

**Vehicle Research and Test Center
Oblique Side Pole Impact
World SID
2010 Buick LaCrosse
TRC Inc. Test Number: 100617**

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**Final Report
June - August 2010**

**Prepared For
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TRC TEST NUMBER: 100617

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Report Approved August 6, 2010 by:



Transportation Research Center Inc.

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Section 1.0

Purpose and Test Procedure

Purpose

This side impact test is part of FMVSS 214 Oblique Pole Side Impact Protection. It 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 refine the seating procedure for the 50th male WorldSID dummy and begin to evaluate the performance of the post-FMVSS 214 fleet with the new dummy. The test was conducted in accordance with the National Highway Traffic Safety Administration's test procedure TP-214P-00 Draft4FR, August 2007.

Section 2.0

Side Impact Test

Summary of Side Impact Test

A 2010 Buick LaCrosse impacted an oblique rigid pole barrier at an angle of 74.9° between the line of forward motion and the centerline of the vehicle, at a velocity of 31.8 km/h (19.8 mph). The pole was aligned with the dummy's head center of gravity. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, Ohio on June 17, 2010. Pre-test and post-test photographs of the test vehicle, the rigid pole barrier, and the side impact dummy (World SID) are included in Appendix A.

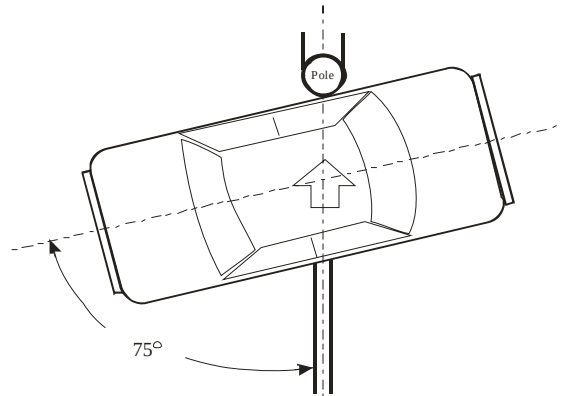
One restrained Side Impact Dummy (World SID) S/N 016, was placed in the driver (Position #1) designated seating position according to the instructions specified in the World SID Seating Procedure Draft 5.1. The World SID was calibrated prior to this test. The side impact test was documented by one (1) real-time camera and nine (9) high-speed digital cameras. Camera locations and other pertinent camera information are included in this report.

The driver front airbag, passenger front airbag, and passenger side curtain and torso airbags were disabled prior to the test performance.

The World SID instrumentation is detailed in Table 4. Eighty-four (84) dummy channels of acceleration, force, moment, and displacement data were collected for this test.

A summary of the side impact dummy (World SID) configuration and verification test data can be found in Appendix C. A total of 119 channels of data were recorded. Appendix B contains the vehicle, barrier, and dummy response data traces.

Test Results Summary



	Front World SID (#016)
HIC36 (g) CFC 1000	577
Upper Rib Deflection (mm) CFC 600	
Rib 1	43 mm
Rib 2	22 mm
Rib 3	21 mm
Lower Rib Deflection (mm) CFC 600	
Rib 1	22 mm
Rib 2	26 mm
Lower Spine Resultant (g) CFC 180	61.3 g
Pubic Symph. Force (N) CFC 600	1201 N

	2010 Buick LaCrosse
Vehicle Test Weight	1915.2 kg (4222.3 lbs)
Impact Point (Horizontal)-behind center of front axle	1380 mm
Maximum Crush	283 mm Level 3
Impact Speed	31.8 km/h

Data Acquisition Explanations

The vehicle Top of Engine X-axis acceleration data channel recorded offset data after approximately 160 milliseconds and did not return to zero following the test event.

The vehicle center of gravity roll, pitch, and yaw rate gyroscope exceeded the full scale of the transducer, but the data appears valid.

The WorldSID dummy does not have a nose so any seating measurements must be referenced to the bridge of the nose. TRC's FARO program uses the nose tip to compute some of the measurements. When asked to measure the nose tip, the bridge of nose point was used instead (in the spreadsheet, nosebridge1 and nosetip1 are the same point). The final dummy measurement page should reference only the bridge of nose.

Section 3

Summary of Test Results

Table 1 General Test Vehicle Parameter Data

Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10

TEST VEHICLE INFORMATION

Make	Buick
Model	LaCrosse
Body Style	4-door
VIN	1G4GB5GG5AF154593
Color	Silver
Odometer Reading	314
Transmission	Automatic
Final Drive	Front-wheel drive
Number of Cylinders	3
Engine Displacement	3.0L
Engine Placement	Transverse
Air Conditioning	Yes
Power Windows	Yes
Power Seats	Yes
Cruise Control	Yes
Tinted Glass	Yes
Keyless Entry	Yes

TEST VEHICLE OPTIONS

Driver Front Airbag	Yes
Driver Side Curtain Airbag	Yes
Driver Side Torso Airbag	Yes
Rear Passenger Side/Curtain Airbag	Yes
Rear Passenger Side Torso Airbag	--- ¹
Power Steering	Yes
Power Door Locks	Yes
Tilt Wheel	Yes
Anti-lock Brakes	Yes
Traction Control	No
Bucket Seats	Yes
Rear Defroster	Yes
2-Door/4-Door	4
AM/FM Radio	Yes
CD Player	Yes
Sun Roof	No
Telescoping Steering Wheel/Column	No

DATA FROM CERTIFICATION LABEL

Manufactured By	General Motors Corporation
Date of Manufacture	10/09

GVWR (kg)	2225
GAWR Front (kg)	1157
GAWR Rear (kg)	1068

Measured Parameter	Front	Mid	Rear	Total
Type of Seats	Bucket	None	Split Bench	
Number Of Occupants	2	0	3	5
Capacity Wt. (VCW) (kg)				420

¹ Not applicable to test mode.

Table 1 General Test Vehicle Parameter Data, Continued

Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10

TEST VEHICLE WEIGHTS

	Units	As Delivered (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	537.0	363.4		579.6	388.6	
Right	kg	510.4	360.0		548.4	398.6	
Ratio	%	59.1	40.9		58.9	41.1	
Totals	kg	1047.4	723.4	1770.8	1128.0	787.2	1915.2

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight	kg	1770.8
Weight of World SID ATD	kg	76.0
Rated Cargo/Luggage Weight (RCLW)	kg	80.0
Calculated Vehicle Target Weight (TVTW)	kg	1926.8

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG(aft of front axle)
As Delivered	mm	726	728	733	742	1158
As Tested	mm	715	715	730	735	1165
Fully Loaded	mm	722	725	714	724	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheelbase	mm	2835
Total Vehicle Length at Left Side	mm	4620
Total Vehicle Length at Centerline	mm	4960
Total Vehicle Length at Right Side	mm	4620
Weight of Ballast	kg	0
Amount of Stoddard Solvent in Fuel Tank	liters	64.7

TEST VEHICLE IMPACT ACCURACY DATA

Measurement Description	Units	Intended	Actual	Difference
Impact Reference Line From Front Axle	mm	1380	1380	0
Impact Point Angle	Degrees	75	74.9	0.1

Table 1 General Test Vehicle Parameter Data, Continued

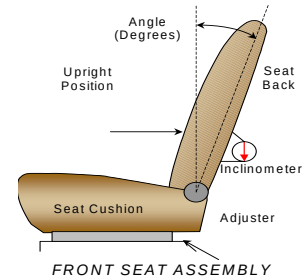
Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10

WORLD SID RIDING POSITION

The driver seat back is positioned according to the procedure defined in SAE J826, “Devices for use in Defining and Measuring Vehicle Seating Accommodation”, November, 2008.

Driver seat back angle: The back was adjusted to 16.0° rearward of vertical measured at the head restraint.

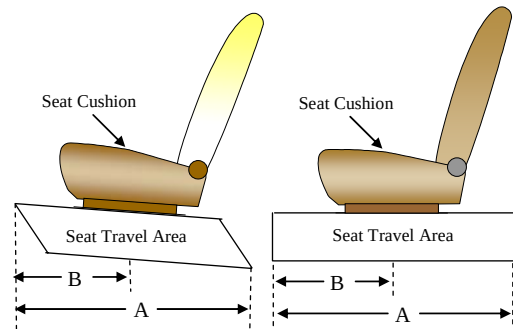


SEAT FORE/AFT POSITIONS

The total seat travel was measured from forward most position to rearmost position, irrespective of vertical seat height in those positions. The seat was set at the longitudinal mid position with vertical adjustment at the lowest position obtainable for the driver. The rear seating position was not tested.

SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position No.
Driver Seat	270 Notches	160 Notches
Rear Seat	Not applicable	Not applicable



SEAT BELT UPPER ANCHORAGE

	Total No. of Positions	Placed in Position No.
Driver Seat	5	3
Rear Seat	Not applicable	Not applicable

Position number one is the uppermost adjustment position.

