

REPORT NUMBER: TWG-KAR-19-002

**SIDE AIRBAG OCCUPANT RISK PROGRAM
OCCUPANT OUT-OF-POSITION TESTS**

**NISSAN MOTOR CO., LTD
2019 NISSAN KICKS 5-DOOR SUV**

NHTSA NUMBER: M20195208TWG2

**PREPARED BY:
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AUGUST 06, 2019

FINAL REPORT

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This final test report was prepared for the U.S. Department of Transportation, Alpha Technology Associate, Inc., in response to Contract Number DTNH22-13-D-00311L.

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16. Abstract A side airbag out of position test was conducted on the subject 2019 Nissan Kicks 5-door SUV in accordance with the specifications of the Office of Crashworthiness Standards SAB OOP NCAP Laboratory Test Procedure for the generation of consumer information on vehicle side airbag protection. The test was conducted at the Applus IDIADA KARCO Engineering, LLC. facility in Adelanto, California on July 23, 2019. The curtain and torso/pelvis side airbags were deployed and responses were measured on a Hybrid III 3-year old child dummy. Three high speed cameras, and one real time camera recorded the event. The ambient temperature at the time of airbag deployment was 21.6°C																							
Section 3.3.3.1 - HIII 3-Year Old Child Dummy - P2																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Measurement Description</th> <th style="width: 10%;">Units</th> <th style="width: 20%;">IARV</th> <th style="width: 40%;">Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>N/A</td> <td>570</td> <td>41.3</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.55</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>1130</td> <td>746.9</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>1380</td> <td>-290.6</td> </tr> </tbody> </table>				Measurement Description	Units	IARV	Result	Head Injury Criteria (HIC ₁₅)	N/A	570	41.3	Nij	N/A	1	0.55	Neck Tension	N	1130	746.9	Neck Compression	N	1380	-290.6
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SECTION 1

PURPOSE AND SUMMARY OF TEST

PURPOSE

This occupant out-of-position static side airbag deployment test is part of the Technical Working Group Occupant Injury Risk from Deploying Side Airbags Testing Program sponsored by Alpha Technology Associate, Inc. under Contract No. DTNH22-13-D-00311L. The purpose of this test was to obtain occupant injury data for a side airbag deployment.

The occupant out-of-position (OOP) side airbag test was conducted in accordance with the Technical Working Group Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags.

SUMMARY

The effects of a roof mounted curtain airbag and a seat mounted torso/pelvis airbag deployment in a 2019 Nissan Kicks 5-door SUV with an out-of-position Hybrid III 3-year old crash test dummy were evaluated. The test was performed at Applus+ IDIADA KARCO, LLC. on July 23, 2019. Pre- and post-test photographs of the vehicle and dummy can be found in Appendix A.

Three (3) high-speed digital cameras and one (1) real time camera were used to document the deployment of the airbags. Camera locations and other pertinent camera information can be found on Data Sheet No.1 and Data Sheet No.6.

A 3-year old anthropomorphic test device (ATD) was placed in the right front passenger seating position, on the outboard edge of foam block, facing forward, and spine aligned with deployment trajectory of airbag according to the dummy placement instructions (3.3.3.1) in the July 2003 Revision of the Technical Working Group's 'Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags'.

The 3-year old ATD was instrumented with head tri-axial accelerometers, upper and lower neck force and moment transducers.

The airbags were deployed and fifteen (15) channels of data were recorded using a data acquisition system. Appendix B contains dummy response data traces. Appendix C contains the instrumentation data channel assignments. Appendix D contains ATD calibration sheets.

Orientation of the 3-year old dummy was with the dummy facing forward. The seat is set in the rearmost position. The dummy is placed on the outboard edge of the foam block with the upper spine aligning with the deployment trajectory of the airbag. The dummy's head is placed between the seat bolster and pillar. The heel placement points were marked and heels were positioned on them. The pelvis is slid forward until the head/neck junction is aligned vertically with the top edge of airbag module. Pelvis is slid outboard until contact is made with the door panel. The outboard arm is placed to contact the armrest and inboard arm placed to contact the seatback. This orientation complies with section 3.3.3.1 of the Technical Working Group (TWG) recommendation in the Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags.

The passenger side door remained closed during the test and was operable after the airbag deployed.

The 3-year old dummy's visible contact points were as follows: The ATD's head contacted the curtain airbag and steering wheel. The ATD's torso contacted the torso/pelvis airbag, floor pan, and steering wheel. The ATD's pelvis contacted the torso/pelvis airbag, booster block, and floor pan.

The occupant data is summarized below:

Measurement Description	Units	Passenger ATD (HIII 3YO)	
		IARV	Result
Head Injury Criteria (HIC15)	N/A	570	41.3
Upper Neck Nij	N/A	1	0.55
Upper Neck Peak Tension	N	1130	746.9
Upper Neck Peak Compression	N	1380	-290.6

SECTION 2

OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

Test Vehicle: 2019 Nissan Kicks 5-Door SUV NHTSA No.: M20195208TWG2

Test Program: TWG 3.3.3.1 Test Date: 07/23/19

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	°F	°C	$=(T_f - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf-ft	N•m	1.355

DATA SHEET NO. 1

TEST SUMMARY

Test Vehicle: 2019 Nissan Kicks 5-Door SUV NHTSA No.: M20195208TWG2
Test Program: TWG 3.3.3.1 Test Date: 07/23/19

TEST DUMMY INFORMATION

Description	Passenger Seat
Dummy Type / Serial No.	3-year old / 044
Head Contact	Torso/Pelvis/Curtain Airbag
Chest Contact	Torso/Pelvis Airbag
Abdomen Contact	Torso/Pelvis Airbag
Pelvis Contact	Torso/Pelvis Airbag
Left Knee Contact	None
Right Knee Contact	None

VIDEO COVERAGE

Description	Quantity
High Speed Digital	3
Real Time	1
Total	4

DATA CHANNELS

Description	Quantity
Head Accelerometers	3
Upper Neck Transducers	6
Lower Neck Transducers	6
Total	15

DATA SHEET NO. 2

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2019 Nissan Kicks 5-Door SUV NHTSA No.: M20195208TWG2
 Test Program: TWG 3.3.3.1 Test Date: 07/23/19

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20195208TWG2
Model Year	2019
Make	Nissan
Model	Kicks
Body Style	5-Door SUV
VIN	3N1CP5C4XKL471859
Body Color	Silver
Odometer Reading (km / mi)	76 / 47
Engine Displacement (L)	1.6
Type / No. of Cylinders	Inline 4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	6
Overdrive	Yes
Final Drive	FWD
Roof Rack	Yes
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	Yes
Rear Pass. Pelvis Airbag	No
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensioner	Yes
Driver Load Limiter	Yes
Rear Pass. Load Limiter	Yes
Other Safety Restraint	No

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

N/A

DATA FROM CERTIFICATION LABEL

Manufactured By	Nissan Motor Co., LTD
Date of Manufacture	11/18
Vehicle Type	MPV

GVWR (kg)	3600
GAWR Front (kg)	1903
GAWR Rear (kg)	1698

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

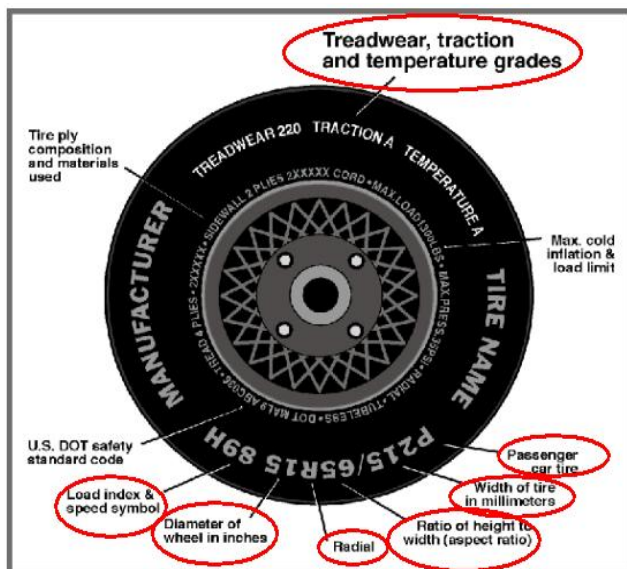
Measured Parameter	Front	Rear	Third	Total	
Type of Seats	Bucket	Bench			
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				385.0	A
DSC x 68.04 (kg)				340.2	B
Cargo Weight (RCLW) (kg)				44.8	A-B

*Vehicle underwent New Car Assessment Program Side MDB Impact Testing on December 13, 2017.

