

REPORT NUMBER: SINCAP-MCW-14-009

**NEW CAR ASSESSMENT PROGRAM (NCAP)
MOVING DEFORMABLE BARRIER SIDE IMPACT TEST**

**FUJI HEAVY INDUSTRIES LTD.
2014 SCION FR-S 2-DOOR COUPE
NHTSA NUMBER: M20145123**

**PREPARED BY:
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MILWAUKEE, WISCONSIN 53295**



TEST DATE: 18 DECEMBER 2013

REPORT DATE: 17 FEBRUARY 2014

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Crashworthiness Standards
Mail Code: NVS-111
1200 New Jersey Ave, SE, Room W43-410
Washington, DC 20590**

Test Vehicle: 2014 Scion FR-S 2-Door Coupe
Test Program: SINCAP

NHTSA Number: M20145123
Test Date: December 18, 2013

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Prepared by: Mark M. Ryan

Date: April 30, 2014

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Date: April 30, 2014

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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

Date: _____

Technical Report Documentation Page

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15. Supplementary Notes																																														
16. Abstract A 55/28 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2014 Scion FR-S 2-Door Coupe in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. The test was conducted at the Medical College of Wisconsin (MCW) facility in Milwaukee, Wisconsin on 18 December 2013. The impact velocity of the Moving Deformable Barrier (MDB) was 61.92 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 20°C. The target vehicle's post test maximum static crush was 232 mm at level 3. The test vehicle's performance is as follows: <table border="1"> <thead> <tr> <th></th> <th><u>Units</u></th> <th><u>IARV</u></th> <th><u>DRIVER ATD (ES-2re)</u></th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td>N/a</td> <td>1000</td> <td>236</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>44</td> <td>38</td> </tr> <tr> <td>Total Abdominal Force</td> <td>N</td> <td>2500</td> <td>1147</td> </tr> <tr> <td>Pubic Symphysis Force</td> <td>N</td> <td>6000</td> <td>1640</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th></th> <th><u>Units</u></th> <th><u>IARV</u></th> <th><u>Pass. ATD (SID-IIIs)</u></th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td>N/a</td> <td>1000</td> <td>391</td> </tr> <tr> <td>Lower Spine Resultant Acceleration</td> <td>G</td> <td>82</td> <td>70</td> </tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td> <td>N</td> <td>5525</td> <td>2456</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38*</td> <td>34</td> </tr> <tr> <td>Maximum Abdominal Rib Deflection</td> <td>mm</td> <td>45*</td> <td>25</td> </tr> </tbody> </table> The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.				<u>Units</u>	<u>IARV</u>	<u>DRIVER ATD (ES-2re)</u>	Head Injury Criteria (HIC ₃₆)	N/a	1000	236	Maximum Thoracic Rib Deflection	mm	44	38	Total Abdominal Force	N	2500	1147	Pubic Symphysis Force	N	6000	1640		<u>Units</u>	<u>IARV</u>	<u>Pass. ATD (SID-IIIs)</u>	Head Injury Criteria (HIC ₃₆)	N/a	1000	391	Lower Spine Resultant Acceleration	G	82	70	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2456	Maximum Thoracic Rib Deflection	mm	38*	34	Maximum Abdominal Rib Deflection	mm	45*	25
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Test Vehicle: 2014 Scion FR-S 2-Door Coupe
Test Program: SINCAP

NHTSA Number: M20145123
Test Date: December 18, 2013

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Test Vehicle: 2014 Scion FR-S 2-Door Coupe
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SECTION 1

TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test is part of the MY 2014 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number DTNH22-09-D-00123. The purpose of this test is to generate comparative side impact performance in a 2014 Scion FR-S 2-Door Coupe. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated September 2013.

SECTION 2 SUMMARY OF TEST RESULTS

A 2014 Scion FR-S 2-Door Coupe was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.92 km/h. The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by The Medical College of Wisconsin in Milwaukee, Wisconsin, on December 18, 2013. Pre-test and post-test photographs of the test vehicle, the MDB, and the dummies (ES-2re and SID-IIs) are included in this report.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the OCWS Side Impact Laboratory Test Procedure, dated September 2013. The side impact event was documented by 11 cameras. Camera locations are included in this report.

The dummies were instrumented in the following manner:

DRIVER ATD (ES-2re)

- Primary and Redundant Head CG Tri-Axial Accelerometers
- Chest, Upper Rib, Middle Rib, and Lower Rib Y-Axis Displacement Potentiometers
- Abdomen Forward, Middle, and Rear Y-Axis Load Cells
- Lower Spine (T₁₂) Tri-Axial Accelerometers
- Pubic Symphysis Y-Axis Load Cell

PASSENGER ATD (SID-IIs)

- Primary and Redundant Head CG Tri-Axial Accelerometers
- Chest, Upper Rib, Middle Rib, and Lower Rib Y-Axis Displacement Potentiometers
- Abdomen Upper Rib and Lower Rib Y-Axis Displacement Potentiometers
- Lower Spine (T₁₂) Tri-Axial Accelerometers
- Acetabulum and Iliac Wing Y-Axis Load Cells

APPENDIX B contains the vehicle and dummy response data. Dummy configuration and performance verification data can be found in APPENDIX C of this report. APPENDIX D of this report contains the test equipment and instrumentation calibration data.

SECTION 2
SUMMARY OF TEST RESULTS (CONTINUED)

Dummy injury values were recorded as follows:

DRIVER DUMMY INJURY VALUES			
Measurement Description	Driver ATD (ES-2re)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	N/a	1000	236
Maximum Thorax Rib Deflection	mm	44	38
Combined Abdominal Force	N	2500	1147
Pubic Symphysis Force	N	6000	1640

PASSENGER DUMMY INJURY VALUES			
Measurement Description	Passenger ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	N/a	1000	391
Lower Spine (T ₁₂) Resultant Acceleration	G's	82	70
Total Pelvic Force (Sum of Acetabular and Iliac Forces)	N	5525	2456
Maximum Thoracic Rib Deflection	mm	38*	34
Maximum Abdominal Rib Deflection	mm	45*	25

**Proposed IARV*

Supplemental restraint information is given below:

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION				
Restraint type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	Did Not Deploy	No	N/a
Knee Airbag	No	N/a	No	N/a
Side Curtain Airbag	Yes	Deployed	Yes	Deployed
Side Torso/Abdomen/Pelvis Airbag	Yes	Deployed	No	N/a
Seat Belt Pretensioner	Yes	Deployed	No	N/a
Seat Belt Load Limiter	Yes	N/a	No	N/a
Other	N/a	N/a	N/a	N/a

GENERAL COMMENTS

SECTION 3 OCCUPANT AND VEHICLE INFORMATION

PRE TEST

Data Sheet No. 1 – General Test and Vehicle Parameter Data
Data Sheet No. 2 – Seat, Seat Belt, Steering Wheel Adjustment and Fuel System Data
Data Sheet No. 3 – Dummy Longitudinal Clearance Dimensions
Data Sheet No. 4 – Dummy Lateral Clearance Dimensions
Data Sheet No. 5 – Camera and Instrumentation Data
Data Sheet No. 6 – Test Vehicle Accelerometer Locations
Data Sheet No. 7 – MDB Accelerometer Locations

POST TEST

Data Sheet No. 8 – Post-Test Observations
Data Sheet No. 9 – MDB Summary of Results
Data Sheet No. 10 – Test Vehicle Profile Measurements
Data Sheet No. 11 – Test Vehicle Exterior Crush Measurements
Data Sheet No. 12 – MDB Exterior Static Crush Measurements
Data Sheet No. 13 – FMVSS No. 301 Static Rollover Results
Data Sheet No. 14 – Dummy/Vehicle Temperature and Humidity Stabilization Data

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

VEHICLE INFORMATION	
NHTSA No.	M20145123
Model Year	2014
Make	Scion
Model	FR-S
Body Style	Coupe
VIN	JF1ZNAA13E9700447
Body Color	Firestorm
Odometer Reading (km/mi)	118 mi
Engine Displacement (L)	2.0
Type/No. of Cylinders	4 Cylinder
Engine Placement	Longitudinal
Transmission Type	Manual
Transmission Speeds	5
Overdrive	Yes
Final Drive	RWD
Roof Rack	No
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

VEHICLE OPTIONS	
Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks (ADL)	No
Power Window Auto-Reverse	No
Other Optional Features	Yes
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensioner	No
Driver Load Limiter	Yes
Rear Pass. Load Limiter	No
Other Safety Restraint	None Noted

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

N/a

DATA FROM CERTIFICATION LABEL			
Manufactured By	Fuji Heavy Industries	GVWR (kg)	1670
Date of Manufacture	August 2013	GAWR Front(kg)	876
Vehicle Type	Coupe	GAWR Rear (kg)	943

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION				
	Front	Rear	Third	Total
Designated Seating Capacity (DSC)	2	2	0	4
Capacity Weight (VCW) (kg)				317.1
DSC X 68.04 (kg)				272.2
Cargo Weight (RCLW) (kg)				44.9

(A)

(B)

(A-B)

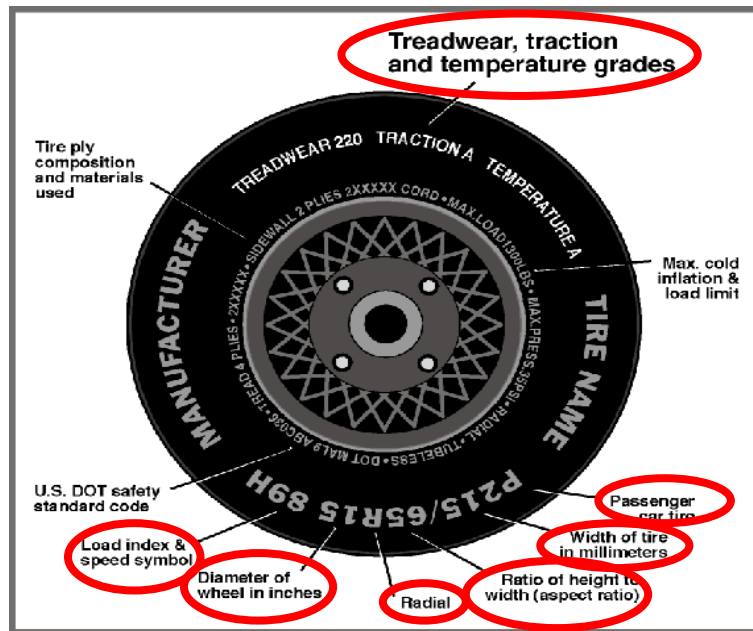
Test Vehicle: 2014 Scion FR-S 2-Door Coupe
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DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA (CONTINUED)

VEHICLE SEAT TYPE							
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						W/ Lever	W/ Knob
Front Seat	X					X	
Rear or Second Row Seat	X				X	N/a	
Third Row Seat							

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



VEHICLE TIRE INFORMATION		
Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	240	240
Recommended Tire Size	215/45R17	215/45R17
Tire Size on Vehicle	215/45R17	215/45R17
Tire Manufacturer	Michelin	Michelin
Tire Model	Primary HP	Primary HP
Treadwear	240	240
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2	2
Tire Plies Body	5	5
Load Index/Speed Symbol	87W	87W
Tire Material	Polyamide, Polyester & Steel	Polyamide, Polyester & Steel
DOT Safety Code Left	F3N0 009X 0613	F3N0 009X 0613
DOT Safety Code Right	F3N0 009X 0613	F3N0 009X 0613

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

TIRE PRESSURES					
	Units	LF	RF	LR	RR
As Delivered	kPa	255.1	262.0	255.1	262.0
Tire Placard	kPa	241.3	241.3	241.3	241.3
Owner's Manual	kPa	240.0	240.0	240.0	240.0
As Tested	kPa	241.3	241.3	241.3	241.3

MDB TIRE SPECIFICATIONS						
	Units	Requirement	LF	RF	LR	RR
Tire Size		205/75R15	P205/75R15	P205/75R15	P205/75R15	P205/75R15
Tire Pressure	kPa	200 +/- 21	200	200	200	200

TEST VEHICLE WEIGHTS										
	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	346.1	279.0		368.3	357.0		386.9	352.9	
Right	kg	342.9	274.0		354.3	325.7		351.5	320.8	
Ratio	%	55.5	44.5		51.4	48.6		52.3	47.7	
Totals	kg	689.0	553.0	1242.0	722.6	682.7	1405.3	738.4	673.7	1412.1

TARGET TEST WEIGHT CALCULATION			
	Units		
Total Delivered Weight (UVW)	kg	1242.0	(A)
Sum of Actual Weight of 2 P572 ATDs used	kg	125.2	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	44.9	(C)
Calculated Target Vehicle Test Weight (TVTW)	kg	1412.1	(A + B + C)

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight – 4.5 kg to 9 kg)?

Yes

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

TEST VEHICLE ATTITUDE AND CG				
Measurement description	Units	Fully Loaded	As Tested	Meets Requirement***
LF	mm	681	687	Yes
RF	mm	688	688	Yes
RR	mm	682	680	Yes
LR	mm	688	683	Yes
Vehicle CG (Aft of Front Axle)	mm	1229	1251	
Vehicle CG (Left(+))/Right(-) from Longitudinal Centerline)	mm	42	28	

***The "As Tested" vehicle attitude measurements must be equal to or within +/- 10 mm of the "Fully Loaded" vehicle attitude measurements at each wheel well. "Yes" or "No" is indicated.

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW	
Ballast	Weight (kg)
Removed spare tire & floor cover, and jack, non-struck side windows to achieve calculated "As Tested" weight.	21.8

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

SCRL ANGLE RANGE			
Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	1.7°	-1.7°	0.0°
Front Passenger Seat	0°	0°	0°
Front Center Seat*			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat*			

*If applicable

SCRL ANGLE RANGE						
Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCR Height (mm)	SCR Height Position	SCR Height (mm)		
				Rearmost	Mid-Fore/Aft	Forward- Most
Driver's Seat	N/a**	N/a**	Max	N/a**	N/a**	N/a**
	0.0	76.0	Mid	85.3	76.0	66.6
	N/a**	N/a**	Min	N/a**	N/a**	N/a**
Front Passenger Seat	N/a**	N/a**	Max	N/a**	N/a**	N/a**
	0.0	90.9	Mid	100.7	90.9	80.4
	N/a**	N/a**	Min	N/a**	N/a**	N/a**
Front Center Seat*			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	0.0	-198.5	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	Fixed	Fixed	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed
Rear Center Seat*			Max			
			Mid			
			Min			

*If applicable

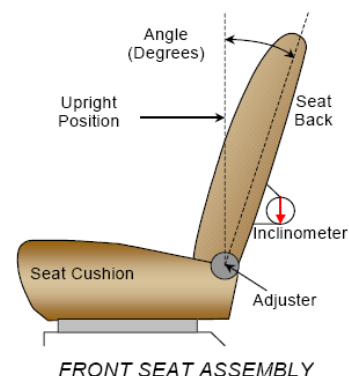
DATA SHEET NO. 2
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA (CONTINUED)

SEAT FORE/AFT POSITION				
Seat	Total Fore/Aft Travel		Test Position from Forward-most Position	
	mm	Detent*	mm	Detent*
Driver Seat	240	25	125	12
Front Passenger Seat	240	25	125	12
Front Center Seat*				
Struck Side Rear Seat	Fixed	N/a	Fixed	N/a
Non-Struck Side Rear Seat	Fixed	N/a	Fixed	N/a
Rear Center Seat*				

*If applicable

Seat Back Angle Adjustment

The driver's seat back is positioned to the manufacturer's designated design angle. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back. The struck side rear seat back is positioned such that the dummy's head is level. The rear center and non-struck side rear outboard seat backs are positioned in a similar manner as the struck-side rear seat back.



SEAT BACK ANGLE ADJUSTMENT				
Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detents*
Driver Seat w/ Seated Dummy	53.6	28	11.0	7
Front Passenger Seat	53.7	28	11.0	7
Front Center Seat*				
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat*				

*If applicable

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

Seat Belt Anchorage Adjustment

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

SEAT BELT ANCHORAGE ADJUSTMENT		
	Total # of Positions	Placed in Position #
Driver Seat	Fixed	As Positioned
Rear Seat	Fixed	As Positioned

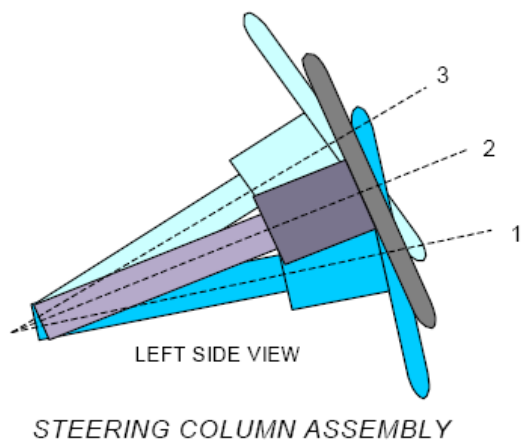
Head Restraint Adjustment

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

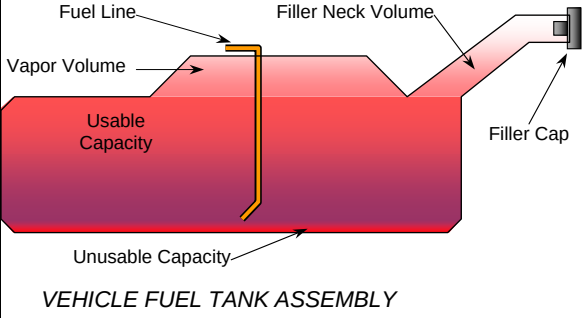
HEAD RESTRAINT ADJUSTMENT		
	Total # of Positions	Placed in Position #
Driver Seat	Fixed	As Positioned
Rear Seat	Fixed	As Positioned

Steering Column Adjustment

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

STEERING COLUMN ADJUSTMENT			
	Degrees	Fore/Aft Position (mm)	
Lowermost, Pos. No. 1	71.3	19	
Geometric Center, Pos. No. 2	69.5	19	
Uppermost, Pos. No. 3	67.6	19	
Telescoping Steering Wheel Travel	38	N/a	
Test Position	69.5	19	

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

FUEL TANK CAPACITY DATA			
Description	Units	Value	
Usable Capacity of “Standard Tank”	L	50.0	
Usable Capacity of “Optional Tank”	L	N/a	
Usable Capacity of Standard Tank	L	50.0	
Usable Capacity of Optional Tank	L	N/a	
93% of Usable Capacity	%	46.5	
Actual Amount of Solvent Used in Test	L	46.5	
1/3 of Usable Capacity	16.7		

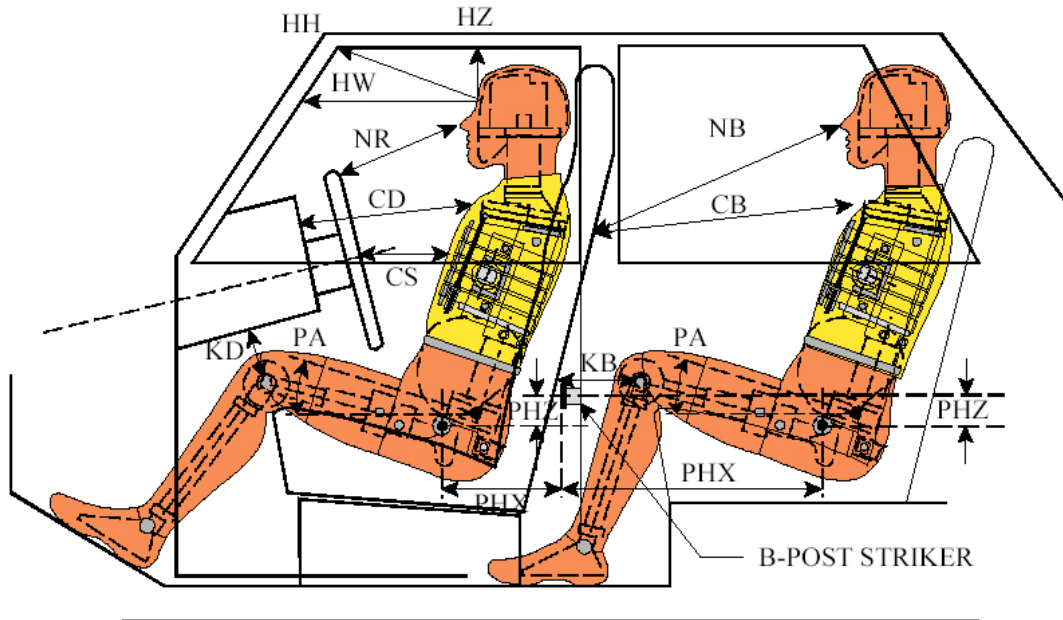
Fuel Pump

The vehicle is equipped with an electronic fuel pump. Key is "ON" position. The fuel pump is on the left side.

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

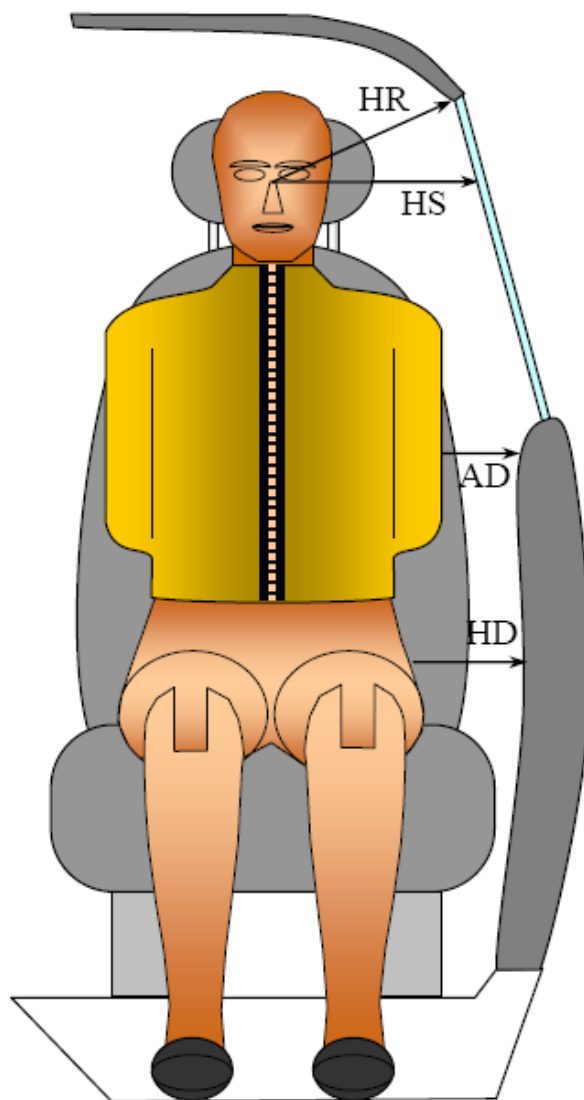
Yes

DATA SHEET NUMBER 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS



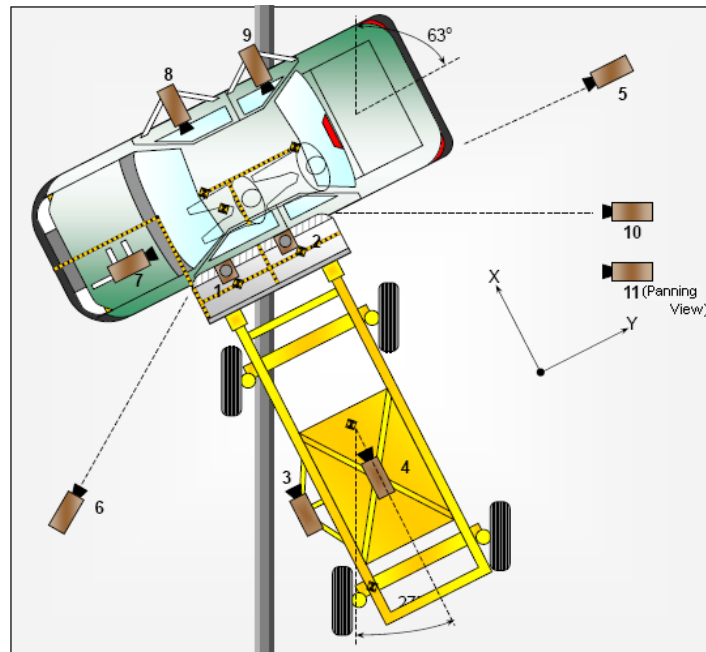
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION						
Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length (mm)	Angle	Length (mm)	Angle
HH		Header to Header	350			
HW		Header to Windshield	554			
HZ	HZ	Head to Roof Liner	125		214	
NR	NB	Nose to Rim/Seat Back	453		394	
CD	CB	Chest to Dash/Seat Back	513		345	
CS		Chest to Steering Wheel	348			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	164	21.1	103	31.4
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	148	28.6	110	31.7
PAX°	PAX°	Pelvic Tilt Angle X		0.0		0.0
	PAY°	Pelvic Tilt Angle Y		19.0		29.6
PHX	PHX	Hip Point to Striker (X-Axis)	430.7		-274.8	
PHZ	PHZ	Hip Point to Striker (Z-Axis)	215.7		212.2	

DATA SHEET NUMBER 4
DUMMY LATERAL CLEARANCE DIMENSIONS



DUMMY LATERAL CLEARANCE DIMENSION INFORMATION				
Code	Description	Units	Driver	Passenger
HR	Head to Side Header	mm	148	201
HS	Head to Side Window	mm	250	374
AD	Arm to Door	mm	197	174
HD	Hip Point to Door	mm	150	96

DATA SHEET 5 CAMERA AND INSTRUMENTATION DATA



	View	Coordinates †			Lens Length mm	Operating Frame Rate fps
		X	Y	Z		
		mm	mm	mm		
1	Overhead Wide View	1705	-791	-4209	10	1000
2	Overhead Close-Up View	1784	-862	-4721	25	1000
3	Impact Point	2091	-1258	-476	25	1000
4	Struck-Side at Impact	1680	-1480	-340	12.5	1000
5	Rear Impact View of Struck Side	-7894	2448	-516	50	1000
6	Front Oblique Impact View of Struck Side	12734	-722	-601	25	1000
7	Driver Dummy Front View (Onboard)				12.5	1000
8	Driver Dummy Side View (Onboard)				12.5	1000
9	Rear Passenger Dummy Side View (Onboard)				12.5	1000
10	Real-Time Rear View of Impact				N/a	30
11	Real-Time Pan View of Impact				N/a	30

Origin

X Vehicle Zero Point
Y Vehicle Zero Point
Z Vehicle Zero Point

Orientation

X +(X) To Front of Vehicle
Y +(Y) To Right of Vehicle
Z +(Z) Down

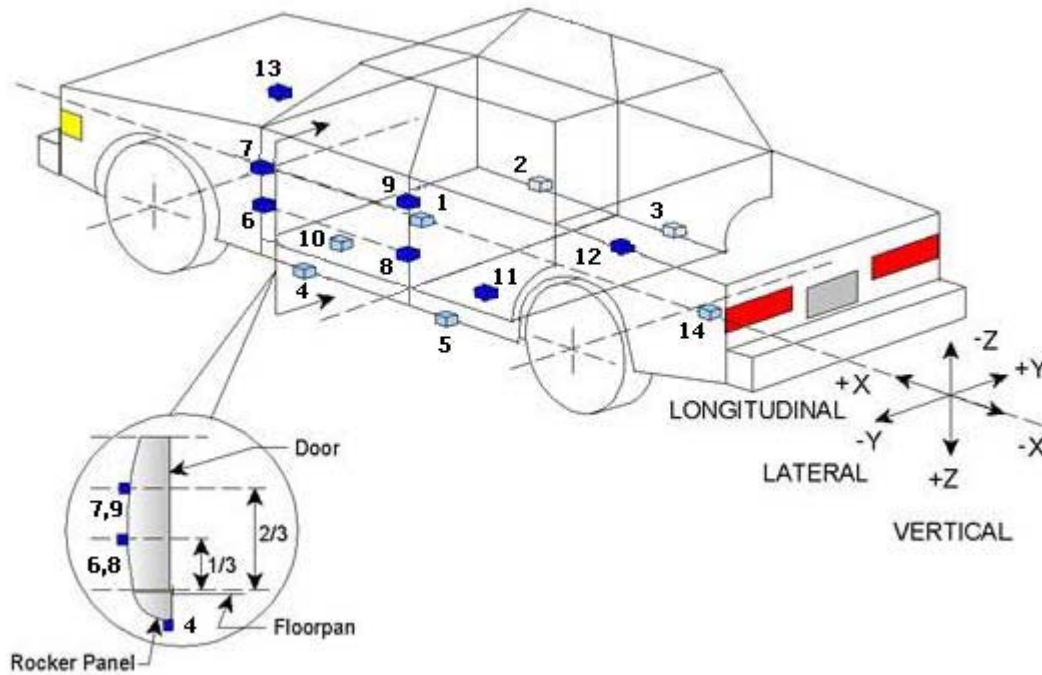
*All measurements accurate to +/- 6 mm

DATA SHEET 5
CAMERA AND INSTRUMENTATION DATA (CONTINUED)

Why did the cameras not operate?

INSTRUMENTATION	
Driver Dummy Channels	16
Passenger Dummy Channels	16
Vehicle Structure Accelerometers	23
MDB Accelerometers	5
Total	60

DATA SHEET 6 **TEST VEHICLE ACCELEROMETER LOCATIONS**

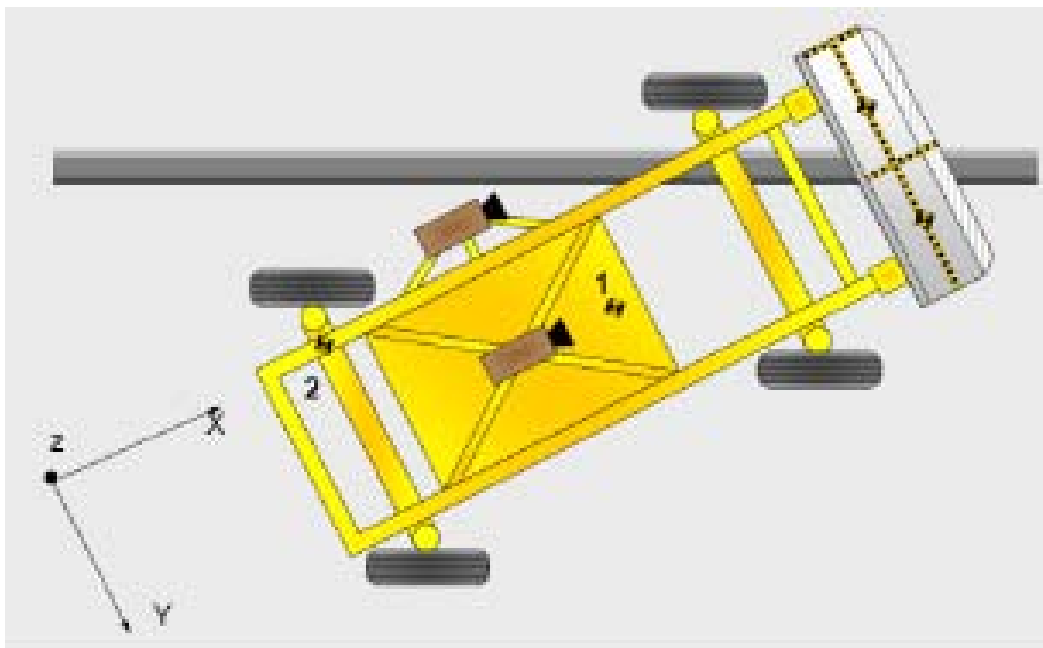


TEST VEHICLE ACCELEROMETER LOCATIONS				
Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Vehicle CG	2079.5	17.8	104.4
2	Right Sill at Front Seat	2102.9	724.0	350.8
3	Right Sill at Rear Seat	1337.4	722.1	352.0
4	Left Sill at Front Door	2114.9	-731.0	338.3
5	Left Sill at Rear Door	1336.1	-732.5	335.6
6	A-Post Lower	2758.7	-791.4	62.6
7	A-Post Middle	2753.2	-783.7	-168.2
8	B-Post Lower	1605.8	-723.3	-5.41
9	B-Post Middle	1567.5	-722.2	-153.7
10	Front Seat Track	1996.7	-542.1	266.4
11	Rear Seat Structure	1635.3	-326.5	131.2
12	Rt. Rear Occ. Compartment	1646.5	321.4	152.7
13	Engine Block	3269.3	23.6	-78.6
14	Rear Above Axle	777.1	2.91	66.5

Reference:

X - Rear surface of vehicle (+ forward)
Y - Vehicle centerline (+ right)
Z - Bumper target (+ down)

DATA SHEET 7
MDB ACCELEROMETER LOCATIONS



MDB ACCELEROMETER LOCATIONS				
Loc No.	Accelerometer Locations	Coordinates (mm)		
		X	Y	Z
1	MDB CG	1113	-1	311
2	MDB Rear	2812	-614	585

Reference

X - Face of MDB (+ forward)
Y - MDB centerline (+ to right)
Z - Ground plane (+ down)

DATA SHEET NUMBER 8
POST-TEST OBSERVATIONS

TEST DUMMY INFORMATION AND CONTACT POINTS		
Dummy Body Part	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Face	To Roof Rail & Side Curtain Airbag	To Roof Rail
Top of Head	To Roof Rail	To Roof Rail
Left Side of Head	To Roof Rail & Side Curtain Airbag	To Roof Rail
Back of Head	Along Head Rest To Roof Rail	To Roof Rail
Left Shoulder	To Side Curtain Airbag and TAP Airbag	To Side Curtain Airbag
Upper Torso	Along Seat Back Wing Into TAP Airbag	To Interior Door Panel
Lower Torso	Along Seat Back Wing Into TAP Airbag	To Interior Door Panel
Left Hip	To TAP Airbag	Along Seat Bottom Into Interior Door Panel
Left Knee	To Interior Door Panel	To Interior 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	N/a	Yes	N/a	Yes
Total Separation from Vehicle at Hinges of Latches	No	N/a	No	N/a	No
Latch of Hinge Systems Pulled Out of Their Anchorages	No	N/a	No	N/a	No
Disengaged from Latched Position	No	N/a	No	N/a	No
Latch Separated from Striker	No	N/a	No	N/a	No
Jammed Shut	Yes	N/a	No	N/a	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	N/a	No	N/a
Seat Disengagement from Floor Pan	No	No	No	No
Seat Back Movement from Initial Position	No	N/a	No	N/a
Seat Back Collapse	No	No	No	No

**DATA SHEET NUMBER 8
POST-TEST OBSERVATIONS (CONTINUED)**

POST TEST STRUCTURAL OBSERVATIONS	
Critical Areas of Performance	Observations/Conclusions
Pillar Performance	No Damage
Sill Separation	No Separation
Windshield Damage	Heavy Cracking Along Struck Side
Window Damage	Shattered at Impact
Other Notable Effects	None Noted

SUPPLEMENTAL RESTRAINT INFORMATION				
Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes – Steering Wheel	Did Not Deploy		
Knee Airbag	No	N/a		
Side Curtain Airbag	Yes – Side Header	Deployed Properly	Yes – Side Header	Deployed Properly
Side Torso/Abdomen/Pelvis Airbag	Yes – Seat Back	Deployed Properly	No	N/a
Seat Belt Pretensioner	Yes	Deployed Properly	No	N/a
Seat Belt Load Limiter	Yes	N/a	No	N/a
Other	No	N/a	No	N/a

IMPACT POINT LOCATION DATA			
Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		2575
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		348
Actual Impact Point (Aft of Front Axle)	mm		339
Horizontal Offset (+ forward / - rear)	mm	+/- 50 of Intended Impact Point	9 Forward
Vertical Offset (+ down / - up)	mm	+/- 20 of Intended Impact Point	6 Below

DATA SHEET NUMBER 9
MDB SUMMARY OF RESULTS

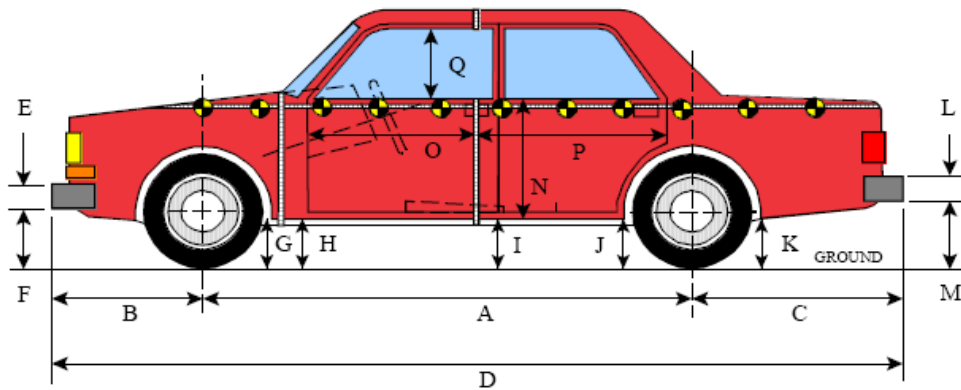
MDB SPECIFICATIONS	
Measurement Description	Length (mm)
Overall Width of Framework Carriage	1250
Overall Length Including Honeycomb Frame	4116
Wheel Base of Framework Carriage	2578
CG Location of Front Axle	1112

MDB WEIGHTS				
	Units	Front Axle	Rear Axle	Total
Left	kg	436.8	245.8	682.6
Right	kg	323.9	355.2	679.1
Ratio	%	55.9	44.1	100.0
Totals	kg	760.7	601.0	1361.7

SPEED AND ANGLE AT IMPACT DATA			
Measured parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.92
Trap No. 2 Velocity (Secondary)	km/h	61.1 to 62.7	61.89
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90
MDB Forward Line of Motion to Target Vehicle	degrees	62.5 to 63.5	63.0
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26 to 28	27.0

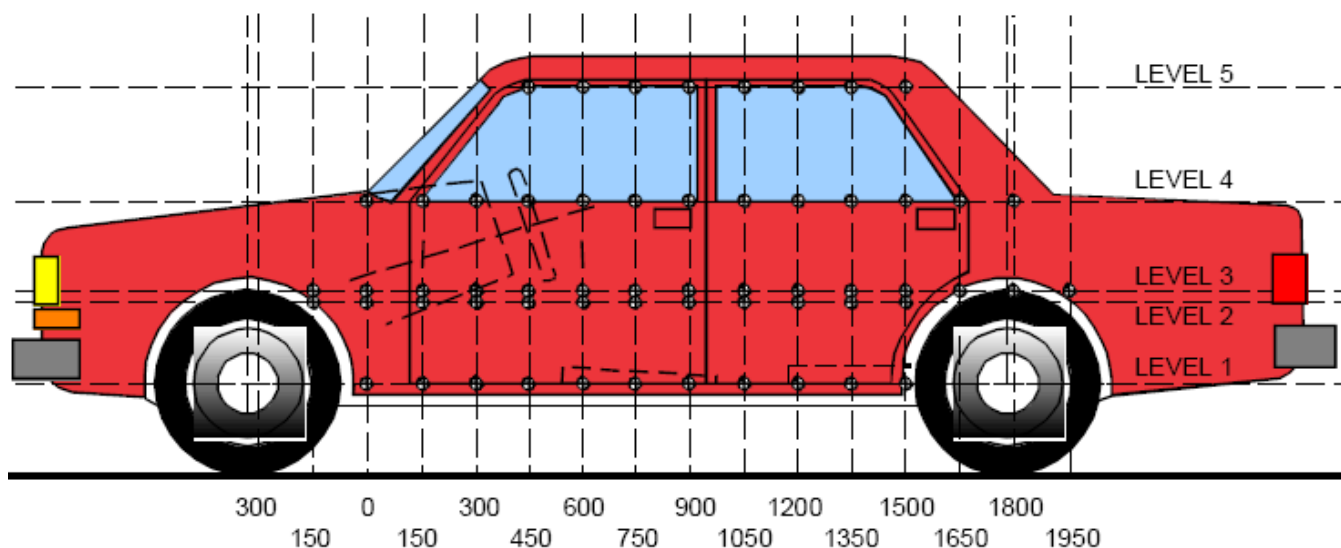
MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE					
Vertical Location			From Centerline		Maximum Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	800	Right	181
B	Top of Bumper	533	800	Left	119
C	Mid-Level	557	800	Left	134
D	Top of Stack	840	800	Left	158

DATA SHEET NUMBER 10
TEST VEHICLE PROFILE MEASUREMENTS



VEHICLE PRE – AND POST – TEST MEASUREMENT INFORMATION				
Code	Description	Pre test	Post test	Difference
		mm	mm	mm
A	Wheelbase	2575	2656	81
B	Front Axle to FSOV	483	491	8
C	Rear Axle to RSOV	576	561	-15
D	Total Length at Centerline	4242	4234	-8
E	Front Bumper Thickness	249	249	0
F	Front Bumper Bottom to Ground	202	224	22
G	Sill Height at Front Wheel Well	201	263	62
H	Sill Height at Front Door Leading Edge	208	276	68
I	Sill Height at B-Pillar	210	235	25
J1	Sill Height at Rear Wheel Well	157	159	2
J2	Pinch Weld Height at Rear Wheel Well	213	235	22
K	Sill Height Aft of Rear Wheel Well	227	206	-21
L	Rear Bumper Thickness	115	115	0
M	Rear Bumper Bottom to Ground	505	480	-25
N	Sill Height to Bottom of Front Window Sill	753	723	-30
O	Front Door Leading Edge to Impact C/L	1340	1330	-10
P	Rear Door Trailing Edge to Impact C/L	578	542	-36
Q	Front Window Opening	350	360	10
R	Right Side Length	3634	3644	10
S	Left Side Length	3634	3617	-17
T	Maximum Vehicle Width	1737	1546	-191

