SPOLE-KAR-18-002

RESEARCH SIDE IMPACT POLE TEST

HONDA OF AMERICA MFG INC

2018 HONDA ACCORD 4-DOOR SEDAN

NHTSA No: R20185381

PREPARED BY:

APPLUS IDIADA KARCO ENGINEERING, LLC.

9270 HOLLY ROAD

ADELANTO, CA 92301

FEBRUARY 7, 2020

FINAL REPORT

PREPARED FOR:

U.S. DEPARTMENT OF TRANSPORTATION

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

OFFICE OF VEHICLE CRASHWORTHINESS RESEARCH

MAIL CODE: NSR-210

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Prepared By: _____

Mr. Amjad A. Jadallah, Project Manager
Applus IDIADA KARCO Engineering, LLC.

Reviewed By: _____

Mr. Michael L. Dunlap, Director of Operations
Applus IDIADA KARCO Engineering, LLC.

Approved By: _____

Mr. Steven D. Matsusaka, Engineering Manager
Applus IDIADA KARCO Engineering, LLC.

Approval Date: February 26, 2020

FINAL REPORT ACCEPTANCE BY NHTSA:

_____

Division Chief, Structures and Restraint Research
NHTSA, Office of Crashworthiness Research

Date: _____

_____

COTR, Structures and Restraints Research
NHTSA, Office of Vehicle Crashworthiness Research

Date: _____

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Final Report of Research Research Side Impact Pole Testing of a 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381	February 26, 2020
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15. Supplementary Notes

16. Abstract

A 32.20 km/h, 75° Oblique Rigid Pole Research Side Impact Test was conducted on the subject 2018 Honda Accord 4-door Sedanin accordance with the specifications of the Laboratory Test Procedure for the Research Side Impact Rigid Pole Test for the generation of consumer information on vehicle side pole crash protection. The test was conducted at the Applus IDIADA KARCO Engineering, LLC. facility in Adelanto, California on September 11, 2019.

The impact velocity was 32.01 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 32.2°C. The test vehicle post-test maximum crush was 319 mm at level 3. The test vehicle's performance was as follows:

Measurement Description	Driver ATD (WORLDSID-50M)	
	Units	Result
Head Injury Criteria (HIC_{15})		154.9
Brain Injury Criterion (BrIC)		0.52
Peak Shoulder Force	N	-2656.7
Peak Thoracic Rib Deflection	mm	51.1
Peak Abdominal Rib Deflection	mm	27.6
Pubic Symphysis Force	N	-906.3
Peak Resultant Sacro-Iliac Force	N	2523.0

Both the left front driver and left rear passenger doors were jammed shut. The doors on the struck side of the vehicle did not separate from the body at the hinges or latches. The opposite side doors did not open during the side impact event.

New Car Assessment Program (NCAP) Side Impact Moving Deformable Barrier (MDB) ES-2re SID-IIs	Copies of this report are available from: National Highway Traffic Safety Admin. Technical Reference Division 1200 New Jersey Ave., SE Room W43-410 Washington, DC 20590

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SECTION 1
TEST PURPOSE AND PROCEDURE

This rigid pole side impact test is a part of the Federal Motor Vehicle Safety Standard 214 Side Impact Protection program. It was conducted for the National Highway Traffic Safety Administration's (NHTSA) under DTNH2214D00360L by Applus IDIADA KARCO Engineering, LLC in Adelanto, California. The purpose of this test was to evaluate the repeatability, reproducibility, and durability of the WorldSID 50th percentile male ATD (WorldSID-50M) equipped with RibEye™, to determine whether the dummy is a viable option to replace the EuroSID-2 dummy with rib extension modifiers (ES-2re) in future side impact rigid pole tests conducted by NHTSA. The test was conducted using NHTSA's 'LABORATORY TEST PROCEDURE FOR THE NEW CAR ASSESSMENT PROGRAM SIDE IMPACT RIGID POLE TEST' dated October 2015 as a guideline.

SECTION 2
SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2018 Honda Accord 4-Door Sedan. The subject vehicle was towed into the rigid pole at an angle of 74.5° and a velocity of 32.01 km/h. The test was conducted by Applus IDIADA KARCO Engineering, LLC. in Adelanto, California on September 11, 2019. Pre-test and post-test photographs of the test vehicle, the rigid pole, and the side impact dummy (WorldSID-50M) are included in Appendix A.

One restrained Side Impact Dummy (WorldSID-50M) S/N EB8888, was placed in the driver (Position #1) designated seating position according to the instructions specified in the VRTC WS50M_THOR Draft Seating Procedures[1]. The dummy was calibrated prior to this test using specifications found in the Humanetics User Manual[2]. The side impact test was documented by two (2) real-time cameras and nine (9) high-speed digital cameras. Camera locations and other pertinent camera information are included in this report.

The passenger front airbag and torso airbags were disabled prior to performing the test.

The WorldSID dummy was instrumented with one-hundred seventeen (117) dummy channels of acceleration, force, moment, angle, and displacement data were collected for this test. It was also instrumented with a Ribeye system manufactured by Boxboro Systems[3] in the chest in place of the IRTRACCs. Each rib (1 shoulder, 3 thorax, and 2 abdomen) had three LEDs placed at the middle, front and rear location to measure X, Y and Z position location. The position measurements were used to calculate a change of length in each rib at each location.

A total of one-hundred sixty one (161) channels of data were recorded. Appendix A contains pre-test and post-test photographs. Appendix B contains the vehicle, barrier and dummy response data traces. A summary of the side impact dummy (WorldSID-50M) configuration and verification test data can be found in Appendix C. Appendix D contains miscellaneous test information. Appendix E contains Ribeye information.

[1] See Appendix G for WorldSID Draft Seating Procedure used for this testing.
[2] https://rosap.ntl.bts.gov/view/dot/41900
[3] http://www.boxborosystems.com/ribeye.html

Dummy Injury readings were recorded as follows:

Measurement Description	Driver ATD (WORLDSID-50M)	
	Units	Result
Head Injury Criteria (HIC_{15})		154.9
Brain Injury Criterion (BrIC)		0.52
Peak Shoulder Force	N	-2656.7
Peak Thoracic Rib Deflection	mm	51.1
Peak Abdominal Rib Deflection	mm	27.6
Pubic Symphysis Force	N	-906.3
Peak Resultant Sacro-Iliac Force	N	2523.0

Explanations for Data Acquisition Anomalies:

Driver Shoulder Rib Rear LED Position X: Data dropout from 48.2 to 65.5 msec known condition with LED out of range

Driver Shoulder Rib Rear LED Position Y: Data dropout from 48.2 to 65.5 msec known condition with LED out of range

Driver Shoulder Rib Rear LED Position Z: Data dropout from 48.2 to 65.5 msec known condition with LED out of range

Driver Seat Track at H-Point Acceleration Y: Questionable data after 32.0 msec appears to detach from mounting

Load Cell Pole #5 Fx: No Data Load Cell Failed

General Comments-

Upon impact the driver's seat back collapsed.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19

CONVERSION FACTORS

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	miles/hr	km/hr	1.609344
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.574
Pressure	Tire Pressures	lbf/in^2	kPa	6.895
Temperature	General Use	^oF	^oC	=(Tf -32)/1.8
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf-ft	N•m	1.355

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	R20185381
Model Year	2018
Make	Honda
Model	Accord
Body Style	4-Door Sedan
VIN	1HGCV1F1XJAL30725
Body Color	Red
Odometer Reading (km / mi)	6 / 4
Engine Displacement (L)	1.5
Type / No. of Cylinders	Inline 4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	CVT
Overdrive	No
Final Drive	FWD
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

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

Does Owner's Manual provide instructions to turn off automatic door locks?	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Honda of America MFG Inc
Date of Manufacture	Mar-18
Vehicle Type	Passenger Car

GVWR (kg)	1950
GAWR Front (kg)	1070
GAWR Rear (kg)	960

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				385.0	*A*
DSC x 68.04 (kg)				340.2	*B*
Cargo Weight (RCLW) (kg)				44.8	*A-B*

VEHICLE SEAT TYPE

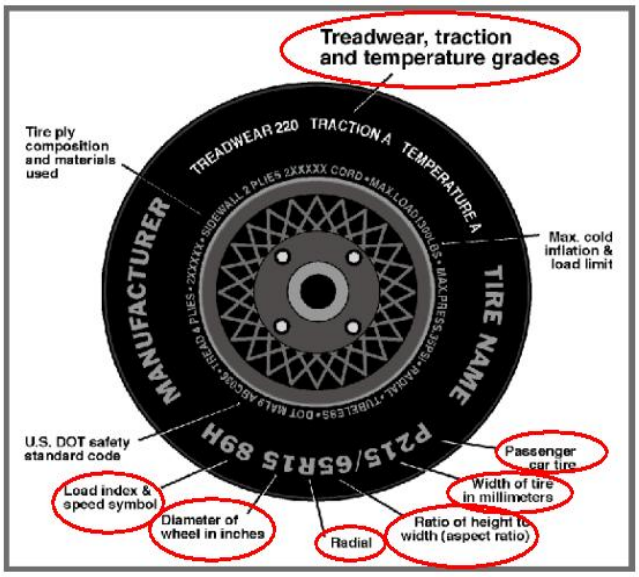
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable w/ Lever	Adjustable w/ Knob
Front Seat	Yes					Yes	
Rear or Second Row Seat			Yes		Yes		
Third Row Seat							

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	220	220
Recommended Tire Size	225/50R17	225/50R17
Tire Size on Vehicle	225/50R17	225/50R17
Tire Manufacturer	Hankook	Hankook
Tire Model	Kinergy GT	Kinergy GT
Treadware	500	500
Traction Grade	A	A
Temperature Grade	A	A
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	2 Steel, 1 Polyester, 1 Nylon	2 Steel, 1 Polyester, 1 Nylon
Load Index/Speed Symbol	94V	94V
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Left	1T7AB 1BH0 5017	1T7AB 1BH0 5017
DOT Safety Code Right	1T7AB 1BH0 5017	1T7AB 1BH0 5017

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	220	220	220	220
Tire Placard	kPa	220	220	220	220
Owner's Manual	kPa	220	22	220	220
As Tested	kPa	220	220	220	220

TEST VEHICLE AXLE WEIGHTS

		As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
	Units	Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	425.5	291.0		440.0	353.5		449.5	343.0	
Right	kg	429.0	274.5		432.0	305.5		431.0	314.5	
Ratio	%	60.2%	39.8%	100.0%	57.0%	43.0%	100.0%	57.2%	42.8%	100.0%
Total	kg	854.5	565.5	1420.0	872.0	659.0	1531.0	880.5	657.5	1538.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1420.0	A
Actual Weight of 1 WORLDSID ATD	kg	74.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	44.8	C
Calculated Vehicle Target Wt (TVTW)	kg	1538.8	A+B+C

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight -4.5 kg to -9.0 kg)? ☒ **Yes** ☐ **No**

TEST VEHICLE ATTITUDE AND CG

Measurement Description	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	°	1.4	-0.9	1.5	Yes
Front Passenger Sill Angle (front-to-rear)*	°	-1.2	0.0	-0.9	Yes
Front Bumper-Line Angle (left-to-right)**	°	-1.5	0.0	-1.4	Yes
Rear Bumper-Line Angle (left-to-right)**	°	1.3	-0.3	1.3	Yes
Vehicle CG (Aft of Front Axle)	mm	1123	1213	1205	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	7	29	24	

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

***The "As Tested" vehicle attitude angle measurements must be within "As Delivered" and the "Fully Loaded" vehicle attitude measurements at each location. Indicate "Yes" or "No" for "Meets Requirement"

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Trunk Trim and Spare Tire	15.0
Ballast / Equipment Added	70.0

Test Height Adjustable Setting (If Applicable)	

DATA SHEET NO. 2

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19

SEAT POSITIONING

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

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	4.2	0.0	2.1
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid Fore/Aft	Forwardmost
Driver Seat	2.1	240	Max			
			Mid	227	240	250
			Min			
Front Passenger Seat	Fixed	240	Max			
			Mid	228	240	250
			Min			
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed

DATA SHEET NO. 2 … (CONTINUED)

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19

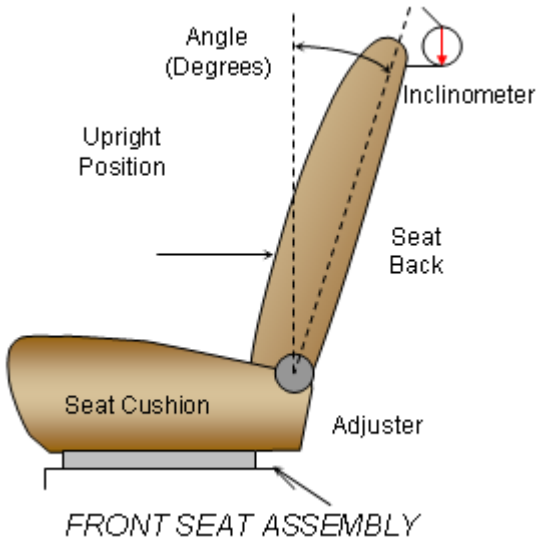
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	240	25	120	12
Front Passenger Seat	240	25	120	12
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

*Detent zero (0) is the forward most detent

SEAT BACK ADJUSTMENT

The driver's seat back is positioned 2.9° rearward measured at the head rest post per Form 1 instructions for a Side Impact using a 50th Male ATD. The front passenger's seat back is positioned in a similar manner to the driver's seat. The seat track was positioned to mid-track fore and aft travel.



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/Seated Dummy	65.1	18	2.9	4
Front Passenger Seat	63.6	24	2.9	4
Front Center Seat				
Struck Side Rear Seat w/Seated Dummy	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

*Detent zero (0) is the forward most detent

DATA SHEET NO. 2 … (CONTINUED)

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1. The positions are marked H, M3, M2, …, L from top to bottom.

	Total No. of Positions	Placed in Position
Driver Seat	4	H

HEAD RESTRAINT ADJUSTMENT

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

	Total No. of Positions	Placed in Position
Driver Seat	4	H

DATA SHEET NO. 2 … (CONTINUED)

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

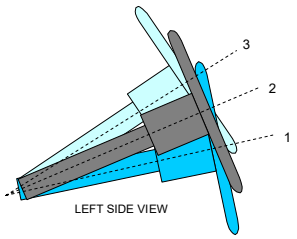
Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19

STEERING COLUMN ADJUSTMENT

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

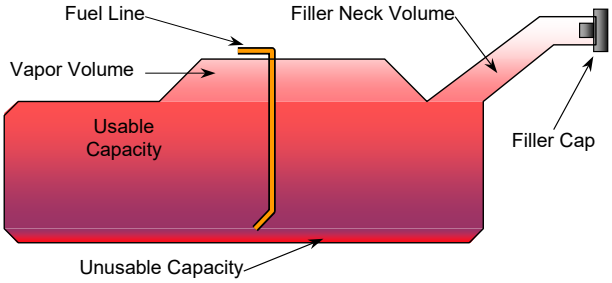
	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	18.7	95
Geometric Center - Position 2	21.2	123
Uppermost - Position 3	23.7	150
Telescoping Steering Wheel Travel		55
Test Position	21.2	123



STEERING COLUMN ASSEMBLY

FUEL PUMP

The fuel pump starts pumping fuel when the key is in the “ON” position.



VEHICLE FUEL TANK ASSEMBLY

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	56.02
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	56.02
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	52.10
Actual amount of Solvent Used in Test	52.10
1/3 of Usable Capacity	18.67

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

DATA SHEET NO. 3

WORLDSID INSTRUMENTATION DATA

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19

No.	Description	Axes	Units	Positive Direction		Negative Direction	
				Max	Time (ms)	Min	Time (ms)
1	Head Acceleration	X	g	22.0	58.6	-4.0	139.6
		Y	g	5.3	89.7	-8.4	36.8
		Z	g	38.3	51.7	-8.1	143.6
2	Head Angular Velocity	X	deg/sec	1046.0	122.2	-787.4	201.0
		Y	deg/sec	655.8	112.7	-423.2	58.6
		Z	deg/sec	762.6	271.3	-944.3	41.6
3	Upper Neck Force	X	g	171.4	138.3	-133.8	73.8
		Y	g	108.9	263.0	-417.3	58.7
		Z	g	750.0	45.3	-213.9	89.9
4	Upper Neck Moment	X	(Nm)	16.1	59.8	-26.9	84.9
		Y	(Nm)	5.7	99.1	-23.3	50.1
		Z	(Nm)	7.2	247.5	-11.5	94.2
5	Lower Neck Force	X	g	191.3	107.5	-365.8	54.7
		Y	g	319.8	48.1	-433.2	112.0
		Z	g	878.5	45.5	-280.2	89.9
6	Lower Neck Moment	X	(Nm)	23.5	261.7	-71.7	145.2
		Y	(Nm)	28.6	68.9	-42.4	136.3
		Z	(Nm)	7.4	247.5	-12.7	94.2
7	T1 Acceleration	X	g	4.3	105.3	-16.4	54.8
		Y	g	49.1	48.4	-13.2	102.4
		Z	g	9.6	60.0	-5.7	107.1
8	T4 Acceleration	X	g	10.5	60.0	-6.7	106.9
		Y	g	38.8	58.3	-13.4	94.3
		Z	g	3.8	69.6	-11.5	54.3
9	T12 Acceleration	X	g	8.4	69.0	-11.8	37.3
		Y	g	40.2	53.1	-25.9	92.2
		Z	g	7.2	60.5	-8.2	102.7
10	Shoulder Force	X	N	97.9	272.5	-1041.1	61.8
		Y	N	81.5	120.0	-2656.5	50.3
		Z	N	659.3	49.7	-139.9	121.1
11	Pubic Symphysis	Y	N	7.4	2.9	-906.1	43.5
12	Sacro-Iliac Left Force	X	N	218.8	138.6	-385.3	58.2
		Y	N	2.9	12.2	-2509.9	45.4
		Z	N	0.3	0.1	-426.2	71.4
13	Sacro-Iliac Left Moment	X	Nm	23.8	71.3	-30.5	42.1
		Y	Nm	22.5	58.2	-10.9	38.8
		Z	Nm	27.0	34.9	-27.5	65.0
14	Lumbar Force	X	N	472.4	72.1	-192.3	136.6
		Y	N	973.1	52.8	-86.9	280.3
		Z	N	1295.4	62.8	4.5	1.5

DATA SHEET NO. 3…(CONTINUED)

WORLDSID INSTRUMENTATION DATA

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19

No.	Description	Axes	Units	Positive Direction		Negative Direction	
				Max	Time (ms)	Min	Time (ms)
15	Lumbar Moment	X	Nm	40.8	57.1	-2.9	90.8
		Y	Nm	11.3	135.6	-24.0	76.6
		Z	Nm	22.5	52.6	-10.1	113.9
16	Pelvis Acceleration	X	g	15.8	58.2	-11.6	28.7
		Y	g	45.7	43.0	-16.9	84.5
		Z	g	9.7	36.1	-8.1	58.0
17	Left Femur Force	X	N	15.8	19.7	-146.3	43.8
		Y	N	109.3	99.1	-319.2	40.0
		Z	N	756.4	46.1	-134.3	0.2
18	Left Femur Moment	X	Nm	163.8	46.8	-8.4	20.2
		Y	Nm	60.1	46.1	-4.9	186.0
		Z	Nm	30.1	50.0	-4.3	18.9
19	Left Femoral Neck Force	X	N	472.4	46.4	-5.3	3.8
		Y	N	98.5	19.1	-1712.5	46.6
		Z	N	134.1	152.1	-1539.4	46.6
20	Shoulder Rear Ribeye Position	X	mm	9.0	48.2	-79.4	65.6
		Y	mm	9.0	48.2	-84.8	19.9
		Z	mm	9.0	48.2	-65.9	39.6
		R	mm	17.6	46.5	-4.9	223.0
21	Shoulder Middle Ribeye Position	X	mm	-6.4	174.8	-43.9	57.2
		Y	mm	-37.1	57.1	-96.8	19.9
		Z	mm	-37.5	118.6	-69.5	39.6
		R	mm	51.1	50.3	-1.6	19.9
22	Shoulder Front Ribeye Position	X	mm	32.2	98.4	9.0	53.2
		Y	mm	9.0	53.2	-83.5	20.8
		Z	mm	9.0	53.2	-73.8	39.1
		R	mm	53.3	65.4	-0.6	20.0
23	Thorax Rib 1 Rear Ribeye Position	X	mm	-18.9	66.1	-46.5	128.7
		Y	mm	-81.9	47.7	-105.5	82.5
		Z	mm	15.3	53.5	-10.2	34.7
		R	mm	19.8	58.5	-7.8	82.8
24	Thorax Rib 1 Middle Ribeye Position	X	mm	21.0	65.6	-11.6	133.0
		Y	mm	-79.4	47.8	-115.5	80.9
		Z	mm	18.0	53.6	-11.7	34.3
		R	mm	27.0	47.7	-7.4	81.0
25	Thorax Rib 1 Front Ribeye Position	X	mm	58.5	65.1	24.6	133.0
		Y	mm	-65.5	47.6	-106.8	81.8
		Z	mm	16.9	53.8	-12.4	34.3
		R	mm	23.1	47.5	-5.8	98.2
26	Thorax Rib 2 Rear Ribeye Position	X	mm	-16.9	65.1	-37.4	82.7
		Y	mm	-87.7	56.8	-102.8	80.6
		Z	mm	53.2	97.8	40.7	29.5
		R	mm	13.1	56.9	-5.8	82.7

DATA SHEET NO. 3…(CONTINUED)

WORLDSID INSTRUMENTATION DATA

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19

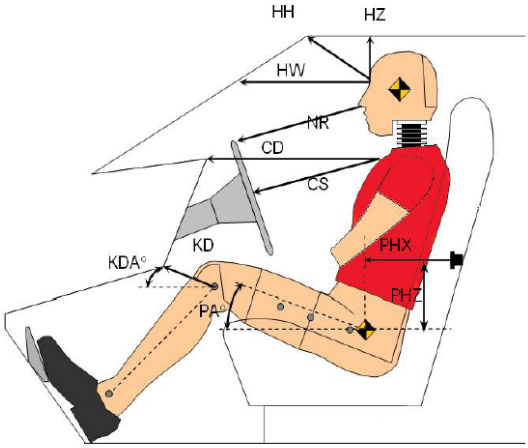
No.	Description	Axes	Units	Positive Direction		Negative Direction	
				Max	Time (ms)	Min	Time (ms)
27	Thorax Rib 2 Middle Ribeye Position	X	mm	20.5	65.3	-1.1	82.0
		Y	mm	-93.0	57.2	-114.5	81.1
		Z	mm	53.6	98.1	38.5	29.4
		R	mm	15.3	57.0	-5.1	83.7
28	Thorax Rib 2 Front Ribeye Position	X	mm	56.2	64.4	35.5	139.6
		Y	mm	-83.3	58.2	-105.8	82.5
		Z	mm	56.4	97.8	41.5	28.6
		R	mm	10.9	58.4	-4.2	98.0
29	Thorax Rib 3 Rear Ribeye Position	X	mm	-45.2	161.1	-54.2	39.4
		Y	mm	-79.3	55.3	-95.9	211.8
		Z	mm	-24.8	45.5	-37.3	26.6
		R	mm	13.3	59.5	-1.6	141.1
30	Thorax Rib 3 Middle Ribeye Position	X	mm	-11.4	64.5	-22.8	80.9
		Y	mm	-82.3	56.4	-104.6	145.7
		Z	mm	-23.1	45.7	-37.1	26.6
		R	mm	19.1	56.2	-2.5	145.7
31	Thorax Rib 3 Front Ribeye Position	X	mm	25.4	61.5	6.9	140.8
		Y	mm	-72.4	58.5	-95.1	143.5
		Z	mm	-24.6	45.4	-37.9	27.0
		R	mm	14.1	56.1	-0.8	300.9
32	Abdomen Rib 1 Rear Ribeye Position	X	mm	-28.2	120.8	-41.9	46.0
		Y	mm	-74.0	54.4	-96.0	369.2
		Z	mm	10.5	51.3	-3.8	247.2
		R	mm	17.3	58.7	-1.3	82.1
33	Abdomen Rib 1 Middle Ribeye Position	X	mm	5.1	65.3	-8.2	43.3
		Y	mm	-74.9	56.0	-103.4	193.5
		Z	mm	10.8	51.3	-3.9	245.0
		R	mm	27.6	56.0	-0.7	193.6
34	Abdomen Rib 1 Front Ribeye Position	X	mm	42.9	62.5	26.5	81.4
		Y	mm	-67.6	56.6	-95.8	283.7
		Z	mm	8.9	47.3	-4.1	229.3
		R	mm	21.8	54.1	-0.6	283.6
35	Abdomen Rib 2 Rear Ribeye Position	X	mm	-9.8	67.4	-23.9	39.3
		Y	mm	-74.2	55.5	-92.6	379.1
		Z	mm	40.3	46.2	28.6	229.3
		R	mm	14.8	59.0	-2.5	116.6
36	Abdomen Rib 2 Middle Ribeye Position	X	mm	25.8	65.3	9.6	38.4
		Y	mm	-78.3	56.3	-102.6	378.0
		Z	mm	39.2	44.9	26.1	228.5
		R	mm	22.5	56.2	-1.4	378.1
37	Abdomen Rib 2 Front Ribeye Ribeye Position	X	mm	61.3	61.4	41.1	104.7
		Y	mm	-69.6	56.0	-95.2	393.6
		Z	mm	39.6	44.9	28.0	229.3
		R	mm	17.9	54.4	-0.6	393.7

DATA SHEET NO. 4

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19



Driver Code	Description	Driver	
		Length (mm)	Angle (º)
HH	Head to Header	357	
HW	Head to Windshield	583	
HZ	Head to Roof	183	
NR	Nose to Rim	449	
CD	Chest to Dash	591	
CS	Chest to Steering Wheel	349	
KD(L)/KDA(L)°	Left Knee to Dash	113	12.4
KD(R)/KDA(R)°	Right Knee to Dash*		
PAX°	Pelvic Tilt Angle (x-axis)		0.0
PAY°	Pelvic Tilt Angle (y-axis)		0.6
PHX	Hip Point to Striker (x-axis)	278	
PHZ	Hip Point to Striker (z-axis)	261	
HAX°	Head Tilt Angle X		-0.6
HAY°	Head Tilt Angle Y		-0.8
TAX°	Thorax Tilt Angle X		1.2
TAY°	Thorax Tilt Angle Y		0.2
	Head Rest Angle		2.9
	H-Point Tool Angle		39.8
	Torso Angle		-5.0
	Windshield Angle		30.8

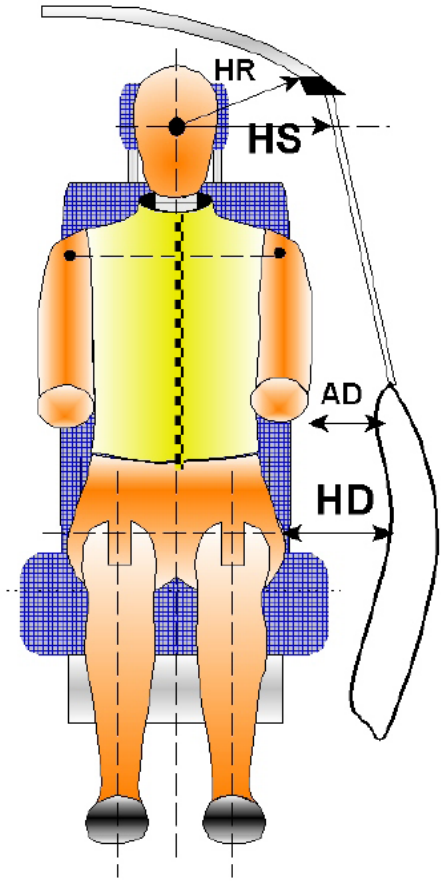
Note: All tilt sensor angles are recorded digitally. WorldSID neck was adjusted 2 notches down.

DATA SHEET NO. 5

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19



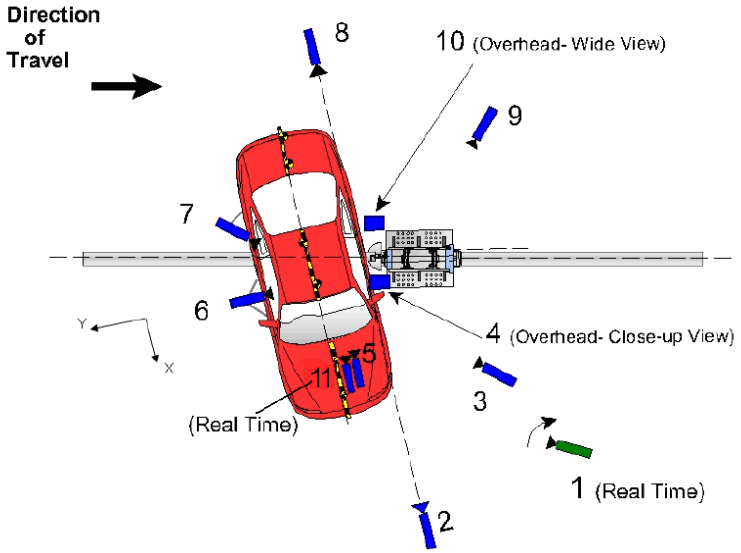
Code	Measurement Description	Units	Driver
HR	Head to Side Header	mm	250
HS	Head to Side Window	mm	353
AD	Arm to Door	mm	178
HD	Hip Point to Door	mm	374
KK	Knee to Knee	mm	330
HLHL	Heel to Heel	mm	374

DATA SHEET NO. 6

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19



Reference from Point of Impact for X and Y; from Ground for Z):
+X = Forward of Vehicle, +Y = Right of Vehicle, +Z = Down

Camera No.	View	Coordinates (m)			Lens (mm)	Film Speed (fps)
		X*	Y*	Z*		
1	Real Time Pan View of Impact	8.89	46.57	-3.04		30
2	Front Ground Level - Impact View	8.34	-0.05	-0.93	24	1000
3	Impact Side 45° - Forward Pole View	4.10	-2.15	-1.15	8.5	1000
4	Overhead Close-Up View of Impact	0.00	0.00	-5.79	12.5	1000
5	On-Board - Dummy Front View	1.28	0.58	-1.56	8.5	1000
6	On-Board - Dummy Side View	1.25	0.57	-1.54	8.5	1000
7	On-Board - Dummy Rear Oblique View	-0.12	1.89	-1.40	8.5	1000
8	Rear Ground Level - Impact View	-6.12	-6.23	-0.96	24	1000
9	Impact Side 45° - Rearward Pole View	-8.02	0.04	-1.01	35	1000
10	Overhead Wide View of Impact	-0.06	0.22	-5.79	14	1000
11	Real Time Dummy Front View	-1.26	1.81	-1.45		30

*All measurements accurate to ±6 mm

INSTRUMENTATION

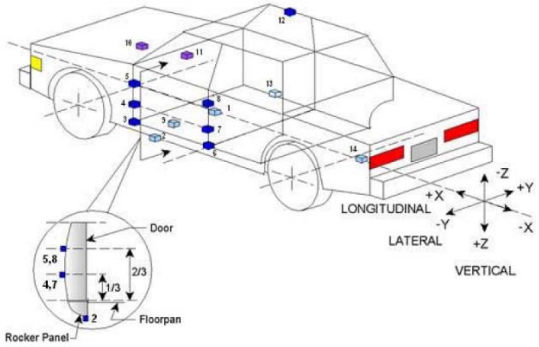
Driver Dummy	117
Vehicle Structure	27
Contact Switches	4
Pole Load Cell	8
Total	156

DATA SHEET NO. 7

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19



No.	Description	Coordinates (mm)			Positive Direction		Negative Direction	
		X	Y	Z	Max	Time (ms)	Min	Time (ms)
1	Vehicle CG	2642.1	-11.1	-537.4				
	Longitudinal (g)	2642.1	-11.1	-537.4	4.4	22.8	-11.2	15.9
	Lateral (g)	2642.1	-11.1	-537.4	19.5	12.5	-0.9	285.9
	Vertical (g)	2642.1	-11.1	-537.4	19.4	16.7	-17.0	24.3
	Resultant (g)	2642.1	-11.1	-537.4				
2	Vehicle CG	2642.1	-11.1	-537.4				
	Angular Rate X (Deg/s)	2642.1	-11.1	-537.4	163.6	39.0	-273.0	36.3
	Angular Rate Y (Deg/s)	2642.1	-11.1	-537.4	194.8	40.5	-285.1	38.7
	Angular Rate Z (Deg/s)	2642.1	-11.1	-537.4	30.9	36.7	-100.7	123.8
3	Rear Deck	3722.2	-70.2	-683.7				
	Longitudinal (g)	3722.2	-70.2	-683.7	11.5	30.6	-16.2	26.4
	Lateral (g)	3722.2	-70.2	-683.7	16.6	47.3	-1.3	286.0
	Vertical (g)	3722.2	-70.2	-683.7	9.5	25.4	-13.7	20.2
	Resultant (g)	3722.2	-70.2	-683.7				
4	Rear Deck	3726.9	-123.9	-678.7				
	Angular Rate X (Deg/s)	3726.9	-123.9	-678.7	124.1	21.1	-212.5	27.3
	Angular Rate Y (Deg/s)	3726.9	-123.9	-678.7	336.1	28.7	-305.5	24.4
	Angular Rate Z (Deg/s)	3726.9	-123.9	-678.7	27.0	33.7	-110.9	142.6
5	Left Floor Sill	1627.1	706.4	-505.5				
	Lateral (g)	1627.1	706.4	-505.5	60.8	11.3	-8.0	14.6
6	Left A-Pillar Sill	1453.5	842.8	-524.6				
	Lateral (g)	1453.5	842.8	-524.6	23.6	11.7	-0.6	243.8
7	Left Lower A-Pillar	1440.8	835.0	-622.0				
	Lateral (g)	1440.8	835.0	-622.0	22.2	12.1	-0.3	1.5
8	Left Mid A-Pillar	1433.8	825.7	-934.5				
	Lateral (g)	1433.8	825.7	-934.5	17.4	20.9	-1.9	2.6
9	Left B-Pillar Sill	2431.1	691.8	-536.3				
	Lateral (g)	2431.1	691.8	-536.3	64.3	11.5	-9.2	14.5

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

NOTE: CMM Origin used was Front Centerline

DATA SHEET NO. 7…(CONTINUED)

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19

No.	Description	Coordinates (mm)			Positive Direction		Negative Direction	
		X	Y	Z	Max	Time (ms)	Min	Time (ms)
10	Left Lower B-Pillar	2469.6	692.8	-674.8				
	Lateral (g)	2469.6	692.8	-674.8	68.0	13.2	-30.7	48.8
11	Left Mid B-Pillar	2555.6	692.9	-869.4				
	Lateral (g)	2555.6	692.9	-869.4	45.3	17.5	-16.5	36.3
12	Driver Seat Track at Dummy H-Point*	2171.2	628.6	-504.0				
		2171.2	628.6	-504.0				
	Lateral (g)	2171.2	628.6	-504.0	72.9	23.0	-35.3	70.0
13	Engine Top	816.2	-277.2	-810.4				
	Longitudinal (g)	816.2	-277.2	-810.4	3.7	137.7	-10.7	47.6
	Lateral (g)	816.2	-277.2	-810.4	17.4	46.5	-3.3	189.3
14	Firewall Center	1088.3	-391.2	-838.7				
	Lateral (g)	1088.3	-391.2	-838.7	12.2	13.3	-1.0	243.9
15	Right Roof at Vertical Impact Reference Line	2338.2	-560.1	-1548.7				
	Lateral (g)	2338.2	-560.1	-1548.7	21.1	40.6	-0.2	297.0
16	Right Sill at Vertical Impact Reference Line	1665.1	-726.7	-476.4				
	Lateral (g)	1665.1	-726.7	-476.4	19.1	13.6	-1.1	264.7
17	Left Front Door Mid Centerline	2013.1	766.2	-683.3				
	Lateral (g)	2013.1	766.2	-683.3	151.0	10.3	-105.5	18.9
18	Left Front Door Mid Rear	2330.7	691.7	-761.6				
	Lateral (g)	2330.7	691.7	-761.6	34.3	15.1	-138.9	18.3
19	Left Front Door Upper Centerline	2081.1	742.1	-1052.2				
	Lateral (g)	2081.1	742.1	-1052.2	145.3	10.7	-46.8	23.0
20	Left Rear Door Mid Rear	3244.1	677.4	-791.7				
	Lateral (g)	3244.1	677.4	-791.7	33.8	73.9	-8.3	23.8
21	Left Rear Door Upper Centerline	3059.9	723.5	-1039.6				
	Lateral (g)	3059.9	723.5	-1039.6	36.5	48.8	-20.0	58.3
22	Floorpan Behind Rear Axle At CL	3688.3	2.6	-635.9				
	Longitudinal (g)	3688.3	2.6	-635.9	2.3	114.2	-4.9	59.2
	Lateral (g)	3688.3	2.6	-635.9	15.2	48.4	-1.4	285.5

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

*Questionable Data after 32.0 msec appears to detach from mounting

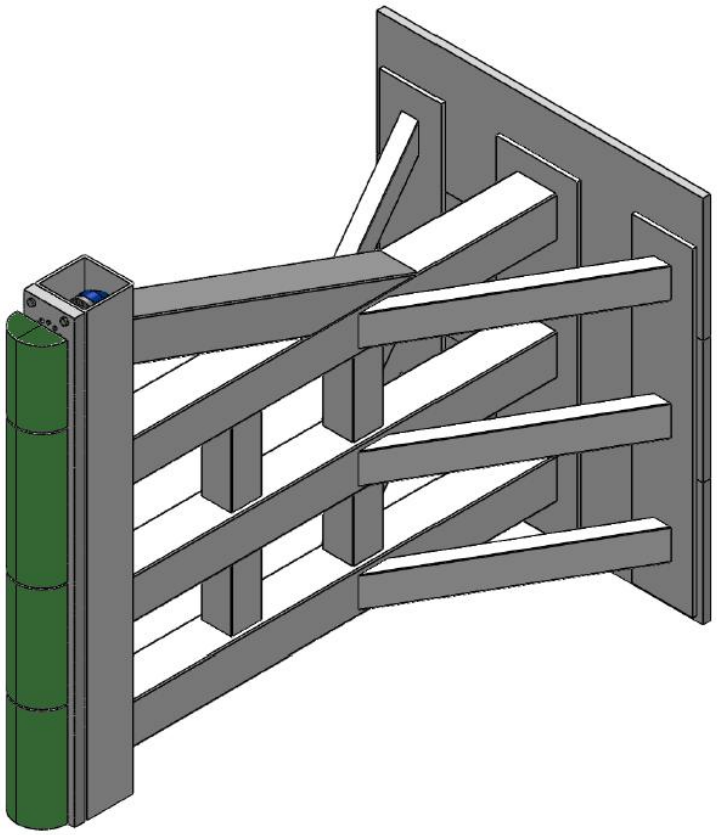
NOTE: CMM Origin used was Front Centerline

DATA SHEET NO. 8

RIGID POLE LOAD CELL DATA

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19



ID	Units	Height From Floor
1	mm	87
2	mm	468
3	mm	648
4	mm	978
5	mm	1168
6	mm	1651
7	mm	1816
8	mm	2057

DATA SHEET NO. 9

POST-TEST OBSERVATIONS

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Driver WorldSid Dummy
Face	Curtain Airbag
Top of Head	Curtain Airbag
Left Side of Head	Curtain Airbag
Back of Head	Curtain Airbag, Headrest
Left Shoulder	Side Airbag, Door Panel
Upper Torso	Side Airbag, Seat
Lower Torso	Side Airbag, Seat
Left Hip	Door Panel
Left Knee	Door Panel

POST-TEST DOOR PERFORMANCE

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

POST-TEST SEAT PERFORMANCE

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

DATA SHEET NO. 9 … (CONTINUED)

POST-TEST OBSERVATIONS

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No separation occurred
Sill Separation	No separation occurred
Windshield Damage	Broken
Side Window Damage	Left front window broken
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No	No*	
Knee Airbag	Yes	No	No*	
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	No	

*Shunted Pre-Test

IMPACT POINT LOCATION DATA

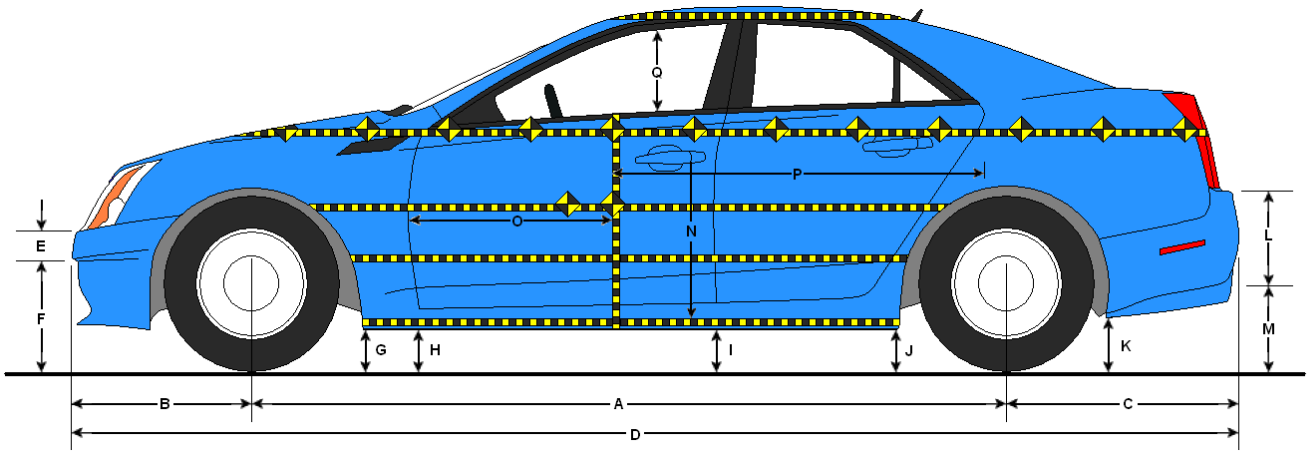
Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		1304
Actual Impact Point (Aft of Front Axle)	mm		1303
Horizontal Offset (+ forward / - rearward)	mm	± 38 of Intended Impact Point	1
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	°	75 ± 3	74.5
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.01
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.02

DATA SHEET NO. 10

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19



LEFT SIDE VIEW

All measurements in mm with tolerance of ± 3mm

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

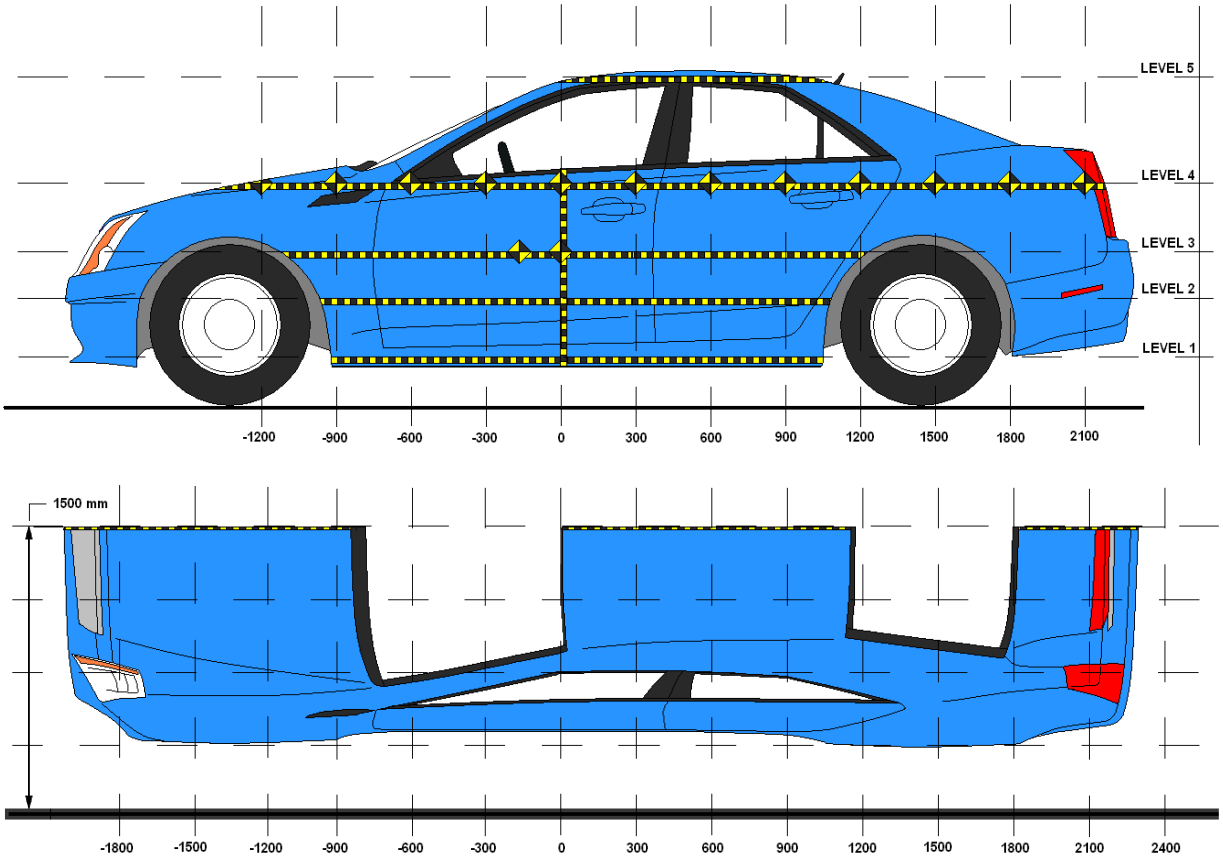
Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2819	2765	-54
B	Front Axle to FSOV	934	941	7
C	Rear Axle to RSOV	1123	1163	40
D	Total Length at Centerline	4873	4869	-4
E	Front Bumper Thickness	-137	-137	0
F	Fromt Bumper Bottom to Ground	-528	-516	12
G	Sill Height at Front Wheel Well	-335	-320	15
H	Sill Height at Front Door Leading Edge	-336	-321	15
I	Sill Height at B-Pillar	-372	-345	27
J1	Sill Height at Rear Wheel Well	-367	-367	0
J2	Pinch Weld Height at Rear Wheel Well	-335	-332	3
K	Sill Height Aft of Rear Wheel Well	-432	-428	4
L	Rear Bumper Thickness	-204	-206	-2
M	Rear Bumper Bottom to Ground	-601	-603	-2
N	Sill Height to Bottom of Front Window Sill	-616	-698	-82
O	Front Door Leading Edge to Impact CL	851	767	-84
P	Rear Door Trailing Edge to Impact CL	1374	1264	-110
Q	Front Window Opening	-399	-417	-18
R	Right Side Length	3386	3398	12
S	Left Side Length	3382	3318	-64
T	Vehicle Width at B-Pillar	1843	1698	-145

DATA SHEET NO. 11

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19



NOTE: All measurements in mm with tolerance of ± 3mm

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	388	266	150
2	Occupant H-Point	651	295	150
3	Mid-Door	793	319	150
4	Window Sill	1053	303	0
5	Window Top	1538	88	150

DATA SHEET NO. 11 … (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

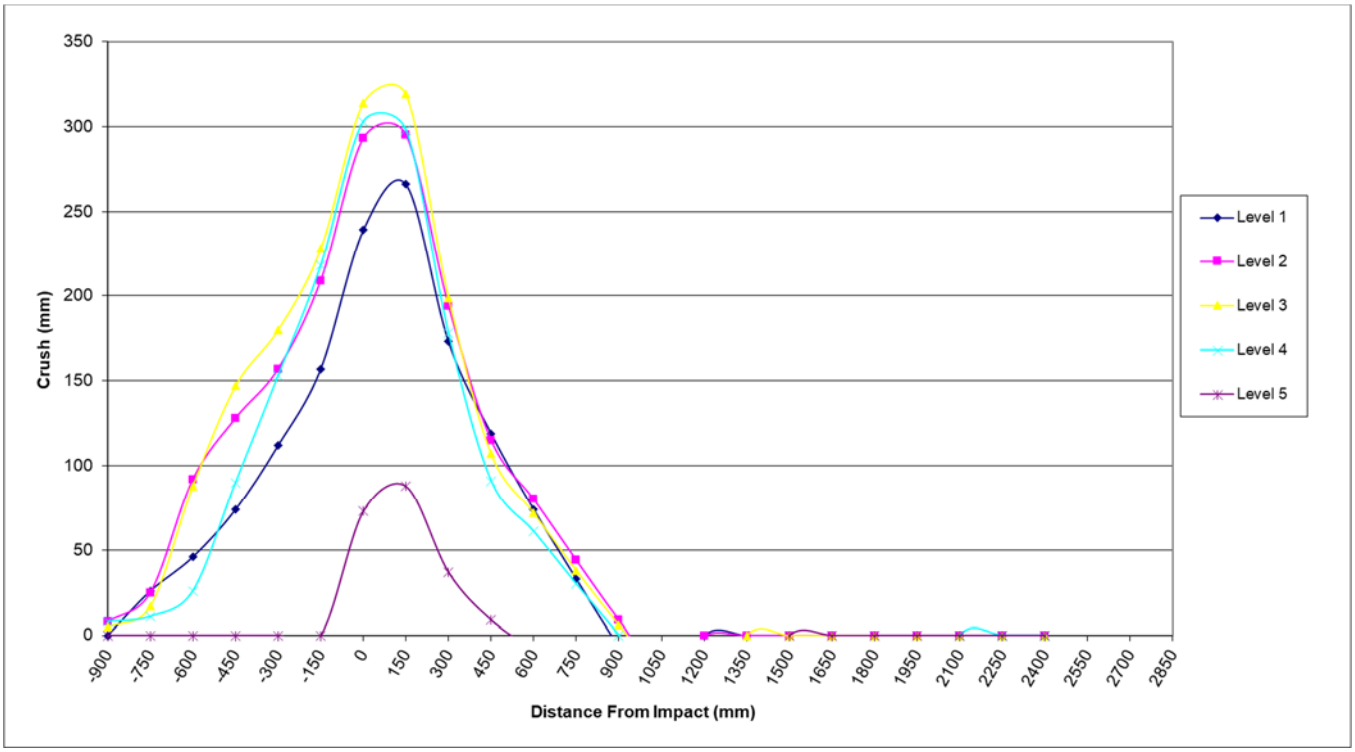
	Pre-Test (mm)					Post-Test (mm)					Difference (mm)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900		575	574	669			583	579	677			8	5	8	
-750	609	581	576	651		635	606	593	662		26	25	17	11	
-600	626	583	576	634		672	675	664	660		46	92	88	26	
-450	628	583	576	619		702	711	723	709		74	128	147	90	
-300	622	584	575	612		734	741	755	765		112	157	180	153	
-150	619	584	575	608		776	793	803	826		157	209	228	218	
0	613	585	575	604	883	852	878	889	907	956	239	293	314	303	73
150	607	587	575	602	889	873	882	894	900	977	266	295	319	298	88
300	600	588	576	600	892	773	782	775	778	929	173	194	199	178	37
450	595	590	577	599	892	714	705	684	690	901	119	115	107	91	9
600	592	590	579	599	891	666	670	651	660	883	74	80	72	61	-8
750	594	588	579	600	888	627	632	617	630	870	33	44	38	30	-18
900	600	584	577	601	886	593	593	583	601	861	-7	9	6	0	-25
1050	604	577	572	604	882	560	555	547	574	851	-44	-22	-25	-30	-31
1200			567	615	879			512	554	844			-55	-61	-35
1350				612	878				520	836				-92	-42
1500				618					581					-37	
1650				628					584					-44	
1800				639					587					-52	
1950				653					595					-58	
2100															
2250															
2400															
2550															
2700															
2850															

DATA SHEET NO. 11 … (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19

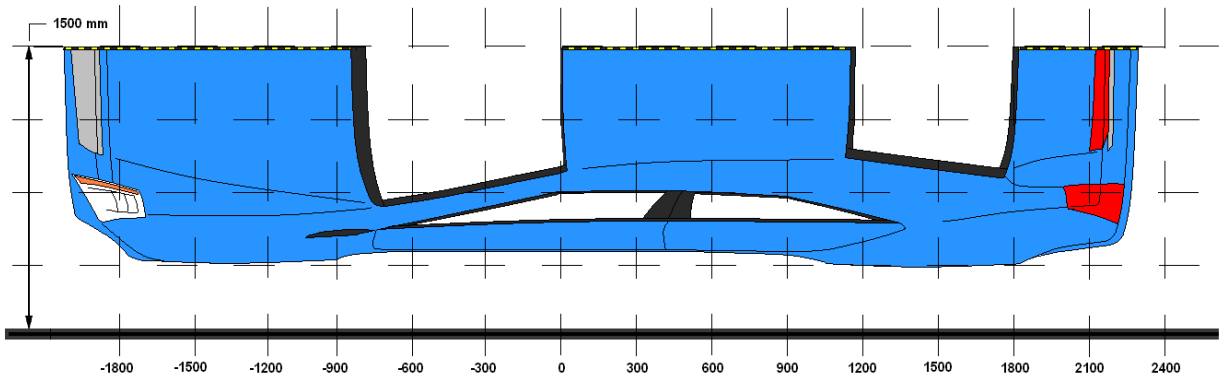


DATA SHEET NO. 12

VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19



DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	1950	4	653	595	-58
2	1350	5	878	836	-42
3	750	4	588	632	44
4	300	3	576	775	199
5	-300	4	575	755	180
6	-900	2	575	583	8

DATA SHEET NO. 13

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19

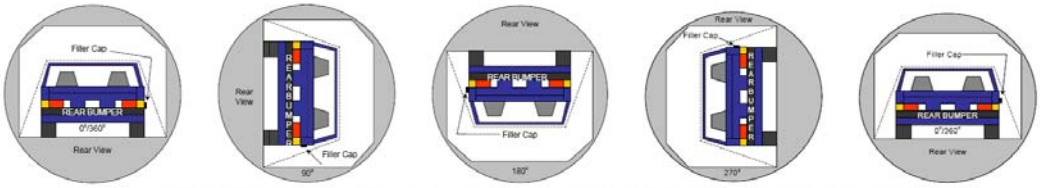
Temperature at Time of Impact: 32.2° C Test Time: 3:59 PM

A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable = 1 oz.)

B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable = 5 oz.)

C. For the following 25 minutes: 0 oz.
(Maximum allowable = 1 oz./minute)

D. Spillage Details: There was no Stoddard solvent spillage.



0° TO 90° 90° TO 180° 180° TO 270° 270° TO 360°

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	83	300	383
90° To 180°	79	300	379
180° To 270°	81	300	381
270° To 360°	79	300	379

FMVSS 301 SPILLAGE TABLE

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

SOLVENT SPILLAGE LOCATION TABLE

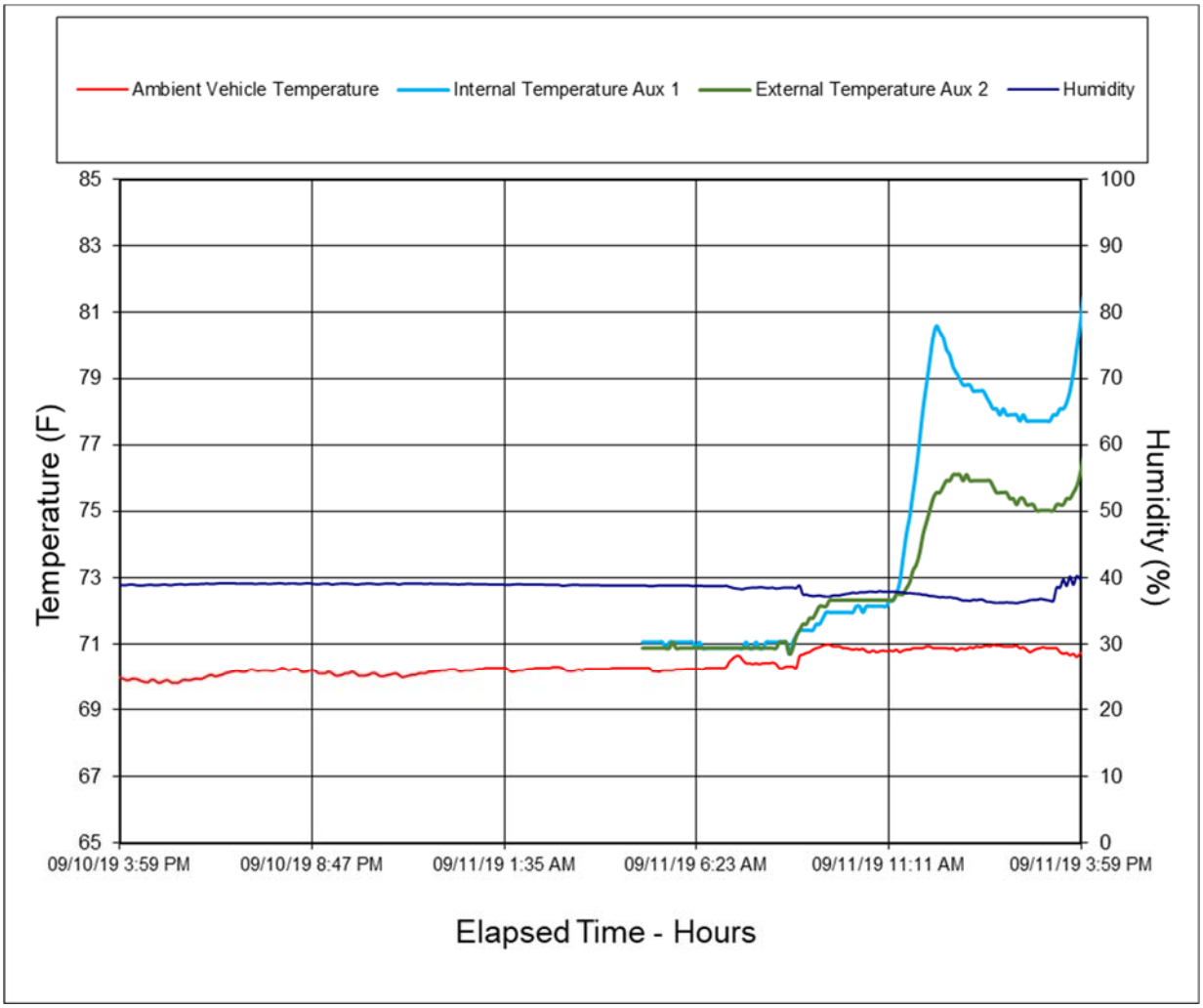
Test Phase	Spillage Location
0° To 90°	No Spillage Occurred
90° To 180°	No Spillage Occurred
180° To 270°	No Spillage Occurred
270° To 360°	No Spillage Occurred

DATA SHEET NO. 14

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2018 Honda Accord 4-Door Sedan NHTSA No. R20185381

Test Program: 75° Research Oblique Side Impact (Rigid Pole) Test Date: 09/11/19



Temperature Data

Time of Impact	3:59 P.M.
Temperature at Time of Impact	
Measurement Location	**°F**
Ambient Vehicle Temperature	70.4
WorldSid Internal Temperature	81.5
WorldSid External Temperature	76.6

APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

TABLE OF PHOTOGRAPHS … (CONTINUED)

TABLE OF PHOTOGRAPHS … (CONTINUED)

FIGURE 1. As-Delivered Right Front ¾ View of Test Vehicle

FIGURE 2. As-Delivered Left Rear ¾ View of Test Vehicle

FIGURE 3. Pre-Test Frontal View of Test Vehicle

FIGURE 4. Post-Test Frontal View of Test Vehicle

FIGURE 5. Pre-Test Left Front ¾ View of Test Vehicle

FIGURE 6. Post-Test Left Front ¾ View of Test Vehicle

FIGURE 7. Pre-Test Left Side View of Test Vehicle

FIGURE 8. Post-Test Left Side View of Test Vehicle

FIGURE 9. Pre-Test Left Rear ¾ View of Test Vehicle

FIGURE 10. Post-Test Left Rear ¾ View of Test Vehicle

FIGURE 11. Pre-Test Rear View of Test Vehicle

FIGURE 12. Post-Test Rear View of Test Vehicle

FIGURE 13. Pre-Test Right Side View of Test Vehicle

FIGURE 14. Post-Test Right Side View of Test Vehicle

FIGURE 15. Pre-Test Overhead View of Test Area

FIGURE 16. Post-Test Overhead View of Test Area

FIGURE 17. Pre-Test Left Side View of Pole Positioned Against Side of Vehicle

FIGURE 18. Pre-Test Right Side View of Pole Positioned Against Side of Vehicle

FIGURE 19. Pre-Test Close-Up View of Impact Point Target

FIGURE 20. Post-Test Close-Up View of Impact Point Target Showing Impact Location

FIGURE 21. Pre-Test Front Close-Up View of Dummy Head and Chest

FIGURE 22. Post-Test Front Close-Up View of Dummy

FIGURE 23. Pre-Test Left Side View of Dummy Showing Belt and Chalking

FIGURE 24. Pre-Test Left Side View of Dummy Shoulder and Door Top View

FIGURE 25. Post-Test Left Side View of Dummy Shoulder and Door Top View

FIGURE 26. Pre-Test Frontal View of Seat Back Prior to Dummy Positioning

FIGURE 27. Pre-Test Frontal Close-Up View of

FIGURE 28. Pre-Test Overhead View of Seat Pan Prior to Dummy Positioning

FIGURE 29. Pre-Test Overhead View of Dummy Thighs on Seat Pan

Photograph Not Applicable

FIGURE 30. Pre-Test Left Side View of Dummy's Neck
Showing Position of Adjustable Neck Bracket

Photograph Not Applicable

FIGURE 31. Pre-Test Left Side View of Dummy's Head

Showing Dummy's Head is Level

FIGURE 32. Pre-Test Placement of Dummy's Feet

FIGURE 33. Pre-Test View of Belt Anchorage for Dummy

FIGURE 34. Pre-Test Left Side View of Steering Wheel

FIGURE 35. View of Disengaged Parking Brake

FIGURE 36. Pre-Test View of Parking Brake

FIGURE 37. Pre-Test Close-Up Left Side View of Driver Seat Track

FIGURE 38. Pre-Test Close-Up Left Side View of Driver Seat Back

FIGURE 39. Pre-Test Close-Up View of Driver Seat Back or Head Restraint

FIGURE 40. Pre-Test Dummy and Door Clearance View

FIGURE 41. Post-Test Dummy and Door Clearance View

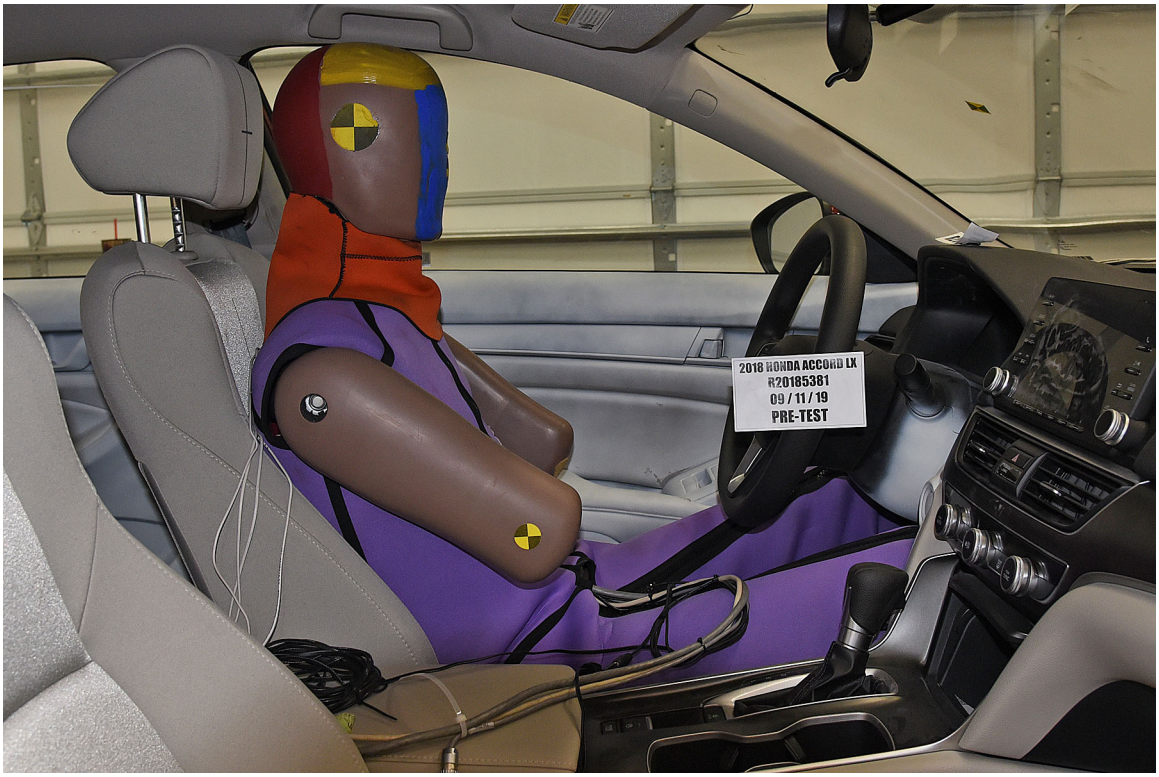


FIGURE 42. Pre-Test Right Side View of Dummy and
Front Seat of Occupant Compartment

FIGURE 43. Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment

FIGURE 44. Pre-Test Inner Door Panel View

FIGURE 45. Post-Test Inner Door Panel View Showing Dummy Contact Locations

FIGURE 46. Post-Test Dummy Close-Up Head Contact with Vehicle Interior View

FIGURE 47. Post-Test Dummy Close-Up Head Contact With Side Airbag View

FIGURE 48. Post-Test Dummy Close-Up Torso Contact With Vehicle Interior View

FIGURE 49. Post-Test Dummy Close-Up Torso Contact With Side Airbag View

Photograph Not Applicable

FIGURE 50. Post-Test Dummy Close-Up Pelvis Contact With Vehicle Interior View

FIGURE 51. Post-Test Dummy Close-Up Pelvis Contact With Side Airbag View

Photograph Not Applicable

FIGURE 52. Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View

FIGURE 53. Pre-Test View of Fuel Filler Cap or Fuel Filler Neck

FIGURE 54. Post-Test View of Fuel Filler Cap or Fuel Filler Neck

FIGURE 55. Close-Up View of Vehicle's Certification Label

FIGURE 56. Close-Up View of Vehicle's Tire Information Placard or Label

FIGURE 57. Pre-Test Pole Barrier Front View

FIGURE 58. Post-Test Pole Barrier Front View

FIGURE 59. Pre-Test Pole Barrier Side View

FIGURE 60. Post-Test Pole Barrier Side View

FIGURE 61. Pre-Test Ballast View

FIGURE 62. Post-Test Primary and Redundant Speed Trap Read-Out

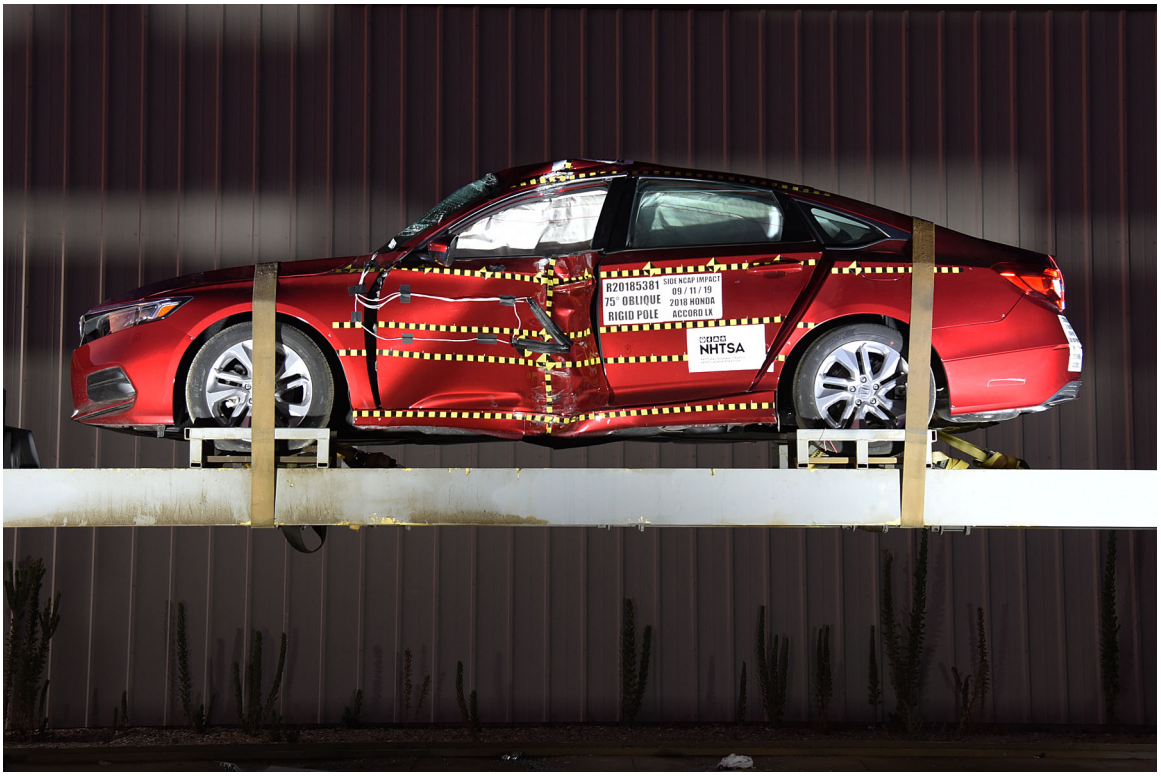


FIGURE 63. FMVSS No. 301 Static Rollover 0 Degrees

FIGURE 64. FMVSS No. 301 Static Rollover 90 Degrees

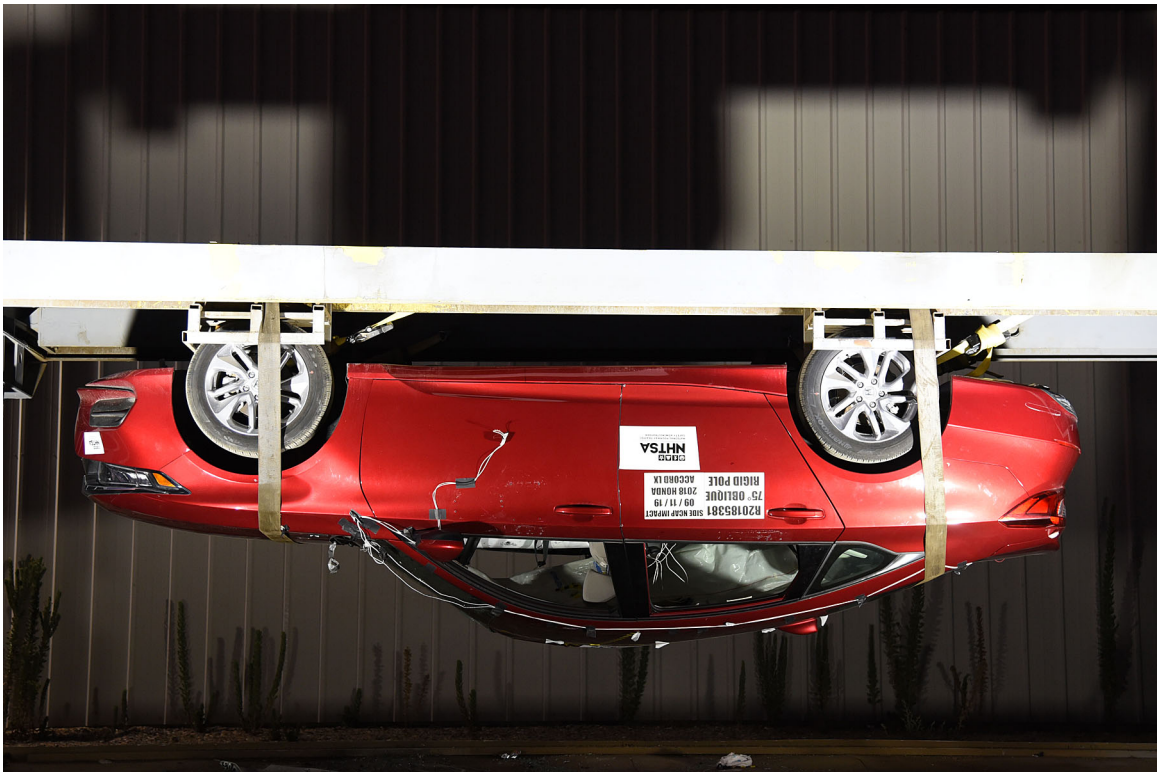


FIGURE 65. FMVSS No. 301 Static Rollover 180 Degrees

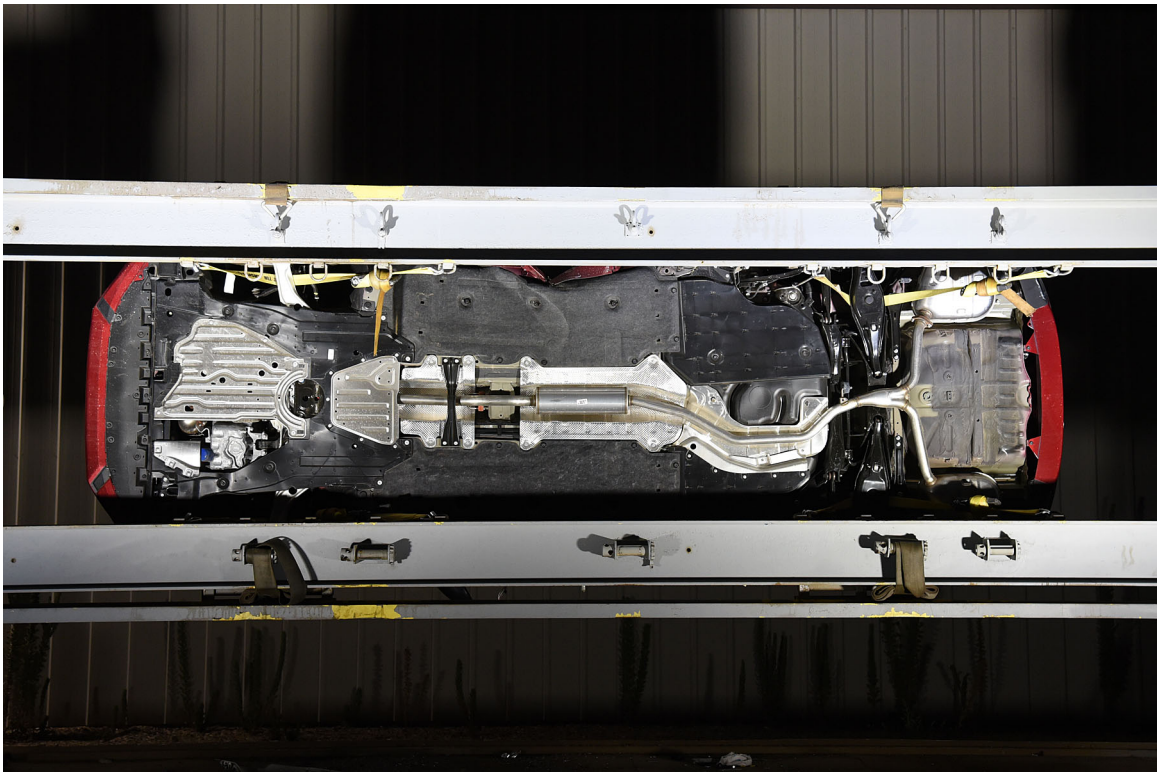


FIGURE 66. FMVSS No. 301 Static Rollover 270 Degrees

FIGURE 67. FMVSS No. 301 Static Rollover 360 Degrees

FIGURE 68. Impact Event

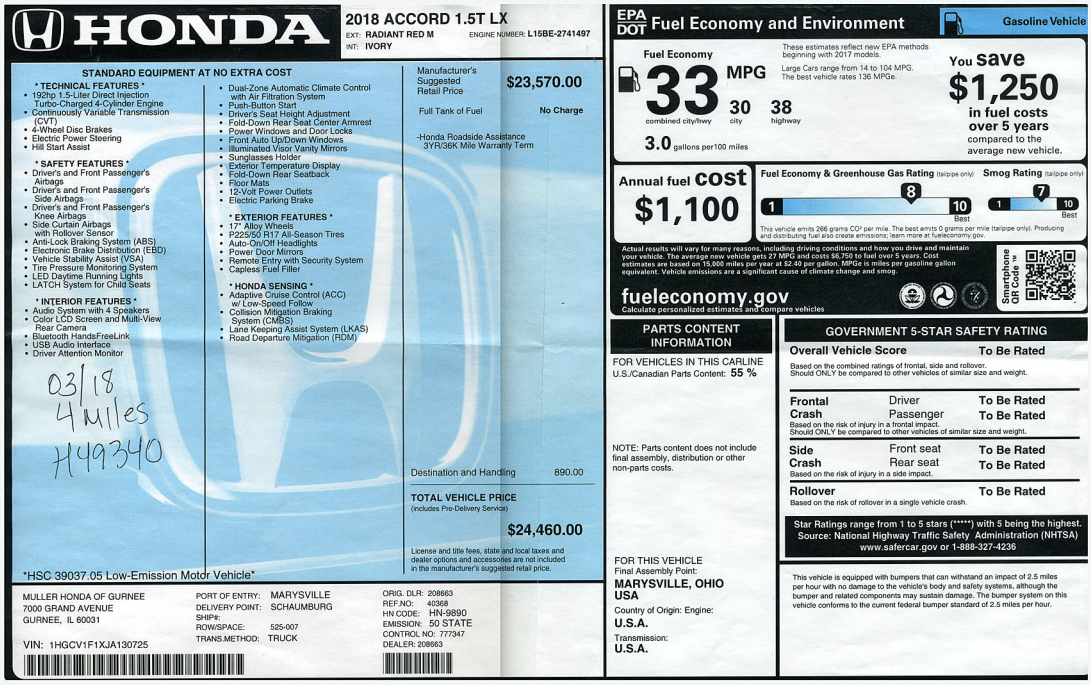


FIGURE 69. Monroney Label

Photograph Not Available

FIGURE 70. Head Restraint Use and Adjustment

Photograph Not Applicable

FIGURE 71. Information from Vehicle Owner's Manual

APPENDIX B
DUMMY RESPONSE DATA

TABLE OF PLOTS		
No.	**Description**	**Page**
177	LOAD CELL POLE #6 FX	B-45
178	LOAD CELL POLE #7 FX	B-45
179	LOAD CELL POLE #8 FX	B-45

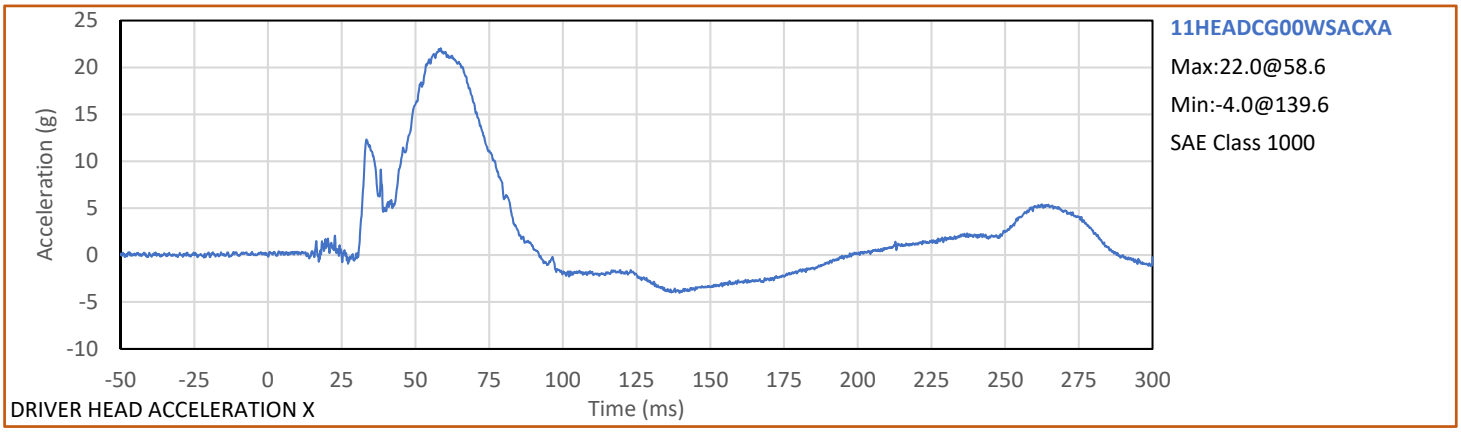
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

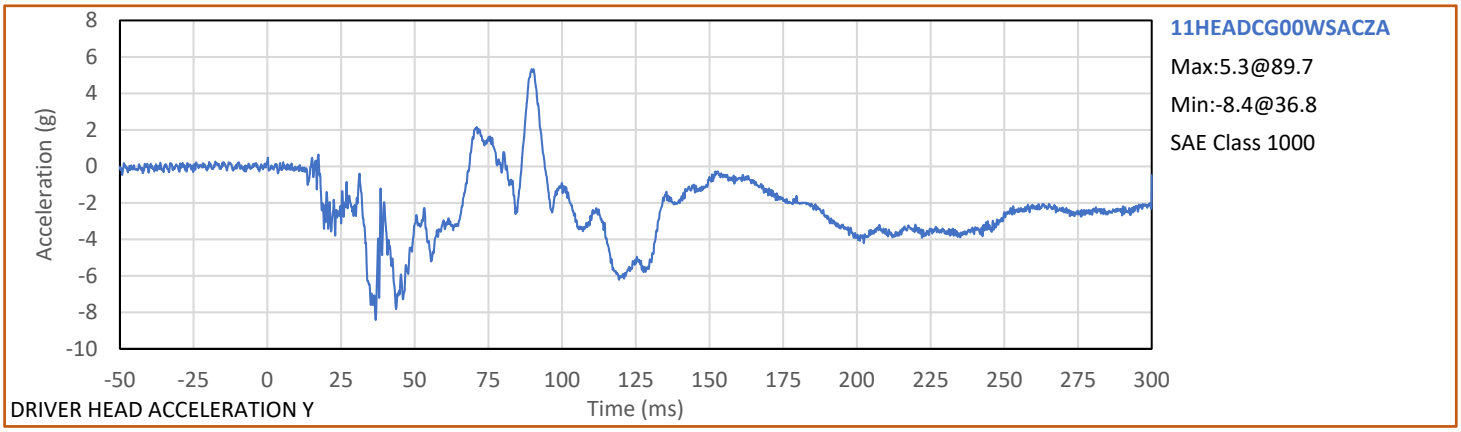
NHTSA No.: R20185381

Test Date: 9/11/2019

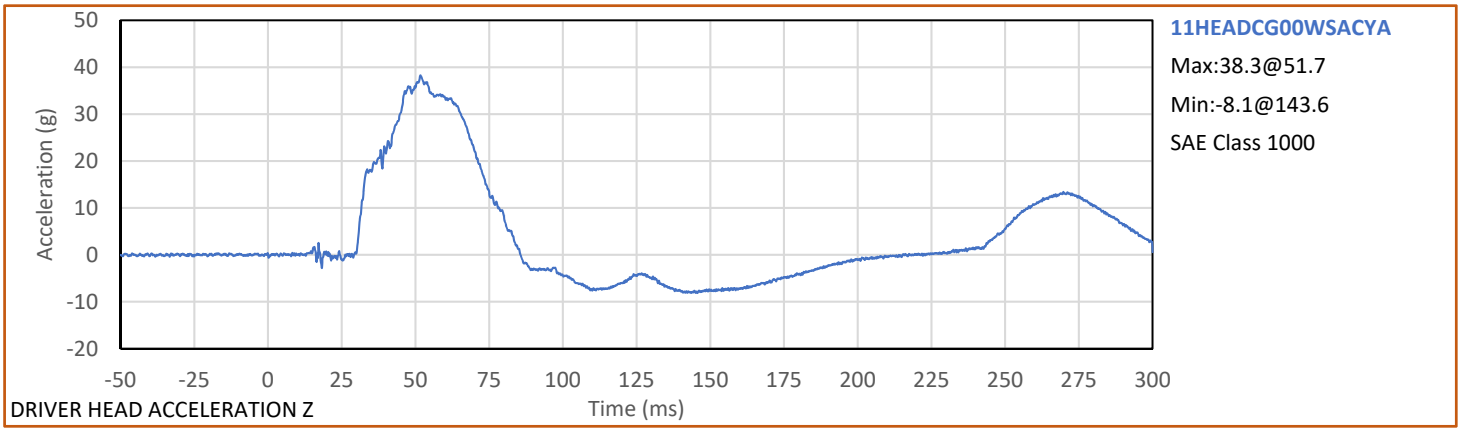
Applus IDIADA KARCO



DRIVER HEAD ACCELERATION X

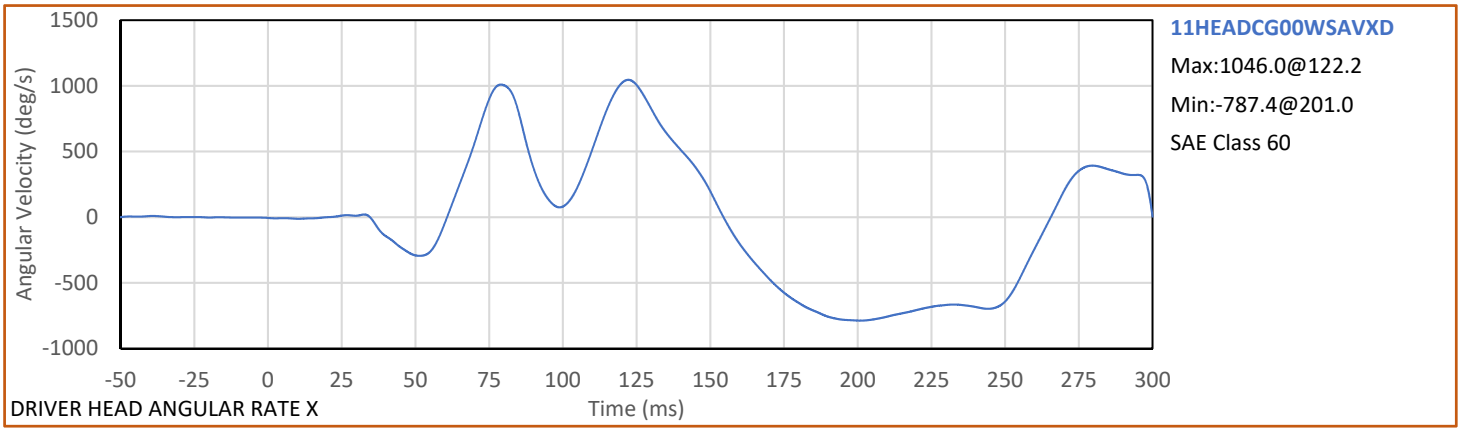


DRIVER HEAD ACCELERATION Y



DRIVER HEAD ACCELERATION Z

E



DRIVER HEAD ANGULAR RATE X

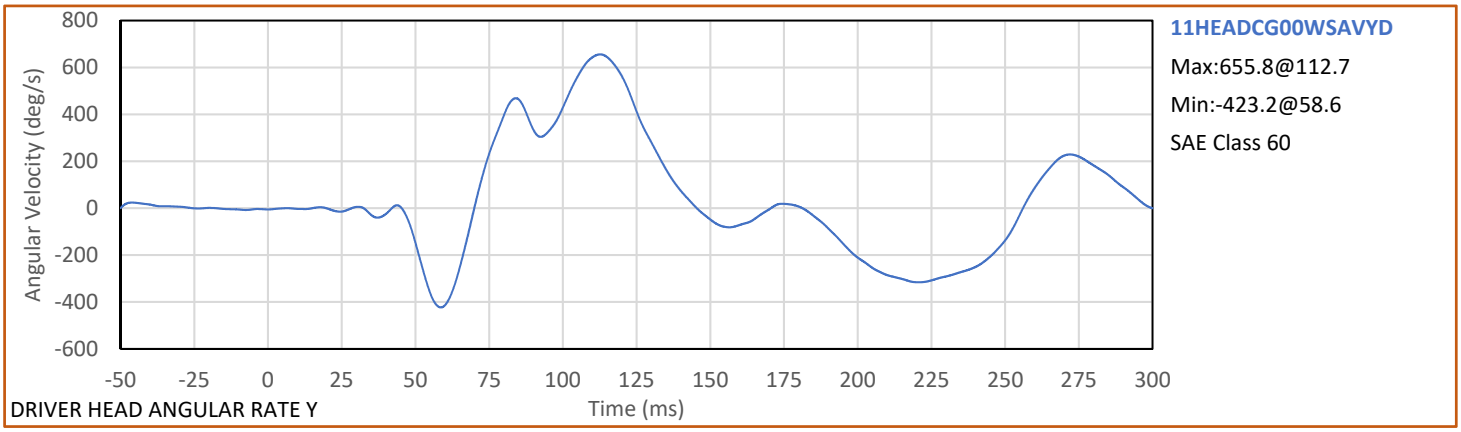
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

