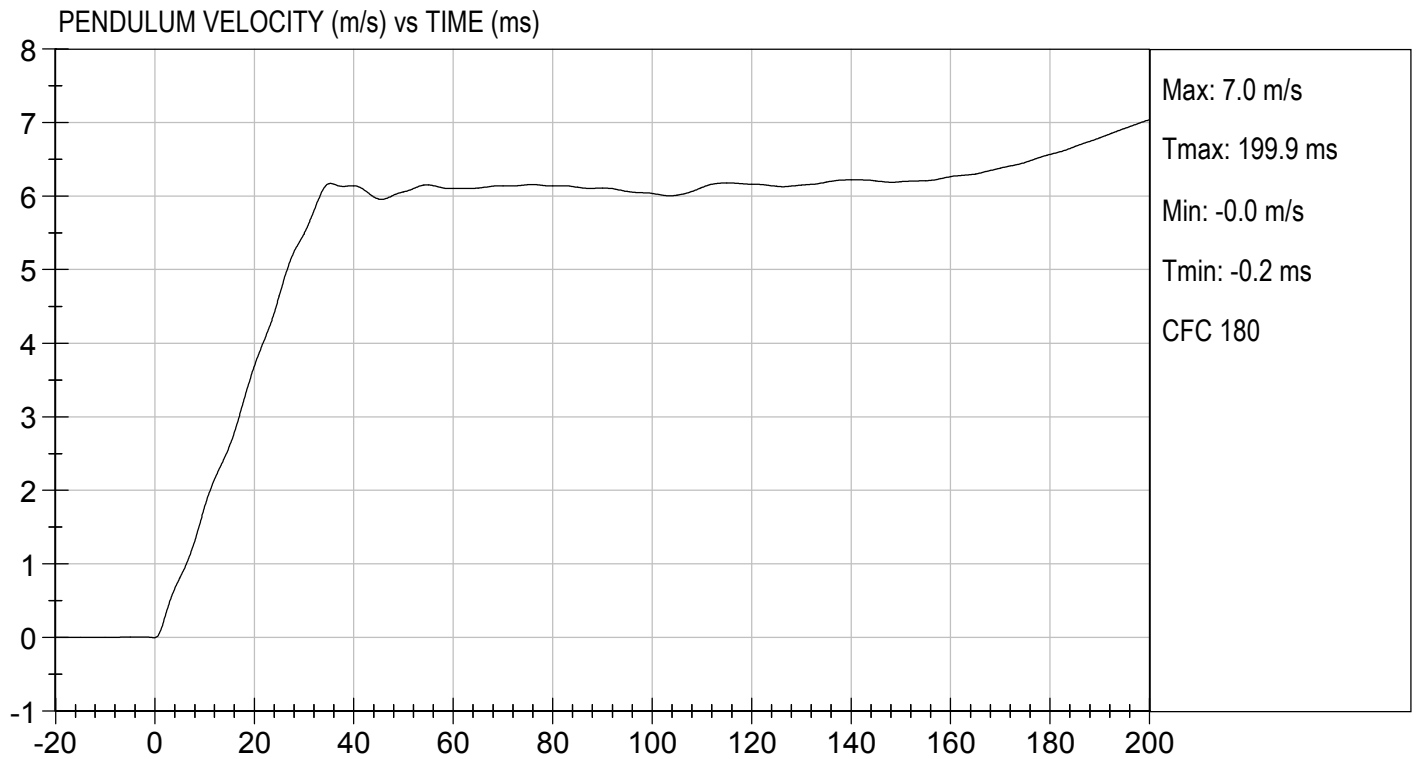
05/27/2021
Test Date


Approved By



TEST DESC: NECK EXTENSION
VELOCITY: 20.08 ft/s, 6.12 m/s

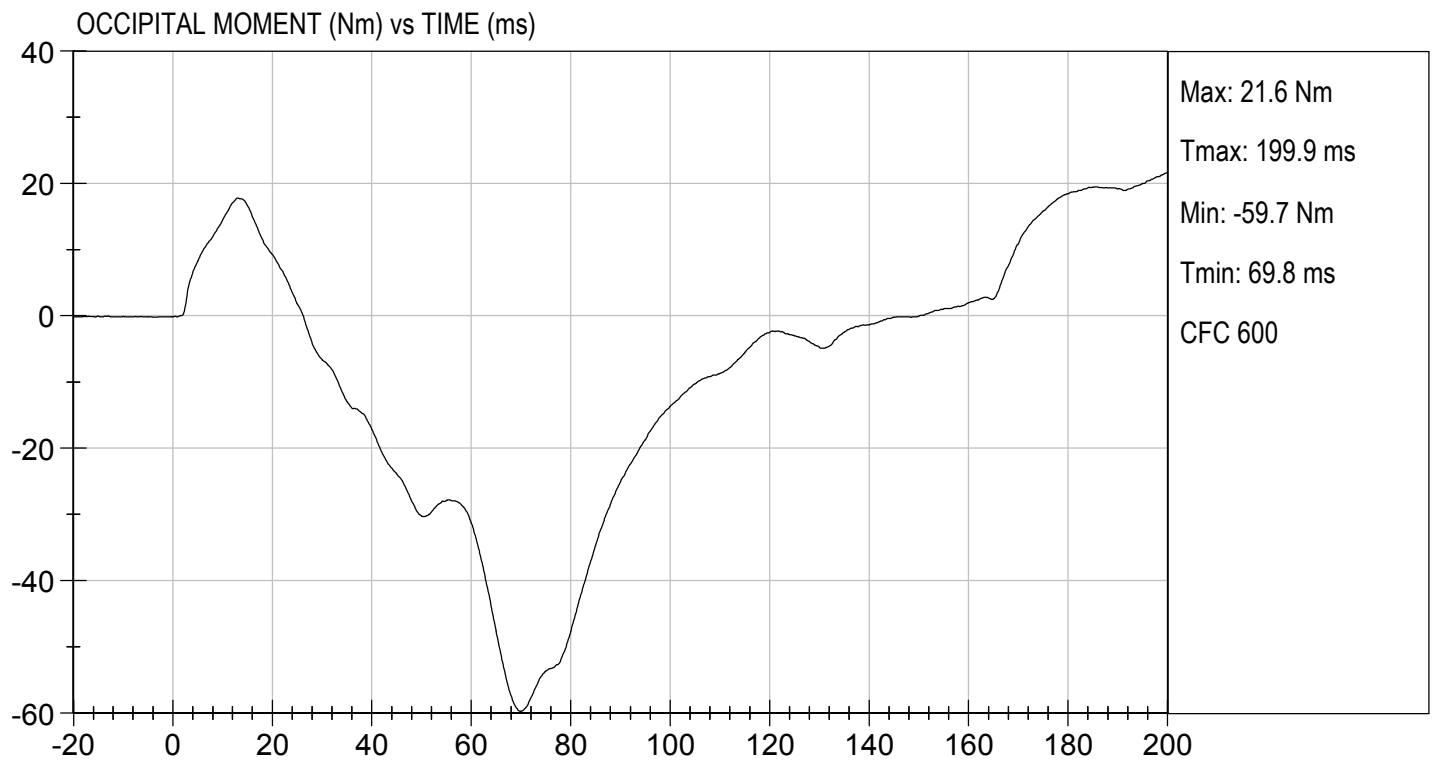
TEST DATE: 05/27/2021
TEST #: D211863





TEST DESC: NECK EXTENSION
VELOCITY: 20.08 ft/s, 6.12 m/s

TEST DATE: 05/27/2021
TEST #: D211863



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: DH1659

Test I.D: D211864

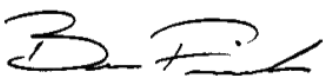
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Relative Humidity	%	10 to 70	46	Pass
Probe Speed	m/s	6.59 to 6.83	6.77	Pass
Peak Deflection	mm	50 to 58	51	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4386	Pass
Internal Hysteresis	%	69 to 85	75	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4449	Pass
			Overall Test Results	Pass



