

Report Number: 214-TRC-06-005

Safety Compliance Testing For FMVSS 214

Side Impact Protection

Indicant

**Hyundai Motor Company
2007 Hyundai Elantra 4-door sedan**

NHTSA Number: C70501

Transportation Research Center Inc.

10820 State Route 347

P. O. Box B-67

East Liberty, OH 43319



Test Date: October 26, 2006

Final Report: November 7, 2006

**U. S. Department Of Transportation
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance
400 Seventh Street, S. W.
Room No. 6111 (NVS-220)
Washington, DC 20590**

This Final Test Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-02-D-11114. This publication is distributed by the U. S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings, and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Test Performed By: William Millis, Engineering Technician

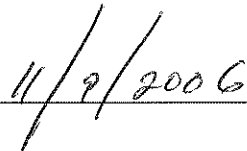
Report Approved By: _____



Walter Dudek, Project Manager

Transportation Research Center Inc.

Approval Date: _____



FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: _____

Acceptance Date: _____

1. Report No. 214-TRC-06-005	2. Government Accession No.	3. Recipient's Catalog No.																														
4. Title and Subtitle Final Report of FMVSS 214 Indicant Compliance Side Impact Testing of a 2007 Hyundai Elantra 4-door sedan, NHTSA No.: C70501	5. Report Date November 7, 2006	6. Performing Organization Code TRC Inc.																														
	8. Performing Organization Report No. 061026																															
7. Author(s) Walter Dudek, Project Manager Transportation Research Center Inc.	10. Work Unit No. (TRAIS)	11. Contract or Grant No. DTNH22-02-D-11114																														
9. Performing Organization Name and Address Transportation Research Center Inc. 10820 State Route 347 East Liberty, OH 43319	13. Type of Report and Period Covered Final Report October - November 2006	14. Sponsoring Agency Code NVS-220																														
	12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Enforcement Office of Vehicle Safety Compliance (NVS-220) 400 Seventh Street, S.W., Room 6111 Washington, DC 20590																															
15. Supplemental Notes	16. Abstract This 56/28 km/h 90° Impact (Moving Deformable Barrier) Compliance Test was conducted on the subject vehicle, a 2007 Hyundai Elantra 4-door sedan in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-214D-06 (except the test was conducted 8 km/h (5 mph) faster than the standard specifies) to determine FMVSS 214 Side Impact Protection compliance. This test was conducted by Transportation Research Center Inc. in East Liberty, Ohio, on October 26, 2006. The impact velocity of the Moving Deformable Barrier (MDB) was 62.0 km/h, and the ambient temperature at the struck (driver's side) side of the target vehicle at the time of impact was 21° C. The target vehicle's post-test maximum crush was 268 mm at Level 2. The test or target vehicle's performance is given below (with FIR filter): <table border="0"> <thead> <tr> <th></th> <th><u>Front SID HIII</u></th> <th></th> <th><u>Rear SID HIII</u></th> <th></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib Acceleration:</td> <td><u>59.8</u></td> <td>g's</td> <td><u>62.9</u></td> <td>g's</td> </tr> <tr> <td>Left Lower Rib Acceleration:</td> <td><u>49.1</u></td> <td>g's</td> <td><u>62.5</u></td> <td>g's</td> </tr> <tr> <td>Lower Spine Acceleration:</td> <td><u>55.4</u></td> <td>g's</td> <td><u>56.4</u></td> <td>g's</td> </tr> <tr> <td>Thoracic Trauma Index, (TTI):</td> <td><u>57.6</u></td> <td>g's</td> <td><u>59.6</u></td> <td>g's</td> </tr> <tr> <td>Pelvis Acceleration (PEV):</td> <td><u>71.4</u></td> <td>g's</td> <td><u>68.2</u></td> <td>g's</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 side impact event.			<u>Front SID HIII</u>		<u>Rear SID HIII</u>		Left Upper Rib Acceleration:	<u>59.8</u>	g's	<u>62.9</u>	g's	Left Lower Rib Acceleration:	<u>49.1</u>	g's	<u>62.5</u>	g's	Lower Spine Acceleration:	<u>55.4</u>	g's	<u>56.4</u>	g's	Thoracic Trauma Index, (TTI):	<u>57.6</u>	g's	<u>59.6</u>	g's	Pelvis Acceleration (PEV):	<u>71.4</u>	g's	<u>68.2</u>	g's
	<u>Front SID HIII</u>		<u>Rear SID HIII</u>																													
Left Upper Rib Acceleration:	<u>59.8</u>	g's	<u>62.9</u>	g's																												
Left Lower Rib Acceleration:	<u>49.1</u>	g's	<u>62.5</u>	g's																												
Lower Spine Acceleration:	<u>55.4</u>	g's	<u>56.4</u>	g's																												
Thoracic Trauma Index, (TTI):	<u>57.6</u>	g's	<u>59.6</u>	g's																												
Pelvis Acceleration (PEV):	<u>71.4</u>	g's	<u>68.2</u>	g's																												
17. Key Words Compliance Testing Side Impact Protection FMVSS 214 Side Impact Dummy (SID HIII)	18. Distribution Statement Copies of this report are available from: NHTSA Technical Information Services (TIS) Room 5108 (NPO-230), 400 Seventh Street, S.W. Washington, DC 20590 Telephone No. (202) 366-4946 Attn: Robert Hornicle																															
19. Security Classification (of this report) Unclassified	20. Security Classification (of this page) Unclassified	21. Number of Pages 386																														
22. Price																																

Table of Contents

<u>Section</u>	<u>Description</u>	<u>Page No.</u>
1	Purpose and Test Procedure	1-1
2	Summary of Side Impact Test	2-1
3	Summary of Test Results	3-1
	Data Sheet 1 - General Vehicle Test Parameter Data	3-2
	Data Sheet 2 - Test Vehicle Summary of Results	3-6
	Data Sheet 3 - Moving Deformable Barrier (MDB) Summary	3-7
	Data Sheet 4 - Post-Test Observations	3-8
4	Occupant and Vehicle Information	4-1
	Data Sheet 5 - SID HIII Instrumentation Data	4-2
	Data Sheet 6 - Vehicle Pre-Test and Post-Test Measurements	4-6
	Data Sheet 7 - SID HIII Longitudinal Clearance Dimensions	4-7
	Data Sheet 8 - SID HIII Lateral Clearance Dimensions	4-8
	Data Sheet 9 - Vehicle Side Measurements	4-9
	Data Sheet 10 - Vehicle Exterior Crush Profiles - All Levels	4-10
	Data Sheet 11 - Vehicle Damage Profile Distances	4-12
	Data Sheet 12 - Exterior Static Crush for Impactor Face	4-13
	Data Sheet 13 - Test Vehicle Accelerometer Locations and Data Summary	4-22
	Data Sheet 14 - MDB Accelerometer Locations and Data Summary	4-26
	Data Sheet 15 - High-Speed Camera Locations and Data	4-27
5	Vehicle Fuel System Integrity	5-1
	Data Sheet 16 - FMVSS 301 Fuel System Integrity Data	5-2
	Data Sheet 17 - FMVSS 301 Rollover Data	5-3
Appendix A	Photographs	A-1
Appendix B	Data Plots	B-1
Appendix C	SID HIII Configuration and Performance Verification Data	C-1
Appendix D	Test Equipment List and Calibration Information	D-1

Section 1

Purpose and Test Procedure

This side impact test is part of the FMVSS 214 Side Impact Protection Compliance Test Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-02-D-11114. The purpose of this test was to evaluate side impact protection in a 2007 Hyundai Elantra 4-door sedan. The test was conducted in accordance with the Office of Vehicle Safety Compliance's Laboratory Test Procedure (TP-214D-06, dated July 2001) (except the test was conducted 8 km/h (5 mph) faster than the standard specifies).

Section 2

Summary of Side Impact Test

A 2007 Hyundai Elantra 4-door sedan was impacted on the driver's side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the monorail at a velocity of 62.0 km/h (38.5 mph). 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 Transportation Research Center Inc. in East Liberty, Ohio on October 26, 2006. Pre-test and post-test photographs of the test vehicle, the moving deformable barrier (MDB), and the side impact dummies (SID HIIIs) are included in Appendix A.

Two restrained Side Impact Dummies (SID HIIIs) were placed in the driver (Pos. #1) and left rear (Pos. #4) designated seating positions according to the instructions specified in the OVSC Side Impact Laboratory Test Procedure (TP-214D-06, dated July 2001). Both SID HIII dummies were certified prior to this test. The side impact test was documented by one real-time camera and 9 high-speed cameras. Camera locations and other pertinent camera information are included in this report.

The SID HIIIs were instrumented with the following accelerometers:

1. Head (HED) triaxial and redundant accelerometers (X, Y, and Z-directions)
2. Neck (NEK) triaxial force and moment load cells (X, Y, and Z-directions)
3. Left Upper Rib (LUR) uniaxial and redundant accelerometer (Y-direction)
4. Left Lower Rib (LLR) uniaxial and redundant accelerometer (Y-direction)
5. Lower Thoracic Spine (T₁₂) uniaxial and redundant accelerometer (Y-direction)
6. Pelvic (PEV) section uniaxial accelerometer (Y-direction)

A summary of the side impact dummy (SID HIII) configuration and verification test data can be found in Appendix C. A total of 66 channels of data were recorded. Appendix B contains the vehicle, MDB, and dummy response data traces.

The following tables summarize the results of the test:

Injury Criteria	Front SID HIII	Rear SID HIII
TTI (g)	57.6	59.6
PEV (g)	71.4	68.2

Data Acquisition Explanations

The vehicle's left lower A-post Y-axis acceleration data channel, 11APILLO0000ACYA, exceeded full-scale at approximately 35 milliseconds and recorded no useful data after that. The velocity was also affected.

The vehicle's left mid A-post Y-axis acceleration data channel, 11APILMI0000ACYA, exceeded full-scale at approximately 5 milliseconds. The velocity was also affected.

The vehicle's left mid B-post Y-axis acceleration data channel, 14BPILMI0000ACYA, exceeded full-scale at approximately 32 milliseconds and recorded no useful data after that. The velocity was also affected.

The vehicle's left rear seat track Y-axis acceleration data channel, 14SETRLERE00ACYA, recorded questionable data after approximately 50 milliseconds. The velocity was also affected.

Section 3

Summary of Test Results

Data Sheet 1

General Test Vehicle Parameter Data

Test Vehicle Information:

Vehicle Year/Make/Model: 2007 Hyundai Elantra
Vehicle Body Style/Color: 4-door sedan/Quicksilver VIN: KMHDU46D57U016734
Vehicle NHTSA No.: C70501 Build Date: 08/06
Engine Data: 4 Cylinders; CID; 2 Liters; cc
Placement: X Longitudinal; or - Lateral; or - Horizontal
Transmission: 4 Speed; Manual; X Automatic; Overdrive
Final Drive: - RWD; X FWD; - Four-Wheel Drive
Odometer Reading: 84 miles
Options: X A/C; X Power steering; X Power brakes; X Power windows

Data From Vehicle's Tire Placard:

Tire Pressure (at capacity)¹ 220 kPa Front; 220 kPa Rear
Recommended Tire Size: P195/65R16
Tires on Test Vehicle: P195/65R15 Manufacturer: Hankook, Optimo

Vehicle Capacity Data:

Number of Occupants: 2 Front; 3 Rear; 3rd seat; 5 Total
Type of Front Seats: X Bucket; - Bench; - Split bench
Type of Front Seat Back: - Fixed; X Adjustable with X Lever or - Knob
Vehicle Max. Capacity Loading = 385 kg (A)
No. of Occupants x 68.04 kg. = 340 kg (B)
Vehicle Cargo Capacity (A-B) = 45 kg

Test Vehicle Delivered Weight With Maximum Fluids:

Left Front	=	<u>426.0</u> kg	Left Rear	=	<u>245.5</u> kg
Right Front	=	<u>398.0</u> kg	Right Rear	=	<u>244.0</u> kg
Total Front	=	<u>824.0</u> kg	Total Rear	=	<u>489.5</u> kg
Front % of Total Weight	=	<u>62.7</u> %	Rear % of Total Weight	=	<u>37.3</u> %
Total Weight	=	<u>1313.5</u> kg			

¹ Tire pressure used in test.

Data Sheet 1 (Continued)

General Test Vehicle Parameter Data

Calculation Of Vehicle's Target Test Weight:

Total Test Vehicle Delivered Weight With Max. Fluids	=	<u>1313.5</u>	kg (A)
Maximum Cargo Carrying Capacity of Test Vehicle	=	<u>45.0</u>	kg (B)
Weight of Instrumented Side Impact Dummies (2 X <u>84.0</u> kg)	=	<u>168.0</u>	kg (C)
Test Vehicle Target Weight:	=	<u>1526.5</u>	kg (A+B+C)

Fully Loaded Test Vehicle (UDW + 2 SID HIII s + Cargo):

Left Front	=	<u>484.0</u>	kg	Left Rear	=	<u>340.5</u>	kg
Right Front	=	<u>398.0</u>	kg	Right Rear	=	<u>307.5</u>	kg
Total Front	=	<u>882.0</u>	kg	Total Rear	=	<u>648.0</u>	kg
Front % of Total Weight	=	<u>57.6</u>	%	Rear % of Total Weight	=	<u>42.4</u>	%
Total Weight	=	<u>1530.0</u>	kg				

As Tested Weight of Test Vehicle (2 SID HIII s + Cargo):

Left Front	=	<u>476.0</u>	kg	Left Rear	=	<u>322.0</u>	kg
Right Front	=	<u>416.0</u>	kg	Right Rear	=	<u>307.8</u>	kg
Total Front	=	<u>892.0</u>	kg	Total Rear	=	<u>629.8</u>	kg
Front % of Total Weight	=	<u>58.6</u>	%	Rear % of Total Weight	=	<u>41.4</u>	%
Total Weight	=	<u>1521.8</u>	kg				

Test Vehicle Attitude (all dimensions in millimeters):

As Delivered	Fully Loaded	Ready For Test
Right Front <u>673</u>	Right Front <u>658</u>	Right Front <u>658</u>
Left Front <u>670</u>	Left Front <u>643</u>	Left Front <u>648</u>
Right Rear <u>683</u>	Right Rear <u>643</u>	Right Rear <u>645</u>
Left Rear <u>682</u>	Left Rear <u>628</u>	Left Rear <u>632</u>

Data Sheet 1 (Continued)

General Test Vehicle Parameter Data

Test Vehicle Attitude:

	Left Sill Pitch	Right Sill Pitch	Front Bumper L-R Roll	Rear Bumper L-R Roll
As Delivered:	-0.5°	-0.7°	-0.6°	-0.6°
Fully Loaded:	-0.2°	0.4°	-1.1°	0.7°
As Tested:	-0.3°	-0.1°	-0.1°	-0.2°
Negative Pitch Angle	= Vehicle front down			
Negative Roll Angle	= Driver side down			

Test Vehicle Wheelbase: 2650 mm

C.G. = 1097 mm rearward of front wheel centerline

Total Vehicle Length:

Right Side = 4360 mm

Left Side = 4370 mm

Centerline = 4484 mm

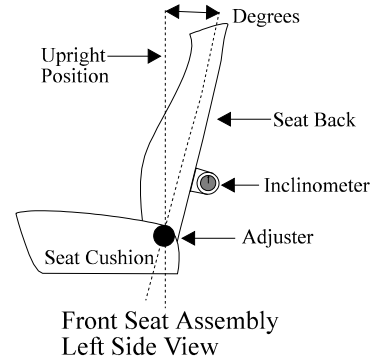
Data Sheet 1 (Continued)

General Test Vehicle Parameter Data

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

Nominal Design Riding Position for adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.



Front Seat Cushion Placement: 135 mm rearward of full forward

Total Length of Fore/Aft Adjustment Travel: 255 mm

Total Number of Adjustment Positions or Detents: N/A

Front Seat Back Adjustment Position: The seat back was adjusted to the 6.9° at headrest support post.

Seat Back Torso Angle: N/A degrees

Second Position Seat Placement: N/A

Total Length Of Fore/Aft Adjustment Travel: N/A mm

Seat Back Adjustment Position: Fixed

Adjustable Steering Column Position: 23.7°; middle of geometric range of travel

Window Positions:

Right Front: Open

Right Rear: Open

Left Front: Closed

Left Rear: Closed

Note: Windows will be in closed position on struck side of test vehicle and in open position on opposite side.

Amount of Stoddard Solvent In Fuel Tank:

53.0 liters (fuel tank usable capacity)

49.2 liters used in test (92% - 94% of fuel tank usable capacity)

Location of Impact Point On Test Vehicle Side To Be Impacted:

Wheelbase = 2650 millimeters

Intended impact point is 385 millimeters rearward of front axle centerline
(which is 940 millimeters forward of the wheelbase midpoint)

Actual Impact Point is 393 millimeters rearward of front axle centerline

Data Sheet 2

Test Vehicle Summary of Results

Vehicle Year/Make/Model: 2007/Hyundai/Elantra

Body Style: 4-door sedan

VIN: KMHU46D57U016734

NHTSA No.: C70501

Build Date: 08/06

Test Date: 10/26/06

Vehicle Overall Length = 4484 mm

Overall Width = 1765 mm

Vehicle Test Weight (Pre-Test):

Left Front = 476.0 kg Left Rear = 322.0 kg

Right Front = 416.0 kg Right Rear = 307.8 kg

Total Front = 892.0 kg Total Rear = 629.8 kg

Total Weight = 1521.8 kg

Wheelbase = 2650 mm

Longitudinal C.G. From Center Of Front Axle = 1097 mm

Impact Angle With Respect To Impactor = 90 degrees

Impact Point:

Actual Impact Point is 8 mm right of nominal impact ref. line (Lateral)

Actual Impact Point is 6 mm up from nominal impact point (Vertical)

Maximum Exterior Static Crush:

1. Level 1 (270 mm above ground) = 88 mm

2. Level 2 (547 mm above ground) = 268 mm

3. Level 3 (645 mm above ground) = 228 mm

4. Level 4 (930 mm above ground) = 202 mm

5. Level 5 (1440 mm above ground) = 23 mm

Maximum Post-Test Intrusion = 268 mm

Occupants:

Front Passenger

Rear Passenger

Dummy Identification 059

055

Restraints Used 3-pt seat belt, curtain and
side torso airbag

3-pt. seat belt, curtain
airbag

Instrumentation:

Number of Vehicle Data Channels: = 21

Number of Cameras: Onboard = 3 Offboard = 6 Total = 9

Data Sheet 3

Moving Deformable Barrier (MDB) Summary

MDB Face Manufacturer And Serial Number:

Cellbond, GB338

Position Of Impactor (MDB) On Monorail:

Crabbed 27° to the left

MDB Specifications:

Overall Width of Framework Carriage = 1251 mm
Overall Length of MDB (Incl. honeycomb impact face) = 4014 mm
Wheelbase of Framework Carriage = 2591 mm
Track of Framework Carriage (Front & Rear) = 1881 mm
C.G. Location Rearward of Front Axle = 1108 mm

MDB Weight:

Left Front	=	<u>403.8</u>	kg	Left Rear	=	<u>277.8</u>	kg
Right Front	=	<u>379.0</u>	kg	Right Rear	=	<u>303.4</u>	kg
Total Front	=	<u>782.8</u>	kg	Total Rear	=	<u>581.2</u>	kg
Total MDB Weight	=	<u>1364.0</u>	kg				

Impact Angle (MDB C/L to Target Vehicle C/L) = 90 degrees
Impact Speed = 62.0 km/h

Maximum Static Crush of Honeycomb Impact Face:

1. Row A at Center of Bumper Level	=	<u>166</u>	millimeters
2. Row B at Top of Bumper Level	=	<u>109</u>	millimeters
3. Row C at Mid Level	=	<u>116</u>	millimeters
4. Row D at Top of Stack Level	=	<u>131</u>	millimeters

Instrumentation:

Number of MDB Data Channels = 7

Data Sheet 4

Post-Test Observations

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

Visible Dummy Contact Points:

	<u>Left Front SID HIII</u>	<u>Left Rear SID HIII</u>
Head:	<u>Curtain airbag, side header</u>	<u>Side curtain airbag, side header</u>
Upper Torso:	<u>Torso airbag</u>	<u>Door panel</u>
Lower Torso:	<u>Torso airbag</u>	<u>Door panel</u>
Left Knee:	<u>Door panel</u>	<u>Door panel</u>
Right Knee:	<u>None</u>	<u>None</u>

Door Opening:

	<u>Left Side</u>	<u>Right Side</u>
Front:	<u>Jammed and latched</u>	<u>Easy</u>
Rear:	<u>Jammed and latched</u>	<u>Easy</u>

MDB Distance From Target Impact Point:

Vertical: 6 mm up from target

Horizontal: 8 mm right from target

Arm Rest Locations:

Front: 246 mm below the bottom of the window

Rear: 273 mm below the bottom of the window

Seat Movement:

Front: None

Rear: None

Glazing Damage:

Windshield: None

Window: Impacted side windows broken.

Pillar Separation: No

Sill Separation: No

Other Notable Impact Effects:

None

Section 4

Occupant and Vehicle Information

Data Sheet 5

SID HIII Instrumentation Data

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

Test Number: 061026

Driver Dummy Serial Number: 059

Location	Positive Direction Max. Time (g) (ms)		Negative Direction Max. Time (g) (ms)	
Head Acceleration (g)				
Longitudinal X	5.6	197.3	29.1	60.8
Lateral Y	30.7	54.0	5.4	104.7
Vertical Z	19.5	65.3	7.4	75.6
Resultant	39.1	56.6		
HIC 36	133			
Head Redundant Acceleration (g)				
Longitudinal X	5.4	195.8	31.1	60.8
Lateral Y	29.5	54.0	5.5	105.5
Vertical Z	20.1	65.4	7.0	75.7
Resultant	39.8	60.9		
Neck Force				
X-Axis Shear	89.3	34.3	712.1	60.9
Y-Axis Shear	457.7	53.9	174.8	69.1
Z-Axis Shear	421.6	36.4	426.2	59.5
Neck Moment				
About X-Axis	8.0	66.3	64.8	53.4
About Y-Axis	41.5	78.0	72.1	57.4
About Z-Axis	40.3	70.9	18.7	232.9
Occipital Cond	7.1	35.7	56.8	53.4
Left Upper Rib Acceleration				
Lateral (P)	59.8	42.6	9.4	30.6
Lateral (R)	56.2	43.1	9.6	31.2
Left Lower Rib Acceleration				
Lateral (P)	49.1	15.0	7.8	73.1
Lateral (R)	49.6	14.4	8.9	28.1

Data Sheet 5 (Continued)

SID Instrumentation Data

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

Test Number: 061026

Driver Dummy Serial Number: 059

Location	Positive Direction		Negative Direction	
	Max. (g)	Time (ms)	Max. (g)	Time (ms)
Lower Spine Acceleration				
Lateral (P)	55.4	44.3	12.4	53.8
Lateral (R)	54.5	43.8	12.4	53.8
Pelvis Acceleration				
Lateral (P)	71.4	28.8	14.2	55.6
TTI	57.6			

Positive Direction

Longitudinal: Forward

Lateral: Rightward

Vertical: Downward

Negative Direction

Longitudinal: Rearward

Lateral: Leftward

Vertical: Upward

Data Sheet 5 (Continued)

SID Instrumentation Data

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

Test Number: 061026

Left Rear Dummy Serial Number: 055

Location	Positive Direction Max. Time (g) (ms)		Negative Direction Max. Time (g) (ms)	
Head Acceleration (g) Longitudinal X Lateral Y Vertical Z Resultant HIC 36				
	7.2	173.8	15.1	68.9
	96.4	52.0	11.5	172.2
	12.9	42.8	35.1	57.4
	96.7	52.0		
	527			
Head Redundant Acceleration (g) Longitudinal X Lateral Y Vertical Z Resultant				
	7.2	174.1	14.1	68.0
	95.4	52.0	11.5	172.3
	12.7	42.7	34.9	57.4
	95.7	52.0		
Neck Force X-Axis Shear Y-Axis Shear Z-Axis Shear				
	542.1	57.8	67.5	129.5
	117.2	184.9	1011.0	69.4
	561.1	43.0	1639.5	57.0
Neck Moment About X-Axis About Y-Axis About Z-Axis Occipital Cond				
	35.1	175.1	44.5	52.6
	24.9	177.3	17.4	64.0
	13.1	77.5	10.1	124.4
	34.6	175.5	58.1	52.8
Left Upper Rib Acceleration Lateral (P) Lateral (R)				
	62.9	39.4	6.2	104.4
	60.8	39.4	6.9	104.4
Left Lower Rib Acceleration Lateral (P) Lateral (R)				
	62.5	42.5	12.7	104.4
	60.3	42.5	12.6	104.4

Data Sheet 5 (Continued)

SID Instrumentation Data

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

Test Number: 061026

Left Rear Dummy Serial Number: 055

Location	Positive Direction		Negative Direction	
	Max. (g)	Time (ms)	Max. (g)	Time (ms)
Lower Spine Acceleration				
Lateral (P)	56.4	41.8	20.0	70.0
Lateral (R)	55.5	41.8	19.7	70.6
Pelvis Acceleration				
Lateral (P)	68.2	39.4	7.9	64.4
TTI	59.6			

Positive Direction

Longitudinal: Forward

Lateral: Rightward

Vertical: Downward

Negative Direction

Longitudinal: Rearward

Lateral: Leftward

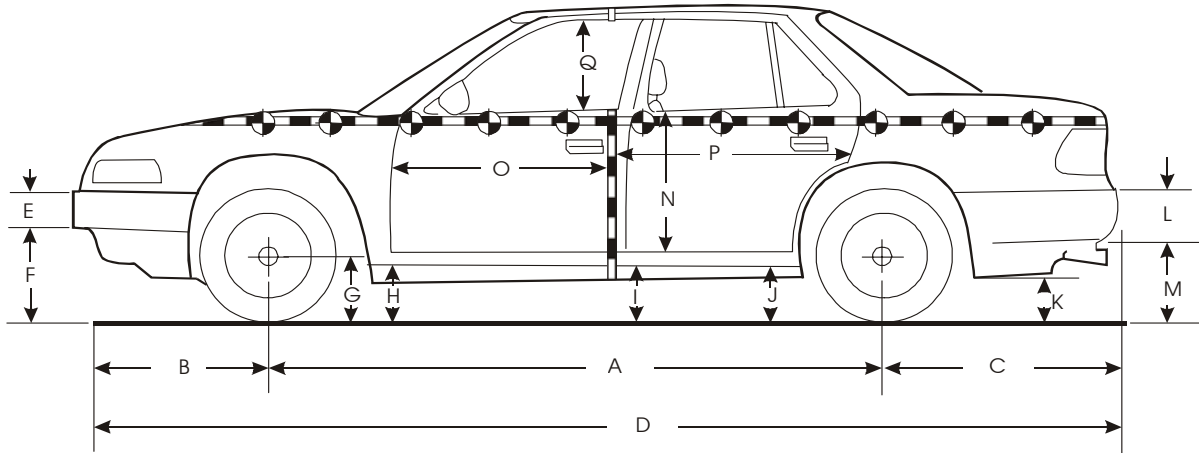
Vertical: Upward

Data Sheet 6

Vehicle Pre-Test And Post-Test Measurements

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501



Left Side View

Note: All dimensions are in millimeters with tolerance of ± 3 mm

	Pre-Test (as delivered)	Pre-Test (as tested)	Post-Test (as tested)	Change
A	2650	2650	2652	-2
B	860	860	860	0
C	974	974	874	100
D	4484	4484	4484	0
E	187	187	187	0
F	380	371	377	-6
G	292	290	285	5
H	270	161	185	-24
I	270	239	317	-78
J1	188	150	152	-2
J2	270	235	228	7
K	330	330	268	62
L	260	260	260	0
M	367	367	305	62
N	755	755	725	30
O	780	780	739	41
P	1283	1283	1177	106
Q	423	423	411	12
R	4360	4360	4377	-17
S	4370	4370	4351	19
T	1290	1290	1151	139

D = Length at centerline

E and L = Bumper Thickness

R = Right Side Length

S = Left Side Length

T = Width at B-pillar

J1 = To Pinch Weld

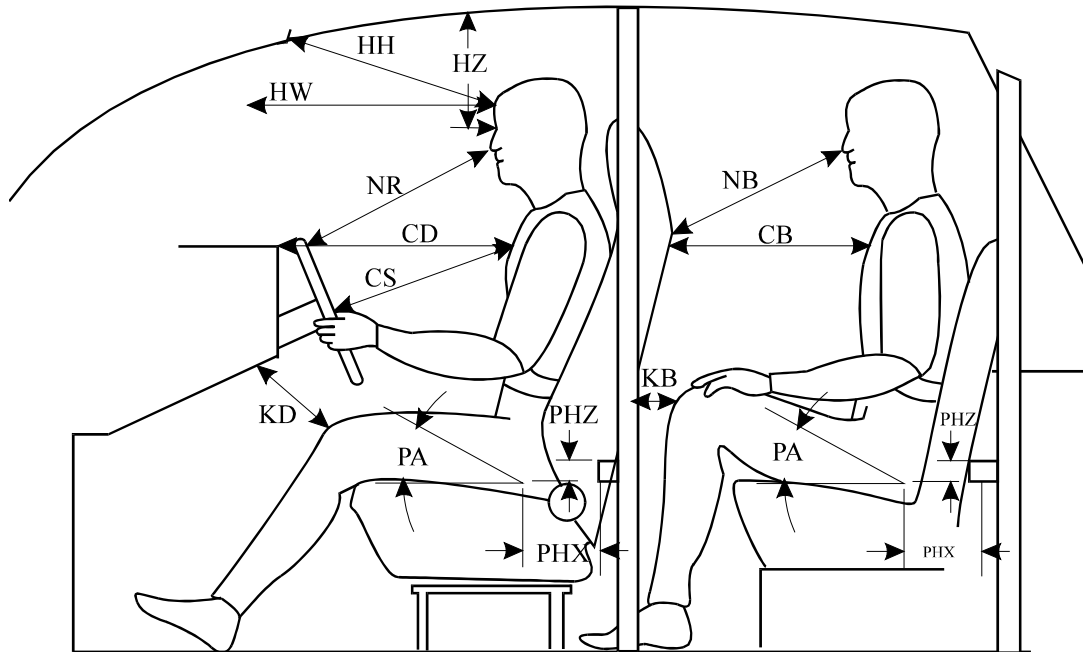
J2 = To Sill

Data Sheet 7

SID HIII Longitudinal Clearance Dimensions

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501



Left Side View

Note: All measurements are in millimeters with tolerance of ± 3 mm

Measurement	Driver SID HIII # 59	Left Rear Pass. SID HIII # 55
HH	345	N/A
HW	577	N/A
HZ	182	147
NR/NB	437	613
CD/CB	548	543
CS	337	N/A
KDL(KDA°)/KBL(KBA°)	192/(25.5°)	192/(15.6°)
KDR(KDA°)/KBR(KBA°)	144/(24.7°)	202/(21.8°)
PA°	24.8°	24.7°
PHX	237	243
PHZ	198	218

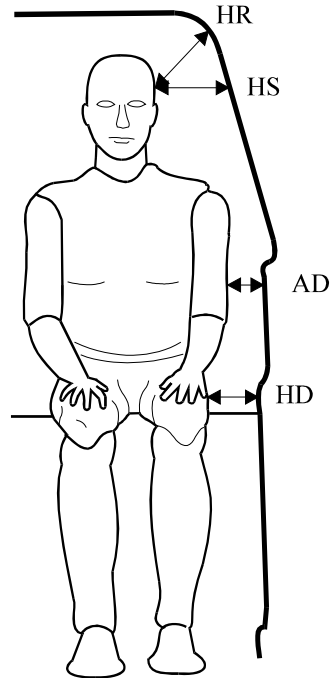
Note: 2-door vehicle shown. Rear dummy PHX and PHZ measurements for 4-door sedan vehicle would use the C-post striker as a reference point.

Data Sheet 8

SID HIII Lateral Clearance Dimensions

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501



Note: All measurements are in millimeters with tolerance of ± 3 mm

Measurement	Driver SID HIII # 59	Left Rear Pass. SID HIII # 55
HR	167	165
HS	257	169
AD*	Lower: 141 Upper: 109	Lower: 139 Upper: 103
HD	166	167

* Lower measurement is taken laterally at center of the lower rib accelerometer height from the SID HIII arm segment to the closest part of the vehicle side.

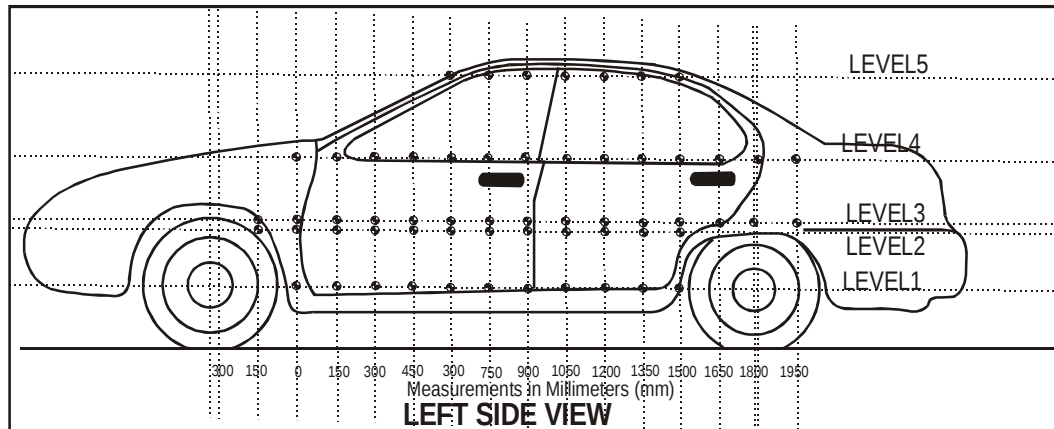
Upper measurement is taken laterally at center of the upper rib accelerometer height from the SID HIII arm segment to the closest part of the vehicle side.

Data Sheet 9

Vehicle Side Measurements

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501



Level 5 - Window Top

Level 4 - Window Sill

Level 3 - Mid-Door

Level 2 - Occupant H-Point

Level 1 - Axle Centerline Height or Sill Top Height

Measurements Are Taken When The Vehicle Is In The “As Tested” Configuration.

Measurements along the vertical 750 mm line shown above:

Level 5 @ Window Top	=	<u>1440</u>	mm
Level 4 @ Window Sill	=	<u>930</u>	mm
Level 3 @ Mid Door	=	<u>645</u>	mm
Level 2 @ Occupant H-Point	=	<u>547</u>	mm
Level 1 @ Axle Centerline Height (or Sill Top Height)	=	<u>270</u>	mm

Data Sheet 10

Vehicle Exterior Crush Profiles - All Levels

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

Location	Height		(mm) From Impact Point													
			-1200	-1050	-900	-750	-600	-450	-300	-150	0	150	300	450	600	750
Level 1 Side Sill	270	Pre	---	---	---	---	---	---	---	---	824	825	827	828	829	829
		Post	---	---	---	---	---	---	---	---	831	781	778	773	763	749
		Crush	---	---	---	---	---	---	---	---	-7	44	49	55	66	80
Level 2 H-Point	547	Pre	---	---	815	853	---	---	---	---	869	866	865	865	864	864
		Post	---	---	833	870	---	---	---	---	846	687	632	618	622	622
		Crush	---	---	-18	-17	---	---	---	---	23	179	233	247	242	242
Level 3 Mid-Door	645	Pre	---	---	805	843	868	---	---	875	873	872	871	871	870	870
		Post	---	---	824	860	881	---	---	866	854	713	679	659	642	655
		Crush	---	---	-19	-17	-13	---	---	9	19	159	192	212	228	215
Level 4 Window Sill	930	Pre	---	---	---	---	---	754	773	785	795	800	803	807	811	815
		Post	---	---	---	---	---	764	776	779	785	771	740	690	688	682
		Crush	---	---	---	---	---	-10	6	10	10	29	63	117	123	133
Level 5 Window Top	1440	Pre	---	---	---	---	---	---	---	---	---	---	---	---	---	550
		Post	---	---	---	---	---	---	---	---	---	---	---	---	---	551
		Crush	---	---	---	---	---	---	---	---	---	---	---	---	---	-1

All measurements were recorded using TRC Inc.'s FARO Arm with a tolerance of ± 0.1 mm.

Data Sheet 10 (Continued)

Vehicle Exterior Crush Profiles - All Levels

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

Location	Height		(mm) From Impact Point												
			900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700
Level 1 Side Sill	270	Pre	829	829	829	829	829	829	829	---	---	---	---	---	---
		Post	744	749	750	741	749	773	821	---	---	---	---	---	---
		Crush	85	80	79	88	80	56	8	---	---	---	---	---	---
Level 2 H-Point	547	Pre	864	865	865	866	867	868	869	871	---	---	---	868	845
		Post	608	597	600	630	675	730	814	849	---	---	---	865	841
		Crush	256	268	265	236	192	138	55	22	---	---	---	3	4
Level 3 Mid-Door	645	Pre	871	871	872	872	873	874	874	875	879	---	876	861	842
		Post	653	652	657	676	703	737	799	879	869	---	873	860	841
		Crush	218	219	215	196	170	137	75	-4	10	---	3	1	1
Level 4 Window Sill	930	Pre	818	821	822	823	825	827	830	833	836	837	832	822	805
		Post	676	669	644	627	623	649	697	775	841	826	828	824	810
		Crush	142	152	178	196	202	178	133	58	-5	11	4	-2	-5
Level 5 Window Top	1440	Pre	570	578	586	589	592	593	591	579	---	---	---	---	---
		Post	567	566	563	568	573	578	585	579	---	---	---	---	---
		Crush	3	12	23	21	19	15	6	0	---	---	---	---	---

All measurements were recorded using TRC Inc.'s FARO Arm with a tolerance of ± 0.1 mm.

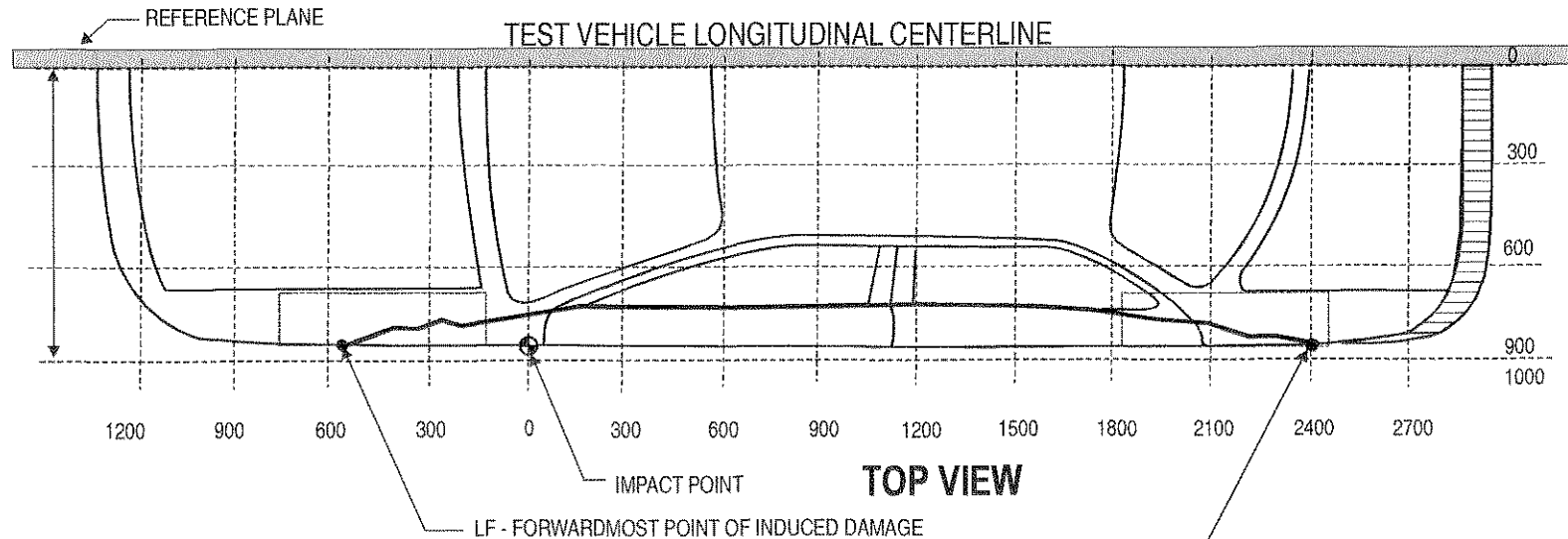
Data Sheet 11

Vehicle Damage Profile Distances

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

NOTE: All measurements are in millimeters (mm) and should be accurate to plus or minus 3mm.



MEASUREMENT CONVENTIONS:

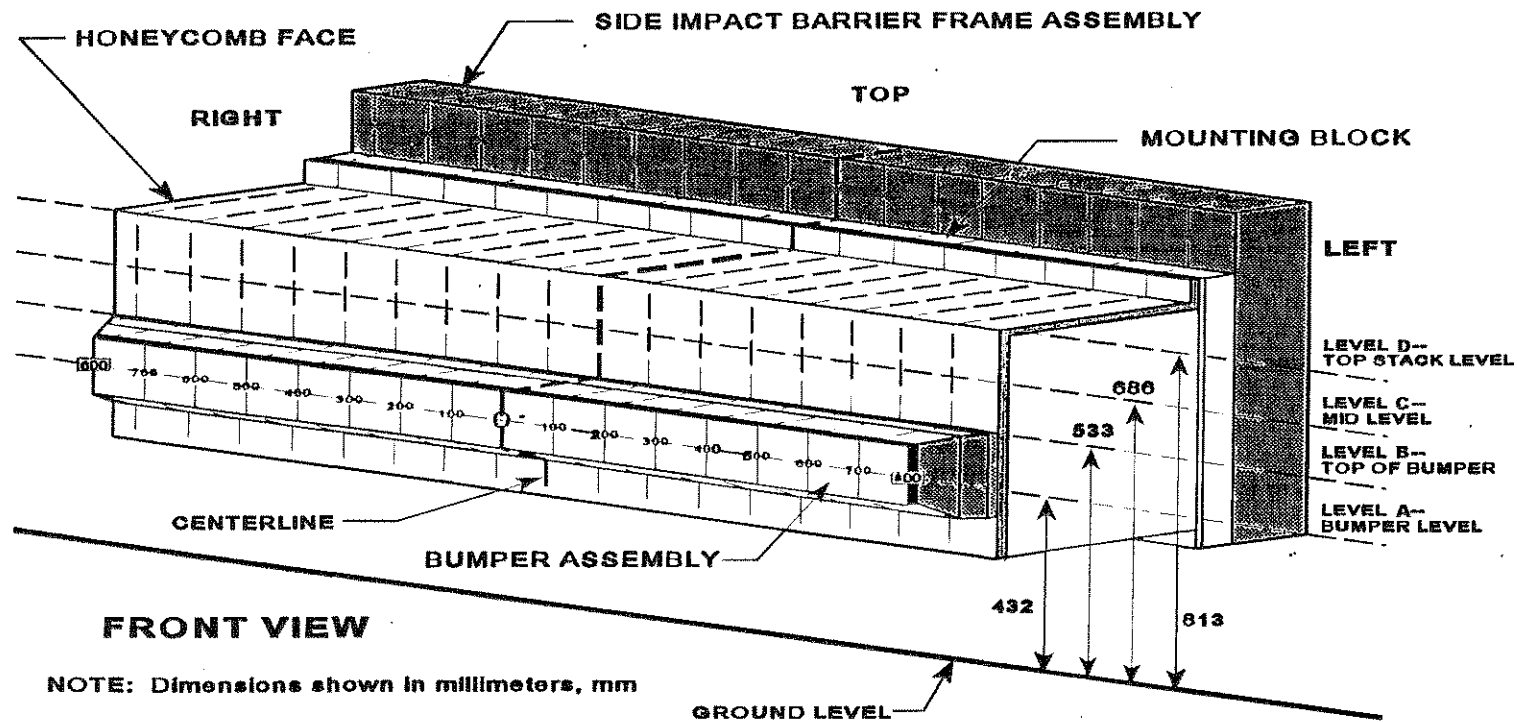
Forward of the impact point (towards front of vehicle) is considered negative (-)

Rearward of the impact point (towards rear end of vehicle) is considered positive (+)

DPD Measurements	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
6: LF = -150 mm (Level 4)	785	779	10
5: 300 mm (Level 2)	865	632	233
4: 750 mm (Level 2)	864	622	242
3: 1050 mm (Level 2)	865	597	268
2: 1500 mm (Level 4)	825	623	202
1: LR = 1950 mm (Level 4)	833	775	58

Full length of induced damage was 2100 mm.

NHTSA No.: C70501



NOTE: Dimensions shown in millimeters, mm

GROUND LEVEL

4-13

061026

Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

4-14

		Distance Right of Center (mm)										Distance Left of Center (mm)							
Location	Height At CL	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800	
Top Stack Level - Level D	814	-84	-38	-11	-10	-15	-30	-52	-30	-26	-29	-32	-35	-36	-45	-60	-91	-131	
Mid Level Level C	685	-86	-40	-20	-15	-17	-27	-49	-39	-29	-18	-14	-15	-19	-26	-44	-76	-116	
Top Bumper Level-Level B ¹	560	-109	-84	-51	-49	-50	-48	-49	-50	-49	-50	-50	-50	-50	-51	-53	-72	-92	
Mid Bumper Level - Level A	432	-166	-132	-113	-114	-115	-121	-117	-118	-118	-117	-117	-117	-118	-118	-119	-132	-162	

All measurements were recorded using TRC Inc.'s FARO Arm with a tolerance of ± 0.1 mm.

¹ Top Bumper measurements are collected at 560 mm to eliminate post-test measurement point obstruction by the bumper element.

061026

Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2007 Hyundai Elantra 4-door sedan

Deformable Barrier Face Profile

NHTSA No.: C70501

Pre-Test

Index	Xmm	Ymm	Zmm
1	-384.4	797.1	-54.0
2	-384.4	701.6	-54.3
3	-384.4	600.7	-54.3
4	-384.5	500.1	-55.0
5	-384.3	399.8	-54.9
6	-384.5	300.3	-53.8
7	-384.5	200.6	-54.6
8	-384.6	100.7	-55.2
9	-384.6	0.9	-55.3
10	-384.5	-98.1	-55.4
11	-384.4	-197.2	-55.0
12	-384.3	-297.4	-55.3
13	-384.0	-396.5	-55.2
14	-384.1	-497.6	-55.6
15	-384.0	-596.9	-55.3
16	-383.7	-697.2	-55.9
17	-383.8	-796.4	-55.8
18	-383.8	797.9	-182.0
19	-384.0	699.8	-180.5
20	-384.0	599.3	-180.8
21	-384.1	498.7	-181.7
22	-384.2	398.8	-181.3
23	-384.3	298.2	-181.2

Post-Test

Index	Xmm	Ymm	Zmm
1	-300.3	744.7	-94.1
2	-346.4	661.4	-95.4
3	-373.9	564.5	-96.8
4	-374.2	465.3	-98.0
5	-369.0	365.2	-96.7
6	-354.1	266.4	-94.6
7	-332.3	169.5	-94.9
8	-354.5	73.3	-97.8
9	-358.8	-26.2	-94.1
10	-355.7	-125.0	-91.6
11	-352.8	-224.2	-88.5
12	-349.0	-324.6	-84.6
13	-347.7	-423.1	-78.2
14	-338.8	-523.5	-76.5
15	-323.7	-619.2	-68.7
16	-293.2	-714.0	-65.7
17	-253.0	-804.0	-63.5
18	-297.4	743.9	-211.5
19	-343.6	660.8	-220.3
20	-363.9	563.0	-223.2
21	-369.1	462.5	-224.2
22	-367.1	362.5	-222.9
23	-357.1	262.5	-221.3

Difference

Index	Xmm	Ymm	Zmm
1	-84.1	52.4	40.1
2	-38.0	40.2	41.1
3	-10.5	36.2	42.5
4	-10.3	34.8	43.0
5	-15.3	34.6	41.8
6	-30.4	33.9	40.8
7	-52.2	31.1	40.3
8	-30.1	27.4	42.6
9	-25.8	27.1	38.8
10	-28.8	26.9	36.2
11	-31.6	27.0	33.5
12	-35.3	27.2	29.3
13	-36.3	26.6	23.0
14	-45.3	25.9	20.9
15	-60.3	22.3	13.4
16	-90.5	16.8	9.8
17	-130.8	7.6	7.7
18	-86.4	54.0	29.5
19	-40.4	39.0	39.8
20	-20.1	36.3	42.4
21	-15.0	36.2	42.5
22	-17.1	36.3	41.6
23	-27.2	35.7	40.1

Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2007 Hyundai Elantra 4-door sedan

Deformable Barrier Face Profile Cont'd.

NHTSA No.: C70501

Pre-Test

Index	Xmm	Ymm	Zmm
24	-384.3	199.4	-182.8
25	-384.3	97.4	-183.1
26	-384.3	-0.1	-182.6
27	-384.2	-98.9	-183.7
28	-384.0	-196.9	-183.3
29	-384.0	-300.5	-183.7
30	-383.9	-397.4	-183.2
31	-383.7	-497.8	-184.1
32	-383.5	-597.3	-184.0
33	-383.3	-699.6	-184.2
34	-383.4	-797.2	-184.9
35	-383.6	800.8	-308.1
36	-383.5	698.7	-307.9
37	-383.6	599.0	-306.9
38	-383.7	499.2	-307.0
39	-383.7	398.2	-307.2
40	-384.0	297.1	-305.6
41	-383.8	197.3	-306.2
42	-383.9	98.2	-306.5
43	-383.7	-2.9	-305.9
44	-383.7	-101.7	-306.3
45	-383.6	-200.4	-306.0
46	-383.6	-300.1	-305.3

Post-Test

Index	Xmm	Ymm	Zmm
24	-335.8	166.1	-221.5
25	-345.8	64.4	-217.9
26	-355.4	-32.7	-215.0
27	-365.8	-131.2	-214.1
28	-370.0	-229.7	-210.8
29	-368.7	-333.3	-206.9
30	-364.5	-430.4	-202.5
31	-357.6	-530.7	-198.9
32	-339.1	-628.9	-194.4
33	-307.4	-725.9	-190.7
34	-267.7	-814.3	-187.6
35	-274.7	754.0	-315.7
36	-299.8	657.0	-327.8
37	-332.3	562.8	-341.9
38	-335.0	462.0	-342.2
39	-333.5	360.7	-341.3
40	-335.6	259.0	-340.9
41	-335.1	159.3	-340.4
42	-333.9	60.0	-338.6
43	-334.7	-40.2	-331.8
44	-334.2	-139.4	-328.9
45	-333.7	-238.6	-323.4
46	-333.9	-337.8	-318.4

Difference

Index	Xmm	Ymm	Zmm
24	-48.5	33.3	38.7
25	-38.5	33.0	34.8
26	-28.9	32.6	32.4
27	-18.4	32.3	30.4
28	-14.0	32.8	27.5
29	-15.3	32.8	23.2
30	-19.4	33.0	19.3
31	-26.1	32.9	14.8
32	-44.4	31.6	10.4
33	-75.9	26.3	6.5
34	-115.7	17.1	2.7
35	-108.9	46.8	7.6
36	-83.7	41.7	19.9
37	-51.3	36.2	35.0
38	-48.7	37.2	35.2
39	-50.2	37.5	34.1
40	-48.4	38.1	35.3
41	-48.7	38.0	34.2
42	-50.0	38.2	32.1
43	-49.0	37.3	25.9
44	-49.5	37.7	22.6
45	-49.9	38.2	17.4
46	-49.7	37.7	13.1

Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2007 Hyundai Elantra 4-door sedan

Deformable Barrier Face Profile Cont'd.

NHTSA No.: C70501

Pre-Test

Index	Xmm	Ymm	Zmm
47	-383.5	-400.8	-304.6
48	-383.5	-500.2	-304.6
49	-383.2	-600.2	-304.4
50	-383.0	-699.2	-304.6
51	-383.1	-799.1	-303.4
52	-475.2	796.3	-433.4
53	-486.4	703.0	-432.9
54	-486.4	600.7	-433.1
55	-486.4	498.2	-433.1
56	-486.5	402.0	-432.7
57	-486.3	301.3	-432.8
58	-486.4	201.1	-433.2
59	-486.4	100.8	-434.3
60	-486.5	1.9	-433.9
61	-486.4	-95.2	-434.0
62	-486.1	-195.7	-434.0
63	-486.0	-295.6	-433.7
64	-485.9	-396.2	-433.3
65	-486.0	-496.1	-434.1
66	-485.9	-596.1	-433.8
67	-485.9	-696.2	-433.7
68	-476.8	-792.9	-433.8

Post-Test

Index	Xmm	Ymm	Zmm
47	-333.2	-438.8	-315.1
48	-332.1	-539.1	-313.4
49	-330.4	-639.1	-311.3
50	-310.6	-737.0	-301.8
51	-290.7	-832.9	-287.0
52	-308.9	742.5	-453.5
53	-354.0	659.8	-466.2
54	-373.2	559.8	-471.3
55	-372.2	457.1	-469.4
56	-371.5	360.8	-466.9
57	-365.5	260.5	-463.4
58	-369.2	160.4	-463.3
59	-368.1	60.0	-461.7
60	-368.8	-38.7	-459.1
61	-369.0	-135.8	-456.9
62	-368.9	-236.5	-455.0
63	-368.6	-336.3	-452.5
64	-368.4	-436.6	-449.8
65	-367.8	-536.7	-448.8
66	-367.0	-636.6	-446.0
67	-353.7	-735.5	-439.3
68	-314.4	-823.4	-424.2

Difference

Index	Xmm	Ymm	Zmm
47	-50.3	38.0	10.5
48	-51.4	38.9	8.8
49	-52.8	38.9	6.9
50	-72.4	37.8	-2.8
51	-92.4	33.8	-16.4
52	-166.3	53.8	20.1
53	-132.4	43.2	33.3
54	-113.2	40.9	38.2
55	-114.2	41.1	36.3
56	-115.0	41.2	34.2
57	-120.8	40.8	30.6
58	-117.2	40.7	30.1
59	-118.3	40.8	27.4
60	-117.7	40.6	25.2
61	-117.4	40.6	22.9
62	-117.2	40.8	21.0
63	-117.4	40.7	18.8
64	-117.5	40.4	16.5
65	-118.2	40.6	14.7
66	-118.9	40.5	12.2
67	-132.2	39.3	5.6
68	-162.4	30.5	-9.6

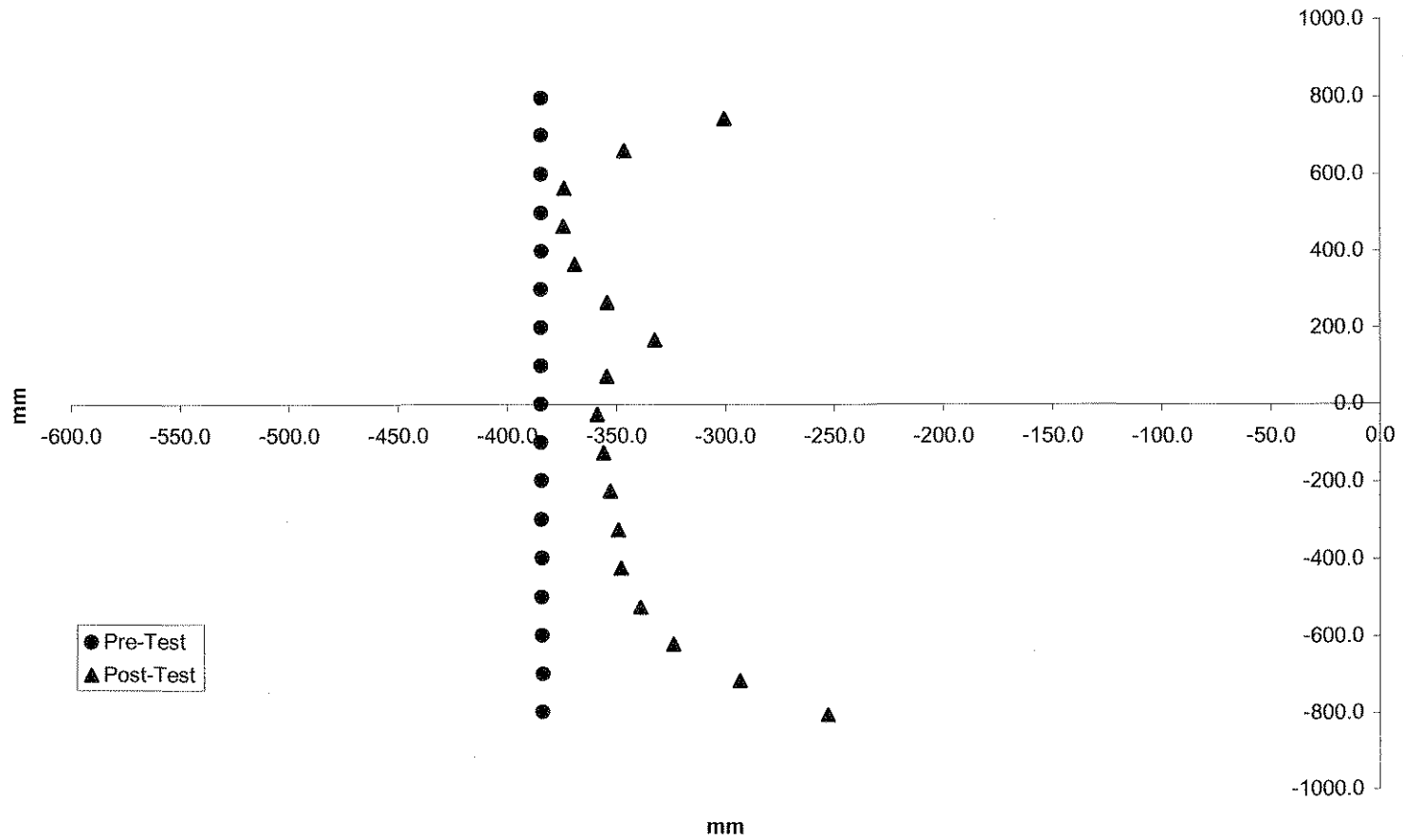
Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

Deformable Barrier Face Profile 1-17



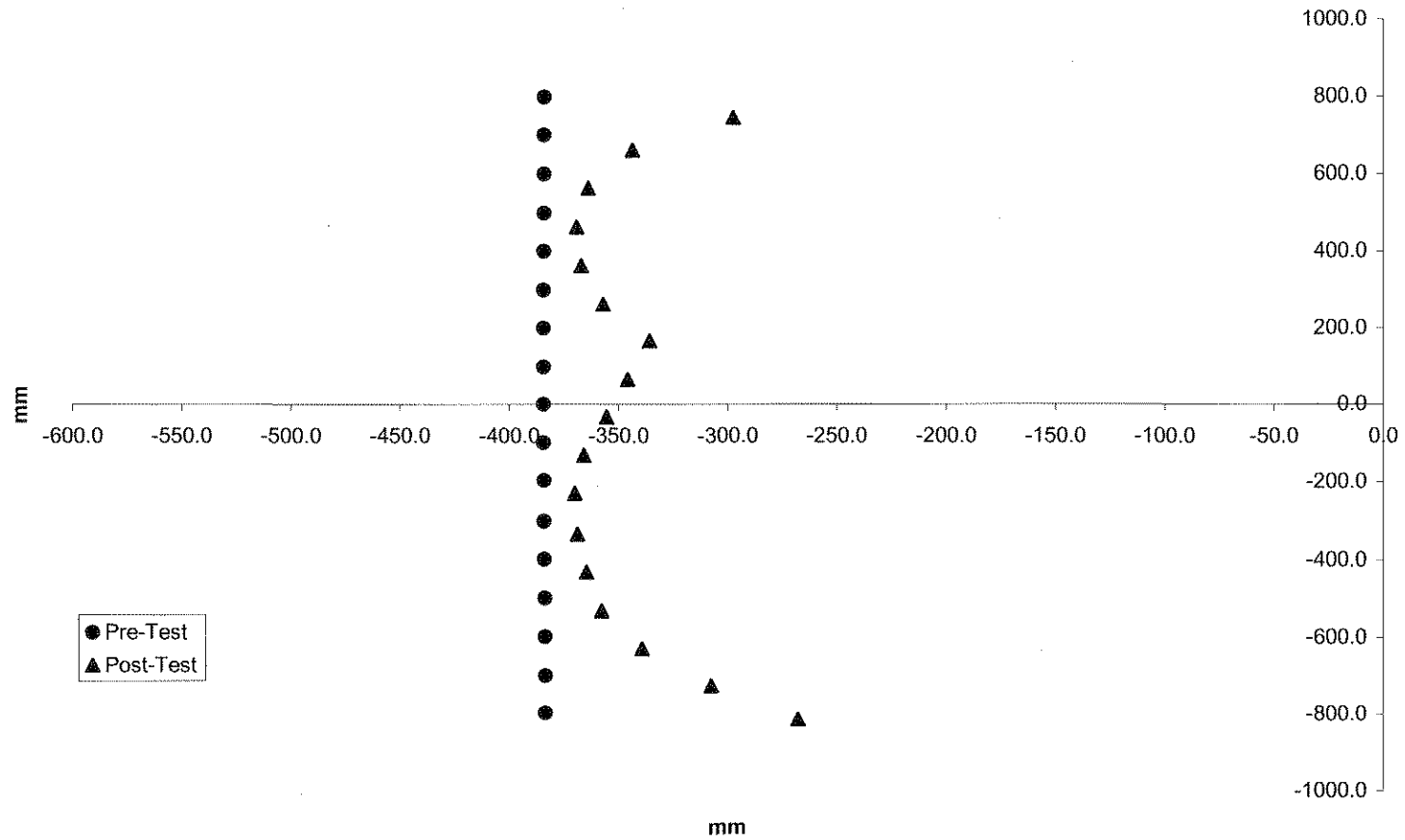
Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

Deformable Barrier Face Profile 18-34



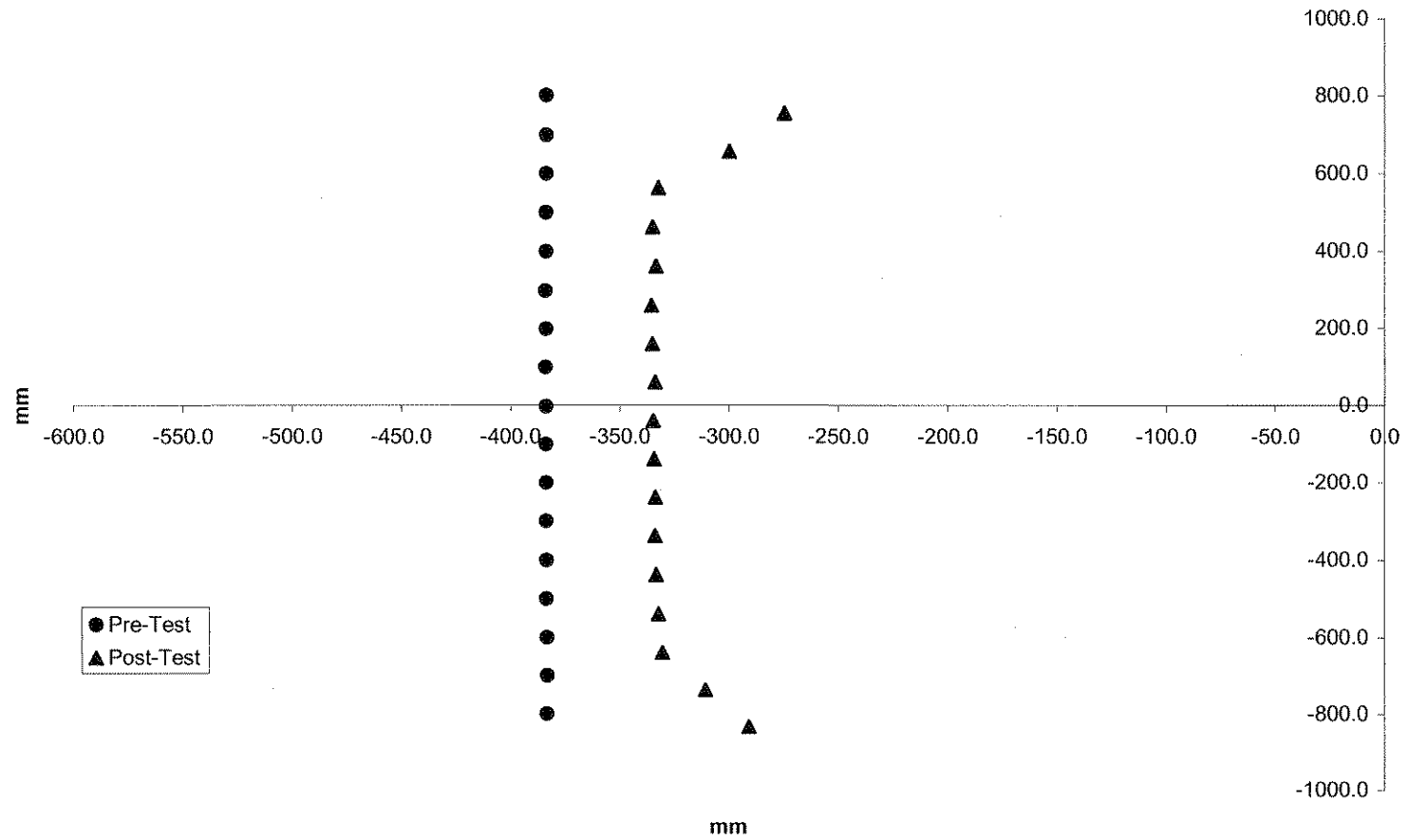
Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

Deformable Barrier Face Profile 35-51



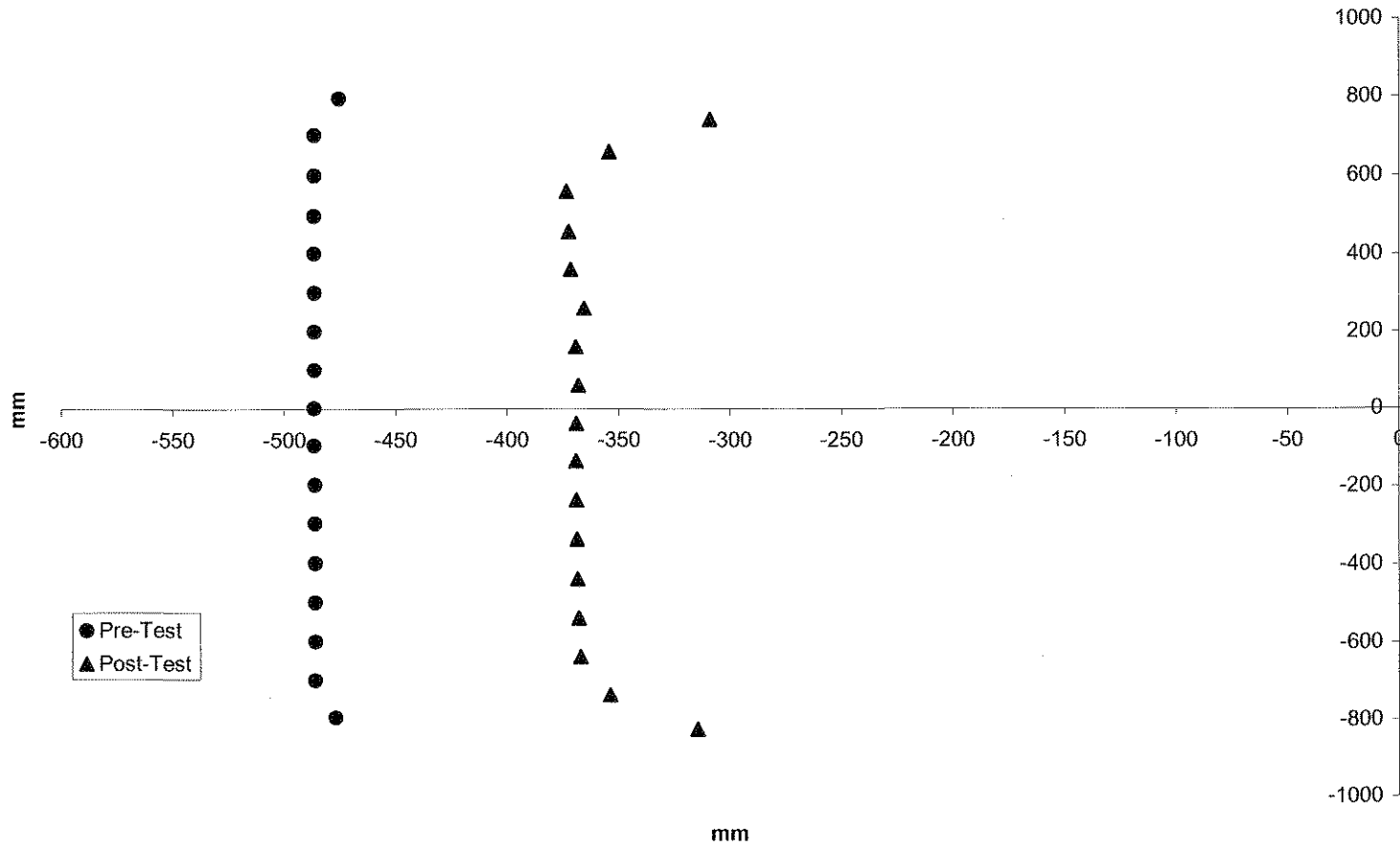
Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

Deformable Barrier Face Profile 52-68

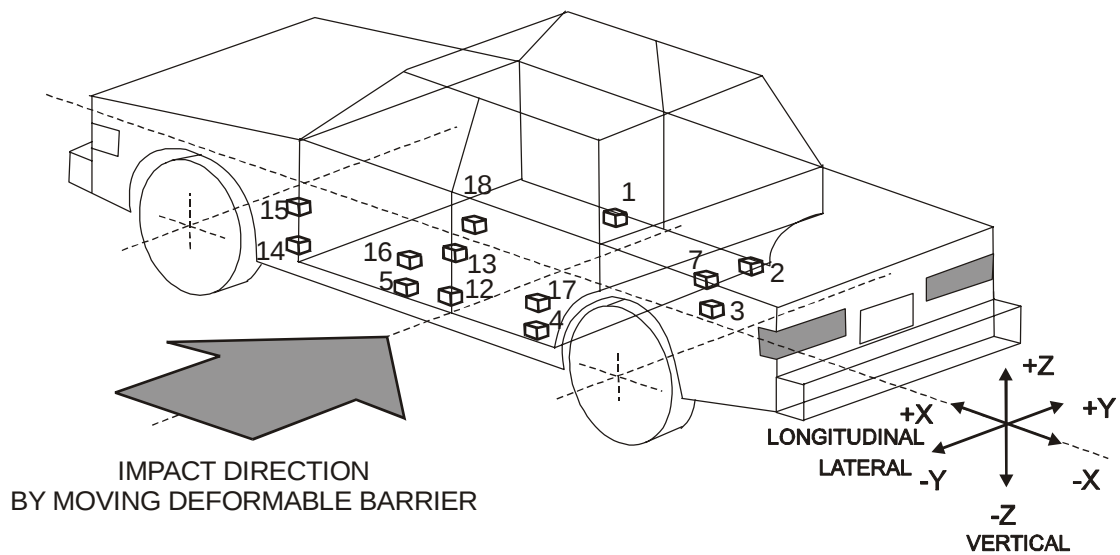


Data Sheet 13

Test Vehicle Accelerometer Locations and Data Summary

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501



1-Right Front Side Sill
2-Right Side Sill at Rear Seat
3-Rear Floorpan above Axle
4-Left Side Sill at Rear Seat
5-Left Side Sill at Front Seat
7-Right Rear Occupant Compartment
12-Left Side Lower B-pillar

13-Left Side Middle B-pillar
14-Left Side Lower A-pillar
15-Left Side Middle A-pillar
16-Left Side Front Seat Track at H-point
17-Left Rear Seat Track at H-point
18-Vehicle Center of Gravity

Data Sheet 13 (Continued)

Test Vehicle Accelerometer Locations and Data Summary

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
	X	Y	Z	Max. (g)	Time (ms)	Max. (g)	Time (ms)
1 Right Side Sill at Front Seat	2987	685	-272				
Longitudinal				3.8	57.8	4.8	10.7
Lateral				22.1	16.7	2.2	122.9
Vertical				4.3	67.9	6.8	5.9
Resultant				22.2	16.7		
2 Right Side Sill at Rear Seat	2198	685	-260				
Longitudinal				4.7	58.0	5.9	9.5
Lateral				23.0	16.1	3.3	92.9
Vertical				5.8	32.9	5.3	20.1
Resultant				23.2	16.1		
3 Rear Floorpan Above Axle	1406	0	-484				
Longitudinal				2.9	58.8	8.7	22.5
Lateral				25.7	22.6	2.8	96.6
Vertical				20.9	18.4	12.4	22.9
Resultant				29.7	22.8		
4 Left Side Sill at Rear Seat	2180	-685	-250				
Longitudinal							
Lateral				38.7	3.8	6.0	53.9
Vertical							
Resultant							
5 Left Side Sill at Front Seat	2990	-685	-246				
Longitudinal							
Lateral				20.8	4.3	1.8	124.5
Vertical							
Resultant							

Data Sheet 13 (Continued)

Test Vehicle Accelerometer Locations and Data Summary

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
	X	Y	Z	Max. (g)	Time (ms)	Max. (g)	Time (ms)
7 Right Rear Occupant Compartment	2005	625	-255				
Longitudinal							
Lateral				21.9	15.9	3.8	93.3
Vertical							
Resultant							
12 Left Lower B-Pillar	2460	-730	-492				
Longitudinal							
Lateral				217.0	3.9	37.7	11.5
Vertical							
Resultant							
13 Left Middle B-Pillar	2415	-730	-805				
Longitudinal							
Lateral ¹				----	----	----	----
Vertical							
Resultant							
14 Left Lower A-Pillar	3415	-810	-405				
Longitudinal							
Lateral ¹				----	----	----	----
Vertical							
Resultant							
15 Left Middle A-Pillar	3420	-780	-765				
Longitudinal							
Lateral ¹				----	----	----	----
Vertical							
Resultant							

Data Sheet 13 (Continued)

Test Vehicle Accelerometer Locations and Data Summary

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
	X	Y	Z	Max. (g)	Time (ms)	Max. (g)	Time (ms)
16 Left Front Seat Track	2639	-565	-261				
Longitudinal							
Lateral				75.3	12.2	70.4	20.2
Vertical							
Resultant							
17 Left Rear Seat Track	1765	-625	-360				
Longitudinal							
Lateral ¹				63.9	45.1	114.2	49.4
Vertical							
Resultant							
18 Vehicle CG	2811	0	-417				
Longitudinal				16.7	18.9	24.3	46.4
Lateral				121.3	19.0	87.5	24.5
Vertical				39.5	45.9	26.4	16.6
Resultant				122.5	19.0		

Reference: X: + Forward from rear bumper
 Y: + Rightward from vehicle centerline
 Z: + Downward from ground level

For acceleration data sign convention see Report Sign Convention in Appendix D.

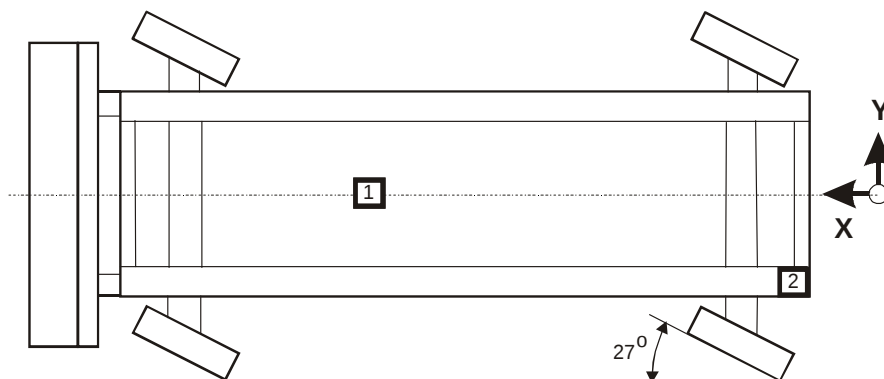
¹ See Data Acquisition Explanations

Data Sheet 14

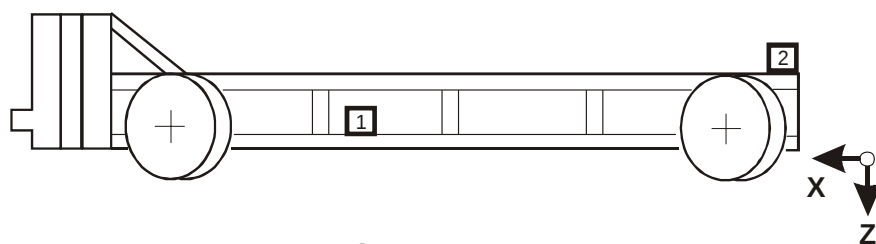
MDB Accelerometer Locations and Data Summary

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501



TOP VIEW



SIDE VIEW

Accel. No.	Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
		X*	Y*	Z*	Max. (g)	Time (ms)	Max. (g)	Time (ms)
1	MDB Center of Gravity	1855	0	-520				
	Longitudinal X				2.9	122.6	21.4	37.5
	Lateral Y				4.6	61.0	10.2	29.2
	Vertical Z				8.0	59.0	8.7	24.6
	Resultant R				22.1	37.3		
2	Rear Frame Member	412	-677	-625				
	Longitudinal X				2.5	102.2	22.6	31.3
	Lateral Y				4.1	32.1	2.4	149.6

*Reference: X = Rear Bumper (+ Forward)

Y = Vehicle Centerline (+ To Right)

Z = Ground Level (+ Down)

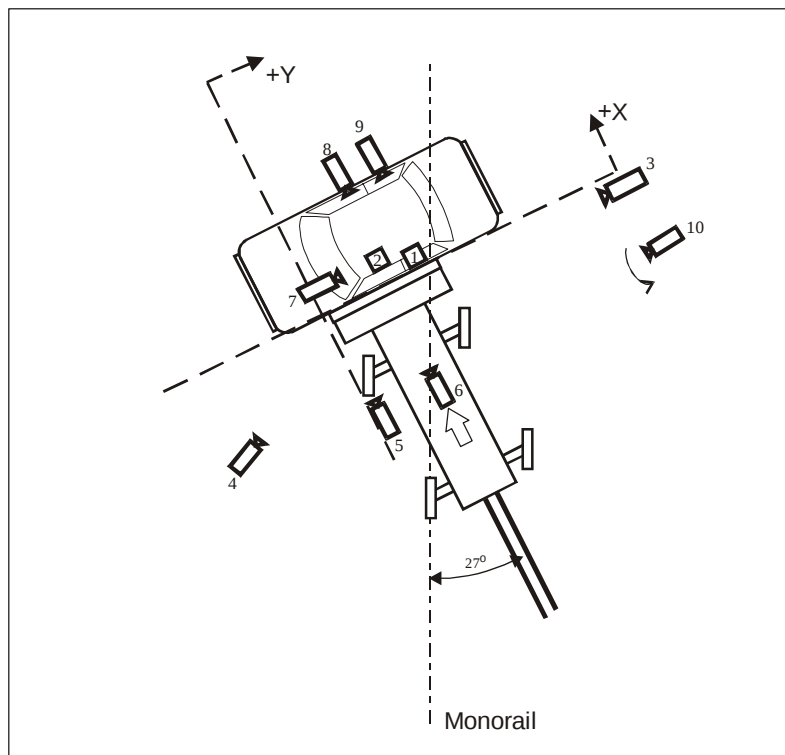
All measurements accurate to within ± 3 mm.

Data Sheet 15

High-Speed Camera Locations and Data Summary

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501



Impact
Area

Camera Number	Location	Location, mm			Angle (deg.)	Lens (mm)	Speed (fps)
		X	Y	Z			
1	Overhead wide	250	2150	-5750	90.0	12.5	1000
2	Overhead tight	370	1800	-5750	90.0	25	1000
3	Right side of MDB	0	9200	-1100	1.0	25	1000
4	Left side of MDB	-2400	-4500	-1110	19.6	25	1000
5	Onboard MDB left side	-1750	-40	-720	1.0	12.5	1000
6	Onboard MDB center	-2480	830	-1353	4-1	12.5	1000
7	Onboard vehicle front	500	-500	-1200	16.9	12.5	1000
8	Onboard side front door	1520	150	-1250	27.7	6.5	1000
9	Onboard side rear door	1750	850	-1250	28.5	6.5	1000
10	Documentary/Panning	N/A	N/A	N/A	N/A	Zoom	24

+X: Forward (referenced to MDB) from impact point

+Y: Rightward (referenced to MDB) from impact point

+Z: Downward from ground level

Section 5

Vehicle Fuel System Integrity

Data Sheet 16

FMVSS 301 Fuel System Integrity Data

NHTSA No.: C70501

Test Date: 10/26/06

Vehicle Year/Make/Model/Body Style: 2007 Hyundai Elantra 4-door sedan

Test Vehicle Impact Type :

- _____ Frontal (48.3 km/h)
_____ Oblique (48.3 km/h) with _____° barrier face
first contacting the (driver/passenger) side
_____ Rear Moving Barrier (48.3 km/h)
_____ Lateral Moving Barrier (32.2 km/h)
X _____ Side Impact Moving Deformable Barrier (62.0
km/h) contacting the driver's side

Fuel Spillage Measurement:

1. From impact until vehicle motion ceases
2. For five-minute period after vehicle motion ceases
3. For next 25 minutes.

Actual	Maximum Allowed
0 g	28 g
0 g	142 g
0 g	28 g/1 minute

Solvent Spillage Details :

None

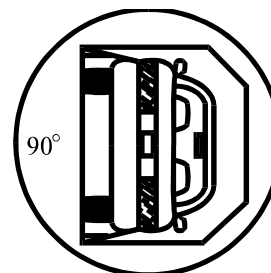
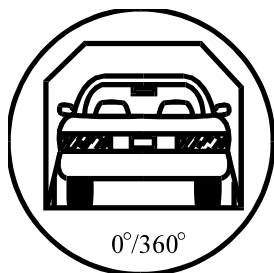
Data Sheet 17

FMVSS 301 Rollover Data

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

0 - 90 Degrees



1. Determination of Solvent Collection Time Period:

Rollover Fixture 90° Rotation Time 1 minutes 30 seconds
(Spec. Range = 1 to 3 minutes)
FMVSS 301 Position Hold Time + 5 minutes 0 seconds
Total 6 minutes 30 seconds
Next whole minute interval 7 minutes

2. FMVSS 301 Requirements:

(1) Time Period

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

3. Actual Test Vehicle Solvent Spillage:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

4. Solvent Spillage Location(s):

None

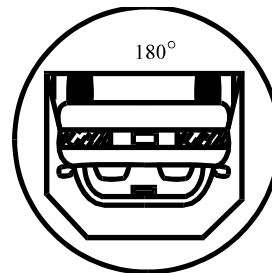
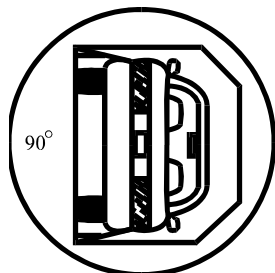
Data Sheet 17 (Continued)

FMVSS 301 Rollover Data

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

90 - 180 Degrees



1. Determination of Solvent Collection Time Period:

Rollover Fixture 90° Rotation Time 1 minutes 30 seconds
(Spec. Range = 1 to 3 minutes)
FMVSS 301 Position Hold Time + 5 minutes 0 seconds
Total 6 minutes 30 seconds
Next whole minute interval 7 minutes

2. FMVSS 301 Requirements:

(1) Time Period

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

3. Actual Test Vehicle Solvent Spillage:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

4. Solvent Spillage Location(s):

None

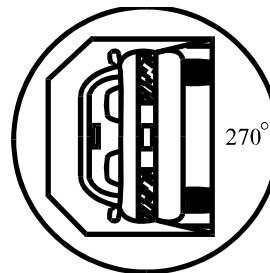
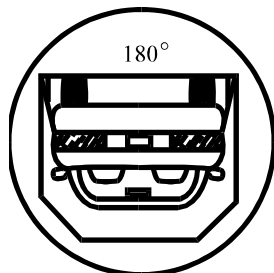
Data Sheet 17 (Continued)

FMVSS 301 Rollover Data

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

180 - 270 Degrees



1. Determination of Solvent Collection Time Period:

Rollover Fixture 90° Rotation Time 1 minutes 30 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

Total 6 minutes 30 seconds

Next whole minute interval 7 minutes

2. FMVSS 301 Requirements:

(1) Time Period

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

3. Actual Test Vehicle Solvent Spillage:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

4. Solvent Spillage Location(s):

None

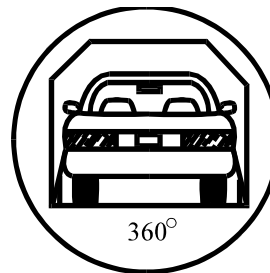
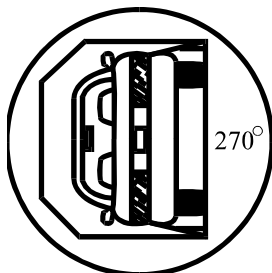
Data Sheet 17 (Continued)

FMVSS 301 Rollover Data

Vehicle: 2007 Hyundai Elantra 4-door sedan

NHTSA No.: C70501

270 - 360 Degrees



1. Determination Of Solvent Collection Time Period:

Rollover Fixture 90° Rotation Time 1 minutes 30 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time + 5 minutes 0 seconds

Total 6 minutes 30 seconds

Next whole minute interval 7 minutes

2. FMVSS 301 Requirements:

(1) Time Period

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

3. Actual Test Vehicle Solvent Spillage:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

4. Solvent Spillage Location(s):

None

Appendix A

Photographs

List of Photographs

<u>Figure</u>	<u>Description</u>	<u>Page</u>
Figure A-1	Pre-Test Front View of Test Vehicle	A-5
Figure A-2	Post-Test Front View of Test Vehicle	A-6
Figure A-3	Pre-Test Left Front View of Test Vehicle	A-7
Figure A-4	Post-Test Left Front View of Test Vehicle	A-8
Figure A-5	Pre-Test Impacted Side View of Test Vehicle	A-9
Figure A-6	Post-Test Impacted Side View of Test Vehicle	A-10
Figure A-7	Pre-Test Left Rear View of Test Vehicle	A-11
Figure A-8	Post-Test Left Rear View of Test Vehicle	A-12
Figure A-9	Pre-Test Rear View of Test Vehicle	A-13
Figure A-10	Post-Test Rear View of Test Vehicle	A-14
Figure A-11	Pre-Test Right Rear View of Test Vehicle	A-15
Figure A-12	Post-Test Right Rear View of Test Vehicle	A-16
Figure A-13	Pre-Test Right Side View of Test Vehicle	A-17
Figure A-14	Post-Test Right Side View of Test Vehicle	A-18
Figure A-15	Pre-Test Right Front View of Test Vehicle	A-19
Figure A-16	Post-Test Right Front View of Test Vehicle	A-20
Figure A-17	Post-Test Frontal View of Impactor Face	A-21
Figure A-18	Post-Test Left Side View of Impactor Face	A-22
Figure A-19	Post-Test Right Side View of Impactor Face	A-23
Figure A-20	Post-Test Top View of Impactor Face	A-24
Figure A-21	Pre-Test Left Side View of Impactor	A-25
Figure A-22	Post-Test Left Side View of Impactor	A-26
Figure A-23	Pre-Test Right Side View of Impactor	A-27
Figure A-24	Post-Test Right Side View of Impactor	A-28
Figure A-25	Pre-Test Top View of Impactor	A-29
Figure A-26	Post-Test Top View of Impactor	A-30
Figure A-27	Pre-Test Left Side Overall View of Impactor	A-31
Figure A-28	Post-Test Left Side Overall View of Impactor	A-32

List of Photographs, Cont'd.

<u>Figure</u>	<u>Description</u>	<u>Page</u>
Figure A-29	Pre-Test Rear Overall View of Impactor	A-33
Figure A-30	Post-Test Rear Overall View of Impactor	A-34
Figure A-31	Pre-Test Right Side Overall View of Impactor	A-35
Figure A-32	Post-Test Right Side Overall View of Impactor	A-36
Figure A-33	Pre-Test View of MDB Showing Contact Switches in Place	A-37
Figure A-34	Post-Test View of MDB Showing Contact Switches in Place	A-38
Figure A-35	Pre-Test Overhead View of MDB Aligned with Vehicle	A-39
Figure A-36	Post-Test Overhead View of MDB and Vehicle	A-40
Figure A-37	Pre-Test Right Occupant Compartment View of Front SID HIII	A-41
Figure A-38	Post-Test Right Occupant Compartment View of Front SID HIII	A-42
Figure A-39	Pre-Test Right Occupant Compartment View of Rear SID HIII	A-43
Figure A-40	Post-Test Right Occupant Compartment View of Rear SID HIII	A-44
Figure A-41	Pre-Test Left View of Front SID HIII	A-45
Figure A-42	Post-Test Left View of Front SID HIII	A-46
Figure A-43	Pre-Test Left View of Front SID HIII and Belt Position	A-47
Figure A-44	Pre-Test Left View of Front SID HIII and Door Clearance	A-48
Figure A-45	Post-Test Left View of Front SID HIII and Door Clearance	A-49
Figure A-46	Pre-Test Left View of Rear SID HIII	A-50
Figure A-47	Post-Test Left View of Rear SID HIII	A-51
Figure A-48	Pre-Test Left of Rear SID HIII and Belt Position	A-52
Figure A-49	Pre-Test Left View of Rear SID HIII and Door Clearance	A-53
Figure A-50	Post-Test Left View of Rear SID HIII and Door Clearance	A-54
Figure A-51	Pre-Test Interior of Front Door	A-55
Figure A-52	Post-Test Interior of Front Door Showing SID HIII Impact Locations	A-56
Figure A-53	Post-Test Front SID HIII Contact - View 1	A-57
Figure A-54	Post-Test Front SID HIII Contact - View 2	A-58
Figure A-55	Pre-Test Interior of Rear Panel	A-59

List of Photographs, Cont'd.

<u>Figure</u>	<u>Description</u>	<u>Page</u>
Figure A-56	Post-Test Interior of Rear Panel Showing SID HIII Impact Locations	A-60
Figure A-57	Post-Test Rear SID HIII Contact - View 1	A-61
Figure A-58	Post-Test Rear SID HIII Contact - View 2	A-62
Figure A-59	Post-Test Rear SID HIII Contact - View 3	A-63
Figure A-60	Post-Test Left Side View of MDB With Impactor Face in Position	A-64
Figure A-61	Pre-Test Primary Impact Point View	A-65
Figure A-62	Post-Test Primary Impact Point View	A-66
Figure A-63	Pre-Test Right Side View of MDB With Impactor Face in Position	A-67
Figure A-64	Post-Test Right Side View of MDB With Impactor Face in Position	A-68
Figure A-65	Pre-Test Secondary Impact Point View	A-69
Figure A-66	Post-Test Secondary Impact Point View	A-70
Figure A-67	Pre-Test Overhead view of MDB With Impactor Face in Position	A-71
Figure A-68	Post-Test Overhead view of MDB With Impactor Face in Position	A-72
Figure A-69	Pre-Test Vehicle Certification Label View	A-73
Figure A-70	Pre-Test Vehicle Recommended Tire Pressure Label View	A-74
Figure A-71	Post-Test Light Trap Digital Readout - View 1	A-75
Figure A-72	Post-Test Light Trap Digital Readout - View 2	A-76
Figure A-73	Impact Event	A-77
Figure A-74	Pre-Test Fuel Cap	A-78
Figure A-75	Post-Test Fuel Cap	A-79
Figure A-76	FMVSS 301 Rollover View at 90°	A-80
Figure A-77	FMVSS 301 Rollover View at 180°	A-81
Figure A-78	FMVSS 301 Rollover View at 270°	A-82
Figure A-79	FMVSS 301 Rollover View at 360°	A-83



Figure A-1 Pre-Test Front View of Test Vehicle



Figure A-2 Post-Test Front View of Test Vehicle



Figure A-3 Pre-Test Left Front View of Test Vehicle



Figure A-4 Post-Test Left Front View of Test Vehicle



Figure A-5 Pre-Test Impacted Side View of Test Vehicle



Figure A-6 Post-Test Impacted Side View of Test Vehicle



Figure A-7 Pre-Test Left Rear View of Test Vehicle



Figure A-8 Post-Test Left Rear View of Test Vehicle



Figure A-9 Pre-Test Rear View of Test Vehicle



Figure A-10 Post-Test Rear View of Test Vehicle



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



Figure A-12 Post-Test Right 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 Right Front View of Test Vehicle