DATA SHEET NUMBER 11
VEHICLE EXTERIOR CRUSH MEASUREMENTS



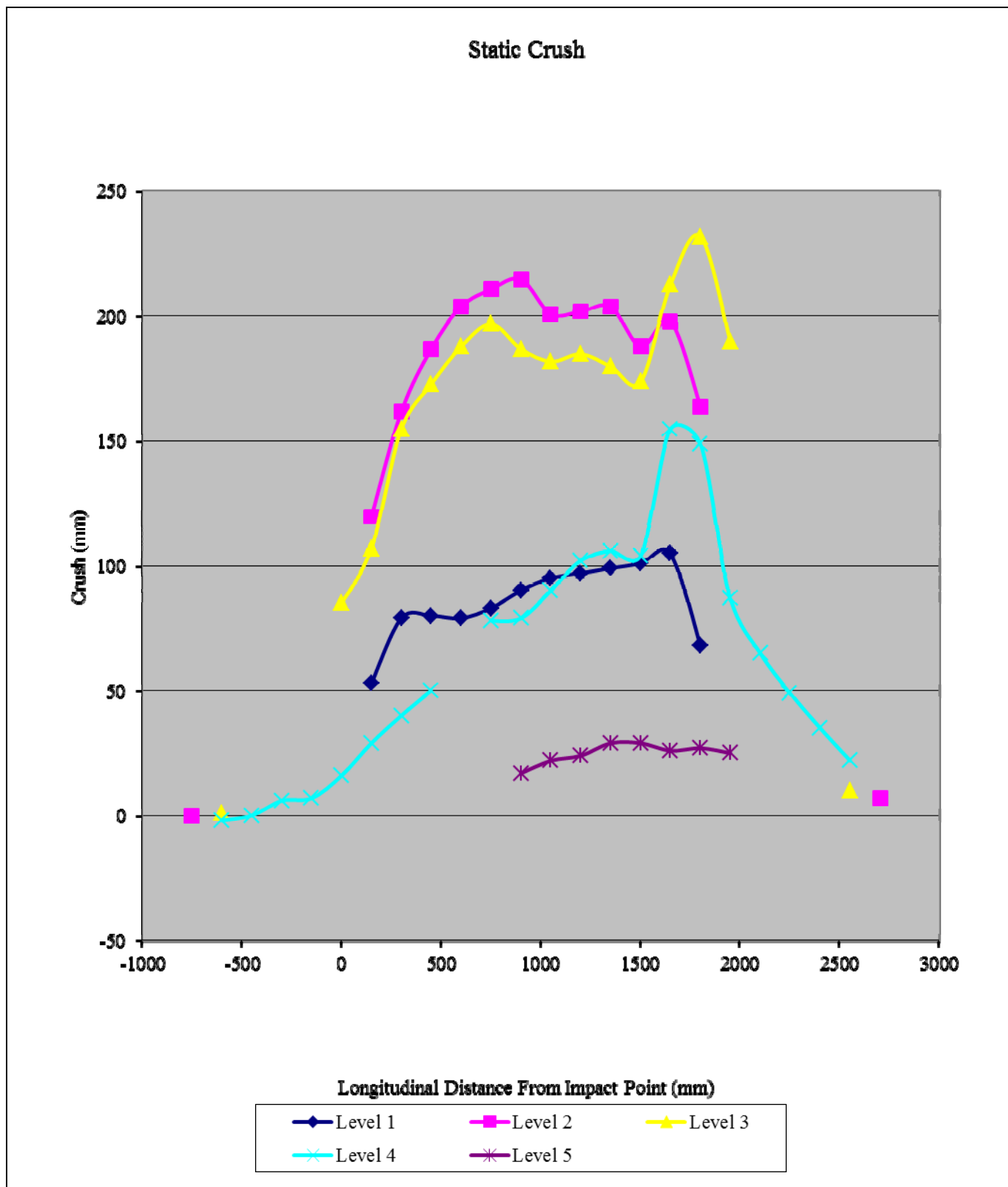
LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS				
Level	Measurement Description	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	232	105	1650
2	Occupant Hip Point	394	215	900
3	Mid-Door	568	232	1800
4	Window Sill	838	155	1650
5	Window Top	1177	29	1350 & 1500

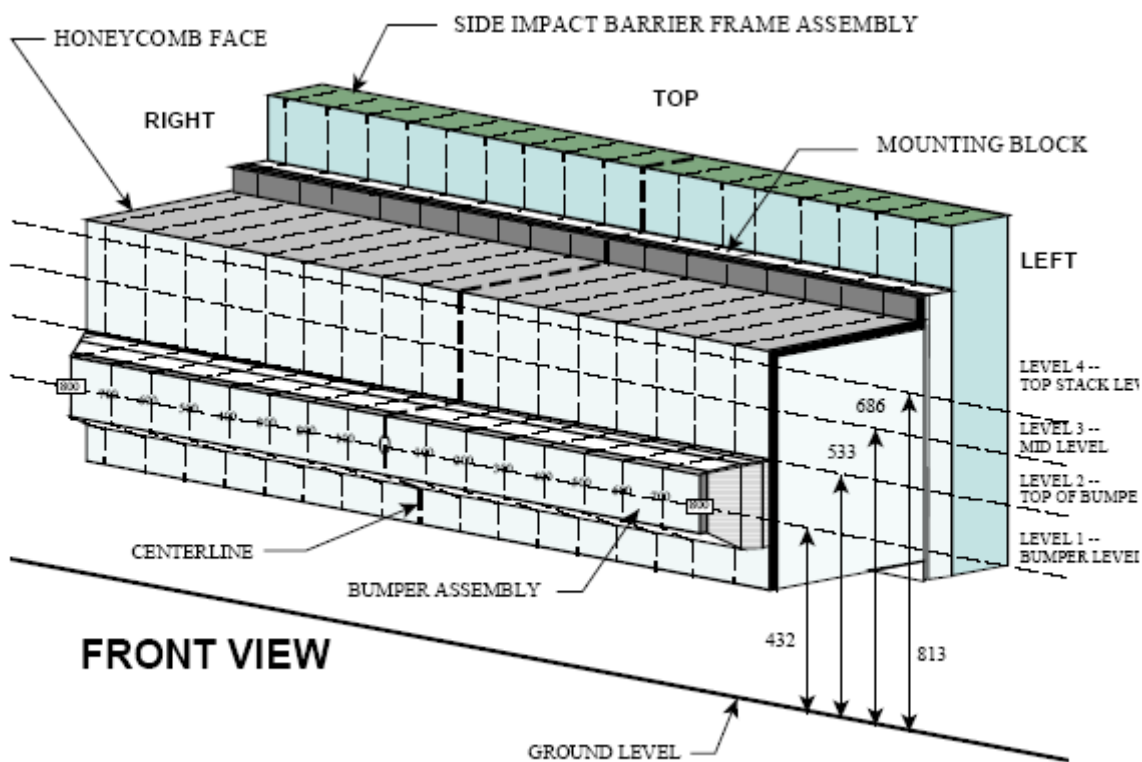
DATA SHEET NUMBER 11
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS (CONTINUED)

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL															
Level	1			2			3			4			5		
	Pre	Post	Crush	Pre	Post	Crush	Pre	Post	Crush	Pre	Post	Crush	Pre	Post	Crush
DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT	-1050														
	-900														
	-750			303	303	0									
	-600						285	286	1	431	429	-2			
	-450									396	396	0			
	-300									378	384	6			
	-150									383	390	7			
	0						282	367	85	380	396	16			
	150	315	368	53	295	415	120	285	392	107	377	406	29		
	300	315	394	79	296	458	162	282	437	155	369	409	40		
	450	312	392	80	294	481	187	280	453	173	372	422	50		
	600	311	390	79	293	497	204	279	467	188					
	750	310	393	83	293	504	211	279	476	197	362	440	78		
	900	310	400	90	294	509	215	279	466	187	360	439	79	546	563
	1050	310	405	95	295	496	201	282	464	182	357	447	90	542	564
	1200	310	407	97	298	500	202	285	470	185	352	454	102	547	571
	1350	307	406	99	301	505	204	287	467	180	351	457	106	549	578
	1500	302	403	101	304	492	188	291	465	174	350	454	104	554	583
	1650	297	402	105	290	488	198	292	505	213	352	507	155	559	585
	1800	288	356	68	276	440	164	282	514	232	352	501	149	567	594
	1950							270	460	190	344	431	87	579	604
	2100										329	394	65		
	2250										335	384	49		
	2400										355	390	35		
	2550							284	294	10	385	407	22		
	2700				330	337	7								
	2850														
	3000														
	3150														
	3330														

DATA SHEET NUMBER 11
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS (CONTINUED)



DATA SHEET NUMBER 12
MDB EXTERIOR STATIC CRUSH MEASUREMENTS



NOTE: Dimensions are shown in millimeters, mm

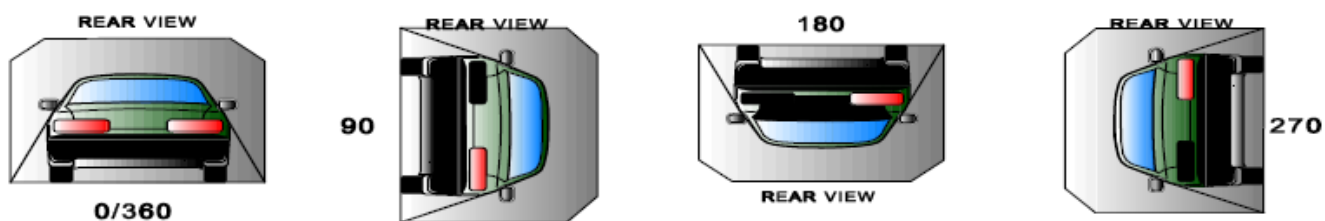
DEFORMABLE BARRIER STATIC CRUSH																	
	Distance Left of Center								C _L	Distance Right of Center							
	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
1	175	163	155	139	132	131	134	132	131	136	139	145	153	164	171	174	181
2	119	110	95	83	81	80	79	78	77	75	73	79	88	95	95	87	100
3	134	131	121	97	74	57	53	38	38	38	45	57	73	89	93	59	51
4	158	147	118	102	106	94	68	60	51	44	41	53	70	87	97	52	51

DATA SHEET NO. 13
FMVSS 301 STATIC ROLLOVER RESULTS

Temperature at Time of Impact: 20° C Test Time: 2:25 pm

STODDARD SOLVENT SPILLAGE MEASUREMENTS				
Period	Description	Maximum Allowable Spillage	Spillage	
			Amount	Location
A	From Impact Until Vehicle Motion Ceases	1 oz	0	N/a
B	5 Minutes After Vehicle Motion Ceases	5 oz	0	N/a
C	Next 25 Minutes	1 oz/minute	0	N/a
D	Spillage Details:			

FMVSS 301 STATIC ROLLOVER



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS			
Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	65	300	365
90° to 180°	66	300	366
180° to 270°	65	300	365
270° to 360°	65	300	365

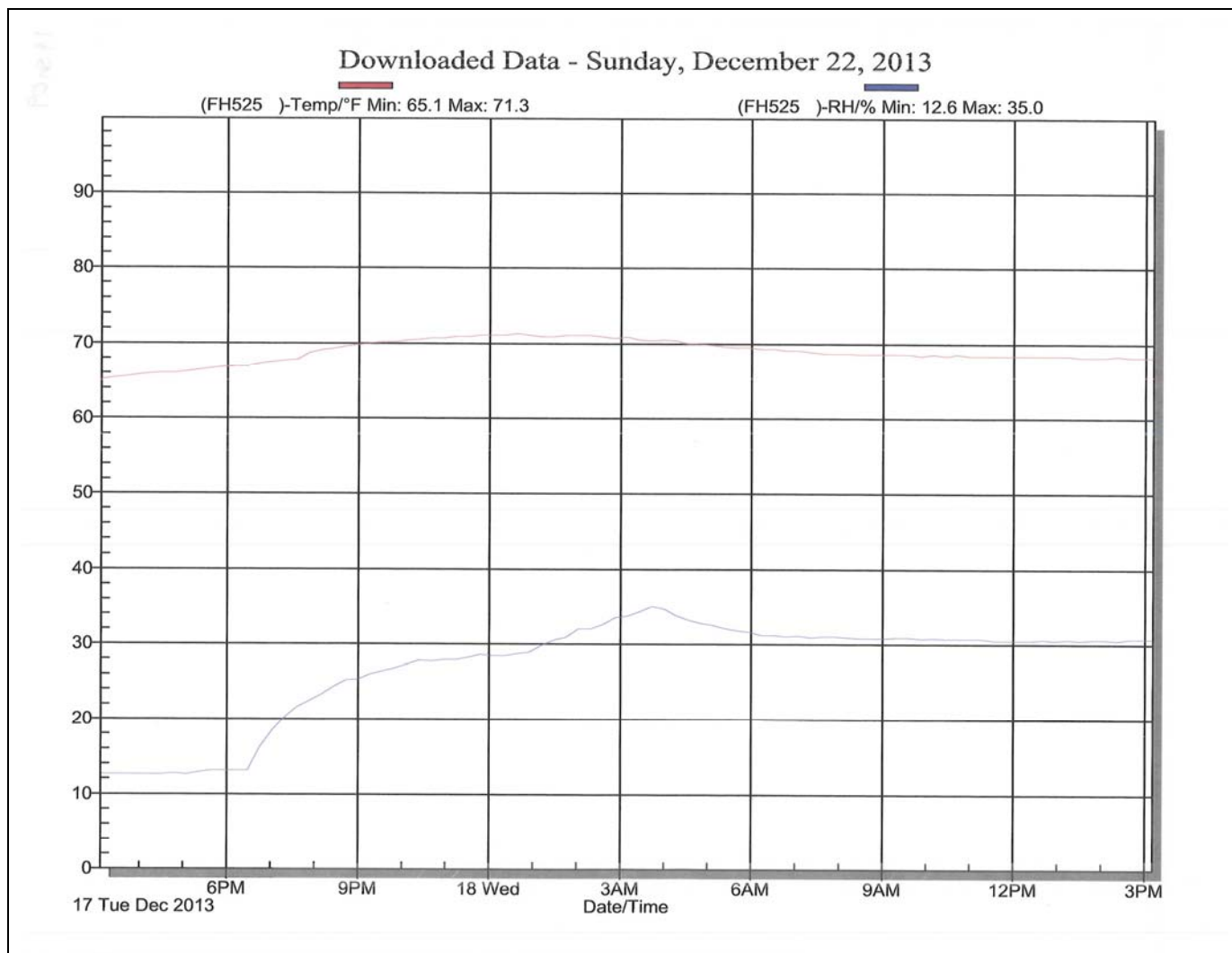
DATA SHEET NO. 13
FMVSS 301 STATIC ROLLOVER RESULTS (CONTINUED)

FMVSS No. 301 ROLLOVER SPILLAGE TABLE				
	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° to 90°	0	0	0	N/a
90° to 180°	0	0	0	N/a
180° to 270°	0	0	0	N/a
270° to 360°	0	0	0	N/a

FMVSS No. 301 STATIC ROLLOVER - SPILLAGE				
	First five minutes (oz)	Sixth minute (oz)	Seventh minute (oz)	Eighth minute (oz)
Max allowable leakage	5.0	1.0	1.0	1.0
0° to 90°	0	0	0	N/a
90° to 180°	0	0	0	N/a
180° to 270°	0	0	0	N/a
270° to 360°	0	0	0	N/a

ROLLOVER SOLVENT SPILLAGE LOCATION TABLE	
Test Phase	Spillage Location
0° to 90°	N/a
90° to 180°	N/a
180° to 270°	N/a
270° to 360°	N/a

DATA SHEET 14
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA



Test Vehicle: 2014 Scion FR-S 2-Door Coupe
Test Program: SINCAP

NHTSA Number: M20145123
Test Date: December 18, 2013

APPENDIX A PHOTOGRAPHS

LIST OF PHOTOGRAPHS

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No. 002	As-Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle	A-5
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No. 095	Post-Test Primary and Redundant Speed Trap Read-Out	A-52
No. 096	FMVSS No. 301 Static Rollover 0°	A-52
No. 097	FMVSS No. 301 Static Rollover 90°	A-53
No. 098	FMVSS No. 301 Static Rollover 180°	A-53
No. 099	FMVSS No. 301 Static Rollover 270°	A-54
No. 100	FMVSS No. 301 Static Rollover 360°	A-54
No. 101	Impact Event	A-55
No. 102	Monroney Label	A-55
No. 103	Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-56
No. 104	Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-56



Figure A-1: As-Delivered Right Front 3-4 View of Test Vehicle



Figure A-2: As-Delivered Left Rear 3-4 View of Test Vehicle



Figure A-3: Pre-Test Frontal View of the Test Vehicle



Figure A-4: Post-Test Frontal View of Test Vehicle



Figure A-5: Pre-Test Left Front 3-4 View of Test Vehicle



Figure A-6: Post-Test Left Front 3-4 View of Test Vehicle



Figure A-7: Pre-Test Left Side View of Test Vehicle



Figure A-8: Post-Test Left Side View of Test Vehicle



Figure A-9: Pre-Test Left Rear 3-4 View of Test Vehicle



Figure A-10: Post-Test Left Rear 3-4 View of Test Vehicle



Figure A-11: Pre-Test Rear View of Test Vehicle



Figure A-12: Post-Test Rear View of Test Vehicle



Figure A-13: Pre-Test Right Side View of Test Vehicle



Figure A-14: Post-Test Right Side View of Test Vehicle



Figure A-15: Pre-Test Overhead View of Test Area



Figure A-16: Post-Test Overhead View of Test Area



Figure A-17: Pre-Test Left Side View of MDB Positioned Against Side of Test Vehicle



Figure A-18: Pre-Test Right Side View of MDB Positioned Against Side of Test Vehicle



Figure A-19: Pre-Test Close-Up View of Impact Point Target



Figure A-20: Post-Test Close-Up View of Impact Point Target



Figure A-21: Pre-Test Left Front Door Latch Close-Up



Figure A-22: Post-Test Left Front Door Latch Close-Up

Not Applicable

M20145123

Figure A-23: Pre-Test Left Rear Door Latch Close-Up - N/a

Not Applicable

M20145123

Figure A-24: Post-Test Left Rear Door Latch Close-Up - N/a



Figure A-25: Pre-Test Front Close-Up View of Driver Dummy

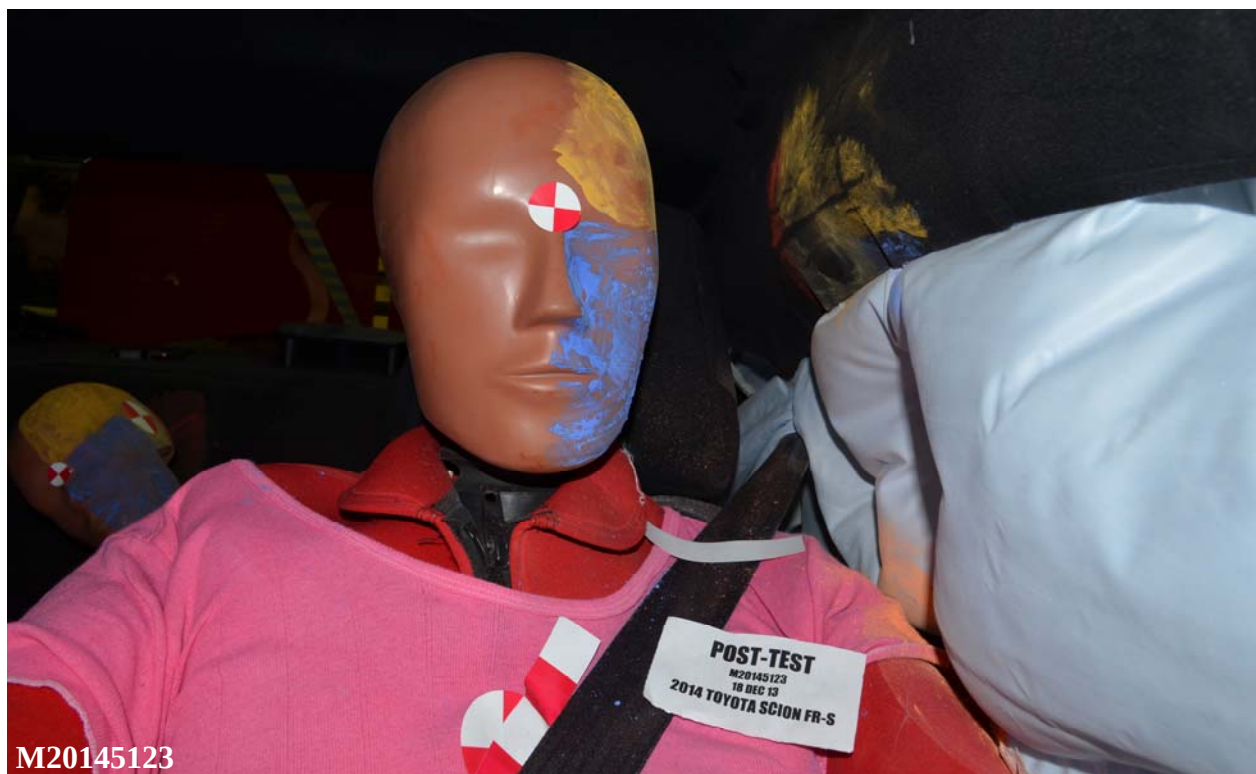


Figure A-26: Post-Test Front Close-Up View of Driver Dummy



Figure A-27: Pre-Test Left Side View of Driver Dummy Showing Belt and Chalking



Figure A-28: Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View



Figure A-29: Post-Test Left Side View of Driver Dummy Shoulder and Door Top View



Figure A-30: Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning

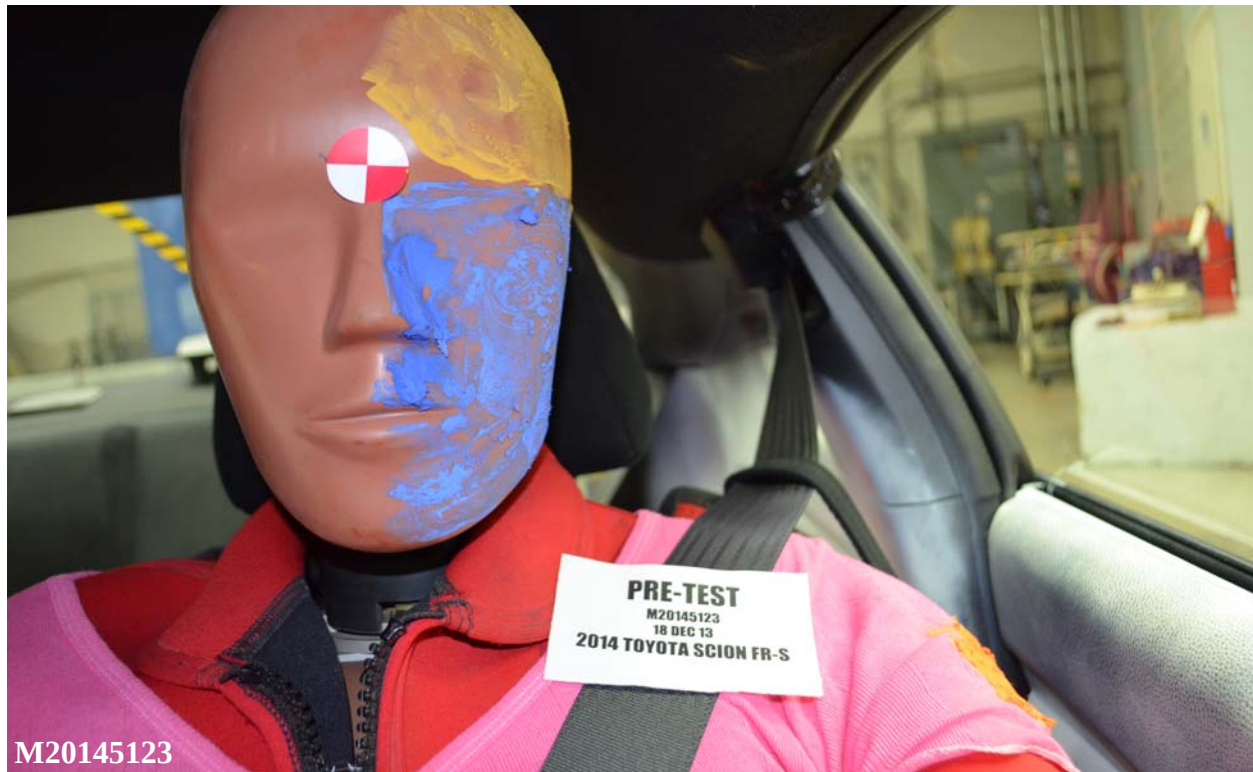


Figure A-31: Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint

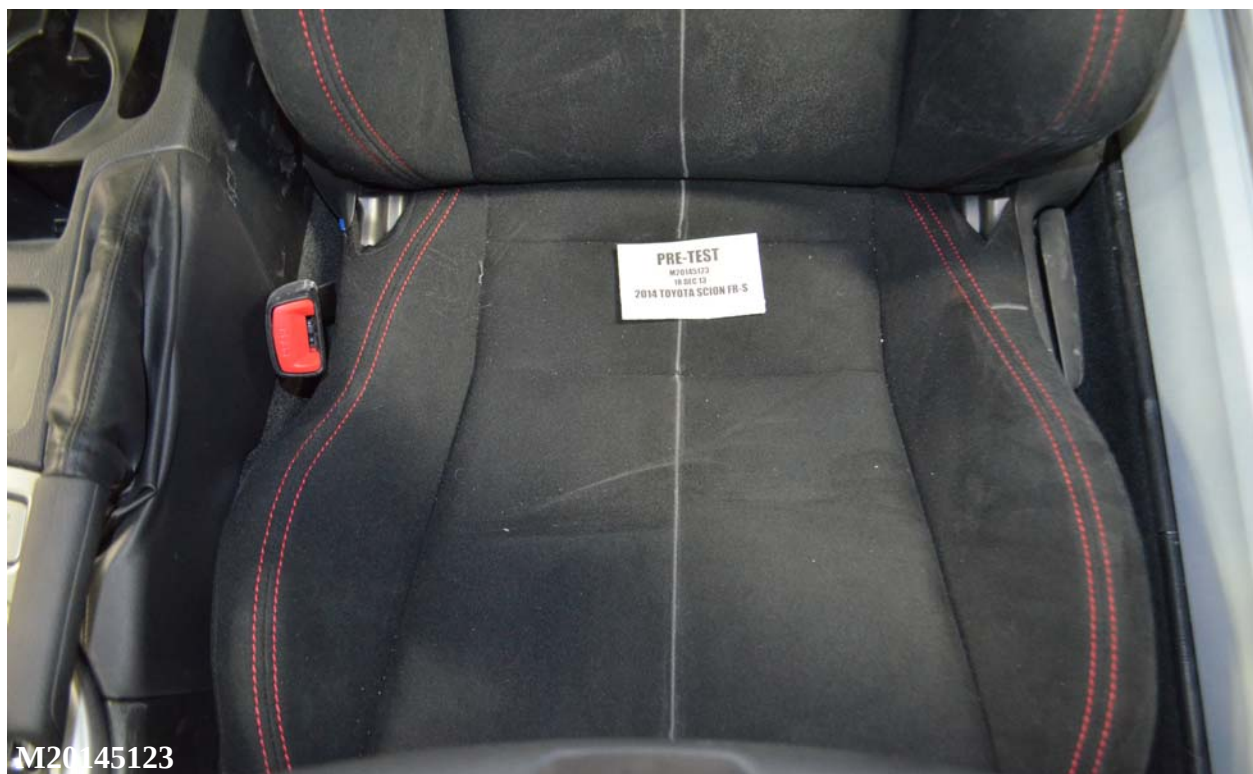


Figure A-32: Pre-Test Frontal View of Driver Seat Pan Prior to Dummy Positioning



Figure A-33: Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan



Figure A-34: Pre-Test Placement of Driver Dummy's Feet

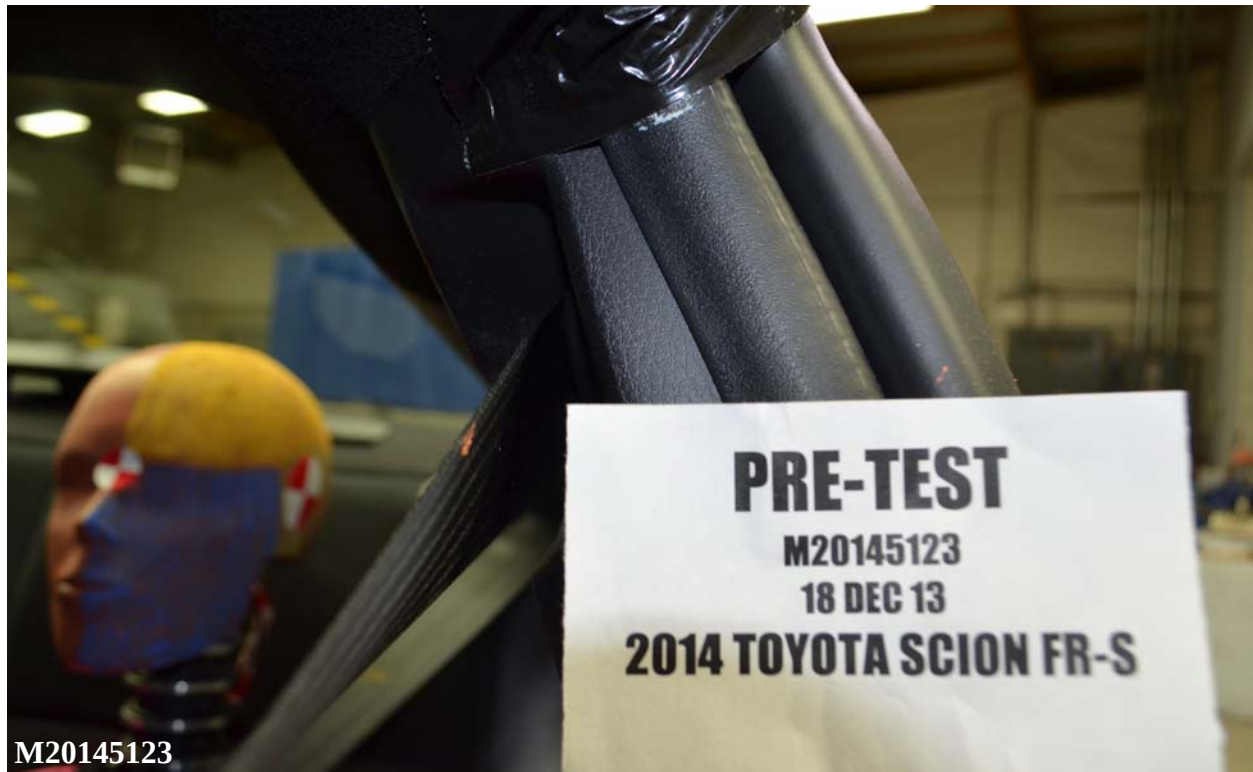


Figure A-35: Pre-Test View of Belt Anchorage for Driver Dummy



Figure A-36: Pre-Test Left Side View of Steering Wheel



Figure A-37: View of Disengaged Parking Brake



Figure A-38: Pre-Test View of Parking Brake



Figure A-39: Pre-Test Close-Up Left Side View of Driver Seat Track



Figure A-40: Pre-Test Close-Up Left Side View of Driver Seat Back



Figure A-41: Pre-Test Close-Up View of Driver Seat Back or Head Restraint



Figure A-42: Pre-Test Driver Dummy and Door Clearance View



Figure A-43: Post-Test Driver Dummy and Door Clearance View



Figure A-44: Pre-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment



Figure A-45: Post-Test Right Side View of Driver Dummy and Front Seat Occupant Compartment

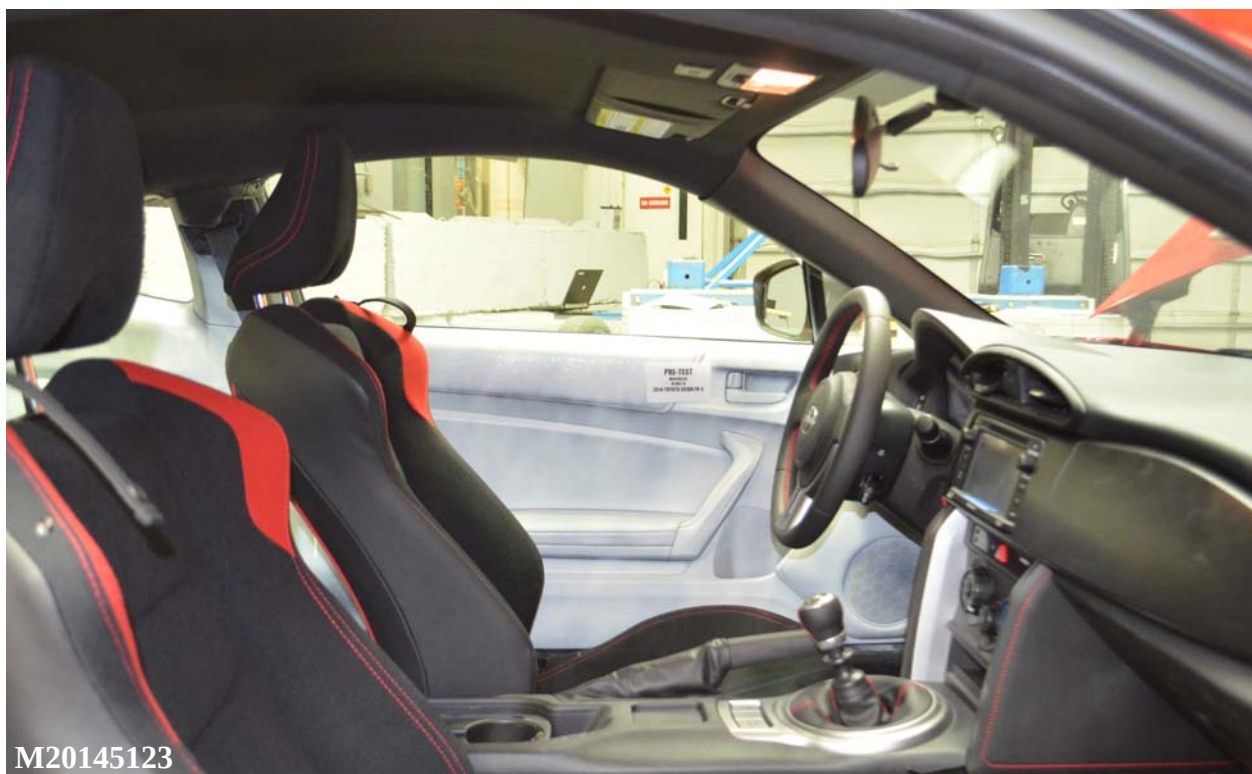


Figure A-46: Pre-Test Driver Inner Door Panel View



Figure A-47: Post-Test Driver Inner Door Panel View Showing Driver Dummy Contact Locations



Figure A-48: Post-Test Driver Dummy Close-Up Head Contact With Vehicle Interior View



Figure A-49: Post-Test Driver Dummy Close-Up Head Contact with Side Airbag View



Figure A-50: Post-Test Driver Dummy Close-Up Torso Contact with Vehicle Interior View



Figure A-51: Post-Test Driver Dummy Close-Up Torso Contact with Side Air Bag View



Figure A-52: Post-Test Driver Dummy Close-Up Pelvis Contact With Vehicle Interior View



Figure A-53: Post-Test Driver Dummy Close-Up Pelvis Contact with Side Airbag View



Figure A-54: Post-Test Driver Dummy Close-Up Knee Contact View

Not Applicable

M20145123

Figure A-55: Pre-Test Left Side View of Rear Passenger Dummy Showing Belt and Chalking - N/a



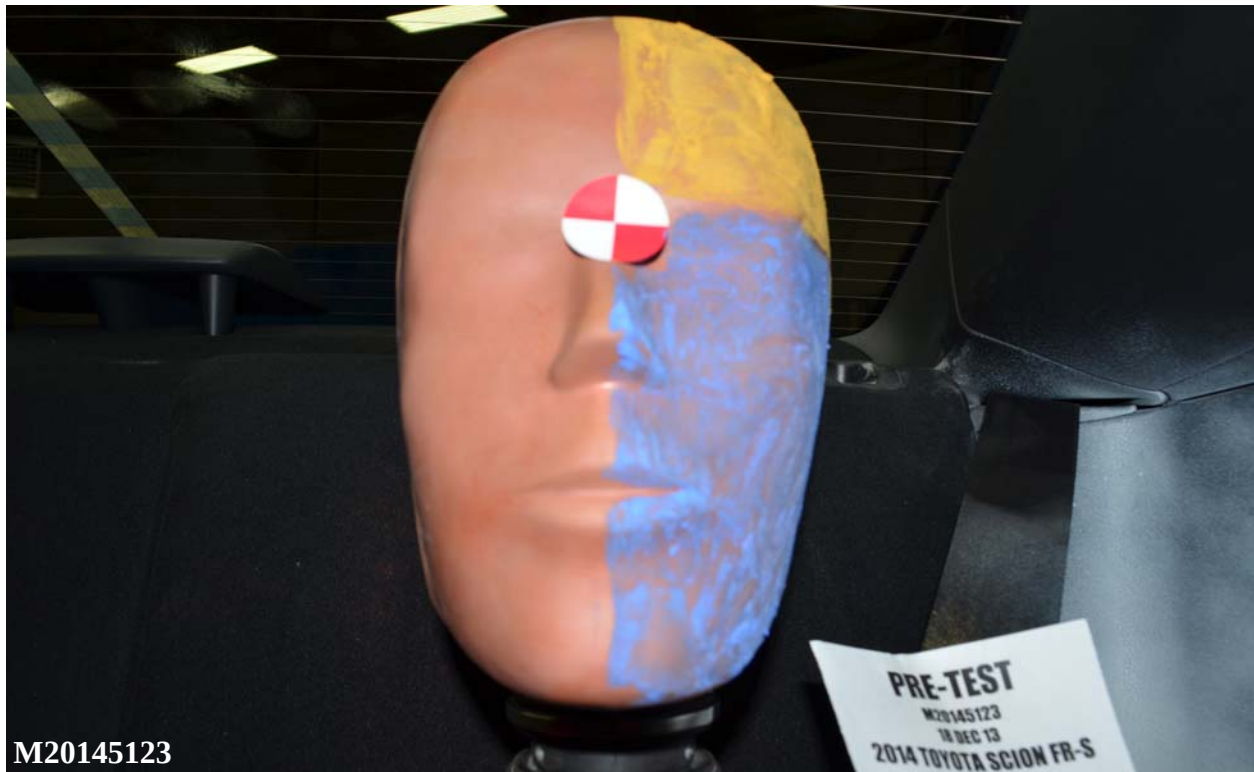
Figure A-56: Pre-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View



Figure A-57: Post-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View



Figure A-58: Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning



M20145123

Figure A-59 - Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint



M20145123

Figure A-60: Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning



Figure A-61: Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan



Figure A-62: Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck Bracket



Figure A-63: Pre-Test View of Rear Passenger Dummy's Head Showing Dummy's Head is Level



Figure A-64: Pre-Test Placement of Rear Passenger Dummy's Feet



Figure A-65: Pre-Test View of Belt Anchorage for Rear Passenger Dummy



Figure A-66: Pre-Test Close-Up Left Side View of Rear Passenger Seat Track

Not Applicable

M20145123

Figure A-67: Pre-Test Close-Up Left Side View of Rear Passenger Seat Back - N/a

Not Applicable

M20145123

Figure A-68: Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint - N/a



Figure A-69: Pre-Test Rear Passenger Dummy and Door Clearance View



Figure A-70: Post-Test Rear Passenger Dummy and Door Clearance View



Figure A-71: Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



Figure A-72: Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



Figure A-73: Pre-Test Rear Passenger Inner Door Panel View



Figure A-74: Post-Test Rear Passenger Inner Door Panel View Showing Dummy Contact Locations



Figure A-75: Post-Test Rear Passenger Dummy Close-Up Head Contact with Vehicle Interior View



Figure A-76: Post-Test Rear Passenger Dummy Close-Up Head Contact with Side Airbag View



Figure A-77: Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle Interior View



Figure A-78: Post-Test Rear Passenger Dummy Close-Up Torso Contact with Side Airbag View



Figure A-79: Post-Test Rear Passenger Dummy Close-up Pelvis Contact with Vehicle Interior View

Not Applicable

M20145123

Figure A-80: Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Side Airbag View - N/a