Table 1 General Test Vehicle Parameter Data, Continued

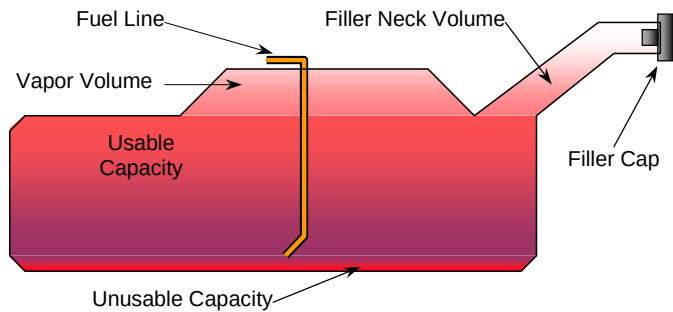
Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	70.0
Usable Capacity used for FMVSS 301	65.1-66.5
Actual Amount of Solvent used	64.7

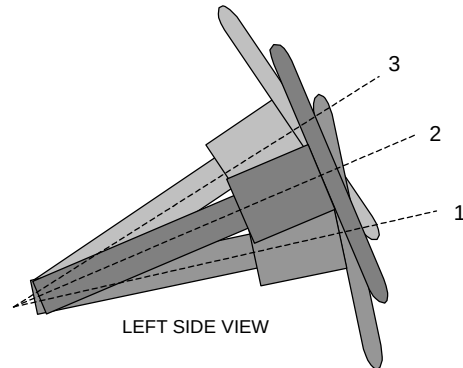
The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the rear seat.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured.



STEERING COLUMN ASSEMBLY

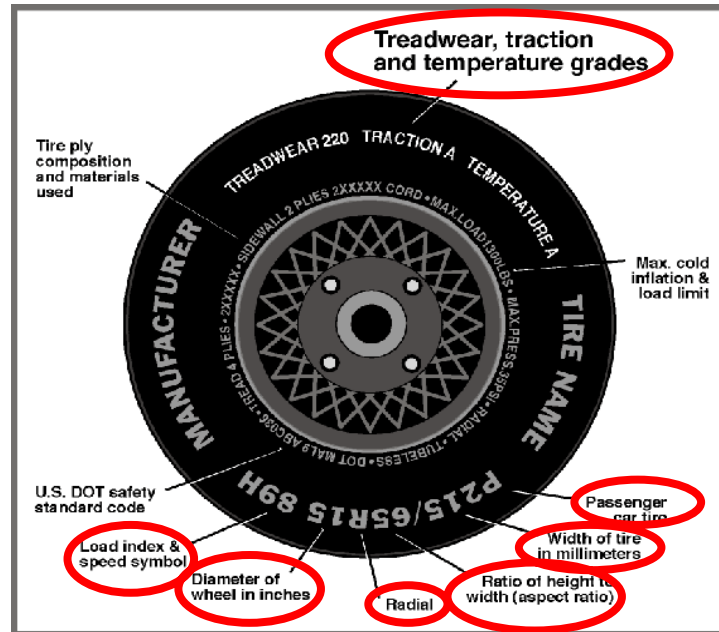
STEERING WHEEL/COLUMN POSITIONS

	Degrees	Fore/Aft Position, mm
Lowermost Position	20.4	No feature
Geometric Center Position	22.4	No feature
Uppermost Position	24.5	No feature

Table 2 Test Vehicle Tire Information

Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold / Test Pressure (kPa)	230	230
Recommended Tire Size	P245/50R17	P245/50R17
Tire Size on Vehicle	P245/50R17	P245/50R17
Tire Manufacturer	Michelin	Michelin
Tire Name	Primary	Primary
Radial	Yes	Yes
Wheel Diameter	17	17
Load Index & Speed Symbol	98H	98H
Treadwear	500	500
Traction Grade	A	A
Temperature Grade	A	A

Table 3 Post-Test Observations

Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat World SID
Dummy Type / Serial No.	World SID / 016
Head Contact	Side curtain airbag, headliner, head restraint
Upper Torso Contact	Door panel
Lower Torso Contact	Door panel
Left Knee Contact	None
Right Knee Contact	None

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Locked/Unlocked Doors	Unlocked	Unlocked
Left Side Door Opening	Jammed and latched	Closed and latched
Right Side Door Opening	Closed and latched	Closed and latched
Seat Movement	None	None
Seat Back Failure	None	None

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Did not separate from vehicle
Sill Separation	Did not separate from vehicle
Windshield Damage	Windshield cracked
Window Damage	Driver's side window shattered
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 01	
	Installed	Operation
Front Airbag	Yes	No ¹
Torso Airbag	Yes	Yes
Head Airbag	No	Not applicable
Curtain Airbag	Yes	Yes
Seat Belt Pretensioner	Yes	Unknown
Seat Belt Load Limiter	No	Not applicable

¹ The driver front airbag was disabled for this test.

Section 4

Occupant and Vehicle Information

Table 4 World SID Instrumentation Data

Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10

Driver Dummy Serial Number: 016

Location		Positive Direction		Negative Direction	
		Max.	Time	Max.	Time
		(g)	(ms)	(g)	(ms)
Head Acceleration	X	6.1	99.6	-26.4	53.3
	Y	70.0	58.0	-20.2	98.4
	Z	16.6	50.8	-3.8	24.2
	R	73.6	57.0		
Head Angular Displacement	X	3833.9	56.5	-3451.7	43.5
	Y	1858.0	25.6	-1852.7	25.2
	Z	8008.0	99.2	-1848.5	24.4
Upper Neck Force	X	95.8	103.6	-442.8	58.4
	Y	485.1	44.9	-178.6	88.2
	Z	1374.7	52.7	-57.0	150.8
Upper Neck Moment	X	6.5	87.1	-40.8	44.3
	Y	11.5	165.0	-38.3	58.2
	Z	15.4	185.5	-40.8	124.2
Lower Neck Force	X	194.4	96.3	-546.7	58.0
	Y	1169.9	52.8	-194.3	88.5
	Z	1372.7	52.8	-139.9	150.8
Lower Neck Moment	X	81.2	57.8	-40.2	187.0
	Y	40.3	58.5	-30.8	98.8
	Z	15.1	262.5	-41.0	122.1
Shoulder Force	X	104.3	145.4	-583.7	49.1
	Y	205.6	112.9	-2270.0	49.2
	Z	797.3	52.6	-136.4	112.9
Shoulder Displacement	Y	54.2	54.6	-2.3	24.4
Shoulder Acceleration	X	84.2	29.1	-164.3	29.6
	Y	172.3	31.6	-98.6	18.1
	Z	80.8	19.0	-96.3	29.1
	R	199.2	31.6		

Table 4 World SID Instrumentation Data, Continued

Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10

Driver Dummy Serial Number: 016

Location		Positive Direction		Negative Direction	
		Max.	Time	Max.	Time
		(g)	(ms)	(g)	(ms)
T1 Acceleration	X	6.6	24.2	-16.4	49.2
	Y	46.6	36.3	-6.9	100.9
	Z	5.2	34.3	-2.6	150.8
	R	47.9	36.2		
T4 Acceleration	X	2.6	153.7	-11.4	34.7
	Y	46.5	36.7	-8.3	95.9
	Z	6.3	47.5	-3.0	23.9
	R	47.7	36.6		
T12 Acceleration	X	7.3	59.0	-12.7	26.4
	Y	61.0	43.5	-12.7	81.6
	Z	4.8	33.9	-3.4	102.8
	R	61.3	43.4		
Thorax Rib 1 Displacement	Y	42.9	48.9	-5.6	184.5
Thorax Rib 1 Acceleration	X	42.1	20.9	-55.6	22.8
	Y	113.5	33.5	-96.4	21.3
	Z	61.7	36.4	-122.2	33.3
	R	122.7	33.3		
Thorax Rib 2 Displacement	Y	22.1	44.3	-2.1	130.1
Thorax Rib 2 Acceleration	X	71.5	21.1	-41.0	28.5
	Y	85.9	21.3	-69.4	36.9
	Z	59.8	36.8	-49.2	37.0
	R	103.2	21.2		
Thorax Rib 3 Displacement	Y	21.4	43.1	-1.5	134.9
Thorax Rib 3 Acceleration	X	74.2	20.6	-52.6	28.2
	Y	96.8	20.7	-50.4	35.7
	Z	23.6	24.4	-33.0	35.8
	R	119.7	20.7		

Table 4 World SID Instrumentation Data, Continued

Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10

Driver Dummy Serial Number: 016

Location		Positive Direction		Negative Direction	
		Max.	Time	Max.	Time
		(g)	(ms)	(g)	(ms)
Abdominal Rib 1 Displacement	Y	22.5	47.5	-1.4	156.3
Abdominal Rib 1 Acceleration	X	55.0	21.1	-56.9	23.2
	Y	80.1	40.3	-30.3	37.9
	Z	24.3	37.7	-48.5	38.0
	R	85.8	21.1		
Abdominal Rib 2 Displacement	Y	26.2	46.7	-2.4	135.0
Abdominal Rib 2 Acceleration	X	42.7	42.4	-88.4	22.5
	Y	163.0	41.1	-137.7	45.4
	Z	69.6	45.1	-80.8	45.4
	R	163.1	41.1		
Lumbar Force	X	419.4	54.8	-381.7	22.5
	Y	1780.2	44.1	-78.5	106.6
	Z	1292.2	63.4	-41.1	185.1
Lumbar Moment	X	98.2	46.1	-8.6	106.7
	Y	15.5	22.9	-27.1	54.7
	Z	31.2	49.7	-1.5	21.8
Pelvis Acceleration	X	20.2	40.0	-17.9	32.0
	Y	86.9	36.2	-16.2	83.6
	Z	23.8	27.8	-24.9	41.5
	R	87.2	36.2		
Sacro-Iliac Left Force	X	307.0	22.5	-1055.5	45.8
	Y	-3.8	-19.7	-3533.0	38.9
	Z	632.8	39.4	-479.5	28.0
Sacro-Iliac Left Moment	X	39.3	25.9	-105.8	38.8
	Y	42.9	42.1	-4.4	22.0
	Z	72.9	35.8	-33.9	53.6