Laboratory Technician

05/26/2021

Test Date

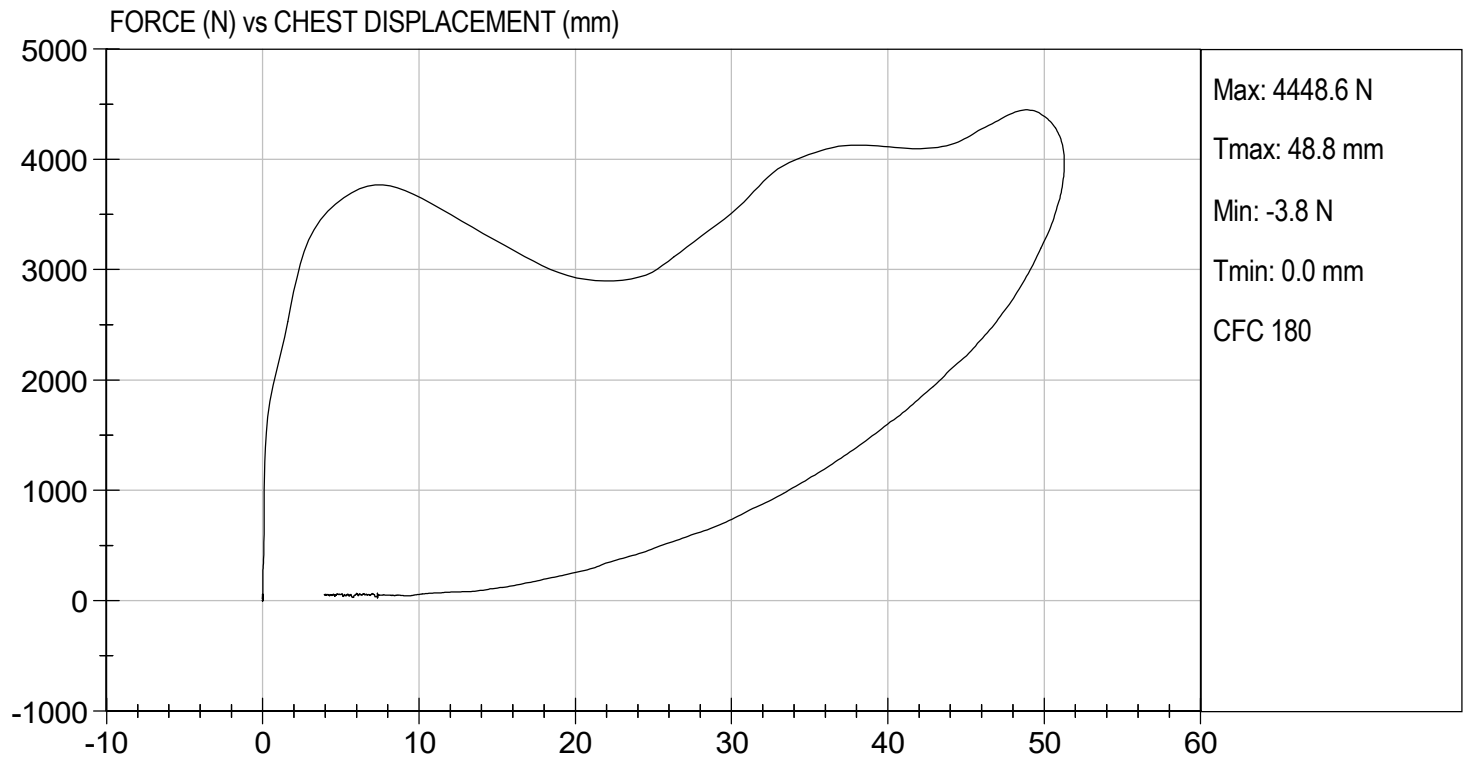


Approved By



TEST DESC: THORAX IMPACT
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 05/26/2021
TEST #: D211864



MGA RESEARCH CORPORATION

RIGHT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: DH1659

Test I.D: D211865

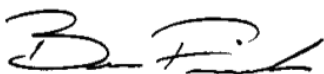
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Probe Speed	m/s	2.07 to 2.13	2.10	Pass
Maximum Force	N	3450 to 4060	3596	Pass
Overall Test Results				Pass