DATA SHEET NO. 2 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2019 Nissan Kicks 5-Door SUV NHTSA No.: M20195208TWG2
 Test Program: TWG 3.3.3.1 Test Date: 07/23/19



VEHICLE TIRE INFORMATION

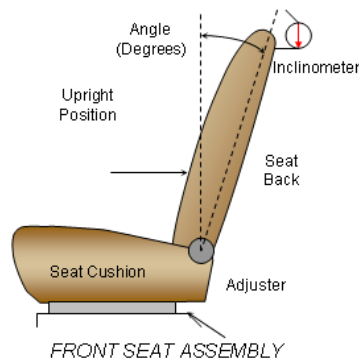
Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	300	300
Cold Pressure (kPa)	220	220
Recommended Tire Size	P205/60R16	P205/60R16
Tire Size on Vehicle	P205/60R16	P205/60R16
Tire Manufacturer	Fire Stone	Fire Stone
Tire Model	FT 140	FT 140
Treadware	560	560
Traction Grade	A	A
Temperature Grade	A	A
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Nylon	1 Polyester, 2 Steel, 1 Nylon
Load Index/Speed Symbol	92H	92H
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Left	V6XW FTO 3218	V6XW FTO 3218
DOT Safety Code Right	V6XW FTO 3218	V6XW FTO 3218

DATA SHEET NO. 3
SEAT ADJUSTMENTS

Test Vehicle: 2019 Nissan Kicks 5-Door SUV NHTSA No.: M20195208TWG2
 Test Program: TWG 3.3.3.1 Test Date: 07/23/19

SEAT BACK ANGLE

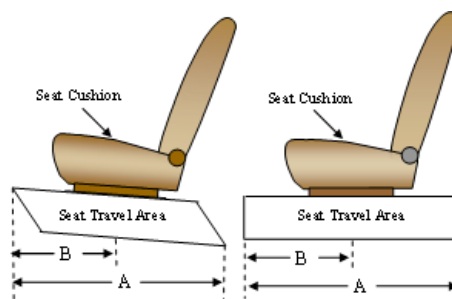
The passenger seat back is positioned per section 3.3.3.1 of the TWG recommendation in the Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags. Seat back angle is measured at the headrest post.



Seating Position	Degrees
Passenger Seat	3.8

SEAT FORE / AFT POSITIONING

The passenger seat track travel is set per section 3.3.3.1 of the TWG recommendation in the Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags. The first or forward most position is counted as zero (0)



Seating Position	Total Fore-Aft Travel		Placed in Position	
	mm	Detents	mm	Detents
Passenger Seat	240	25	240	24

SEAT BELT UPPER ANCHORAGE

The seat belt upper anchorage is positioned to the uppermost position. Position "H" is the uppermost position, followed by position "M1". Position "L" is the lowermost position.

Seating Position	Total No. of Positions	Placed in Position
Passenger Seat	4	H

DATA SHEET NO. 4

DUMMY POSITIONING AND AIRBAG DIMENSIONS

Test Vehicle: 2019 Nissan Kicks 5-Door SUV NHTSA No.: M20195208TWG2
 Test Program: TWG 3.3.3.1 Test Date: 07/23/19

DUMMY POSITIONING

Code	Measurement Description	Passenger	
		Length (mm)	Angle (°)
SA	Seat Back Angle		3.8
AN	Top of Airbag Module to Head/Neck Junction	45	90.0
HD	Head CG to Door Panel/ Window	140	0.0
HSC	Head to Seat Back Centerline	145	0.0
HB	Head to B-Pillar (measured from bridge of nose)	50	0.0
HZ	Head to Roof (Z)	405	90.0
HHD	Head to Side Header	623	22.9
ND	Nose to Dash	735	9.5
NS	Nose to Seat Back	234	0.0
NR	Nose to Header	610	24.4
CD	Chest to Dash	723	0.4
CS	Chest to Seat Back (measured to centerline)	166	0.0
RACL	Right Arm to Seat Back Centerline	310	0.0
LACL	Left Arm to Seat Back Centerline	73	0.0
RA	Right Arm to Door Panel	55	0.0
LA	Left Arm to Door Panel	348	0.0
KK	Knee to Knee	140	0.0
TT	Toe to Toe	120	0.0
KSCR	Right Knee to Seat Cushion Centerline	54	0.0
KSCL	Left Knee to Seat Cushion Centerline	176	0.0
	Head Level (X Direction)		
	Head Level (Y Direction)		

AIRBAG DIMENSIONS

Code	Measurement Description	Airbag
		Length (mm)
AMW	Curtain Airbag Module Diameter	45
AML	Curtain Airbag Module Length	300
ABW	Curtain Airbag Width	1815
ABL	Curtain Airbag Length	523
AMW	Torso/Pelvis Airbag Module Diameter	25
AML	Torso/Pelvis Airbag Module Length	135
ABW	Torso/Pelvis Airbag Width	563
ABL	Torso/Pelvis Airbag Length	305

DATA SHEET NO. 5

DUMMY INJURY CRITERIA AND PERFORMANCE DATA

Test Vehicle: 2019 Nissan Kicks 5-Door SUV NHTSA No.: M20195208TWG2
 Test Program: TWG 3.3.3.1 Test Date: 07/23/19

HEAD PEAK ACCELERATIONS

Location	Axis	Units	3 Year Old			
			Max	Time	Min	Time
Head CG	X	g	24.7	15.5	-5.2	298.2
Head CG	Y	g	2.6	297.0	-22.6	12.4
Head CG	Z	g	42.3	11.7	-15.0	7.8
Head CG Resultant	N/A	g	48.0	11.7		

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	3 Year Old			
			Max	Time	Min	Time
Neck Force	X	N	559.3	15.0	-130.7	298.2
Neck Force	Y	N	171.7	46.6	-300.9	14.6
Neck Force	Z	N	746.9	43.1	-290.6	4.7
Neck Force Resultant	N/A	N	779.2	15.4		
Neck Moment	X	Nm	5.6	299.9	-9.1	19.9
Neck Moment	Y	Nm	29.8	14.5	-12.0	41.8
Neck Moment	Z	Nm	4.1	299.9	-14.7	21.2
Neck Moment Resultant	N/A	Nm	32.3	14.9		

LOWER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	3 Year Old			
			Max	Time	Min	Time
Neck Force	X	N	846.8	14.8	-115.5	297.9
Neck Force	Y	N	186.8	46.7	-440.8	11.9
Neck Force	Z	N	348.8	299.0	-315.4	5.0
Neck Force Resultant	N/A	N	969.7	15.0		
Neck Moment	X	Nm	12.8	46.8	-31.9	13.5
Neck Moment	Y	Nm	15.8	131.8	-41.8	15.1
Neck Moment	Z	Nm	4.7	299.9	-14.0	15.1
Neck Moment Resultant	N/A	Nm	53.4	15.1		

HEAD INJURY CRITERIA (HIC15)

Location	3 Year Old			
	HIC15	T ¹	T ²	Avg G
Head CG	41.3	9.0	24.0	23.7

UPPER NECK NIJ VALUES

Location	3 Year Old			
	Ntf	Nte	Ncf	Nce
Upper Neck	0.04	0.22	0.04	0.55

DATA SHEET NO. 6
HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2019 Nissan Kicks 5-Door SUV NHTSA No.: M20195208TWG2
 Test Program: TWG 3.3.3.1 Test Date: 07/23/19

CAMERA LOCATIONS

No.	Camera View	Location (mm)			Angle (Deg.)	Lens (mm)	Speed (fps)
		X	Y	Z			
1	High Speed Side View	2580	200	450	7.5	35	1000
2	High Speed 3/4 View	2230	1240	450	11.9	35	1000
3	High Speed Front View	305	2180	140	12.7	35	1000
4	Real Time	2580	200	450	7.5		24

Coordinates: +X = forward of vehicle relative to dummy's head CG
 +Y = right of vehicle relative to dummy's head CG
 +Z = into ground

**APPENDIX A
PHOTOGRAPHS**

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FIGURE 1. Right Front ¾ View, As Received