Table 4 World SID Instrumentation Data, Continued

Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10

Driver Dummy Serial Number: 016

Location		Positive Direction		Negative Direction	
		Max.	Time	Max.	Time
		(g)	(ms)	(g)	(ms)
Sacro-Iliac Right Force	X	83.9	49.8	-435.9	84.7
	Y	-0.3	205.5	-1951.6	37.4
	Z	1215.7	43.5	16.2	-20.0
Sacro-Iliac Right Moment	X	59.6	49.8	-16.8	103.2
	Y	50.4	42.7	0.3	-18.4
	Z	59.9	34.8	-28.6	50.2
Pubic Force	Y	1201.2	38.1	-10.3	19.4
Left Femur Force	X	167.0	26.3	-538.8	68.5
	Y	142.3	82.0	-623.8	39.8
	Z	5.8	5.4	-2637.9	48.3
Left Knee Outboard Force	Y	451.9	66.8	-222.8	48.8
Left Knee Inboard Force	Y	84.4	39.4	-252.8	52.0
Right Mid Femur Force	X	16.4	138.4	-622.8	50.5
	Y	141.2	60.3	-909.0	41.5
	Z	1179.8	53.2	-5.9	-2.8

Positive Direction

Longitudinal: Forward
 Lateral: Rightward
 Vertical: Downward

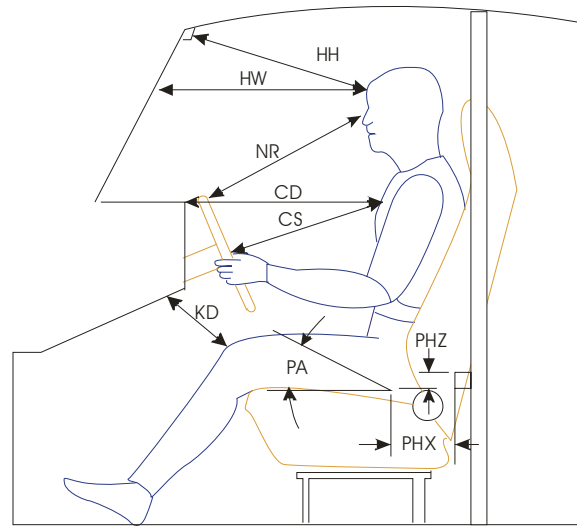
Negative Direction

Longitudinal: Rearward
 Lateral: Leftward
 Vertical: Upward

Figure 1 World SID Longitudinal Clearance Dimensions

Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10



Left Side View

Note: All measurements are in millimeters with tolerance of ± 0.1 mm

Measurement	Driver World SID # 016
HH	505
HW	858
HZ	207
NR ¹	521
CD	682
CS	452
KDL(KDA°)	181/(30.3°)
KDR(KDA°)	183/(28.7°)
PA°	Not Available
PHX	125
PHZ	148

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.

¹ See Data Acquisition Explanations

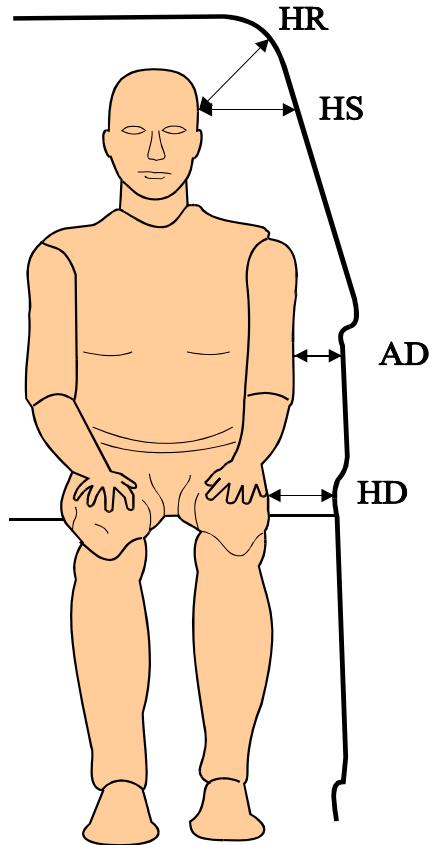
Location	Measurement
Head X-Angle	-1.2°
Head Y-Angle	1.5°
Thorax X-Angle	0.8°
Thorax Y-Angle	-2.1°
Pelvis X-Angle	0.6°
Pelvis Y-Angle	-1.2°

Note: Measurements recorded from WorldSID Digital Read-out Box. The neck was moved forward 1 notch to level the head.

Figure 2 World SID Lateral Clearance Dimensions

Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10



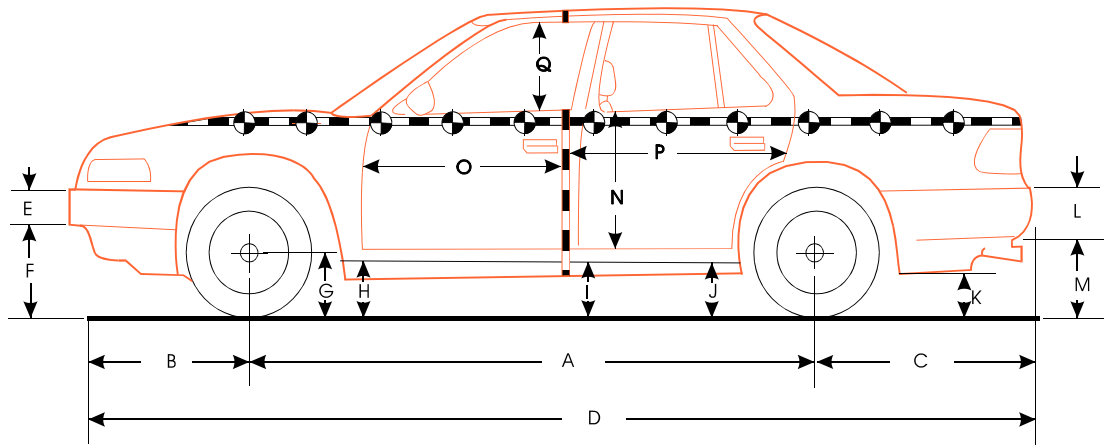
Note: All measurements are in millimeters with tolerance of ± 0.1 mm

Measurement	Driver World SID # 016
HR	224
HS	349
AD	Lower: 122 Upper: 103
HD	116

Figure 3 Vehicle Pre-Test And Post-Test Measurements

Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10



Left Side View

Note: Measurements were achieved by using a tape measure.

All dimensions are in millimeters with tolerance of ± 0.1 mm

	Pre-Test (as delivered)	Pre-Test (as tested)	Post-Test (as tested)	Change
A	2835	2835	2780	55
B	985	985	985	0
C	1140	1140	1140	0
D	4960	4960	4965	-5
E	178	178	178	0
F	410	400	402	-2
G	323	319	315	4
G1	285	284	300	-16
H	290	289	310	-21
I	276	270	310	-40
J1	204	199	253	-54
J2	290	287	350	-63
K	305	290	375	-85
L	210	210	210	0
M	483	465	565	-100
N	805	805	805	0
O	920	920	900	20
P	1120	1120	1155	-35
Q	360	360	352	8
R	4620	4620	4625	-5
S	4620	4620	4580	40
T	1345	1345	1202	143

D = Length at centerline

E and L = Bumper Thickness

R = Right Side Length

S = Left Side Length

T = Width at B-pillar

J1 = To Pinch Weld

J2 = To Sill

Table 5 Vehicle Structural Measurements^{1,2}

Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10

	Elements	Pre-Test
1	Total Length	4960
2	Total Width	1830
3	Bumper Top Height	497
4	Bumper Bottom Height	424
5	Longitudinal Member Top Height	537
6	Longitudinal Member Bottom Height	414
7	Distance Between Longitudinal Members	1125
7'	Longitudinal Member Width	100
8	Engine Top Height	857
9	Engine Bottom Height	176
10	Engine and Gearbox Width	900
11	Front Bumper - Engine Distance	460
12	Front Shock Absorber Fixing Height	894
13	Bonnet Leading Edge Height	819
14	Front Shock Absorber Fixing Width	1190
15	Front Bumper - Front Axle Distance	985
16	Front Axle - A Pillar Distance	550
17	A Pillar - B Pillar Distance	1030
18	B Pillar - Rear Axle Distance	1230
19	B Pillar - C Pillar Distance	1030
20	Roof Sill Bottom Height	1301
21	Roof Sill Top Height	1376
22	Floor Sill Bottom Height	346
23	Floor Sill Top Height	391

All distance measurements are in millimeters and achieved by using a tape measure.