Figure A-16 Post-Test Right Front View of Test Vehicle



Figure A-17 Post-Test Frontal View of Impactor Face



Figure A-18 Post-Test Left Side View of Impactor Face

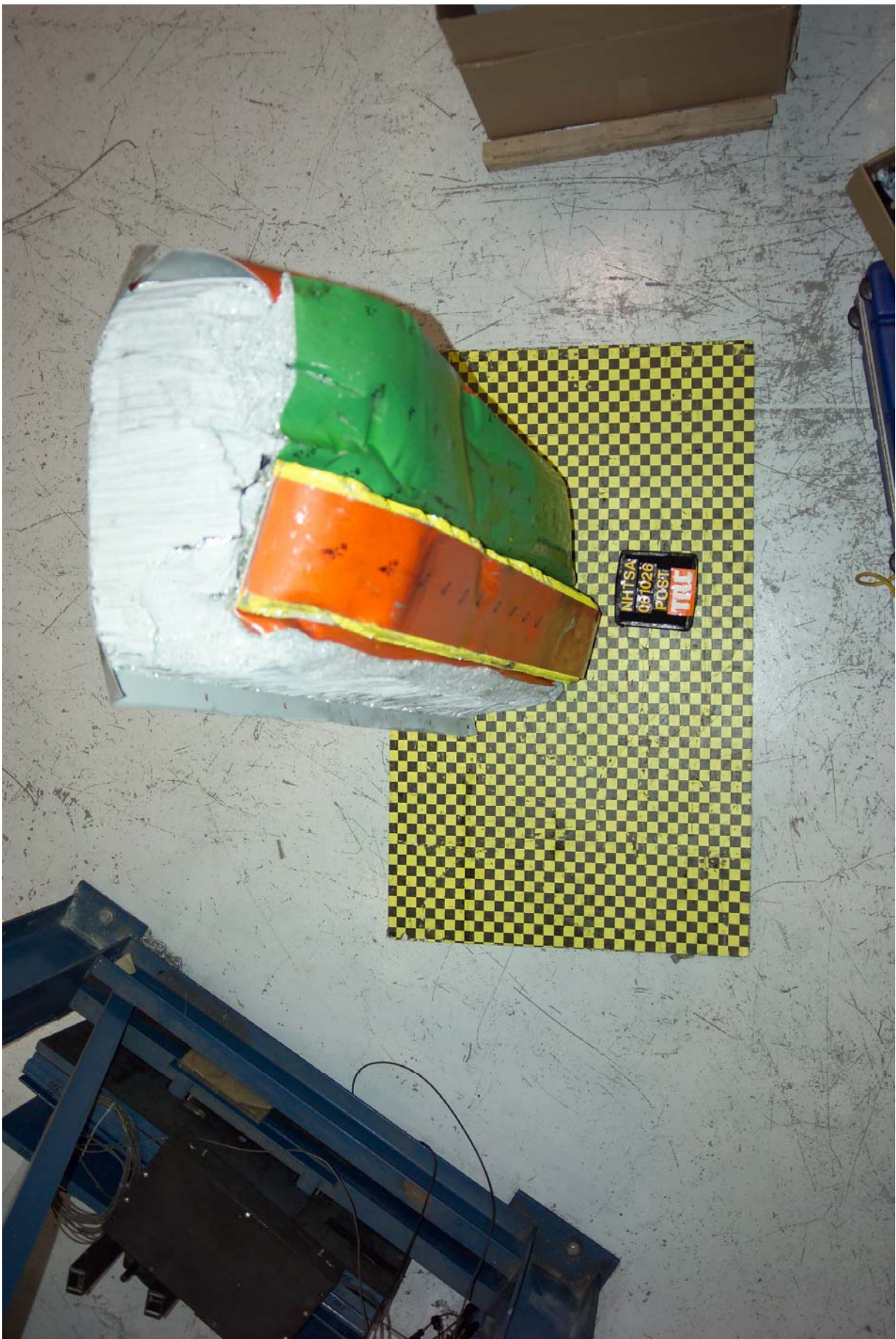


Figure A-19 Post-Test Right Side View of Impactor Face



Figure A-20 Post-Test Top View of Impactor Face



Figure A-21 Pre-Test Left Side View of Impactor

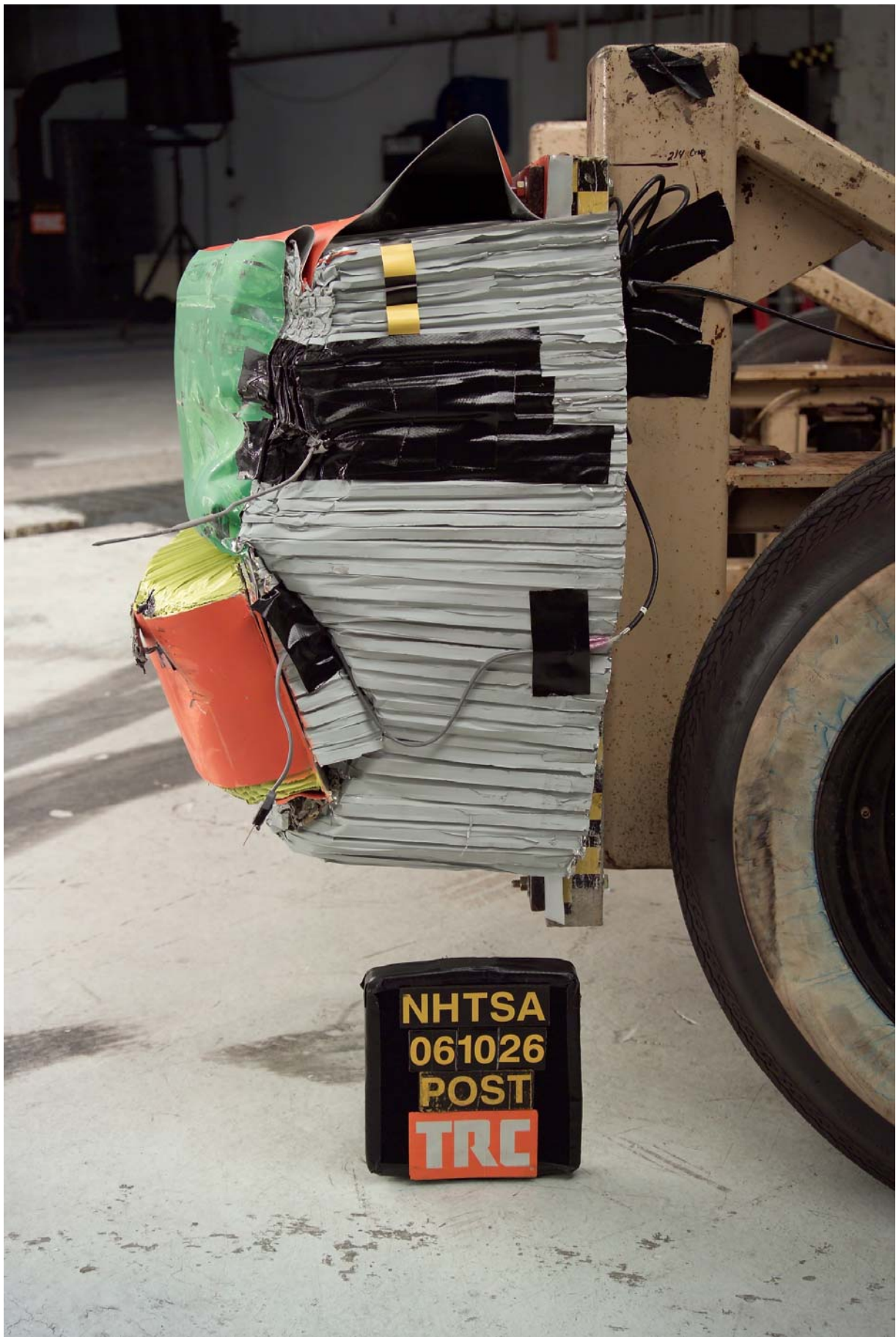


Figure A-22 Post-Test Left Side View of Impactor

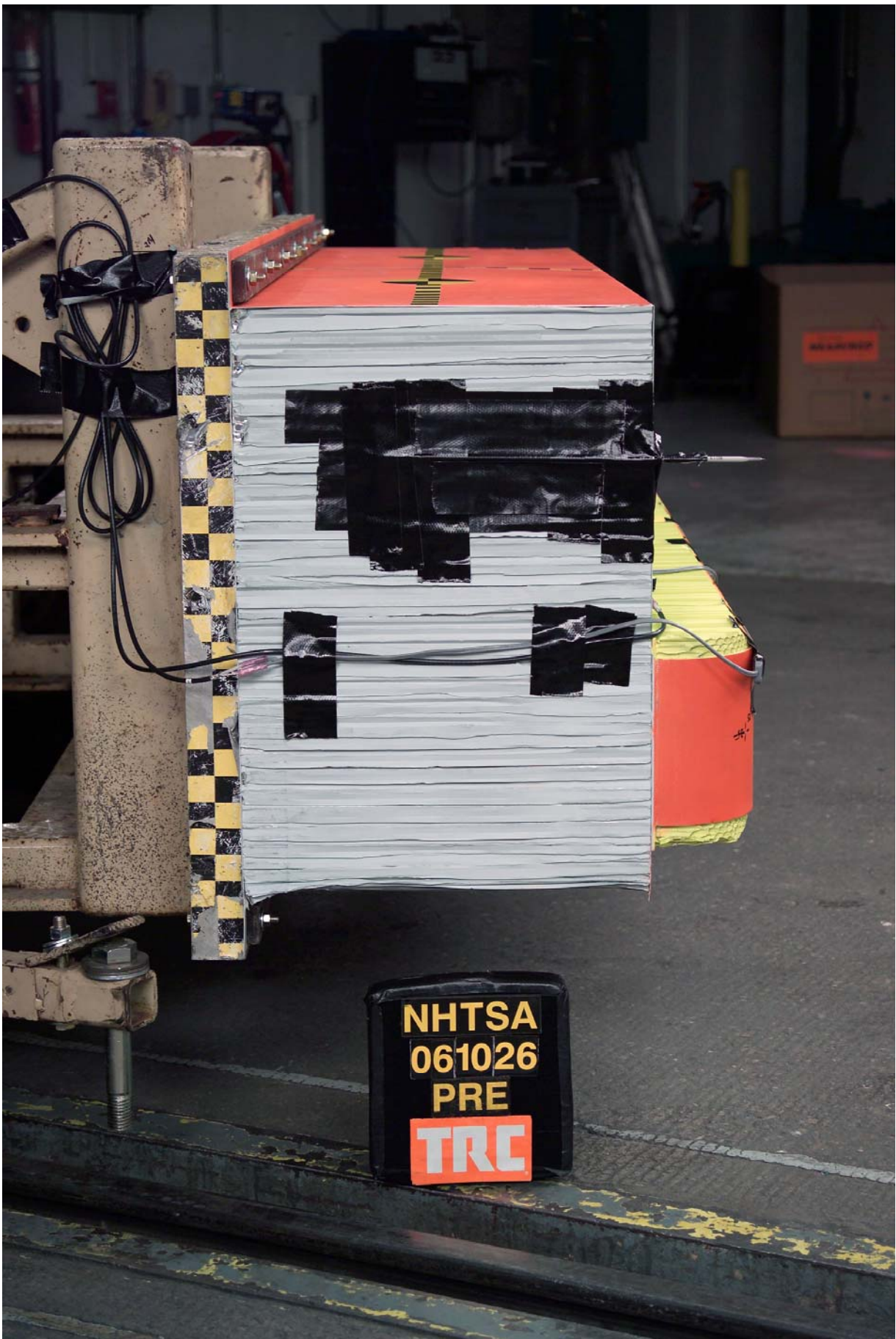


Figure A-23 Pre-Test Right Side View of Impactor



Figure A-24 Post-Test Right Side View of Impactor

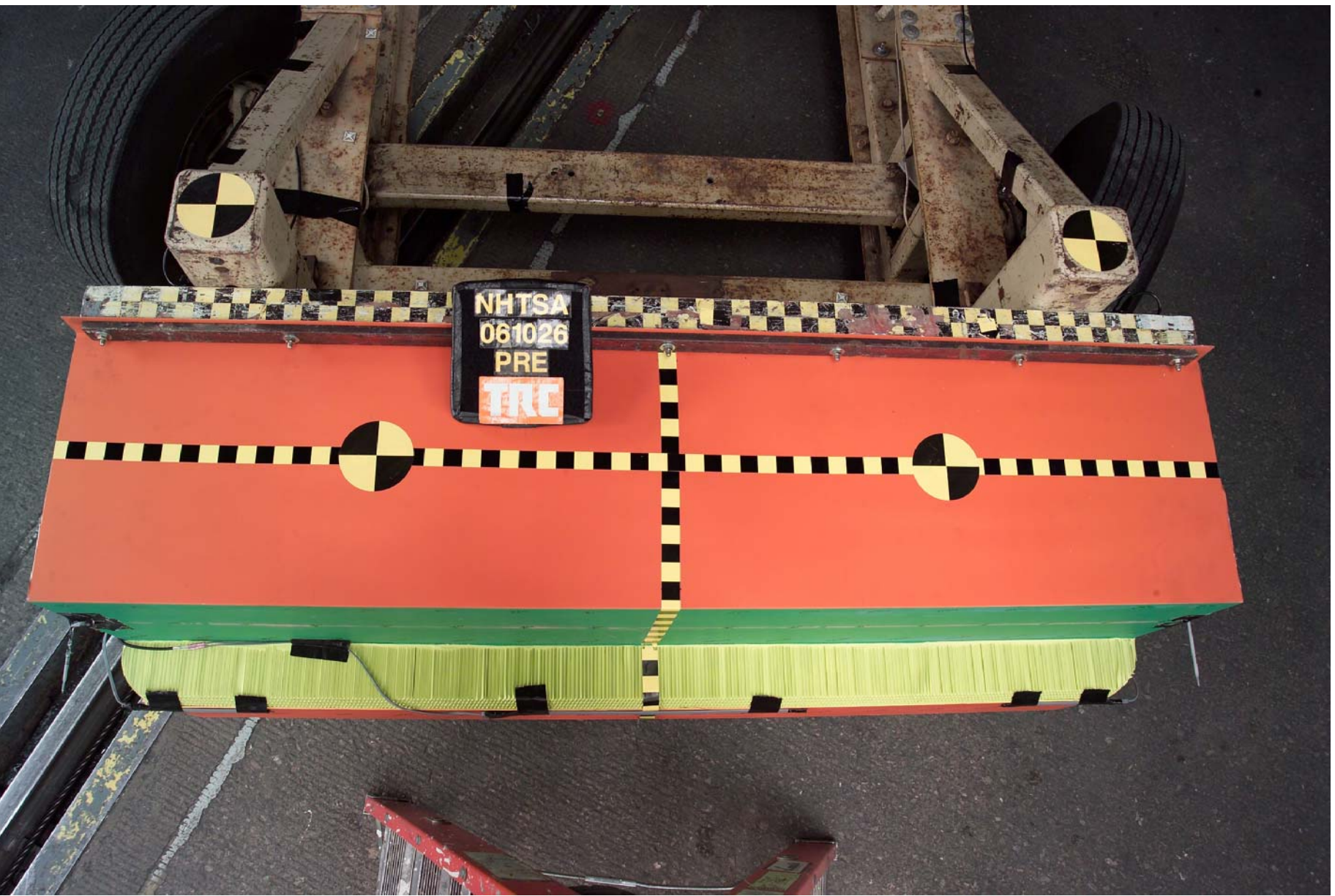


Figure A-25 Pre-Test Top View of Impactor



Figure A-26 Post-Test Top View of Impactor

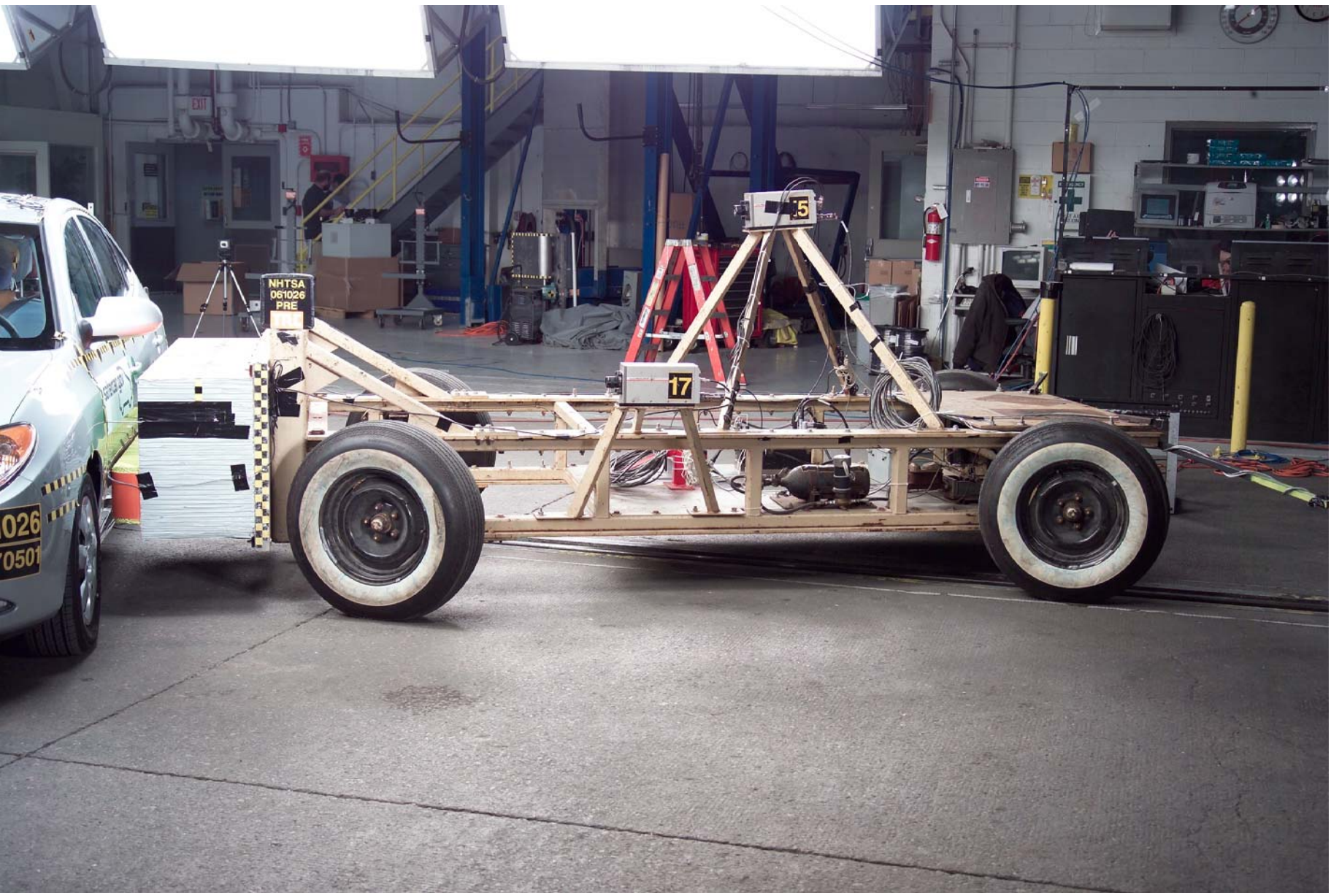


Figure A-27 Pre-Test Left Side Overall View of Impactor



Figure A-28 Post-Test Left Side Overall View of Impactor



Figure A-29 Pre-Test Rear Overall View of Impactor



Figure A-30 Post-Test Rear Overall View of Impactor



Figure A-31 Pre-Test Right Side Overall View of Impactor

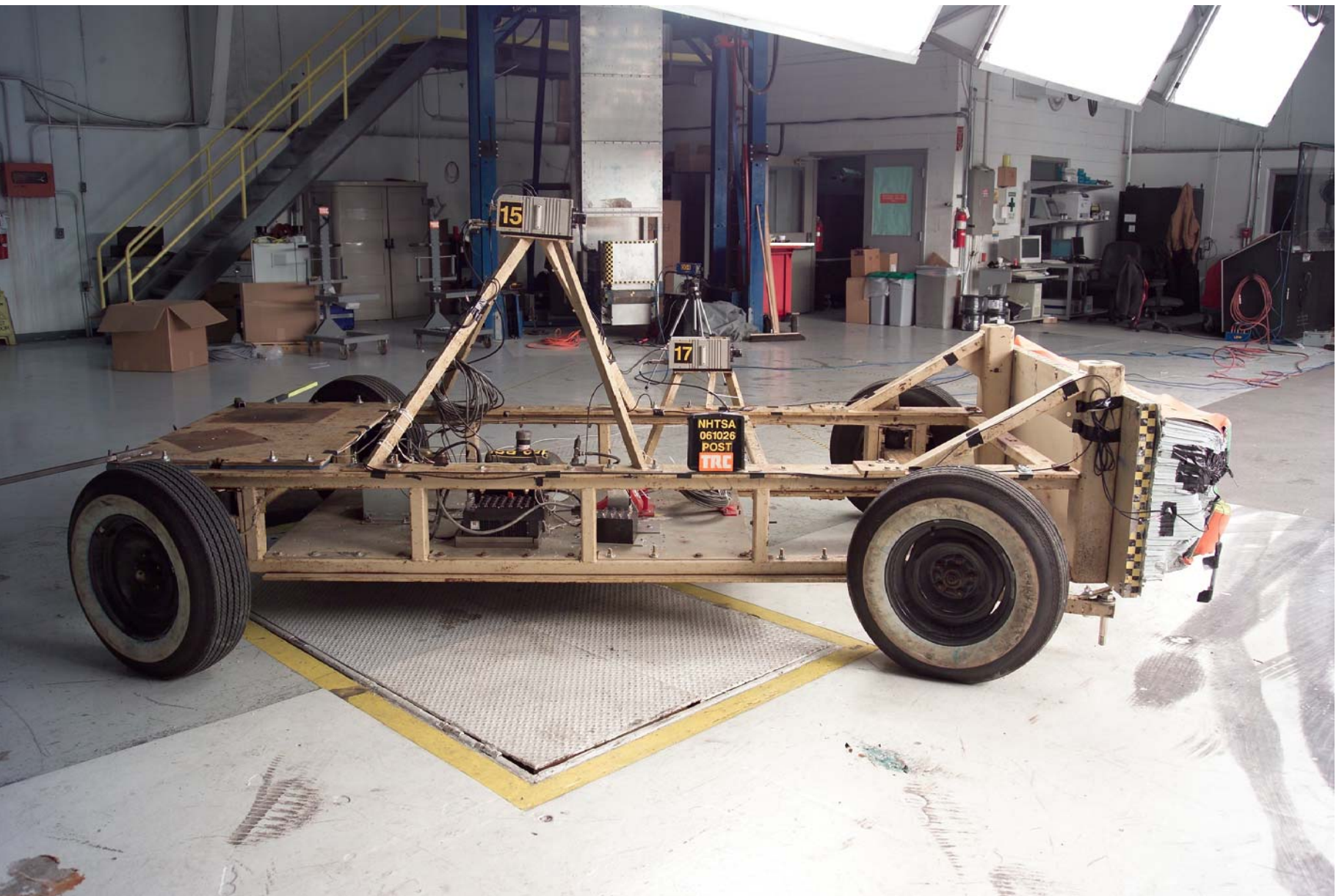


Figure A-32 Post-Test Right Side Overall View of Impactor



Figure A-33 Pre-Test View of MDB Showing Contact Switches in Place



Figure A-34 Post-Test View of MDB Showing Contact Switches in Place



Figure A-35 Pre-Test Overhead View of MDB Aligned with Vehicle

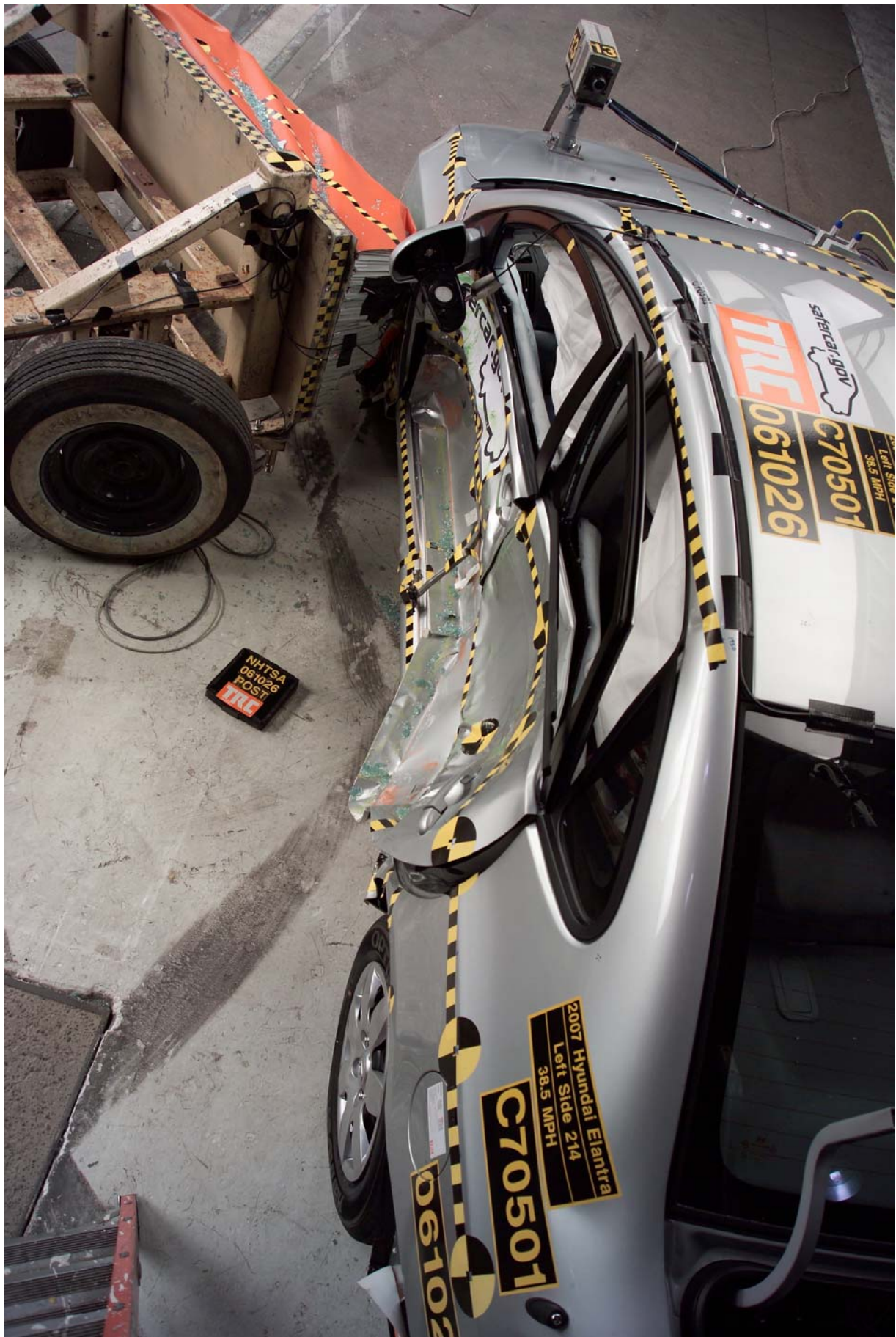


Figure A-36 Post-Test Overhead View of MDB and Vehicle



Figure A-37 Pre-Test Right Occupant Compartment View of Front SID HIII



Figure A-38 Post-Test Right Occupant Compartment View of Front SID HII



Figure A-39 Pre-Test Right Occupant Compartment View of Rear SID HIIII



Figure A-40 Post-Test Right Occupant Compartment View of Rear SID HIII

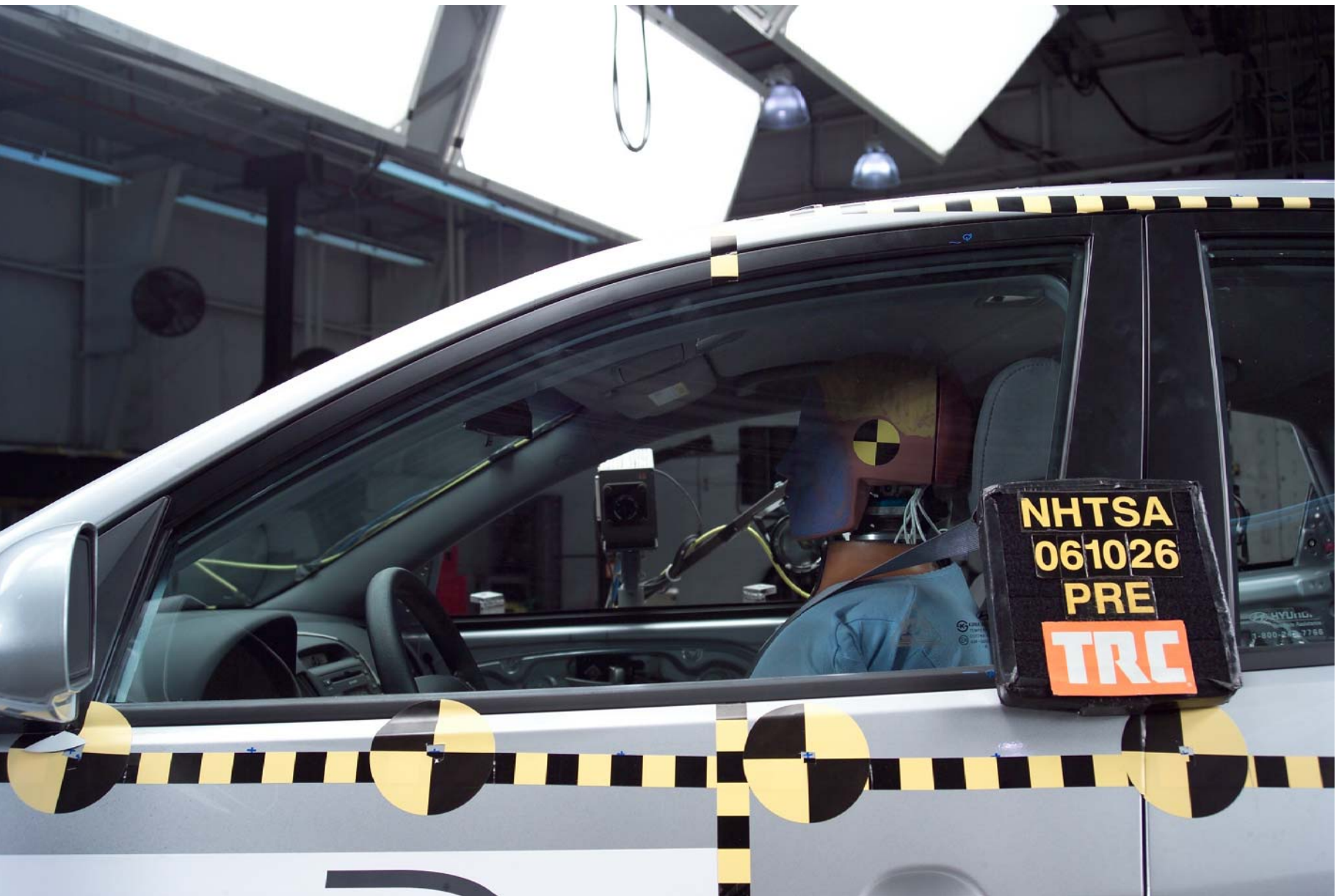


Figure A-41 Pre-Test Left View of Front SID HII



Figure A-42 Post-Test Left View of Front SID HIII



Figure A-43 Pre-Test Left View of Front SID HIII and Belt Position



Figure A-44 Pre-Test Left View of Front SID HIII and Door Clearance



Figure A-45 Post-Test Left View of Front SID HIII and Door Clearance



Figure A-46 Pre-Test Left View of Rear SID IIII



Figure A-47 Post-Test Left View of Rear SID HIII



Figure A-48 Pre-Test Left of Rear SID HII and Belt Position



Figure A-49 Pre-Test Left View of Rear SID HIII and Door Clearance



Figure A-50 Post-Test Left View of Rear SID HIII and Door Clearance



Figure A-51 Pre-Test Interior of Front Door



Figure A-52 Post-Test Interior of Front Door Showing SID HIII Impact Locations

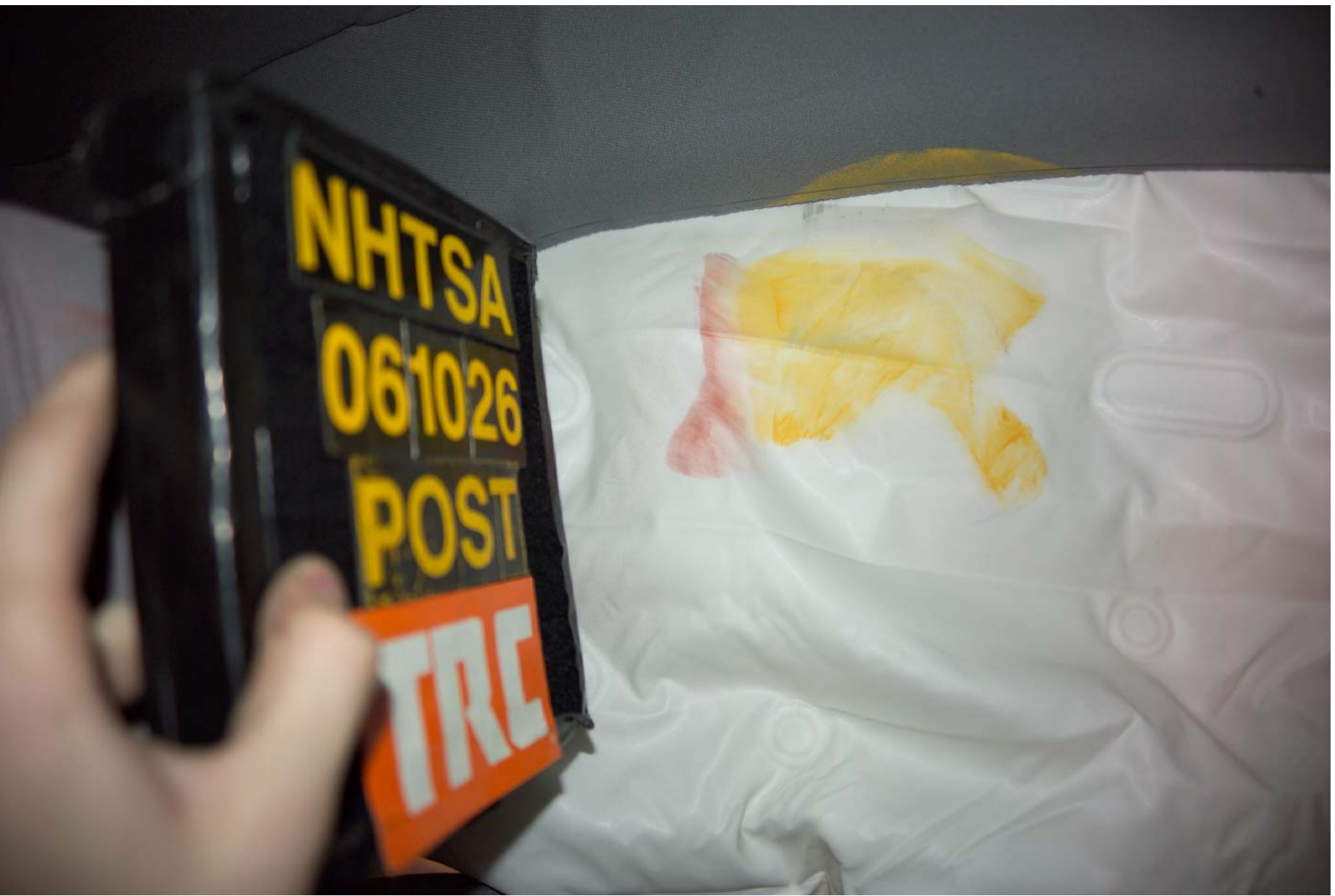


Figure A-53 Post-Test Front SID HIII Contact - View 1



Figure A-54 Post-Test Front SID HIII Contact - View 2



Figure A-55 Pre-Test Interior of Rear Panel



Figure A-56 Post-Test Interior of Rear Panel Showing SID HIII Impact Locations



Figure A-57 Post-Test Rear SID HIII Contact - View 1



Figure A-58 Post-Test Rear SID HII Contact - View 2



Figure A-59 Pre-Test Left Side View of MDB With Impactor Face in Position

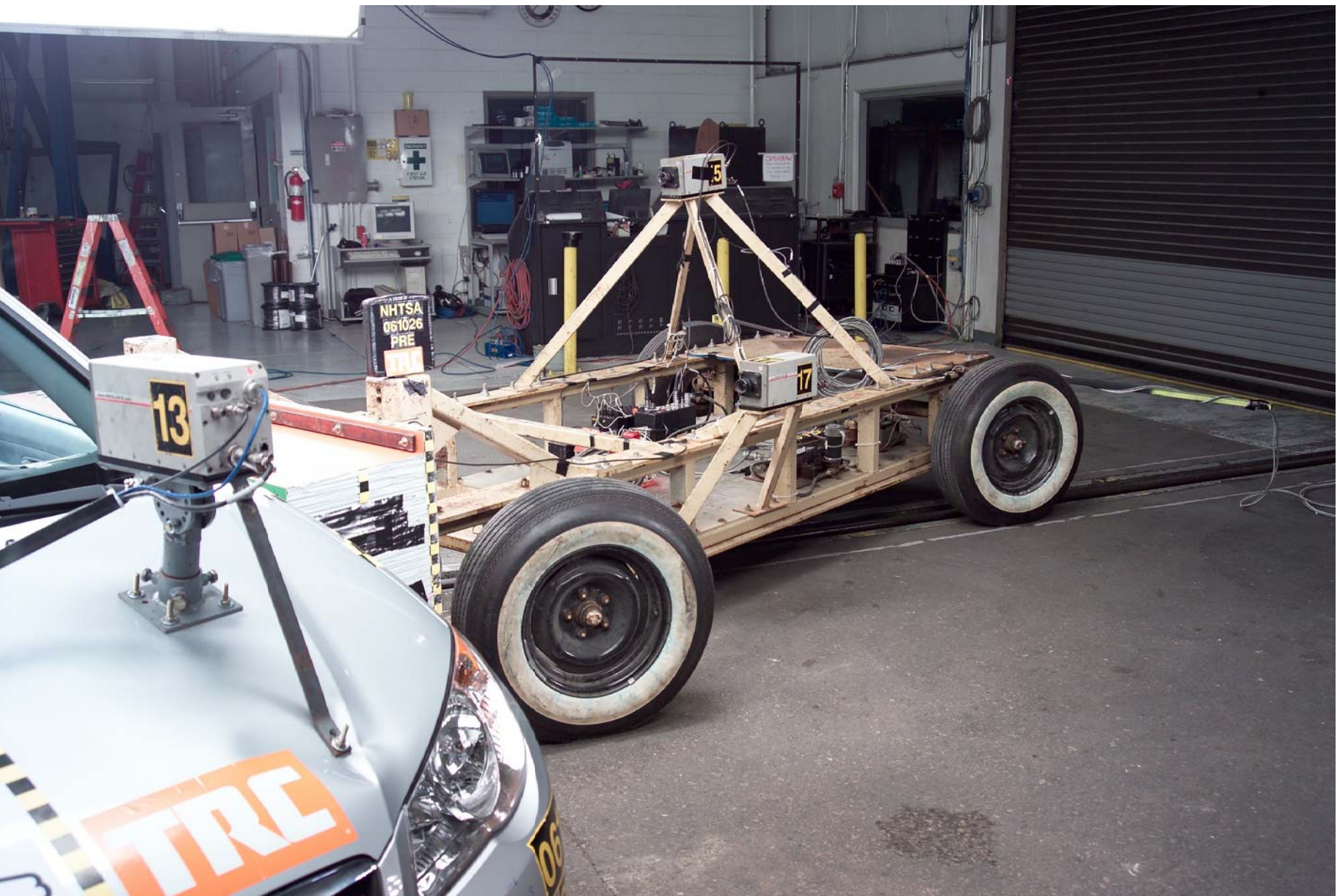


Figure A-60 Pre-Test Left Front View of MDB With Impactor Face in Position



Figure A-61 Pre-Test Primary Impact Point View



Figure A-62 Post-Test Primary Impact Point View



Figure A-63 Pre-Test Right Side View of MDB With Impactor Face in Position



Figure A-64 Pre-Test Right Front View of MDB With Impactor Face in Position



Figure A-65 Pre-Test Secondary Impact Point View



Figure A-66 Post-Test Secondary Impact Point View



Figure A-67 Pre-Test Overhead View of MDB With Impactor Face in Position

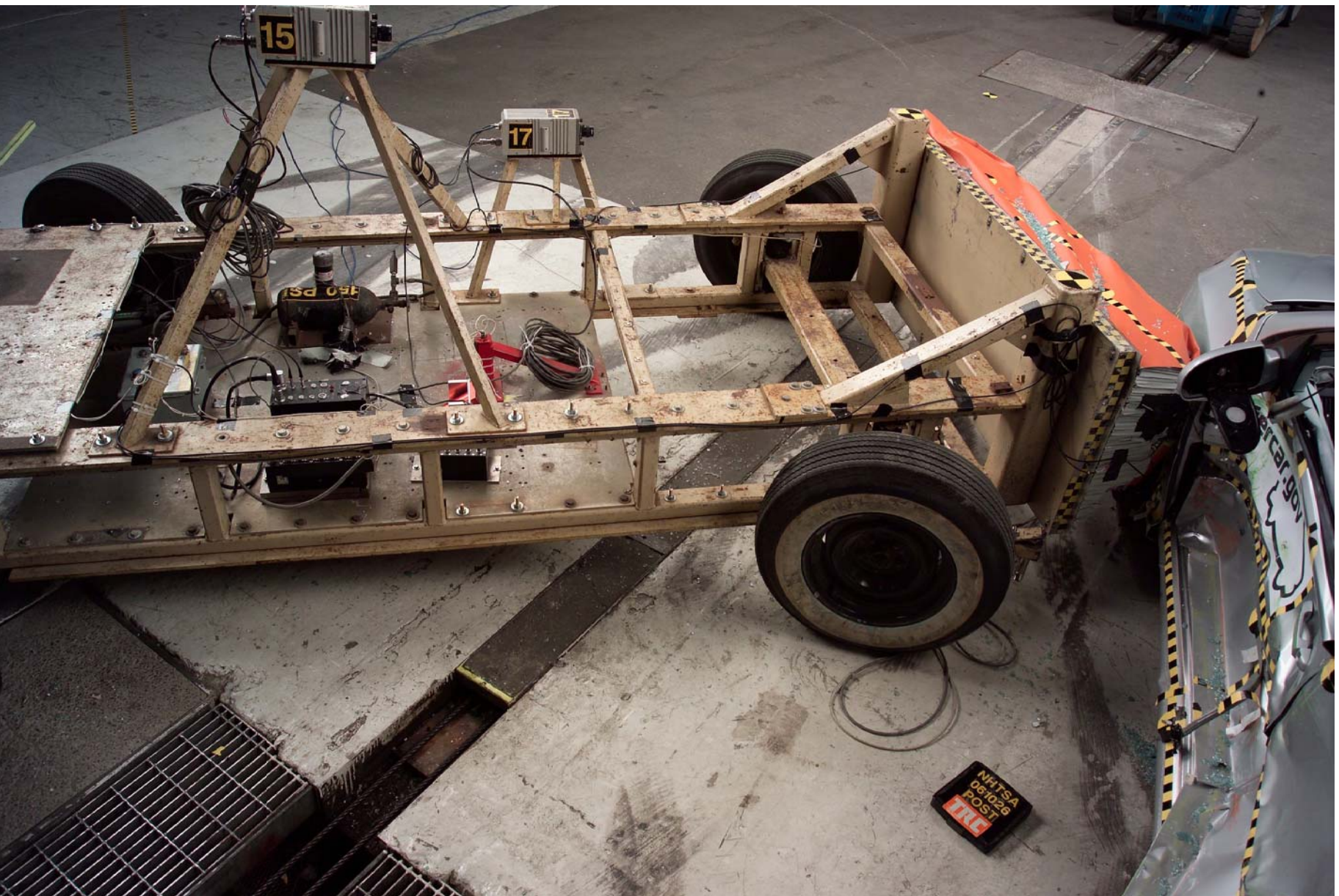


Figure A-68 Post-Test Overhead View of MDB With Impactor Face in Position



Figure A-69 Pre-Test Vehicle Certification Label View



Figure A-70 Pre-Test Vehicle Recommended Tire Pressure Label View

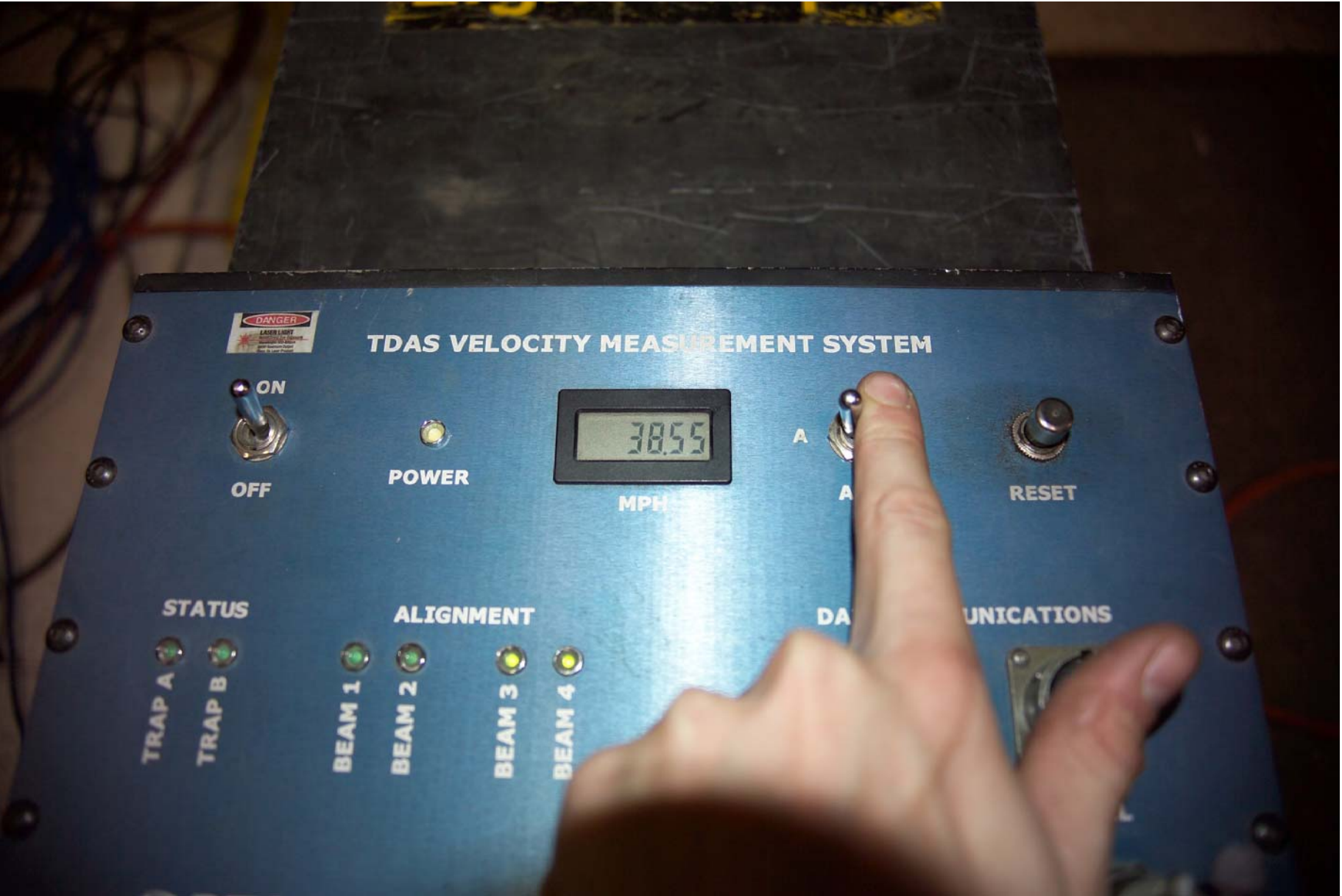


Figure A-71 Post-Test Light Trap Digital Readout - View 1



Figure A-72 Post-Test Light Trap Digital Readout - View 2



Figure A-73 Impact Event



Figure A-74 Pre-Test Fuel Cap



Figure A-75 Post-Test Fuel Cap



Figure A-76 FMVSS 301 Rollover View at 90°

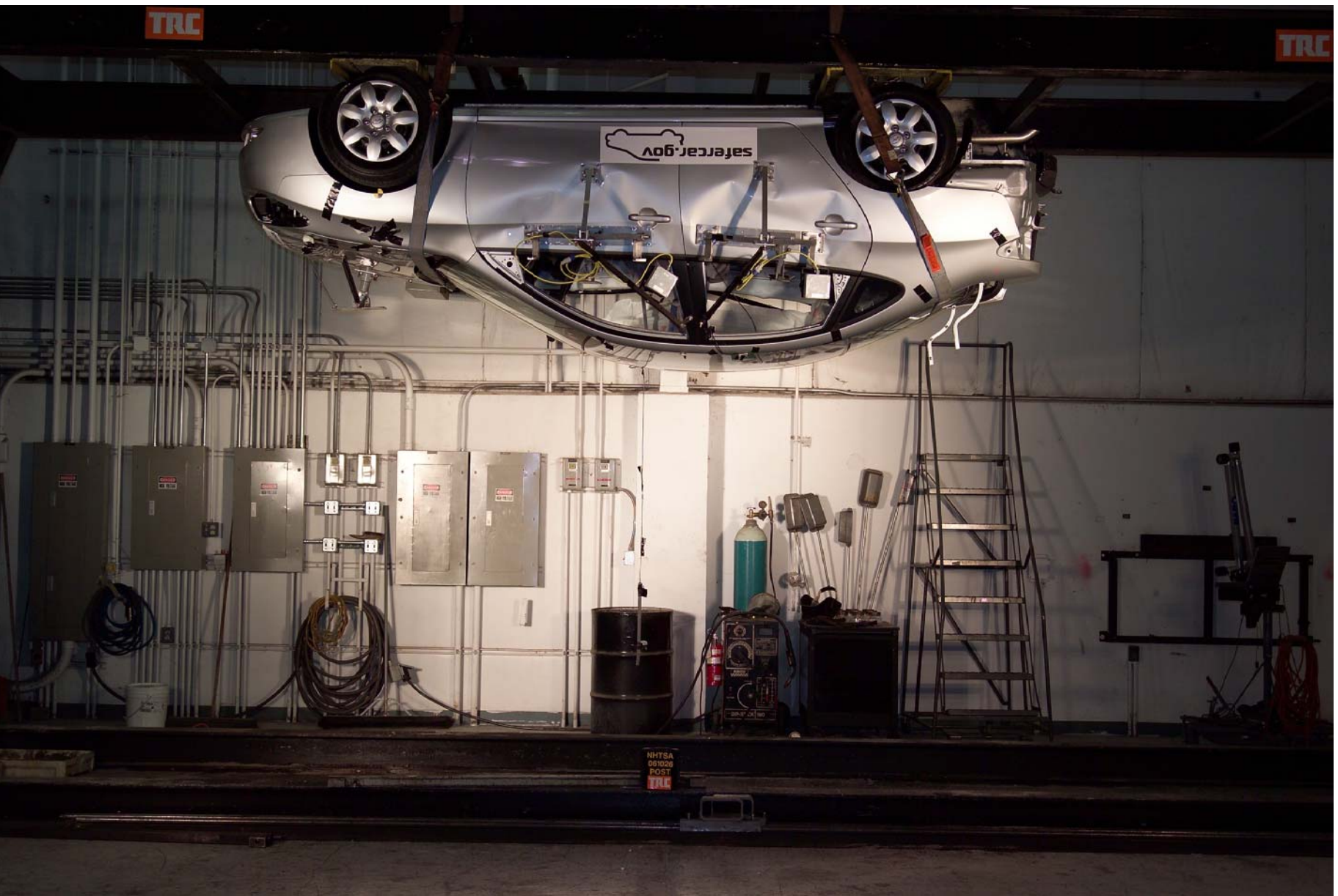


Figure A-77 FMVSS 301 Rollover View at 180°

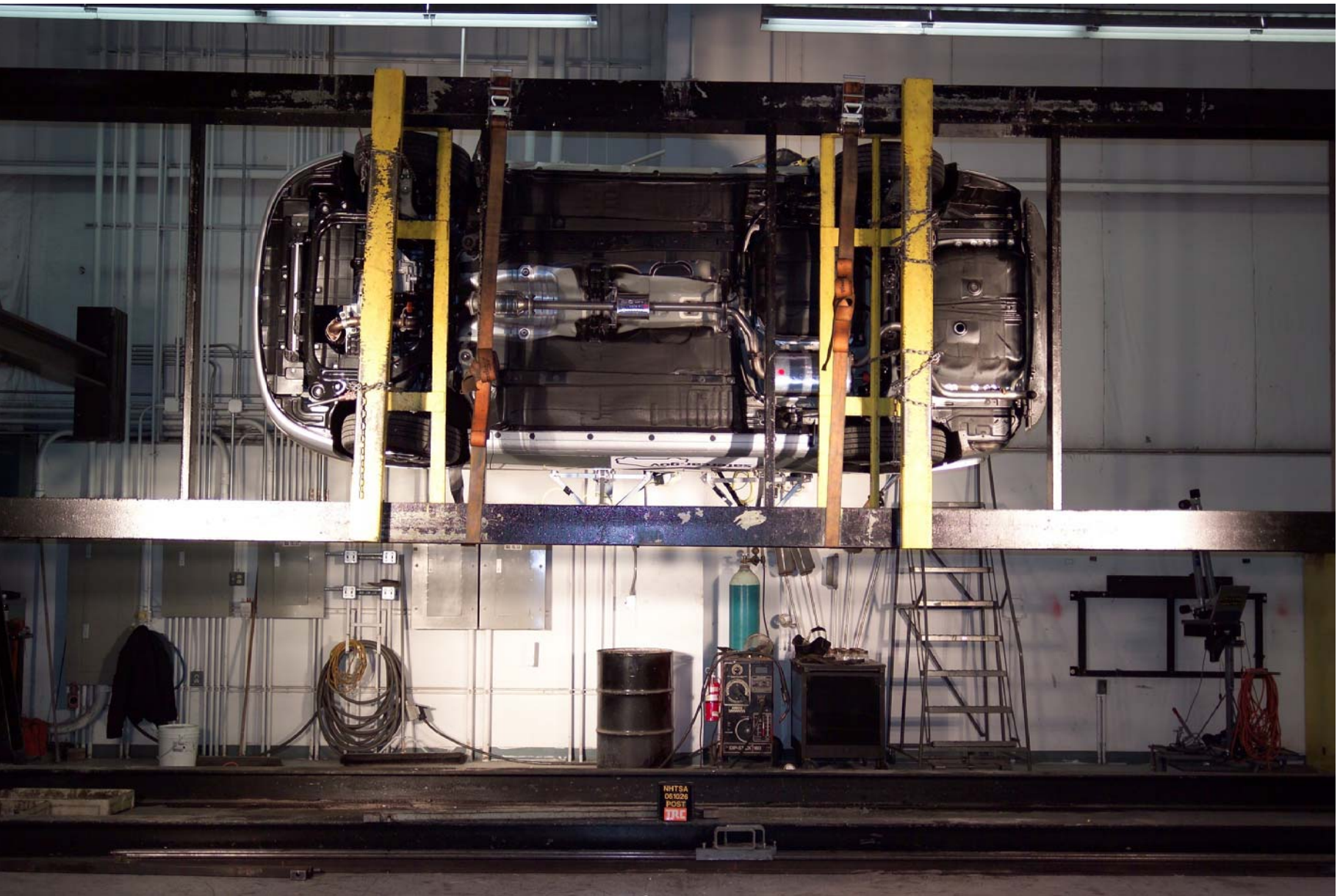


Figure A-78 FMVSS 301 Rollover View at 270°



Figure A-79 FMVSS 301 Rollover View at 360°

Appendix B

Data Plots

Table of Data Plots
Driver and Passenger Dummy Instrumentation Plots
Acceleration Data - Filter Class 1000
Integration Data - Filter Class 180
Force Data - Filter Class 1000
Moment Data - Filter Class 600
Contact Data - Filter Class 1000

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
1	Driver Head X-Axis Acceleration	B-10
2	Driver Head X-Axis Velocity	B-11
3	Driver Head Y-Axis Acceleration	B-12
4	Driver Head Y-Axis Velocity	B-13
5	Driver Head Z-Axis Acceleration	B-14
6	Driver Head Z-Axis Velocity	B-15
7	Driver Head Resultant Acceleration	B-16
8	Driver Neck X-Axis Shear Force	B-17
9	Driver Neck Y-Axis Shear Force	B-18
10	Driver Neck Z-Axis Axial Force	B-19
11	Driver Neck Moment about X Axis	B-20
12	Driver Neck Moment about Y Axis	B-21
13	Driver Neck Moment about Z Axis	B-22
14	Driver Neck Occipital Condyle Moment about X Axis	B-23
15	Driver Upper Rib Y-Axis Acceleration	B-24
16	Driver Upper Rib Y-Axis Velocity	B-25
17	Driver Lower Rib Y-Axis Acceleration	B-26
18	Driver Lower Rib Y-Axis Velocity	B-27
19	Driver Lower Spine Y-Axis Acceleration	B-28
20	Driver Lower Spine Y-Axis Velocity	B-29
21	Driver Pelvis Y-Axis Acceleration	B-30
22	Driver Pelvis Y-Axis Velocity	B-31
23	Left Rear Passenger Head X-Axis Acceleration	B-32
24	Left Rear Passenger Head X-Axis Velocity	B-33

Table of Data Plots (Continued)

Driver and Passenger Dummy Instrumentation Plots (Continued)

Acceleration Data - Filter Class 1000

Integration Data - Filter Class 180

Force Data - Filter Class 1000

Moment Data - Filter Class 600

Contact Data - Filter Class 1000

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
25	Left Rear Passenger Head Y-Axis Acceleration	B-34
26	Left Rear Passenger Head Y-Axis Velocity	B-35
27	Left Rear Passenger Head Z-Axis Acceleration	B-36
28	Left Rear Passenger Head Z-Axis Velocity	B-37
29	Left Rear Passenger Head Resultant Acceleration	B-38
30	Left Rear Passenger Neck X-Axis Shear Force	B-39
31	Left Rear Passenger Neck Y-Axis Shear Force	B-40
32	Left Rear Passenger Neck Z-Axis Axial Force	B-41
33	Left Rear Passenger Neck Moment about X Axis	B-42
34	Left Rear Passenger Neck Moment about Y Axis	B-43
35	Left Rear Passenger Neck Moment about Z Axis	B-44
36	Left Rear Passenger Neck Occipital Condyle Moment about X Axis	B-45
37	Left Rear Passenger Upper Rib Y-Axis Acceleration	B-46
38	Left Rear Passenger Upper Rib Y-Axis Velocity	B-47
39	Left Rear Passenger Lower Rib Y-Axis Acceleration	B-48
40	Left Rear Passenger Lower Rib Y-Axis Velocity	B-49
41	Left Rear Passenger Lower Spine Y-Axis Acceleration	B-50
42	Left Rear Passenger Lower Spine Y-Axis Velocity	B-51
43	Left Rear Passenger Pelvis Y-Axis Acceleration	B-52
44	Left Rear Passenger Pelvis Y-Axis Velocity	B-53

Table of Data Plots (Continued)

Driver and Passenger Dummy Redundant Instrumentation Plots

Acceleration Data - Filter Class 1000 - Redundant

Integration Data - Filter Class 180 - Redundant

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
45	Driver Head X-Axis Redundant Acceleration	B-55
46	Driver Head X-Axis Redundant Velocity	B-56
47	Driver Head Y-Axis Redundant Acceleration	B-57
48	Driver Head Y-Axis Redundant Velocity	B-58
49	Driver Head Z-Axis Redundant Acceleration	B-59
50	Driver Head Z-Axis Redundant Velocity	B-60
51	Driver Head Resultant Redundant Acceleration	B-61
52	Driver Upper Rib Y-Axis Redundant Acceleration	B-62
53	Driver Upper Rib Y-Axis Redundant Velocity	B-63
54	Driver Lower Rib Y-Axis Redundant Acceleration	B-64
55	Driver Lower Rib Y-Axis Redundant Velocity	B-65
56	Driver Lower Spine Y-Axis Redundant Acceleration	B-66
57	Driver Lower Spine Y-Axis Redundant Velocity	B-67
58	Left Rear Passenger Head X-Axis Redundant Acceleration	B-68
59	Left Rear Passenger Head X-Axis Redundant Velocity	B-69
60	Left Rear Passenger Head Y-Axis Redundant Acceleration	B-70
61	Left Rear Passenger Head Y-Axis Redundant Velocity	B-71
62	Left Rear Passenger Head Z-Axis Redundant Acceleration	B-72
63	Left Rear Passenger Head Z-Axis Redundant Velocity	B-73
64	Left Rear Passenger Head Resultant Redundant Acceleration	B-74
65	Left Rear Passenger Upper Rib Y-Axis Redundant Acceleration	B-75
66	Left Rear Passenger Upper Rib Y-Axis Redundant Velocity	B-76
67	Left Rear Passenger Lower Rib Y-Axis Redundant Acceleration	B-77
68	Left Rear Passenger Lower Rib Y-Axis Redundant Velocity	B-78
69	Left Rear Passenger Lower Spine Y-Axis Redundant Acceleration	B-79
70	Left Rear Passenger Lower Spine Y-Axis Redundant Velocity	B-80

Table of Data Plots (Continued)
Test Vehicle Instrumentation Plots
Acceleration Data - Filter Class 60
Integration Data - Filter Class 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
71	Right Side Sill at Front Seat X-Axis Acceleration	B-82
72	Right Side Sill at Front Seat X-Axis Velocity	B-83
73	Right Side Sill at Front Seat Y-Axis Acceleration	B-84
74	Right Side Sill at Front Seat Y-Axis Velocity	B-85
75	Right Side Sill at Front Seat Z-Axis Acceleration	B-86
76	Right Side Sill at Front Seat Z-Axis Velocity	B-87
77	Right Side Sill at Front Seat Resultant Acceleration	B-88
78	Right Side Sill at Rear Seat X-Axis Acceleration	B-89
79	Right Side Sill at Rear Seat X-Axis Velocity	B-90
80	Right Side Sill at Rear Seat Y-Axis Acceleration	B-91
81	Right Side Sill at Rear Seat Y-Axis Velocity	B-92
82	Right Side Sill at Rear Seat Z-Axis Acceleration	B-93
83	Right Side Sill at Rear Seat Z-Axis Velocity	B-94
84	Right Side Sill at Rear Seat Resultant Acceleration	B-95
85	Rear Floorpan Above Axle X-Axis Acceleration	B-96
86	Rear Floorpan Above Axle X-Axis Velocity	B-97
87	Rear Floorpan Above Axle Y-Axis Acceleration	B-98
88	Rear Floorpan Above Axle Y-Axis Velocity	B-99
89	Rear Floorpan Above Axle Z-Axis Acceleration	B-100
90	Rear Floorpan Above Axle Z-Axis Velocity	B-101
91	Rear Floorpan Above Axle Resultant Acceleration	B-102
92	Left Side Sill at Front Seat Y-Axis Acceleration	B-103
93	Left Side Sill at Front Seat Y-Axis Velocity	B-104
94	Left Side Sill at Front Seat Y-Axis Displacement	B-105

Table of Data Plots (Continued)
Test Vehicle Instrumentation Plots (Continued)
Acceleration Data - Filter Class 60
Integration Data - Filter Class 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
95	Left Side Sill at Rear Seat Y-Axis Acceleration	B-106
96	Left Side Sill at Rear Seat Y-Axis Velocity	B-107
97	Left Side Sill at Rear Seat Y-Axis Displacement	B-108
98	Right Rear Occupant Compartment Y-Axis Acceleration	B-109
99	Right Rear Occupant Compartment Y-Axis Velocity	B-110
100	Right Rear Occupant Compartment Y-Axis Displacement	B-111
101	Left Lower A-Post Y-Axis Acceleration	B-112
102	Left Lower A-Post Y-Axis Velocity	B-113
103	Left Middle A-Post Y-Axis Acceleration	B-114
104	Left Middle A-Post Y-Axis Velocity	B-115
105	Left Lower B-Post Y-Axis Acceleration	B-116
106	Left Lower B-Post Y-Axis Velocity	B-117
107	Left Middle B-Post Y-Axis Acceleration	B-118
108	Left Middle B-Post Y-Axis Velocity	B-119
109	Left Front Seat Track Y-Axis Acceleration	B-120
110	Left Front Seat Track Y-Axis Velocity	B-121
111	Left Rear Seat Track Y-Axis Acceleration	B-122
112	Left Rear Seat Track Y-Axis Velocity	B-123
113	Vehicle Center of Gravity X-Axis Acceleration	B-124
114	Vehicle Center of Gravity X-Axis Velocity	B-125
115	Vehicle Center of Gravity Y-Axis Acceleration	B-126
116	Vehicle Center of Gravity Y-Axis Velocity	B-127
117	Vehicle Center of Gravity Z-Axis Acceleration	B-128
118	Vehicle Center of Gravity Z-Axis Velocity	B-129
119	Vehicle Center of Gravity Resultant Acceleration	B-130

Table of Data Plots (Continued)
 MDB Instrumentation Plots
 Acceleration Data - Filter Class 60
 Integration Data - Filter Class 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
120	MDB Center of Gravity X-Axis Acceleration	B-132
121	MDB Center of Gravity X-Axis Velocity	B-133
122	MDB Center of Gravity Y-Axis Acceleration	B-134
123	MDB Center of Gravity Y-Axis Velocity	B-135
124	MDB Center of Gravity Z-Axis Acceleration	B-136
125	MDB Center of Gravity Z-Axis Velocity	B-137
126	MDB Center of Gravity Resultant Acceleration	B-138
127	MDB Left Rear X-Axis Acceleration	B-139
128	MDB Left Rear X-Axis Velocity	B-140
129	MDB Left Rear Y-Axis Acceleration	B-141
130	MDB Left Rear Y-Axis Velocity	B-142
131	MDB Right Side Contact Switch	B-143
132	MDB Left Side Contact Switch	B-144

Table of Data Plots (Continued)
Driver and Passenger Dummy Instrumentation Plots
Acceleration Data - FIR Filtered

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
133	Driver Upper Rib Y-Axis Acceleration	B-146
134	Driver Lower Rib Y-Axis Acceleration	B-147
135	Driver Lower Spine Y-Axis Acceleration	B-148
136	Driver Pelvis Y-Axis Acceleration	B-149
137	Left Rear Passenger Upper Rib Y-Axis Acceleration	B-150
138	Left Rear Passenger Lower Rib Y-Axis Acceleration	B-151
139	Left Rear Passenger Lower Spine Y-Axis Acceleration	B-152
140	Left Rear Passenger Pelvis Y-Axis Acceleration	B-153
141	Driver Upper Rib Y-Axis Redundant Acceleration	B-154
142	Driver Lower Rib Y-Axis Redundant Acceleration	B-155
143	Driver Lower Spine Y-Axis Redundant Acceleration	B-156
144	Left Rear Passenger Upper Rib Y-Axis Redundant Acceleration	B-157
145	Left Rear Passenger Lower Rib Y-Axis Redundant Acceleration	B-158
146	Left Rear Passenger Lower Spine Y-Axis Redundant Acceleration	B-159

Driver and Passenger Dummy Instrumentation Plots



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

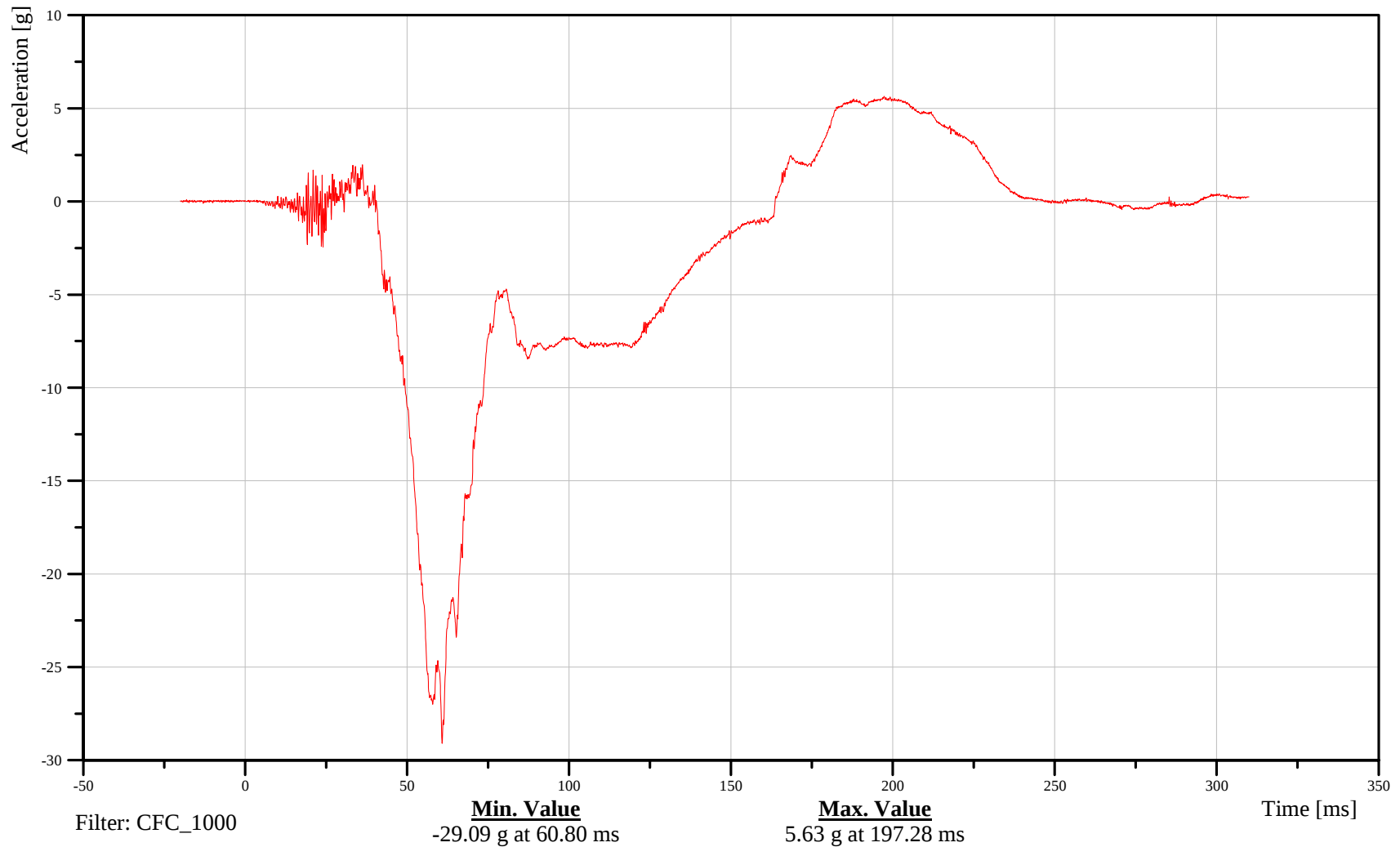
Date: 10/26/2006
Time: 13:29

DRIVER HEAD X-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

11HEADCG00SHACXA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-10

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

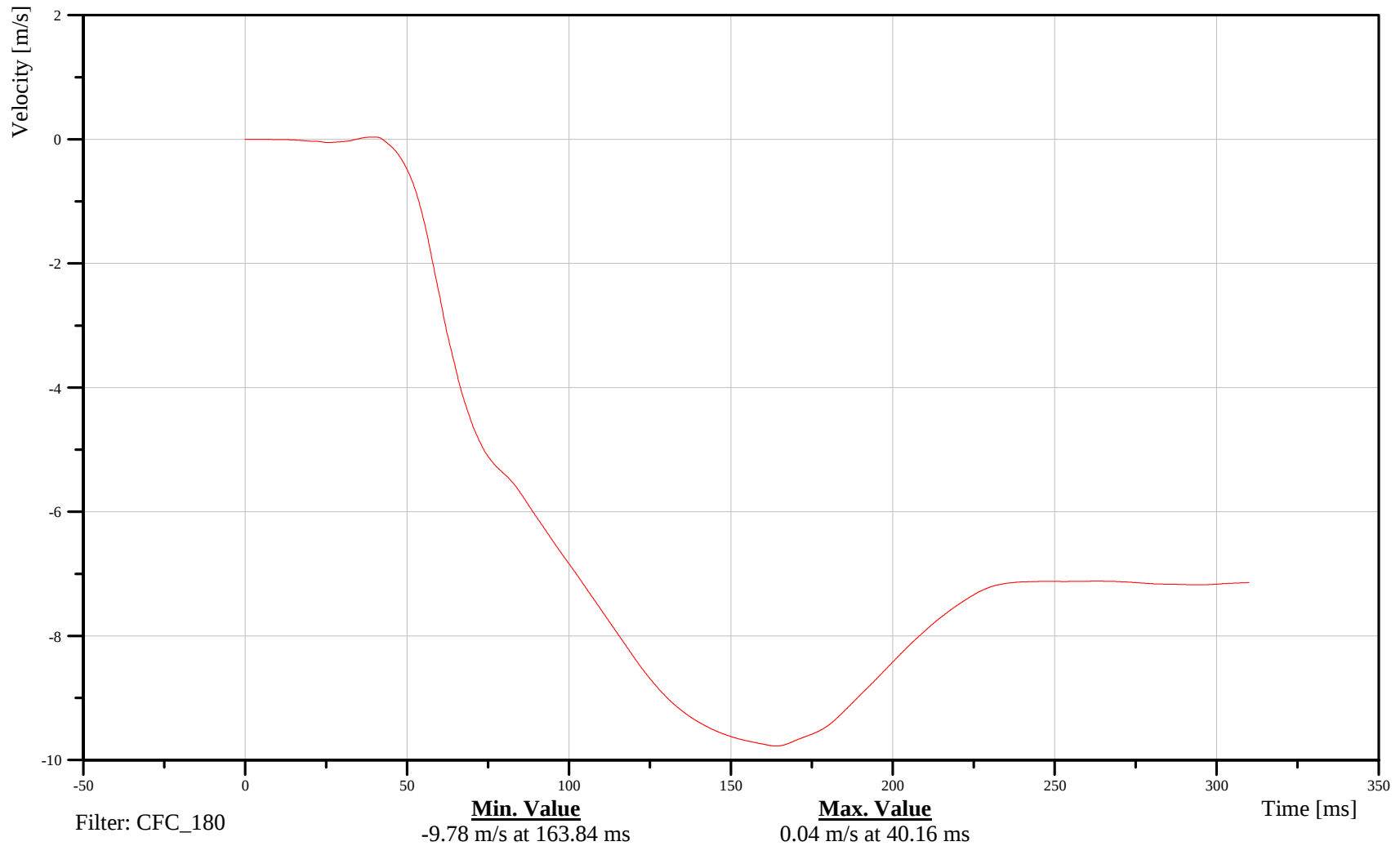
Date: 10/26/2006
Time: 13:29

DRIVER HEAD X-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

11HEADCG00SHVEXC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-11

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

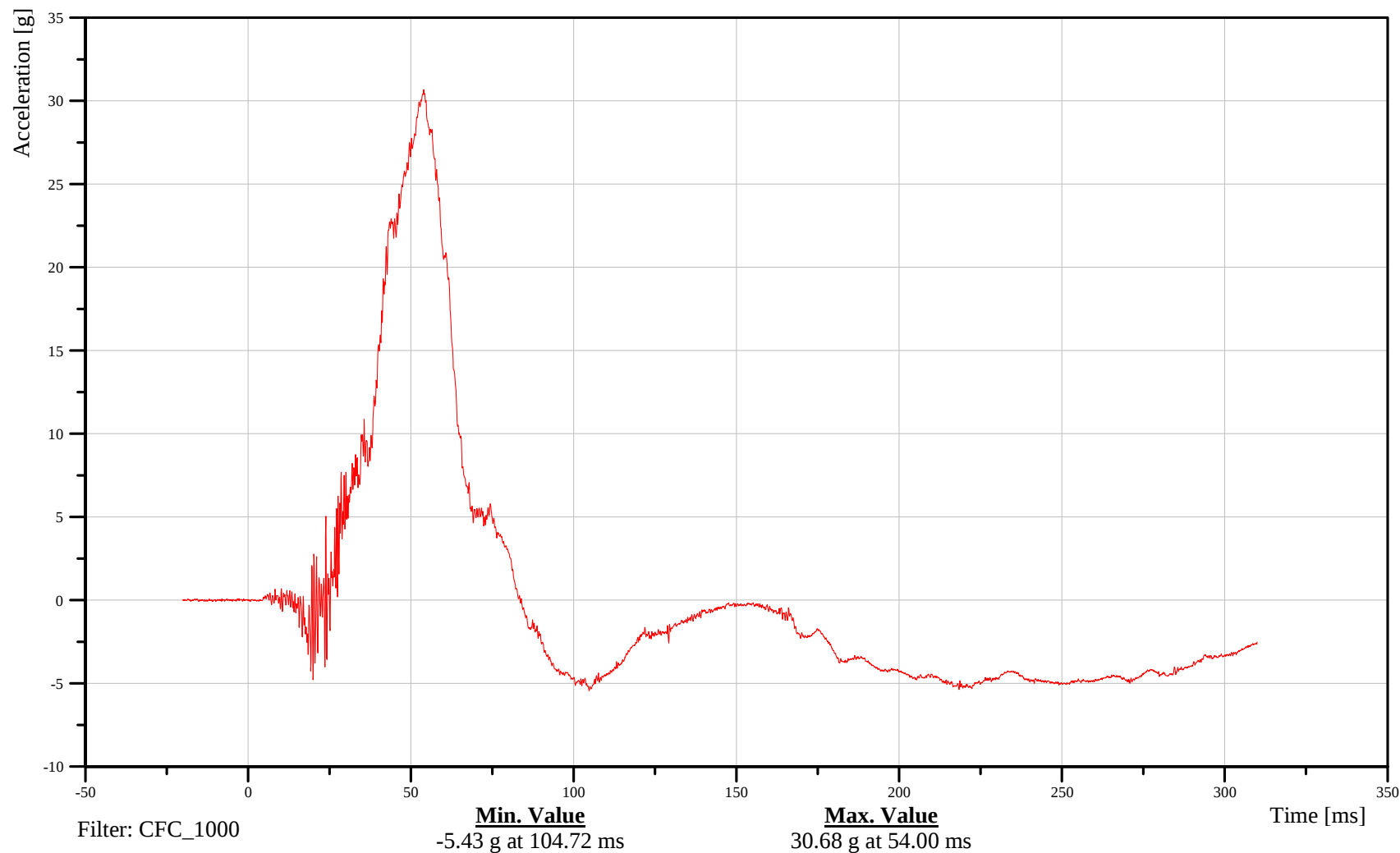
Date: 10/26/2006
Time: 13:29

DRIVER HEAD Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

11HEADCG00SHACYA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-12

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

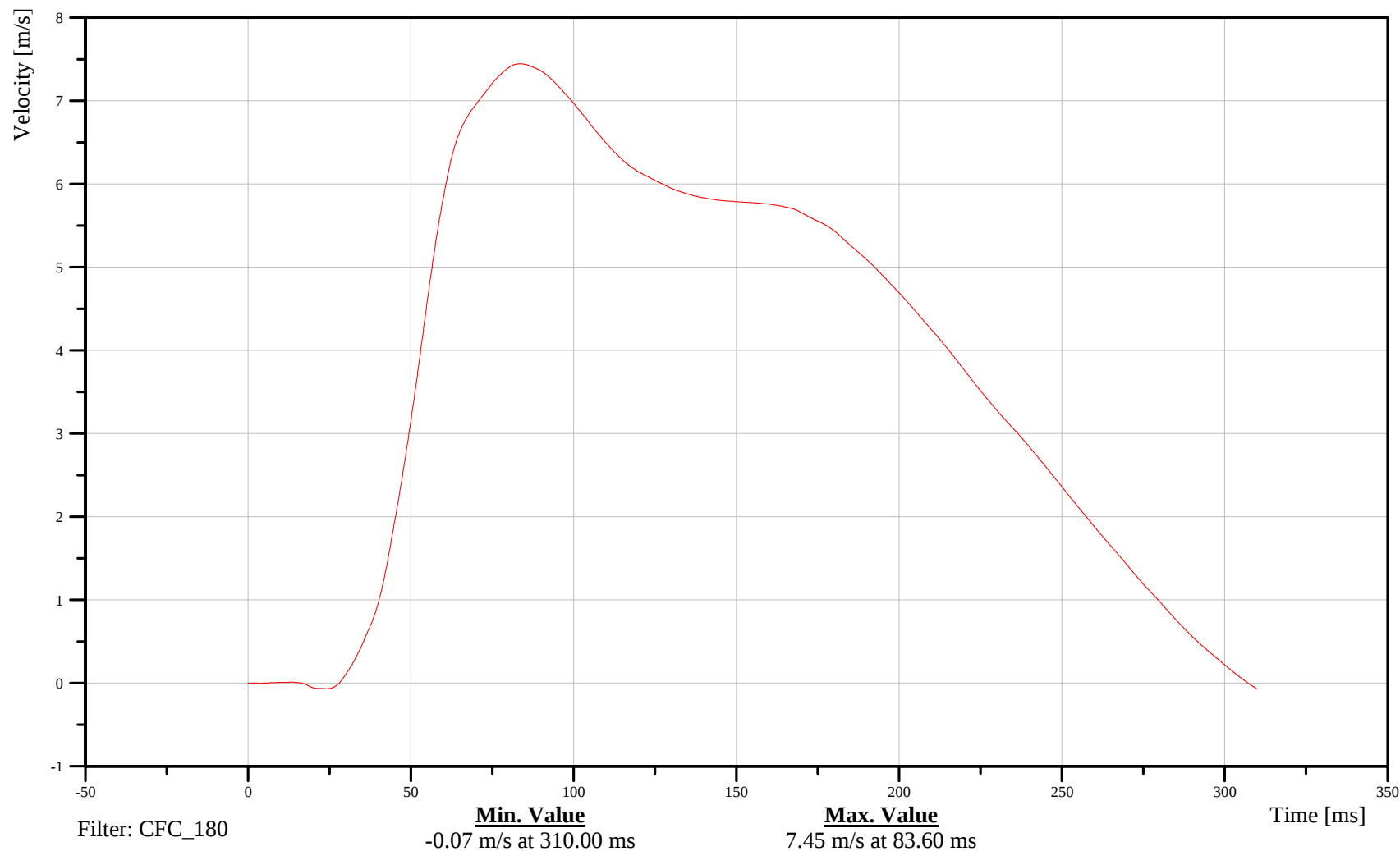
Date: 10/26/2006
Time: 13:29

DRIVER HEAD Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

11HEADCG00SHVEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-13

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

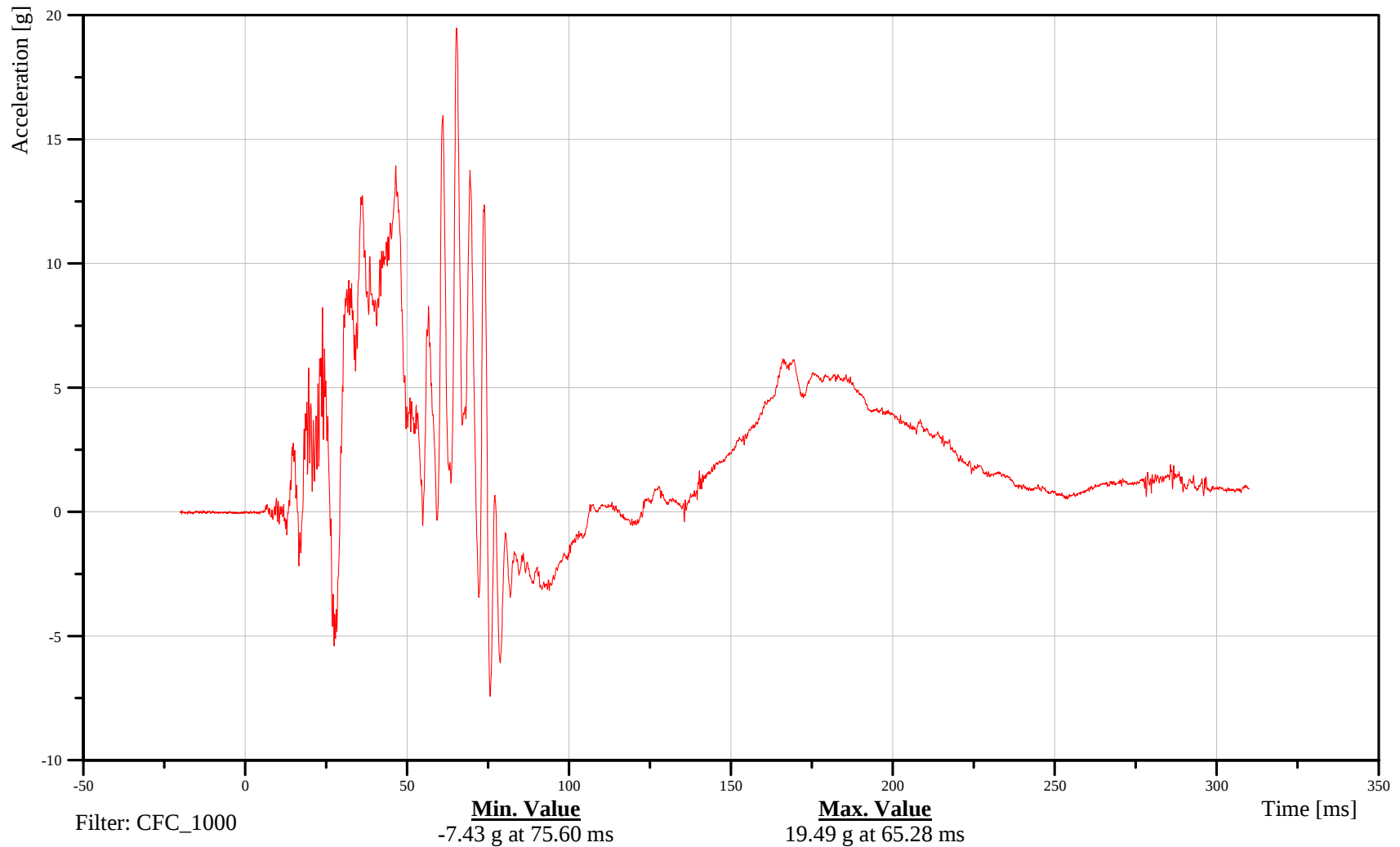
Date: 10/26/2006
Time: 13:29

DRIVER HEAD Z-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

11HEADCG00SHACZA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-14

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

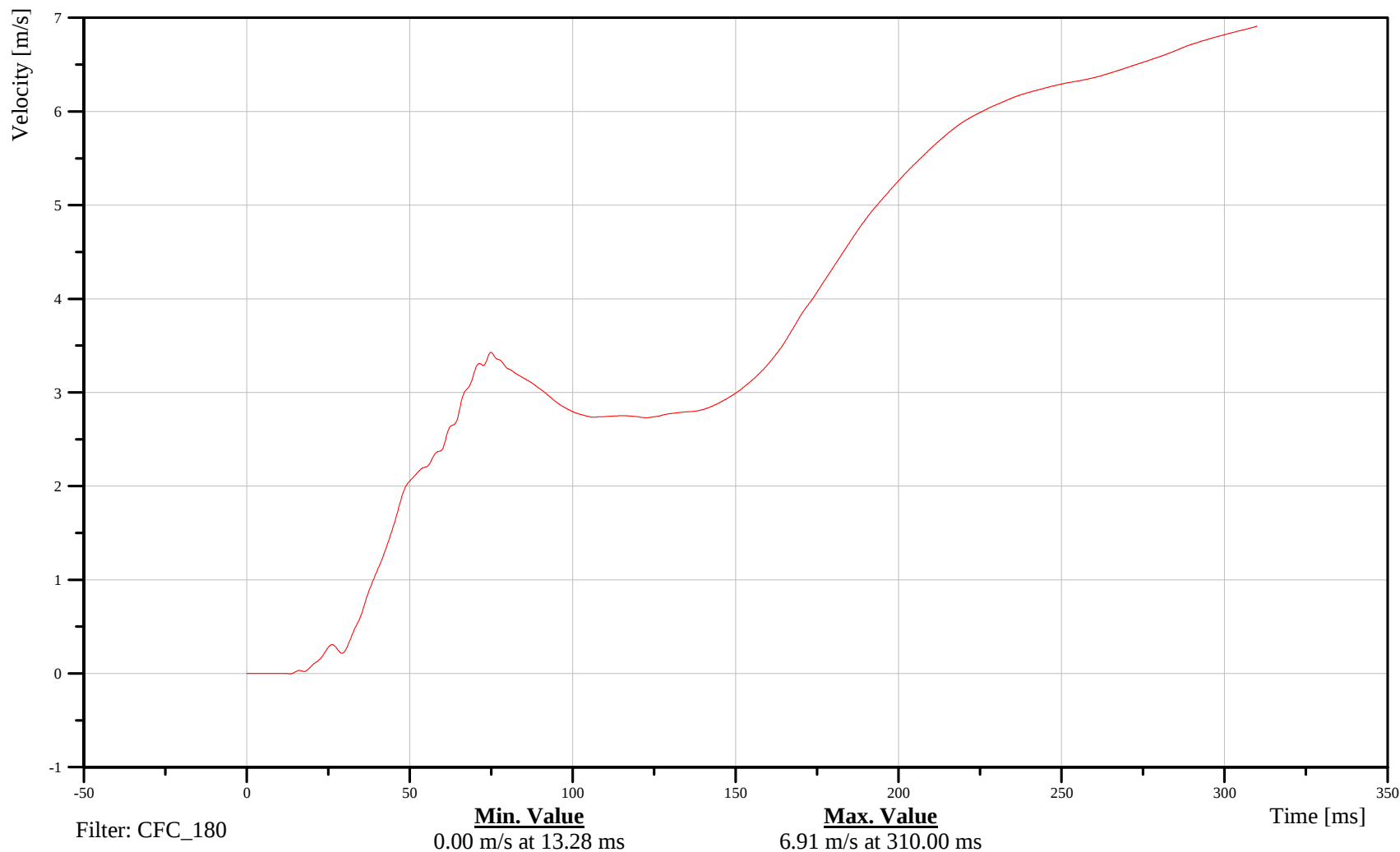
Date: 10/26/2006
Time: 13:29

DRIVER HEAD Z-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

11HEADCG00SHVEZC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-15

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

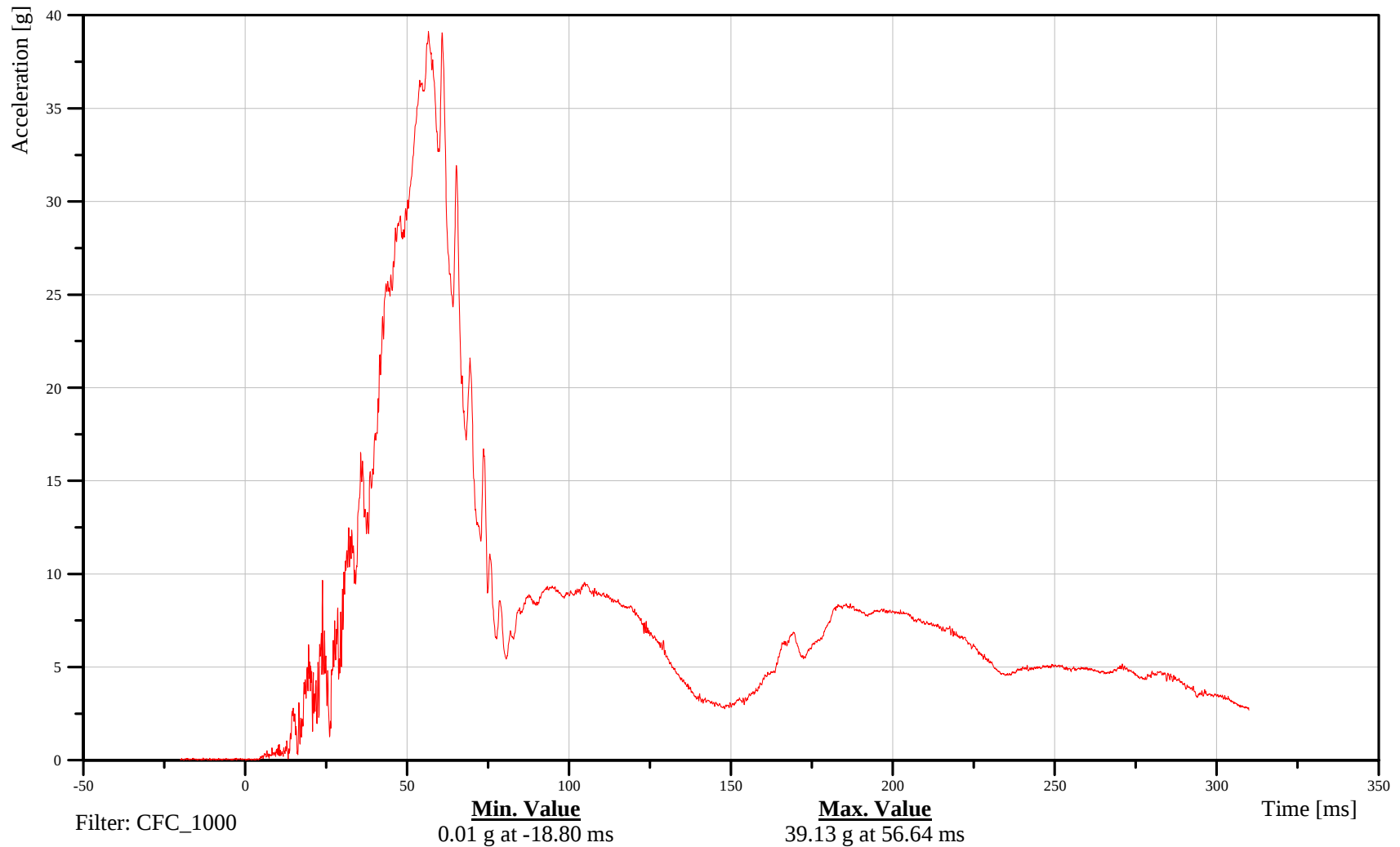
Date: 10/26/2006
Time: 13:29

DRIVER HEAD RESULTANT ACCELERATION

Customer: NHTSA
Test Number: C70501

11HEADCG00SHACRA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-16

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

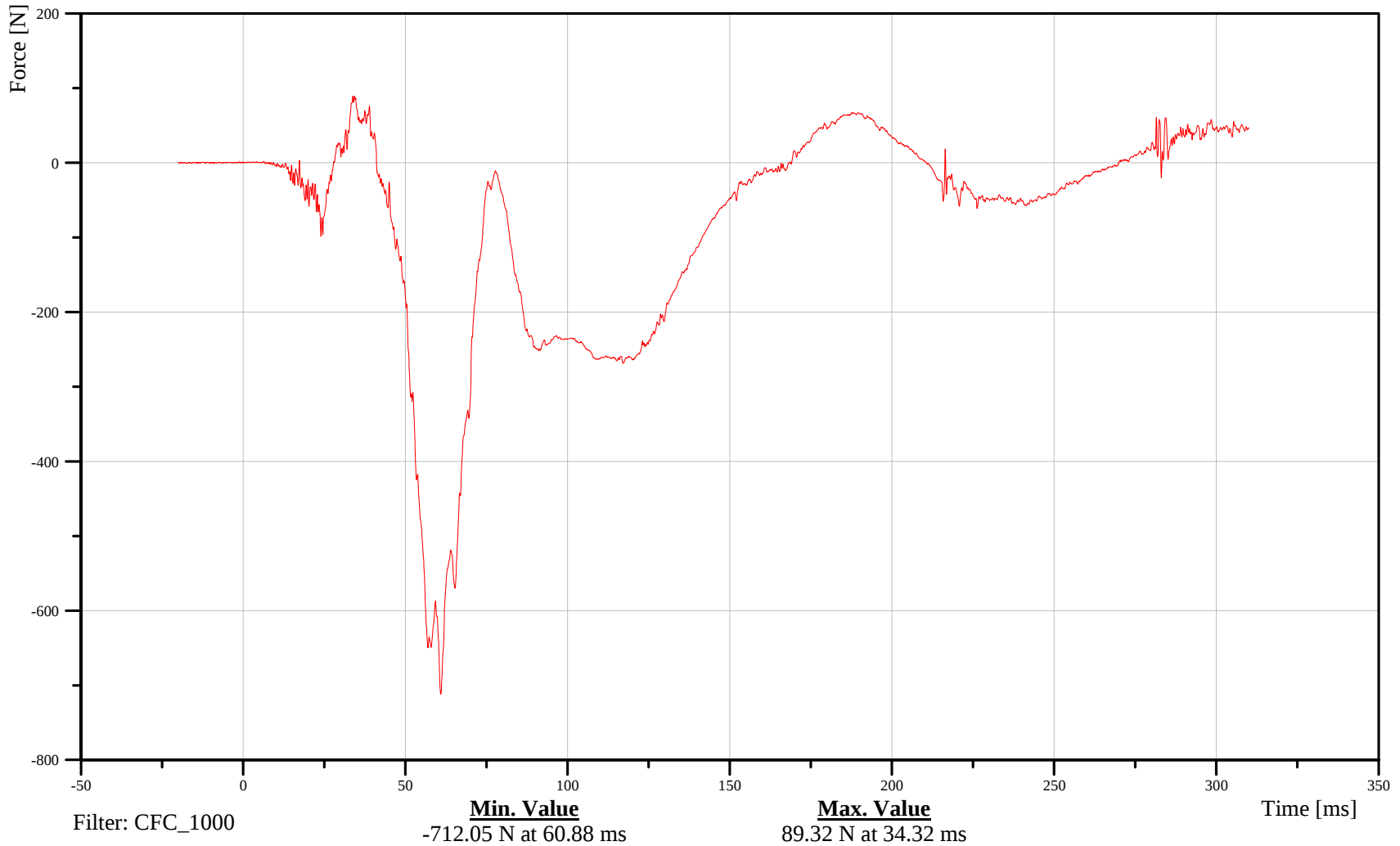
Date: 10/26/2006
Time: 13:29

DRIVER NECK X-AXIS SHEAR FORCE

Customer: NHTSA
Test Number: C70501

11NECKUP00SHFOXA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-17

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

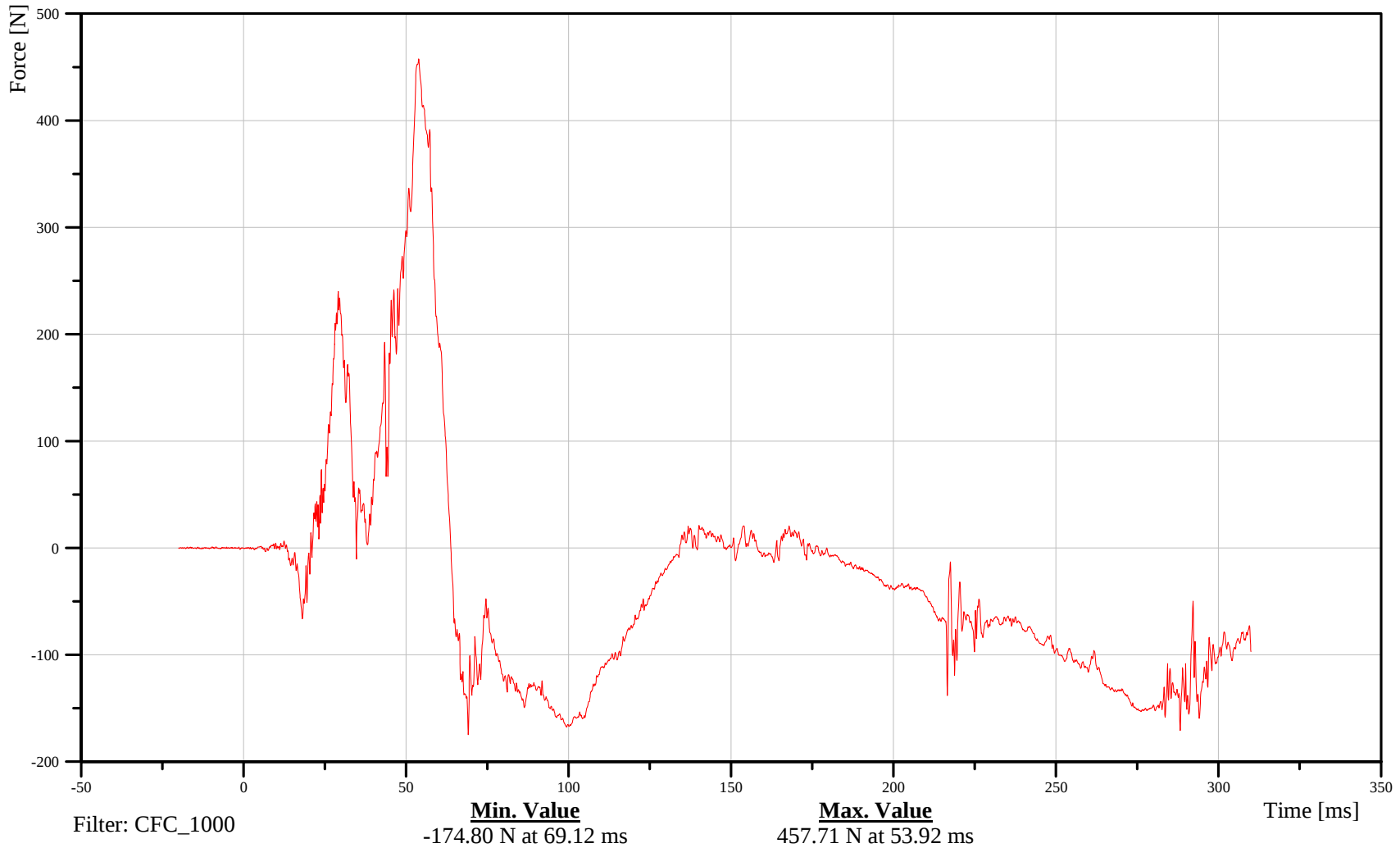
Date: 10/26/2006
Time: 13:29

DRIVER NECK Y-AXIS SHEAR FORCE

Customer: NHTSA
Test Number: C70501

11NECKUP00SHFOYA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-18

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

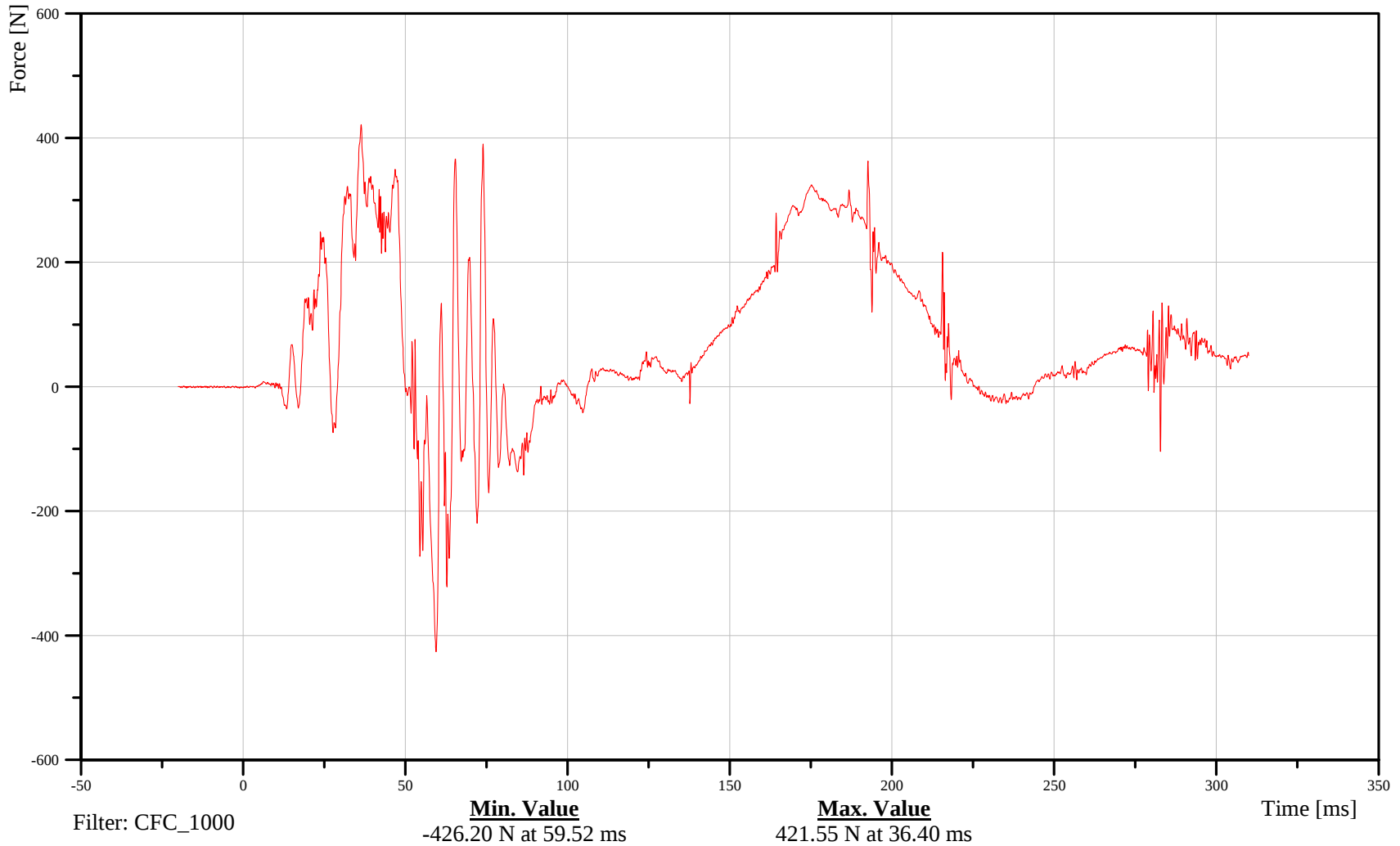
Date: 10/26/2006
Time: 13:29

DRIVER NECK Z-AXIS AXIAL FORCE

Customer: NHTSA
Test Number: C70501

11NECKUP00SHFOZA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-19

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

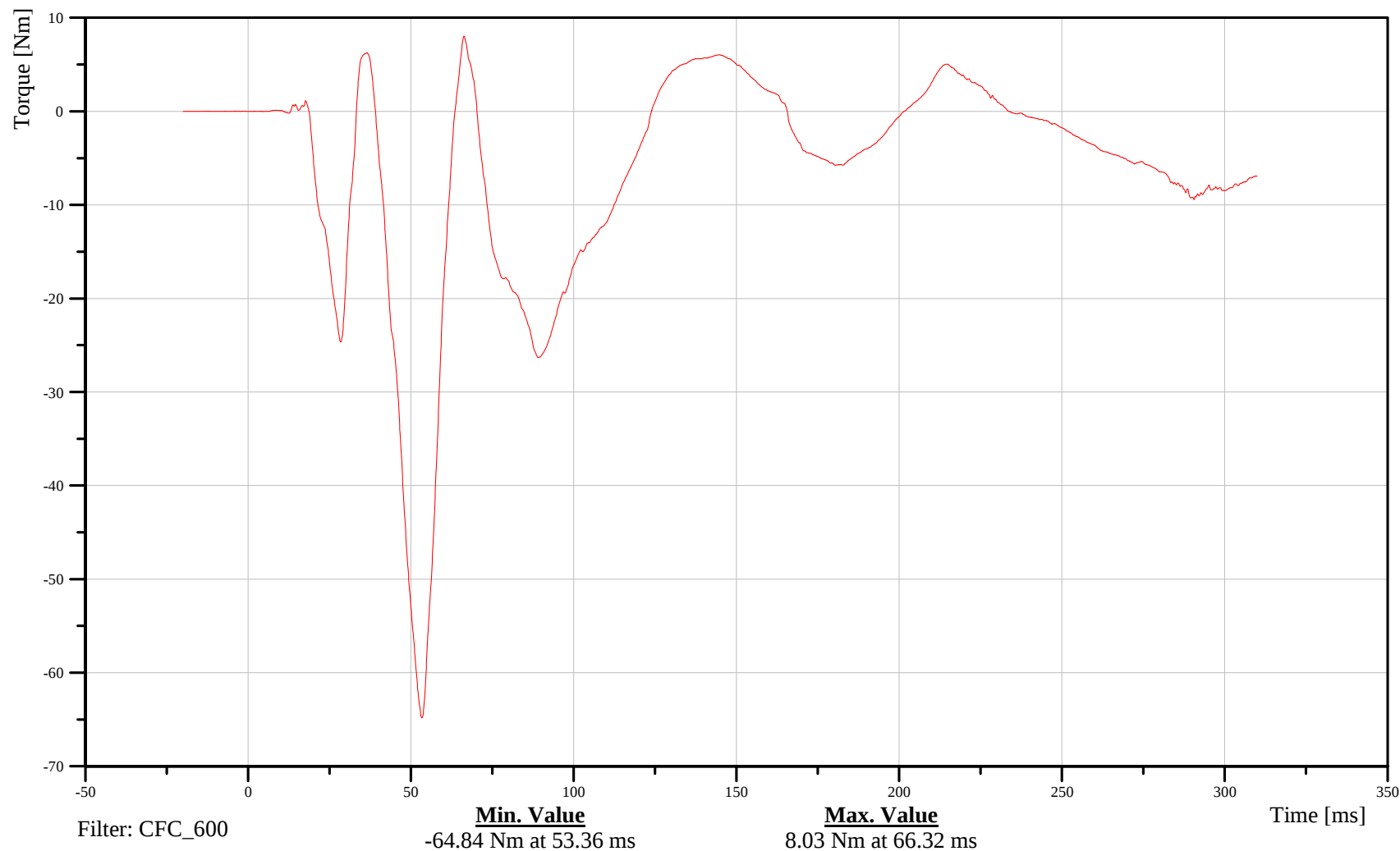
Date: 10/26/2006
Time: 13:29

DRIVER NECK MOMENT ABOUT X AXIS

Customer: NHTSA
Test Number: C70501

11NECKUP00SHMOXB

TRC Inc. Test Lab: CTF
Test Number: 061026



B-20

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

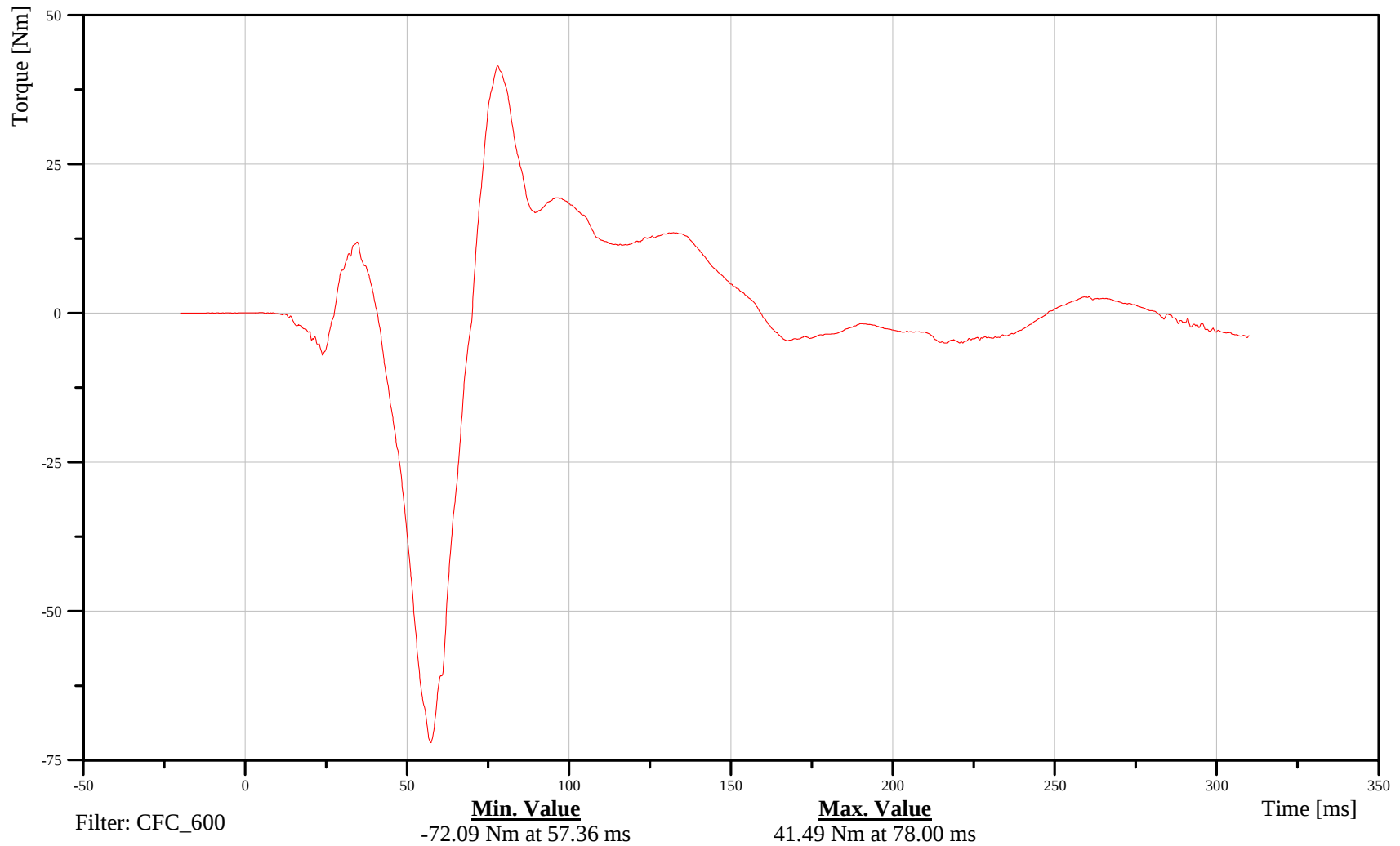
Date: 10/26/2006
Time: 13:29

DRIVER NECK MOMENT ABOUT Y AXIS

Customer: NHTSA
Test Number: C70501

11NECKUP00SHMOYB

TRC Inc. Test Lab: CTF
Test Number: 061026



B-21

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

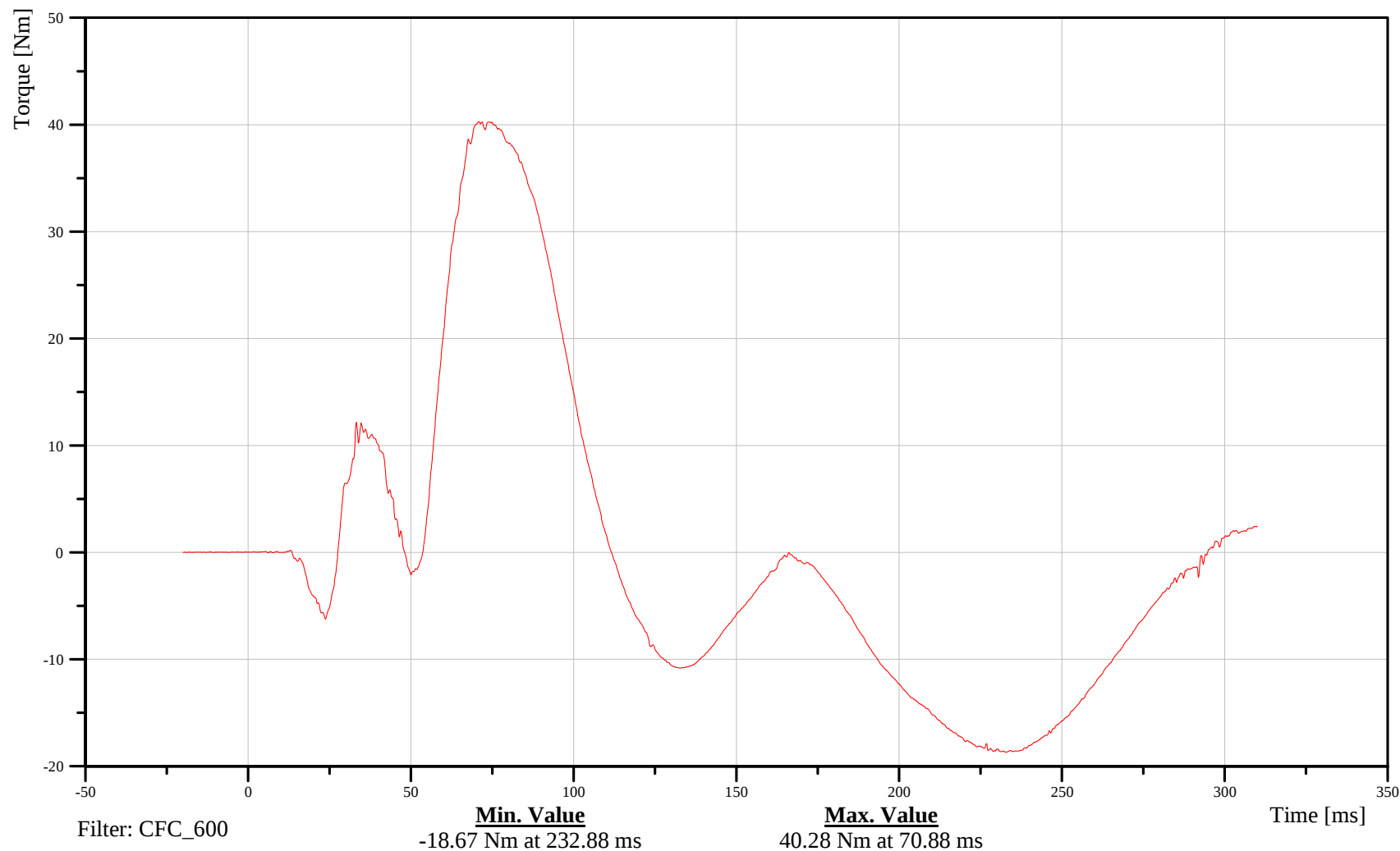
Date: 10/26/2006
Time: 13:29

DRIVER NECK MOMENT ABOUT Z AXIS

Customer: NHTSA
Test Number: C70501

11NECKUP00SHMOZB

TRC Inc. Test Lab: CTF
Test Number: 061026



B-22

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra Neck Moment about the Occipital Condyle (NECK OM)

Date: 10/26/2006
Time: 13:29

Customer: NHTSA

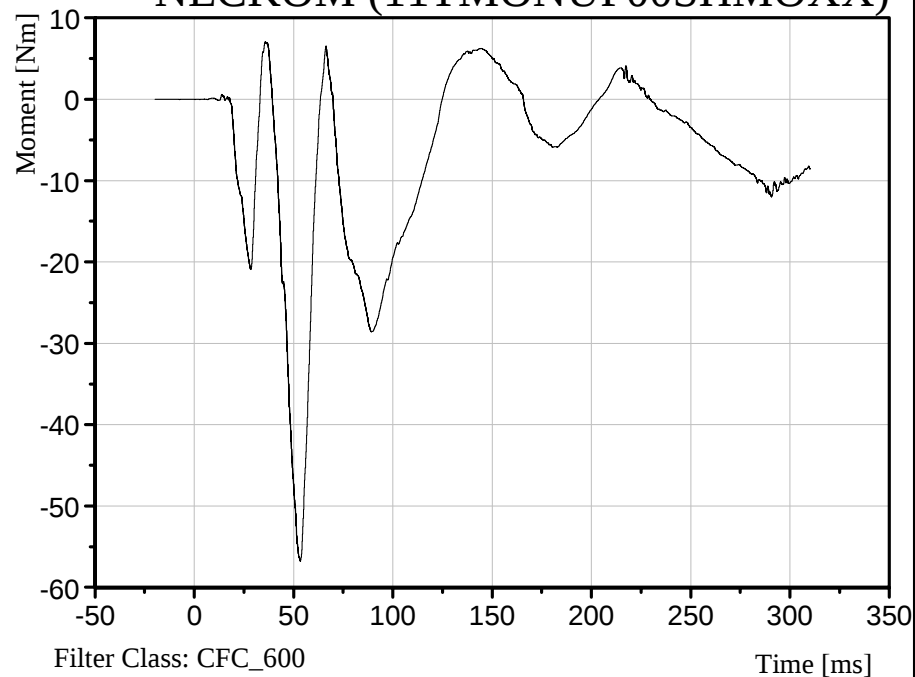
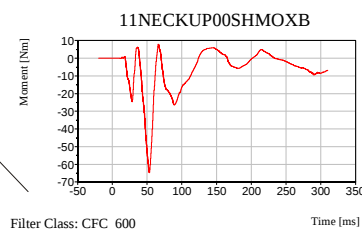
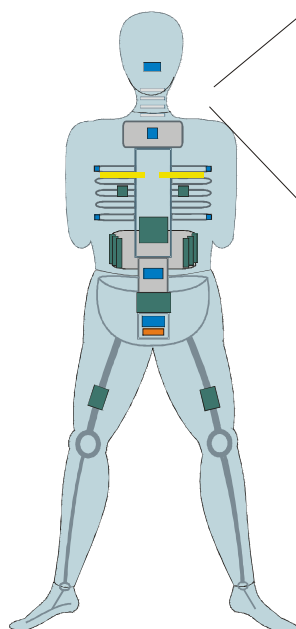
Test Number: C70501

Test Orientation = Side

TRC Inc. Test Lab: CTF

Test Number: 061026

NECKOM (11TMONUP00SHMOXX)



Dummy: HIII/SID

Seating Position:

Driver

Neck OM Source Code: $M_x + (D \cdot F_y)$

[Max.] 7.06 Nm at 35.68 ms

[Min.] -56.80 Nm at 53.36 ms

B-23

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

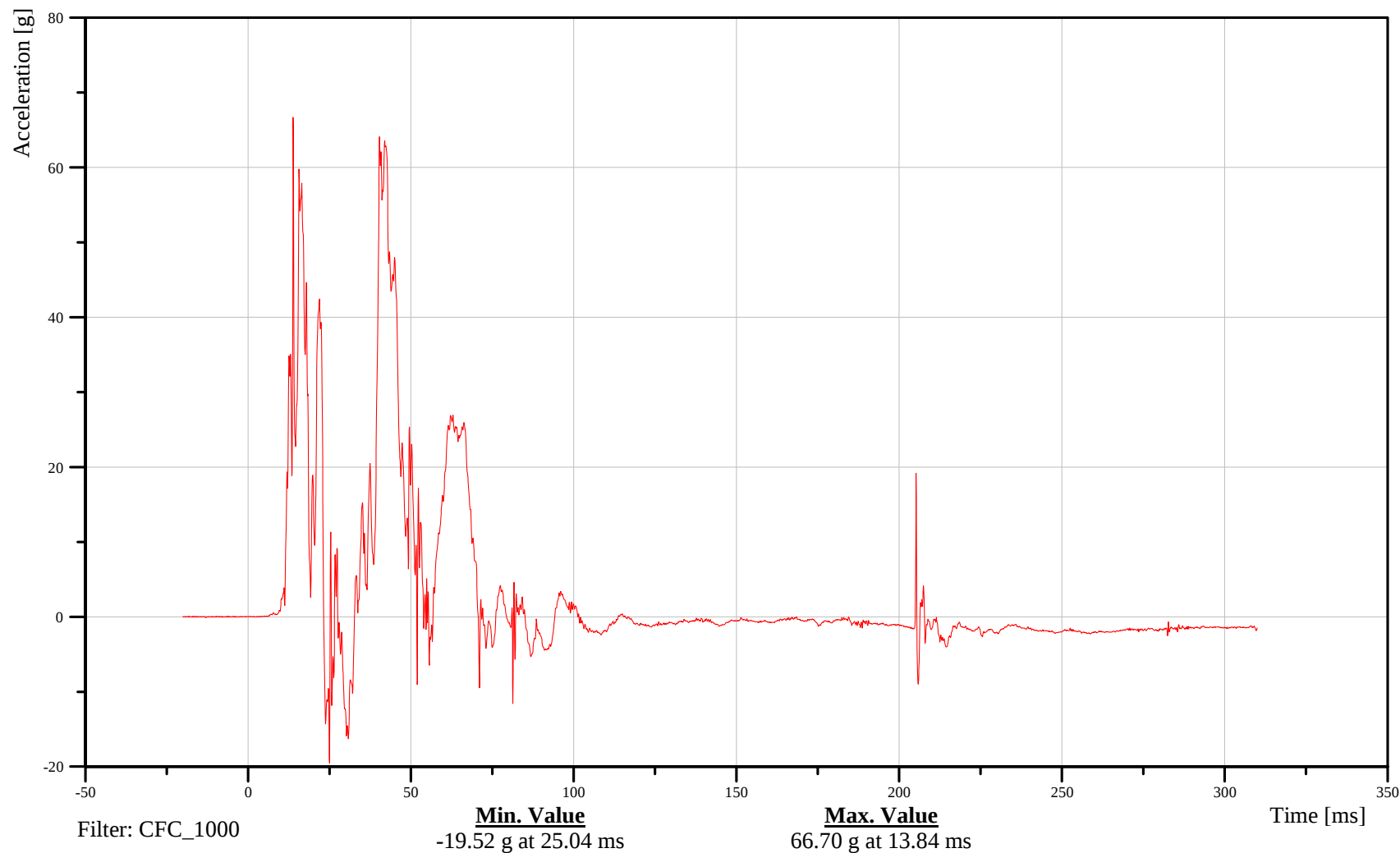
Date: 10/26/2006
Time: 13:29

DRIVER UPPER RIB Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

11RIBSLU00SHACYA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-24

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

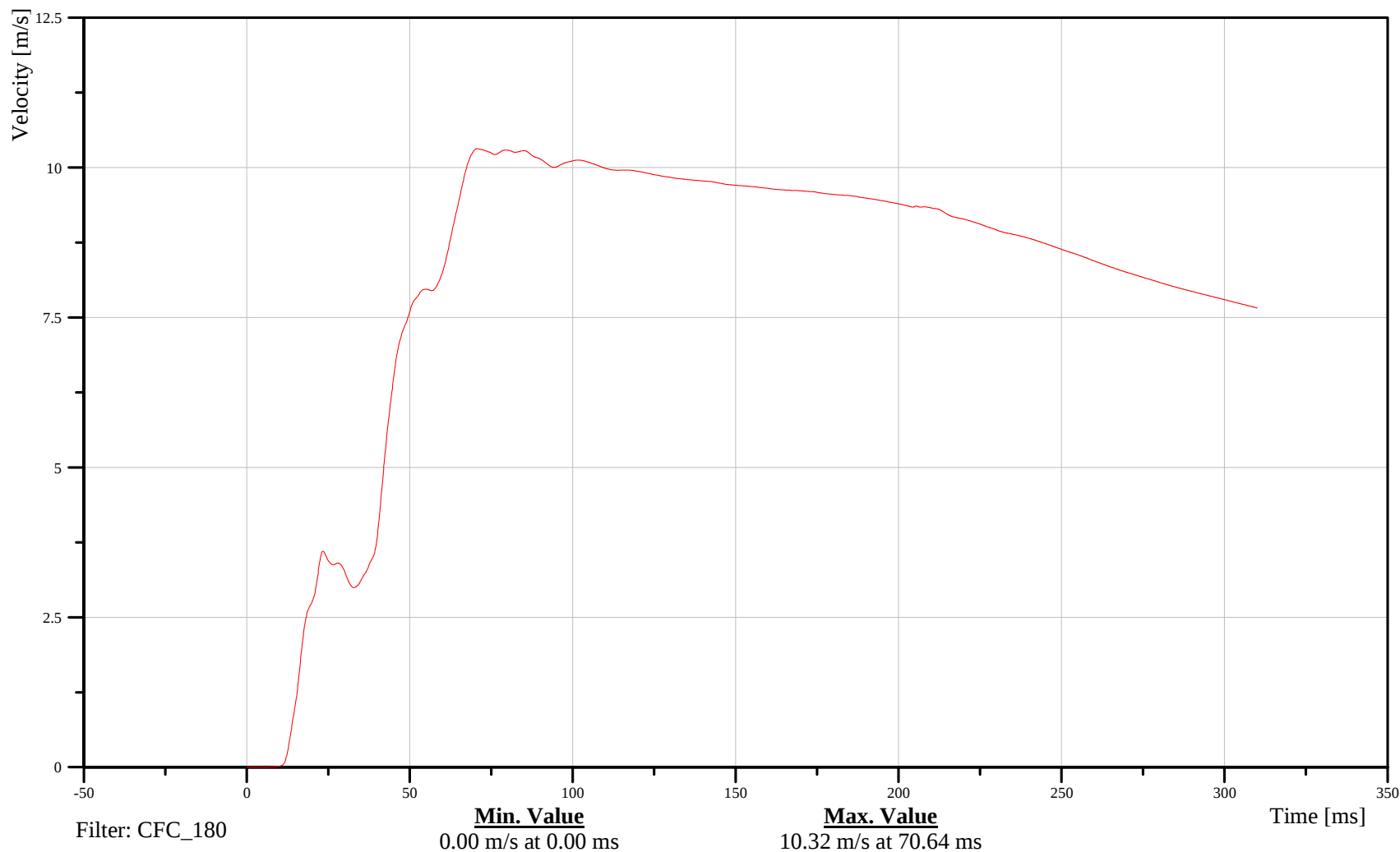
Date: 10/26/2006
Time: 13:29

DRIVER UPPER RIB Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

11RIBSLU00SHVEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-25

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

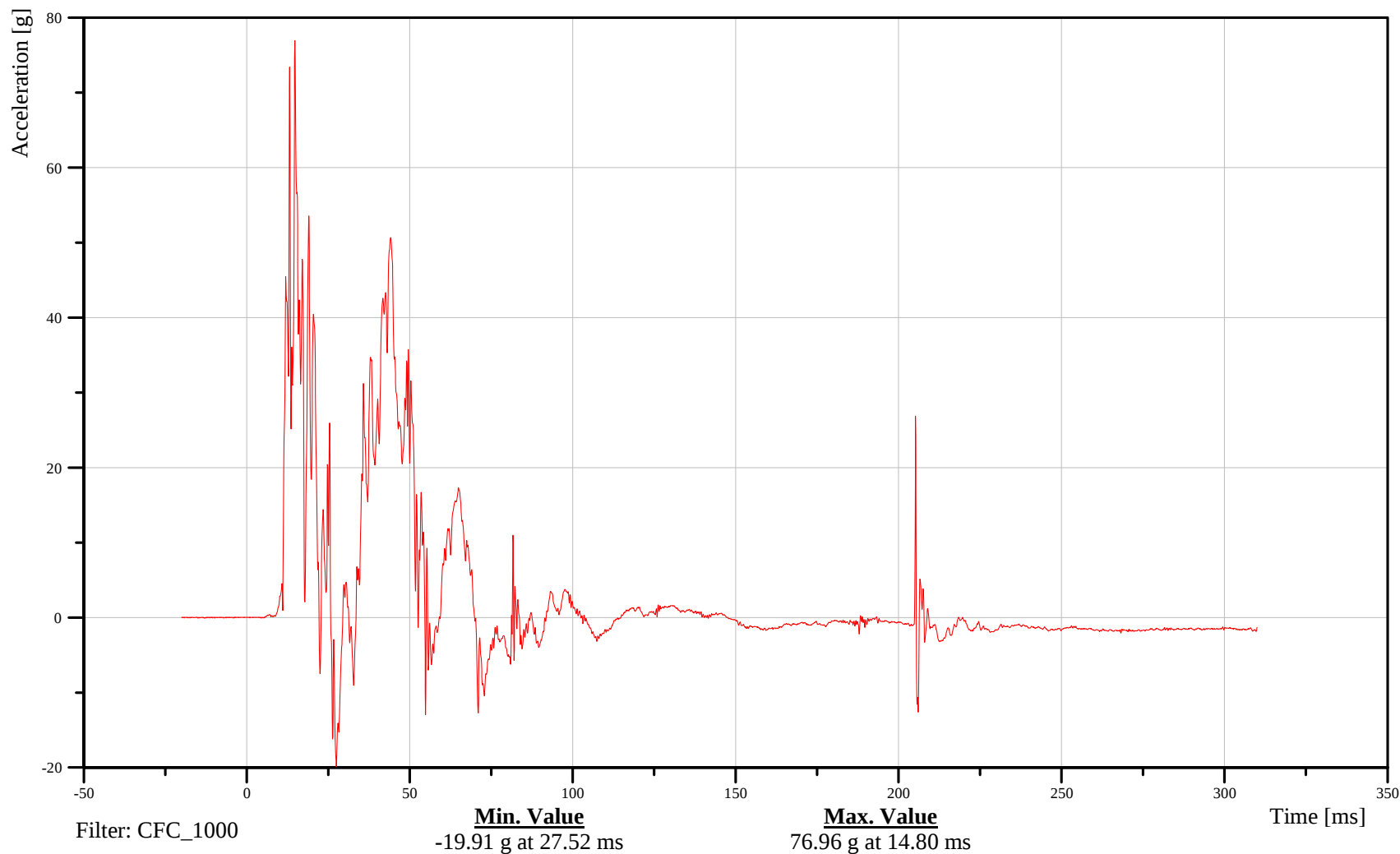
Date: 10/26/2006
Time: 13:29

DRIVER LOWER RIB Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

11RIBSLL00SHACYA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-26

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

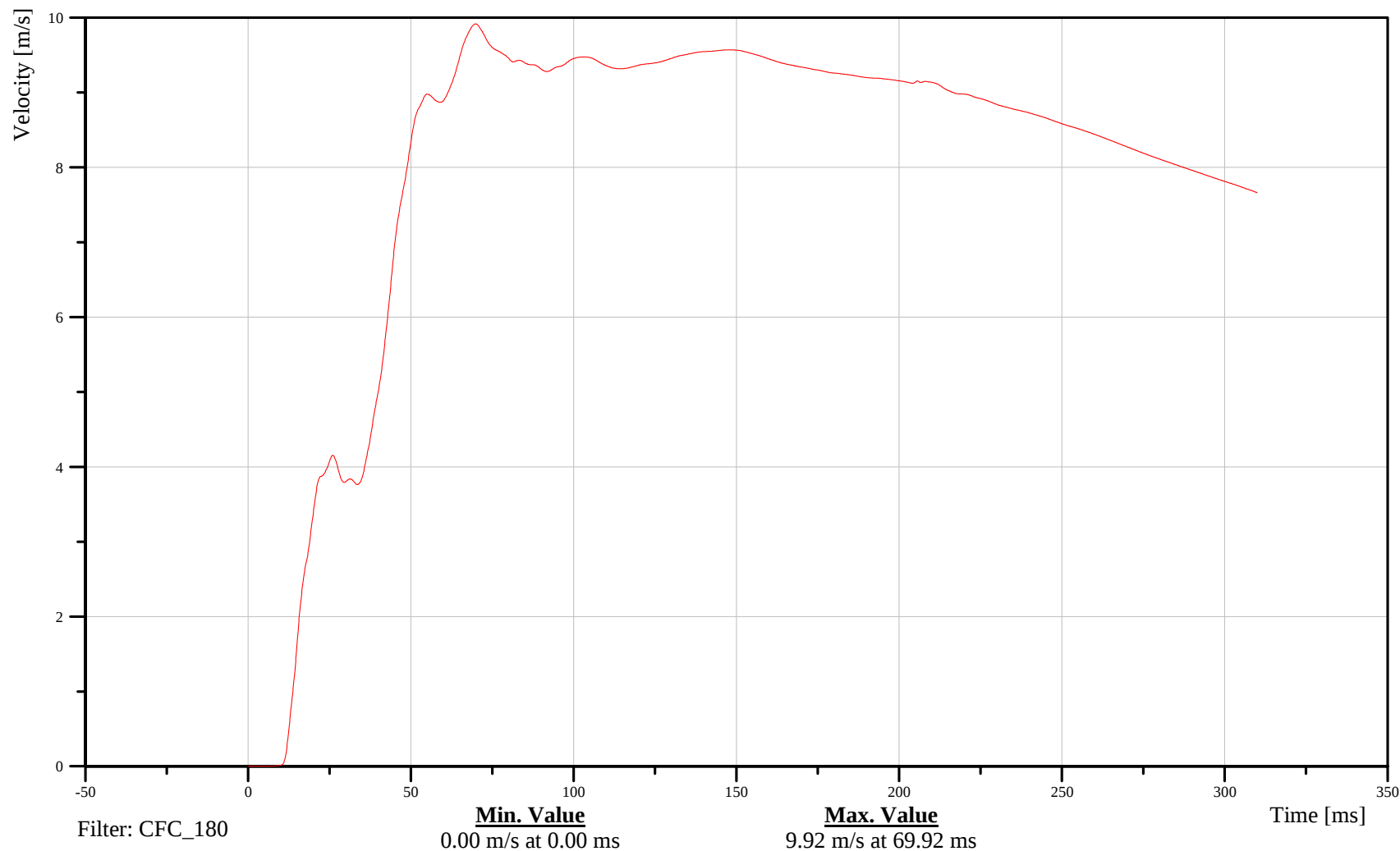
Date: 10/26/2006
Time: 13:29

DRIVER LOWER RIB Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

11RIBSLL00SHVEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-27

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

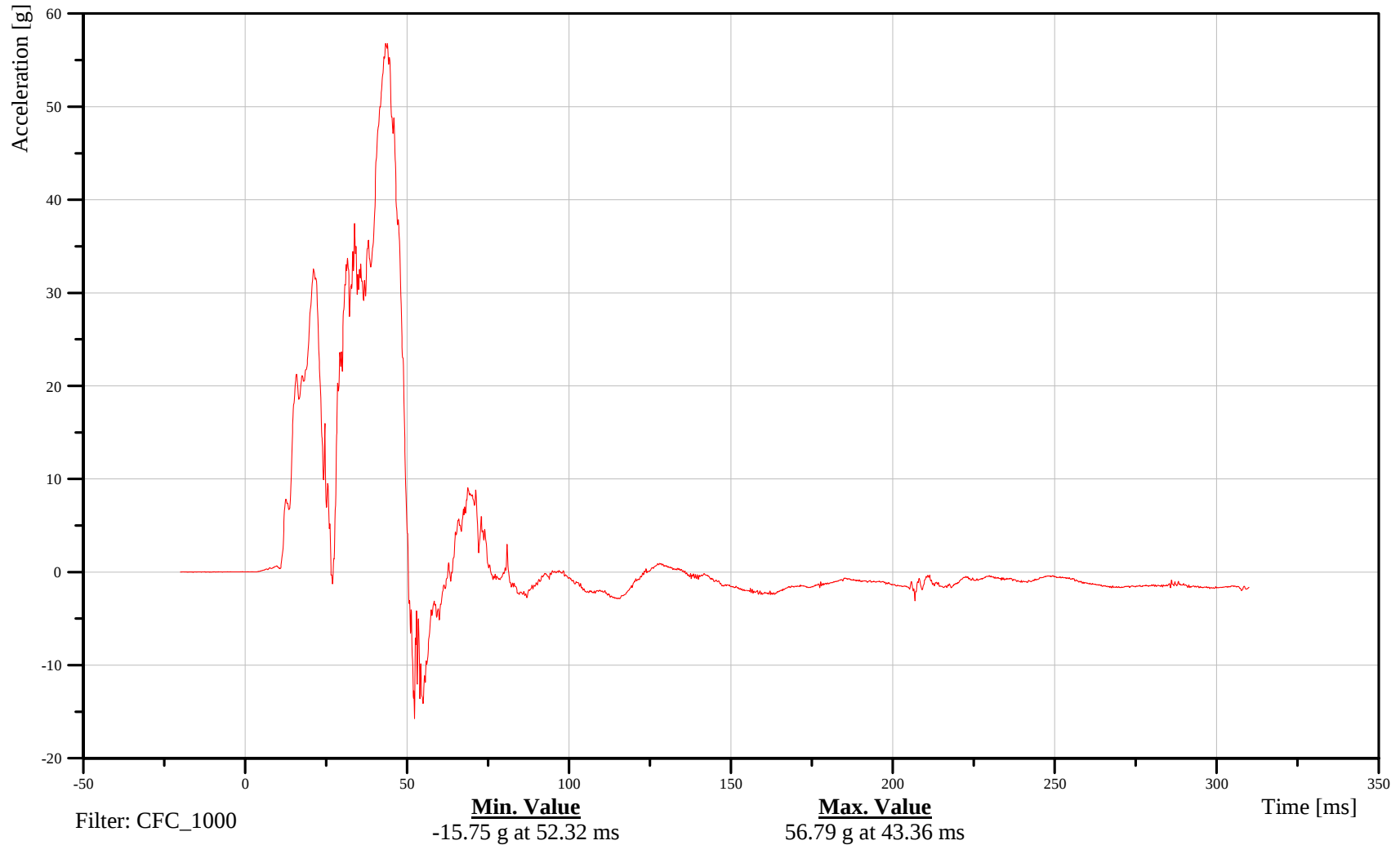
Date: 10/26/2006
Time: 13:29

DRIVER LOWER SPINE Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

11SPIN1200SHACYA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-28

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

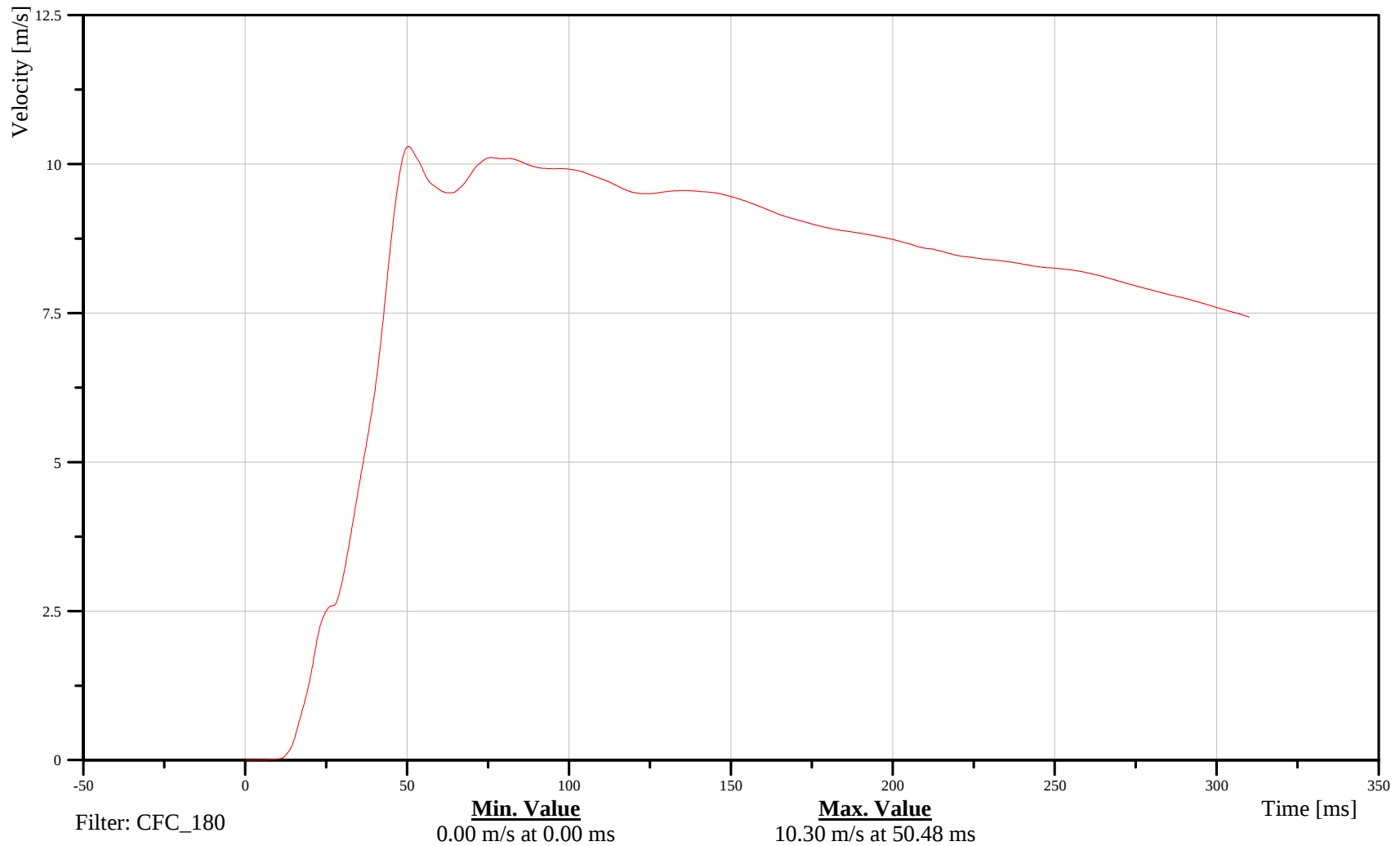
Date: 10/26/2006
Time: 13:29

DRIVER LOWER SPINE Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

11SPIN1200SHVEYC

TRC Inc. Test Lab: CTF
Test Number: 061026





56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

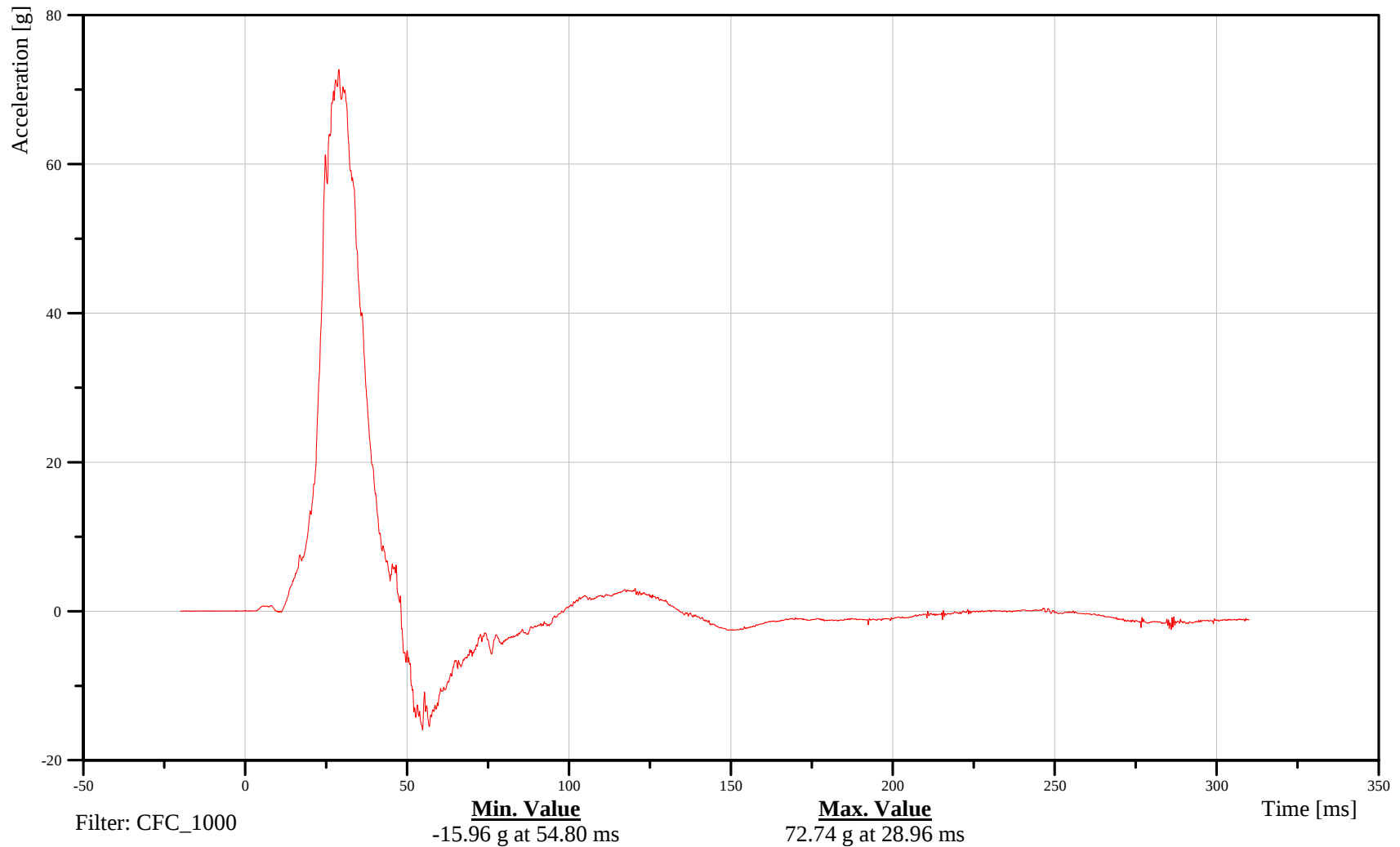
Date: 10/26/2006
Time: 13:29

DRIVER PELVIS Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

11PELVCG00SHACYA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-30

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

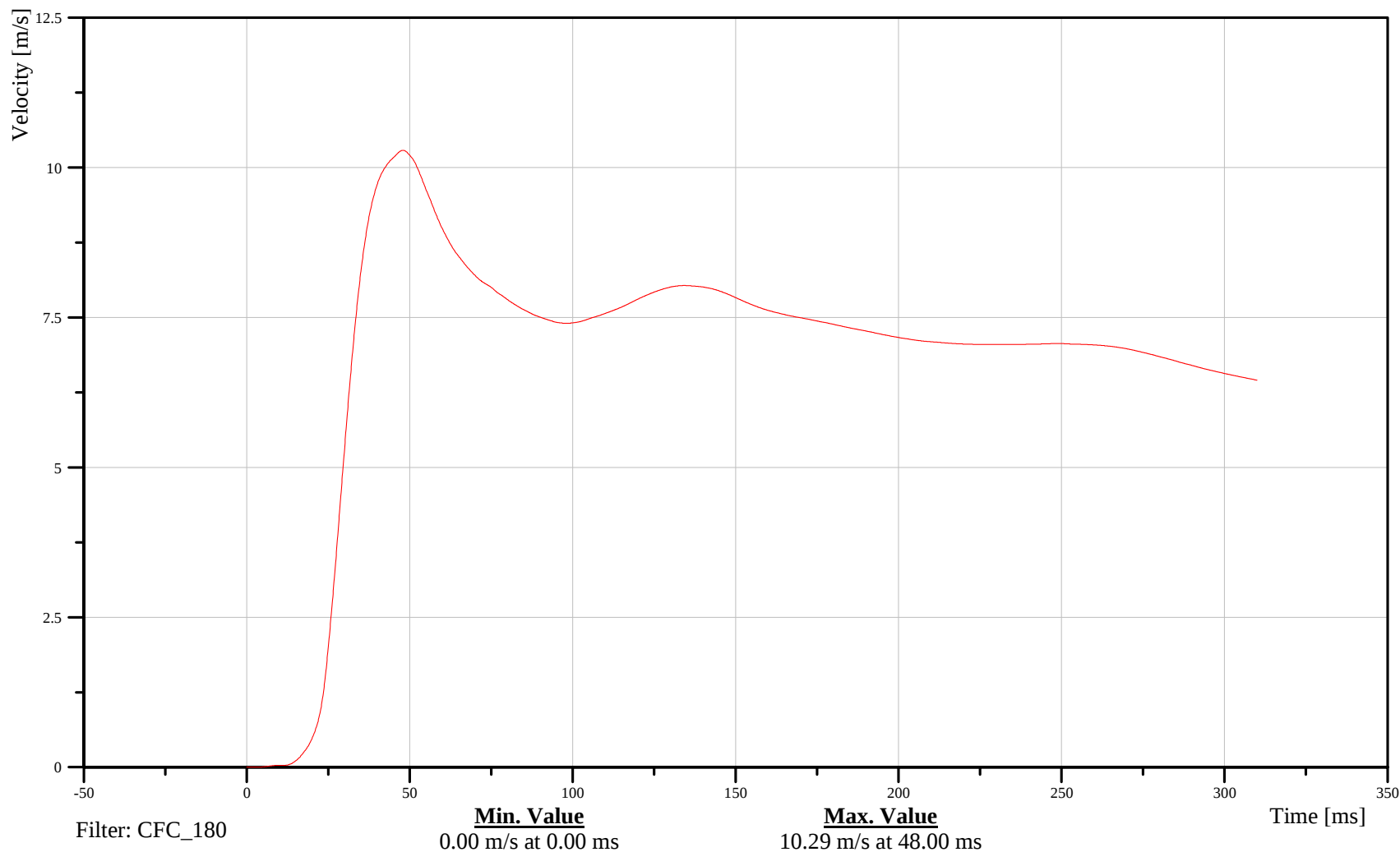
Date: 10/26/2006
Time: 13:29

DRIVER PELVIS Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

11PELVCG00SHVEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-31

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

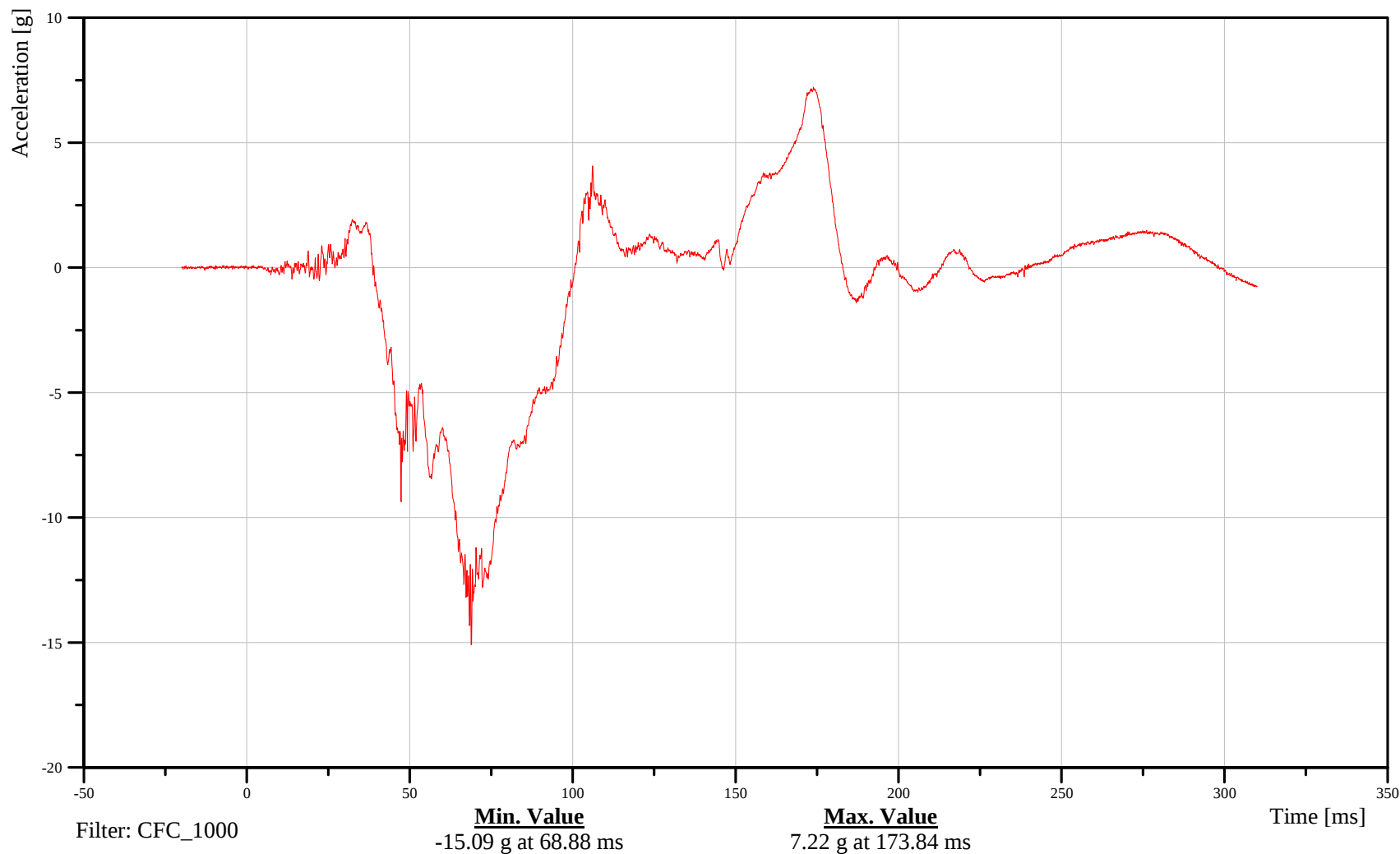
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER HEAD X-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