Laboratory Technician

05/27/2021

Test Date

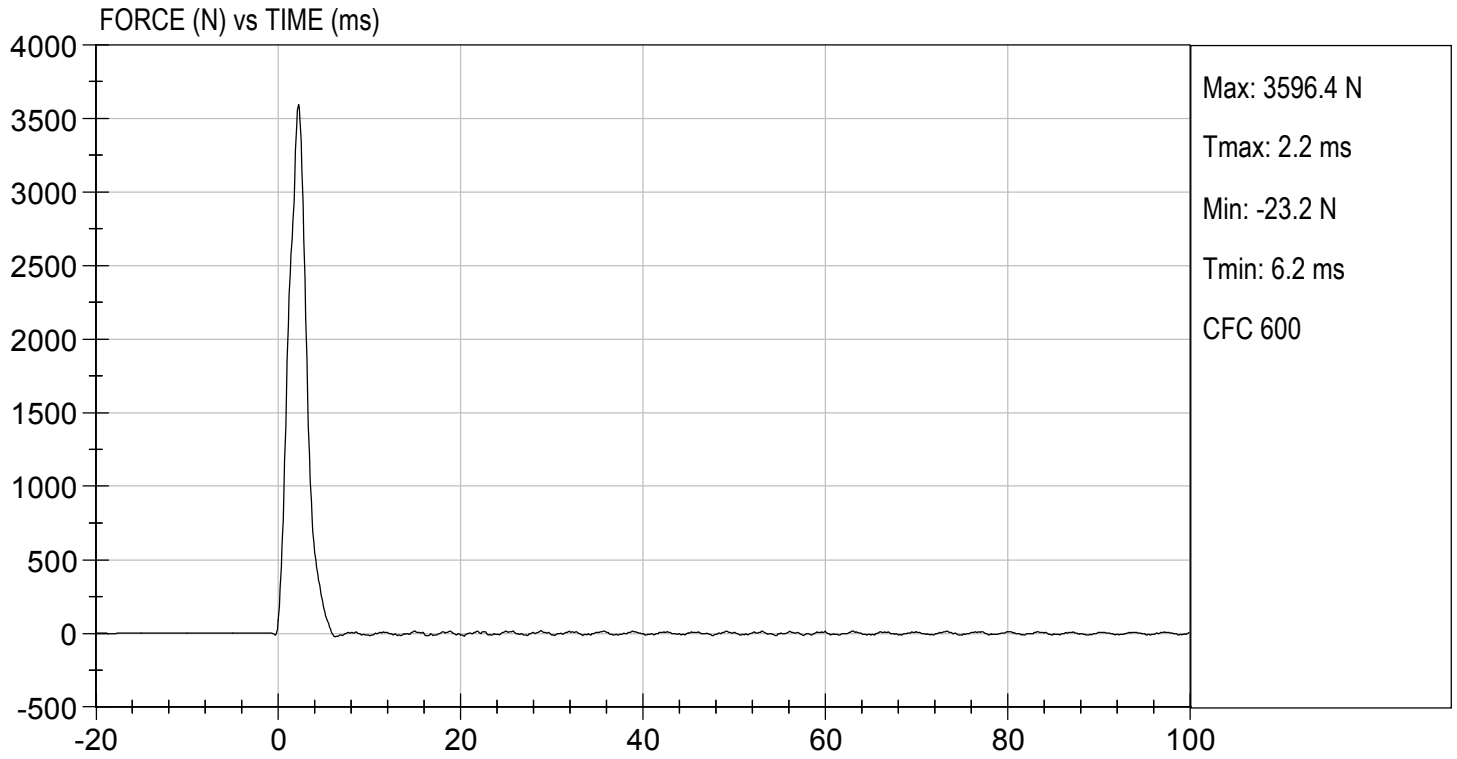


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TEST DESC: RIGHT KNEE
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 05/27/2021
TEST #: D211865



MGA RESEARCH CORPORATION

**LEFT KNEE IMPACT TEST
HYBRID III 5TH PERCENTILE**

ATD Serial No: DH1659

Test I.D: D211866

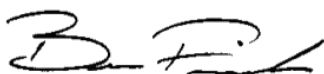
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Probe Speed	m/s	2.07 to 2.13	2.11	Pass
Maximum Force	N	3450 to 4060	3862	Pass
Overall Test Results				Pass