NHTSA No.: R20185381

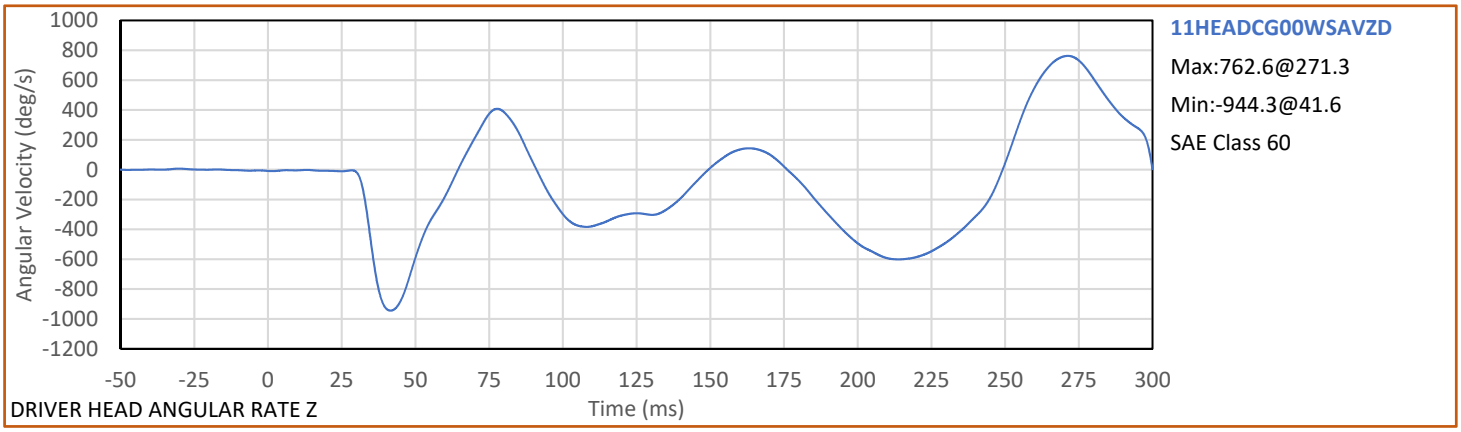
Test Date: 9/11/2019

Applus IDIADA KARCO



11HEADCG00WSAVYD
Max:655.8@112.7
Min:-423.2@58.6
SAE Class 60

DRIVER HEAD ANGULAR RATE Y



11HEADCG00WSAVZD
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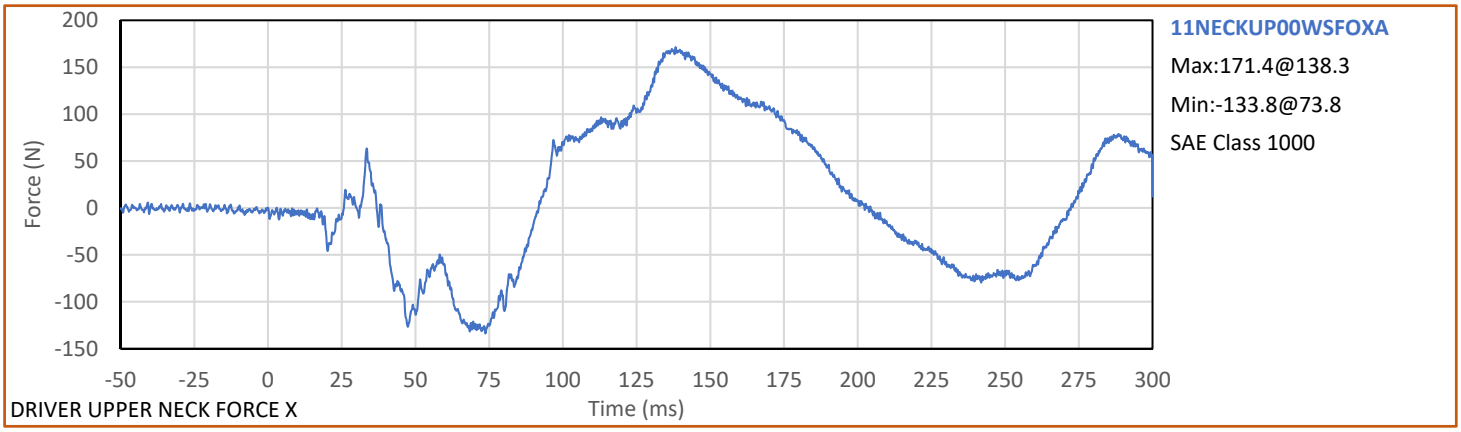
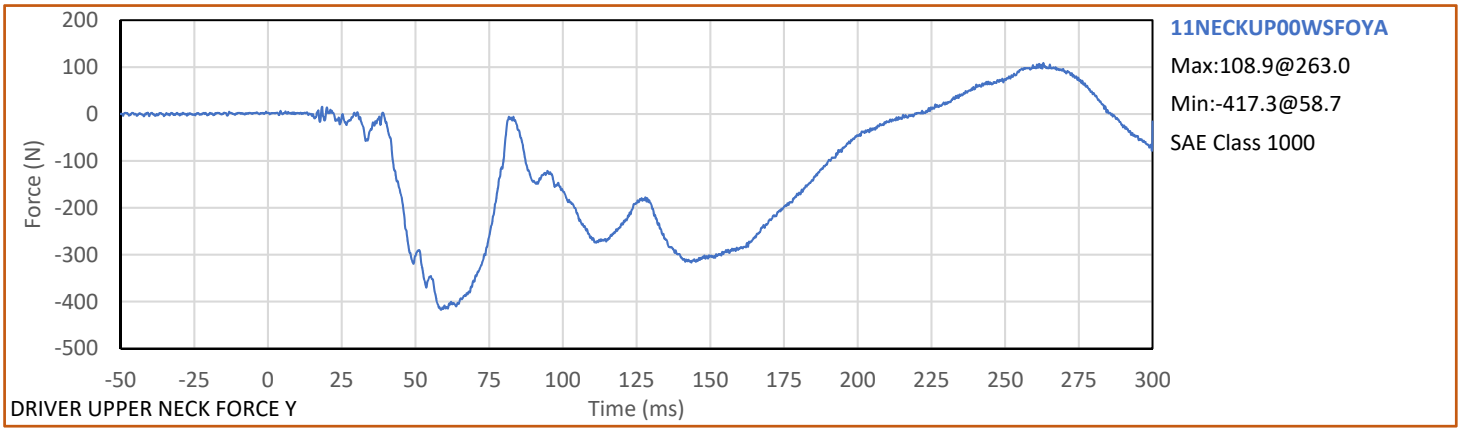
Min:-944.3@41.6
SAE Class 60

DRIVER HEAD ANGULAR RATE Z



11NECKUP00WSFOXA
Max:171.4@138.3
Min:-133.8@73.8
SAE Class 1000

DRIVER UPPER NECK FORCE X



11NECKUP00WSFOYA
Max:108.9@263.0
Min:-417.3@58.7
SAE Class 1000

DRIVER UPPER NECK FORCE Y

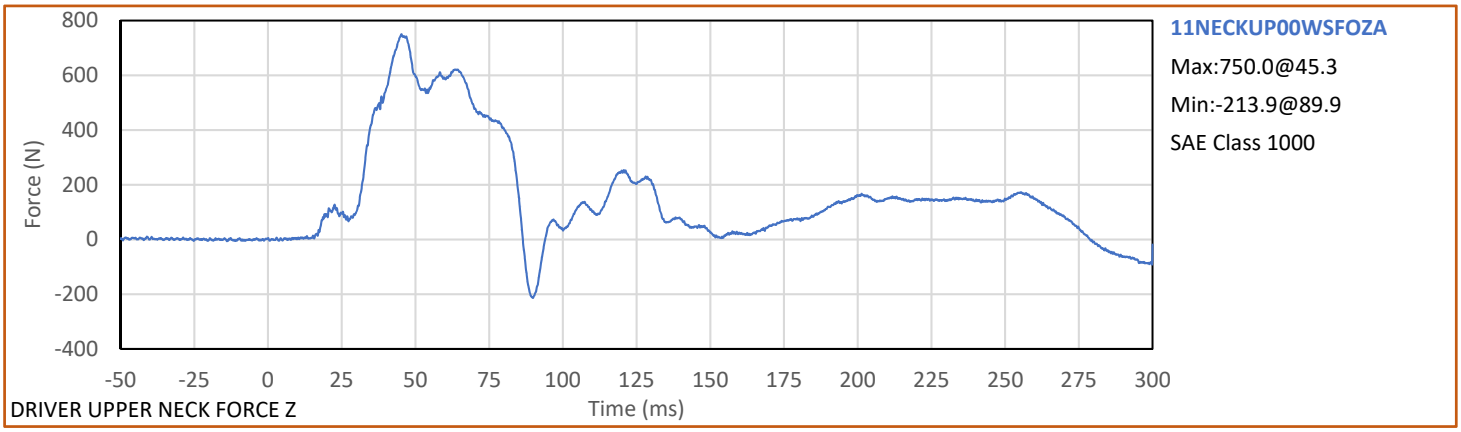
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

NHTSA No.: R20185381

Test Date: 9/11/2019

Applus IDIADA KARCO



DRIVER UPPER NECK FORCE Z

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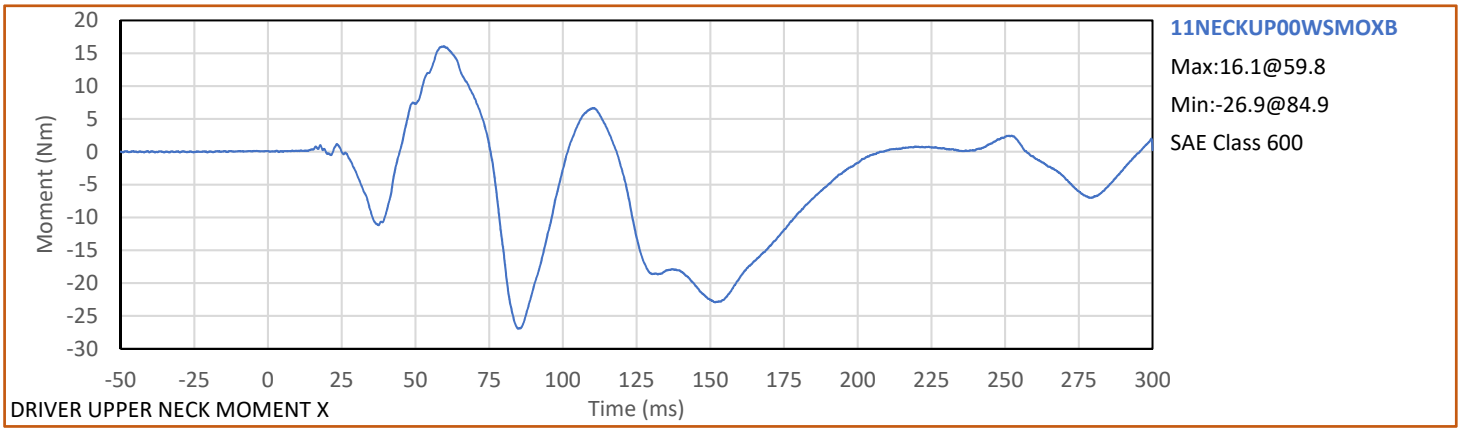
SAE Class 1000



DRIVER UPPER NECK MOMENT X

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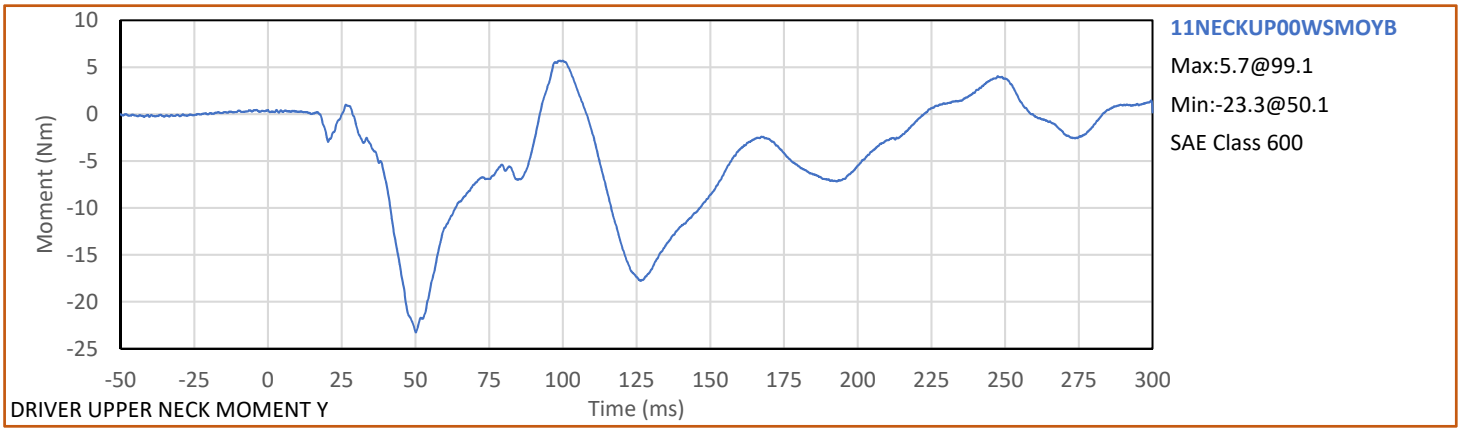
Min:-26.9@84.9
SAE Class 600



DRIVER UPPER NECK MOMENT Y

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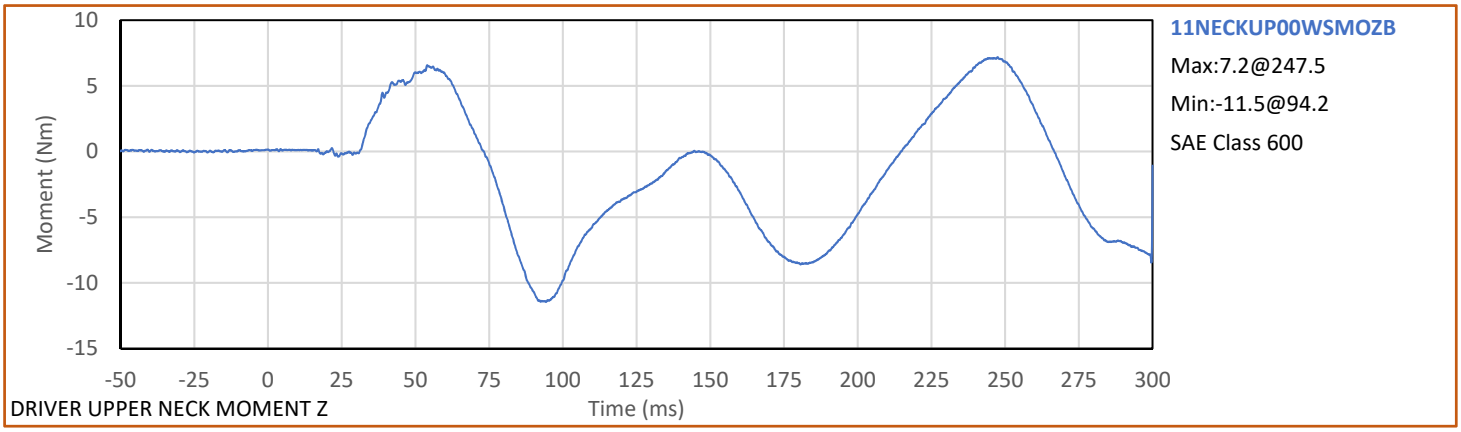
Min:-23.3@50.1
SAE Class 600



DRIVER UPPER NECK MOMENT Z

11NECKUP00WSMOZB
Max:7.2@247.5
Min:-11.5@94.2
SAE Class 600

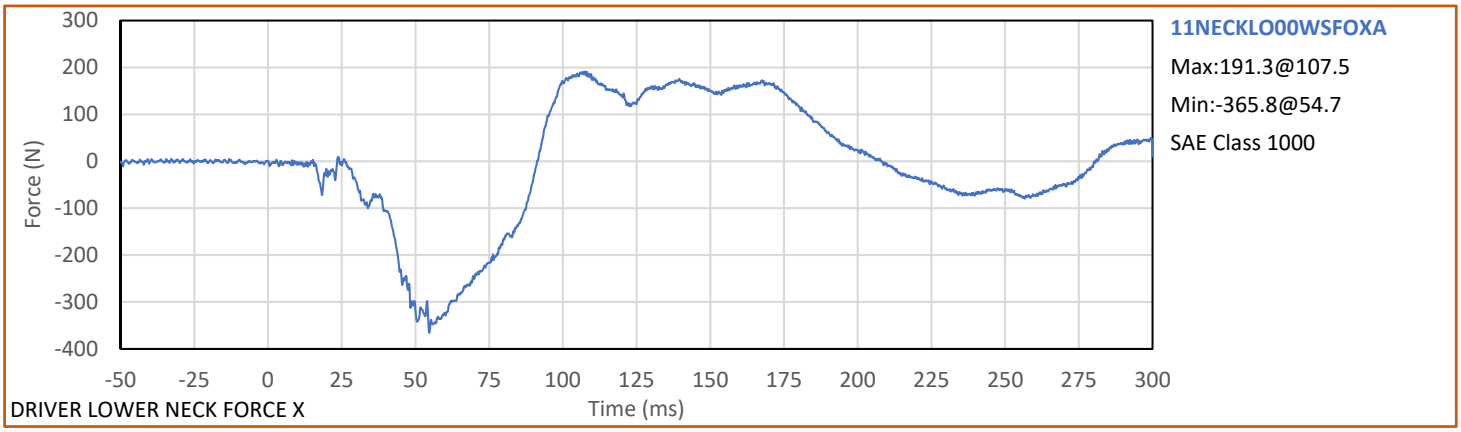
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

NHTSA No.: R20185381

Test Date: 9/11/2019

Applus IDIADA KARCO



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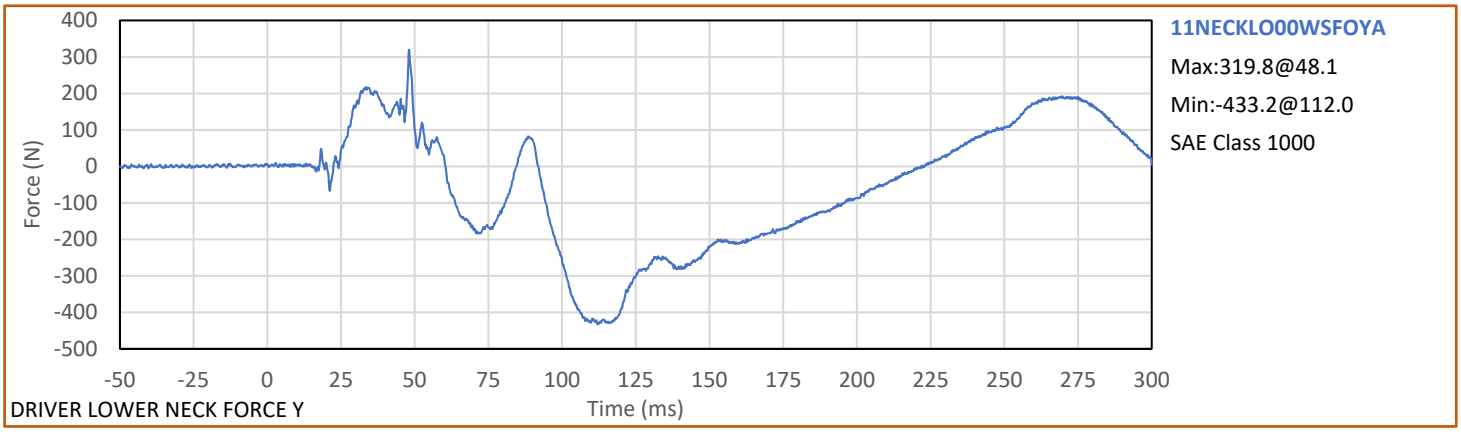
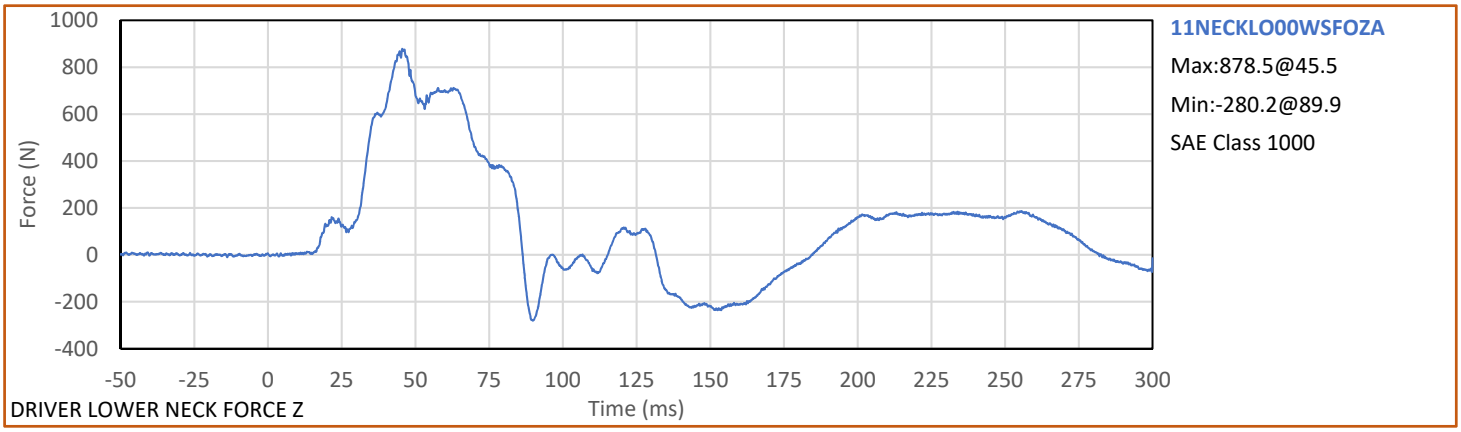
SAE Class 1000



11NECKLO00WSFOYA
Max:319.8@48.1
Min:-433.2@112.0
SAE Class 1000



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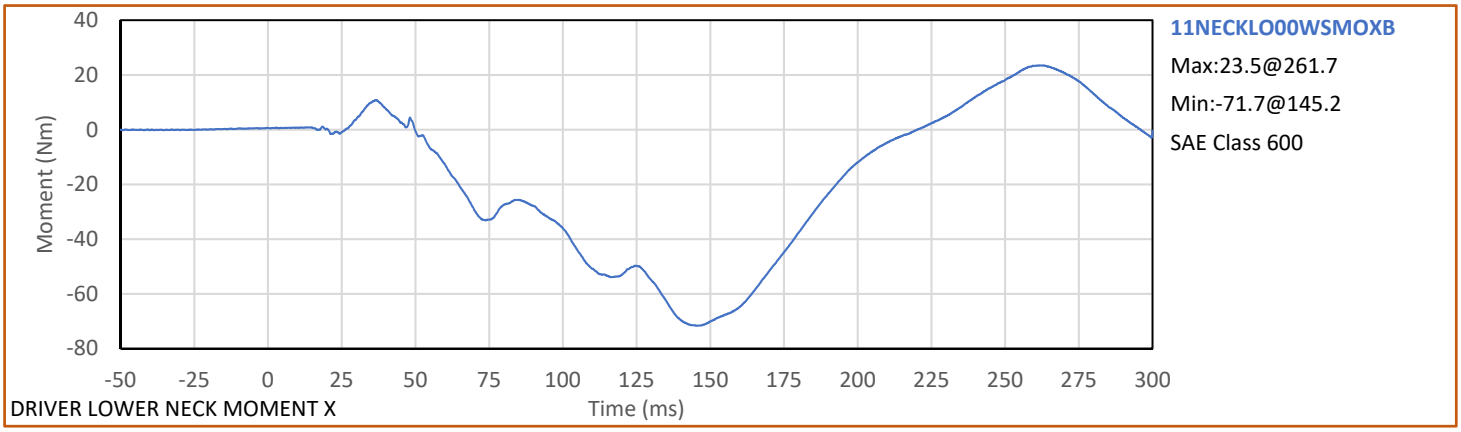
Min:-280.2@89.9
SAE Class 1000



11NECKLO00WSMOXB
Max:23.5@261.7
Min:-71.7@145.2
SAE Class 600

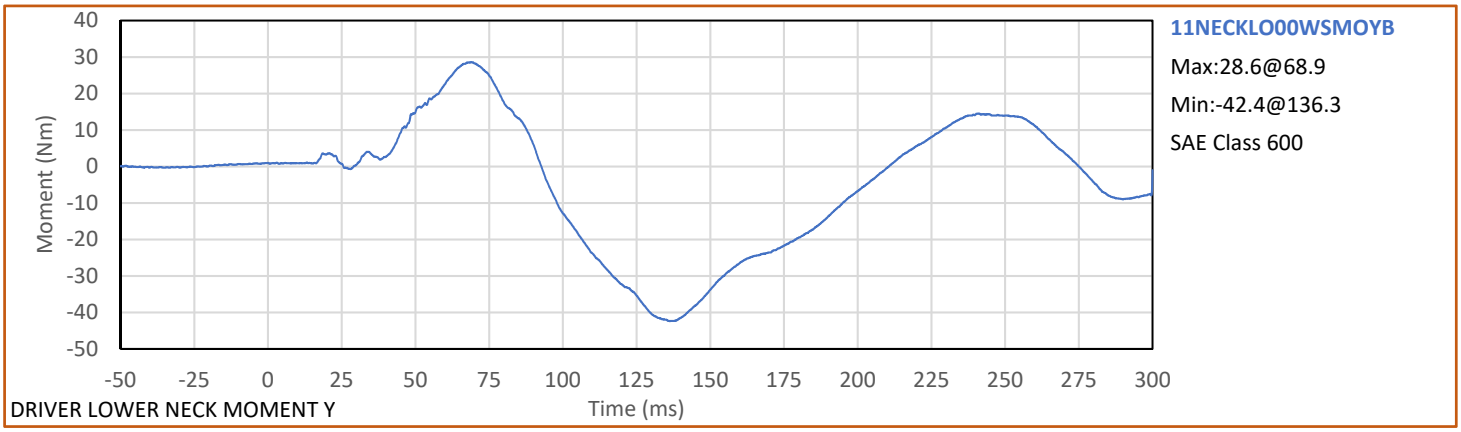
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

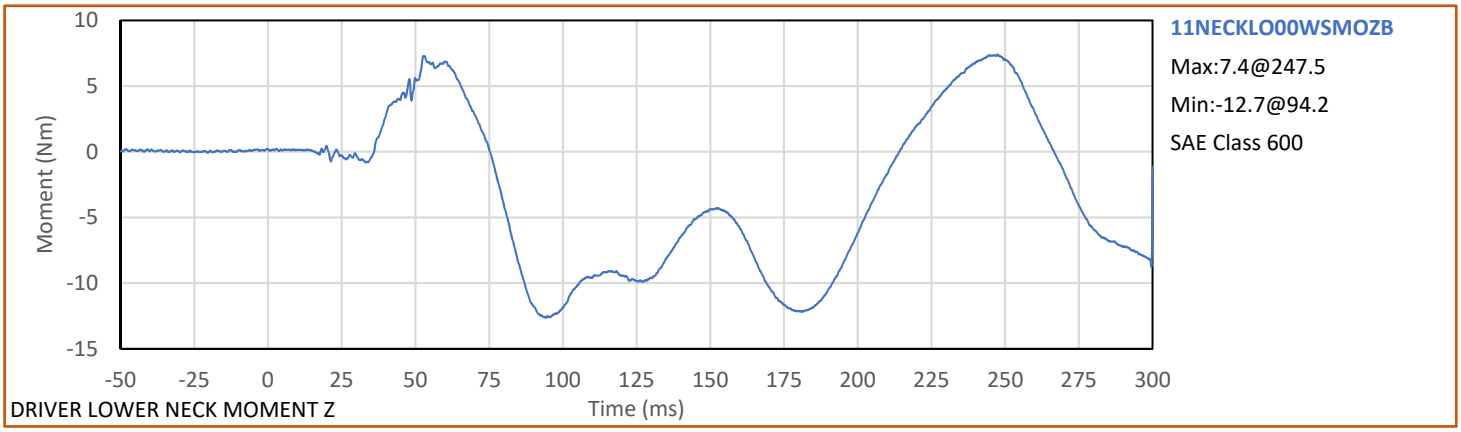
NHTSA No.: R20185381

Test Date: 9/11/2019

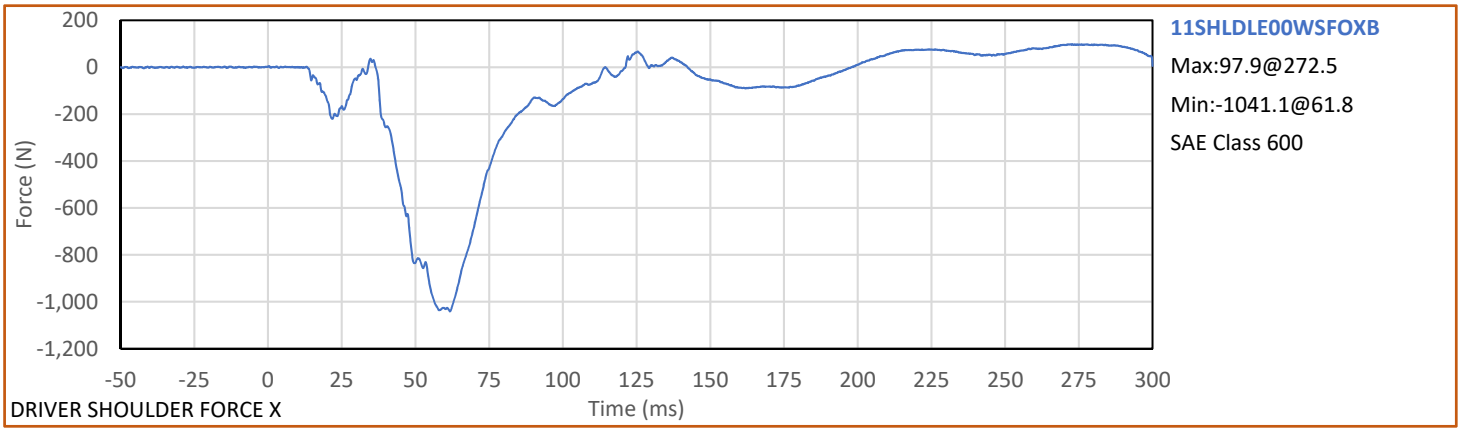
Applus IDIADA KARCO



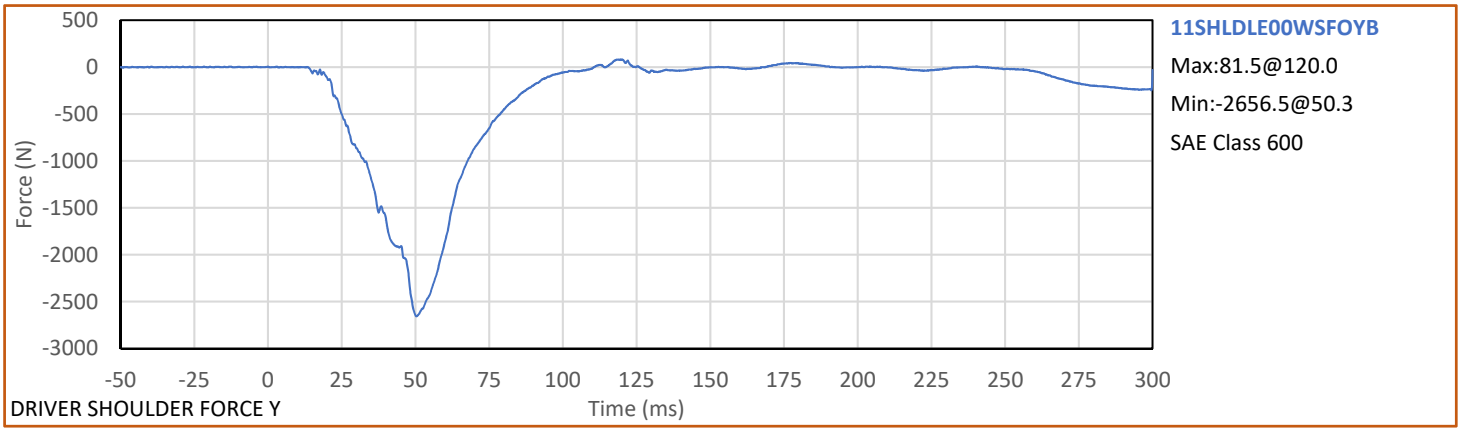
DRIVER LOWER NECK MOMENT Y



DRIVER LOWER NECK MOMENT Z



DRIVER SHOULDER FORCE X



DRIVER SHOULDER FORCE Y

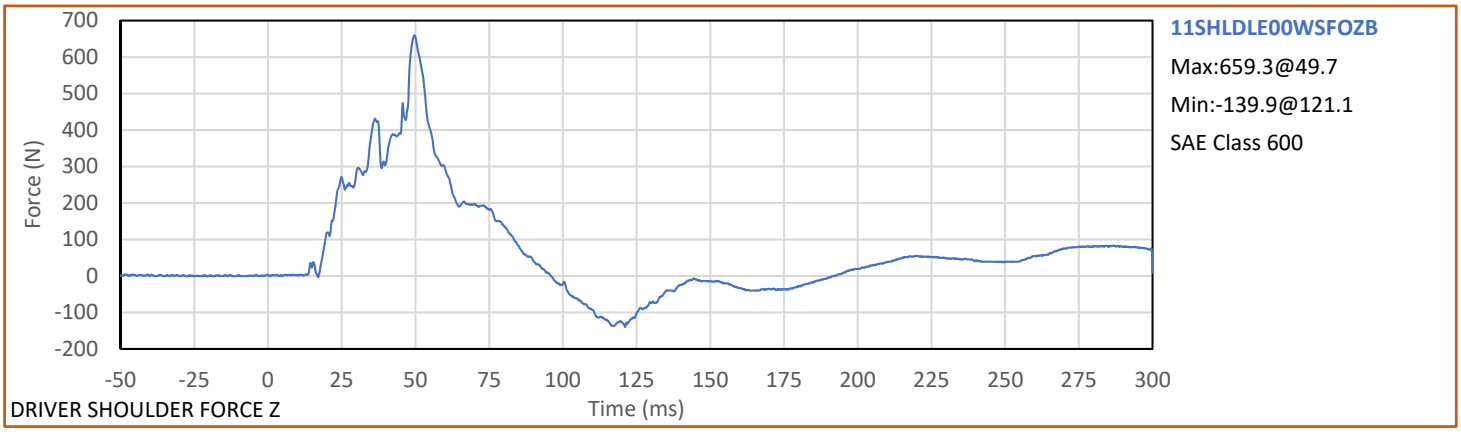
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

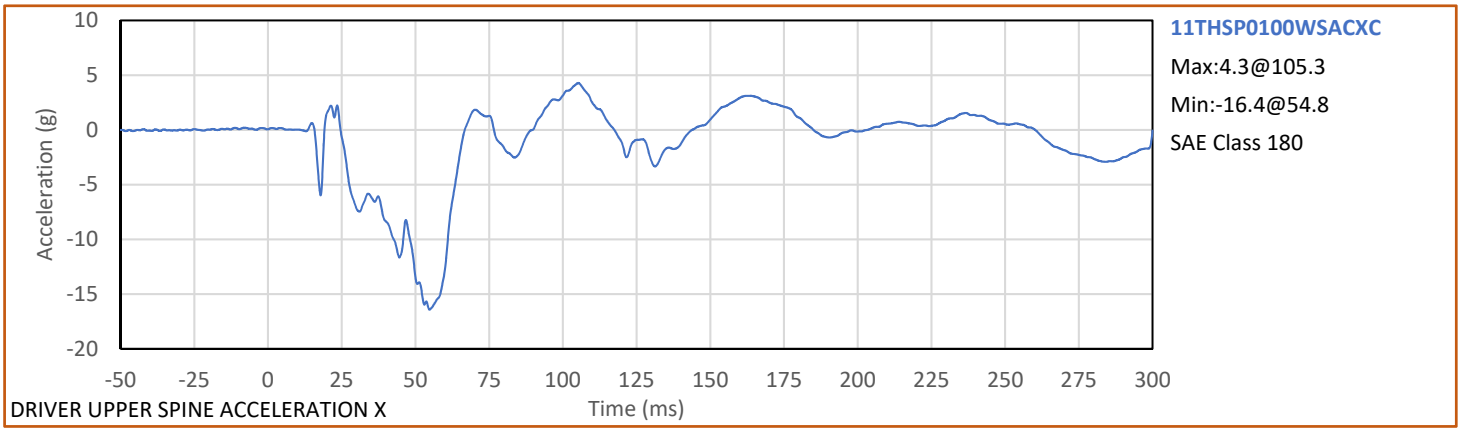
NHTSA No.: R20185381

Test Date: 9/11/2019

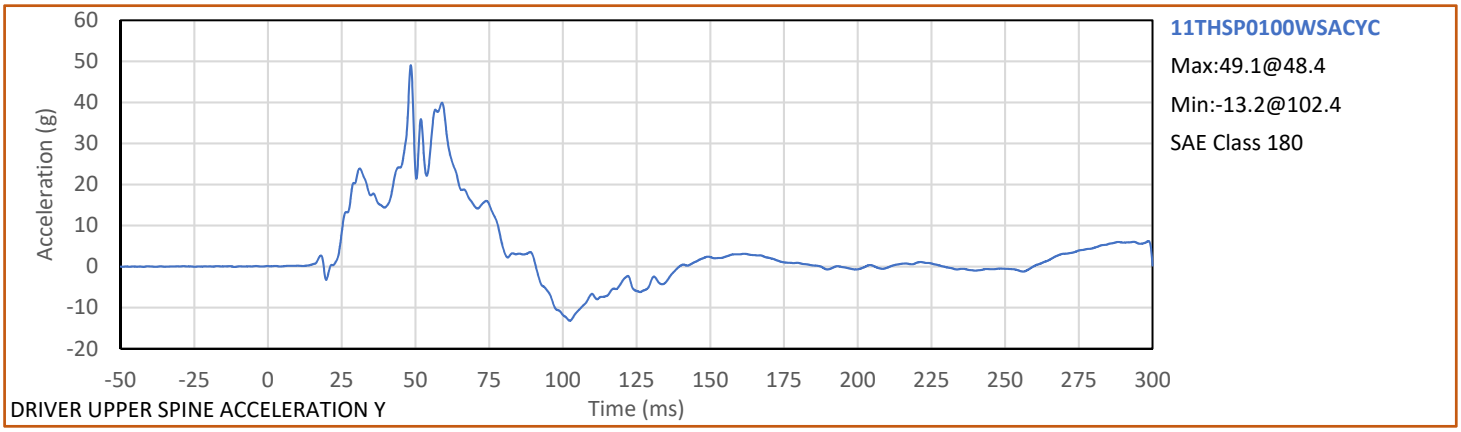
Applus IDIADA KARCO



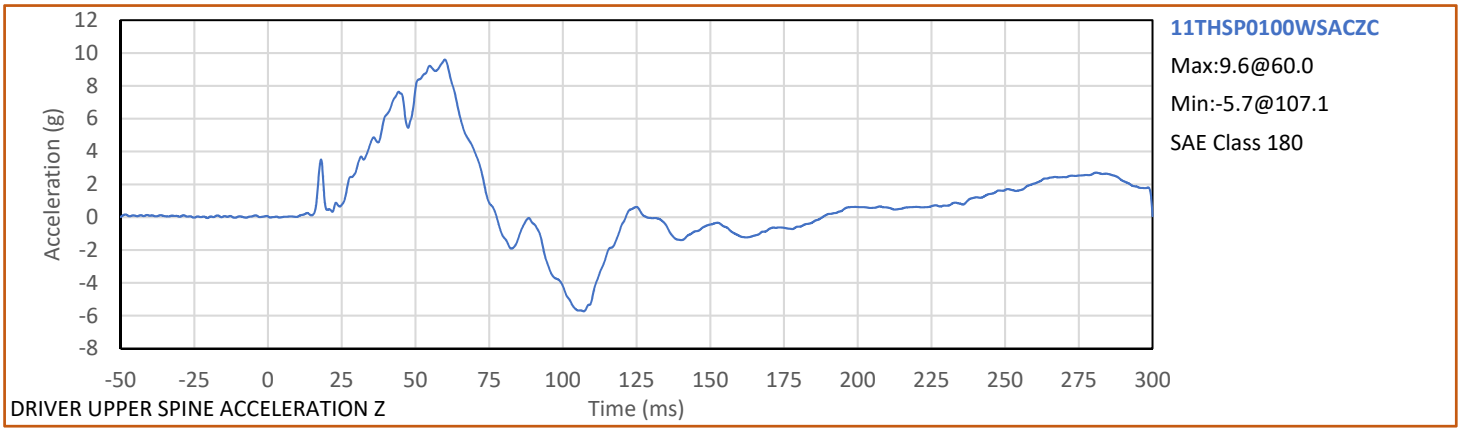
DRIVER SHOULDER FORCE Z



DRIVER UPPER SPINE ACCELERATION X



DRIVER UPPER SPINE ACCELERATION Y



DRIVER UPPER SPINE ACCELERATION Z

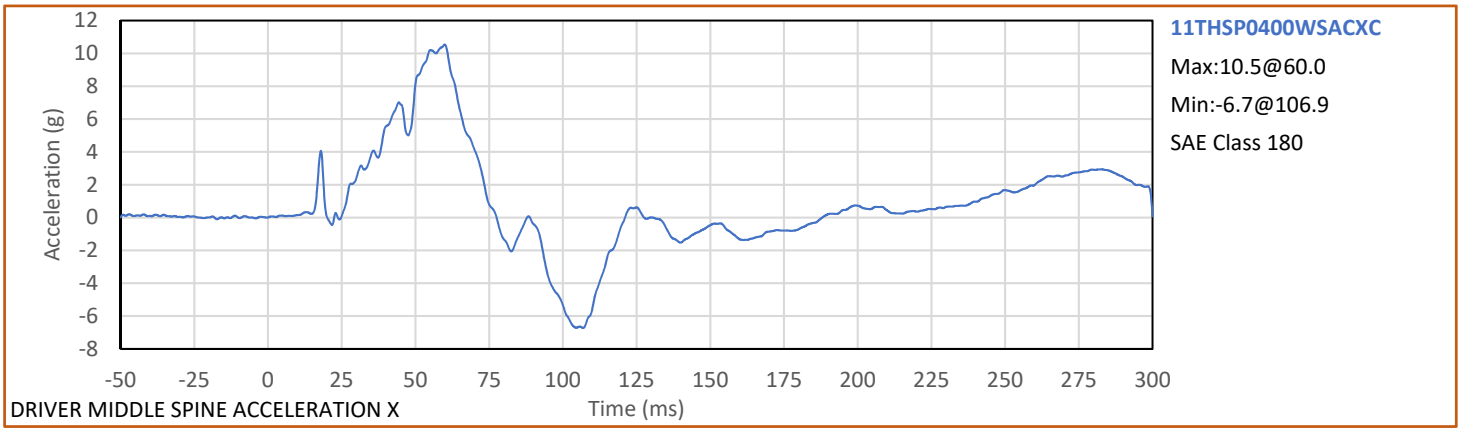
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

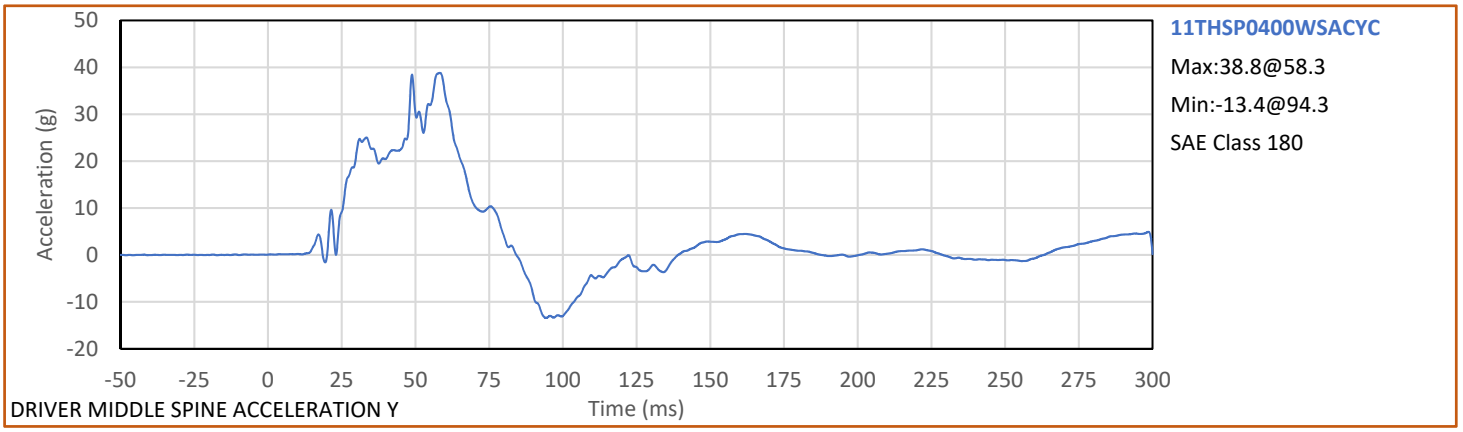
NHTSA No.: R20185381

Test Date: 9/11/2019

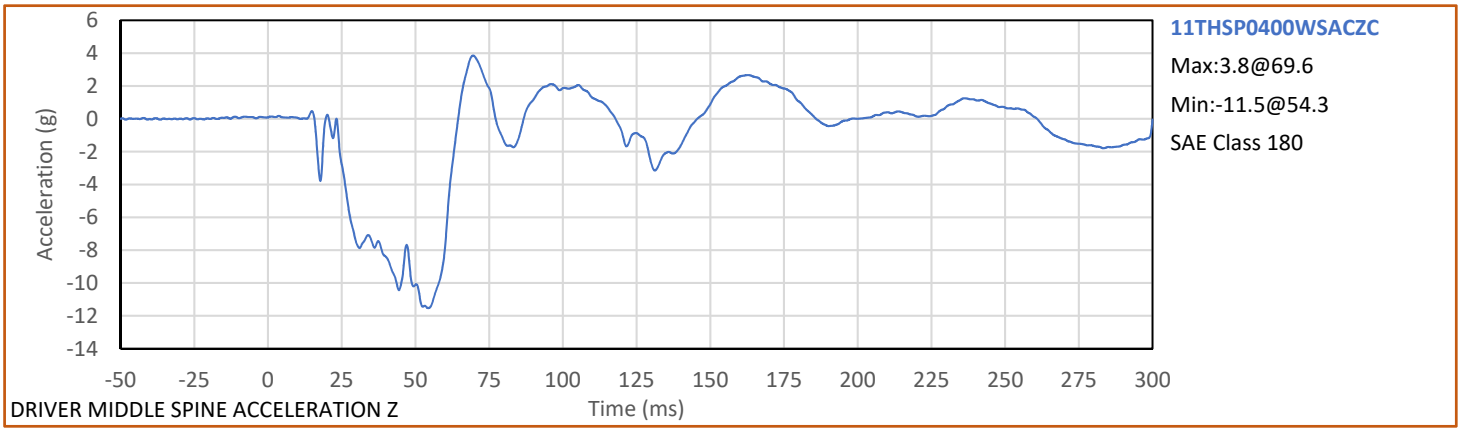
Applus IDIADA KARCO



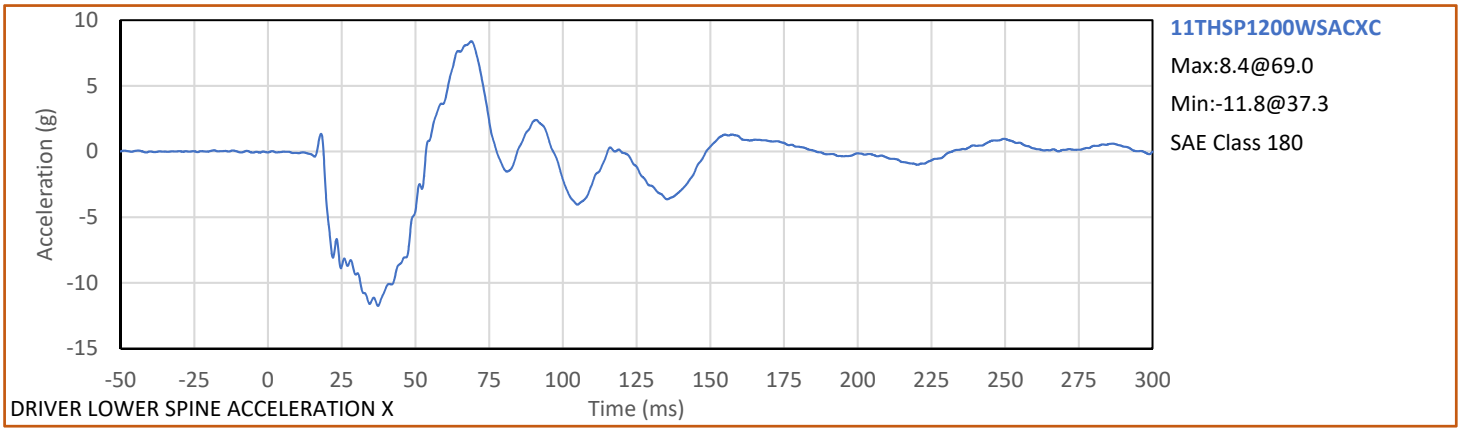
DRIVER MIDDLE SPINE ACCELERATION X



DRIVER MIDDLE SPINE ACCELERATION Y



DRIVER MIDDLE SPINE ACCELERATION Z



DRIVER LOWER SPINE ACCELERATION X

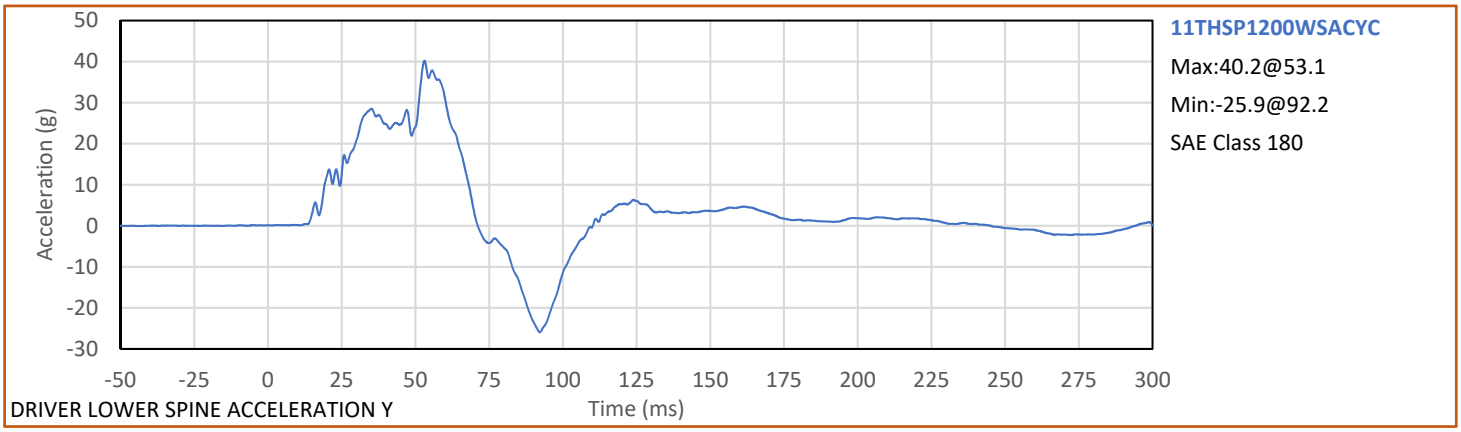
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

NHTSA No.: R20185381

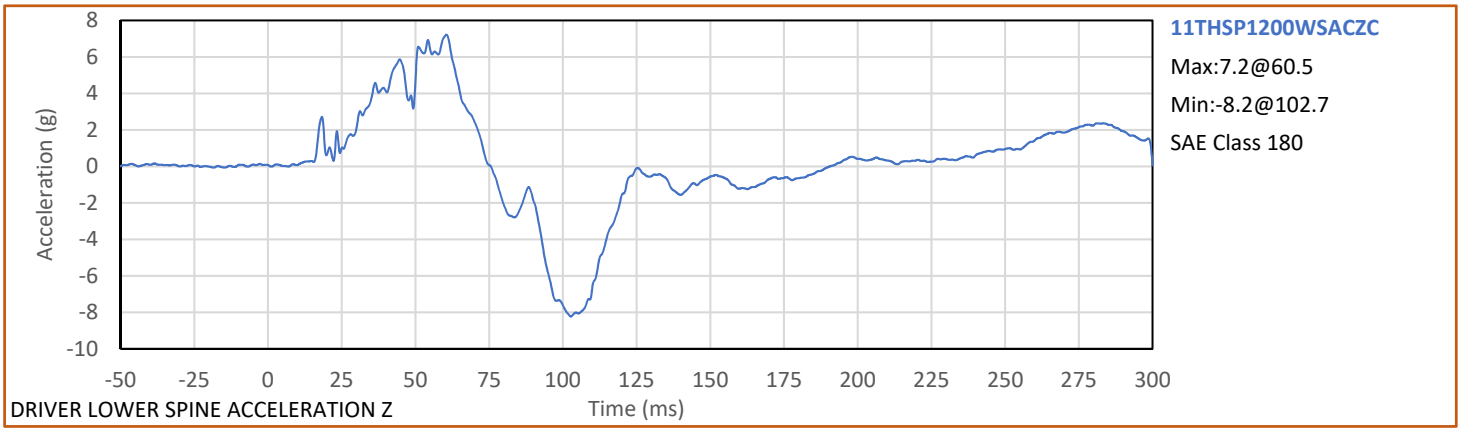
Test Date: 9/11/2019

Applus IDIADA KARCO



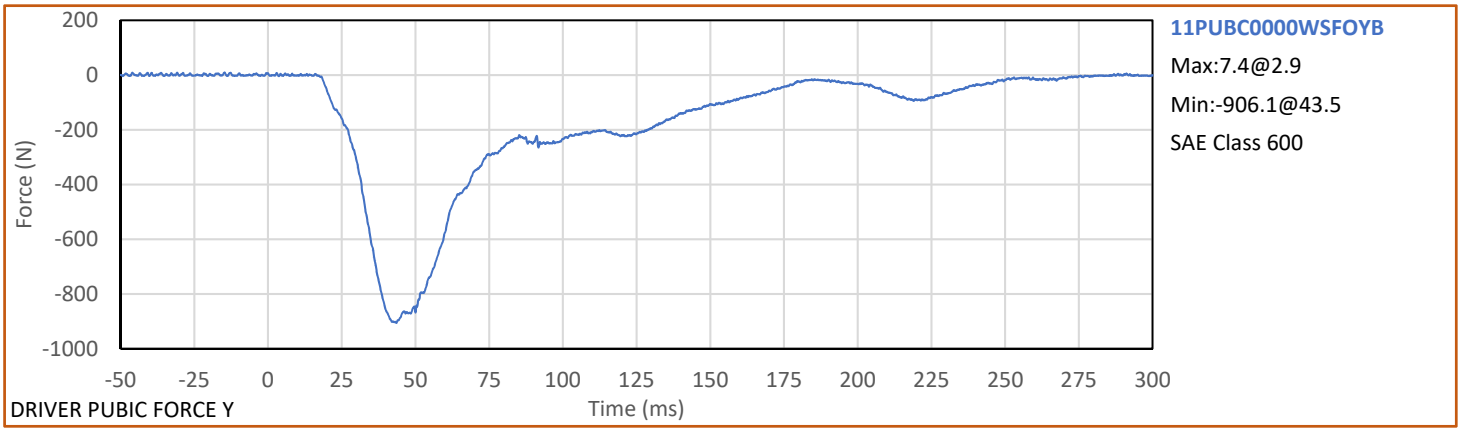
DRIVER LOWER SPINE ACCELERATION Y

11THSP1200WSACYC
Max:40.2@53.1
Min:-25.9@92.2
SAE Class 180



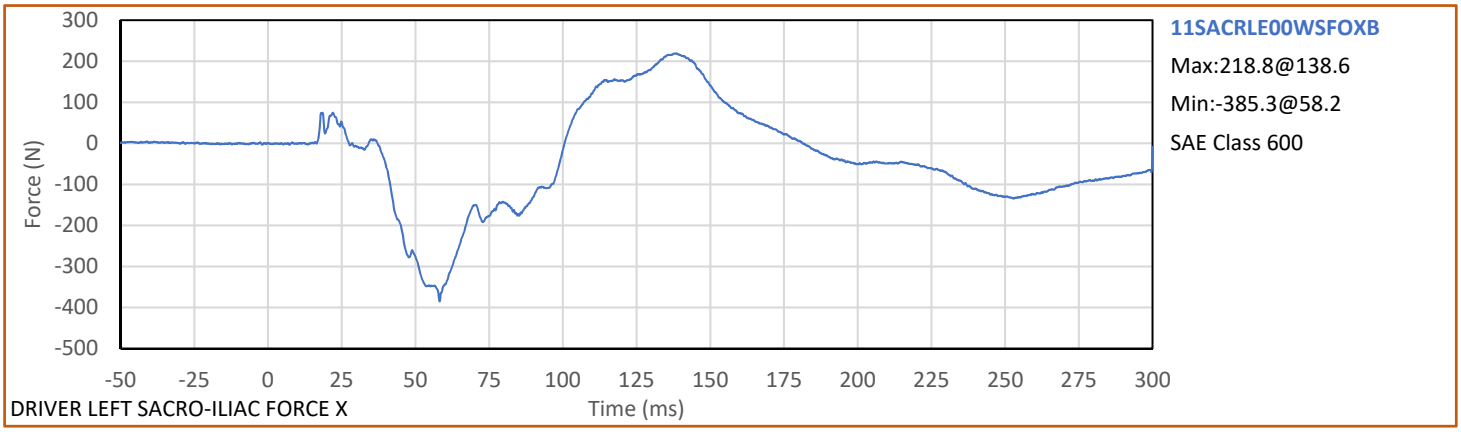
DRIVER LOWER SPINE ACCELERATION Z

11THSP1200WSACZC
Max:7.2@60.5
Min:-8.2@102.7
SAE Class 180



DRIVER PUBIC FORCE Y

11PUBC0000WSFOYB
Max:7.4@2.9
Min:-906.1@43.5
SAE Class 600



DRIVER LEFT SACRO-ILIAC FORCE X

11SACRLE00WSFOXB
Max:218.8@138.6
Min:-385.3@58.2
SAE Class 600

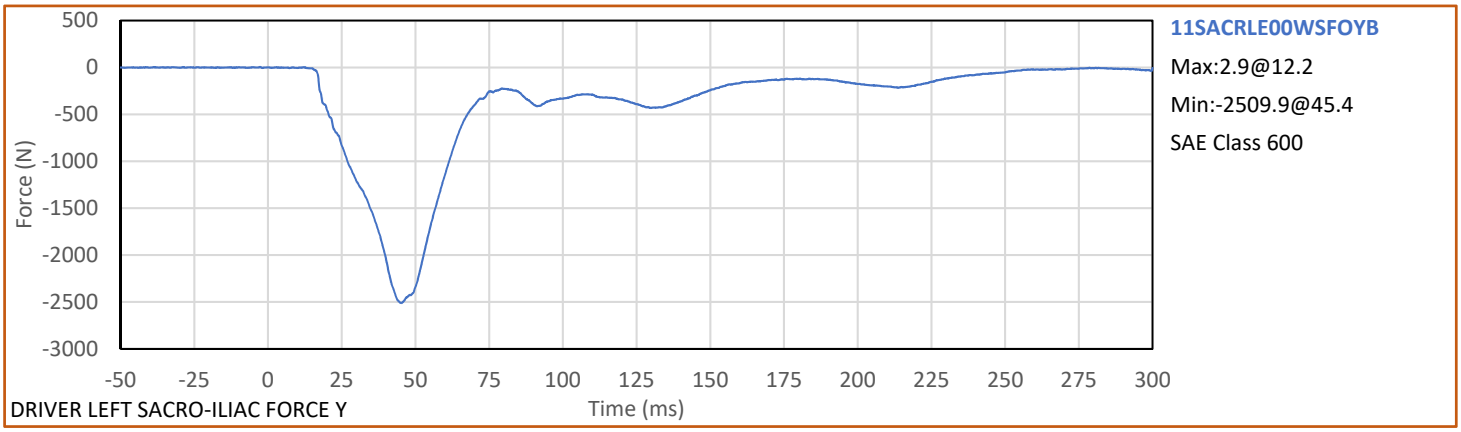
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

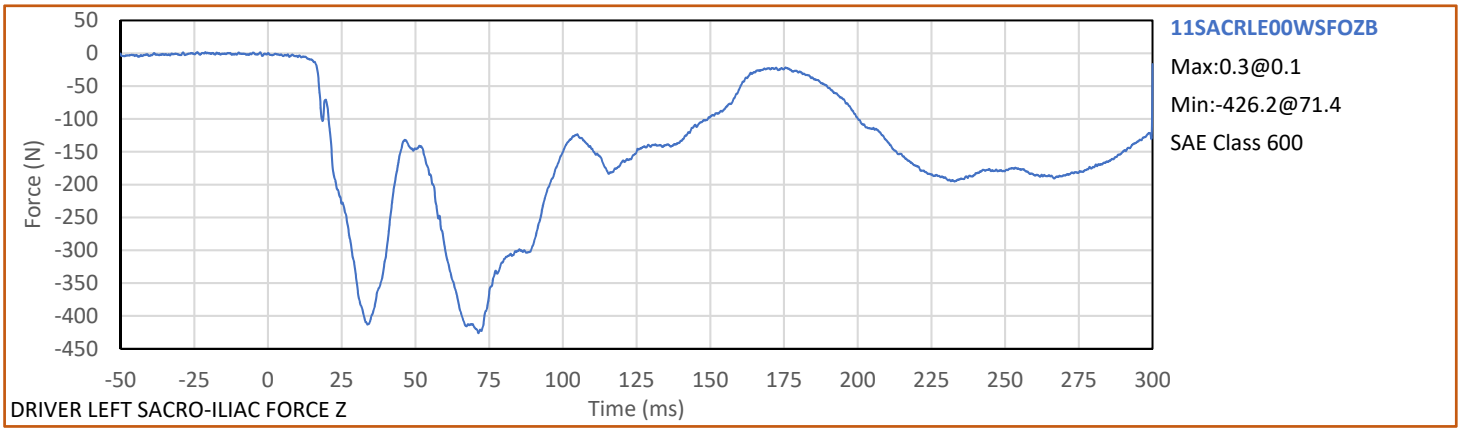
NHTSA No.: R20185381

Test Date: 9/11/2019

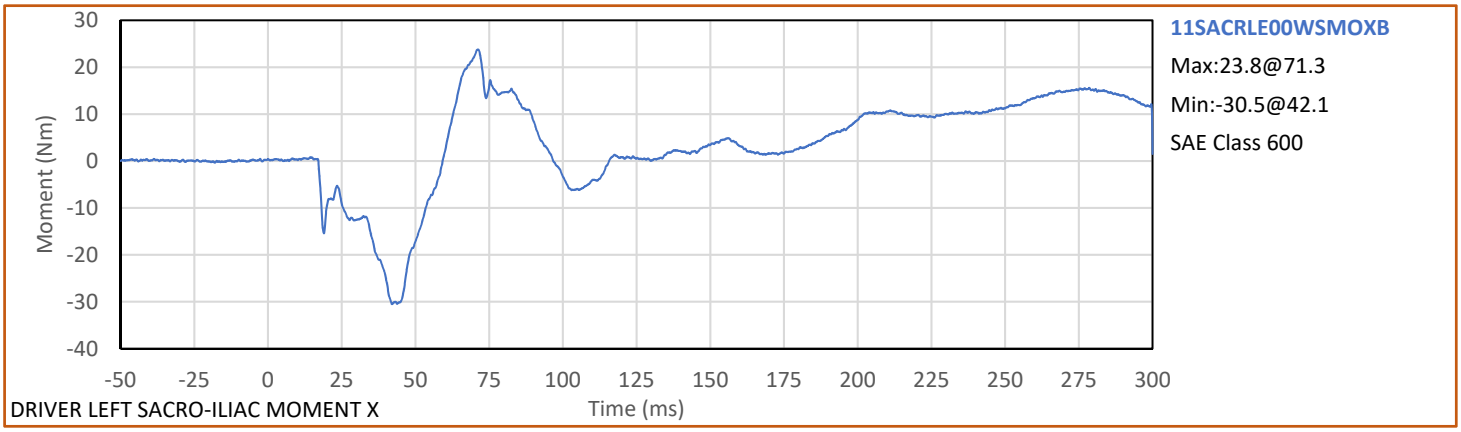
Applus IDIADA KARCO



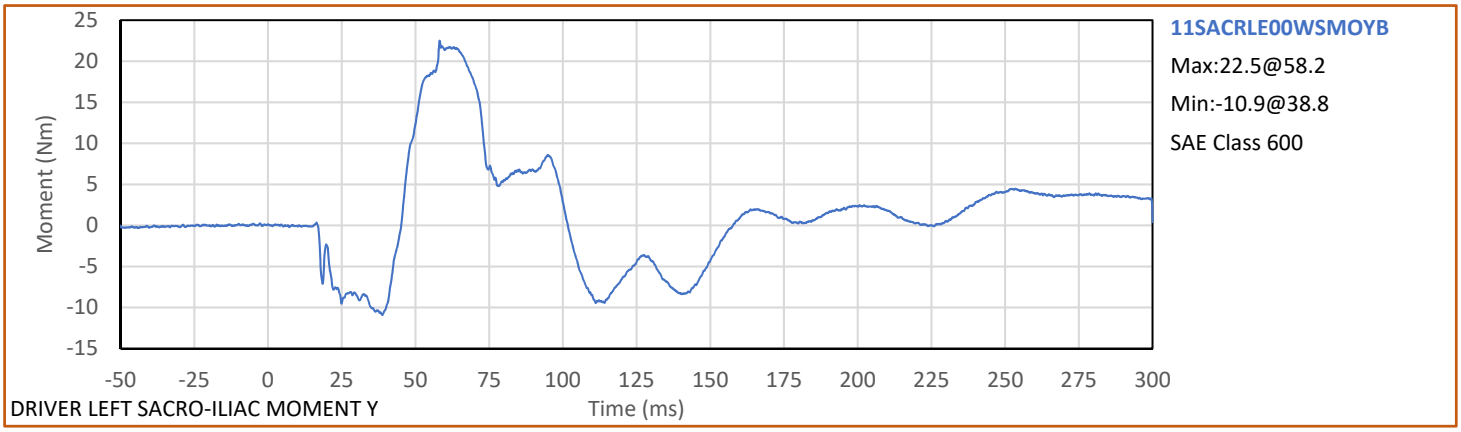
DRIVER LEFT SACRO-ILIAC FORCE Y



DRIVER LEFT SACRO-ILIAC FORCE Z



DRIVER LEFT SACRO-ILIAC MOMENT X



DRIVER LEFT SACRO-ILIAC MOMENT Y

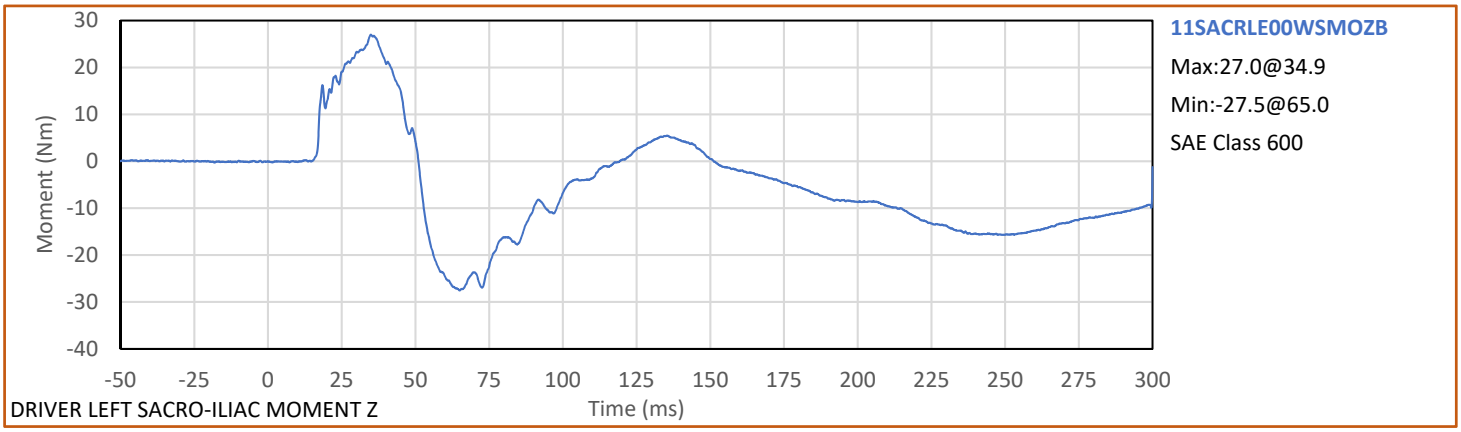
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

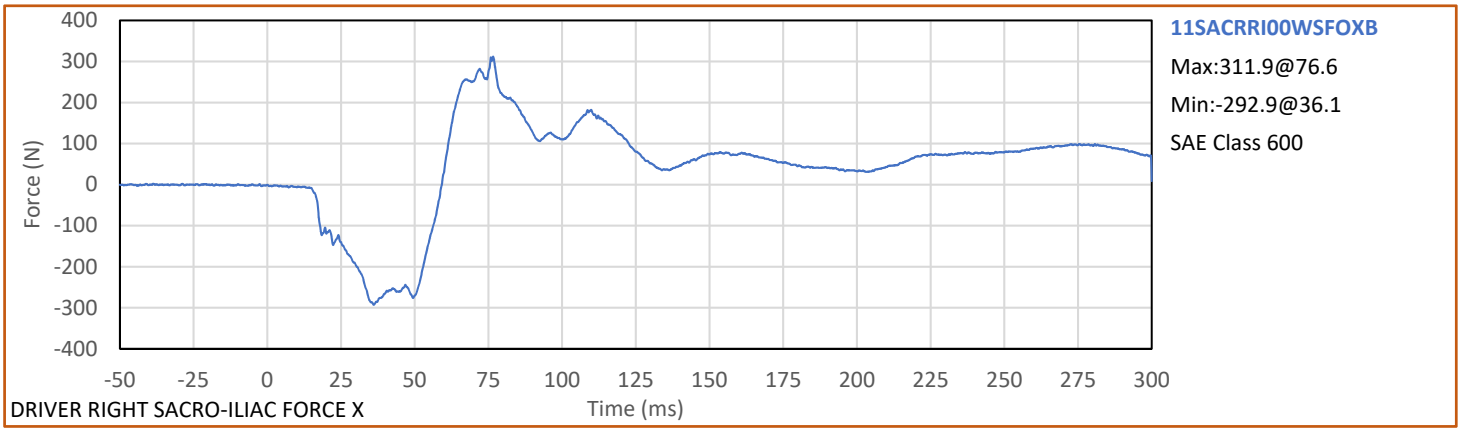
NHTSA No.: R20185381

Test Date: 9/11/2019

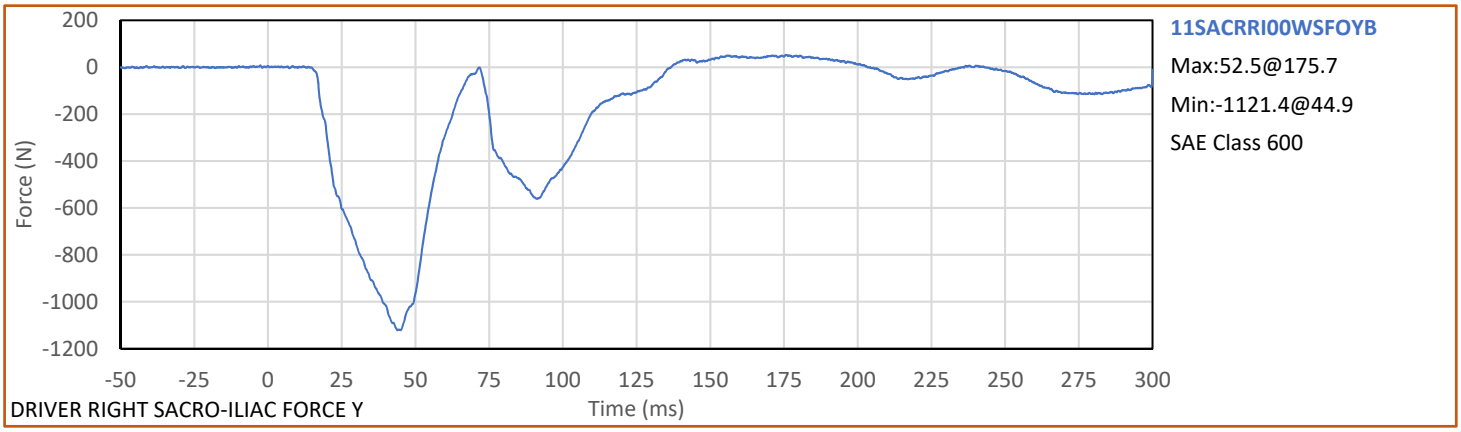
Applus IDIADA KARCO



DRIVER LEFT SACRO-ILIAC MOMENT Z

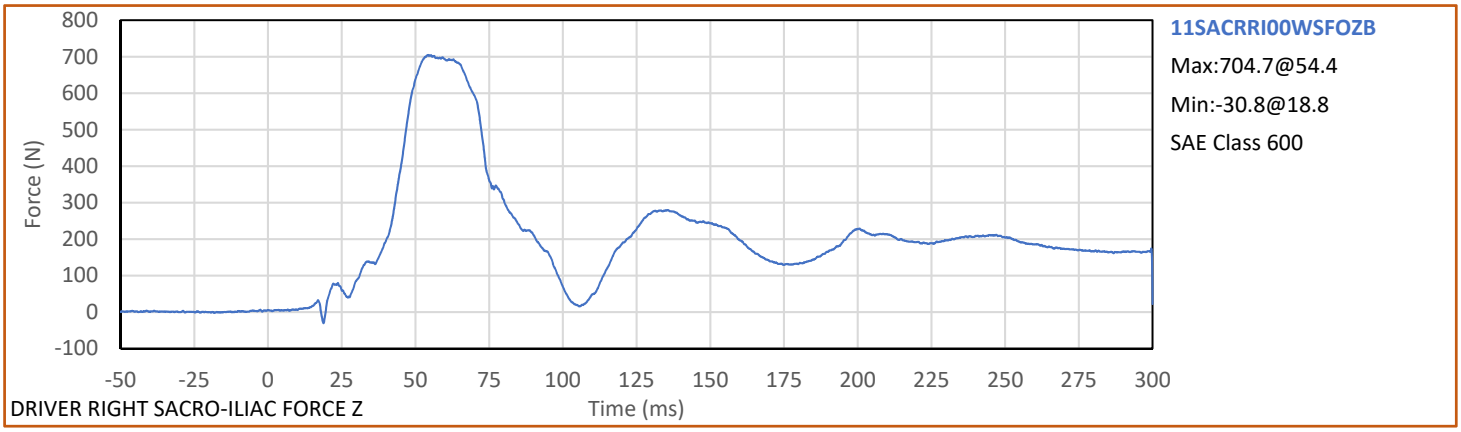


DRIVER RIGHT SACRO-ILIAC FORCE X



DRIVER RIGHT SACRO-ILIAC FORCE Y

E



DRIVER RIGHT SACRO-ILIAC FORCE Z

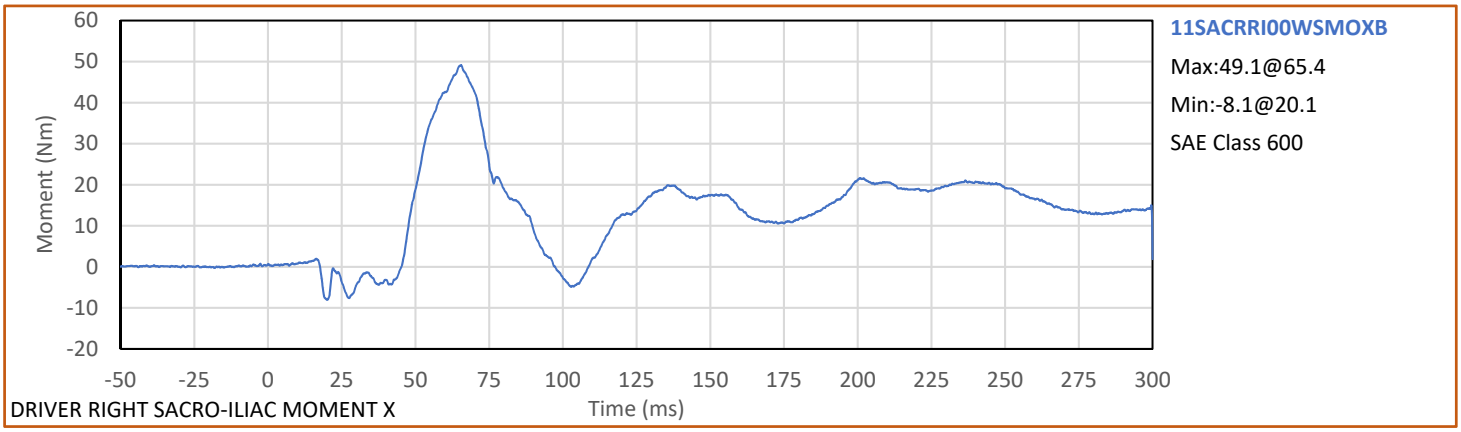
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

NHTSA No.: R20185381

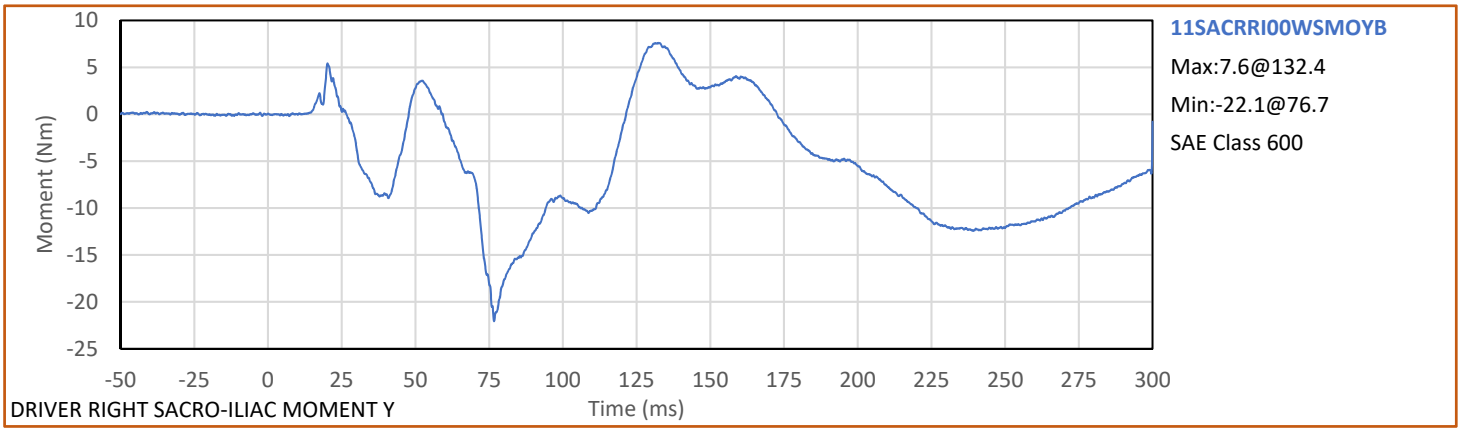
Test Date: 9/11/2019

Applus IDIADA KARCO



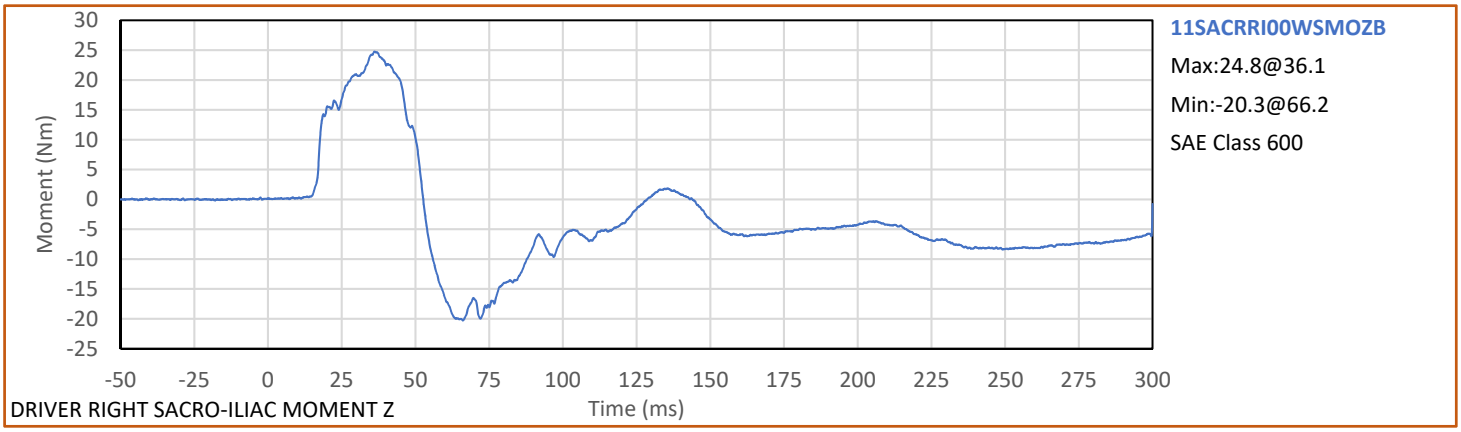
DRIVER RIGHT SACRO-ILIAC MOMENT X

11SACRRI00WSMOXB
Max:49.1@65.4
Min:-8.1@20.1
SAE Class 600



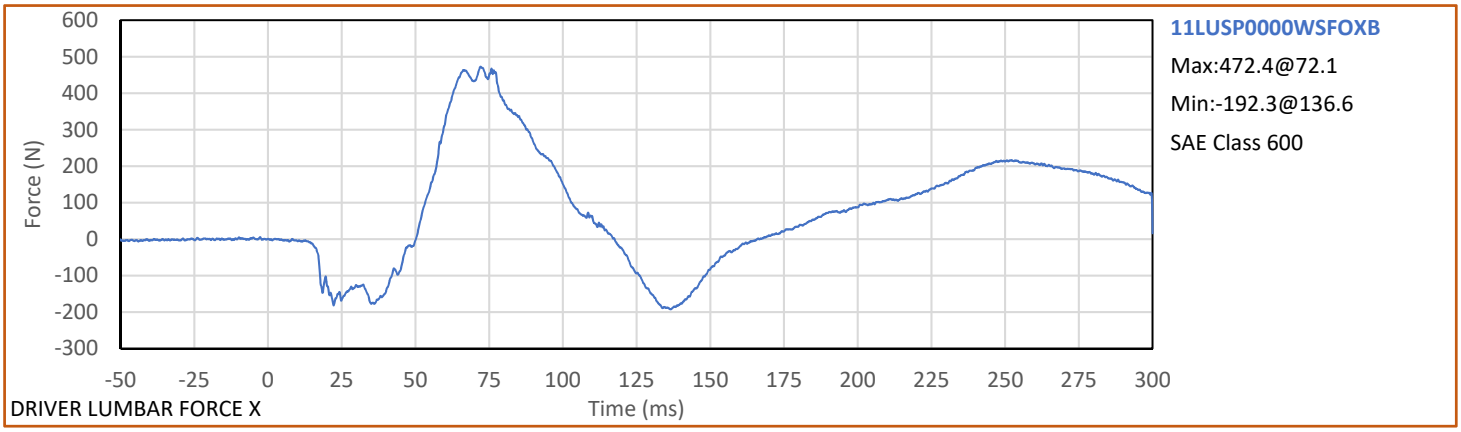
DRIVER RIGHT SACRO-ILIAC MOMENT Y

11SACRRI00WSMOYB
Max:7.6@132.4
Min:-22.1@76.7
SAE Class 600



DRIVER RIGHT SACRO-ILIAC MOMENT Z

11SACRRI00WSMOZB
Max:24.8@36.1
Min:-20.3@66.2
SAE Class 600



DRIVER LUMBAR FORCE X

11LUSP0000WSFOXB
Max:472.4@72.1
Min:-192.3@136.6
SAE Class 600

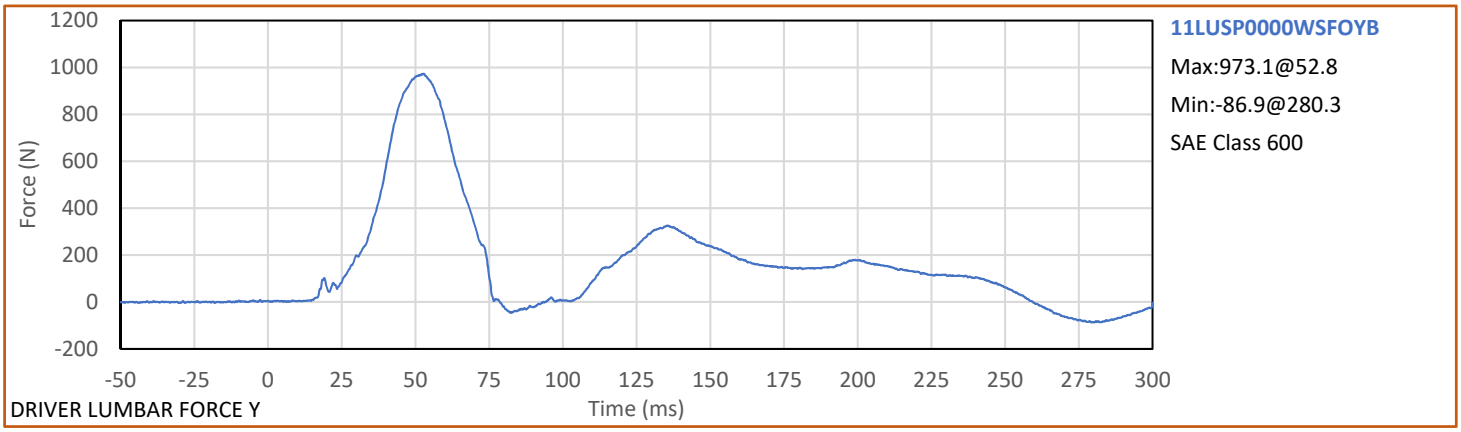
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