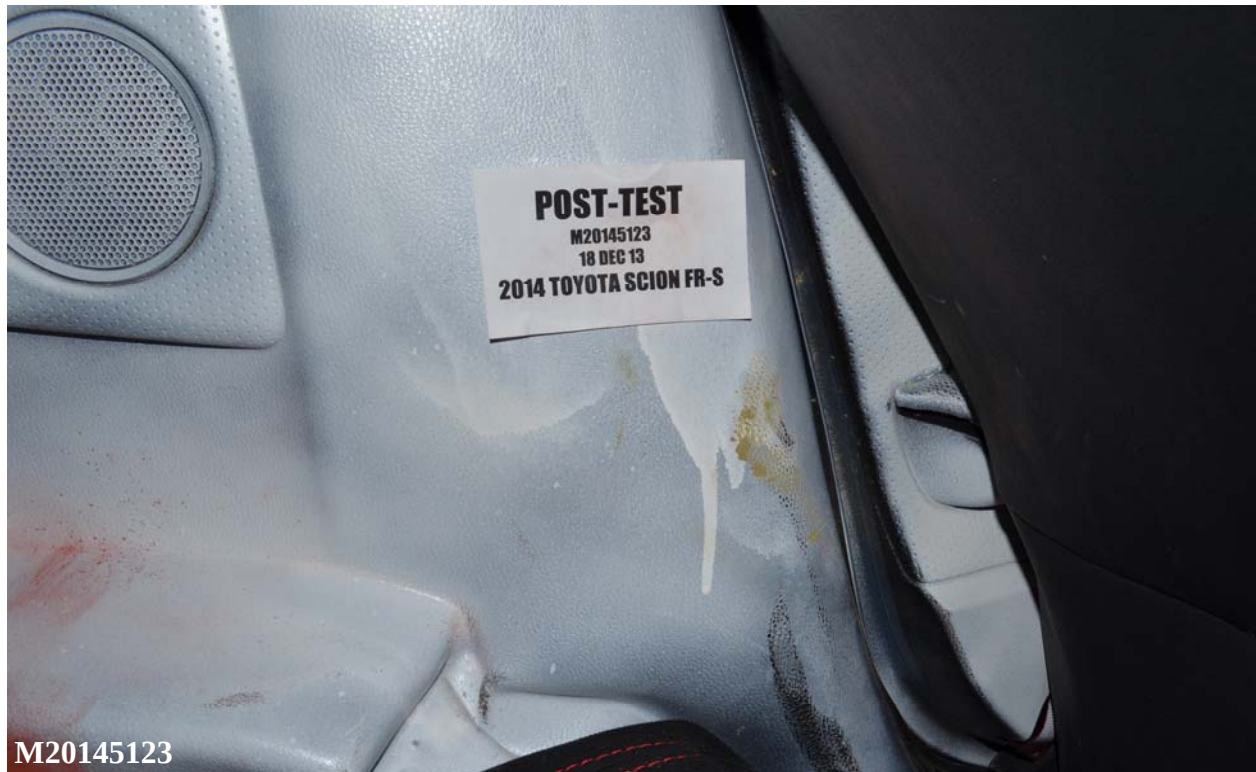


Figure A-81: Post-Test Rear Passenger Dummy Close-Up Knee Contact View



Figure A-82: Pre-Test View of Fuel Filler Cap or Fuel Filler Neck

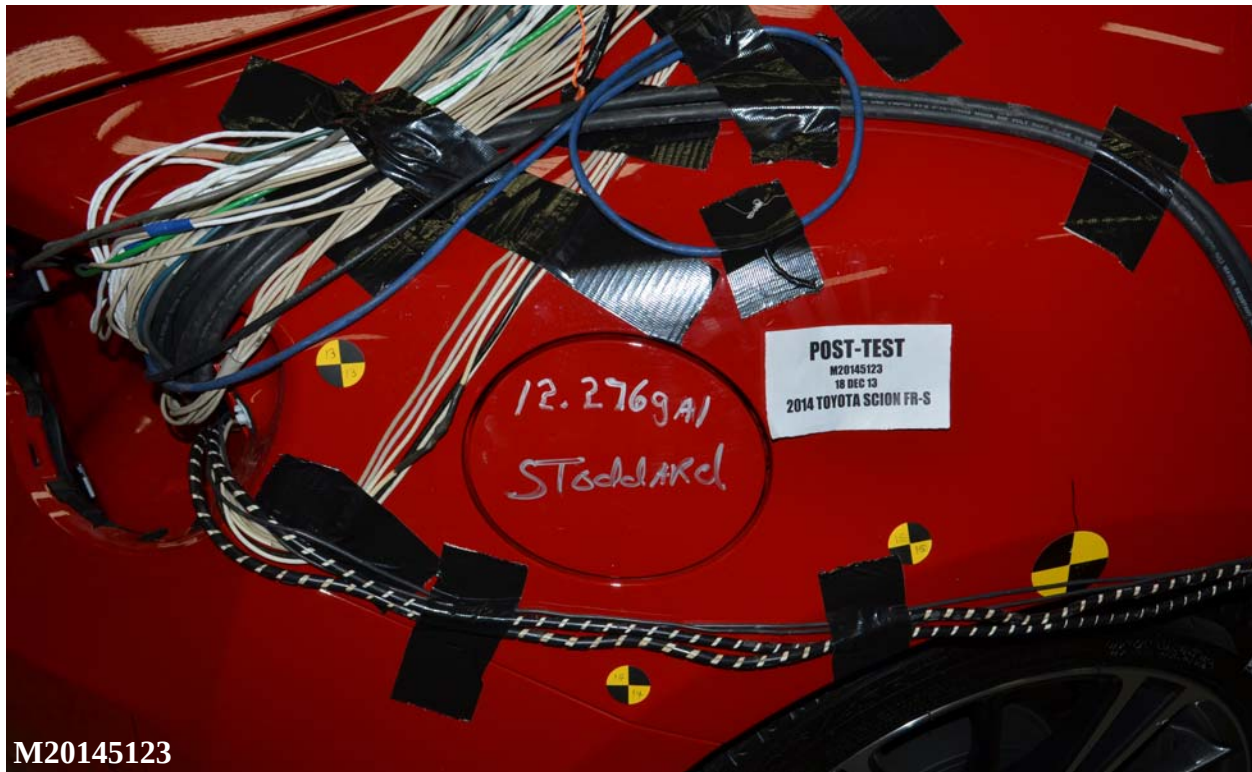


Figure A-83: Post-Test View of Fuel Filler Cap or Fuel Filler Neck



Figure A-84: Pre-Test Front View of MDB Impactor Face



Figure A-85: Post-Test Front View of MDB Impactor Face



Figure A-86: Pre-Test Top View of MDB Impactor Face



Figure A-87: Post-Test Top View of MDB Impactor Face



Figure A-88: Pre-Test Left Side View of MDB Impactor Face



Figure A-89: Post-Test Left Side View of MDB Impactor Face



Figure A-90: Pre-Test Right Side View of MDB Impactor Face



Figure A-91: Post-Test Right Side View of MDB Impactor Face

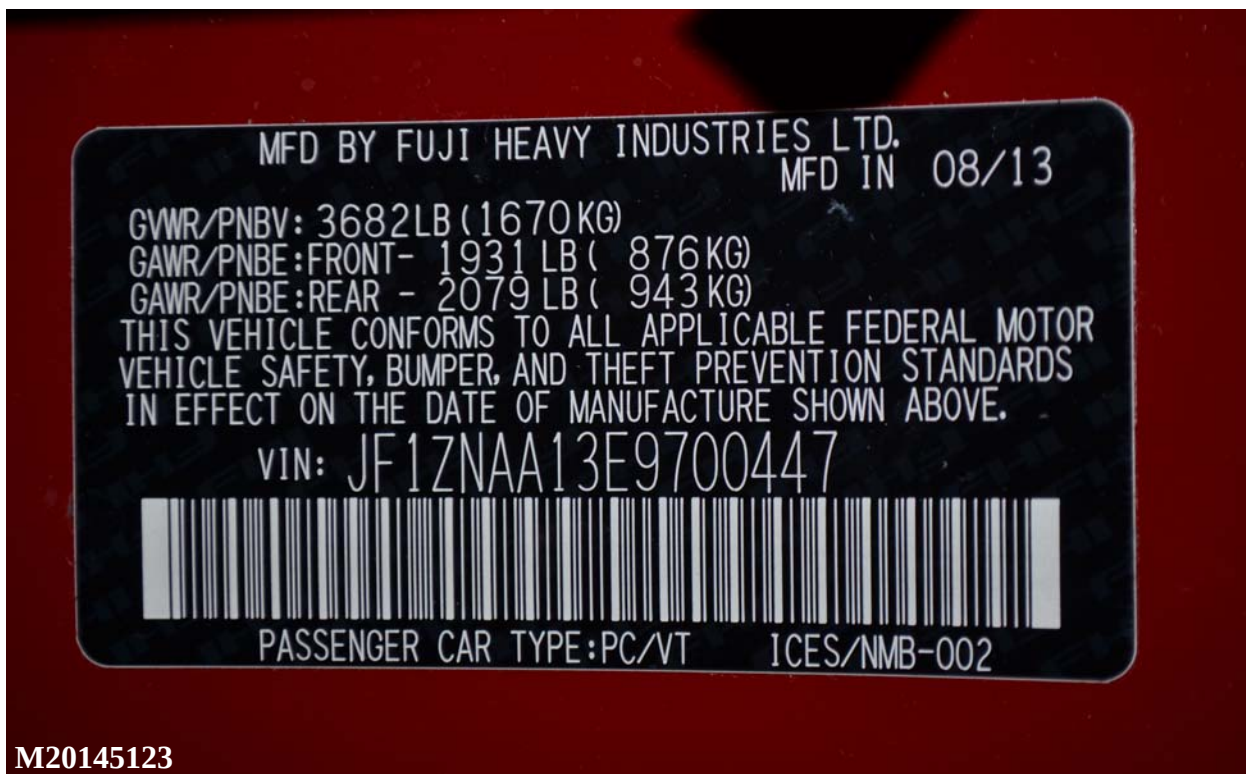
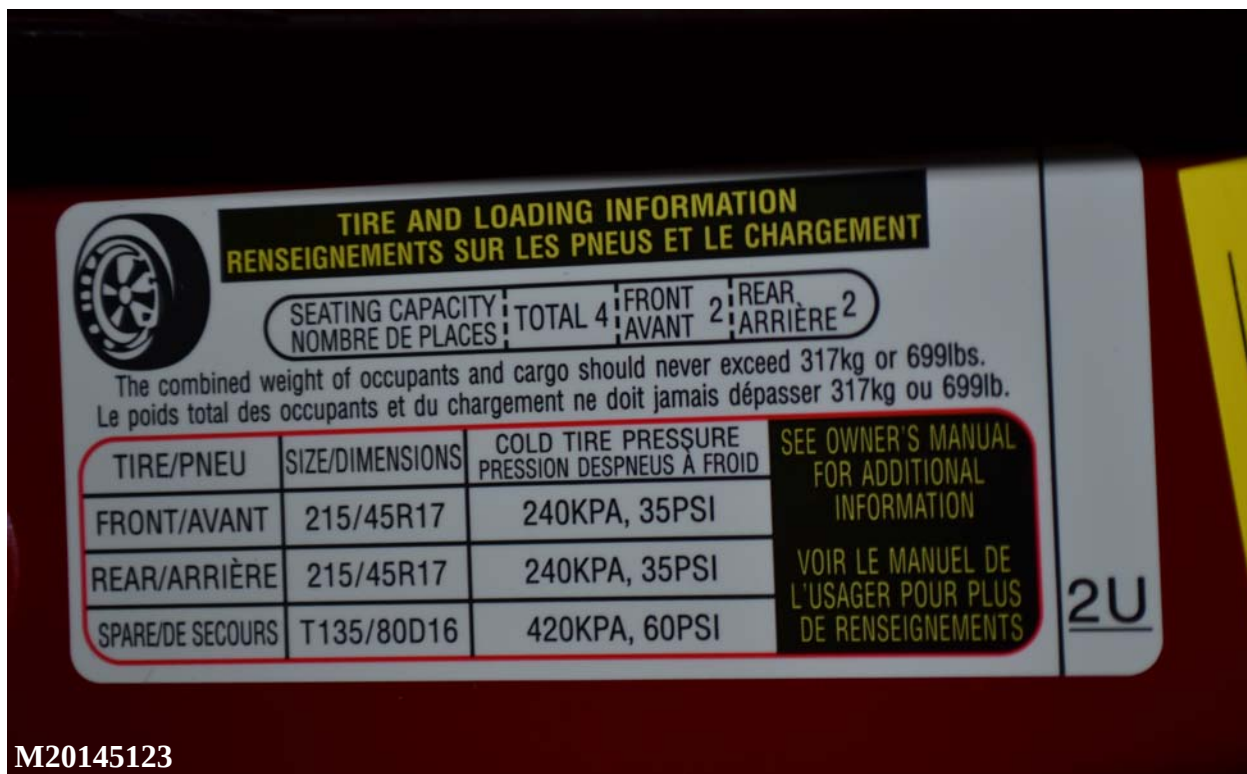


Figure A-92: Close-Up View of Vehicle's Certification Label



M20145123

Figure A-93: Close-Up View of Vehicle's Tire Information Placard or Label



M20145123

Figure A-94: Pre-Test Ballast View



M20145123

Figure A-95: Post-Test Primary and Redundant Speed Trap Read-Out



M20145123

Figure A-96: FMVSS No. 301 Static Rollover 0 Degrees



Figure A-97: FMVSS No. 301 Static Rollover 90 Degrees



Figure A-98: FMVSS No. 301 Static Rollover 180 Degrees

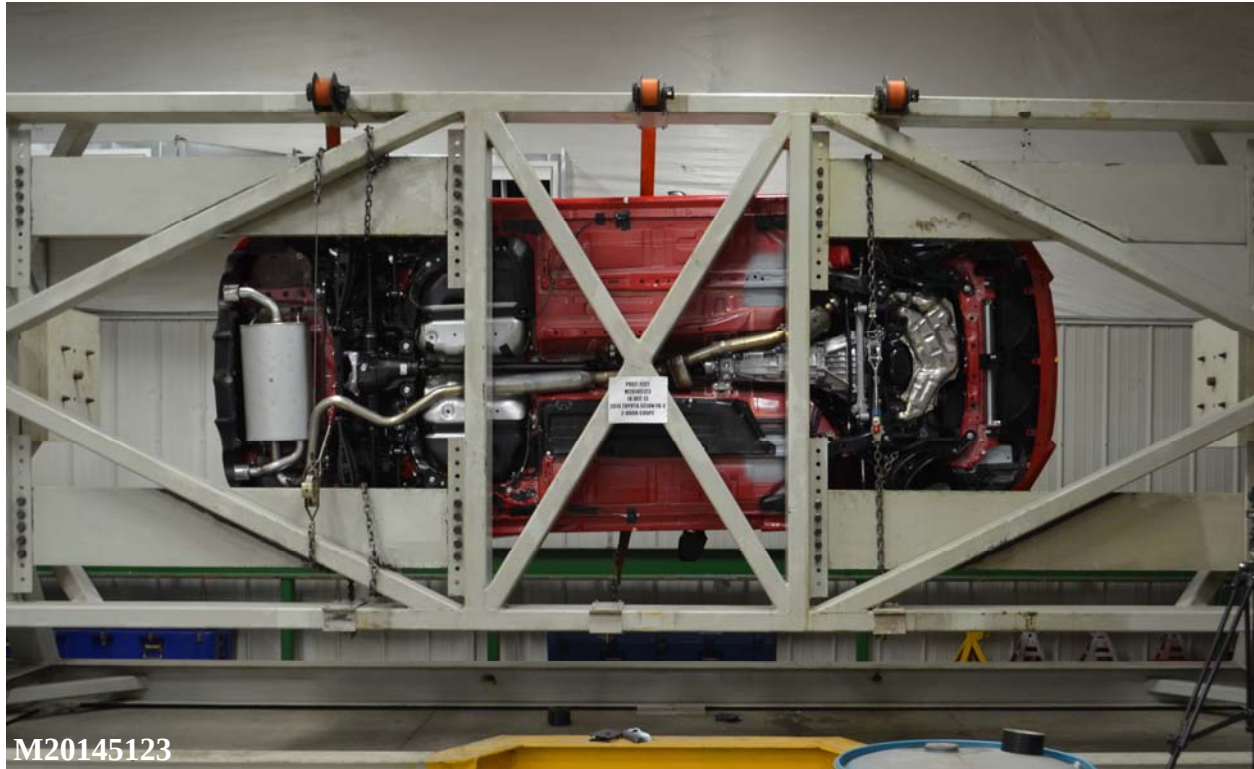


Figure A-99: FMVSS No. 301 Static Rollover 270 Degrees



Figure A-100: FMVSS No. 301 Static Rollover 360 Degrees



Figure A-101: Impact Event



DESC: **SCION FR-S**
VIN: **JF1ZNA13E9700447**
YR/MDL: 2014/6233A
CLR: FIRESTORM/BLACK (CCTP/29)
PORT/PLANT: Portland, OR RAILHEAD:

GOVERNMENT 5-STAR SAFETY RATINGS

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

Star ratings range from 1 to 5 stars (★★★★★) with 5 being the highest. Source: National Highway Traffic Safety Administration (NHTSA) www.safercar.gov or 1-888-327-4235

Fuel Economy and Environment

Fuel Economy
25 MPG combined city/hwy
22 city
30 highway
4.0 gallons per 100 miles

Annual fuel Cost
\$2,250

Smog Rating
6 (out of 10)

You save \$250 in fuel costs over 5 years compared to the average new vehicle.

MECHANICAL AND PERFORMANCE

- Front Engine Rear Wheel Drive
- 2.5L 4-Cyl. Boxer DOHC 16V 200HP
- Dual Variable Valve Timing
- 5-Speed Manual Transmission
- 17" Alloy Wheels with 215/45R17 Tires
- FR & RR Ventilated Disc Brakes
- 1st MacPherson Strut Front Suspension
- Double Wishbone Rear Suspension
- Torque Limited 5th Differential

SAFETY AND CONVENIENCE

- Star Safety Seat: Ven 50000 Crl (VSC)
- Trac Ctrl (TRAC), Anti-Lock Brake System (ABS), Steer Assist (SA) & Smart Stop Tech (SST)
- Dr and FR Side Advanced Airbag System
- Dr and FR Side Seat Mounted Side Airbags
- FR and RR Side Curtain Airbags
- Tire Pressure Monitoring System

EXTERIOR

- Chrome-Tipped Dual Exhaust
- Color-Keyed Power Outside Mirrors
- Projection-Beam Halogen Headlamps
- LED Taillights & Ctr Mounted Stop Lamp
- Var Intermittent Front Windshield Wipers

INTERIOR

- Pioneer 6.1" Touch-Screen Display Audio 500W AM/FM/CD/DVD Radio, 8 Speakers, iPod/USB Port w/ iPod Connectivity, Hands-Free Phone Capability & Music Streaming via Bluetooth Wireless Technology
- Remote Keyless Entry w/ Engine Immobilizer
- Power Door Locks & Window w/ Auto Up/Down
- Leather-Trimmed 12" Telescopic Steering Wheel
- Digital/Analog Speedometer/ Cruise Ctrl
- Adjusting Tach w/ Programmable Rev Indicator
- Aluminum Sport Pedals & Shift Paddles
- Air Conditioning w/ Window Defogger
- One-Piece Folding Rear Seatback
- Multi-Media Display/ Carpeted Floor Mats

MANUFACTURER'S SUGGESTED RETAIL PRICE \$24,700.00

OPTIONAL EQUIPMENT

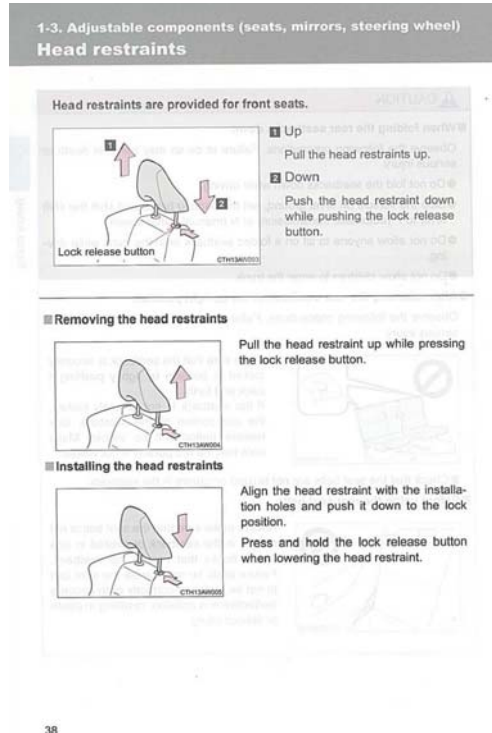
FE 50 STATE EMISSIONS

DELIVERY PROCESSING AND HANDLING FEE 755.00

TOTAL \$25,455.00

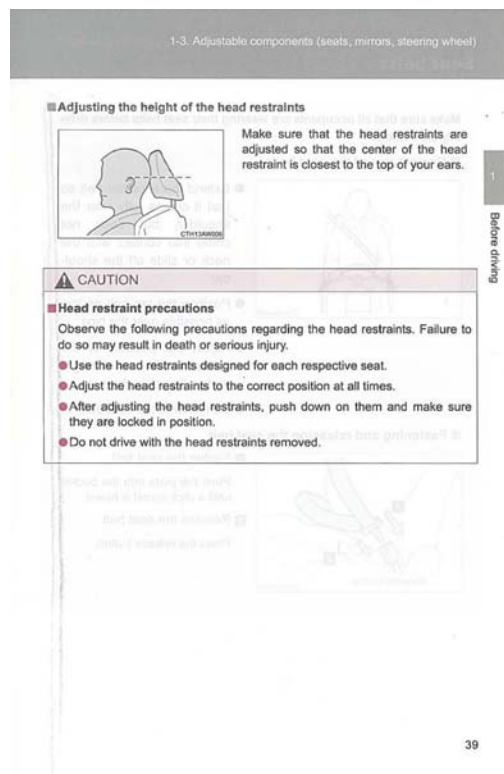
Dealer Name / Address: 12160 CHICAGO NORTHSHORE SCION 8635 NORTH BROADWAY CHICAGO IL 60650

Figure A-102: Monroney Label



M20145123

Figure A-103: Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual



M20145123

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

Test Vehicle: 2014 Scion FR-S 2-Door Coupe
Test Program: SINCAP

NHTSA Number: M20145123
Test Date: December 18, 2013

APPENDIX B
DRIVER & PASSENGER DUMMY INSTRUMENTATION PLOTS

The following plots are provided in the test report

Data Plot	Description	Page
1	Driver Head Acceleration (X) Primary vs. Time	B-4
2	Driver Head Acceleration (Y) Primary vs. Time	B-5
3	Driver Head Acceleration (Z) Primary vs. Time	B-6
4	Driver Head Resultant Acceleration Primary vs. Time	B-7
5	Driver Upper Thorax Rib Deflection (Y) vs. Time	B-8
6	Driver Middle Thorax Rib Deflection (Y) vs. Time	B-9
7	Driver Lower Thorax Rib Deflection (Y) vs. Time	B-10
8	Driver Thorax Rib Deflection Maximum vs. Time	B-11
9	Driver Anterior Abdominal Force (Y) vs. Time	B-12
10	Driver Middle Abdominal Force (Y) vs. Time	B-13
11	Driver Posterior Abdominal Force (Y) vs. Time	B-14
12	Driver Total Abdominal Force (Y) vs. Time	B-15
13	Driver Pubic Symphysis Force (Y) vs. Time	B-16
14	Passenger Head Acceleration (X) Primary vs. Time	B-17
15	Passenger Head Acceleration (Y) Primary vs. Time	B-18
16	Passenger Head Acceleration (Z) Primary vs. Time	B-19
17	Passenger Head Resultant Acceleration Primary vs. Time	B-20
18	Passenger Lower Spine T ₁₂ Acceleration (X) vs. Time	B-21
19	Passenger Lower Spine T ₁₂ Acceleration (Y) vs. Time	B-22
20	Passenger Lower Spine T ₁₂ Acceleration (Z) vs. Time	B-23
21	Passenger Lower Spine T ₁₂ Resultant Acceleration vs. Time	B-24
22	Passenger Iliac Force on Impact Side (Y) vs. Time	B-25
23	Passenger Acetabulum Force on Impact Side (Y) vs. Time	B-26
24	Passenger Total Pelvic Force on Impact Side (Y) vs. Time	B-27

The following additional data for this test can be obtained from the Research and Development section of the NHTSA website. The website can be found at www.NHTSA.dot.gov.

Additional Driver & Passenger Dummy Instrumentation Data

Driver Lower Spine T₁₂ Acceleration (X)
Driver Lower Spine T₁₂ Acceleration (Y)
Driver Lower Spine T₁₂ Acceleration (Z)
Passenger Upper Thorax Rib Deflection (Y)
Passenger Middle Thorax Rib Deflection (Y)
Passenger Lower Thorax Rib Deflection (Y)
Passenger Upper Abdomen Rib Deflection (Y)
Passenger Lower Abdomen Rib Deflection (Y)
Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Passenger Head Acceleration Redundant (X)
Passenger Head Acceleration Redundant (Y)
Passenger Head Acceleration Redundant (Z)

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Right Side Sill at Front Seat Acceleration (X)
Right Side Sill at Front Seat Acceleration (Y)
Right Side Sill at Front Seat Acceleration (Z)
Right Side Sill at Rear Seat Acceleration (X)
Right Side Sill at Rear Seat Acceleration (Y)
Right Side Sill at Rear Seat Acceleration (Z)
Left Side Sill at Front Seat Acceleration (Y)
Left Side Sill at Rear Seat Acceleration (Y)
Lower A-Post Acceleration (Y)
Middle A-Post Acceleration (Y)
Lower B-Post Acceleration (Y)
Middle B-Post Acceleration (Y)
Front Seat Track Acceleration (Y)
Rear Seat Structure Acceleration (Y)
Right Rear Occupant Compartment Acceleration (Y)
Engine Block (X)
Engine Block (Y)
Rear Floorpan Above Axle Acceleration (X)
Rear Floorpan Above Axle Acceleration (Y)
Rear Floorpan Above Axle Acceleration (Z)

MDB Instrumentation Data

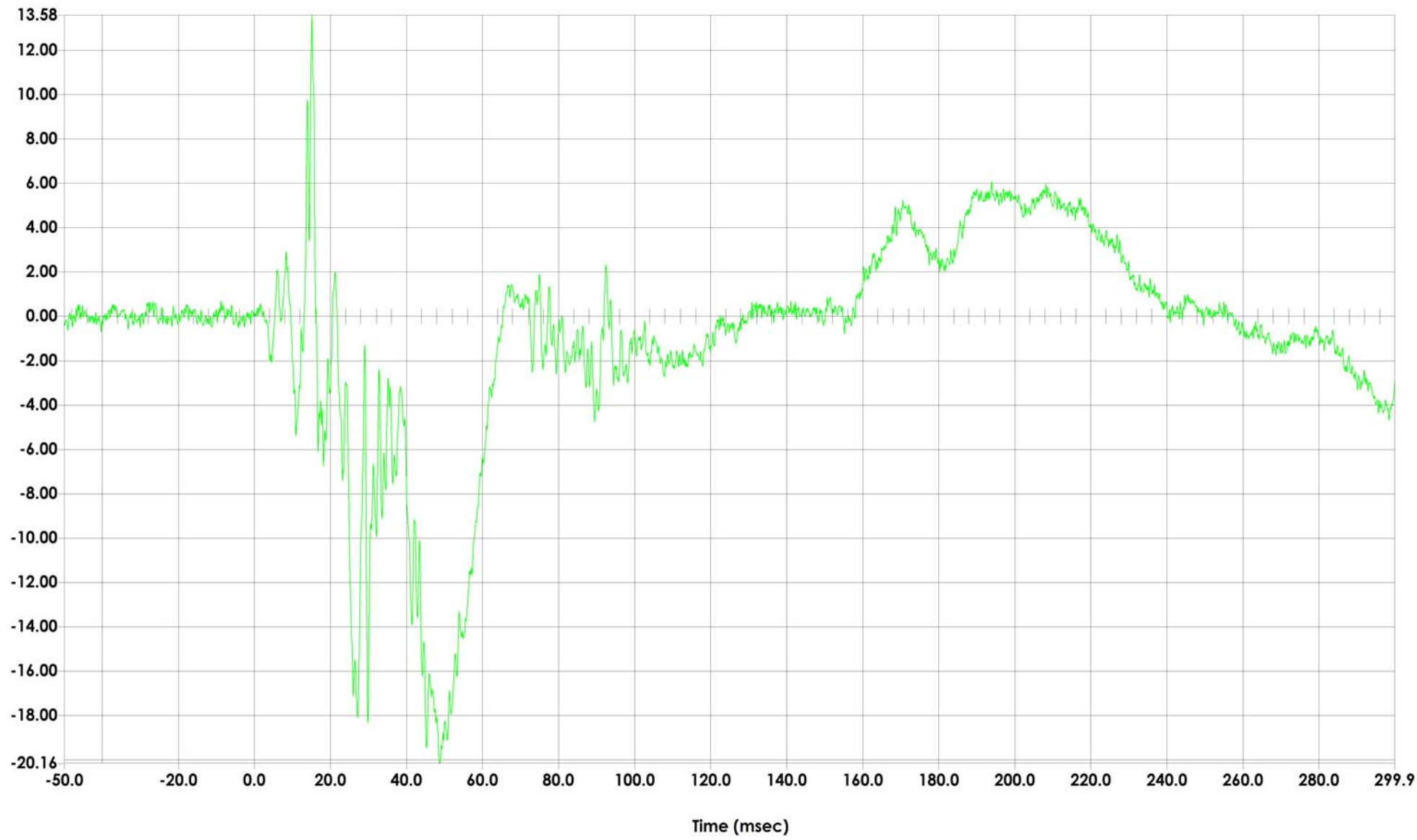
MDB Center of Gravity Acceleration (X)
MDB Center of Gravity Acceleration (Y)
MDB Center of Gravity Acceleration (Z)
MDB Rear Acceleration (X)
MDB Rear Acceleration (Y)
Left MDB Contact Switch
Right MDB Contact Switch

Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC1000
Plot number	001
Units	G'S

Max	13.58	G'S
	15.12	msec
Min	-20.16	G'S
	48.64	msec



Driver Head Acceleration (X) Primary vs. Time

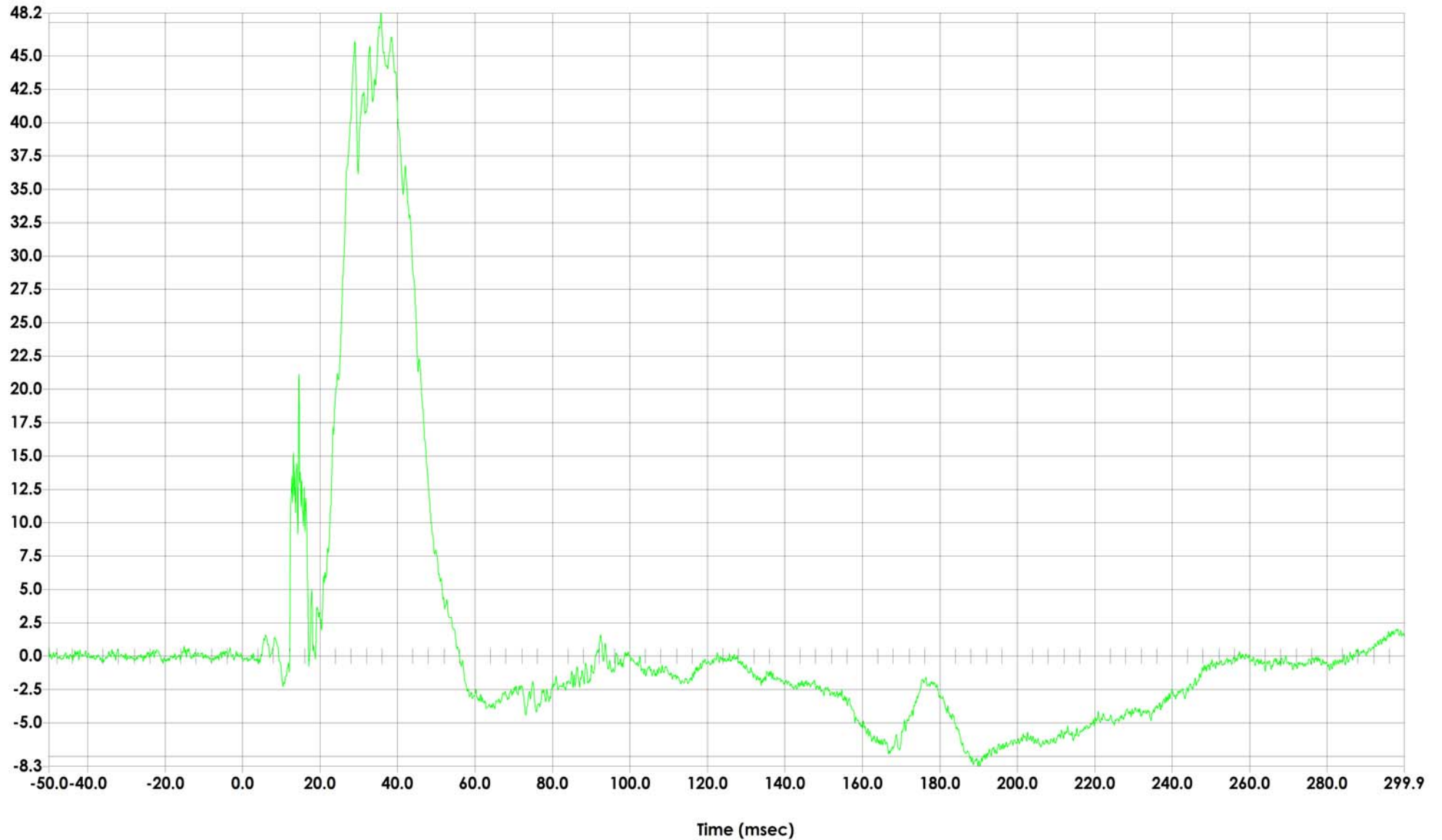


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC1000
Plot number	002
Units	G'S

Max	48.20	G'S
	35.68	msec
Min	-8.27	G'S
	189.84	msec



Driver Head Acceleration (Y) Primary vs. Time

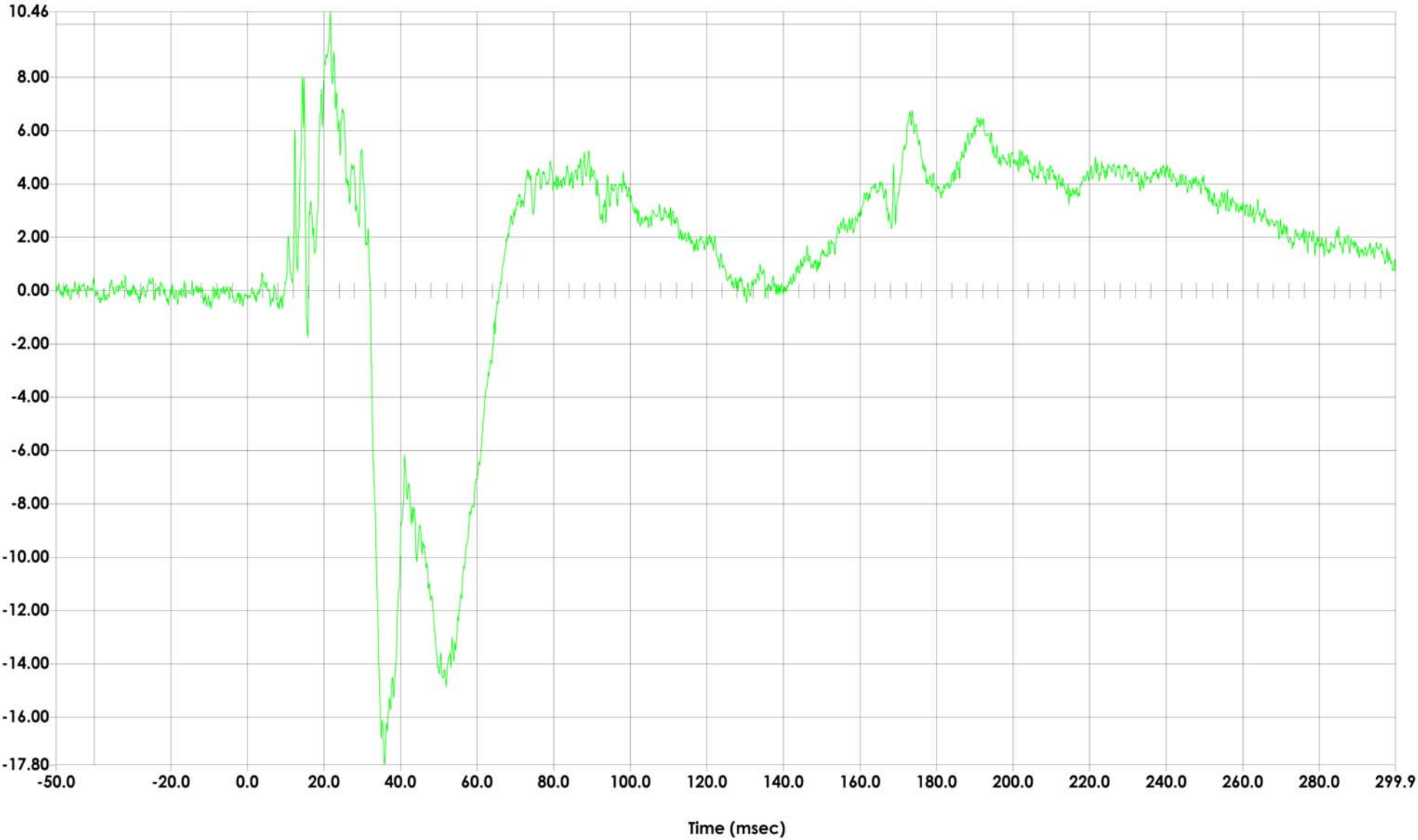


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC1000
Plot number	003
Units	G'S

Max	10.46	G'S
	21.68	msec
Min	-17.80	G'S
	35.76	msec



Driver Head Acceleration (Z) Primary vs. Time

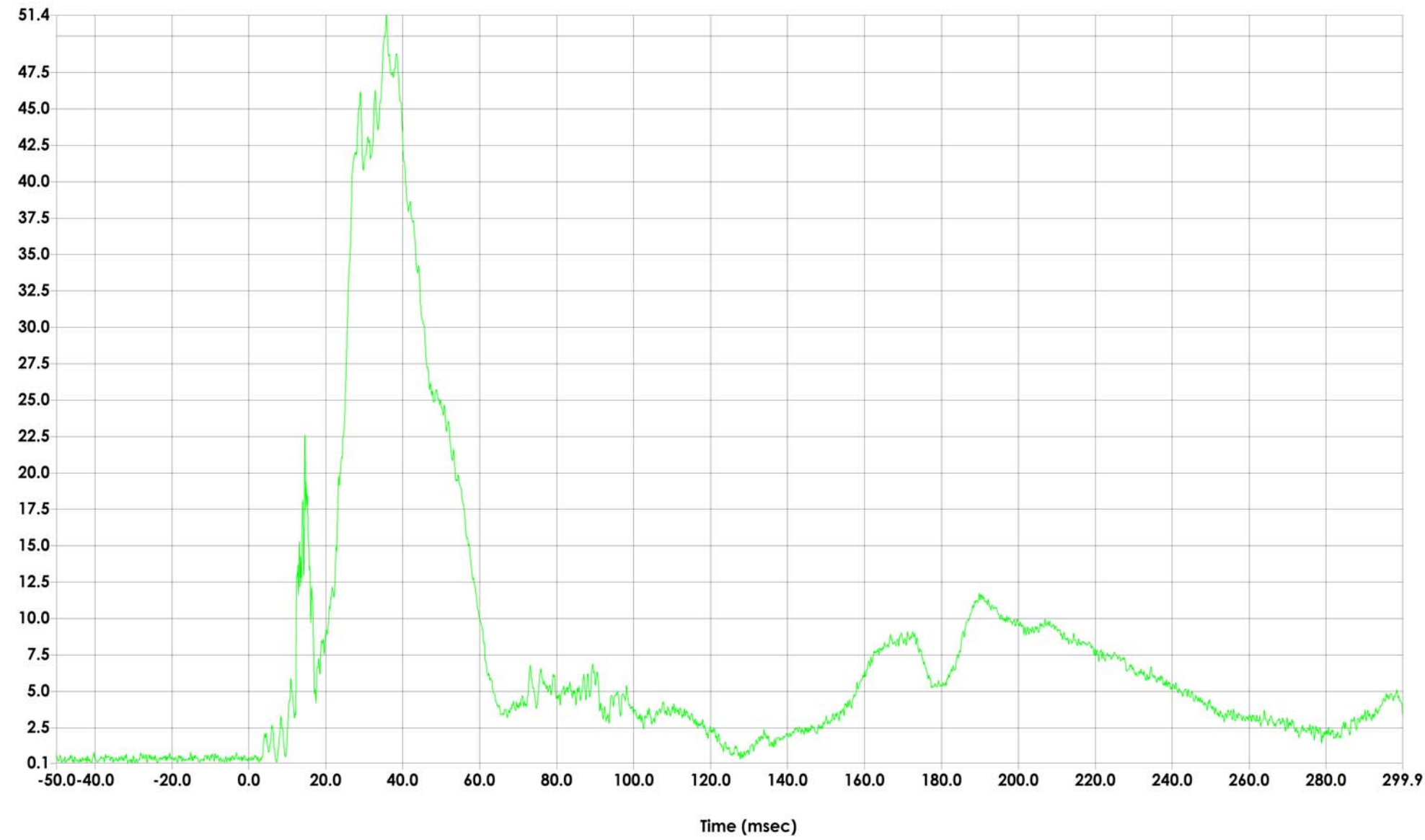


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC1000
Plot number	063
Units	G'S

Max	51.43	G'S
	35.76	msec
Min	0.05	G'S
	-31.52	msec



Driver Head Resultant Acceleration Primary vs. Time

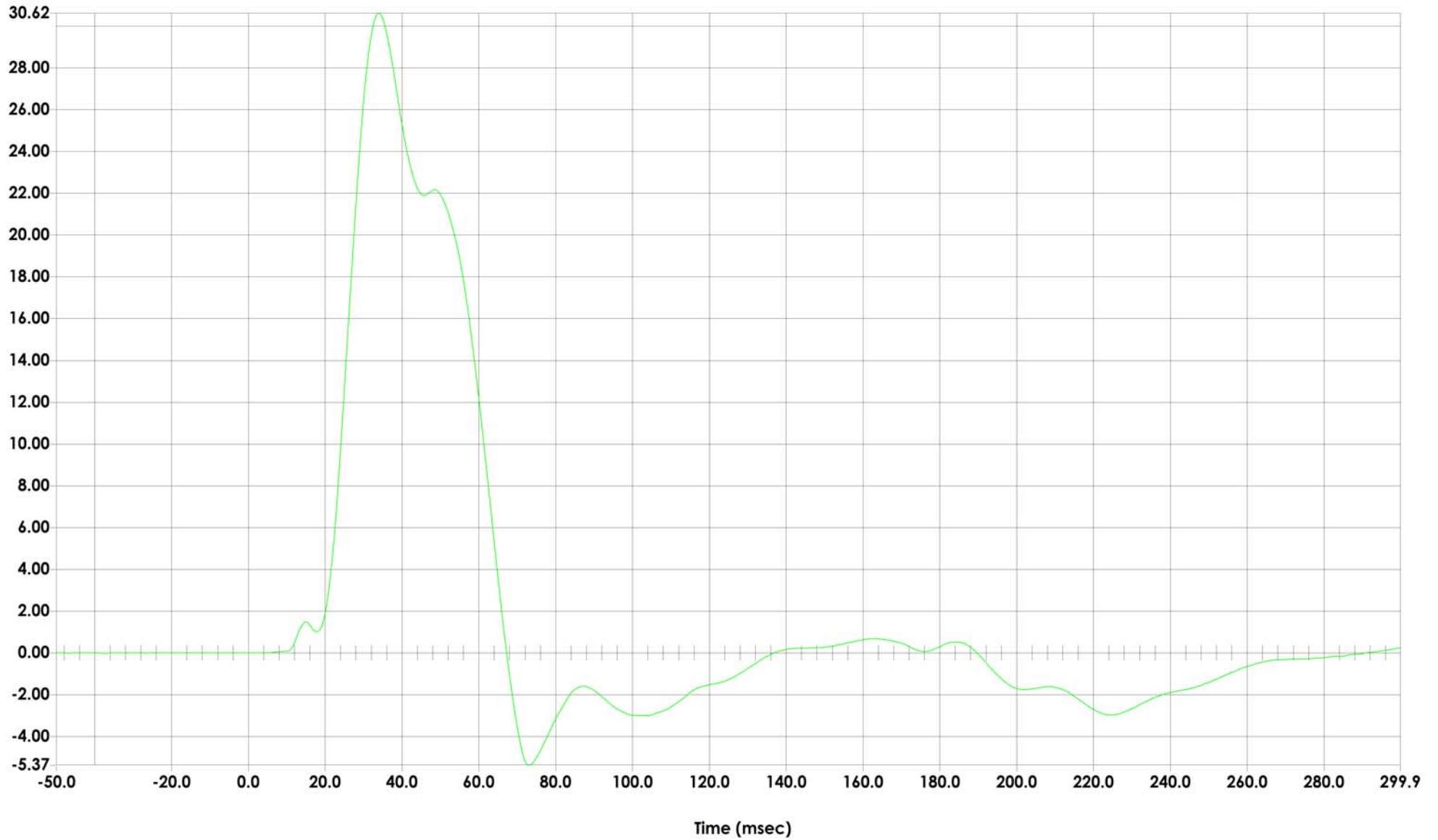


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC180
Plot number	007
Units	MM