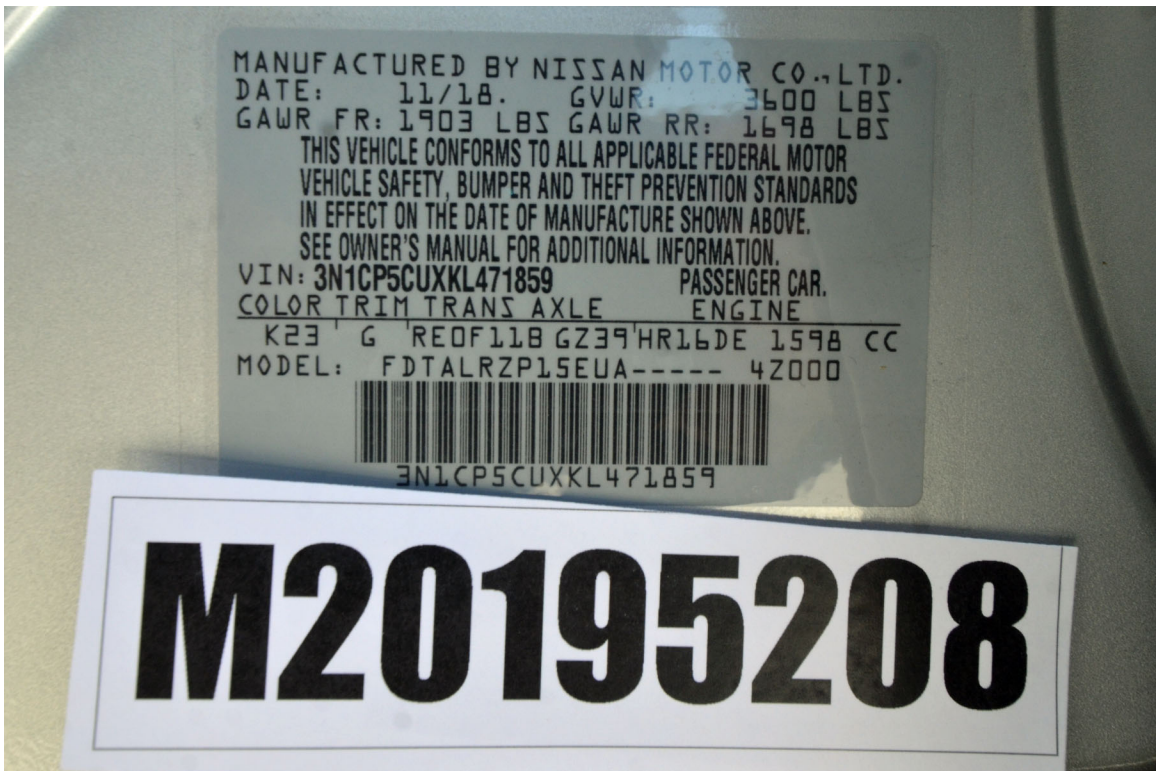


FIGURE 2. Vehicle Certification Label



FIGURE 3. Post-Test Left Front 3/4 View of NCAP Side MDB Impact Test



FIGURE 4. Post-Test Left Side View of NCAP Side MDB Impact Test



FIGURE 5. Post-Test Left Rear $\frac{3}{4}$ View of NCAP Side MDB Impact Test



FIGURE 6. Post-Test Right Side View of NCAP Side MDB Impact Test



FIGURE 7. Pre-Test Dummy Position, Left View



FIGURE 8. Post-Test Dummy Position, Left View



FIGURE 9. Pre-Test Dummy Position, $\frac{3}{4}$ View



FIGURE 10. Post-Test Dummy Position, $\frac{3}{4}$ View



FIGURE 11. Pre-Test Dummy Position, Front View



FIGURE 12. Post-Test Dummy Position, Front View



FIGURE 13. Pre-Test Dummy Position, Close-Up Front View



FIGURE 14. Post-Test Dummy Position, Close-Up Front View



FIGURE 15. Pre-Test Dummy Position, Close-Up Rear View

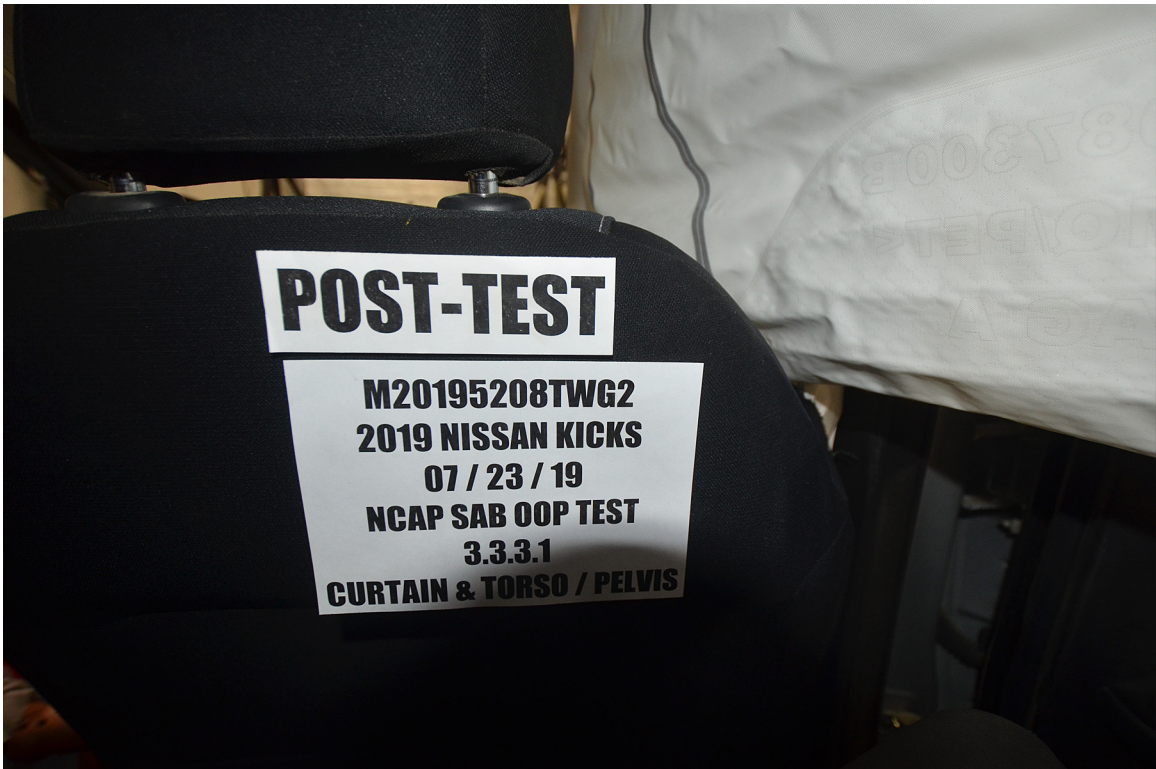


FIGURE 16. Post-Test Dummy Position, Close-Up Rear View



FIGURE 17. Post-Test Airbags, Left Side View



FIGURE 18. Post-Test Airbags, Left Front $\frac{3}{4}$ View

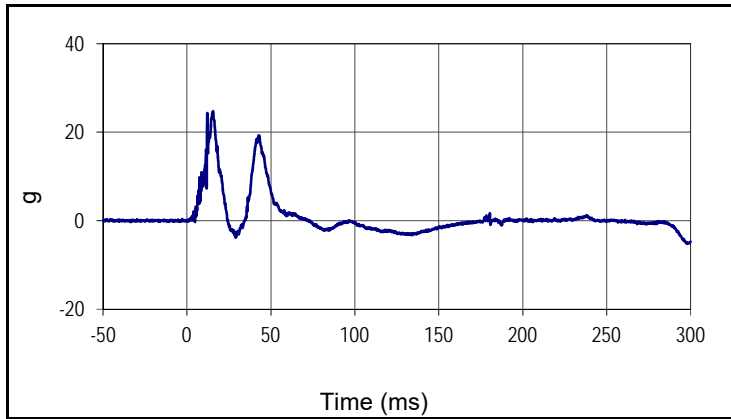
APPENDIX B
DUMMY RESPONSE DATA TRACES

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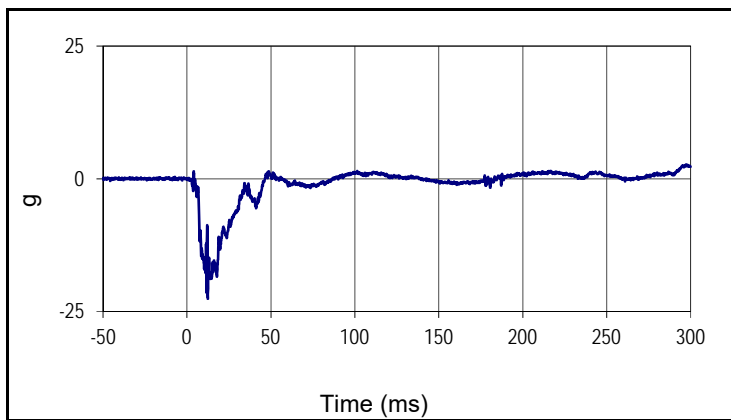
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Test Vehicle: 2019 Nissan Kicks 5-Door SUV
 Test Program: TWG 3.3.3.1

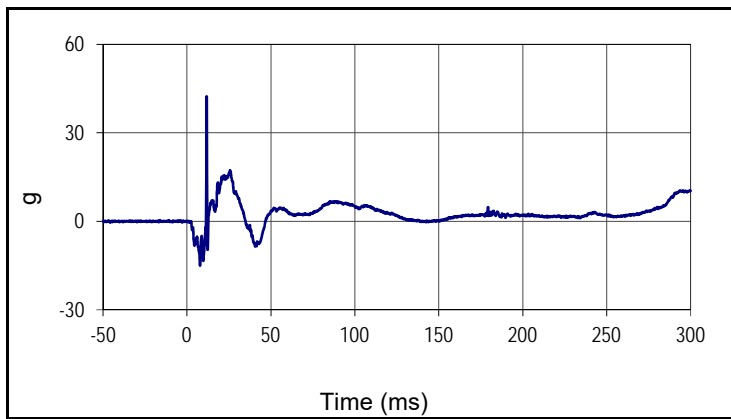
Test Date: 07/23/19
 NHTSA No.: M20195208TWG2