14HEADCG00SHACXA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-32

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

LEFT REAR PASSENGER HEAD X-AXIS VELOCITY

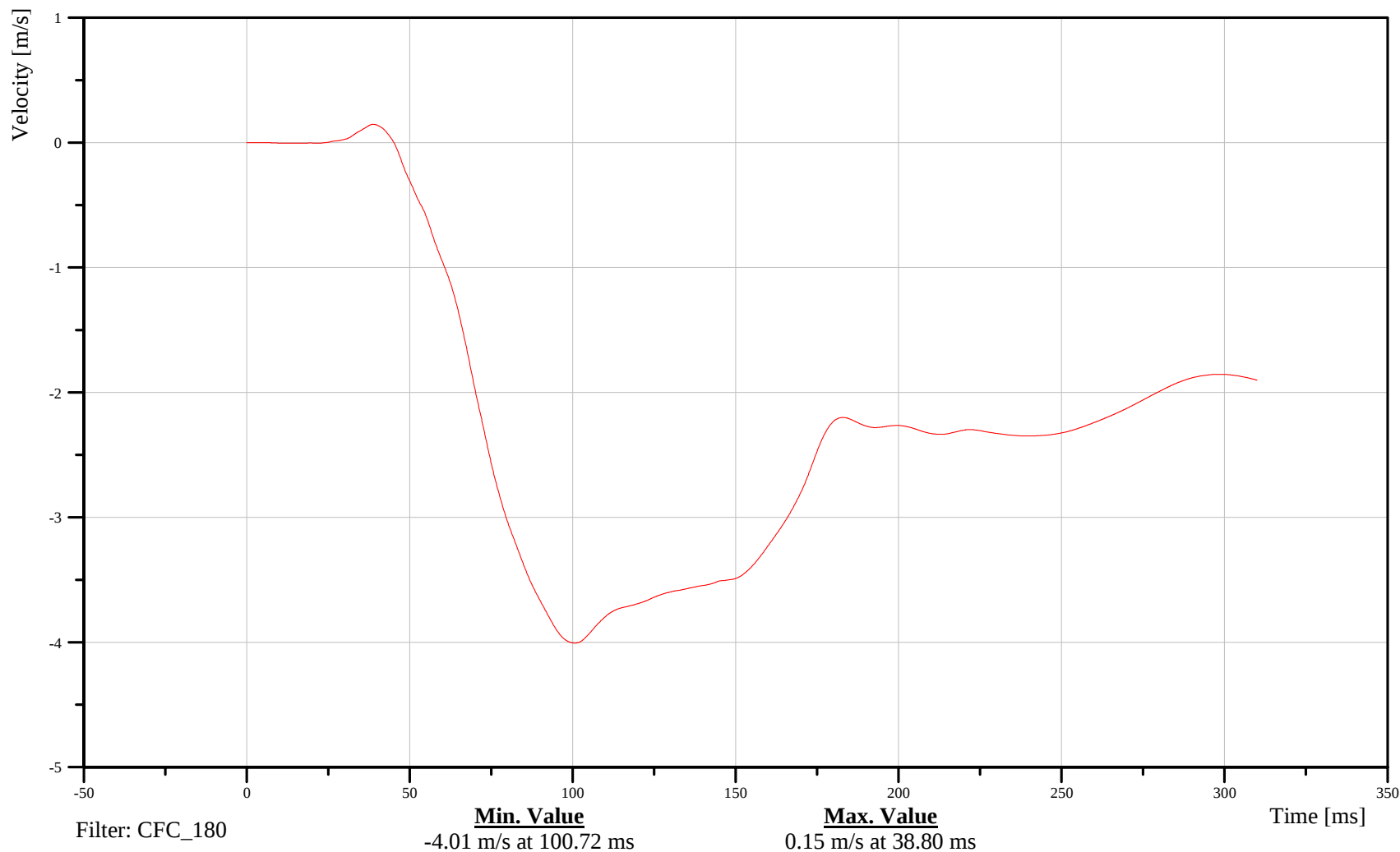
Customer: NHTSA

Test Number: C70501

14HEADCG00SHVEXC

TRC Inc. Test Lab: CTF

Test Number: 061026



B-33

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

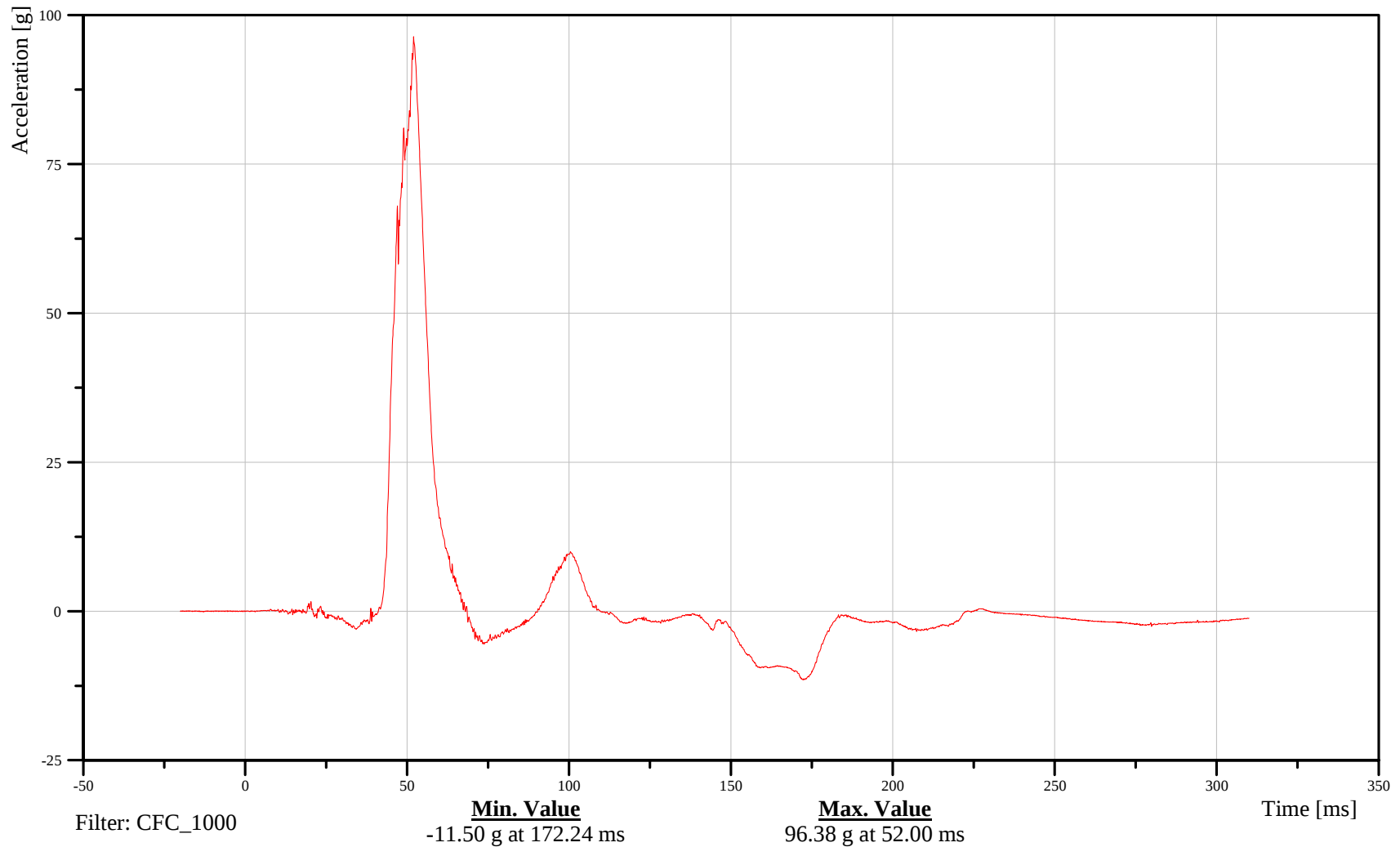
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER HEAD Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

14HEADCG00SHACYA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-34

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

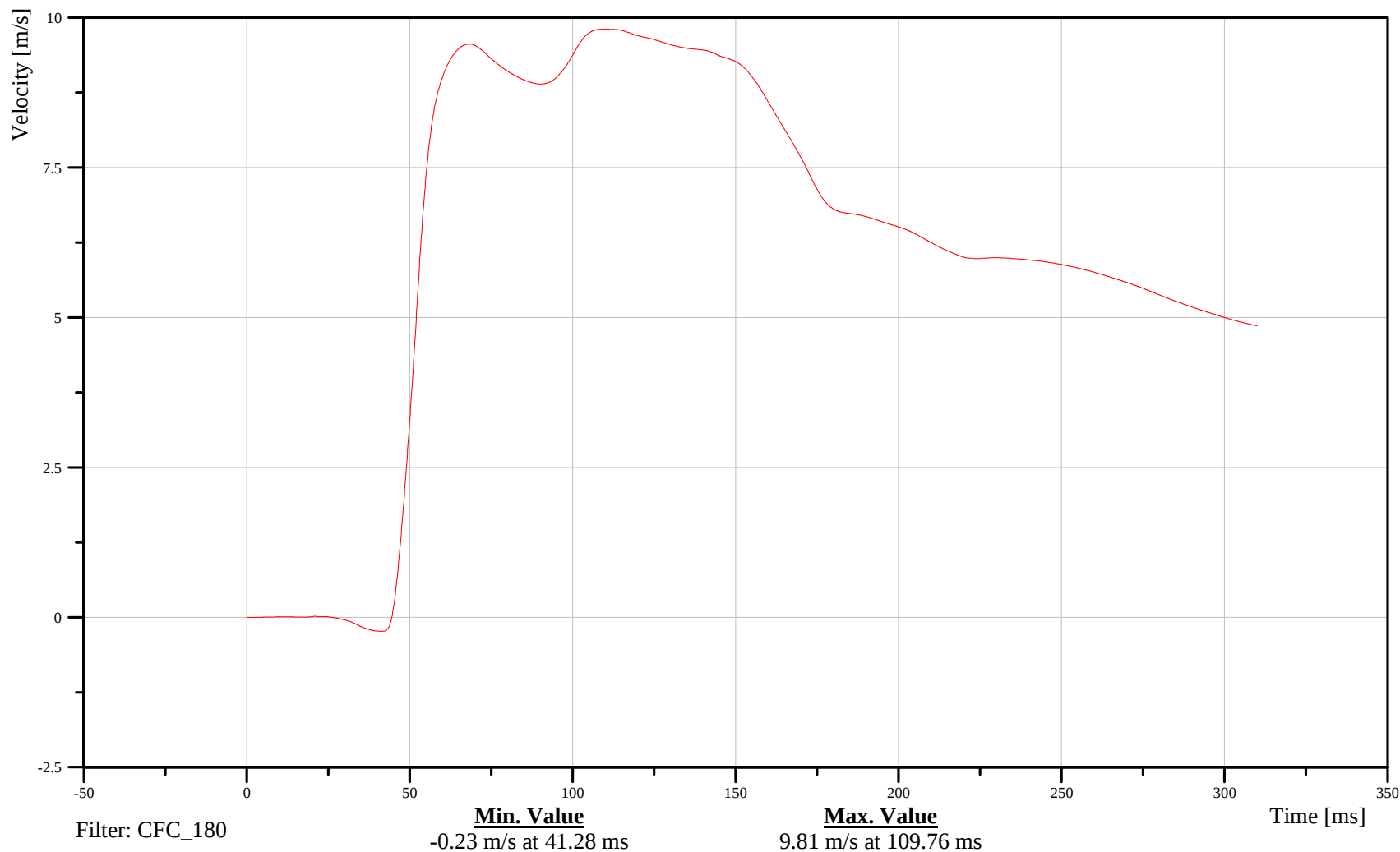
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER HEAD Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

14HEADCG00SHVEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-35

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

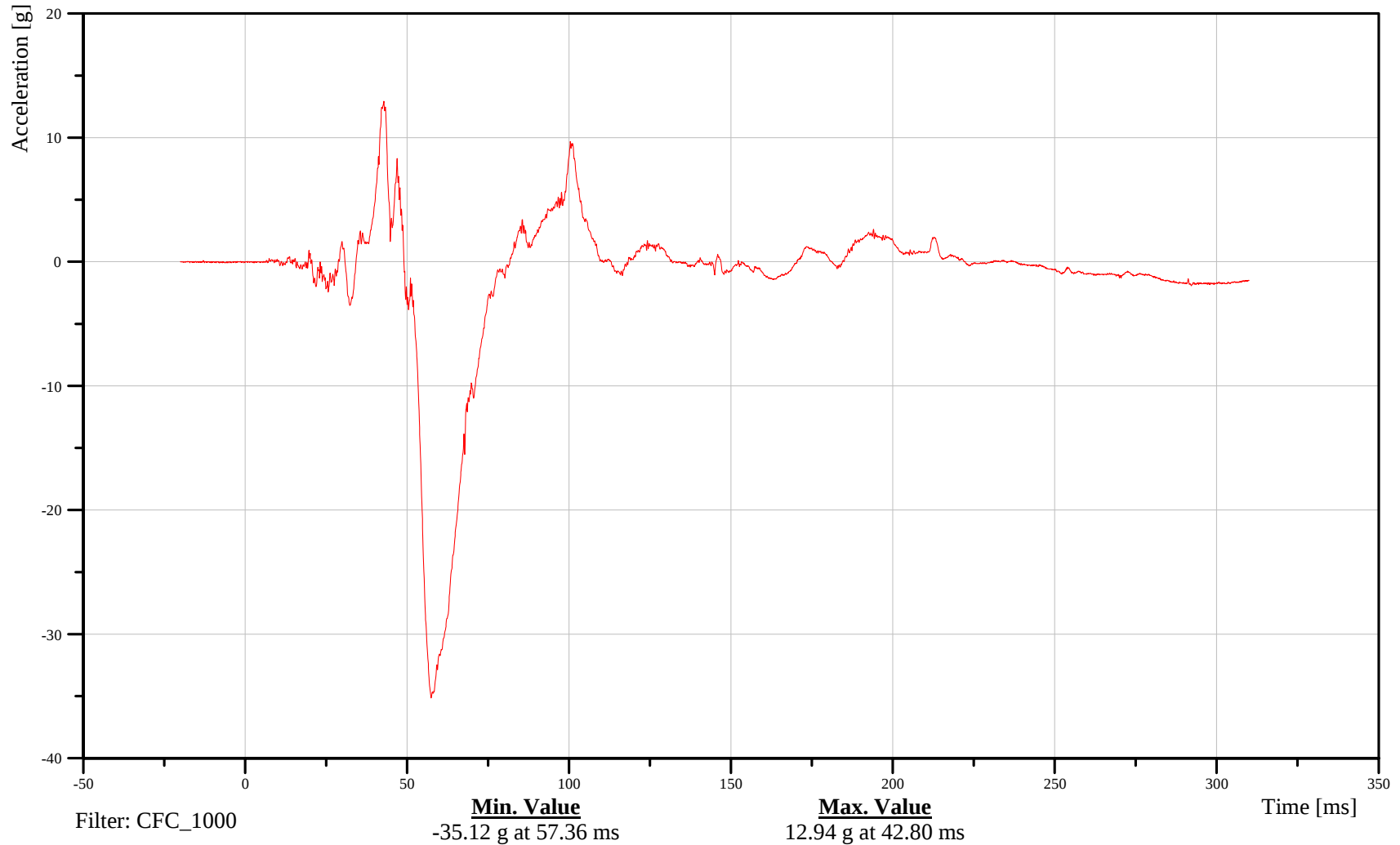
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER HEAD Z-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

14HEADCG00SHACZA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-36

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

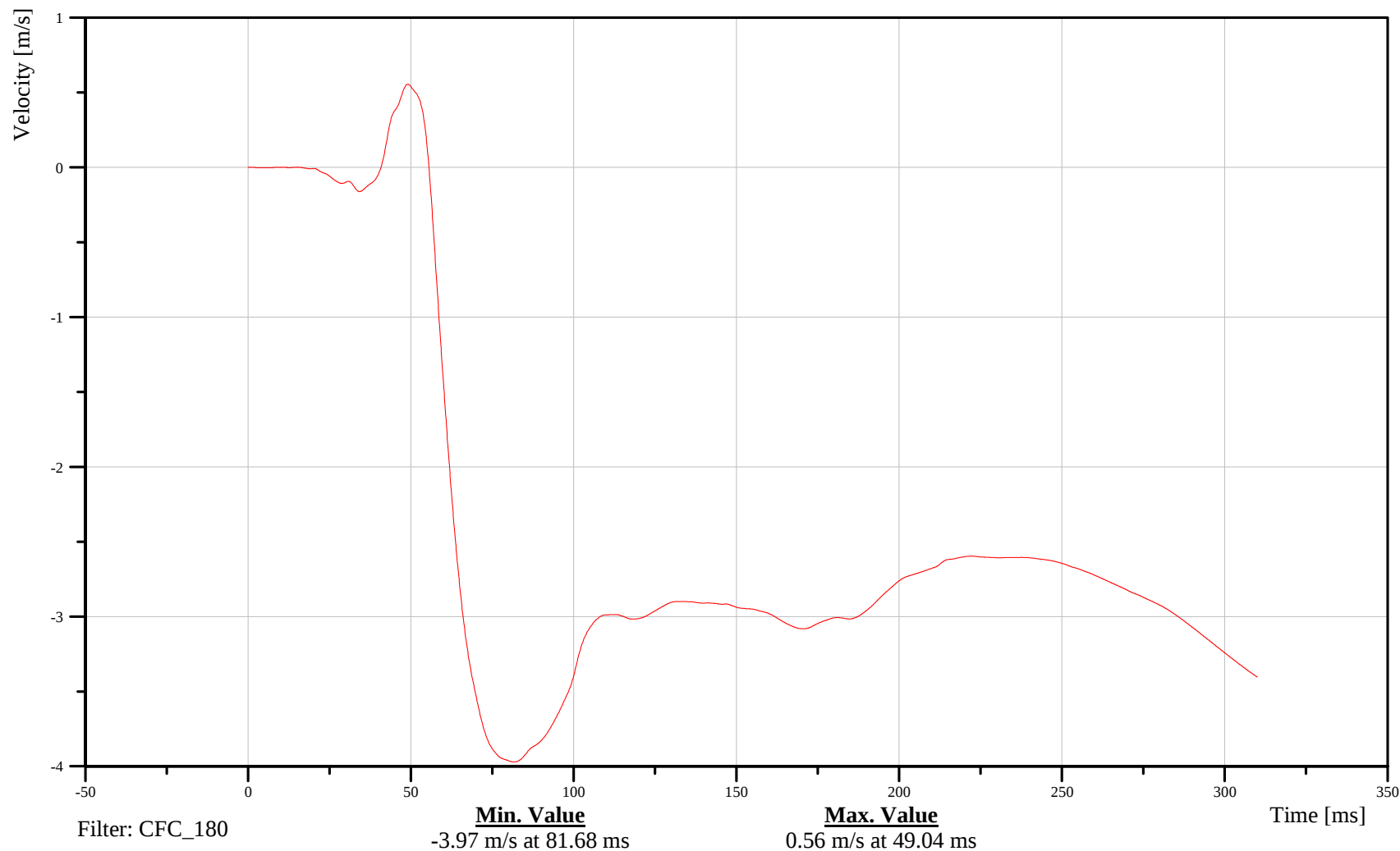
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER HEAD Z-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

14HEADCG00SHVEZC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-37

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

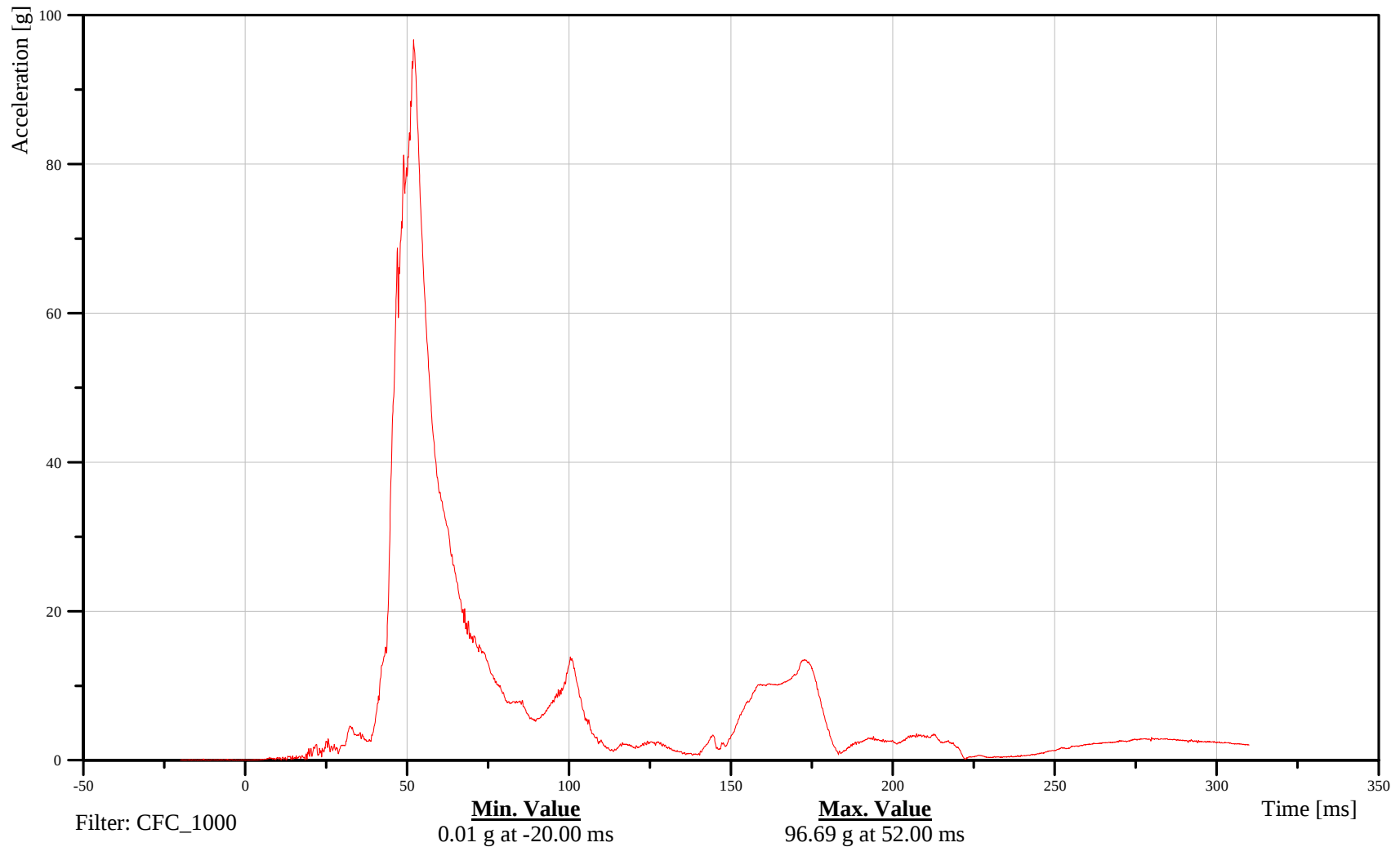
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER HEAD RESULTANT ACCELERATION

Customer: NHTSA
Test Number: C70501

14HEADCG00SHACRA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-38

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

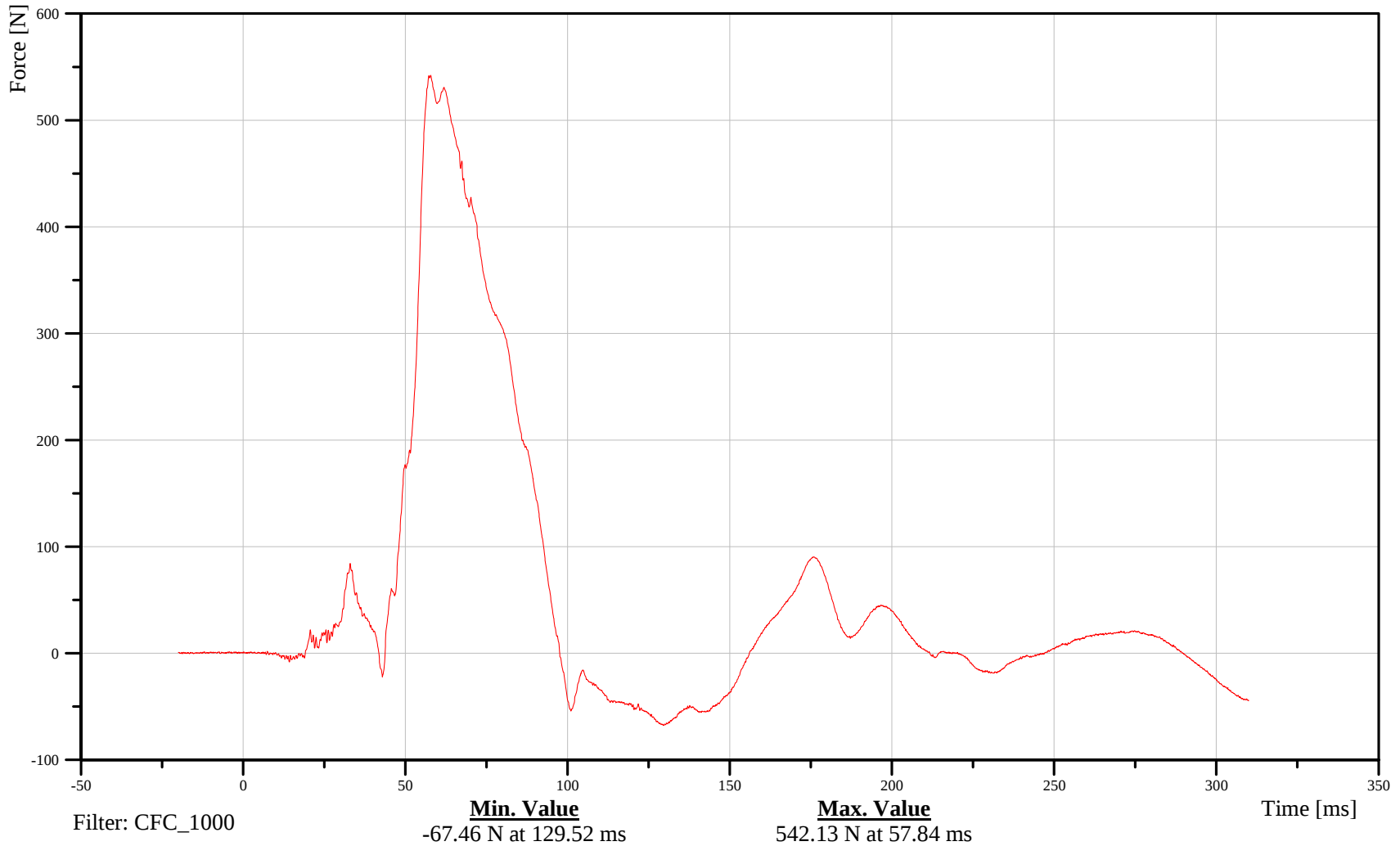
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER NECK X-AXIS SHEAR FORCE

Customer: NHTSA
Test Number: C70501

14NECKUP00SHFOXA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-39

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

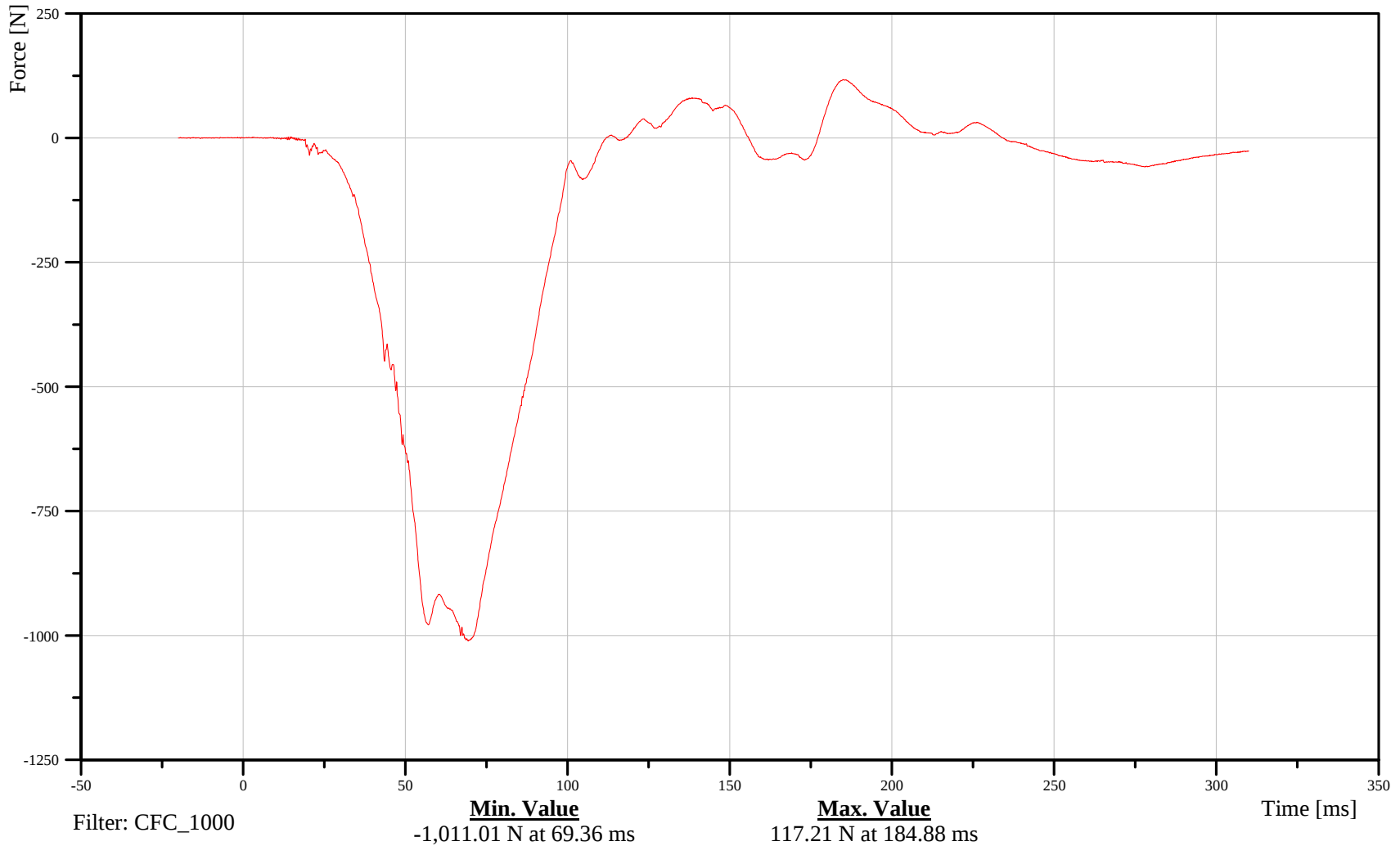
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER NECK Y-AXIS SHEAR FORCE

Customer: NHTSA
Test Number: C70501

14NECKUP00SHFOYA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-40

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

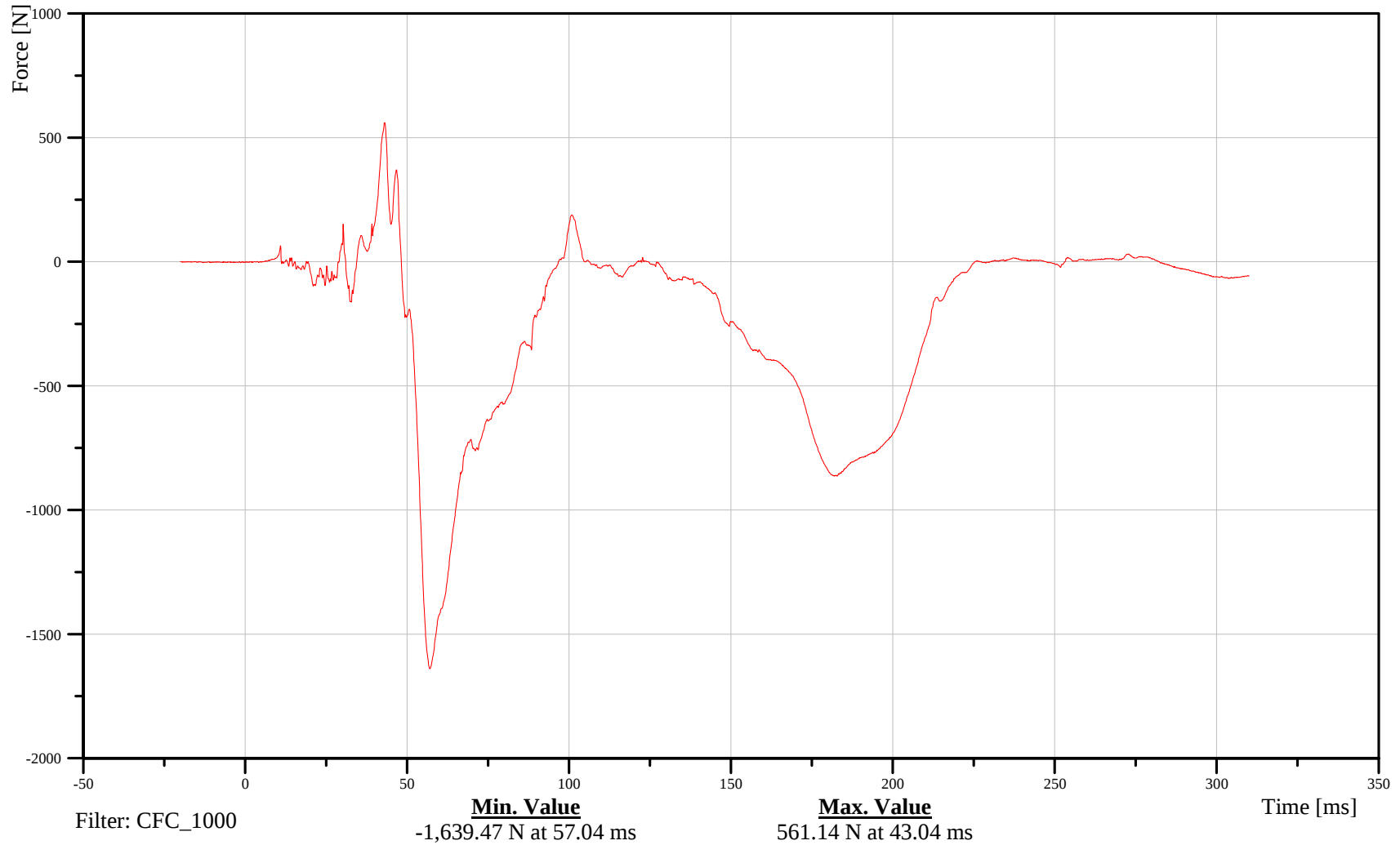
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER NECK Z-AXIS AXIAL FORCE

Customer: NHTSA
Test Number: C70501

14NECKUP00SHFOZA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-41

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER NECK MOMENT ABOUT X AXIS

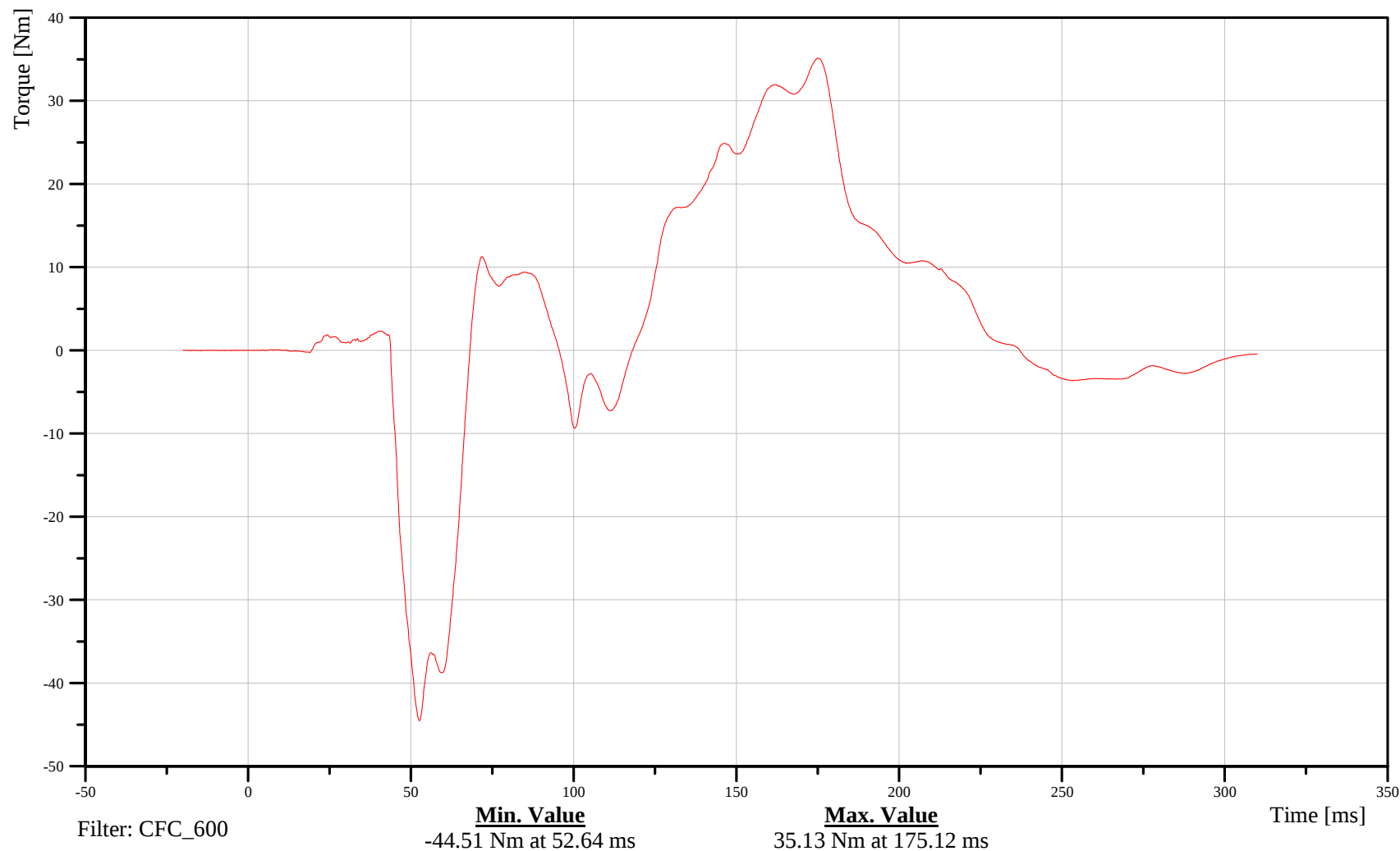
Customer: NHTSA

Test Number: C70501

14NECKUP00SHMOXB

TRC Inc. Test Lab: CTF

Test Number: 061026



B-42

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

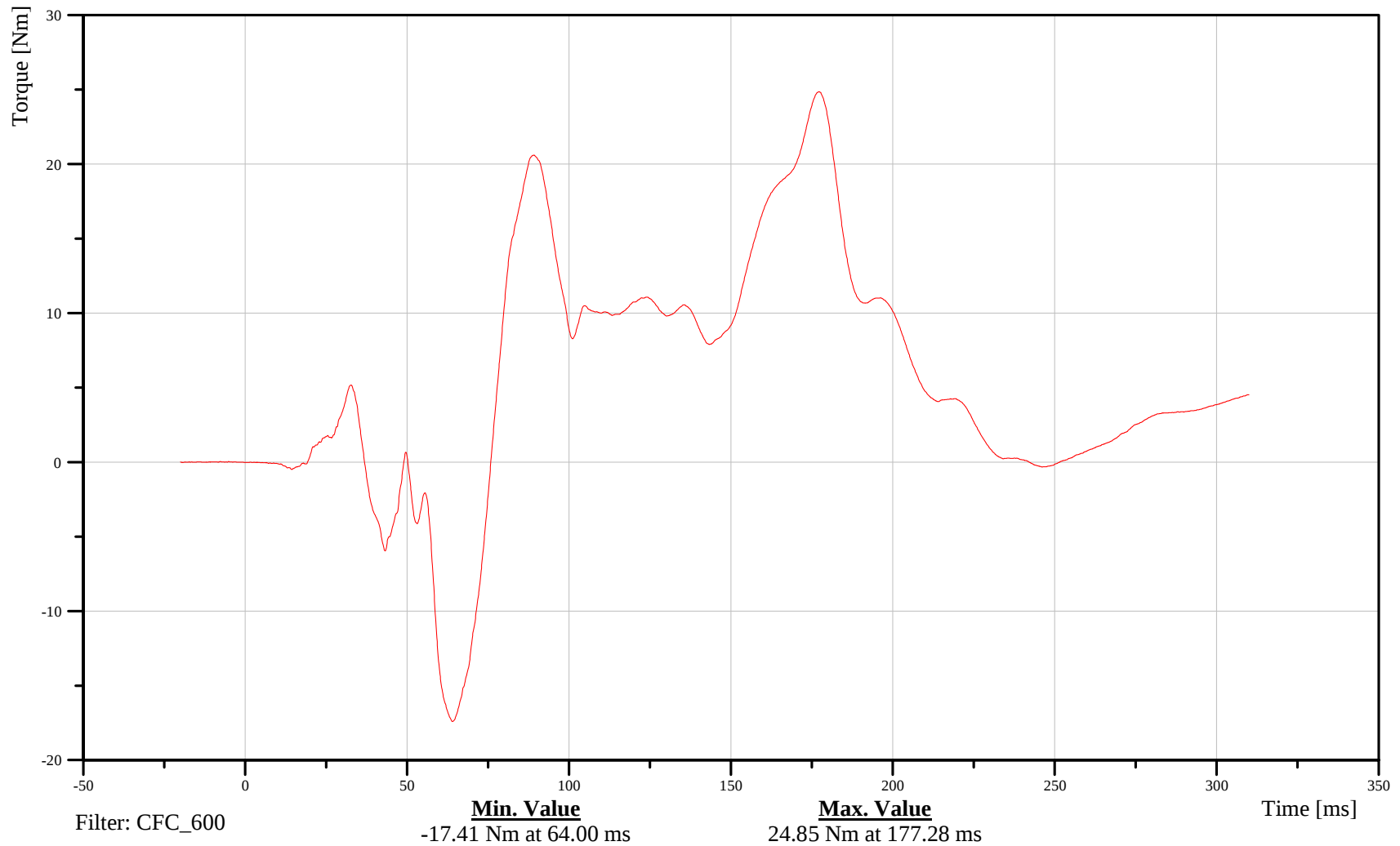
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER NECK MOMENT ABOUT Y AXIS

Customer: NHTSA
Test Number: C70501

14NECKUP00SHMOYB

TRC Inc. Test Lab: CTF
Test Number: 061026



B-43

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

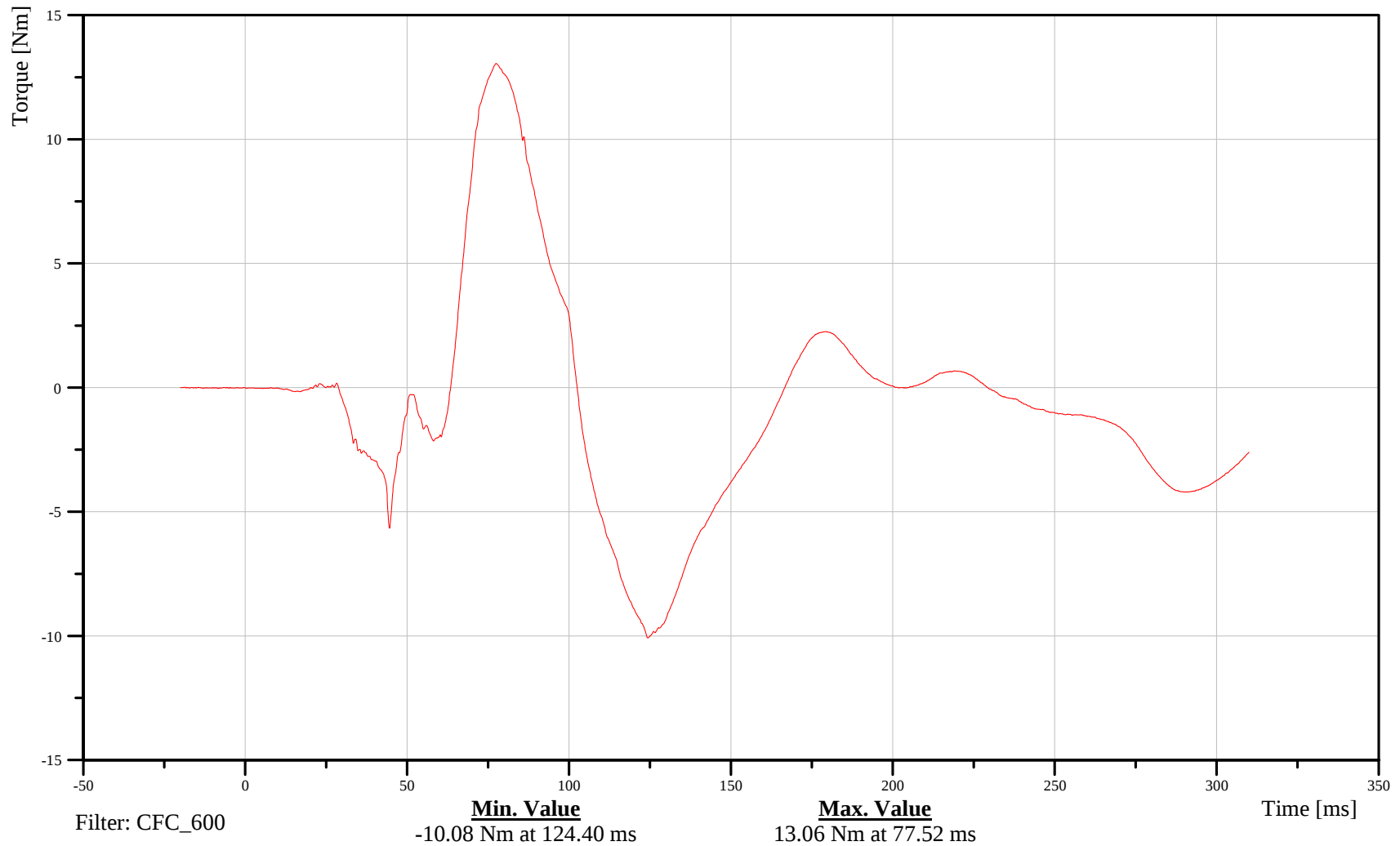
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER NECK MOMENT ABOUT Z AXIS

Customer: NHTSA
Test Number: C70501

14NECKUP00SHMOZB

TRC Inc. Test Lab: CTF
Test Number: 061026



B-44

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra Neck Moment about the Occipital Condyle (NECK OM)

Date: 10/26/2006
Time: 13:29

Customer: NHTSA

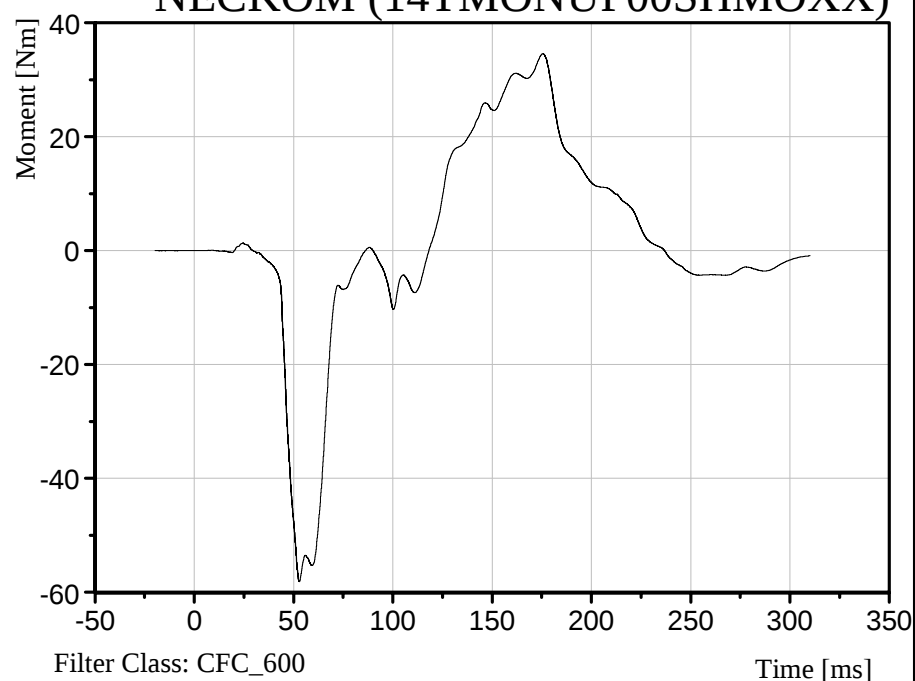
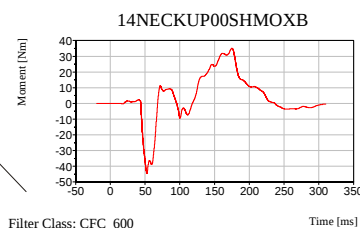
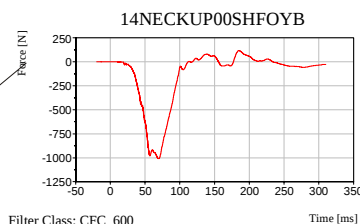
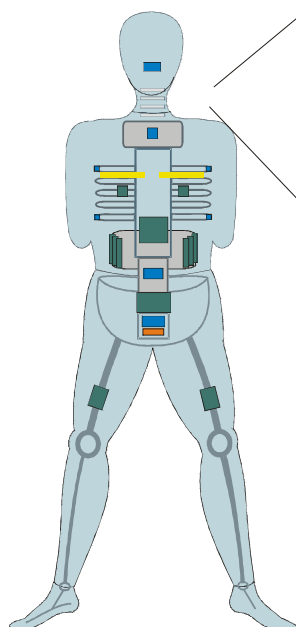
Test Number: C70501

Test Orientation = Side

TRC Inc. Test Lab: CTF

Test Number: 061026

NECKOM (14TMONUP00SHMOXX)



Dummy: HIII/SID

Seating Position:

Left Rear Passenger

Neck OM Source Code: $M_x + (D \cdot F_y)$

[Max.] 34.58 Nm at 175.52 ms

[Min.] -58.10 Nm at 52.80 ms

B-45

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

LEFT REAR PASSENGER UPPER RIB Y-AXIS ACCELERATION

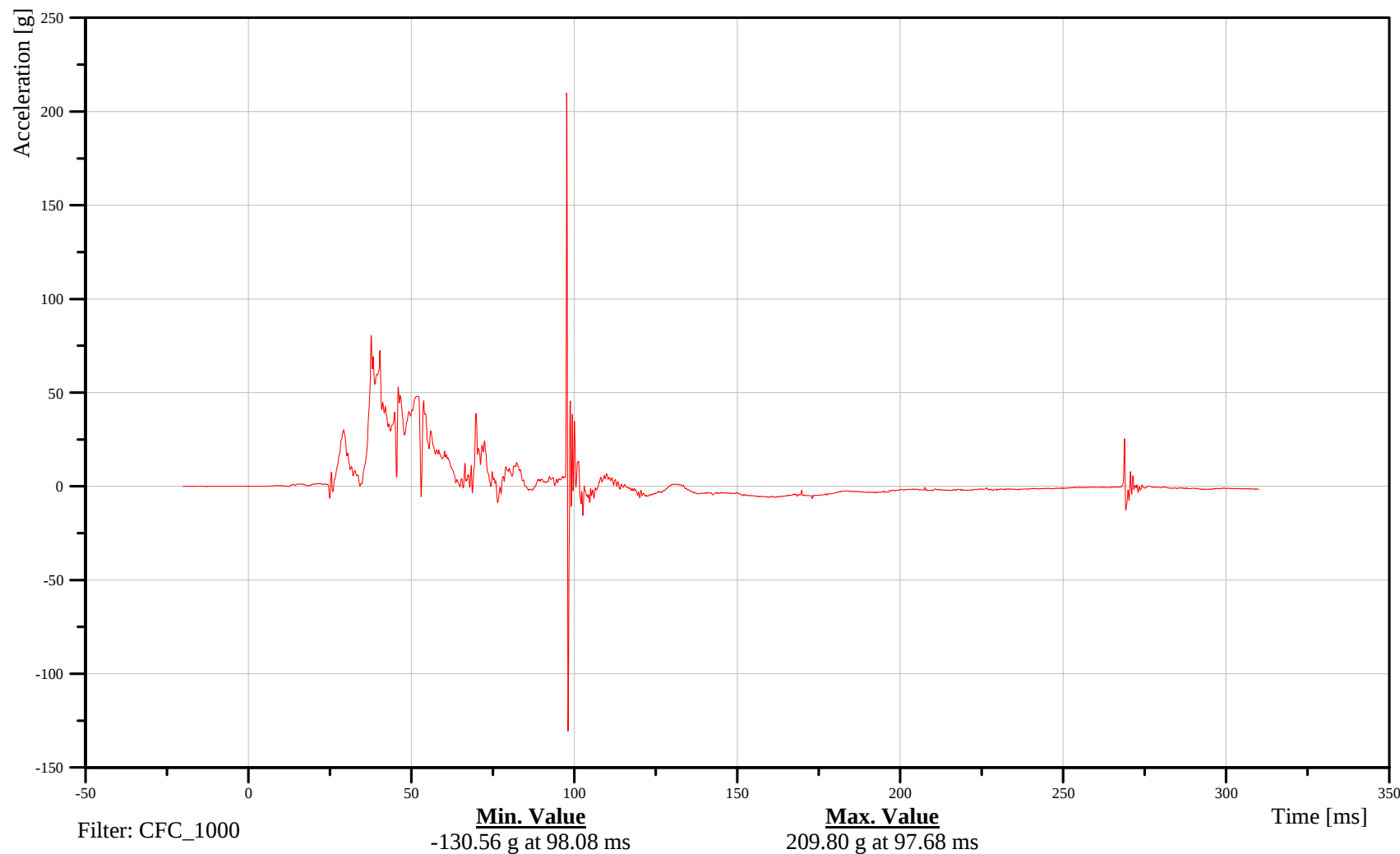
Customer: NHTSA

Test Number: C70501

14RIBSLU00SHACYA

TRC Inc. Test Lab: CTF

Test Number: 061026



B-46

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

LEFT REAR PASSENGER UPPER RIB Y-AXIS VELOCITY

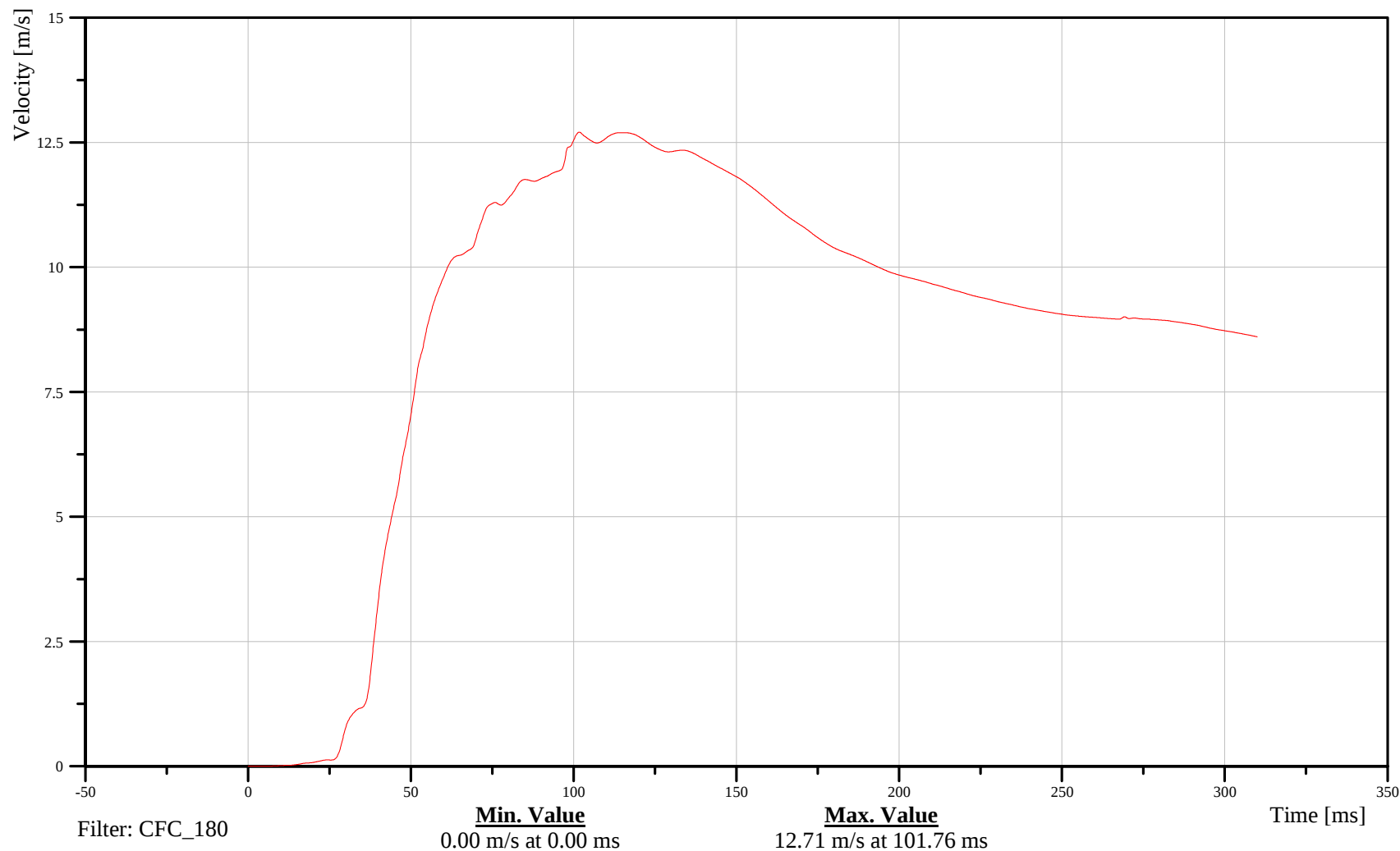
Customer: NHTSA

Test Number: C70501

14RIBSLU00SHVEYC

TRC Inc. Test Lab: CTF

Test Number: 061026



B-47

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

LEFT REAR PASSENGER LOWER RIB Y-AXIS ACCELERATION

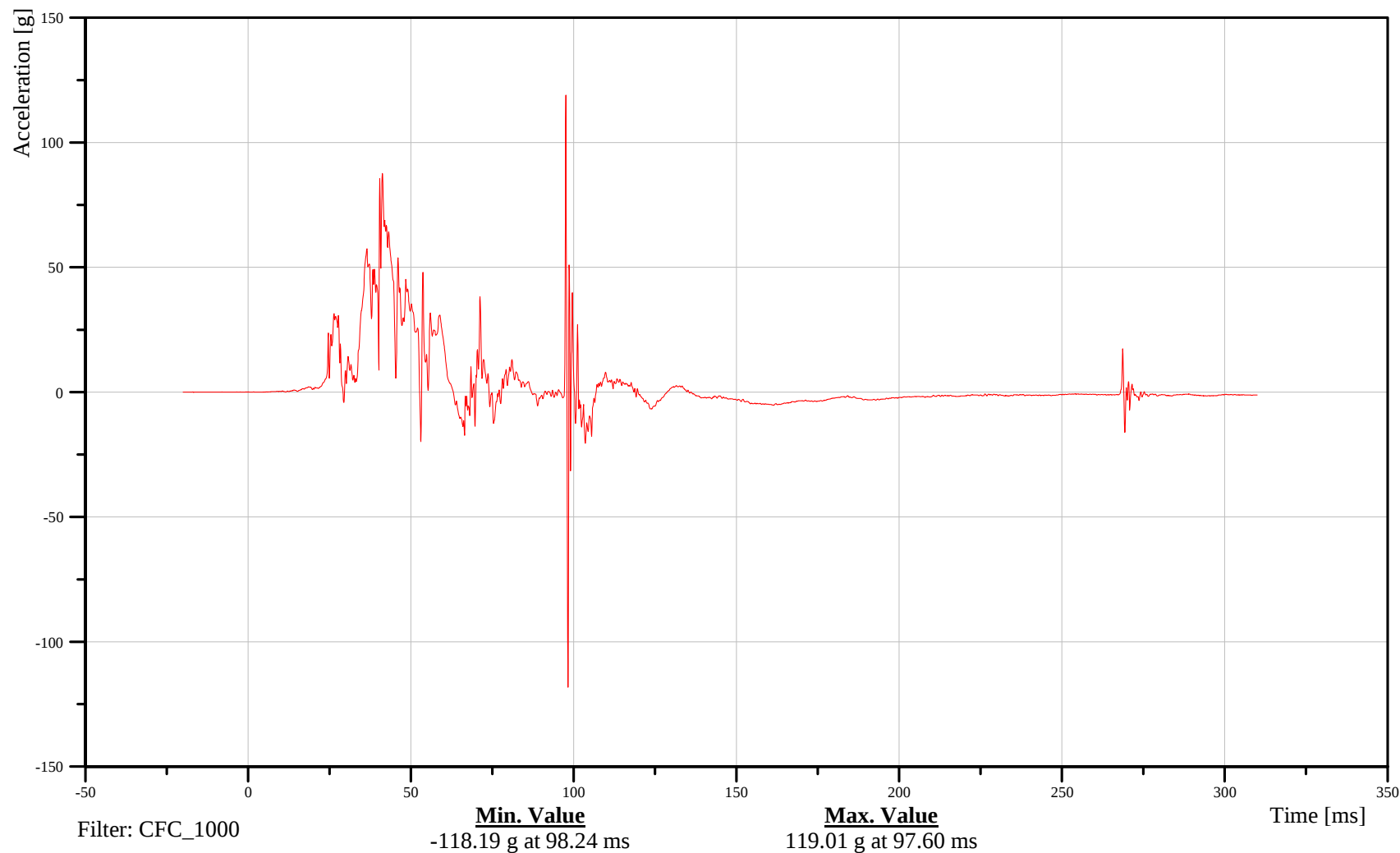
Customer: NHTSA

Test Number: C70501

14RIBSLL00SHACYA

TRC Inc. Test Lab: CTF

Test Number: 061026



B-48

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

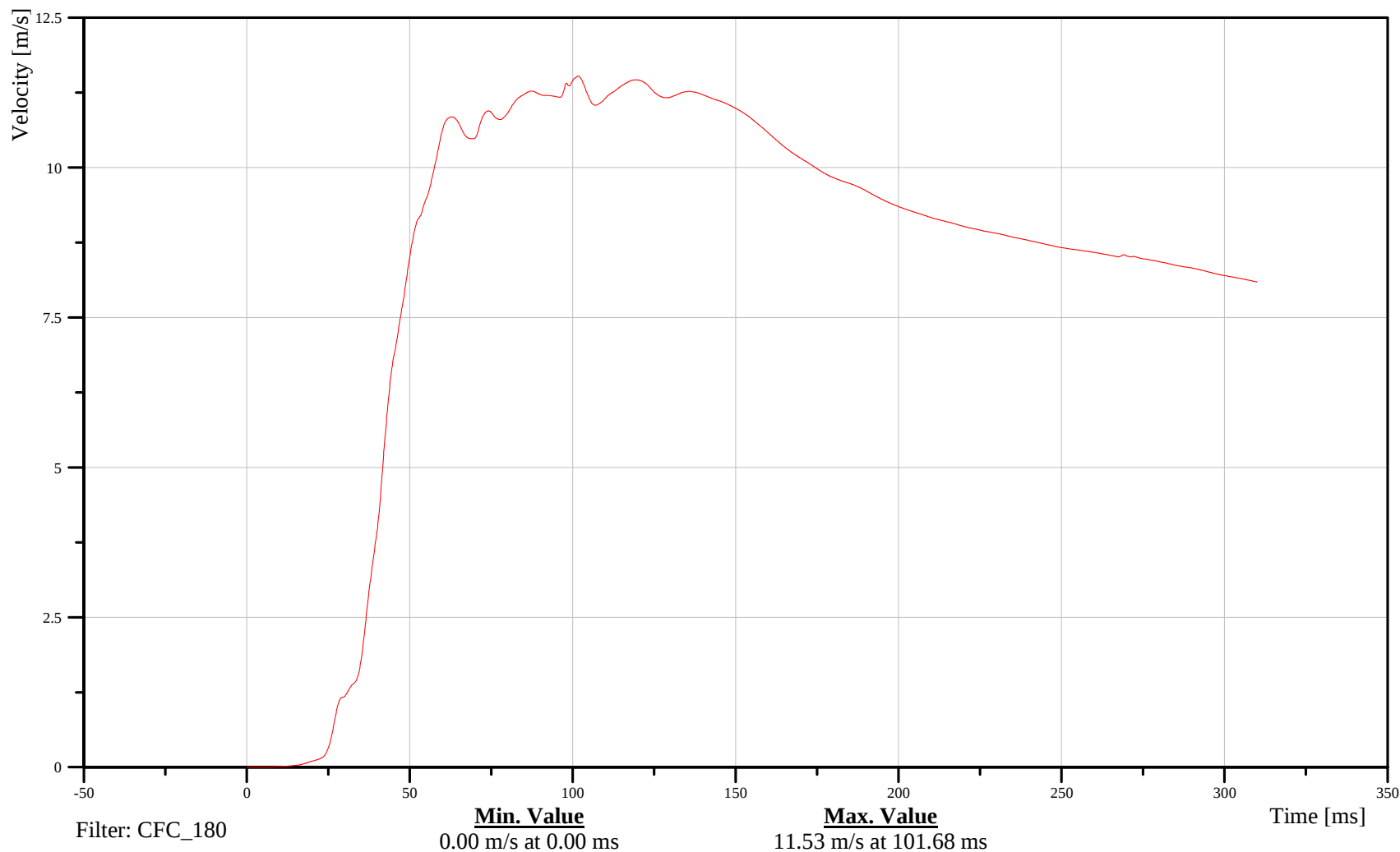
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER LOWER RIB Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

14RIBSLL00SHVEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-49

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

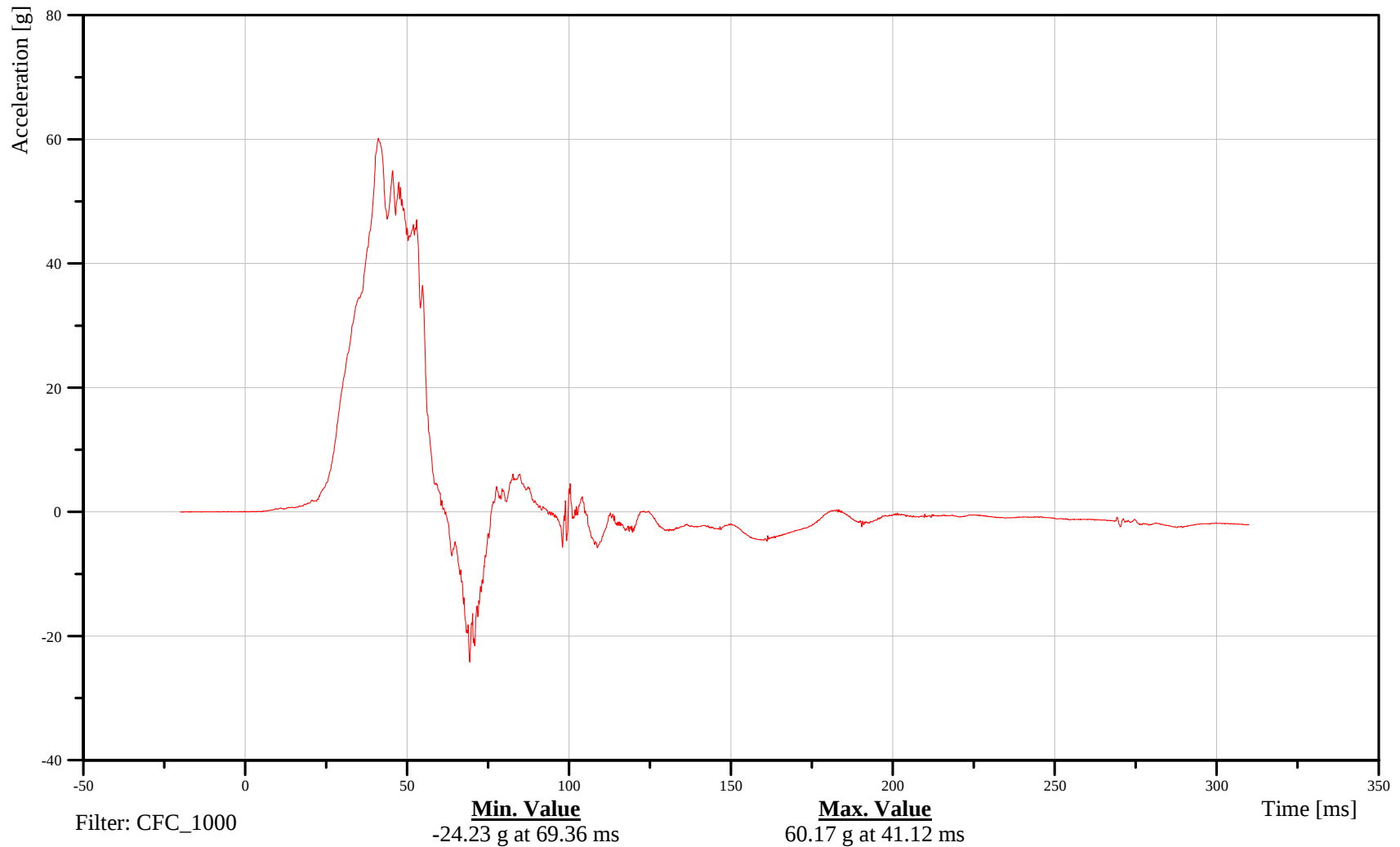
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER LOWER SPINE Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

14SPIN1200SHACYA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-50

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

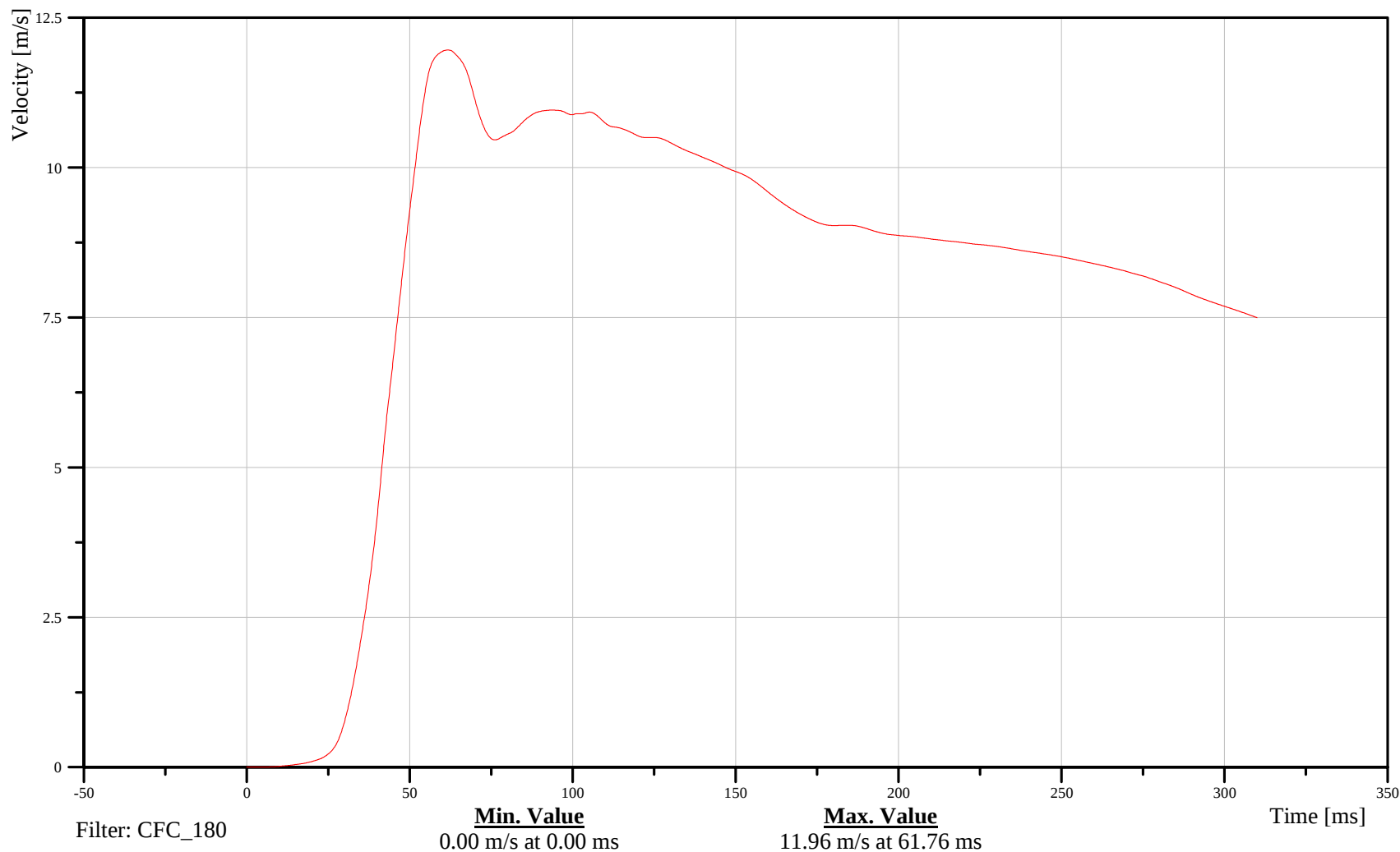
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER LOWER SPINE Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

14SPIN1200SHVEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-51

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

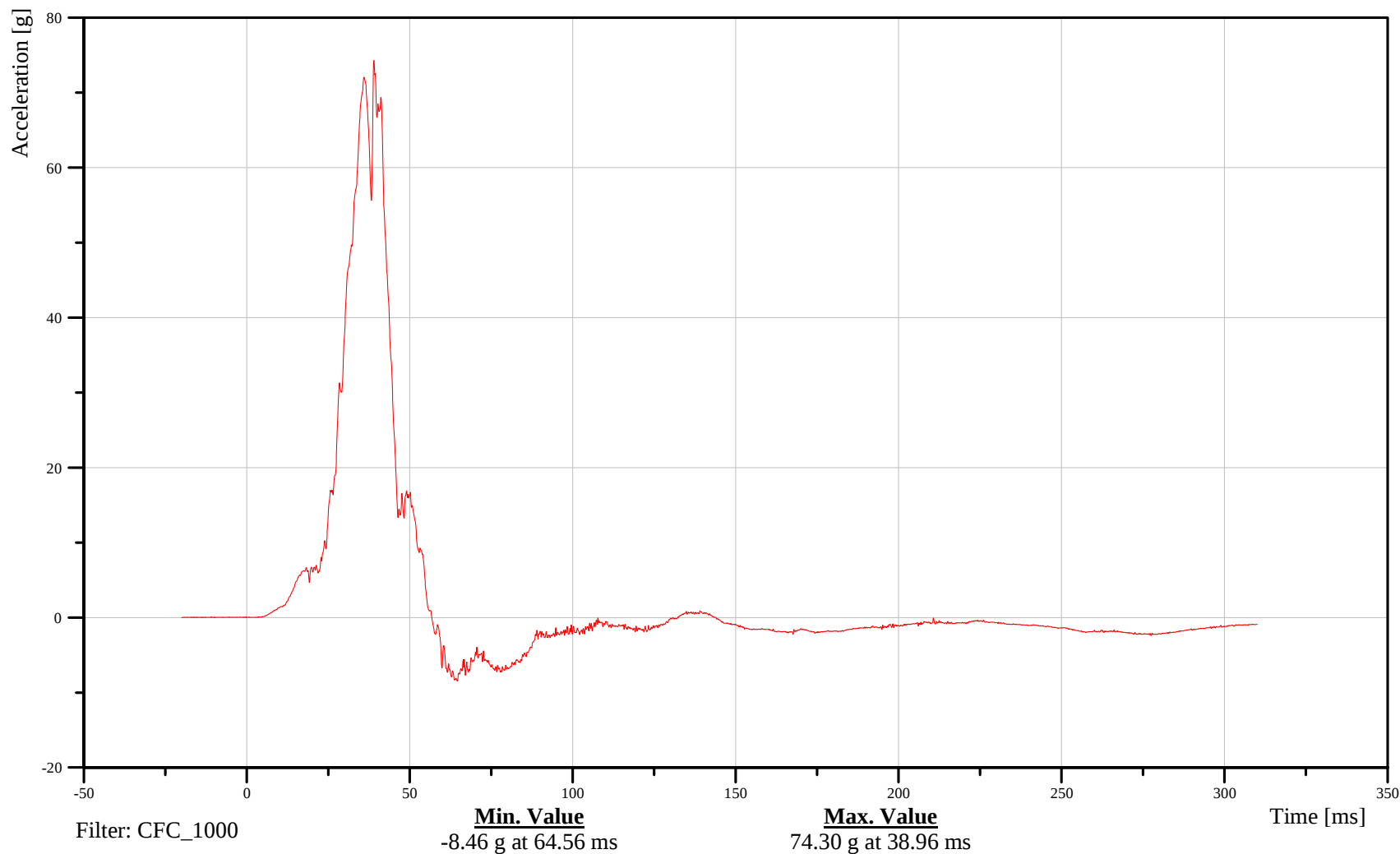
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER PELVIS Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

14PELVCG00SHACYA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-52

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

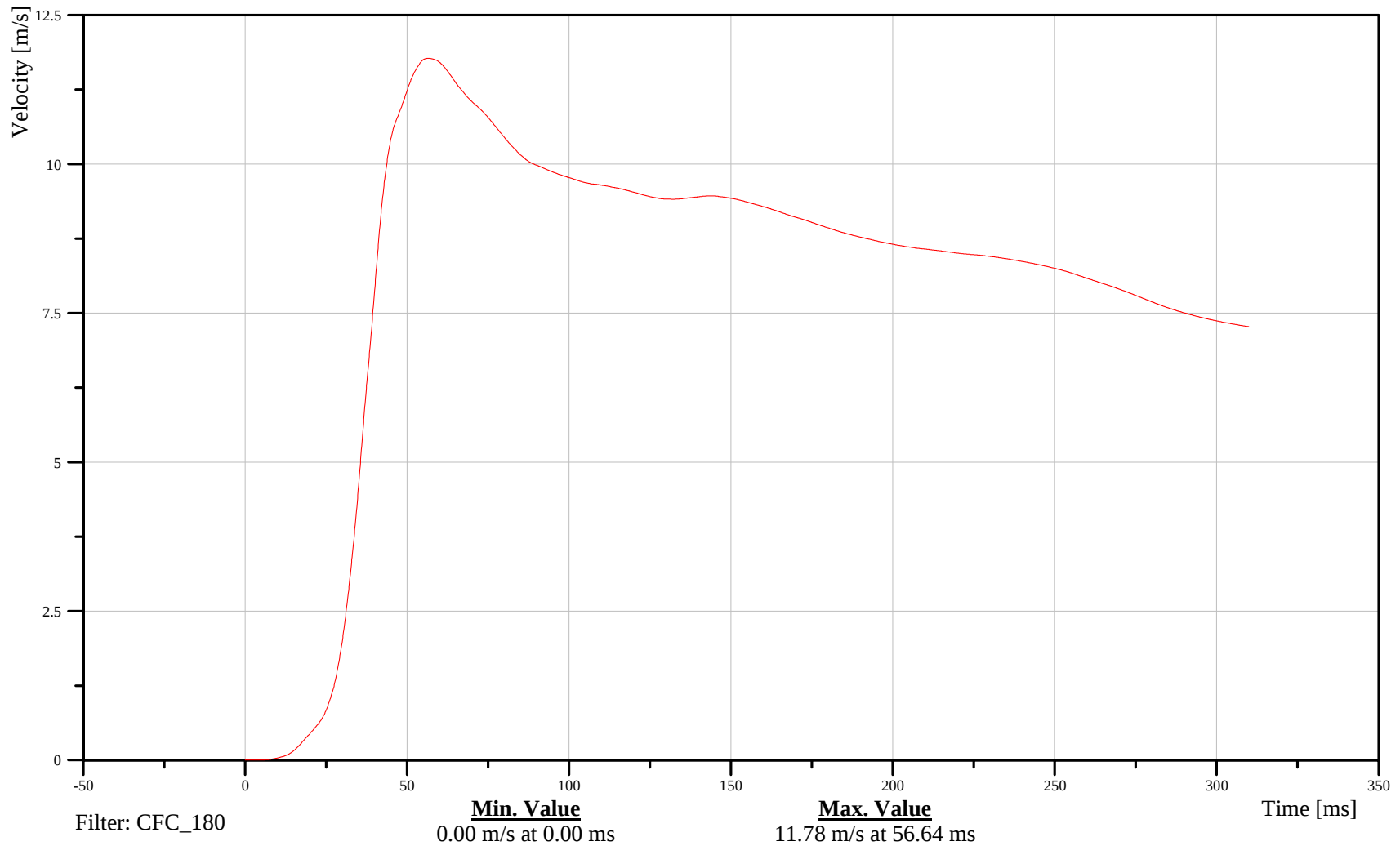
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER PELVIS Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

14PELVCG00SHVEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-53

061026

Driver and Passenger Dummy Redundant Instrumentation Plots



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

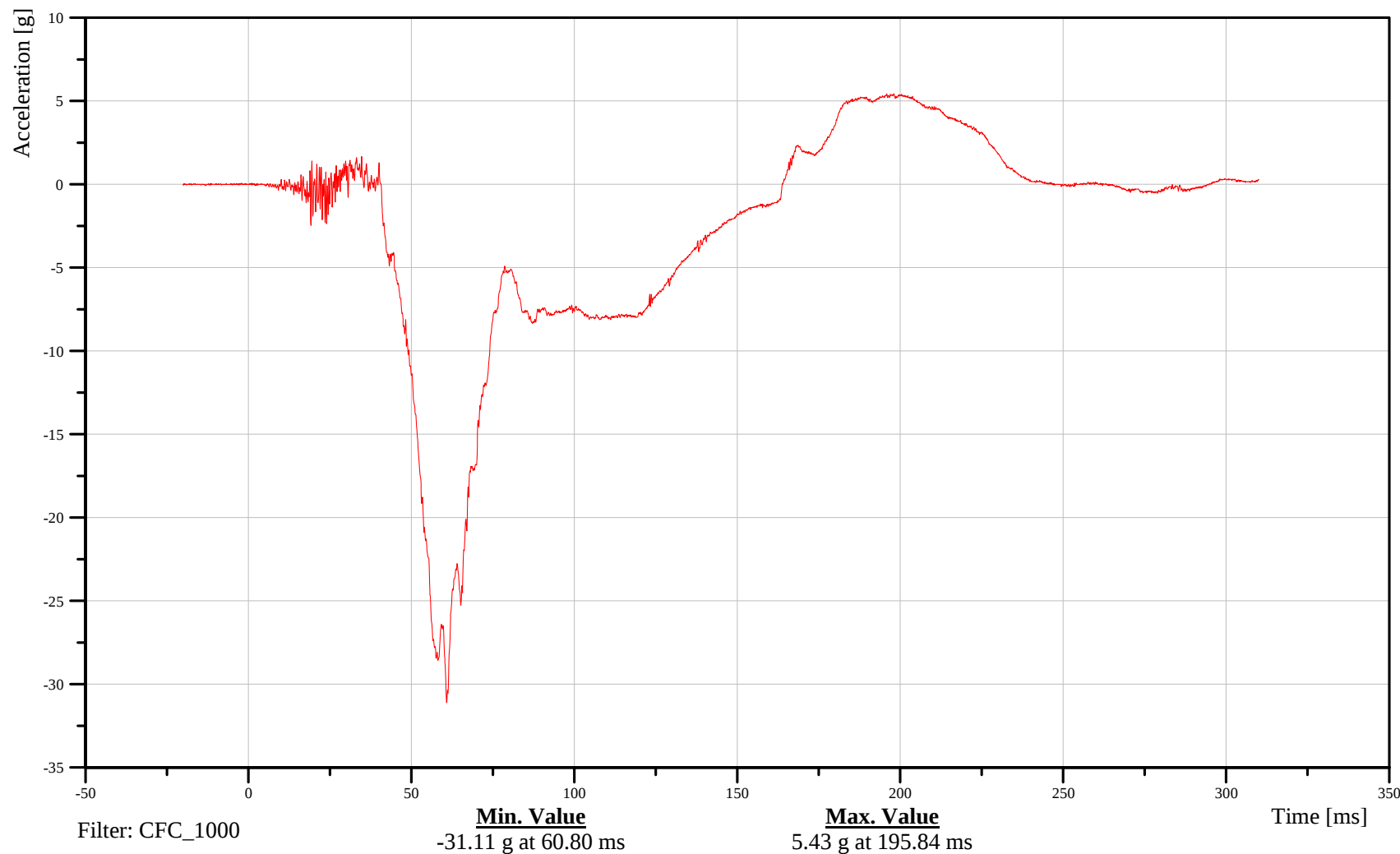
Date: 10/26/2006
Time: 13:29

DRIVER HEAD X-AXIS REDUNDANT ACCELERATION

Customer: NHTSA
Test Number: C70501

11HEADCGRDSHACXA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-55

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

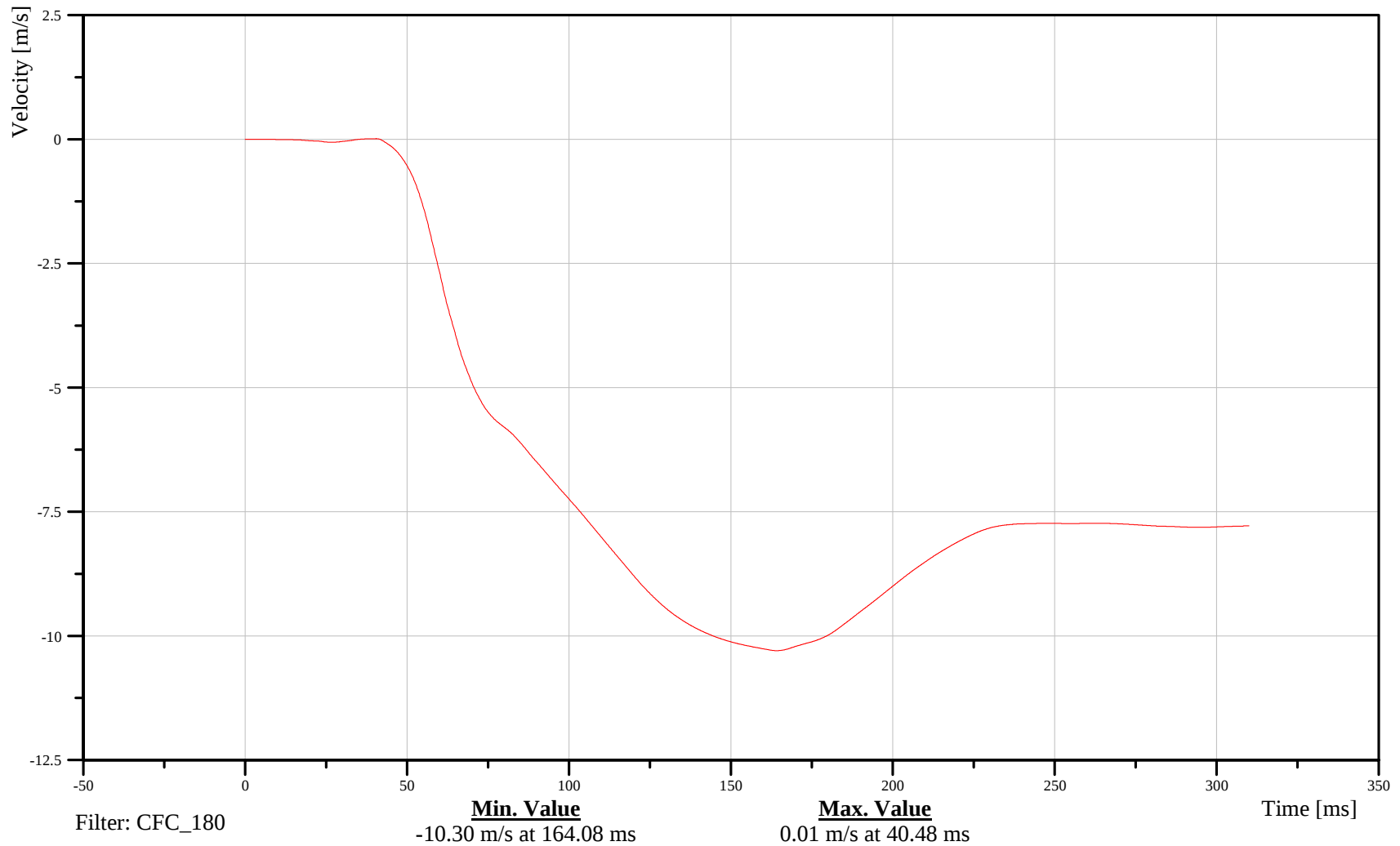
Date: 10/26/2006
Time: 13:29

DRIVER HEAD X-AXIS REDUNDANT VELOCITY

Customer: NHTSA
Test Number: C70501

11HEADCGRDSHVEXC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-56

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

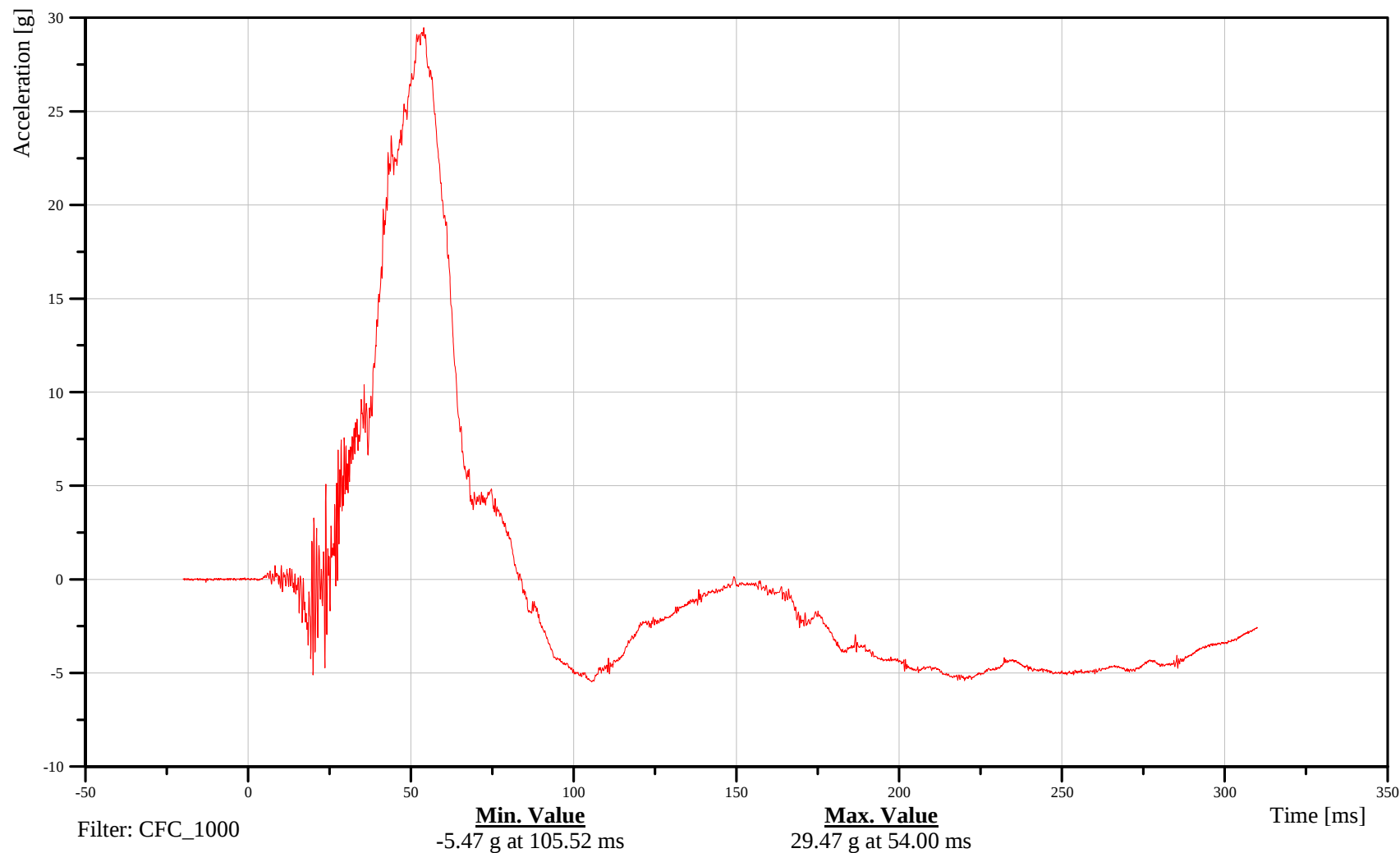
Date: 10/26/2006
Time: 13:29

DRIVER HEAD Y-AXIS REDUNDANT ACCELERATION

Customer: NHTSA
Test Number: C70501

11HEADCGRDSHACYA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-57

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

DRIVER HEAD Y-AXIS REDUNDANT VELOCITY

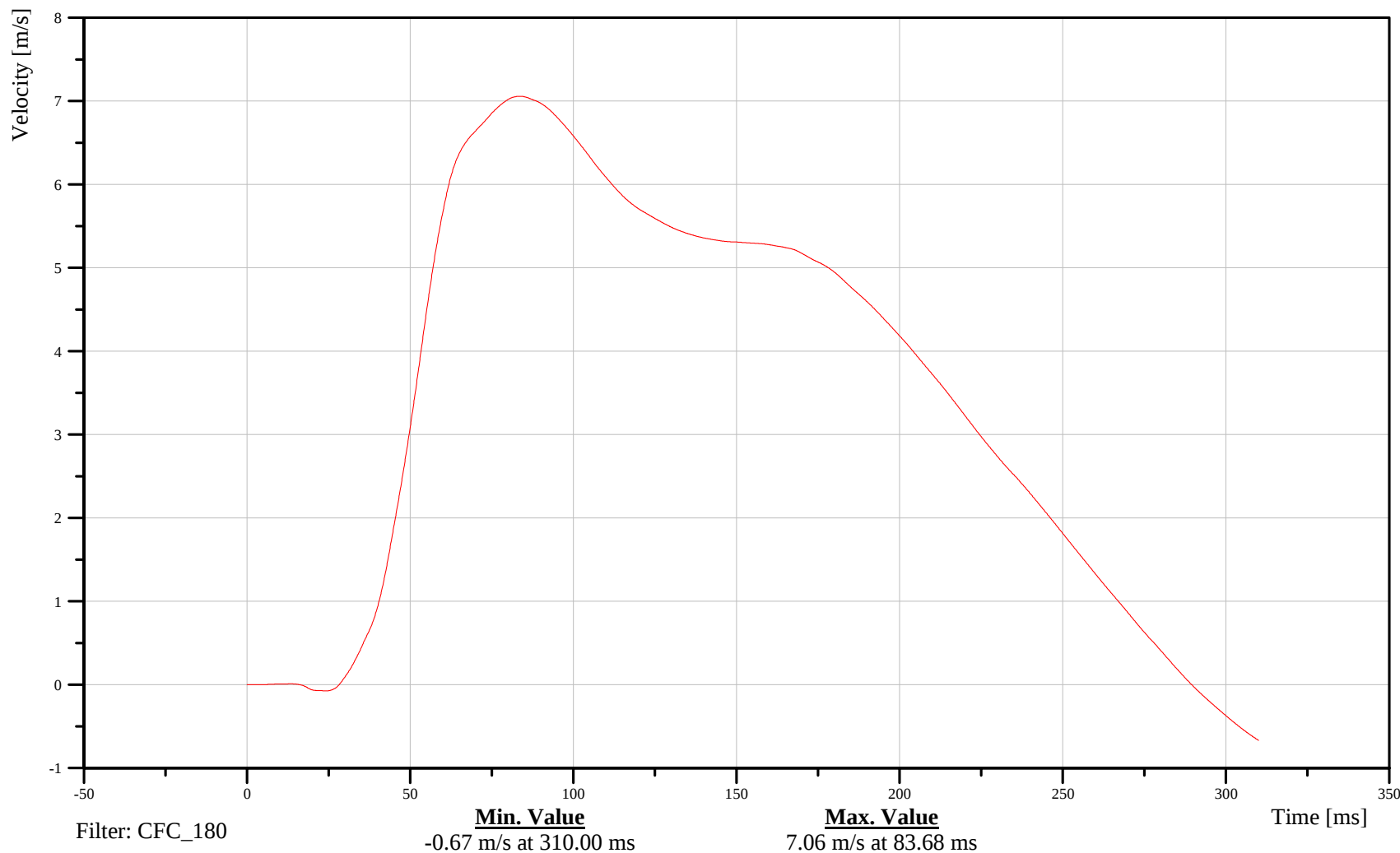
Customer: NHTSA

Test Number: C70501

11HEADCGRDSHVEYC

TRC Inc. Test Lab: CTF

Test Number: 061026



B-58

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

DRIVER HEAD Z-AXIS REDUNDANT ACCELERATION

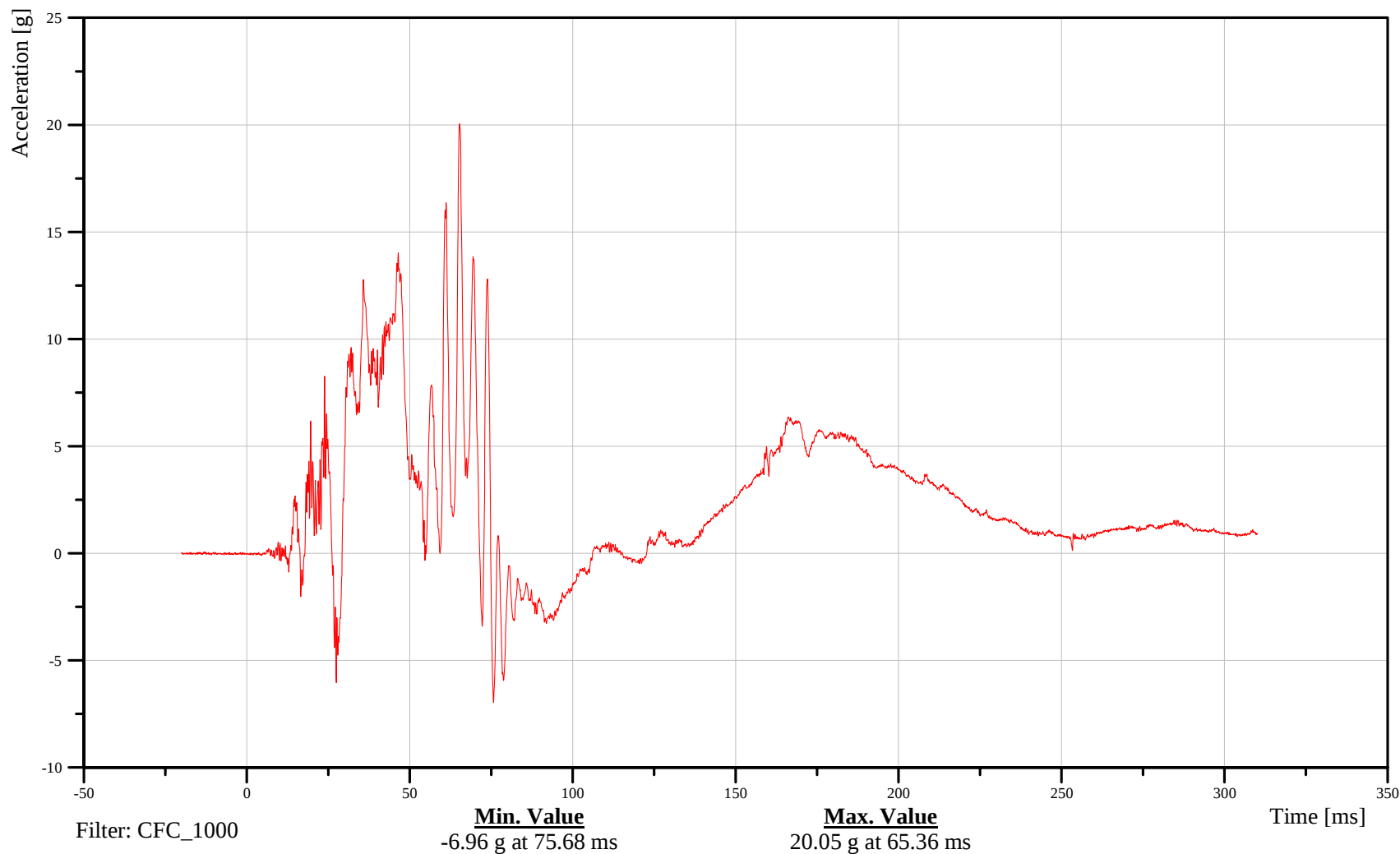
Customer: NHTSA

Test Number: C70501

11HEADCGRDSHACZA

TRC Inc. Test Lab: CTF

Test Number: 061026



B-59

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

DRIVER HEAD Z-AXIS REDUNDANT VELOCITY

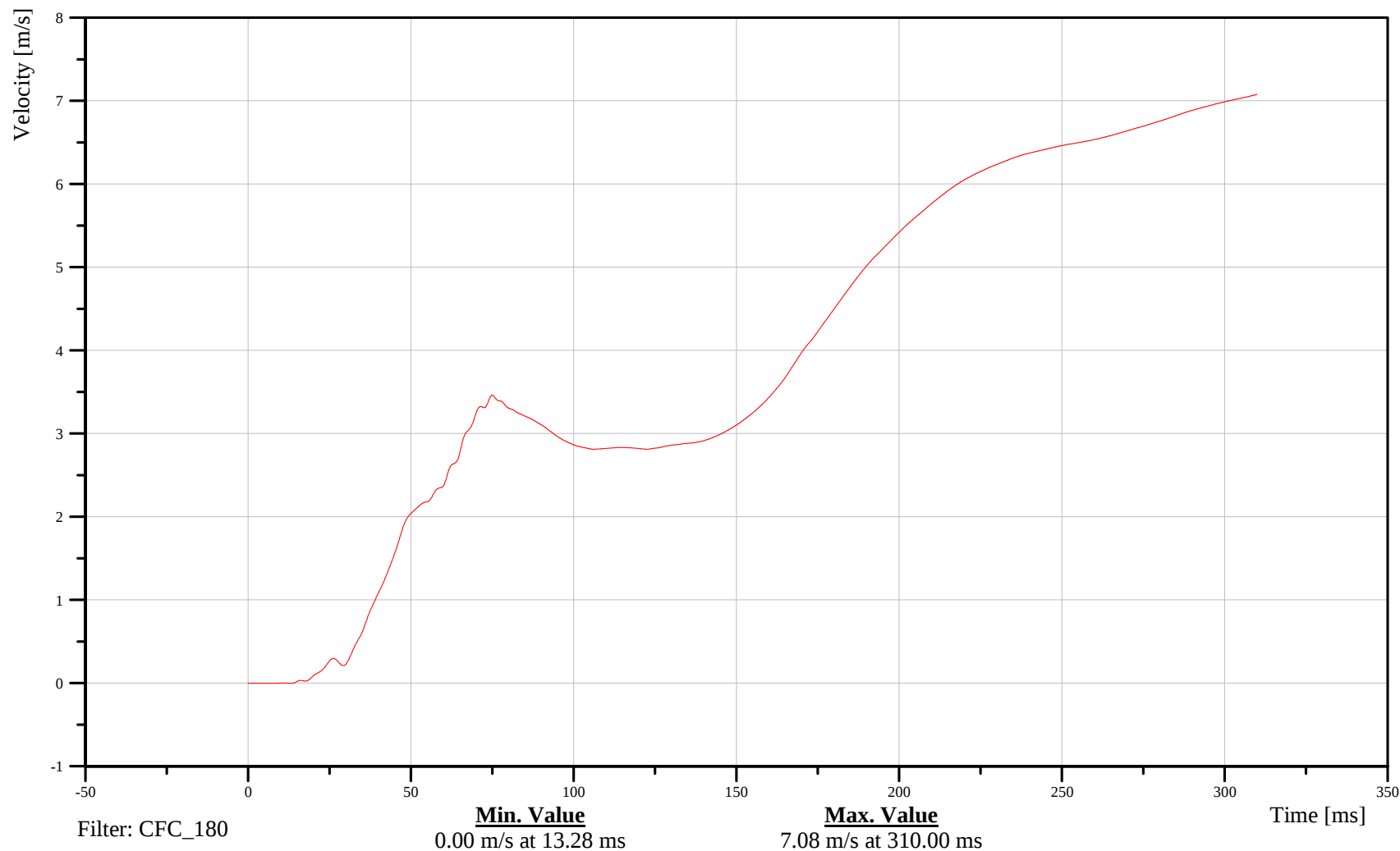
Customer: NHTSA

Test Number: C70501

11HEADCGRDSHVEZC

TRC Inc. Test Lab: CTF

Test Number: 061026



B-60

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

DRIVER HEAD RESULTANT REDUNDANT ACCELERATION

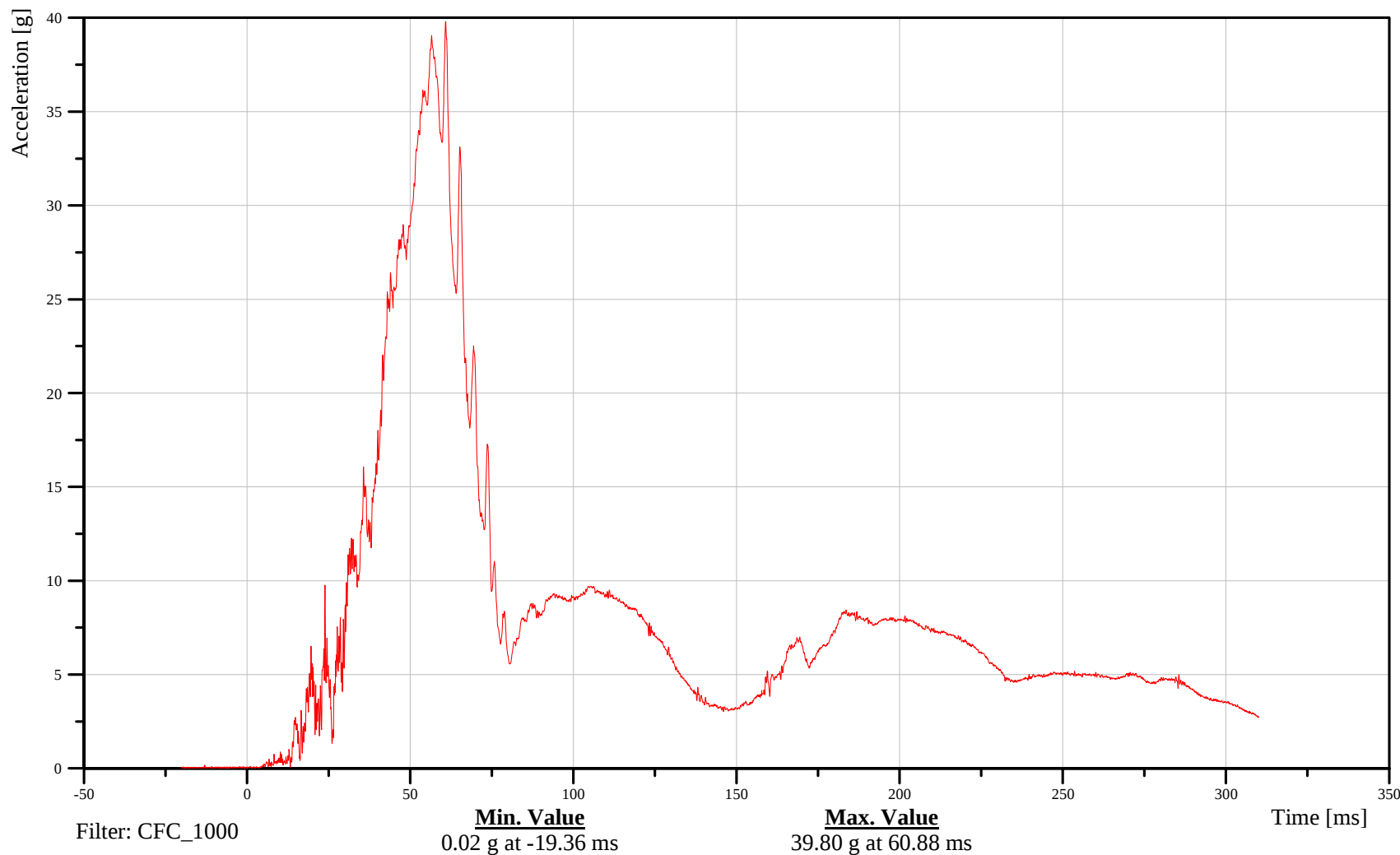
Customer: NHTSA

Test Number: C70501

11HEADCGRDSHACRA

TRC Inc. Test Lab: CTF

Test Number: 061026



B-61

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

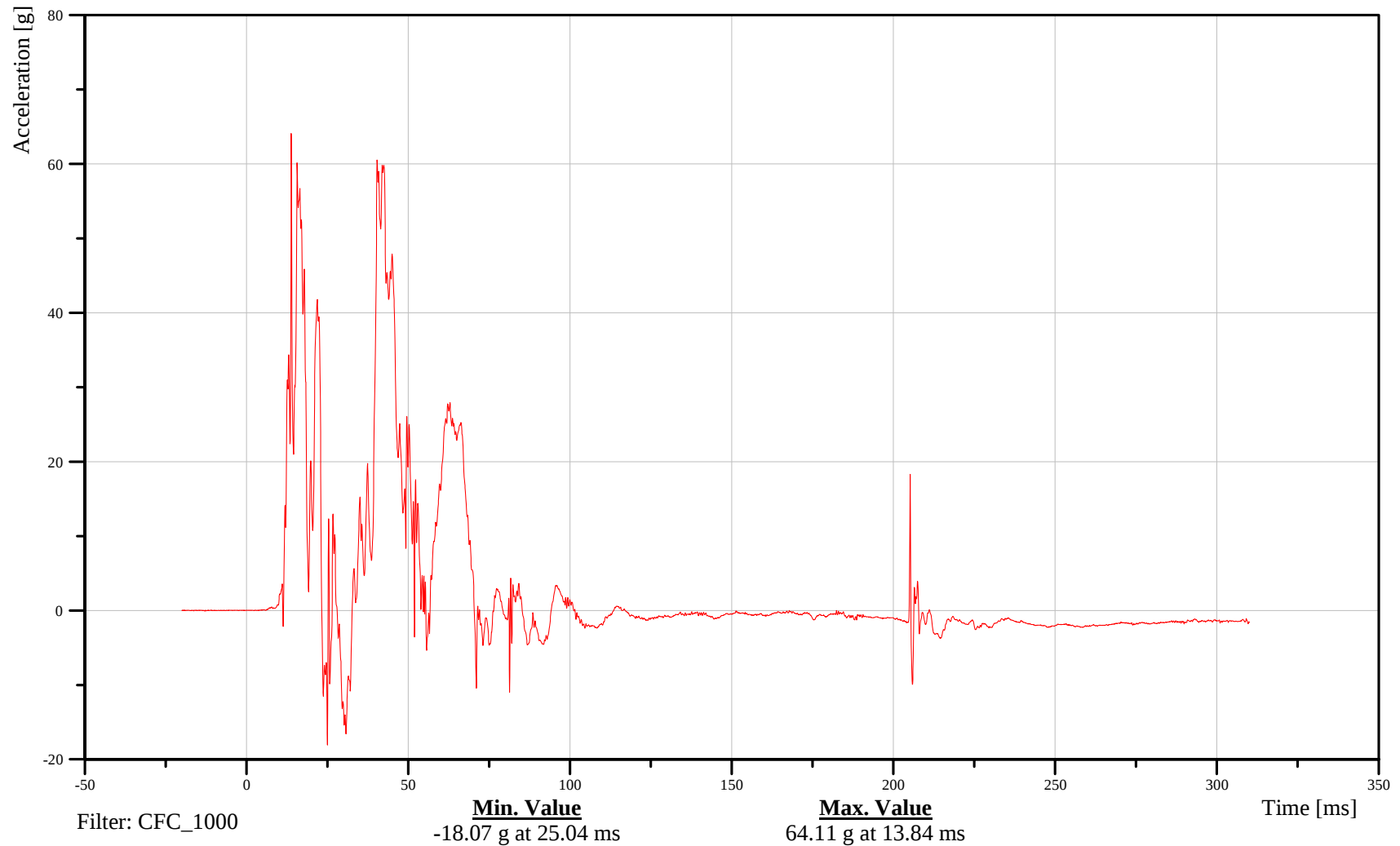
Date: 10/26/2006
Time: 13:29

DRIVER UPPER RIB Y-AXIS REDUNDANT ACCELERATION

Customer: NHTSA
Test Number: C70501

11RIBSLURESHACYA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-62

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

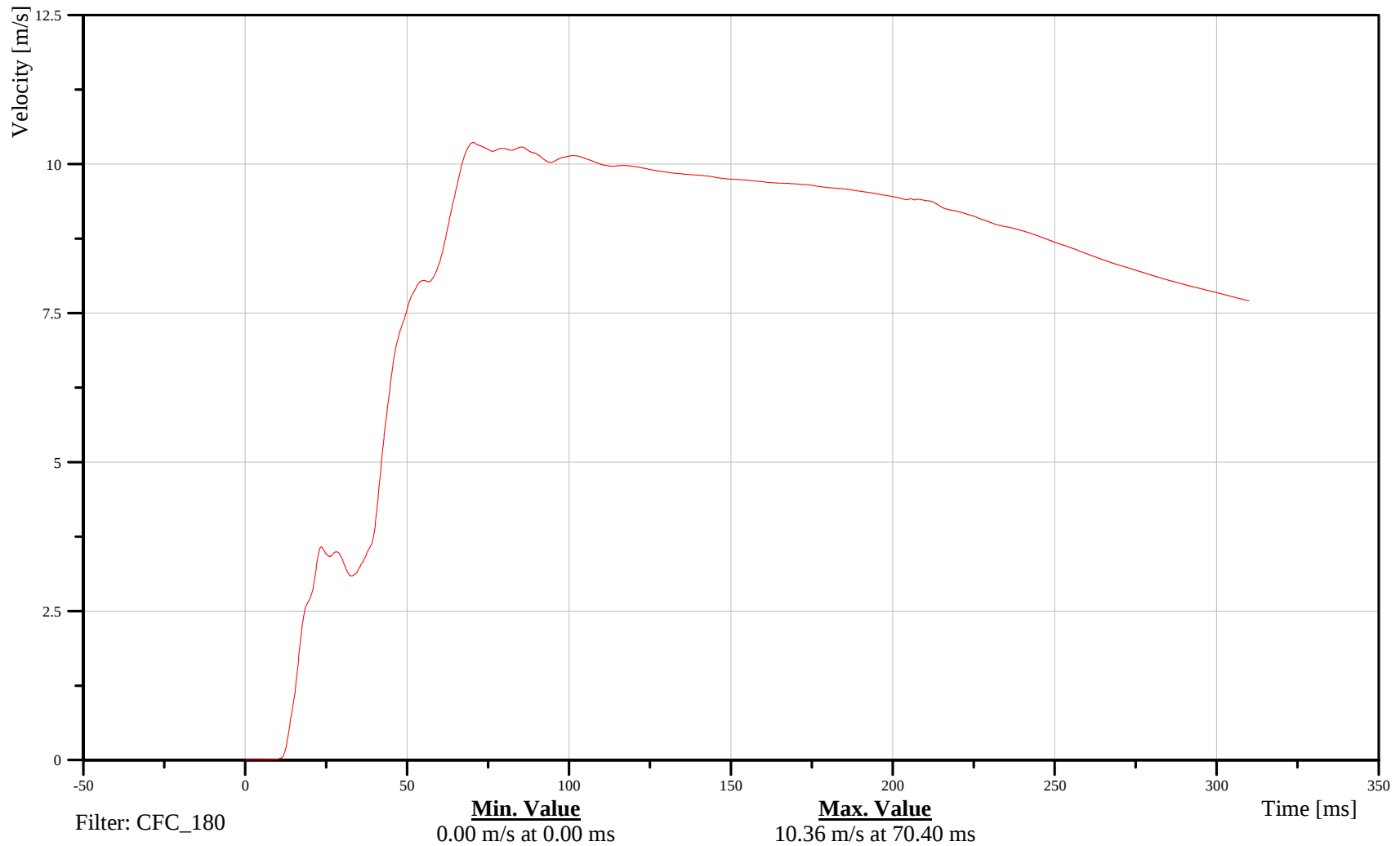
Date: 10/26/2006
Time: 13:29

DRIVER UPPER RIB Y-AXIS REDUNDANT VELOCITY

Customer: NHTSA
Test Number: C70501

11RIBSLURESHVEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-63

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

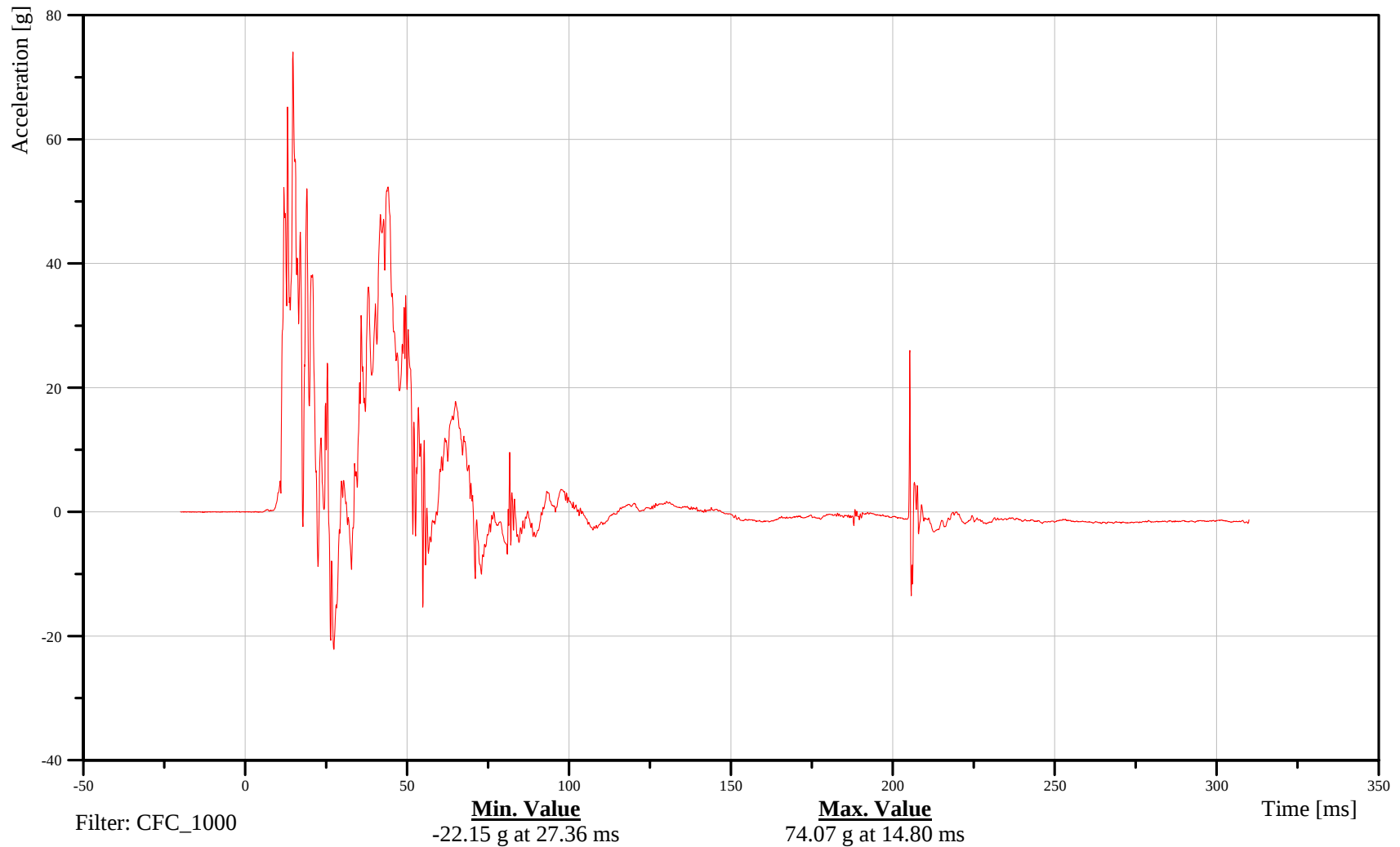
Date: 10/26/2006
Time: 13:29

DRIVER LOWER RIB Y-AXIS REDUNDANT ACCELERATION

Customer: NHTSA
Test Number: C70501

11RIBSLLRESHACYA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-64

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

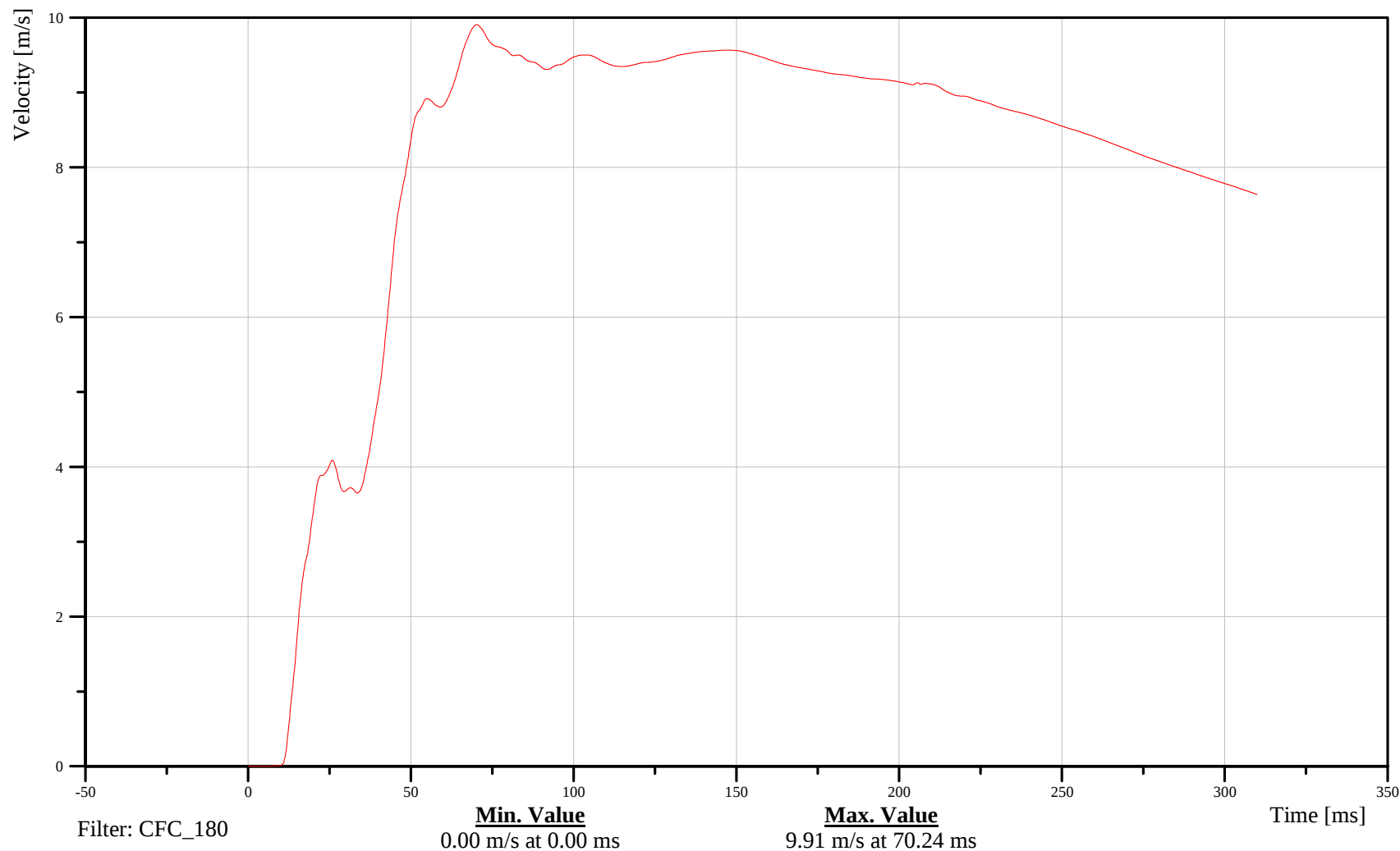
Date: 10/26/2006
Time: 13:29

DRIVER LOWER RIB Y-AXIS REDUNDANT VELOCITY

Customer: NHTSA
Test Number: C70501

11RIBSLLRESHVEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-65

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

DRIVER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION

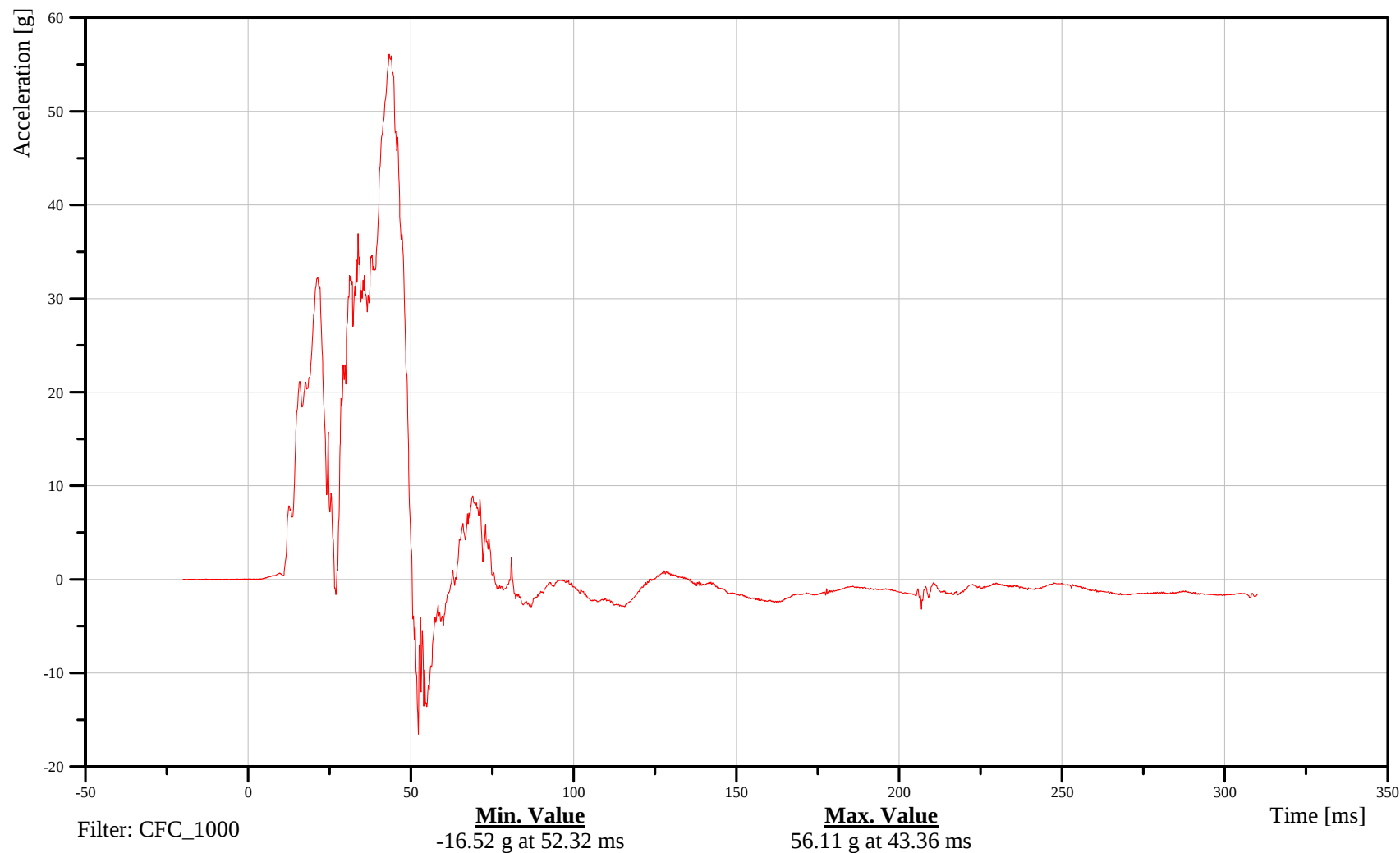
Customer: NHTSA

Test Number: C70501

11SPIN12RDSHACYA

TRC Inc. Test Lab: CTF

Test Number: 061026



B-66

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

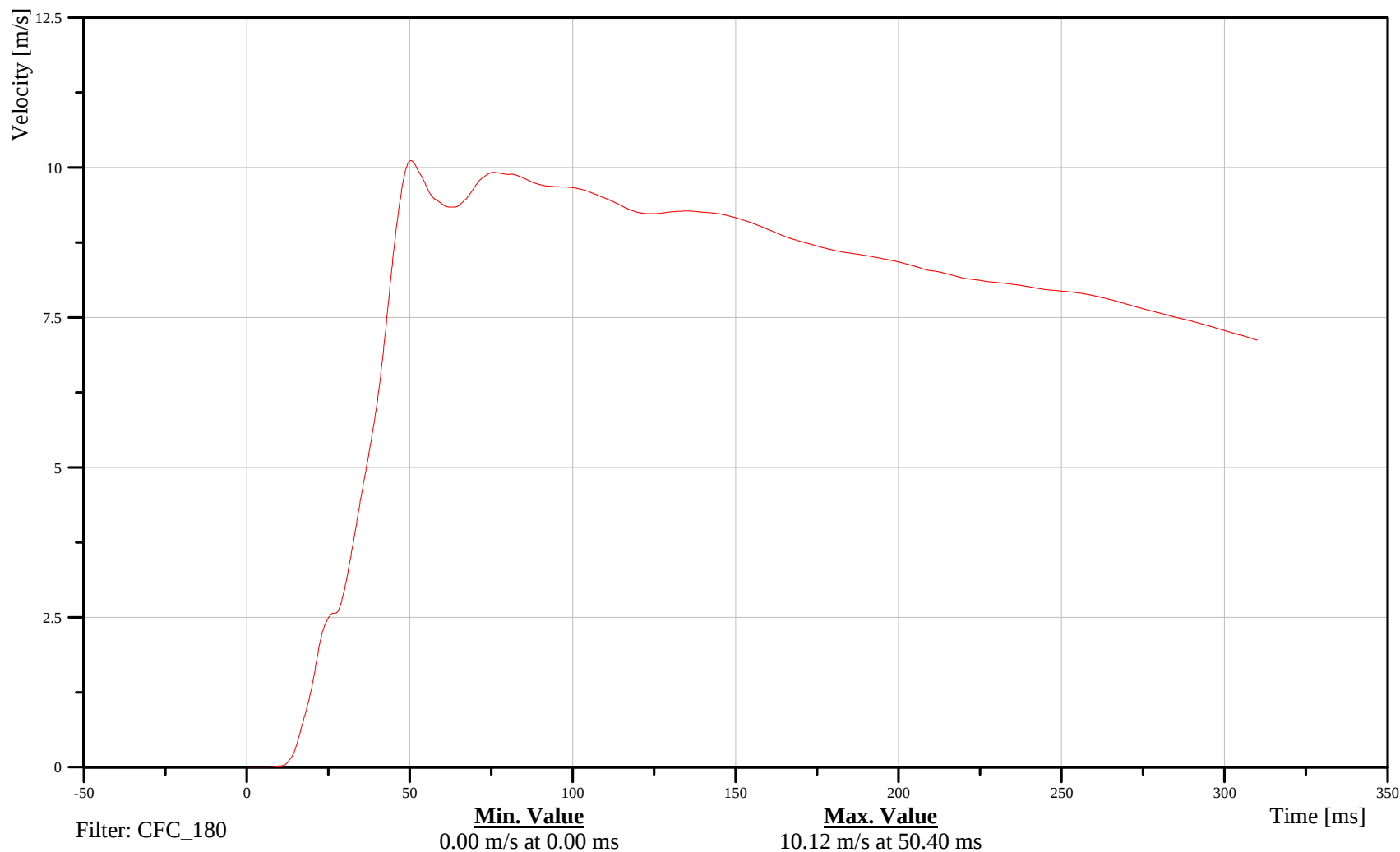
Date: 10/26/2006
Time: 13:29

DRIVER LOWER SPINE Y-AXIS REDUNDANT VELOCITY

Customer: NHTSA
Test Number: C70501

11SPIN12RDSHVEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-67

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER HEAD X-AXIS REDUNDANT ACCELERATION