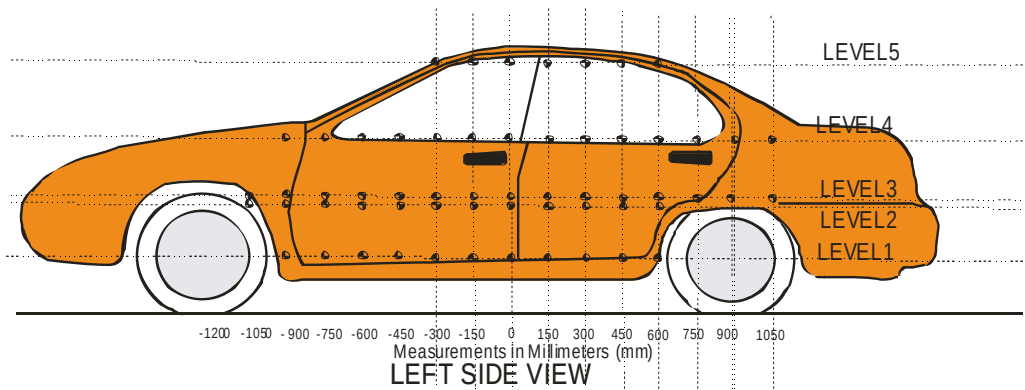
¹ Taken from INSIA report, “Structural Survey of Cars, Methodology of the Main Resistant Elements in the Car Body”, March 1999.

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

Figure 4 Vehicle Side Measurements

Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10



Measurements are taken when the vehicle is in the “As Tested” configuration.

Measurements vehicle forward of the impact line are negative.

All measurements below in mm.

The target impact point was 17 mm rearward of the crush grid zero point taken at level 4.

Level	Measurement Description	Height Above Ground
5	Window Top	1430
4	Window Sill	1000
3	Mid Door	660
2	Occupant H-Point	535
1	Side Sill	260

Note: Measurements were taken using a tape measure at crush grid zero vertical line.

Table 6 Vehicle Exterior Crush Profiles - All Levels

Vehicle: 2010 Buick LaCrosse

Location	Height		(mm) From Impact Point															
			-1500	-1350	-1200	-1050	-900	-750	-600	-450	-300	-150	0	150	300	450	600	750
Level 1 Side Sill	260	Pre					873	872	871	872	872	871	871	870	868	868	869	871
		Post					879	854	827	795	759	720	642	674	746	784	821	855
		Crush					-6	18	44	77	113	151	229	196	122	84	48	16
Level 2 H-Point	535	Pre				918	905	895	894	895	896	897	897	898	896	896	895	895
		Post				932	938	903	863	813	765	703	632	677	785	815	836	859
		Crush				-14	-33	-8	31	82	131	194	265	221	111	81	59	36
Level 3 Mid-Door	660	Pre				921	904	900	901	903	904	905	906	907	906	906	906	905
		Post				936	953	907	857	793	740	687	623	674	788	816	838	860
		Crush				-15	-49	-7	44	110	164	218	283	233	118	90	68	45
Level 4 Window Sill	1000	Pre			802	816	825	830	834	838	840	842	844	845	845	845	845	844
		Post			835	841	865	837	802	760	716	667	610	657	750	770	788	805
		Crush			-33	-25	-40	-7	32	78	124	175	234	188	95	75	57	39
Level 5 Window Top	1430	Pre				797	764	734	703	673	648	633	624	620	621	623	628	634
		Post				821	790	752	711	669	628	590	543	547	568	587	605	619
		Crush				-24	-26	-18	-8	4	20	43	81	73	53	36	23	15

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

Note: Negative measurements are vehicle forward of the impact point.

The crush profile grid is established prior to test day based on an estimated impact point.

¹ The target impact point was 17 mm rearward of the crush grid zero line.

Table 6 Vehicle Exterior Crush Profiles - All Levels, Continued

Vehicle: 2010 Buick LaCrosse

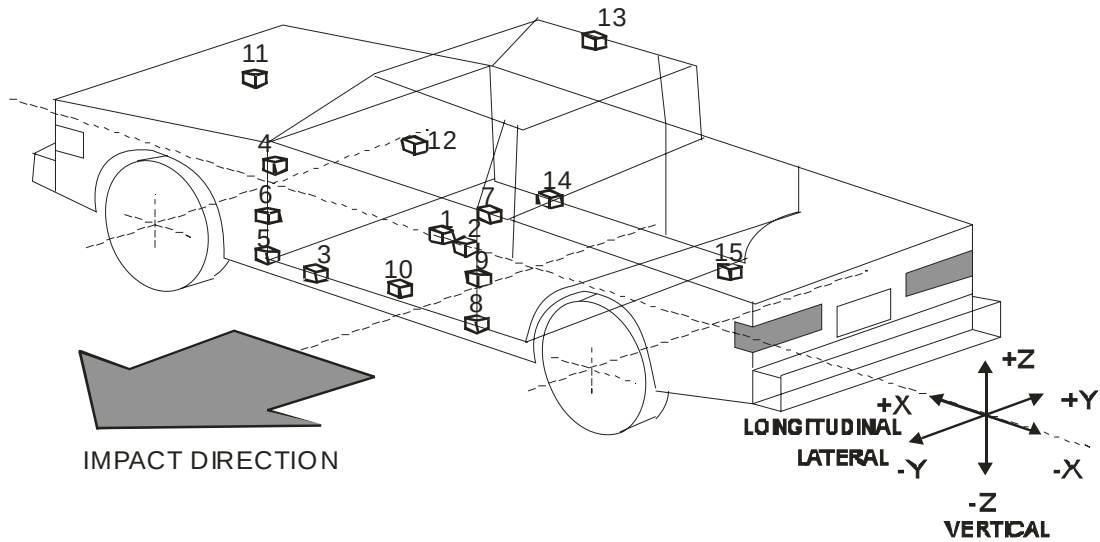
Location	Height		(mm) From Impact Point												
			900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700
Level 1 Side Sill	260	Pre	875	880											
		Post	882	910											
		Crush	-7	-30											
Level 2 H-Point	535	Pre	901	917											
		Post	887	931											
		Crush	14	-14											
Level 3 Mid-Door	660	Pre	906	916	929										
		Post	883	921	930										
		Crush	23	-5	-1										
Level 4 Window Sill	1000	Pre	843	846	850										
		Post	820	842	861										
		Crush	23	4	-11										
Level 5 Window Top	1430	Pre	642	653	665	681									
		Post	632	648	664	677									
		Crush	10	5	1	4									

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

Figure 5 Test Vehicle Accelerometer Locations and Data Summary

Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10



- 1-Vehicle Center of Gravity
- 2-Vehicle Center of Gravity Gyroscopes
- 3-Left Floor Sill Between A-Pillar and Impact Line
- 4-Left Side Sill at A-Pillar
- 5-Left Side Lower A-Pillar
- 6-Left Side Middle A-Pillar
- 7-Left Side Sill at Rear Seat
- 8-Left Side Lower B-Pillar
- 9-Left Side Middle B-Pillar

- 10-Left Side Front Seat Track at H-point
- 11-Top of Engine
- 12-Center Firewall
- 13-Right Side Roof Rail
- 14-Right Side Floor Sill
- 15-Rear Deck Behind Rear Axle

Table 7 Test Vehicle Accelerometer Locations and Data Summary

Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10

	Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
		X	Y	Z	Max. (g)	Time (ms)	Max. (g)	Time (ms)
1	Vehicle CG	3000	0	-315				
	Longitudinal				2.5	20.1	-11.0	29.6
	Lateral				29.2	17.4	-0.5	240.3
	Vertical				5.8	18.3	-15.7	28.7
	Resultant				31.2	29.2		
2	Vehicle CG Gyroscopes ¹	3000	0	-315				
	Longitudinal °/sec				246.4	126.3	-156.0	47.7
	Lateral °/sec				204.0	125.5	-599.5	52.6
	Vertical °/sec				189.7	57.7	-178.0	51.6
3	Left Side Sill Between A-Pillar and Impact Line	3290	-654	-359				
	Lateral				47.3	12.7	-36.9	17.1
4	Left Side Sill at A-Pillar	3635	-709	-359				
	Lateral				47.2	13.5	-38.9	18.5
5	Left Side Lower A-Pillar	3707	-804	-523				
	Lateral				34.7	24.0	-17.9	18.1
6	Left Side Middle A-Pillar	3715	-779	-791				
	Lateral				29.9	14.7	-3.5	18.5
7	Left Side Sill at Rear Seat	2335	-655	-284				
	Lateral				27.7	117.1	-31.3	33.3
8	Left Side Lower B-Pillar	2645	-775	-604				
	Lateral				77.7	16.4	-7.9	24.4
9	Left Side Middle B-Pillar	2648	-805	-943				
	Lateral				85.3	17.7	-4.0	59.4