Laboratory Technician

05/27/2021

Test Date

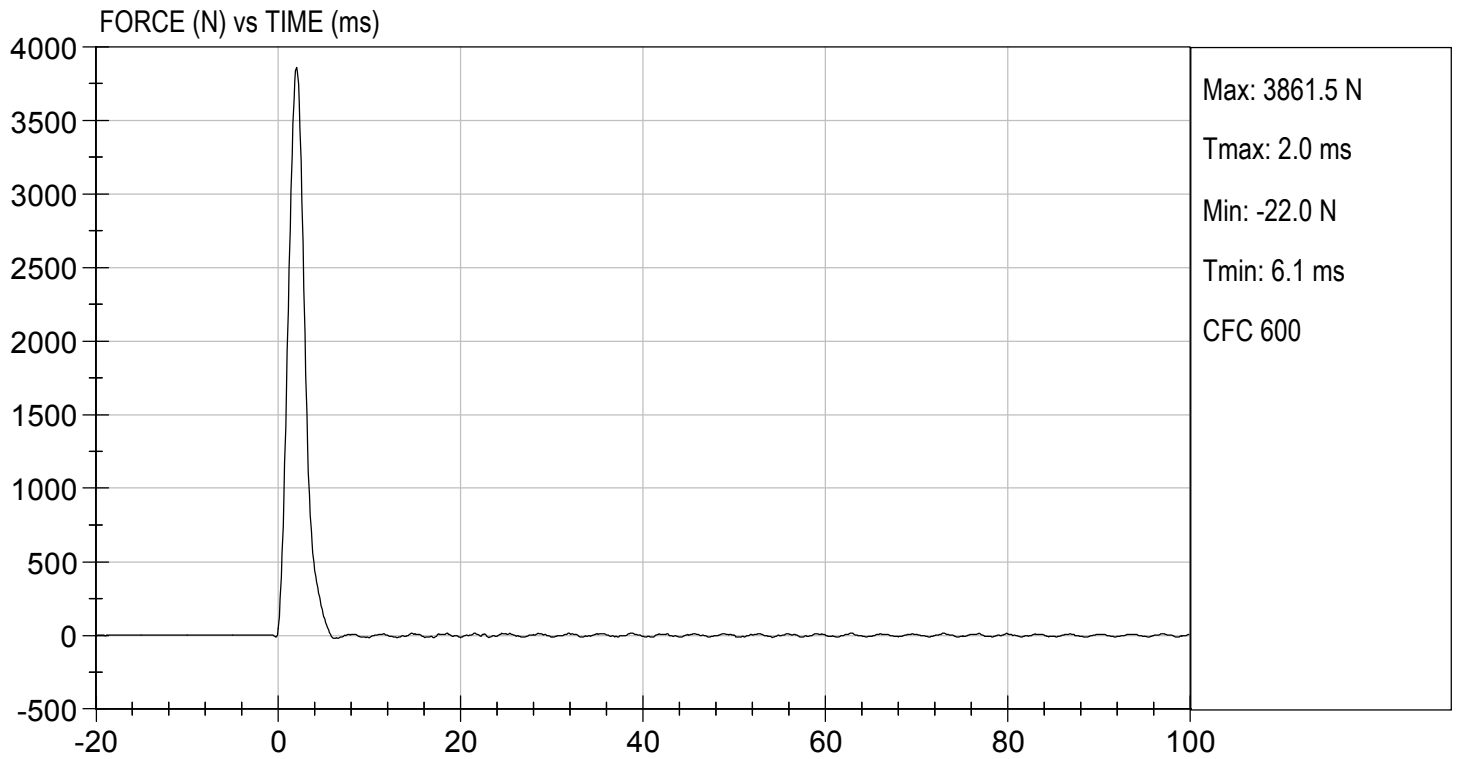


Approved By



TEST DESC: LEFT KNEE
VELOCITY: 6.92 ft/s, 2.11 m/s

TEST DATE: 05/27/2021
TEST #: D211866



MGA RESEARCH CORPORATION

TORSO FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: DH1659

Test I.D: D211867

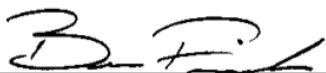
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	34	Pass
Initial Angle	deg	0 to 20	19	Pass
Return Angle	deg	+/- 8	2	Pass
Force at 45 deg	N	320 to 390	365	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.5	Pass
Overall Result				Pass