Max	30.62	MM
	33.92	msec
Min	-5.37	MM
	73.12	msec



Driver Upper Thorax Rib Deflection (Y) vs. Time

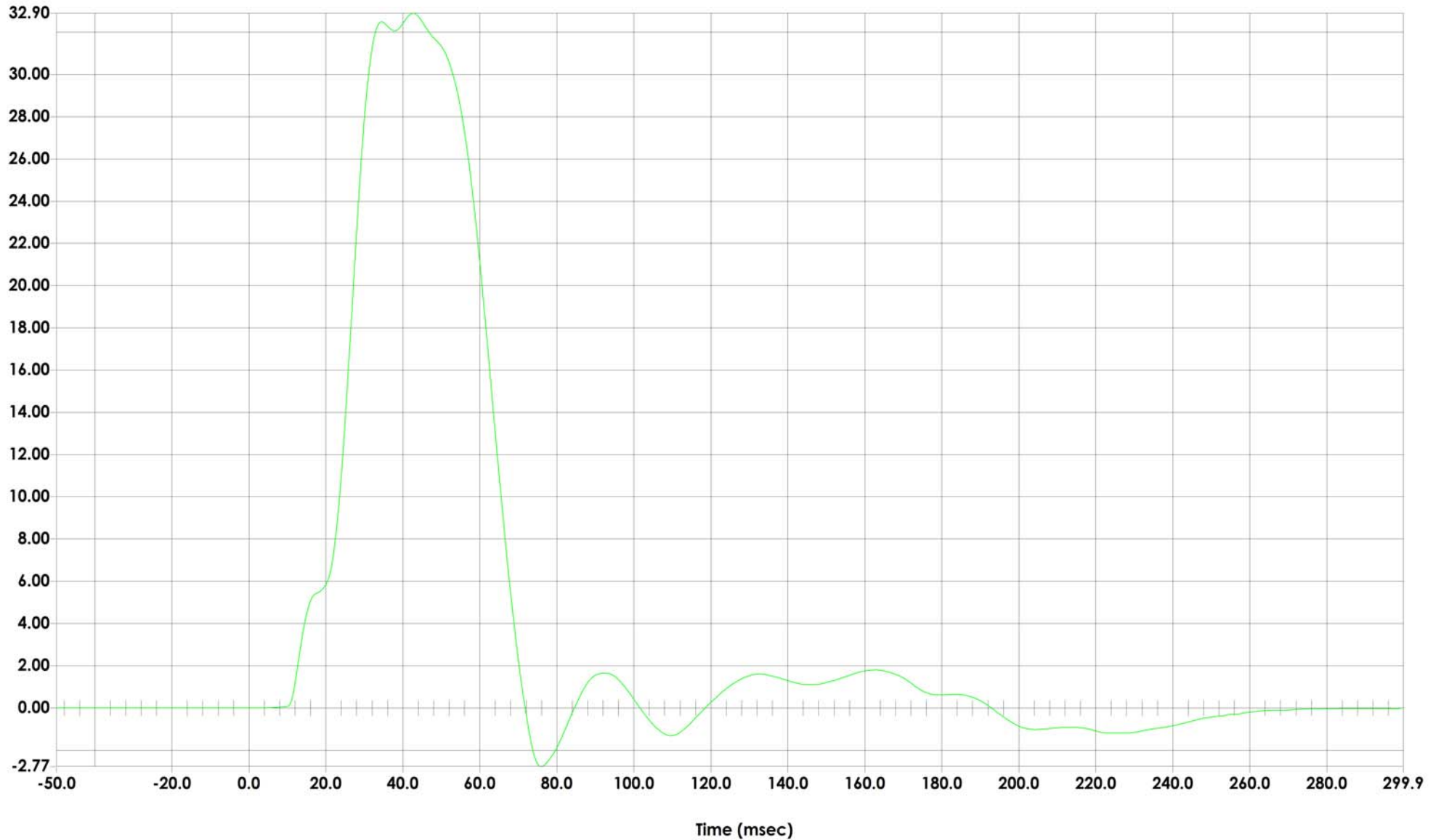


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC180
Plot number	008
Units	MM

Max	32.90	MM
	42.72	msec
Min	-2.77	MM
	75.92	msec



Driver Middle Thorax Rib Deflection (Y) vs. Time

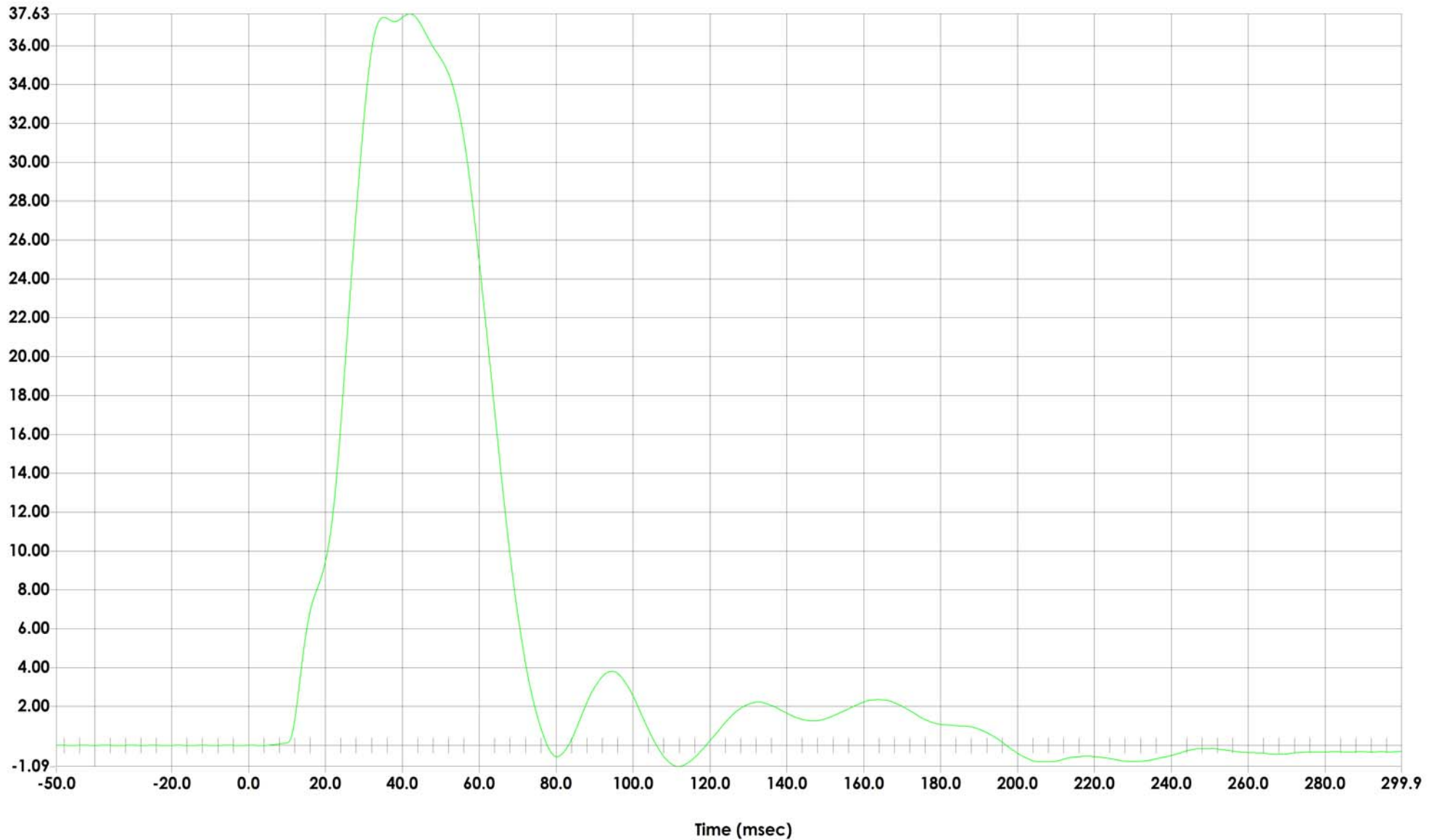


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC180
Plot number	009
Units	MM

Max	37.63	MM
	41.92	msec
Min	-1.09	MM
	111.76	msec



Driver Lower Thorax Rib Deflection (Y) vs. Time

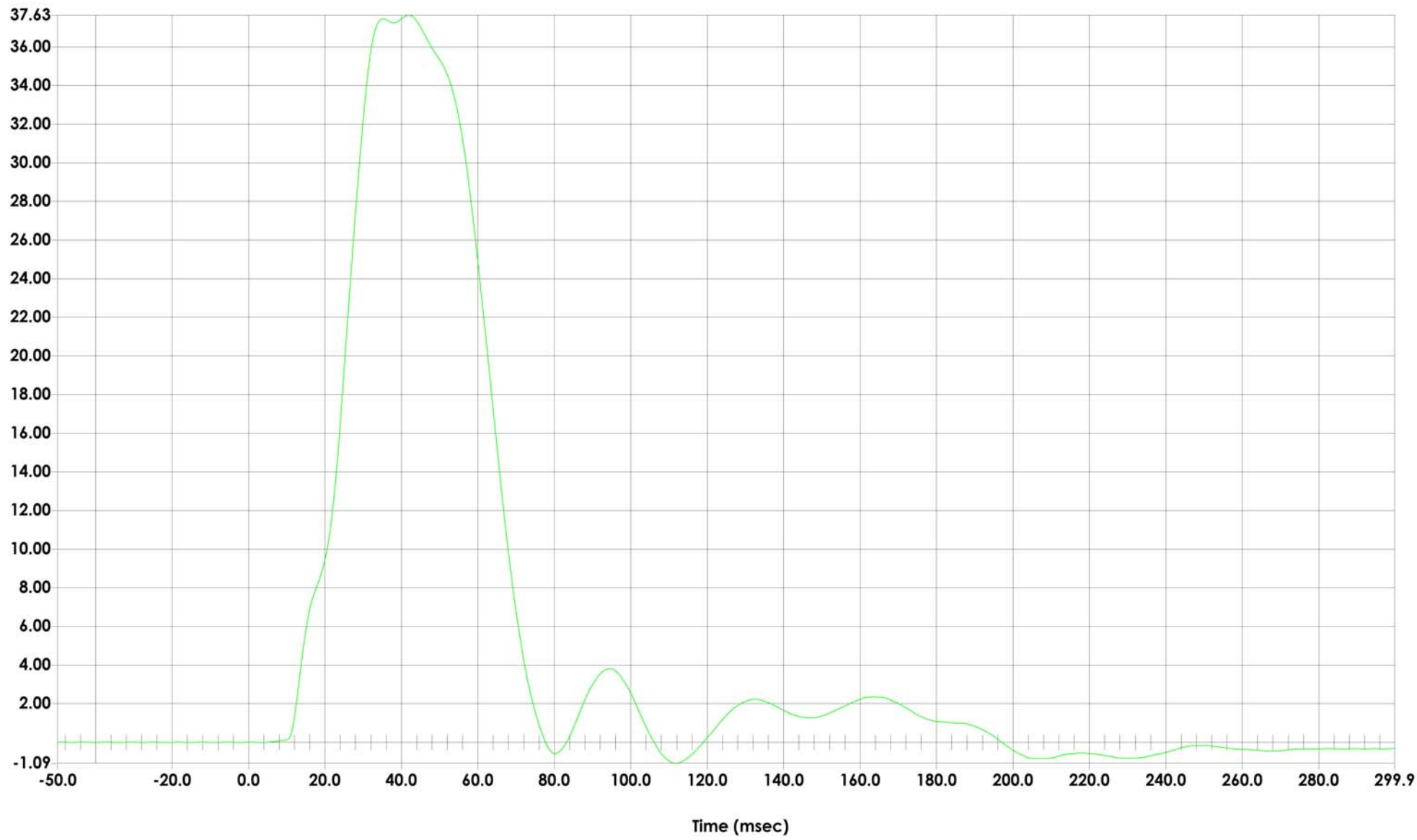


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC180
Plot number	009
Units	MM

Max	37.63	MM
	41.92	msec
Min	-1.09	MM
	111.76	msec



Driver Thorax Rib Deflection Maximum (Y) vs. Time

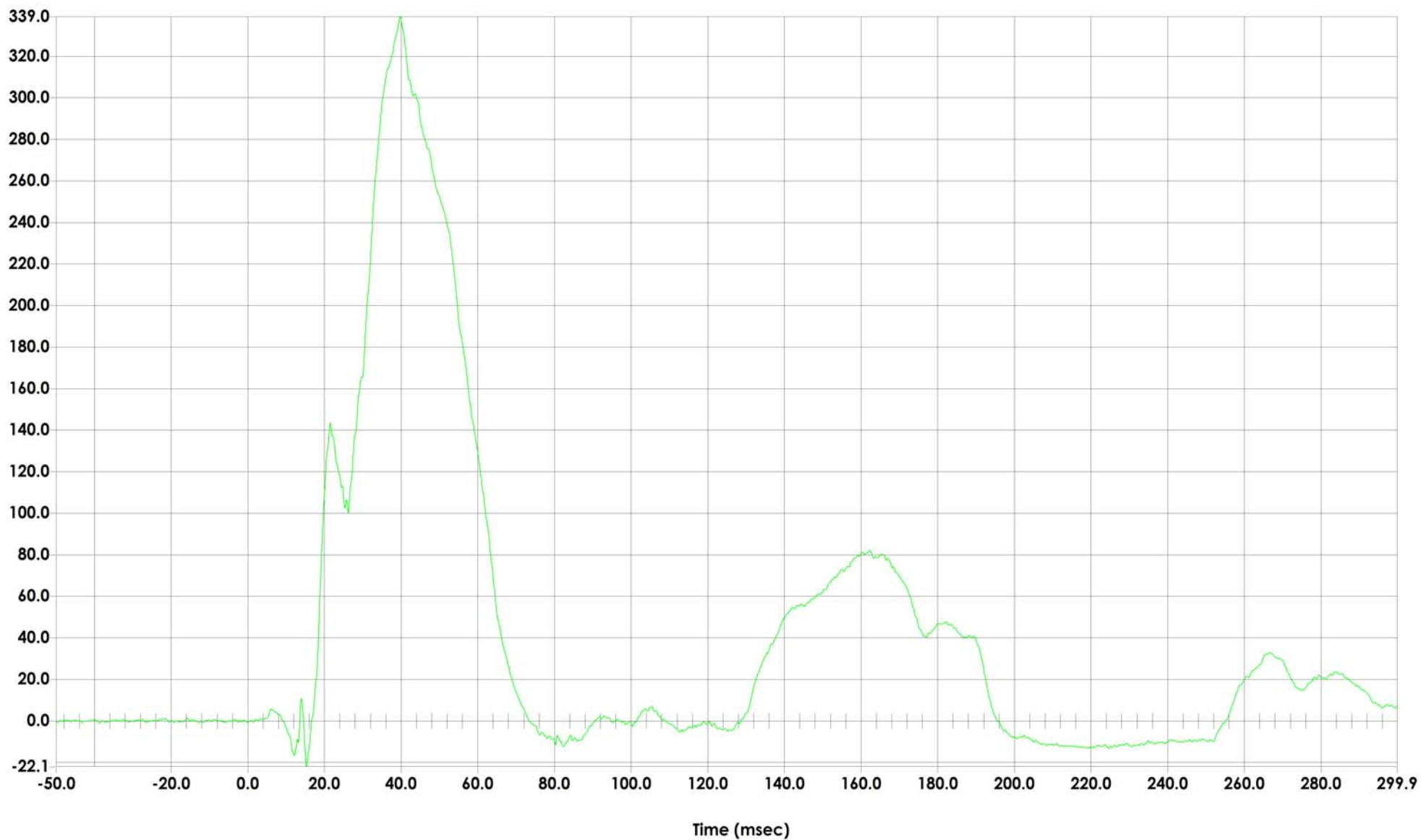


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC600
Plot number	010
Units	NWT

Max	339.05	NWT
	39.68	msec
Min	-22.07	NWT
	15.28	msec



Driver Anterior Abdominal Force (Y) vs. Time

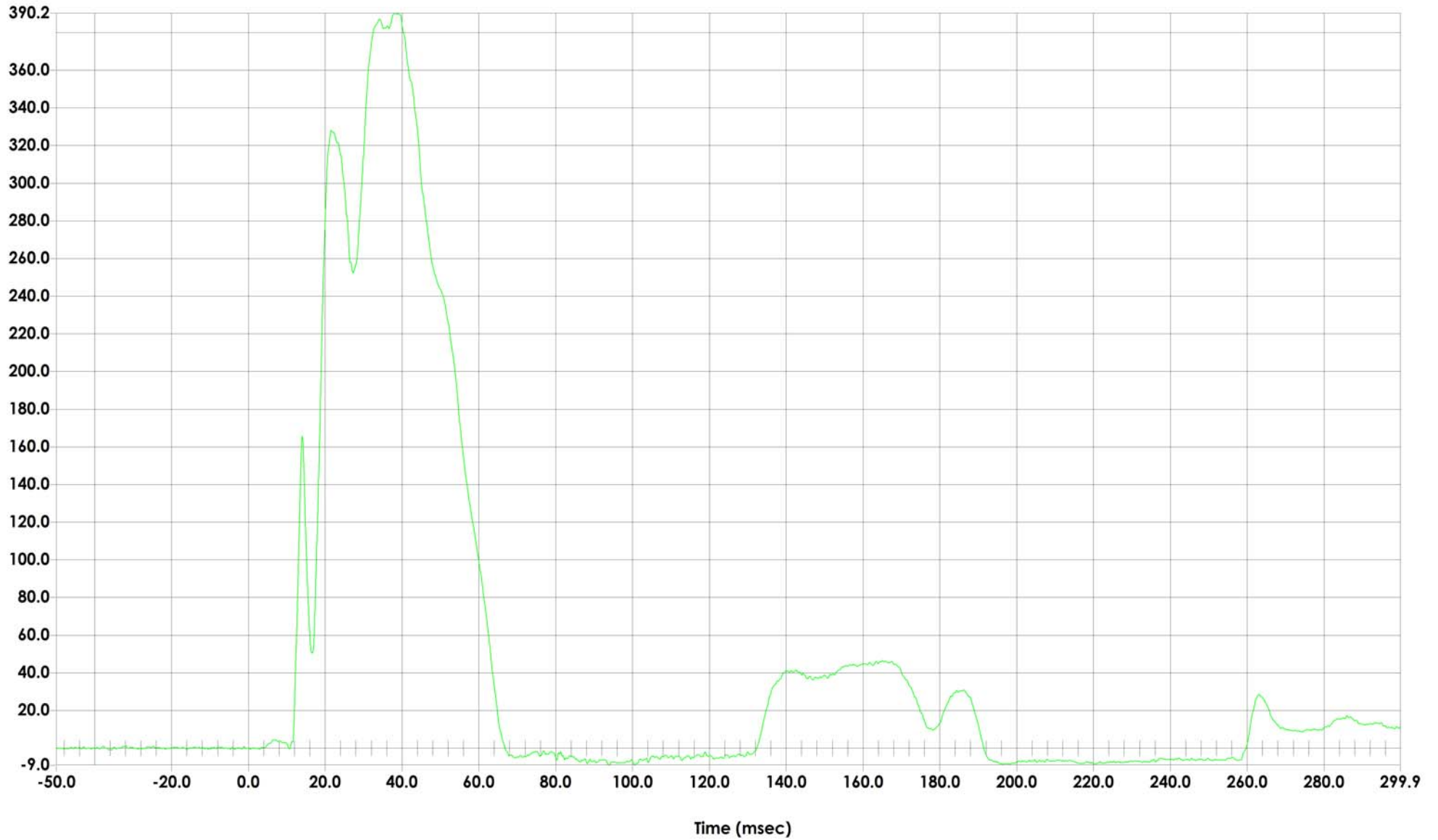


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC600
Plot number	011
Units	NWT

Max	390.25	NWT
	38.00	msec
Min	-9.05	NWT
	93.92	msec



Driver Middle Abdominal Force (Y) vs. Time

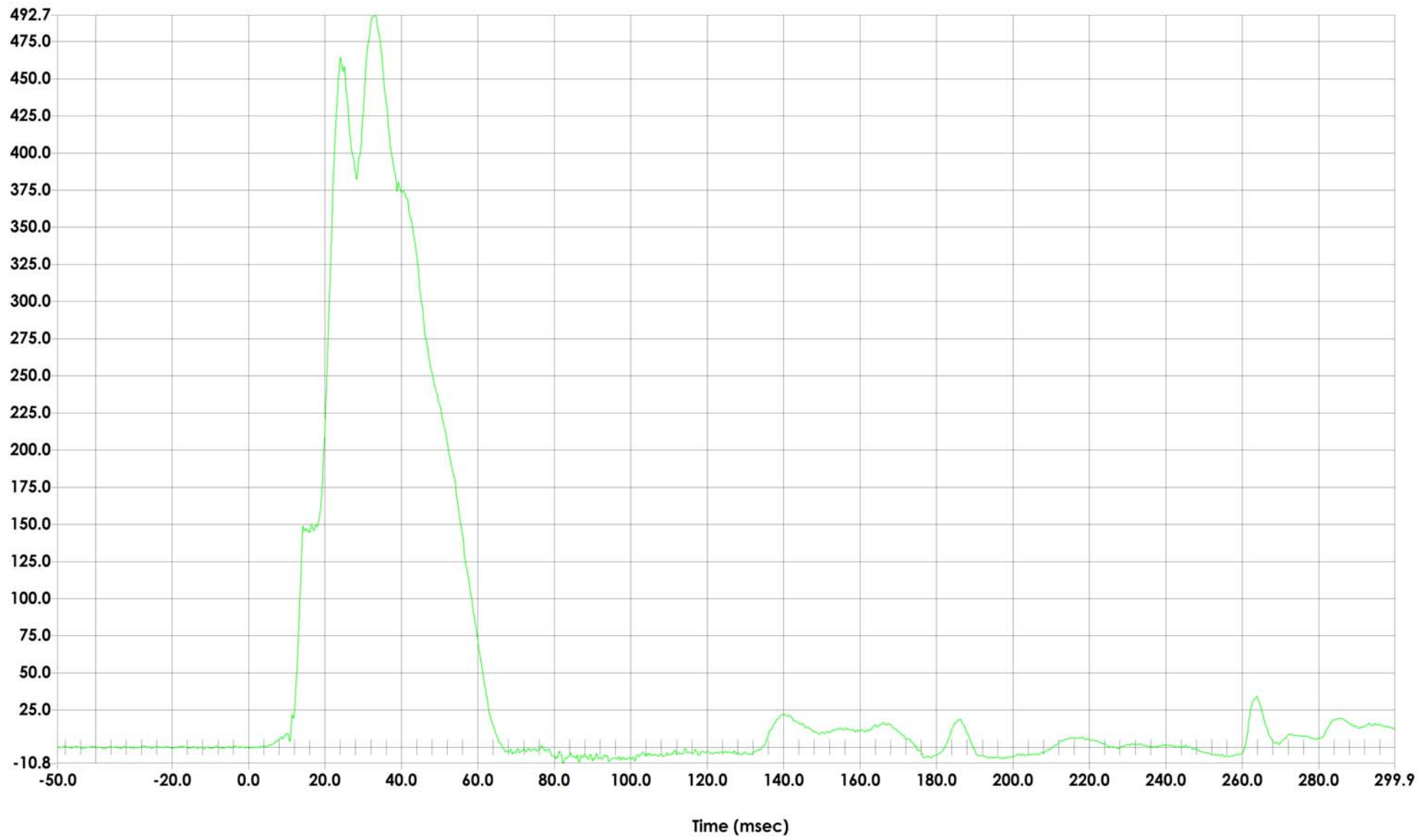


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC600
Plot number	012
Units	NWT

Max	492.69	NWT
	33.20	msec
Min	-10.85	NWT
	82.32	msec



Driver Posterior Abdominal Force (Y) vs. Time

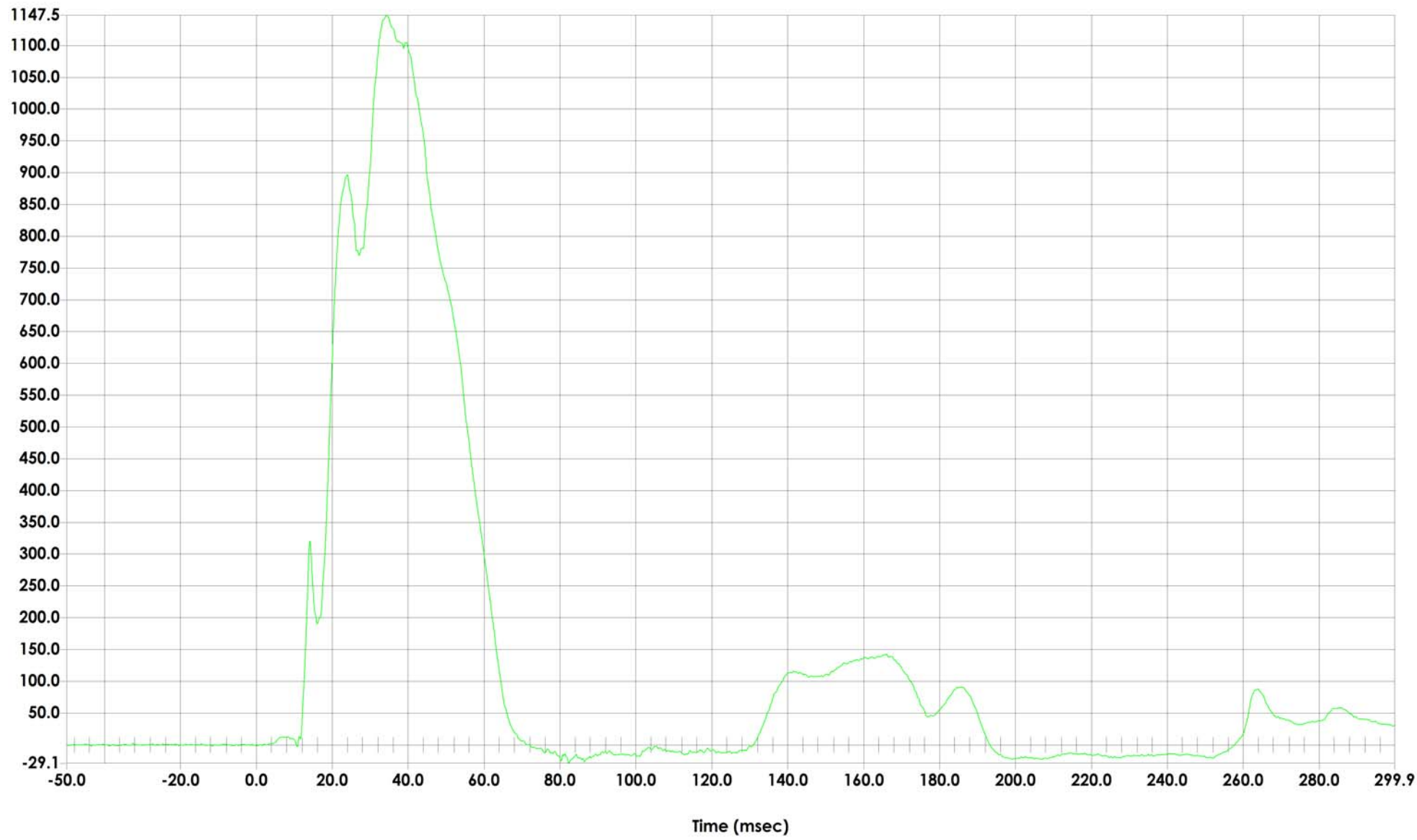


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC600
Plot number	064
Units	NWT

Max	1147.52	NWT
	34.32	msec
Min	-29.12	NWT
	82.32	msec



Driver Total Abdominal Force (Y) vs. Time

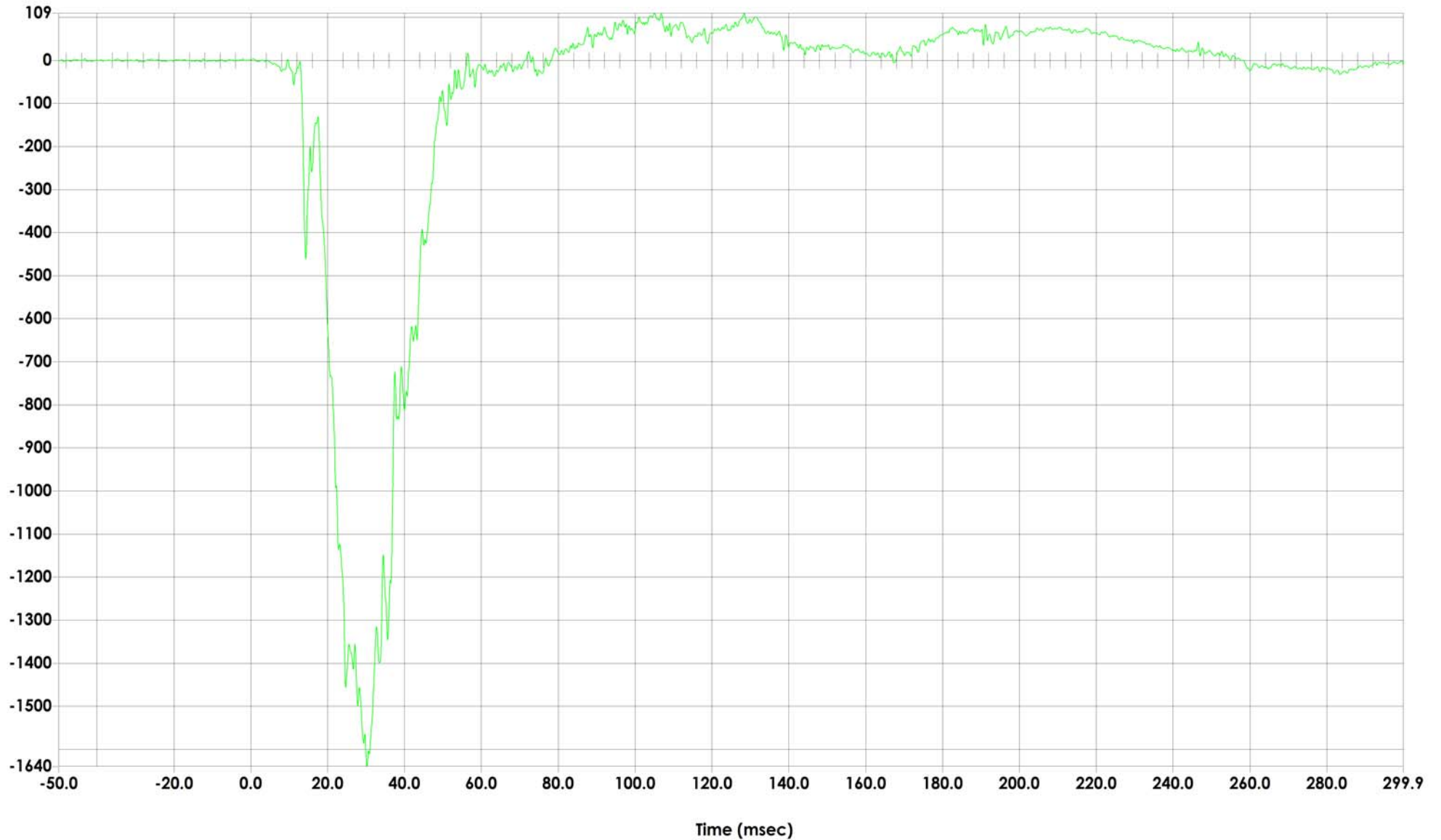


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC600
Plot number	016
Units	NWT

Max	109.43	NWT
	105.04	msec
Min	-1639.83	NWT
	30.24	msec



Driver Pubic Symphysis Force (Y) vs. Time

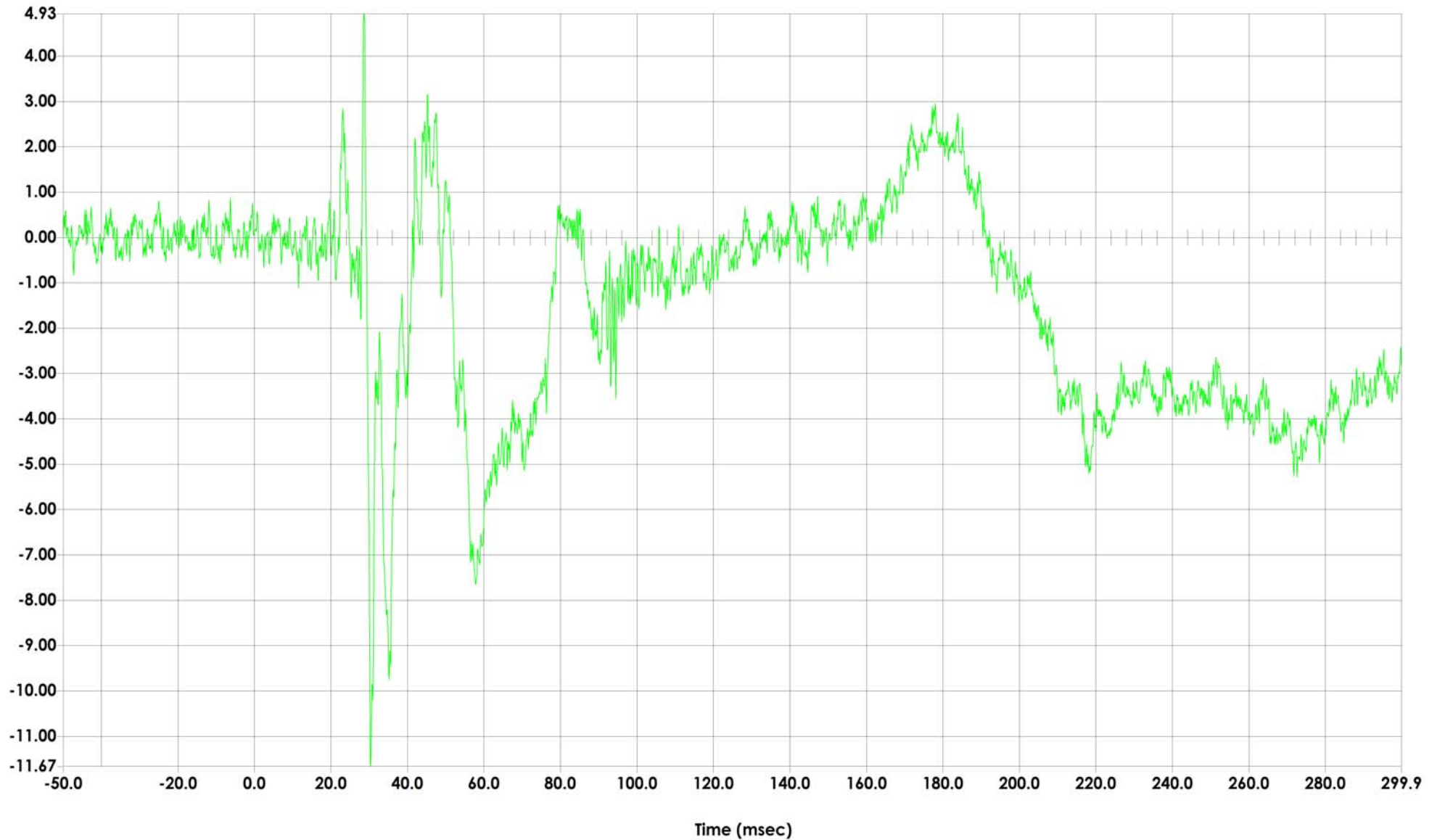


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC1000
Plot number	017
Units	G'S

Max	4.93	G'S
	28.64	msec
Min	-11.67	G'S
	30.40	msec



Passenger Head Acceleration (X) Primary vs. Time

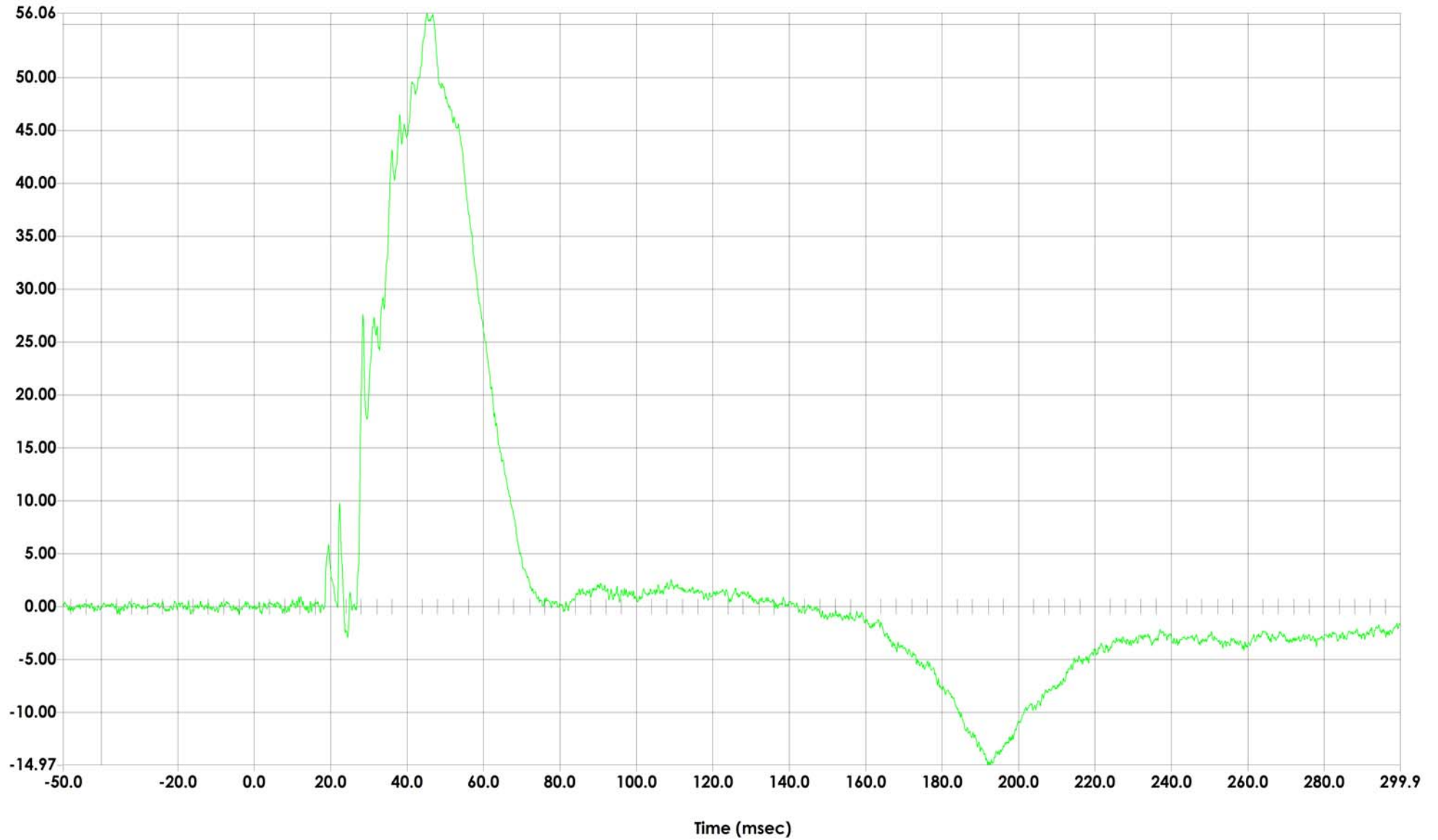


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC1000
Plot number	018
Units	G'S

Max	56.06	G'S
	45.20	msec
Min	-14.97	G'S
	191.92	msec



Passenger Head Acceleration (Y) Primary vs. Time

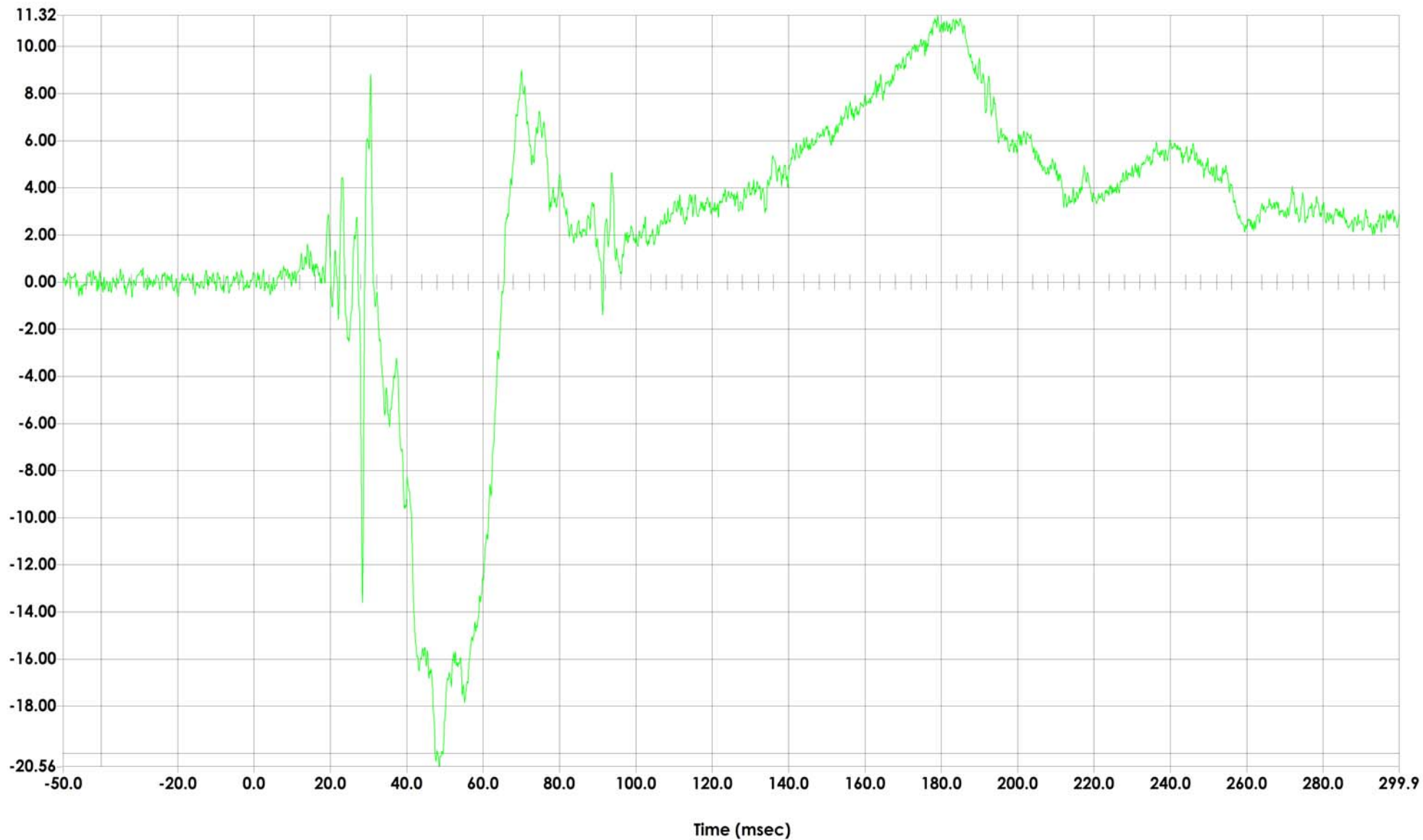


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC1000
Plot number	019
Units	G'S