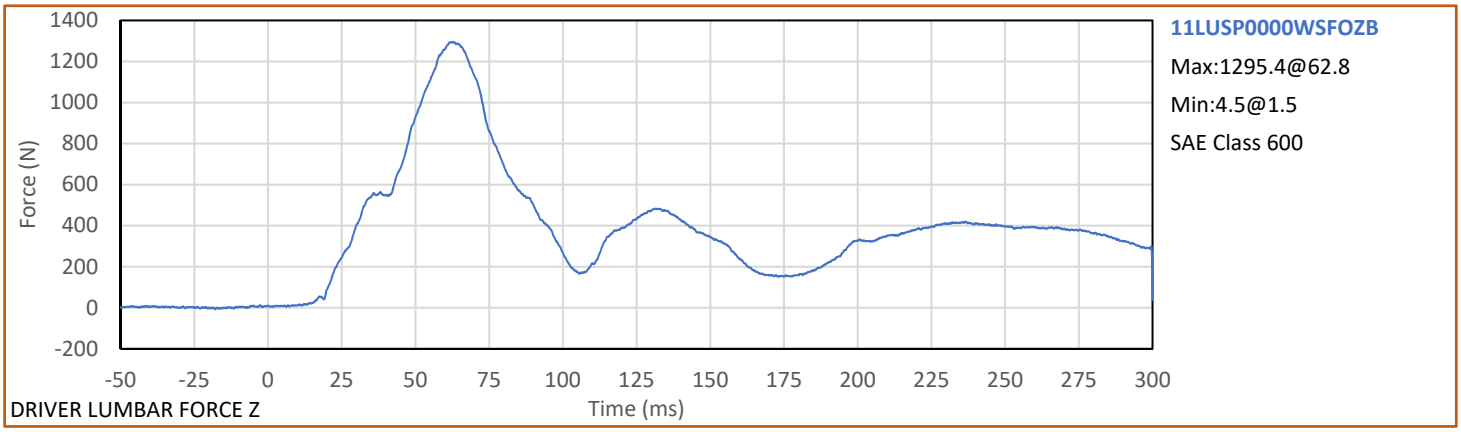
NHTSA No.: R20185381

Test Date: 9/11/2019

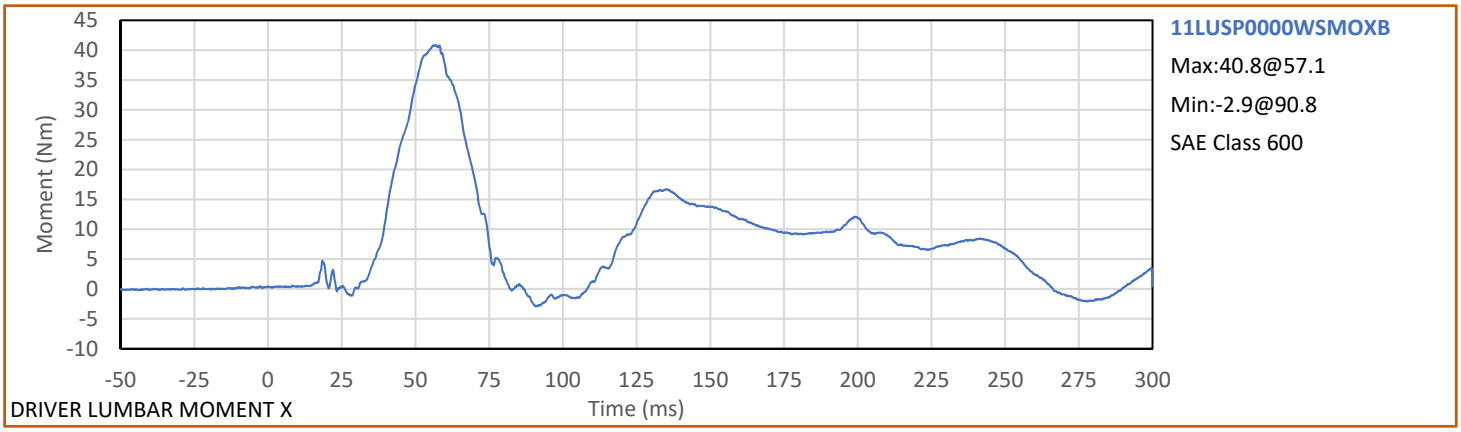
Applus IDIADA KARCO



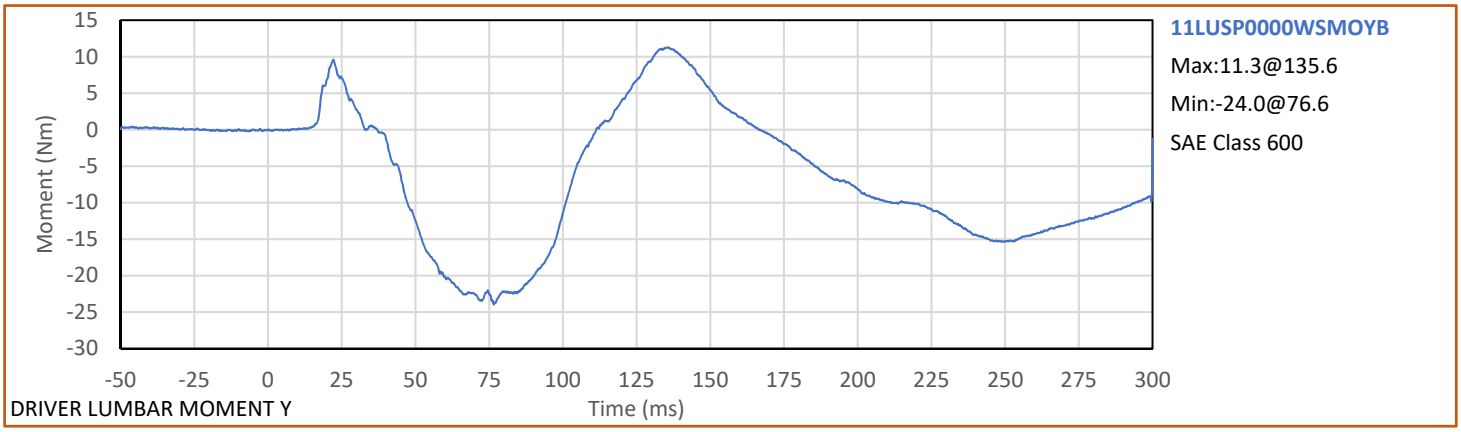
DRIVER LUMBAR FORCE Y



DRIVER LUMBAR FORCE Z



DRIVER LUMBAR MOMENT X



DRIVER LUMBAR MOMENT Y

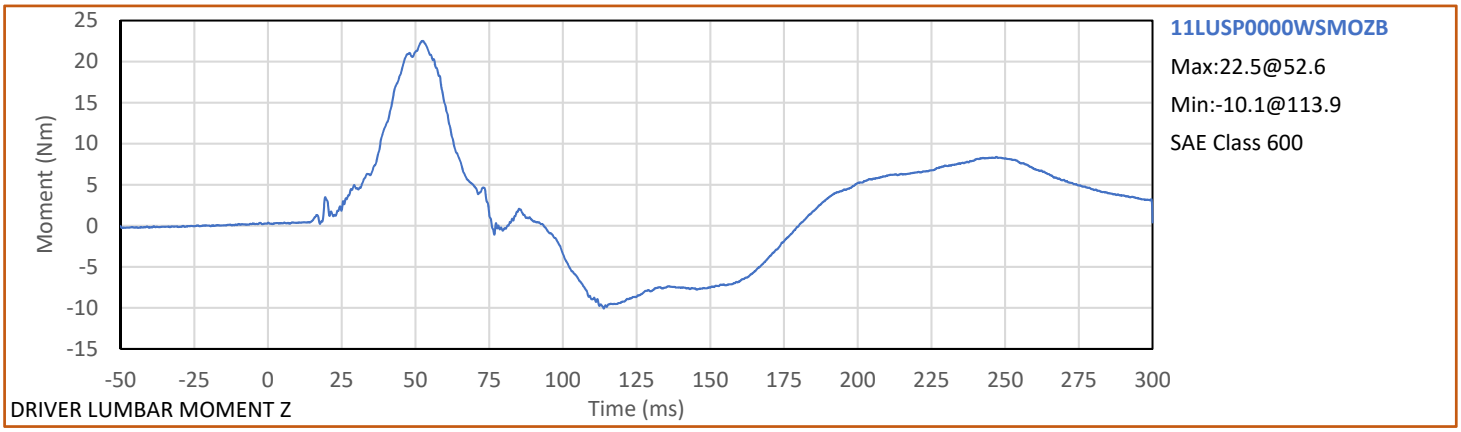
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

NHTSA No.: R20185381

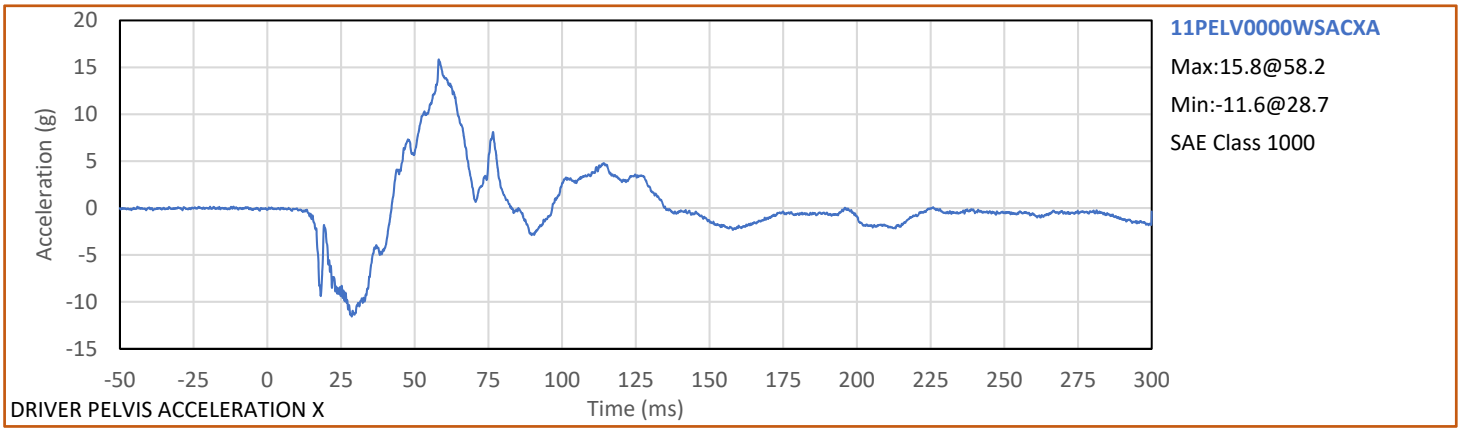
Test Date: 9/11/2019

Applus IDIADA KARCO



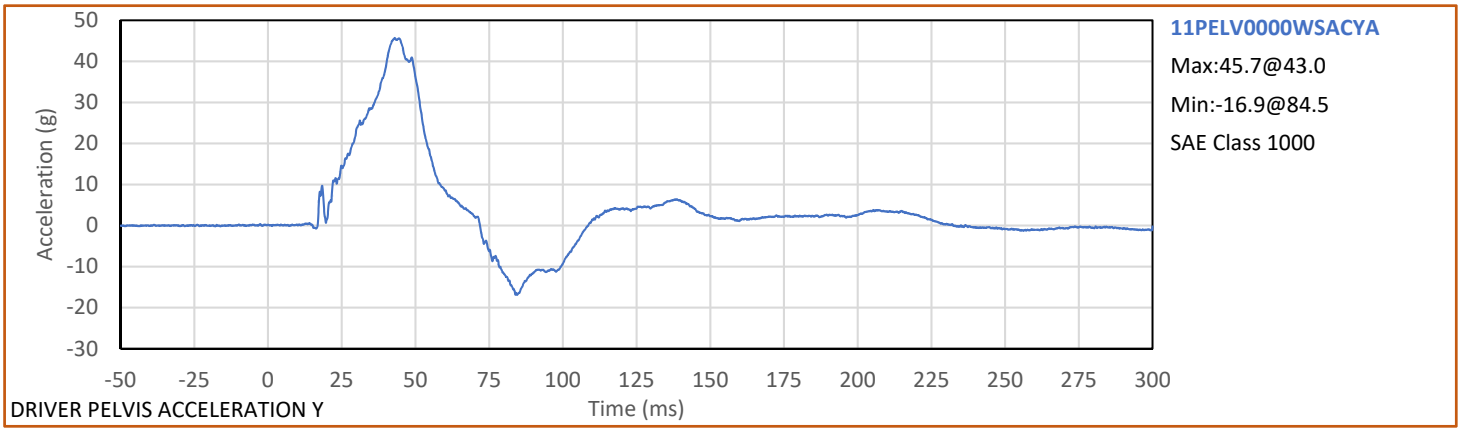
DRIVER LUMBAR MOMENT Z

11LUSP0000WSMOZB
Max:22.5@52.6
Min:-10.1@113.9
SAE Class 600



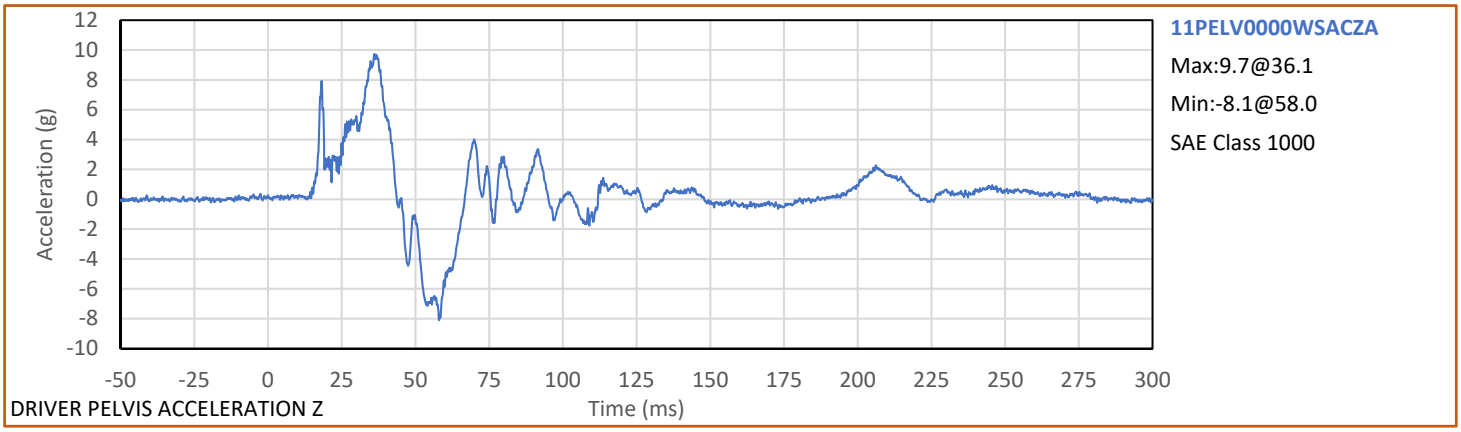
DRIVER PELVIS ACCELERATION X

11PELV0000WSACXA
Max:15.8@58.2
Min:-11.6@28.7
SAE Class 1000



DRIVER PELVIS ACCELERATION Y

11PELV0000WSACYA
Max:45.7@43.0
Min:-16.9@84.5
SAE Class 1000



DRIVER PELVIS ACCELERATION Z

11PELV0000WSACZA
Max:9.7@36.1
Min:-8.1@58.0
SAE Class 1000

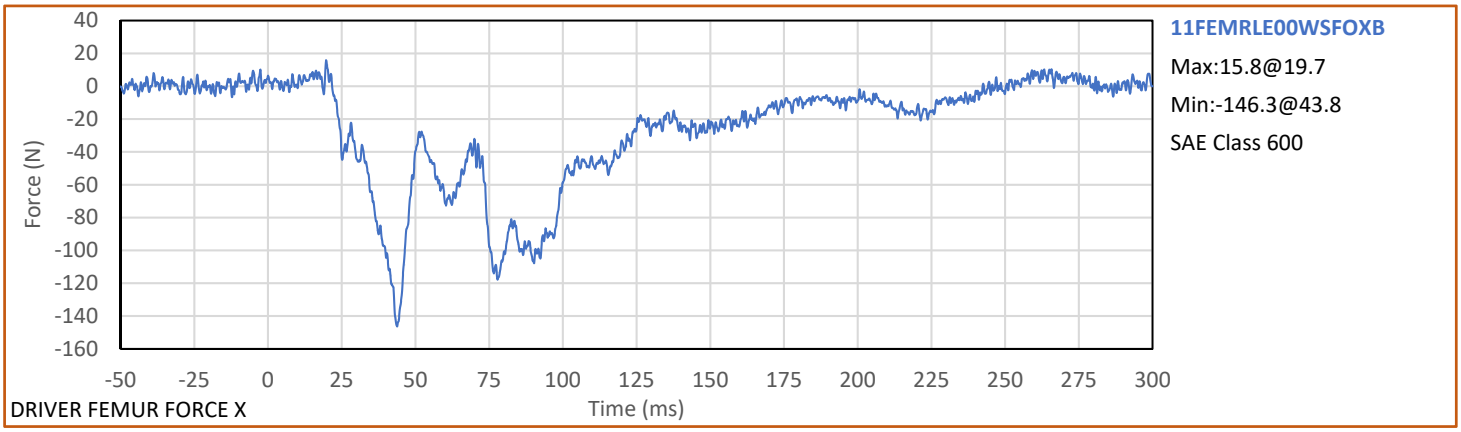
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

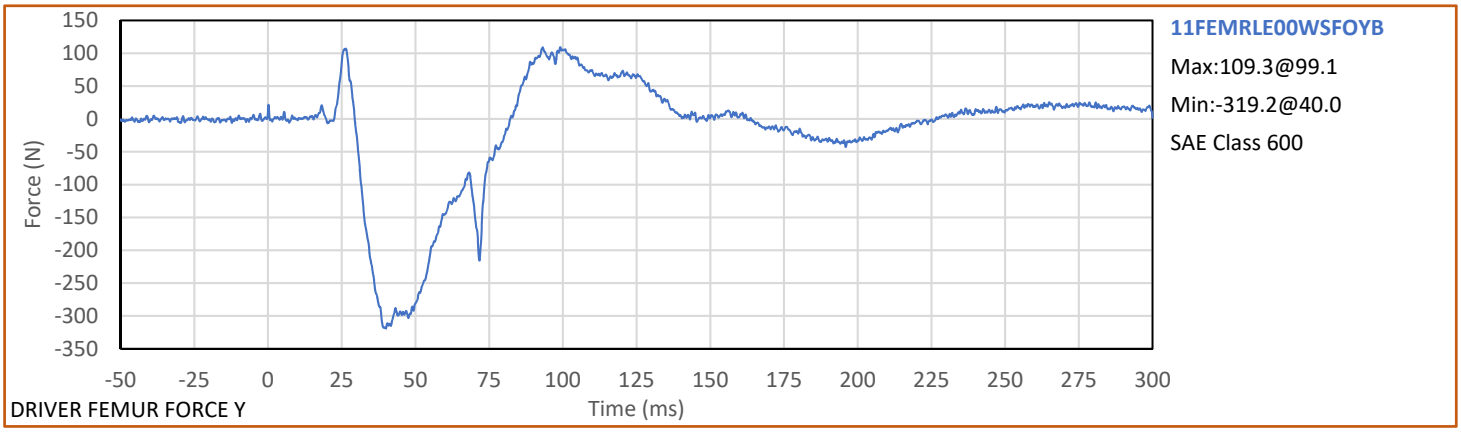
Test Program: 75° Research Oblique Side Impact (Rigid Pole)

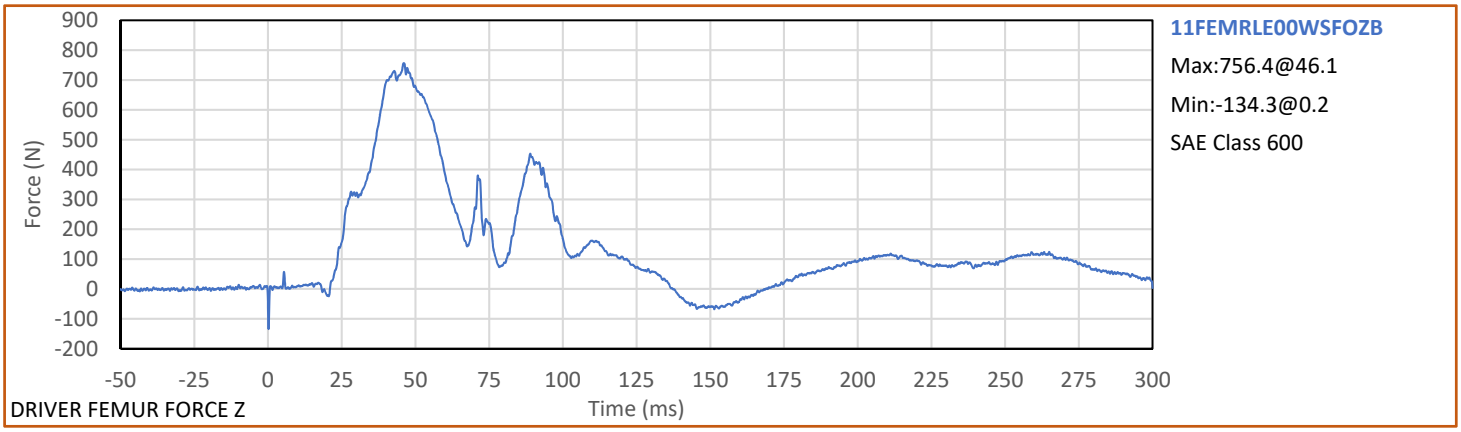
NHTSA No.: R20185381

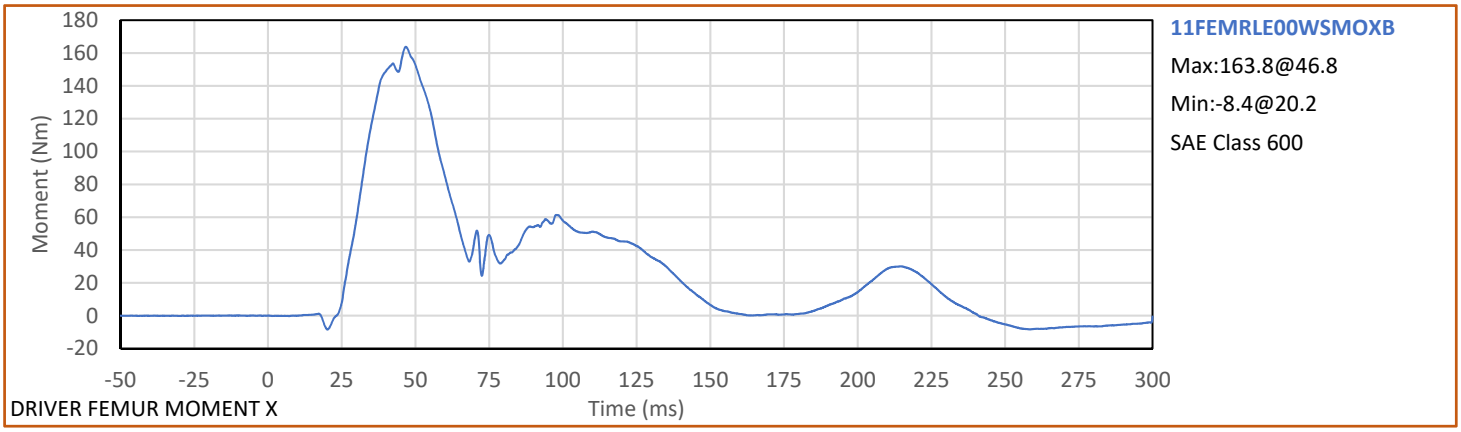
Test Date: 9/11/2019

Applus IDIADA KARCO









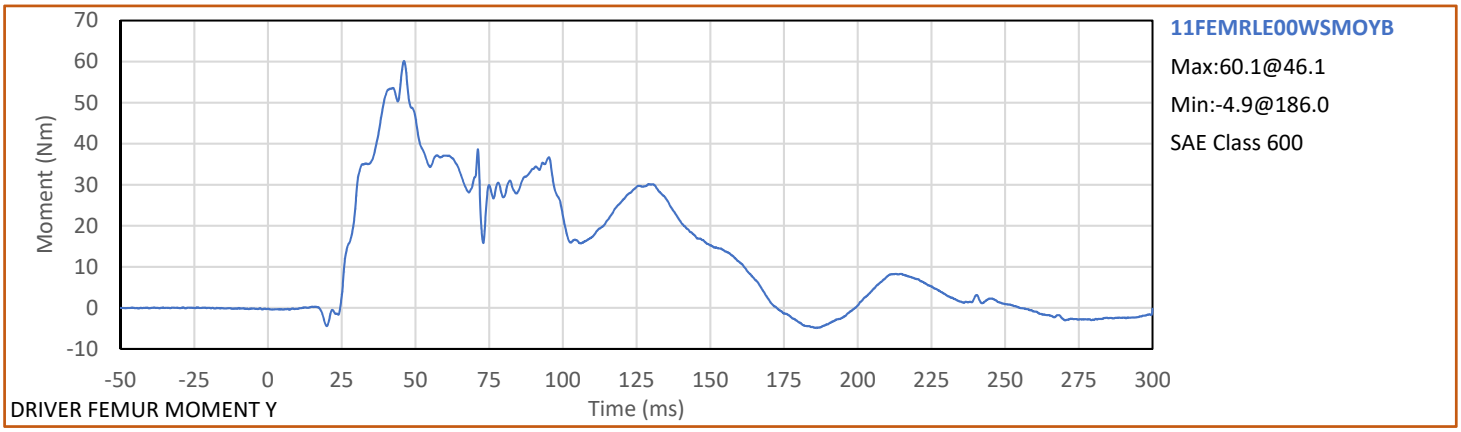
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

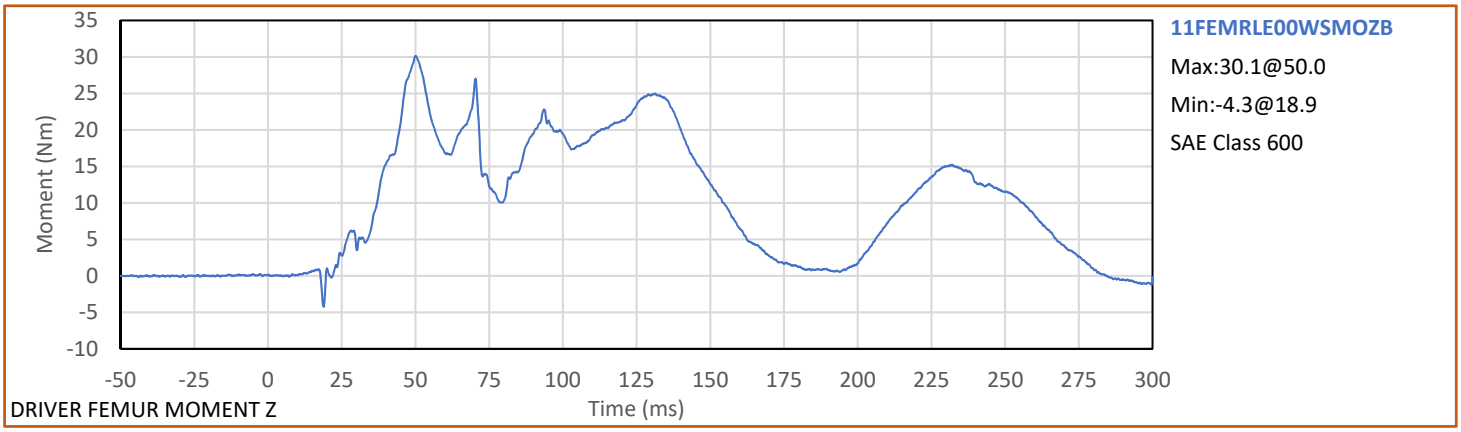
NHTSA No.: R20185381

Test Date: 9/11/2019

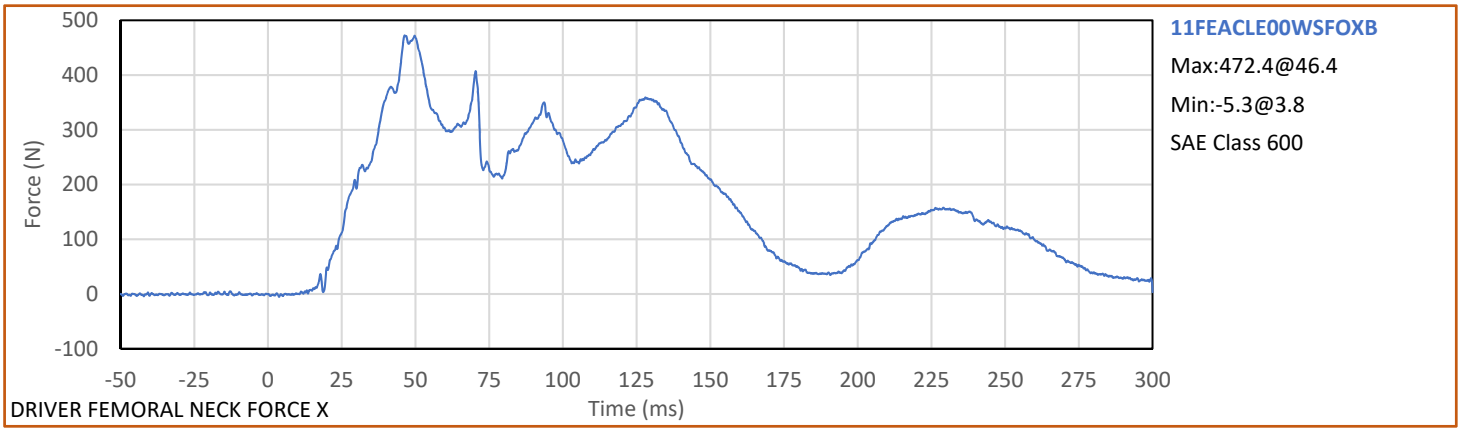
Applus IDIADA KARCO



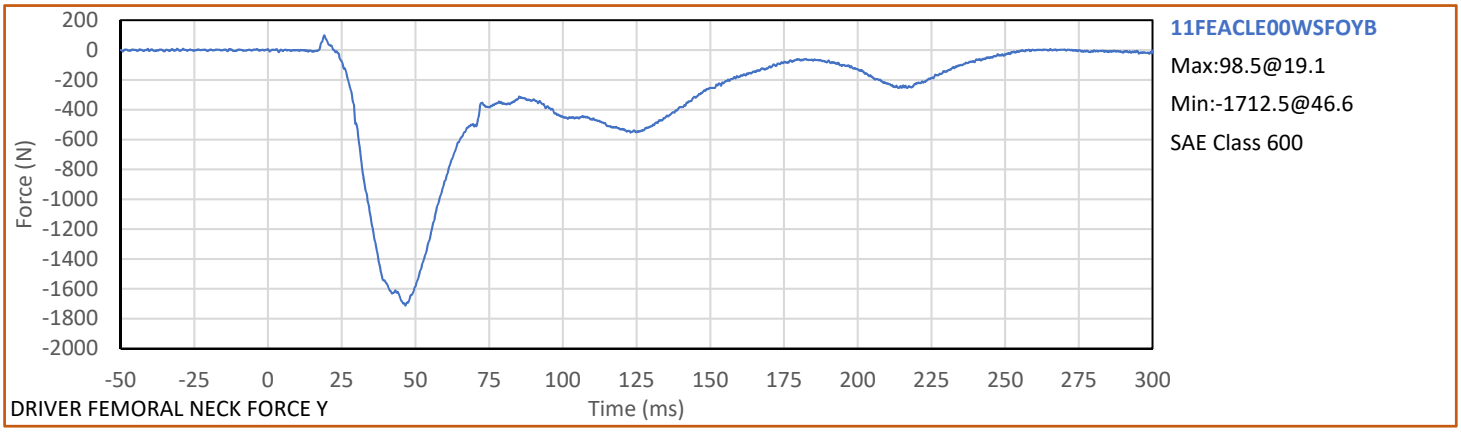
DRIVER FEMUR MOMENT Y



DRIVER FEMUR MOMENT Z



DRIVER FEMORAL NECK FORCE X



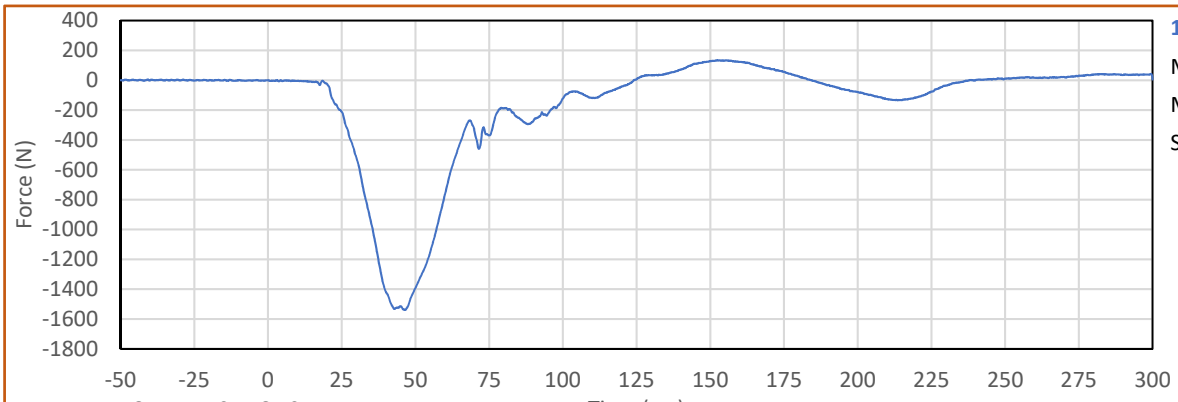
DRIVER FEMORAL NECK FORCE Y

Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

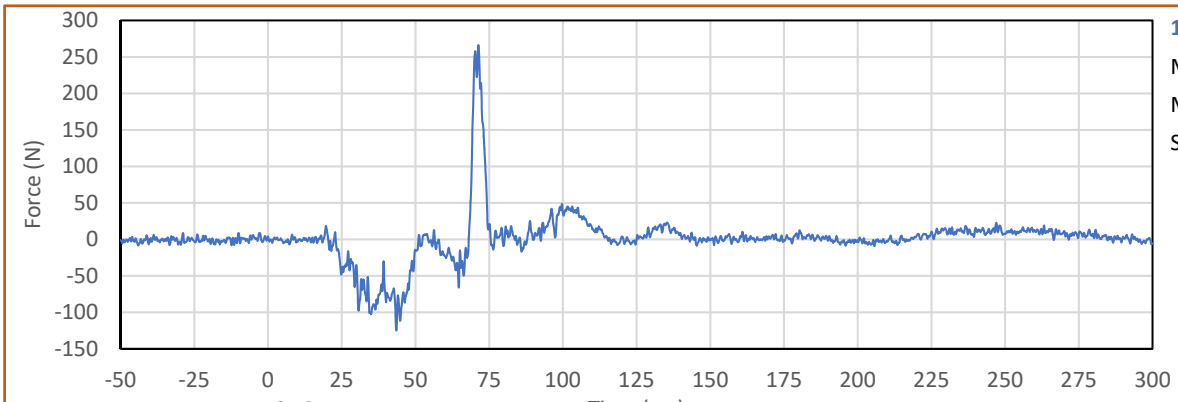
NHTSA No.: R20185381

Test Date: 9/11/2019



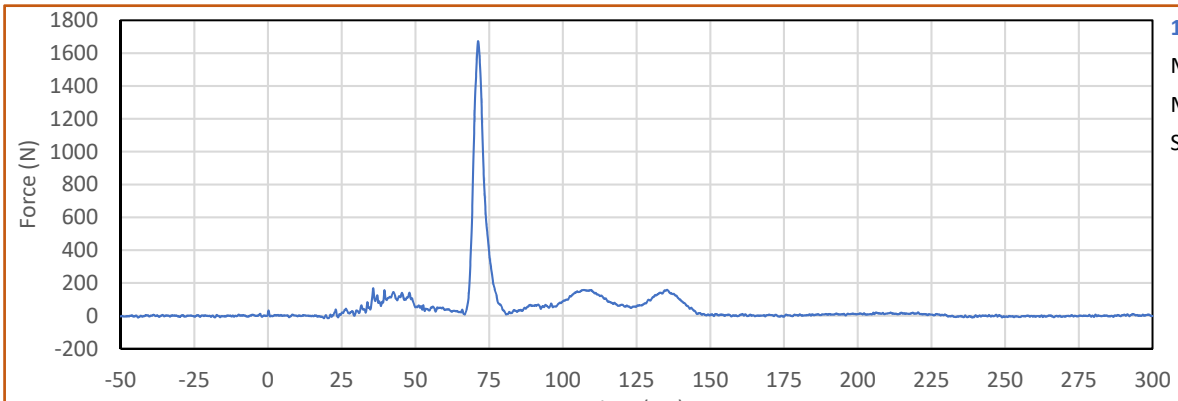
DRIVER FEMORAL NECK FORCE Z

11FEACLE00WSFOZB
Max:134.1@152.1
Min:-1539.4@46.6
SAE Class 600



DRIVER LEFT KNEE INNER FORCE Y

11KNEELEINWSFOYB
Max:266.2@71.4
Min:-125.1@43.5
SAE Class 600



DRIVER LEFT KNEE OUTER FORCE Y

11KNEELEOUWSFOYB
Max:1673.6@71.3
Min:-14.6@19.0
SAE Class 600

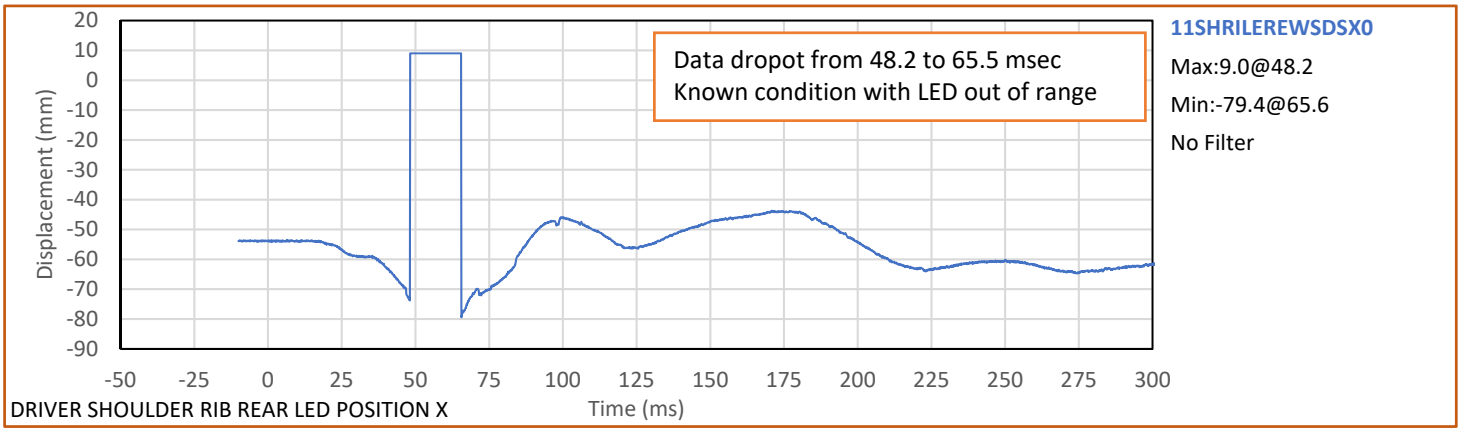
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

NHTSA No.: R20185381

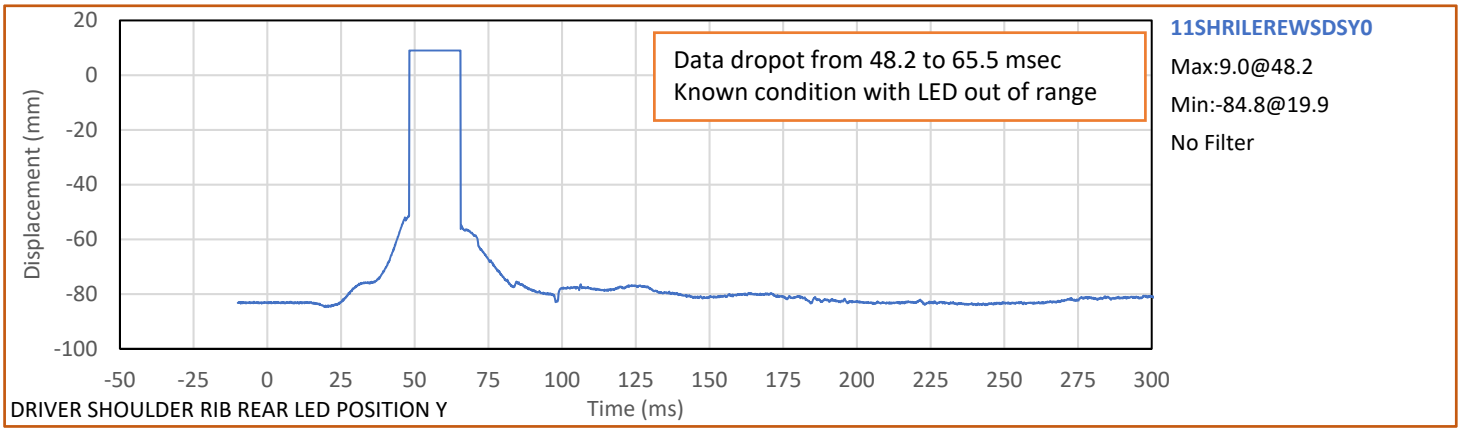
Test Date: 9/11/2019

Applus IDIADA KARCO



11SHRILEREWSDSX0
Max:9.0@48.2
Min:-79.4@65.6
No Filter

DRIVER SHOULDER RIB REAR LED POSITION X



11SHRILEREWSDSY0
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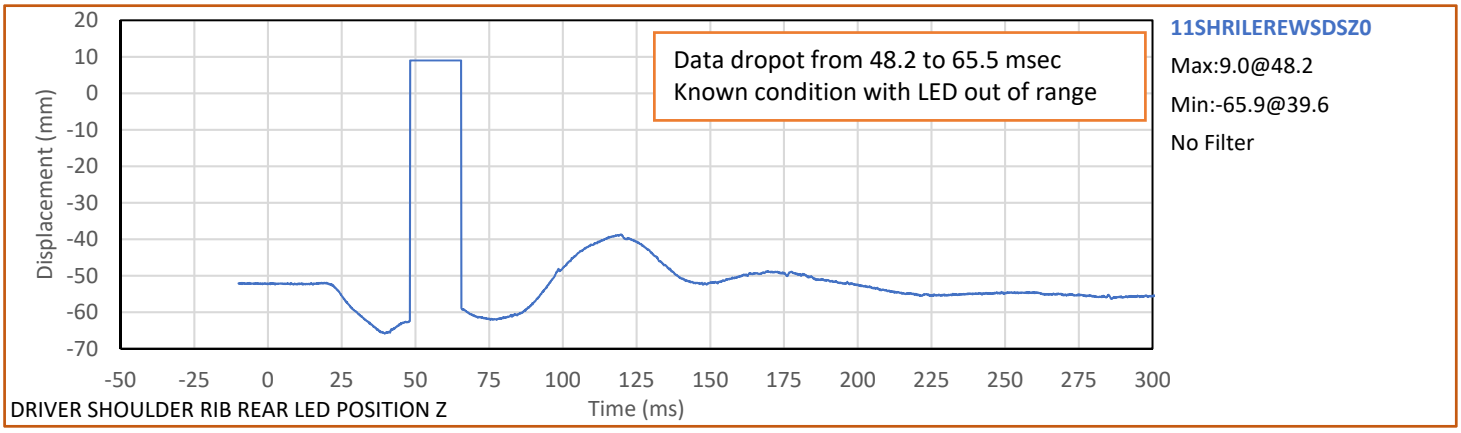
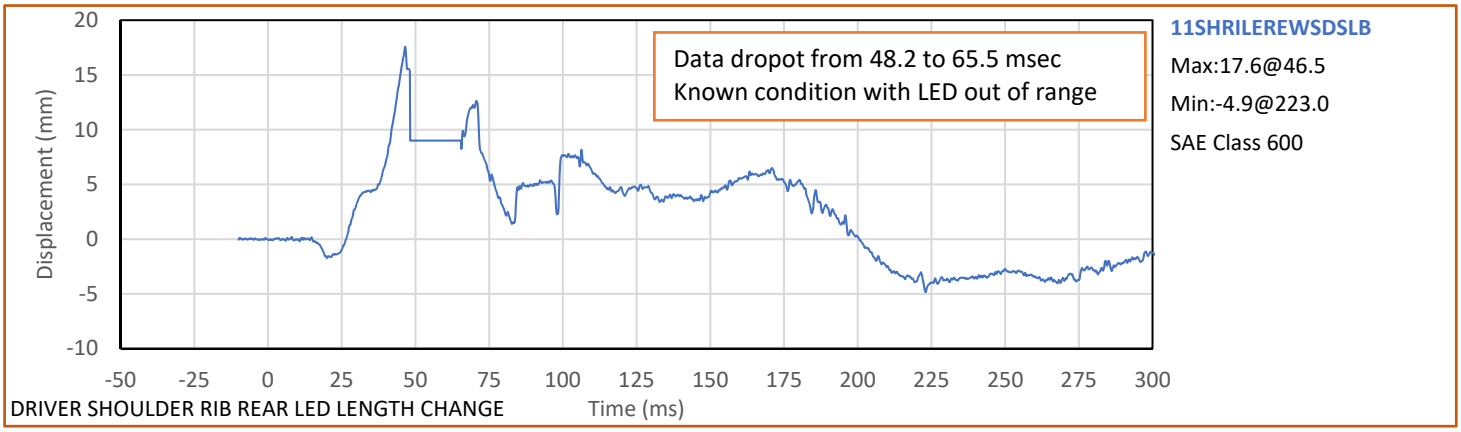
Min:-84.8@19.9
No Filter

DRIVER SHOULDER RIB REAR LED POSITION Y



11SHRILEREWSDSZ0
Max:9.0@48.2
Min:-65.9@39.6
No Filter

DRIVER SHOULDER RIB REAR LED POSITION Z



11SHRILEREWSDSLB
Max:17.6@46.5
Min:-4.9@223.0
SAE Class 600

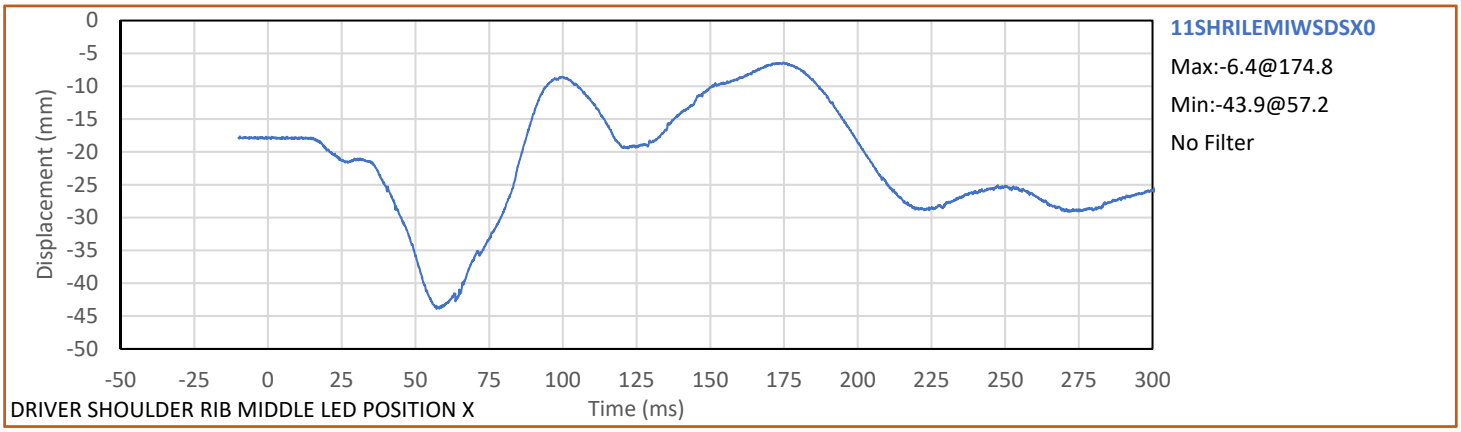
DRIVER SHOULDER RIB REAR LED LENGTH CHANGE

Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

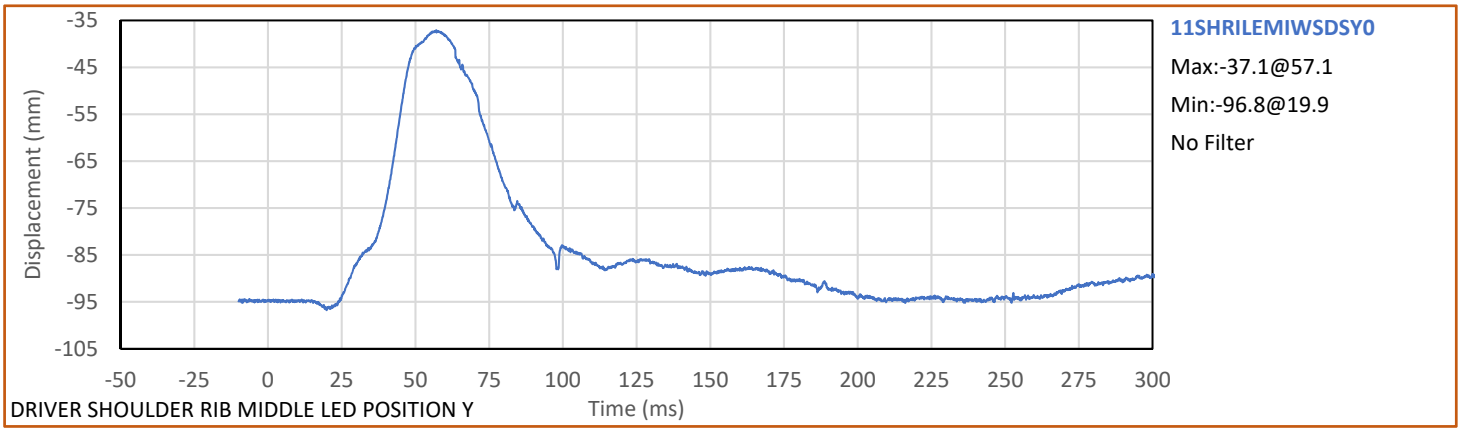
NHTSA No.: R20185381

Test Date: 9/11/2019



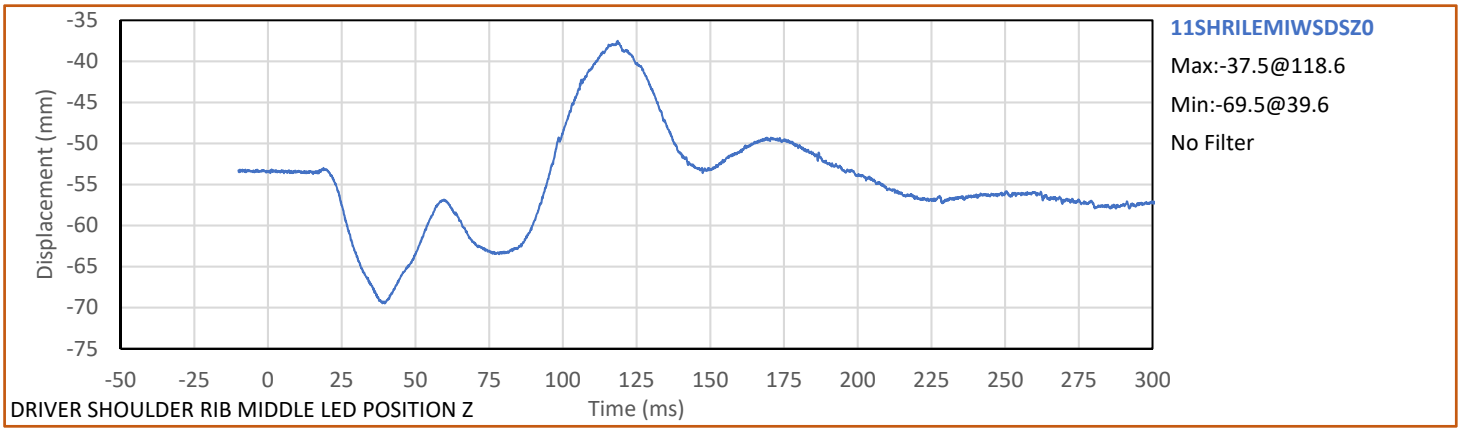
DRIVER SHOULDER RIB MIDDLE LED POSITION X

11SHRILEMIWSDSX0
Max:-6.4@174.8
Min:-43.9@57.2
No Filter



DRIVER SHOULDER RIB MIDDLE LED POSITION Y

11SHRILEMIWSDSY0
Max:-37.1@57.1
Min:-96.8@19.9
No Filter



DRIVER SHOULDER RIB MIDDLE LED POSITION Z

11SHRILEMIWSDSZ0
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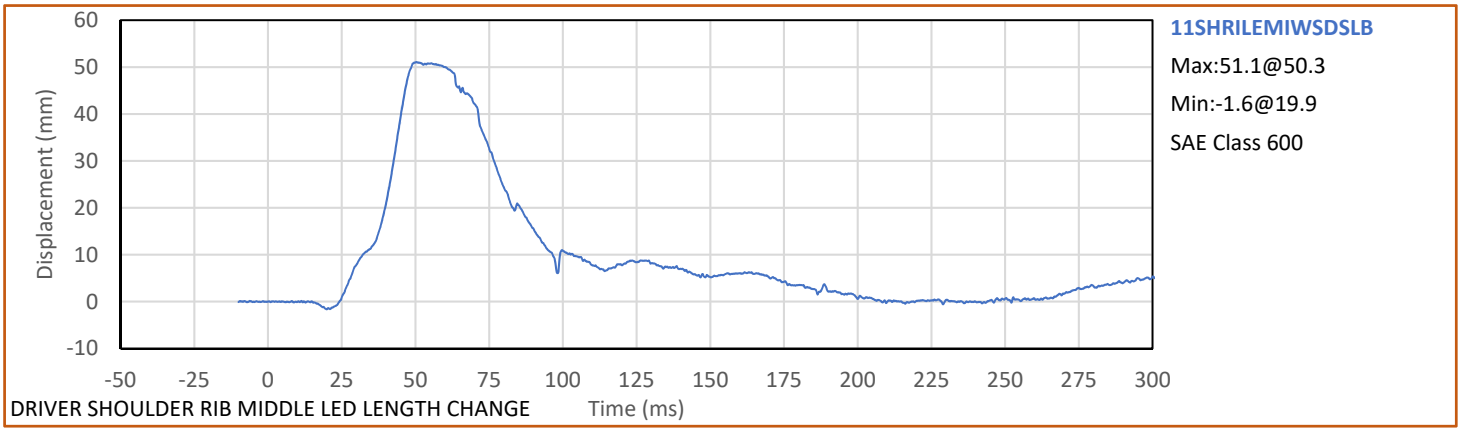
Min:-69.5@39.6
No Filter



DRIVER SHOULDER RIB MIDDLE LED LENGTH CHANGE

11SHRILEMIWSDSLB
Max:51.1@50.3
Min:-1.6@19.9
SAE Class 600

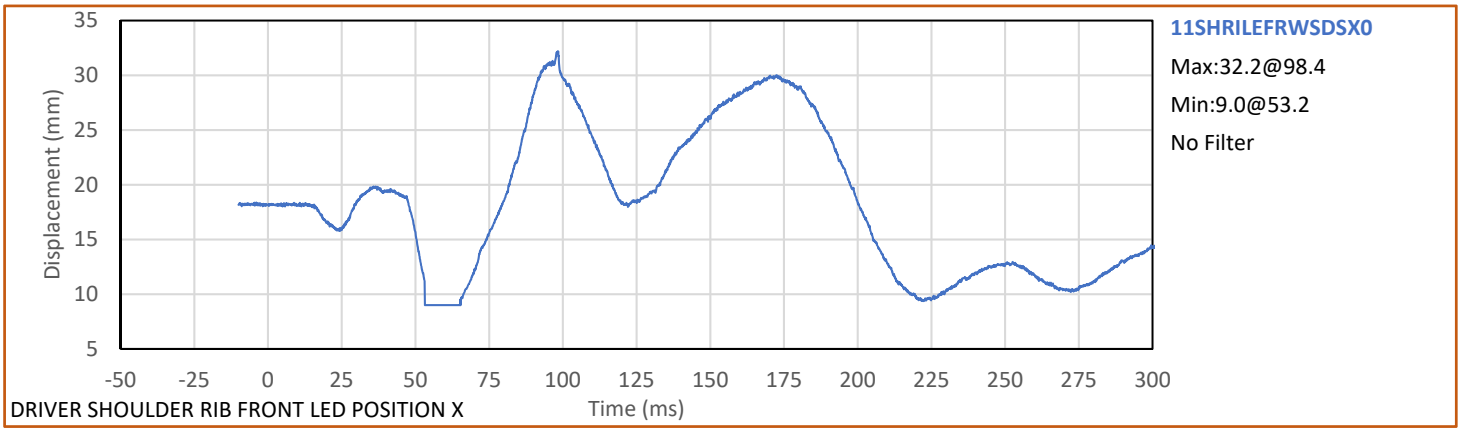
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

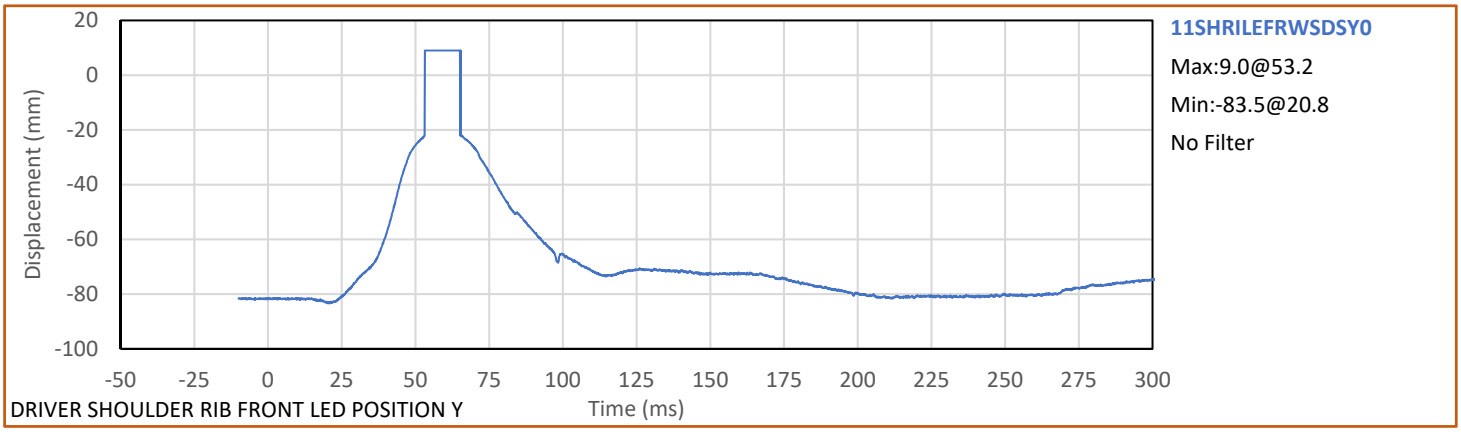
NHTSA No.: R20185381

Test Date: 9/11/2019

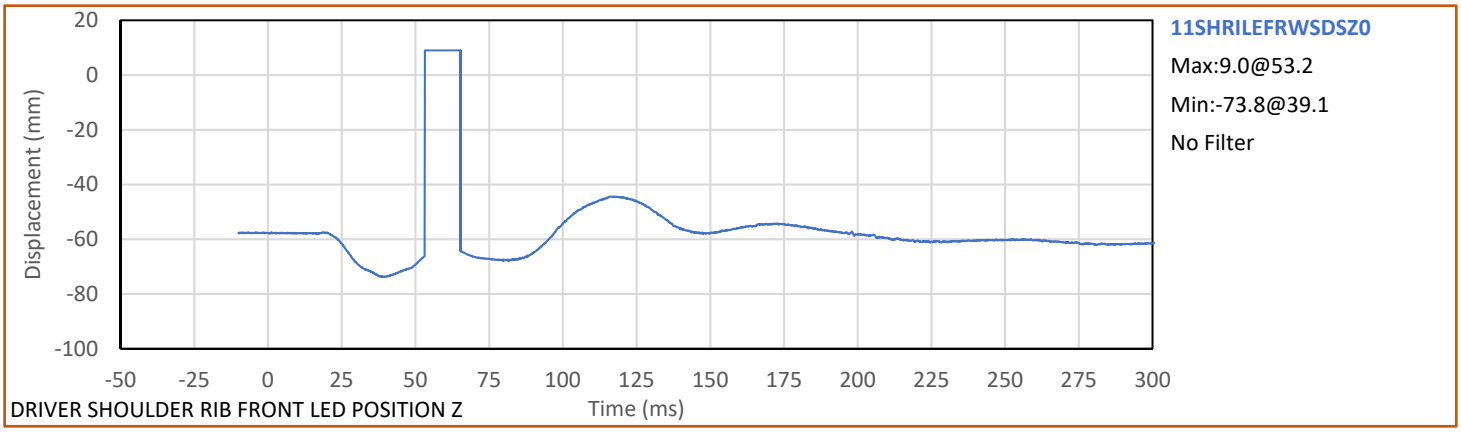
Applus IDIADA KARCO



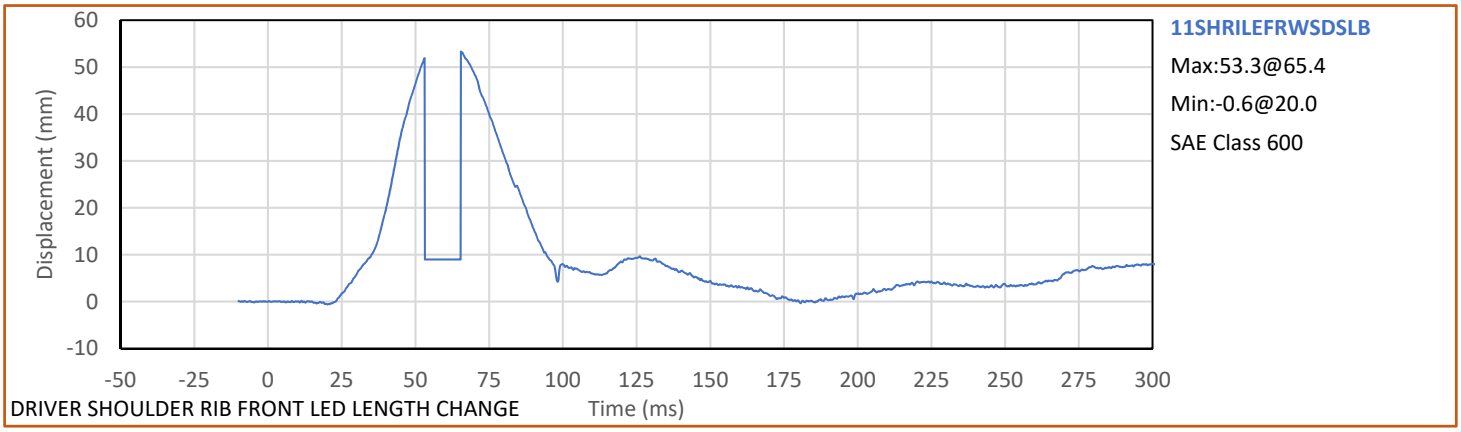
DRIVER SHOULDER RIB FRONT LED POSITION X



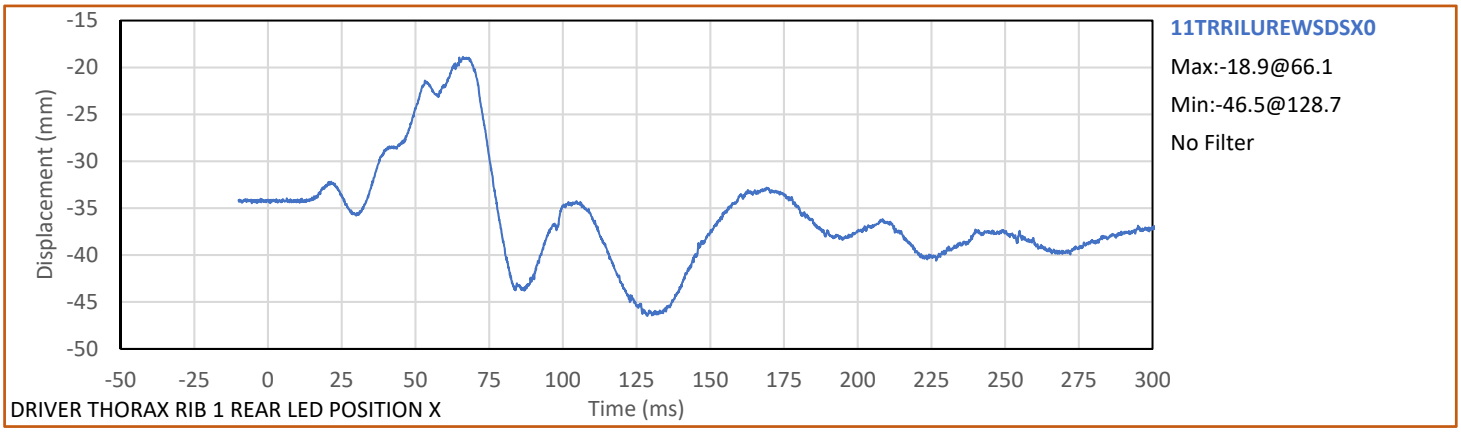
DRIVER SHOULDER RIB FRONT LED POSITION Y



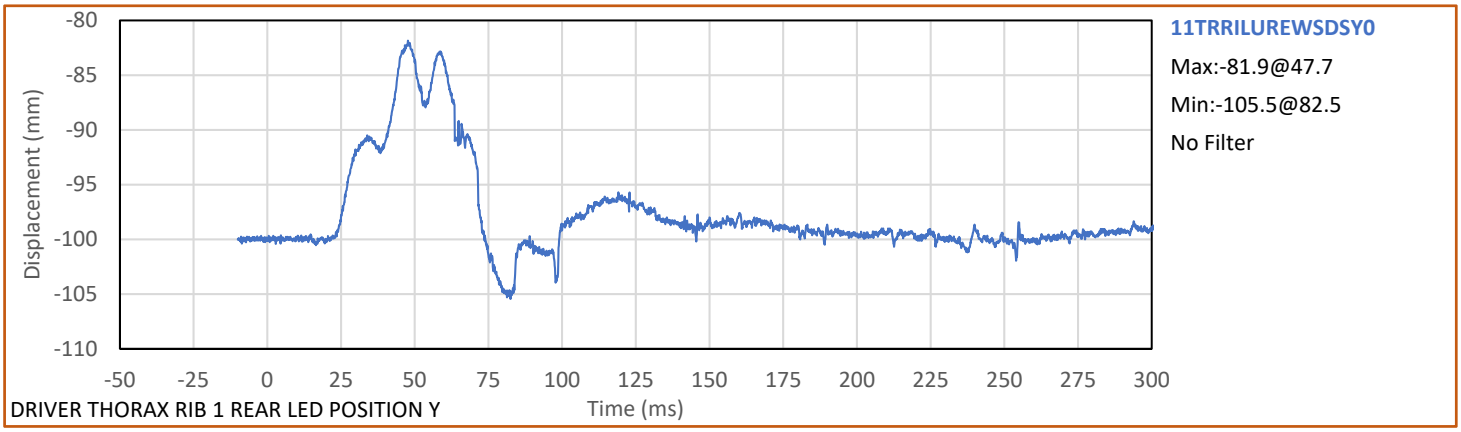
DRIVER SHOULDER RIB FRONT LED POSITION Z



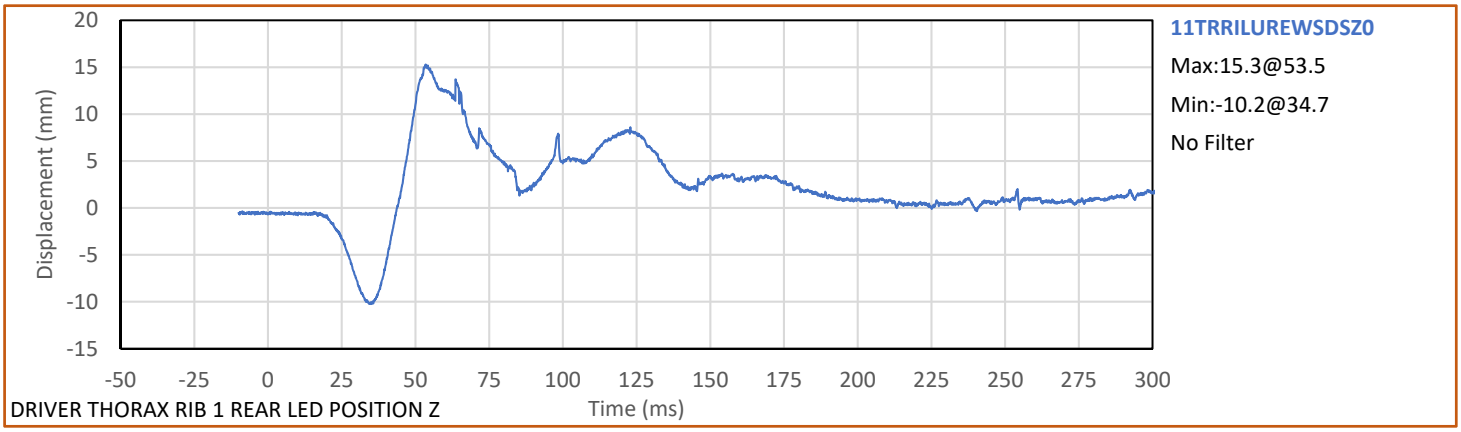
DRIVER SHOULDER RIB FRONT LED LENGTH CHANGE



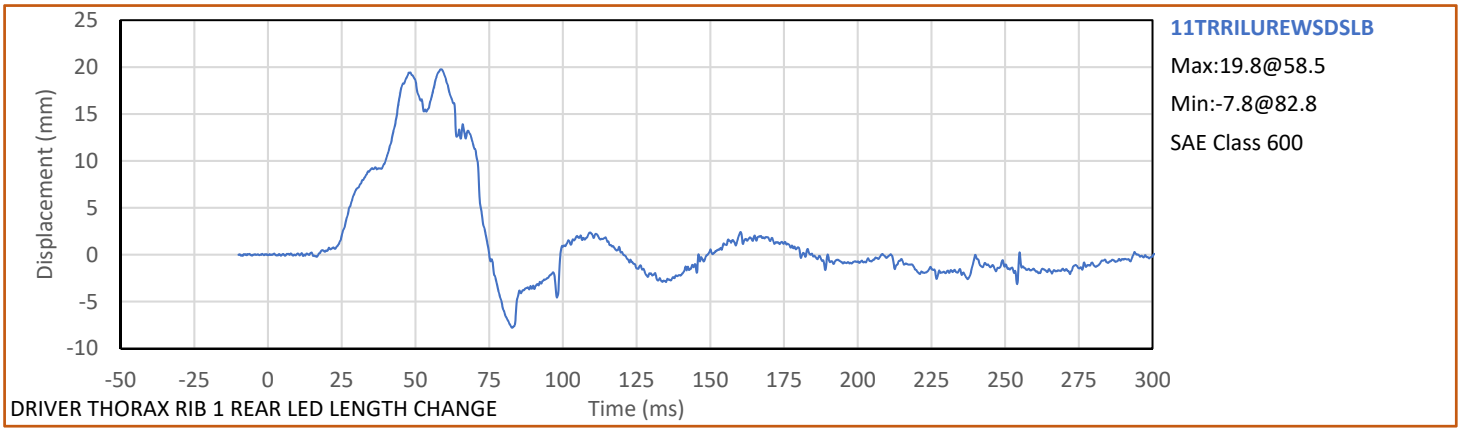
DRIVER THORAX RIB 1 REAR LED POSITION X



DRIVER THORAX RIB 1 REAR LED POSITION Y



DRIVER THORAX RIB 1 REAR LED POSITION Z



DRIVER THORAX RIB 1 REAR LED LENGTH CHANGE

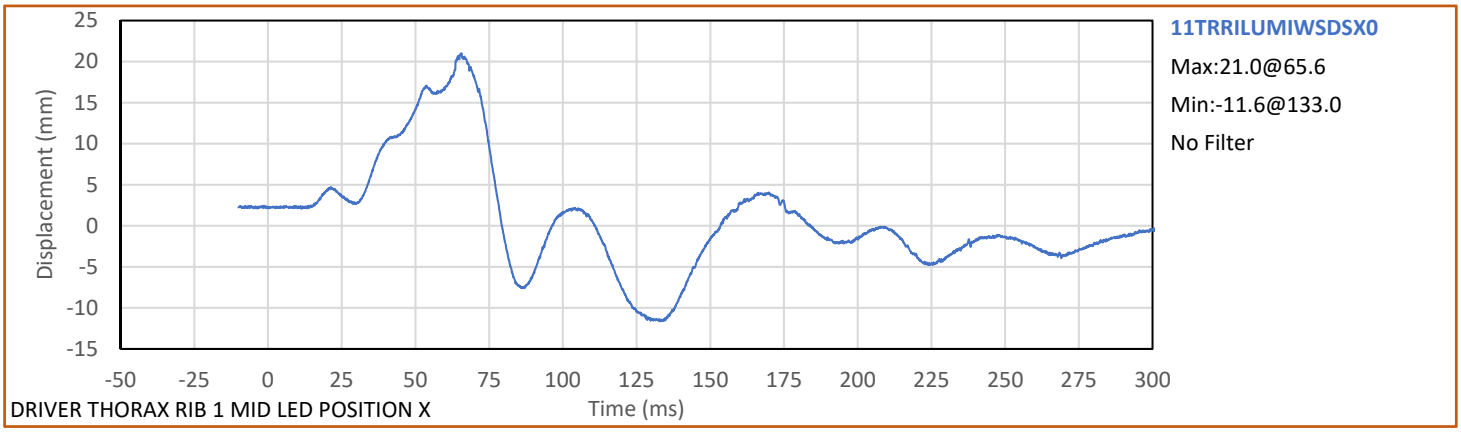
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

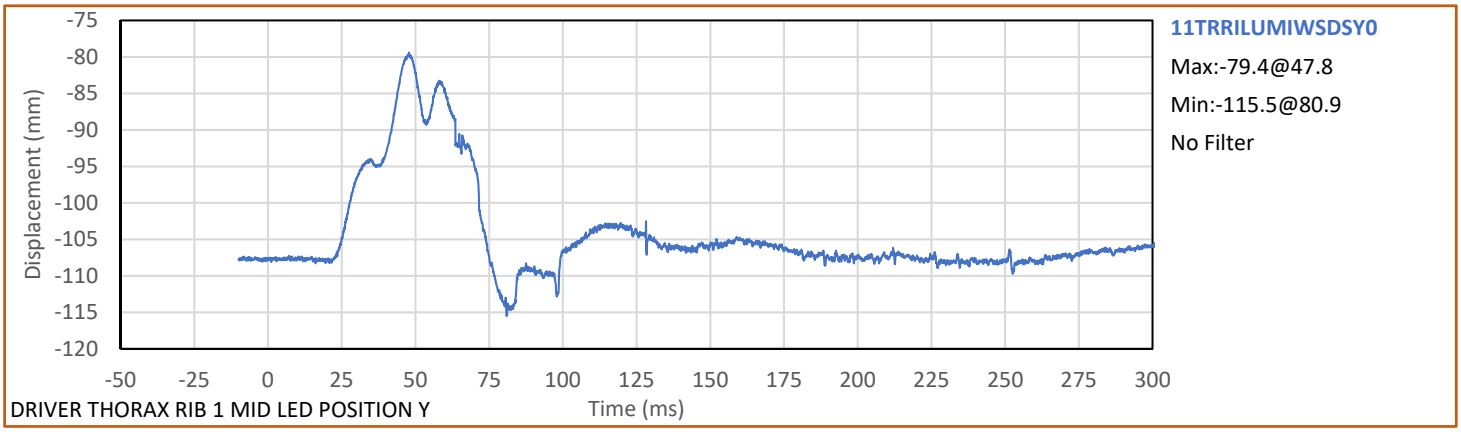
Test Program: 75° Research Oblique Side Impact (Rigid Pole)

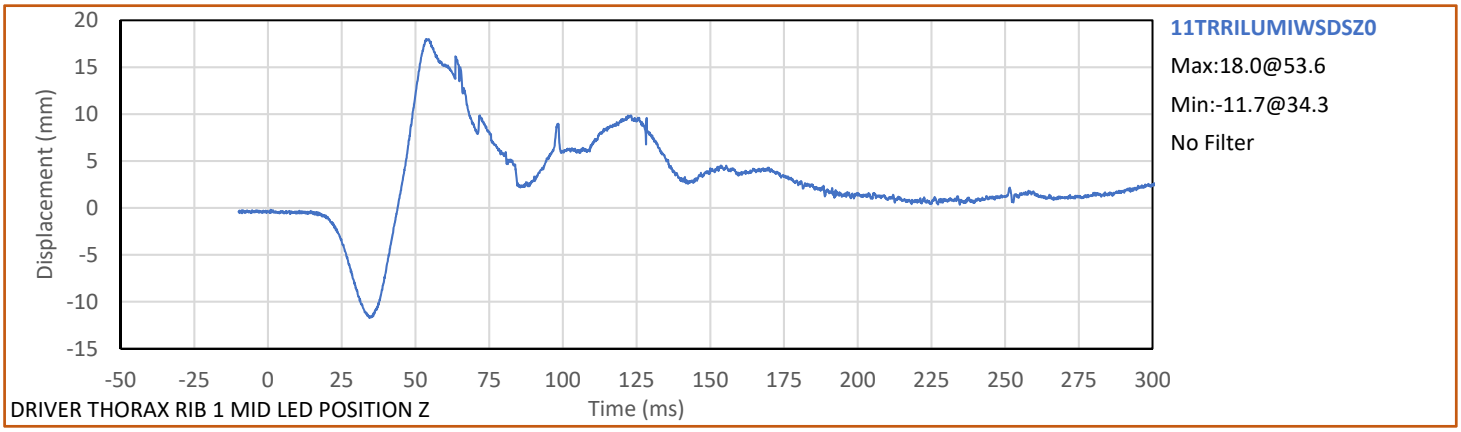
NHTSA No.: R20185381

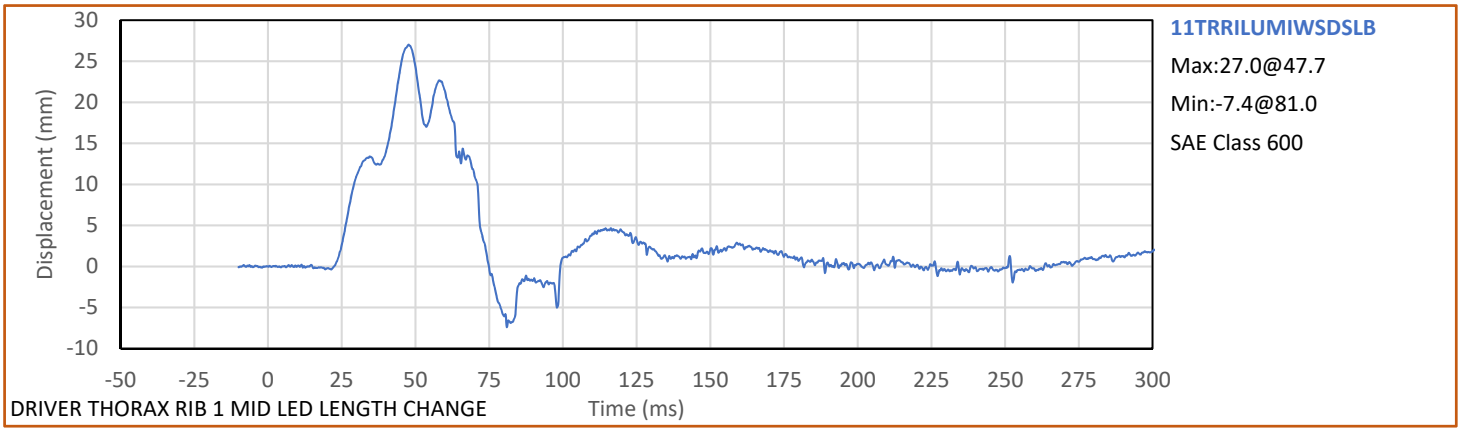
Test Date: 9/11/2019

Applus IDIADA KARCO







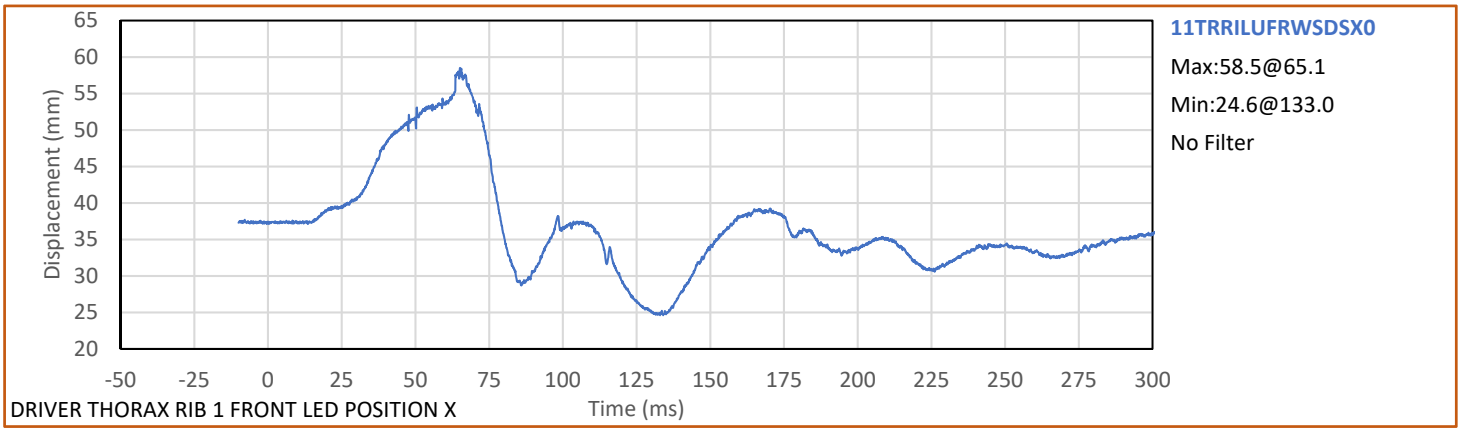


Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

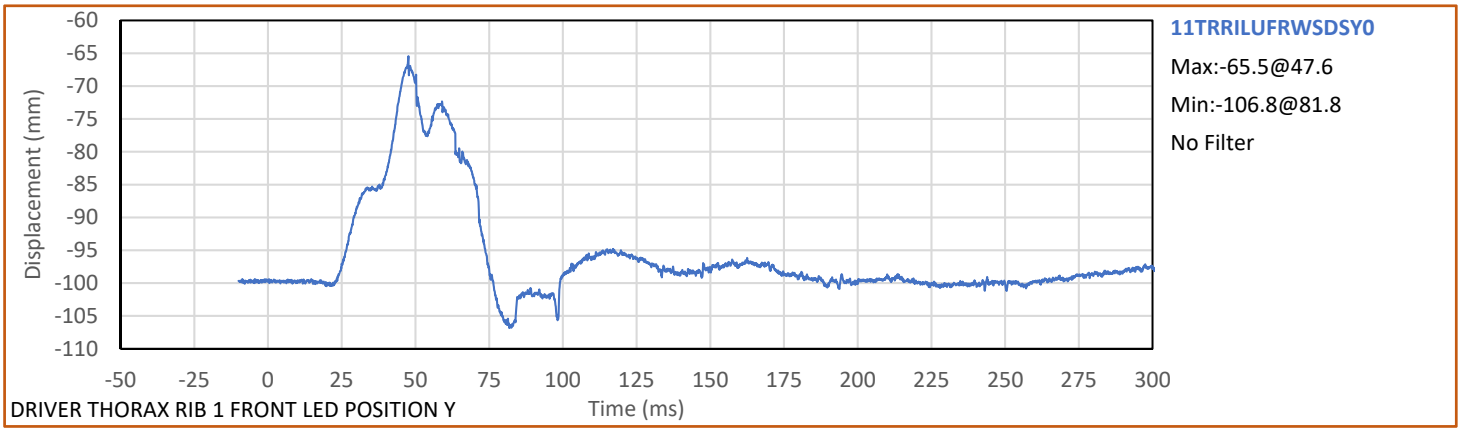
Test Program: 75° Research Oblique Side Impact (Rigid Pole)

NHTSA No.: R20185381

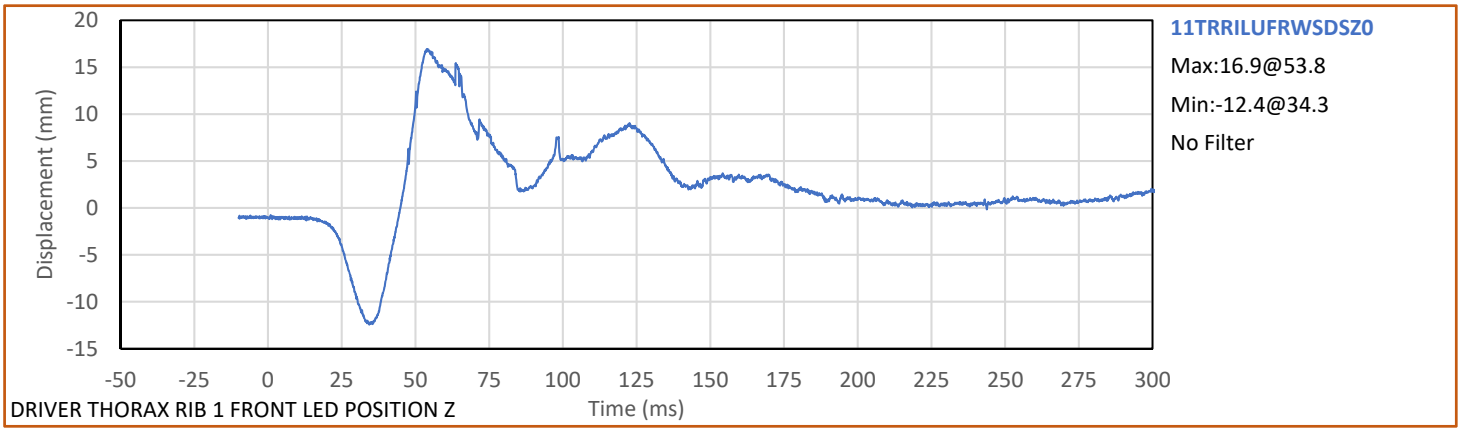
Test Date: 9/11/2019



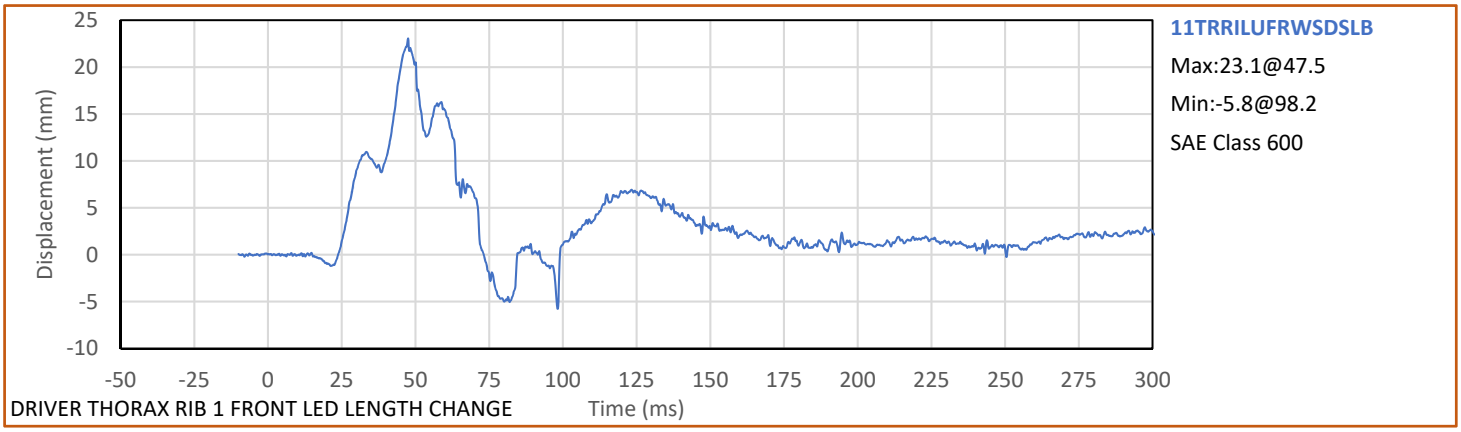
DRIVER THORAX RIB 1 FRONT LED POSITION X



DRIVER THORAX RIB 1 FRONT LED POSITION Y



DRIVER THORAX RIB 1 FRONT LED POSITION Z



DRIVER THORAX RIB 1 FRONT LED LENGTH CHANGE

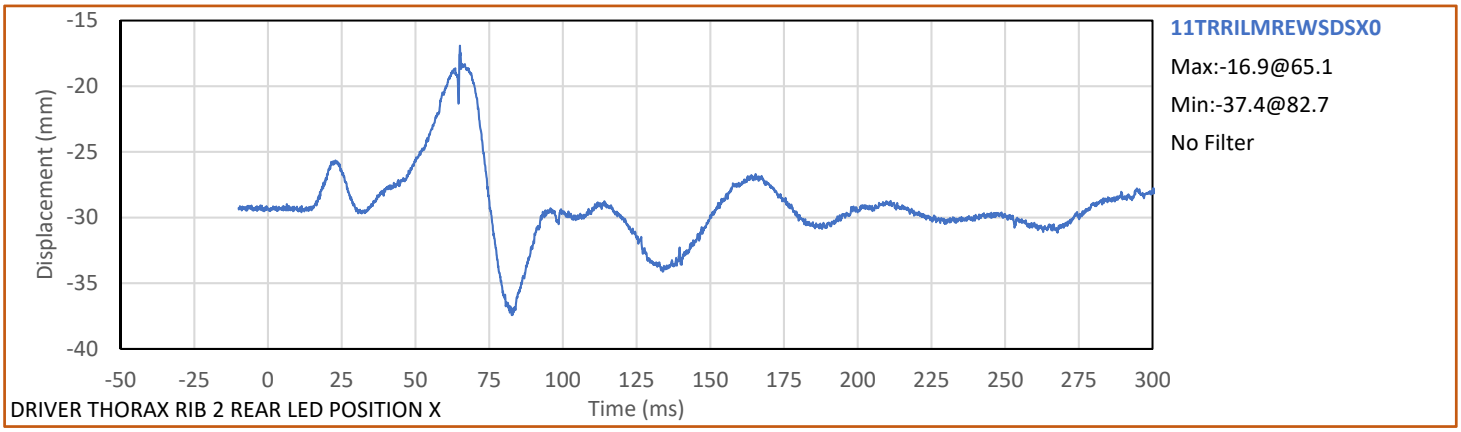
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