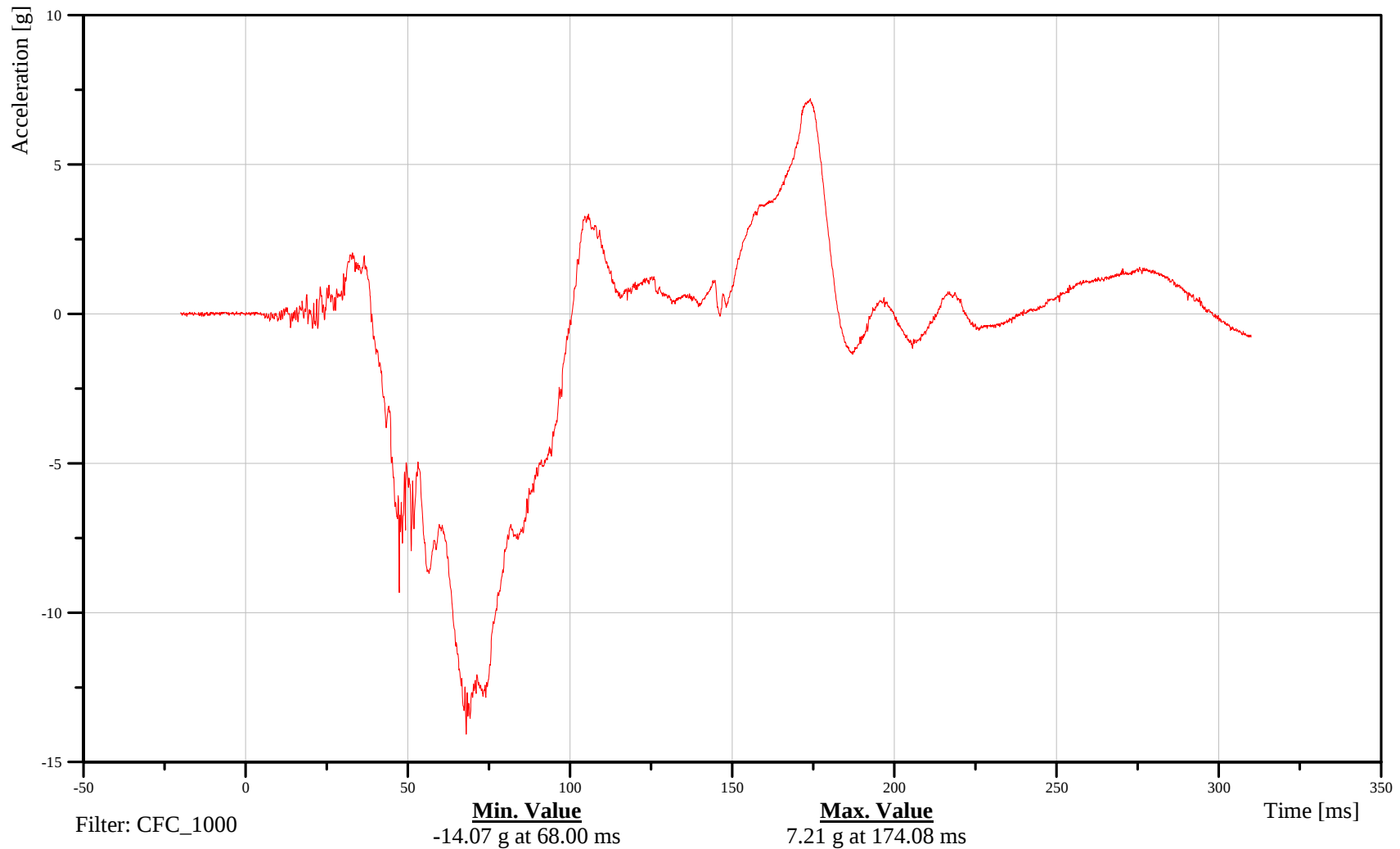
Customer: NHTSA

Test Number: C70501

14HEADCGRDSHACXA

TRC Inc. Test Lab: CTF

Test Number: 061026



B-68

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER HEAD X-AXIS REDUNDANT VELOCITY

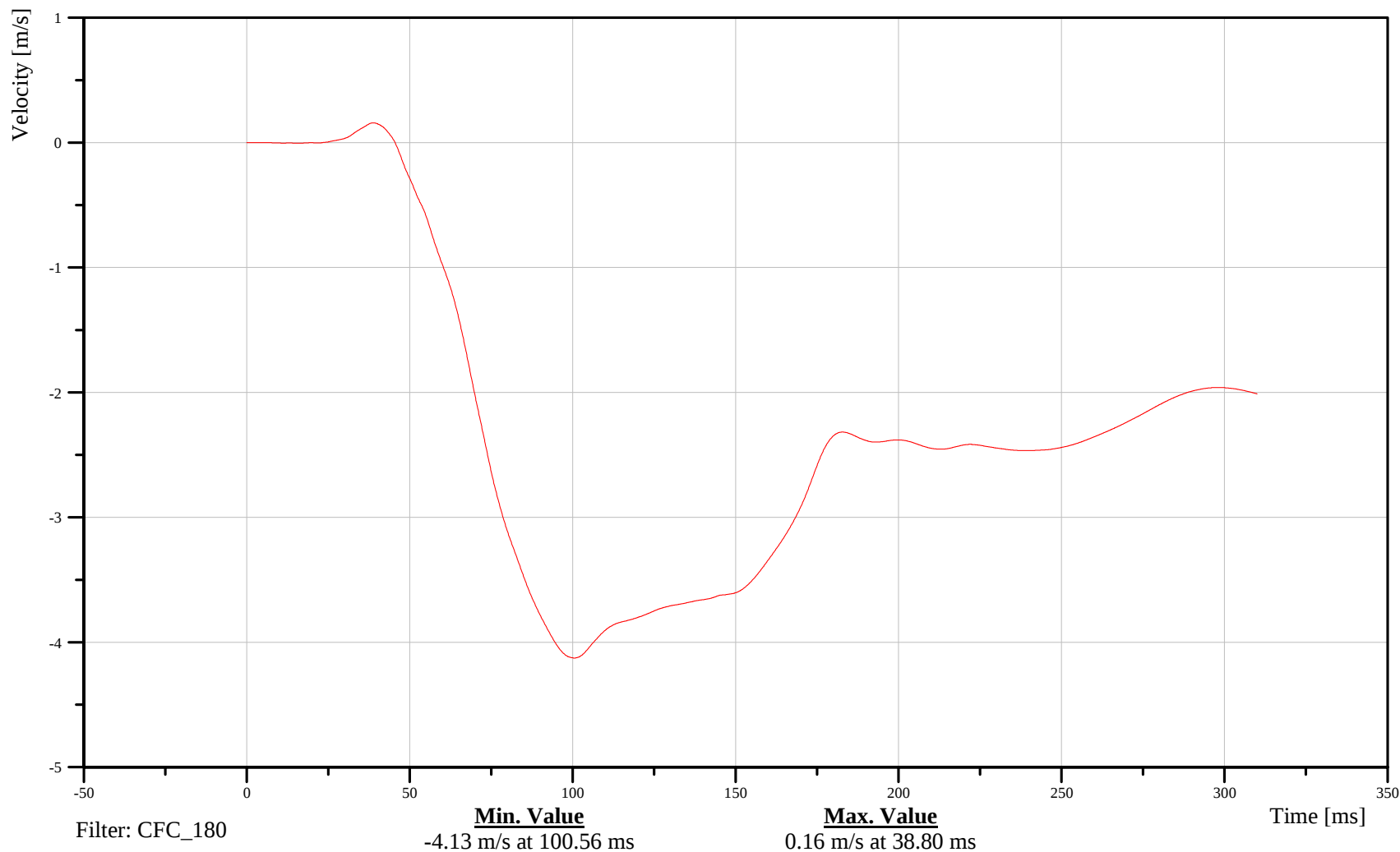
Customer: NHTSA

Test Number: C70501

14HEADCGRDSHVEXC

TRC Inc. Test Lab: CTF

Test Number: 061026



B-69

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

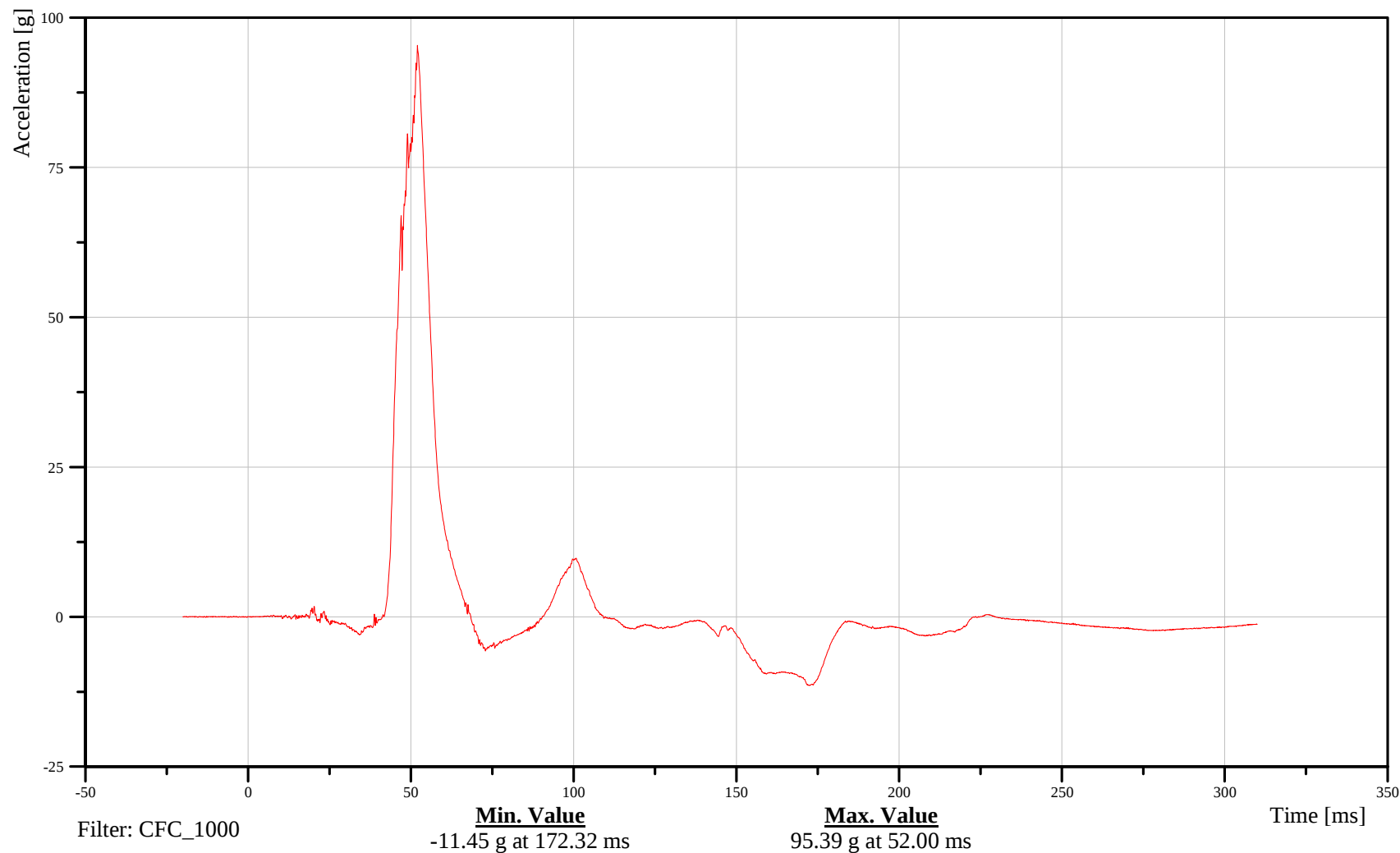
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER HEAD Y-AXIS REDUNDANT ACCELERATION

Customer: NHTSA
Test Number: C70501

14HEADCGRDSHACYA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-70

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

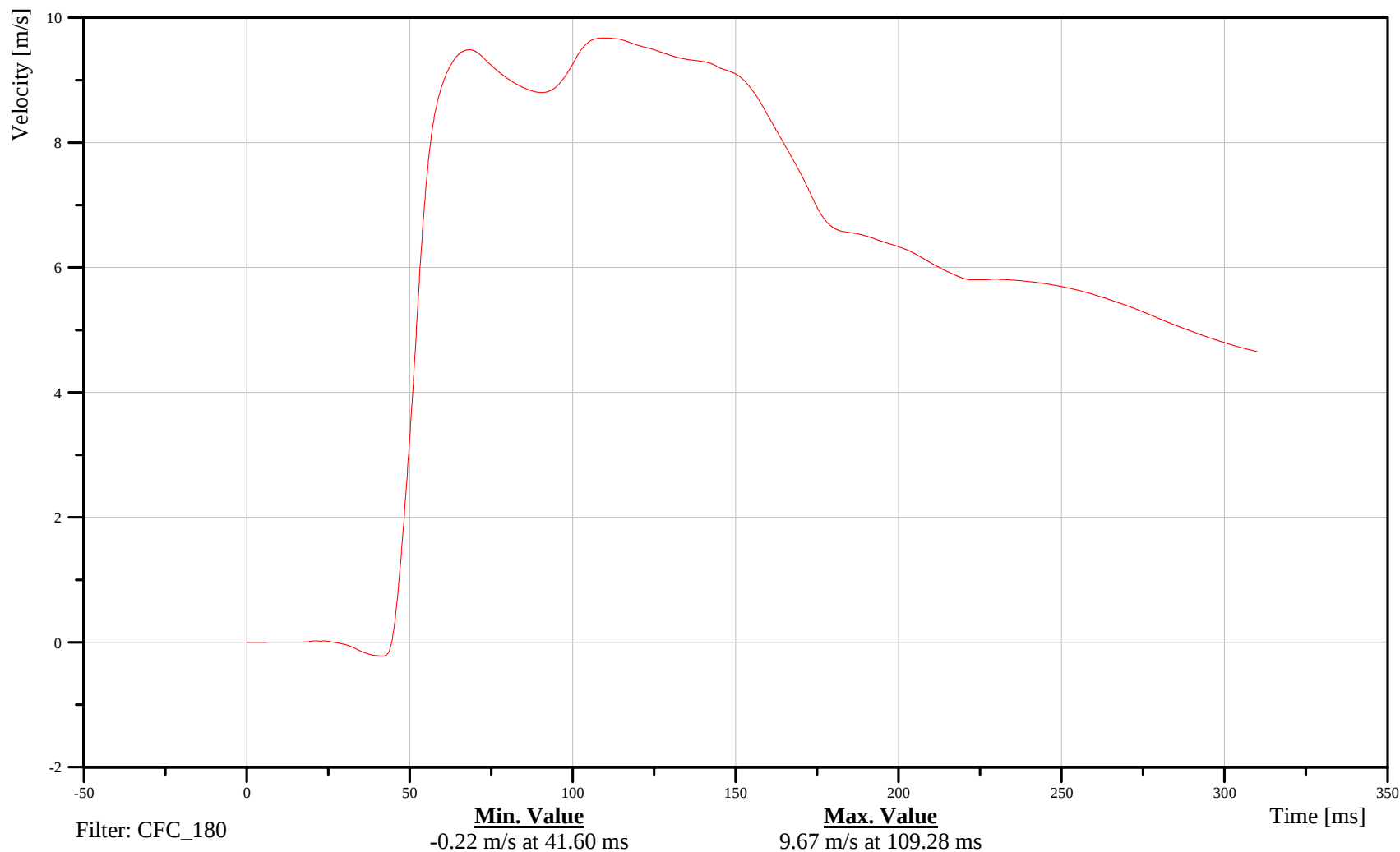
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER HEAD Y-AXIS REDUNDANT VELOCITY

Customer: NHTSA
Test Number: C70501

14HEADCGRDSHVEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-71

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

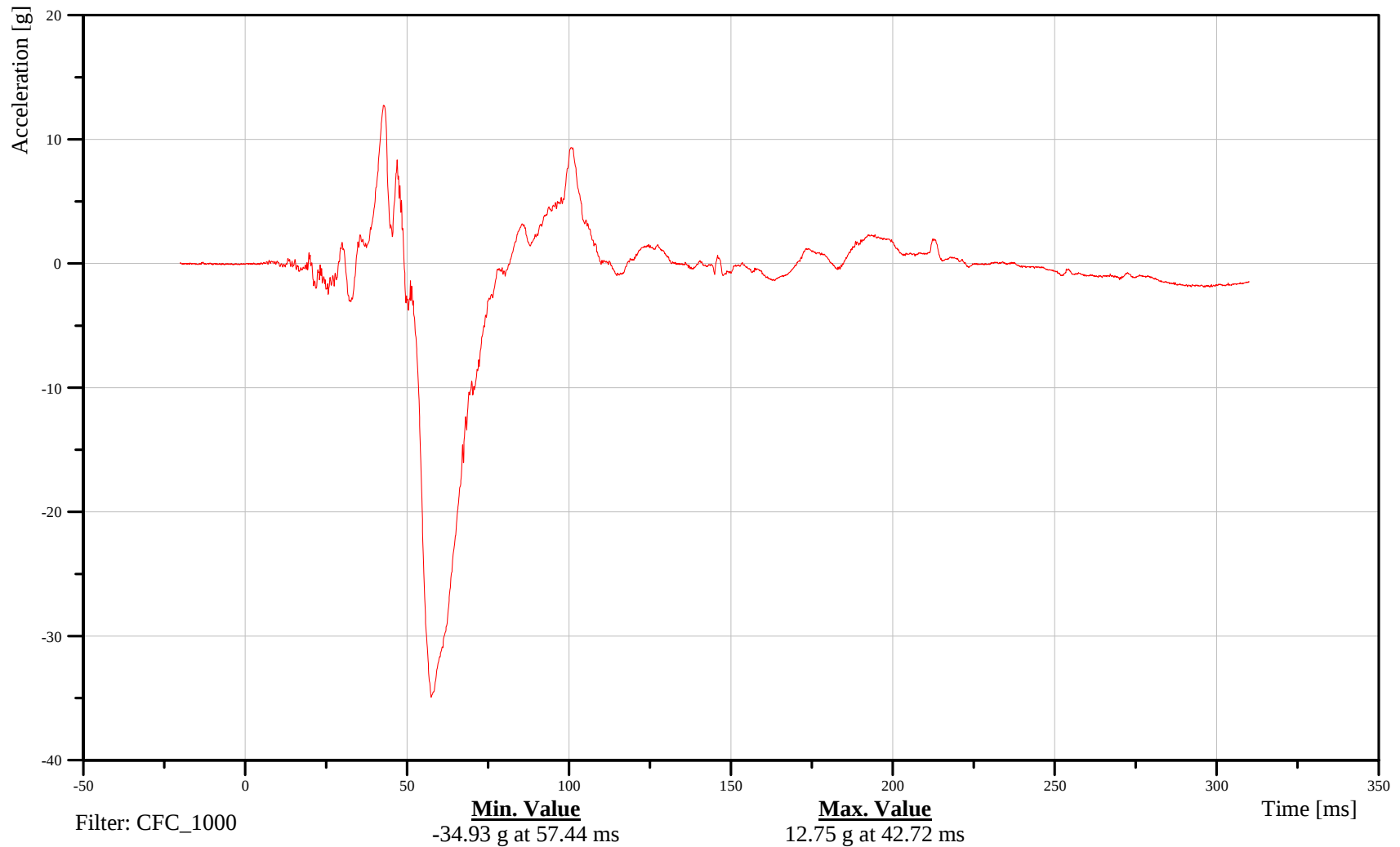
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER HEAD Z-AXIS REDUNDANT ACCELERATION

Customer: NHTSA
Test Number: C70501

14HEADCGRDSHACZA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-72

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

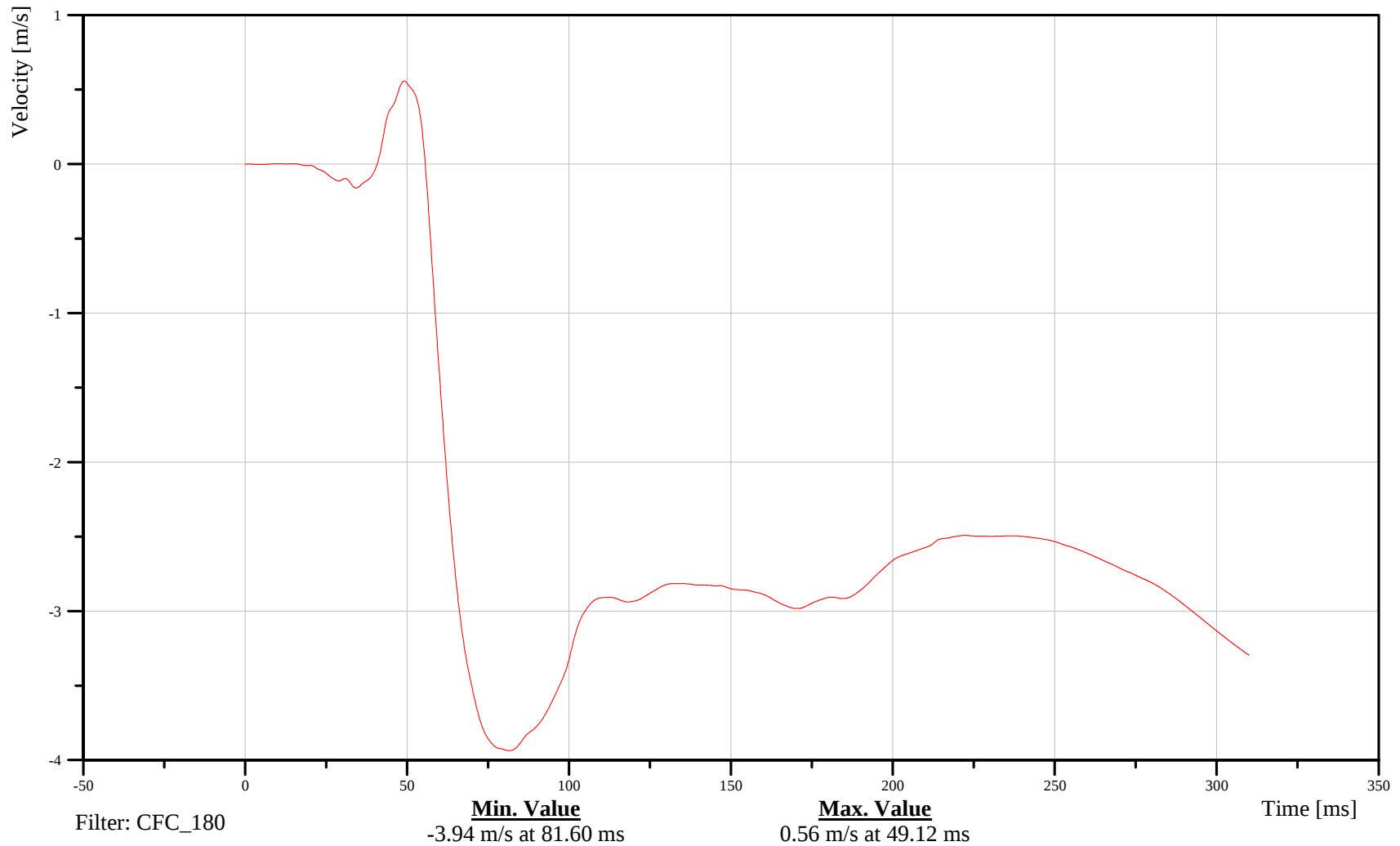
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER HEAD Z-AXIS REDUNDANT VELOCITY

Customer: NHTSA
Test Number: C70501

14HEADCGRDSHVEZC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-73

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

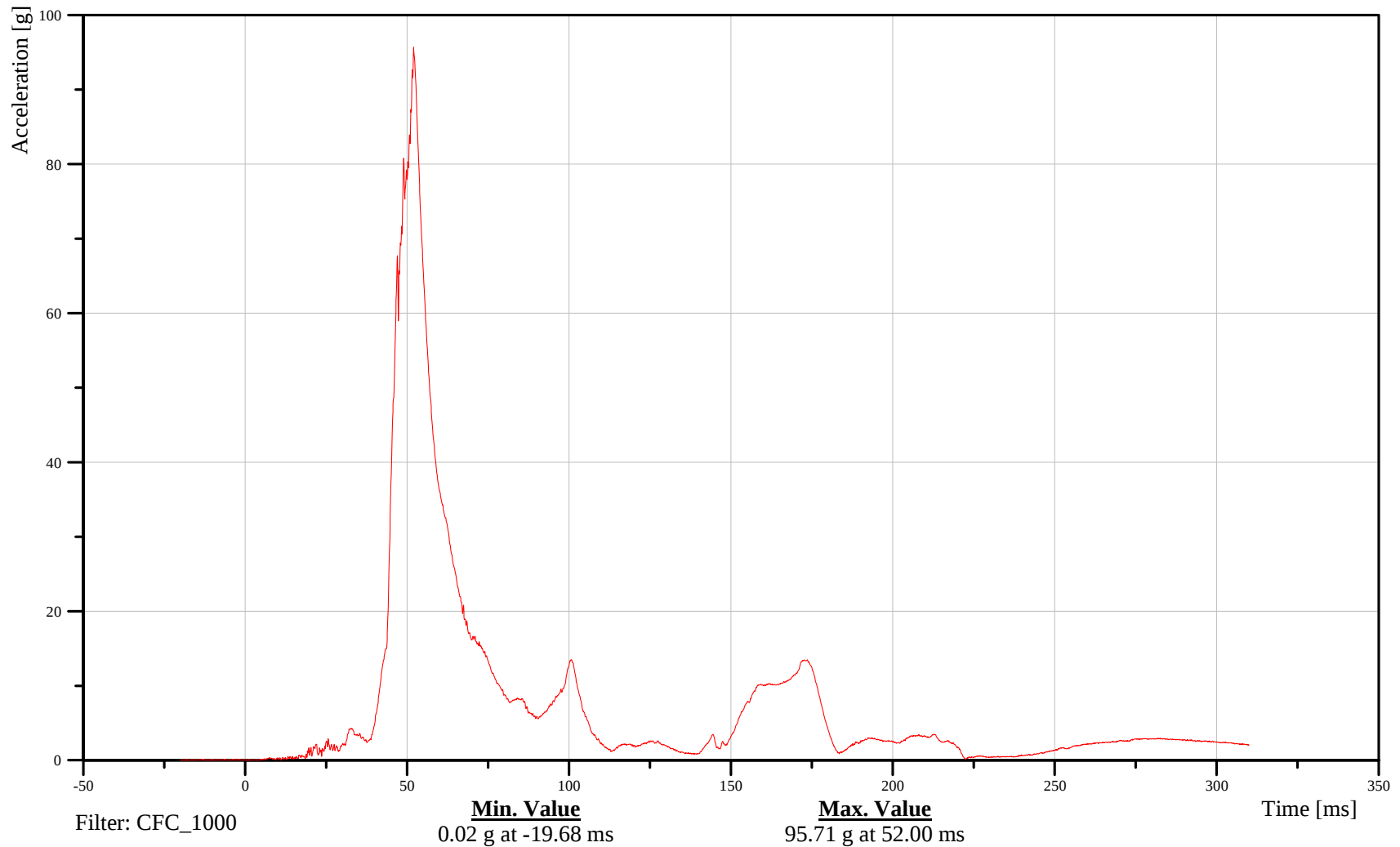
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER HEAD RESULTANT ACCELERATION

Customer: NHTSA
Test Number: C70501

14HEADCGRDSHACRA

TRC Inc. Test Lab: CTF
Test Number: 061026



B-74

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER UPPER RIB Y-AXIS REDUNDANT ACCELERATION

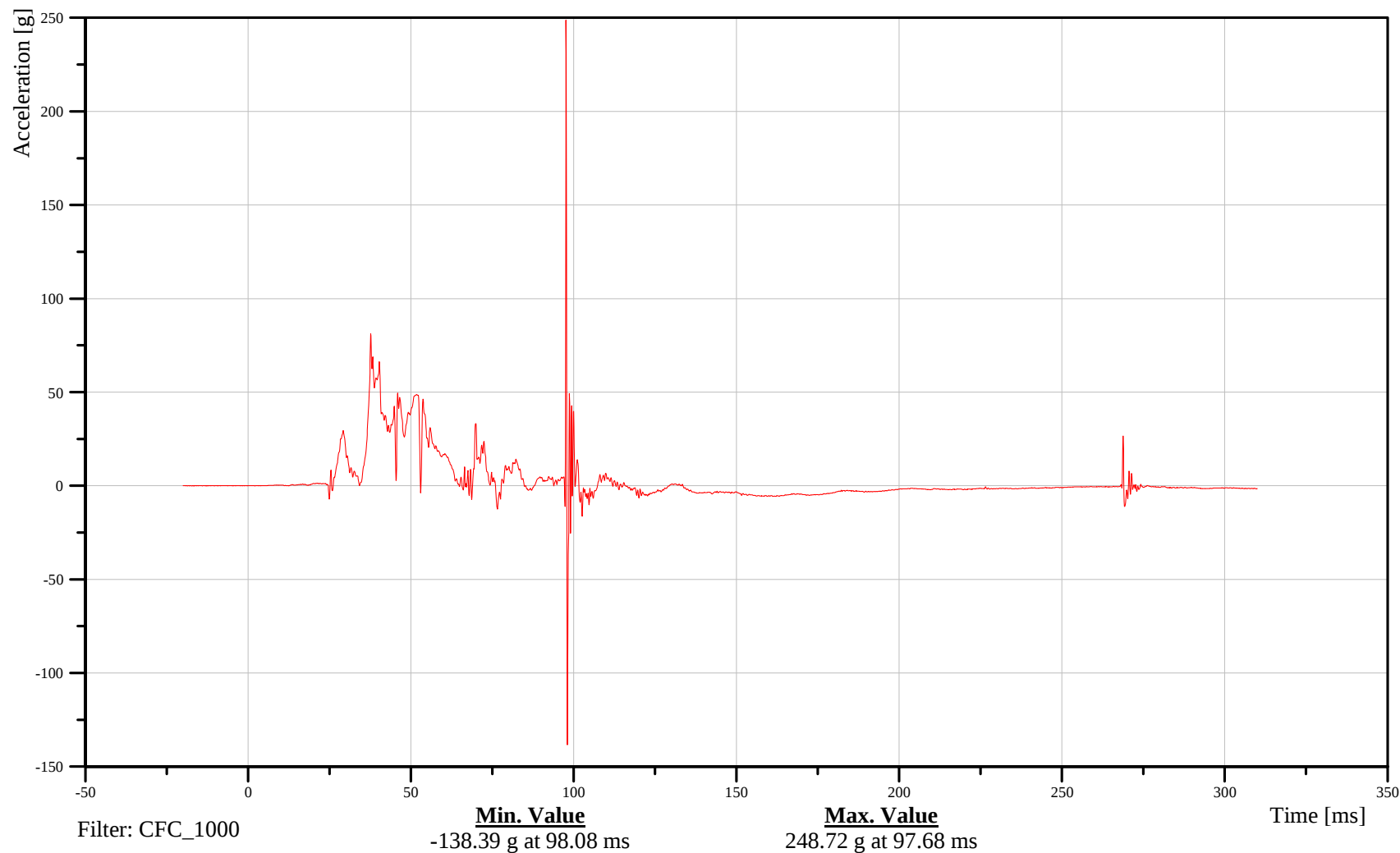
Customer: NHTSA

Test Number: C70501

14RIBSLURESHACYA

TRC Inc. Test Lab: CTF

Test Number: 061026



B-75

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER UPPER RIB Y-AXIS REDUNDANT VELOCITY

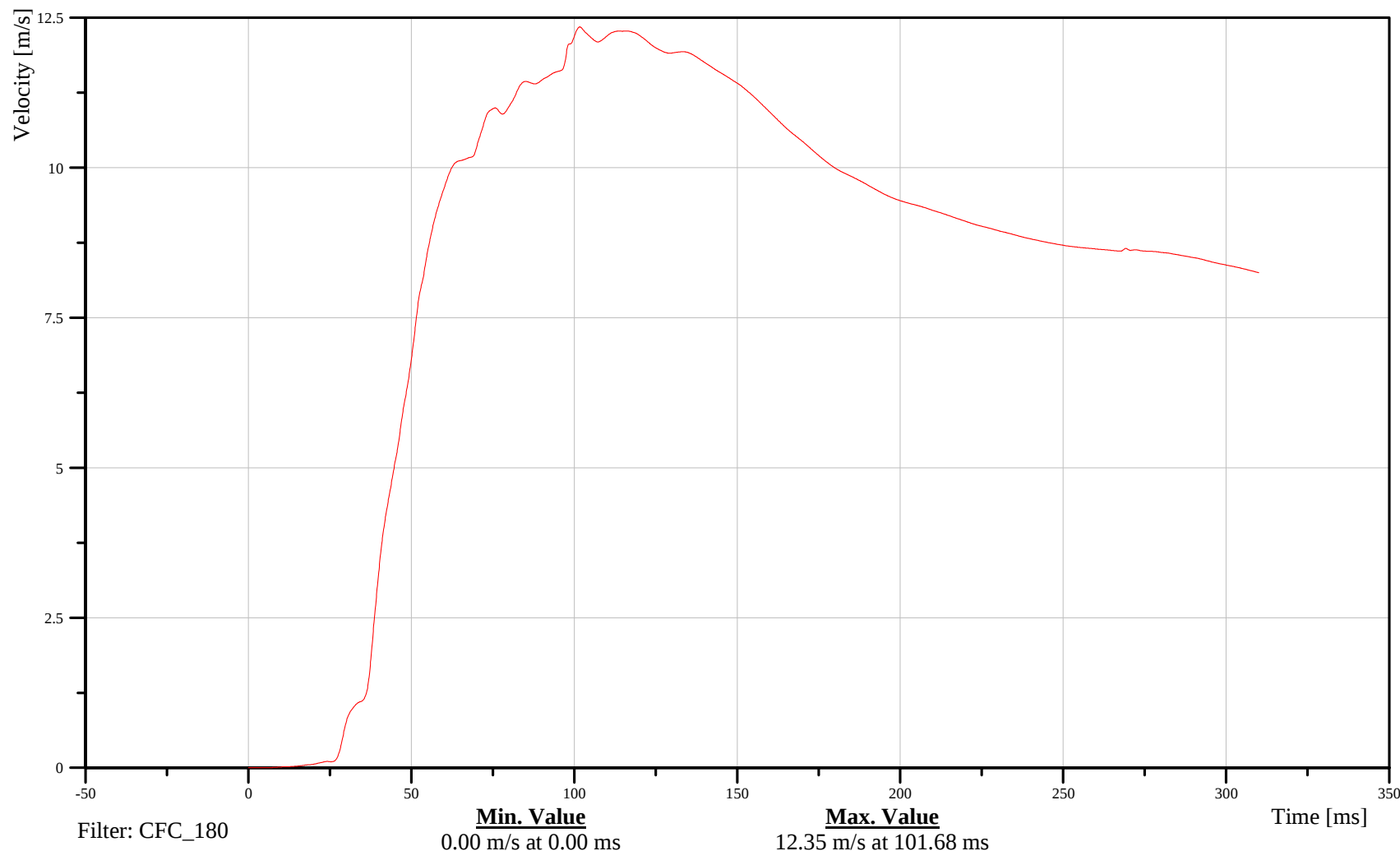
Customer: NHTSA

Test Number: C70501

14RIBSLURESHVEYC

TRC Inc. Test Lab: CTF

Test Number: 061026



B-76

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER LOWER RIB Y-AXIS REDUNDANT ACCELERATION

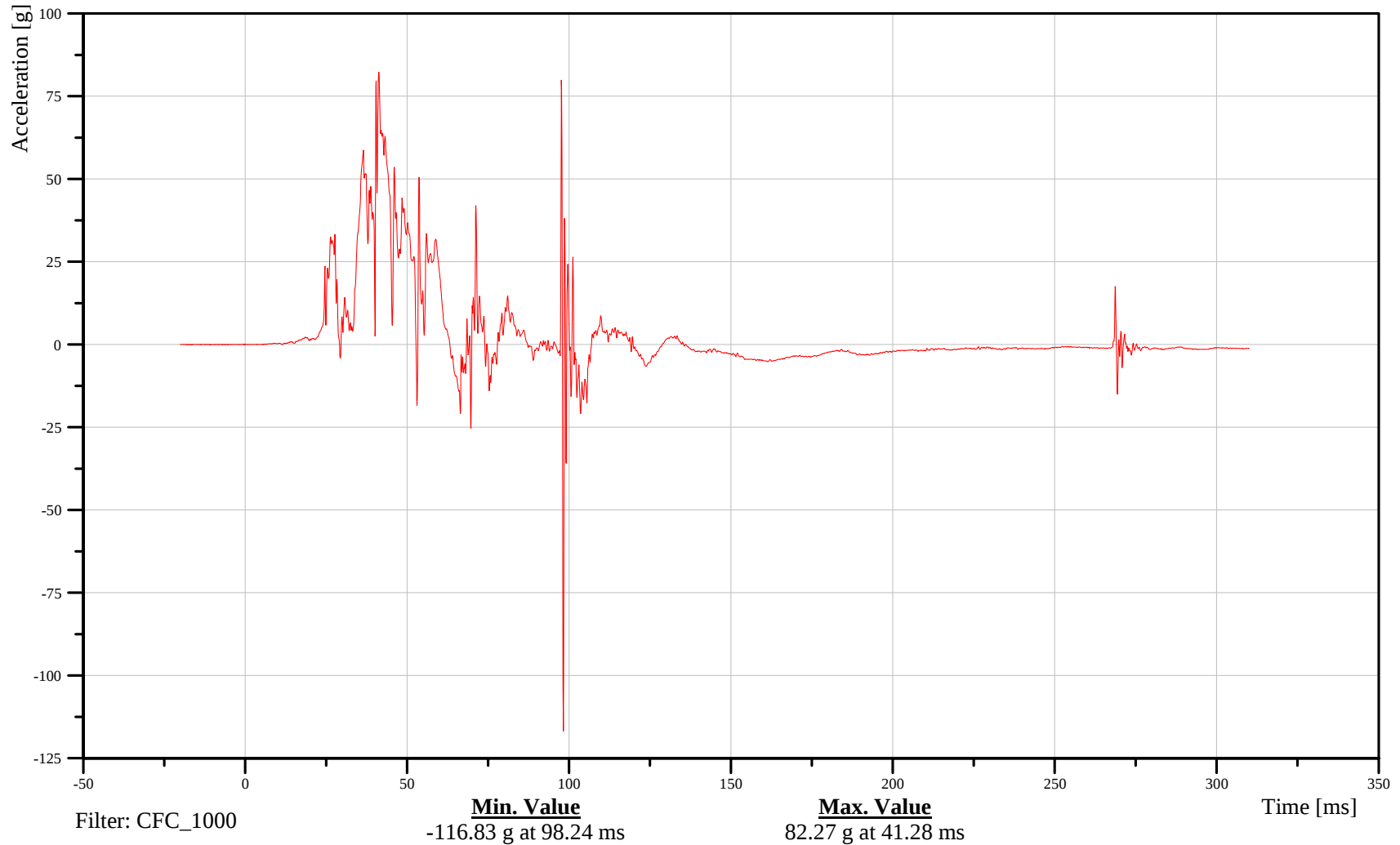
Customer: NHTSA

Test Number: C70501

14RIBSLLRESHACYA

TRC Inc. Test Lab: CTF

Test Number: 061026



B-77

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER LOWER RIB Y-AXIS REDUNDANT VELOCITY

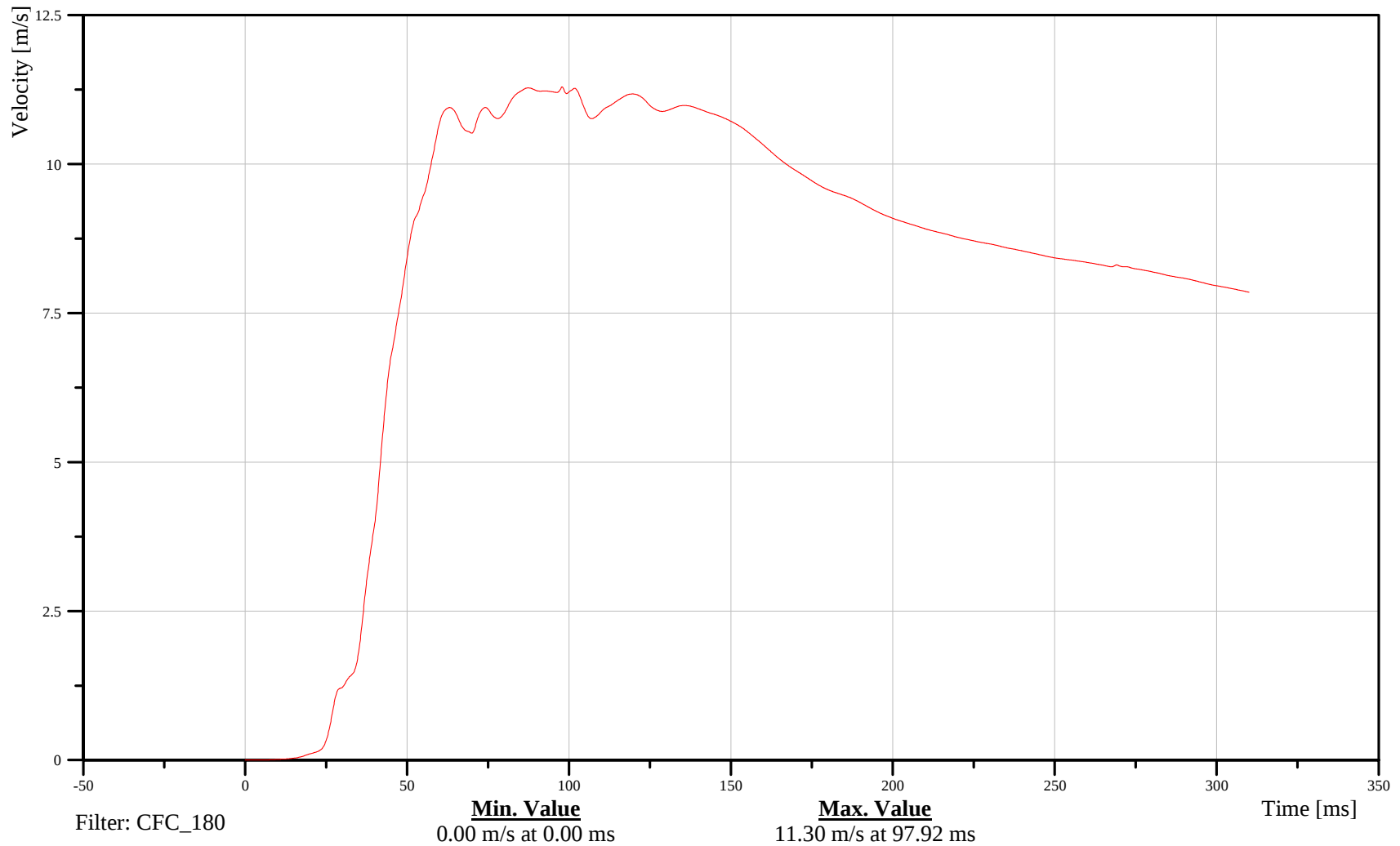
Customer: NHTSA

Test Number: C70501

14RIBSLLRESHVEYC

TRC Inc. Test Lab: CTF

Test Number: 061026



B-78

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

LEFT REAR PASSENGER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION

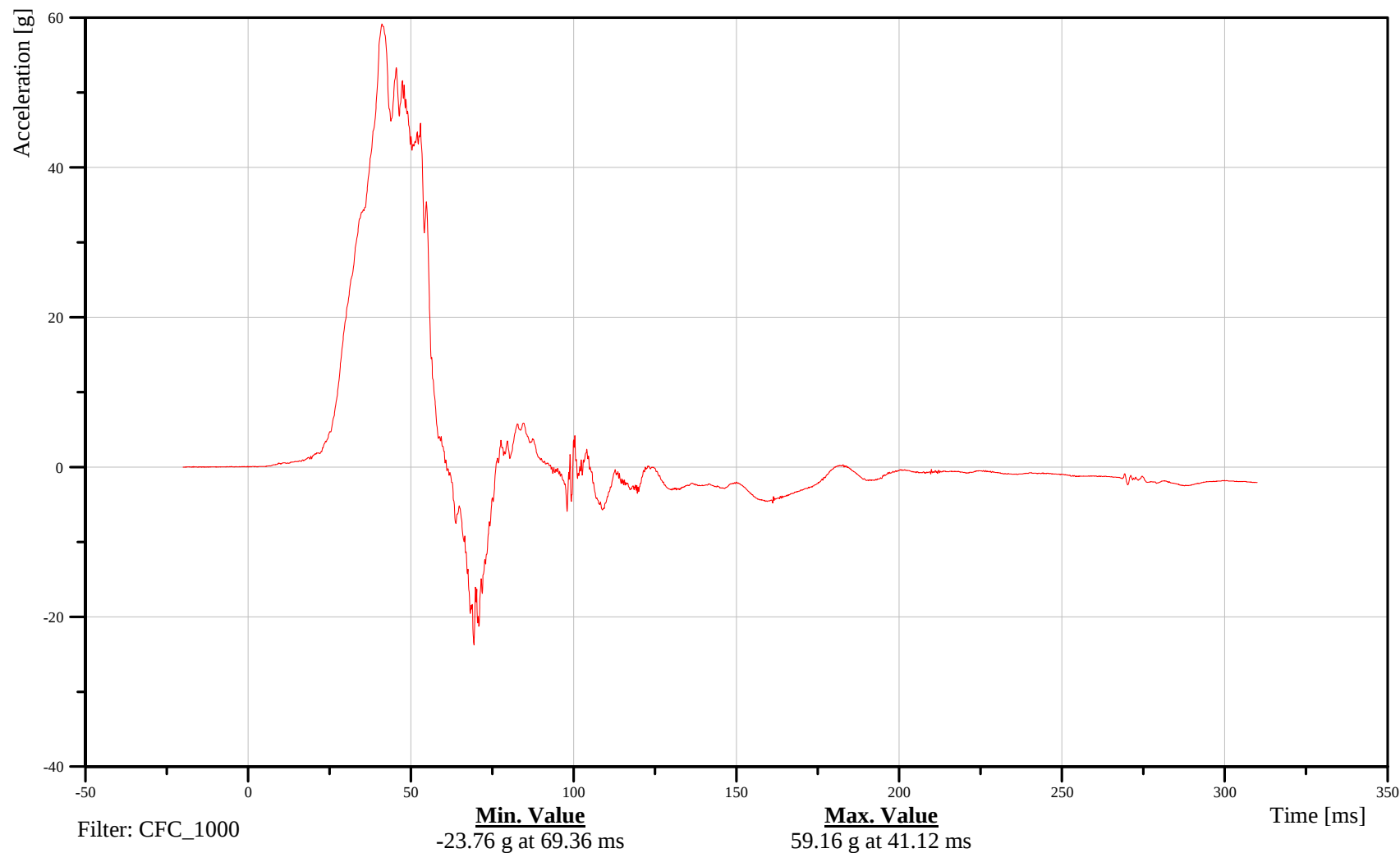
Customer: NHTSA

Test Number: C70501

14SPIN12RDSHACYA

TRC Inc. Test Lab: CTF

Test Number: 061026



B-79

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER LOWER SPINE Y-AXIS REDUNDANT VELOCITY

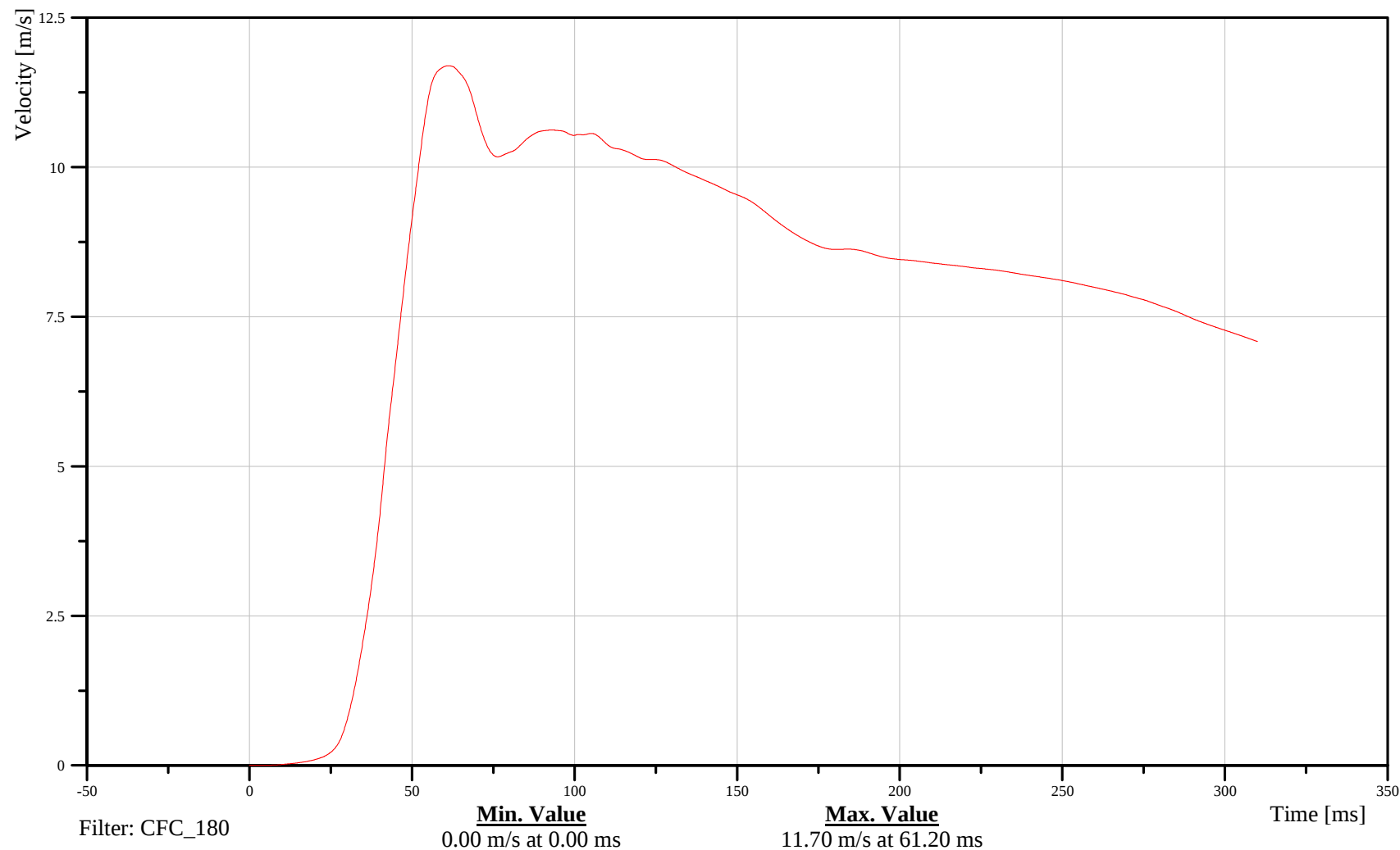
Customer: NHTSA

Test Number: C70501

14SPIN12RDSHVEYC

TRC Inc. Test Lab: CTF

Test Number: 061026



B-80

061026

Test Vehicle Instrumentation Plots



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

RIGHT SIDE SILL AT FRONT SEAT X-AXIS ACCELERATION

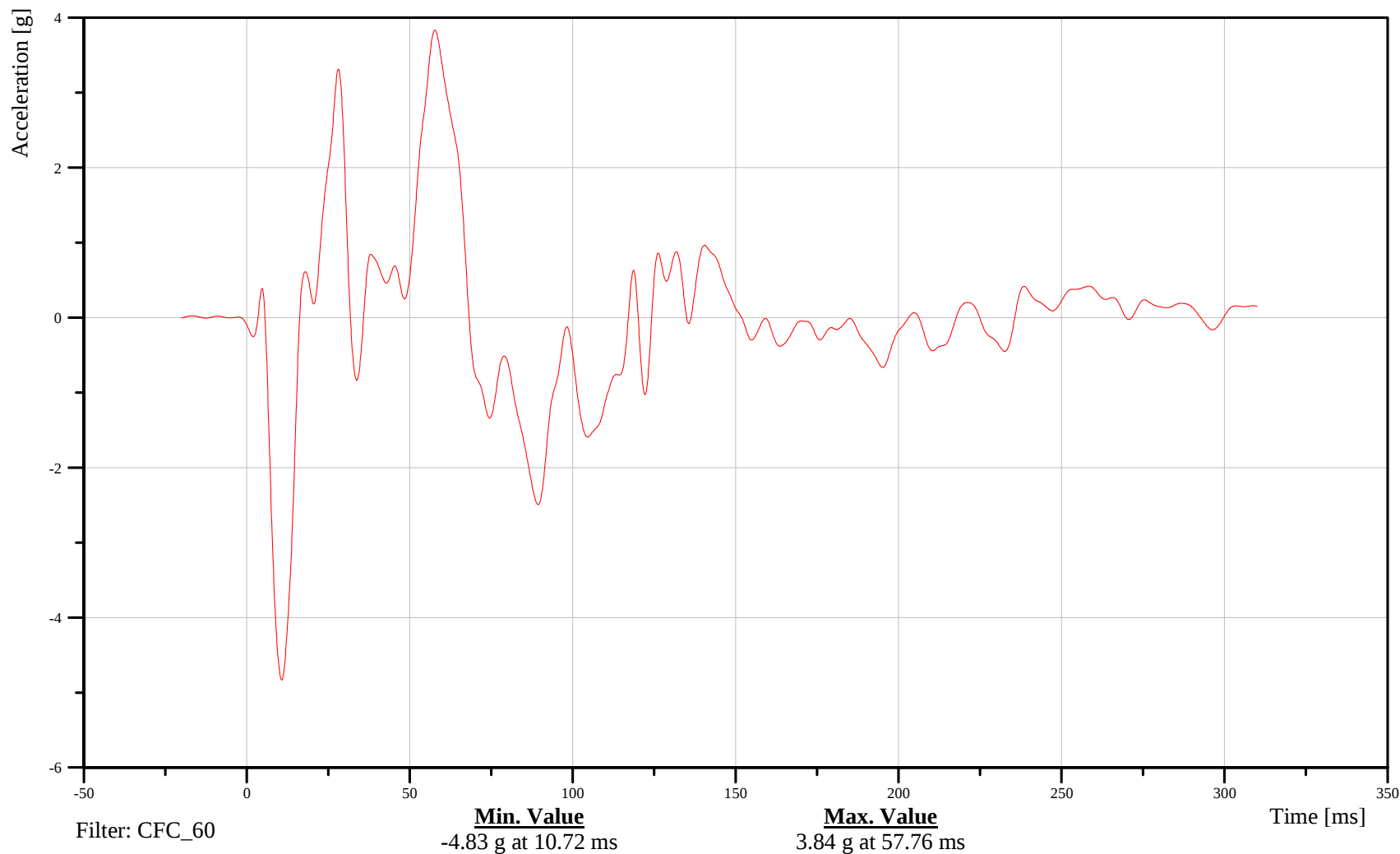
Customer: NHTSA

Test Number: C70501

16SILBFR0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 061026



B-82

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

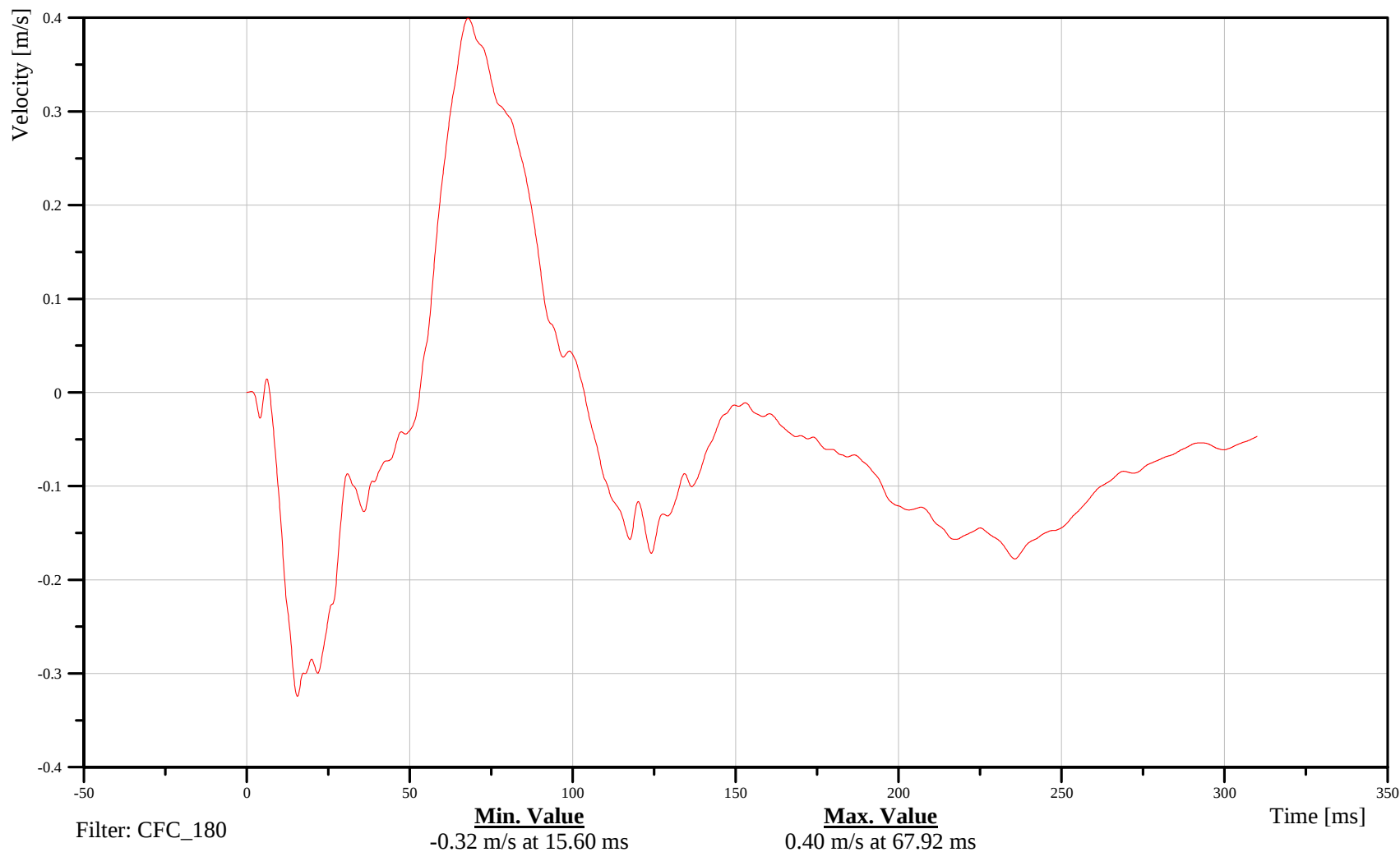
Date: 10/26/2006
Time: 13:29

RIGHT SIDE SILL AT FRONT SEAT X-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

16SILBFR0000VEXC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-83

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

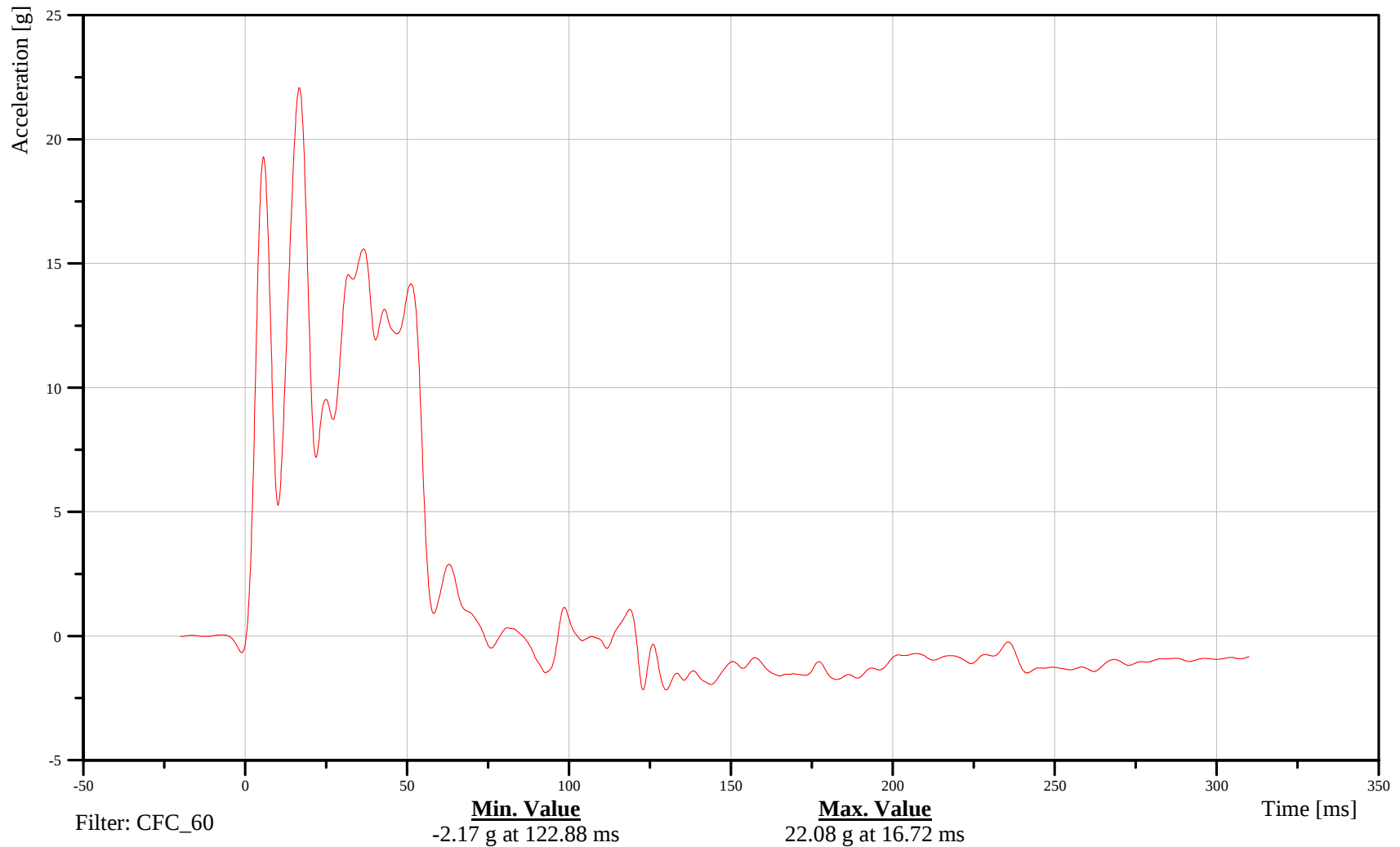
Date: 10/26/2006
Time: 13:29

RIGHT SIDE SILL AT FRONT SEAT Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

16SILBFR0000ACYD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-84

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

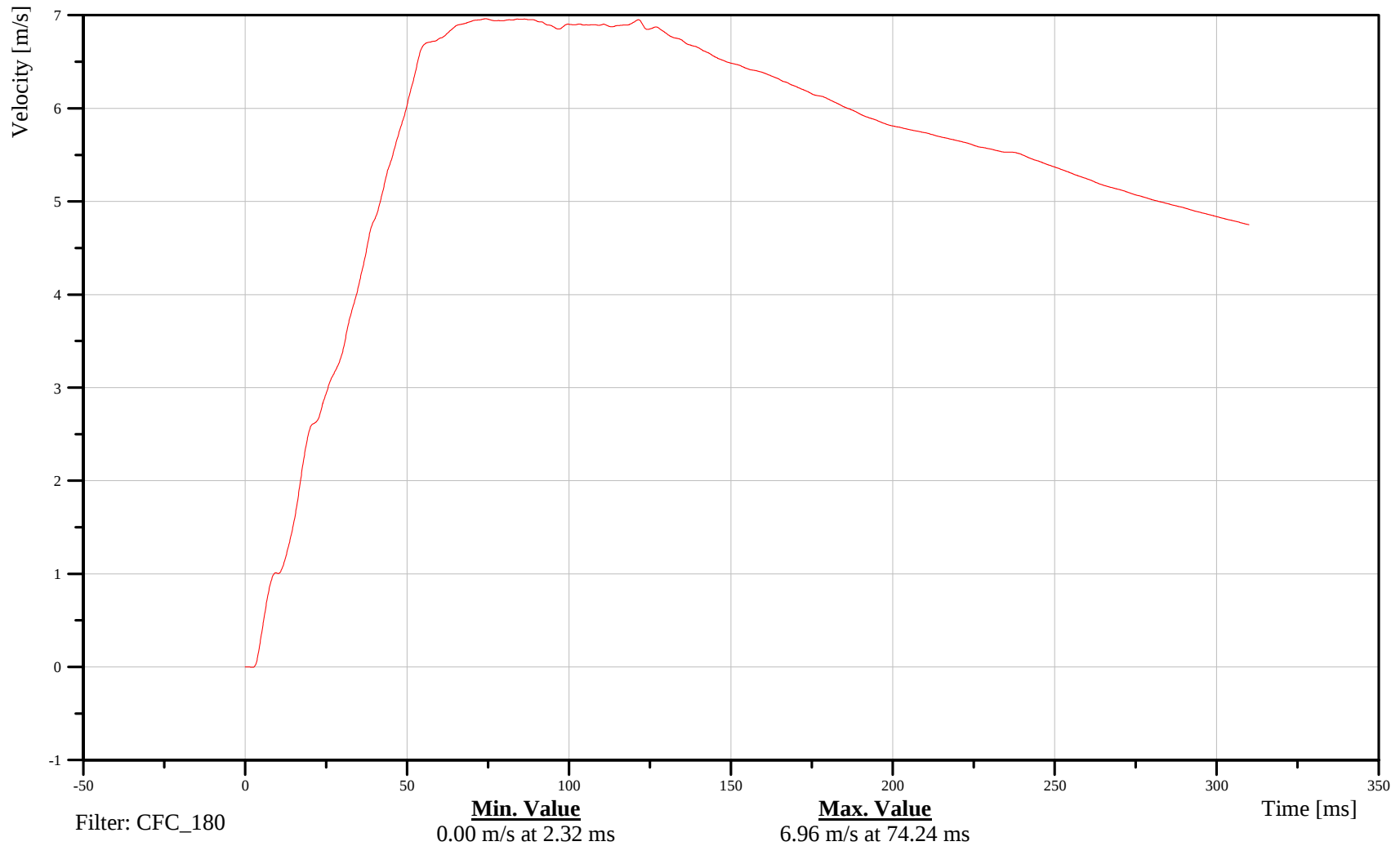
Date: 10/26/2006
Time: 13:29

RIGHT SIDE SILL AT FRONT SEAT Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

16SILBFR0000VEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-85

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

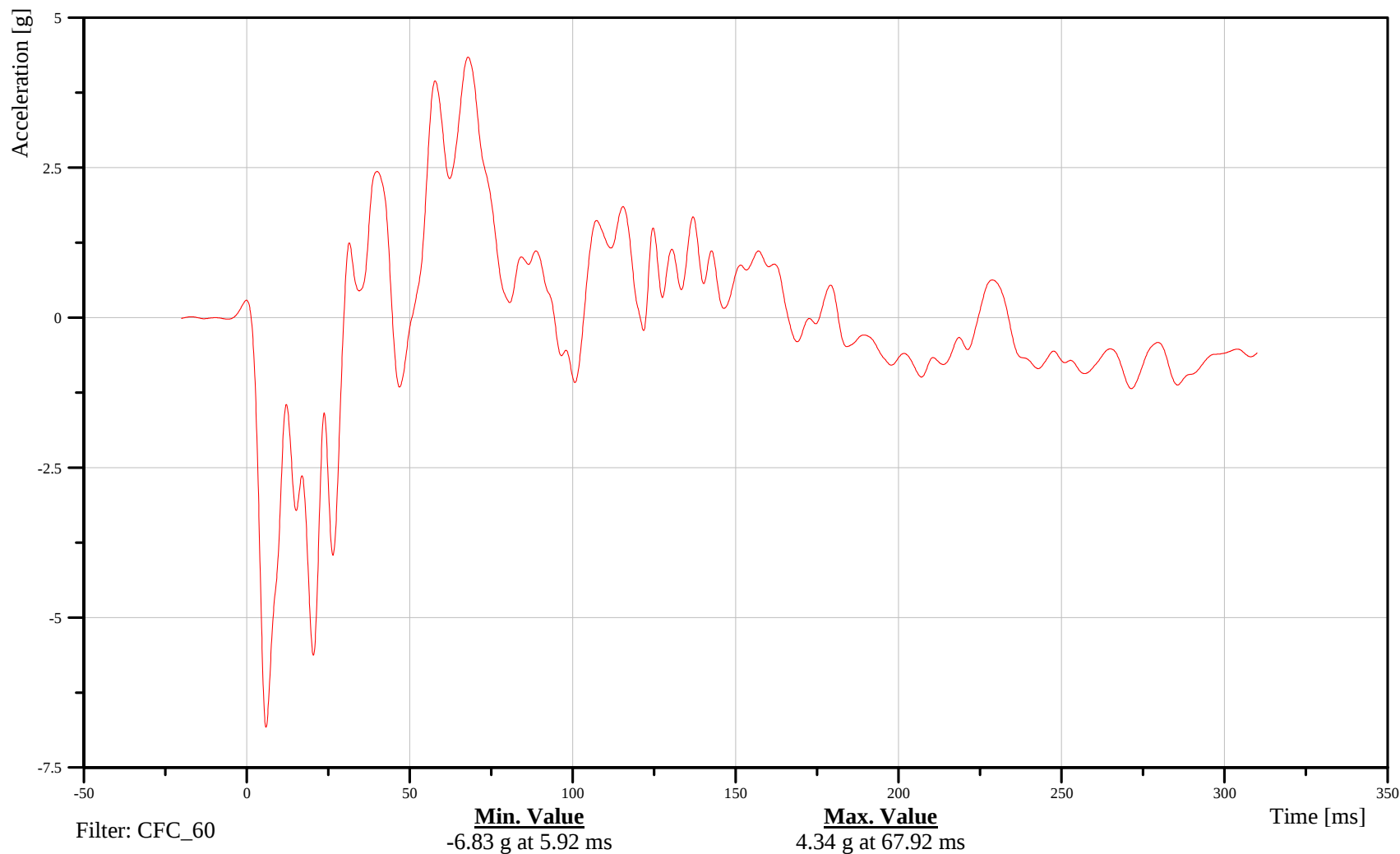
Date: 10/26/2006
Time: 13:29

RIGHT SIDE SILL AT FRONT SEAT Z-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

16SILBFR0000ACZD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-86

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

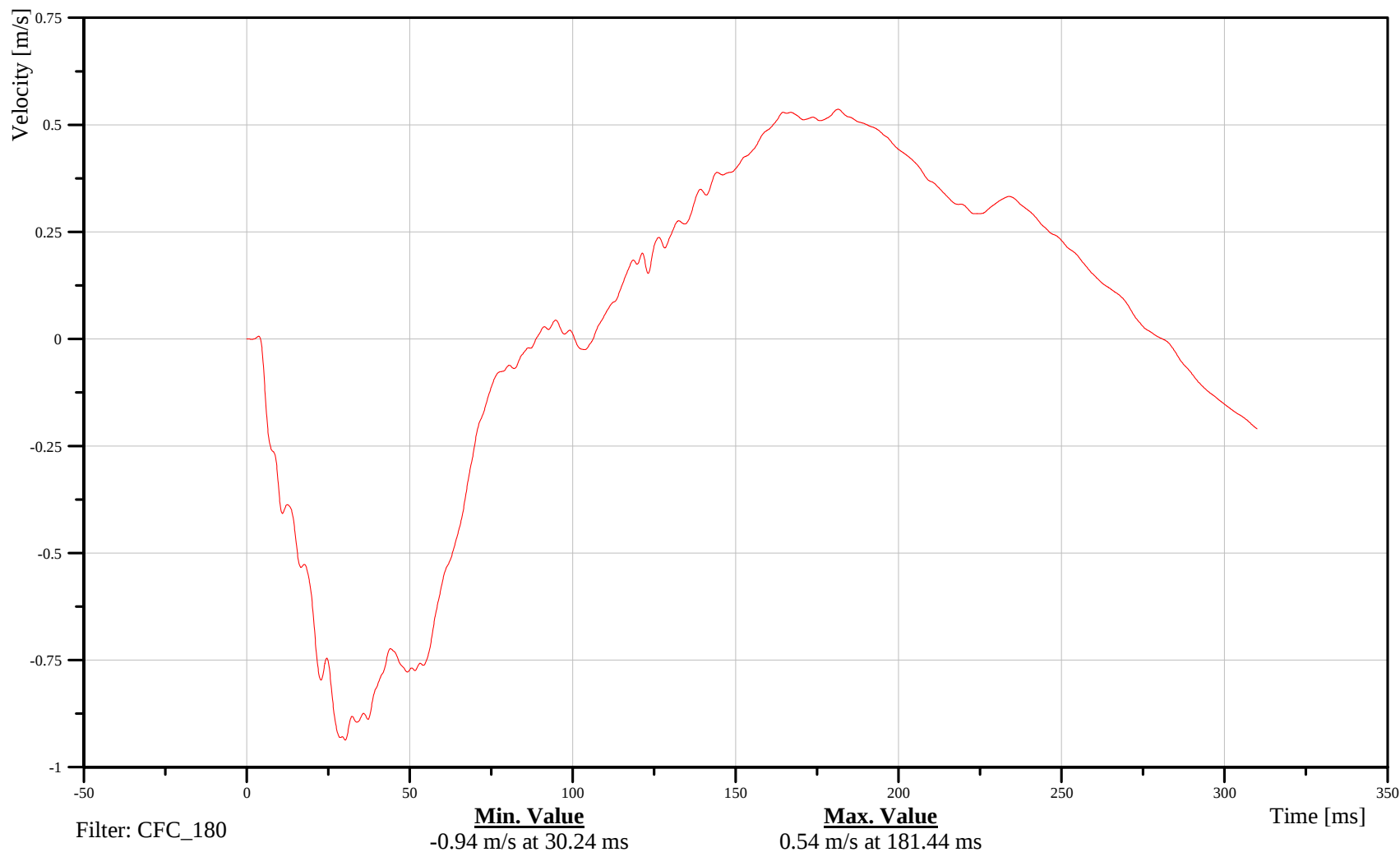
Date: 10/26/2006
Time: 13:29

RIGHT SIDE SILL AT FRONT SEAT Z-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

16SILBFR0000VEZC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-87

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

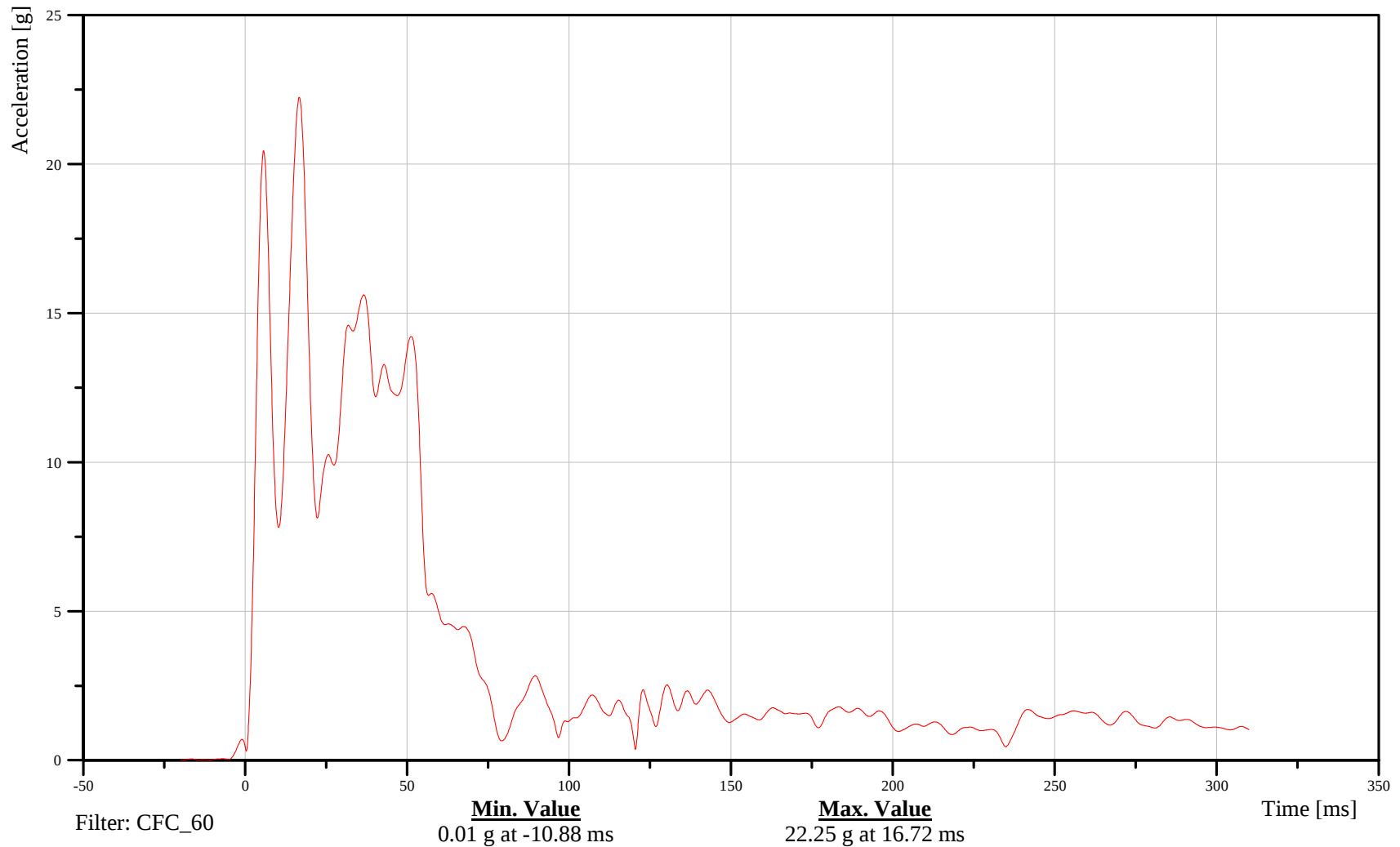
Date: 10/26/2006
Time: 13:29

RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION

Customer: NHTSA
Test Number: C70501

16SILBFR0000ACRD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-88

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

RIGHT SIDE SILL AT REAR SEAT X-AXIS ACCELERATION

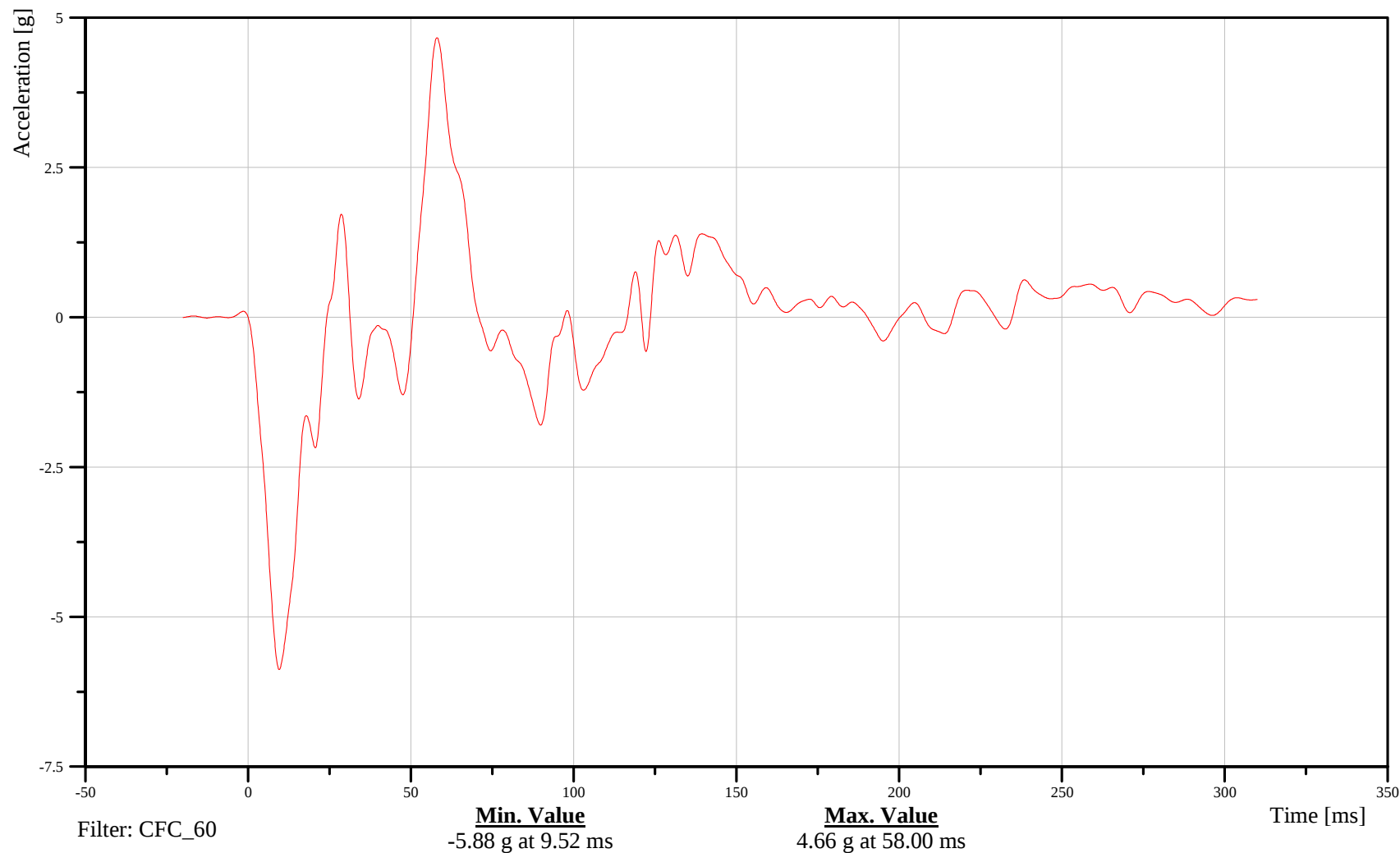
Customer: NHTSA

Test Number: C70501

16SILBRE0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 061026



B-89

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

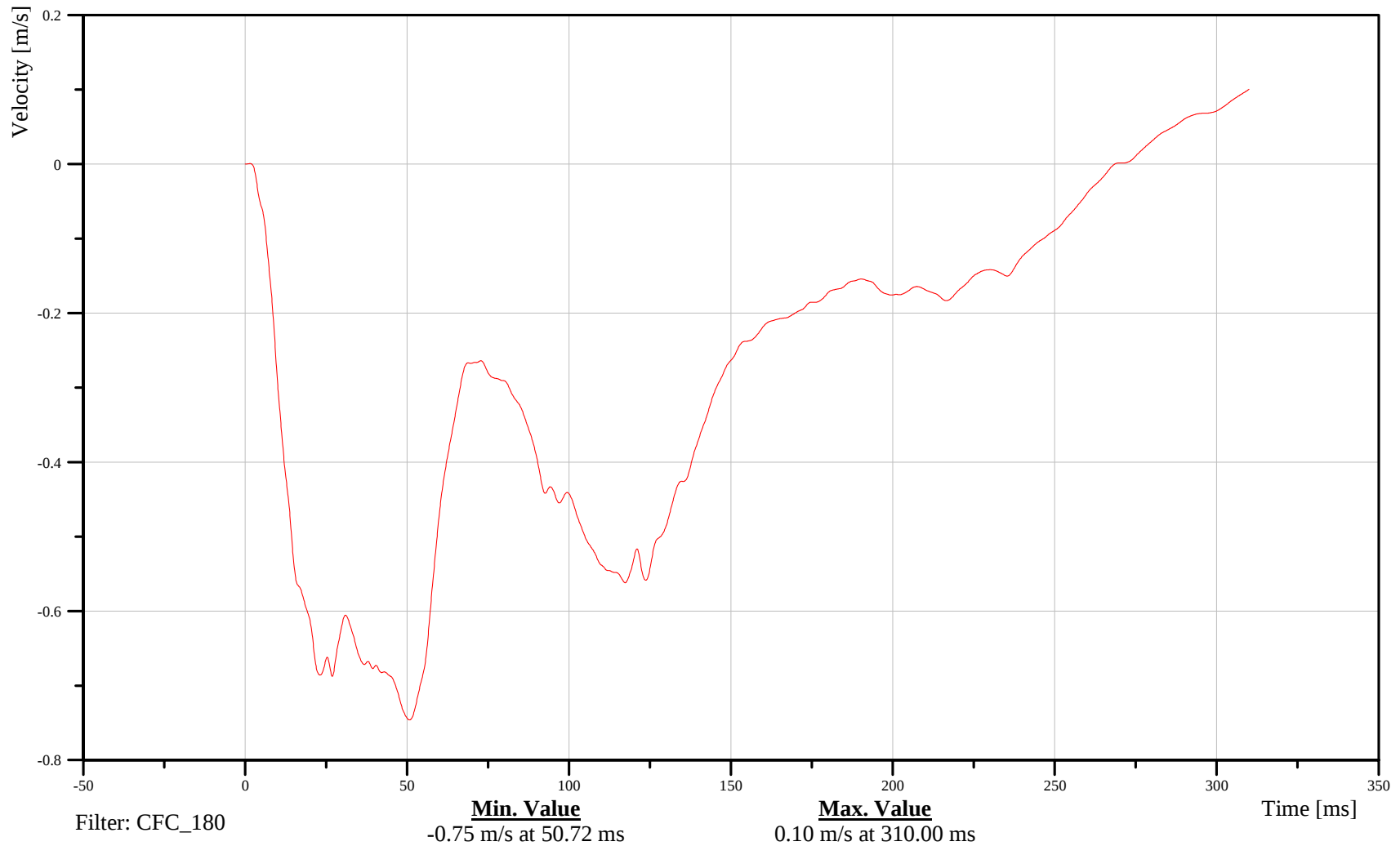
Date: 10/26/2006
Time: 13:29

RIGHT SIDE SILL AT REAR SEAT X-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

16SILBRE0000VEXC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-90

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

RIGHT SIDE SILL AT REAR SEAT Y-AXIS ACCELERATION

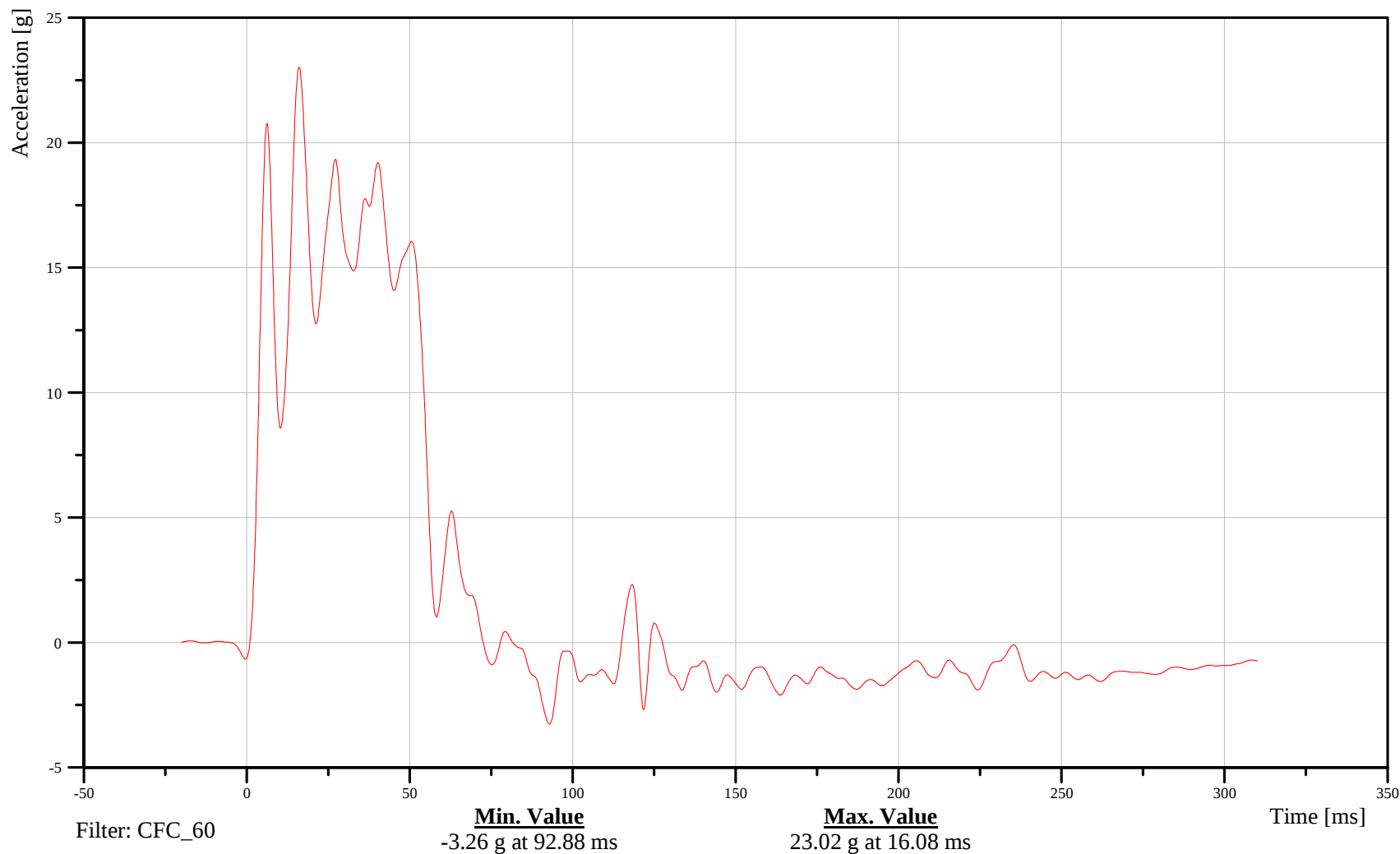
Customer: NHTSA

Test Number: C70501

16SILBRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 061026



B-91

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

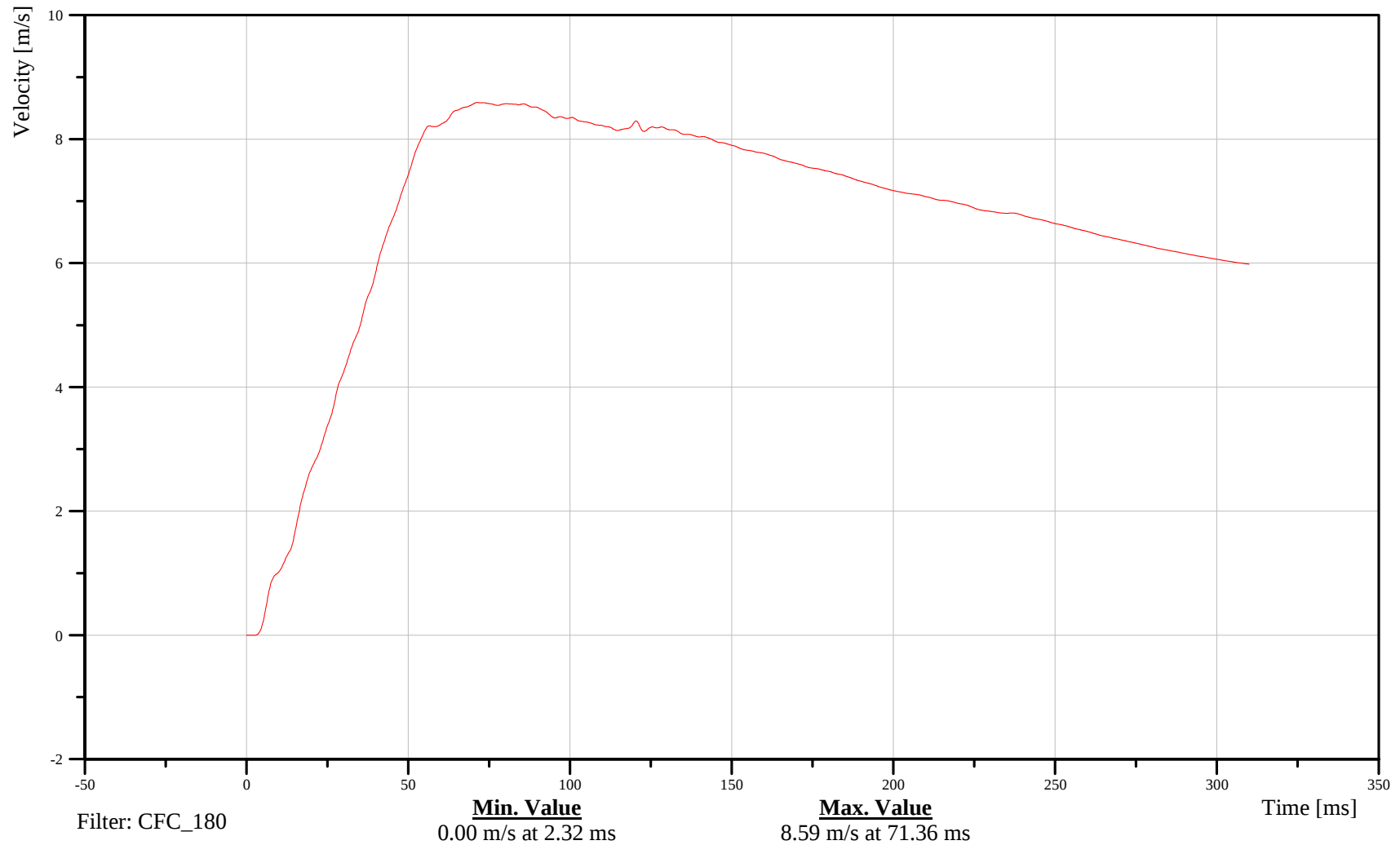
Date: 10/26/2006
Time: 13:29

RIGHT SIDE SILL AT REAR SEAT Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

16SILBRE0000VEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-92

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

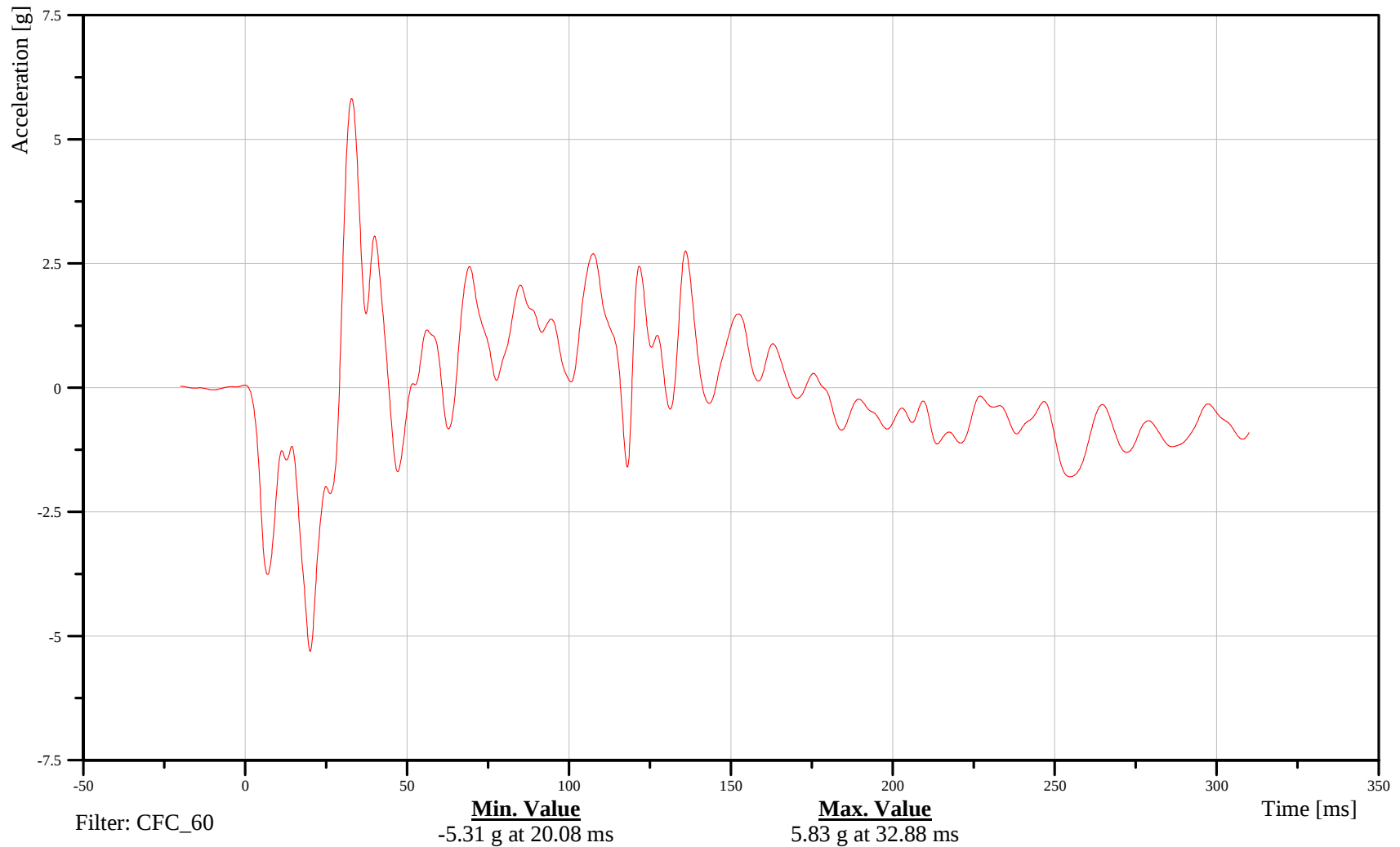
Date: 10/26/2006
Time: 13:29

RIGHT SIDE SILL AT REAR SEAT Z-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