Max	11.32	G'S
	179.04	msec
Min	-20.56	G'S
	48.48	msec



Passenger Head Acceleration (Z) Primary vs. Time

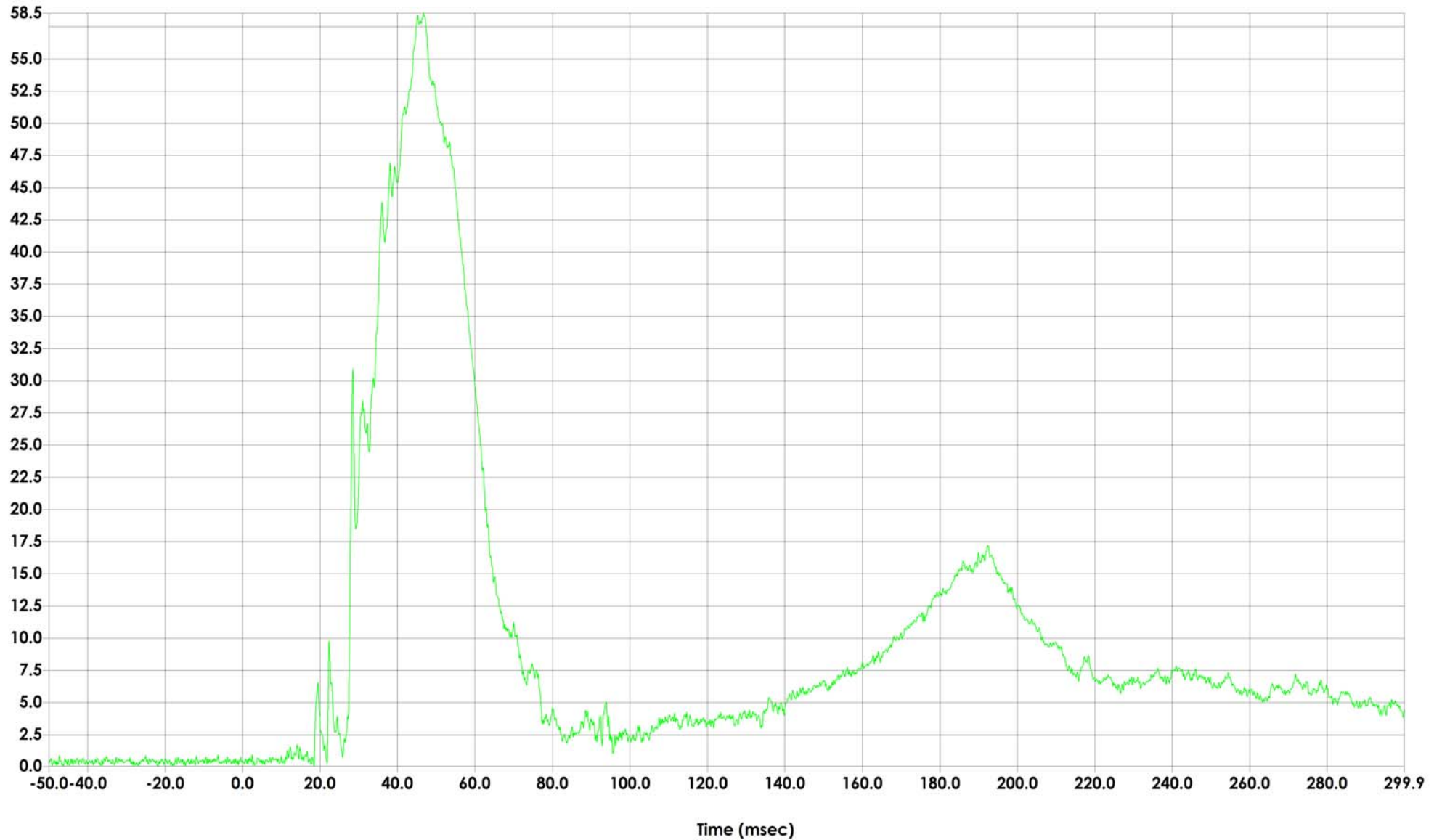


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC1000
Plot number	065
Units	G'S

Max	58.55	G'S
	46.72	msec
Min	0.04	G'S
	-28.16	msec



Passenger Head Resultant Acceleration Primary vs. Time



Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC180
Plot number	028
Units	G'S

Max	7.90	G'S
	174.00	msec
Min	-22.38	G'S
	46.16	msec



Passenger Lower Spine T12 Acceleration (X) vs. Time

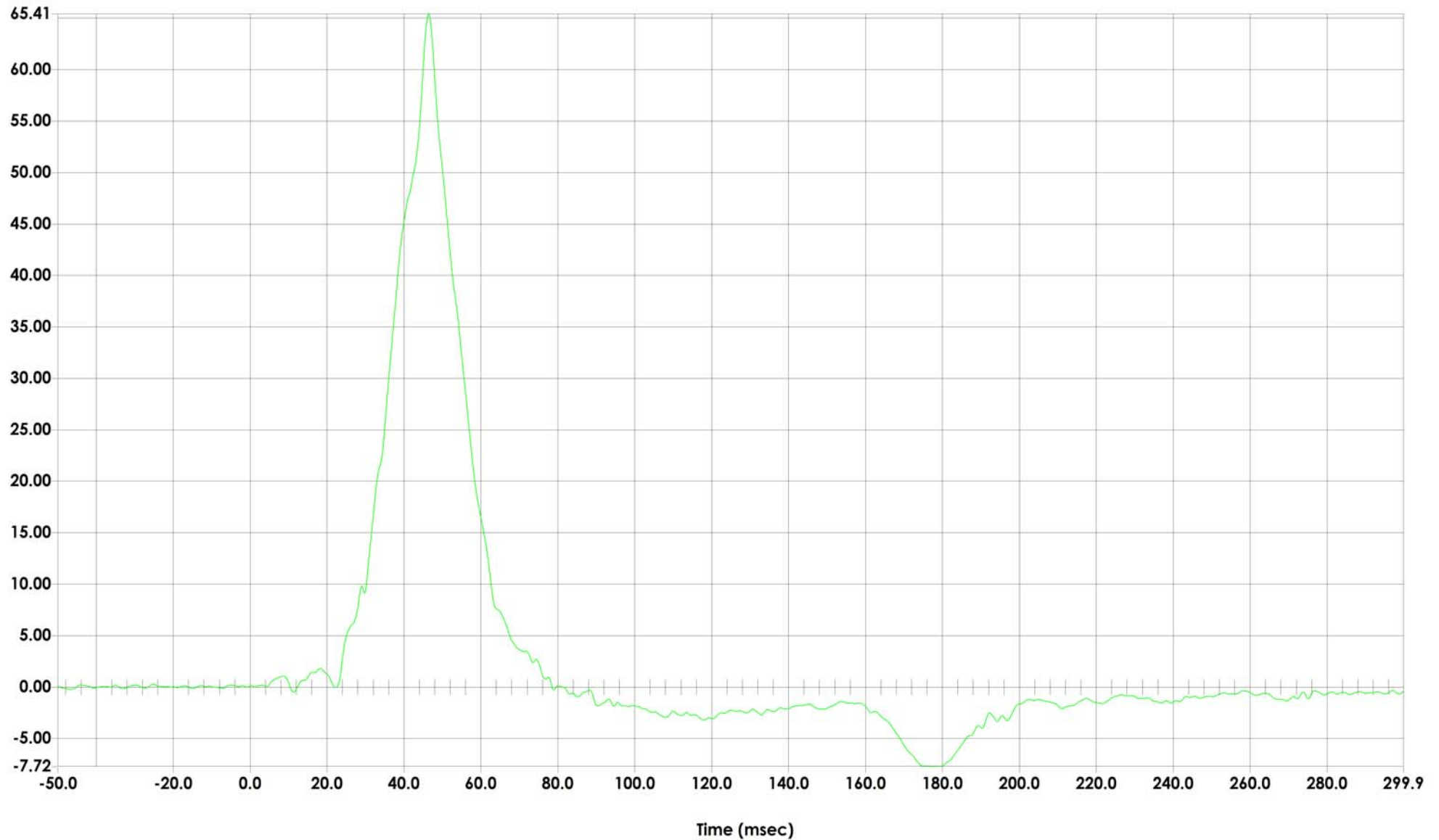


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC180
Plot number	029
Units	G'S

Max	65.41	G'S
	46.40	msec
Min	-7.72	G'S
	179.28	msec



Passenger Lower Spine T12 Acceleration (Y) vs. Time

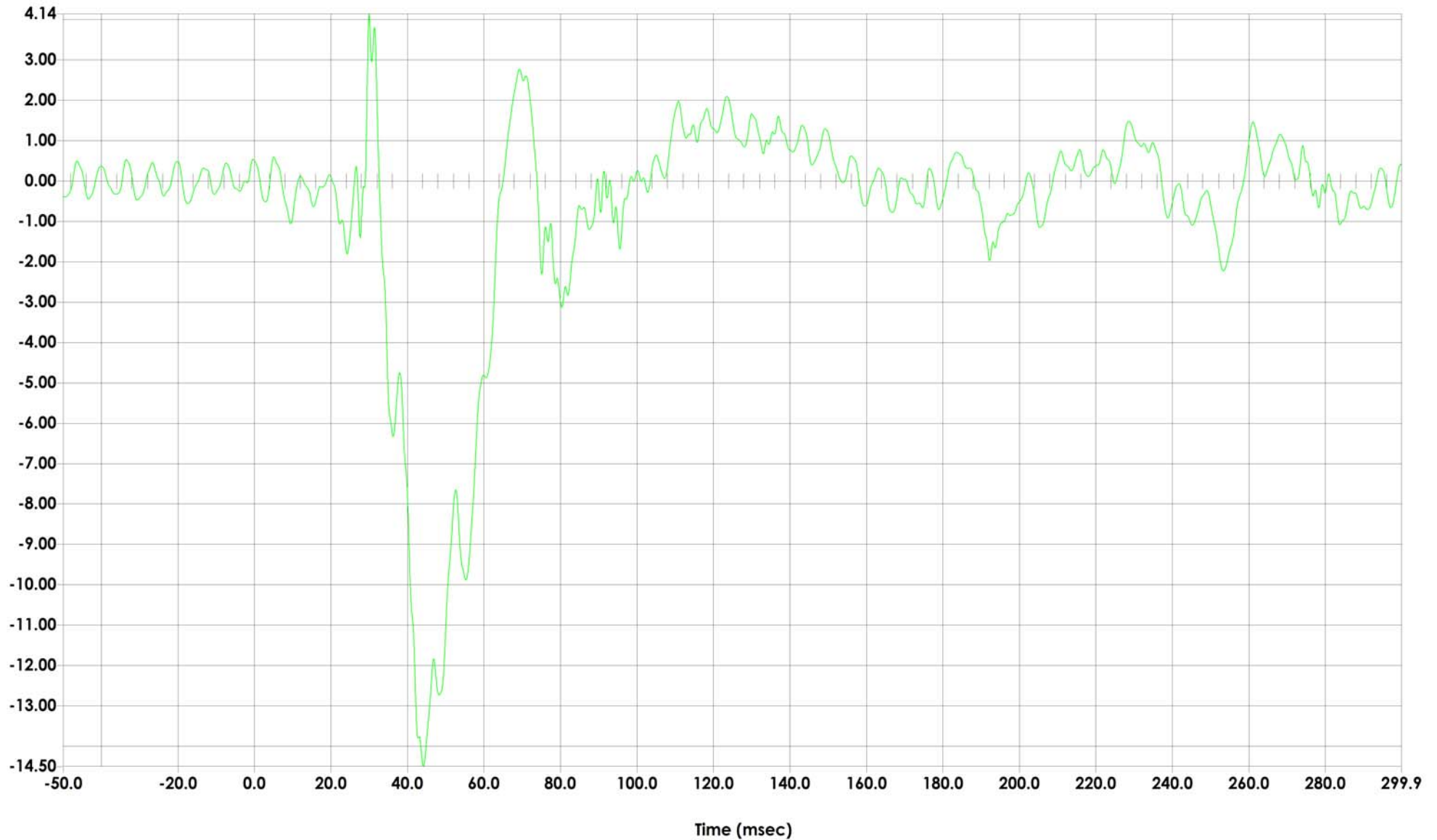


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC180
Plot number	030
Units	G'S

Max	4.14	G'S
	30.00	msec
Min	-14.50	G'S
	44.16	msec



Passenger Lower Spine T12 Acceleration (Z) vs. Time

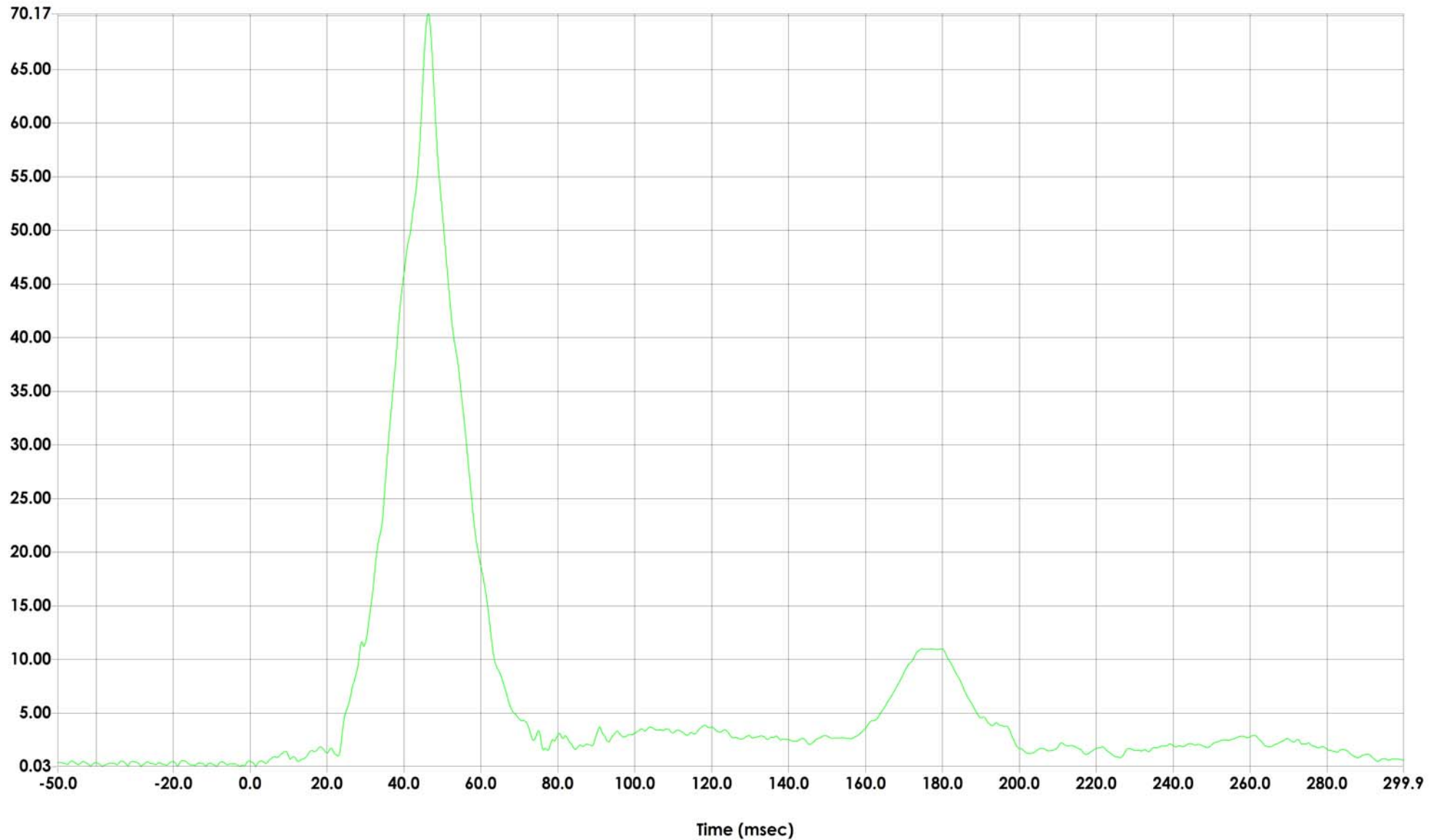


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC180
Plot number	066
Units	G'S

Max	70.17	G'S
	46.32	msec
Min	0.03	G'S
	1.44	msec



Passenger Lower Spine T12 Resultant Acceleration vs. Time

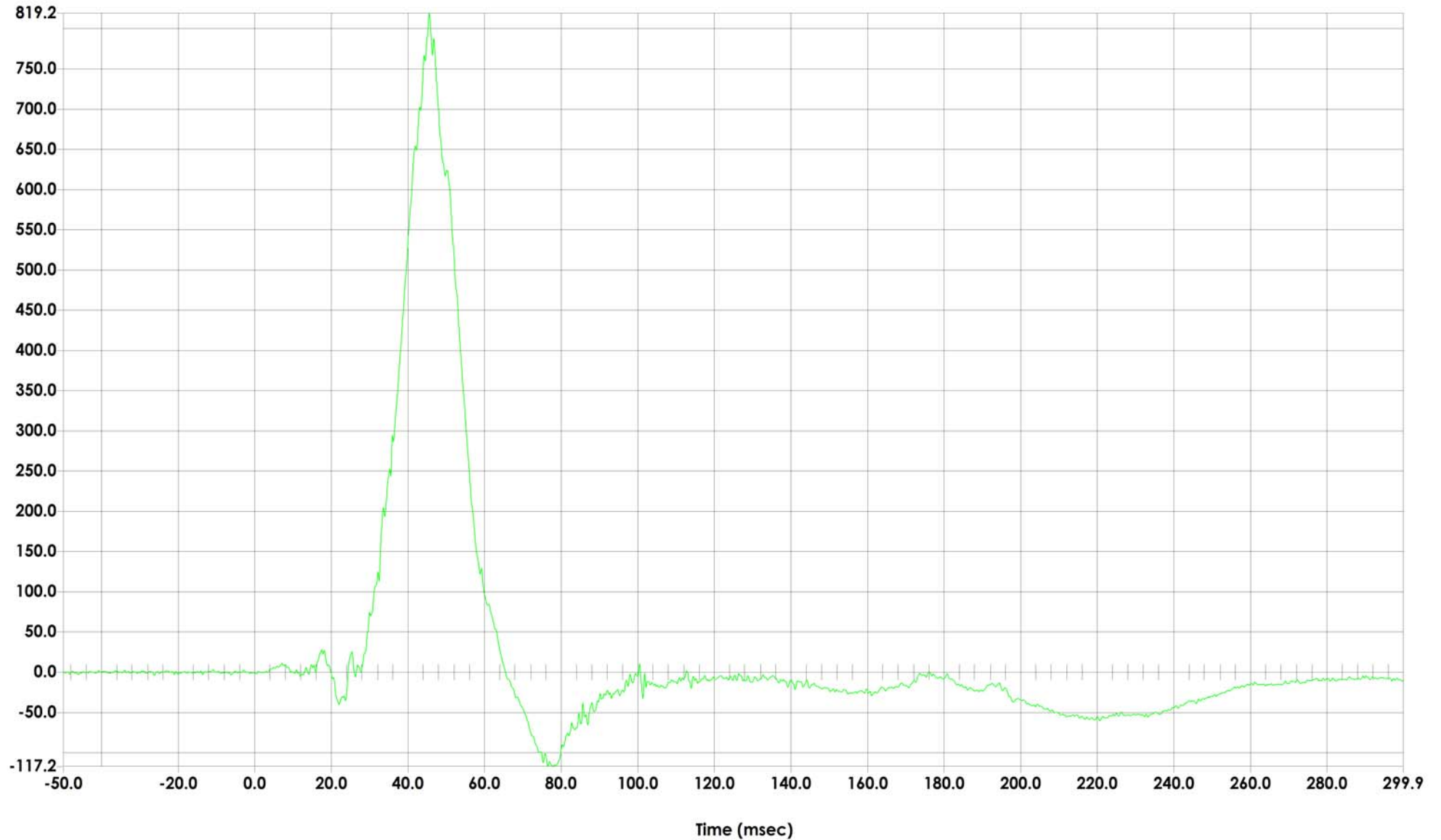


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC600
Plot number	031
Units	NWT

Max	819.19	NWT
	45.60	msec
Min	-117.16	NWT
	77.84	msec



Passenger Iliac Wing Force on Impact Side vs. Time

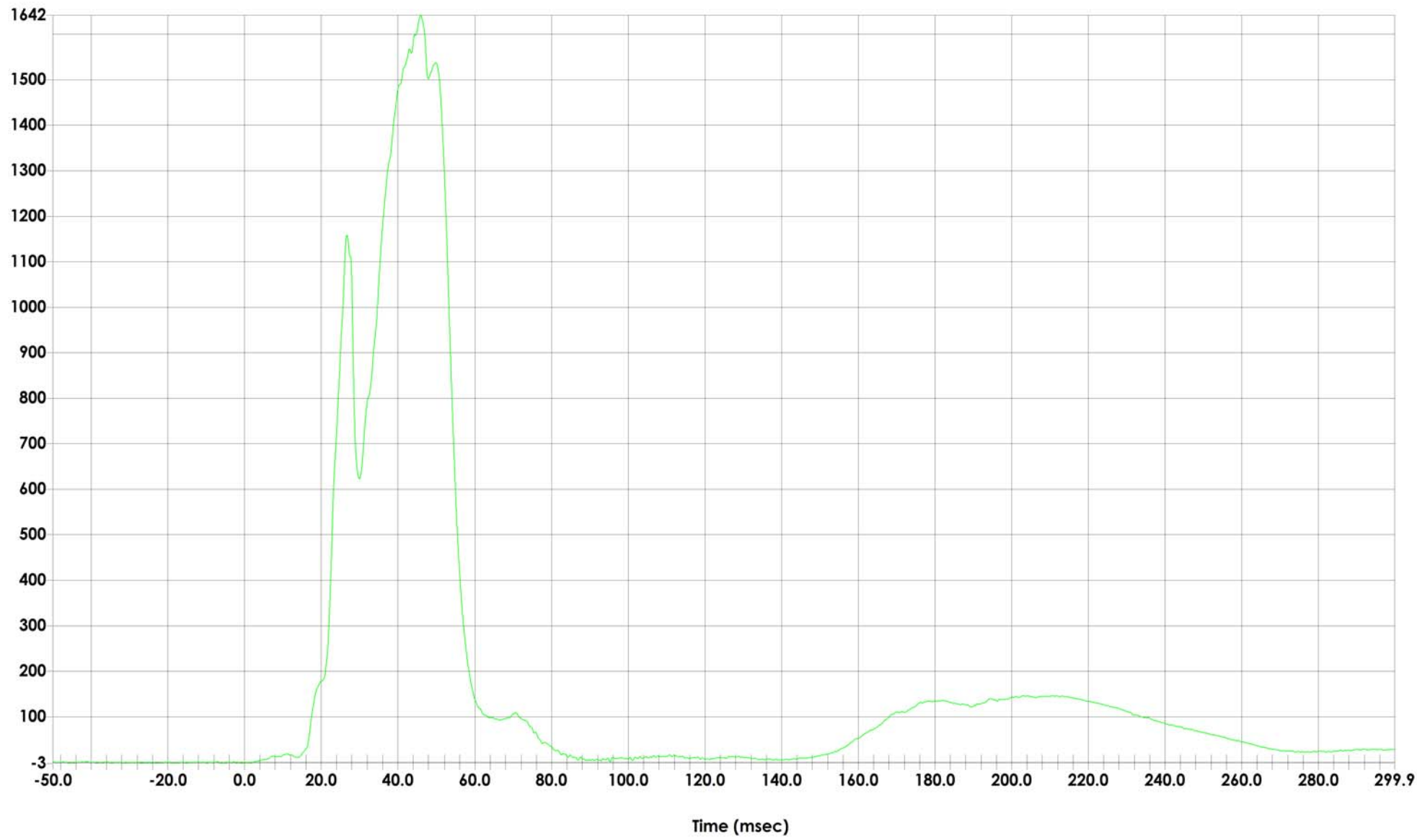


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC600
Plot number	032
Units	NWT

Max	1641.60	NWT
	45.92	msec
Min	-2.51	NWT
	-17.52	msec



Passenger Acetabulum Force on Impact Side vs. Time

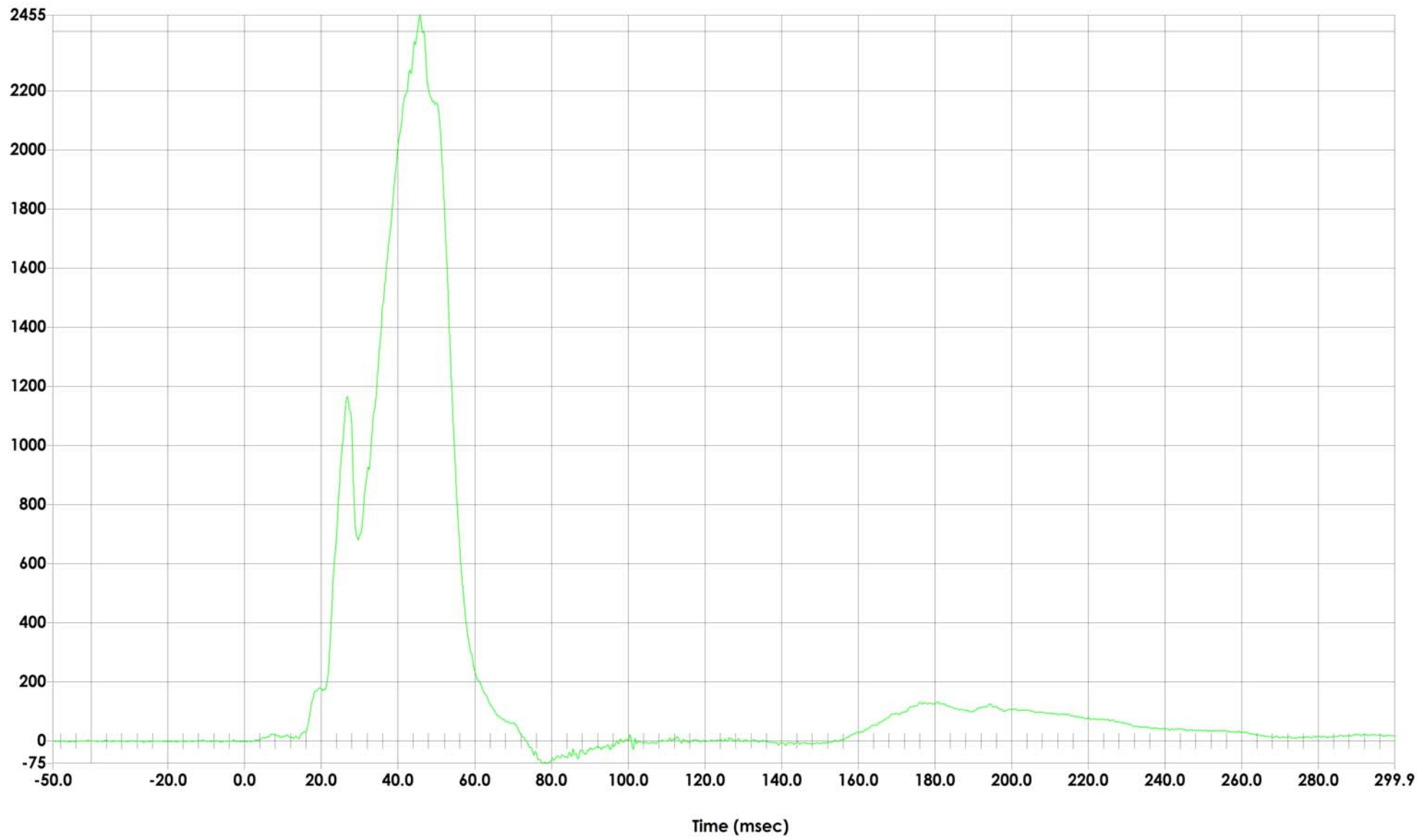


Test ID	M20145123
Sampling Rate (Hz)	12500
Filter	CFC600
Plot number	067
Units	NWT

Max	2455.03	NWT
	45.60	msec
Min	-75.37	NWT
	77.76	msec



Passenger Total Pelvic Force on Impact Side (Y) vs. Time



Test Vehicle: 2014 SCION FRS 2-Door Coupe
Test Program: SINCAP

NHTSA Number: M20145123
Test Date: December 18, 2013

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE DATA

TABLE 1
EXTERNAL MEASUREMENTS (ES-IIre)

ES-IIre Serial Number F038 Test Sequences 5 & 6

TEST PARAMETER	SPEC.	PRE		POST	
Date	-	12-17-13		12-22-13	
Sequential Test Number	-	5		6	
		Result	Pass/Fail	Result	Pass/Fail
Temperature (°C)	20.6-22.2	21.2	Pass	21.9	Pass
Relative Humidity (%)	10-70	35.3	Pass	24.2	Pass
Sitting Height	900 - 918	908	Pass	910	Pass
Seat to Shoulder Joint	558 -572	566	Pass	565	Pass
Seat to Lower Face of Thoracic Spine Box	346 -356	354	Pass	355	Pass
Seat to Hip Joint (Center of Bolt)	97 - 103	100	Pass	100	Pass
Sole to Seat, Sitting	433 - 451	440	Pass	441	Pass
Head Width	152 -158	153	Pass	154	Pass
Shoulder/Arm Width	461 - 479	475	Pass	475	Pass
Thorax Width	322 - 332	324	Pass	324	Pass
Abdomen Width	273 - 287	280	Pass	279	Pass
Pelvis/Lap Width	359 - 373	364	Pass	365	Pass
Head Depth	196 - 206	201	Pass	201	Pass
Thorax Depth	262 - 272	270	Pass	269	Pass
Abdomen Depth	194 - 204	200	Pass	200	Pass
Pelvis Depth	235 - 245	239	Pass	241	Pass
Back of Buttocks to Hip Joint (Center of Bolt)	150 - 160	156	Pass	154	Pass
Back of Buttocks to Front Knee	597 - 615	612	Pass	612	Pass

TABLE 2
HEAD DROP TEST (ES-IIre)

ES-IIre Serial Number F038

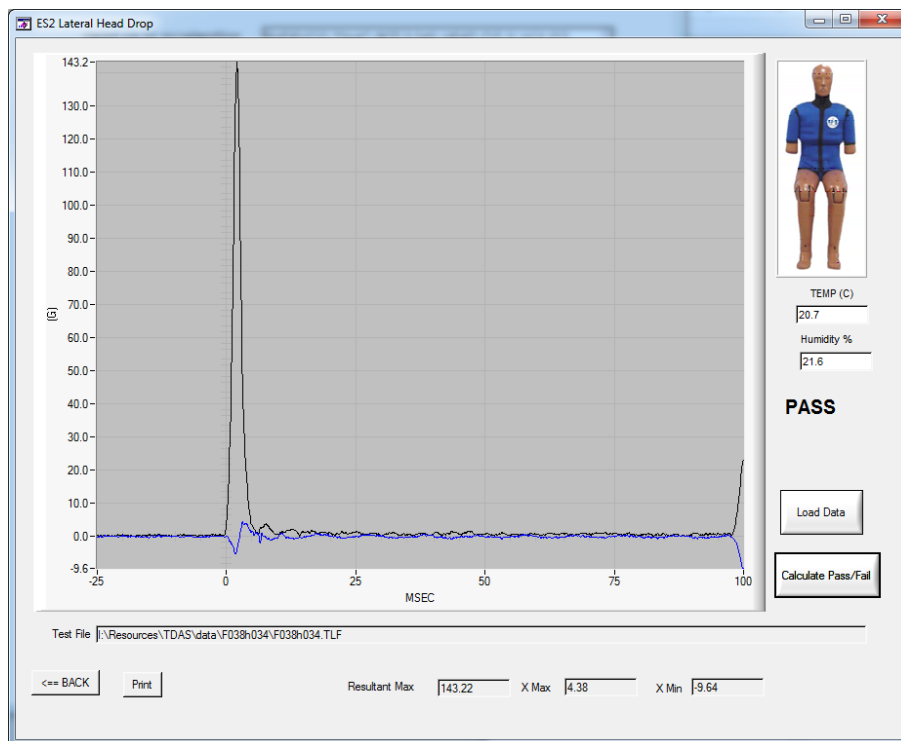
Test Sequences

5 & 6

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12-16-13		12-20-13	
Sequential Test Number		-	5		6	
			Result	Pass/Fail	Result	Pass/Fail
Head Assembly Soak Time (min)		≥ 240	240	Pass	240	Pass
Temperature (°C) – During Soak	Max	20.6-22.2	22.0	Pass	22.0	Pass
	Min		20.7	Pass	21.5	Pass
Humidity (%) – During Soak	Max	10.0-70.0	21.6	Pass	22.7	Pass
	Min		17.0	Pass	18.5	Pass
Temperature – During Test (°C)		20.6-22.2	20.7	Pass	22.0	Pass
Humidity – During Test (%)		10-70	21.6	Pass	22.7	Pass
Peak Head Resultant Acceleration (G)		125-155	143.2	Pass	138.3	Pass
Peak Head X Acceleration (G)		<15	4.4	Pass	5.1	Pass
Unimodal (Oscillation) (Yes/No)		<15%	Yes	Pass	Yes	Pass

TABLE 2
HEAD DROP TEST (ES-IIre) (CONTINUED)

PRE-TEST



POST-TEST

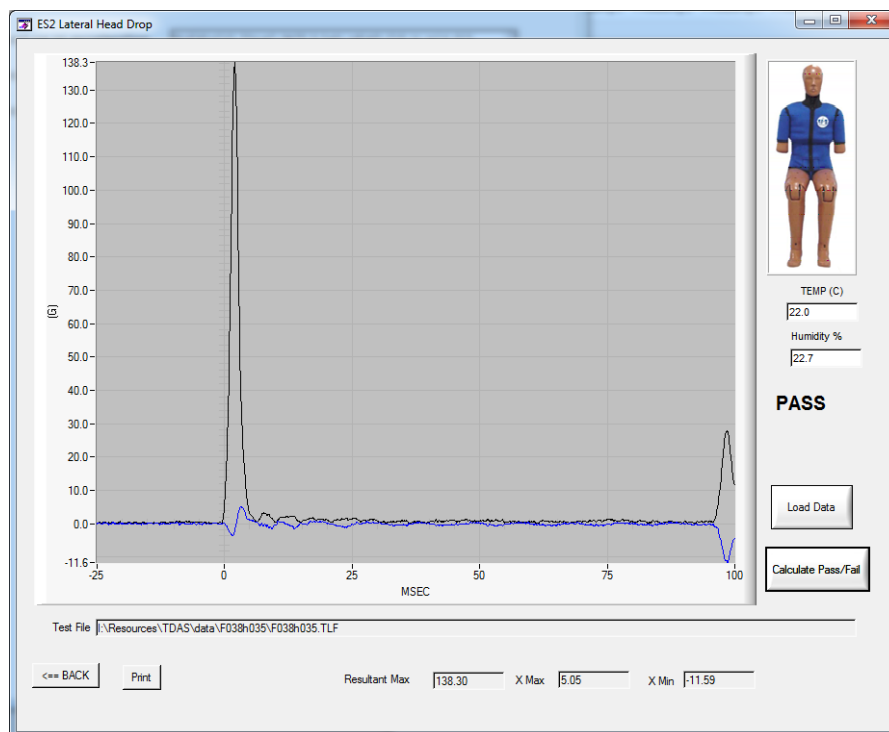


TABLE 3
NECK PENDULUM TEST (ES-IIre)

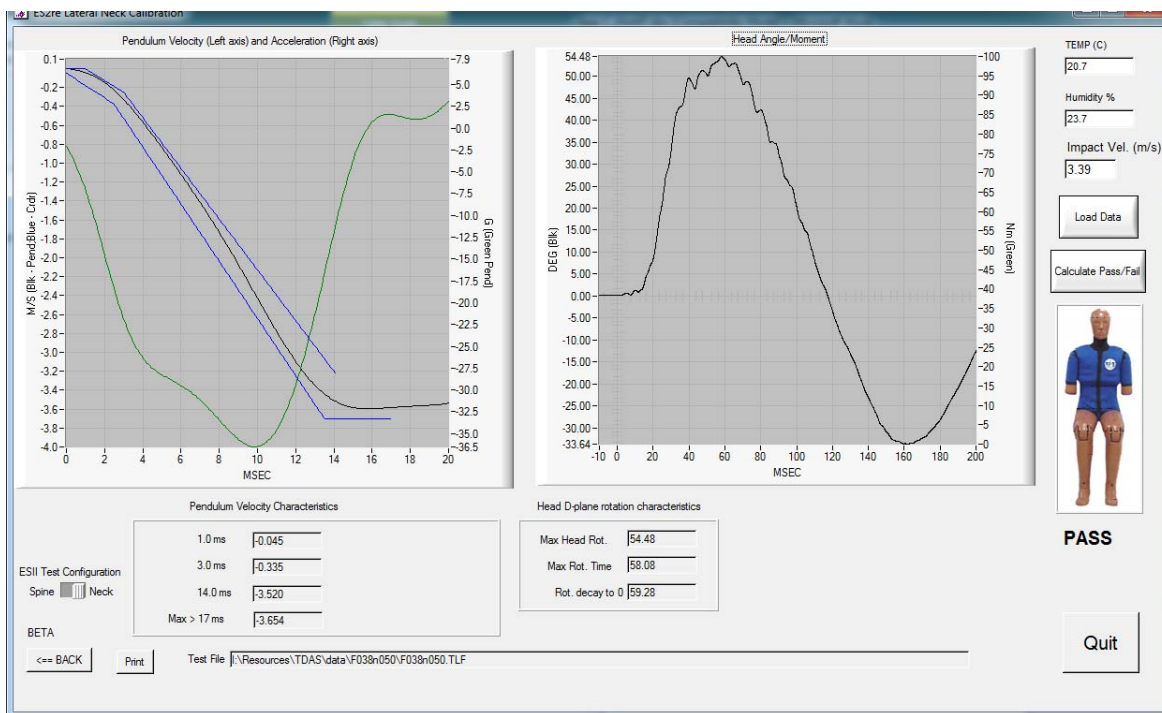
ES-IIre Serial Number F038

Test Sequences 5 & 6

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12-16-13		12-20-13	
Sequential Test Number		-	5		6	
			Result	Pass/Fail	Result	Pass/Fail
Neck Assembly Soak Time (min)		≥ 240	240	Pass	240	Pass
Temperature (°C) – During Soak	Max	20.6-22.2	20.7	Pass	22.0	Pass
	Min		20.6	Pass	21.7	Pass
Humidity (%) – During Soak	Max	10.0-70.0	23.7	Pass	23.9	Pass
	Min		18.9	Pass	22.7	Pass
Temperature – During Test (°C)		20.6-22.2	20.7	Pass	21.7	Pass
Humidity – During Test (%)		10-70	23.7	Pass	23.9	Pass
Pendulum Velocity (m/s)		3.3-3.5	3.39	Pass	3.39	Pass
Pendulum Velocity Corridors (m/s)	0-1.0 ms	(-0.05)-0.00	-0.05	Pass	-0.05	Pass
	2.5-3.0 ms	(-0.375) - (-0.25)	-0.34	Pass	-0.35	Pass
	13.5-14.0 ms	(-3.7) - (-3.20)	-3.5	Pass	-3.5	Pass
	Max > 17 ms	-3.7	-3.6	Pass	-3.6	Pass
Max D-Plane rotation (deg)		49-59	54.5	Pass	55.4	Pass
Time of Max D-Plane Rotation (ms)		54-66	58.1	Pass	58.3	Pass
Time of Moment Decay from Peak to 0 Nm (ms)		53-88	59.3	Pass	59.0	Pass

TABLE 3
NECK PENDULUM TEST (ES-IIre) (CONTINUED)