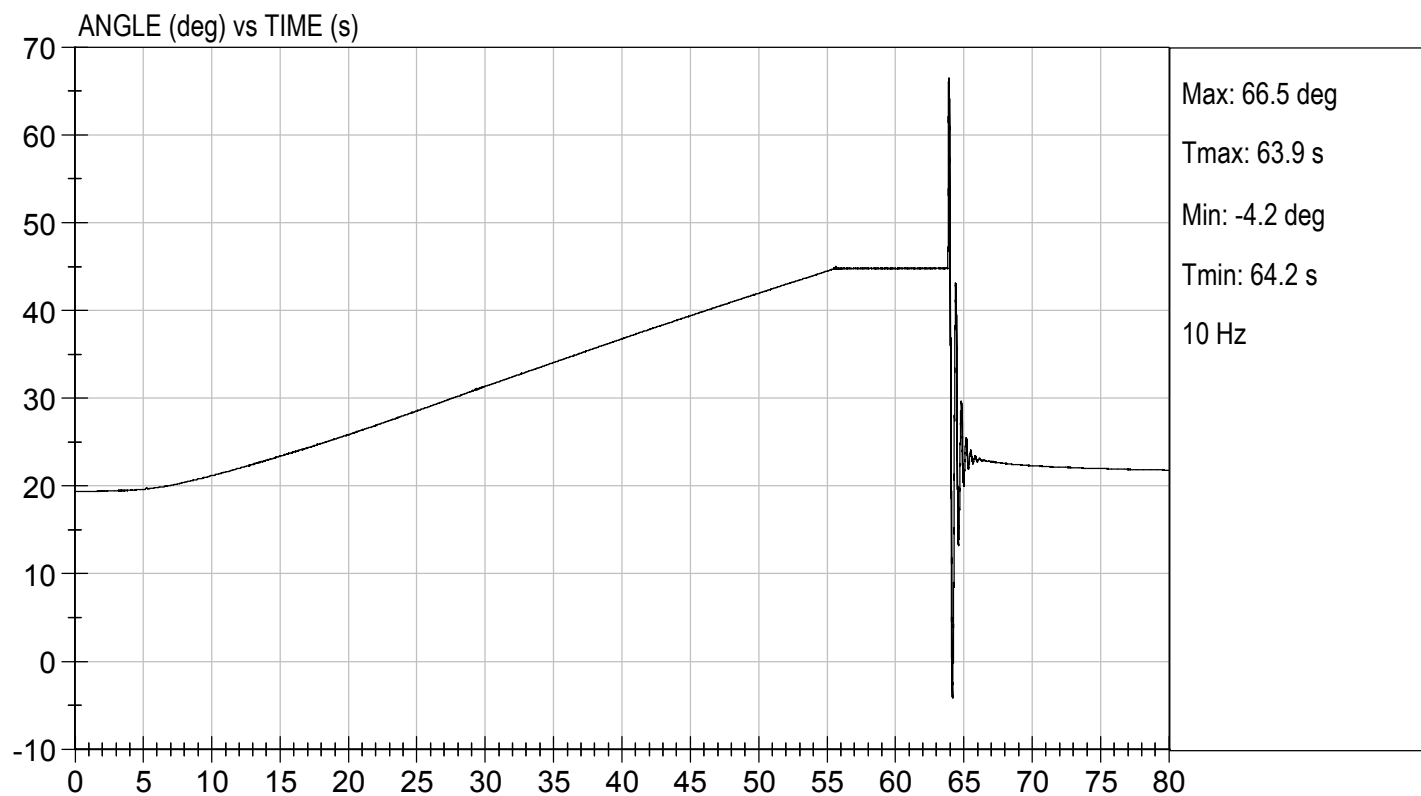