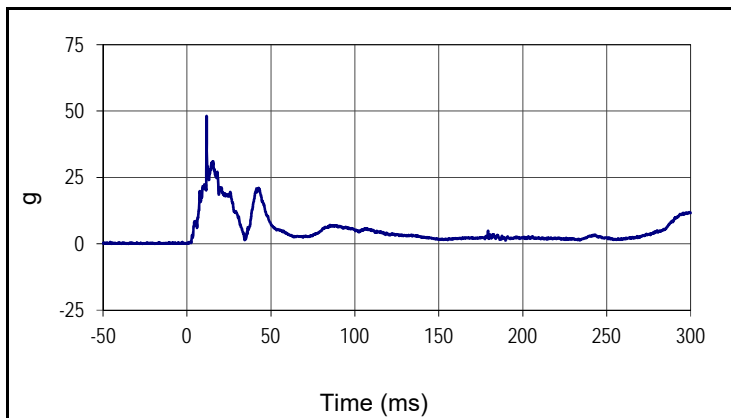
Curve Description			
3 Year Old Head Acceleration X			
Plot No.		SAE Class	Units
001		1000	g
Max	Time	Min	Time
24.7	15.5	-5.2	298.2



Curve Description			
3 Year Old Head Acceleration Y			
Plot No.		SAE Class	Units
002		1000	g
Max	Time	Min	Time
2.6	297.0	-22.6	12.4



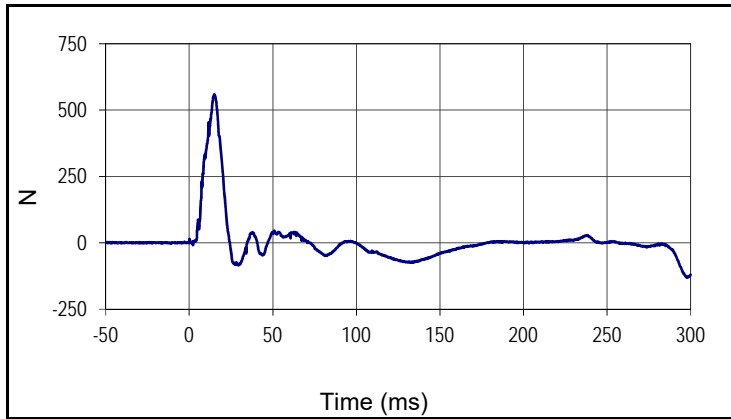
Curve Description			
3 Year Old Head Acceleration Z			
Plot No.		SAE Class	Units
003		1000	g
Max	Time	Min	Time
42.3	11.7	-15.0	7.8



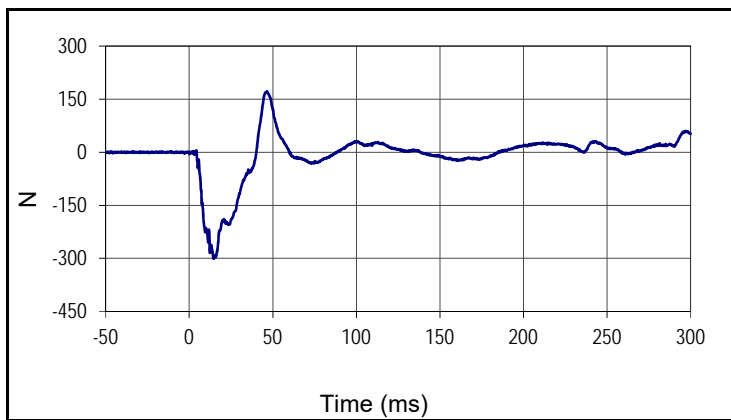
Curve Description			
3 Year Old Head Acceleration Primary Resultant			
Plot No.		SAE Class	Units
004		1000	g
Max	Time	Min	Time
48.0	11.7	0.1	0.1

Test Vehicle: 2019 Nissan Kicks 5-Door SUV
 Test Program: TWG 3.3.3.1

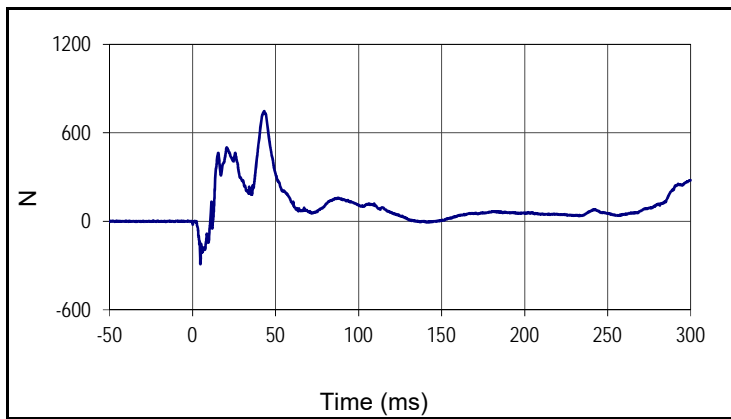
Test Date: 07/23/19
 NHTSA No.: M20195208TWG2



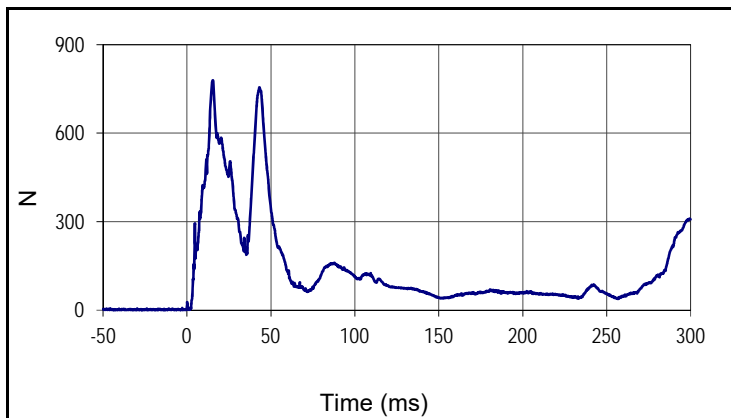
Curve Description			
3 Year Old Upper Neck Force X			
Plot No.		SAE Class	Units
005		1000	N
Max	Time	Min	Time
559.3	15.0	-130.7	298.2



Curve Description			
3 Year Old Upper Neck Force Y			
Plot No.		SAE Class	Units
006		1000	N
Max	Time	Min	Time
171.7	46.6	-300.9	14.6



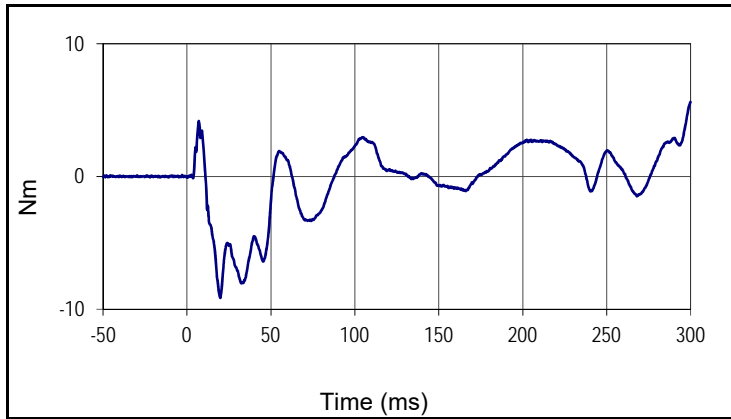
Curve Description			
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Plot No.		SAE Class	Units
007		1000	N
Max	Time	Min	Time
746.9	43.1	-290.6	4.7



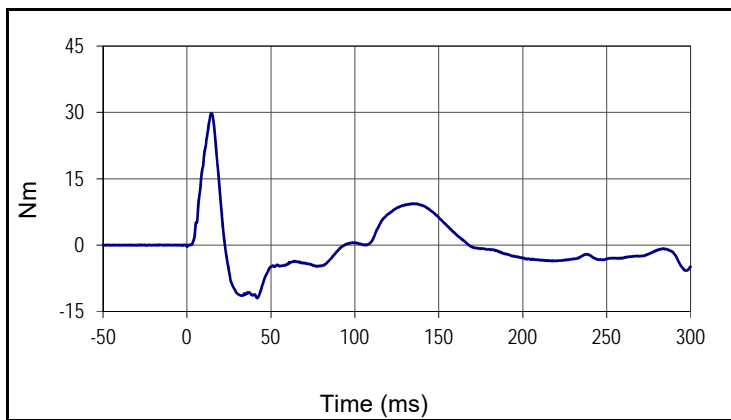
Curve Description			
3 Year Old Upper Neck Force Resultant			
Plot No.		SAE Class	Units
008		1000	N
Max	Time	Min	Time
779.2	15.4	0.8	1.1

Test Vehicle: 2019 Nissan Kicks 5-Door SUV
 Test Program: TWG 3.3.3.1

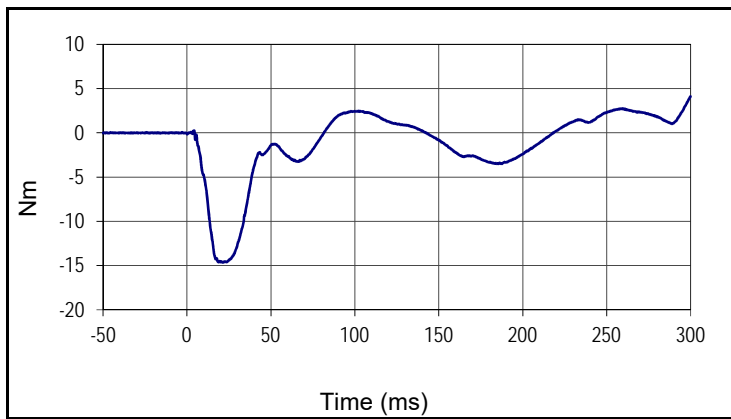
Test Date: 07/23/19
 NHTSA No.: M20195208TWG2