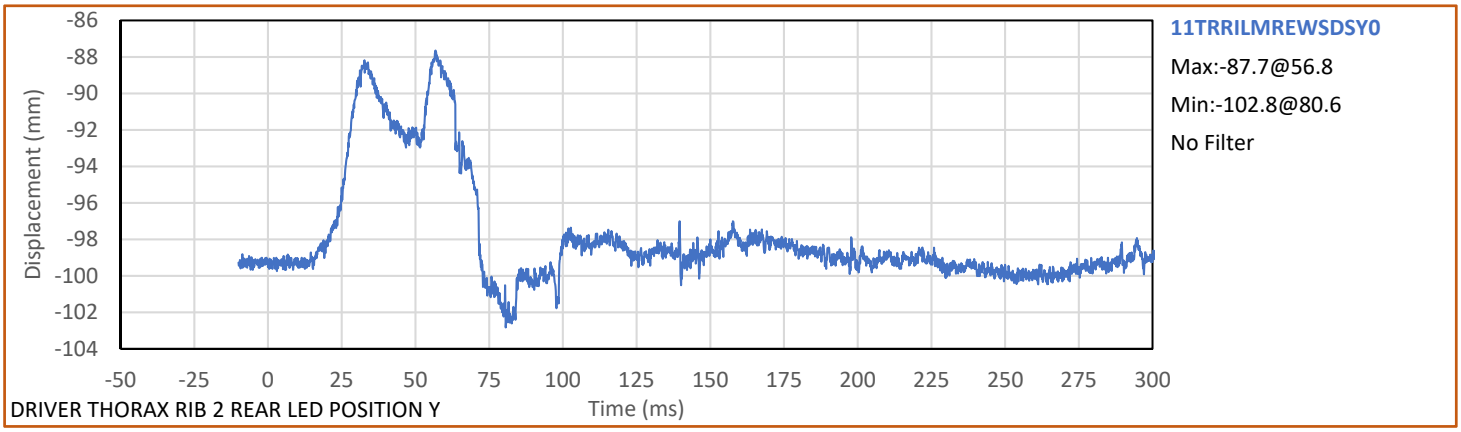
NHTSA No.: R20185381

Test Date: 9/11/2019

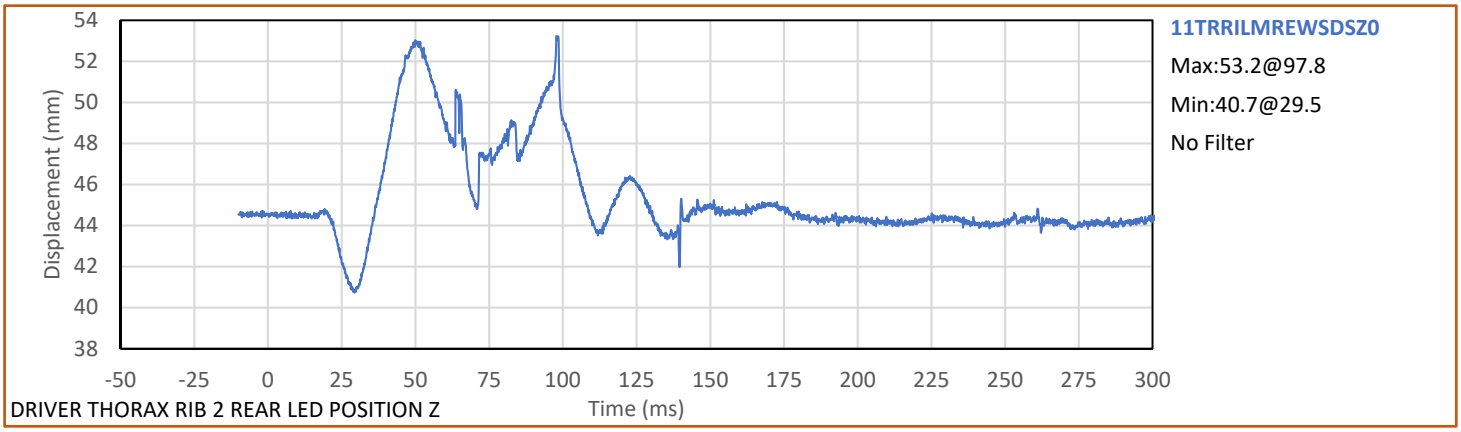
Applus IDIADA KARCO



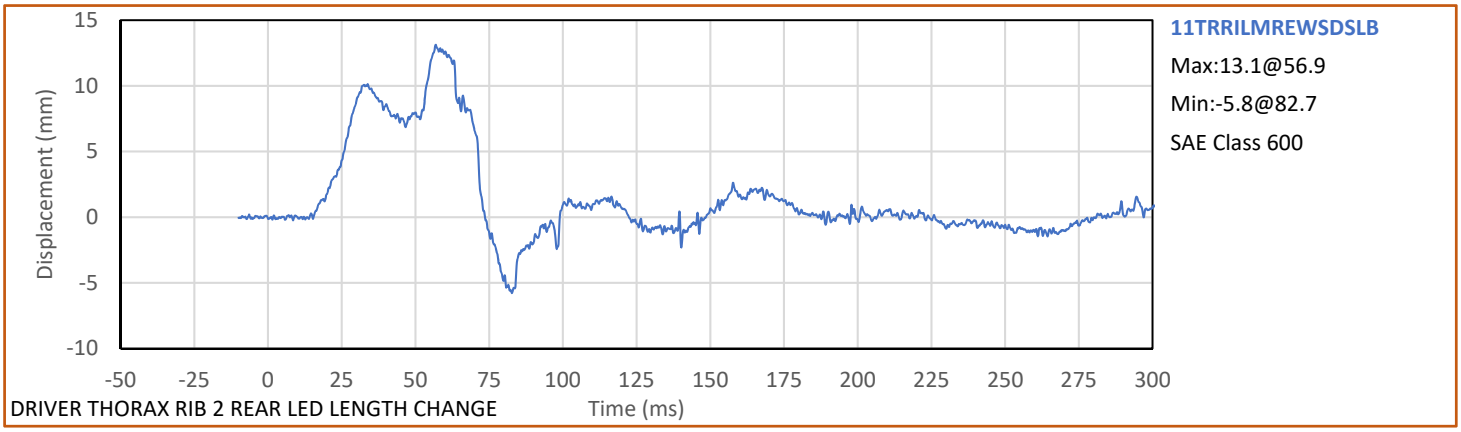
DRIVER THORAX RIB 2 REAR LED POSITION X



DRIVER THORAX RIB 2 REAR LED POSITION Y



DRIVER THORAX RIB 2 REAR LED POSITION Z



DRIVER THORAX RIB 2 REAR LED LENGTH CHANGE

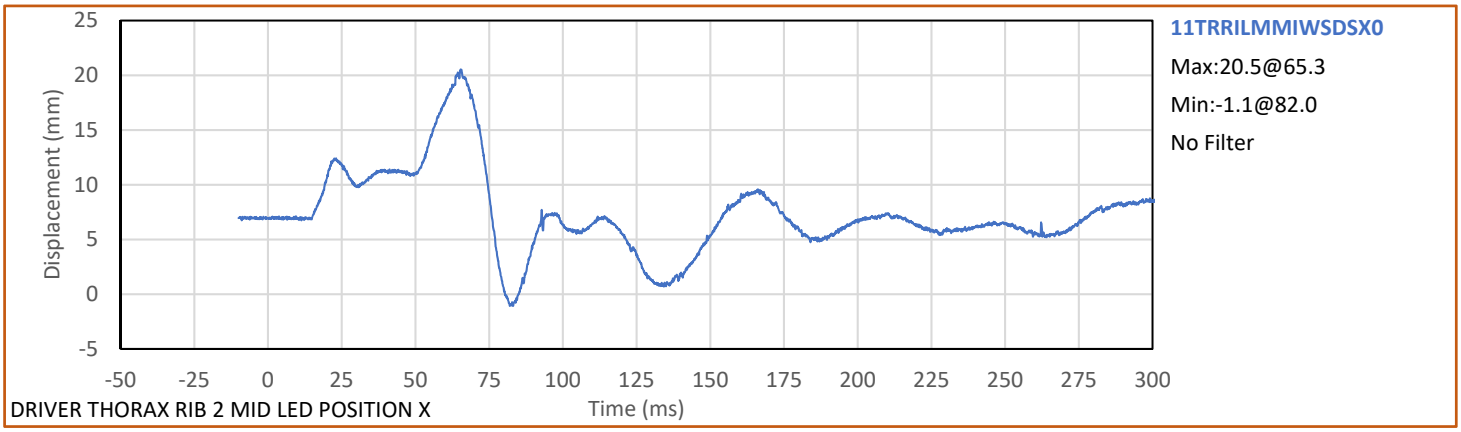
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

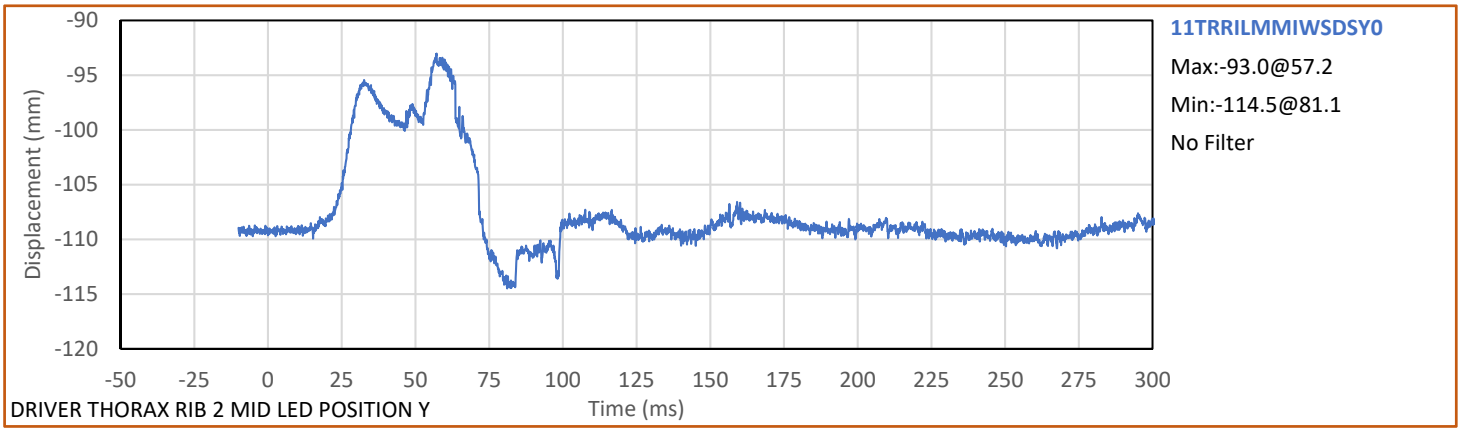
NHTSA No.: R20185381

Test Date: 9/11/2019

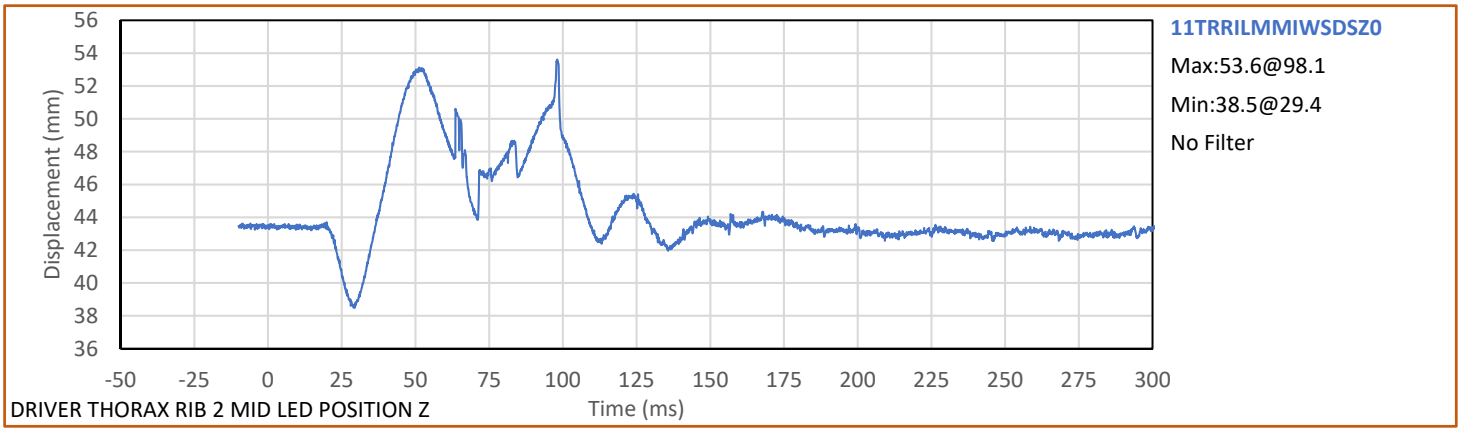
Applus IDIADA KARCO



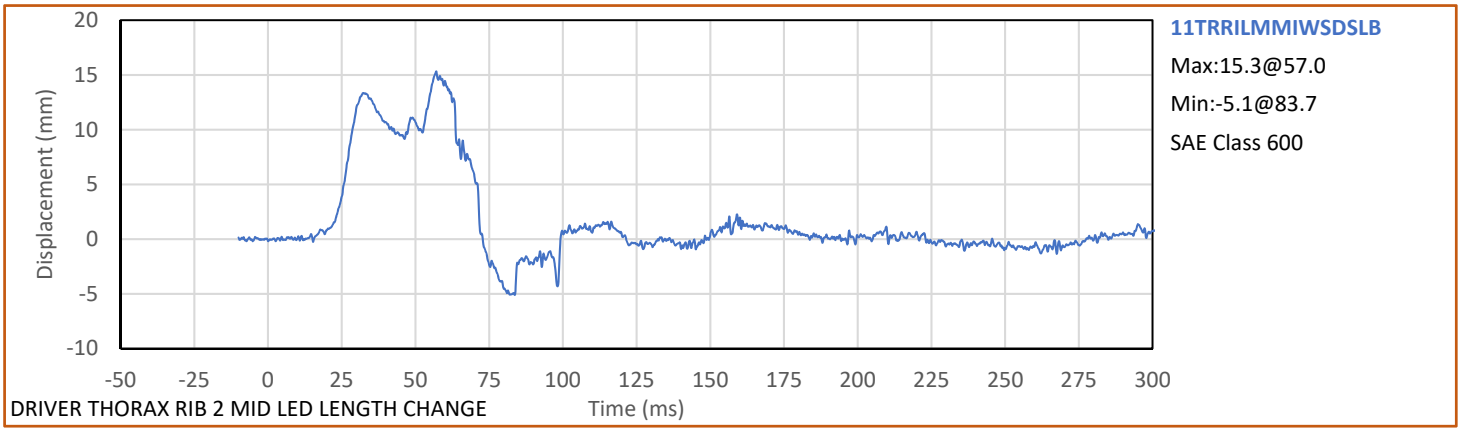
DRIVER THORAX RIB 2 MID LED POSITION X



DRIVER THORAX RIB 2 MID LED POSITION Y



DRIVER THORAX RIB 2 MID LED POSITION Z



DRIVER THORAX RIB 2 MID LED LENGTH CHANGE

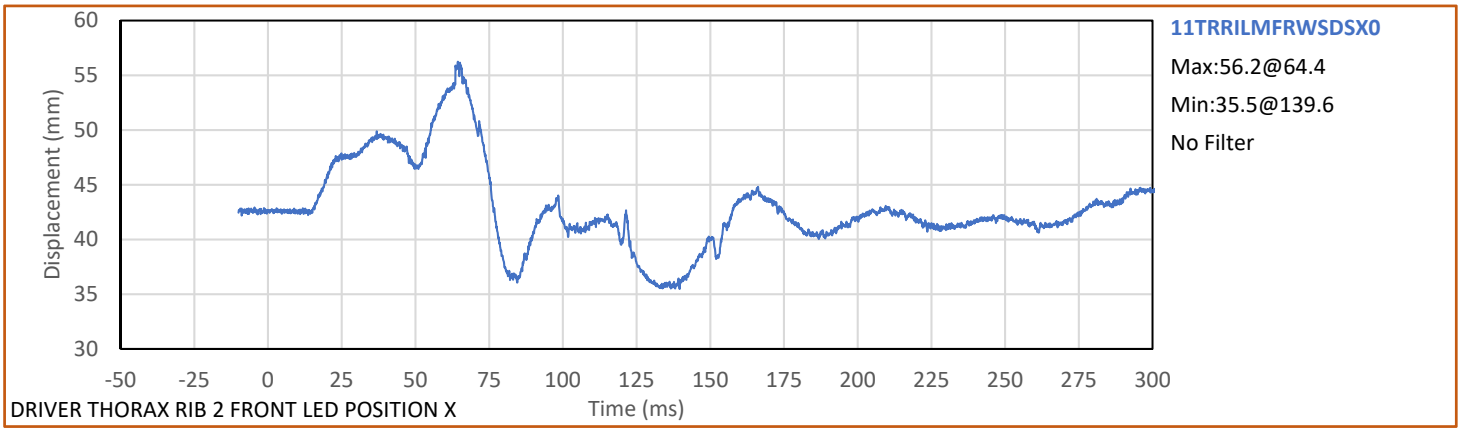
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

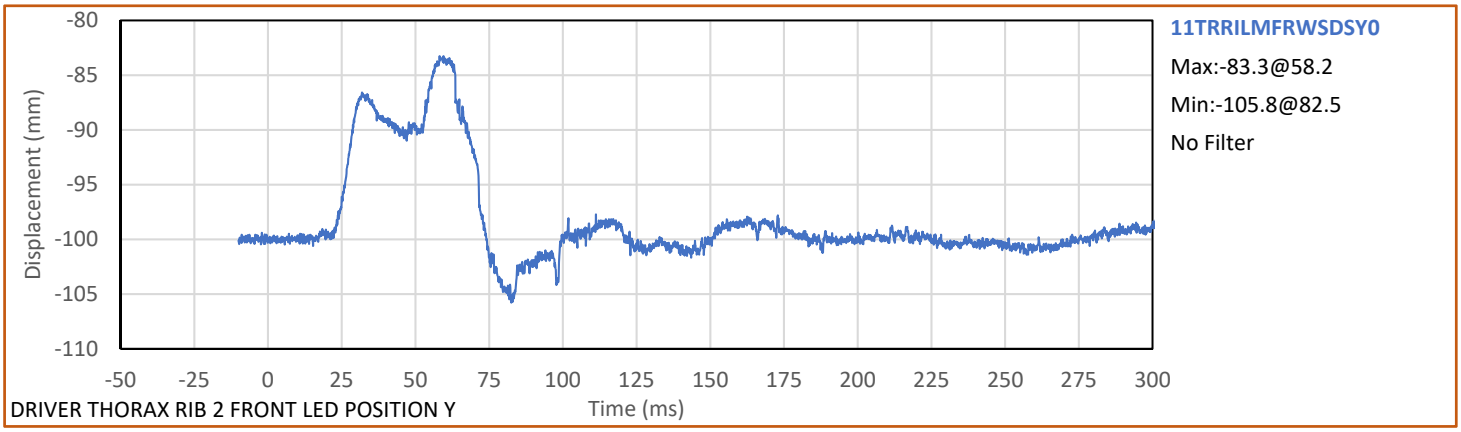
NHTSA No.: R20185381

Test Date: 9/11/2019

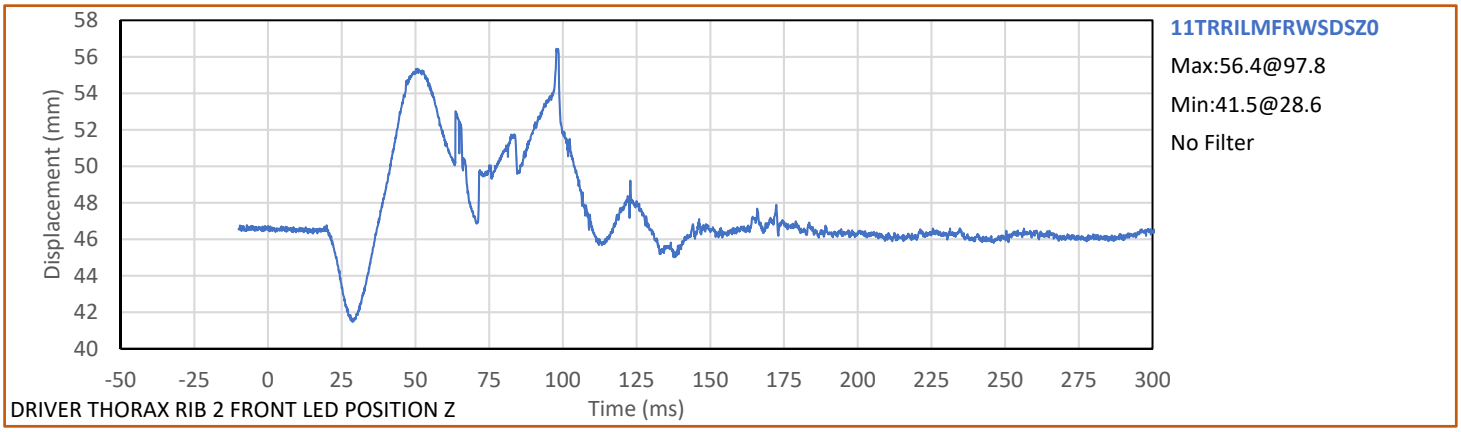
Applus IDIADA KARCO



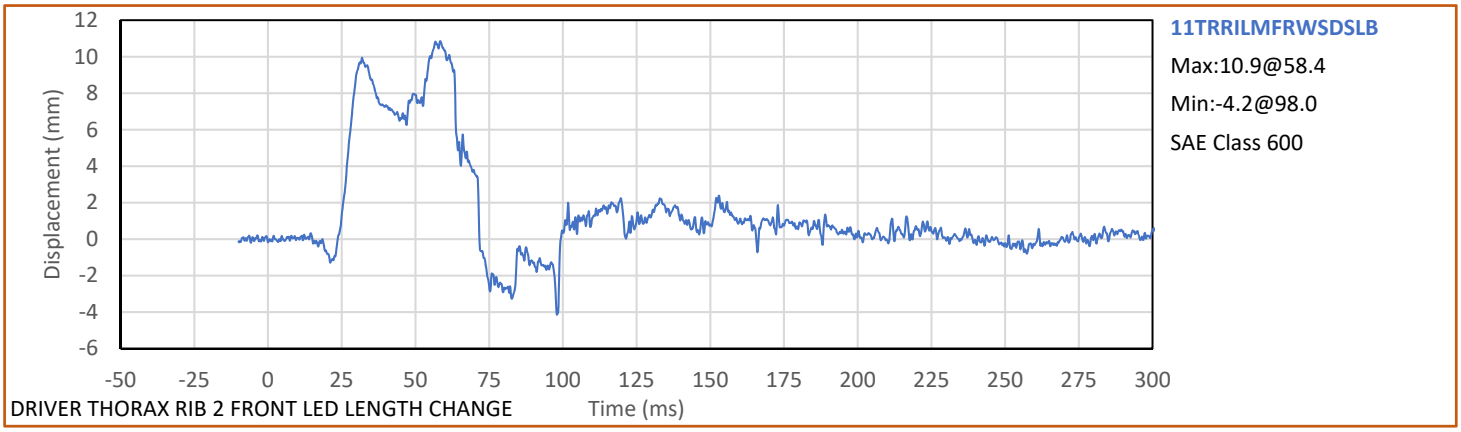
DRIVER THORAX RIB 2 FRONT LED POSITION X



DRIVER THORAX RIB 2 FRONT LED POSITION Y



DRIVER THORAX RIB 2 FRONT LED POSITION Z



DRIVER THORAX RIB 2 FRONT LED LENGTH CHANGE

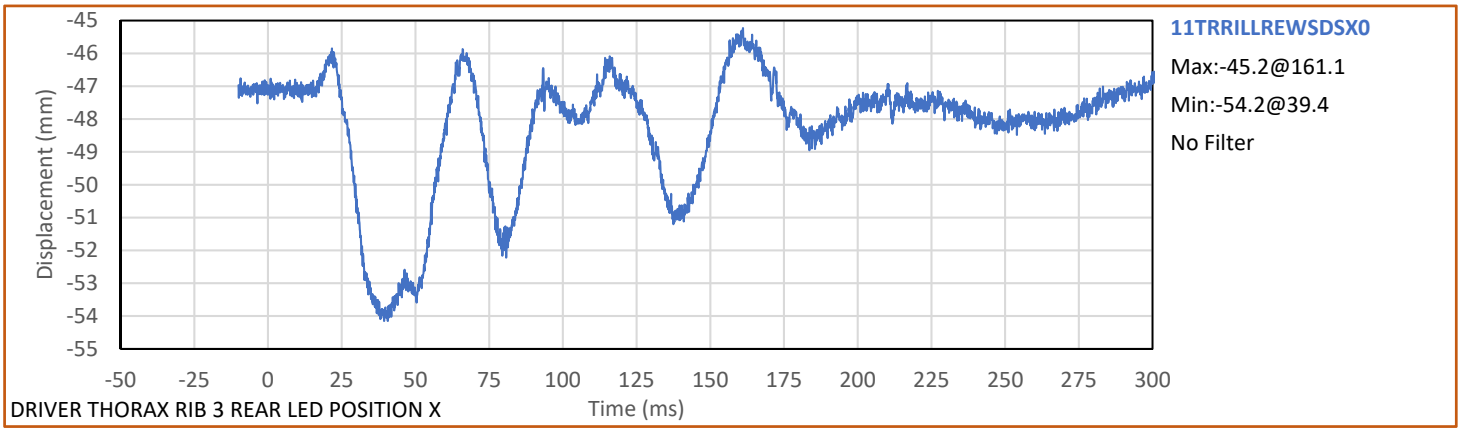
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

NHTSA No.: R20185381

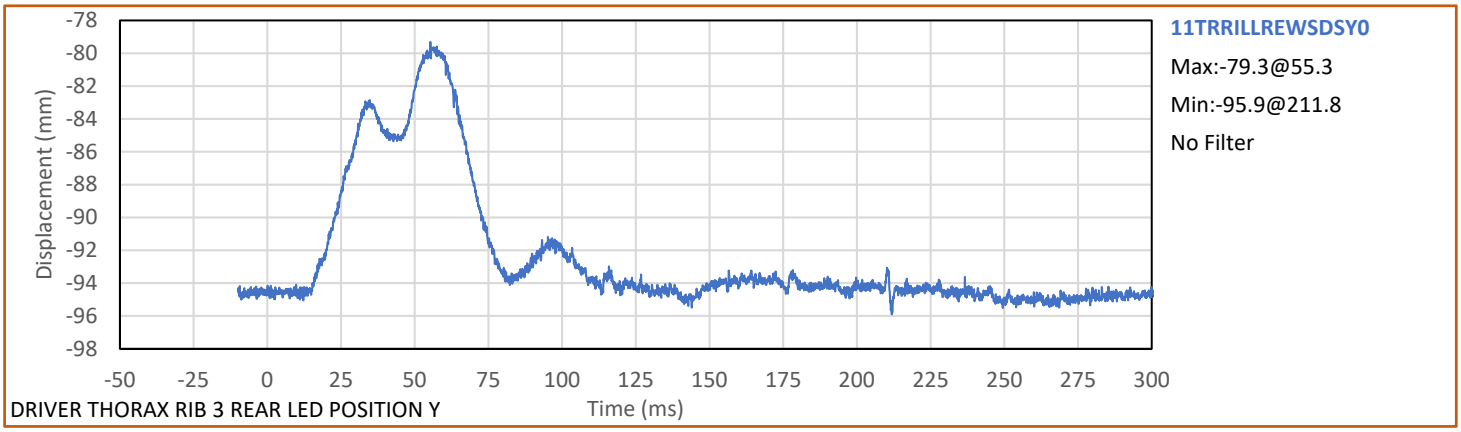
Test Date: 9/11/2019

Applus IDIADA KARCO



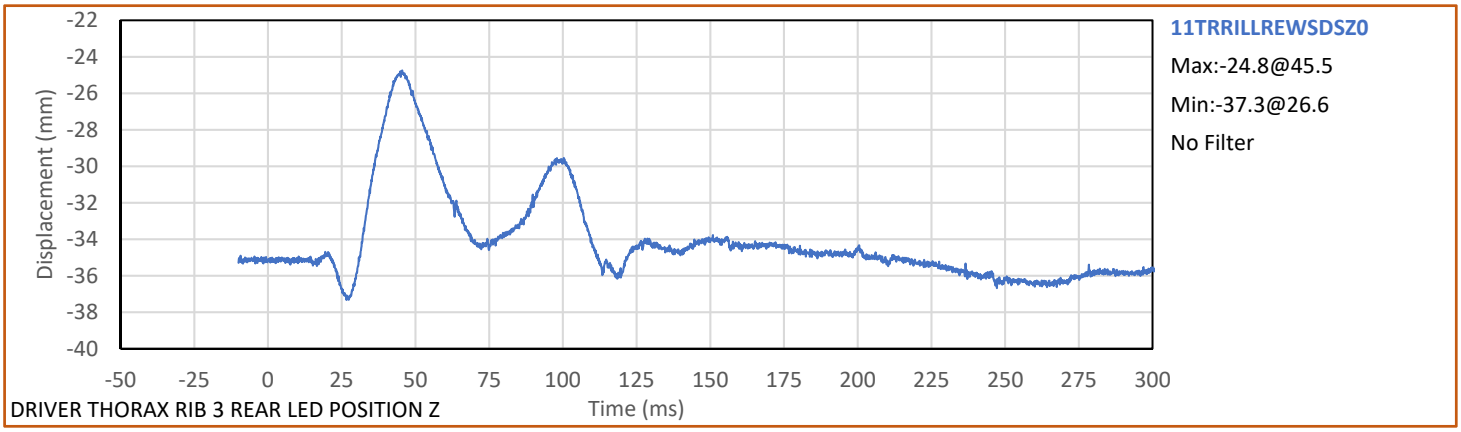
DRIVER THORAX RIB 3 REAR LED POSITION X

11TRRILLREWSDSX0
Max:-45.2@161.1
Min:-54.2@39.4
No Filter



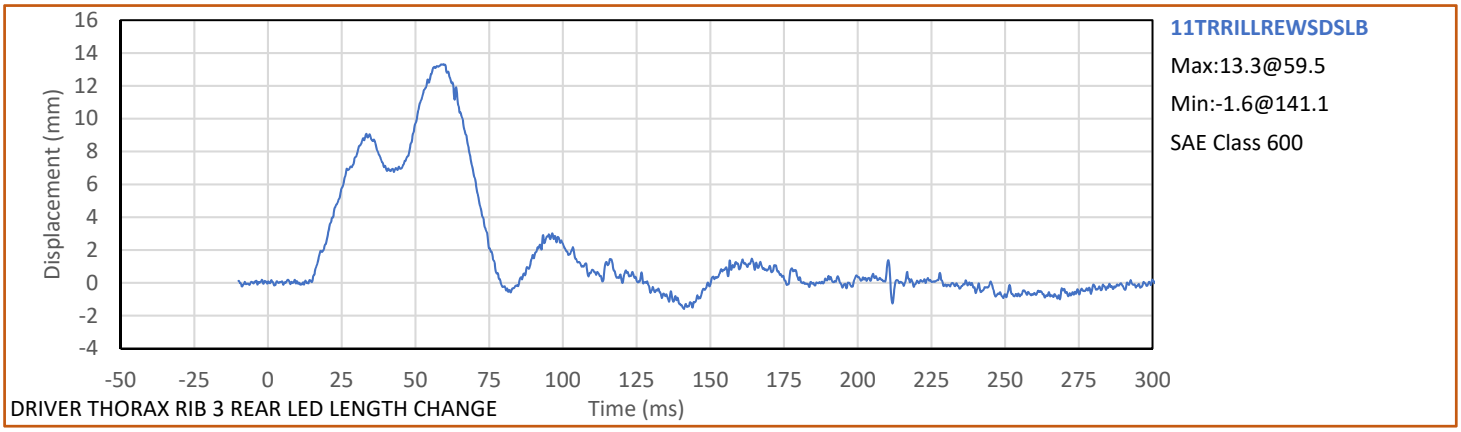
DRIVER THORAX RIB 3 REAR LED POSITION Y

11TRRILLREWSDSY0
Max:-79.3@55.3
Min:-95.9@211.8
No Filter



DRIVER THORAX RIB 3 REAR LED POSITION Z

11TRRILLREWSDSZ0
Max:-24.8@45.5
Min:-37.3@26.6
No Filter



DRIVER THORAX RIB 3 REAR LED LENGTH CHANGE

11TRRILLREWSDSLB
Max:13.3@59.5
Min:-1.6@141.1
SAE Class 600

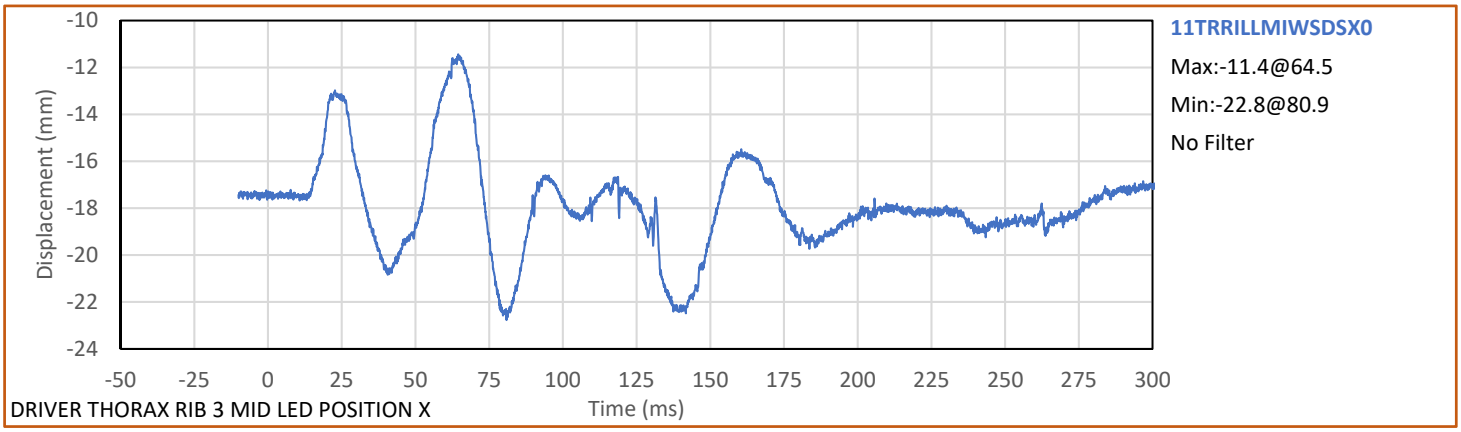
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

NHTSA No.: R20185381

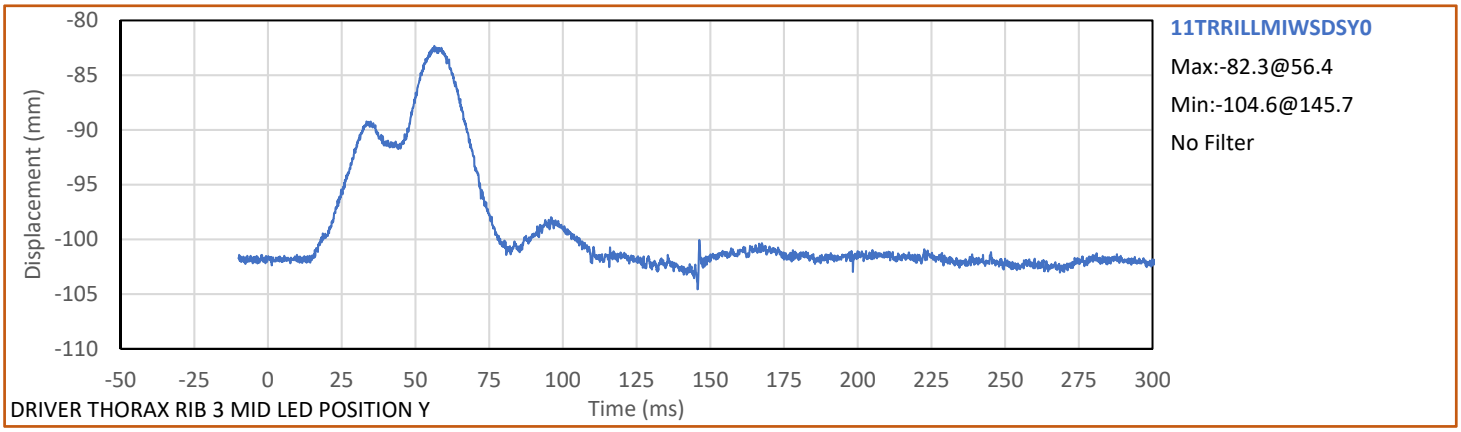
Test Date: 9/11/2019

Applus IDIADA KARCO



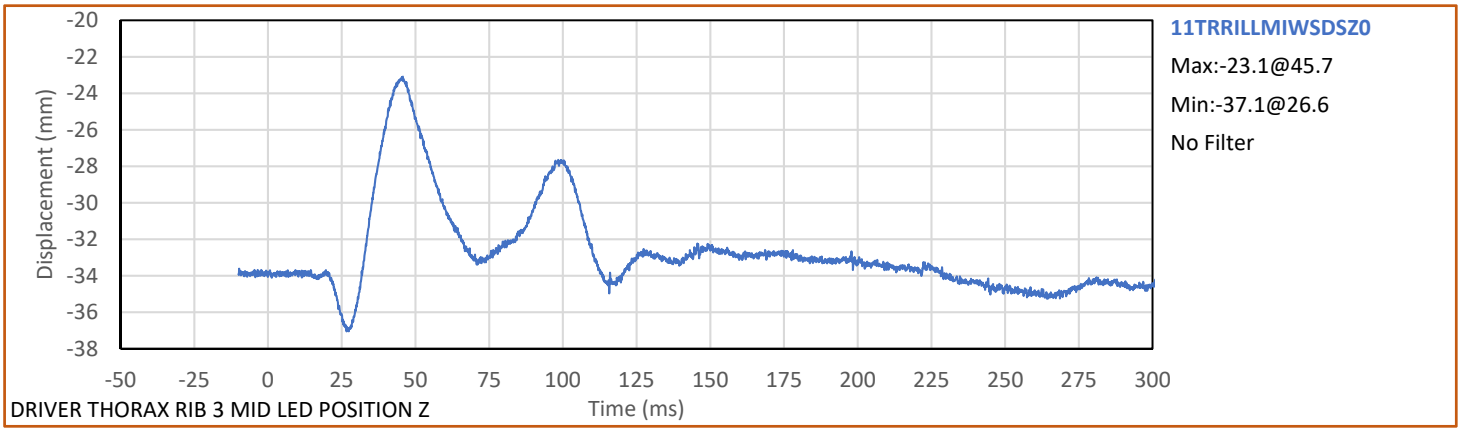
DRIVER THORAX RIB 3 MID LED POSITION X

11TRRILLMIWSDSX0
Max:-11.4@64.5
Min:-22.8@80.9
No Filter



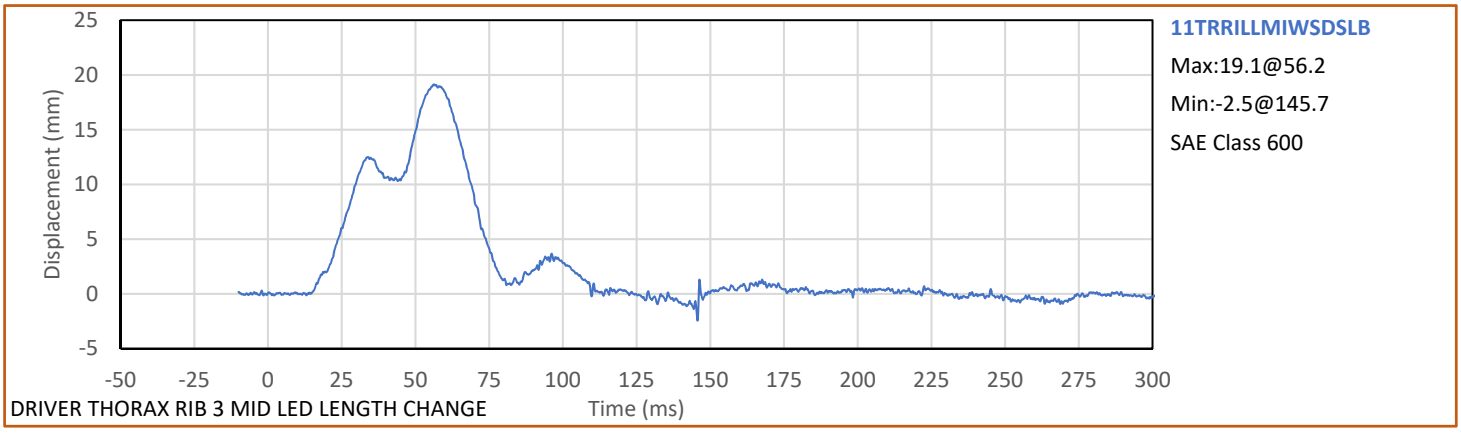
DRIVER THORAX RIB 3 MID LED POSITION Y

11TRRILLMIWSDSY0
Max:-82.3@56.4
Min:-104.6@145.7
No Filter



DRIVER THORAX RIB 3 MID LED POSITION Z

11TRRILLMIWSDSZ0
Max:-23.1@45.7
Min:-37.1@26.6
No Filter



DRIVER THORAX RIB 3 MID LED LENGTH CHANGE

11TRRILLMIWSDSLB
Max:19.1@56.2
Min:-2.5@145.7
SAE Class 600

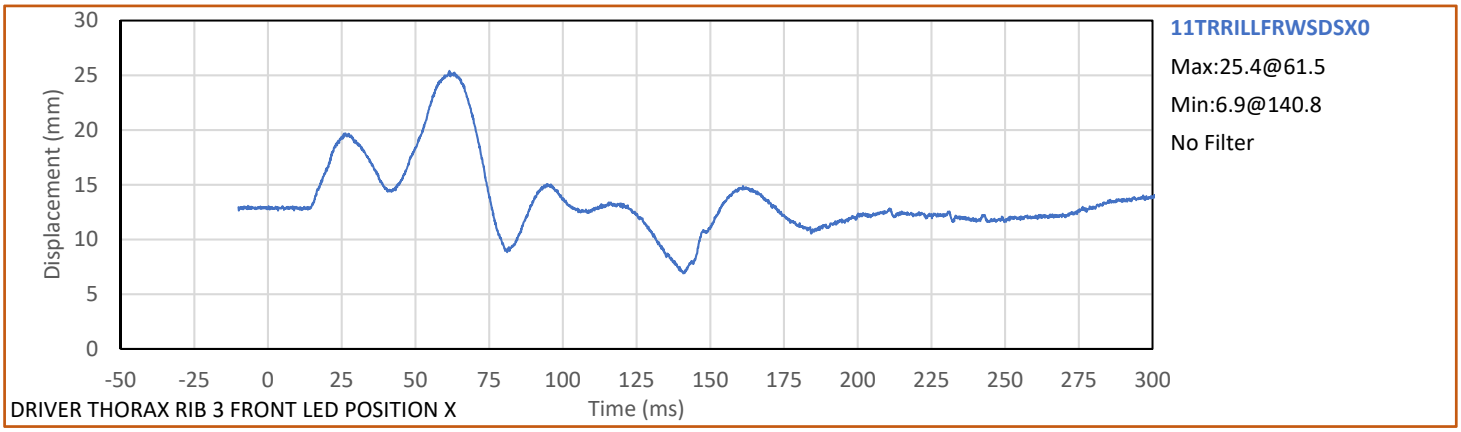
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

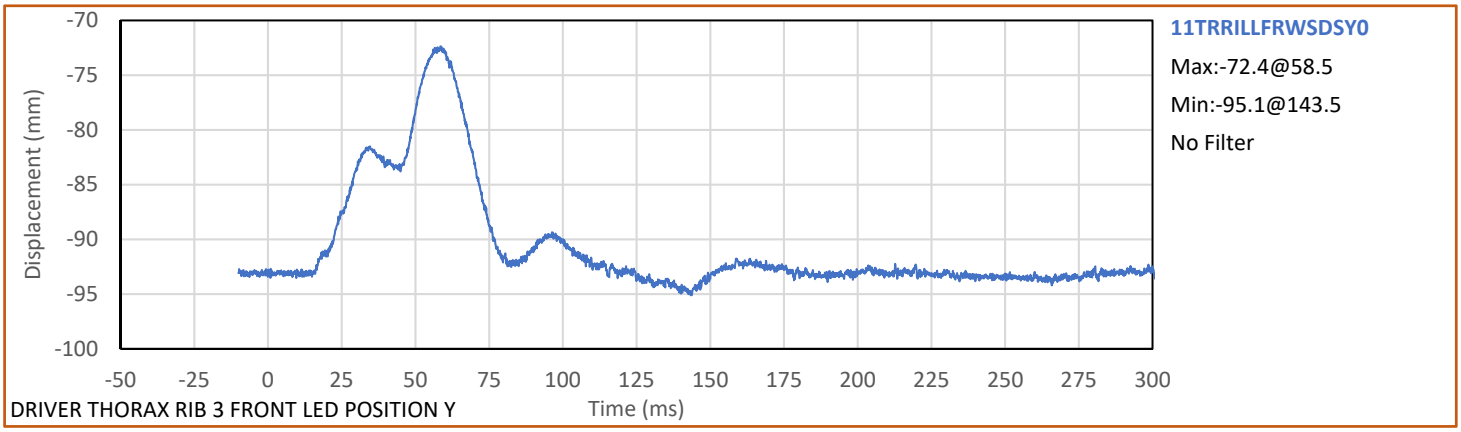
NHTSA No.: R20185381

Test Date: 9/11/2019

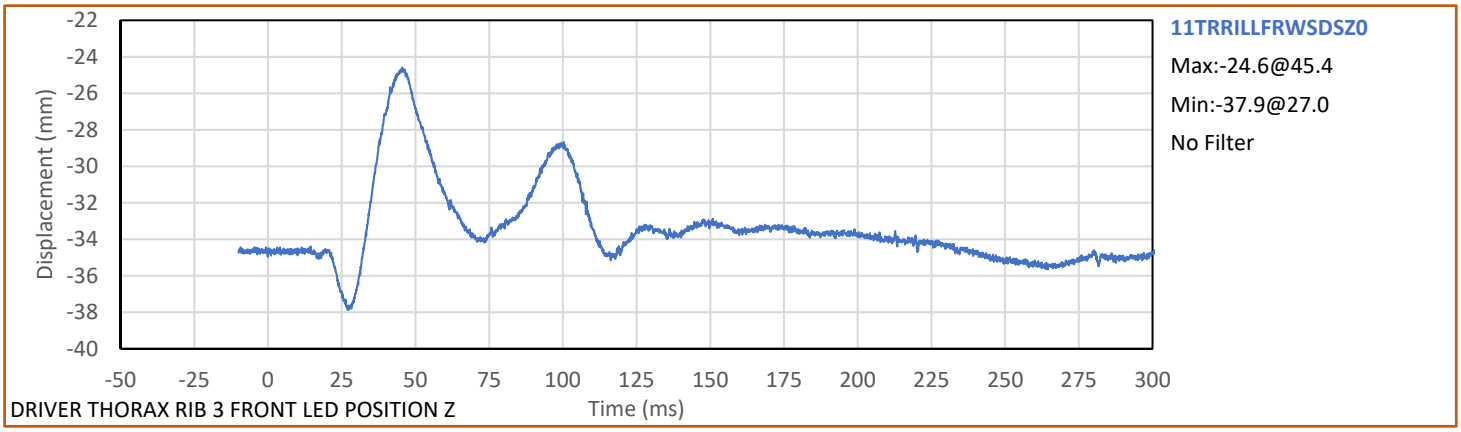
Applus IDIADA KARCO



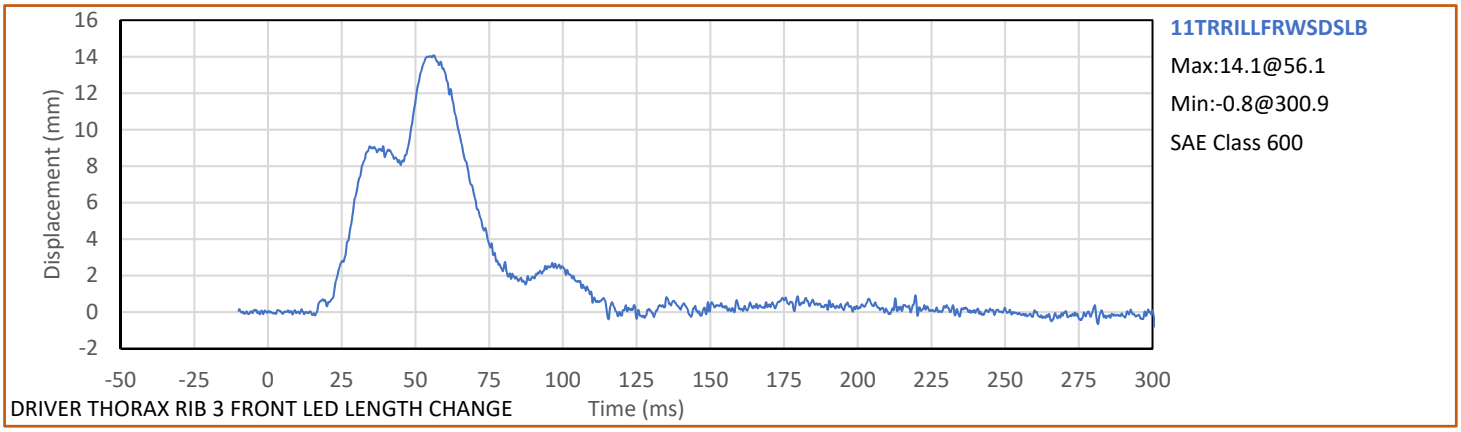
DRIVER THORAX RIB 3 FRONT LED POSITION X



DRIVER THORAX RIB 3 FRONT LED POSITION Y



DRIVER THORAX RIB 3 FRONT LED POSITION Z



DRIVER THORAX RIB 3 FRONT LED LENGTH CHANGE

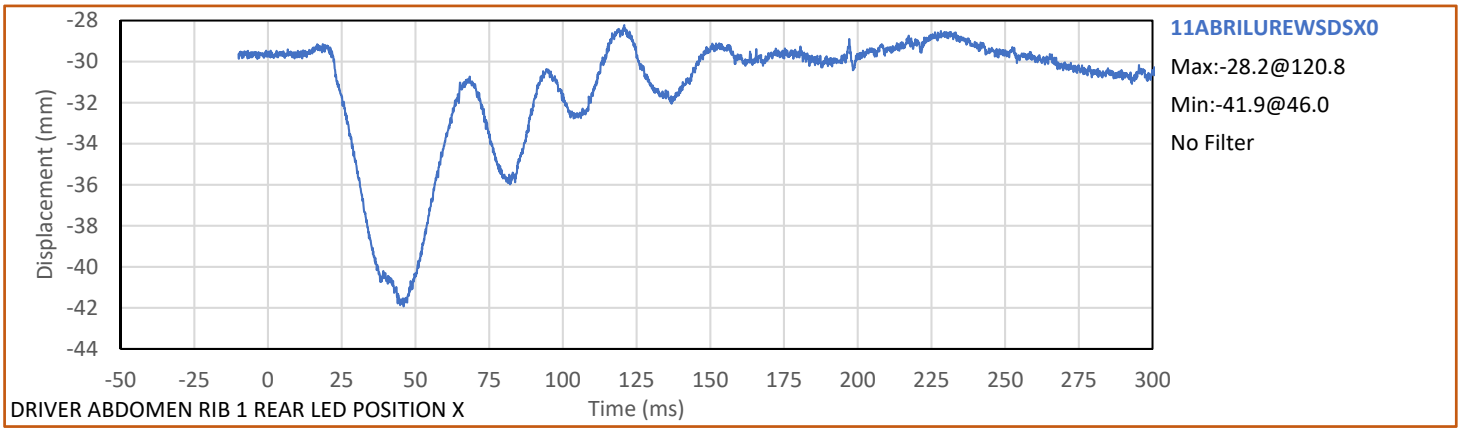
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

NHTSA No.: R20185381

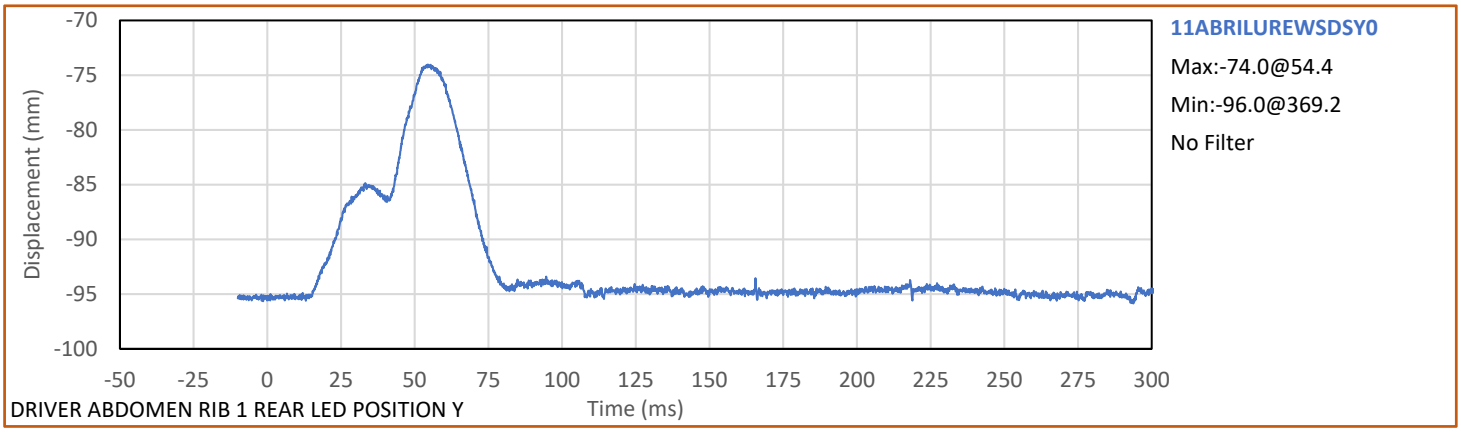
Test Date: 9/11/2019

Applus IDIADA KARCO



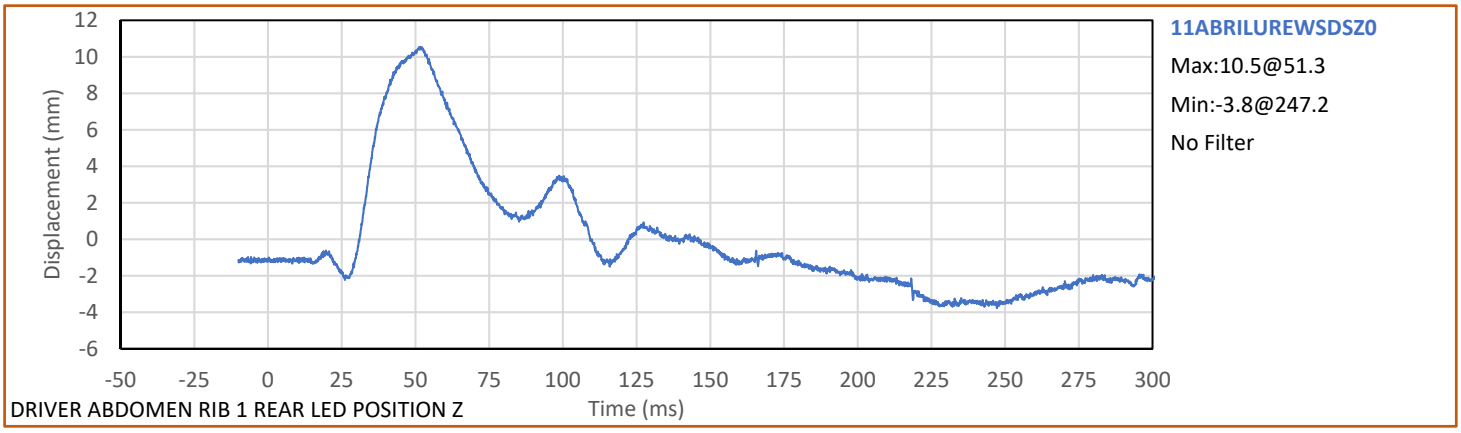
11ABRILUREWSDSX0
Max:-28.2@120.8
Min:-41.9@46.0
No Filter

DRIVER ABDOMEN RIB 1 REAR LED POSITION X



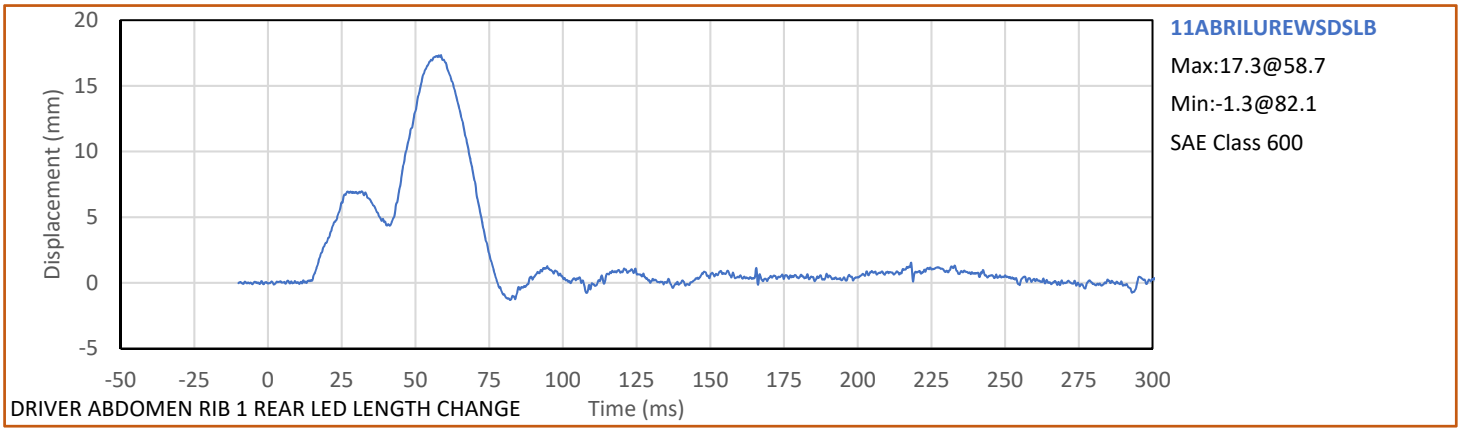
11ABRILUREWSDSY0
Max:-74.0@54.4
Min:-96.0@369.2
No Filter

DRIVER ABDOMEN RIB 1 REAR LED POSITION Y



11ABRILUREWSDSZ0
Max:10.5@51.3
Min:-3.8@247.2
No Filter

DRIVER ABDOMEN RIB 1 REAR LED POSITION Z



11ABRILUREWSDSLB
Max:17.3@58.7
Min:-1.3@82.1
SAE Class 600

DRIVER ABDOMEN RIB 1 REAR LED LENGTH CHANGE

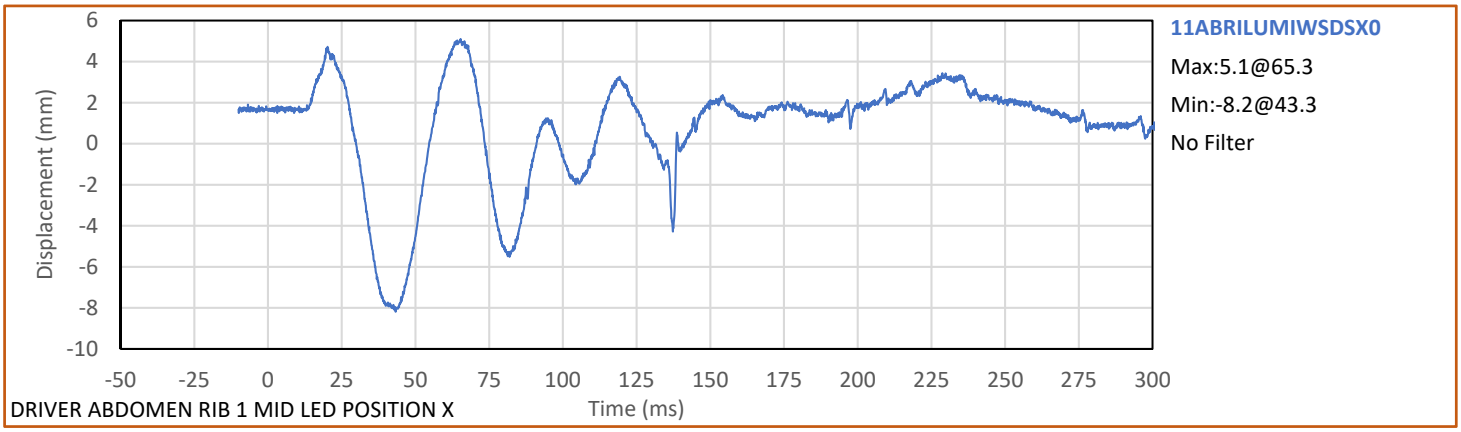
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

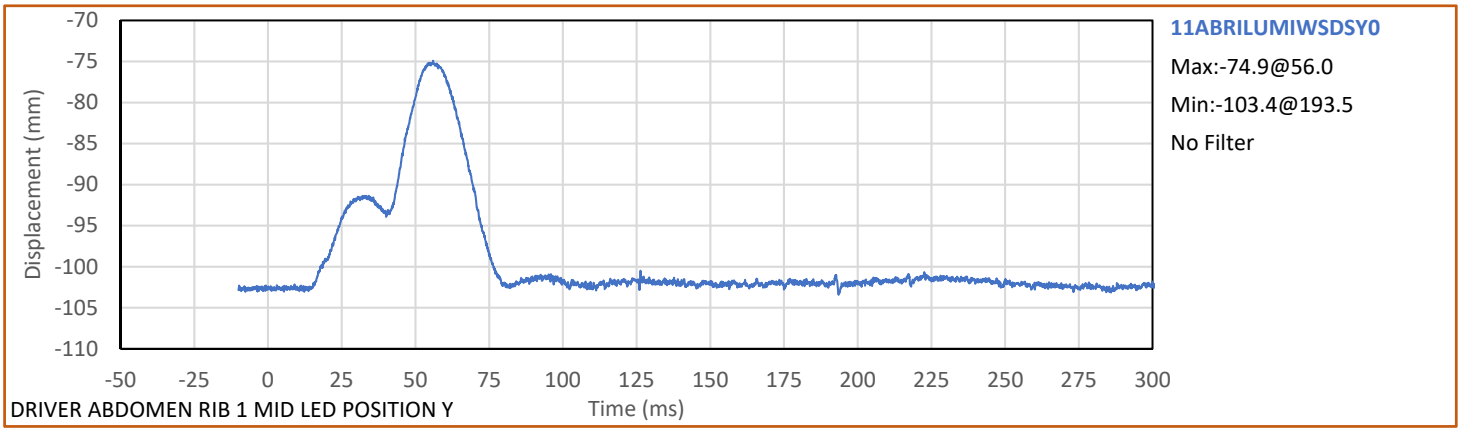
Test Program: 75° Research Oblique Side Impact (Rigid Pole)

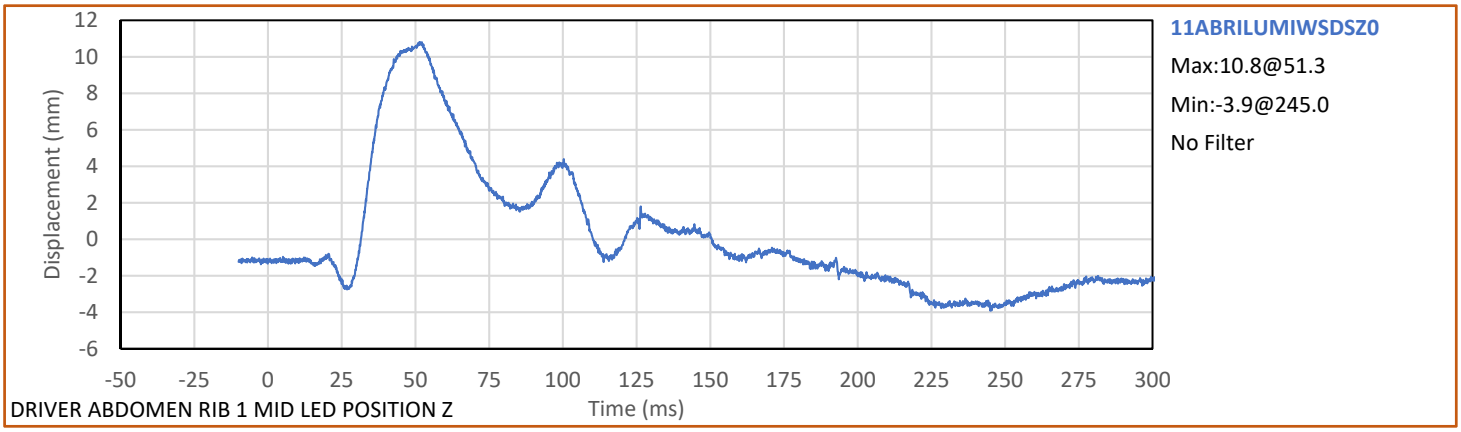
NHTSA No.: R20185381

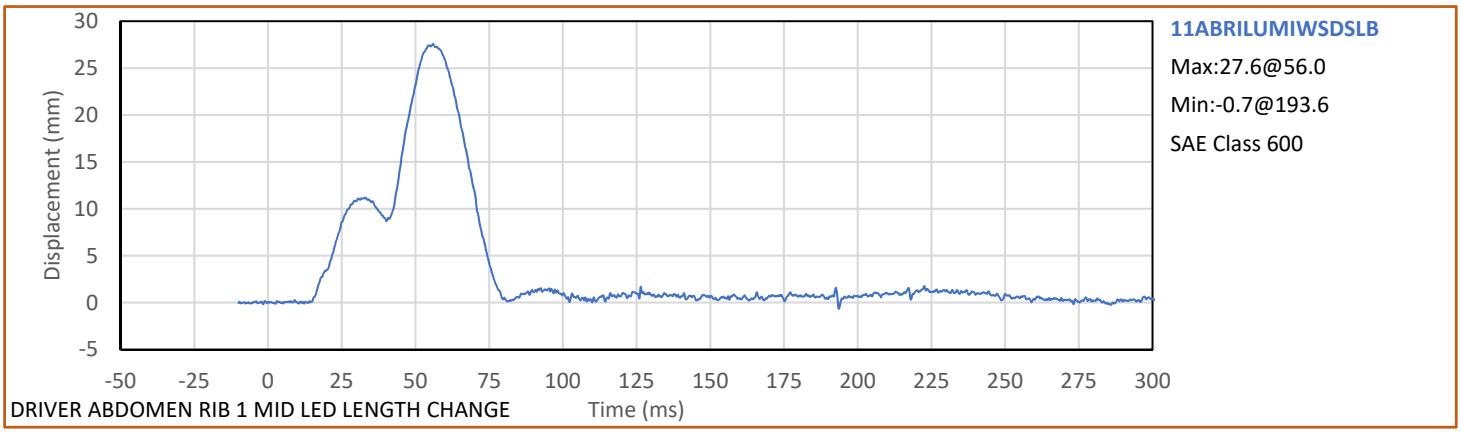
Test Date: 9/11/2019

Applus IDIADA KARCO









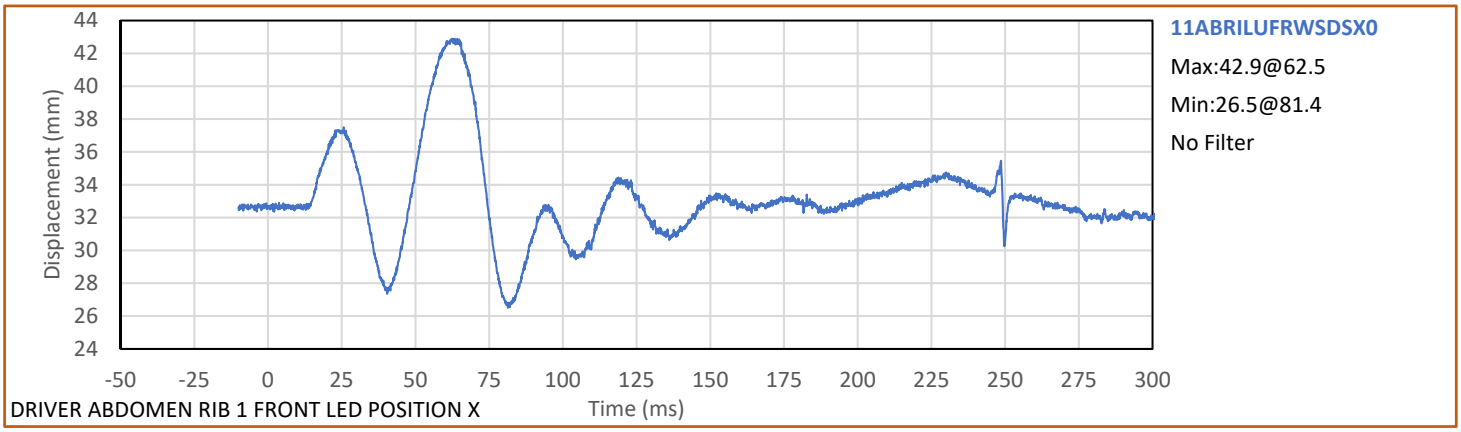
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

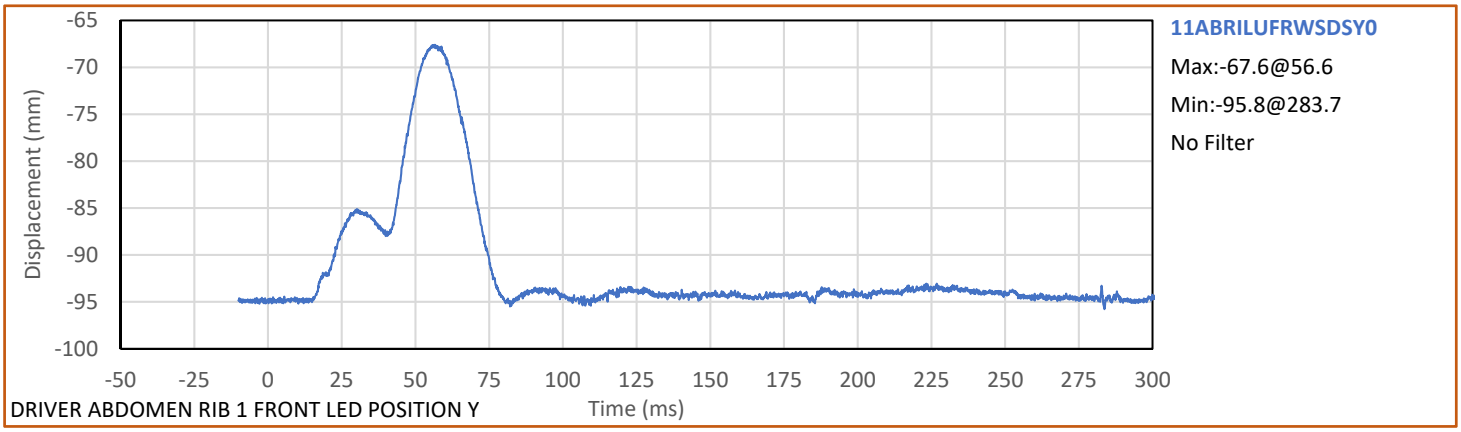
NHTSA No.: R20185381

Test Date: 9/11/2019

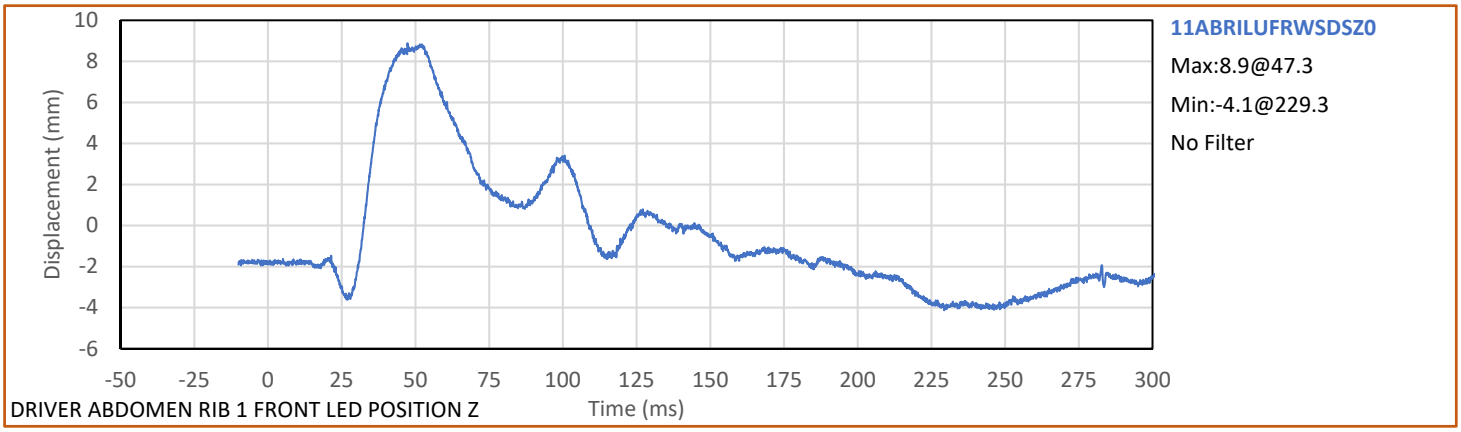
Applus IDIADA KARCO



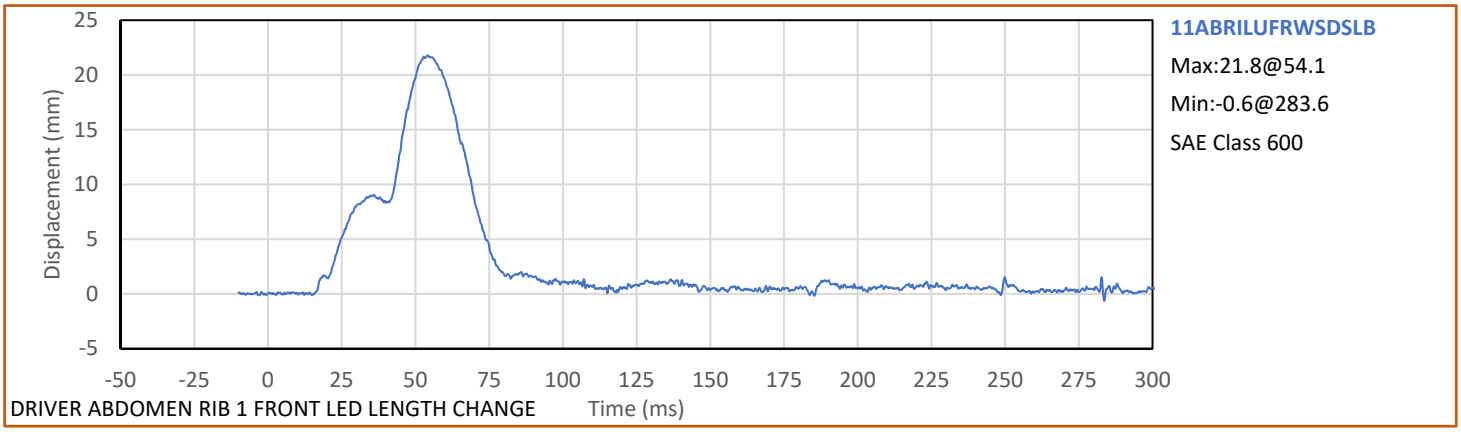
DRIVER ABDOMEN RIB 1 FRONT LED POSITION X



DRIVER ABDOMEN RIB 1 FRONT LED POSITION Y



DRIVER ABDOMEN RIB 1 FRONT LED POSITION Z



DRIVER ABDOMEN RIB 1 FRONT LED LENGTH CHANGE

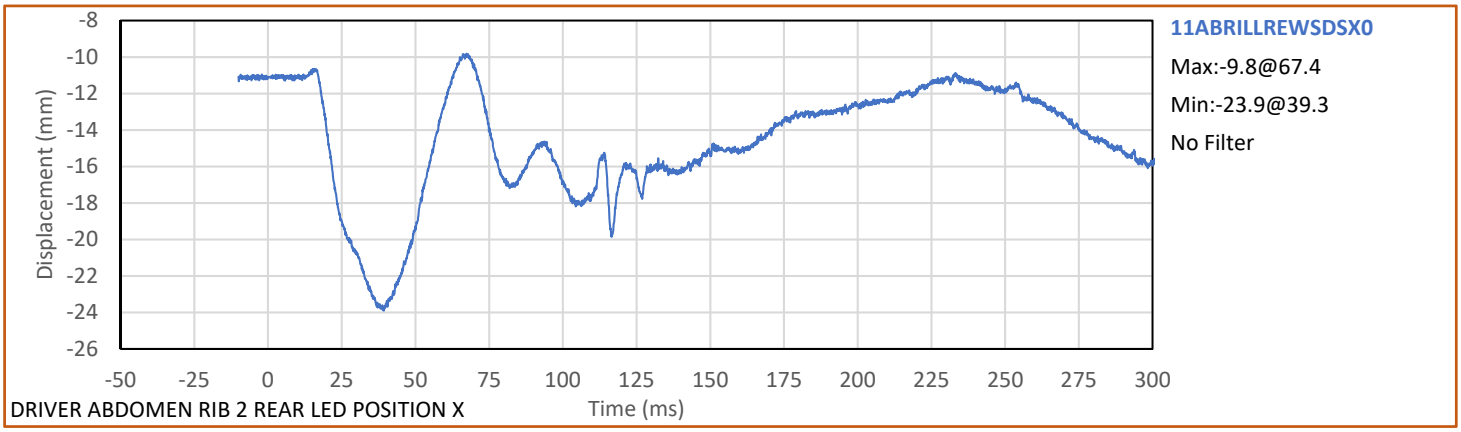
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

NHTSA No.: R20185381

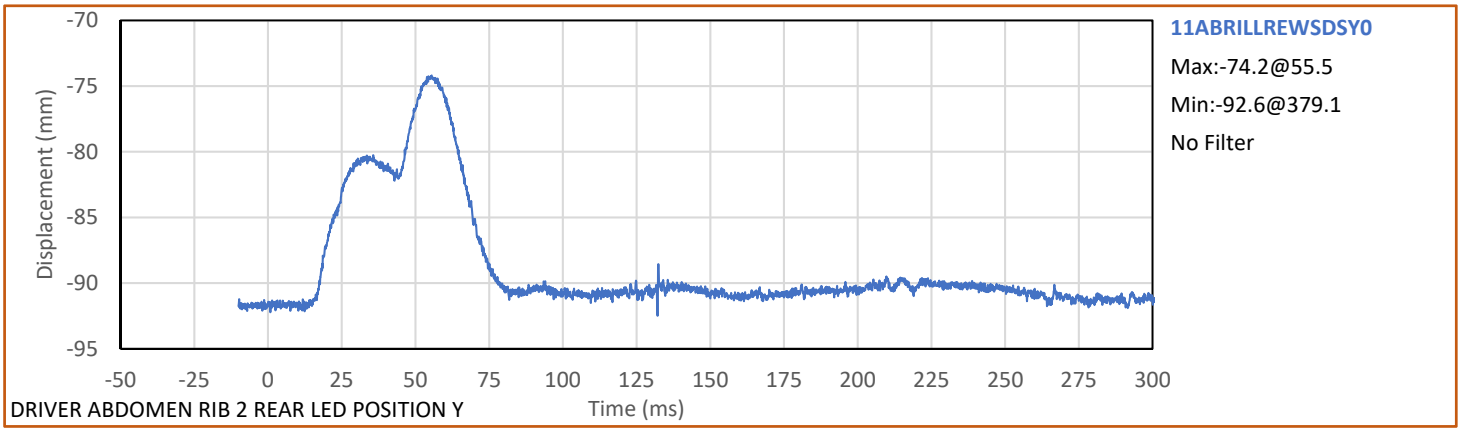
Test Date: 9/11/2019

Applus IDIADA KARCO



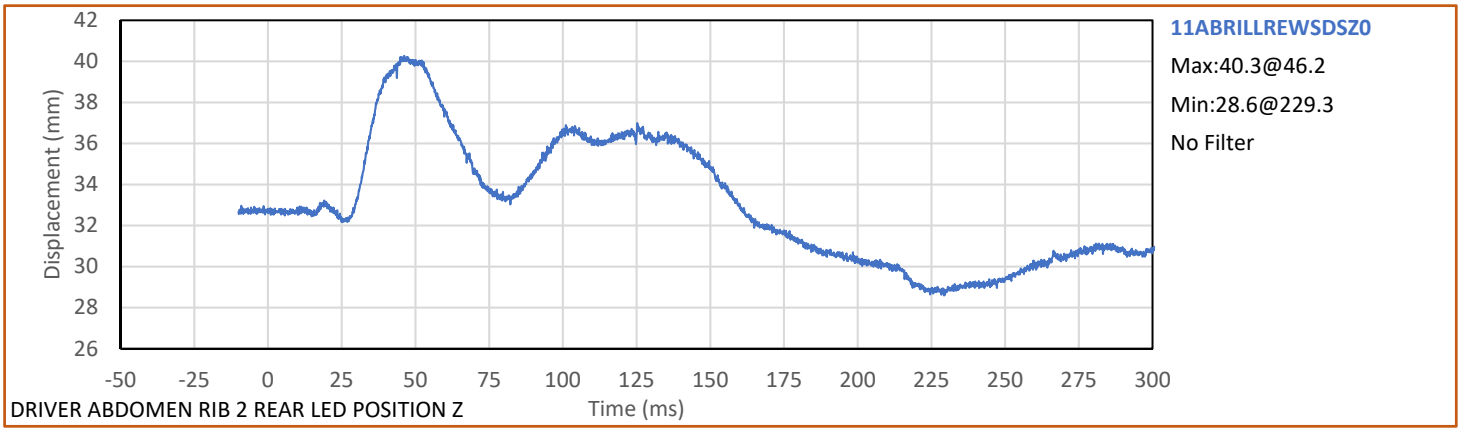
DRIVER ABDOMEN RIB 2 REAR LED POSITION X

11ABRILLREWSDSX0
Max:-9.8@67.4
Min:-23.9@39.3
No Filter



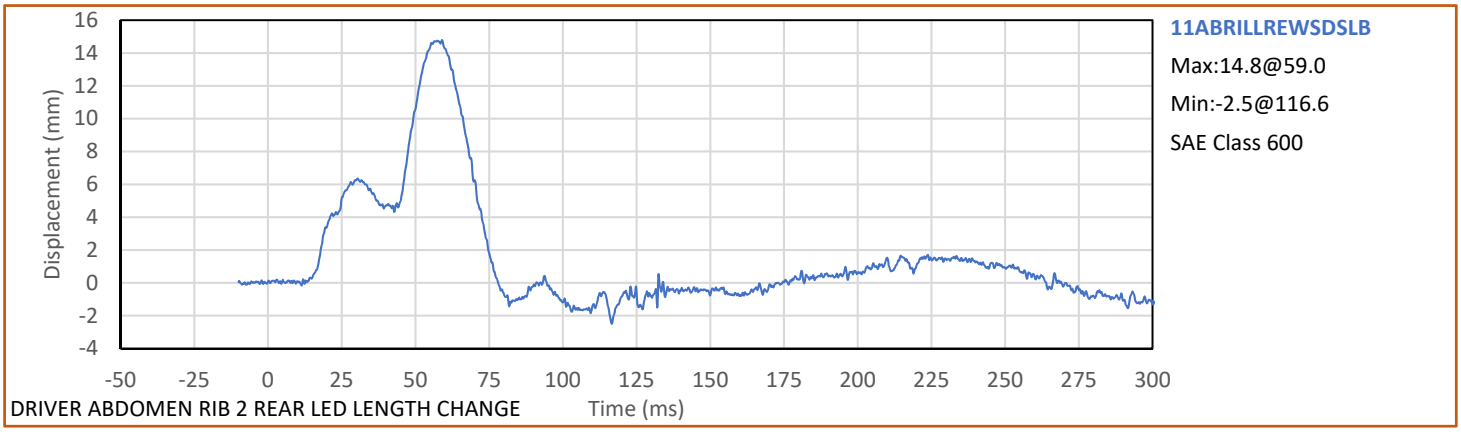
DRIVER ABDOMEN RIB 2 REAR LED POSITION Y

11ABRILLREWSDSY0
Max:-74.2@55.5
Min:-92.6@379.1
No Filter



DRIVER ABDOMEN RIB 2 REAR LED POSITION Z

11ABRILLREWSDSZ0
Max:40.3@46.2
Min:28.6@229.3
No Filter



DRIVER ABDOMEN RIB 2 REAR LED LENGTH CHANGE

11ABRILLREWSDSLB
Max:14.8@59.0
Min:-2.5@116.6
SAE Class 600

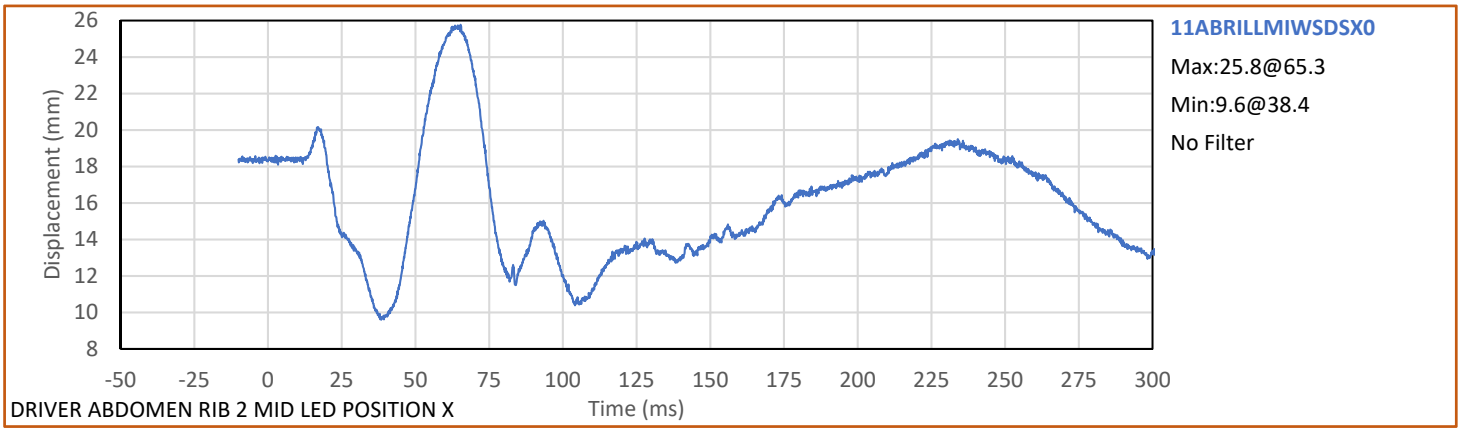
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