PRE-TEST



POST-TEST

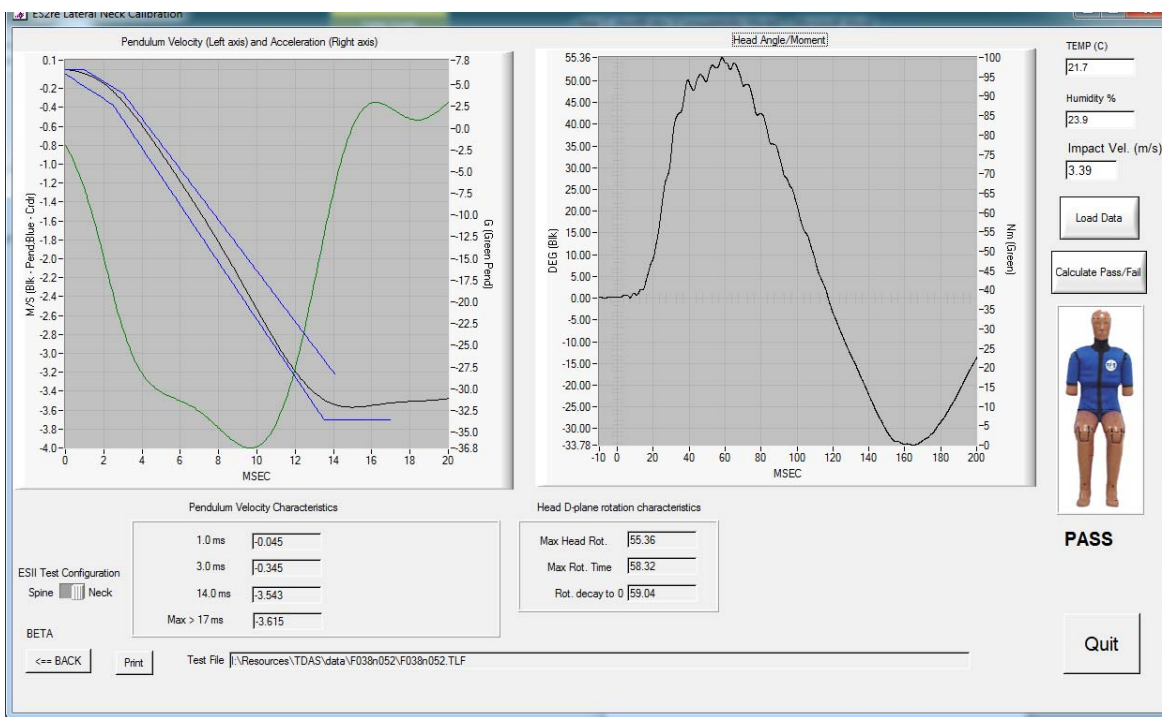


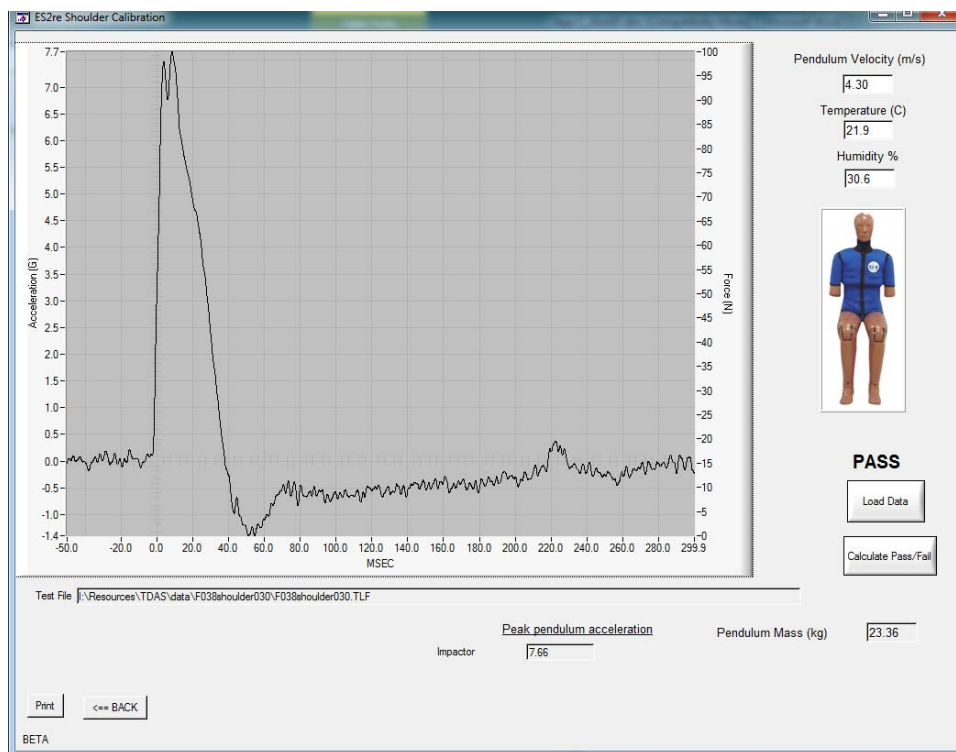
TABLE 4
SHOULDER IMPACT TEST (ES-IIre)

ES-IIre Serial Number F038 Test Sequences 5 & 6

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12-17-13		12-22-13	
Sequential Test Number		-	5		6	
			Result	Pass/Fail	Result	Pass/Fail
Dummy Soak Time (min)		≥ 240	240	Pass	240	Pass
Temperature (°C) – During Soak	Max	20.6-22.2	21.9	Pass	21.8	Pass
	Min		21.3	Pass	21.3	Pass
Humidity (%) – During Soak	Max	10.0-70.0	30.6	Pass	23.9	Pass
	Min		24.7	Pass	22.9	Pass
Temperature – During Test (°C)		20.6-22.2	21.9	Pass	21.8	Pass
Humidity – During Test (%)		10-70	30.6	Pass	23.9	Pass
Pendulum Velocity (m/s)		4.2-4.4	4.3	Pass	4.3	Pass
Peak Impactor Acceleration (G)		7.5-10.5	7.7	Pass	7.8	Pass

TABLE 4
SHOULDER IMPACT TEST (ES-IIre) (CONTINUED)

PRE-TEST



POST-TEST

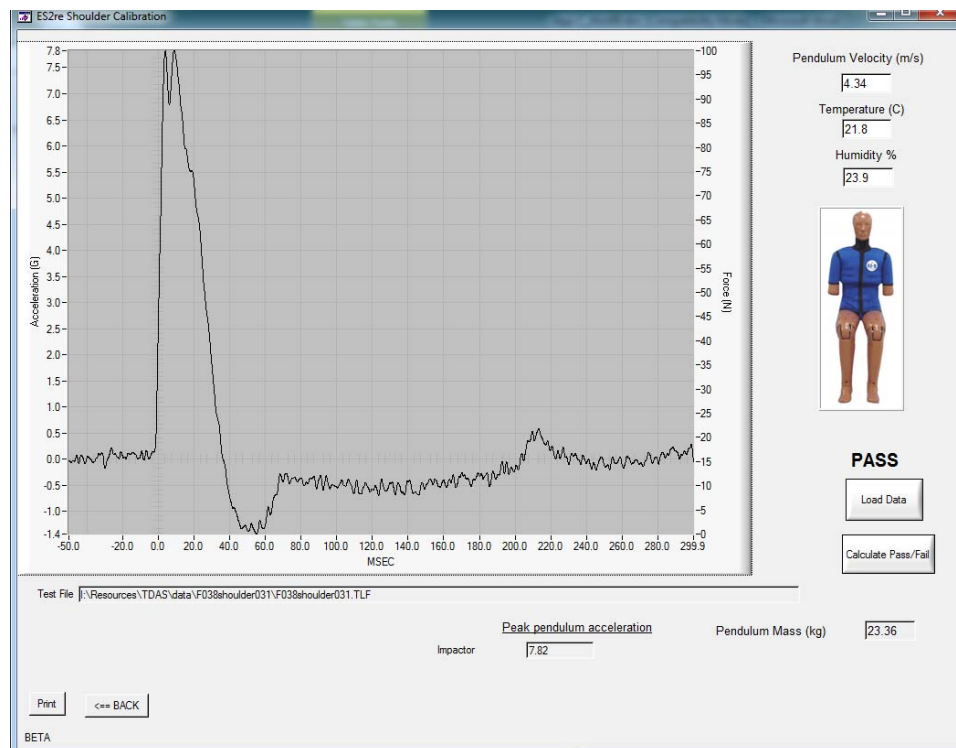


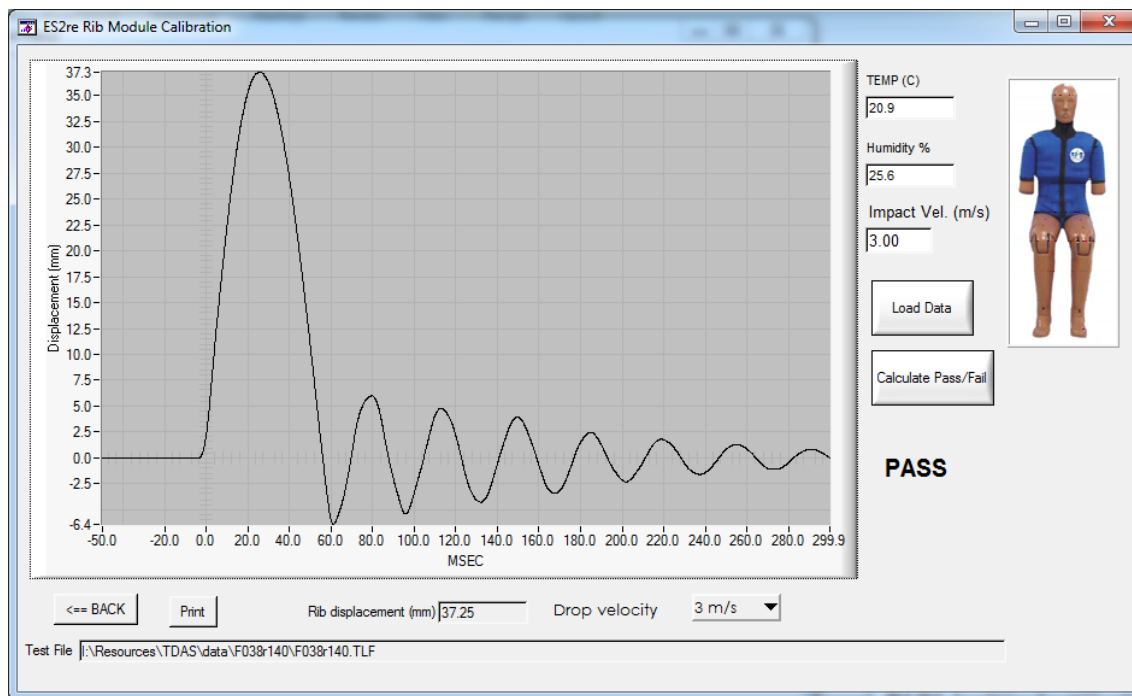
TABLE 5
THORAX – UPPER RIB DROP TEST (ES-IIre)

ES-IIre Serial Number F038 Test Sequences 5 & 6

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12-16-13		12-20-13	
Sequential Test Number		-	5		6	
			Result	Pass/Fail	Result	Pass/Fail
Upper Rib Drop Module Soak Time (min)		≥ 240	240	Pass	240	Pass
Temperature (°C) – During Soak	Max	20.6-22.2	20.9	Pass	22.0	Pass
	Min		20.6	Pass	22.0	Pass
Humidity (%) – During Soak	Max	10.0-70.0	25.6	Pass	23.1	Pass
	Min		18.9	Pass	22.7	Pass
Temperature – During Test (°C)		20.6-22.2	20.9	Pass	22.0	Pass
Humidity – During Test (%)		10-70	25.6	Pass	23.1	Pass
1 st Test - Drop Height 459 ± 5 mm		36-40	37.3	Pass	37.8	Pass
2 nd Test - Drop Height 815 ± 5 mm		46-51	48.7	Pass	48.7	Pass

TABLE 5
THORAX – UPPER RIB DROP TEST (ES-IIre) (CONTINUED)
3.00 m/s

PRE-TEST



POST-TEST

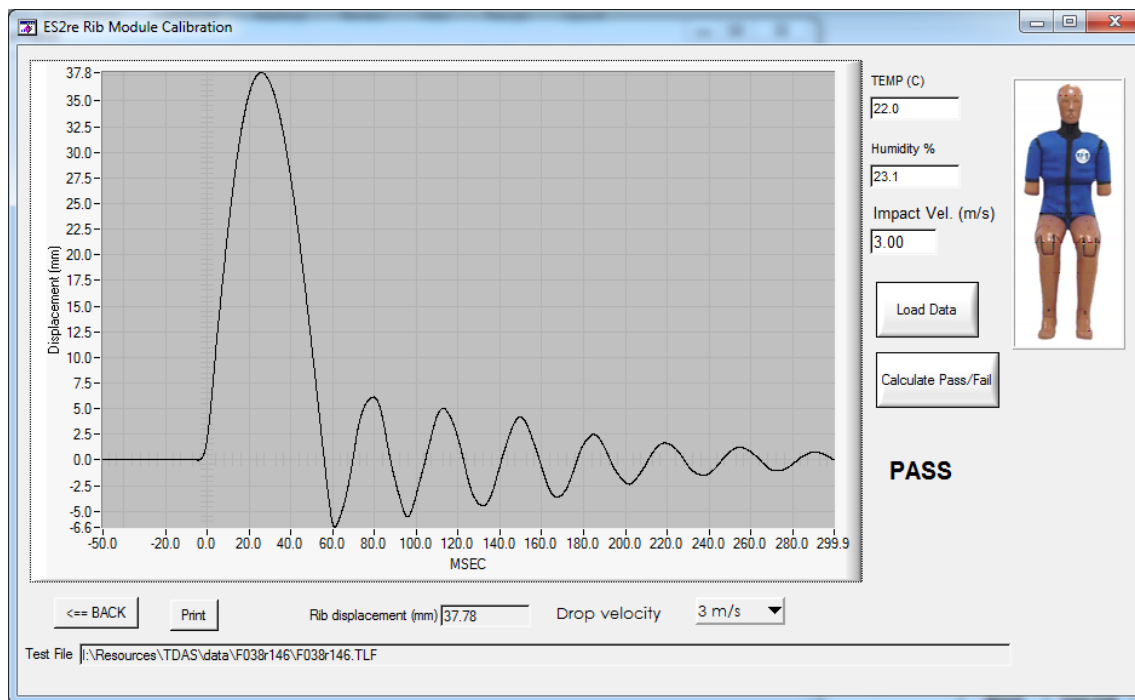
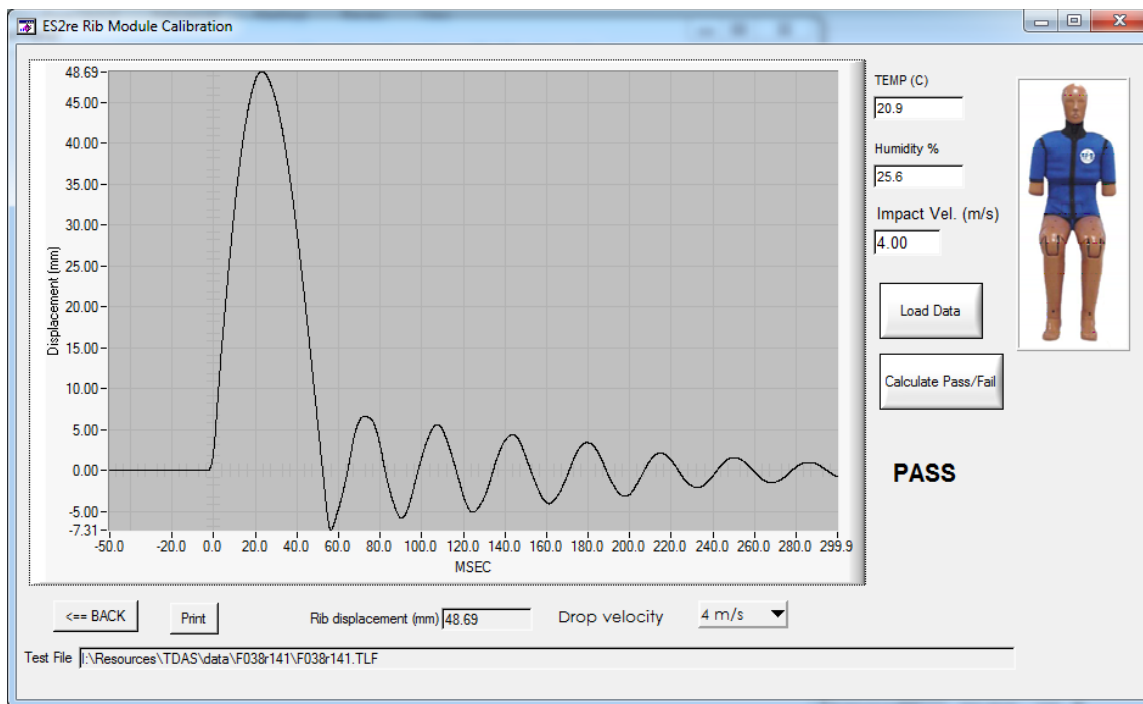


TABLE 5
THORAX – UPPER RIB DROP TEST (ES-IIre) (CONTINUED)
4.00 m/s

PRE-TEST



POST-TEST

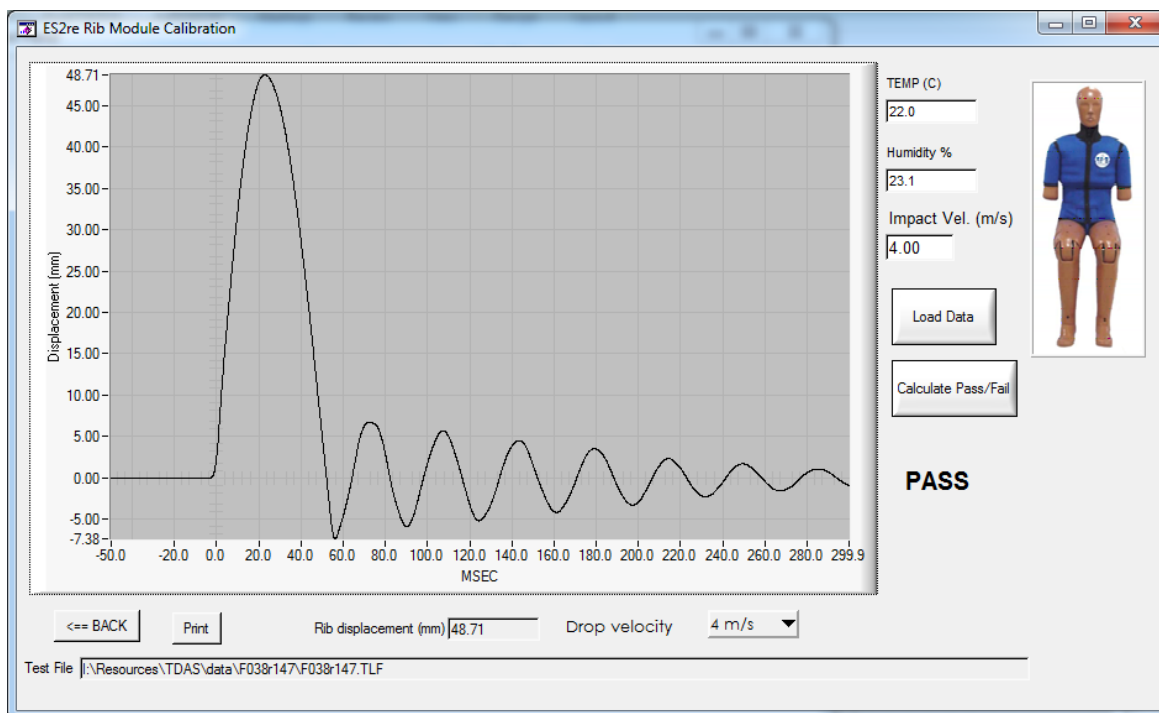


TABLE 6
THORAX – MIDDLE RIB DROP TEST (ES-IIre)

ES-IIre Serial Number F038

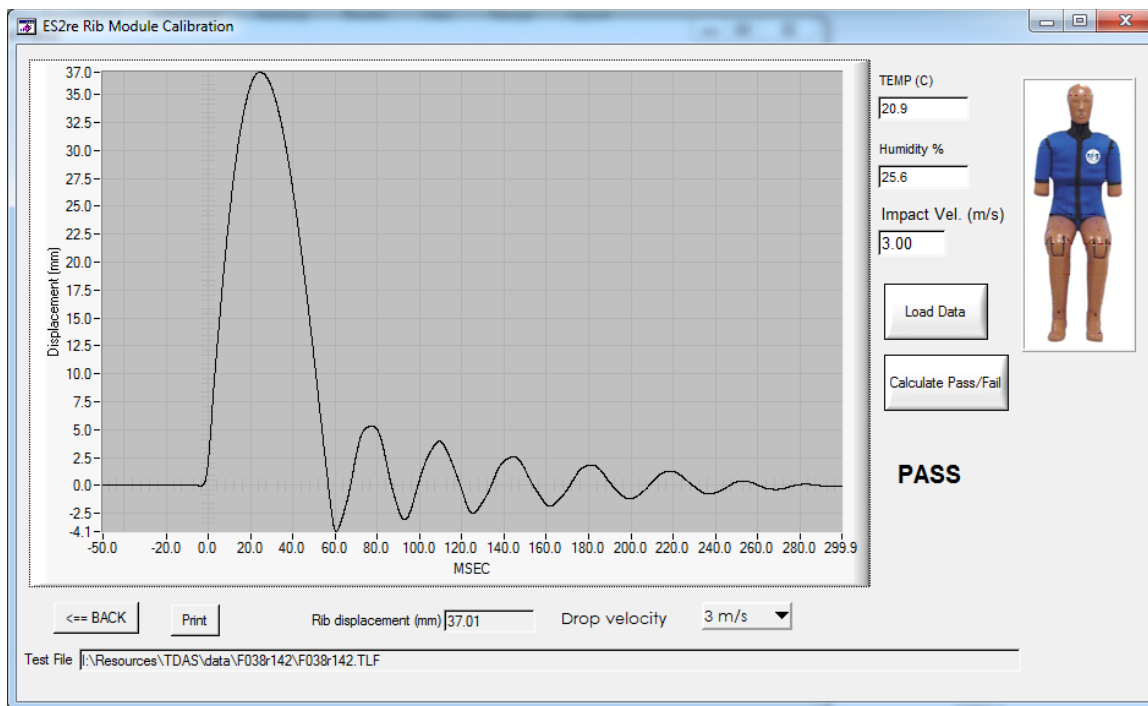
Test Sequences

5 & 6

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12-16-13		12-20-13	
Sequential Test Number		-	5		6	
			Result	Pass/Fail	Result	Pass/Fail
Middle Rib Drop Module Soak Time (min)		≥ 240	240	Pass	240	Pass
Temperature (°C) – During Soak	Max	20.6-22.2	20.9	Pass	22.0	Pass
	Min		20.6	Pass	21.9	Pass
Humidity (%) – During Soak	Max	10.0-70.0	25.6	Pass	23.5	Pass
	Min		18.9	Pass	22.7	Pass
Temperature – During Test (°C)		20.6-22.2	20.9	Pass	21.9	Pass
Humidity – During Test (%)		10-70	25.6	Pass	23.5	Pass
1 st Test - Drop Height 459 ± 5 mm		36-40	37.0	Pass	37.1	Pass
2 nd Test - Drop Height 815 ± 5 mm		46-51	48.7	Pass	48.7	Pass

TABLE 6
THORAX – MIDDLE RIB DROP TEST (ES-IIre) (CONTINUED)
3.00 m/s

PRE-TEST



POST-TEST

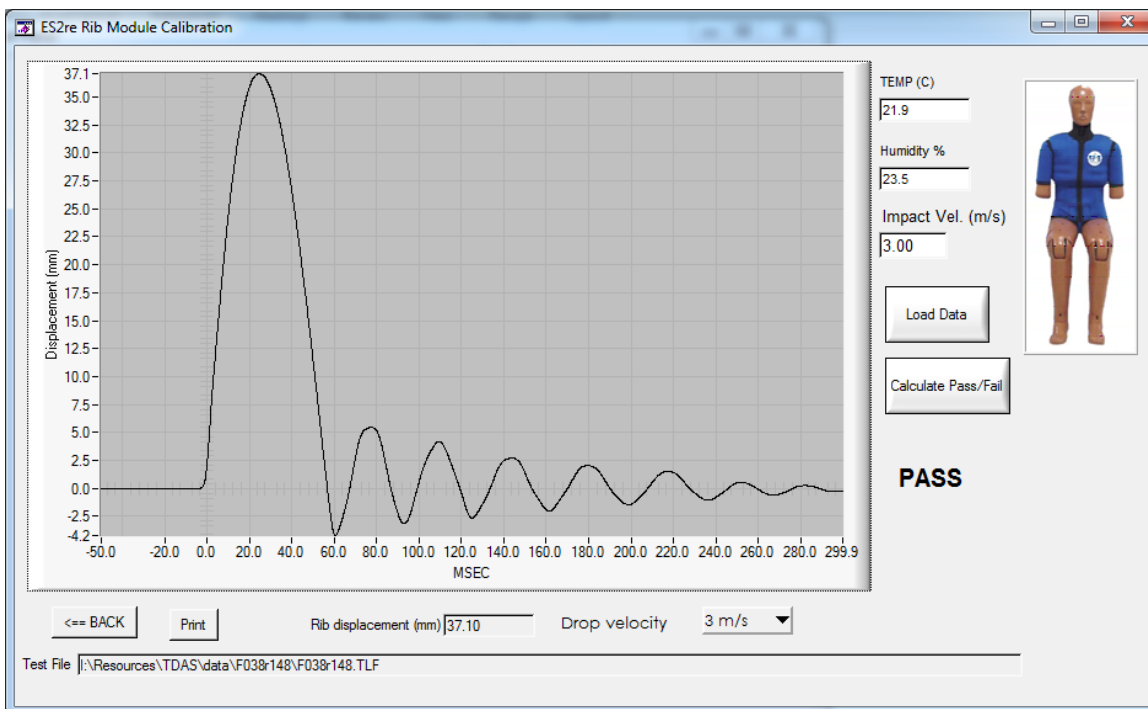
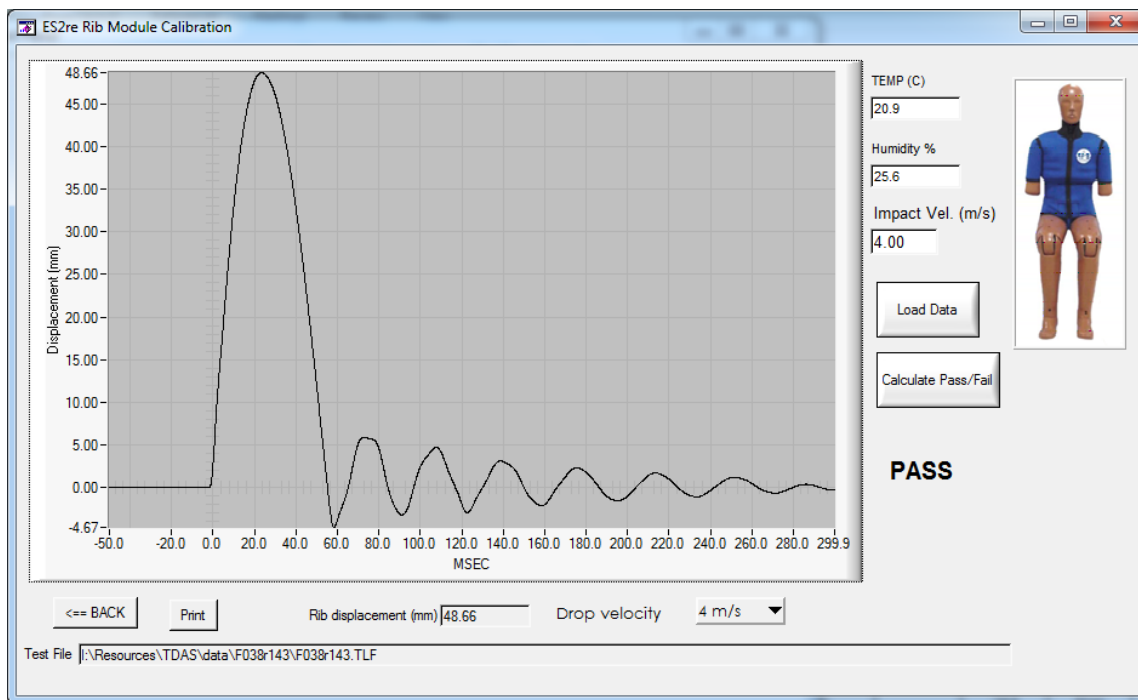


TABLE 6
THORAX – MIDDLE RIB DROP TEST (ES-IIre) (CONTINUED)
4.00 m/s

PRE-TEST



POST-TEST

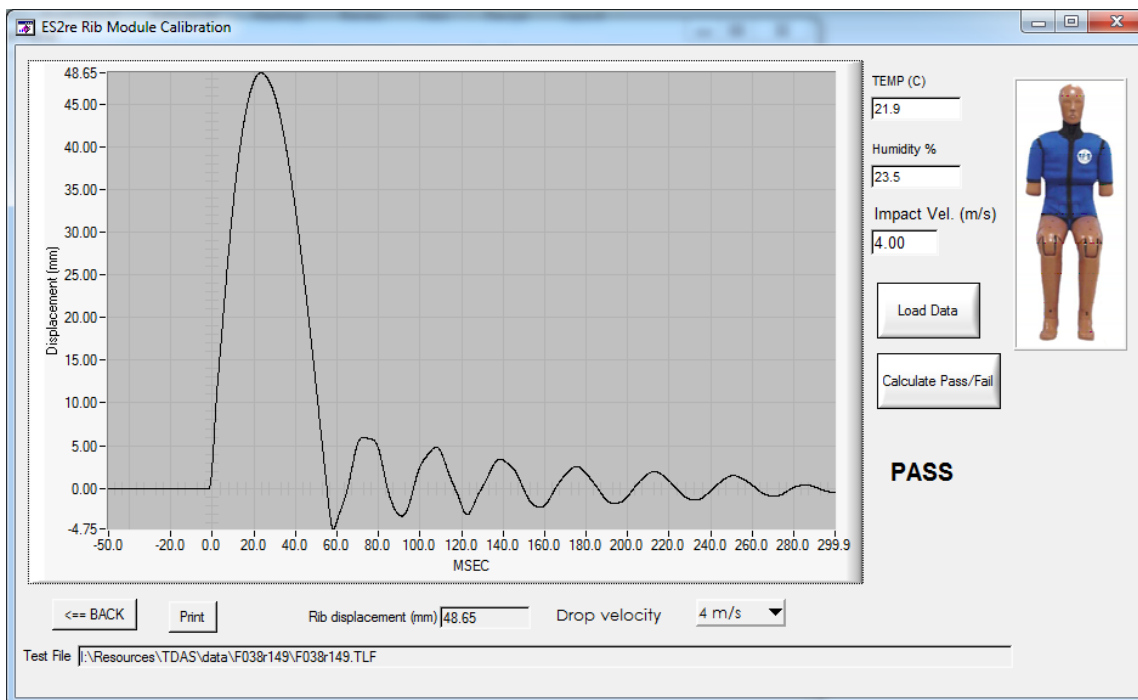


TABLE 7
THORAX – LOWER RIB DROP TEST (ES-IIre)

ES-IIre Serial Number F038

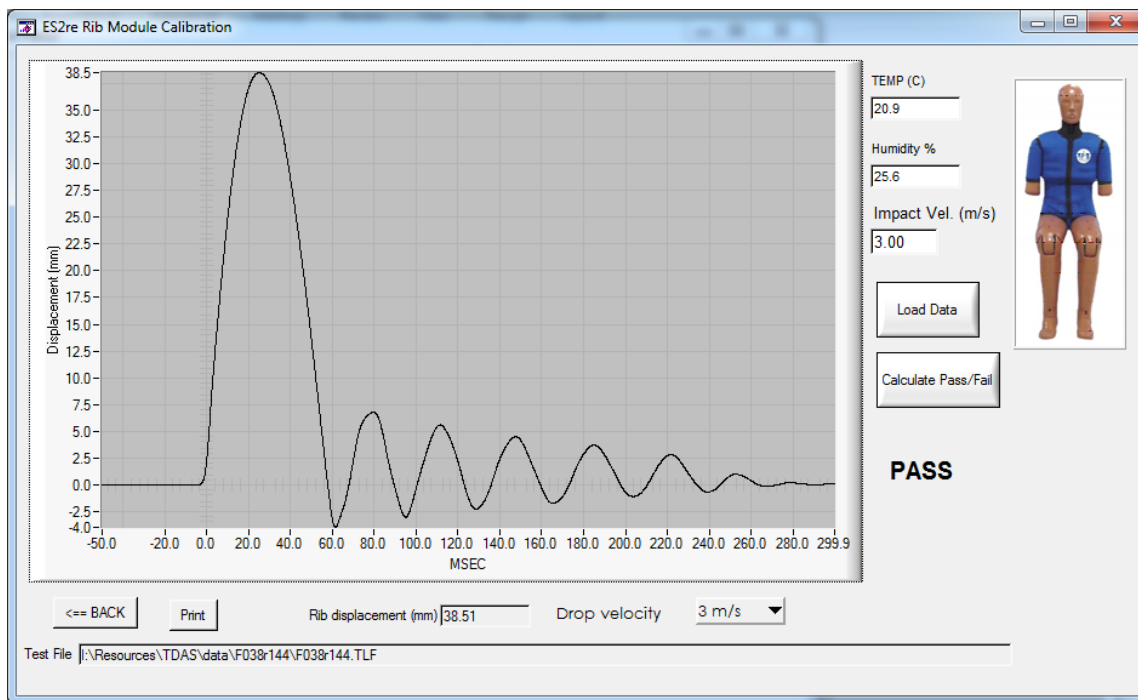
Test Sequences

5 & 6

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12-16-13		12-20-13	
Sequential Test Number		-	5		6	
			Result	Pass/Fail	Result	Pass/Fail
Lower Rib Drop Module Soak Time (min)		≥ 240	240	Pass	240	Pass
Temperature (°C) – During Soak	Max	20.6-22.2	20.9	Pass	22.0	Pass
	Min		20.6	Pass	21.8	Pass
Humidity (%) – During Soak	Max	10.0-70.0	25.6	Pass	23.5	Pass
	Min		18.9	Pass	22.7	Pass
Temperature – During Test (°C)		20.6-22.2	20.9	Pass	21.8	Pass
Humidity – During Test (%)		10-70	25.6	Pass	23.5	Pass
1 st Test - Drop Height 459 ± 5 mm		36-40	38.5	Pass	38.4	Pass
2nd Test - Drop Height 815 ± 5 mm		46-51	49.1	Pass	49.2	Pass

TABLE 7
THORAX – LOWER RIB DROP TEST (ES-IIre) (CONTINUED)
3.00 m/s

PRE-TEST



POST-TEST

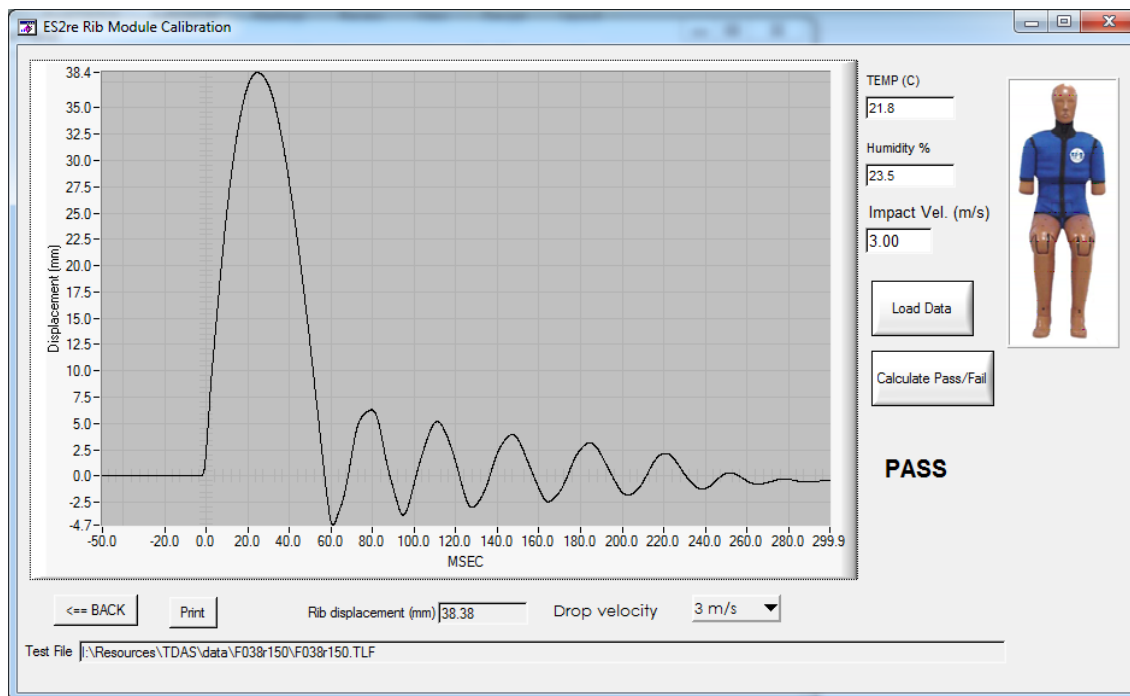
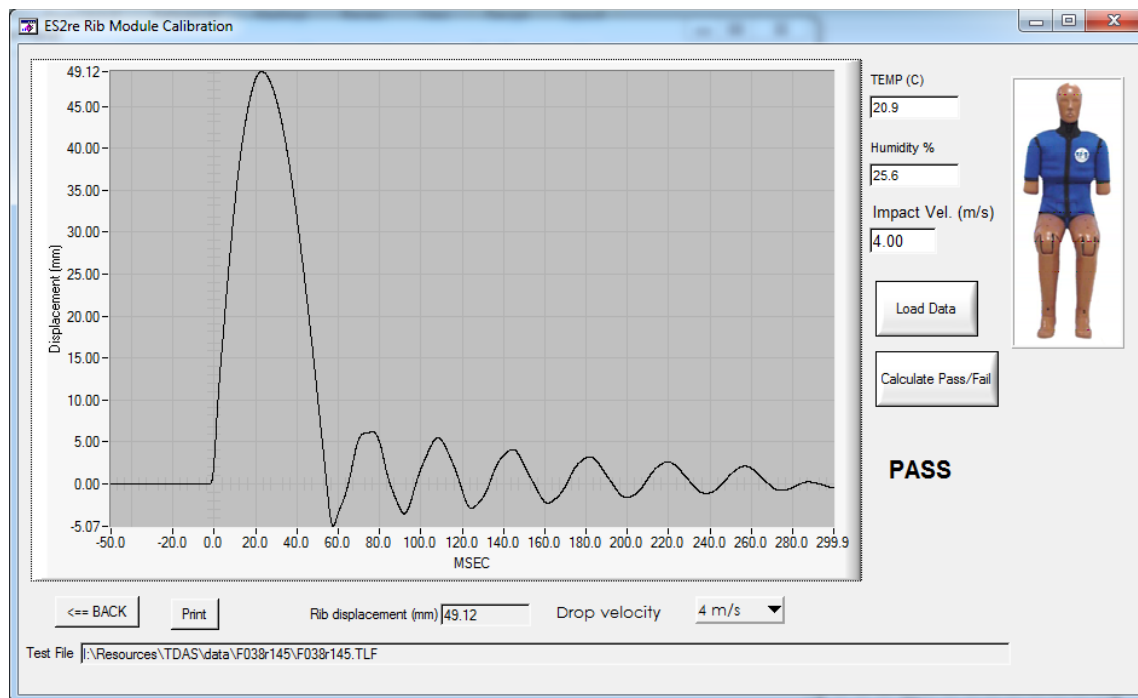


TABLE 7
THORAX – LOWER RIB DROP TEST (ES-IIre) (CONTINUED)
4.00 m/s

PRE-TEST



POST-TEST

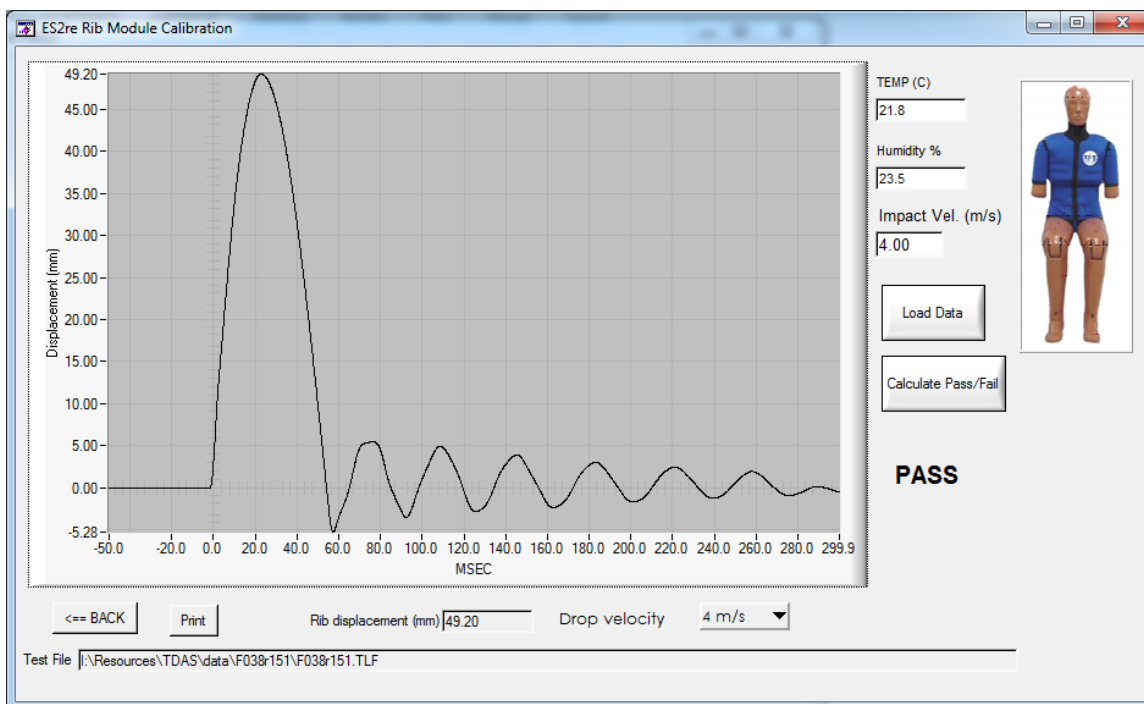


TABLE 8
THORAX – FULL BODY IMPACT TEST (ES-IIre)