¹ See Data Acquisition Explanations

Table 7 Test Vehicle Accelerometer Locations and Data Summary, Continued

Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10

	Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
		X	Y	Z	Max. (g)	Time (ms)	Max. (g)	Time (ms)
10	Left Side Front Seat Track at H-Point	2845	-540	-342				
	Lateral				60.5	25.2	-51.4	20.0
11	Top of Engine	4445	0	-840				
	Longitudinal				18.3	284.8	-13.2	47.2
	Lateral				19.5	55.8	-1.8	26.3
12	Firewall	4107	17	-865				
	Lateral				13.9	66.0	-0.5	245.4
13	Right Side Roof Rail	3180	620	-1309				
	Lateral				23.8	44.1	-1.0	262.5
14	Right Side Sill	3260	654	-339				
	Lateral				27.1	18.3	-2.1	23.5
15	Rear Deck Behind Rear Axle	1390	0	530				
	Longitudinal				2.7	127.1	-4.9	50.0
	Lateral				19.0	30.2	-1.8	135.6

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

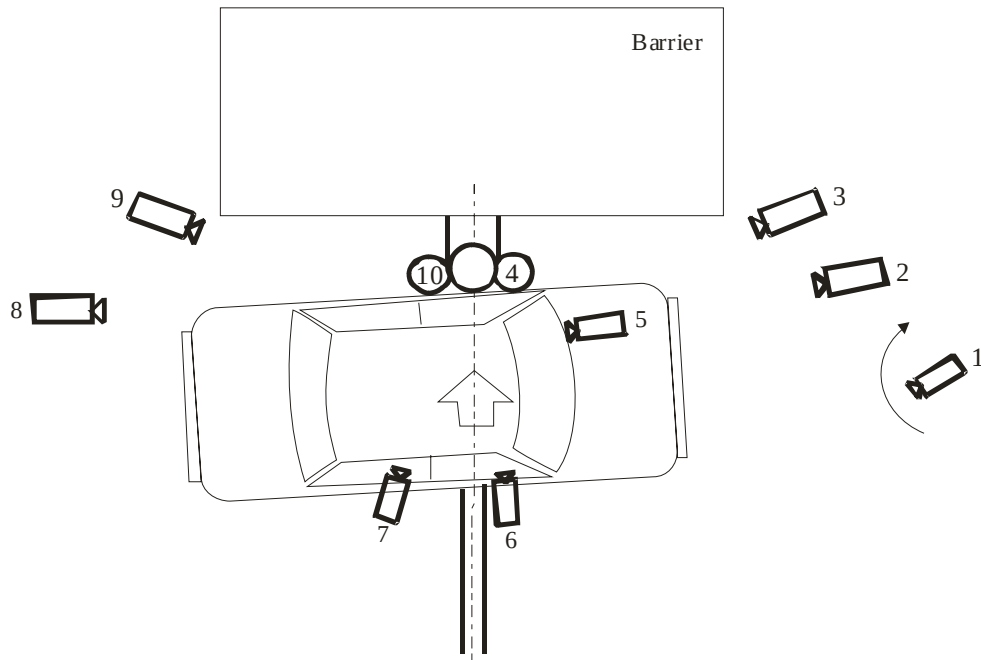
For acceleration data sign convention see Report Sign Convention in Appendix D.

¹ See Data Acquisition Explanations

Figure 6 High-Speed Camera Locations and Data Summary

Test Vehicle: 2010 Buick LaCrosse

Test Date: 06/17/10



No.	Camera View	Lens (mm)	Speed (fps)
1	Real-time	Zoom	1000
2	Front view	25	1000
3	Front oblique	25	1000
4	Overhead tight	25	1000
5	Onboard vehicle front	12.5	1000
6	Onboard right front door	8.5	1000
7	Onboard right rear door	6.5	1000
8	Rear view	25	1000
9	Rear oblique view	25	1000
10	Overhead wide view	12.5	1000

Vehicle was at a 75° angle to the rigid pole.

