

**Vehicle Research and Test Center
Moving Deformable Barrier into
2005 Subaru Forester at 53.1 km/h
TRC Inc. Test Number: 050718**

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Section 1.0

Purpose and Test Procedure

Purpose

This 48/24 km/h (32.9 mph) 90° side impact test was conducted for the National Highway Traffic Safety Administration (NHTSA) and Vehicle Research and Test Center (VRTC) by Transportation Research Center Inc. (TRC Inc.).

The purpose of this test was to evaluate side impact protection in a moving deformable barrier impact test. The subject vehicle was a 2005 Subaru Forester 4-door.

Test Procedure

This test was conducted in accordance with VRTC instructions for a moving deformable barrier into a vehicle side impact test. Data was obtained relative to FMVSS 214, "Side Impact Protection" performed using SID-IIs (Build D) anthropomorphic test devices (dummies).

A 2005 Subaru Forester 4-door 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 53.1 km/h (33.0 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 July 18, 2005. Pre-test and post-test photographs of the test vehicle, the moving deformable barrier (MDB), and the side impact dummies (SID-IIs) are included in Appendix A.

The moving deformable barrier was equipped with a 214 style deformable barrier face and five (5) accelerometers to measure longitudinal, lateral, and vertical axis accelerations. The barrier's specified impact velocity range was 52.1 to 53.8 km/h.

Two restrained Side Impact Dummies (SID-IIs) were placed in the driver (Pos. #1) and left rear (Pos. #4) designated seating positions according to the instructions specified in the Federal Register Part 572-214 Section S8.3 and S12.3 (May 17, 2004). Both SID-IIs were certified prior to this test and were restrained by 3-point seat belts. The driver dummy was additionally restrained by a combination head/torso airbag.

Both dummies were instrumented with head, shoulder, spine, thorax, abdomen, and pelvis accelerometers to measure longitudinal, lateral, and vertical accelerations. Both dummies were also instrumented with upper neck, shoulder, lumbar, acetabulum, iliac wing, and femur load cells to measure forces and moments, and five (5) rib and one (1) shoulder deflection potentiometers.

The 197 data channels were digitally sampled and recorded at 12,500 samples per second and processed per SAE J211 March 1995.

The crash event was recorded by one (1) real-time panning motion picture camera and ten (10) high-speed digital motion picture cameras. The pre- and post-test conditions were recorded by one (1) real-time motion picture camera.

The side impact test summary data are presented in Section 2.0. The summary of FMVSS 214 data are presented in Section 3.0. The occupant, camera, vehicle, and barrier measurements are presented in Section 4.0. Appendix A contains the still photographic prints. Appendix B contains the dummy and vehicle data plots. Appendix C contains the dummy verification data. Appendix D contains test equipment and instrumentation calibration information. Appendix E contains a copy of the INSIA Report on Structural Measurements.

Section 2.0

Moving Deformable Barrier Side Impact Test Summary

Test Results Summary

This moving deformable barrier side impact test was conducted by TRC Inc. on July 18, 2005.

The test vehicle, a 2005 Subaru Forester 4-door, was equipped with a 2.5-liter transverse engine, automatic transmission, power steering, power brakes, dual stage front airbags, side curtain airbags, and side front torso airbags. The vehicle's test weight was 1607.6 kg. The moving deformable barrier's impact speed was 53.1 km/h. The moving deformable barrier impacted 3 mm to the right of the target point (940 mm rearward of front axle).

Injury Criteria Data Summary		
	Driver	Left Rear Passenger
HIC (15 ms)	19	122
HIC (36 ms)	43	150
Lower Spine Acceleration (g)	37	43
Pelvic Force Summation (N)	3066	3572

Data Acquisition Explanations

The left rear passenger spine rib 2 Z-axis acceleration data channel, 14THSP02RIS2ACZA, did not record any useful data during the test. The resultant was also affected.

The left rear passenger abdomen rib 1 Z-axis acceleration data channel, 14ABRI01LES2AZA, recorded questionable data throughout the test. The resultant was also affected.

The left lower A-post Y-axis acceleration data channel, 11APILLO00000ACYA, recorded questionable data throughout the test.

The left rear seat track Y-axis acceleration data channel, 14SETRLERE00ACYA, recorded questionable data throughout the test.

The left front door mid-rear Y-axis acceleration data channel, 11DOOR000002ACYA, exceeded full-scale at approximately 33 milliseconds and recorded no useful data after that.

Table 1 Crash Test Summary

Test mode:	Moving deformable barrier side impact			
Test date:	07/18/05			
Test time:	13:53			
Ambient temperature:	21° C			
Vehicle year/make/ model/body style:	2005/Subaru/Forester/4-door			
Vehicle test weight:	1607.6 kg			
Impact angle ¹ :	270°			
Impact velocity ² :	53.1 km/h			
Maximum vehicle static crush:	175 mm			
Maximum barrier static crush:	123 mm			
Number of data channels:	197			
Number of cameras:	High-speed	10	Real-time	1
<u>Dummies:</u>	<u>Driver #020</u>		<u>Passenger #056</u>	
Type:	SID-IIs		SID-IIs	
Location:	Left front		Left rear	
Restraint:	3-pt. seat belt, combination head/torso airbag		3-pt. seat belt	
<u>Seat track position for test:</u>				
Driver:	Middle; closest detent rearward of 125 mm			
Passenger:	Fixed			
<u>Seat back position for test:</u>				
Driver:	1.9°; measured at the head restraint support pos			
Passenger:	Fixed			
<u>Head restraint position for test:</u>				
Driver:	Full down			
Passenger:	Full down			
<u>Steering column position:</u>	23.4°; middle of geometric range of travel			

¹ With respect to tow track centerline.

² Speed trap measurement ($\pm$.08 km/h accuracy)

Table 2 General Test and Vehicle Parameter Data

Vehicle year/make/ model/body style:	2005/Subaru/Forester/4-door		
VIN:	JF1SG636X5G750176		
Model year:	2005		
Body style:	4-door		
Color:	Silver		
Engine data:			
Cylinders:	4		
Displacement	2.5 liters		
Cylinder placement:	Straight		
Engine placement:	Transverse		
Transmission data:	<u>5</u> speed,	<u>X</u> manual,	<u> </u> automatic, <u> </u> overdrive
Final drive:	<u> </u> FWD,	<u> </u> RWD,	<u> </u> 4WD <u>X</u> AWD
Date vehicle received:	7/12/2005		
Odometer reading:	53		
Dealer's name and address:	Vehicle supplied by VRTC		

Accessories:

Power steering	Yes	Automatic transmission	No
Power brakes	Yes	Automatic speed control	Yes
Power seats	No	Tilting steering wheel	Yes
Power windows	No	Telescoping steering wheel	No
Tinted glass	Yes	Air conditioning	Yes
Radio	Yes	Anti-skid brake	Yes
Clock	Yes	Rear window defroster	Yes
Other	None	Power door locks	Yes

Certification data from vehicle's label:

Vehicle manufactured by:	Fuji Heavy Ind. LTD		
Date of manufacture:	02/05		
VIN:	JF1SG636X5G750176		
GVWR:	1880 kg	(4150 lbs.)	
GAWR: Front:	930 kg	(2050 lbs.)	
Rear:	1000 kg	(2200 lbs.)	

Table 2 General Test and Vehicle Parameter Data, Continued

Tires on vehicle (mfr., line, size): Yokohama, Geolandar, P215/60R16

Tire pressure with maximum capacity vehicle load:

Front:	44 psi	(300 kPa)
Rear:	44 psi	(300 kPa)

Spare tire (mfr., line, size): Yokohama, Geolandar, P215/60R16

Type of seats:

Front	Bucket
Rear	Split bench

Maximum width: 1715 mm

Wheelbase: 2525 mm

Location of “Recommended Tire Pressure” label:

The label was located on driver side B-pillar.

Data from vehicle’s “Recommended Tire Pressure” label”:

Recommended tire size: P215/60R16

Recommended cold tire pressure:

Front:	29 psi	(200 kPa)
Rear:	28 psi	(190 kPa)

Vehicle Capacity Data:

Number of Occupants (Designated seating capacity):

Front	2
Rear	3
Total	5

Vehicle capacity weight: 408 kg

Rated cargo/luggage weight¹ 68 kg

Test vehicle attitude:

Delivered attitude:	LF	748 mm;	RF	750 mm;	LR	737 mm;	RR	740 mm
Fully loaded attitude:	LF	748 mm;	RF	758 mm;	LR	705 mm;	RR	715 mm
Pre-test attitude:	LF	740 mm;	RF	740 mm;	LR	711 mm;	RR	713 mm
Post-test attitude:	LF	754 mm;	RF	728 mm;	LR	736 mm;	RR	669 mm

¹ RCLW = VCW - (68 kg * designated seating capacity)

Table 2 General Test and Vehicle Parameter Data, Continued

Test vehicle attitude:

	Left Sill Pitch	Right Sill Pitch	Front Bumper L-R Roll	Rear Bumper L-R Roll
As Delivered:	0.1°	0.1°	0.0°	0.0°
As Tested:	0.1°	0.1°	-0.2°	-0.1°
Fully Loaded:	0.1°	0.1°	0.0°	0.0°

Negative Pitch Angle = Vehicle front down

Negative Roll Angle = Driver side down

Weight of test vehicle as received (with maximum fluids)=UDW:

Right front	412.0 kg	Right rear	324.5 kg
Left front	377.5 kg	Left rear	316.5 kg
Total front weight	789.5 kg	(55.2 % of total vehicle weight)	
Total rear weight	641.0 kg	(44.8 % of total vehicle weight)	
Total delivered weight	1430.5 kg		

Calculation of test vehicle's target test weight:

Total Delivered Weight (UDW) =	1430.5 kg
Rated Cargo/Luggage Weight (RCLW) =	68.0 kg
Weight of 2 SID-IIs Dummies @ 57 kg each =	114.0 kg
Target test weight =	1612.5 kg

Weight of test vehicle with required dummies and required equipment:

Right front	411.8 kg	Right rear	391.6 kg
Left front	428.2 kg	Left rear	376.0 kg
Total front weight	840.0 kg	(52.3% of total vehicle weight)	
Total rear weight	767.6 kg	(47.7% of total vehicle weight)	
Total test weight	1607.6 kg		

Table 2 General Test and Vehicle Parameter Data, Continued

Weight of ballast secured in vehicle: None

Components removed to meet target test weight: Front passenger headrests, rear passenger headrests, rear center headrests, rear taillights, rear hatch, alternator, AC pump and hose, alternator bracket, (1) belt tensioner, right rear door release handle.

Location of Vehicle's CG: 1131 mm rearward of front wheel centerline

Fuel System Data:

Usable fuel system capacity 60.2 liters (from owner's manual)

Actual test volume: 55.8 liters (93% of usable)

Table 3 Post-Impact Data

Test number: 050718
Test date: 07/18/05
Test time: 13:53
Test type: Moving deformable barrier left side impact
Impact angle: 270°
Ambient temperature
at impact area: 21° C
Required impact velocity range: 52.1 to 53.8 km/h

MDB impact velocity:

Primary: 53.1 km/h
Secondary: 53.1 km/h
Distance from vehicle to barrier:
Entering velocity trap: 661 mm
Exiting velocity trap: 51 mm

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

Wheelbase = 2525 millimeters
Intended impact point is 322 millimeters rearward of front axle centerline
(which is 940 millimeters forward of the wheelbase midpoint)
Actual Impact Point is 325 millimeters rearward of front axle centerline

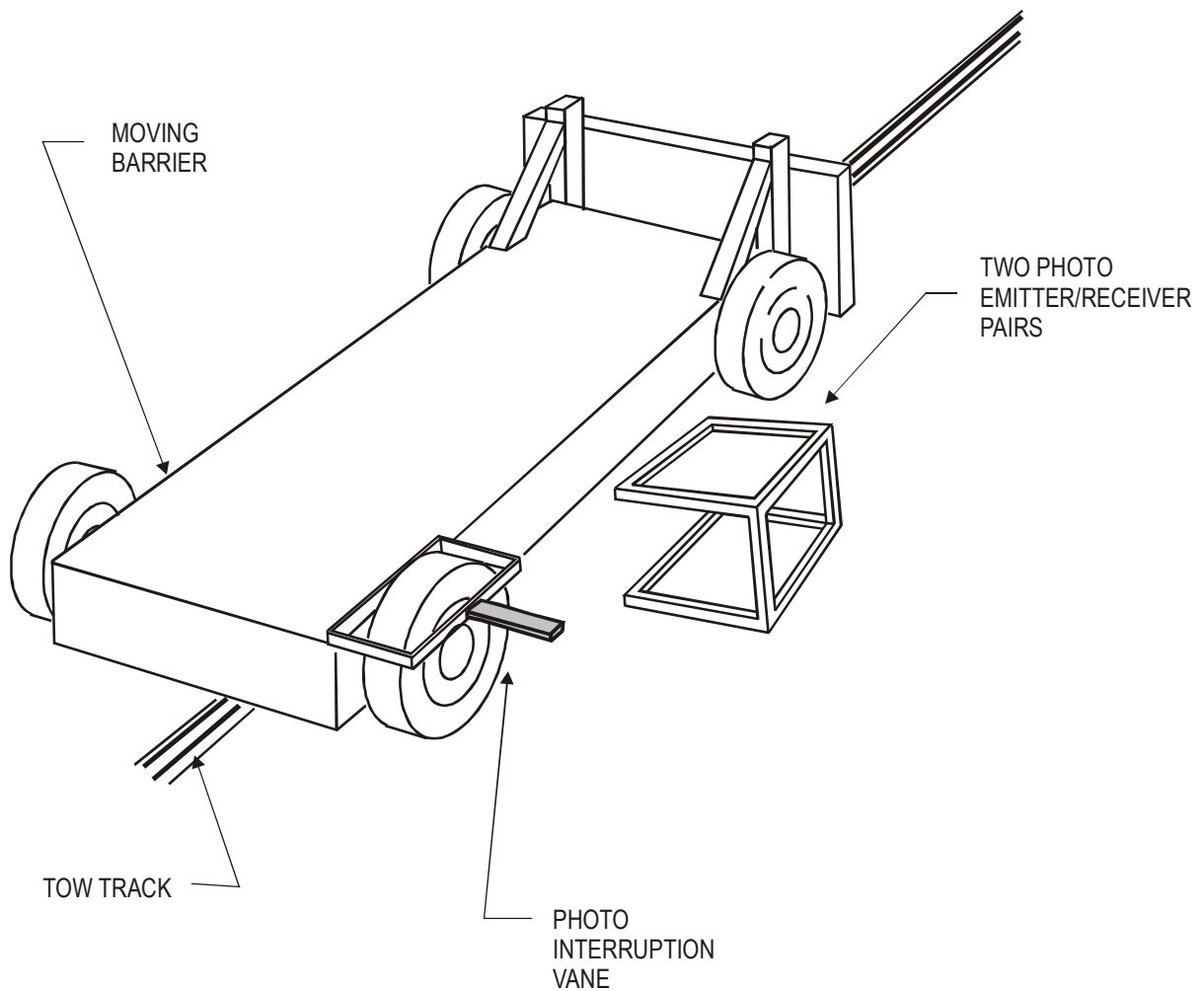
Impact Point:

Actual Impact Point is 3 mm right of nominal impact ref. line (Lateral)
Actual Impact Point is 1 mm up from nominal impact point (Vertical)

Maximum Exterior Static Crush:

1. Level 1 (314 mm above ground) = 53 mm
2. Level 2 (644 mm above ground) = 175 mm
3. Level 3 (684 mm above ground) = 171 mm
4. Level 4 (970 mm above ground) = 93 mm
5. Level 5 (1505 mm above ground) = 2 mm
Maximum Post-Test Intrusion = 175 mm

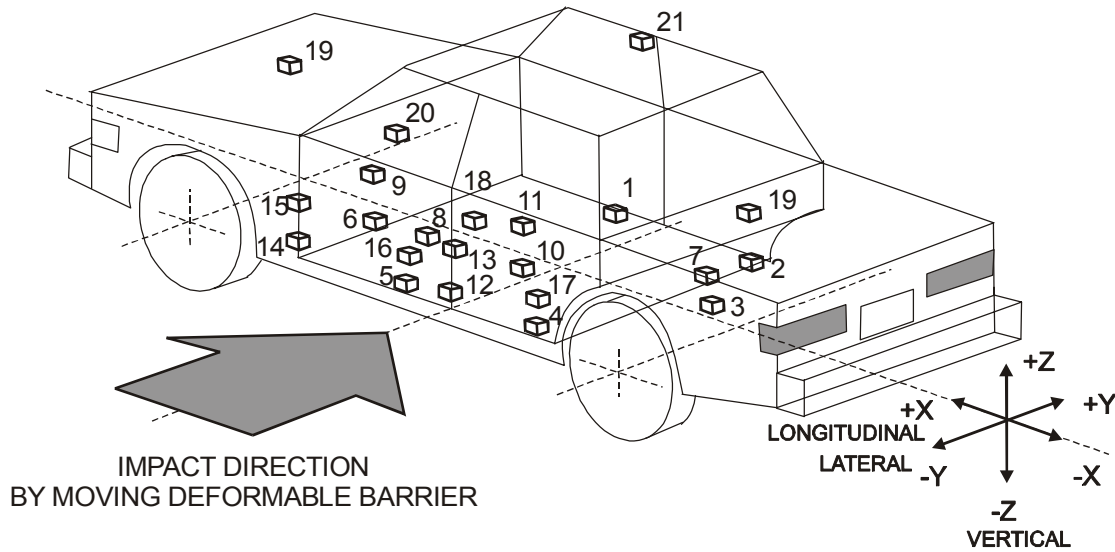
Figure 1 Impact Velocity Measurement System



The final vane clears the final emitter/receiver pair 51 millimeters before impact.

The vanes have 610-millimeter spacing.

Figure 2 Vehicle Accelerometer and String Potentiometer Placement



- 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 Front Side Sill
- 6-Left Front Door Centerline
- 7-Right Rear Occupant Compartment
- 8-Left Front Door Mid-Rear
- 9-Left Front Door Upper Centerline
- 10-Left Rear Door Mid-Rear
- 11-Left Rear Door Upper Centerline

- 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
- 19-Engine Top
- 20-Firewall
- 21-Right Side Roof Rail

Table 4 Test Vehicle Accelerometer Data Summary

Accel. No.	Location		Positive Direction		Negative Direction	
			Max. (g)	Time (ms)	Max. (g)	Time (ms)
1	Right Side Sill at Front Seat	X	2.6	51.8	5.0	27.2
		Y	17.5	16.6	1.8	134.8
		Z	4.8	55.3	11.0	17.0
2	Right Side Sill At Rear Seat	X	3.0	53.2	4.4	28.0
		Y	19.9	22.1	2.3	113.8
		Z	3.9	88.1	7.1	23.1
3	Rear Floorpan Above Axle	X	4.0	17.7	8.7	23.4
		Y	21.2	32.9	2.4	81.6
		Z	4.9	36.1	7.1	26.6
4	Left Side Sill at Rear Seat	Y	52.6	4.9	35.9	39.6
5	Left Side Sill at Front Seat	Y	38.9	4.5	7.6	47.6
6	Left Front Door Centerline	Y	65.5	9.5	91.6	15.6
7	Right Rear Occupant Compartment	Y	19.9	20.5	2.3	113.3
8	Left Front Door Mid-Rear ¹	Y	-----	-----	-----	-----
9	Left Front Door Upper Centerline	Y	98.2	18.6	42.0	31.9
10	Left Rear Door Mid-Rear	Y	89.9	4.8	34.8	32.3
11	Left Rear Door Upper Centerline	Y	79.3	8.6	65.3	32.6
12	Left Lower B-Pillar	Y	106.7	4.2	14.4	33.0
13	Left Middle B-Pillar	Y	108.1	4.5	19.7	33.7
14	Left Lower A-Pillar ¹	Y	76.7	3.3	72.0	20.5
15	Left Middle A-Pillar	Y	44.6	11.8	23.9	27.0
16	Left Front Seat Track	Y	72.5	13.7	17.3	9.7
17	Left Rear Seat Track ¹	Y	47.7	48.6	32.1	36.2
18	Vehicle Center of Gravity	X	6.2	7.8	11.5	12.9
		Y	43.6	24.4	7.3	48.6
		Z	11.8	53.0	21.0	7.5
	Resultant		45.7	24.4		

¹ See Data Acquisition Explanations.

Table 4 Test Vehicle Accelerometer Data Summary, Cont'd.

Accel. No.	Location		Positive Direction		Negative Direction	
			Max. (g)	Time (ms)	Max. (g)	Time (ms)
19	Top of Engine	X	5.4	72.6	16.3	36.6
		Y	3.0	62.8	3.0	93.8
20	Firewall	X	4.1	56.2	22.0	32.3
		Y	6.6	17.3	10.3	41.0
21	Right Roof Rail	X	5.0	53.5	7.1	19.0
		Y	18.9	27.3	2.1	292.6

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

Table 5 Moving Deformable Barrier (MDB) Summary

MDB Face Manufacturer And Serial Number:

Cellbond, EH342

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 = 1127 mm

MDB Weight:

Left Front = 493.8 kg Left Rear = 190.0 kg

Right Front = 274.2 kg Right Rear = 401.2 kg

Total Front = 768.0 kg Total Rear = 591.2 kg

Total MDB Weight = 1359.2 kg

Impact Angle (MDB C/L to Target Vehicle C/L) = 90 degrees

Impact Speed = 53.1 km/h

Maximum Static Crush of Honeycomb Impact Face:

1. Row A at Center of Bumper Level = 123 millimeters

2. Row B at Top of Bumper Level = 82 millimeters

3. Row C at Mid Level = 62 millimeters

4. Row D at Top of Stack Level = 107 millimeters

Instrumentation:

Number of MDB Data Channels = 5

Section 3.0

Summary of FMVSS 214 Data

Table 6 Dummy Injury Criteria Data

Driver Dummy S/N 020

Location		Positive Direction Max. Time (ms)		Negative Direction Max. Time (ms)	
Head Acceleration (g)					
Longitudinal	X	3.8	168.2	9.2	53.9
Lateral	Y	13.6	81.0	4.0	13.7
Vertical	Z	18.4	35.6	0.5	12.5
Resultant		20.9	35.6		
HIC (36 ms)		43			
Upper Neck Force (N)					
X-Axis Shear		269.1	53.6	15.5	199.0
Y-Axis Shear		429.9	81.4	11.7	13.3
Z-Axis Axial		638.5	35.5	18.3	101.4
Upper Neck Moment (N-m)					
About X-Axis		10.6	18.6	23.2	76.2
About Y-Axis		21.3	65.7	15.1	30.6
About Z-Axis		16.2	68.7	9.6	219.7
Shoulder Acceleration (g)					
Longitudinal	X	137.1	21.1	129.6	12.2
Lateral	Y	170.5	12.2	150.2	11.7
Vertical	Z	59.2	17.4	154.9	19.5
Resultant		208.5	12.2		
Shoulder Force (N)					
Longitudinal	X	459.4	13.2	262.6	26.2
Lateral	Y	11.7	270.9	723.7	14.4
Vertical	Z	247.9	16.3	145.0	67.1
Shoulder Displacement (mm)					
Lateral	Y	11.3	42.5		
Upper Spine Acceleration (g)					
Longitudinal	X	8.6	57.0	18.5	25.8
Lateral	Y	28.4	42.5	2.9	70.5
Vertical	Z	8.6	32.2	10.8	47.8
Resultant		28.8	42.5		

Table 6 Dummy Injury Criteria Data, Cont'd.

Driver Dummy S/N 020

Location		Positive Direction Max. Time (ms)		Negative Direction Max. Time (ms)	
Spine Rib 1 Acceleration (g)					
Longitudinal	X	5.9	56.9	12.2	32.6
Lateral	Y	29.8	42.2	4.0	80.8
Vertical	Z	8.8	29.5	13.8	47.8
Resultant		31.4	43.1		
Spine Rib 2 Acceleration (g)					
Longitudinal	X	5.5	56.2	12.5	32.6
Lateral	Y	32.0	42.0	5.1	80.6
Vertical	Z	8.5	29.4	14.4	47.7
Resultant		33.5	43.4		
Spine Rib 3 Acceleration (g)					
Longitudinal	X	5.9	53.2	12.9	32.6
Lateral	Y	33.5	41.7	6.0	80.5
Vertical	Z	8.8	29.4	14.1	47.7
Resultant		34.7	43.9		
Lower Spine Acceleration (g)					
Longitudinal	X	7.0	49.5	13.9	32.8
Lateral	Y	35.8	40.2	7.3	77.7
Vertical	Z	8.8	29.4	14.8	47.7
Resultant		37.1	44.2		
Spine Rib 5 Acceleration (g)					
Longitudinal	X	9.9	49.1	14.6	32.7
Lateral	Y	37.8	40.0	8.7	77.8
Vertical	Z	8.7	29.4	14.8	47.8
Resultant		38.5	44.3		
Lumbar Moment (N-m)					
Longitudinal	X	32.8	49.0	11.2	27.0
Lateral	Y	14.3	120.6	17.5	29.0
Vertical	Z	13.8	44.3	10.4	70.6

Table 6 Dummy Injury Criteria Data, Cont'd.

Driver Dummy S/N 020

Location		Positive Direction Max. Time (ms)		Negative Direction Max. Time (ms)	
Thorax Rib 1 Acceleration (g)					
Longitudinal	X	13.5	28.9	38.0	12.2
Lateral	Y	56.5	16.7	22.9	11.7
Vertical	Z	19.6	28.6	12.1	20.8
Resultant		57.7	16.6		
Thorax Rib 1 Displacement (mm)					
Lateral	Y	5.5	36.7		
Thorax Rib 2 Acceleration (g)					
Longitudinal	X	16.5	29.4	47.1	16.6
Lateral	Y	32.1	43.7	29.4	15.7
Vertical	Z	21.4	45.4	10.7	48.9
Resultant		49.8	16.4		
Thorax Rib 2 Displacement (mm)					
Lateral	Y	5.6	37.0		
Thorax Rib 3 Acceleration (g)					
Longitudinal	X	28.2	12.5	37.7	17.0
Lateral	Y	45.0	12.7	38.4	15.9
Vertical	Z	19.8	31.0	18.7	14.6
Resultant		52.1	12.6		
Thorax Rib 3 Displacement (mm)					
Lateral	Y	11.4	42.2		
Abdomen Rib 1 Acceleration (g)					
Longitudinal	X	14.1	19.2	26.1	15.4
Lateral	Y	67.1	37.8	39.5	13.8
Vertical	Z	26.6	25.8	21.9	45.0
Resultant		68.4	37.8		
Abdomen Rib 1 Displacement (mm)					
Lateral	Y	6.9	49.0		

Table 6 Dummy Injury Criteria Data, Cont'd.

Driver Dummy S/N 020

Location		Positive Direction Max. Time (ms)		Negative Direction Max. Time (ms)	
Abdomen Rib 2 Acceleration (g)					
Longitudinal	X	16.4	52.2	33.2	18.2
Lateral	Y	73.0	37.4	15.7	17.0
Vertical	Z	37.4	41.1	31.0	45.0
Resultant		73.8	37.3		
Abdomen Rib 2 Displacement (mm)					
Lateral	Y	11.2	46.6		
Pelvis Acceleration (g)					
Longitudinal	X	11.0	63.7	13.9	15.8
Lateral	Y	39.0	35.2	16.1	15.7
Vertical	Z	5.9	19.8	13.6	62.9
Resultant		39.6	35.2		
Left Acetabulum Force (N)					
Lateral	Y	2245.1	39.9	1.9	253.0
Left Illiac Wing Force (N)					
Lateral	Y	848.9	44.1	45.8	24.3
Pelvis Force Summation (N)					
Lateral	Y	3066	42.2		
Right Femur Force (N)					
X-Axis		35.7	244.5	339.1	63.3
Y-Axis		309.3	61.7	155.6	62.6
Z-Axis		1005.0	44.4	96.4	107.4
Right Femur Moment (N-m)					
About Longitudinal		12.4	17.8	79.0	57.0
About Lateral		15.4	64.5	47.7	43.6
About Vertical		5.0	151.4	62.7	60.4

Table 6 Dummy Injury Criteria Data, Cont'd.

Driver Dummy S/N 020

Location	Positive Direction		Negative Direction	
	Max.	Time (ms)	Max.	Time (ms)
Left Femur Force (N)				
X-Axis	209.8	61.0	115.5	17.3
Y-Axis	158.8	33.9	523.1	53.1
Z-Axis	508.6	33.7	382.6	61.4
Left Femur Moment (N-m)				
About Longitudinal	110.2	61.0	31.8	36.7
About Lateral	57.7	60.9	17.7	121.2
About Vertical	12.9	123.3	43.6	52.6

Positive Direction:

Longitudinal: Forward

Lateral: Rightward

Vertical: Downward

Negative Direction:

Longitudinal: Rearward

Lateral: Leftward

Vertical: Upward

Table 6 Dummy Injury Criteria Data, Cont'd.

Left Rear Passenger Dummy S/N 056

Location		Positive Direction Max. Time (ms)		Negative Direction Max. Time (ms)	
Head Acceleration (g)					
Longitudinal	X	2.5	27.3	21.7	73.8
Lateral	Y	44.7	67.0	2.9	41.2
Vertical	Z	27.4	67.3	9.2	39.4
Resultant		53.2	68.3		
HIC (36 ms)		150			
Upper Neck Force (N)					
X-Axis Shear		665.7	73.4	65.6	27.3
Y-Axis Shear		93.4	83.3	176.8	69.7
Z-Axis Axial		676.4	81.8	584.8	69.9
Upper Neck Moment (N-m)					
About X-Axis		27.1	56.2	27.8	73.4
About Y-Axis		22.0	101.3	52.9	73.2
About Z-Axis		21.3	90.5	3.5	166.2
Shoulder Acceleration (g)					
Longitudinal	X	43.5	26.6	48.3	62.9
Lateral	Y	32.7	27.0	70.0	49.1
Vertical	Z	230.0	26.3	109.6	27.3
Resultant		230.6	26.3		
Shoulder Force (N)					
Longitudinal	X	135.3	98.5	362.5	64.9
Lateral	Y	1020.7	55.0	187.1	35.9
Vertical	Z	507.4	72.6	415.7	31.7
Shoulder Displacement (mm)					
Lateral	Y	15.9	58.6		
Upper Spine Acceleration (g)					
Longitudinal	X	8.2	73.3	21.6	87.5
Lateral	Y	32.0	57.2	8.4	83.4
Vertical	Z	12.8	70.2	8.5	38.8
Resultant		32.2	57.3		

Table 6 Dummy Injury Criteria Data, Cont'd.

Left Rear Passenger Dummy S/N 056

Location		Positive Direction Max. Time (ms)		Negative Direction Max. Time (ms)	
Spine Rib 1 Acceleration (g)					
Longitudinal	X	7.7	33.2	13.2	87.6
Lateral	Y	25.8	50.2	6.9	97.0
Vertical	Z	22.9	70.4	22.5	37.9
Resultant		30.0	39.4		
Spine Rib 2 Acceleration (g)					
Longitudinal	X	7.6	33.4	10.1	87.6
Lateral	Y	26.5	46.1	6.9	90.3
Vertical ¹	Z	-----	-----	-----	-----
Resultant ¹		-----	-----		
Spine Rib 3 Acceleration (g)					
Longitudinal	X	7.4	33.4	9.5	71.8
Lateral	Y	29.9	45.0	8.7	89.0
Vertical	Z	22.3	70.3	23.0	42.1
Resultant		36.9	42.0		
Lower Spine Acceleration (g)					
Longitudinal	X	8.0	33.5	16.3	72.2
Lateral	Y	36.1	41.4	12.2	88.4
Vertical	Z	23.2	70.5	23.8	42.2
Resultant		43.1	41.7		
Spine Rib 5 Acceleration (g)					
Longitudinal	X	9.2	83.5	19.8	72.3
Lateral	Y	40.9	41.7	13.5	88.5
Vertical	Z	23.2	70.5	24.4	42.2
Resultant		47.5	41.8		
Lumbar Moment (N-m)					
Longitudinal	X	71.0	43.8	8.5	305.5
Lateral	Y	19.1	40.2	26.1	75.1
Vertical	Z	25.2	136.2	2.7	208.4

Table 6 Dummy Injury Criteria Data, Cont'd.

Left Rear Passenger Dummy S/N 056

Location		Positive Direction Max. Time (ms)		Negative Direction Max. Time (ms)	
Thorax Rib 1 Acceleration (g)					
Longitudinal	X	59.4	65.8	36.0	94.0
Lateral	Y	51.8	52.1	29.1	31.7
Vertical	Z	35.4	30.7	26.5	28.1
Resultant		76.5	65.7		
Thorax Rib 1 Displacement (mm)					
Lateral	Y	16.8	58.2		
Thorax Rib 2 Acceleration (g)					
Longitudinal	X	31.6	67.0	27.7	54.6
Lateral	Y	64.0	27.1	37.9	32.6
Vertical	Z	53.8	31.5	31.0	27.0
Resultant		71.9	27.1		
Thorax Rib 2 Displacement (mm)					
Lateral	Y	20.8	56.8		
Thorax Rib 3 Acceleration (g)					
Longitudinal	X	24.1	68.9	24.6	45.7
Lateral	Y	103.3	28.4	39.0	32.8
Vertical	Z	40.5	33.7	40.3	29.6
Resultant		109.8	28.4		
Thorax Rib 3 Displacement (mm)					
Lateral	Y	24.2	49.2		
Abdomen Rib 1 Acceleration (g)					
Longitudinal	X	13.7	39.1	37.5	44.9
Lateral	Y	129.2	29.6	43.0	37.5
Vertical ¹	Z	-----	-----	-----	-----
Resultant ¹		-----	-----		
Abdomen Rib 1 Displacement (mm)					
Lateral	Y	25.9	48.4		

Table 6 Dummy Injury Criteria Data, Cont'd.

Left Rear Passenger Dummy S/N 056

Location	Positive Direction Max. Time (ms)		Negative Direction Max. Time (ms)	
Abdomen Rib 2 Acceleration (g)				
Longitudinal X	10.3	133.1	36.3	44.0
Lateral Y	65.2	31.8	14.4	89.8
Vertical Z	30.4	41.9	36.9	79.7
Resultant	70.5	31.7		
Abdomen Rib 2 Displacement (mm)				
Lateral Y	19.1	54.9		
Pelvis Acceleration (g)				
Longitudinal X	4.6	27.5	17.6	49.1
Lateral Y	41.9	31.0	8.9	78.2
Vertical Z	12.7	80.6	13.7	34.1
Resultant	43.1	31.0		
Left Acetabulum Force (N)				
Lateral Y	2681.5	35.4	39.5	178.4
Left Illiac Wing Force (N)				
Lateral Y	928.1	41.4	99.7	60.3
Pelvis Force Summation (N)				
Lateral Y	3572	39.5		
Right Femur Force (N)				
X-Axis	105.1	166.7	322.0	46.7
Y-Axis	687.4	46.7	209.1	50.2
Z-Axis	573.3	43.4	230.5	46.3
Right Femur Moment (N-m)				
About Longitudinal	90.5	50.6	83.1	46.6
About Lateral	35.5	51.3	8.9	245.2
About Vertical	39.7	59.0	18.1	169.0

Table 6 Dummy Injury Criteria Data, Cont'd.

Left Rear Passenger Dummy S/N 056

Location	Positive Direction		Negative Direction	
	Max.	Time (ms)	Max.	Time (ms)
Left Femur Force (N)				
X-Axis	66.5	156.2	172.0	51.7
Y-Axis	449.7	50.0	443.8	46.2
Z-Axis	298.7	59.9	1254.9	38.1
Left Femur Moment (N-m)				
About Longitudinal	55.4	46.4	71.5	49.6
About Lateral	23.8	59.4	31.5	33.9
About Vertical	39.3	59.1	5.5	157.4

Positive Direction:

Longitudinal: Forward
 Lateral: Rightward
 Vertical: Downward

Negative Direction:

Longitudinal: Rearward
 Lateral: Leftward
 Vertical: Upward

¹ See Data Acquisition Explanations

Table 7 Post-Impact Dummy/Vehicle Data

Visible Dummy Contact Points:

	<u>Driver</u>	<u>Passenger</u>
Head	Combination head/torso airbag, head restraint	C-pillar
Shoulder	Combination head/torso airbag	Door panel
Abdomen	Door panel	None
Left knee	Door panel	Door panel
Right knee	None	None

Door opening:

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

Seat movement:

	<u>Seat back failure</u>	<u>Seat shift</u>
Left Front	None	None
Left Rear	None	None

Glazing damage: None

Other notable impact effects: None

Section 4.0

Occupant, Vehicle, Camera, and Barrier Information

Table 8 Vehicle Structural Measurements^{1,2}

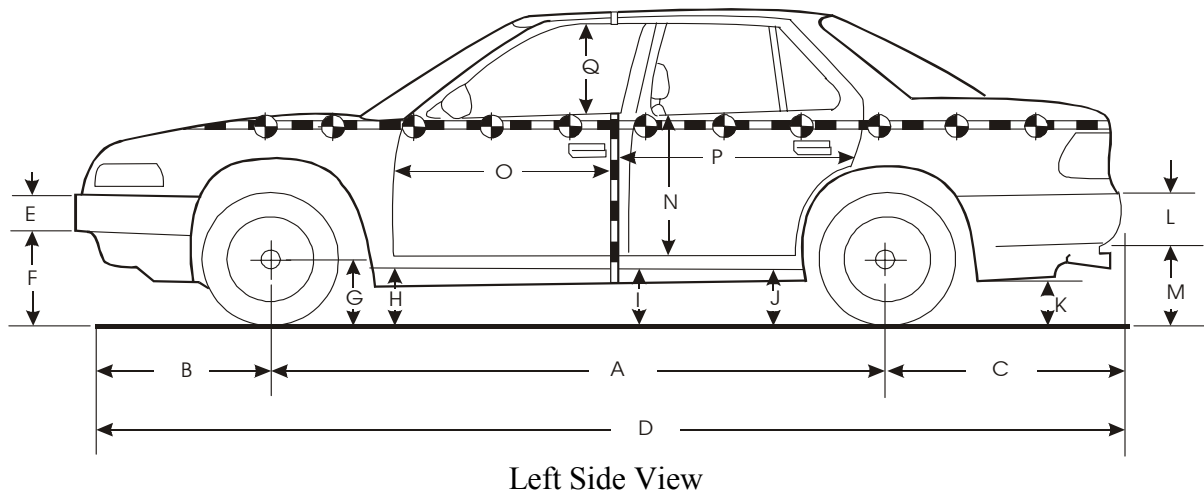
	Elements	Pre-Test
1	Total Length	4450
2	Total Width	1715
3	Bumper Top Height	583
4	Bumper Bottom Height	398
5	Longitudinal Member Top Height	563
6	Longitudinal Member Bottom Height	474
7	Distance Between Longitudinal Members	990
7'	Longitudinal Member Width	70
8	Engine Top Height	859
9	Engine Bottom Height	234
10	Engine and Gearbox Width	680
11	Front Bumper - Engine Distance	450
12	Front Shock Absorber Fixing Height	913
13	Bonnet Leading Edge Height	806
14	Front Shock Absorber Fixing Width	1075
15	Front Bumper - Front Axle Distance	905
16	Front Axle - A Pillar Distance	512
17	A Pillar - B Pillar Distance	990
18	B Pillar - Rear Axle Distance	1015
19	B Pillar - C Pillar Distance	860
20	Roof Sill Bottom Height	1423
21	Roof Sill Top Height	1458
22	Floor Sill Bottom Height	353
23	Floor Sill Top Height	400

All distance measurements are in millimeters.

¹ Taken from INSIA report, “Structural Survey of Cars, Methodology of the Main Resistant Elements in the Car Body”, March 1999. This report is included in Appendix E.

² The vertical measurements from the ground are adjusted based on the test vehicle’s pre-test attitude measurements.

Figure 3 Pre-Test And Post-Test Measurement Points



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

Code	Measurement Description	Pre-Test	Post-Test	Change
A	Wheelbase	2525	2494	31
B	Front Axle to Front Surface of Vehicle	905	910	-5
C	Rear Axle to Rear Surface of Vehicle	1020	1017	3
D	Total Length at Centerline	4450	4431	19
E	Front Bumper Thickness	150	150	0
F	Front Bumper Bottom to Ground	445	456	-11
G	Sill Height at Front Wheel Well	313	313	0
H	Sill Height at Front Door Leading Edge	302	336	-34
I	Sill Height at "B" Pillar	304	341	-37
J1	Sill Height at Rear Wheel Well	235	249	-14
J2	Pinch Weld Height at Rear Wheel Well	285	294	-9
K	Sill Height Aft of Rear Wheel Well	303	308	-5
L	Rear Bumper Thickness	110	110	0
M	Rear Bumper Bottom to Ground	456	438	18
N	Sill Height to Window Bottom Sill	740	706	34
O	Front Door Leading Edge to Impact CL	700	723	-23
P	Rear Door Trailing Edge to Impact CL	1242	1183	59
Q	Front Window Opening	450	460	-10
R	Right Side Length	4365	4389	-24
S	Left Side Length	4365	4358	7
T	Vehicle Width at "B" Post	1267	1184	83

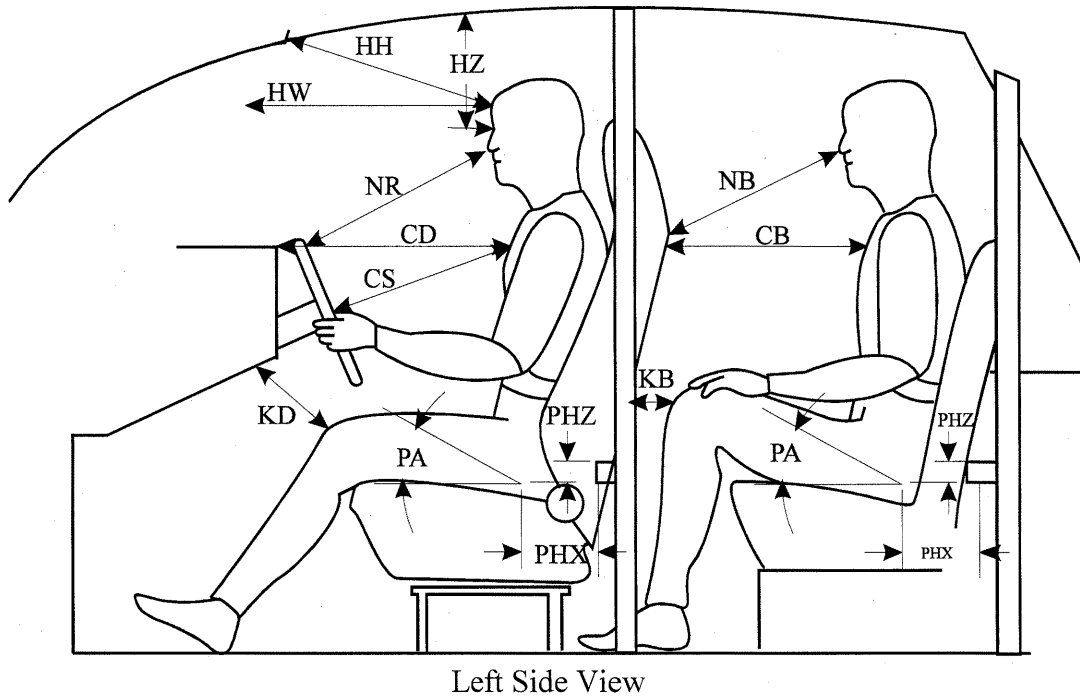
D = Length at centerline
T = Width at B-pillar

E&L = Bumper Thickness
J1 = To Pinch Weld

R = Right Side Length
J2 = To Sill

S = Left Side Length

Figure 4 SID-IIs Longitudinal Clearance Dimensions

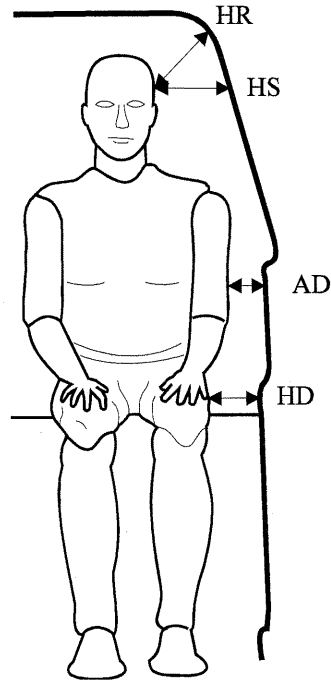


Note: All measurements were recorded using TRC Inc.'s FARO Arm with a tolerance of ± 0.1 mm.

Measurement	Driver SID-IIs # 020	Left Rear Pass. SID-IIs # 056
HH	272	N/A
HW	518	N/A
HZ	219	N/A
NR/NB	235	712
CD/CB	582	697
CS	172	N/A
KDL(KDA°)/KBL(KBA°)	40/(2.7°)	362/(4.2°)
KDR(KDA°)/KBR(KBA°)	42/(7.7°)	359/(1.4°)
PA°	18.1°	18.0°
PHX	278	231
PHZ	54	297

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

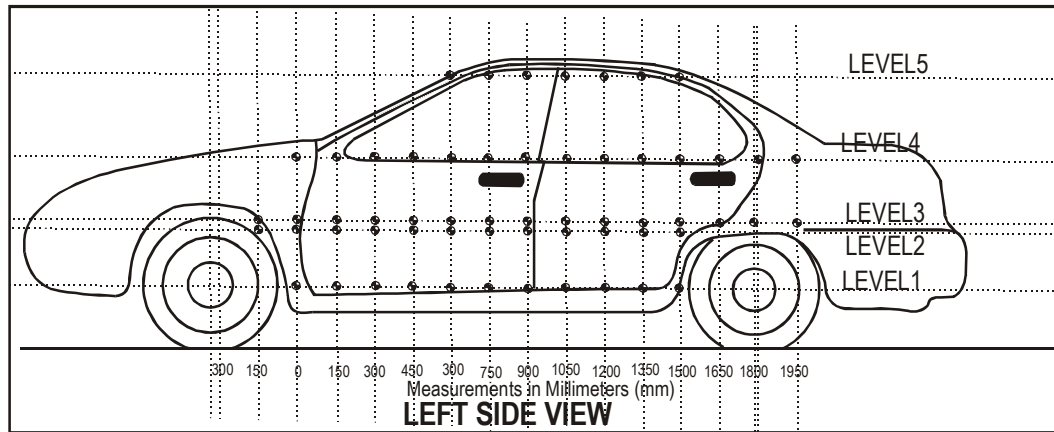
Figure 5 SID-IIs Lateral Clearance Dimensions



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

Measurement	Driver SID-IIs # 020	Left Rear Pass. SID-IIs # 056
HR	251	292
HS	344	367
AD	148	76
HD	157	162

Figure 6 Vehicle Side Measurements



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>1505</u>	mm
Level 4 @ Window Sill	=	<u>970</u>	mm
Level 3 @ Mid Door	=	<u>684</u>	mm
Level 2 @ Occupant H-Point	=	<u>644</u>	mm
Level 1 @ Axle Centerline Height (or Sill Top Height)	=	<u>314</u>	mm

Table 9 Vehicle Exterior Crush Profiles - All Levels

Location	Height		(mm) From Impact Point													
			-1200	-1050	-900	-750	-600	-450	-300	-150	0	150	300	450	600	750
Level 1 Side Sill	314	Pre	---	---	---	---	---	---	---	---	---	759	759	759	759	759
		Post	---	---	---	---	---	---	---	---	---	721	716	712	711	706
		Crush	---	---	---	---	---	---	---	---	---	38	43	47	48	53
Level 2 H-Point	644	Pre	---	---	---	832	---	---	---	---	864	851	845	846	847	847
		Post	---	---	---	832	---	---	---	---	851	719	705	701	690	687
		Crush	---	---	---	0	---	---	---	---	13	132	140	145	157	160
Level 3 Mid-Door	684	Pre	---	---	---	825	859	---	---	---	865	849	850	850	851	851
		Post	---	---	---	824	859	---	---	---	869	719	717	711	708	706
		Crush	---	---	---	1	0	---	---	---	-4	130	133	139	143	145
Level 4 Window Sill	970	Pre	---	---	---	---	756	773	785	794	800	804	808	813	815	818
		Post	---	---	---	---	755	772	785	793	798	787	784	780	773	769
		Crush	---	---	---	---	1	1	0	1	2	17	24	33	42	49
Level 5 Window Top	1505	Pre	---	---	---	---	---	---	---	---	---	---	---	---	---	572
		Post	---	---	---	---	---	---	---	---	---	---	---	---	---	573
		Crush	---	---	---	---	---	---	---	---	---	---	---	---	---	-1

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

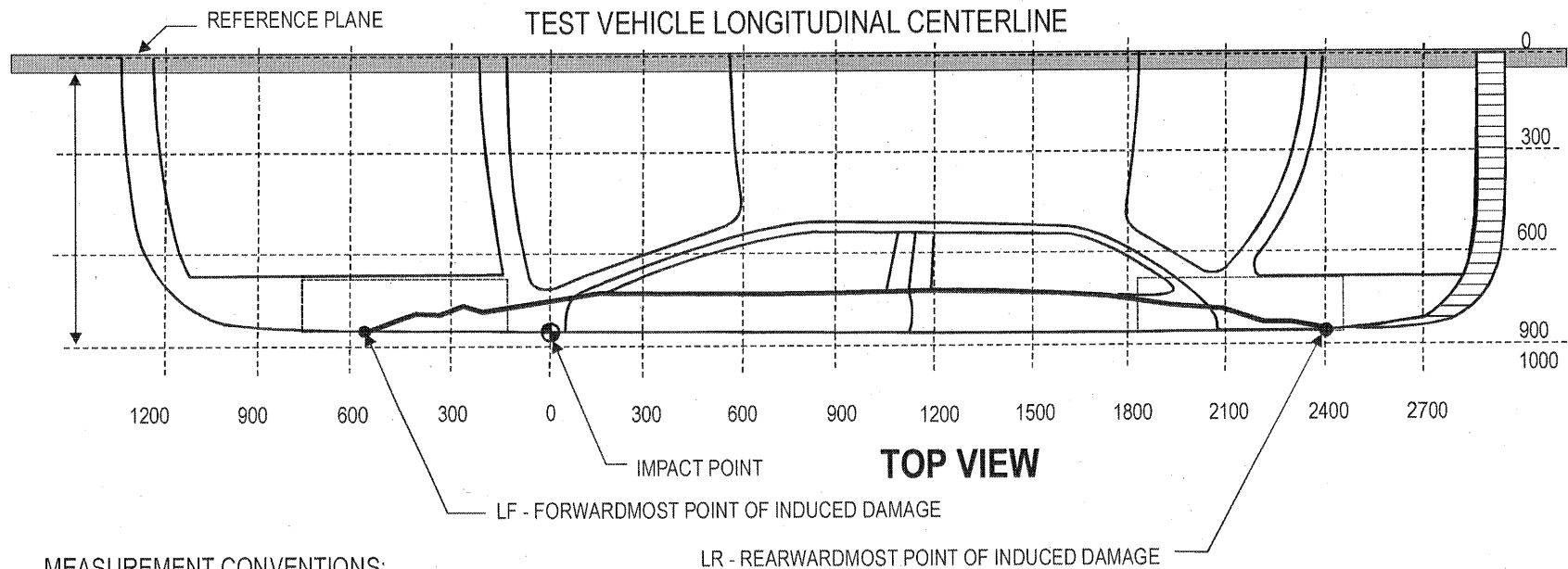
Table 9 Vehicle Exterior Crush Profiles - All Levels, Cont'd.

Location	Height		(mm) From Impact Point												
			900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700
Level 1 Side Sill	314	Pre	759	760	760	760	760	760	---	---	---	---	---	---	---
		Post	709	707	711	713	719	721	---	---	---	---	---	---	---
		Crush	50	53	49	47	41	39	---	---	---	---	---	---	---
Level 2 H-Point	644	Pre	848	849	851	851	851	852	856	---	---	---	---	858	844
		Post	700	694	693	696	683	677	737	---	---	---	---	920	913
		Crush	148	155	158	155	168	175	119	---	---	---	---	-62	-69
Level 3 Mid-Door	684	Pre	851	851	851	850	849	847	851	863	---	---	---	857	837
		Post	706	698	702	681	679	676	734	845	---	---	---	918	905
		Crush	145	153	149	169	170	171	117	18	---	---	---	-61	-68
Level 4 Window Sill	970	Pre	820	823	823	824	825	824	832	843	819	817	813	807	799
		Post	767	763	730	740	756	769	791	846	831	835	836	850	867
		Crush	53	60	93	84	69	55	41	-3	-12	-18	-23	-43	-68
Level 5 Window Top	1505	Pre	580	578	577	575	572	571	569	569	567	565	563	558	546
		Post	581	576	578	579	581	585	587	595	601	602	603	601	594
		Crush	-1	2	-1	-4	-9	-14	-18	-26	-34	-37	-40	-43	-48

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

Figure 7 Vehicle Damage Profile Distances

NOTE: All measurements were recorded using TRC Inc.'s FARO Arm with a tolerance of plus or minus 0.1 mm.



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 = 0 mm (Level 2)	864	851	13
5: 450 mm (Level 2)	846	701	145
4: 750 mm (Level 2)	847	687	160
3: 1050 mm (Level 2)	849	694	155
2: 1500 mm (Level 3)	849	679	170
1: LR = 1950 mm (Level 3)	863	845	18

Full length of induced damage was 1950 mm.

Figure 8 Exterior Static Crush For Impactor Face

(Grid as looking at MDB from front)

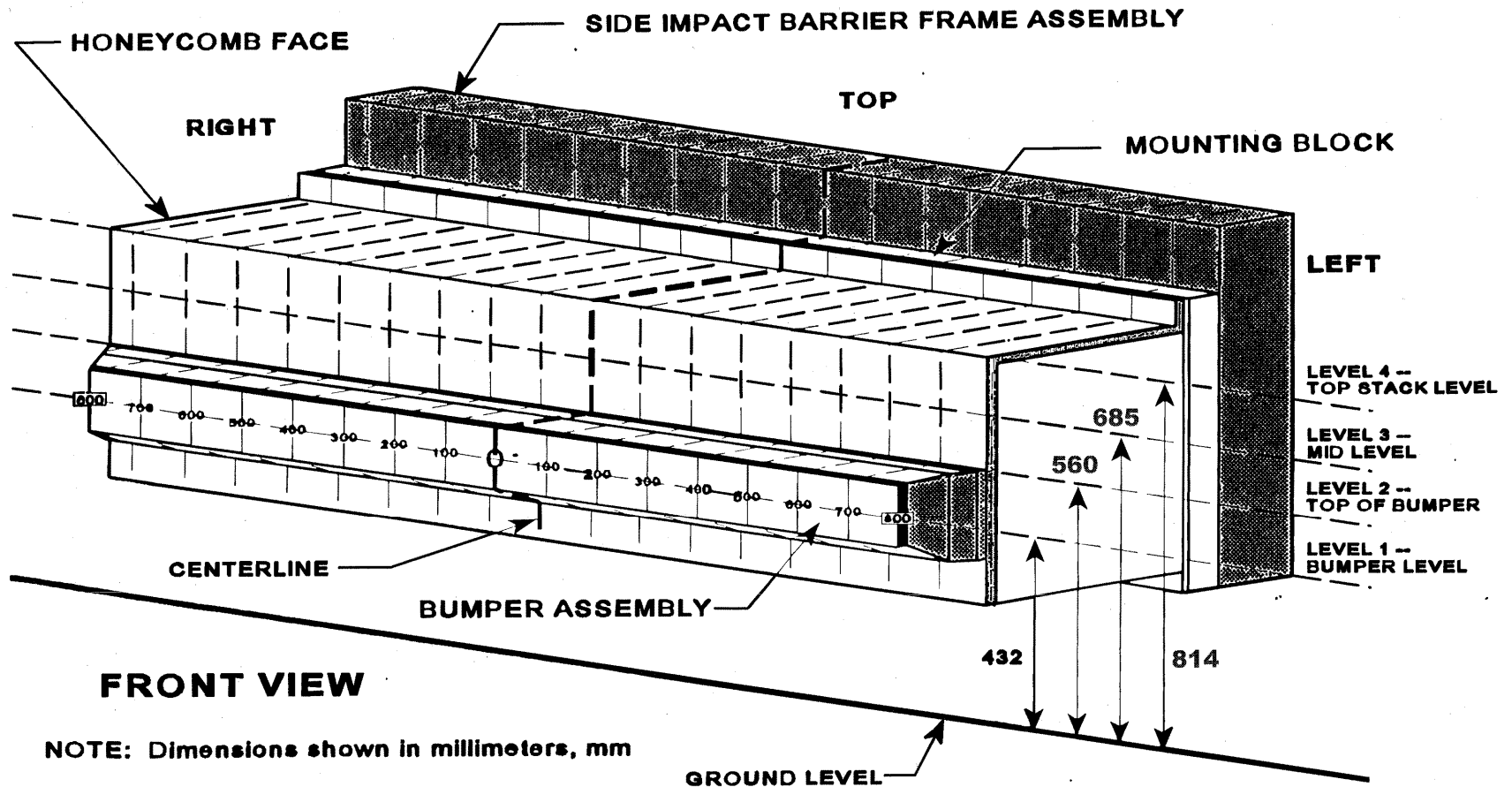


Table 10 Exterior Static Crush For Impactor Face

		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	-39	-21	-13	-9	-13	-38	-54	-29	-14	-13	-15	-18	-24	-31	-45	-73	-107	
Mid Level Level C	685	-45	-5	-4	-5	-5	-16	-28	-17	-14	-10	-9	-10	-14	-20	-31	-46	-62	
Top Bumper Level-Level B	560	-82	-71	-64	-58	-51	-50	-46	-46	-47	-42	-40	-40	-39	-39	-50	-61	-66	
Mid Bumper Level - Level A	432	-123	-111	-105	-95	-91	-97	-89	-86	-84	-90	-82	-80	-79	-79	-88	-107	-117	

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

Table 11 Deformable Barrier Face Profiles

Deformable Barrier Face Profile

Level D - Top Stack

Pre-Test

Index	Xmm	Ymm	Zmm
1	-385	803	-49
2	-384	703	-49
3	-385	602	-50
4	-384	503	-50
5	-385	402	-50
6	-385	302	-52
7	-385	202	-51
8	-385	103	-51
9	-385	2	-52
10	-385	-97	-52
11	-385	-197	-52
12	-385	-298	-53
13	-385	-398	-53
14	-385	-497	-54
15	-385	-597	-54
16	-385	-697	-54
17	-385	-797	-54

Post-Test

Index	Xmm	Ymm	Zmm
1	-347	770	-87
2	-364	671	-87
3	-372	572	-87
4	-376	473	-87
5	-372	372	-88
6	-347	276	-91
7	-331	177	-91
8	-356	81	-85
9	-371	-18	-80
10	-372	-118	-77
11	-371	-218	-74
12	-367	-318	-71
13	-360	-418	-67
14	-353	-517	-64
15	-340	-617	-61
16	-312	-711	-65
17	-277	-803	-66

Difference

Index	Xmm	Ymm	Zmm
1	-39	33	38
2	-21	31	38
3	-13	30	37
4	-9	30	37
5	-13	30	38
6	-38	27	39
7	-54	25	40
8	-29	22	34
9	-14	20	28
10	-13	21	26
11	-15	21	22
12	-18	20	18
13	-24	20	14
14	-31	20	10
15	-45	20	7
16	-73	14	11
17	-107	5	12

Table 11 Deformable Barrier Face Profiles, Cont'd.

Deformable Barrier Face Profile Cont'd.

Level C - Mid Level

Pre-Test

Index	Xmm	Ymm	Zmm
18	-384	804	-178
19	-384	704	-178
20	-385	604	-178
21	-384	504	-178
22	-385	405	-178
23	-384	305	-178
24	-384	204	-179
25	-385	104	-179
26	-384	4	-180
27	-385	-96	-180
28	-385	-196	-180
29	-384	-295	-181
30	-384	-396	-182
31	-384	-496	-181
32	-384	-596	-182
33	-384	-696	-182
34	-384	-796	-183

Post-Test

Index	Xmm	Ymm	Zmm
18	-340	766	-211
19	-379	674	-214
20	-381	574	-214
21	-380	474	-214
22	-379	375	-215
23	-368	276	-216
24	-356	177	-217
25	-368	78	-212
26	-371	-22	-208
27	-375	-122	-205
28	-376	-222	-200
29	-375	-322	-196
30	-370	-422	-193
31	-364	-522	-189
32	-353	-622	-185
33	-338	-721	-182
34	-322	-820	-178

Difference

Index	Xmm	Ymm	Zmm
18	-45	38	34
19	-5	30	37
20	-4	30	36
21	-5	30	37
22	-5	30	37
23	-16	29	38
24	-28	28	38
25	-17	26	33
26	-14	26	28
27	-10	26	25
28	-9	26	20
29	-10	26	16
30	-14	27	12
31	-20	26	7
32	-31	26	4
33	-46	25	0
34	-62	24	-5

Table 11 Deformable Barrier Face Profiles, Cont'd.

Deformable Barrier Face Profile Cont'd.

Level B - Top of Bumper

Pre-Test

Index	Xmm	Ymm	Zmm
35	-383	804	-302
36	-383	704	-302
37	-384	604	-302
38	-384	504	-303
39	-384	404	-303
40	-384	304	-304
41	-384	204	-304
42	-384	104	-304
43	-384	4	-305
44	-384	-96	-305
45	-384	-196	-306
46	-384	-296	-307
47	-384	-396	-308
48	-384	-496	-307
49	-383	-596	-307
50	-383	-696	-308
51	-383	-796	-308

Post-Test

Index	Xmm	Ymm	Zmm
35	-301	771	-311
36	-313	673	-317
37	-320	572	-319
38	-325	471	-322
39	-332	374	-322
40	-334	272	-323
41	-337	173	-324
42	-338	72	-323
43	-337	-26	-322
44	-342	-128	-320
45	-344	-227	-316
46	-344	-328	-314
47	-345	-426	-311
48	-345	-527	-308
49	-334	-628	-302
50	-323	-727	-296
51	-317	-826	-298

Difference

Index	Xmm	Ymm	Zmm
35	-82	33	10
36	-71	31	14
37	-64	31	16
38	-58	32	19
39	-51	30	19
40	-50	32	20
41	-46	31	20
42	-46	32	19
43	-47	30	18
44	-42	32	15
45	-40	31	11
46	-40	32	7
47	-39	30	4
48	-39	31	2
49	-50	32	-5
50	-61	31	-12
51	-66	30	-11

Table 11 Deformable Barrier Face Profiles, Cont'd.

Deformable Barrier Face Profile Cont'd.

Level A - Mid Bumper

Pre-Test

Index	Xmm	Ymm	Zmm
52	-475	795	-432
53	-486	697	-431
54	-486	597	-431
55	-486	497	-431
56	-486	397	-431
57	-486	297	-432
58	-486	197	-432
59	-486	97	-433
60	-486	-3	-432
61	-486	-103	-433
62	-486	-203	-433
63	-485	-303	-433
64	-486	-402	-433
65	-486	-503	-433
66	-486	-603	-434
67	-486	-702	-434
68	-470	-799	-435

Post-Test

Index	Xmm	Ymm	Zmm
52	-352	758	-436
53	-374	663	-437
54	-381	564	-437
55	-391	464	-439
56	-395	364	-438
57	-389	264	-437
58	-397	164	-437
59	-400	64	-436
60	-402	-36	-436
61	-396	-136	-433
62	-404	-234	-434
63	-405	-335	-434
64	-406	-434	-432
65	-406	-535	-431
66	-398	-635	-429
67	-380	-732	-425
68	-354	-827	-423

Difference

Index	Xmm	Ymm	Zmm
52	-123	37	4
53	-111	34	6
54	-105	34	6
55	-95	34	7
56	-91	33	7
57	-97	33	6
58	-89	33	5
59	-86	33	4
60	-84	33	4
61	-90	33	1
62	-82	32	1
63	-80	32	0
64	-79	32	-1
65	-79	32	-2
66	-88	32	-5
67	-107	30	-8
68	-117	29	-12

Figure 9 Deformable Barrier Face Profiles

Level D - Deformable Barrier Face Profile 1-17

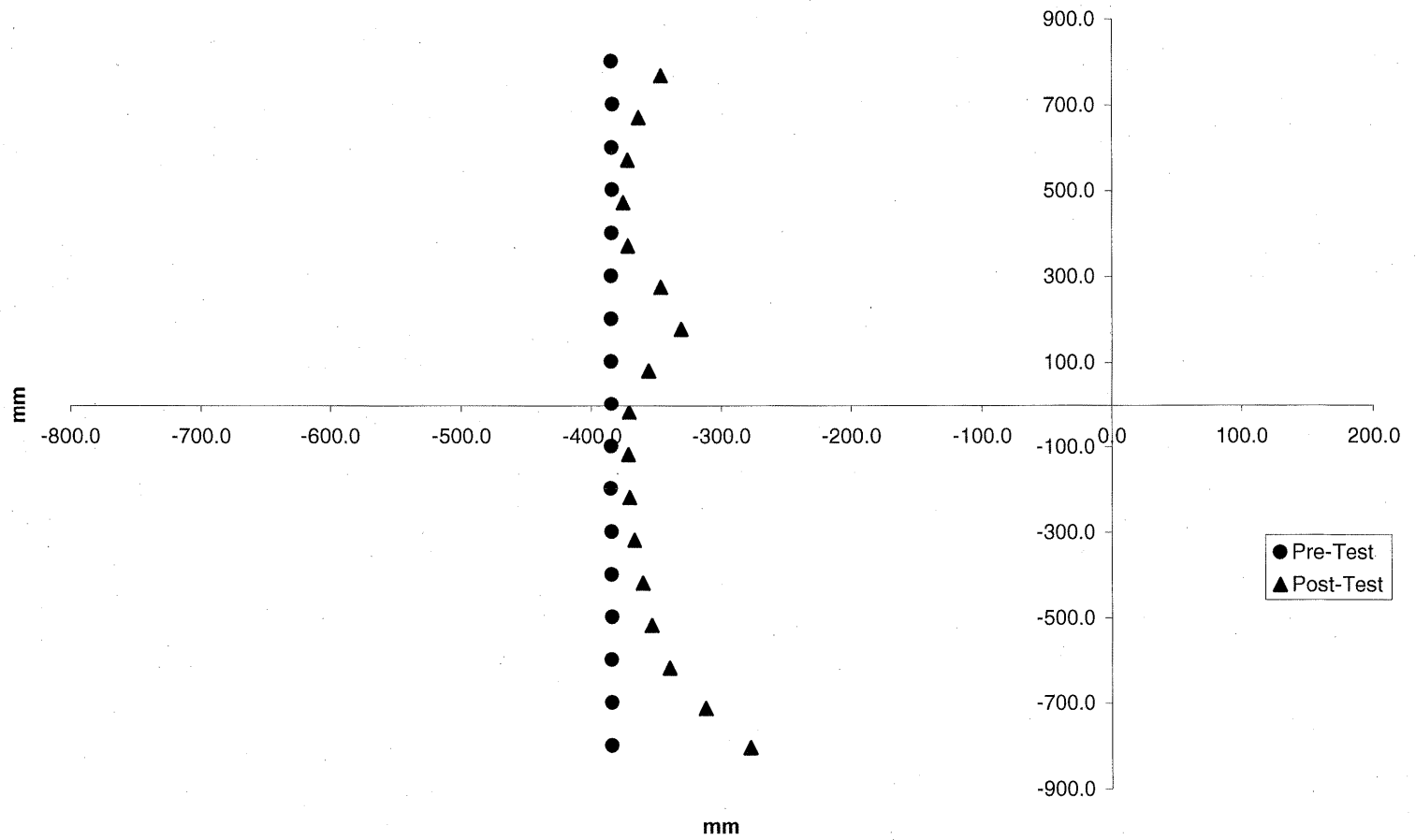


Figure 9 Deformable Barrier Face Profiles, Cont'd.

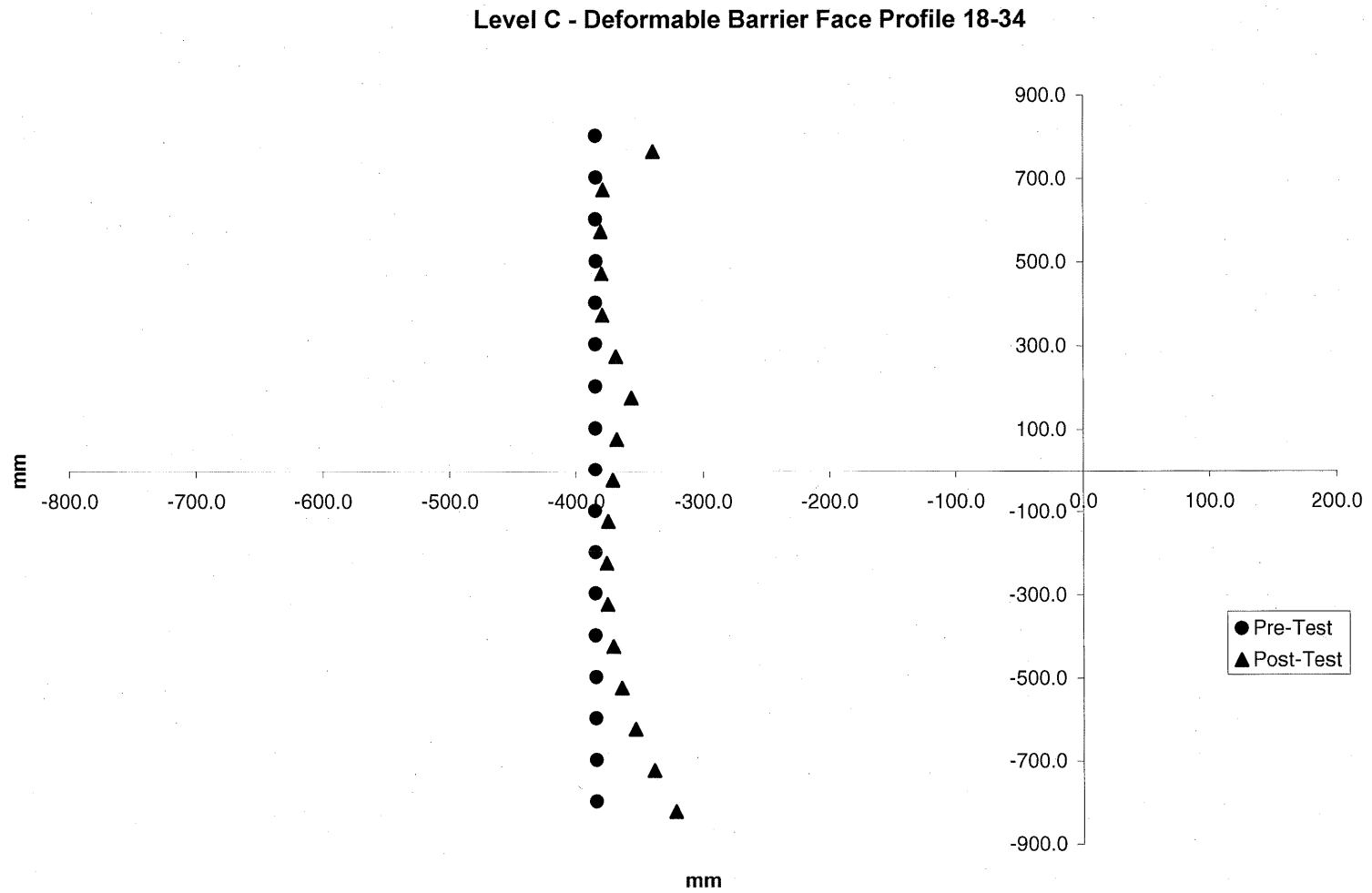


Figure 9 Deformable Barrier Face Profiles, Cont'd.

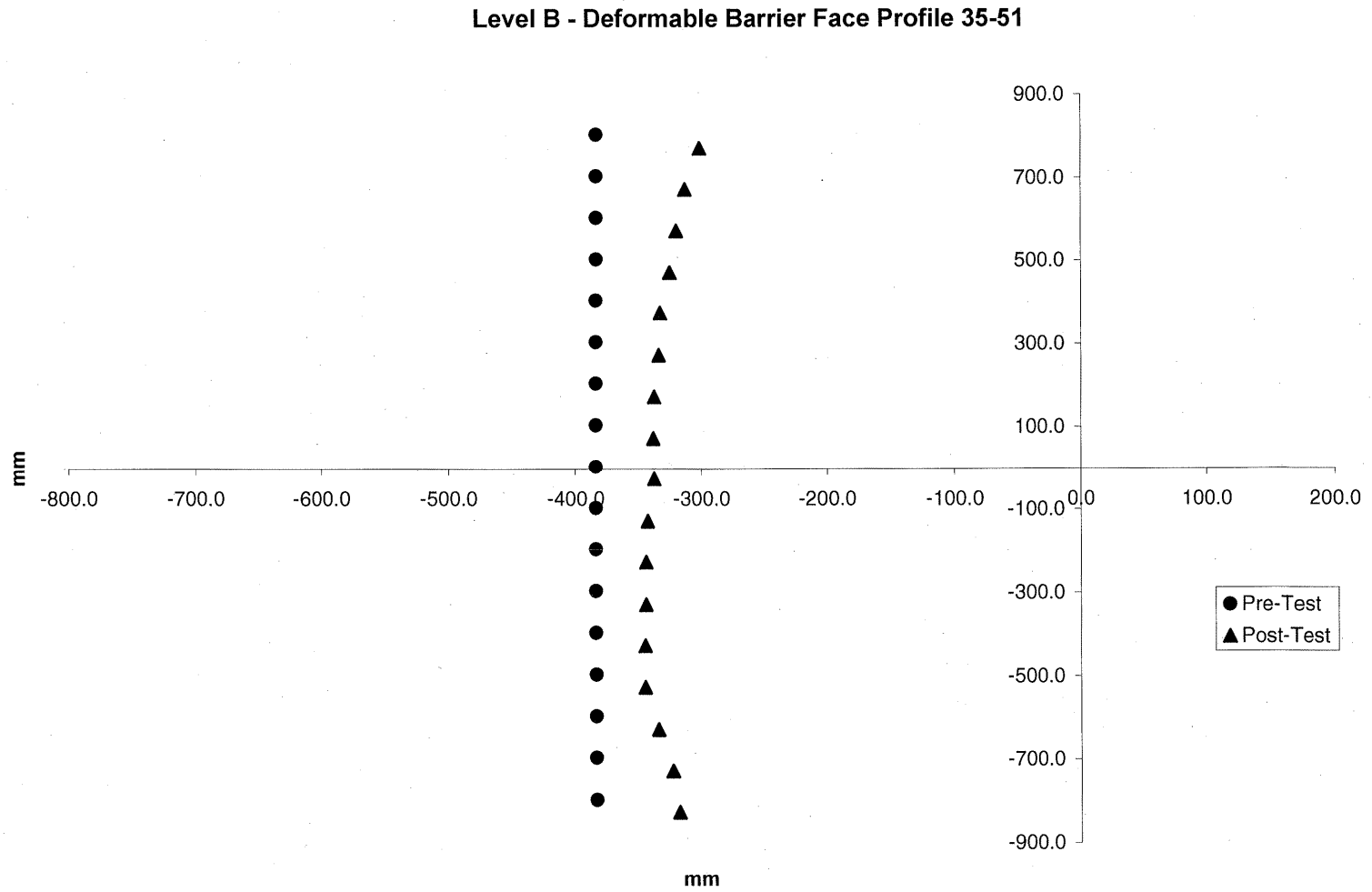


Figure 9 Deformable Barrier Face Profiles, Cont'd.

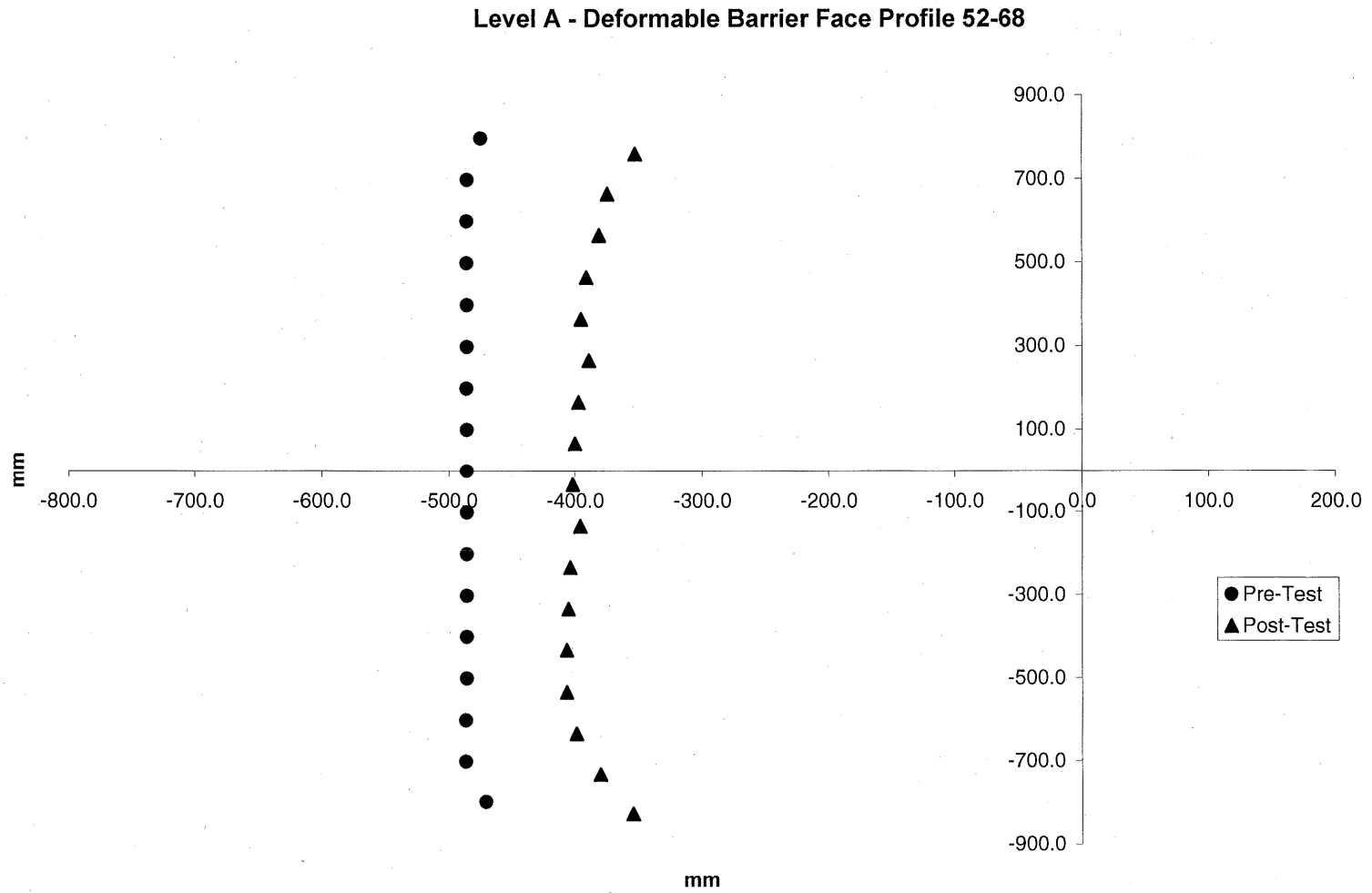
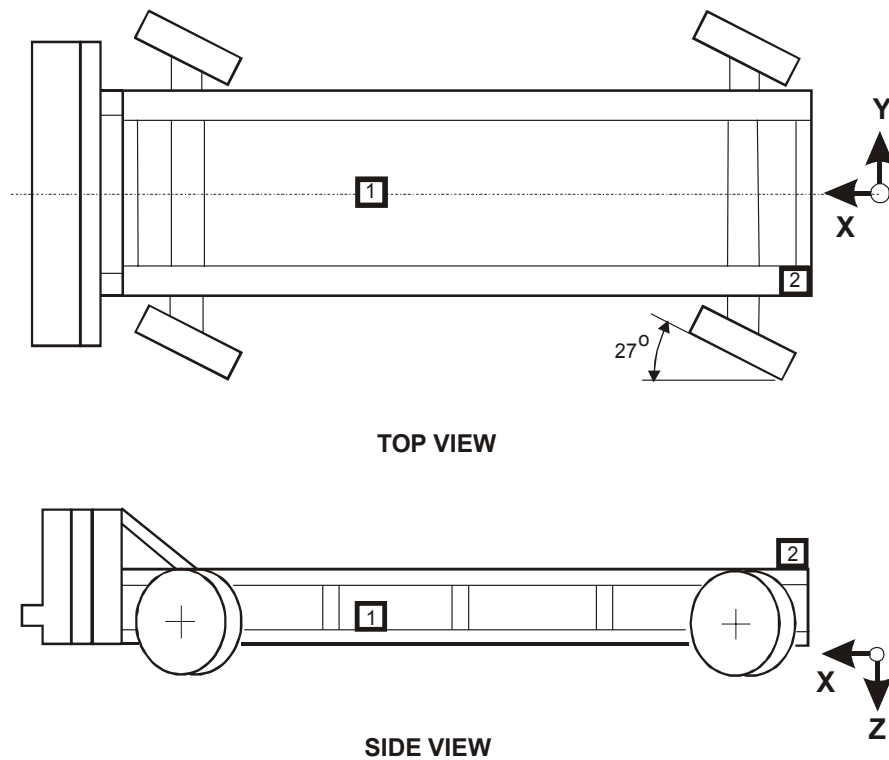


Figure 10 MDB Accelerometer Locations and Data Summary



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	1853	0	-519				
	Longitudinal X				1.2	110.5	21.2	41.8
	Lateral Y				2.3	55.0	7.5	28.4
	Vertical Z				8.6	16.1	6.2	21.8
	Resultant R				21.9	41.2		
2	Rear Frame Member	411	-738	-628				
	Longitudinal X				1.7	111.5	22.6	39.8
	Lateral Y				2.9	30.5	3.8	54.4

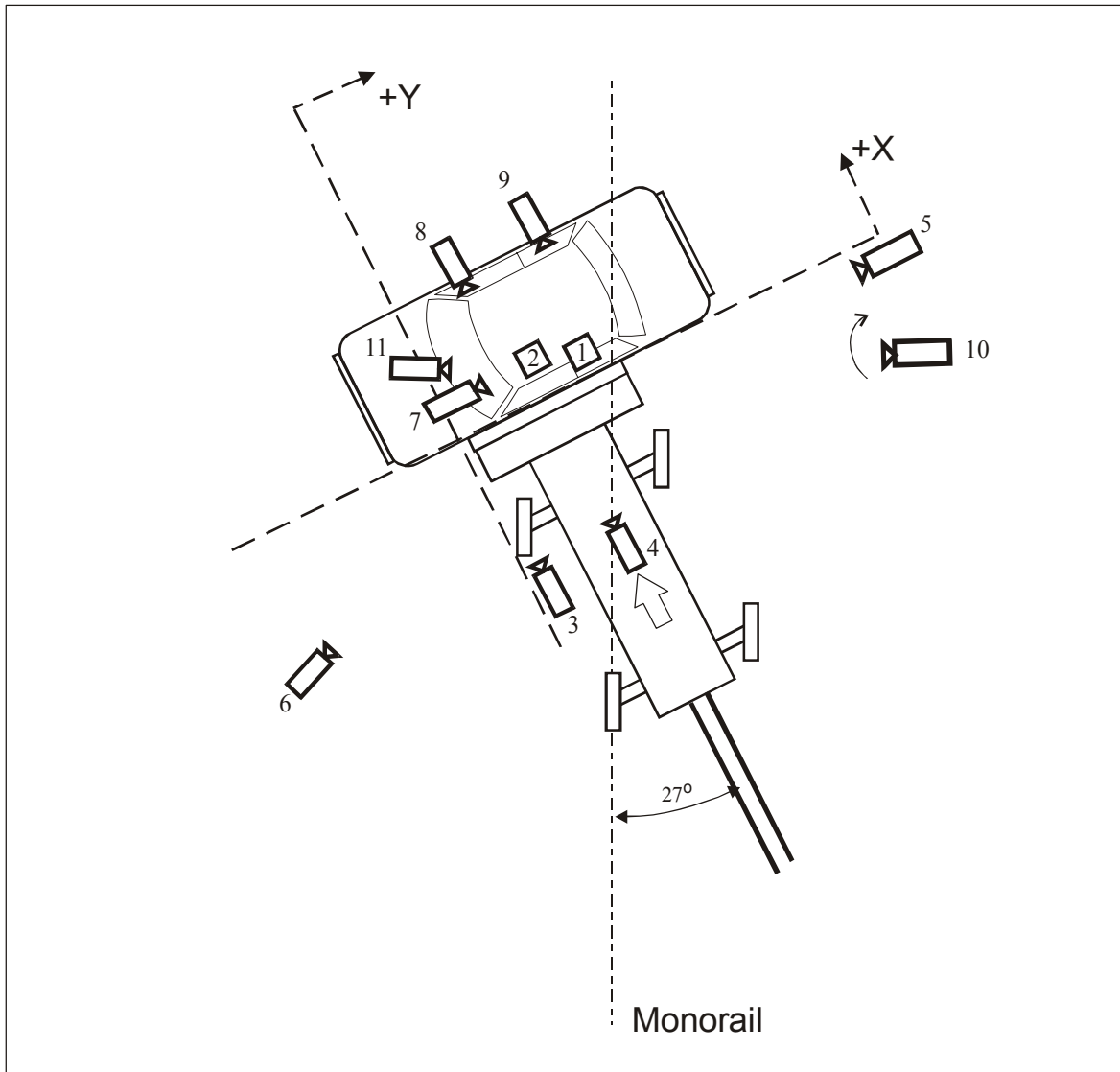
*Reference: X = Rear Bumper (+ Forward)

Y = Vehicle Centerline (+ To Right)

Z = Ground Level (+ Down)

All measurements accurate to within ± 3 mm.

Figure 11 Camera Positions



Impact
Area

Table 12 Camera Information

Camera Number	Location	Location, mm			Angle (deg.)	Lens (mm)	Speed (fps)
		X	Y	Z			
1	Overhead wide	250	2150	-5750	-77.5	10	1000
2	Overhead tight	370	1800	-5750	-85.5	Zoom	1000
3	Onboard MDB left side	-1750	-40	-720	-0.5	13	1000
4	Onboard MDB center	-2480	830	-1353	-5.2	17	1000
5	Right wide	2600	5400	-950	2.4	12.5	1000
6	Left quarter wide	0	-8670	-1000	2.4	25	1000
7	Onboard vehicle front	500	-1500	-1300	1.5	25	1000
8	Onboard side front door	1660	300	-1100	8.7	12.5	1000
9	Onboard side rear door	1660	800	-1100	6.7	12.5	1000
10	Real-time Panning-Video	N/A	N/A	N/A	N/A		24
11	Onboard vehicle driver hip	800	-1300	-1610	25.6	50	1000

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

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

+Z: Downward from ground level

Appendix A

Photographs



Figure A-1 Post-Test Front View

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Figure A-2 Pre-Test Left Front View



Figure A-3 Post-Test Left Front View



Figure A-4 Pre-Test Left Side View



Figure A-5 Post-Test Left Side View



Figure A-6 Pre-Test Left Rear View



Figure A-7 Post-Test Left Rear View



Figure A-8 Pre-Test Rear View



Figure A-9 Post-Test Rear View



Figure A-10 Pre-Test Right Rear View



Figure A-11 Post-Test Right Rear View



Figure A-12 Pre-Test Right Side View



Figure A-13 Post-Test Right Side View



Figure A-14 Pre-Test Right Front View



Figure A-15 Post-Test Right Front View

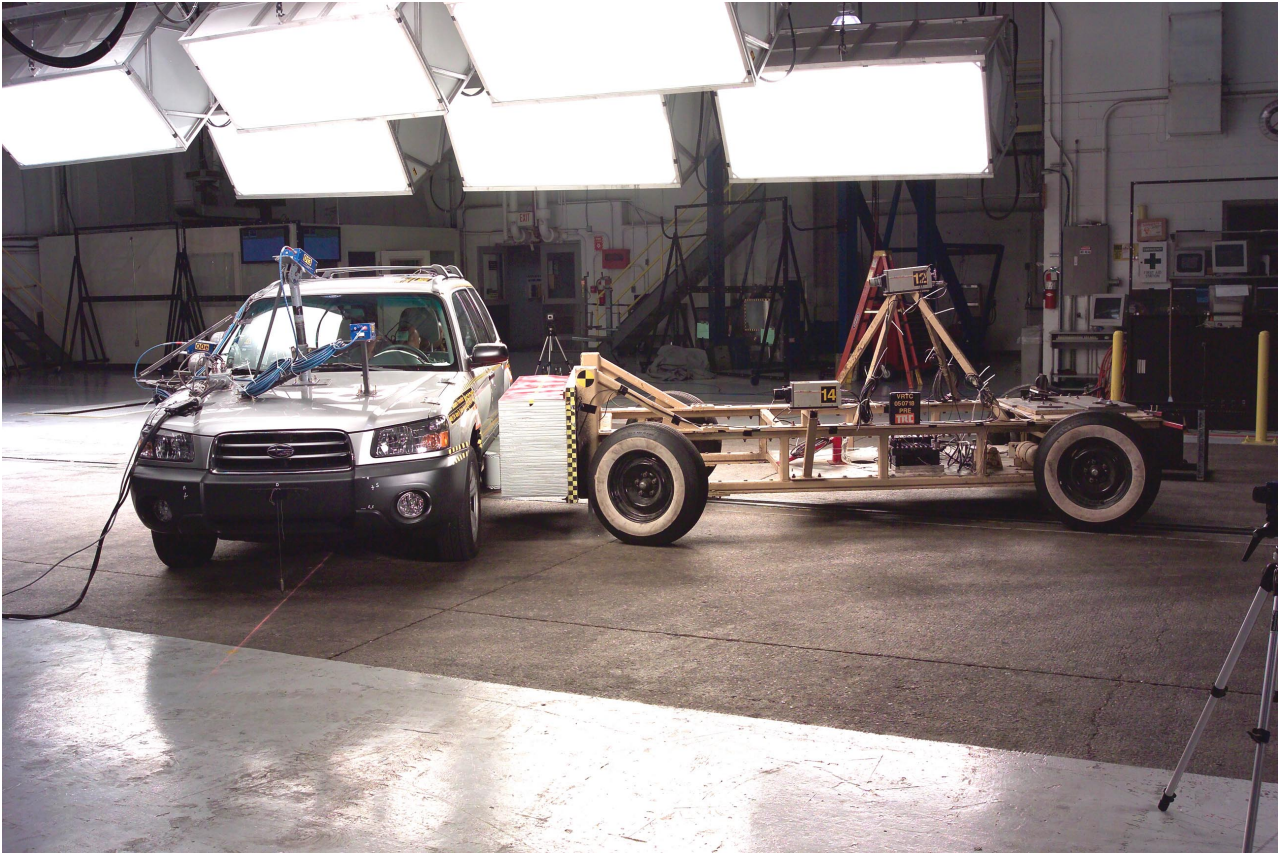


Figure A-16 Pre-Test Front View with MDB in Position



Figure A-17 Post-Test Front View with MDB in Position

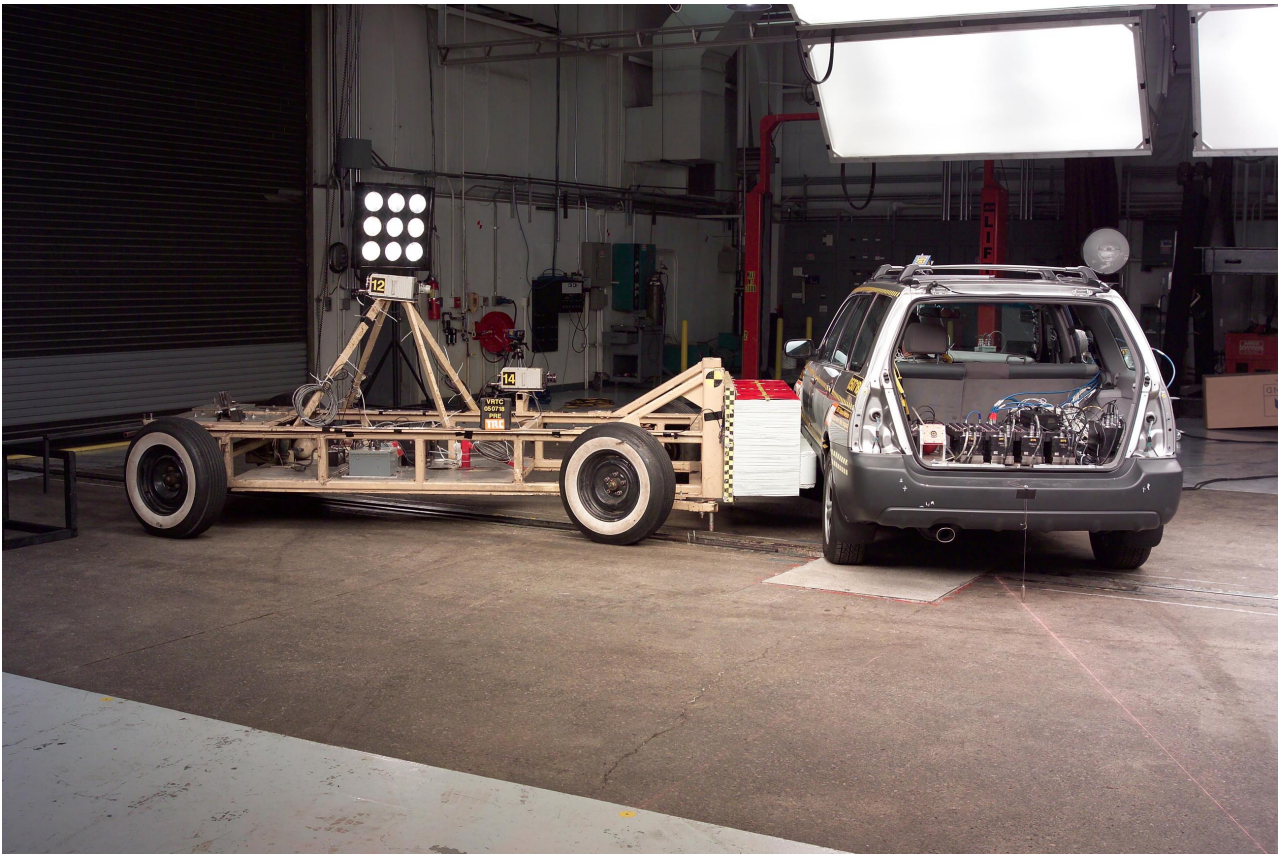


Figure A-18 Pre-Test Rear View with MDB in Position

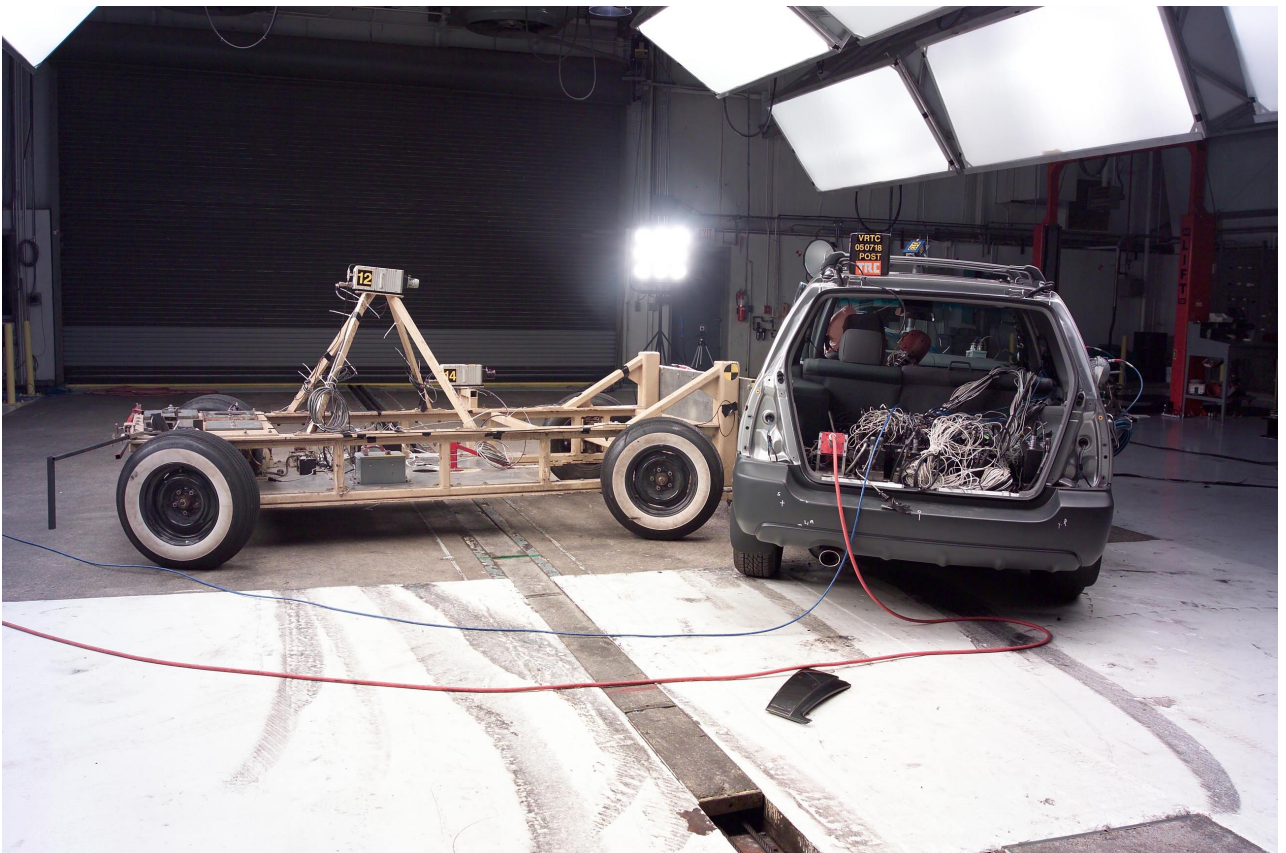


Figure A-19 Post-Test Rear View with MDB in Position

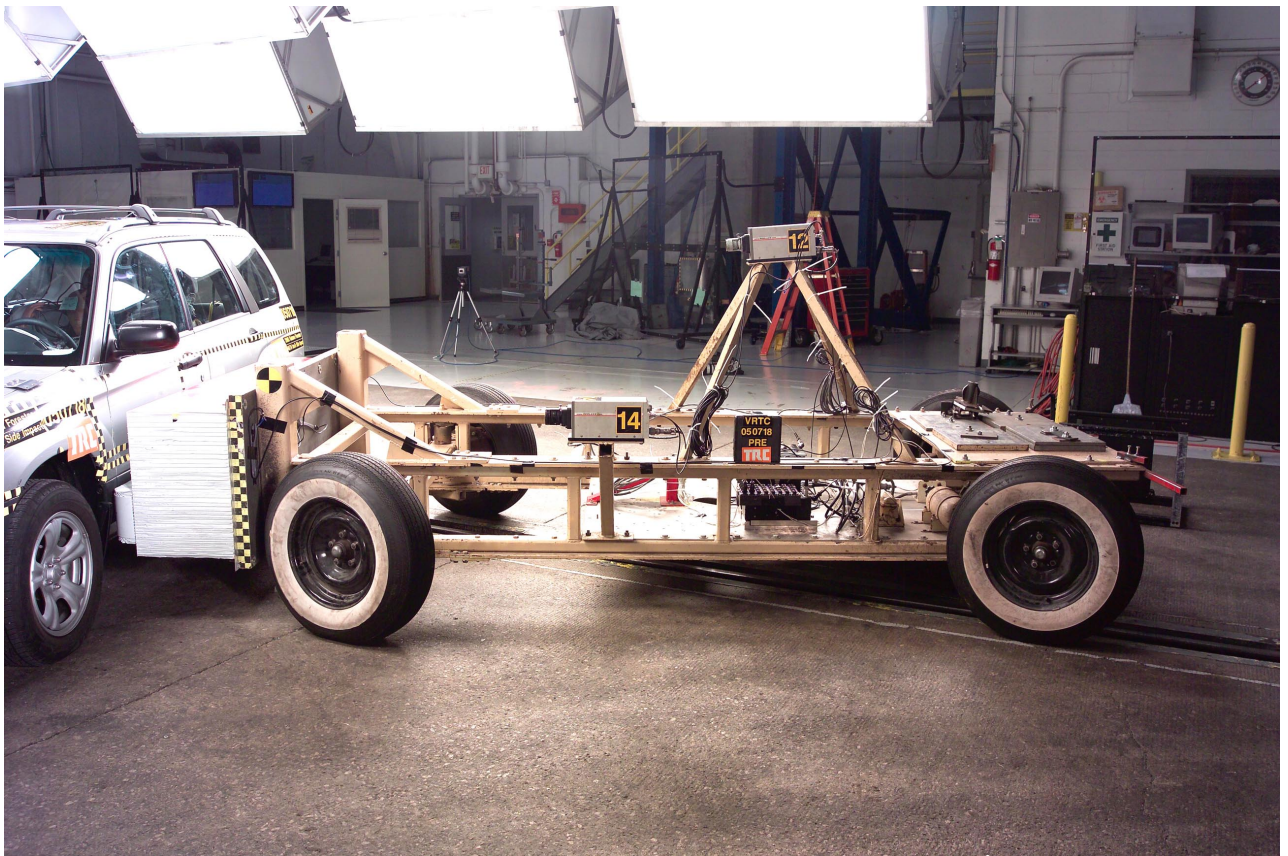


Figure A-20 Pre-Test Left Front View of MDB with Impactor Face in Position



Figure A-21 Post-Test Left Front View of MDB with Impactor Face in Position



Figure A-22 Pre-Test Left Side View of MDB with Impactor Face in Position

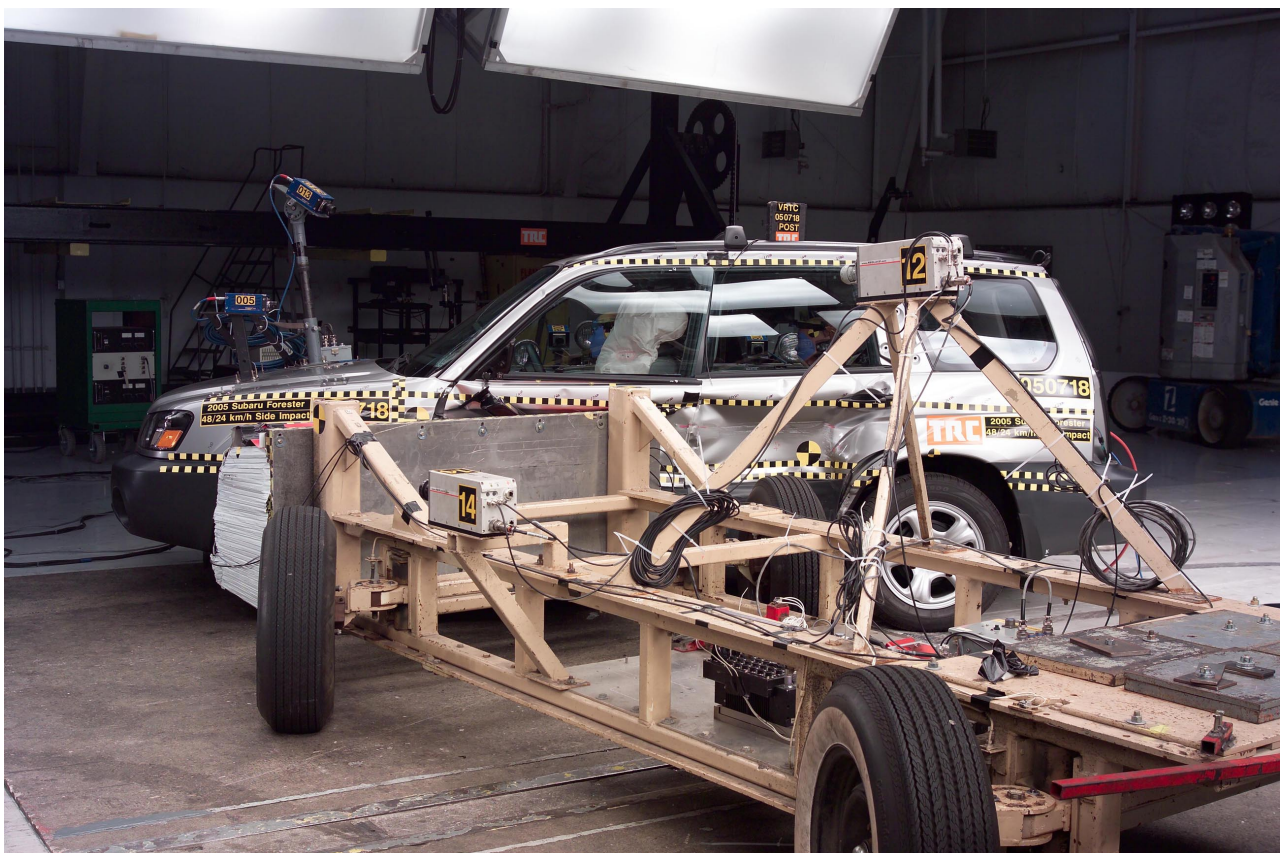


Figure A-23 Post-Test Left Side View of MDB with Impactor Face in Position

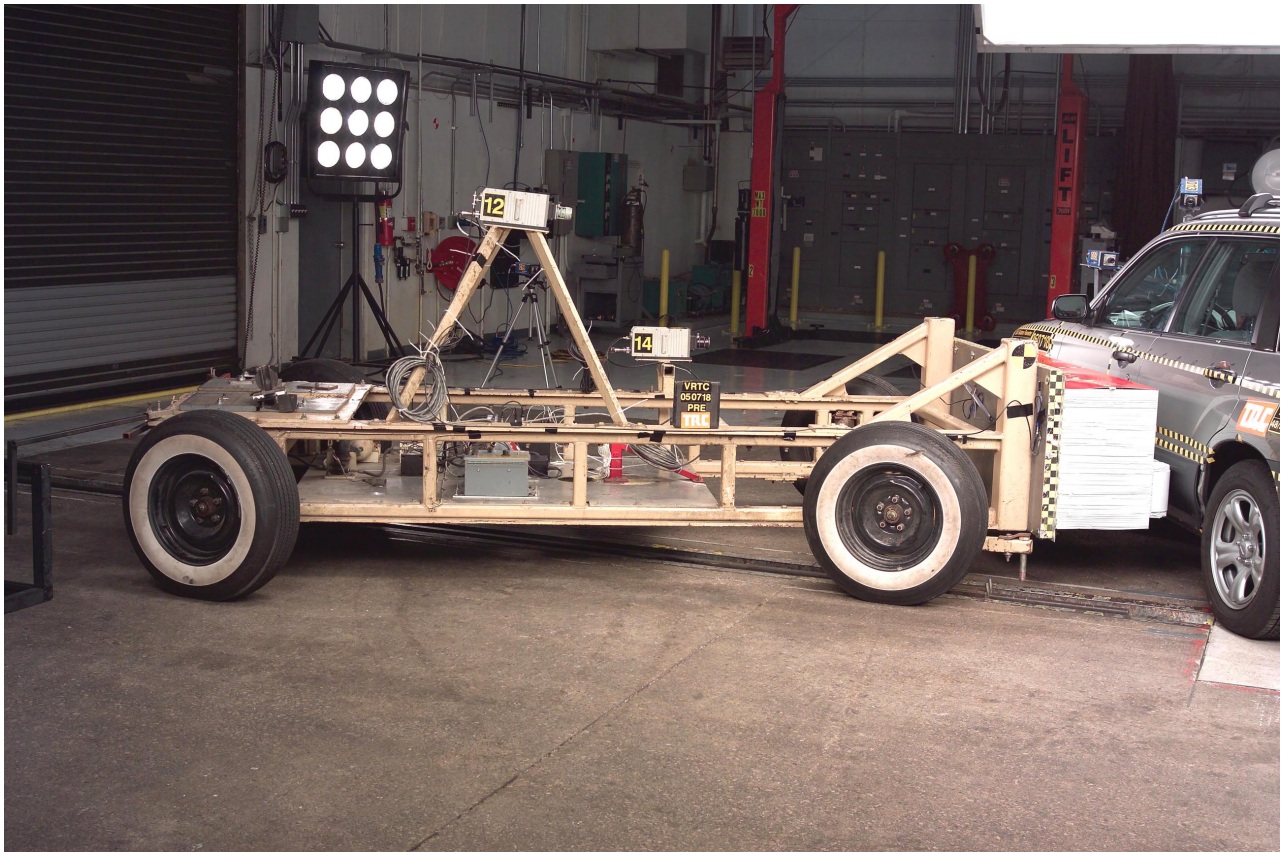


Figure A-24 Pre-Test Left Rear View of MDB with Impactor Face in Position

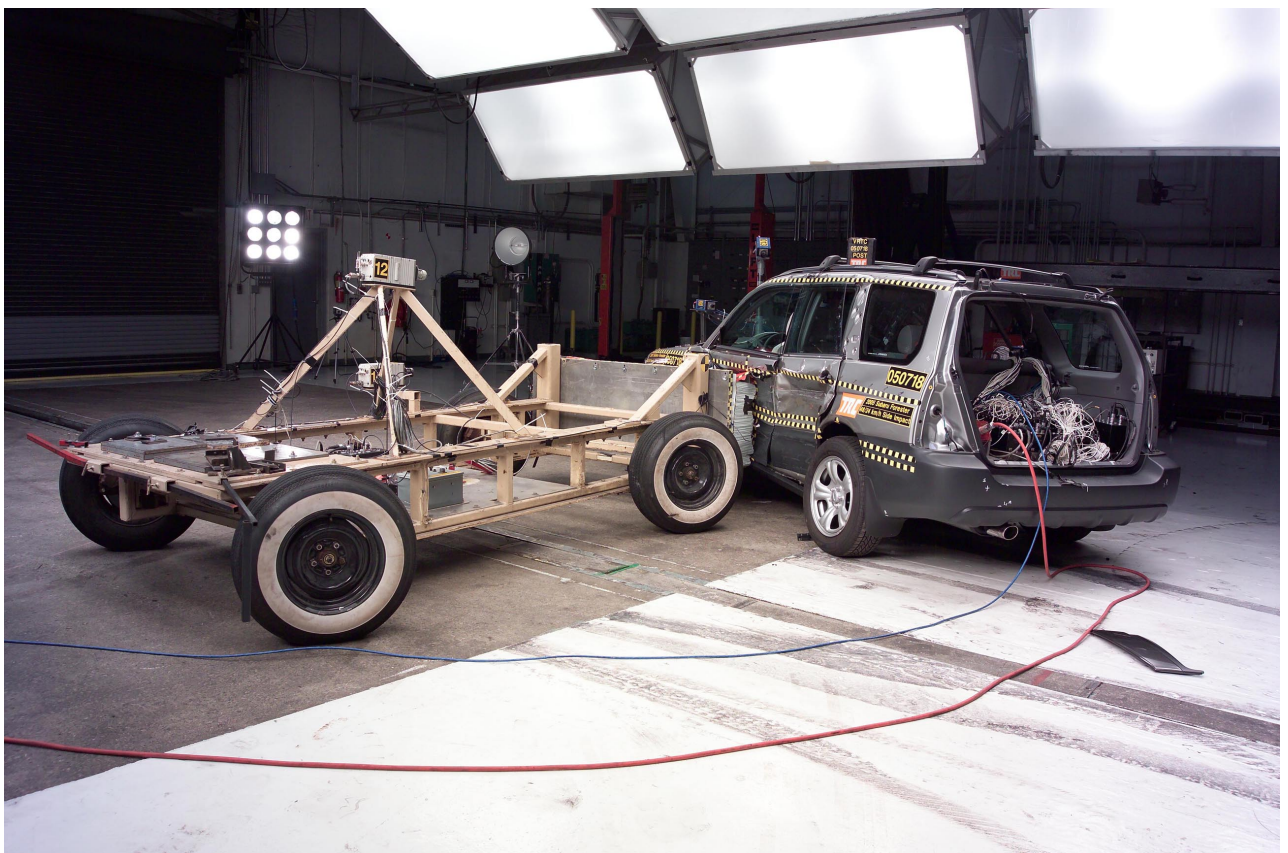


Figure A-25 Post-Test Left Rear View of MDB with Impactor Face in Position



Figure A-26 Pre-Test Overhead View of MDB Aligned with Vehicle



Figure A-27 Post-Test Overhead View of MDB Aligned with Vehicle

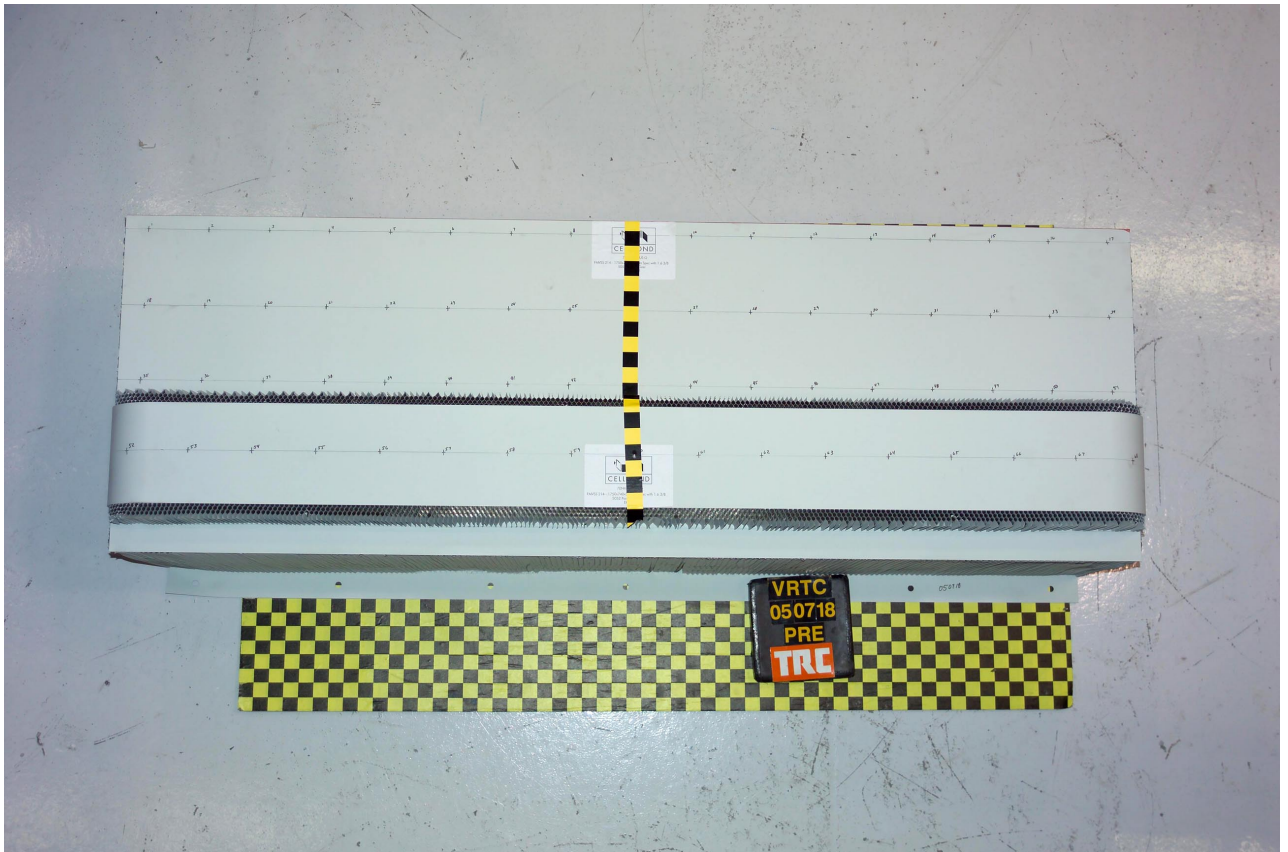


Figure A-28 Pre-Test Frontal View of Impactor Face



Figure A-29 Post-Test Frontal View of Impactor Face

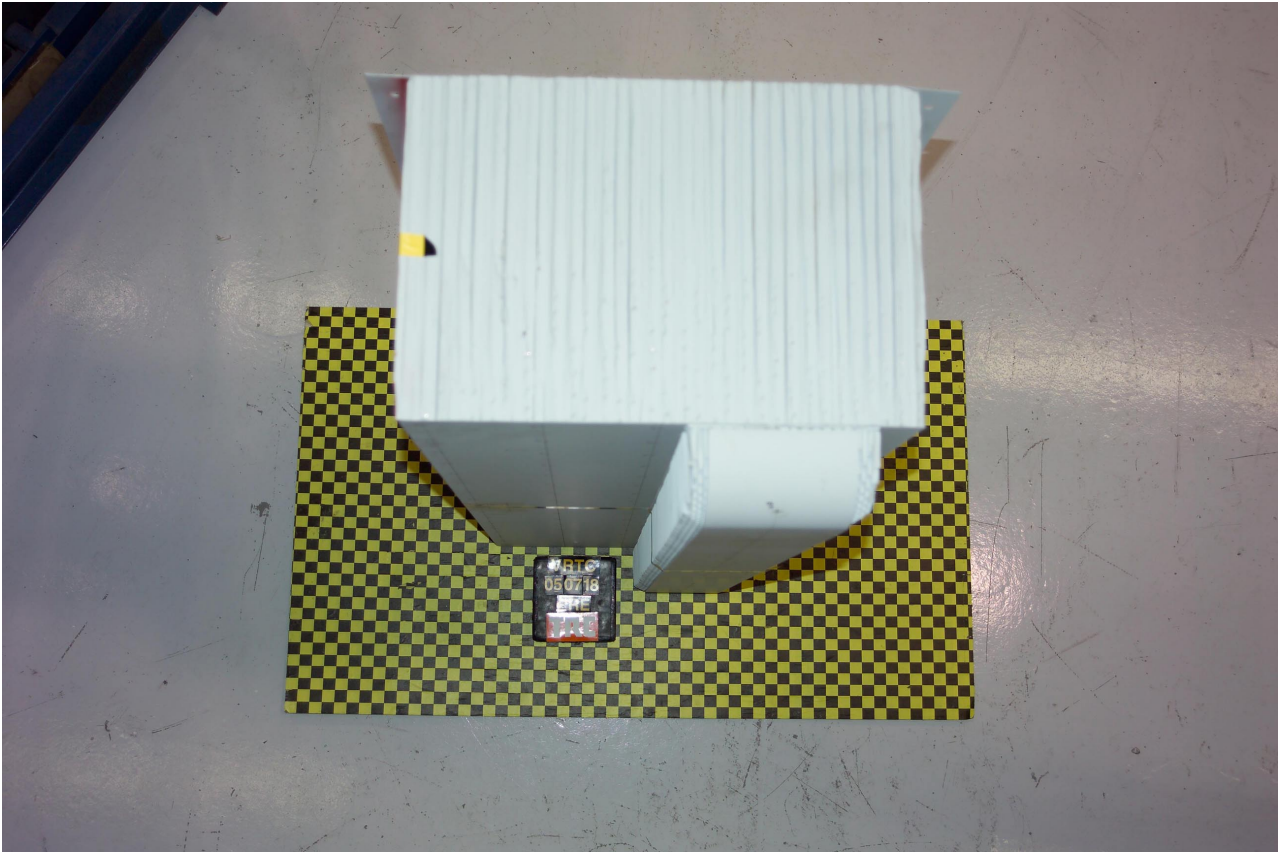


Figure A-30 Pre-Test Left Side View of Impactor Face

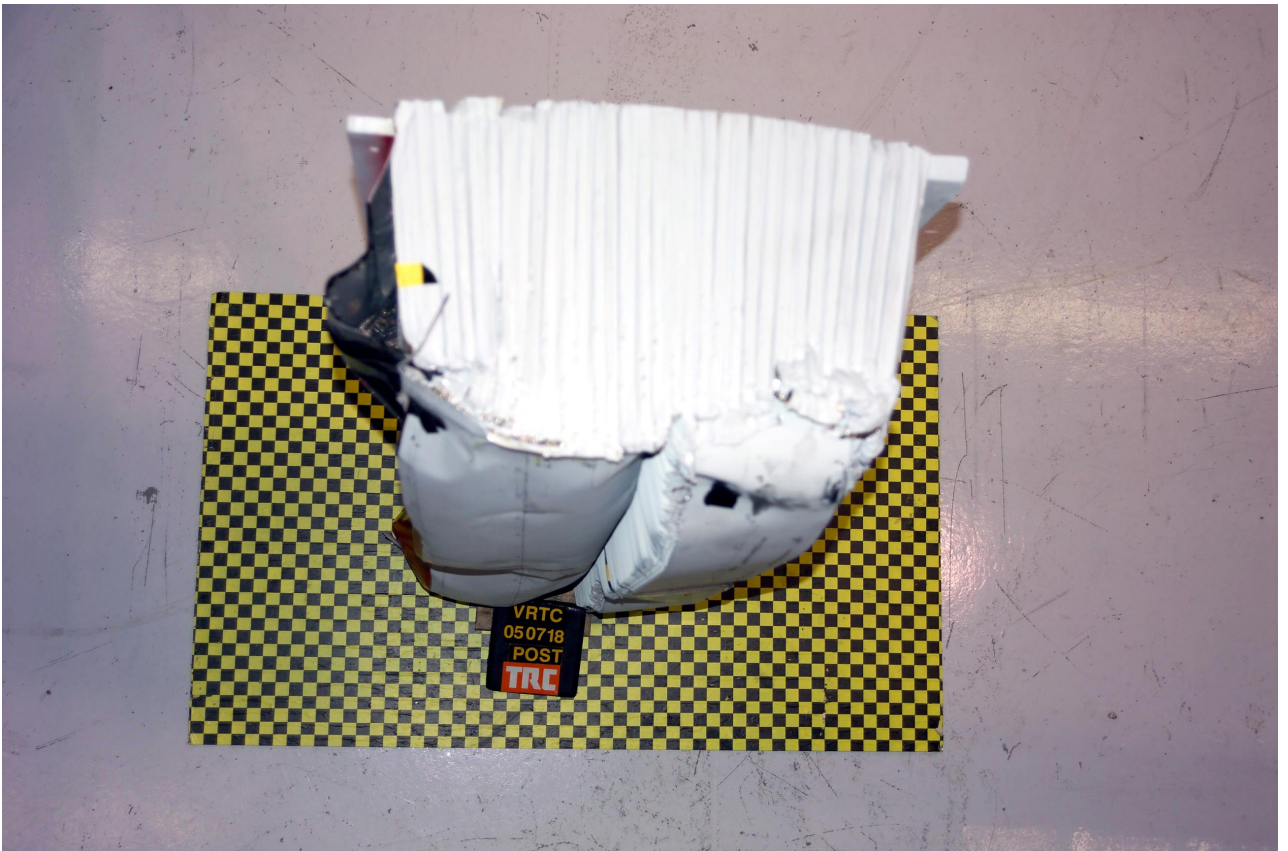


Figure A-31 Post-Test Left Side View of Impactor Face



Figure A-32 Pre-Test Right Side View of Impactor Face

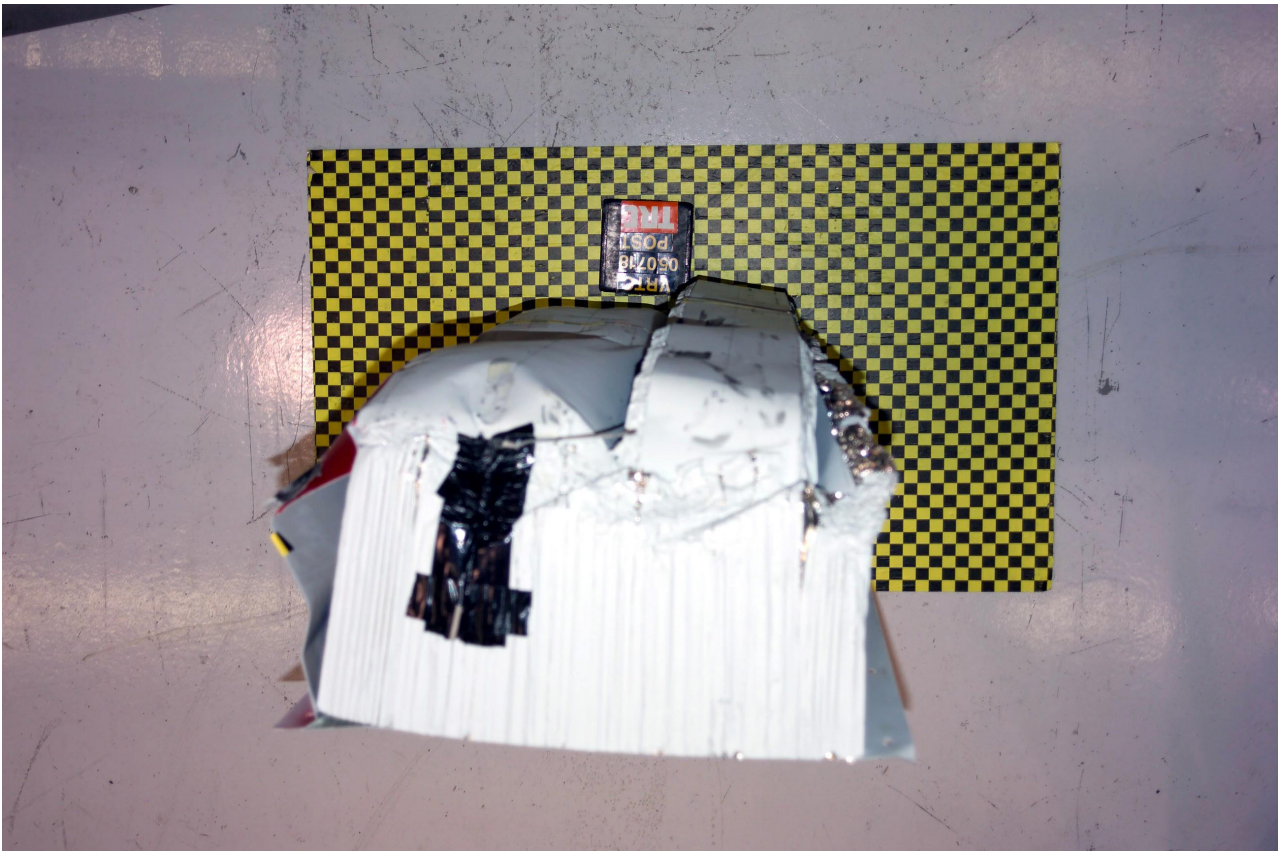


Figure A-33 Post-Test Right Side View of Impactor Face

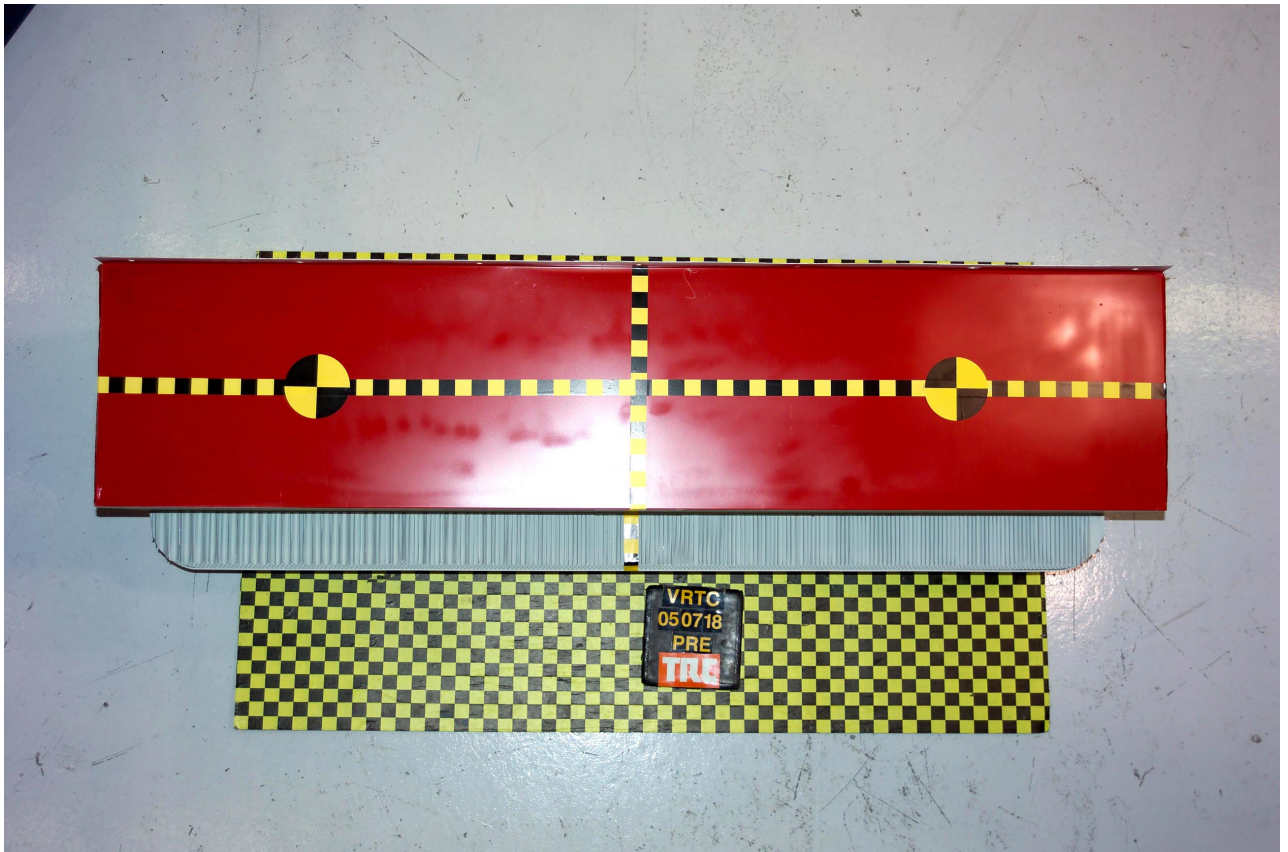


Figure A-34 Pre-Test Top View of Impactor Face

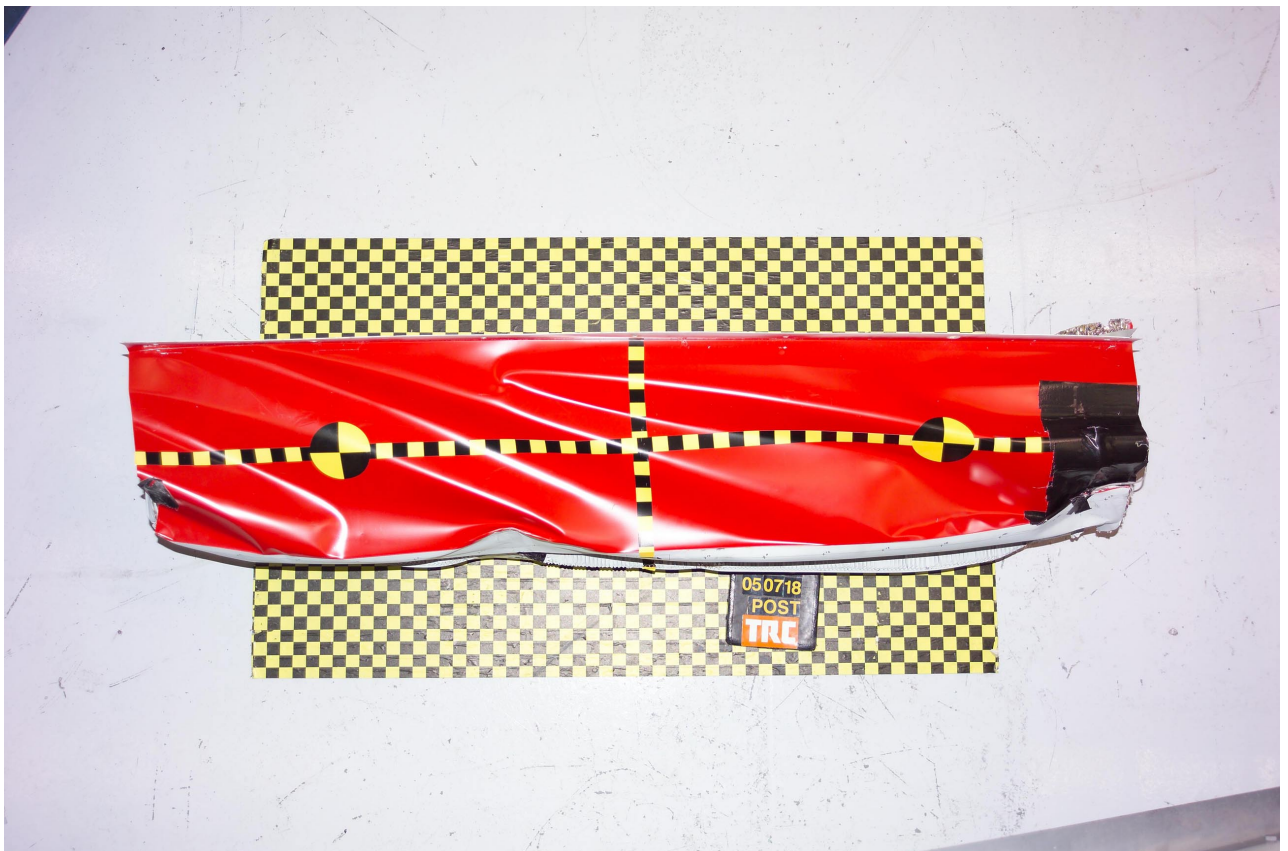


Figure A-35 Post-Test Top View of Impactor Face

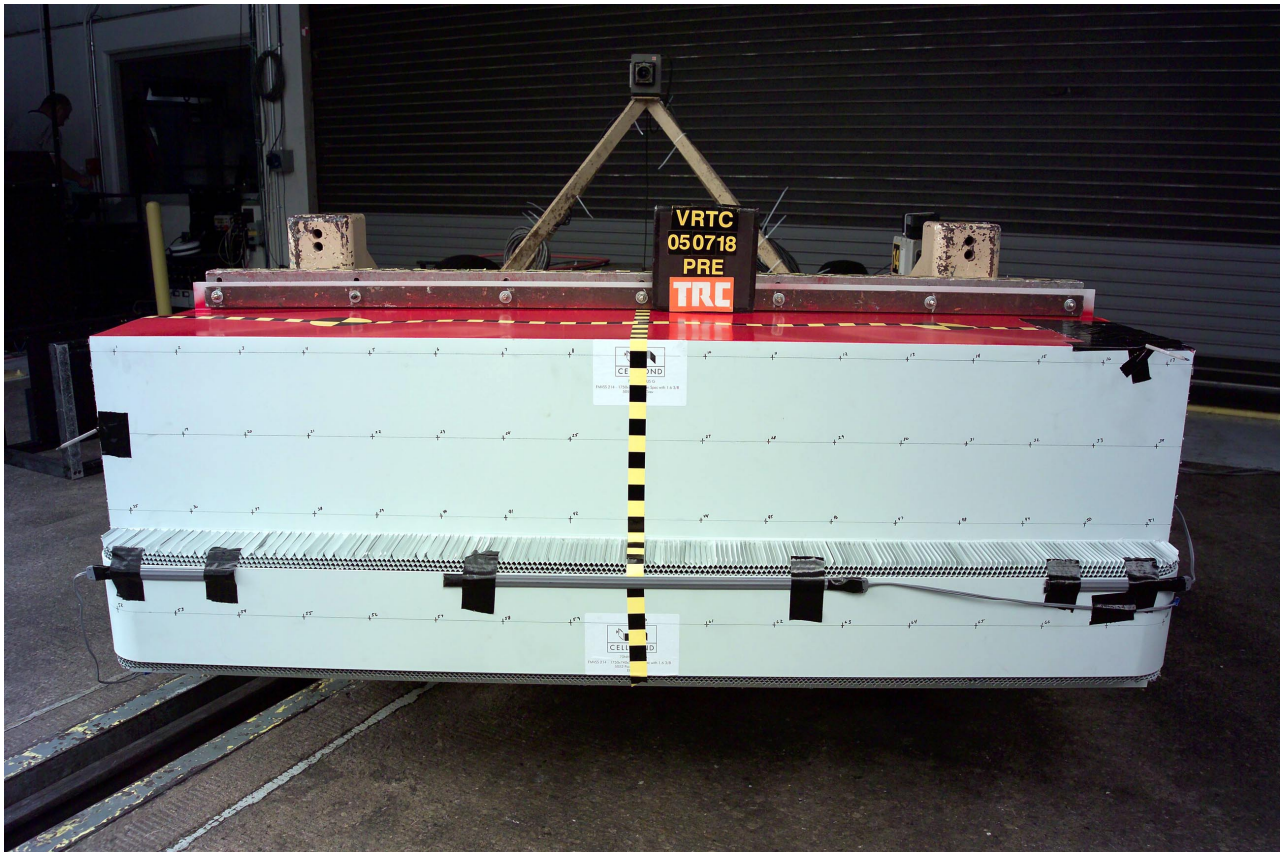


Figure A-36 Pre-Test View of MDB Showing Contact Switches in Place



Figure A-37 Post-Test View of MDB Showing Contact Switches in Place



Figure A-38 Pre-Test Primary Impact Point View



Figure A-39 Post-Test Primary Impact Point View



Figure A-40 Pre-Test Secondary Impact Point View



Figure A-41 Post-Test Secondary Impact Point View



Figure A-42 Pre-Test Fuel Filler Cap View



Figure A-43 Post-Test Fuel Filler Cap View



Figure A-44 Pre-Test Right Occupant Compartment View of Front SID-IIs



Figure A-45 Post-Test Right Occupant Compartment View of Front SID-IIs

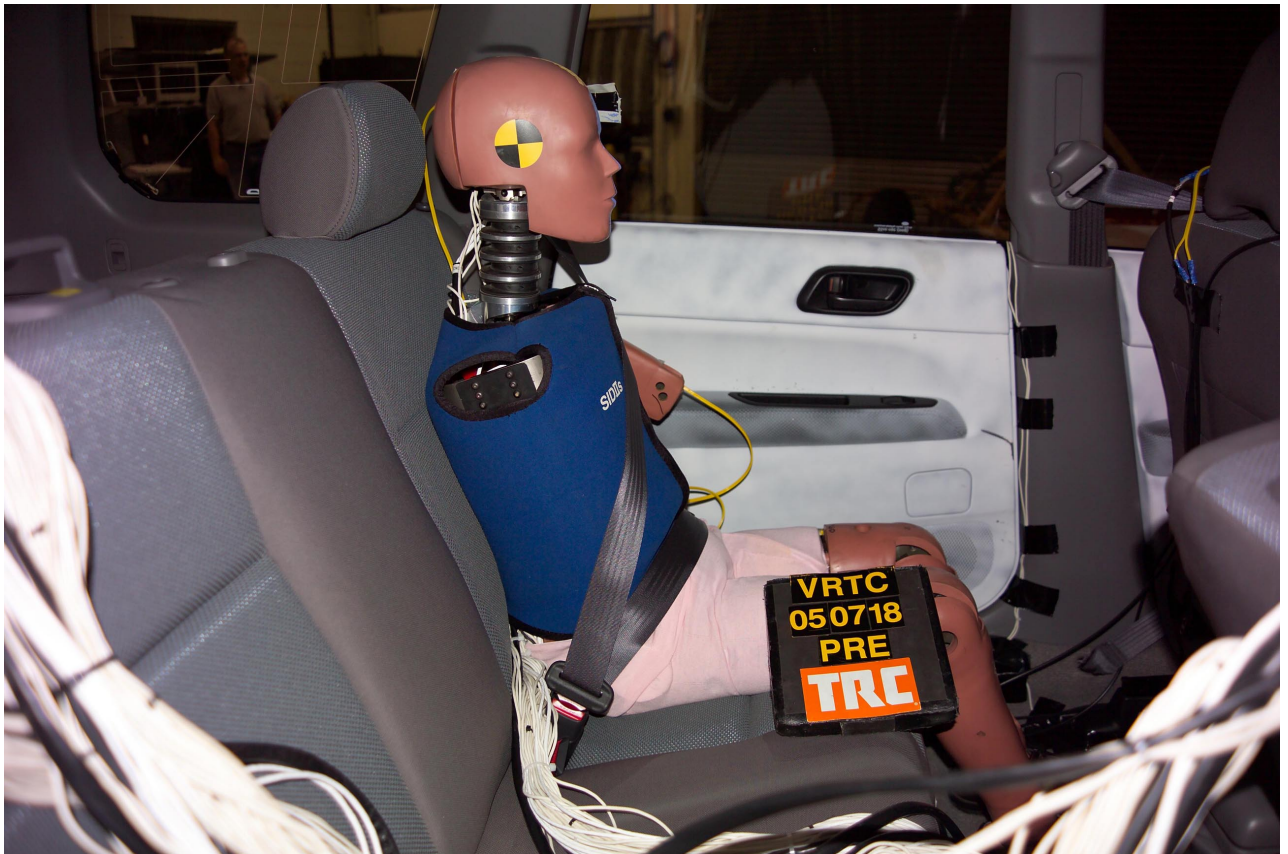


Figure A-46 Pre-Test Right Occupant Compartment View of Rear SID-IIs



Figure A-47 Post-Test Right Occupant Compartment View of Rear SID-II



Figure A-48 Pre-Test Left View of Front SID-IIs - View 1



Figure A-49 Post-Test Left View of Front SID-IIs View



Figure A-50 Pre-Test Left View of Front SID-IIs - View 2

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Figure A-51 Pre-Test Left View of Front SID-IIs and Door Clearance



Figure A-52 Post-Test Left View of Front SID-IIs and Door Clearance



Figure A-53 Pre-Test Left View of Rear SID-IIs - View 1



Figure A-54 Post-Test Left View of Rear SID-IIs View



Figure A-55 Pre-Test Left View of Rear SID-IIs - View 2

Intentionally Left Blank



Figure A-56 Pre-Test Left View of Rear SID-IIs and Door Clearance



Figure A-57 Post-Test Left View of Rear SID-IIs and Door Clearance



Figure A-58 Pre-Test Interior of Front Door



Figure A-59 Post-Test Interior of Front Door Showing SID-II's Impact Locations



Figure A-60 Post-Test Front SID-IIs Contact - View 1



Figure A-61 Post-Test Front SID-IIs Contact - View 2



Figure A-62 Post-Test Front SID-IIs Contact - View 3

Intentionally Left Blank



Figure A-63 Pre-Test Interior of Rear Door



Figure A-64 Post-Test Interior of Rear Door Showing SID-II's Impact Locations



Figure A-65 Post-Test Rear SID-IIs Contact View

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Figure A-66 Pre-Test Barrier Face Front View