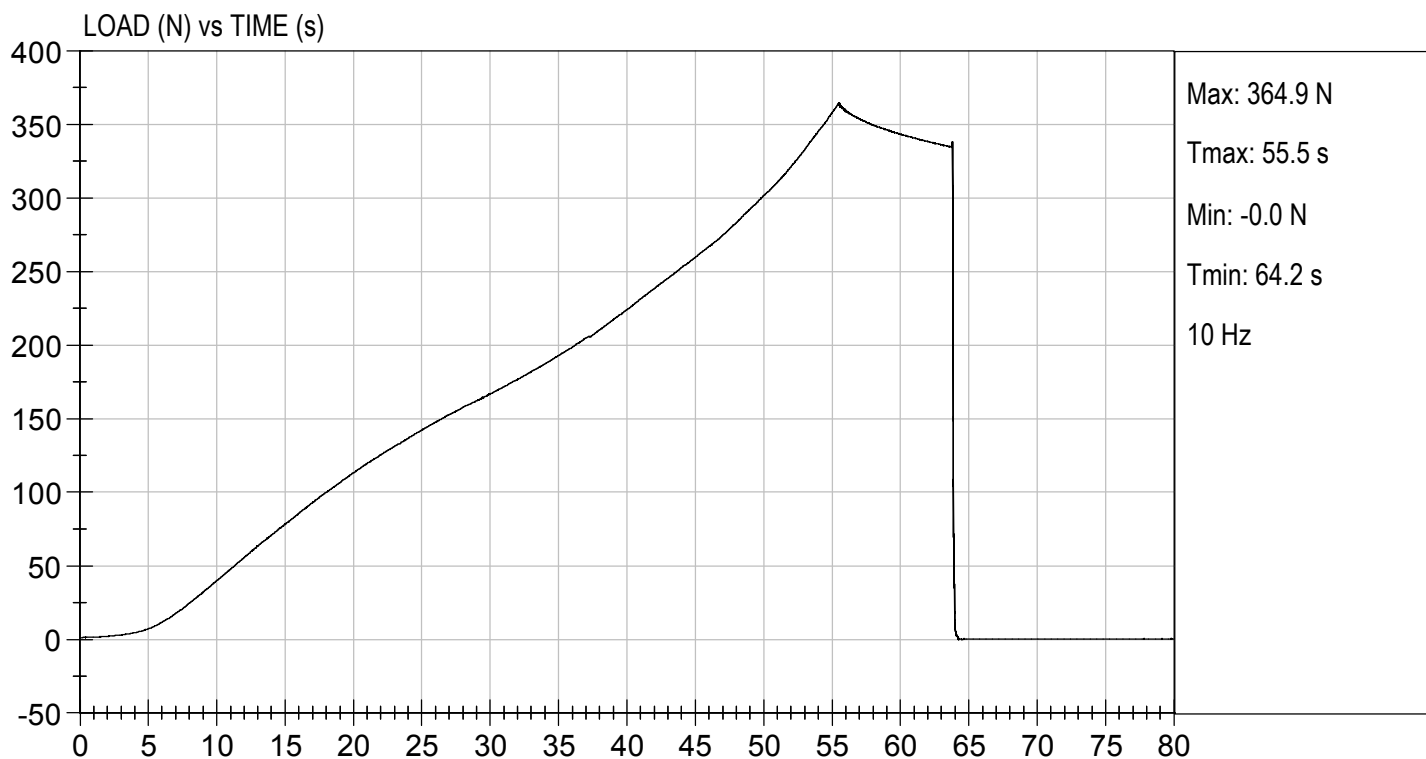
Laboratory Technician