16SILBRE0000ACZD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-93

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

RIGHT SIDE SILL AT REAR SEAT Z-AXIS VELOCITY

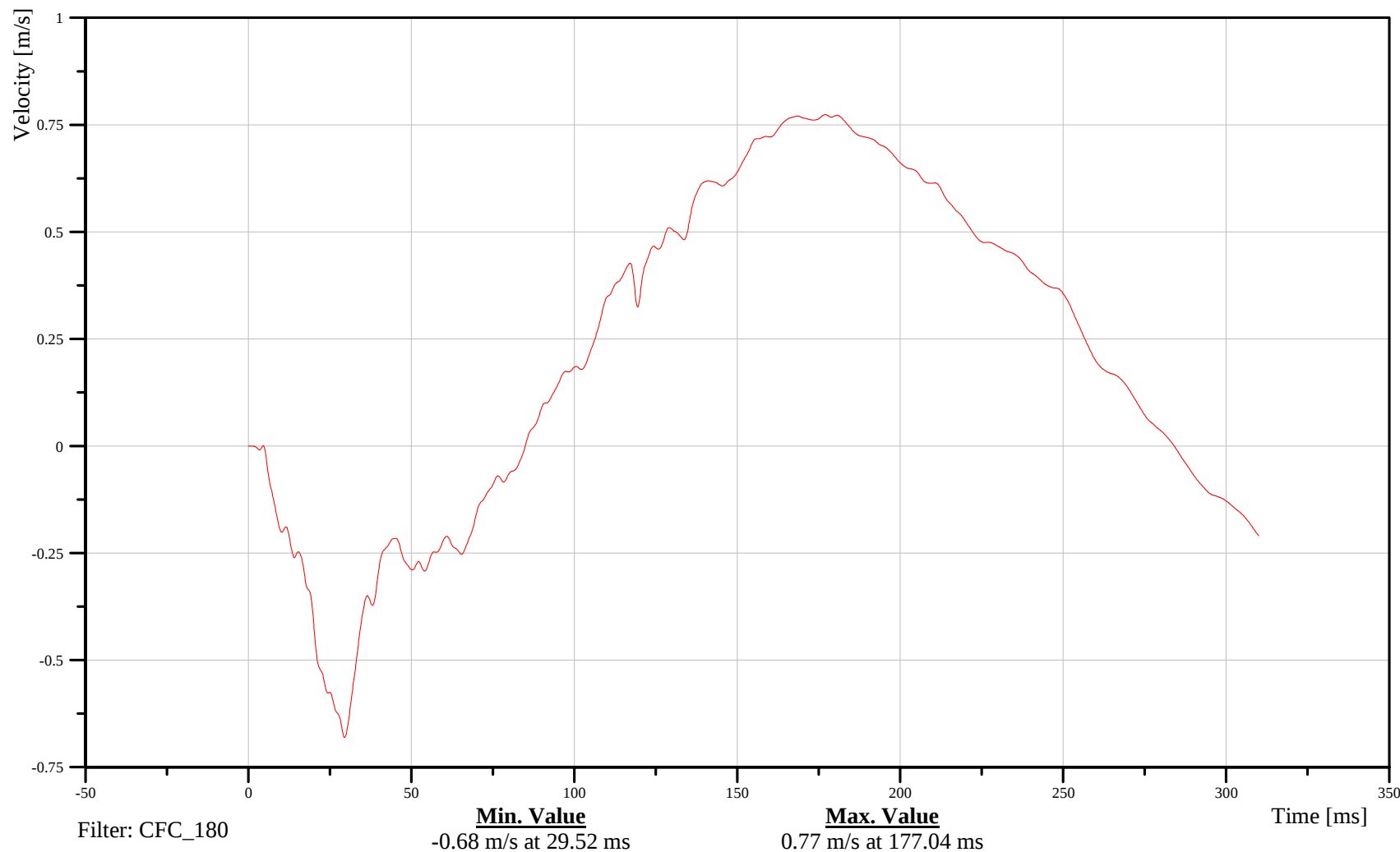
Customer: NHTSA

Test Number: C70501

16SILBRE0000VEZC

TRC Inc. Test Lab: CTF

Test Number: 061026



B-94

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

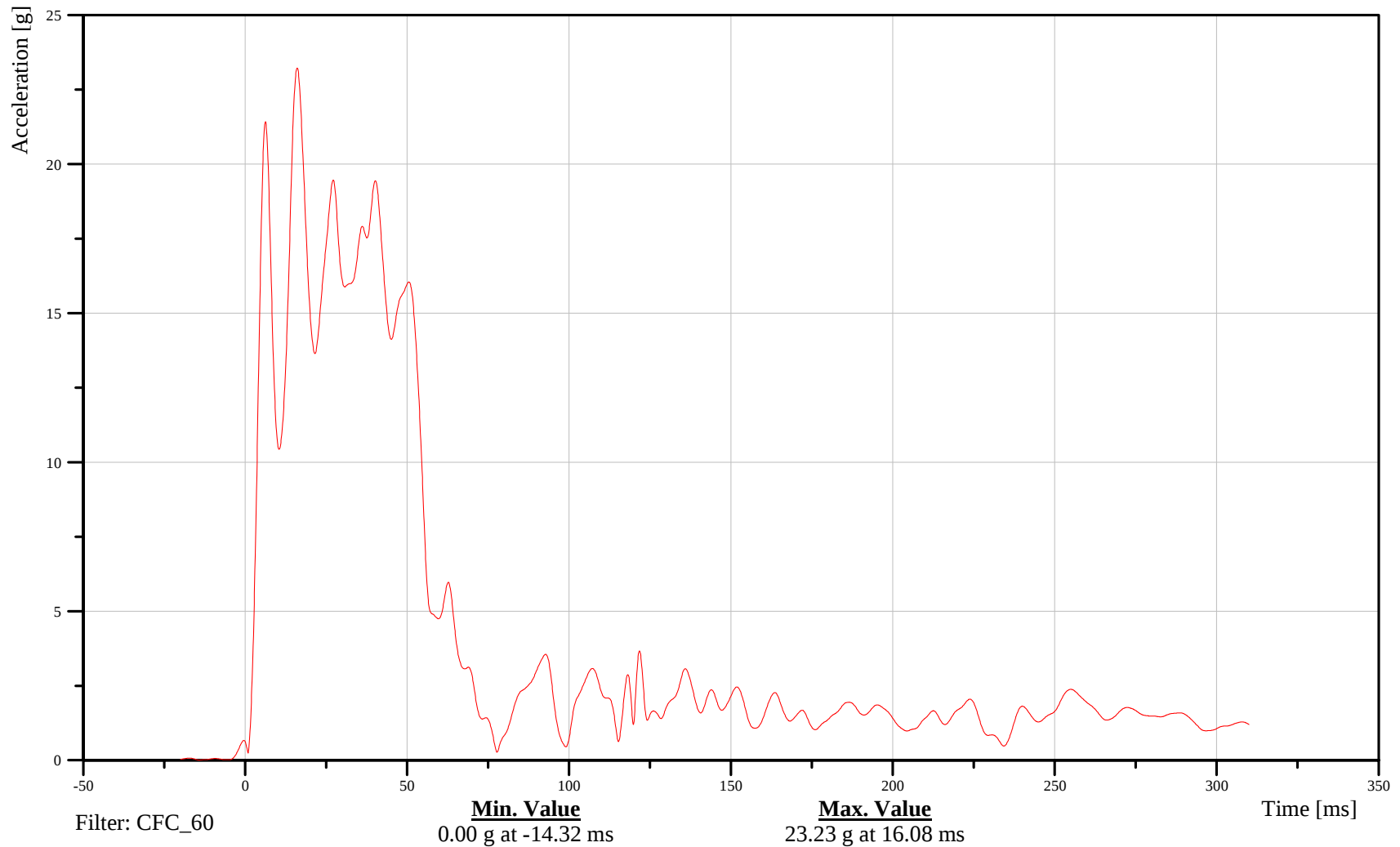
Date: 10/26/2006
Time: 13:29

RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION

Customer: NHTSA
Test Number: C70501

16SILBRE0000ACRD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-95

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

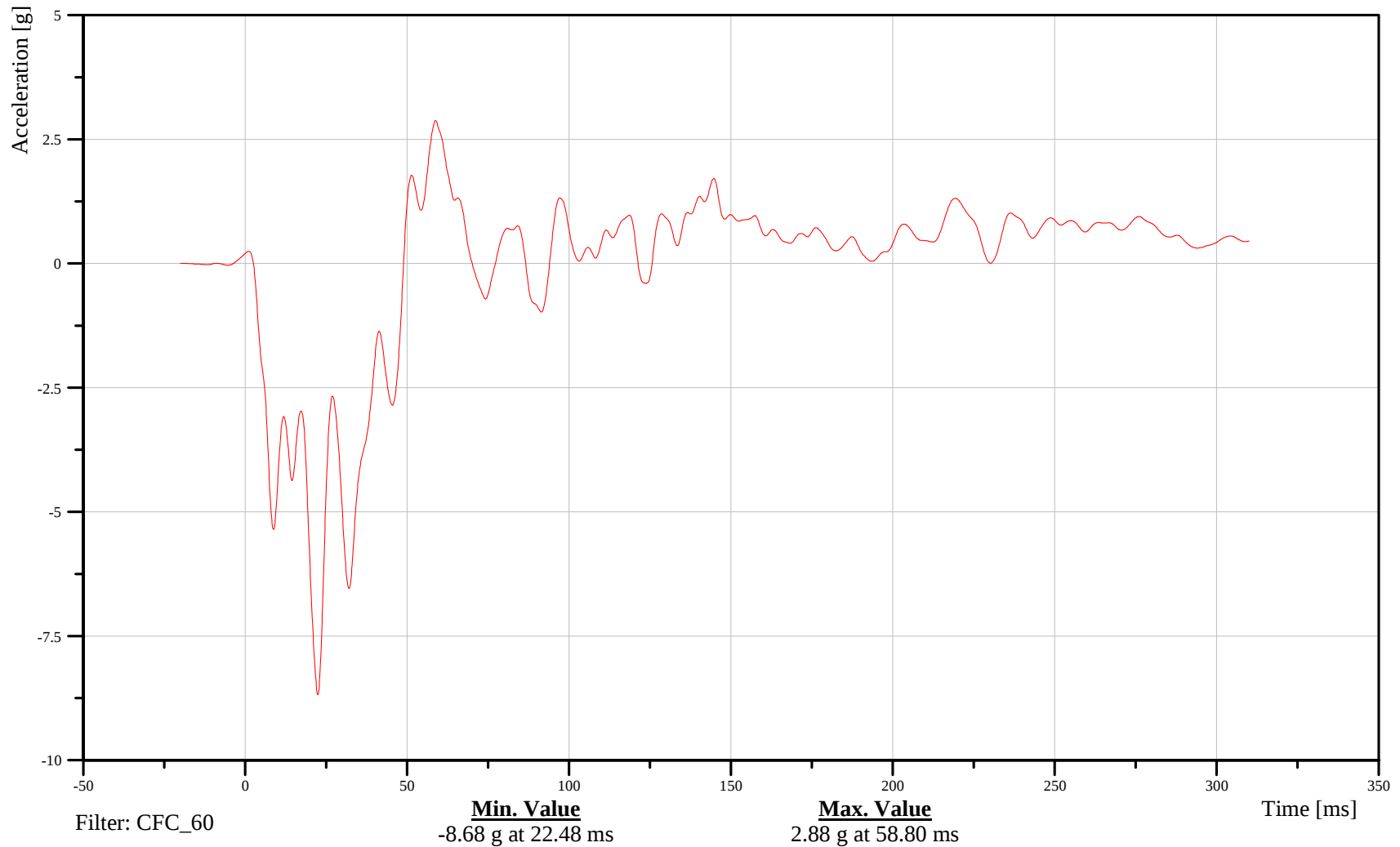
Date: 10/26/2006
Time: 13:29

REAR FLOORPAN ABOVE AXLE X-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

18FORA000000ACXD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-96

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

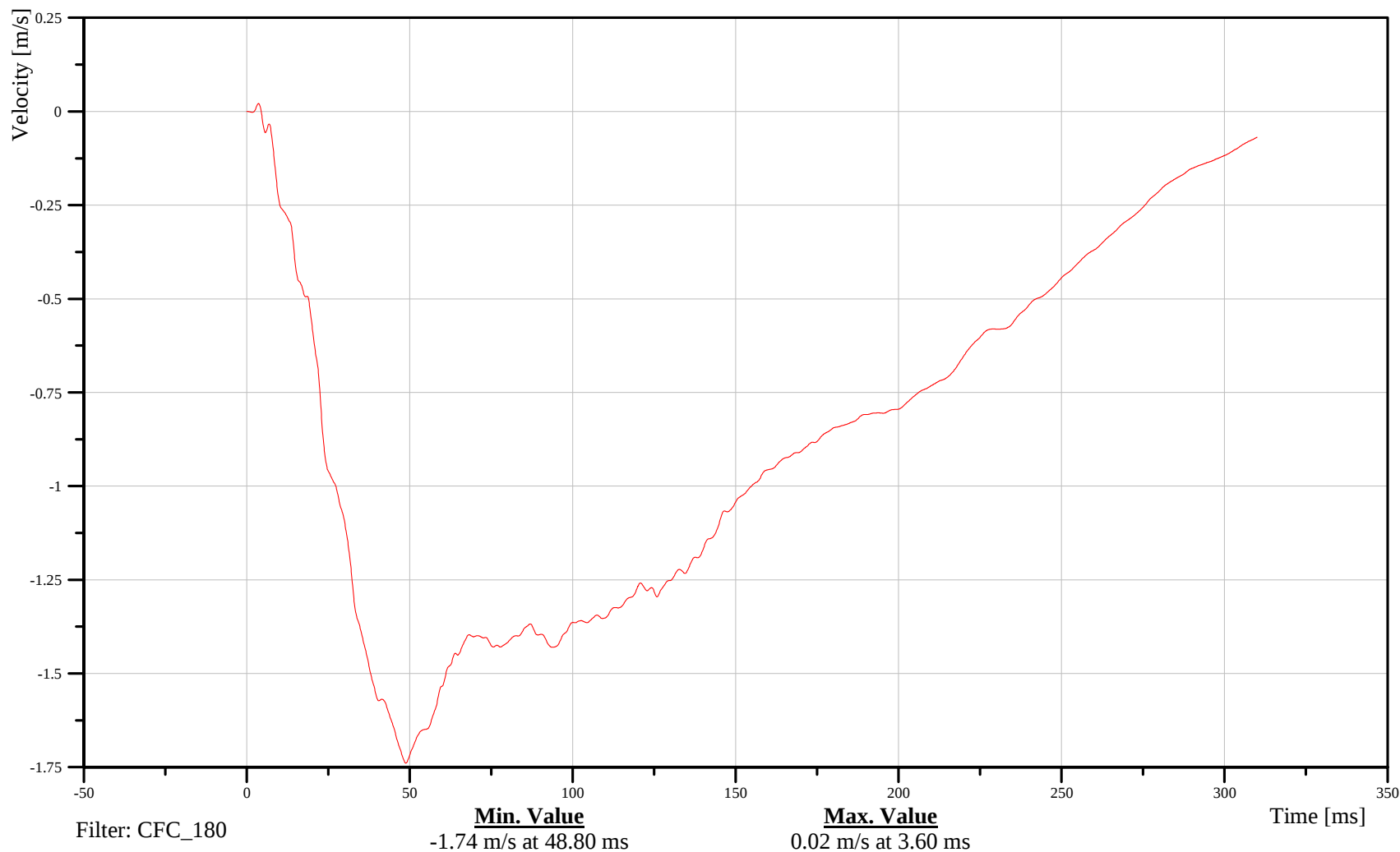
Date: 10/26/2006
Time: 13:29

REAR FLOORPAN ABOVE AXLE X-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

18FORA000000VEXC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-97

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

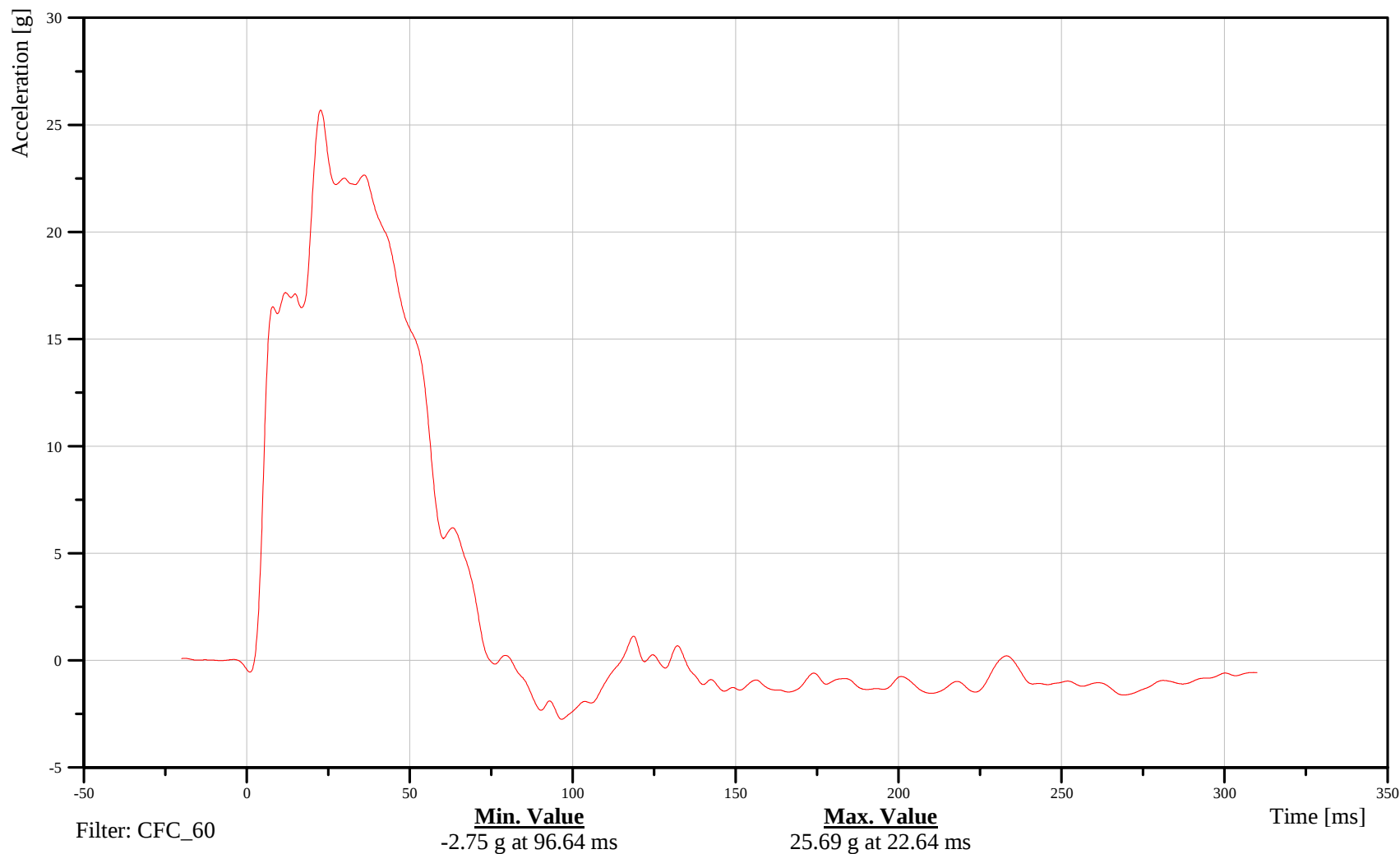
Date: 10/26/2006
Time: 13:29

REAR FLOORPAN ABOVE AXLE Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

18FORA000000ACYD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-98

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

REAR FLOORPAN ABOVE AXLE Y-AXIS VELOCITY

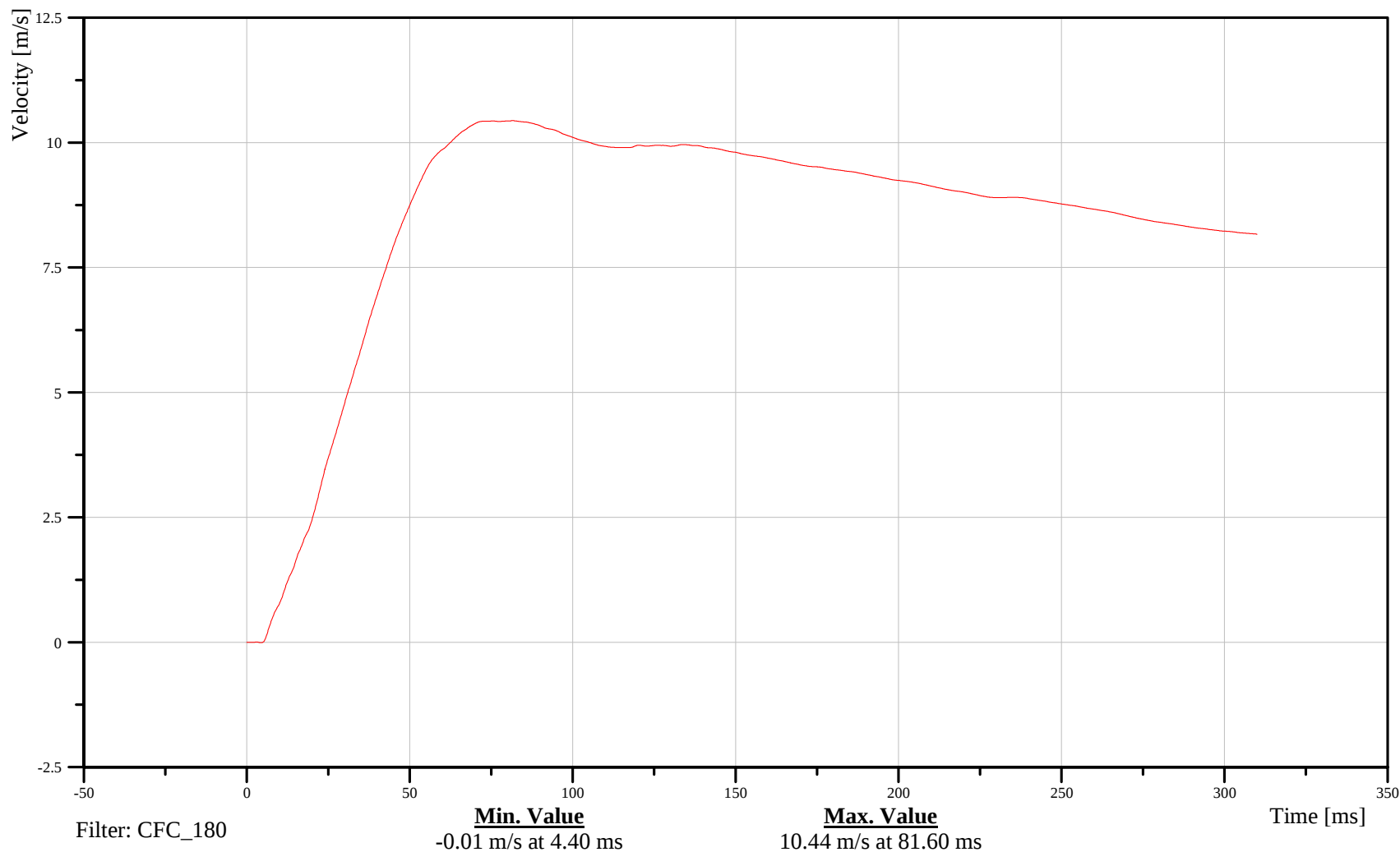
Customer: NHTSA

Test Number: C70501

18FORA000000VEYC

TRC Inc. Test Lab: CTF

Test Number: 061026



B-99

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

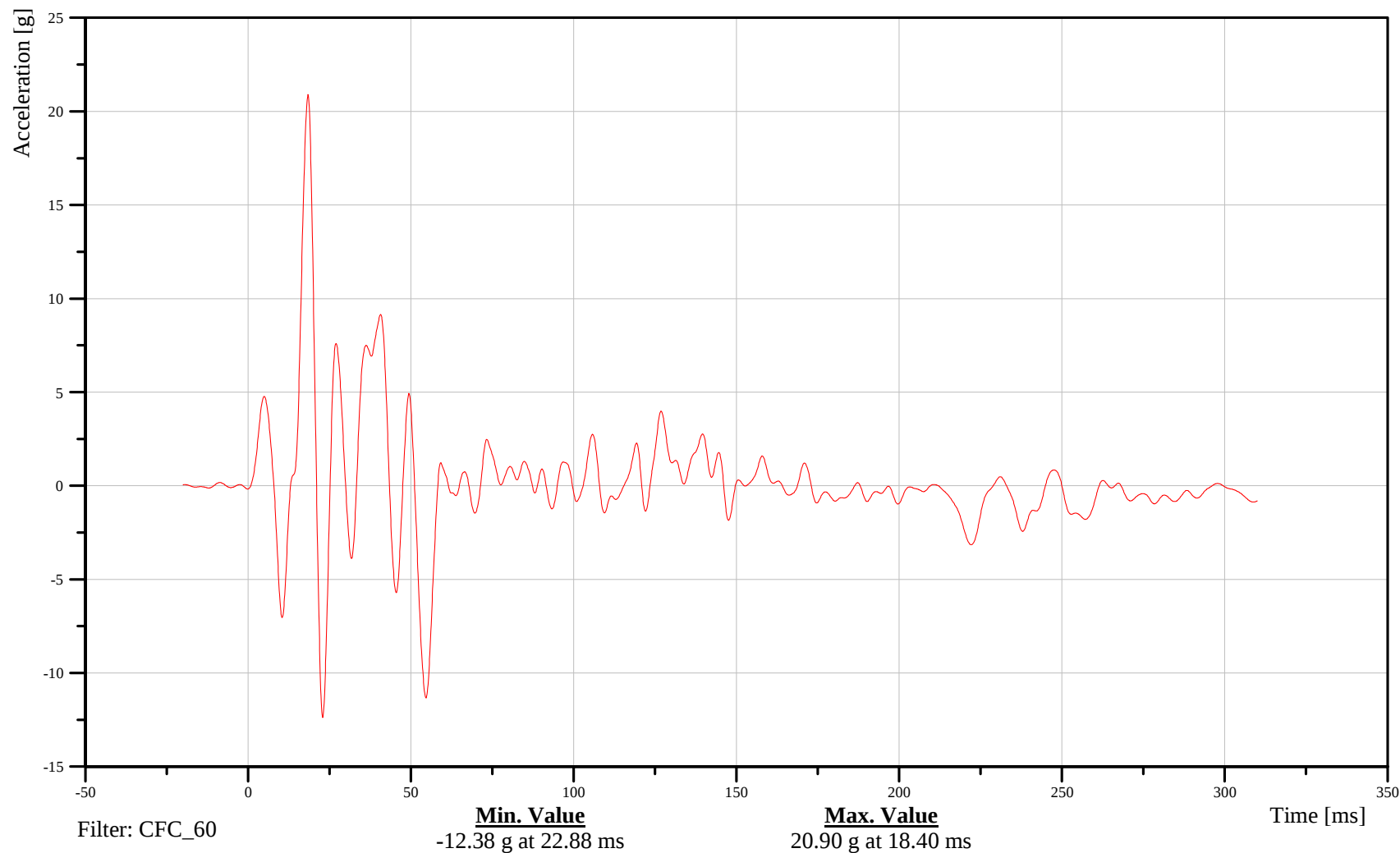
Date: 10/26/2006
Time: 13:29

REAR FLOORPAN ABOVE AXLE Z-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

18FORA000000ACZD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-100

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

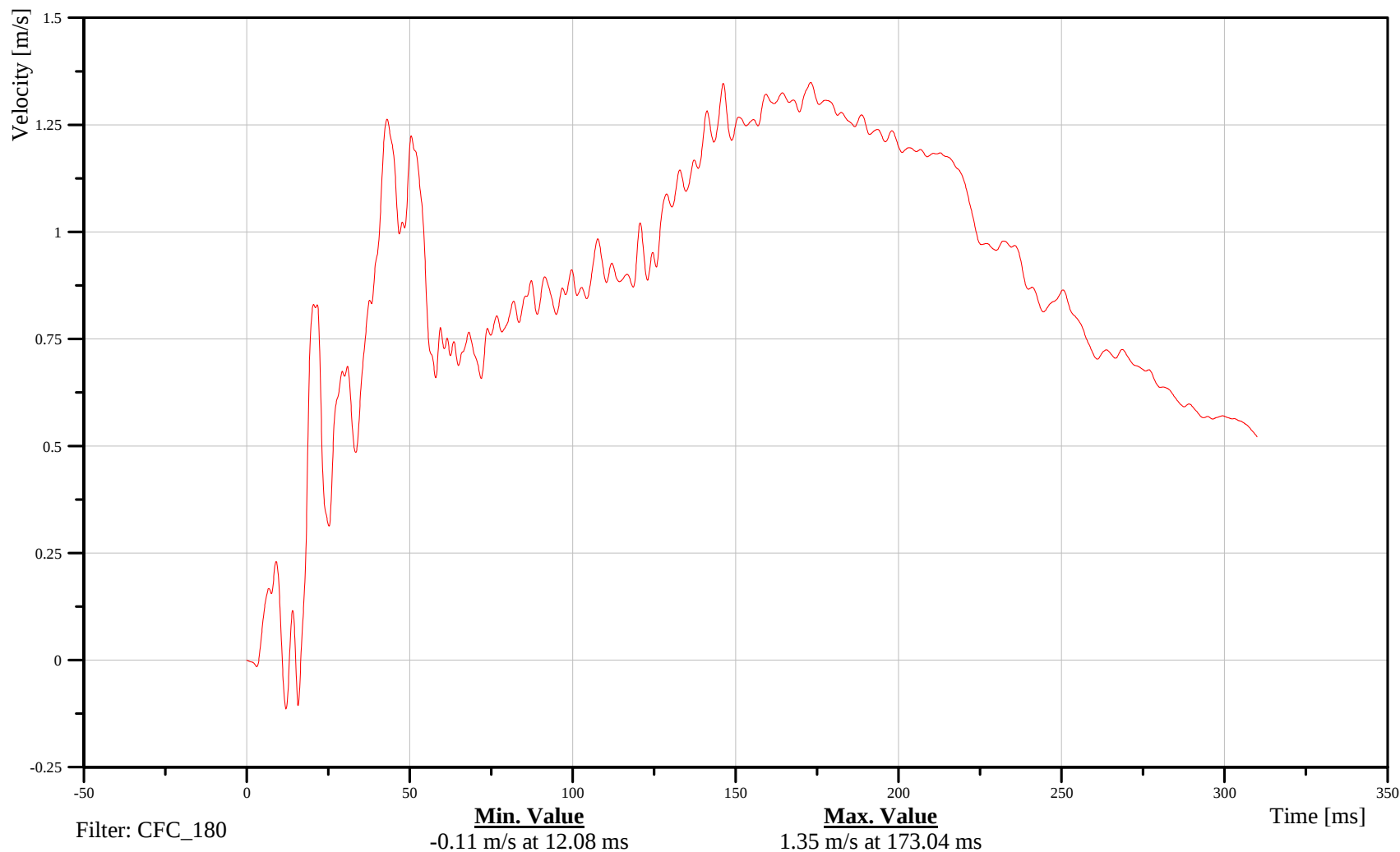
Date: 10/26/2006
Time: 13:29

REAR FLOORPAN ABOVE AXLE Z-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

18FORA000000VEZC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-101

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

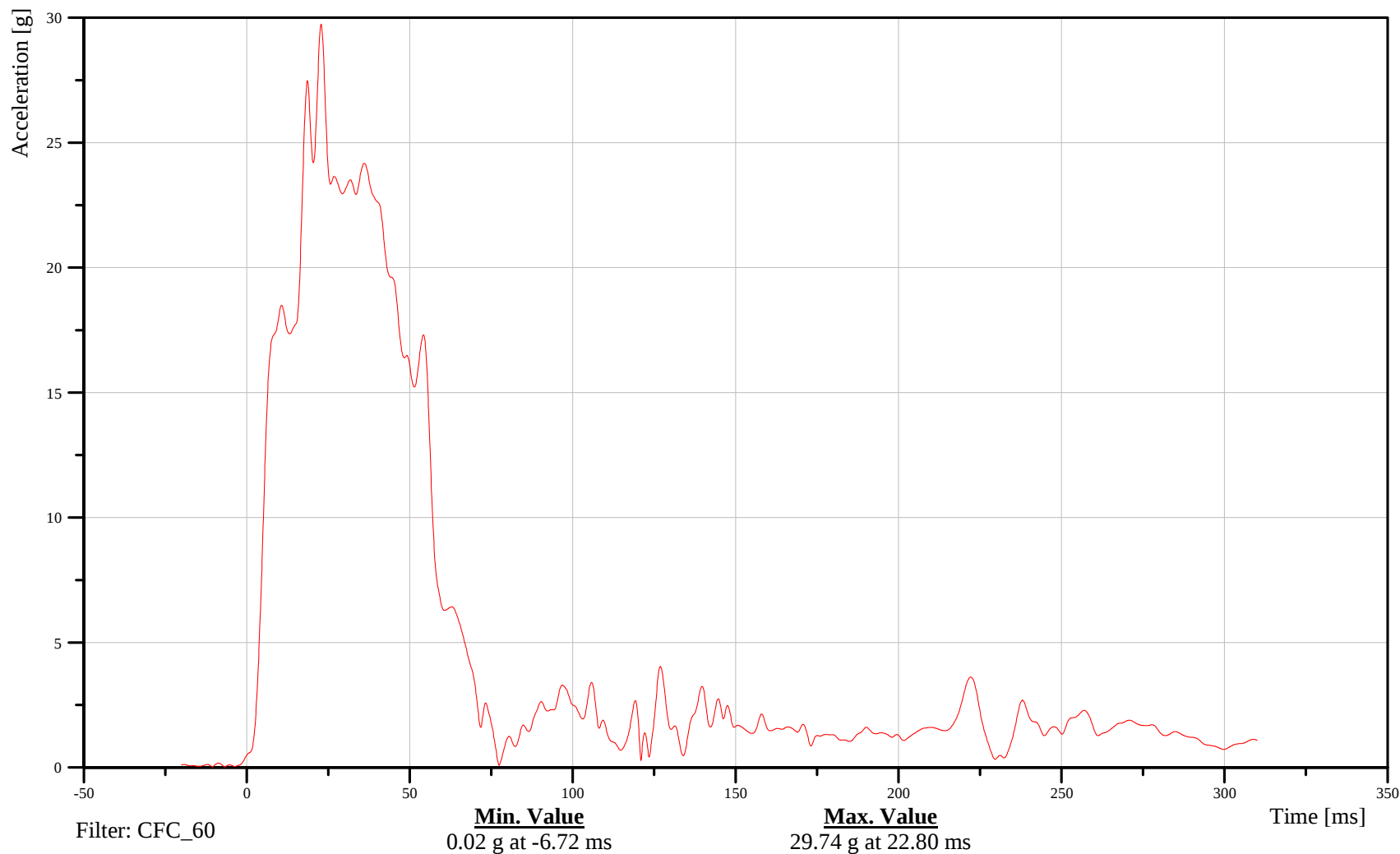
Date: 10/26/2006
Time: 13:29

REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION

Customer: NHTSA
Test Number: C70501

18FORA000000ACRD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-102

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

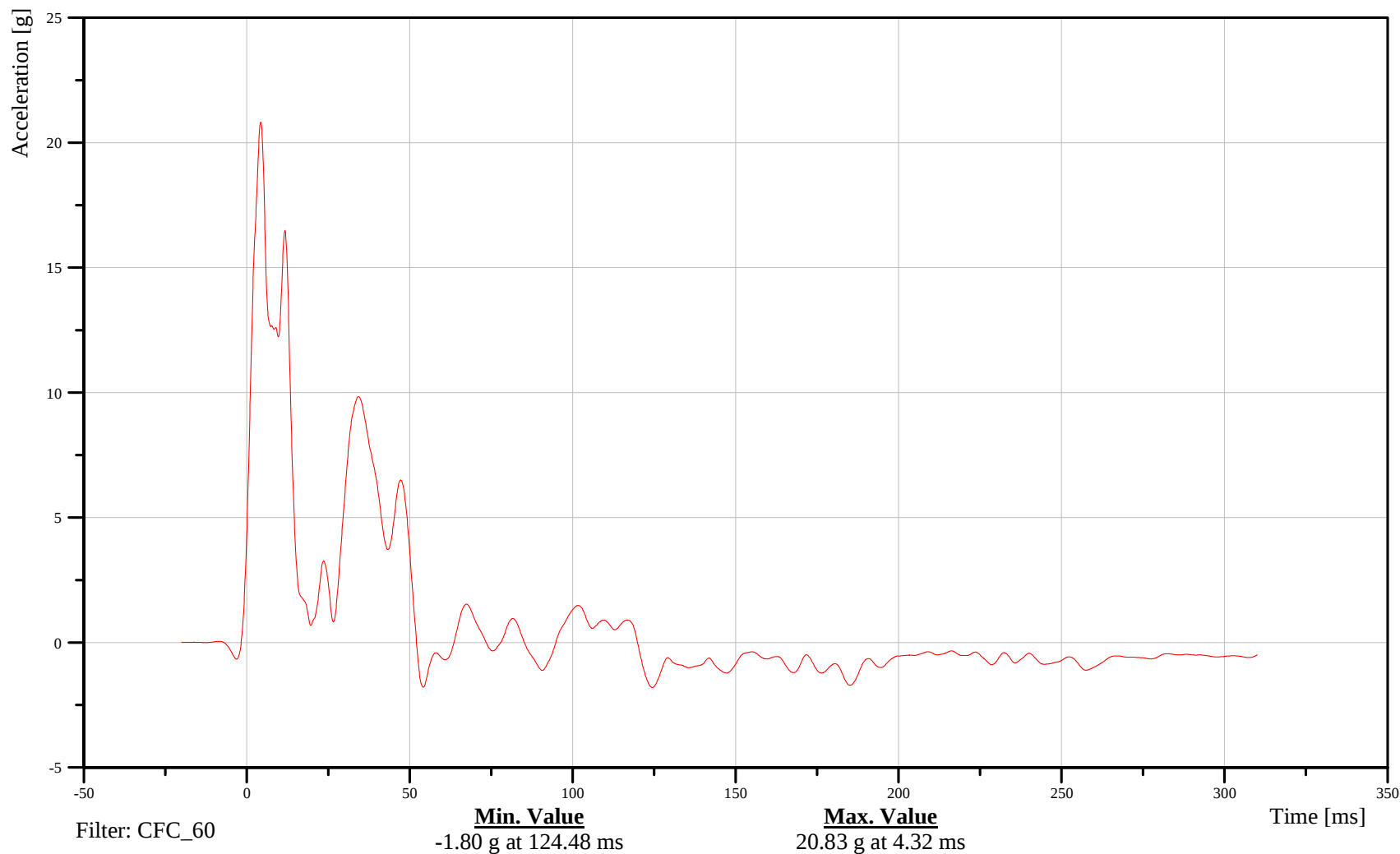
Date: 10/26/2006
Time: 13:29

LEFT SIDE SILL AT FRONT SEAT Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

14SILBFR0000ACYD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-103

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

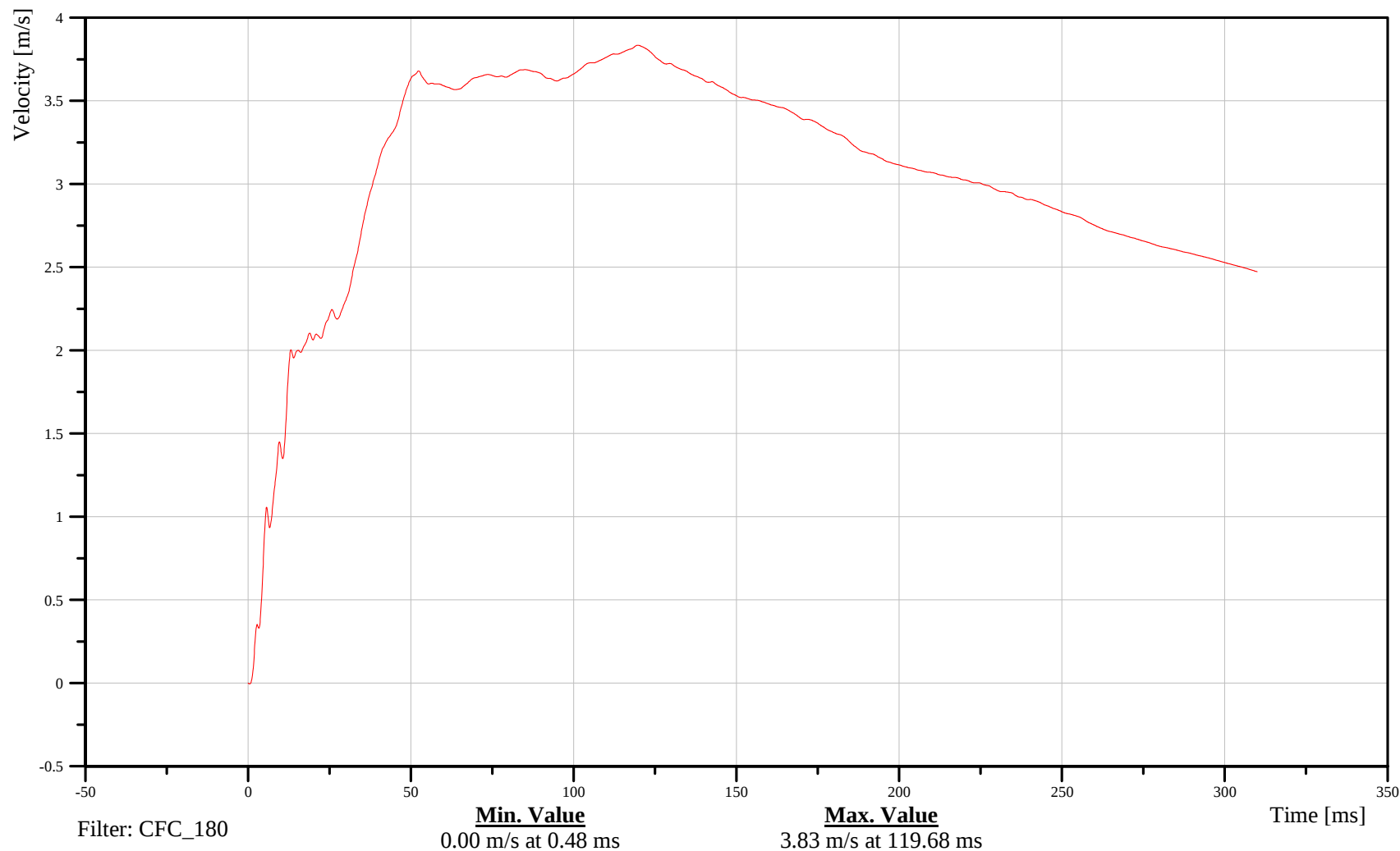
Date: 10/26/2006
Time: 13:29

LEFT SIDE SILL AT FRONT SEAT Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

14SILBFR0000VEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-104

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

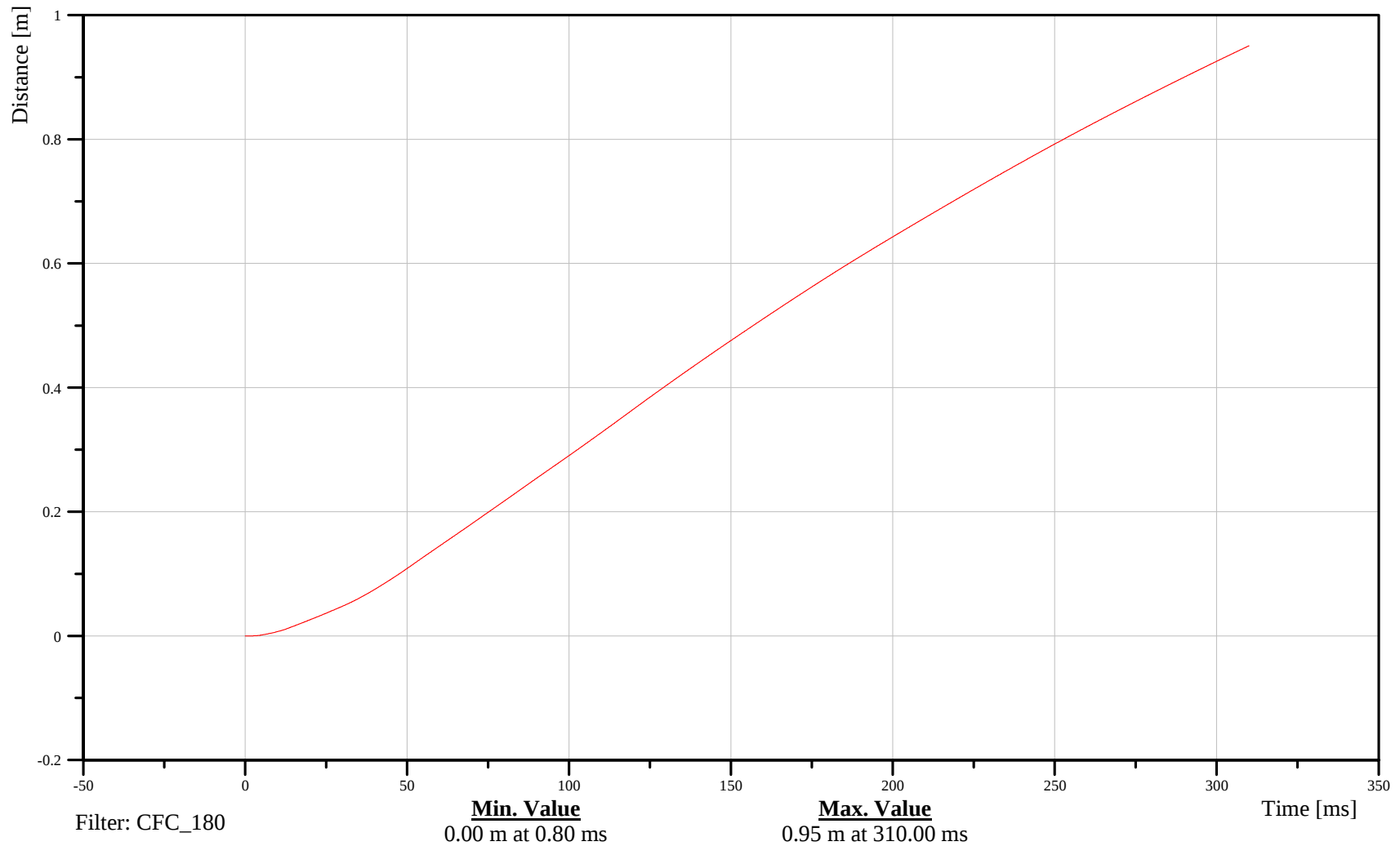
Date: 10/26/2006
Time: 13:29

LEFT SIDE SILL AT FRONT SEAT Y-AXIS DISPLACEMENT

Customer: NHTSA
Test Number: C70501

14SILBFR0000DCYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-105

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

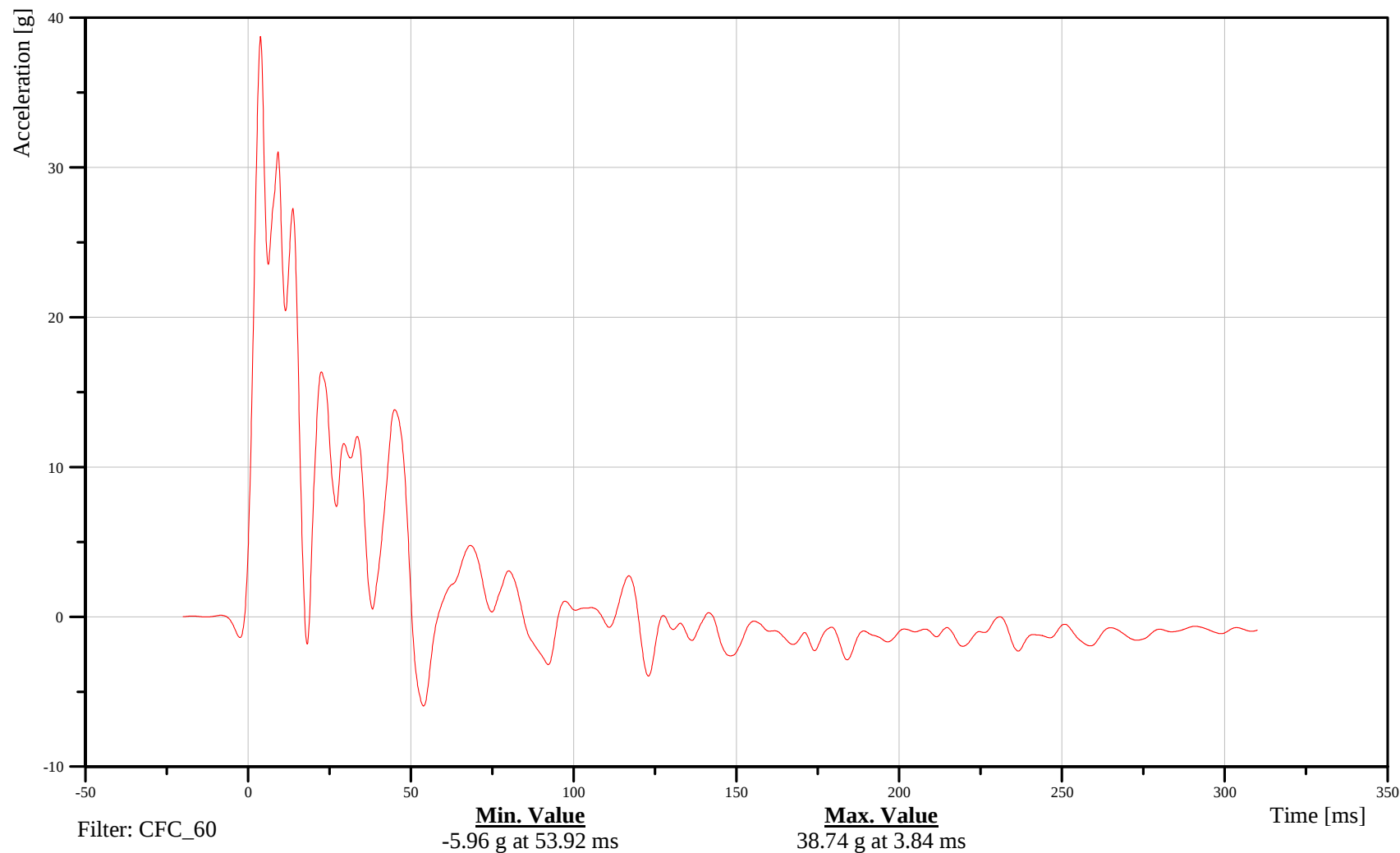
Date: 10/26/2006
Time: 13:29

LEFT SIDE SILL AT REAR SEAT Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

14SILBRE0000ACYD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-106

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

LEFT SIDE SILL AT REAR SEAT Y-AXIS VELOCITY

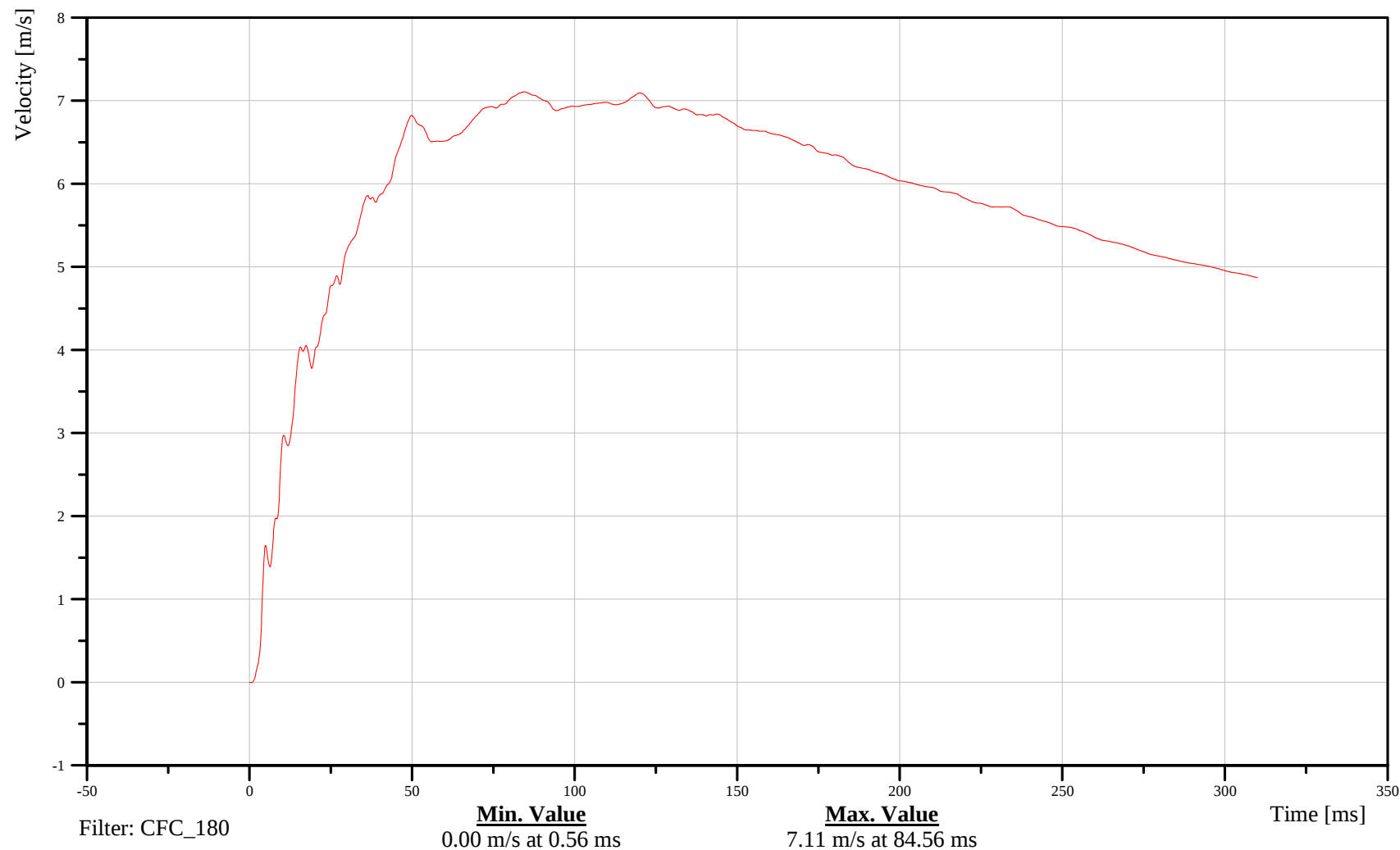
Customer: NHTSA

Test Number: C70501

14SILBRE0000VEYC

TRC Inc. Test Lab: CTF

Test Number: 061026



B-107

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

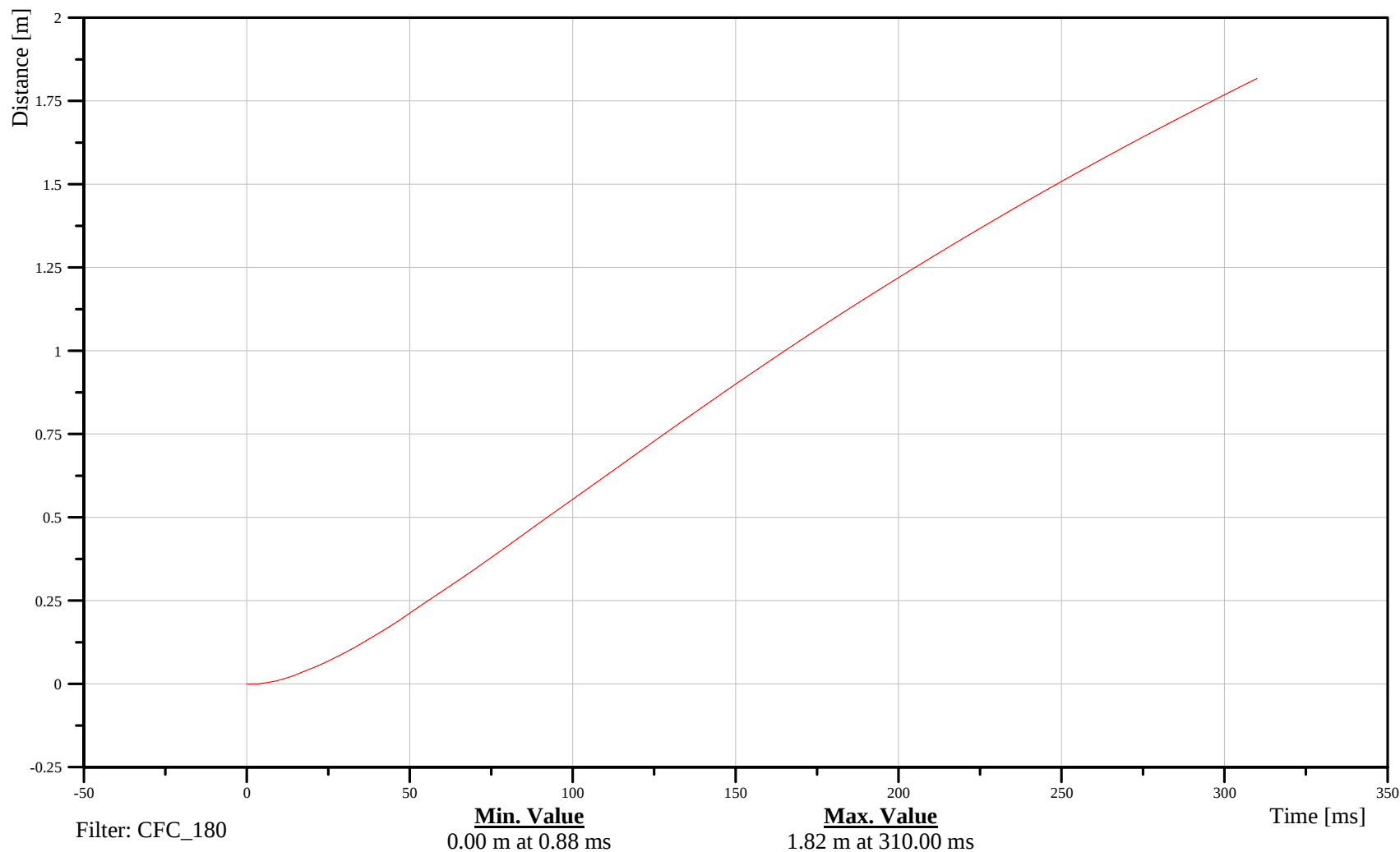
Date: 10/26/2006
Time: 13:29

LEFT SIDE SILL AT REAR SEAT Y-AXIS DISPLACEMENT

Customer: NHTSA
Test Number: C70501

14SILBRE0000DCYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-108

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006
Time: 13:29

RIGHT REAR OCCUPANT COMPARTMENT Y-AXIS ACCELERATION

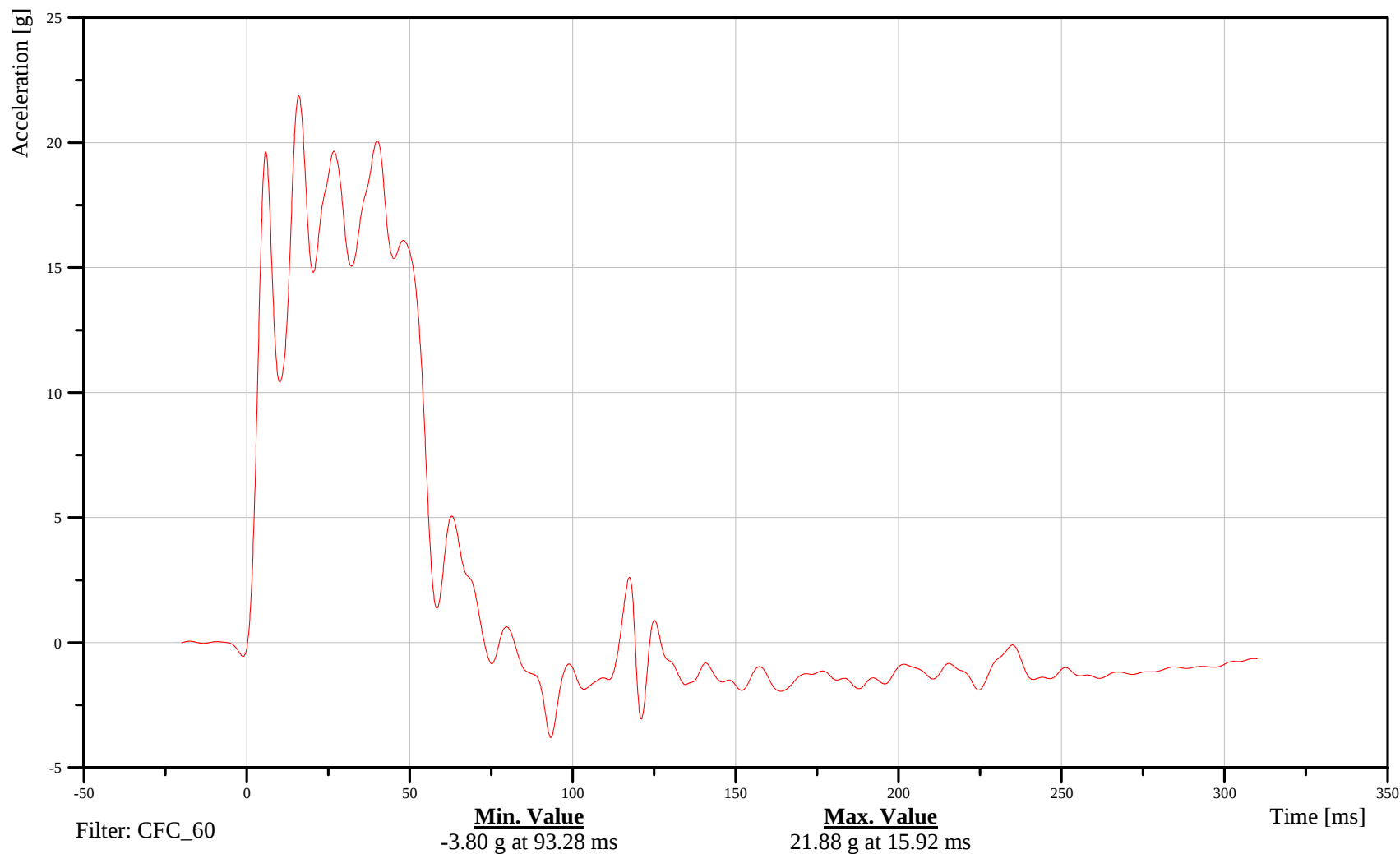
Customer: NHTSA

Test Number: C70501

16VEHCRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 061026



B-109

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

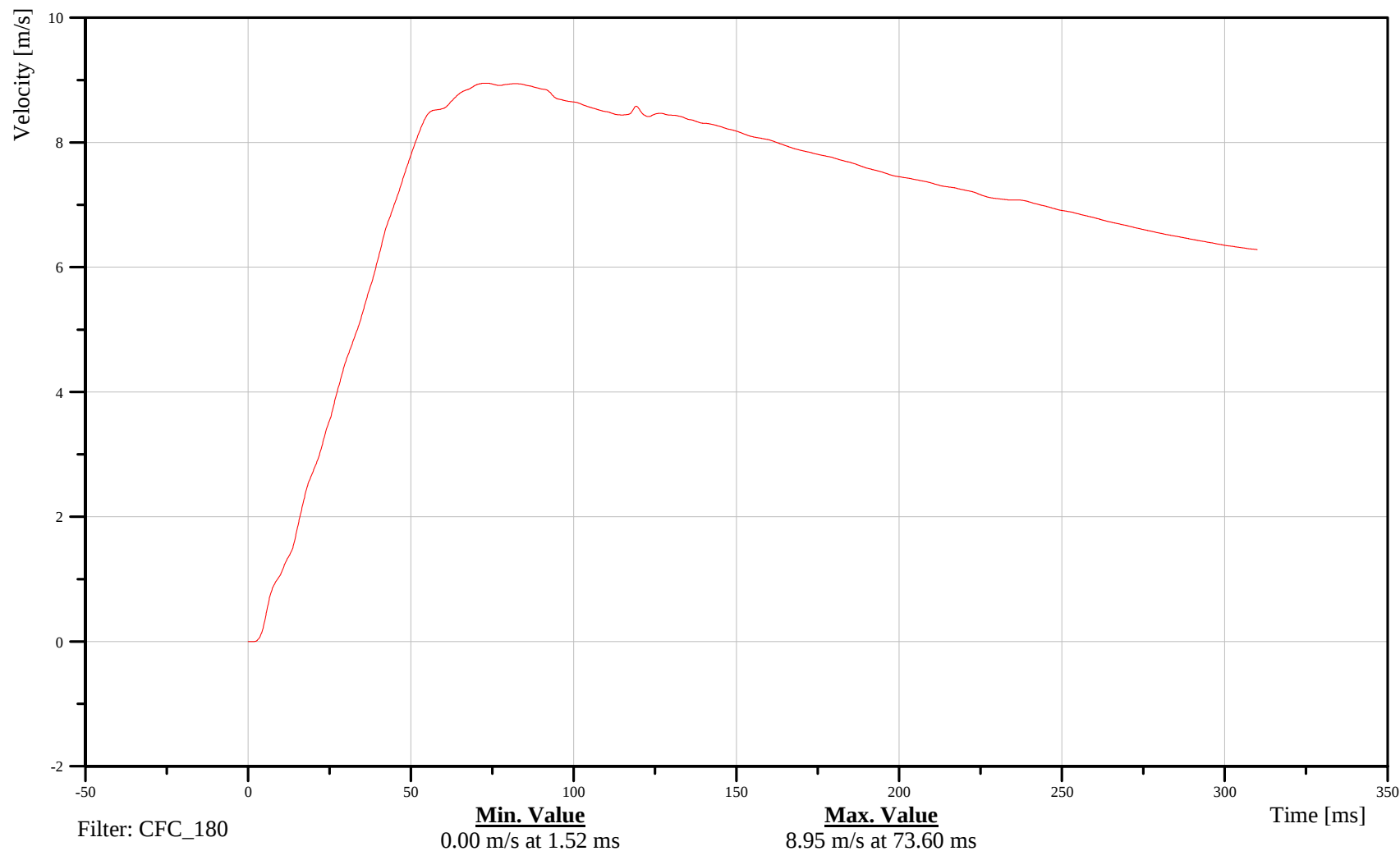
Date: 10/26/2006
Time: 13:29

RIGHT REAR OCCUPANT COMPARTMENT Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

16VEHCRE0000VEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-110

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

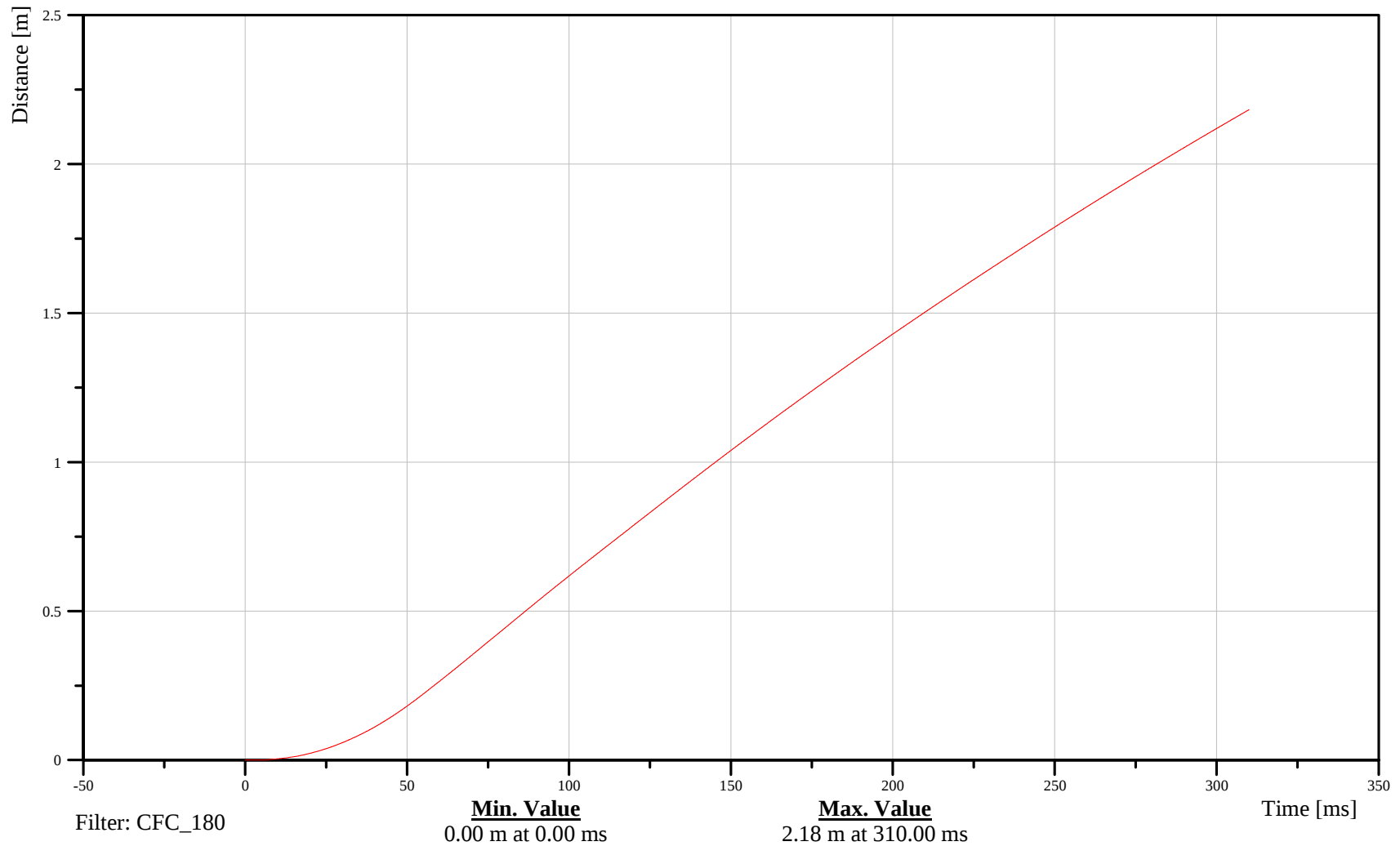
Date: 10/26/2006
Time: 13:29

RIGHT REAR OCCUPANT COMPARTMENT Y-AXIS DISPLACEMENT

Customer: NHTSA
Test Number: C70501

16VEHCRE0000DCYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-111

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

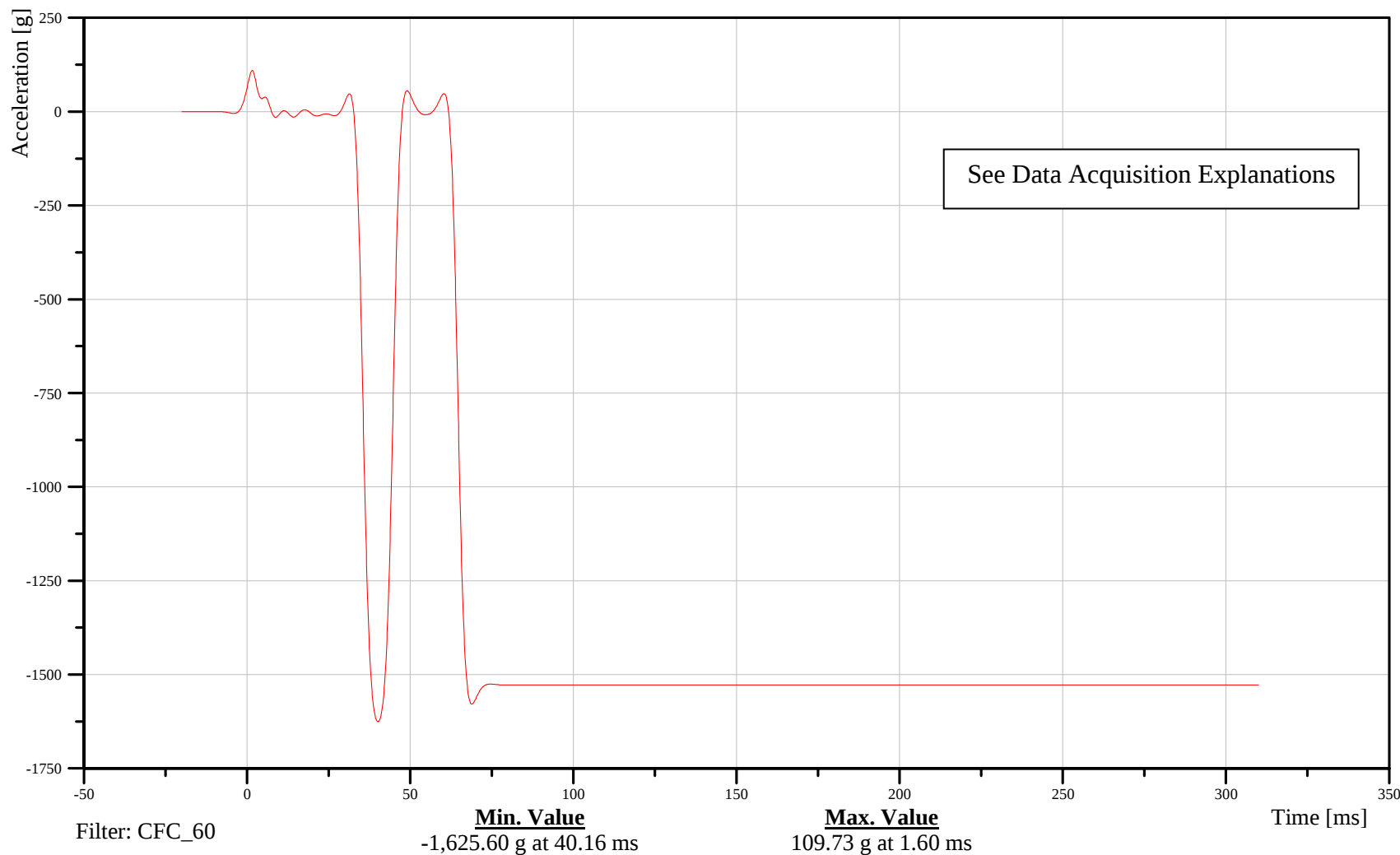
Date: 10/26/2006
Time: 13:29

LEFT LOWER A-POST Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

11APILLO0000ACYD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-112

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

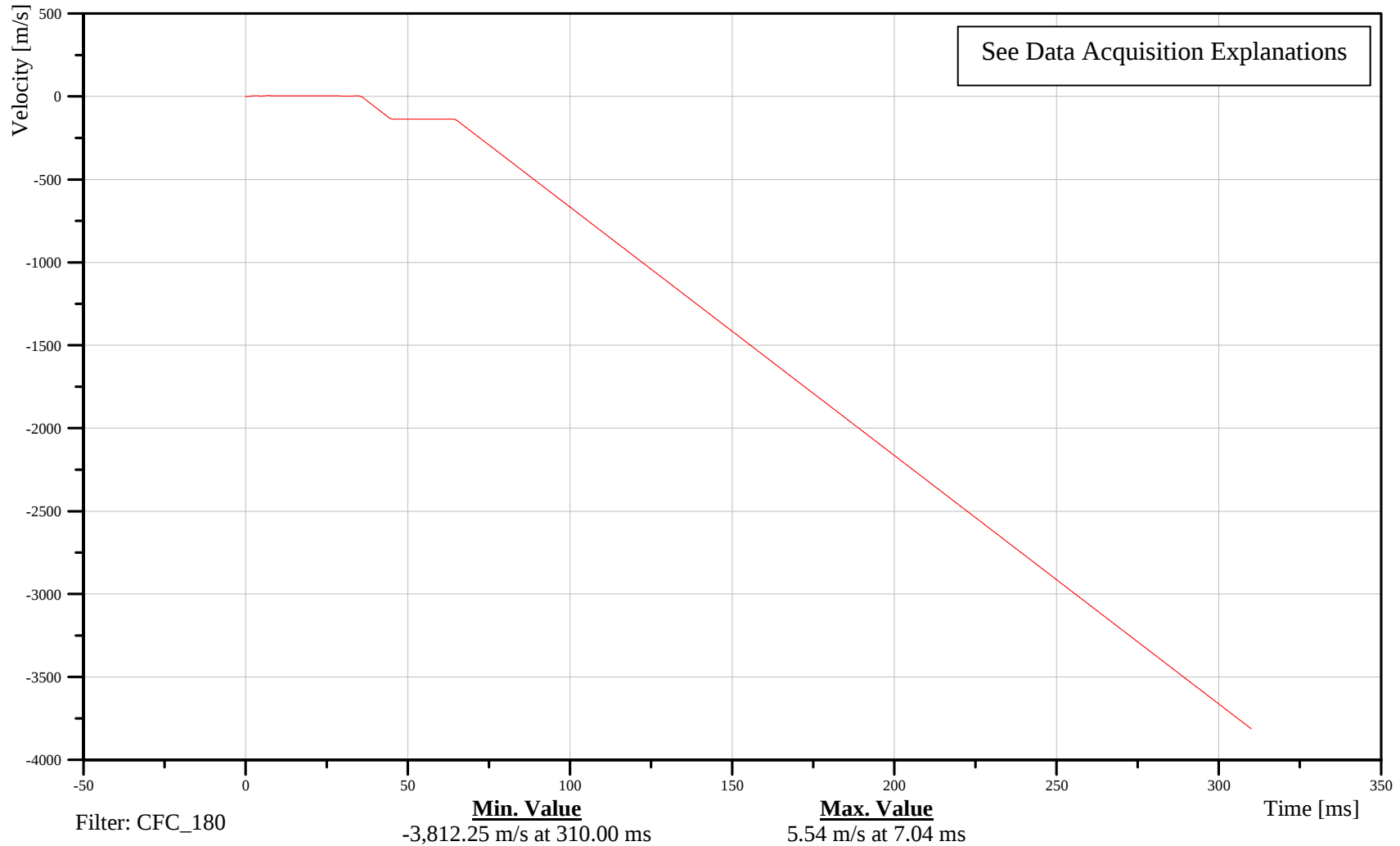
Date: 10/26/2006
Time: 13:29

LEFT LOWER A-POST Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

11APILLO0000VEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-113

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

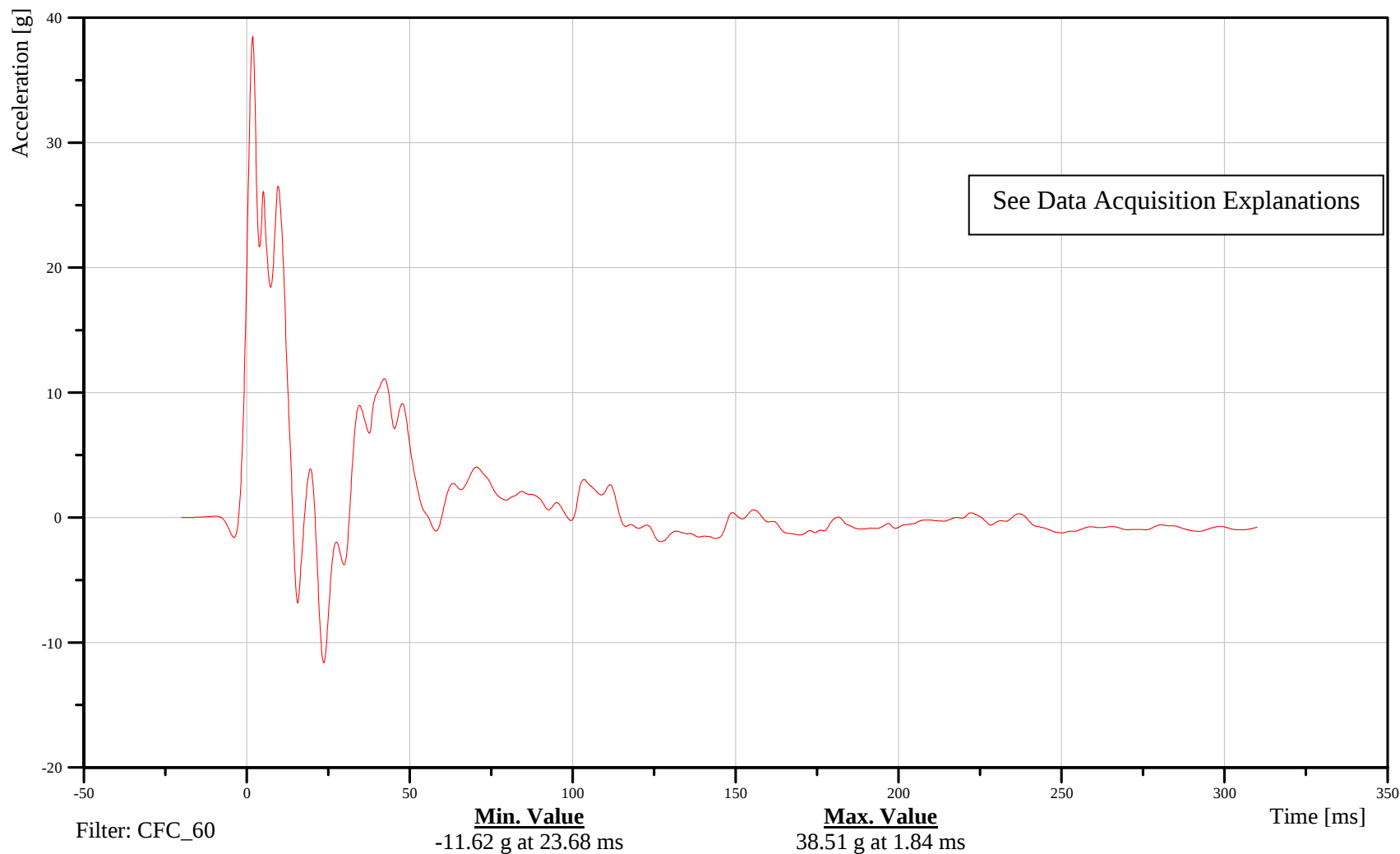
Date: 10/26/2006
Time: 13:29

LEFT MIDDLE A-POST Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

11APILMI0000ACYD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-114

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

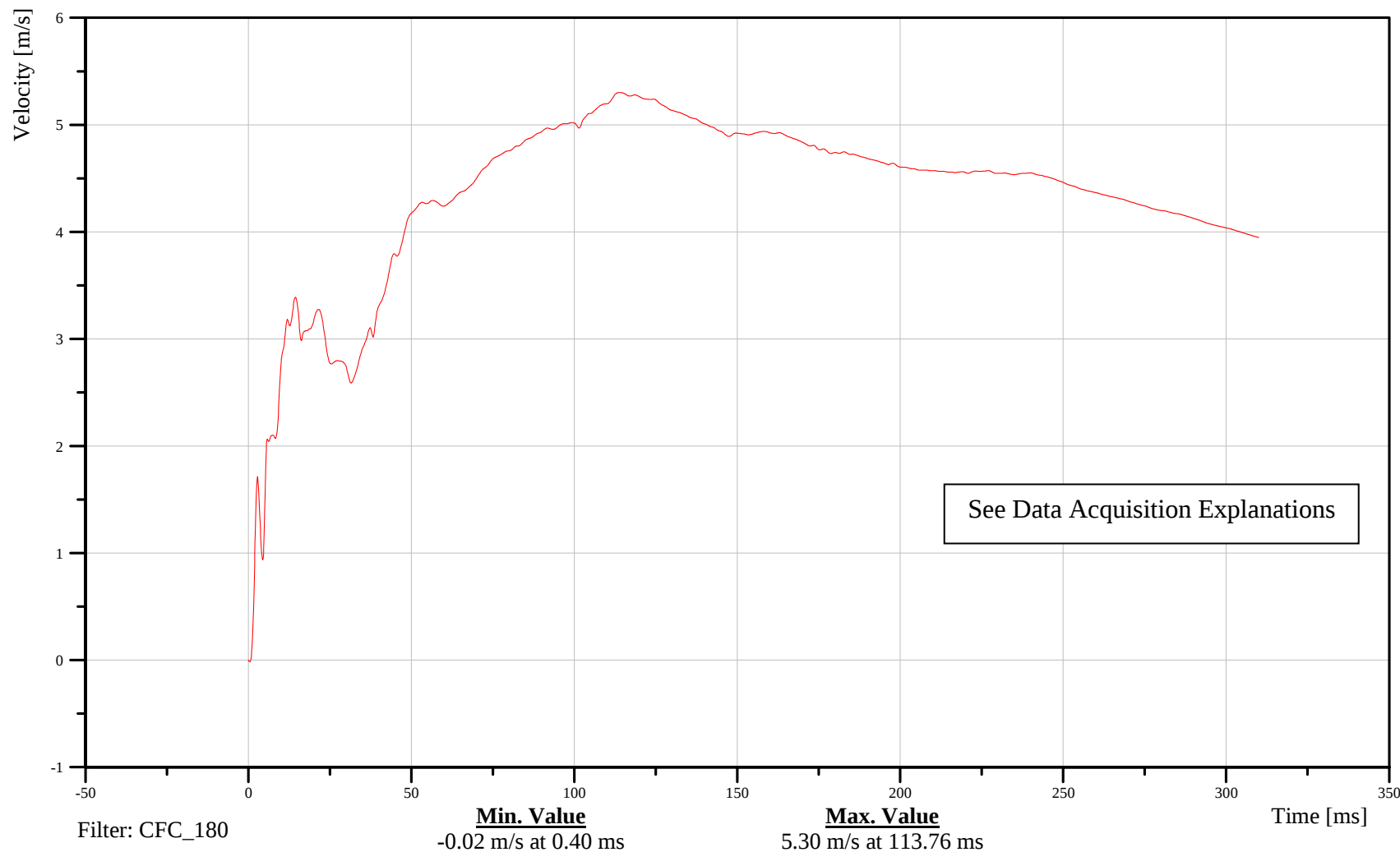
Date: 10/26/2006
Time: 13:29

LEFT MIDDLE A-POST Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

11APILMI0000VEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-115

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

LEFT LOWER B-POST Y-AXIS ACCELERATION

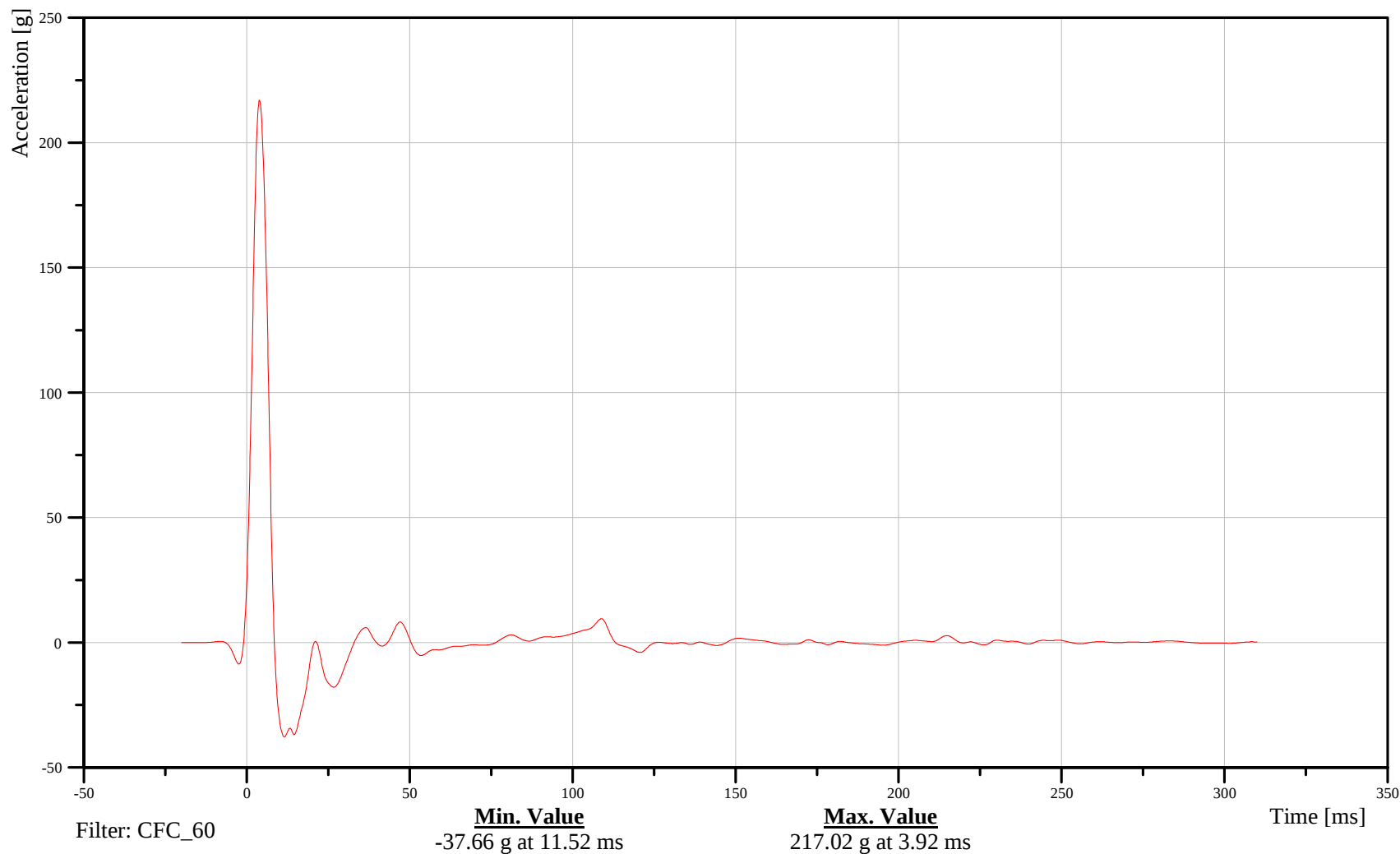
Customer: NHTSA

Test Number: C70501

14BPILLO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 061026



B-116

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

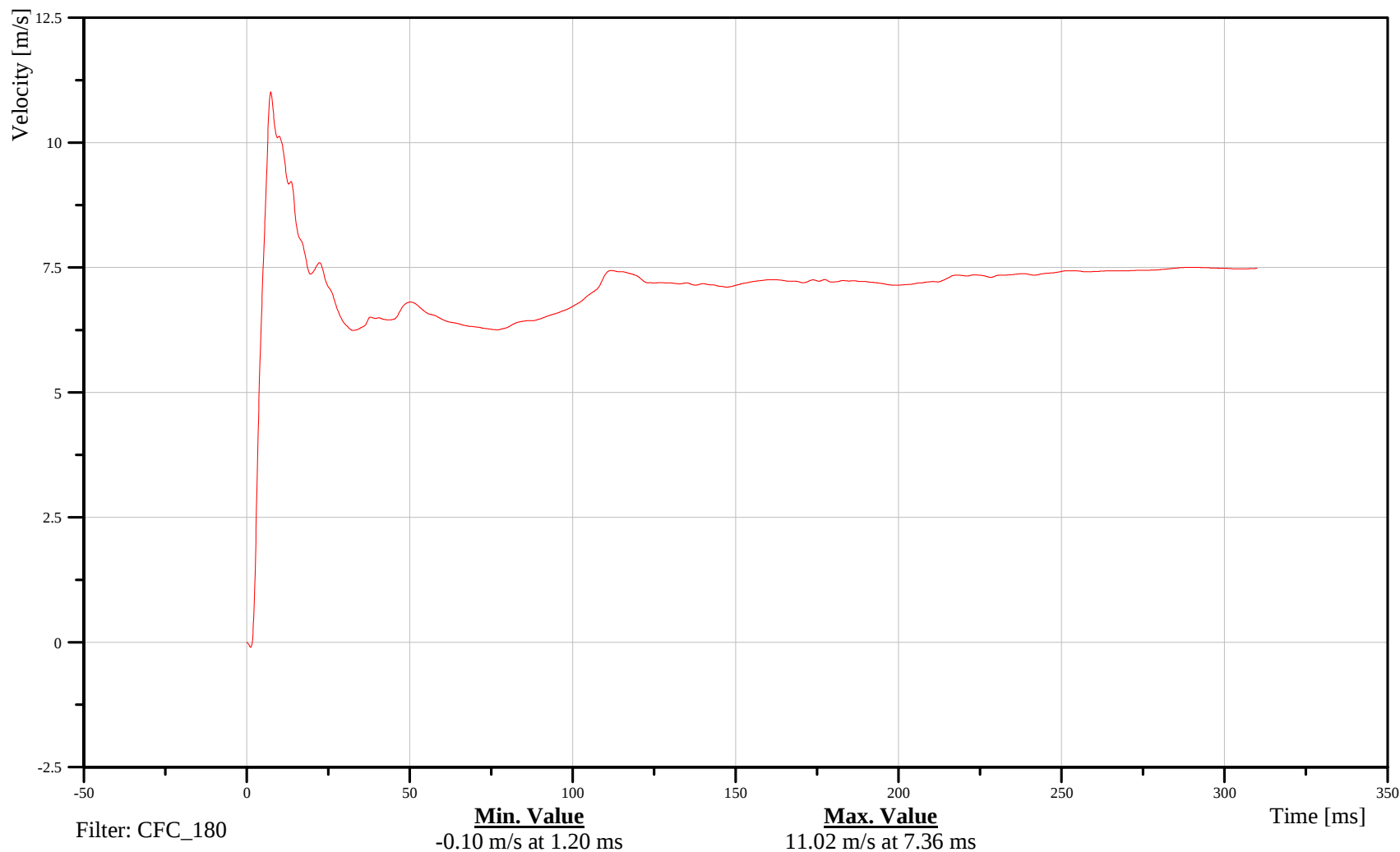
Date: 10/26/2006
Time: 13:29

LEFT LOWER B-POST Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

14BPILLO0000VEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-117

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

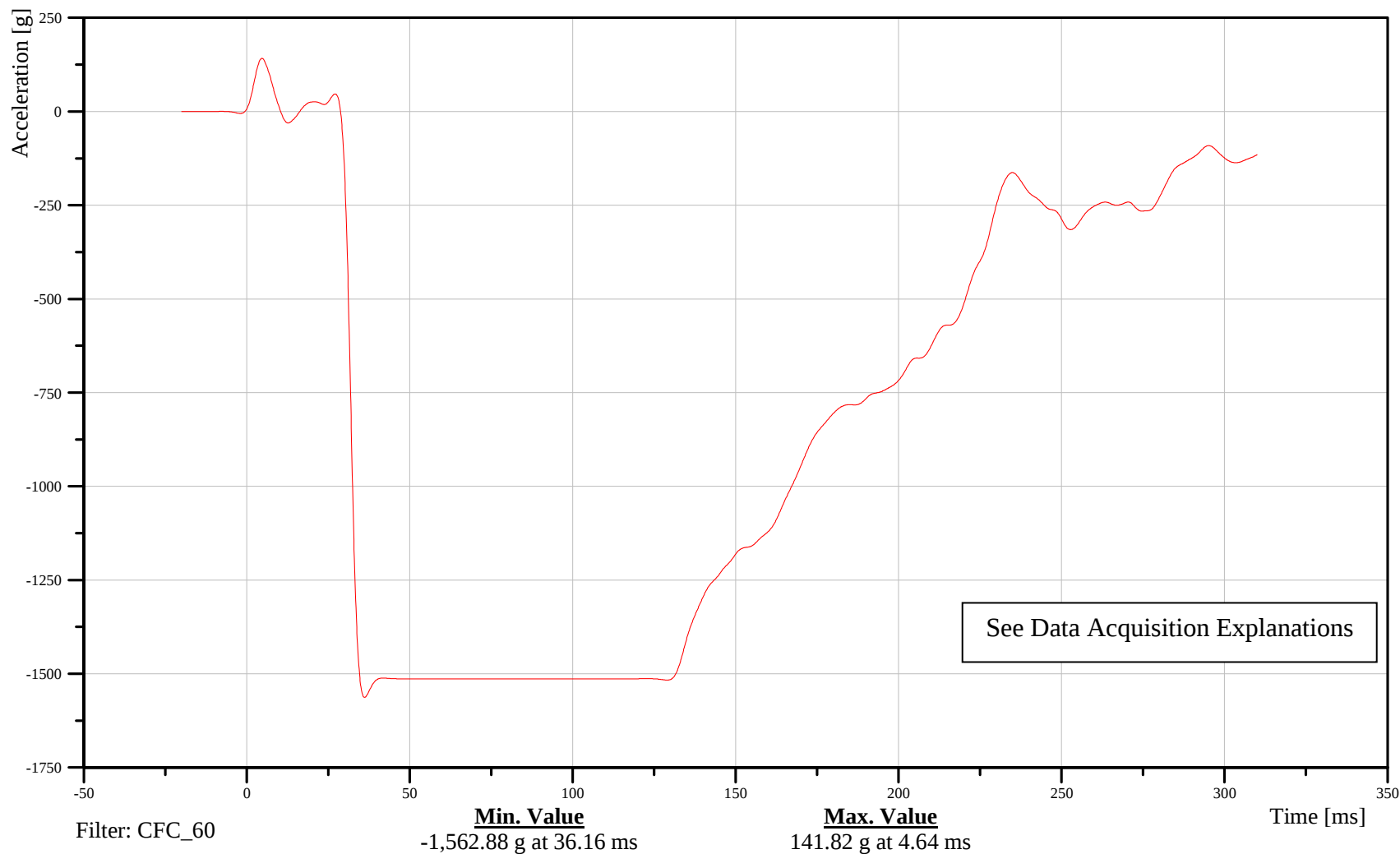
Date: 10/26/2006
Time: 13:29

LEFT MIDDLE B-POST Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

14BPILMI0000ACYD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-118

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

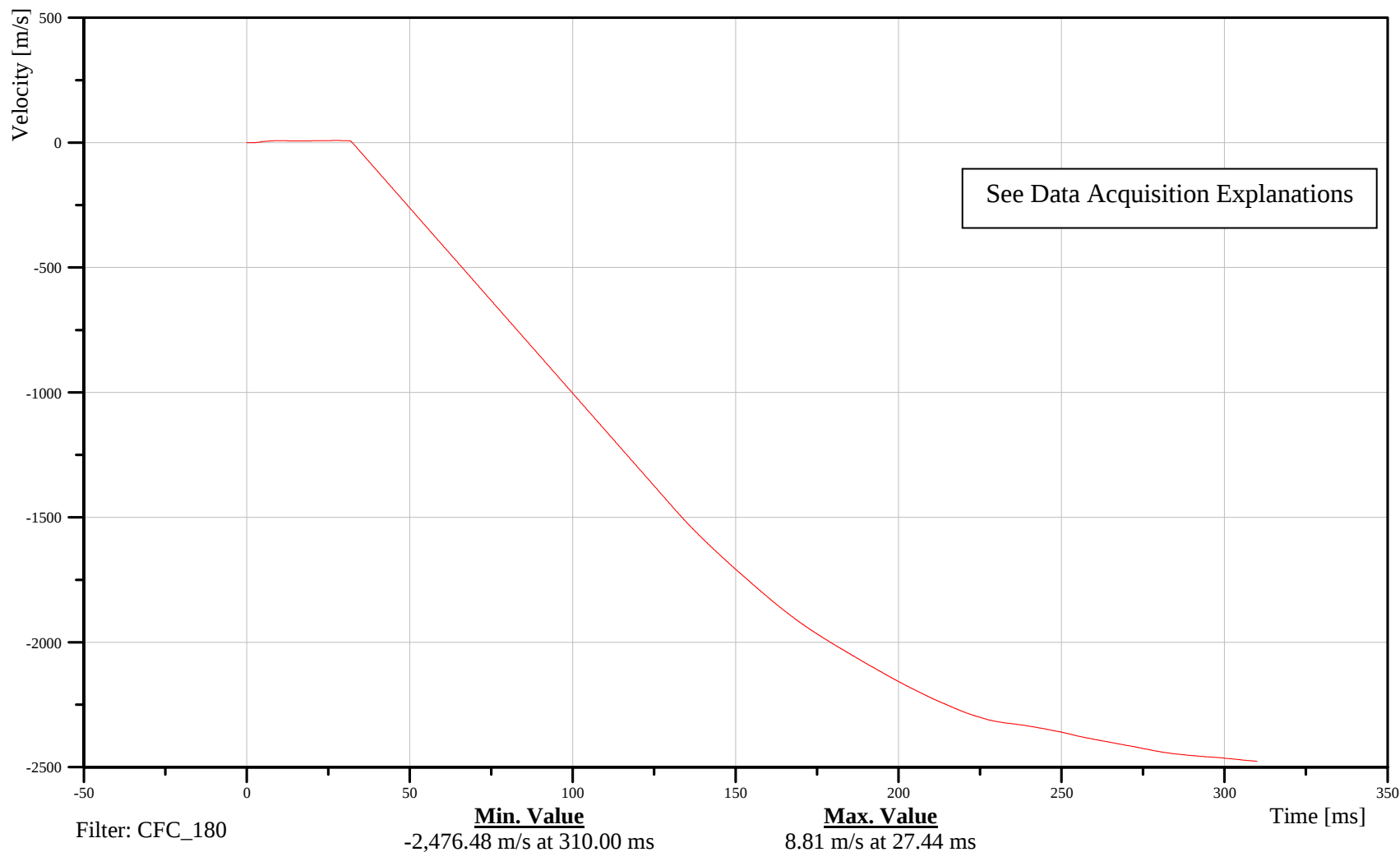
Date: 10/26/2006
Time: 13:29

LEFT MIDDLE B-POST Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

14BPILMI0000VEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-119

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

LEFT FRONT SEAT TRACK Y-AXIS ACCELERATION

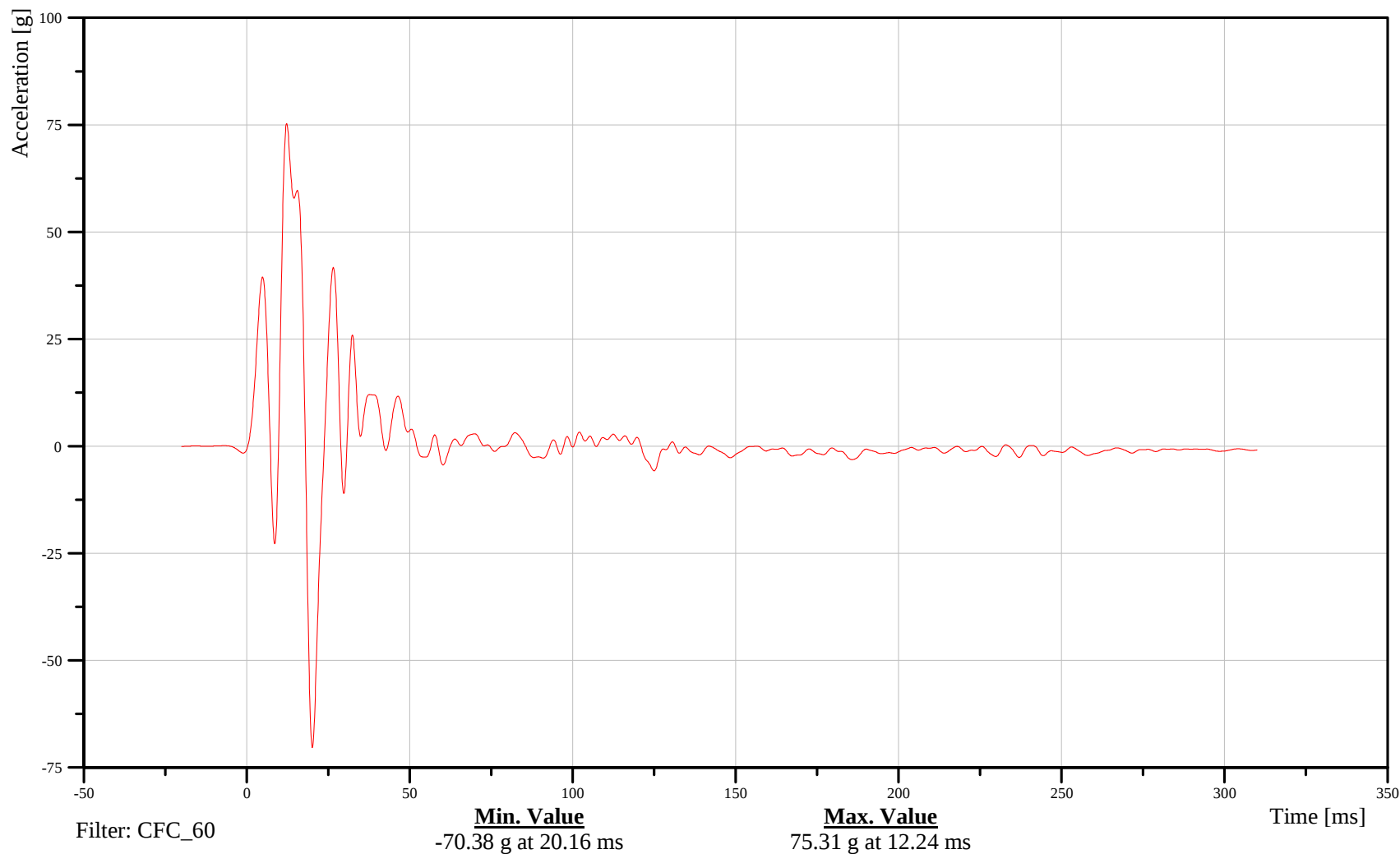
Customer: NHTSA

Test Number: C70501

11SETRFR0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 061026



B-120

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

LEFT FRONT SEAT TRACK Y-AXIS VELOCITY

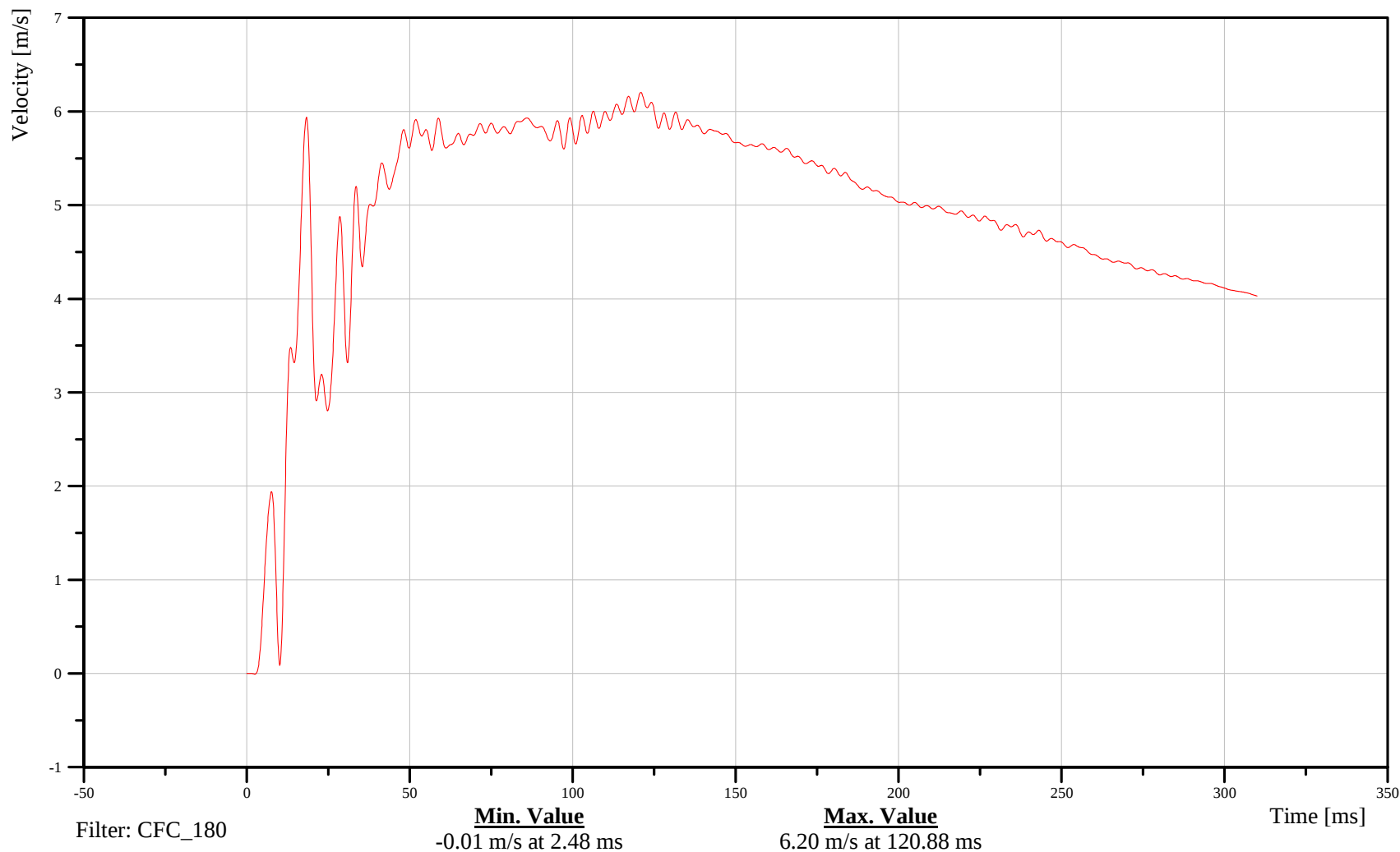
Customer: NHTSA

Test Number: C70501

11SETRFR0000VEYC

TRC Inc. Test Lab: CTF

Test Number: 061026



B-121

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

LEFT REAR SEAT TRACK Y-AXIS ACCELERATION

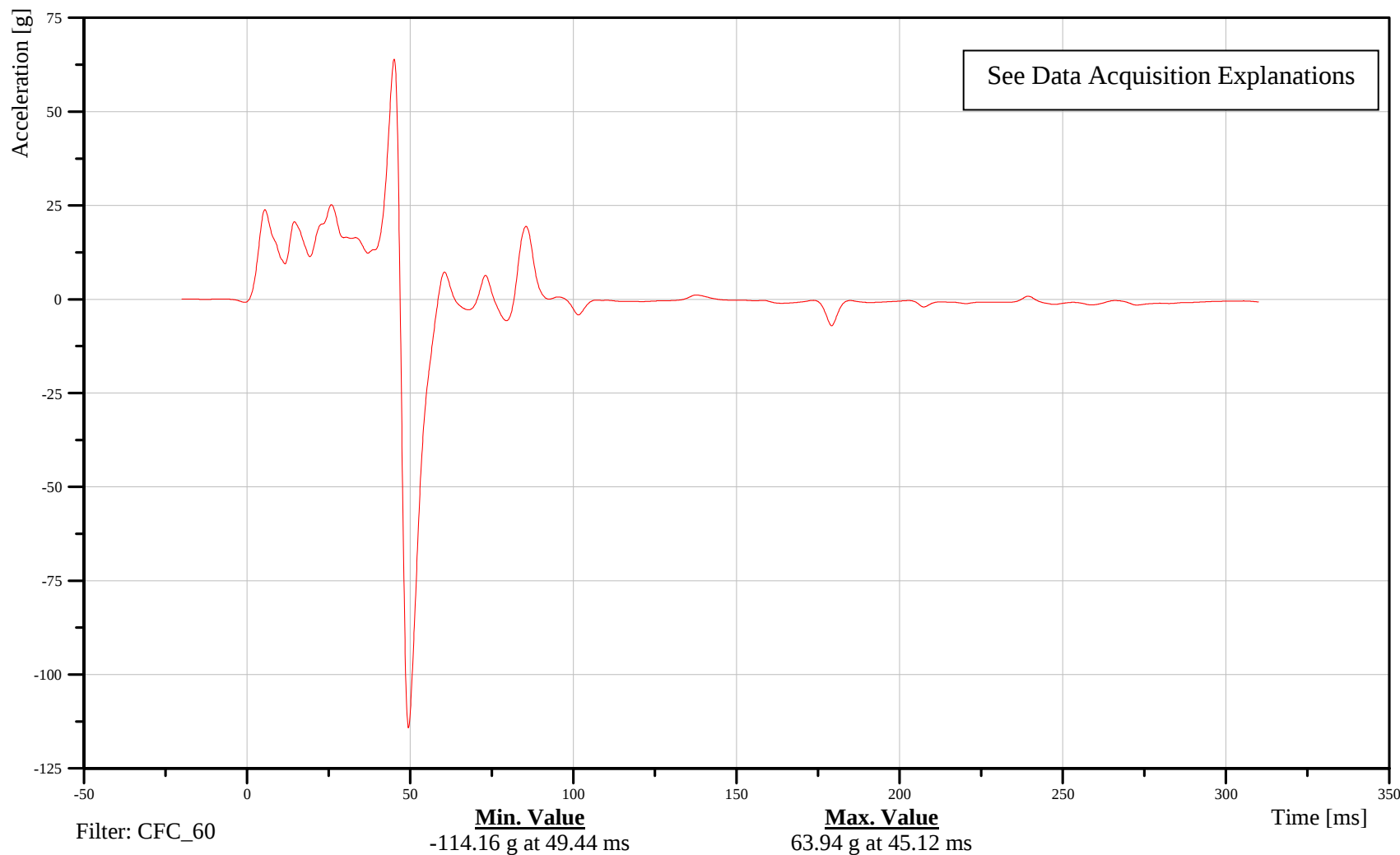
Customer: NHTSA

Test Number: C70501

14SETRLERE00ACYD

TRC Inc. Test Lab: CTF

Test Number: 061026



B-122

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

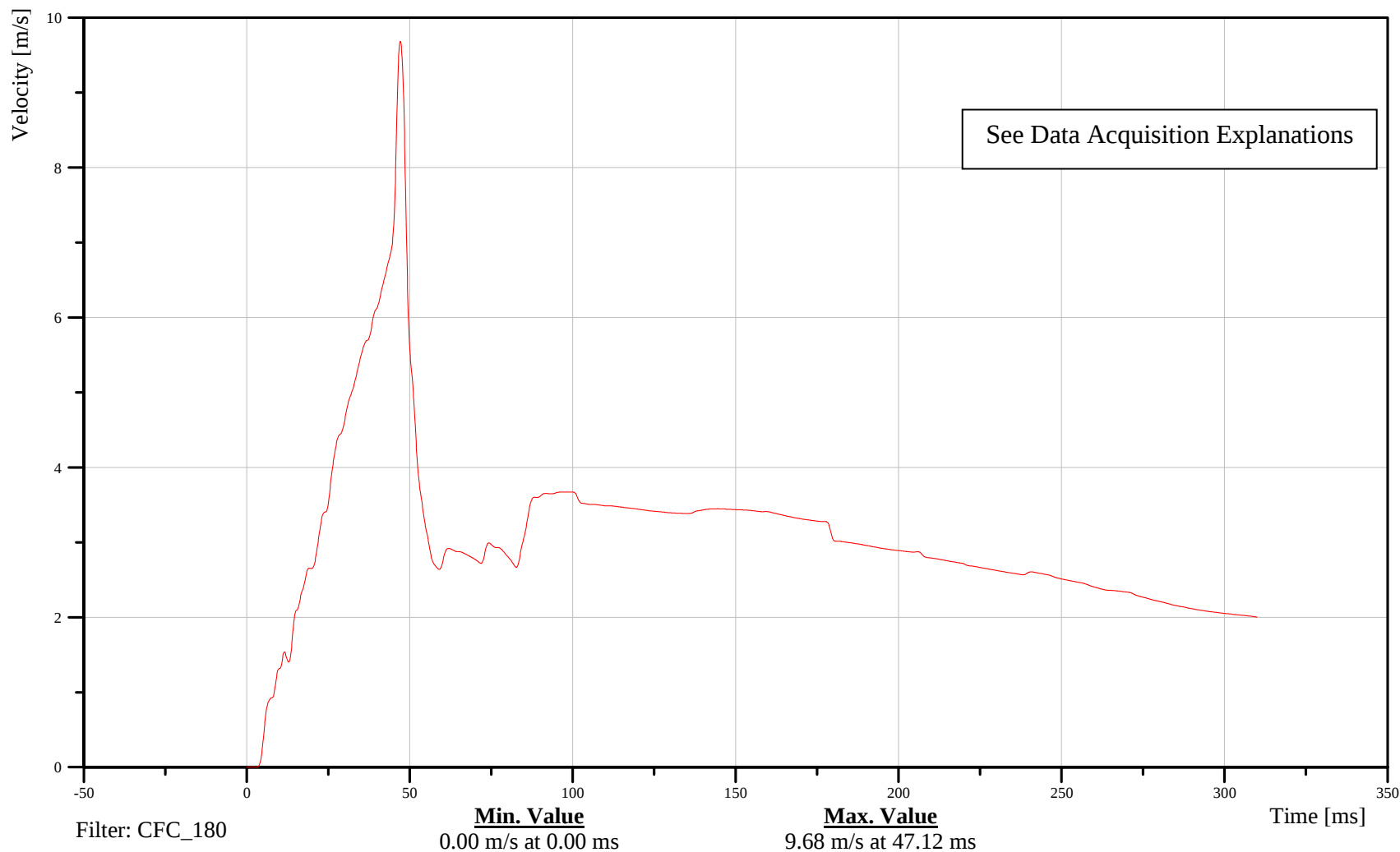
Date: 10/26/2006
Time: 13:29

LEFT REAR SEAT TRACK Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

14SETRLERE00VEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-123

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

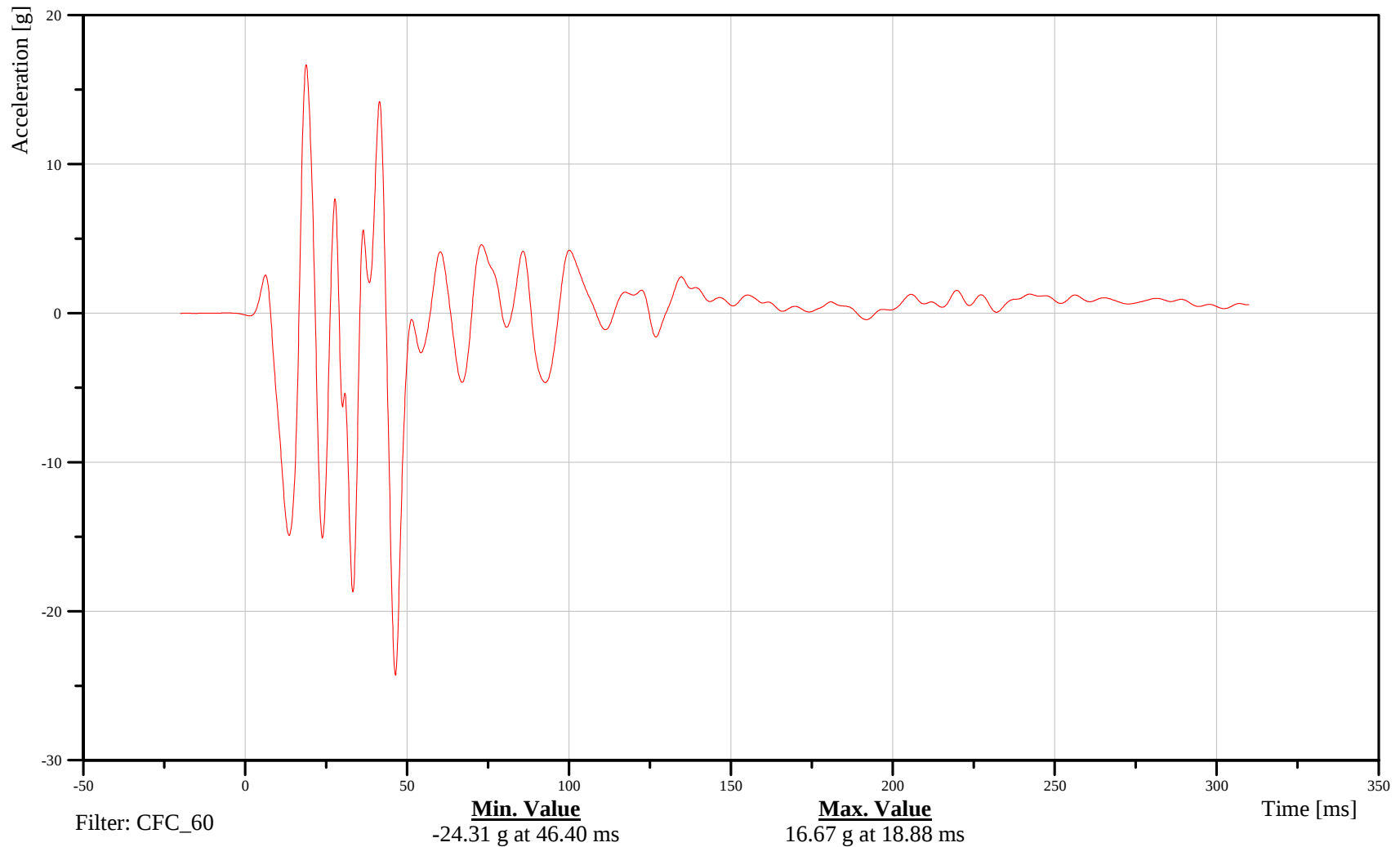
Date: 10/26/2006
Time: 13:29

VEHICLE CENTER OF GRAVITY X-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

10VEHCCG0000ACXD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-124

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

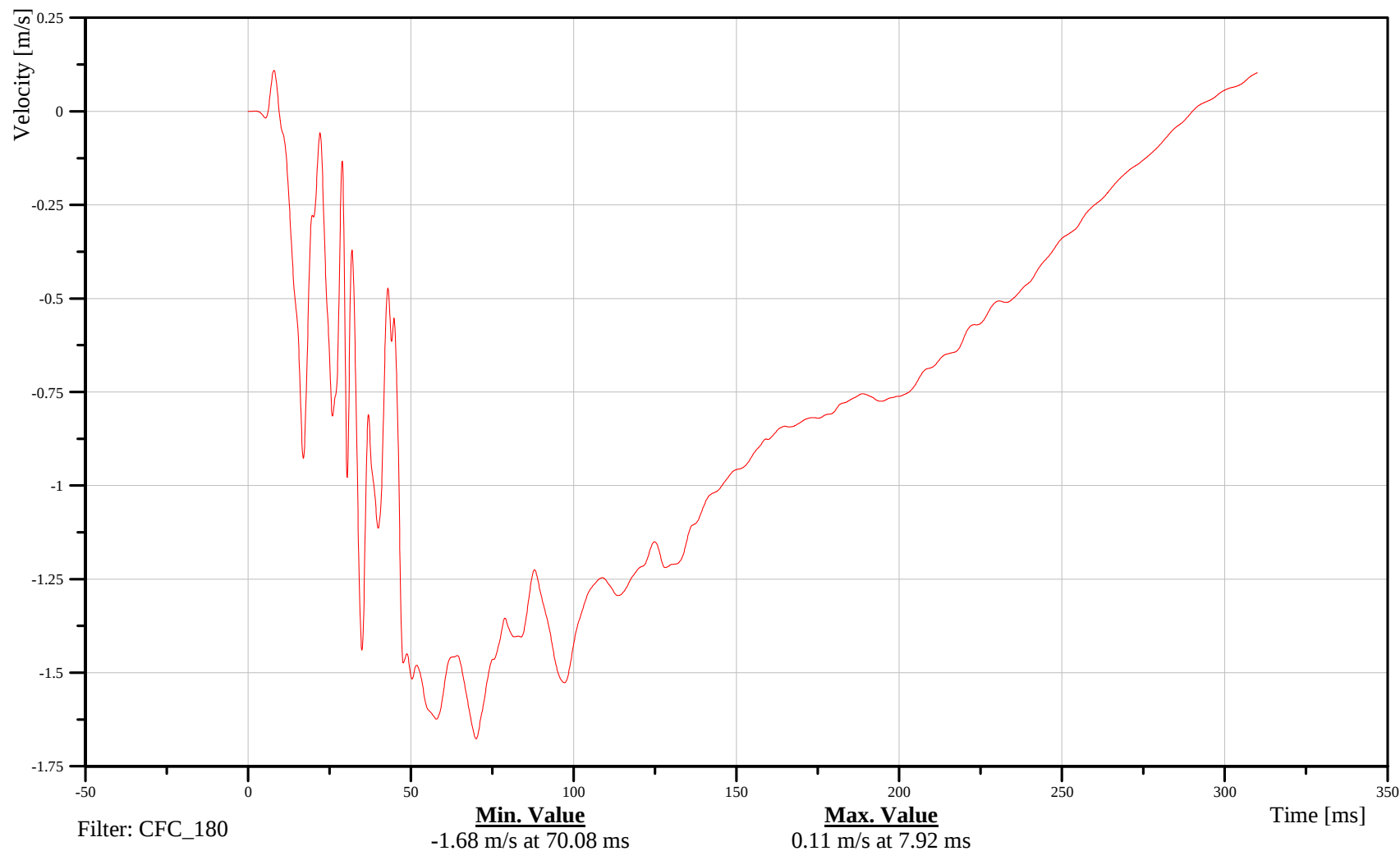
Date: 10/26/2006
Time: 13:29

VEHICLE CENTER OF GRAVITY X-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

10VEHCCG0000VEXC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-125

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

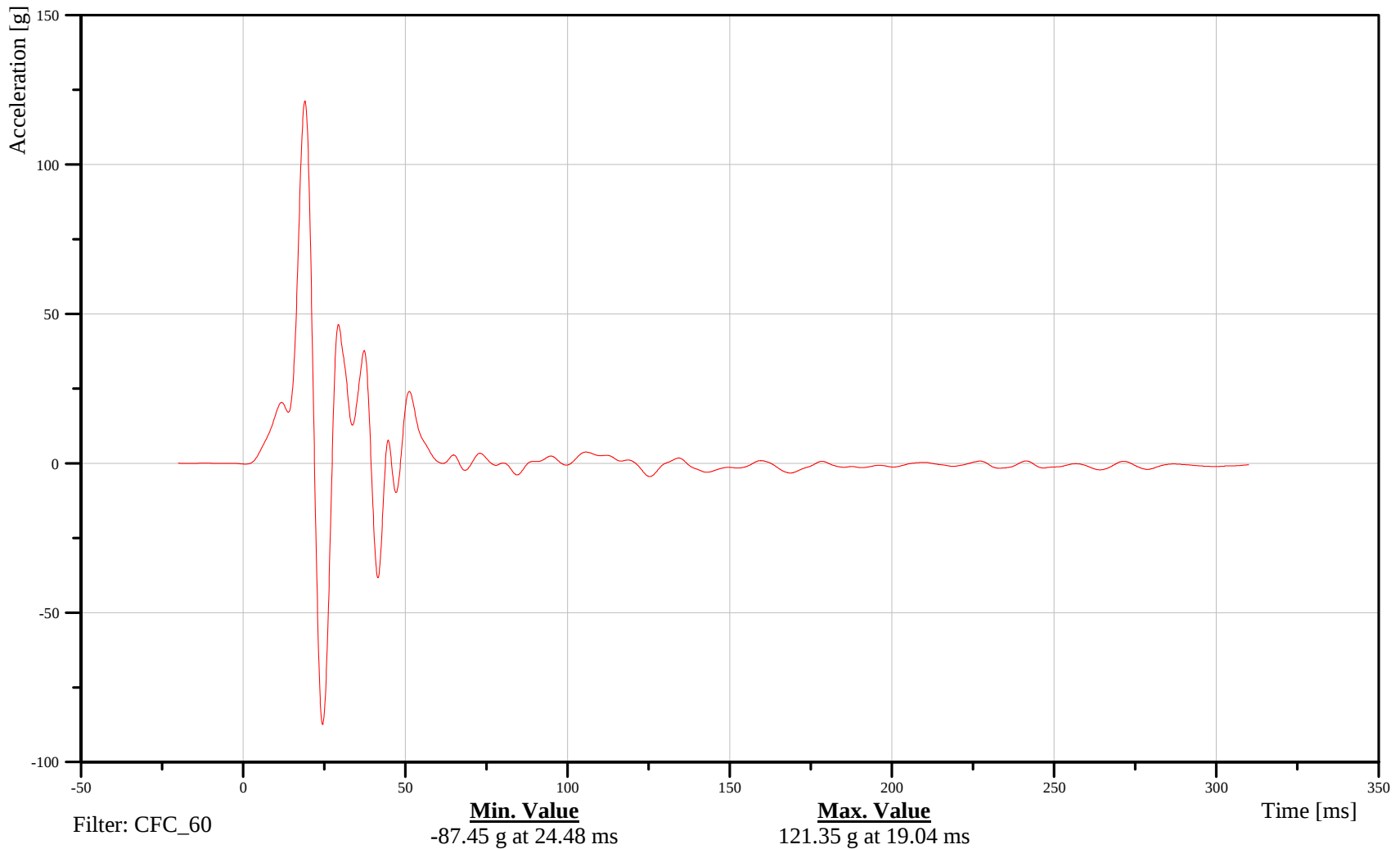
Date: 10/26/2006
Time: 13:29

VEHICLE CENTER OF GRAVITY Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

10VEHCCG0000ACVD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-126

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

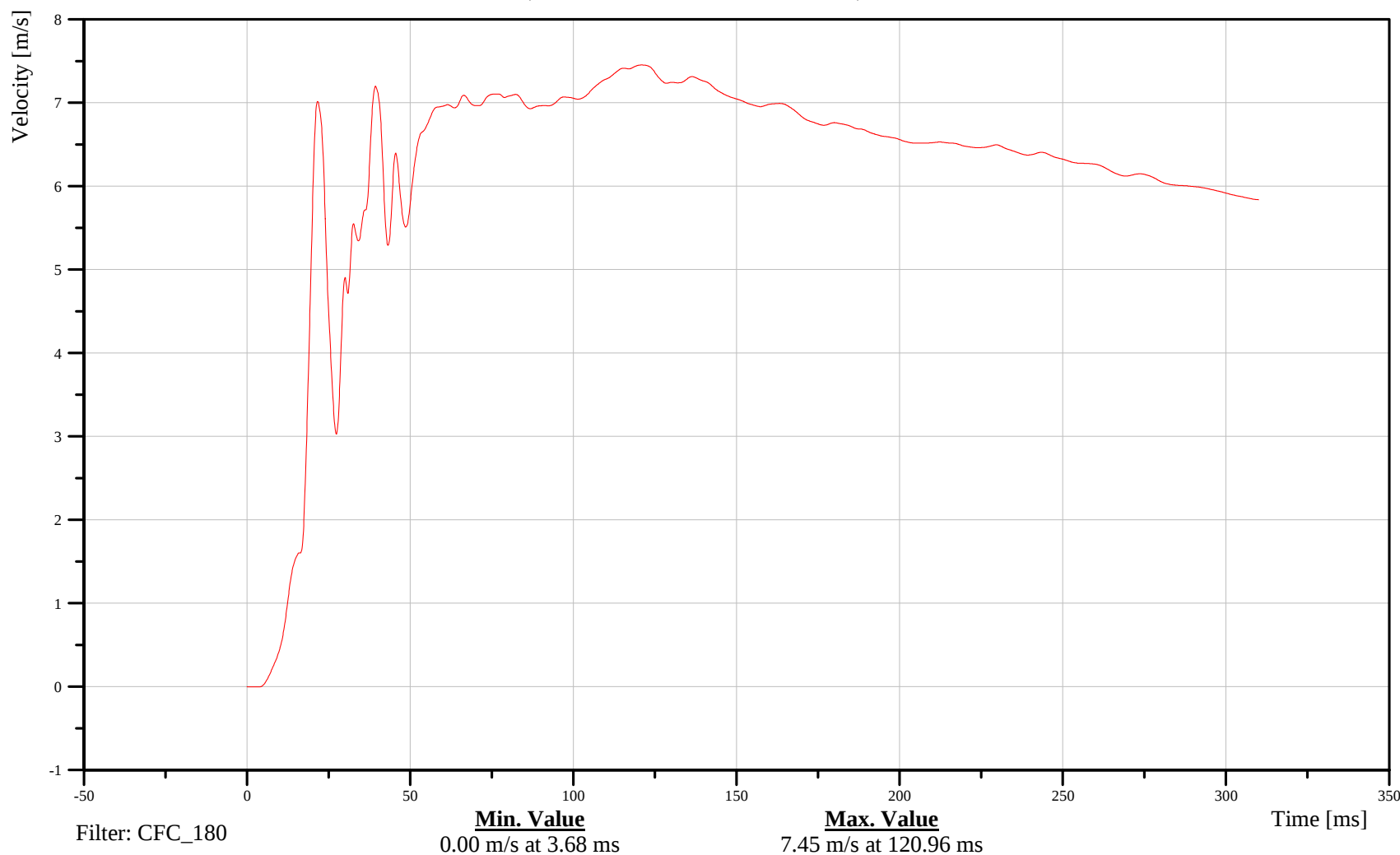
Date: 10/26/2006
Time: 13:29

VEHICLE CENTER OF GRAVITY Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

10VEHCCG0000VEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-127

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

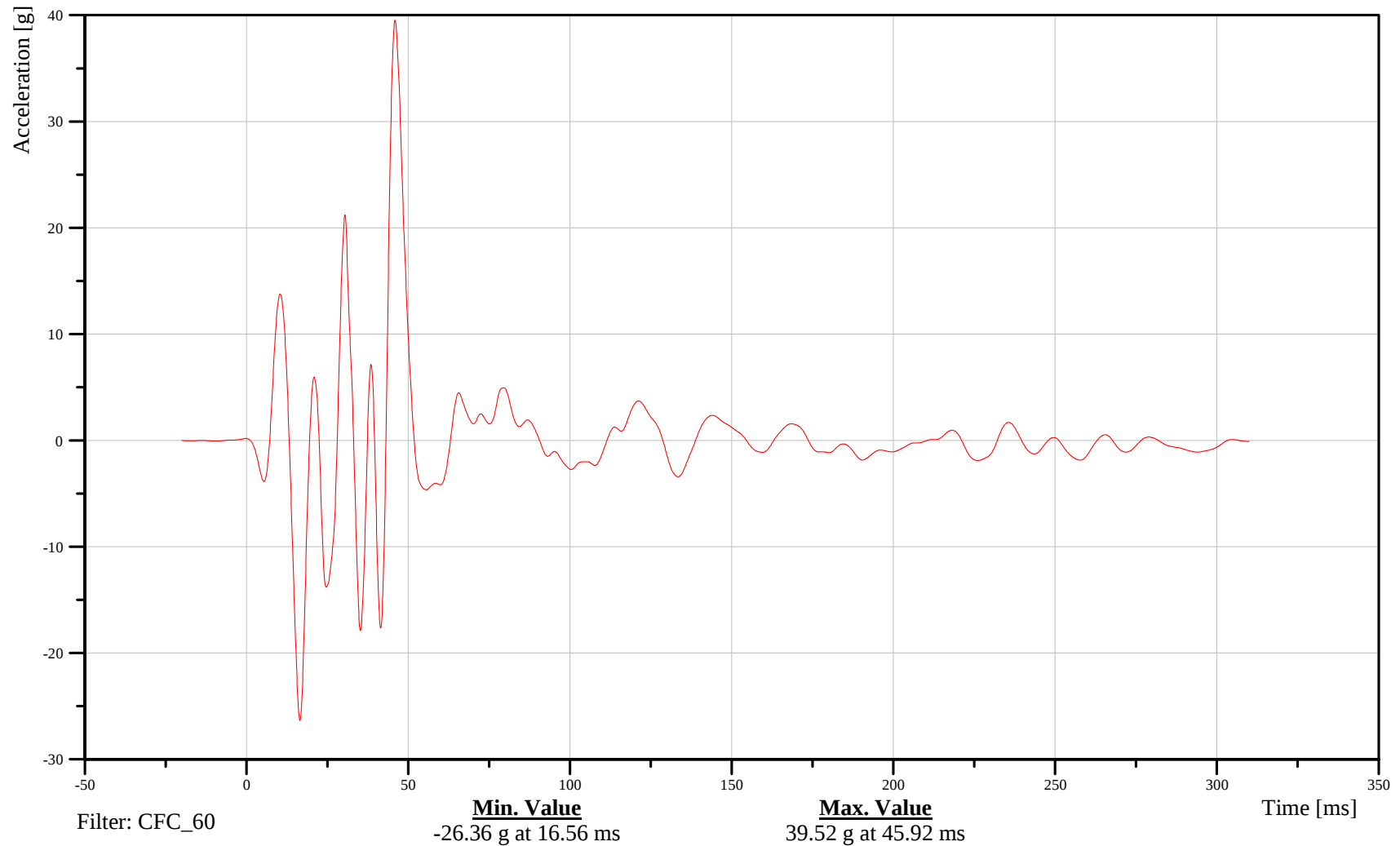
Date: 10/26/2006
Time: 13:29

VEHICLE CENTER OF GRAVITY Z-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