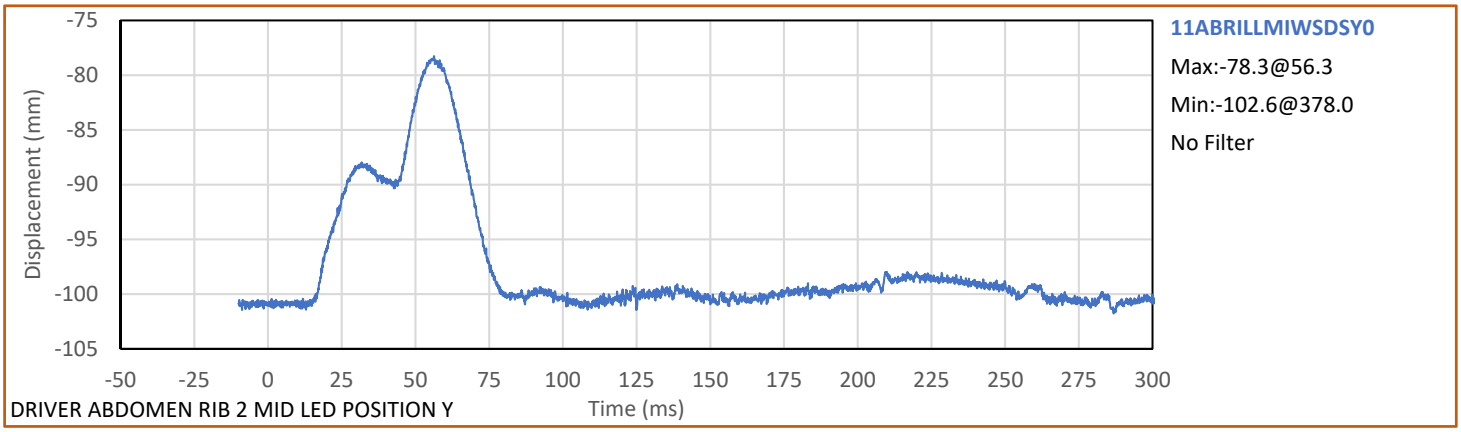
NHTSA No.: R20185381

Test Date: 9/11/2019

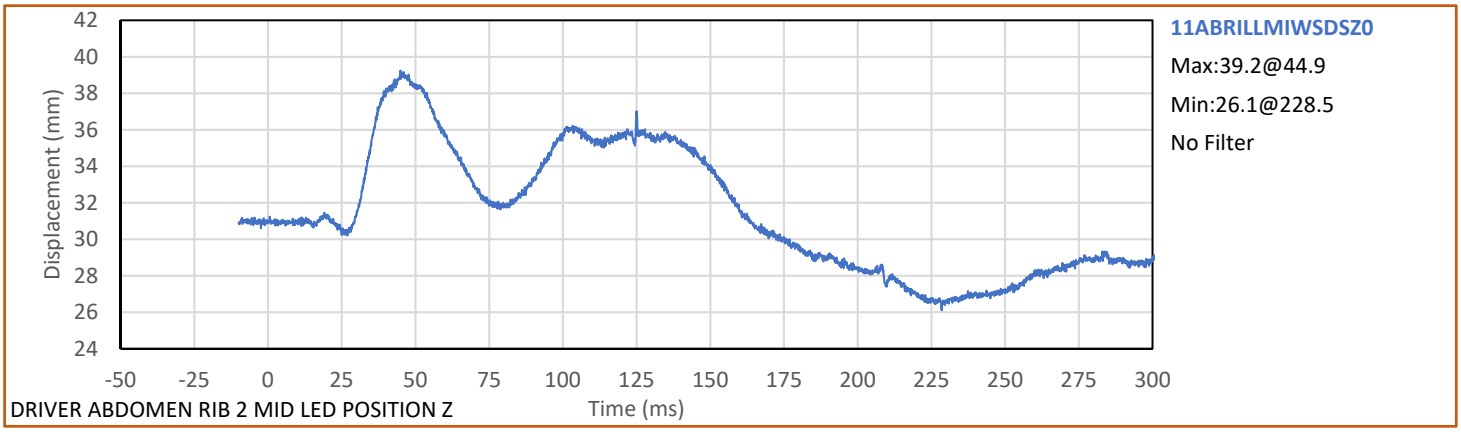
Applus IDIADA KARCO



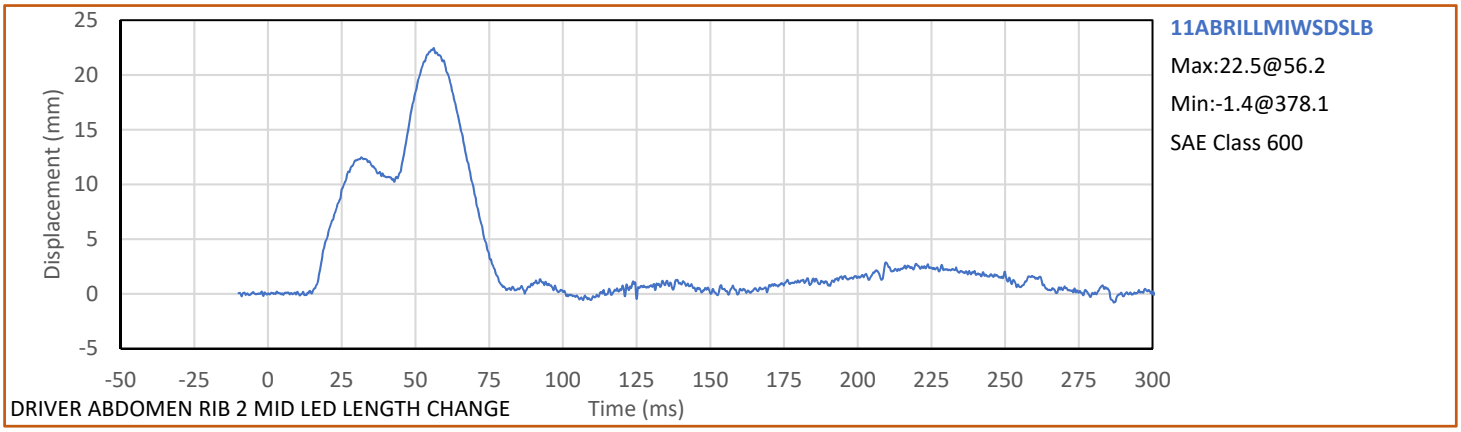
DRIVER ABDOMEN RIB 2 MID LED POSITION X



DRIVER ABDOMEN RIB 2 MID LED POSITION Y



DRIVER ABDOMEN RIB 2 MID LED POSITION Z



DRIVER ABDOMEN RIB 2 MID LED LENGTH CHANGE

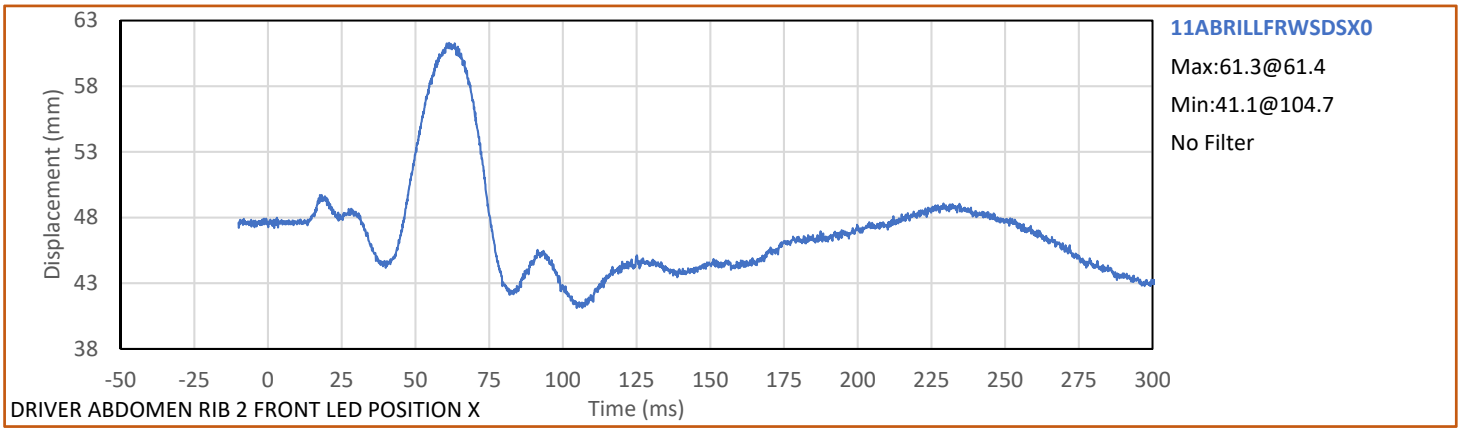
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

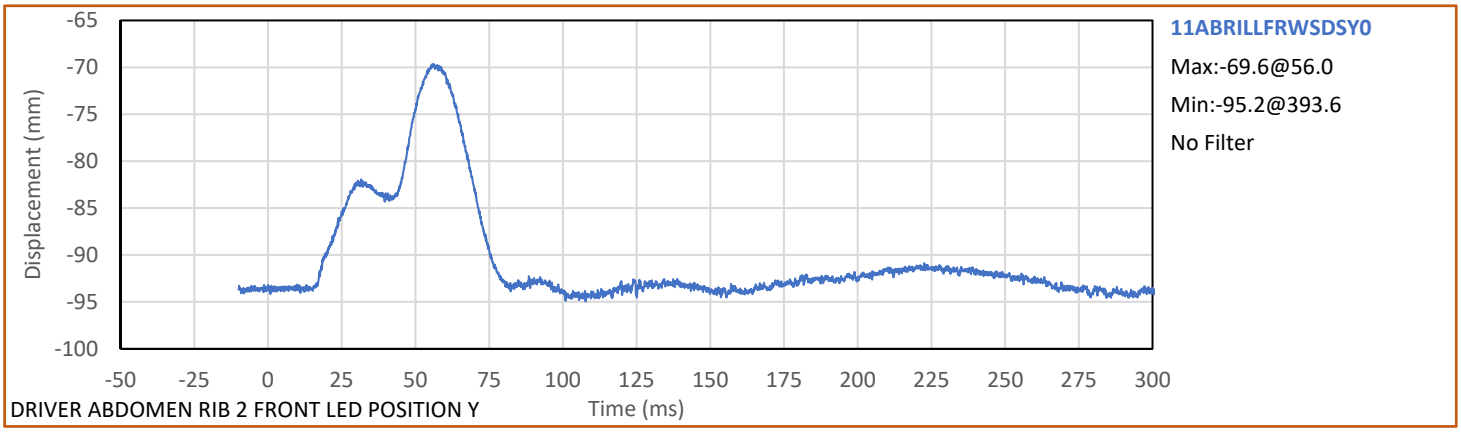
NHTSA No.: R20185381

Test Date: 9/11/2019

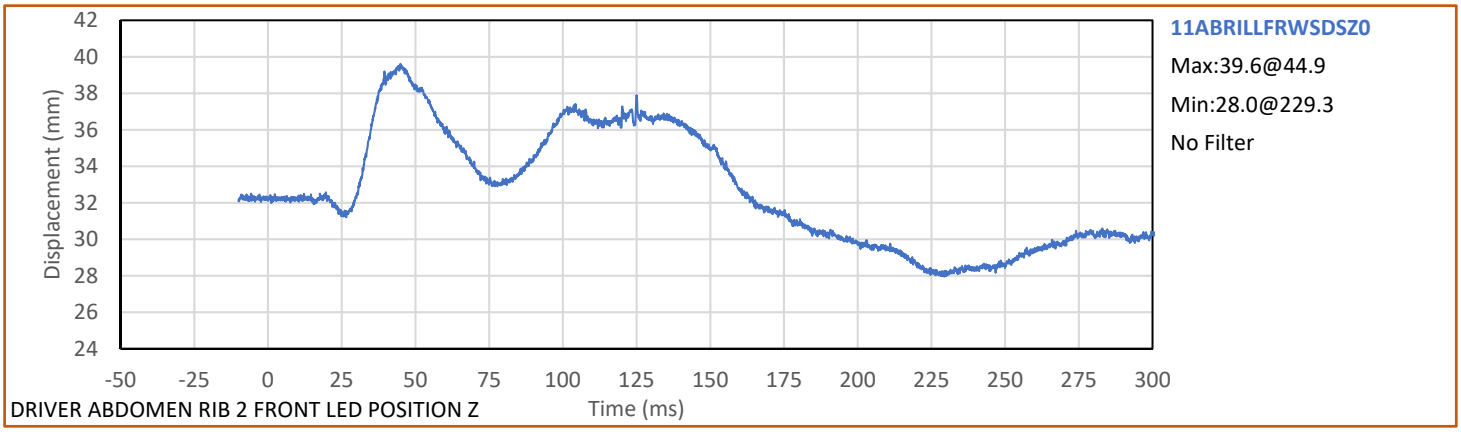
Applus IDIADA KARCO



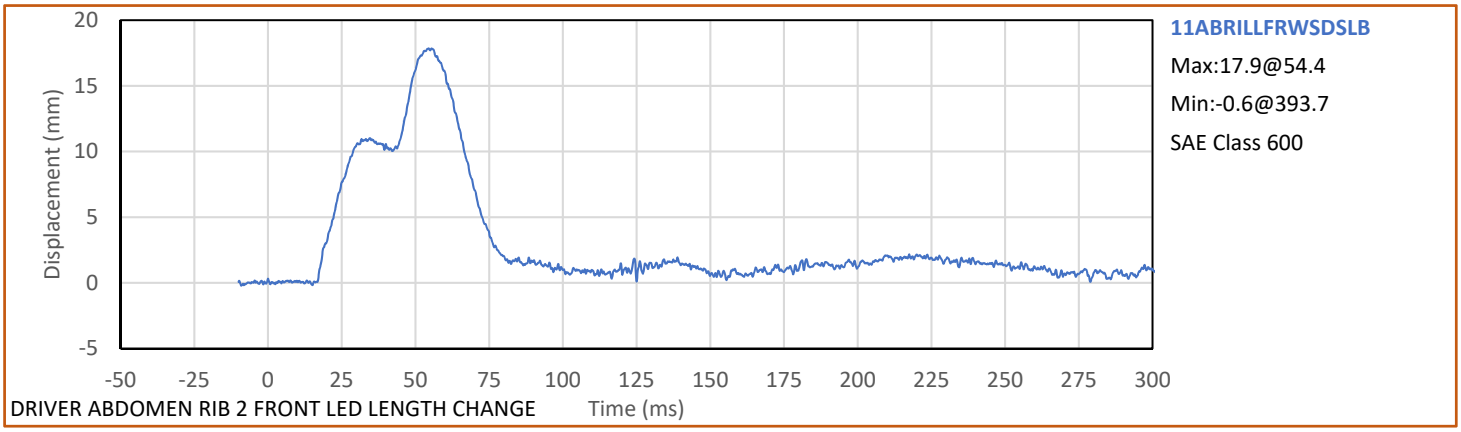
DRIVER ABDOMEN RIB 2 FRONT LED POSITION X



DRIVER ABDOMEN RIB 2 FRONT LED POSITION Y



DRIVER ABDOMEN RIB 2 FRONT LED POSITION Z



DRIVER ABDOMEN RIB 2 FRONT LED LENGTH CHANGE

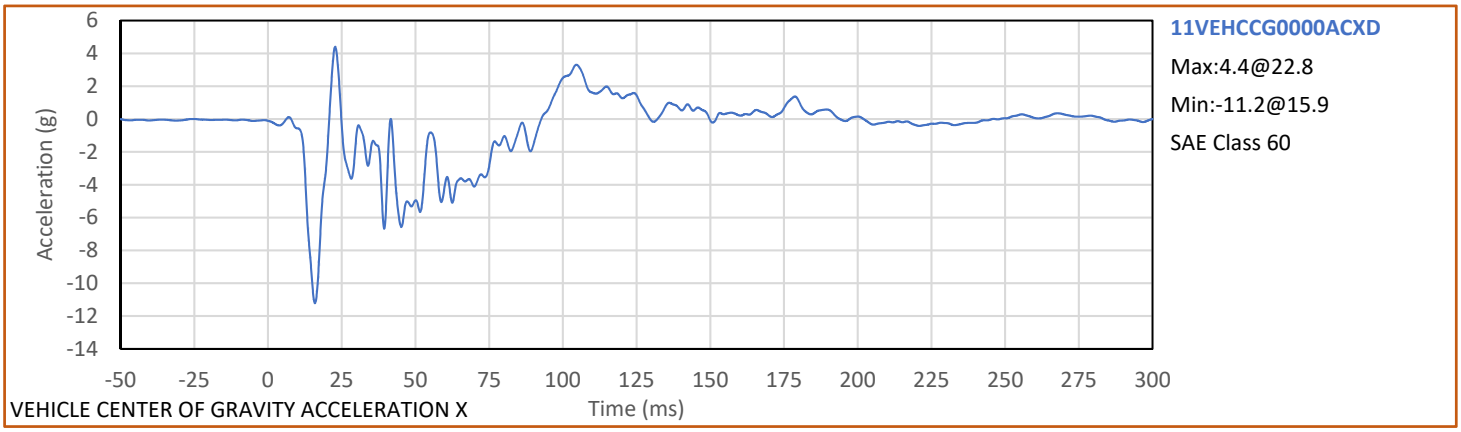
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

NHTSA No.: R20185381

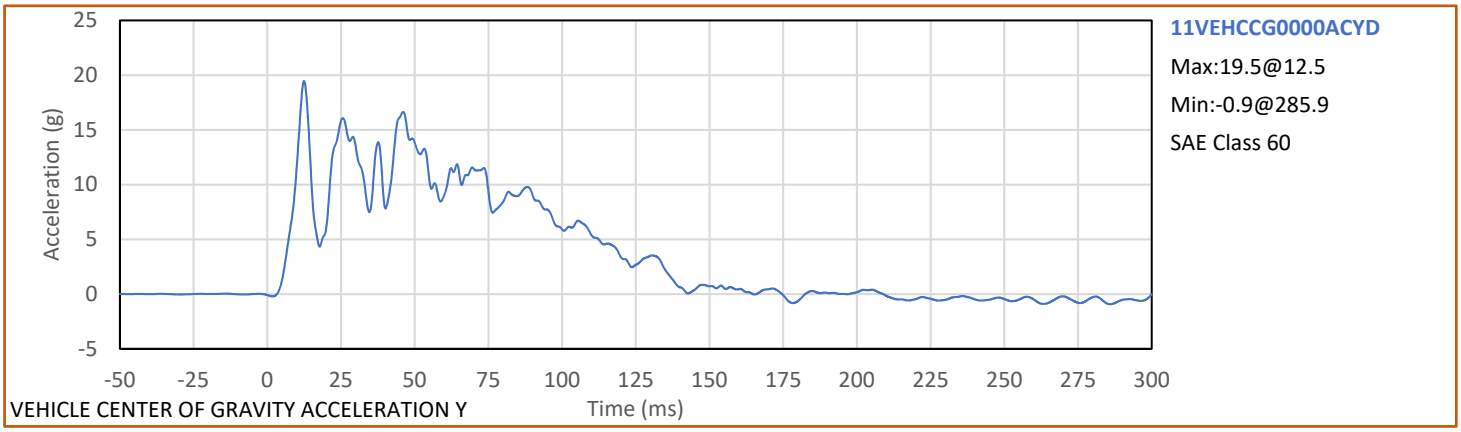
Test Date: 9/11/2019

Applus IDIADA KARCO



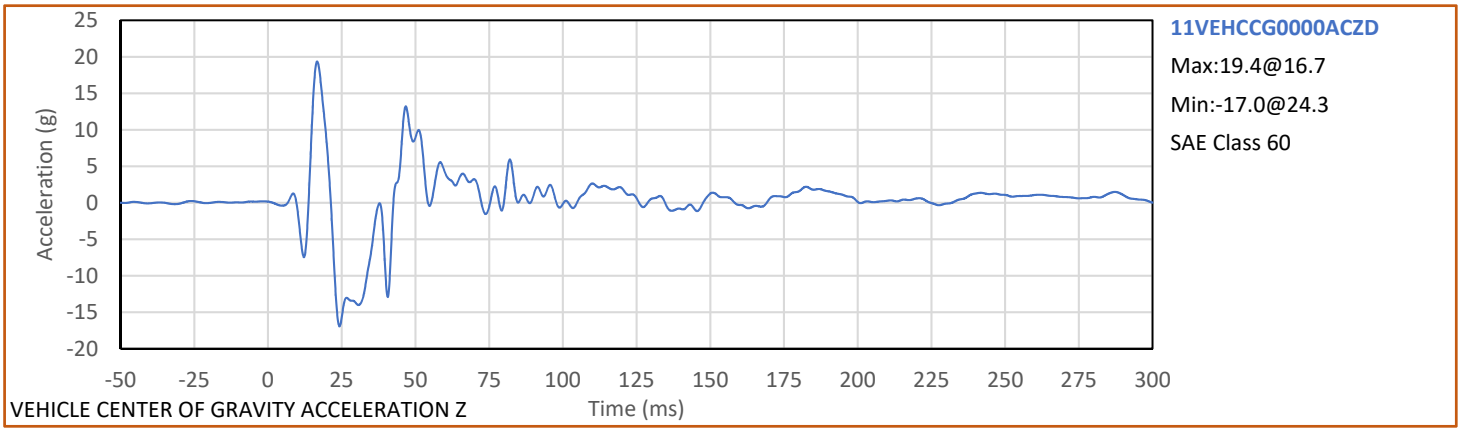
11VEHCCG0000ACXD
Max:4.4@22.8
Min:-11.2@15.9
SAE Class 60

VEHICLE CENTER OF GRAVITY ACCELERATION X



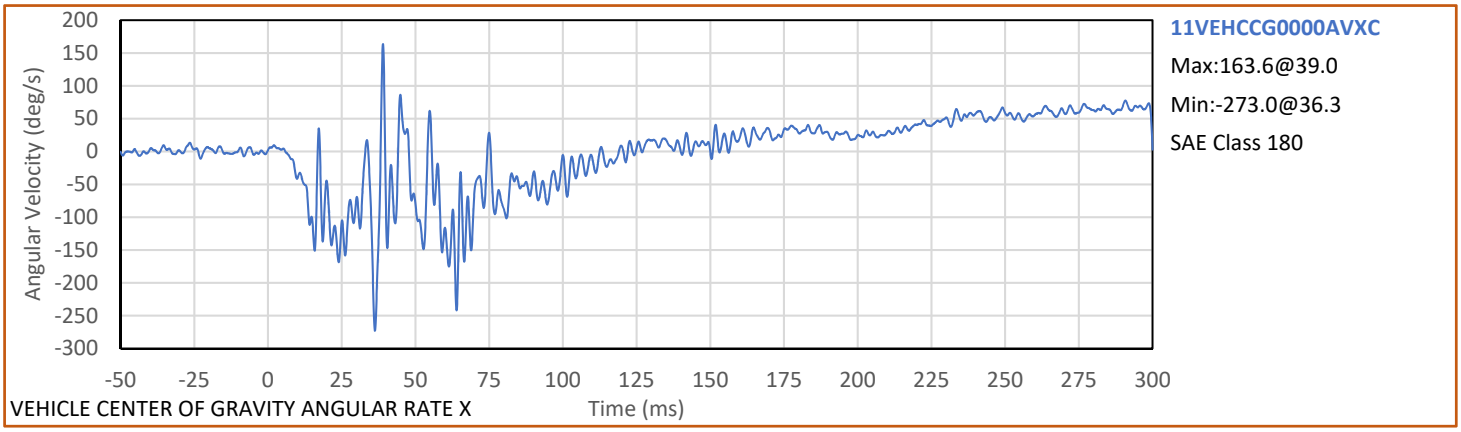
11VEHCCG0000ACYD
Max:19.5@12.5
Min:-0.9@285.9
SAE Class 60

VEHICLE CENTER OF GRAVITY ACCELERATION Y



11VEHCCG0000ACZD
Max:19.4@16.7
Min:-17.0@24.3
SAE Class 60

VEHICLE CENTER OF GRAVITY ACCELERATION Z



11VEHCCG0000AVXC
Max:163.6@39.0
Min:-273.0@36.3
SAE Class 180

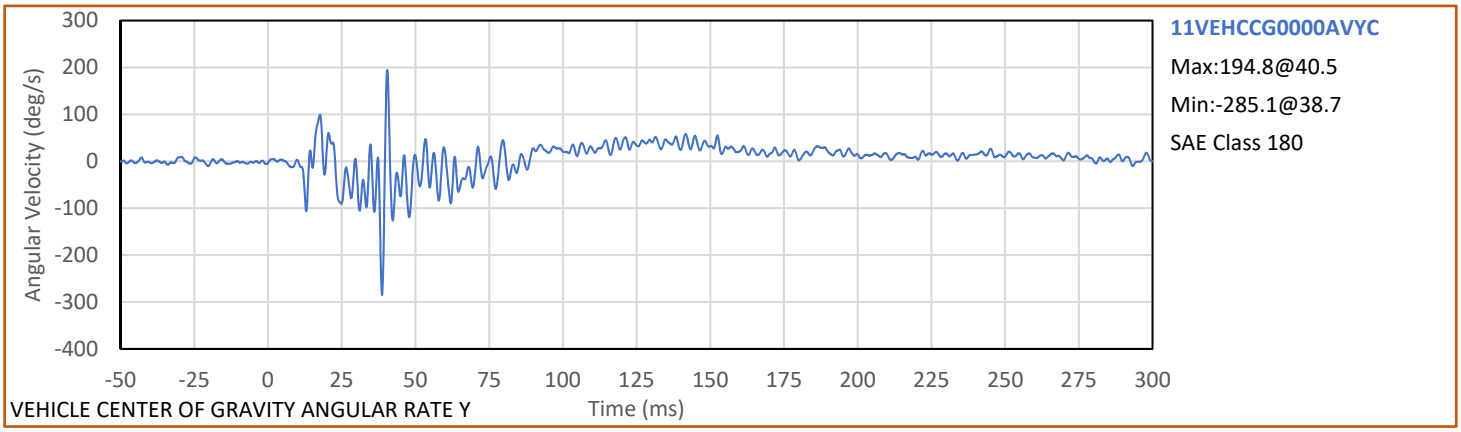
VEHICLE CENTER OF GRAVITY ANGULAR RATE X

Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

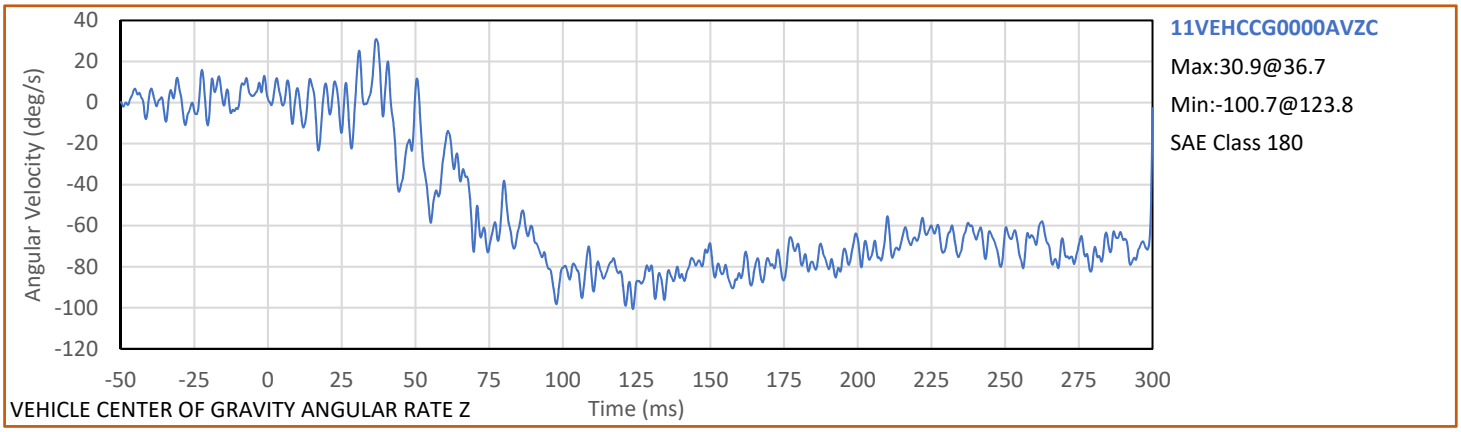
NHTSA No.: R20185381

Test Date: 9/11/2019



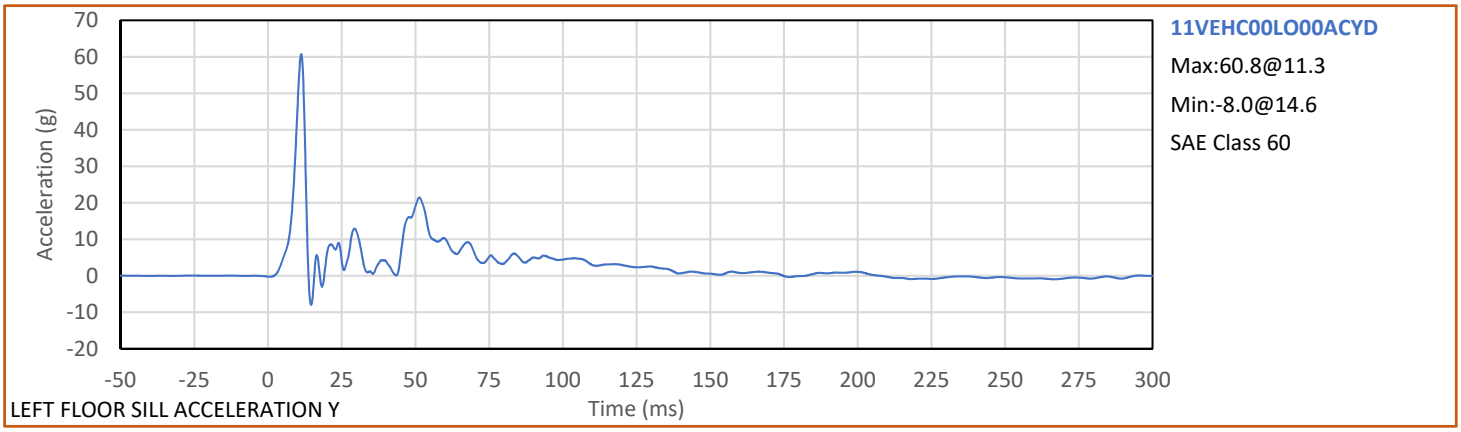
11VEHCCG0000AVYC
Max:194.8@40.5
Min:-285.1@38.7
SAE Class 180

VEHICLE CENTER OF GRAVITY ANGULAR RATE Y



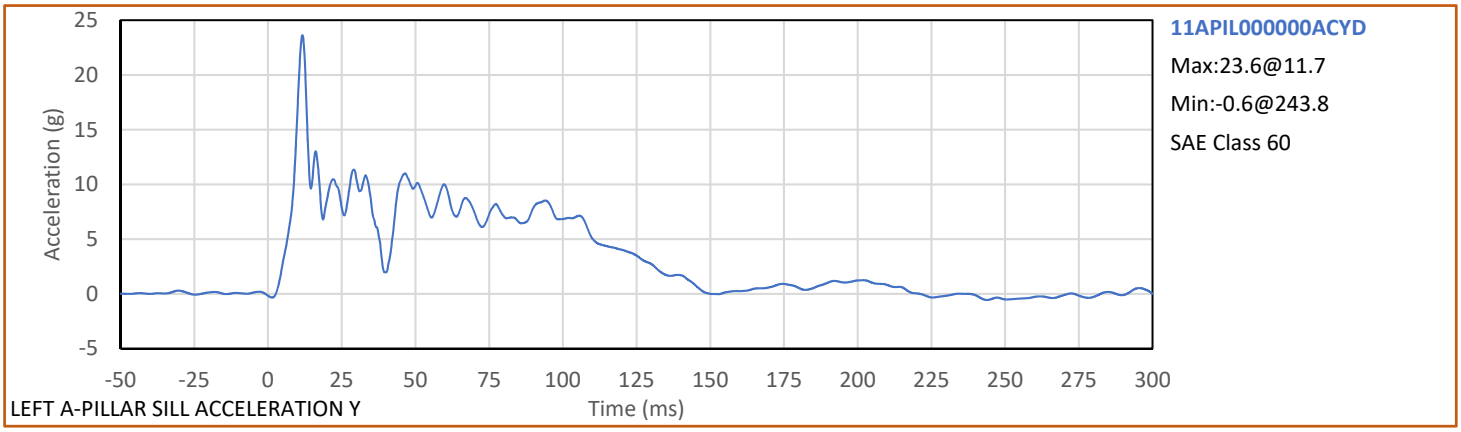
11VEHCCG0000AVZC
Max:30.9@36.7
Min:-100.7@123.8
SAE Class 180

VEHICLE CENTER OF GRAVITY ANGULAR RATE Z



11VEHC00LO00ACYD
Max:60.8@11.3
Min:-8.0@14.6
SAE Class 60

LEFT FLOOR SILL ACCELERATION Y



11APIL000000ACYD
Max:23.6@11.7
Min:-0.6@243.8
SAE Class 60

LEFT A-PILLAR SILL ACCELERATION Y

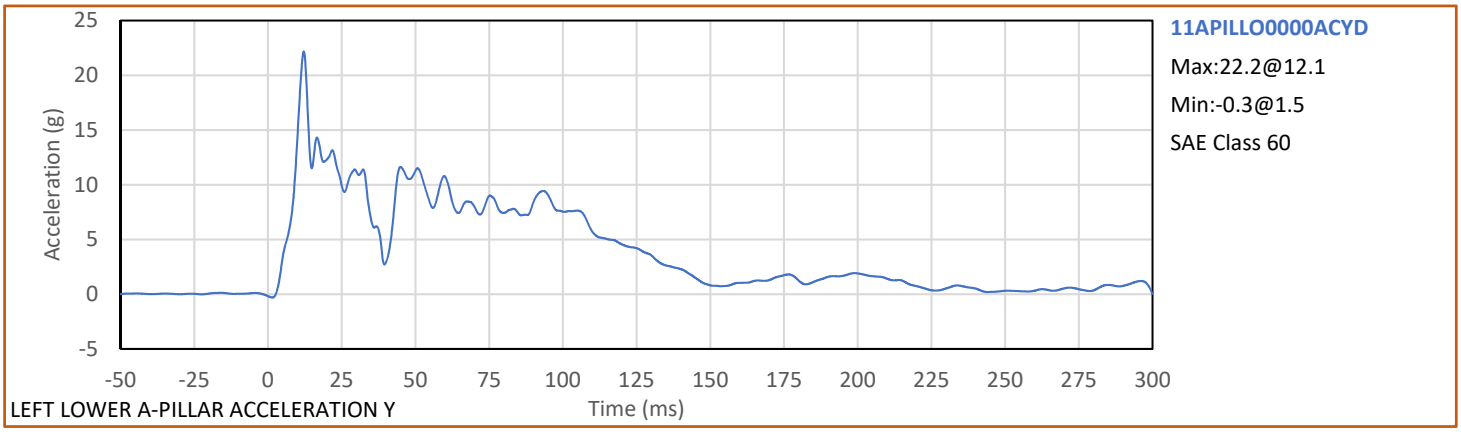
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

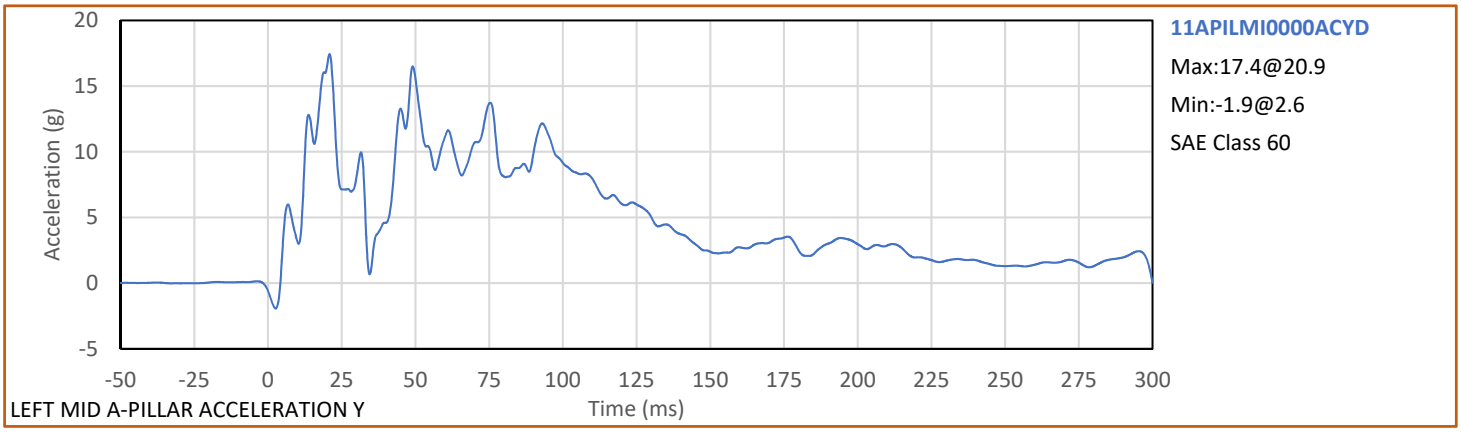
NHTSA No.: R20185381

Test Date: 9/11/2019

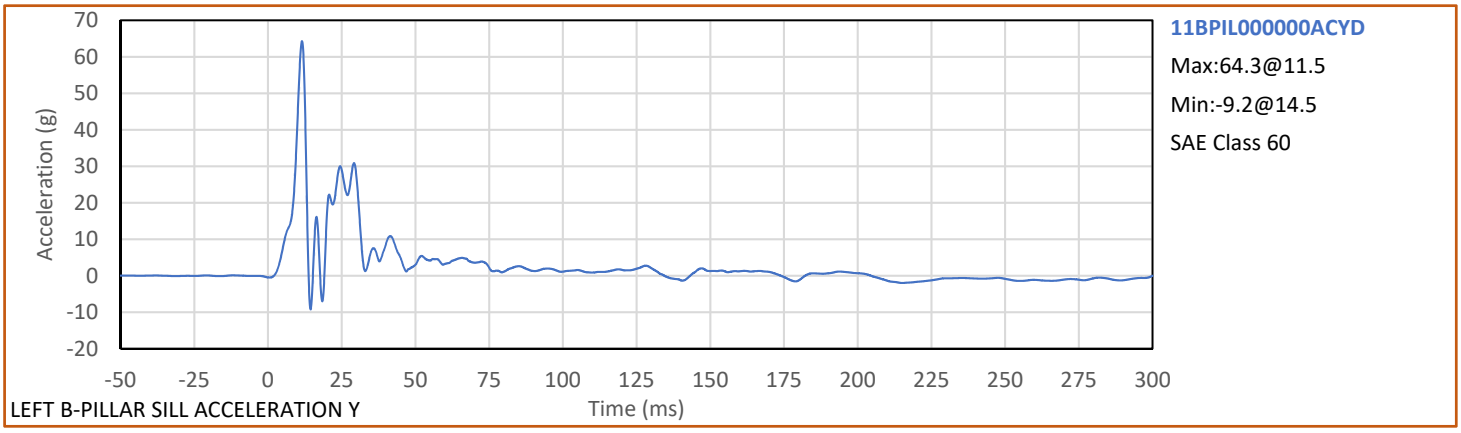
Applus IDIADA KARCO



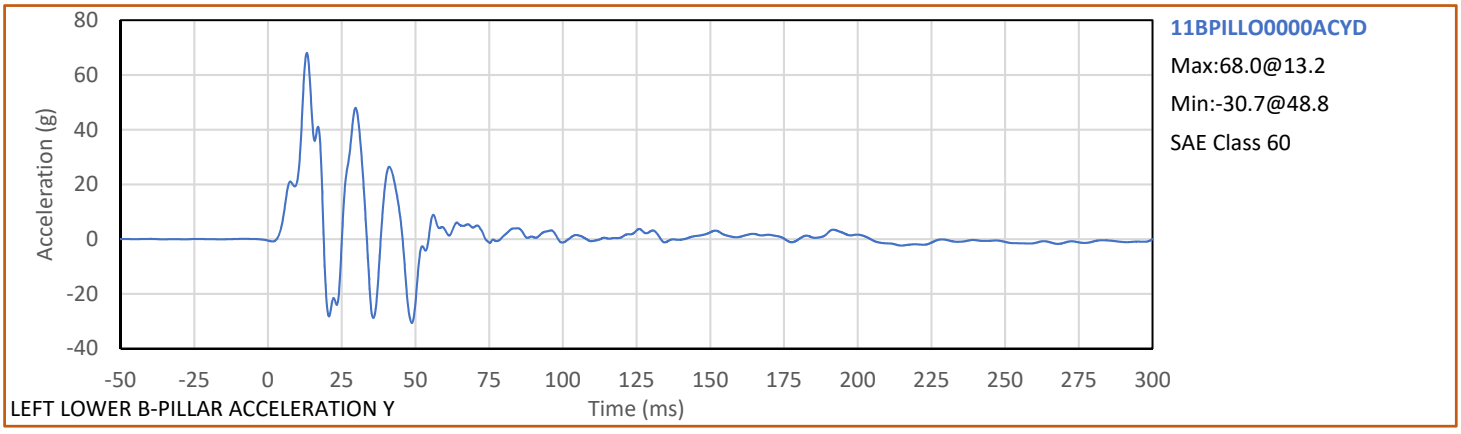
LEFT LOWER A-PILLAR ACCELERATION Y



LEFT MID A-PILLAR ACCELERATION Y



LEFT B-PILLAR SILL ACCELERATION Y



LEFT LOWER B-PILLAR ACCELERATION Y

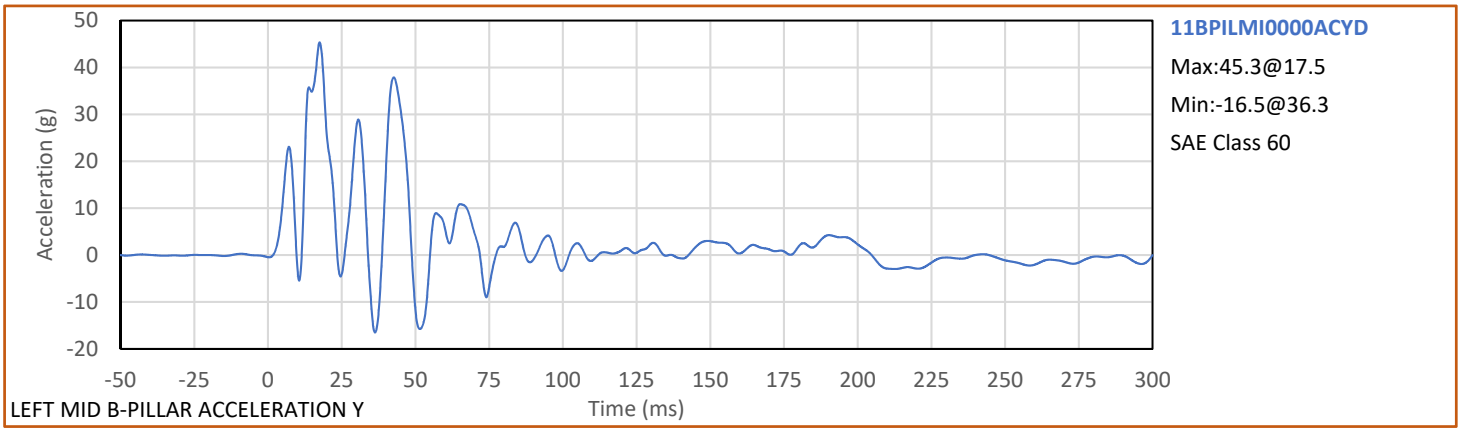
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

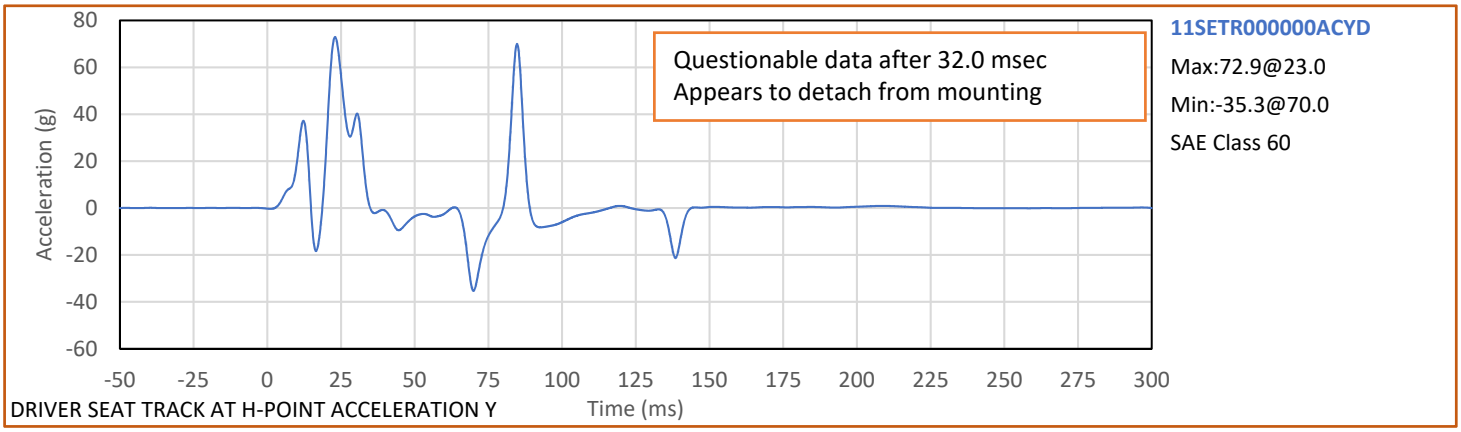
NHTSA No.: R20185381

Test Date: 9/11/2019

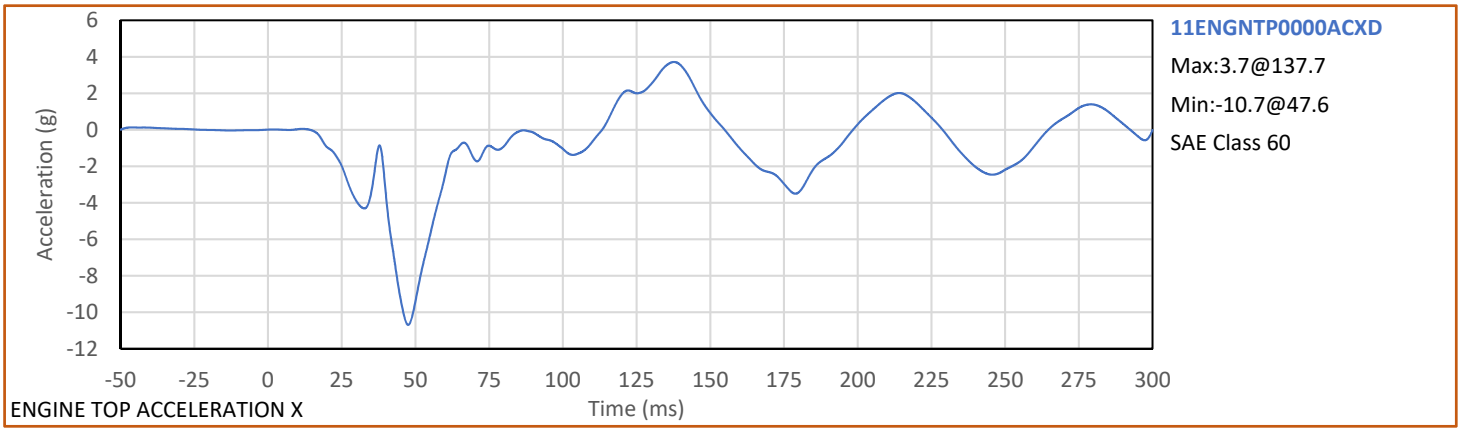
Applus IDIADA KARCO



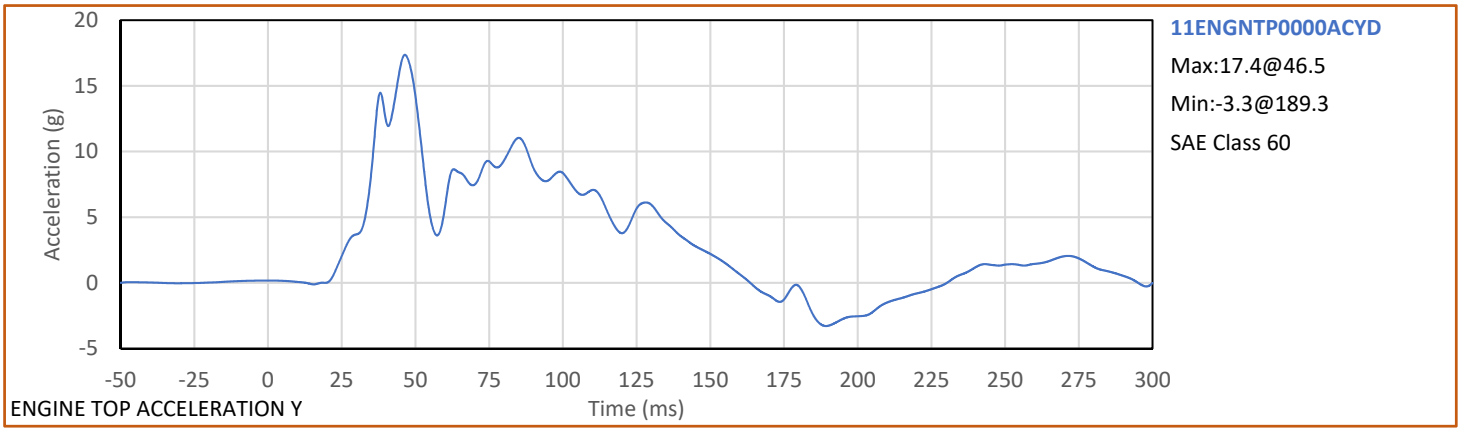
LEFT MID B-PILLAR ACCELERATION Y



DRIVER SEAT TRACK AT H-POINT ACCELERATION Y



ENGINE TOP ACCELERATION X



ENGINE TOP ACCELERATION Y

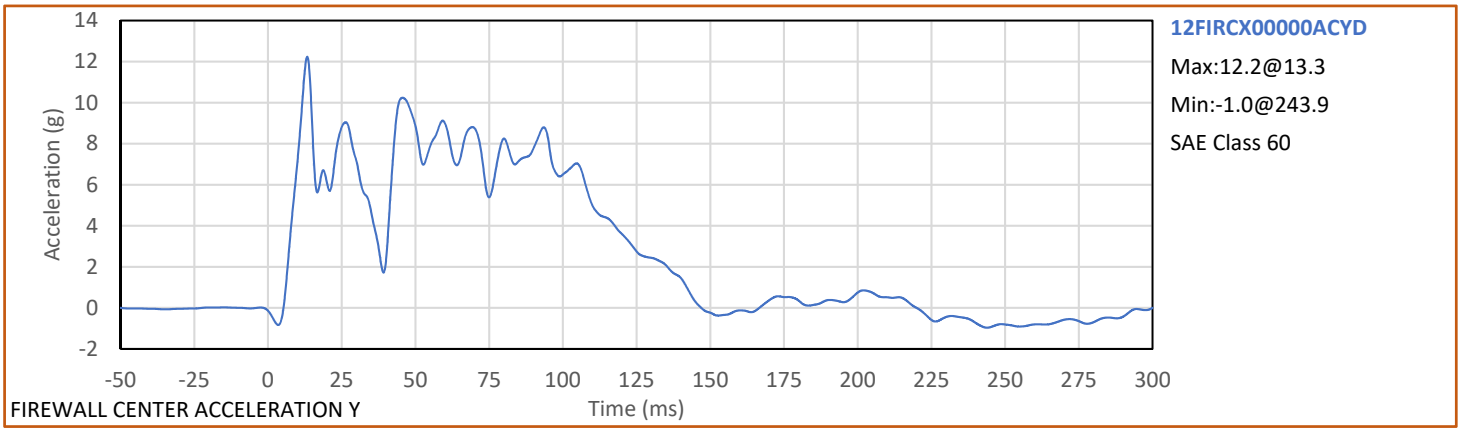
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

NHTSA No.: R20185381

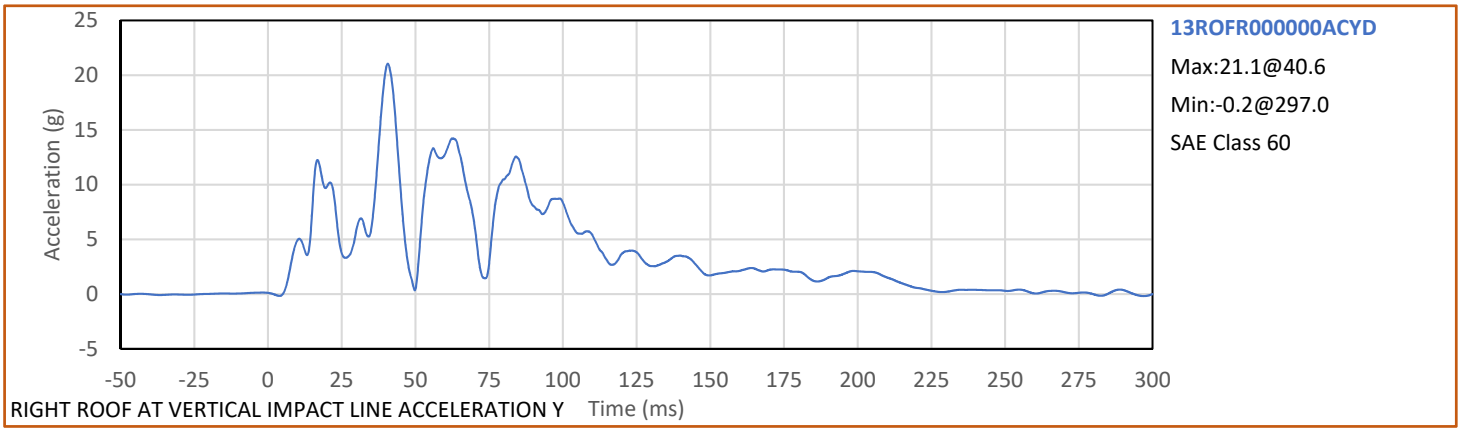
Test Date: 9/11/2019

Applus IDIADA KARCO



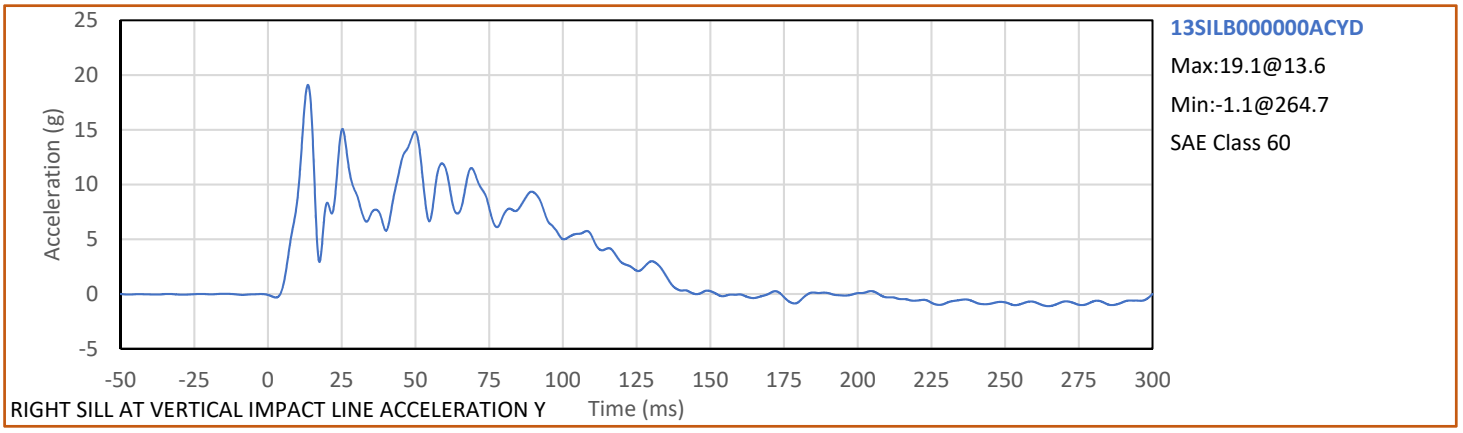
FIREWALL CENTER ACCELERATION Y

12FIRCX00000ACYD
Max:12.2@13.3
Min:-1.0@243.9
SAE Class 60



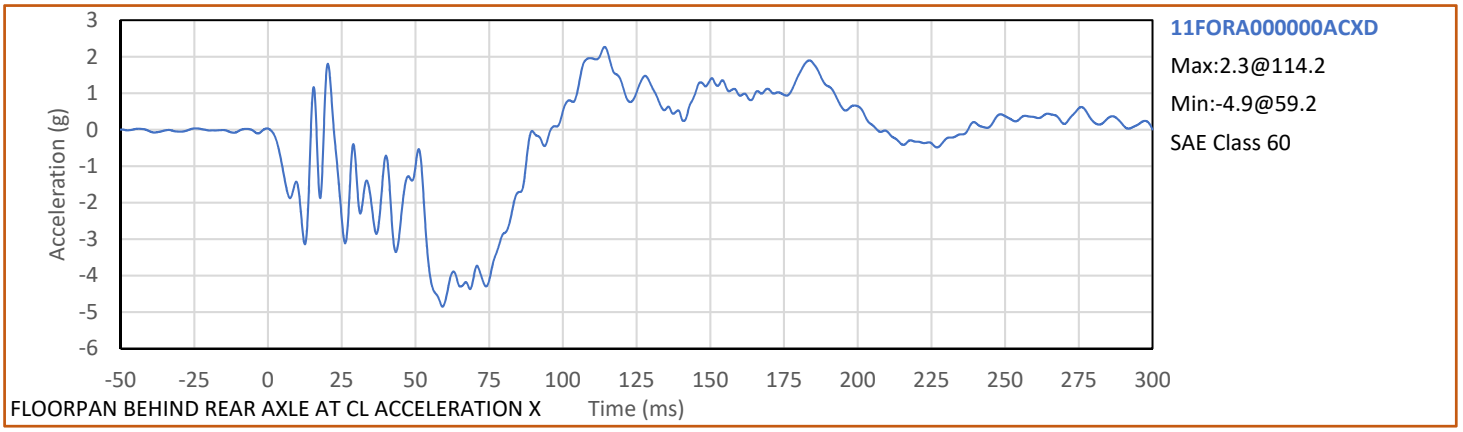
RIGHT ROOF AT VERTICAL IMPACT LINE ACCELERATION Y

13ROFR000000ACYD
Max:21.1@40.6
Min:-0.2@297.0
SAE Class 60



RIGHT SILL AT VERTICAL IMPACT LINE ACCELERATION Y

13SILB000000ACYD
Max:19.1@13.6
Min:-1.1@264.7
SAE Class 60



FLOORPAN BEHIND REAR AXLE AT CL ACCELERATION X

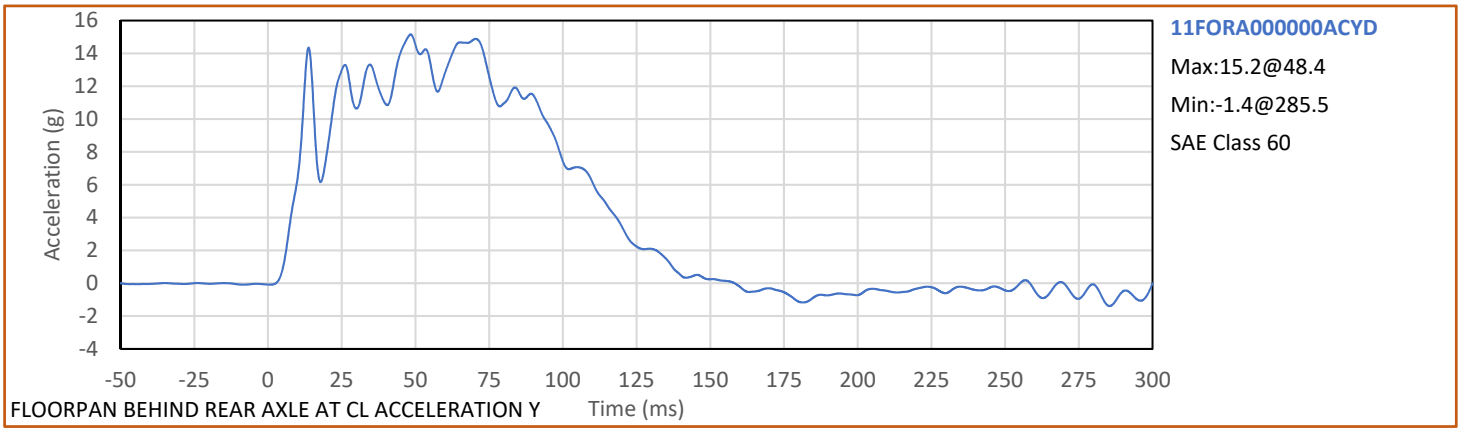
11FORA000000ACXD
Max:2.3@114.2
Min:-4.9@59.2
SAE Class 60

Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

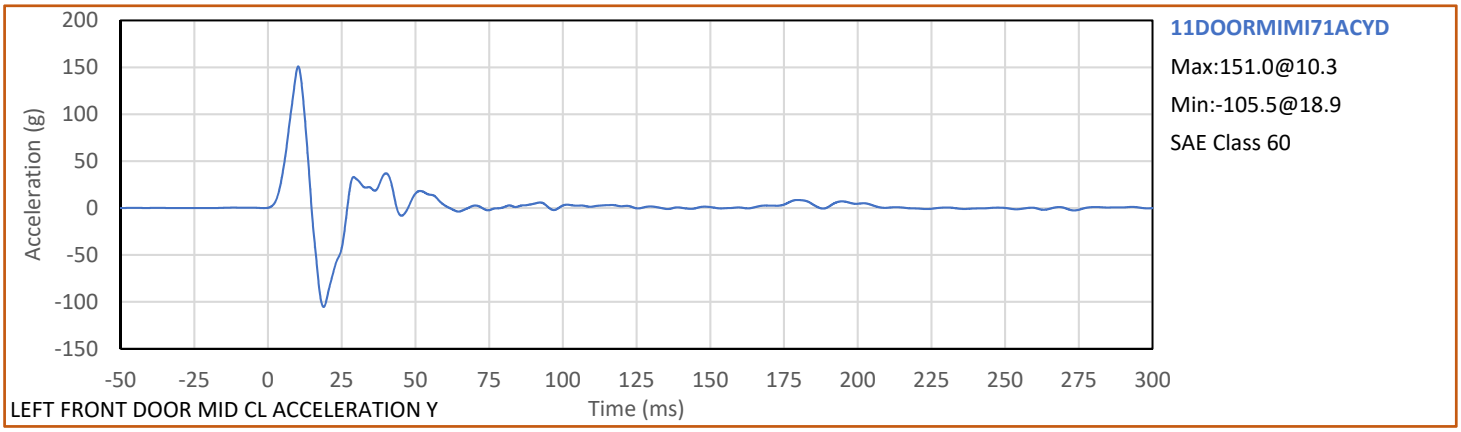
Test Program: 75° Research Oblique Side Impact (Rigid Pole)

NHTSA No.: R20185381

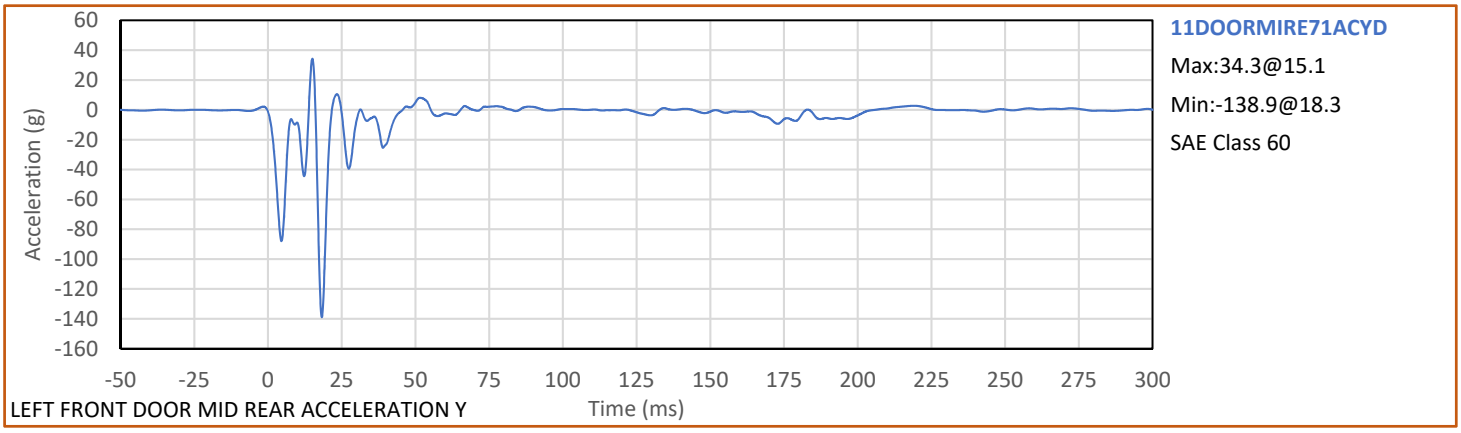
Test Date: 9/11/2019



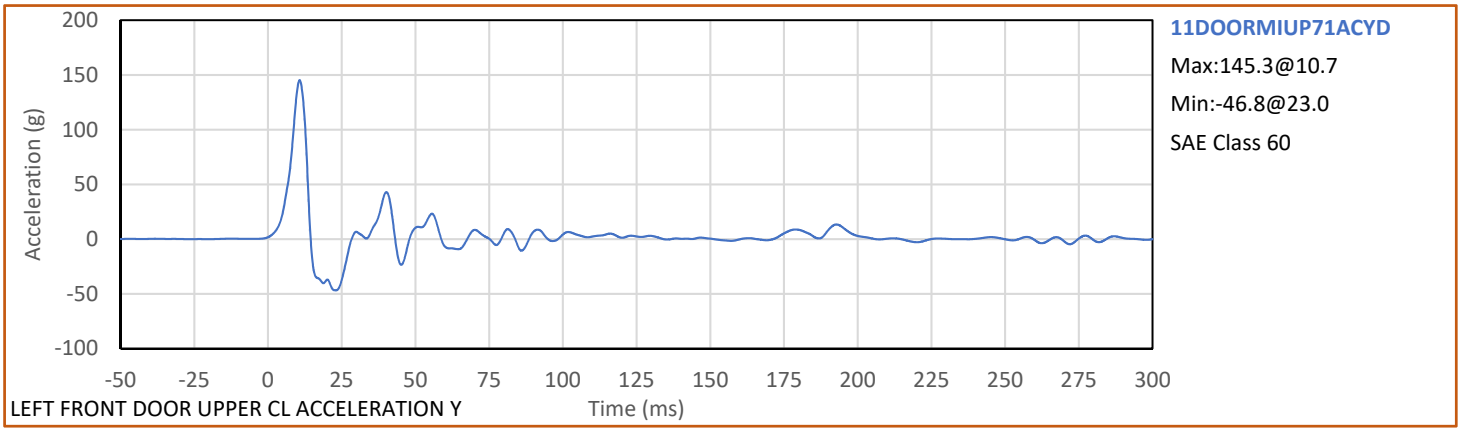
FLOORPAN BEHIND REAR AXLE AT CL ACCELERATION Y



LEFT FRONT DOOR MID CL ACCELERATION Y



LEFT FRONT DOOR MID REAR ACCELERATION Y



LEFT FRONT DOOR UPPER CL ACCELERATION Y

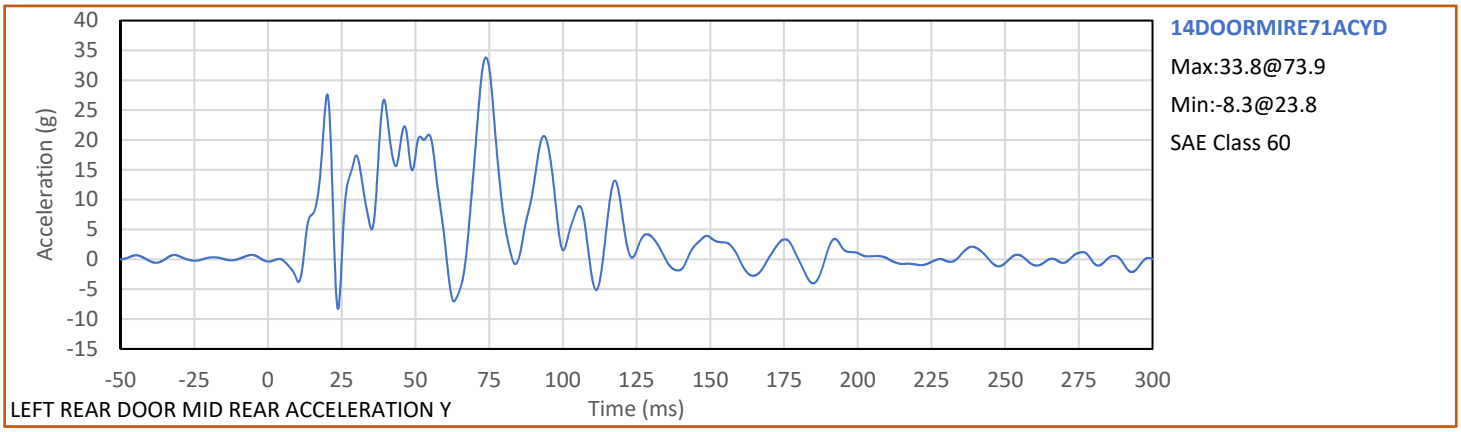
Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

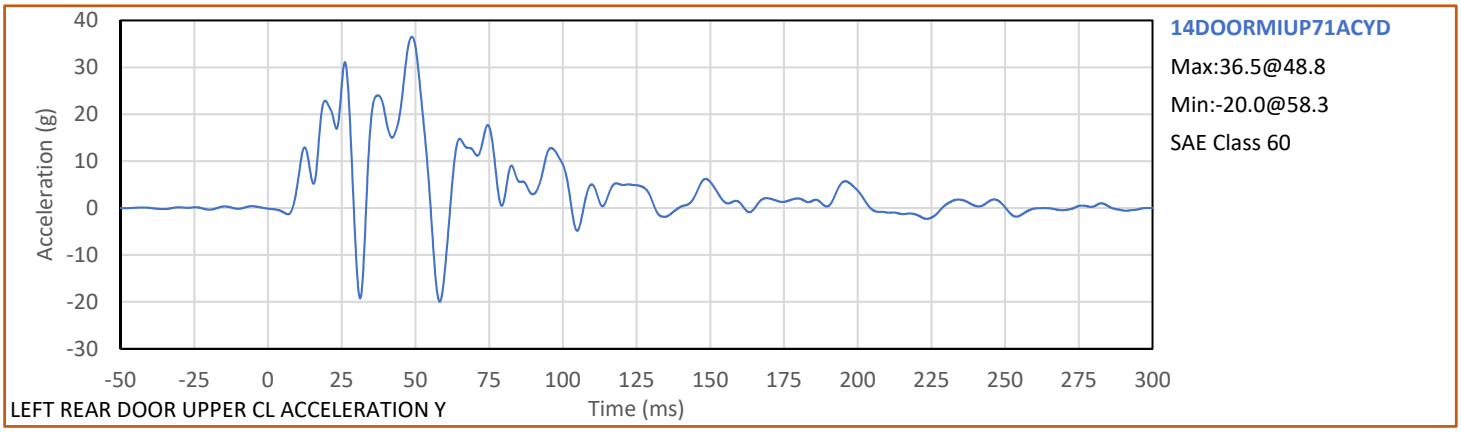
NHTSA No.: R20185381

Test Date: 9/11/2019

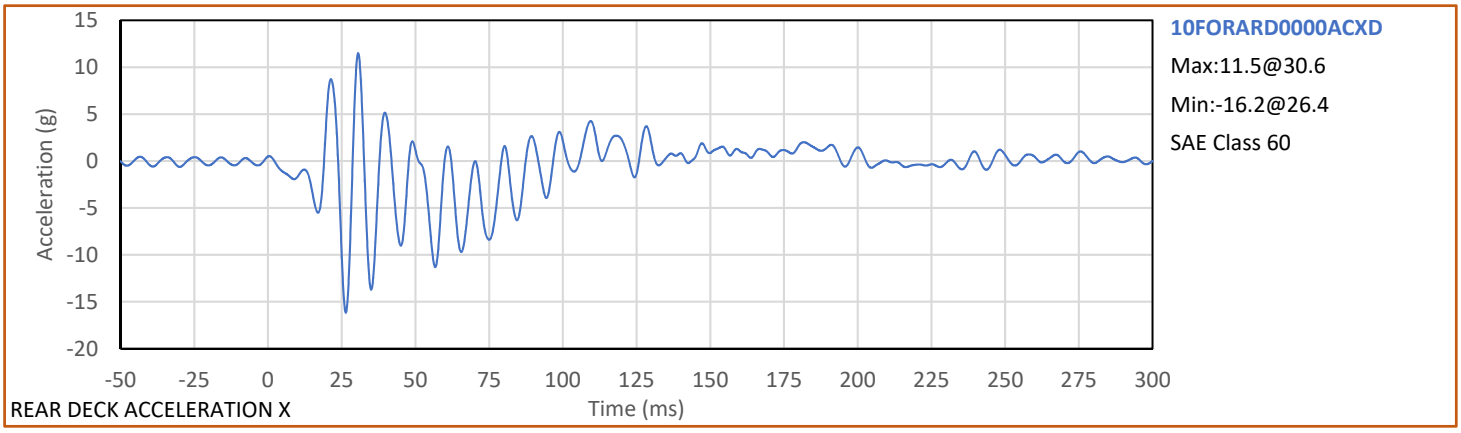
Applus IDIADA KARCO



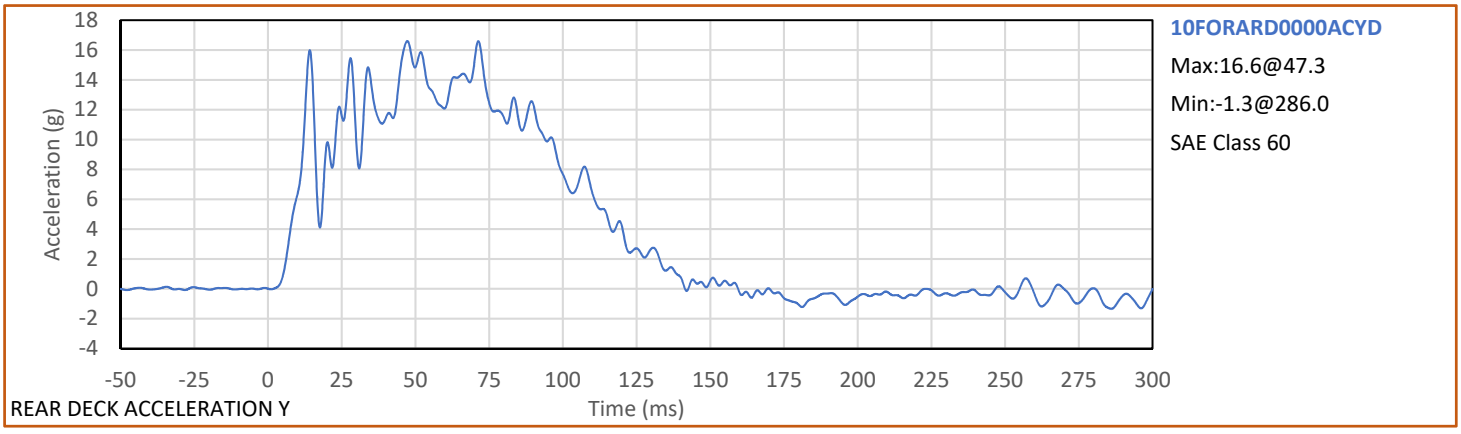
LEFT REAR DOOR MID REAR ACCELERATION Y



LEFT REAR DOOR UPPER CL ACCELERATION Y



REAR DECK ACCELERATION X



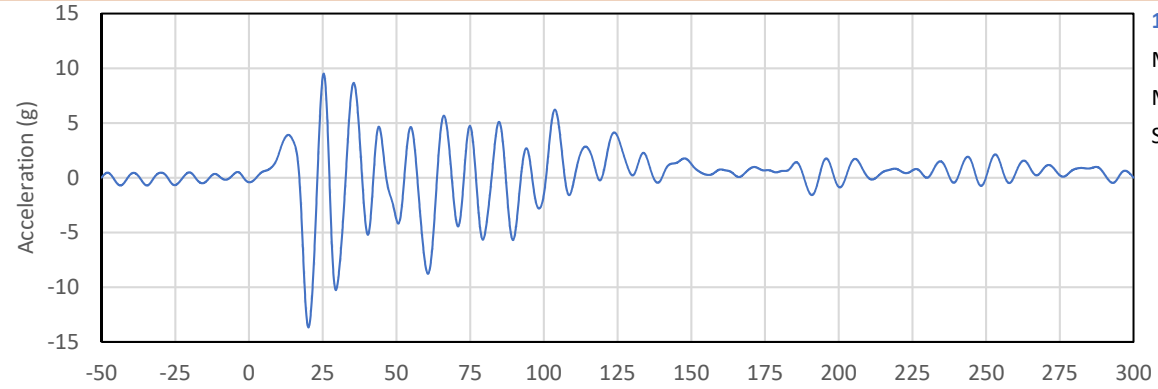
REAR DECK ACCELERATION Y

Test Vehicle: 2018 Honda Accord LX 4-Door Sedan

Test Program: 75° Research Oblique Side Impact (Rigid Pole)

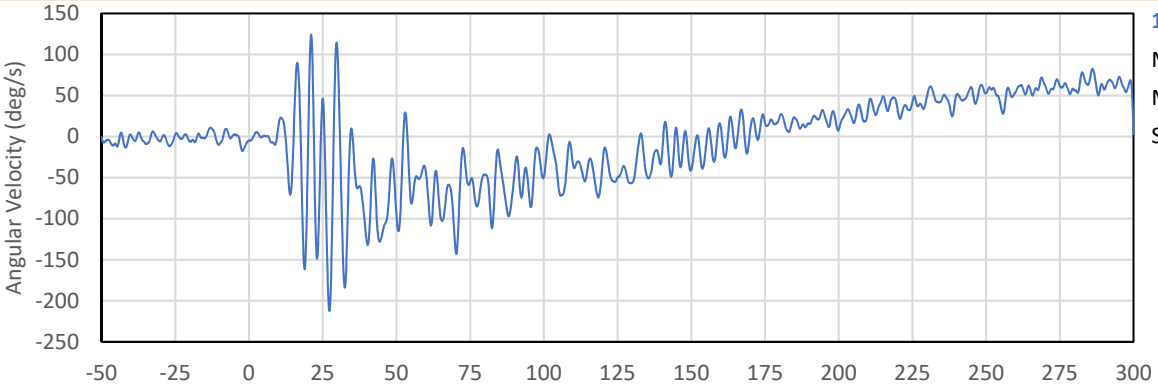
NHTSA No.: R20185381

Test Date: 9/11/2019



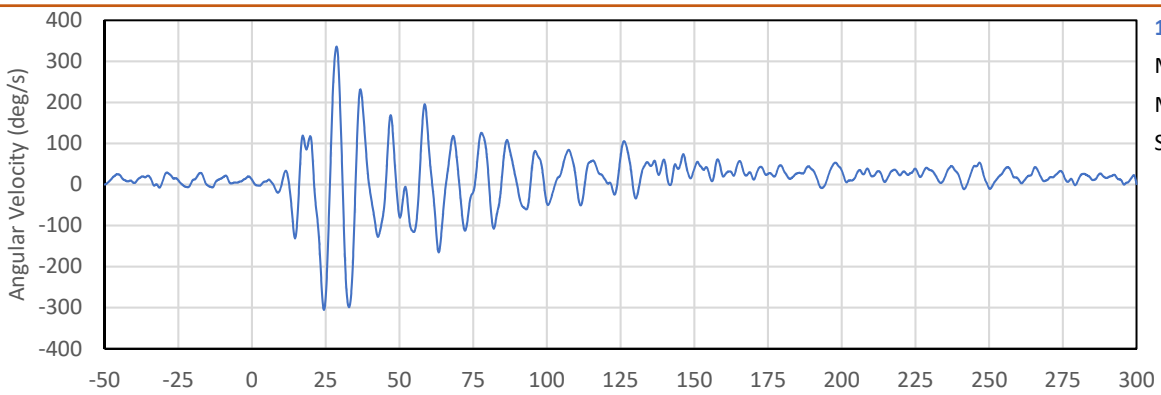
REAR DECK ACCELERATION Z

10FORARD0000ACZD
Max:9.5@25.4
Min:-13.7@20.2
SAE Class 60



REAR DECK ANGULAR RATE X

10FORARD0000AVXC
Max:124.1@21.1
Min:-212.5@27.3
SAE Class 180

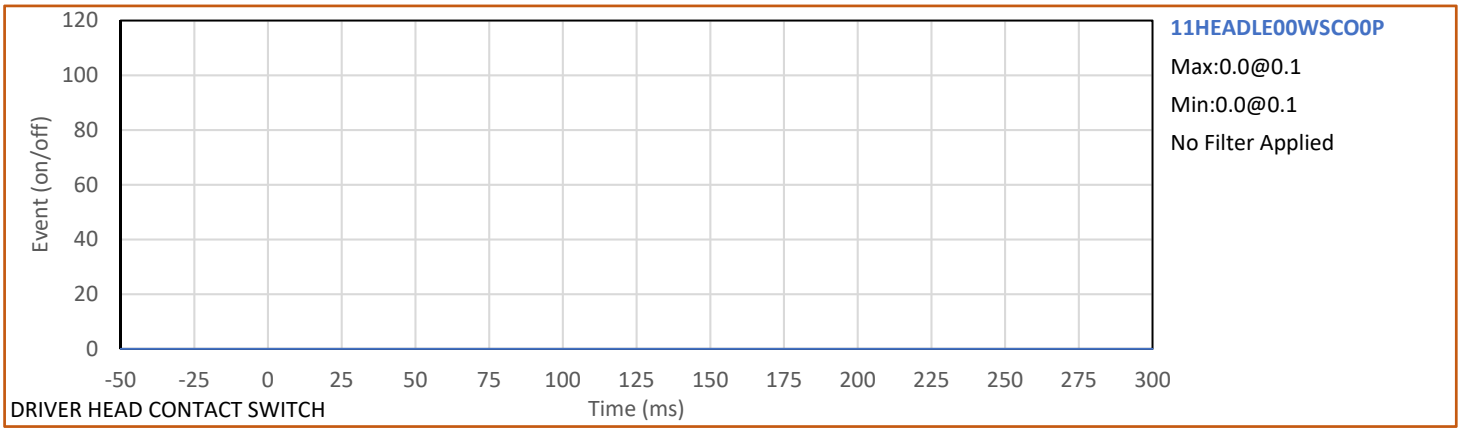


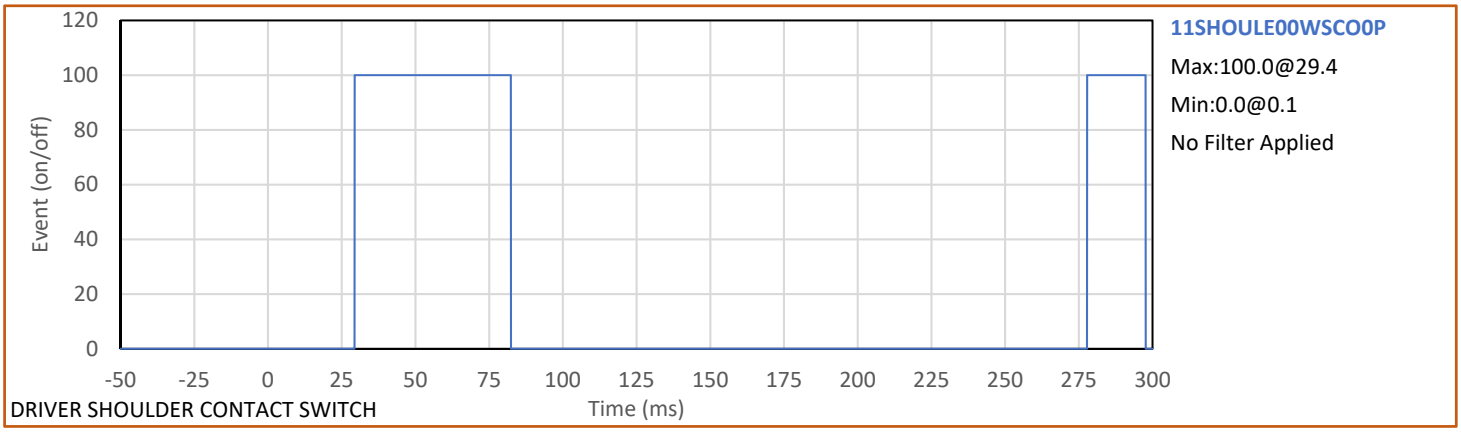
REAR DECK ANGULAR RATE Y

10FORARD0000AVYC
Max:336.1@28.7
Min:-305.5@24.4
SAE Class 180

REAR DECK ANGULAR RATE Z

10FORARD0000AVZC
Max:27.0@33.7
Min:-110.9@142.6
SAE Class 180


11HEADLE00WSCO0P
Max:0.0@0.1
Min:0.0@0.1
No Filter Applied
Event (on/off)
Time (ms)
DRIVER HEAD CONTACT SWITCH