05/27/2021

Test Date



Approved By



APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – DRIVER DUMMY INSTRUMENTATION

Instrument Location			Axis	Hybrid III 50 th S/N 351		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers	Primary		X	P79741	Endevco	03/01/2021
			Y	P79743	Endevco	03/01/2021
			Z	P79744	Endevco	03/01/2021
	Redundant		X	P94834	Endevco	03/01/2021
			Y	P94856	Endevco	03/01/2021
			Z	P97412	Endevco	03/01/2021
Head Angular Rate Sensors			X	ARS7402	DTS	08/04/2020
			Y	ARS7416	DTS	08/04/2020
			Z	ARS7366	DTS	08/04/2020
Upper Neck Load Cell			Fx, Fy, Fz Mx, My, Mz	NG2203	Denton	02/10/2021
Chest Accelerometers	Primary		X	P86792	Endevco	03/01/2021
			Y	P86793	Endevco	03/01/2021
			Z	P88348	Endevco	03/01/2021
	Redundant		X	P88666	Endevco	03/01/2021
			Y	P88667	Endevco	03/01/2021
			Z	P94109	Endevco	03/01/2021
Chest Potentiometer			X	351	Servo	03/02/2021
Pelvis Accelerometers			X	P95526	Endevco	03/01/2021
			Y	P96038	Endevco	03/01/2021
			Z	P97742	Endevco	03/01/2021
Femur Load Cells	Right	Primary	Z	FG121	Denton	03/02/2021
		Redundant	Z	FG121	Denton	03/02/2021
	Left	Primary	Z	FG122	Denton	03/02/2021
		Redundant	Z	FG122	Denton	03/02/2021
Tibia Load Cells	Right	Upper	Mx, My, Fz	TG408	Denton	02/09/2021
		Lower	Mx, My, Fz	AG116	Denton	02/09/2021
	Left	Upper	Mx, My, Fz	TG480	Denton	02/09/2021
		Lower	Mx, My, Fz	AG502	Denton	02/09/2021
Foot Accelerometers	Right	Rear	X	T22486	Endevco	03/01/2021
			Z	P97382	Endevco	03/01/2021
		Front	Z	P82120	Endevco	03/01/2021
	Left	Rear	X	T16468	Endevco	03/01/2021
			Z	T16496	Endevco	03/01/2021
		Front	Z	T16501	Endevco	03/01/2021
Seat Belt Load Cells		Lap				
		Shoulder				

TABLE 2 – FRONT PASSENGER DUMMY INSTRUMENTATION

Instrument Location			Axis	Hybrid III 5 th S/N DH1659		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers	Primary		X	P97377	Endevco	02/10/2021
			Y	P94800	Endevco	02/10/2021
			Z	P94802	Endevco	02/10/2021
	Redundant		X	P94799	Endevco	02/10/2021
			Y	P94801	Endevco	02/10/2021
			Z	P94803	Endevco	02/10/2021
Head Angular Rate Sensors			X	ARS7423	DTS	03/02/2021
			Y	ARS7502	DTS	03/02/2021
			Z	ARS7586	DTS	03/02/2021
Upper Neck Load Cell		Fx, Fy, Fz Mx, My, Mz	NG2256	Denton	04/27/2021	
Chest Accelerometers	Primary		X	P94793	Endevco	02/10/2021
			Y	P95322	Endevco	02/10/2021
			Z	P88719	Endevco	02/10/2021
	Redundant		X	P94794	Endevco	02/10/2021
			Y	P95370	Endevco	02/10/2021
			Z	P94785	Endevco	02/10/2021
Chest Potentiometer		X	DH1659	Servo	02/10/2021	
Pelvis Accelerometers			X	P94798	Endevco	02/10/2021
			Y	P97705	Endevco	02/10/2021
			Z	P82646	Endevco	02/10/2021
Femur Load Cells	Right	Primary	Z	FG126	Denton	02/10/2021
		Redundant	Z	FG126	Denton	02/10/2021
	Left	Primary	Z	FG127	Denton	02/10/2021
		Redundant	Z	FG127	Denton	02/10/2021
Tibia Load Cells	Right	Upper	Mx, My, Fz	TG467	Denton	04/28/2021
		Lower	Mx, My, Fz	AG491	Denton	04/28/2021
	Left	Upper	Mx, My, Fz	TG478	Denton	04/28/2021
		Lower	Mx, My, Fz	AG500	Denton	04/28/2021
Foot Accelerometers	Right	Rear	X	P94795	Endevco	02/10/2021
			Z	P94796	Endevco	02/10/2021
		Front	Z	P94797	Endevco	02/10/2021
	Left	Rear	X	P83167	Endevco	02/10/2021
			Z	P83168	Endevco	02/10/2021
		Front	Z	P83169	Endevco	02/10/2021
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	A370259	MSI	03/05/2021
			Z	T22865	Endevco	03/15/2021
		Redundant	X	A370267	MSI	03/05/2021
	Right	Primary	X	PCB1315	PCB	02/19/2021
			Z	PCB1080	PCB	02/19/2021
		Redundant	X	PCB1033	PCB	06/17/2020
Engine Accelerometers		Top	X	A356235	MSI	12/18/2020
		Bottom	X	A340696	MSI	04/19/2021