10VEHCCG0000ACZD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-128

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

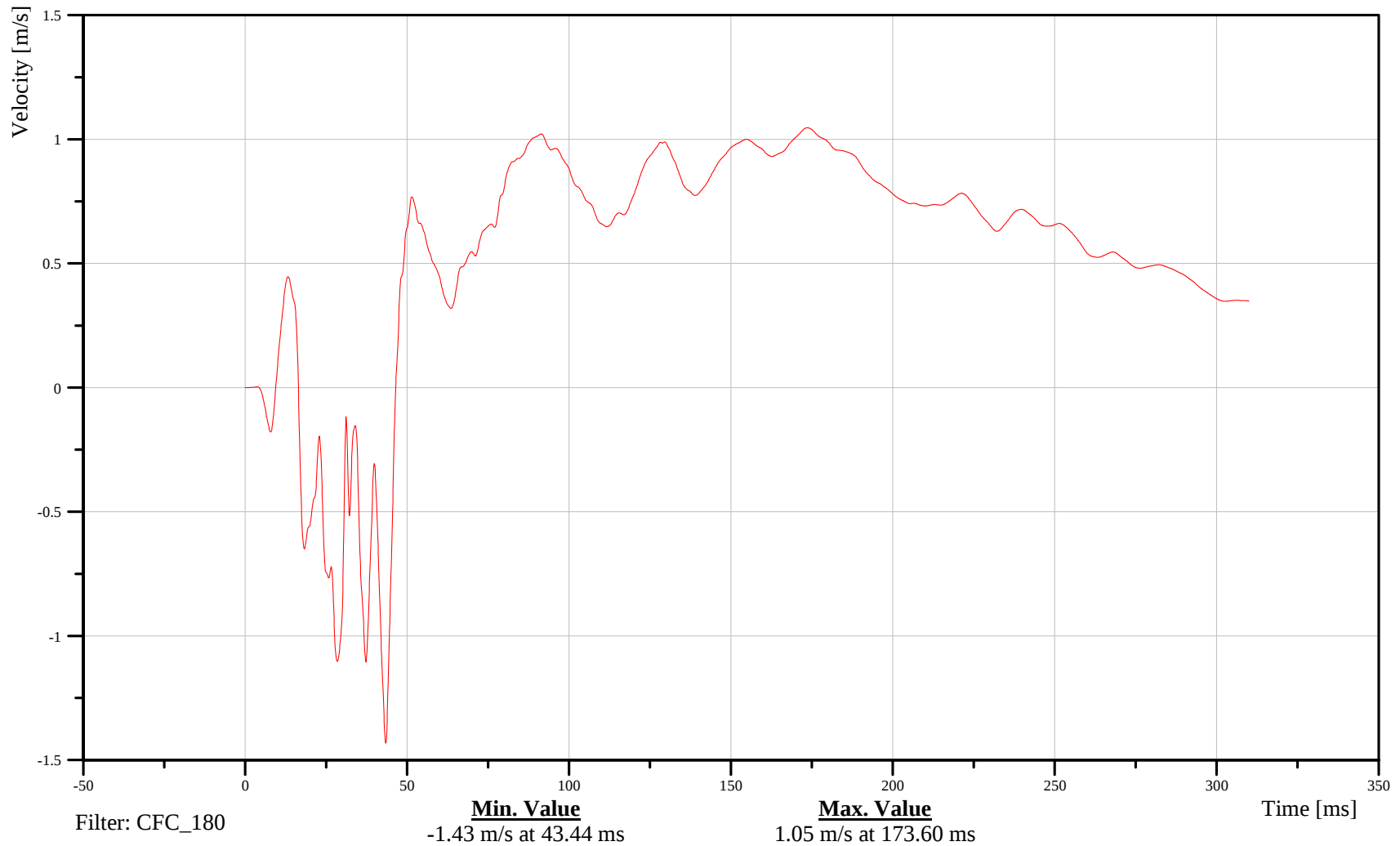
Date: 10/26/2006
Time: 13:29

VEHICLE CENTER OF GRAVITY Z-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

10VEHCCG0000VEZC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-129

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

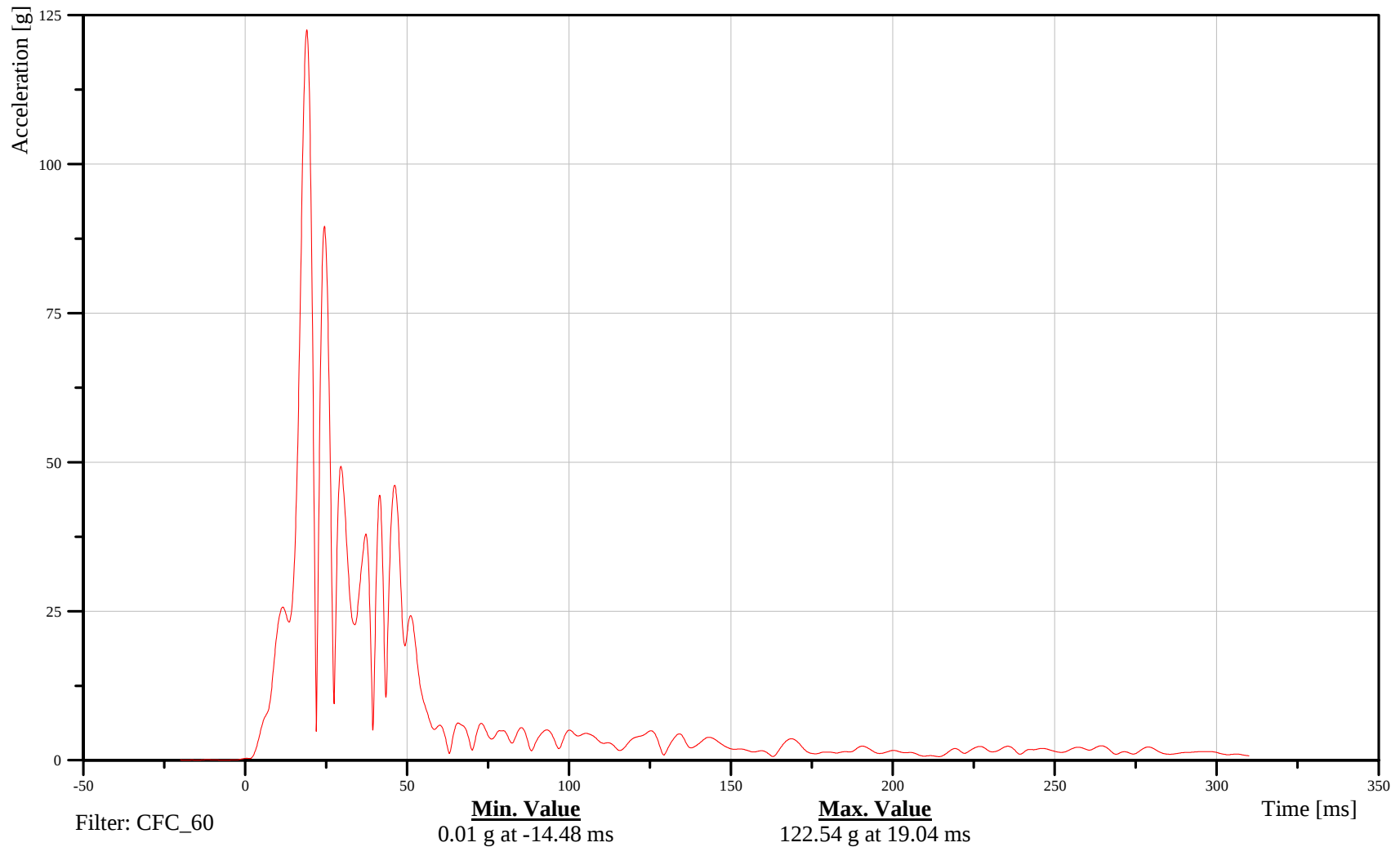
Date: 10/26/2006
Time: 13:29

VEHICLE CENTER OF GRAVITY RESULTANT ACCELERATION

Customer: NHTSA
Test Number: C70501

10VEHCCG0000ACRD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-130

061026

MDB Instrumentation Plots



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

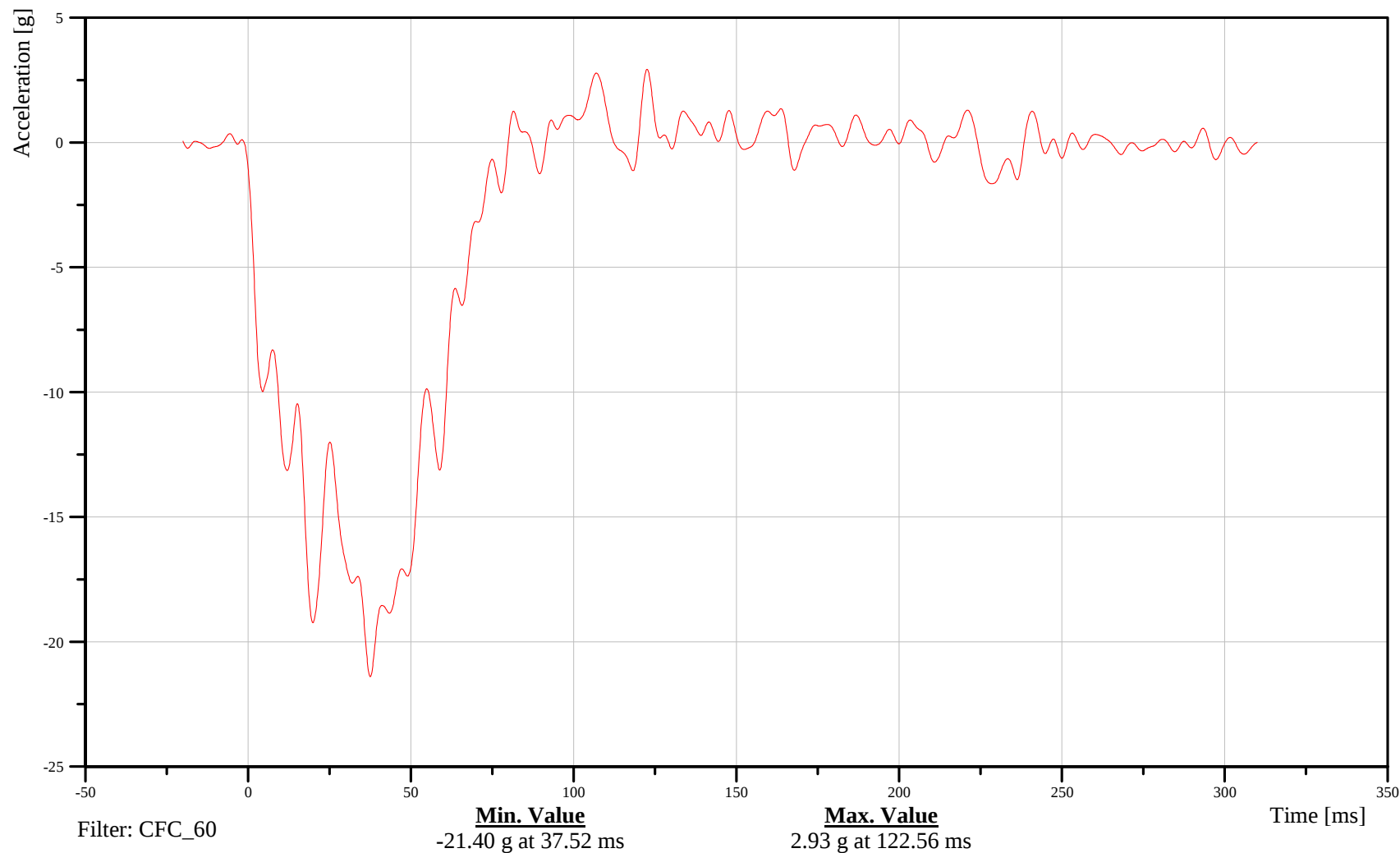
Date: 10/26/2006
Time: 13:29

MDB CENTER OF GRAVITY X-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

M0VEHCCG0000ACXD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-132

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

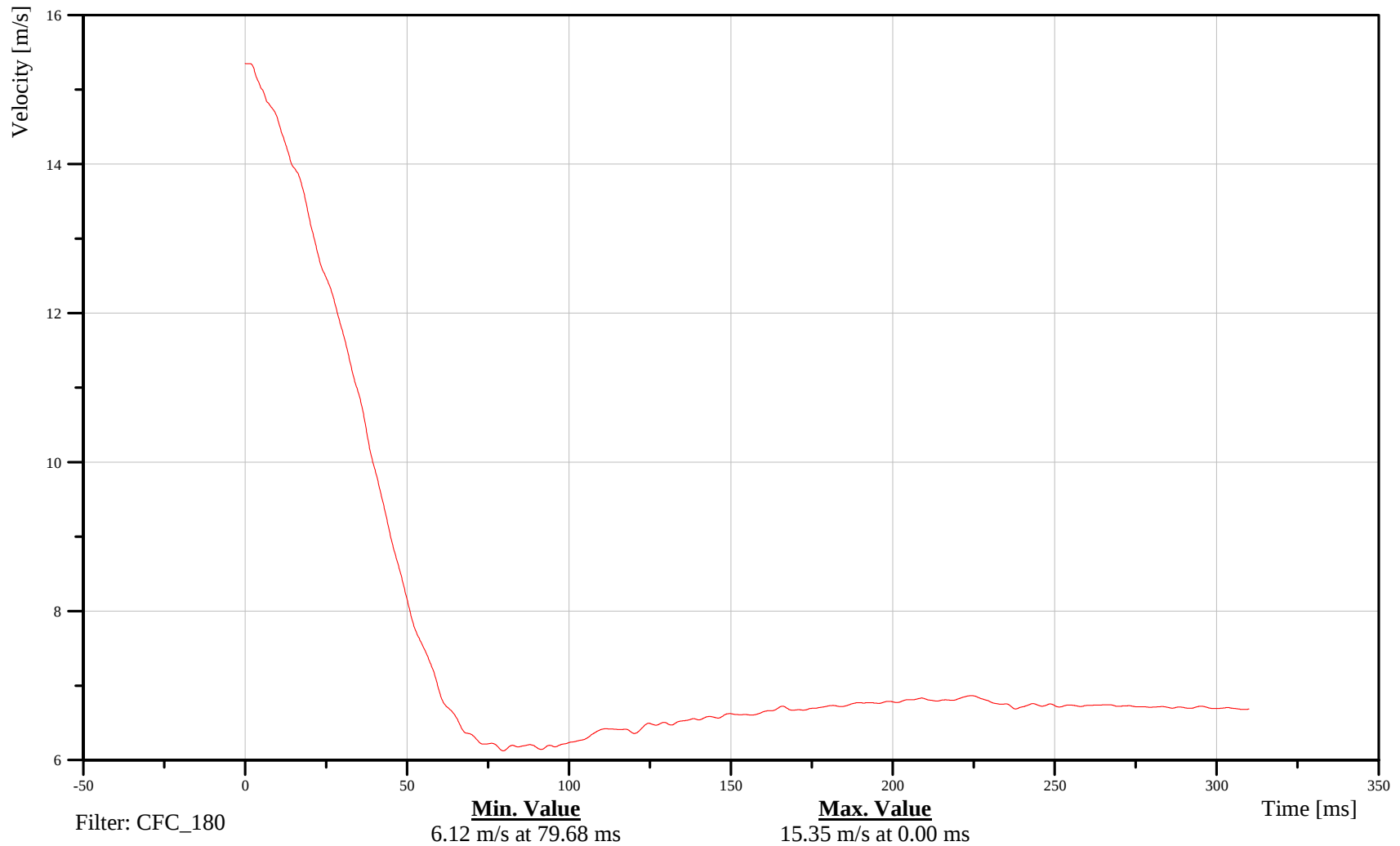
Date: 10/26/2006
Time: 13:29

MDB CENTER OF GRAVITY X-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

M0VEHCCG0000VEXC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-133

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

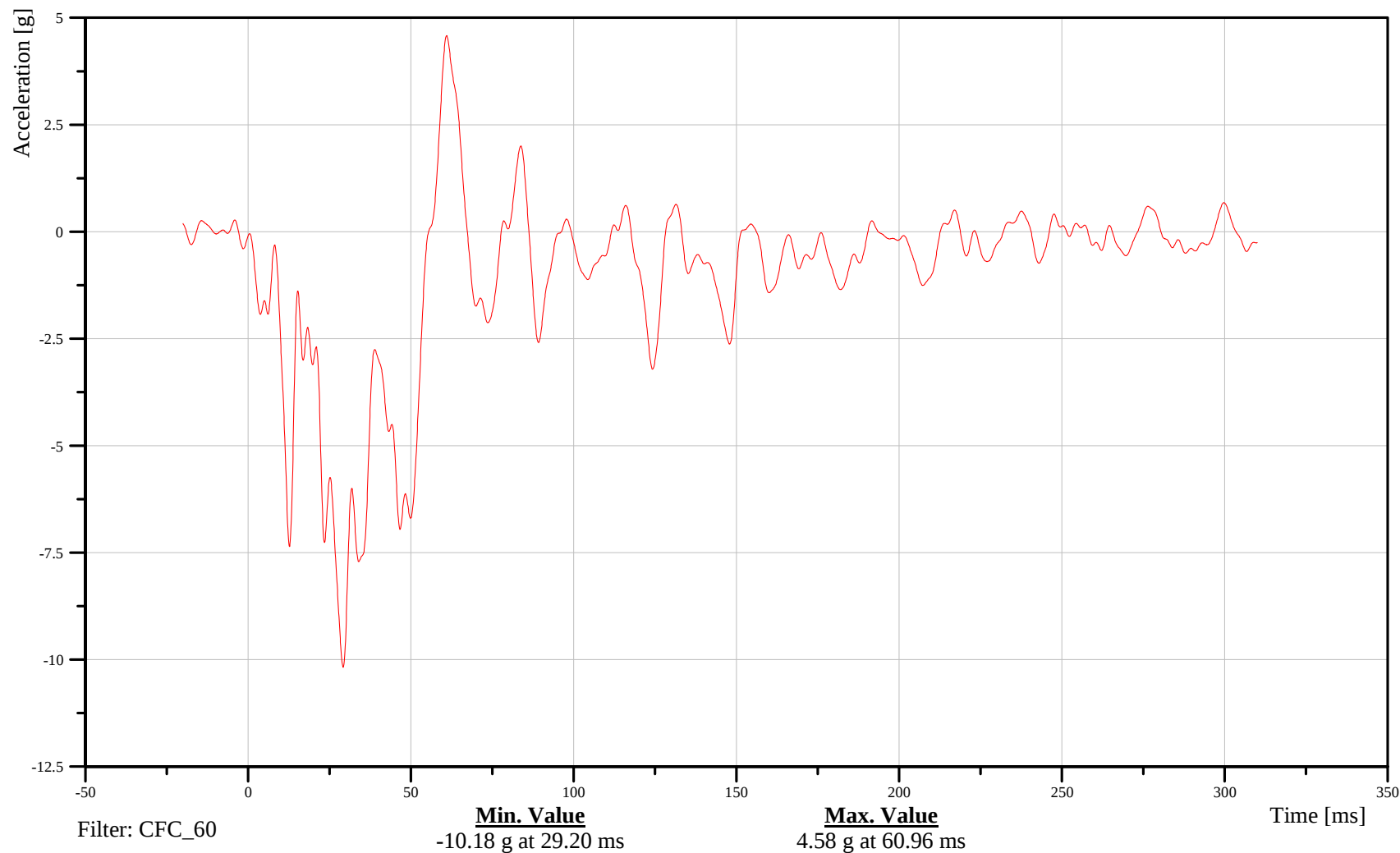
Date: 10/26/2006
Time: 13:29

MDB CENTER OF GRAVITY Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

M0VEHCCG0000ACYD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-134

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

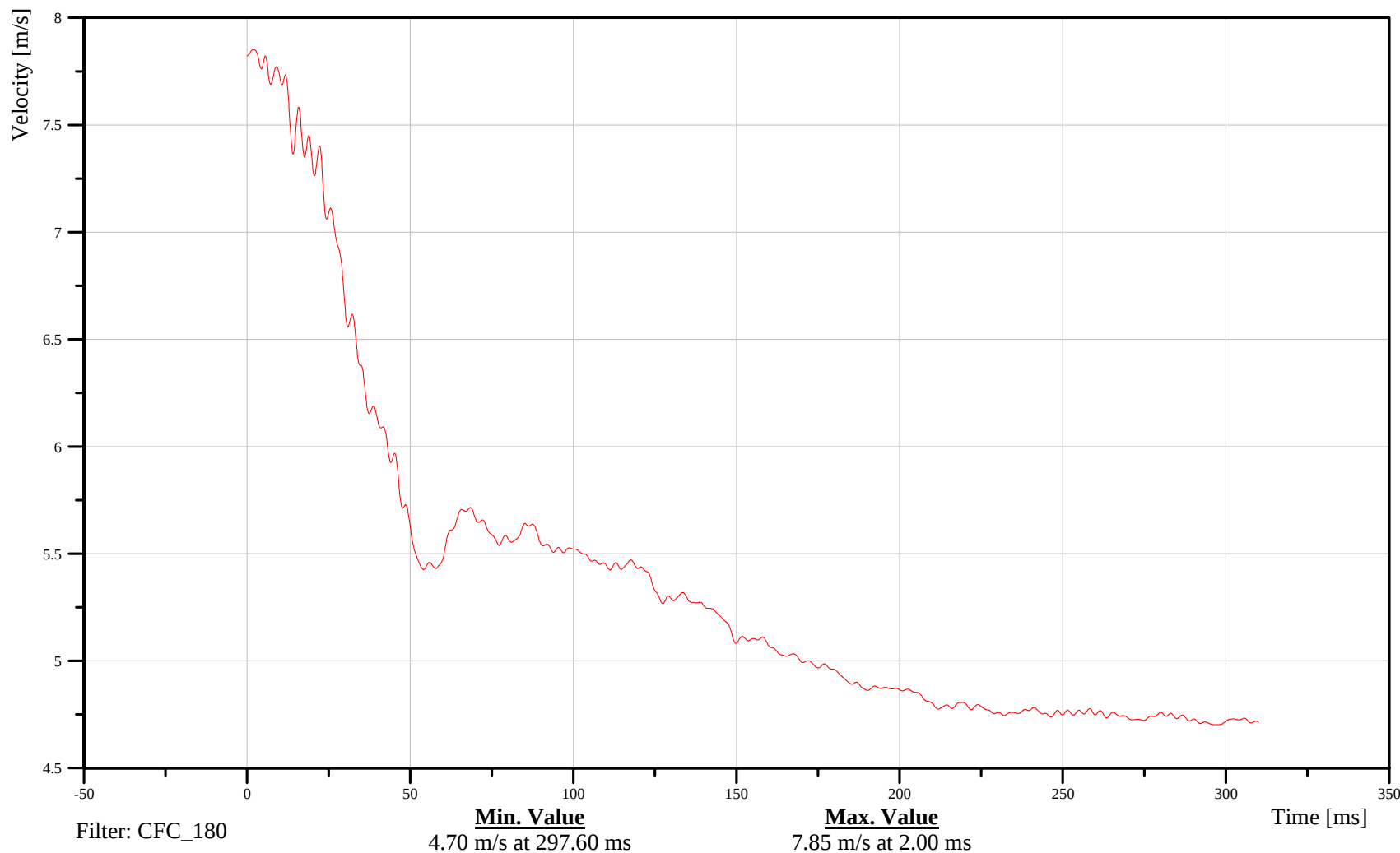
Date: 10/26/2006
Time: 13:29

MDB CENTER OF GRAVITY Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

M0VEHCCG0000VEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-135

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

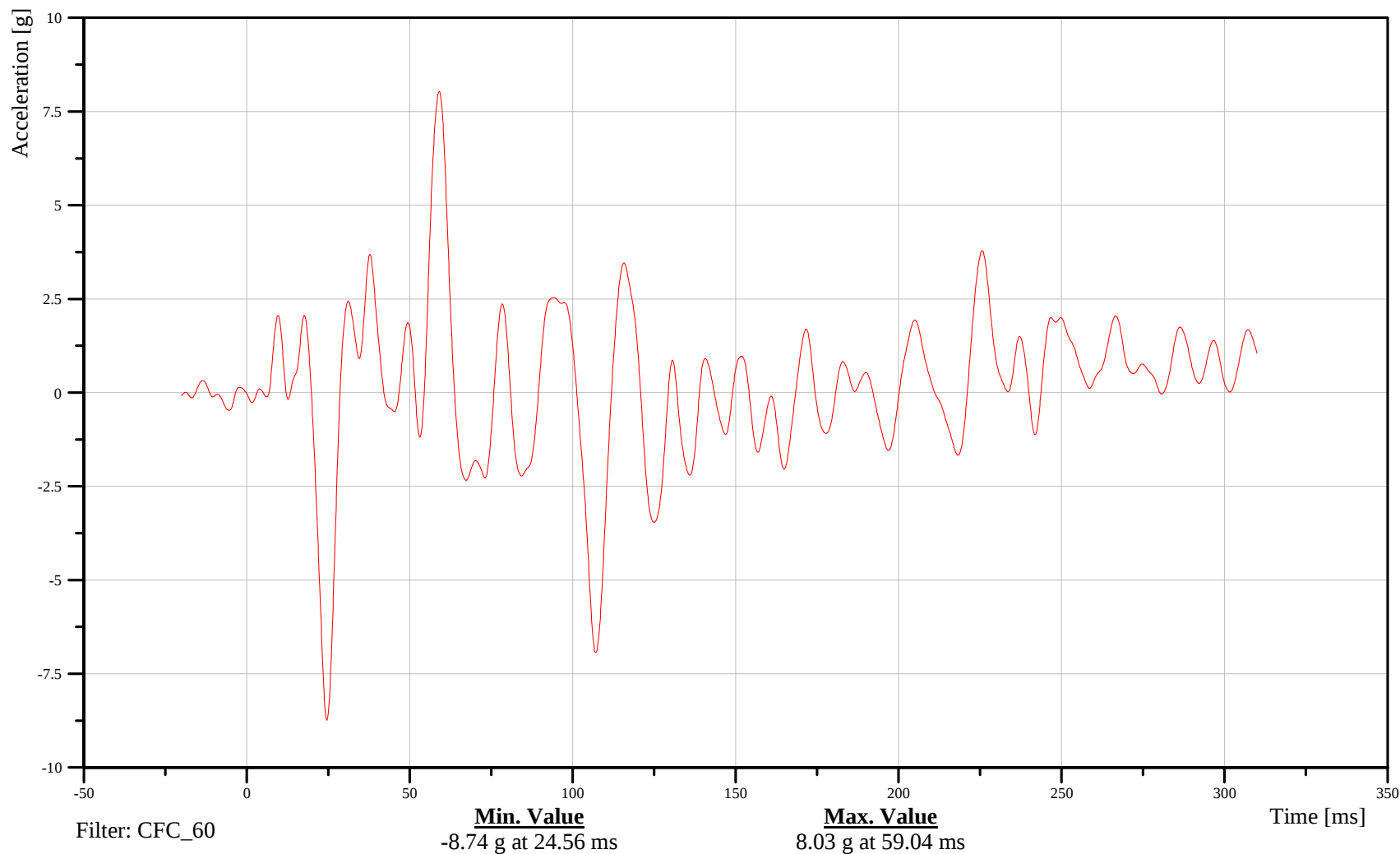
Date: 10/26/2006
Time: 13:29

MDB CENTER OF GRAVITY Z-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

M0VEHCCG0000ACZD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-136

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

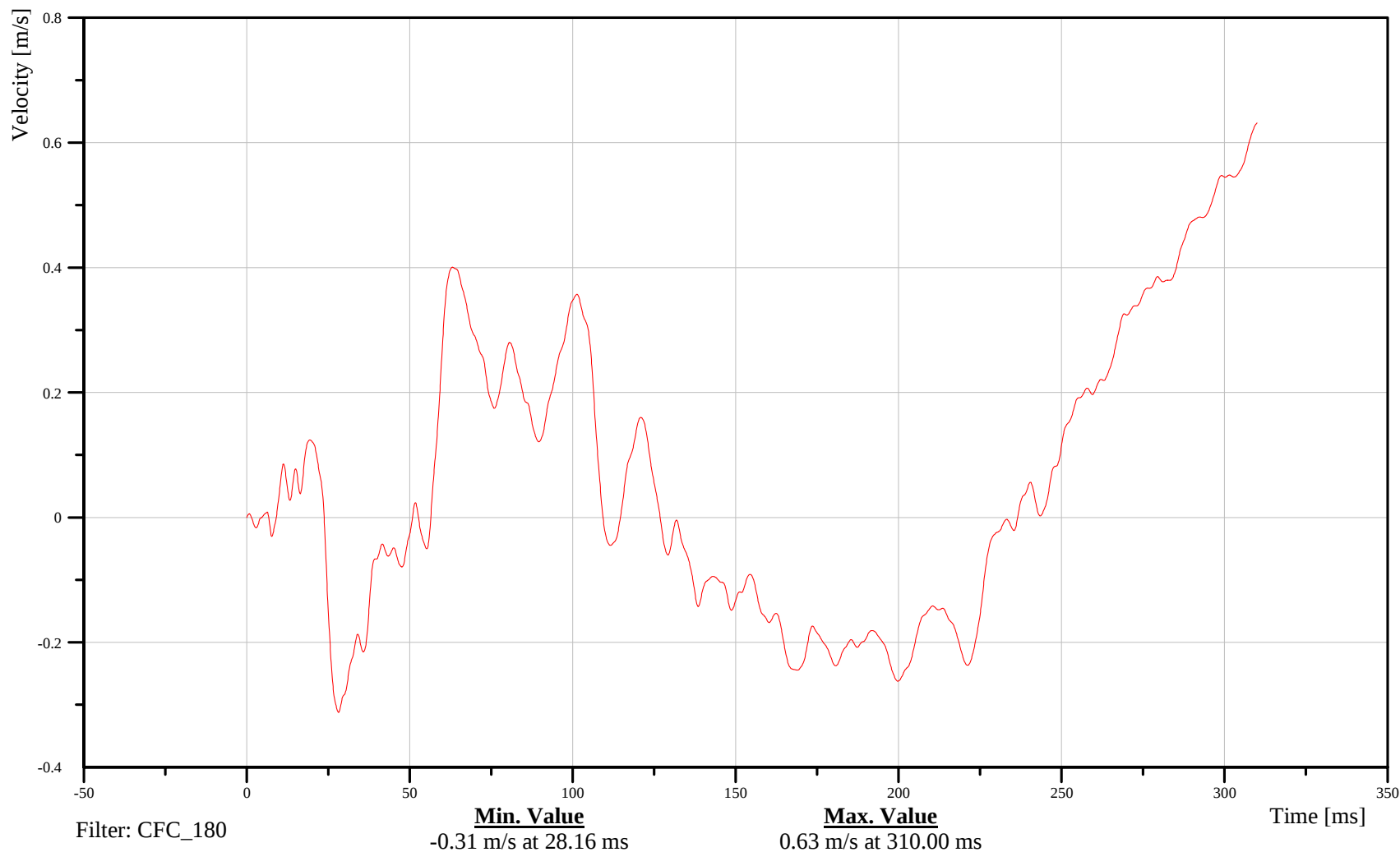
Date: 10/26/2006
Time: 13:29

MDB CENTER OF GRAVITY Z-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

M0VEHCCG0000VEZC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-137

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

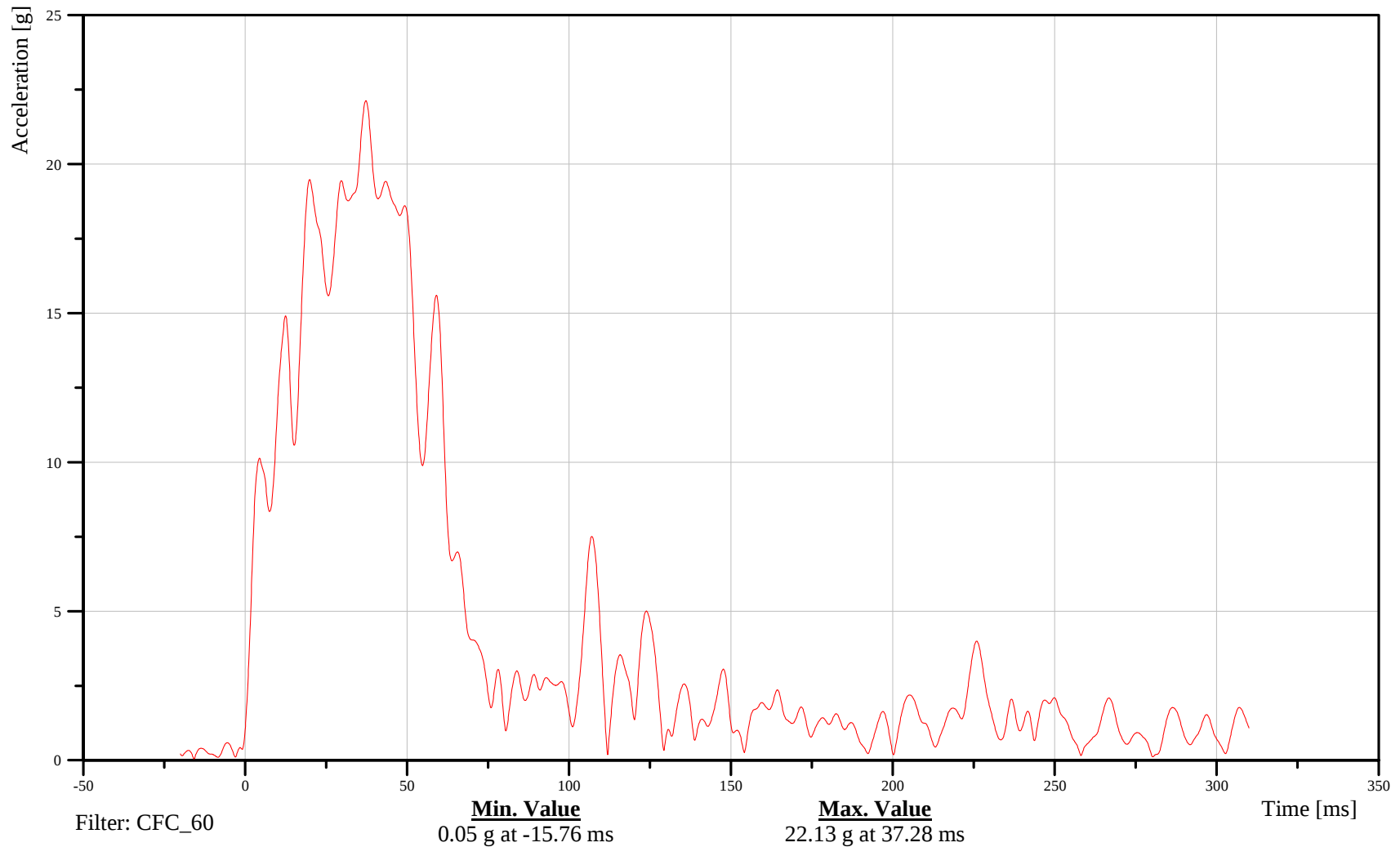
Date: 10/26/2006
Time: 13:29

MDB CENTER OF GRAVITY RESULTANT ACCELERATION

Customer: NHTSA
Test Number: C70501

M0VEHCCG0000ACRD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-138

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

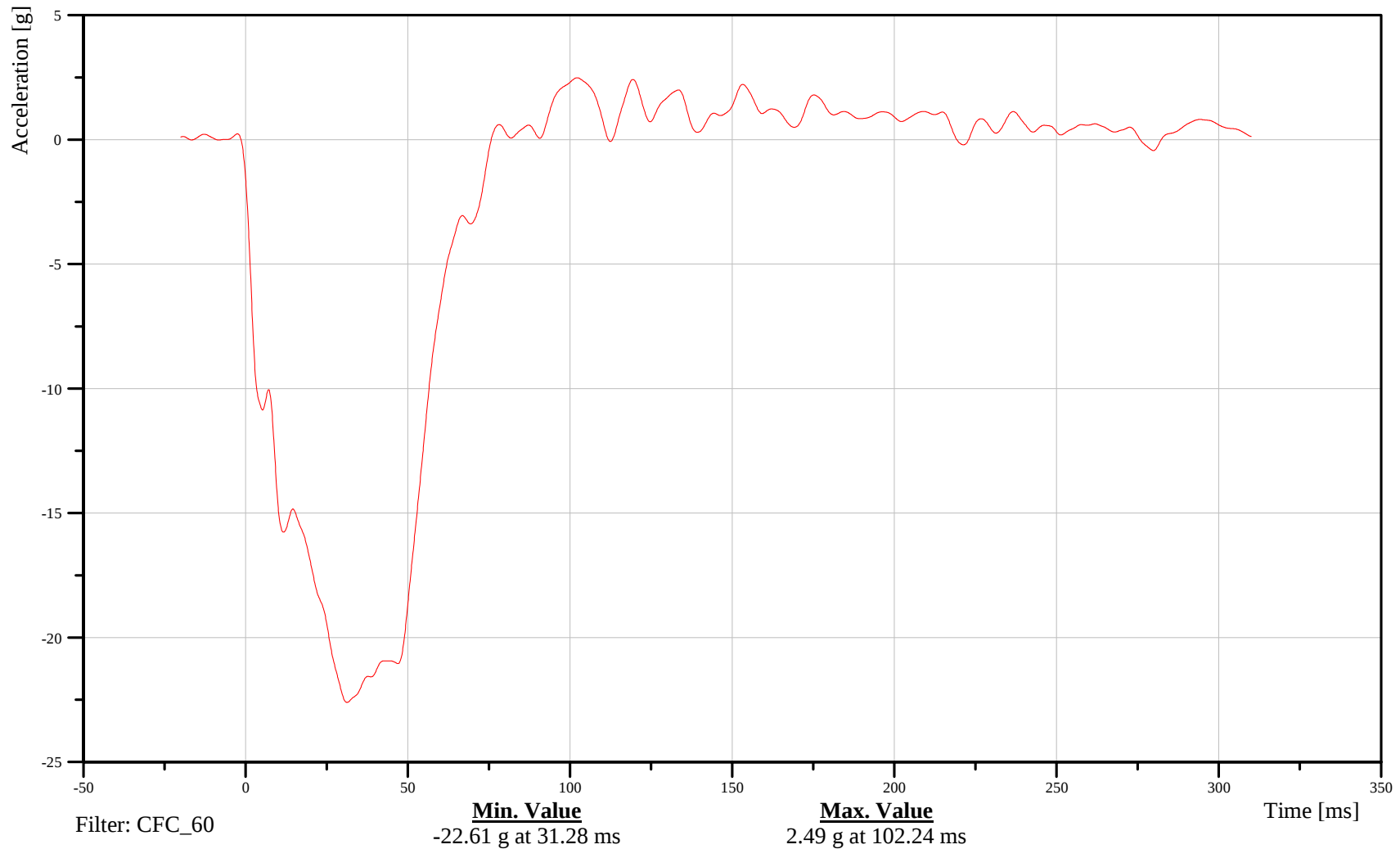
Date: 10/26/2006
Time: 13:29

MDB REAR X-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

M7FRAM000000ACXD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-139

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

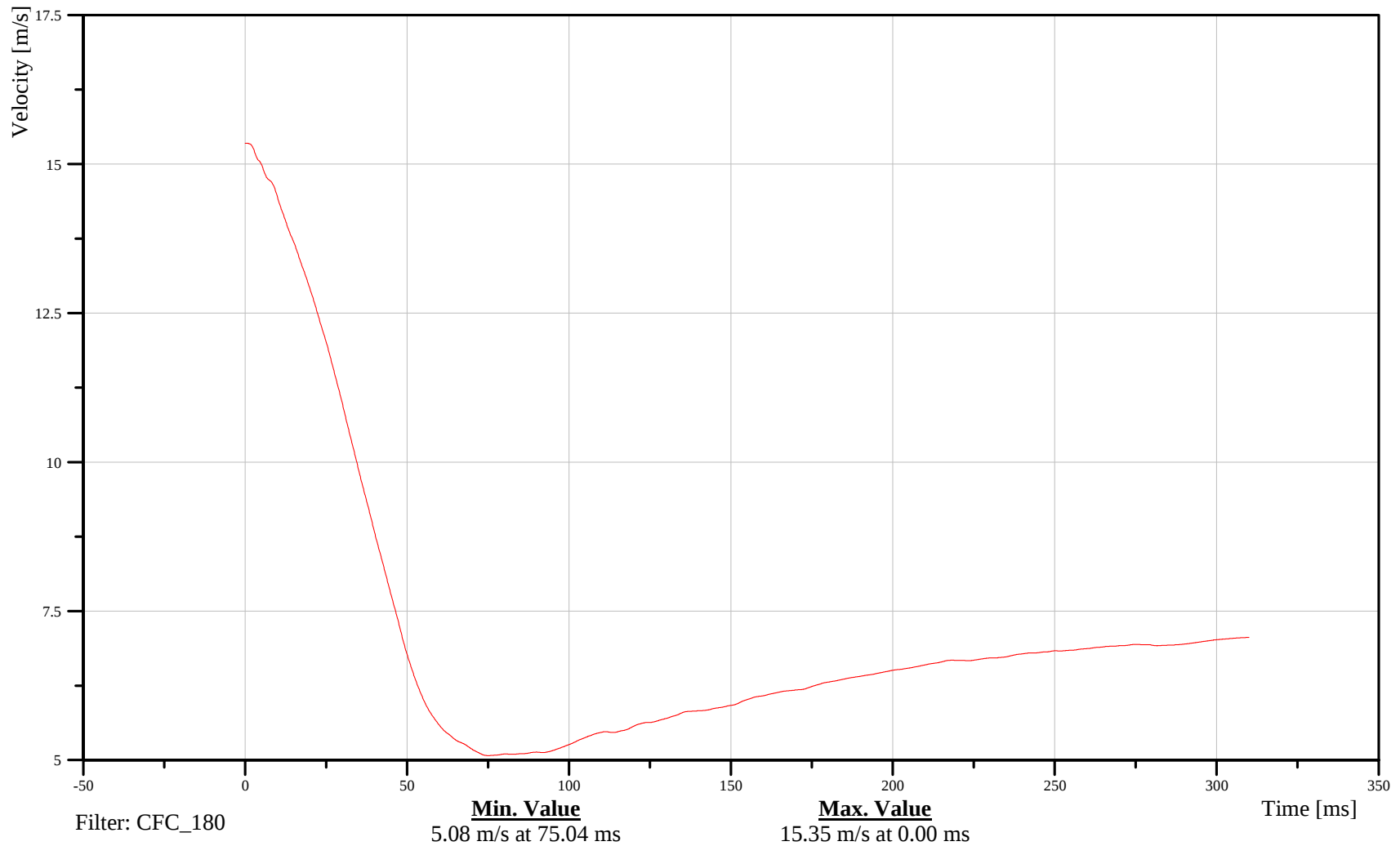
Date: 10/26/2006
Time: 13:29

MDB REAR X-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

M7FRAM000000VEXC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-140

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

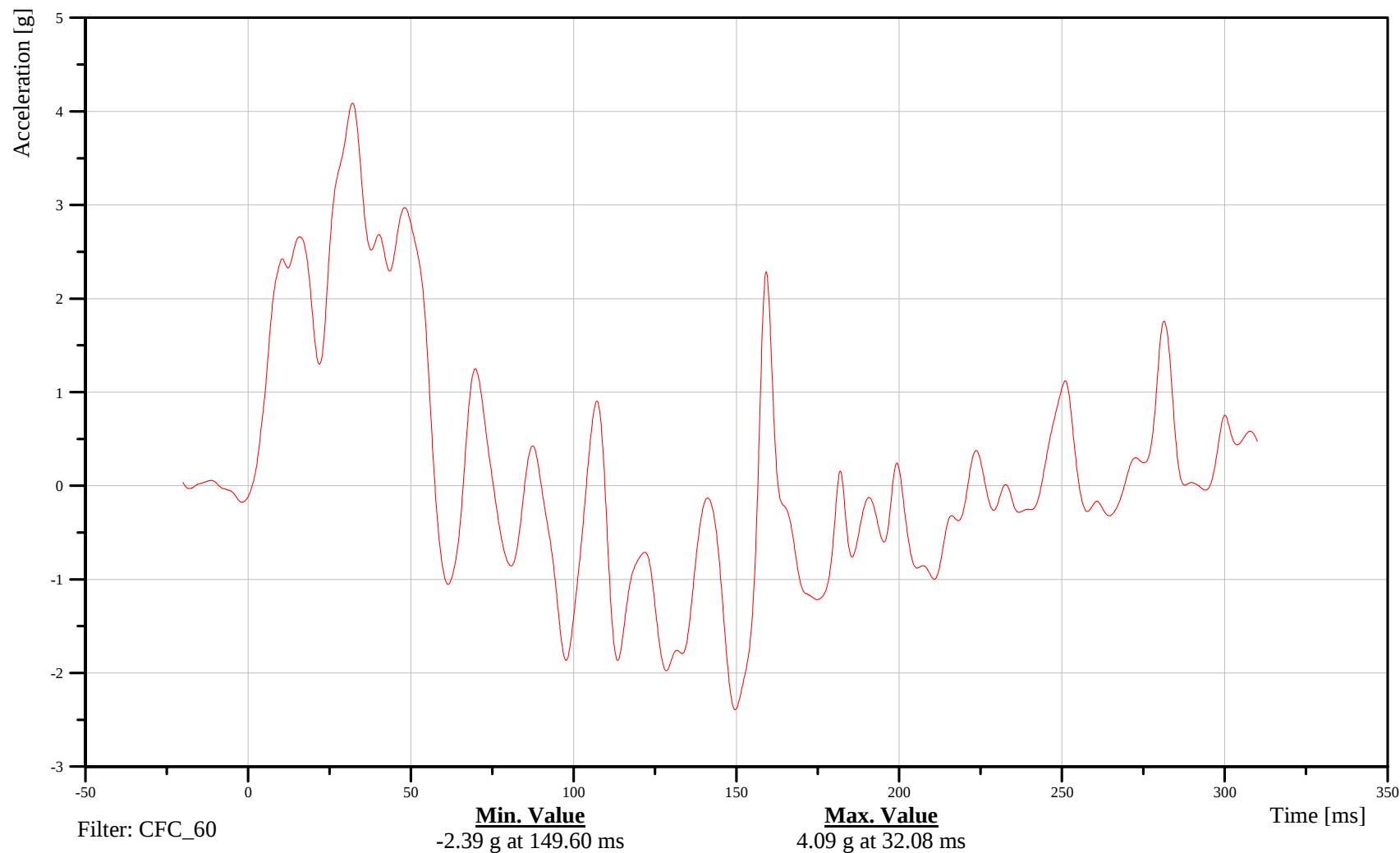
Date: 10/26/2006
Time: 13:29

MDB REAR Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

M7FRAM000000ACYD

TRC Inc. Test Lab: CTF
Test Number: 061026



B-141

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

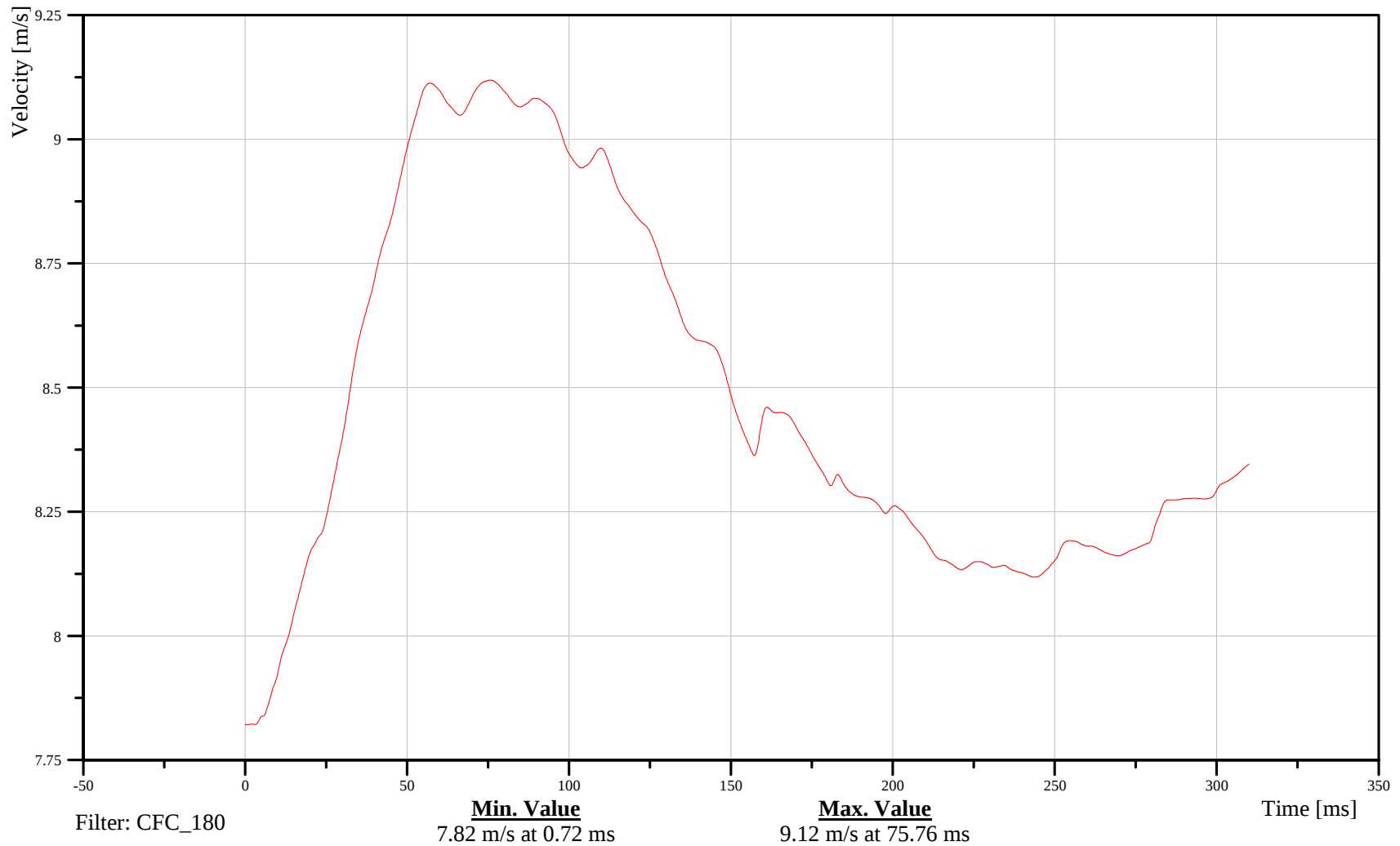
Date: 10/26/2006
Time: 13:29

MDB REAR Y-AXIS VELOCITY

Customer: NHTSA
Test Number: C70501

M7FRAM000000VEYC

TRC Inc. Test Lab: CTF
Test Number: 061026



B-142

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

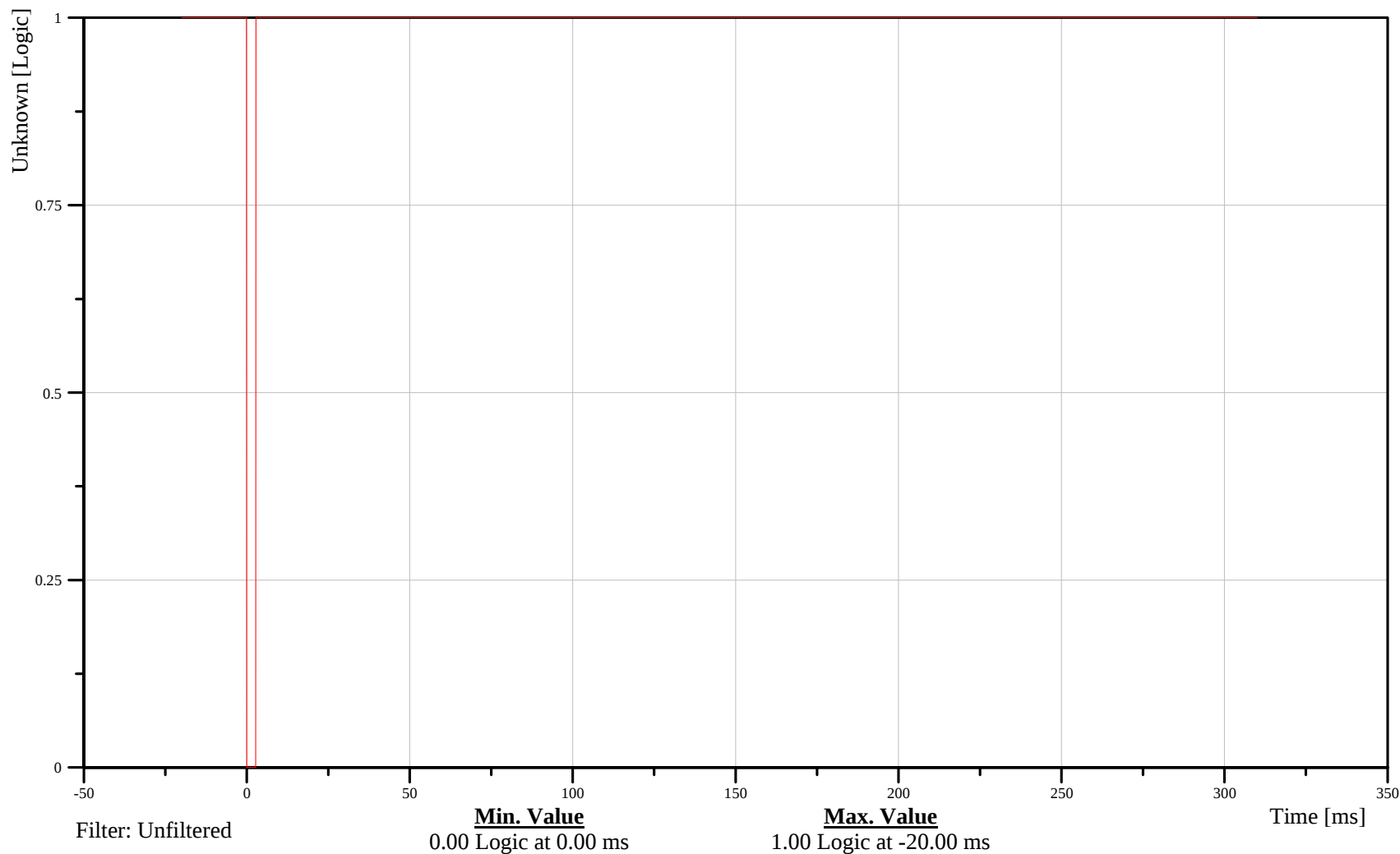
Date: 10/26/2006
Time: 13:29

MDB RIGHT CONTACT SWITCH

Customer: NHTSA
Test Number: C70501

M3CONT000000VO00

TRC Inc. Test Lab: CTF
Test Number: 061026



B-143

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

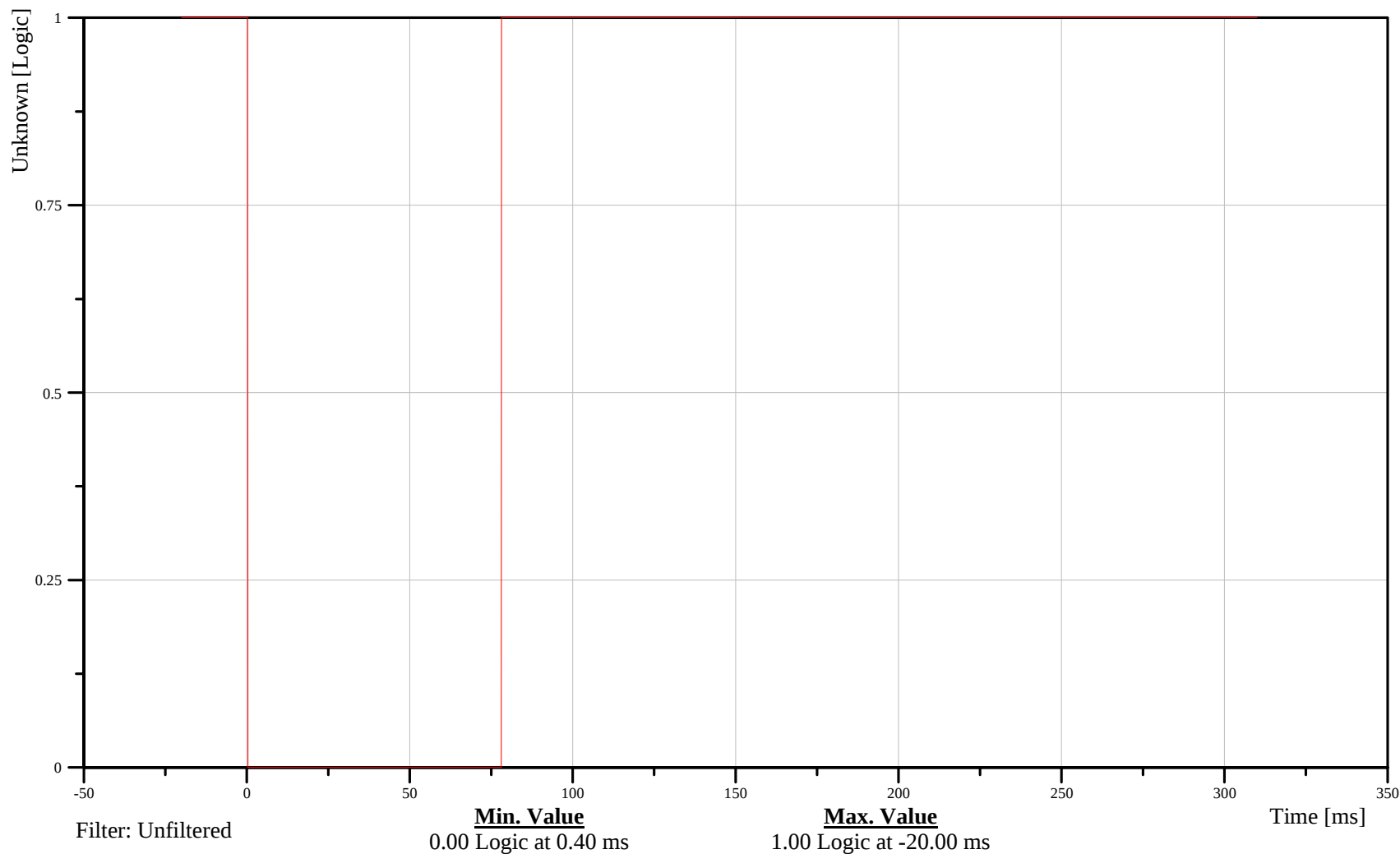
Date: 10/26/2006
Time: 13:29

MDB LEFT CONTACT SWITCH

Customer: NHTSA
Test Number: C70501

M1CONT000000VO00

TRC Inc. Test Lab: CTF
Test Number: 061026



B-144

061026

Driver and Passenger Dummy Instrumentation Plots



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

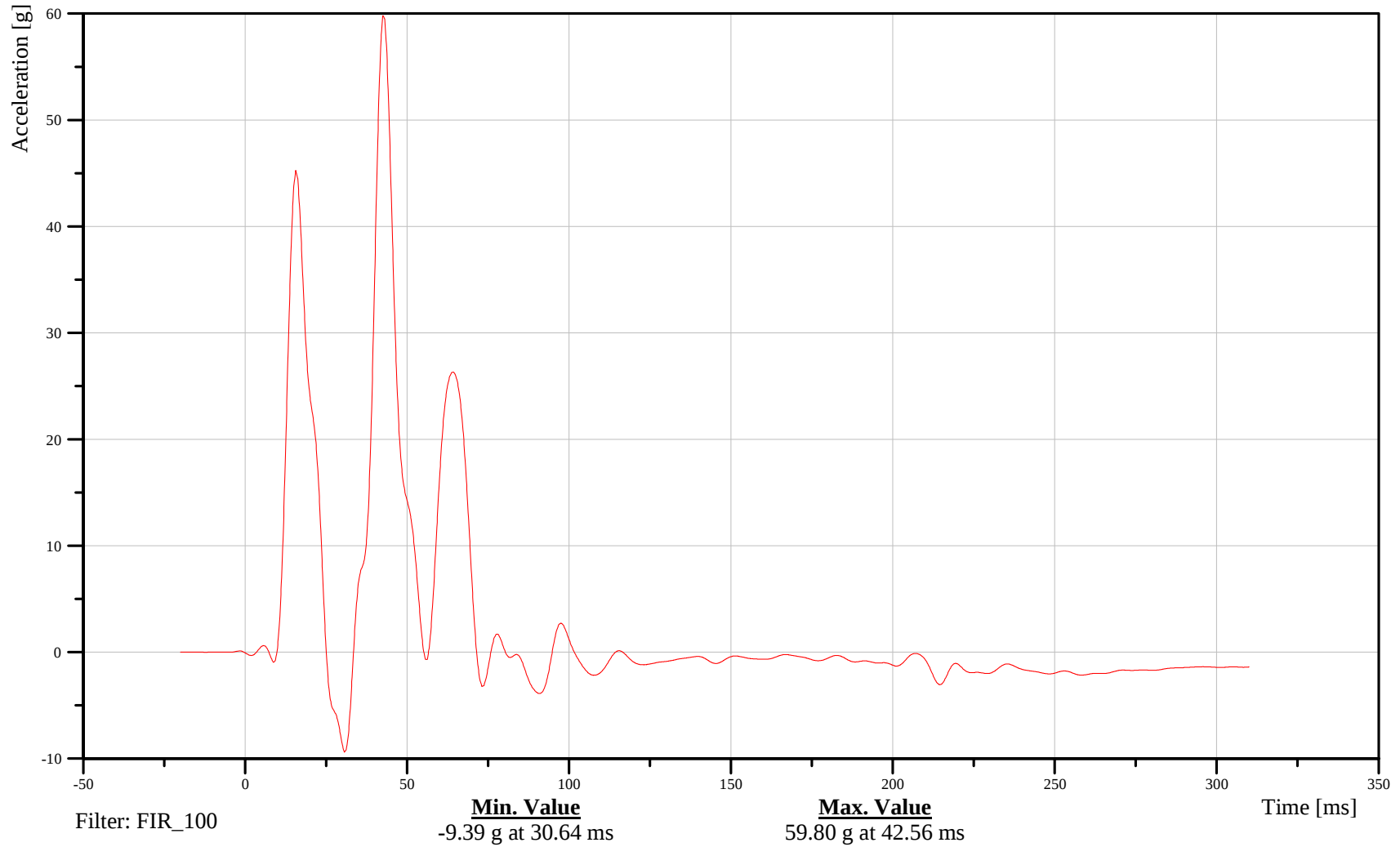
Date: 10/26/2006
Time: 13:29

DRIVER UPPER RIB Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

11RIBSLU00SHACY1

TRC Inc. Test Lab: CTF
Test Number: 061026



B-146

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

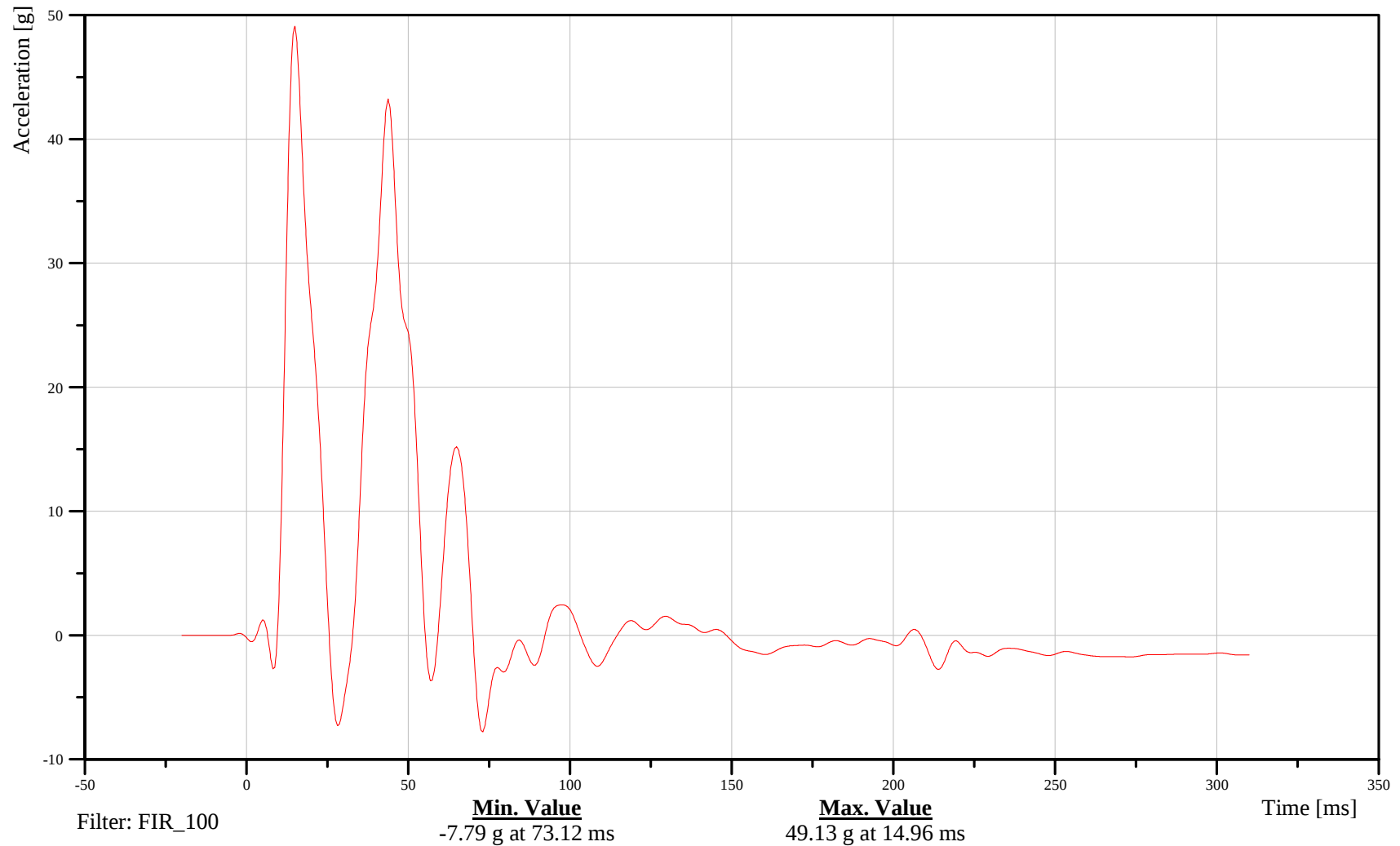
Date: 10/26/2006
Time: 13:29

DRIVER LOWER RIB Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

11RIBSL00SHACY1

TRC Inc. Test Lab: CTF
Test Number: 061026



B-147

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

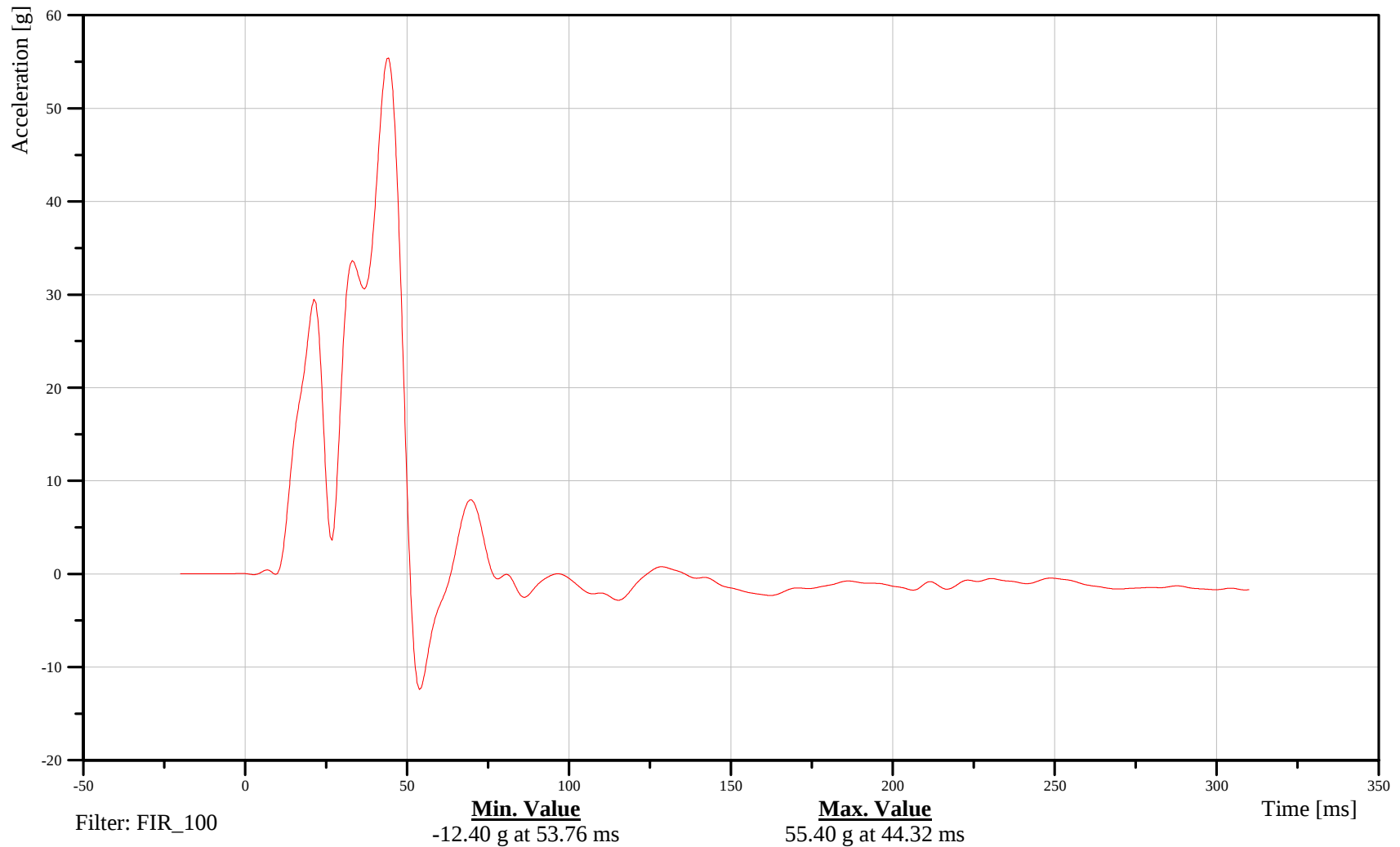
Date: 10/26/2006
Time: 13:29

DRIVER LOWER SPINE Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

11SPIN1200SHACY1

TRC Inc. Test Lab: CTF
Test Number: 061026



B-148

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

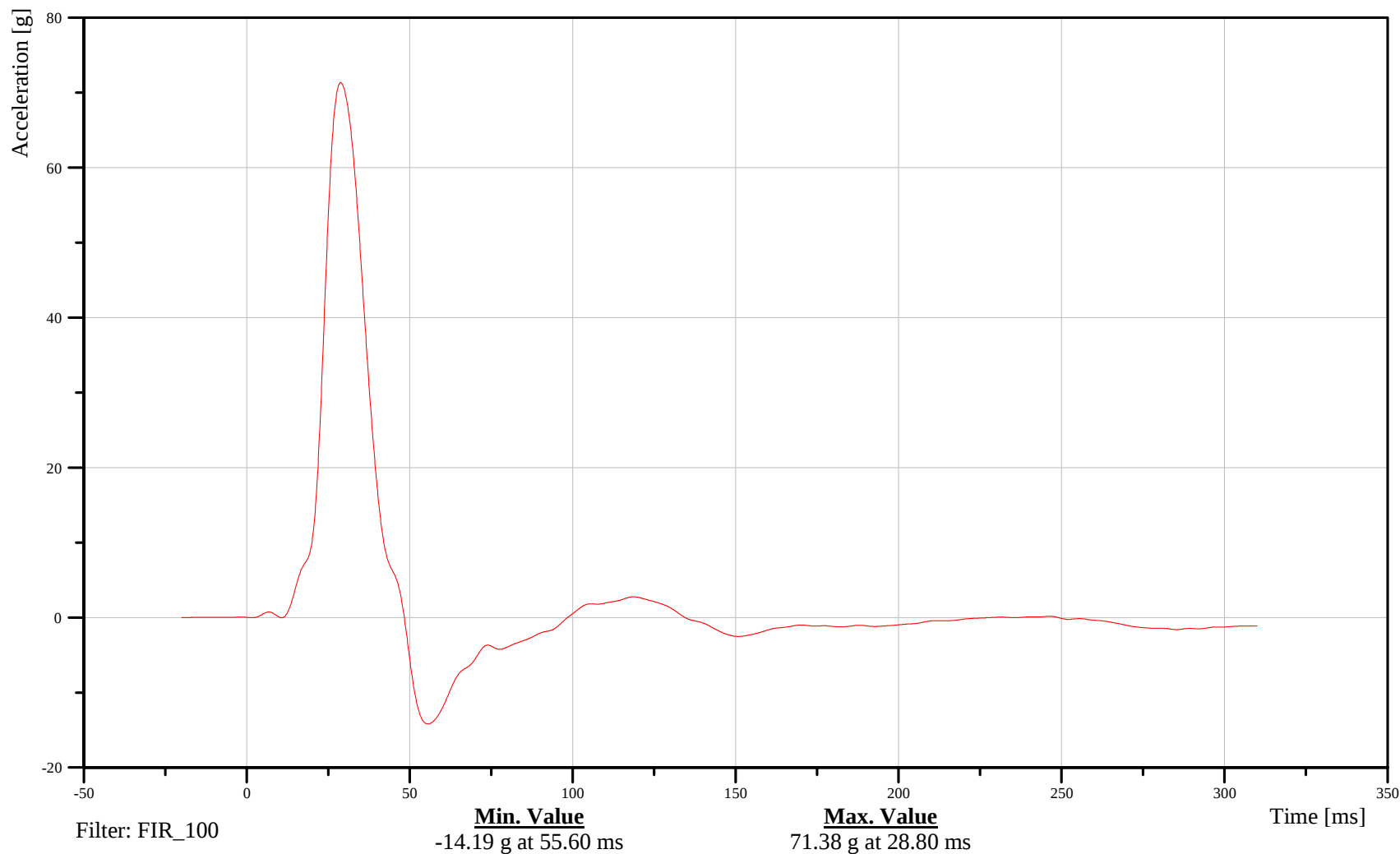
Date: 10/26/2006
Time: 13:29

DRIVER PELVIS Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

11PELVCG00SHACY1

TRC Inc. Test Lab: CTF
Test Number: 061026



B-149

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

LEFT REAR PASSENGER UPPER RIB Y-AXIS ACCELERATION

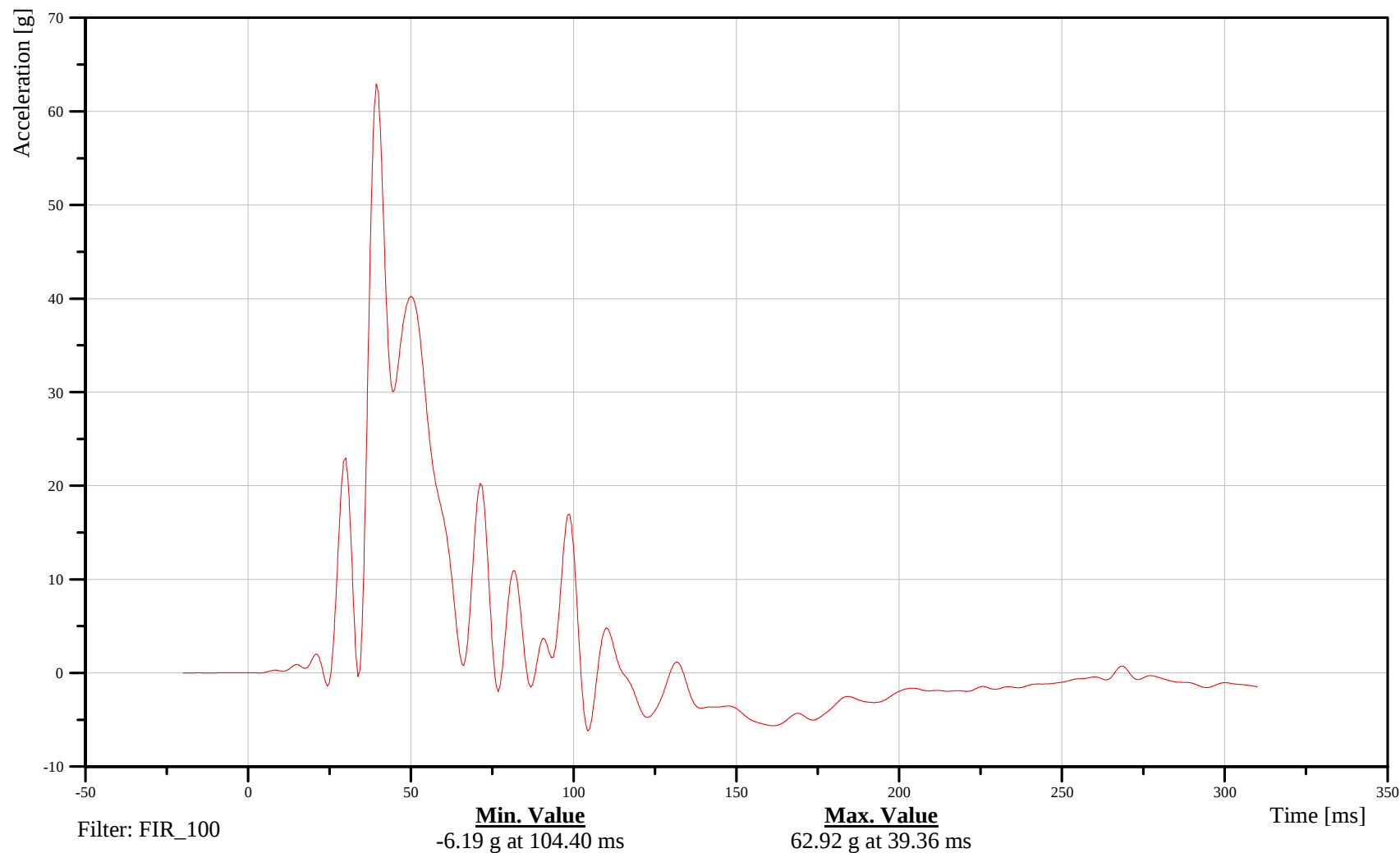
Customer: NHTSA

Test Number: C70501

14RIBSLU00SHACY1

TRC Inc. Test Lab: CTF

Test Number: 061026



B-150

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

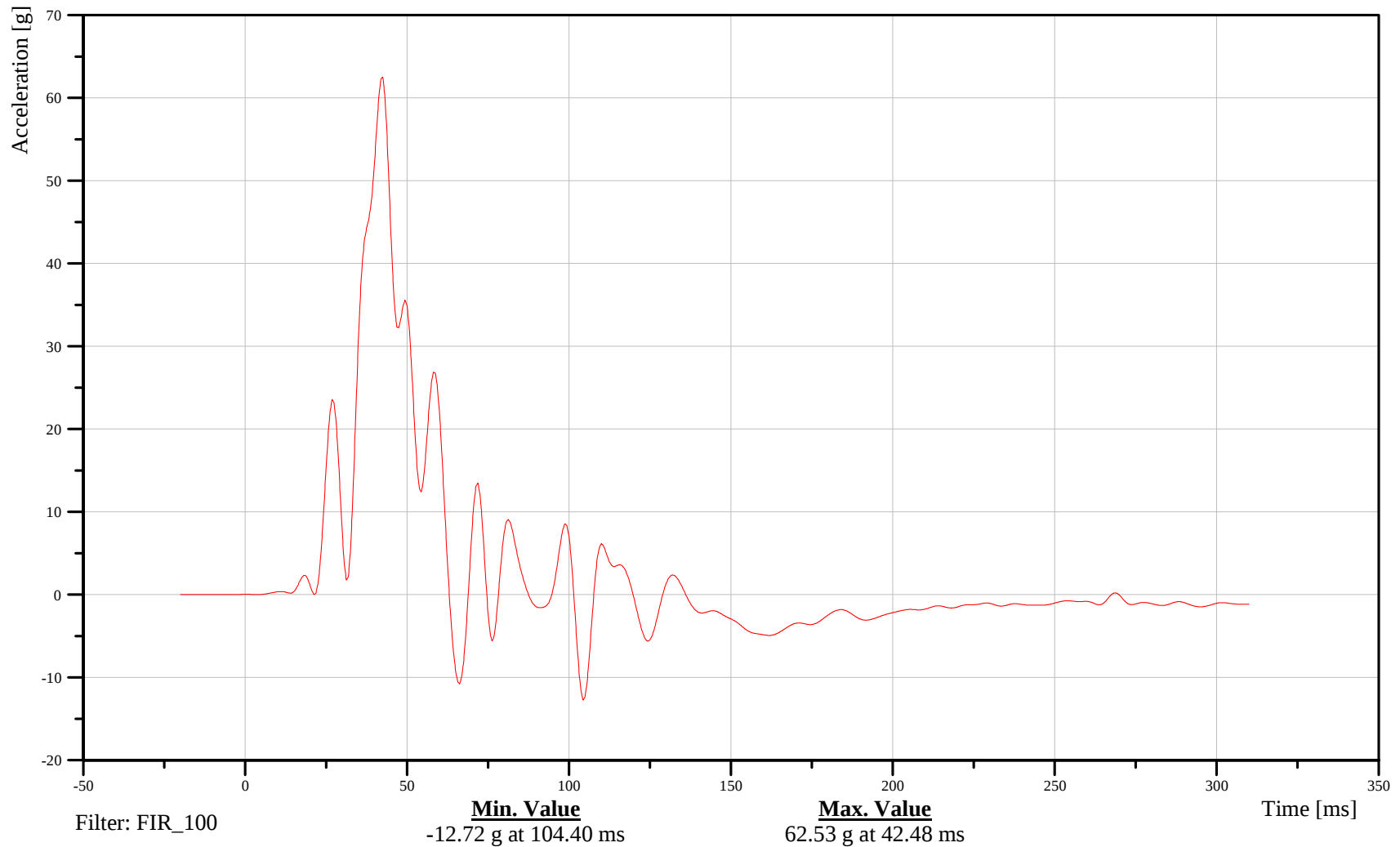
Date: 10/26/2006
Time: 13:29

LEFT REAR PASSENGER LOWER RIB Y-AXIS ACCELERATION

Customer: NHTSA
Test Number: C70501

14RIBSLL00SHACY1

TRC Inc. Test Lab: CTF
Test Number: 061026



B-151

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

LEFT REAR PASSENGER LOWER SPINE Y-AXIS ACCELERATION

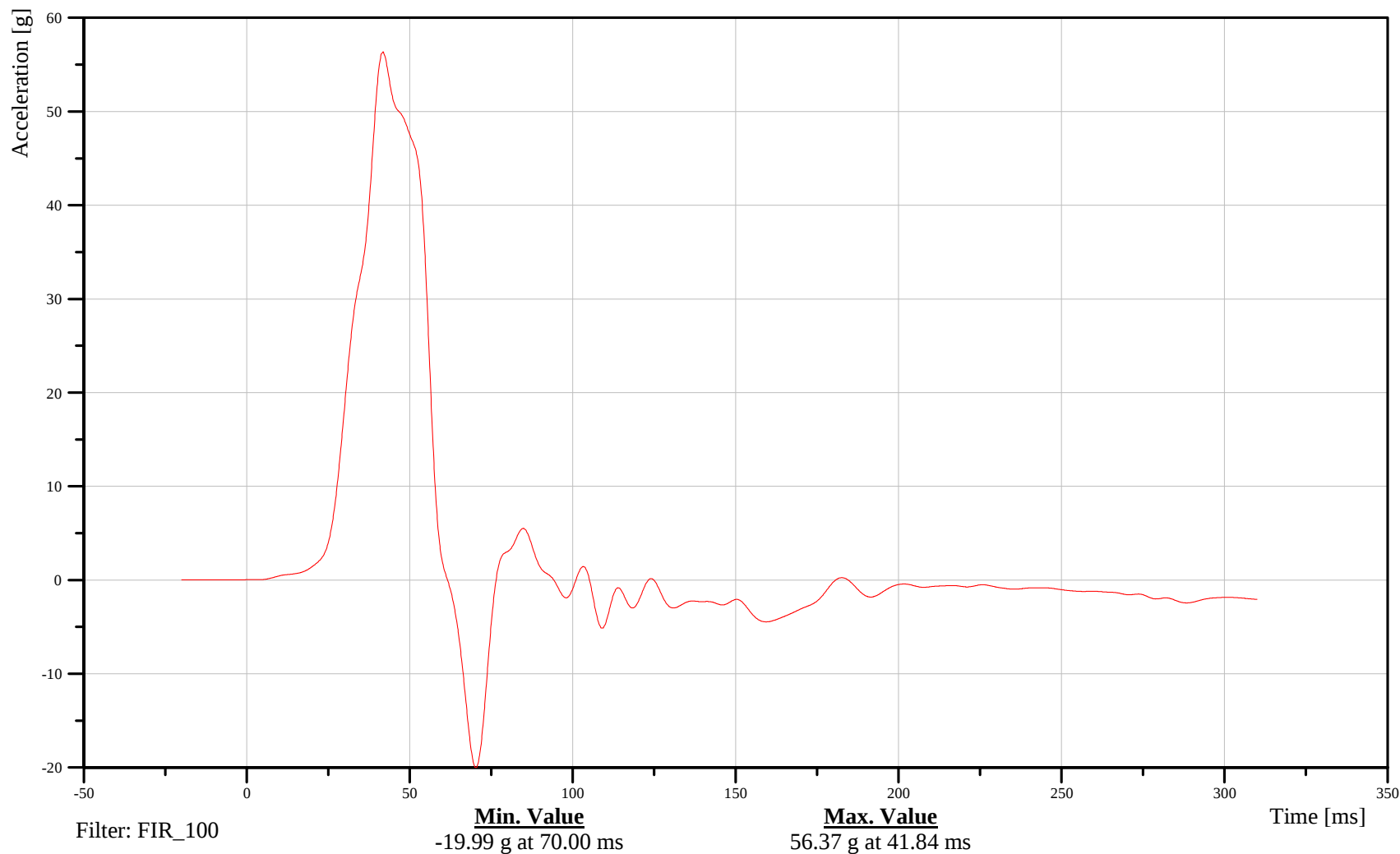
Customer: NHTSA

Test Number: C70501

14SPIN1200SHACY1

TRC Inc. Test Lab: CTF

Test Number: 061026



B-152

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

LEFT REAR PASSENGER PELVIS Y-AXIS ACCELERATION

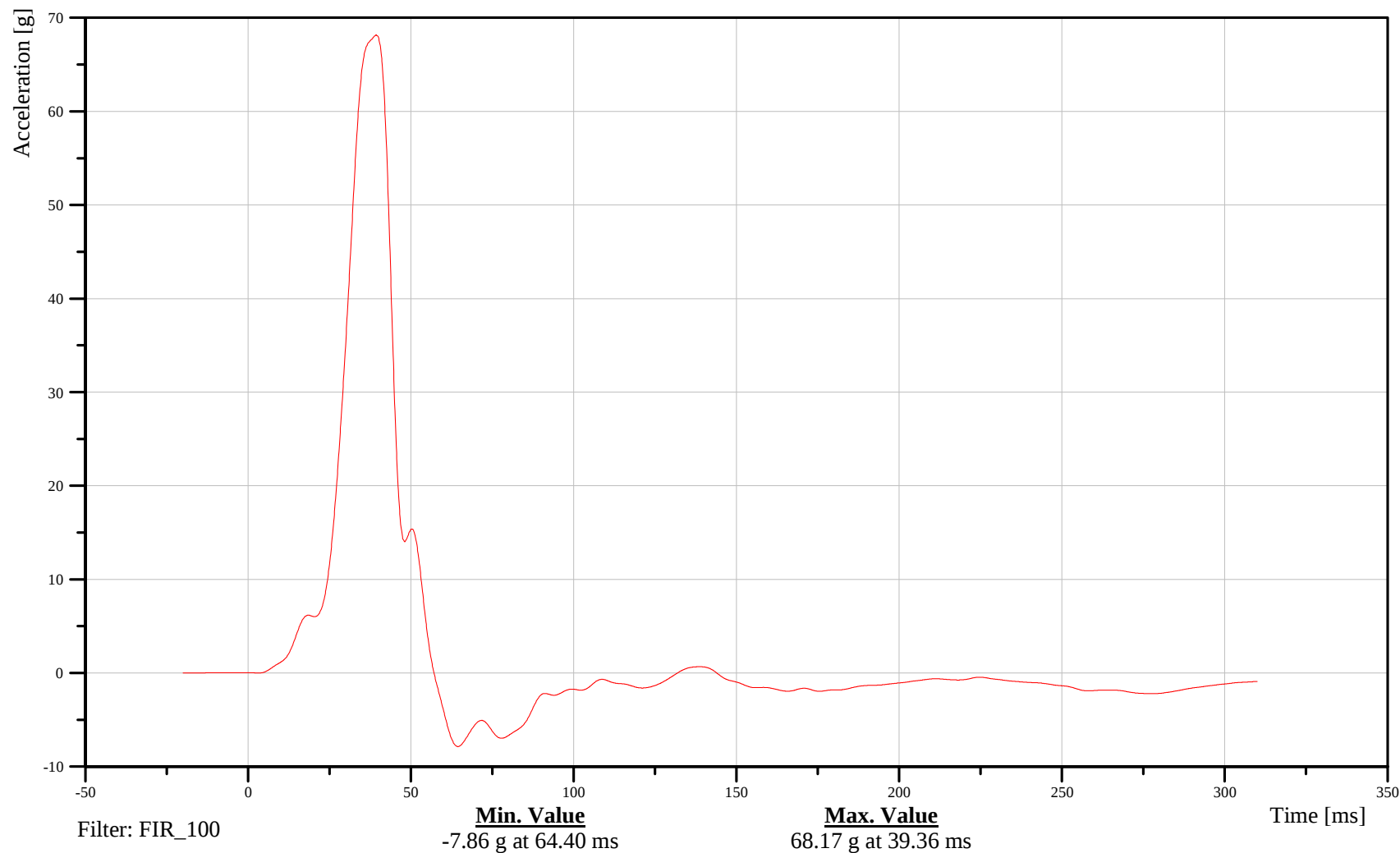
Customer: NHTSA

Test Number: C70501

14PELVCG00SHACY1

TRC Inc. Test Lab: CTF

Test Number: 061026



B-153

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

DRIVER UPPER RIB Y-AXIS REDUNDANT ACCELERATION

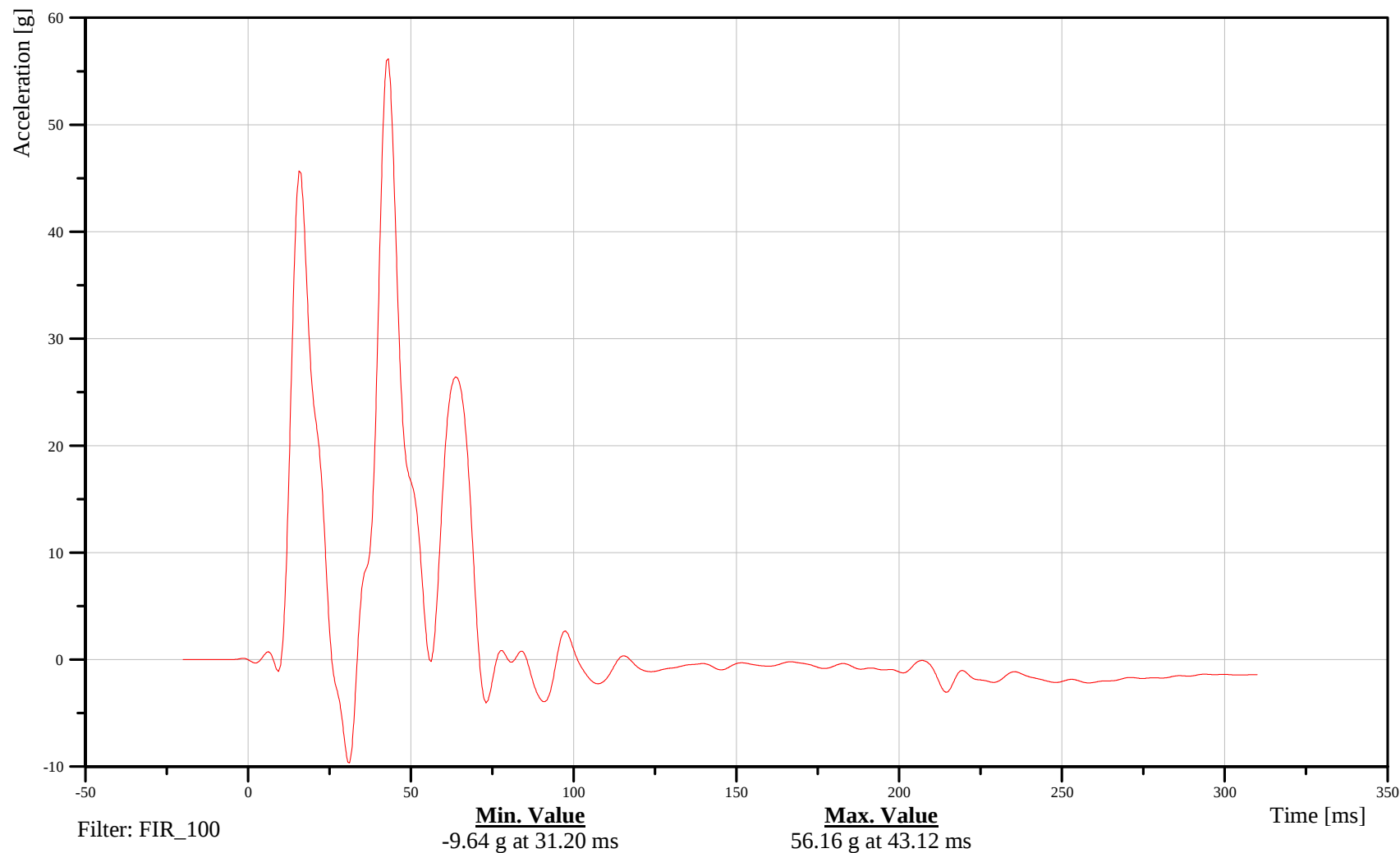
Customer: NHTSA

Test Number: C70501

11RIBSLURESHACY1

TRC Inc. Test Lab: CTF

Test Number: 061026



B-154

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

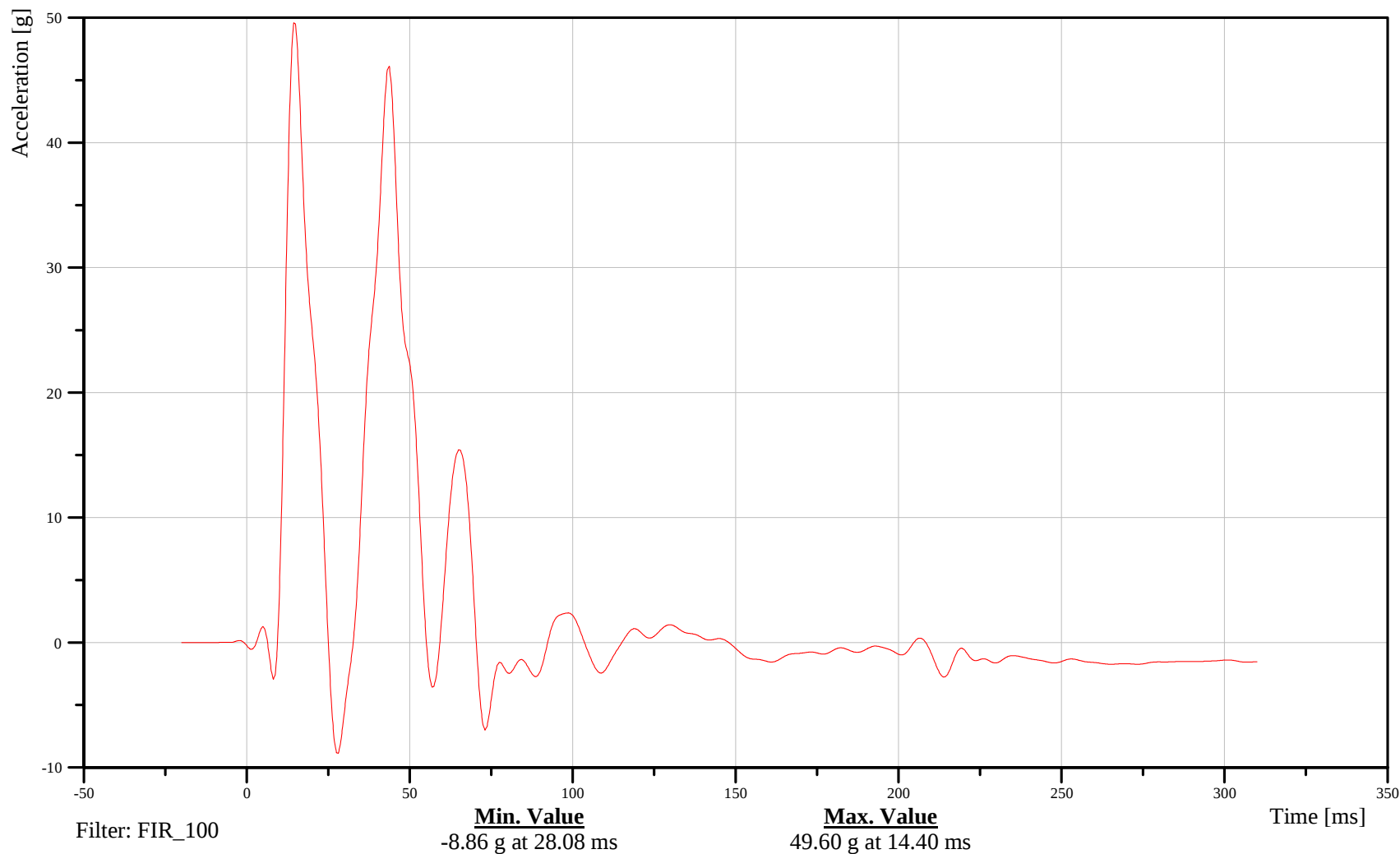
Date: 10/26/2006
Time: 13:29

DRIVER LOWER RIB Y-AXIS REDUNDANT ACCELERATION

Customer: NHTSA
Test Number: C70501

11RIBSLLRESHACY1

TRC Inc. Test Lab: CTF
Test Number: 061026



B-155

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

DRIVER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION

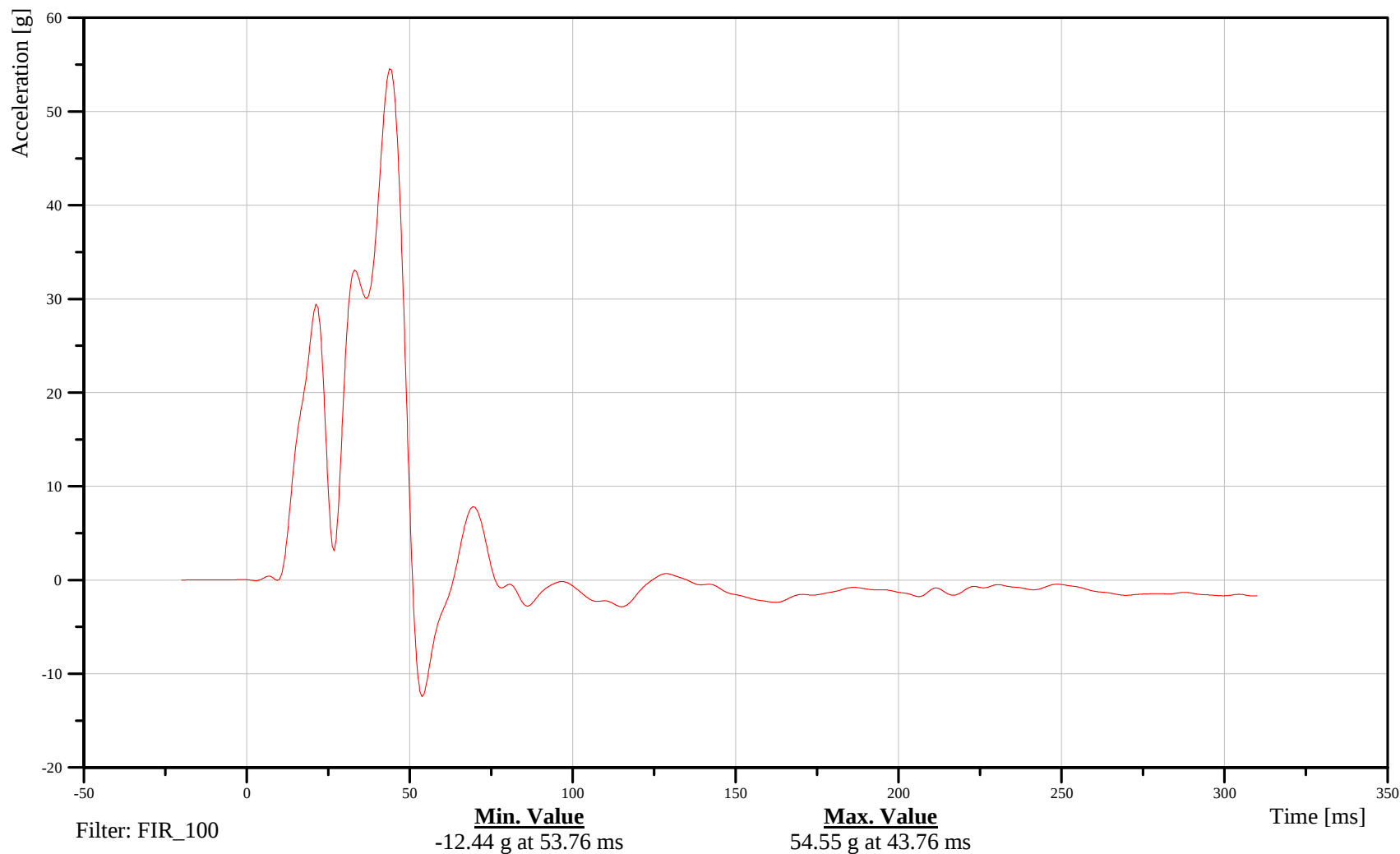
Customer: NHTSA

Test Number: C70501

11SPIN12RDSHACY1

TRC Inc. Test Lab: CTF

Test Number: 061026



B-156

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

LEFT REAR PASSENGER UPPER RIB Y-AXIS REDUNDANT ACCELERATION

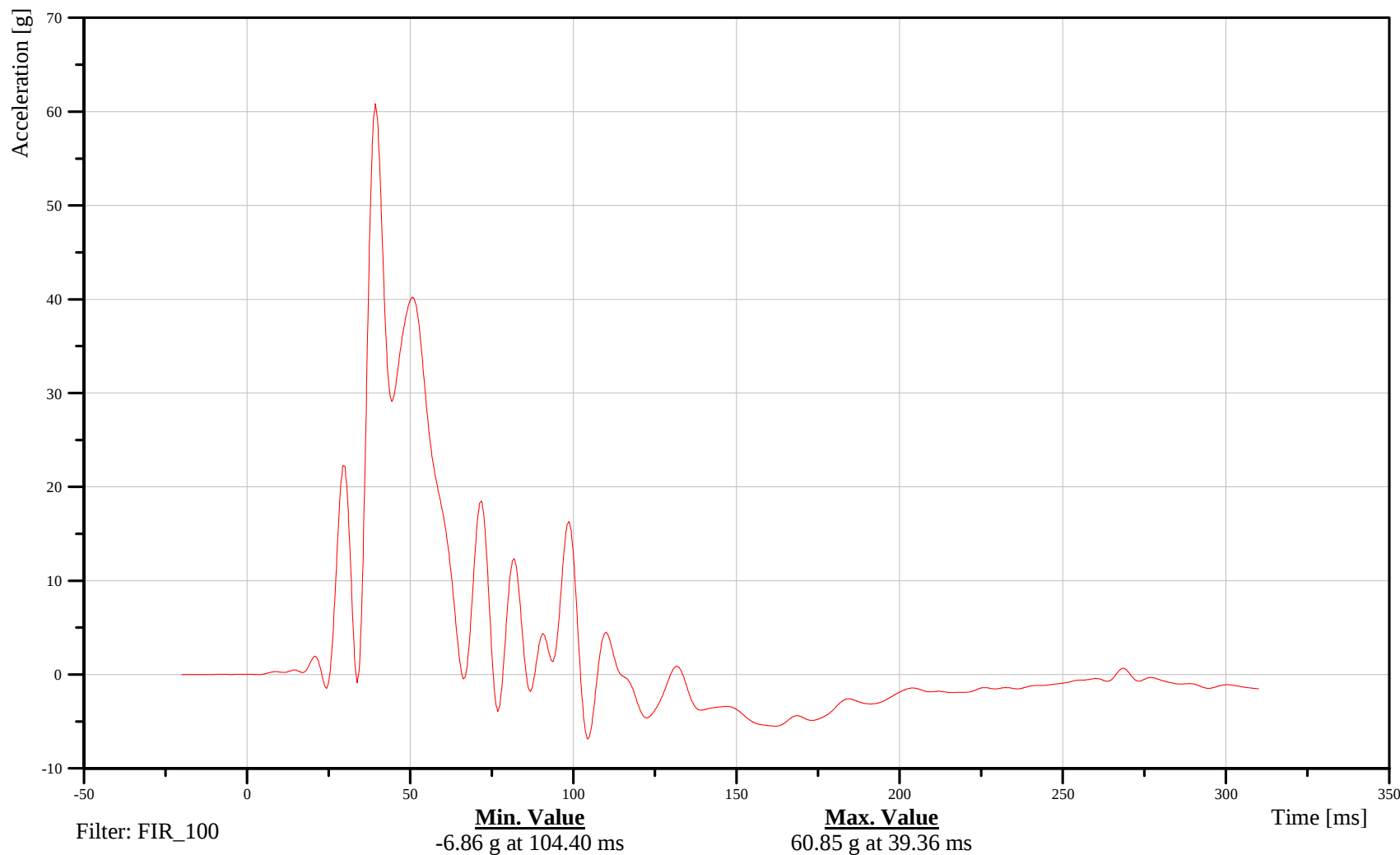
Customer: NHTSA

Test Number: C70501

14RIBSLURESHACY1

TRC Inc. Test Lab: CTF

Test Number: 061026



B-157

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

LEFT REAR PASSENGER LOWER RIB Y-AXIS REDUNDANT ACCELERATION

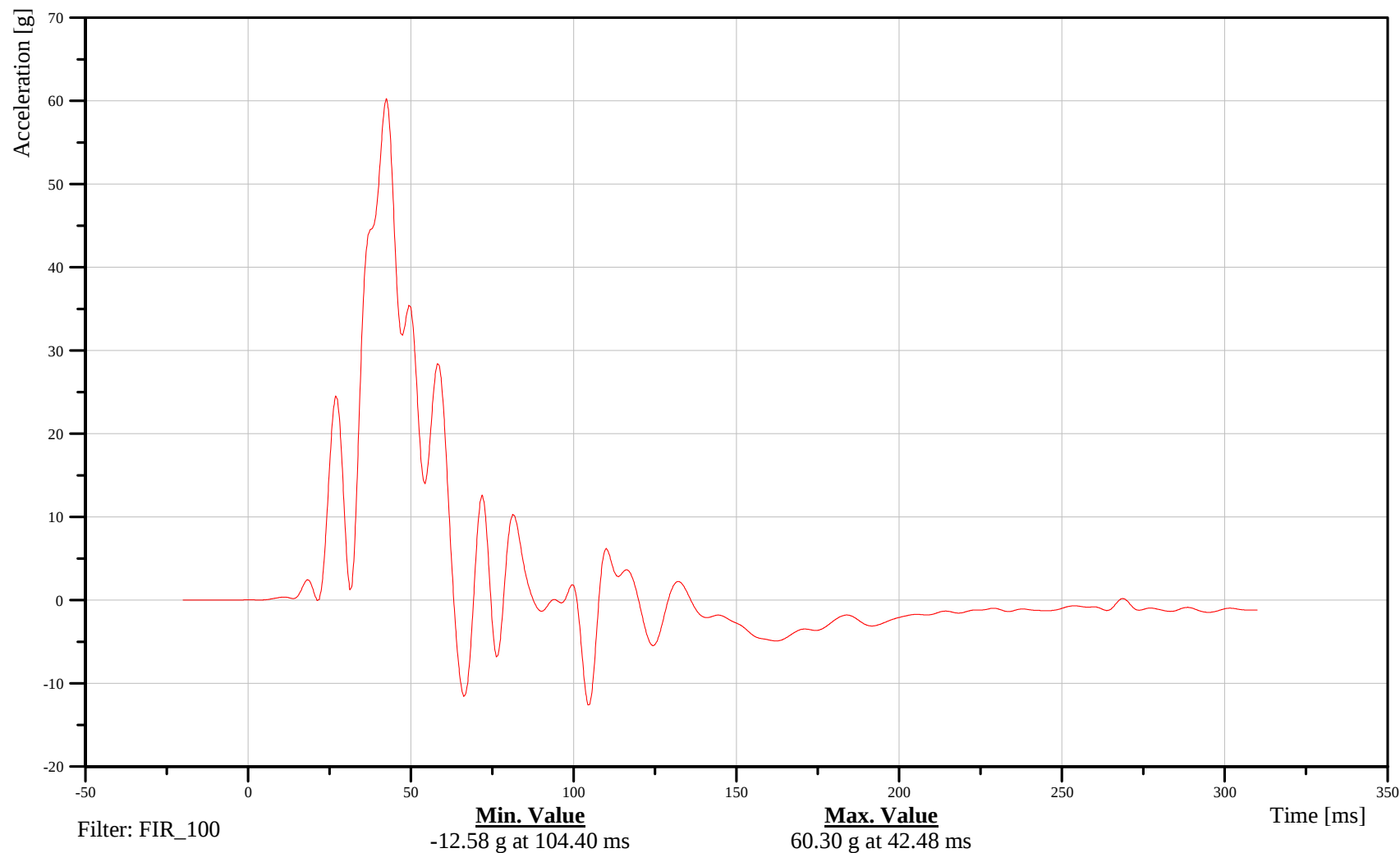
Customer: NHTSA

Test Number: C70501

14RIBSLLRESHACY1

TRC Inc. Test Lab: CTF

Test Number: 061026



B-158

061026



56/28 kph 90 Deg. Side Impact (MDB) into Left Side of 2007 Hyundai Elantra

Date: 10/26/2006

Time: 13:29

LEFT REAR PASSENGER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION

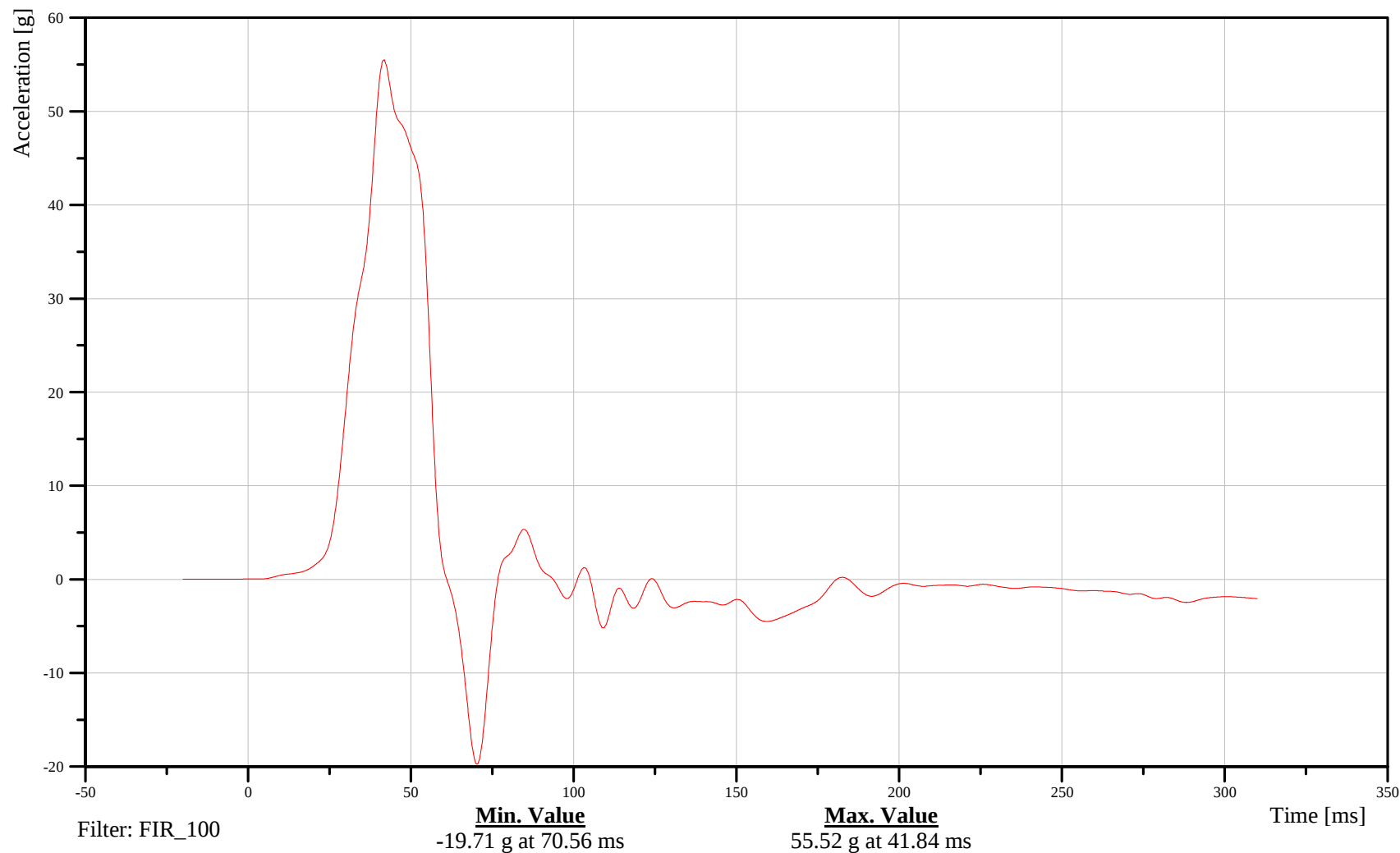
Customer: NHTSA

Test Number: C70501

14SPIN12RDSHACY1

TRC Inc. Test Lab: CTF

Test Number: 061026



B-159

061026

Appendix C

SID HIII Configuration and Performance Verification Data

Summary
SID HIII Pre-Test and Post-Test Calibration
Configured For Left Side Impact

Date: 10/02/06-11/03/06 TRC Inc. Test Number: S/N059 & S/N055

Laboratory Technician: R. Benavides & R. Stoner

Test Parameter	Specification	SID HIII 059		SID HIII 055	
		Pre-Test	Post-Test	Pre-Test	Post-Test
SH - Seated Height (mm)	889-909	906	906	904	904
RH - Rib Height (mm)	502-520	510	512	502	502
HP - Hip Pivot Height (mm)	99 ref	99.1	99.1	99.1	99.1
KH - Knee Pivot from Back Line (mm)	511-526	520	520	521	521
KV - Knee Pivot to Floor (mm)	490-505	495	498	493	493
HW - Hip Width (mm)	356-391	359	368	374	376
Thorax Impacts					
Temperature (°C)	18.9-25.5	21.2	21.4	21.5	21.1
Relative Humidity (%)	10-70	59	25	56	47
Probe Speed (m/s)	4.27-4.33	4.29	4.28	4.27	4.29
Upper Rib (g's)	37-46	41.7	40.7	44.2	44.5
Lower Rib (g's)	37-46	38.9	38.3	43.5	43.1
Lower Spine (g's)	15-22	18.4	19.1	19.4	20.4
Pelvis Impacts					
Temperature (°C)	18.9-25.5	21.2	21.7	21.5	21.3
Relative Humidity (%)	10-70	57	24	59	49
Probe Speed (m/s)	4.27-4.33	4.29	4.28	4.28	4.32
Pelvis (g's)	40-60	42.1	46.2	52.4	54.2

Calibration Test Results

Pre-Test

SID HIII: 059

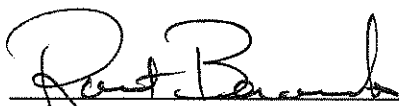
Configured for Left Side Impact

External Dimensions:	The dummy passed all external dimension requirements.
Lateral Head Drop Test:	The head passed all lateral drop test requirements.
Lateral Neck Test:	The neck passed all impact test requirements.
Lateral Thorax Impact Test:	The thorax passed all impact test requirements.
Lumbar Flexion Test:	The dummy met the lumbar flexion test requirements.
Abdominal Compression Test:	The abdomen met the compression test requirements.
Pelvis Impact Test:	The lateral pelvis passed all impact test requirements.
Thoracic Shock Absorber Test:	The thoracic shock absorber passed all test requirements.

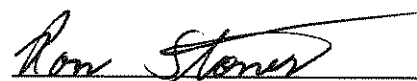
Transportation Research Center Inc.
SID/HIII Dummy Post-Test
External Dimensions
Serial No. 059 Calibration No. 17

Test Parameter	Dimension	Specification	Results	Pass
Seated Height	SH	889.0 - 909.3 mm	906 mm	Yes
Rib Height	RH	501.7 - 520.7 mm	510 mm	Yes
Hip Pivot Height	HP	99.1 REF mm	99.1 mm	
Knee Pivot From Backline	KH	510.5 - 525.8 mm	520 mm	Yes
Knee Pivot From Floor	KV	490.2 - 505.5 mm	495 mm	Yes
Hip Width	HW	355.6 - 391.2 mm	359 mm	Yes
Top Rib Width From C/L	RW-1	165.1 - 180.3 mm	172 mm	Yes
Bottom Rib Width From C/L	RW-2	165.1 - 180.3 mm	170 mm	Yes
Difference Between Top & Bottom Rib Width from C/L		<= 2.5 mm	2.0 mm	Yes

Technician



Approved





Transportation Research Center Inc.

Left Lateral Head Drop

SID-HIII Serial No. 059 Certification No. 17-2

Test Date: 10/02/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	56 %	Yes
Peak Head Resultant Acceleration	120 - 150 g	142.2 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-7.3 g	Yes
Is Head Resultant Acceleration Curve Unimodal Within 15% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Rout Brando

Approved

Ron Starnes

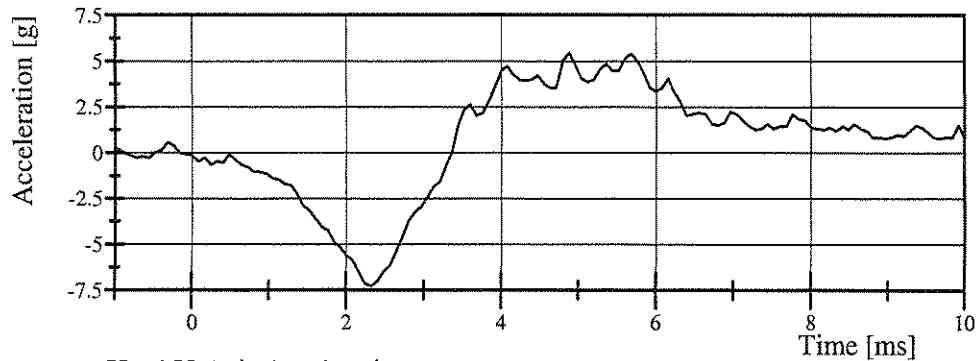
Transportation Research Center Inc.