Intentionally Left Blank



Figure A-67 Pre-Test Barrier Face Left Side View

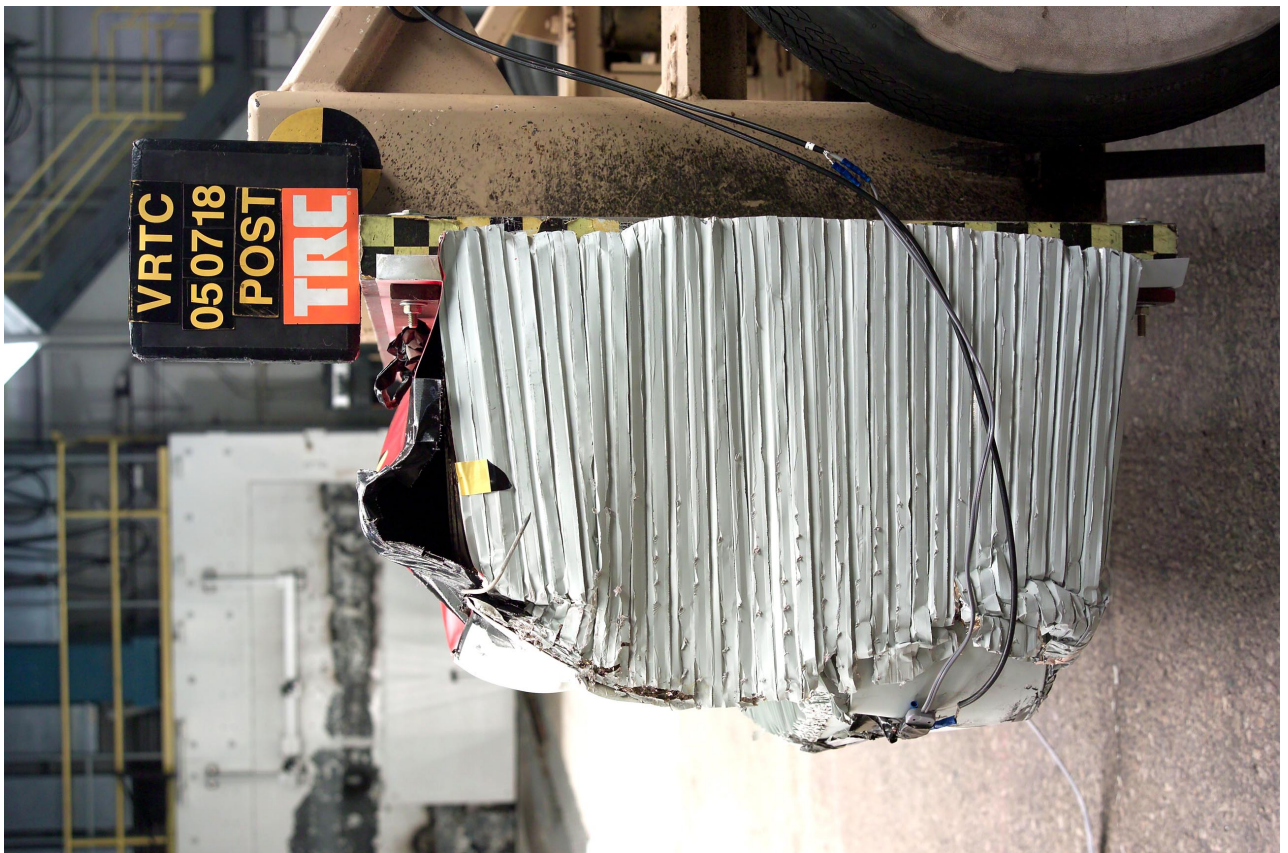


Figure A-68 Post-Test Barrier Face Left Side View



Figure A-69 Pre-Test Barrier Face Right Side View



Figure A-70 Post-Test Barrier Face Right Side View

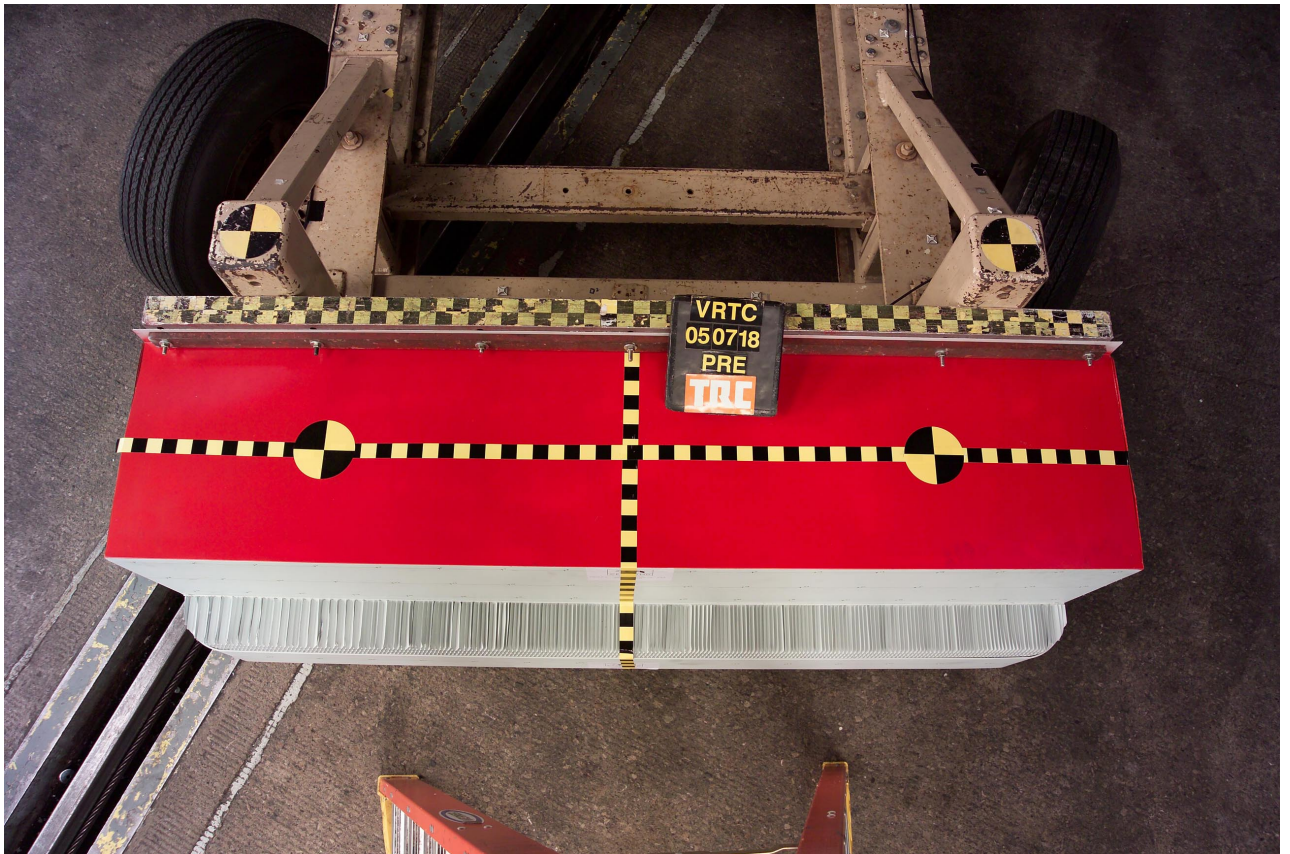


Figure A-71 Pre-Test Barrier Face Overhead View



Figure A-72 Post-Test Barrier Face Overhead View



Figure A-73 Vehicle Certification Label View



Figure A-74 Vehicle Tire Load Label View

Appendix B

Data Plots



MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

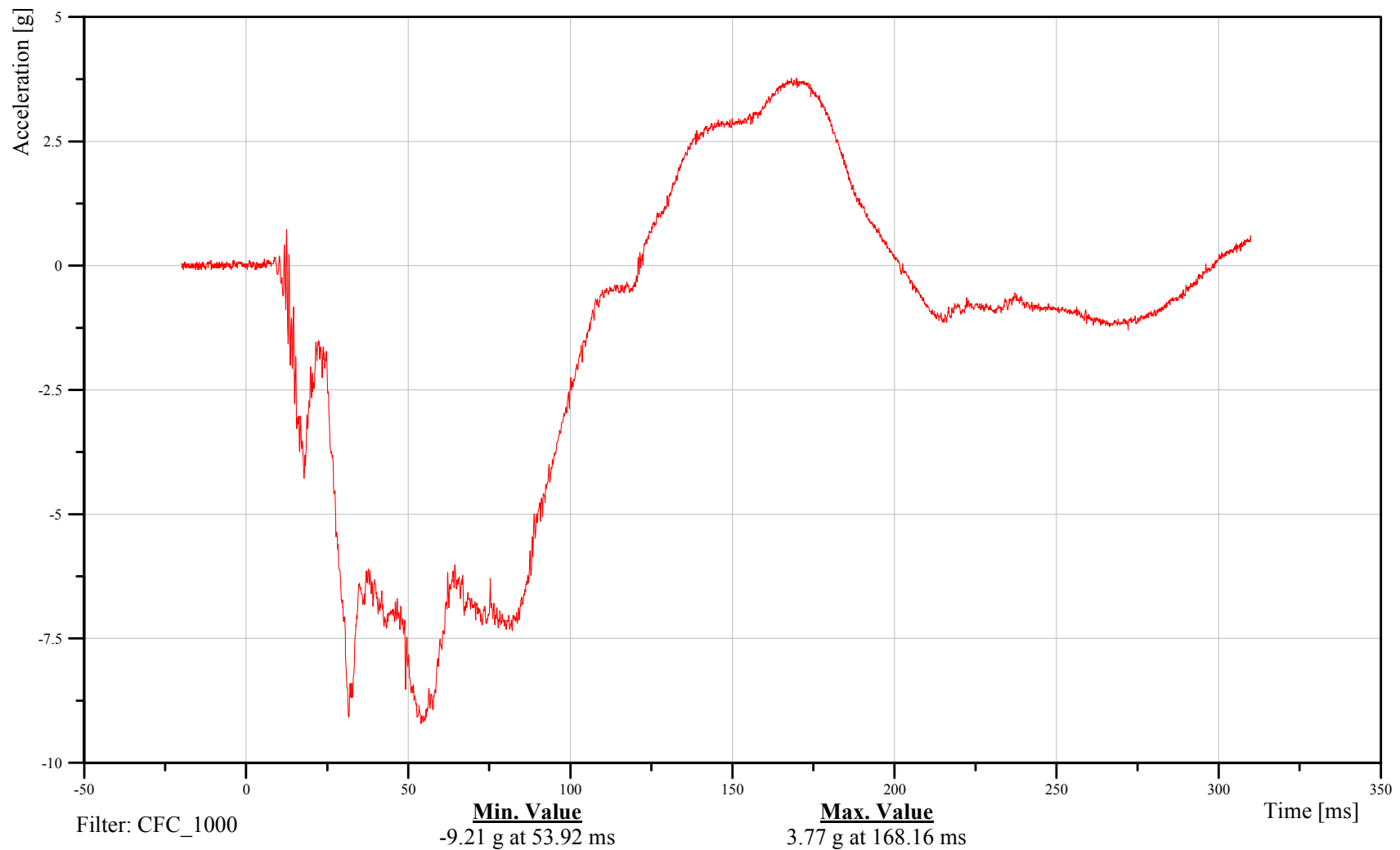
Head Accel X

Customer: VRTC

11HEADCG00S2ACXA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

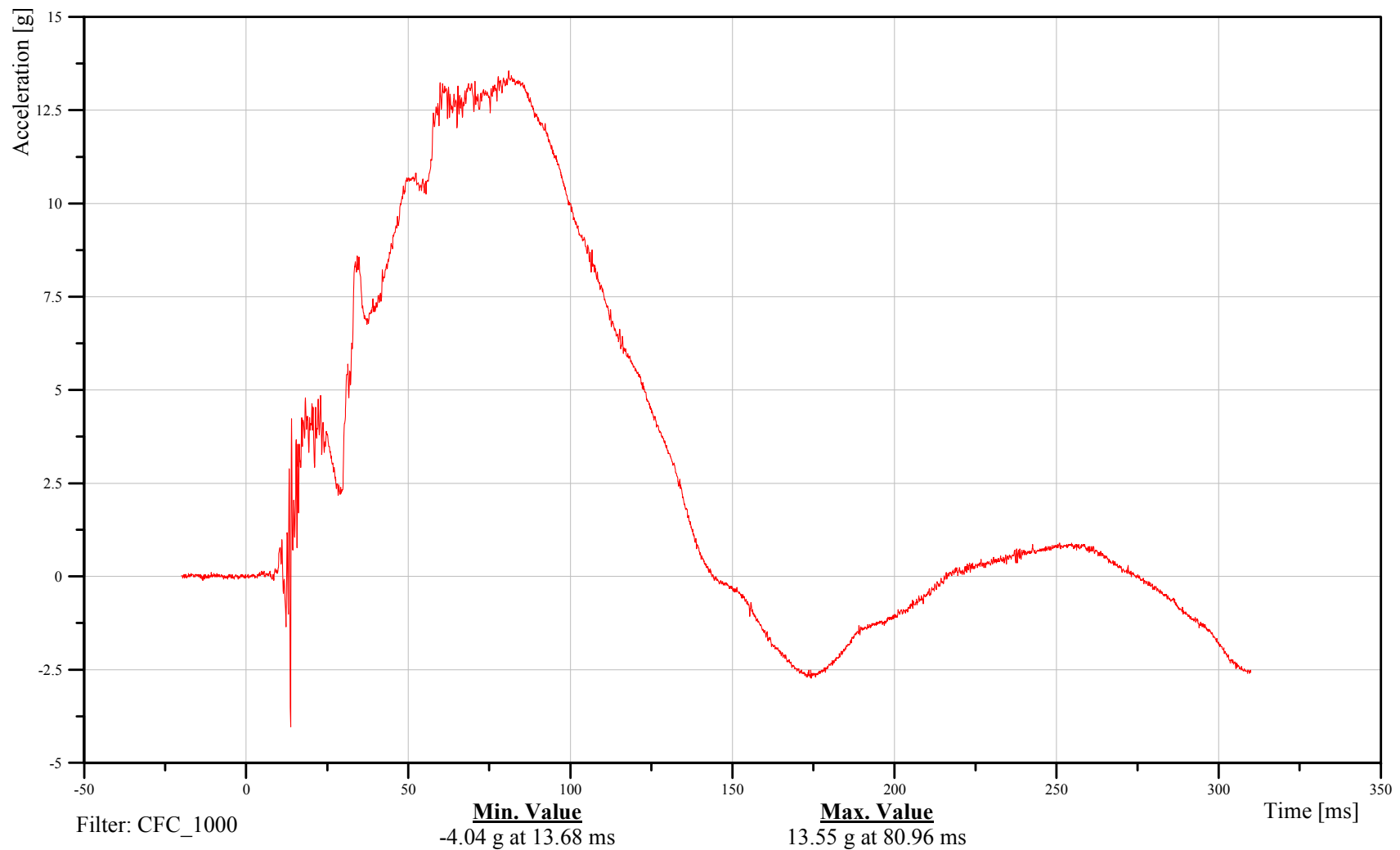
Head Accel Y

Customer: VRTC

11HEADCG00S2ACYA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

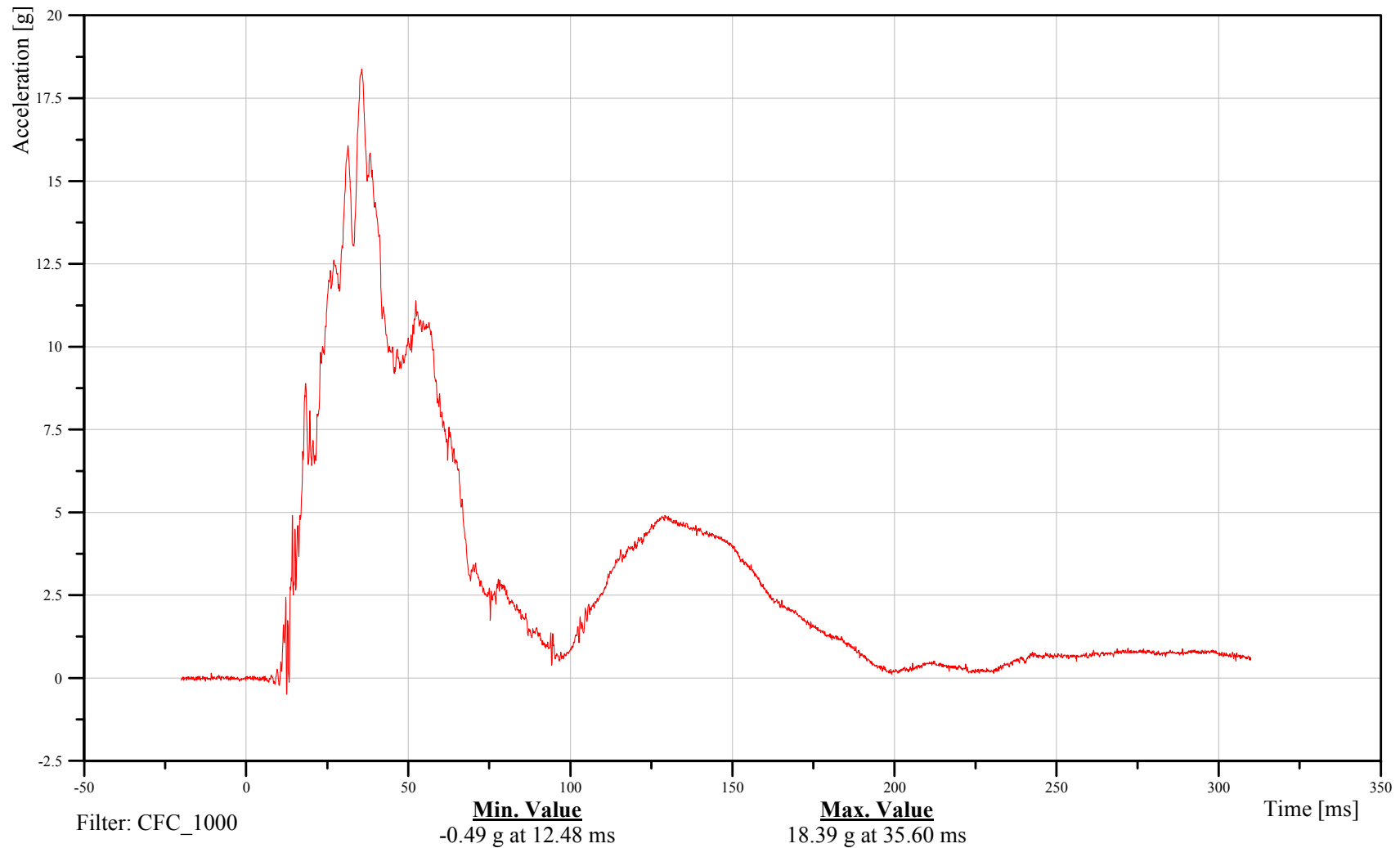
Head Accel Z

Customer: VRTC

11HEADCG00S2ACZA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

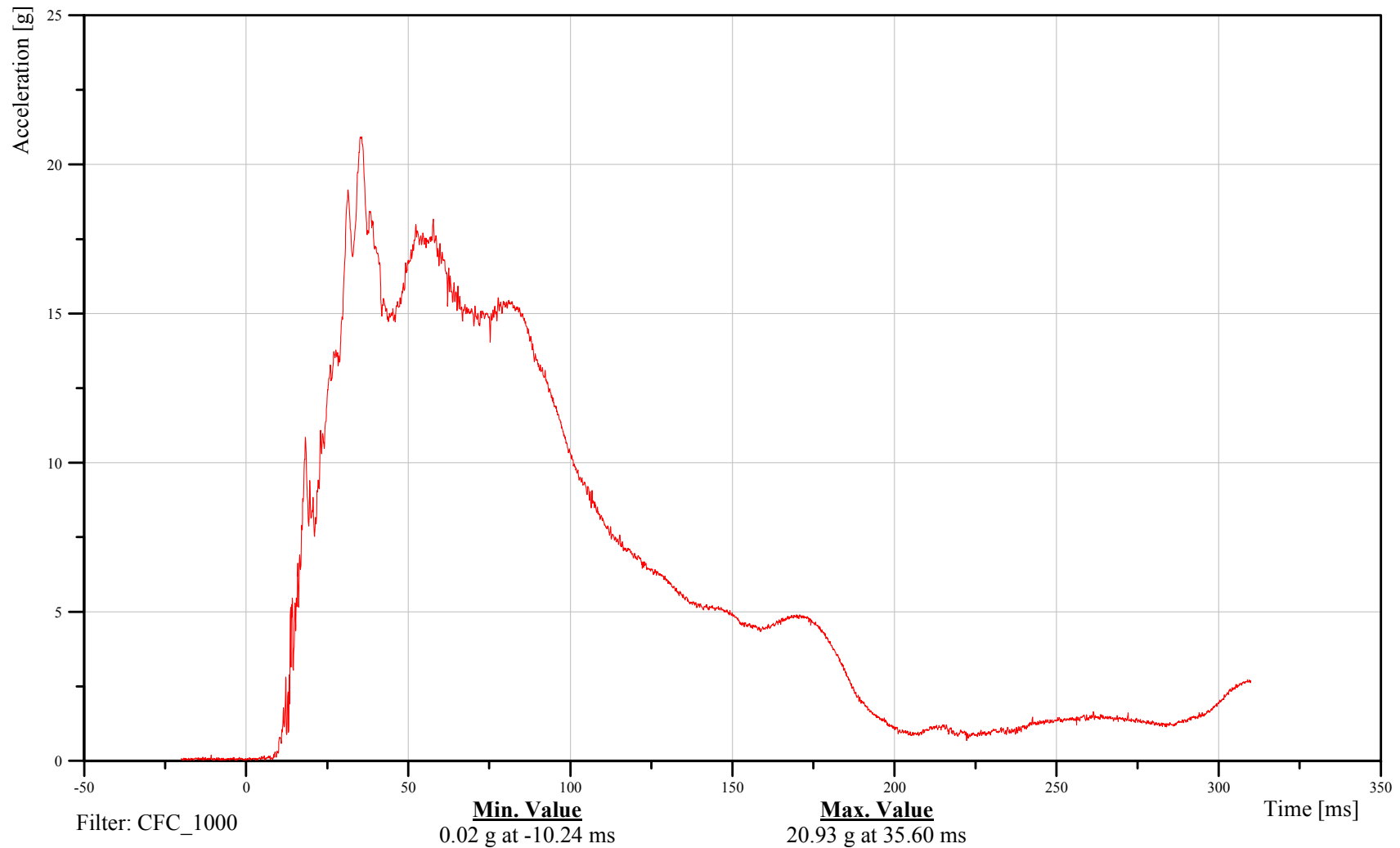
Head Accel Resultant

Customer: VRTC

11HEADCG00S2ACRA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

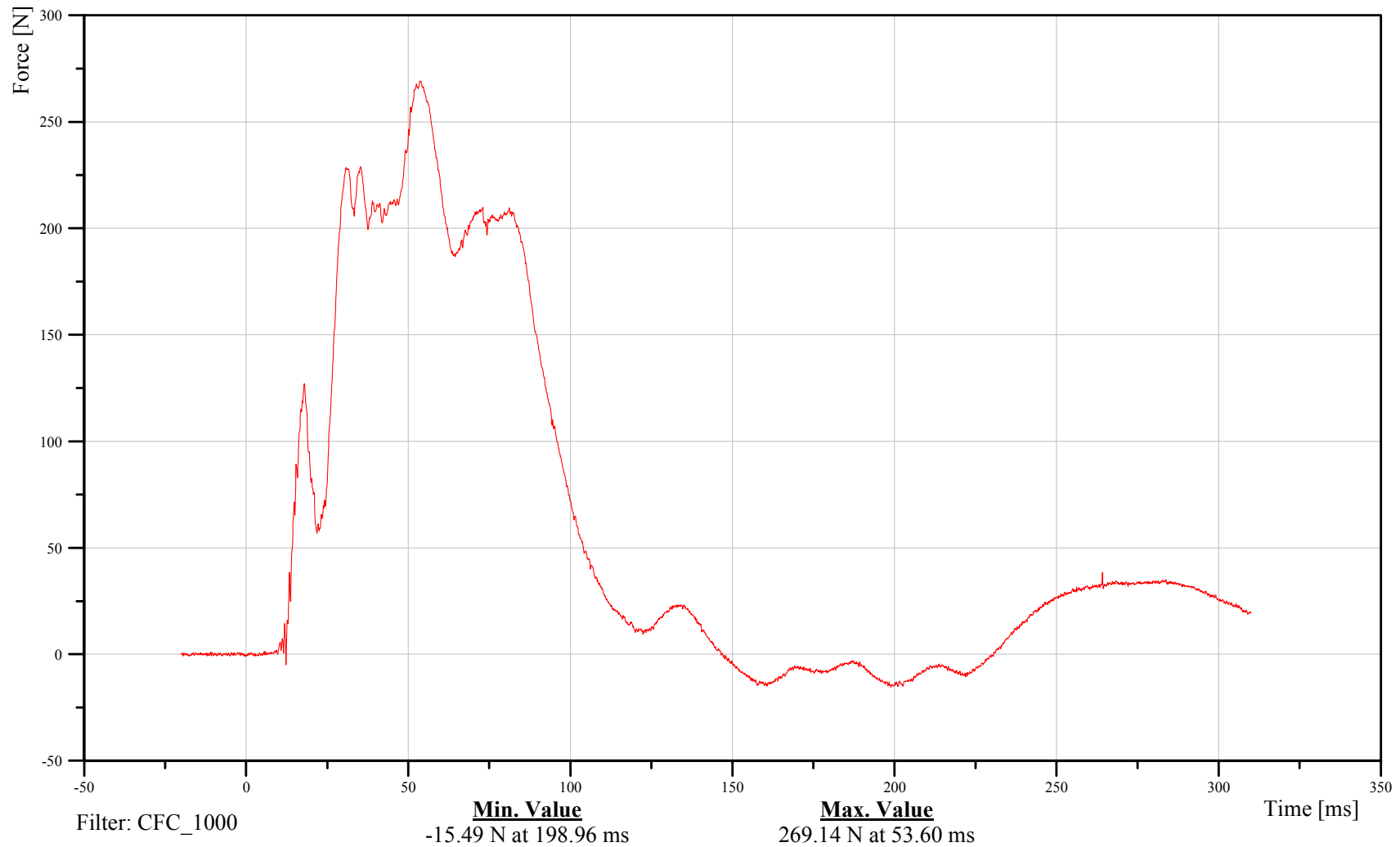
Neck Force X

Customer: VRTC

11NECKUP00S2FOXA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

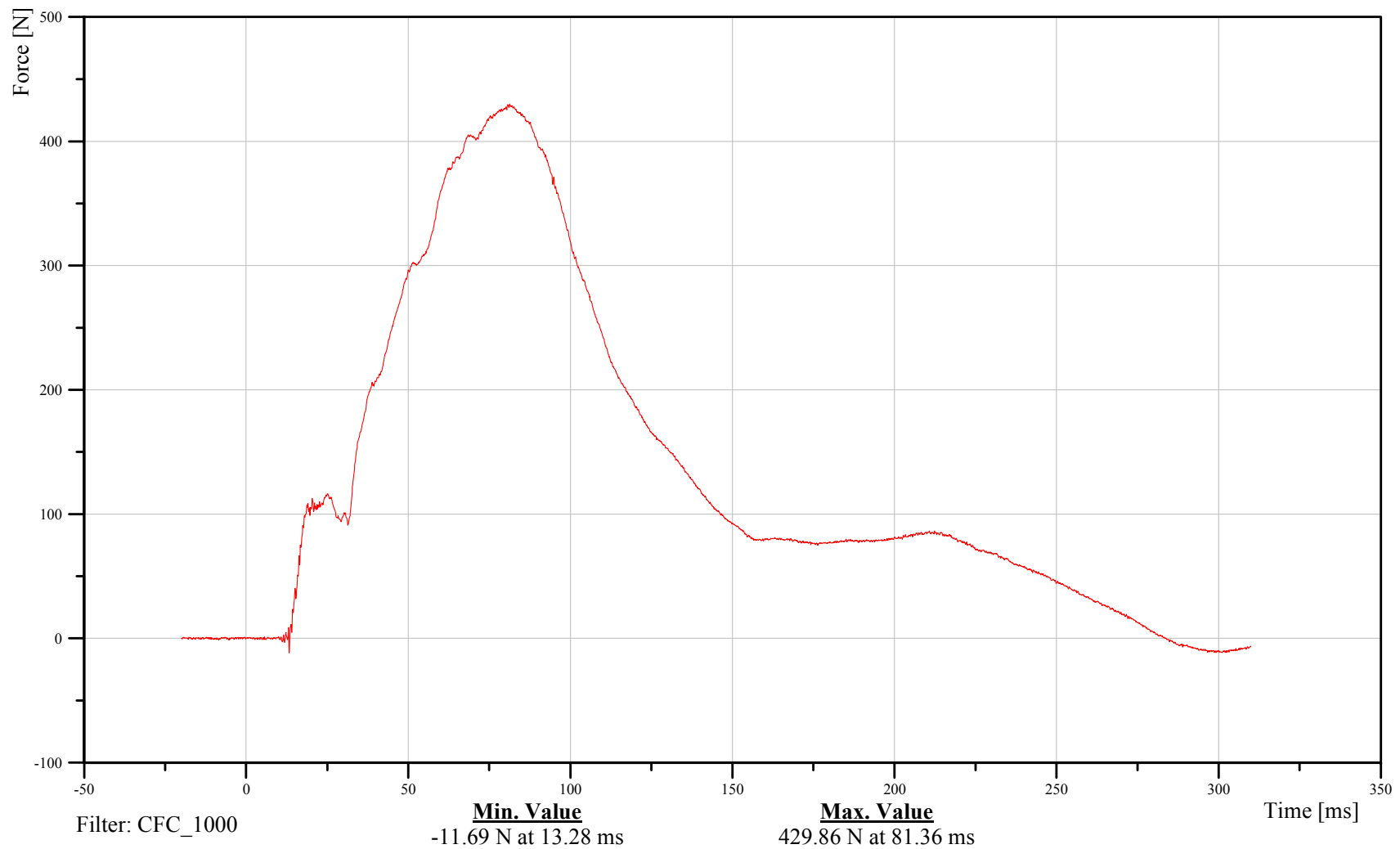
Neck Force Y

Customer: VRTC

11NECKUP00S2FOYA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

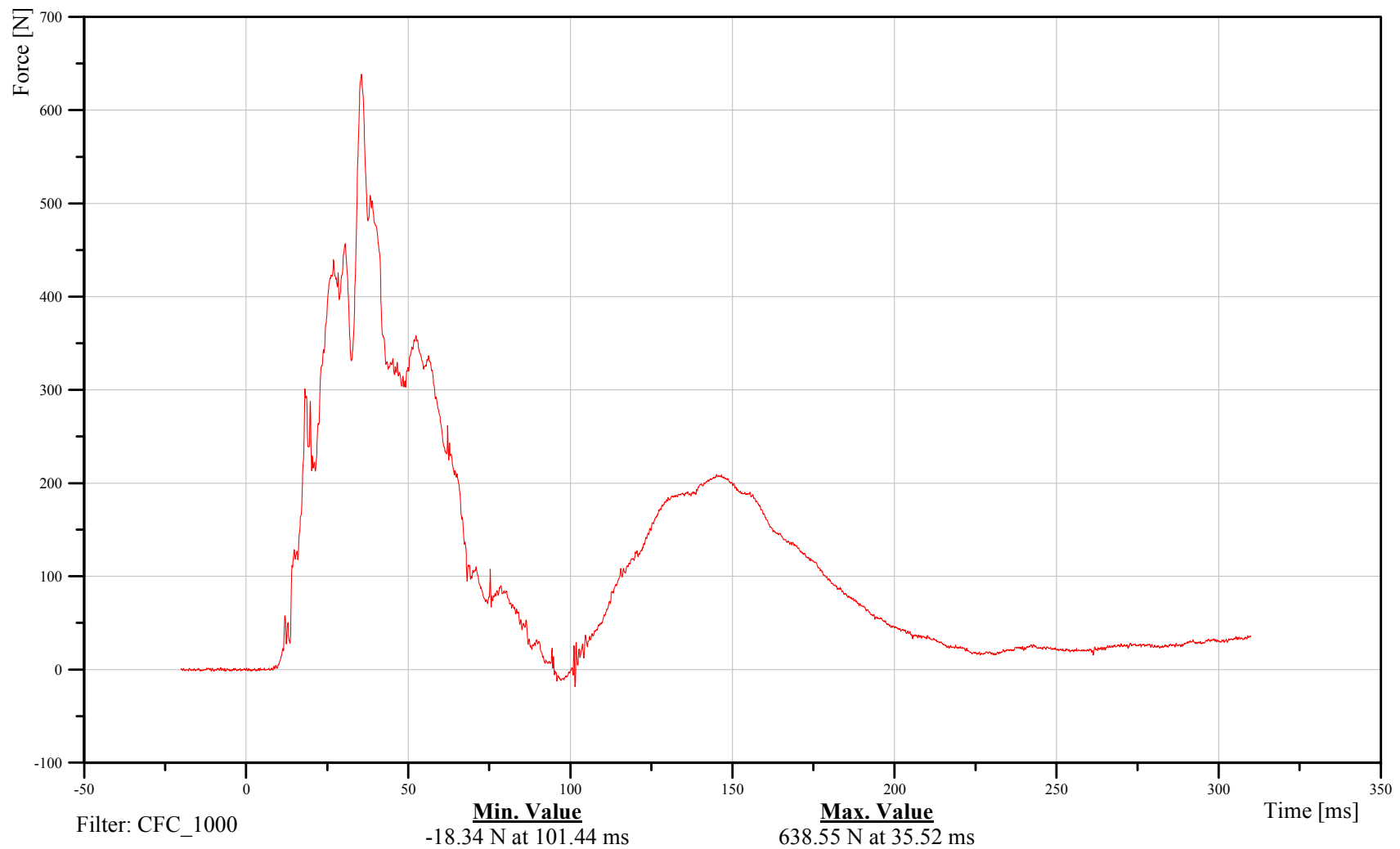
Neck Force Z

Customer: VRTC

11NECKUP00S2FOZA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

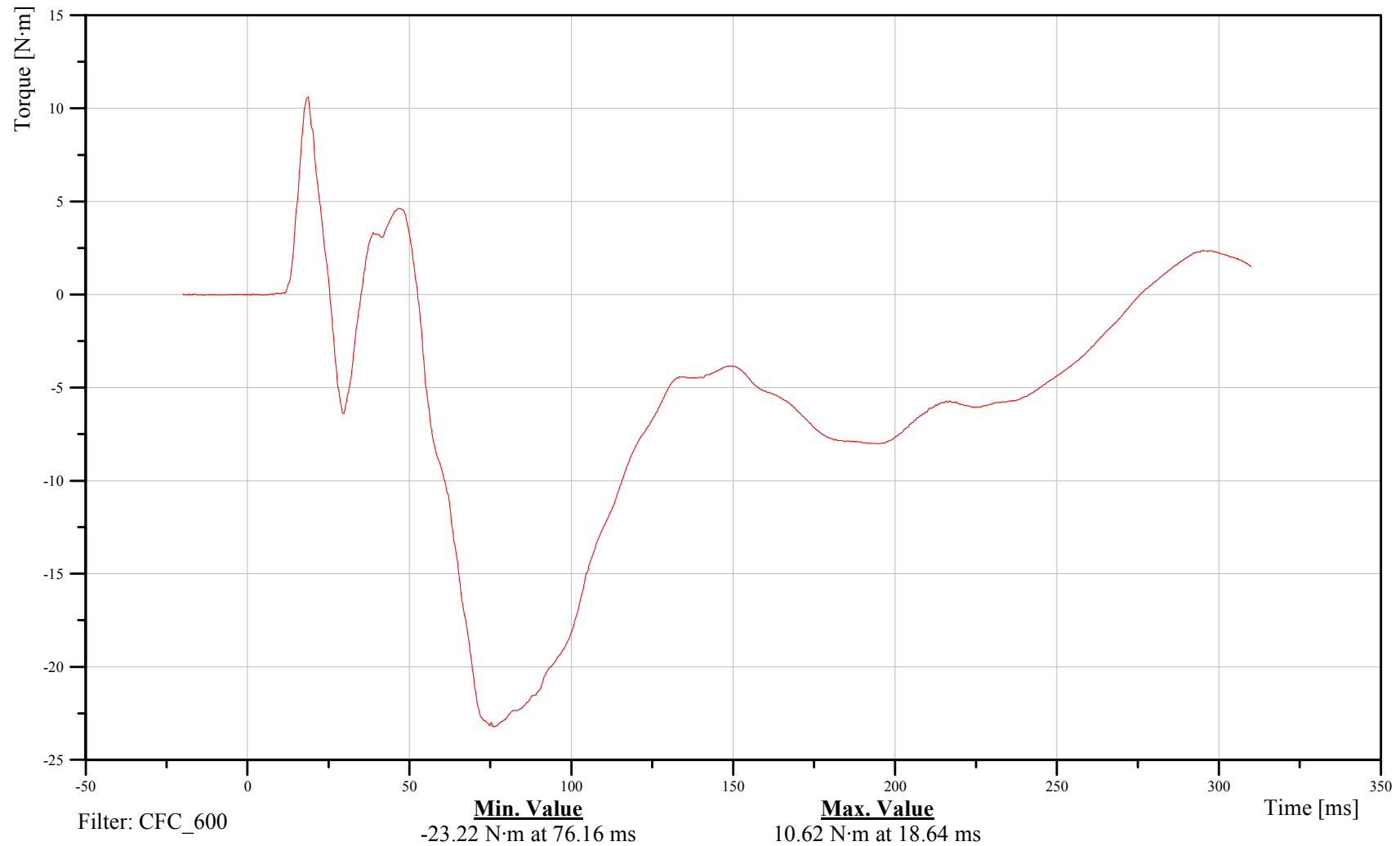
Neck Moment X

Customer: VRTC

11NECKUP00S2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

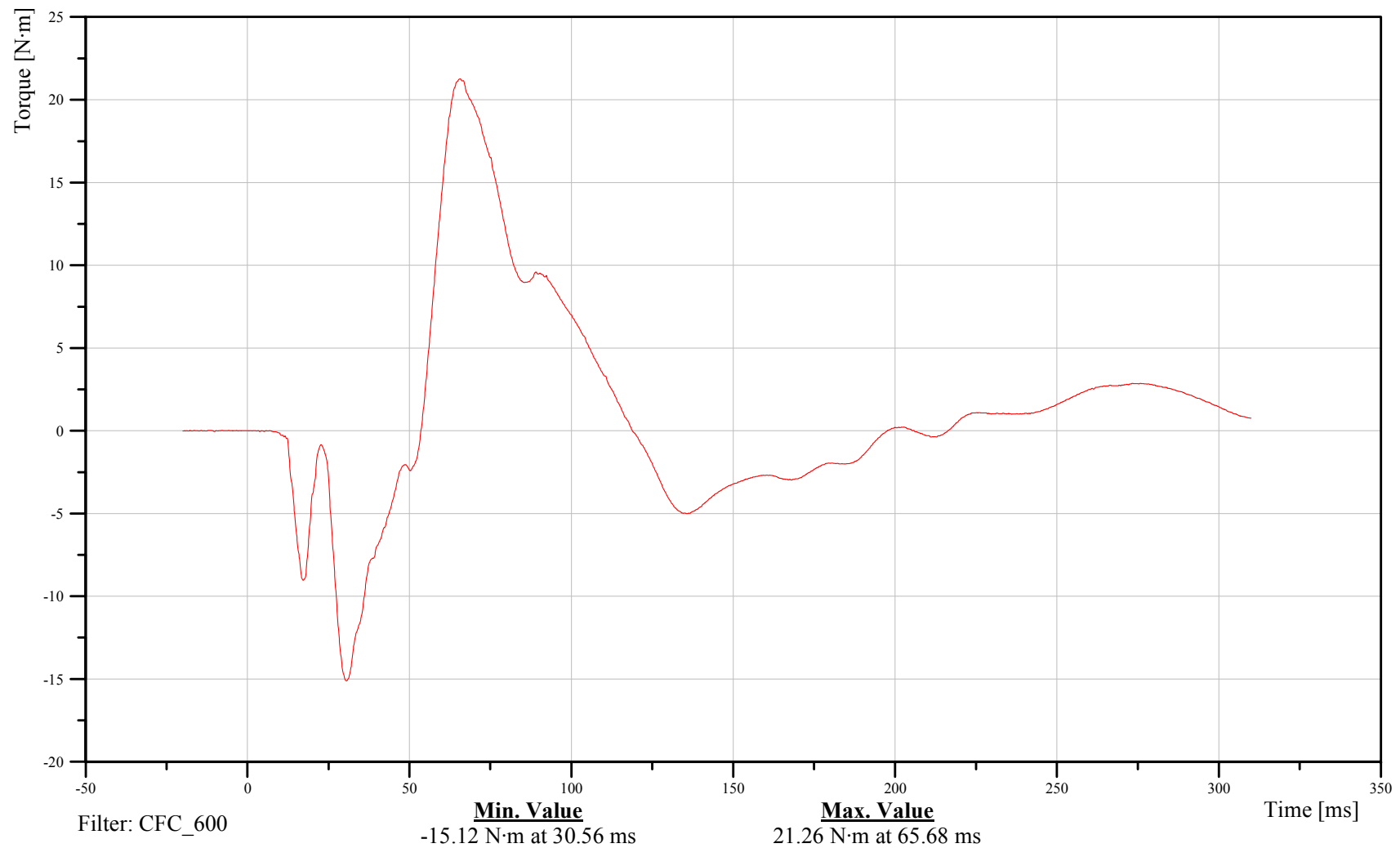
Neck Moment Y

Customer: VRTC

11NECKUP00S2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

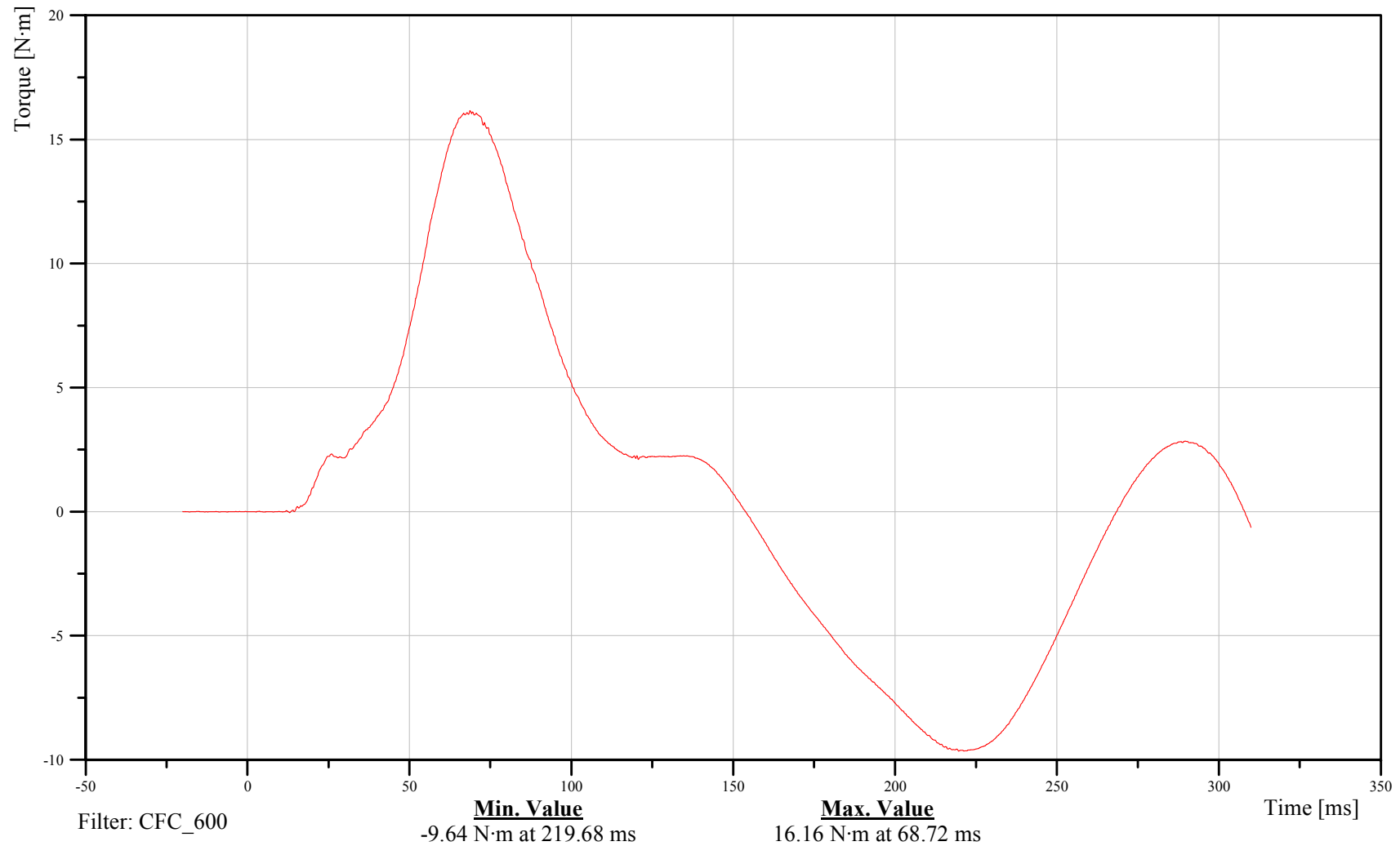
Neck Moment Z

Customer: VRTC

11NECKUP00S2MOZB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Shoulder Accel X

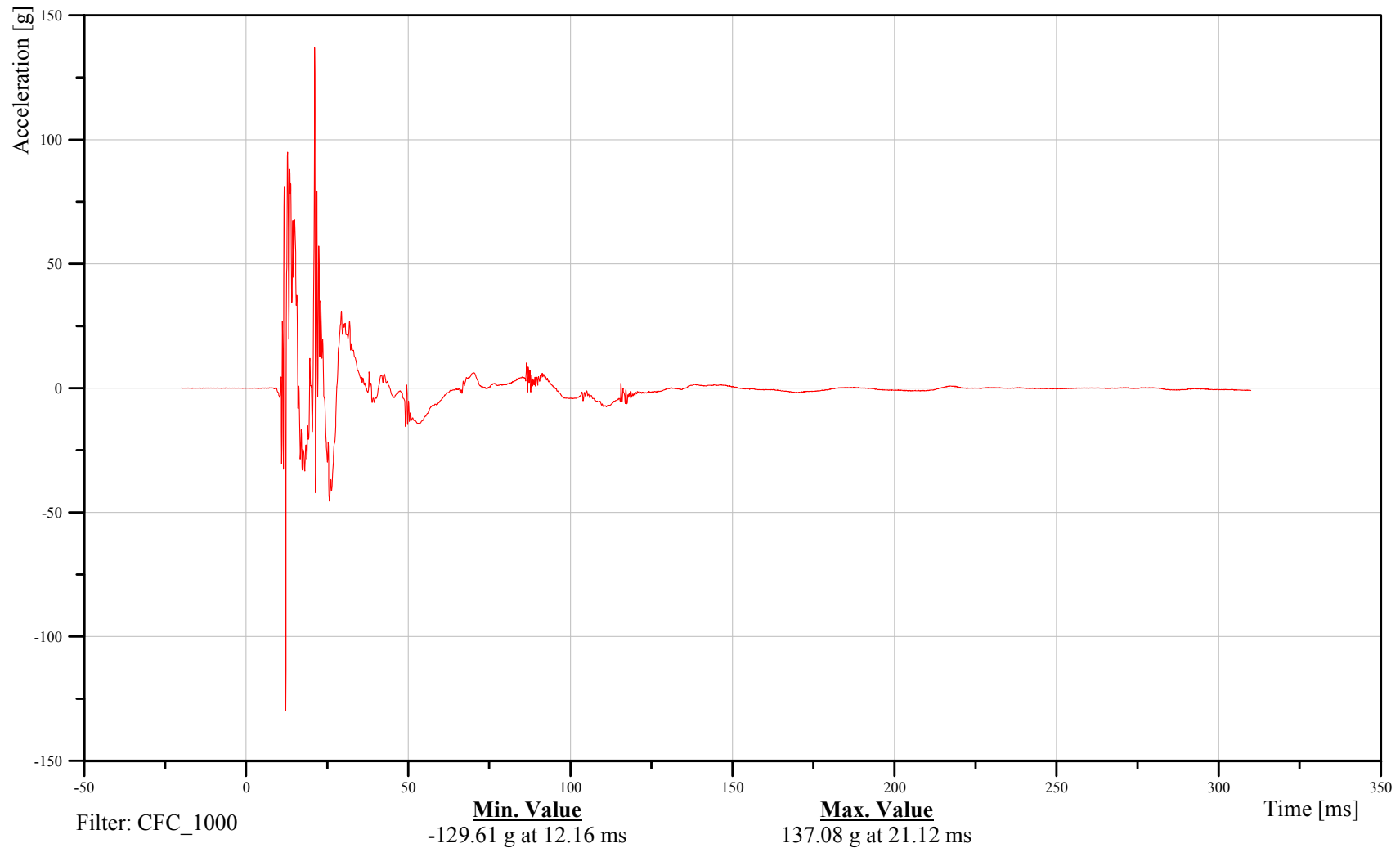
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11SHLDLE00S2ACXA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

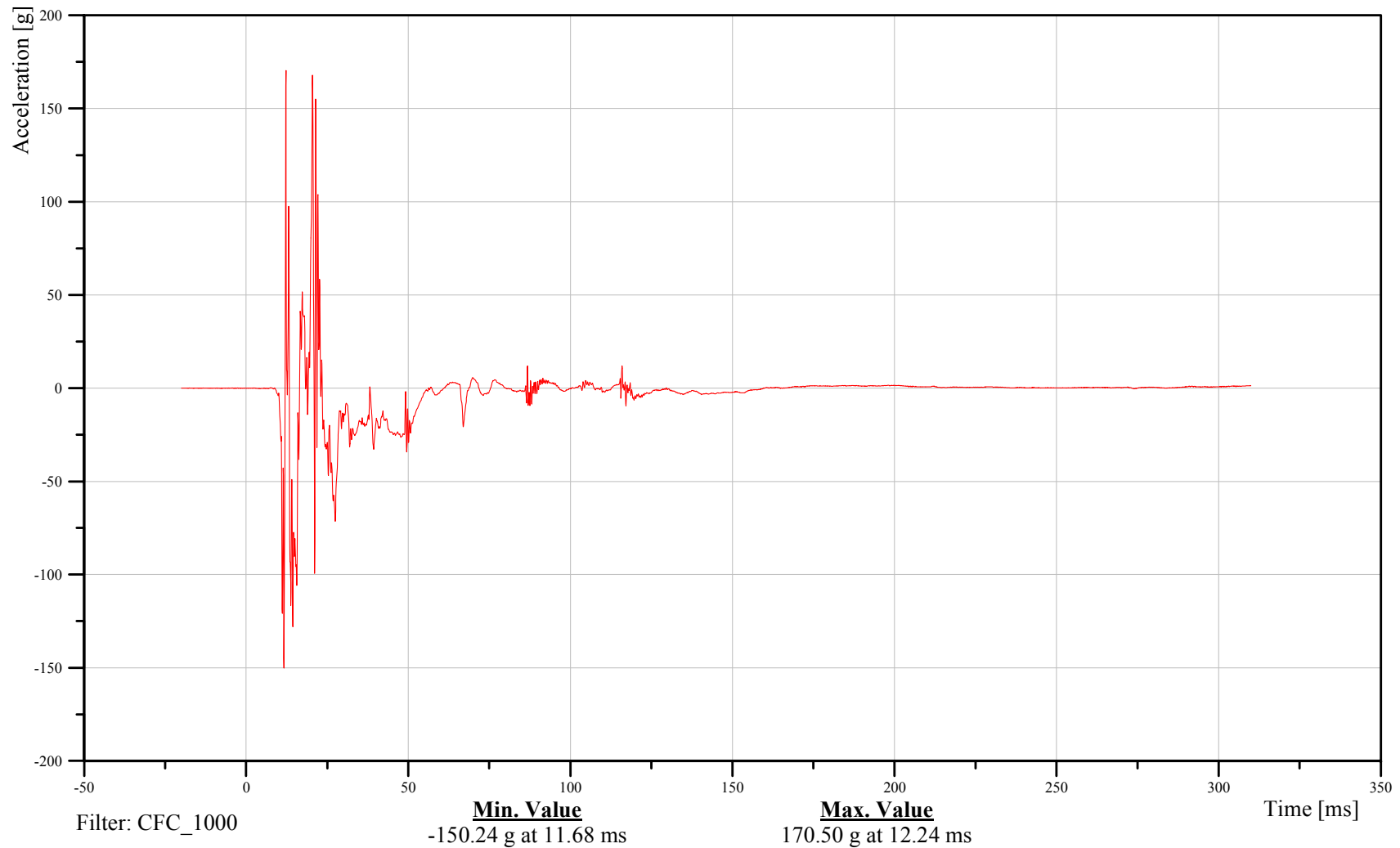
Shoulder Accel Y

Customer: VRTC

11SHLDLE00S2ACYA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

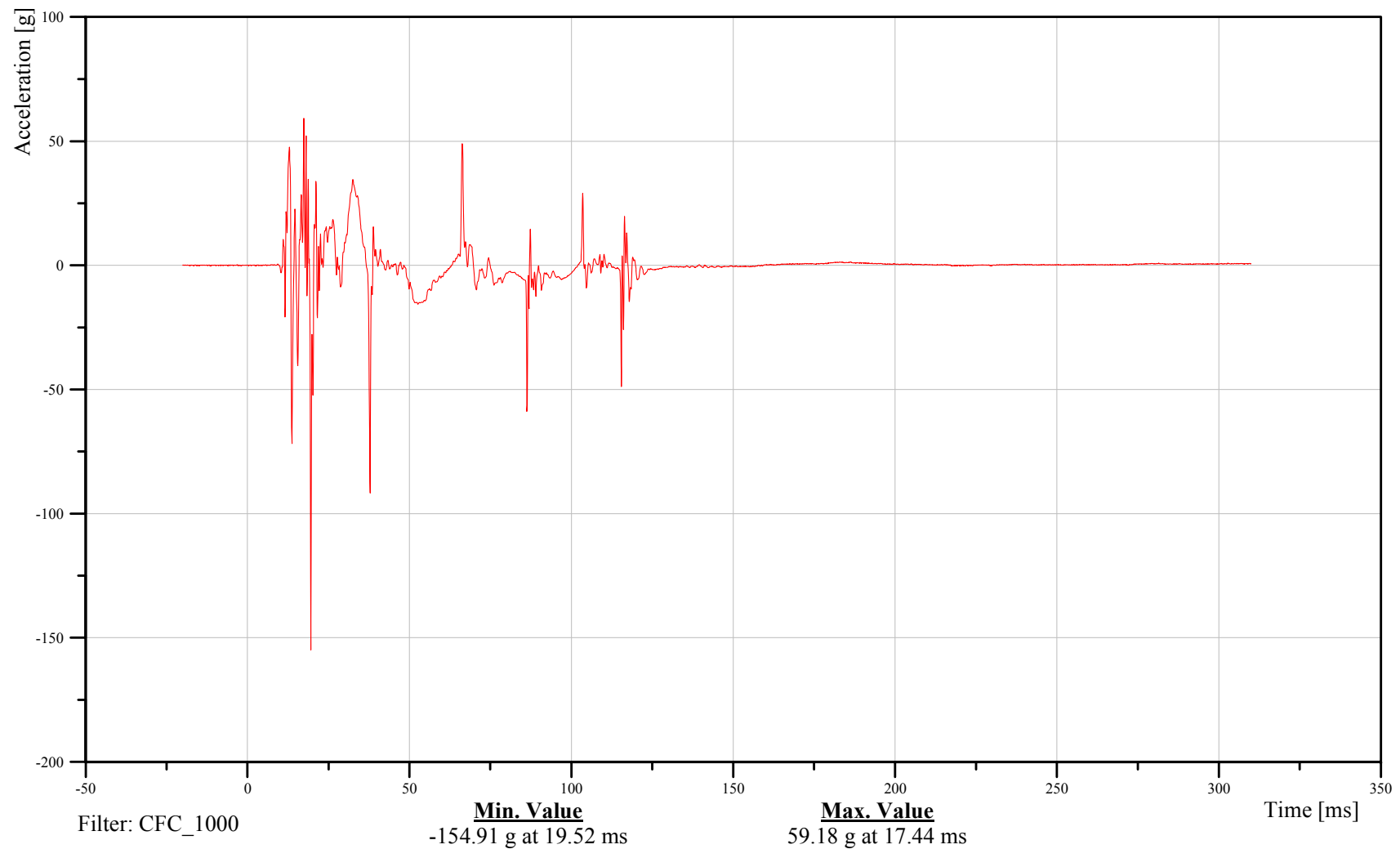
Shoulder Accel Z

Customer: VRTC

11SHLDLE00S2ACZA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

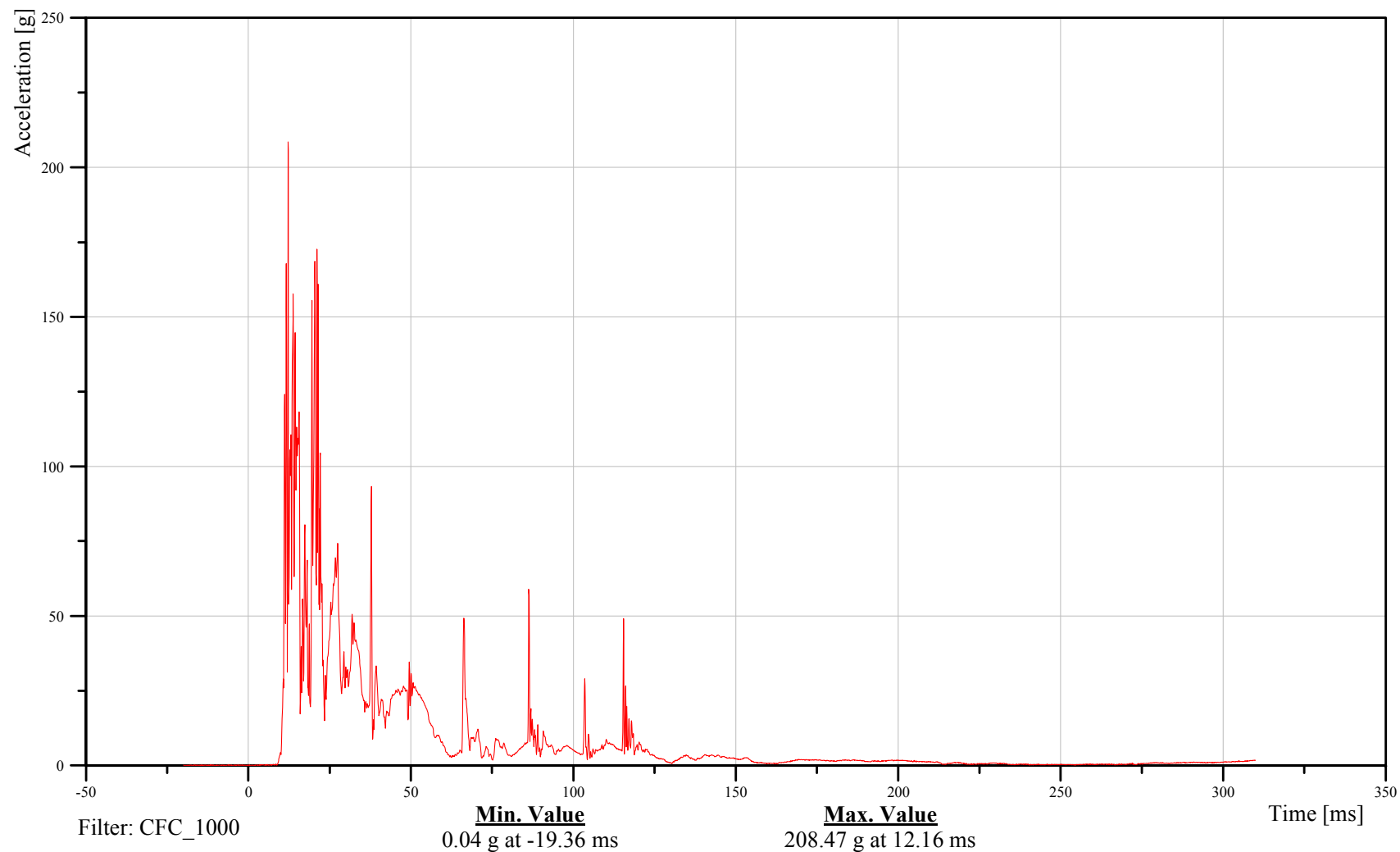
Shoulder Accel Resultant

Customer: VRTC

11SHLDLE00S2ACRA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

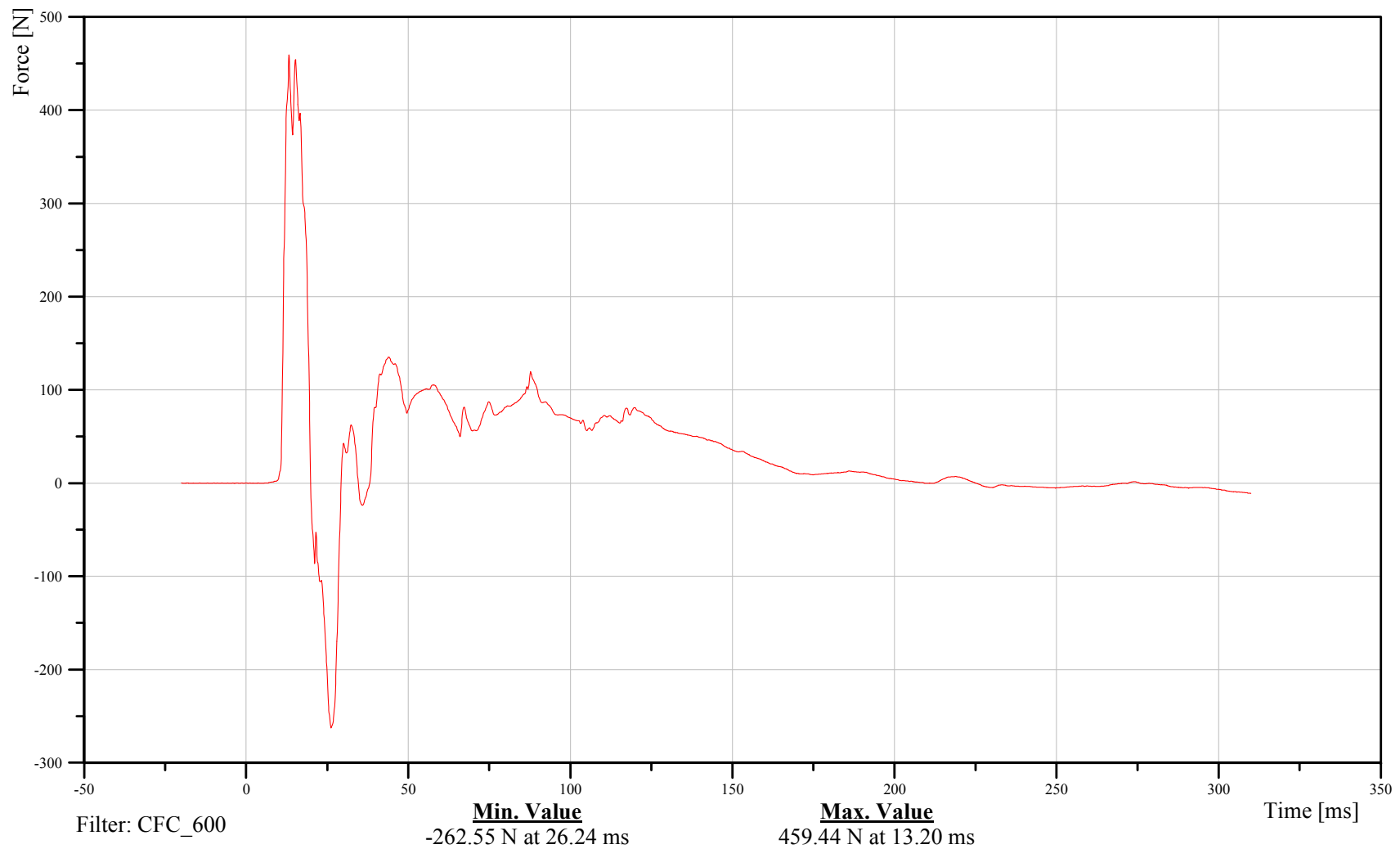
Shoulder Force X

Customer: VRTC

11SHLDLE00S2FOXB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Shoulder Force Y

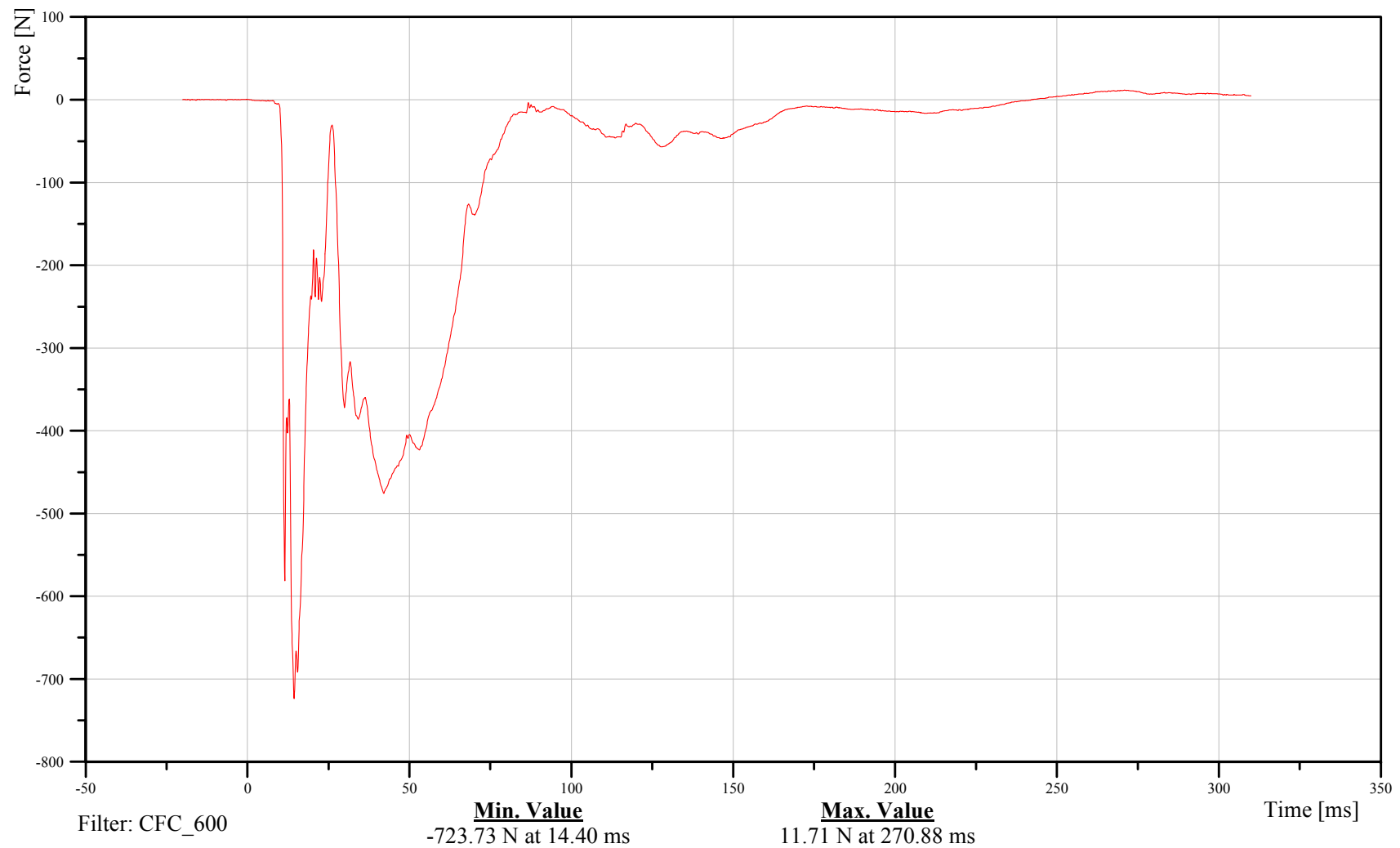
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11SHLDLE00S2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Shoulder Force Z

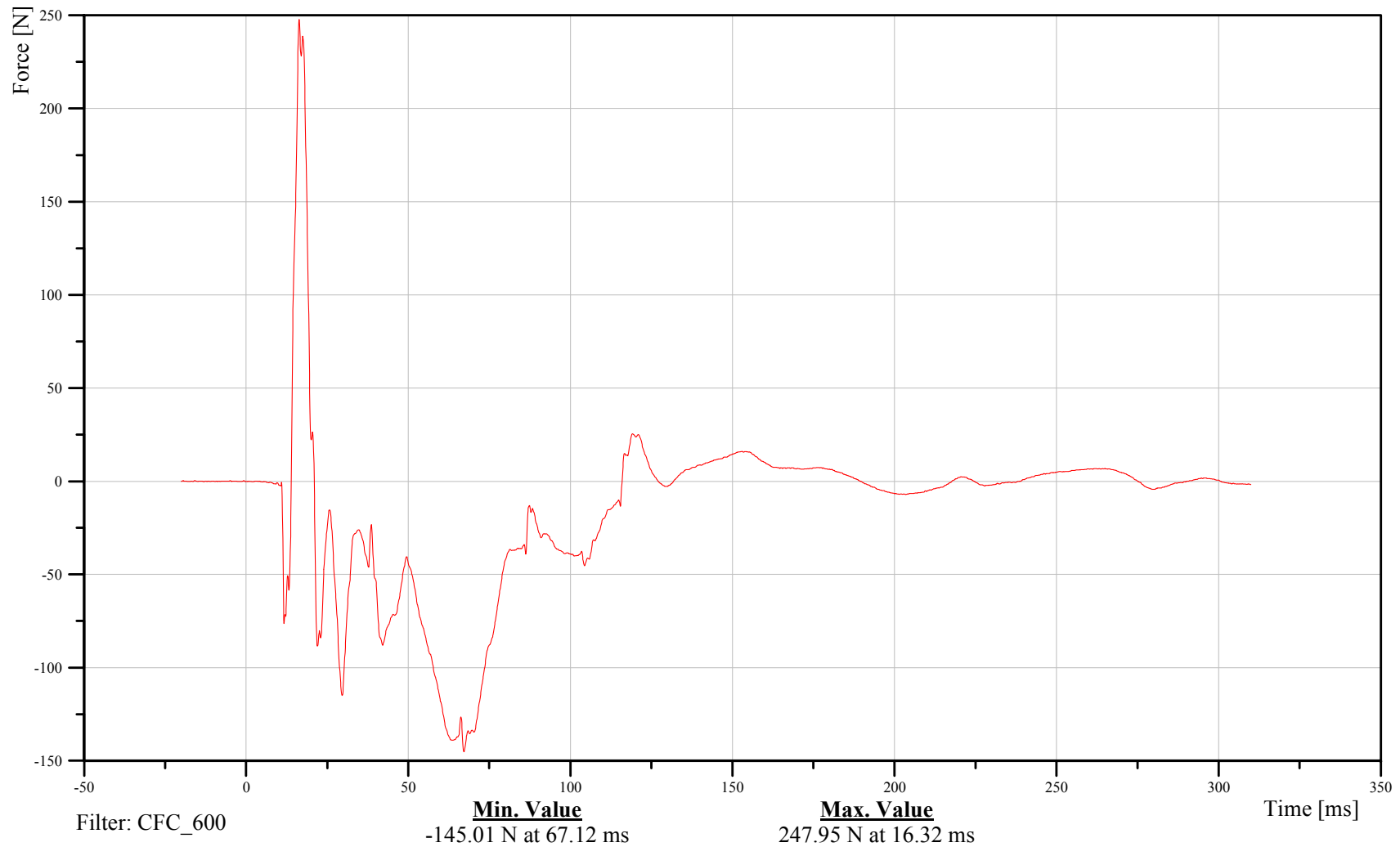
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11SHLDLE00S2FOZB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

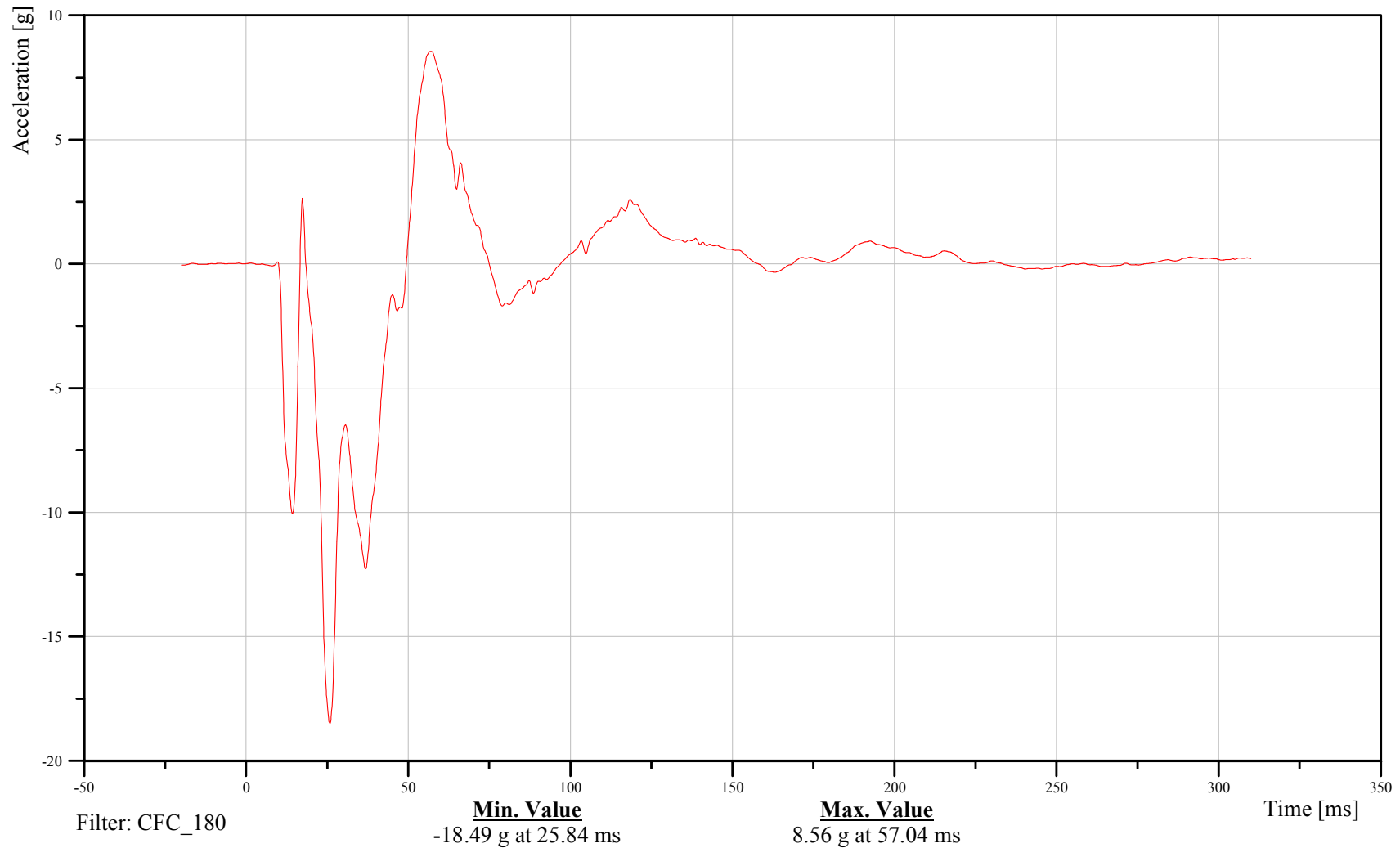
Upper Spine Accel X

Customer: VRTC

11SPIN0100S2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

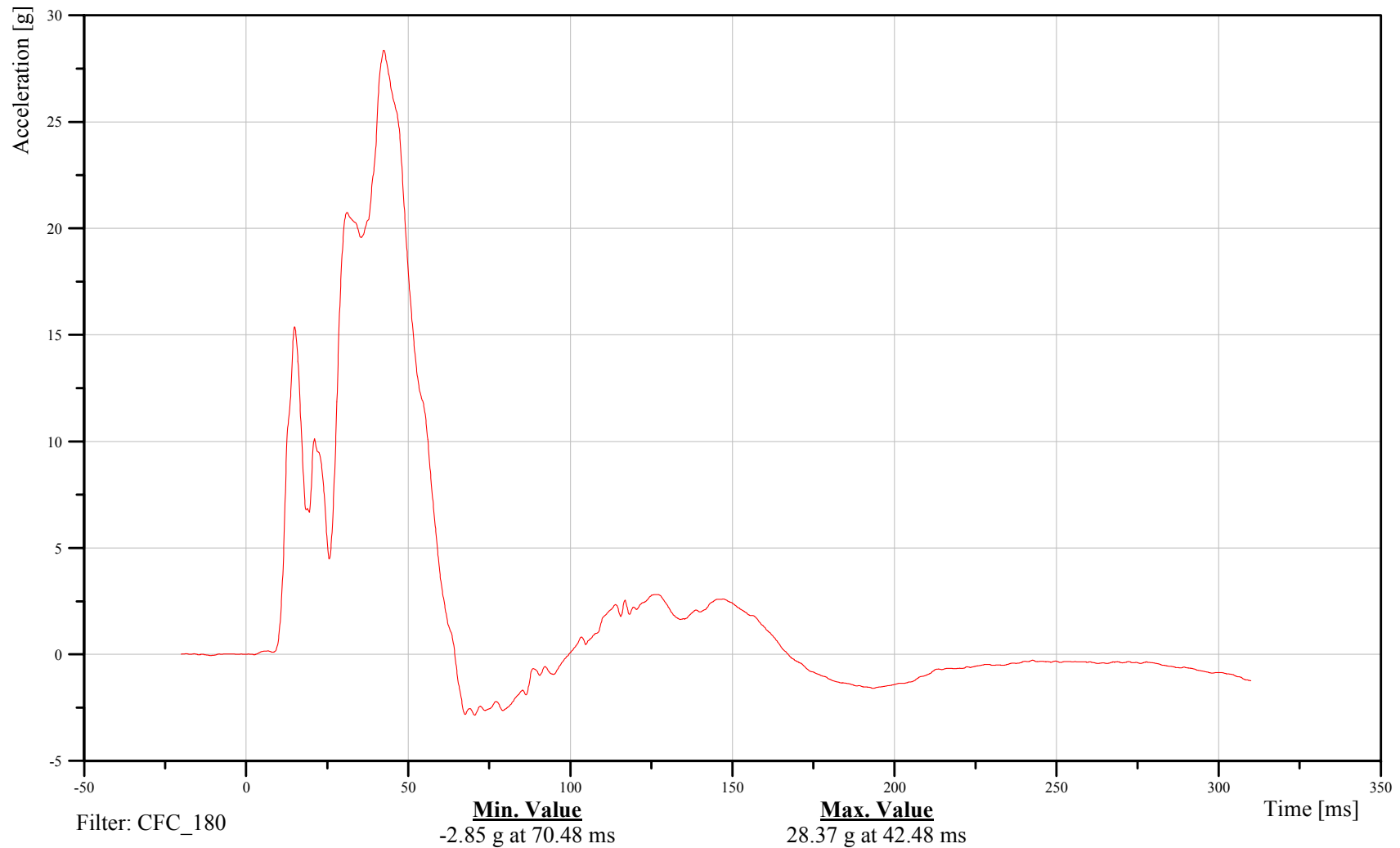
Upper Spine Accel Y

Customer: VRTC

11SPIN0100S2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

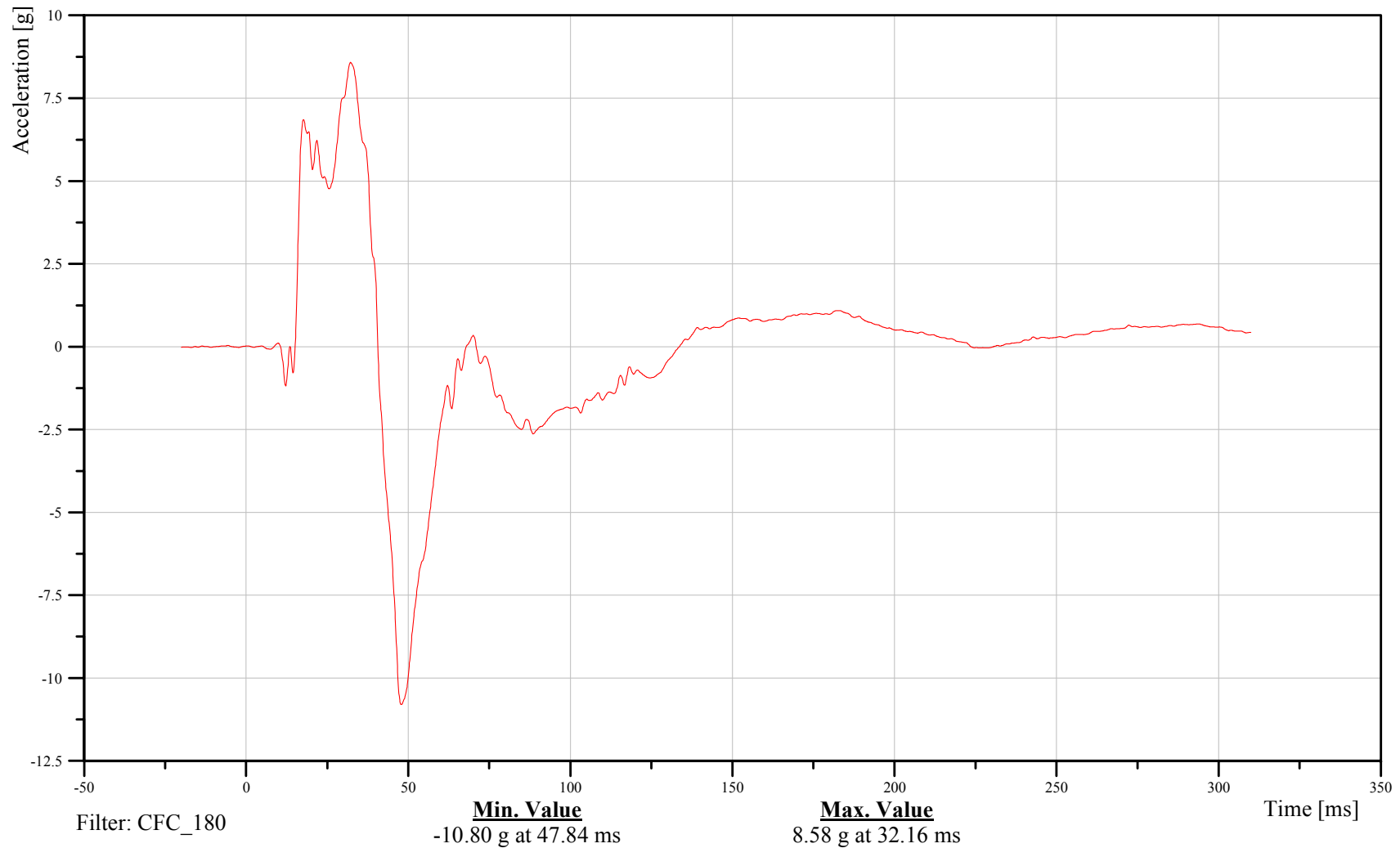
Upper Spine Accel Z

Customer: VRTC

11SPIN0100S2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

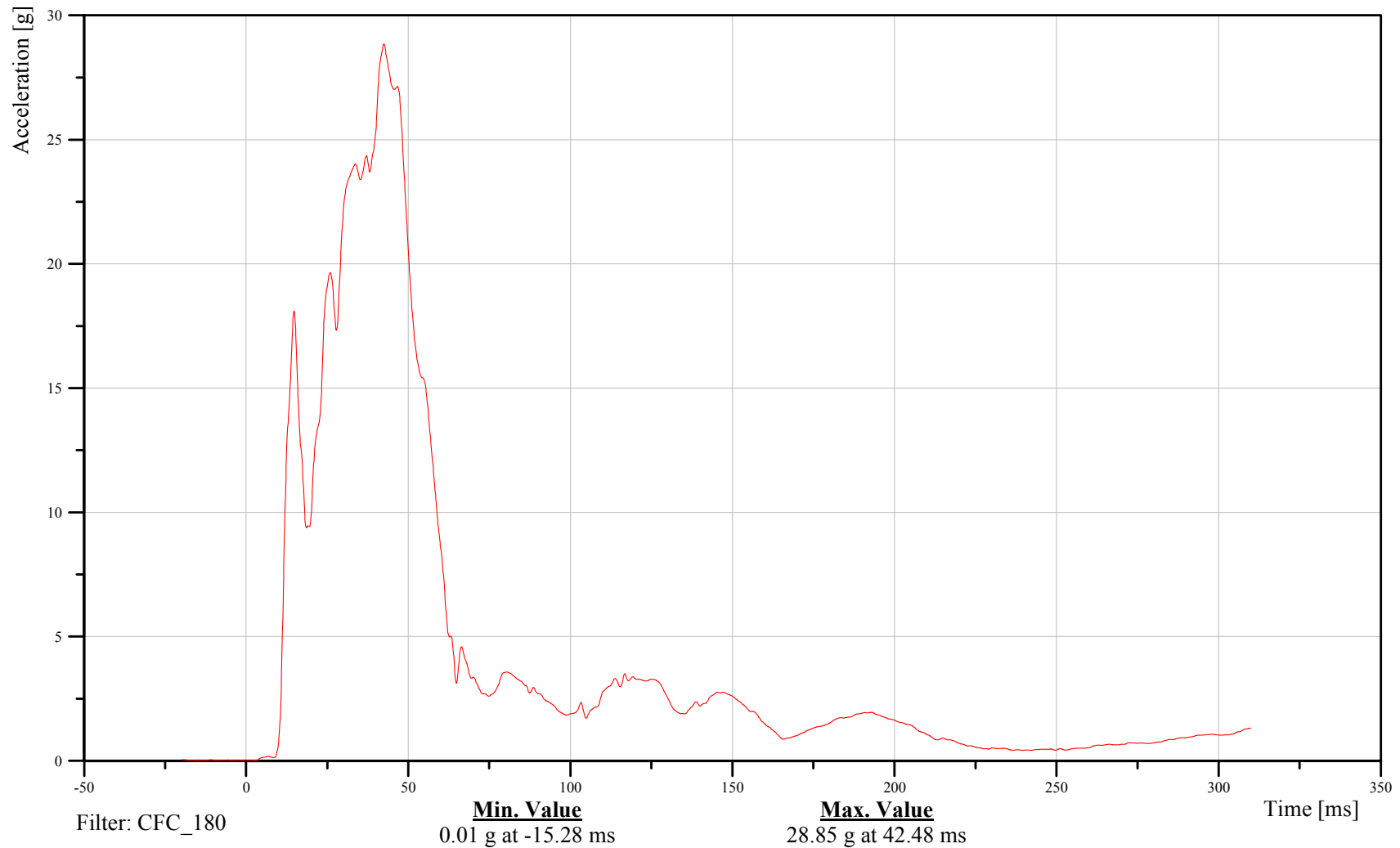
Upper Spine Resultant

Customer: VRTC

11SPIN0100S2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Spine Rib 1 Accel X

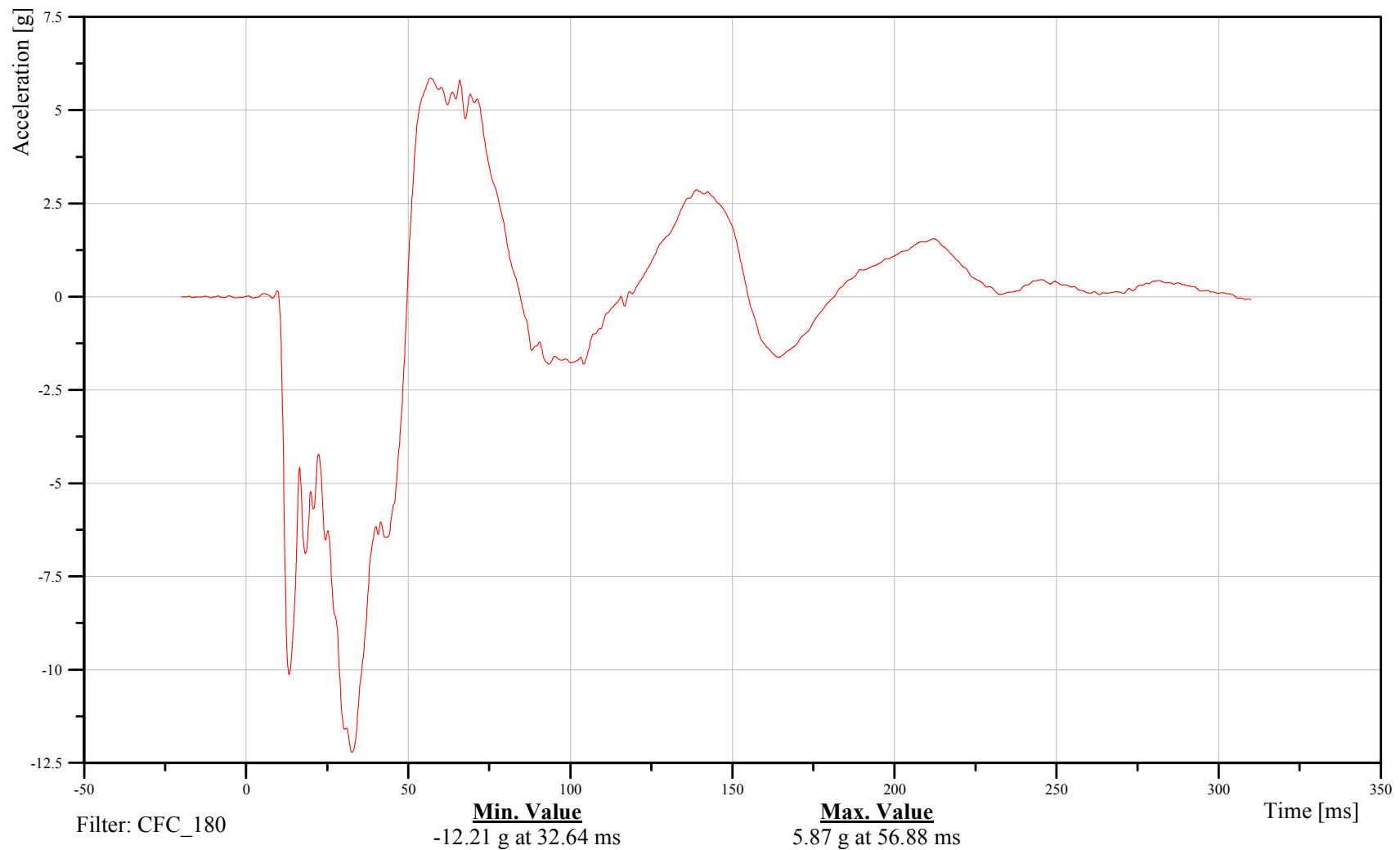
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11THSP01RIS2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Spine Rib 1 Accel Y

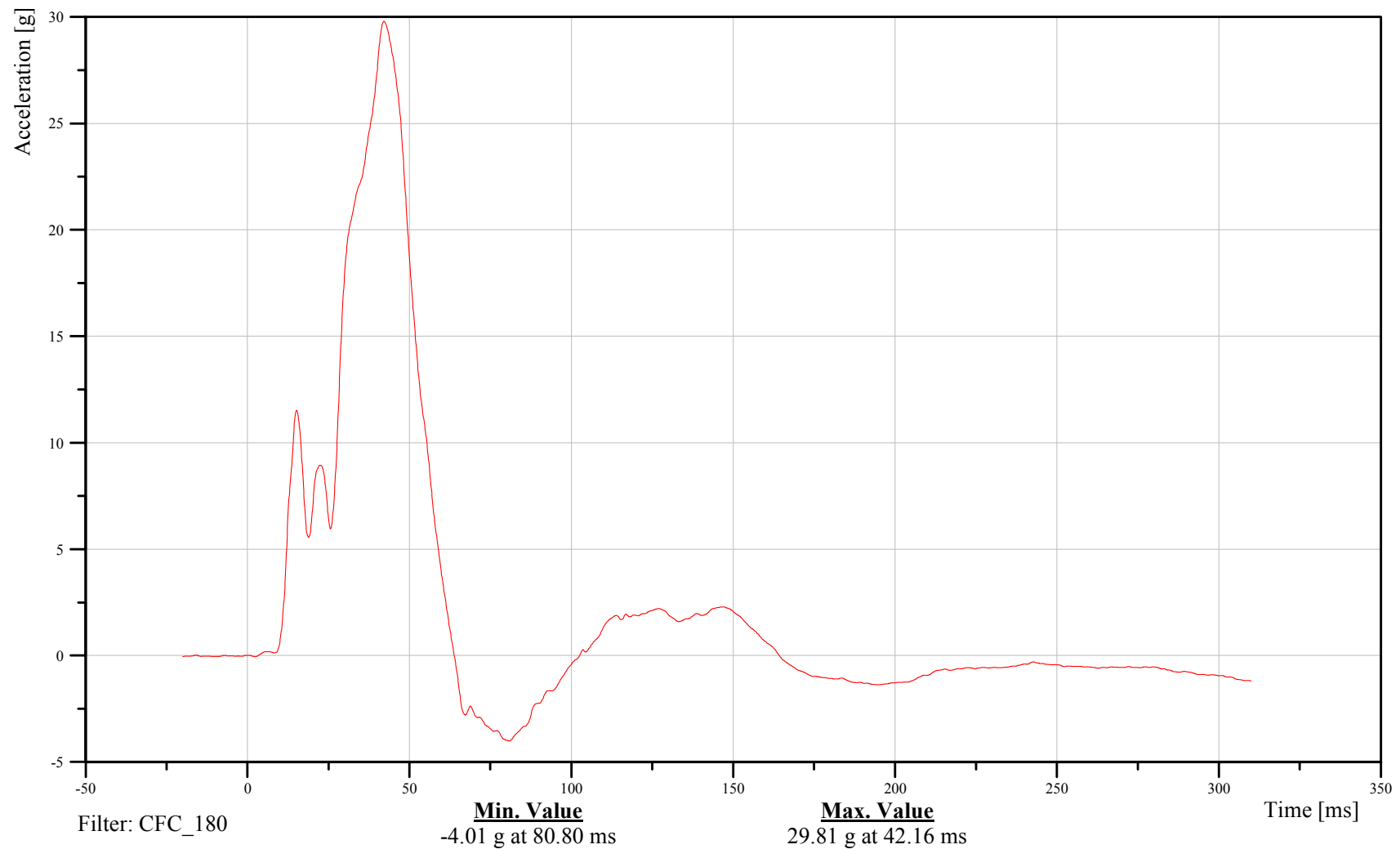
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11THSP01RIS2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

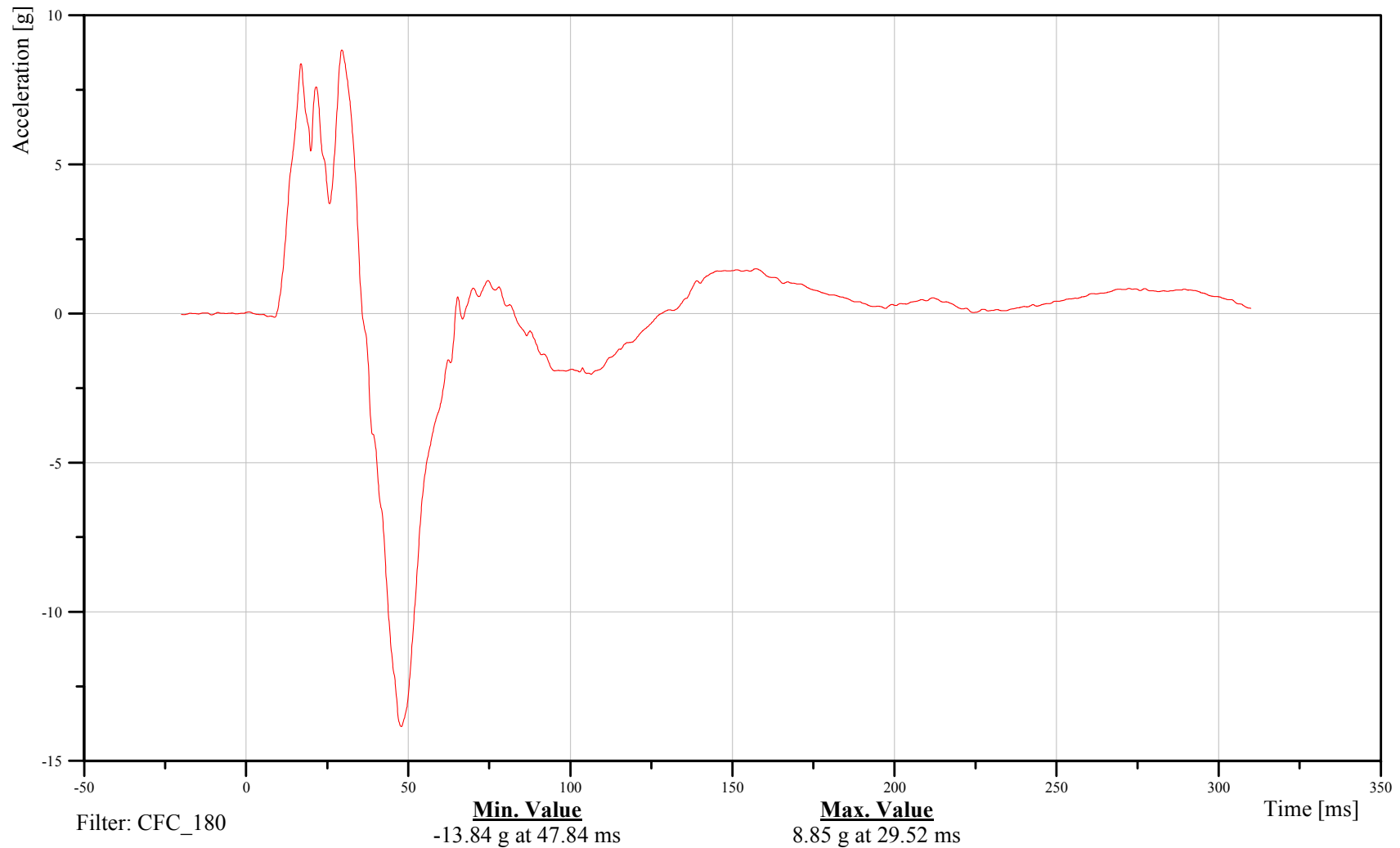
Spine Rib 1 Accel Z

Customer: VRTC

11THSP01RIS2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

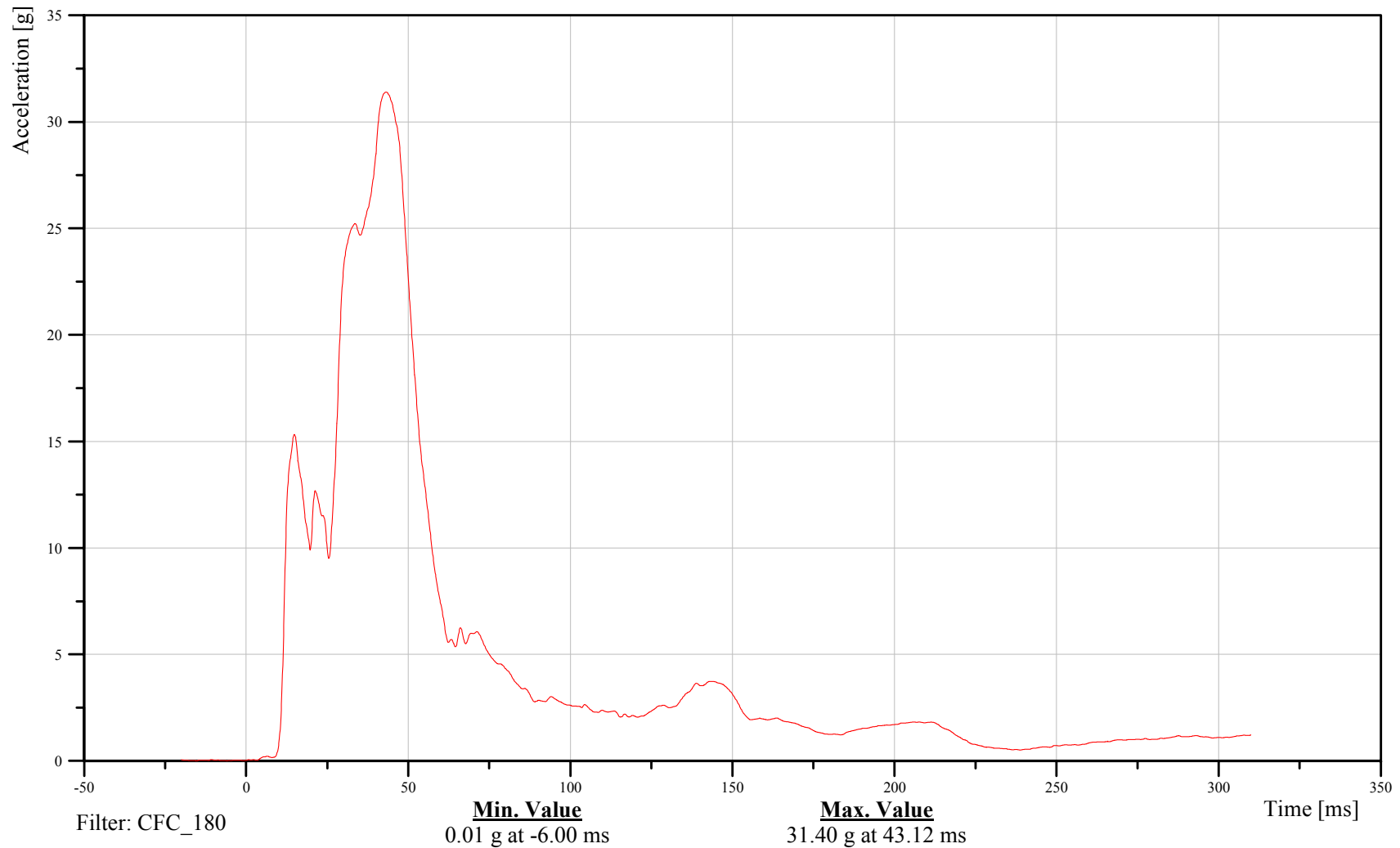
Spine Rib 1 Accel Resultant

Customer: VRTC

11THSP01RIS2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Spine Rib 2 Accel X

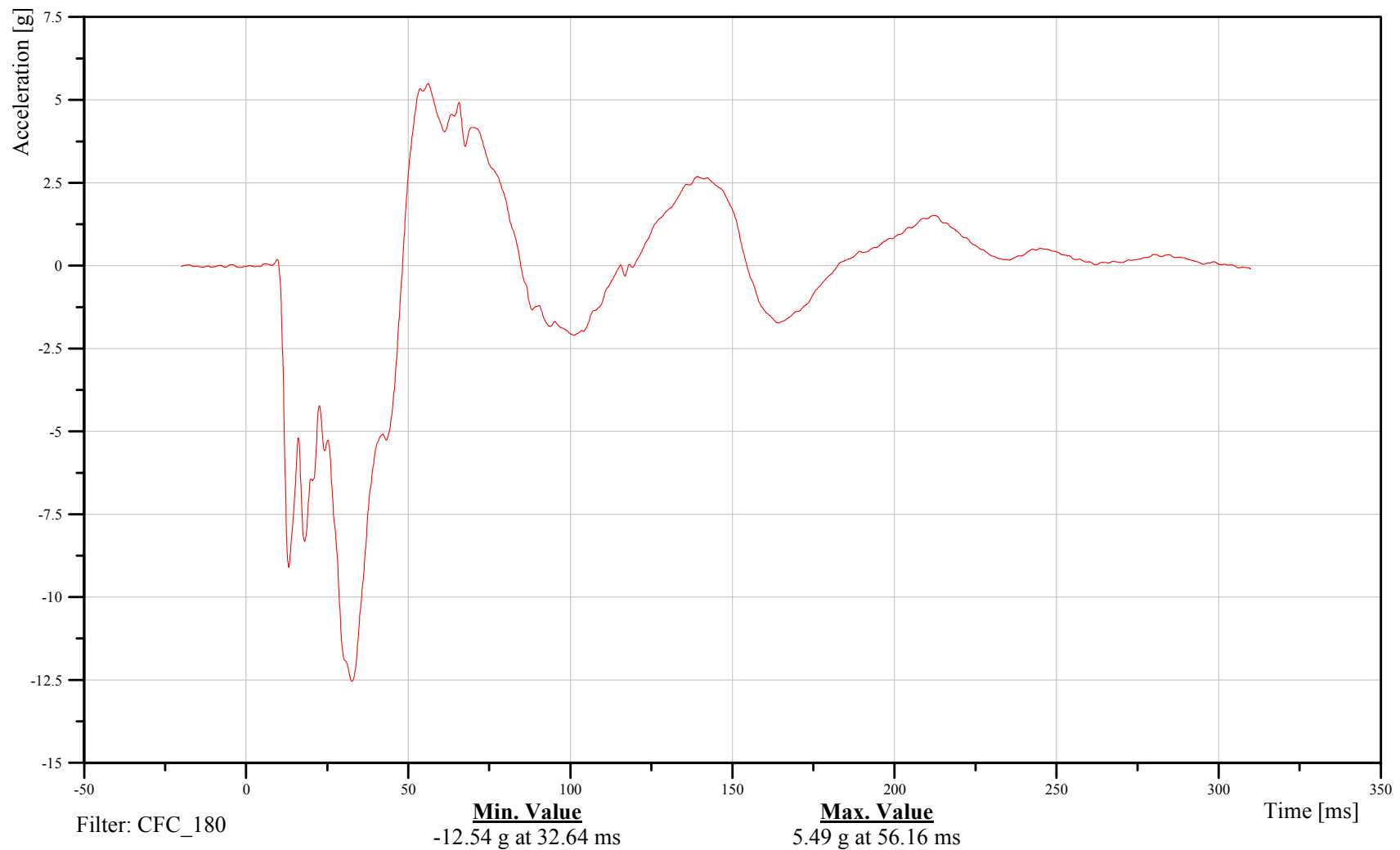
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11THSP02RIS2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Spine Rib 2 Accel Y

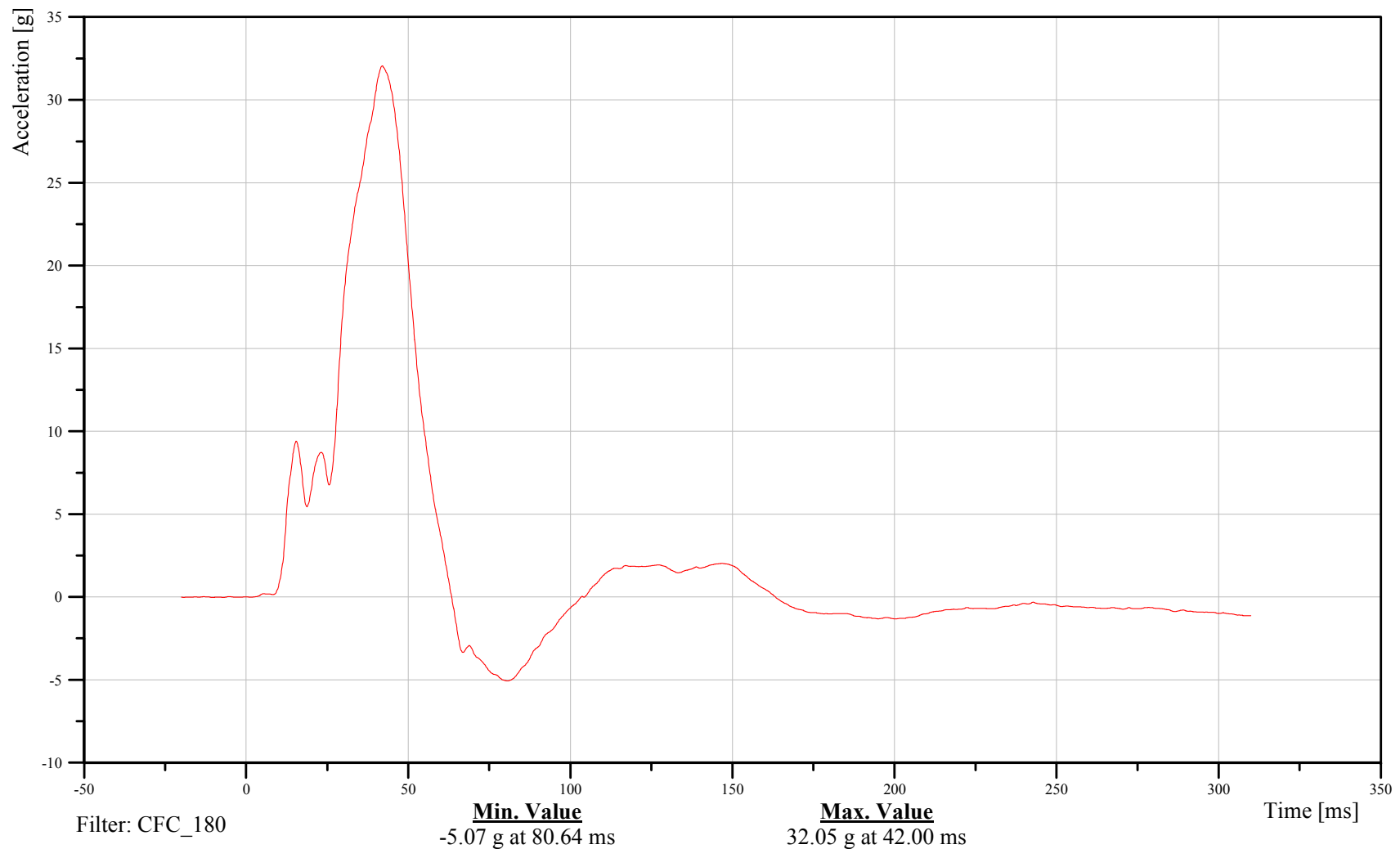
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11THSP02RIS2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

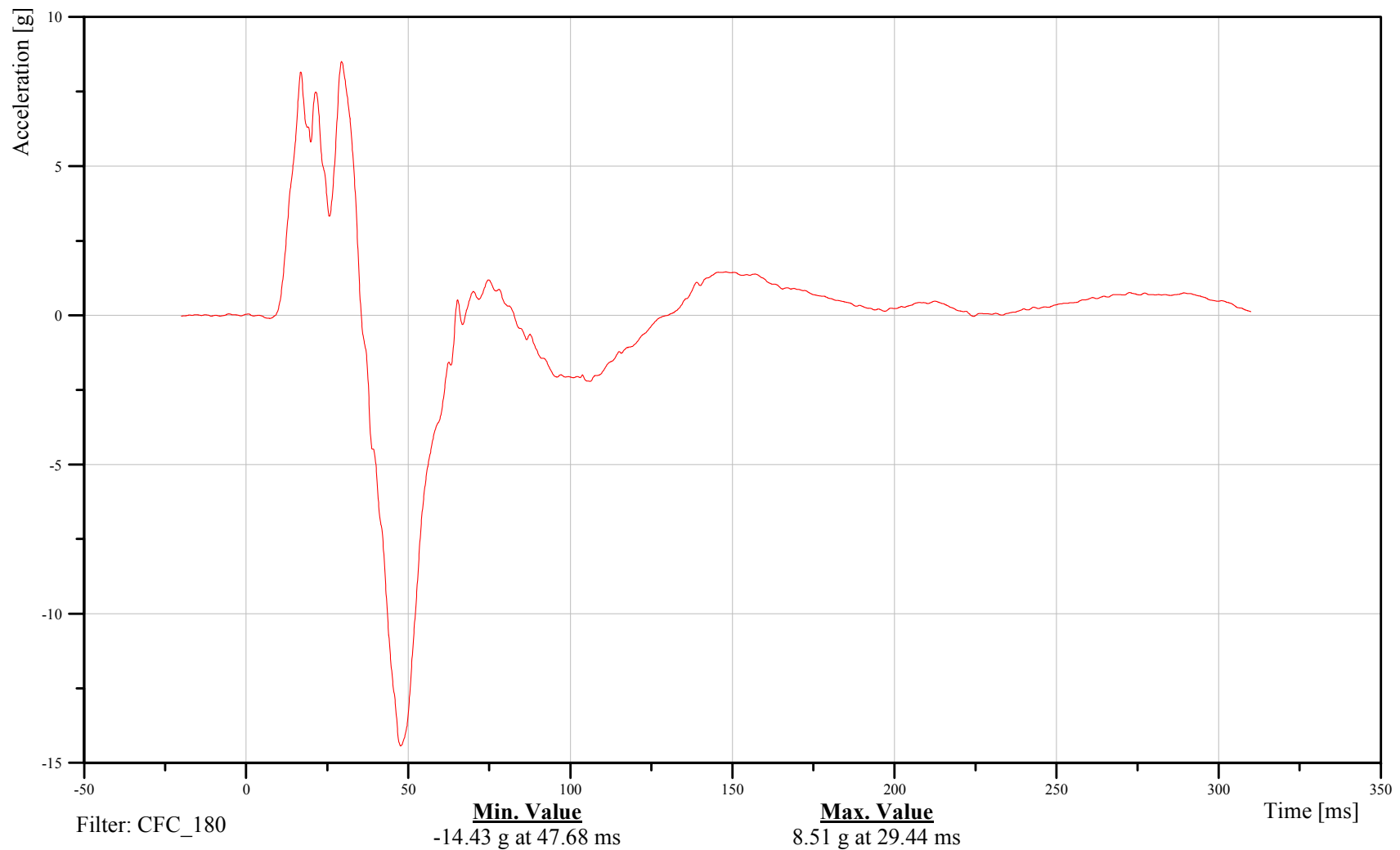
Spine Rib 2 Accel Z

Customer: VRTC

11THSP02RIS2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

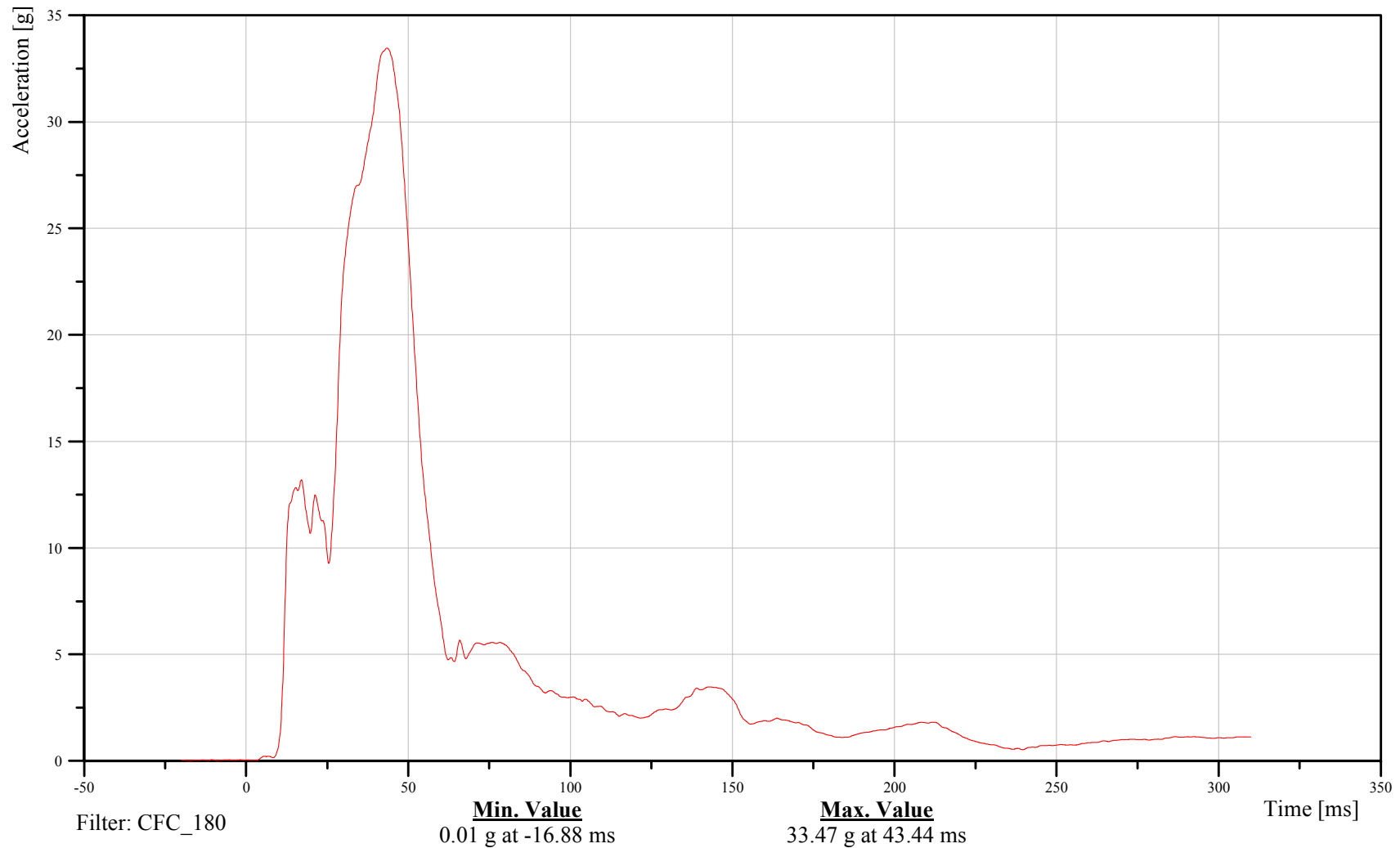
Spine Rib 2 Accel Resultant

Customer: VRTC

11THSP02RIS2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Spine Rib 3 Accel X

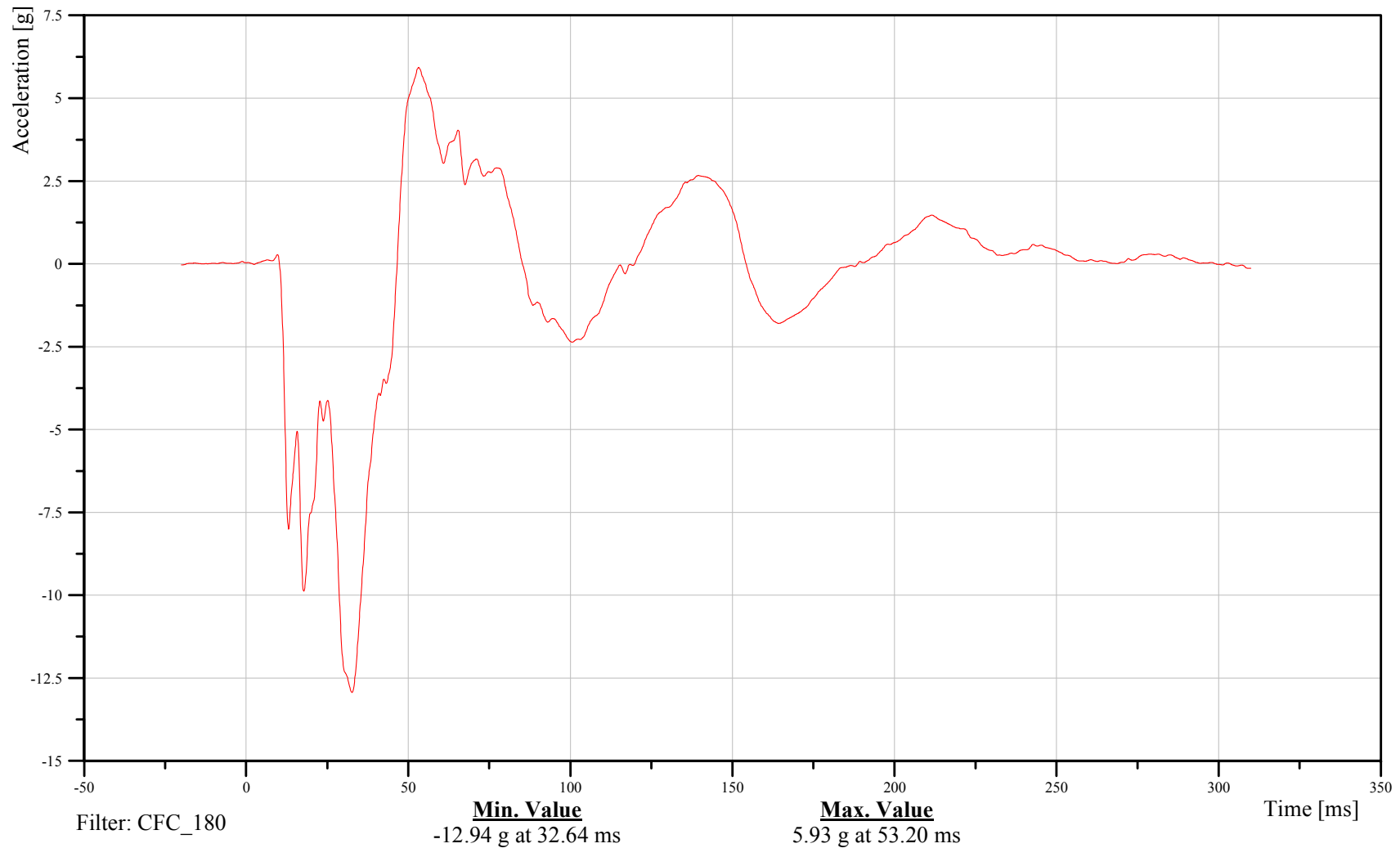
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11THSP03RIS2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Spine Rib 3 Accel Y

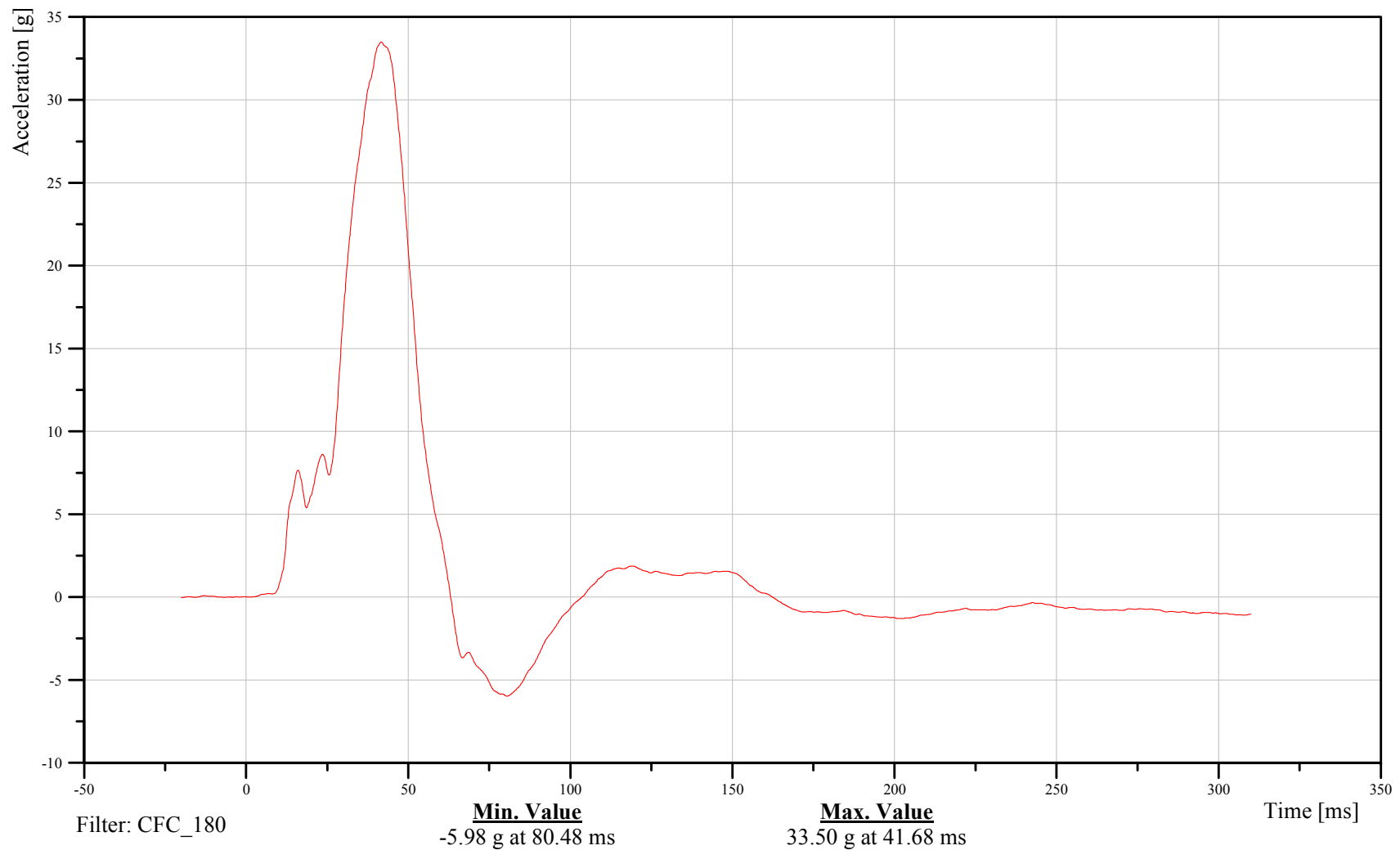
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11THSP03RIS2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

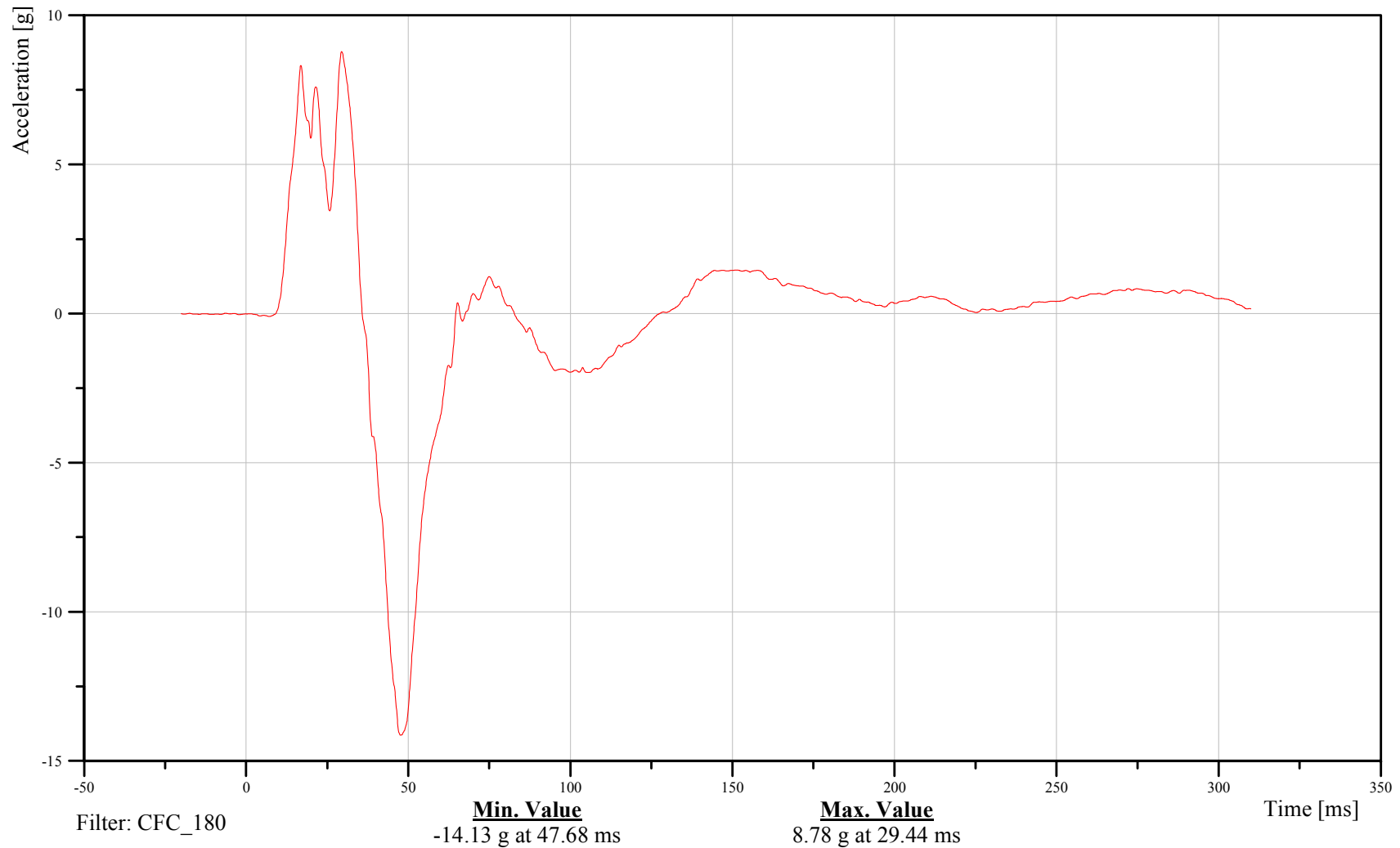
Spine Rib 3 Accel Z

Customer: VRTC

11THSP03RIS2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

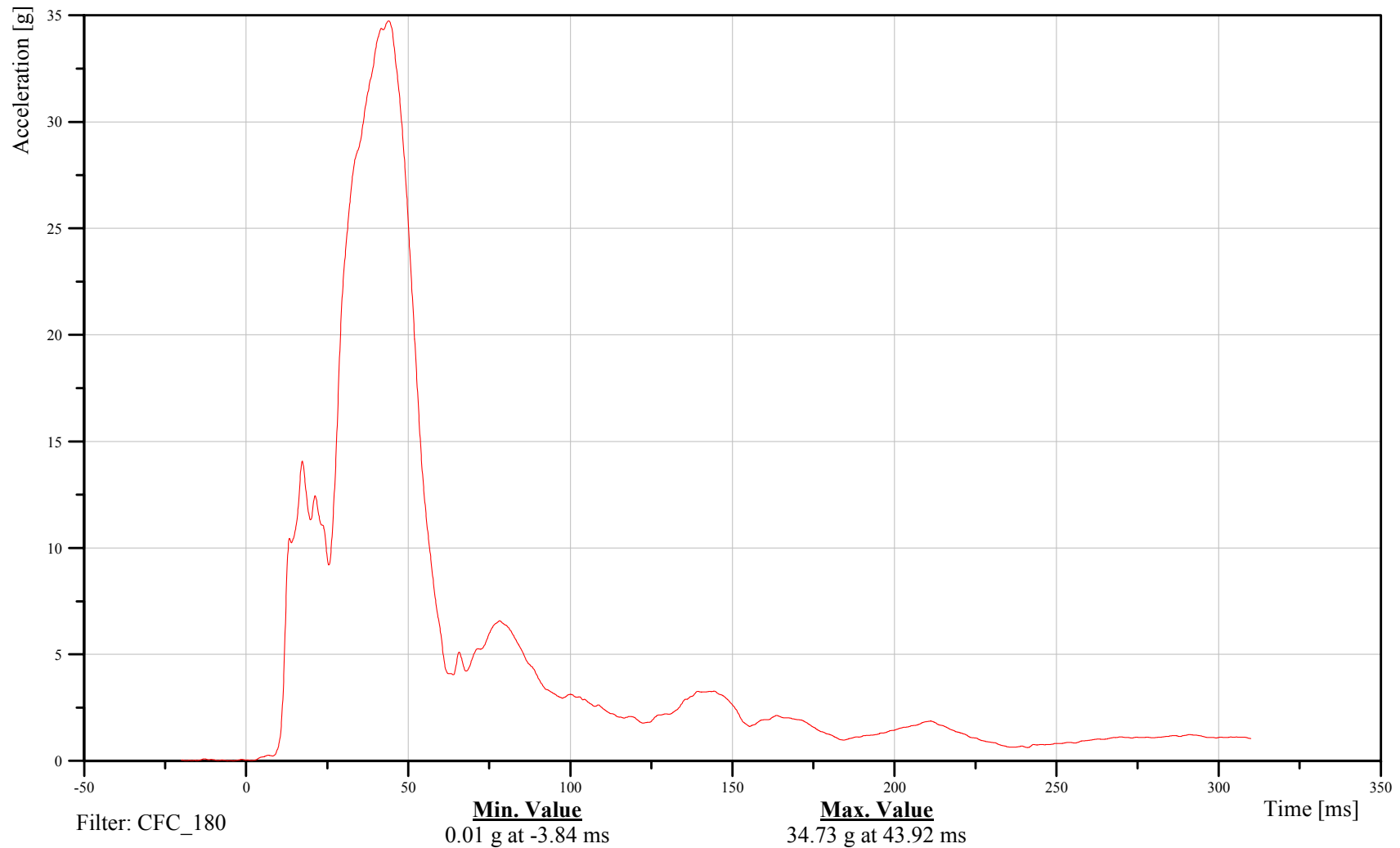
Spine Rib 3 Accel Resultant

Customer: VRTC

11THSP03RIS2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

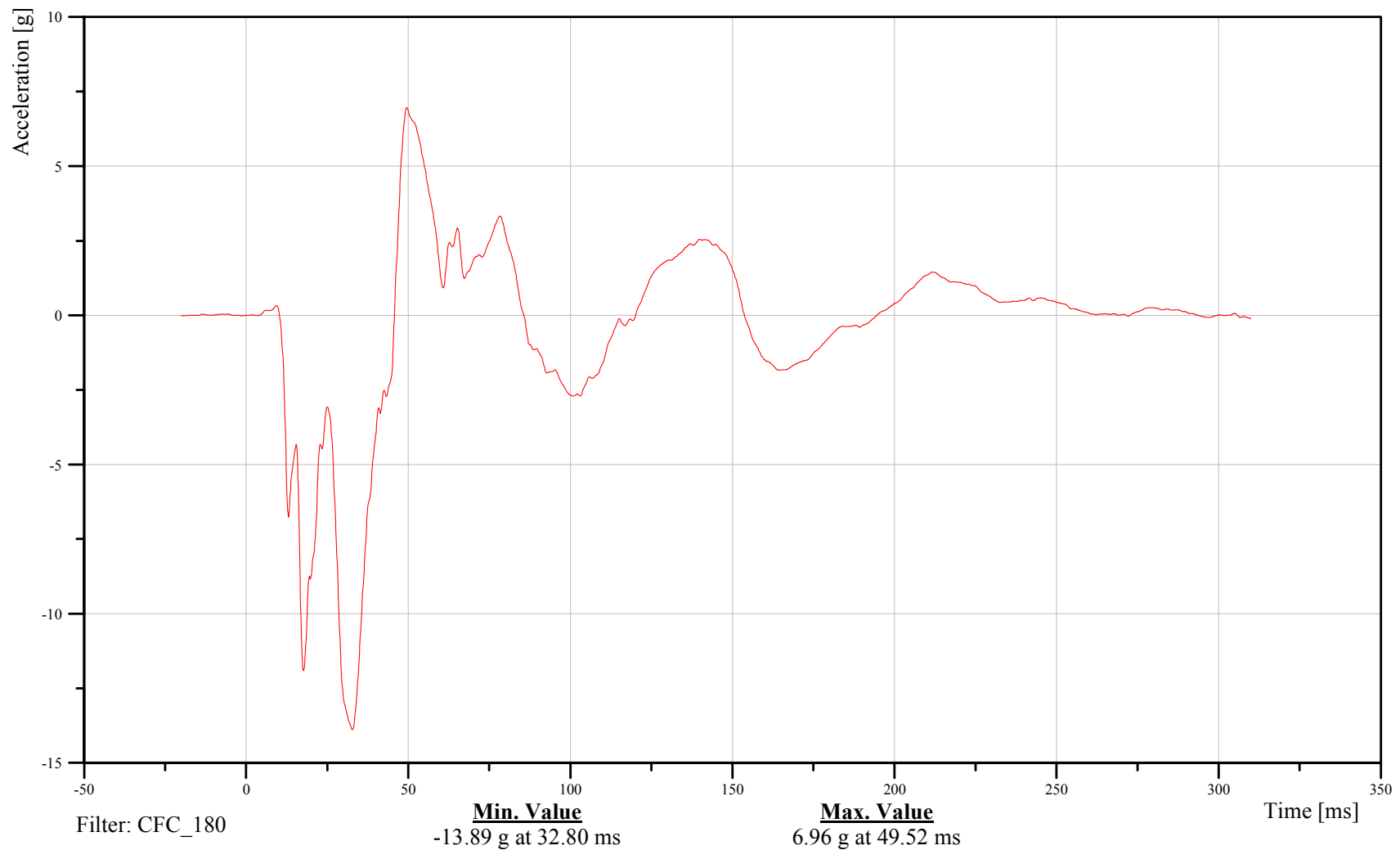
Lower Spine Accel X

Customer: VRTC

11SPIN1200S2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

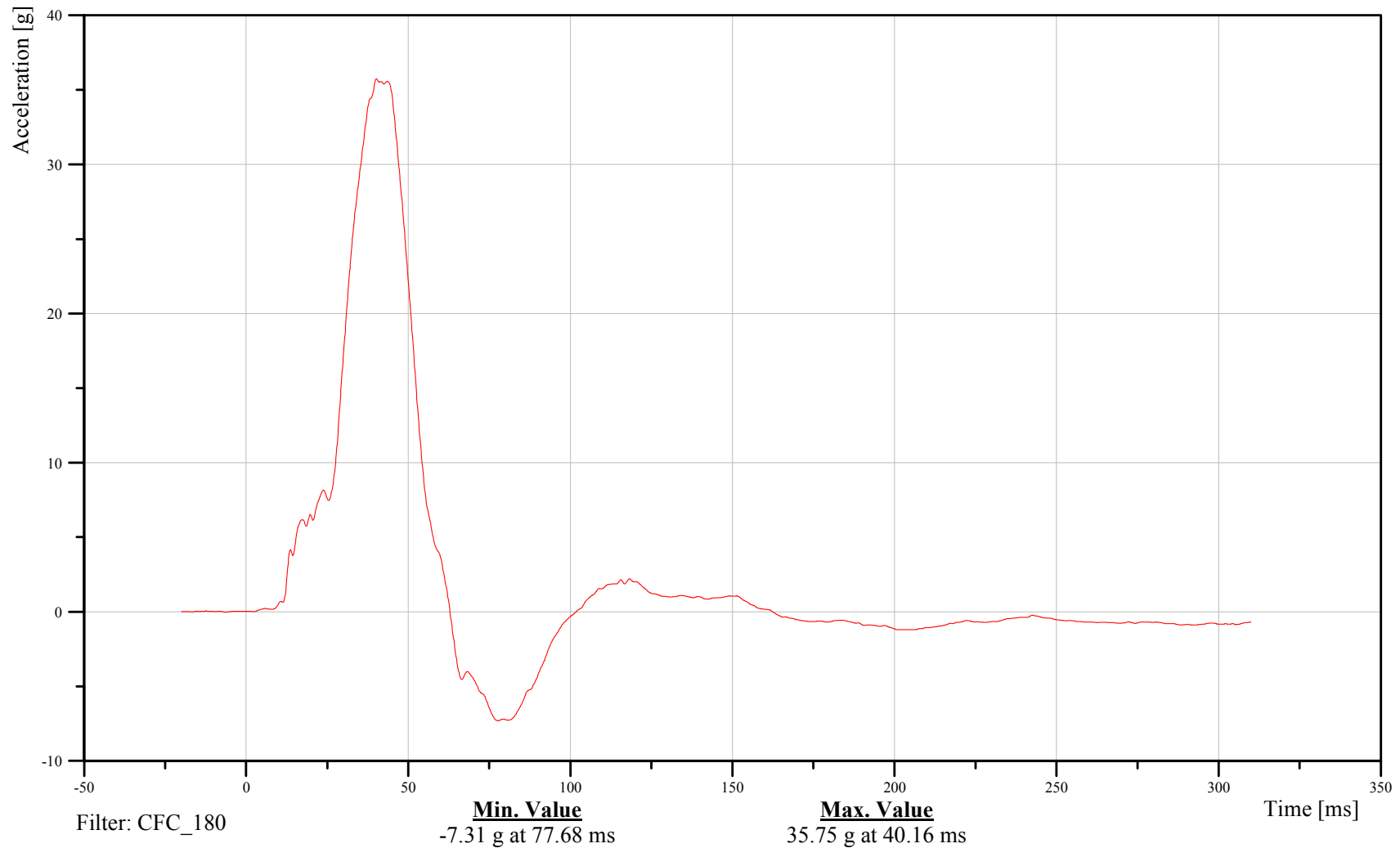
Lower Spine Accel Y

Customer: VRTC

11SPIN1200S2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

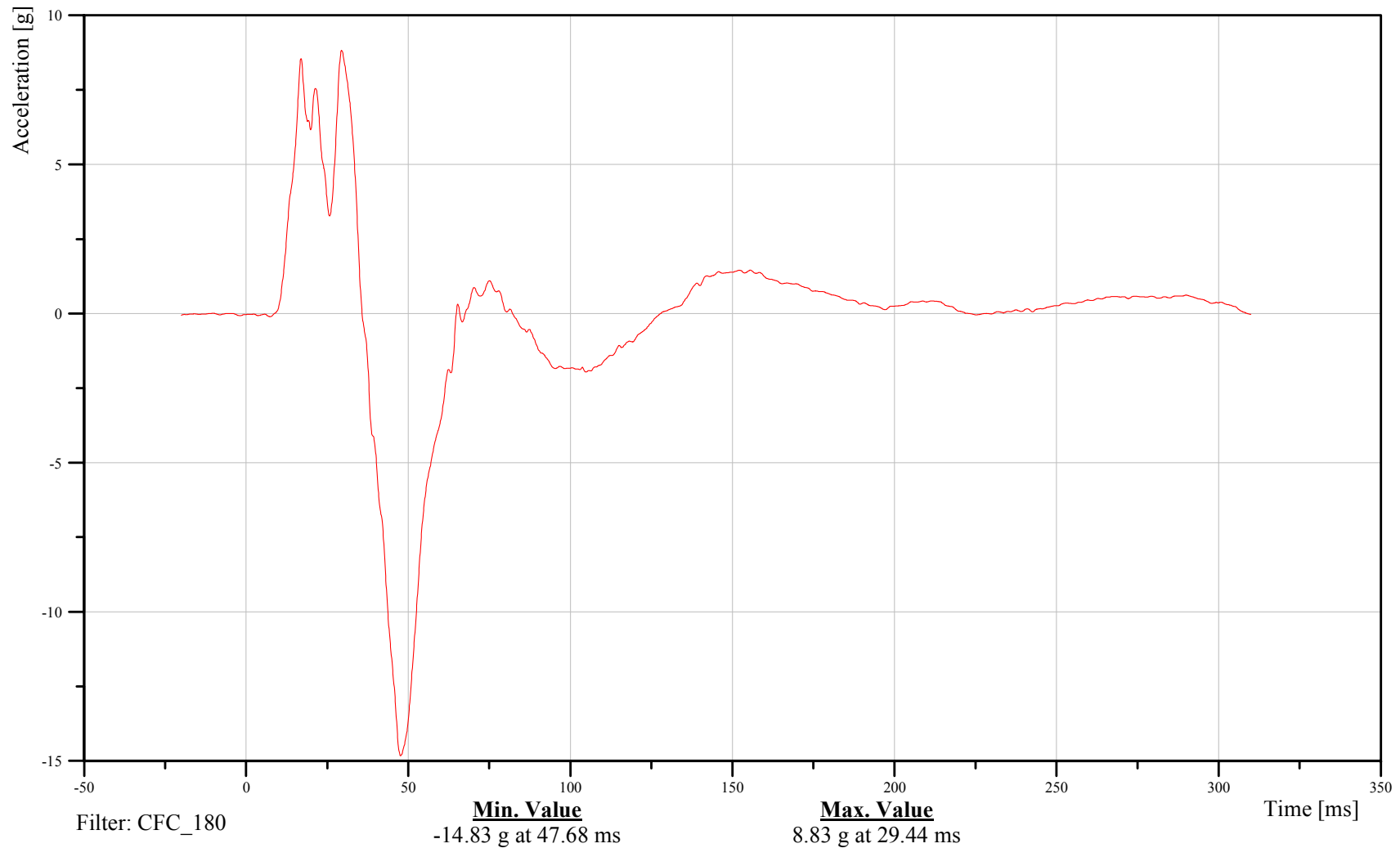
Lower Spine Accel Z

Customer: VRTC

11SPIN1200S2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

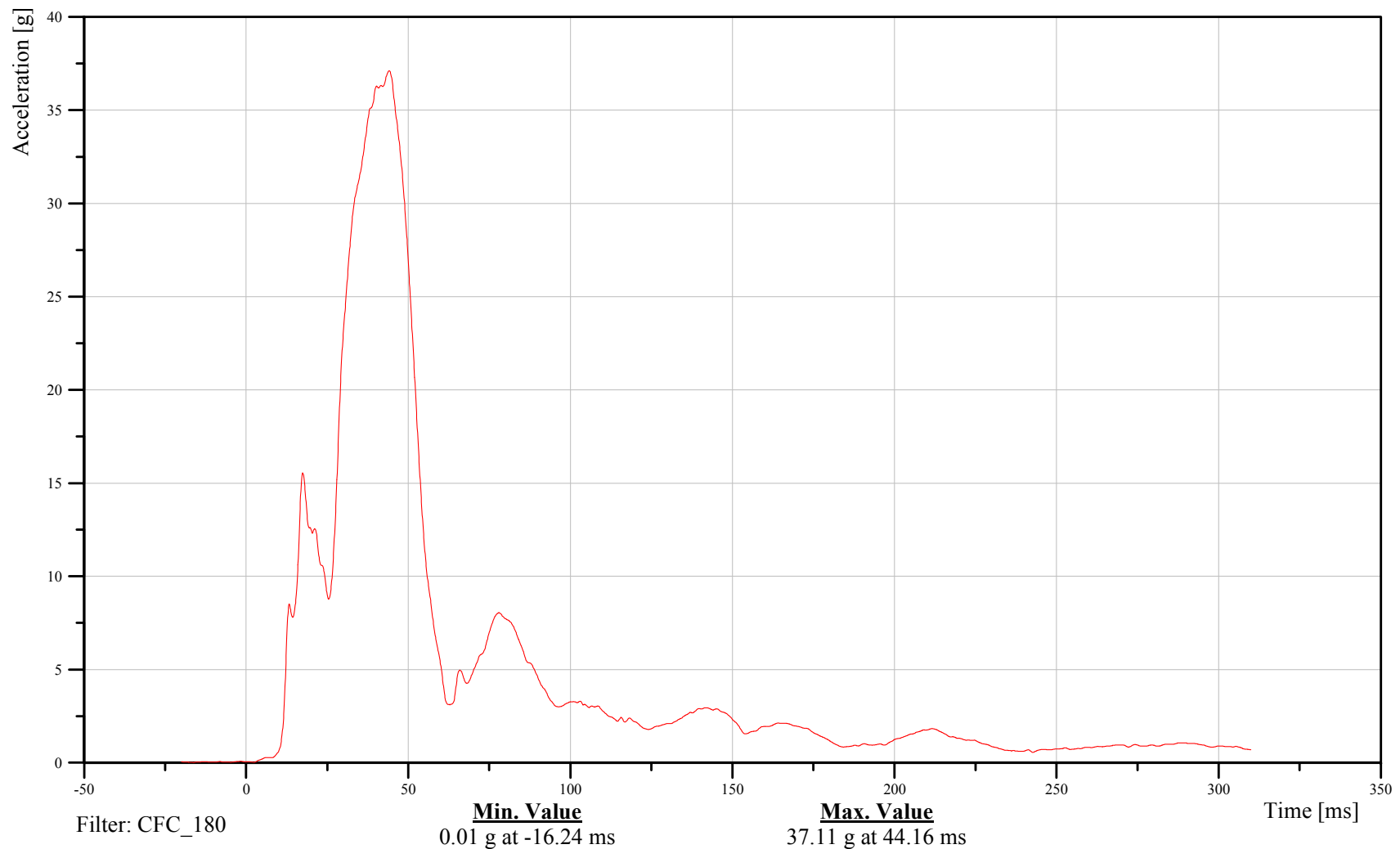
Lower Spine Accel Resultant

Customer: VRTC

11SPIN1200S2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Spine Rib 5 Accel X

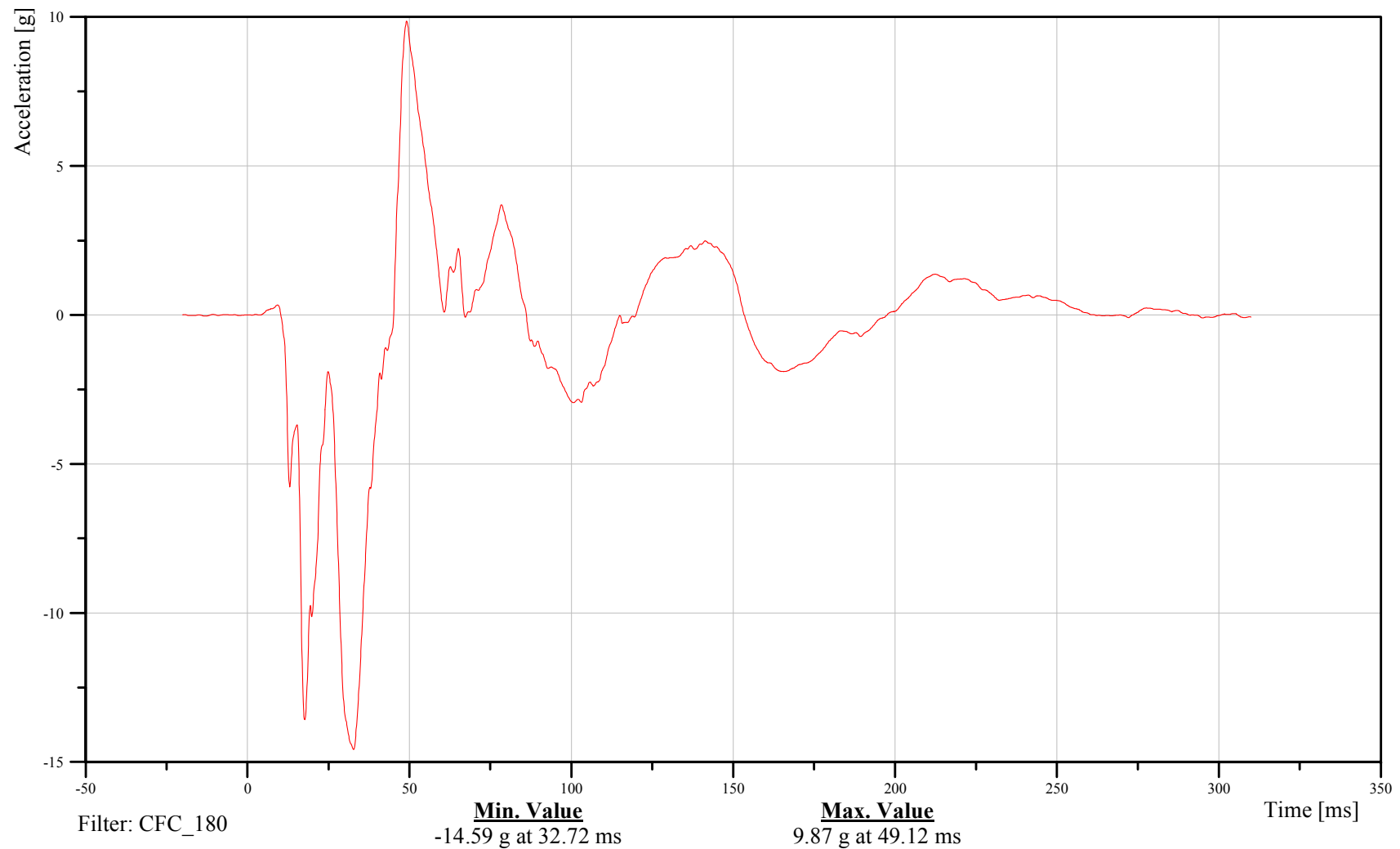
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11ABSP02RIS2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

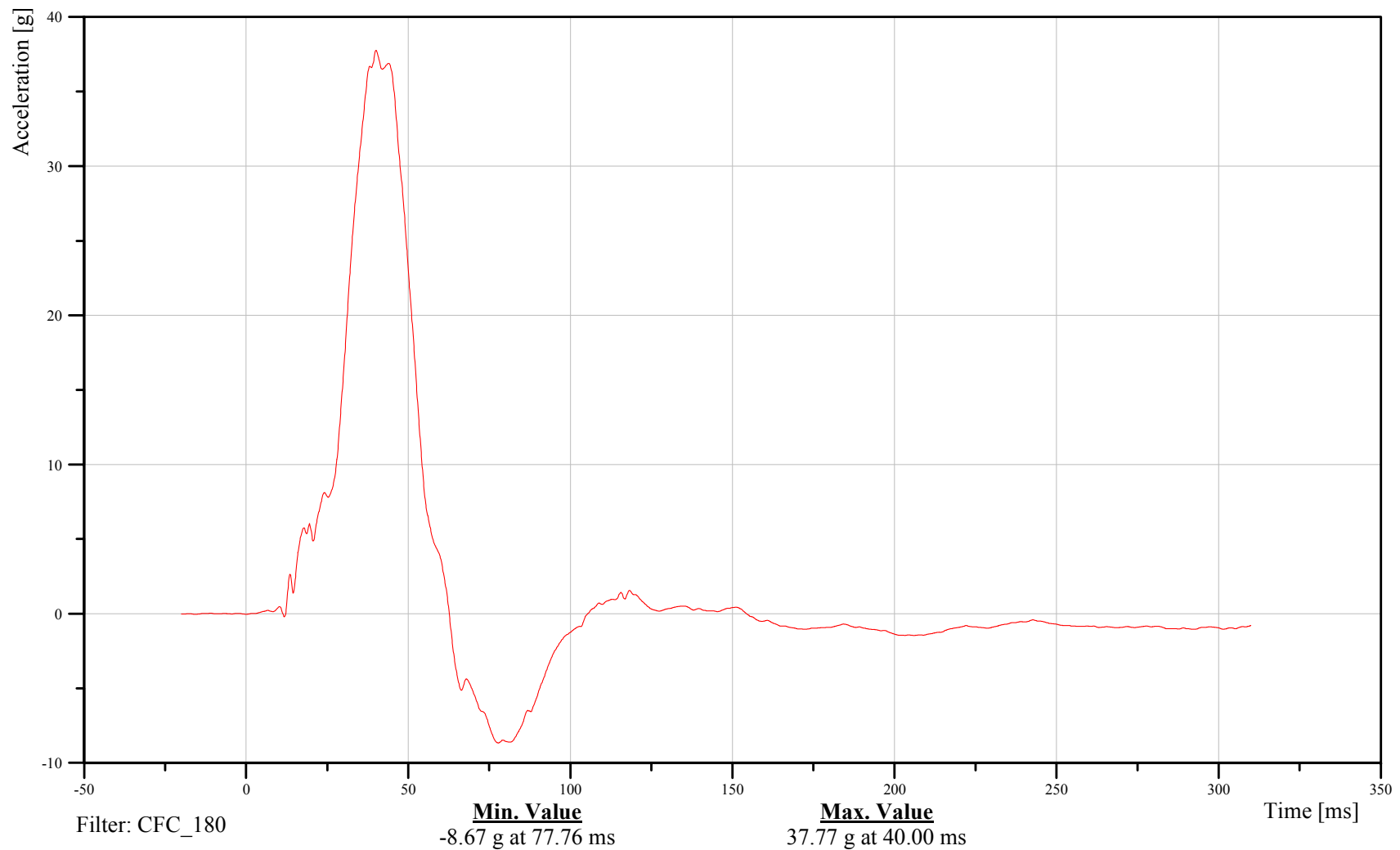
Spine Rib 5 Accel Y

Customer: VRTC

11ABSP02RIS2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

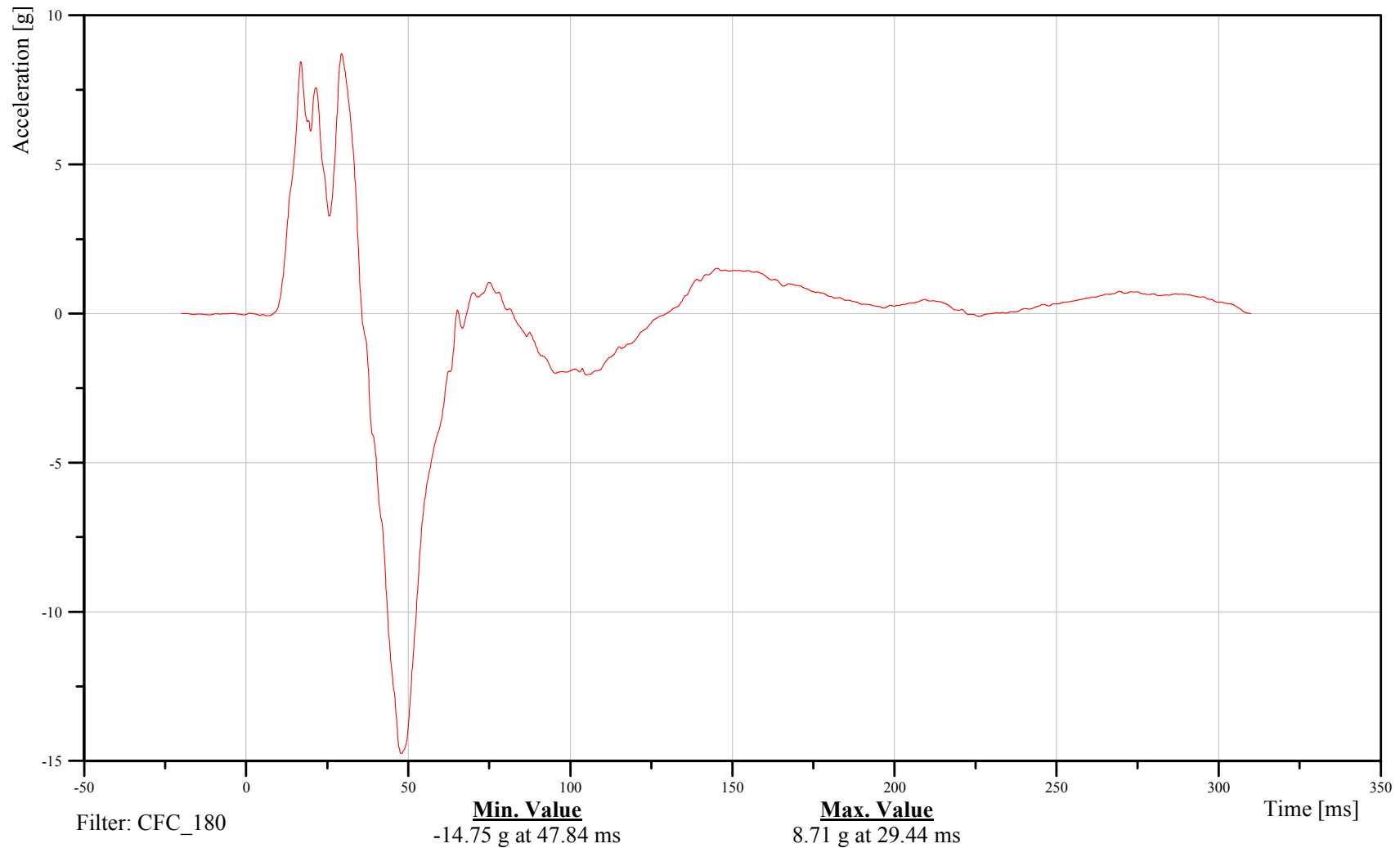
Spine Rib 5 Accel Z

Customer: VRTC

11ABSP02RIS2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Spine Rib 5 Accel Resultant

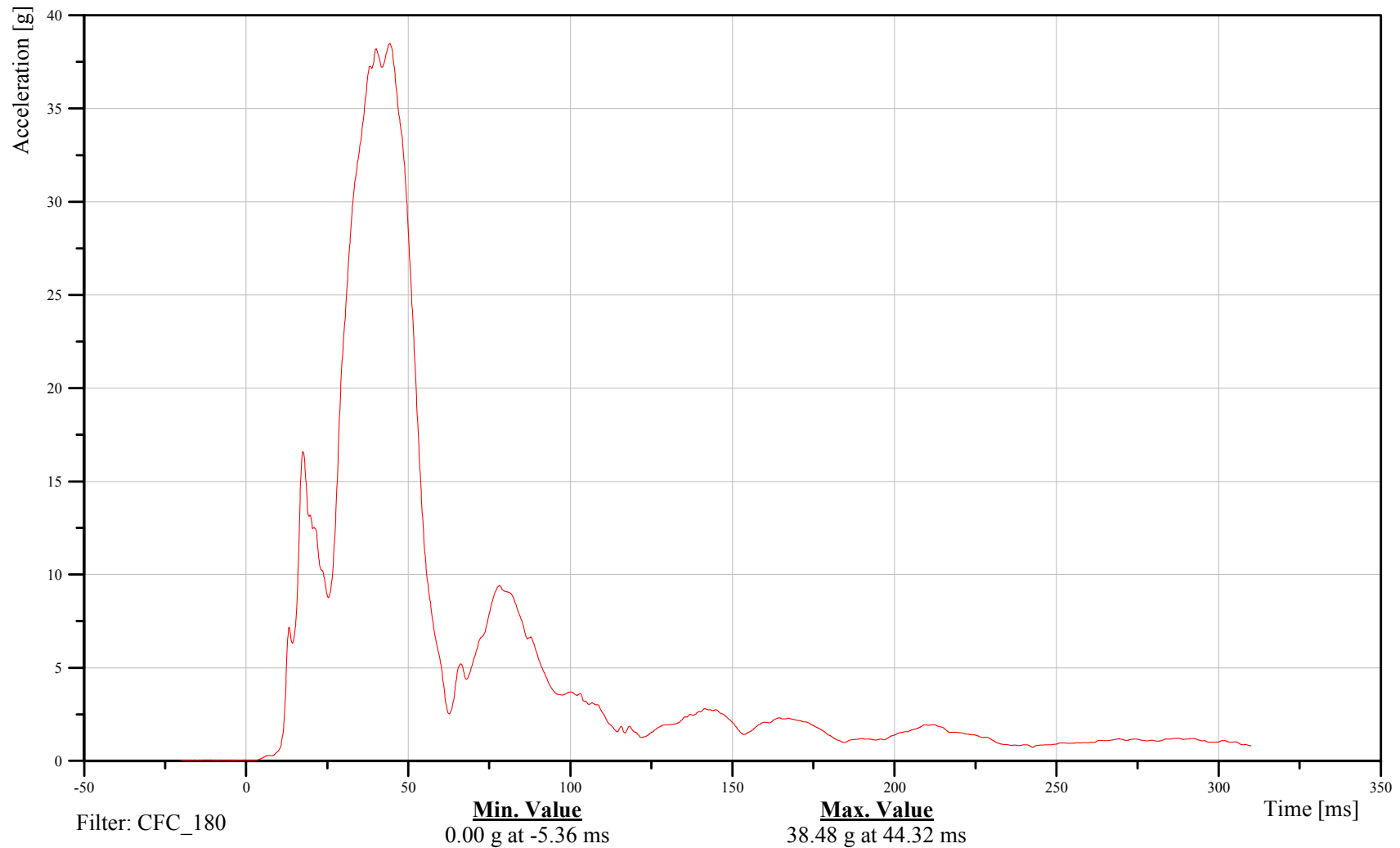
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11ABSP02RIS2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

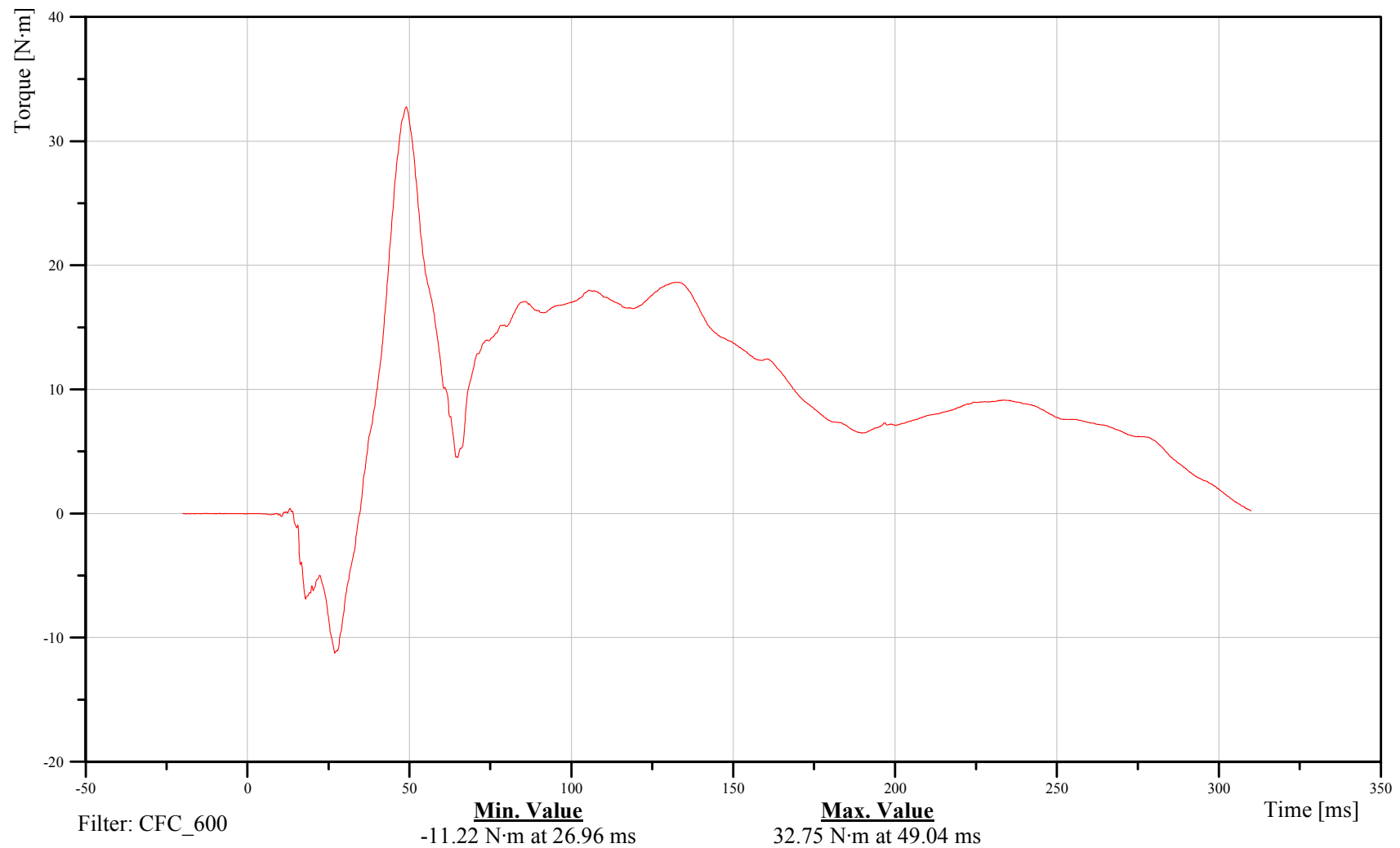
Lumbar Moment X

Customer: VRTC

11LUSP0000S2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

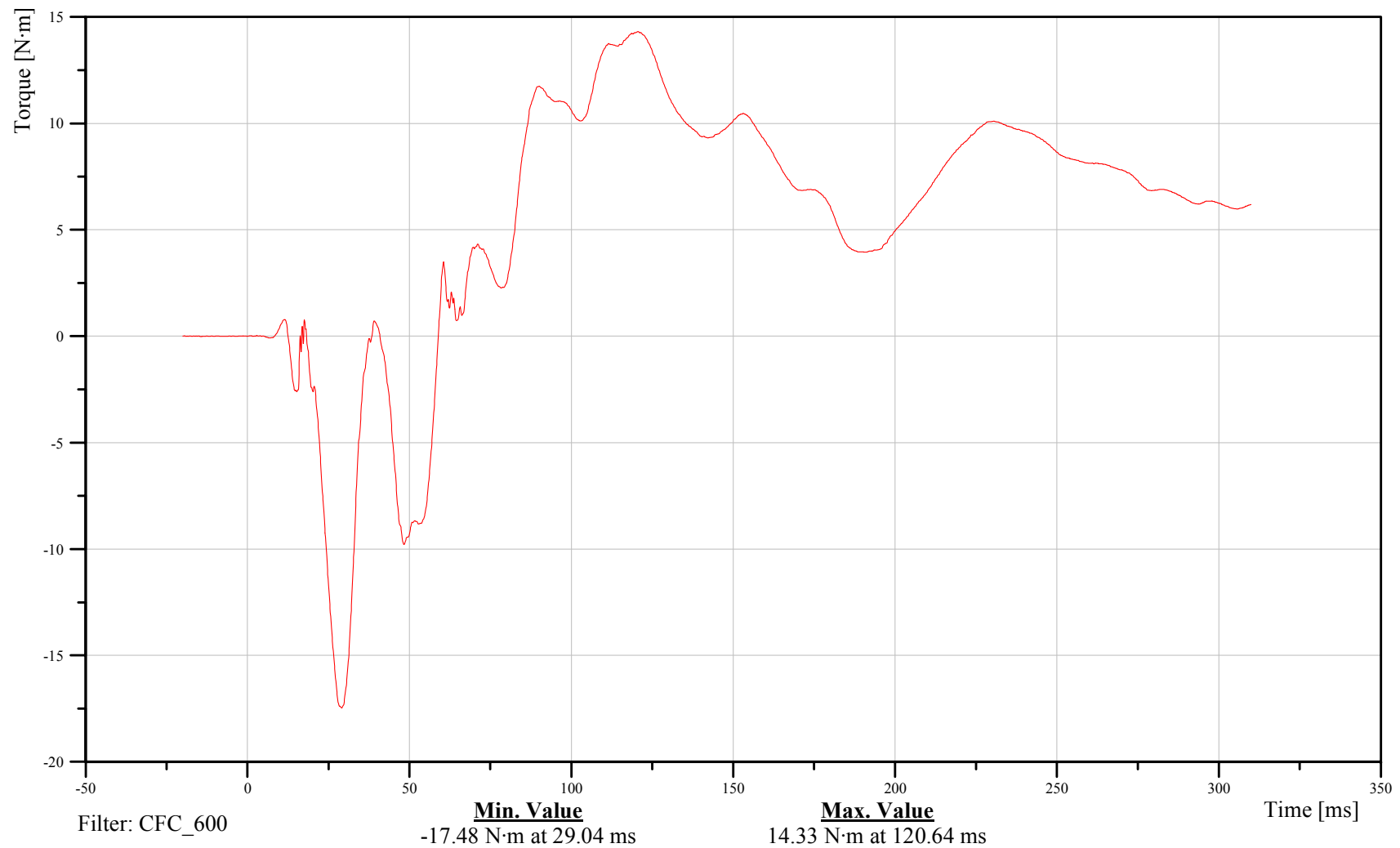
Lumbar Moment Y

Customer: VRTC

11LUSP0000S2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

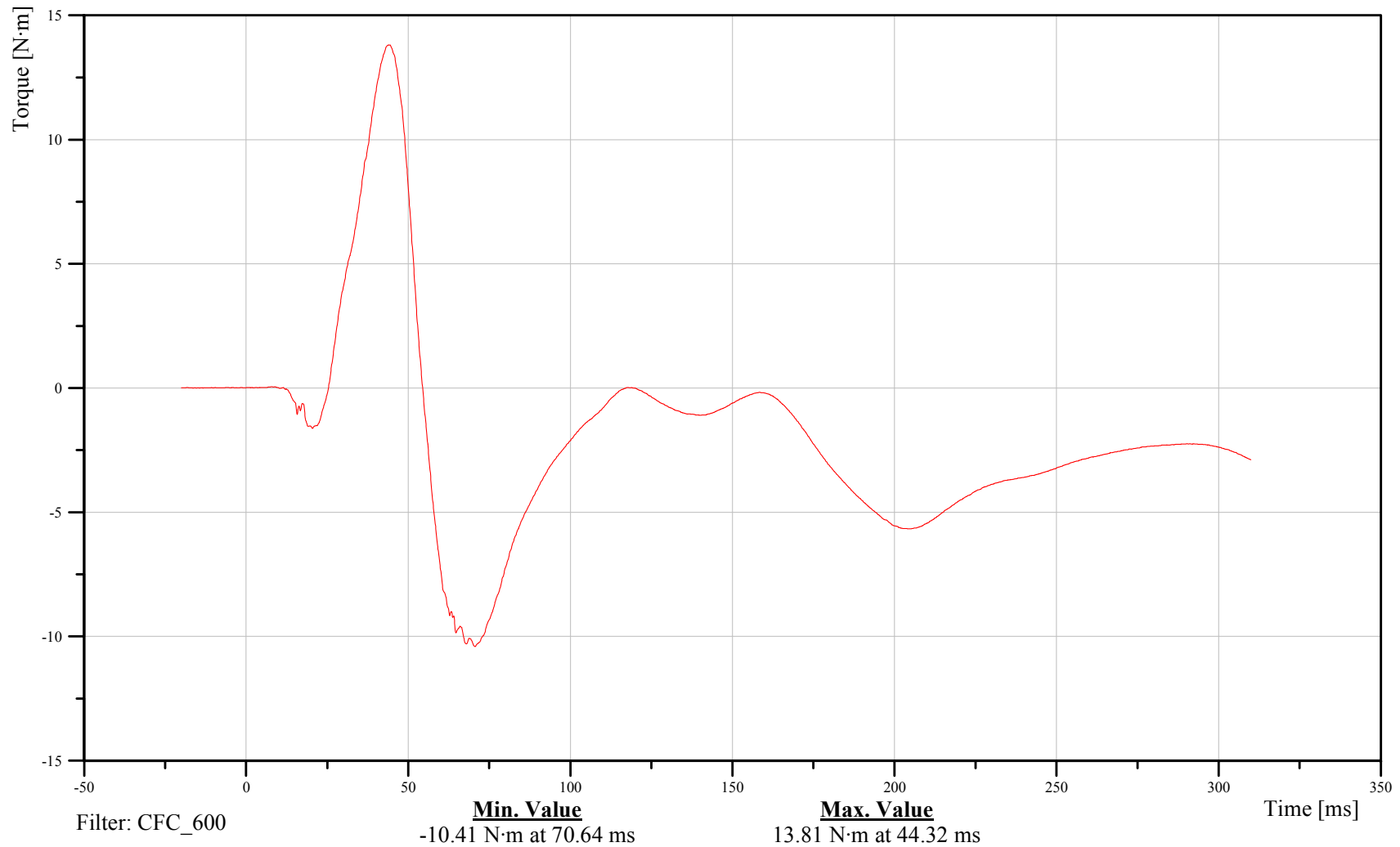
Lumbar Moment Z

Customer: VRTC

11LUSP0000S2MOZB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 1 Accel X

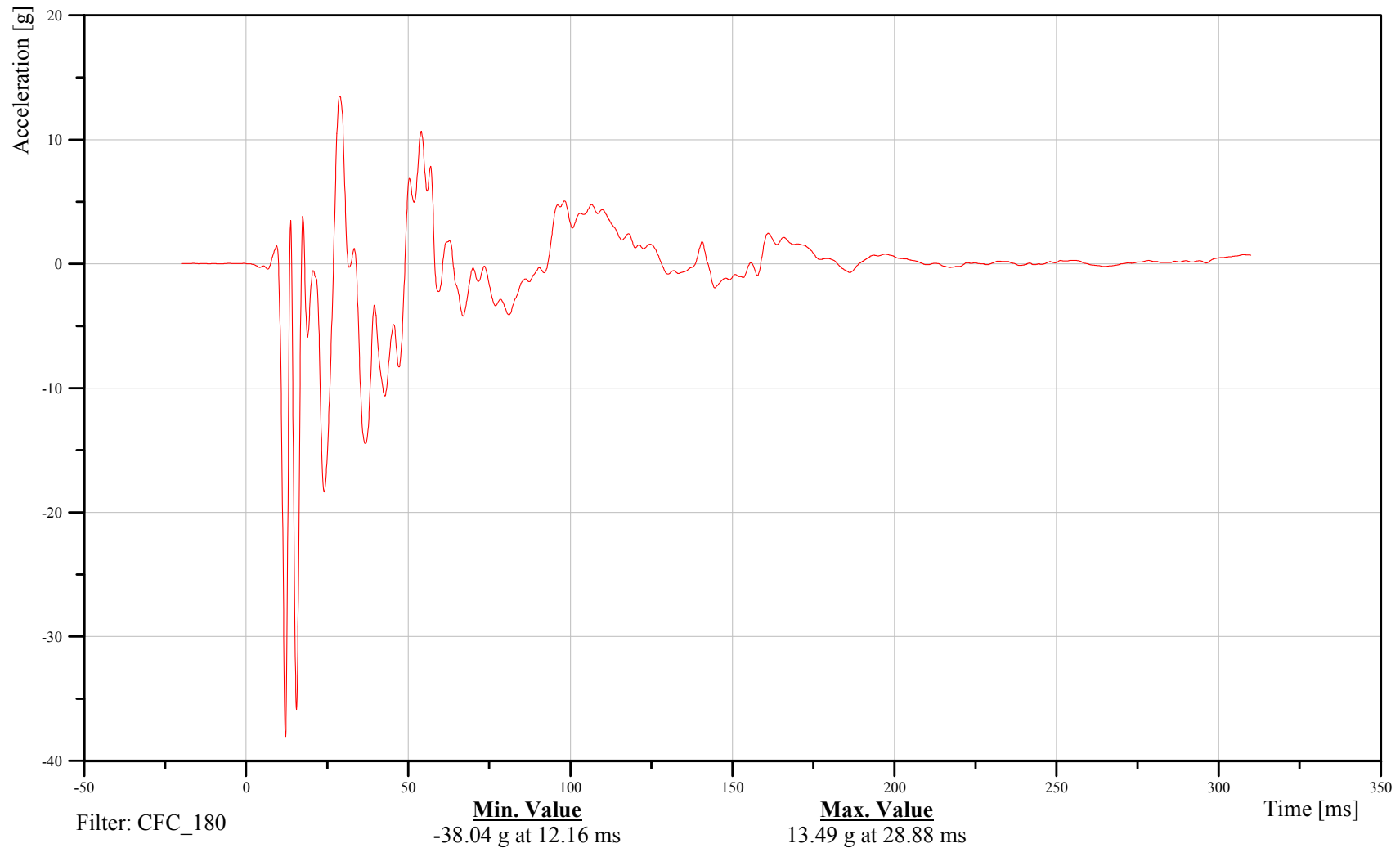
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11TRRI01LES2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 1 Accel Y