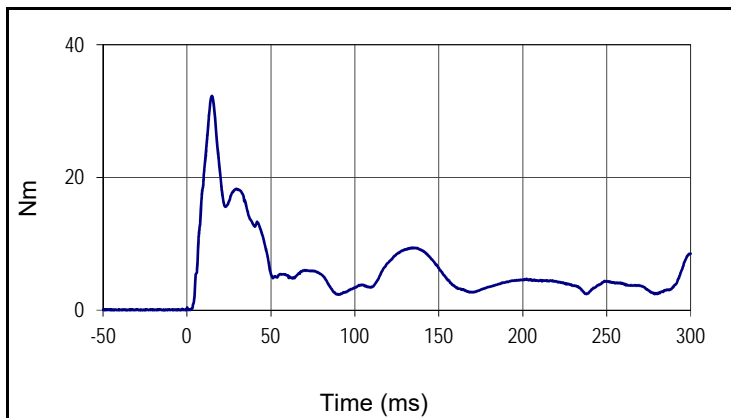
Curve Description			
3 Year Old Upper Neck Moment X			
Plot No.		SAE Class	Units
009		600	Nm
Max	Time	Min	Time
5.6	299.9	-9.1	19.9



Curve Description			
3 Year Old Upper Neck Moment Y			
Plot No.		SAE Class	Units
010		600	Nm
Max	Time	Min	Time
29.8	14.5	-12.0	41.8



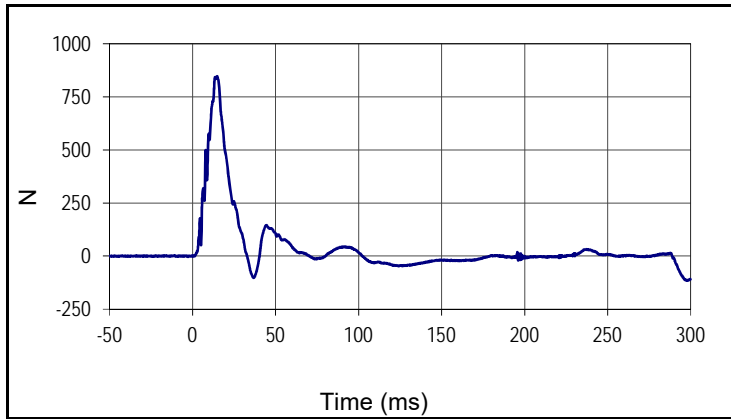
Curve Description			
3 Year Old Upper Neck Moment Z			
Plot No.		SAE Class	Units
011		600	Nm
Max	Time	Min	Time
4.1	299.9	-14.7	21.2



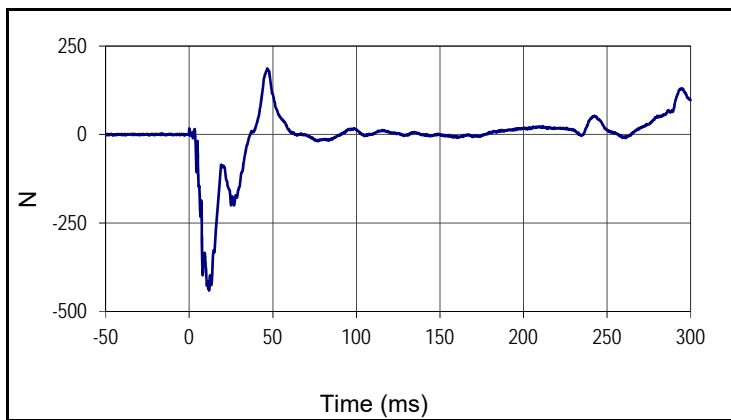
Curve Description			
3 Year Old Upper Neck Moment Resultant			
Plot No.		SAE Class	Units
012		1000	Nm
Max	Time	Min	Time
32.3	14.9	0.0	1.9

Test Vehicle: 2019 Nissan Kicks 5-Door SUV
 Test Program: TWG 3.3.3.1

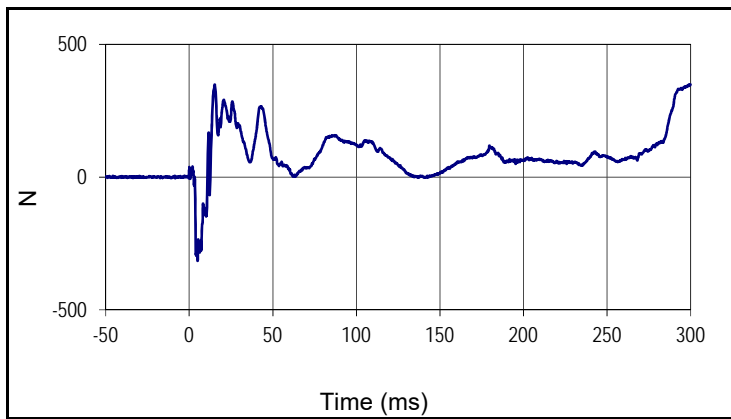
Test Date: 07/23/19
 NHTSA No.: M20195208TWG2



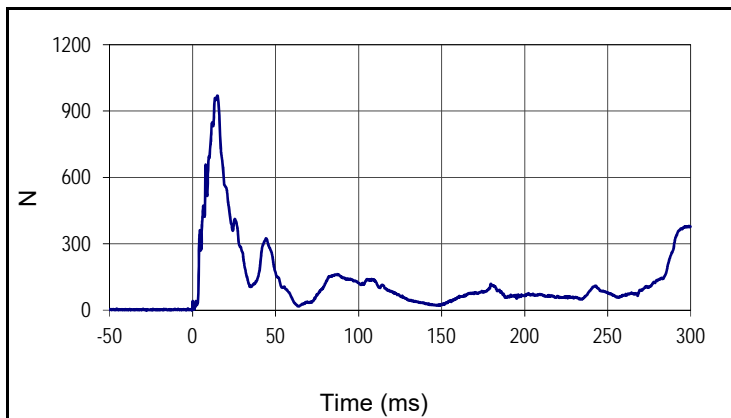
Curve Description			
3 Year Old Lower Neck Force X			
Plot No.		SAE Class	Units
013		1000	N
Max	Time	Min	Time
846.8	14.8	-115.5	297.9



Curve Description			
3 Year Old Lower Neck Force Y			
Plot No.		SAE Class	Units
014		1000	N
Max	Time	Min	Time
186.8	46.7	-440.8	11.9



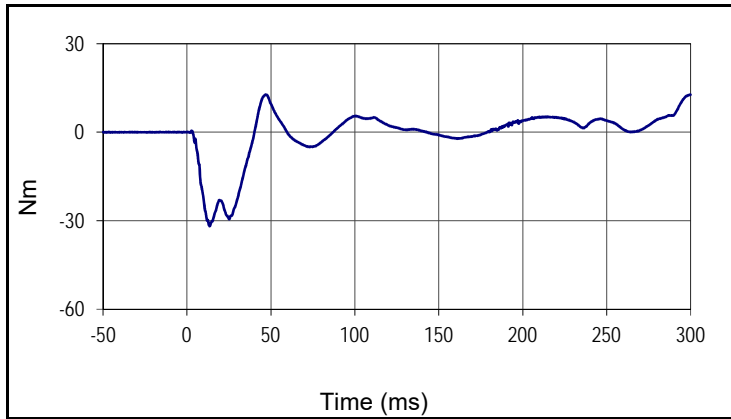
Curve Description			
3 Year Old Lower Neck Force Z			
Plot No.		SAE Class	Units
015		1000	N
Max	Time	Min	Time
348.8	299.0	-315.4	5.0



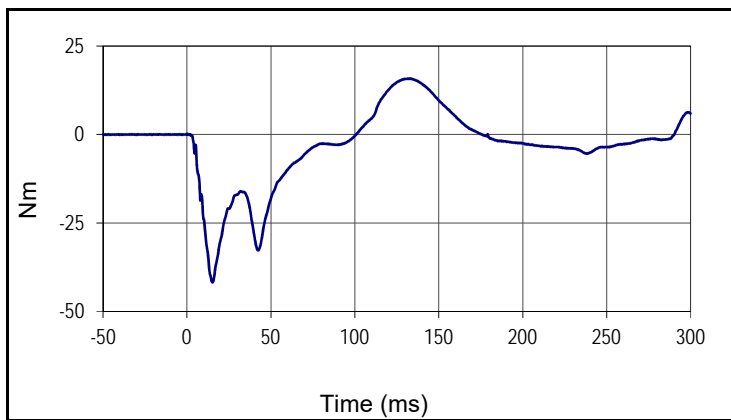
Curve Description			
3 Year Old Lower Neck Force Resultant			
Plot No.		SAE Class	Units
016		1000	N
Max	Time	Min	Time
969.7	15.0	2.2	0.8