Appendix A

Photographs



Figure A-1 Pre-Test Front View

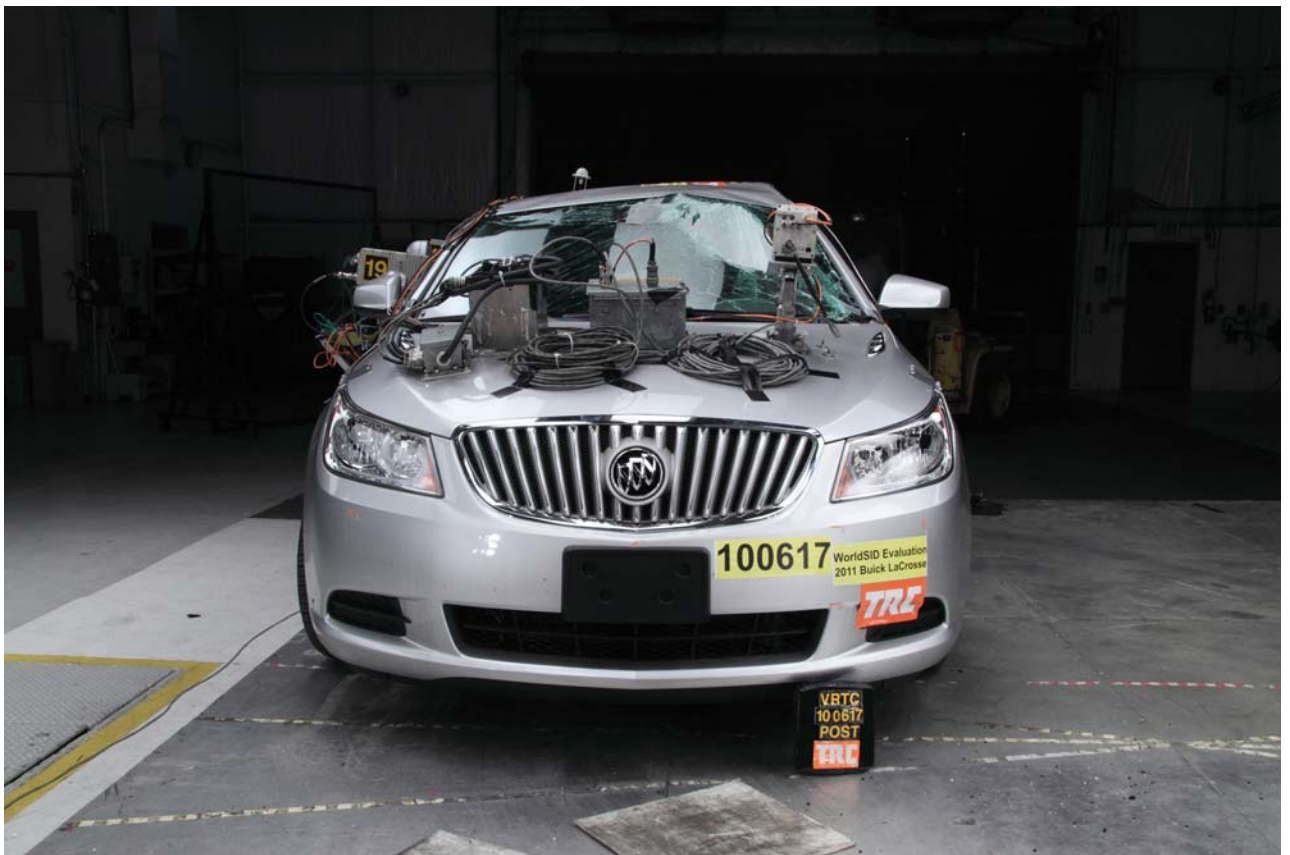


Figure A-2 Post-Test Front View



Figure A-3 Pre-Test Left Front View

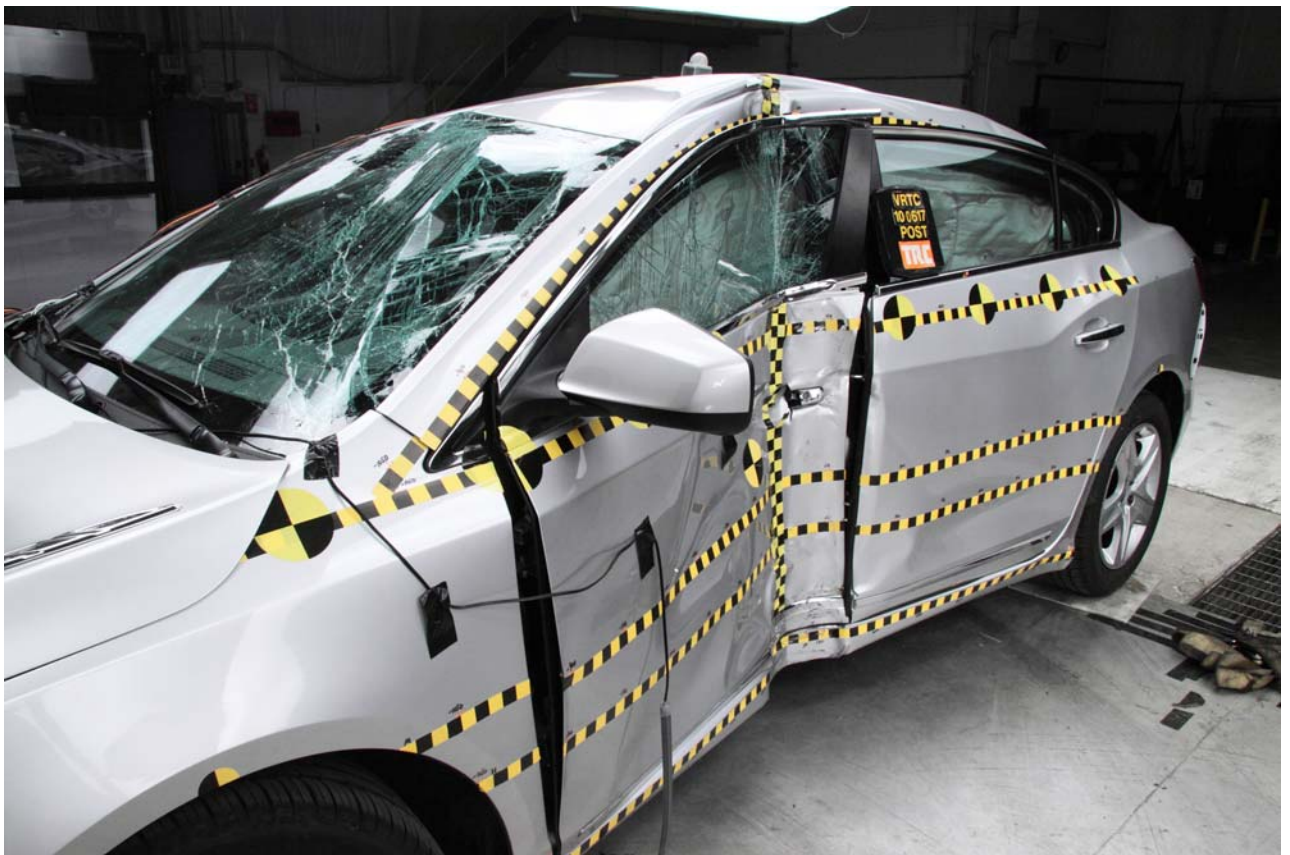


Figure A-4 Post-Test Left Front View



Figure A-5 Pre-Test Left Front Tight View

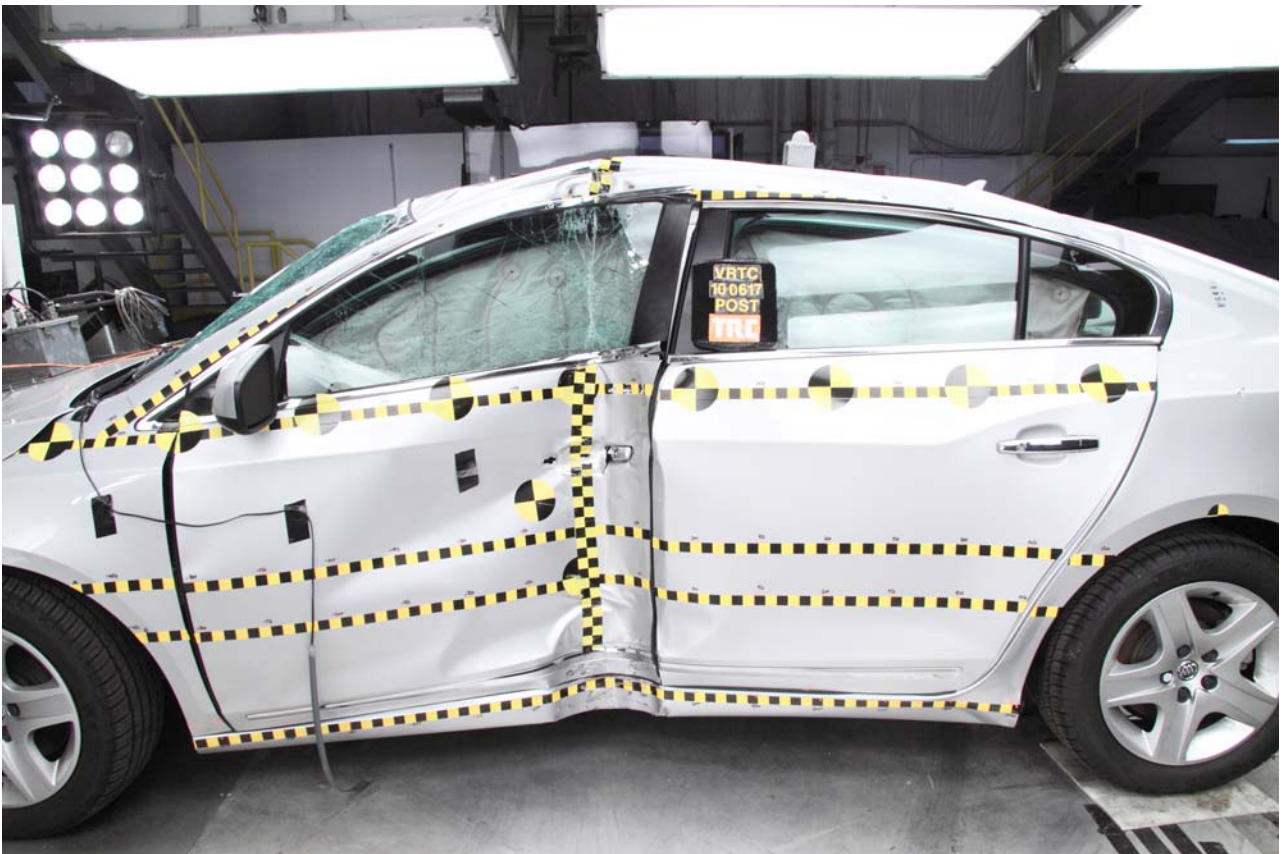


Figure A-6 Post-Test Left Front Tight View



Figure A-7 Pre-Test Left Side View