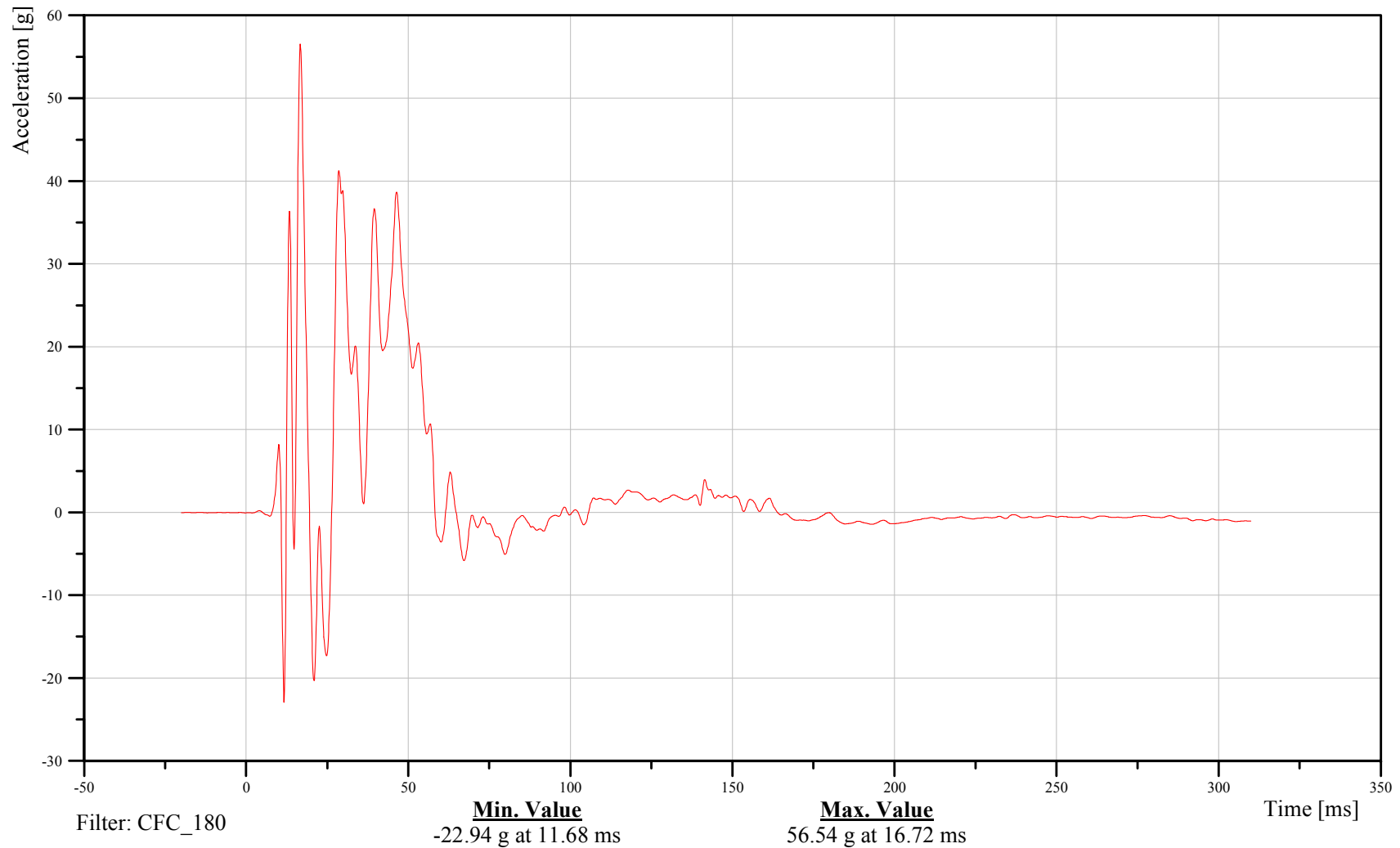
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11TRRI01LES2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 1 Accel Z

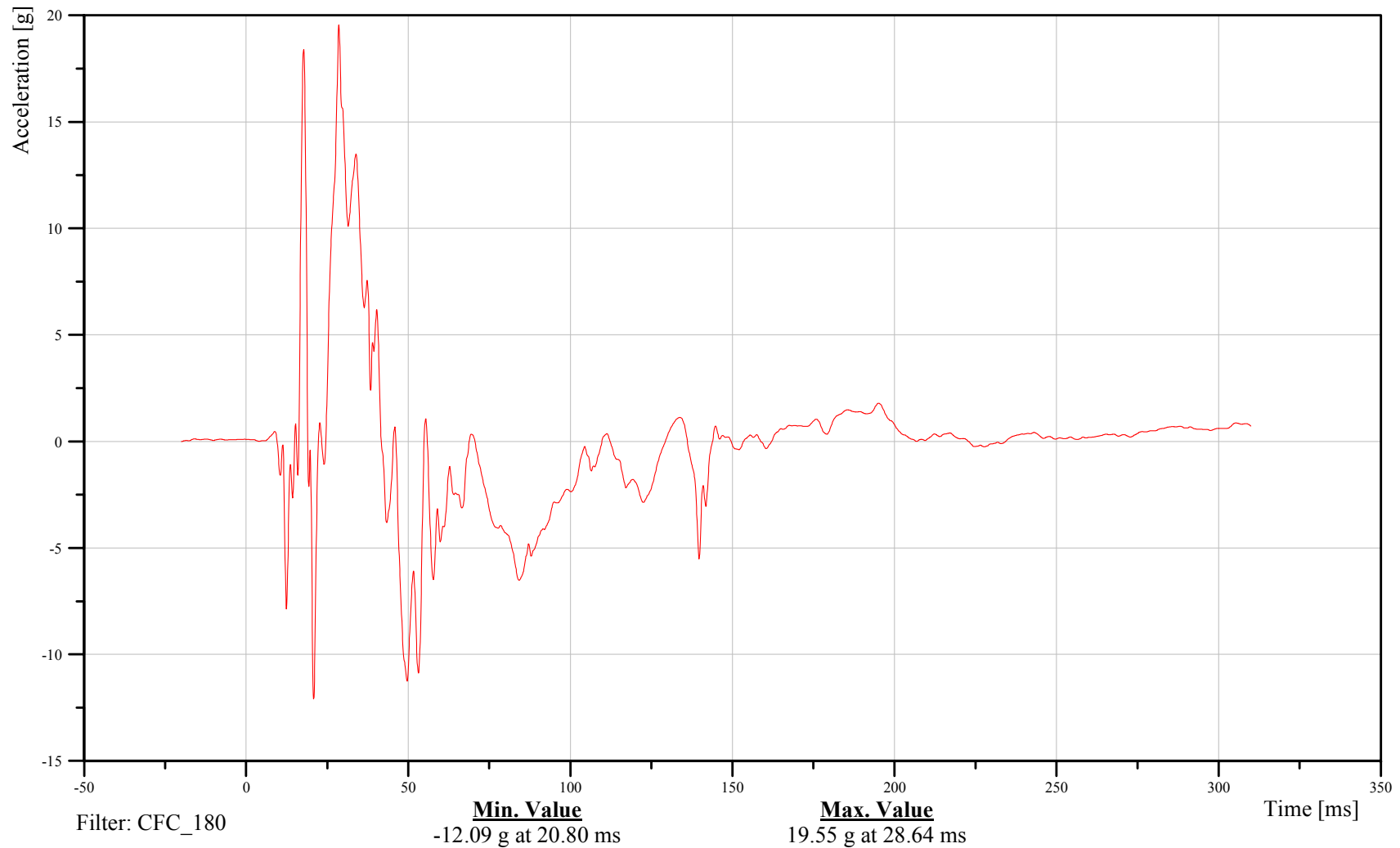
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11TRRI01LES2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 1 Accel Resultant

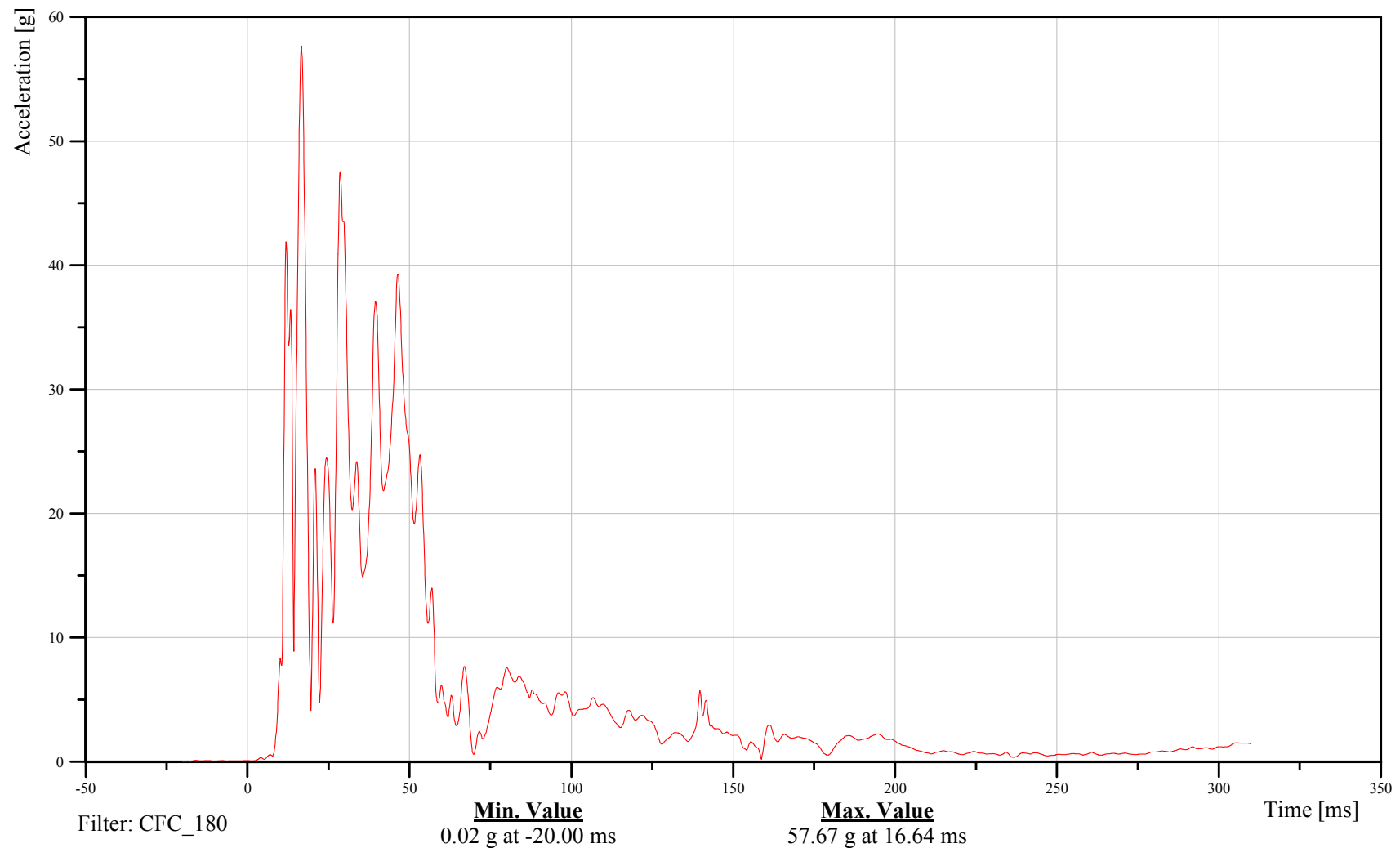
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11TRRI01LES2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 2 Accel X

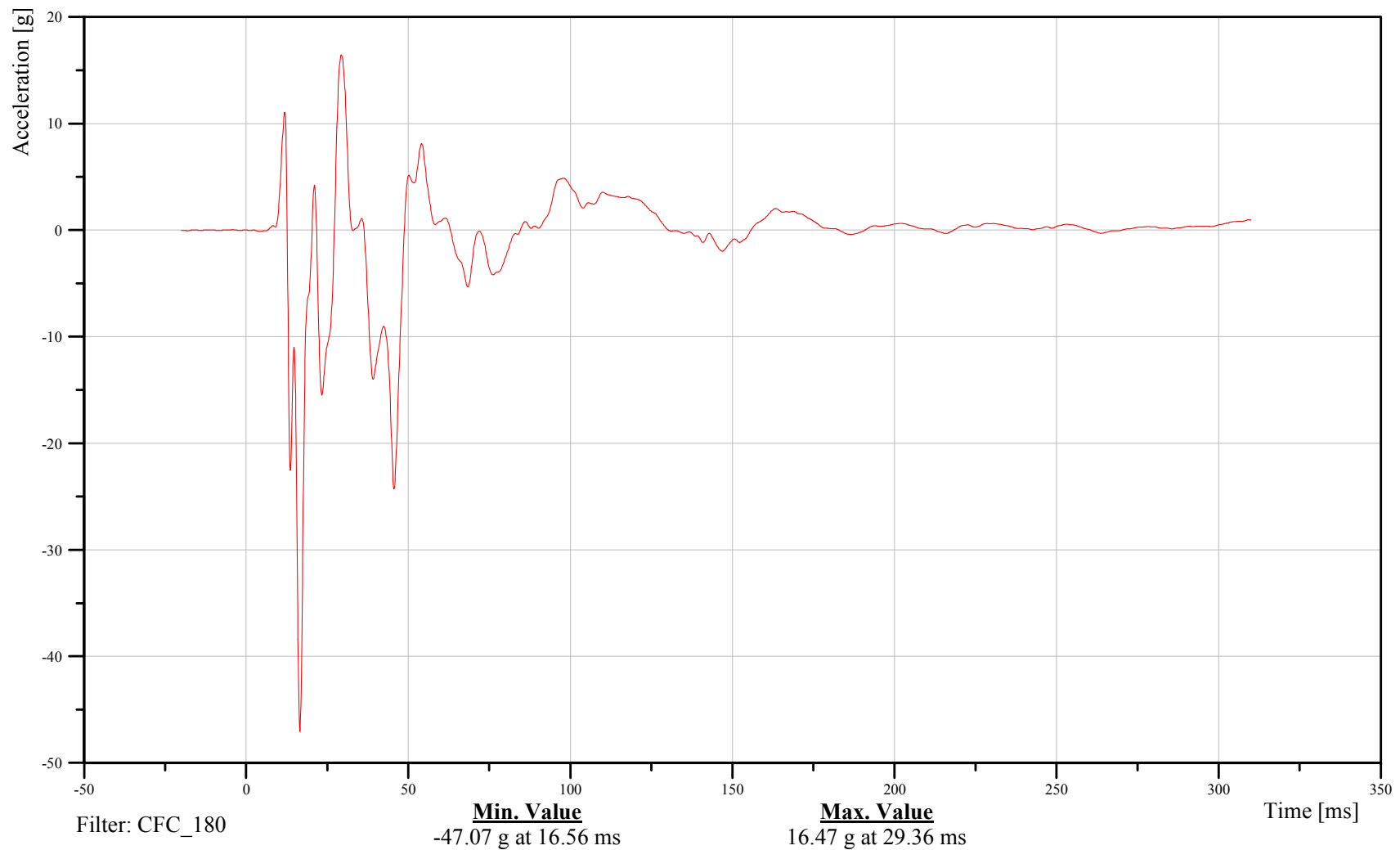
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11TRRI02LES2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 2 Accel Y

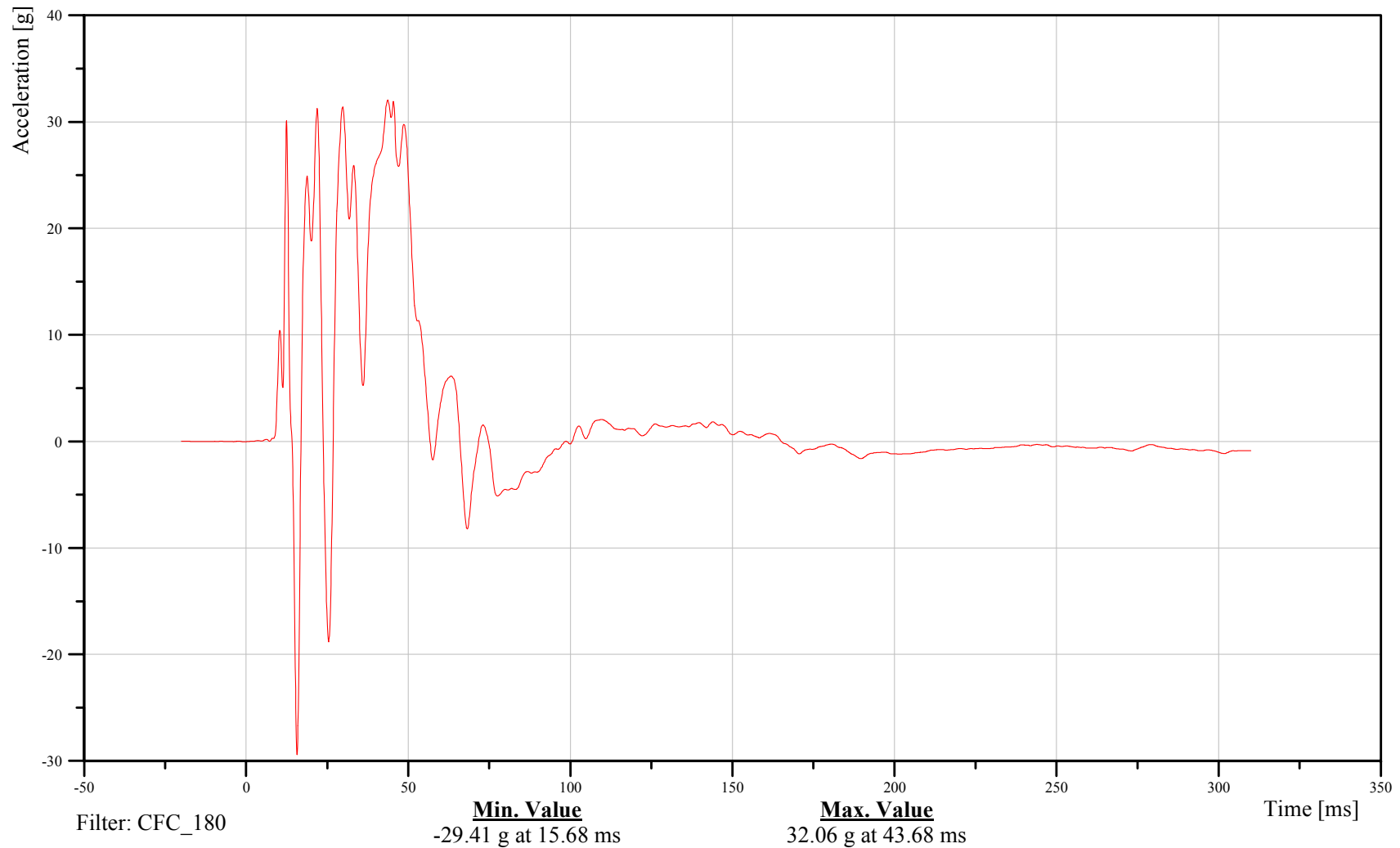
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11TRRI02LES2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 2 Accel Z

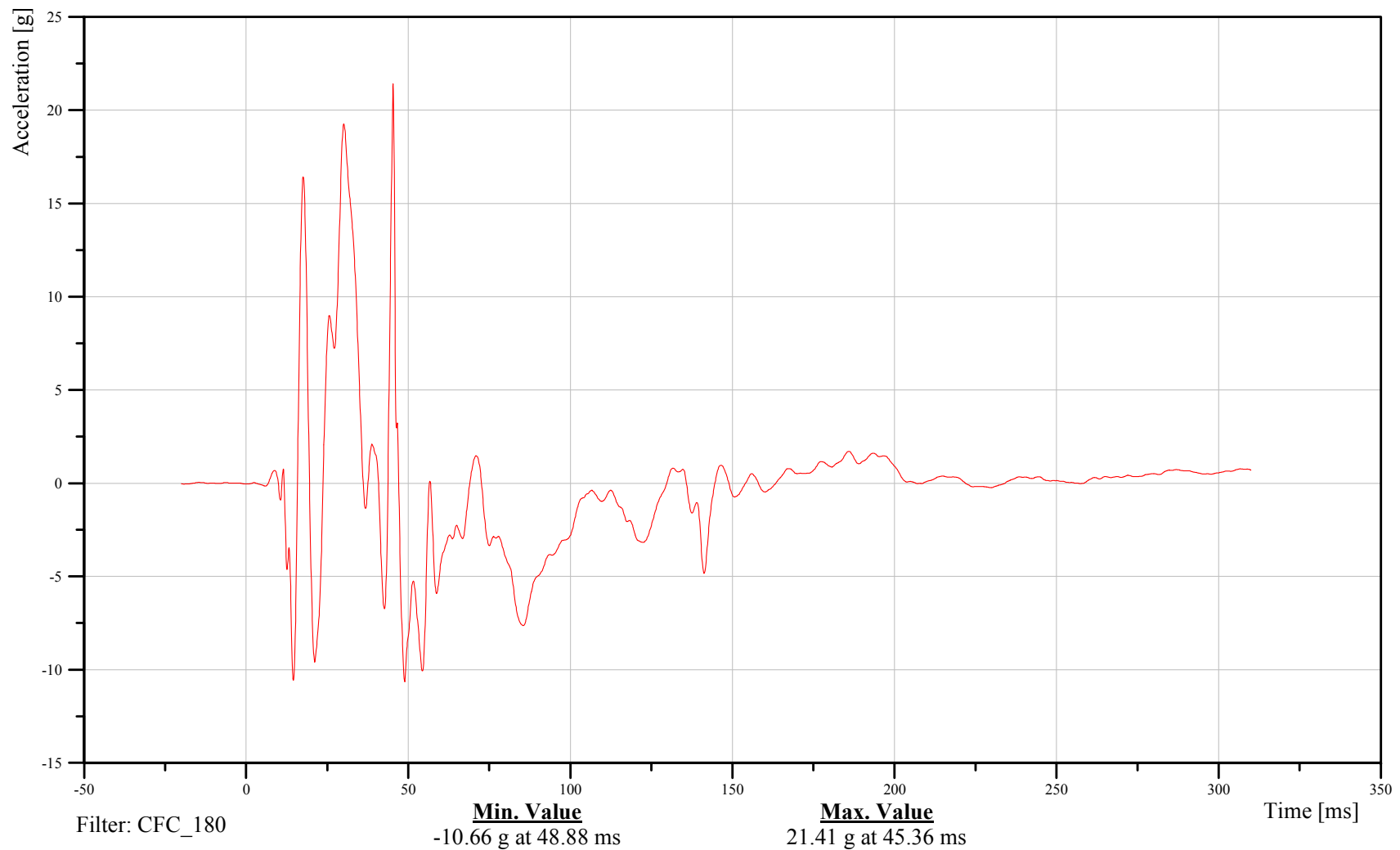
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11TRRI02LES2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 2 Accel Resultant

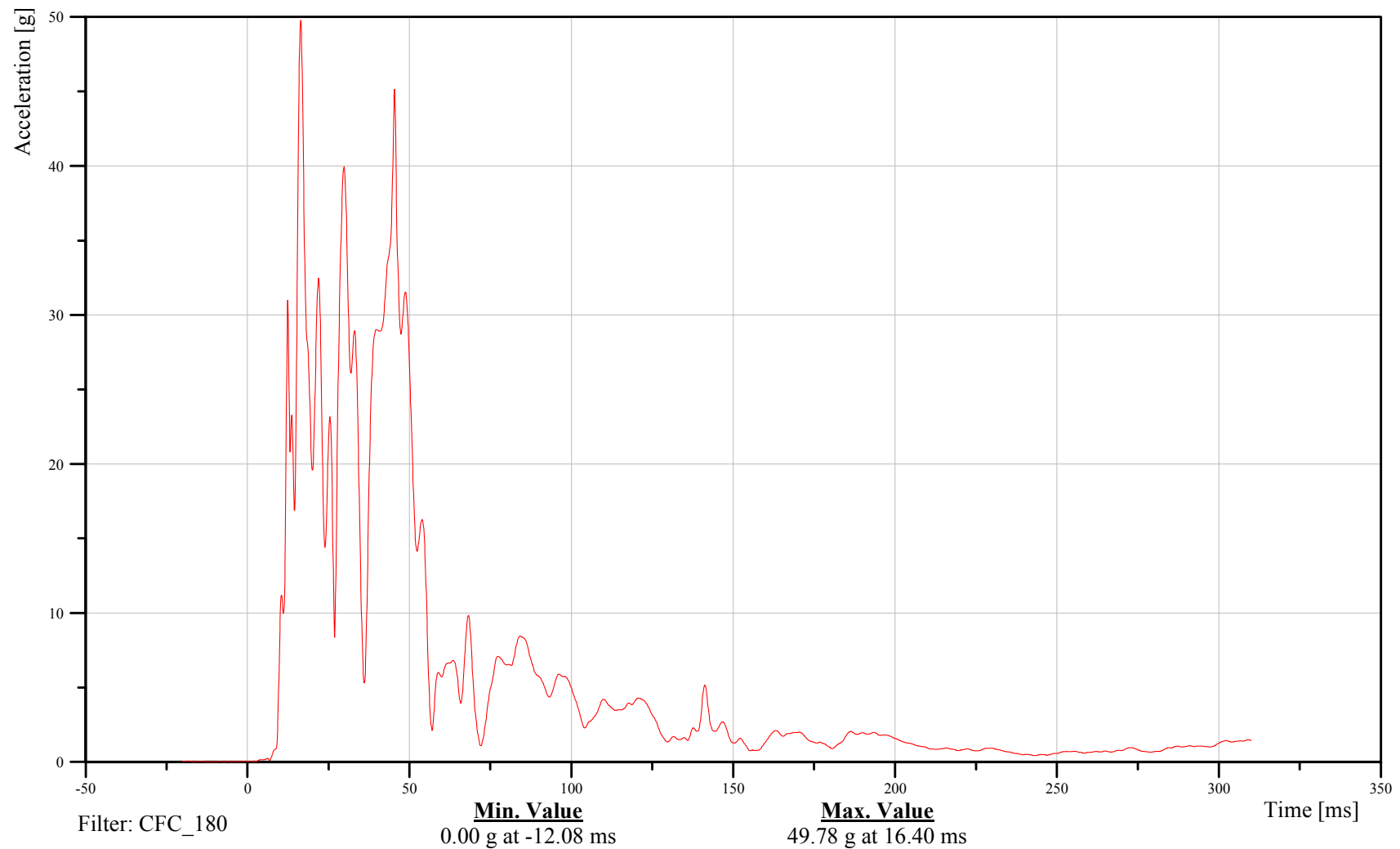
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11TRRI02LES2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 3 Accel X

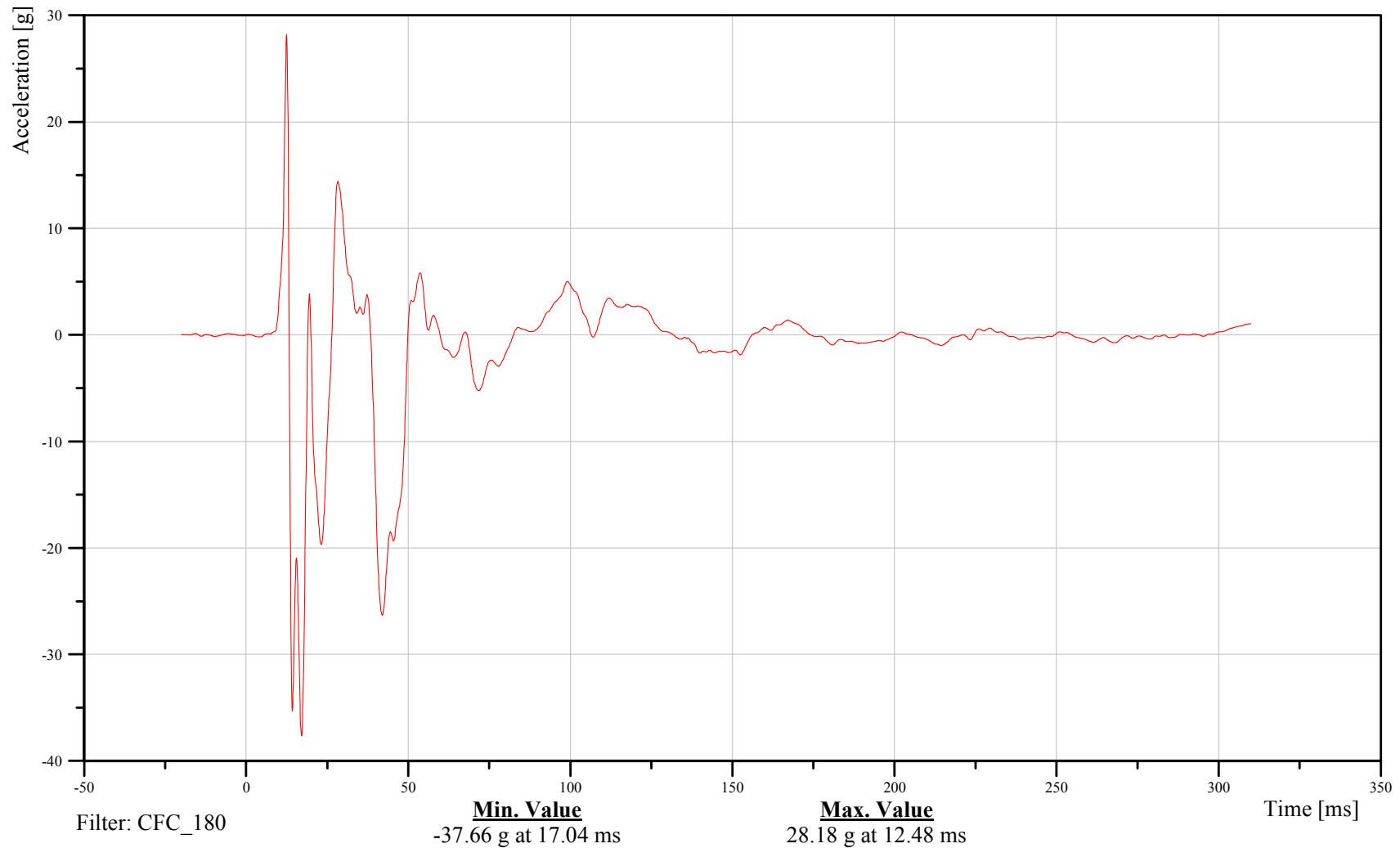
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11TRRI03LES2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 3 Accel Y

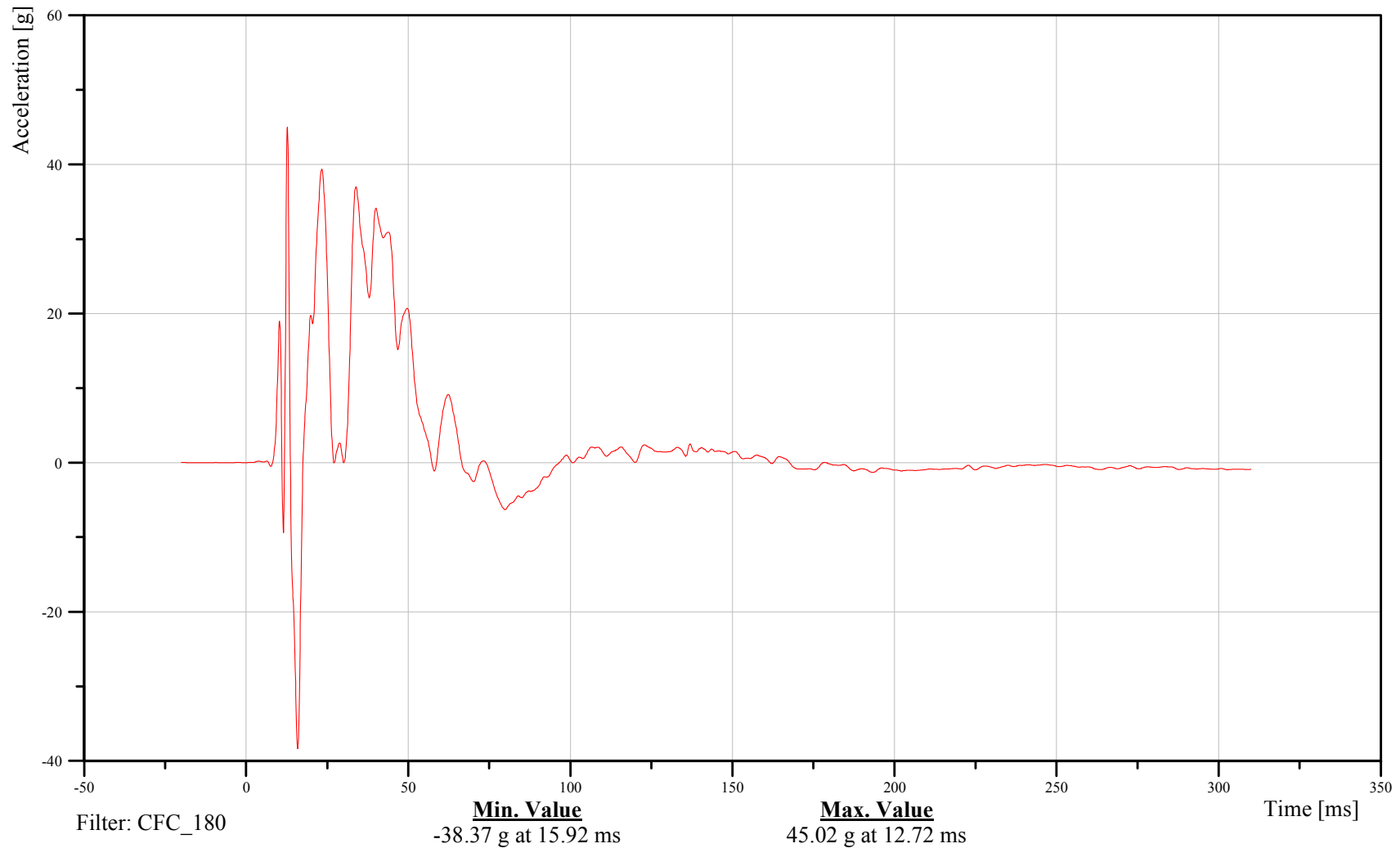
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11TRRI03LES2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 3 Accel Z

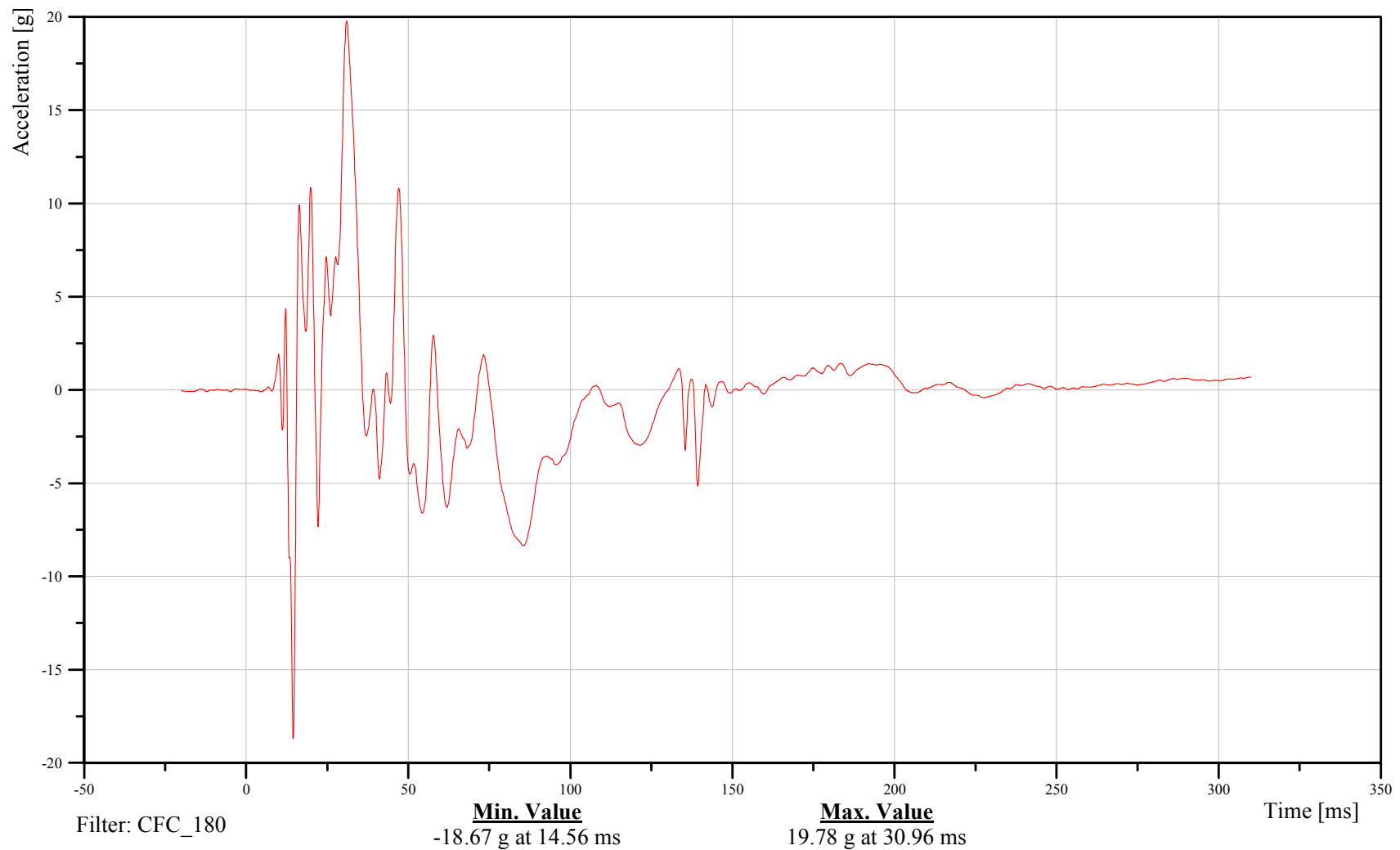
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11TRRI03LES2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 3 Accel Resultant

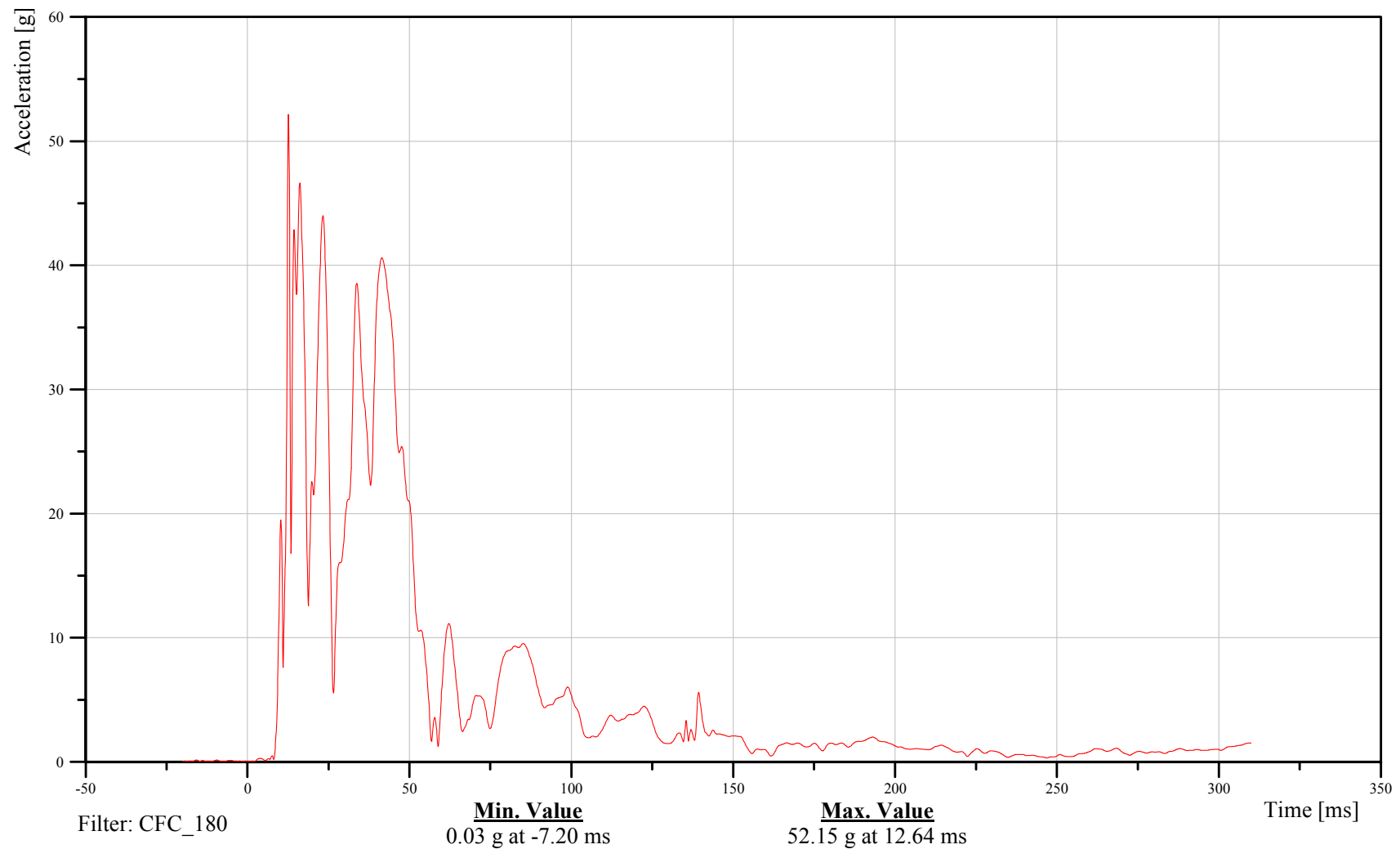
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11TRRI03LES2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Abdomin Rib 1 Accel X

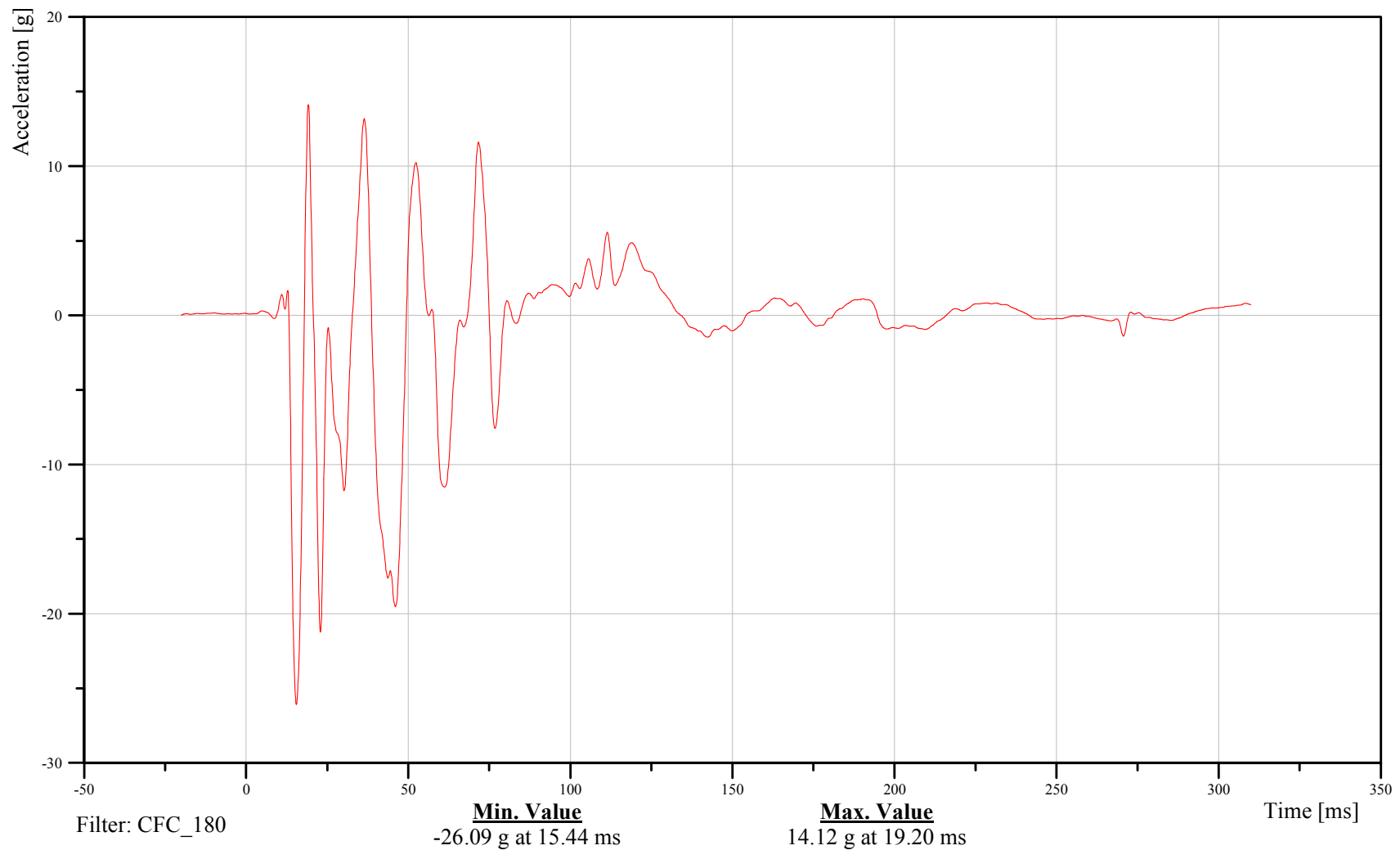
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11ABRI01LES2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

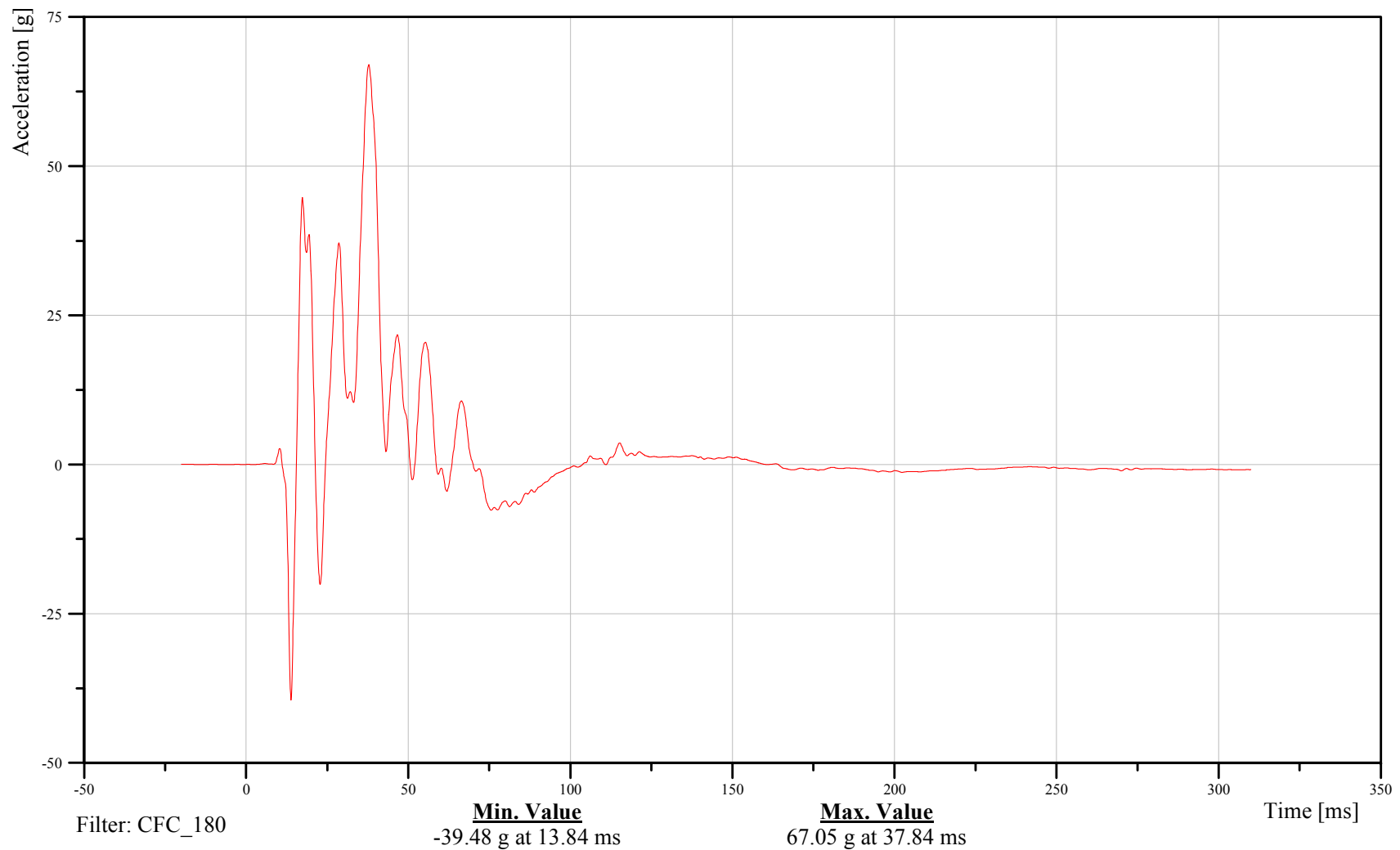
Abdomin Rib 1 Accel Y

Customer: VRTC

11ABRI01LES2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Abdomin Rib 1 Accel Z

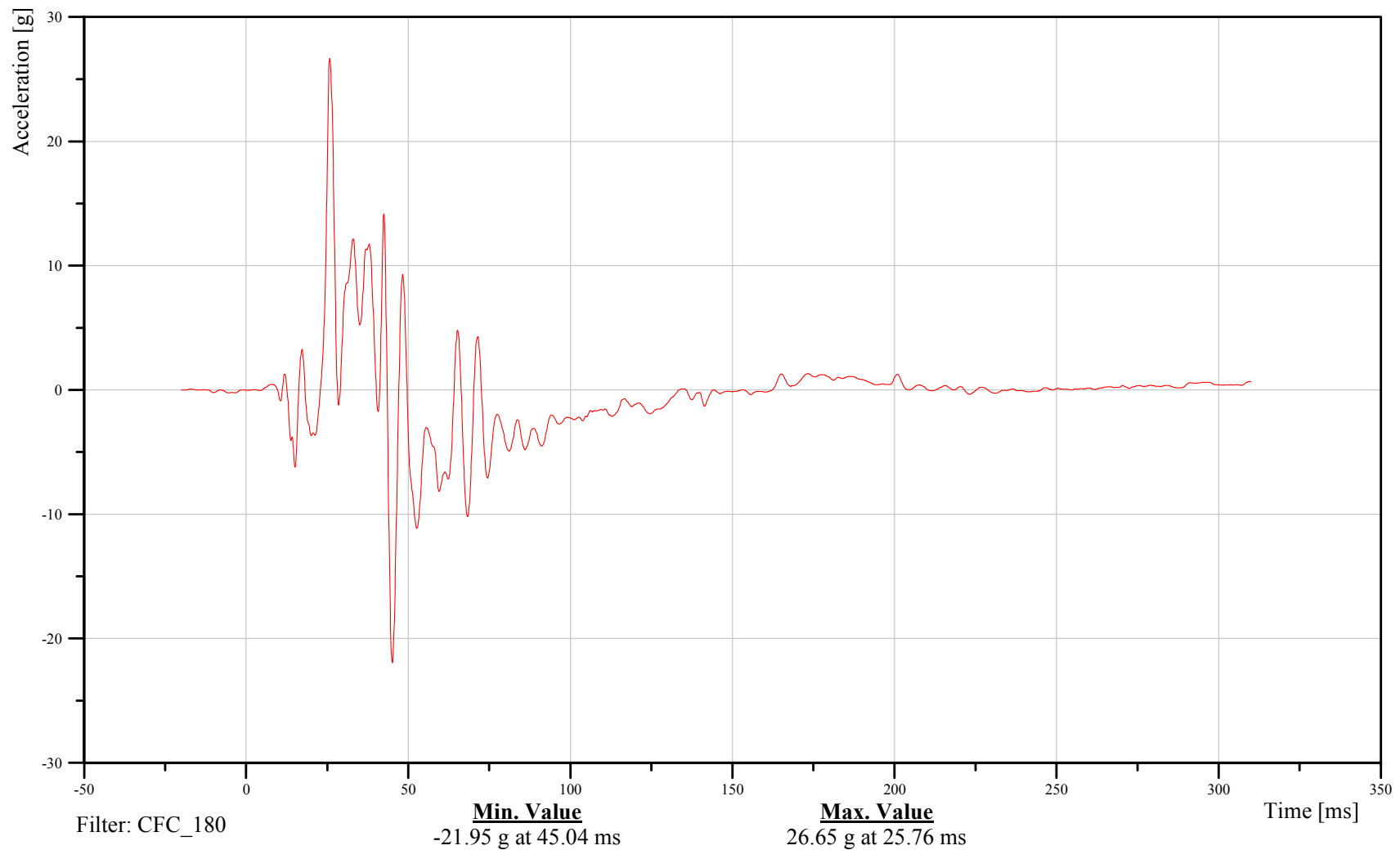
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11ABRI01LES2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Abdomin Rib 1 Accel Resultant

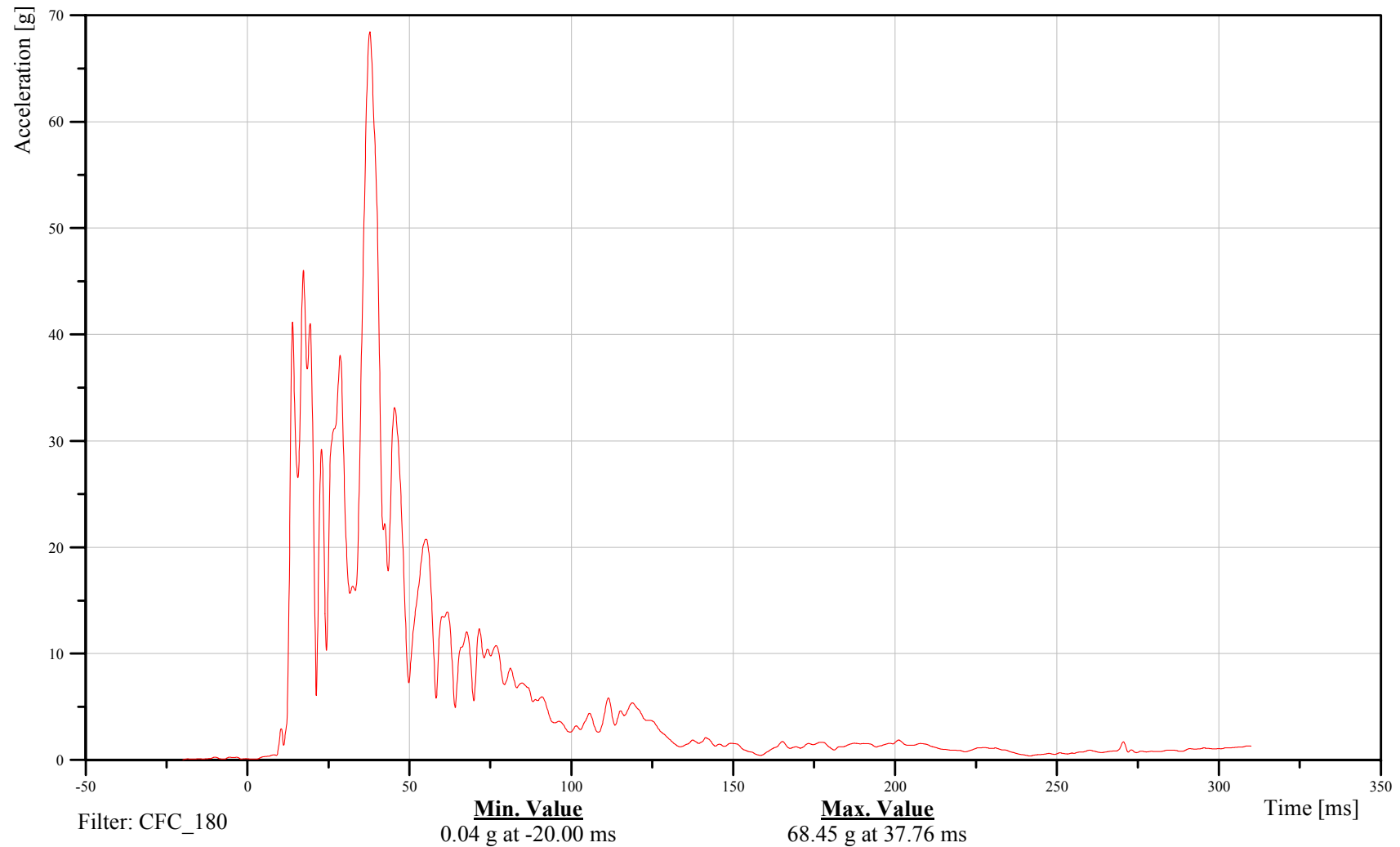
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11ABRI01LES2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Abdomin Rib 2 Accel X

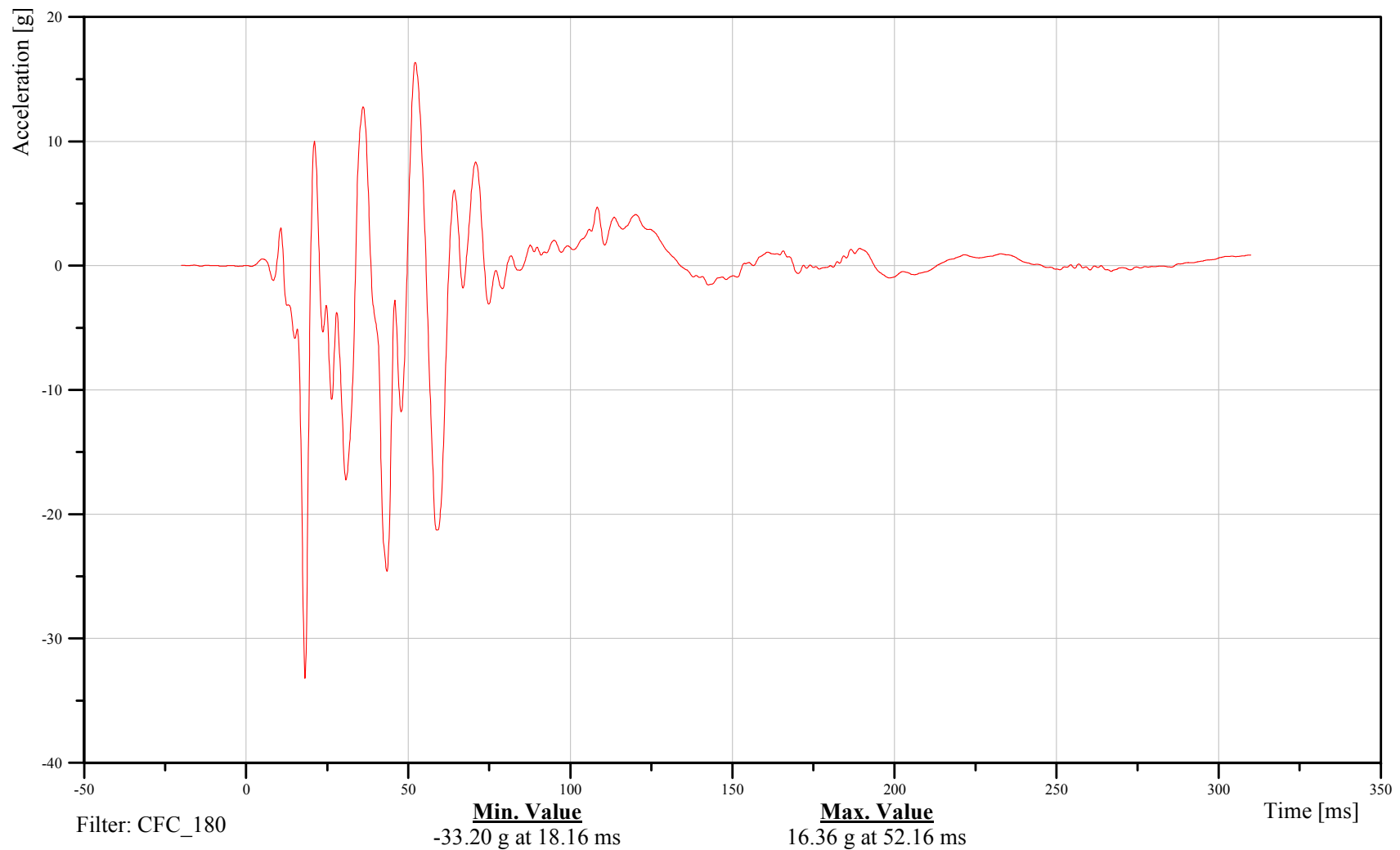
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11ABRI02LES2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Abdomin Rib 2 Accel Y

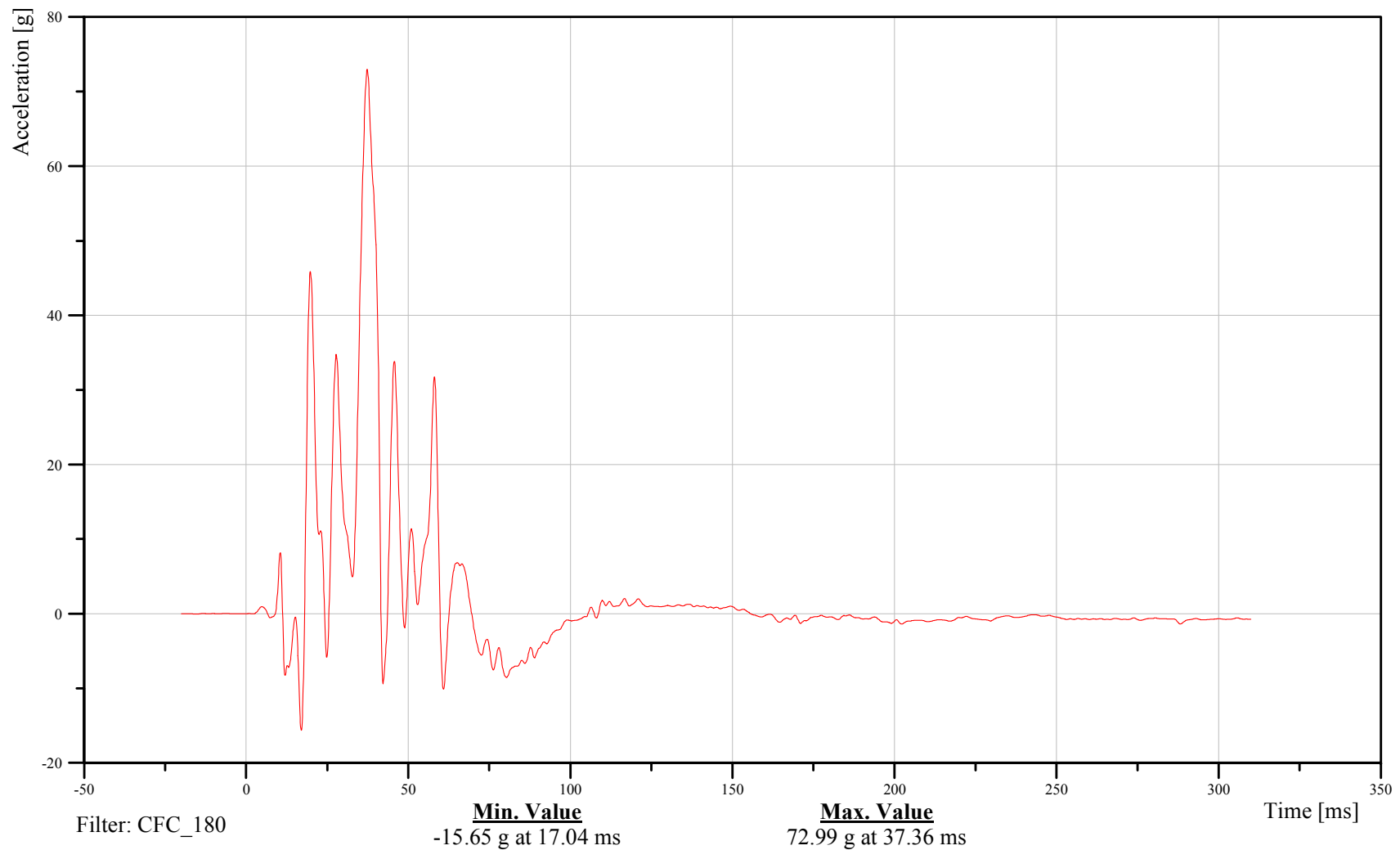
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11ABRI02LES2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Abdomin Rib 2 Accel Z

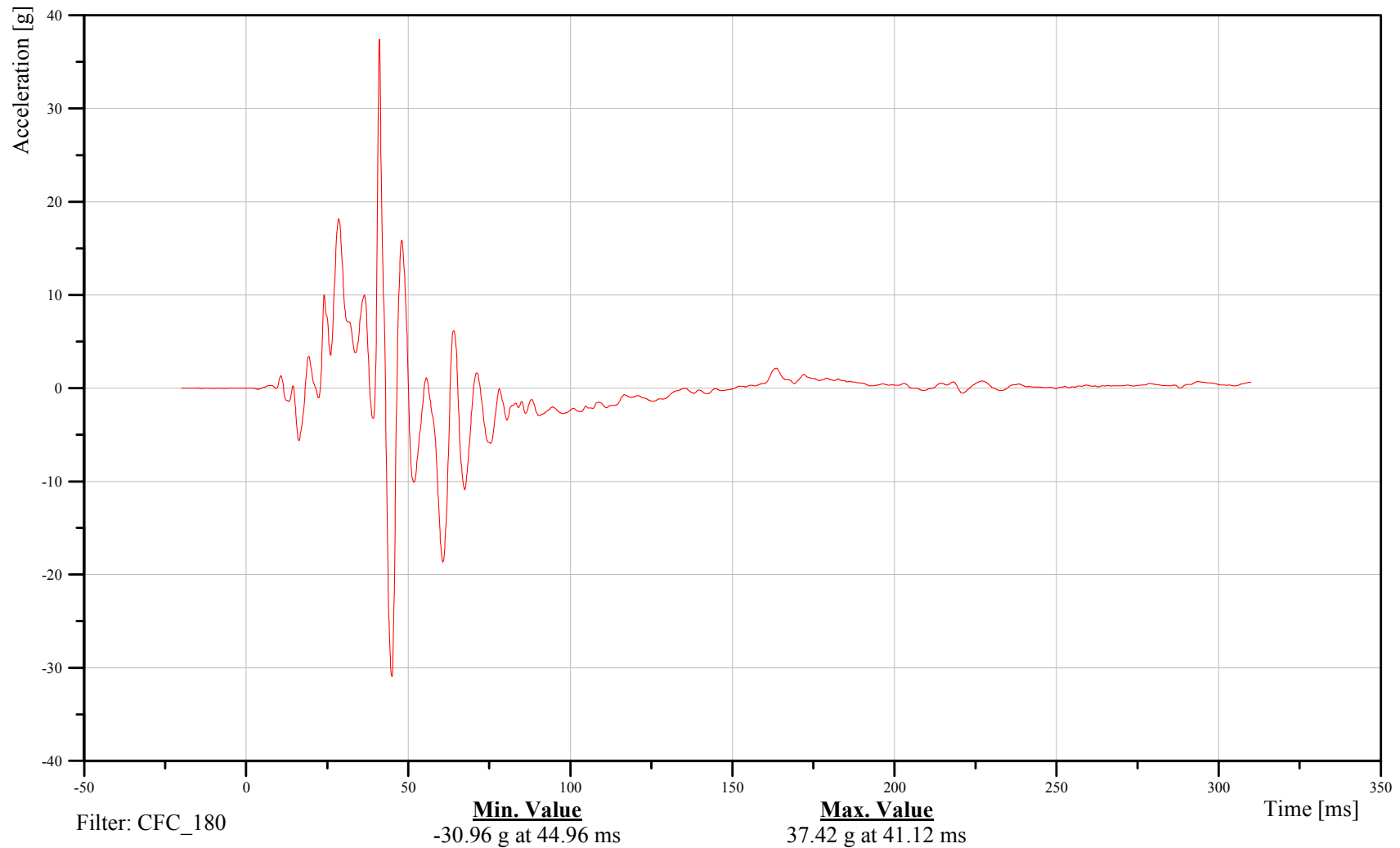
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11ABRI02LES2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Abdomin Rib 2 Accel Resultant

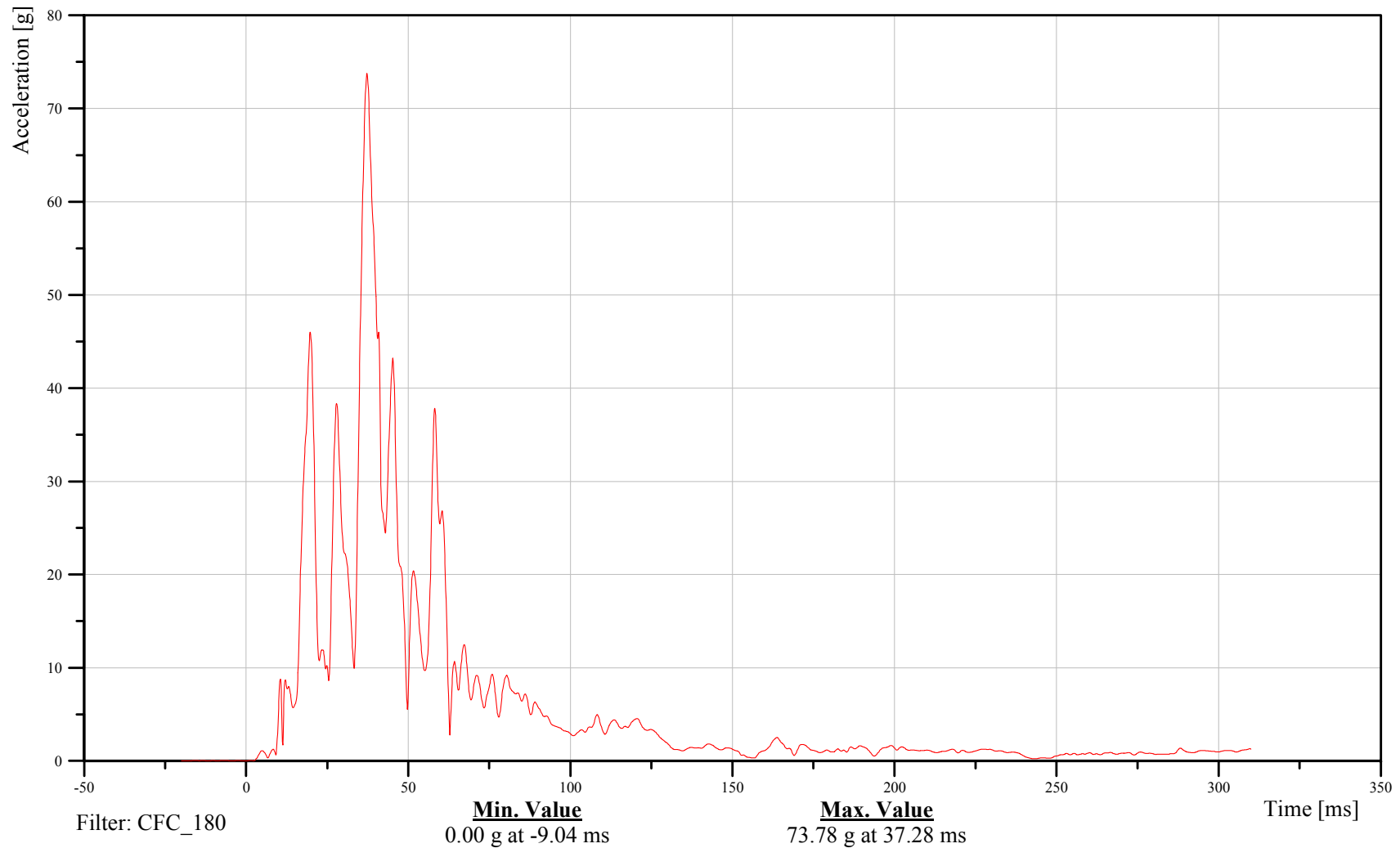
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11ABRI02LES2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

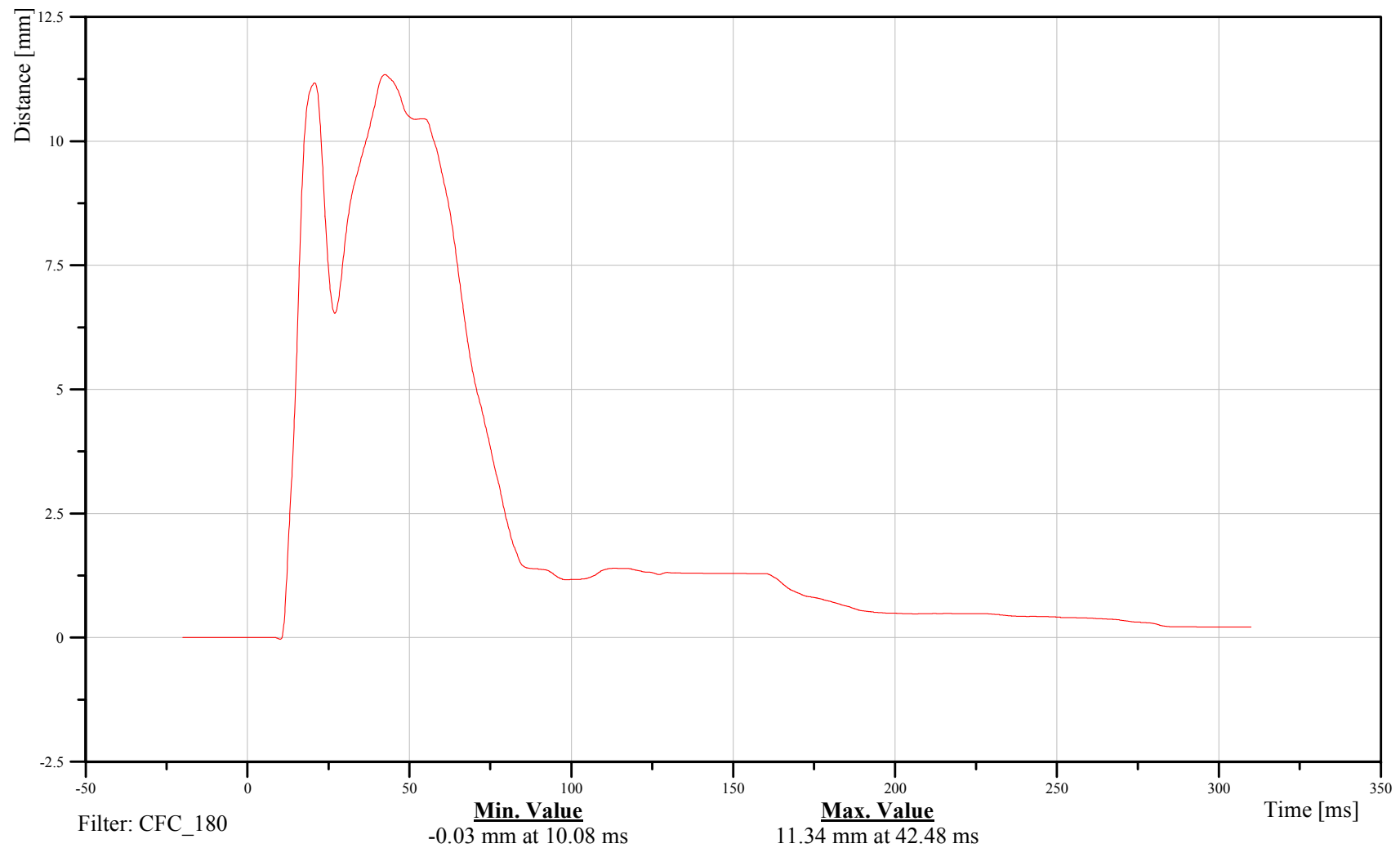
Shoulder Disp. Y

Customer: VRTC

11SHRILE00S2DSYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 1 Disp. Y

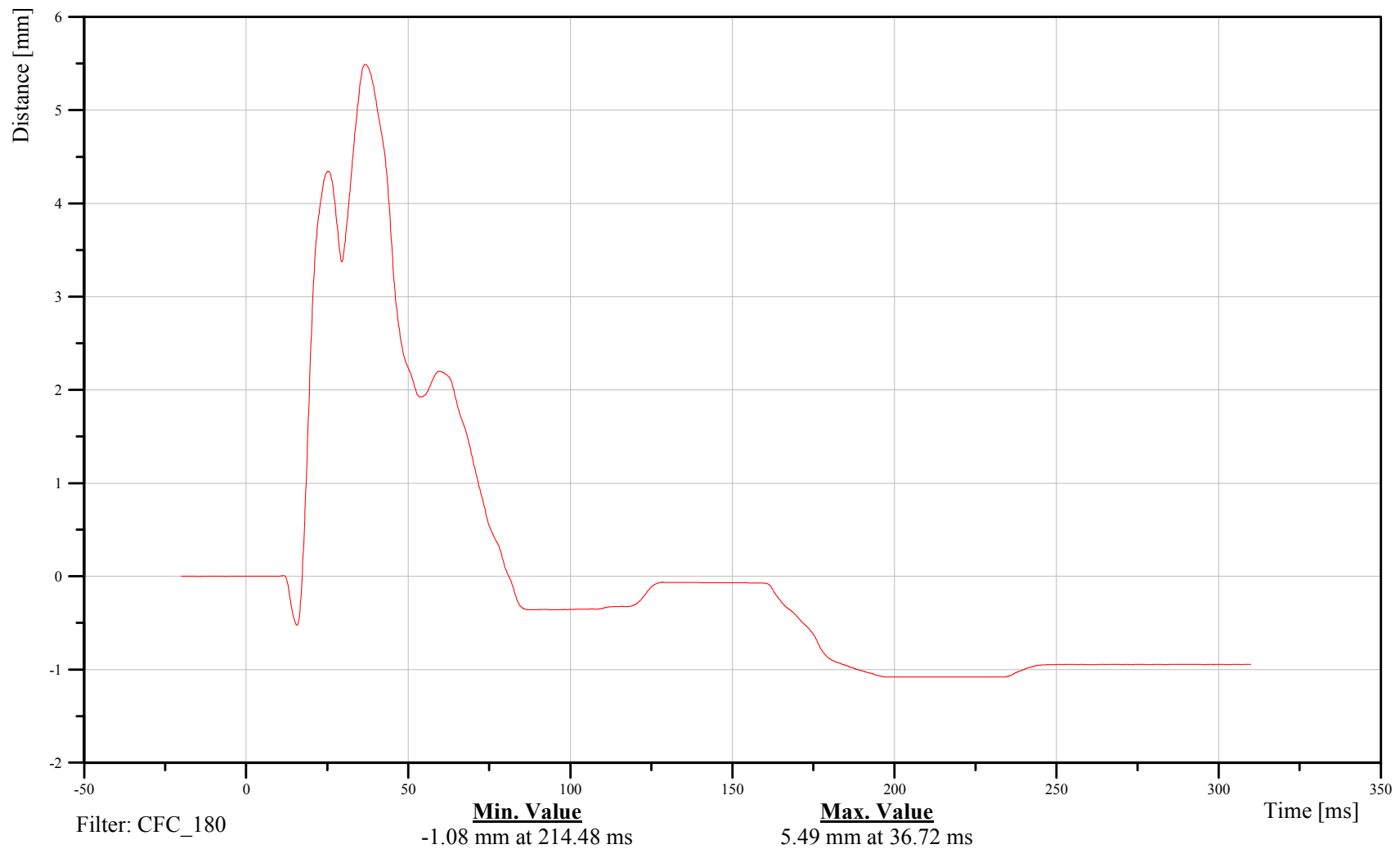
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11TRRI01LES2DSYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

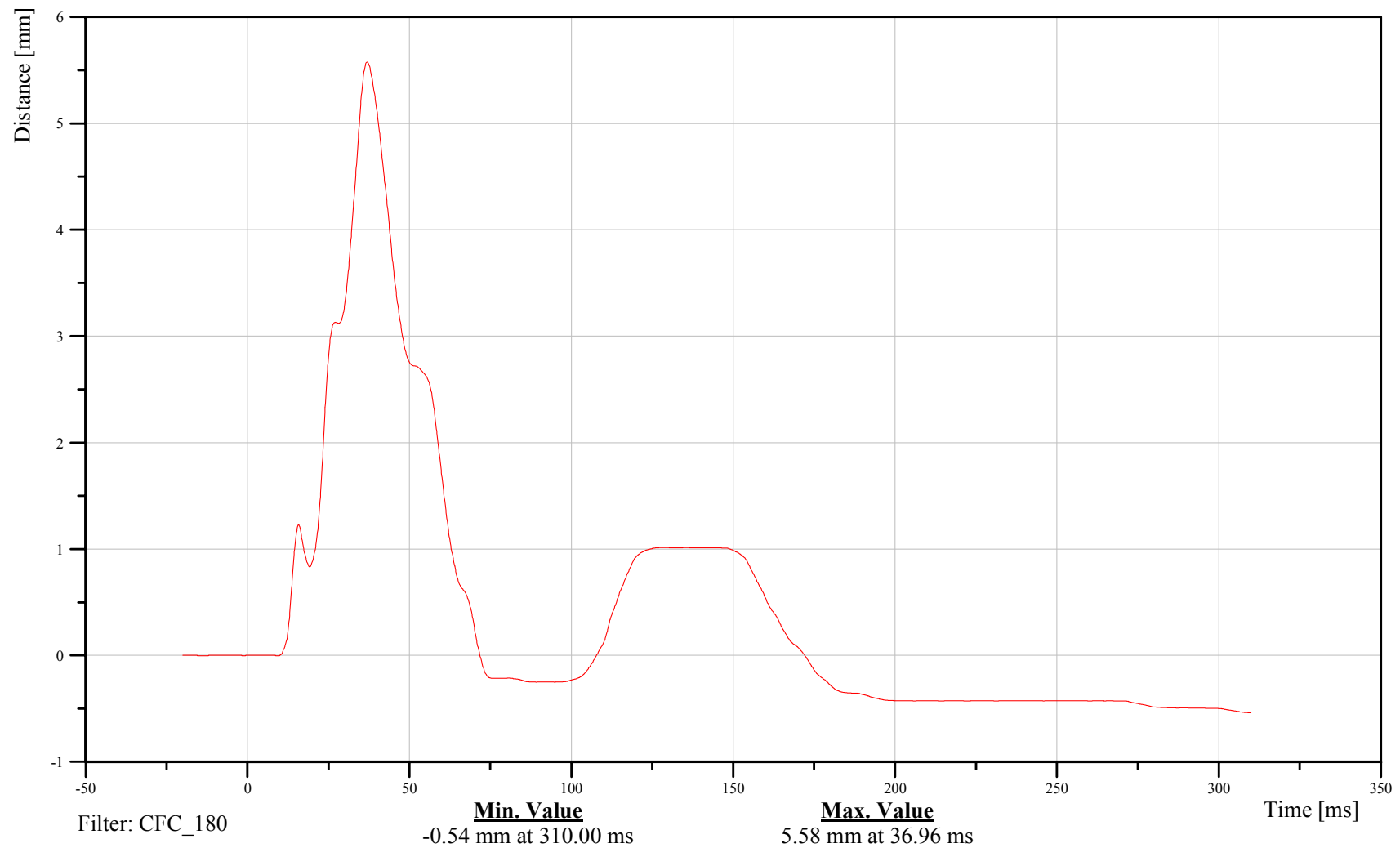
Thorax Rib 2 Disp. Y

Customer: VRTC

11TRRI02LES2DSYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 3 Disp. Y

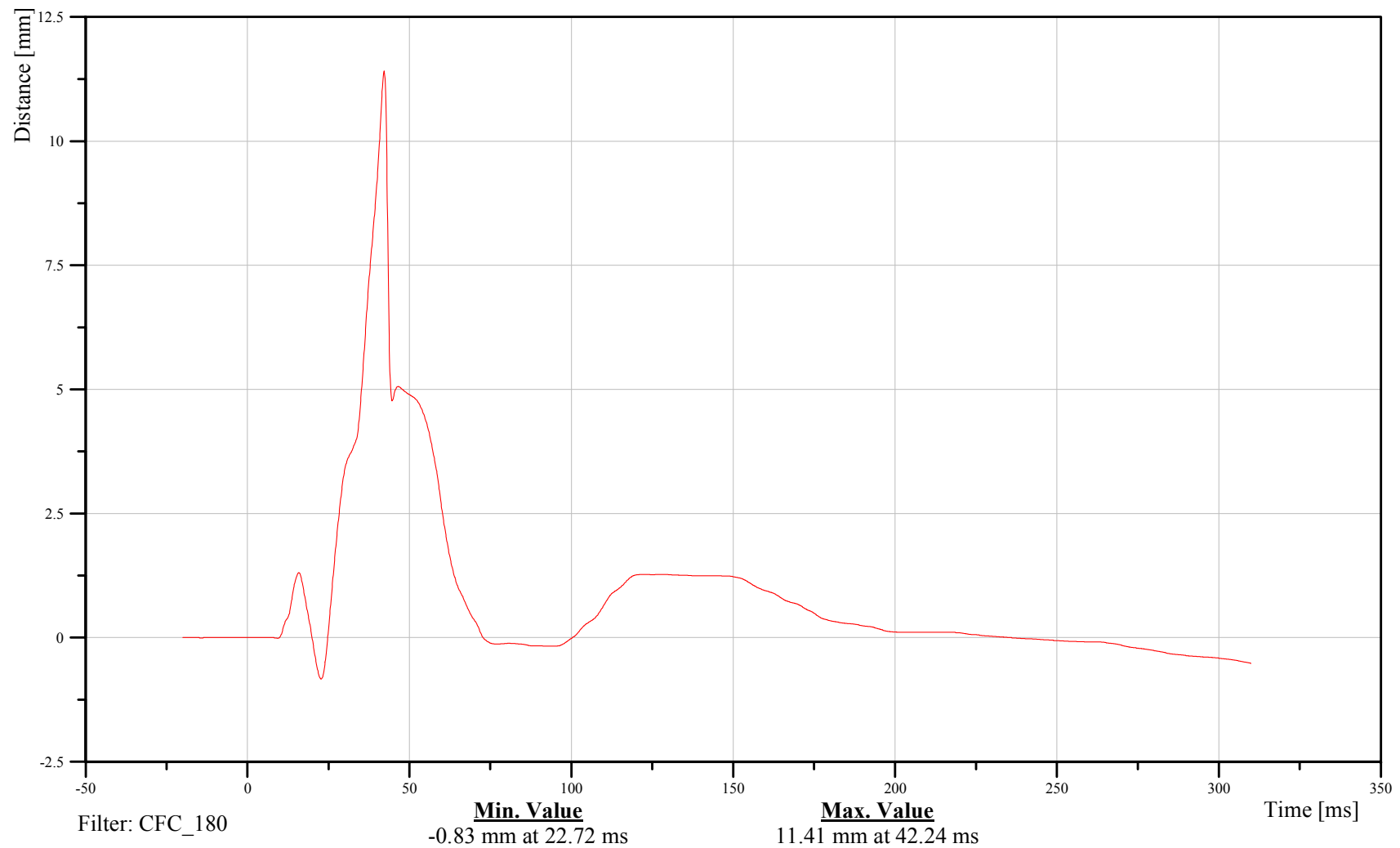
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11TRRI03LES2DSYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

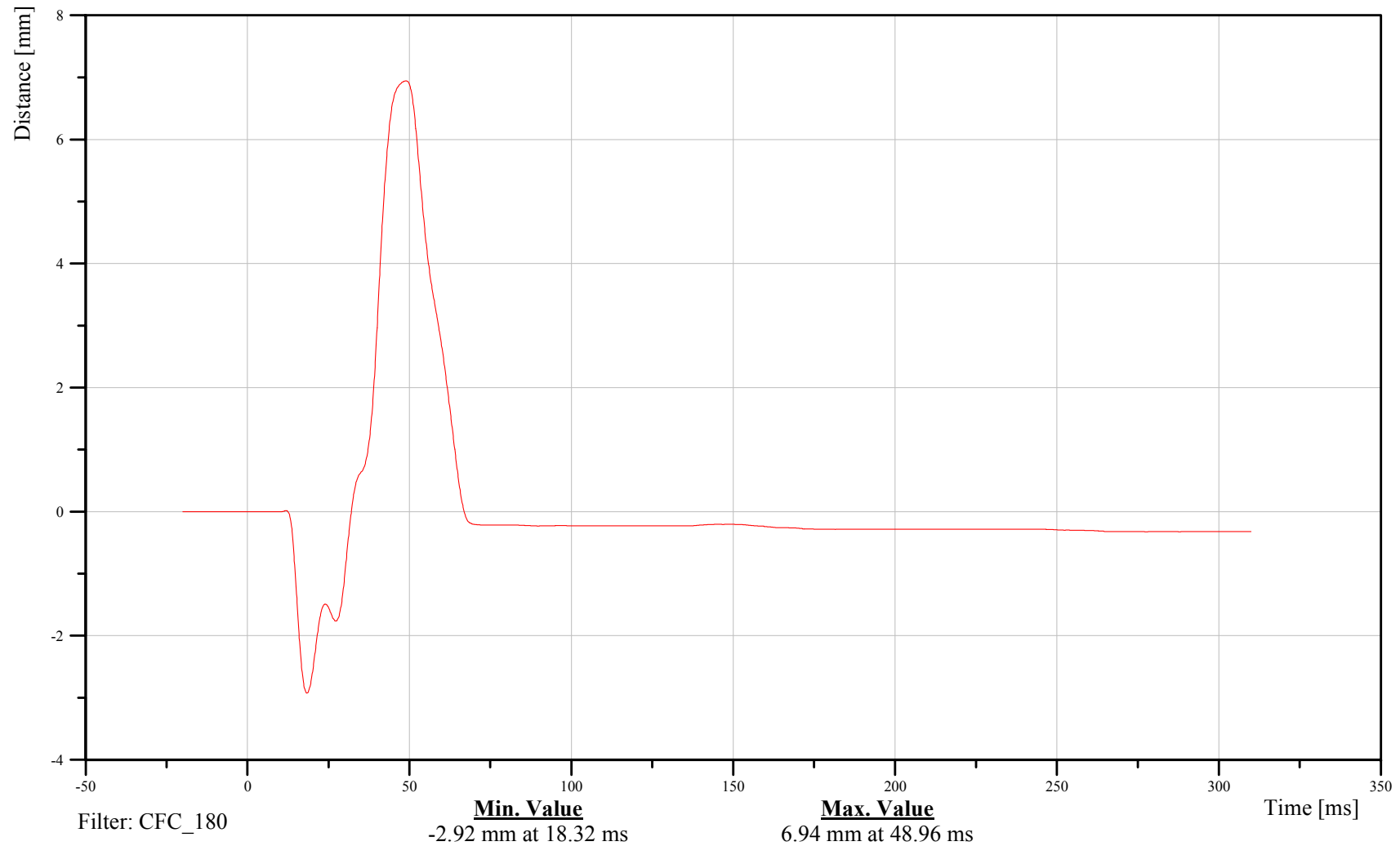
Abdomin Rib 1 Disp. Y

Customer: VRTC

11ABRI01LES2DSYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

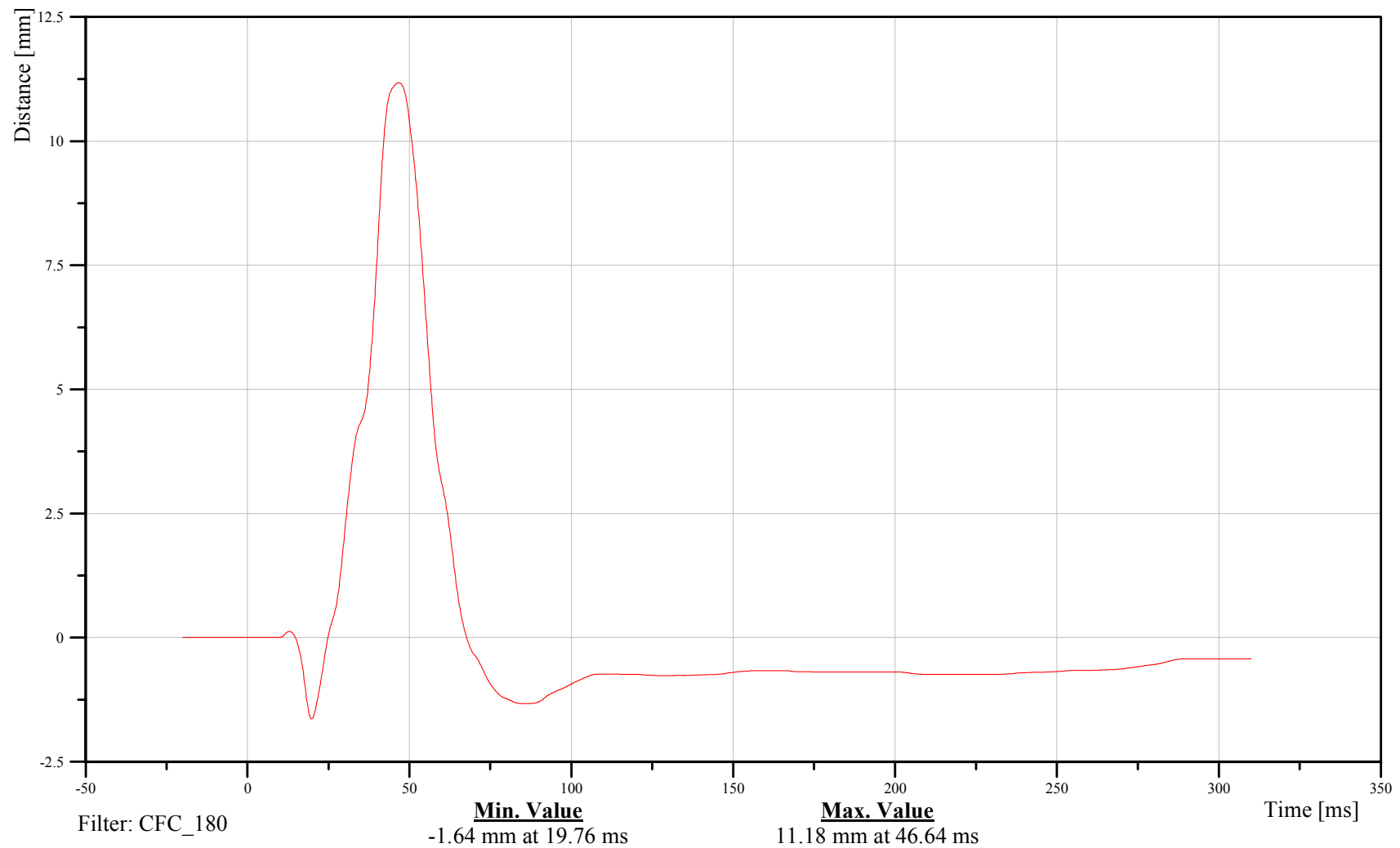
Abdomin Rib 2 Disp. Y

Customer: VRTC

11ABRI02LES2DSYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

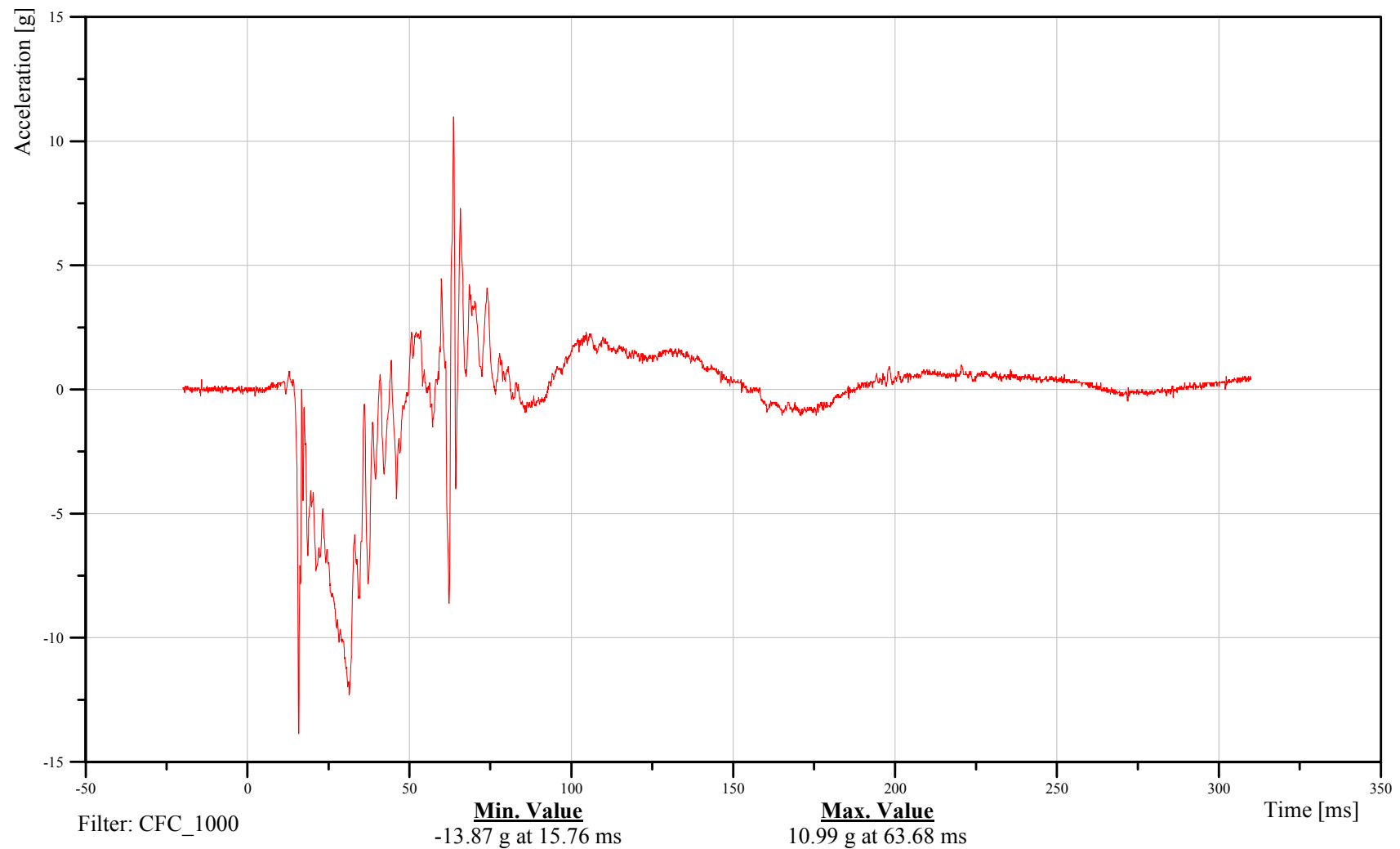
Pelvis Accel X

Customer: VRTC

11PELVCG00S2ACXA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

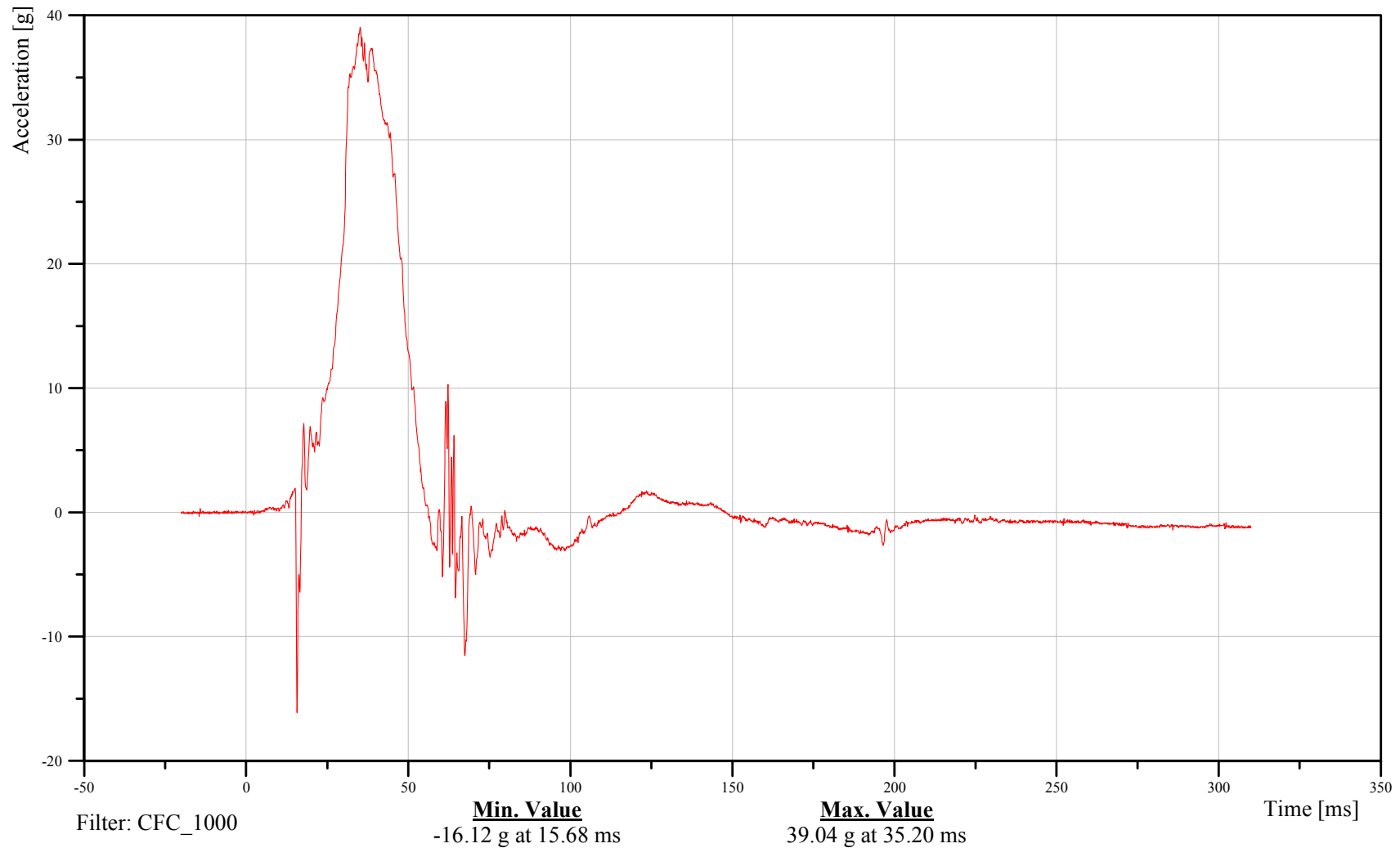
Pelvis Accel Y

Customer: VRTC

11PELVCG00S2ACYA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Pelvis Accel Z

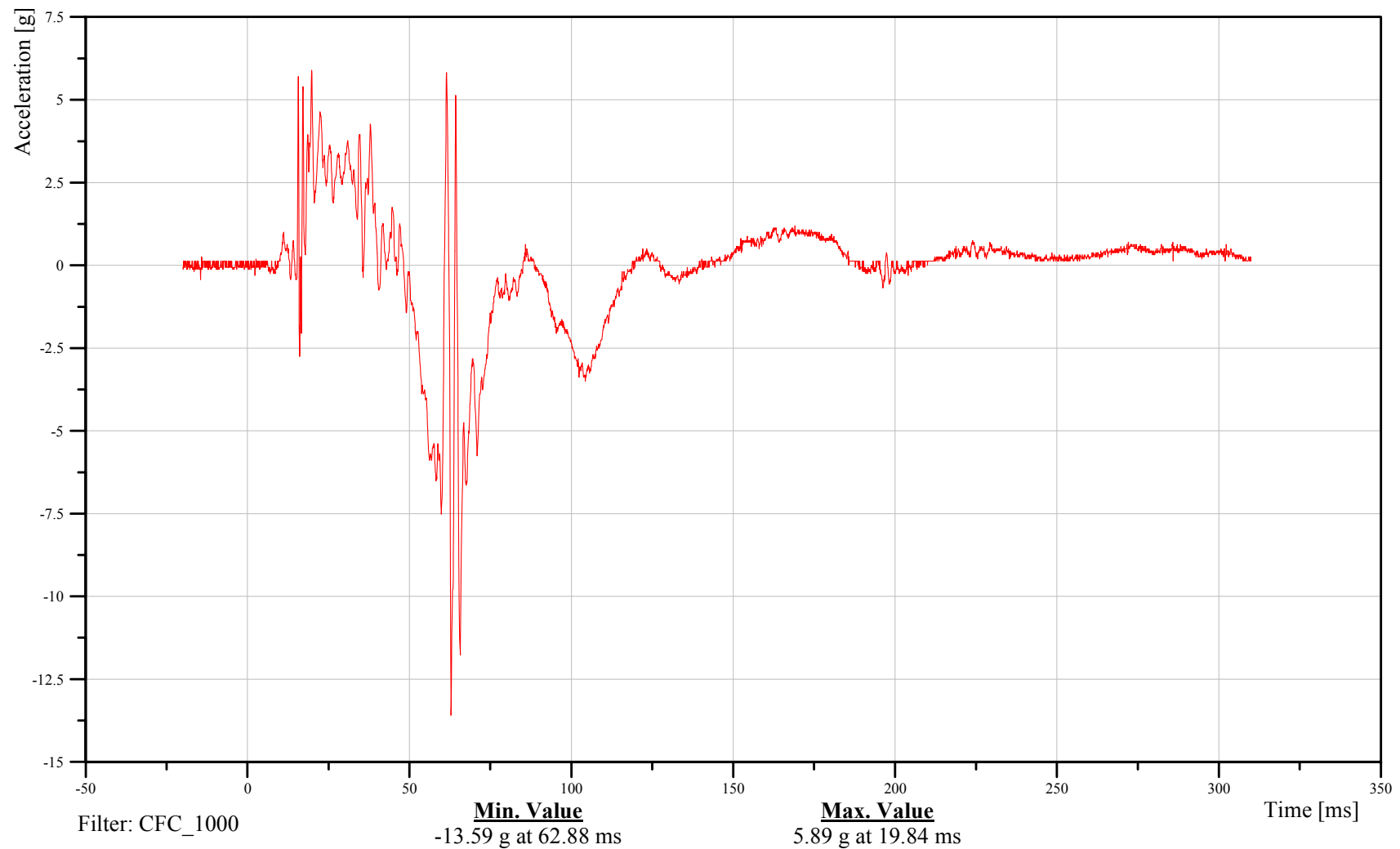
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11PELVCG00S2ACZA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Pelvis Accel Resultant

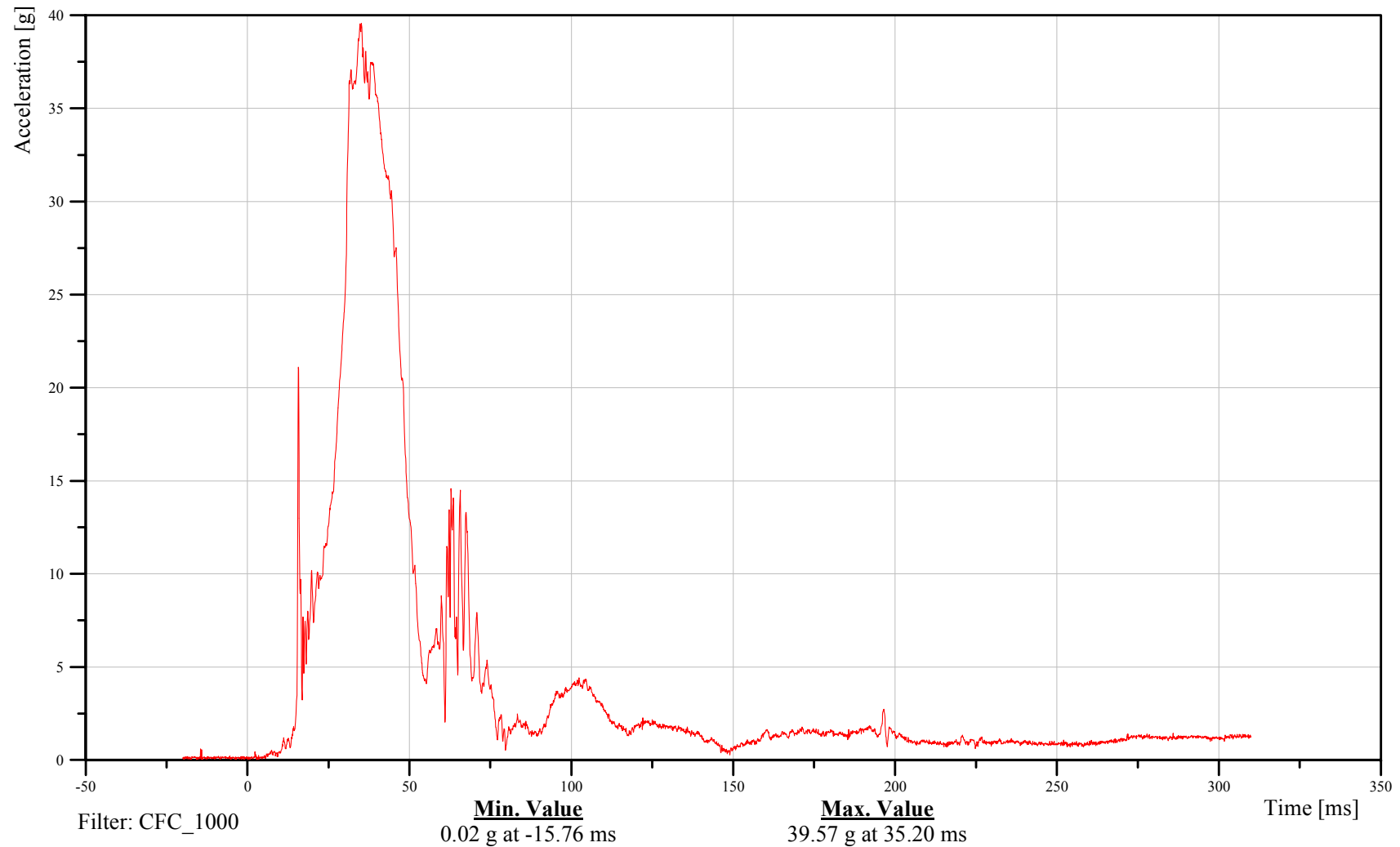
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11PELVCG00S2ACRA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

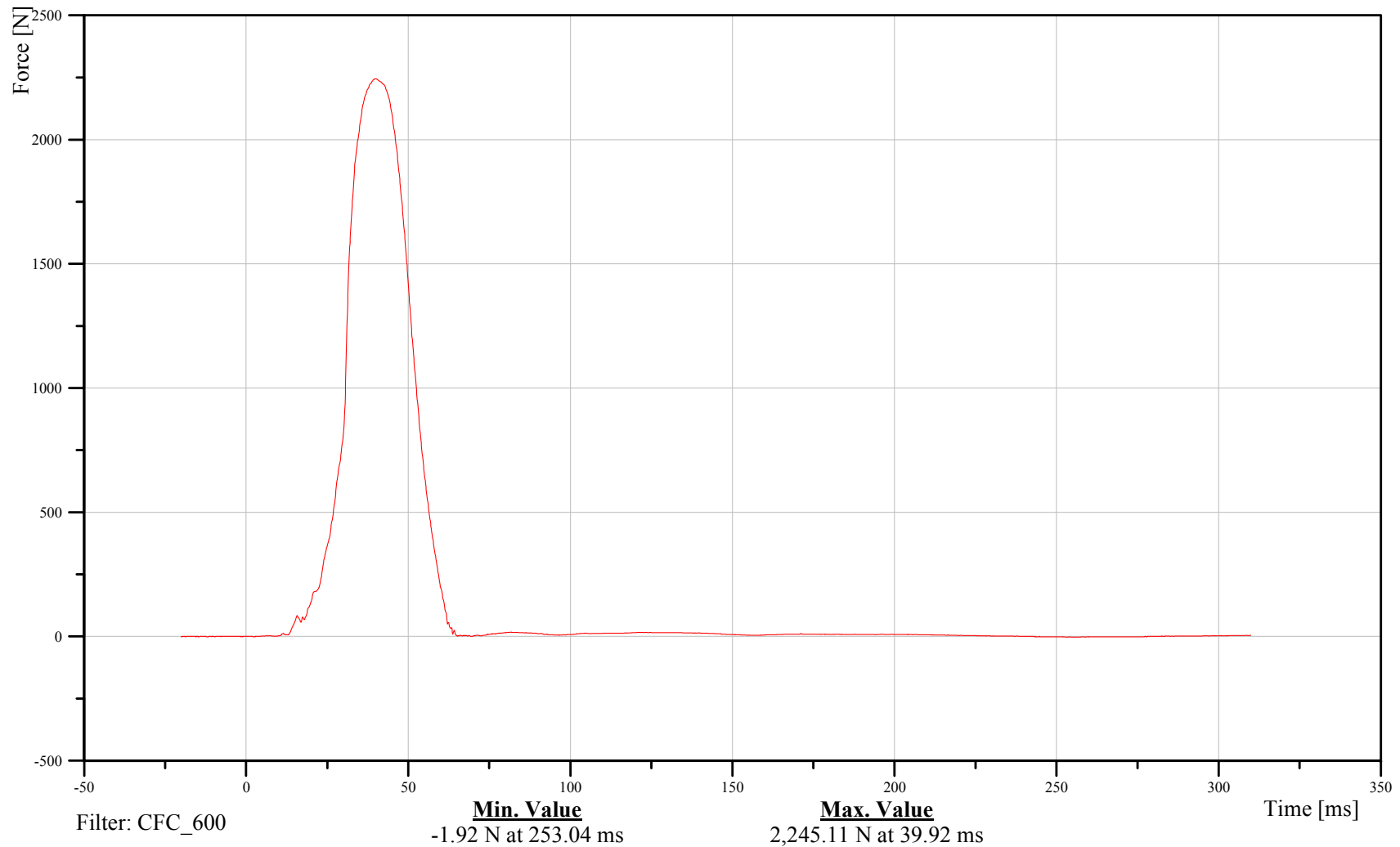
Left Acetabulum Force Y

Customer: VRTC

11ACTBLE00S2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Illiac Wing Force Y

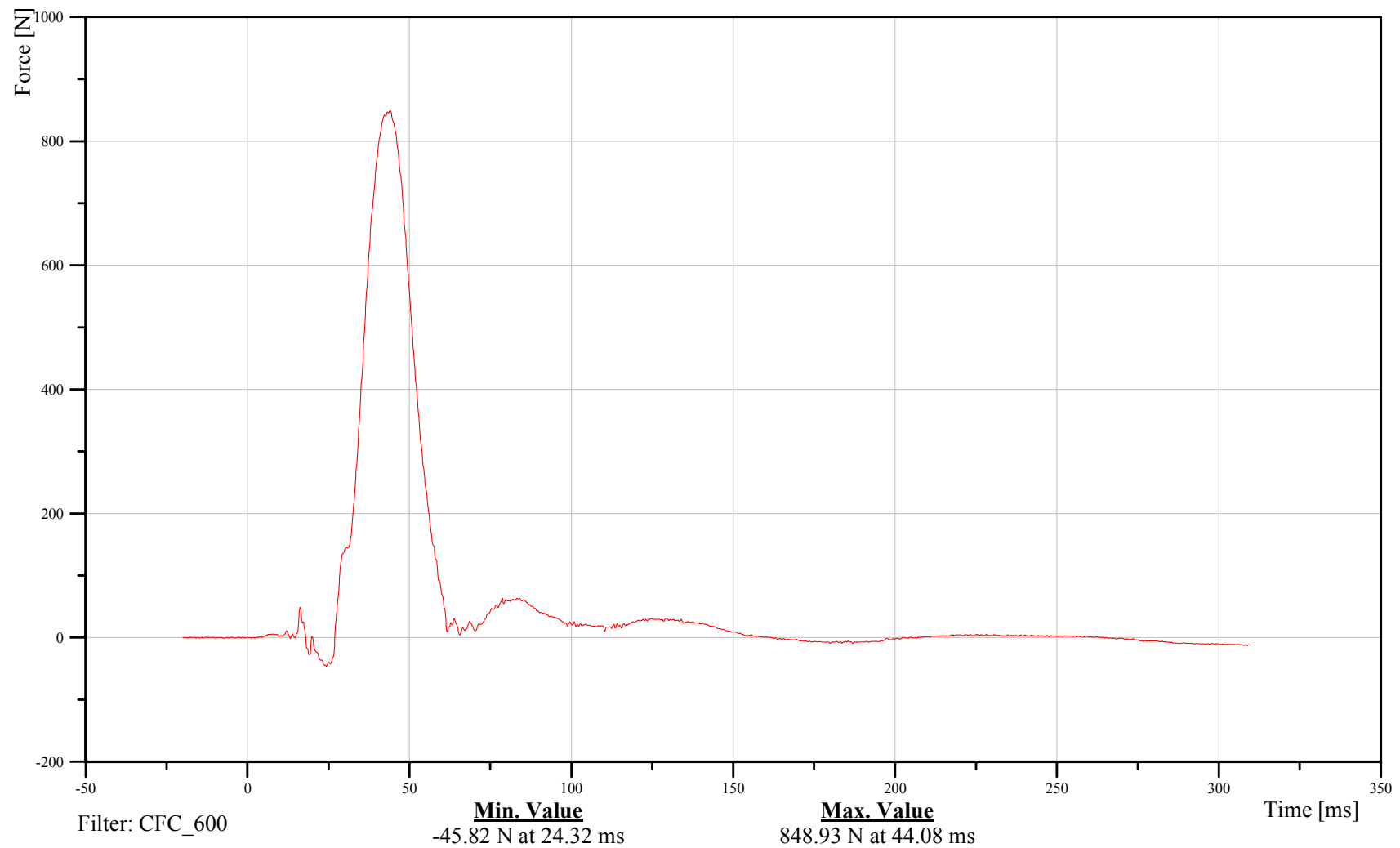
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11ILACLE00S2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

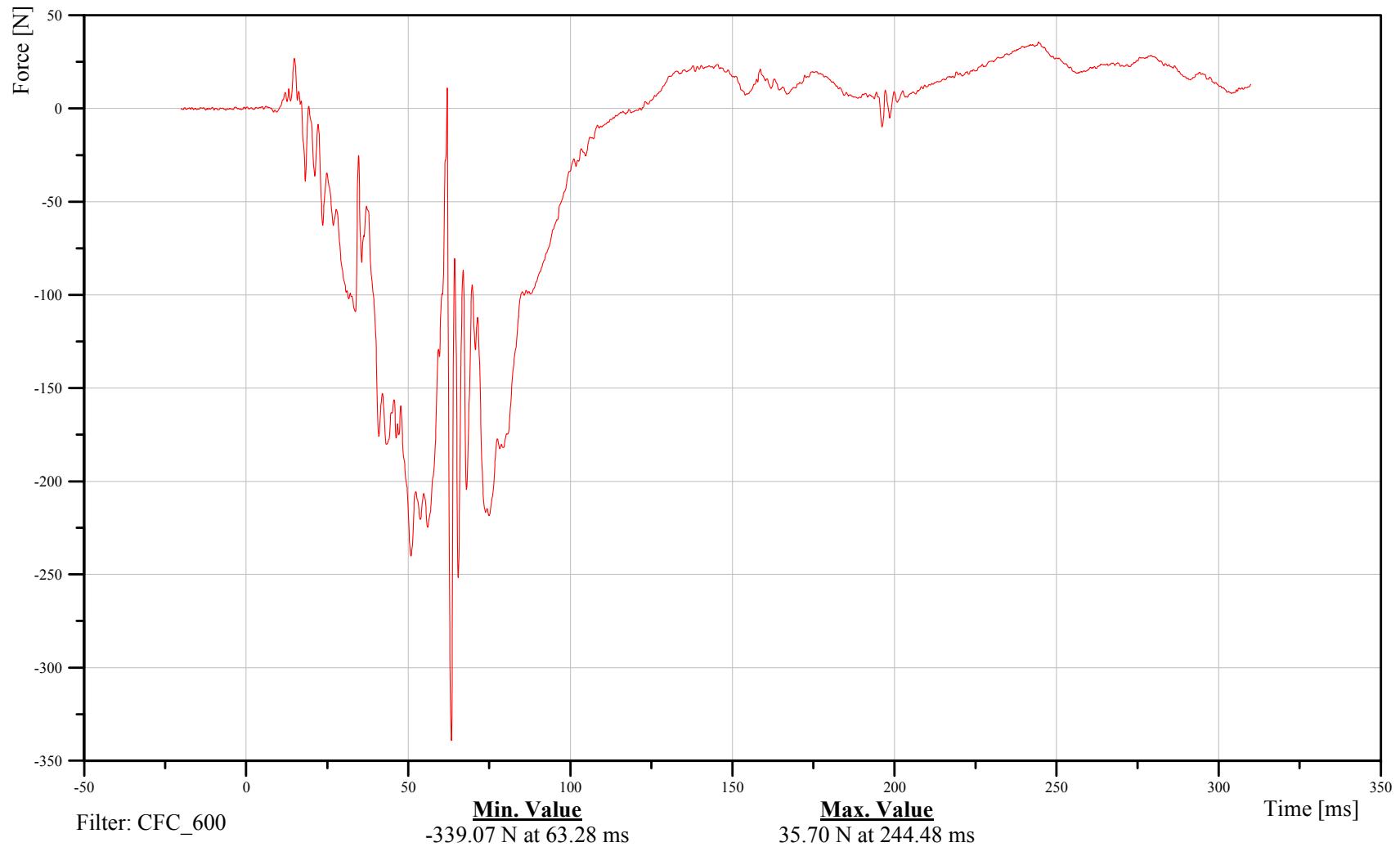
Right Femur Force X

Customer: VRTC

11FEMRRI00S2FOXB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

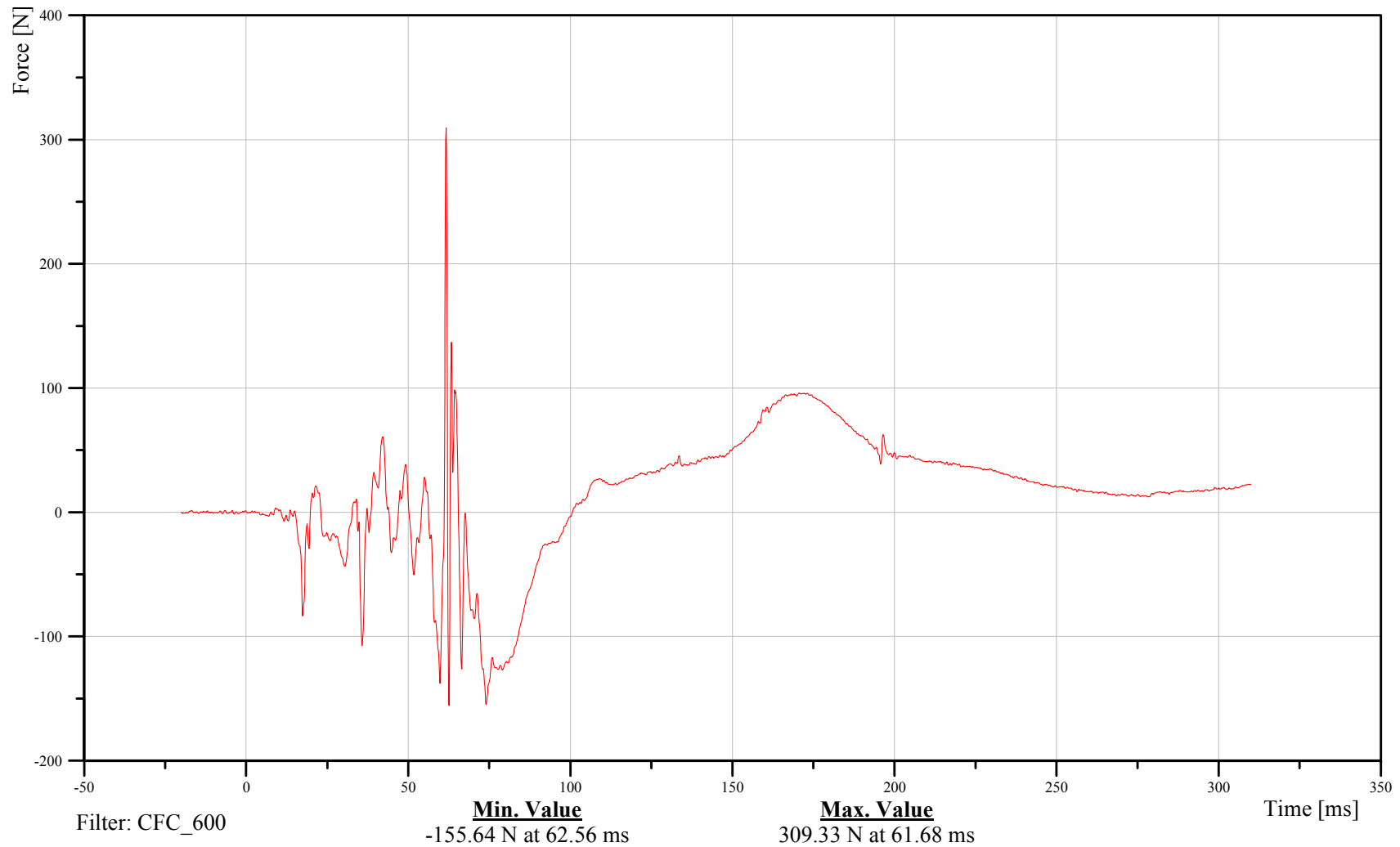
Right Femur Force Y

Customer: VRTC

11FEMRRI00S2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

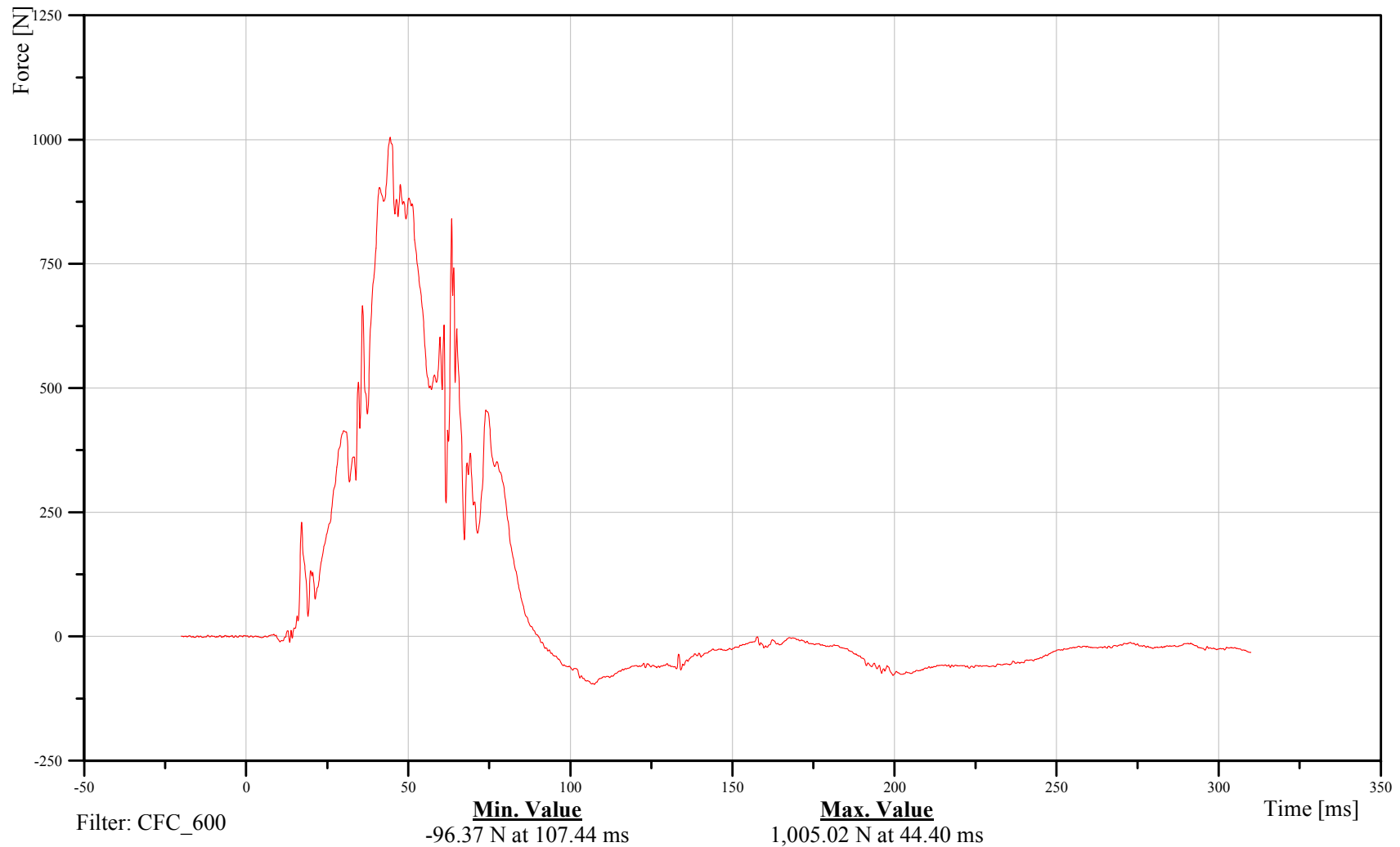
Right Femur Force Z

Customer: VRTC

11FEMRRI00S2FOZB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

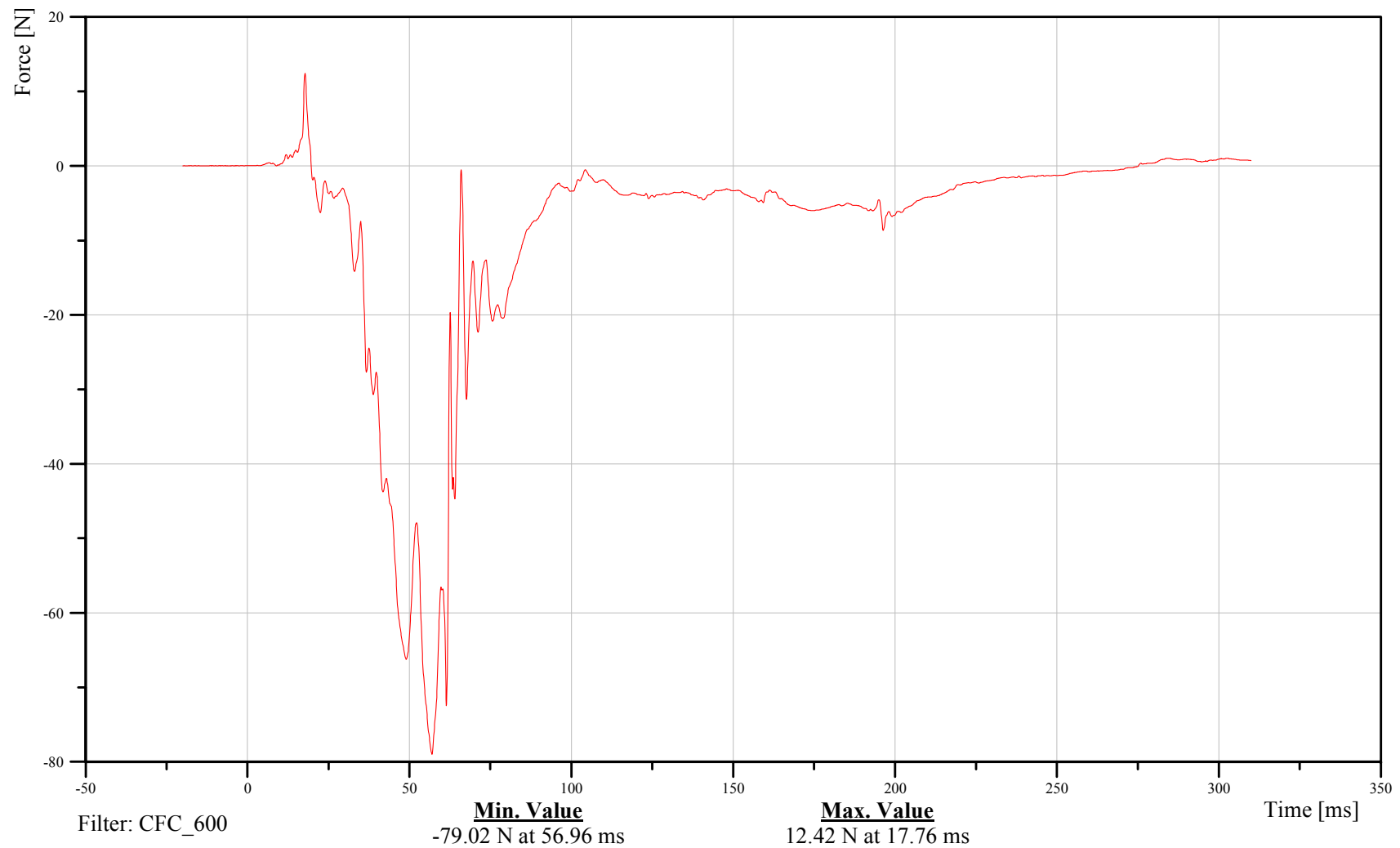
Right Femur Moment X

Customer: VRTC

11FEMRRI00S2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

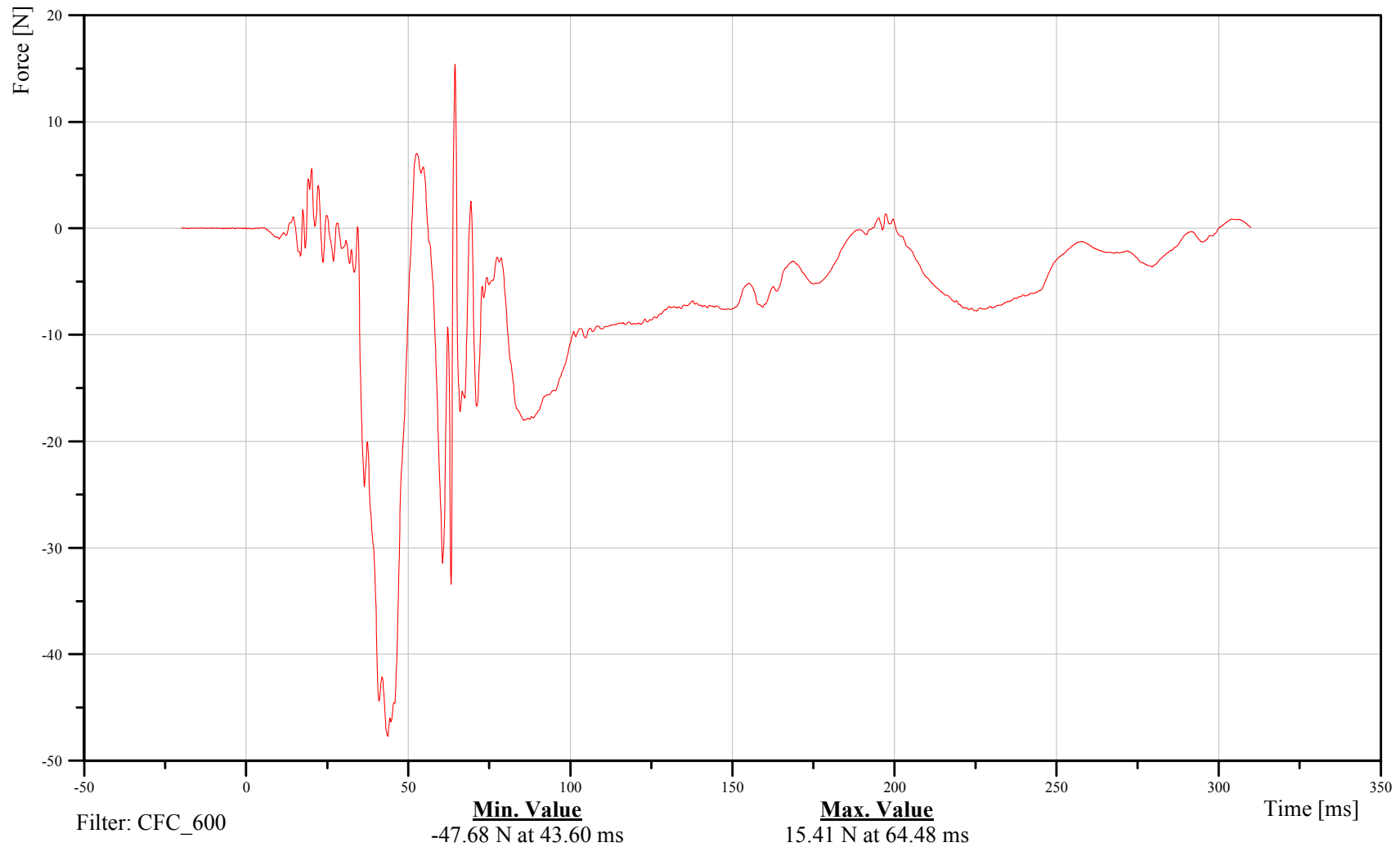
Right Femur Moment Y

Customer: VRTC

11FEMRRI00S2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

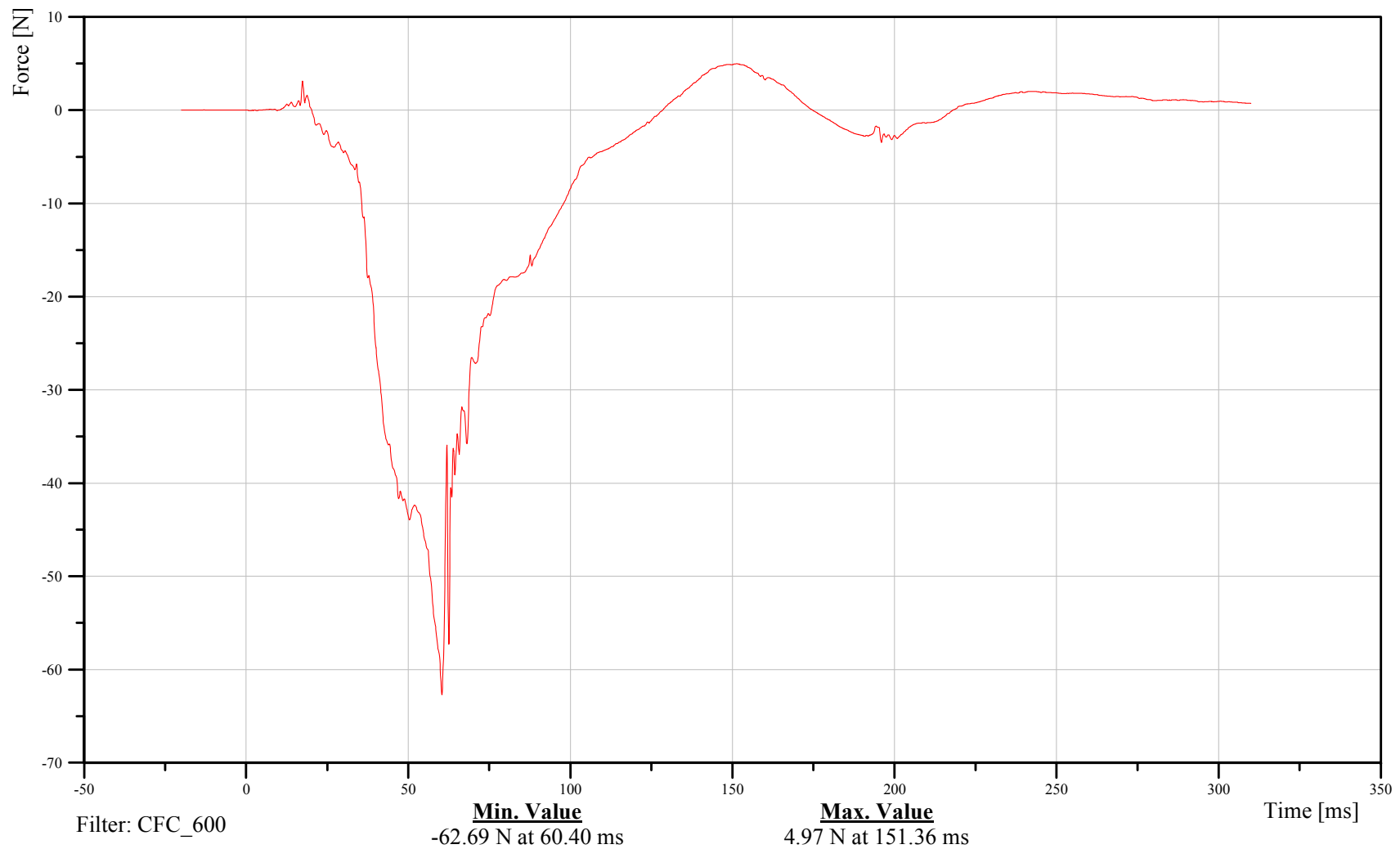
Right Femur Moment Z

Customer: VRTC

11FEMRRI00S2MOZB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Femur Force X

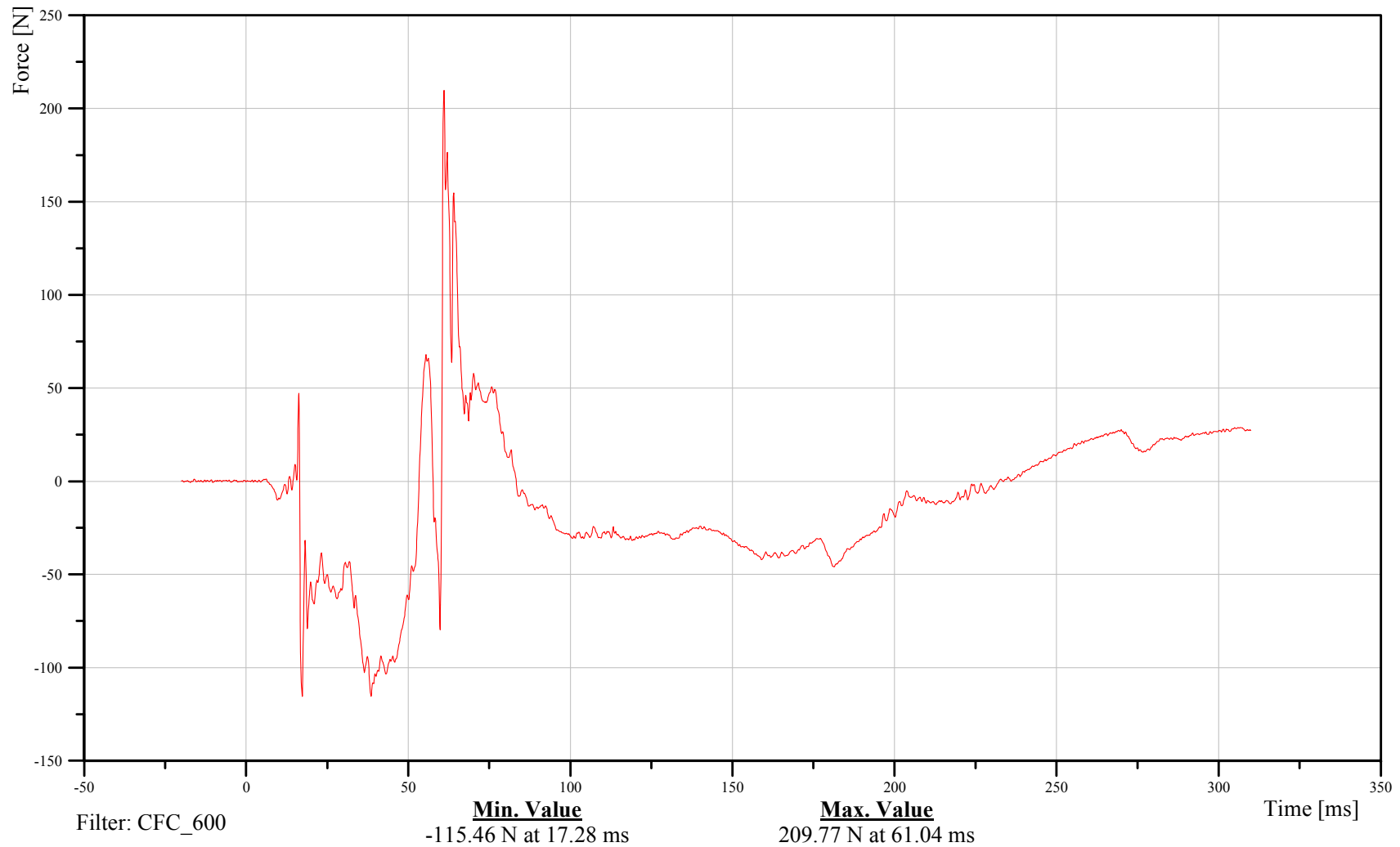
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11FEMRLE00S2FOXB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Femur Force Y

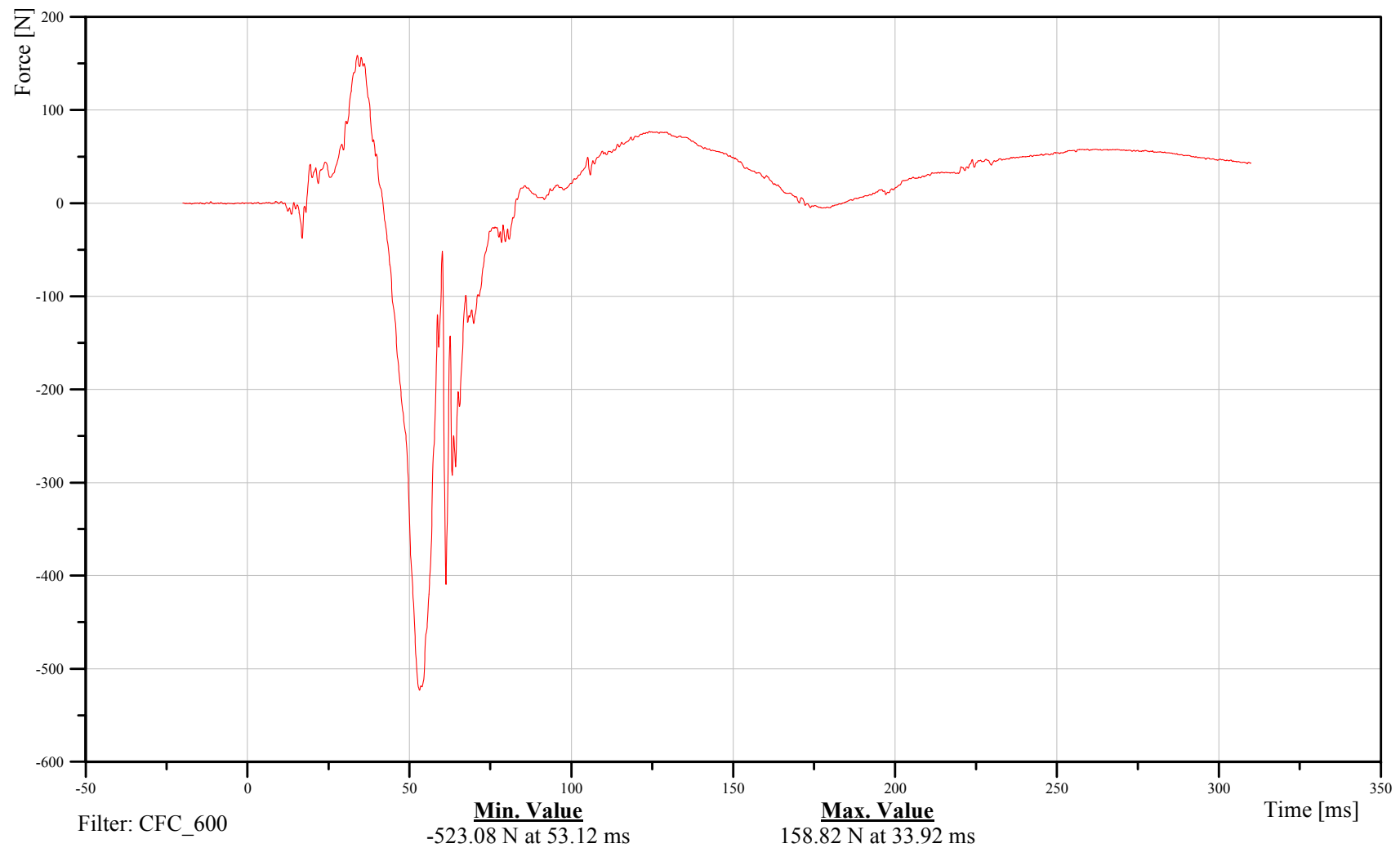
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11FEMRLE00S2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

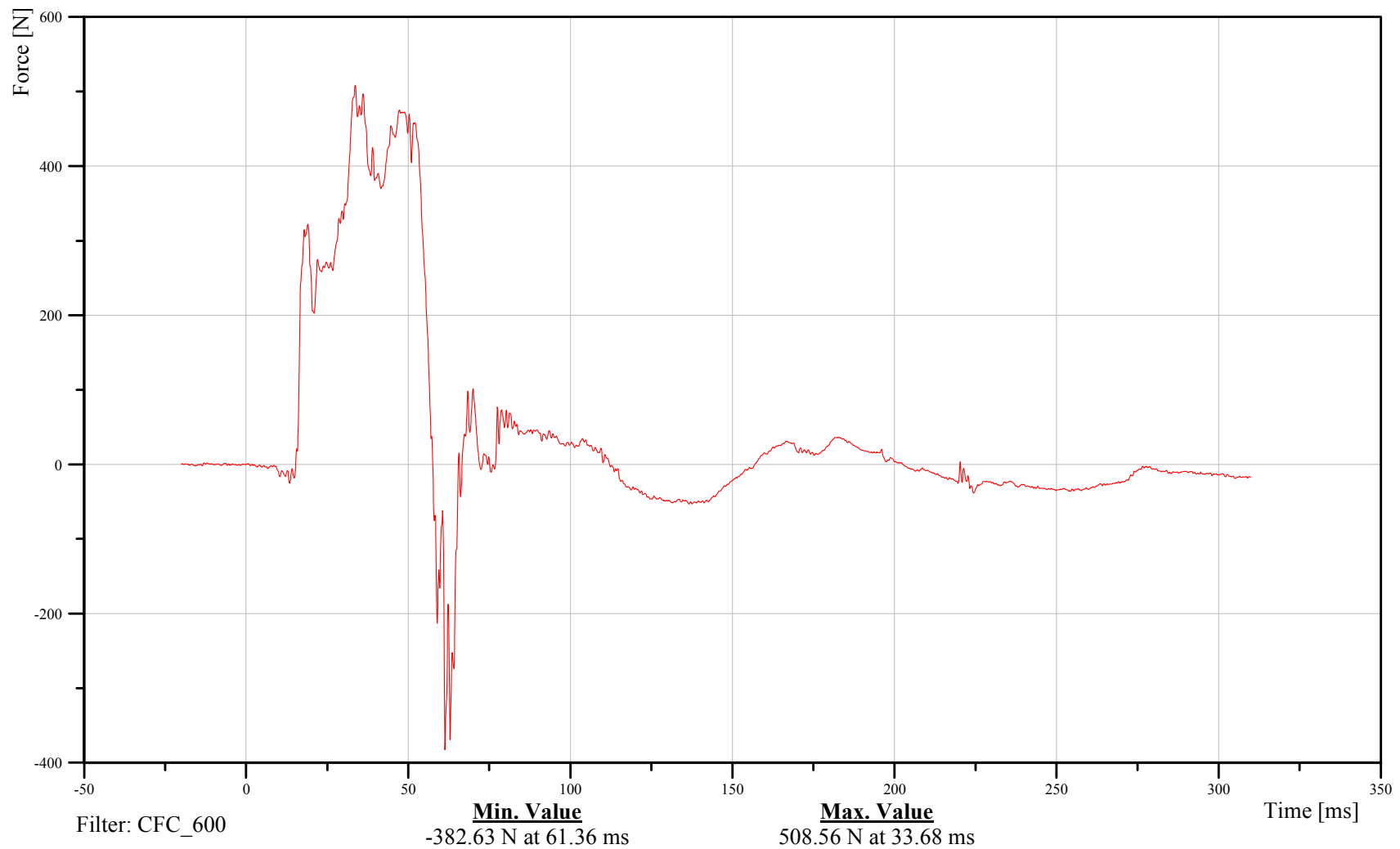
Left Femur Force Z

Customer: VRTC

11FEMRLE00S2FOZB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Femur Moment X

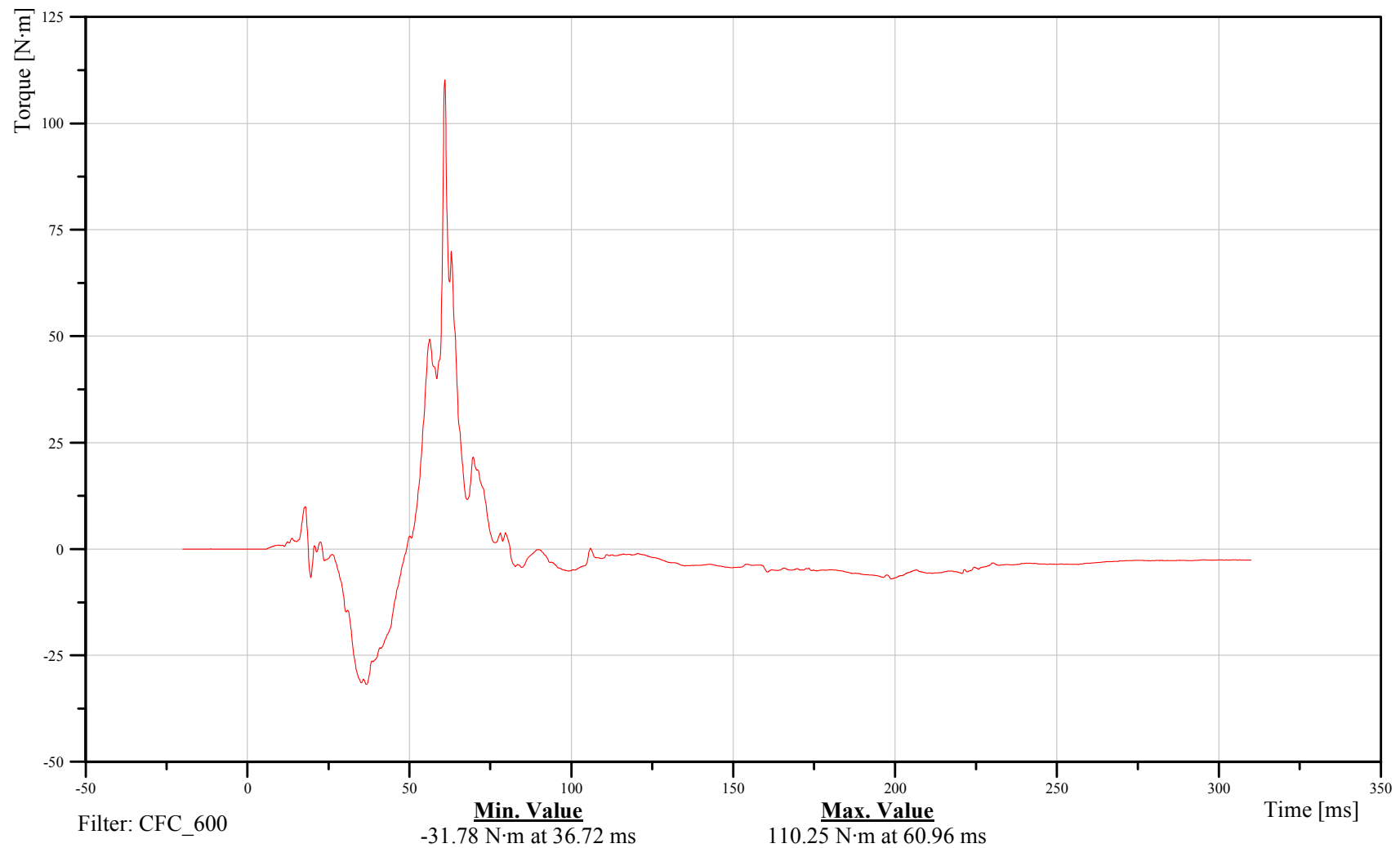
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11FEMRLE00S2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Femur Moment Y

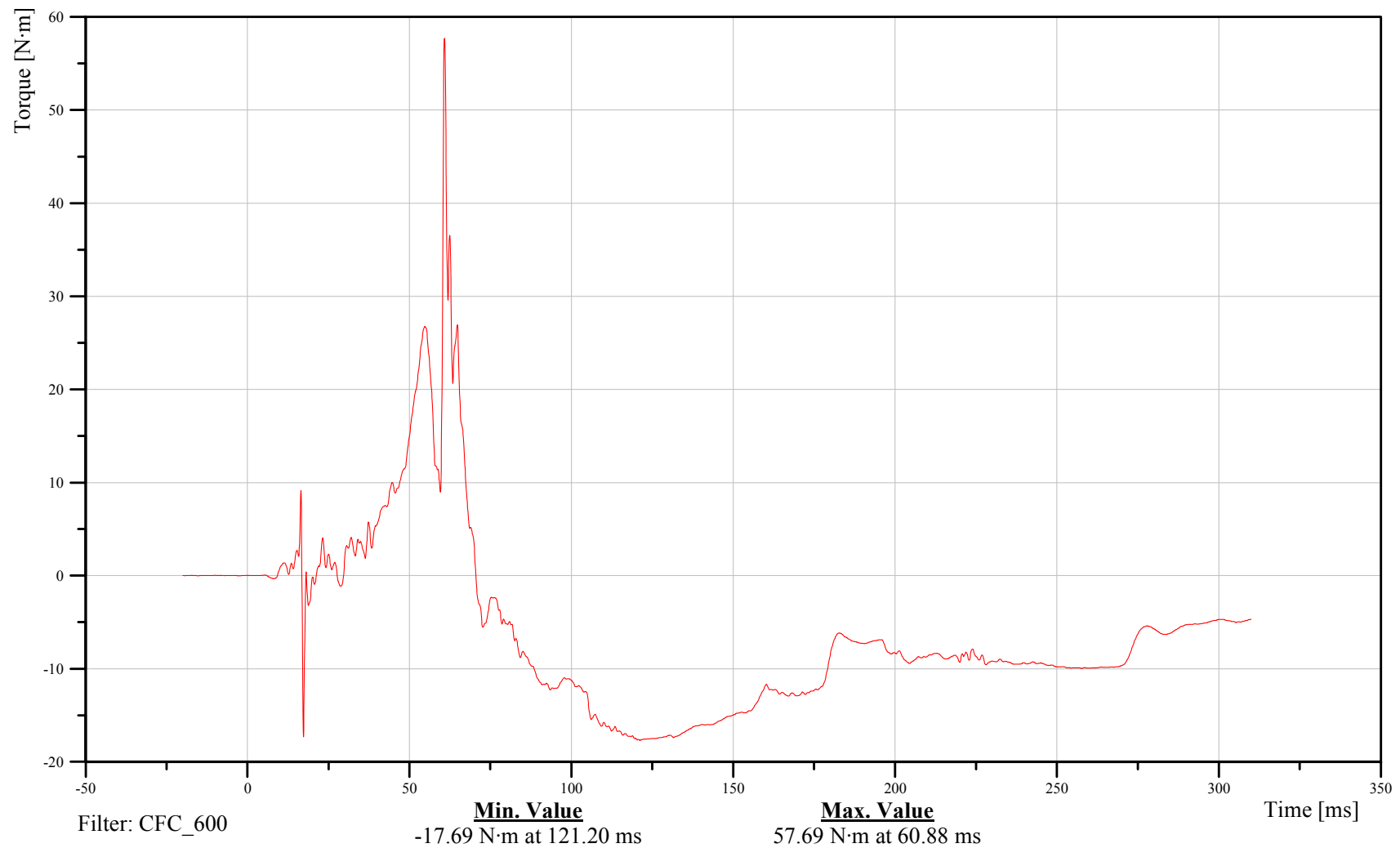
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11FEMRLE00S2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Femur Moment Z

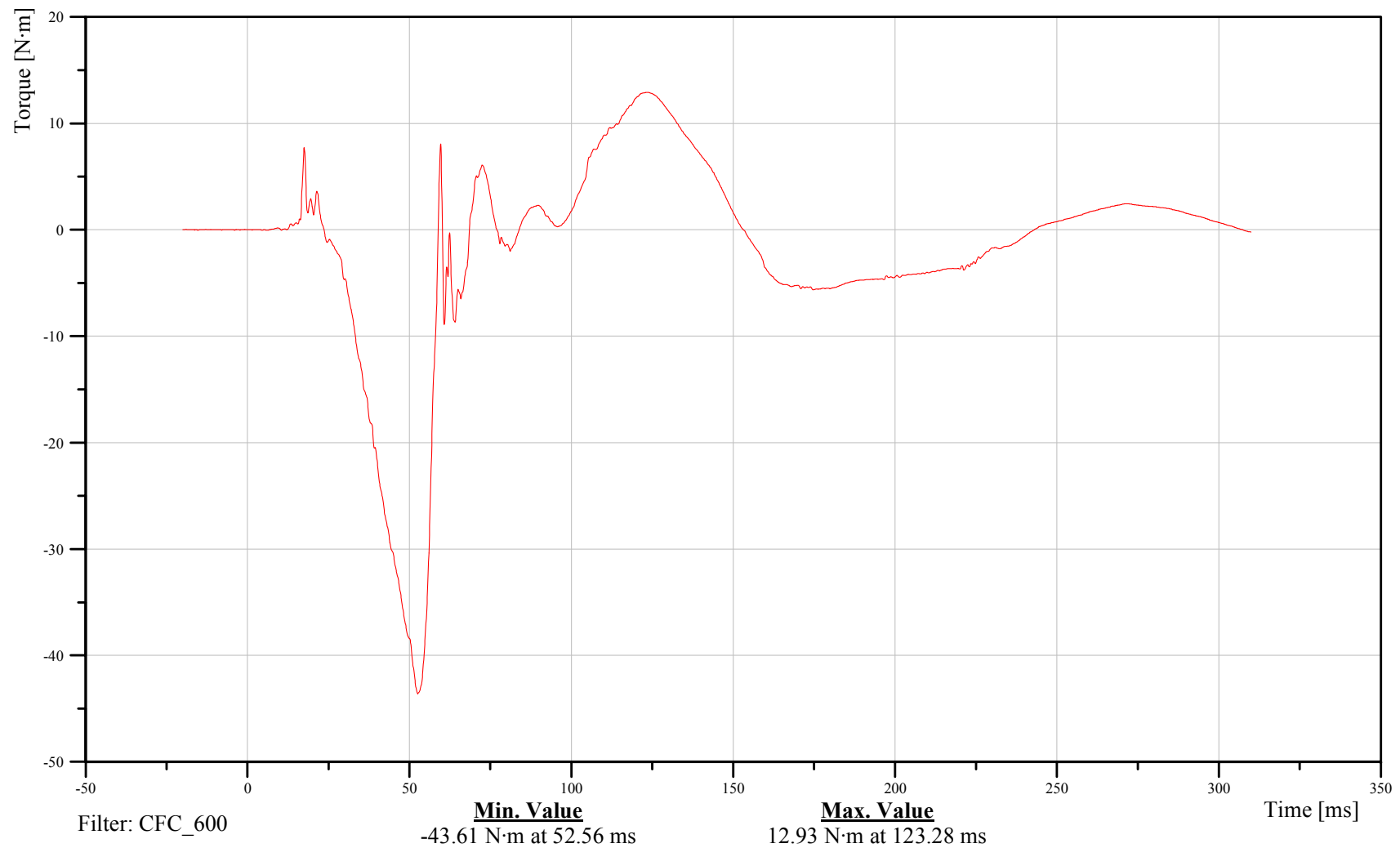
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11FEMRLE00S2MOZB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