Left Lateral Head Drop

SID-HIII Serial No. 059 Certification No. 17-2

Test Date: 10/02/2006

Head X-Axis Acceleration

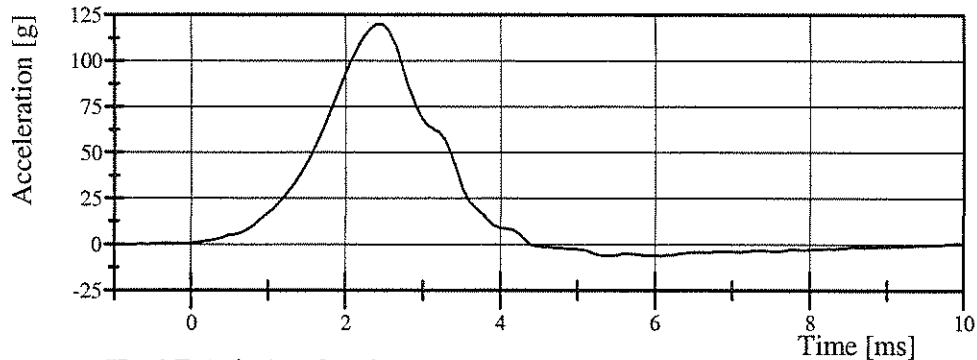


Filter Class: CFC_1000

Max: 5.4 g at 4.9 ms

Min: -7.3 g at 2.3 ms

Head Y-Axis Acceleration

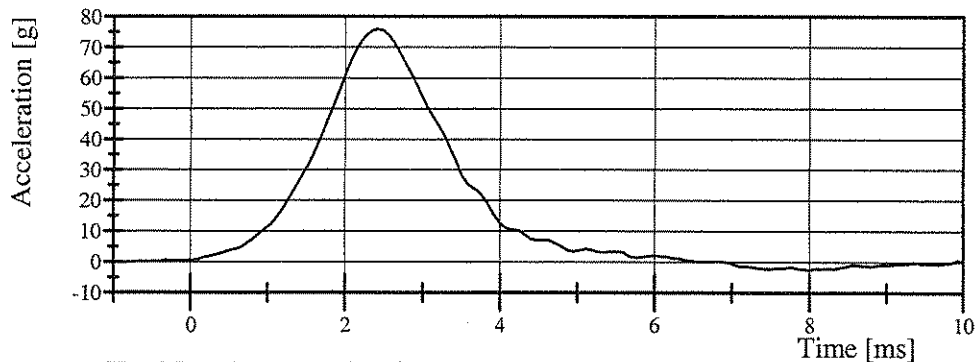


Filter Class: CFC_1000

Max: 119.9 g at 2.4 ms

Min: -6.3 g at 5.4 ms

Head Z-Axis Acceleration

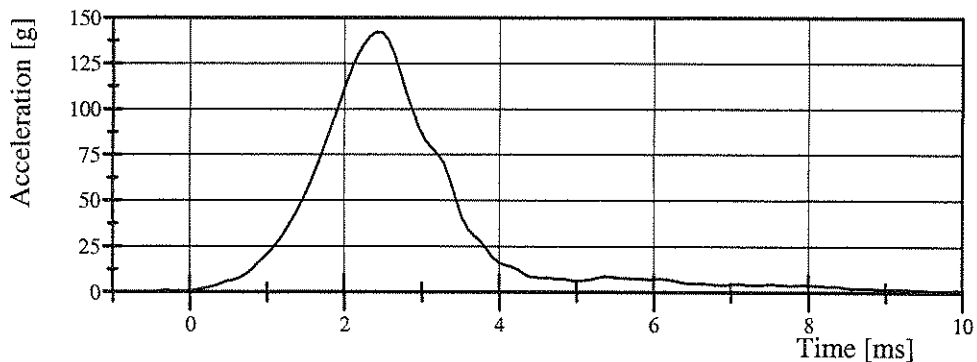


Filter Class: CFC_1000

Max: 76.0 g at 2.4 ms

Min: -2.6 g at 8.0 ms

Head Resultant Acceleration



Filter Class: CFC_1000

Max: 142.2 g at 2.4 ms

Min: 0.2 g at -0.8 ms

Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 059 Certification No. 17-1

Test Date: 10/02/2006

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	56 %	Yes
Pendulum Velocity	(-6.89) - (-7.13) m/s	-6.977 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	1.96 - 2.55 m/s	2.414 m/s	Yes
Pendulum Integrated Velocity Change at 20 ms	4.12 - 5.10 m/s	4.700 m/s	Yes
Pendulum Integrated Velocity Change at 30 ms	5.73 - 7.01 m/s	6.500 m/s	Yes
Pendulum Integrated Velocity Change at 40 to 70 ms	6.27 - 7.64 m/s	7.359 m/s	Yes
Total Head D-Plane Rotation	(-66) - (-82) °	-70.7 °	Yes
Total Head D-Plane Rotation Time to 0° after Peak Rotation	58 - 67 ms	58.1 ms	Yes
Total Neck Occipital Condyle Moment	73 - 88 N·m	79.6 N·m	Yes
Total Neck Occipital Condyle Moment Time to 0 N·m after Peak Moment	49 - 64 ms	54.1 ms	Yes
Time from Peak Moment to Peak Rotation	2 - 16 ms	9.4 ms	Yes

Test meets specifications.

Comments:

Technician



Approved

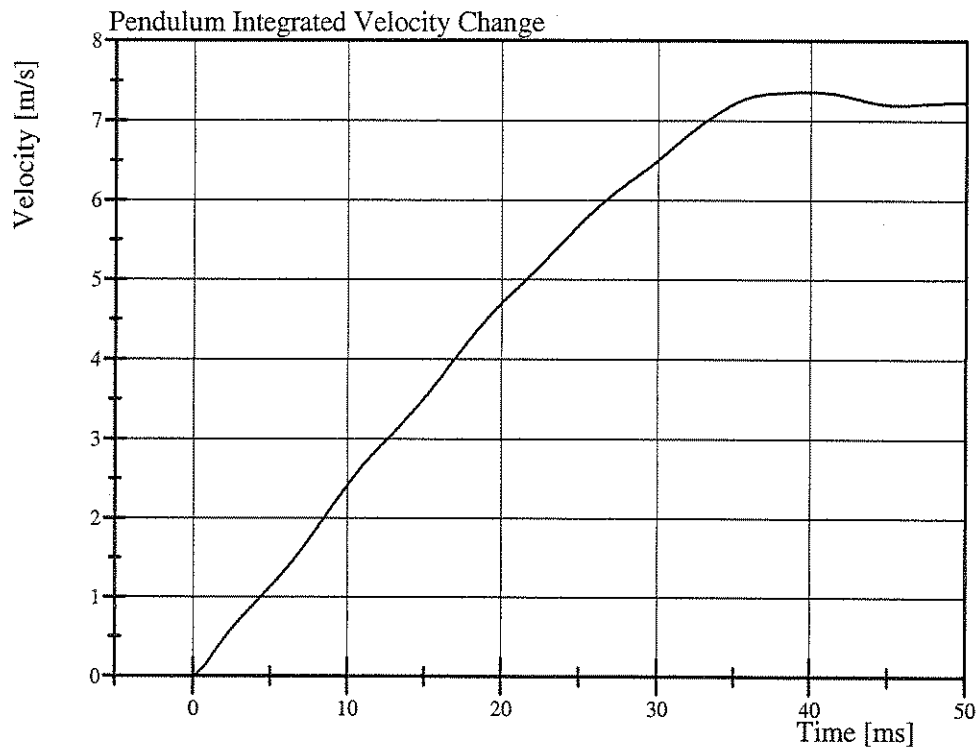
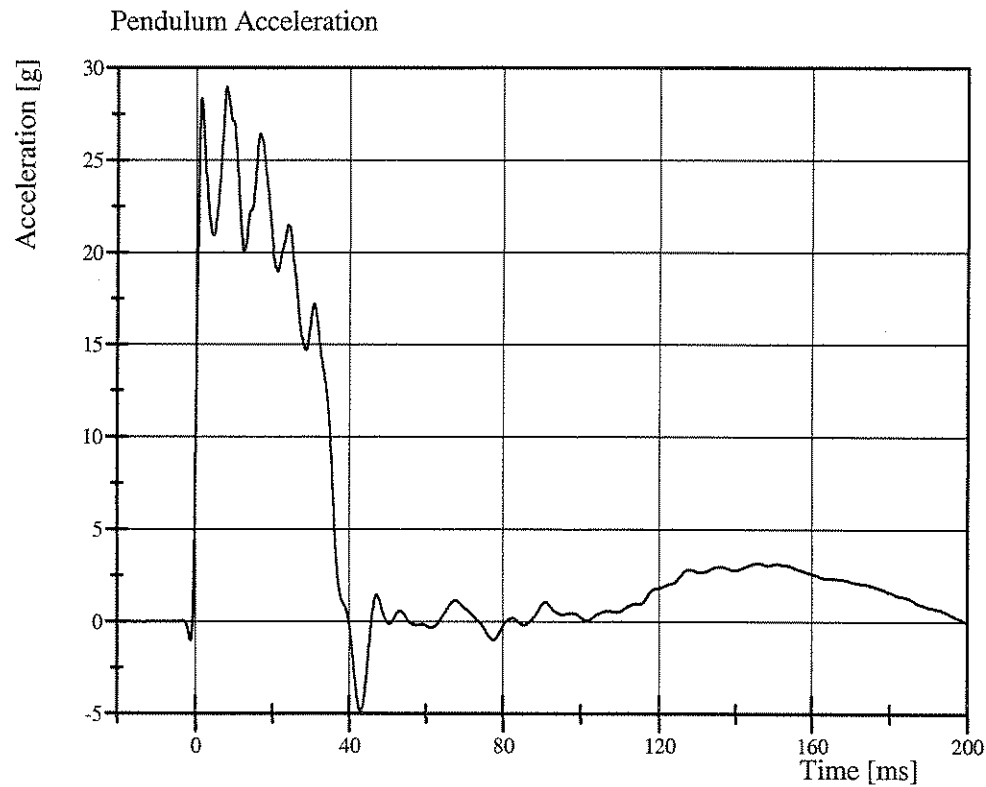


Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 059 Certification No. 17-1

Test Date: 10/02/2006



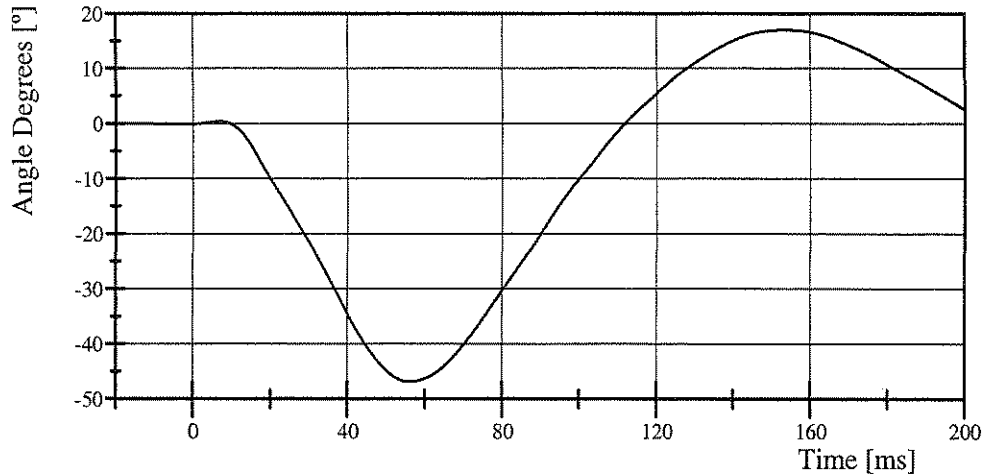
Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 059 Certification No. 17-1

Test Date: 10/02/2006

Pot Rotation at the Base of Neck

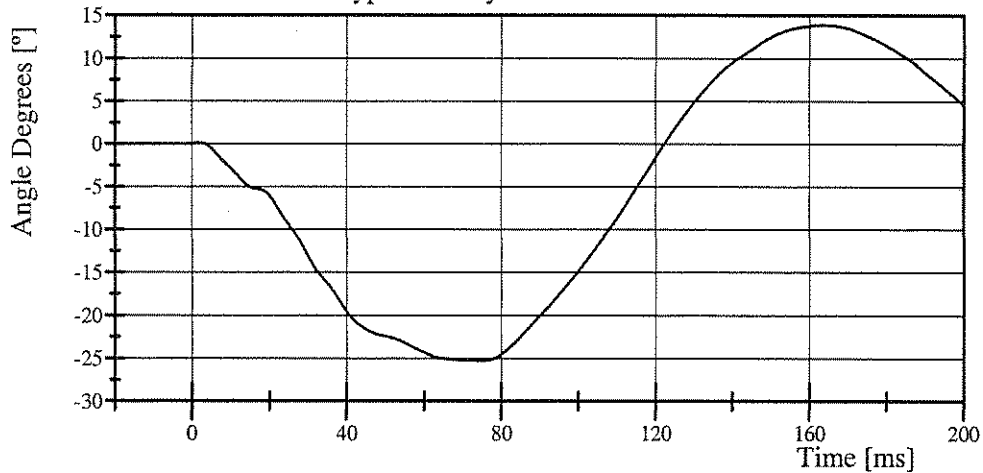


Filter Class: CFC_60

Max: 17.0 ° at 153.4 ms

Min: -46.8 ° at 56.3 ms

Head Rotation at Occypital Condyles

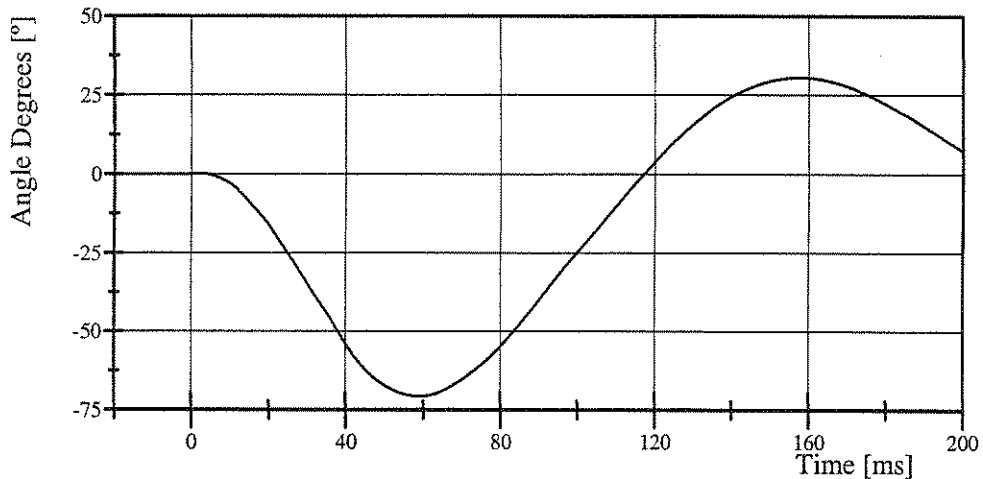


Filter Class: CFC_60

Max: 13.9 ° at 163.5 ms

Min: -25.3 ° at 75.3 ms

Total Head D-Plane Rotation



Filter Class: CFC_60

Max: 30.5 ° at 157.7 ms

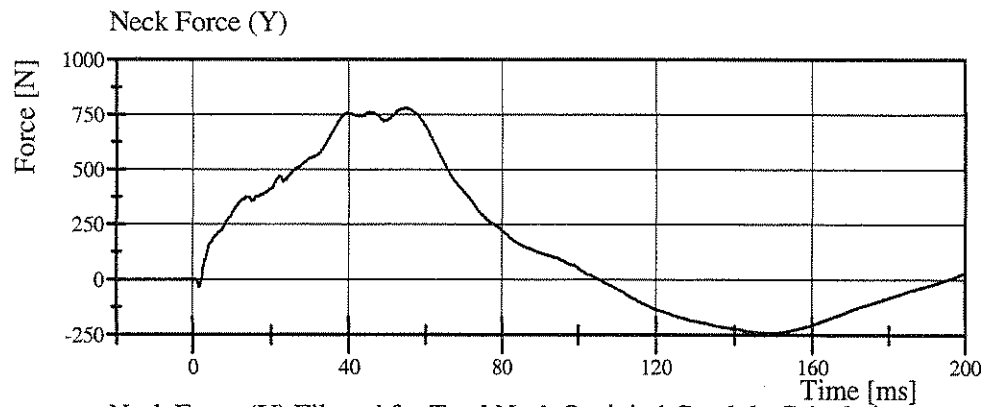
Min: -70.7 ° at 59.1 ms

Transportation Research Center Inc.

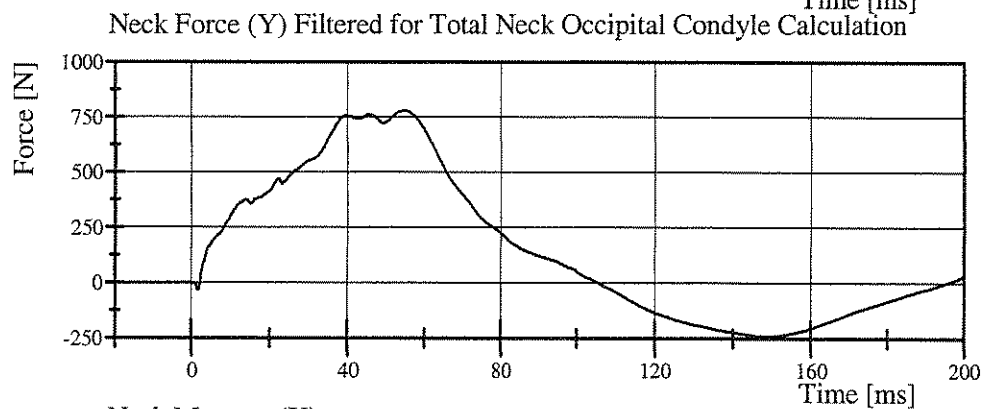
Left Lateral Neck

SID-HIII Serial No. 059 Certification No. 17-1

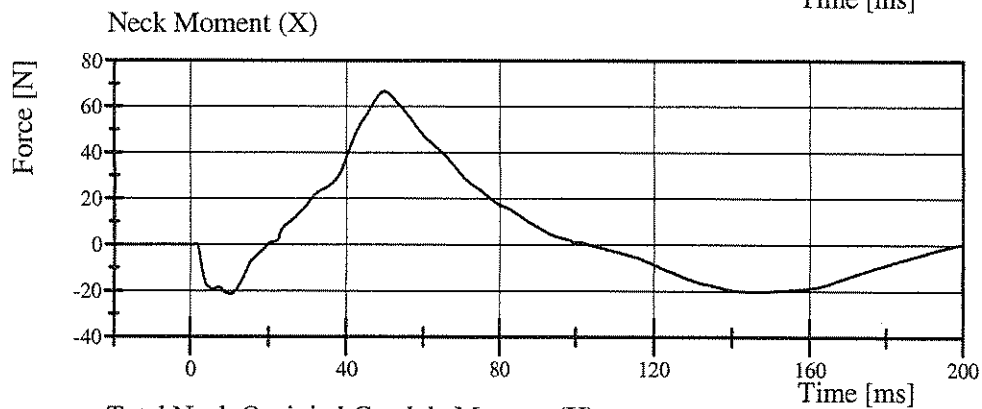
Test Date: 10/02/2006



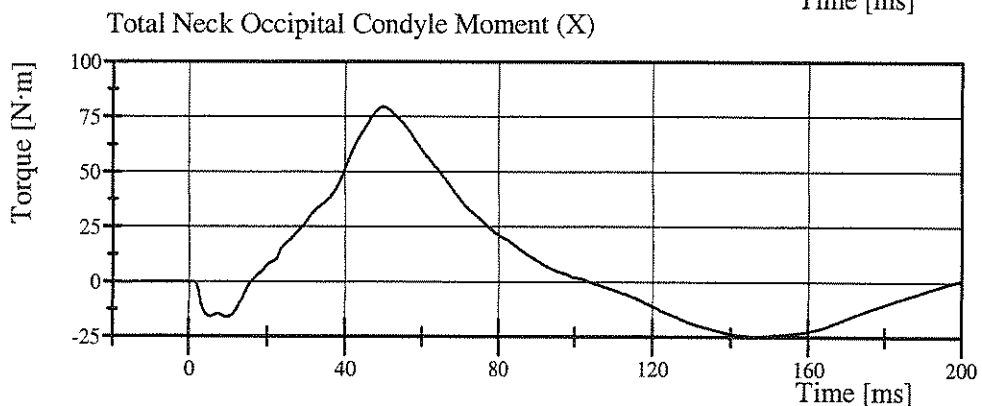
Filter Class: CFC_1000
Max: 781.2 N at 54.6 ms
Min: -241.8 N at 150.1 ms



Filter Class: CFC_600
Max: 780.5 N at 54.6 ms
Min: -240.2 N at 149.2 ms



Filter Class: CFC_600
Max: 66.7 N at 49.7 ms
Min: -21.4 N at 10.2 ms



Filter Class: CFC_600
Max: 79.6 N·m at 49.8 ms
Min: -24.6 N·m at 146.2 ms

Transportation Research Center Inc.

3.05 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 059 Certification No. 17-1

Test Date: 10/20/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Maximum Force at Test Velocity	849 - 1,137 N	929.1 N	Yes
Maximum Displacement at Test Velocity	30.19 - 35.17 mm	30.962 mm	Yes

Test meets specifications.

Comments:

Actual Impactor Velocity (m/s): 3.064

Damper Setting: 5.5

Technician

Jacqueline Brewster

Approved

Kon Stoner

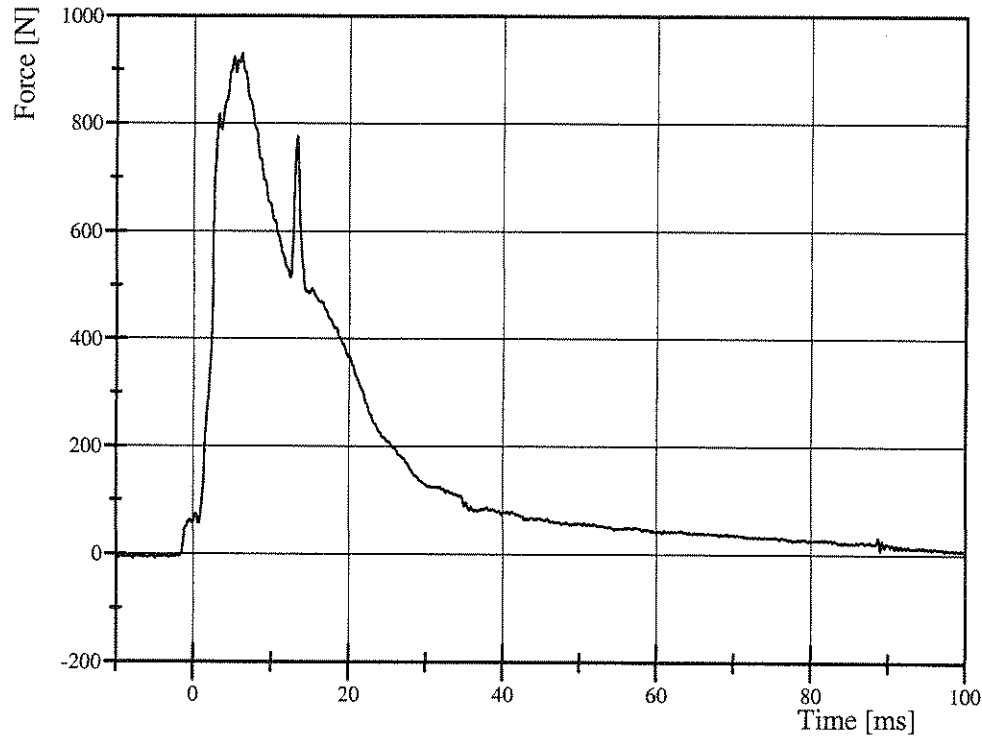
Transportation Research Center Inc.

3.05 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 059 Certification No. 17-1

Test Date: 10/20/2006

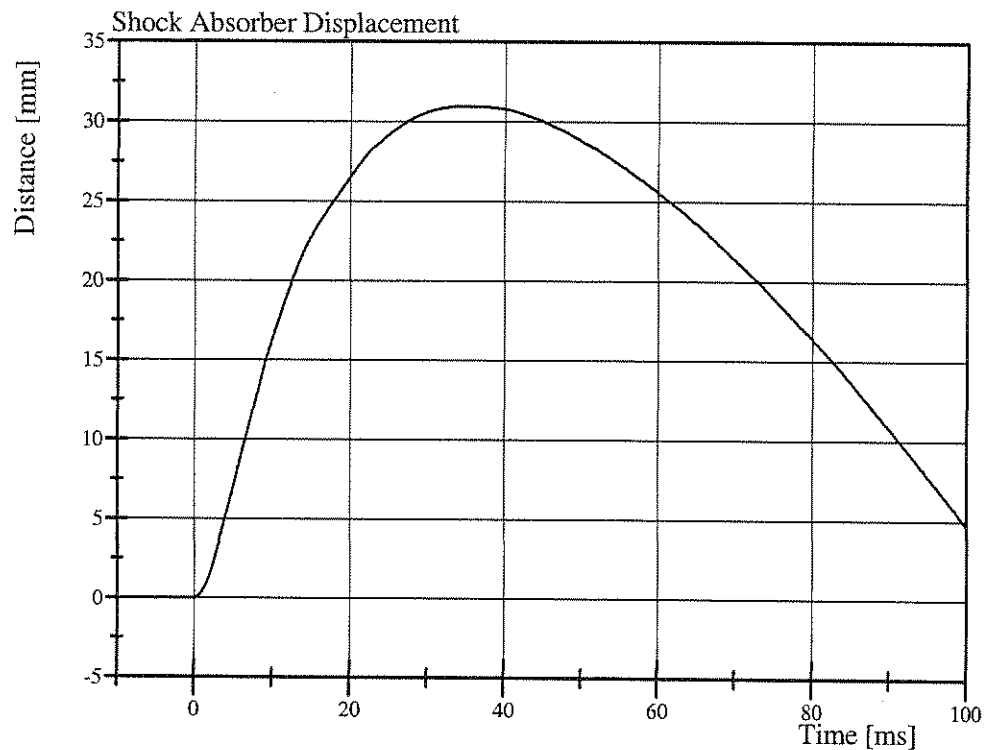
Shock Absorber Resistive Force



Filter Class: CFC_1000

Max: 929.1 N at 6.1 ms

Min: -8.2 N at -7.8 ms



Filter Class: CFC_1000

Max: 31.0 mm at 34.9 ms

Min: -0.0 mm at -9.7 ms

Transportation Research Center Inc.

4.27 m/s Thoracic Shock Absorber Compression
SID-HIII Serial No. 059 Certification No. 17-1
Test Date: 10/20/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Maximum Force at Test Velocity	1,744 - 2,108 N	1,859.9 N	Yes
Maximum Displacement at Test Velocity	31.69 - 37.24 mm	33.640 mm	Yes

Test meets specifications.

Comments:

Actual Impactor Velocity (m/s): 4.278

Damper Setting: 5.5

Technician

Jaqueline Burske

Approved

Ron Storm

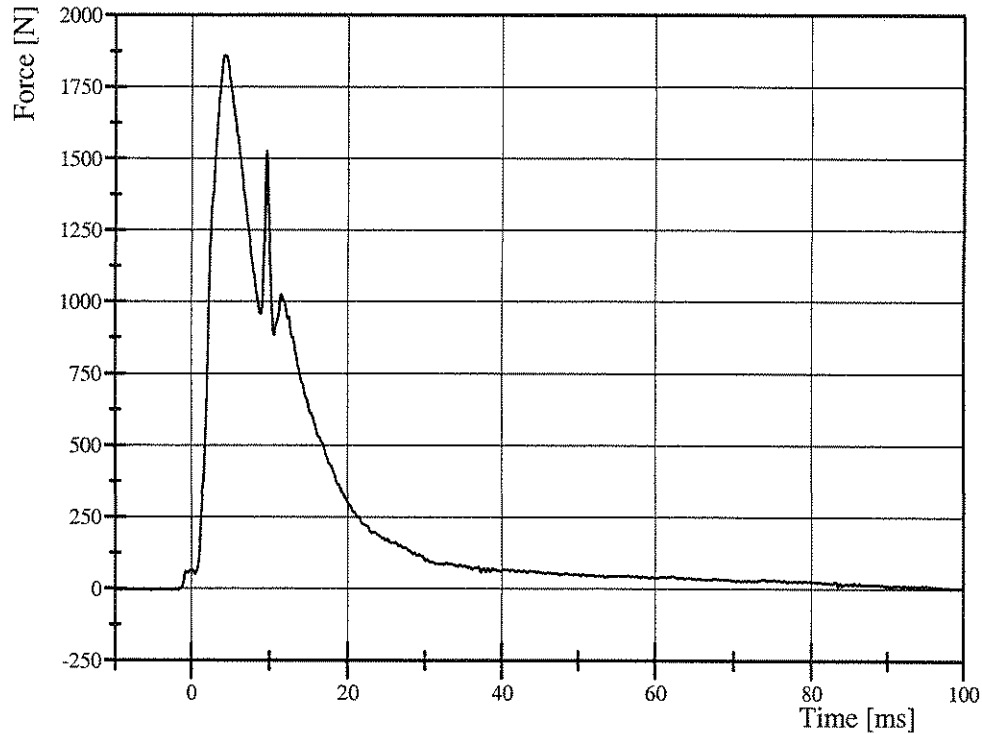
Transportation Research Center Inc.

4.27 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 059 Certification No. 17-1

Test Date: 10/20/2006

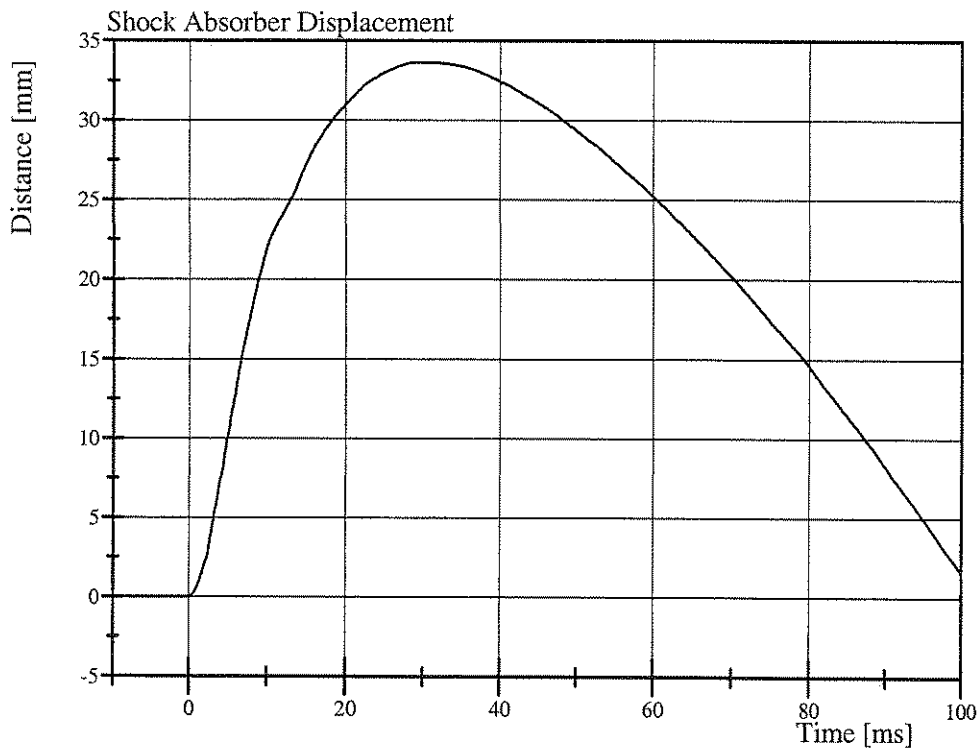
Shock Absorber Resistive Force



Filter Class: CFC_1000

Max: 1,859.9 N at 4.2 ms

Min: -6.4 N at -5.3 ms



Filter Class: CFC_1000

Max: 33.6 mm at 29.5 ms

Min: -0.0 mm at -8.6 ms

Transportation Research Center Inc.

6.10 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 059 Certification No. 17-1

Test Date: 10/20/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Maximum Force at Test Velocity	3,732 - 4,424 N	4,229.0 N	Yes
Maximum Displacement at Test Velocity	33.36 - 39.56 mm	37.024 mm	Yes

Test meets specifications.

Comments:

Actual Impactor Velocity (m/s): 6.086

Damper Setting: 5.5

Technician

Joseph Bursch

Approved

Ron Stump

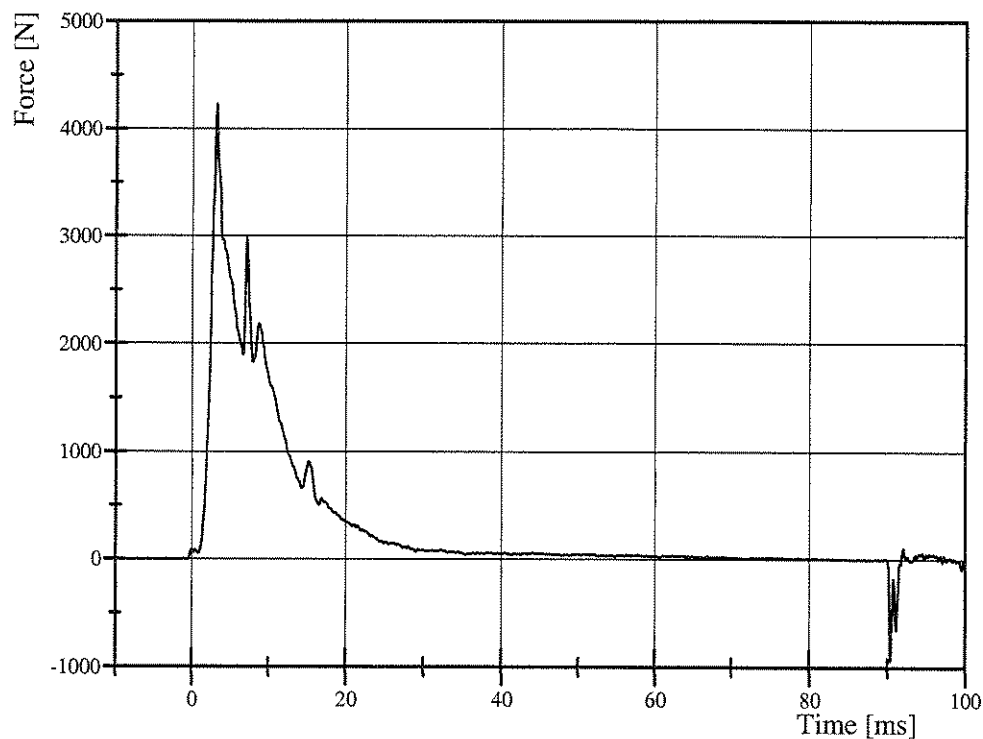
Transportation Research Center Inc.

6.10 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 059 Certification No. 17-1

Test Date: 10/20/2006

Shock Absorber Resistive Force

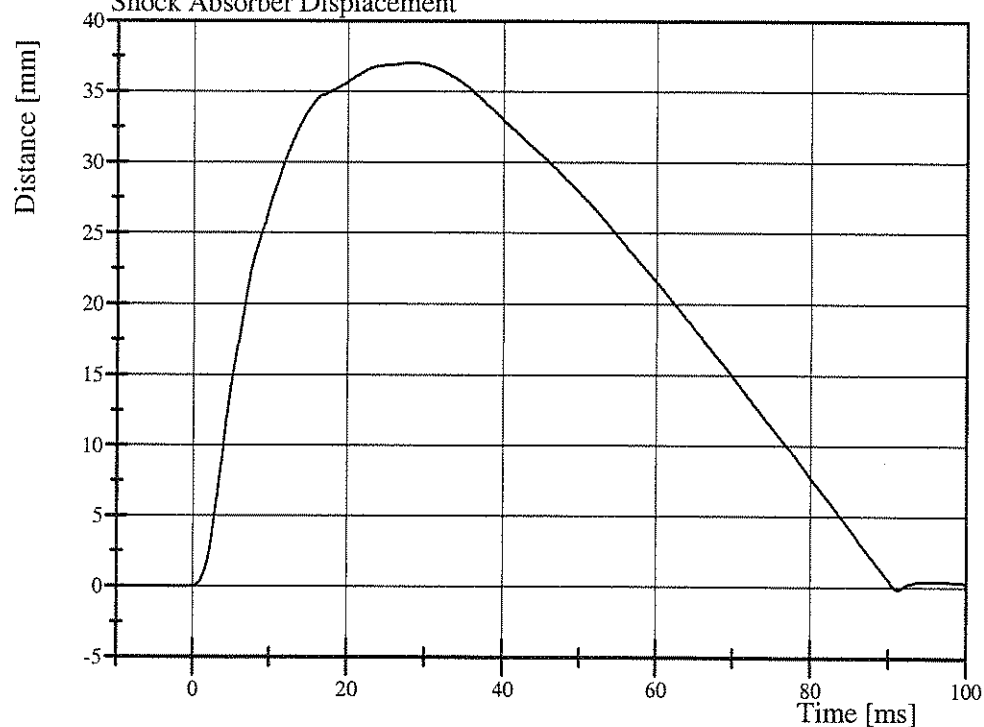


Filter Class: CFC_1000

Max: 4,229.0 N at 3.1 ms

Min: -939.9 N at 90.4 ms

Shock Absorber Displacement



Filter Class: CFC_1000

Max: 37.0 mm at 28.1 ms

Min: -0.2 mm at 91.2 ms

Transportation Research Center Inc.

Left Lateral Thorax

SID-HIII Serial No. 059 Certification No. 17-2

Test Date: 10/04/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	59 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.290 m/s	Yes
Upper Rib Lateral Acceleration	37 - 46 g	41.7 g	Yes
Lower Rib Lateral Acceleration	37 - 46 g	38.9 g	Yes
Lower Spine Lateral Acceleration	15 - 22 g	18.4 g	Yes

Test meets specifications.

Comments:

Technician



Approved



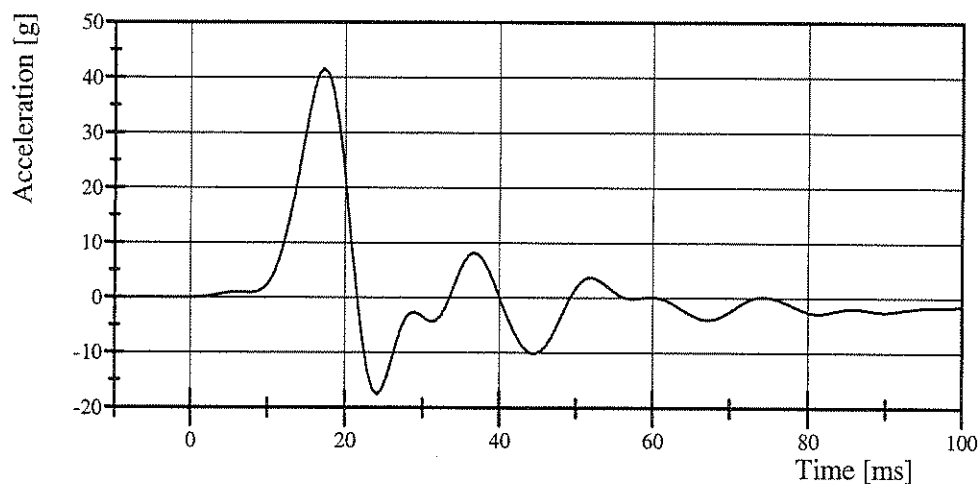
Transportation Research Center Inc.

Left Lateral Thorax

SID-HIII Serial No. 059 Certification No. 17-2

Test Date: 10/04/2006

Upper Rib Acceleration (Y)

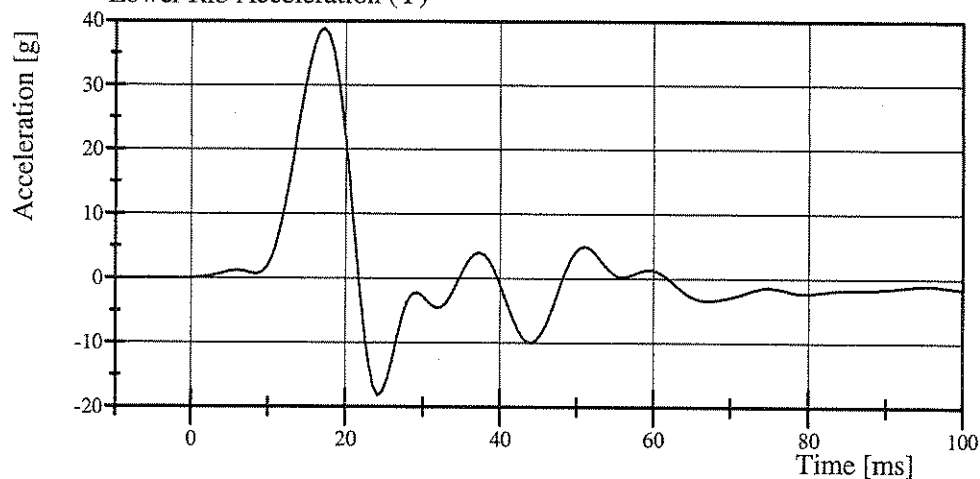


Filter Class: FIR_100

Max: 41.7 g at 17.3 ms

Min: -17.6 g at 24.2 ms

Lower Rib Acceleration (Y)

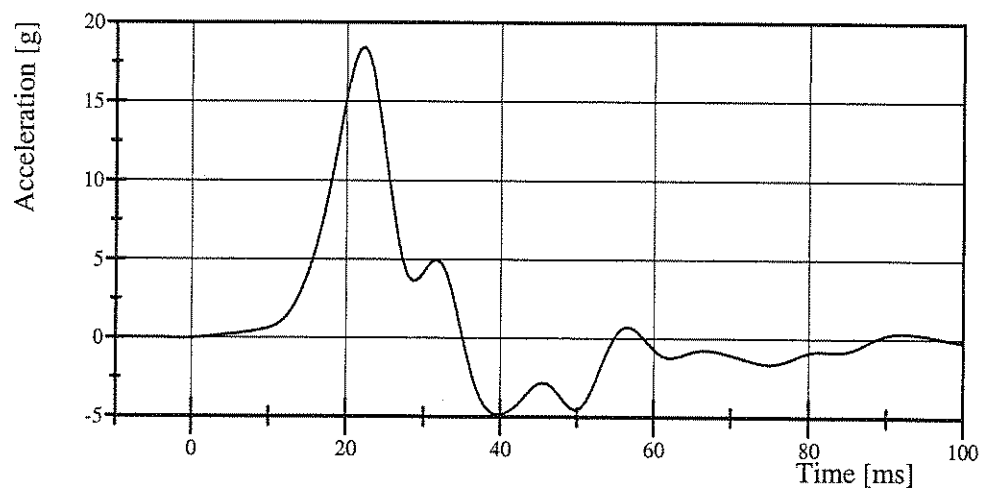


Filter Class: FIR_100

Max: 38.9 g at 17.3 ms

Min: -18.2 g at 24.2 ms

Lower Spine Acceleration (Y)



Filter Class: FIR_100

Max: 18.4 g at 22.2 ms

Min: -4.9 g at 39.8 ms



Transportation Research Center Inc.

Abdomen Compression

SID-HIII Serial No. 059 Certification No. 17-25

Test Date: 10/11/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	53 %	Yes
Probe Force within Corridor	Yes	Yes	Yes
Probe Velocity	6.35 - 8.89 mm/s	7.980 mm/s	Yes

Test meets specifications.

Comments:

Technician

Rout Bonds

Approved

Ken Stoner

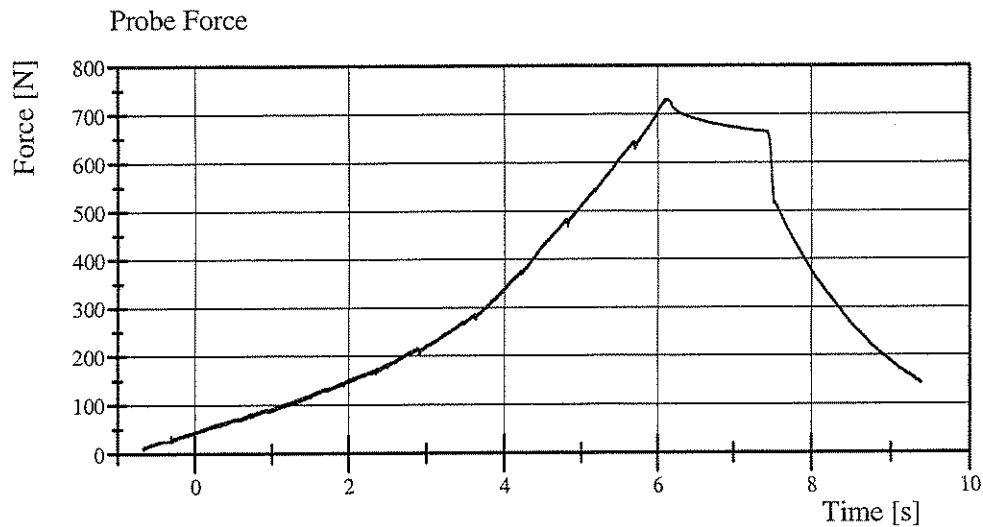


Transportation Research Center Inc.

Abdomen Compression

SID-HIII Serial No. 059 Certification No. 17-25

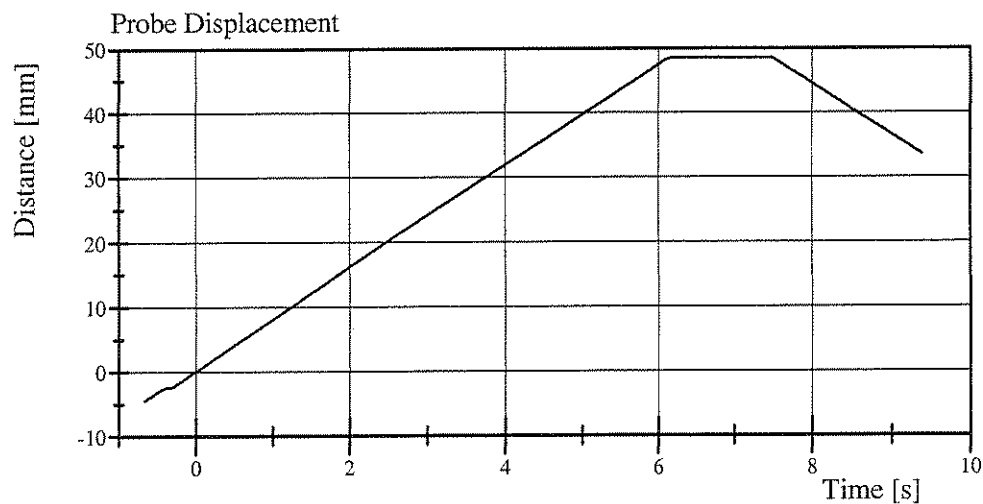
Test Date: 10/11/2006



Filter Class: CFC_600

Max: 730.3 N at 6.1 s

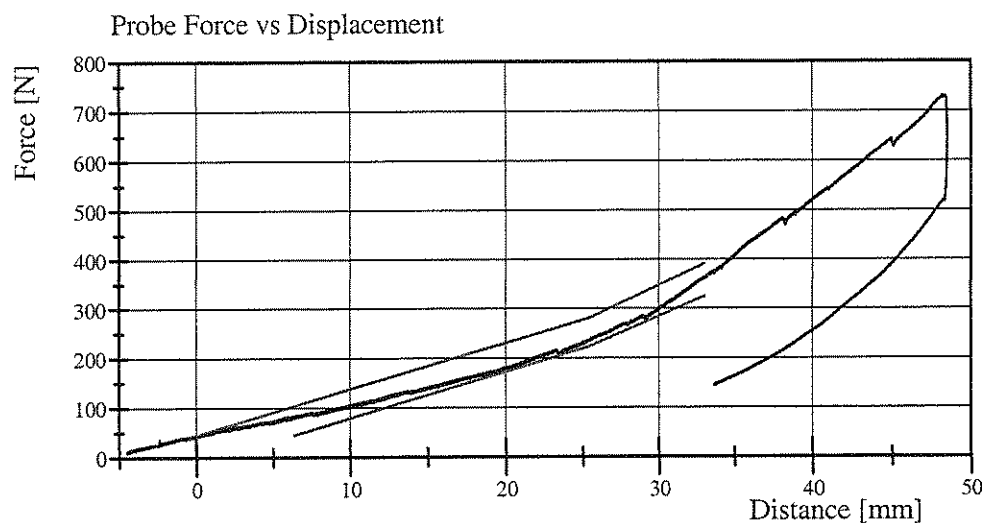
Min: 9.1 N at -0.7 s



Filter Class: CFC_180

Max: 48.5 mm at 7.5 s

Min: -4.5 mm at -0.7 s



Filter Class: CFC_600

Max: 730.3 N at 48.3 mm

Min: 9.1 N at -4.5 mm



TRANSPORTATION RESEARCH CENTER INC.

LUMBAR FLEXION TEST

SID PART 572B

CAL DATE: 04-Oct-06

TRC, INC.

TEST NO: LUFL-01

572B SN 059 TORSO FLEX CAL 17

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 – 25.6° C	21.4 C
RELATIVE HUMIDITY	10 – 70 %	59 %
FORCE AT 0 DEG. FLEXION	-27 – 27 N	0 N
FORCE AT 20 DEG OF FLEXION	98 – 151 N	133.45 N
FORCE AT 30 DEG OF FLEXION	151 – 205 N	191.27 N
FORCE AT 40 DEG OF FLEXION	205 – 258 N	257.99 N
NET RETURN ANGLE AFTER 3 MINUTES	< 12 °	2.0 °

TEST MEETS SPECIFICATIONS

TECHNICIAN Rout Band

Transportation Research Center Inc.

Left Lateral Pelvis

SID-HIII Serial No. 059 Certification No. 17-1

Test Date: 10/04/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	57 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.287 m/s	Yes
Pelvis Lateral Acceleration Duration above 20g	3 - 7 ms	6.3 ms	Yes
Pelvis Lateral Acceleration	40 - 60 g	42.1 g	Yes
Is Acceleration Curve Unimodal Above 20g?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Rust Branch

Approved

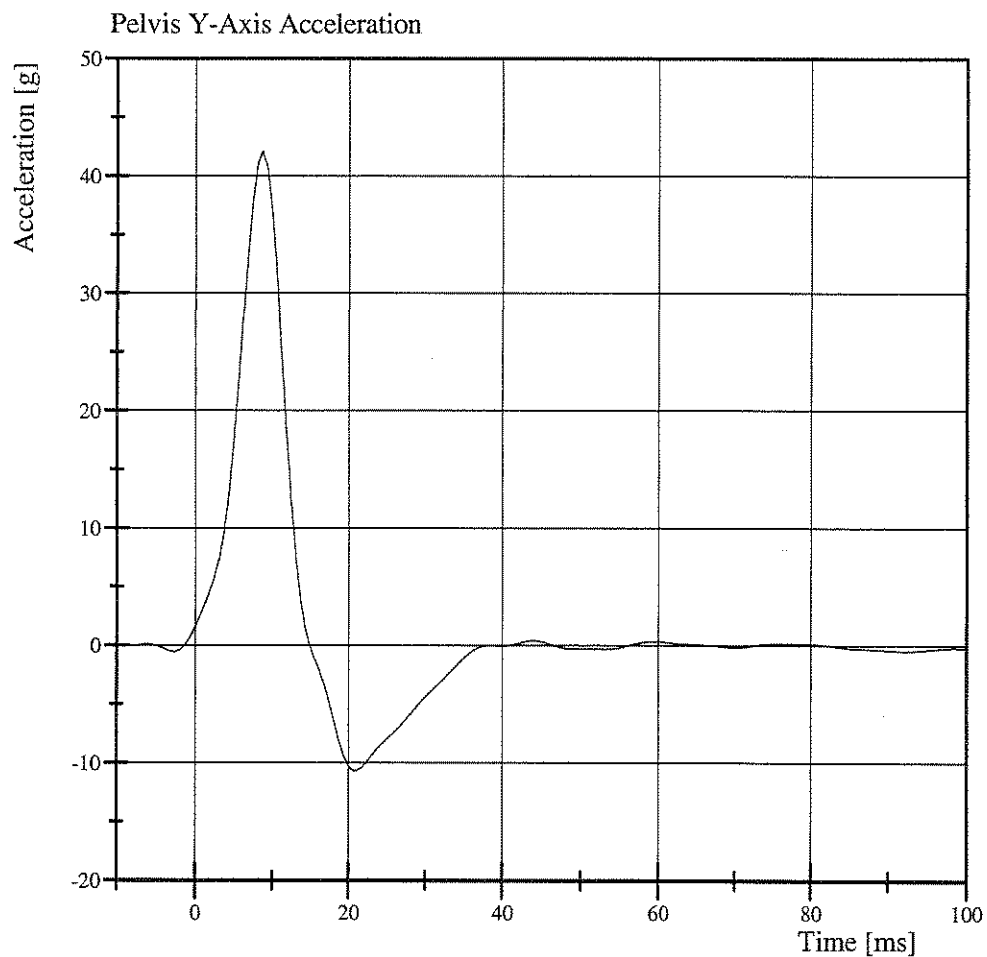
Ron Storer

Transportation Research Center Inc.

Left Lateral Pelvis

SID-HIII Serial No. 059 Certification No. 17-1

Test Date: 10/04/2006



Filter Class: FIR_100

Max: 42.1 g at 8.6 ms

Min: -10.7 g at 21.1 ms

Calibration Test Results

Pre-Test

SID HIII: 055

Configured for Left Side Impact

External Dimensions:	The dummy passed all external dimension requirements.
Lateral Head Drop Test:	The head passed all lateral drop test requirements.
Lateral Neck Test:	The neck passed all impact test requirements.
Lateral Thorax Impact Test:	The thorax passed all impact test requirements.
Lumbar Flexion Test:	The dummy met the lumbar flexion test requirements.
Abdominal Compression Test:	The abdomen met the compression test requirements.
Pelvis Impact Test:	The lateral pelvis passed all impact test requirements.
Thoracic Shock Absorber Test:	The thoracic shock absorber passed all test requirements.

Transportation Research Center Inc.
SID/HIII Dummy
External Dimensions
Serial No. 055 Calibration No. 22

Test Parameter	Dimension	Specification	Results	Pass
Seated Height	SH	889.0 - 909.3 mm	904 mm	Yes
Rib Height	RH	501.7 - 520.7 mm	502 mm	Yes
Hip Pivot Height	HP	99.1 REF mm	99.1 mm	
Knee Pivot From Backline	KH	510.5 - 525.8 mm	521 mm	Yes
Knee Pivot From Floor	KV	490.2 - 505.5 mm	493 mm	Yes
Hip Width	HW	355.6 - 391.2 mm	374 mm	Yes
Top Rib Width From CVL	RW-1	165.1 - 180.3 mm	171 mm	Yes
Bottom Rib Width From CVL	RW-2	165.1 - 180.3 mm	170 mm	Yes
Difference Between Top & Bottom Rib Width from CVL		<= 2.5 mm	1.0 mm	Yes

Technician

Rout Beranda

Approved

Ren Storus



Transportation Research Center Inc.

Left Lateral Head Drop

SID-HIII Serial No. 055 Certification No. 22-1

Test Date: 10/02/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	54 %	Yes
Peak Head Resultant Acceleration	120 - 150 g	146.3 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-5.1 g	Yes
Is Head Resultant Acceleration Curve Unimodal Within 15% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Rout B...

Approved

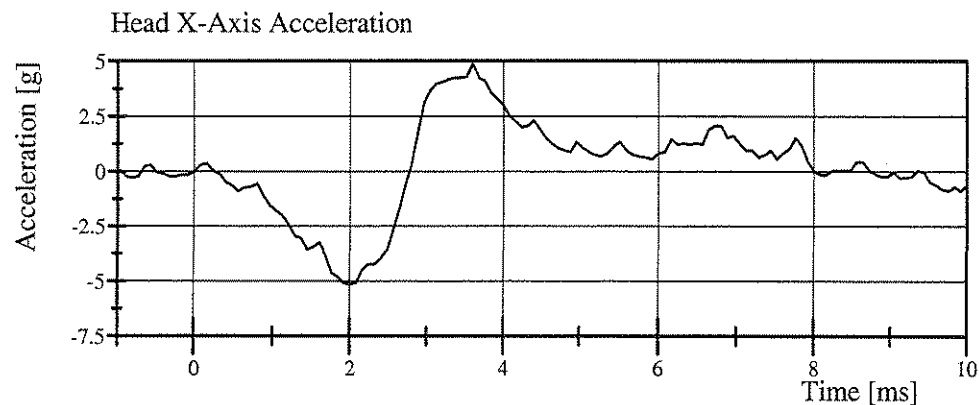
Ron Stone

Transportation Research Center Inc.

Left Lateral Head Drop

SID-HIII Serial No. 055 Certification No. 22-1

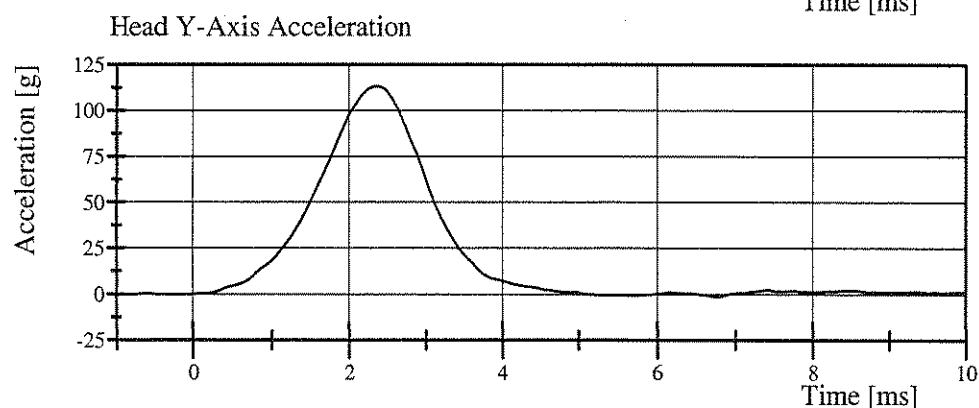
Test Date: 10/02/2006



Filter Class: CFC_1000

Max: 4.9 g at 3.6 ms

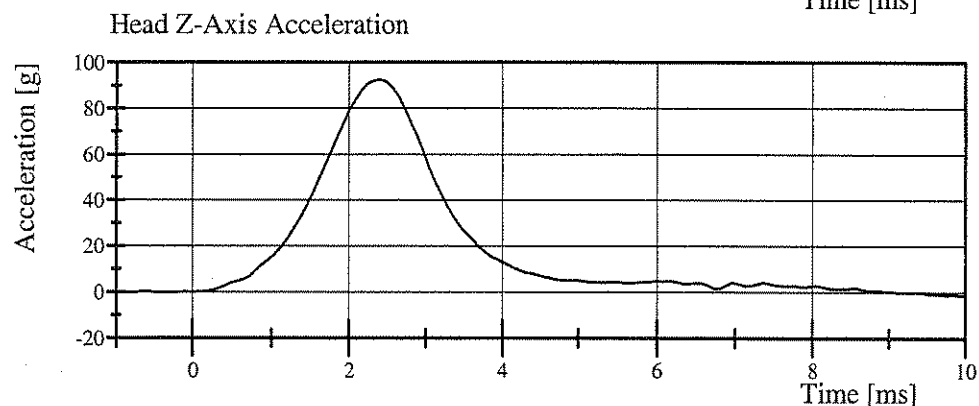
Min: -5.1 g at 2.0 ms



Filter Class: CFC_1000

Max: 113.3 g at 2.3 ms

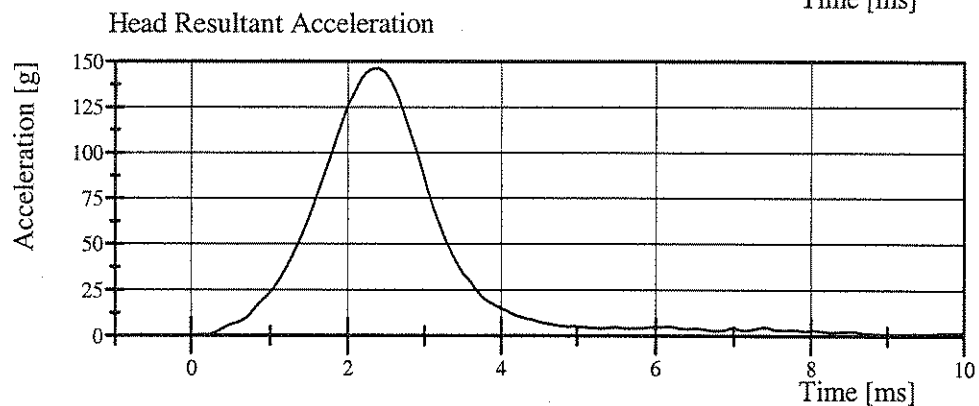
Min: -1.3 g at 6.8 ms



Filter Class: CFC_1000

Max: 92.5 g at 2.4 ms

Min: -1.3 g at 9.9 ms



Filter Class: CFC_1000

Max: 146.3 g at 2.4 ms

Min: 0.1 g at 0.0 ms

Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 055 Certification No. 22-1

Test Date: 10/02/2006

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	52 %	Yes
Pendulum Velocity	(-6.89) - (-7.13) m/s	-6.970 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	1.96 - 2.55 m/s	2.440 m/s	Yes
Pendulum Integrated Velocity Change at 20 ms	4.12 - 5.10 m/s	4.794 m/s	Yes
Pendulum Integrated Velocity Change at 30 ms	5.73 - 7.01 m/s	6.759 m/s	Yes
Pendulum Integrated Velocity Change at 40 to 70 ms	6.27 - 7.64 m/s	7.311 m/s	Yes
Total Head D-Plane Rotation	(-66) - (-82) °	-72.4 °	Yes
Total Head D-Plane Rotation Time to 0° after Peak Rotation	58 - 67 ms	59.3 ms	Yes
Total Neck Occipital Condyle Moment	73 - 88 N·m	81.8 N·m	Yes
Total Neck Occipital Condyle Moment Time to 0 N·m after Peak Moment	49 - 64 ms	54.6 ms	Yes
Time from Peak Moment to Peak Rotation	2 - 16 ms	10.5 ms	Yes

Test meets specifications.

Comments:

Technician



Approved

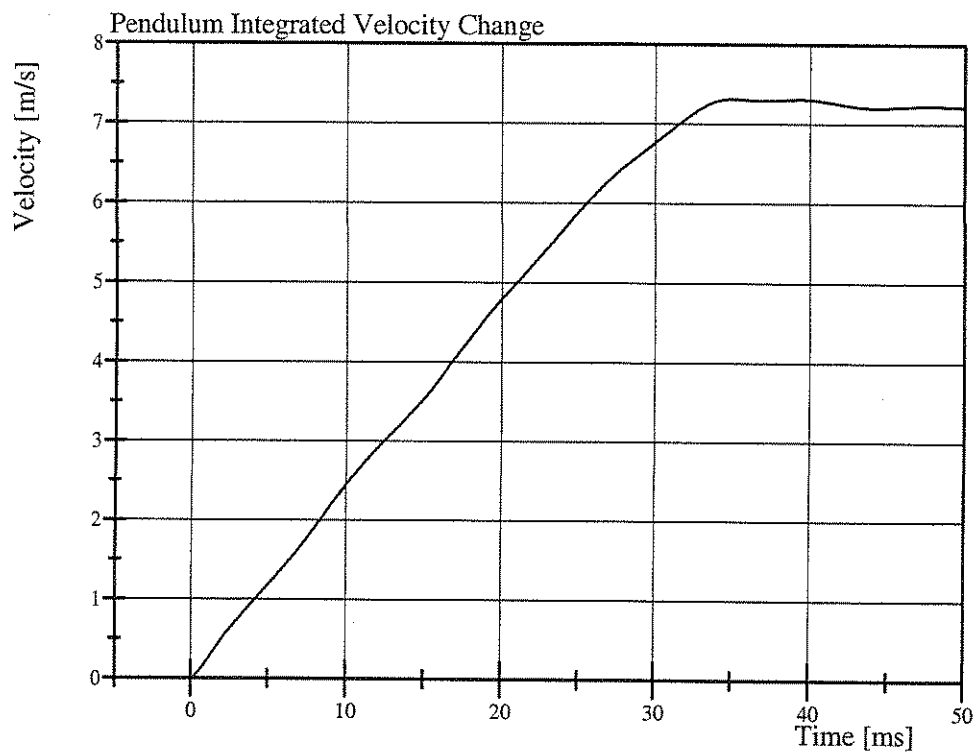
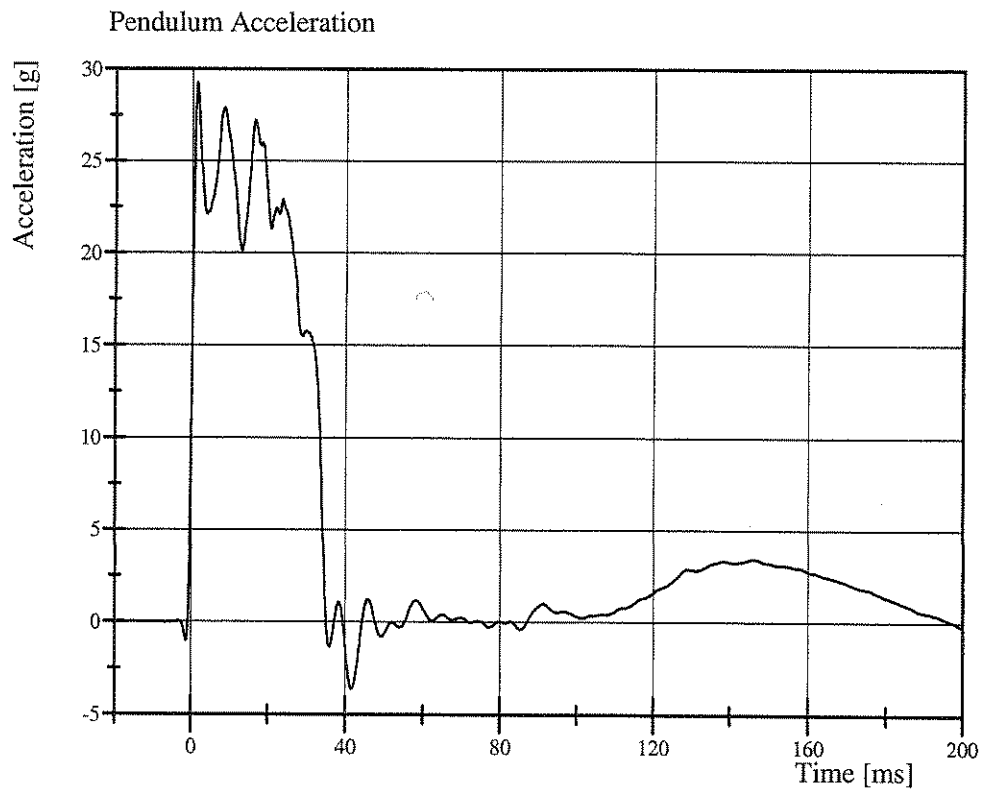


Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 055 Certification No. 22-1

Test Date: 10/02/2006



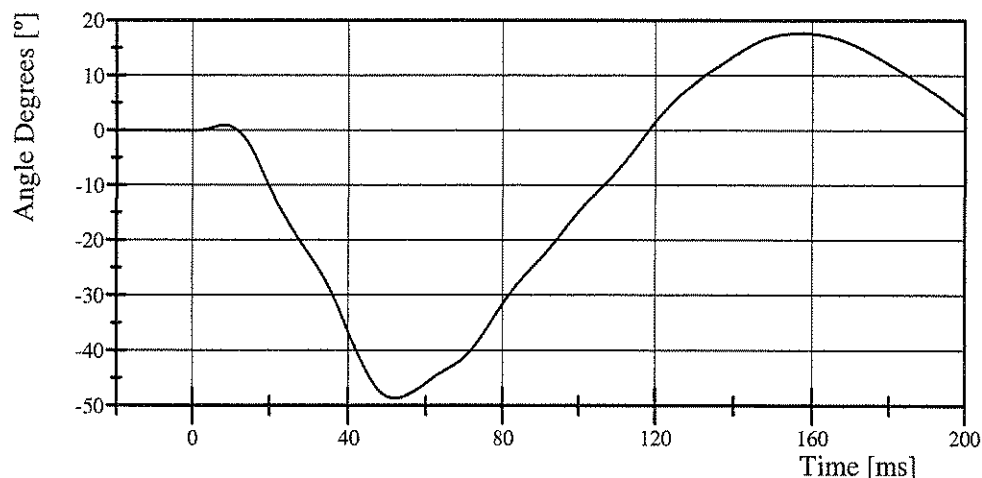
Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 055 Certification No. 22-1

Test Date: 10/02/2006

Pot Rotation at the Base of Neck

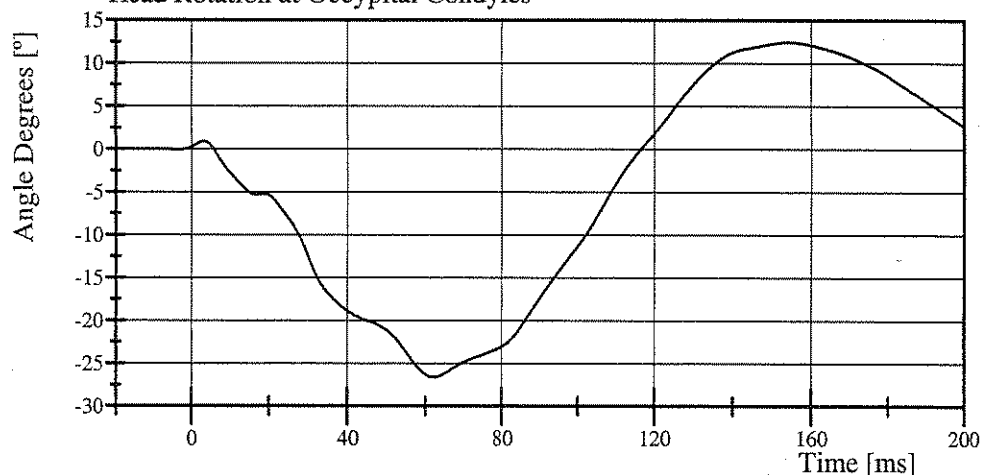


Filter Class: CFC_60

Max: 17.7 ° at 157.3 ms

Min: -48.6 ° at 52.0 ms

Head Rotation at Occypital Condyles

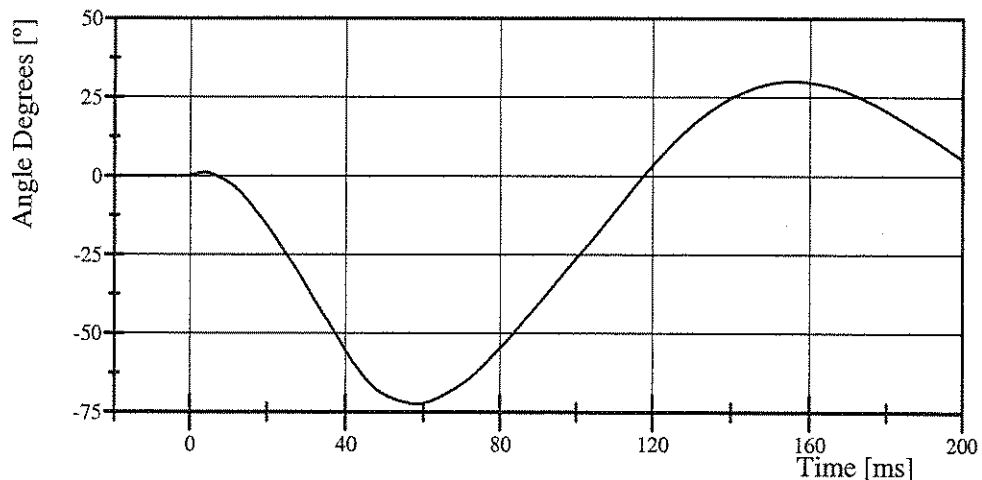


Filter Class: CFC_60

Max: 12.5 ° at 154.2 ms

Min: -26.6 ° at 62.3 ms

Total Head D-Plane Rotation



Filter Class: CFC_60

Max: 30.1 ° at 155.7 ms

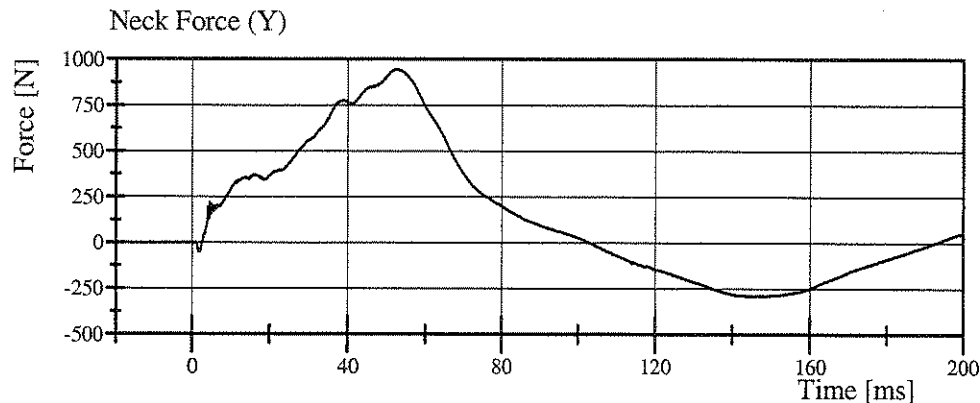
Min: -72.4 ° at 58.4 ms

Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 055 Certification No. 22-1

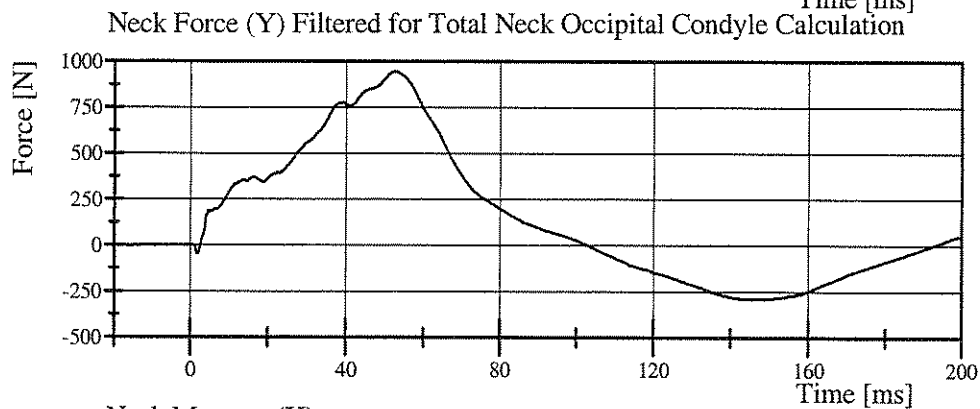
Test Date: 10/02/2006



Filter Class: CFC_1000

Max: 945.6 N at 52.4 ms

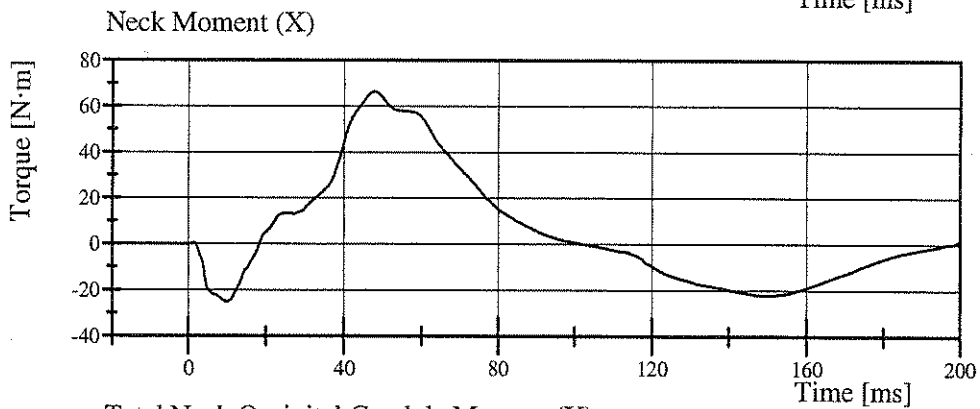
Min: -293.7 N at 147.5 ms



Filter Class: CFC_600

Max: 945.2 N at 52.3 ms

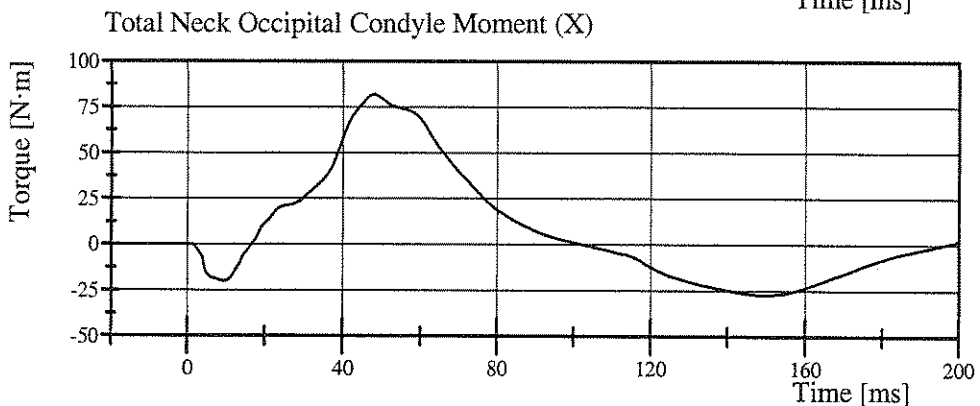
Min: -290.6 N at 145.4 ms



Filter Class: CFC_600

Max: 66.5 N·m at 47.8 ms

Min: -25.1 N·m at 10.0 ms



Filter Class: CFC_600

Max: 81.8 N·m at 47.9 ms

Min: -27.3 N·m at 150.3 ms

Transportation Research Center Inc.

3.05 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 055 Certification No. 22-1

Test Date: 10/20/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	35 %	Yes
Maximum Force at Test Velocity	849 - 1,137 N	927.2 N	Yes
Maximum Displacement at Test Velocity	30.19 - 35.17 mm	32.106 mm	Yes

Test meets specifications.

Comments:

Actual Impactor Velocity (m/s): 3.064

Damper Setting: 9.0

Technician

Jaqueline Bousle

Approved

Ron Storm

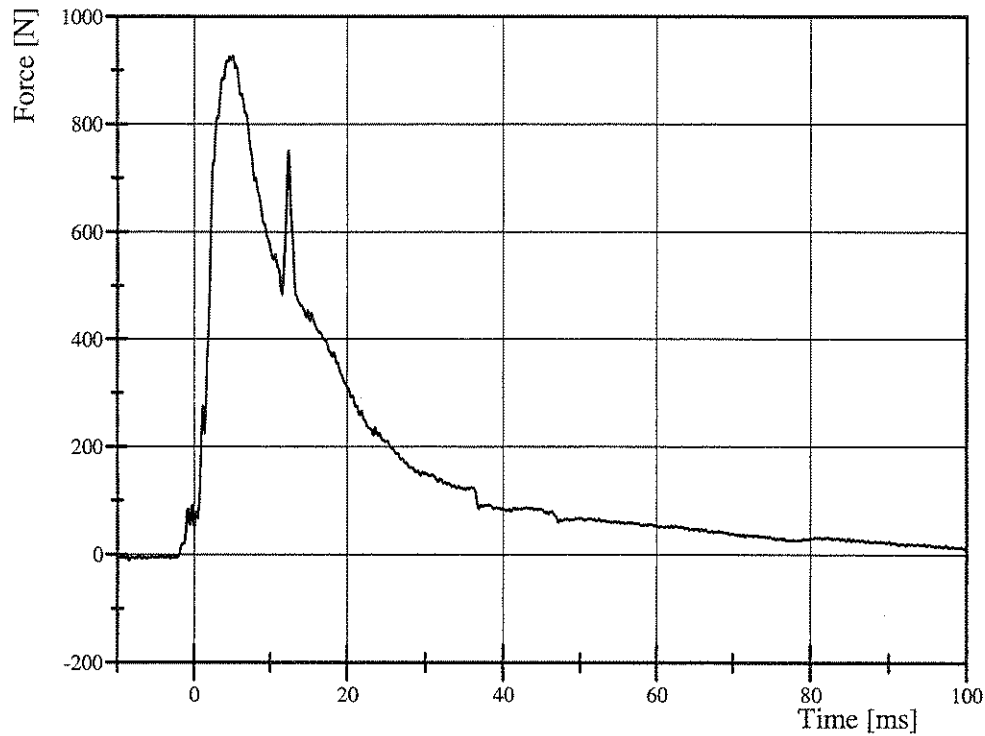
Transportation Research Center Inc.

3.05 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 055 Certification No. 22-1

Test Date: 10/20/2006

Shock Absorber Resistive Force

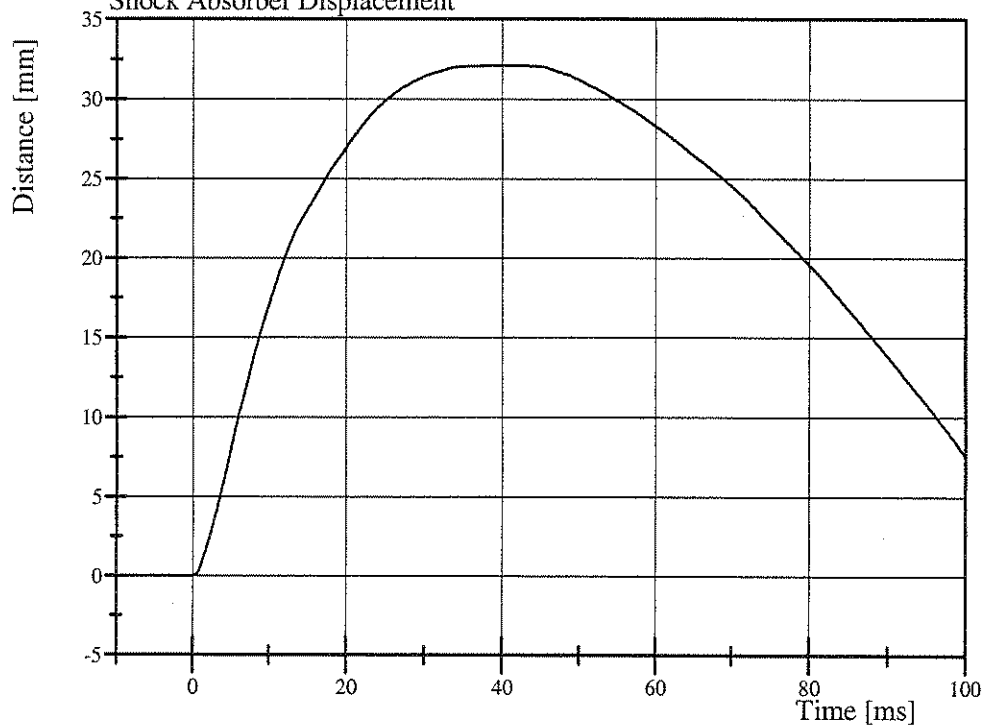


Filter Class: CFC_1000

Max: 927.2 N at 5.1 ms

Min: -10.9 N at -8.4 ms

Shock Absorber Displacement



Filter Class: CFC_1000

Max: 32.1 mm at 39.8 ms

Min: -0.0 mm at -4.9 ms

Transportation Research Center Inc.

4.27 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 055 Certification No. 22-1

Test Date: 10/20/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Maximum Force at Test Velocity	1,744 - 2,108 N	1,858.3 N	Yes
Maximum Displacement at Test Velocity	31.69 - 37.24 mm	34.677 mm	Yes

Test meets specifications.

Comments:

Actual Impactor Velocity (m/s): 4.278

Damper Setting: 9.0

Technician

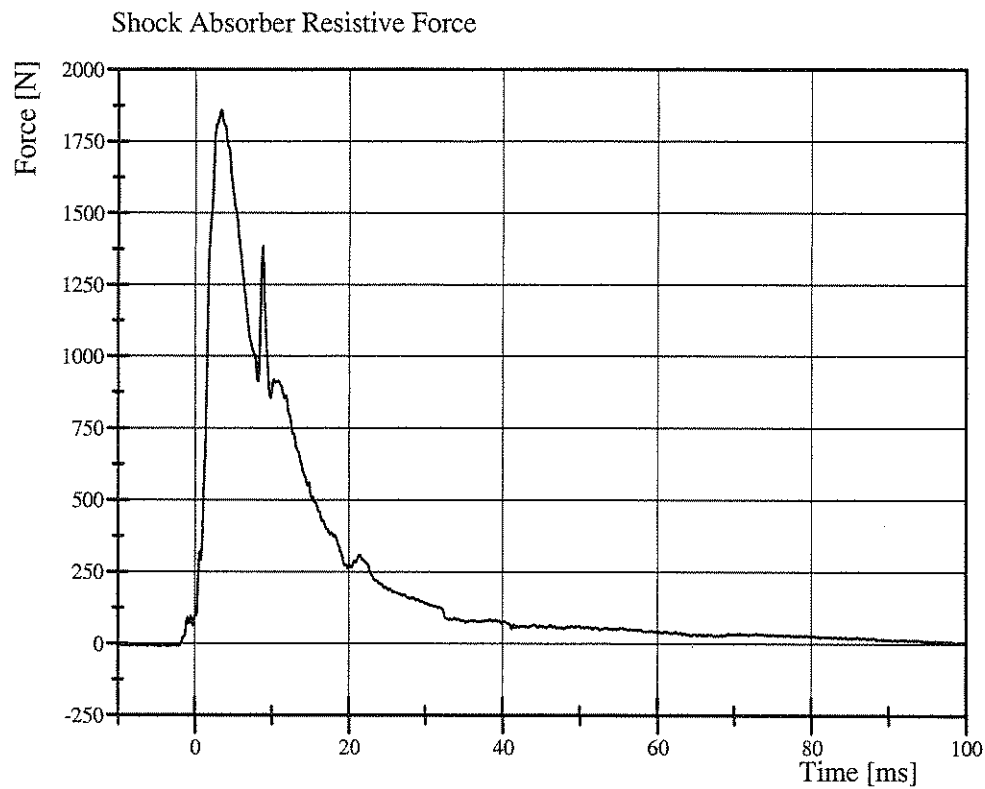
Gregory Brewster

Approved

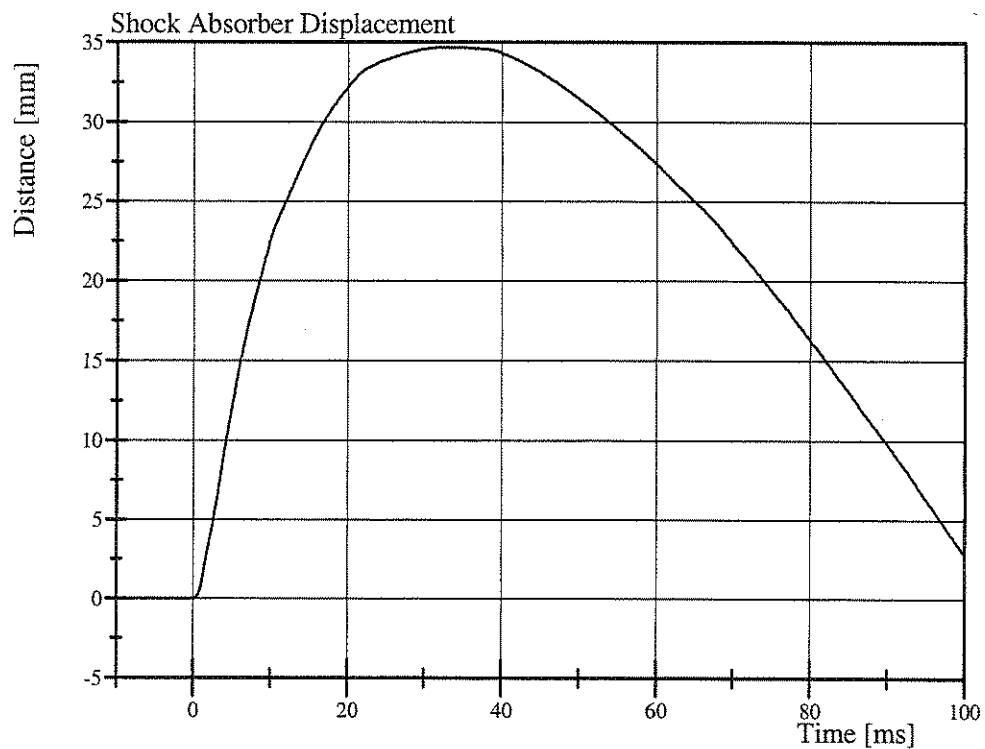
Ron Stoner

Transportation Research Center Inc.

4.27 m/s Thoracic Shock Absorber Compression
SID-HIII Serial No. 055 Certification No. 22-1
Test Date: 10/20/2006



Filter Class: CFC_1000
Max: 1,858.3 N at 3.4 ms
Min: -8.9 N at -6.1 ms



Filter Class: CFC_1000
Max: 34.7 mm at 32.6 ms
Min: -0.0 mm at -9.9 ms

Transportation Research Center Inc.

6.10 m/s Thoracic Shock Absorber Compression

SID-HIII Serial No. 055 Certification No. 22-2

Test Date: 10/20/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Maximum Force at Test Velocity	3,732 - 4,424 N	4,361.1 N	Yes
Maximum Displacement at Test Velocity	33.36 - 39.56 mm	36.298 mm	Yes

Test meets specifications.

Comments:

Actual Impactor Velocity (m/s): 6.086

Damper Setting: 9.0

Technician

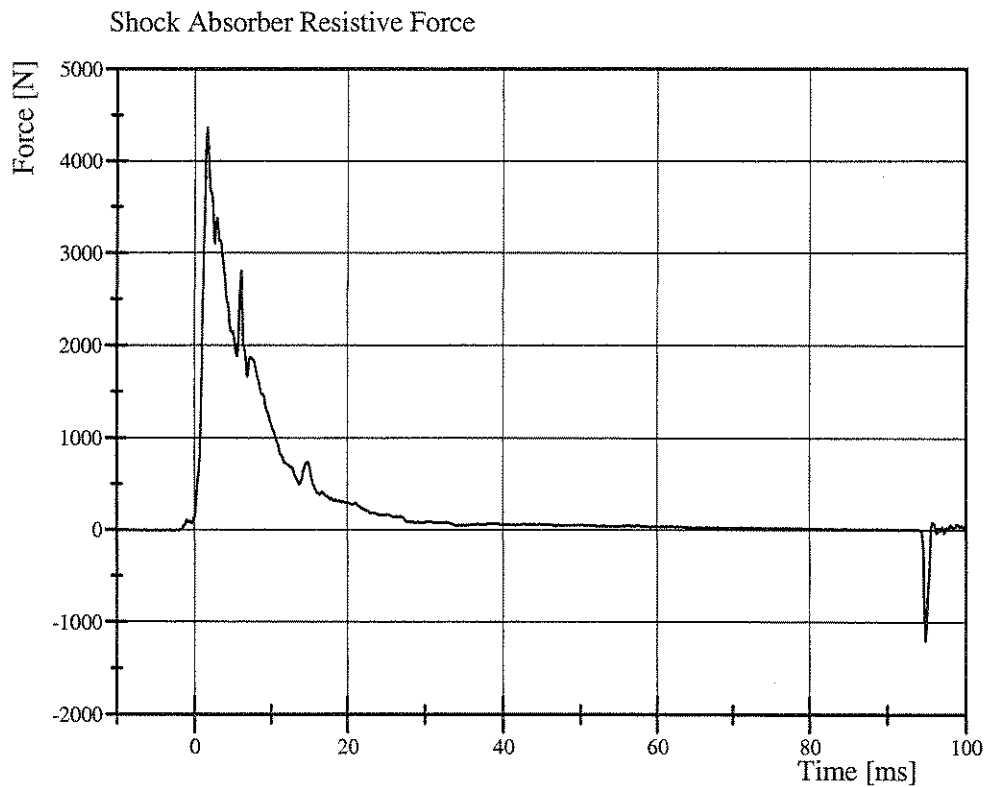
Jaqueline Boush

Approved

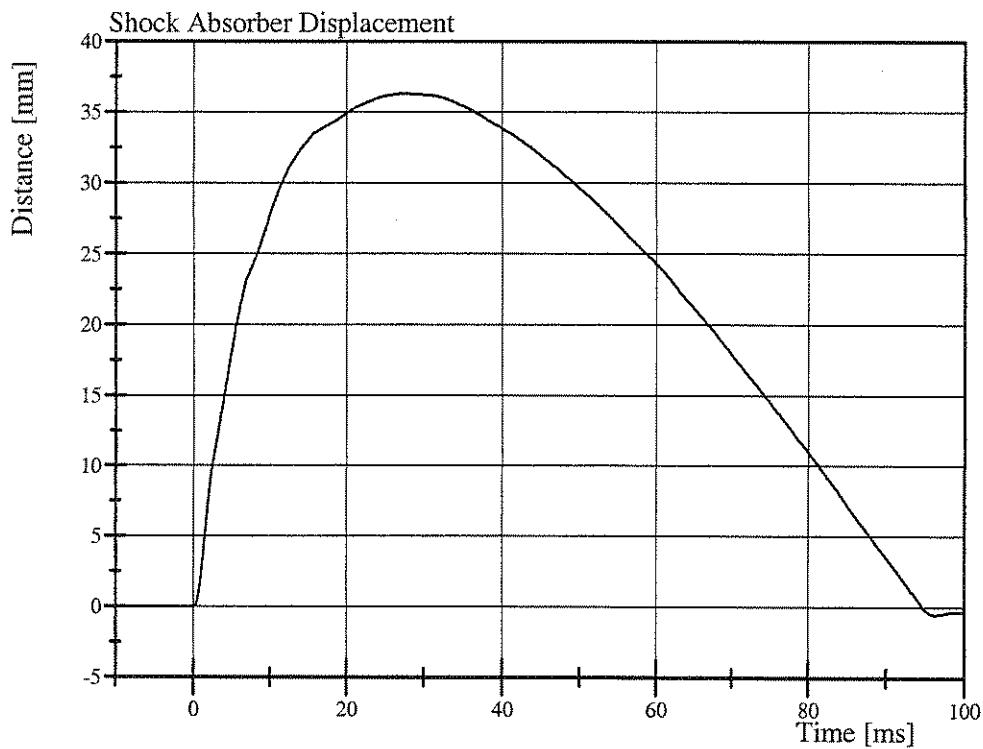
Ron Stoner

Transportation Research Center Inc.

6.10 m/s Thoracic Shock Absorber Compression
SID-HIII Serial No. 055 Certification No. 22-2
Test Date: 10/20/2006



Filter Class: CFC_1000
Max: 4,361.1 N at 1.7 ms
Min: -1,203.7 N at 94.9 ms



Filter Class: CFC_1000
Max: 36.3 mm at 27.3 ms
Min: -0.6 mm at 96.3 ms

Transportation Research Center Inc.

Left Lateral Thorax

SID-HIII Serial No. 055 Certification No. 22-1

Test Date: 10/04/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	56 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.270 m/s	Yes
Upper Rib Lateral Acceleration	37 - 46 g	44.2 g	Yes
Lower Rib Lateral Acceleration	37 - 46 g	43.5 g	Yes
Lower Spine Lateral Acceleration	15 - 22 g	19.4 g	Yes

Test meets specifications.

Comments:

Technician

Rust Brando

Approved

Ron Stoner

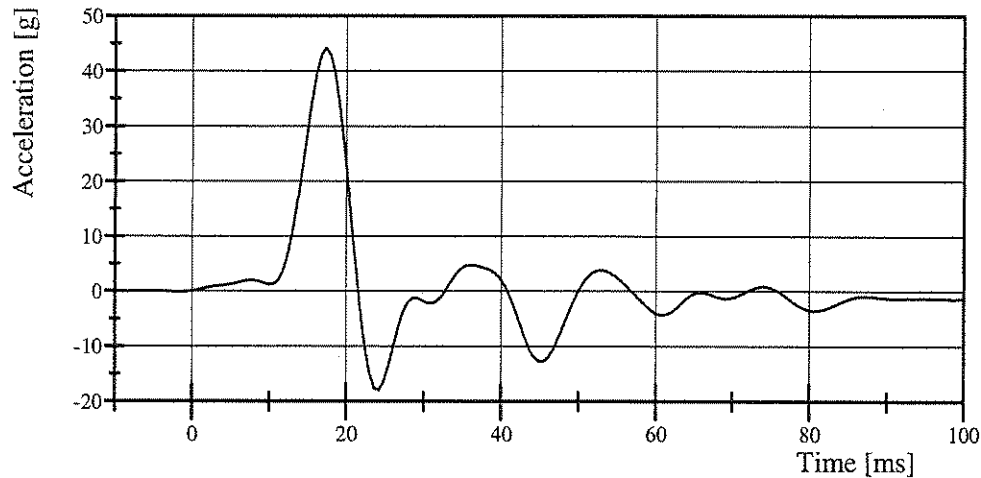
Transportation Research Center Inc.

Left Lateral Thorax

SID-HIII Serial No. 055 Certification No. 22-1

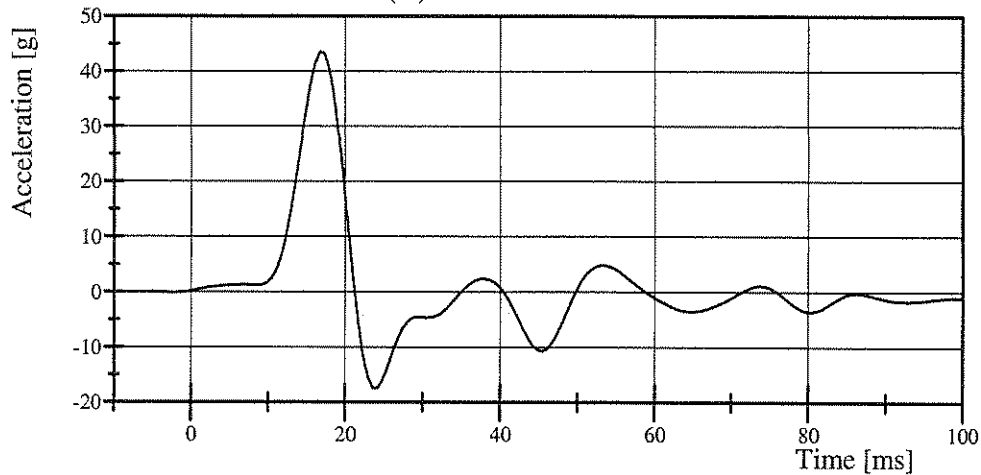
Test Date: 10/04/2006

Upper Rib Acceleration (Y)



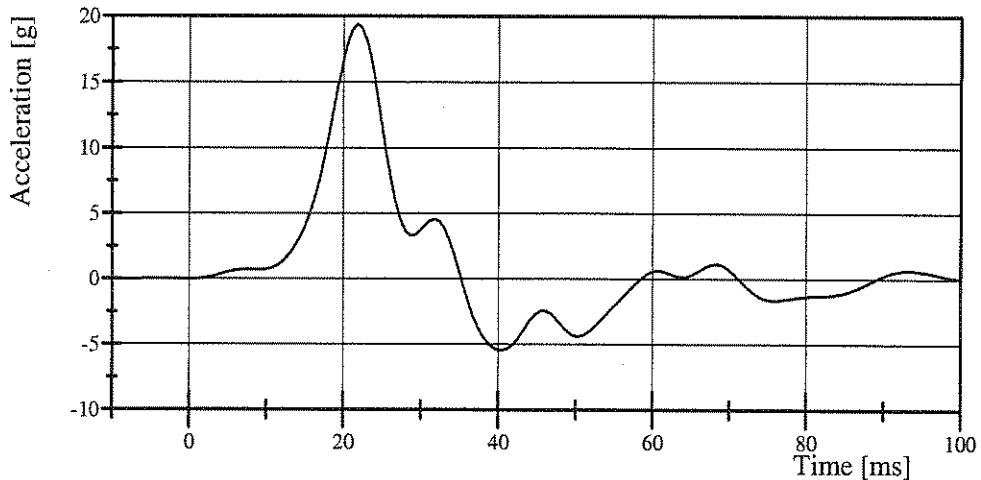
Filter Class: FIR_100
Max: 44.2 g at 17.4 ms
Min: -17.9 g at 24.2 ms

Lower Rib Acceleration (Y)



Filter Class: FIR_100
Max: 43.5 g at 16.8 ms
Min: -17.4 g at 23.7 ms

Lower Spine Acceleration (Y)



Filter Class: FIR_100
Max: 19.4 g at 21.8 ms
Min: -5.5 g at 40.5 ms

Transportation Research Center Inc.

Abdomen Compression
SID-HIII Serial No. 055 Certification No. 22-28
Test Date: 10/05/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Probe Force within Corridor	Yes	Yes	Yes
Probe Velocity	6.35 - 8.89 mm/s	7.913 mm/s	Yes

Test meets specifications.

Comments:

Technician

Robert Bravard

Approved

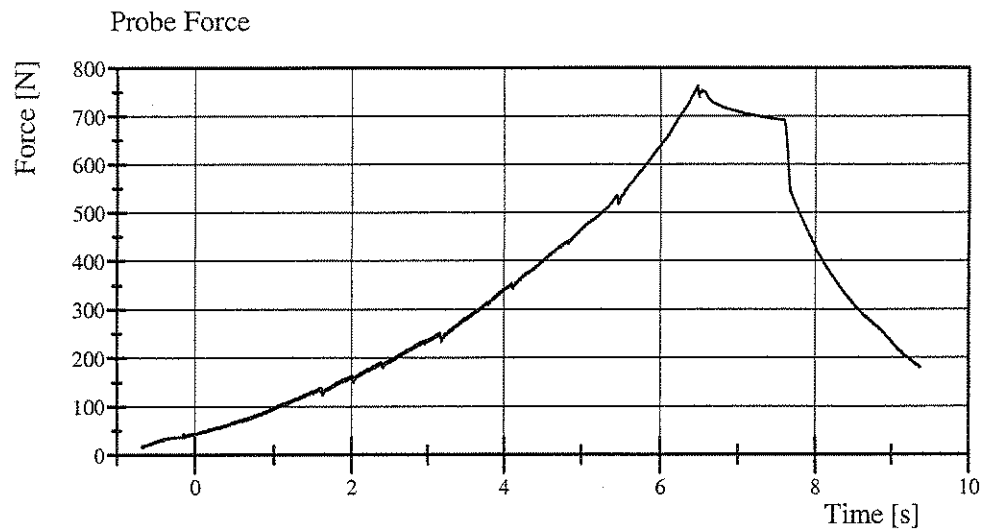
Ron Stoner

Transportation Research Center Inc.

Abdomen Compression

SID-HIII Serial No. 055 Certification No. 22-28

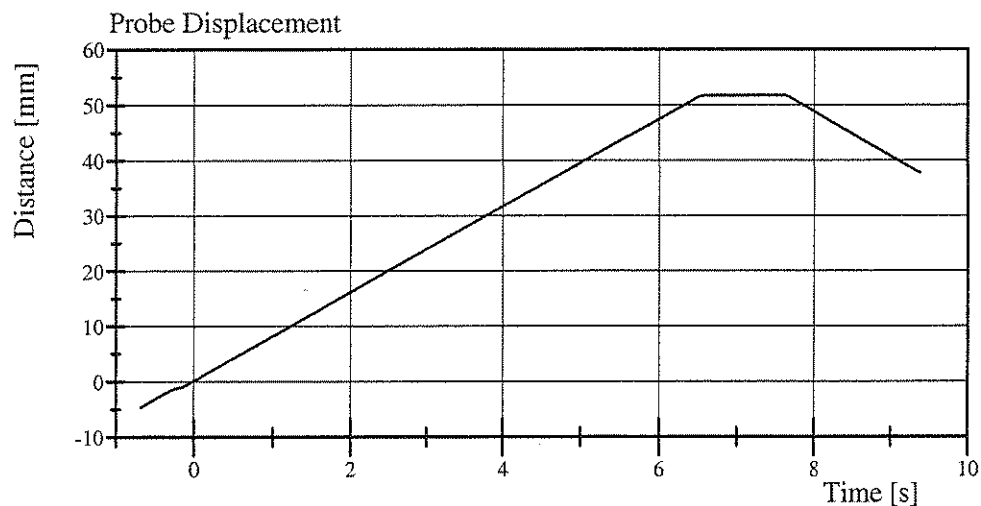
Test Date: 10/05/2006



Filter Class: CFC_600

Max: 762.1 N at 6.5 s

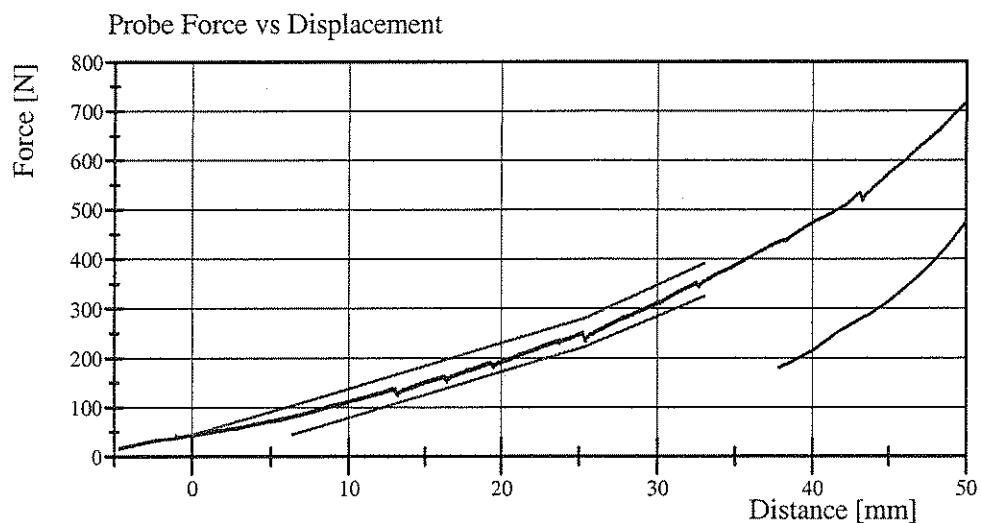
Min: 15.1 N at -0.7 s



Filter Class: CFC_180

Max: 51.7 mm at 7.6 s

Min: -4.7 mm at -0.7 s



Filter Class: CFC_600

Max: 762.1 N at 51.2 mm

Min: 15.1 N at -4.6 mm

TRANSPORTATION RESEARCH CENTER INC.

PART 572B LUMBAR FLEXION TEST

SID/HIII

CAL DATE: 04-Oct-06

TRC, INC.

TEST NO: LUFL-01

572M SN 055 TORSO FLEX CAL 22

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 – 25.6° C	21.4°C
RELATIVE HUMIDITY	10 – 70 %	58 %
FORCE AT 0 DEG. FLEXION	-27 – 27 N	0 N
FORCE AT 20 DEG OF FLEXION	98 – 151 N	142.34 N
FORCE AT 30 DEG OF FLEXION	151 – 205 N	204.62 N
FORCE AT 40 DEG OF FLEXION	205 – 258 N	257.99 N
NET RETURN ANGLE AFTER 3 MINUTES	< 12 °	3.5 °

TEST MEETS SPECIFICATIONS

TECHNICIAN

Rod Branda

Transportation Research Center Inc.

Left Lateral Pelvis

SID-HIII Serial No. 055 Certification No. 22-2

Test Date: 10/04/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	59 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.284 m/s	Yes
Pelvis Lateral Acceleration Duration above 20g	3 - 7 ms	5.6 ms	Yes
Pelvis Lateral Acceleration	40 - 60 g	52.4 g	Yes
Is Acceleration Curve Unimodal Above 20g?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Ron Baran

Approved

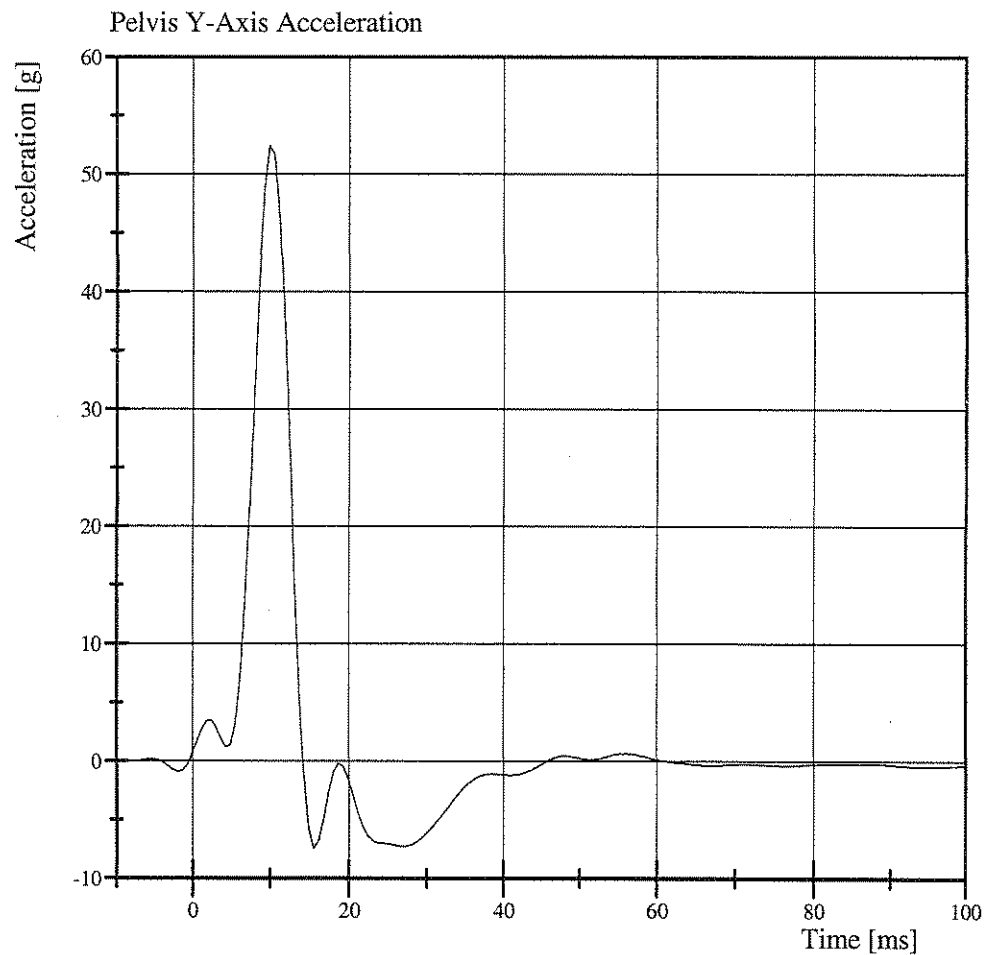
Ron Stoner

Transportation Research Center Inc.

Left Lateral Pelvis

SID-HIII Serial No. 055 Certification No. 22-2

Test Date: 10/04/2006



Filter Class: FIR_100
Max: 52.4 g at 9.9 ms
Min: -7.4 g at 15.5 ms

Calibration Test Results

Post-Test

SID HIII: 059

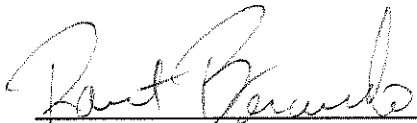
Configured for Left Side Impact

External Dimensions:	The dummy passed all external dimension requirements.
Lateral Head Drop Test:	The head passed all lateral drop test requirements.
Lateral Neck Test:	The neck passed all impact test requirements.
Lateral Thorax Impact Test:	The thorax passed all impact test requirements.
Lumbar Flexion Test:	The dummy met the lumbar flexion test requirements.
Abdominal Compression Test:	The abdomen met the compression test requirements.
Pelvis Impact Test:	The lateral pelvis passed all impact test requirements.
Thoracic Shock Absorber Test:	The thoracic shock absorber was not tested at this time.

Transportation Research Center Inc.
SID/HIII Dummy Post-Test
External Dimensions
Serial No. 059 Calibration No. 18

Test Parameter	Dimension	Specification	Results	Pass
Seated Height	SH	889.0 - 909.3 mm	906 mm	Yes
Rib Height	RH	501.7 - 520.7 mm	512 mm	Yes
Hip Pivot Height	HP	99.1 REF mm	99.1 mm	
Knee Pivot From Backline	KH	510.5 - 525.8 mm	520 mm	Yes
Knee Pivot From Floor	KV	490.2 - 505.5 mm	498 mm	Yes
Hip Width	HW	355.6 - 391.2 mm	368 mm	Yes
Top Rib Width From CVL	RW-1	165.1 - 180.3 mm	172 mm	Yes
Bottom Rib Width From CVL	RW-2	165.1 - 180.3 mm	172 mm	Yes
Difference Between Top & Bottom Rib Width from CVL		<= 2.5 mm	0.0 mm	Yes

Technician



Approved





Transportation Research Center Inc.

Left Lateral Head Drop

SID-HIII Serial No. 059 Certification No. 18-3

Test Date: 11/2/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	27 %	Yes
Peak Head Resultant Acceleration	120 - 150 g	145.6 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-6.9 g	Yes
Is Head Resultant Acceleration Curve Unimodal Within 15% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Rout Baranski

Approved

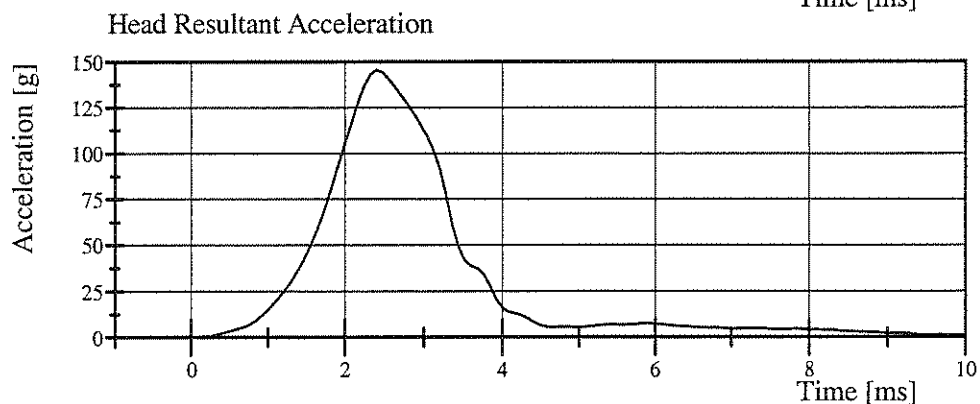
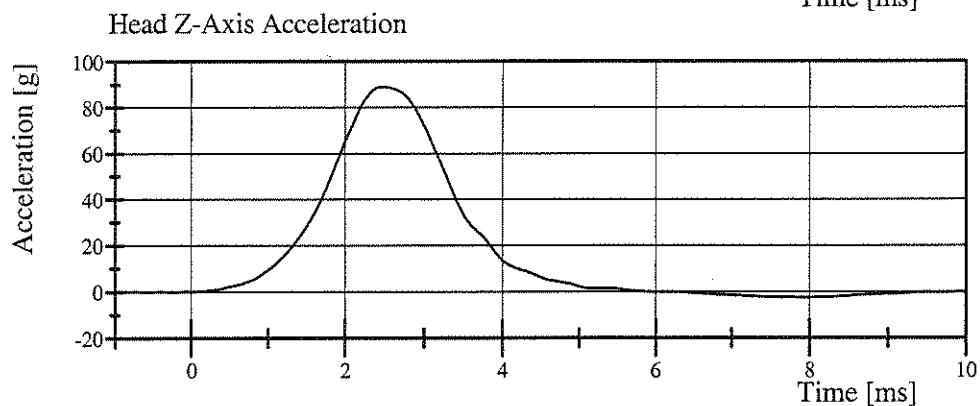
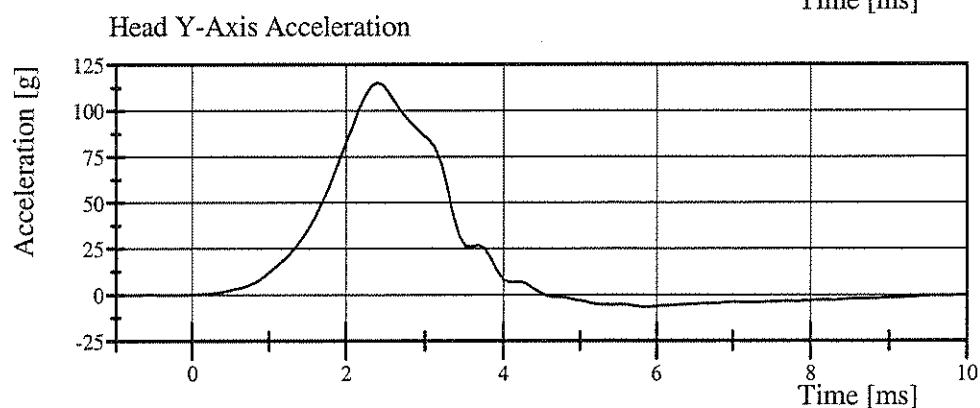
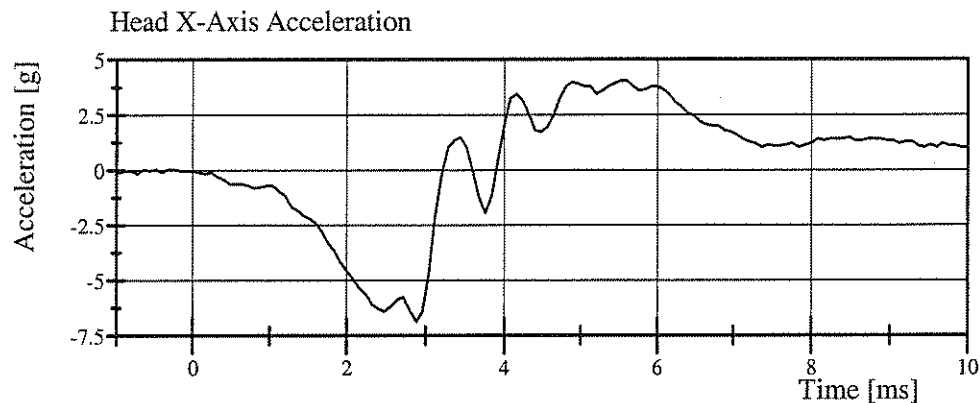
Ron Stenn

Transportation Research Center Inc.

Left Lateral Head Drop

SID-HIII Serial No. 059 Certification No. 18-3

Test Date: 11/2/2006



Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 059 Certification No. 18-1

Test Date: 11/2/2006

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	26 %	Yes
Pendulum Velocity	(-6.89) - (-7.13) m/s	-6.962 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	1.96 - 2.55 m/s	2.399 m/s	Yes
Pendulum Integrated Velocity Change at 20 ms	4.12 - 5.10 m/s	4.723 m/s	Yes
Pendulum Integrated Velocity Change at 30 ms	5.73 - 7.01 m/s	6.570 m/s	Yes
Pendulum Integrated Velocity Change at 40 to 70 ms	6.27 - 7.64 m/s	7.196 m/s	Yes
Total Head D-Plane Rotation	(-66) - (-82) °	-72.2 °	Yes
Total Head D-Plane Rotation Time to 0° after Peak Rotation	58 - 67 ms	59.4 ms	Yes
Total Neck Occipital Condyle Moment	73 - 88 N·m	86.3 N·m	Yes
Total Neck Occipital Condyle Moment Time to 0 N·m after Peak Moment	49 - 64 ms	51.5 ms	Yes
Time from Peak Moment to Peak Rotation	2 - 16 ms	6.1 ms	Yes

Test meets specifications.