11SHOULE00WSCO0P
Max:100.0@29.4
Min:0.0@0.1
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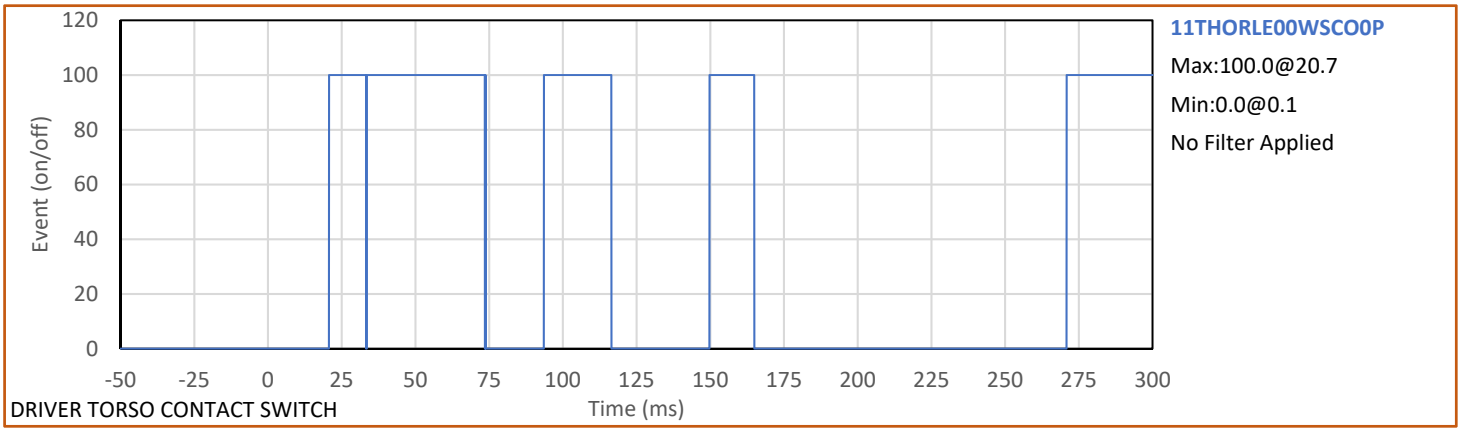
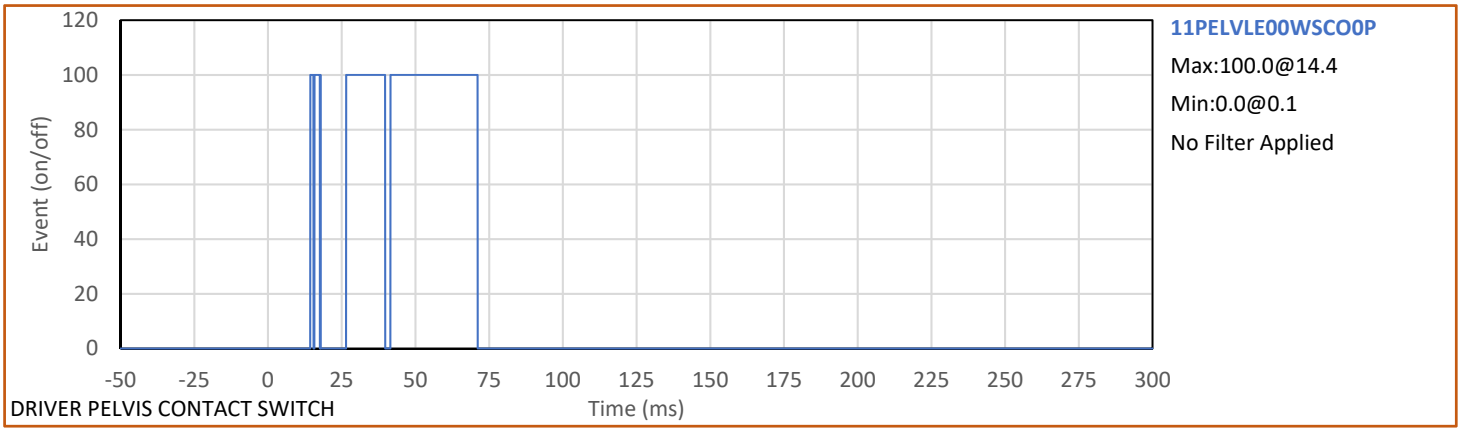
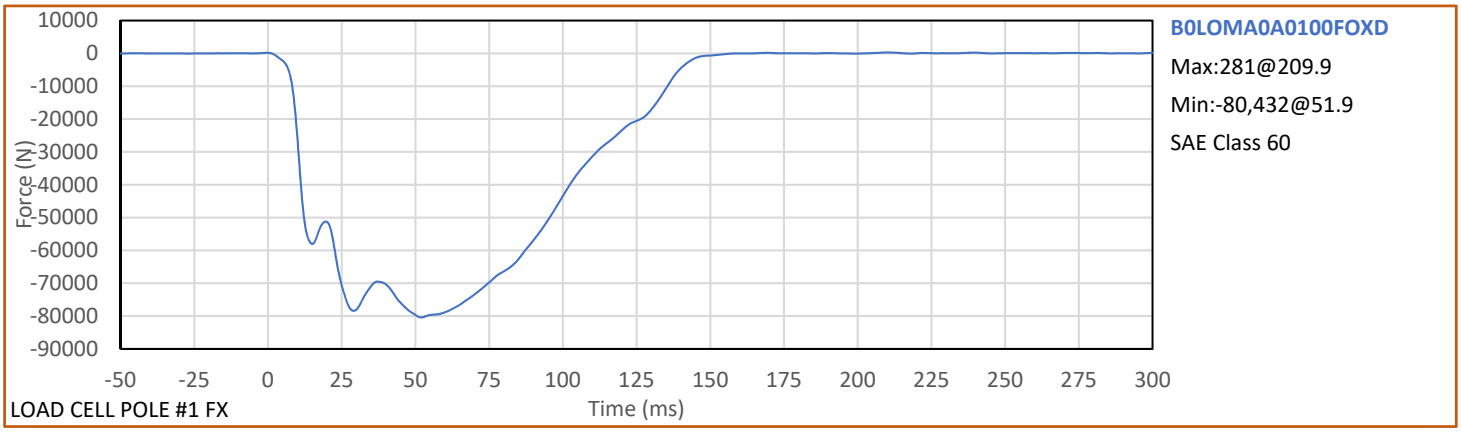
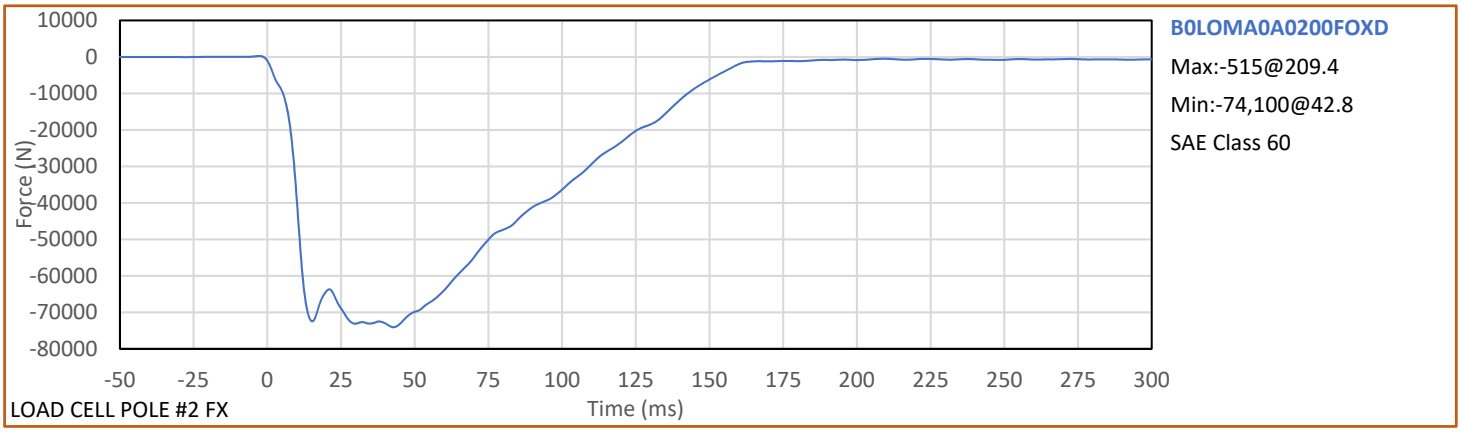
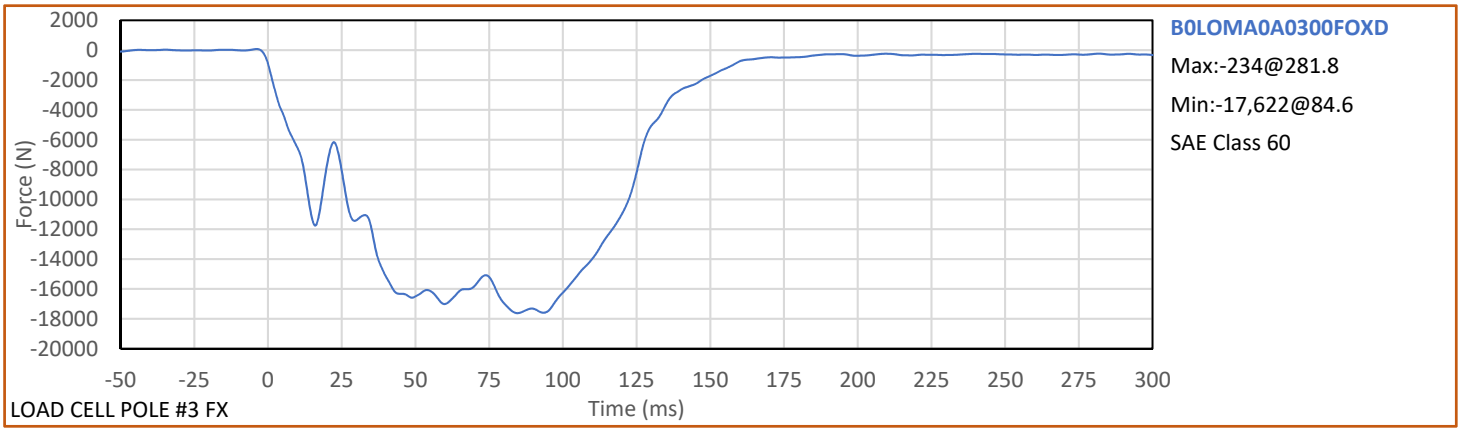
Event (on/off)
Time (ms)
DRIVER SHOULDER CONTACT SWITCH


11THORLE00WSCO0P
Max:100.0@20.7
Min:0.0@0.1
No Filter Applied
Event (on/off)
Time (ms)
DRIVER TORSO CONTACT SWITCH


11PELVLE00WSCO0P
Max:100.0@14.4
Min:0.0@0.1
No Filter Applied
Event (on/off)
Time (ms)
DRIVER PELVIS CONTACT SWITCH


B0LOMA0A0100FOXD
Max:281@209.9
Min:-80,432@51.9
SAE Class 60
Force (N)
Time (ms)
LOAD CELL POLE #1 FX


B0LOMA0A0200FOXD
Max:-515@209.4
Min:-74,100@42.8
SAE Class 60
Force (N)
Time (ms)
LOAD CELL POLE #2 FX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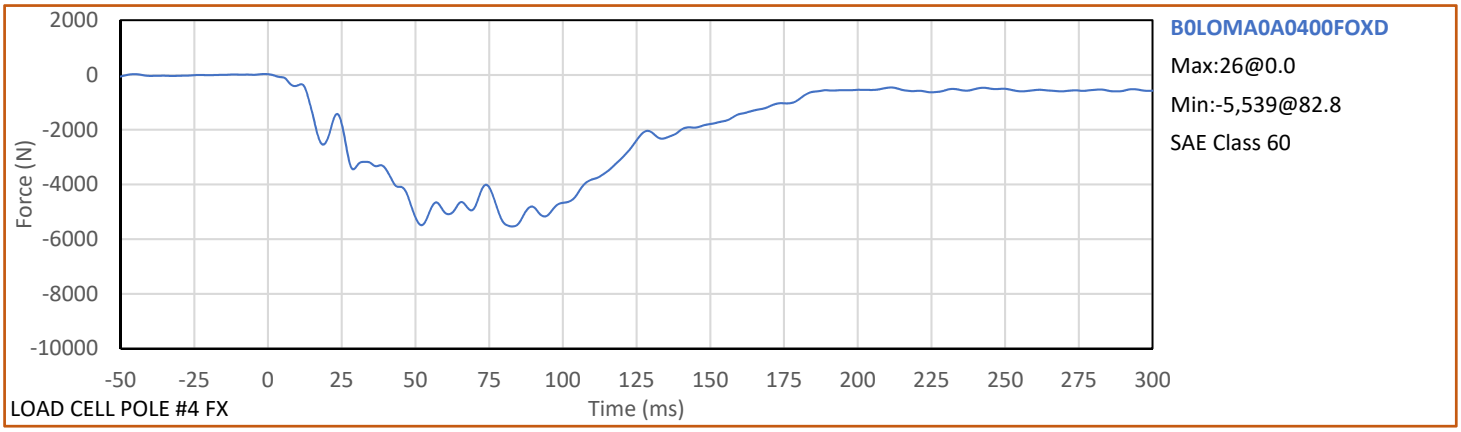
Max:-234@281.8
Min:-17,622@84.6
SAE Class 60
Force (N)
Time (ms)
LOAD CELL POLE #3 FX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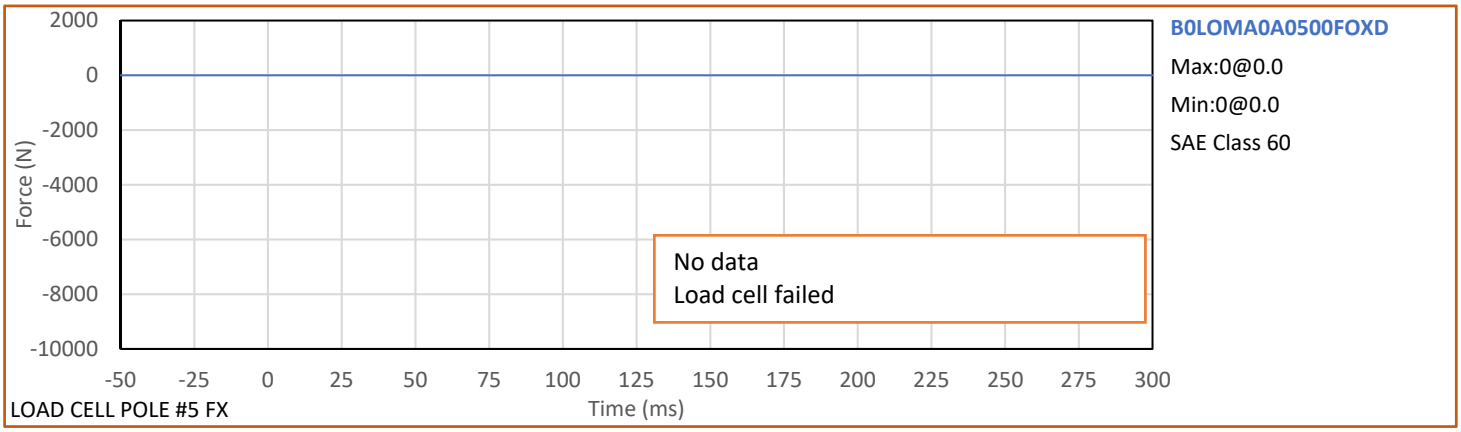
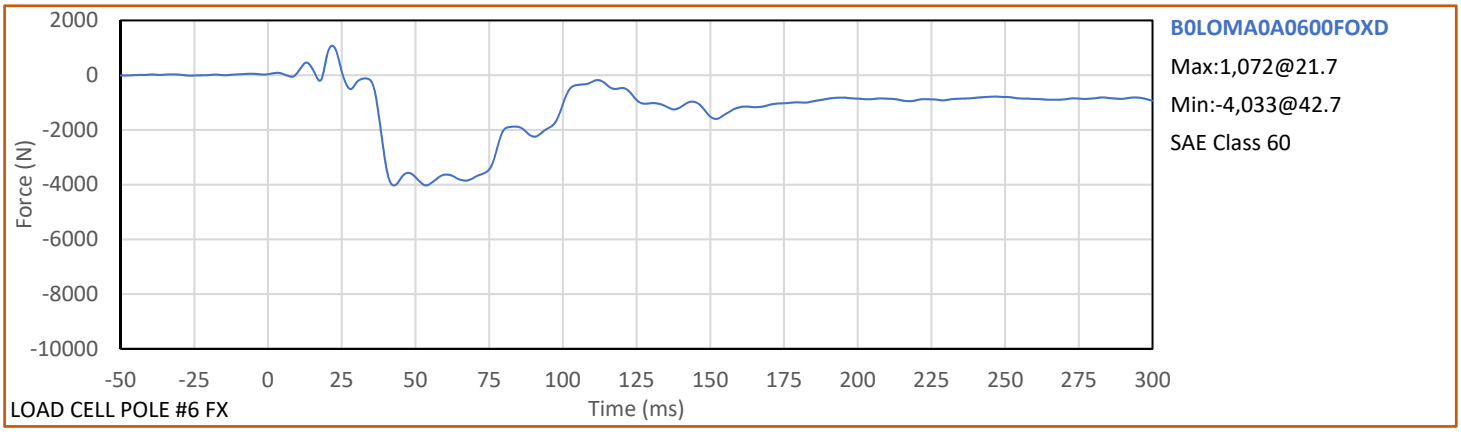
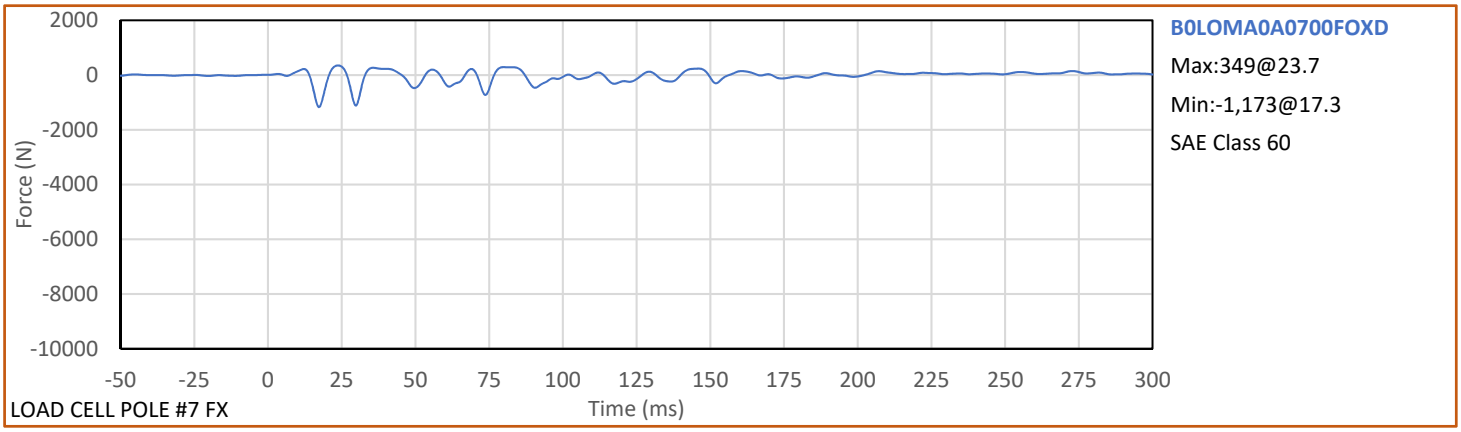
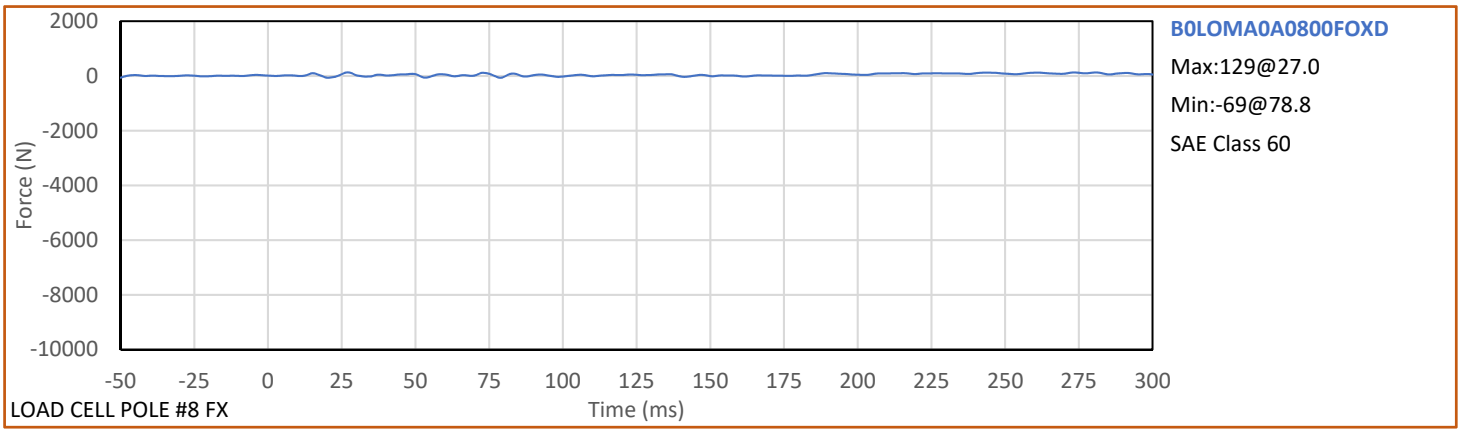
Min:-5,539@82.8
SAE Class 60
Force (N)
Time (ms)
LOAD CELL POLE #4 FX


B0LOMA0A0500FOXD
Max:0@0.0
Min:0@0.0
SAE Class 60
No data
Load cell failed
Force (N)
Time (ms)
LOAD CELL POLE #5 FX


B0LOMA0A0600FOXD
Max:1,072@21.7
Min:-4,033@42.7
SAE Class 60
Force (N)
Time (ms)
LOAD CELL POLE #6 FX


B0LOMA0A0700FOXD
Max:349@23.7
Min:-1,173@17.3
SAE Class 60
Force (N)
Time (ms)
LOAD CELL POLE #7 FX


B0LOMA0A0800FOXD
Max:129@27.0
Min:-69@78.8
SAE Class 60
Force (N)
Time (ms)
LOAD CELL POLE #8 FX

APPENDIX C
DUMMY PERFORMANCE QUALIFICATION TEST DATA

APPENDIX C
Pre-Test ATD Configuration and Performance Verification Data
WorldSID 50th Male Side Impact ATD, Left Side Configuration*
S/N: EB8888

Note:

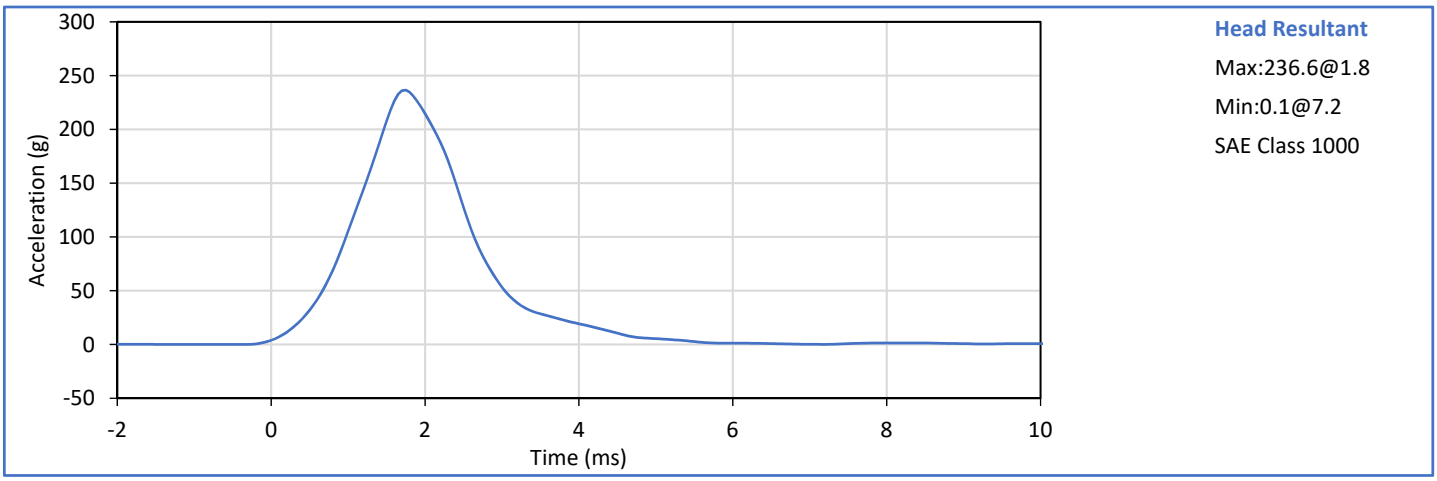
* *Pre-Test Head Drop (Lateral Right) has been performed after the first of two dynamic tests*
* *Neck Lateral Flexion (Right) performed with one velocity criteria out of the corridor. This test was not repeated due to time constraints of the ATD availability before testing*
* *Neck Torsion (Right) not performed due to time constraints of the ATD availability before testing*

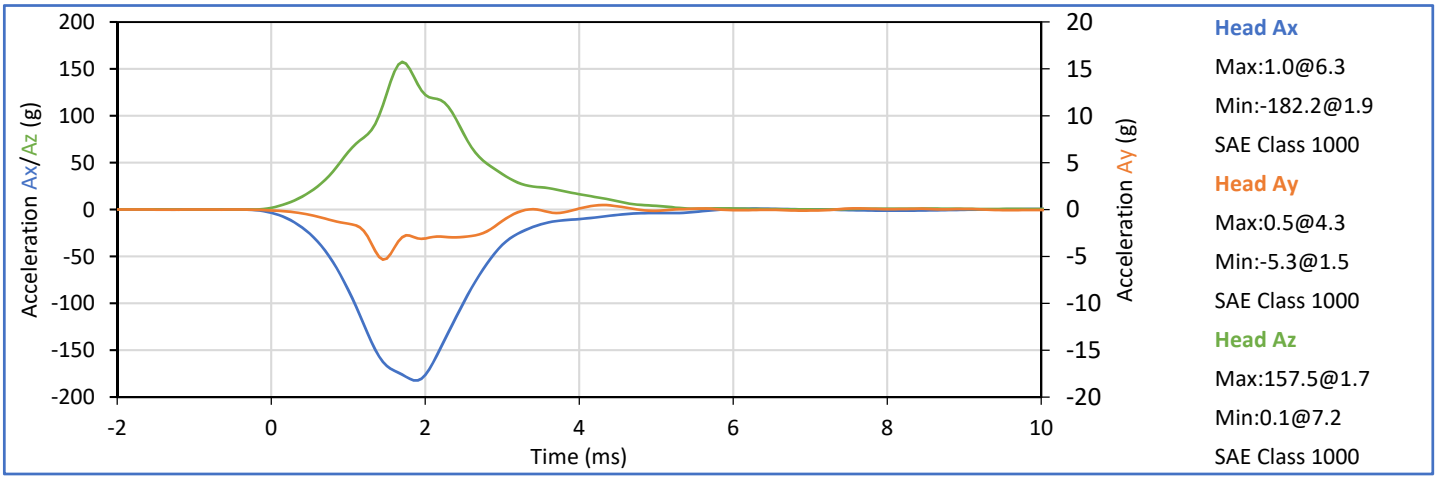
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Head Drop (Frontal)

ATD S/N: EB8888 Test Date: 2019-09-05

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	45	Pass
Peak Resultant Acceleration	g	211.0	261.0	236.6	Pass
Peak Ay	g	-15.0	15.0	-5.3	Pass
Oscillations After Main Pulse	%	-10.0	10.0	0.6	Pass
			Overall Test Results		Pass





Technician: J. Hernandez

Approved By: C-1 P. Puzzuto

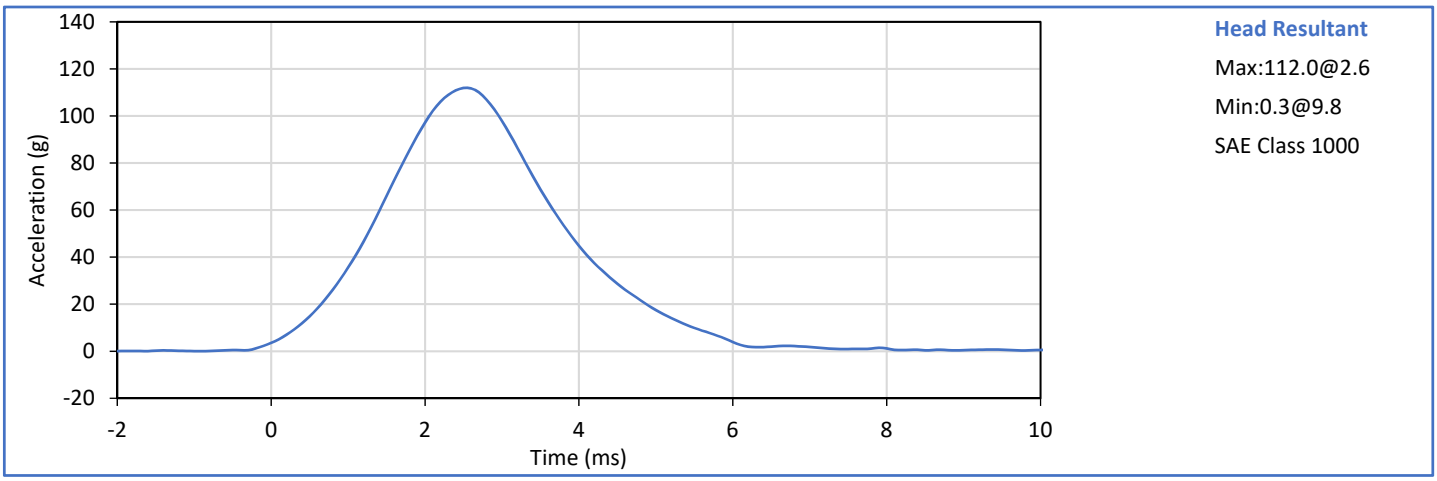
TR-P39013-01-NC

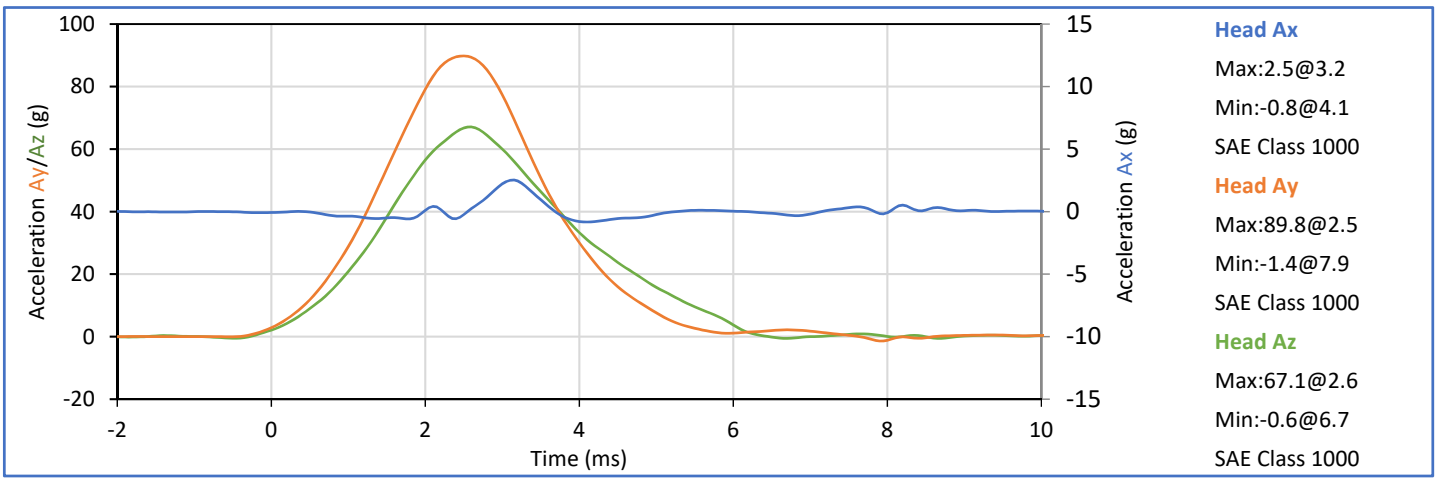
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Head Drop (Lateral Left)

ATD S/N: EB8888 Test Date: 2019-09-05

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	45	Pass
Peak Resultant Acceleration	g	107.0	126.0	112.0	Pass
Peak Ax	g	-15.0	15.0	2.5	Pass
Oscillations After Main Pulse	%	-10.0	10.0	2.0	Pass
			Overall Test Results		Pass





Technician: J. Hernandez

Approved By: C-2 P. Puzzuto

TR-P39013-01-NC

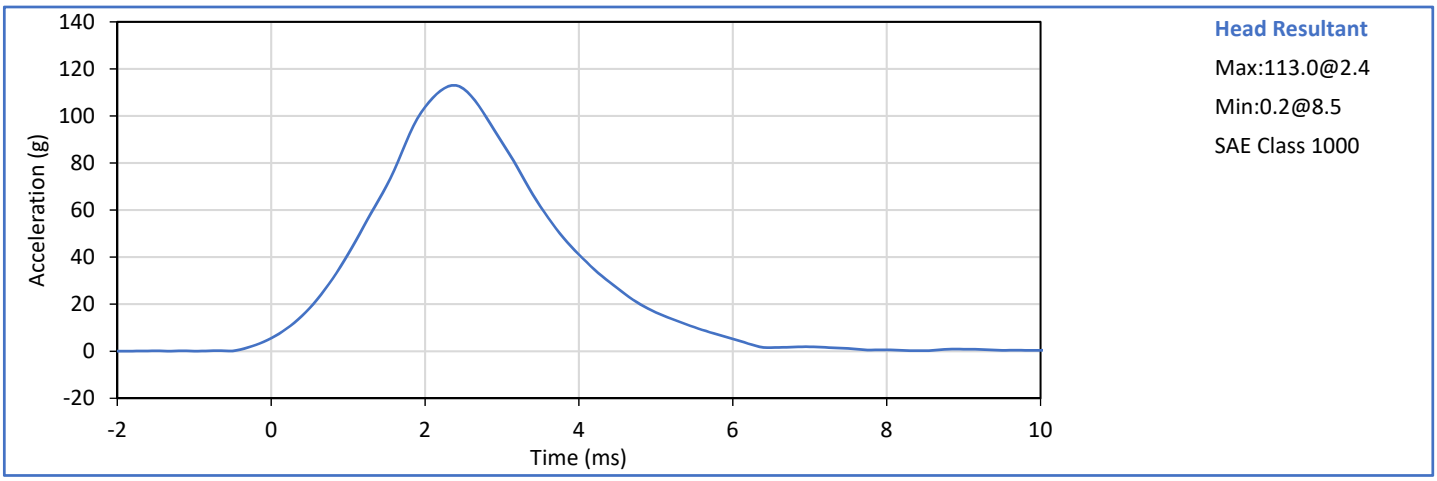
Applus IDIADA
KARCO

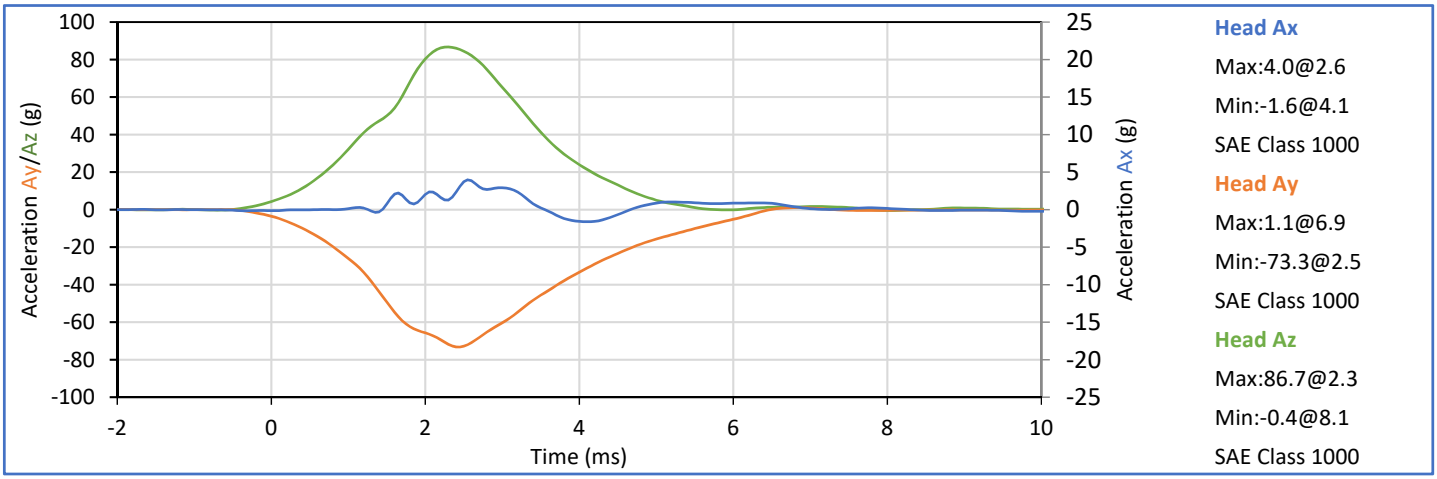
WorldSID 50th Male Side Impact ATD
Head Drop (Lateral Right)

ATD S/N: EB8888

Test Date: 2019-09-10

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	45	Pass
Peak Resultant Acceleration	g	107.0	126.0	113.0	Pass
Peak Ax	g	-15.0	15.0	4.0	Pass
Oscillations After Main Pulse	%	-10.0	10.0	1.7	Pass
			Overall Test Results		Pass





Technician: J. Hernandez

Approved By: C-3 P. Puzzuto

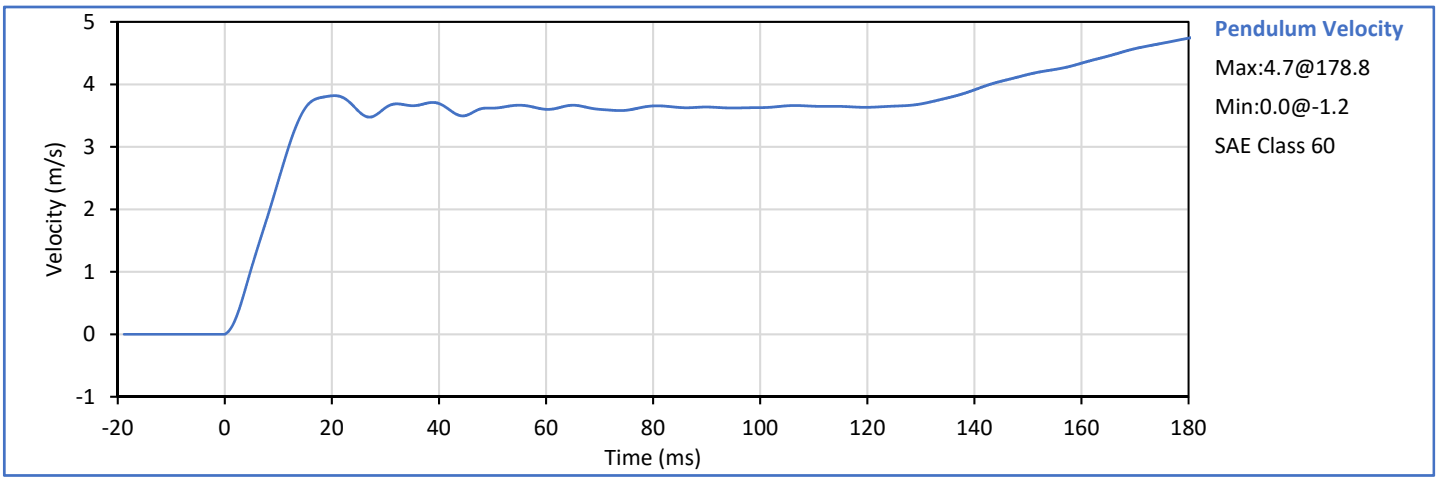
TR-P39013-01-NC

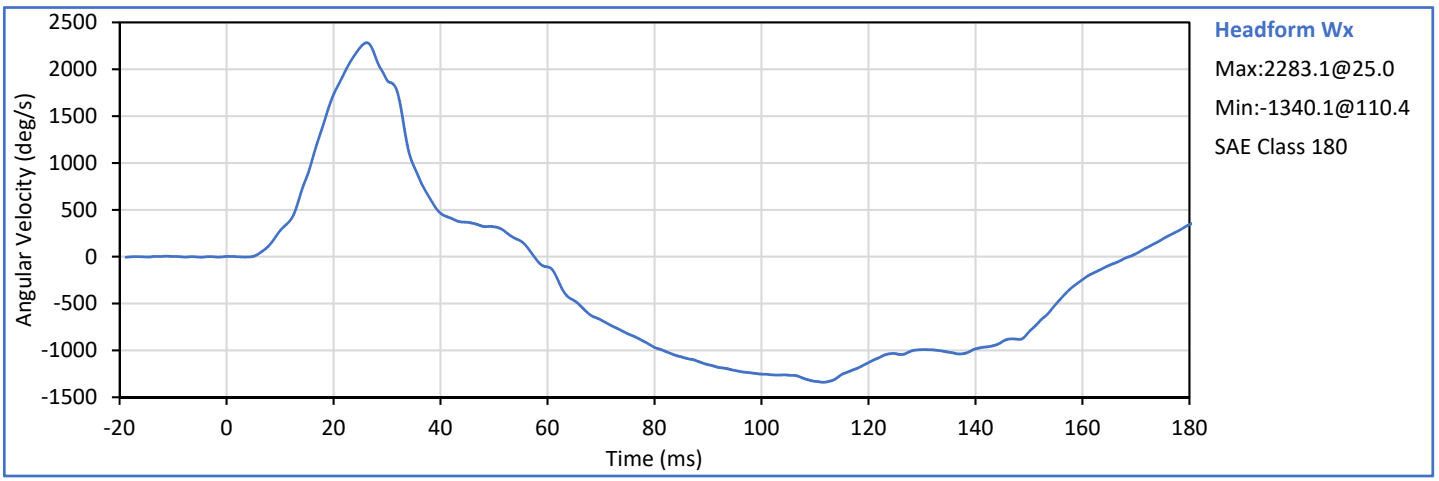
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Neck Lateral Flexion (Left)

ATD S/N: EB8888 Test Date: 2019-09-06

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Relative Humidity	%	10	70	47	Pass
Pendulum Velocity	m/s	3.30	3.50	3.45	Pass
Pendulum Velocity at 4 ms	m/s	0.77	1.04	0.77	Pass
Pendulum Velocity at 8 ms	m/s	1.60	1.90	1.89	Pass
Pendulum Velocity at 12 ms	m/s	2.43	3.29	3.02	Pass
Headform Flexion Angle	deg	50.0	61.0	56.5	Pass
Headform Flexion Decay to 0 deg	ms	58.0	72.0	60.4	Pass
Peak Occipital Condyle Moment	Nm	54.0	67.0	60.3	Pass
Peak Occipital Condyle Moment deca	ms	71.0	87.0	74.5	Pass
Peak Forward Rotation	deg	32.0	39.0	35.1	Pass
	ms	56.0	68.0	61.1	Pass
Peak Rearward Rotation	deg	29.0	36.0	31.6	Pass
	ms	56.0	68.0	60.4	Pass
Peak Headform ωx	deg/s	2163	2393	2283	Pass
			Overall Test Results		Pass





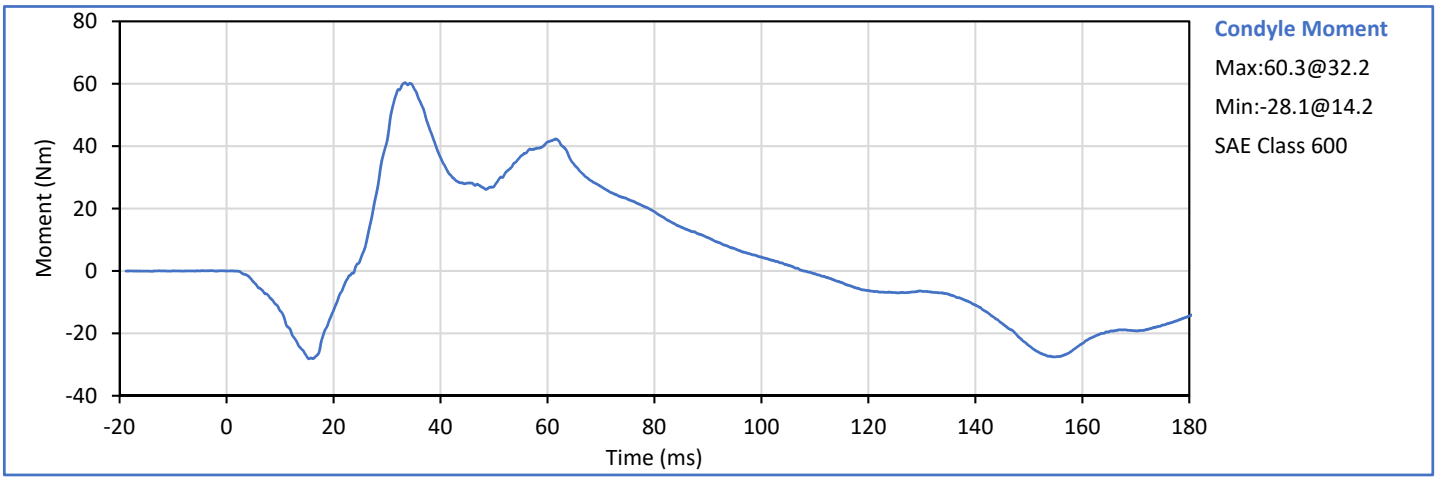
Technician: J. Hernandez

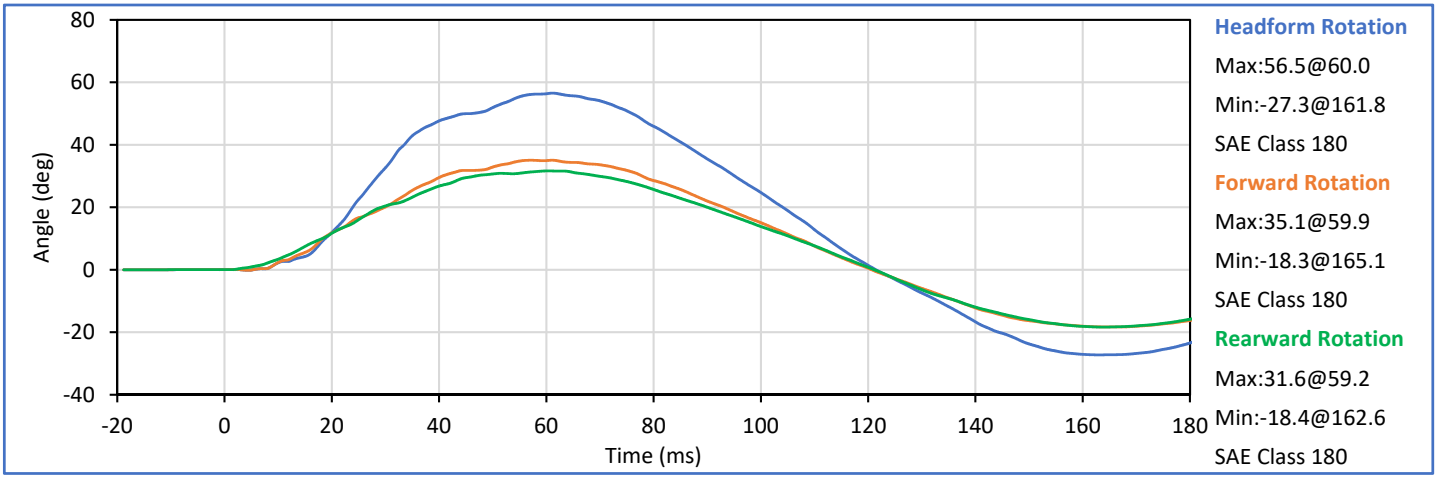
Approved By: C-4 P. Puzzuto

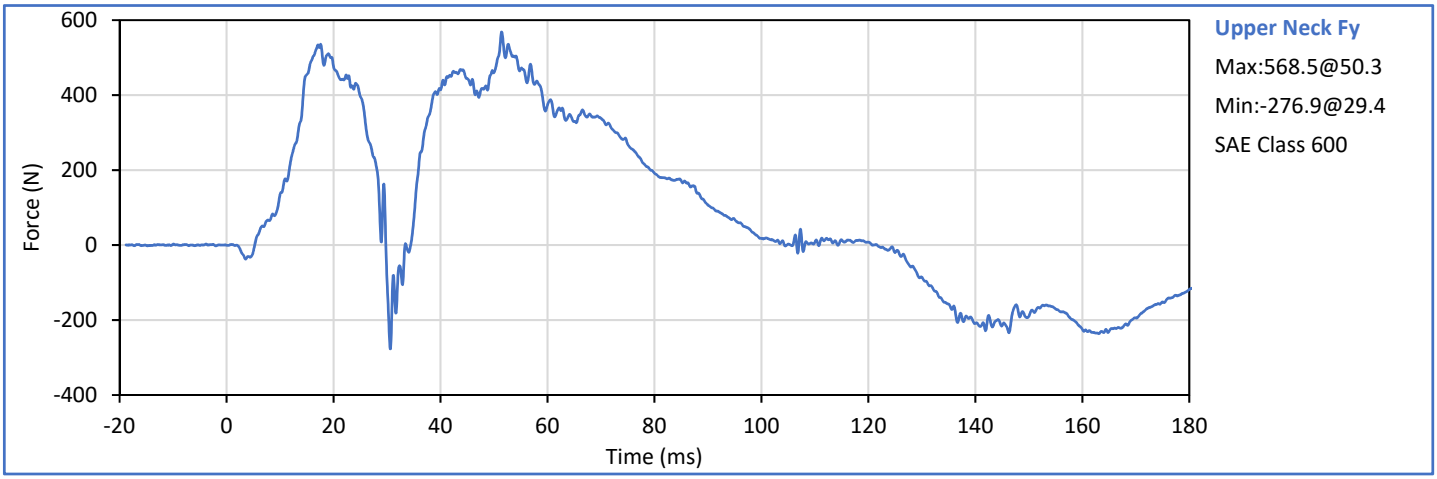
TR-P39013-01-NC

WorldSID 50th Male Side Impact ATD
Neck Lateral Flexion (Left)

ATD S/N: EB8888 Test Date: 2019-09-06





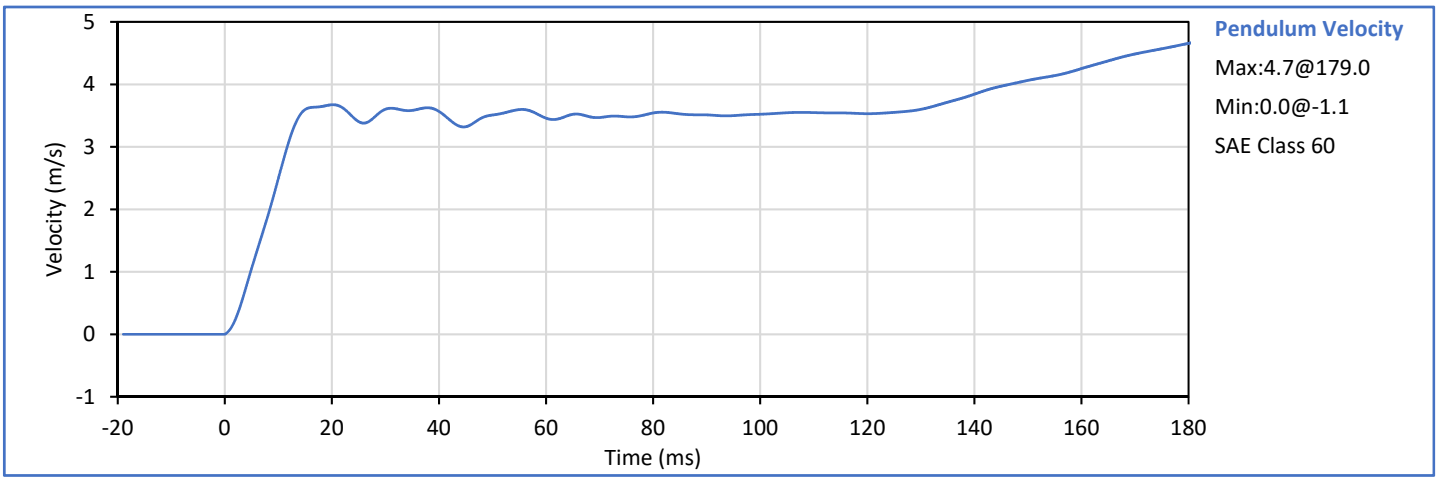


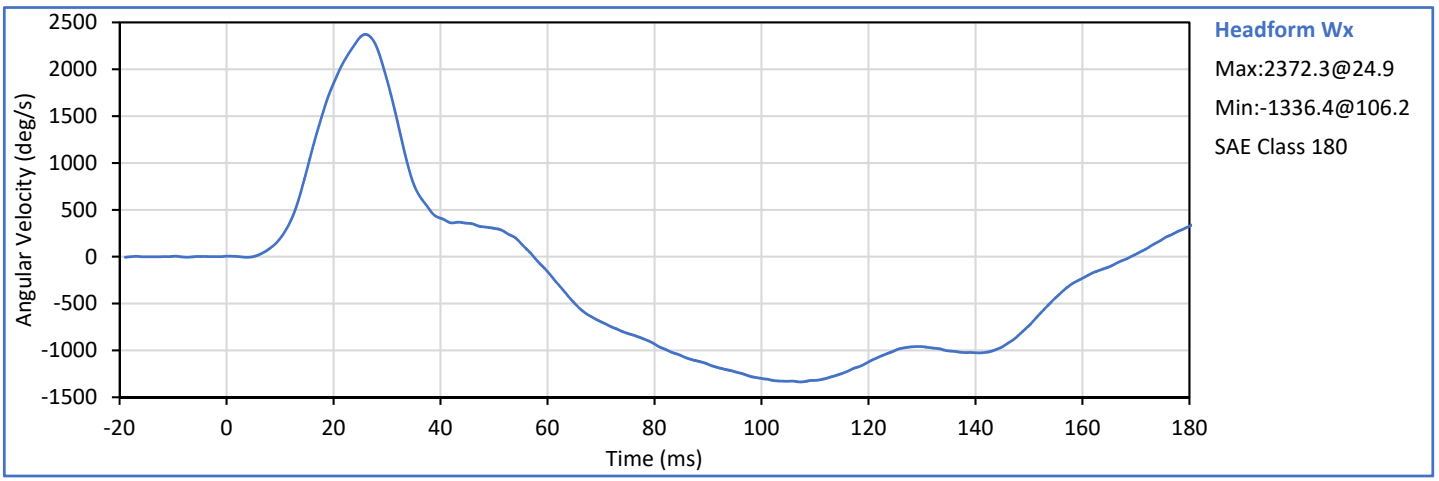
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Neck Lateral Flexion (Right)

ATD S/N: EB8888 Test Date: 2019-09-10

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Relative Humidity	%	10	70	47	Pass
Pendulum Velocity	m/s	3.30	3.50	3.45	Pass
Pendulum Velocity at 4 ms	m/s	0.77	1.04	0.76	**Fail**
Pendulum Velocity at 8 ms	m/s	1.60	1.90	1.89	Pass
Pendulum Velocity at 12 ms	m/s	2.43	3.29	3.10	Pass
Headform Flexion Angle	deg	50.0	61.0	56.7	Pass
Headform Flexion Decay to 0 deg	ms	58.0	72.0	58.8	Pass
Peak Occipital Condyle Moment	Nm	-67.0	-54.0	-63.6	Pass
Peak Occipital Condyle Moment deca	ms	71.0	87.0	74.5	Pass
Peak Forward Rotation	deg	32.0	39.0	33.8	Pass
	ms	56.0	68.0	60.9	Pass
Peak Rearward Rotation	deg	29.0	36.0	30.7	Pass
	ms	56.0	68.0	57.6	Pass
Peak Headform ωx	deg/s	2163	2393	2372	Pass
			Overall Test Results		**Fail**





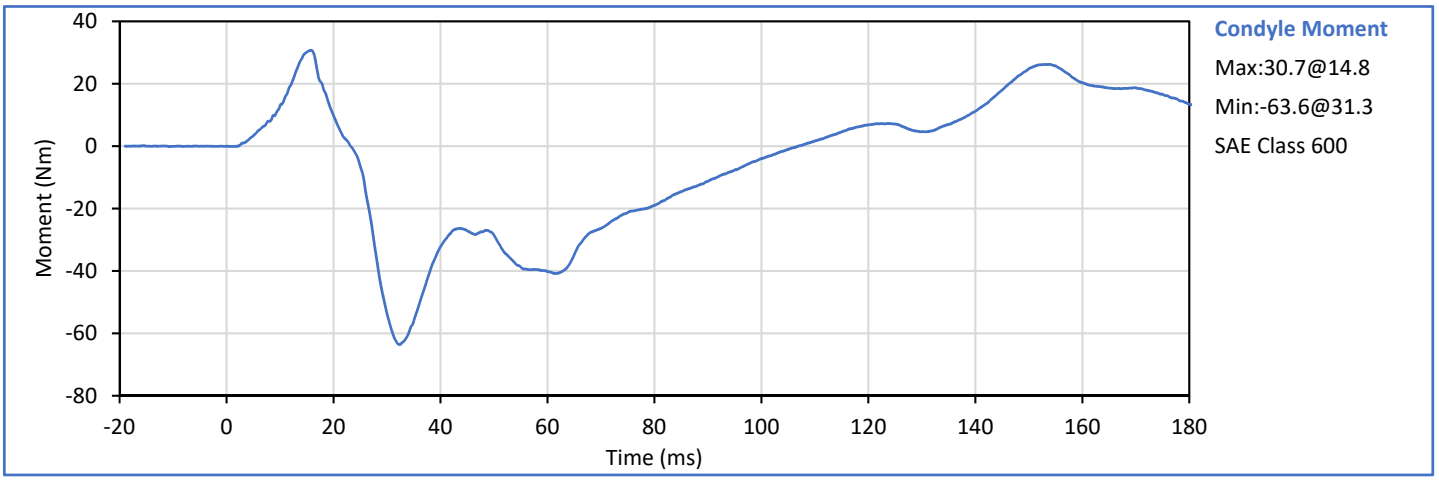
Technician: J. Hernandez

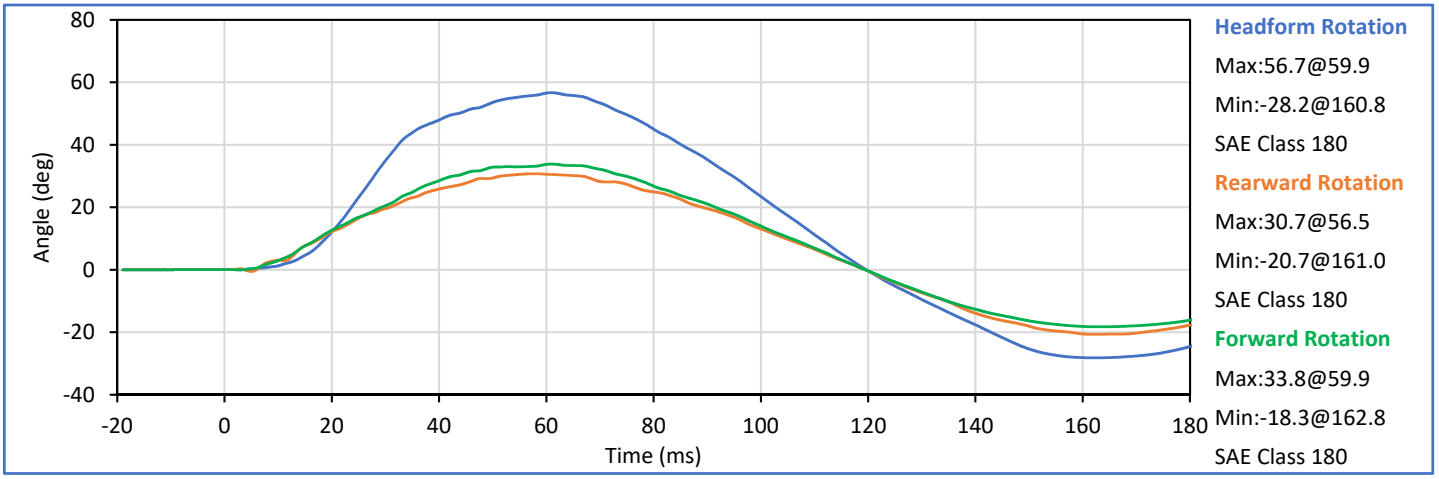
Approved By: C-6 P. Puzzuto

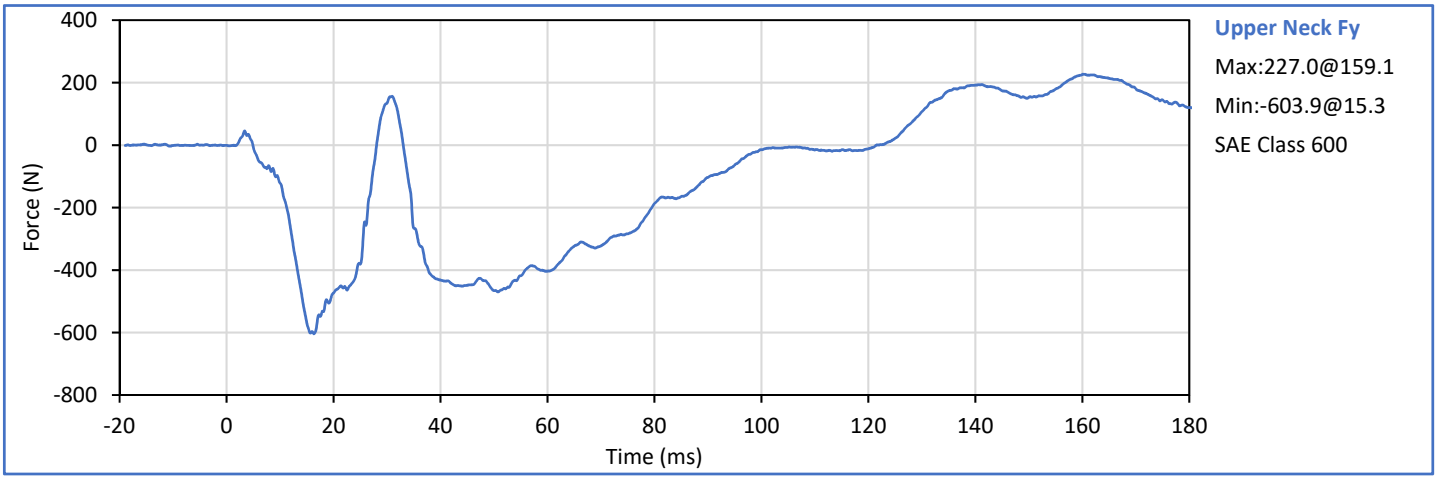
TR-P39013-01-NC

WorldSID 50th Male Side Impact ATD
Neck Lateral Flexion (Right)

ATD S/N: EB8888 Test Date: 2019-09-10





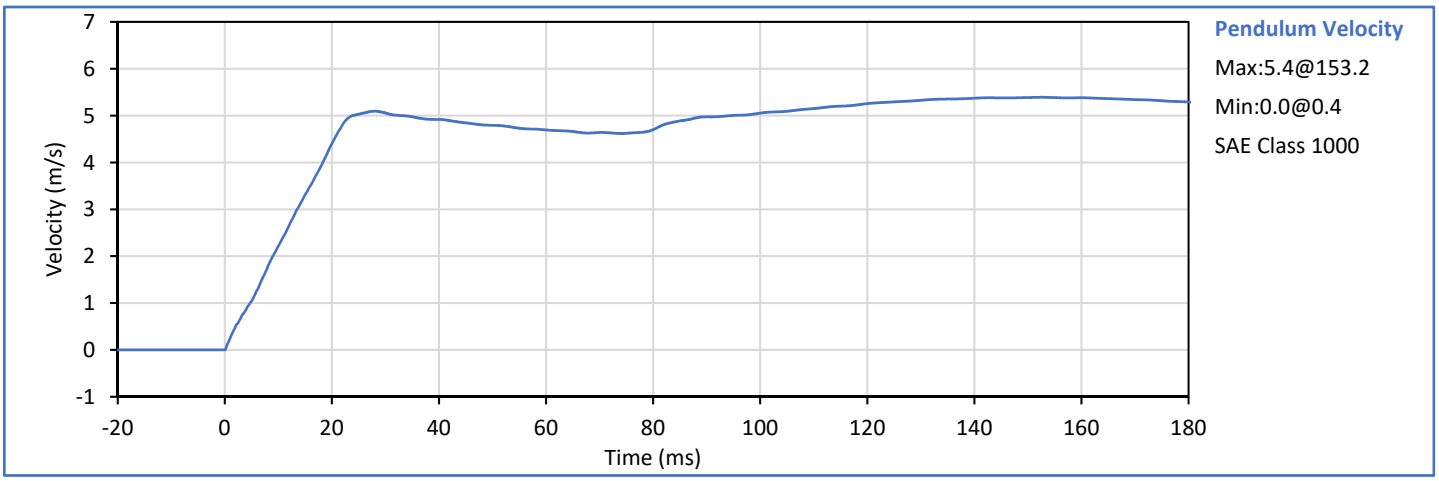


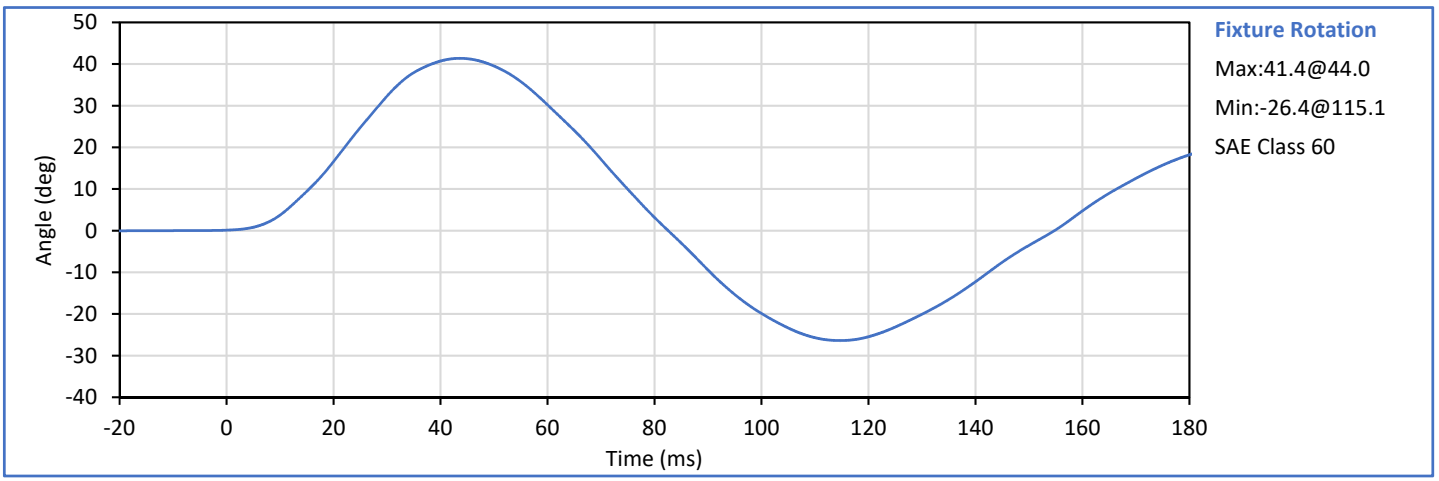
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Neck Torsion (Left)

ATD S/N: EB8888 Test Date: 2019-09-05

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Relative Humidity	%	10	70	46	Pass
Pendulum Velocity	m/s	5.10	5.30	5.14	Pass
Pendulum Velocity at 10 ms	m/s	2.04	2.28	2.22	Pass
Pendulum Velocity at 15 ms	m/s	3.20	3.57	3.31	Pass
Pendulum Velocity at 20 ms	m/s	4.32	4.83	4.40	Pass
Peak Fixture Rotation	deg	45.0	48.0	41.4	**Fail**
Fixture Decay from peak to 0 deg	ms	37.0	41.0	39.0	Pass
Peak Head ωz	deg/s	1450	1560	1425	**Fail**
Peak Lower Neck Mz	Nm	36.0	40.0	36.8	Pass
			Overall Test Results		**Fail**



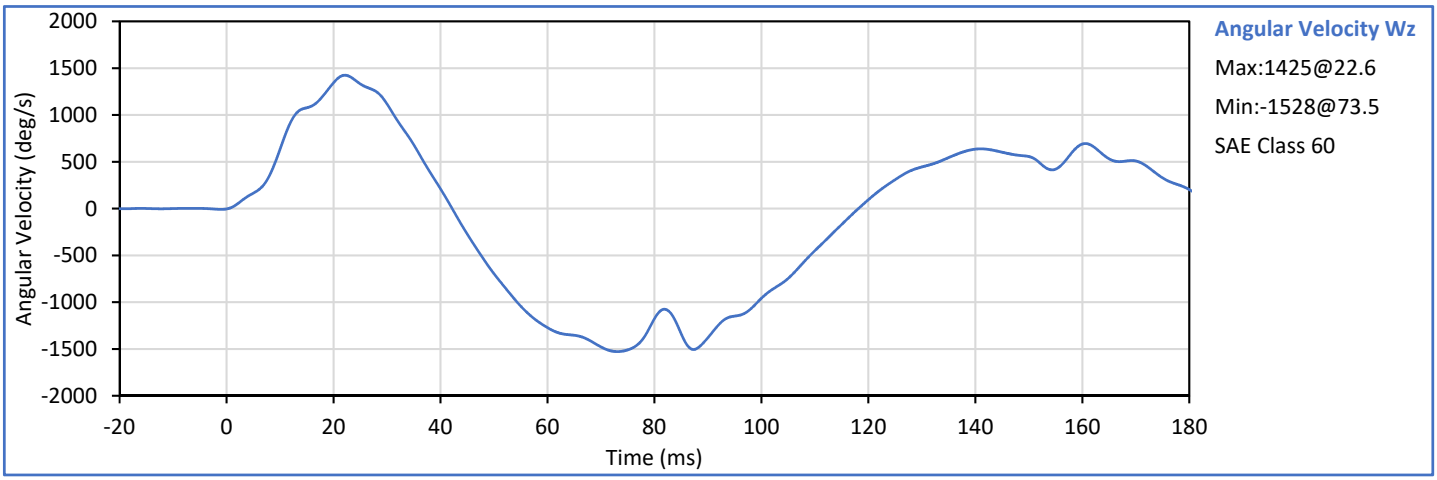


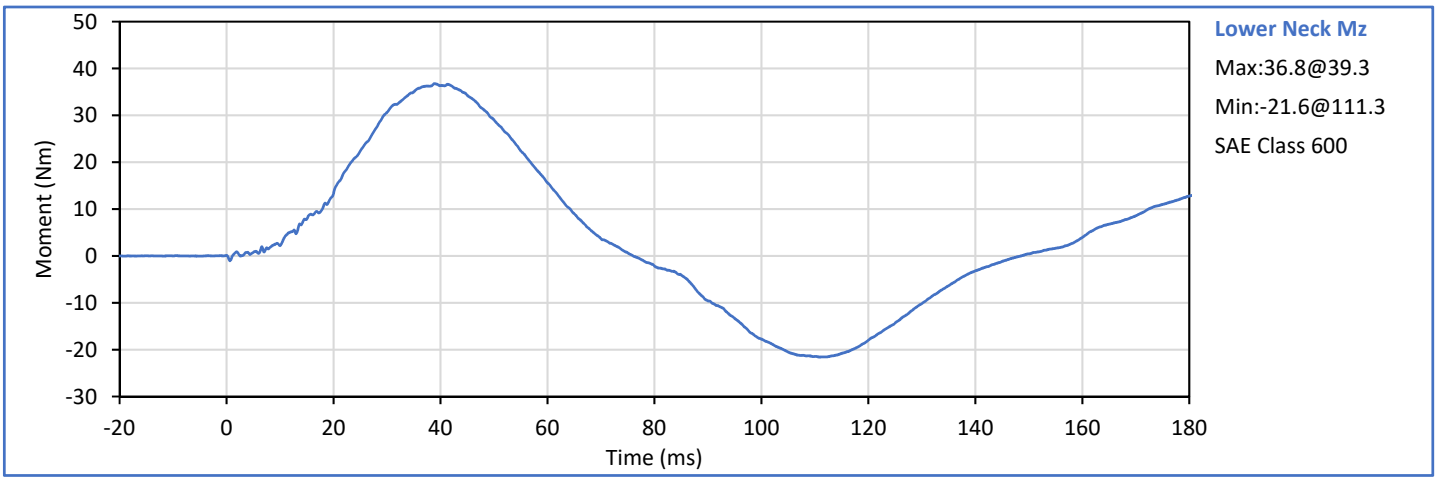
Technician: J. Hernandez

Approved By: C-8 P. Puzzuto

WorldSID 50th Male Side Impact ATD
Neck Torsion (Left)

ATD S/N: EB8888 Test Date: 2019-09-05





NO TEST PERFORMED

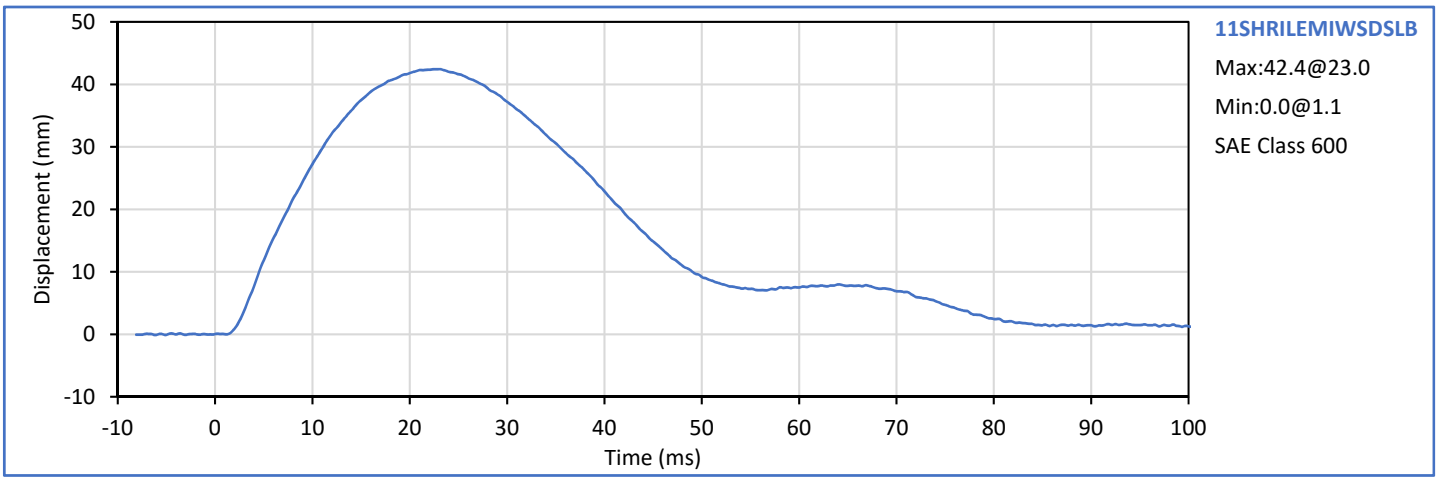
NO TEST PERFORMED

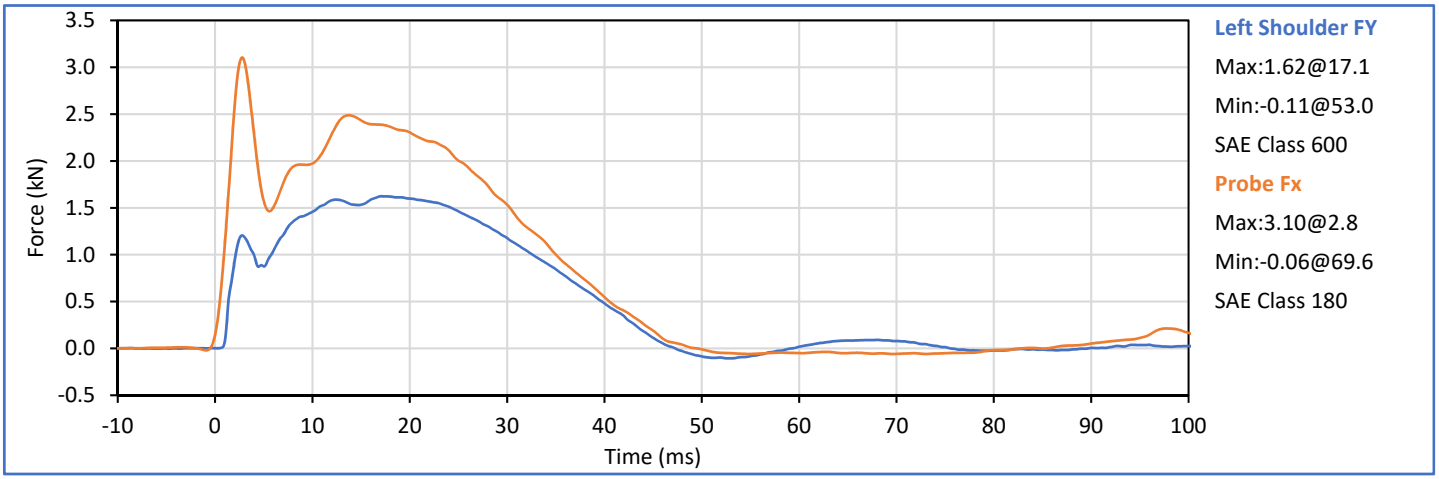
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Shoulder Qualification

ATD S/N: EB8888 Test Date: 2019-09-06

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Relative Humidity	%	10	70	47	Pass
Probe Velocity	m/s	4.20	4.40	4.30	Pass
Peak Shoulder Deflection	mm	37.0	46.0	42.4	Pass
Peak Shoulder Fy	kN	1.50	1.70	1.62	Pass
Peak Pendulum Fx	kN	2.60	3.30	3.10	Pass
			Overall Test Results		Pass





Technician: J. Hernandez

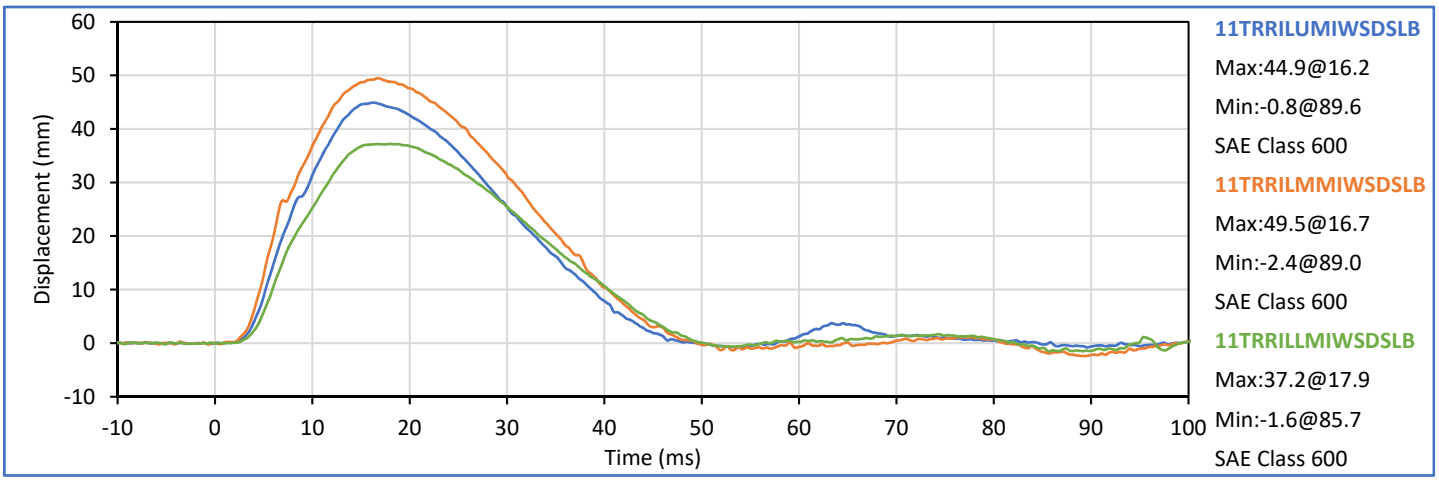
Approved By: C-12 P. Puzzuto

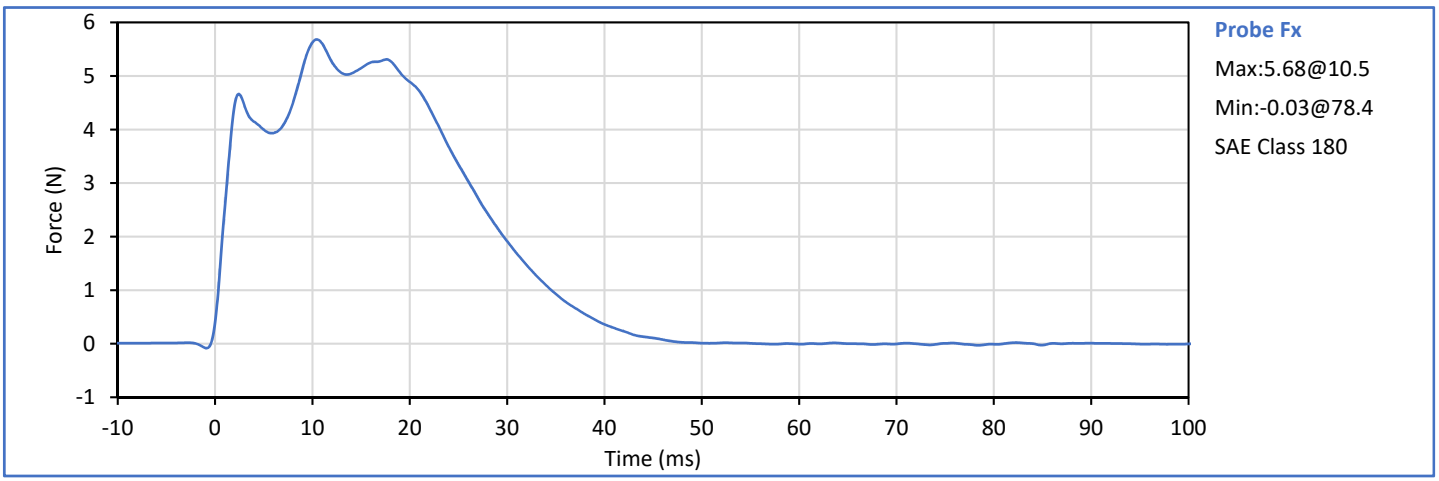
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Thorax With Arm Qualification

ATD S/N: EB8888 Test Date: 2019-09-04

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	43	Pass
Probe Velocity	m/s	6.60	6.80	6.73	Pass
Peak Thorax Rib 1 Deflection	mm	35.0	47.0	44.9	Pass
Peak Thorax Rib 2 Deflection	mm	46.0	56.0	49.5	Pass
Peak Thorax Rib 3 Deflection	mm	33.5	40.5	37.2	Pass
Peak Pendulum Fx	kN	5.30	6.20	5.68	Pass
Peak T4 Ay Acceleration	g	28.0	37.0	34.5	Pass
Peak T12 Ay Acceleration	g	22.0	28.0	24.2	Pass
			Overall Test Results		Pass





Technician: J. Hernandez

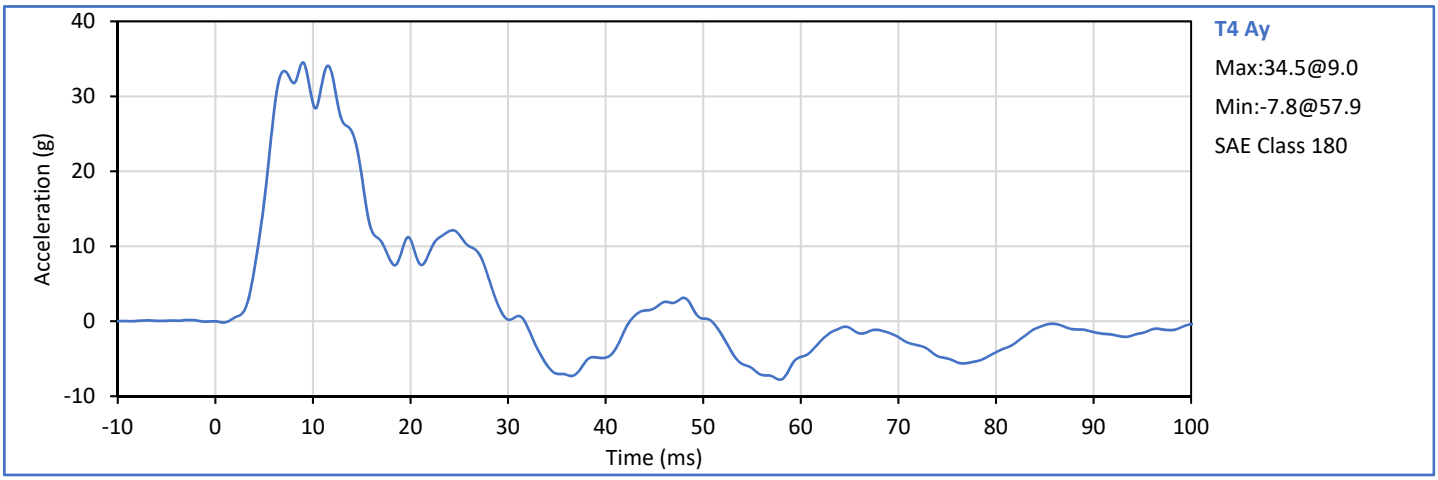
Approved By: C-13 P. Puzzuto

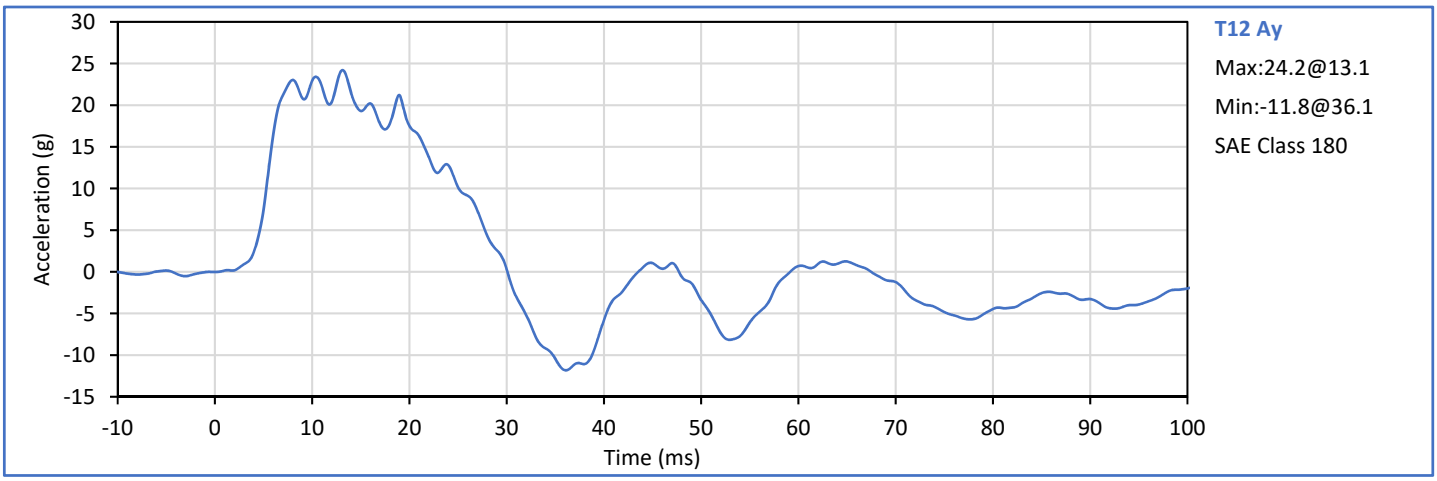
TR-P39013-01-NC

Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Thorax With Arm Qualification

ATD S/N: EB8888 Test Date: 2019-09-04





Technician: J. Hernandez

Approved By: C-14 P. Puzzuto

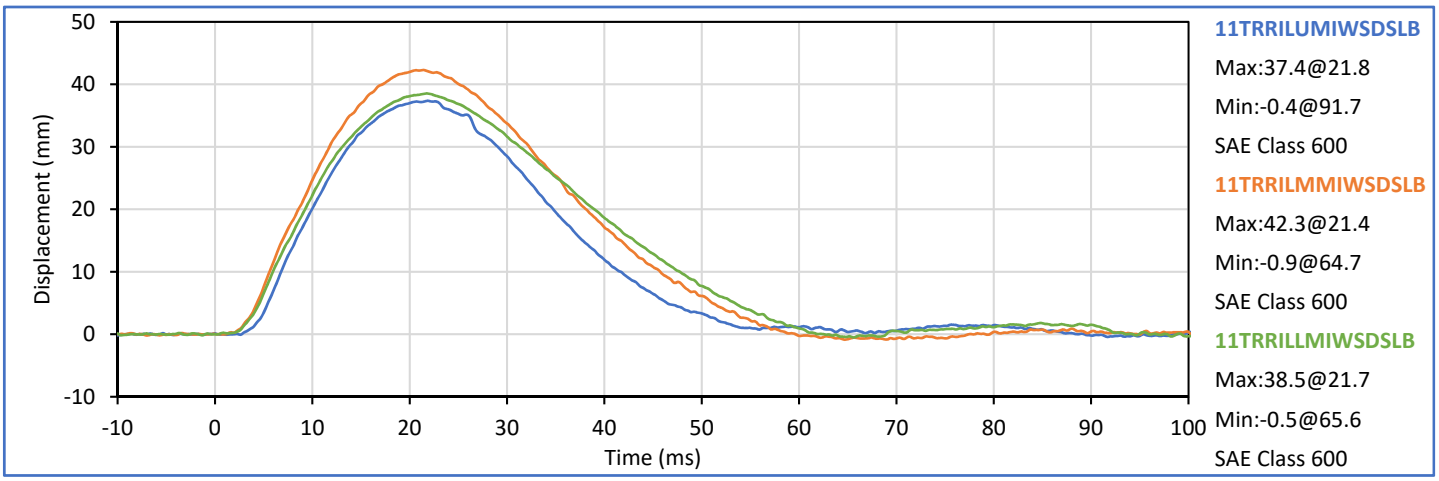
TR-P39013-01-NC

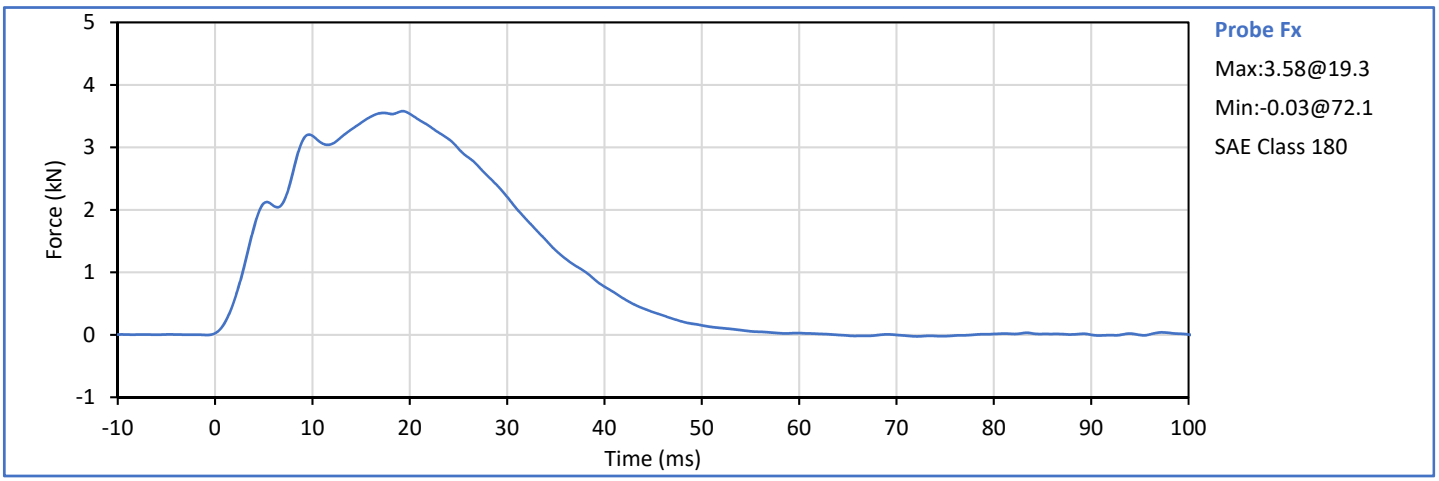
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Thorax Without Arm Qualification