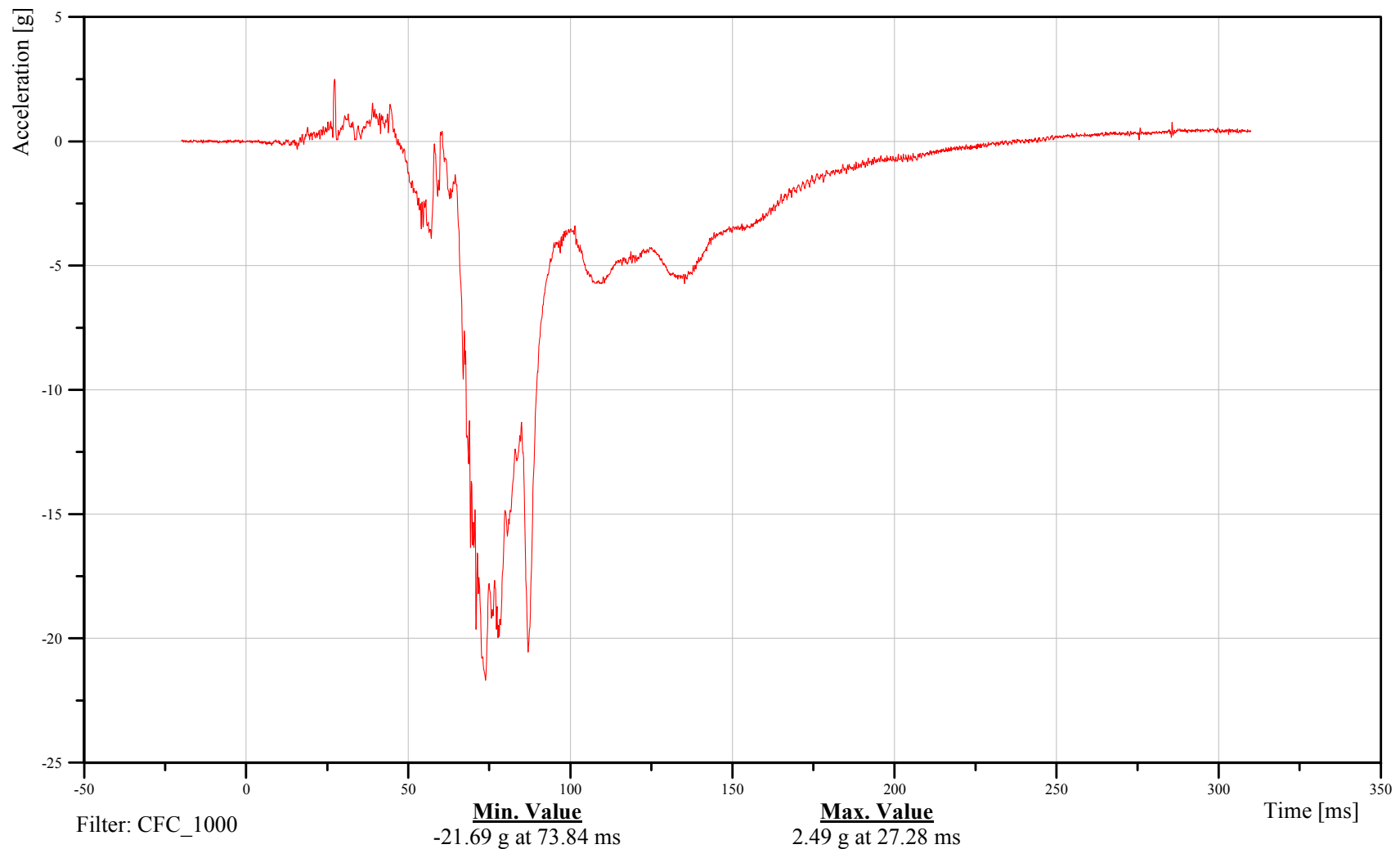
Head Accel X

Customer: VRTC

14HEADCG00S2ACXA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

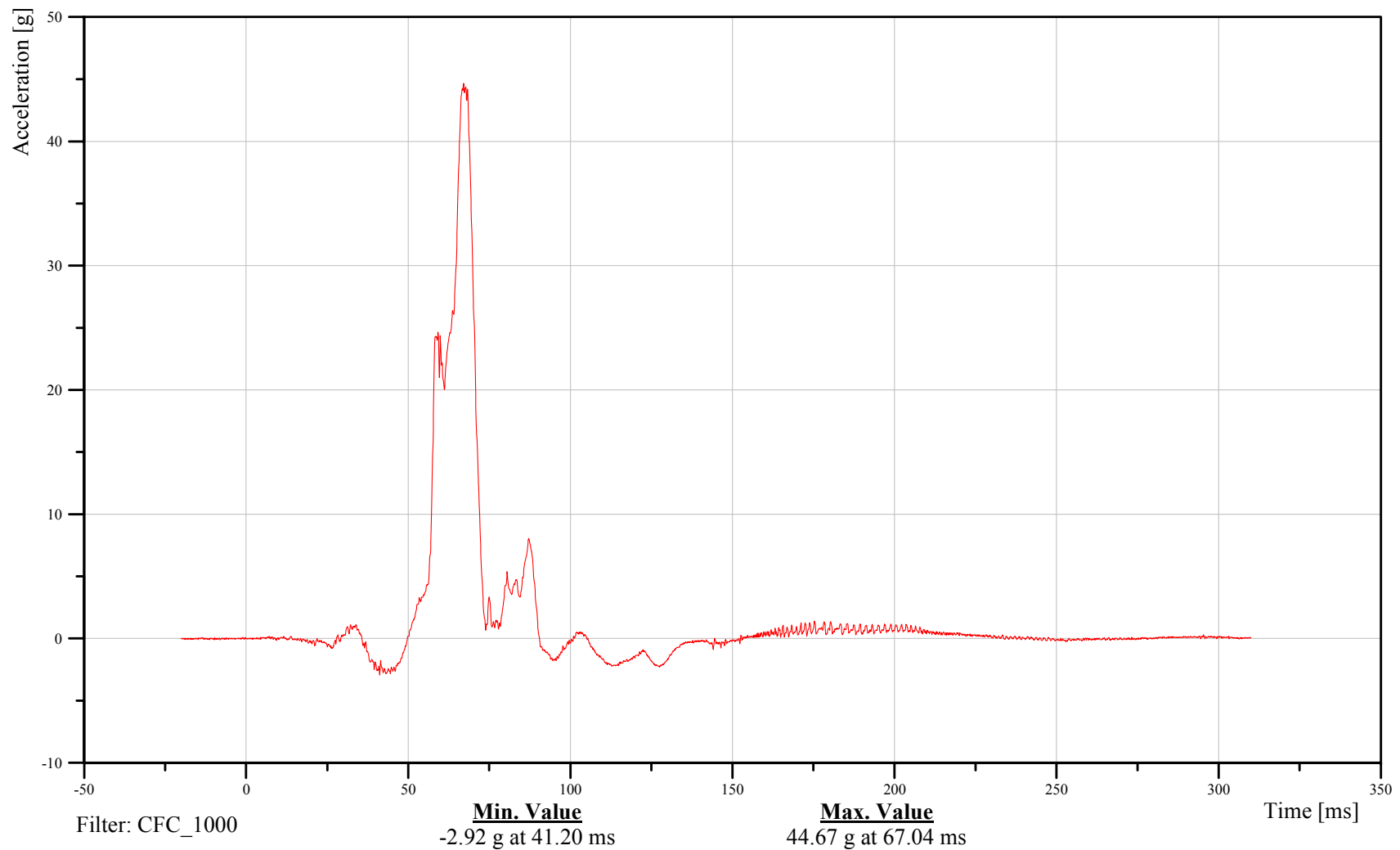
Head Accel Y

Customer: VRTC

14HEADCG00S2ACYA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

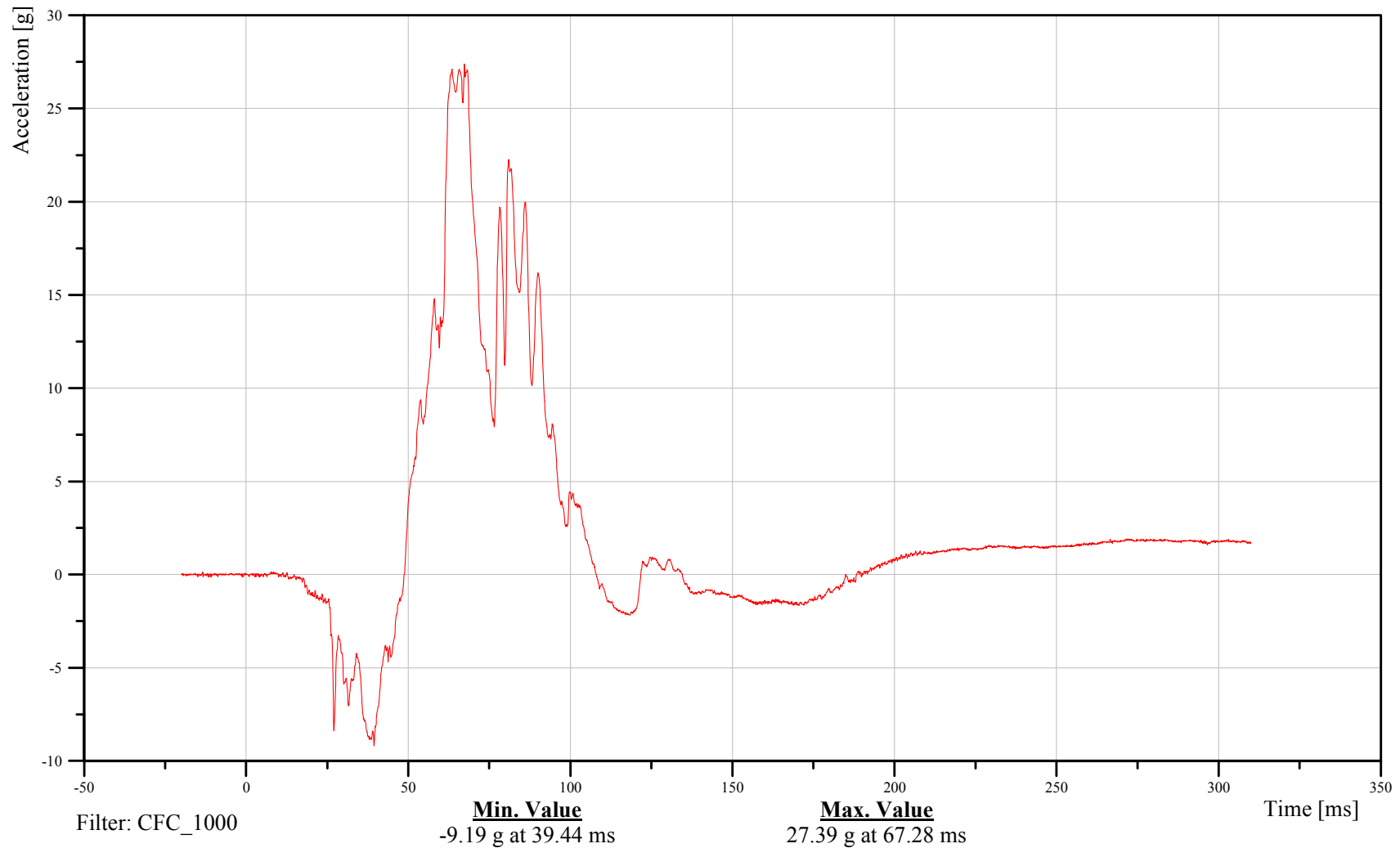
Head Accel Z

Customer: VRTC

14HEADCG00S2ACZA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

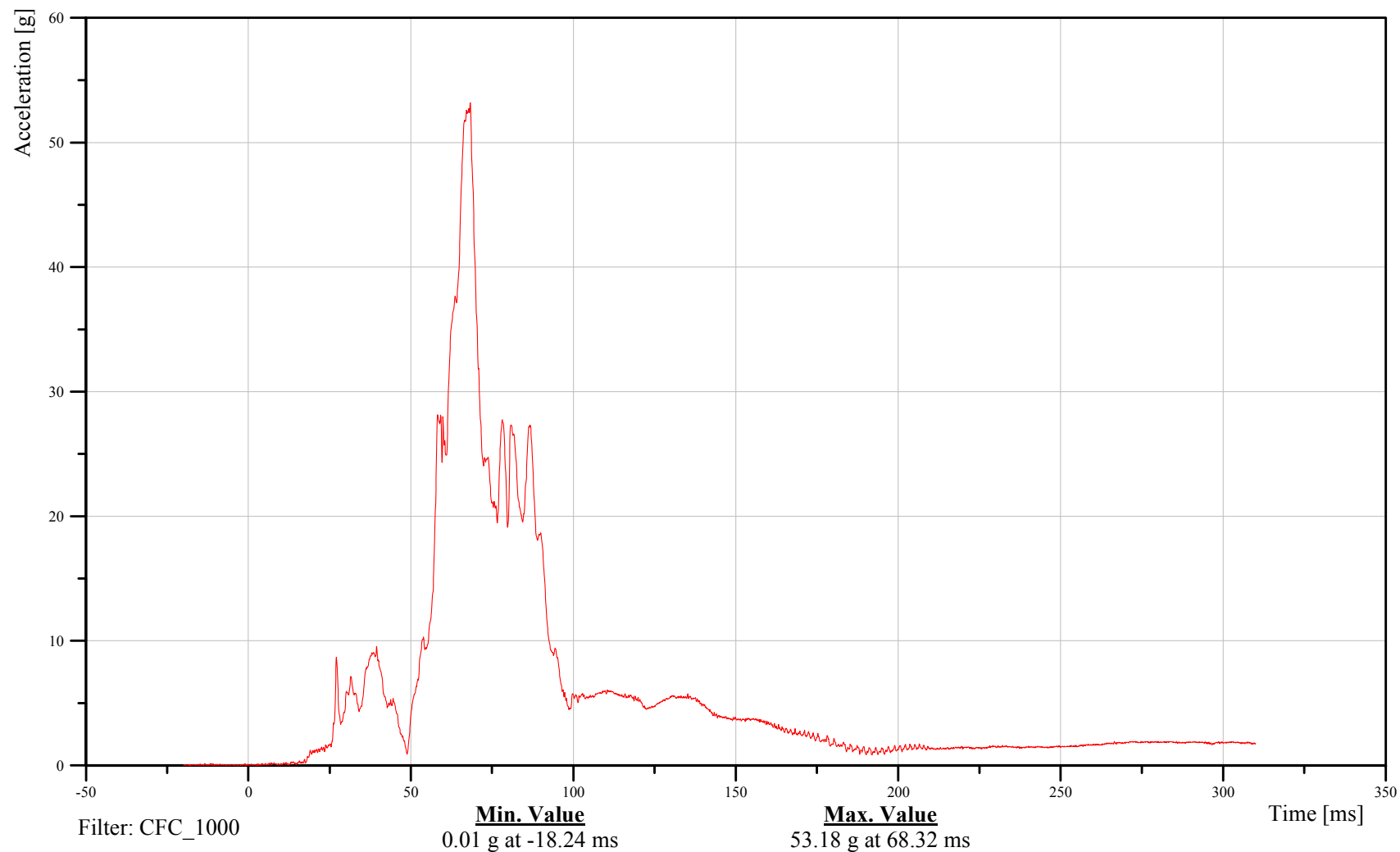
Head Accel Resultant

Customer: VRTC

14HEADCG00S2ACRA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

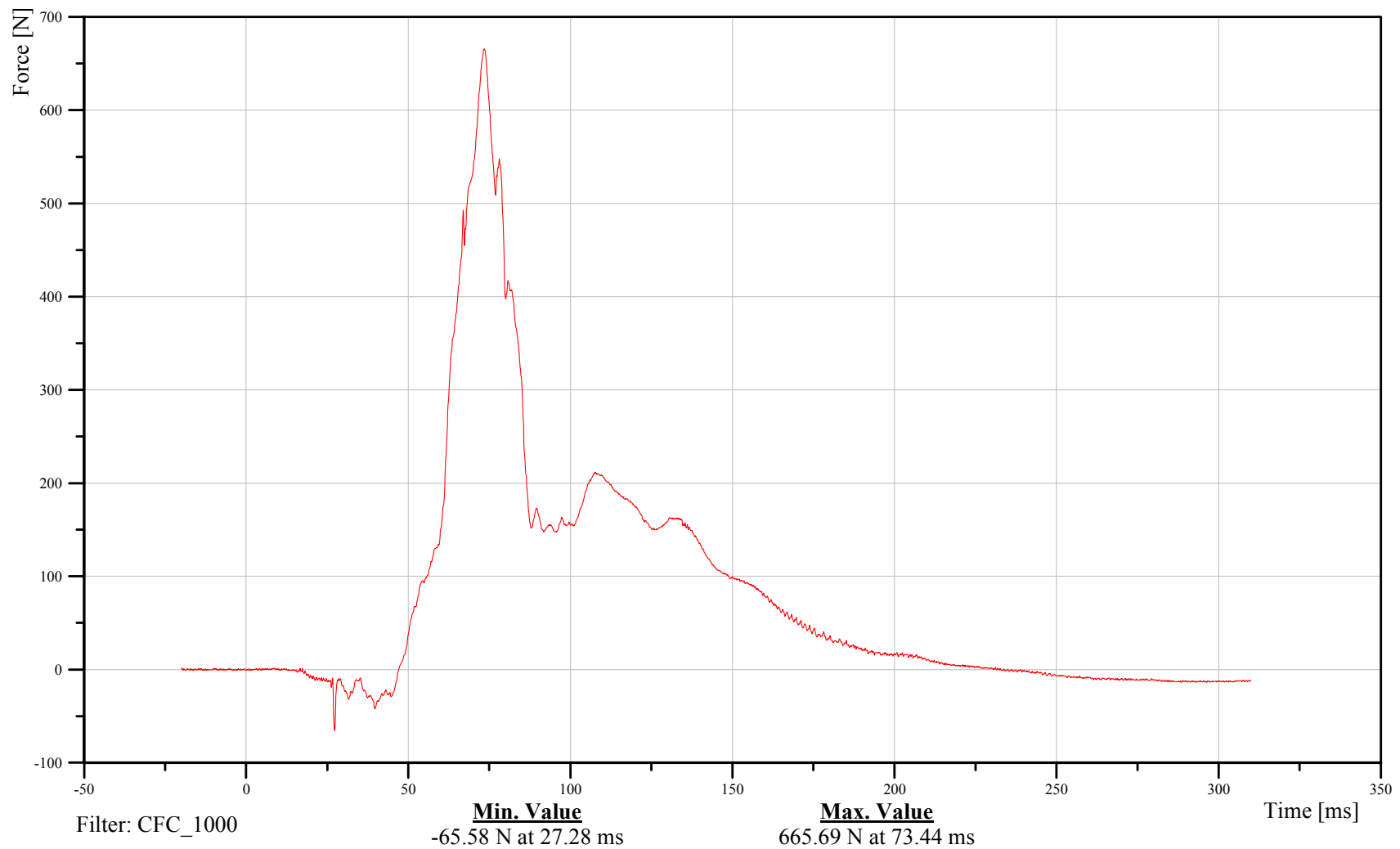
Neck Force X

Customer: VRTC

14NECKUP00S2FOXA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

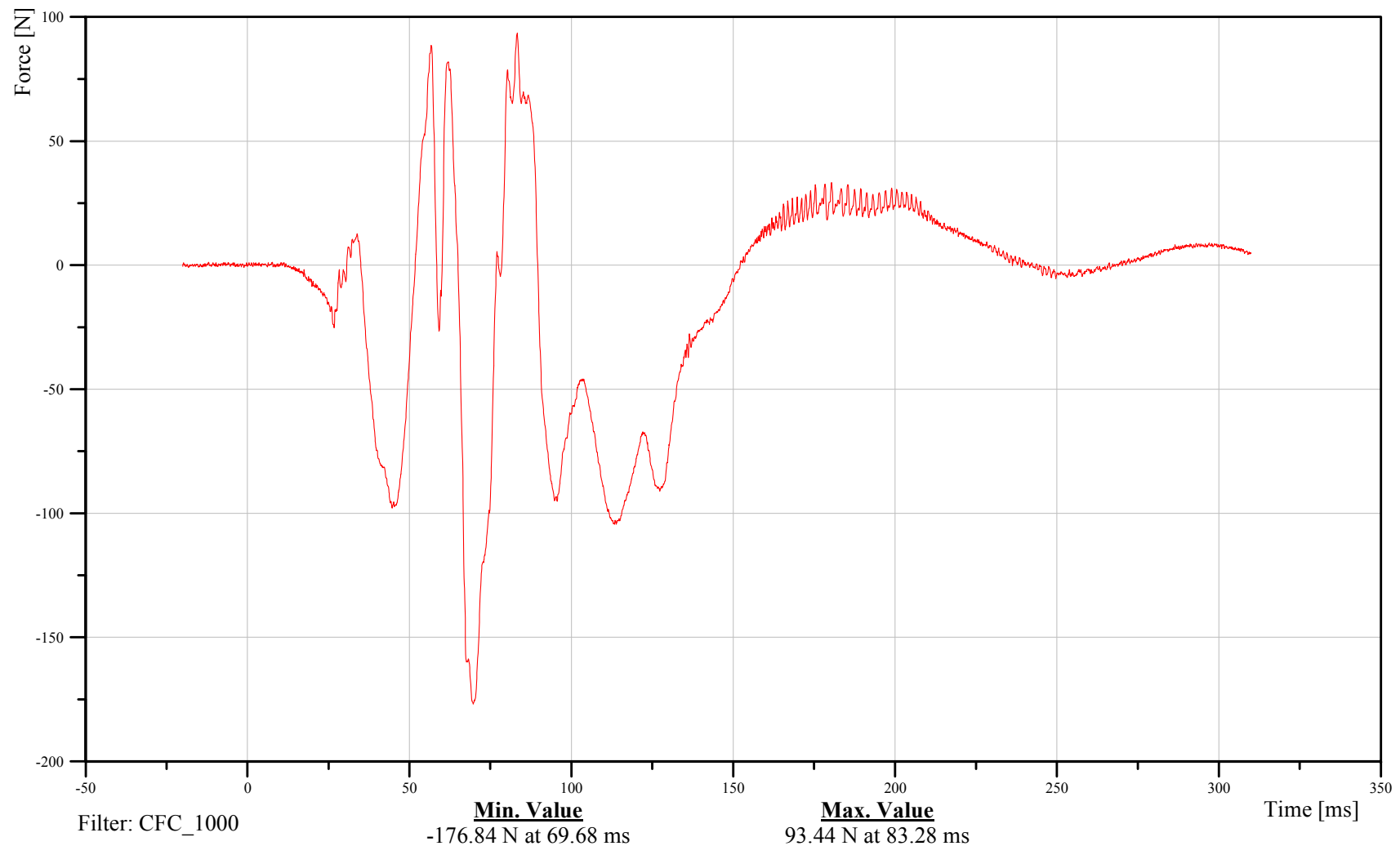
Neck Force Y

Customer: VRTC

14NECKUP00S2FOYA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

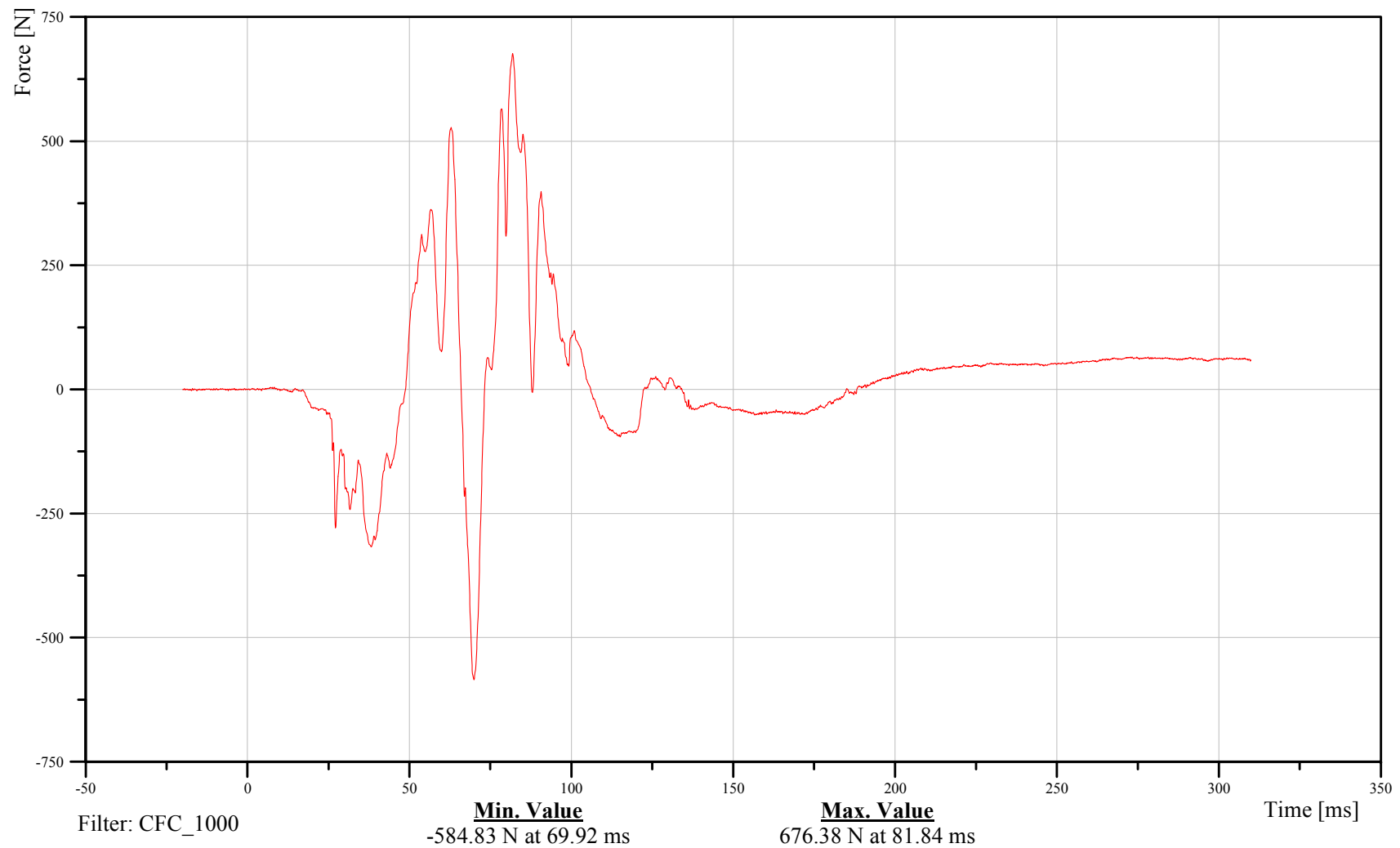
Neck Force Z

Customer: VRTC

14NECKUP00S2FOZA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

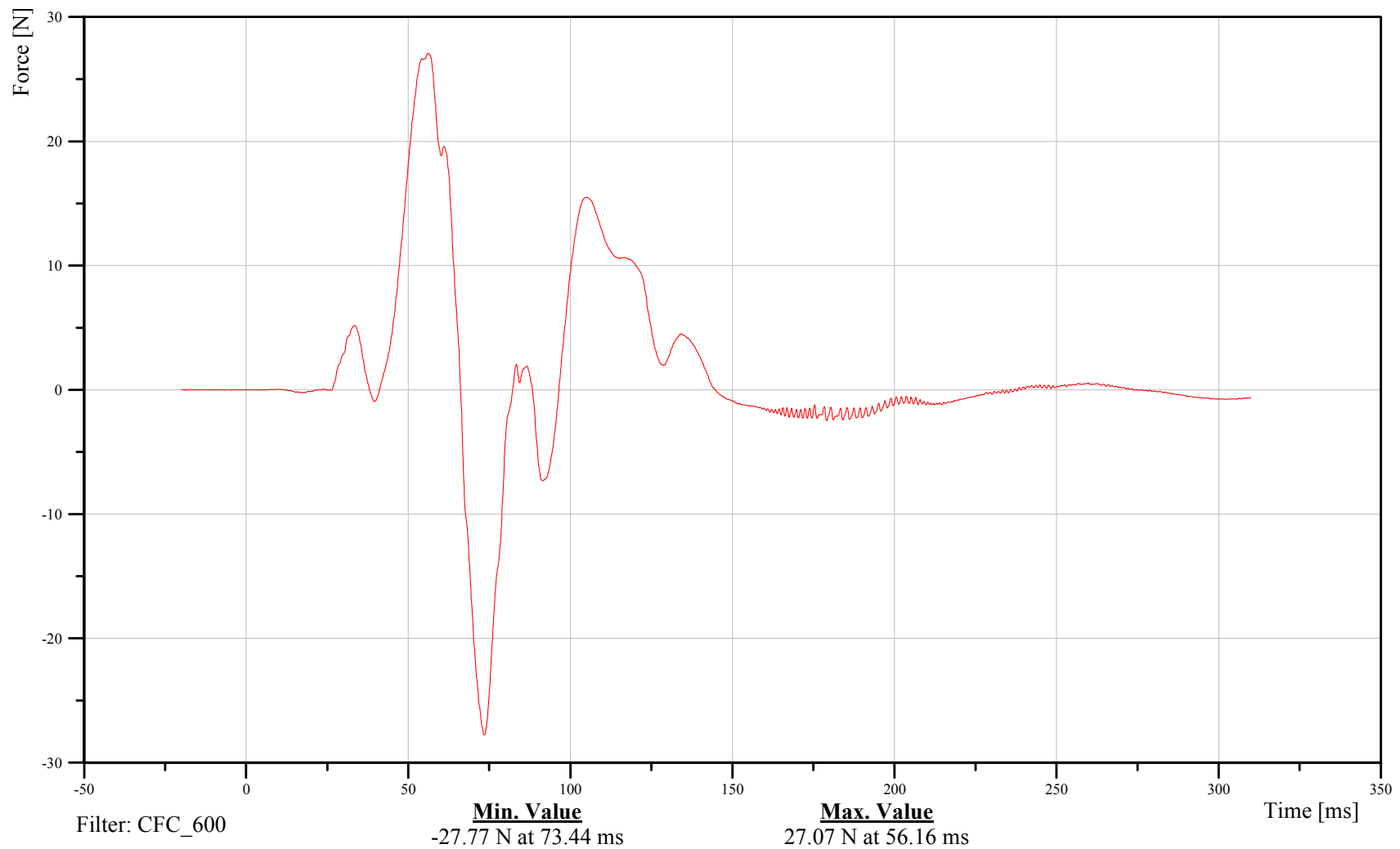
Neck Moment X

Customer: VRTC

14NECKUP00S2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

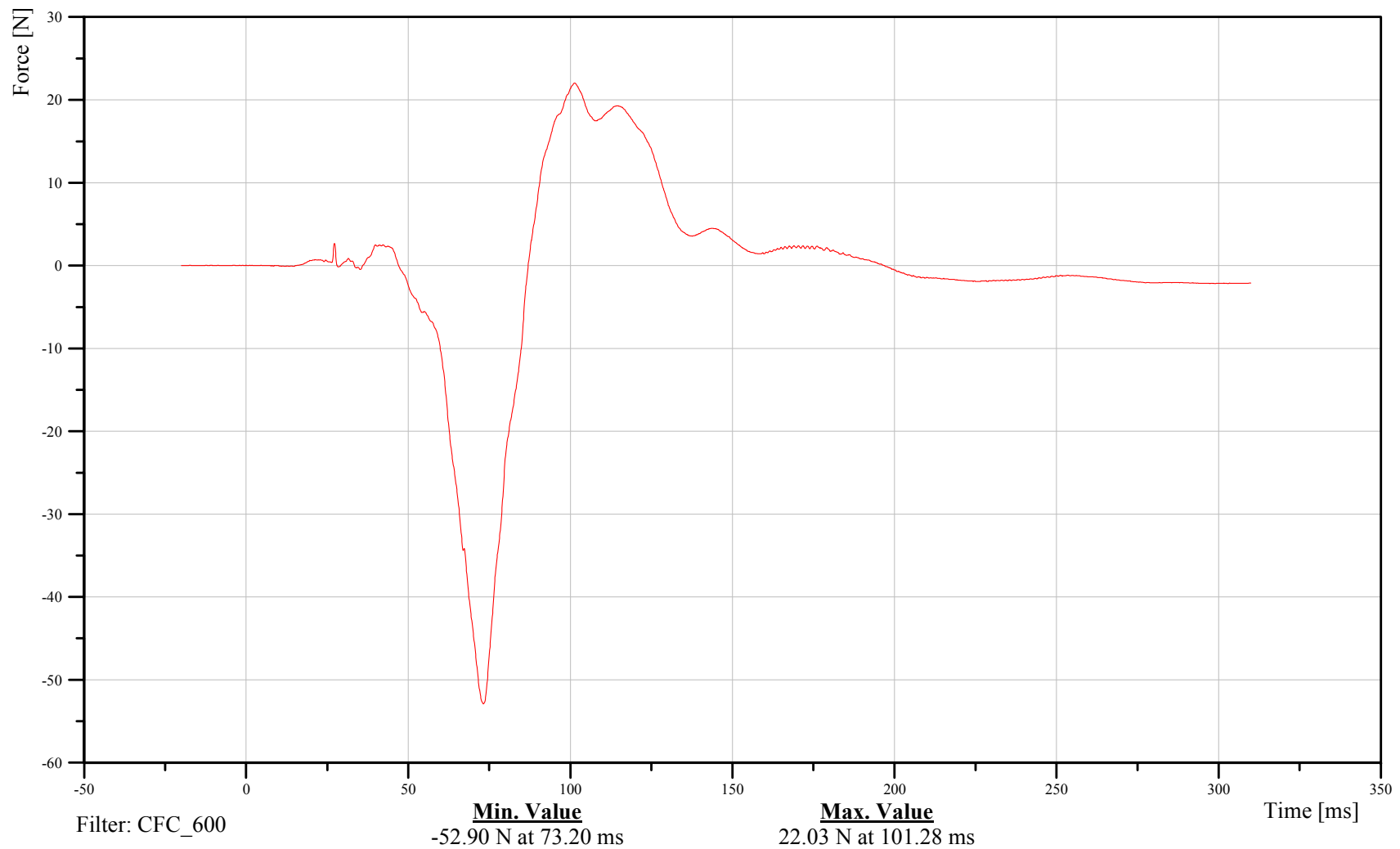
Neck Moment Y

Customer: VRTC

14NECKUP00S2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

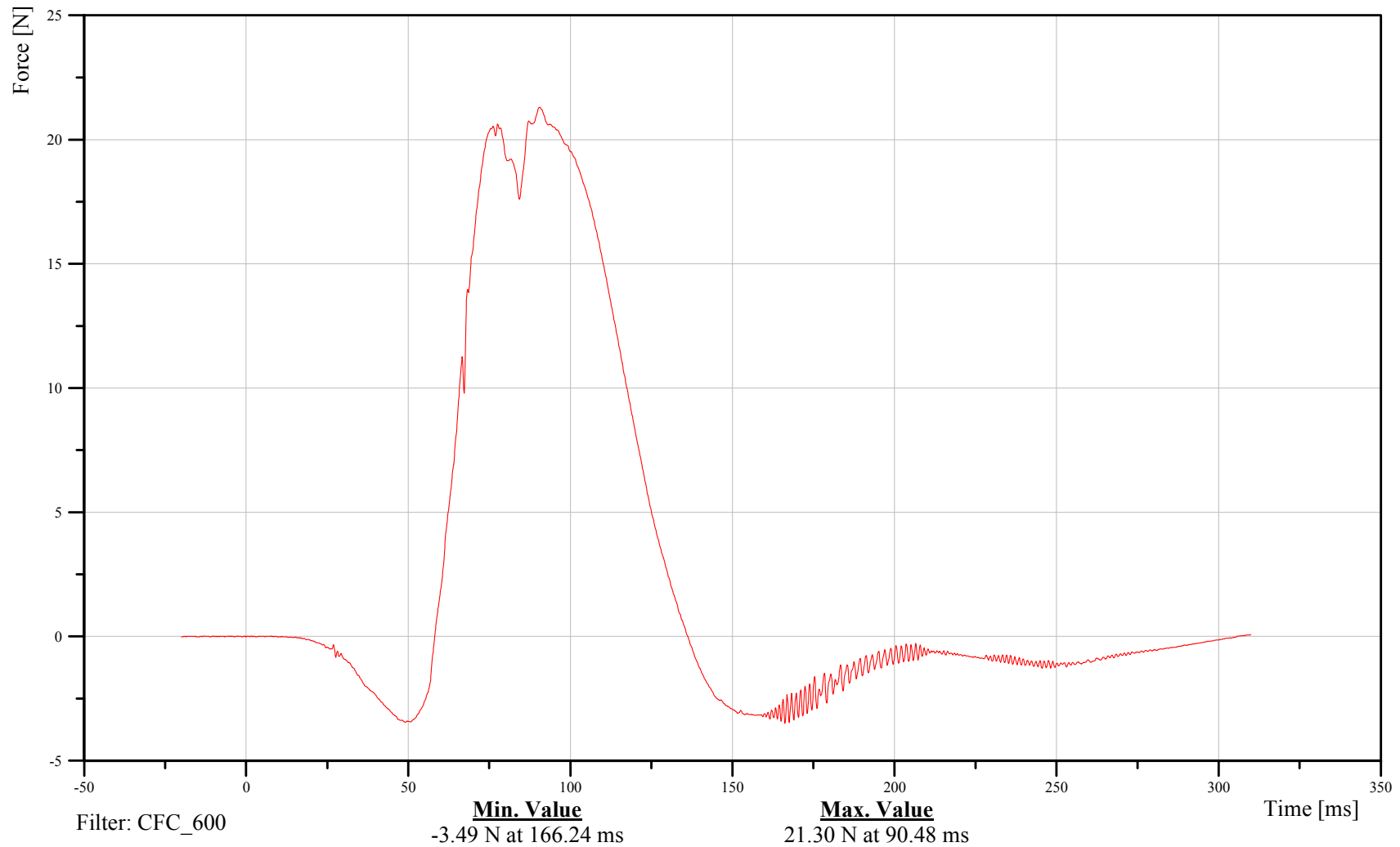
Neck Moment Z

Customer: VRTC

14NECKUP00S2MOZB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Shoulder Accel X

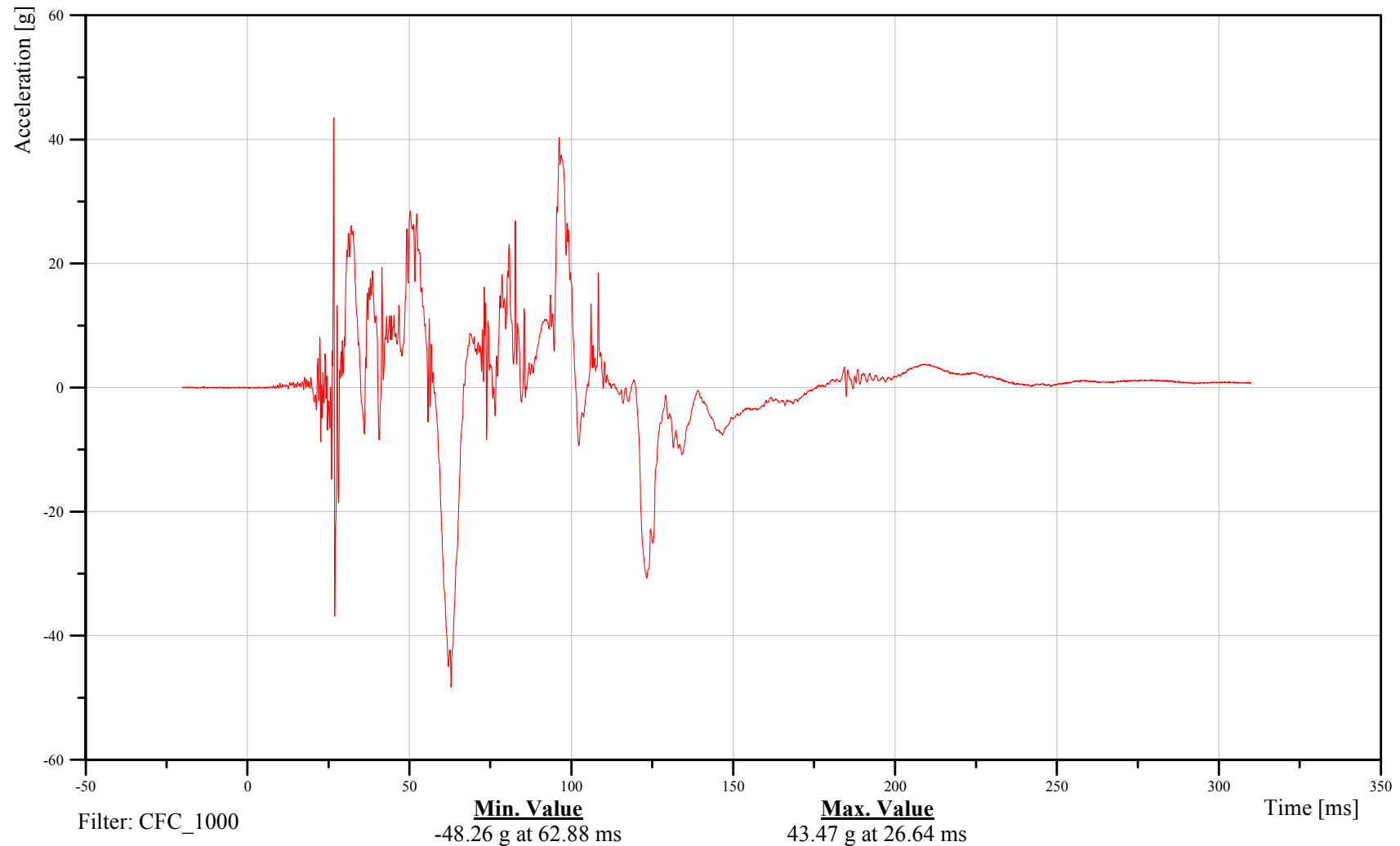
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14SHLDLE00S2ACXA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

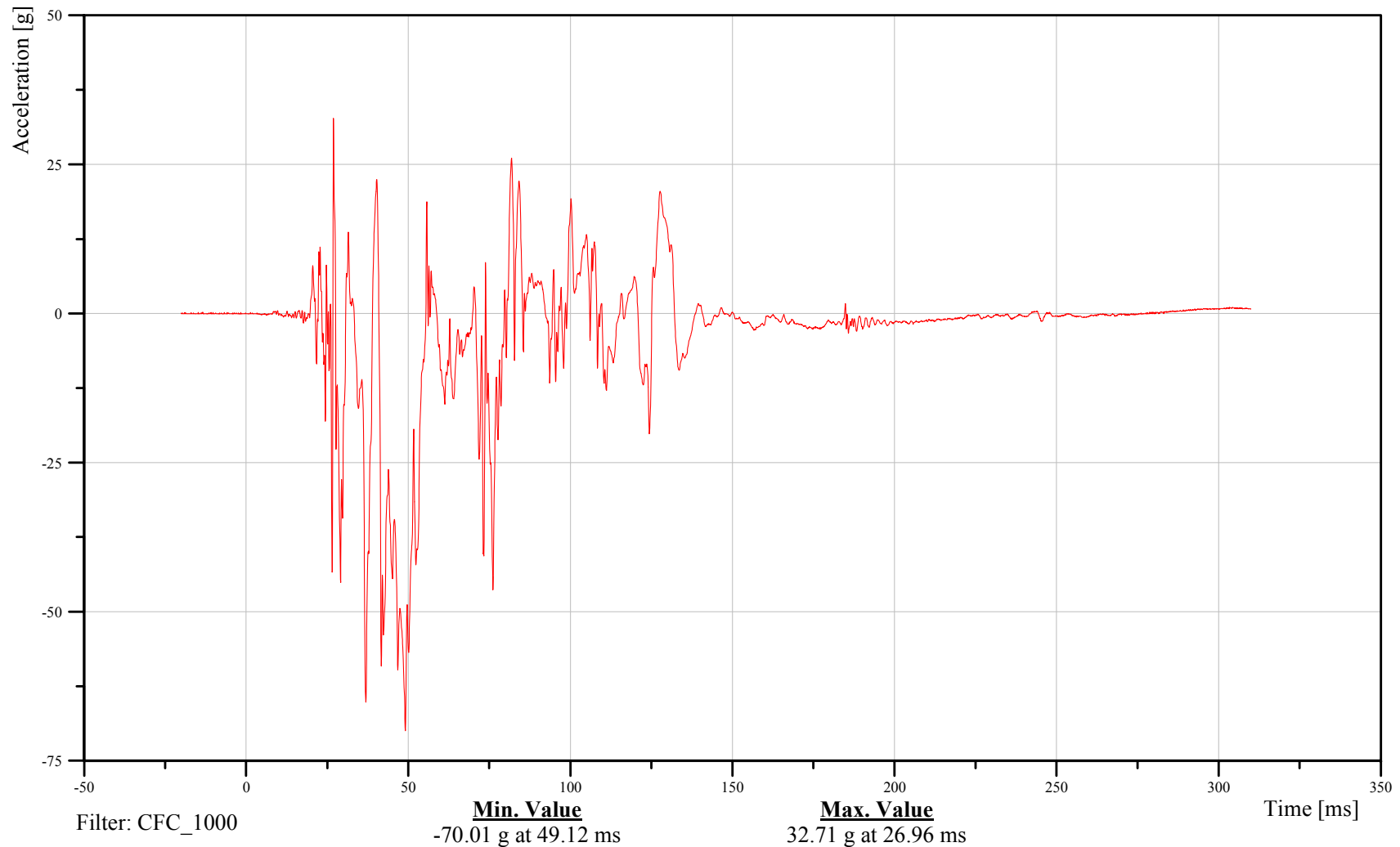
Shoulder Accel Y

Customer: VRTC

14SHLDLE00S2ACYA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

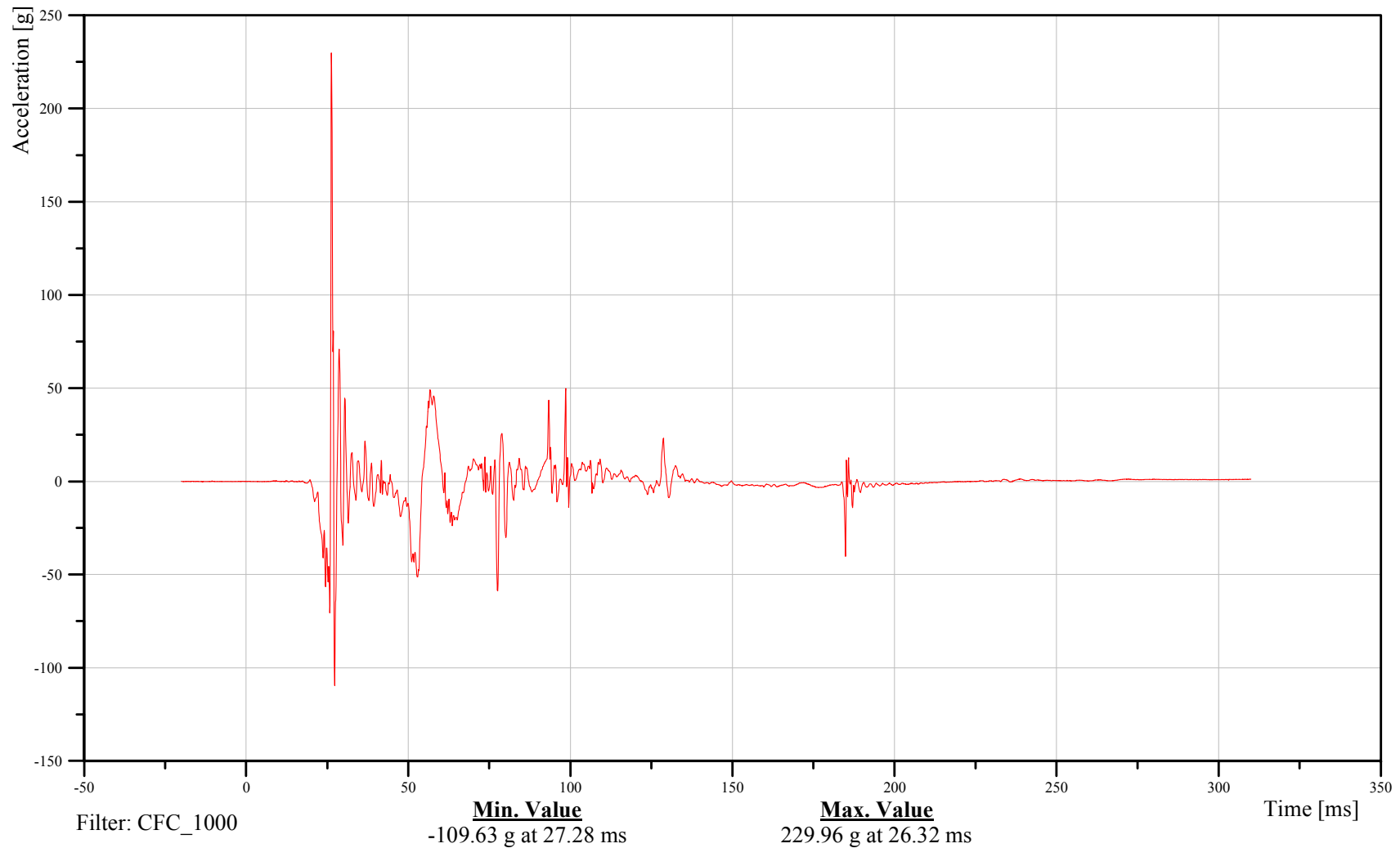
Shoulder Accel Z

Customer: VRTC

14SHLDLE00S2ACZA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

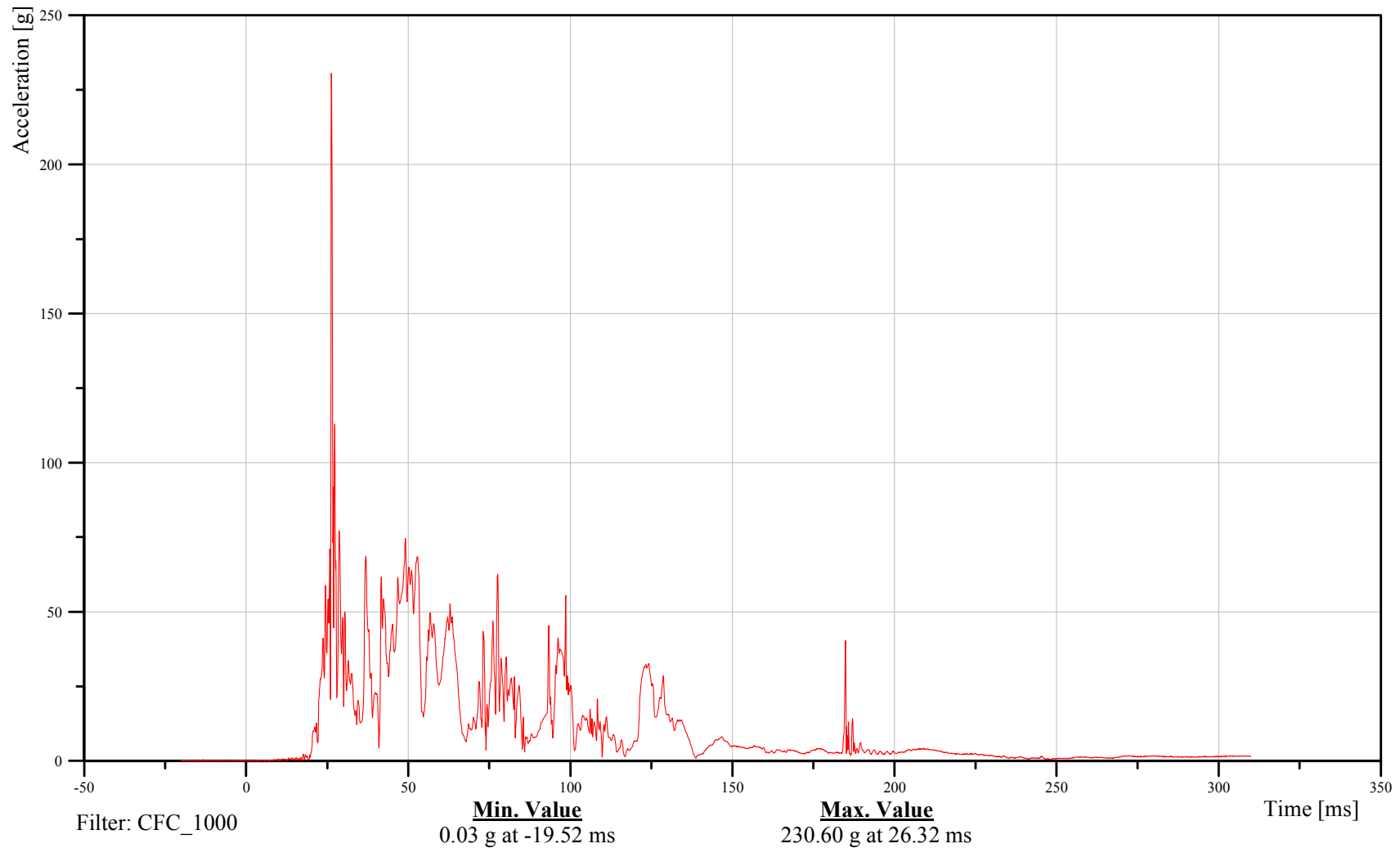
Shoulder Accel Resultant

Customer: VRTC

14SHLDLE00S2ACRA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

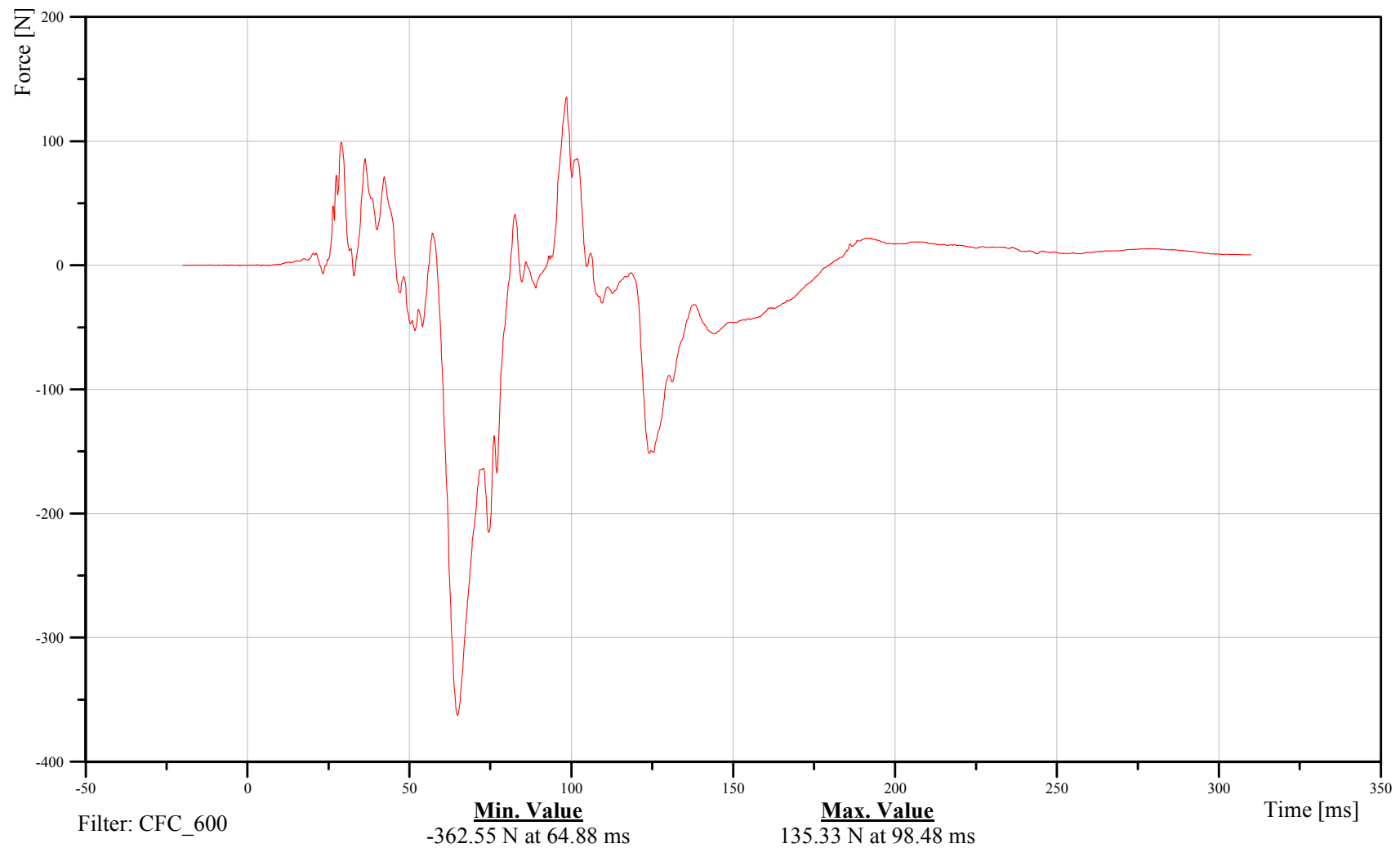
Shoulder Force X

Customer: VRTC

14SHLDLE00S2FOXB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

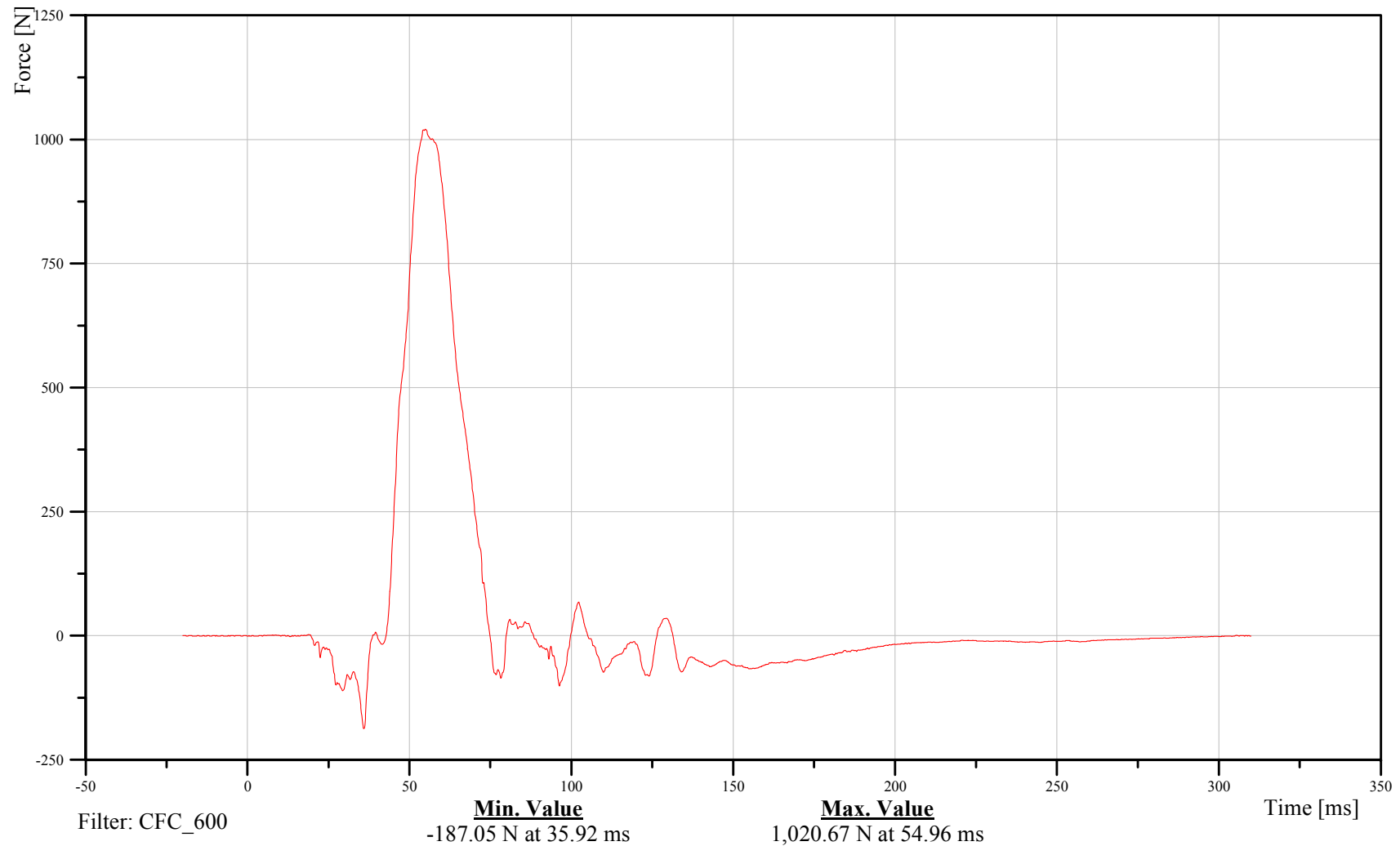
Shoulder Force Y

Customer: VRTC

14SHLDLE00S2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

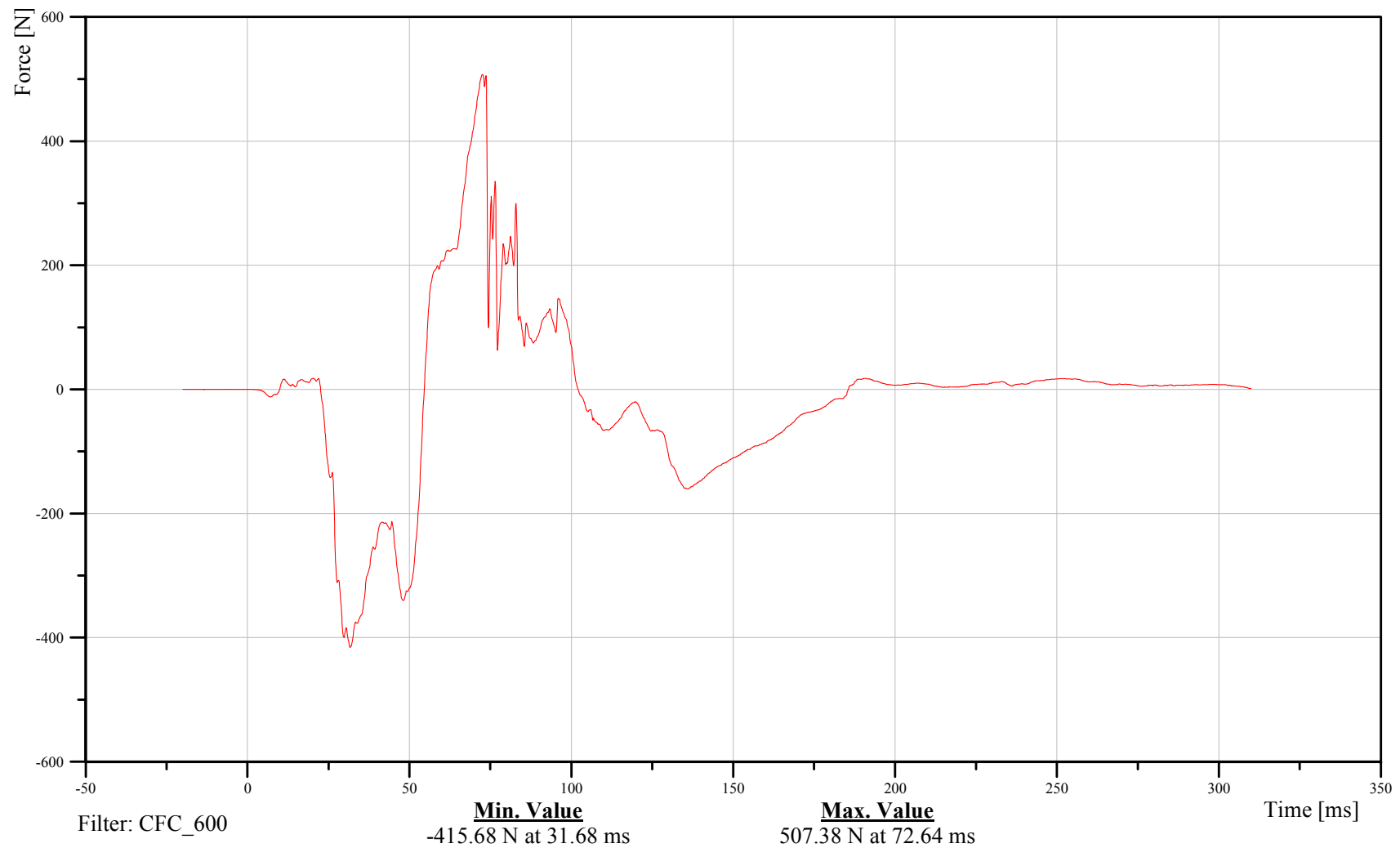
Shoulder Force Z

Customer: VRTC

14SHLDLE00S2FOZB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

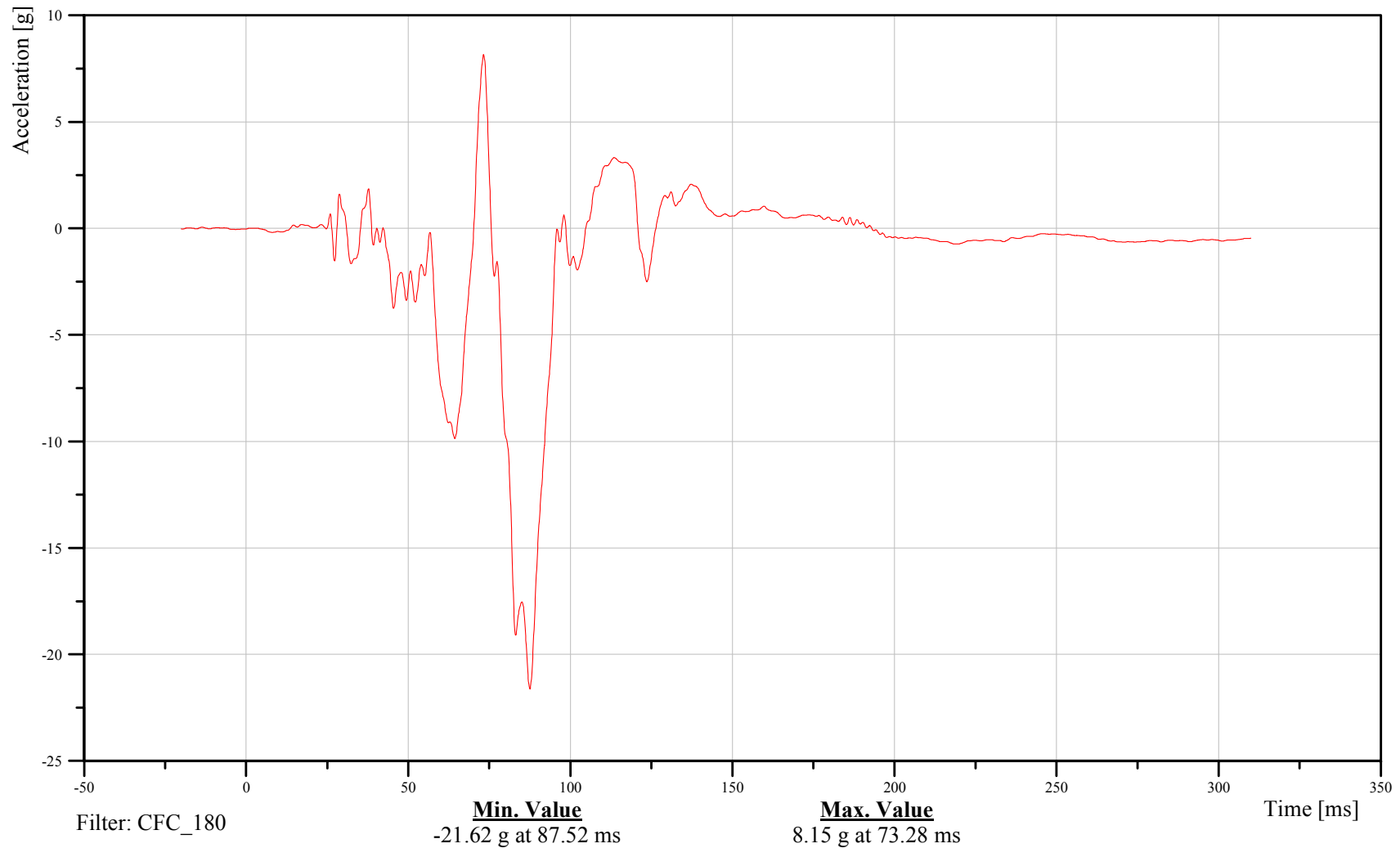
Upper Spine Accel X

Customer: VRTC

14SPIN0100S2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

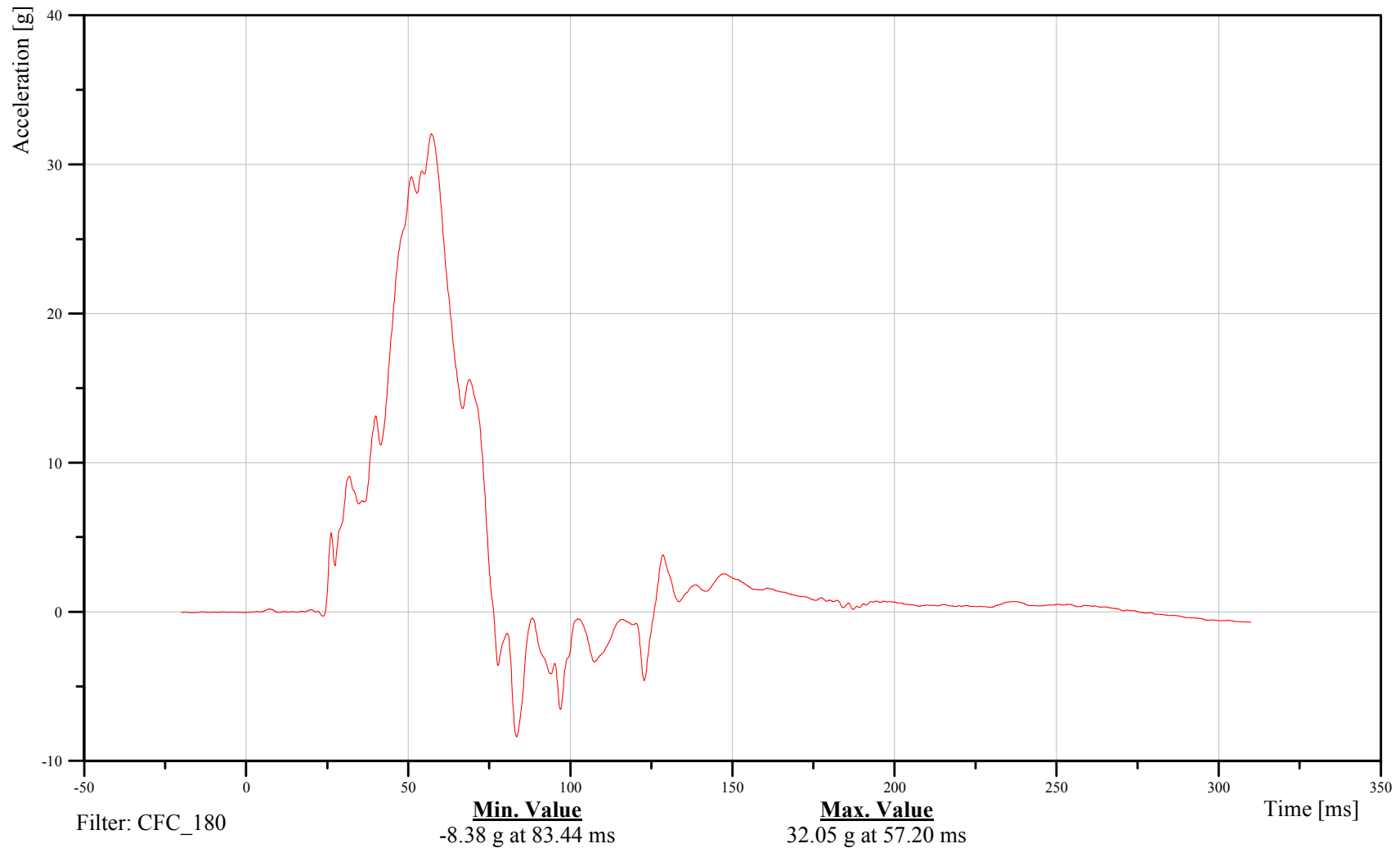
Upper Spine Accel Y

Customer: VRTC

14SPIN0100S2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

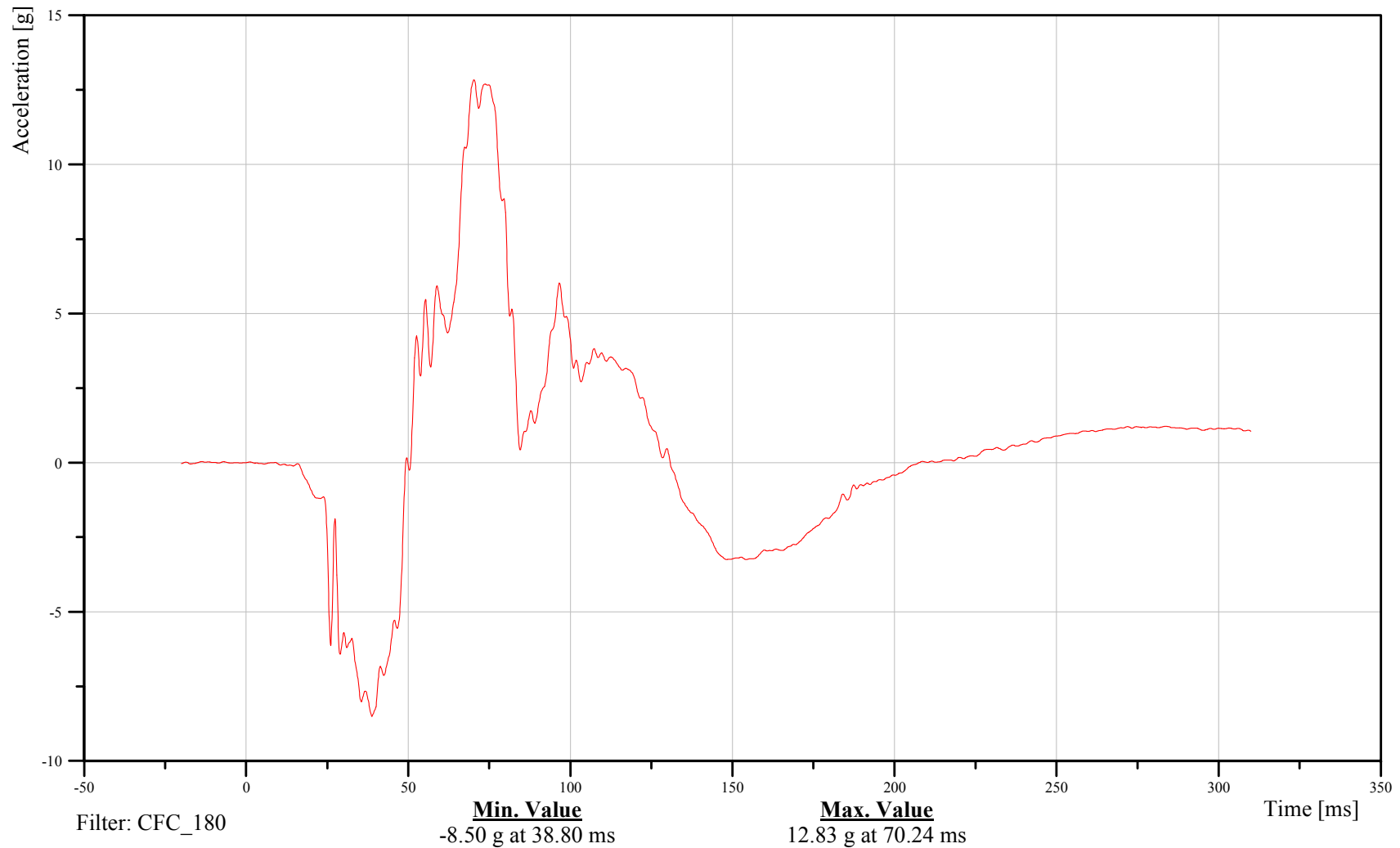
Upper Spine Accel Z

Customer: VRTC

14SPIN0100S2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

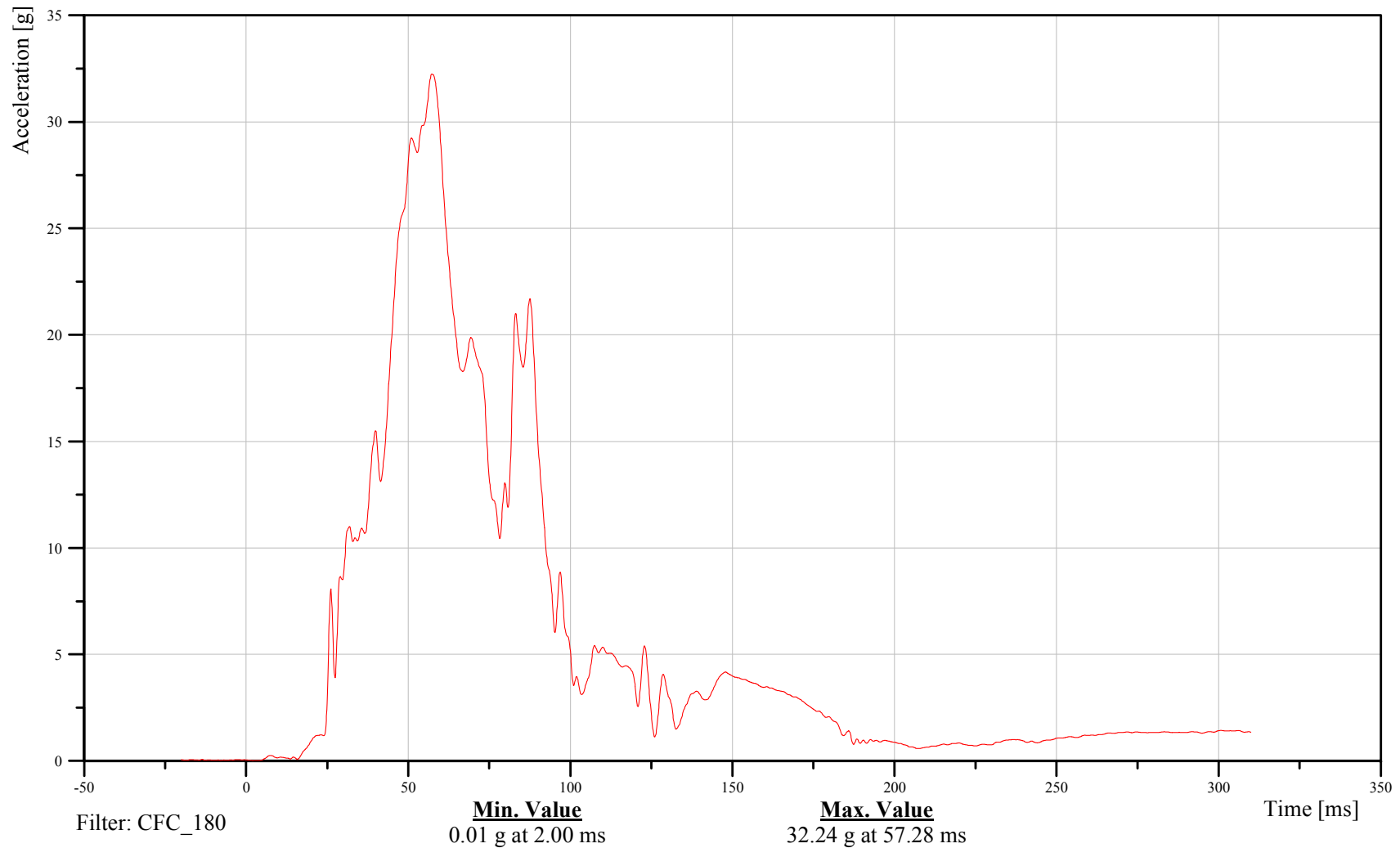
Upper Spine Resultant

Customer: VRTC

14SPIN0100S2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Spine Rib 1 Accel X

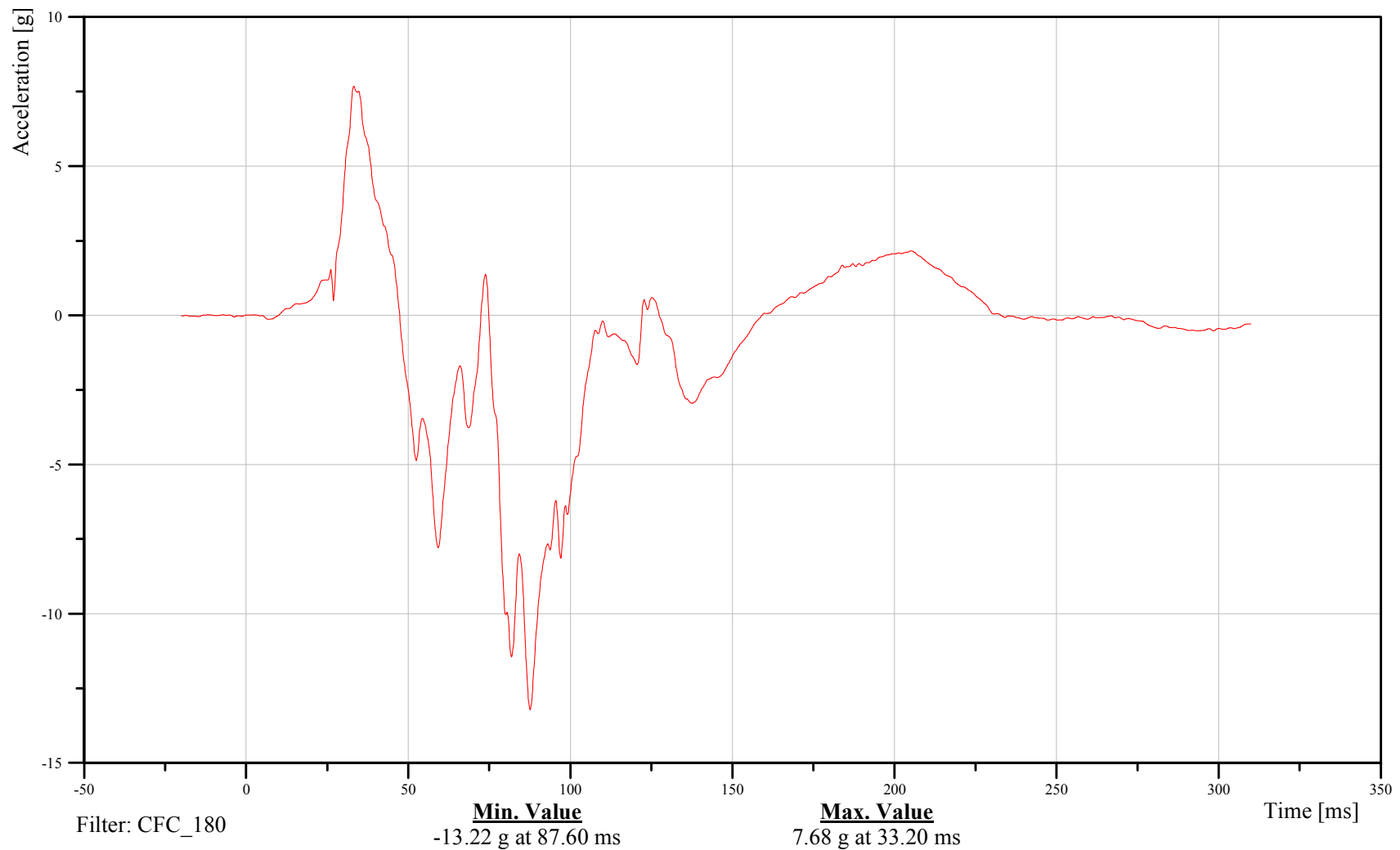
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14THSP01RIS2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Spine Rib 1 Accel Y

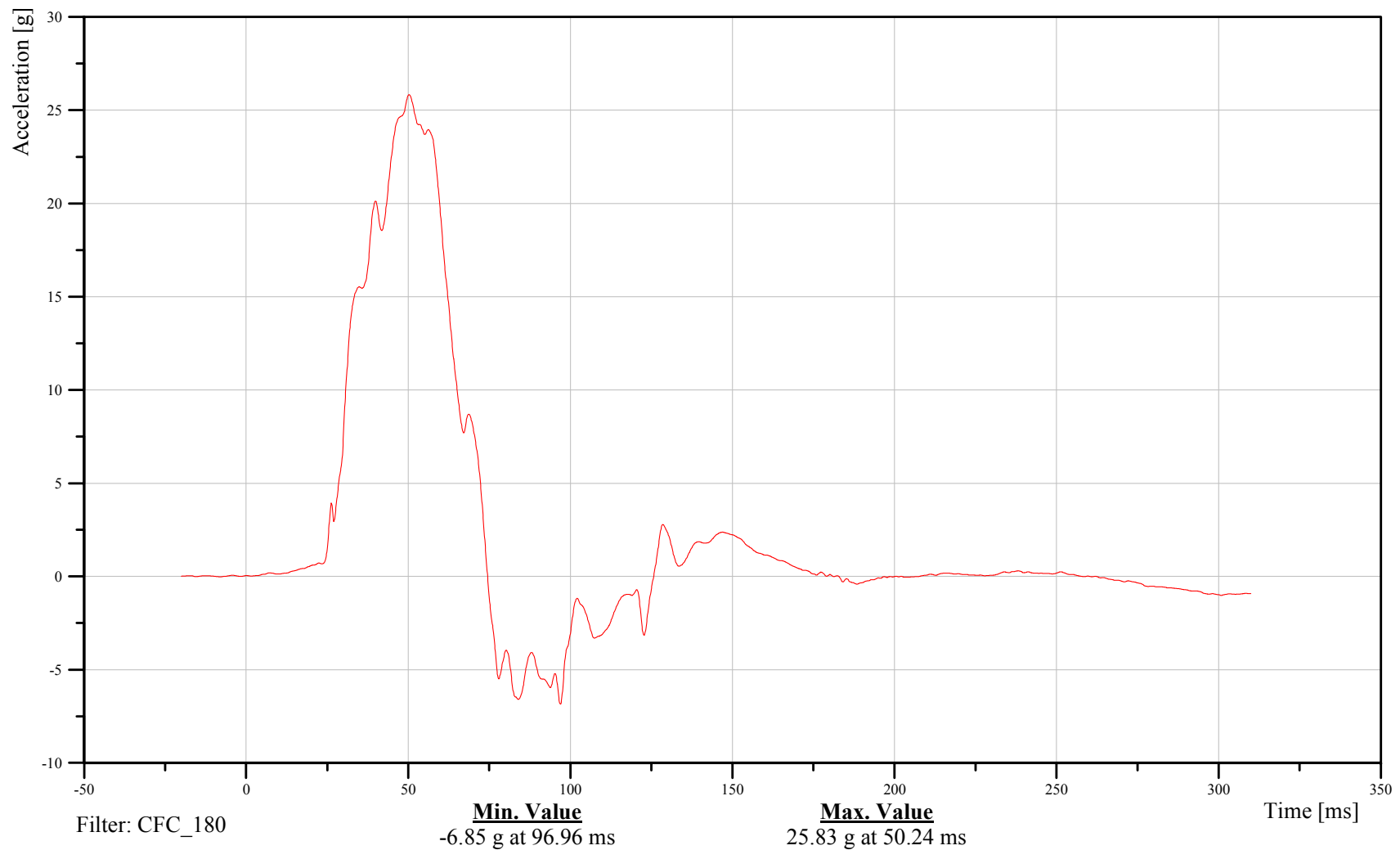
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14THSP01RIS2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

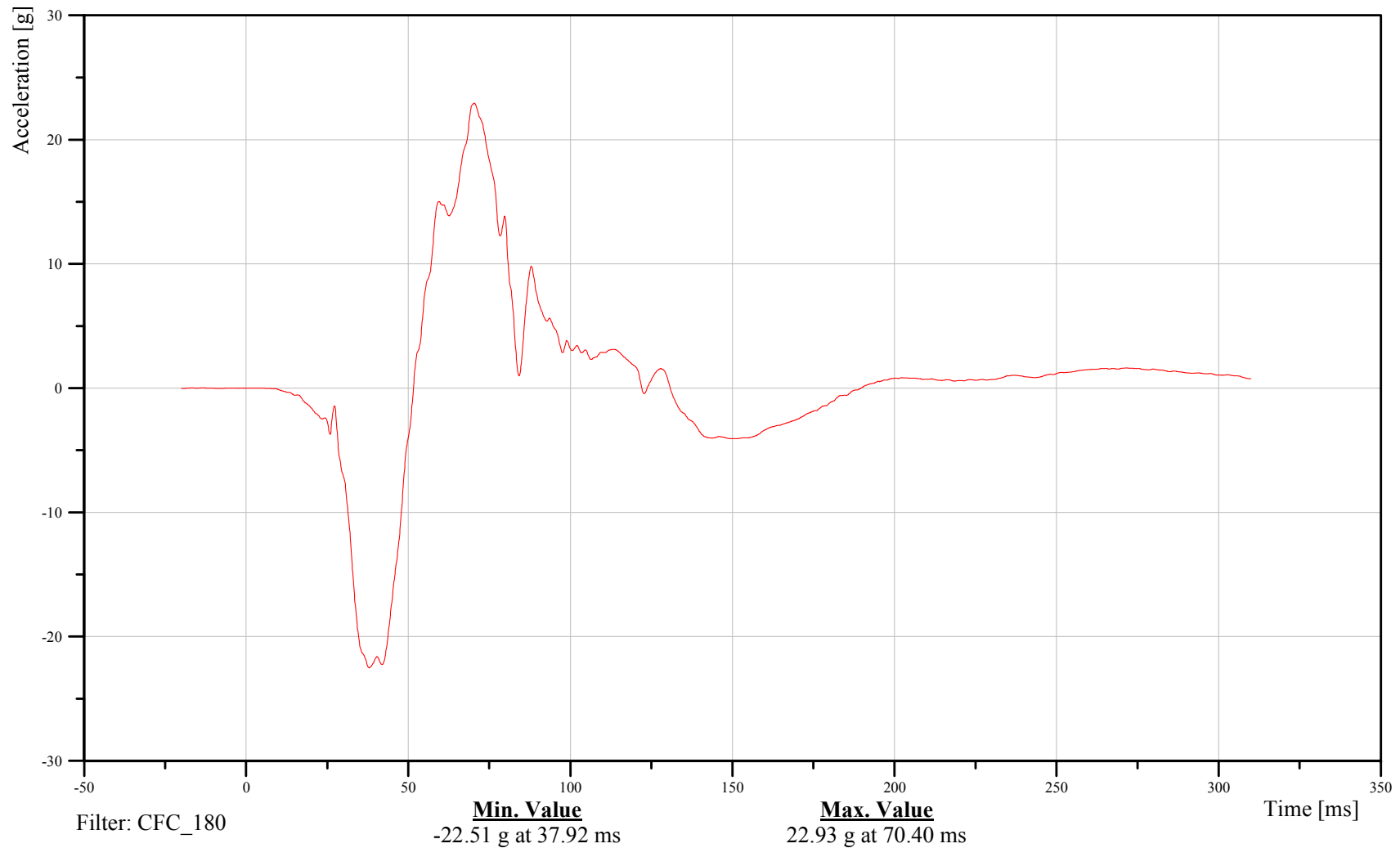
Spine Rib 1 Accel Z

Customer: VRTC

14THSP01RIS2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

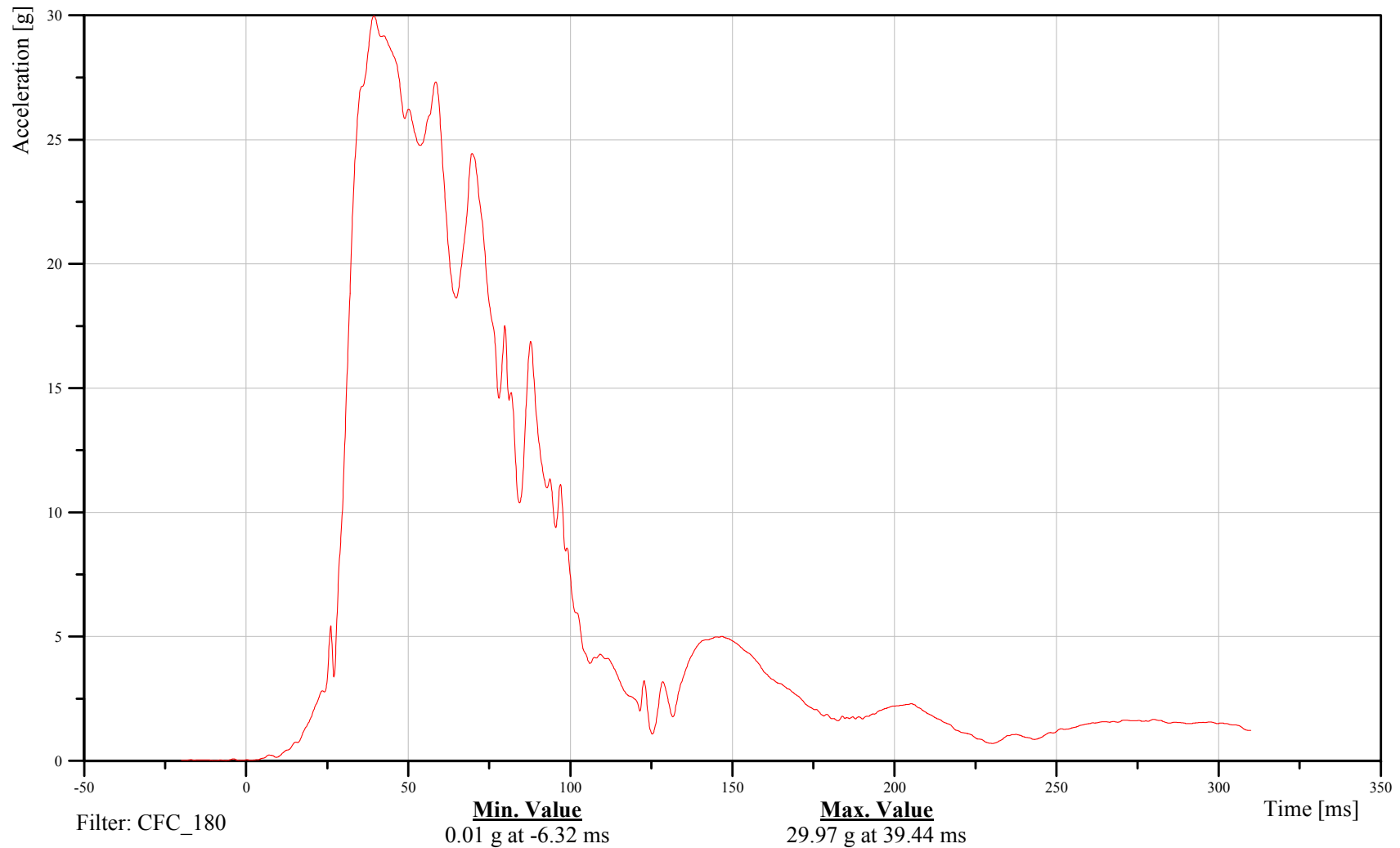
Spine Rib 1 Accel Resultant

Customer: VRTC

14THSP01RIS2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Spine Rib 2 Accel X

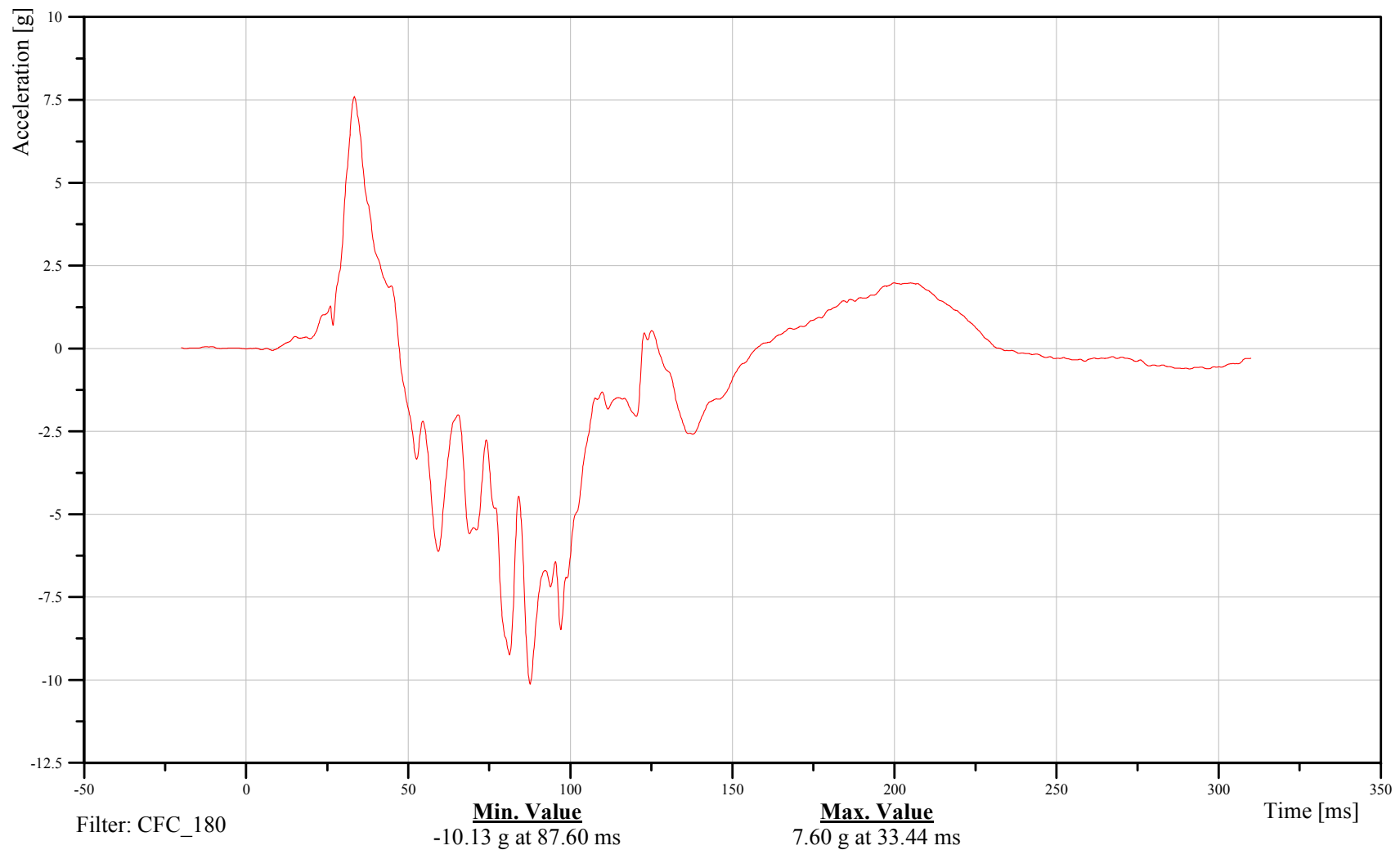
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14THSP02RIS2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Spine Rib 2 Accel Y

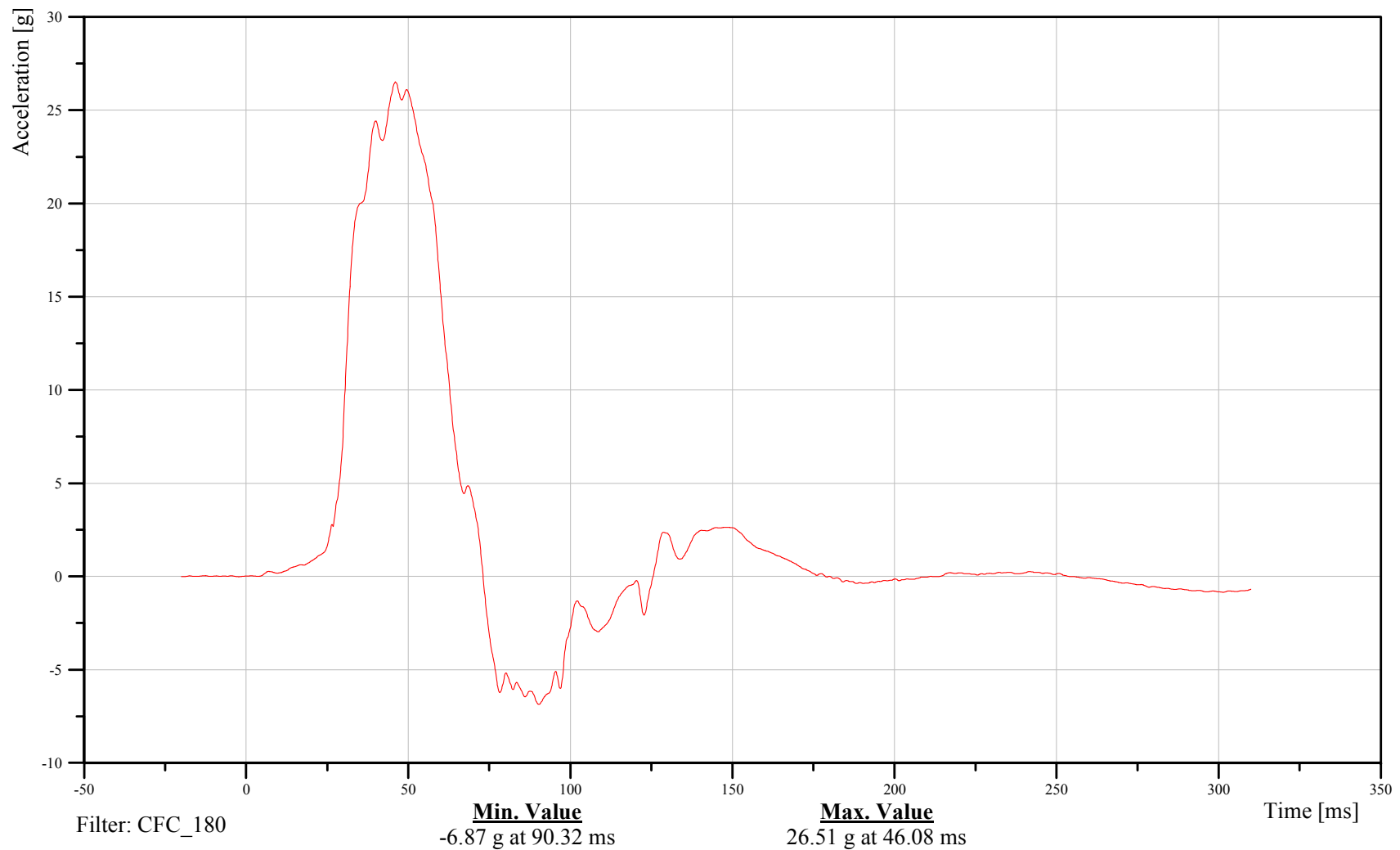
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14THSP02RIS2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

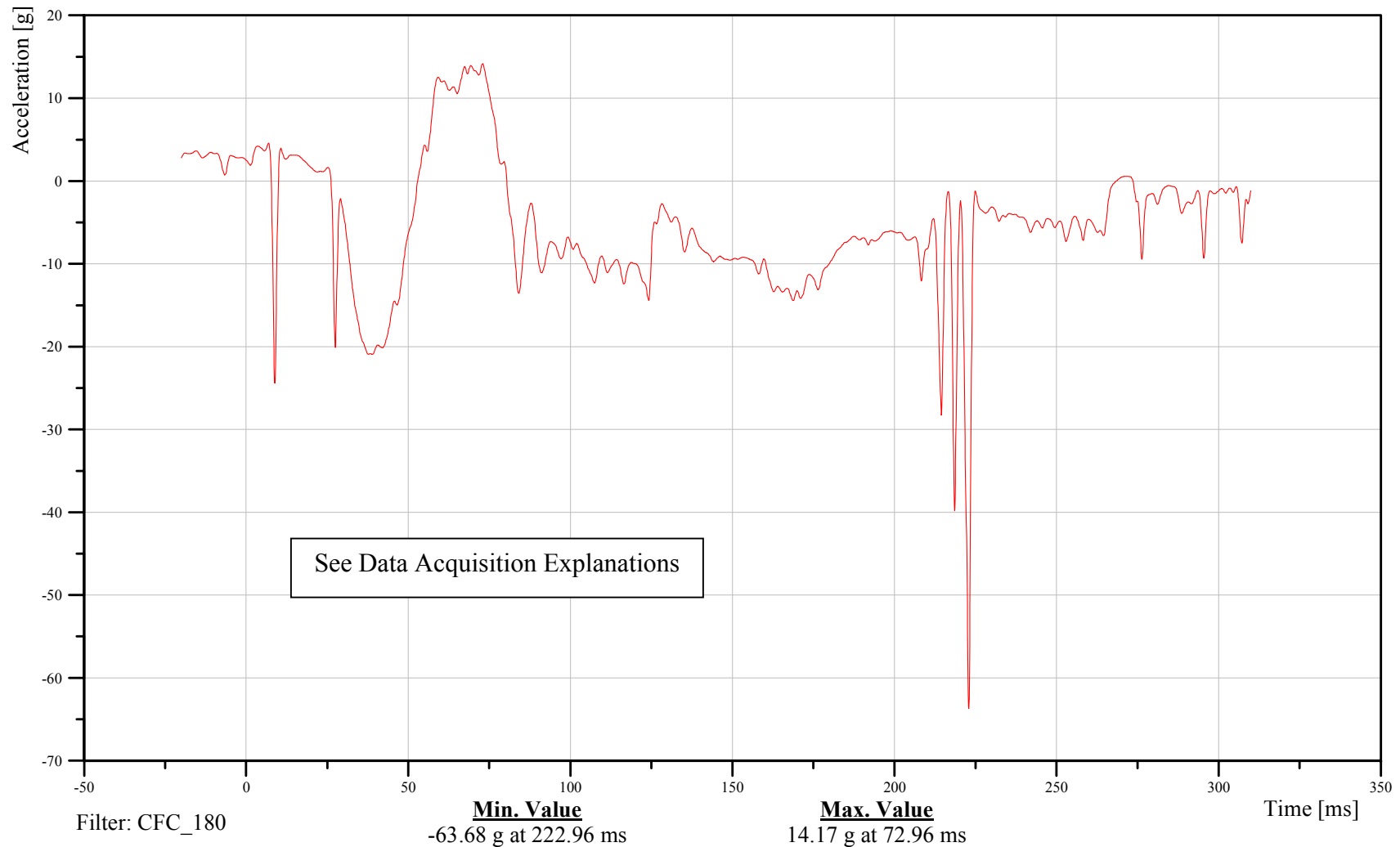
Spine Rib 2 Accel Z

Customer: VRTC

14THSP02RIS2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

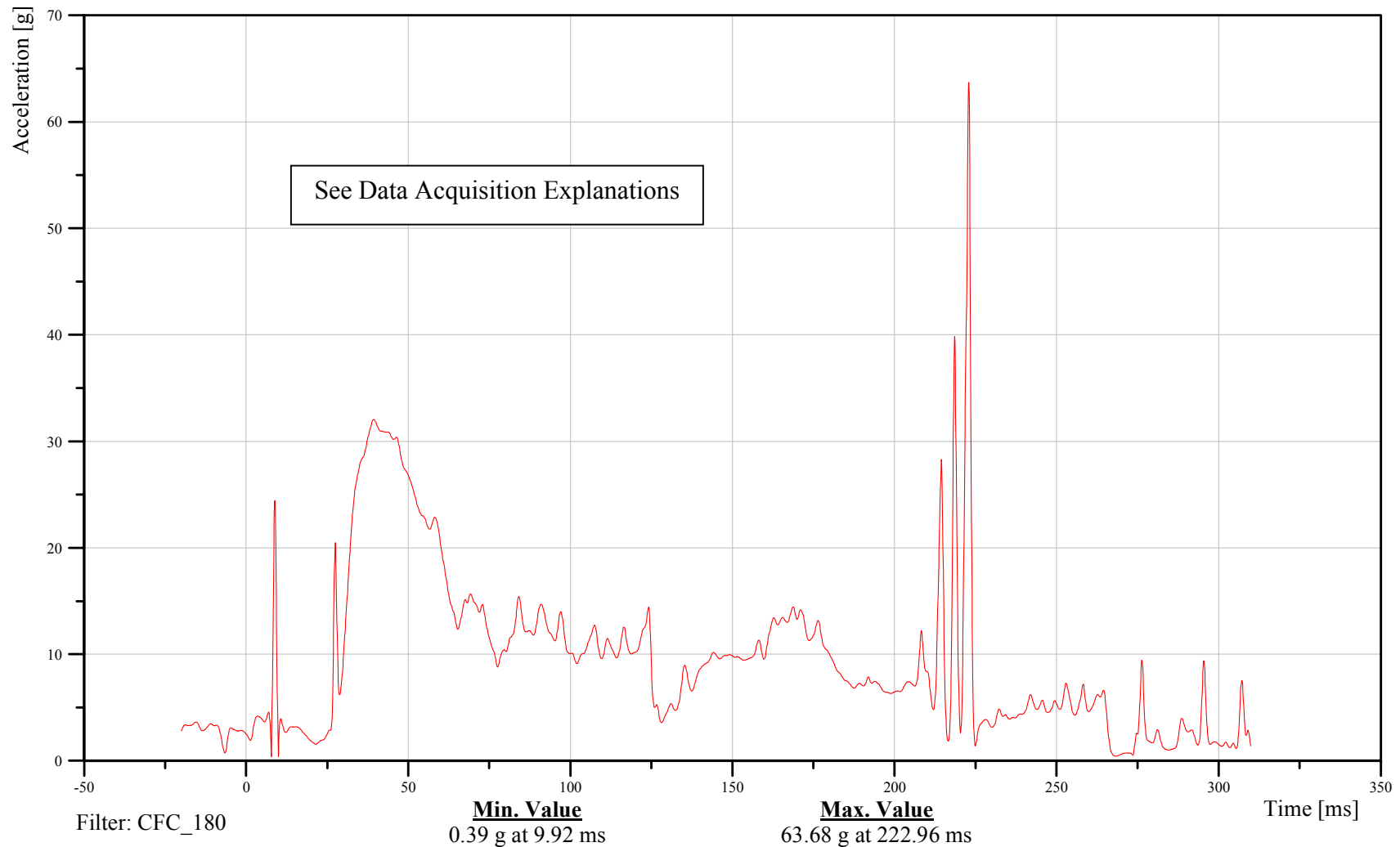
Spine Rib 2 Accel Resultant

Customer: VRTC

14THSP02RIS2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Spine Rib 3 Accel X

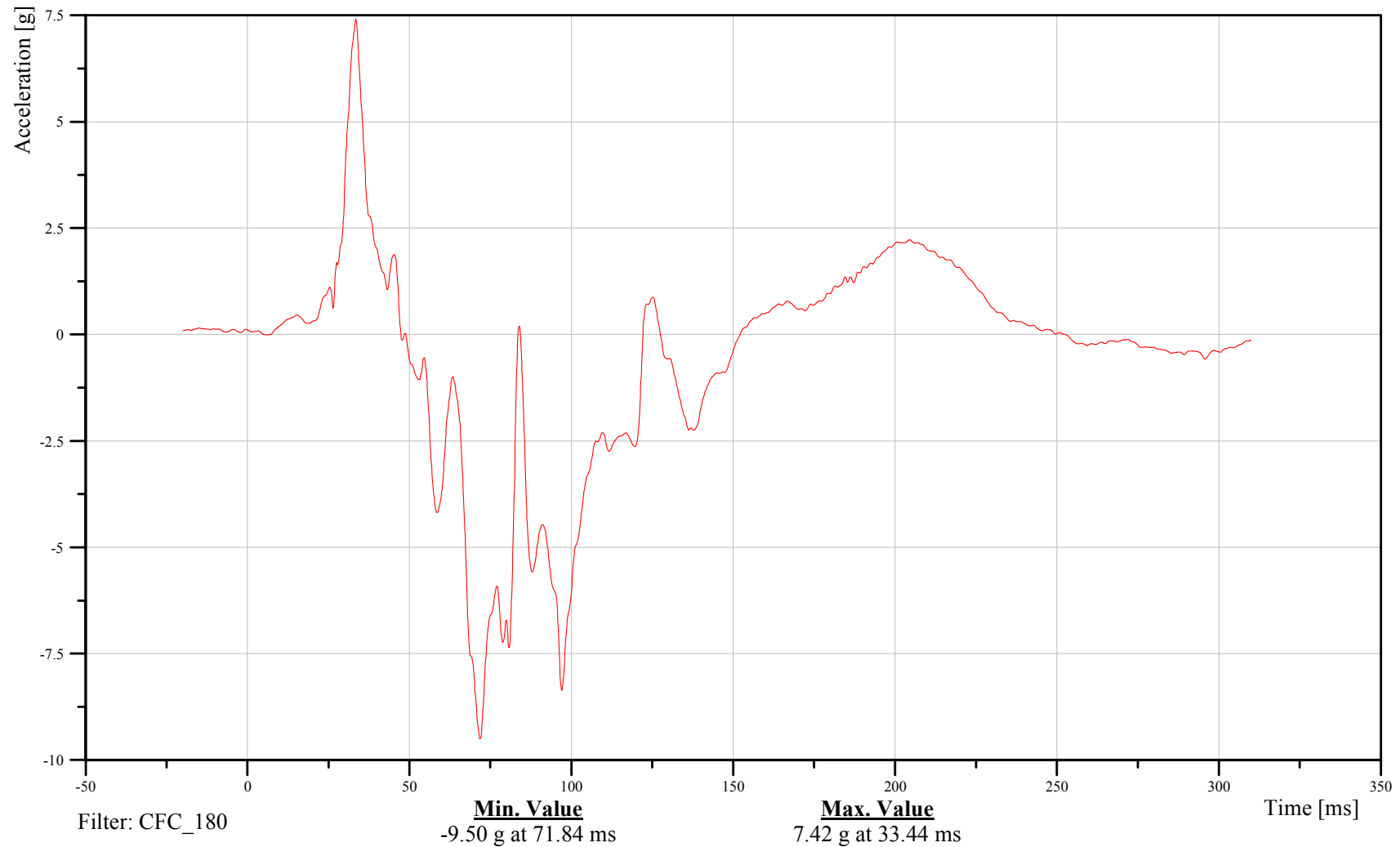
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14THSP03RIS2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Spine Rib 3 Accel Y

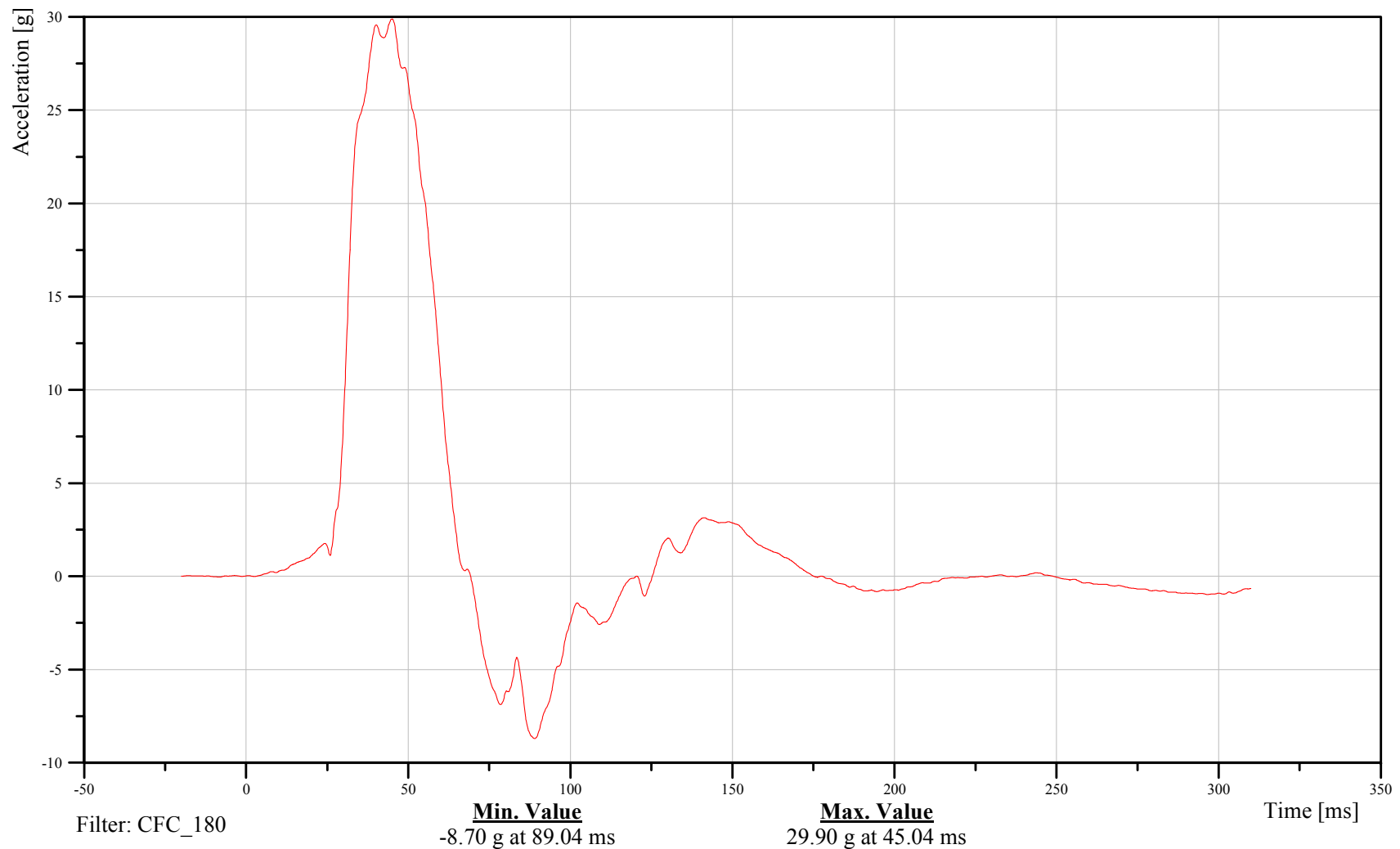
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14THSP03RIS2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

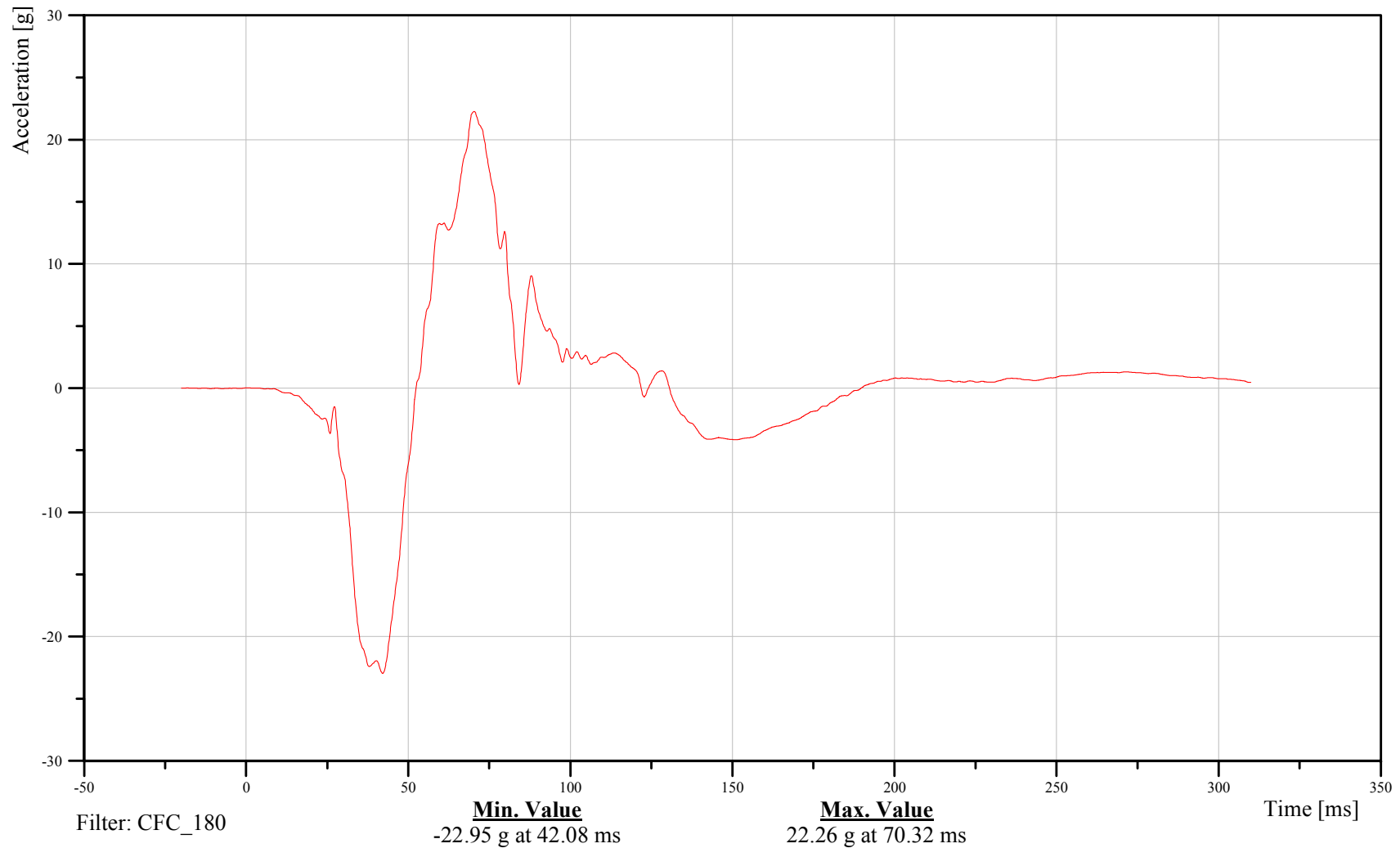
Spine Rib 3 Accel Z

Customer: VRTC

14THSP03RIS2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Spine Rib 3 Accel Resultant

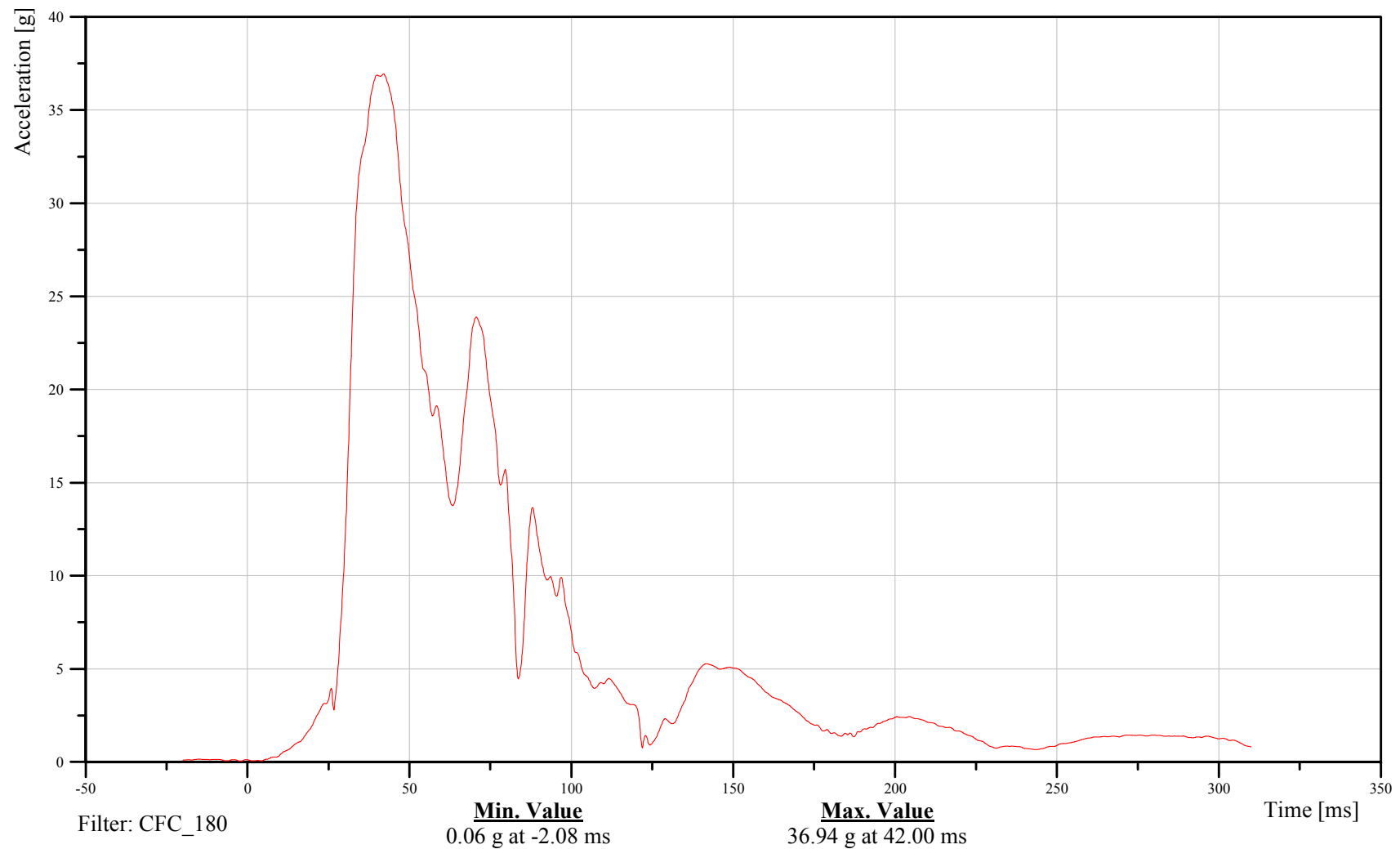
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14THSP03RIS2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

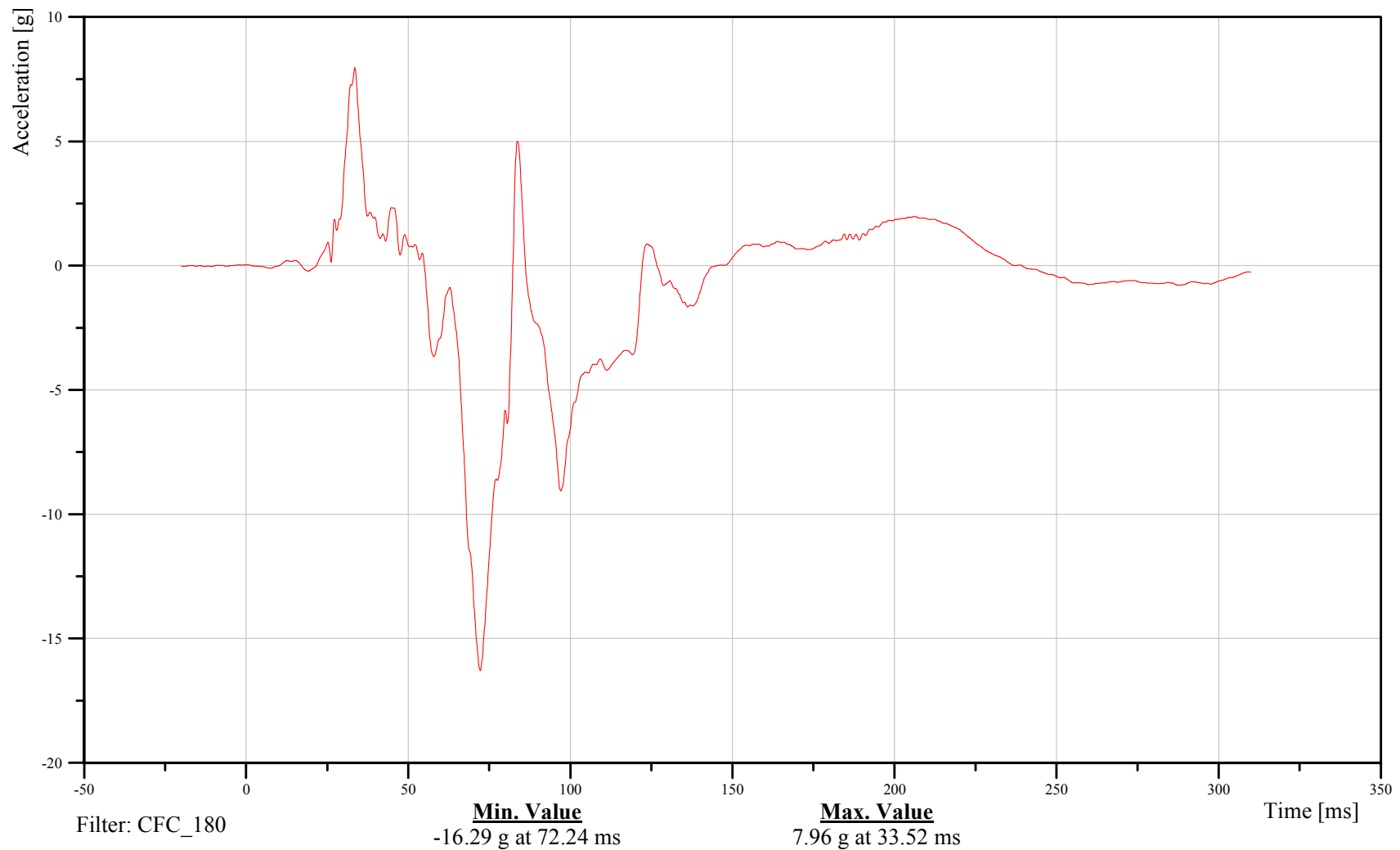
Lower Spine Accel X

Customer: VRTC

14SPIN1200S2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

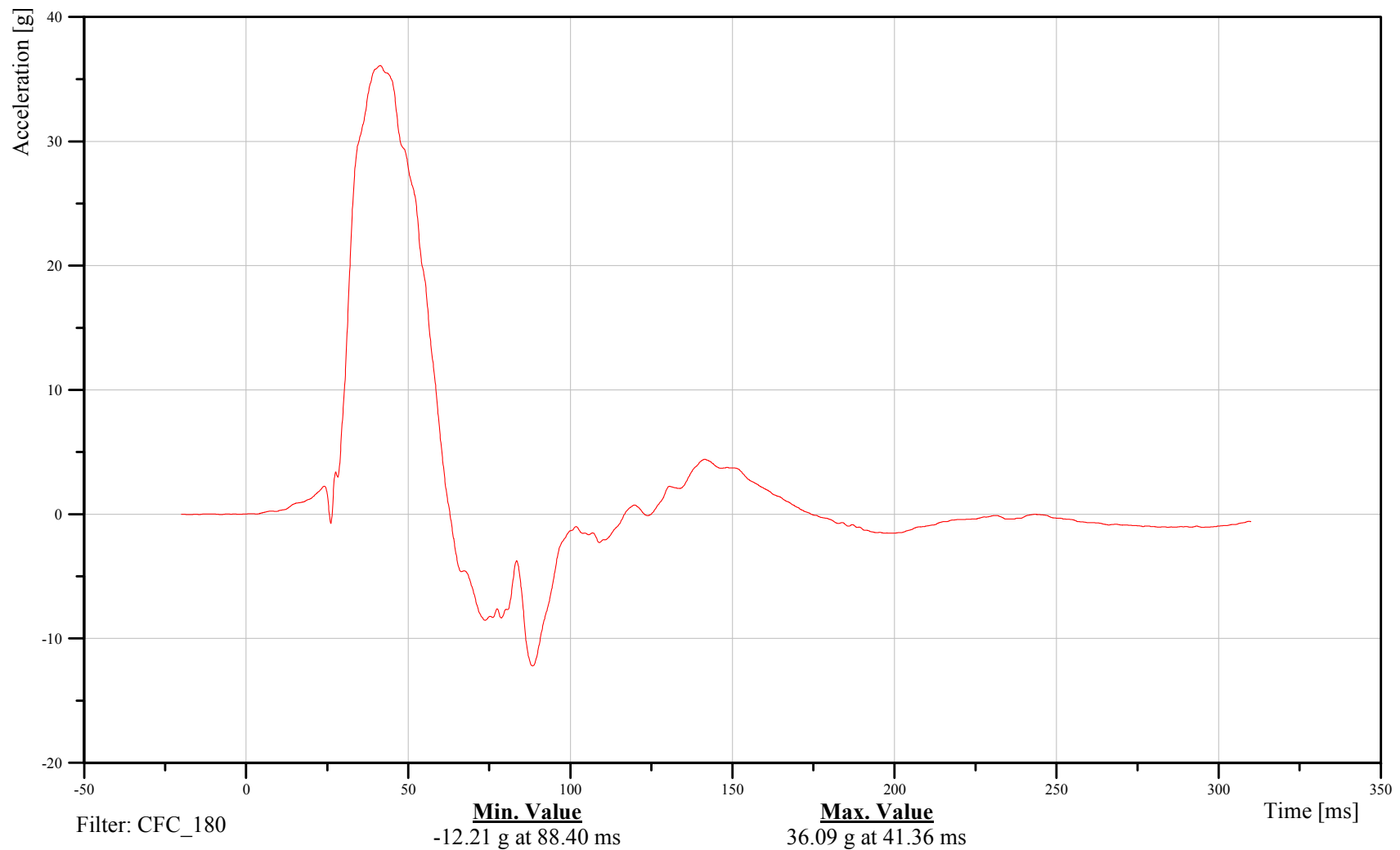
Lower Spine Accel Y

Customer: VRTC

14SPIN1200S2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

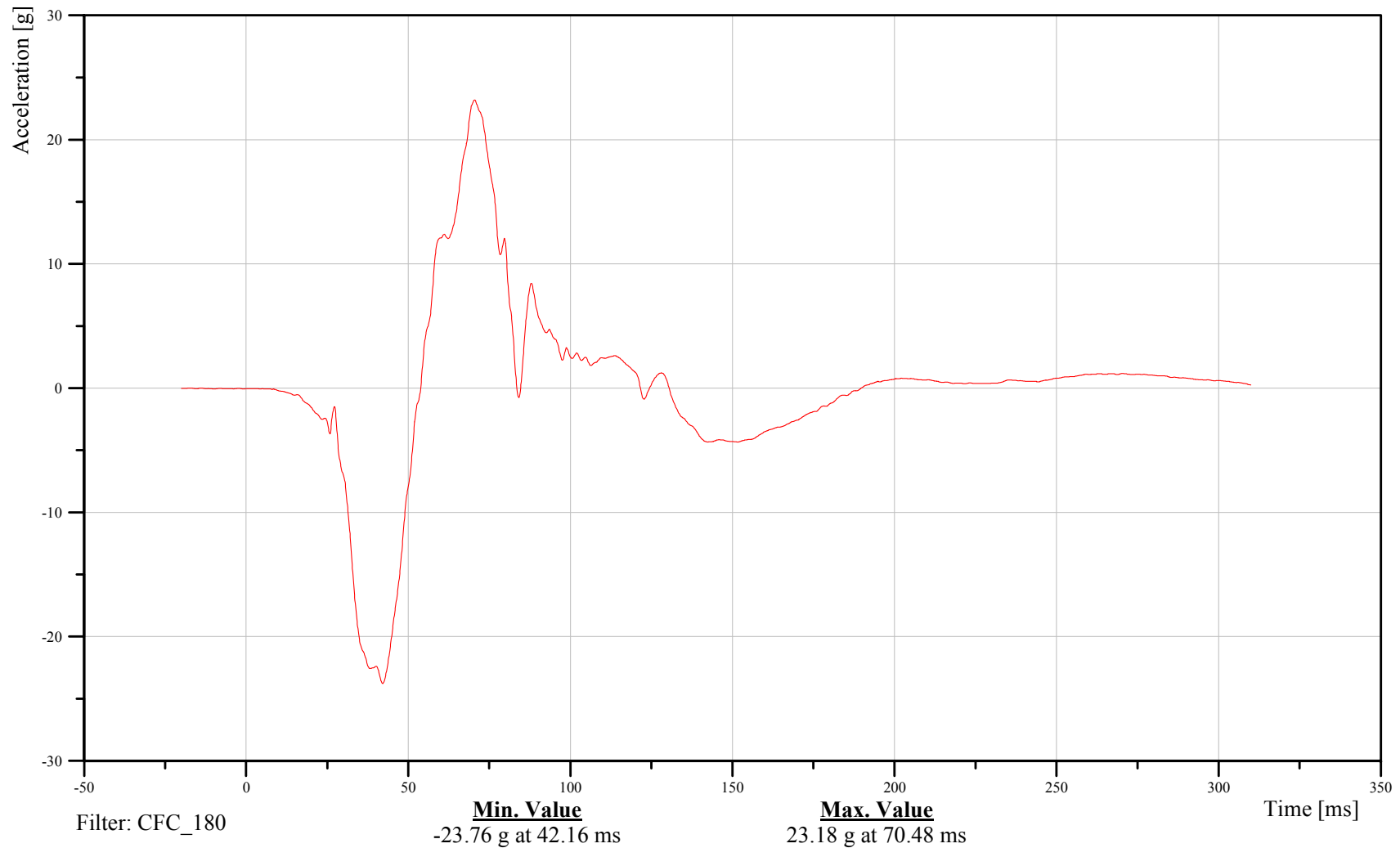
Lower Spine Accel Z

Customer: VRTC

14SPIN1200S2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

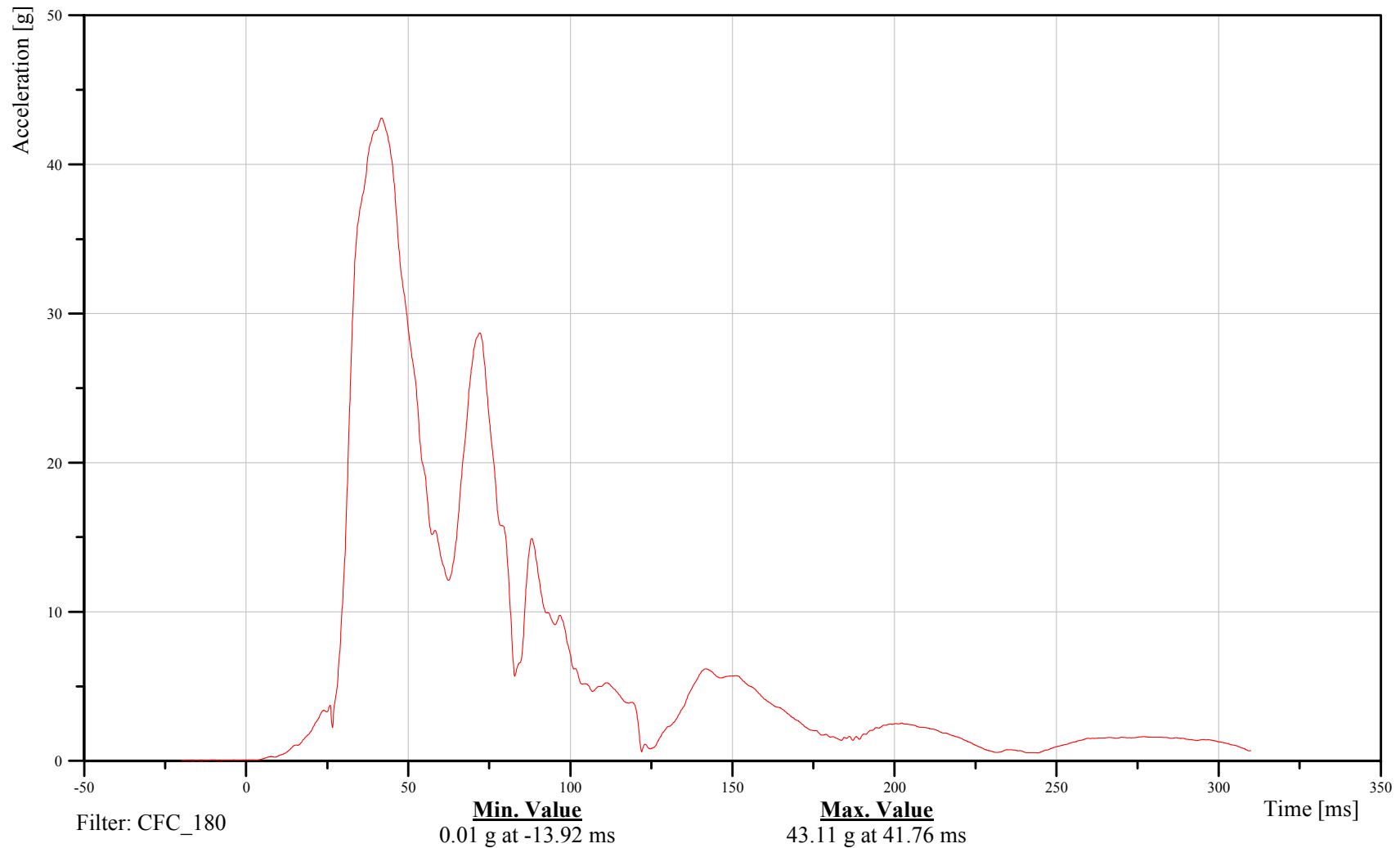
Lower Spine Accel Resultant

Customer: VRTC

14SPIN1200S2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Spine Rib 5 Accel X

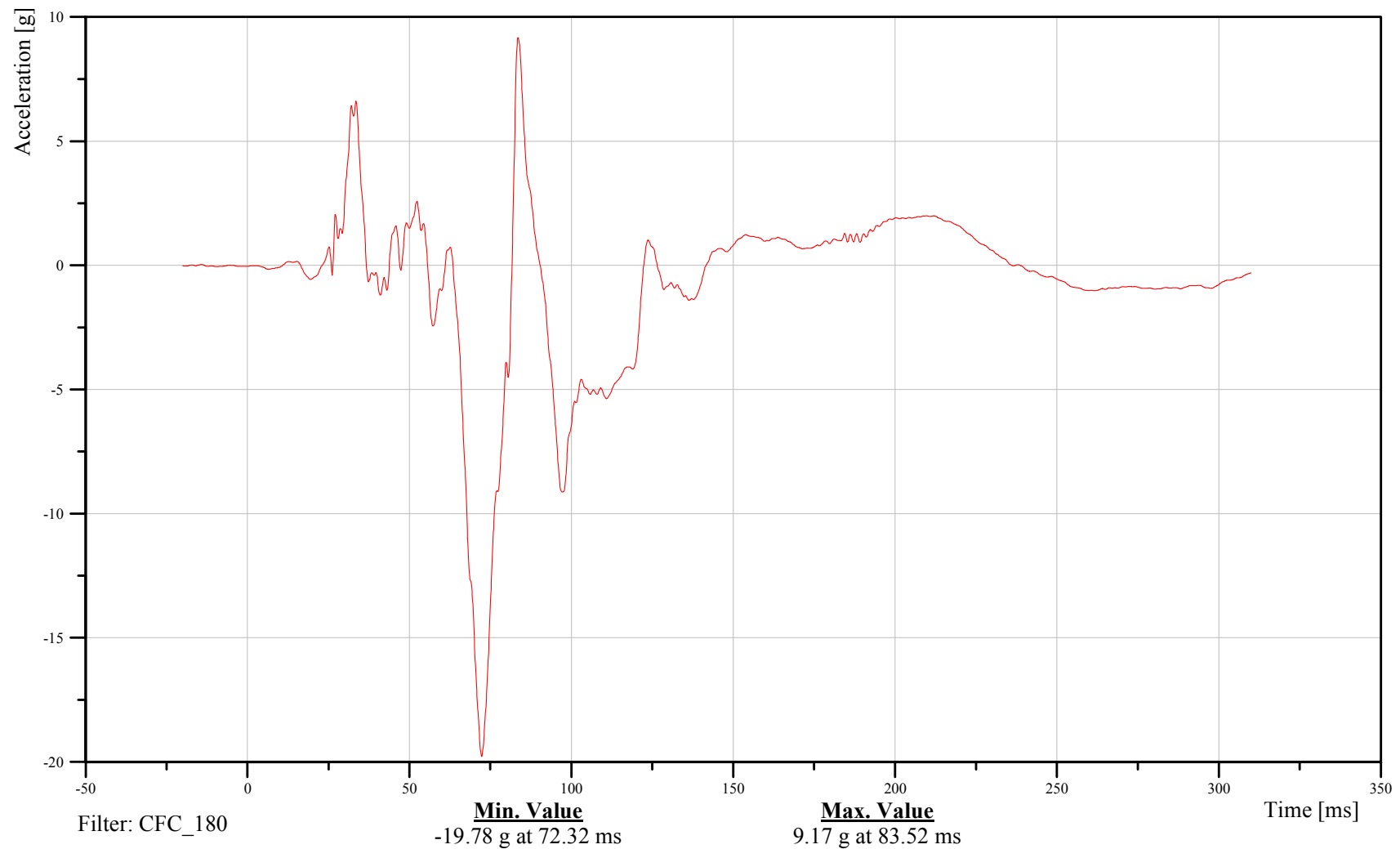
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14ABSP02RIS2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Spine Rib 5 Accel Y

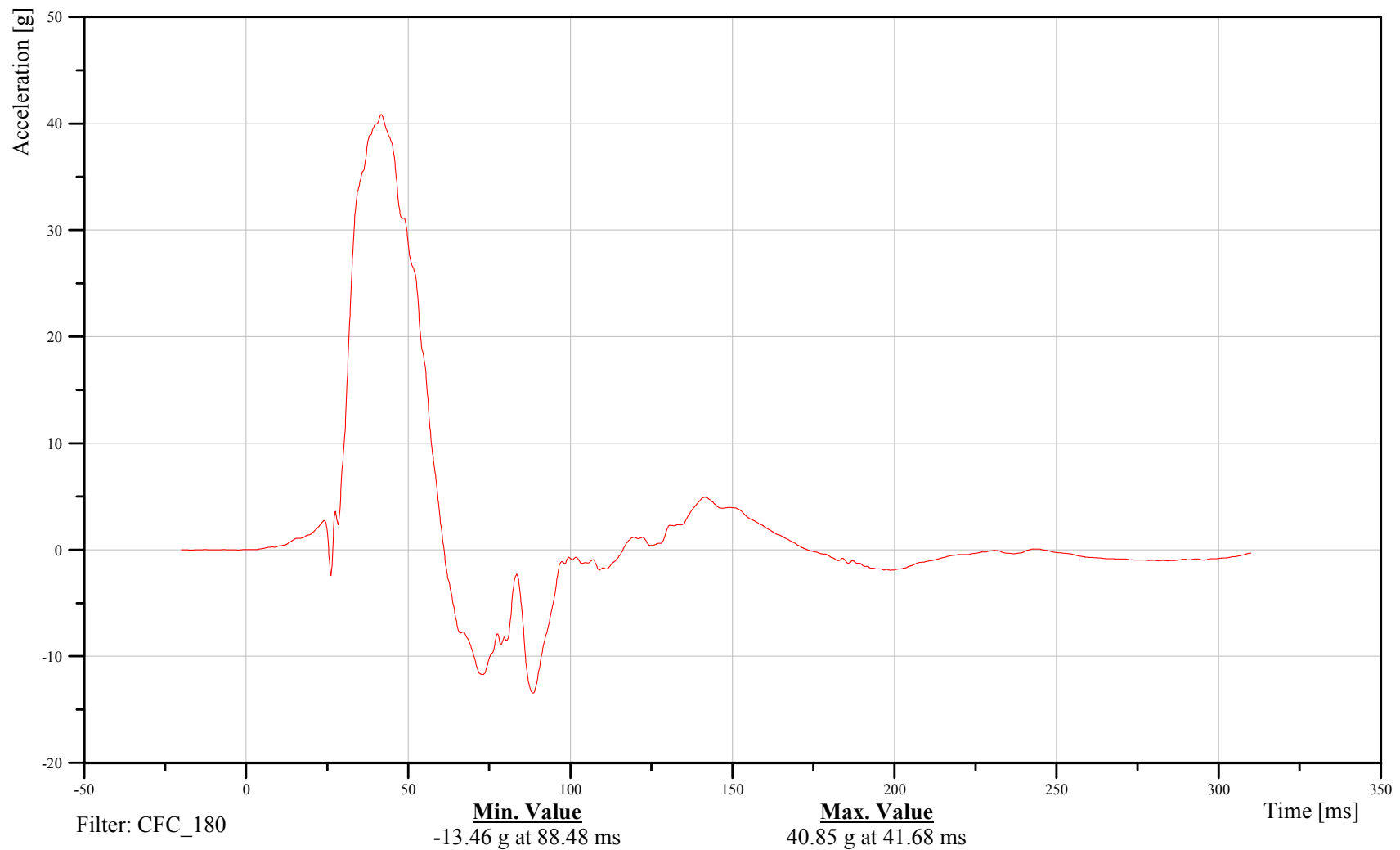
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14ABSP02RIS2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