Comments:

Technician



Approved

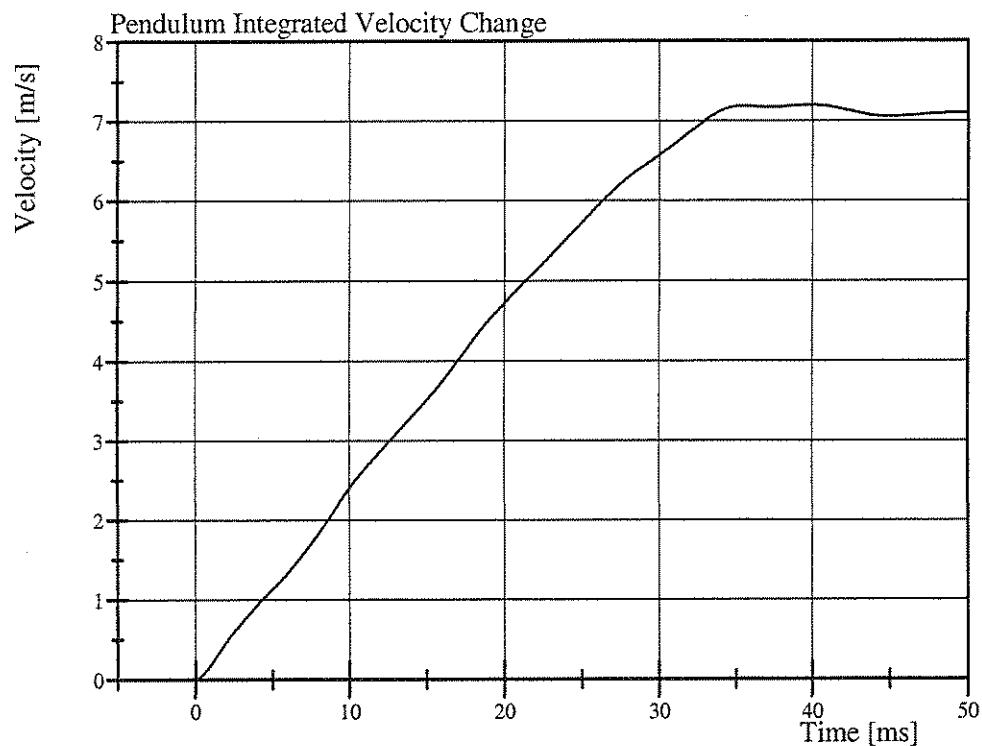
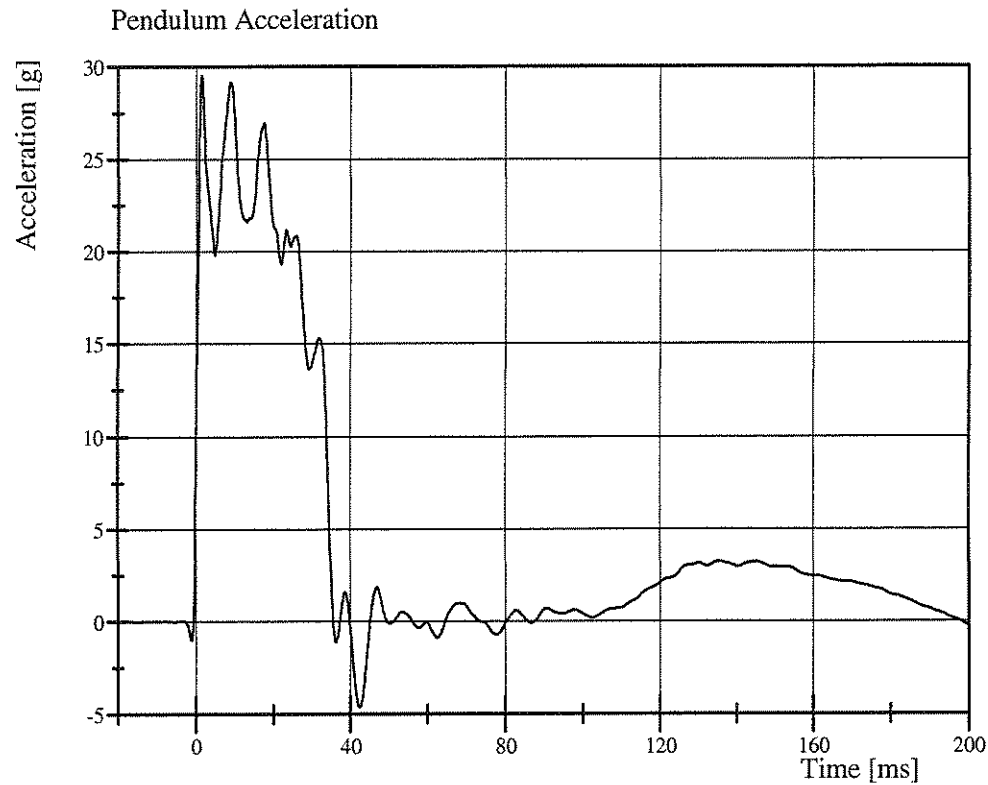


Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 059 Certification No. 18-1

Test Date: 11/2/2006



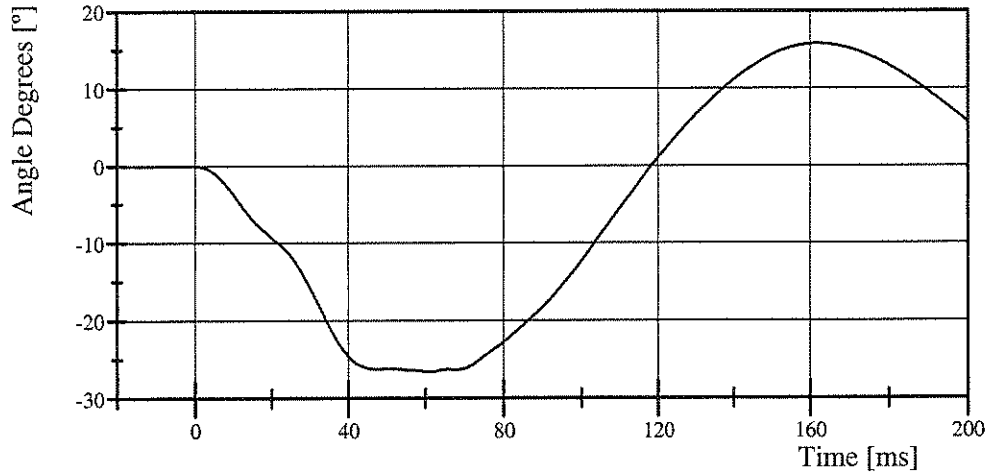
Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 059 Certification No. 18-1

Test Date: 11/2/2006

Pot Rotation at the Base of Neck

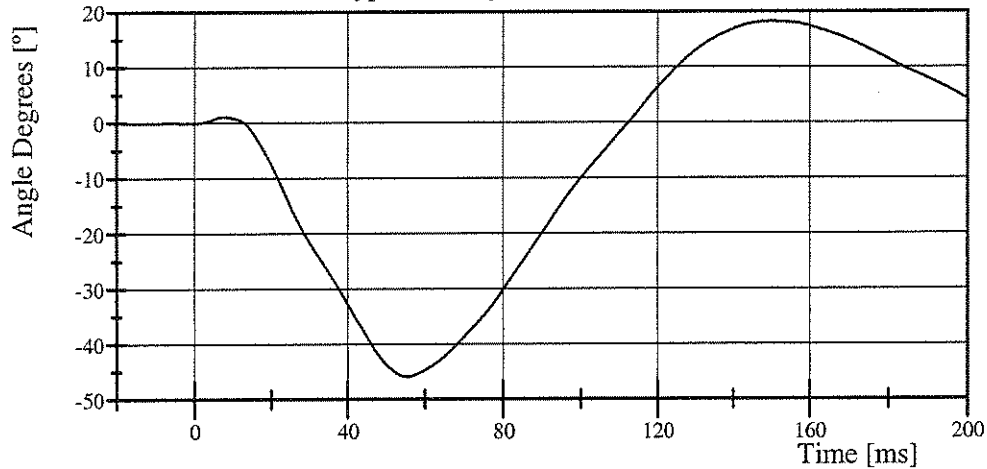


Filter Class: CFC_60

Max: 15.8 ° at 162.0 ms

Min: -26.6 ° at 61.0 ms

Head Rotation at Occypital Condyles

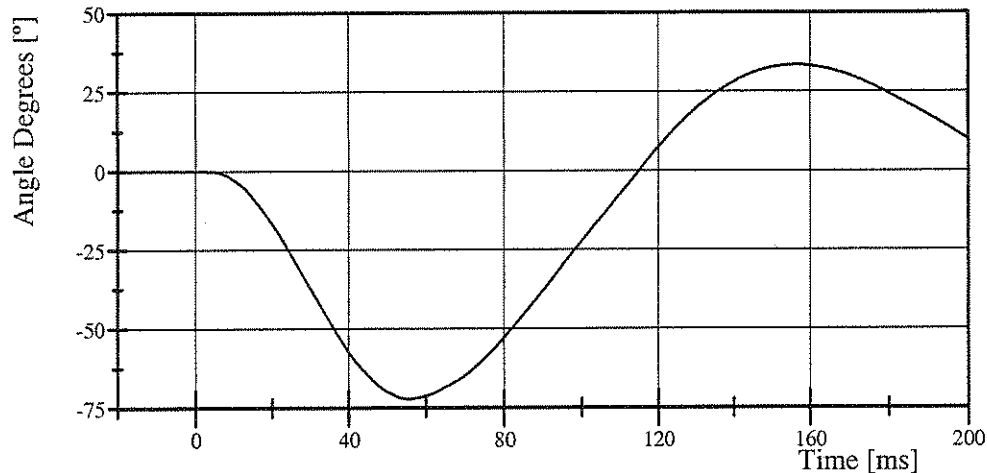


Filter Class: CFC_60

Max: 18.2 ° at 150.1 ms

Min: -45.9 ° at 55.4 ms

Total Head D-Plane Rotation



Filter Class: CFC_60

Max: 33.5 ° at 156.9 ms

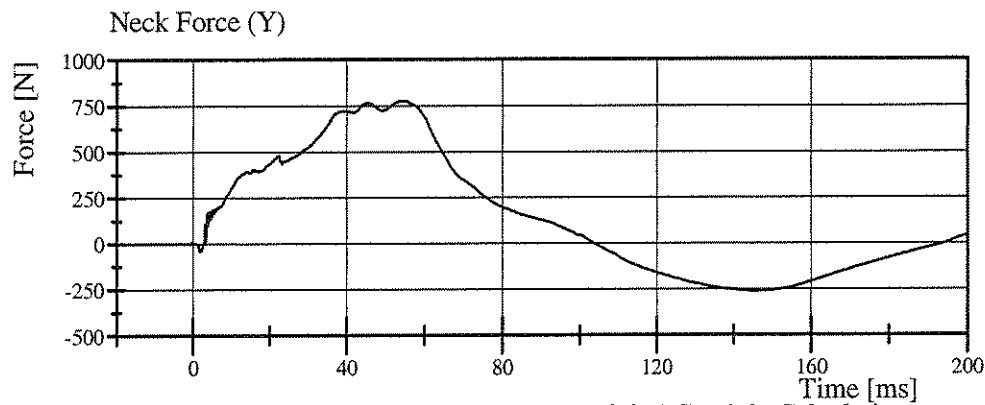
Min: -72.2 ° at 55.5 ms

Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 059 Certification No. 18-1

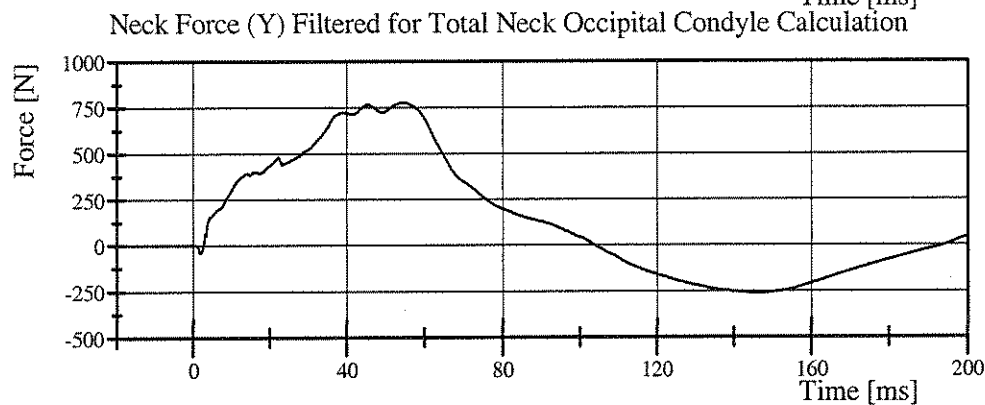
Test Date: 11/2/2006



Filter Class: CFC_1000

Max: 776.9 N at 54.4 ms

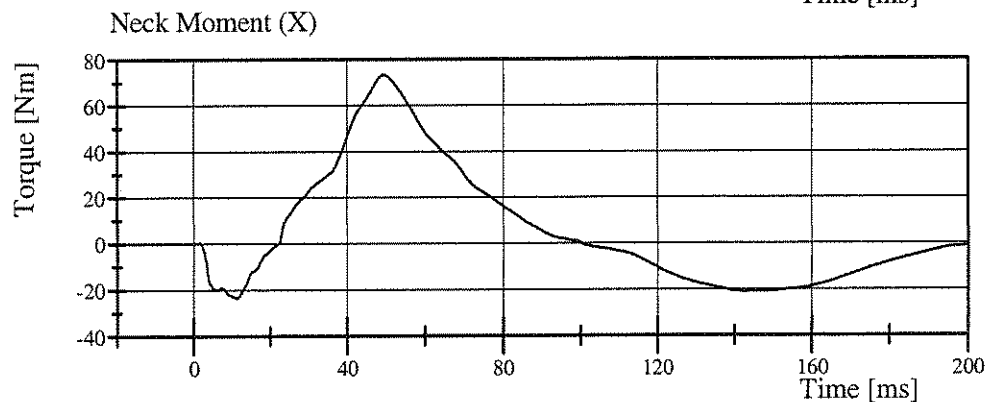
Min: -262.2 N at 145.4 ms



Filter Class: CFC_600

Max: 776.8 N at 54.7 ms

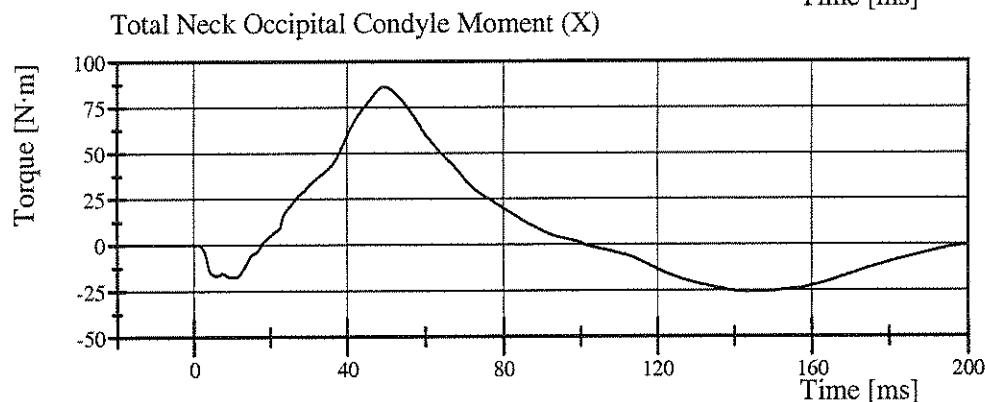
Min: -261.9 N at 145.5 ms



Filter Class: CFC_600

Max: 73.4 Nm at 49.4 ms

Min: -23.5 Nm at 11.1 ms



Filter Class: CFC_600

Max: 86.3 N·m at 49.4 ms

Min: -25.6 N·m at 143.4 ms

Transportation Research Center Inc.

Left Lateral Thorax

SID-HIII Serial No. 059 Certification No. 18-1

Test Date: 11/1/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	25 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.276 m/s	Yes
Upper Rib Lateral Acceleration	37 - 46 g	40.7 g	Yes
Lower Rib Lateral Acceleration	37 - 46 g	38.3 g	Yes
Lower Spine Lateral Acceleration	15 - 22 g	19.1 g	Yes

Test meets specifications.

Comments:

Technician

Rant Barab

Approved

Ron Stoner

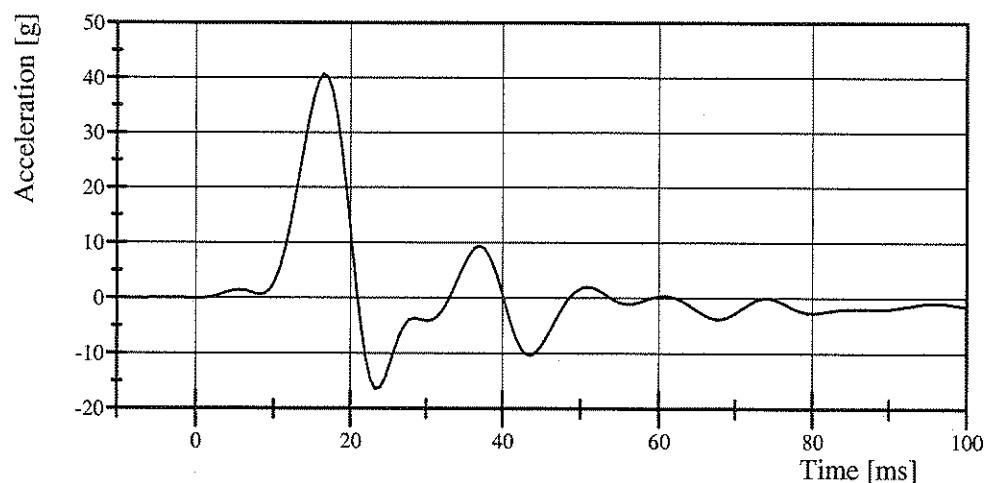
Transportation Research Center Inc.

Left Lateral Thorax

SID-HIII Serial No. 059 Certification No. 18-1

Test Date: 11/1/2006

Upper Rib Acceleration (Y)

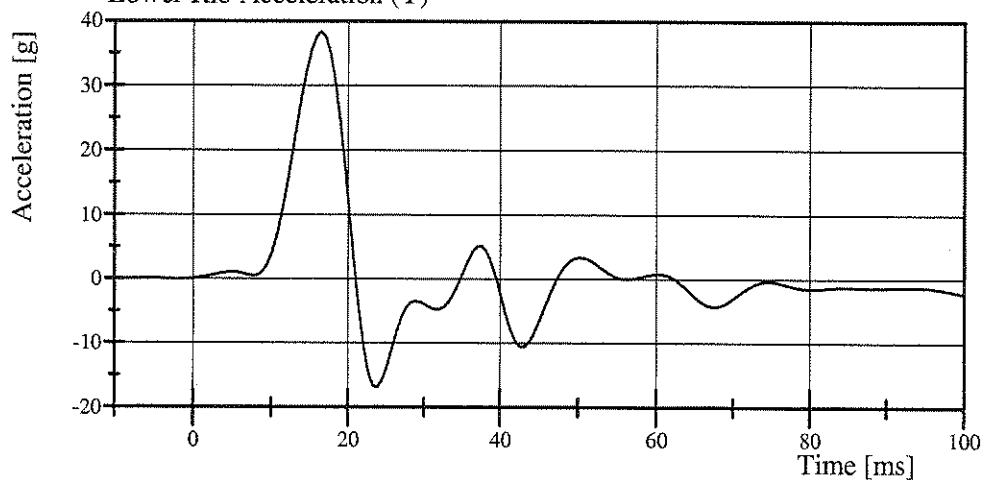


Filter Class: FIR_100

Max: 40.7 g at 16.4 ms

Min: -16.4 g at 23.3 ms

Lower Rib Acceleration (Y)

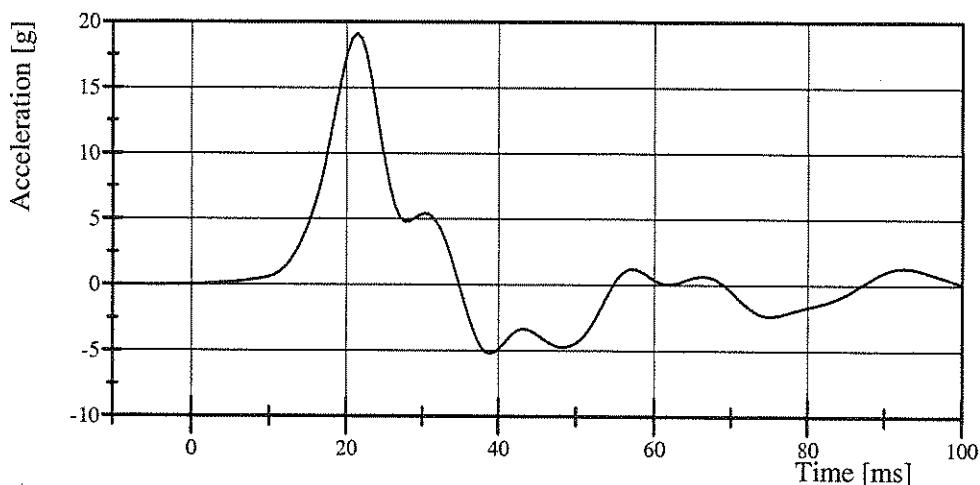


Filter Class: FIR_100

Max: 38.3 g at 16.4 ms

Min: -16.9 g at 23.8 ms

Lower Spine Acceleration (Y)



Filter Class: FIR_100

Max: 19.1 g at 21.4 ms

Min: -5.2 g at 38.9 ms

Transportation Research Center Inc.

Abdomen Compression

SID-HIII Serial No. 059 Certification No. 18-5

Test Date: 11/2/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	27 %	Yes
Probe Force within Corridor	Yes	Yes	Yes
Probe Velocity	6.35 - 8.89 mm/s	8.039 mm/s	Yes

Test meets specifications.

Comments:

Technician

Rust Berend

Approved

Ron Stoner

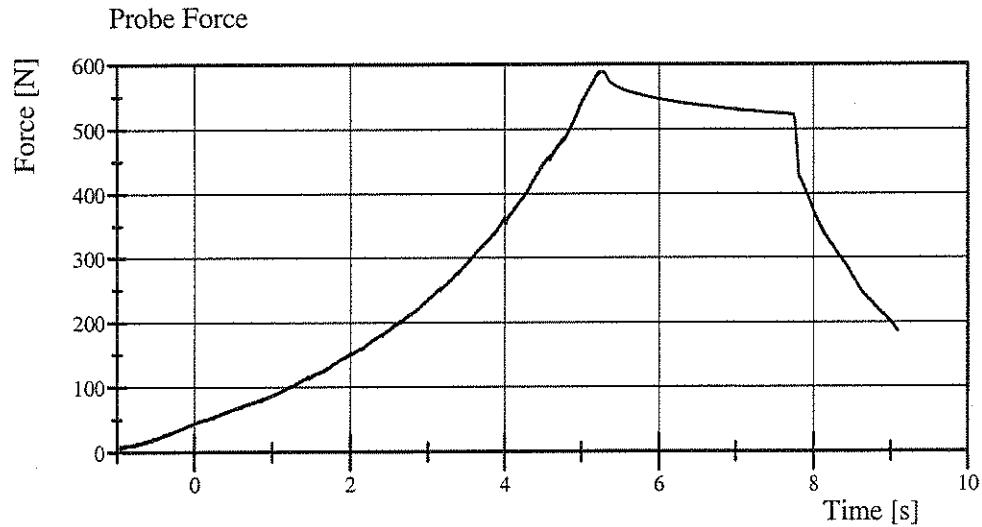


Transportation Research Center Inc.

Abdomen Compression

SID-HIII Serial No. 059 Certification No. 18-5

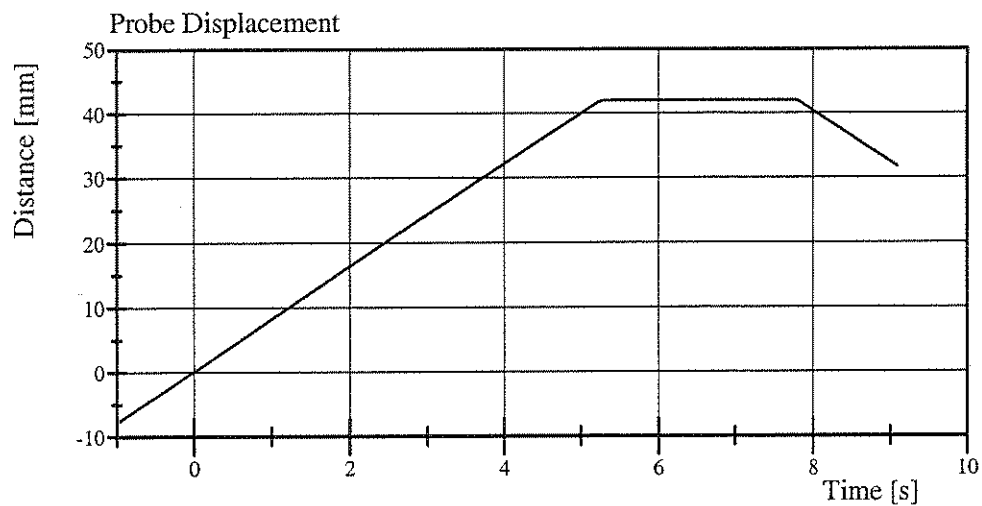
Test Date: 11/2/2006



Filter Class: CFC_600

Max: 588.6 N at 5.3 s

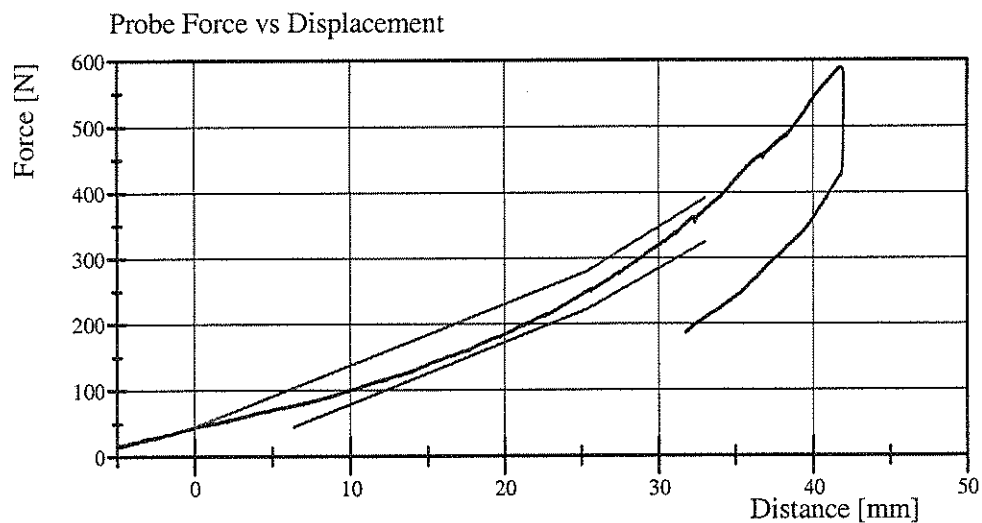
Min: 5.2 N at -1.0 s



Filter Class: CFC_180

Max: 42.0 mm at 7.6 s

Min: -7.6 mm at -1.0 s



Filter Class: CFC_600

Max: 588.6 N at 41.8 mm

Min: 5.2 N at -7.6 mm

TRANSPORTATION RESEARCH CENTER INC.

LUMBAR FLEXION TEST

SID PART 572B

CAL DATE: 02-Nov-06

TRC, INC. TEST NO: LUFL-01 572B SN 059 TORSO FLEX CAL 18

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 – 25.6° C	21.6 C
RELATIVE HUMIDITY	10 – 70 %	26 %
FORCE AT 0 DEG. FLEXION	-27 – 27 N	0 N
FORCE AT 20 DEG OF FLEXION	98 – 151 N	120 N
FORCE AT 30 DEG OF FLEXION	151 – 205 N	152 N
FORCE AT 40 DEG OF FLEXION	205 – 258 N	206 N
NET RETURN ANGLE AFTER 3 MINUTES	< 12 °	8.0 °

TEST MEETS SPECIFICATIONS

TECHNICIAN Ron Stoner

Transportation Research Center Inc.

Left Lateral Pelvis

SID-HIII Serial No. 059 Certification No. 18-1

Test Date: 11/1/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	24 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.281 m/s	Yes
Pelvis Lateral Acceleration Duration above 20g	3 - 7 ms	6.3 ms	Yes
Pelvis Lateral Acceleration	40 - 60 g	46.2 g	Yes
Is Acceleration Curve Unimodal Above 20g?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Rout Barand

Approved

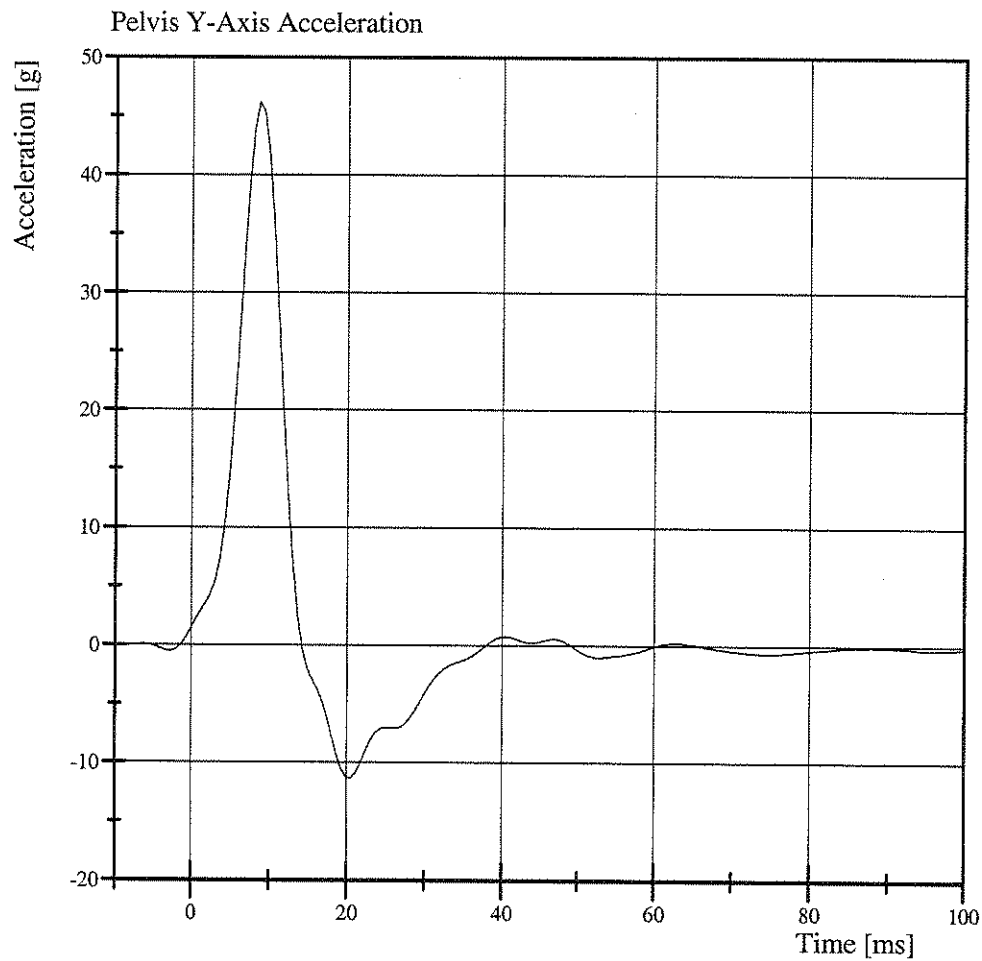
Ron Stoner

Transportation Research Center Inc.

Left Lateral Pelvis

SID-HIII Serial No. 059 Certification No. 18-1

Test Date: 11/1/2006



Filter Class: FIR_100
Max: 46.2 g at 8.6 ms
Min: -11.3 g at 20.5 ms

Calibration Test Results

Post-Test

SID HIII: 055

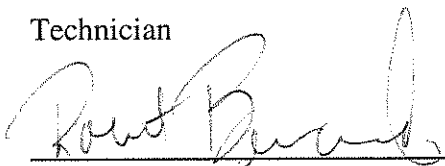
Configured for Left Side Impact

External Dimensions:	The dummy passed all external dimension requirements.
Lateral Head Drop Test:	The head passed all lateral drop test requirements.
Lateral Neck Test:	The neck passed all impact test requirements.
Lateral Thorax Impact Test:	The thorax passed all impact test requirements.
Lumbar Flexion Test:	The dummy met the lumbar flexion test requirements.
Abdominal Compression Test:	The abdomen met the compression test requirements.
Pelvis Impact Test:	The lateral pelvis passed all impact test requirements.
Thoracic Shock Absorber Test:	The thoracic shock absorber was not tested at this time.

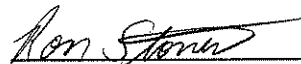
Transportation Research Center Inc.
SID/HIII Dummy
External Dimensions
Serial No. 055 Calibration No. 23

Test Parameter	Dimension	Specification	Results	Pass
Seated Height	SH	889.0 - 909.3 mm	904 mm	Yes
Rib Height	RH	501.7 - 520.7 mm	502 mm	Yes
Hip Pivot Height	HP	99.1 REF mm	99.1 mm	
Knee Pivot From Backline	KH	510.5 - 525.8 mm	521 mm	Yes
Knee Pivot From Floor	KV	490.2 - 505.5 mm	493 mm	Yes
Hip Width	HW	355.6 - 391.2 mm	376 mm	Yes
Top Rib Width From CVL	RW-1	165.1 - 180.3 mm	171 mm	Yes
Bottom Rib Width From CVL	RW-2	165.1 - 180.3 mm	170 mm	Yes
Difference Between Top & Bottom Rib Width from CVL		<= 2.5 mm	1.0 mm	Yes

Technician



Approved





Transportation Research Center Inc.

Left Lateral Head Drop

SID-HIII Serial No. 055 Certification No. 23-1

Test Date: 11/2/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	27 %	Yes
Peak Head Resultant Acceleration	120 - 150 g	139.4 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	5.0 g	Yes
Is Head Resultant Acceleration Curve Unimodal Within 15% of Peak?	Yes	Yes	Yes

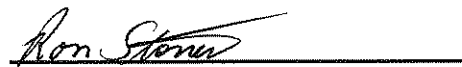
Test meets specifications.

Comments:

Technician



Approved

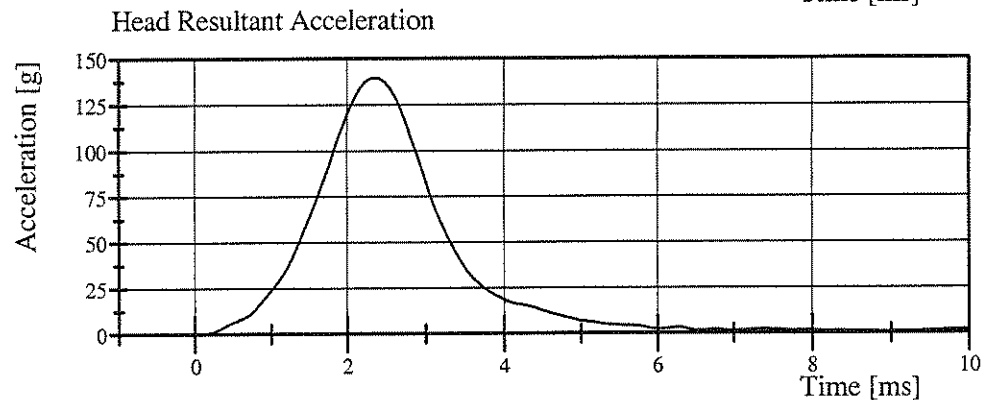
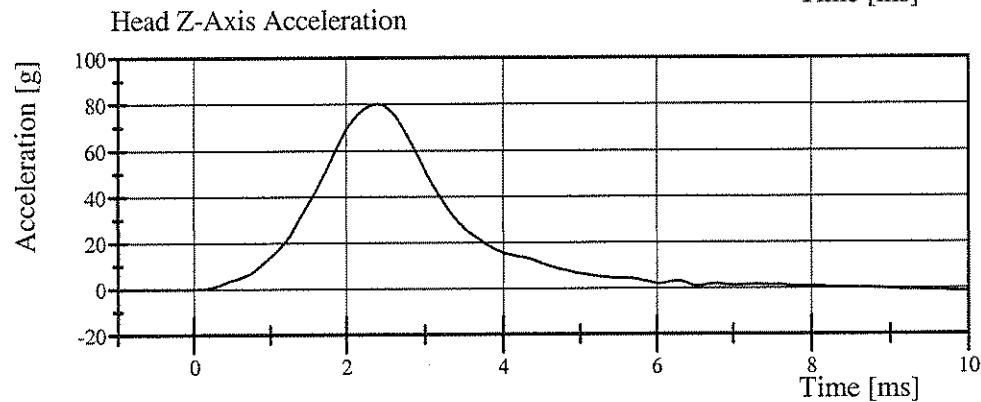
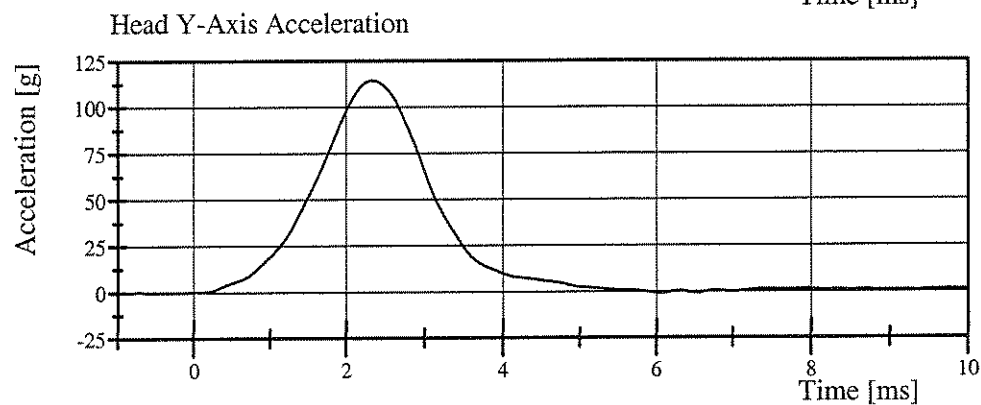
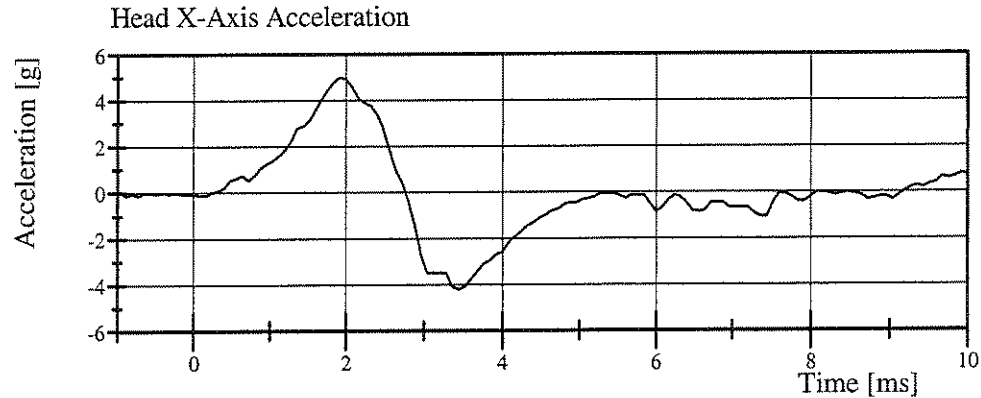


Transportation Research Center Inc.

Left Lateral Head Drop

SID-HIII Serial No. 055 Certification No. 23-1

Test Date: 11/2/2006



Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 055 Certification No. 23-4

Test Date: 11/2/2006

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	27 %	Yes
Pendulum Velocity	(-6.89) - (-7.13) m/s	-6.977 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	1.96 - 2.55 m/s	2.253 m/s	Yes
Pendulum Integrated Velocity Change at 20 ms	4.12 - 5.10 m/s	4.458 m/s	Yes
Pendulum Integrated Velocity Change at 30 ms	5.73 - 7.01 m/s	6.302 m/s	Yes
Pendulum Integrated Velocity Change at 40 to 70 ms	6.27 - 7.64 m/s	7.209 m/s	Yes
Total Head D-Plane Rotation	(-66) - (-82) °	-72.4 °	Yes
Total Head D-Plane Rotation Time to 0° after Peak Rotation	58 - 67 ms	60.4 ms	Yes
Total Neck Occipital Condyle Moment	73 - 88 N·m	84.7 N·m	Yes
Total Neck Occipital Condyle Moment Time to 0 N·m after Peak Moment	49 - 64 ms	54.1 ms	Yes
Time from Peak Moment to Peak Rotation	2 - 16 ms	8.7 ms	Yes

Test meets specifications.

Comments:

Technician

Rout Berube

Approved

Alan Storer

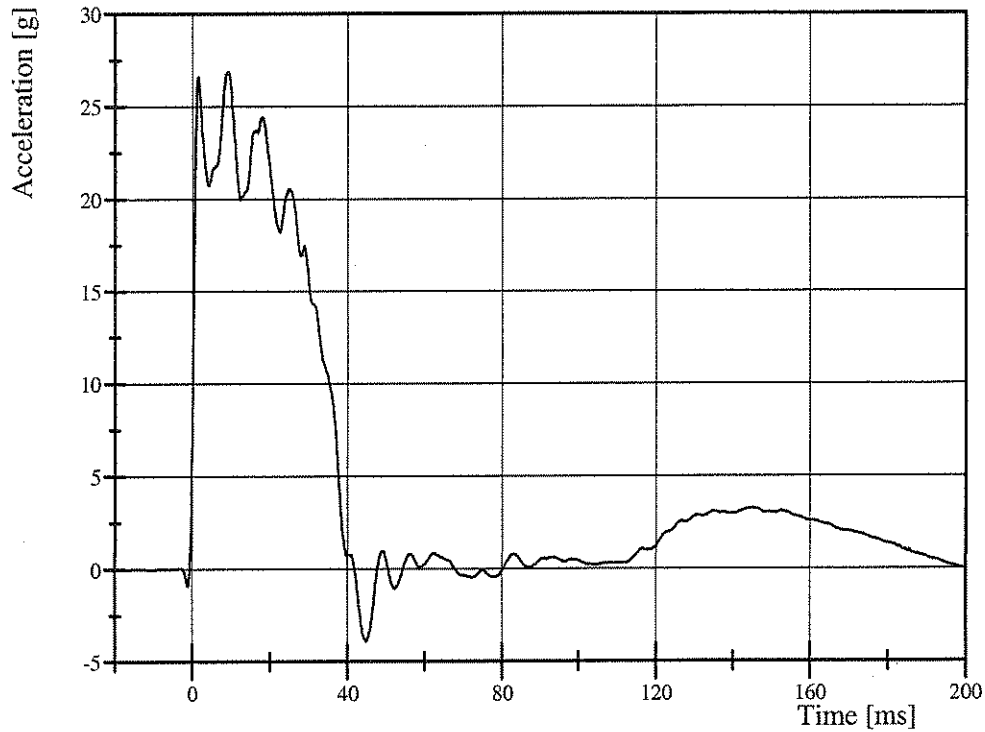
Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 055 Certification No. 23-4

Test Date: 11/2/2006

Pendulum Acceleration

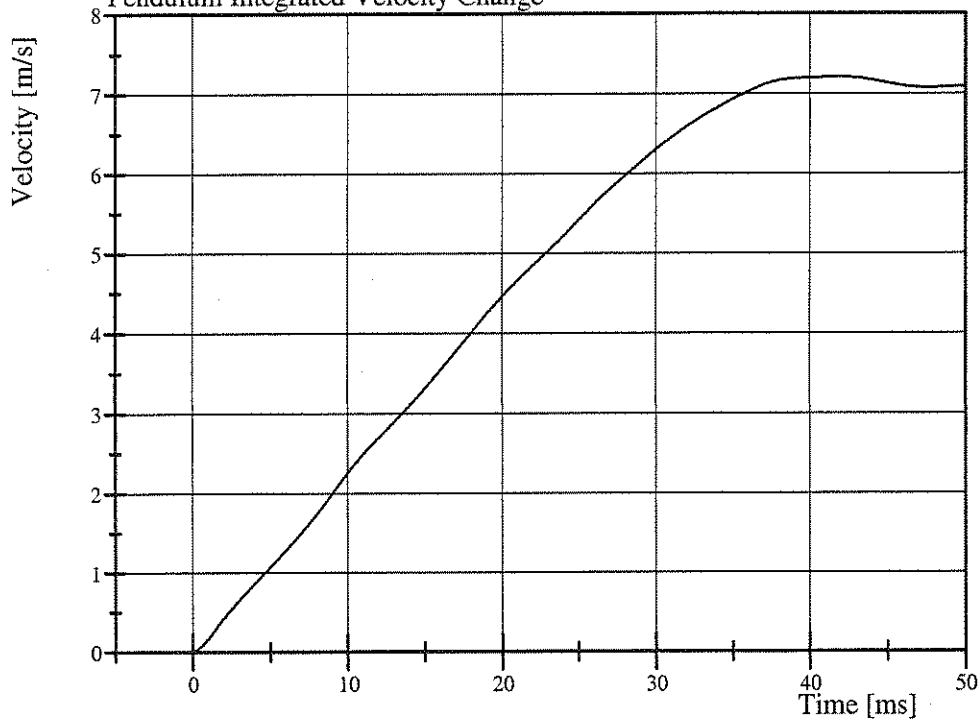


Filter Class: CFC_180

Max: 26.9 g at 9.2 ms

Min: -3.9 g at 44.7 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180

Max: 7.2 m/s at 41.8 ms

Min: 0.0 m/s at 0.0 ms

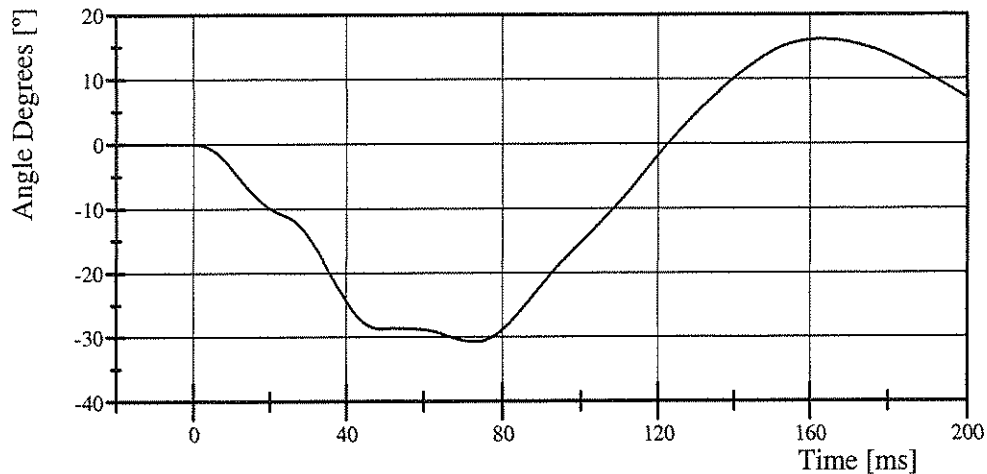
Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 055 Certification No. 23-4

Test Date: 11/2/2006

Pot Rotation at the Base of Neck

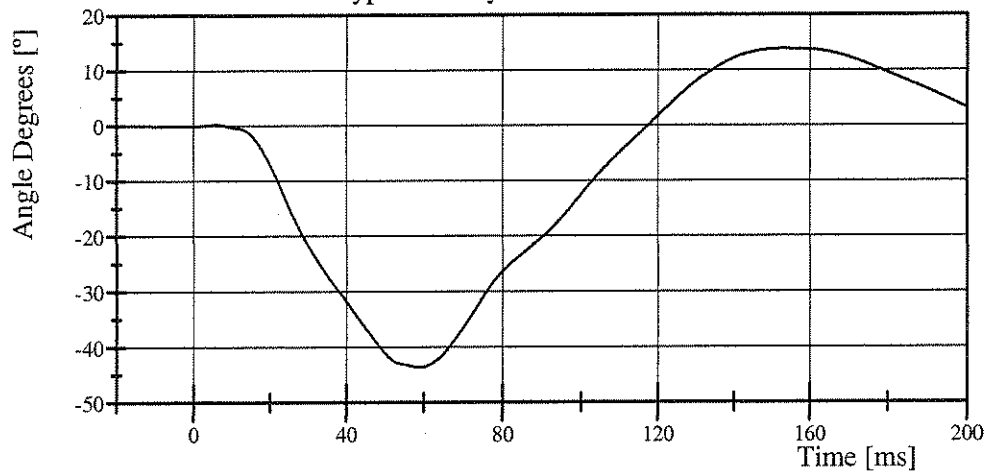


Filter Class: CFC_60

Max: 16.1 ° at 163.0 ms

Min: -30.7 ° at 73.4 ms

Head Rotation at Occypital Condyles

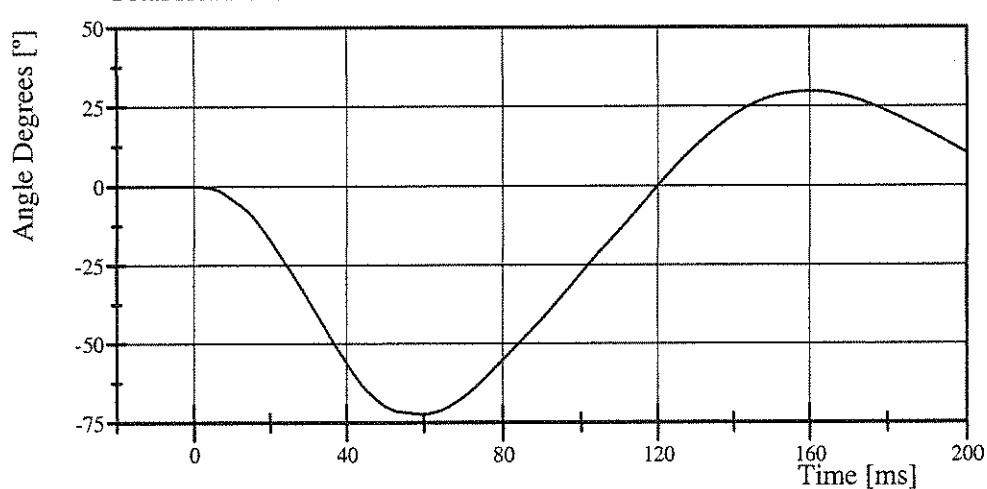


Filter Class: CFC_60

Max: 13.9 ° at 153.0 ms

Min: -43.6 ° at 59.1 ms

Total Head D-Plane Rotation



Filter Class: CFC_60

Max: 29.8 ° at 160.5 ms

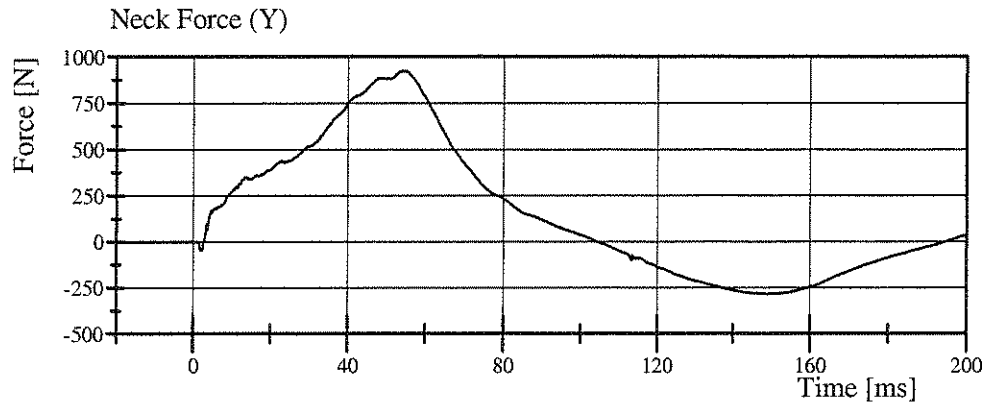
Min: -72.4 ° at 59.6 ms

Transportation Research Center Inc.

Left Lateral Neck

SID-HIII Serial No. 055 Certification No. 23-4

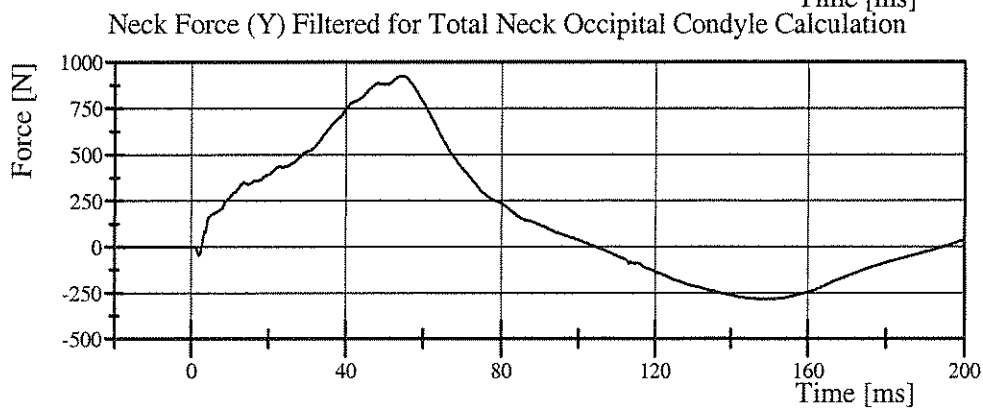
Test Date: 11/2/2006



Filter Class: CFC_1000

Max: 924.4 N at 54.4 ms

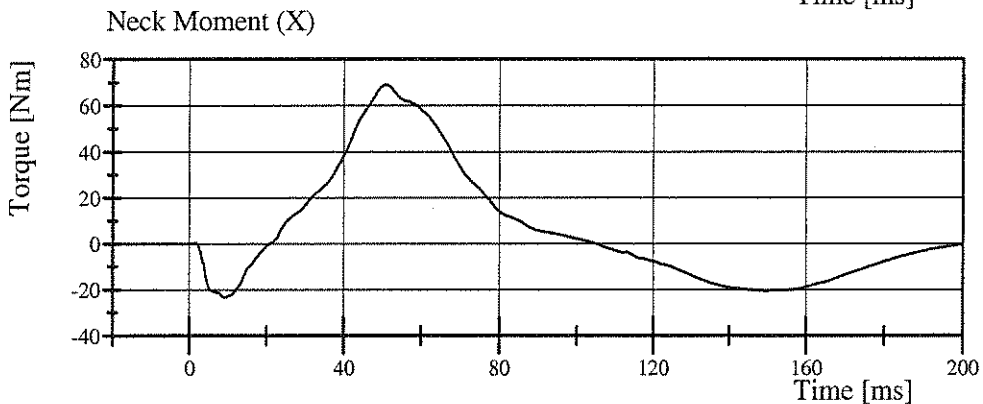
Min: -284.5 N at 148.8 ms



Filter Class: CFC_600

Max: 924.2 N at 54.5 ms

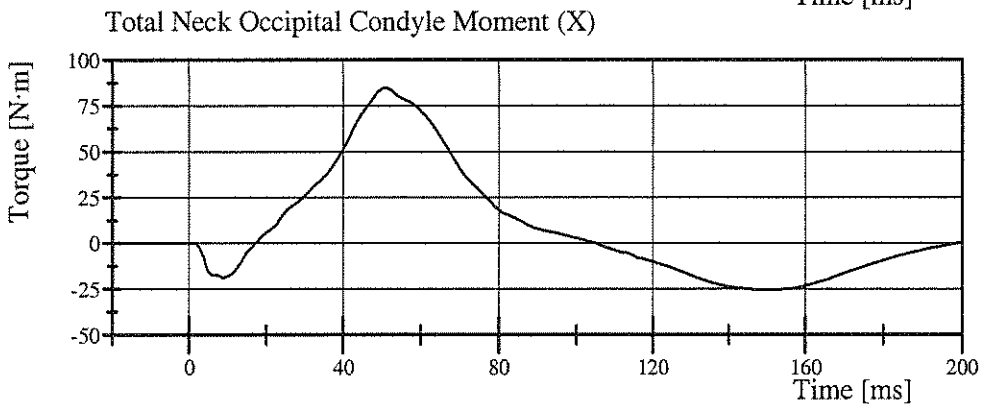
Min: -284.1 N at 148.8 ms



Filter Class: CFC_600

Max: 69.0 Nm at 50.9 ms

Min: -23.2 Nm at 9.1 ms



Filter Class: CFC_600

Max: 84.7 N·m at 50.9 ms

Min: -25.5 N·m at 149.8 ms

Transportation Research Center Inc.

Left Lateral Thorax

SID-HIII Serial No. 055 Certification No. 23-1

Test Date: 10/31/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.292 m/s	Yes
Upper Rib Lateral Acceleration	37 - 46 g	44.5 g	Yes
Lower Rib Lateral Acceleration	37 - 46 g	43.1 g	Yes
Lower Spine Lateral Acceleration	15 - 22 g	20.4 g	Yes

Test meets specifications.

Comments:

Technician

Rout Bando

Approved

Ron. Thomas

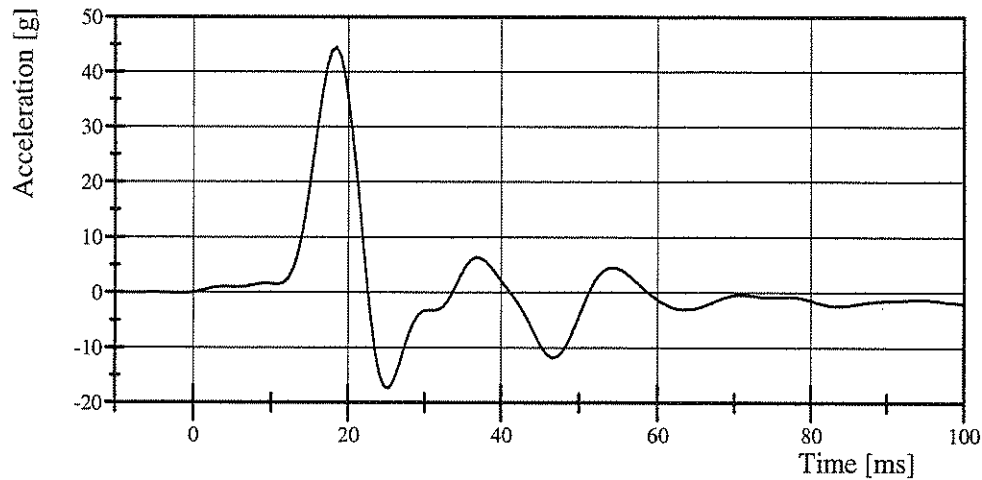
Transportation Research Center Inc.

Left Lateral Thorax

SID-HIII Serial No. 055 Certification No. 23-1

Test Date: 10/31/2006

Upper Rib Acceleration (Y)

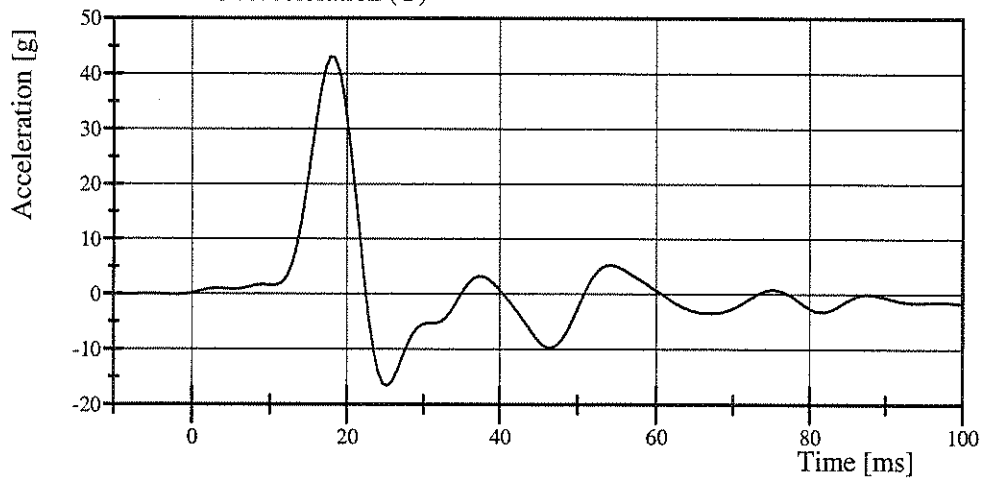


Filter Class: FIR_100

Max: 44.5 g at 18.5 ms

Min: -17.3 g at 25.4 ms

Lower Rib Acceleration (Y)

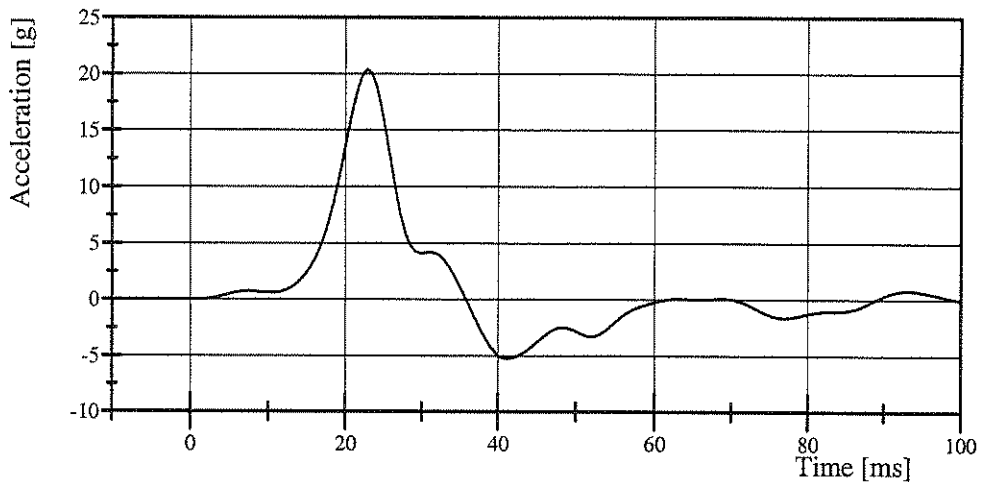


Filter Class: FIR_100

Max: 43.1 g at 17.9 ms

Min: -16.6 g at 25.4 ms

Lower Spine Acceleration (Y)



Filter Class: FIR_100

Max: 20.4 g at 22.9 ms

Min: -5.3 g at 41.0 ms

Transportation Research Center Inc.

Abdomen Compression

SID-HIII Serial No. 055 Certification No. 23-3

Test Date: 11/2/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	28 %	Yes
Probe Force within Corridor	Yes	Yes	Yes
Probe Velocity	6.35 - 8.89 mm/s	7.921 mm/s	Yes

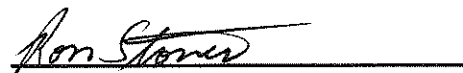
Test meets specifications.

Comments:

Technician



Approved

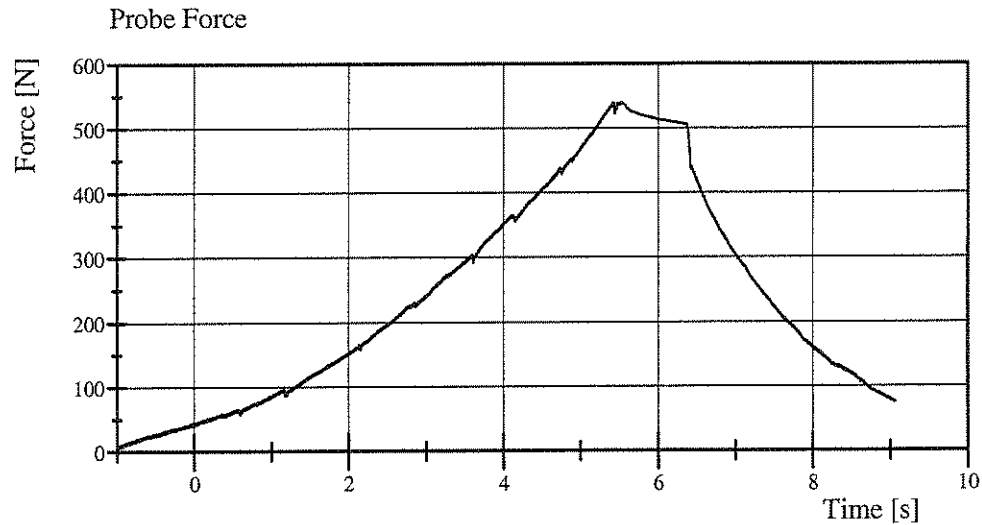


Transportation Research Center Inc.

Abdomen Compression

SID-HIII Serial No. 055 Certification No. 23-3

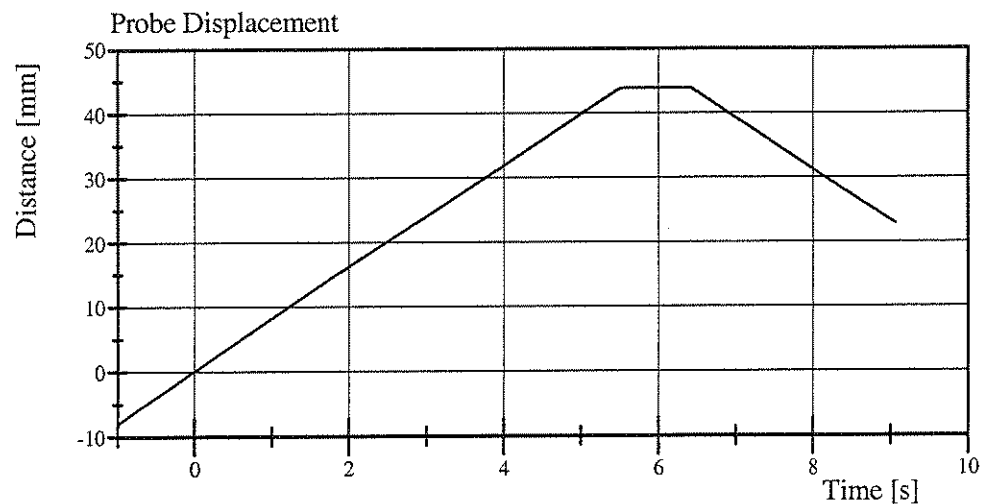
Test Date: 11/2/2006



Filter Class: CFC_600

Max: 539.2 N at 5.5 s

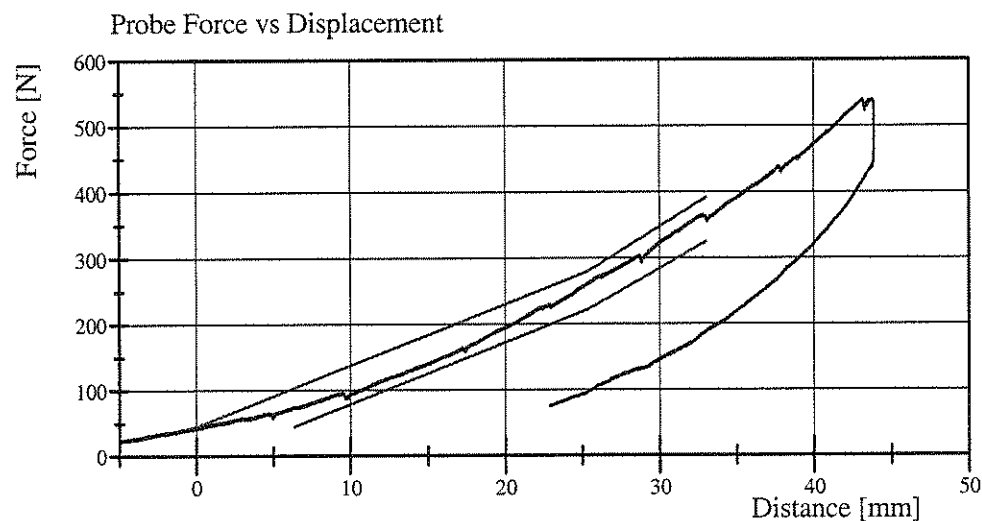
Min: 6.0 N at -1.0 s



Filter Class: CFC_180

Max: 43.9 mm at 6.4 s

Min: -8.0 mm at -1.0 s



Filter Class: CFC_600

Max: 539.2 N at 43.8 mm

Min: 6.0 N at -7.9 mm

Transportation Research Center Inc.

Left Lateral Pelvis

SID-HIII Serial No. 055 Certification No. 23-3

Test Date: 10/31/2006

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
Impactor Velocity	4.27 - 4.33 m/s	4.316 m/s	Yes
Pelvis Lateral Acceleration			
Duration above 20g	3 - 7 ms	5.5 ms	Yes
Pelvis Lateral Acceleration	40 - 60 g	54.2 g	Yes
Is Acceleration Curve Unimodal Above 20g?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Randy Berube

Approved

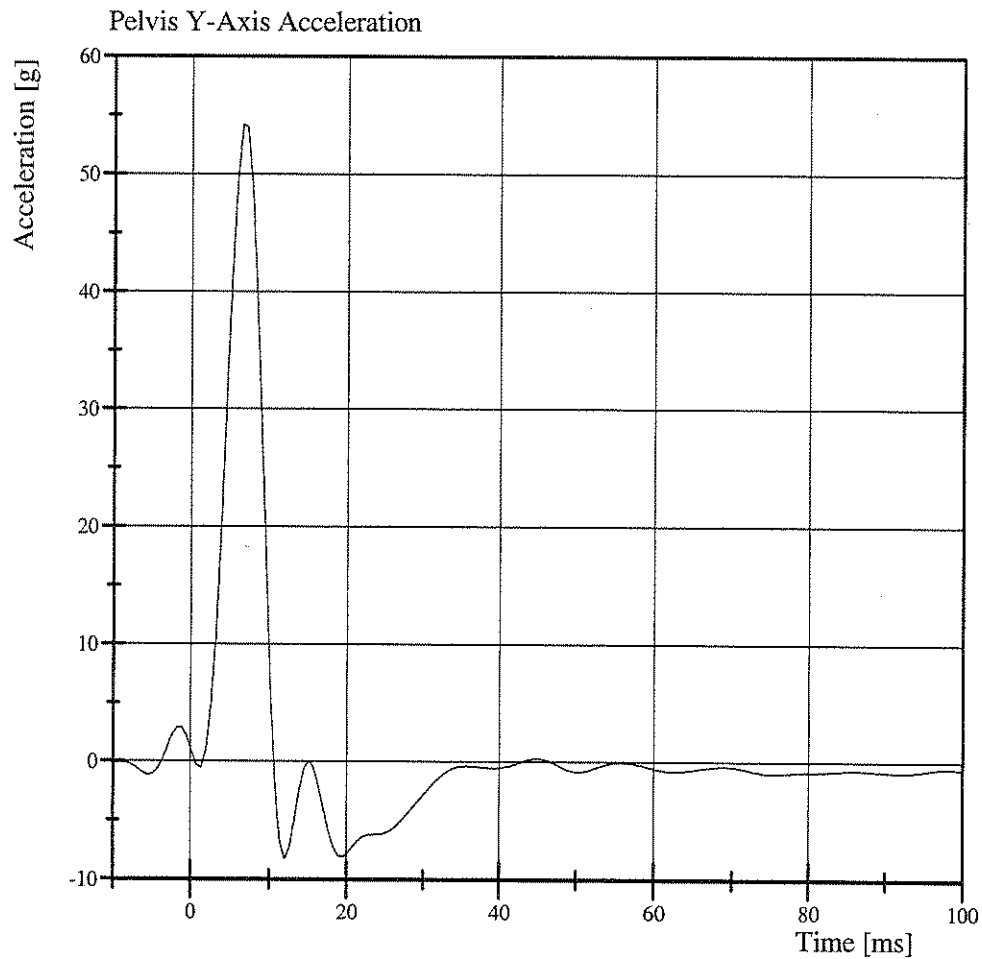
Ken Stover

Transportation Research Center Inc.

Left Lateral Pelvis

SID-HIII Serial No. 055 Certification No. 23-3

Test Date: 10/31/2006



Filter Class: FIR_100

Max: 54.2 g at 6.4 ms

Min: -8.3 g at 12.0 ms

TRANSPORTATION RESEARCH
CENTER INC.



SID or SID/HIII

Test Date: 10/26/06

Type: SID HIII S/N: 059 Mfg.: ASTC

Proj./Seg. No.: 20020455/ 3040 Test Eng: Walter D. Dudek

ITEM	PRE-USE	POST-USE
HEAD:		
Skull Cap Bolts: tight and no wires pinched	X	
Head Skin Condition	X	X
* Neck Load Cell Cables: secure, taped, and with strain relief	X	
Accel. Cable Exit (left or right)	N/A	
NECK:		
Rubber Condition and Separation From End Caps	X	X
NECK – SID/HIII only:		
Condyle Pin, Set Screws	X	
* Neck Cable Torque (10-14 in lb) Actual: <u>12</u>	X	
* Nodding Blocks Condition and Position (Post-test Joint Function)	X	X
THORAX:		
Jacket & Abdomen Condition	X	X
Stacked Shoulder Foams and Bolts	X	X
Rib Wrap Condition	X	X
Rib Cage Spring and Support Assembly	X	X
Rib Cage Bolts	X	X
Damper Rear Attachment Ring, Pivot Pins, and Bracket	X	X
Location and Adjustment of Chest Pot Bracket and Collars	N/A	X
Chest Pot Rod End Nuts and Eyebolt	N/A	
Arm Foam Orientation/Condition	X	X
Thorax/Lumbar Spine Bolts / Condition and Separation from End Caps	X	X
Adjust rib cage position to full extension	X	
PELVIS:		
Iliac Crest Bone	X	X
Flesh Condition	X	X
Tightness and Alignment of H-Point Tool Insert	X	
Hips Range of Motion and 1-2g Adjustment (before calibration only)	X	
Upper Femur Bolt Adjustment and Position	X	
LEGS AND FEET:		
Knee Skins and Castings Condition	X	X
Femur Load Cell Bolts	X	
Breakaway Femur Bolts - function	X	
Knee Joint Function and Range of Motion	X	X
Leg Skin Condition and Position	X	X
Ankle Range of Motion	X	X
Foot Condition	X	X
OTHER:		
Cleanliness	X	
Target Position	X	
Clothes and Shoes Blue	X	
One G Joint Adjustments	X	
Verify channel s against assembly and Check connectors (intact & labeled)	X	
ATTACH TEMPERATURE LOGGER TO DUMMY / DOWNLOAD	X	X

* Items checked during calibration; these items need checked when the dummy is used without recalibration

Pre Test Inspection Completed By: J. Clarridge Date: 10/25/06

Post Test Inspection Completed By: J. Clarridge Date: 10/30/06

TRANSPORTATION RESEARCH
CENTER INC.



SID or SID/HIII

Test Date: 10/26/06

Type: SID HIII S/N: 055 Mfg.: ASTC

Proj./Seg. No.: 20020455/ 3040 Test Eng: Walter D. Dudek

ITEM	PRE-USE	POST-USE
HEAD:		
Skull Cap Bolts: tight and no wires pinched	X	
Head Skin Condition	X	X
* Neck Load Cell Cables: secure, taped, and with strain relief	X	
Accel. Cable Exit (left or right)	N/A	
NECK:		
Rubber Condition and Separation From End Caps	X	X
NECK – SID/HIII only:		
Condyle Pin, Set Screws	X	
* Neck Cable Torque (10-14 in lb) Actual: <u>12</u>	X	
* Nodding Blocks Condition and Position (Post-test Joint Function)	X	X
THORAX:		
Jacket & Abdomen Condition	X	X
Stacked Shoulder Foams and Bolts	X	X
Rib Wrap Condition	X	X
Rib Cage Spring and Support Assembly	X	X
Rib Cage Bolts	X	X
Damper Rear Attachment Ring, Pivot Pins, and Bracket	X	X
Location and Adjustment of Chest Pot Bracket and Collars	N/A	X
Chest Pot Rod End Nuts and Eyebolt	N/A	
Arm Foam Orientation/Condition	X	X
Thorax/Lumbar Spine Bolts / Condition and Separation from End Caps	X	X
Adjust rib cage position to full extension	X	
PELVIS:		
Iliac Crest Bone	X	X
Flesh Condition	X	X
Tightness and Alignment of H-Point Tool Insert	X	
Hips Range of Motion and 1-2g Adjustment (before calibration only)	X	
Upper Femur Bolt Adjustment and Position	X	
LEGS AND FEET:		
Knee Skins and Castings Condition	X	X
Femur Load Cell Bolts	X	
Breakaway Femur Bolts - function	X	
Knee Joint Function and Range of Motion	X	X
Leg Skin Condition and Position	X	X
Ankle Range of Motion	X	X
Foot Condition	X	X
OTHER:		
Cleanliness	X	
Target Position	X	
Clothes and Shoes Pink	X	
One G Joint Adjustments	X	
Verify channel s against assembly and Check connectors (intact & labeled)	X	
ATTACH TEMPERATURE LOGGER TO DUMMY / DOWNLOAD	X	X

* Items checked during calibration; these items need checked when the dummy is used without recalibration

Pre Test Inspection Completed By: J. Clarridge Date: 10/25/06

Post Test Inspection Completed By: J. Clarridge Date: 10/30/06

Appendix D

Test Equipment List and Calibration Information

Sign Convention
SAE J211 MAR95

Accelerometers:

+X: Forward
+Y: Rightward
+Z: Downward

Potentiometers:

+Chest longitudinal deflection: Outward
+Chest lateral deflection: Rightward
+Seat belt displacement: Outward
+Seat belt extension: Elongation
+Knee slider displacement: Distance between femur and tibia increased (in relation to a seated dummy)

Rotation potentiometers:

+About the X-axis: Left foot-eversion
Right foot-inversion
+About the Y-axis: Left/right foot-dorsiflexion
+About the Z-axis: Left foot-internal
Right foot-external

Load cells:

+Femur force: Tension
+Seat belt force: Tension
+Barrier force: Tension

Neck load cells:

+X force: Head pushed rearward
+Y force: Head pushed leftward
+Z force: Head pulled upward (tension on neck)
+X moment: Left ear rotating toward left shoulder
+Y moment: Chin rotating toward chest
+Z moment: Chin rotating toward left shoulder

Tibia load cells:

+X force: Ankle forward, knee rearward
+Y force: Ankle rightward, knee leftward
+Z force: Tension
+X moment: Bottom of tibia moving leftward
+Y moment: Bottom of tibia moving rearward

Sign Convention (Continued)
SAE J211 MAR95

<u>Lumbar load cells:</u>	+X force:	Chest rearward, pelvis forward
	+Y force:	Chest leftward, pelvis rightward
	+Z force:	Chest upward, pelvis downward
	+X moment:	Left shoulder toward left hip
	+Y moment:	Sternum toward front of legs
	+Z moment:	Right shoulder forward, left shoulder rearward

Frequency Response Classes
SAE J211 MAR95

<u>Typical Test Measurements</u>	<u>Channel Class</u>
Vehicle Structural Accelerations for use in:	
Total vehicle comparison	60
Collision simulation input	60
Component analysis	600
Integration for velocity or displacement	180
Barrier Face Forces	60
Belt Restraint System Loads	60
Anthropomorphic Test Device	
Head accelerations (linear and angular)	1000
Neck	
Forces	1000
Moments	600
Thorax	
Spine accelerations	180
Rib accelerations	1000
Sternum accelerations	1000
Deflections	600
Lumbar	
Forces	1000
Moments	1000
Pelvis	
Accelerations	1000
Forces	1000
Moments	1000
Femur/Knee/Tibia/Ankle	
Forces	600
Moments	600
Displacements	180
Sled Accelerations	60
Steering Column Loads	600
Head Form Accelerations	1000

The direction column on the following sheets describes the transducer output as mounted and wired in the test location. The polarity column indicates whether a polarity change occurred during data acquisition to conform to J211 MAR95. See Report Sign Convention sheet for description of data output as presented in the report: occasionally channels have been adjusted in post-acquisition processing to conform to J211 MAR95.

Channel Report Test Number 061026

Ref	Transducer ID	ISO Signal Identifier	Description	FScale	Units	DAS		Assembly
						Flip	Positive Polarity	
1	Trig D1	10ZERO00000VO0A	EVENT		1 Logic	+	Bipolar	
2	P46512	11HEADCG00SHACXA	Head Accel X	1000	g	+	Forward	1-059 SID/HIII ASTC.001
3	P49052	11HEADCG00SHACYA	Head Accel Y	1000	g	+	Rightward	1-059 SID/HIII ASTC.002
4	P49038	11HEADCG00SHACZA	Head Accel Z	1000	g	-	Upward	1-059 SID/HIII ASTC.003
5	P49030	11HEADCGRDSHACXA	Head Accel X Red	1000	g	+	Forward	1-059 SID/HIII ASTC.004
6	P49043	11HEADCGRDSHACYA	Head Accel Y Red	1000	g	+	Rightward	1-059 SID/HIII ASTC.005
7	P49039	11HEADCGRDSHACZA	Head Accel Z Red	1000	g	-	Upward	1-059 SID/HIII ASTC.006
8	1716A-1624-FX	11NECKUP00SHFOXA	Neck Force X	8896	N	-	Head forward, chest rearward	1-059 SID/HIII ASTC.007
9	1716A-1624-FY	11NECKUP00SHFOYA	Neck Force Y	8896	N	+	Head leftward, chest rightward	1-059 SID/HIII ASTC.008
10	1716A-1624-FZ	11NECKUP00SHFOZA	Neck Force Z	13344	N	+	Head upward, chest downward	1-059 SID/HIII ASTC.009
11	1716A-1624-MX	11NECKUP00SHMOXA	Neck Moment X	282	Nm	-	Right ear toward right shoulder	1-059 SID/HIII ASTC.010
12	1716A-1624-MY	11NECKUP00SHMOYA	Neck Moment Y	282	Nm	+	Chin toward sternum	1-059 SID/HIII ASTC.011
13	1716A-1624-MZ	11NECKUP00SHMOZA	Neck Moment Z	282	Nm	+	Chin toward left shoulder	1-059 SID/HIII ASTC.012
14	P49567	11RIBSLU00SHACYA	Left Upper Rib Y	800	g	+	Rightward	1-059 SID/HIII ASTC.013
15	P49565	11RIBSLURESHACYA	Left Upper Rid Red Y	800	g	+	Rightward	1-059 SID/HIII ASTC.014
16	P49336	11RIBSLL00SHACYA	Left Lower Rib Y	800	g	+	Rightward	1-059 SID/HIII ASTC.015
17	P47479	11RIBSLLRESHACYA	Left Lower Rib Red Y	800	g	+	Rightward	1-059 SID/HIII ASTC.016
18	P49566	11SPIN1200SHACYA	Lower Spine Y	400	g	-	Leftward	1-059 SID/HIII ASTC.017
19	P49302	11SPIN12RDSHACYA	Lower Spine Red Y	400	g	-	Leftward	1-059 SID/HIII ASTC.018
20	P49333	11PELVCG00SHACYA	Pelvis Accel Y	400	g	-	Leftward	1-059 SID/HIII ASTC.019
21	P49045	14HEADCG00SHACXA	Head Accel X	1000	g	-	Rearward	4-055 SID/HIII ASTC.001
22	P49057	14HEADCG00SHACYA	Head Accel Y	1000	g	-	Leftward	4-055 SID/HIII ASTC.002
23	P49037	14HEADCG00SHACZA	Head Accel Z	1000	g	-	Upward	4-055 SID/HIII ASTC.003
24	P49050	14HEADCGRDSHACXA	Head Accel X Red	1000	g	-	Rearward	4-055 SID/HIII ASTC.004
25	P46511	14HEADCGRDSHACYA	Head Accel Y Red	1000	g	-	Leftward	4-055 SID/HIII ASTC.005
26	P49021	14HEADCGRDSHACZA	Head Accel Z Red	1000	g	-	Upward	4-055 SID/HIII ASTC.006
27	1716A-1634-FX	14NECKUP00SHFOXA	Neck Force X	8896	N	-	Head forward, chest rearward	4-055 SID/HIII ASTC.007
28	1716A-1634-FY	14NECKUP00SHFOYA	Neck Force Y	8896	N	+	Head leftward, chest rightward	4-055 SID/HIII ASTC.008
29	1716A-1634-FZ	14NECKUP00SHFOZA	Neck Force Z	13344	N	+	Head upward, chest downward	4-055 SID/HIII ASTC.009
30	1716A-1634-MX	14NECKUP00SHMOXA	Neck Moment X	282	Nm	-	Right ear toward right shoulder	4-055 SID/HIII ASTC.010
31	1716A-1634-MY	14NECKUP00SHMOYA	Neck Moment Y	282	Nm	+	Chin toward sternum	4-055 SID/HIII ASTC.011
32	1716A-1634-MZ	14NECKUP00SHMOZA	Neck Moment Z	282	Nm	+	Chin toward left shoulder	4-055 SID/HIII ASTC.012
33	P54124	14RIBSLU00SHACYA	Left Upper Rib Y	800	g	+	Rightward	4-055 SID/HIII ASTC.013
34	P54146	14RIBSLURESHACYA	Left Upper Rid Red Y	800	g	+	Rightward	4-055 SID/HIII ASTC.014

D-6

061026

Channel Report Test Number 061026

Ref	Transducer ID	ISO Signal Identifier	Description	FScale	Units	DAS		Assembly
						Flip	Positive Polarity	
35	P54115	14RIBSLL00SHACYA	Left Lower Rib Y	800	g	+	Rightward	4-055 SID/HIII ASTC.015
36	P54155	14RIBSLLRESHACYA	Left Lower Rib Red Y	800	g	+	Rightward	4-055 SID/HIII ASTC.016
37	P54148	14SPIN1200SHACYA	Lower Spine Y	400	g	-	Leftward	4-055 SID/HIII ASTC.017
38	P54150	14SPIN12RDSHACYA	Lower Spine Red Y	400	g	-	Leftward	4-055 SID/HIII ASTC.018
39	P54198	14PELVCG00SHACYA	Pelvis Accel Y	400	g	-	Leftward	4-055 SID/HIII ASTC.019
40	P50677	16SILBFR0000ACXA	RIGHT SIDE SILL AT FRONT SEAT (X) ACCELERATION VS TIME (#1)	400	g	+	Forward	
41	P50854	16SILBFR0000ACYA	RIGHT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME (#1)	1000	g	-	Leftward	
42	P25874	16SILBFR0000ACZA	RIGHT SIDE SILL AT FRONT SEAT (Z) ACCELERATION VS TIME (#1)	400	g	-	Upward	
43	P50319	16SILBRE0000ACXA	RIGHT SIDE SILL AT REAR SEAT (X) ACCELERATION VS TIME (#2)	400	g	+	Forward	
44	P54215	16SILBRE0000ACYA	RIGHT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME (#2)	1000	g	-	Leftward	
45	P46926	16SILBRE0000ACZA	RIGHT SIDE SILL AT REAR SEAT (Z) ACCELERATION VS TIME (#2)	400	g	-	Upward	
46	P50304	18FORA000000ACXA	REAR FLOORPAN ABOVE AXLE (X) ACCELERATION VS TIME (#3)	1000	g	+	Forward	
47	P49969	18FORA000000ACYA	REAR FLOORPAN ABOVE AXLE (Y) ACCELERATION VS TIME (#3)	1000	g	-	Leftward	
48	P50316	18FORA000000ACZA	REAR FLOORPAN ABOVE AXLE (Z) ACCELERATION VS TIME (#3)	1000	g	-	Upward	
49	P50769	14SILBFR0000ACYA	LEFT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME (#5)	1000	g	+	Rightward	
50	P54191	14SILBRE0000ACYA	LEFT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME	1000	g	+	Rightward	
51	P50782	16VEHCRE0000ACYA	RIGHT REAR OCCUPANT COMPARTMENT (Y) ACCELERATION VS TIME (#7)	1500	g	+	Rightward	
52	P50873	11APILLO0000ACYA	LEFT LOWER A-POST (Y) ACCELERATION VS TIME (#14)	1500	g	-	Leftward	
53	P49596	11APILMI0000ACYA	LEFT MID A-POST (Y) ACCELERATION VS TIME (#15)	1500	g	-	Leftward	
54	P50862	14BPILLO0000ACYA	LEFT LOWER B-POST (Y) ACCELERATION VS TIME (#12)	1500	g	-	Leftward	
55	P50874	14BPILMI0000ACYA	LEFT MID B-POST (Y) ACCELERATION VS TIME (#13)	1500	g	-	Leftward	
56	P50839	11SETFR0000ACYA	LEFT FRONT SEAT TRACK (Y) ACCELERATION VS TIME (#16)	1500	g	-	Leftward	
57	P50836	14SETRLERE00ACYA	LEFT REAR SEAT TRACK (Y) ACCELERATION VS TIME	1500	g	+	Rightward	
58	P45943	10VEHCCG0000ACXA	VEHICLE CENTER OF GRAVITY (X) ACCELERATION VS TIME (#18)	1000	g	+	Forward	
59	P50843	10VEHCCG0000ACYA	VEHICLE CENTER OF GRAVITY (Y) ACCELERATION VS TIME (#18)	1000	g	-	Leftward	
60	P50925	10VEHCCG0000ACZA	VEHICLE CENTER OF GRAVITY (Z) ACCELERATION VS TIME (#18)	1000	g	-	Upward	

Channel Report Test Number 061026

Ref	Transducer ID	ISO Signal Identifier	Description	FScale	Units	DAS	
						Flip	Positive Polarity
1	P40751	M0VEHCCG0000ACXA	MDB CENTER OF GRAVITY (X) ACCELERATION VS TIME (#1)	600	g	-	Rearward
2	P49744	M0VEHCCG0000ACYA	MDB CENTER OF GRAVITY (Y) ACCELERATION VS TIME(#1)	600	g	+	Rightward
3	P49961	M0VEHCCG0000ACZA	MDB CENTER OF GRAVITY (Z) ACCELERATION VS TIME(#1)	600	g	+	Downward
4	P46067	M7FRAM000000ACXA	MDB REAR (X) ACCELERATION VS TIME (#2)	600	g	+	Forward
5	P50650	M7FRAM000000ACYA	MDB REAR (Y) ACCELERATION VS TIME (#2)	600	g	-	Leftward
6	Bit.00	M3CONT000000VO00	MDB RIGHT CONTACT SWITCH	1	Logic	+	Bipolar
7	Bit.01	M1CONT000000VO00	MDB LEFT CONTACT SWITCH	1	Logic		Bipolar

Command File Test Number 061026

Channel	ISO Mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
1	11HEADCG00SHACXA	DRIVER HEAD X-AXIS ACCELERATION	1000	+	yes	1000
1A	11HEADCG00SHVEXA	DRIVER HEAD X-AXIS VELOCITY	180			
2	11HEADCG00SHACYA	DRIVER HEAD Y-AXIS ACCELERATION	1000	+	yes	1000
2A	11HEADCG00SHVEYA	DRIVER HEAD Y-AXIS VELOCITY	180			
3	11HEADCG00SHACZA	DRIVER HEAD Z-AXIS ACCELERATION	1000	+	yes	1000
3A	11HEADCG00SHVEZA	DRIVER HEAD Z-AXIS VELOCITY	180			
3B	11HEADCG00SHACRA	DRIVER HEAD RESULTANT ACCELERATION	1000			
4	11NECKUP00SHFOXA	DRIVER NECK X-AXIS SHEAR FORCE	1000	+	yes	8896
5	11NECKUP00SHFOYA	DRIVER NECK Y-AXIS SHEAR FORCE	1000	+	yes	8896
6	11NECKUP00SHFOZA	DRIVER NECK Z-AXIS AXIAL FORCE	1000	+	yes	13344
7	11NECKUP00SHMOXA	DRIVER NECK MOMENT ABOUT X AXIS	600	+	yes	282
8	11NECKUP00SHMOYA	DRIVER NECK MOMENT ABOUT Y AXIS	600	+	yes	282
9	11NECKUP00SHMOZA	DRIVER NECK MOMENT ABOUT Z AXIS	600	+	yes	282
10	11RIBSLU00SHACYA	DRIVER UPPER RIB Y-AXIS ACCELERATION	1000	+	yes	800
10A	11RIBSLU00SHVEYA	DRIVER UPPER RIB Y-AXIS VELOCITY	180			
11	11RIBSLL00SHACYA	DRIVER LOWER RIB Y-AXIS ACCELERATION	1000	+	yes	800
11A	11RIBSLL00SHVEYA	DRIVER LOWER RIB Y-AXIS VELOCITY	180			
12	11SPIN1200SHACYA	DRIVER LOWER SPINE Y-AXIS ACCELERATION	1000	+	yes	400
12A	11SPIN1200SHVEYA	DRIVER LOWER SPINE Y-AXIS VELOCITY	180			
13	11PELVCG00SHACYA	DRIVER PELVIS Y-AXIS ACCELERATION	1000	+	yes	400
13A	11PELVCG00SHVEYA	DRIVER PELVIS Y-AXIS VELOCITY	180			
14	14HEADCG00SHACXA	LEFT REAR PASSENGER HEAD X-AXIS ACCELERATION	1000	-	yes	1000
14A	14HEADCG00SHVEXA	LEFT REAR PASSENGER HEAD X-AXIS VELOCITY	180			
15	14HEADCG00SHACYA	LEFT REAR PASSENGER HEAD Y-AXIS ACCELERATION	1000	-	yes	1000
15A	14HEADCG00SHVEYA	LEFT REAR PASSENGER HEAD Y-AXIS VELOCITY	180			
16	14HEADCG00SHACZA	LEFT REAR PASSENGER HEAD Z-AXIS ACCELERATION	1000	+	yes	1000
16A	14HEADCG00SHVEZA	LEFT REAR PASSENGER HEAD Z-AXIS VELOCITY	180			
16B	14HEADCG00SHACRA	LEFT REAR PASSENGER HEAD RESULTANT ACCELERATION	1000			
17	14NECKUP00SHFOXA	LEFT REAR PASSENGER NECK X-AXIS SHEAR FORCE	1000	+	yes	8896
18	14NECKUP00SHFOYA	LEFT REAR PASSENGER NECK Y-AXIS SHEAR FORCE	1000	+	yes	8896
19	14NECKUP00SHFOZA	LEFT REAR PASSENGER NECK Z-AXIS AXIAL FORCE	1000	+	yes	13344
20	14NECKUP00SHMOXA	LEFT REAR PASSENGER NECK MOMENT ABOUT X AXIS	600	+	yes	282
21	14NECKUP00SHMOYA	LEFT REAR PASSENGER NECK MOMENT ABOUT Y AXIS	600	+	yes	282
22	14NECKUP00SHMOZA	LEFT REAR PASSENGER NECK MOMENT ABOUT Z AXIS	600	+	yes	282
23	14RIBSLU00SHACYA	LEFT REAR PASSENGER UPPER RIB Y-AXIS ACCELERATION	1000	+	yes	800
23A	14RIBSLU00SHVEYA	LEFT REAR PASSENGER UPPER RIB Y-AXIS VELOCITY	180			
24	14RIBSLL00SHACYA	LEFT REAR PASSENGER LOWER RIB Y-AXIS ACCELERATION	1000	+	yes	800

Command File Test Number 061026

Channel	ISO Mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
57	10VEHCCG0000ACXA	VEHICLE CENTER OF GRAVITY X-AXIS ACCELERATION	60	+	yes	1000
57A	10VEHCCG0000VEXA	VEHICLE CENTER OF GRAVITY X-AXIS VELOCITY	180			
58	10VEHCCG0000ACYA	VEHICLE CENTER OF GRAVITY Y-AXIS ACCELERATION	60	+	yes	1000
58A	10VEHCCG0000VEYA	VEHICLE CENTER OF GRAVITY Y-AXIS VELOCITY	180			
59	10VEHCCG0000ACZA	VEHICLE CENTER OF GRAVITY Z-AXIS ACCELERATION	60	+	yes	1000
59A	10VEHCCG0000VEZA	VEHICLE CENTER OF GRAVITY Z-AXIS VELOCITY	180			
59B	10VEHCCG0000ACRA	VEHICLE CENTER OF GRAVITY RESULTANT ACCELERATION	60			
60	M0VEHCCG0000ACXA	MDB CENTER OF GRAVITY X-AXIS ACCELERATION	60	-	yes	600
60A	M0VEHCCG0000VEXA	MDB CENTER OF GRAVITY X-AXIS VELOCITY	180			
61	M0VEHCCG0000ACYA	MDB CENTER OF GRAVITY Y-AXIS ACCELERATION	60	+	yes	600
61A	M0VEHCCG0000VEYA	MDB CENTER OF GRAVITY Y-AXIS VELOCITY	180			
62	M0VEHCCG0000ACZA	MDB CENTER OF GRAVITY Z-AXIS ACCELERATION	60	-	yes	600
62A	M0VEHCCG0000VEZA	MDB CENTER OF GRAVITY Z-AXIS VELOCITY	180			
62B	M0VEHCCG0000ACRA	MDB CENTER OF GRAVITY RESULTANT ACCELERATION	60			
63	M7FRAM000000ACXA	MDB REAR X-AXIS ACCELERATION	60	+	yes	600
63A	M7FRAM000000VEXA	MDB REAR X-AXIS VELOCITY	180			
64	M7FRAM000000ACYA	MDB REAR Y-AXIS ACCELERATION	60	+	yes	600
64A	M7FRAM000000VEYA	MDB REAR Y-AXIS VELOCITY	180			
65	M3CONT000000VO00	MDB RIGHT CONTACT SWITCH	0	+	no	1
66	M1CONT000000VO00	MDB LEFT CONTACT SWITCH	0	+	no	1
66A	11RIBSLU00SHACYA	DRIVER UPPER RIB Y-AXIS ACCELERATION	100	+	yes	800
66B	11RIBSLL00SHACYA	DRIVER LOWER RIB Y-AXIS ACCELERATION	100	+	yes	800
66C	11SPIN1200SHACYA	DRIVER LOWER SPINE Y-AXIS ACCELERATION	100	+	yes	400
66D	11PELVCG00SHACYA	DRIVER PELVIS Y-AXIS ACCELERATION	100	+	yes	400
66E	14RIBSLU00SHACYA	LEFT REAR PASSENGER UPPER RIB Y-AXIS ACCELERATION	100	+	yes	800
66F	14RIBSLL00SHACYA	LEFT REAR PASSENGER LOWER RIB Y-AXIS ACCELERATION	100	+	yes	800
66G	14SPIN1200SHACYA	LEFT REAR PASSENGER LOWER SPINE Y-AXIS ACCELERATION	100	+	yes	400
66H	14PELVCG00SHACYA	LEFT REAR PASSENGER PELVIS Y-AXIS ACCELERATION	100	+	yes	400
66I	11RIBSLURESHACYA	DRIVER UPPER RIB Y-AXIS REDUNDANT ACCELERATION	100	+	yes	800
66J	11RIBSLLRESHACYA	DRIVER LOWER RIB Y-AXIS REDUNDANT ACCELERATION	100	+	yes	800
66K	11SPIN12RDSHACYA	DRIVER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION	100	+	yes	400
66L	14RIBSLURESHACYA	LEFT REAR PASSENGER UPPER RIB Y-AXIS REDUNDANT ACCELERATION	100	+	yes	800
66M	14RIBSLLRESHACYA	LEFT REAR PASSENGER LOWER RIB Y-AXIS REDUNDANT ACCELERATION	100	+	yes	800
66N	14SPIN12RDSHACYA	LEFT REAR PASSENGER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION	100	+	yes	400

Command File Test Number 061026

Channel	ISO Mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
24A	14RIBSLL00SHVEYA	LEFT REAR PASSENGER LOWER RIB Y-AXIS VELOCITY	180			
25	14SPIN1200SHACYA	LEFT REAR PASSENGER LOWER SPINE Y-AXIS ACCELERATION	1000	+	yes	400
25A	14SPIN1200SHVEYA	LEFT REAR PASSENGER LOWER SPINE Y-AXIS VELOCITY	180			
26	14PELVCG00SHACYA	LEFT REAR PASSENGER PELVIS Y-AXIS ACCELERATION	1000	+	yes	400
26A	14PELVCG00SHVEYA	LEFT REAR PASSENGER PELVIS Y-AXIS VELOCITY	180			
27	11HEADCGRDSHACXA	DRIVER HEAD X-AXIS REDUNDANT ACCELERATION	1000	+	yes	1000
27A	11HEADCGRDSHVEYA	DRIVER HEAD X-AXIS REDUNDANT VELOCITY	180			
28	11HEADCGRDSHACYA	DRIVER HEAD Y-AXIS REDUNDANT ACCELERATION	1000	+	yes	1000
28A	11HEADCGRDSHVEYA	DRIVER HEAD Y-AXIS REDUNDANT VELOCITY	180			
29	11HEADCGRDSHACZA	DRIVER HEAD Z-AXIS REDUNDANT ACCELERATION	1000	+	yes	1000
29A	11HEADCGRDSHVEZA	DRIVER HEAD Z-AXIS REDUNDANT VELOCITY	180			
29B	11HEADCGRDSHACRA	DRIVER HEAD RESULTANT REDUNDANT ACCELERATION	1000			
30	11RIBSLURESHACYA	DRIVER UPPER RIB Y-AXIS REDUNDANT ACCELERATION	1000	+	yes	800
30A	11RIBSLURESHVEYA	DRIVER UPPER RIB Y-AXIS REDUNDANT VELOCITY	180			
31	11RIBSLLRESHACYA	DRIVER LOWER RIB Y-AXIS REDUNDANT ACCELERATION	1000	+	yes	800
31A	11RIBSLLRESHVEYA	DRIVER LOWER RIB Y-AXIS REDUNDANT VELOCITY	180			
32	11SPIN12RDSHACYA	DRIVER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION	1000	+	yes	400
32A	11SPIN12RDSHVEYA	DRIVER LOWER SPINE Y-AXIS REDUNDANT VELOCITY	180			
33	14HEADCGRDSHACXA	LEFT REAR PASSENGER HEAD X-AXIS REDUNDANT ACCELERATION	1000	-	yes	1000
33A	14HEADCGRDSHVEYA	LEFT REAR PASSENGER HEAD X-AXIS REDUNDANT VELOCITY	180			
34	14HEADCGRDSHACYA	LEFT REAR PASSENGER HEAD Y-AXIS REDUNDANT ACCELERATION	1000	-	yes	1000
34A	14HEADCGRDSHVEYA	LEFT REAR PASSENGER HEAD Y-AXIS REDUNDANT VELOCITY	180			
35	14HEADCGRDSHACZA	LEFT REAR PASSENGER HEAD Z-AXIS REDUNDANT ACCELERATION	1000	+	yes	1000
35A	14HEADCGRDSHVEZA	LEFT REAR PASSENGER HEAD Z-AXIS REDUNDANT VELOCITY	180			
35B	14HEADCGRDSHACRA	LEFT REAR PASSENGER HEAD RESULTANT ACCELERATION	1000			
36	14RIBSLURESHACYA	LEFT REAR PASSENGER UPPER RIB Y-AXIS REDUNDANT ACCELERATION	1000	+	yes	800
36A	14RIBSLURESHVEYA	LEFT REAR PASSENGER UPPER RIB Y-AXIS REDUNDANT VELOCITY	180			
37	14RIBSLLRESHACYA	LEFT REAR PASSENGER LOWER RIB Y-AXIS REDUNDANT ACCELERATION	1000	+	yes	800
37A	14RIBSLLRESHVEYA	LEFT REAR PASSENGER LOWER RIB Y-AXIS REDUNDANT VELOCITY	180			
38	14SPIN12RDSHACYA	LEFT REAR PASSENGER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION	1000	+	yes	400
38A	14SPIN12RDSHVEYA	LEFT REAR PASSENGER LOWER SPINE Y-AXIS REDUNDANT VELOCITY	180			
39	16SILBFR0000ACXA	RIGHT SIDE SILL AT FRONT SEAT X-AXIS ACCELERATION	60	+	yes	400
39A	16SILBFR0000VEXA	RIGHT SIDE SILL AT FRONT SEAT X-AXIS VELOCITY	180			
40	16SILBFR0000ACYA	RIGHT SIDE SILL AT FRONT SEAT Y-AXIS ACCELERATION	60	+	yes	1000
40A	16SILBFR0000VEYA	RIGHT SIDE SILL AT FRONT SEAT Y-AXIS VELOCITY	180			
41	16SILBFR0000ACZA	RIGHT SIDE SILL AT FRONT SEAT Z-AXIS ACCELERATION	60	+	yes	400

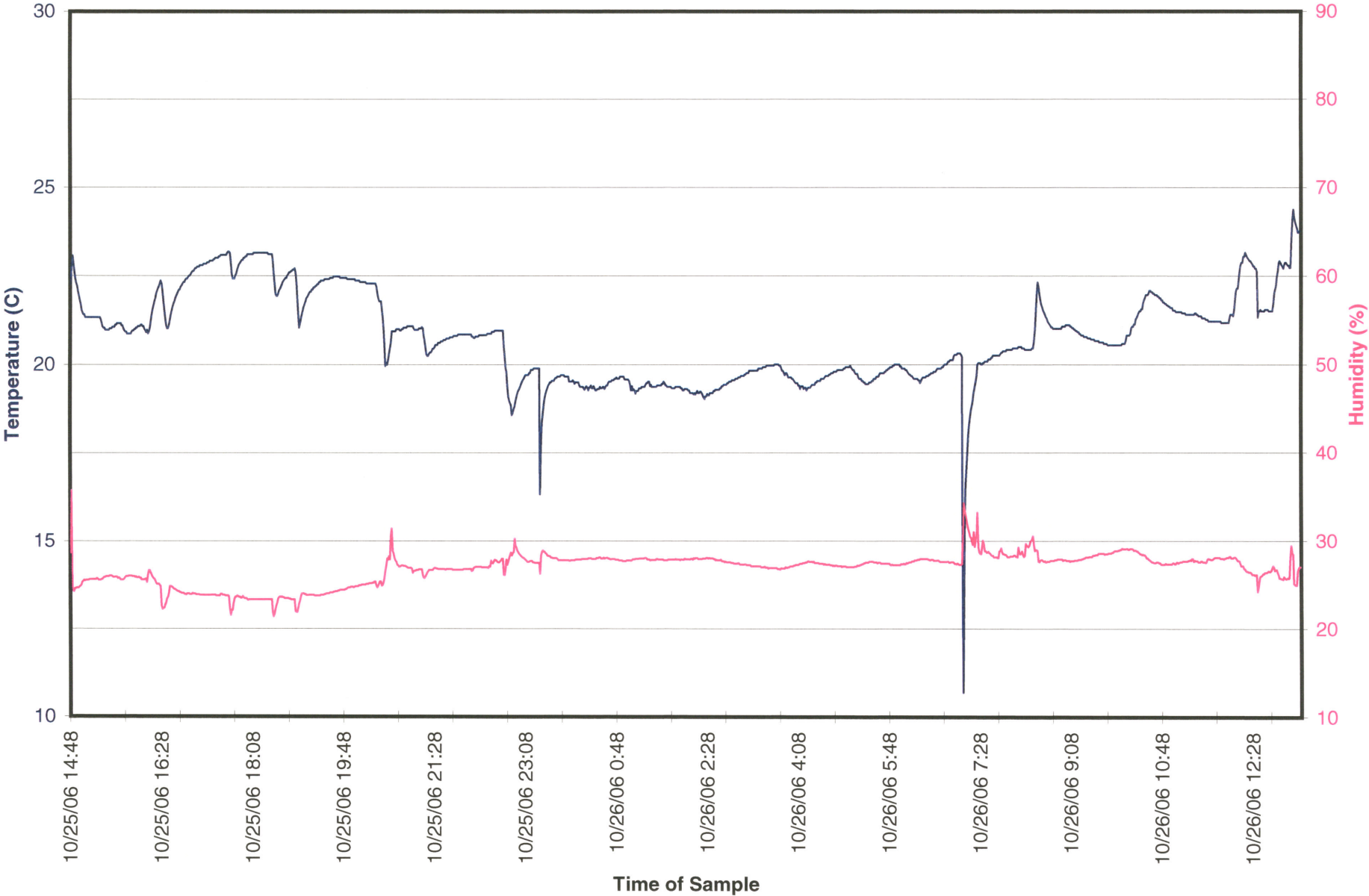
Command File Test Number 061026

Channel	ISO Mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
41A	16SILBFR0000VEZA	RIGHT SIDE SILL AT FRONT SEAT Z-AXIS VELOCITY	180			
41B	16SILBFR0000ACRA	RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION	60			
42	16SILBRE0000ACXA	RIGHT SIDE SILL AT REAR SEAT X-AXIS ACCELERATION	60	+	yes	400
42A	16SILBRE0000VEXA	RIGHT SIDE SILL AT REAR SEAT X-AXIS VELOCITY	180			
43	16SILBRE0000ACYA	RIGHT SIDE SILL AT REAR SEAT Y-AXIS ACCELERATION	60	+	yes	1000
43A	16SILBRE0000VEYA	RIGHT SIDE SILL AT REAR SEAT Y-AXIS VELOCITY	180			
44	16SILBRE0000ACZA	RIGHT SIDE SILL AT REAR SEAT Z-AXIS ACCELERATION	60	+	yes	400
44A	16SILBRE0000VEZA	RIGHT SIDE SILL AT REAR SEAT Z-AXIS VELOCITY	180			
44B	16SILBRE0000ACRA	RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION	60			
45	18FORA000000ACXA	REAR FLOORPAN ABOVE AXLE X-AXIS ACCELERATION	60	+	yes	1000
45A	18FORA000000VEXA	REAR FLOORPAN ABOVE AXLE X-AXIS VELOCITY	180			
46	18FORA000000ACYA	REAR FLOORPAN ABOVE AXLE Y-AXIS ACCELERATION	60	+	yes	1000
46A	18FORA000000VEYA	REAR FLOORPAN ABOVE AXLE Y-AXIS VELOCITY	180			
47	18FORA000000ACZA	REAR FLOORPAN ABOVE AXLE Z-AXIS ACCELERATION	60	+	yes	1000
47A	18FORA000000VEZA	REAR FLOORPAN ABOVE AXLE Z-AXIS VELOCITY	180			
47B	18FORA000000ACRA	REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION	60			
48	14SILBFR0000ACYA	LEFT SIDE SILL AT FRONT SEAT Y-AXIS ACCELERATION	60	+	yes	1000
48A	14SILBFR0000VEYA	LEFT SIDE SILL AT FRONT SEAT Y-AXIS VELOCITY	180			
48B	14SILBFR0000DCYA	LEFT SIDE SILL AT FRONT SEAT Y-AXIS DISPLACEMENT	180			
49	14SILBRE0000ACYA	LEFT SIDE SILL AT REAR SEAT Y-AXIS ACCELERATION	60	+	yes	1000
49A	14SILBRE0000VEYA	LEFT SIDE SILL AT REAR SEAT Y-AXIS VELOCITY	180			
49B	14SILBRE0000DCYA	LEFT SIDE SILL AT REAR SEAT Y-AXIS DISPLACEMENT	180			
50	16VEHCRE0000ACYA	RIGHT REAR OCCUPANT COMPARTMENT Y-AXIS ACCELERATION	60	+	yes	1500
50A	16VEHCRE0000VEYA	RIGHT REAR OCCUPANT COMPARTMENT Y-AXIS VELOCITY	180			
50B	16VEHCRE0000DCYA	RIGHT REAR OCCUPANT COMPARTMENT Y-AXIS DISPLACEMENT	180			
51	11APILLO0000ACYA	LEFT LOWER A-POST Y-AXIS ACCELERATION	60	+	yes	1500
51A	11APILLO0000VEYA	LEFT LOWER A-POST Y-AXIS VELOCITY	180			
52	11APILMI0000ACYA	LEFT MIDDLE A-POST Y-AXIS ACCELERATION	60	+	yes	1500
52A	11APILMI0000VEYA	LEFT MIDDLE A-POST Y-AXIS VELOCITY	180			
53	14BPILLO0000ACYA	LEFT LOWER B-POST Y-AXIS ACCELERATION	60	+	yes	1500
53A	14BPILLO0000VEYA	LEFT LOWER B-POST Y-AXIS VELOCITY	180			
54	14BPILMI0000ACYA	LEFT MIDDLE B-POST Y-AXIS ACCELERATION	60	+	yes	1500
54A	14BPILMI0000VEYA	LEFT MIDDLE B-POST Y-AXIS VELOCITY	180			
55	11SETRFR0000ACYA	LEFT FRONT SEAT TRACK Y-AXIS ACCELERATION	60	+	yes	1500
55A	11SETRFR0000VEYA	LEFT FRONT SEAT TRACK Y-AXIS VELOCITY	180			
56	14SETRLERE00ACYA	LEFT REAR SEAT TRACK Y-AXIS ACCELERATION	60	+	yes	1500
56A	14SETRLERE00VEYA	LEFT REAR SEAT TRACK Y-AXIS VELOCITY	180			

FMVSS 214 2007 HYUNDAI ELANTRA / 061026

D-13

061026





2007 ELANTRA GLS

VIN: KMH DU46D57U016734
Engine #: G4GC6696134
Color: Quicksilver

Model: 43402
Port of Entry: PT
Mode of Transport: TRUCK

Sold To: RICART HYUNDAI
OH037 4255 SOUTH HAMILTON ROAD
COLUMBUS, OH 43227

Shipped to:
OH037

Compare this vehicle to others in the FREE FUEL ECONOMY GUIDE available at the dealer.

CITY MPG

28



HIGHWAY MPG

36

Actual Mileage

will vary with options, driving conditions, driving habits and vehicle's condition. Results report to EPA indicate that the majority of these vehicles with these estimates will achieve between:
23 and 33 mpg in city and between
30 and 42 mpg on the highway

2007 ELANTRA 2.0 LITER
I4 ENGINE ELEC. FUEL INJECT.
AUTO 4-SPD TRANS. CATALYST

Estimated Annual Fuel Cost:

\$1,284.00

For comparison shopping
all vehicles classified as
MID-SIZE

have been issued mileage ratings
from 10 to 60 mpg city
and 16 to 51 mpg highway

See www.fueleconomy.gov

PART CONTENT INFORMATION

FOR VEHICLE IN THIS CARLINE:

U.S. / Canadian Parts Contents:

1 %

Major Sources of Foreign Parts Contents: Korea

99 %

Note: Parts content does not include final assembly, distribution, or other non-parts cost.

FOR THIS VEHICLE:

Final Assembly Point: Ulsan, Korea

Country of Origin: Engine: Korea

Transmission Parts: Korea

2007 Elantra offers an unprecedented combination of safety, roominess and warranty.

Unsurpassed Standard Safety Technologies*

- Six standard airbags: Dual front/front side-impact/side-curtain
- Standard ABS with Electronic Brake Force Distribution (EBD)
- 4-wheel Disc Brakes
- Standard front seat active head restraints
- Adjustable head restraints for all seating positions

Most interior volume (passenger and cargo) for a sedan in its class*

*Based on 2006MY Autosource Inc. upper small car sedan segmentation.

America's Best Warranty

- 5-year/60,000-mile New Vehicle Warranty*
- 10-year/100,000-mile Powertrain Warranty*
- 7-year/Unlimited-mile Anti-perforation Warranty*
- 5-year/Unlimited-mile Roadside Assistance

*Limited warranties, see dealer for details

High Value Features:

*2.0L DOHC 16-Valve CVT Eng.	INCLUDED
*4-Spd Automatic Transmission	INCLUDED
*Dual Front Airbags	INCLUDED
*Front Side Airbags	INCLUDED
*Side Curtain Airbags	INCLUDED
*Anti-Lock Brakes	INCLUDED
*4-Wheel Disc Brakes	INCLUDED
*Front Active Head Restraints	INCLUDED
*Front Seatbelt Pretensioners	INCLUDED
*Front Independent Suspension w/ MacPherson Struts	INCLUDED
*Rear Independent Multi Link Suspension	INCLUDED
*P195/65R-15 Tires	INCLUDED
*Full-Size Wheel Covers	INCLUDED
*Power Steering	INCLUDED
*Tilt Steering Column	INCLUDED
*Power Locks	INCLUDED
*Power Windows	INCLUDED
*Remote Keyless Entry w/Alarm	INCLUDED
*Power Heated Mirrors	INCLUDED
*Variable Intermittent Wipers	INCLUDED
*Tachometer	INCLUDED
*Tinted Glass	INCLUDED
*Digital Clock	INCLUDED
*60/40 Split-Folding Rear Seat	INCLUDED
*Front Cupholders	INCLUDED
*Rear Center Armrest With Cupholders	INCLUDED
*Center Console w/ Armrest	INCLUDED

Manufacturer's Suggested

Retail Price: \$14,395.00

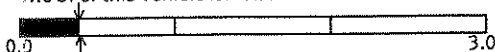
Optional Features:

*This vehicle is certified to meet emission requirements in all 50 states	
*Preferred Package	\$1,500.00
includes:	
Air Conditioning	
AM/FM/CD Audio System w/ 6 Spks & Auxiliary Jack	
Cruise Control	
Dual Illuminated Vanity Mirrors	
Fog Lights	
Windshield Shade Band	
*Carpeted Floor Mats	\$85.00

Inland Freight & Handling \$600.00
Total Manufacturer's Suggested Retail Price: \$16,580.00

SMOG EMISSION INFORMATION

The SI of this vehicle is: 0.39



The SI of the average new vehicle is: 0.40

<< Cleaner More Polluting >>

Note: The Smog Index (SI) indicates the relative level of smog-forming pollutants emitted by the vehicle. The lower the SI, the lower the vehicle's emissions.

Manufacturer's suggested retail price includes manufacturer's recommended pre-delivery service. Gasoline license and title fees, state and local taxes and dealer installed options and accessories are not included in the manufacturer's suggested retail price.

This label has been affixed to this vehicle by Hyundai Motor America, pursuant to the requirements of 15 U.S.C. 1231 et seq. which prohibits its removal or alteration prior to delivery to the ultimate purchaser.



CERTIFICATE OF CONFORMITY

Certificate No. 27074
Serial No. GB338

Cellbond Composites Ltd
5 Stukeley Business Centre
Blackstone Road
Huntingdon
Cambridgeshire
PE29 6EF
United Kingdom

Product Description	NHTSA US HON FMVSS 214-1750x740x550
Cellbond Part No.	70NHTSAUSHON

telephone
+44 (0) 1480 435302
telefax
+44 (0) 1480 450181
email
sales@cellbond.com
website
www.cellbond.com

	Test Results	GR No.	Blk No.
1	5921-8	CHC13030009GA	N/A
2	7727-8	CHC0511015FL	N/A

Declaration.

The above moving deformable barrier has been manufactured in accordance with the provisions of FMVSS 214.

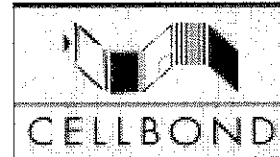
Additional Information...

company registration
England 1944904

registered office
5 Stukeley Business Centre
Blackstone Road
Huntingdon
Cambridgeshire
PE29 6EF

Cellbond Offices
United Kingdom
United States of America





NHTSA / IIHS DEFORMABLE SIDE IMPACT BARRIER
ALUMINIUM HONEYCOMB CERTIFICATION
STATIC TEST RESULTS

MAIN BLOCK
Core: 1.6 3/8 5052

Required Crush Strength
42.5 PSI to 47.5 PSI

Test No: 5921-8

GR No: CHC13030009GA

Block No: N/A

	Crush Strength (PSI)			RESULT
	0.25 to 0.38 inch	0.38 to 0.52 inch	0.52 to 0.65 inch	
Sample* 1	44.711	45.933	46.694	PASS
Sample 2	42.363	43.182	44.417	FAIL
Sample 3	42.780	43.059	43.632	PASS
Sample 4	42.592	43.266	43.485	PASS
Sample 5	43.098	44.022	44.116	PASS
Sample 6	42.691	42.903	42.965	PASS
Sample 7	44.680	46.055	45.939	PASS
Sample 8	45.056	46.758	46.555	PASS

Seven out of the eight samples must fulfil the crush strength
requirement in order to pass the block certification

*Sample size and location as per R94.

RESULT: PASSED

NHTSA / IIHS DEFORMABLE SIDE IMPACT BARRIER
MAIN BLOCK

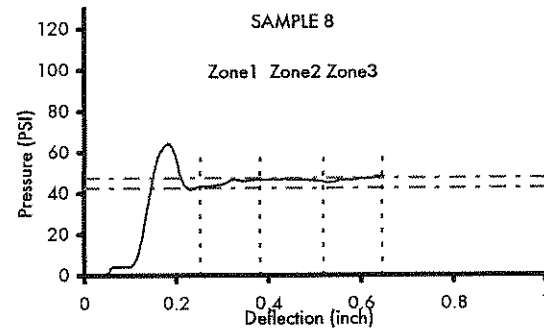
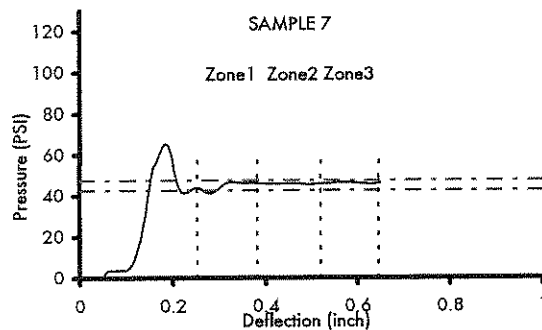
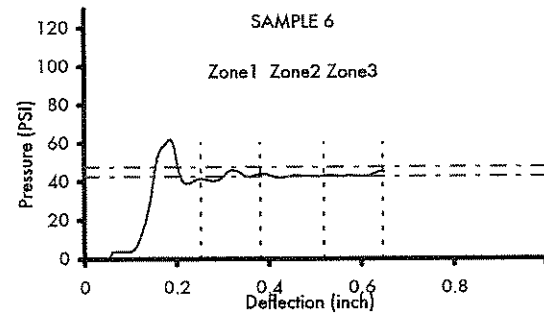
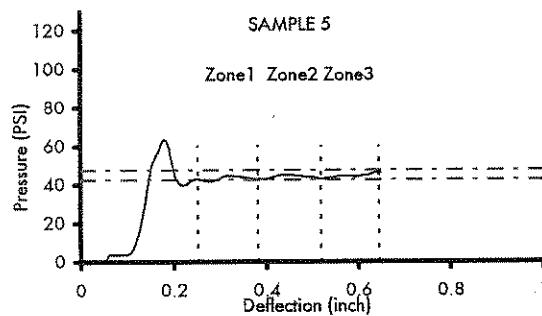
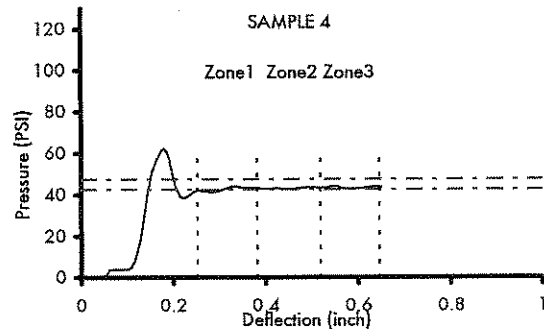
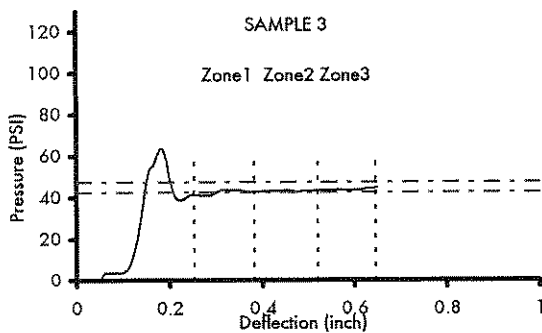
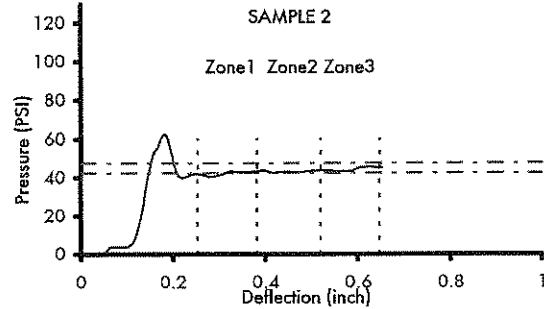
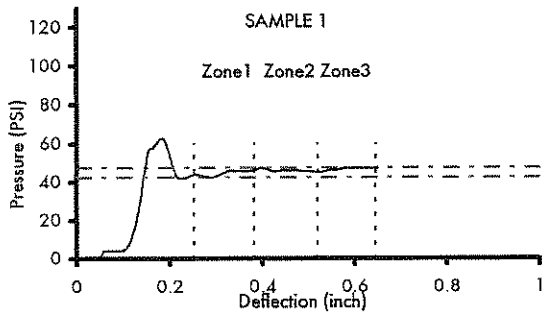
Honeycomb Type: 1.6 3/8 5052
Higher Acceptable Crush Strength Limit: 47.5 PSI
Lower Acceptable Crush Strength Limit: 42.5 PSI

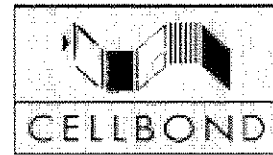
Section 1: 0.25 - 0.38 inch
Section 2: 0.38 - 0.52 inch
Section 3: 0.52 - 0.65 inch
Speed: 0.25 inch/min

Test No: 5921-8

GR No: CHC13030009GA

Block No: N/A





NHTSA / IIHS DEFORMABLE SIDE IMPACT BARRIER
ALUMINIUM HONEYCOMB CERTIFICATION
STATIC TEST RESULTS

BUMPER

Core: 5.2 1/4 3003

Required Crush Strength
230 PSI to 260 PSI

Test No: 7727-8

GR No: CHC0511015FL

Block No: N/A

	Crush Strength (PSI)			RESULT
	0.25 to 0.38	0.38 to 0.52	0.52 to 0.65	
Sample* 1	236.82	236.14	231.81	PASS
Sample 2	240.17	236.46	235.13	PASS
Sample 3	235.39	231.35	230.90	PASS
Sample 4	238.04	234.36	234.88	PASS
Sample 5	237.55	237.53	235.15	PASS
Sample 6	237.20	236.40	234.53	PASS
Sample 7	237.49	235.45	235.25	PASS
Sample 8	234.04	232.52	231.69	PASS

Seven out of the eight samples must fulfil the crush strength
requirement in order to pass the block certification

*Sample size and location as per R94.

RESULT: PASSED

NHTSA / IHS DEFORMABLE SIDE IMPACT BARRIER
BUMPER

Honeycomb Type: 5.2 1/4 3003
Higher Acceptable Crush Strength Limit: 260 PSI
Lower Acceptable Crush Strength Limit: 230 PSI

Section 1: 0.25 - 0.38 inch
Section 2: 0.38 - 0.52 inch
Section 3: 0.52 - 0.65 inch
Speed: 0.25 inch/min

Test No: 7727-8

GR No: CHC0511015FL

Block No: N/A