Figure A-8 Post-Test Left Side View

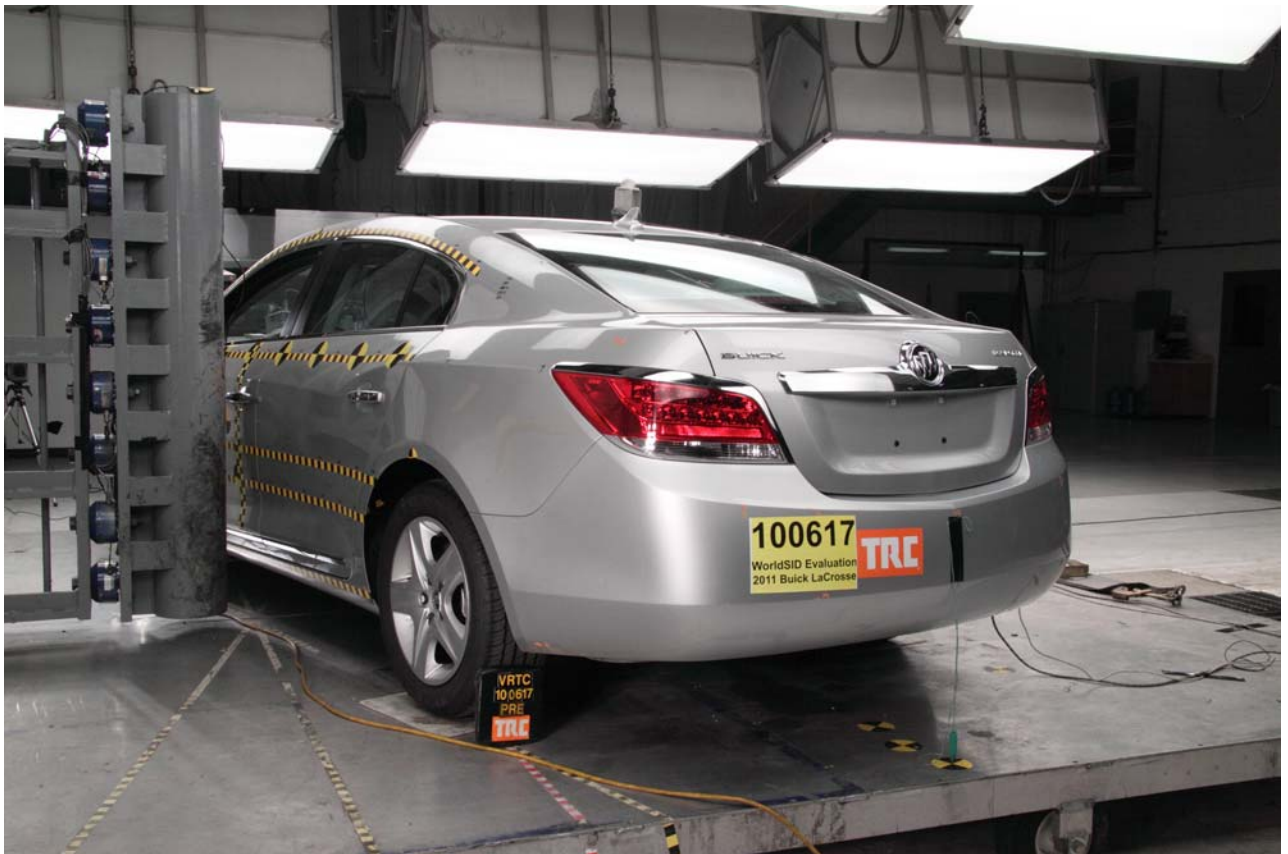


Figure A-9 Pre-Test Left Rear View



Figure A-10 Post-Test Left Rear View

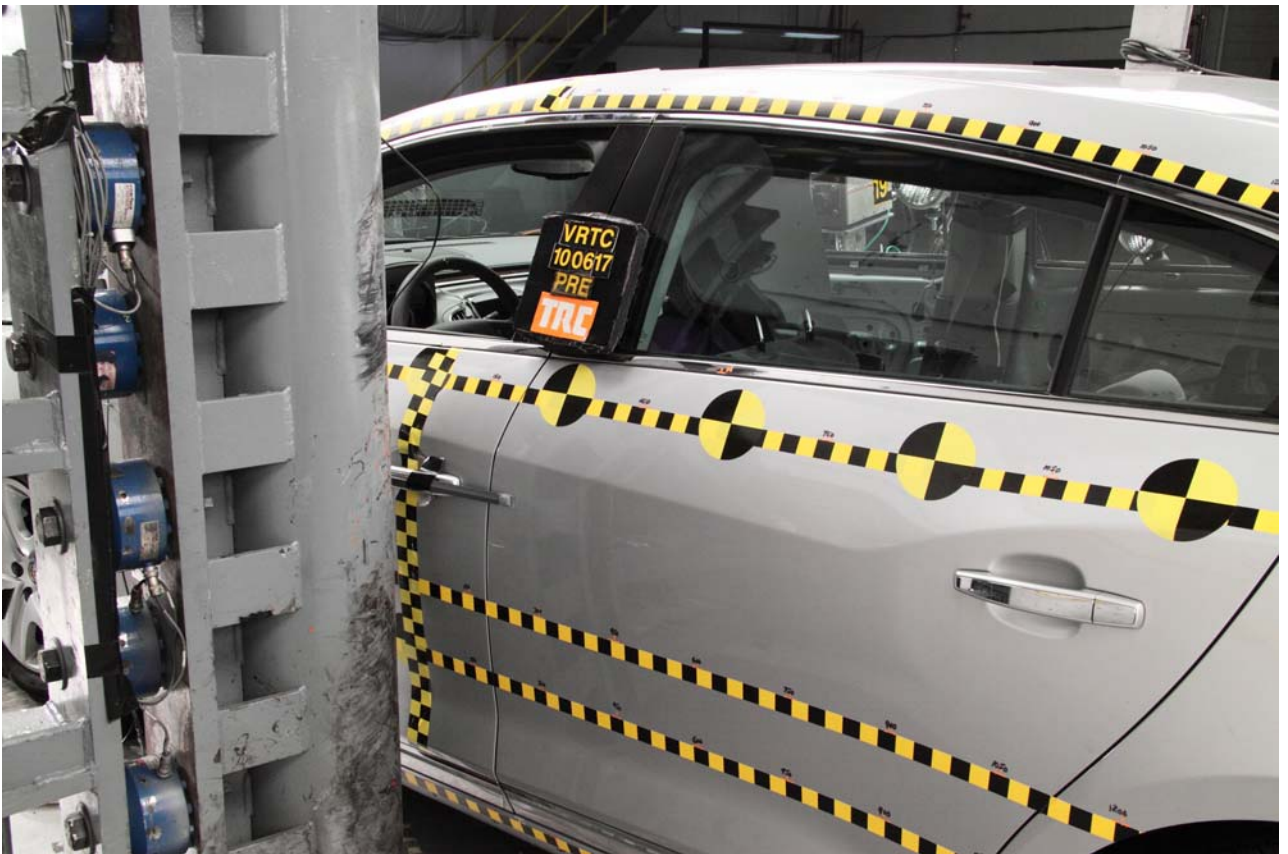


Figure A-11 Pre-Test Left Rear Tight View



Figure A-12 Post-Test Left Rear Tight View



Figure A-13 Pre-Test Rear View

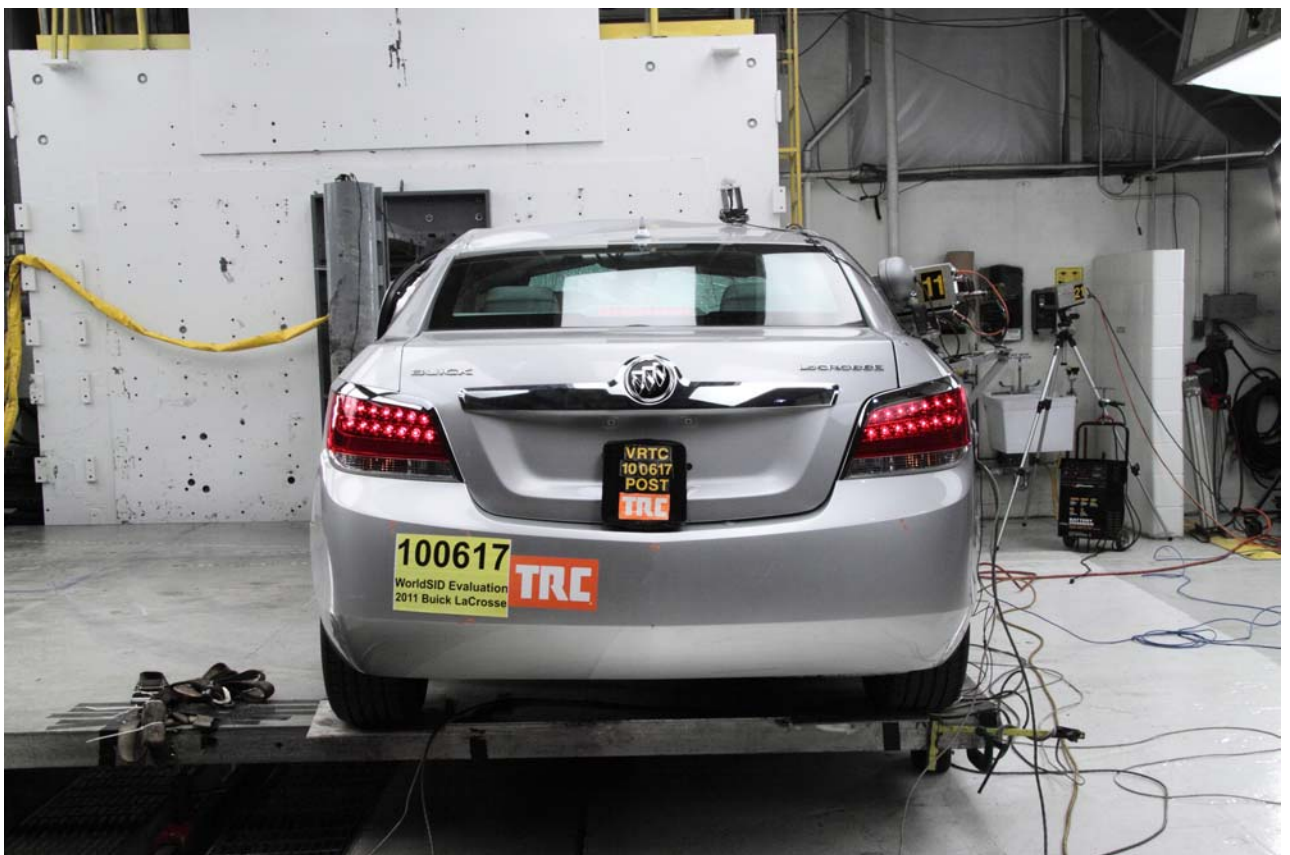


Figure A-14 Post-Test Rear View



Figure A-15 Pre-Test Right Side View

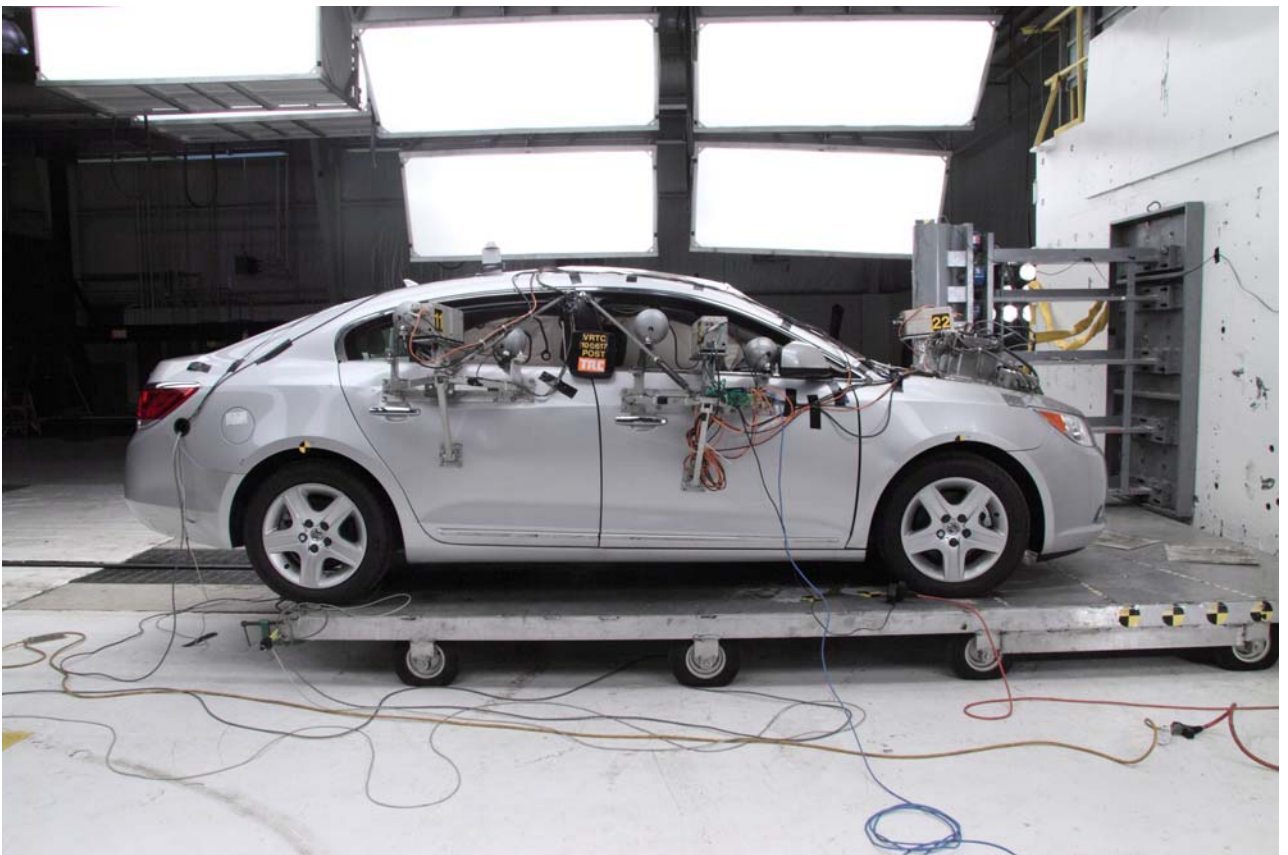