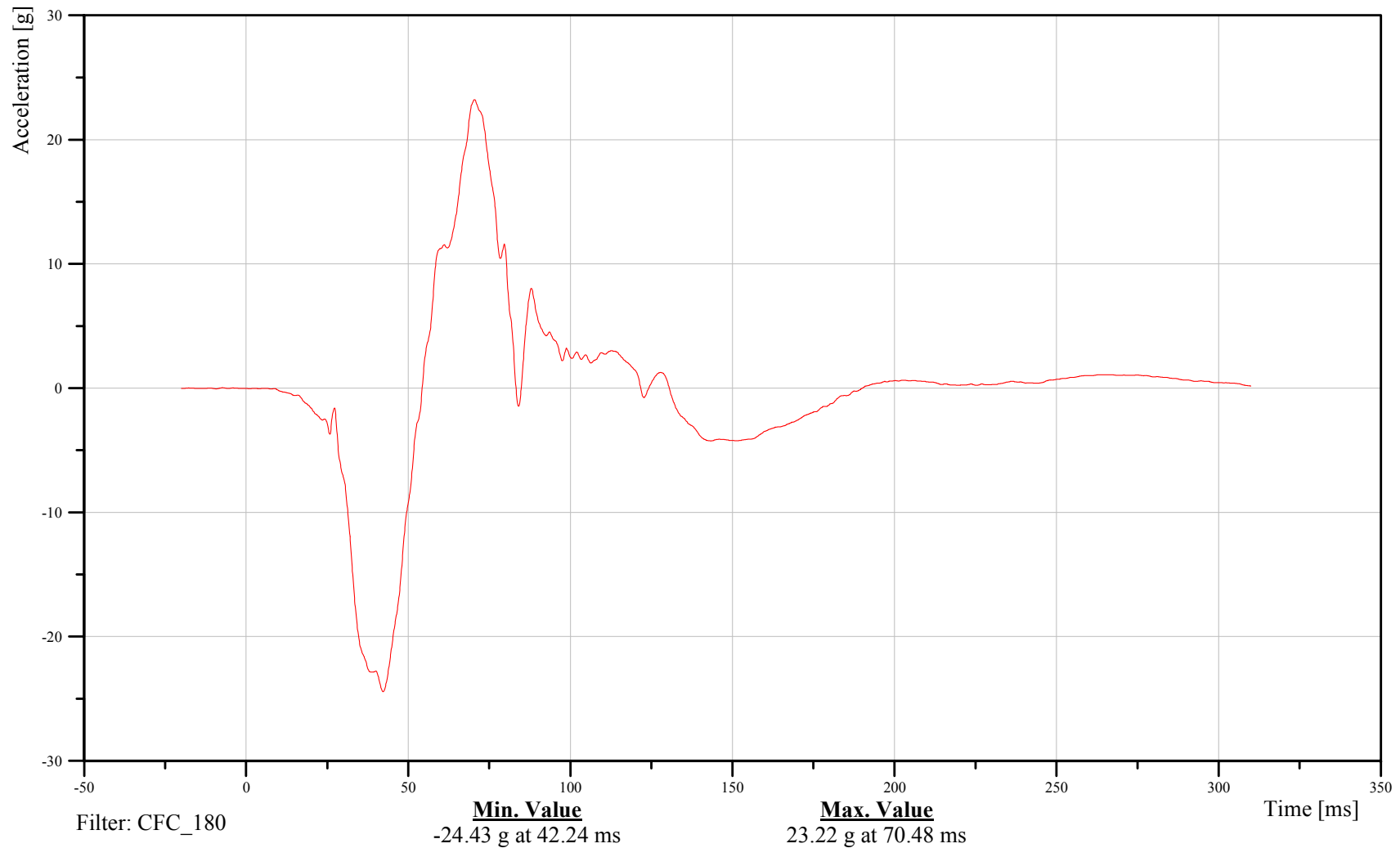
Spine Rib 5 Accel Z

Customer: VRTC

14ABSP02RIS2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

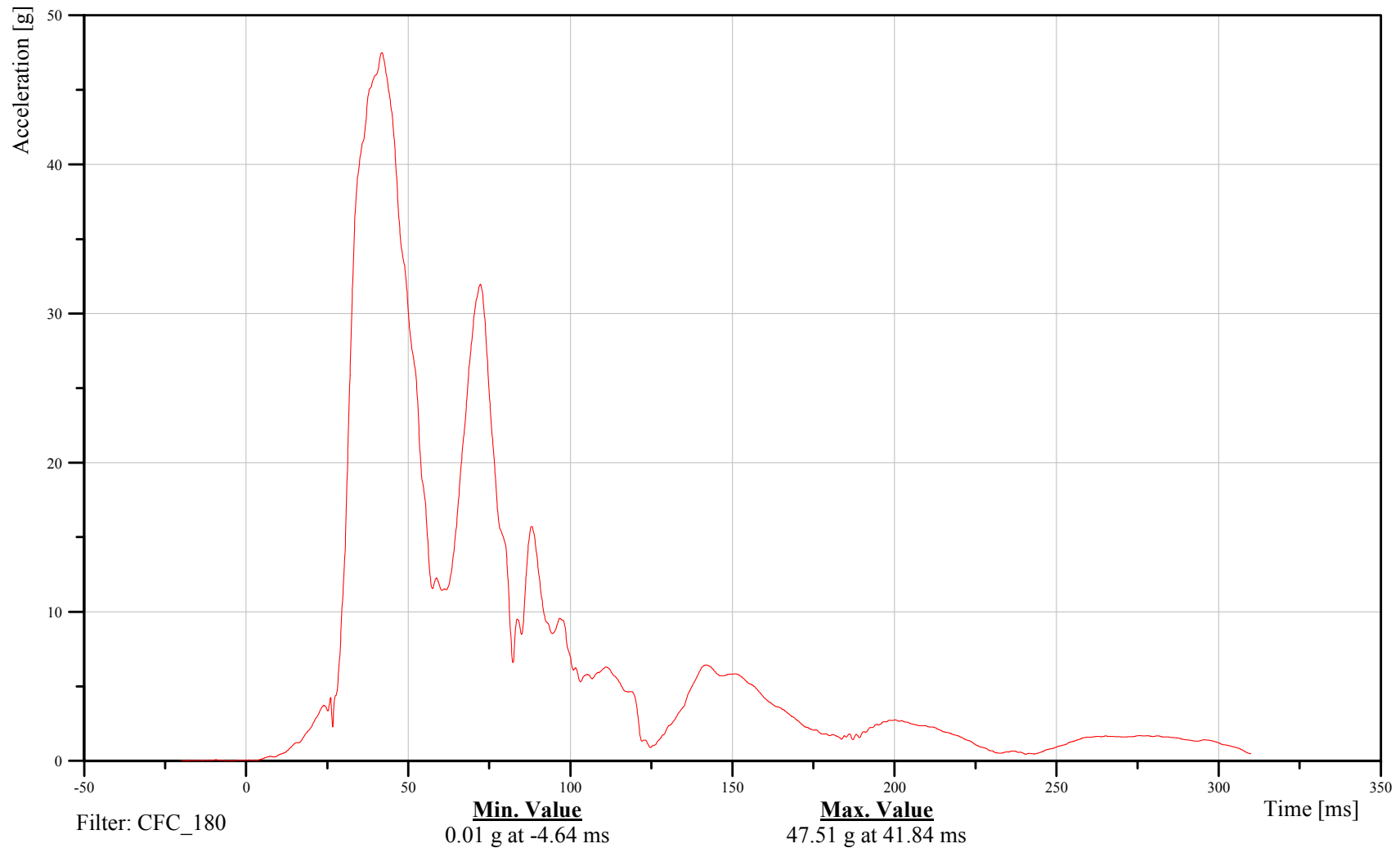
Spine Rib 5 Accel Resultant

Customer: VRTC

14ABSP02RIS2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

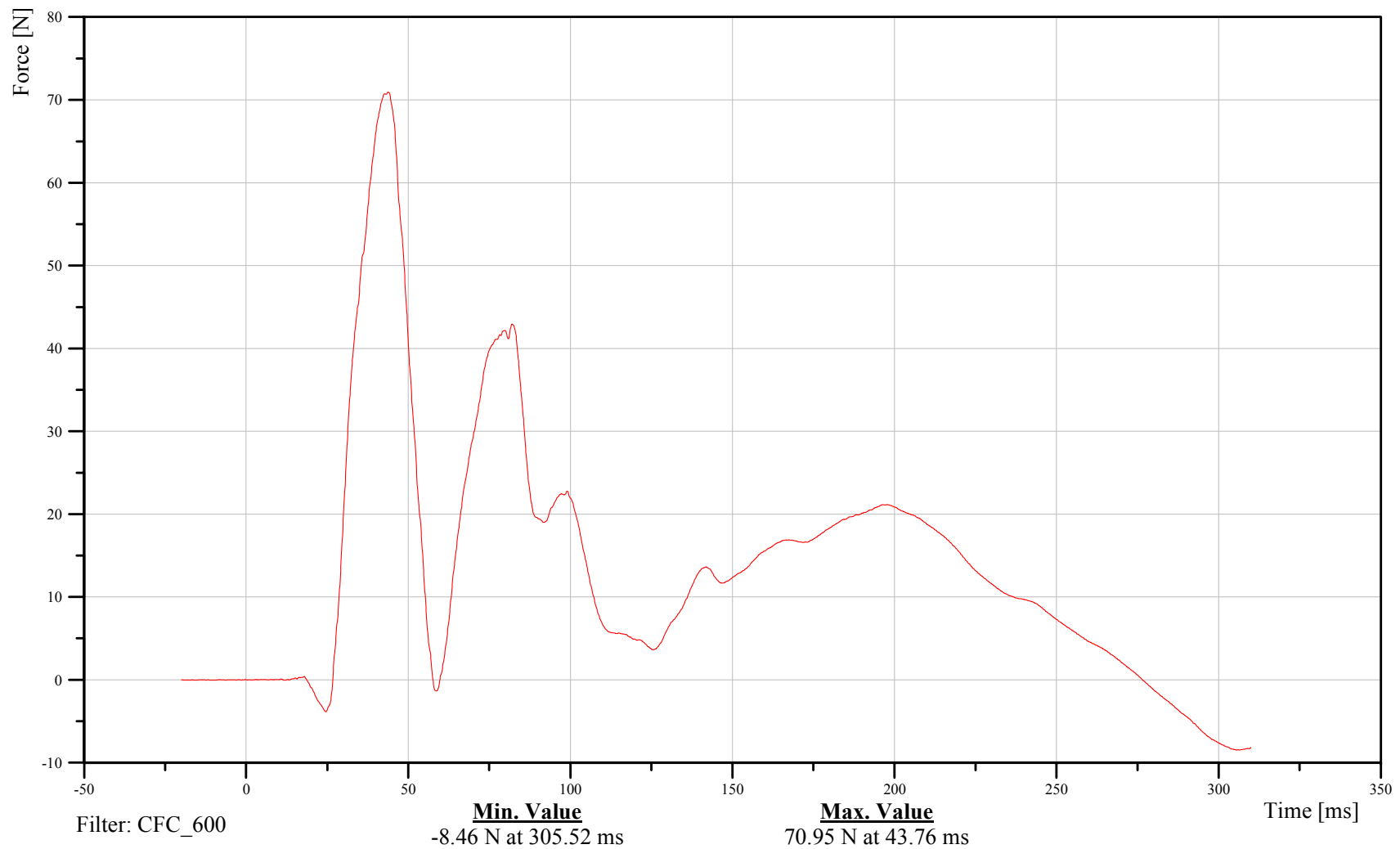
Lumbar Moment X

Customer: VRTC

14LUSP0000S2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

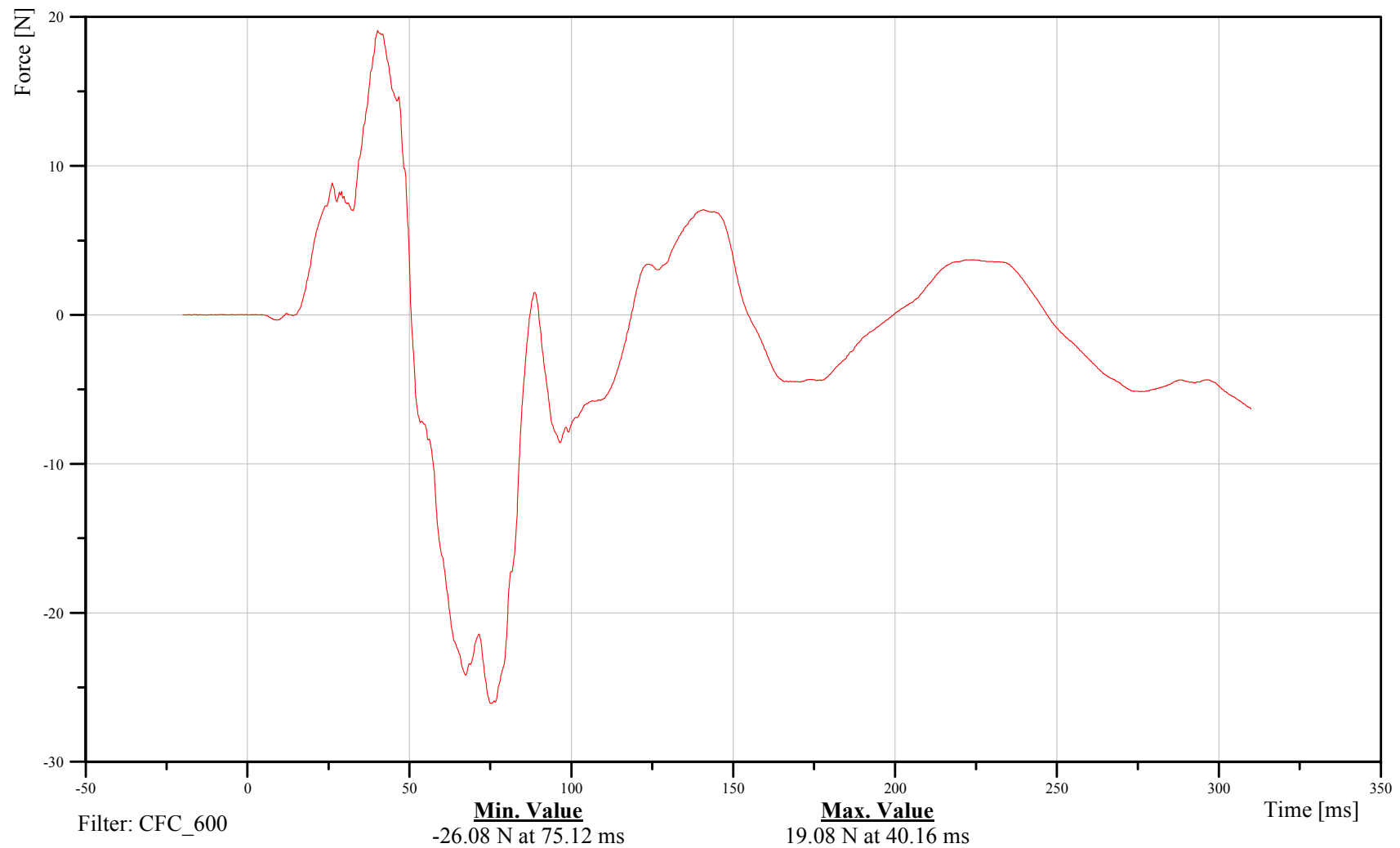
Lumbar Moment Y

Customer: VRTC

14LUSP0000S2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

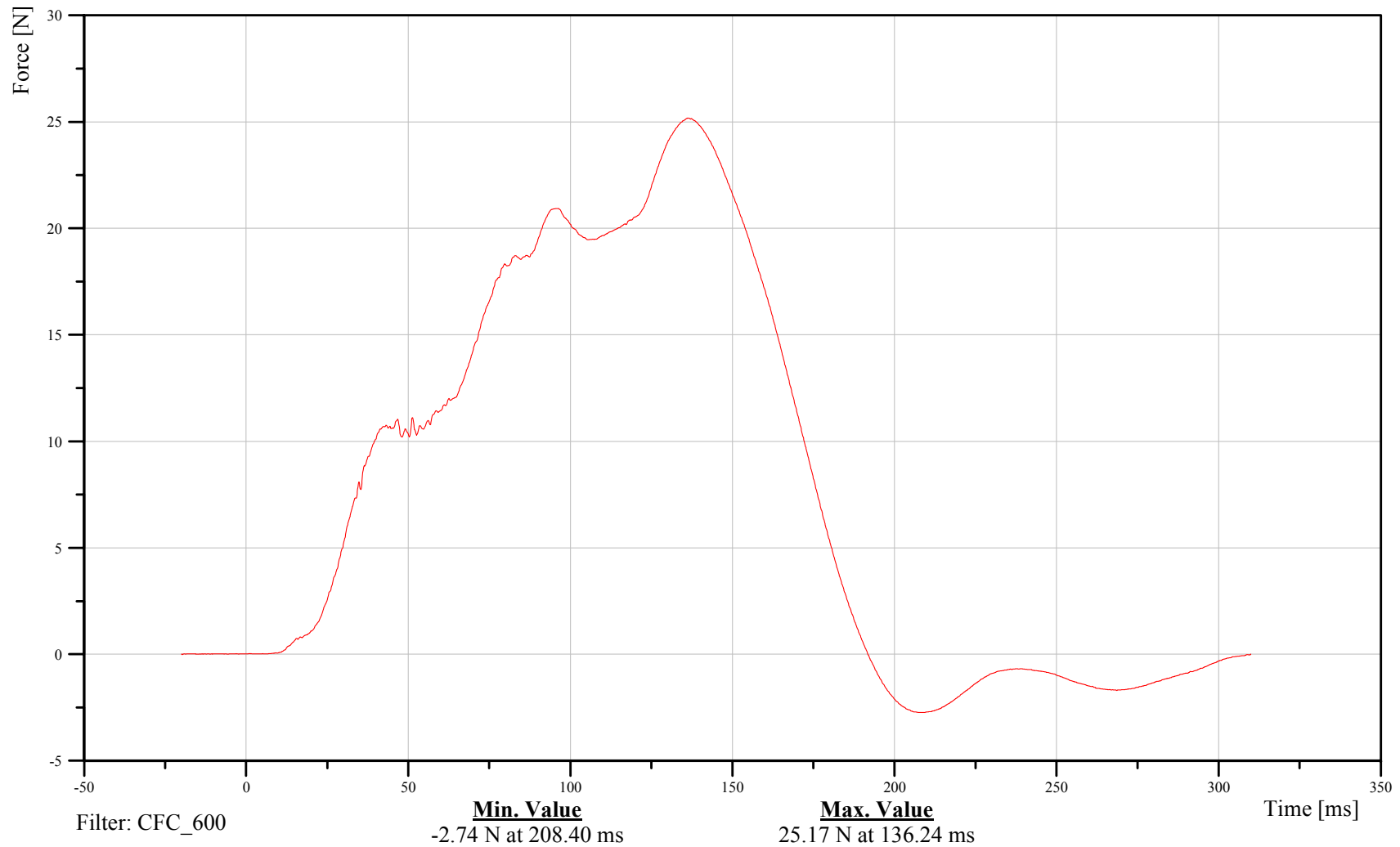
Lumbar Moment Z

Customer: VRTC

14LUSP0000S2MOZB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 1 Accel X

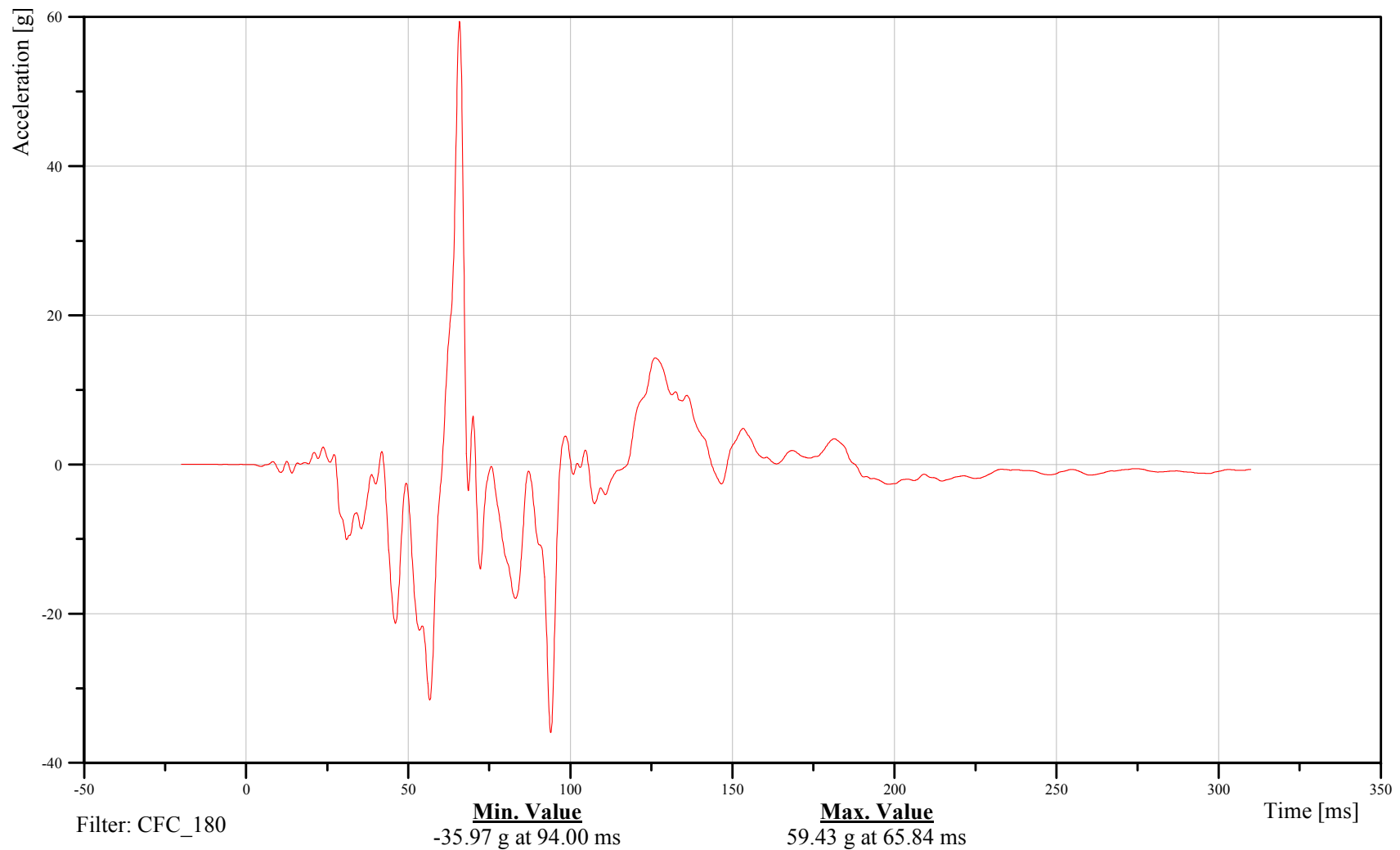
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14TRRI01LES2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 1 Accel Y

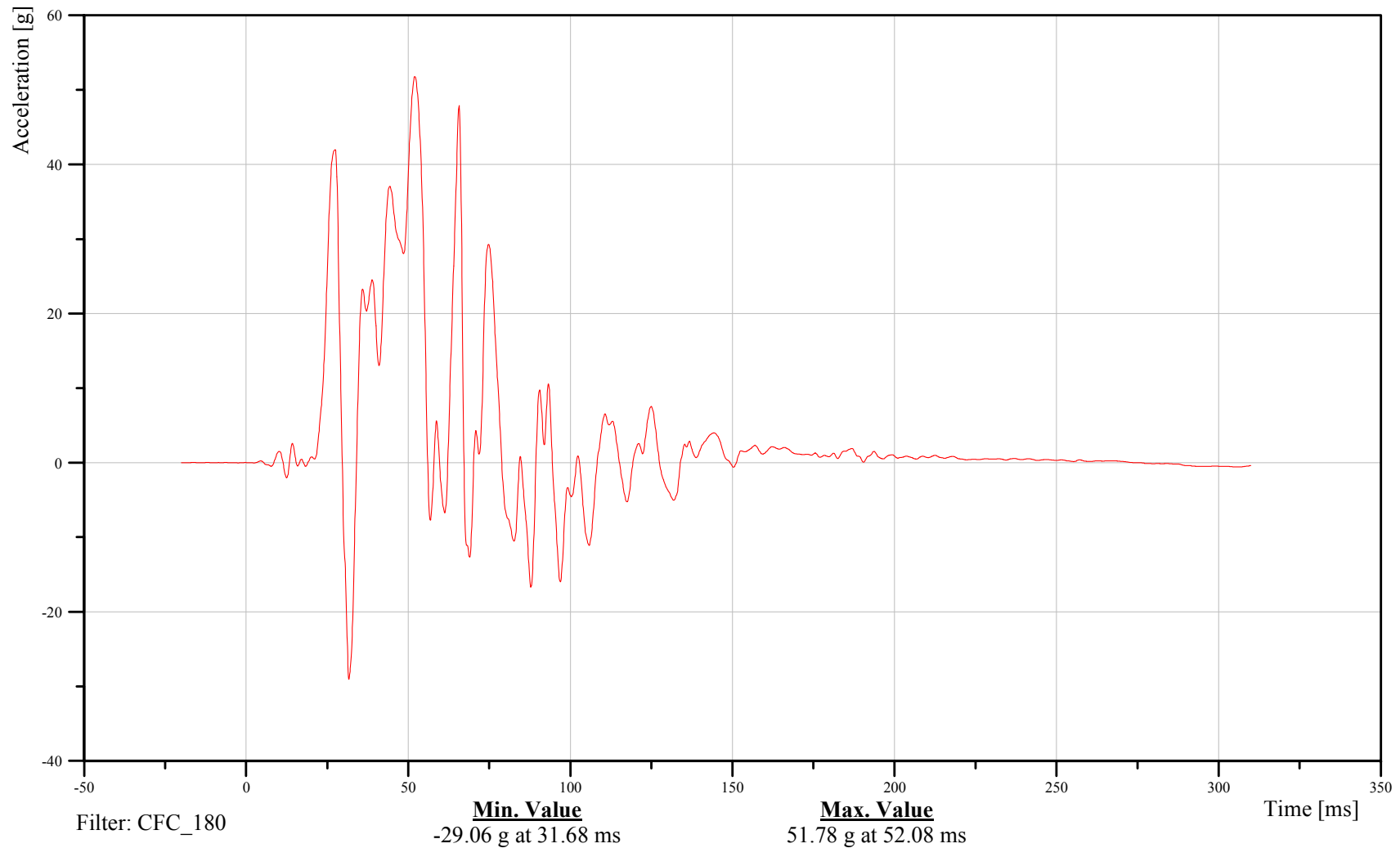
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14TRRI01LES2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 1 Accel Z

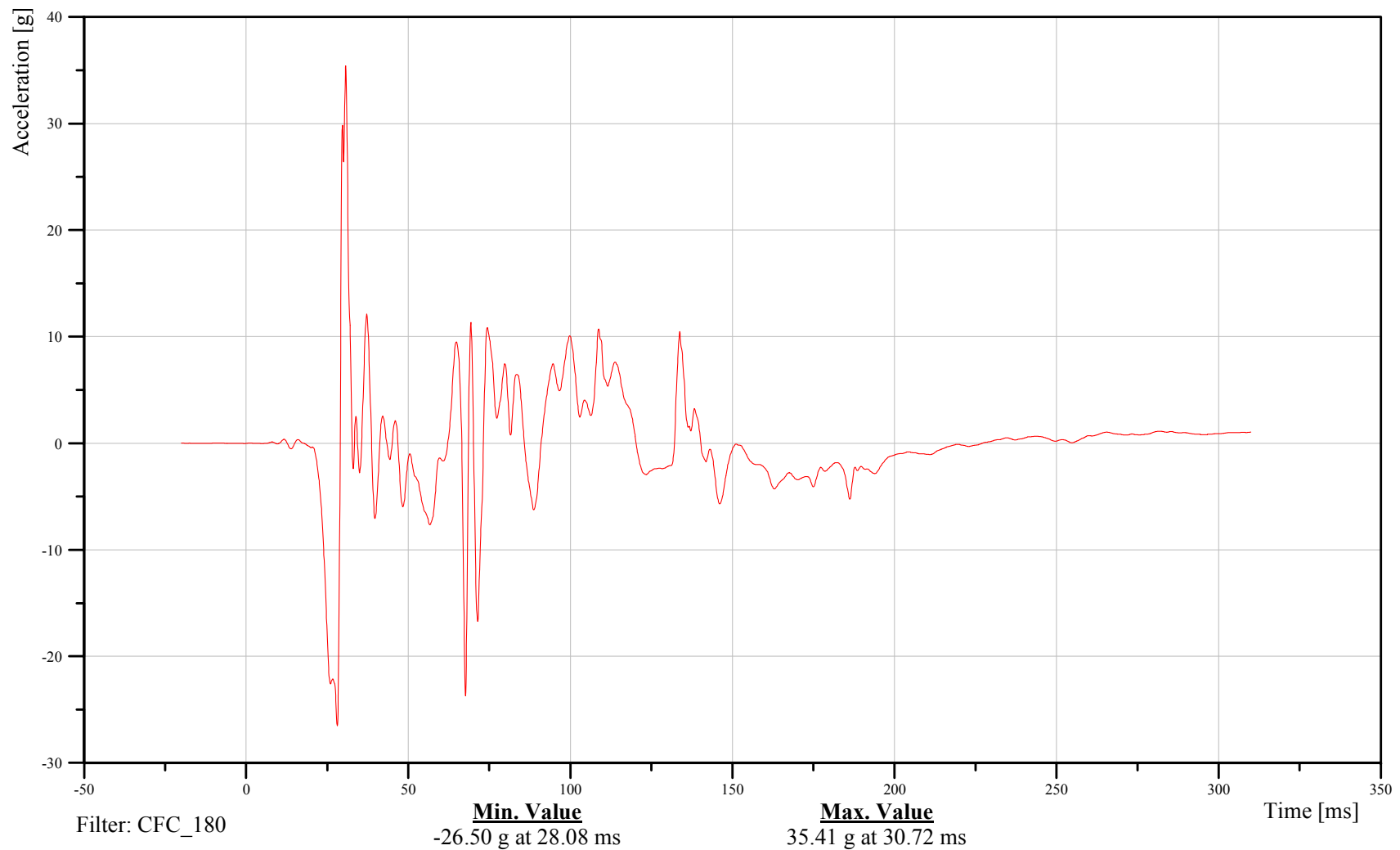
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14TRRI01LES2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 1 Accel Resultant

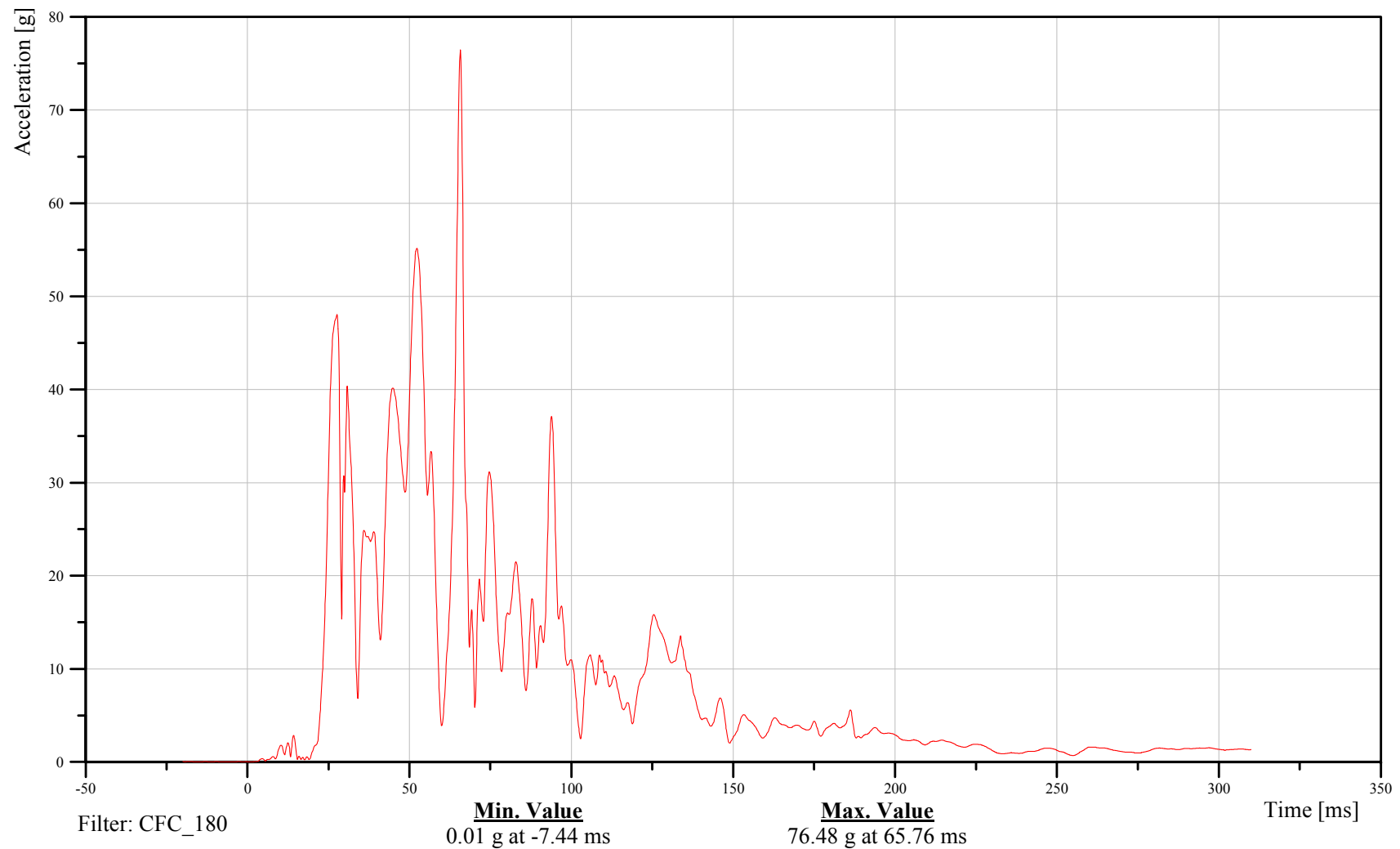
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14TRRI01LES2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 2 Accel X

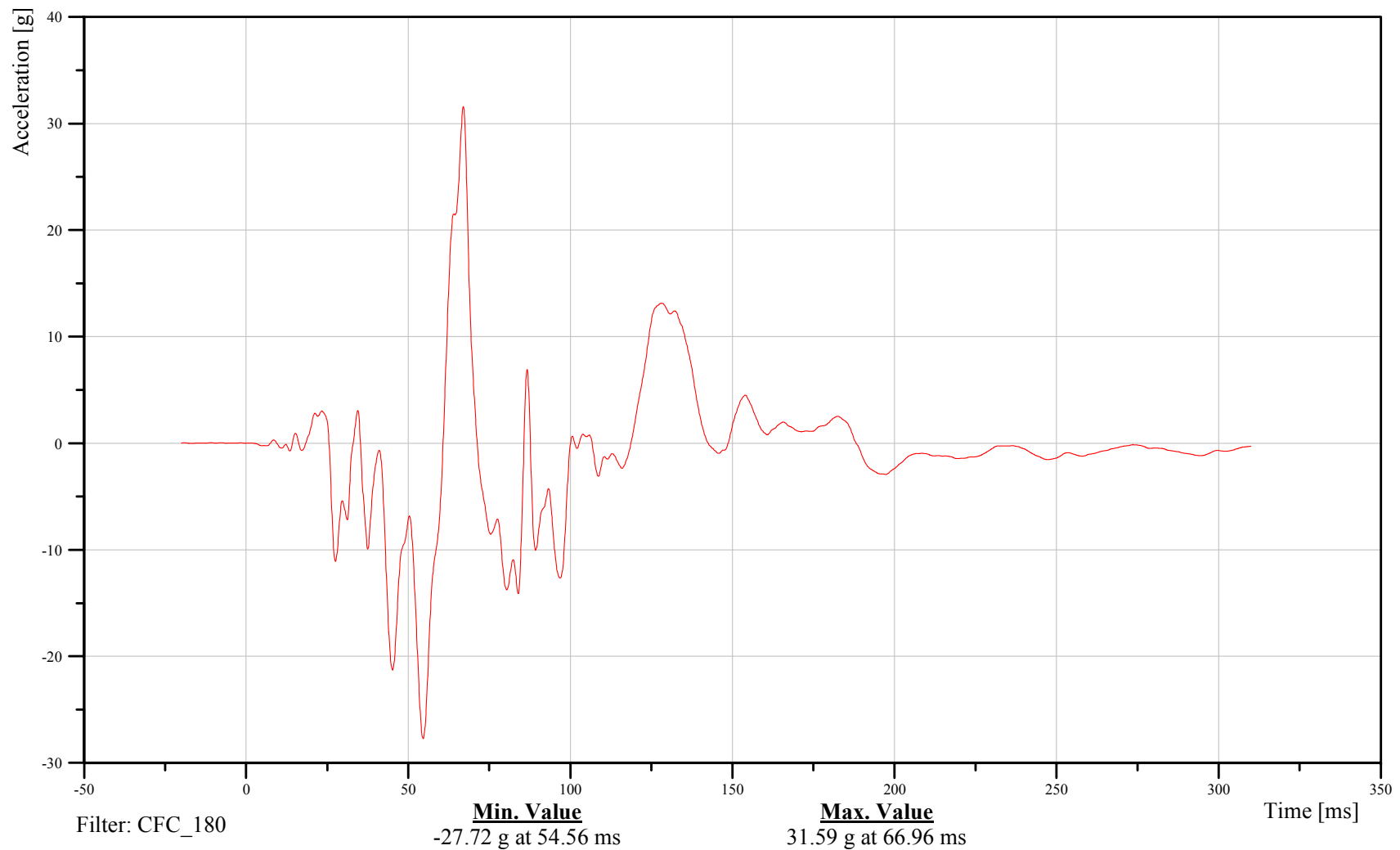
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14TRRI02LES2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 2 Accel Y

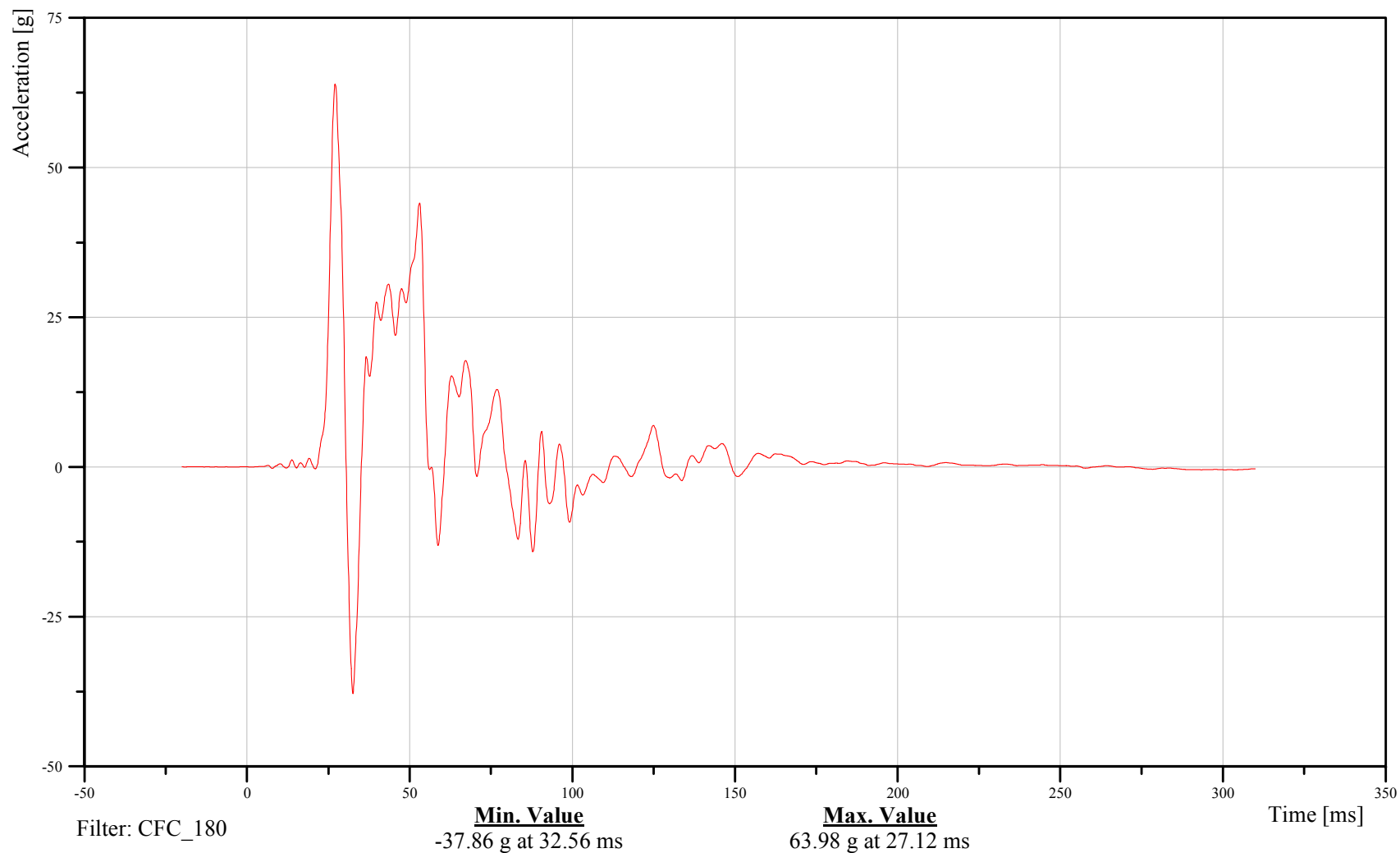
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14TRRI02LES2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 2 Accel Z

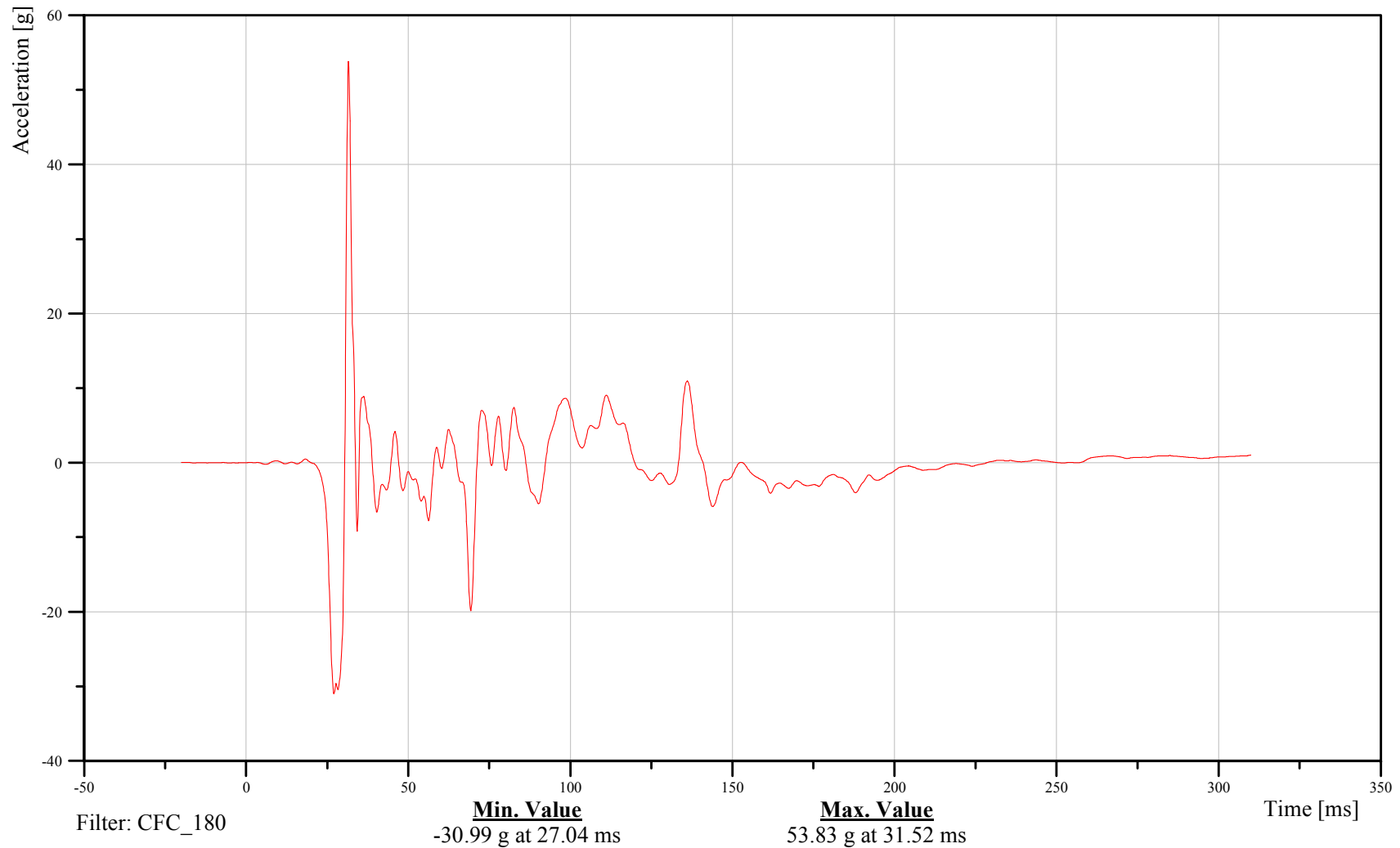
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14TRRI02LES2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 2 Accel Resultant

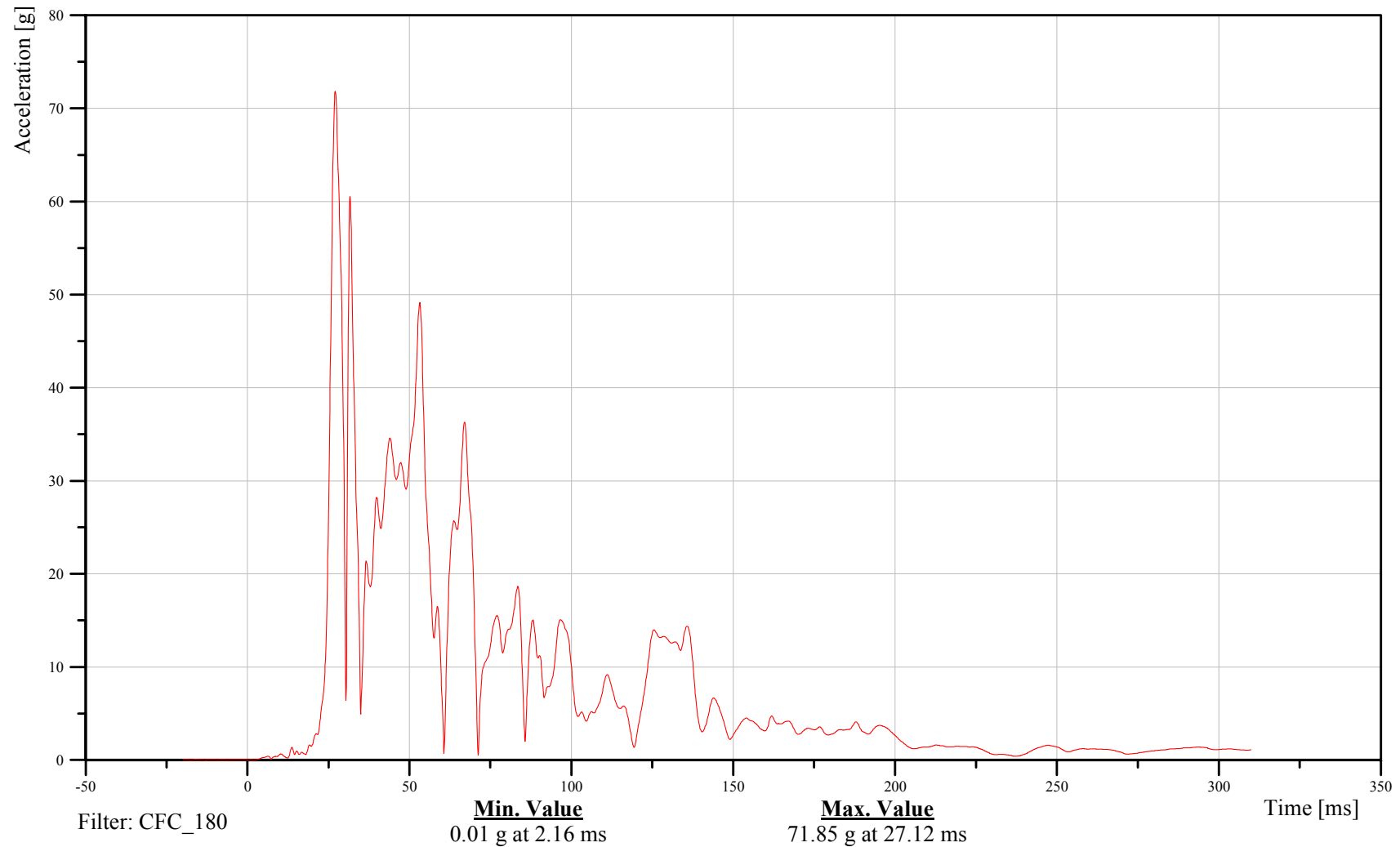
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14TRRI02LES2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 3 Accel X

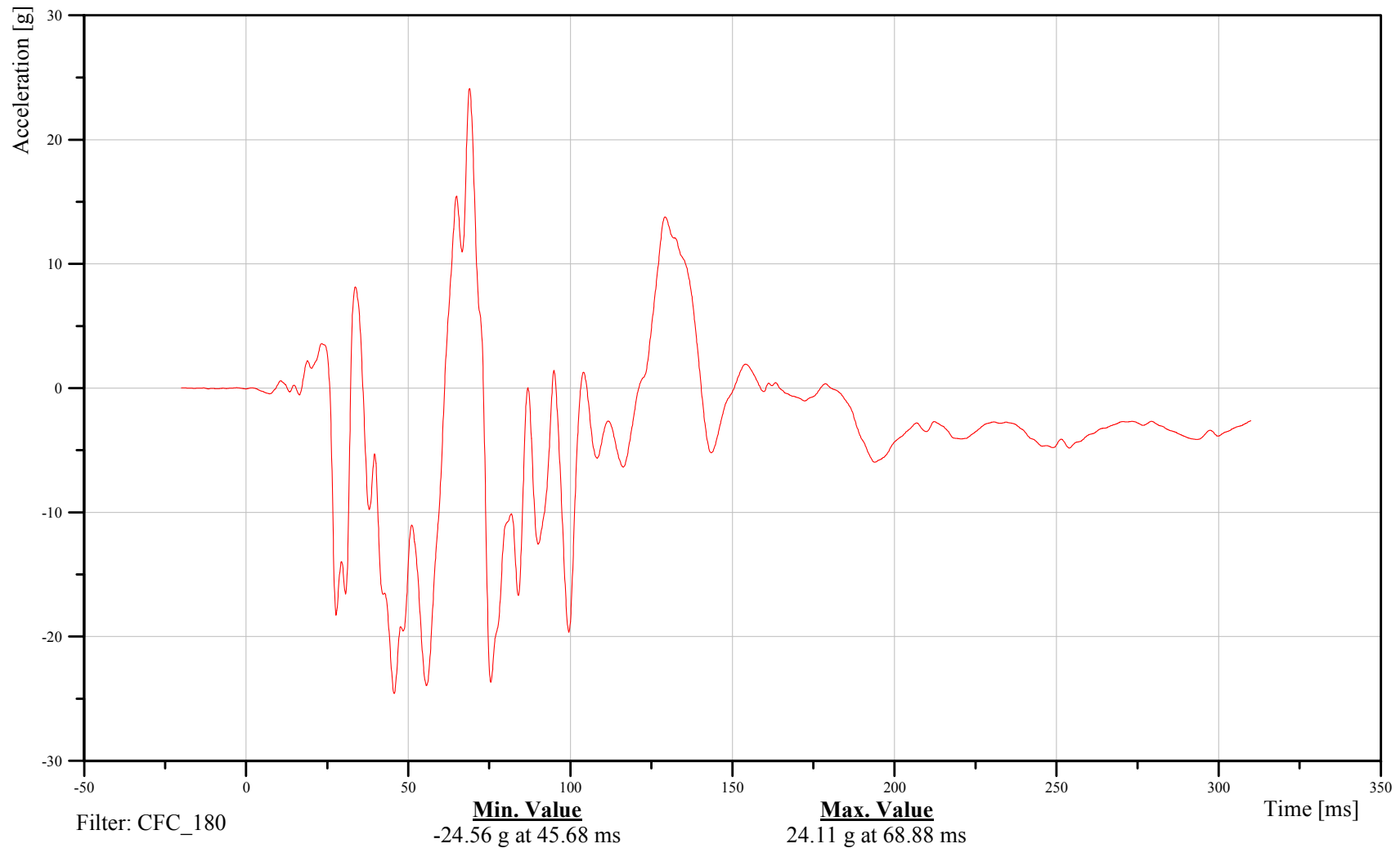
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14TRRI03LES2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 3 Accel Y

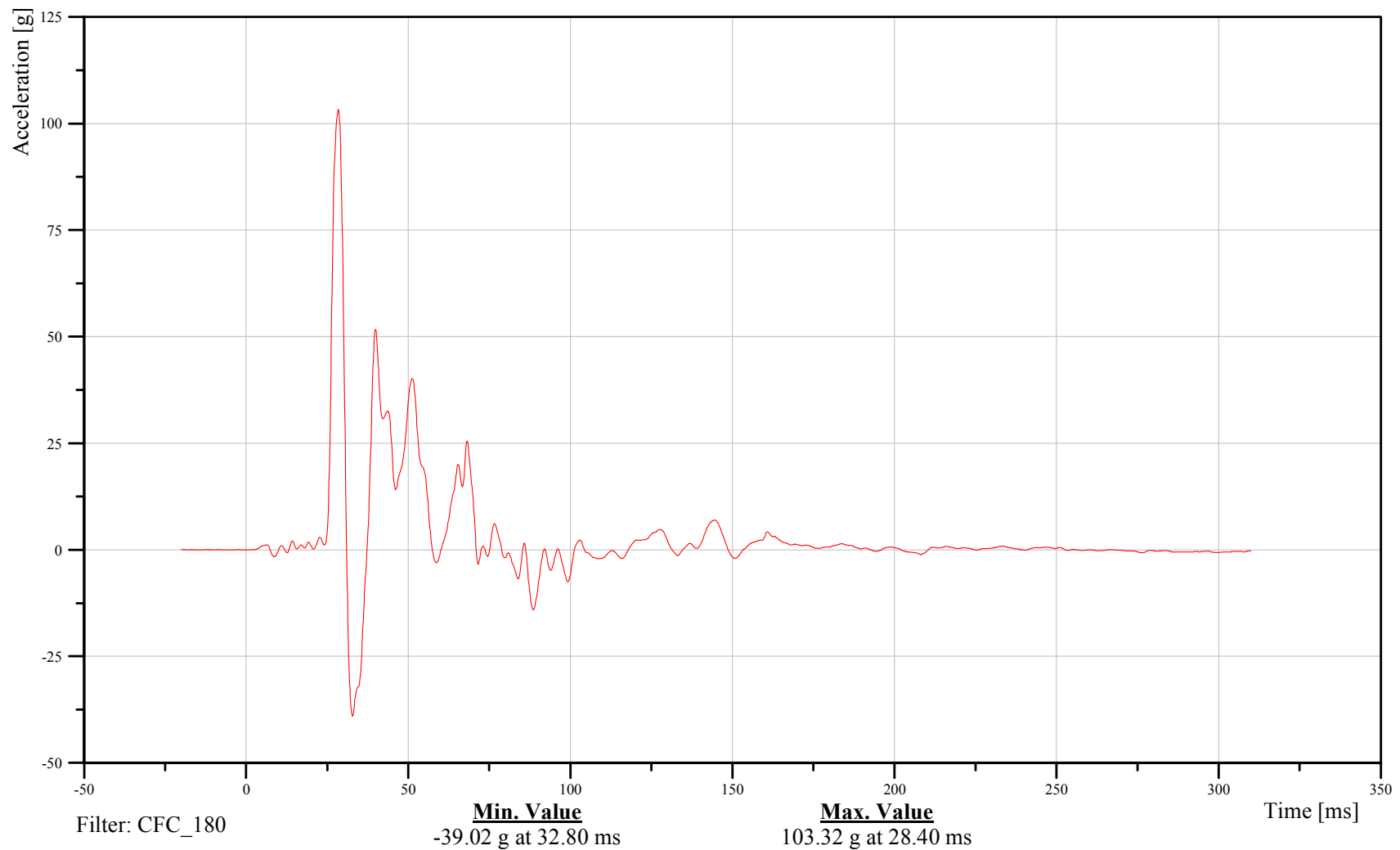
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14TRRI03LES2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 3 Accel Z

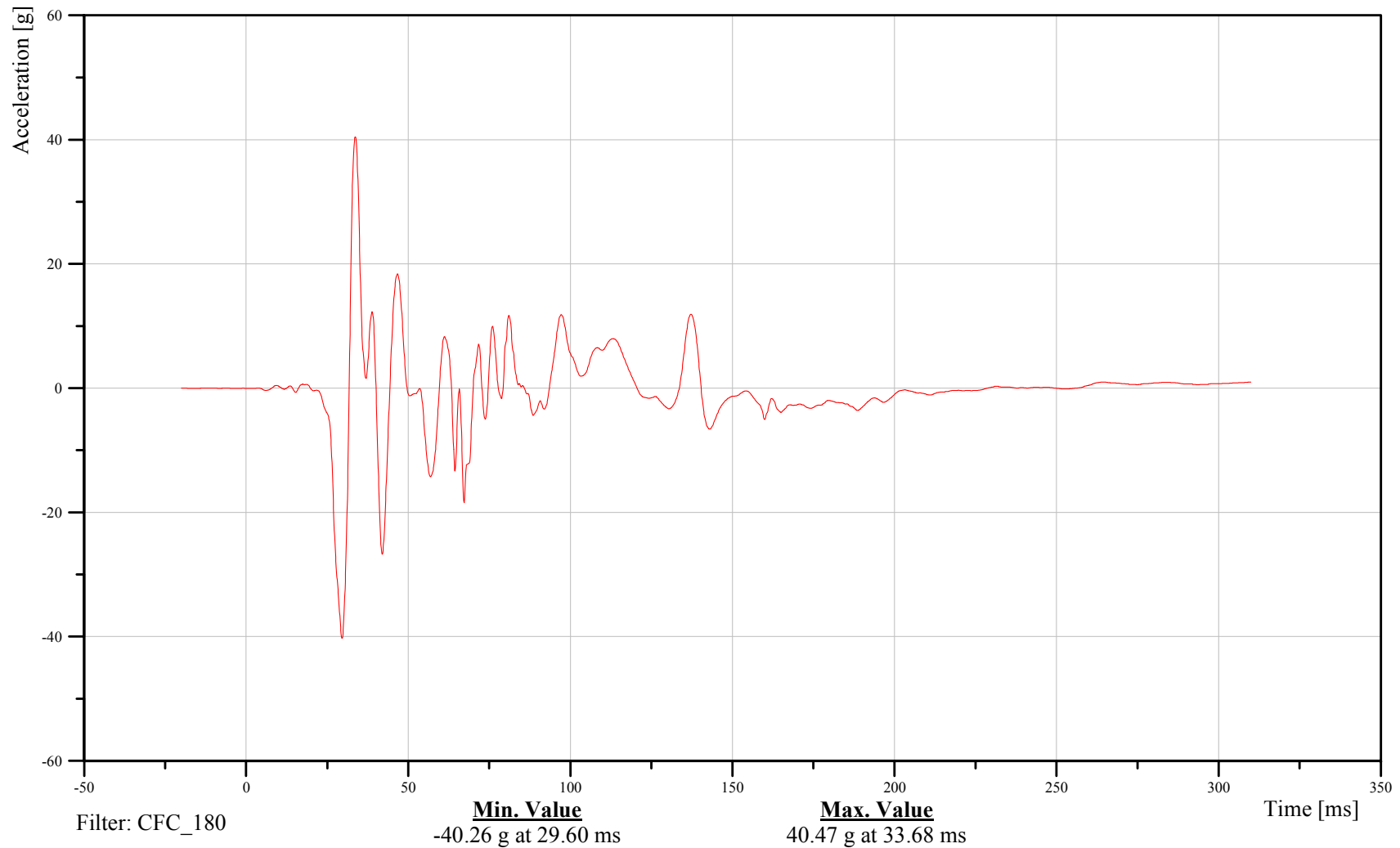
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14TRRI03LES2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 3 Accel Resultant

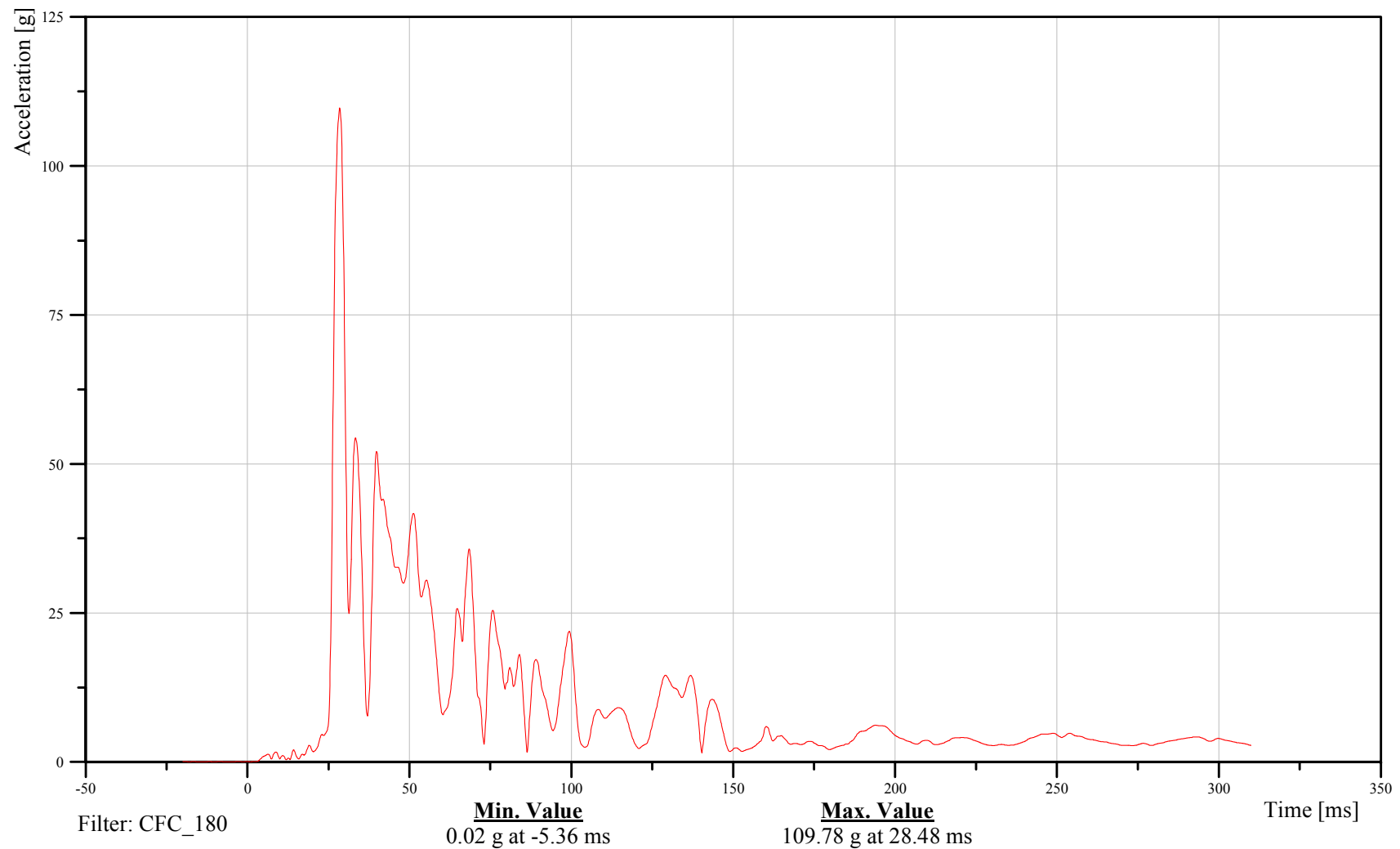
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14TRRI03LES2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Abdomin Rib 1 Accel X

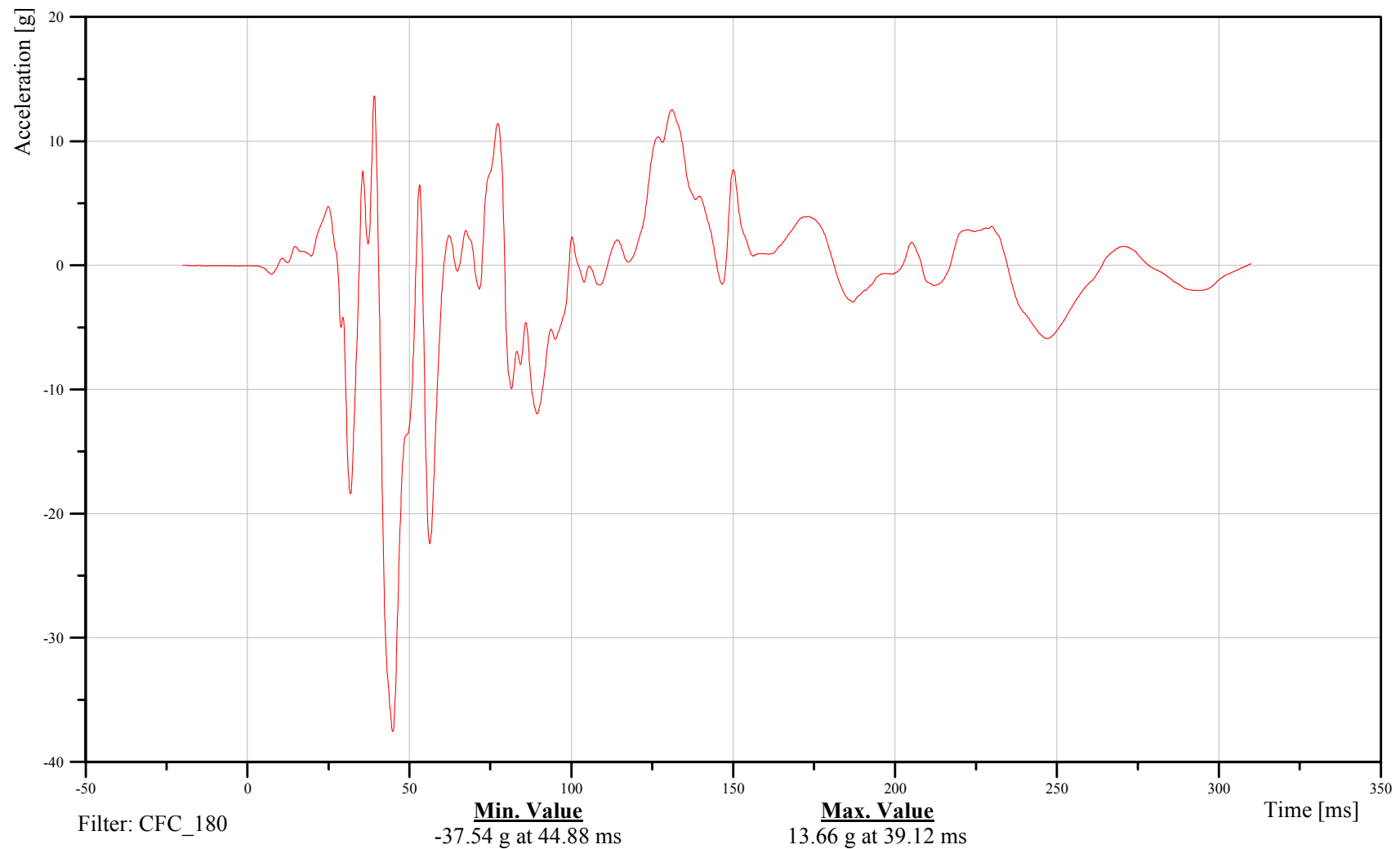
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14ABRI01LES2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Abdomin Rib 1 Accel Y

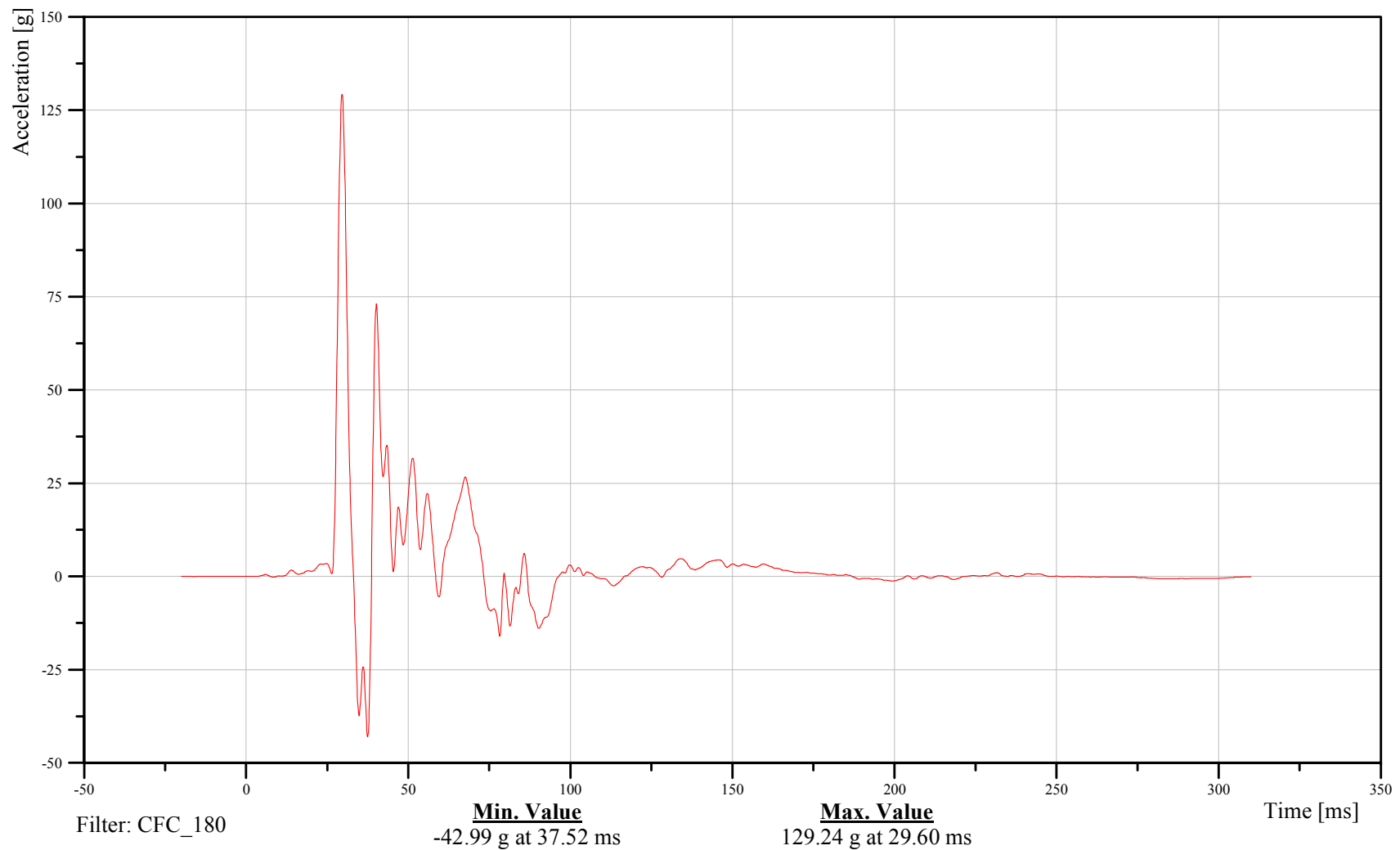
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14ABRI01LES2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Abdomin Rib 1 Accel Z

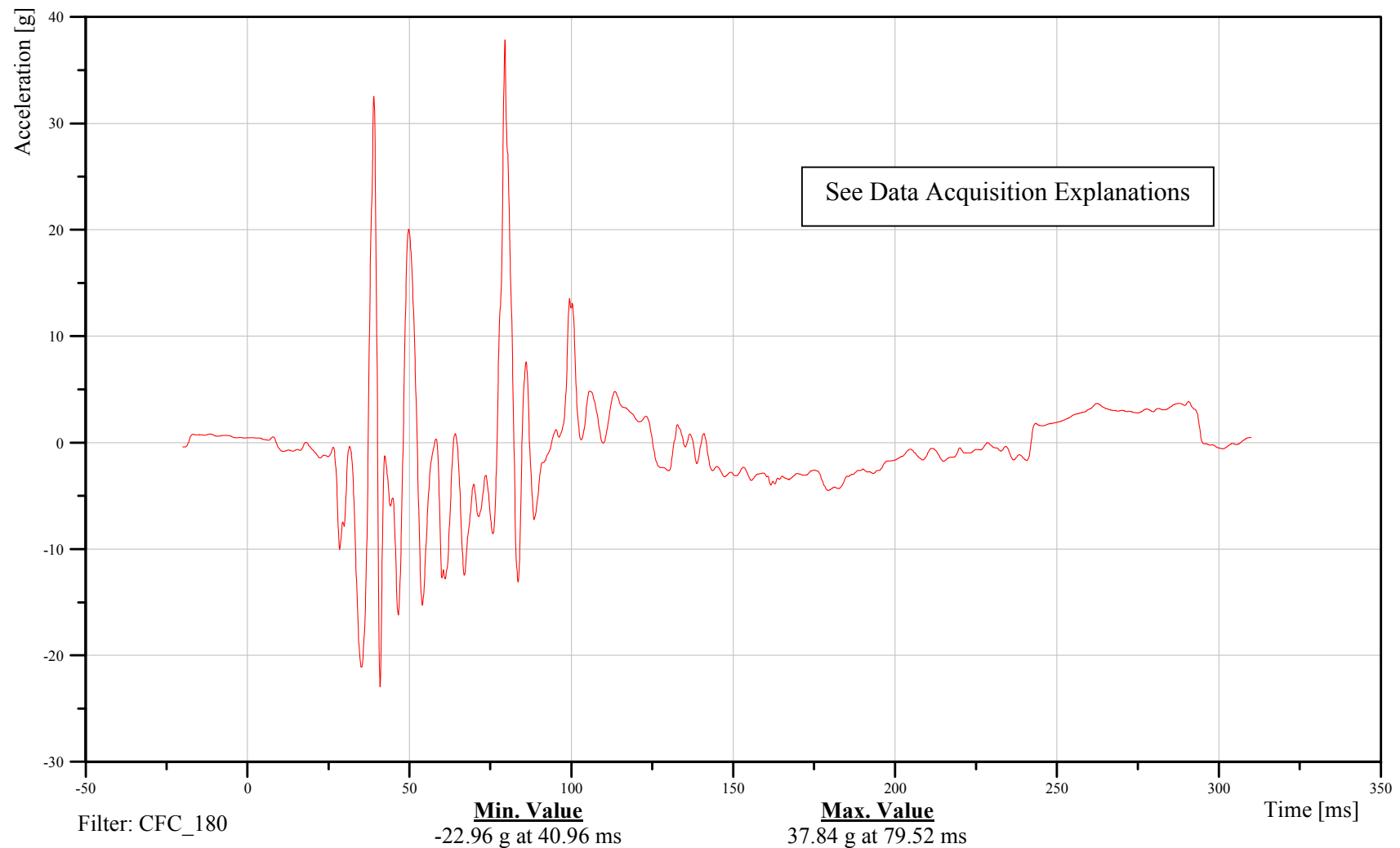
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14ABRI01LES2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Abdomin Rib 1 Accel Resultant

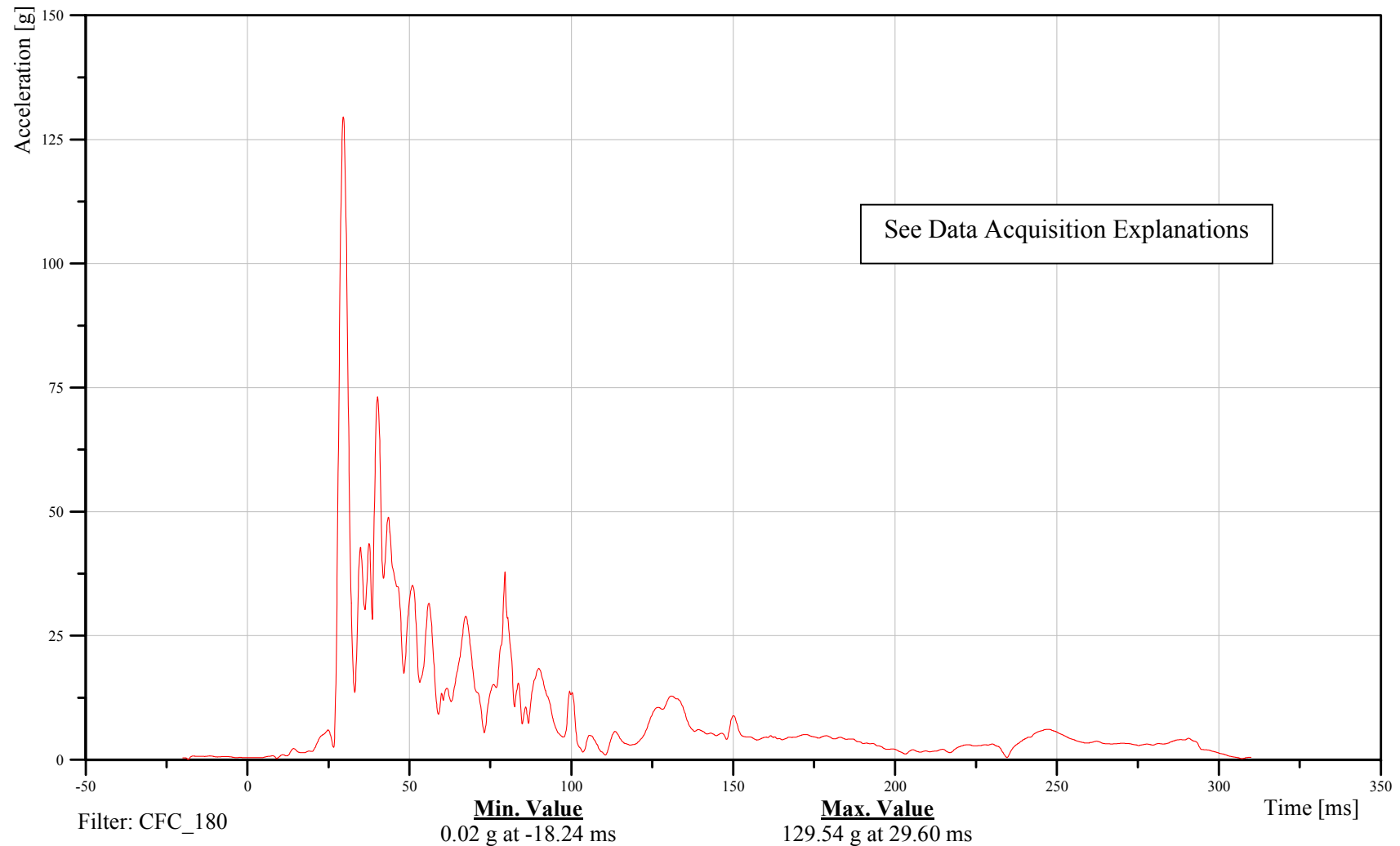
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14ABRI01LES2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Abdomin Rib 2 Accel X

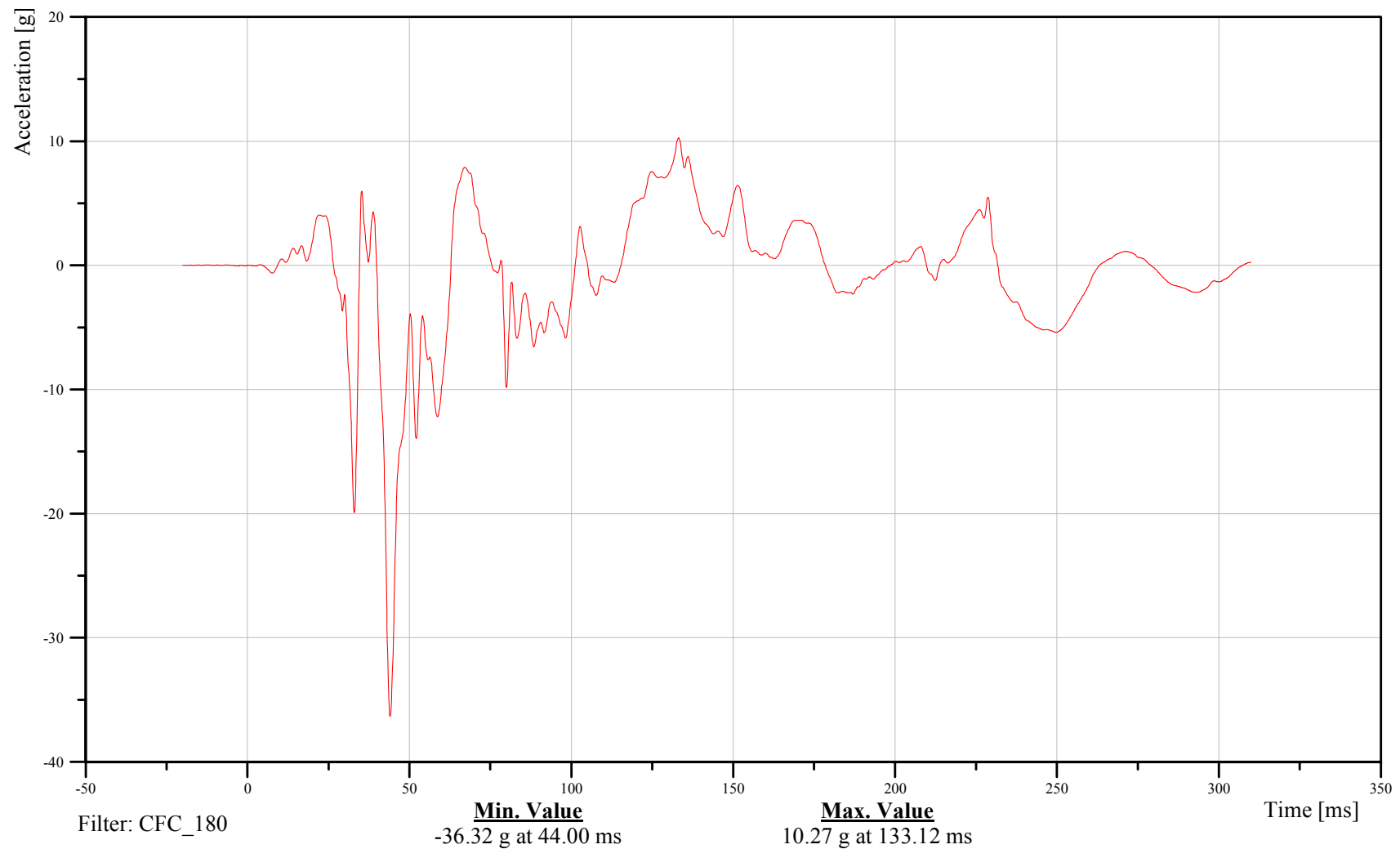
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14ABRI02LES2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Abdomin Rib 2 Accel Y

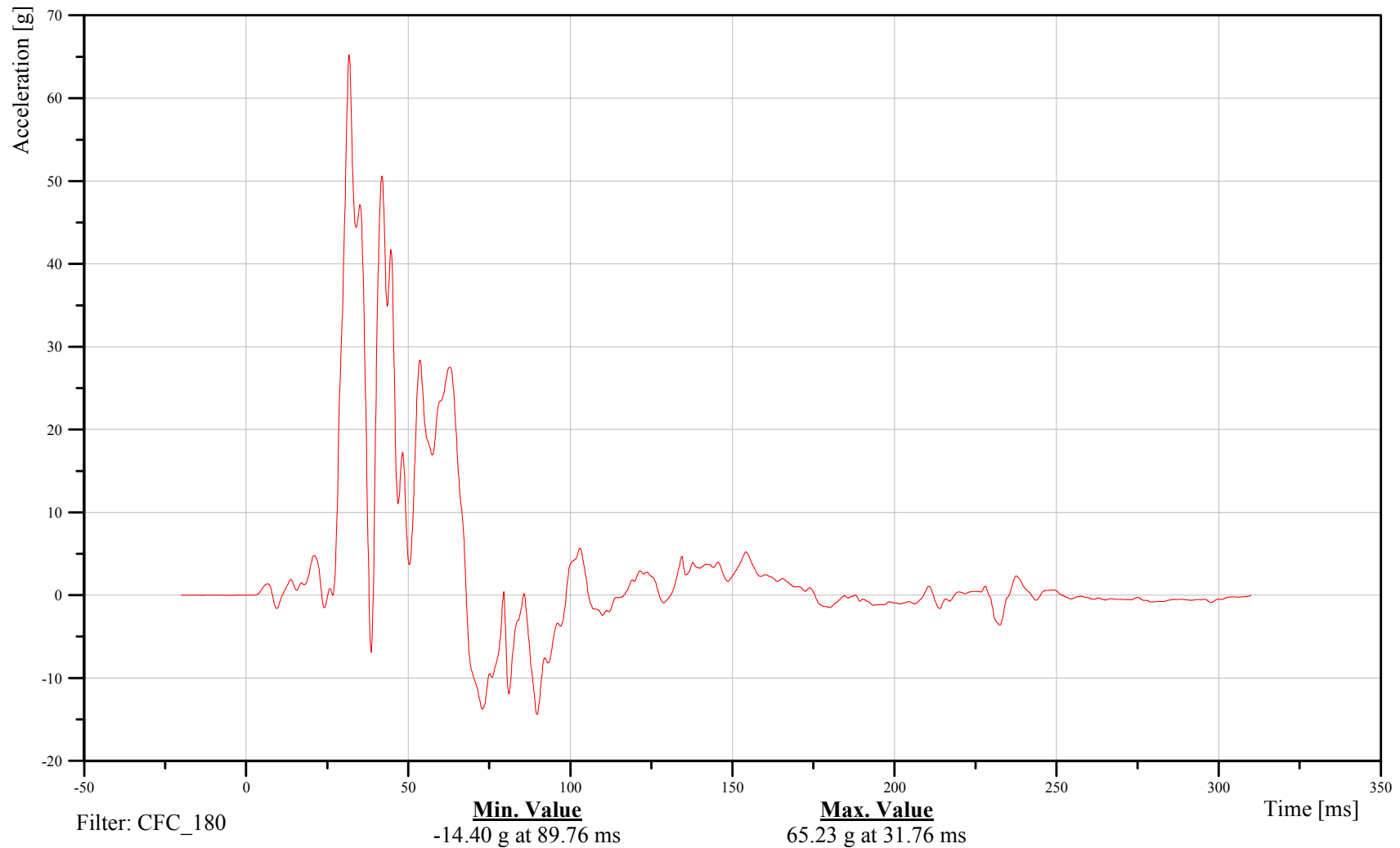
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14ABRI02LES2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Abdomin Rib 2 Accel Z

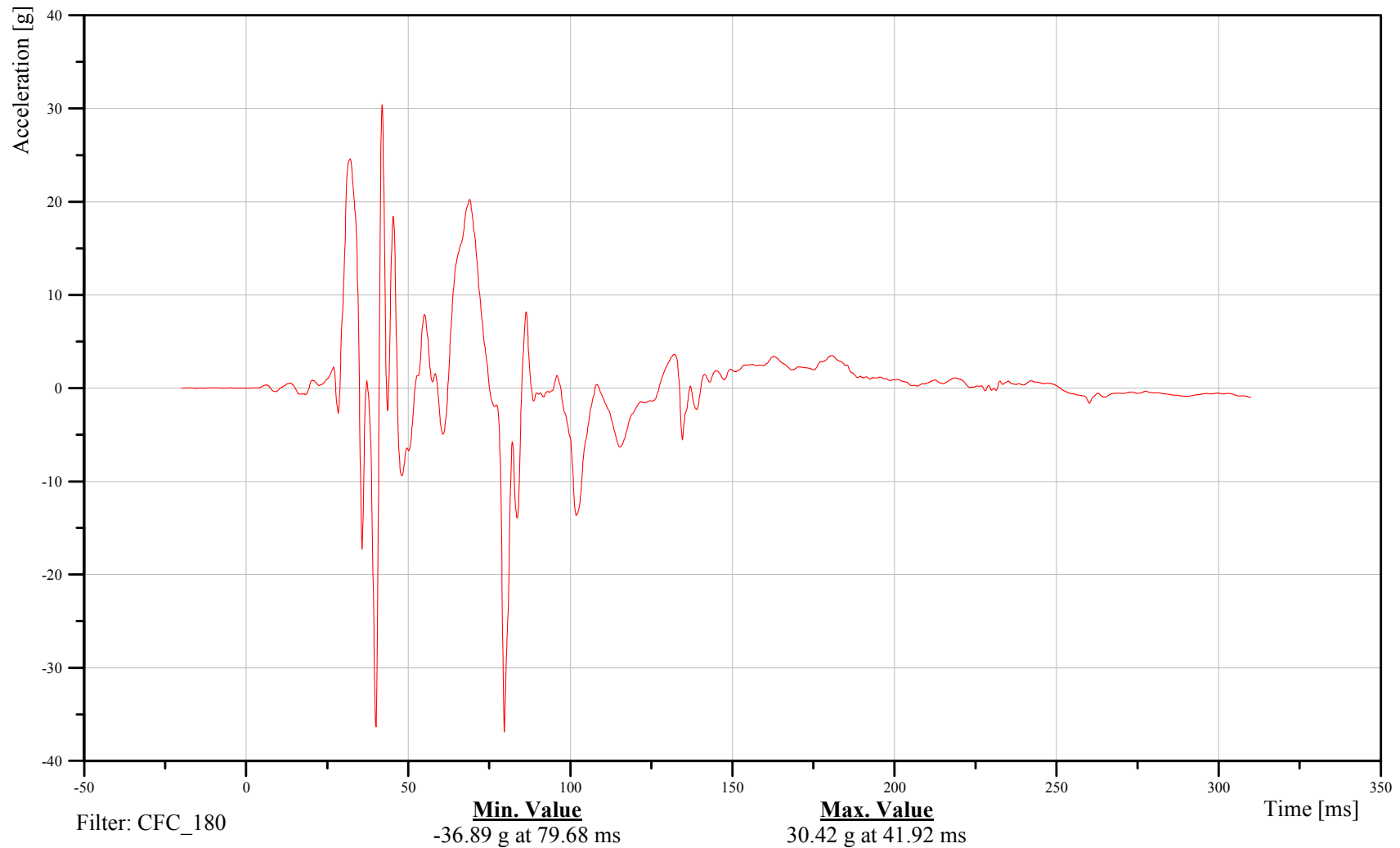
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14ABRI02LES2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Abdomin Rib 2 Accel Resultant

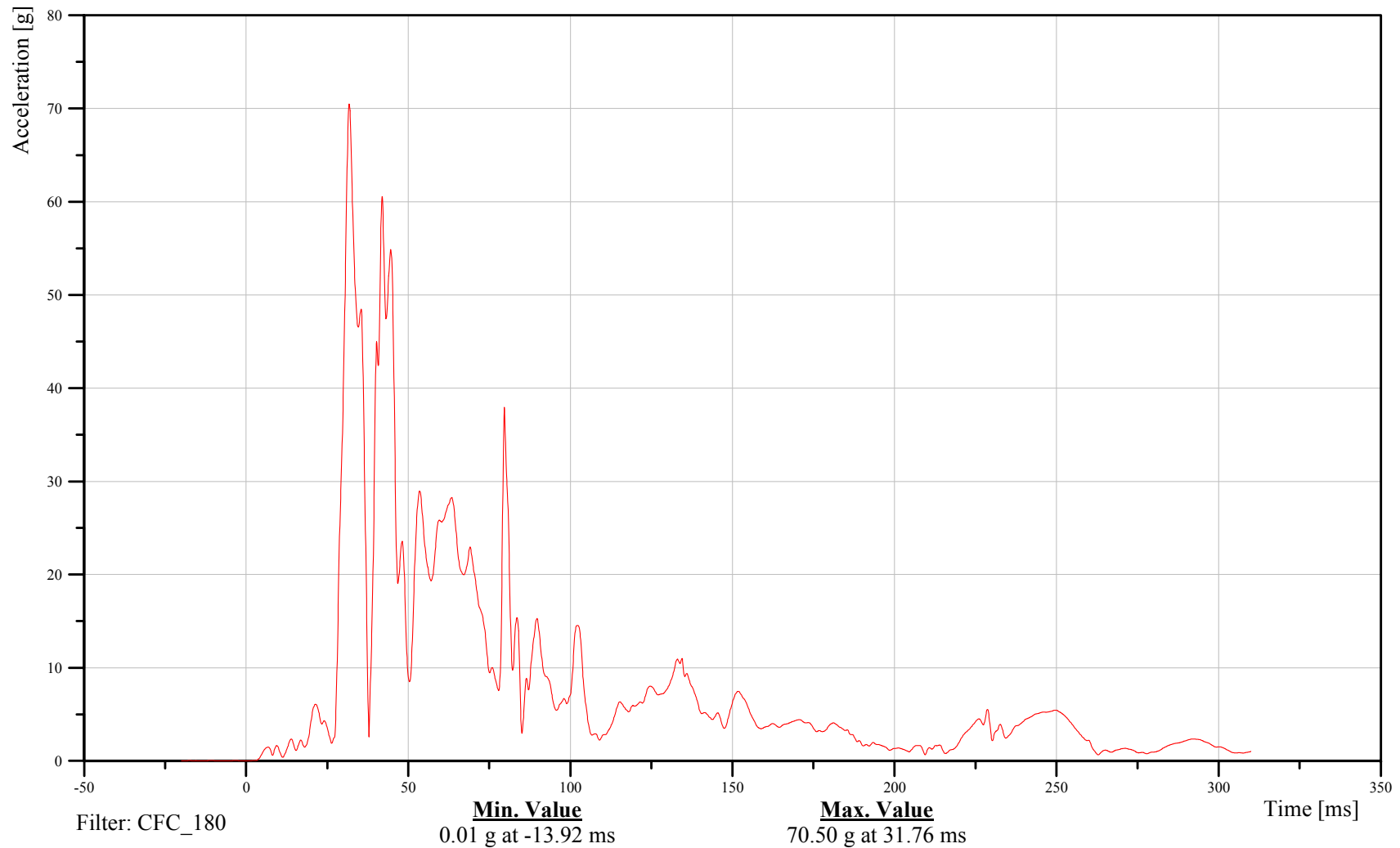
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14ABRI02LES2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

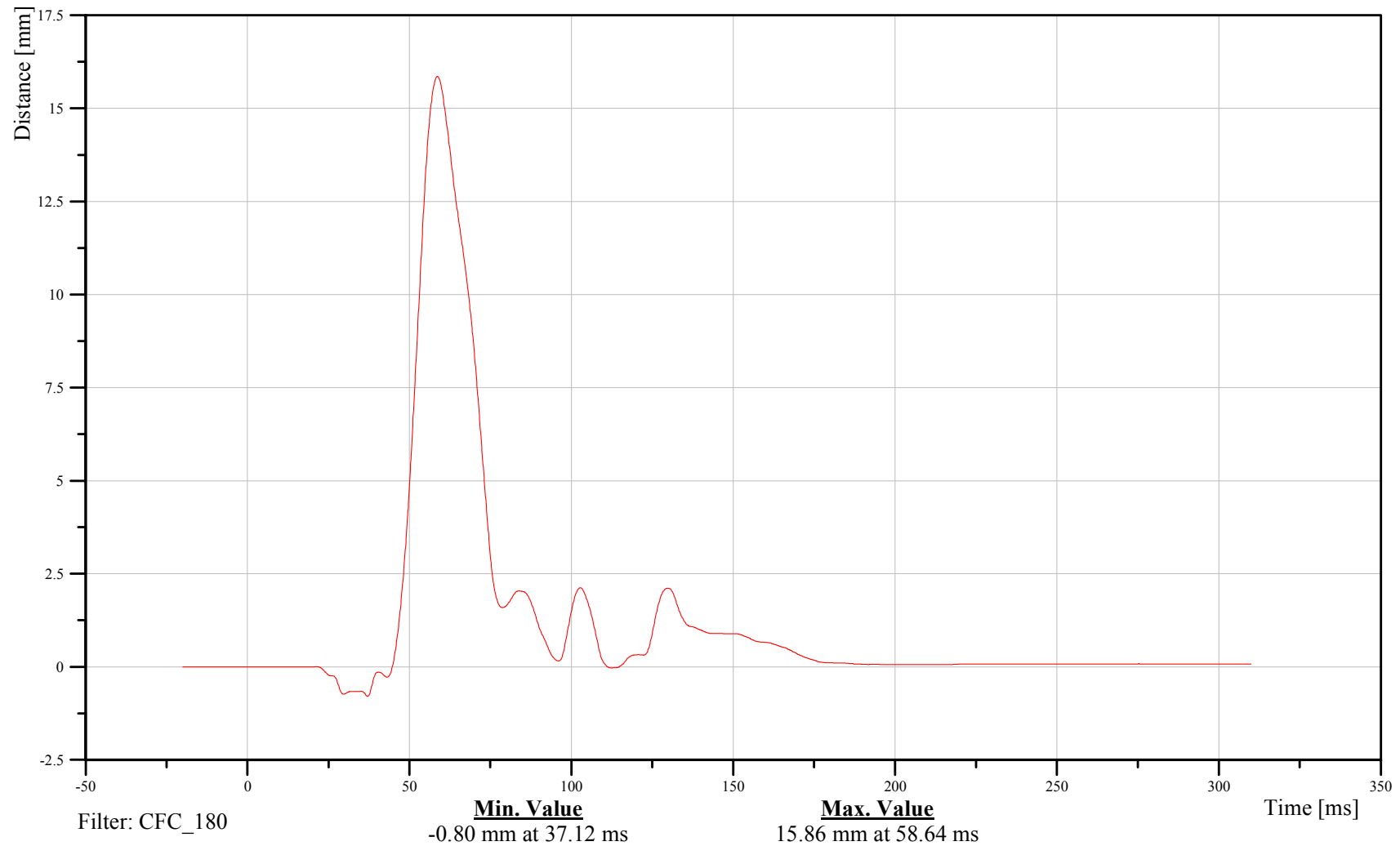
Shoulder Disp. Y

Customer: VRTC

14SHRILE00S2DSYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 1 Disp. Y

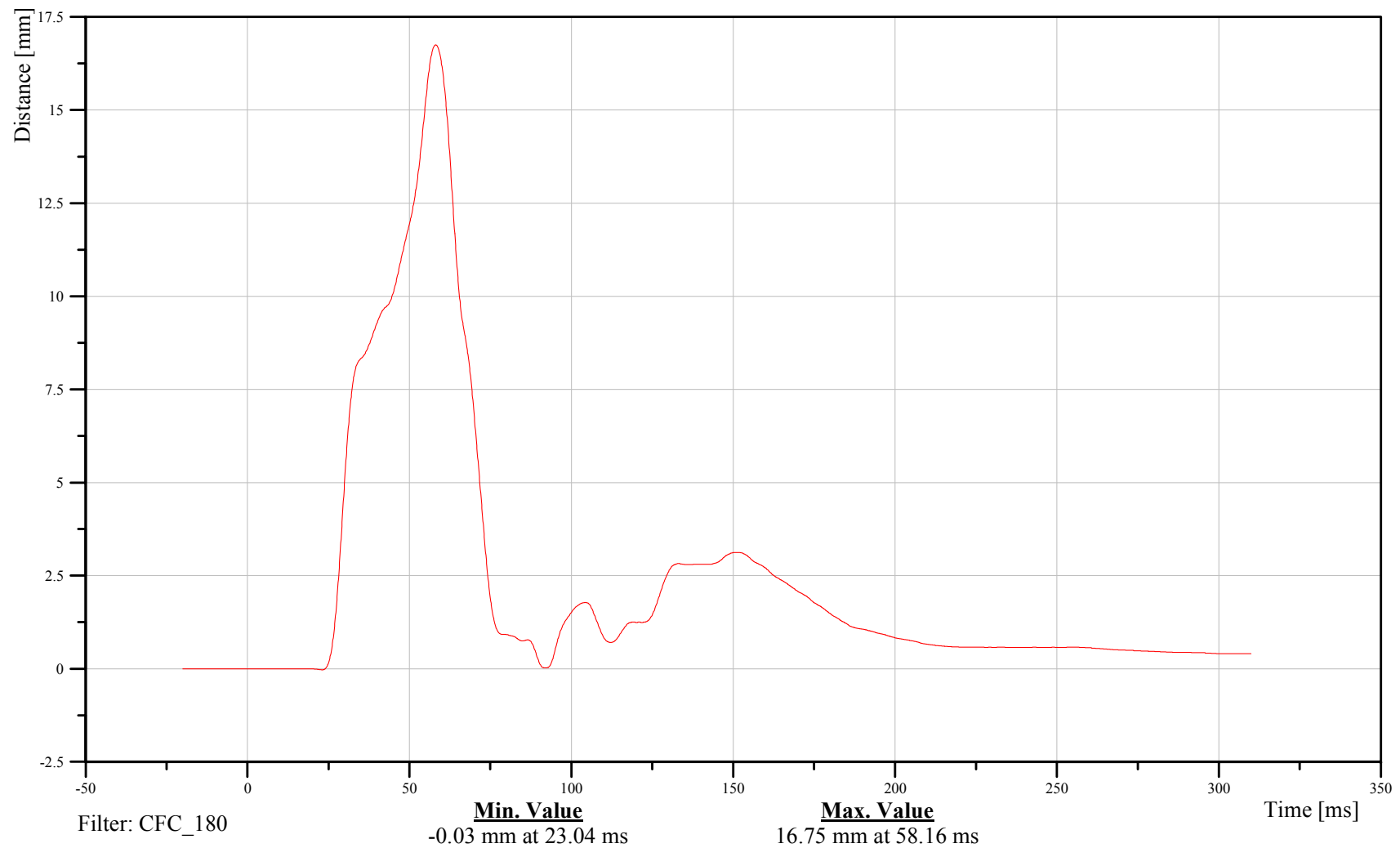
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14TRRI01LES2DSYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 2 Disp. Y

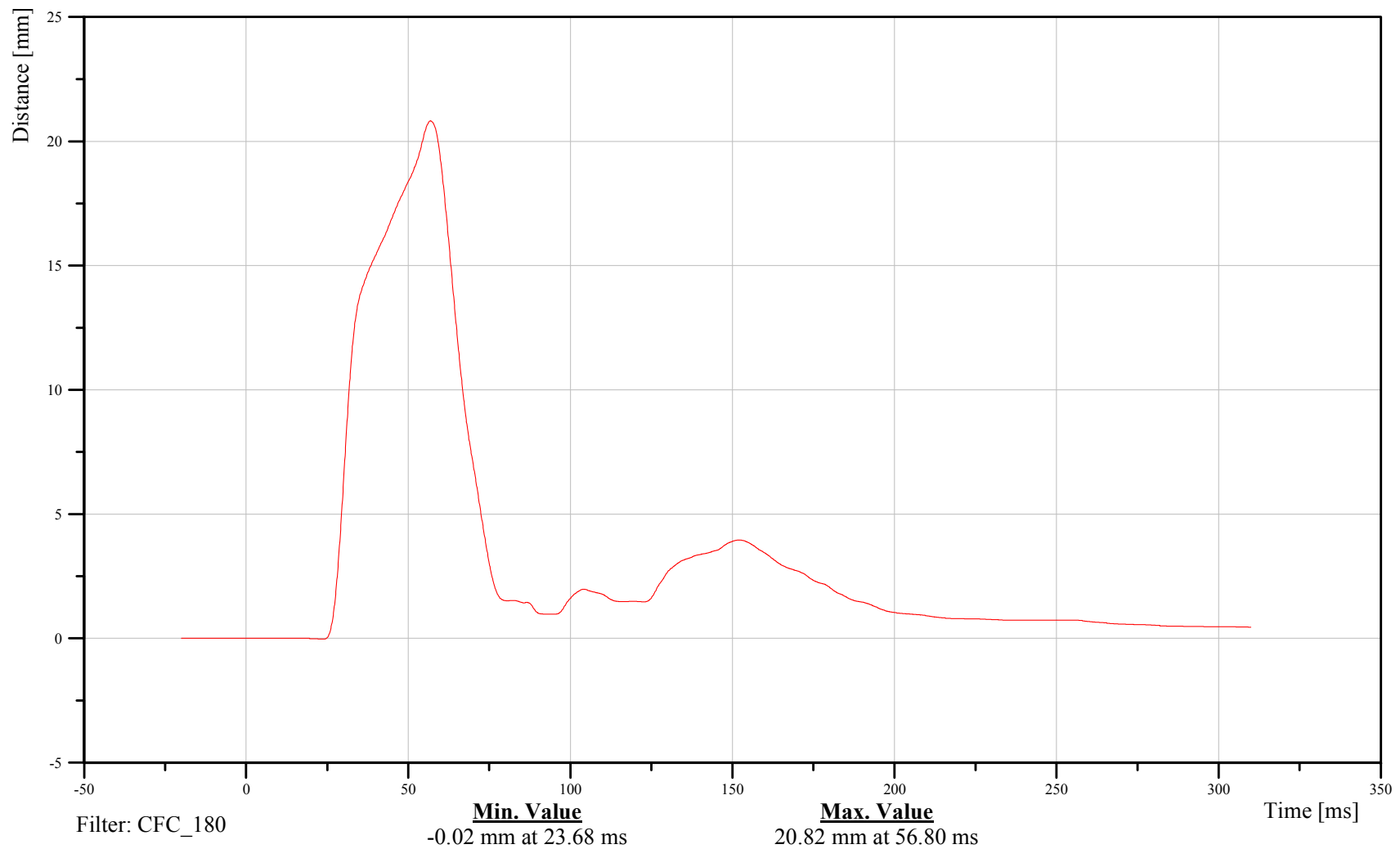
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14TRRI02LES2DSYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Thorax Rib 3 Disp. Y

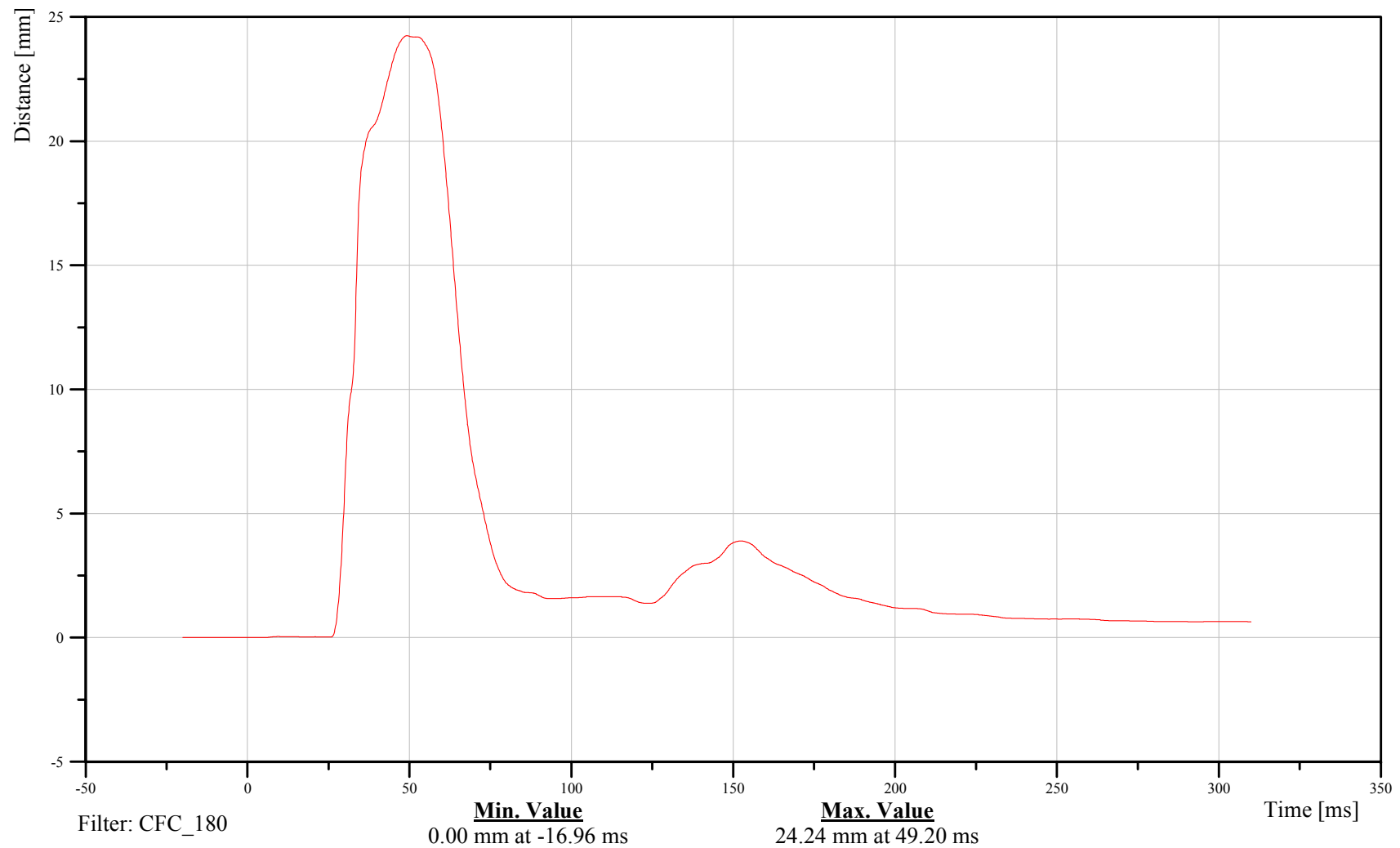
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14TRRI03LES2DSYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

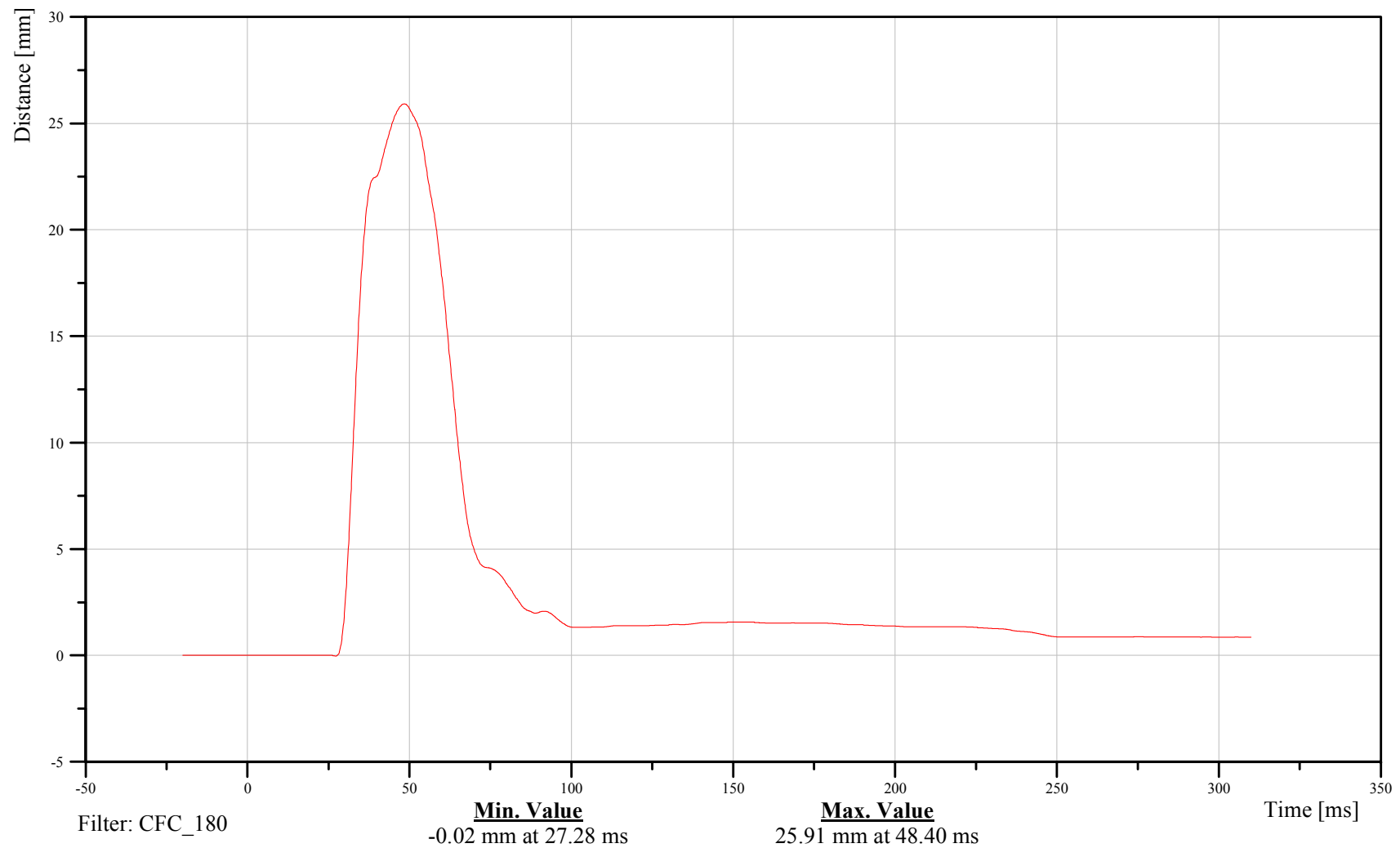
Abdomin Rib 1 Disp. Y

Customer: VRTC

14ABRI01LES2DSYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

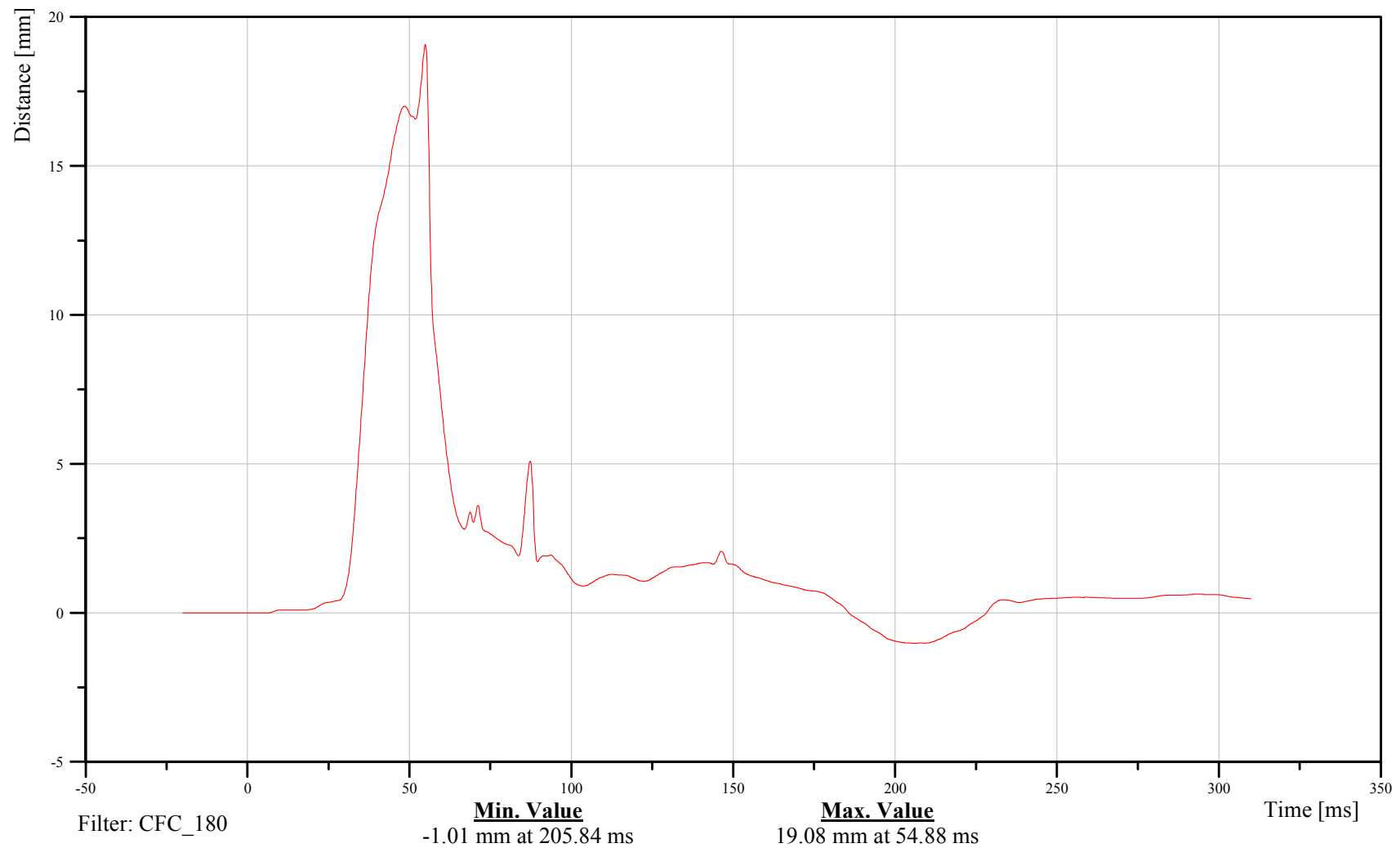
Abdomin Rib 2 Disp. Y

Customer: VRTC

14ABRI02LES2DSYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

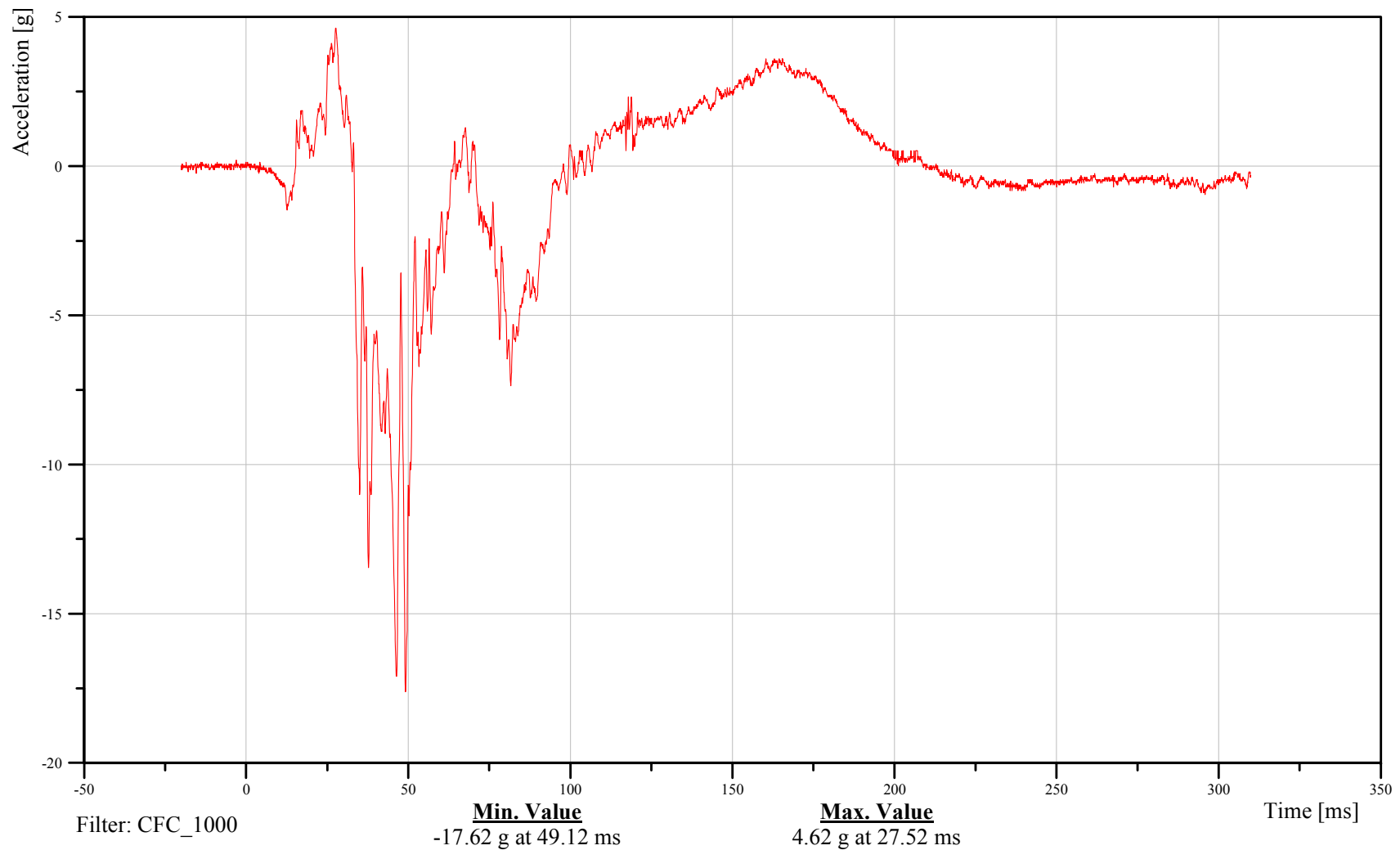
Pelvis Accel X

Customer: VRTC

14PELVCG00S2ACXA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

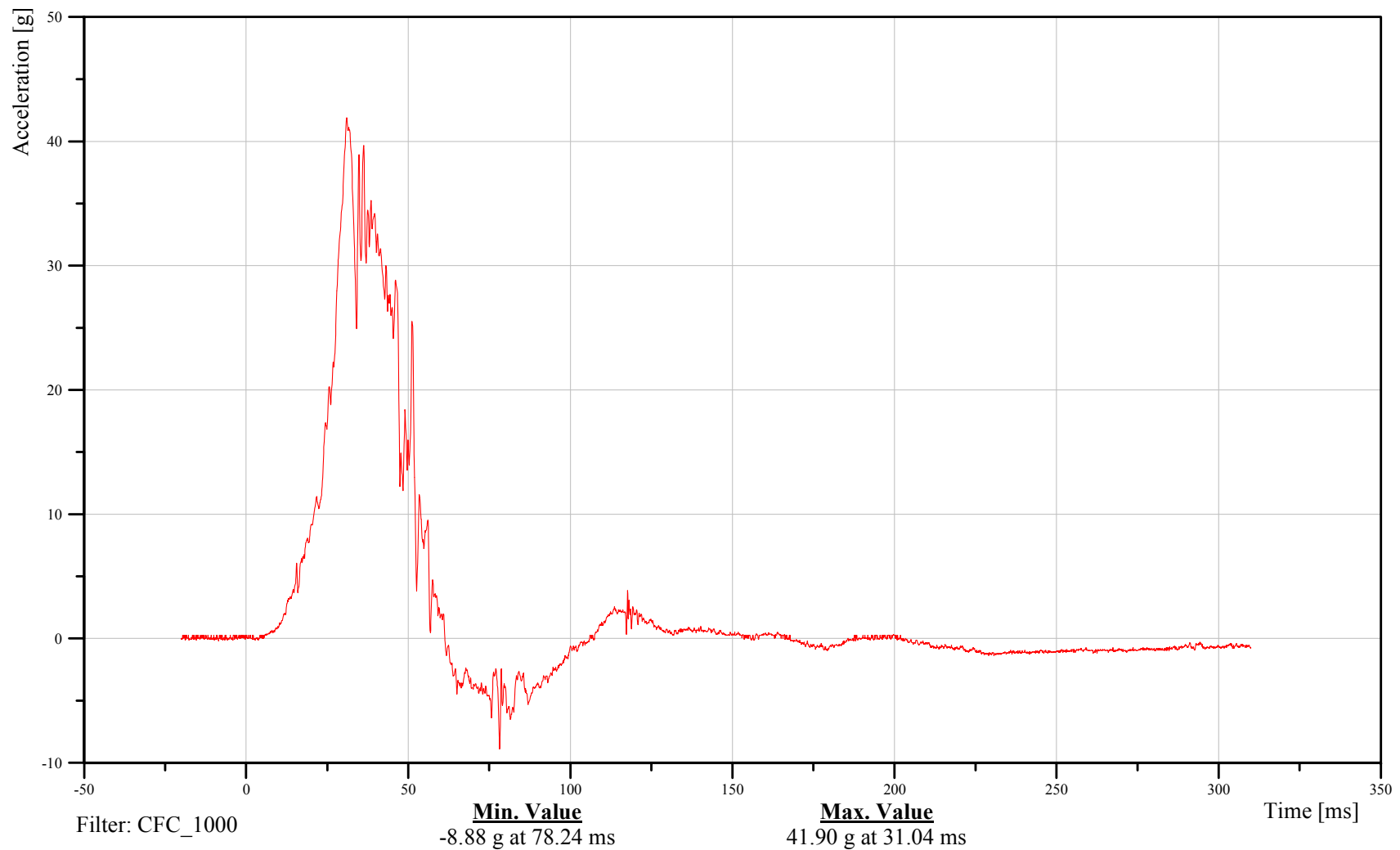
Pelvis Accel Y

Customer: VRTC

14PELVCG00S2ACYA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Pelvis Accel Z

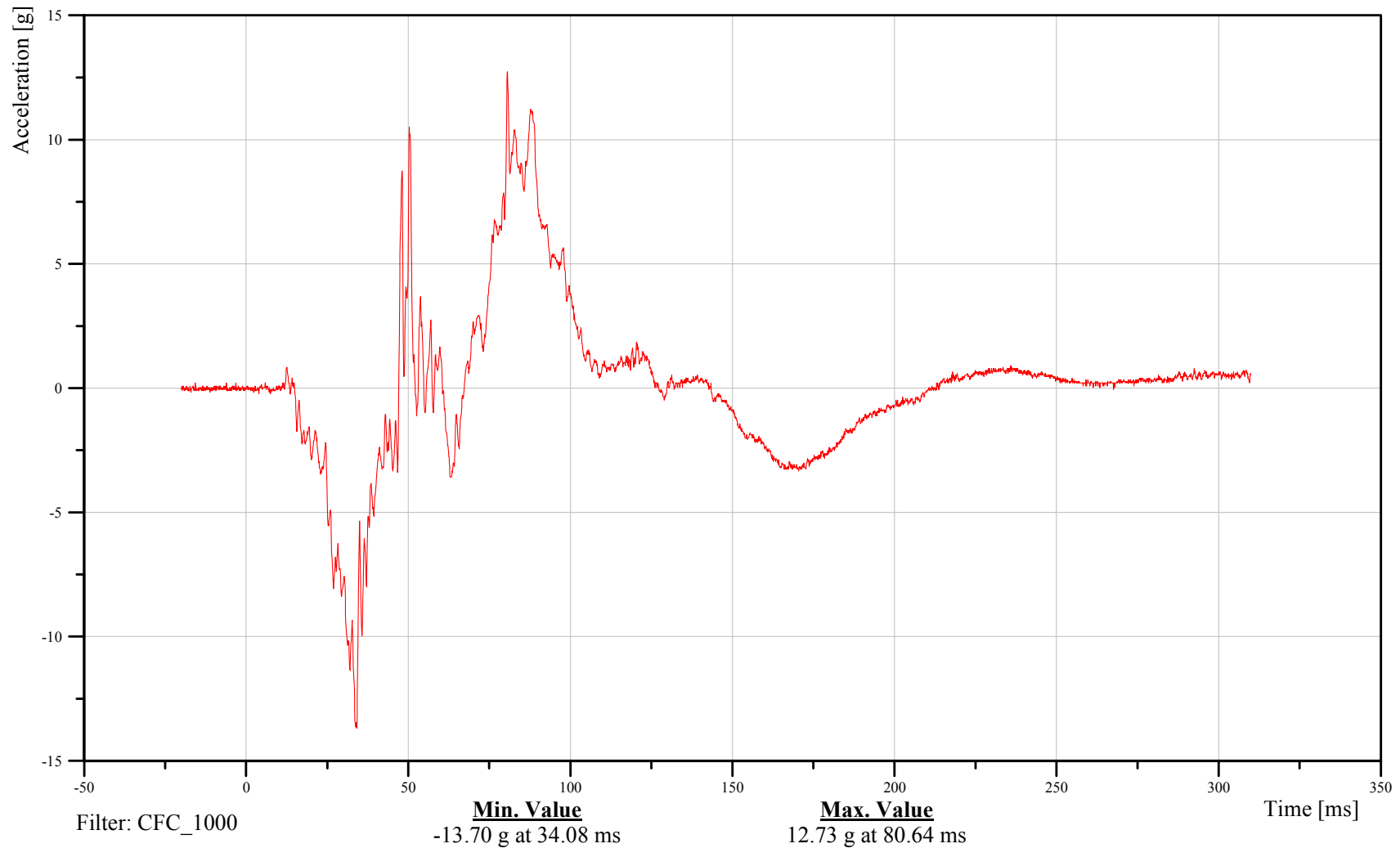
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14PELVCG00S2ACZA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

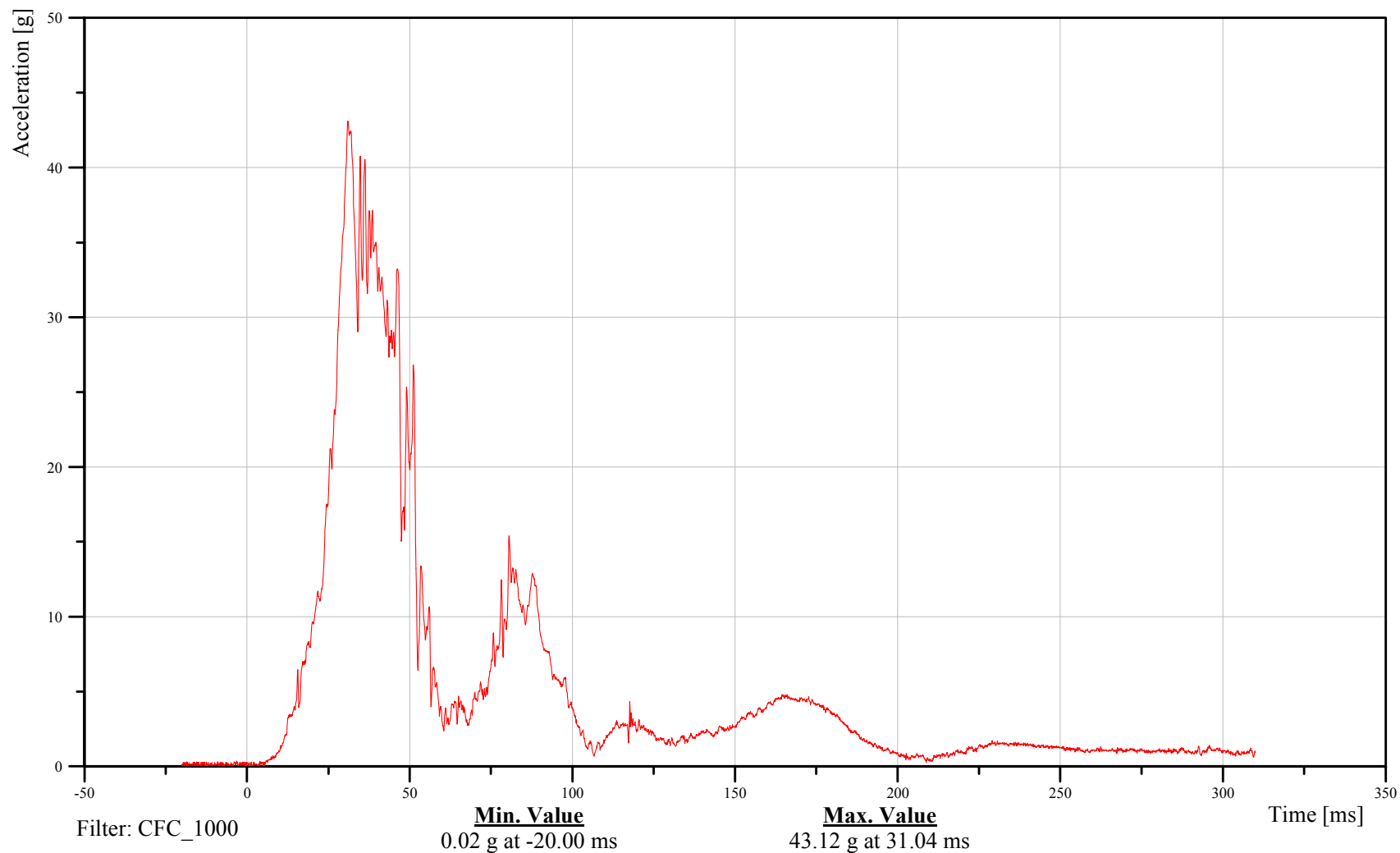
Pelvis Accel Resultant

Customer: VRTC

14PELVCG00S2ACRA

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Acetabulum Force Y

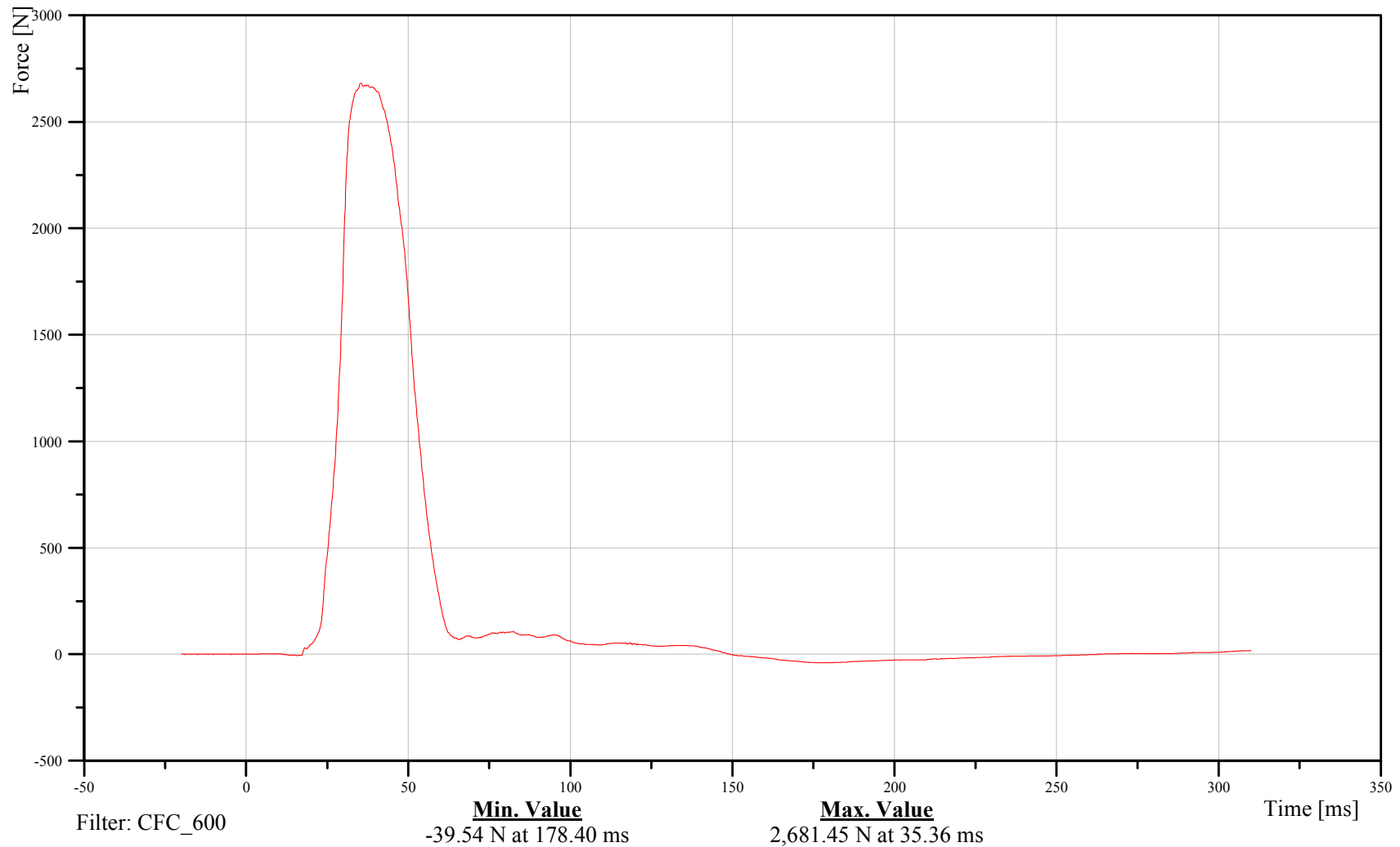
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14ACTBLE00S2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Illiac Wing Force Y

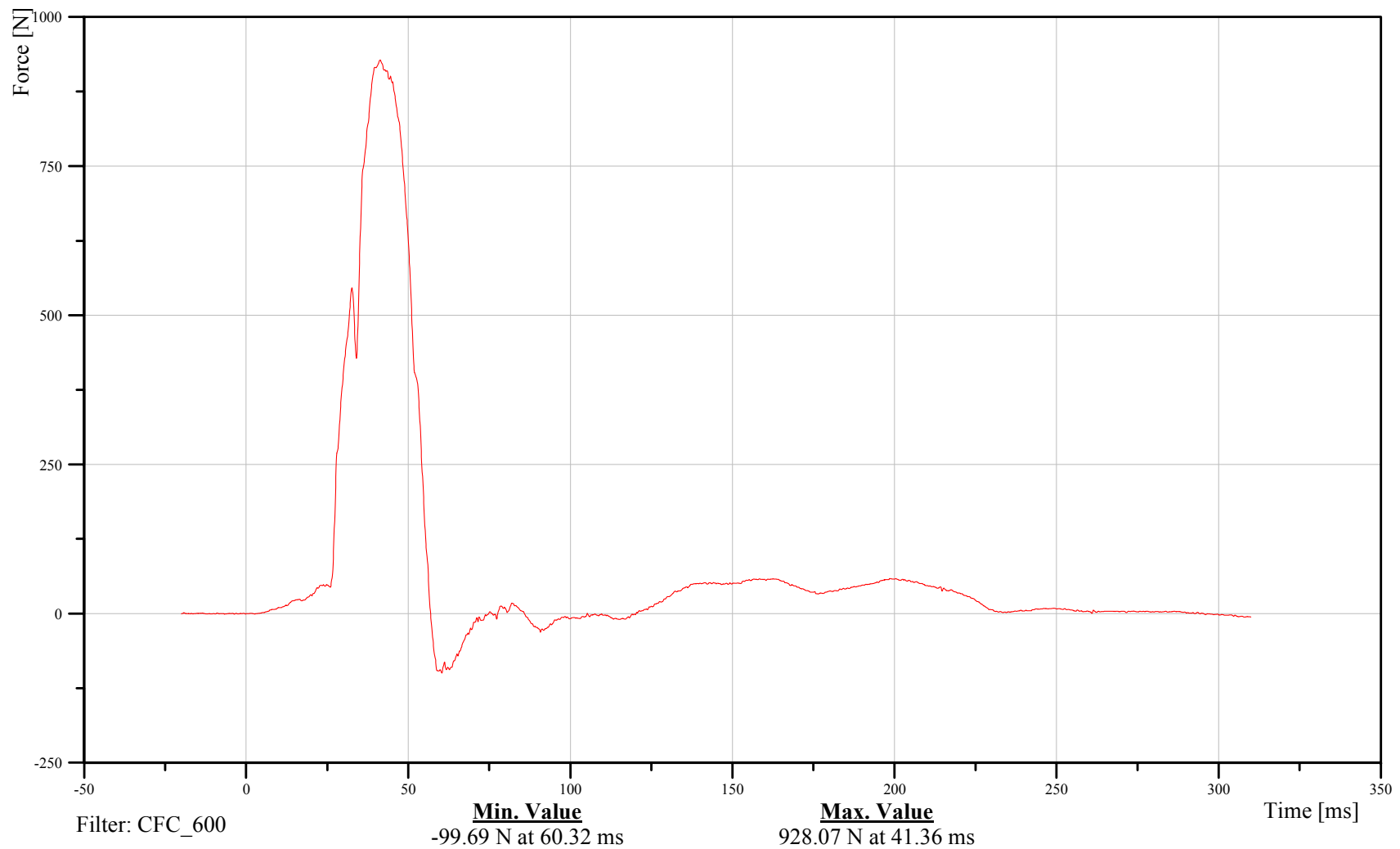
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14ILACLE00S2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

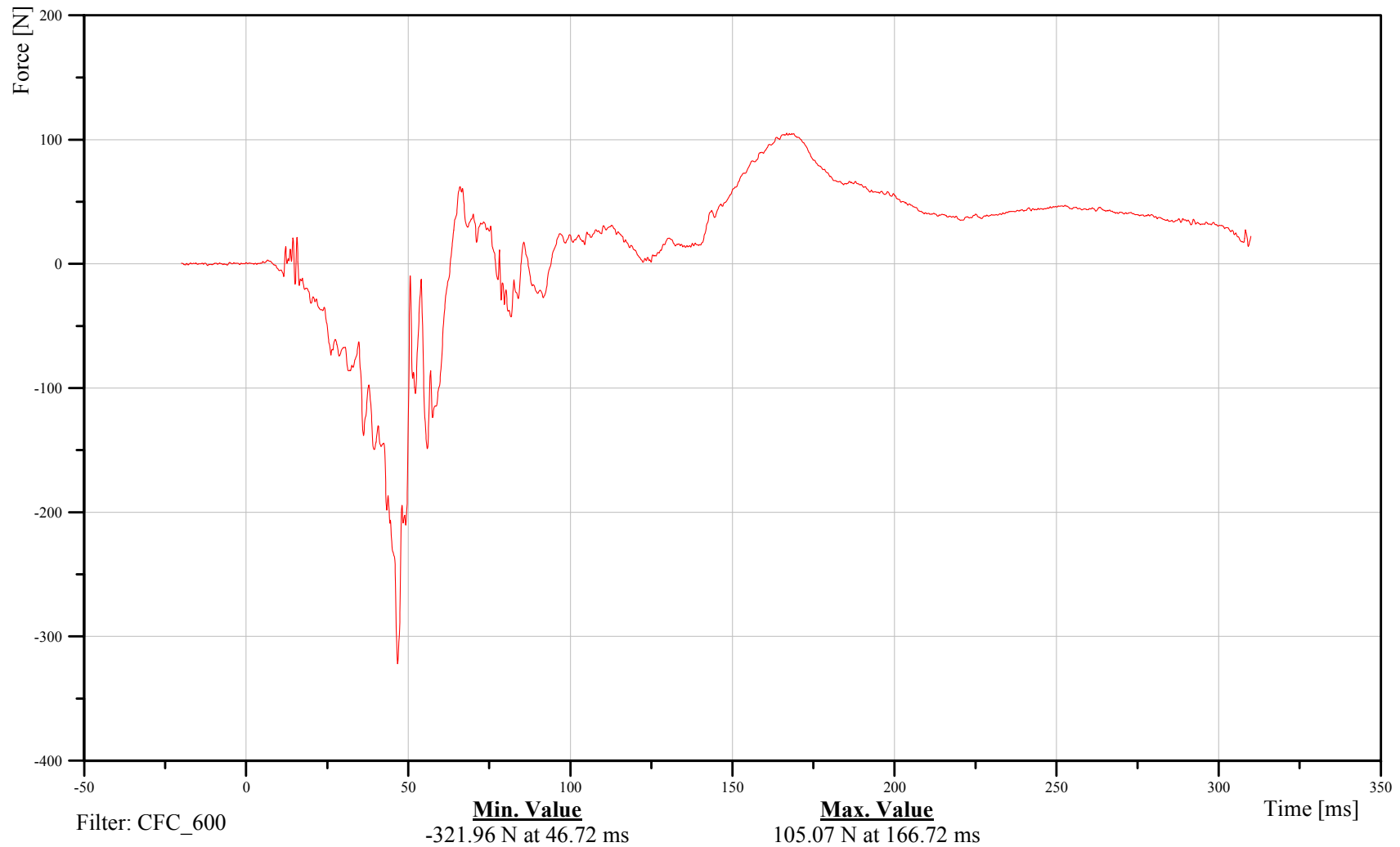
Right Femur Force X

Customer: VRTC

14FEMRRI00S2FOXB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

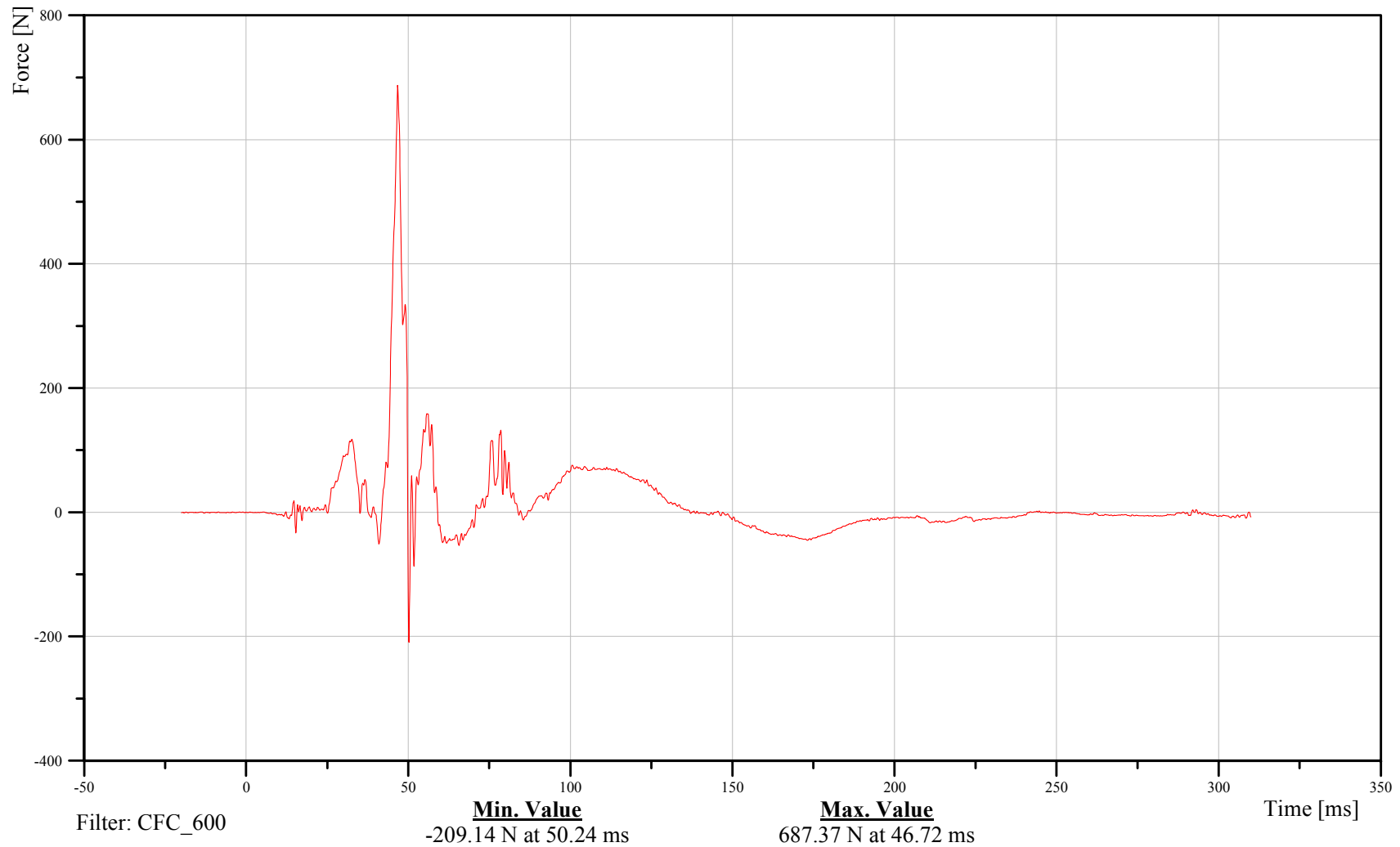
Right Femur Force Y

Customer: VRTC

14FEMRRI00S2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

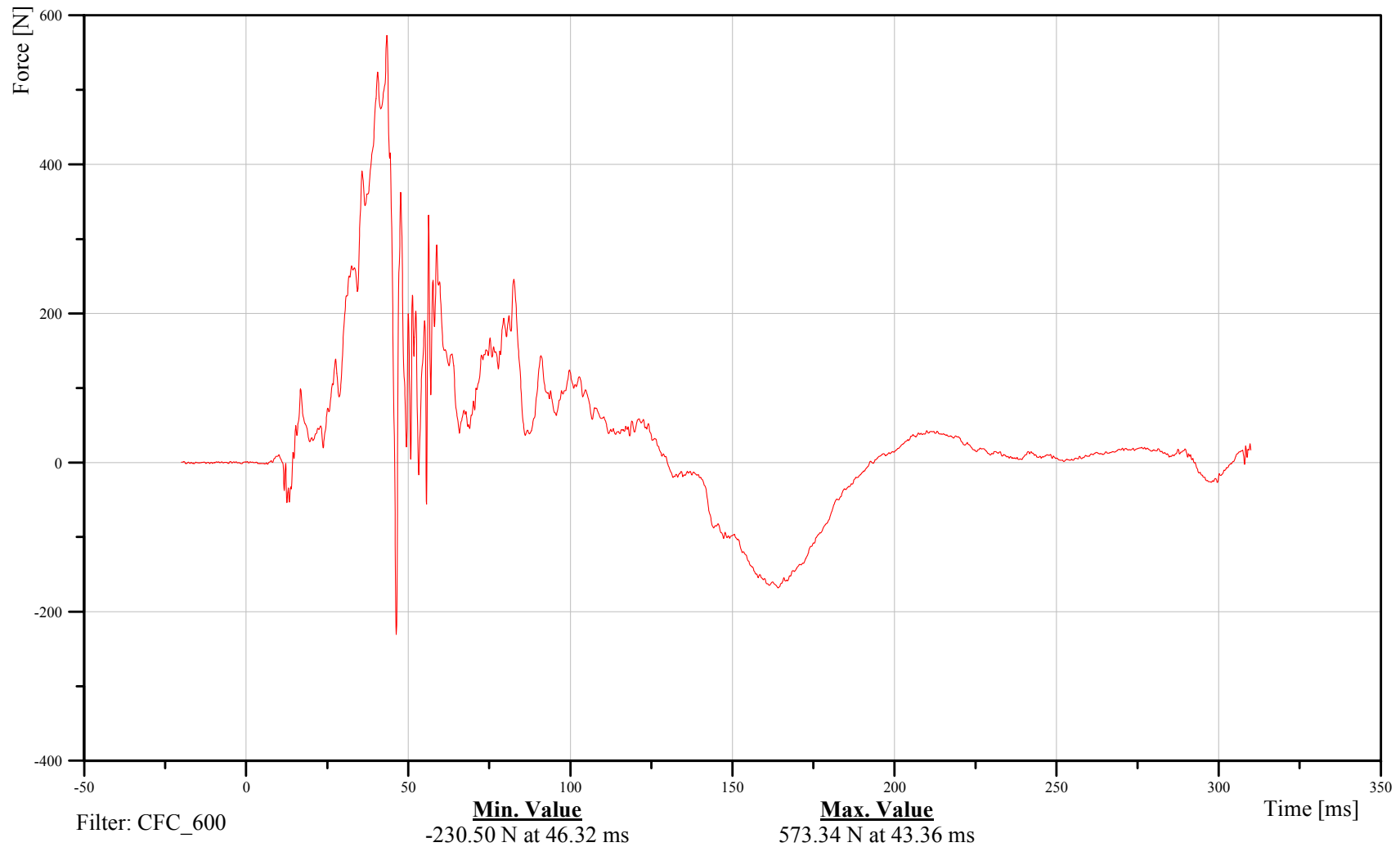
Right Femur Force Z

Customer: VRTC

14FEMRRI00S2FOZB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

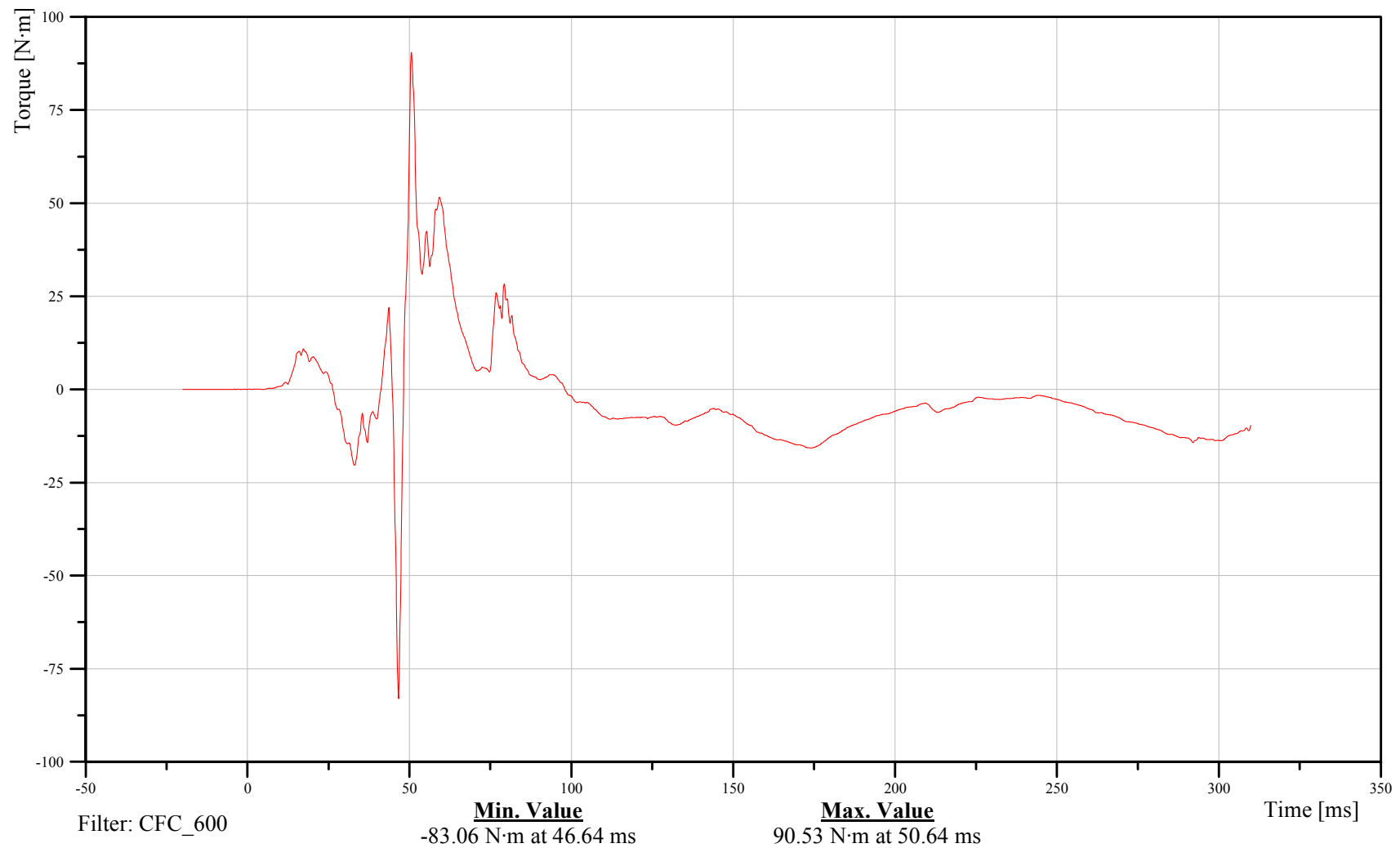
Right Femur Moment X

Customer: VRTC

14FEMRRI00S2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

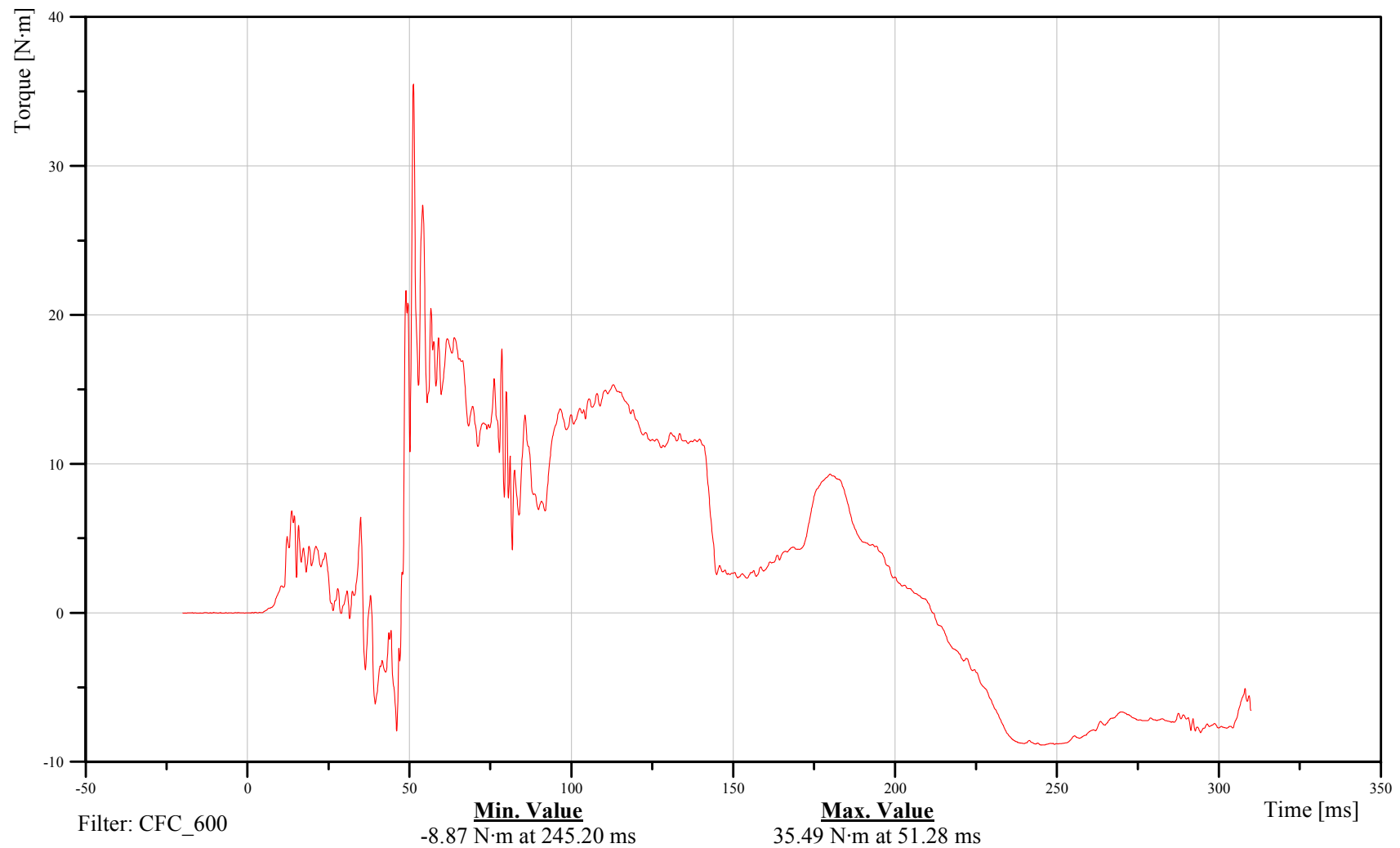
Right Femur Moment Y

Customer: VRTC

14FEMRRI00S2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

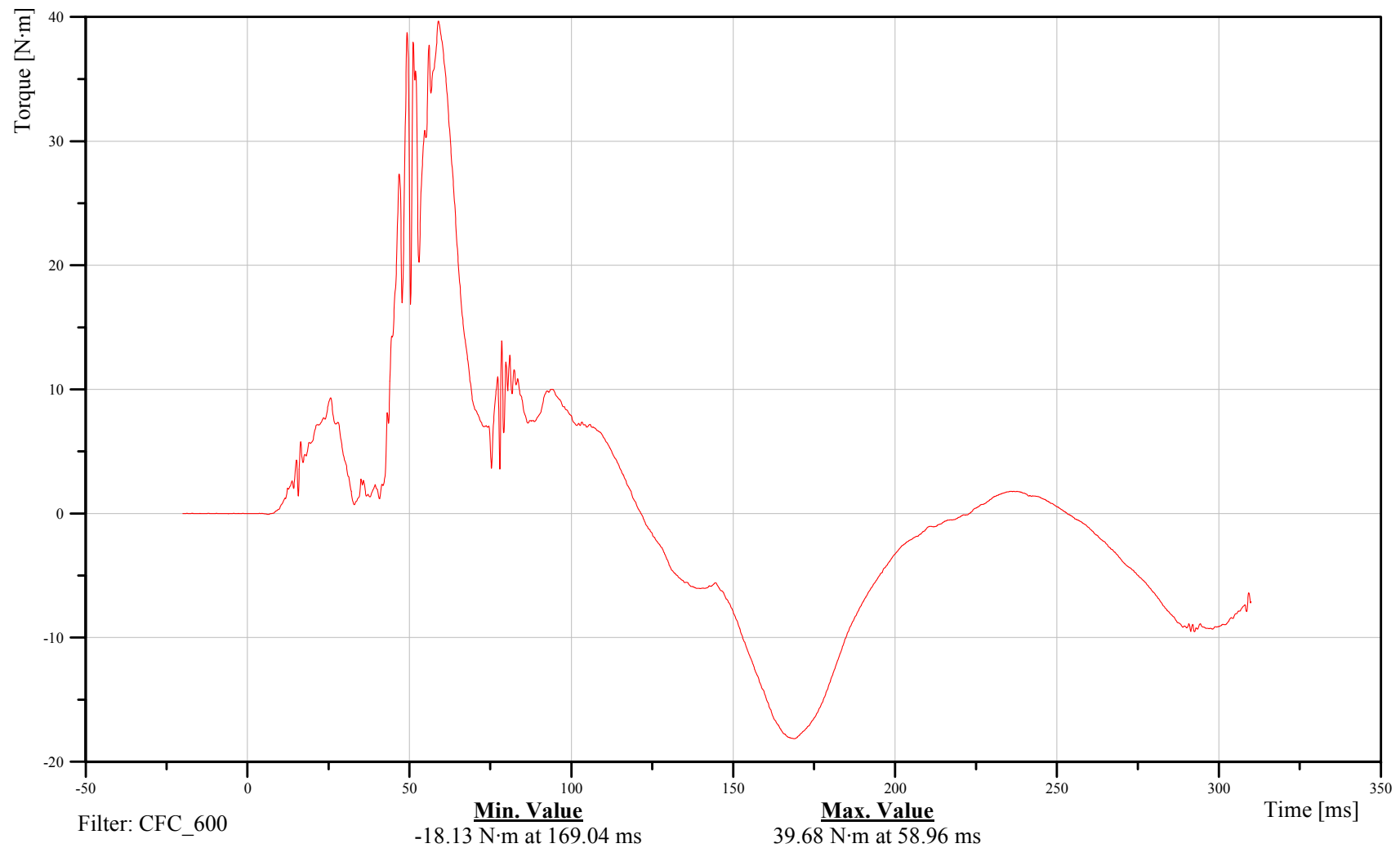
Right Femur Moment Z

Customer: VRTC

14FEMRRI00S2MOZB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

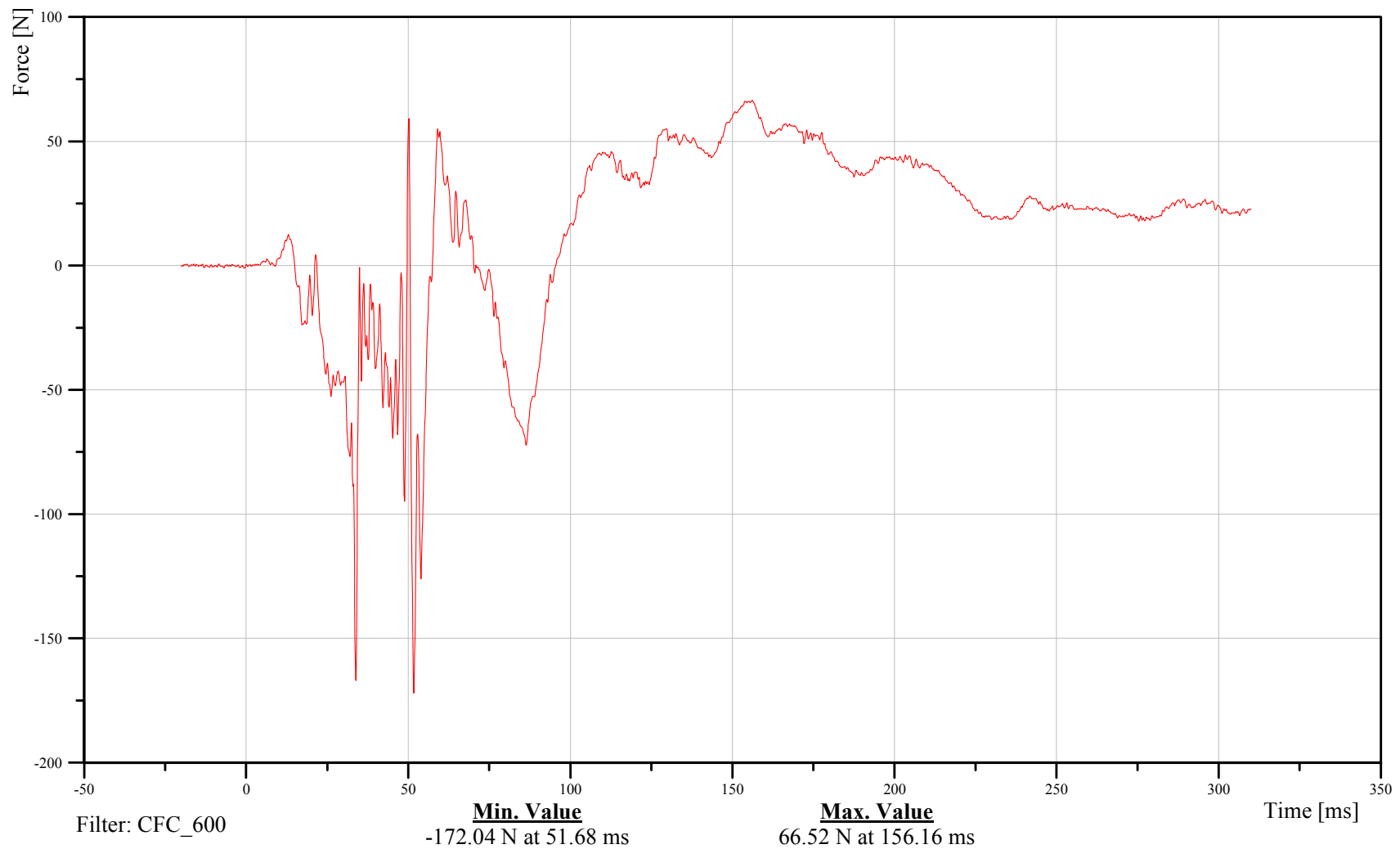
Left Femur Force X

Customer: VRTC

14FEMRLE00S2FOXB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

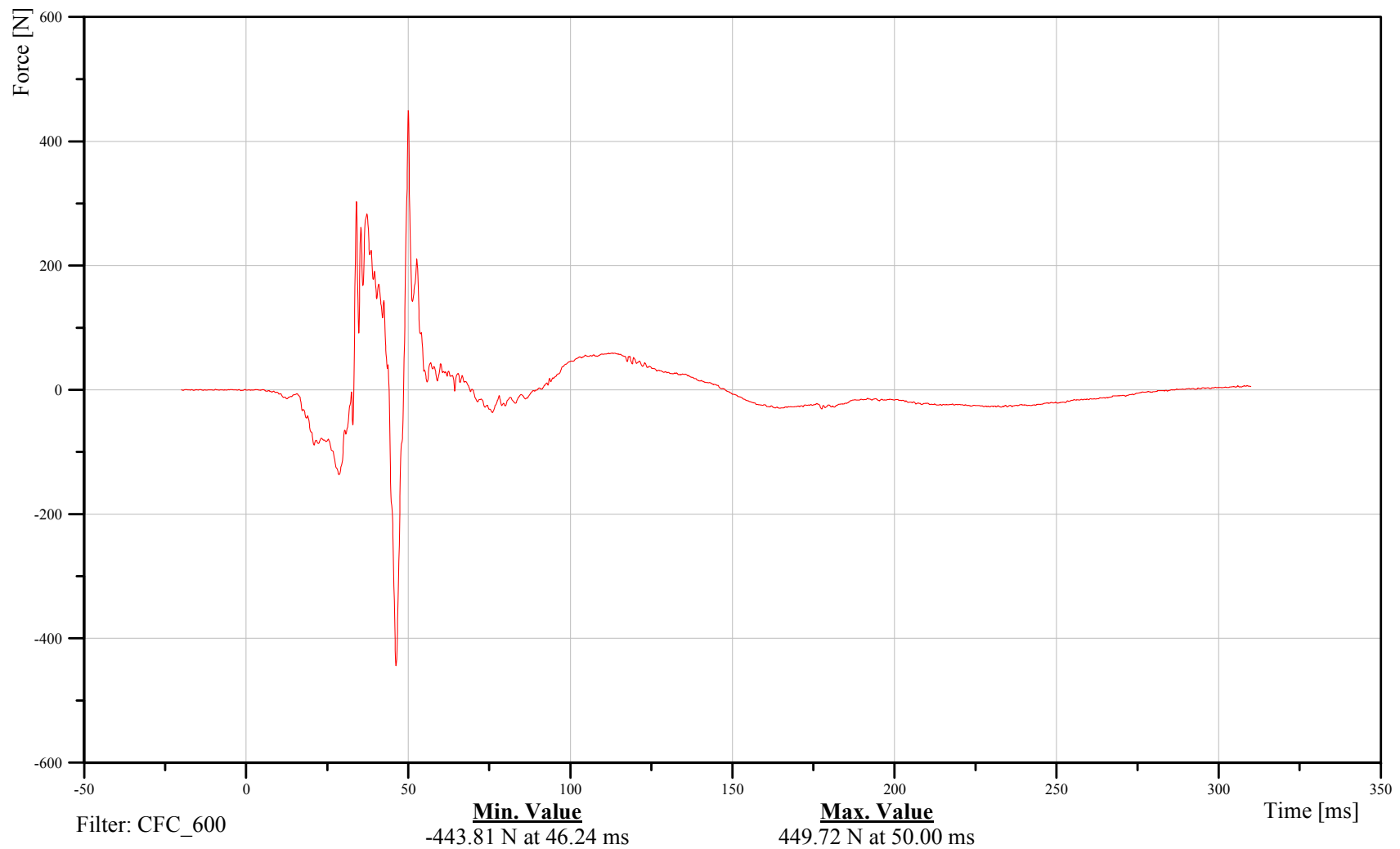
Left Femur Force Y

Customer: VRTC

14FEMRLE00S2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

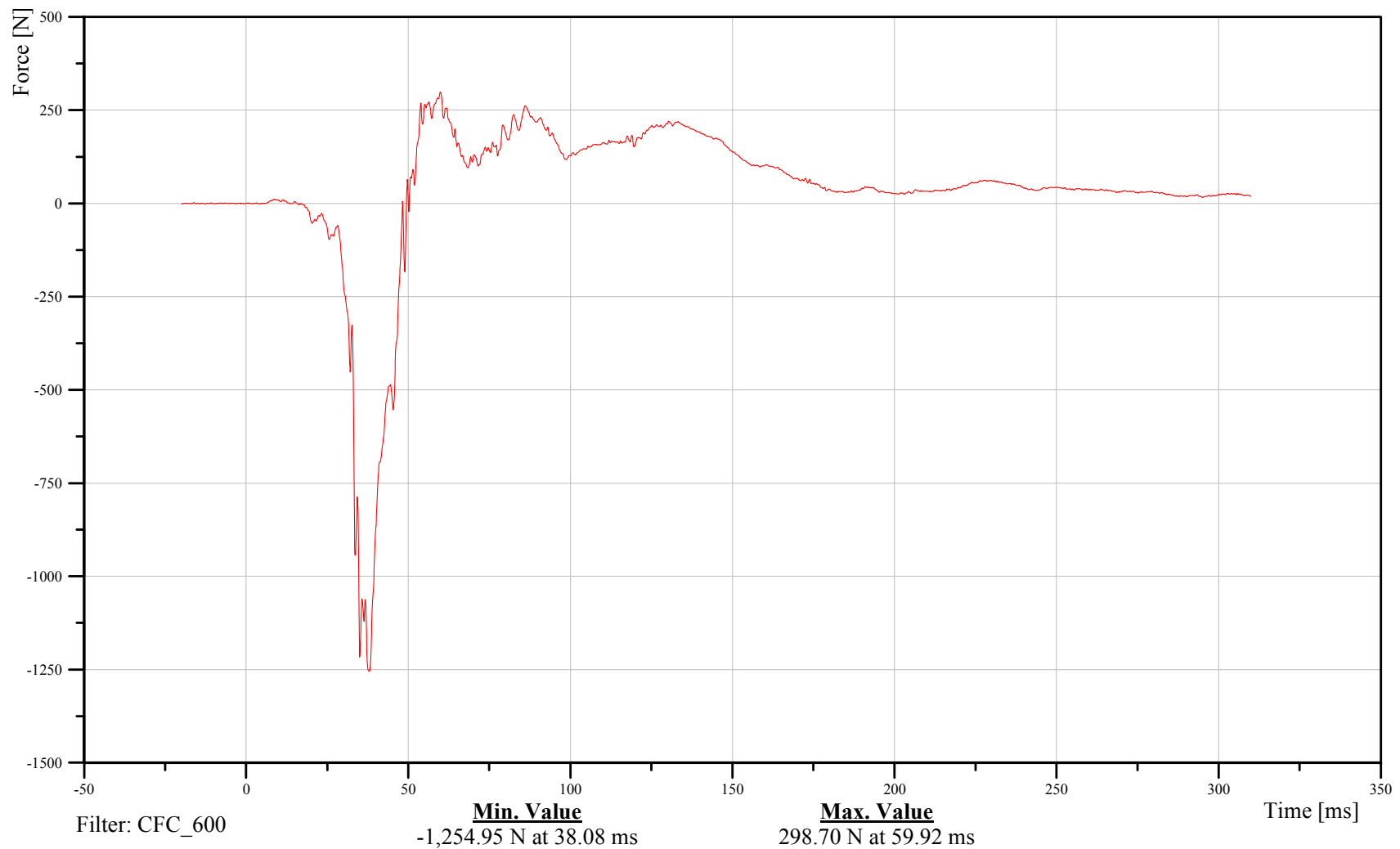
Left Femur Force Z

Customer: VRTC

14FEMRLE00S2FOZB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Femur Moment X