ES-IIre Serial Number F038

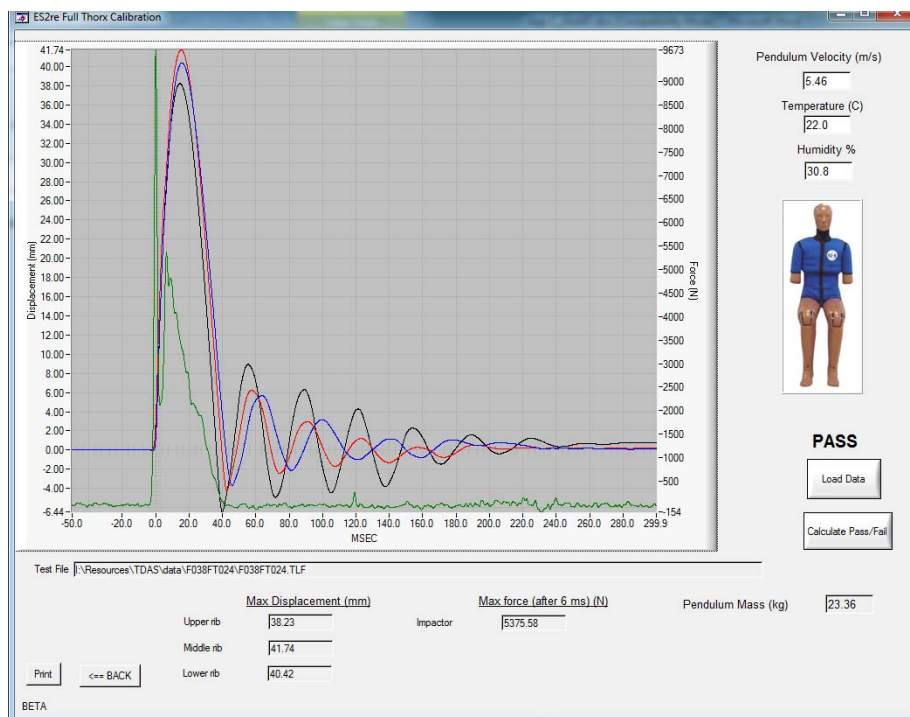
Test Sequences

5 & 6

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12-17-13		12-22-13	
Sequential Test Number		-	5		6	
			Result	Pass/Fail	Result	Pass/Fail
Dummy Soak Time (min)		≥ 240	240	Pass	240	Pass
Temperature (°C) – During Soak	Max	20.6-22.2	22.0	Pass	21.9	Pass
	Min		21.3	Pass	21.3	Pass
Humidity (%) – During Soak	Max	10.0-70.0	30.8	Pass	23.8	Pass
	Min		24.7	Pass	22.9	Pass
Temperature – During Test (°C)		20.6-22.2	22.0	Pass	21.9	Pass
Humidity – During Test (%)		10-70	30.8	Pass	23.8	Pass
Peak Impactor Velocity (m/s)		5.4-5.6	5.5	Pass	5.5	Pass
Peak Upper Rib Deflection (mm)		34-41	38.2	Pass	36.6	Pass
Peak Middle Rib Deflection (mm)		37-45	41.7	Pass	41.0	Pass
Peak Lower Rib Deflection (mm)		37-44	40.4	Pass	40.9	Pass
Peak Impactor Force (>6ms) (kN)		5.1-6.2	5.4	Pass	5.8	Pass

TABLE 8
THORAX – FULL BODY IMPACT TEST (ES-IIre)

PRE-TEST



POST-TEST

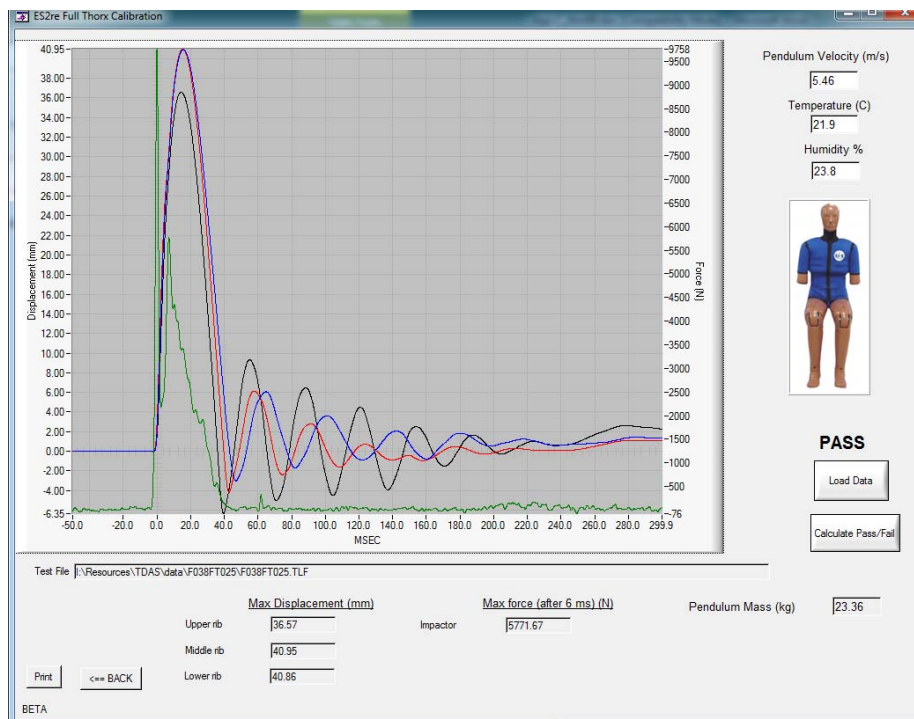


TABLE 9
ABDOMEN IMPACT TEST (ES-IIre)

ES-IIre Serial Number F038

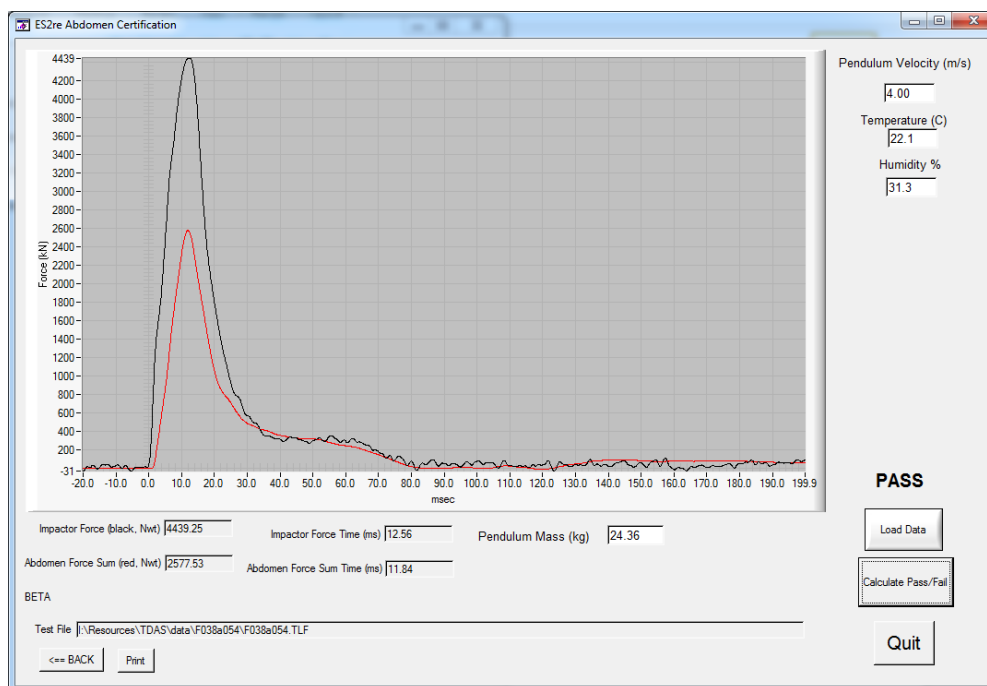
Test Sequences

5 & 6

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12-17-13		12-22-13	
Sequential Test Number		-	5		6	
			Result	Pass/Fail	Result	Pass/Fail
Dummy Soak Time (min)		≥ 240	240	Pass	240	Pass
Temperature (°C) – During Soak	Max	20.6-22.2	22.1	Pass	21.8	Pass
	Min		21.3	Pass	21.3	Pass
Humidity (%) – During Soak	Max	10.0-70.0	31.3	Pass	23.9	Pass
	Min		24.7	Pass	22.9	Pass
Temperature – During Test (°C)		20.6-22.2	22.1	Pass	21.8	Pass
Humidity – During Test (%)		10-70	31.3	Pass	23.9	Pass
Peak Impactor Velocity (m/s)		3.9-4.1	4.0	Pass	4.0	Pass
Sum of Abdominal Forces (kN)		2.2-2.7	2.6	Pass	2.6	Pass
Time of Abdominal Forces (ms)		10-12.3	11.8	Pass	11.8	Pass
Peak Impactor Force (kN)		4.0-4.8	4.4	Pass	4.4	Pass
Time of Peak Impactor Force (ms)		10.6-13.0	12.6	Pass	11.7	Pass

TABLE 9
ABDOMEN IMPACT TEST (ES-IIre) (CONTINUED)

PRE-TEST



POST-TEST

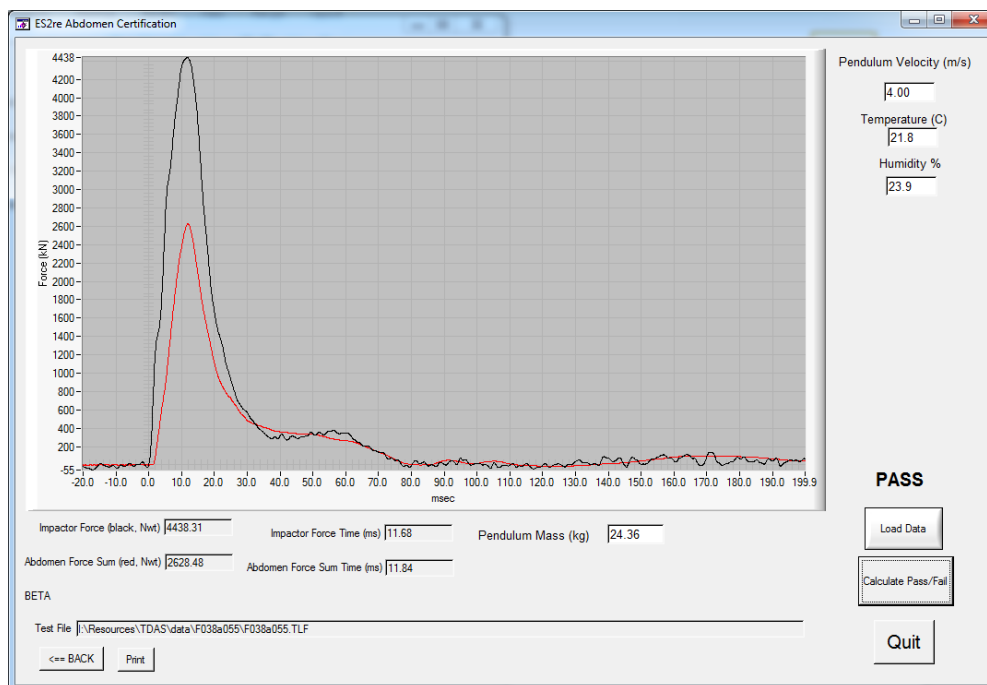


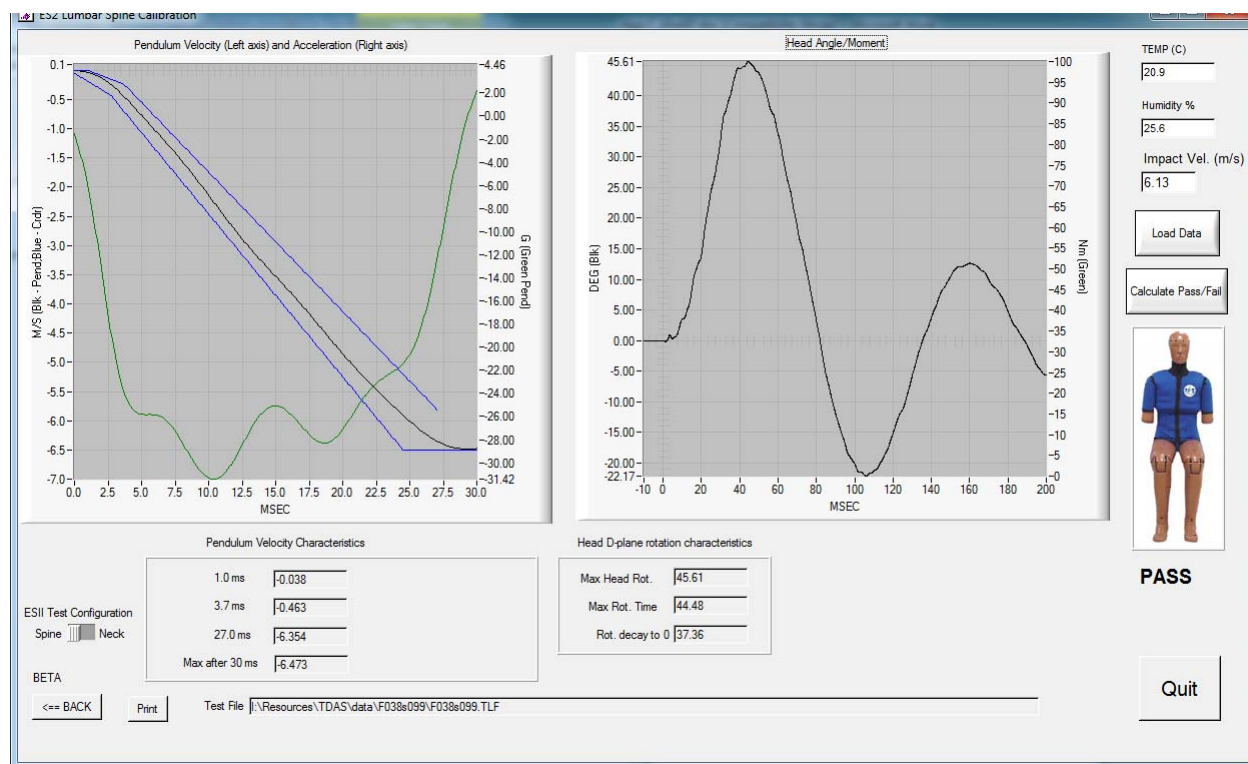
TABLE 10
LUMBAR SPINE FLEXION TEST (ES-IIre)

ES-IIre Serial Number F038 Test Sequences 5 & 6

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12-16-13		12-20-13	
Sequential Test Number		-	5		6	
			Result	Pass/Fail	Result	Pass/Fail
Lumbar Spine Assembly Soak Time (min)		≥ 240	240	Pass	240	Pass
Temperature (°C) – During Soak	Max	20.6-22.2	20.9	Pass	22.0	Pass
	Min		20.6	Pass	21.6	Pass
Humidity (%) – During Soak	Max	10.0-70.0	25.6	Pass	24.1	Pass
	Min		18.9	Pass	22.7	Pass
Temperature – During Test (°C)		20.6-22.2	20.9	Pass	21.6	Pass
Humidity – During Test (%)		10-70	25.6	Pass	24.1	Pass
Pendulum Velocity (m/s)		5.95-6.15	6.1	Pass	6.1	Pass
Pendulum Velocity Corridors (m/s)	0-1.0 ms	(-0.05)-0.00	-0.04	Pass	-0.04	Pass
	2.7-3.7 ms	(-0.425) - (-0.24)	-0.46	Pass	-0.47	Pass
	24.5-27.0 ms	(-6.50) - (-5.80)	-6.4	Pass	-6.3	Pass
	Max after 30 ms	-6.50	-6.5	Pass	-6.5	Pass
Maximum Headform Flexion Angle (deg)		45-55	45.6	Pass	47.1	Pass
Time at Maximum Flexion Angel (ms)		39-53	44.5	Pass	44.2	Pass
Time of Decay to Zero Angle from Peak (ms)		37-57	37.4	Pass	38.7	Pass

TABLE 10
LUMBAR SPINE FLEXION TEST (ES-IIre) (CONTINUED)

PRE-TEST



POST-TEST

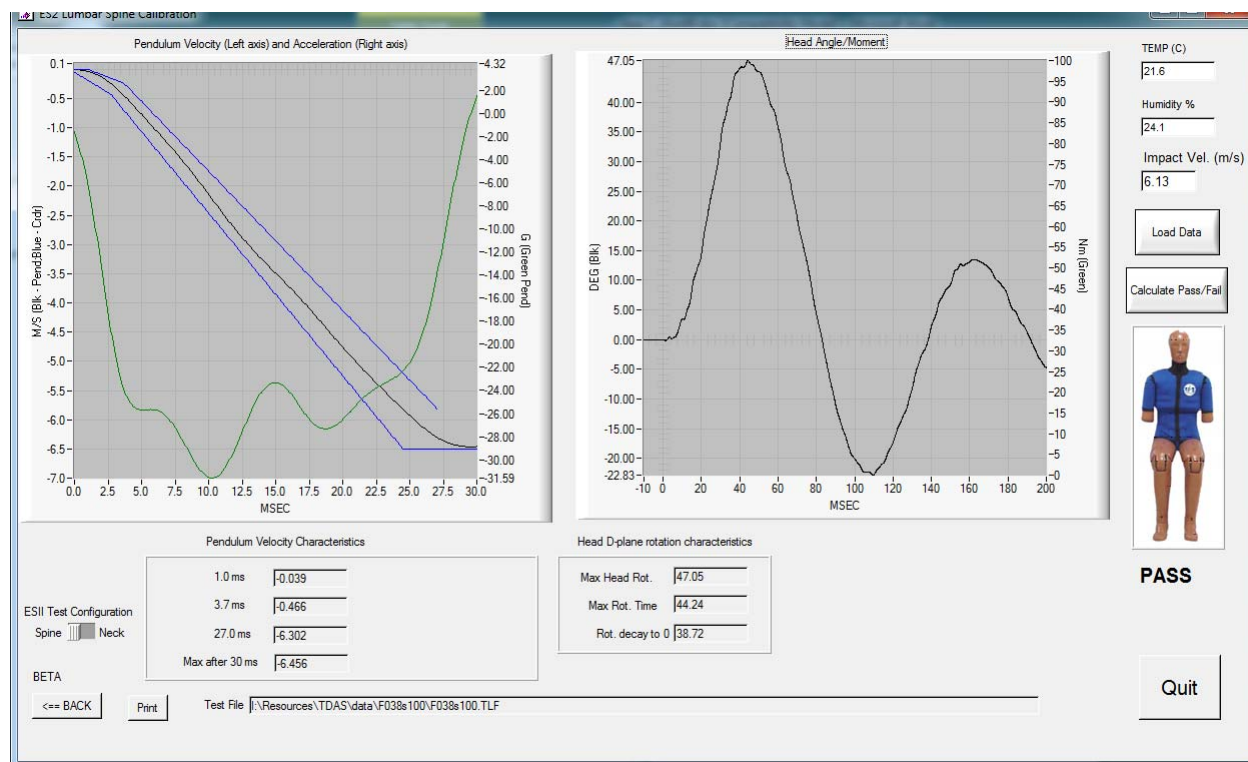


TABLE 11
PELVIS IMPACT TEST (ES-IIre)

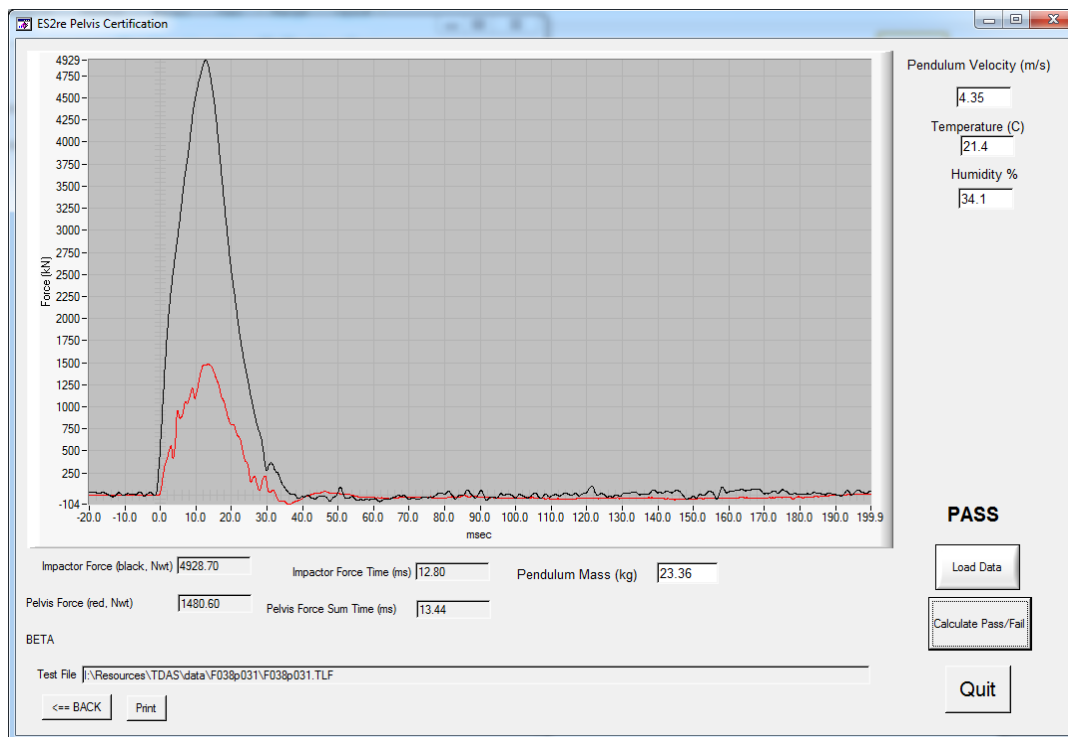
ES-IIre Serial Number F038

Test Sequences 5 & 6

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12-17-13		12-22-13	
Sequential Test Number		-	5		6	
			Result	Pass/Fail	Result	Pass/Fail
Dummy Soak Time (min)		≥ 240	240	Pass	240	Pass
Temperature (°C) – During Soak	Max	20.6-22.2	21.4	Pass	21.8	Pass
	Min		21.3	Pass	21.3	Pass
Humidity (%) – During Soak	Max	10.0-70.0	34.1	Pass	24.2	Pass
	Min		24.7	Pass	22.9	Pass
Temperature – During Test (°C)		20.6-22.2	21.4	Pass	21.8	Pass
Humidity – During Test (%)		10-70	34.1	Pass	24.2	Pass
Pendulum Velocity (m/s)		4.2-4.4	4.4	Pass	4.4	Pass
Peak Impactor Force (kN)		4.7 – 5.4	4.9	Pass	5.0	Pass
Time at Peak Force (ms)		11.8-16.1	12.8	Pass	12.6	Pass
Peak Pubic Symphysis Force (kN)		1.23-1.59	1.5	Pass	1.6	Pass
Time at Peak Force (ms)		12.2-17.0	13.4	Pass	13.1	Pass

TABLE 11
PELVIS IMPACT TEST (ES-IIre) (CONTINUED)

PRE-TEST



POST-TEST

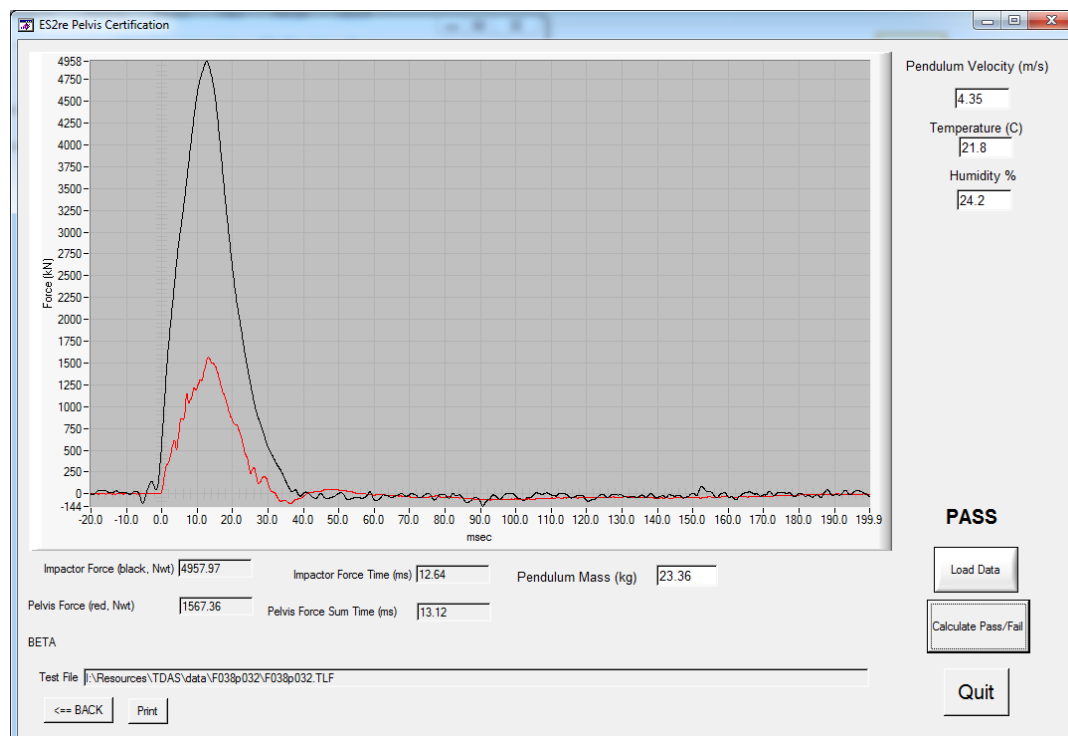


TABLE 1
EXTERNAL MEASUREMENTS (SID-IIIs)

SIDIIs Serial Number	298	Test Sequences		5 & 6	
TEST PARAMETER	SPEC.	PRE		POST	
Date	-	12-17-13		12-22-13	
Sequential Test Number	-	5		6	
		Result	Pass/Fail	Result	Pass/Fail
Temperature (°C)	20.6-22.2	21.4	Pass	21.5	Pass
Relative Humidity (%)	10-70	24.5	Pass	25.9	Pass
Sitting Height	772 – 788	778	Pass	779	Pass
Shoulder Pivot Height	437 – 453	447	Pass	446	Pass
H-Point Height	79 – 89	86	Pass	85	Pass
H-Point from Seat Back	141 – 151	146	Pass	145	Pass
Shoulder Pivot from Backline	97 – 107	100	Pass	100	Pass
Thigh Clearance	119 – 135	124	Pass	123	Pass
Head Breadth	140 – 148	144	Pass	142	Pass
Head Back from Backline	40 – 46	43	Pass	43	Pass
Head Depth	178 – 188	182	Pass	182	Pass
Head Circumference	541 – 551	543	Pass	543	Pass
Buttock to Knee Length	514 – 540	525	Pass	525	Pass
Popliteal Height	343 – 369	357	Pass	359	Pass
Knee Pivot to Floor Height	392 – 409	405	Pass	405	Pass
Buttock Popliteal Length	416 – 442	432	Pass	430	Pass
Chest Depth w/o Jacket	195 – 211	208	Pass	206	Pass
Foot Length	216 – 232	225	Pass	225	Pass
Hip Breadth	313 – 323	320	Pass	321	Pass
Arm Length	249 – 259	255	Pass	255	Pass
Knee Joint to Seat Back	477 – 493	485	Pass	485	Pass
Shoulder Width	341 – 357	347	Pass	350	Pass
Foot Width	78 – 94	87	Pass	87	Pass
Chest Circumference w/Jacket	851 – 881	880	Pass	880	Pass
Waist Circumference	761 – 791	775	Pass	778	Pass

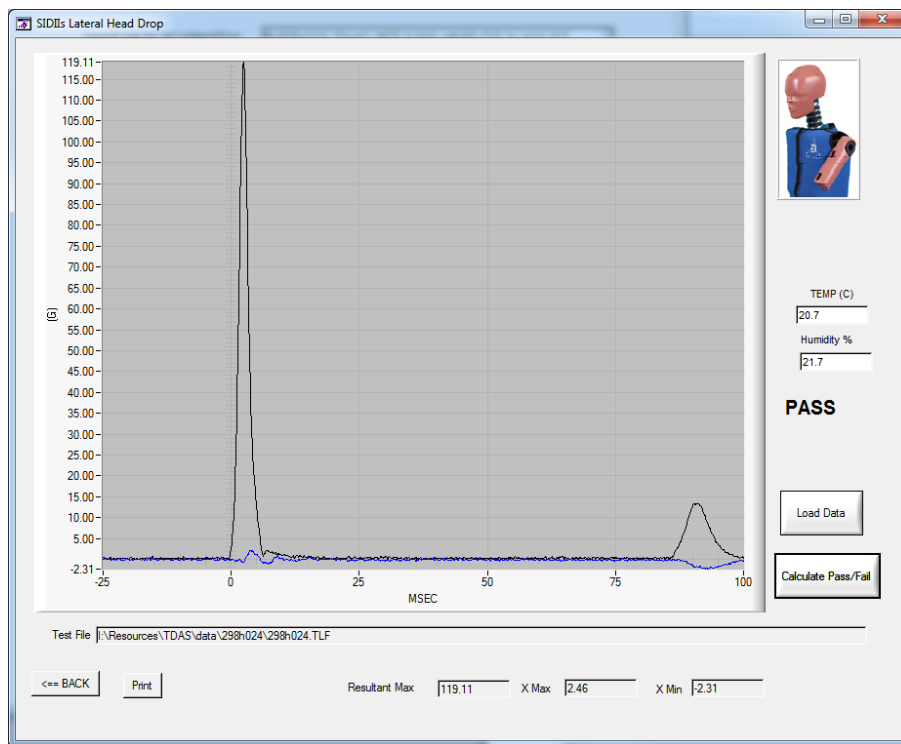
TABLE 2
HEAD DROP TEST (SID-IIIs)

SIDIIs Serial Number 298 Test Sequences 5 & 6

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12-16-13		12-20-13	
Sequential Test Number		-	5		6	
			Result	Pass/Fail	Result	Pass/Fail
Head Soak Time (min)		≥ 240	240	Pass	240	Pass
Temperature(°C) – During Soak	Max	20.6-22.2	20.7	Pass	22.0	Pass
	Min		20.6	Pass	21.4	Pass
Humidity(%) – During Soak	Max	10.0-70.0	21.7	Pass	24.7	Pass
	Min		18.9	Pass	22.7	Pass
Temperature – During Test (°C)		20.6-22.2	20.7	Pass	21.4	Pass
Humidity – During Test (%)		10-70	21.7	Pass	24.7	Pass
Peak Head Resultant Acceleration (G)		115-137	119.1	Pass	118.7	Pass
Peak Head X Acceleration (G)		<15	2.5	Pass	3.4	Pass
Unimodal (Oscillation) (Yes/No)		<15%	Yes	Pass	Yes	Pass

TABLE 2
HEAD DROP TEST (SID-II_s) (CONTINUED)

PRE-TEST



POST-TEST

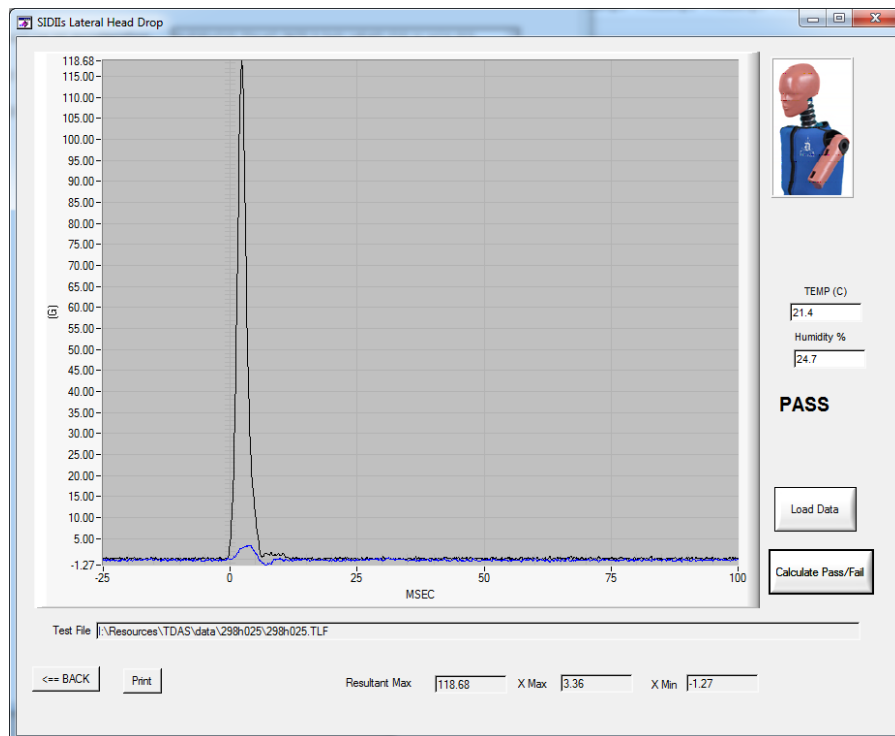
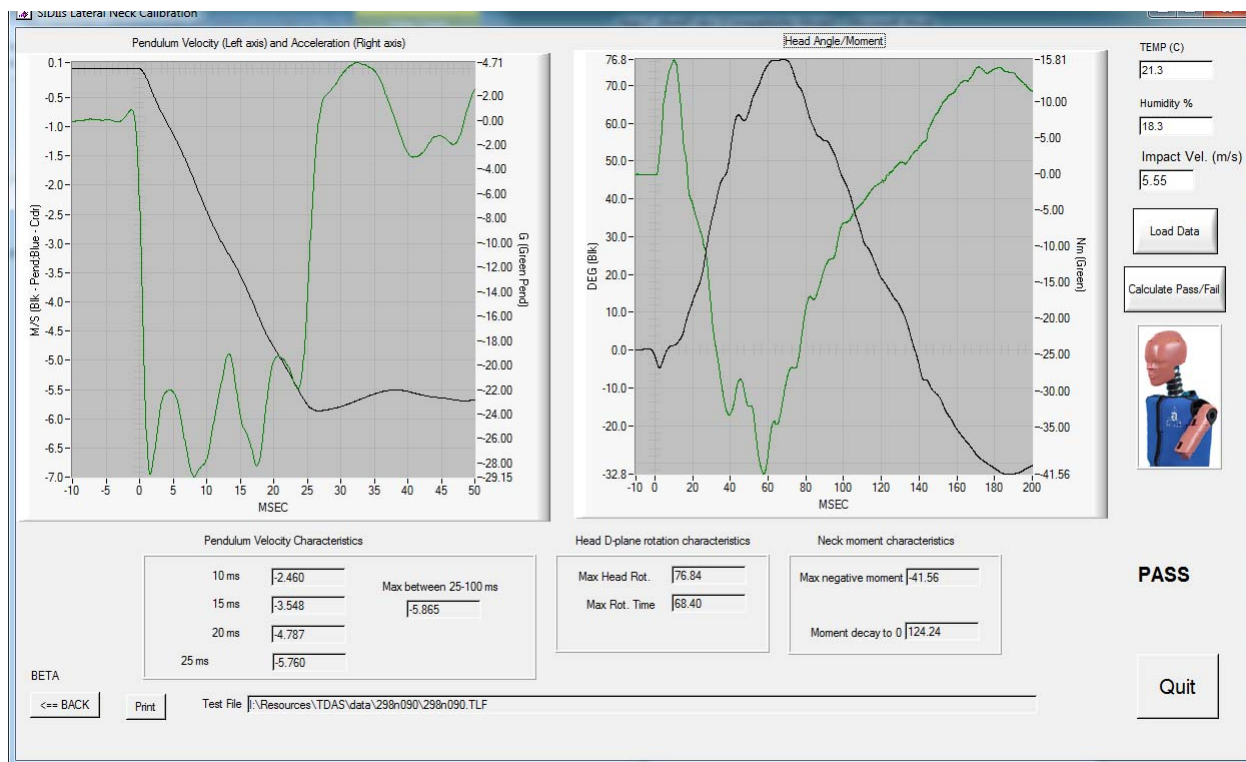


TABLE 3
LATERAL NECK PENDULUM TEST (SID-IIIs)

SIDIIIs Serial Number		298	Test Sequences		5 & 6	
TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12-13-13		12-20-13	
Sequential Test Number		-	5		6	
			Result	Pass/Fail	Result	Pass/Fail
Neck Assembly Soak Time (min)		≥ 240	240	Pass	240	Pass
Temperature(°C) – During Soak	Max	20.6-22.2	22.0	Pass	22.0	Pass
	Min		21.3	Pass	21.6	Pass
Humidity(%) – During Soak	Max	10.0-70.0	18.3	Pass	24.4	Pass
	Min		17.0	Pass	22.7	Pass
Temperature – During Test (°C)		20.6-22.2	21.3	Pass	21.6	Pass
Humidity – During Test (%)		10-70	18.3	Pass	24.4	Pass
Pendulum Velocity (m/s)		5.51-5.63	5.6	Pass	5.6	Pass
Pendulum Deceleration (G)	10 ms	2.20-2.80	2.5	Pass	2.5	Pass
	15 ms	3.30-4.10	3.5	Pass	3.6	Pass
	20 ms	4.40-5.40	4.8	Pass	4.9	Pass
	25 ms	5.40-6.10	5.8	Pass	5.8	Pass
	25-100 ms	5.50-6.20	5.9	Pass	5.9	Pass
Maximum D-Plane rotation (deg)		71-81	76.8	Pass	78.5	Pass
Time of Maximum D-Plane Rotation (ms)		50-70	68.4	Pass	64.0	Pass
Peak Occ. Condyle Moment (Nm)		36-44	41.6	Pass	40.6	Pass
Time of Moment Decay (ms)		102-126	124.2	Pass	121.7	Pass

TABLE 3
LATERAL NECK PENDULUM TEST (SID-II_s) (CONTINUED)

PRE-TEST



POST-TEST

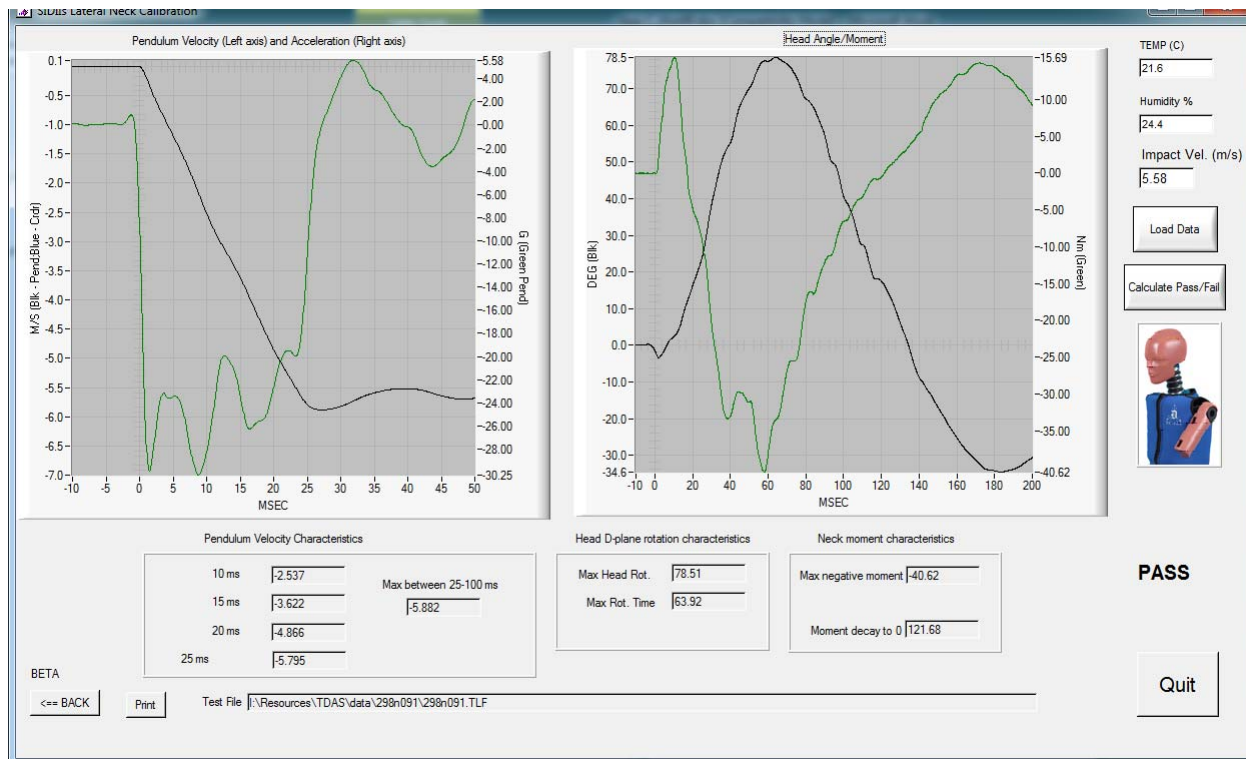


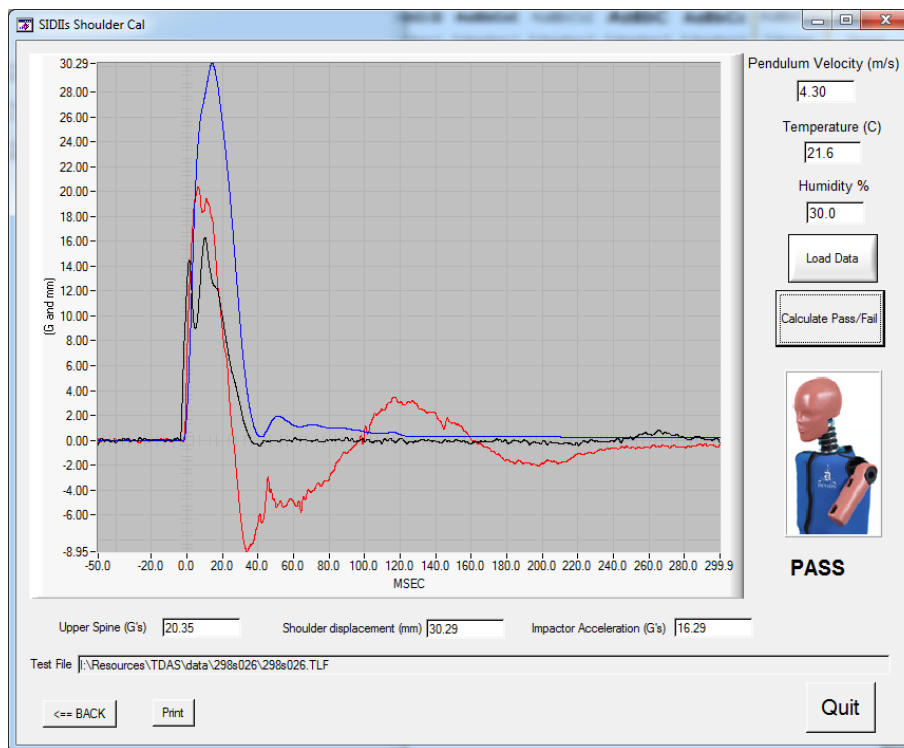
TABLE 4
SHOULDER IMPACT TEST (SID-IIs)