ATD S/N: EB8888 Test Date: 2019-09-04

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Relative Humidity	%	10	70	43	Pass
Probe Velocity	m/s	4.20	4.40	4.31	Pass
Peak Thorax Rib 1 Deflection	mm	33.0	43.0	37.4	Pass
Peak Thorax Rib 2 Deflection	mm	35.0	43.0	42.3	Pass
Peak Thorax Rib 3 Deflection	mm	32.0	40.0	38.5	Pass
Peak Pendulum Fx	kN	3.20	3.80	3.58	Pass
Peak T4 Ay Acceleration	g	14.0	20.0	17.1	Pass
Peak T12 Ay Acceleration	g	14.0	22.0	14.1	Pass
			Overall Test Results		Pass





Technician: J. Hernandez

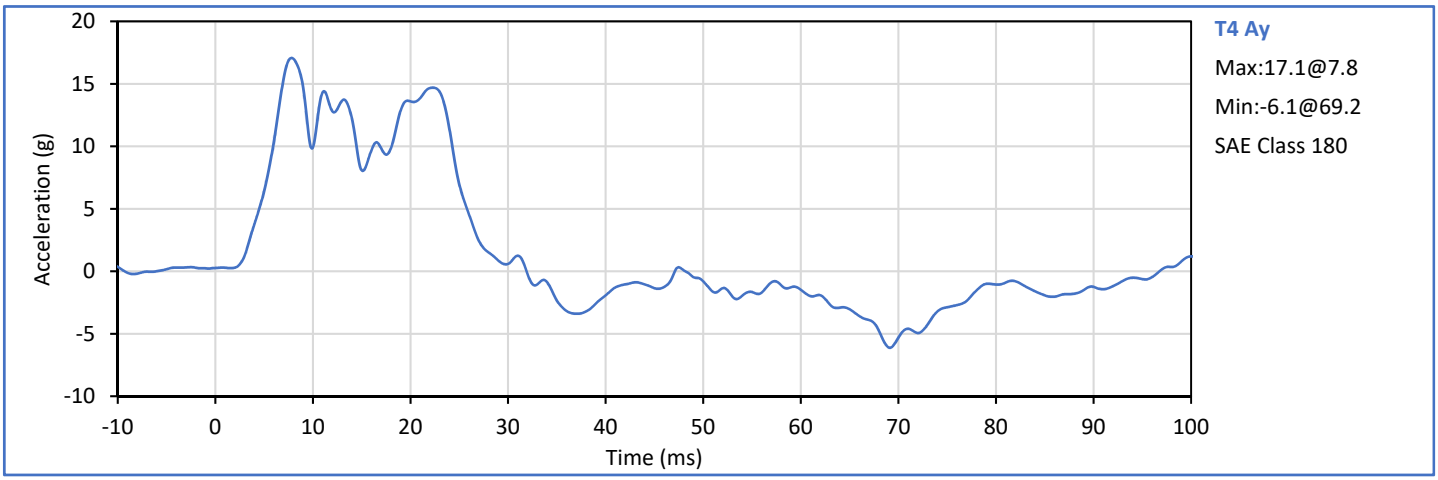
Approved By: C-15 P. Puzzuto

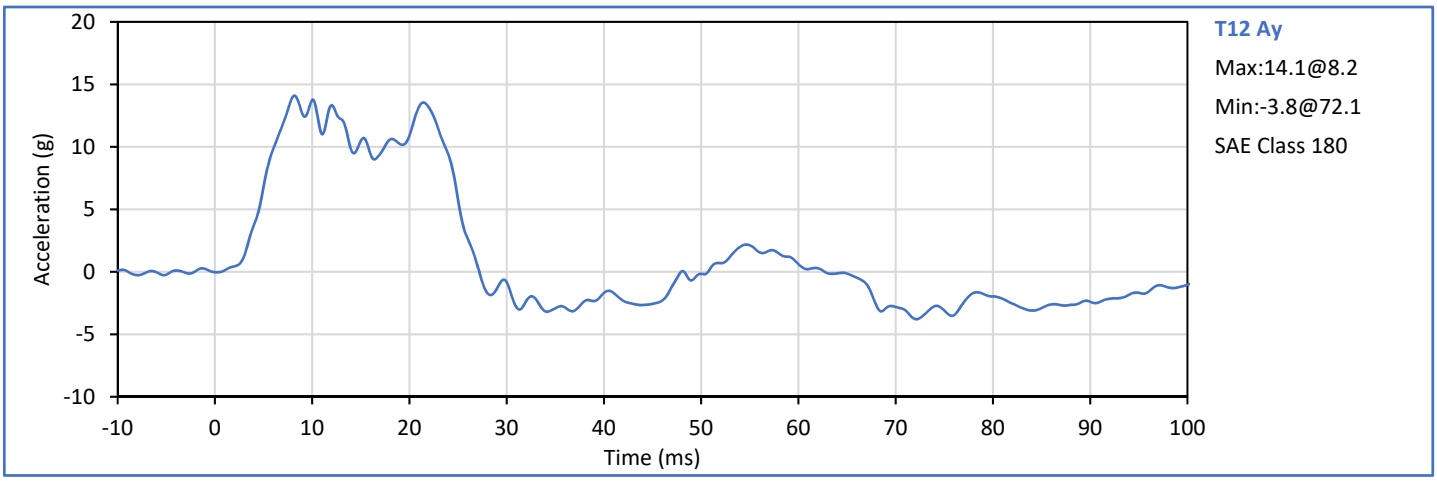
TR-P39013-01-NC

Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Thorax Without Arm Qualification

ATD S/N: EB8888 Test Date: 2019-09-04





Technician: J. Hernandez

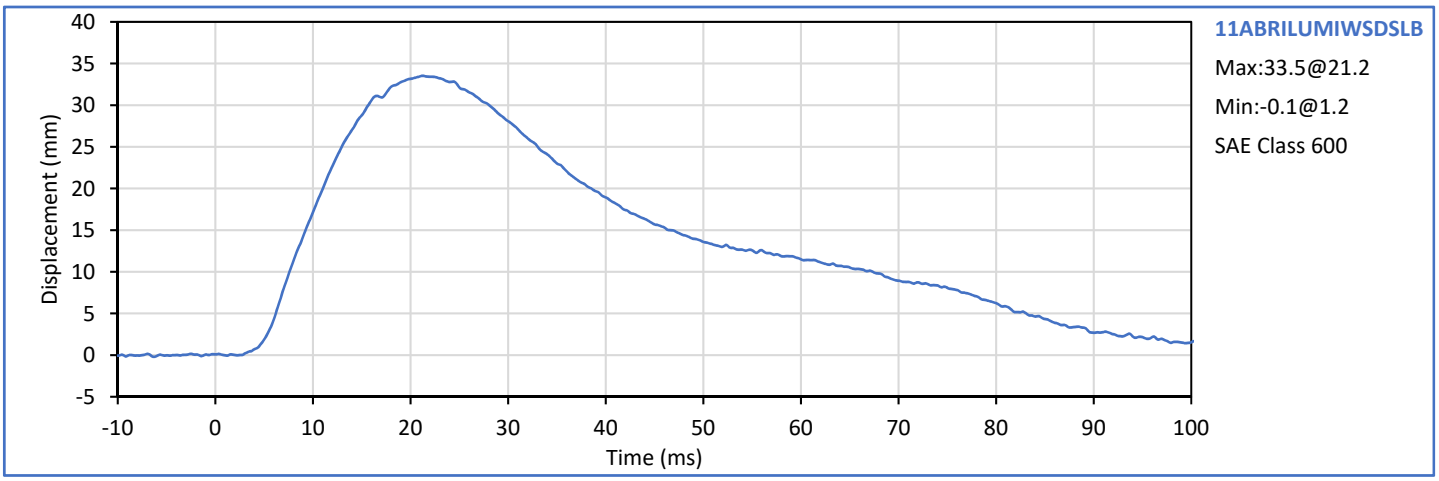
Approved By: C-16 P. Puzzuto

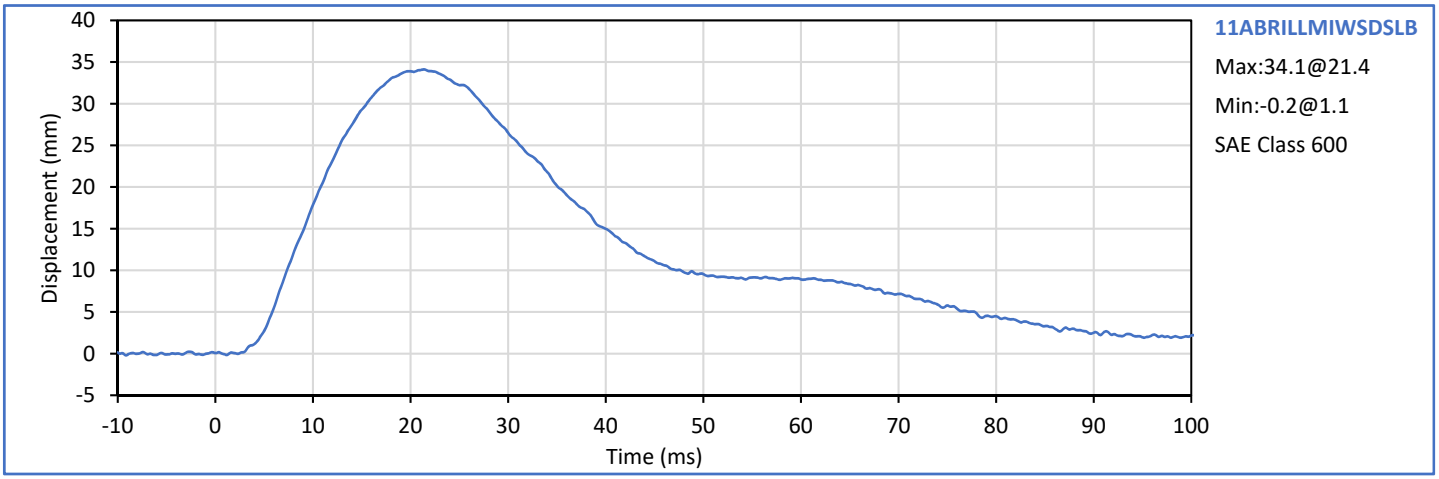
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Abdomen Qualification

ATD S/N: EB8888 Test Date: 2019-09-04

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Relative Humidity	%	10	70	43	Pass
Probe Velocity	m/s	4.20	4.40	4.27	Pass
Peak Abdomen Rib 1 Deflection	mm	32.5	39.5	33.5	Pass
Peak Abdomen Rib 2 Deflection	mm	32.0	38.0	34.1	Pass
Peak Pendulum Fx	kN	2.70	3.10	3.04	Pass
Peak T12y Acceleration	g	14.5	19.5	17.5	Pass
			Overall Test Results		Pass





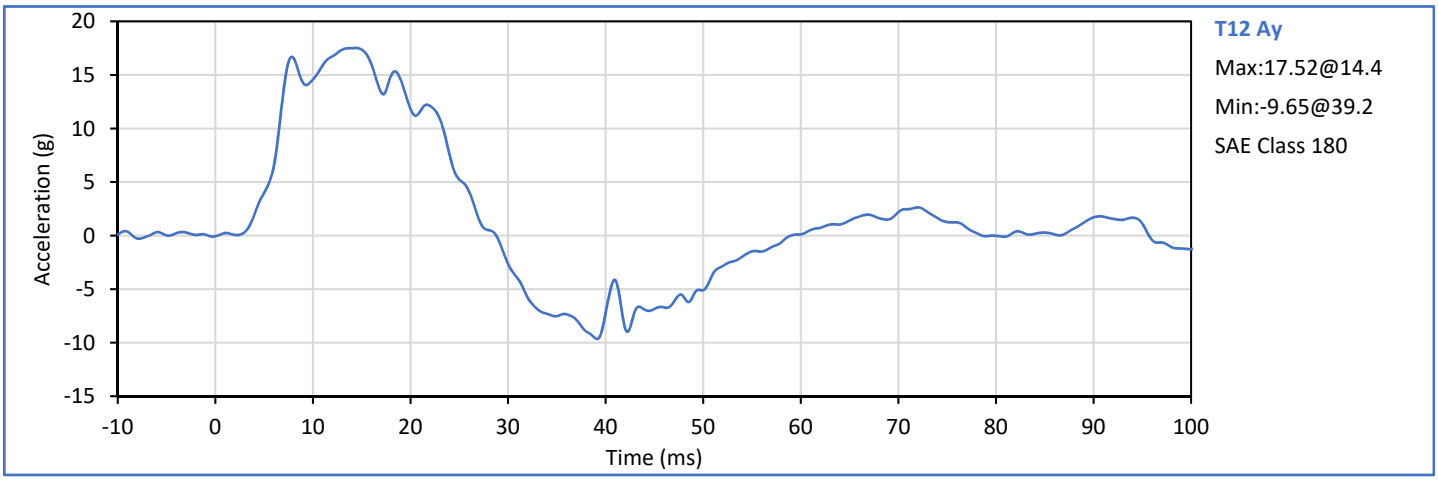
Technician: J. Hernandez

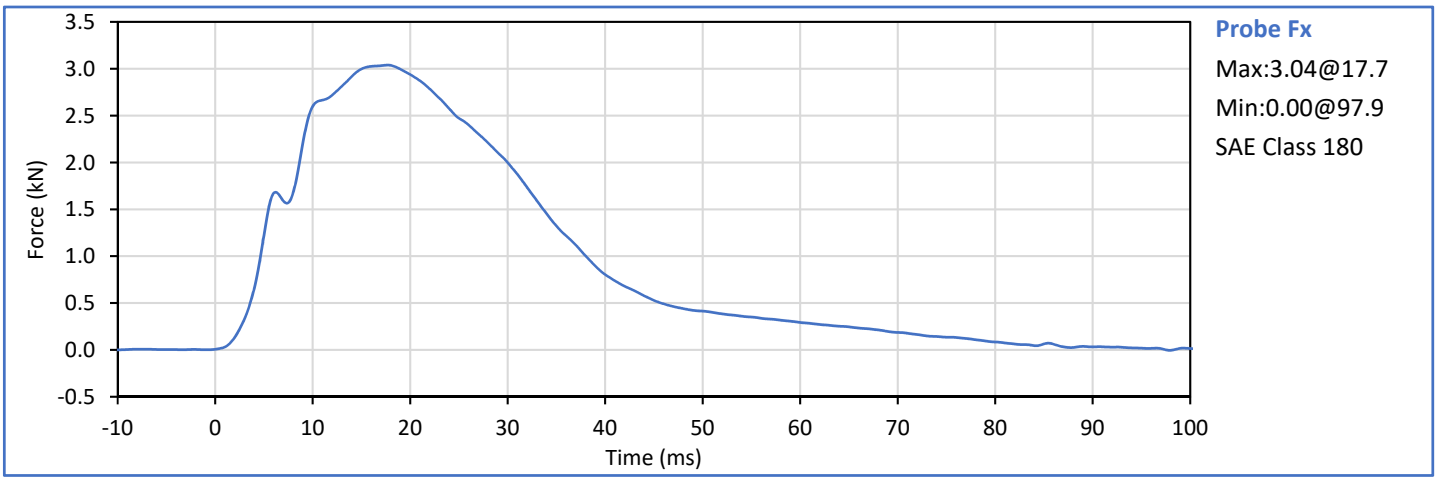
Approved By: C-17 P. Puzzuto

Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Abdomen Qualification

ATD S/N: EB8888 Test Date: 2019-09-04





Technician: J. Hernandez

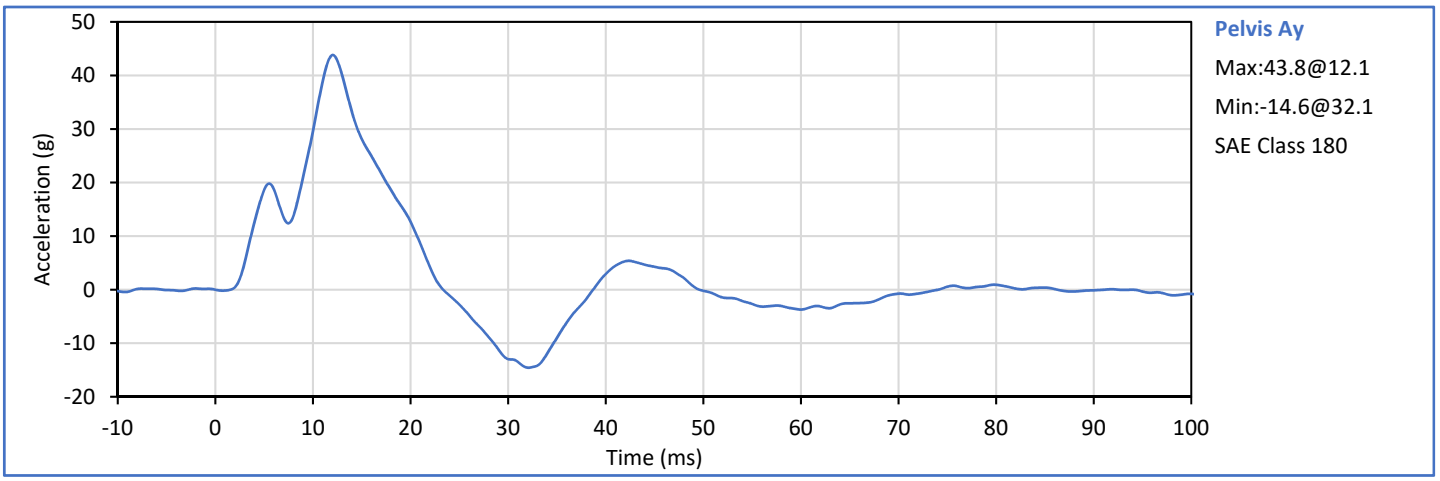
Approved By: C-18 P. Puzzuto

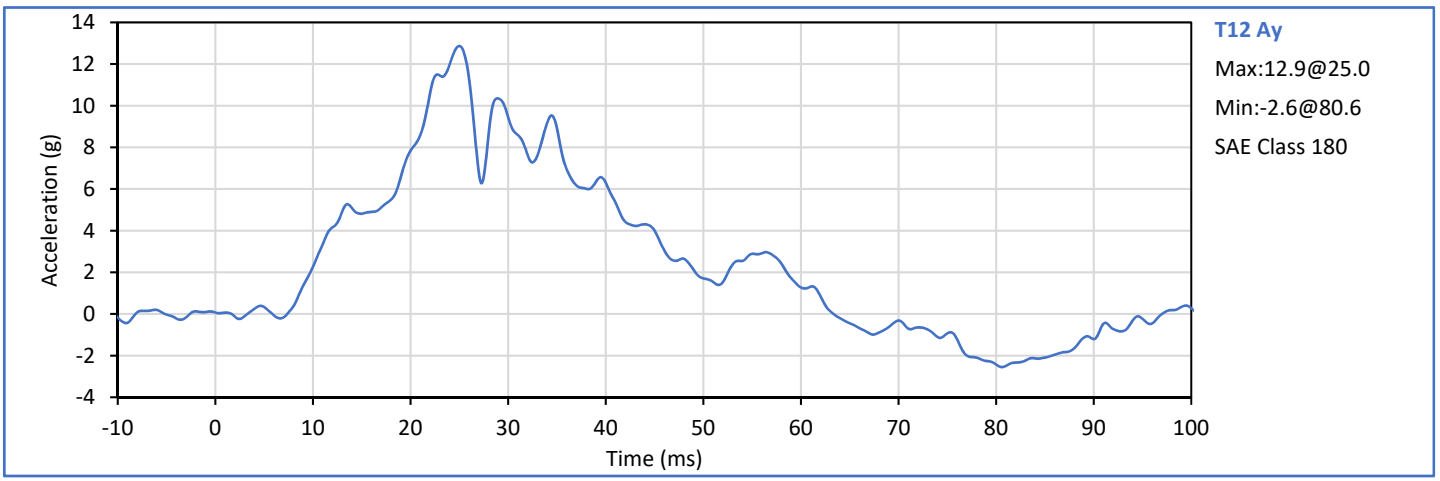
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Pelvis Qualification

ATD S/N: EB8888 Test Date: 2019-09-04

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	43	Pass
Probe Velocity	m/s	6.60	6.80	6.76	Pass
Peak Pendulum Force	kN	6.80	8.20	7.70	Pass
Peak T12 Ay	g	10.0	14.0	12.9	Pass
Peak Pelvis Ay	g	38.5	48.5	43.8	Pass
Peak Pubic Fy	kN	1.30	1.59	1.39	Pass
Peak Sacroiliac Fy	kN	1.93	2.21	2.11	Pass
			Overall Test Results		Pass





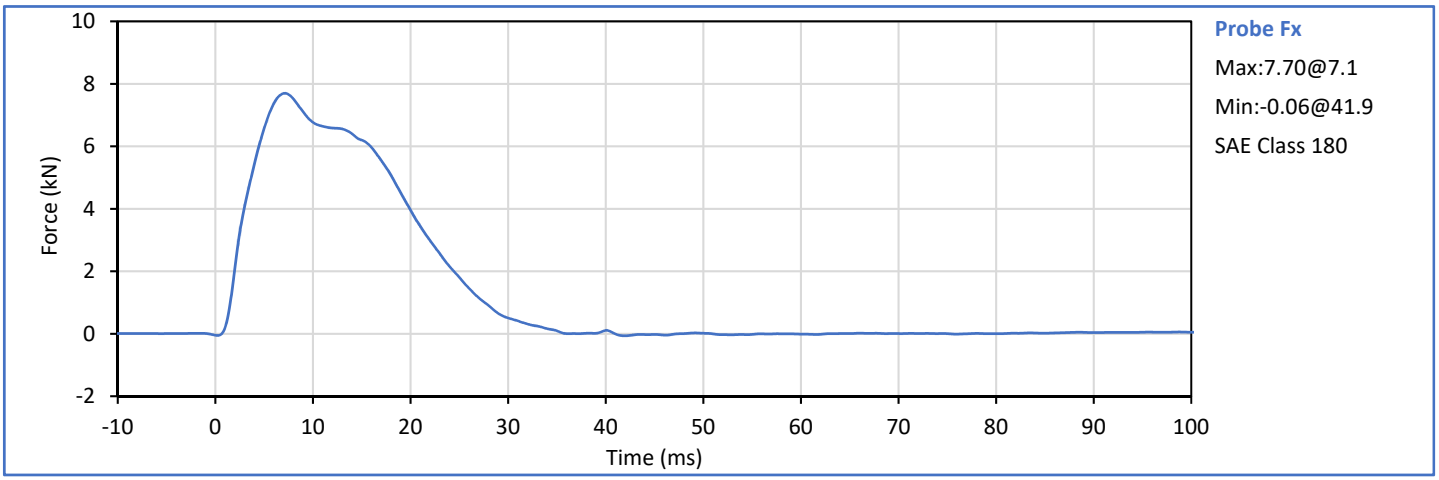
Technician: J. Hernandez

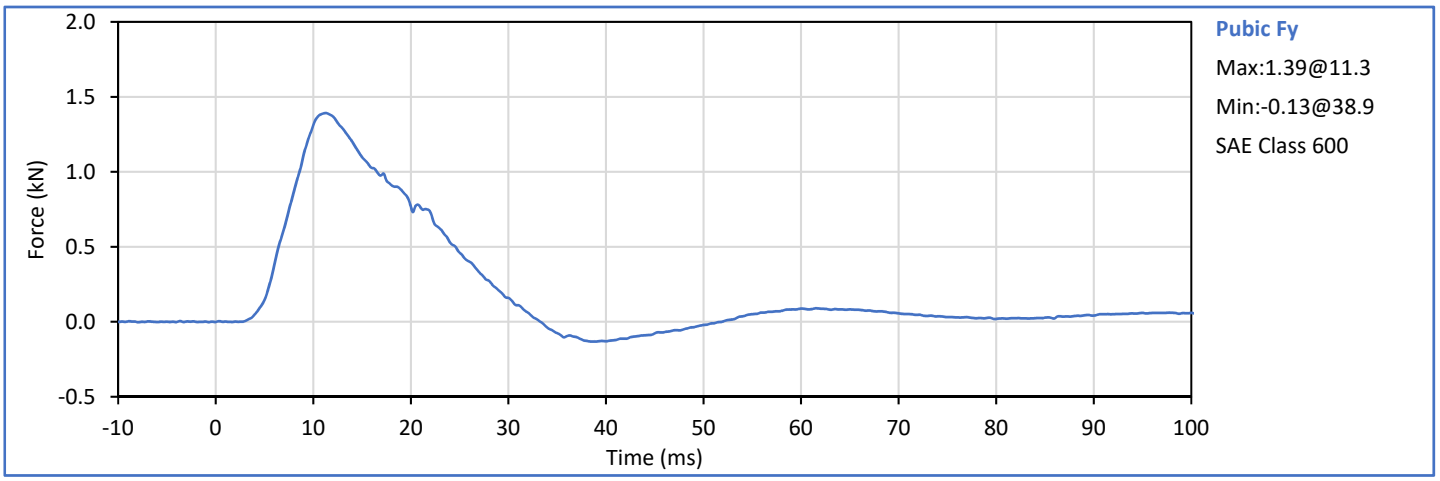
Approved By: C-19 P. Puzzuto

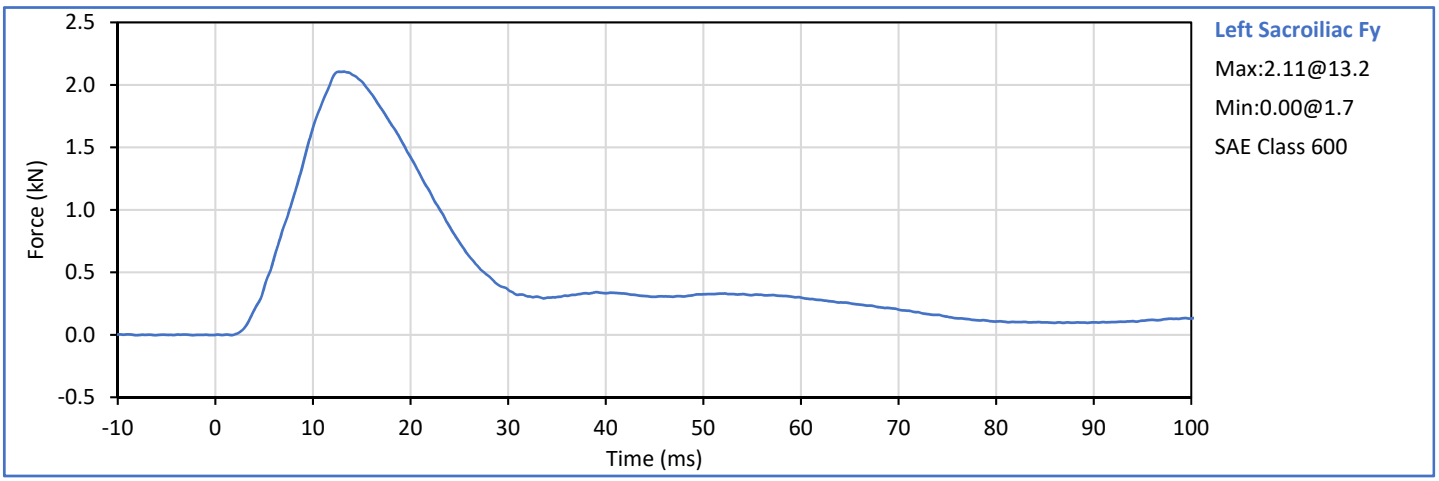
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Pelvis Qualification

ATD S/N: EB8888 Test Date: 2019-09-04







Technician: J. Hernandez

Approved By: C-20 P. Puzzuto

TR-P39013-01-NC

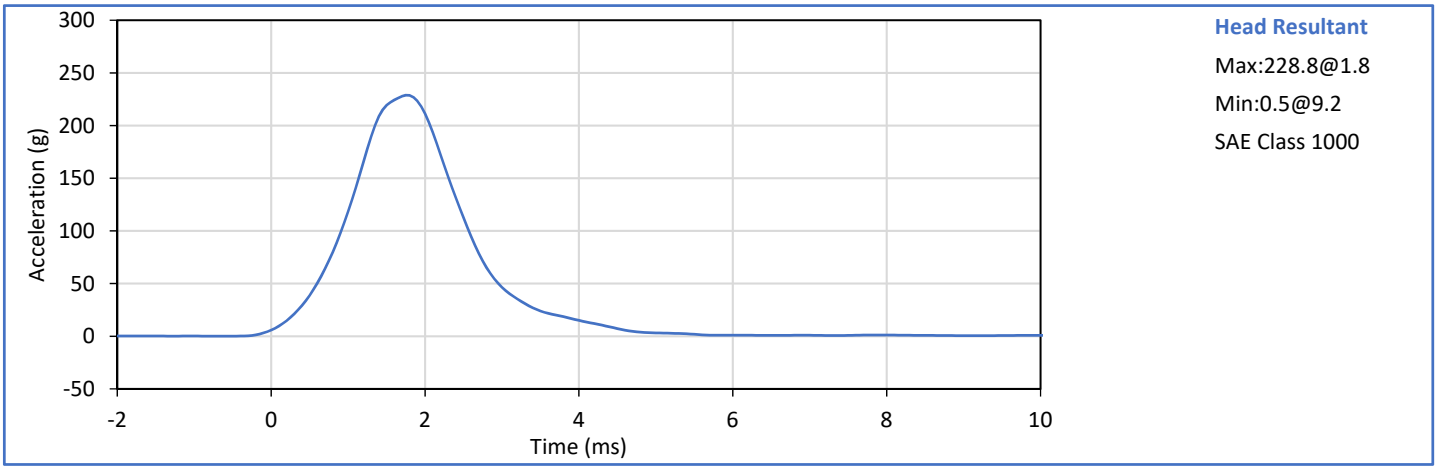
APPENDIX C
Post-Test ATD Configuration and Performance Verification Data
WorldSID 50th Male Side Impact ATD, Left Side Configuration
S/N: EB8888

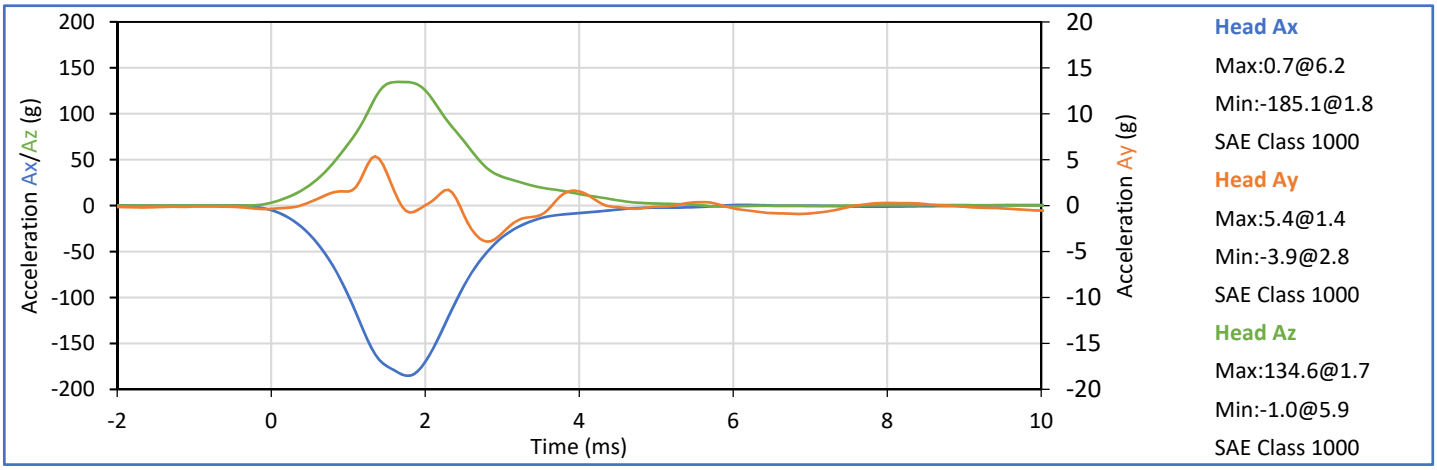
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Head Drop (Frontal)

ATD S/N: EB8888 Test Date: 2019-09-12

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	33	Pass
Peak Resultant Acceleration	g	211.0	261.0	228.8	Pass
Peak Ay	g	-15.0	15.0	5.4	Pass
Oscillations After Main Pulse	%	-10.0	10.0	0.5	Pass
			Overall Test Results		Pass





Technician: J. Hernandez

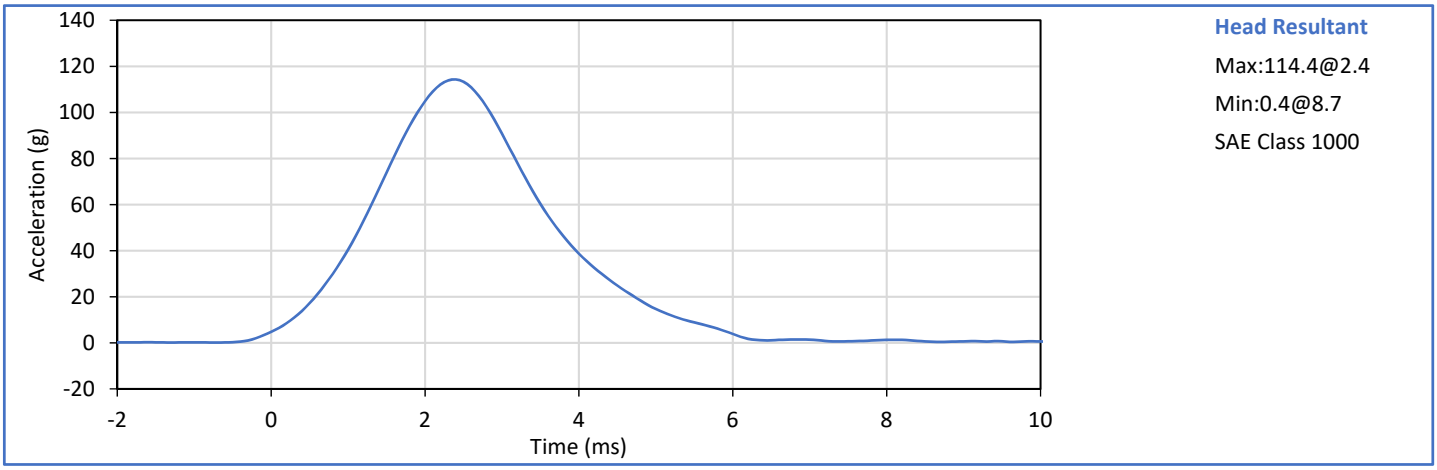
Approved By: P. Puzzuto

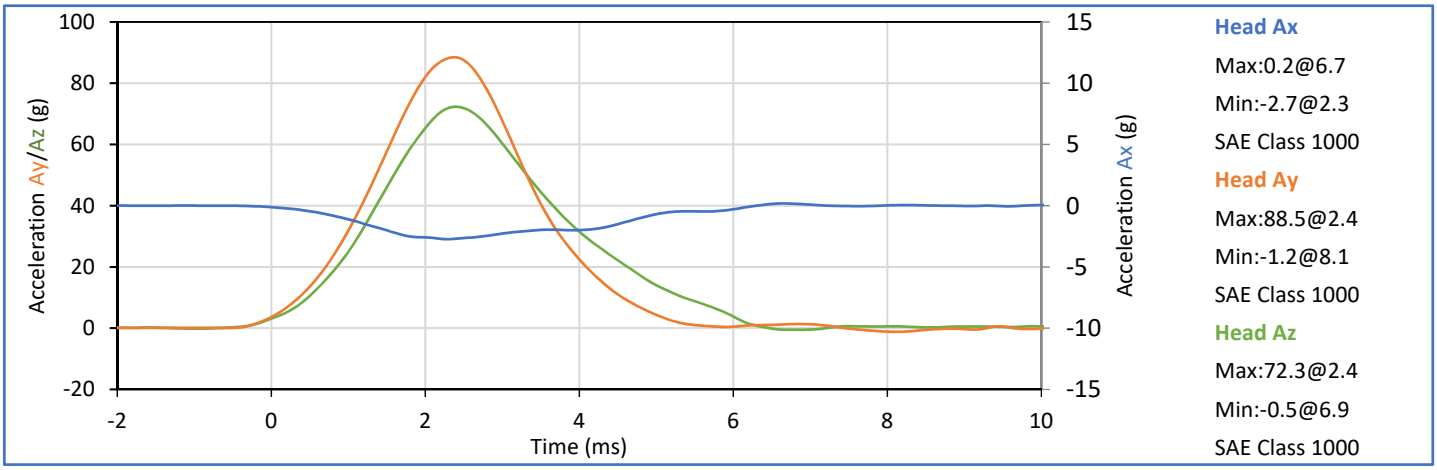
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Head Drop (Lateral Left)

ATD S/N: EB8888 Test Date: 2019-09-12

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	33	Pass
Peak Resultant Acceleration	g	107.0	126.0	114.3	Pass
Peak Ax	g	-15.0	15.0	-2.7	Pass
Oscillations After Main Pulse	%	-10.0	10.0	1.3	Pass
			Overall Test Results		Pass





Technician: J. Hernandez

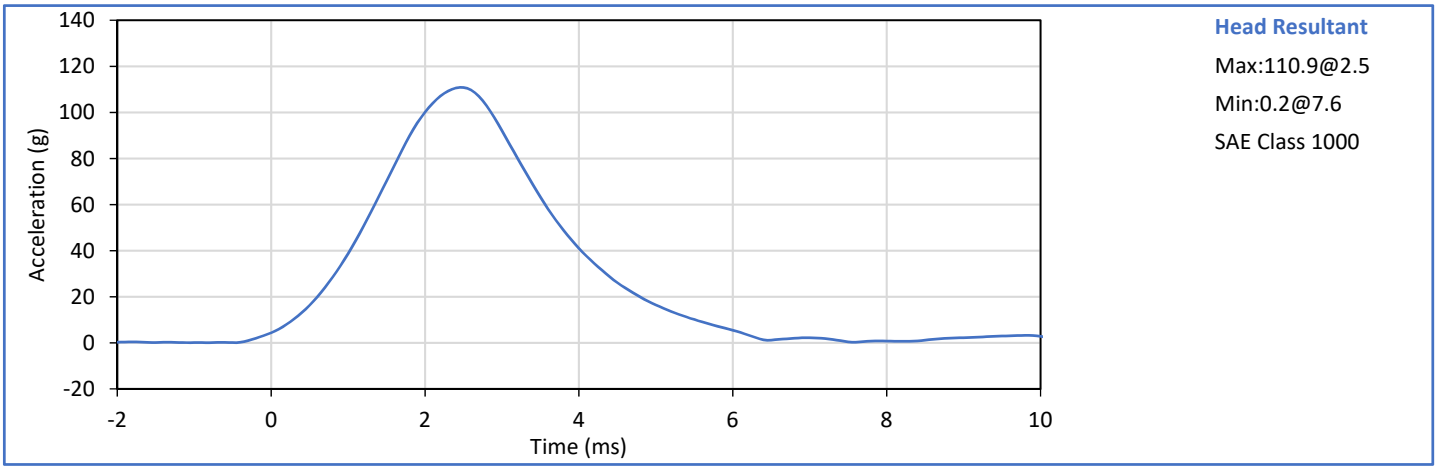
Approved By: P. Puzzuto

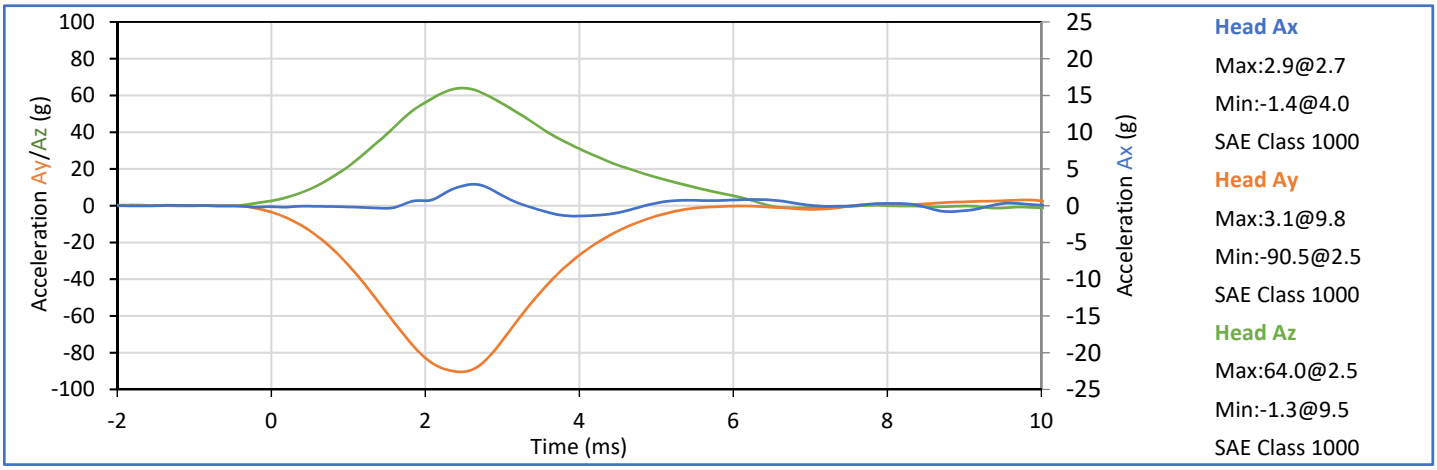
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Head Drop (Lateral Right)

ATD S/N: EB8888 Test Date: 2019-09-12

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	32	Pass
Peak Resultant Acceleration	g	107.0	126.0	110.9	Pass
Peak Ax	g	-15.0	15.0	2.9	Pass
Oscillations After Main Pulse	%	-10.0	10.0	2.9	Pass
			Overall Test Results		Pass





Technician: J. Hernandez

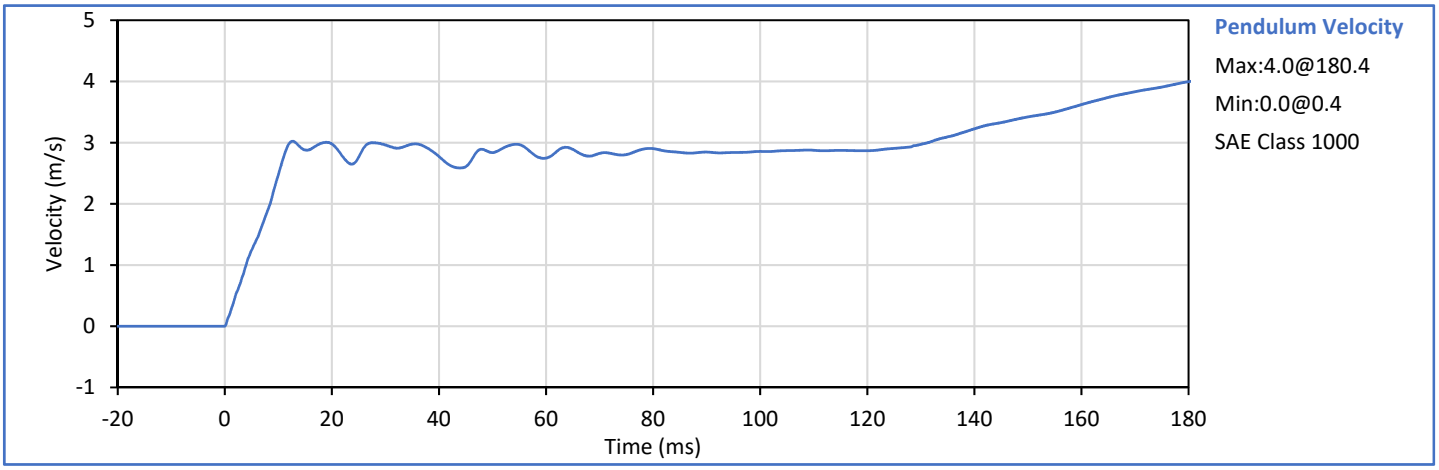
Approved By: P. Puzzuto

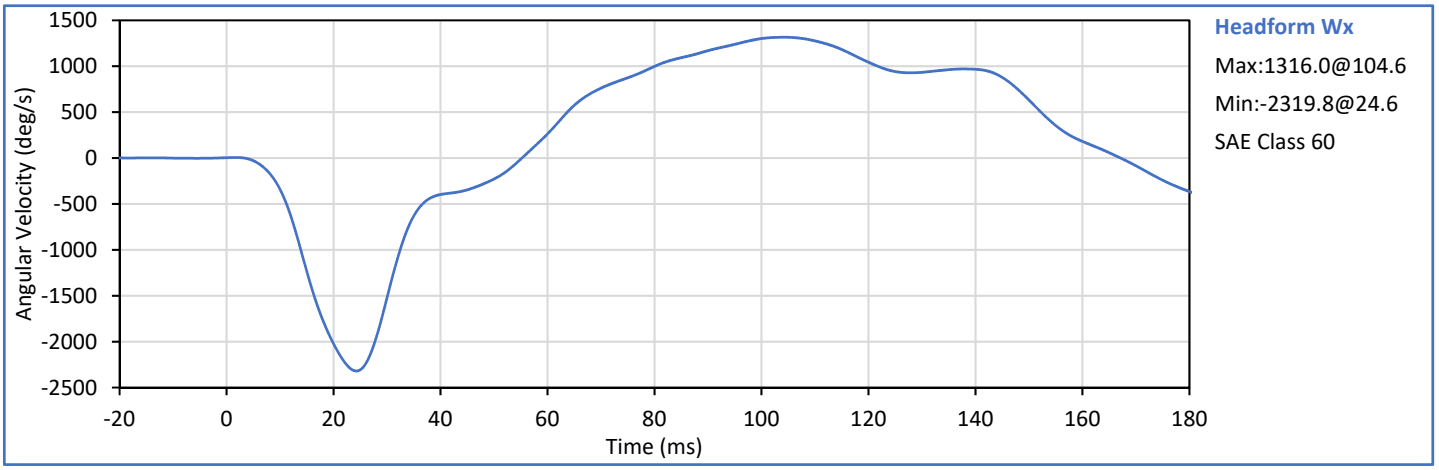
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Neck Lateral Flexion (Left)

ATD S/N: EB8888 Test Date: 2019-09-12

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	34	Pass
Pendulum Velocity	m/s	3.30	3.50	3.39	Pass
Pendulum Velocity at 4 ms	m/s	0.77	1.04	1.01	Pass
Pendulum Velocity at 8 ms	m/s	1.60	1.90	1.89	Pass
Pendulum Velocity at 12 ms	m/s	2.43	3.29	2.98	Pass
Headform Flexion Angle	deg	-61.0	-50.0	-56.5	Pass
Headform Flexion Decay to 0 deg	ms	58.0	72.0	60.4	Pass
Peak Occipital Condyle Moment	Nm	54.0	67.0	61.6	Pass
Peak Occipital Condyle Moment deca	ms	71.0	87.0	74.1	Pass
Peak Forward Rotation	deg	-39.0	-32.0	-35.2	Pass
	ms	56.0	68.0	56.2	Pass
Peak Rearward Rotation	deg	-36.0	-29.0	-31.5	Pass
	ms	56.0	68.0	56.2	Pass
Peak Headform ωx	deg/s	-2393	-2163	-2320	Pass
			Overall Test Results		Pass



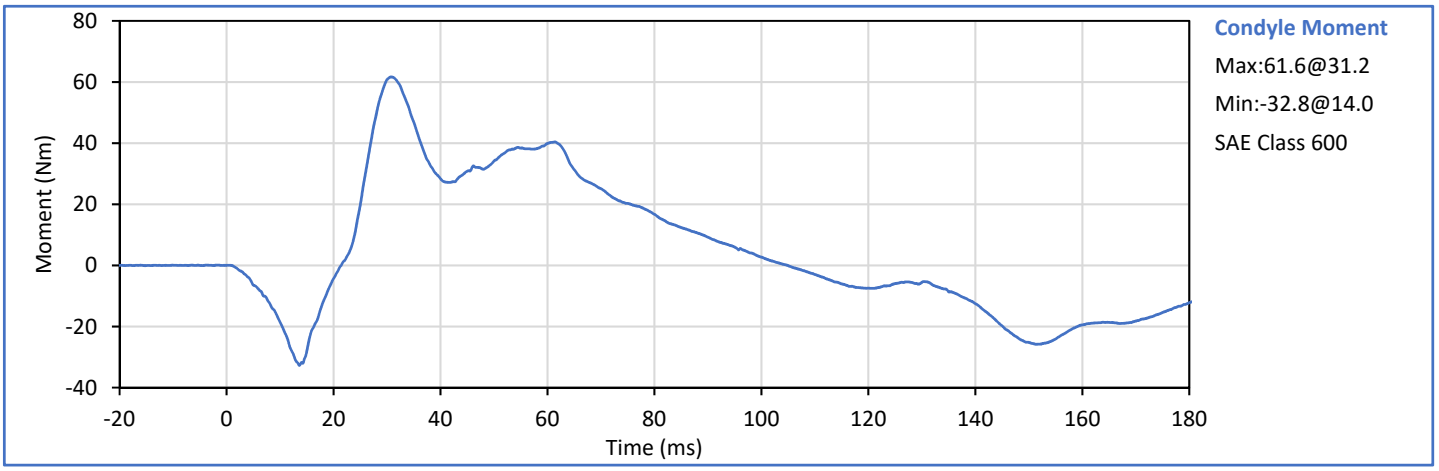


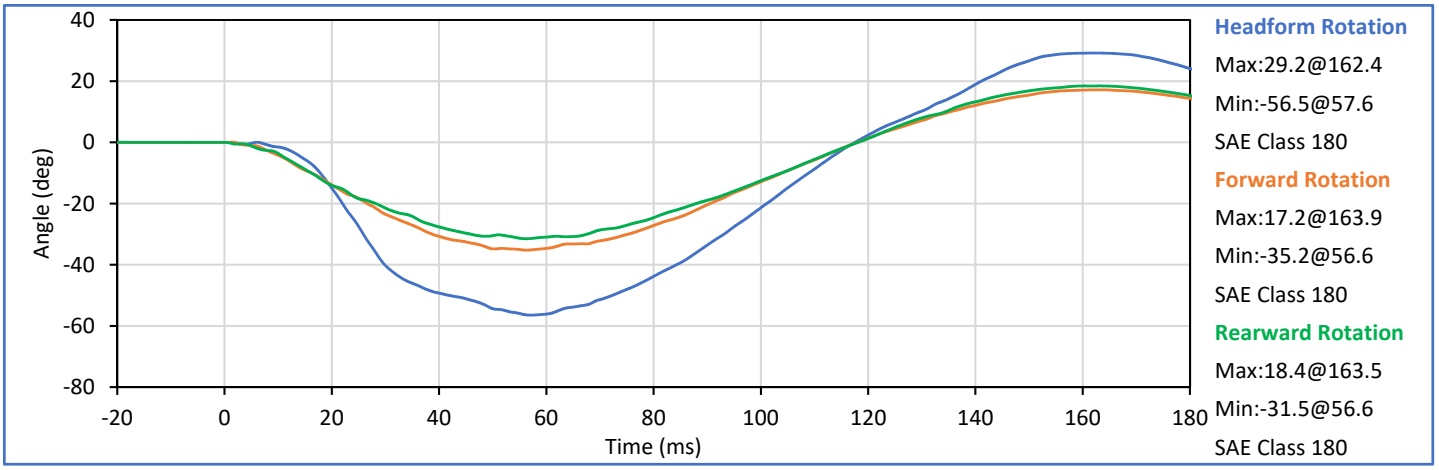
Technician: J. Hernandez

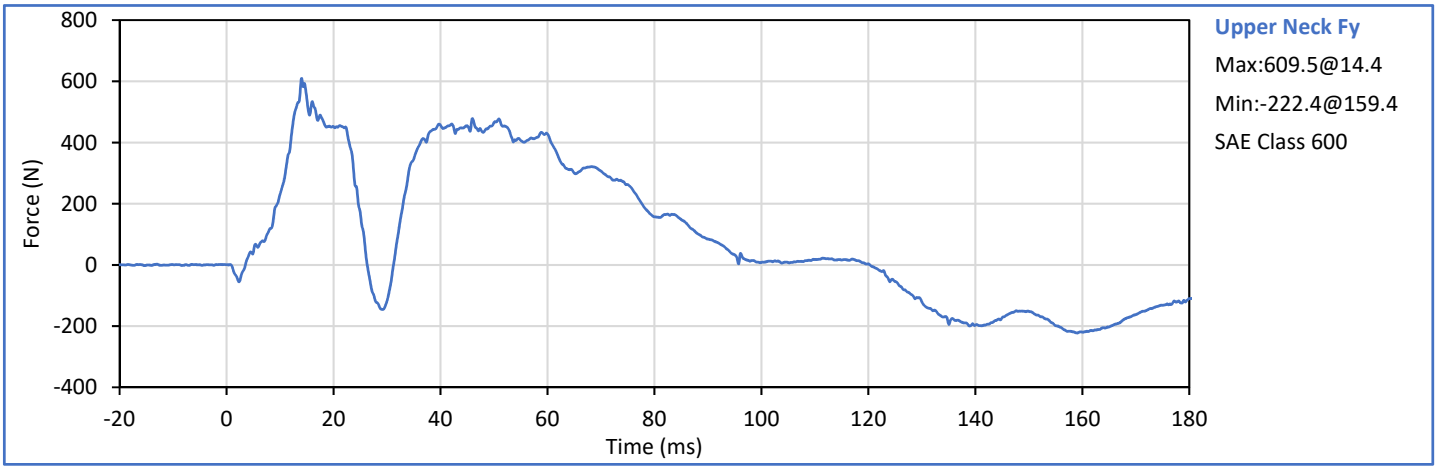
Approved By: P. Puzzuto

WorldSID 50th Male Side Impact ATD
Neck Lateral Flexion (Left)

ATD S/N: EB8888 Test Date: 2019-09-12





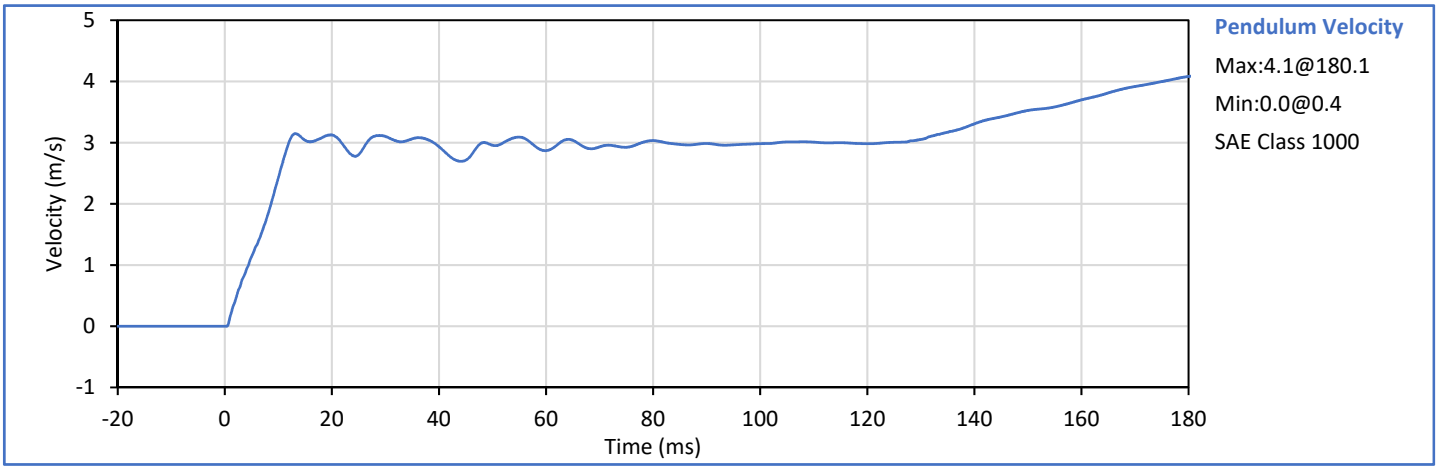


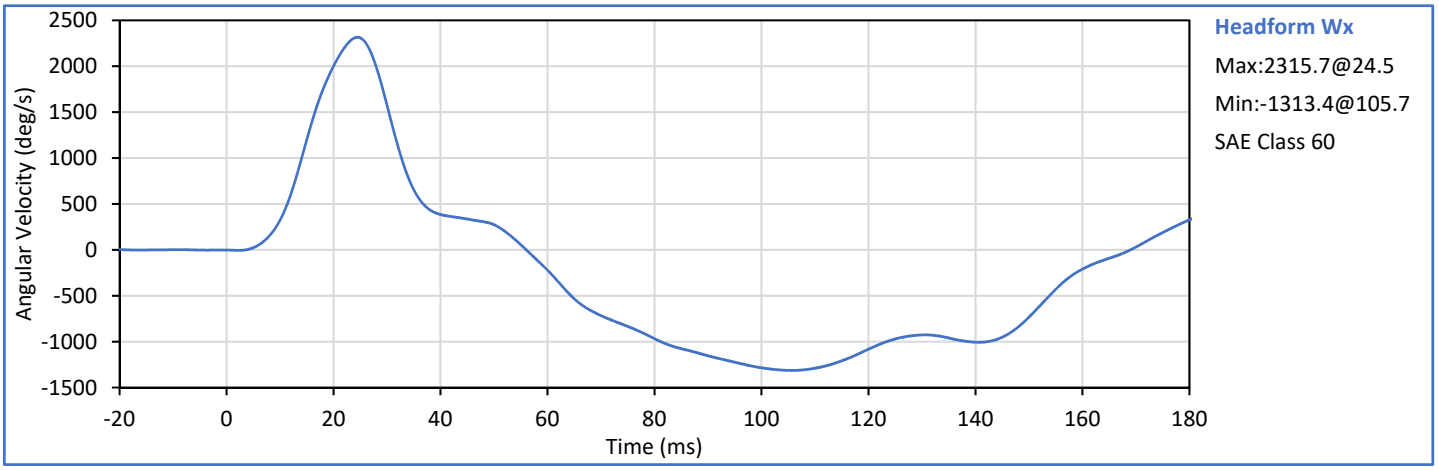
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Neck Lateral Flexion (Right)

ATD S/N: EB8888 Test Date: 2019-09-12

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Relative Humidity	%	10	70	33	Pass
Pendulum Velocity	m/s	3.30	3.50	3.39	Pass
Pendulum Velocity at 4 ms	m/s	0.77	1.04	0.92	Pass
Pendulum Velocity at 8 ms	m/s	1.60	1.90	1.82	Pass
Pendulum Velocity at 12 ms	m/s	2.43	3.29	3.01	Pass
Headform Flexion Angle	deg	50.0	61.0	56.4	Pass
Headform Flexion Decay to 0 deg	ms	58.0	72.0	61.5	Pass
Peak Occipital Condyle Moment	Nm	-67.0	-54.0	-61.0	Pass
Peak Occipital Condyle Moment deca	ms	71.0	87.0	74.4	Pass
Peak Forward Rotation	deg	32.0	39.0	33.8	Pass
	ms	56.0	68.0	56.4	Pass
Peak Rearward Rotation	deg	29.0	36.0	33.5	Pass
	ms	56.0	68.0	61.3	Pass
Peak Headform ωx	deg/s	2163	2393	2316	Pass
			Overall Test Results		Pass



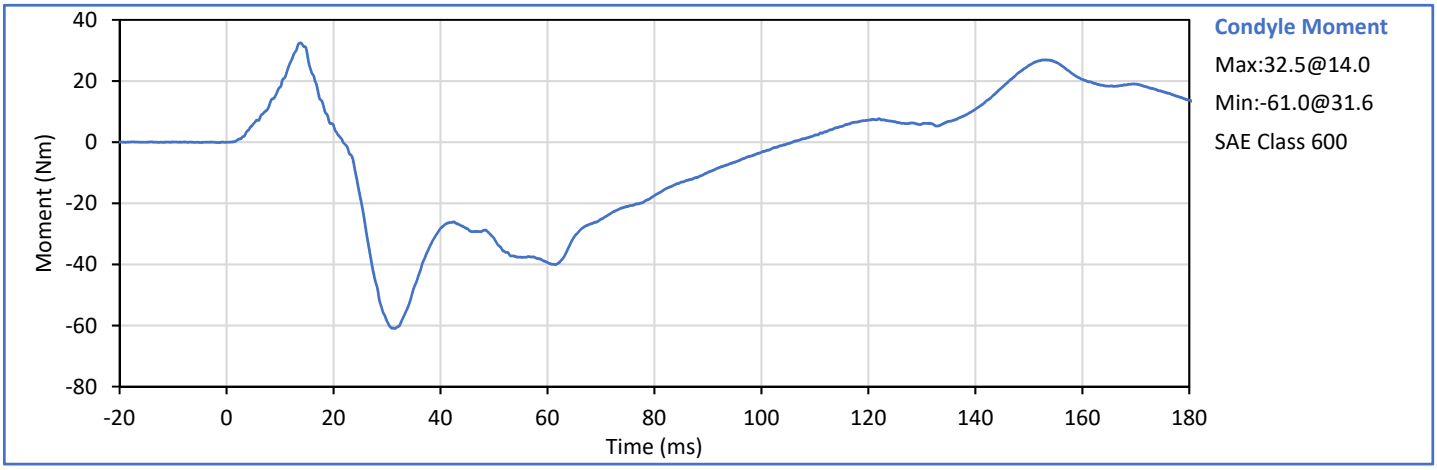


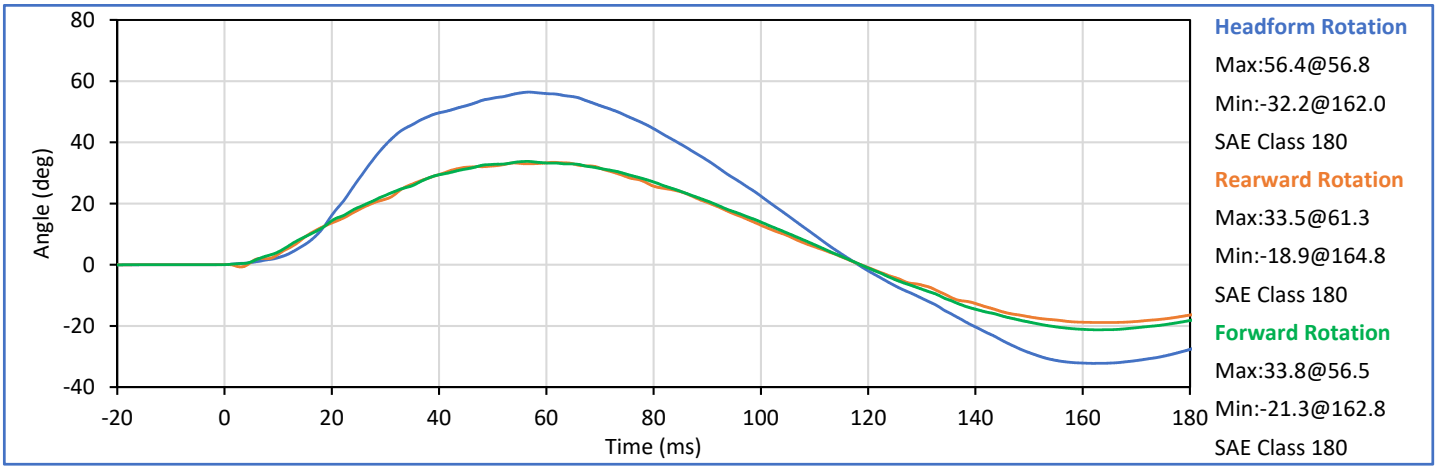
Technician: J. Hernandez

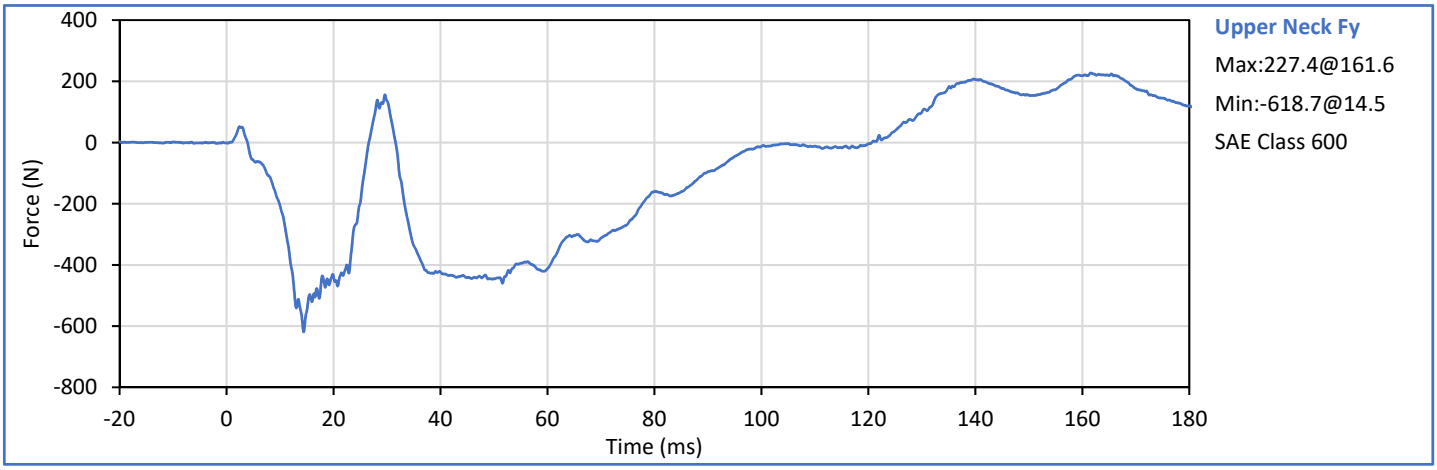
Approved By: P. Puzzuto

WorldSID 50th Male Side Impact ATD
Neck Lateral Flexion (Right)

ATD S/N: EB8888 Test Date: 2019-09-12





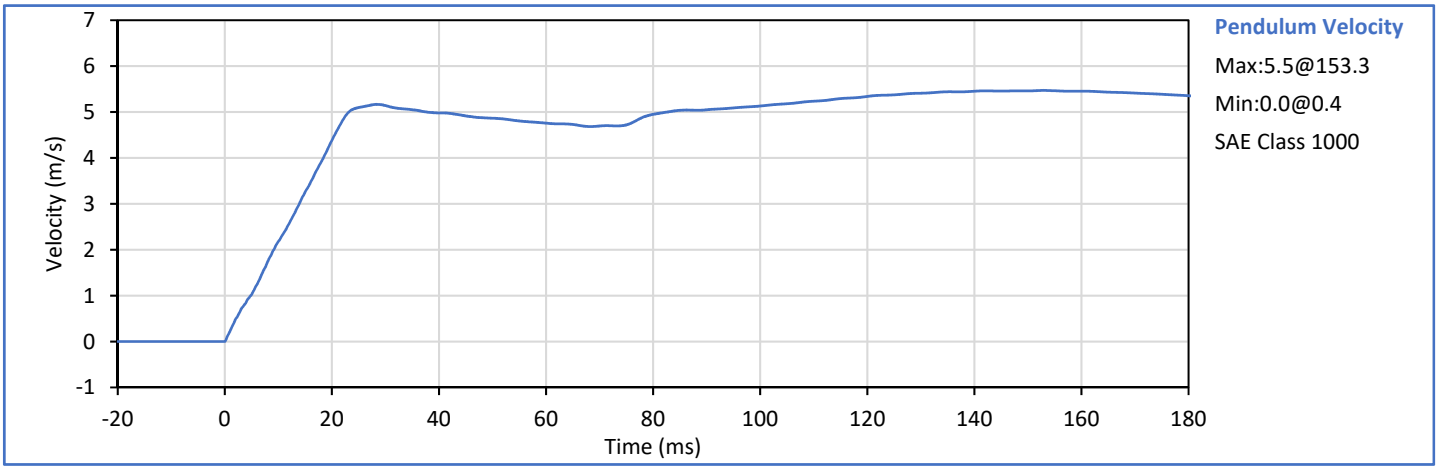


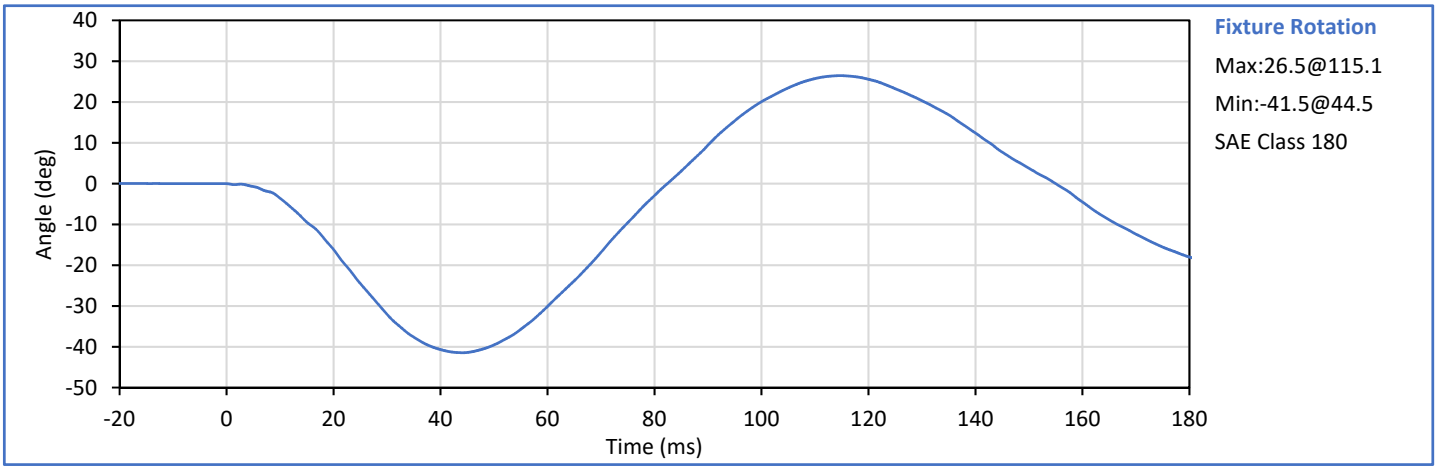
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Neck Torsion (Left)

ATD S/N: EB8888 Test Date: 2019-09-12

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	34	Pass
Pendulum Velocity	m/s	5.10	5.30	5.14	Pass
Pendulum Velocity at 10 ms	m/s	2.04	2.28	2.18	Pass
Pendulum Velocity at 15 ms	m/s	3.20	3.57	3.26	Pass
Pendulum Velocity at 20 ms	m/s	4.32	4.83	4.38	Pass
Peak Fixture Rotation	deg	-48.0	-45.0	-41.5	**Fail**
Fixture Decay from peak to 0 deg	ms	37.0	41.0	38.7	Pass
Peak Head ωz	deg/s	-1560	-1450	-1417	**Fail**
Peak Lower Neck Mz	Nm	36.0	40.0	37.3	Pass
			Overall Test Results		**Fail**



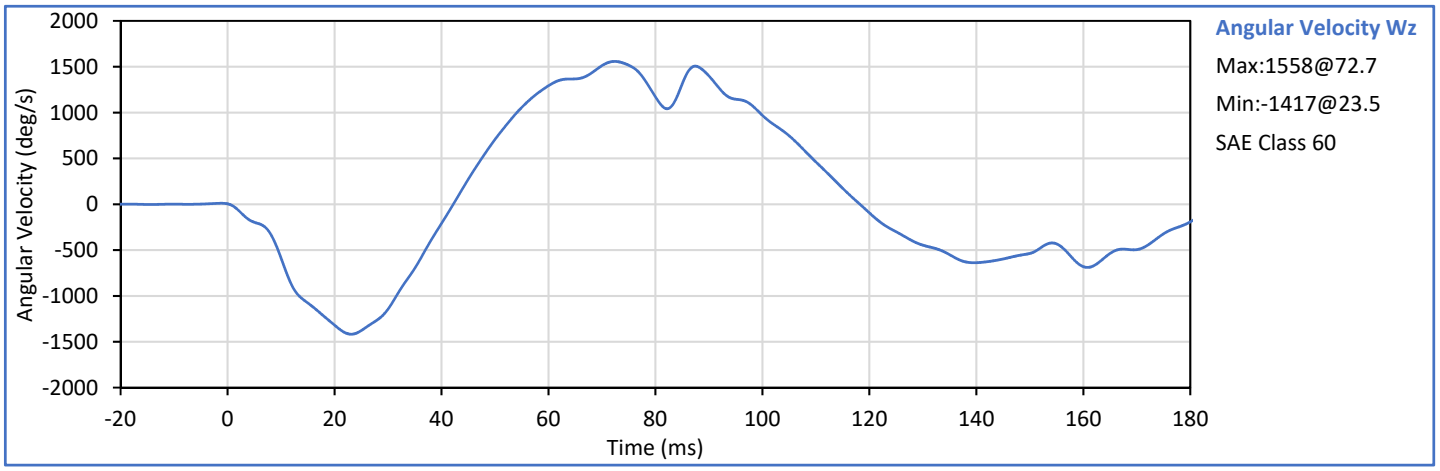


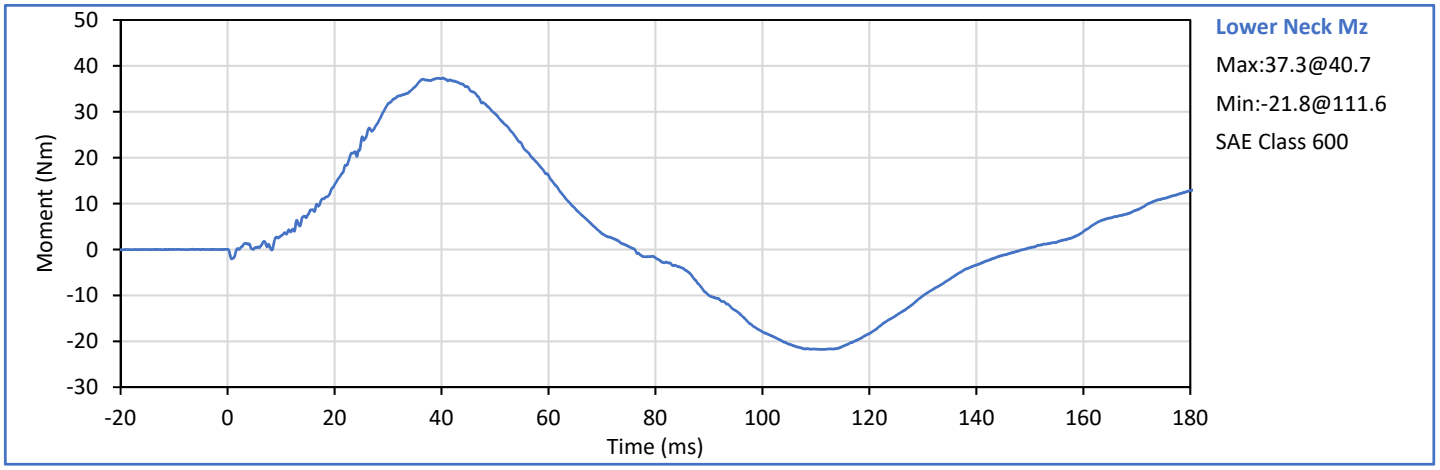
Technician: J. Hernandez

Approved By: P. Puzzuto

WorldSID 50th Male Side Impact ATD
Neck Torsion (Left)

ATD S/N: EB8888 Test Date: 2019-09-12



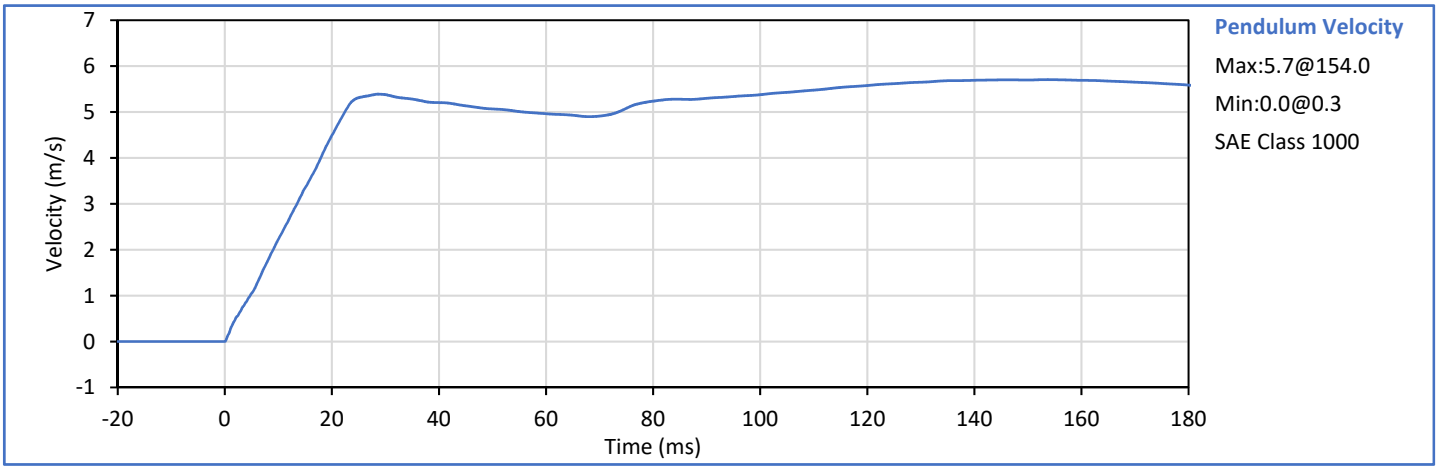


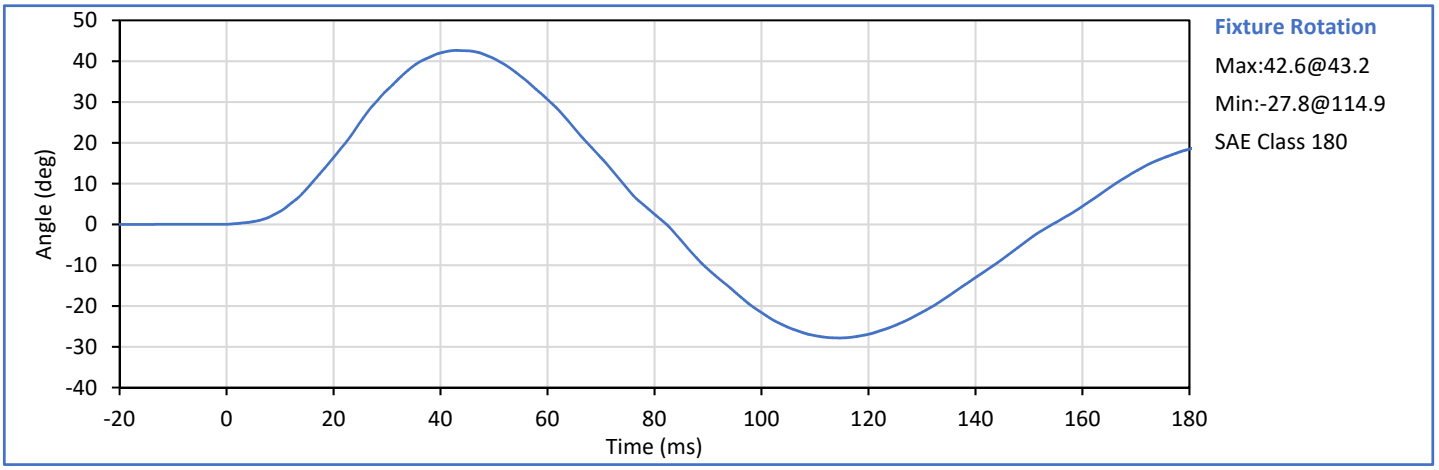
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Neck Torsion (Right)

ATD S/N: EB8888 Test Date: 2019-09-12

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	32	Pass
Pendulum Velocity	m/s	5.10	5.30	5.19	Pass
Pendulum Velocity at 10 ms	m/s	2.04	2.28	2.23	Pass
Pendulum Velocity at 15 ms	m/s	3.20	3.57	3.35	Pass
Pendulum Velocity at 20 ms	m/s	4.32	4.83	4.49	Pass
Peak Fixture Rotation	deg	45.0	48.0	42.6	**Fail**
Fixture Decay from peak to 0 deg	ms	37.0	41.0	39.7	Pass
Peak Head ωz	deg/s	1450	1560	1481	Pass
Peak Lower Neck Mz	Nm	-40.0	-36.0	-39.4	Pass
			Overall Test Results		**Fail**



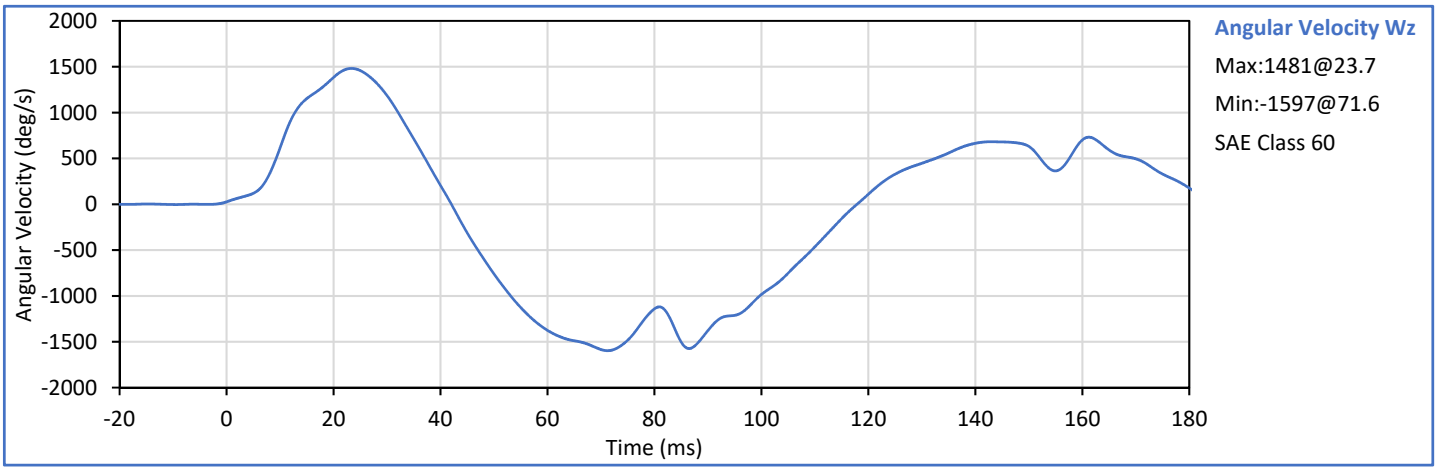


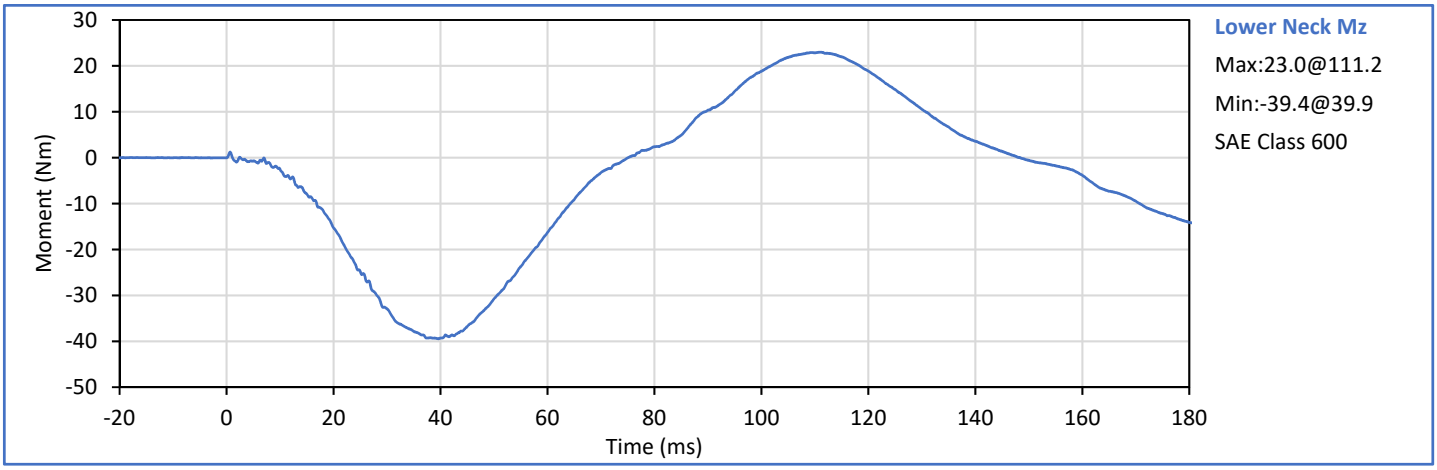
Technician: J. Hernandez

Approved By: P. Puzzuto

WorldSID 50th Male Side Impact ATD
Neck Torsion (Right)

ATD S/N: EB8888 Test Date: 2019-09-12





Applus IDIADA KARCO

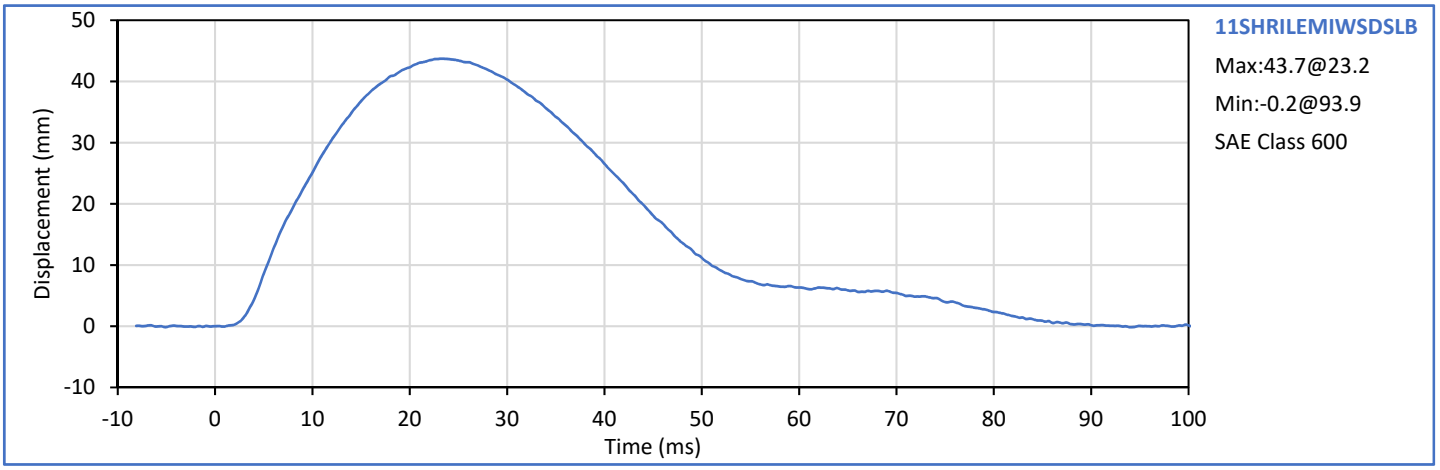
WorldSID 50th Male Side Impact ATD
Shoulder Qualification