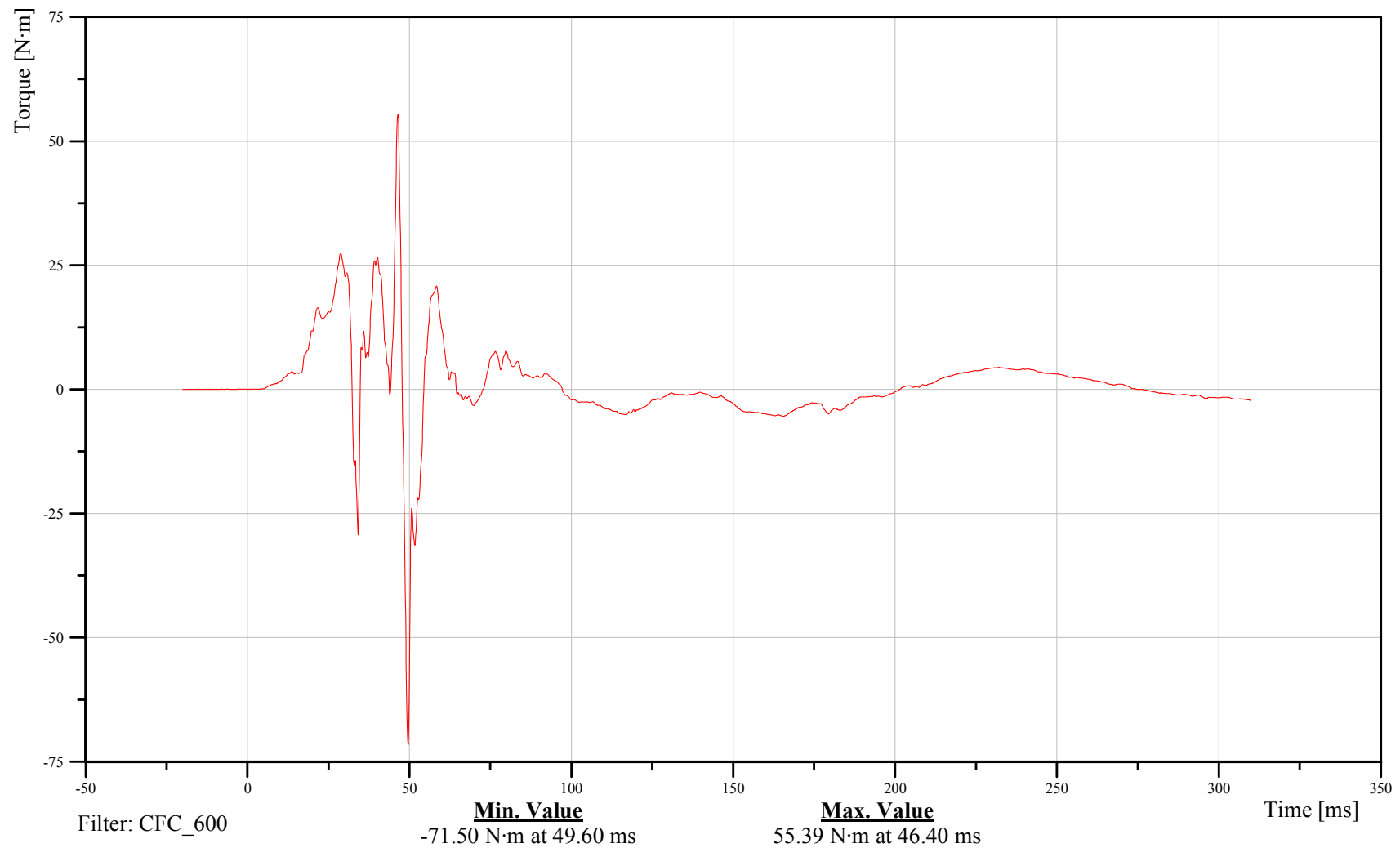
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14FEMRLE00S2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Femur Moment Y

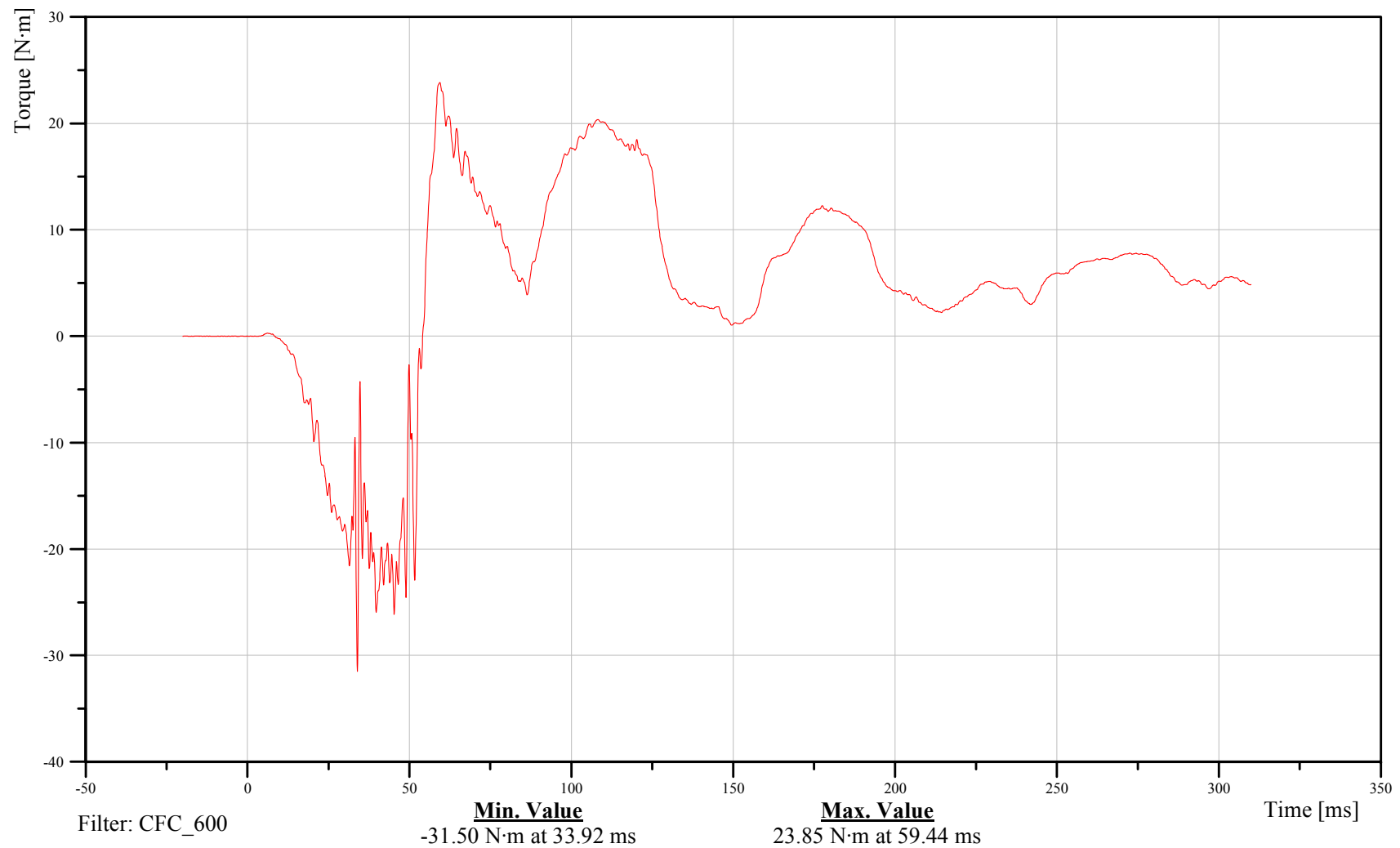
Date: 07/18/2005
Time: 13:59

Customer: VRTC

14FEMRLE00S2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

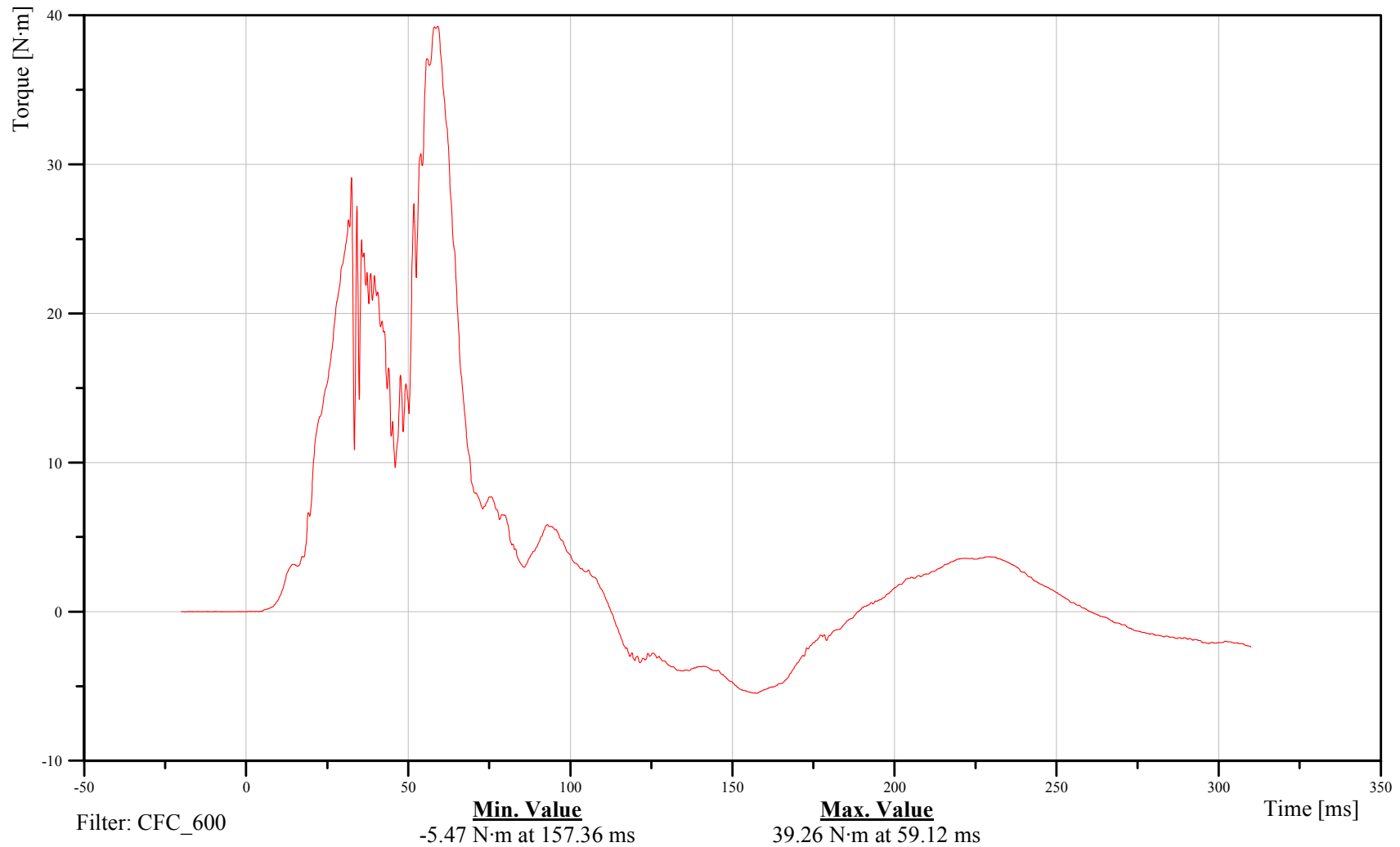
Left Femur Moment Z

Customer: VRTC

14FEMRLE00S2MOZB

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

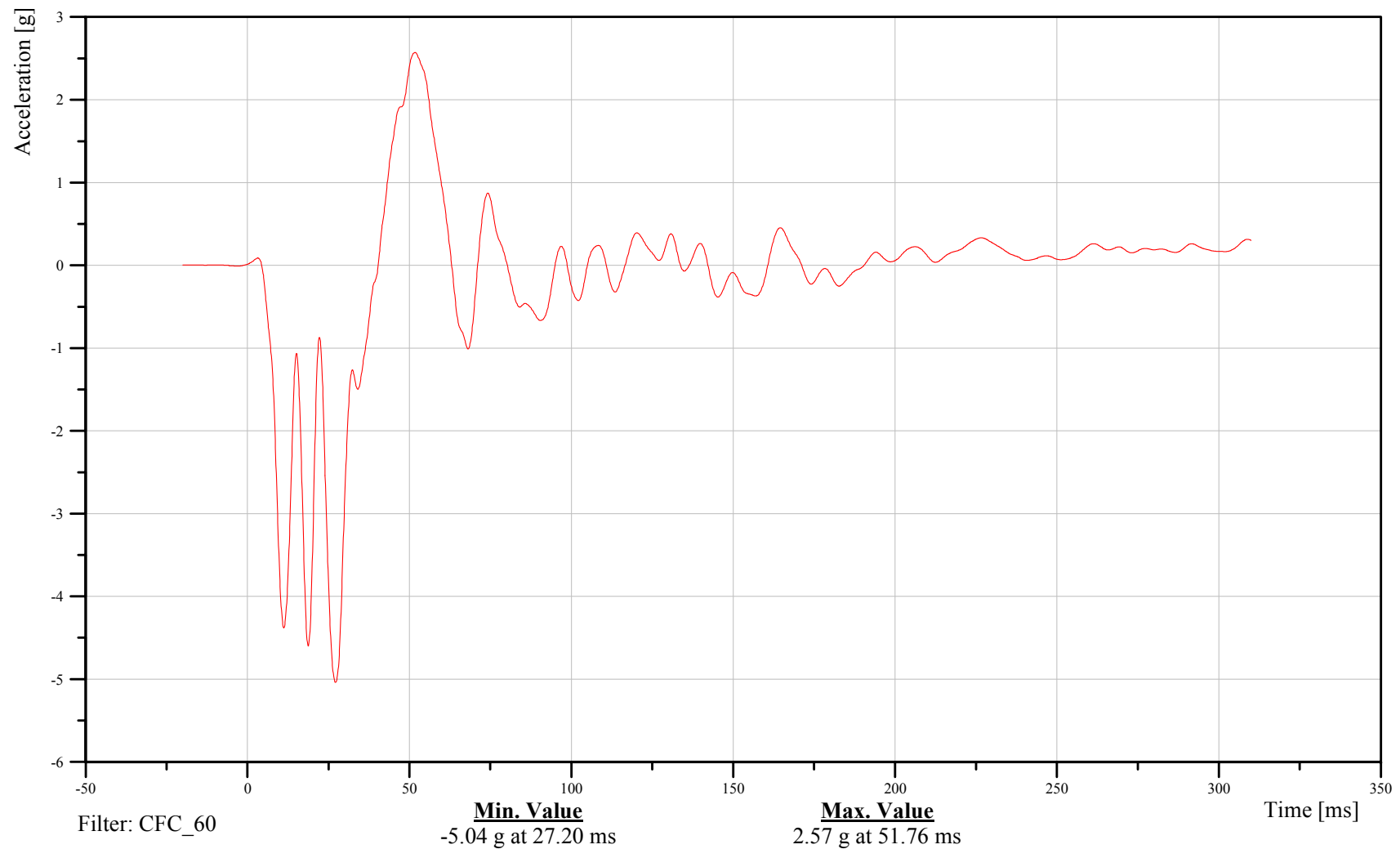
Right Side Sill at Front Seat X-axis Acceleration

Customer: VRTC

16SILBFR0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Right Side Sill at Front Seat Y-axis Acceleration

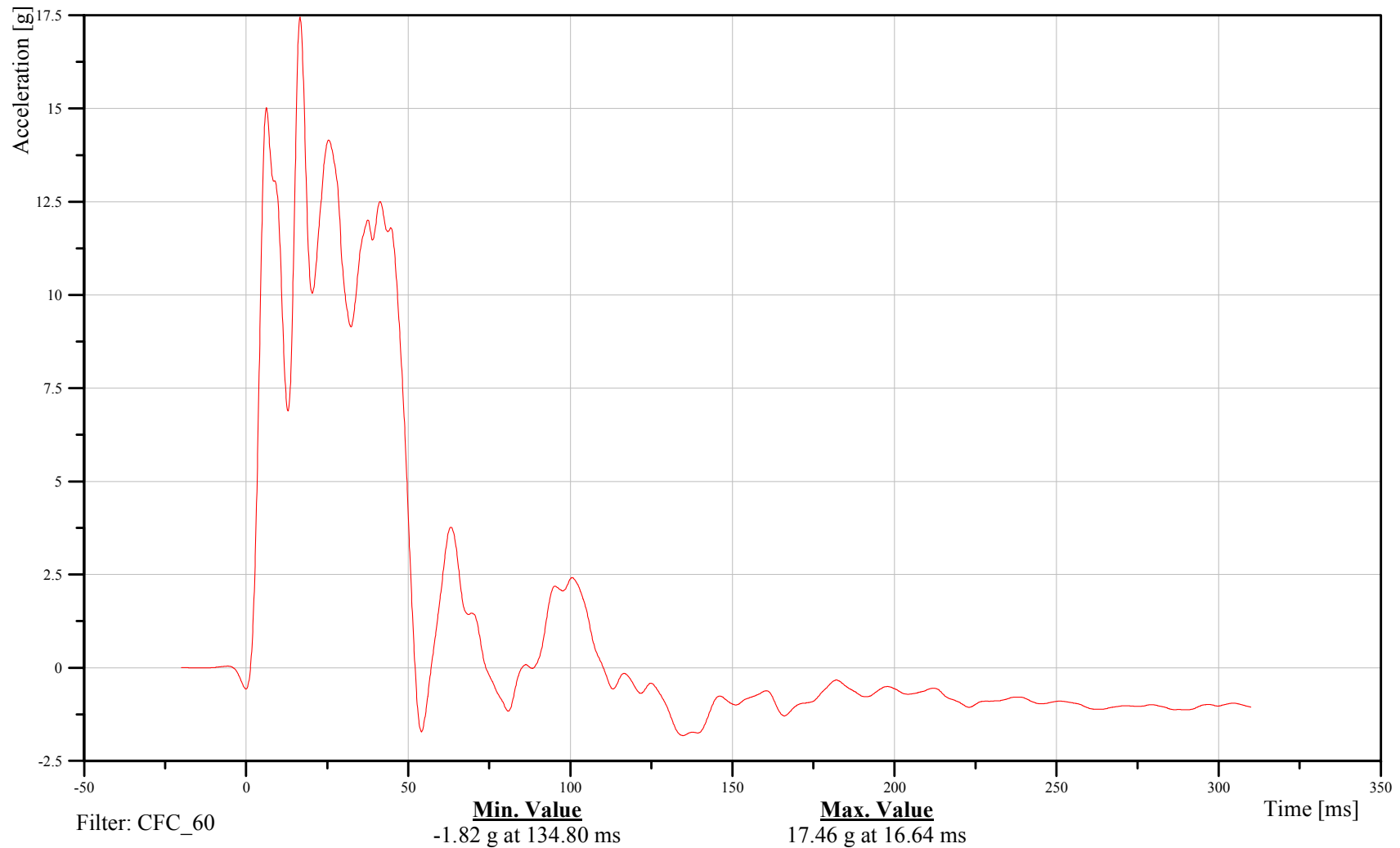
Date: 07/18/2005
Time: 13:59

Customer: VRTC

16SILBFR0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005

Time: 13:59

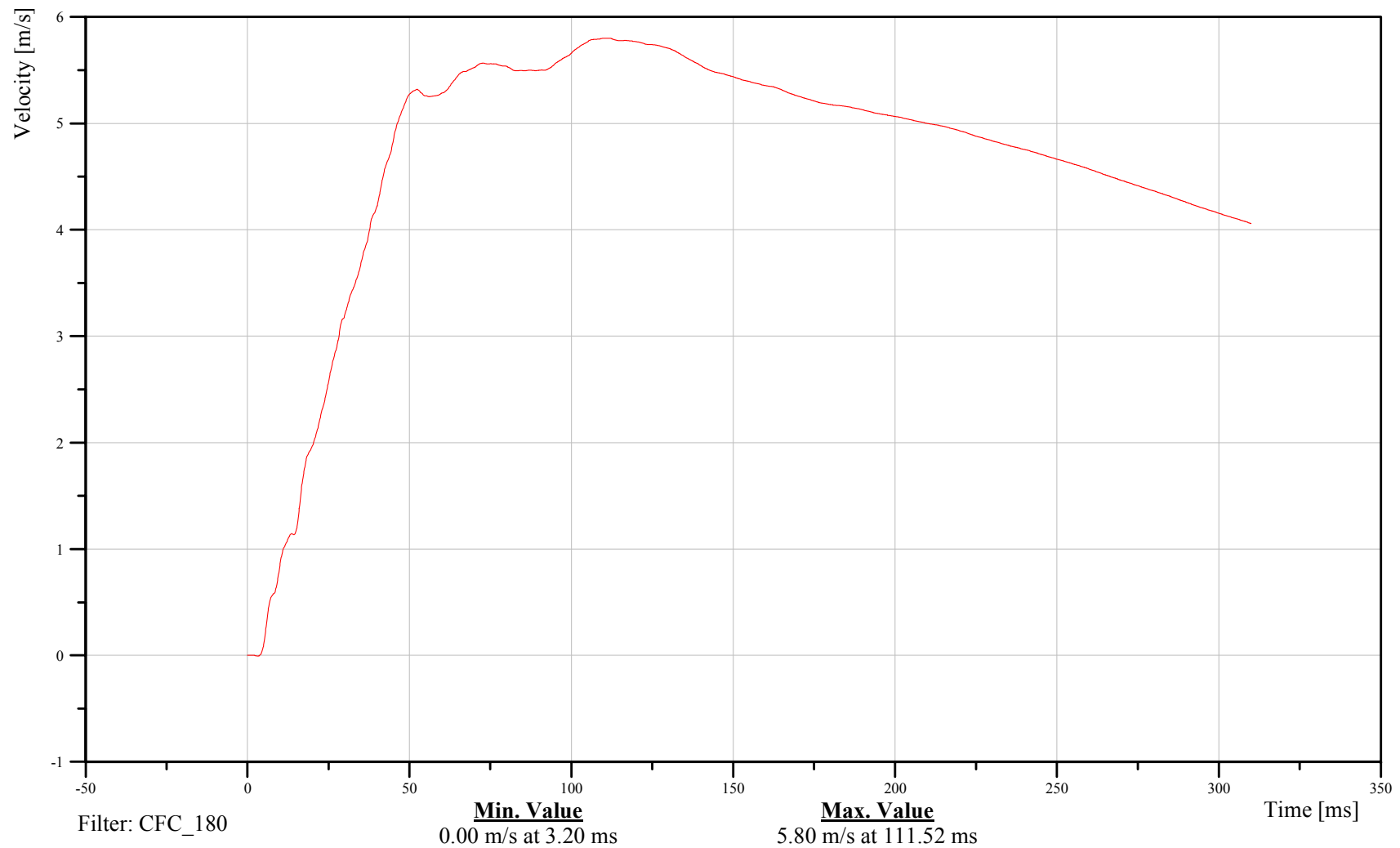
Right Side Sill at Front Seat Y-axis Velocity

Customer: VRTC

16SILBFR0000VEYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005

Time: 13:59

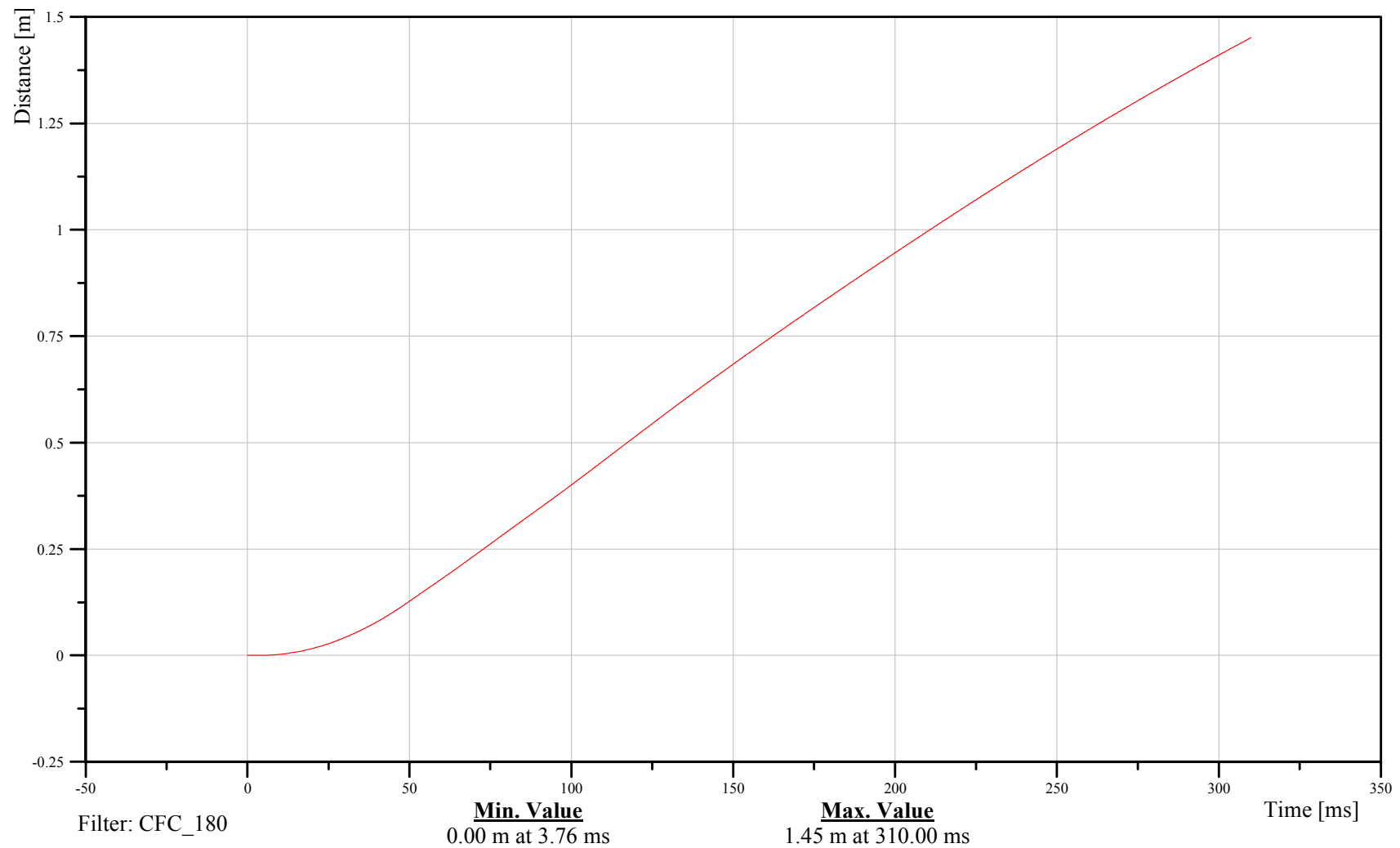
Right Side Sill at Front Seat Y-axis Displacement

Customer: VRTC

16SILBFR0000DCYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005

Time: 13:59

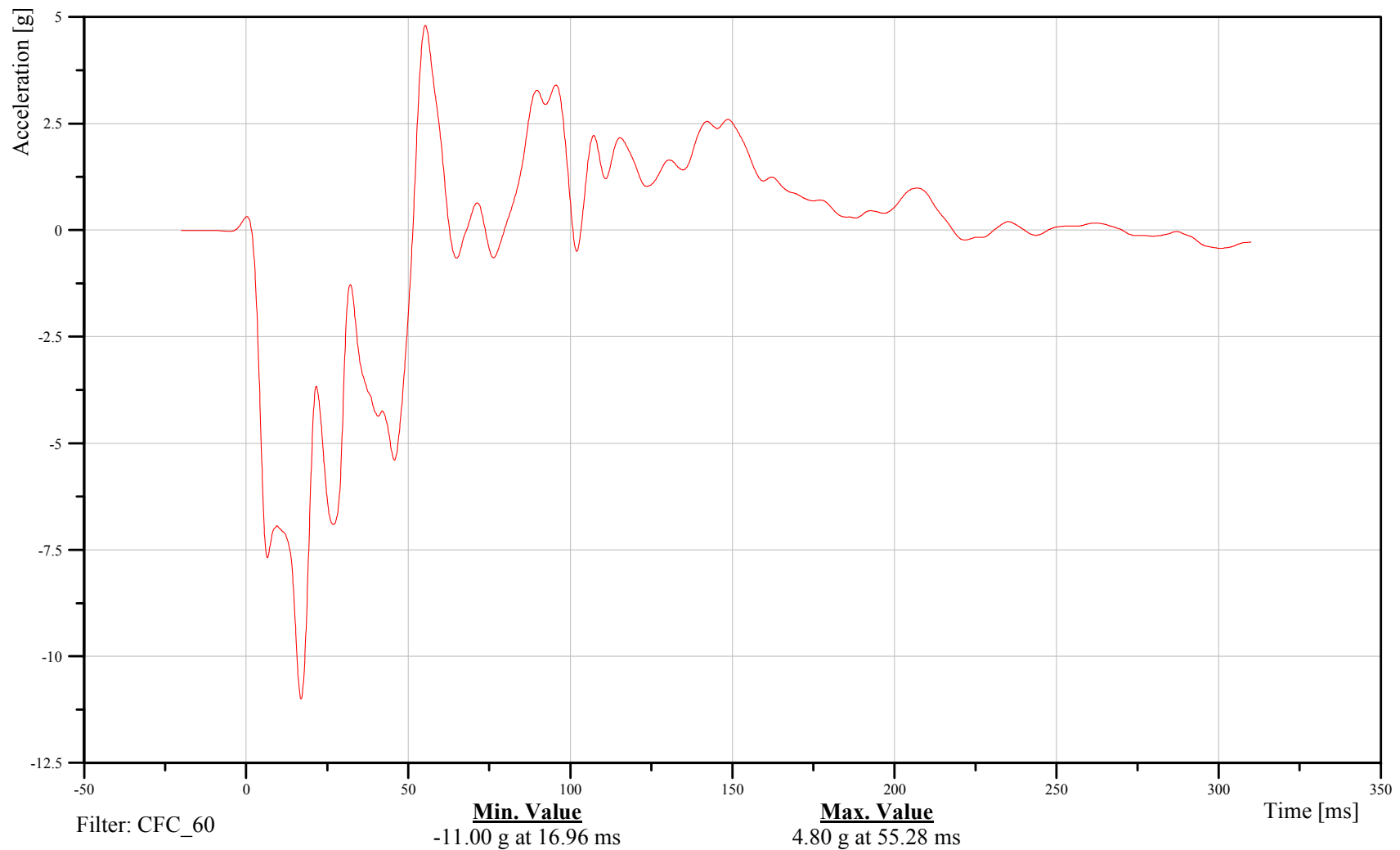
Right Side Sill at Front Seat Z-axis Acceleration

Customer: VRTC

16SILBFR0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

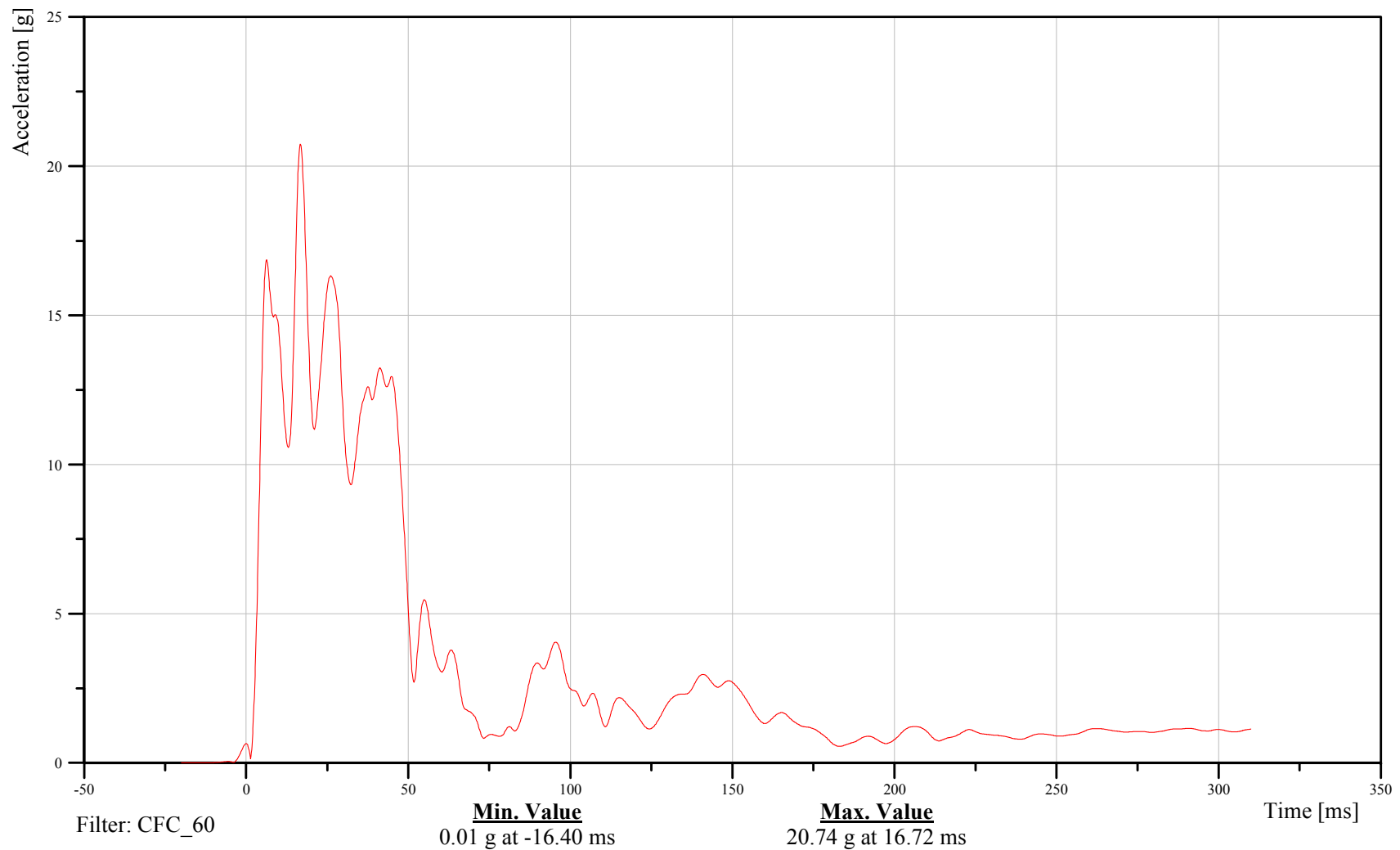
Right Side Sill at Front Seat Resultant Acceleration

Customer: VRTC

16SILBFR0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Right Side Sill at Rear Seat X-axis Acceleration

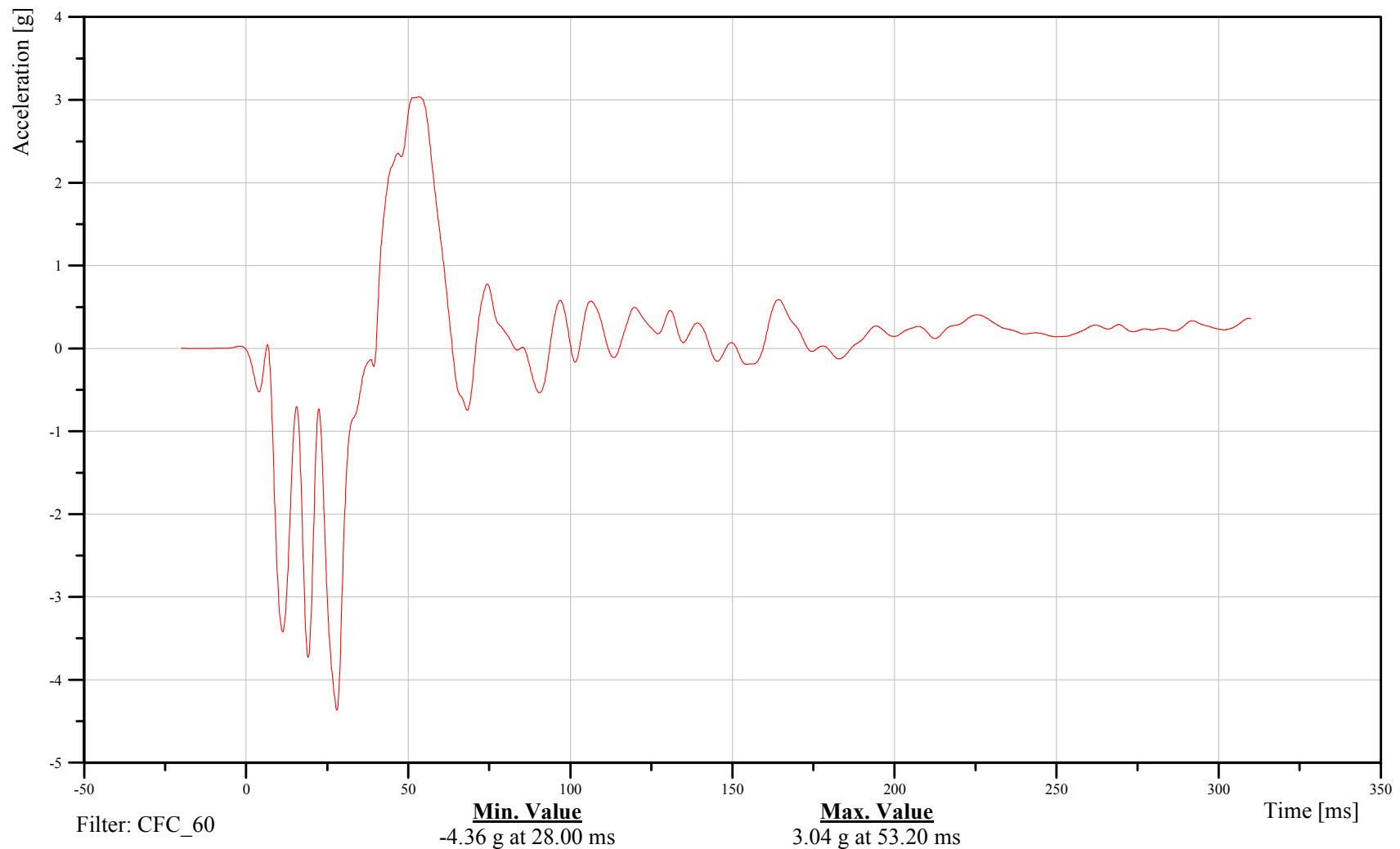
Date: 07/18/2005
Time: 13:59

Customer: VRTC

16SILBRE0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Right Side Sill at Rear Seat Y-axis Acceleration

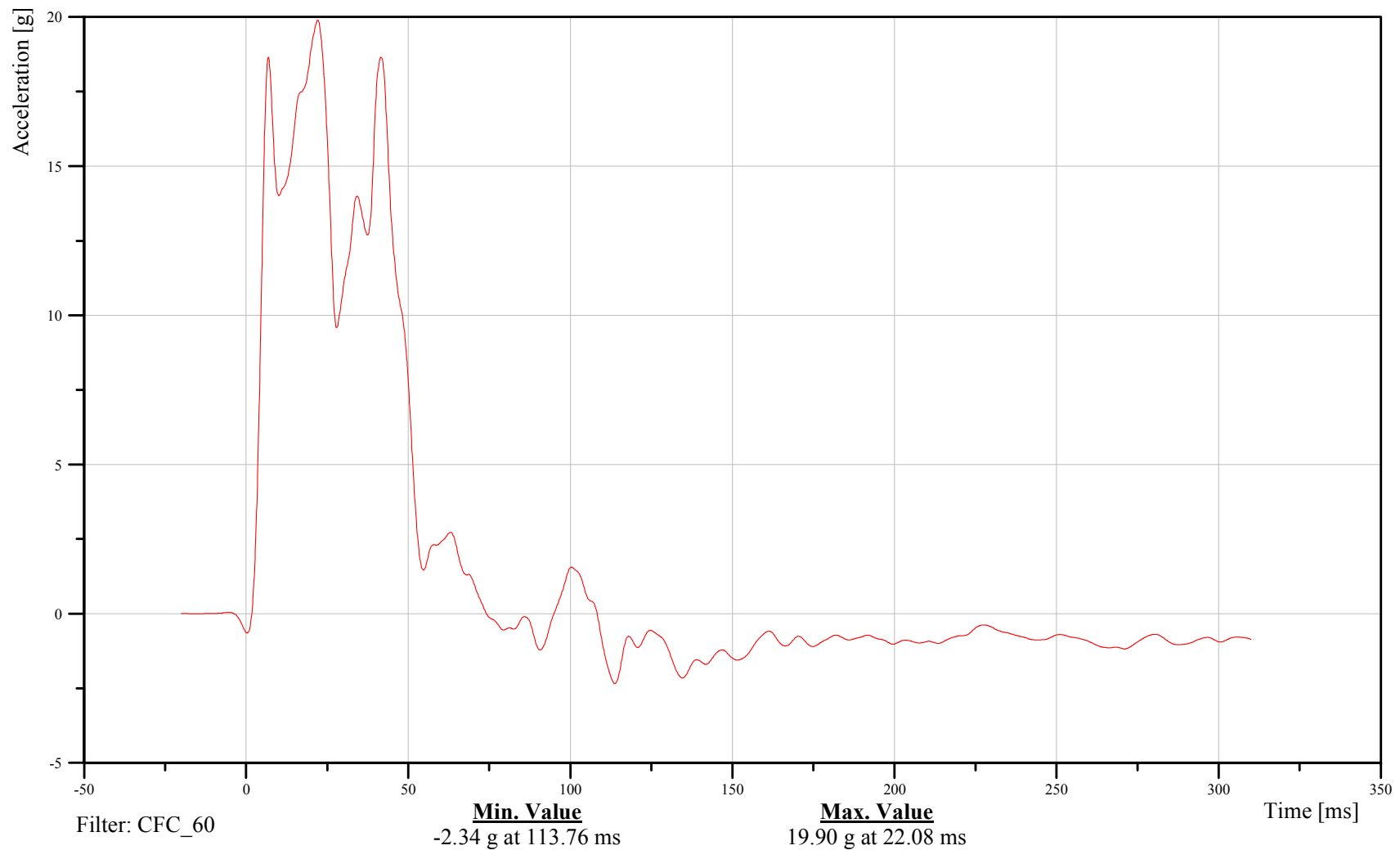
Date: 07/18/2005
Time: 13:59

Customer: VRTC

16SILBRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005

Time: 13:59

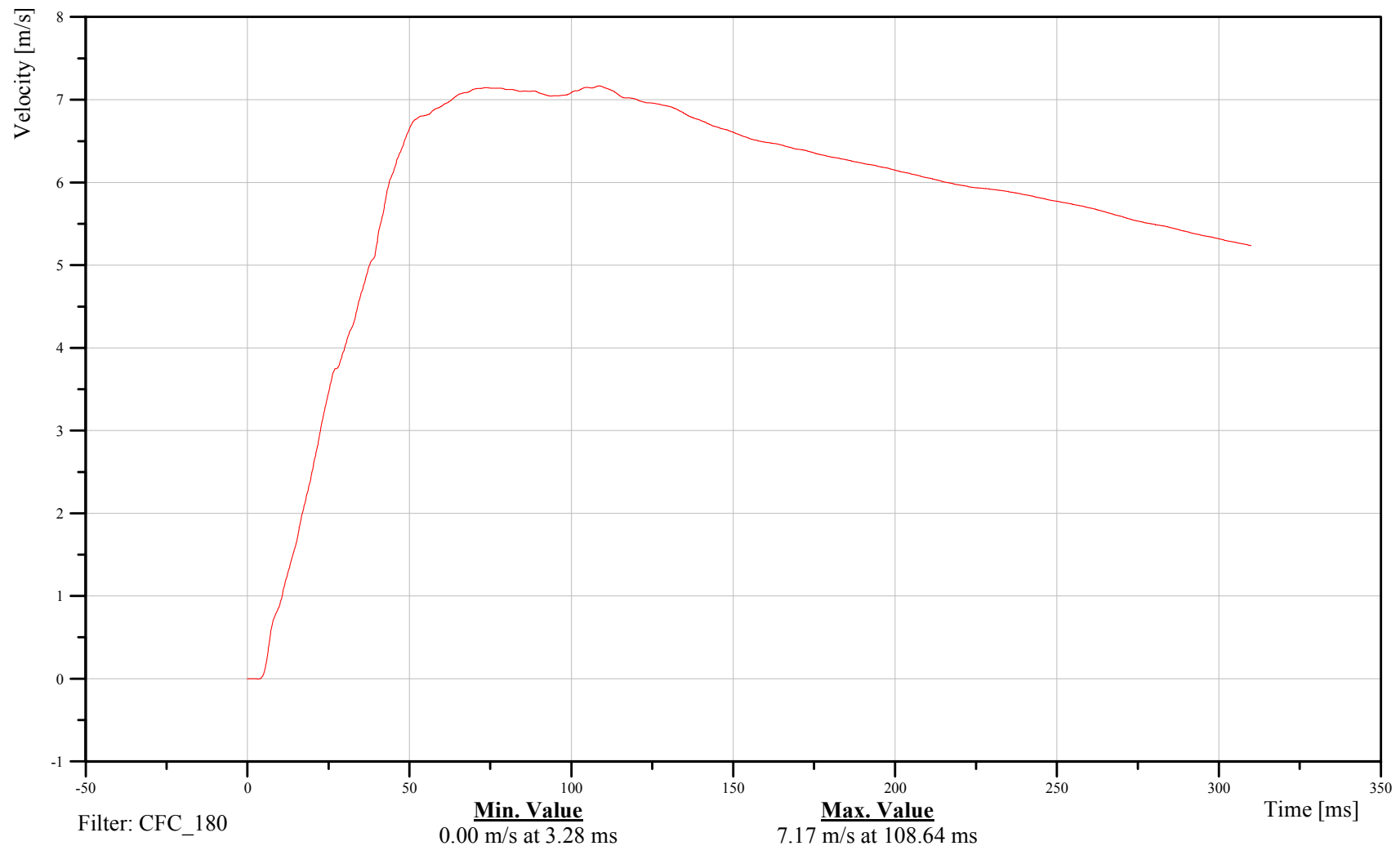
Right Side Sill at Rear Seat Y-axis Velocity

Customer: VRTC

16SILBRE0000VEYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Right Side Sill at Rear Seat Y-axis Displacement

Date: 07/18/2005

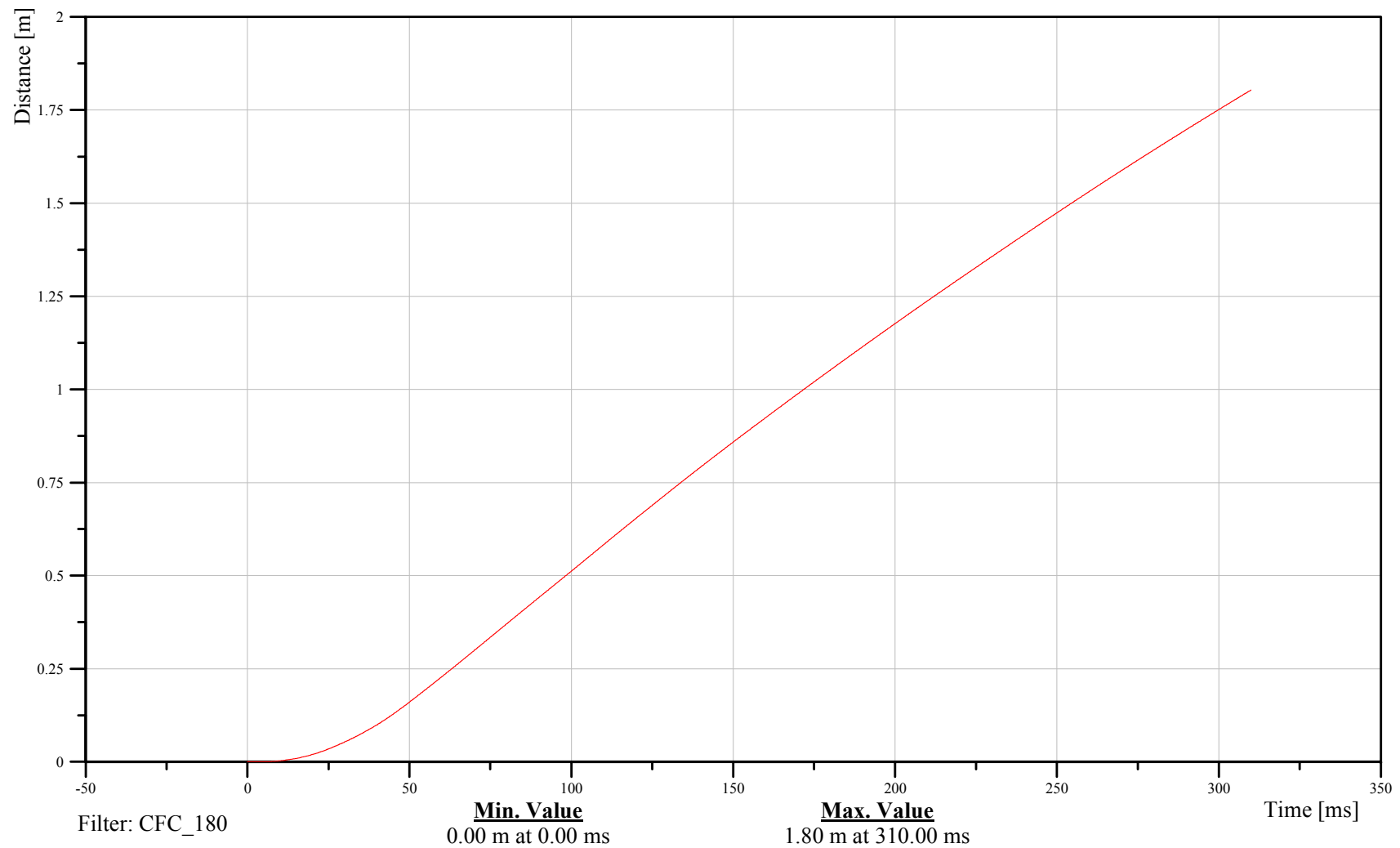
Time: 13:59

Customer: VRTC

16SILBRE0000DCYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005

Time: 13:59

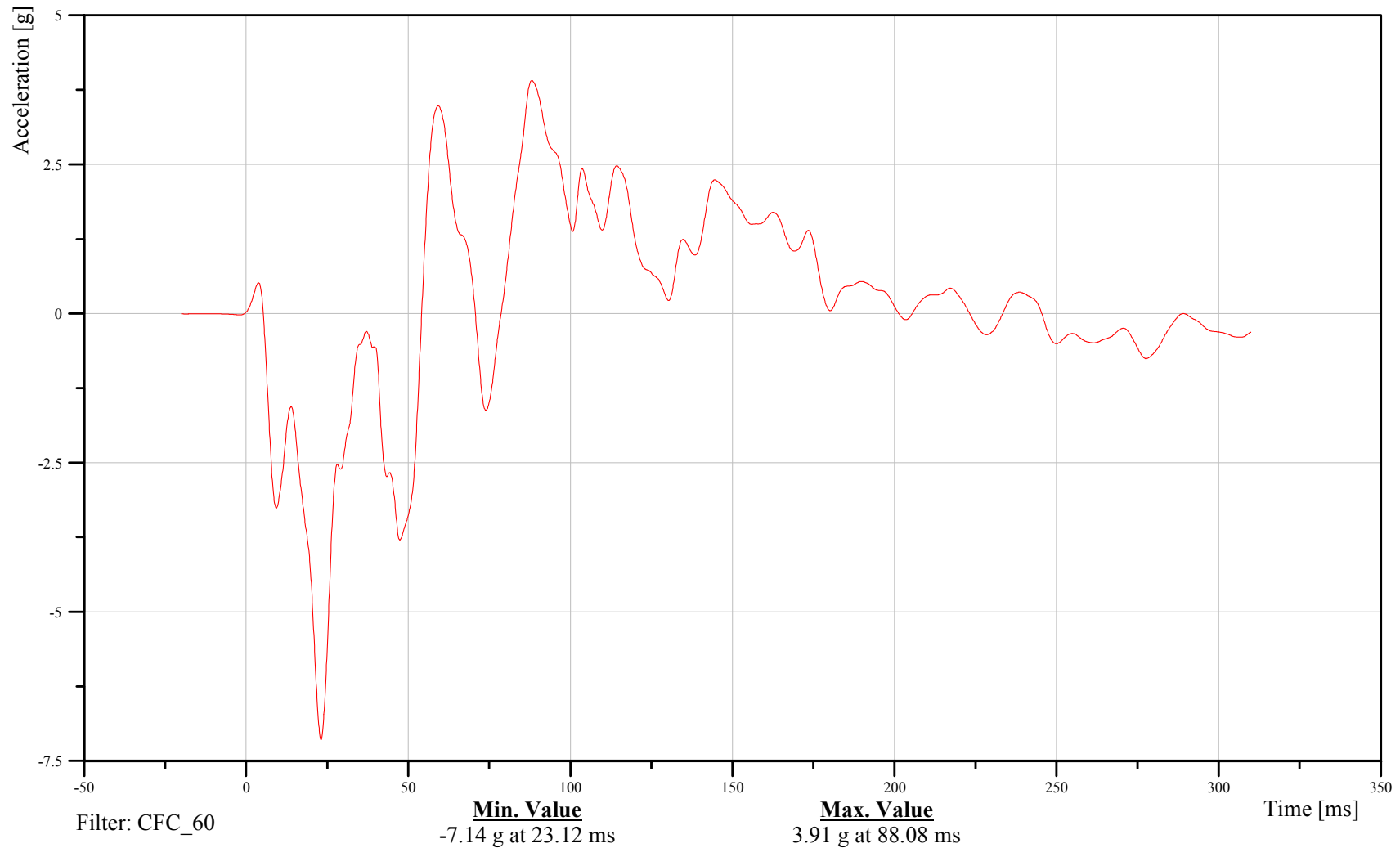
Right Side Sill at Rear Seat Z-axis Acceleration

Customer: VRTC

16SILBRE0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

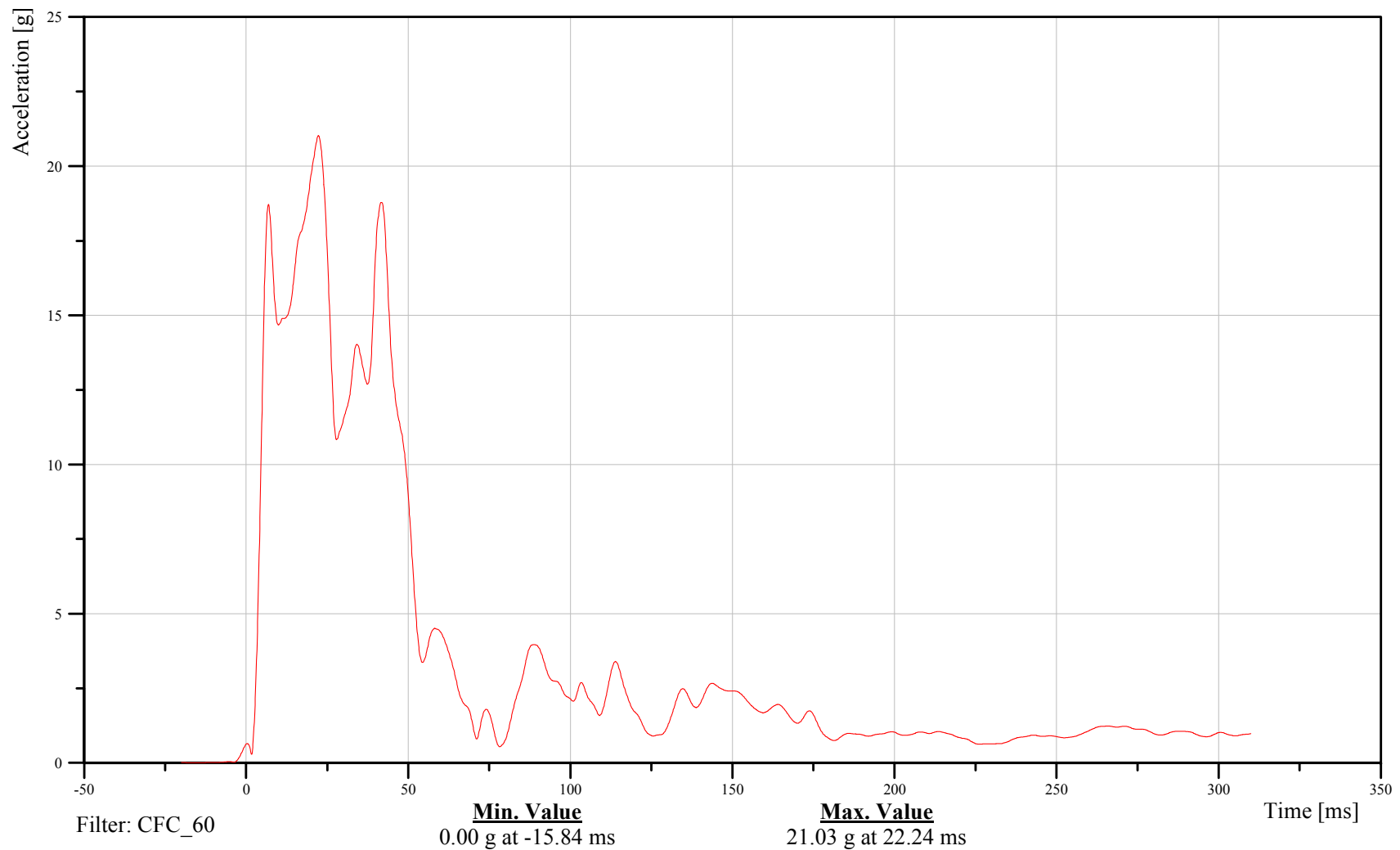
Right Side Sill at Rear Seat Resultant Acceleration

Customer: VRTC

16SILBRE0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

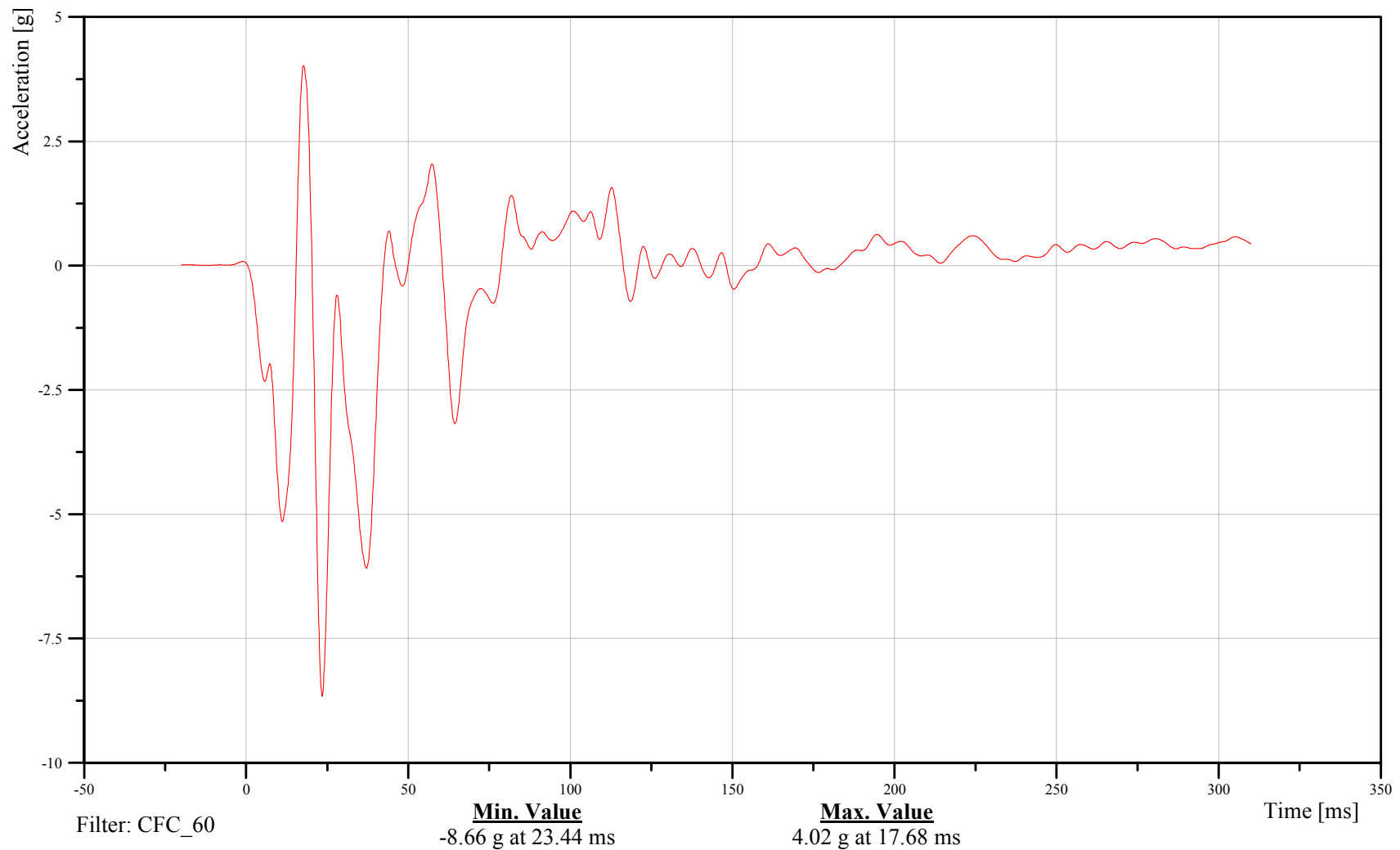
Rear Floorpan Above Axle X-axis Acceleration

Customer: VRTC

18FORA000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Rear Floorpan Above Axle Y-axis Acceleration

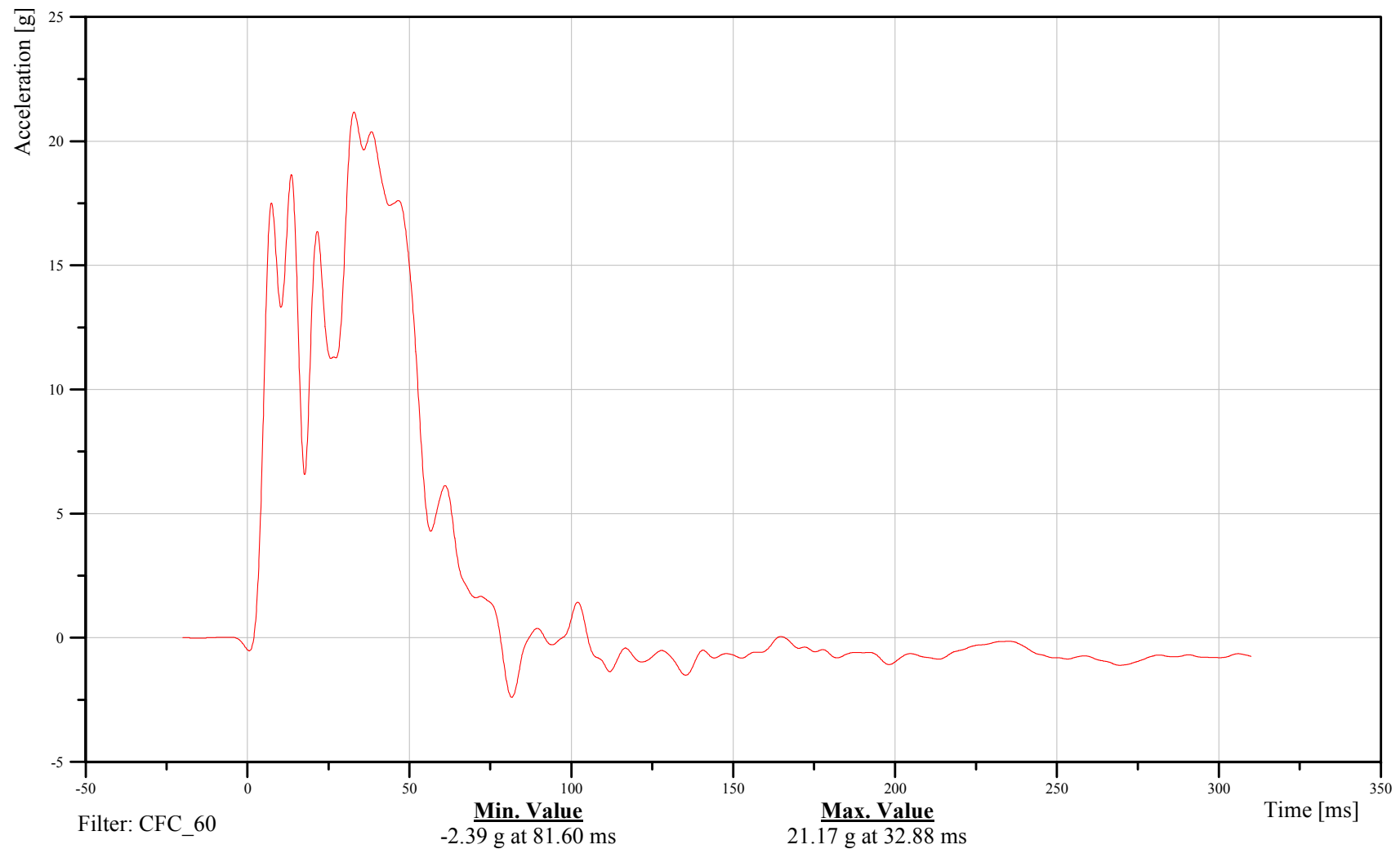
Date: 07/18/2005
Time: 13:59

Customer: VRTC

18FORA000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

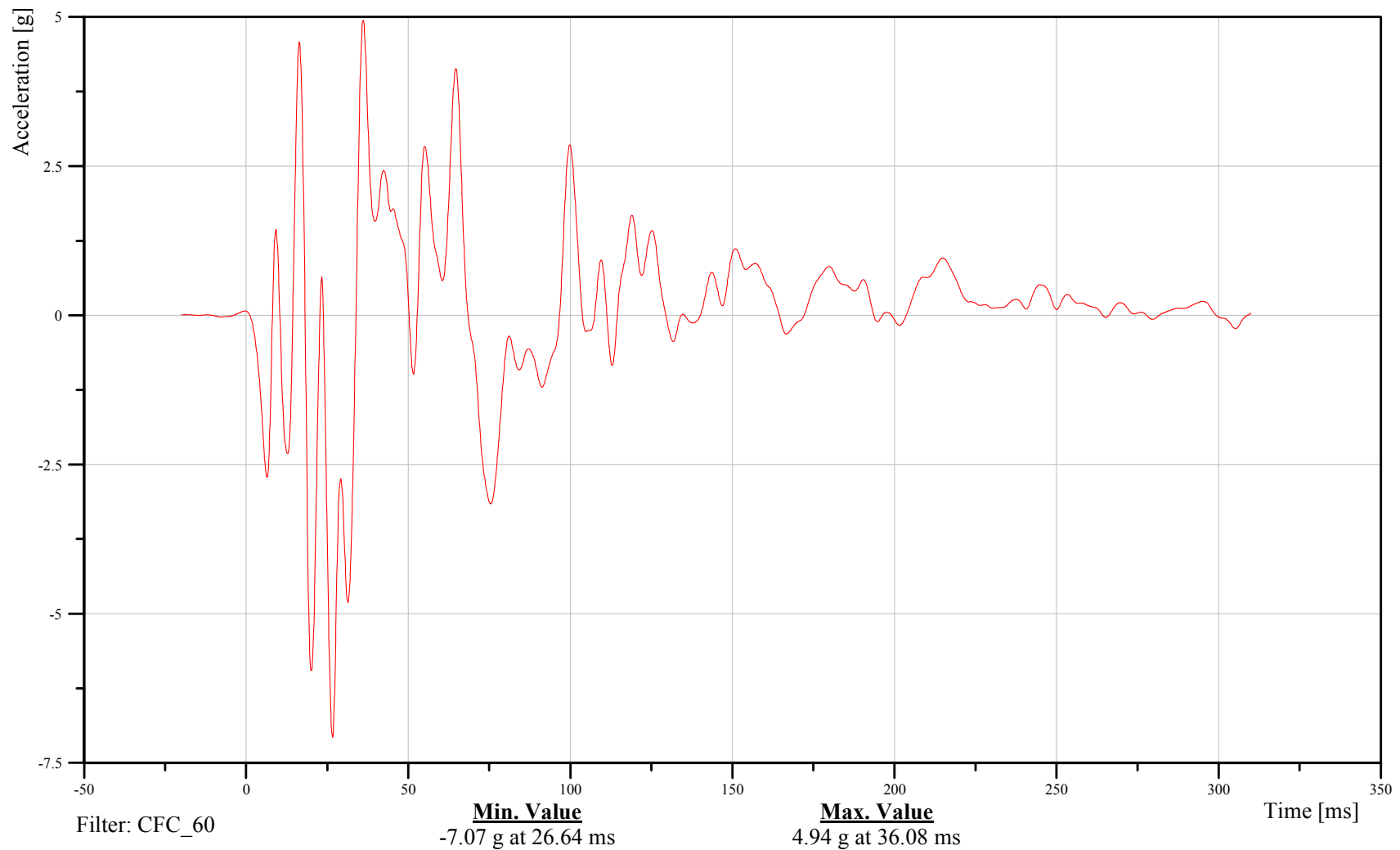
Rear Floorpan Above Axle Z-axis Acceleration

Customer: VRTC

18FORA000000ACZD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

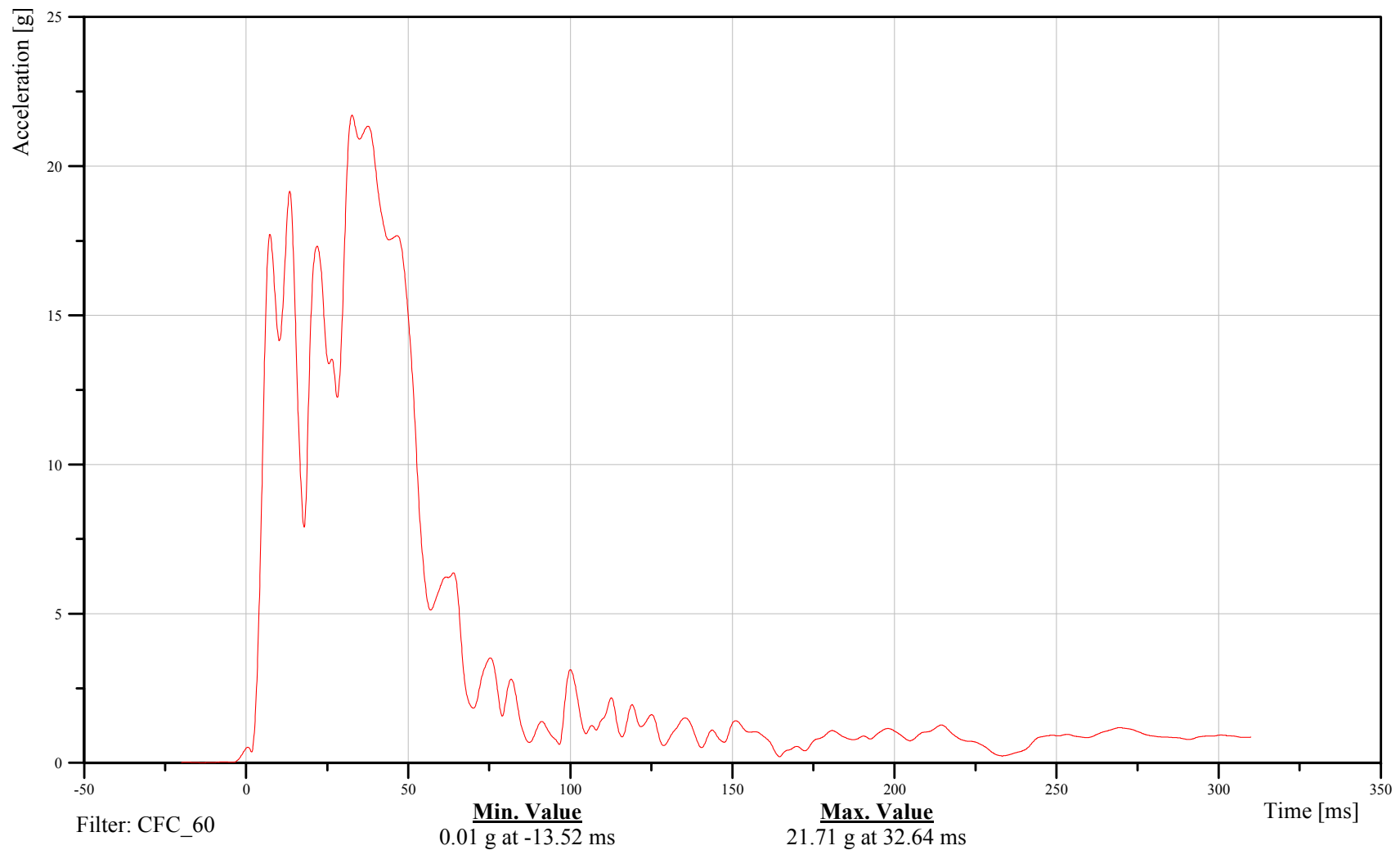
Rear Floorpan Above Axle Resultant Acceleration

Customer: VRTC

18FORA000000ACRD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

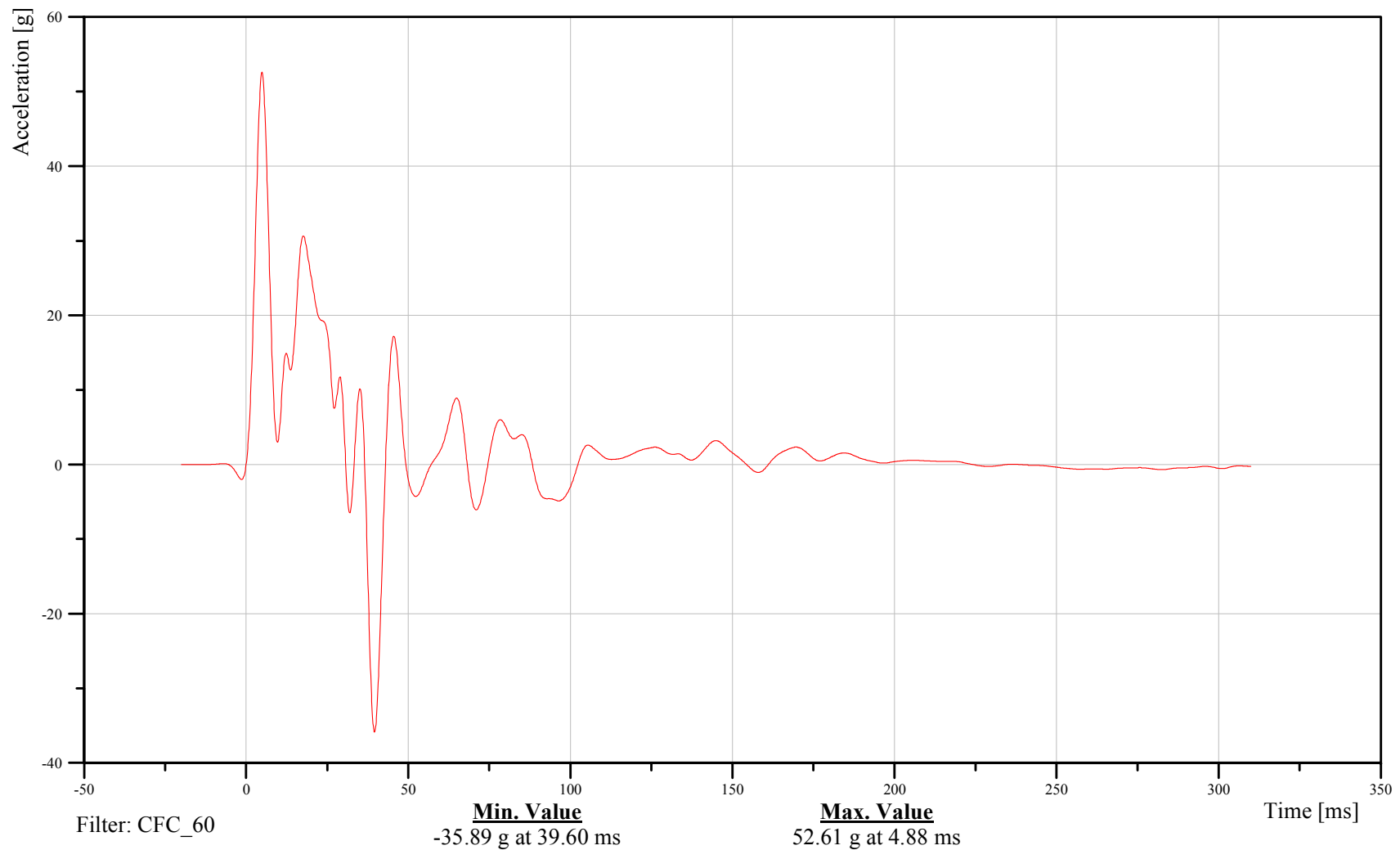
Left Side Sill at Rear Seat Y-axis Acceleration

Customer: VRTC

14SILBRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005

Time: 13:59

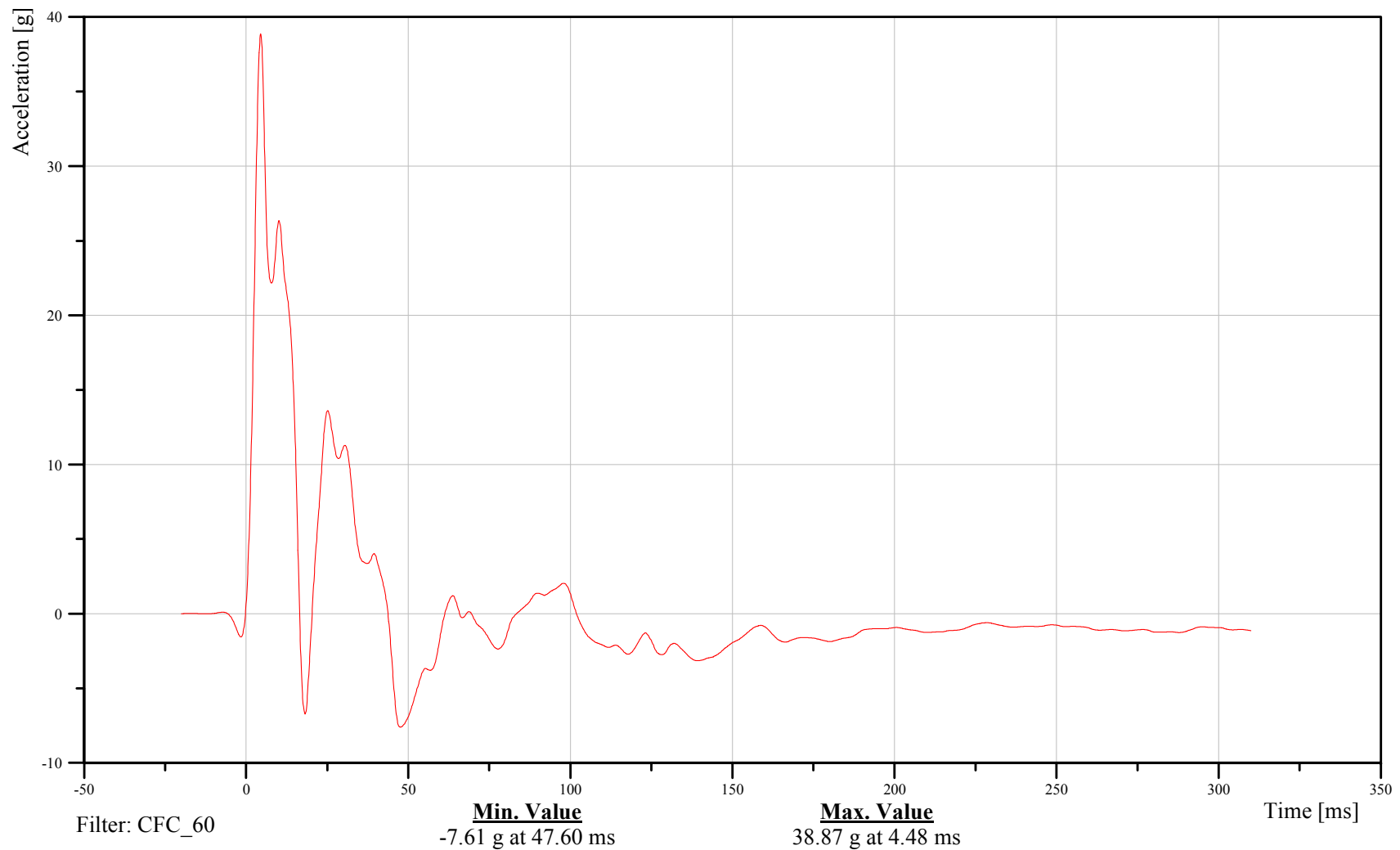
Left Side Sill at Front Seat Y-axis Acceleration

Customer: VRTC

14SILBFR0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

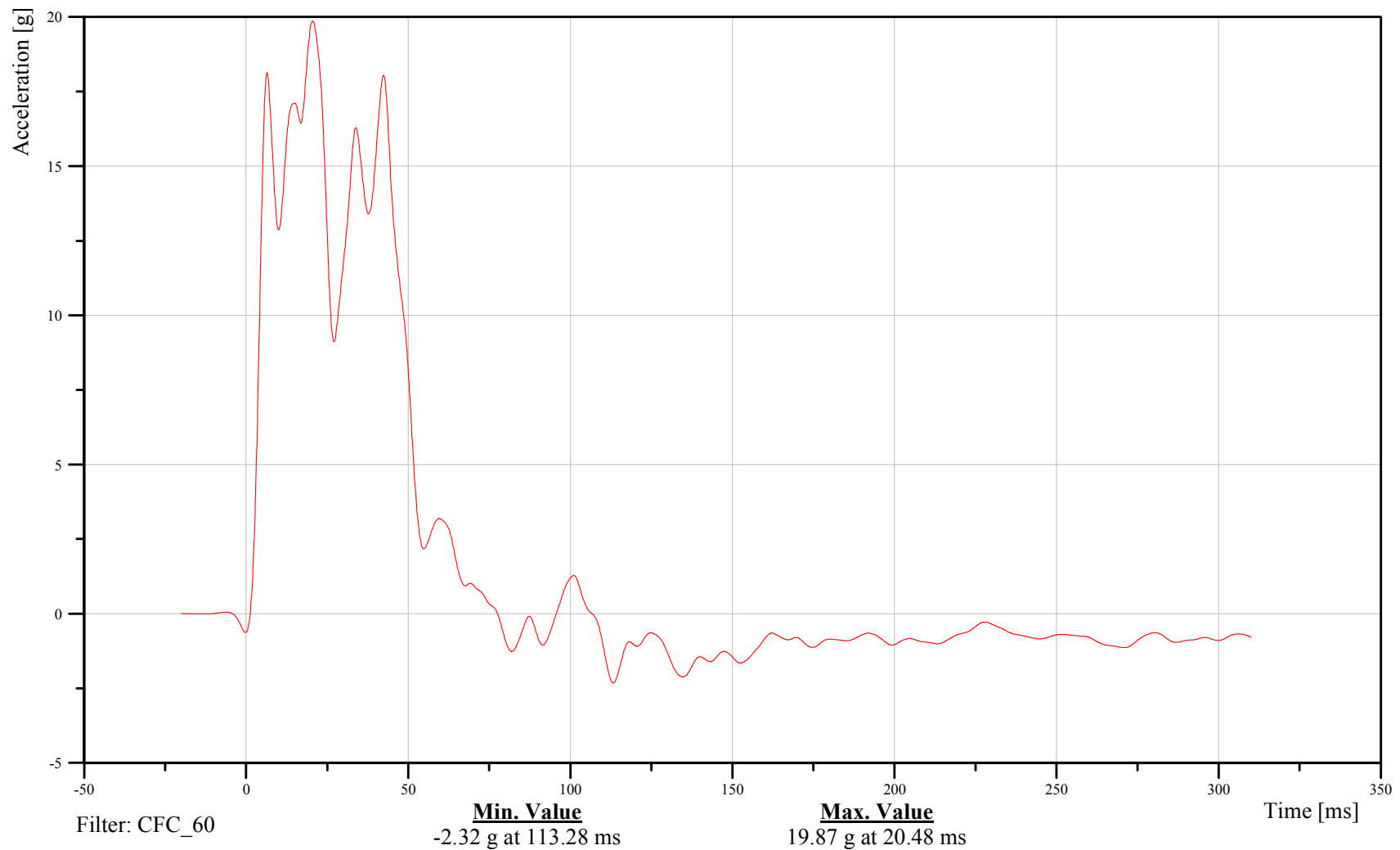
Right Rear Occupant Compartment Y-axis Accel

Customer: VRTC

16VEHCRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

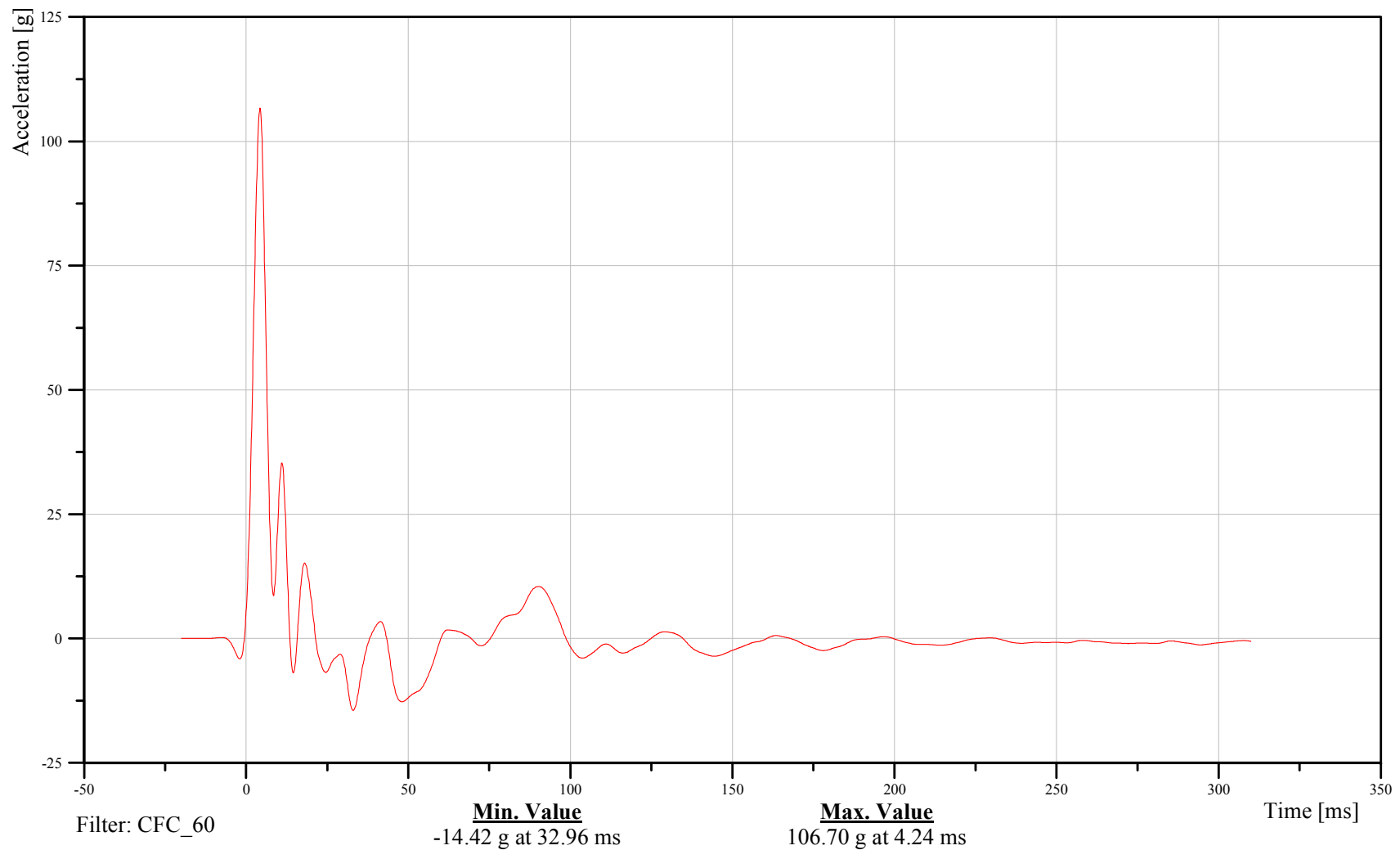
Left Lower B-Post Y-axis Accel

Customer: VRTC

14BPILLO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

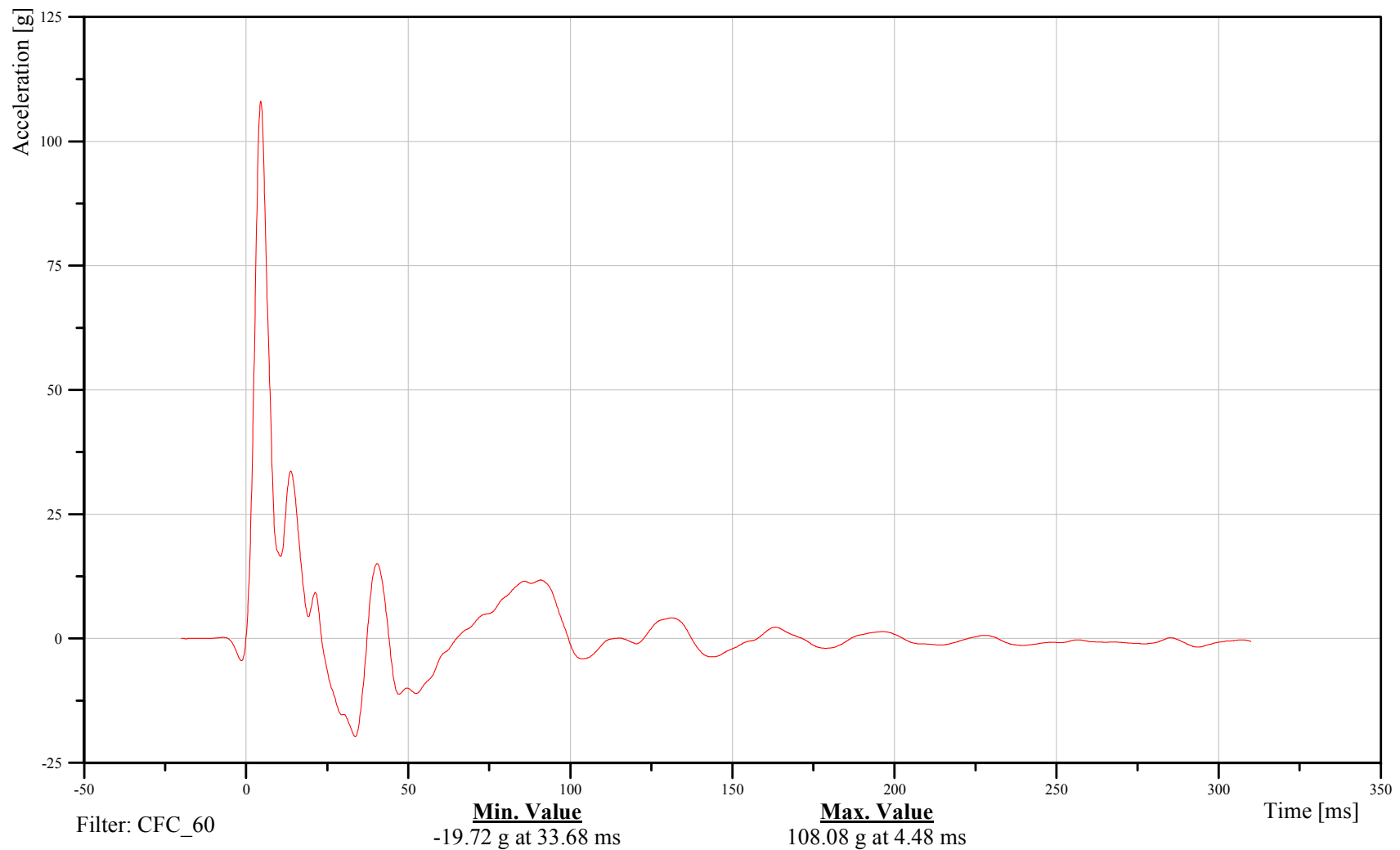
Left Middle B-Post Y-axis Accel

Customer: VRTC

14BPILMI0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Lower A-Post Y-axis Accel

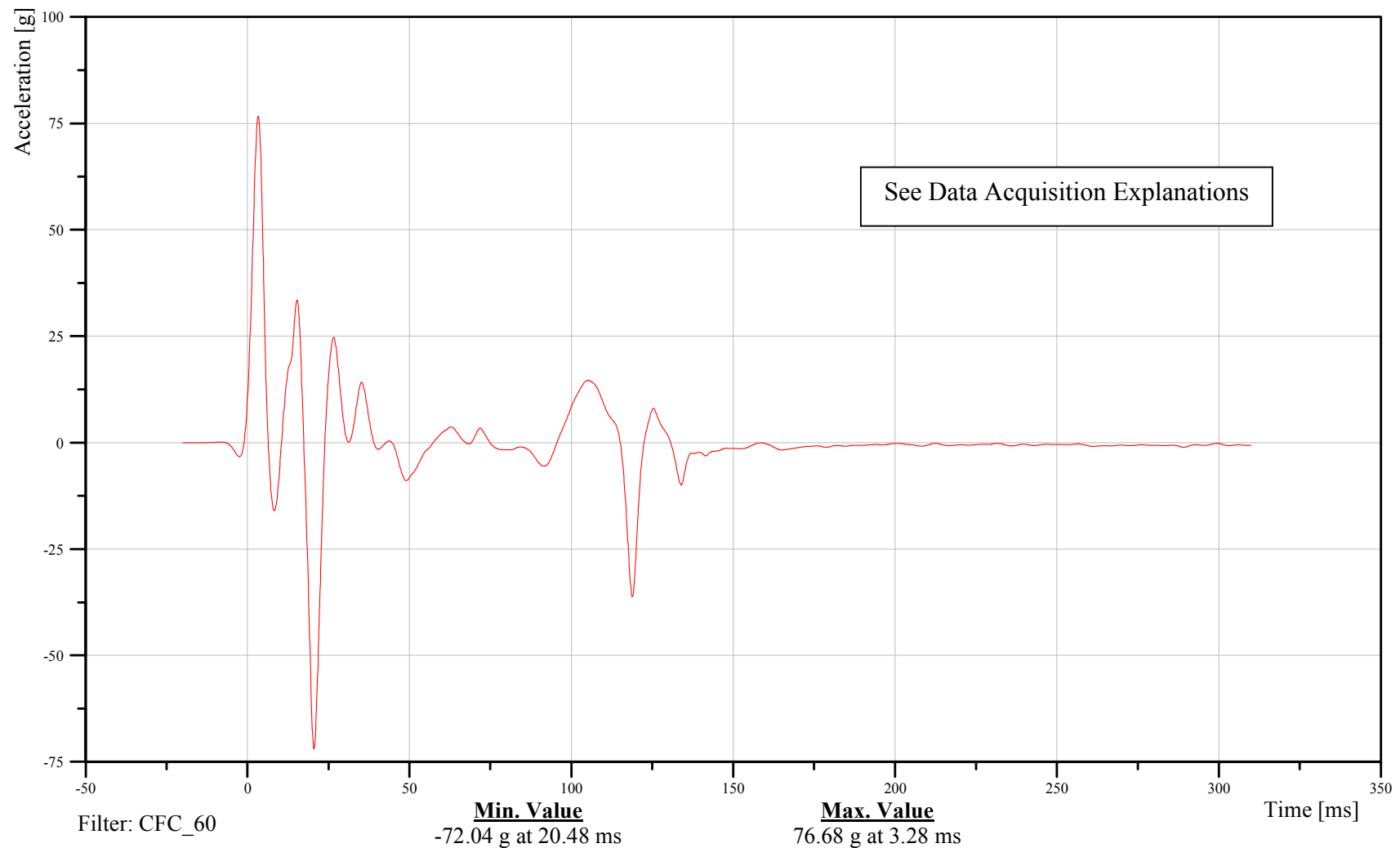
Date: 07/18/2005
Time: 13:59

Customer: VRTC

11APILO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

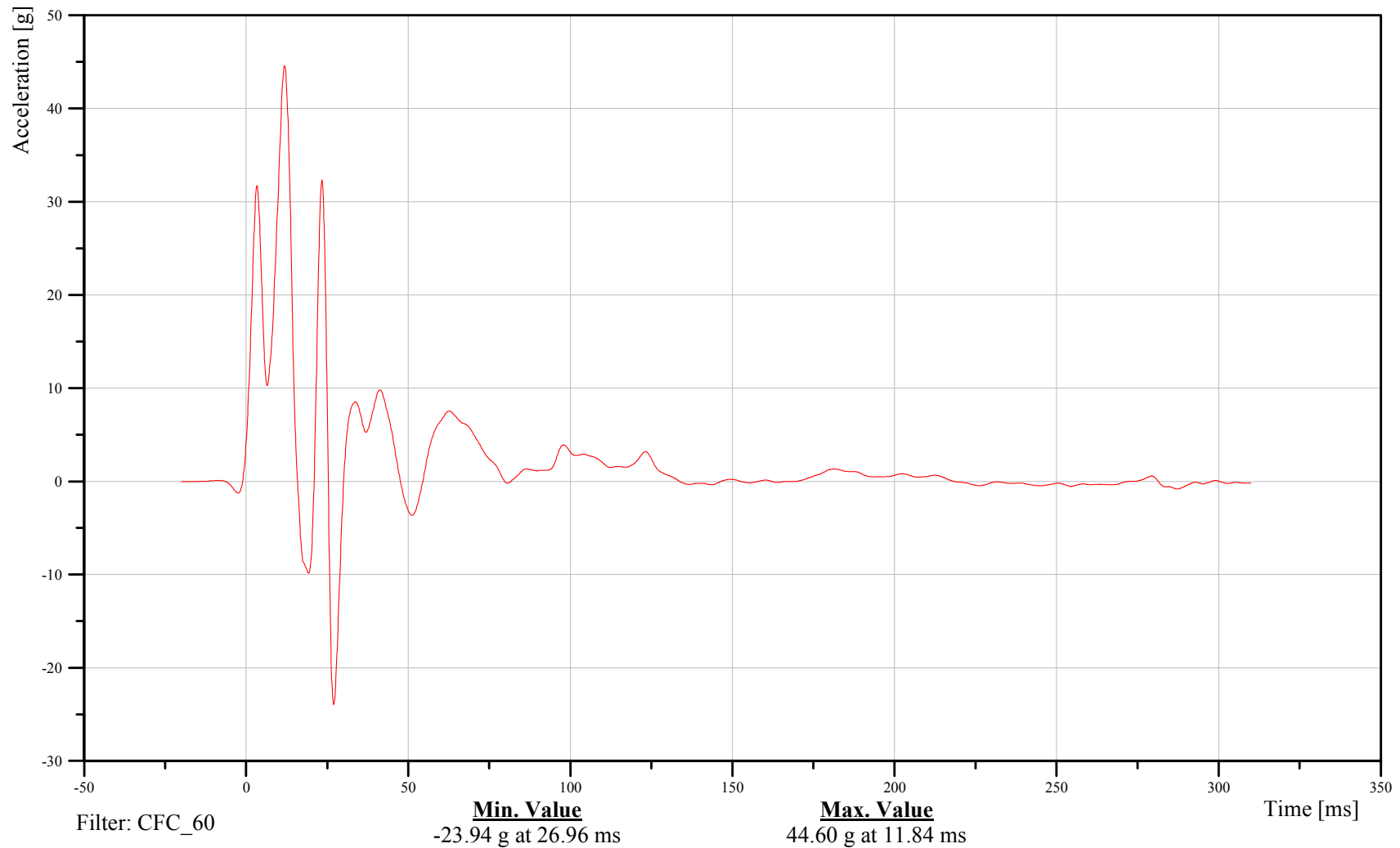
Left Middle A-Post Y-axis Accel

Customer: VRTC

11APILMI0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

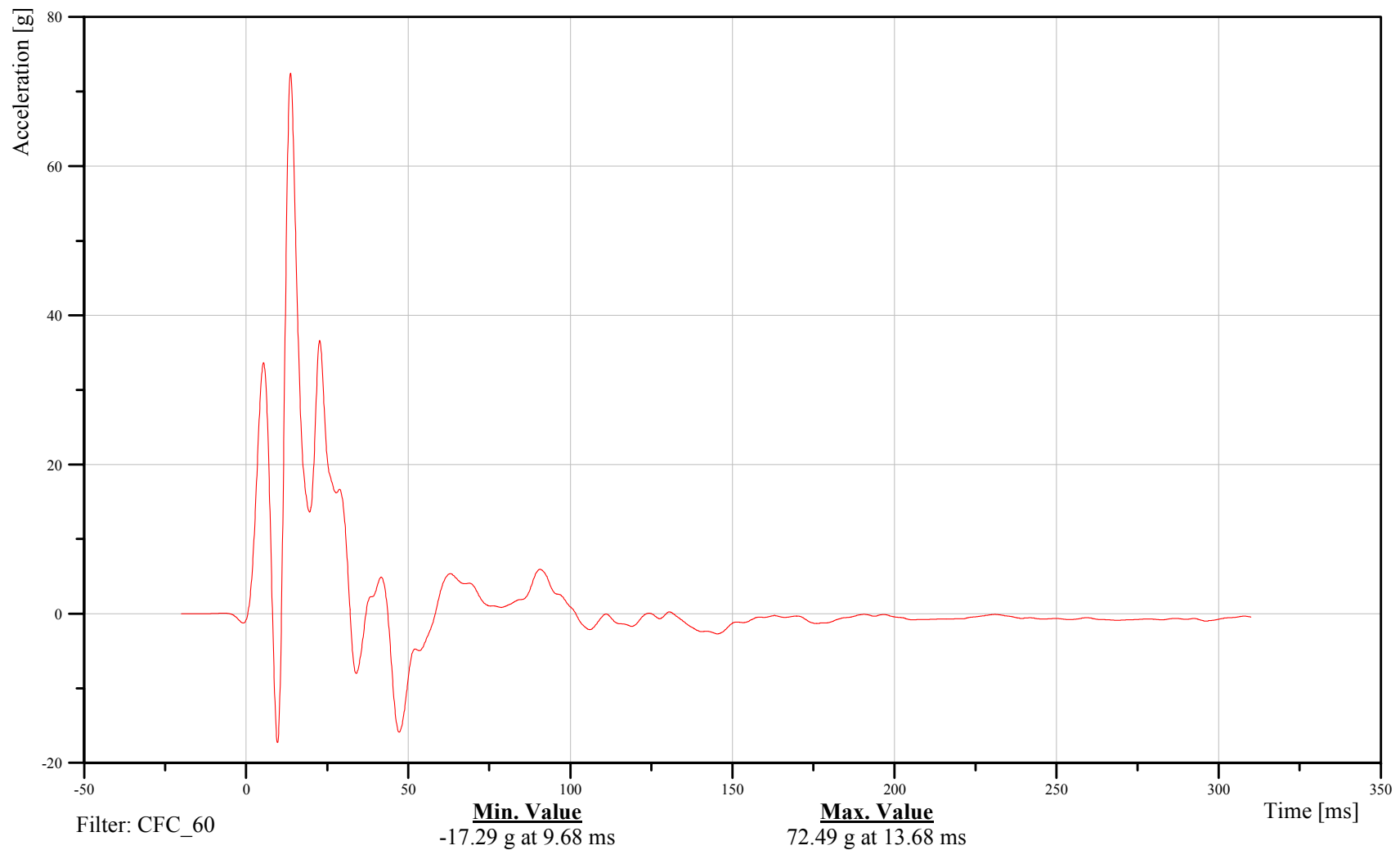
Left Front Seat Track Y-axis Acceleration

Customer: VRTC

11SETRFR0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

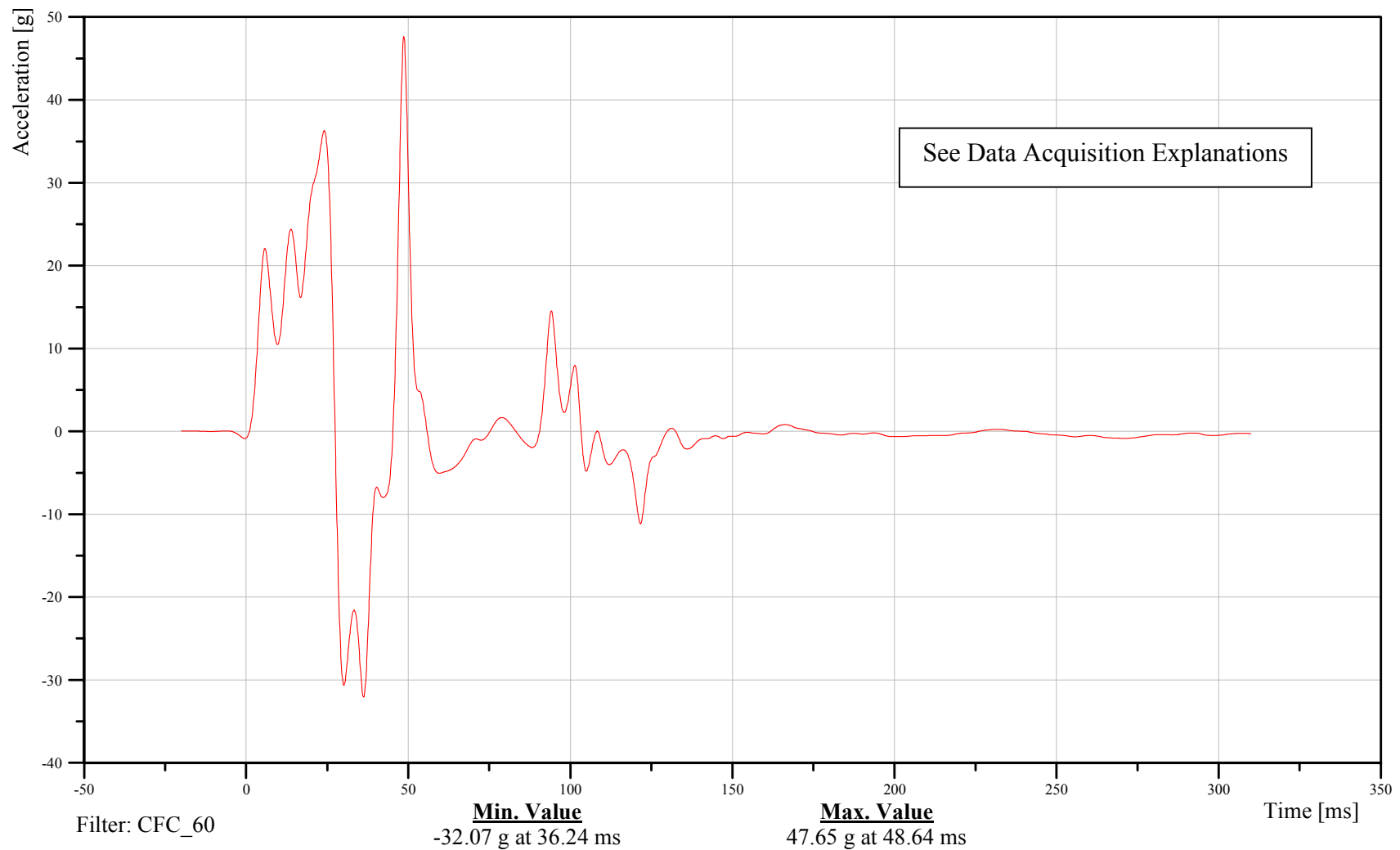
Left Rear Seat Track Y-axis Acceleration

Customer: VRTC

14SETRLERE00ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Vehicle Center of Gravity X-axis Acceleration

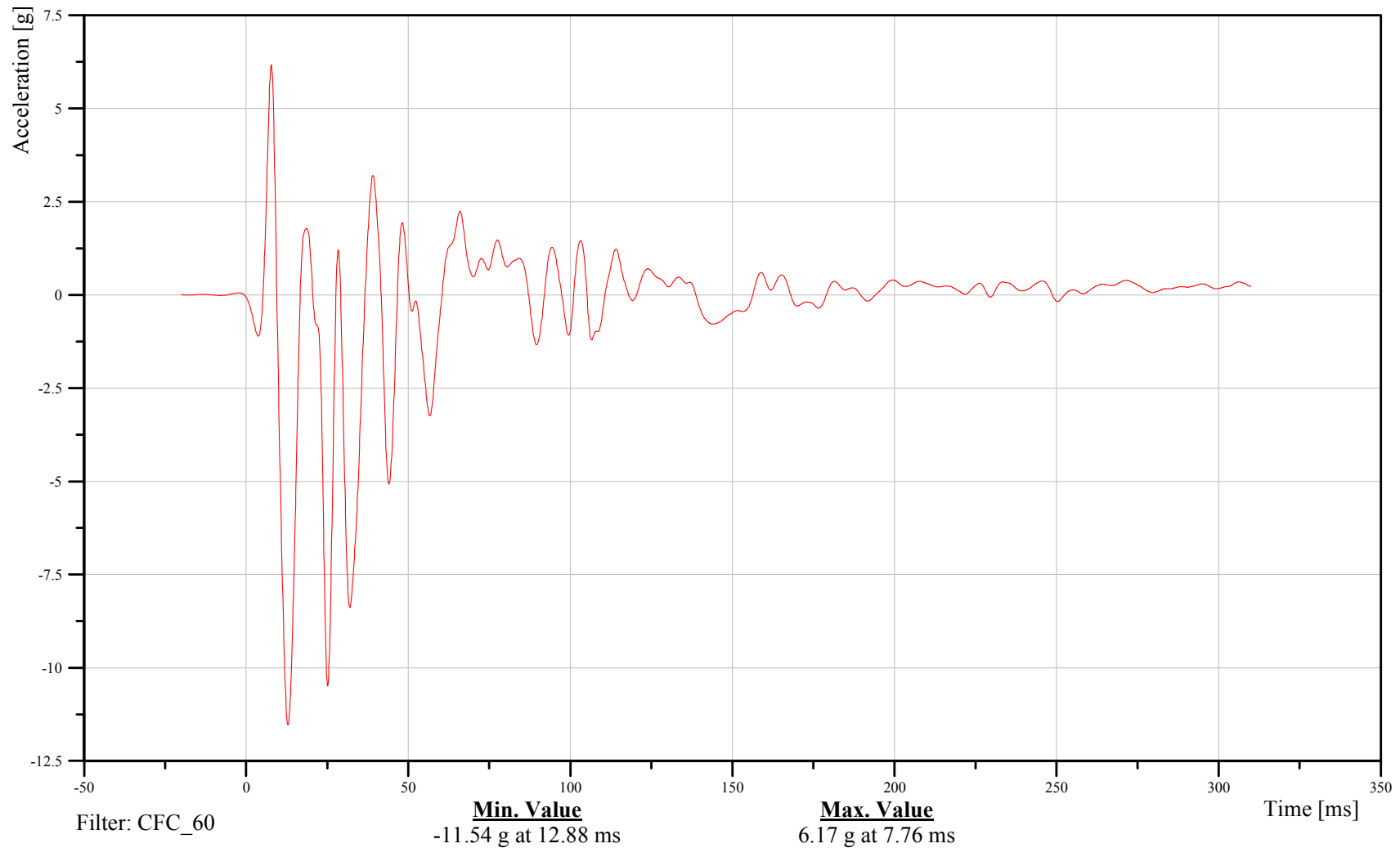
Date: 07/18/2005
Time: 13:59

Customer: VRTC

10VEHCCG0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Vehicle Center of Gravity Y-axis Acceleration

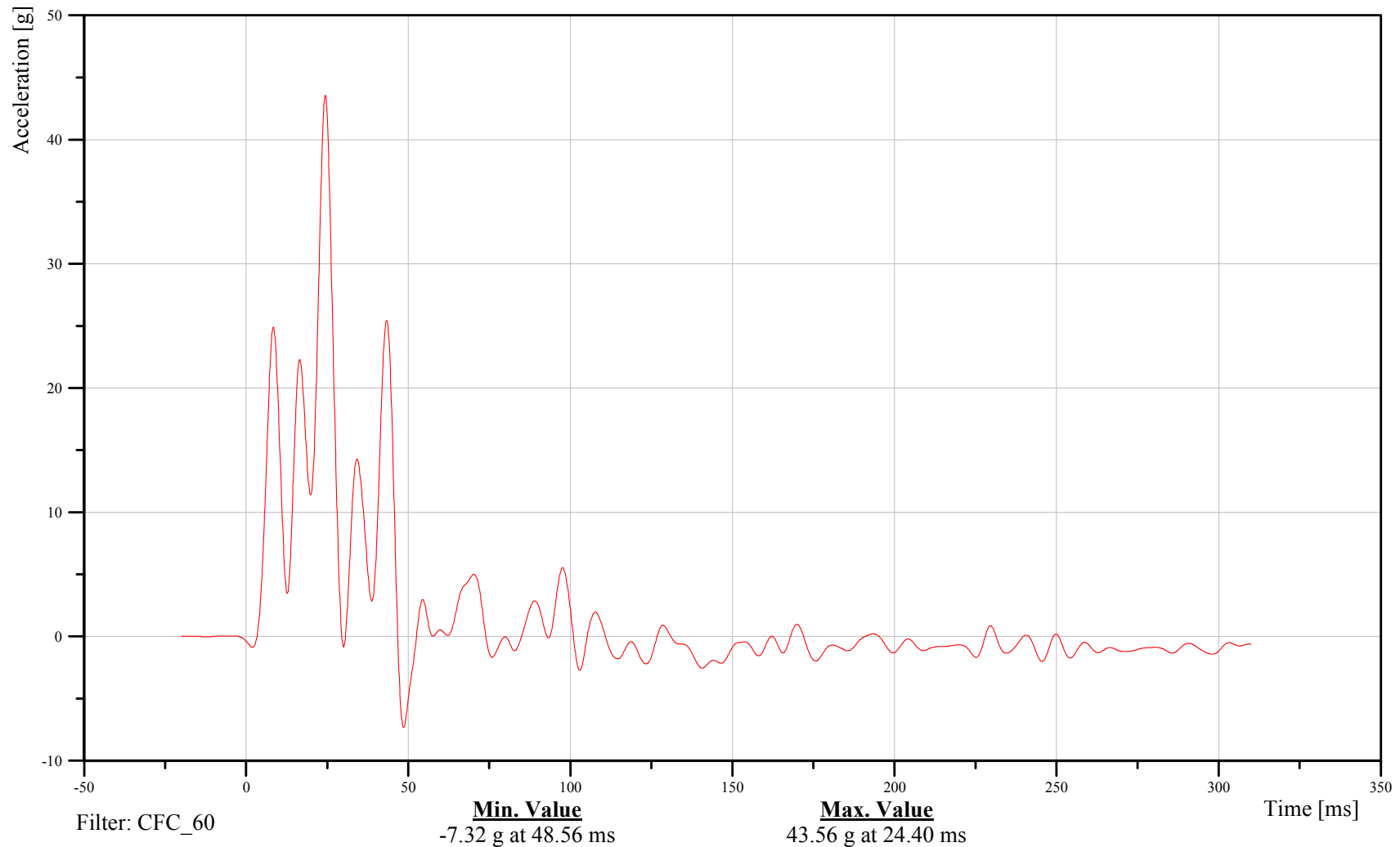
Date: 07/18/2005
Time: 13:59

Customer: VRTC

10VEHCCG0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

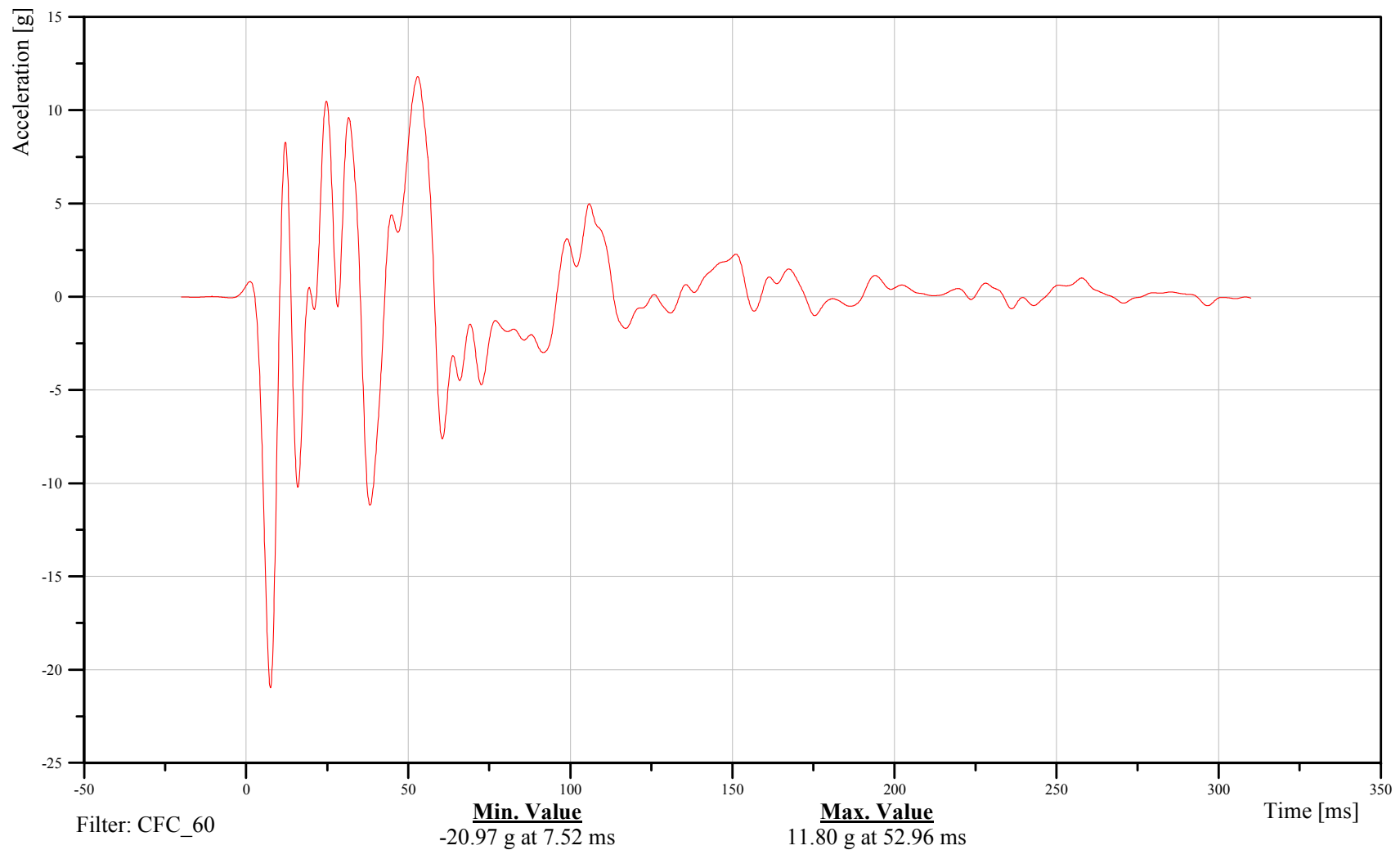
Vehicle Center of Gravity Z-axis Acceleration

Customer: VRTC

10VEHCCG0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Vehicle Center of Gravity Resultant Acceleration

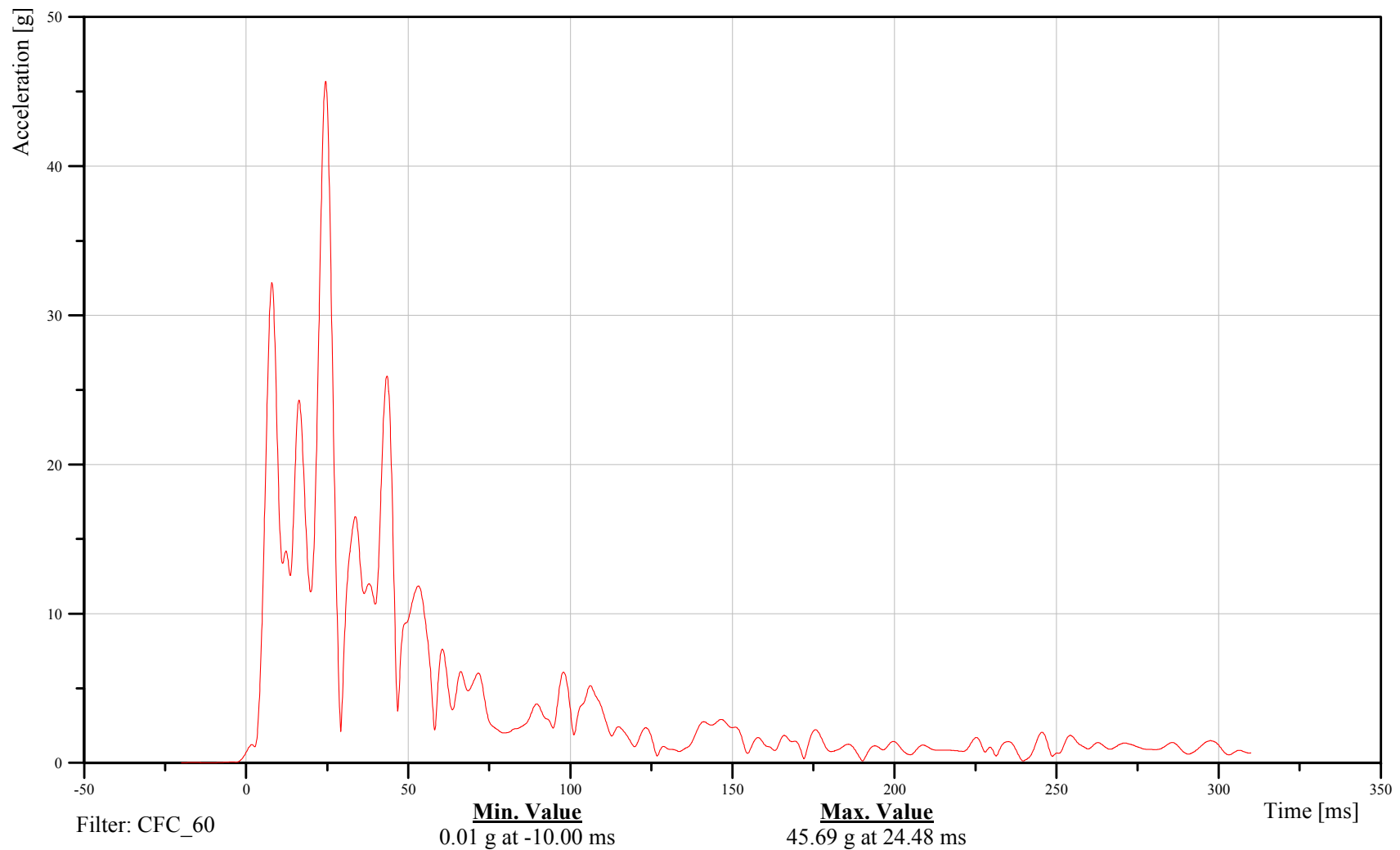
Date: 07/18/2005
Time: 13:59

Customer: VRTC

10VEHCCG0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

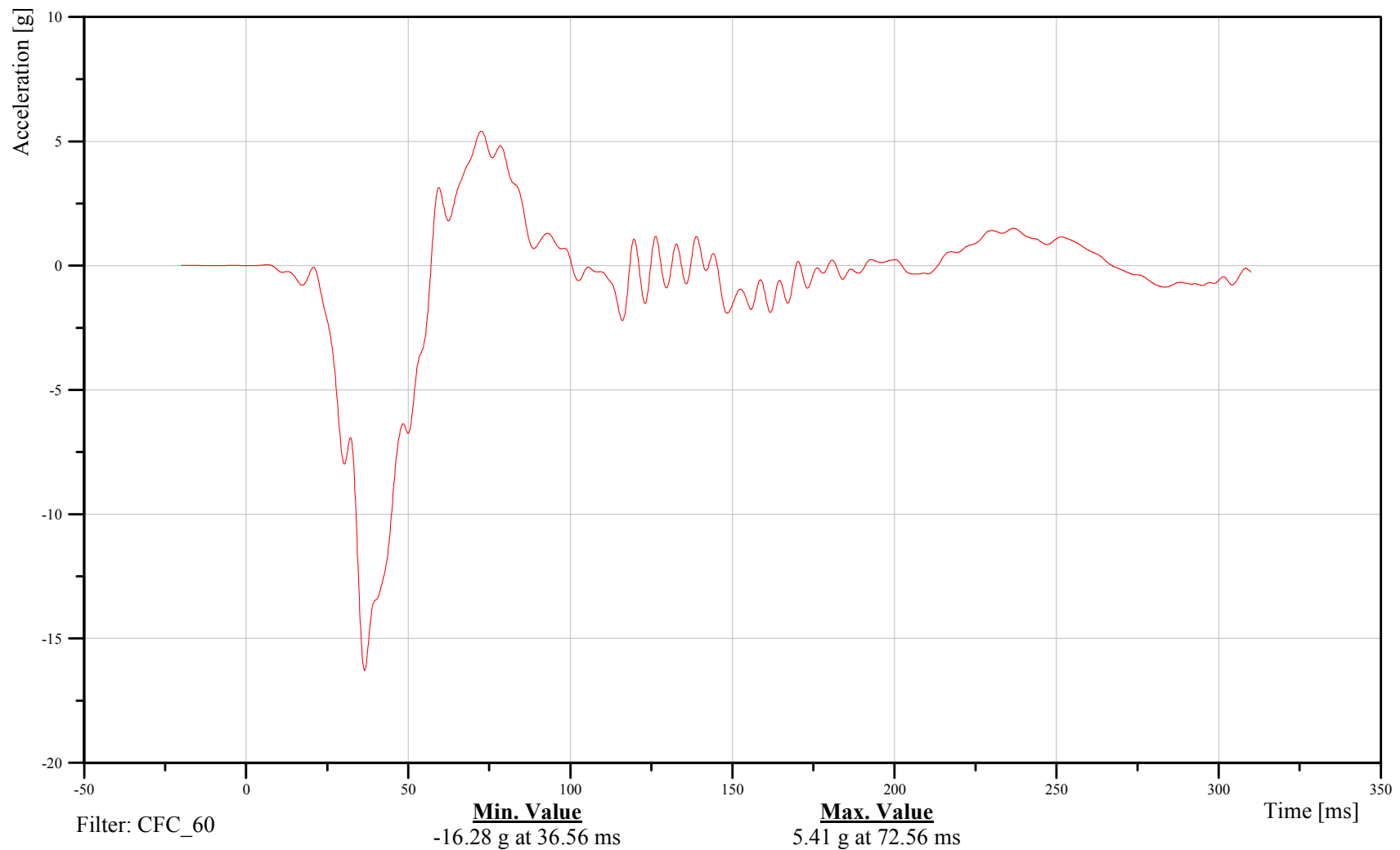
Top of Engine X-axis Acceleration

Customer: VRTC

12ENG000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

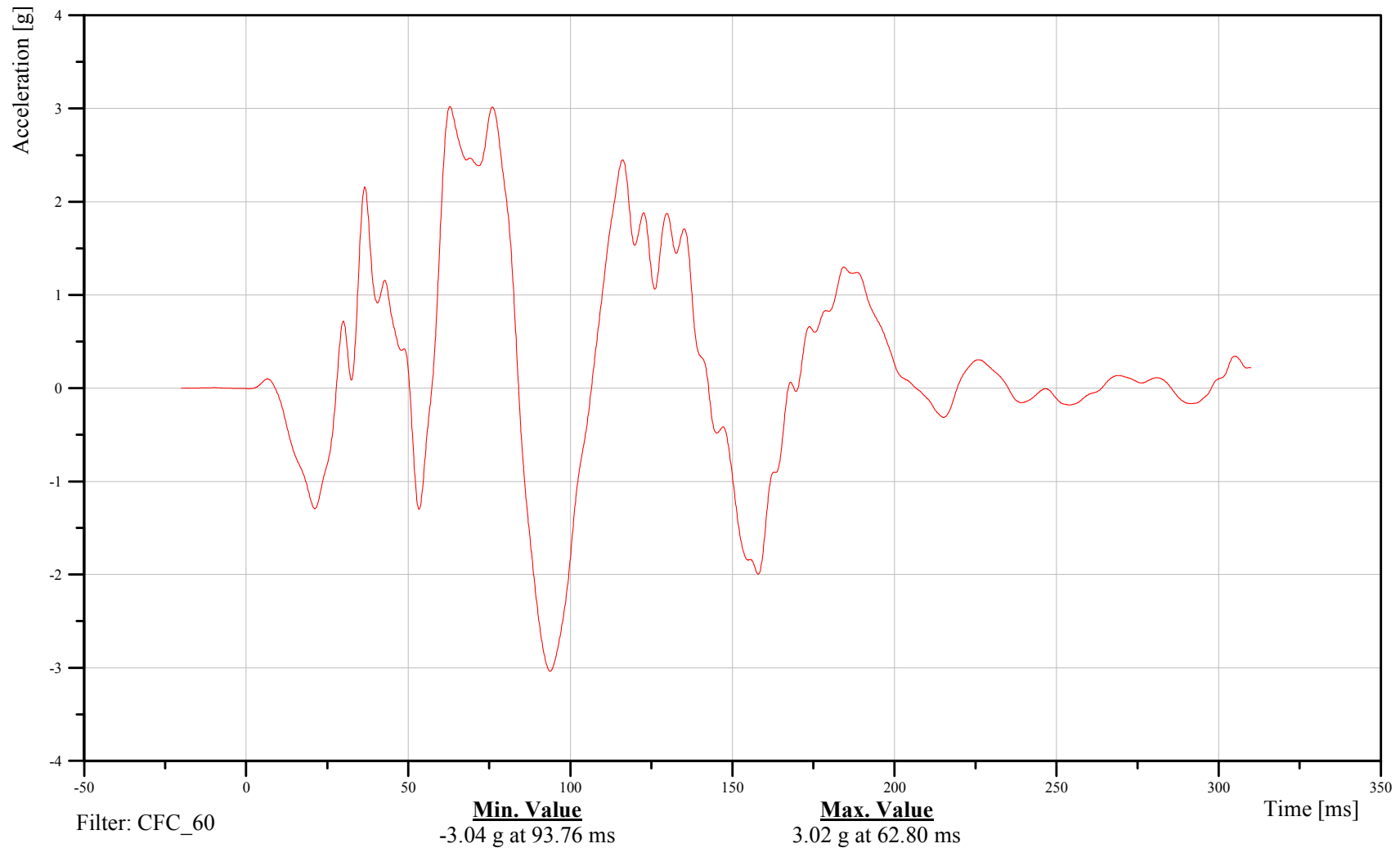
Top of Engine Y-axis Acceleration

Customer: VRTC

12ENG000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

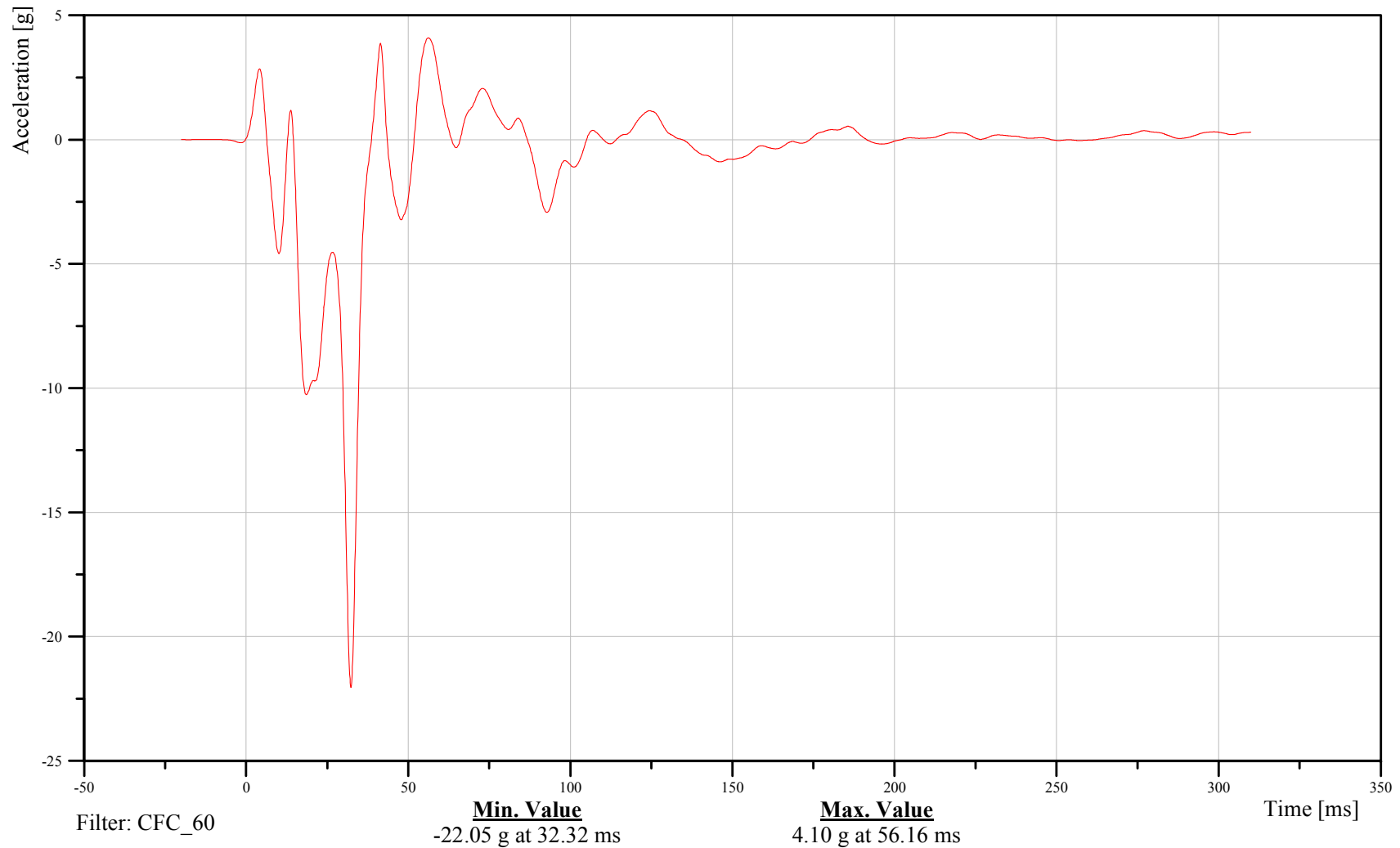
Firewall X-axis Acceleration

Customer: VRTC

12VEHC000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

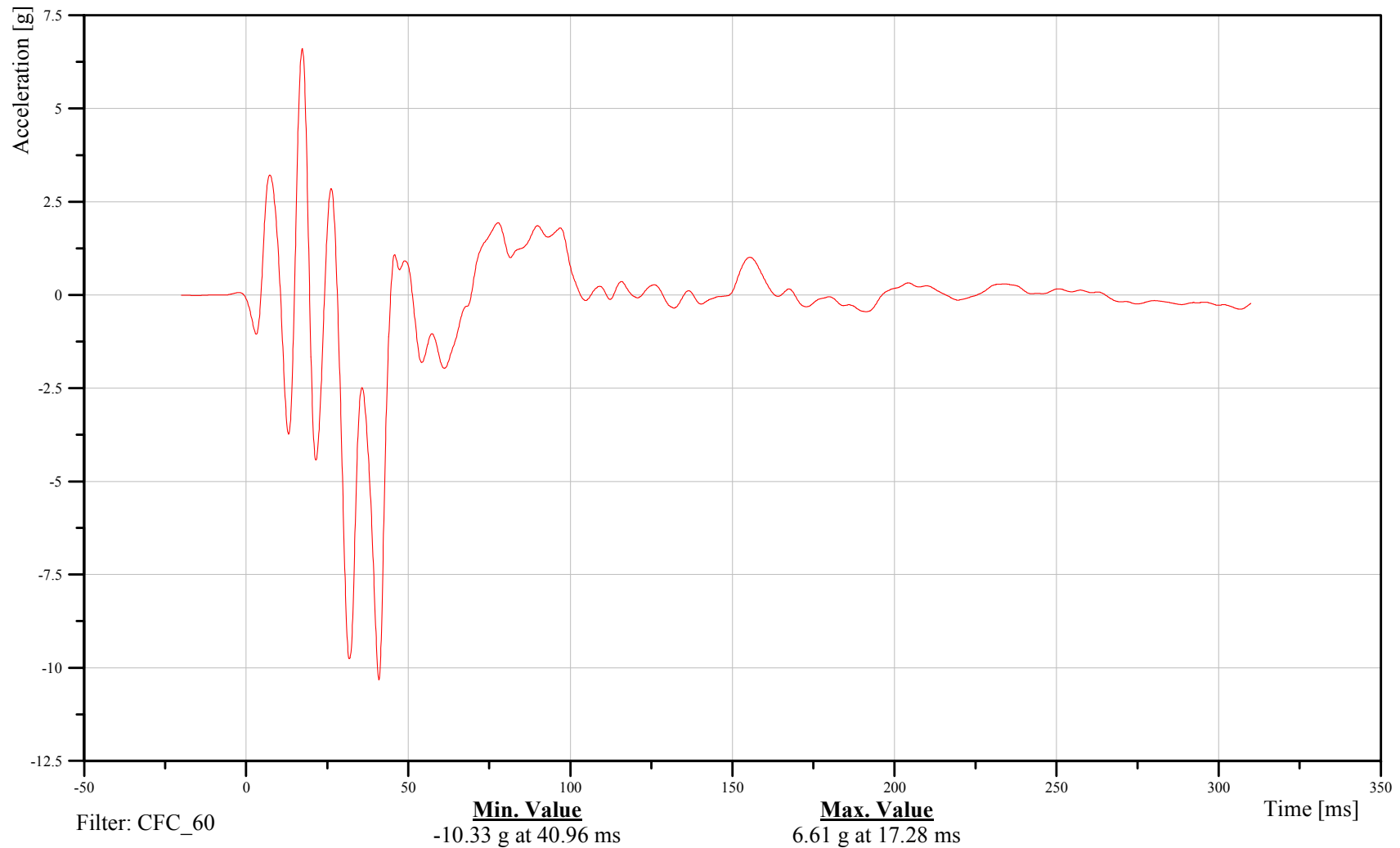
Firewall Y-axis Acceleration

Customer: VRTC

12VEHC000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

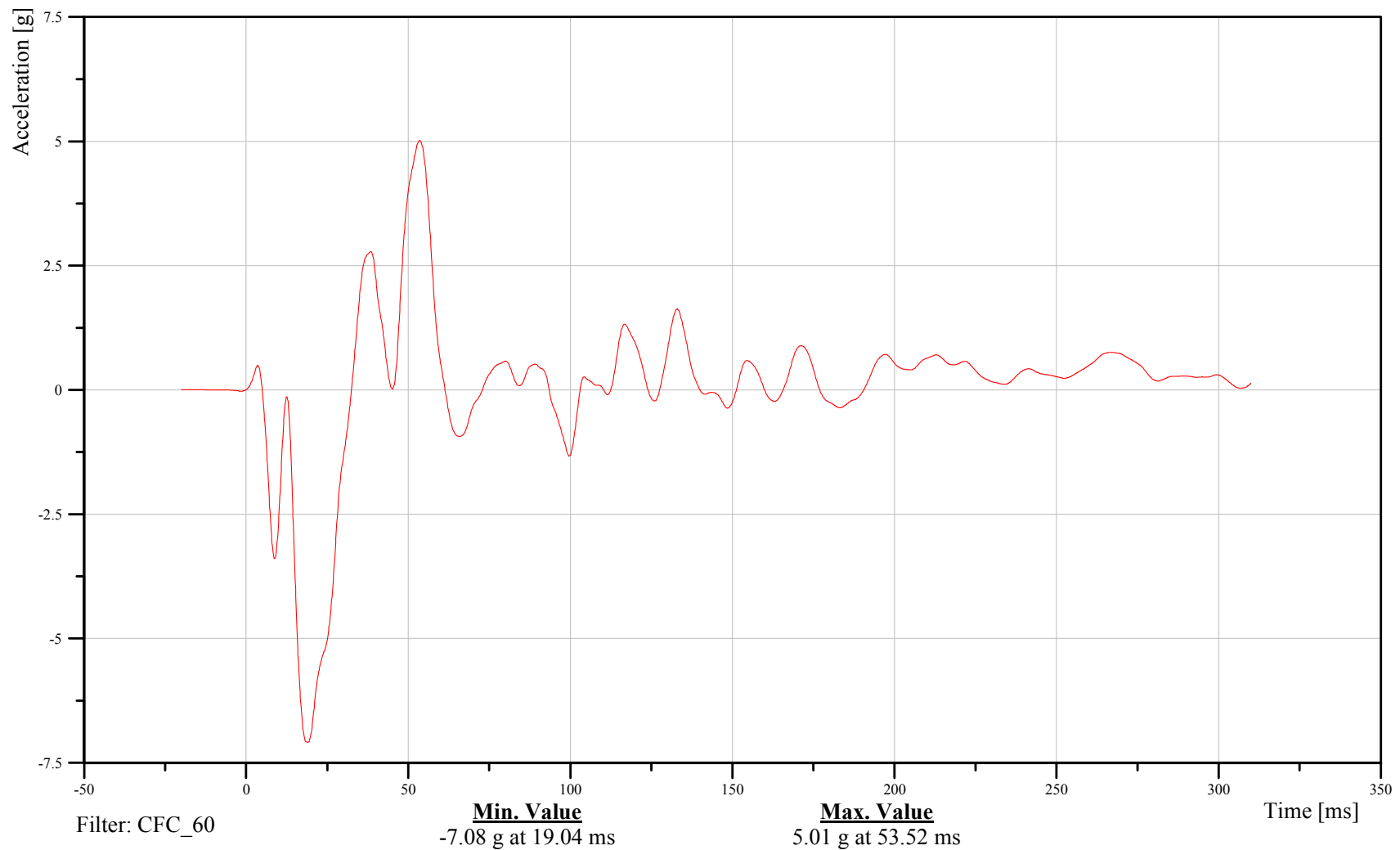
Right Roof Rail X-axis Acceleration

Customer: VRTC

13ROFR000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

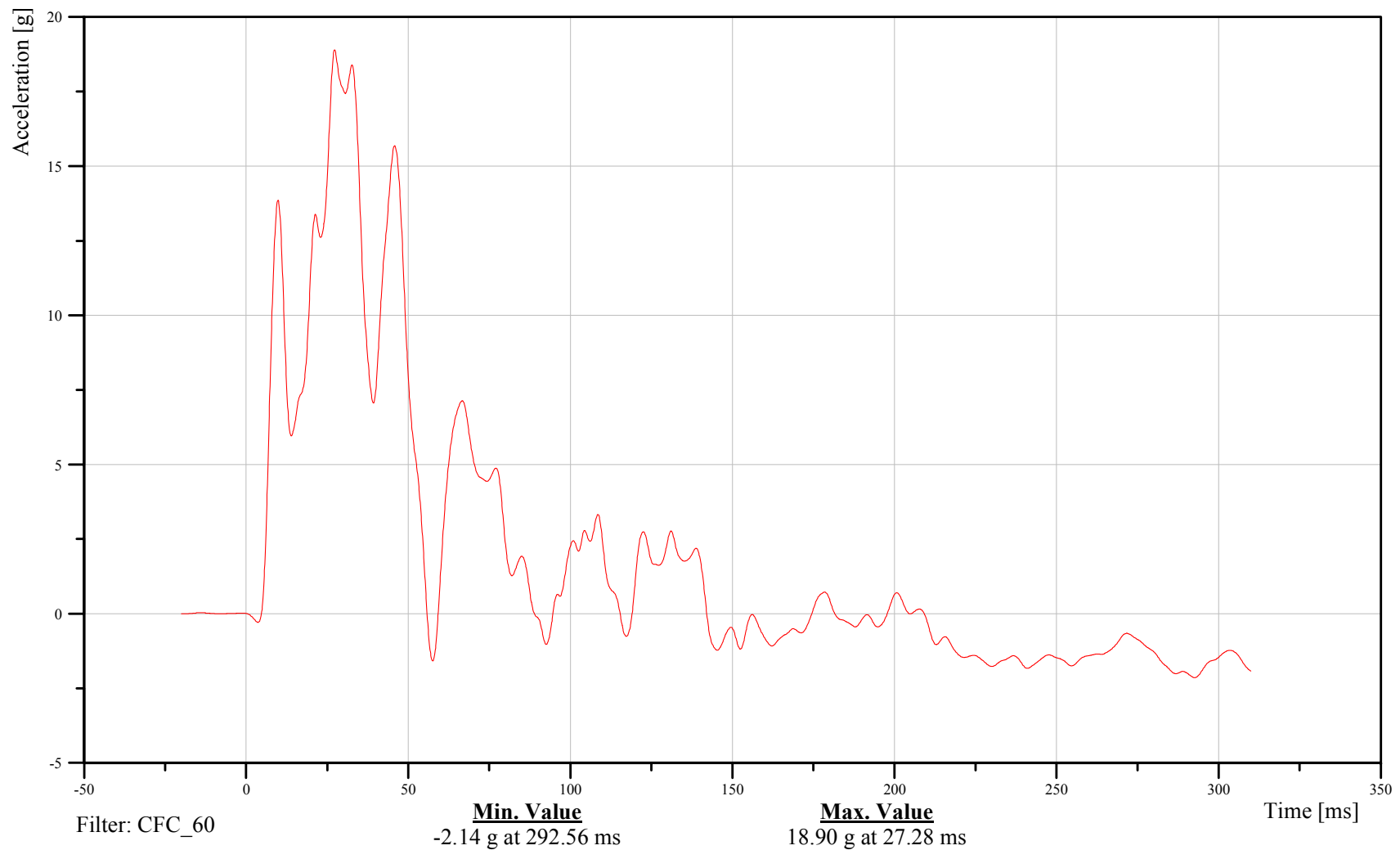
Right Roof Rail Y-axis Acceleration

Customer: VRTC

13ROFR000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

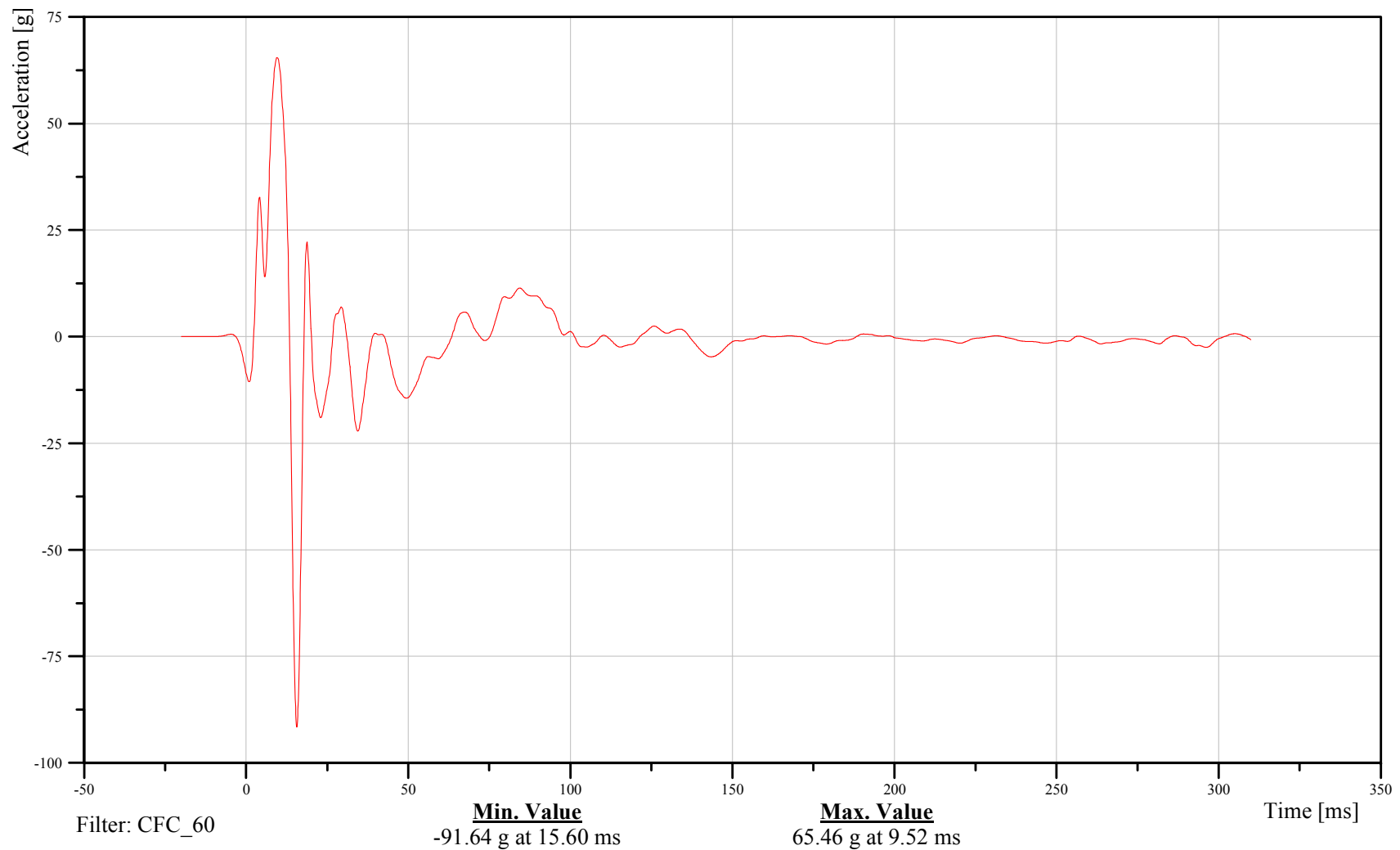
Left Front Door centerline Y-axis Acceleration

Customer: VRTC

11DOOR000001ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

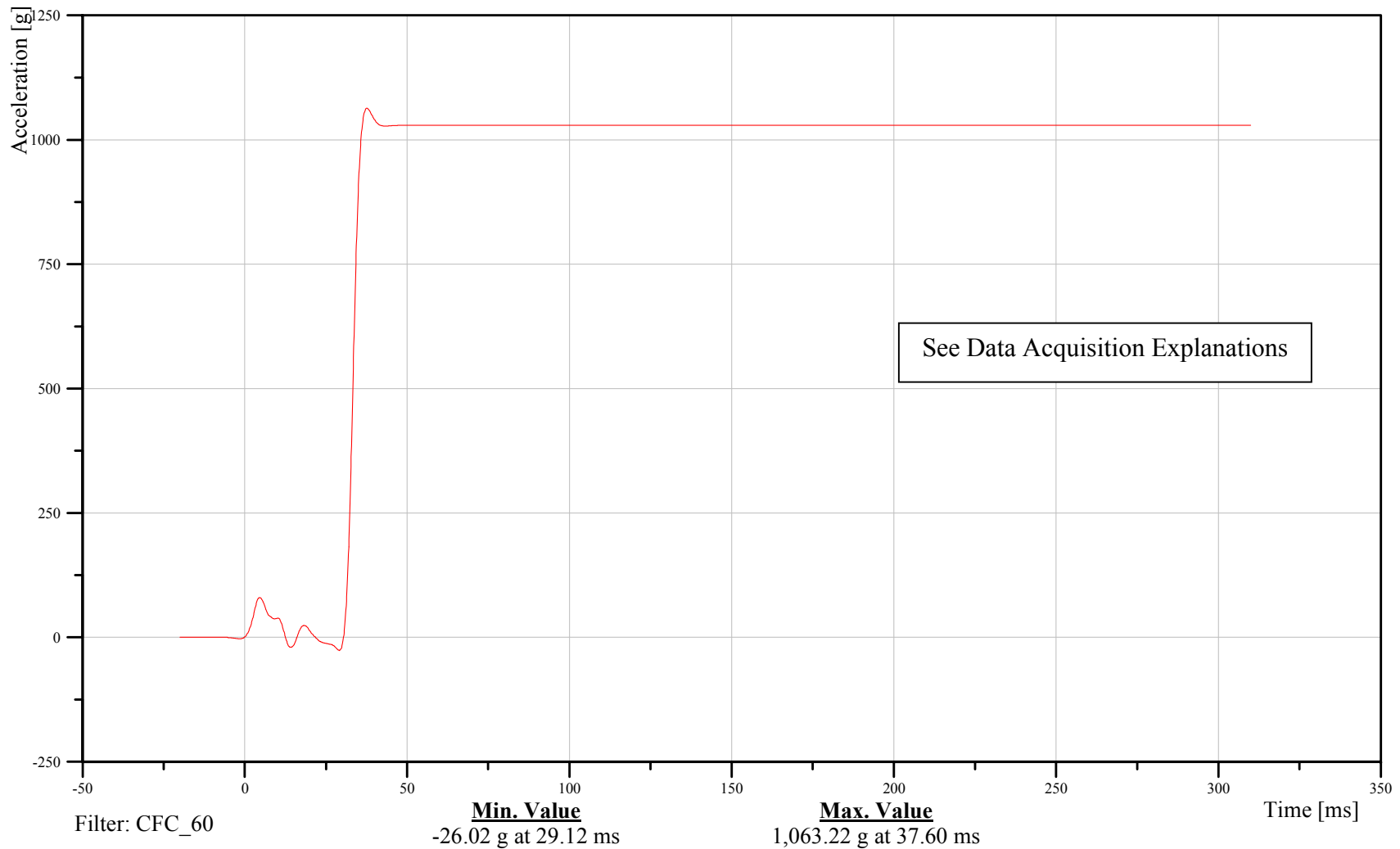
Left Front Door mid-rear Y-axis Acceleration

Customer: VRTC

11DOOR000002ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005

Time: 13:59

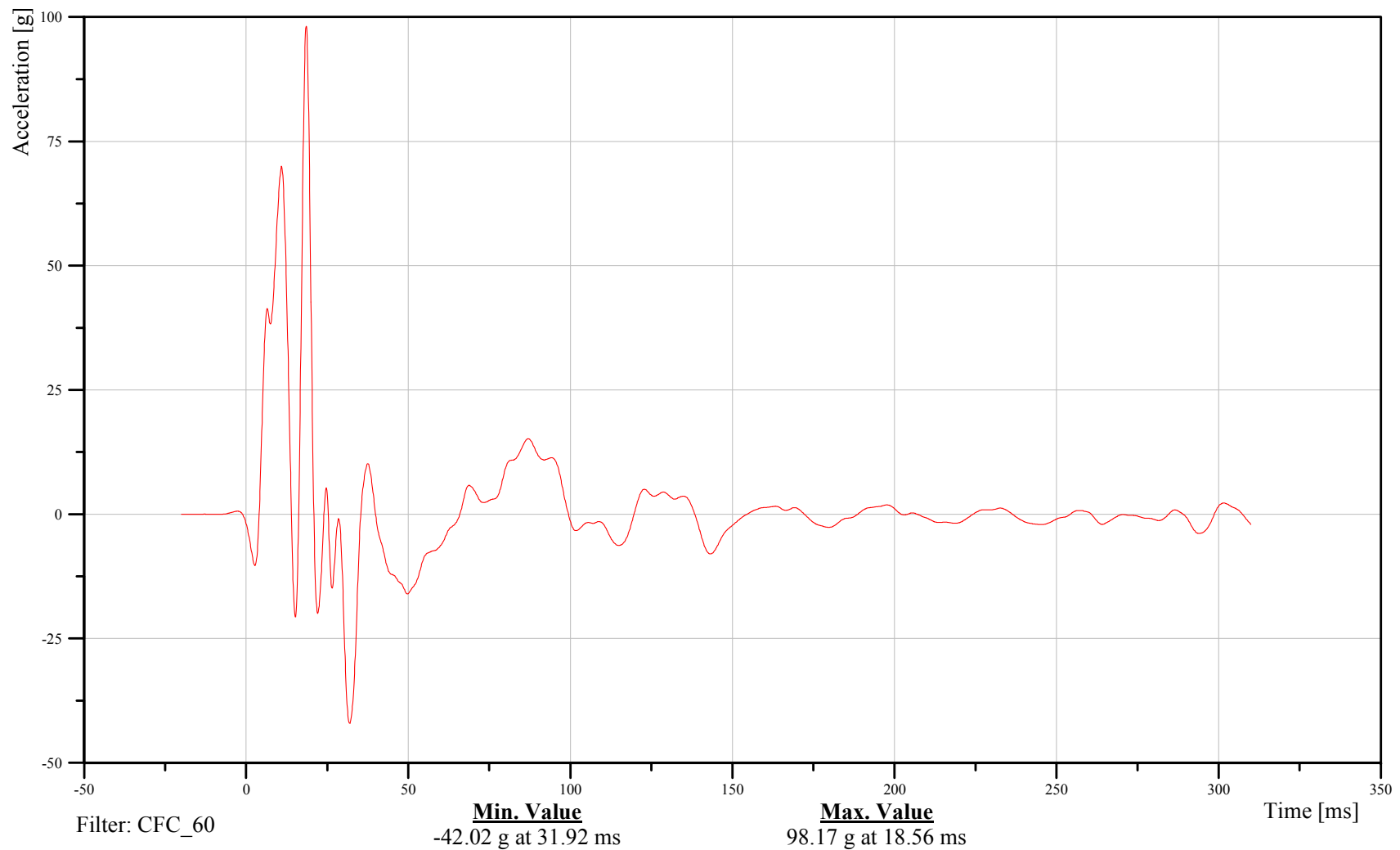
Left Front Door upper centerline Y-axis Acceleration