SIDIIs Serial Number 298 Test Sequences 5 & 6

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12-16-13		12-22-13	
Sequential Test Number		-	5		6	
			Result	Pass/Fail	Result	Pass/Fail
Dummy Soak Time (min)		≥ 180	180	Pass	180	Pass
Temperature(°C) – During Soak	Max	20.6-22.2	21.6	Pass	22.1	Pass
	Min		20.6	Pass	21.3	Pass
Humidity(%) – During Soak	Max	10.0-70.0	30.0	Pass	23.9	Pass
	Min		18.9	Pass	22.9	Pass
Temperature – During Test (°C)		20.6-22.2	21.6	Pass	22.1	Pass
Relative Humidity – During Test (%)		10-70	30.0	Pass	23.9	Pass
Impactor Velocity (m/s)		4.2-4.4	4.3	Pass	4.3	Pass
Peak Shoulder Deflection (mm)		28-37	30.3	Pass	30.6	Pass
Peak Lateral Spine (T1) Acceleration Y (G)		17-22	20.4	Pass	19.5	Pass
Peak Impactor Acceleration (G)		13-18	16.3	Pass	15.5	Pass

TABLE 4
SHOULDER IMPACT TEST (SID-II_s) (CONTINUED)

PRE-TEST



POST-TEST

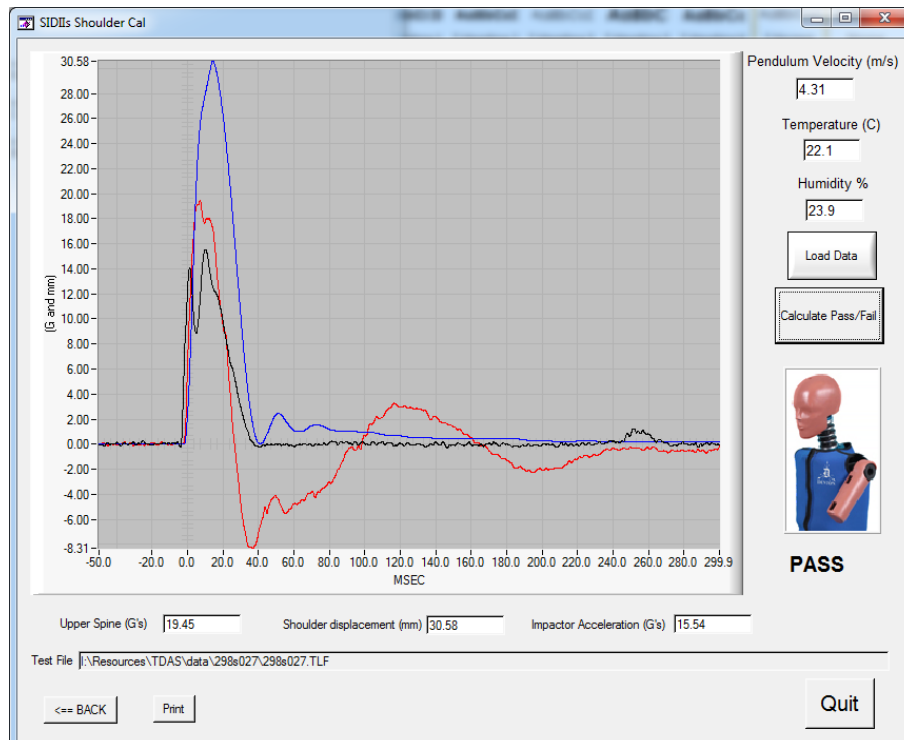


TABLE 5
THORAX (WITH ARM) IMPACT TEST (SID-IIIs)

SIDIIs Serial Number 298

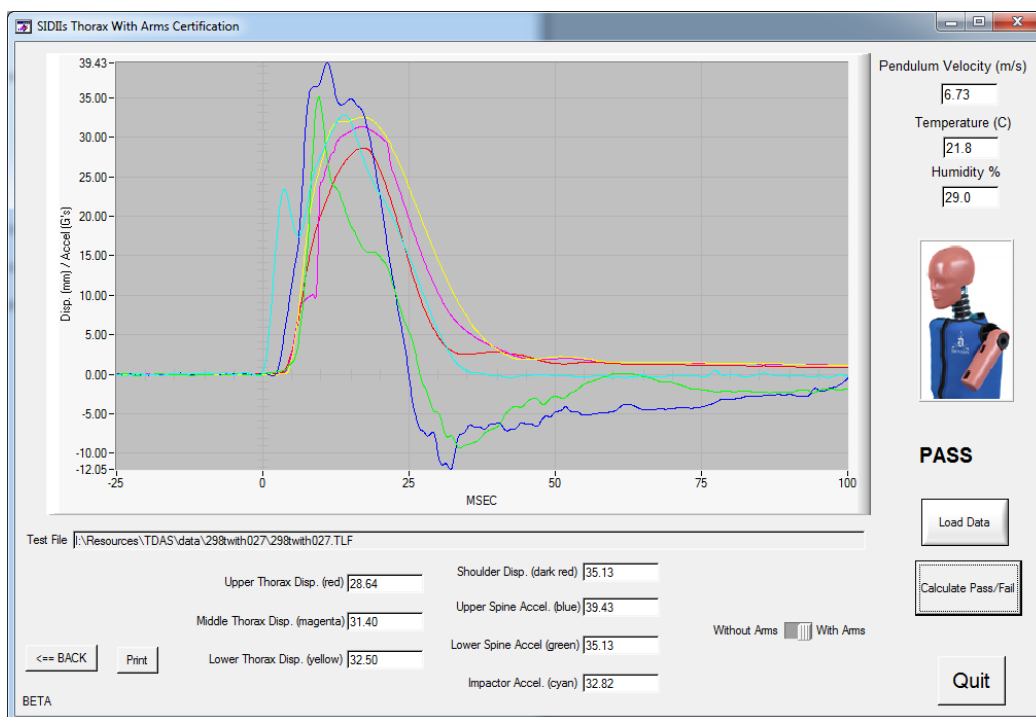
Test Sequences

5 & 6

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12-16-13		12-22-13	
Sequential Test Number		-	5		6	
			Result	Pass/Fail	Result	Pass/Fail
Dummy Soak Time (min)		≥ 180	180	Pass	180	Pass
Temperature(°C) – During Soak	Max	20.6-22.2	21.8	Pass	21.8	Pass
	Min		20.6	Pass	21.3	Pass
Humidity(%) – During Soak	Max	10.0-70.0	29.0	Pass	25.1	Pass
	Min		18.9	Pass	22.9	Pass
Temperature – During Test (°C)		20.6-22.2	21.8	Pass	21.8	Pass
Relative Humidity – During Test (%)		10-70	29.0	Pass	25.1	Pass
Impactor Velocity (m/s)		6.6-6.8	6.7	Pass	6.7	Pass
Peak Shoulder Deflection (mm)		31-40	35.1	Pass	34.8	Pass
Peak Upper Rib Deflection (mm)		25-32	28.6	Pass	30.5	Pass
Peak Middle Rib Deflection (mm)		30-36	31.4	Pass	32.5	Pass
Peak Lower Rib Deflection (mm)		32-38	32.5	Pass	33.3	Pass
Peak Upper Spine (T1) Acceleration Y (G)		34-43	39.4	Pass	37.4	Pass
Peak Lower Spine (T12) Acceleration Y (G)		29-37	35.1	Pass	34.8	Pass
Peak Impactor Acceleration (G)		30-36	32.8	Pass	32.6	Pass

TABLE 5
THORAX (WITH ARM) IMPACT TEST (SID-II_s) (CONTINUED)

PRE-TEST



POST-TEST

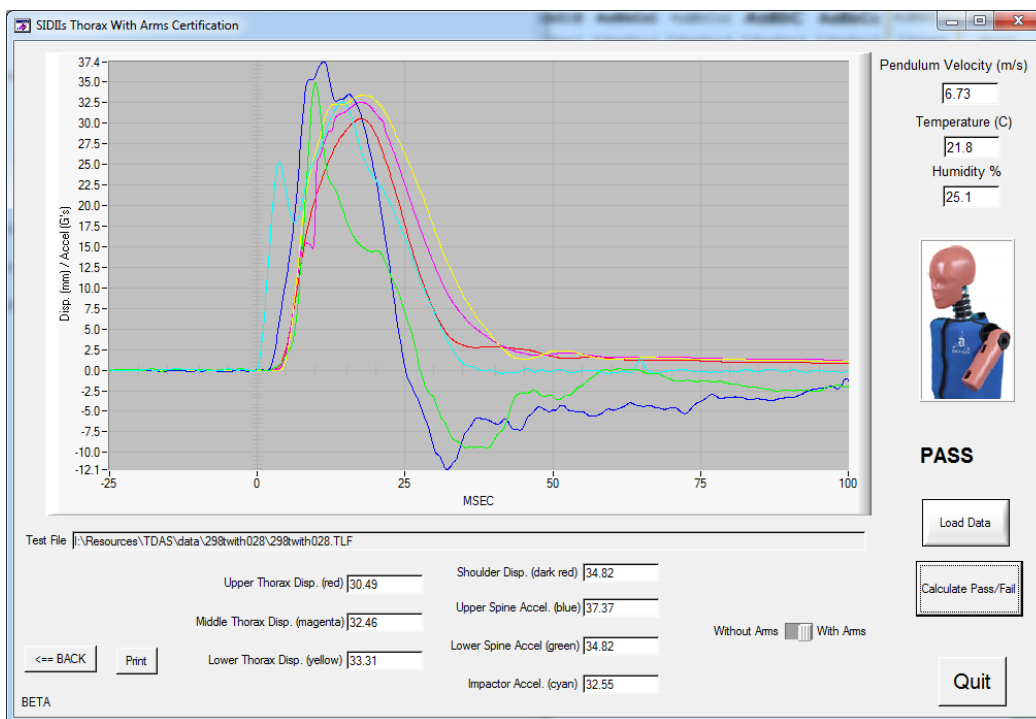


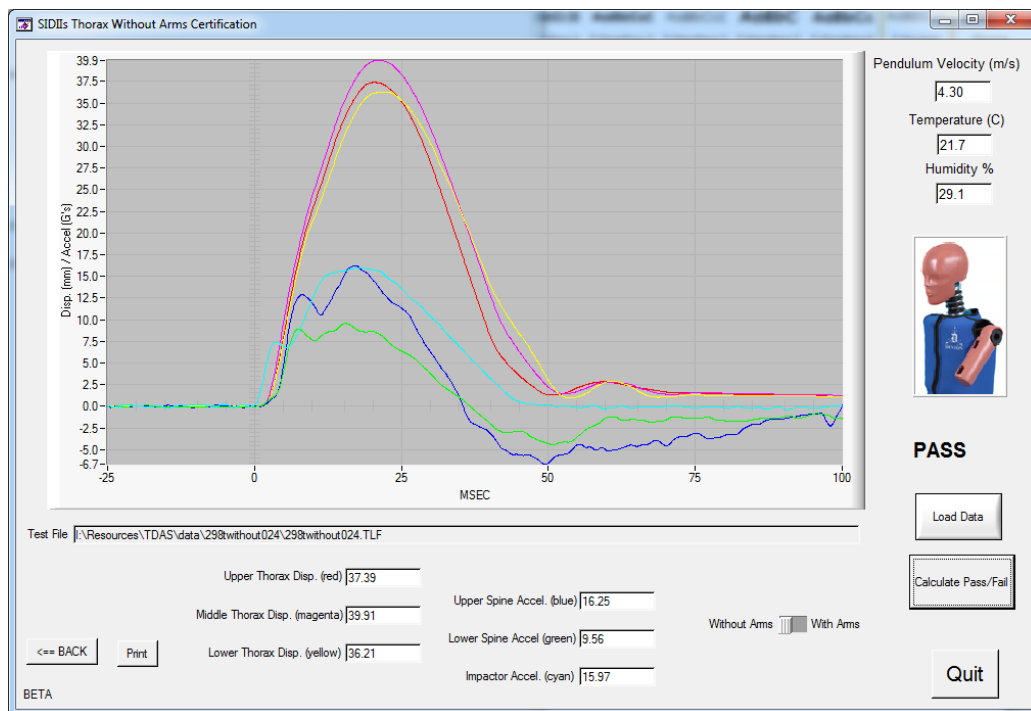
TABLE 6
THORAX (WITHOUT ARM) IMPACT TEST (SID-IIIs)

SIDIIs Serial Number 298 Test Sequences 5 & 6

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12-16-13		12-22-13	
Sequential Test Number		-	5		6	
			Result	Pass/Fail	Result	Pass/Fail
Dummy Soak Time (min)		≥ 180	180	Pass	180	Pass
Temperature(°C) – During Soak	Max	20.6-22.2	21.7	Pass	21.8	Pass
	Min		20.6	Pass	21.3	Pass
Humidity(%) – During Soak	Max	10.0-70.0	29.1	Pass	25.9	Pass
	Min		18.9	Pass	22.9	Pass
Temperature – During Test (°C)		20.6-22.2	21.7	Pass	21.8	Pass
Relative Humidity – During Test (%)		10-70	29.1	Pass	25.9	Pass
Impactor Velocity (m/s)		4.2-4.4	4.3	Pass	4.3	Pass
Peak Upper Rib Deflection (mm)		32-40	37.4	Pass	36.0	Pass
Peak Middle Rib Deflection (mm)		39-45	40.0	Pass	40.6	Pass
Peak Lower Rib Deflection (mm)		35-43	36.2	Pass	38.8	Pass
Peak Upper Spine (T1) Acceleration Y (G)		13-17	16.3	Pass	15.0	Pass
Peak Lower Spine (T12) Acceleration Y (G)		7-11	9.6	Pass	10.0	Pass
Peak Impactor Acceleration (G)		14-18	16.0	Pass	16.1	Pass

TABLE 6
THORAX (WITHOUT ARM) IMPACT TEST (SID-II_s) (CONTINUED)

PRE-TEST



POST-TEST

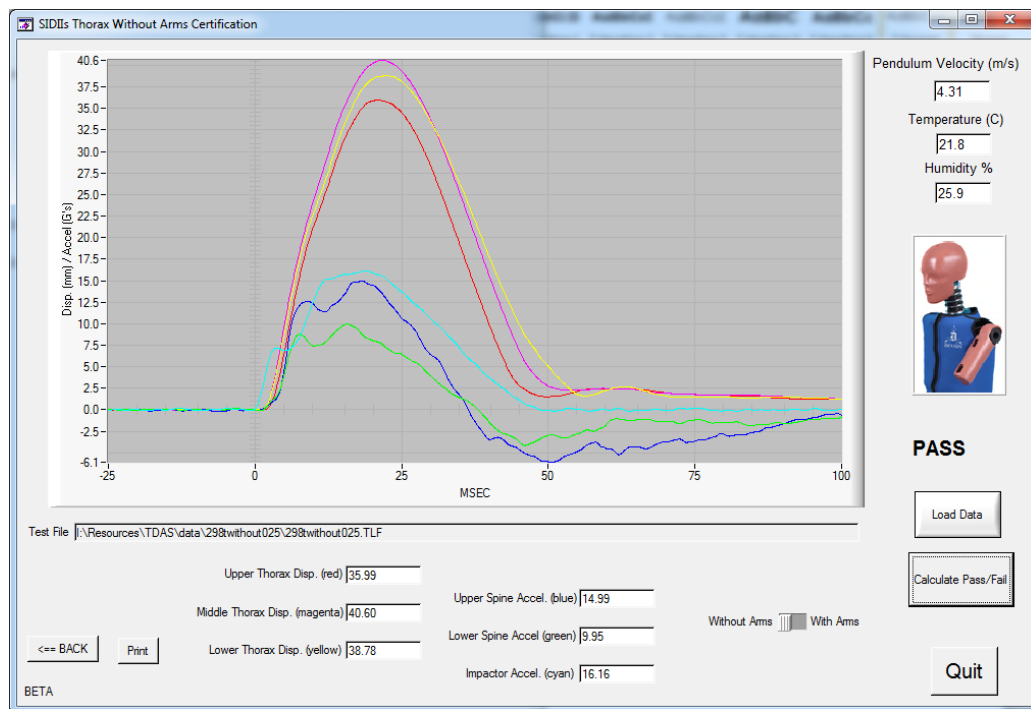


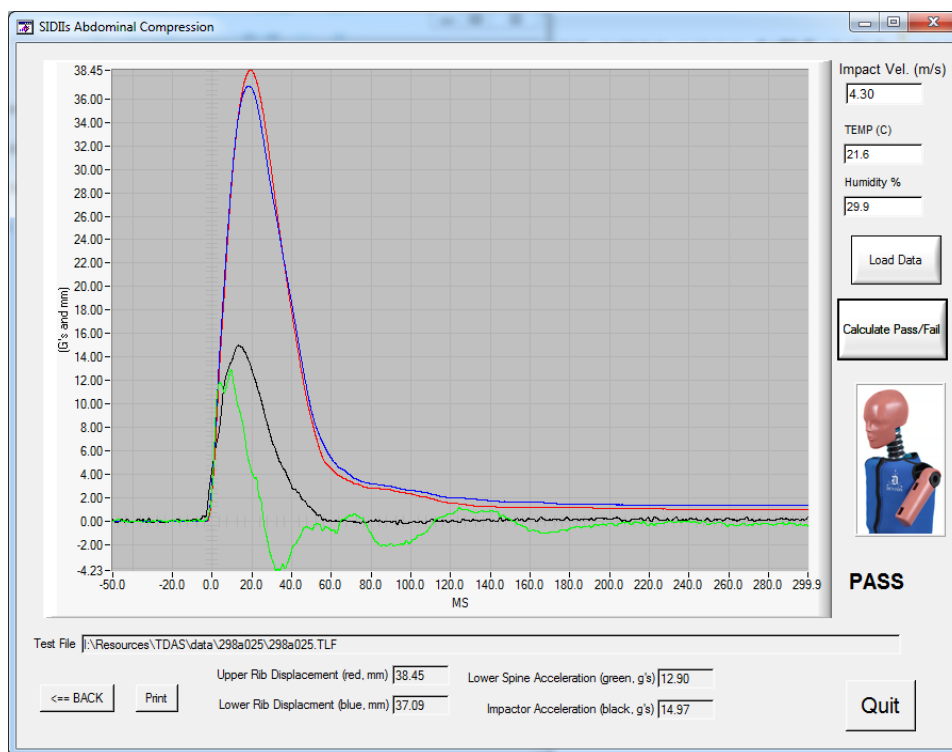
TABLE 7
ABDOMEN IMPACT TEST (SID-IIIs)

SIDIIs Serial Number 298 Test Sequences 5 & 6

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12-16-13		12-22-13	
Sequential Test Number		-	5		6	
			Result	Pass/Fail	Result	Pass/Fail
Dummy Soak Time (min)		≥ 180	180	Pass	180	Pass
Temperature(°C) – During Soak	Max	20.6-22.2	21.6	Pass	21.7	Pass
	Min		20.6	Pass	21.3	Pass
Humidity(%) – During Soak	Max	10.0-70.0	29.9	Pass	25.6	Pass
	Min		18.9	Pass	22.9	Pass
Temperature – During Test (°C)		20.6-22.2	21.6	Pass	21.7	Pass
Relative Humidity – During Test (%)		10-70	29.9	Pass	25.6	Pass
Impactor Velocity (m/s)		4.2-4.4	4.3	Pass	4.3	Pass
Peak Upper Abdominal Rib Deflection (mm)		36-47	38.5	Pass	40.3	Pass
Peak Lower Abdominal Rib Deflection (mm)		33-44	37.1	Pass	40.3	Pass
Peak Lower Spine (T12) Acceleration Y (G)		9-14	12.9	Pass	11.7	Pass
Peak Impactor Acceleration (G)		12-16	15.0	Pass	14.8	Pass

TABLE 7
ABDOMEN IMPACT TEST (SID-IIIs) (CONTINUED)

PRE-TEST



POST-TEST

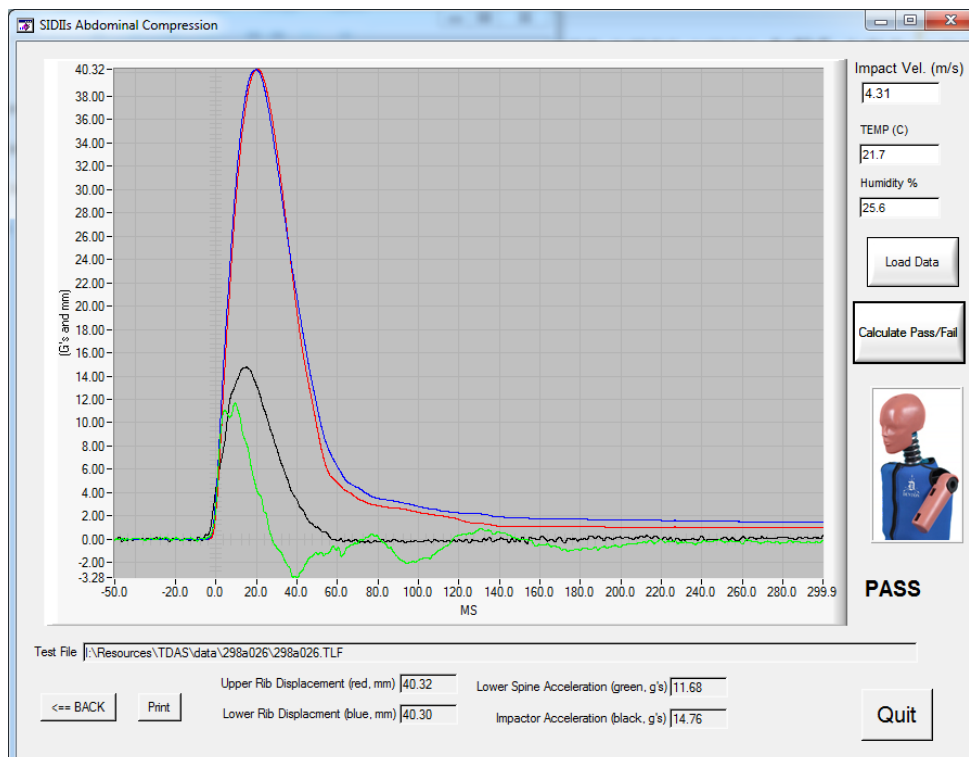
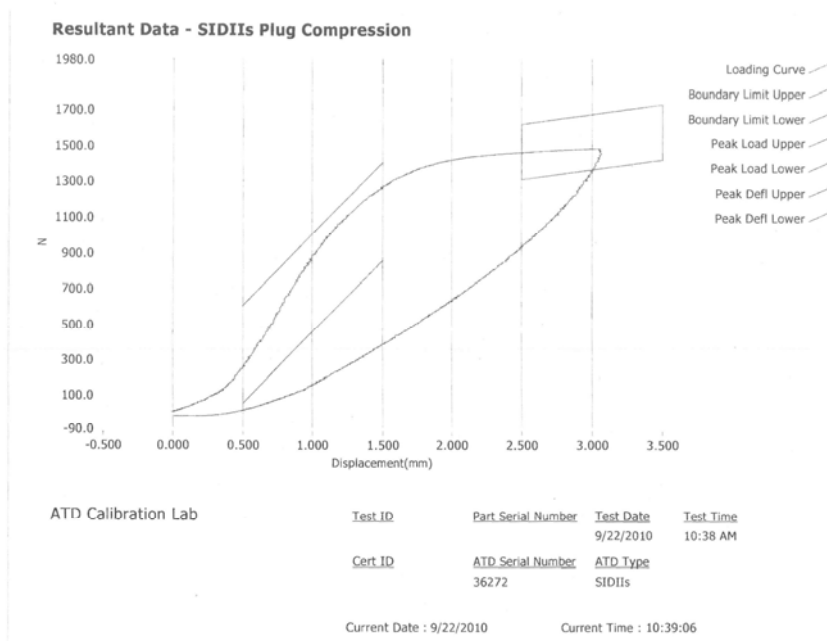


TABLE 8
PELVIS PLUG QUASI-STATIC TEST (SID-IIIs)

PRE-Test



POST-TEST

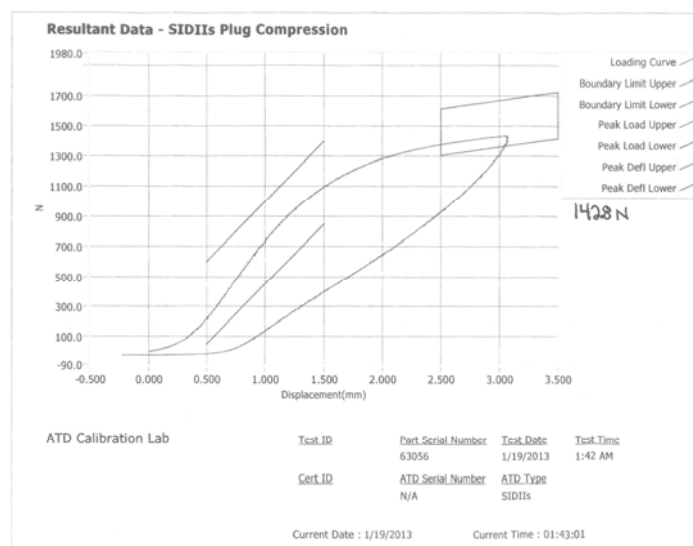


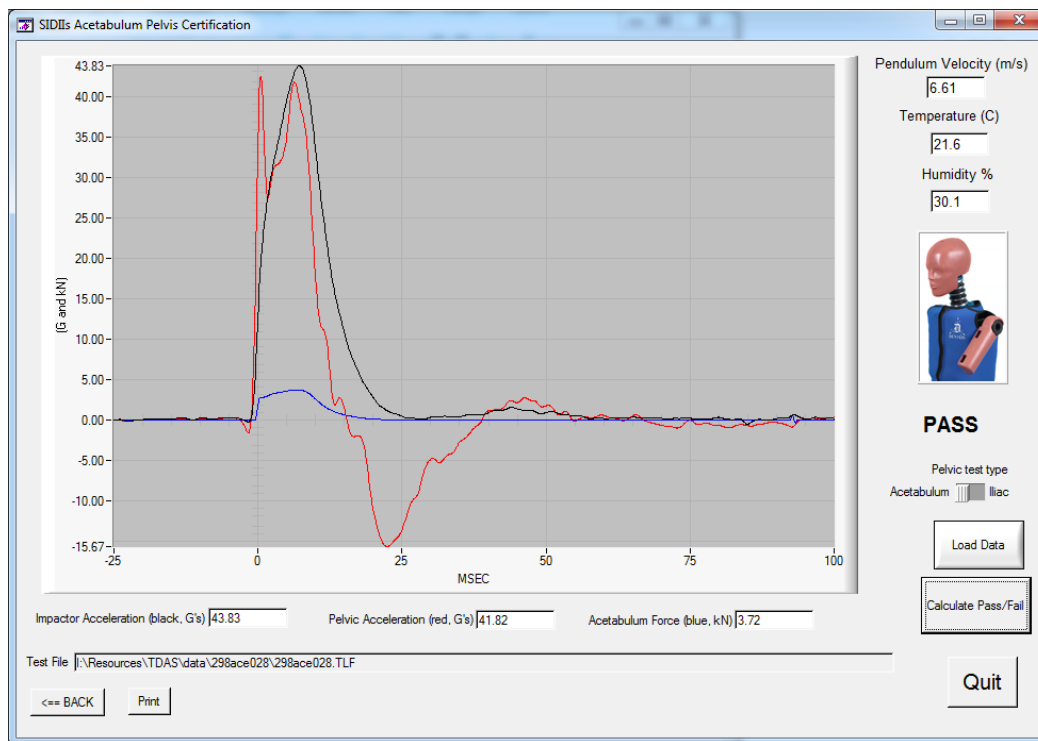
TABLE 9
PELVIS ACETABULUM IMPACT TEST (SID-IIIs)

SIDIIs Serial Number 298 Test Sequences 5 & 6

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12-16-13		12-22-13	
Sequential Test Number		-	5		6	
			Result	Pass/Fail	Results	Pass/Fail
Dummy Soak Time (min)		≥ 180	180	Pass	180	Pass
Temperature(°C) – During Soak	Max	20.6-22.2	21.6	Pass	21.6	Pass
	Min		20.6	Pass	21.3	Pass
Humidity(%) – During Soak	Max	10.0-70.0	30.1	Pass	26.0	Pass
	Min		18.9	Pass	22.9	Pass
Temperature – During Test (°C)		20.6-22.2	21.6	Pass	21.6	Pass
Humidity – During Test (%)		10-70	30.1	Pass	26.0	Pass
Impactor Velocity (m/s)		6.6-6.8	6.6	Pass	6.6	Pass
Peak Impactor Acceleration (G)		38-47	43.8	Pass	45.3	Pass
Pelvis Acceleration Y after 6ms (G)		34-42	41.8	Pass	40.8	Pass
Peak Acetabulum Force (kN)		3.60-4.30	3.7	Pass	4.2	Pass
Pelvis Plug Serial No. 36272 (Pre) No. 63056 (Post)						

TABLE 9
PELVIS ACETABULUM IMPACT TEST (SID-II_s) (CONTINUED)

PRE-TEST



POST-TEST

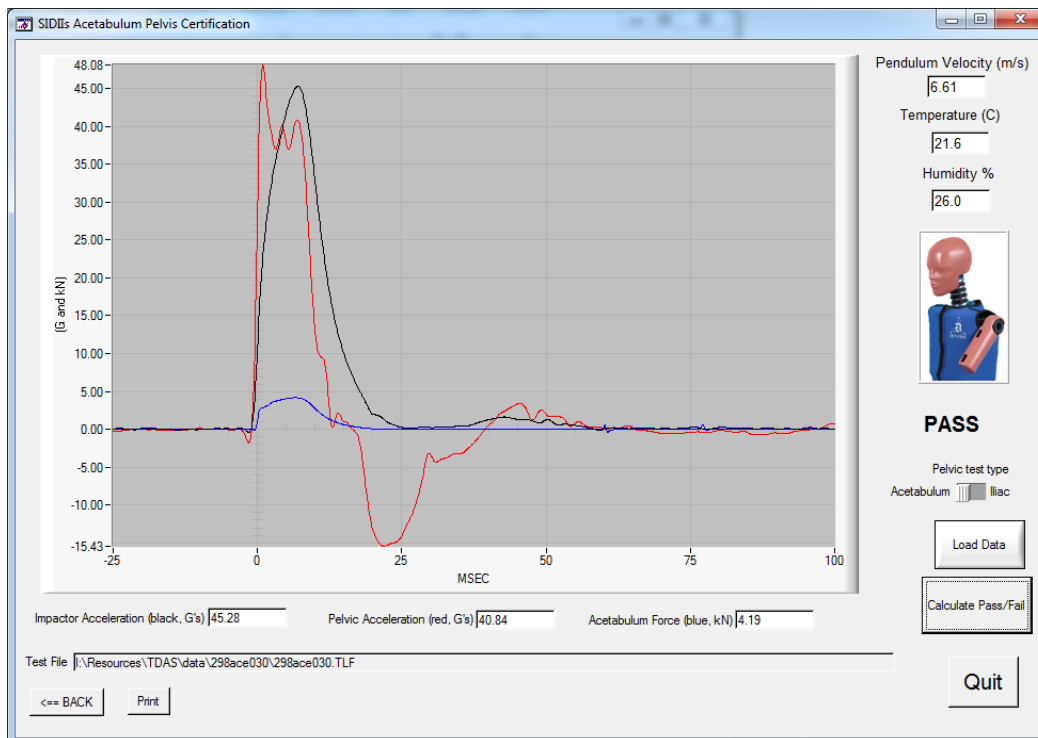


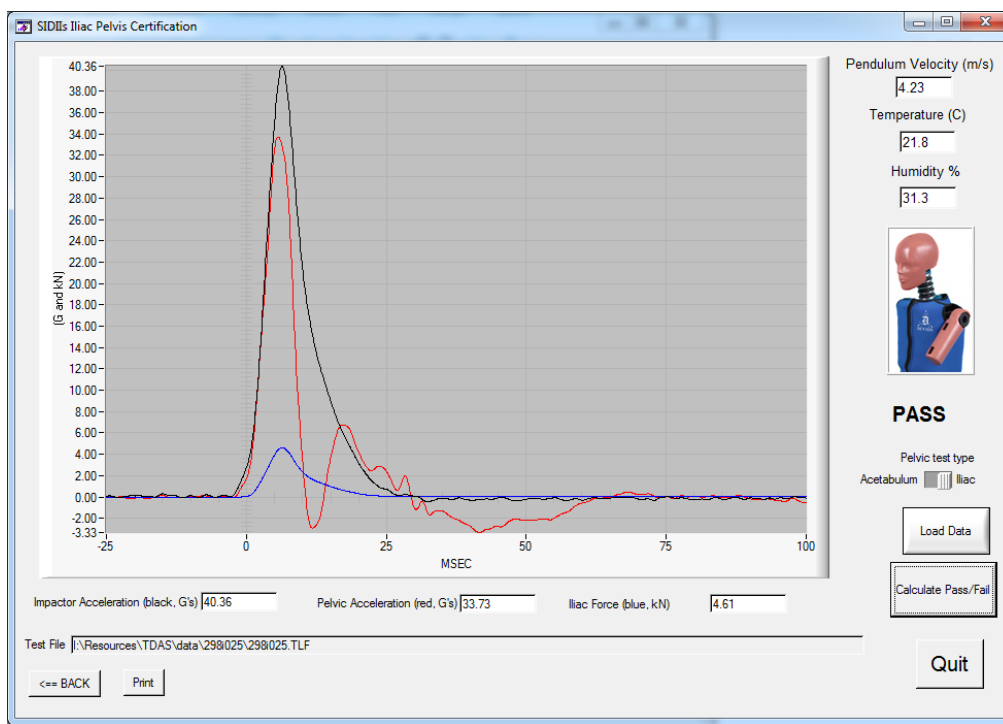
TABLE 10
PELVIS ILIAC IMPACT TEST (SID-IIIs)

SIDIIs Serial Number 298 Test Sequences 5 & 6

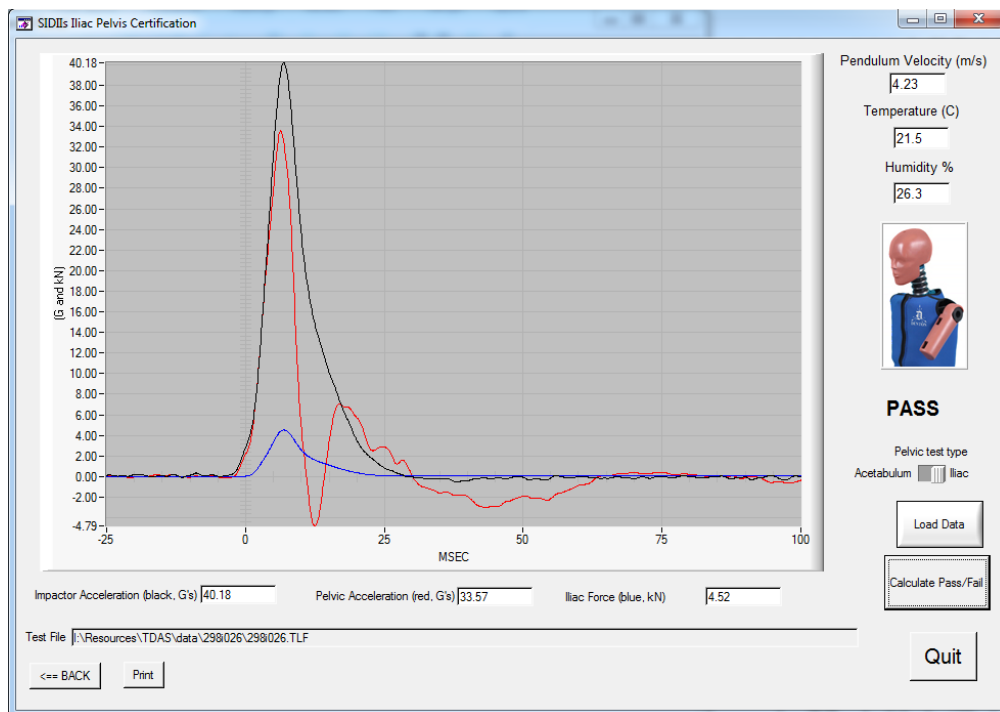
TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12-16-13		12-22-13	
Sequential Test Number		-	5		6	
			Result	Pass/Fail	Result	Pass/Fail
Dummy Soak Time (min)		≥ 180	180	Pass	180	Pass
Temperature(°C) – During Soak	Max	20.6-22.2	21.8	Pass	21.5	Pass
	Min		20.6	Pass	21.3	Pass
Humidity(%) – During Soak	Max	10.0-70.0	31.3	Pass	26.3	Pass
	Min		18.9	Pass	22.9	Pass
Temperature – During Test (°C)		20.6-22.2	21.8	Pass	21.5	Pass
Humidity – During Test (%)		10-70	31.3	Pass	26.3	Pass
Pendulum Velocity (m/s)		4.2-4.4	4.2	Pass	4.2	Pass
Peak Impactor Acceleration (G)		36-46	40.4	Pass	40.2	Pass
Pelvis Acceleration Y (G)		29-39	33.7	Pass	33.6	Pass
Peak Iliac Force Y (N)		4.00-5.20	4.6	Pass	4.5	Pass
Pelvis Plug Serial No. 36272 (Pre) No. 63056 (Post)						

TABLE 10
PELVIS ILIAC IMPACT TEST (SID-IIIs) (CONTINUED)

PRE-TEST



POST-TEST



Test Vehicle: 2014 Scion FR-S 2-Door Coupe
Test Program: SINCAP

NHTSA Number: M20145123
Test Date: December 18, 2013

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 - DUMMY INSTRUMENTATION – ES-IIre					
		ES-IIre S/N: F038			
		Serial Number	Manufacturer	Calibration Date	
Head Accelerometers	X	P24165	Endevco	28/Nov/2013	
	Y	P25036	Endevco	15/June/2013	
	Z	P21704	Endevco	15/June/2013	
	X _R	12120	Endevco	15/June/2013	
	Y _R	12093	Endevco	06/Aug/2013	
	Z _R	12097	Endevco	15/June/2013	
Thoracic Rib Displacement Potentiometers	Upper	Y	224	Honeywell	02/May/2013
	Middle	Y	193	Honeywell	02/May/2013
	Lower	Y	191	Honeywell	02/May/2013
Abdomen Load Cells	Forward	Y	1502	Denton	07/May/2013
	Middle	Y	1511	Denton	07/May/2013
	Rear	Y	1537	Denton	07/May/2013
Lower Spine Accelerometers (T ₁₂)	X	P19287	Endevco	15/June/2013	
	Y	P21575	Endevco	25/Aug/2013	
	Z	P21732	Endevco	15/June/2013	
Pubic Symphosis Load Cell		Y	460	Denton	07/May/2013

TABLE 2 - DUMMY INSTRUMENTATION – SID-IIs						
				SID-IIs S/N: 298		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers			X	P59221	Endevco	15/Oct/2013
			Y	P22311	Endevco	25/Aug/2013
			Z	P23582	Endevco	25/Aug/2013
			X _R	12099	Endevco	15/June/2013
			Y _R	12103	Endevco	28/May/2013
			Z _R	12108	Endevco	15/June/2013
Displacement Potentiometers	Shoulder		Y	N/a	N/a	N/a
	Thoracic Rib	Upper	Y	1181	FTSS	02/May/2013
		Middle	Y	1203	FTSS	02/May/2013
		Lower	Y	1215	FTSS	03/May/2013
	Abdominal Rib	Upper	Y	717	FTSS	03/May/2013
		Lower	Y	486	FTSS	03/May/2013
Lower Spine Accelerometers (T ₁₂)			X	P21586	Endevco	25/Aug/2013
			Y	P21673	Endevco	25/Aug/2013
			Z	P24682	Endevco	25/Aug/2013
Acetabulum Load Cell			Y	114	FTSS	07/May/2013
Iliac Wing Load Cell			Y	283	Denton	22/Aug/2013
Pelvis Plug (Struck-Side)				36272	FTSS	N/a
Pelvis Plug (Non-Struck-Side)				46804	FTSS	N/a

TABLE 3 - VEHICLE INSTRUMENTATION					
			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	P22230	Endevco	15/Oct/2013
	Vehicle Center of Gravity	Y	P14233	Endevco	15/Oct/2013
	Vehicle Center of Gravity	Z	P22315	Endevco	15/Oct/2013
2	Right Sill at Front Seat	X	12111	Endevco	15/Oct/2013
	Right Sill at Front Seat	Y	12118	Endevco	15/Oct/2013
	Right Sill at Front Seat	Z	12096	Endevco	15/Oct/2013
3	Right Sill at Rear Seat	X	12110	Endevco	15/Oct/2013
	Right Sill at Rear Seat	Y	A011343	MSI	15/Oct/2013
	Right Sill at Rear Seat	Z	A011334	MSI	15/Oct/2013
4	Left Sill at Front Door	Y	A011644	MSI	15/Oct/2013
5	Left Sill at Rear Door	Y	A119068	MSI	05/Nov/2013
6	Left A-Post Lower	Y	A119073	MSI	05/Nov/2013
7	Left A-Post Middle	Y	A119063	MSI	24/Sept/2013
8	Left B-Post Lower	Y	J43476	Endevco	07/July/2013
9	Left B-Post Middle	Y	J43478	Endevco	28/Mar/2013
10	Front Seat Track	Y	A119077	MSI	15/Nov/2013
11	Rear Seat Track or Structure	Y	A127955	MSI	17/Oct/2013
12	Right Rear Occ. Compartment	Y	A127954	MSI	17/Oct/2013
13	Engine Block	X	P12746	Endevco	15/Oct/2013
	Engine Block	Y	P13835	Endevco	15/Oct/2013
14	Rear Floorpan Above Axle	X	P21785	Endevco	15/Oct/2013
	Rear Floorpan Above Axle	Y	P21608	Endevco	15/Oct/2013
	Rear Floorpan Above Axle	Z	P21605	Endevco	22/Sept/2013

TABLE 4 - MDB INSTRUMENTATION				
		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	12115	Endevco	22/Oct/2013
MDB Center of Gravity	Y	12149	Endevco	22/Oct/2013
MDB Center of Gravity	Z	P21898	Endevco	22/Oct/2013
Left Frame at Rear Axle Centerline	X	P22339	Endevco	22/Oct/2013
Left Frame at Rear Axle Centerline	Y	P22539	Endevco	22/Oct/2013