Test Vehicle: 2019 Nissan Kicks 5-Door SUV
 Test Program: TWG 3.3.3.1

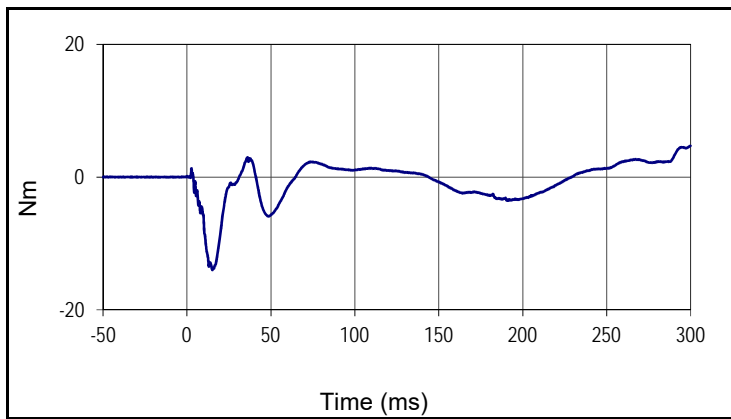
Test Date: 07/23/19
 NHTSA No.: M20195208TWG2



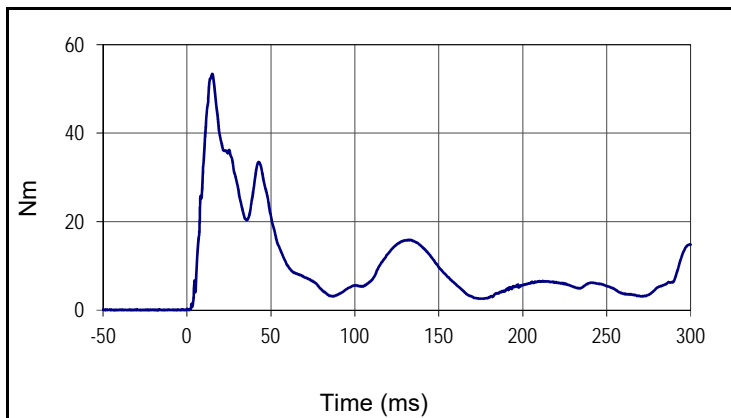
Curve Description			
3 Year Old Lower Neck Moment X			
Plot No.		SAE Class	Units
017		600	Nm
Max	Time	Min	Time
12.8	46.8	-31.9	13.5



Curve Description			
3 Year Old Lower Neck Moment Y			
Plot No.		SAE Class	Units
018		600	Nm
Max	Time	Min	Time
15.8	131.8	-41.8	15.1



Curve Description			
3 Year Old Lower Neck Moment Z			
Plot No.		SAE Class	Units
019		600	Nm
Max	Time	Min	Time
4.7	299.9	-14.0	15.1

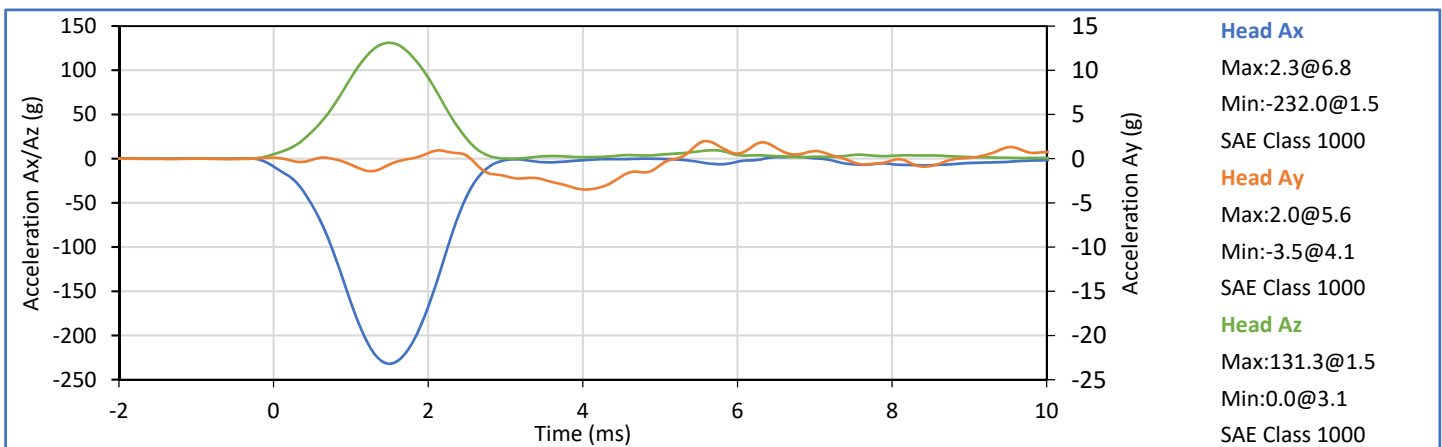
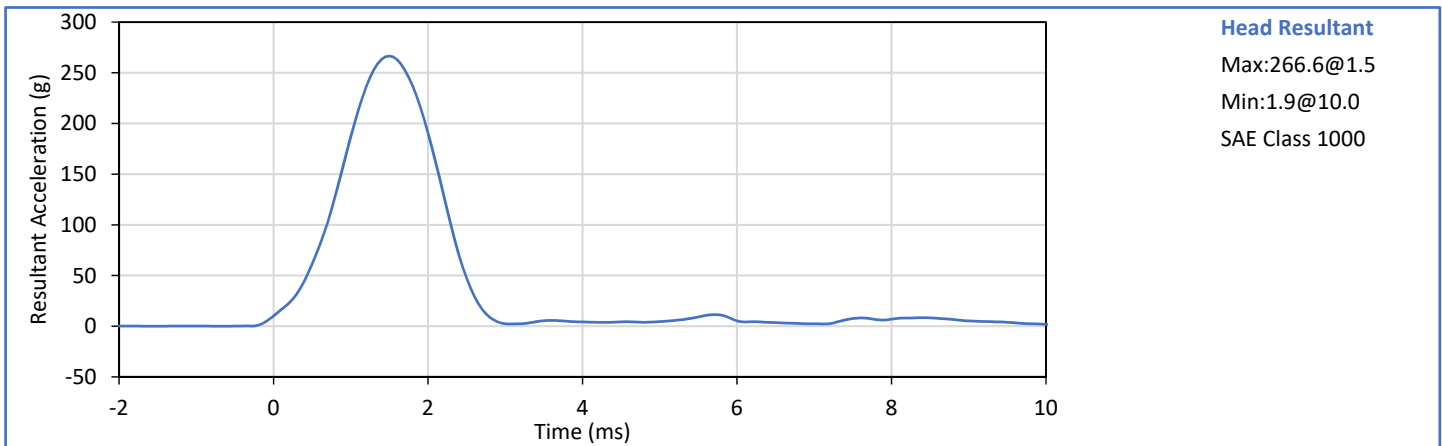


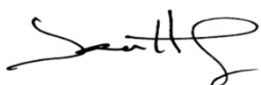
Curve Description			
3 Year Old Lower Neck Moment Resultant			
Plot No.		SAE Class	Units
020		600	Nm
Max	Time	Min	Time
53.4	15.1	0.0	1.1


APPENDIX C
ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

APPENDIX C
Pre-Test ATD Configuration And Performance Verification Data
Hybrid III 3 Year-Old Child ATD
S/N: 044