Customer: VRTC

11DOOR000003ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

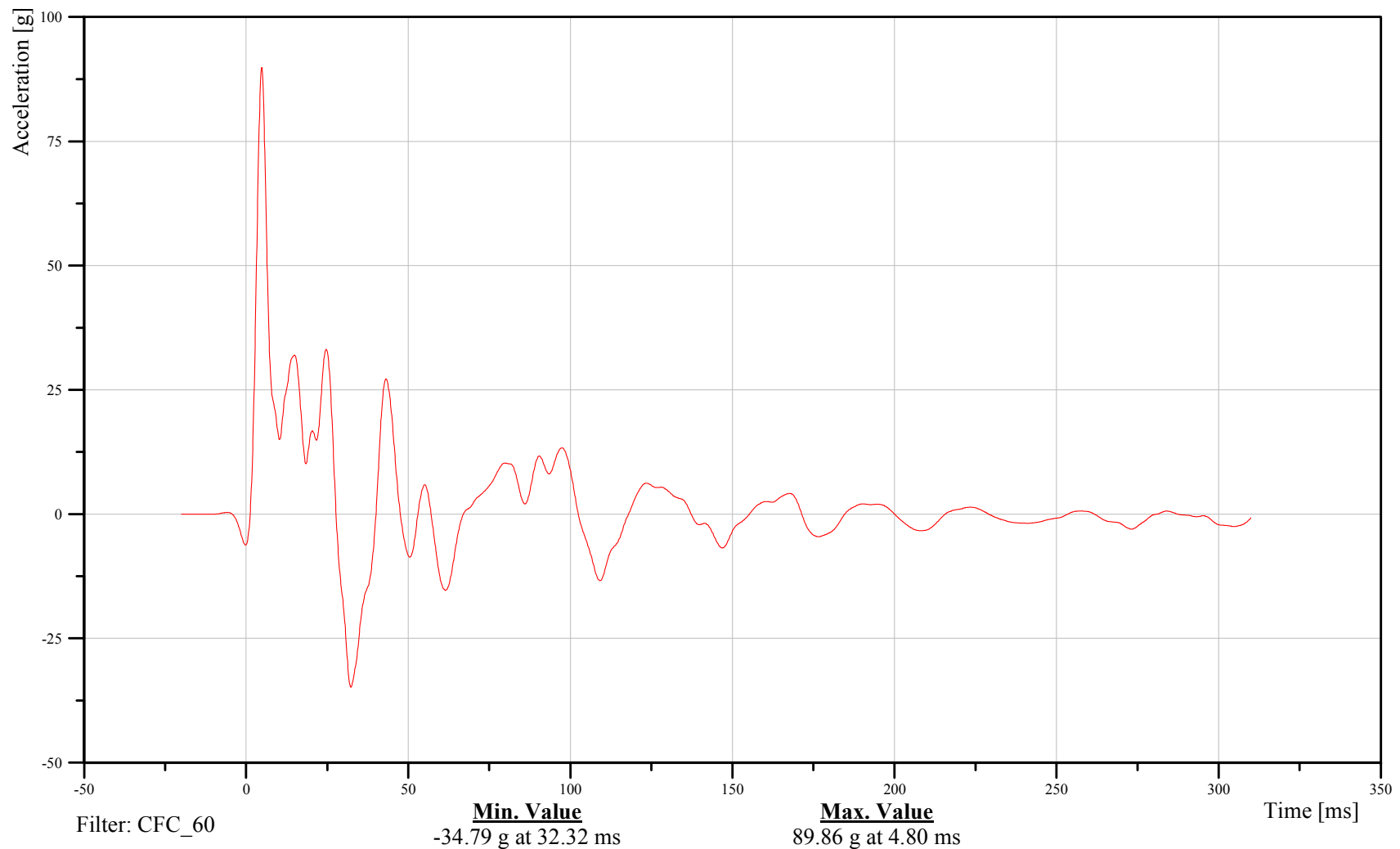
Left Rear Door mid-rear Y-axis Acceleration

Customer: VRTC

14DOOR000001ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005

Time: 13:59

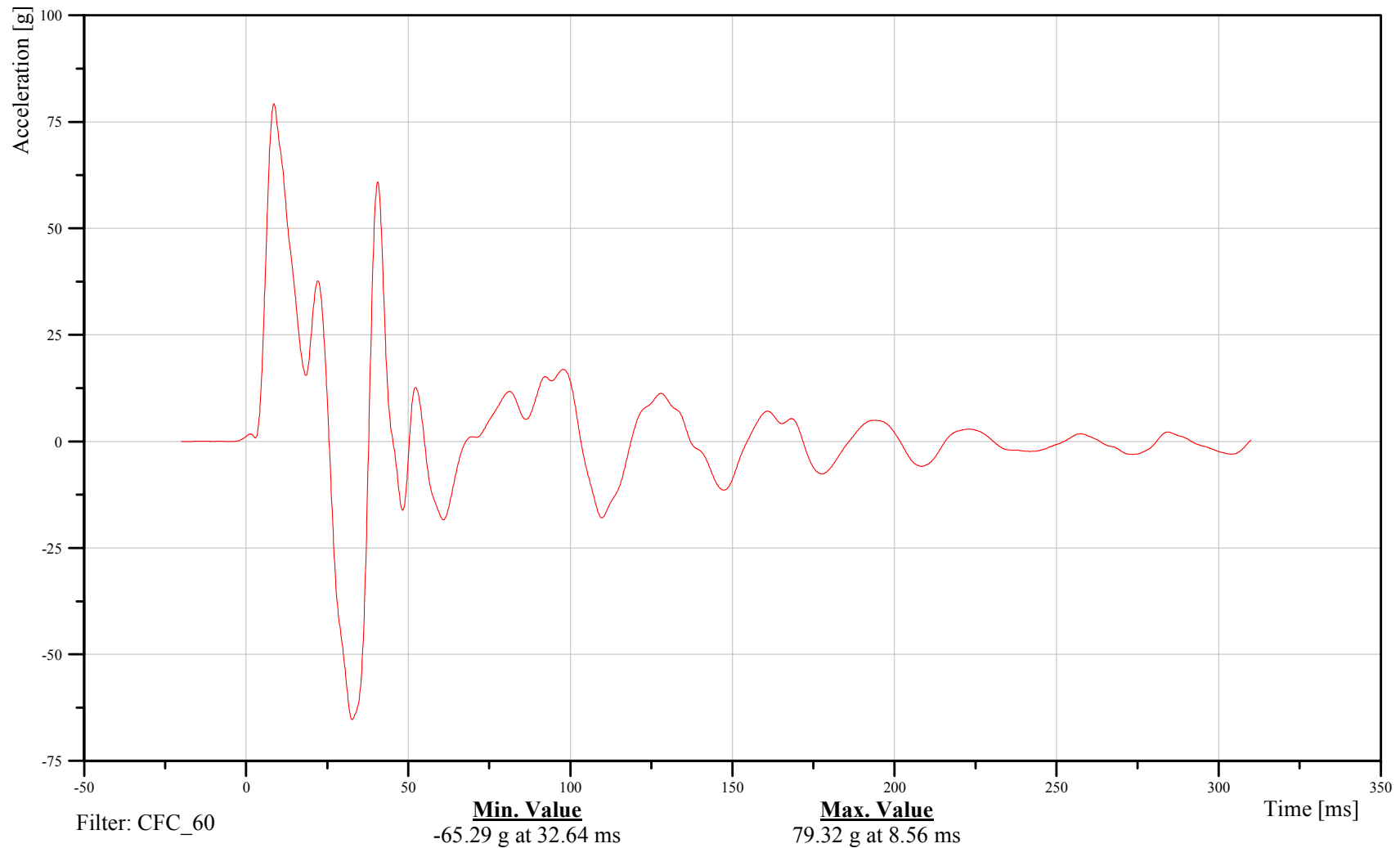
Left Rear Door upper centerline Y-axis Acceleration

Customer: VRTC

14DOOR000002ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

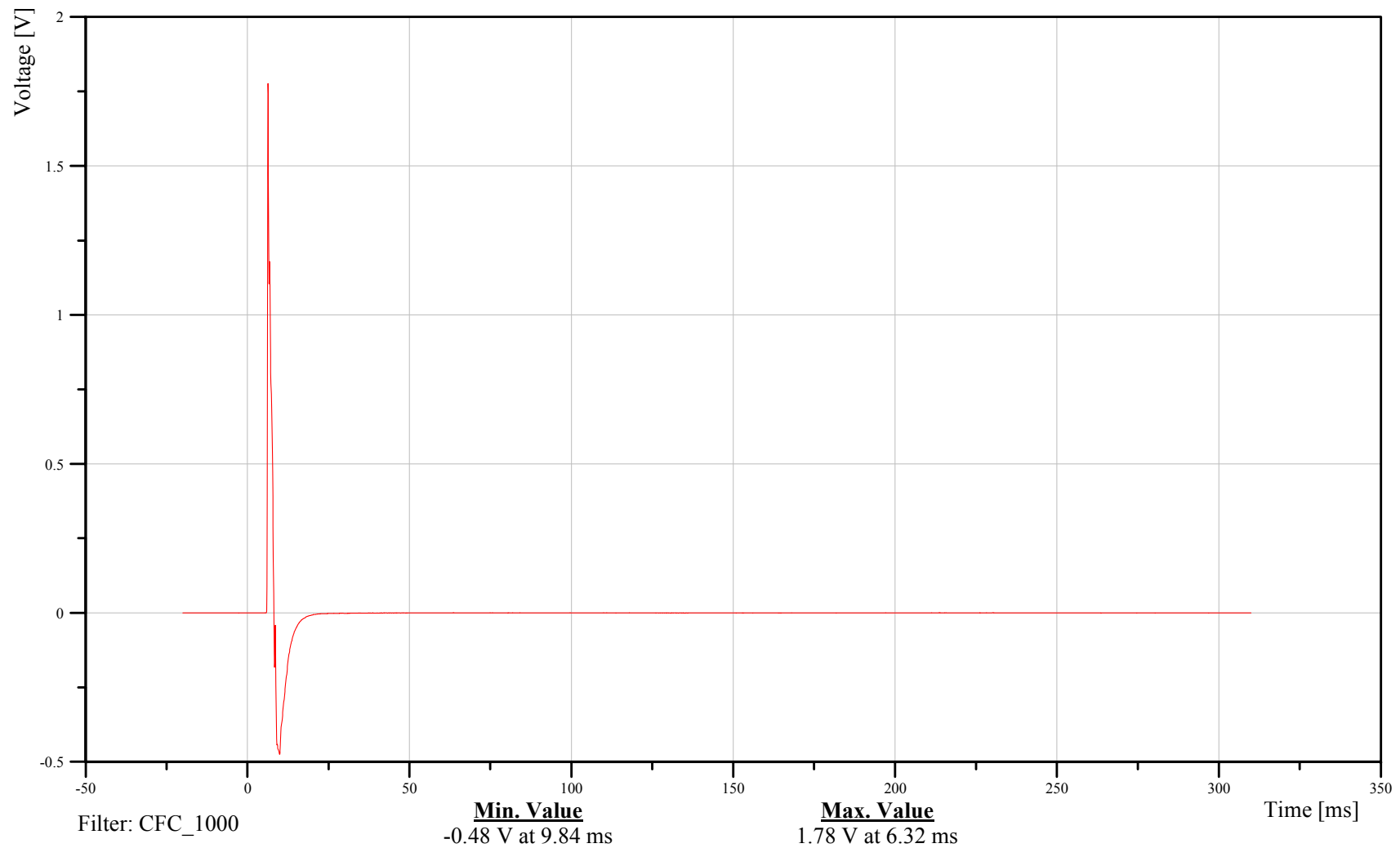
Side torso airbag fire

Customer: VRTC

11SENS000001VO0A

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Non-struck Side torso Airbag fire (disable bag)

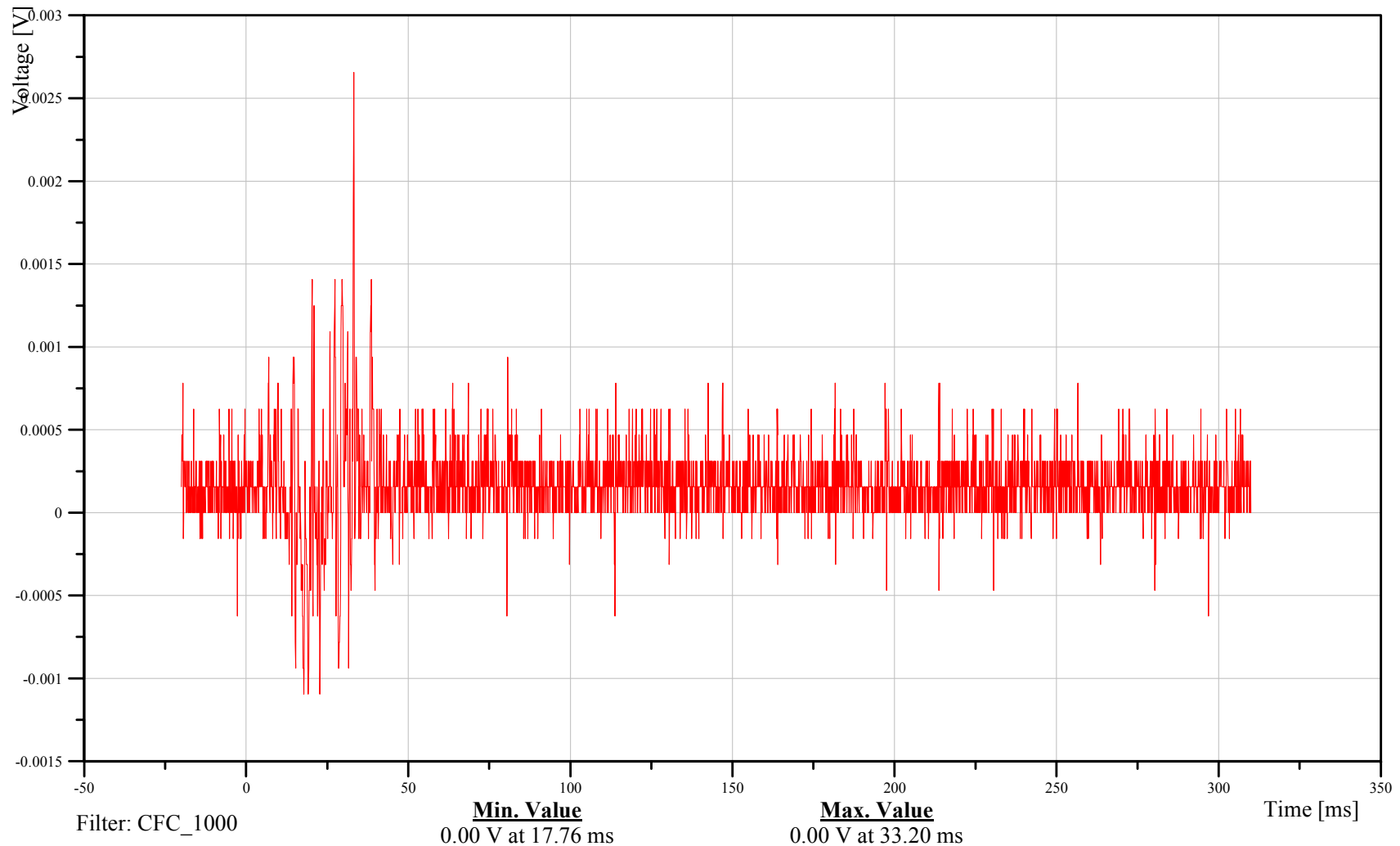
Date: 07/18/2005
Time: 13:59

Customer: VRTC

13SENS000001VO0A

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

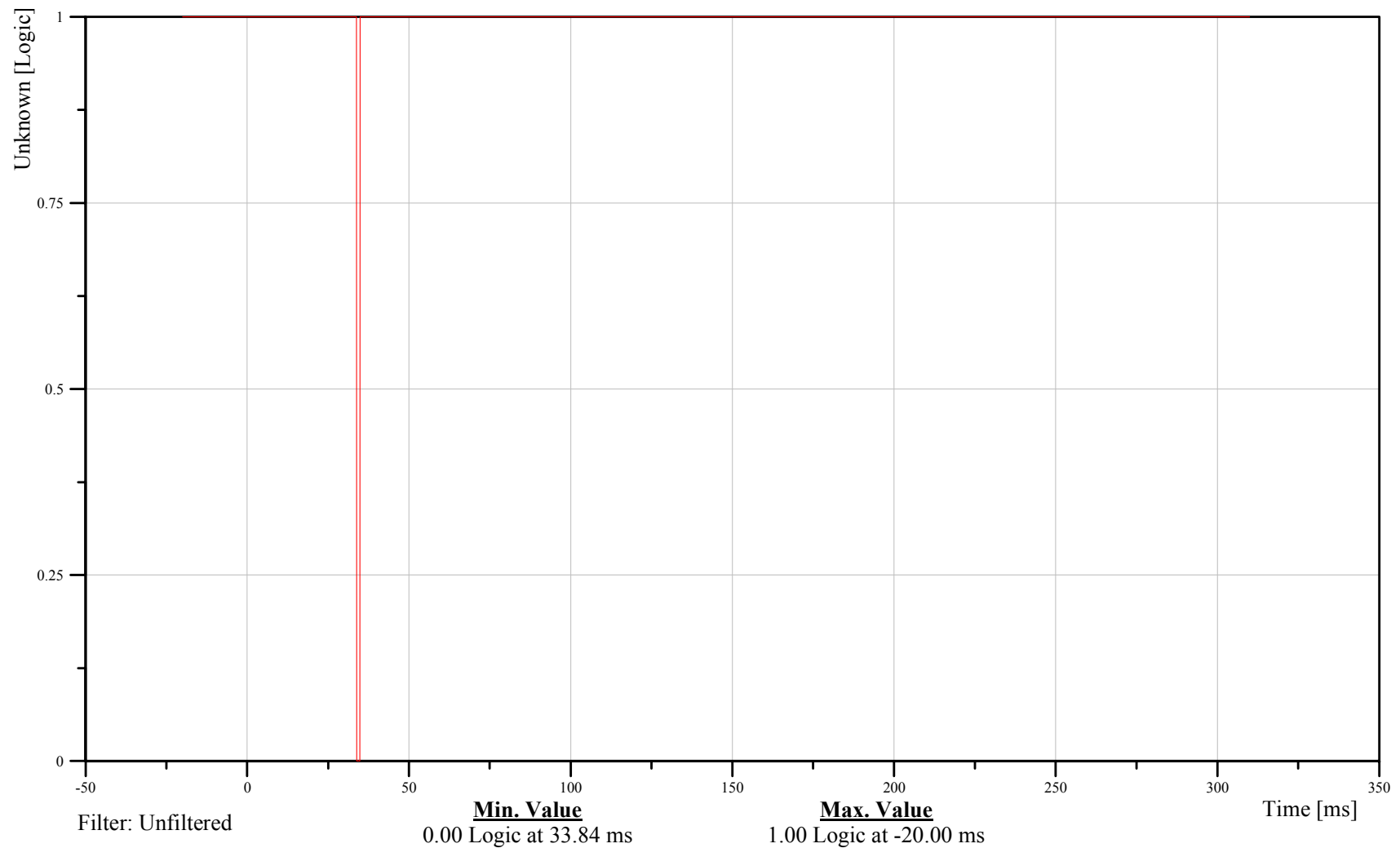
Dummy head contact

Customer: VRTC

11CONT000001EV00

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

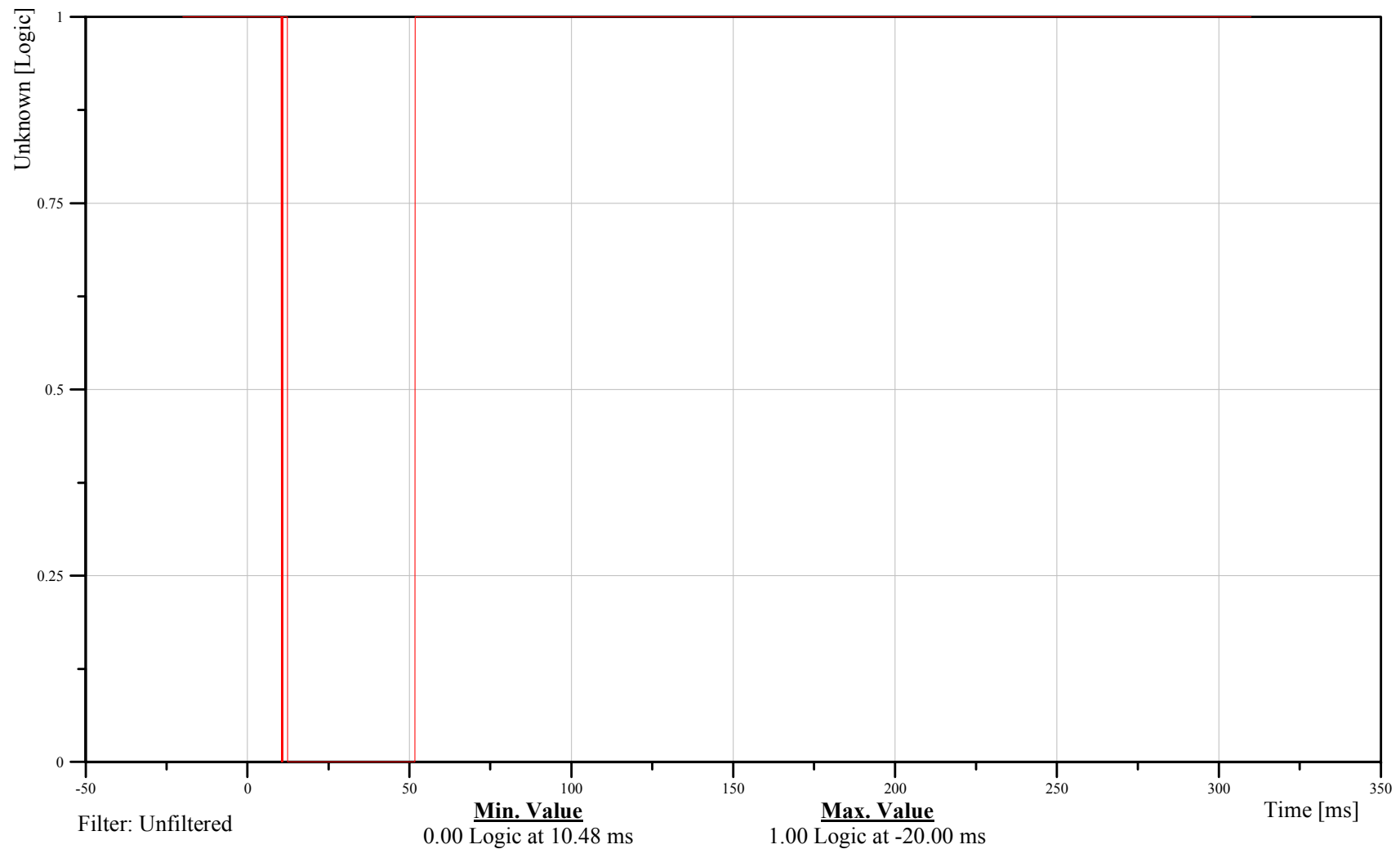
Dummy shoulder contact

Customer: VRTC

11CONT000002EV00

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

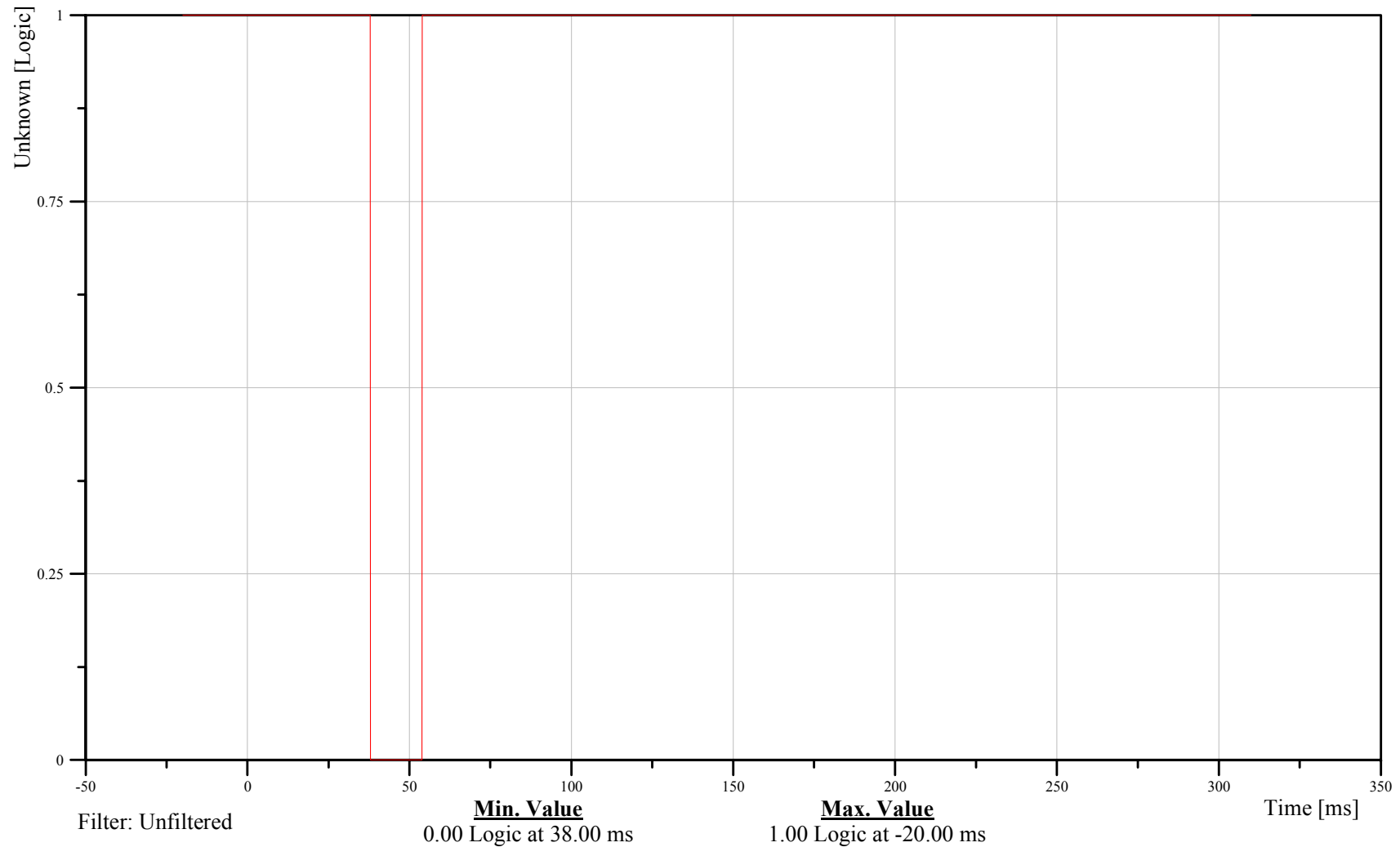
Dummy torso contact

Customer: VRTC

11CONT000003EV00

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

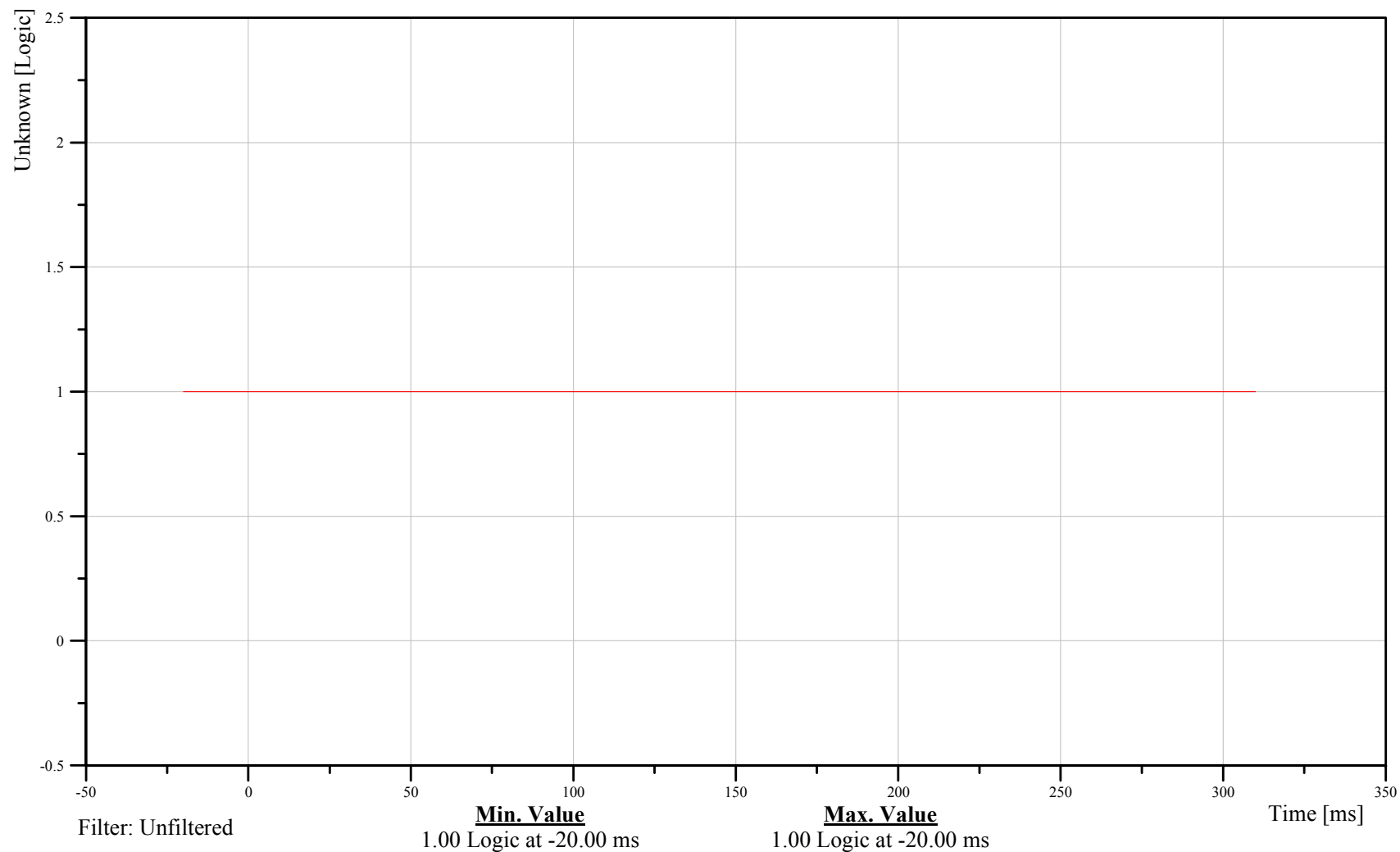
Dummy leg contact

Customer: VRTC

11CONT000004EV00

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

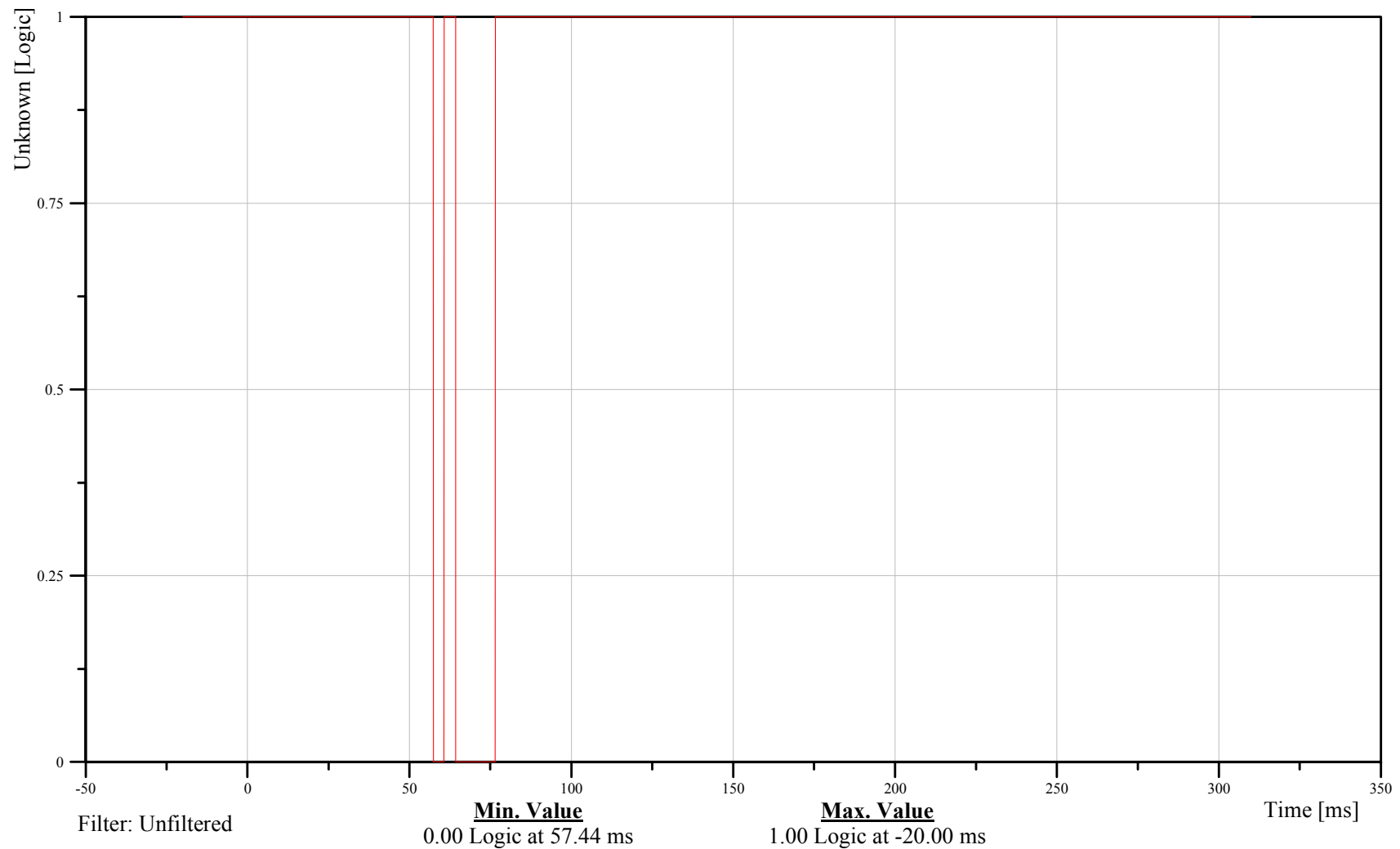
Dummy head contact

Customer: VRTC

14CONT000001EV00

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

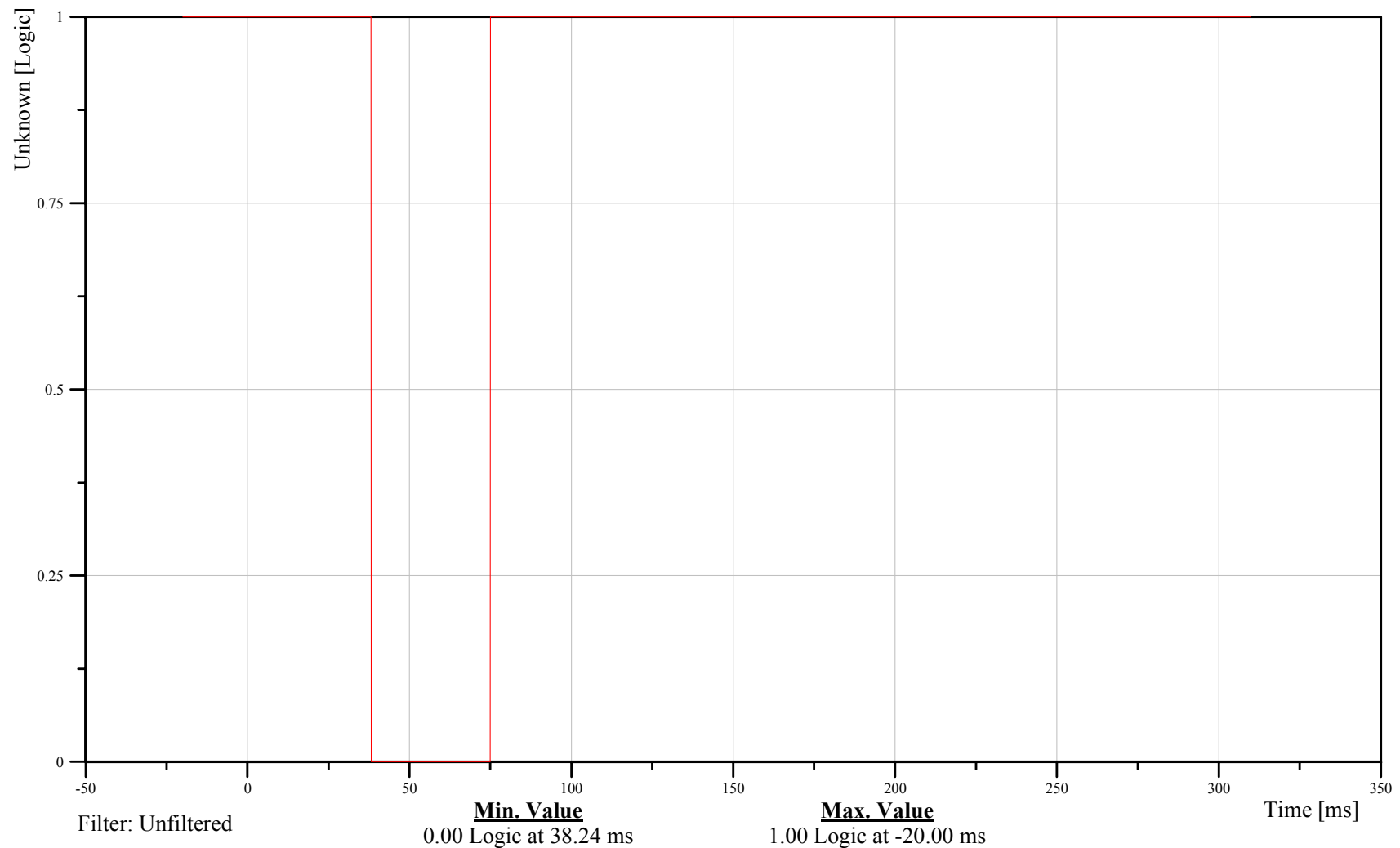
Dummy shoulder contact

Customer: VRTC

14CONT000002EV00

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

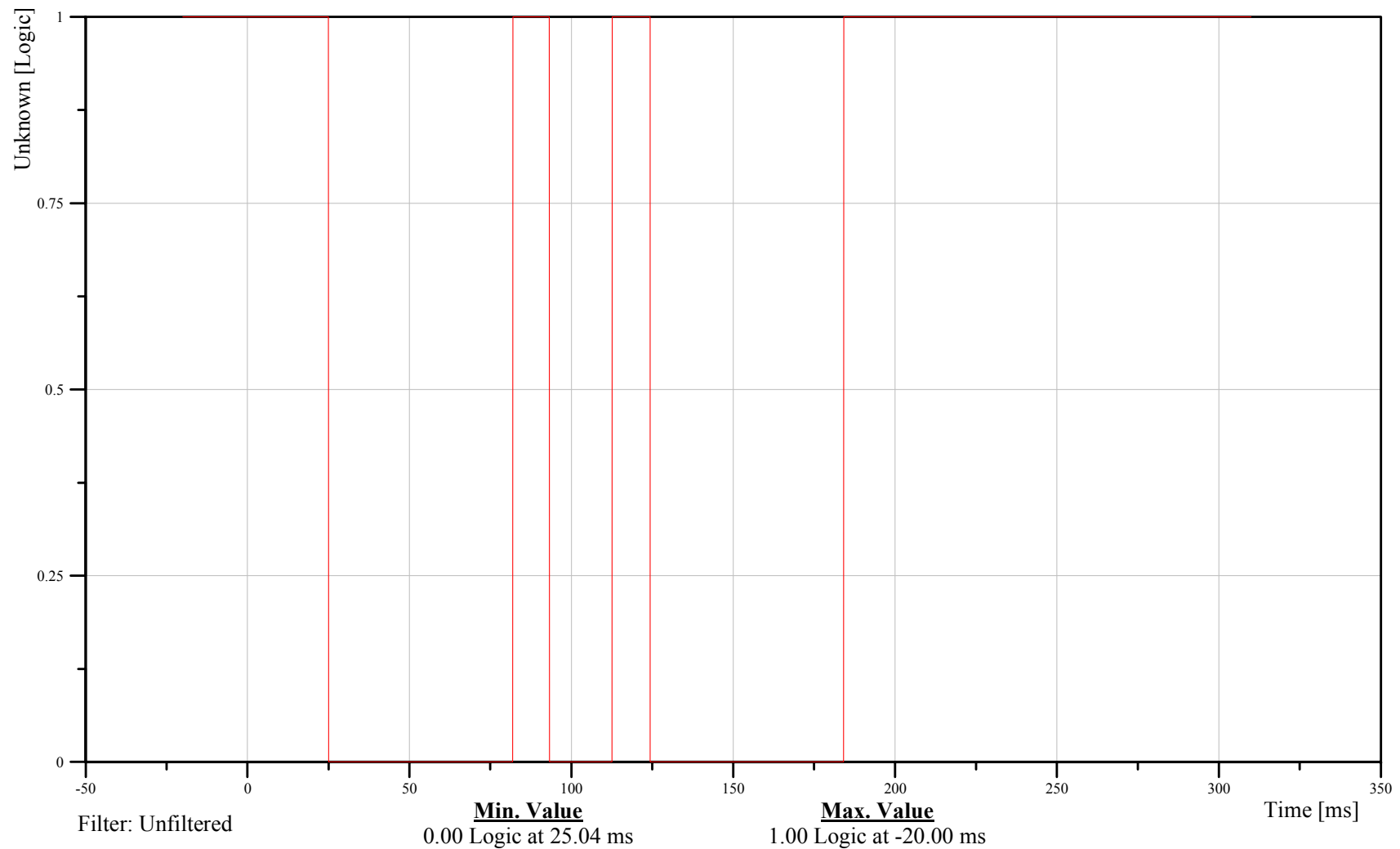
Dummy torso contact

Customer: VRTC

14CONT000003EV00

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

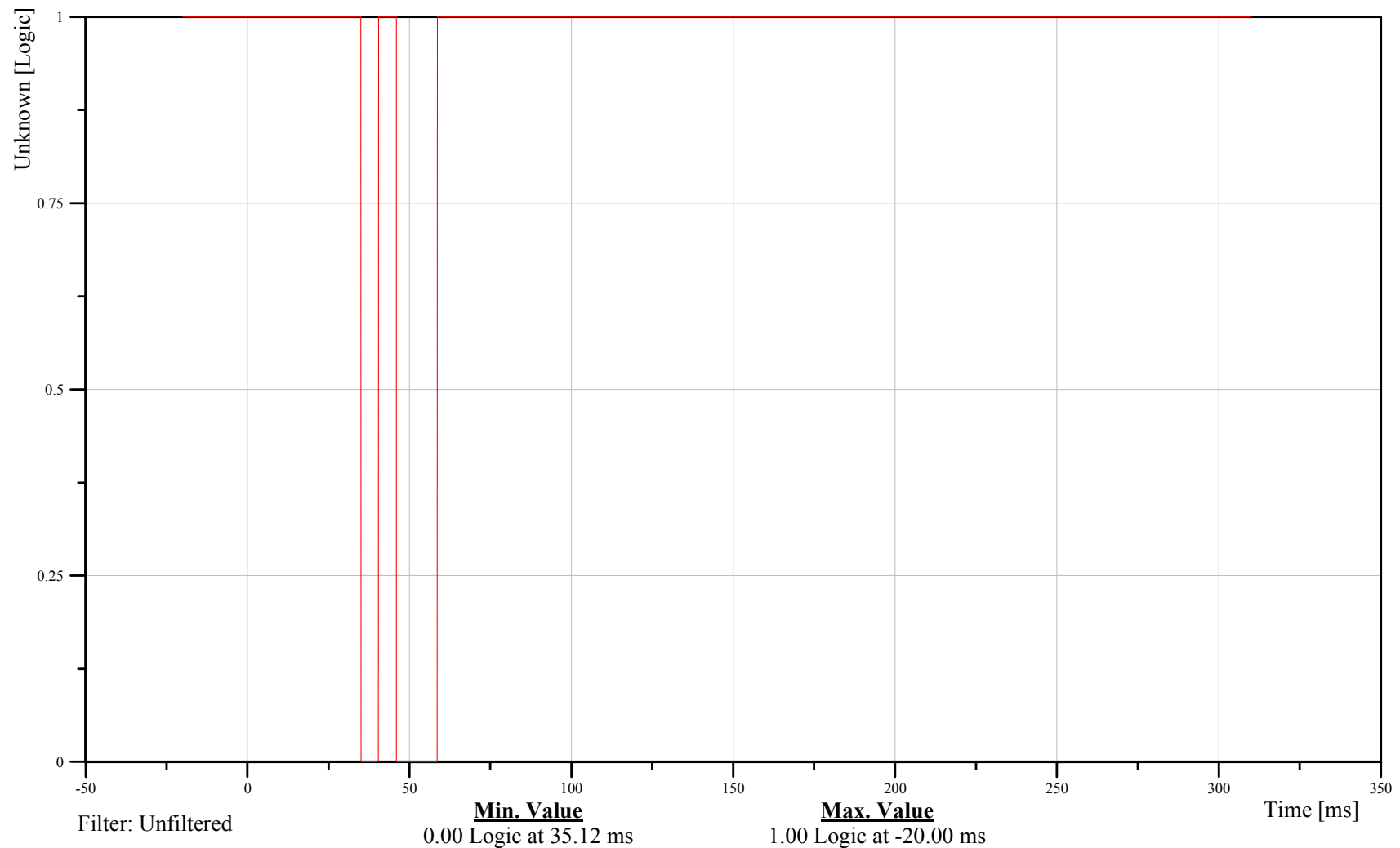
Dummy leg contact

Customer: VRTC

14CONT000004EV00

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

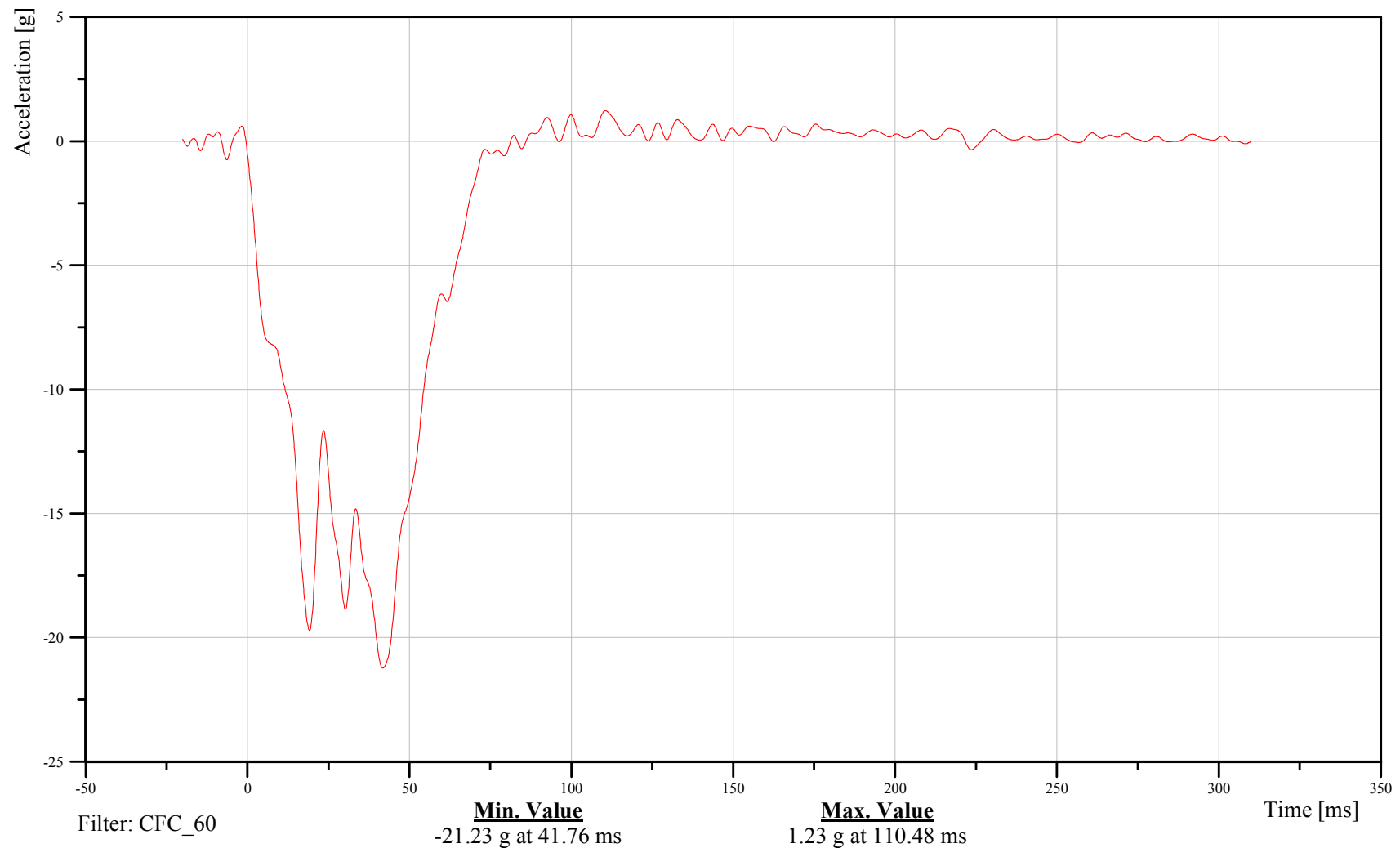
MDB Center of Gravity X-axis Acceleration

Customer: VRTC

M0VEHCCG0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

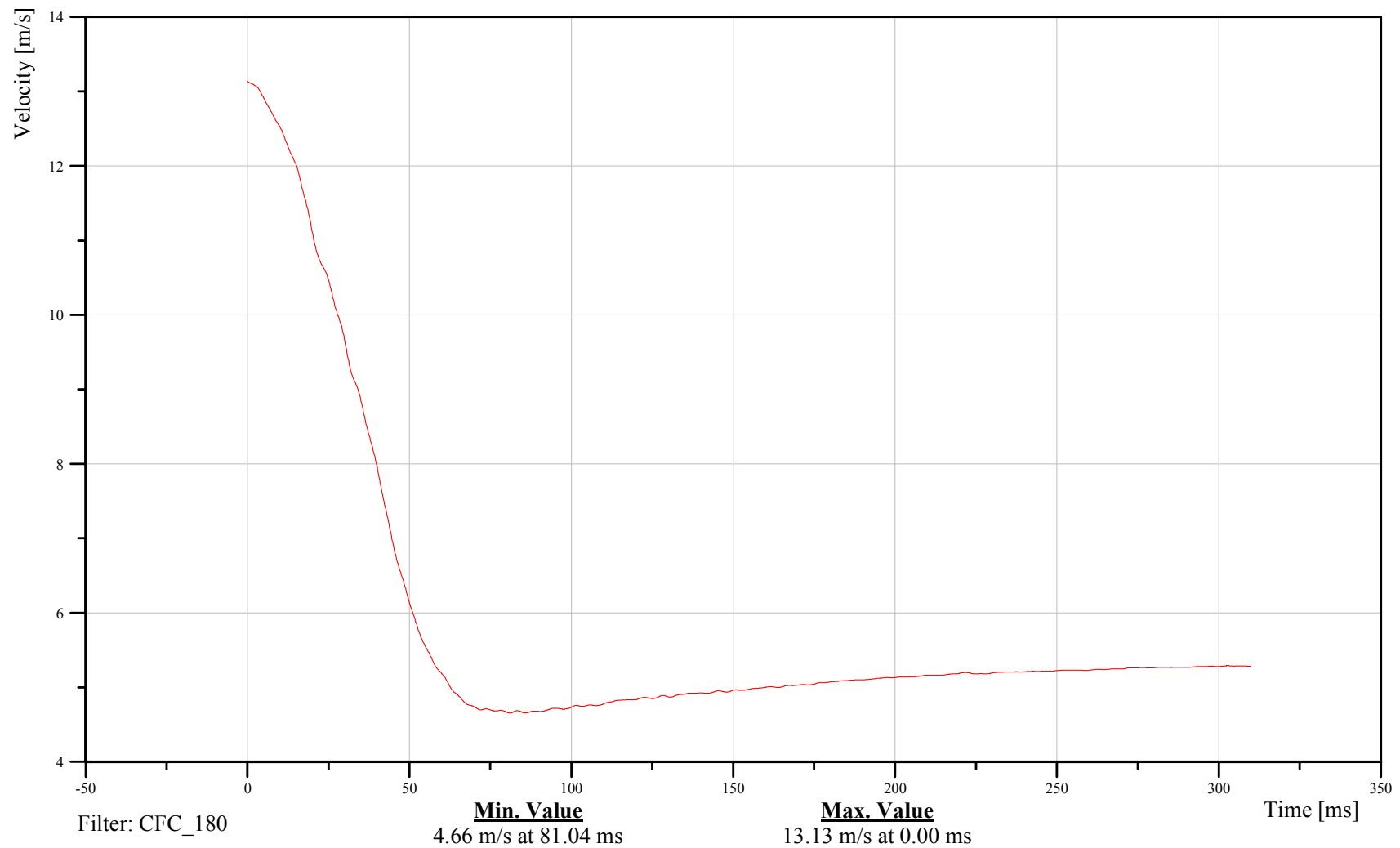
MDB Center of Gravity X-axis Velocity

Customer: VRTC

M0VEHCCG0000VEXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

MDB Center of Gravity Y-axis Acceleration

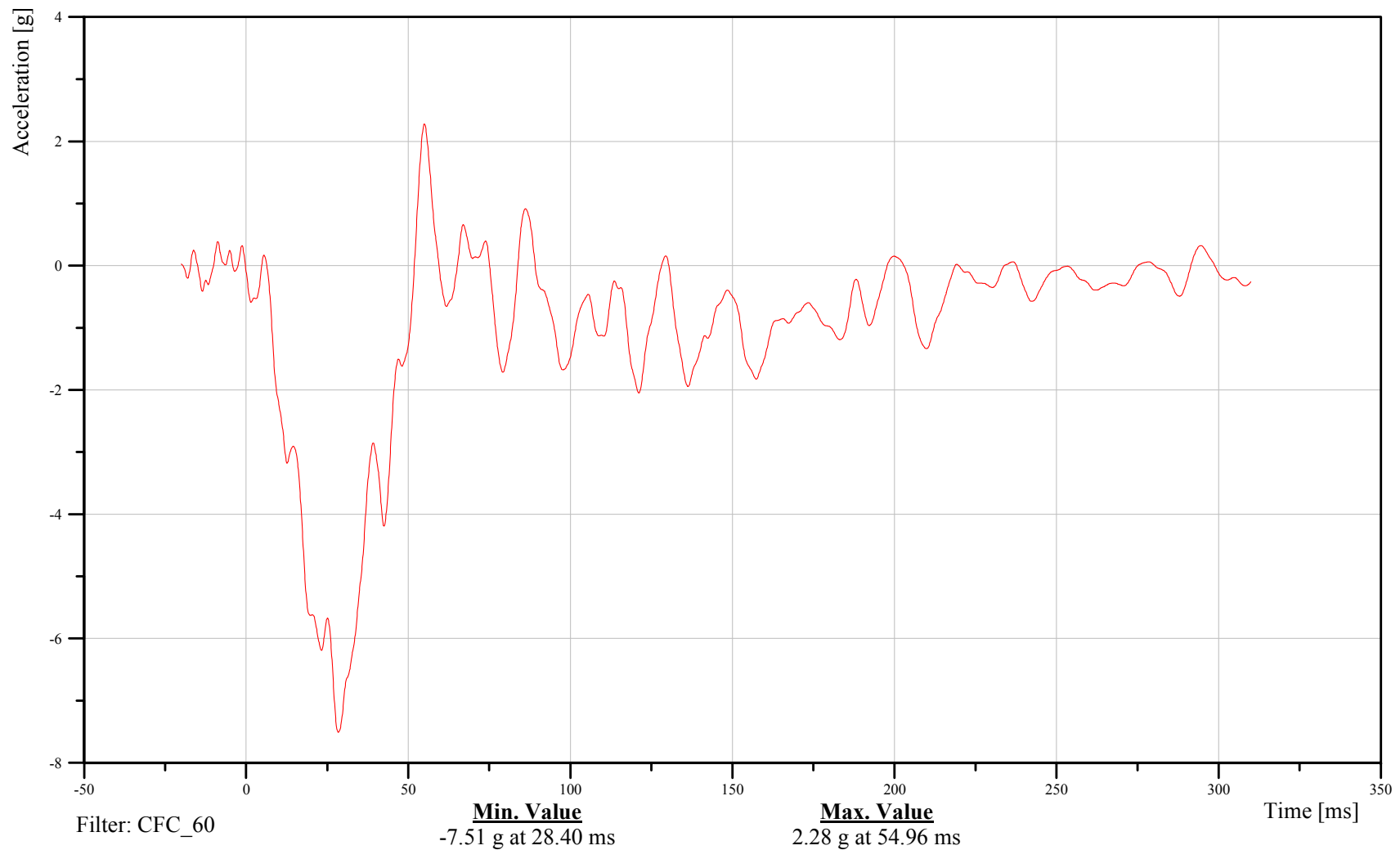
Date: 07/18/2005
Time: 13:59

Customer: VRTC

M0VEHCCG0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

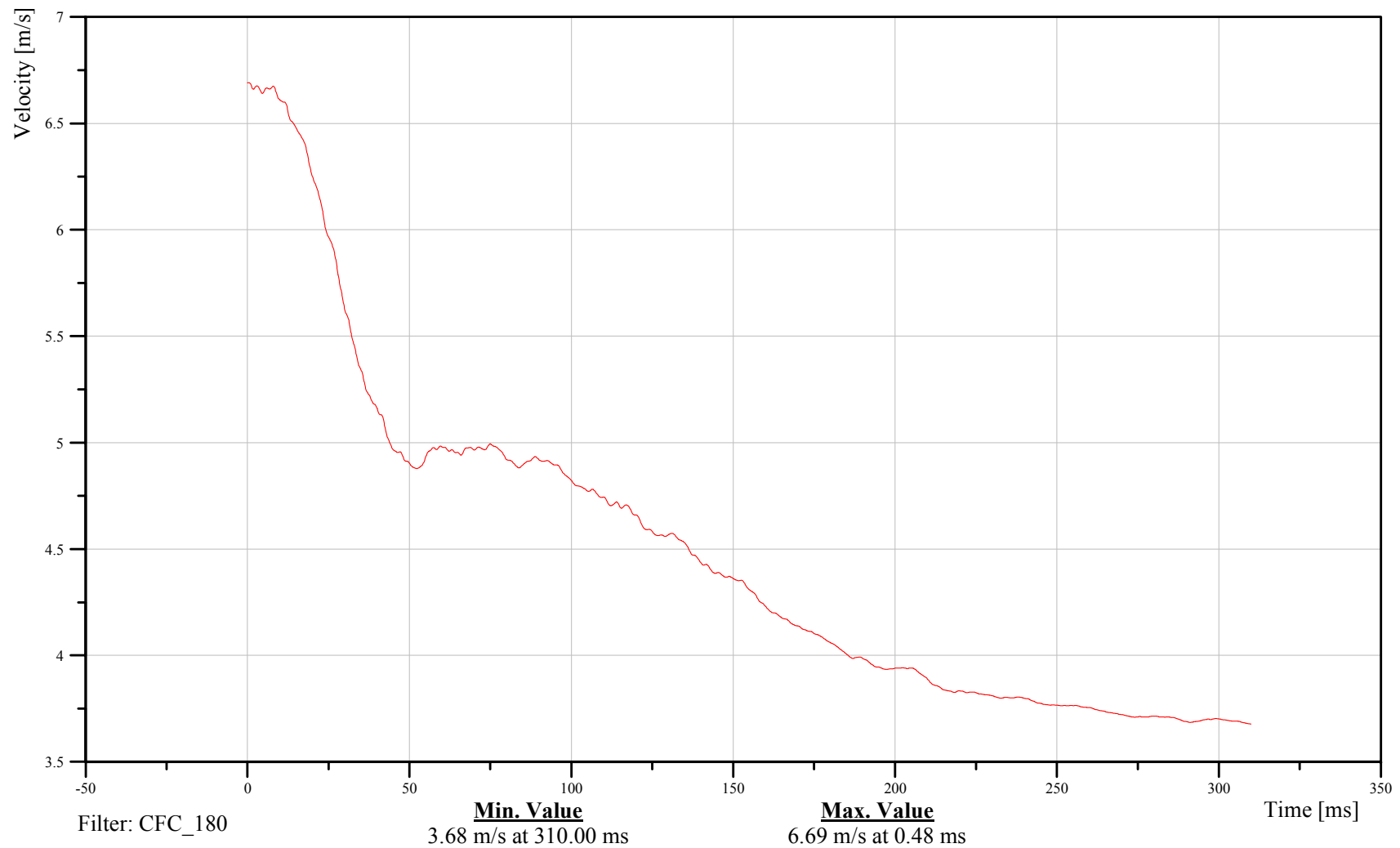
MDB Center of Gravity Y-axis Velocity

Customer: VRTC

M0VEHCCG0000VEYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

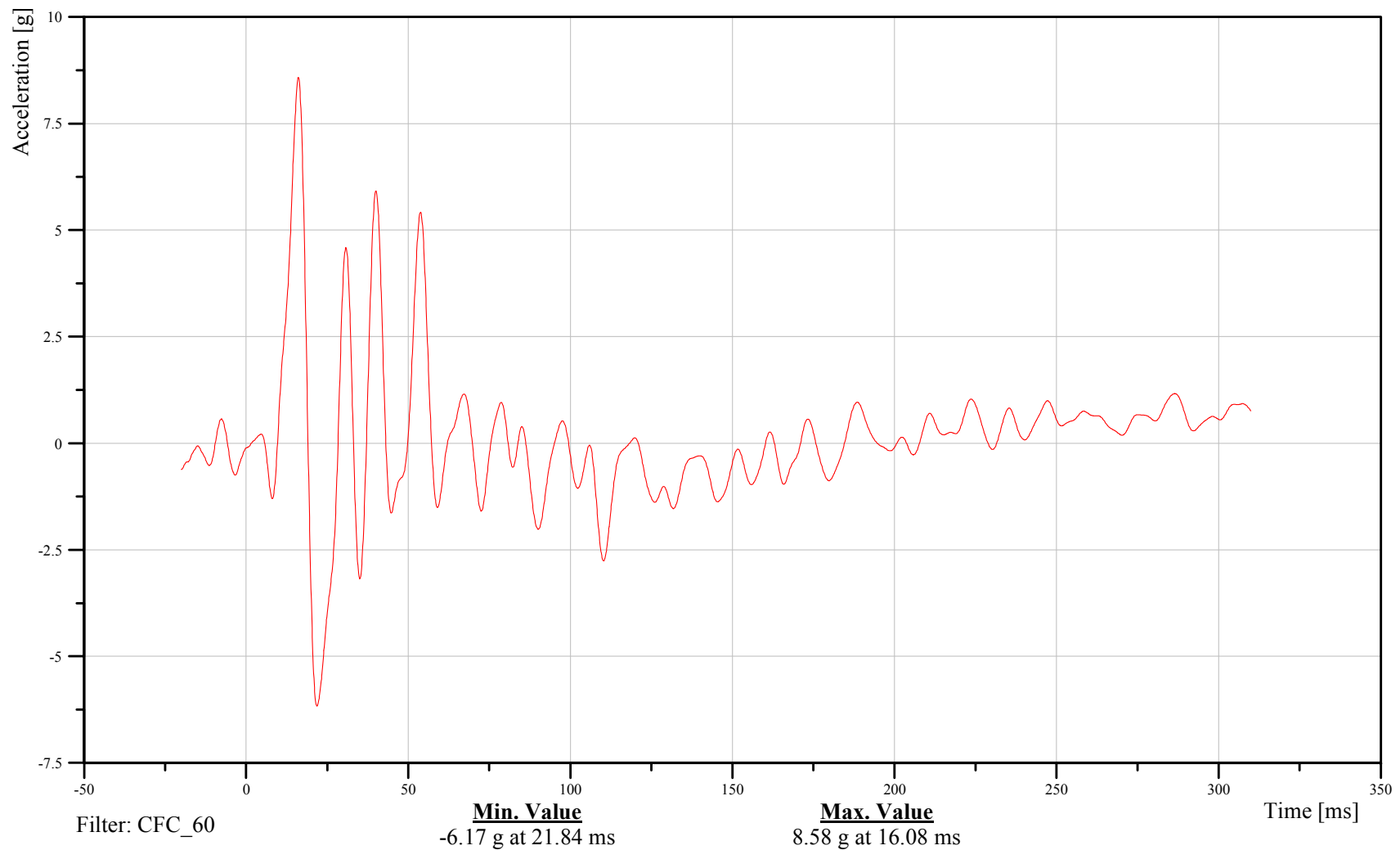
MDB Center of Gravity Z-axis Acceleration

Customer: VRTC

M0VEHCCG0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

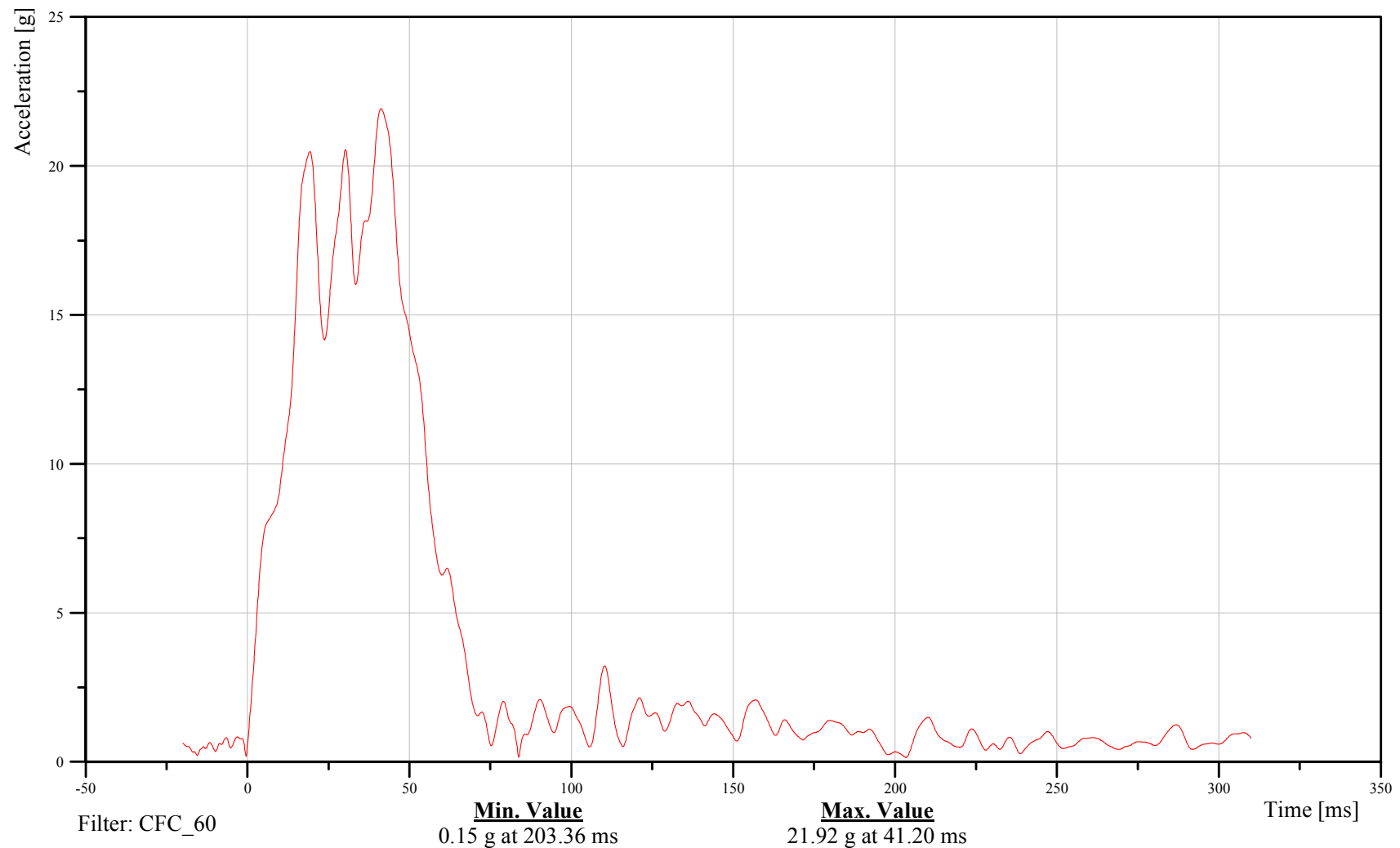
MDB Center of Gravity Resultant Acceleration

Customer: VRTC

M0VEHCCG0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

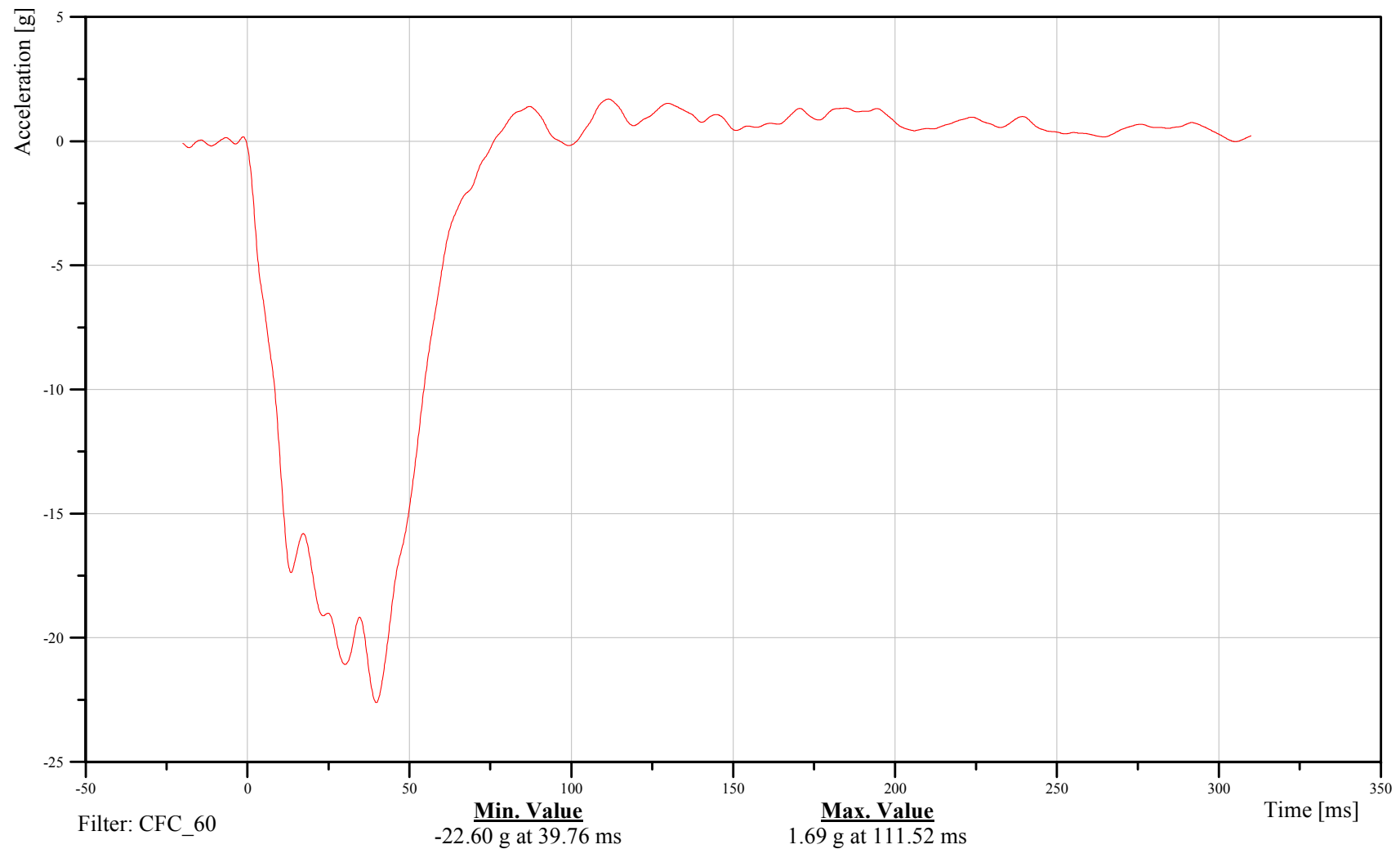
MDB Left Rear X-axis Acceleration

Customer: VRTC

M7FRAM000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

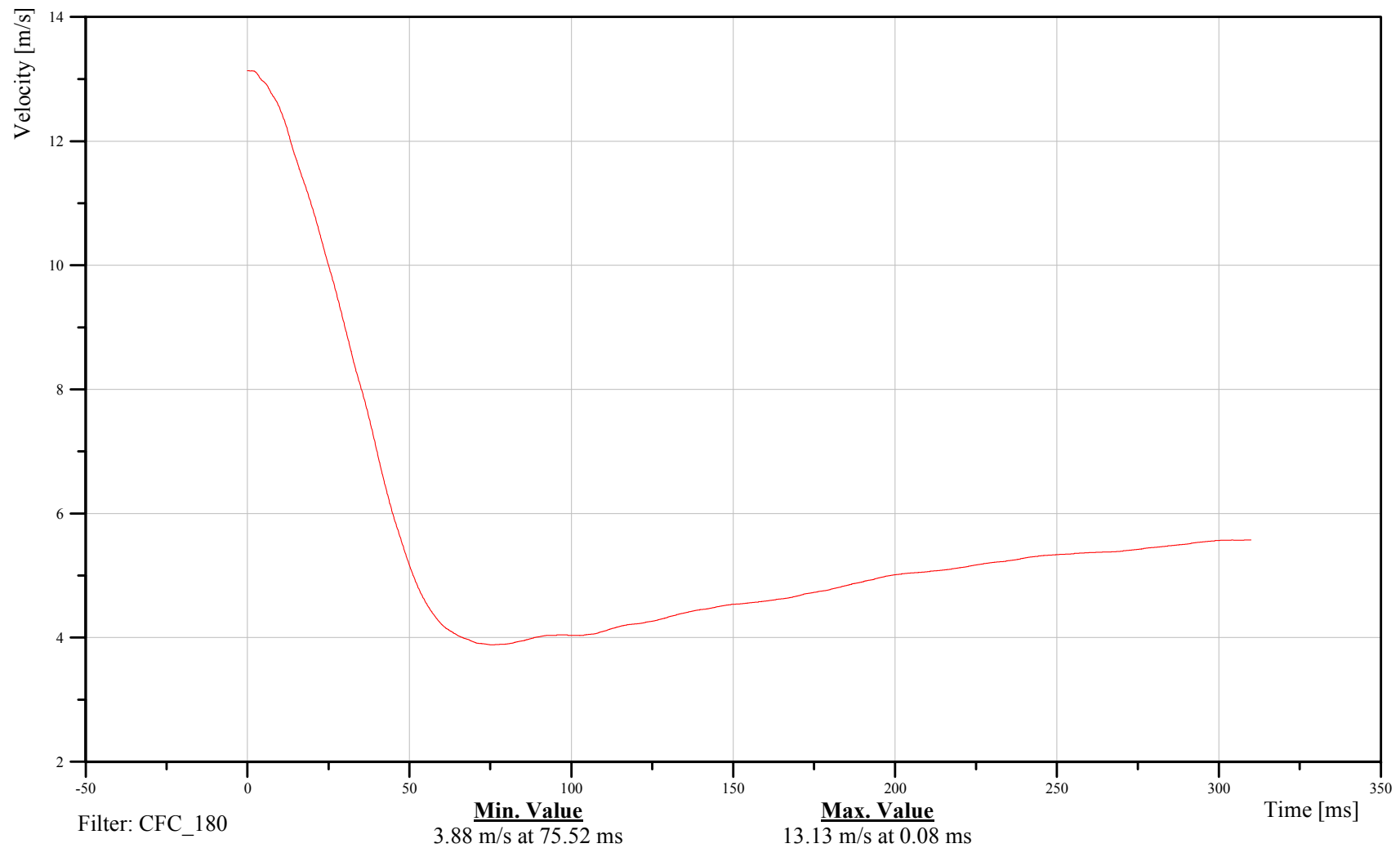
MDB Left Rear X-axis Velocity

Customer: VRTC

M7FRAM000000VEXC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

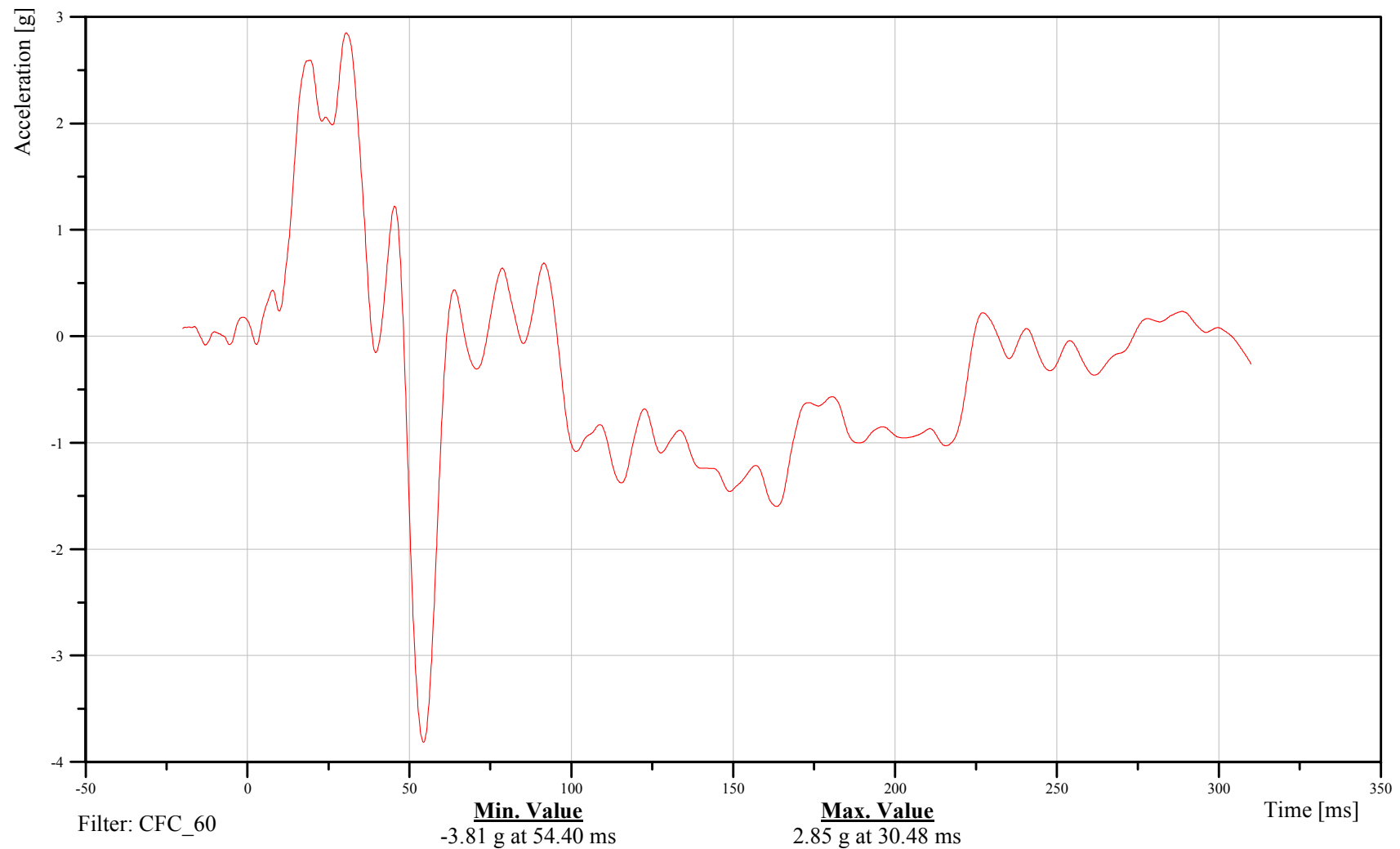
MDB Left Rear Y-axis Acceleration

Customer: VRTC

M7FRAM000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

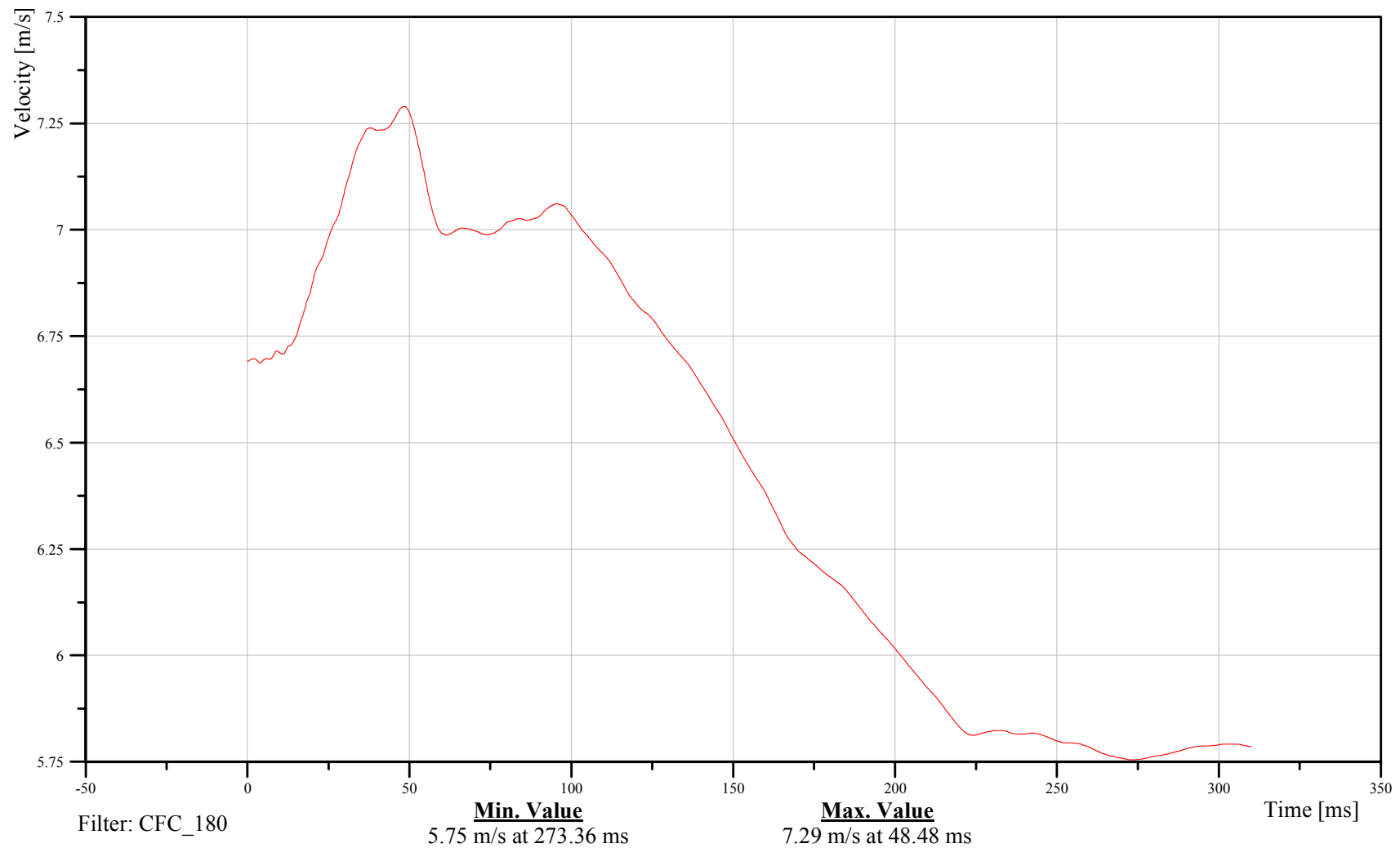
MDB Left Rear Y-axis Velocity

Customer: VRTC

M7FRAM000000VEYC

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005
Time: 13:59

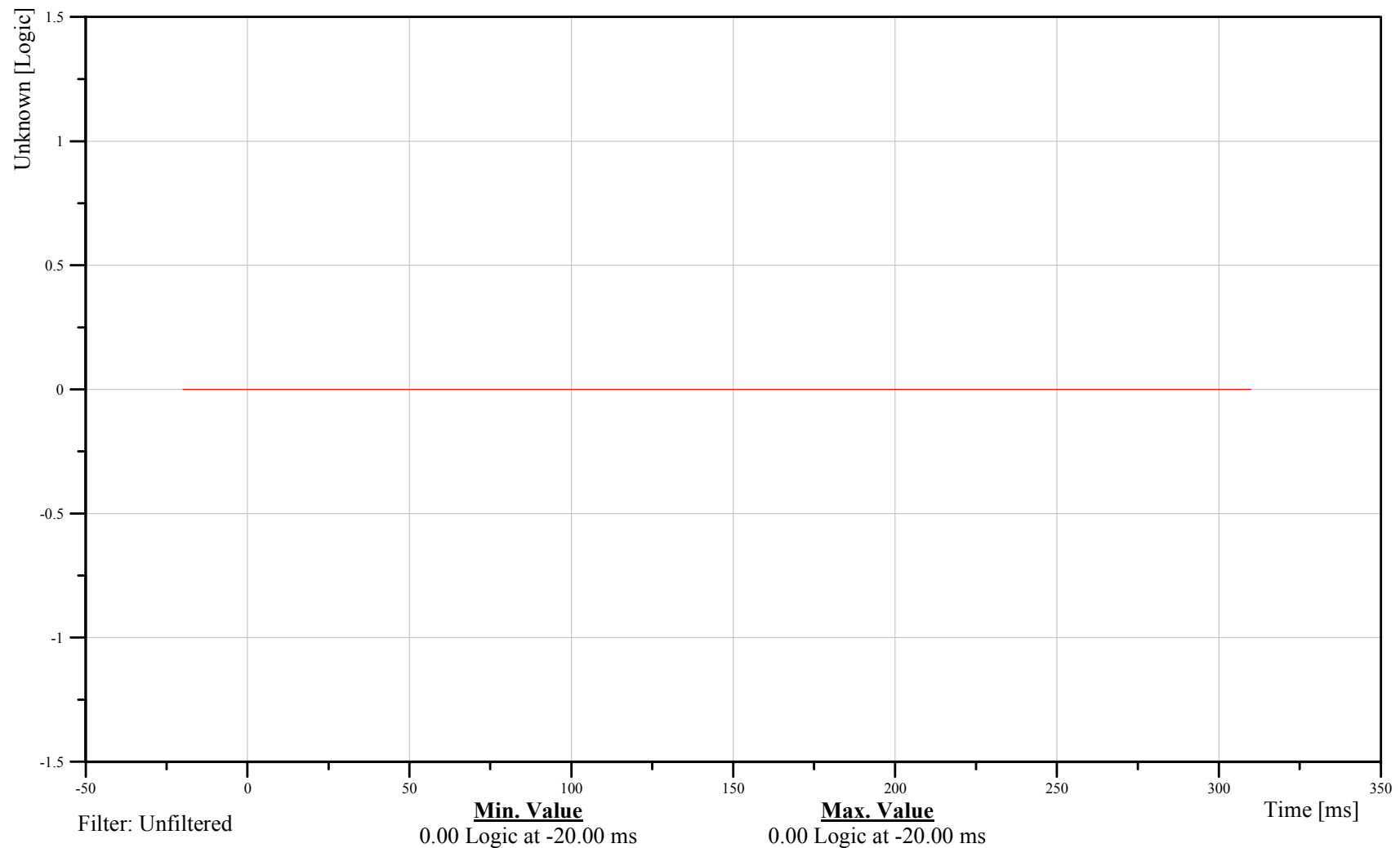
MDB Right Side Contact Switch

Customer: VRTC

M3CONT000000EV00

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

MDB Left Side Contact Switch

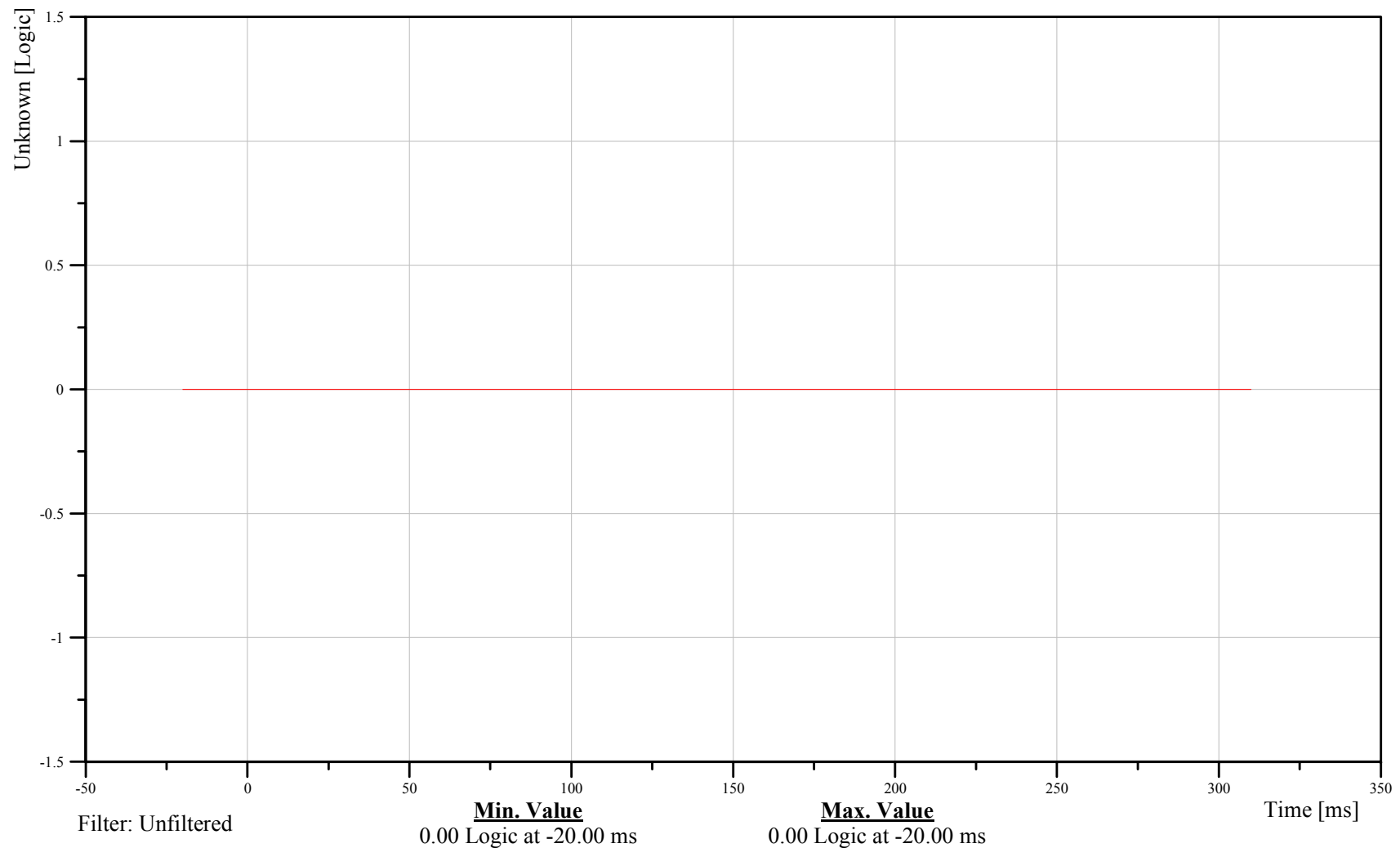
Date: 07/18/2005
Time: 13:59

Customer: VRTC

M1CONT000000EV00

TRC Inc. Test Lab: CTF

Test Number: 050718





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Head Injury Criterion (HIC)

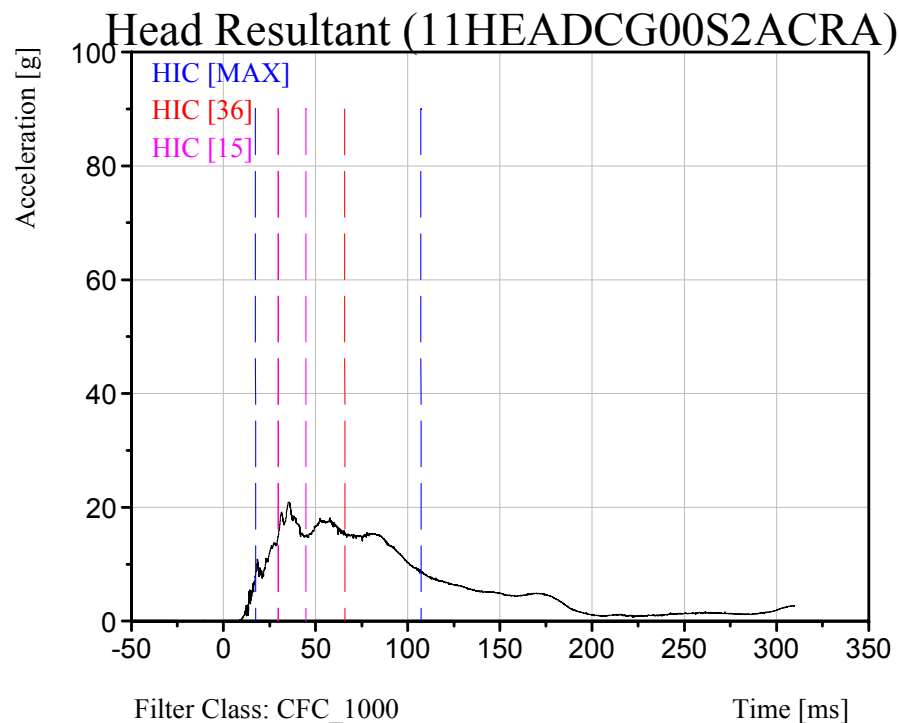
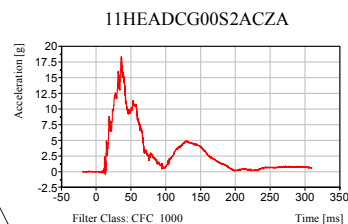
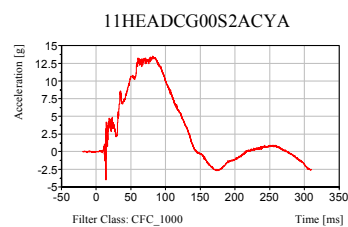
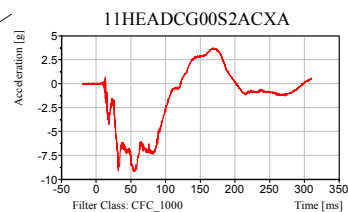
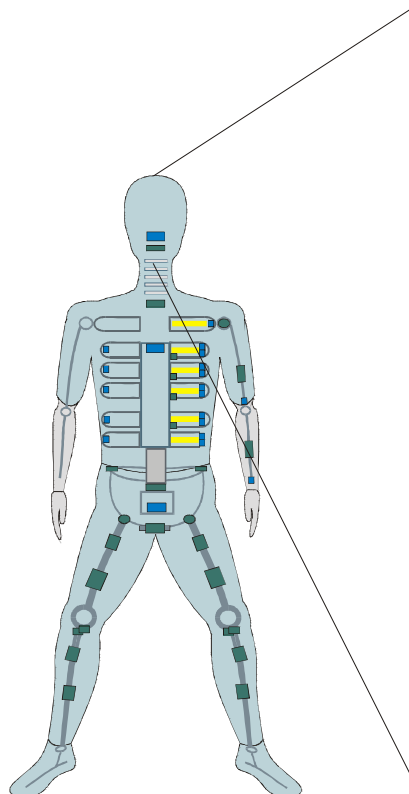
Date: 07/18/2005

Time: 13:59

Customer: VRTC

TRC Inc. Test Lab: CTF

Test Number: 050718



Dummy:SID IIs
Seating Position:
Driver

	<u>T1</u> (Begin)	<u>T2</u> (End)	<u>Avg. g T1 to T2</u>
HIC [Max.] = 70.85	17.44 ms	107.28 ms	14.41 g
HIC [36] = 42.59	29.92 ms	65.92 ms	16.95 g
HIC [15] = 19.26	29.76 ms	44.80 ms	17.48 g

HIC Source Code: SAE J2052 ISO/TC22/SC12/WG3 N 282 (Issued 1990-03-16) 0



MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005

Time: 13:59

Pelvis(LE) Summation

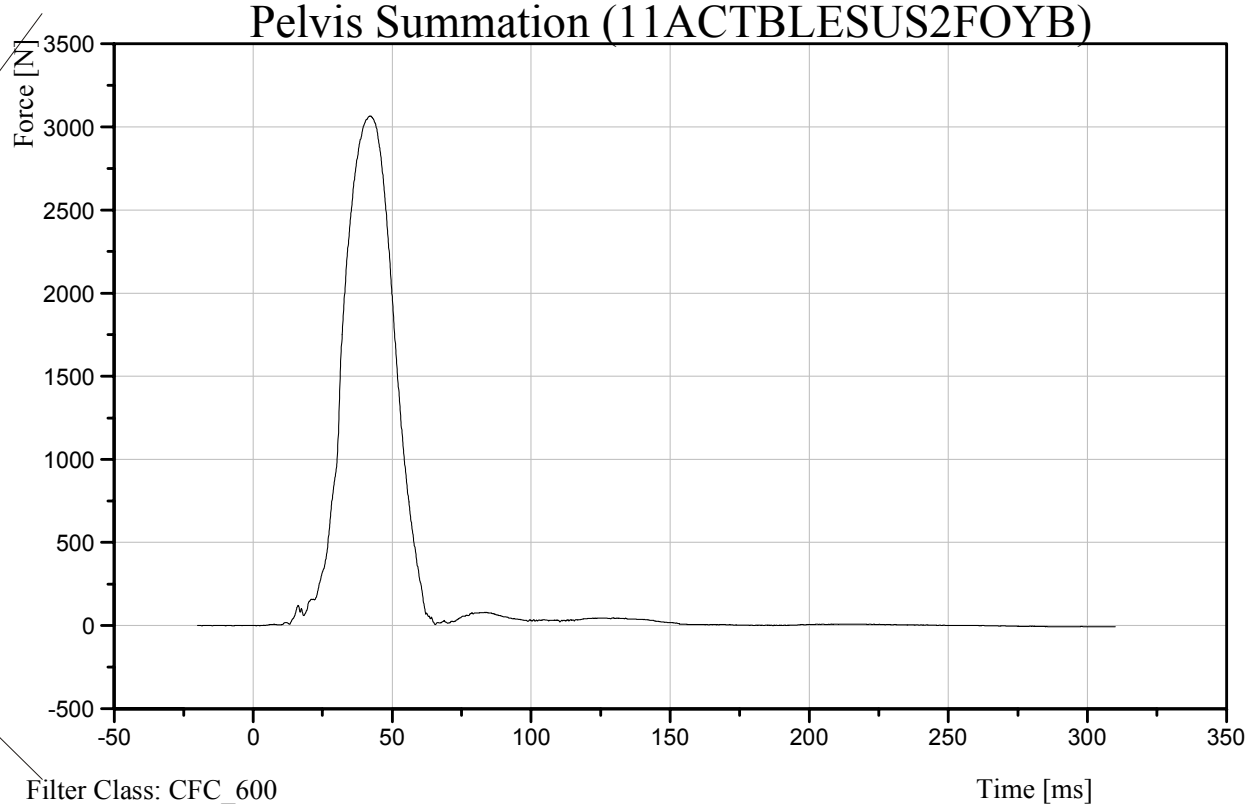
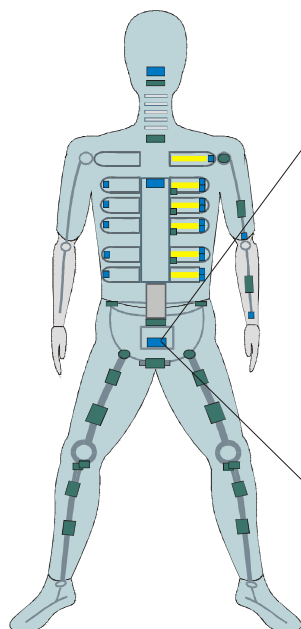
Customer: VRTC

TRC Inc. Test Lab: CTF

Test Number: 050718

Test Orientation = Side

Pelvis Summation (11ACTBLE00S2FOYB)



Dummy:SID IIs
Seating Position:
Driver

[Max.] 3,066.40 N at 42.16 ms

[Min.] -8.70 N at 297.20 ms

Pelvis Summation Source Code : Summation of Channels 11ILACLE00S2FOYB,11ACTBLE00S2FOYB



MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Head Injury Criterion (HIC)

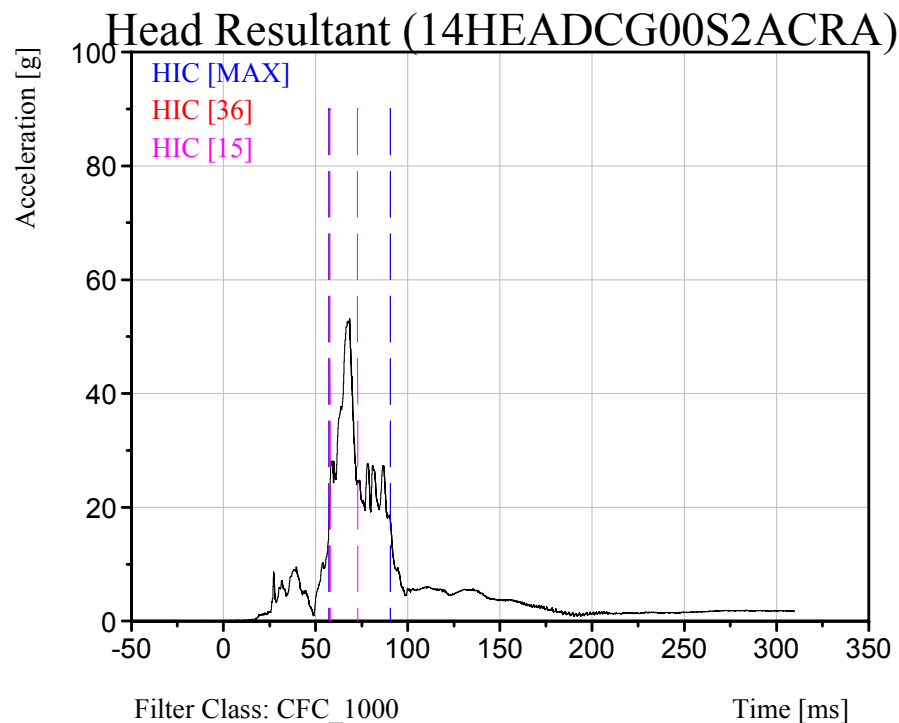
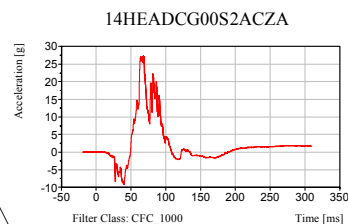
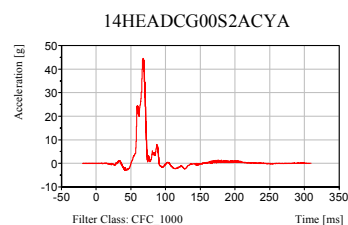
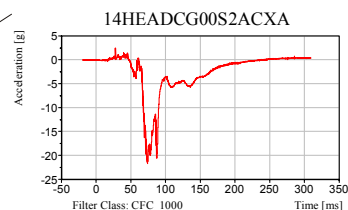
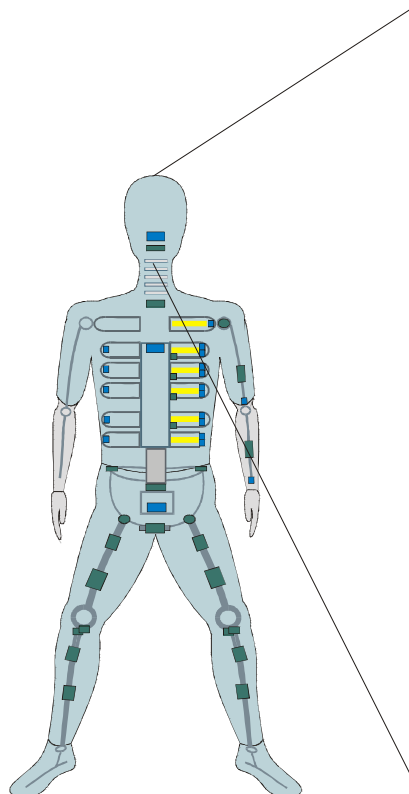
Date: 07/18/2005

Time: 13:59

Customer: VRTC

TRC Inc. Test Lab: CTF

Test Number: 050718



Dummy:SID IIs
Seating Position:
Left Rear Passenger

	<u>T1</u> (Begin)	<u>T2</u> (End)	<u>Avg. g T1 to T2</u>
HIC [Max.] = 150.49	57.28 ms	90.56 ms	28.95 g
HIC [36] = 150.49	57.28 ms	90.56 ms	28.95 g
HIC [15] = 121.92	57.84 ms	72.88 ms	36.54 g

HIC Source Code: SAE J2052 ISO/TC22/SC12/WG3 N 282 (Issued 1990-03-16) 102



MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 07/18/2005

Time: 13:59

Pelvis(LE) Summation

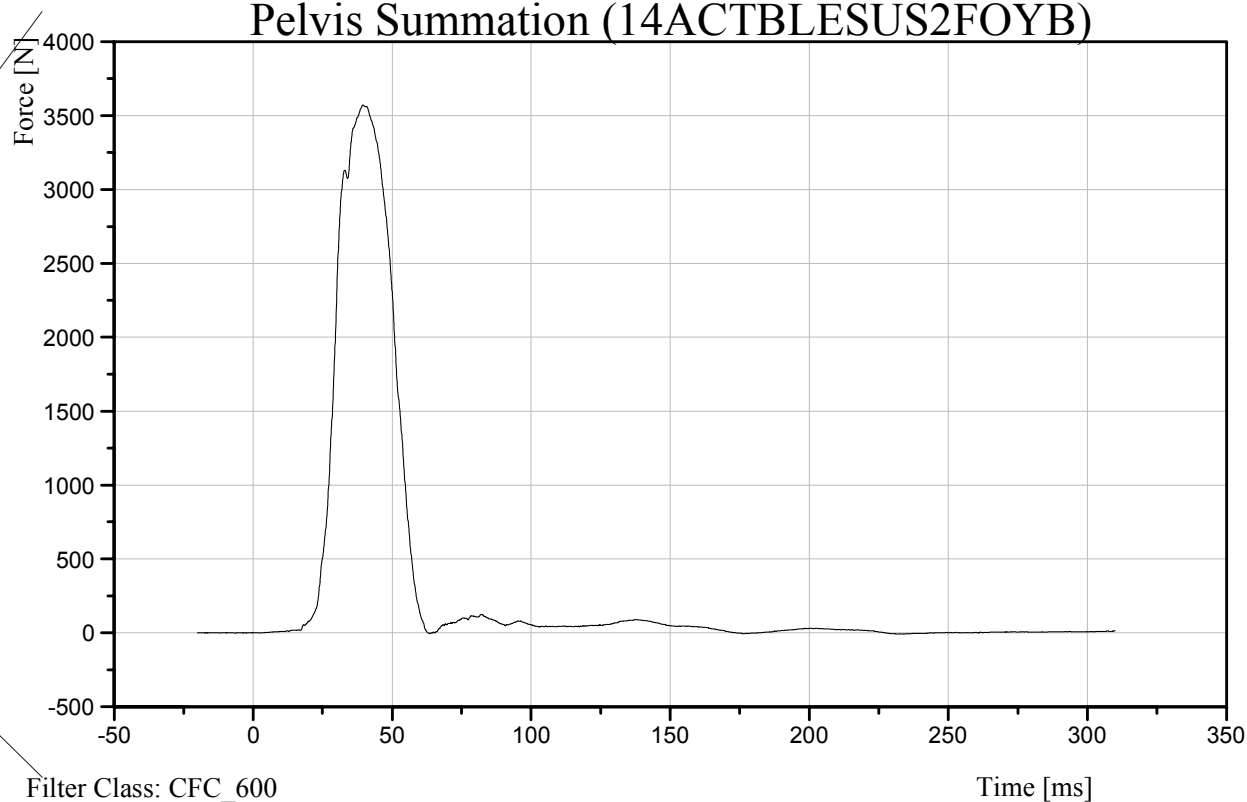
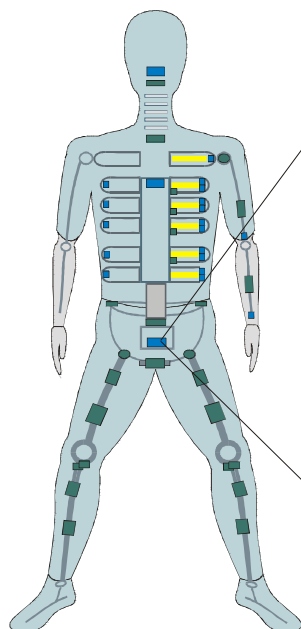
Customer: VRTC

TRC Inc. Test Lab: CTF

Test Number: 050718

Test Orientation = Side

Pelvis Summation (14ACTBLE00S2FOYB)



Dummy:SID IIs
Seating Position:
Left Rear Passenger

[Max.] 3,572.41 N at 39.52 ms

[Min.] -9.21 N at 233.44 ms

Pelvis Summation Source Code : Summation of Channels 14ILACLE00S2FOYB,14ACTBLE00S2FOYB

Appendix C

Dummy Configuration and Performance Verification Data

Pre-Test Dummy Configuration and Performance Verification Data

Driver Dummy S/N: 020 Build Level D

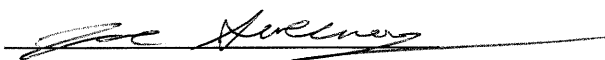
Tested per draft procedures and specifications provided by VRTC

Note: The External Dimensions were taken after the crash test.

Transportation Research Center Inc.
SIDIIs Dummy - Build Level D
External Dimensions
Serial No. 020 Calibration No. 07
Date: 22-Jul-05

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	779.0 - 795.0	781	Yes
B	Shoulder Pivot Height	437.0 - 453.0	441	Yes
C	H-Point Height	81.0 - 91.0	83	Yes
D	H-Point from Backline	141.0 - 151.0	142	Yes
E	Shoulder Pivot from Backline	104.0 - 114.0	107	Yes
F	Thigh Clearance	119.0 - 135.0	127	Yes
G	Head Breadth	140.0 - 148.0	143	Yes
H	Head Back from Backline	40.0 - 46.0	43	Yes
I	Head Depth	178.0 - 188.0	181	Yes
J	Head Circumference	541.0 - 551.0	543	Yes
K	Buttock to Knee Length	514.0 - 540.0	531	Yes
L	Popliteal Height	348.0 - 374.0	351	Yes
M	Knee to Floor Height	393.0 - 409.0	403	Yes
N	Buttock Popliteal Length	416.0 - 442.0	425	Yes
O	Chest Depth without Jacket	195.0 - 211.0	200	Yes
P	Foot Length (right)	218.0 - 234.0	224	Yes
P	Foot Length (left)	218.0 234.0	215	No
Q	Hip Breadth	313.0 - 323.0	318	Yes
R	Arm Length	249.0 - 259.0	251	Yes
S	Knee to Seat Back	477.0 - 493.0	481	Yes
V	Shoulder Width	337.0 - 353.0	346	Yes
W	Foot Width (right)	78.0 - 94.0	85	Yes
W	Foot Width (left)	78.0 94.0	81	Yes
Y	Chest Circumference with Jacket	861.0 - 891.0	872	Yes
Z	Waist Circumference	757.0 - 787.0	764	Yes

Technician



Approved





Transportation Research Center Inc.

Left Head Test

SID-IIIs Serial No. 020 Calibration No. 07 - 1

Test Date 07/14/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
Peak Resultant Acceleration	125 - 145 g	122.4 g	No
Peak Longitudinal Acceleration	15 g Max	-4.2 g	Yes
Is Acceleration Curve Unimodal?	Yes	Yes	Yes

Test does not meet specifications.

Comments:

Technician



Approved



08.07.2005 13:05:18 231

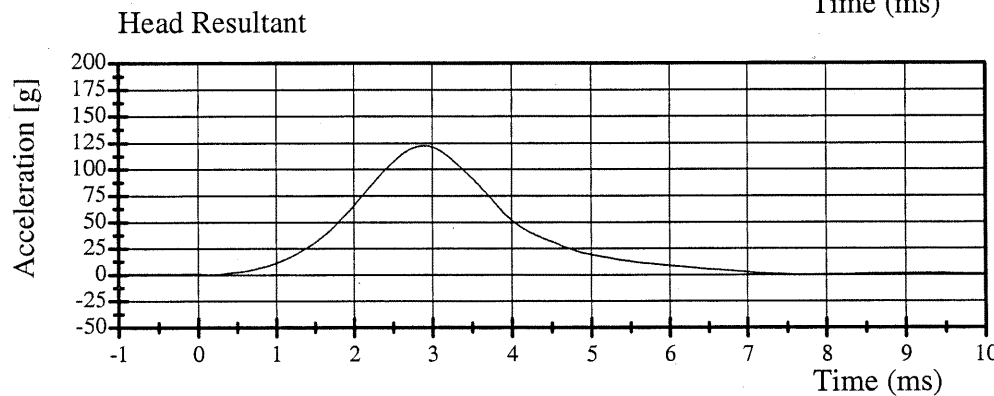
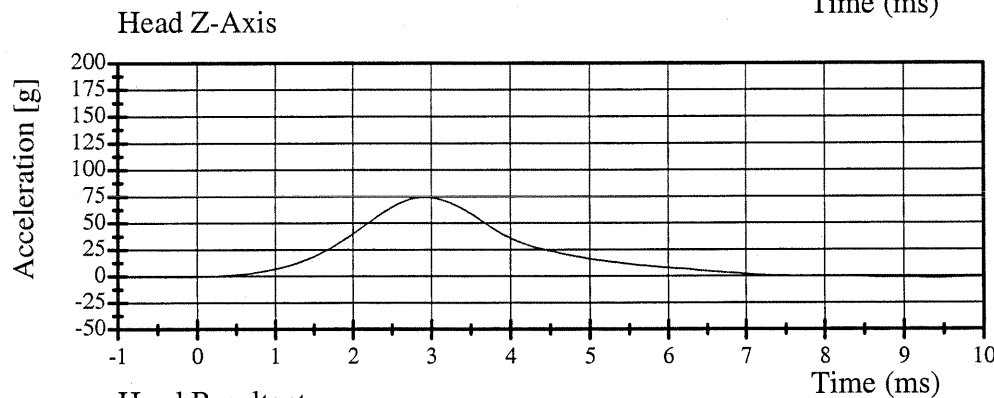
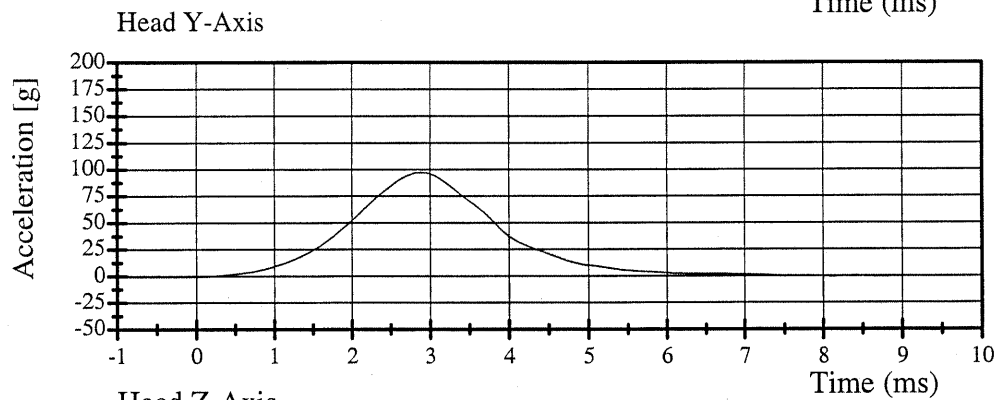
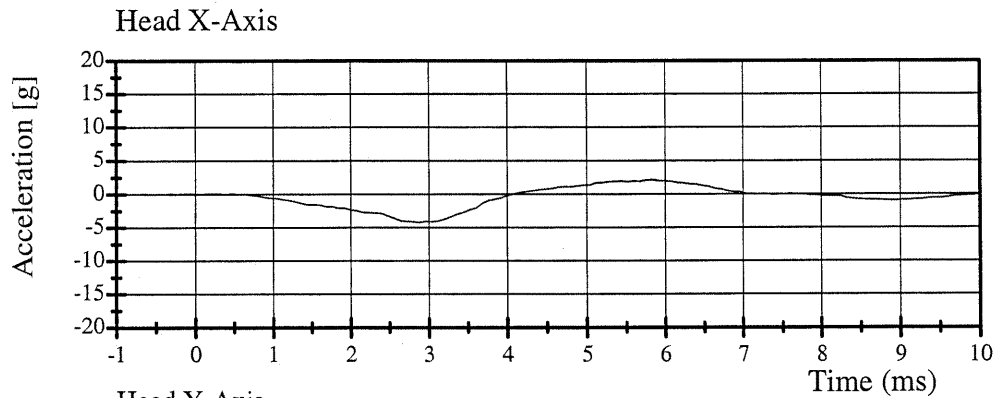


Transportation Research Center Inc.

Head Test

SID-IIs Serial No. 020 Calibration No. 07 - 1

Test Date 07/14/2005



08.07.2005 13:05:19 231



Transportation Research Center Inc.

Left Lateral Neck Test

SID-IIs Serial No. 020 Calibration No. 07 - 4

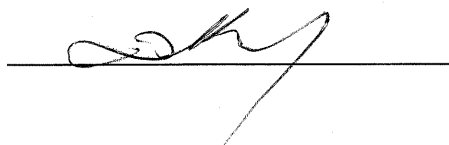
Test Date 07/15/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	51 %	Yes
Impact Velocity	5.51 - 5.63 m/s	5.60 m/s	Yes
Integrated Pendulum Velocity			
10 ms	2.20 - 2.80 m/s	2.57 m/s	Yes
15 ms	3.40 - 4.10 m/s	3.73 m/s	Yes
20 ms	4.50 - 5.40 m/s	5.00 m/s	Yes
25 ms	5.50 - 6.10 m/s	5.97 m/s	Yes
25 - 100 ms	5.20 - 6.20 m/s	5.70 - 6.02 m/s	Yes
Peak D Plane Rotation	74 - 79 °	73.5 °	No
Time of Peak D-Plane Rotation	50 - 70 °	61.7 °	Yes
Peak Moment About Occipital Condyles during Rotation Interval	40.0 - 45.0 N·m	0 N·m	No
Time of Moment Decay To 0 N·m	113 - 123 ms	115.8 ms	Yes

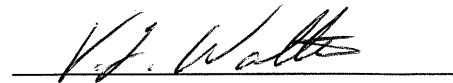
Test does not meet specifications.

Comments:

Technician



Approved



08.07.2005 14:18:48 670

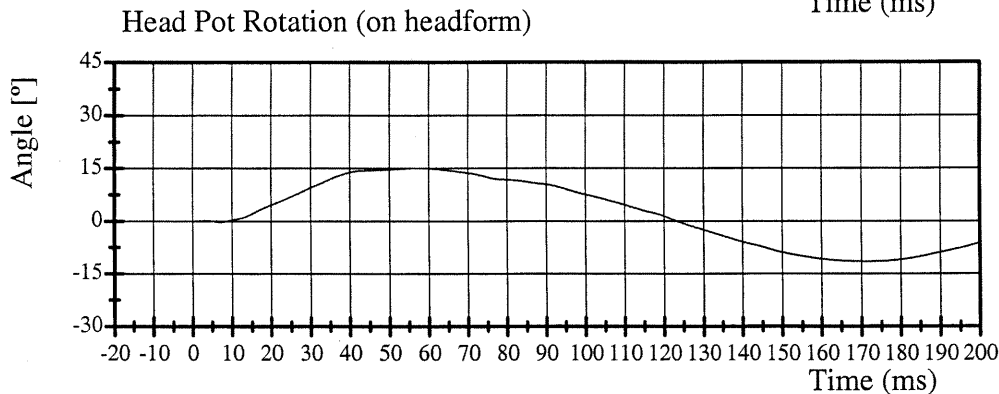
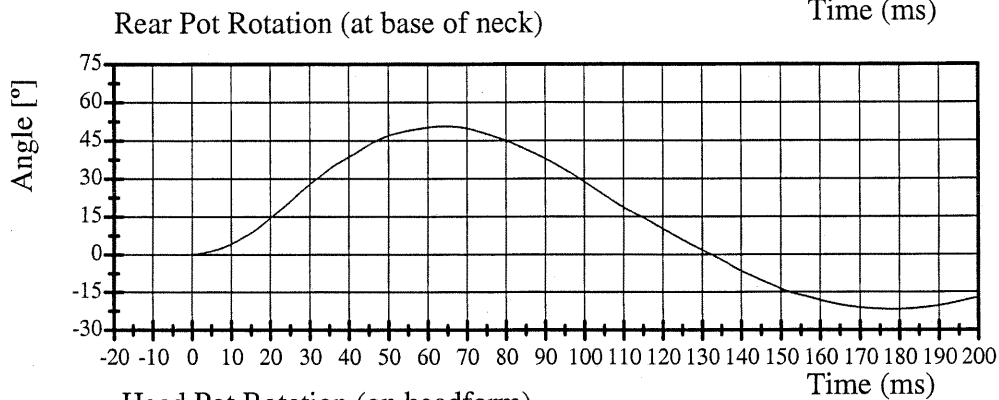
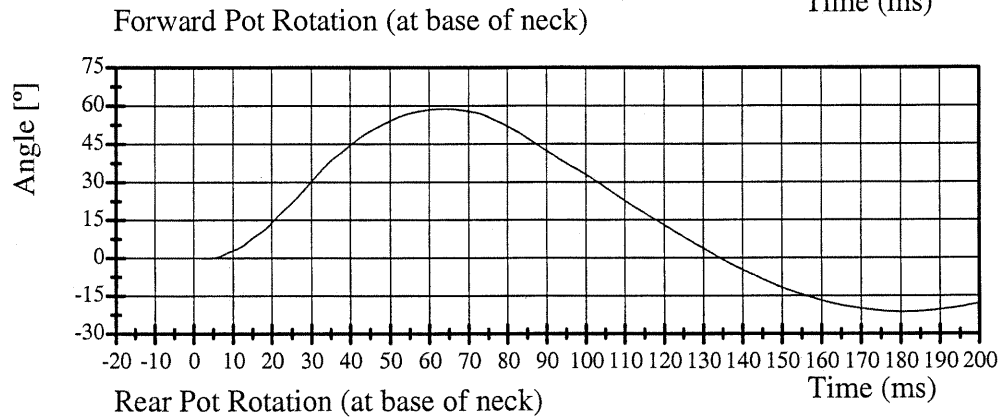
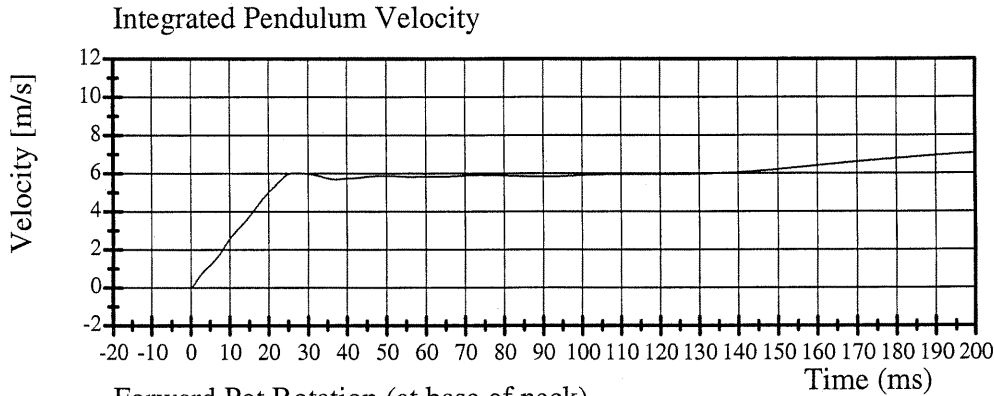


Transportation Research Center Inc.

Left Lateral Neck Test

SID-IIIs Serial No. 020 Calibration No. 07 - 4

Test Date 07/15/2005



08.07.2005 14:19:56 670



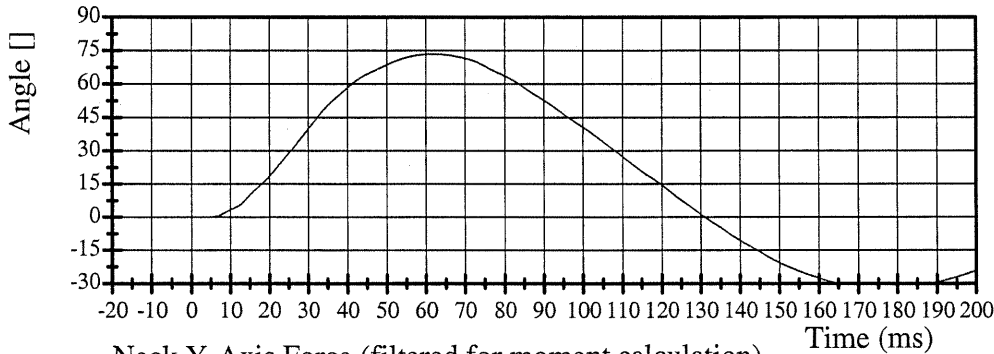
Transportation Research Center Inc.

Left Lateral Neck Test

SID-IIs Serial No. 020 Calibration No. 07 - 4

Test Date 07/15/2005

D-Plane Rotation (forward pot + head pot)

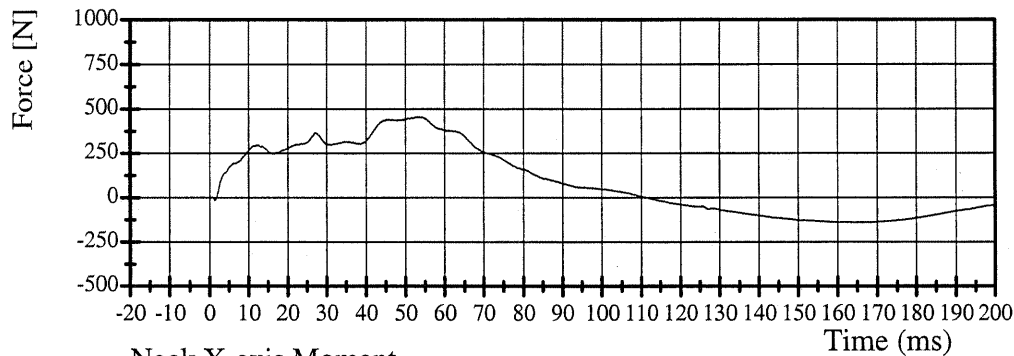


Filter Class: CFC 60

Max: 73.5 ° at 61.7 ms

Min: -32.4 ° at 177.3 ms

Neck Y-Axis Force (filtered for moment calculation)

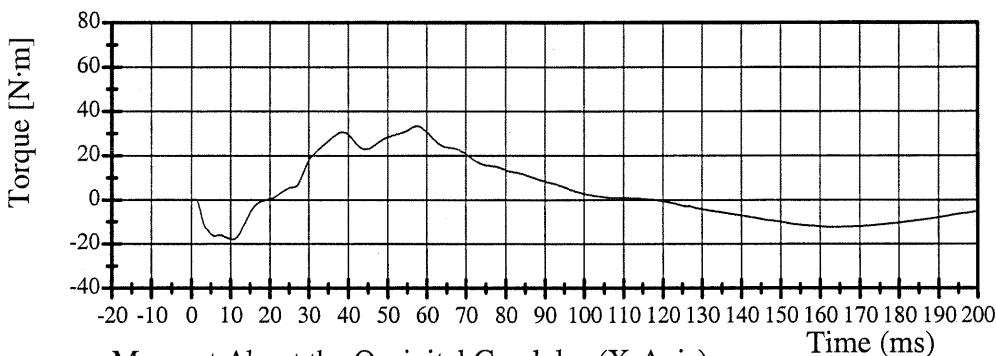


Filter Class: CFC 600

Max: 455 N at 52.6 ms

Min: -140 N at 166.6 ms

Neck X-axis Moment

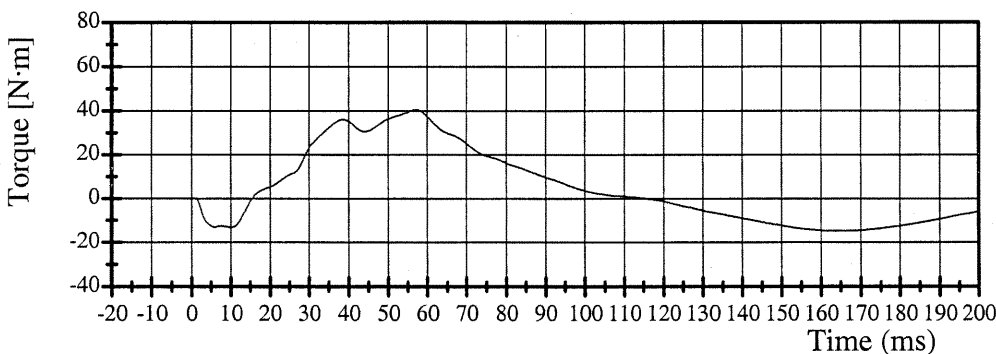


Filter Class: CFC 600

Max: 33.4 N·m at 57.6 ms

Min: -18.0 N·m at 10.6 ms

Moment About the Occipital Condyles (X-Axis)



Filter Class: 600

Max: 40.5 N·m at 57.2 ms

Min: -14.8 N·m at 163.9 ms

08.07.2005 14:19:21 670



Transportation Research Center Inc.

Left Shoulder Test

SID-IIs Serial No. 020 Calibration No. 07 - 1

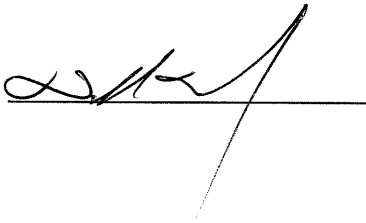
Test Date 07/16/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 C	21.3 C	Yes
Relative Humidity	10 - 70 %	58 %	Yes
Pendulum Velocity	4.41 - 4.59 m/sec	4.47 m/sec	Yes
Probe Force	1600 - 2400 N	2274 N	Yes
Deflection	27 - 39 mm	33.7 mm	Yes

Test meets specifications.

Comments:

Technician



Approved



07.16.2005 09:28:13 578



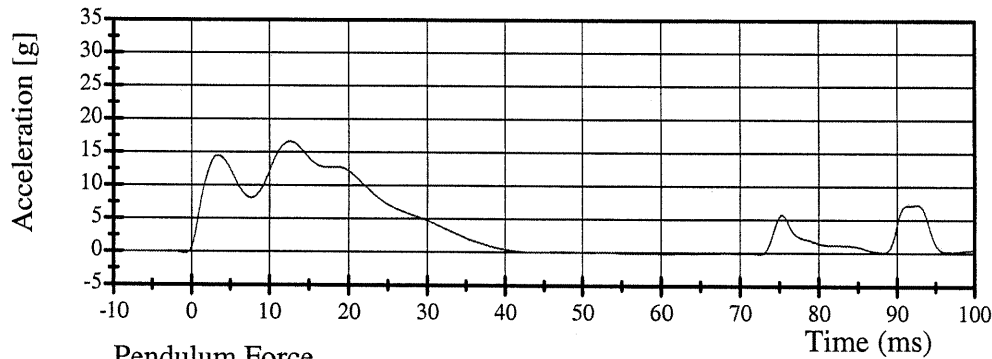
Transportation Research Center Inc.

Left Shoulder Test

SID-IIs Serial No. 020 Calibration No. 07 - 1

Test Date 07/16/2005

Pendulum Deceleration

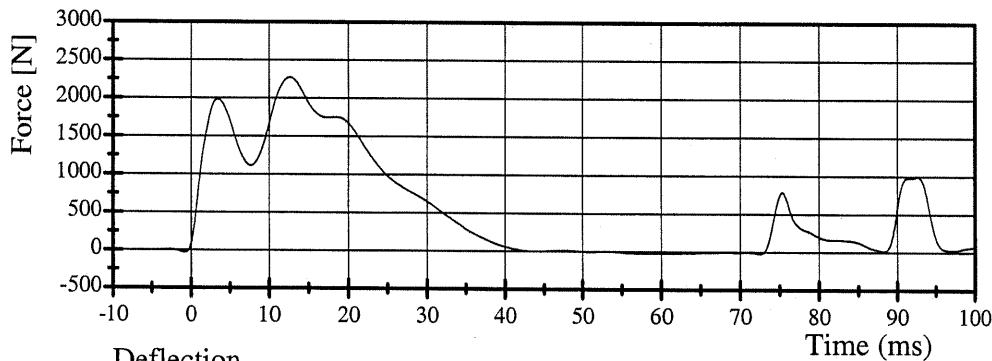


Filter Class: CFC 180

Max: 16.8 g at 12.7 ms

Min: -0.7 g at 97.7 ms

Pendulum Force

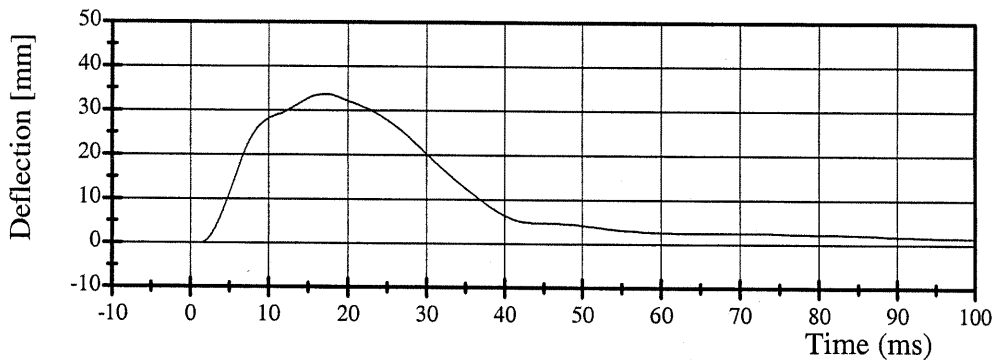


Filter Class: CFC 180

Max: 2274 N at 12.6 ms

Min: -28 N at -0.8 ms

Deflection



Filter Class: CFC 600

Max: 33.7 mm at 17.4 ms

Min: -0.0 mm at 1.4 ms

Transportation Research Center Inc.

Left Thorax with Arm Test

SID-IIs Serial No. 020 Calibration No. 07 - 2

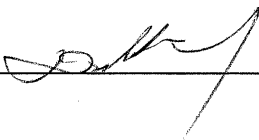
Test Date 07/16/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 C	21.2 C	Yes
Relative Humidity	10 - 70 %	52 %	Yes
Pendulum Velocity	6.60 - 6.80 m/sec	6.72 m/sec	Yes
Pendulum Force	4100 - 4700 N	4679 N	Yes
Upper Spine Peak Acceleration	34 - 48 g	37.3 g	Yes
Lower Spine Peak Acceleration	30 - 38 g	31.6 g	Yes
Upper Rib Peak Deflection	23 - 35 mm	28.0 mm	Yes
Mid Rib Peak Deflection	29 - 44 mm	32.5 mm	Yes
Lower Rib Peak Deflection	33 - 40 mm	36.5 mm	Yes
Shoulder Peak Deflectioin	30 - 42 mm	33.7 mm	Yes

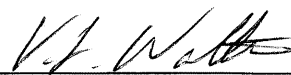
Test meets specifications.

Comments:

Technician



Approved



08.07.2005 15:41:36 382

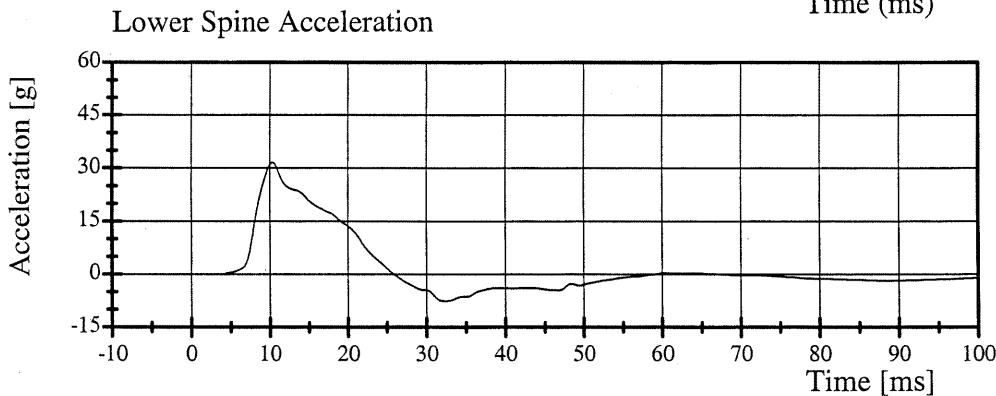
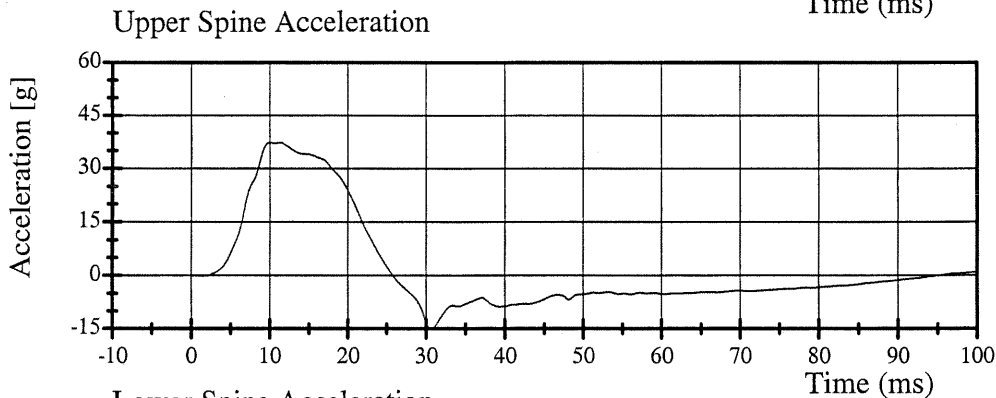
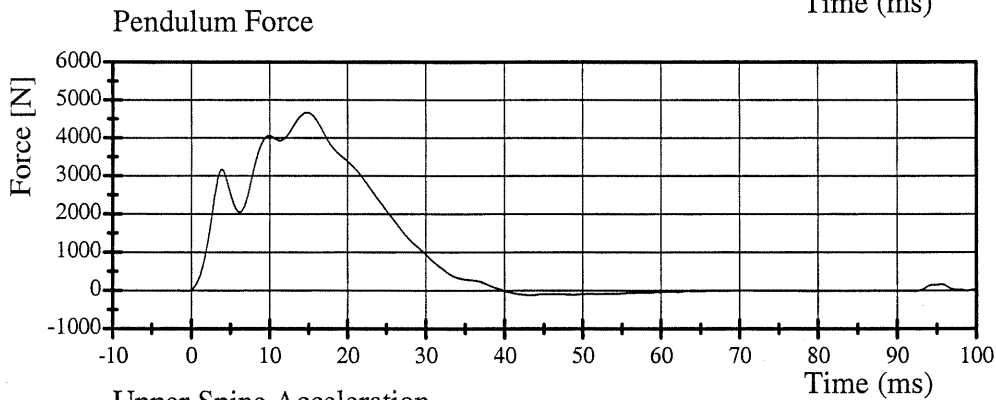
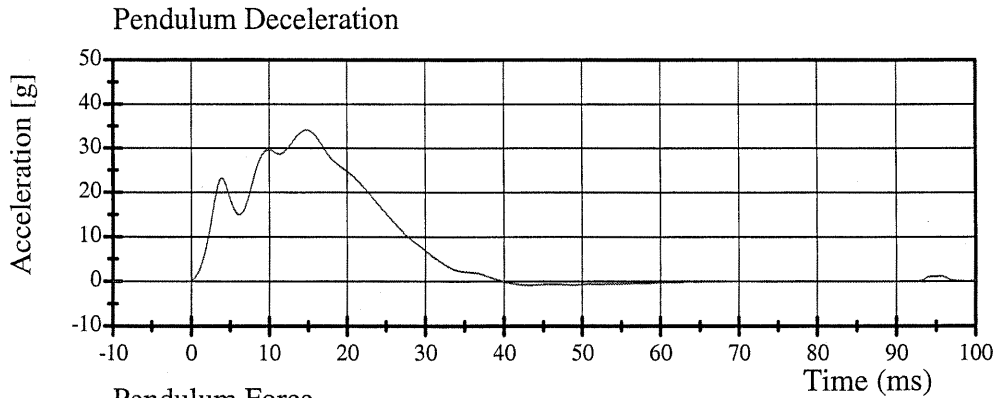


Transportation Research Center Inc.

Left Thorax with Arm Test

SID-IIIs Serial No. 020 Calibration No. 07 - 2

Test Date 07/16/2005



08.07.2005 15:41:36 382

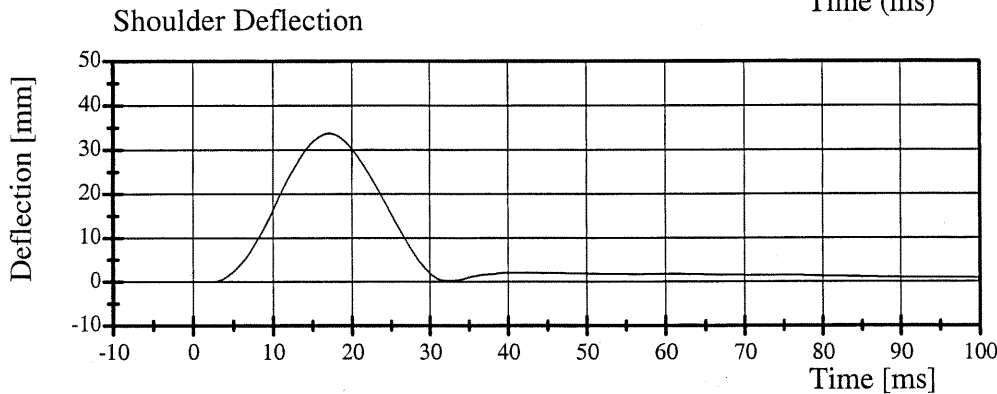
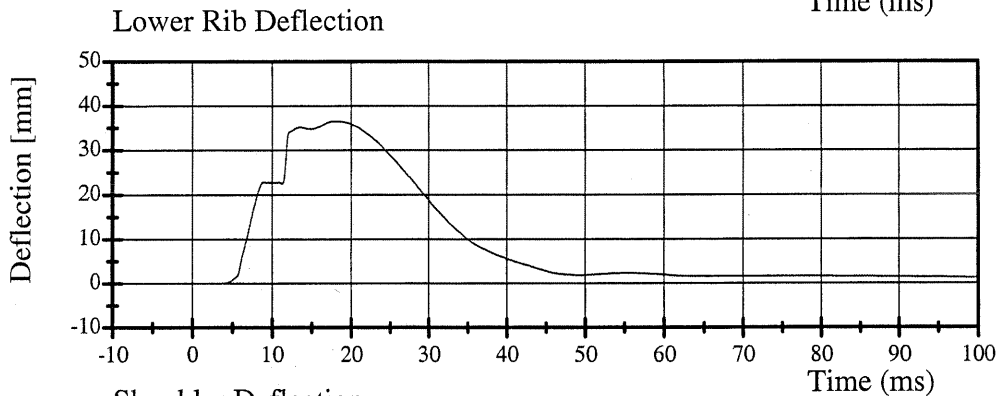
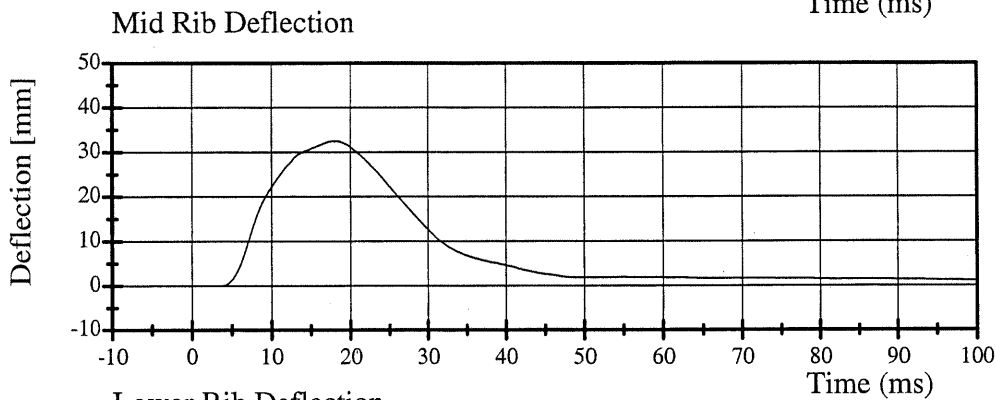
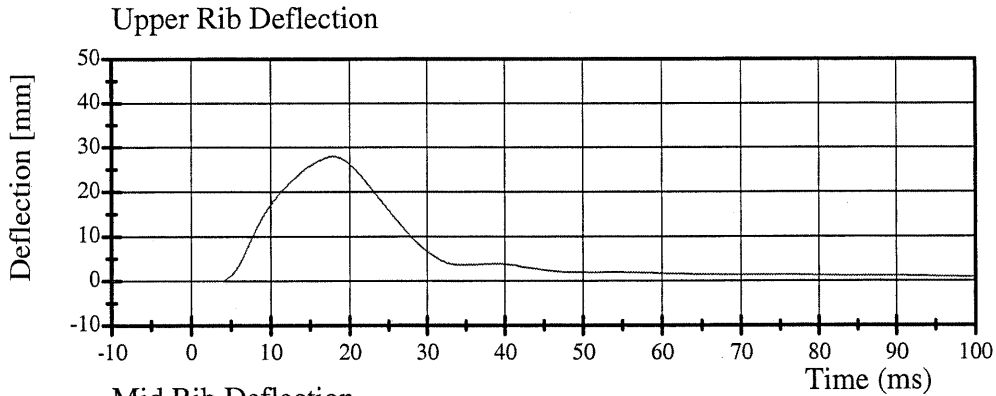


Transportation Research Center Inc.

Left Thorax with Arm Test

SID-IIs Serial No. 020 Calibration No. 07 - 2

Test Date 07/16/2005



08.07.2005 15:41:37 382



Transportation Research Center Inc.

Left Thorax No Arm Test

SID-IIs Serial No. 020 Calibration No. 07 - 1

Test Date 07/16/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 C	21.5 C	Yes
Relative Humidity	10 - 70 %	58 %	Yes
Pendulum Velocity	4.20 - 4.40 m/sec	4.31 m/sec	Yes
Pendulum Force	1800 - 2300 N	2294 N	Yes
Upper Spine Peak Acceleration	13 - 18 g	15.8 g	Yes
Lower Spine Peak Acceleration	8 - 13 g	9.2 g	Yes
Upper Rib Peak Deflection	32 - 41 mm	34.4 mm	Yes
Mid Rib Peak Deflection	40 - 51 mm	41.0 mm	Yes
Lower Rib Peak Deflection	34 - 47 mm	40.6 mm	Yes

Test meets specifications.

Comments:

Technician



Approved



08.07.2005 15:51:44 617



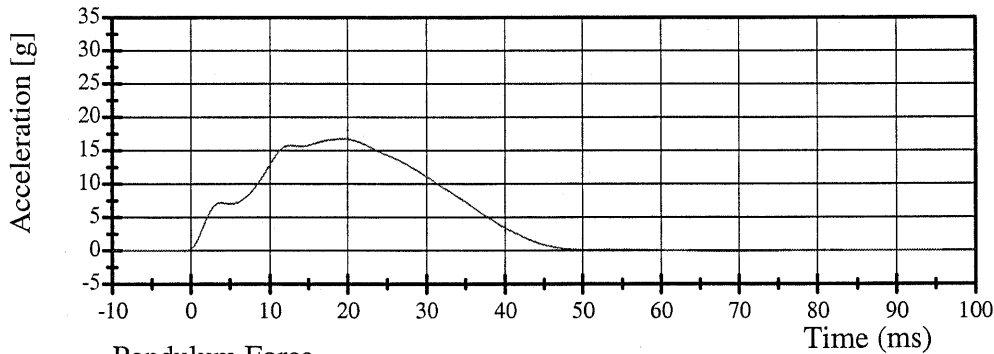
Transportation Research Center Inc.

Left Thorax No Arm Test

SID-IIIs Serial No. 020 Calibration No. 07 - 1

Test Date 07/16/2005

Pendulum Deceleration

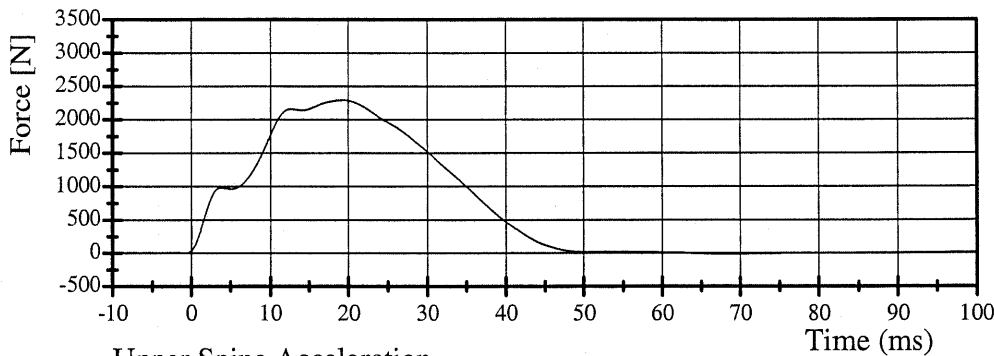


Filter Class: CFC 180

Max: 16.7 g at 19.4 ms

Min: -0.1 g at 69.5 ms

Pendulum Force

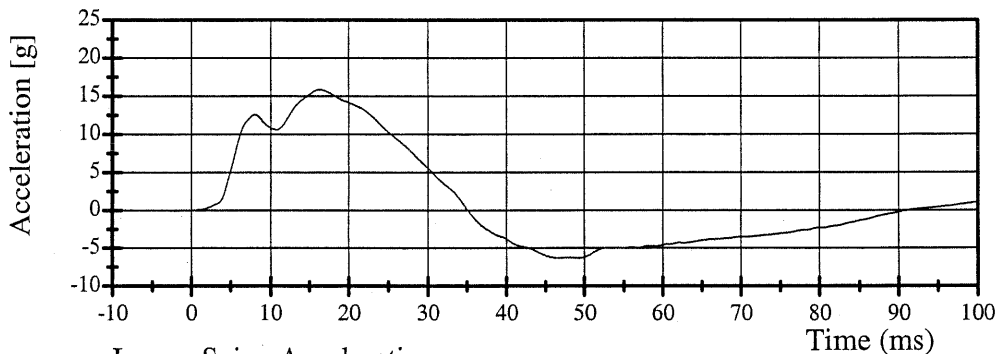


Filter Class: CFC 180

Max: 2294 N at 19.4 ms

Min: -16 N at 69.5 ms

Upper Spine Acceleration

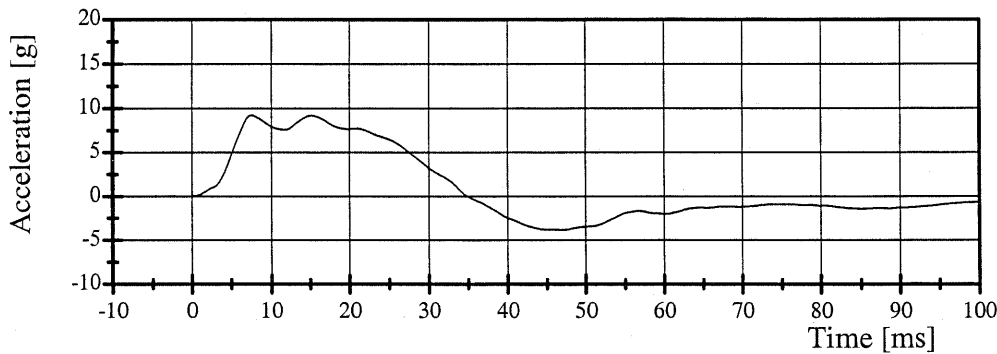


Filter Class: CFC 180

Max: 15.8 g at 16.2 ms

Min: -6.3 g at 49.4 ms

Lower Spine Acceleration



Filter Class: CFC 180

Max: 9.2 g at 7.6 ms

Min: -3.8 g at 47.0 ms

08.07.2005 15:51:44 617



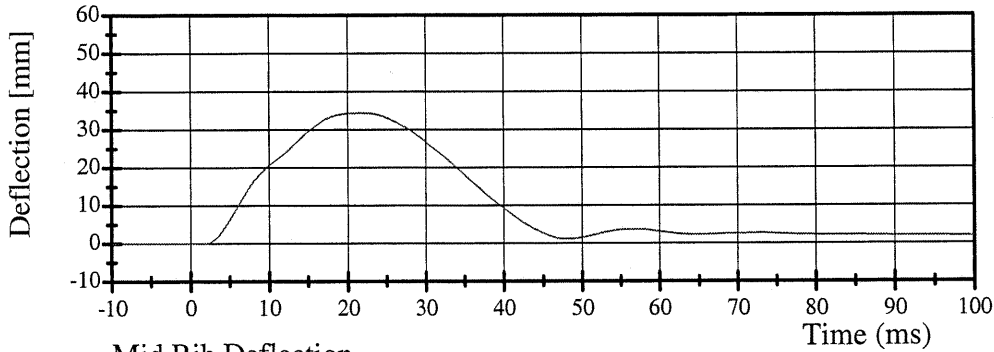
Transportation Research Center Inc.

Left Thorax No Arm Test

SID-IIIs Serial No. 020 Calibration No. 07 - 1

Test Date 07/16/2005

Upper Rib Deflection

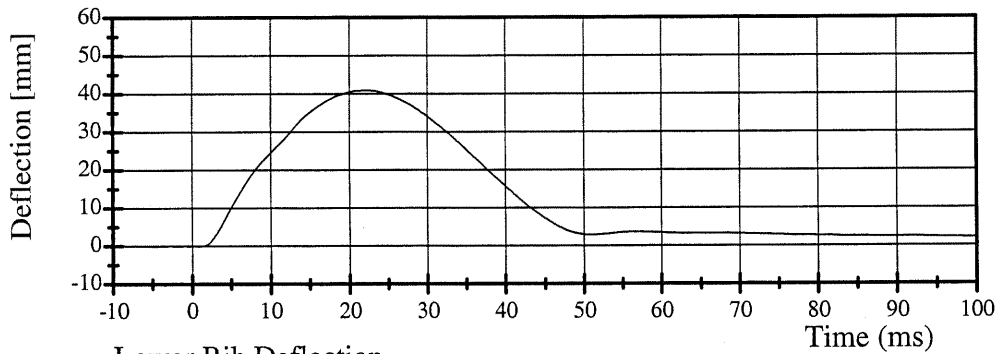


Filter Class: CFC 600

Max: 34.4 mm at 21.3 ms

Min: -0.0 mm at -43.0 ms

Mid Rib Deflection

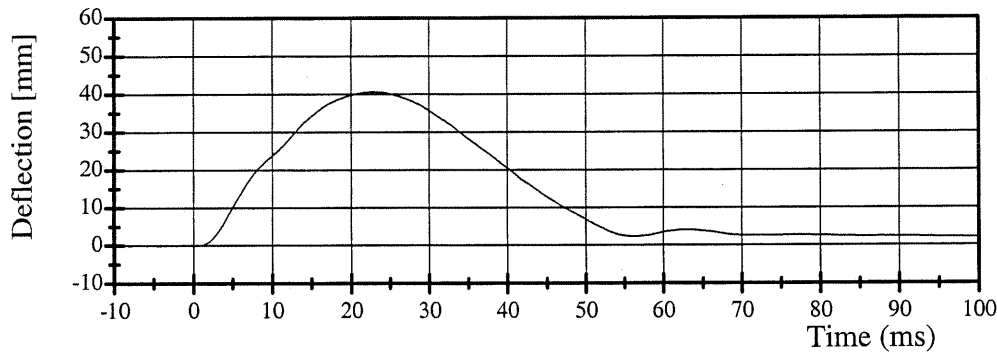


Filter Class: CFC 600

Max: 41.0 mm at 22.1 ms

Min: -0.0 mm at 1.0 ms

Lower Rib Deflection



Filter Class: CFC 600

Max: 40.6 mm at 23.0 ms

Min: -0.0 mm at 0.6 ms

Transportation Research Center Inc.

Left Abdomen Test

SID-IIIs Serial No. 020 Calibration No. 07 - 6

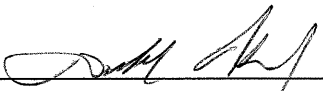
Test Date 07/16/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 C	21.1 C	Yes
Relative Humidity	10 - 70 %	51 %	Yes
Pendulum Velocity	4.20 - 4.40 m/sec	4.38 m/sec	Yes
Pendulum Force	1300 - 1900 N	2007 N	No
Upper Spine Peak Acceleration	5 - 9 g	6.9 g	Yes
Lower Spine Peak Acceleration	9 - 13 g	12.1 g	Yes
Upper Abdomen Rib Peak Deflection	44 - 55 mm	40.2 mm	No
Lower Abdomen Rib Peak Deflection	44 - 56 mm	40.0 mm	No

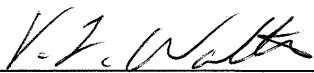
Test does not meet specifications.

Comments:

Technician



Approved



08.07.2005 17:10:49 637



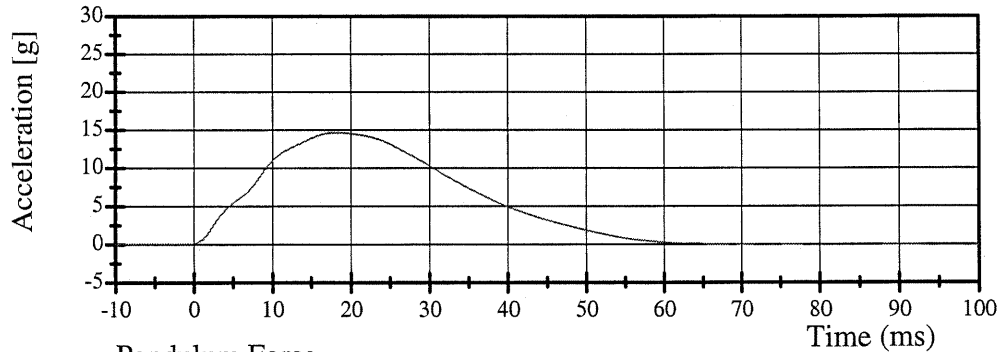
Transportation Research Center Inc.

Left Abdomen Test

SID-IIIs Serial No. 020 Calibration No. 07 - 6

Test Date 07/16/2005

Pendulum Deceleration

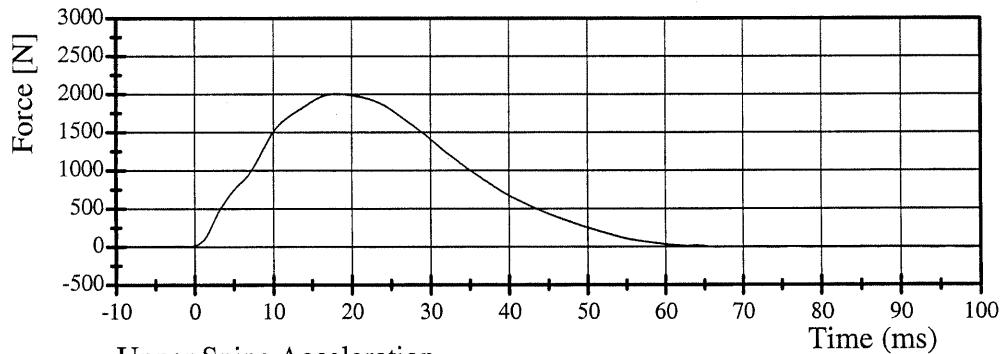


Filter Class: CFC 180

Max: 14.6 g at 18.1 ms

Min: -0.1 g at 160.4 ms

Pendulum Force

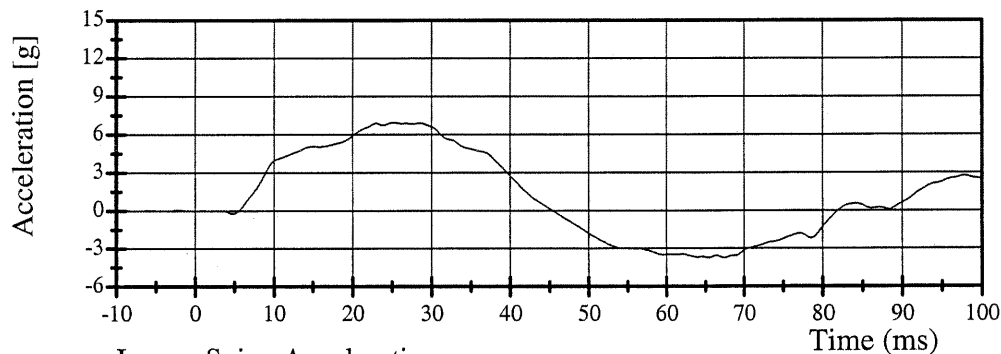


Filter Class: CFC 180

Max: 2007 N at 18.1 ms

Min: -14 N at 160.4 ms

Upper Spine Acceleration

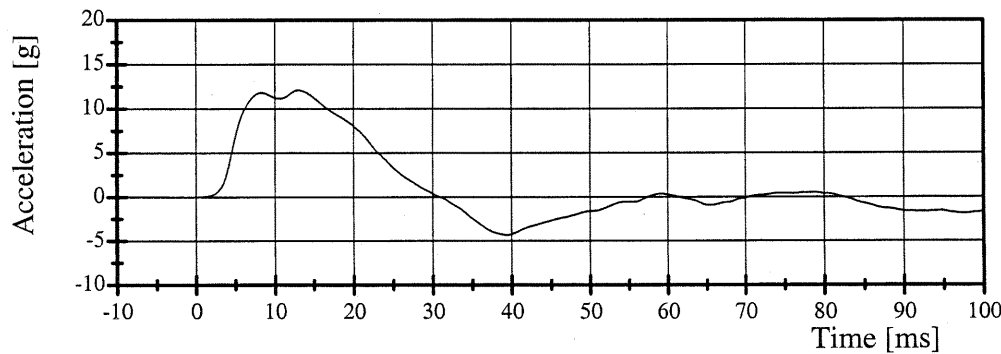


Filter Class: CFC 180

Max: 6.9 g at 25.2 ms

Min: -3.7 g at 65.4 ms

Lower Spine Acceleration



Filter Class: CFC 180

Max: 12.1 g at 13.1 ms

Min: -4.3 g at 39.4 ms

08.07.2005 17:10:50 637



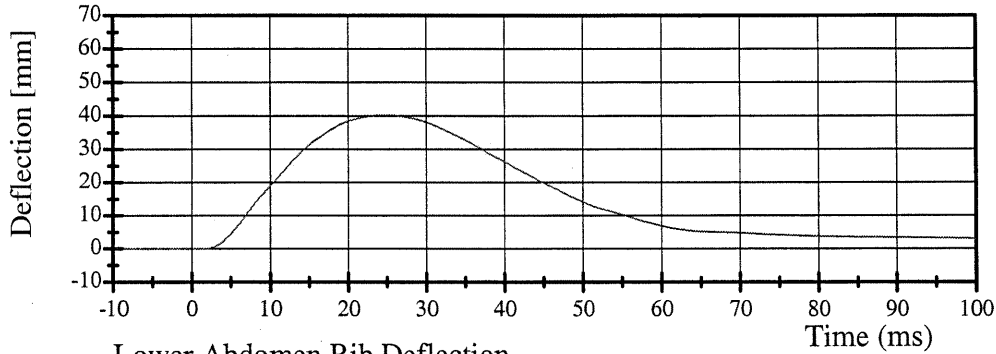
Transportation Research Center Inc.