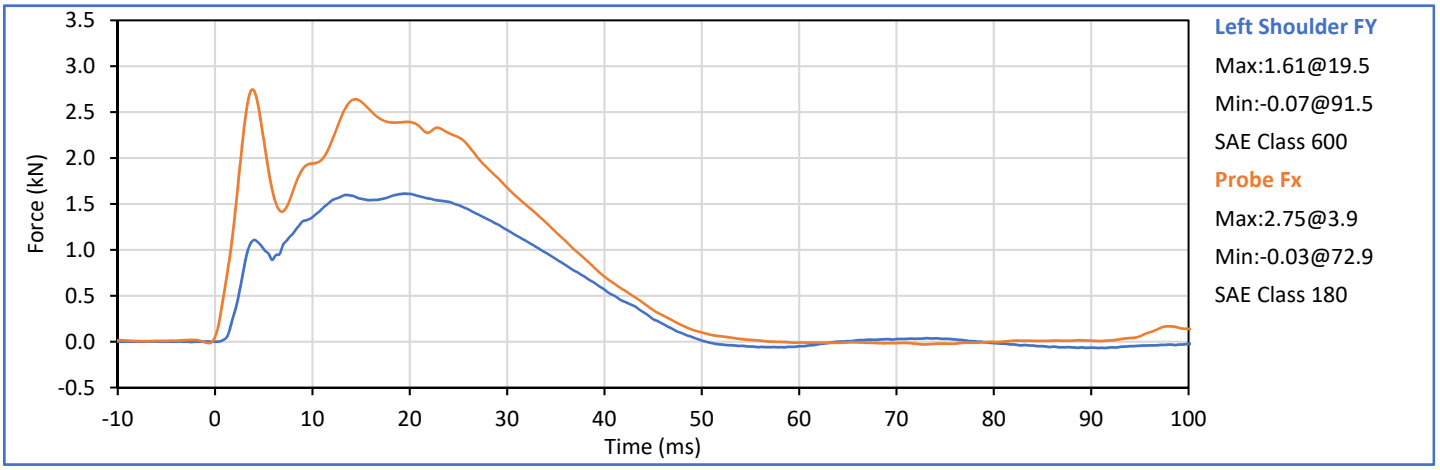
ATD S/N: EB8888 Test Date: 2019-09-13

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	20.8	Pass
Laboratory Relative Humidity	%	10	70	30	Pass
Probe Velocity	m/s	4.20	4.40	4.31	Pass
Peak Shoulder Deflection	mm	37.0	46.0	43.7	Pass
Peak Shoulder Fy	kN	1.50	1.70	1.61	Pass
Peak Pendulum Fx	kN	2.60	3.30	2.75	Pass
			Overall Test Results		Pass

Test Angles and Temperatures

Head (deg)		Spine (deg)		Pelvis		H-Point	Temp (degC)	
X	Y	X	Y	X	Y	X	T Int	T Ext
-0.3	0.1	-0.4	0.2	0.0	5.2	39.7	21.3	20.0





Technician: J. Hernandez

Approved By: P. Puzzuto

Applus IDIADA
KARCO

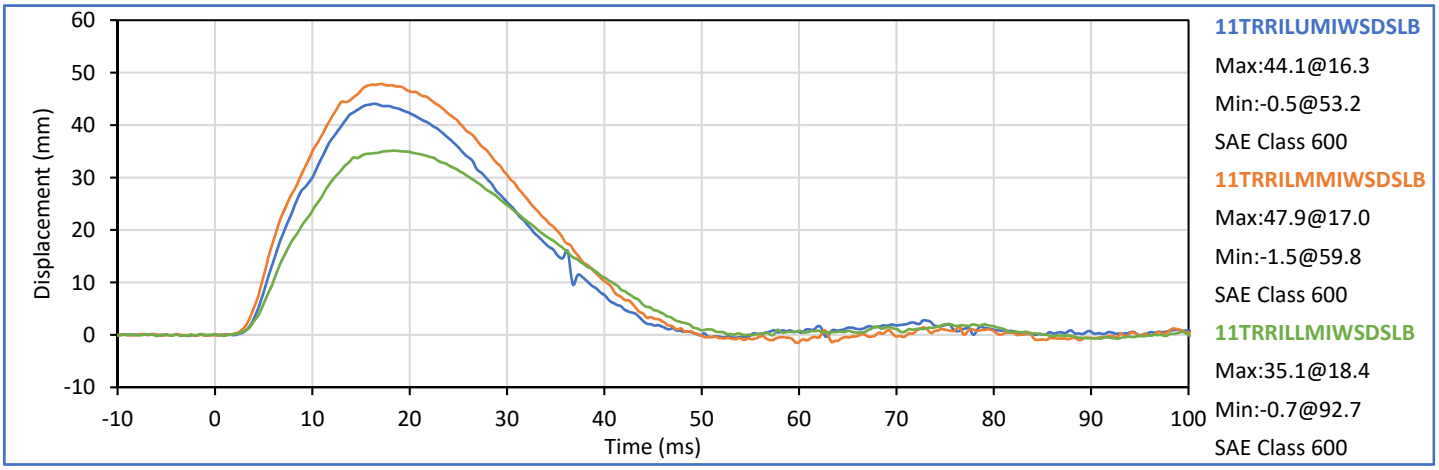
WorldSID 50th Male Side Impact ATD
Thorax With Arm Qualification

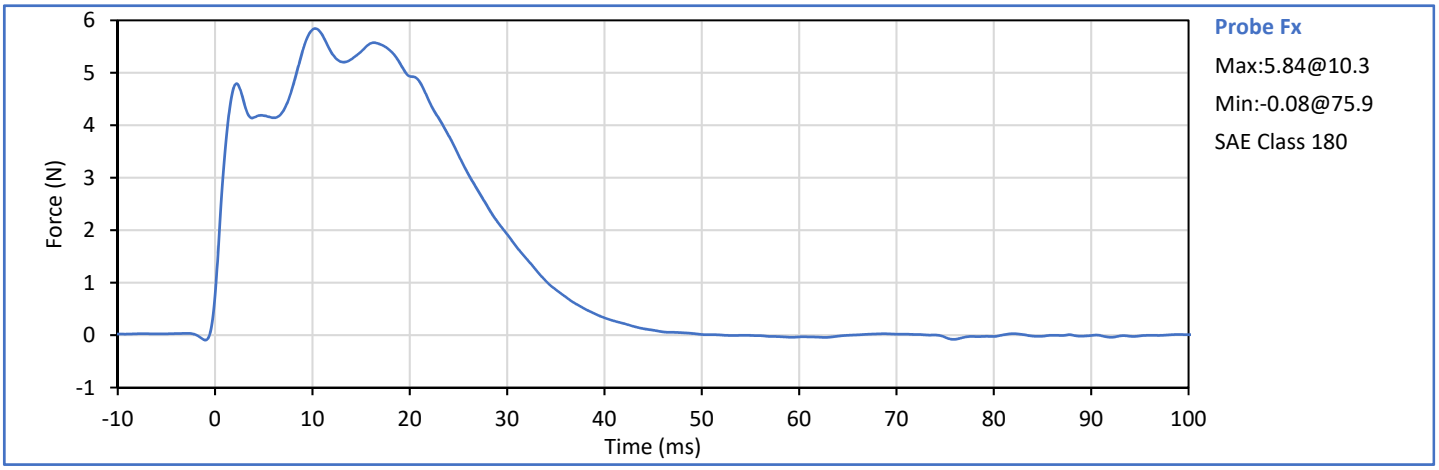
ATD S/N: EB8888 Test Date: 2019-09-13

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	32	Pass
Probe Velocity	m/s	6.60	6.80	6.72	Pass
Peak Thorax Rib 1 Deflection	mm	35.0	47.0	44.1	Pass
Peak Thorax Rib 2 Deflection	mm	46.0	56.0	47.9	Pass
Peak Thorax Rib 3 Deflection	mm	33.5	40.5	35.1	Pass
Peak Pendulum Fx	kN	5.30	6.20	5.84	Pass
Peak T4 Ay Acceleration	g	28.0	37.0	35.4	Pass
Peak T12 Ay Acceleration	g	22.0	28.0	22.9	Pass
			Overall Test Results		Pass

Test Angles and Temperatures

Head (deg)		Spine (deg)		Pelvis		H-Point	Temp (degC)	
X	Y	X	Y	X	Y	X	T Int	T Ext
-0.3	0.4	-0.2	0.7	0.2	5.7	39.6	21.9	19.7





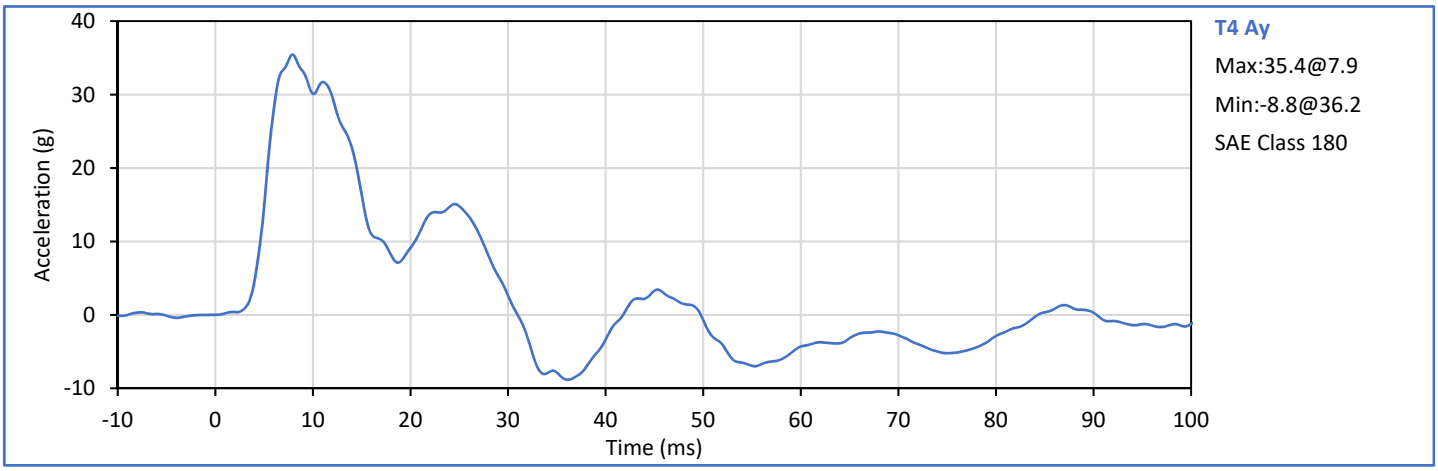
Technician: J. Hernandez

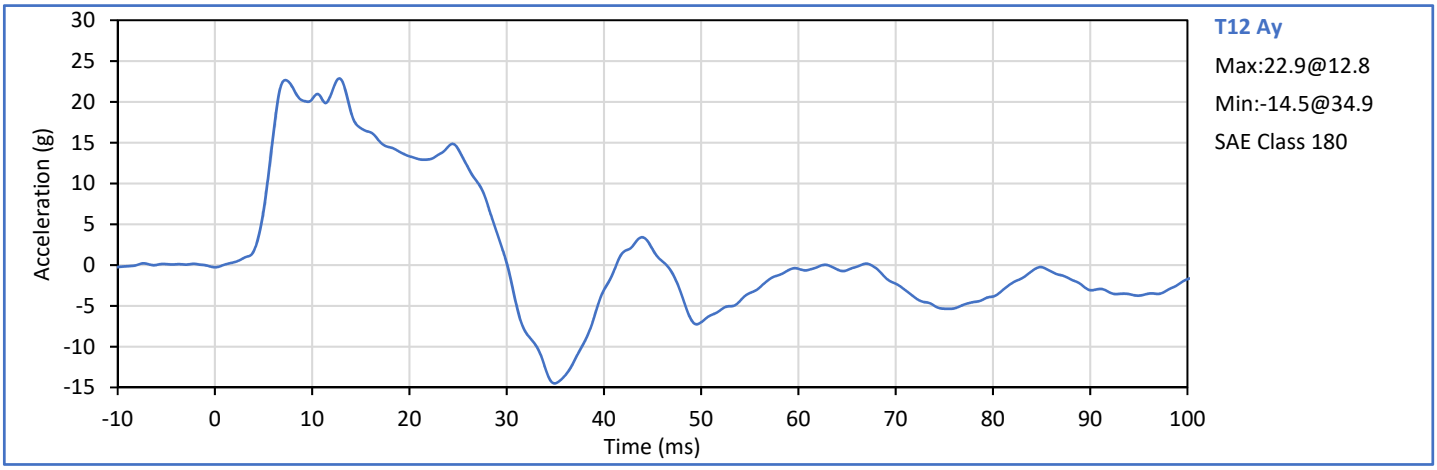
Approved By: P. Puzzuto

Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Thorax With Arm Qualification

ATD S/N: EB8888 Test Date: 2019-09-13





Technician: J. Hernandez

Approved By: P. Puzzuto

Applus IDIADA KARCO

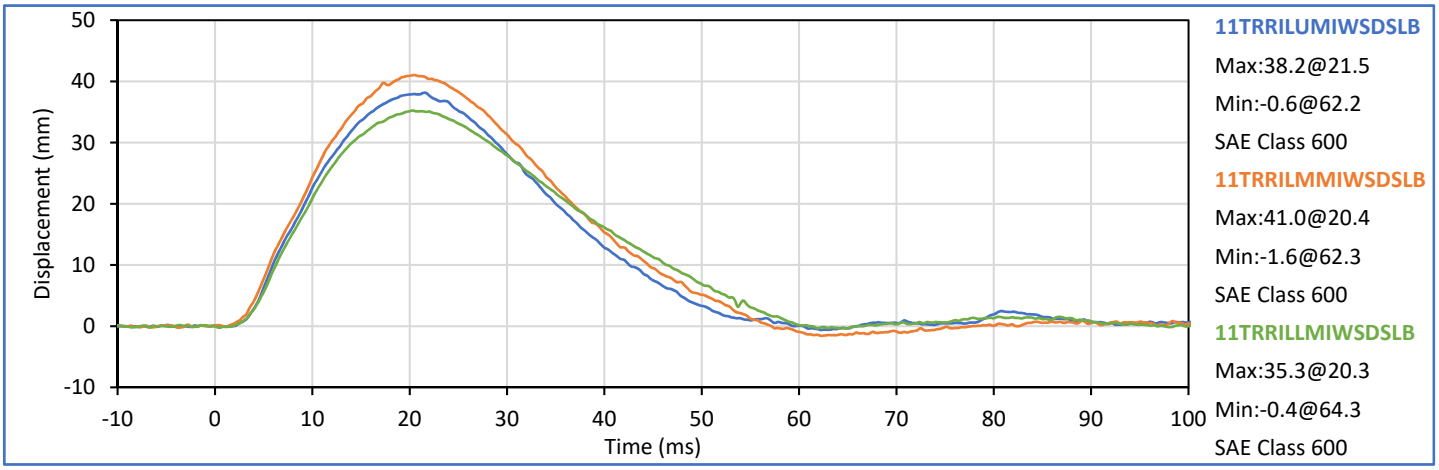
WorldSID 50th Male Side Impact ATD
Thorax Without Arm Qualification

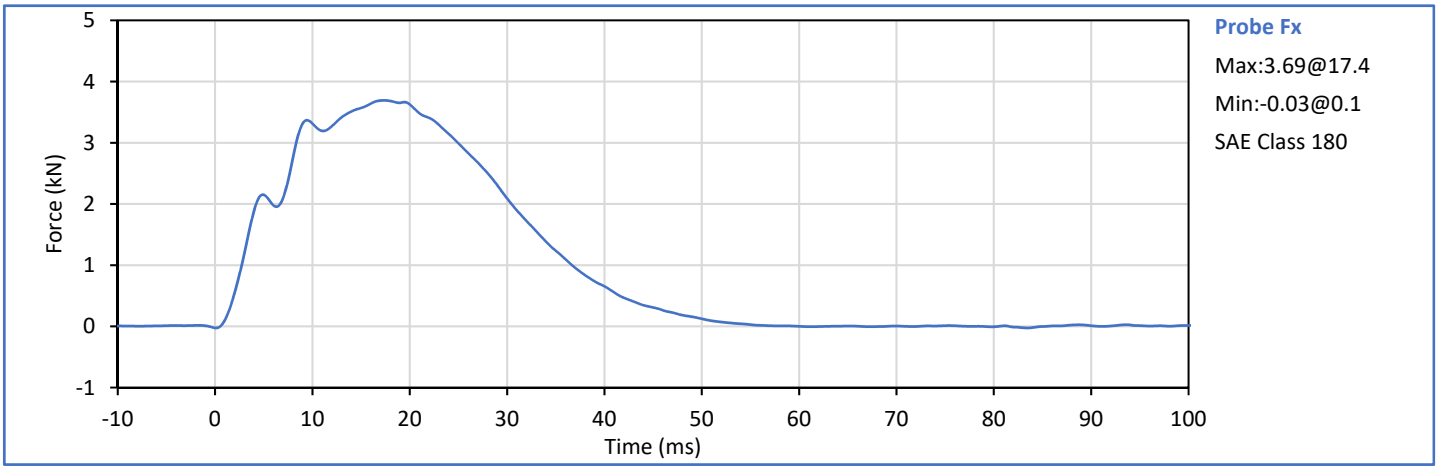
ATD S/N: EB8888 Test Date: 2019-09-13

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	31	Pass
Probe Velocity	m/s	4.20	4.40	4.32	Pass
Peak Thorax Rib 1 Deflection	mm	33.0	43.0	38.2	Pass
Peak Thorax Rib 2 Deflection	mm	35.0	43.0	41.0	Pass
Peak Thorax Rib 3 Deflection	mm	32.0	40.0	35.3	Pass
Peak Pendulum Fx	kN	3.20	3.80	3.69	Pass
Peak T4 Ay Acceleration	g	14.0	20.0	17.2	Pass
Peak T12 Ay Acceleration	g	14.0	22.0	16.2	Pass
			Overall Test Results		Pass

Test Angles and Temperatures

Head (deg)		Spine (deg)		Pelvis		H-Point	Temp (degC)	
X	Y	X	Y	X	Y	X	T Int	T Ext
0.2	-0.4	-0.3	0.3	0.4	5.7	39.4	24.3	20.8





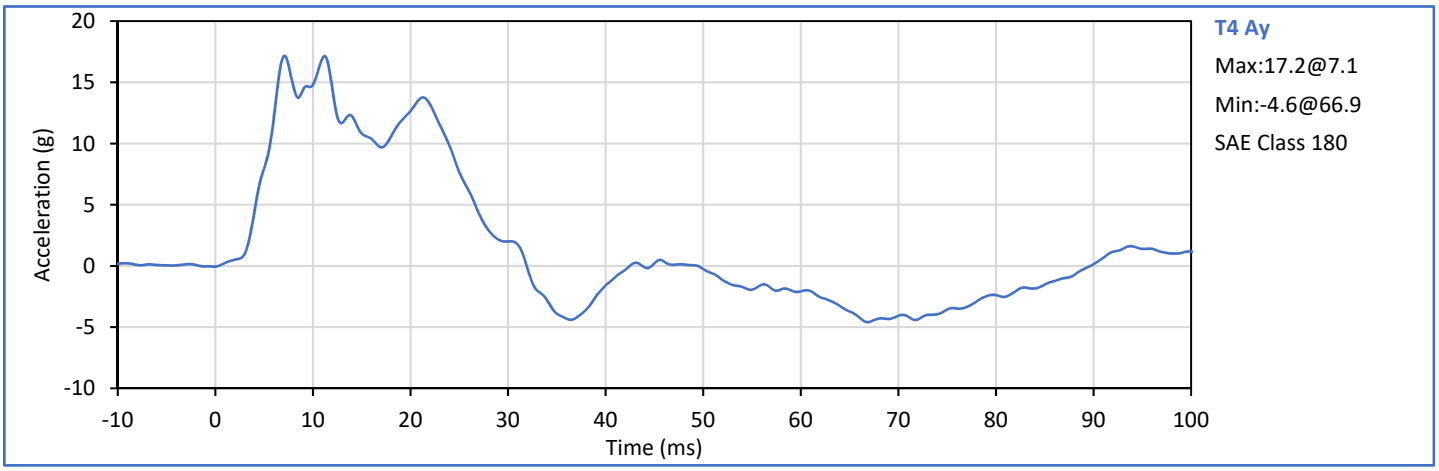
Technician: J. Hernandez

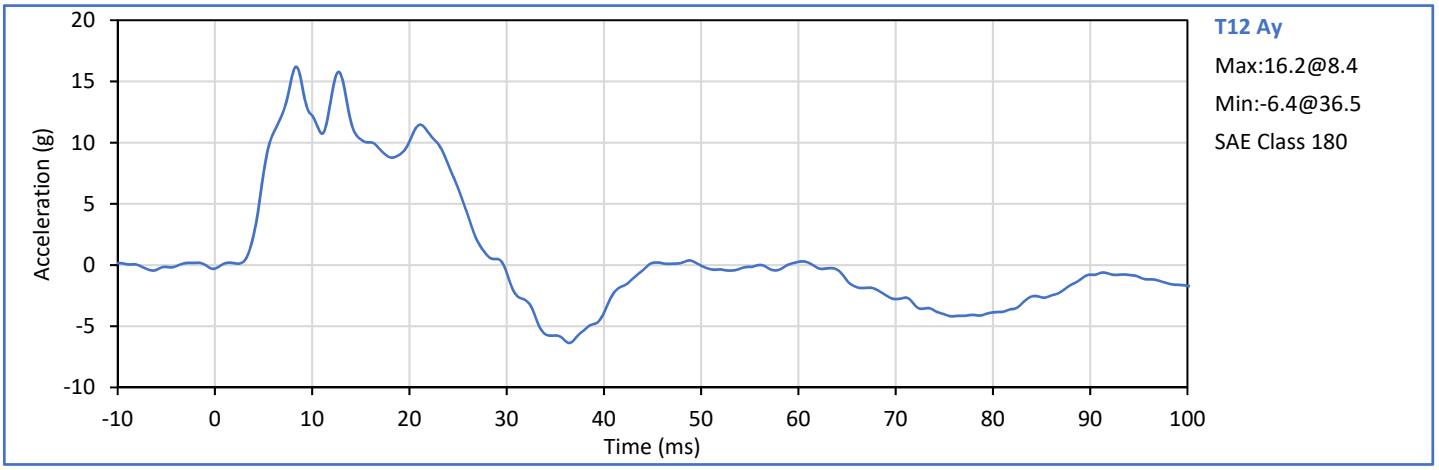
Approved By: P. Puzzuto

Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Thorax Without Arm Qualification

ATD S/N: EB8888 Test Date: 2019-09-13





Technician: J. Hernandez

Approved By: P. Puzzuto

Applus IDIADA KARCO

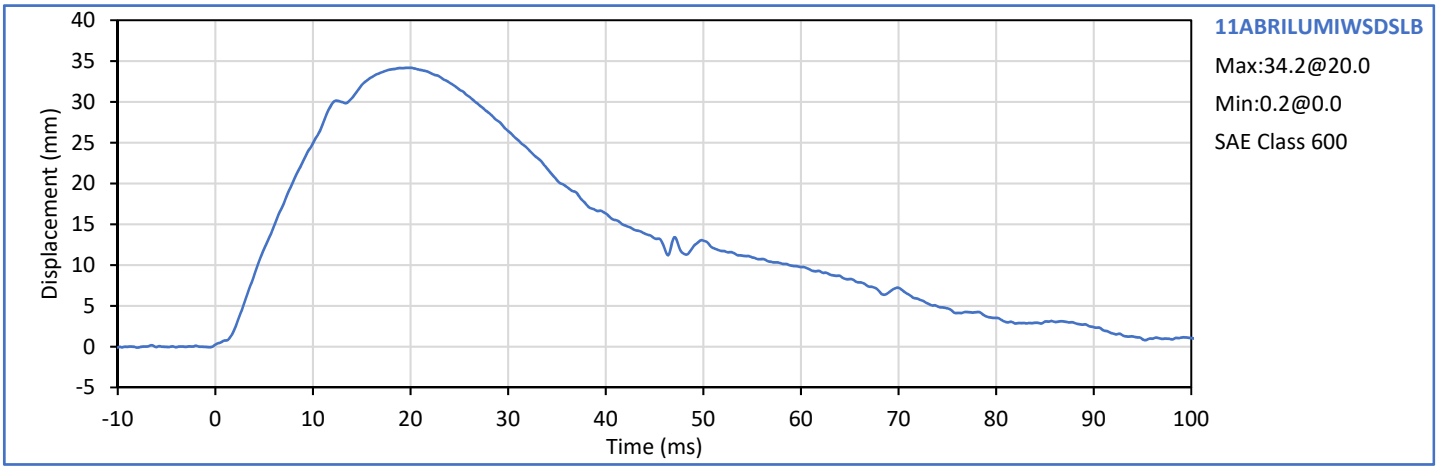
WorldSID 50th Male Side Impact ATD
Abdomen Qualification

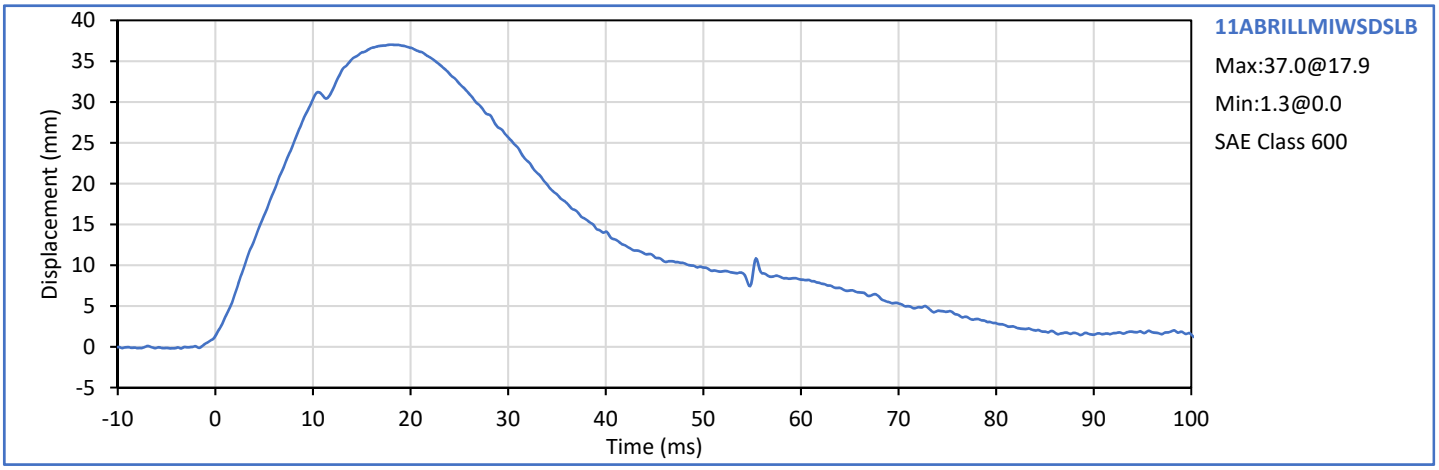
ATD S/N: EB8888 Test Date: 2019-09-13

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	20.9	Pass
Laboratory Relative Humidity	%	10	70	30	Pass
Probe Velocity	m/s	4.20	4.40	4.40	Pass
Peak Abdomen Rib 1 Deflection	mm	32.5	39.5	34.2	Pass
Peak Abdomen Rib 2 Deflection	mm	32.0	38.0	37.0	Pass
Peak Pendulum Fx	kN	2.70	3.10	3.05	Pass
Peak T12y Acceleration	g	14.5	19.5	18.2	Pass
			Overall Test Results		Pass

Test Angles and Temperatures

Head (deg)		Spine (deg)		Pelvis		H-Point	Temp (degC)	
X	Y	X	Y	X	Y	X	T Int	T Ext
-0.2	-0.4	-0.2	0.4	0.2	5.2	39.7	23.9	20.4





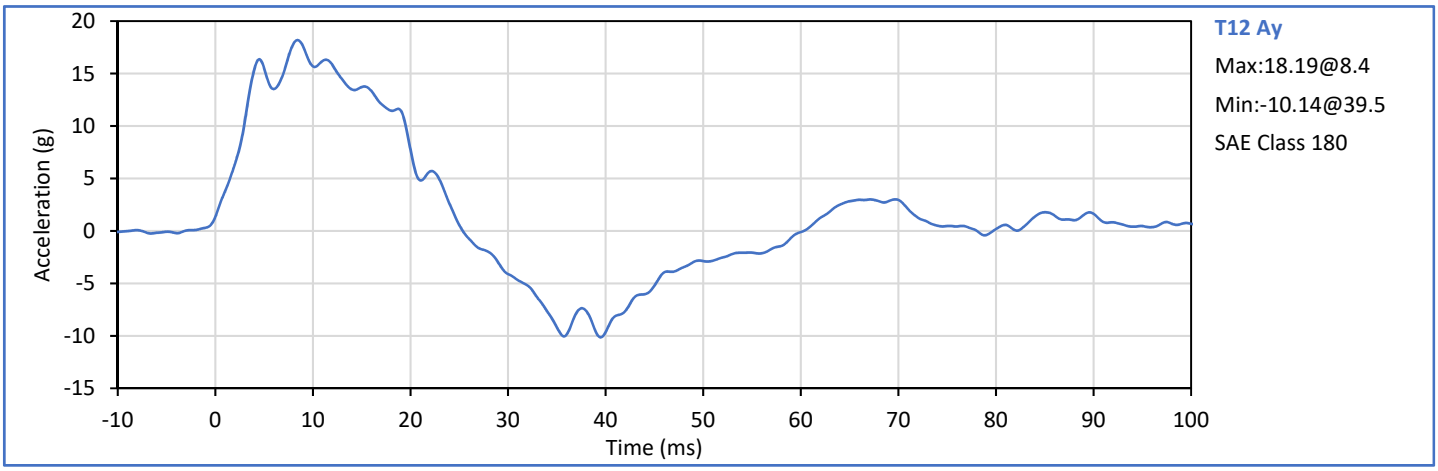
Technician: J. Hernandez

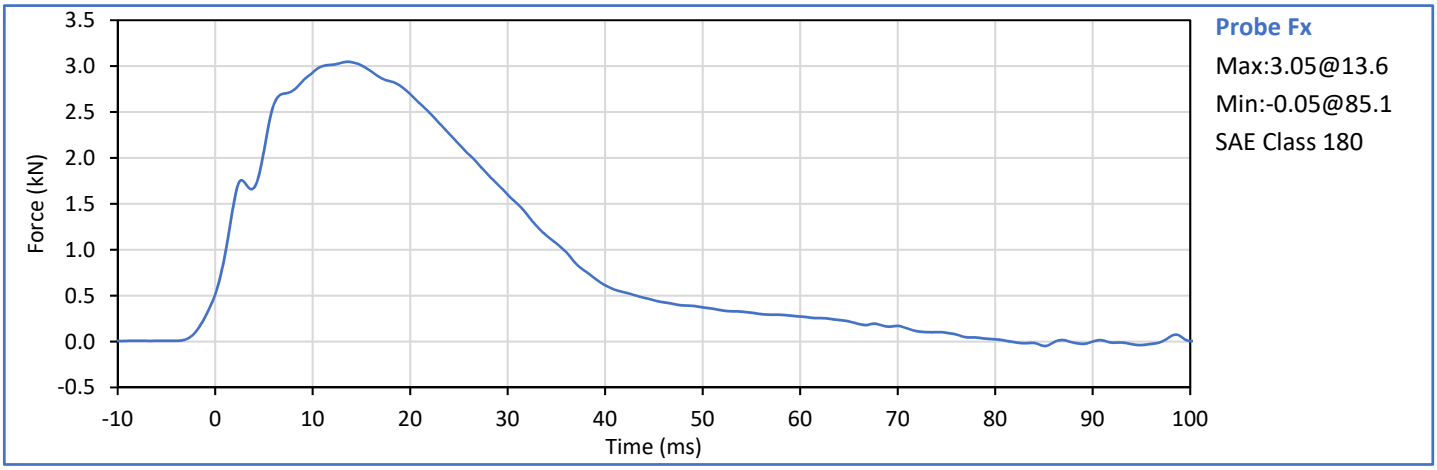
Approved By: P. Puzzuto

Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Abdomen Qualification

ATD S/N: EB8888 Test Date: 2019-09-13





Technician: J. Hernandez

Approved By: P. Puzzuto

Applus IDIADA KARCO

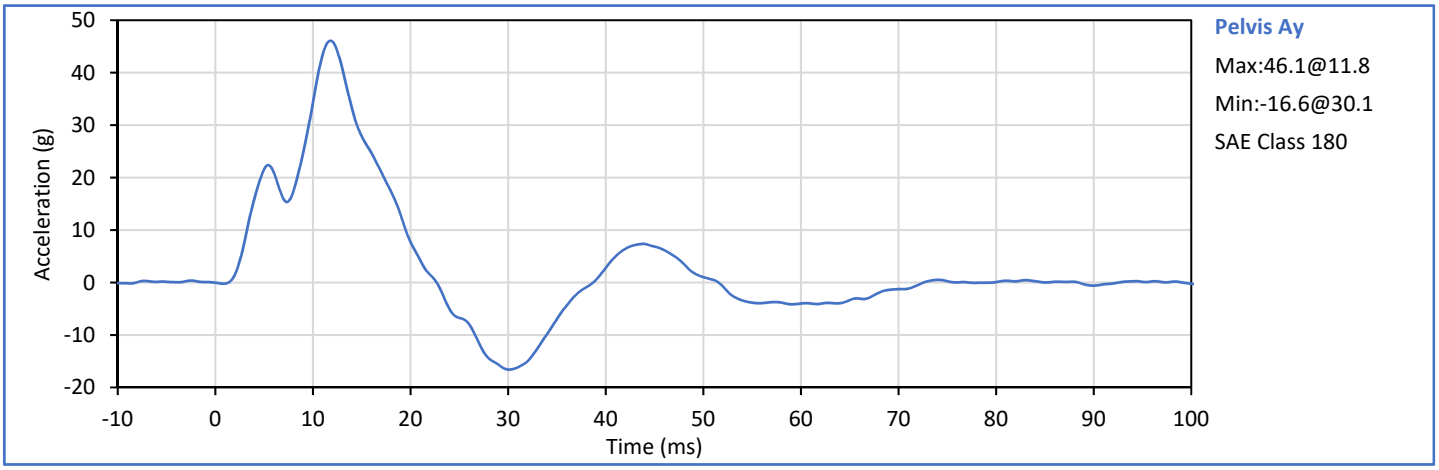
WorldSID 50th Male Side Impact ATD
Pelvis Qualification

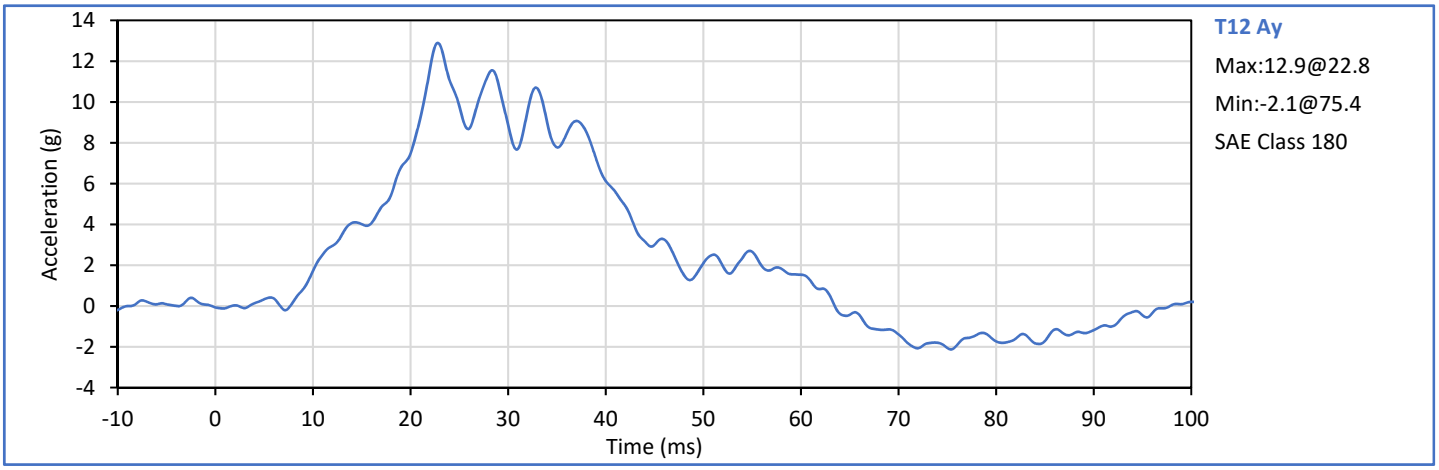
ATD S/N: EB8888 Test Date: 2019-09-13

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	30	Pass
Probe Velocity	m/s	6.60	6.80	6.77	Pass
Peak Pendulum Force	kN	6.80	8.20	7.75	Pass
Peak T12 Ay	g	10.0	14.0	12.9	Pass
Peak Pelvis Ay	g	38.5	48.5	46.1	Pass
Peak Pubic Fy	kN	1.30	1.59	1.38	Pass
Peak Sacroiliac Fy	kN	1.93	2.21	2.16	Pass
			Overall Test Results		Pass

Test Angles and Temperatures

Head (deg)		Spine (deg)		Pelvis		H-Point	Temp (degC)	
X	Y	X	Y	X	Y	X	T Int	T Ext
-0.3	0.4	-0.4	0.0	0.3	5.3	39.8	22.8	20.1





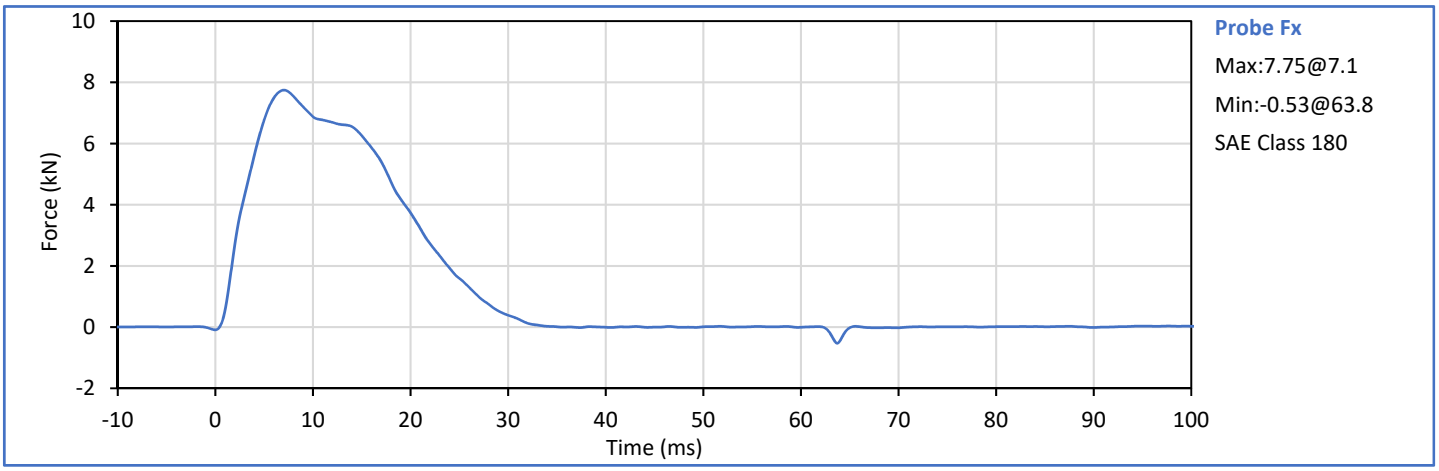
Technician: J. Hernandez

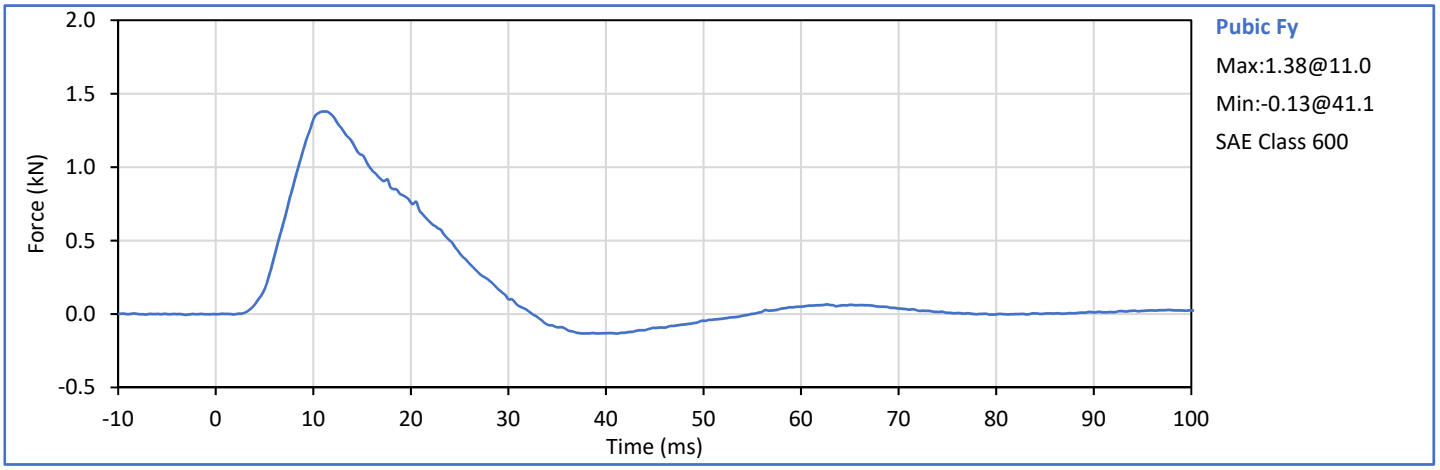
Approved By: P. Puzzuto

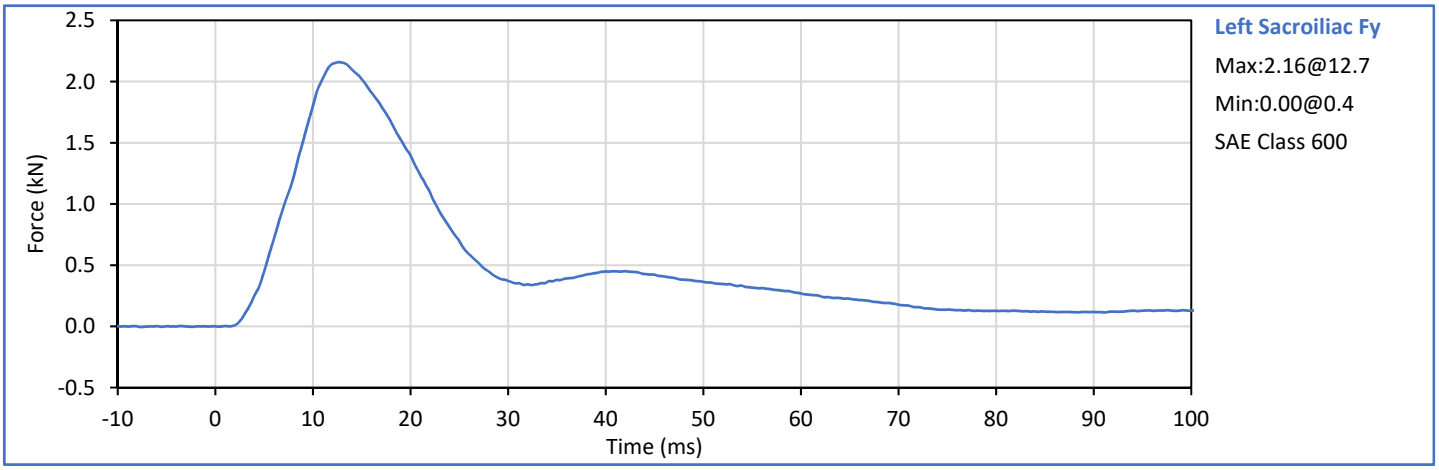
Applus IDIADA KARCO

WorldSID 50th Male Side Impact ATD
Pelvis Qualification

ATD S/N: EB8888 Test Date: 2019-09-13







Technician: J. Hernandez

Approved By: P. Puzzuto

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

WSID-50 ATD S/N: EB8888

Table 1a - Driver ATD Instrumentation

Sensor Location	ISO Code	Sensor S/N	Mfr	Model	Cal Date
Head CG Ax	11HEADCG00WSACXP	7268C-12362-1	Endevco	7268C-2000	2019-05-23
Head CG Az	11HEADCG00WSACZP	7268C-12362-2	Endevco	7268C-2000	2019-05-23
Head CG Ay	11HEADCG00WSACYP	7268C-12362-3	Endevco	7268C-2000	2019-05-23
Head Wx	11HEADCG00WSAVXP	ARS15092	DTS	ARS PRO-8k	2018-10-01
Head Wy	11HEADCG00WSAVYP	ARS PRO-8K-ARS12311	DTS	ARS PRO-8k	2019-04-10
Head Wz	11HEADCG00WSAVZP	ARS15089	DTS	ARS PRO-8k	2018-10-01
Upper Neck Fx	11NECKUP00WSFOXP	W50-71005-110-FX	Humanetics	W50-71005	2018-11-27
Upper Neck Fy	11NECKUP00WSFOYP	W50-71005-110-FY	Humanetics	W50-71005	2018-11-27
Upper Neck Fz	11NECKUP00WSFOZP	W50-71005-110-FZ	Humanetics	W50-71005	2018-11-27
Upper Neck Mx	11NECKUP00WSMOXP	W50-71005-110-MX	Humanetics	W50-71005	2018-11-27
Upper Neck My	11NECKUP00WSMOYP	W50-71005-110-MY	Humanetics	W50-71005	2018-11-27
Upper Neck Mz	11NECKUP00WSMOZP	W50-71005-110-MZ	Humanetics	W50-71005	2018-11-27
Lower Neck Fx	11NECKLO00WSFOXP	W50-71000S4-EB8143-FX	Humanetics	W50-71000S4	2018-11-27
Lower Neck Fy	11NECKLO00WSFOYP	W50-71000S4-EB8143-FY	Humanetics	W50-71000S4	2018-11-27
Lower Neck Fz	11NECKLO00WSFOZP	W50-71000S4-EB8143-FZ	Humanetics	W50-71000S4	2018-11-27
Lower Neck Mx	11NECKLO00WSMOXP	W50-71000S4-EB8143-MX	Humanetics	W50-71000S4	2018-11-27
Lower Neck My	11NECKLO00WSMOYP	W50-71000S4-EB8143-MY	Humanetics	W50-71000S4	2018-11-27
Lower Neck Mz	11NECKLO00WSMOZP	W50-71000S4-EB8143-MZ	Humanetics	W50-71000S4	2018-11-27
Left Shoulder Fx	11SHLDLE00WSFOXP	W50-71090S4-EA8982-FX	Humanetics	W50-71090S4	2018-11-27
Left Shoulder Fy	11SHLDLE00WSFOYP	W50-71090S4-EA8982-FY	Humanetics	W50-71090S4	2018-11-27
Left Shoulder Fz	11SHLDLE00WSFOZP	W50-71090S4-EA8982-FZ	Humanetics	W50-71090S4	2018-11-27
T1 Ax	11THSP0100WSACXP	7268C-12040-3	Endevco	7268C-2000	2019-05-23
T1 Ay	11THSP0100WSACYP	7268C-12040-2	Endevco	7268C-2000	2019-05-23
T1 Az	11THSP0100WSACZP	7268C-12040-1	Endevco	7268C-2000	2019-05-23
T4 Ax	11THSP0400WSACXP	7268C-12078-1	Endevco	7268C-2000	2019-05-21
T4 Ay	11THSP0400WSACYP	7268C-12078-2	Endevco	7268C-2000	2019-05-21
T4 Az	11THSP0400WSACZP	7268C-12078-3	Endevco	7268C-2000	2019-05-22
T12 Ax	11THSP1200WSACXP	7268C-12058-3	Endevco	7268C-2000	2019-05-23
T12 Ay	11THSP1200WSACYP	7268C-12058-2	Endevco	7268C-2000	2019-05-23
T12 Az	11THSP1200WSACZP	7268C-12058-1	Endevco	7268C-2000	2019-05-23
Pelvis Ax	11PELV0000WSACXP	7268C-12300-1	Endevco	7268C-2000	2019-05-23
Pelvis Ay	11PELV0000WSACYP	7268C-12300-2	Endevco	7268C-2000	2019-05-23
Pelvis Az	11PELV0000WSACZP	7268C-12300-3	Endevco	7268C-2000	2019-05-23
Lumbar Fx	11LUSP0000WSFOXP	W50-71120S4-EB8157-FX	Humanetics	W50-71120S4	2018-11-27
Lumbar Fy	11LUSP0000WSFOYP	W50-71120S4-EB8157-FY	Humanetics	W50-71120S4	2018-11-27
Lumbar Fz	11LUSP0000WSFOZP	W50-71120S4-EB8157-FZ	Humanetics	W50-71120S4	2018-11-27
Lumbar Mx	11LUSP0000WSMOXP	W50-71120S4-EB8157-MX	Humanetics	W50-71120S4	2018-11-27
Lumbar My	11LUSP0000WSMOYP	W50-71120S4-EB8157-MY	Humanetics	W50-71120S4	2018-11-27
Lumbar Mz	11LUSP0000WSMOZP	W50-71120S4-EB8157-MZ	Humanetics	W50-71120S4	2018-11-27
Pubic Fy	11PUBC0000WSFOYP	W50-71051-EB8675-FY	Humanetics	W50-71051	2018-11-27

WSID-50 ATD S/N: EB8888

Table 1a - Driver ATD Instrumentation (continued)

Sensor Location	ISO Code	Sensor S/N	Mfr	Model	Cal Date
Left Sacroiliac Fx	11SACRLE00WSFOXP	W50-71130S5L-EA8971-FX	Humanetics	W50-71130S5L	2019-02-28
Left Sacroiliac Fy	11SACRLE00WSFOYP	W50-71130S5L-EA8971-FY	Humanetics	W50-71130S5L	2019-02-28
Left Sacroiliac Fz	11SACRLE00WSFOZP	W50-71130S5L-EA8971-FZ	Humanetics	W50-71130S5L	2019-02-28
Left Sacroiliac Mx	11SACRLE00WSMOXP	W50-71130S5L-EA8971-MX	Humanetics	W50-71130S5L	2019-02-28
Left Sacroiliac My	11SACRLE00WSMOYP	W50-71130S5L-EA8971-MY	Humanetics	W50-71130S5L	2019-02-28
Left Sacroiliac Mz	11SACRLE00WSMOZP	W50-71130S5L-EA8971-MZ	Humanetics	W50-71130S5L	2019-02-28
Right Sacroiliac Fx	11SACRRI00WSFOXP	W50-71130S5R-EA8971-FX	Humanetics	W50-71130S5R	2019-02-28
Right Sacroiliac Fy	11SACRRI00WSFOYP	W50-71130S5R-EA8971-FY	Humanetics	W50-71130S5R	2019-02-28
Right Sacroiliac Fz	11SACRRI00WSFOZP	W50-71130S5R-EA8971-FZ	Humanetics	W50-71130S5R	2019-02-28
Right Sacroiliac Mx	11SACRRI00WSMOXP	W50-71130S5R-EA8971-MX	Humanetics	W50-71130S5R	2019-02-28
Right Sacroiliac My	11SACRRI00WSMOYP	W50-71130S5R-EA8971-MY	Humanetics	W50-71130S5R	2019-02-28
Right Sacroiliac Mz	11SACRRI00WSMOZP	W50-71130S5R-EA8971-MZ	Humanetics	W50-71130S5R	2019-02-28
Left Femoral Neck Fx	11FEACLE00WSFOXP	W50-71081S4-EB8707-FX	Humanetics	W50-71081S4	2018-11-27
Left Femoral Neck Fy	11FEACLE00WSFOYP	W50-71081S4-EB8707-FY	Humanetics	W50-71081S4	2018-11-27
Left Femoral Neck Fz	11FEACLE00WSFOZP	W50-71081S4-EB8707-FZ	Humanetics	W50-71081S4	2018-11-27
Left Femur Fx	11FEMRLE00WSFOXP	W50-71010S4-DZ5708T-FX	Humanetics	W50-71010S4	2018-11-27
Left Femur Fy	11FEMRLE00WSFOYP	W50-71010S4-DZ5708T-FY	Humanetics	W50-71010S4	2018-11-27
Left Femur Fz	11FEMRLE00WSFOZP	W50-71010S4-DZ5708T-FZ	Humanetics	W50-71010S4	2018-11-27
Left Femur Mx	11FEMRLE00WSMOXP	W50-71010S4-DZ5708T-MX	Humanetics	W50-71010S4	2018-11-27
Left Femur My	11FEMRLE00WSMOYP	W50-71010S4-DZ5708T-MY	Humanetics	W50-71010S4	2018-11-27
Left Femur Mz	11FEMRLE00WSMOZP	W50-71010S4-DZ5708T-MZ	Humanetics	W50-71010S4	2018-11-27
Left Knee Outer Fy	11KNEELEINWSFOYP	W50-71020 EA8972_FY	Humanetics	W50-71020	2019-02-28
Left Knee Inner Fy	11KNEELEOUWSFOYP	W50-71020 EA8973_FY	Humanetics	W50-71020	2019-02-28

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Table 1b - Driver ATD Instrumentation, RibEye

Sensor Location	ISO Code	Sensor S/N	Mfr	Model	Cal Date
Shoulder/Thorax/Abdomen Ribs	N/A	123	Boxboro	WS-50 RibEye	2018-11-13

Table 2 - Vehicle Instrumentation

Sensor Location	ISO Code	Sensor S/N	Mfr	Model	Cal Date
Vehicle CG Ax	11VEHCCG0000ACXA	A273392	MSI	52F-2000	2018-09-17
Vehicle CG Ay	11VEHCCG0000ACYA	A273398	MSI	52F-2000	2018-09-17
Vehicle CG Az	11VEHCCG0000ACZA	A273389	MSI	52F-2000	2018-09-17
Vehicle CG Wx	11VEHCCG0000AVXA	ARS13159	DTS	ARS PRO 18k-2k	2019-07-03
Vehicle CG Wy	11VEHCCG0000AVYA	ARS14228	DTS	ARS PRO 18k-2k	2019-07-08
Vehicle CG Wz	11VEHCCG0000AVZA	ARS6733	DTS	ARS PRO 18k-2k	2019-07-03
Left Floor Sill Ay	11VEHC00LO00ACYA	A212049	MSI	52F-2000	2018-10-01
Left A-Pillar Sill Ay	11APIL000000ACYA	A224577	MSI	52F-2000	2018-09-17
Left Lower A-Pillar Ay	11APILLO0000ACYA	A232030	MSI	52M30-2000	2019-03-15
Left Mid A-Pillar Ay	11APILMI0000ACYA	A247080	MSI	52F-2000	2018-09-14
Left B-Pillar Sill Ay	11BPIL000000ACYA	A248848	MSI	52F-2000	2018-09-18
Left Lower B-Pillar Ay	11BPILLO0000ACYA	A185633	MSI	52F-2000	2018-11-06
Left Mid B-Pillar Ay	11BPILMI0000ACYA	A232039	MSI	52M30-2000	2019-03-15
Driver Seat Track at H-Point Ay	11SETR000000ACYA	A148222	MSI	52F-2000	2018-09-21
Engine Top Ax	11ENGNTP0000ACXA	A224486	MSI	52F-2000	2018-09-28
Engine Top Ay	11ENGNTP0000ACYA	A273391	MSI	52F-2000	2018-09-17
Firewall Center Ay	12FIRCX00000ACYA	A145439	MSI	52F-2000	2018-09-26
Right Roof at Impact Line Ay	13ROFR000000ACYA	A273399	MSI	52F-2000	2018-09-17
Right Sill at Impact Line Ay	13SILB000000ACYA	A253252	MSI	52M30-2000	2019-02-27
Floorpan Behind Rear Axle CL Ax	11FORA000000ACXA	A148277	MSI	52F-2000	2018-09-15
Floorpan Behind Rear Axle CL Ay	11FORA000000ACYA	A224564	MSI	52F-2000	2018-09-18
Left Front Door Mid CL Ay	11DOORMIMI71ACYA	A253258	MSI	52M30-2000	2019-02-27
Left Front Door Mid Rear Ay	11DOORMIRE71ACYA	A273417	MSI	52F-2000	2018-09-17
Left Front Door Upper CL Ay	11DOORMIUP71ACYA	A253271	MSI	52M30-2000	2019-02-27
Left Rear Door Mid Rear Ay	14DOORMIRE71ACYA	A227290	MSI	52F-2000	2018-09-26
Left Rear Door Upper CL Ay	14DOORMIUP71ACYA	A147385	MSI	52F-2000	2018-09-17
Rear Deck Ax	10FORARD0000ACXA	A273037	MSI	52F-2000	2018-09-12
Rear Deck Ay	10FORARD0000ACYA	A273386	MSI	52F-2000	2018-09-17
Rear Deck Az	10FORARD0000ACZA	A273040	MSI	52F-2000	2018-09-12
Rear Deck Wx	10FORARD0000AVXA	ARS14262	DTS	ARS PRO 18k-2k	2019-07-03
Rear Deck Wy	10FORARD0000AVYA	ARS14260	DTS	ARS PRO 18k-2k	2019-07-03
Rear Deck Wz	10FORARD0000AVZA	ARS14303	DTS	ARS PRO 18k-2k	2019-07-08

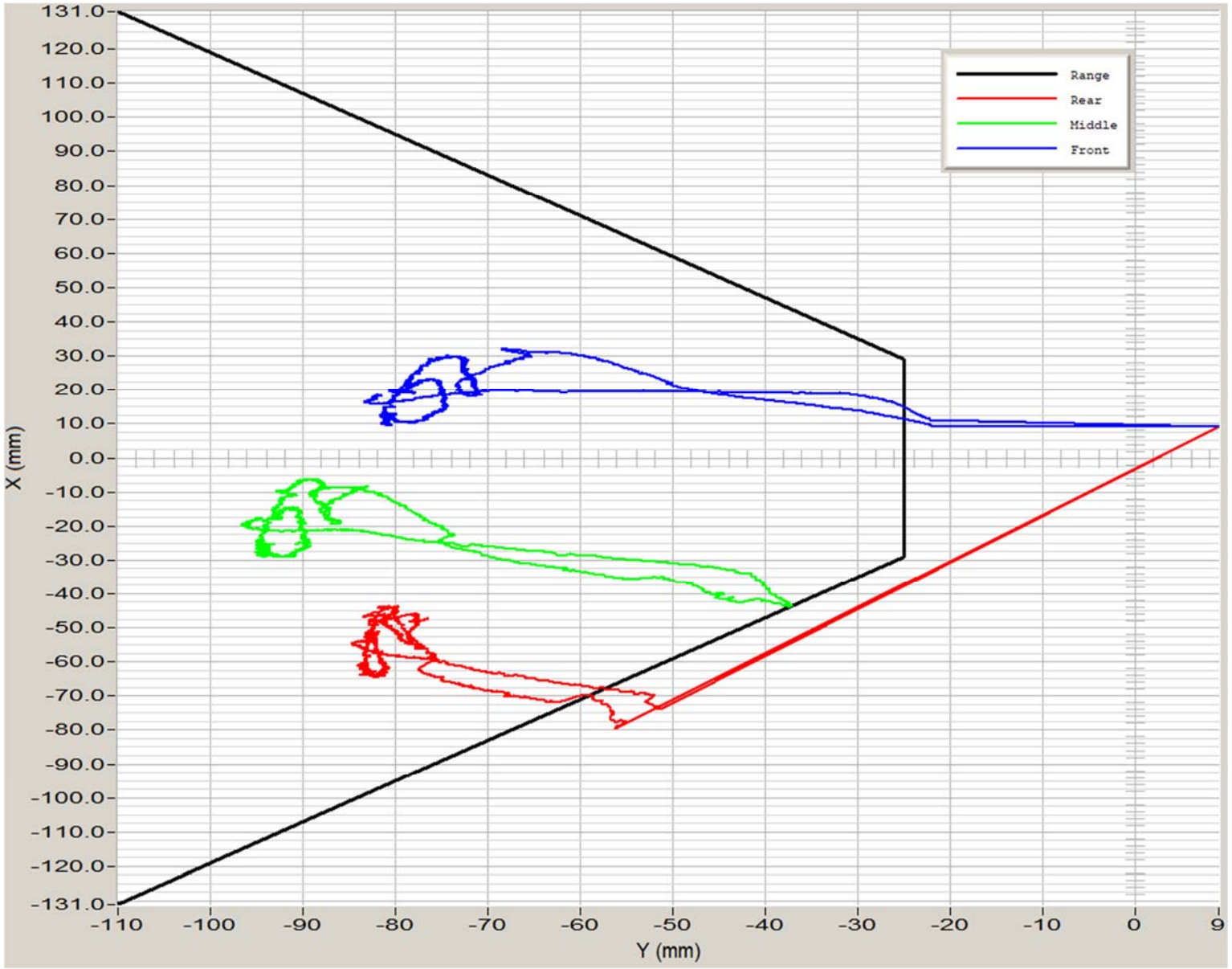
Table 3 - Rigid Pole Instrumentation

Sensor Location	ISO Code		Mfr	Model	Cal Date
Barrier Pole 01 Fx	K0FBAR010000FOXA	19267	Interface	1220-FS	2019-05-07
Barrier Pole 02 Fx	K0FBAR020000FOXA	19321	Interface	1220-FS	2019-05-07
Barrier Pole 03 Fx	K0FBAR030000FOXA	19325	Interface	1220-FS	2019-05-07
Barrier Pole 04 Fx	K0FBAR040000FOXA	19340	Interface	1220-FS	2019-03-20
Barrier Pole 05 Fx	K0FBAR050000FOXA	19477	Interface	1220-FS	2019-05-07
Barrier Pole 06 Fx	K0FBAR060000FOXA	131822A	Interface	1220-FS	2019-05-07
Barrier Pole 07 Fx	K0FBAR070000FOXA	131827A	Interface	1220-FS	2019-05-07
Barrier Pole 08 Fx	K0FBAR080000FOXA	132302A	Interface	1220-FS	2019-05-07

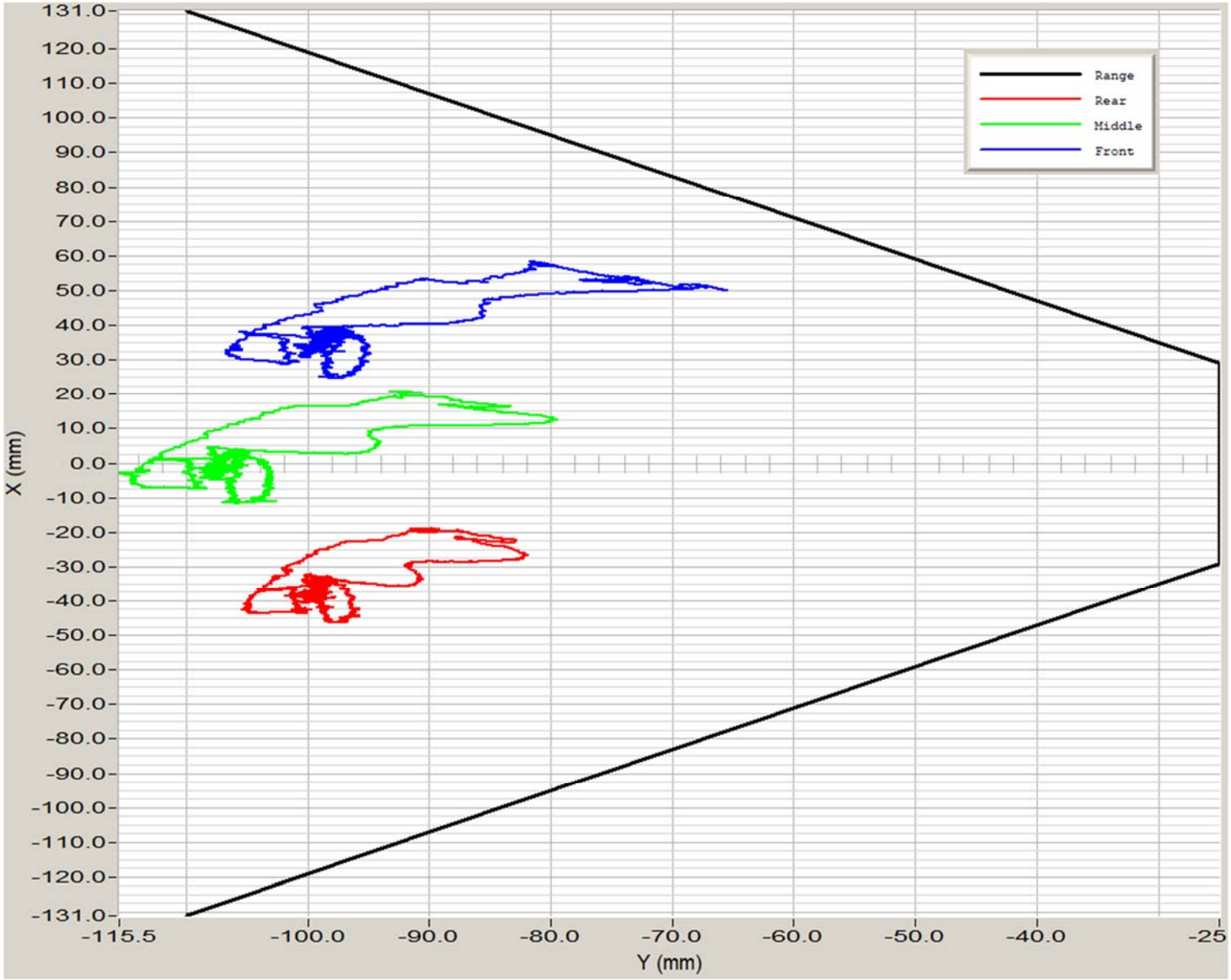
APPENDIX E

RIBEYE XY DATA PLOTS

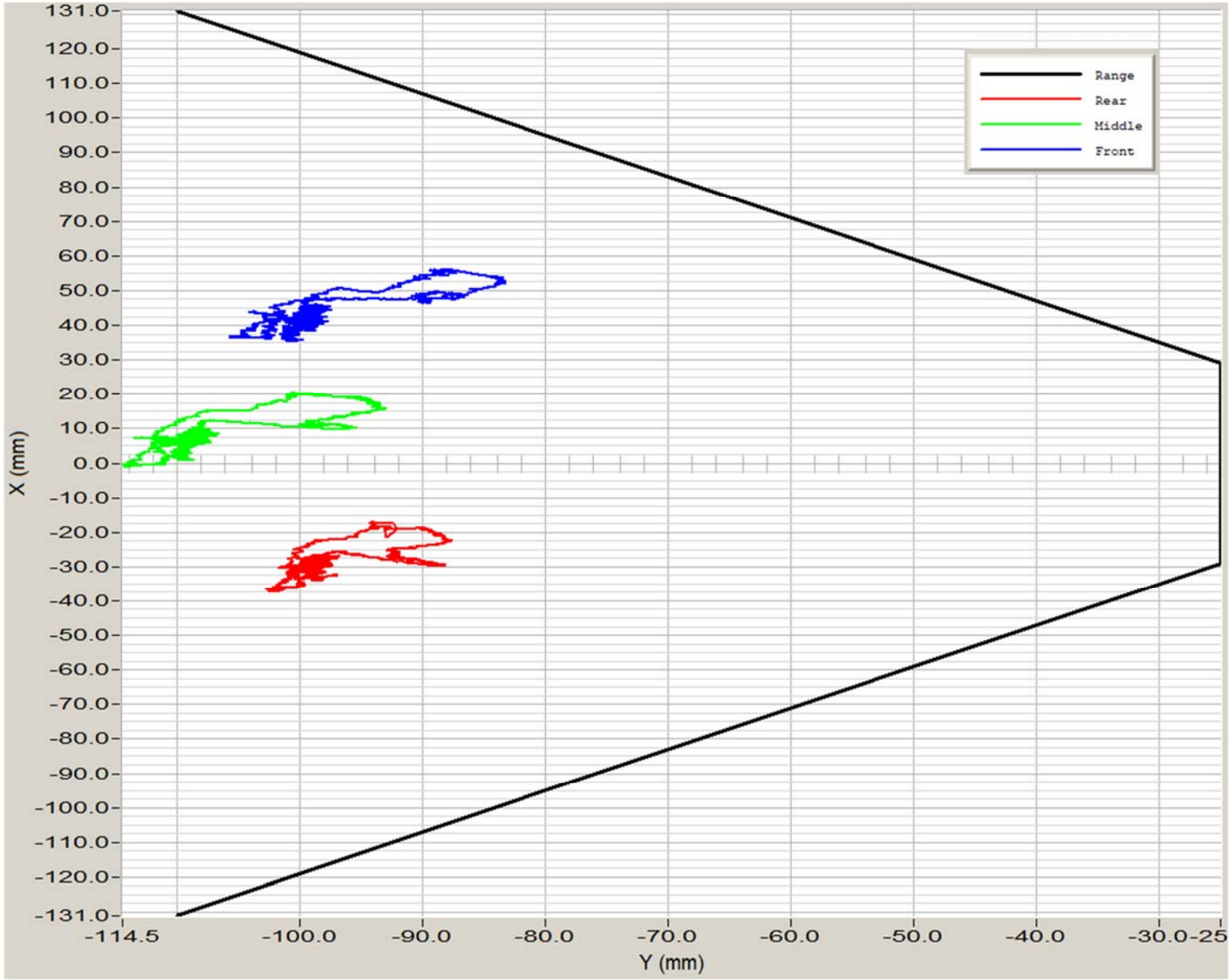
WORLD SID POLE 1 RIBEYE SHOULDER XY PLOTS



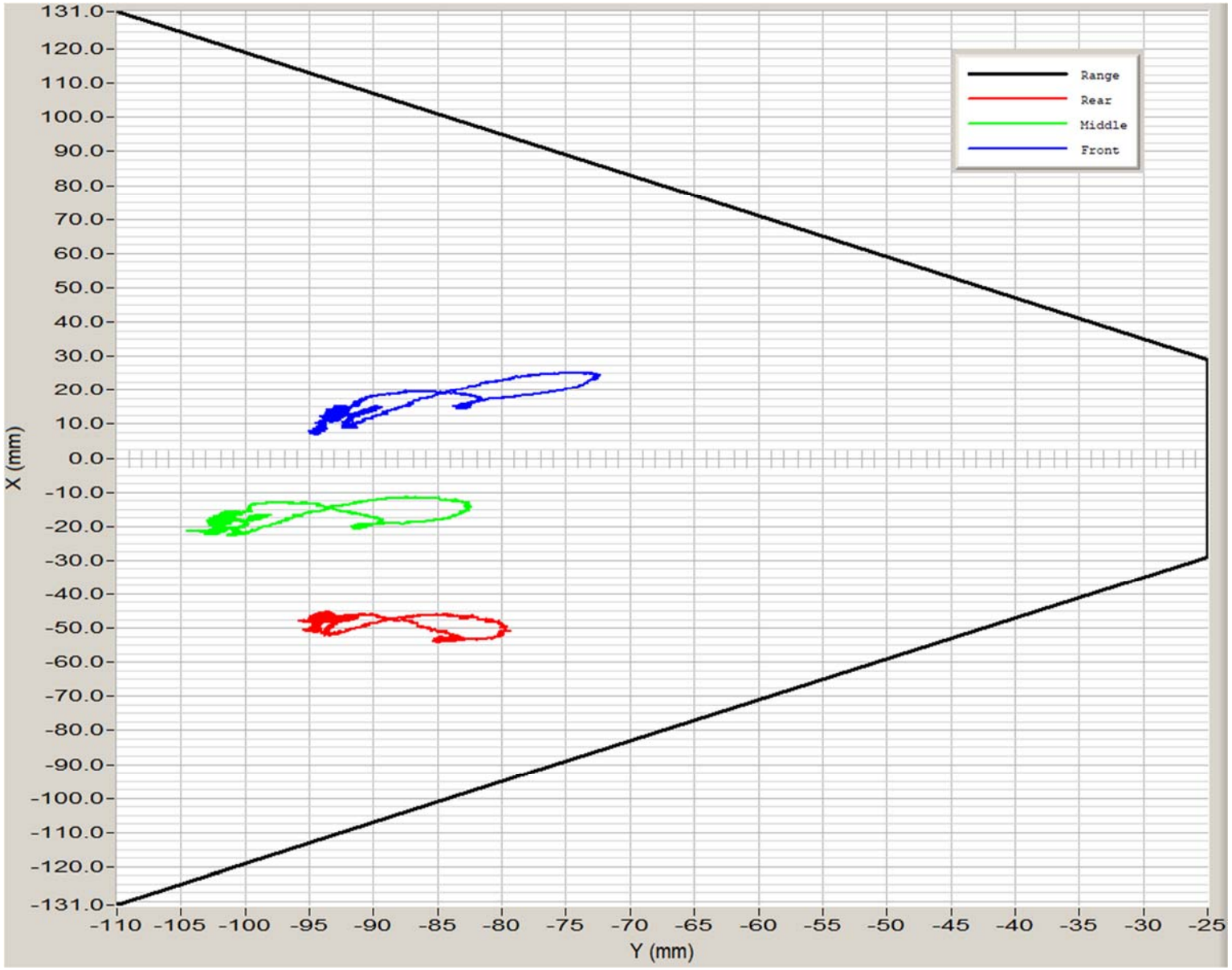
WORLD SID POLE 2 RIBEYE THORAX_1_XY PLOTS



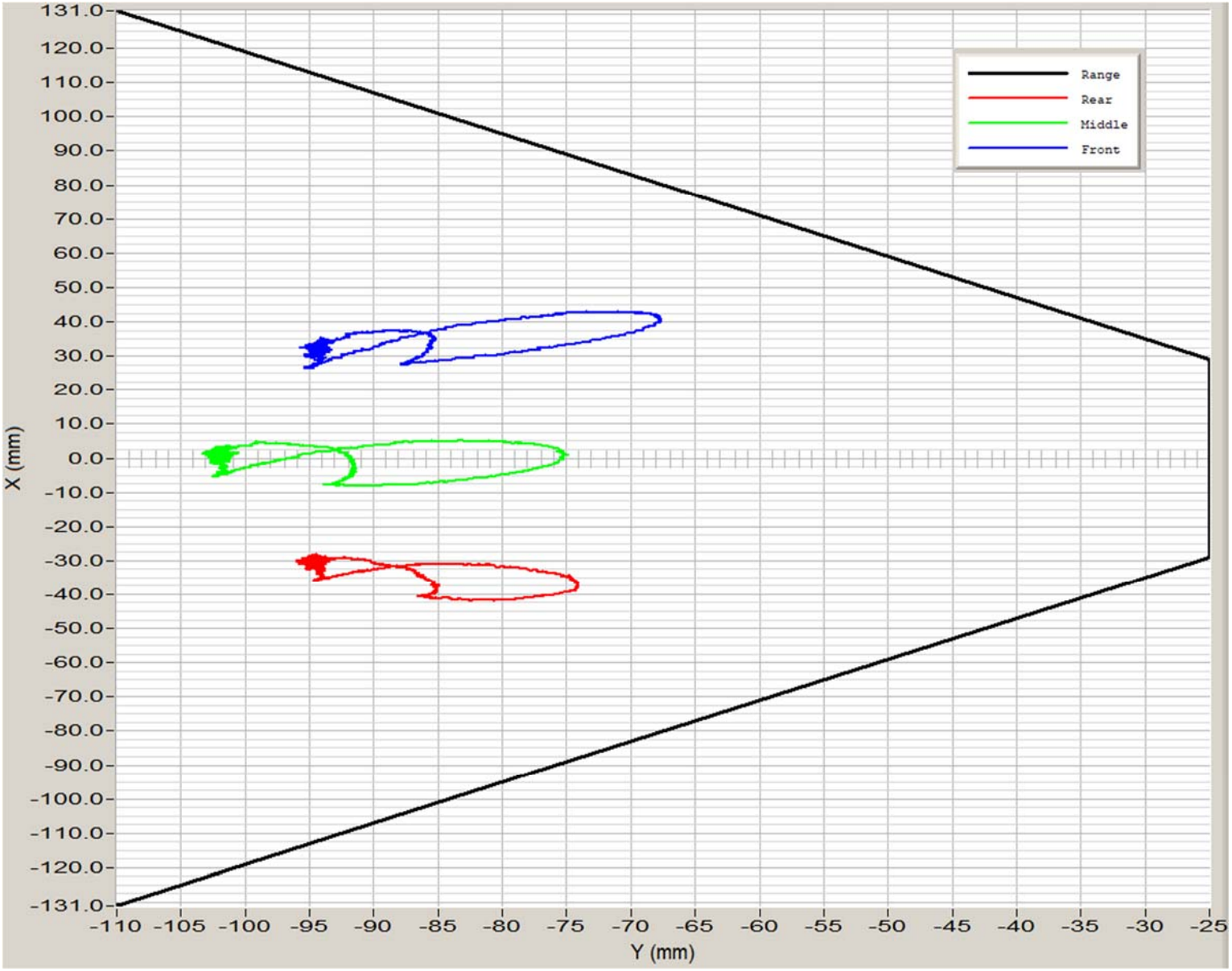
WORLD SID POLE 3 RIBEYE THORAX_2_XY PLOTS



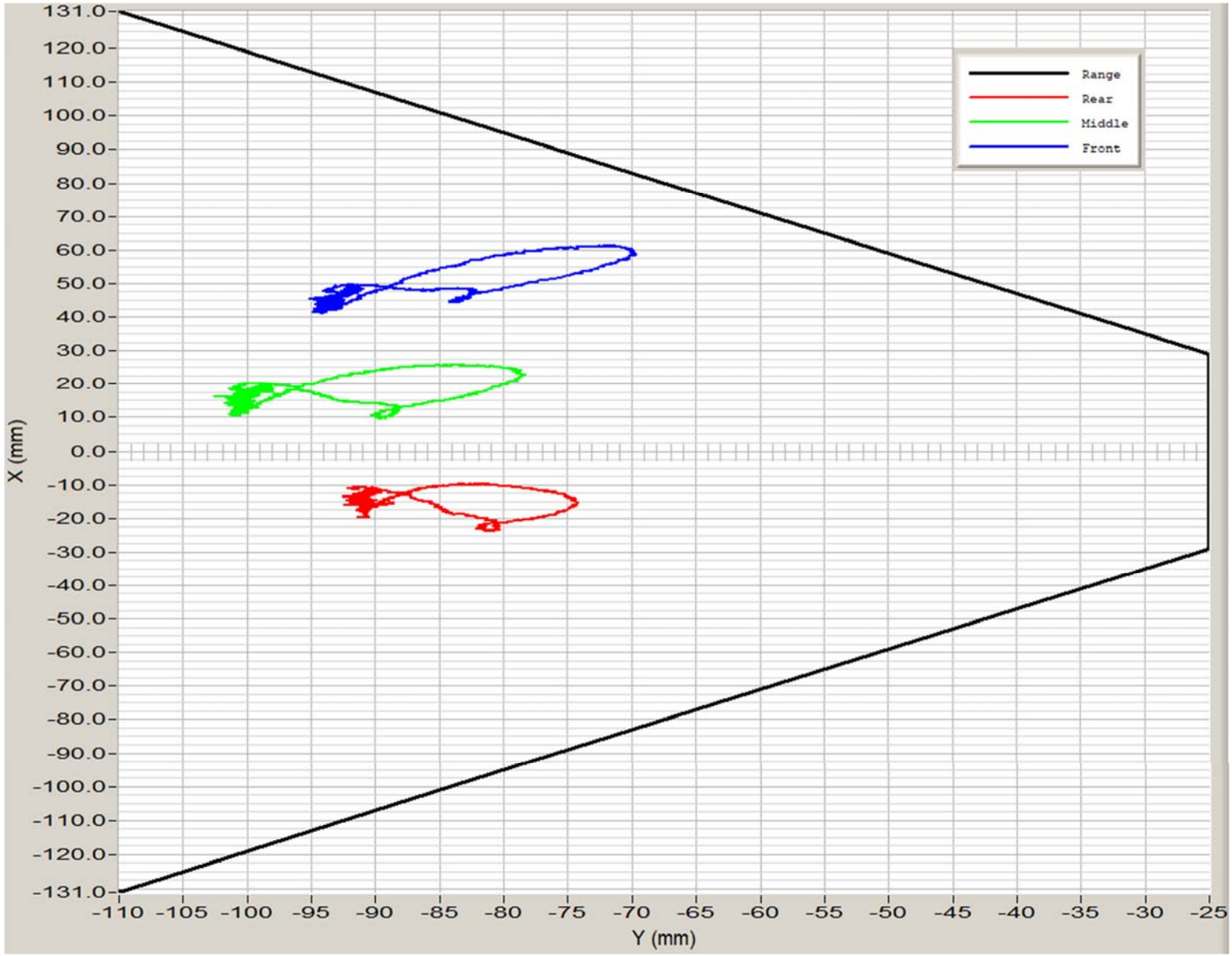
WORLDS SID POLE 4 RIBEYE THORAX_3_XY PLOTS



WORLD SID POLE 5 RIBEYE ABDOMEN_1_XY PLOTS



WORLD SID POLE 6 RIBEYE ABDOMEN_2_XY PLOTS



APPENDIX F
WORLDSID SEATING TABLES

WSID SEATING TABLES

15.26	
Oscar H-point location	
Torso Angle	25 °
X (Positive (+) forward of striker)	251.8 mm
Z (Positive (+) below striker)	275.6 mm

15.27	
Seat Tracking Point (STP) location at mid-position	
X (Positive (+) forward of striker)	265.868 mm
Z (Positive (+) below striker)	348.222 mm

16.1					
WSID Target H-point at Mid-position					
	Oscar H-point (15.26)	+/-	20mm	=	WSID H-Point at Mid-position
X (Positive (+) forward of striker)	251.786	+	20	=	271.786 mm
Z (Positive (+) below striker)	275.58	-	20	=	255.58 mm

18.6	
Seat Tracking Point location	
X (Positive (+) forward of striker)	147.437 mm
Z (Positive (+) below striker)	354.91 mm
Seat Tracking Point location Trial 2 (if applicable)	
X (Positive (+) forward of striker)	246.632 mm
Z (Positive (+) below striker)	345.615 mm
Seat Tracking Point location Trial 3 (if applicable)	
X (Positive (+) forward of striker)	266.027 mm
Z (Positive (+) below striker)	344.927 mm

DRIVER

Fill in cells to calculate H-point Location

WSID H-point Target

WSID H-point Target at midtrack

18.6.1					
Trial 1					
	Results from (18.6)	-	Results from (15.27)	=	STPD
X (Positive (+) forward of striker)	147.437	-	265.868	=	-118.431 mm
Z (Positive (+) below striker)	354.91	-	348.222	=	6.688 mm

Trial 2					
	Results from (18.6)	-	Results from (15.27)	=	STPD
X (Positive (+) forward of striker)	246.632	-	265.868	=	-19.236 mm
Z (Positive (+) below striker)	345.615	-	348.222	=	-2.607 mm

Trial 2					
	Results from (18.6)	-	Results from (15.27)	=	STPD
X (Positive (+) forward of striker)	266.027	-	265.868	=	0.159 mm
Z (Positive (+) below striker)	344.927	-	348.222	=	-3.295 mm

18.6.2					
Trial 1					
	Results from (16.1)	+	Results from (18.6.1)	=	Current H-point Target
X (Positive (+) forward of striker)	271.786	+	-118.431	=	153.355 mm
Z (Positive (+) below striker)	255.58	+	6.688	=	262.268 mm

Trial 2					
	Results from (16.1)	+	Results from (18.6.1)	=	Current H-point Target
X (Positive (+) forward of striker)	271.786	+	-19.236	=	252.55 mm
Z (Positive (+) below striker)	255.58	+	-2.607	=	252.973 mm

Trial 3					
	Results from (16.1)	+	Results from (18.6.1)	=	Current H-point Target
X (Positive (+) forward of striker)	271.786	+	0.159	=	271.945 mm
Z (Positive (+) below striker)	255.58	+	-3.295	=	252.285 mm

Driver WSID 50th Seating Worksheet

Vehicle	2018 Honda Accord 1.5T LX	**Technician**	Malo Tauaese
VIN #	1HGCV1F1XJAL30725	**Position**	1
ATD	EB8888	**Date**	9/11/2019
Test #	R20185381		

SCRL Angle

Max	10.6
Min -	6.4
Difference	4.2
/2	2.1
Min +	2.1
Mid Angle	8.5

WSID 50th Tilt Sensors		**X**	**Y**
Head	0°±2	-0.6	-0.8
T6	0°±2	1.2	0.2
Pelvis	0°±2	0	0.6

Seat Back Angle	W/Level °	2.9	**HEAD REST POST**			**FINAL HEAD REST**	
Seat Pan Angle	W/Level °	8.5	**ANGLE**	2.9		**POST ANGLE**	2.9
Pelvis Angle	WSID 50th 0° +/-2.5°		Manual Inclinometer		Tilt Sensor	0.6	

Collected Points

Name	Meas X	Meas Y	Meas Z
SBU -			
SBL -			
STRIKER -	0	0	0
FOSB -	489.5215663	201.4569063	501.6863218
FISB -	490.3652582	637.650867	502.139
ROSB -	89.116	203.265	511.939
RISB -	91.297	654.660	505.096
PCP-(Pedal Center Point)	1121.253	618.018	378.182
RHP - (Right Heel Point)	998.713	588.919	533.474
LHP -(Left Heel Point)	999.623	264.785	534.652
S0 -	557.345	434.468	-88.989
TS -	652.198	434.010	-281.126
BS -	513.346	435.201	68.105
SC1 -	715.018	434.011	-115.882
OSCAR H-POINT -	251.786	243.847	275.580
DR PROJECTED WSID H-POINT AT MID-POSITION -			
DRIVER STP 15.27 MID-POSITION -			
DRIVER STP STEP 18.6 TRIAL 1 -	148.584	175.434	359.164
DR PROJECTED WSID H-POINT STEP 18.6.2 TRIAL 1 -			
DRIVER STP STEP 18.6 TRIAL 2 -	243.196	180.389	351.975
DR PROJECTED WSID H-POINT STEP 18.6.2 TRIAL 2 -			
DRIVER STP STEP 18.6 TRIAL 3 -	265.868	174.347	348.222
DR PROJECTED WSID H-POINT STEP 18.6.2 TRIAL 3 -			
RHDCG -	121.205	519.472	-401.398
3DLHCG -	135.735	362.996	-400.763
LHDCG -	114.151	360.984	-402.467
BON -	211.215	437.288	-401.118
TN -	209.583	440.826	-354.038
TC -	193.148	439.148	-276.226
SHLD R1 -	171.641	441.633	-174.148
THX R1 -	206.445	440.968	-99.139
THX R2 -	241.138	439.784	-33.907
THX R3 -	257.8521333	439.1417069	12.295
ABD R1 -	274.291579	436.164	65.82993888
ABD R2 -	297.0627148	435.84657	111.4855376
TPS -	344.7554573	435.3288643	177.2564724
C1 -	180.3084409	439.3198	-150.4389144
C2 -	208.6319126	434.1628757	-88.219
C3 -	279.6432482	435.51779	68.957
SHT -	88.29756264	224.5952727	-137.4313888
E1 -	292.1393125	217.1165124	3.273622476
P1 -	223.2266	216.7536568	215.9099381
H-POINT -	277.50522	214.4726545	261.0722311
OK -	662.1492144	191.1014536	120.7036325
IK -	707.75239	520.8360808	112.19024
OA -	963.4912331	221.574056	407.7269363
IA -	964.1219317	523.1303656	418.45773
OH -	984.7115521	231.0622445	530.065
IH -	998.3597544	605.0835853	529.8062553
OP -	-119.7983383	368.271	-281.241
R -	211.249877	436.417	-584.4674678
H -	546.13223	437.0554162	-523.295
W1 -	794.199936	436.9487288	-400.5015919
W1 Outside -	1047.837731	436.8739	-249.5992115
W2 Outside -			
D1 -	764.6254876	439.856	-238.5692068
D2 -	772.4462464	191.0694142	96.47607163
D3 -			
HRP -	210.93	211.2041675	-508.1082
HSP -	211.6513889	84.1044194	-399.75994
ADP -	292.8137914	38.93436069	2.992579369
HDP -	279.5610763	102.9815114	262.432

Calculated Measurements

Name	Cal X	Cal Y	Cal Z	Cal 3D Distance	Deg
HZ -			183.350		
HH -				356.506	
HW -	582.985				
NR -				448.632	
CD -				590.926	
CS -	348.713				
IKD -					
OKD -				112.927	
HR -				250.122	
HS -		353.184			
AD -		178.1821517			
HD -		374.0213408			
374				374.27	
KK -		329.7346			
SH -				437.226	
HRA -					
H-POINT TOOL ANGLE -					39.76200397
TORSO ANGLE -					-4.996049034
WINDSHIELD ANGLE -					30.75062556