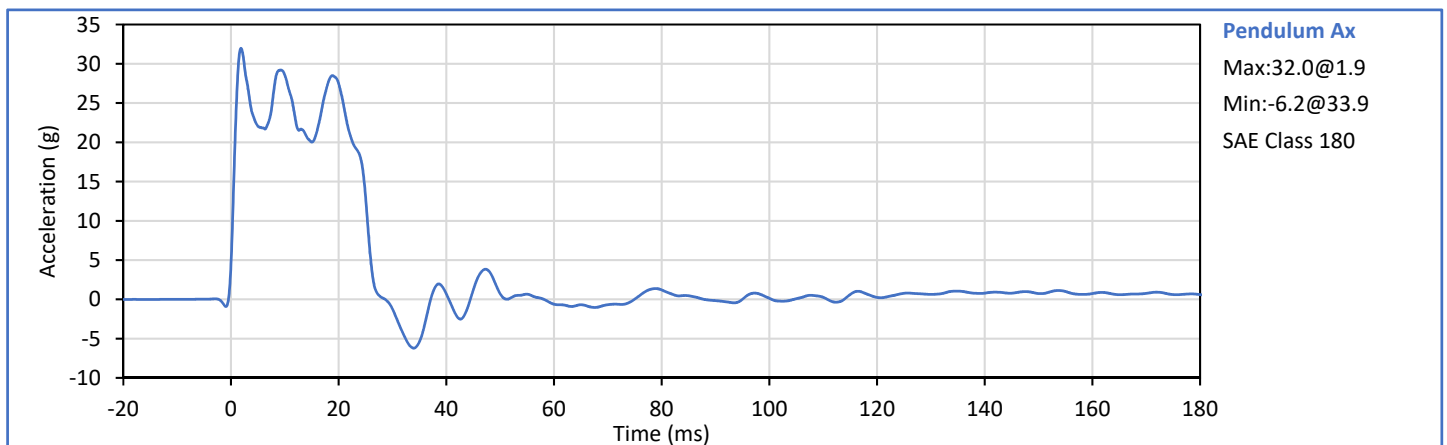
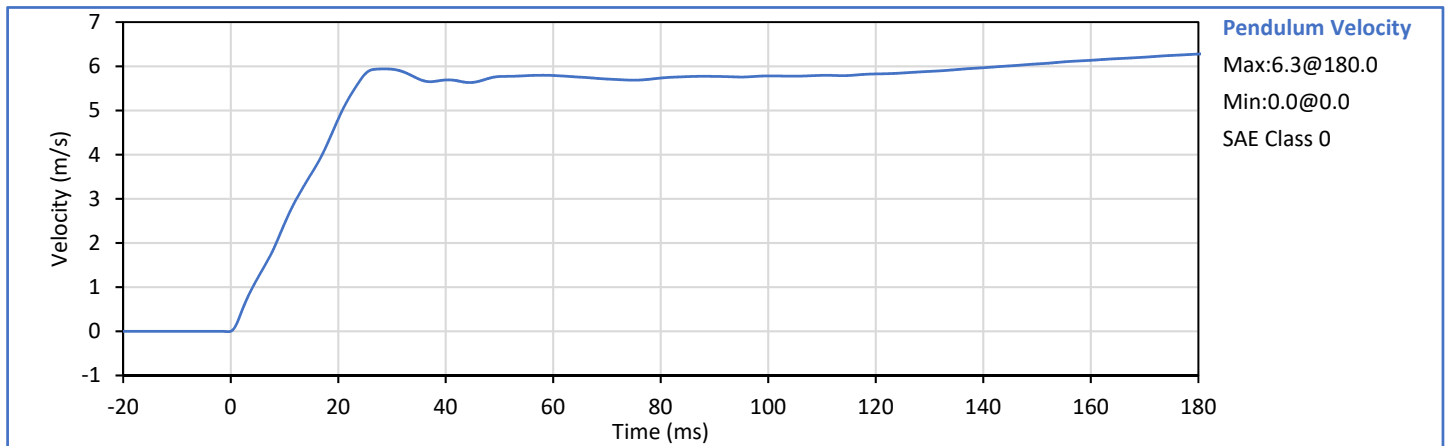
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.1	Pass
Laboratory Humidity	%	10	70	29	Pass
Peak Resultant Acceleration	g	250.0	280.0	266.6	Pass
Peak Lateral Acceleration	g	-15.0	15.0	-3.5	Pass
Oscillations After Main Pulse	%	0.0	10.0	4.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
Overall Test Results					Pass





Technician: 
J. Hernandez

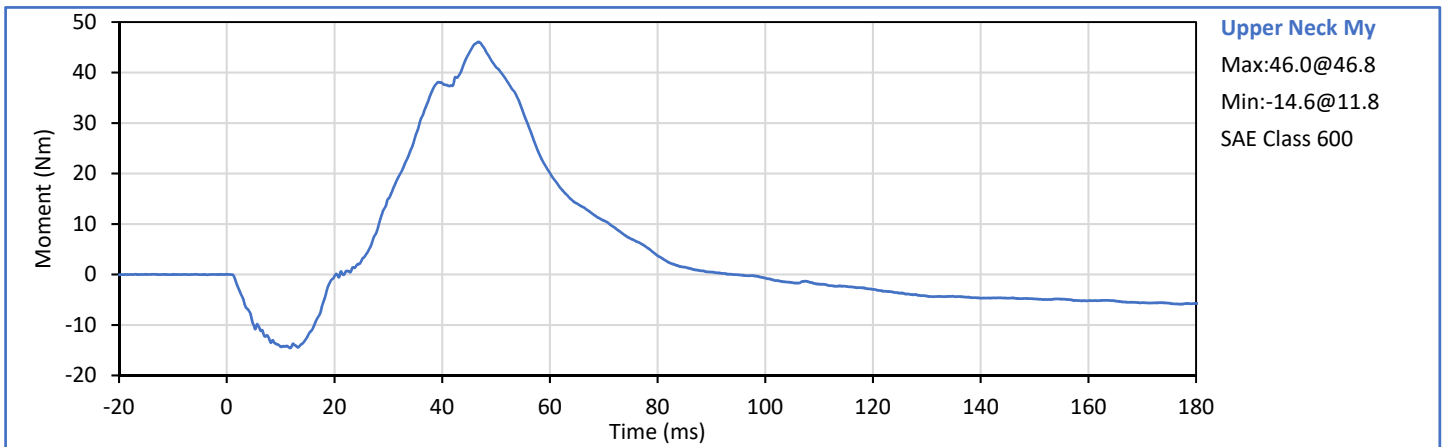
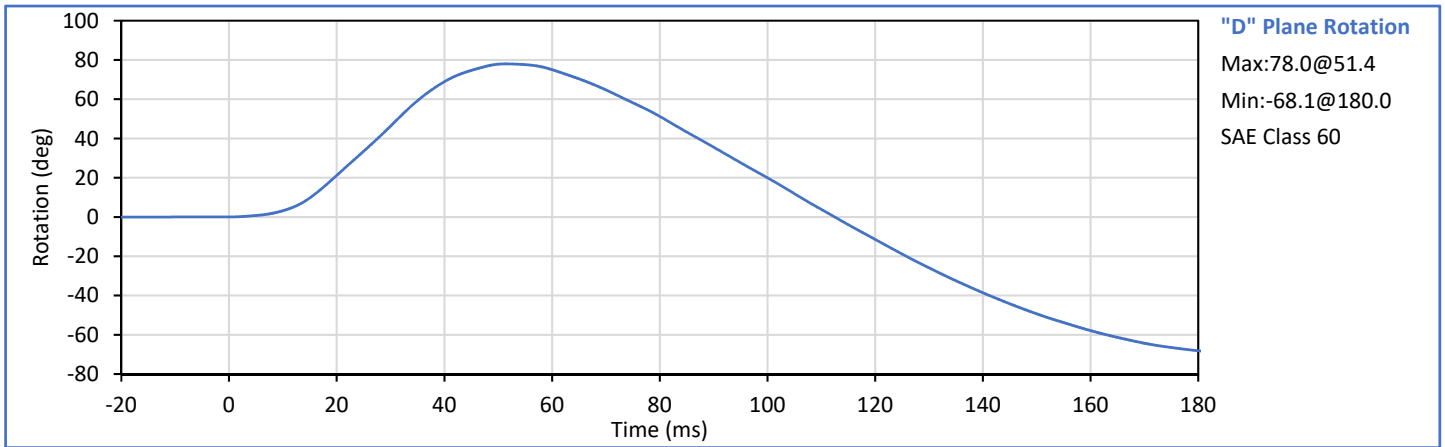
Approved By: 
P. Puzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	31	Pass
Pendulum Velocity	m/s	5.40	5.60	5.55	Pass
Pendulum Velocity at 10 ms	m/s	2.00	2.70	2.44	Pass
Pendulum Velocity at 15 ms	m/s	3.00	4.00	3.57	Pass
Pendulum Velocity at 20 ms	m/s	4.00	5.10	4.81	Pass
Peak Moment in Rotation	Nm	42.0	53.0	46.0	Pass
	deg	70.0	82.0	76.1	Pass
Positive Moment Decay to 10 Nm	ms	60.0	80.0	71.1	Pass
Overall Test Results					Pass