Left Abdomen Test

SID-II's Serial No. 020 Calibration No. 07 - 6

Test Date 07/16/2005

Upper Abdomen Rib Deflection

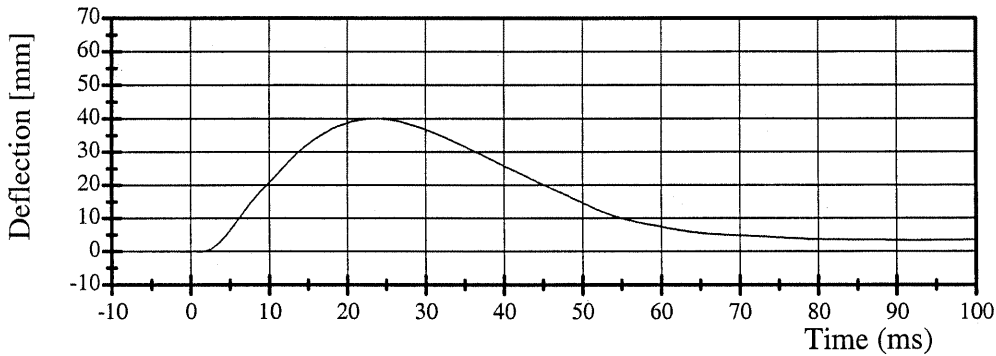


Filter Class: CFC 600

Max: 40.2 mm at 24.7 ms

Min: -0.0 mm at -37.8 ms

Lower Abdomen Rib Deflection



Filter Class: CFC 600

Max: 40.0 mm at 23.7 ms

Min: -0.0 mm at 1.3 ms

08.07.2005 17:10:51 637



Transportation Research Center Inc.

Left Pelvis Test

SID-IIs Serial No. 020 Calibration No. 07 - 1

Test Date 07/16/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 C	21.5 C	Yes
Relative Humidity	10 - 70 %	59 %	Yes
Pendulum Velocity	6.60 - 6.80 m/sec	6.61 m/sec	Yes
Pendulum Acceleration	40 - 48 g	40.6 g	Yes
Pelvis Peak Acceleration	40 - 48 g	46.6 g	Yes
Peak Acetabulum Force	3803 - 4505 g	3803 N	Yes

Test meets specifications.

Comments:

Technician



Approved



08.07.2005 16:48:28 392

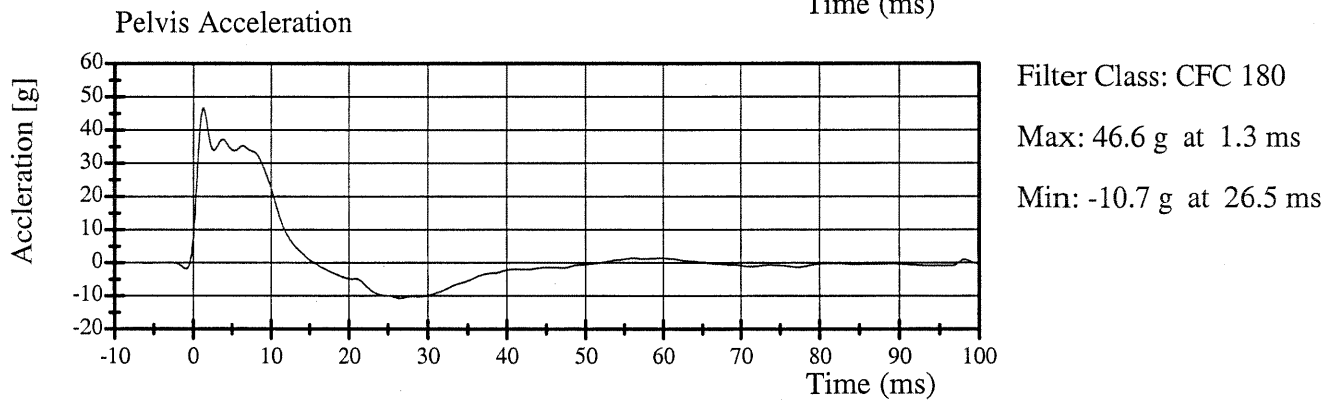
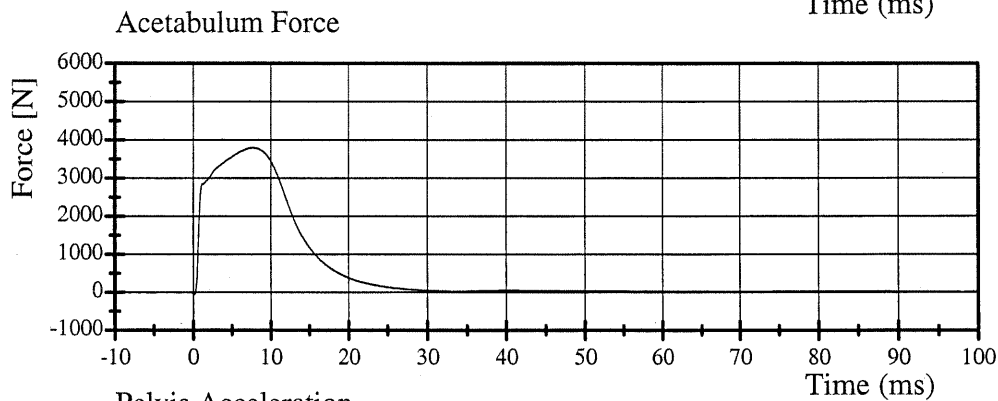
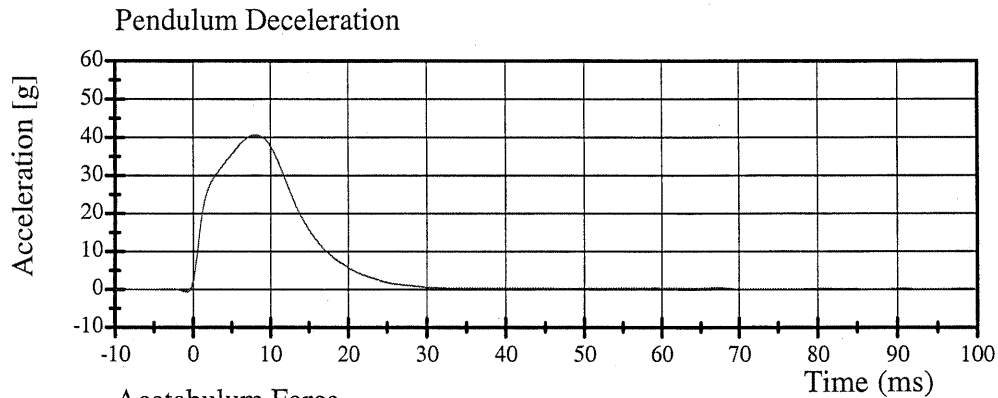


Transportation Research Center Inc.

Left Pelvis Test

SID-IIa Serial No. 020 Calibration No. 07 - 1

Test Date 07/16/2005



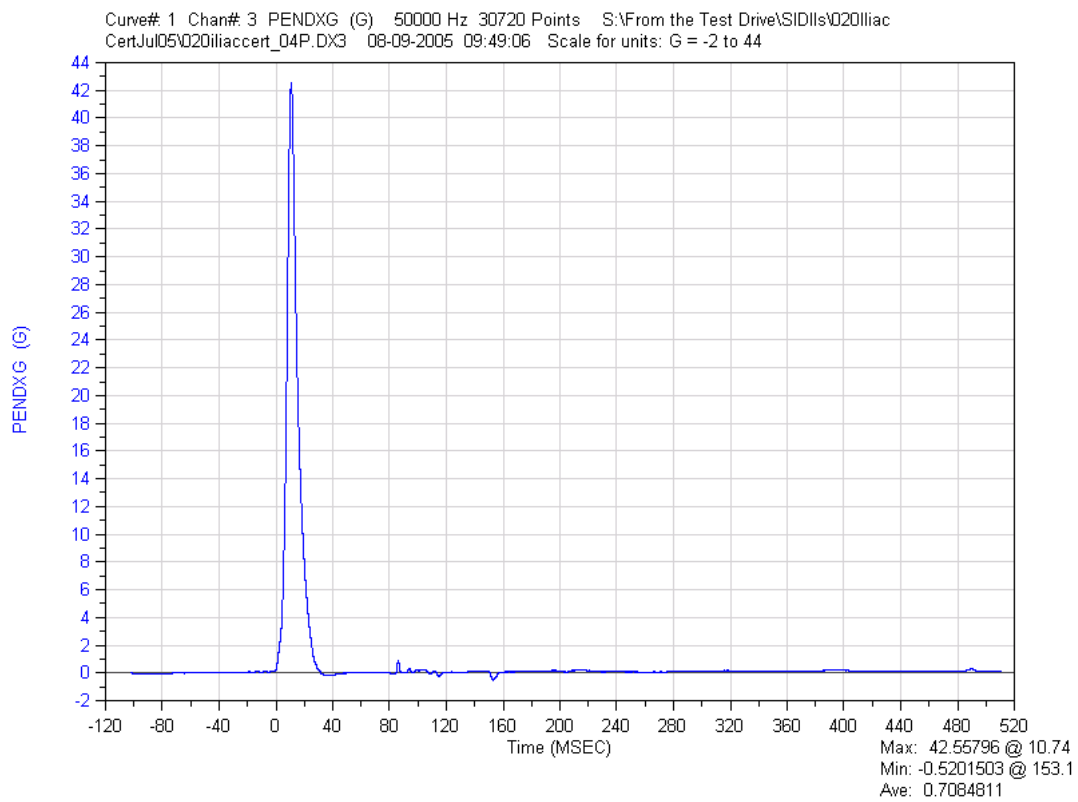
08.07.2005 16:48:28 392

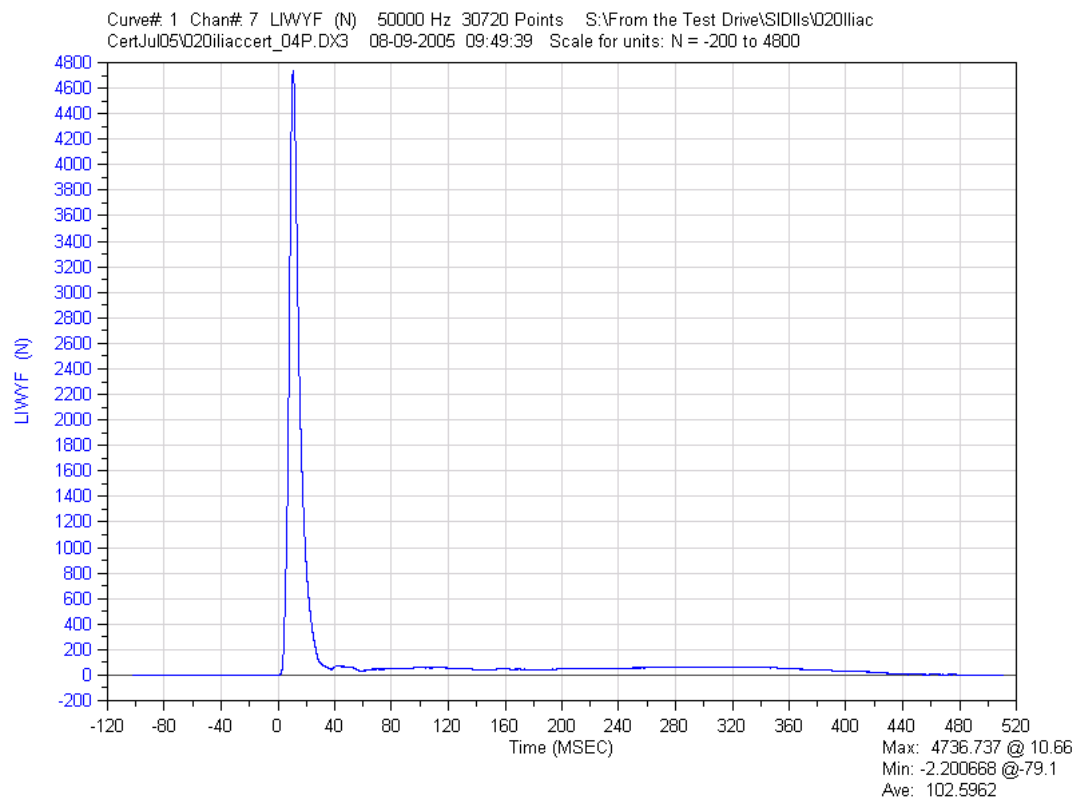
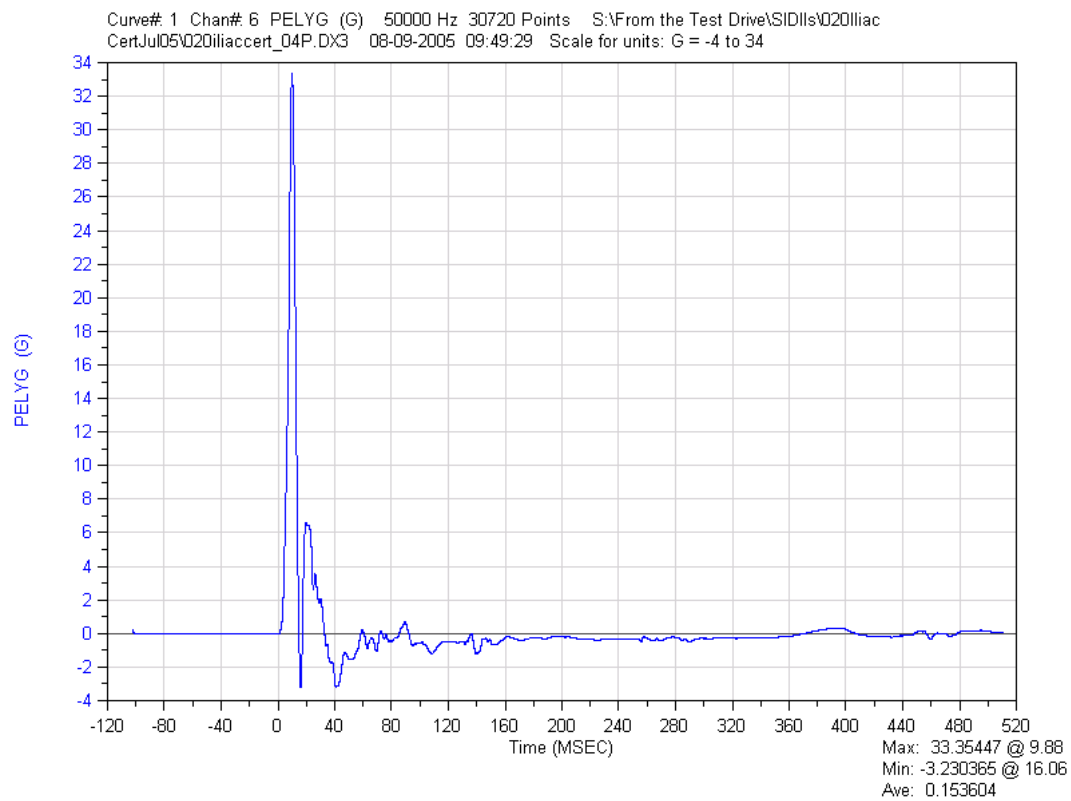


Test Parameter/Specification

Test Number	020iliaccert_04
Dummy S/N	020
Test Performer	VRTC
Date of Calibration	7/14/2005
Temperature (20.6 - 22.2 °C)	20
Relative Humidity (10 - 70 %)	50
Probe Velocity (4.2 - 4.4 m/s)	4.372
Maximum Probe Acceleration (41 - 47 g)	42.558
Maximum Pelvis Y Acceleration (32 - 40 g)	33.354
Maximum Iliac Force (4841 - 5491 N)	4736.737

Test Results





Pre-Test Dummy Configuration and Performance Verification Data

Passenger Dummy S/N: 056

Tested per draft procedures and specifications provided by VRTC

Note: The External Dimensions were taken after the crash test.

Transportation Research Center Inc.

SIDIIs Dummy - Build Level D

External Dimensions

Serial No. 056 Calibration No. 01

Date: 22-Jul-05

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	779.0 - 795.0	782	Yes
B	Shoulder Pivot Height	437.0 - 453.0	440	Yes
C	H-Point Height	81.0 - 91.0	84	Yes
D	H-Point from Backline	141.0 - 151.0	145	Yes
E	Shoulder Pivot from Backline	104.0 - 114.0	108	Yes
F	Thigh Clearance	119.0 - 135.0	125	Yes
G	Head Breadth	140.0 - 148.0	145	Yes
H	Head Back from Backline	40.0 - 46.0	43	Yes
I	Head Depth	178.0 - 188.0	184	Yes
J	Head Circumference	541.0 - 551.0	546	Yes
K	Buttock to Knee Length	514.0 - 540.0	537	Yes
L	Popliteal Height	348.0 - 374.0	354	Yes
M	Knee to Floor Height	393.0 - 409.0	404	Yes
N	Buttock Popliteal Length	416.0 - 442.0	432	Yes
O	Chest Depth without Jacket	195.0 - 211.0	202	Yes
P	Foot Length	218.0 - 234.0	223	Yes
Q	Hip Breadth	313.0 - 323.0	320	Yes
R	Arm Length	249.0 - 259.0	252	Yes
S	Knee to Seat Back	477.0 - 493.0	480	Yes
V	Shoulder Width	337.0 - 353.0	347	Yes
W	Foot Width	78.0 - 94.0	87	Yes
Y	Chest Circumference with Jacket	861.0 - 891.0	866	Yes
Z	Waist Circumference	757.0 - 787.0	774	Yes

Technician

Approved





Revised 3/19/3003

Transportation Research Center Inc.

Left Head Test

SID-IIIs Serial No. 056 Calibration No. 01 - 1

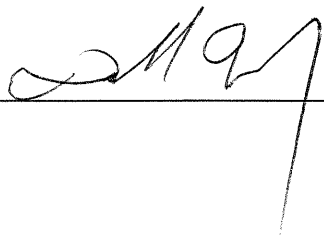
Test Date 07/14/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	54 %	Yes
Peak Resultant Acceleration	125 - 145 g	121.3 g	No
Peak Longitudinal Acceleration	15 g Max	-3.8 g	Yes
Is Acceleration Curve Unimodal?	Yes	Yes	Yes

Test does not meet specifications.

Comments:

Technician



Approved



08.07.2005 17:40:07 231

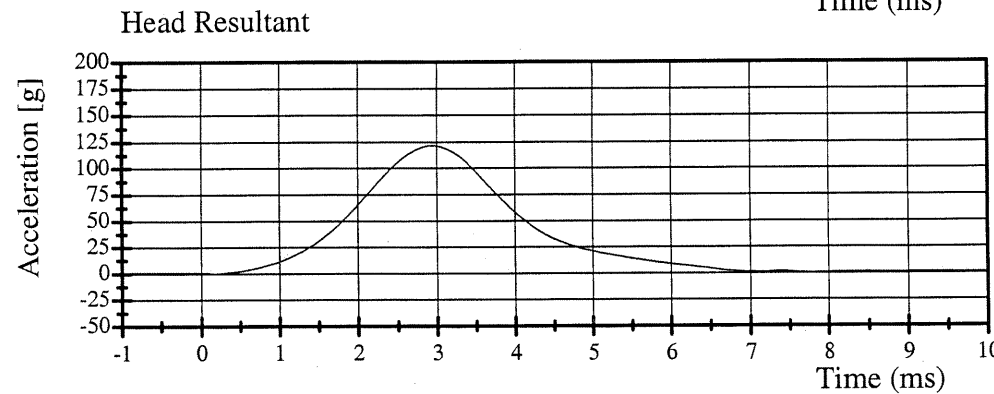
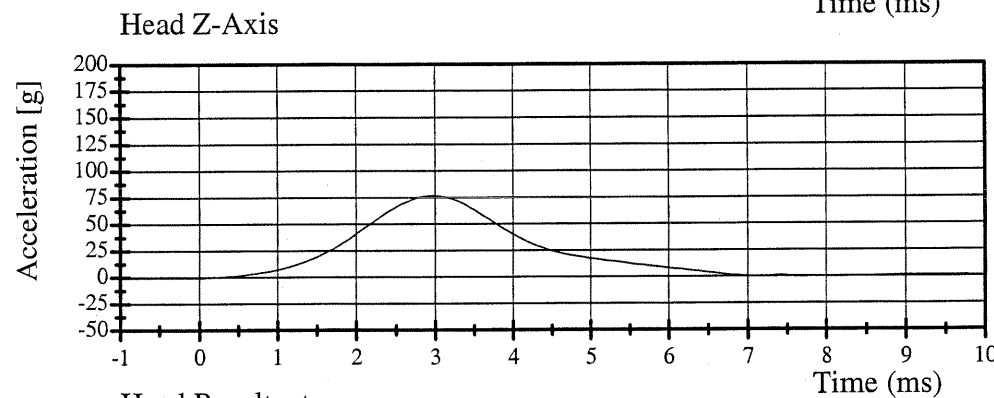
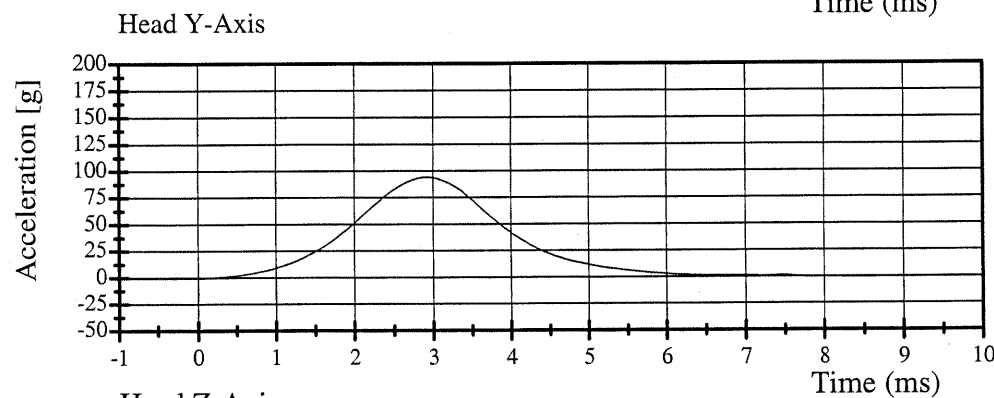
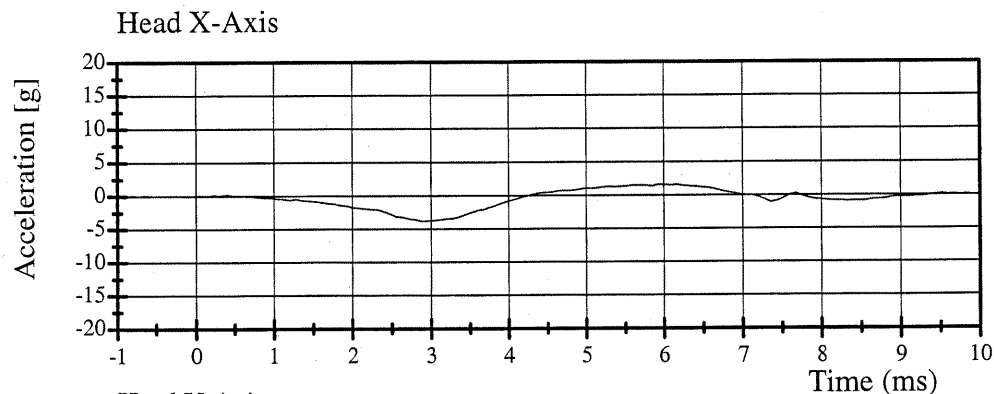


Transportation Research Center Inc.

Head Test

SID-IIs Serial No. 056 Calibration No. 01 - 1

Test Date 07/14/2005



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Transportation Research Center Inc.

Left Lateral Neck Test

SID-IIs Serial No. 056 Calibration No. 01 - 4

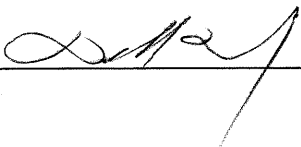
Test Date 07/16/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	54 %	Yes
Impact Velocity	5.51 - 5.63 m/s	5.60 m/s	Yes
Integrated Pendulum Velocity			
10 ms	2.20 - 2.80 m/s	2.65 m/s	Yes
15 ms	3.40 - 4.10 m/s	3.75 m/s	Yes
20 ms	4.50 - 5.40 m/s	5.00 m/s	Yes
25 ms	5.50 - 6.10 m/s	5.98 m/s	Yes
25 - 100 ms	5.20 - 6.20 m/s	5.70 - 6.03 m/s	Yes
Peak D Plane Rotation	74 - 79 °	74.2 °	Yes
Time of Peak D-Plane Rotation	50 - 70 °	61.0 °	Yes
Peak Moment About Occipital Condyles during Rotation Interval	40.0 - 45.0 N·m	39.3 N·m	No
Time of Moment Decay To 0 N·m	113 - 123 ms	117.4 ms	Yes

Test does not meet specifications.

Comments:

Technician



Approved



08.07.2005 17:33:42 673



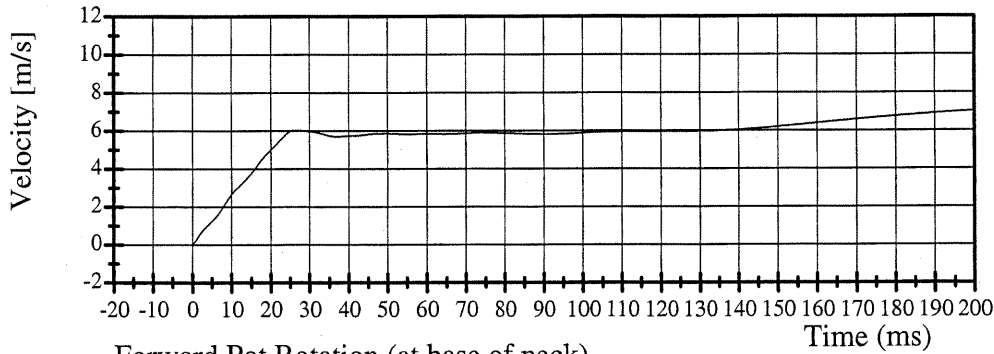
Transportation Research Center Inc.

Left Lateral Neck Test

SID-IIs Serial No. 056 Calibration No. 01 - 4

Test Date 07/16/2005

Integrated Pendulum Velocity

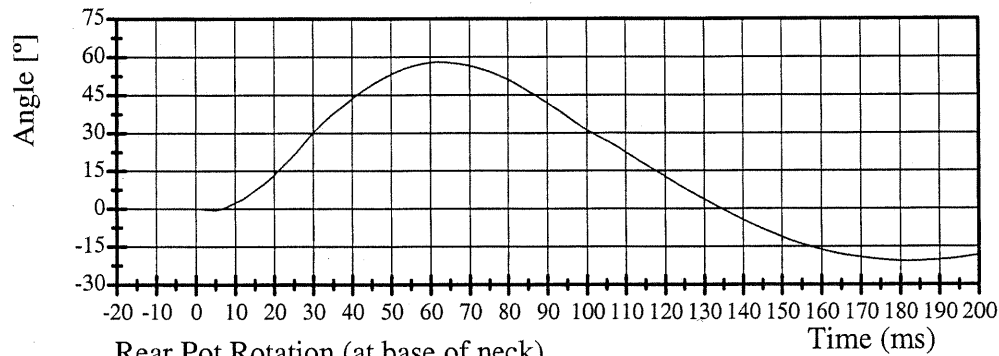


Filter Class: 180

Max: 7.2 m/s at 227.8 ms

Min: -0.0 m/s at -0.8 ms

Forward Pot Rotation (at base of neck)

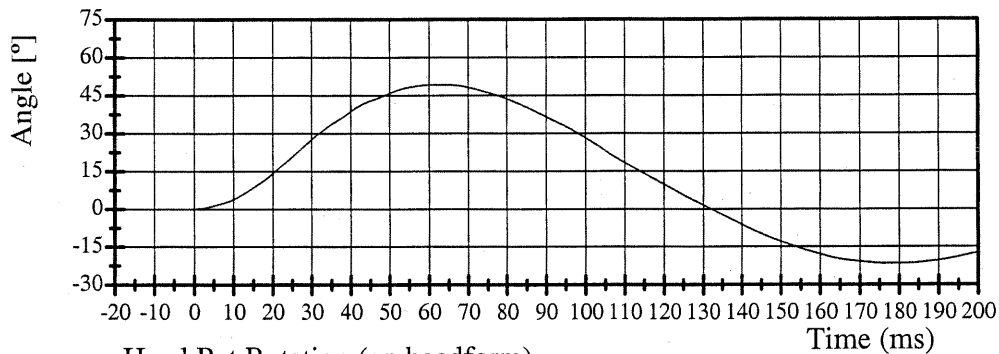


Filter Class: 60

Max: 58.0 ° at 62.2 ms

Min: -20.7 ° at 182.2 ms

Rear Pot Rotation (at base of neck)

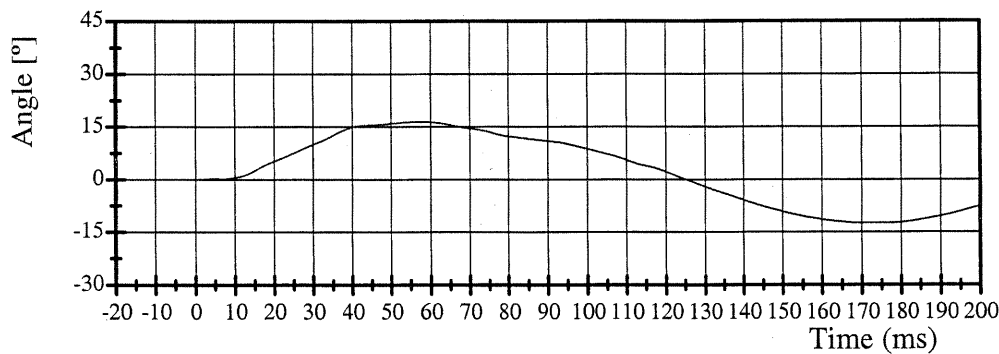


Filter Class: 60

Max: 49.3 ° at 61.7 ms

Min: -21.6 ° at 178.8 ms

Head Pot Rotation (on headform)



Filter Class: 60

Max: 16.5 ° at 57.6 ms

Min: -12.4 ° at 169.8 ms

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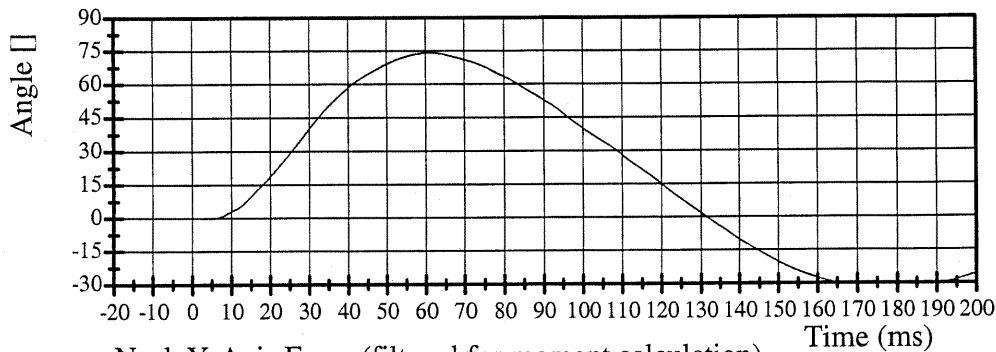
Transportation Research Center Inc.

Left Lateral Neck Test

SID-IIs Serial No. 056 Calibration No. 01 - 4

Test Date 07/16/2005

D-Plane Rotation (forward pot + head pot)

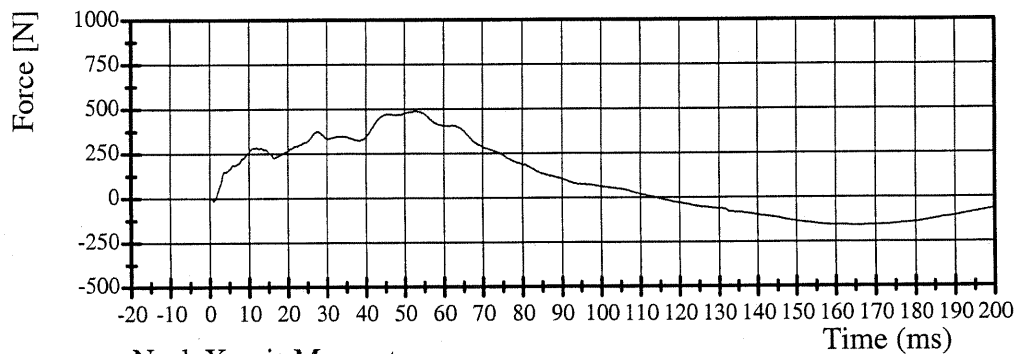


Filter Class: CFC 60

Max: 74.2 ° at 61.0 ms

Min: -32.9 ° at 179.4 ms

Neck Y-Axis Force (filtered for moment calculation)

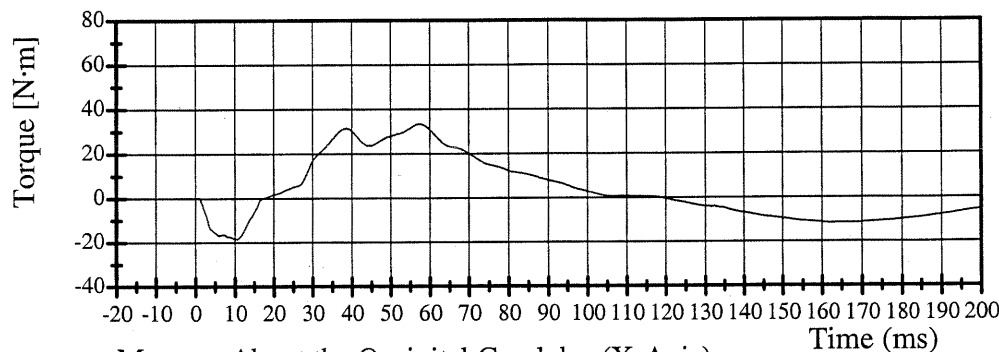


Filter Class: CFC 600

Max: 488 N at 53.0 ms

Min: -160 N at 164.9 ms

Neck X-axis Moment

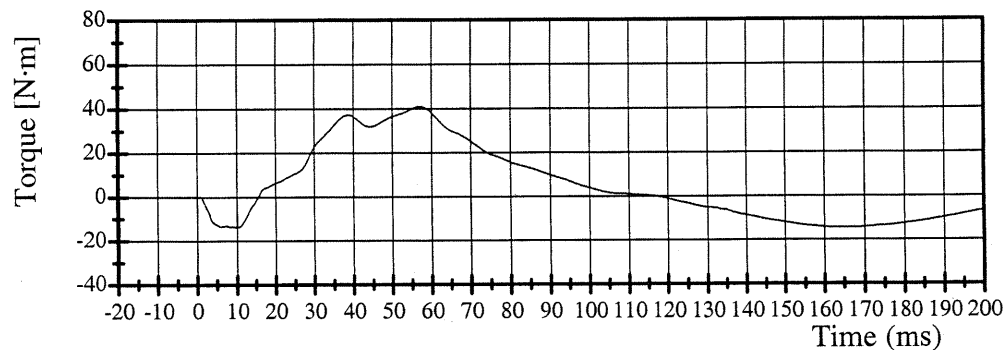


Filter Class: CFC 600

Max: 33.4 N·m at 57.5 ms

Min: -18.5 N·m at 10.5 ms

Moment About the Occipital Condyles (X-Axis)



Filter Class: 600

Max: 41.0 N·m at 57.3 ms

Min: -14.5 N·m at 162.7 ms

08.07.2005 17:30:40 673



Transportation Research Center Inc.

Left Shoulder Test

SID-IIs Serial No. 056 Calibration No. 01 - 1

Test Date 07/16/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 C	21.5 C	Yes
Relative Humidity	10 - 70 %	60 %	Yes
Pendulum Velocity	4.41 - 4.59 m/sec	4.46 m/sec	Yes
Probe Force	1600 - 2400 N	2493 N	No
Deflection	27 - 39 mm	29.7 mm	Yes

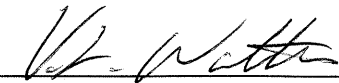
Test does not meet specifications.

Comments:

Technician



Approved



08.07.2005 17:45:23 561



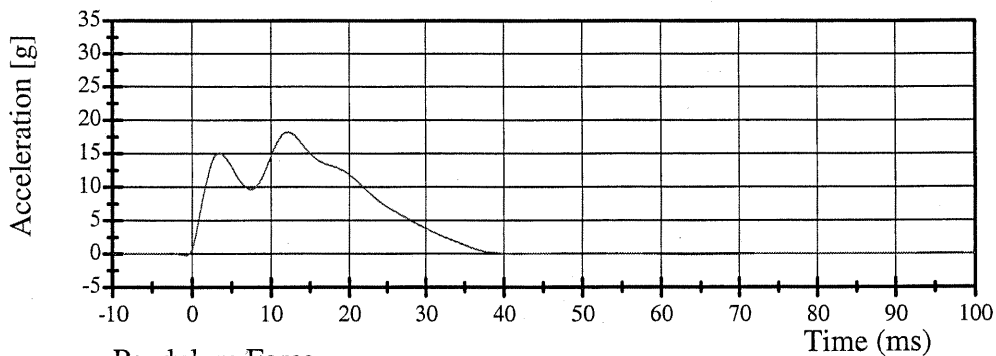
Transportation Research Center Inc.

Left Shoulder Test

SID-IIs Serial No. 056 Calibration No. 01 - 1

Test Date 07/16/2005

Pendulum Deceleration

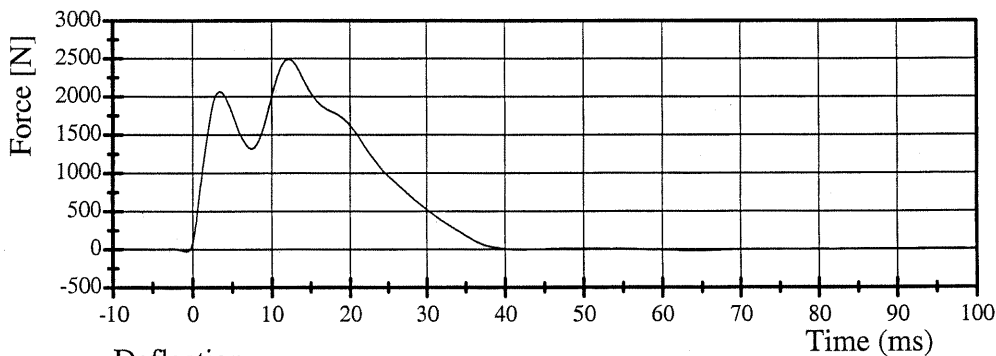


Filter Class: CFC 180

Max: 18.4 g at 12.2 ms

Min: -0.2 g at 63.0 ms

Pendulum Force

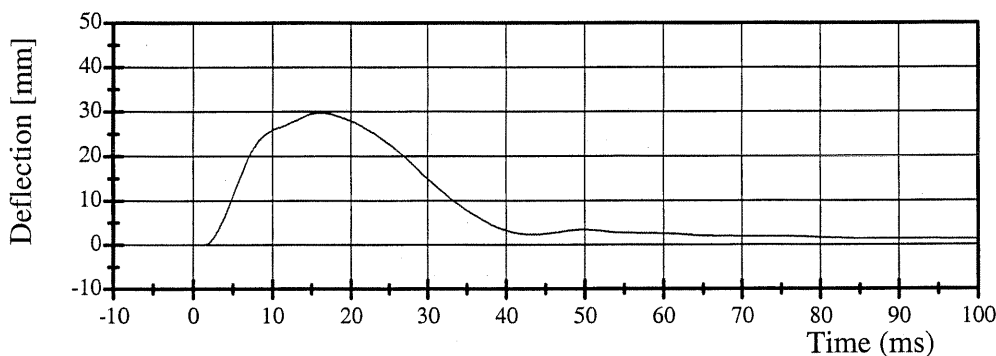


Filter Class: CFC 180

Max: 2493 N at 12.2 ms

Min: -27 N at -0.8 ms

Deflection



Filter Class: CFC 600

Max: 29.7 mm at 16.2 ms

Min: -0.0 mm at 1.4 ms

Transportation Research Center Inc.

Left Thorax with Arm Test

SID-IIs Serial No. 056 Calibration No. 01 - 2

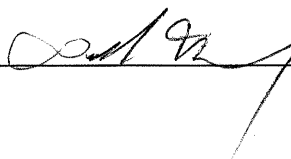
Test Date 07/15/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 C	21.2 C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Pendulum Velocity	6.60 - 6.80 m/sec	6.72 m/sec	Yes
Pendulum Force	4100 - 4700 N	4673 N	Yes
Upper Spine Peak Acceleration	34 - 48 g	36.7 g	Yes
Lower Spine Peak Acceleration	30 - 38 g	32.1 g	Yes
Upper Rib Peak Deflection	23 - 35 mm	26.6 mm	Yes
Mid Rib Peak Deflection	29 - 44 mm	32.4 mm	Yes
Lower Rib Peak Deflection	33 - 40 mm	35.6 mm	Yes
Shoulder Peak Deflection	30 - 42 mm	28.7 mm	No

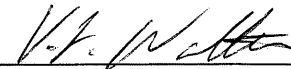
Test does not meet specifications.

Comments:

Technician



Approved



08.07.2005 17:51:24 319



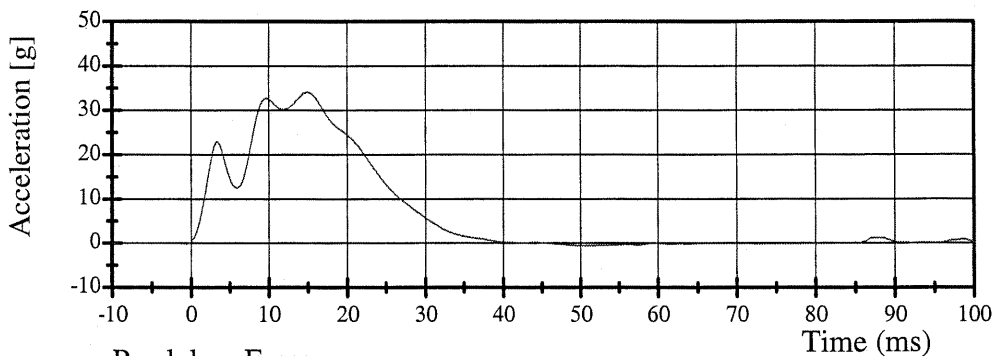
Transportation Research Center Inc.

Left Thorax with Arm Test

SID-II's Serial No. 056 Calibration No. 01 - 2

Test Date 07/15/2005

Pendulum Deceleration

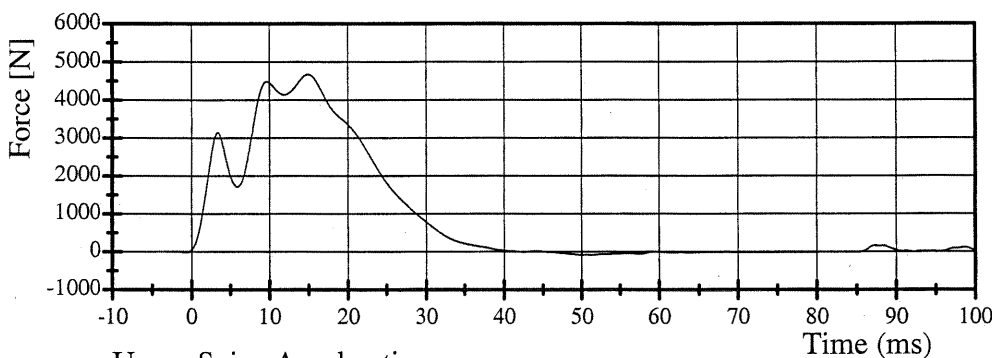


Filter Class: CFC 180

Max: 34.1 g at 15.0 ms

Min: -0.6 g at 50.7 ms

Pendulum Force

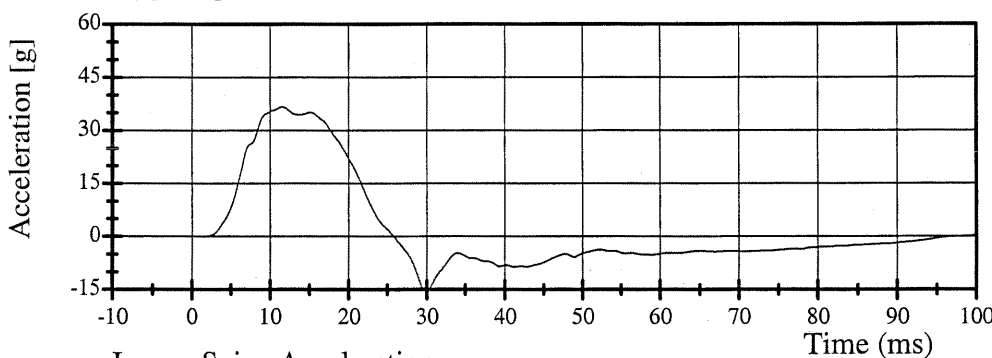


Filter Class: CFC 180

Max: 4673 N at 15.0 ms

Min: -82 N at 50.7 ms

Upper Spine Acceleration

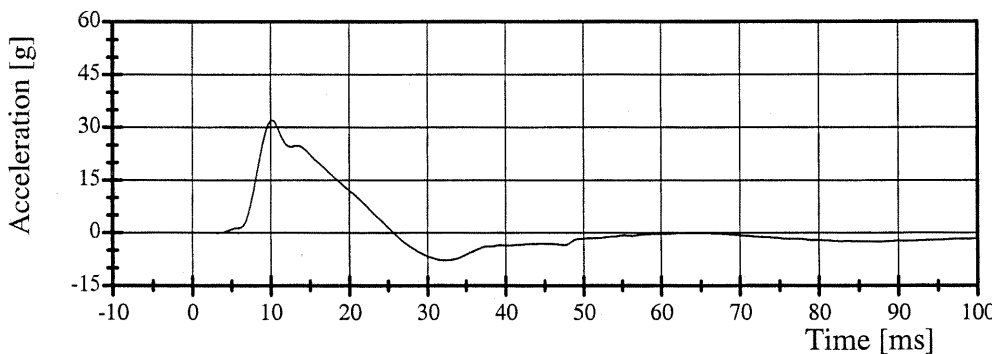


Filter Class: CFC 180

Max: 36.7 g at 11.6 ms

Min: -15.7 g at 29.9 ms

Lower Spine Acceleration



Filter Class: CFC 180

Max: 32.1 g at 10.2 ms

Min: -7.9 g at 32.2 ms

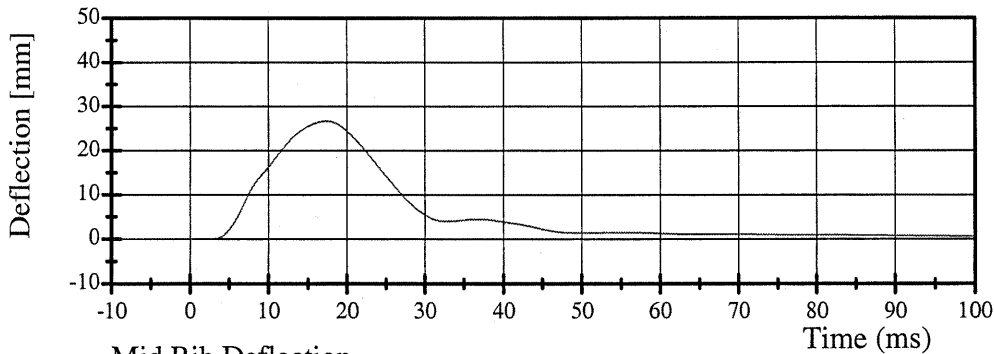
Transportation Research Center Inc.

Left Thorax with Arm Test

SID-IIIs Serial No. 056 Calibration No. 01 - 2

Test Date 07/15/2005

Upper Rib Deflection

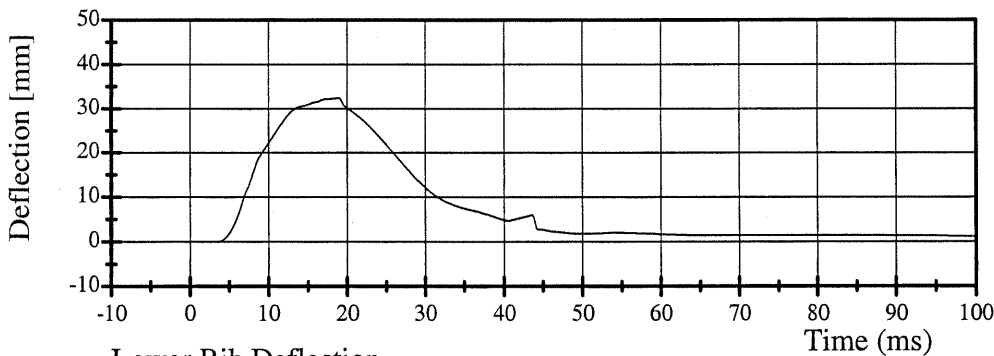


Filter Class: CFC 600

Max: 26.6 mm at 17.4 ms

Min: -0.0 mm at -0.7 ms

Mid Rib Deflection

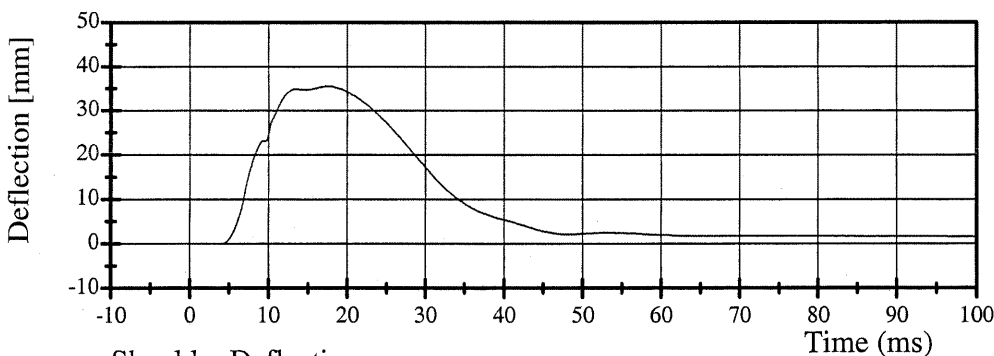


Filter Class: CFC 600

Max: 32.4 mm at 18.9 ms

Min: -0.0 mm at -0.7 ms

Lower Rib Deflection

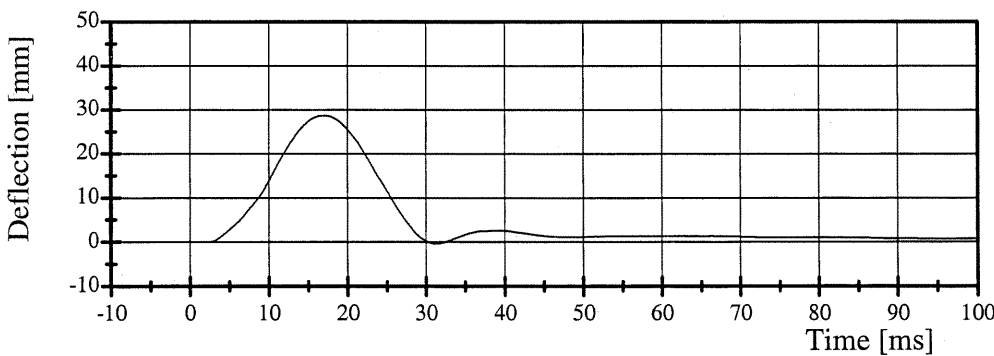


Filter Class: CFC 600

Max: 35.6 mm at 17.5 ms

Min: -0.0 mm at 4.0 ms

Shoulder Deflection



Filter Class: CFC 600

Max: 28.7 mm at 17.0 ms

Min: -0.3 mm at 31.3 ms

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Transportation Research Center Inc.

Left Thorax No Arm Test

SID-IIs Serial No. 056 Calibration No. 01 - 1

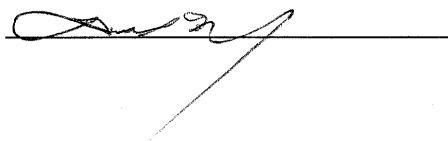
Test Date 07/15/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 C	21.4 C	Yes
Relative Humidity	10 - 70 %	52 %	Yes
Pendulum Velocity	4.20 - 4.40 m/sec	4.31 m/sec	Yes
Pendulum Force	1800 - 2300 N	2277 N	Yes
Upper Spine Peak Acceleration	13 - 18 g	15.4 g	Yes
Lower Spine Peak Acceleration	8 - 13 g	10.2 g	Yes
Upper Rib Peak Deflection	32 - 41 mm	35.8 mm	Yes
Mid Rib Peak Deflection	40 - 51 mm	41.3 mm	Yes
Lower Rib Peak Deflection	34 - 47 mm	38.9 mm	Yes

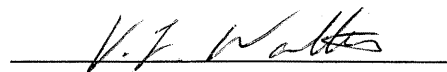
Test meets specifications.

Comments:

Technician



Approved



08.07.2005 17:52:39 611



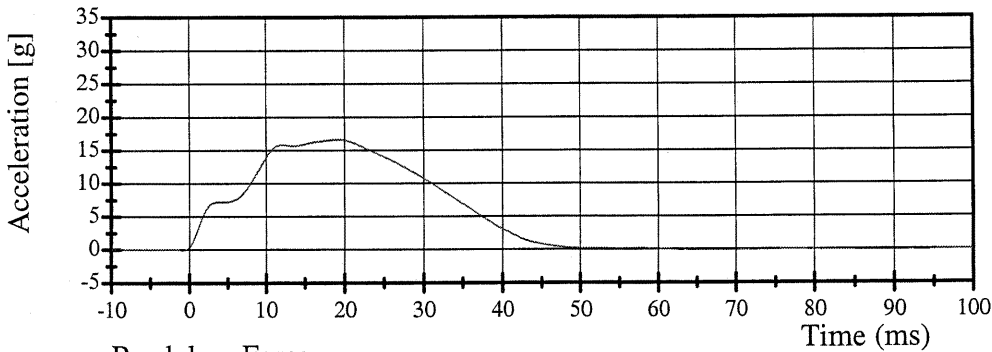
Transportation Research Center Inc.

Left Thorax No Arm Test

SID-IIs Serial No. 056 Calibration No. 01 - 1

Test Date 07/15/2005

Pendulum Deceleration

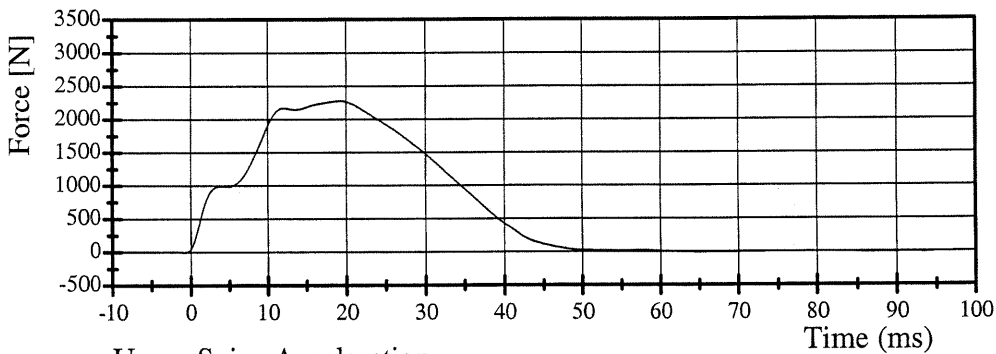


Filter Class: CFC 180

Max: 16.6 g at 19.2 ms

Min: -0.1 g at 69.4 ms

Pendulum Force

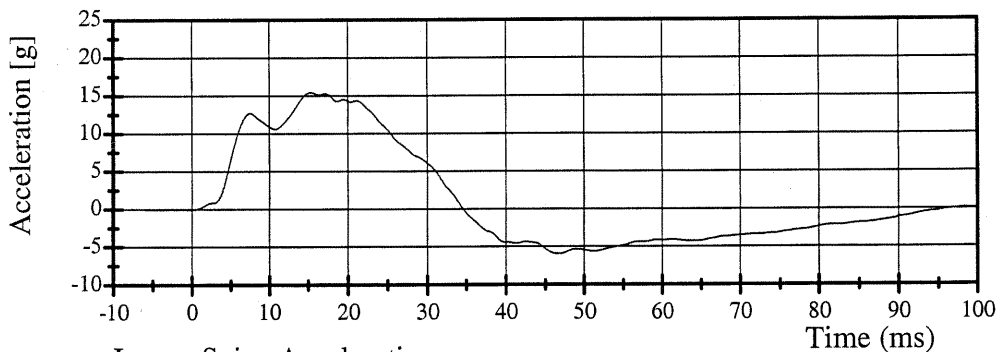


Filter Class: CFC 180

Max: 2277 N at 19.2 ms

Min: -10 N at 69.4 ms

Upper Spine Acceleration

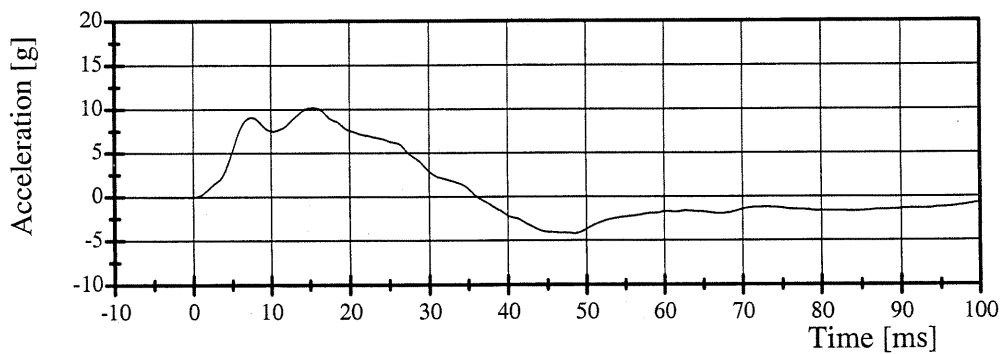


Filter Class: CFC 180

Max: 15.4 g at 15.4 ms

Min: -5.9 g at 46.6 ms

Lower Spine Acceleration



Filter Class: CFC 180

Max: 10.2 g at 15.5 ms

Min: -4.2 g at 48.6 ms

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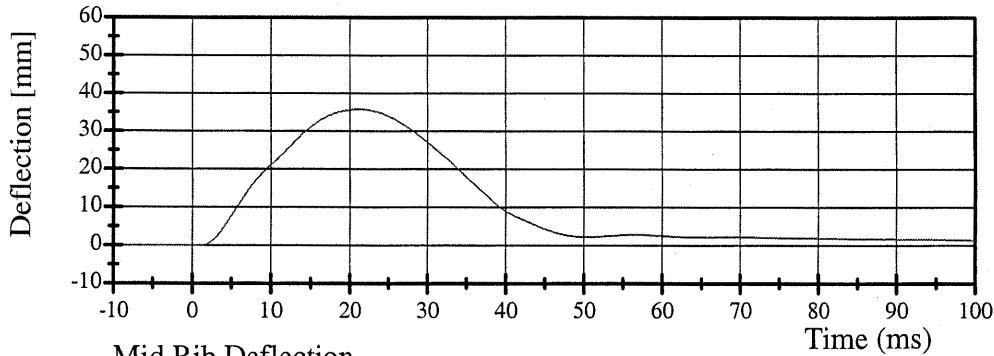
Transportation Research Center Inc.

Left Thorax No Arm Test

SID-II's Serial No. 056 Calibration No. 01 - 1

Test Date 07/15/2005

Upper Rib Deflection

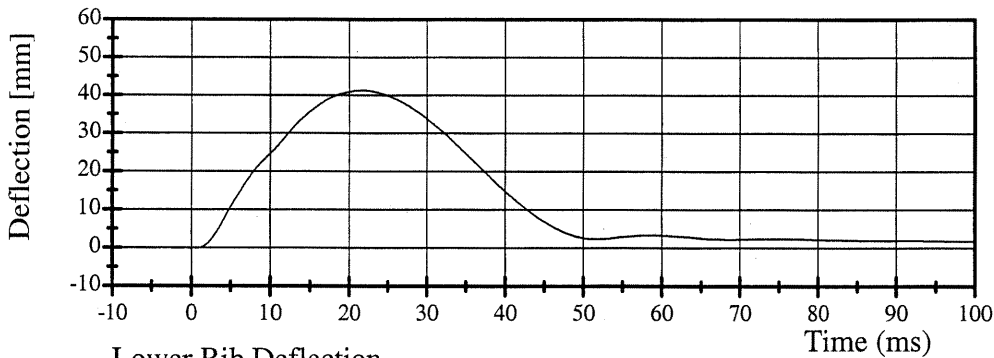


Filter Class: CFC 600

Max: 35.8 mm at 21.2 ms

Min: -0.0 mm at -23.8 ms

Mid Rib Deflection

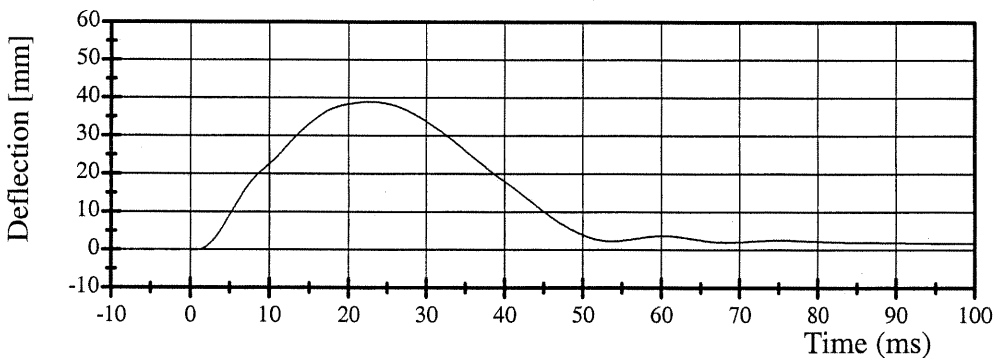


Filter Class: CFC 600

Max: 41.3 mm at 22.0 ms

Min: -0.0 mm at -37.8 ms

Lower Rib Deflection



Filter Class: CFC 600

Max: 38.9 mm at 22.6 ms

Min: -0.0 mm at -38.0 ms

Transportation Research Center Inc.

Left Abdomen Test

SID-IIs Serial No. 056 Calibration No. 01 - 1

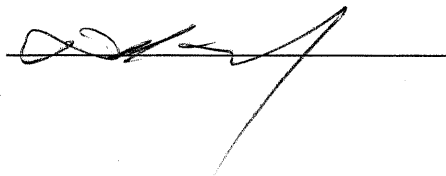
Test Date 07/15/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 C	21.2 C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Pendulum Velocity	4.20 - 4.40 m/sec	4.38 m/sec	Yes
Pendulum Force	1300 - 1900 N	2028 N	No
Upper Spine Peak Acceleration	5 - 9 g	7.5 g	Yes
Lower Spine Peak Acceleration	9 - 13 g	11.9 g	Yes
Upper Abdomen Rib Peak Deflection	44 - 55 mm	44.5 mm	Yes
Lower Abdomen Rib Peak Deflection	44 - 56 mm	41.3 mm	No

Test does not meet specifications.

Comments:

Technician



Approved



08.07.2005 17:58:23 607



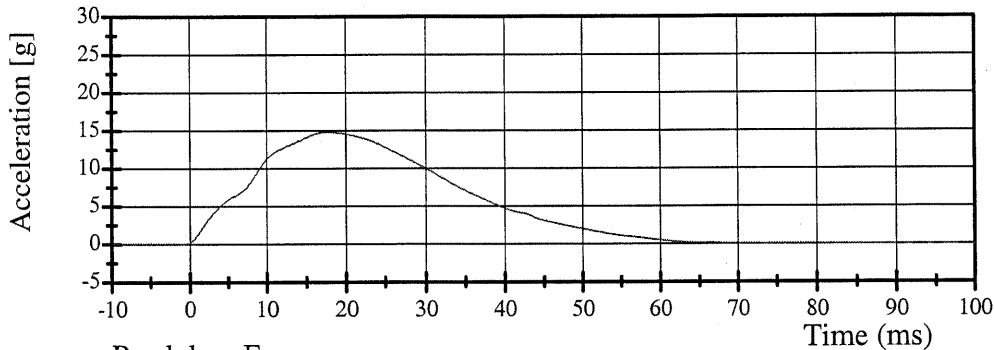
Transportation Research Center Inc.

Left Abdomen Test

SID-IIs Serial No. 056 Calibration No. 01 - 1

Test Date 07/15/2005

Pendulum Deceleration

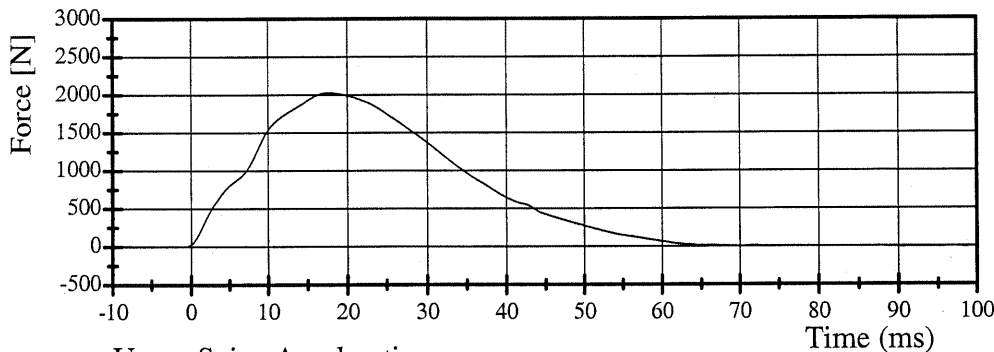


Filter Class: CFC 180

Max: 14.8 g at 17.8 ms

Min: -0.0 g at 98.5 ms

Pendulum Force

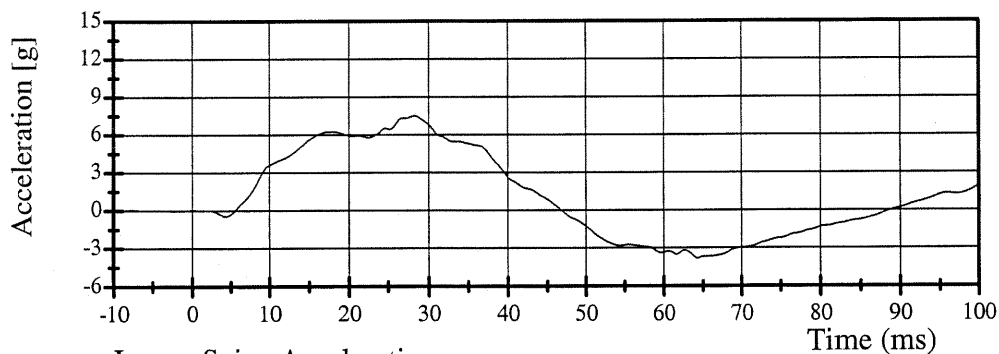


Filter Class: CFC 180

Max: 2028 N at 17.8 ms

Min: -6 N at 98.5 ms

Upper Spine Acceleration

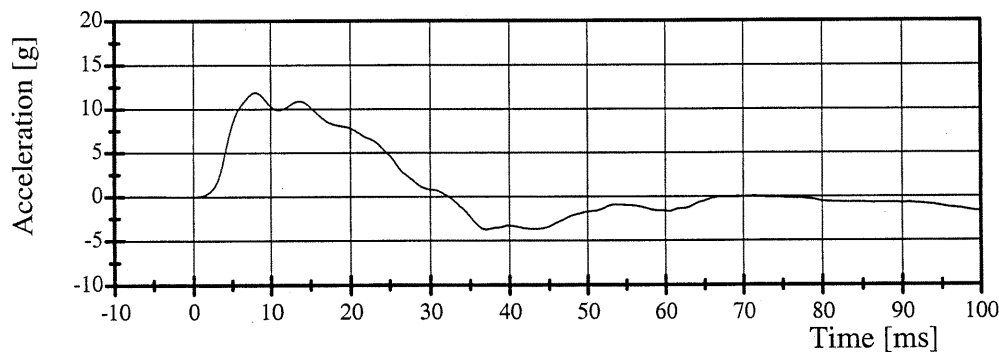


Filter Class: CFC 180

Max: 7.5 g at 28.2 ms

Min: -3.8 g at 64.3 ms

Lower Spine Acceleration



Filter Class: CFC 180

Max: 11.9 g at 8.0 ms

Min: -3.7 g at 37.0 ms

08.07.2005 17:58:23 607



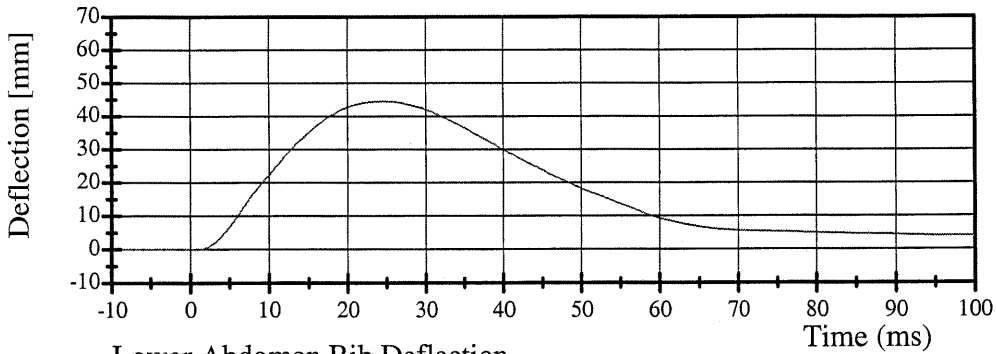
Transportation Research Center Inc.

Left Abdomen Test

SID-IIIs Serial No. 056 Calibration No. 01 - 1

Test Date 07/15/2005

Upper Abdomen Rib Deflection

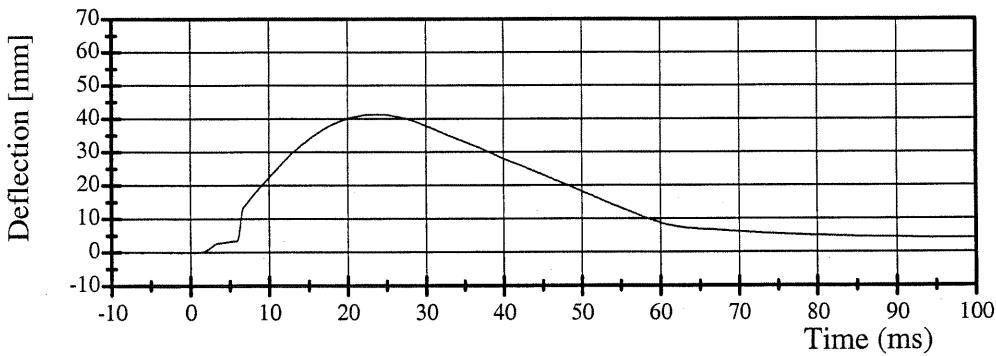


Filter Class: CFC 600

Max: 44.5 mm at 24.6 ms

Min: -0.0 mm at -28.4 ms

Lower Abdomen Rib Deflection



Filter Class: CFC 600

Max: 41.3 mm at 23.8 ms

Min: -0.0 mm at 0.8 ms

Transportation Research Center Inc.

Left Pelvis Test

SID-IIs Serial No. 056 Calibration No. 01 - 1

Test Date 07/15/05

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 C	21.5 C	Yes
Relative Humidity	10 - 70 %	52 %	Yes
Pendulum Velocity	6.60 - 6.80 m/sec	6.61 m/sec	Yes
Pendulum Acceleration	40 - 48 g	40.9 g	Yes
Pelvis Peak Acceleration	40 - 48 g	41.6 g	Yes
Peak Acetabulum Force	3803 - 4505 g	3972 N	Yes

Test meets specifications.

Comments:

Technician



Approved



08.07.2005 18:00:58 391

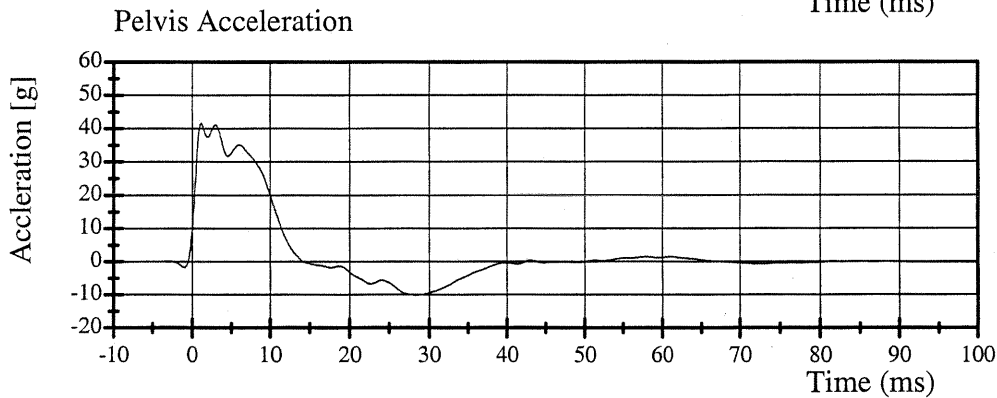
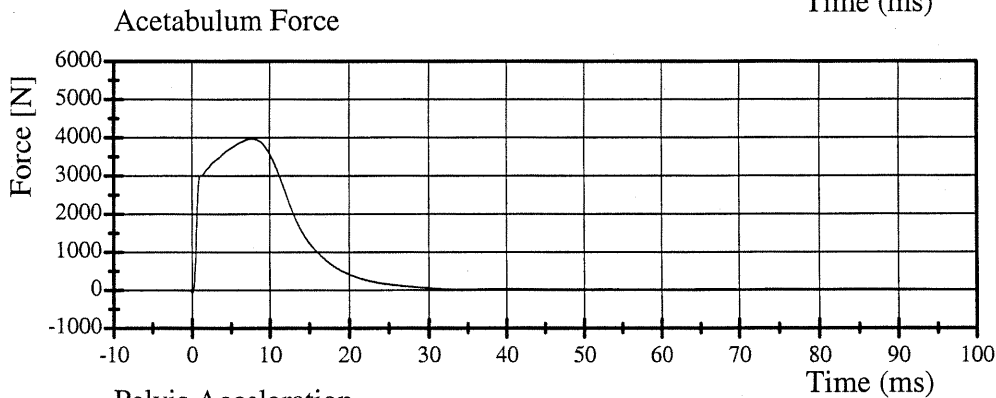
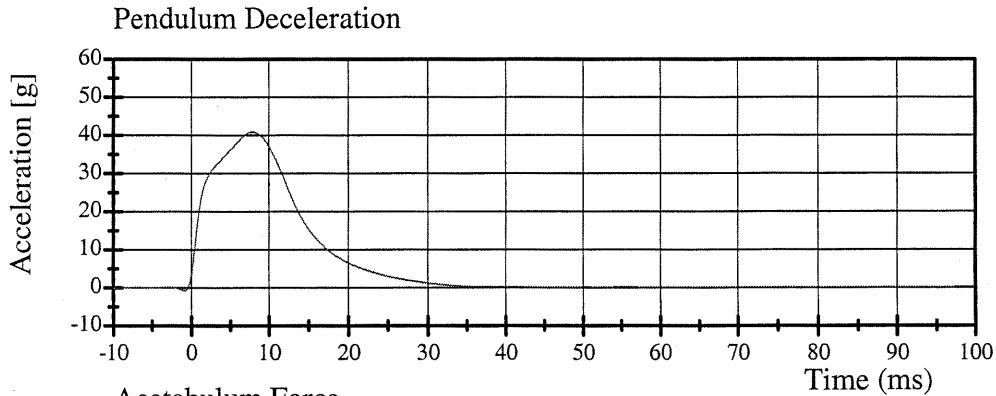


Transportation Research Center Inc.

Left Pelvis Test

SID-IIIs Serial No. 056 Calibration No. 01 - 1

Test Date 07/15/05



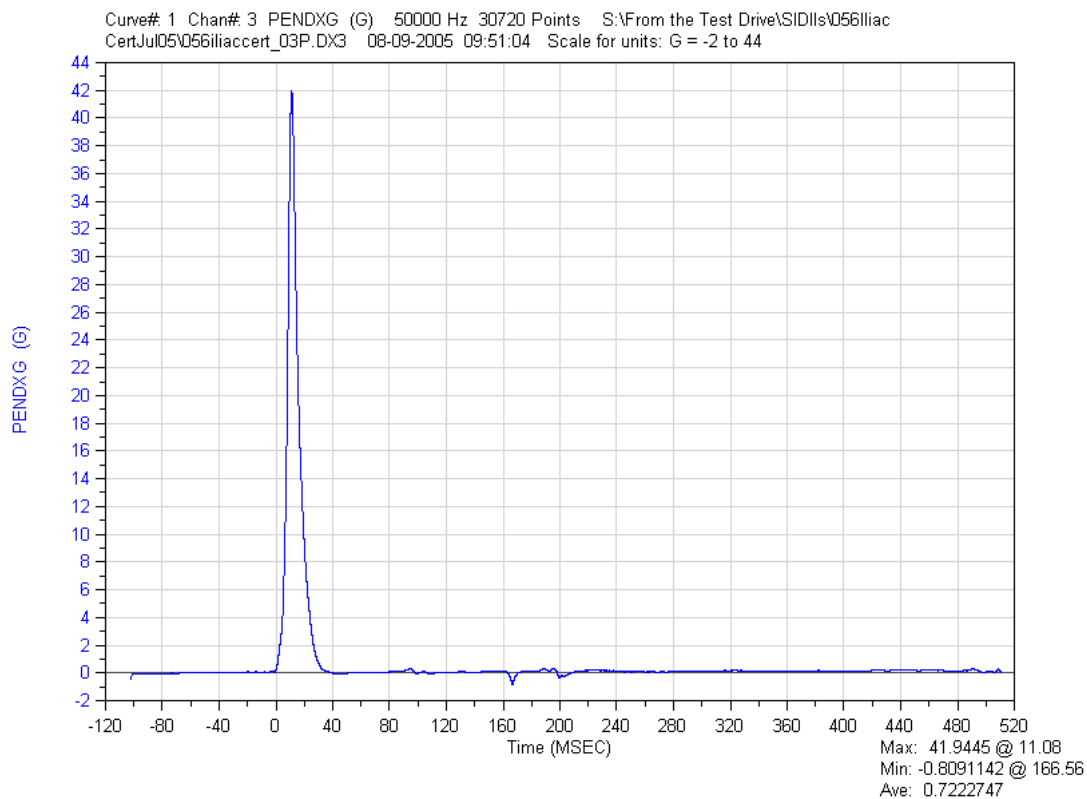
08.07.2005 18:01:16 391

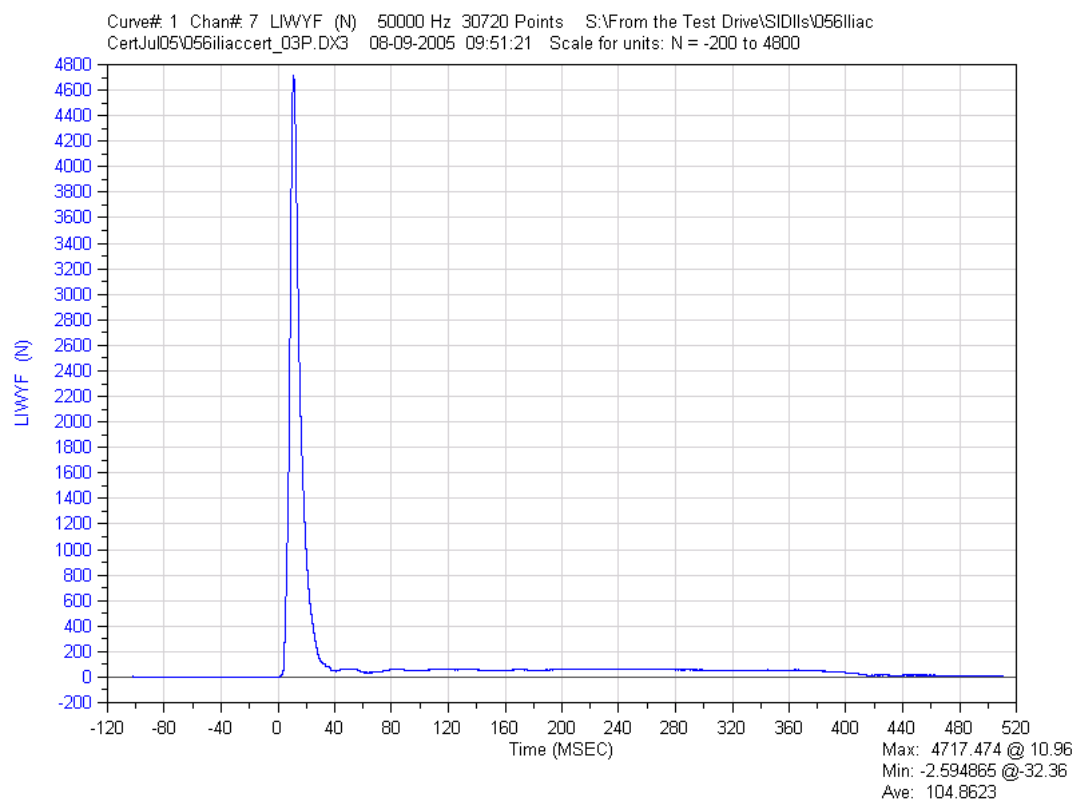
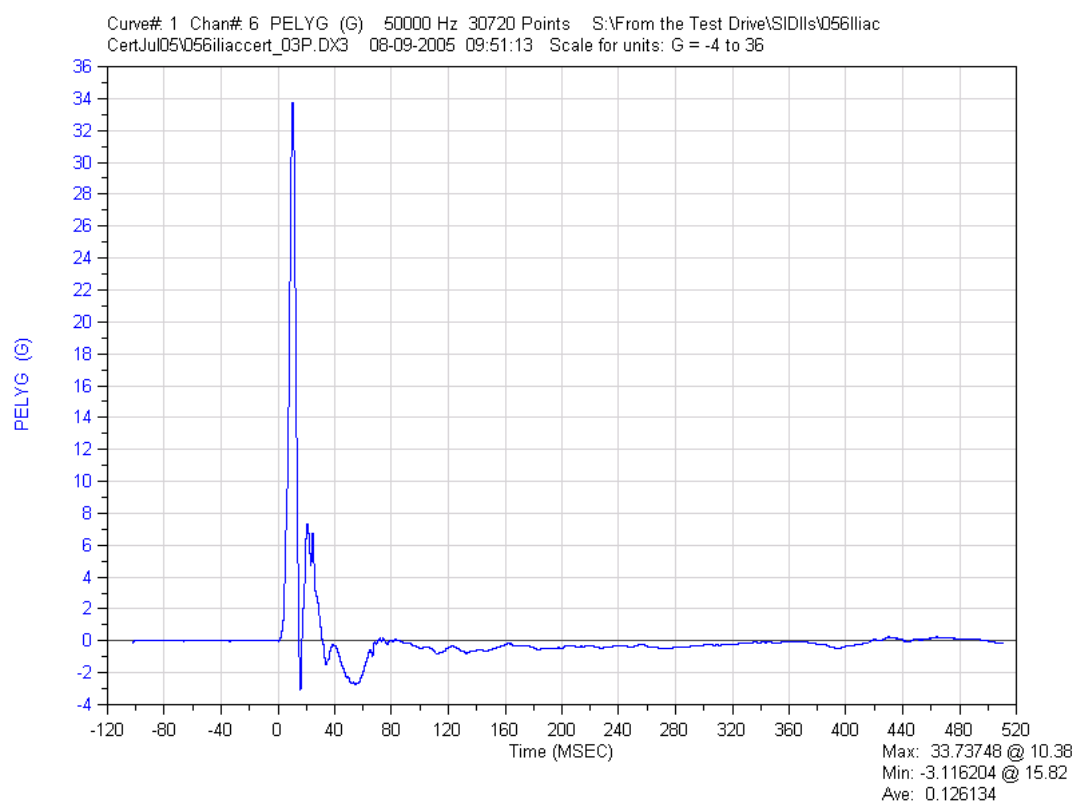


Test Parameter/Specification

Test Number	056iliaccert_03
Dummy S/N	056
Test Performer	VRTC
Date of Calibration	7/13/2005
Temperature (20.6 - 22.2 °C)	20
Relative Humidity (10 - 70 %)	49
Probe Velocity (4.2 - 4.4 m/s)	4.425
Maximum Probe Acceleration (41 - 47 g)	41.945
Maximum Pelvis Y Acceleration (32 - 40 g)	33.737
Maximum Iliac Force (4841 - 5491 N)	4717.474

Test Results





Appendix D

Miscellaneous Test 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
Used for 050718 Test

<u>Typical Test Measurements</u>	<u>Channel Class</u>
Vehicle Structural Accelerations for use in:	
Total vehicle comparison	60
Integration for velocity or displacement	180
Anthropomorphic Test Device	
Head accelerations	1000
Upper neck force	1000
Upper neck moment	600
Shoulder accelerations	1000
Shoulder force	600
Shoulder displacement	180
Spine acceleration	180
Rib Y-axis acceleration	180
Rib displacement	180
Lumbar moment	600
Pelvis acceleration	1000
Iliac wing force	600
Acetabulum force	600
Femur force	600
Femur moment	600

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 050718

Ref	Transducer ID	ISO Signal Identifier	Description	FScale	Units	Assembly
1	Trig D1	10ZERO000000EV00	EVENT		1 Logic	
2	02I02I24-N07	11HEADCG00S2ACXA	Head Accel X	1000	g	1-020 SIDiIs FTSS.001
3	04J04I20-Z24	11HEADCG00S2ACYA	Head Accel Y	1000	g	1-020 SIDiIs FTSS.002
4	04J04I08-F24	11HEADCG00S2ACZA	Head Accel Z	1000	g	1-020 SIDiIs FTSS.003
5	IF-205-286-FX	11NECKUP00S2FOXA	Neck Force X	8896	N	1-020 SIDiIs FTSS.004
6	IF-205-286-FY	11NECKUP00S2FOYA	Neck Force Y	8896	N	1-020 SIDiIs FTSS.005
7	IF-205-286-FZ	11NECKUP00S2FOZA	Neck Force Z	13344	N	1-020 SIDiIs FTSS.006
8	IF-205-286-MX	11NECKUP00S2MOXA	Neck Moment X	282.5	N·m	1-020 SIDiIs FTSS.007
9	IF-205-286-MY	11NECKUP00S2MOYA	Neck Moment Y	282.5	N·m	1-020 SIDiIs FTSS.008
10	IF-205-286-MZ	11NECKUP00S2MOZA	Neck Moment Z	282.5	N·m	1-020 SIDiIs FTSS.009
11	01G18-F05	11SHLDLE00S2ACXA	Shoulder Accel X	2000	g	1-020 SIDiIs FTSS.016
12	04J04I20-Z06	11SHLDLE00S2ACYA	Shoulder Accel Y	2000	g	1-020 SIDiIs FTSS.017
13	03E03E18-F18	11SHLDLE00S2ACZA	Shoulder Accel Z	2000	g	1-020 SIDiIs FTSS.018
14	IF-344-110-FX	11SHLDLE00S2FOXA	Shoulder Force X	4448	N	1-020 SIDiIs FTSS.013
15	IF-344-110-FY	11SHLDLE00S2FOYA	Shoulder Force Y	4448	N	1-020 SIDiIs FTSS.014
16	IF-344-110-FZ	11SHLDLE00S2FOZA	Shoulder Force Z	4448	N	1-020 SIDiIs FTSS.015
17	03E03E18-F09	11SPIN0100S2ACXA	Upper Spine Accel X	2000	g	1-020 SIDiIs FTSS.010
18	04J04I01-R24	11SPIN0100S2ACYA	Upper Spine Accel Y	2000	g	1-020 SIDiIs FTSS.011
19	02I02I05-F04	11SPIN0100S2ACZA	Upper Spine Accel Z	2000	g	1-020 SIDiIs FTSS.012
20	04J04I07-Z15	11THSP01RIS2ACXA	Spine Rib 1 Accel X	2000	g	1-020 SIDiIs FTSS.020
21	04J04I20-A17	11THSP01RIS2ACYA	Spine Rib 1 Accel Y	2000	g	1-020 SIDiIs FTSS.021
22	03F03E29-N17	11THSP01RIS2ACZA	Spine Rib 1 Accel Z	2000	g	1-020 SIDiIs FTSS.022
23	03F03F09-N03	11THSP02RIS2ACXA	Spine Rib 2 Accel X	2000	g	1-020 SIDiIs FTSS.023
24	03E03E20-N14	11THSP02RIS2ACYA	Spine Rib 2 Accel Y	2000	g	1-020 SIDiIs FTSS.024
25	03E03E20-N12	11THSP02RIS2ACZA	Spine Rib 2 Accel Z	2000	g	1-020 SIDiIs FTSS.025
26	01H02-N07	11THSP03RIS2ACXA	Spine Rib 3 Accel X	2000	g	1-020 SIDiIs FTSS.026
27	00L20-A14	11THSP03RIS2ACYA	Spine Rib 3 Accel Y	2000	g	1-020 SIDiIs FTSS.027
28	03F03E29-N10	11THSP03RIS2ACZA	Spine Rib 3 Accel Z	2000	g	1-020 SIDiIs FTSS.028
29	01J02-F22	11SPIN1200S2ACXA	Lower Spine Accel X	2000	g	1-020 SIDiIs FTSS.029
30	B02A09-F04	11SPIN1200S2ACYA	Lower Spine Accel Y	2000	g	1-020 SIDiIs FTSS.030
31	01G25-N16	11SPIN1200S2ACZA	Lower Spine Accel Z	2000	g	1-020 SIDiIs FTSS.031
32	01G18-F13	11ABSP02RIS2ACXA	Spine Rib 5 Accel X	2000	g	1-020 SIDiIs FTSS.032
33	00L13-F37	11ABSP02RIS2ACYA	Spine Rib 5 Accel Y	2000	g	1-020 SIDiIs FTSS.033
34	01J02-F07	11ABSP02RIS2ACZA	Spine Rib 5 Accel Z	2000	g	1-020 SIDiIs FTSS.034
35	IF-414-107-MX	11LUSP0000S2MOXA	Lumbar Moment X	451.9	N·m	1-020 SIDiIs FTSS.058
36	IF-414-107-MY	11LUSP0000S2MOYA	Lumbar Moment Y	451.9	N·m	1-020 SIDiIs FTSS.059
37	IF-414-107-MZ	11LUSP0000S2MOZA	Lumbar Moment Z	226	N·m	1-020 SIDiIs FTSS.060
38	02I02I05-F24	11TRRI01LES2ACXA	Thorax Rib 1 Accel X	2000	g	1-020 SIDiIs FTSS.035
39	04J04I01-R11	11TRRI01LES2ACYA	Thorax Rib 1 Accel Y	2000	g	1-020 SIDiIs FTSS.036
40	98H10-F03	11TRRI01LES2ACZA	Thorax Rib 1 Accel Z	2000	g	1-020 SIDiIs FTSS.037
41	03E03E21-M09	11TRRI02LES2ACXA	Thorax Rib 2 Accel X	2000	g	1-020 SIDiIs FTSS.038

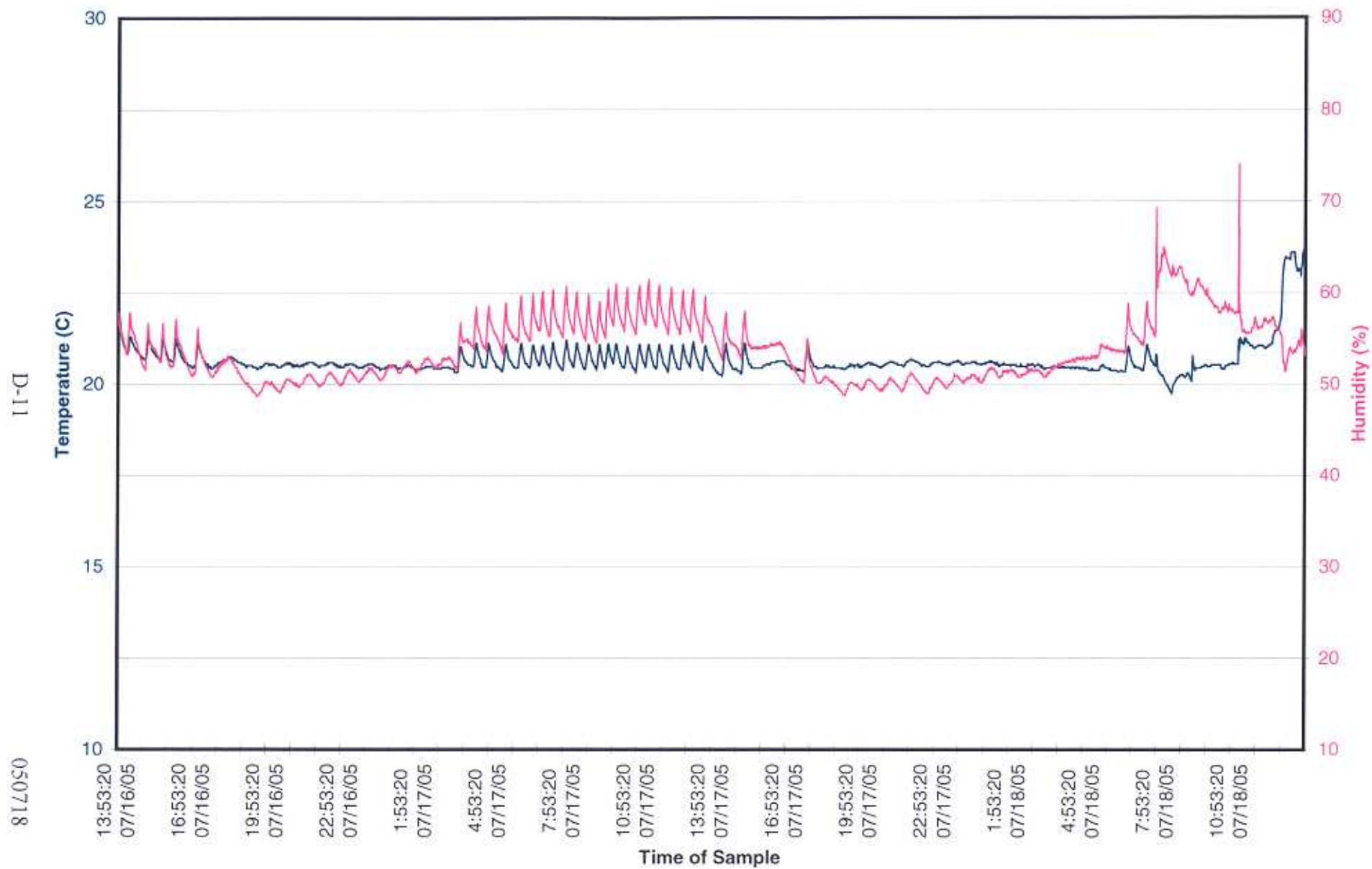
42 01G18-F03	11TRRI02LES2ACYA	Thorax Rib 2 Accel Y	2000 g	1-020 SIDILs FTSS.039
43 03E03E20-N13	11TRRI02LES2ACZA	Thorax Rib 2 Accel Z	2000 g	1-020 SIDILs FTSS.040
44 04J04I01-R09	11TRRI03LES2ACXA	Thorax Rib 3 Accel X	2000 g	1-020 SIDILs FTSS.041
45 98H13-F11	11TRRI03LES2ACYA	Thorax Rib 3 Accel Y	2000 g	1-020 SIDILs FTSS.042
46 03D03D09-N02	11TRRI03LES2ACZA	Thorax Rib 3 Accel Z	2000 g	1-020 SIDILs FTSS.043
47 02A16-A15	11ABRI01LES2ACXA	Abdomen Rib 1 Accel X	2000 g	1-020 SIDILs FTSS.044
48 99H12-F26	11ABRI01LES2ACYA	Abdomen Rib 1 Accel Y	2000 g	1-020 SIDILs FTSS.045
49 02I02I05-F22	11ABRI01LES2ACZA	Abdomen Rib 1 Accel Z	2000 g	1-020 SIDILs FTSS.046
50 04J04I10-H10	11ABRI02LES2ACXA	Abdomen Rib 2 Accel X	2000 g	1-020 SIDILs FTSS.047
51 04J04I20-Z18	11ABRI02LES2ACYA	Abdomen Rib 2 Accel Y	2000 g	1-020 SIDILs FTSS.048
52 02I02I05-F09	11ABRI02LES2ACZA	Abdomen Rib 2 Accel Z	2000 g	1-020 SIDILs FTSS.049
53 01J02-F16	11PELVCG00S2ACXA	Pelvis Accel X	2000 g	1-020 SIDILs FTSS.061
54 03E03E18-F03	11PELVCG00S2ACYA	Pelvis Accel Y	2000 g	1-020 SIDILs FTSS.062
55 03F03E29-N13	11PELVCG00S2ACZA	Pelvis Accel Z	2000 g	1-020 SIDILs FTSS.063
56 IF-520-115-FY	11ACTBLE00S2FOYA	Left Acetabulum Force Y	8896 N	1-020 SIDILs FTSS.064
57 IF-507-112-FY	11ILACLE00S2FOYA	Left Iliac Wing Force Y	13344.6 N	1-020 SIDILs FTSS.065
58 IF-625-142-FX	11FEMRRI00S2FOXA	Right Femur Force X	13344 N	1-020 SIDILs FTSS.072
59 IF-625-142-FY	11FEMRRI00S2FOYA	Right Femur Force Y	13344 N	1-020 SIDILs FTSS.073
60 IF-625-142-FZ	11FEMRRI00S2FOZA	Right Femur Force Z	22240 N	1-020 SIDILs FTSS.074
61 IF-625-142-MX	11FEMRRI00S2MOXA	Right Femur Moment X	339 N	1-020 SIDILs FTSS.075
62 IF-625-142-MY	11FEMRRI00S2MOYA	Right Femur Moment Y	339 N	1-020 SIDILs FTSS.076
63 IF-625-142-MZ	11FEMRRI00S2MOZA	Right Femur Moment Z	339 N	1-020 SIDILs FTSS.077
64 IF-625-107-FX	11FEMRLE00S2FOXA	Left Femur Force X	13344 N	1-020 SIDILs FTSS.066
65 IF-625-107-FY	11FEMRLE00S2FOYA	Left Femur Force Y	13344 N	1-020 SIDILs FTSS.067
66 IF-625-107-FZ	11FEMRLE00S2FOZA	Left Femur Force Z	22240 N	1-020 SIDILs FTSS.068
67 IF-625-107-MX	11FEMRLE00S2MOXA	Left Femur Moment X	339 N·m	1-020 SIDILs FTSS.069
68 IF-625-107-MY	11FEMRLE00S2MOYA	Left Femur Moment Y	339 N·m	1-020 SIDILs FTSS.070
69 IF-625-107-MZ	11FEMRLE00S2MOZA	Left Femur Moment Z	339 N·m	1-020 SIDILs FTSS.071
70 03F03E29-N04	14HEADCG00S2ACXA	Head Accel X	1000 g	4-056 SIDILs FTSS.001
71 01G18-F08	14HEADCG00S2ACYA	Head Accel Y	1000 g	4-056 SIDILs FTSS.002
72 03E03E18-F21	14HEADCG00S2ACZA	Head Accel Z	1000 g	4-056 SIDILs FTSS.003
73 IF-205-283-FX	14NECKUP00S2FOXA	Neck Force X	8896 N	4-056 SIDILs FTSS.004
74 IF-205-283-FY	14NECKUP00S2FOYA	Neck Force Y	8896 N	4-056 SIDILs FTSS.005
75 IF-205-283-FZ	14NECKUP00S2FOZA	Neck Force Z	13344 N	4-056 SIDILs FTSS.006
76 IF-205-283-MX	14NECKUP00S2MOXA	Neck Moment X	282.5 N	4-056 SIDILs FTSS.007
77 IF-205-283-MY	14NECKUP00S2MOYA	Neck Moment Y	282.5 N	4-056 SIDILs FTSS.008
78 IF-205-283-MZ	14NECKUP00S2MOZA	Neck Moment Z	282.5 N	4-056 SIDILs FTSS.009
79 03E03E20-N05	14SHLDLE00S2ACXA	Shoulder Accel X	2000 g	4-056 SIDILs FTSS.016
80 03D03D16-F13	14SHLDLE00S2ACYA	Shoulder Accel Y	2000 g	4-056 SIDILs FTSS.017
81 02I02I05-F07	14SHLDLE00S2ACZA	Shoulder Accel Z	2000 g	4-056 SIDILs FTSS.018
82 3167-142-FX	14SHLDLE00S2FOXA	Shoulder Force X	4448 N	4-056 SIDILs FTSS.013
83 3167-142-FY	14SHLDLE00S2FOYA	Shoulder Force Y	4448 N	4-056 SIDILs FTSS.014
84 3167-142-FZ	14SHLDLE00S2FOZA	Shoulder Force Z	4448 N	4-056 SIDILs FTSS.015

85 P17846	14SPIN0100S2ACXA	Upper Spine Accel X	2000 g	4-056 SIDiIs FTSS.010
86 00L13-F71	14SPIN0100S2ACYA	Upper Spine Accel Y	2000 g	4-056 SIDiIs FTSS.011
87 02I02I05-F14	14SPIN0100S2ACZA	Upper Spine Accel Z	2000 g	4-056 SIDiIs FTSS.012
88 03F03E29-N21	14THSP01RIS2ACXA	Spine Rib 1 Accel X	2000 g	4-056 SIDiIs FTSS.020
89 04J04I01-R04	14THSP01RIS2ACYA	Spine Rib 1 Accel Y	2000 g	4-056 SIDiIs FTSS.021
90 04J04I20-Z05	14THSP01RIS2ACZA	Spine Rib 1 Accel Z	2000 g	4-056 SIDiIs FTSS.022
91 03D03D16-F18	14THSP02RIS2ACXA	Spine Rib 2 Accel X	2000 g	4-056 SIDiIs FTSS.023
92 01G18-F15	14THSP02RIS2ACYA	Spine Rib 2 Accel Y	2000 g	4-056 SIDiIs FTSS.024
93 03E03E02-N16	14THSP02RIS2ACZA	Spine Rib 2 Accel Z	2000 g	4-056 SIDiIs FTSS.025
94 04J04I20-Z14	14THSP03RIS2ACXA	Spine Rib 3 Accel X	2000 g	4-056 SIDiIs FTSS.026
95 03D03D09-N10	14THSP03RIS2ACYA	Spine Rib 3 Accel Y	2000 g	4-056 SIDiIs FTSS.027
96 03F03F09-N17	14THSP03RIS2ACZA	Spine Rib 3 Accel Z	2000 g	4-056 SIDiIs FTSS.028
97 04J04I01-R18	14SPIN1200S2ACXA	Lower Spine Accel X	2000 g	4-056 SIDiIs FTSS.029
98 03E03D30-N04	14SPIN1200S2ACYA	Lower Spine Accel Y	2000 g	4-056 SIDiIs FTSS.030
99 04J04I01-R10	14SPIN1200S2ACZA	Lower Spine Accel Z	2000 g	4-056 SIDiIs FTSS.031
100 04J04I08-F25	14ABSP02RIS2ACXA	Spine Rib 5 Accel X	2000 g	4-056 SIDiIs FTSS.032
101 00L13-F04	14ABSP02RIS2ACYA	Spine Rib 5 Accel Y	2000 g	4-056 SIDiIs FTSS.033
102 04J04I20-Z08	14ABSP02RIS2ACZA	Spine Rib 5 Accel Z	2000 g	4-056 SIDiIs FTSS.034
103 IF-414-101-MX	14LUSP0000S2MOXA	Lumbar Moment X	451.9 N	4-056 SIDiIs FTSS.058
104 IF-414-101-MY	14LUSP0000S2MOYA	Lumbar Moment Y	451.9 N	4-056 SIDiIs FTSS.059
105 IF-414-101-MZ	14LUSP0000S2MOZA	Lumbar Moment Z	226 N	4-056 SIDiIs FTSS.060
106 02I02I10-N22	14TRRI01LES2ACXA	Thorax Rib 1 Accel X	2000 g	4-056 SIDiIs FTSS.035
107 99H12-F11	14TRRI01LES2ACYA	Thorax Rib 1 Accel Y	2000 g	4-056 SIDiIs FTSS.036
108 03E03E20-N04	14TRRI01LES2ACZA	Thorax Rib 1 Accel Z	2000 g	4-056 SIDiIs FTSS.037
109 02A16-A07	14TRRI02LES2ACXA	Thorax Rib 2 Accel X	2000 g	4-056 SIDiIs FTSS.038
110 02I02I05-F23	14TRRI02LES2ACYA	Thorax Rib 2 Accel Y	2000 g	4-056 SIDiIs FTSS.039
111 02A16-A10	14TRRI02LES2ACZA	Thorax Rib 2 Accel Z	2000 g	4-056 SIDiIs FTSS.040
112 04J04I07-Z16	14TRRI03LES2ACXA	Thorax Rib 3 Accel X	2000 g	4-056 SIDiIs FTSS.041
113 04J04I01-R06	14TRRI03LES2ACYA	Thorax Rib 3 Accel Y	2000 g	4-056 SIDiIs FTSS.042
114 04J04I01-R13	14TRRI03LES2ACZA	Thorax Rib 3 Accel Z	2000 g	4-056 SIDiIs FTSS.043
115 03D03D16-F04	14ABRI01LES2ACXA	Abdomen Rib 1 Accel X	2000 g	4-056 SIDiIs FTSS.044
116 03D03D09-N07	14ABRI01LES2ACYA	Abdomen Rib 1 Accel Y	2000 g	4-056 SIDiIs FTSS.045
117 04J04I20-Z23	14ABRI01LES2ACZA	Abdomen Rib 1 Accel Z	2000 g	4-056 SIDiIs FTSS.046
118 99H12-F20	14ABRI02LES2ACXA	Abdomen Rib 2 Accel X	2000 g	4-056 SIDiIs FTSS.047
119 99H12-F24	14ABRI02LES2ACYA	Abdomen Rib 2 Accel Y	2000 g	4-056 SIDiIs FTSS.048
120 03E03E21-M19	14ABRI02LES2ACZA	Abdomen Rib 2 Accel Z	2000 g	4-056 SIDiIs FTSS.049
121 01G25-N14	14PELVCG00S2ACXA	Pelvis Accel X	2000 g	4-056 SIDiIs FTSS.061
122 01G25-N05	14PELVCG00S2ACYA	Pelvis Accel Y	2000 g	4-056 SIDiIs FTSS.062
123 03E03E18-F05	14PELVCG00S2ACZA	Pelvis Accel Z	2000 g	4-056 SIDiIs FTSS.063
124 IF-520-102-FY	14ACTBLE00S2FOYA	Left Acetabulum Force Y	8896 N	4-056 SIDiIs FTSS.064
125 IF-507-101-FY	14ILACLE00S2FOYA	Left Iliac Wing Force Y	13344 N	4-056 SIDiIs FTSS.065
126 IF-625-111-FX	14FEMRRI00S2FOXA	Right Femur Force X	13344 N	4-056 SIDiIs FTSS.072
127 IF-625-111-FY	14FEMRRI00S2FOYA	Right Femur Force Y	13344 N	4-056 SIDiIs FTSS.073

128 IF-625-111-FZ	14FEMRRI00S2FOZA	Right Femur Force Z	22240 N	4-056 SIDIIIs FTSS.074
129 IF-625-111-MX	14FEMRRI00S2MOXA	Right Femur Moment X	339 N-m	4-056 SIDIIIs FTSS.075
130 IF-625-111-MY	14FEMRRI00S2MOYA	Right Femur Moment Y	339 N-m	4-056 SIDIIIs FTSS.076
131 IF-625-111-MZ	14FEMRRI00S2MOZA	Right Femur Moment Z	339 N-m	4-056 SIDIIIs FTSS.077
132 IF-625-110-FX	14FEMRLE00S2FOXA	Left Femur Force X	13344.6 N	4-056 SIDIIIs FTSS.066
133 IF-625-110-FY	14FEMRLE00S2FOYA	Left Femur Force Y	13344 N	4-056 SIDIIIs FTSS.067
134 IF-625-110-FZ	14FEMRLE00S2FOZA	Left Femur Force Z	22241 N	4-056 SIDIIIs FTSS.068
135 IF-625-110-MX	14FEMRLE00S2MOXA	Left Femur Moment X	339 N-m	4-056 SIDIIIs FTSS.069
136 IF-625-110-MY	14FEMRLE00S2MOYA	Left Femur Moment Y	339 N-m	4-056 SIDIIIs FTSS.070
137 IF-625-110-MZ	14FEMRLE00S2MOZA	Left Femur Moment Z	339 N-m	4-056 SIDIIIs FTSS.071
138 P46492	16SILBFR0000ACXA	Right Side Sill at Front Seat X-axis Acceleration	400 g	
139 P46476	16SILBFR0000ACYA	Right Side Sill at Front Seat Y-axis Acceleration	1000 g	
140 P46478	16SILBFR0000ACZA	Right Side Sill at Front Seat Z-axis Acceleration	400 g	
141 P46473	16SILBRE0000ACXA	Right Side Sill at Rear Seat X-axis Acceleration	400 g	
142 P47527	16SILBRE0000ACYA	Right Side Sill at Rear Seat Y-axis Acceleration	1000 g	
143 P46483	16SILBRE0000ACZA	Right Side Sill at Rear Seat Z-axis Acceleration	400 g	
144 P42130	18FORA000000ACXA	Rear Floorpan Above Axle X-axis Acceleration	1000 g	
145 P45713	18FORA000000ACYA	Rear Floorpan Above Axle Y-axis Acceleration	1000 g	
146 P46013	18FORA000000ACZA	Rear Floorpan Above Axle Z-axis Acceleration	1000 g	
147 P47475	14SILBRE0000ACYA	Left Side Sill at Rear Seat Y-axis Acceleration	1000 g	
148 P47317	14SILBFR0000ACYA	Left Side Sill at Front Seat Y-axis Acceleration	1000 g	
149 P47530	16VEHCRE0000ACYA	Right Rear Occupant Compartment Y-axis Accel	1500 g	
150 P34021	14BPILLO0000ACYA	Left Lower B-Post Y-axis Accel	1500 g	
151 P40227	14BPILMI0000ACYA	Left Middle B-Post Y-axis Accel	1500 g	
152 J18063	11APILLO0000ACYA	Left Lower A-Post Y-axis Accel	1500 g	
153 P42044	11APILMI0000ACYA	Left Middle A-Post Y-axis Accel	1500 g	
154 P47483	11SETRFR0000ACYA	Left Front Seat Track Y-axis Acceleration	1500 g	
155 P47326	14SETRLERE00ACYA	Left Rear Seat Track Y-axis Acceleration	1500 g	
156 P46480	10VEHCCG0000ACXA	Vehicle Center of Gravity X-axis Acceleration	1000 g	
157 P47311	10VEHCCG0000ACYA	Vehicle Center of Gravity Y-axis Acceleration	1000 g	
158 P46494	10VEHCCG0000ACZA	Vehicle Center of Gravity Z-axis Acceleration	1000 g	
159 P46045	12ENGN000000ACXA	Top of Engine X-axis Acceleration	1000 g	
160 P44291	12ENGN000000ACYA	Top of Engine Y-axis Acceleration	1000 g	
161 P39842	12VEHC000000ACXA	Firewall X-axis Acceleration	1000 g	
162 P34231	12VEHC000000ACYA	Firewall Y-axis Acceleration	1000 g	
163 P37737	13ROFR000000ACXA	Right Roof Rail X-axis Acceleration	1000 g	
164 P32450	13ROFR000000ACYA	Right Roof Rail Y-axis Acceleration	1000 g	
165 P38078	11DOOR000001ACYA	Left Front Door centerline 430 mm above ground Y-axis accel (NHTSA #6)	1000 g	
166 P39865	11DOOR000002ACYA	Left Front Door mid-rear 430 mm above ground Y-axis accel (NHTSA #8)	1000 g	
167 P38842	11DOOR000003ACYA	Left Front Door upper centerline 685 mm above ground Y-axis accel (NHTSA #9)	1000 g	
168 P44289	14DOOR000001ACYA	Left Rear Door mid-rear 685 mm above ground Y-axis accel (NHTSA #10)	1000 g	
169 P34005	14DOOR000002ACYA	Left Rear Door upper centerline 685 mm above ground Y-axis accel (NHTSA #11)	1000 g	
170 P45717	M0VEHCCG0000ACXA	MDB Center of Gravity X-axis Acceleration	600 g	

171 P45731	M0VEHCCG0000ACYA	MDB Center of Gravity Y-axis Acceleration	600 g
172 P45728	M0VEHCCG0000ACZA	MDB Center of Gravity Z-axis Acceleration	600 g
173 P39845	M7FRAM000000ACXA	MDB Left Rear X-axis Acceleration (on left frame over axle)	600 g
174 P39982	M7FRAM000000ACYA	MDB Left Rear Y-axis Acceleration (on left frame over axle)	600 g
175 Bit.00	M3CONT000000EV00	MDB Right Side Contact Switch	1 Logic
176 Bit.01	M1CONT000000EV00	MDB Left Side Contact Switch	1 Logic
177 ABFire1	11SENS000001VO0A	Side torso Airbag fire	5 V
178 ABFire2	13SENS000001VO0A	Non-struck Side torso Airbag fire (disable bag)	5 V
179 Bit.00	11CONT000001EV00	Dummy head contact	1 Logic
180 Bit.01	11CONT000002EV00	Dummy shoulder contact	1 Logic
181 Bit.02	11CONT000003EV00	Dummy torso contact	1 Logic
182 Bit.03	11CONT000004EV00	Dummy leg contact	1 Logic
183 Bit.04	14CONT000001EV00	Dummy head contact	1 Logic
184 Bit.05	14CONT000002EV00	Dummy shoulder contact	1 Logic
185 Bit.06	14CONT000003EV00	Dummy torso contact	1 Logic
186 Bit.07	14CONT000004EV00	Dummy leg contact	1 Logic
187 3860-020SHD	11SHRILE00S2DSYA	Shoulder Disp. Y	75 mm 1-020 SIDIIIs FTSS.019
188 3861-020RB1	11TRRI01LES2DSYA	Thorax Rib 1 Disp. Y	75 mm 1-020 SIDIIIs FTSS.050
189 3861-020RB2	11TRRI02LES2DSYA	Thorax Rib 2 Disp. Y	75 mm 1-020 SIDIIIs FTSS.051
190 3861-020RB3	11TRRI03LES2DSYA	Thorax Rib 3 Disp. Y	75 mm 1-020 SIDIIIs FTSS.052
191 3861-020RB4	11ABRI01LES2DSYA	Abdomen Rib 1 Disp. Y	75 mm 1-020 SIDIIIs FTSS.053
192 3861-020RB5	11ABRI02LES2DSYA	Abdomen Rib 2 Disp. Y	75 mm 1-020 SIDIIIs FTSS.054
193 180-3860-056SHLD	14SHRILE00S2DSYA	Shoulder Disp. Y	75 mm 4-056 SIDIIIs FTSS.019
194 180-3860-056RIB1	14TRRI01LES2DSYA	Thorax Rib 1 Disp. Y	75 mm 4-056 SIDIIIs FTSS.050
195 180-3860-056RIB2	14TRRI02LES2DSYA	Thorax Rib 2 Disp. Y	75 mm 4-056 SIDIIIs FTSS.051
196 180-3860-056RIB3	14TRRI03LES2DSYA	Thorax Rib 3 Disp. Y	75 mm 4-056 SIDIIIs FTSS.052
197 180-3860-056RIB4	14ABRI01LES2DSYA	Abdomen Rib 1 Disp. Y	75 mm 4-056 SIDIIIs FTSS.053
198 180-3860-056RIB5	14ABRI02LES2DSYA	Abdomen Rib 2 Disp. Y	75 mm 4-056 SIDIIIs FTSS.054

LEFT SIDE IMPACT OF 2005 SUBARU FORESTER / 050718





CERTIFICATE OF CONFORMITY

Certificate No. 19997
Serial No. EH 342

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

Product Description	FMVSS 214 - 1750x740x550mm Spec with 1.6 3/8 5052 Painted Grey
Cellbond Part No.	70NHTSASIUS G

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	27012-19	P144787A00	N/A
2	27557-64	P142611-B01	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
Germany
United States of America



0507189000
ISO 9001:2000



NHTSA 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: 27012-19

GR No: P144787A00
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	44.455	44.653	44.637	PASS
Sample 2	43.608	43.010	43.916	PASS
Sample 3	44.265	44.296	45.028	PASS
Sample 4	43.270	43.687	44.283	PASS
Sample 5	45.614	46.000	45.768	PASS
Sample 6	45.001	44.565	44.663	PASS
Sample 7	45.019	45.990	45.295	PASS
Sample 8	43.732	44.167	44.142	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

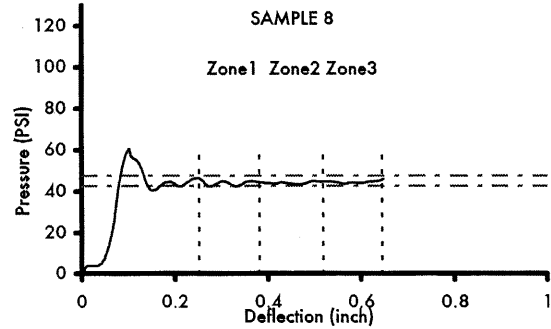
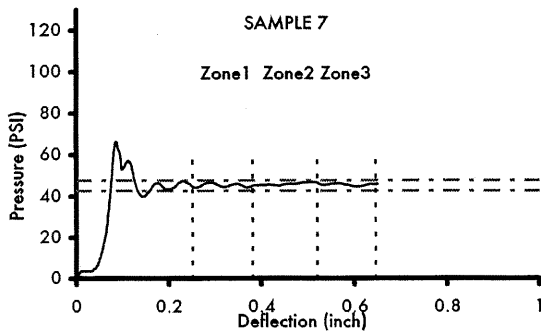
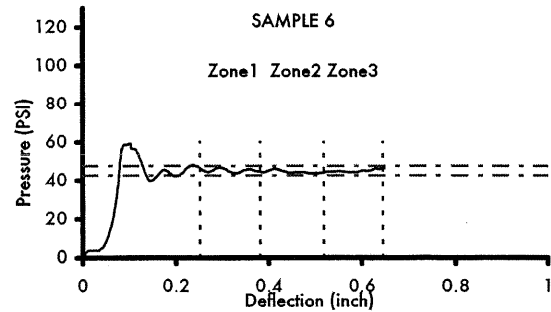
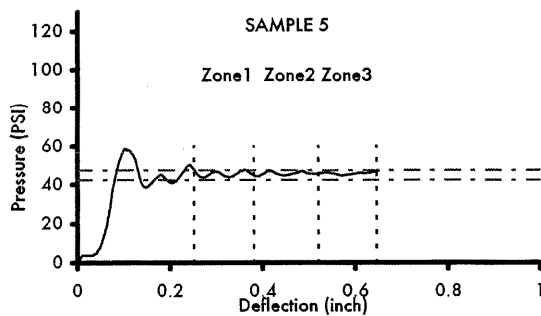
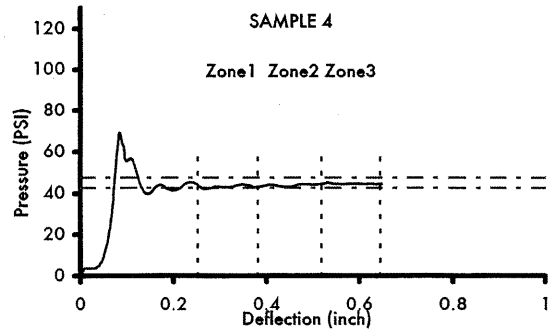
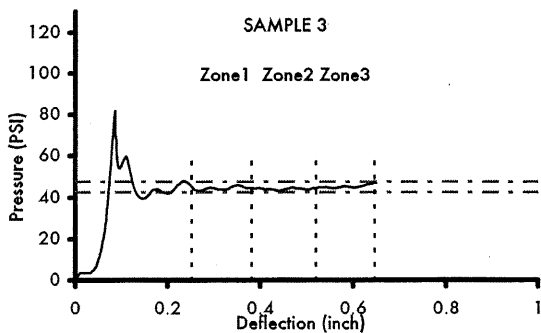
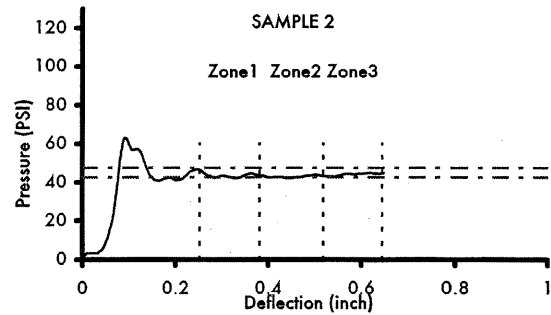
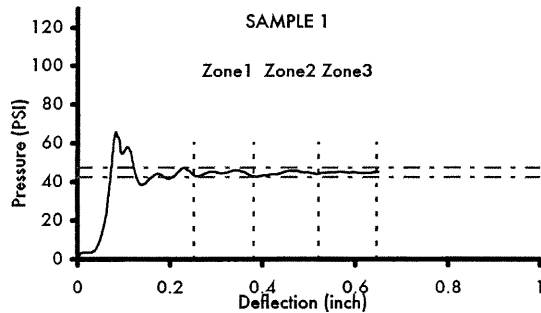
NHTSA DEFORMABLE SIDE IMPACT BARRIER
MAIN BLOCK

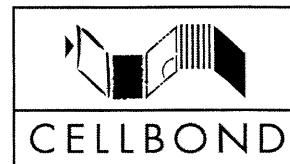
Honeycomb Type: 1.6 3/8 5052
Higher Acceptable Crush Strength Limit: 47.5 PSI
Lower Acceptable Crush Strength Limit: 42.5 PSI

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
Block No: N/A

Test No: 27012-19

GR No: P144787A00





NHTSA 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: 27557-64

GR No: P142611-B01

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	251.93	249.17	247.96	PASS
Sample 2	256.67	257.42	257.66	PASS
Sample 3	253.33	252.23	252.03	PASS
Sample 4	255.75	254.79	253.81	PASS
Sample 5	258.12	258.58	257.48	PASS
Sample 6	251.35	248.38	246.05	PASS
Sample 7	253.79	252.83	253.92	PASS
Sample 8	243.90	242.13	237.15	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 DEFORMABLE SIDE IMPACT BARRIER BUMPER

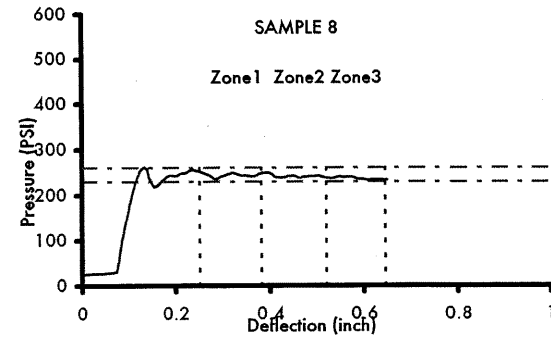
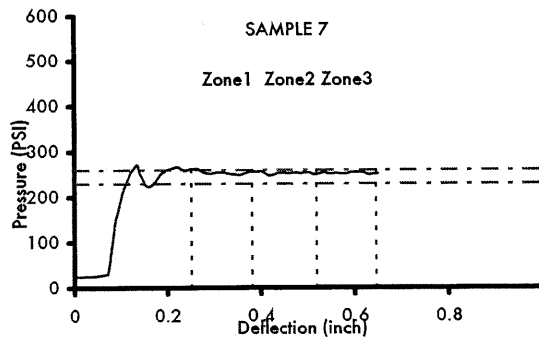
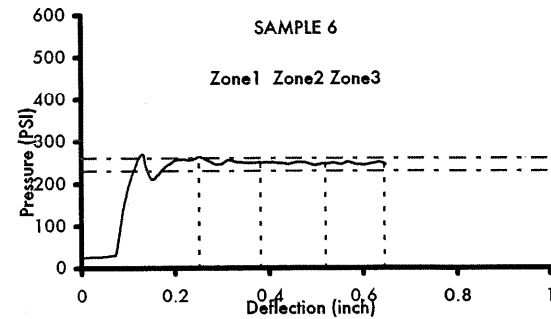
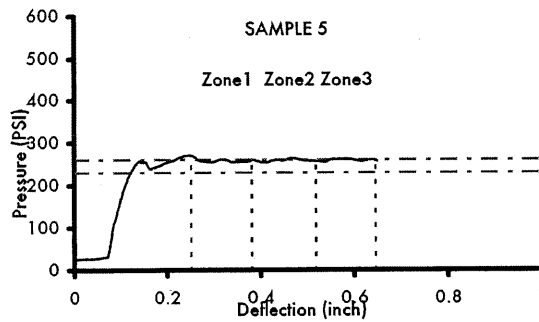
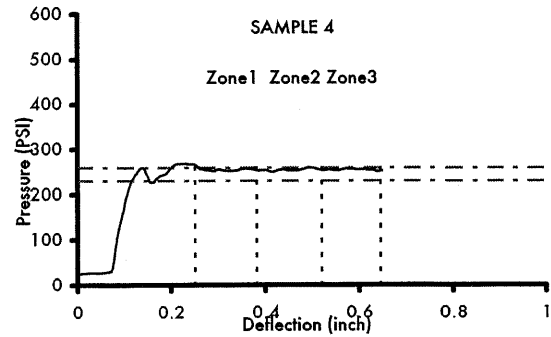
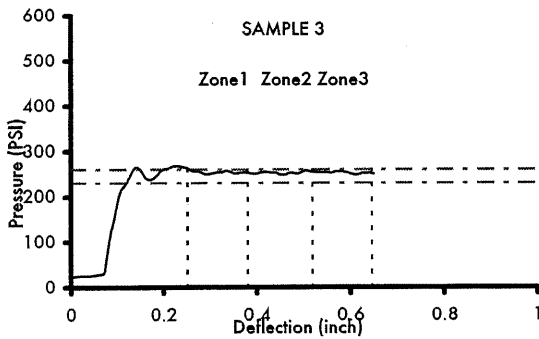
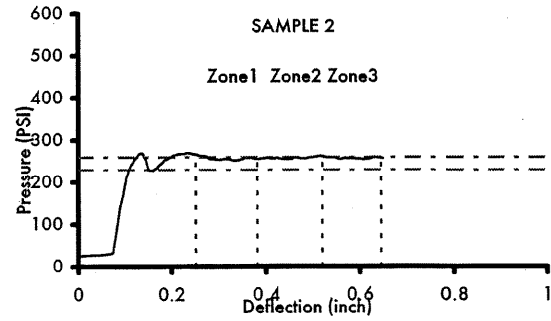
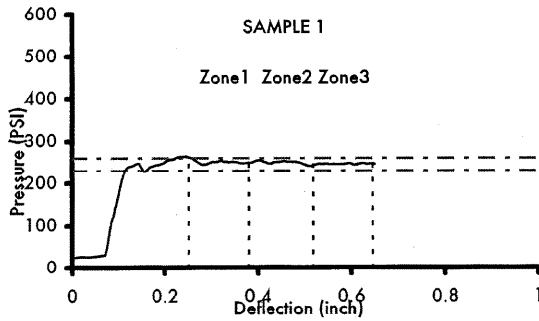
Honeycomb Type: 5.2 1/4 3003
Higher Acceptable Crush Strength Limit: 260 PSI
Lower Acceptable Crush Strength Limit: 230 PSI

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: 27557-64

GR No: P142611-B01

Block No: N/A



Appendix E

INSIA Report on Structural Measurements



STRUCTURAL SURVEY OF CARS. MEASUREMENT METHODOLOGY OF THE MAIN RESISTANT ELEMENTS IN THE CAR BODY

**APARICIO IZQUIERDO, FRANCISCO
PÁEZ AYUSO, FRANCISCO JAVIER**

**INSIA
Carretera de Valencia, km. 7
Campus Sur de la Universidad Politécnica de Madrid
28031 – MADRID – (SPAIN)**

March, 1999

REPORT DOCUMENTATION PAGE**Title:**

STRUCTURAL SURVEY OF CARS. MEASUREMENT METHODOLOGY OF THE MAIN RESISTANT ELEMENTS IN THE CAR BODY

Author(s):

Aparicio Izquierdo, Francisco
Páez Ayuso, Francisco Javier

Performing Organisation name and address:

INSIA – University Institute for Automobile Research
Carretera de Valencia, Km. 7 – Campus Sur de la Universidad Politécnica de Madrid
28031 – Madrid – Spain

Supplementary notes:

Under contract to:

THE EUROPEAN COMMUNITY

Project: “Improvement of Crash Compatibility between Cars”

Contract N°: RO – 97 – SC.1064

Abstract:

The main aim of this working package -*Structural Survey of Cars*- is the reduction of incompatibilities, both structural and geometric, between passenger vehicles and their potential collision partners. The understanding of these incompatibilities needs a previous step for the knowledge of the existing car fleet.

Firstly, it is necessary to select the main resistant elements in the car body. These elements have to be chosen from the point of view of the sort of collision that we want to study, that is to say, frontal and side impacts.

Detailed measurements have been taken from exterior and interior elements, spread to a total number of 74 models selected from the main vehicle manufacturers at Spain. All of them are being sold this year. Using the information available from the previous measurements in vehicles, the geometric characteristics of the main resistant elements involved in the geometric compatibility between cars will be defined.

This report shows the methodology followed to get these measurements.

Subject terms:

Crash compatibility, geometric compatibility, resistant elements, measure methodology

Date:

March, 1999

1.- METHODOLOGY.

Detailed measurements have been taken from exterior and interior elements. Using the information available from the previous measurements in vehicles, the geometric characteristics of the main resistant elements involved in the geometric compatibility between cars have been defined. These elements are presented in the following figures, and have been divided in two main groups according to the vehicle zones studied in this project.

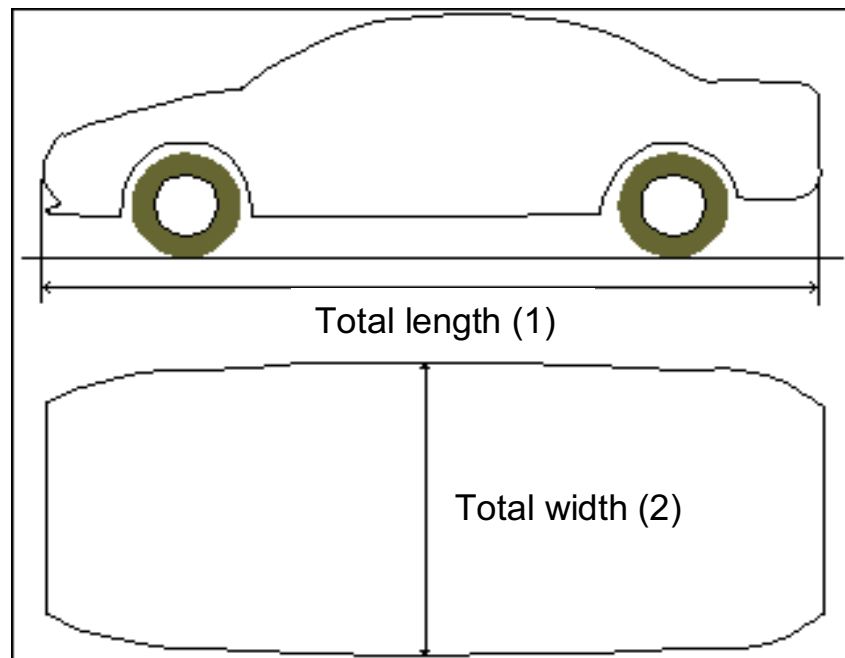


Figure 1.- Definition of the main resistant elements. General dimensions.

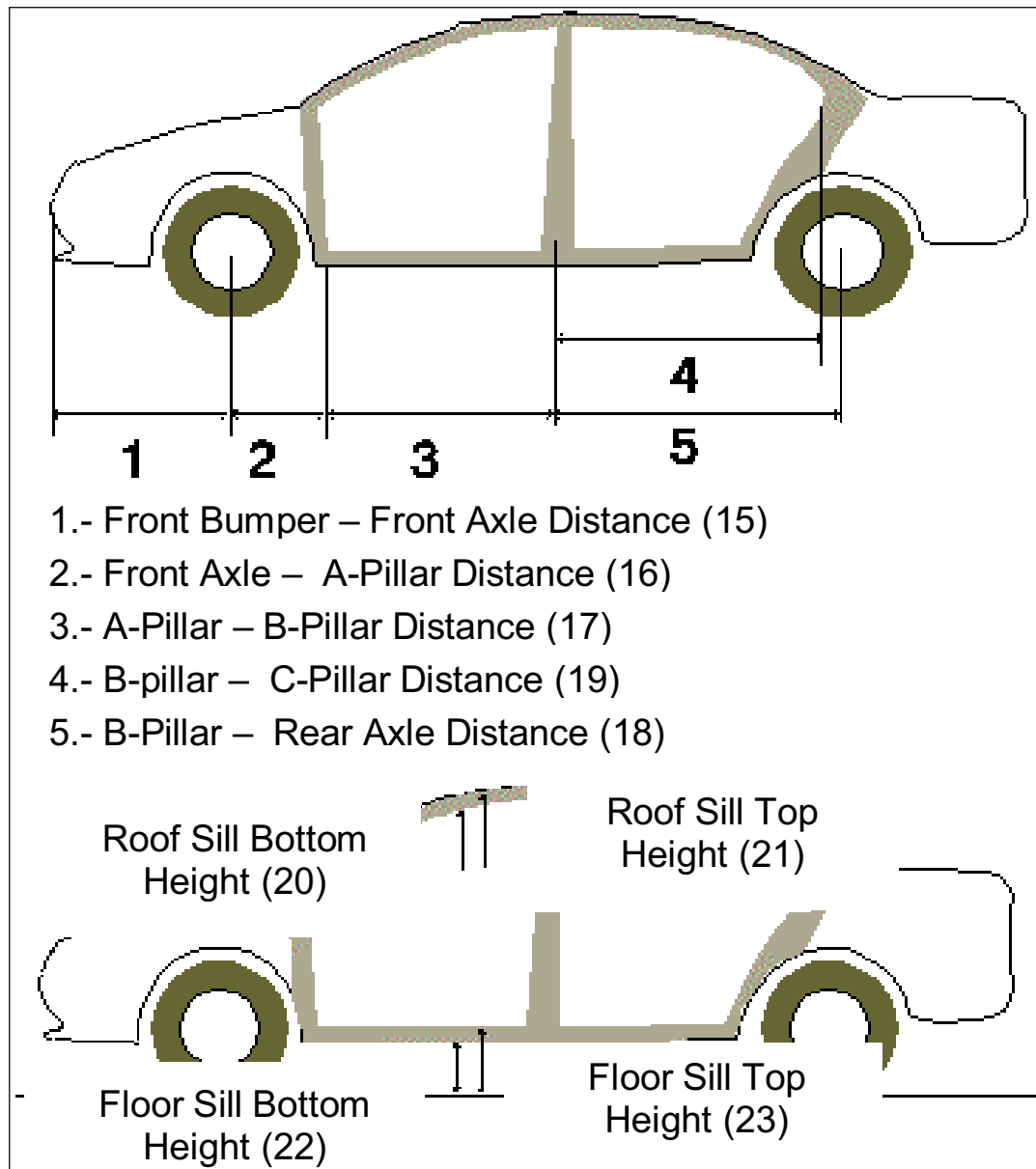


Figure 2.- Definition of the main resistant elements. Side elements.

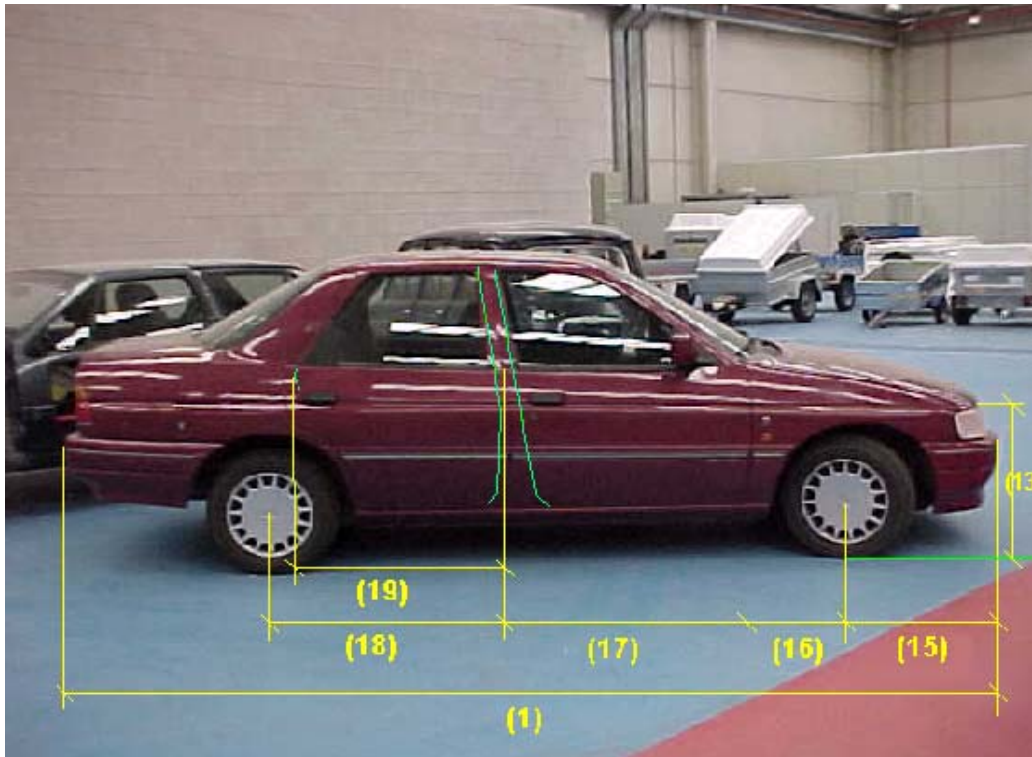


Figure 3.-
Measurements of
the side resistant
elements (outer).

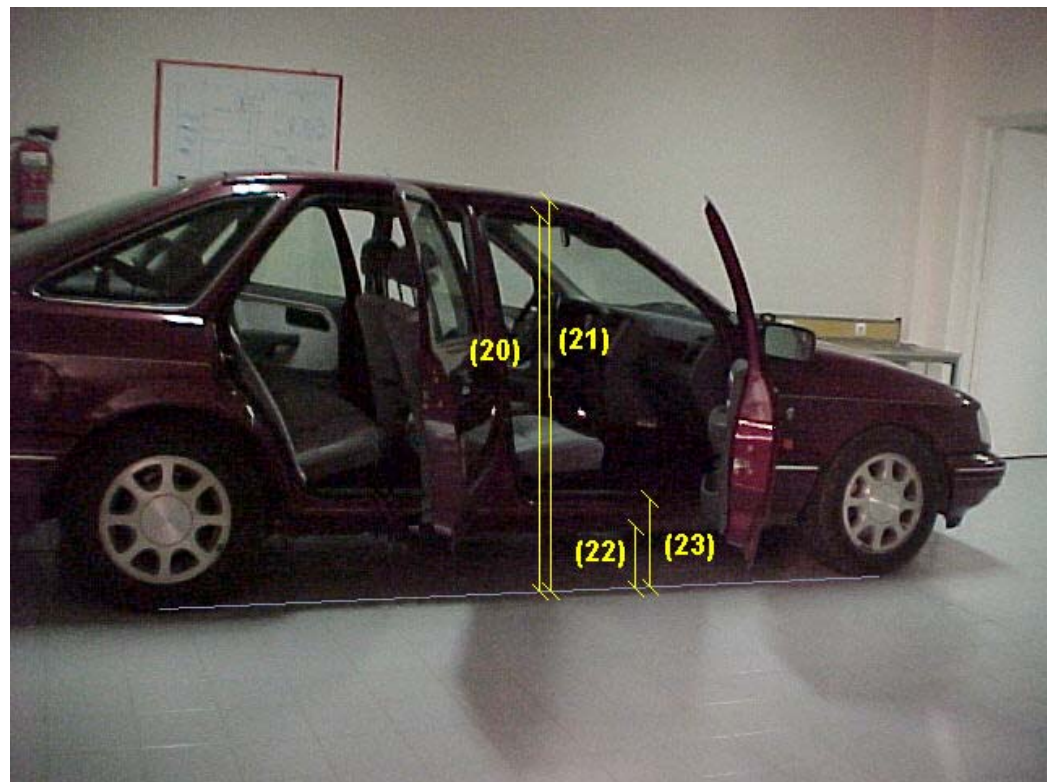


Figure 4.- Measurements
of the side resistant
elements (inner).

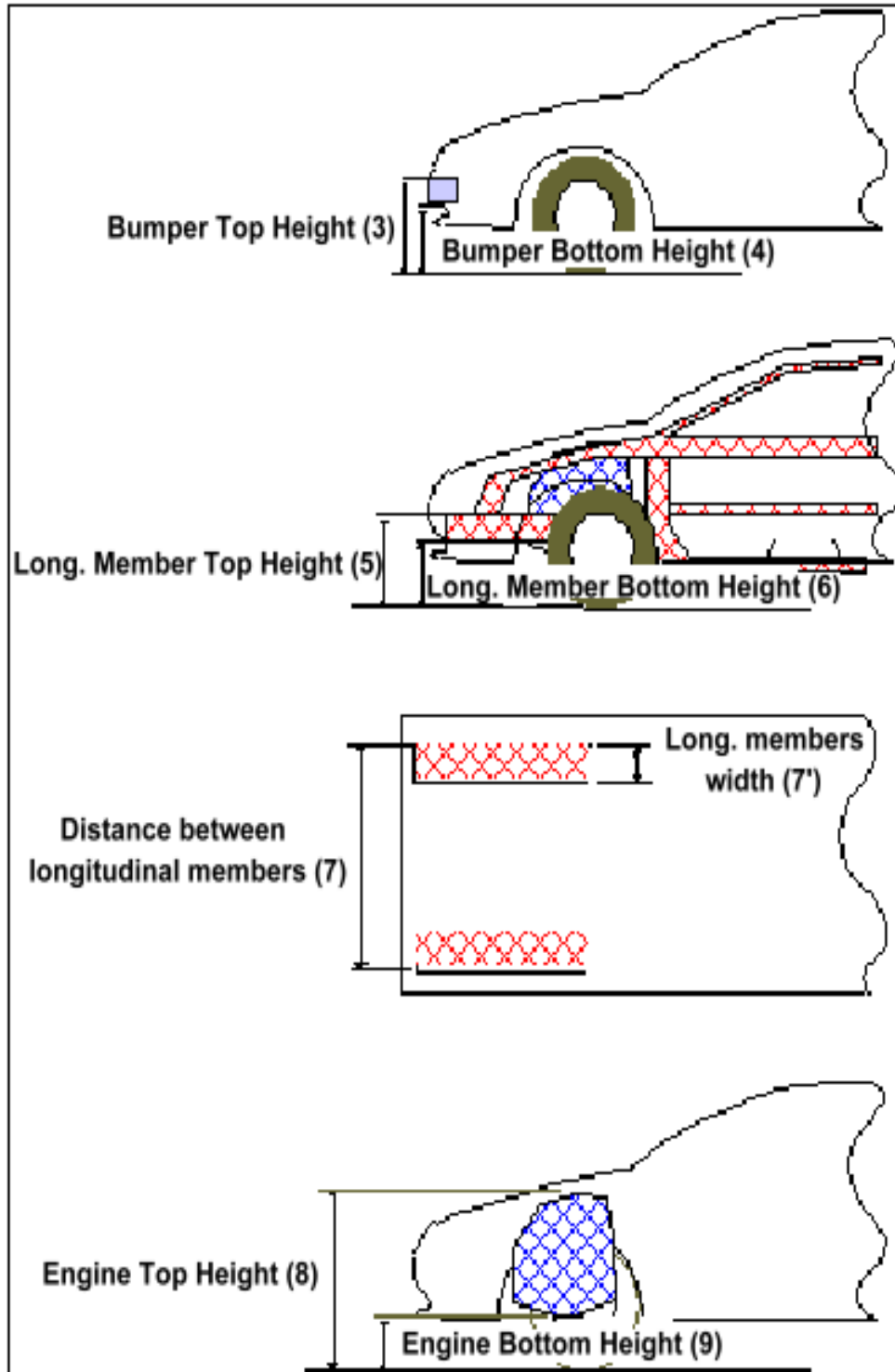


Figure 5.- Definition of the main resistant elements. Front elements.

Figure 6.-
Measurements of the
main resistant elements.
Front elements 1.

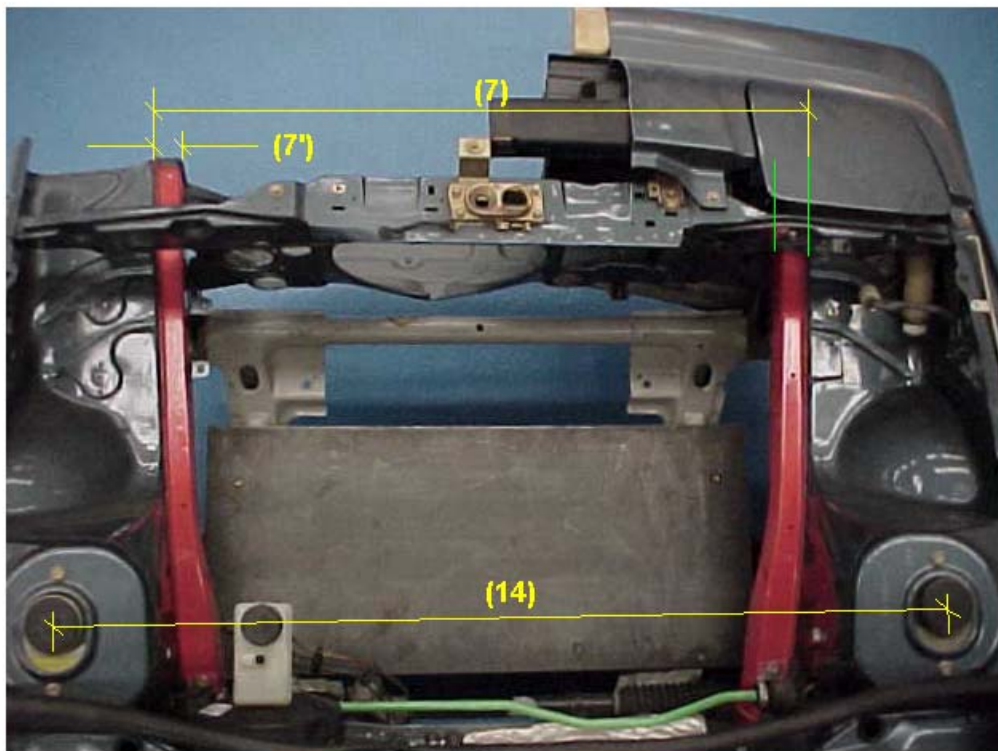
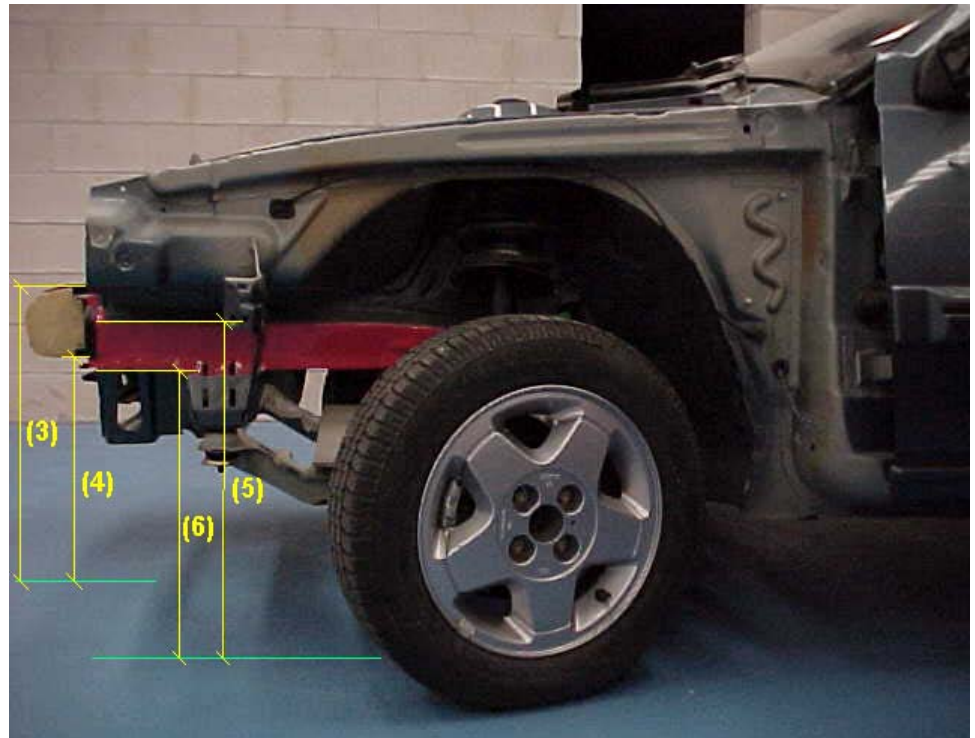


Figure 7.-
Measurements
of the main
resistant
elements. Front
elements 2.

Figure 8.-
Measurements of
the main resistant
elements. Front
elements 3.

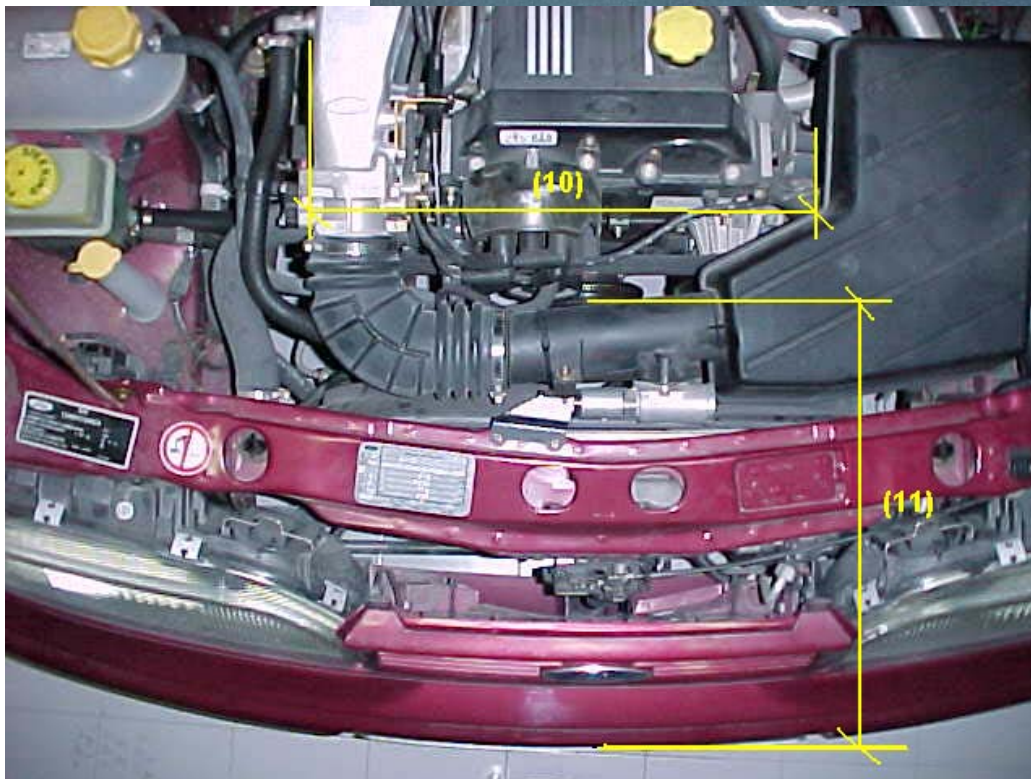
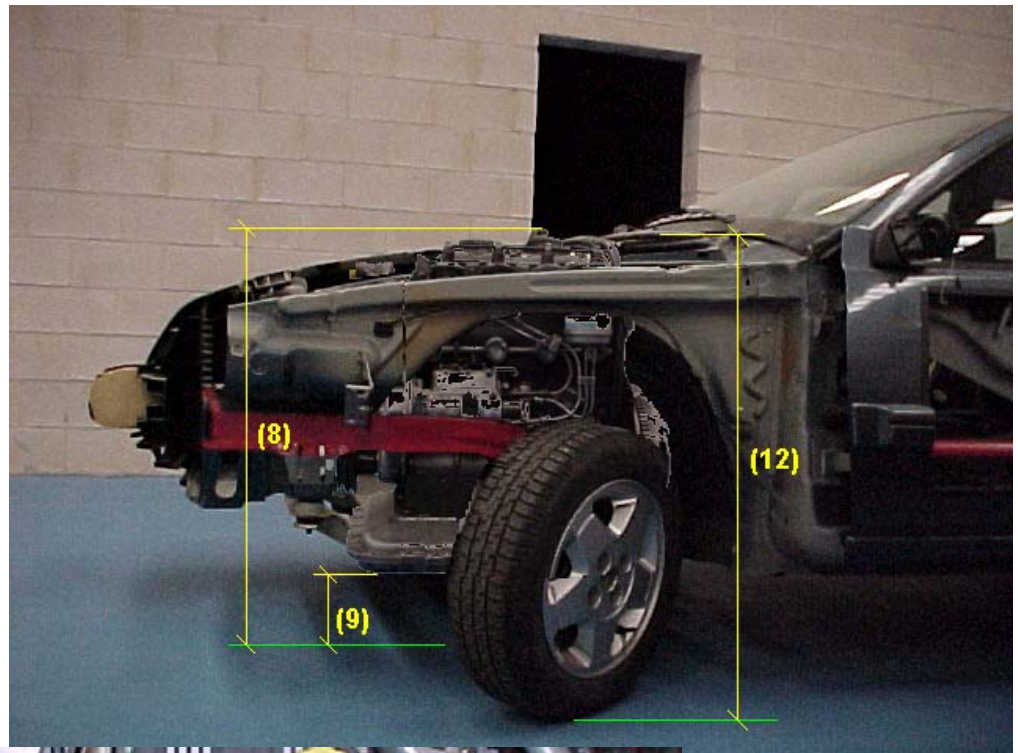


Figure 9.-
Definition of
the main
resistant
elements. Front
elements
(Longitudinal
engine).



The procedure considered to measure these elements is described as follows, where it is indicated the location of these ones in the Excel Sheet (SURVEY.XLS) into brackets:

FRONT ELEMENTS

- **Total Length –(1)- (Side & Front Sheets - C column):** distance between the point in the front bumper further on and the point in the rear bumper further back.
- **Weight (Side & Front Sheets - D column):** mass, including an average driver weight (70 kg), and the fuel tank mass (at half-capacity).
- **Total Width –(2)- (Side & Front Sheets - E column):** distance between the outer side points in a transverse plane of the vehicle (middle plane between the front and rear axles).
- **Bumper bottom height –(4)- (Front Sheet G column):** distance between the ground and the lowest point on the front bumper, being a resistant member (aerodynamic elements under the front bumper are not considered).
- **Bumper top height –(3)- (Front Sheet H column):** distance between the ground and the highest point on the front bumper, being a resistant member (aerodynamic elements are not considered).
- **Longitudinal member top height –(5)- (Front Sheet I column):** distance between the ground and the highest point on the longitudinal members, measured approximately in the front bumper-longitudinal member joint (when accessible).
- **Longitudinal member bottom height –(6)- (Front Sheet J column):** distance between the ground and the lowest point on the longitudinal members, measured approximately in the front bumper-longitudinal member joint.
- **Distance between longitudinal members (Front Sheet K column):** transverse distance between extreme points in longitudinal members, measured approximately in the front bumper-longitudinal member joint.

Depending on the accessibility of these members, the extreme points are the inner points (I) or the outer points (O).

- **Longitudinal member width -7'- (Front Sheet L column):** width of one of the longitudinal members, measured approximately in the front bumper-longitudinal member joint.

- **Engine top height (8) (Front Sheet N column):** distance between the ground and the highest point on the engine that can be a resistant member in case of accident (usually, the highest point on the head, or the highest point of the inlet or exhaust manifolds).
- **Engine bottom height (9) (Front Sheet M column):** distance between the ground and the lowest point on the engine (usually, the lowest point on the crankcase).
- **Engine and Gearbox width (10) (Front Sheet O & P columns):**
 - *Transverse configuration engine:* distance between extreme points in the gearbox-cylinder block unit or others resistant members attached to the cylinder block unit, i.e. fan belts (from a front point of view).
 - *Longitudinal configuration engine:* distance between extreme points in the cylinder block unit (from a front point of view).
- **Front bumper - Engine distance (11) (Front Sheet Q column):** distance between the point in the front bumper further on and the point in the engine further on that is a resistant element, i.e. the further on point of the exhaust manifold placed in the front of the engine.
- **Front shock absorber fixing width (14) (Front Sheet R column):** transverse distance between the front shock absorber - body car joints.
- **Front shock absorber fixing height (12) (Front Sheet S column):** distance between the ground and the front shock absorber-body car joint.
- **Bonnet leading edge height (Front Sheet T column):** distance between the ground and the bonnet edge further on.

SIDE ELEMENTS

- **Front bumper - Front axle distance (15) (Side Sheet G column):** distance between the point in the front bumper further on and the middle point in the front tyre-road contact patch.
- **Front axle - A Pillar distance (16) (Side Sheet H column):** distance between the middle point in the front tyre-road contact patch and the point in the A-pillar further back.
- **A Pillar - B Pillar distance (17) (Side Sheet I column):** distance between the point in the A-pillar further back and the middle point in the B-pillar.
- **B Pillar - C Pillar distance (19) (Side Sheet J column):** distance between the middle point in the B-pillar and the point in the C-pillar further back (only 4/5-door vehicles).
- **B Pillar - Rear axle distance (18) (Side Sheet K column):** distance between the middle point in the B-pillar and the middle point in the rear tyre-road contact patch.
- **Roof sill bottom height (20) (Side Sheet L column):** distance between the ground and the lowest point on the roof sill, measured in the front door middle point.
- **Roof sill top height (21) (Side Sheet M column):** distance between the ground and the highest point on the roof sill (usually located in the sill-roof joint), measured in the front door middle point.
- **Floor sill bottom height (22) (Side Sheet N column):** distance between the ground and the lowest point on the floor sill, measured in the front door middle point.
- **Floor sill top height (23) (Side Sheet O column):** distance between the ground and the highest point on the floor sill, measured in the front door middle point.

NOTE

- N/A: dimension not available.