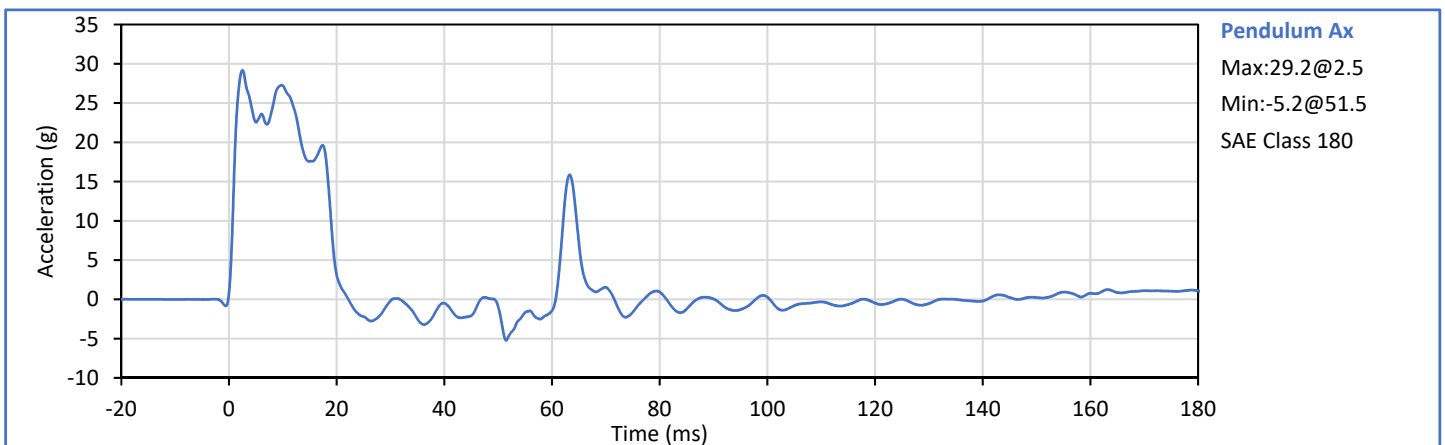
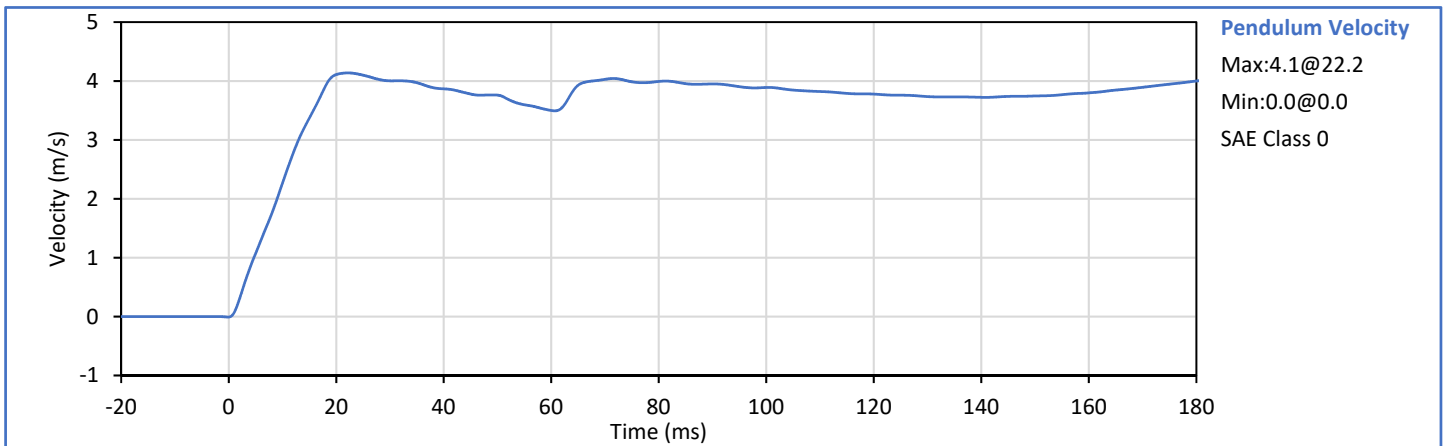



Technician: 
J. Hernandez


Approved By: 
P. Puzuto

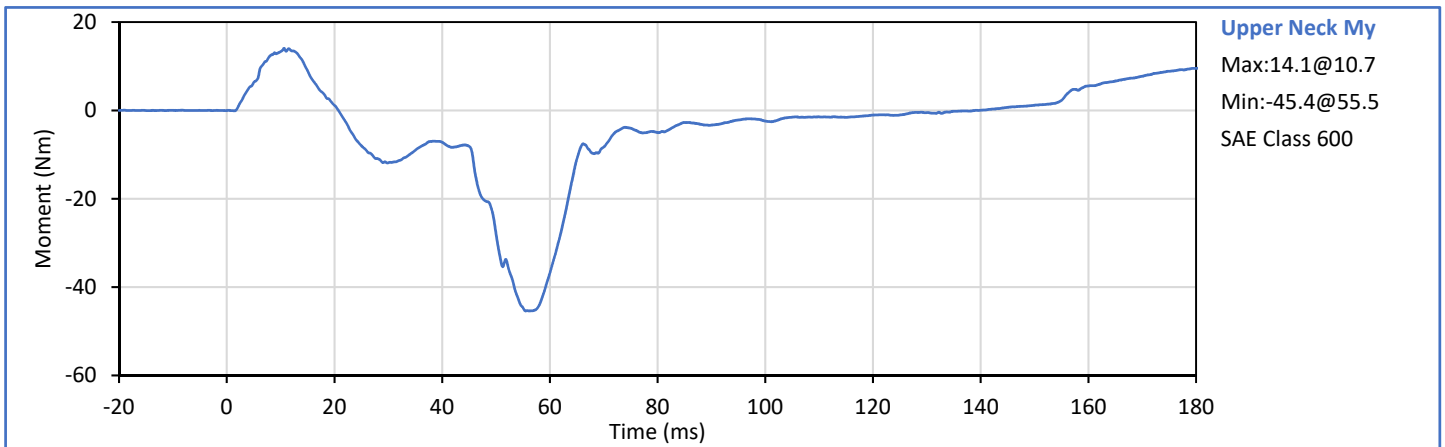
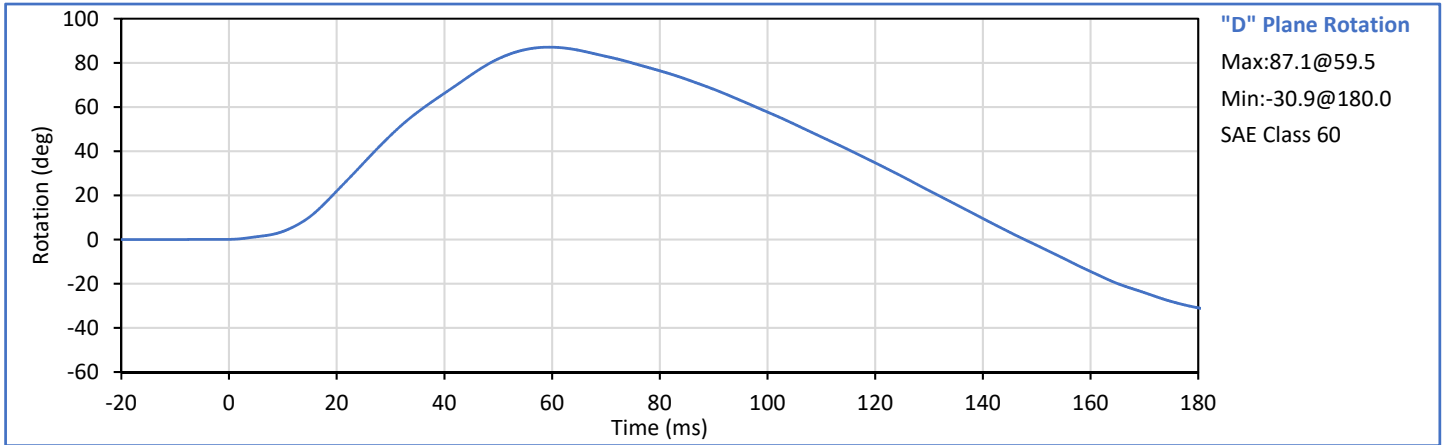


Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	31	Pass
Pendulum Velocity	m/s	3.55	3.75	3.73	Pass
Pendulum Velocity at 6 ms	m/s	1.00	1.40	1.30	Pass
Pendulum Velocity at 10 ms	m/s	1.90	2.50	2.27	Pass
Pendulum Velocity at 14 ms	m/s	2.80	3.50	3.20	Pass
Peak Moment in Rotation	Nm	-53.3	-43.7	-45.4	Pass
	deg	83.0	93.0	86.2	Pass
Positive Moment Decay to -10 Nm	ms	60.0	80.0	65.2	Pass
Overall Test Results					Pass



Technician: 
J. Hernandez

Approved By: 
P. Puzuto



APPENDIX D
INSTRUMENTATION DATA CHANNEL ASSIGNMENTS

TWG 3.3.3.1

Test Equipment and Instrumentation Calibration Data

A.T.D. Serial Number 044

07/23/19

2019 Nissan Kicks 5-Door SUV

Channel	Location	Axis	Sensor S/N	MFR	Model	Units	Calibration Date
1	Head Acceleration	X	A290221	MSI	64C	g	06/08/19
2	Head Acceleration	Y	A290237	MSI	64C	g	06/08/19
3	Head Acceleration	Z	A290267	MSI	64C	g	06/08/19
4	Upper Neck Force	X	212 Fx	R.A. Denton	3303	N	04/11/19
5	Upper Neck Force	Y	212 Fy	R.A. Denton	3303	N	04/11/19
6	Upper Neck Force	Z	212 Fz	R.A. Denton	3303	N	04/11/19
7	Upper Neck Moment	X	212 Mx	R.A. Denton	3303	Nm	04/11/19
8	Upper Neck Moment	Y	212 My	R.A. Denton	3303	Nm	04/11/19
9	Upper Neck Moment	Z	212 Mz	R.A. Denton	3303	Nm	04/11/19
10	Lower Neck Force	X	93 Fx	R.A. Denton	3303	N	04/11/19
11	Lower Neck Force	Y	93 Fy	R.A. Denton	3303	N	04/11/19
12	Lower Neck Force	Z	93 Fz	R.A. Denton	3303	N	04/11/19
13	Lower Neck Moment	X	93 Mx	R.A. Denton	3303	Nm	04/11/19
14	Lower Neck Moment	Y	93 My	R.A. Denton	3303	Nm	04/11/19
15	Lower Neck Moment	Z	93 Mz	R.A. Denton	3303	Nm	04/11/19
16	Chest Displacement	X	1035 (Y6)	SERVO	14CBI	mm	06/14/19