Figure A-16 Post-Test Right Side View



Figure A-17 Pre-Test Overhead View



Figure A-18 Post-Test Overhead View



Figure A-19 Pre-Test Impact Point View



Figure A-20 Post-Test Impact Point View

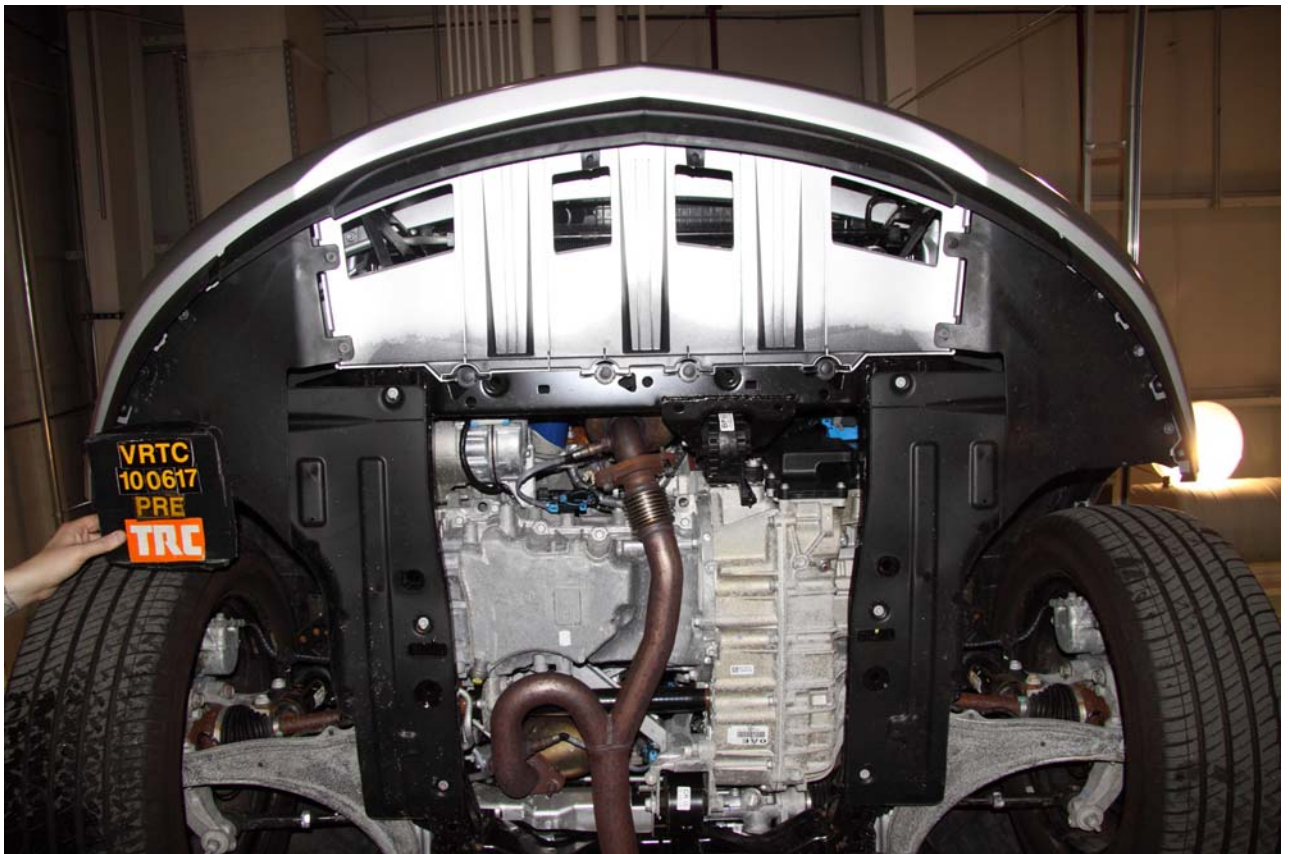


Figure A-21 Pre-Test Front Underbody View



Figure A-22 Post-Test Front Underbody View

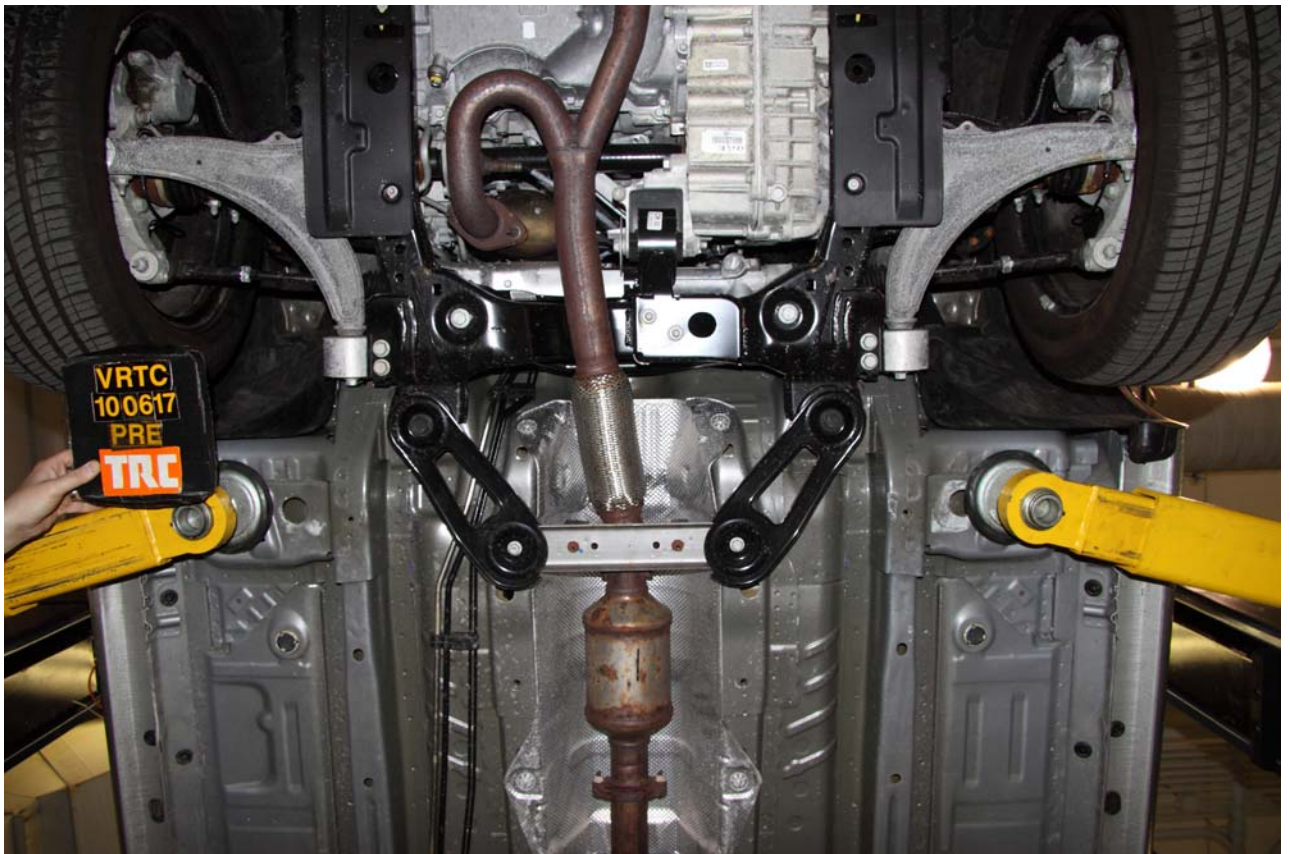


Figure A-23 Pre-Test Front Mid Underbody View

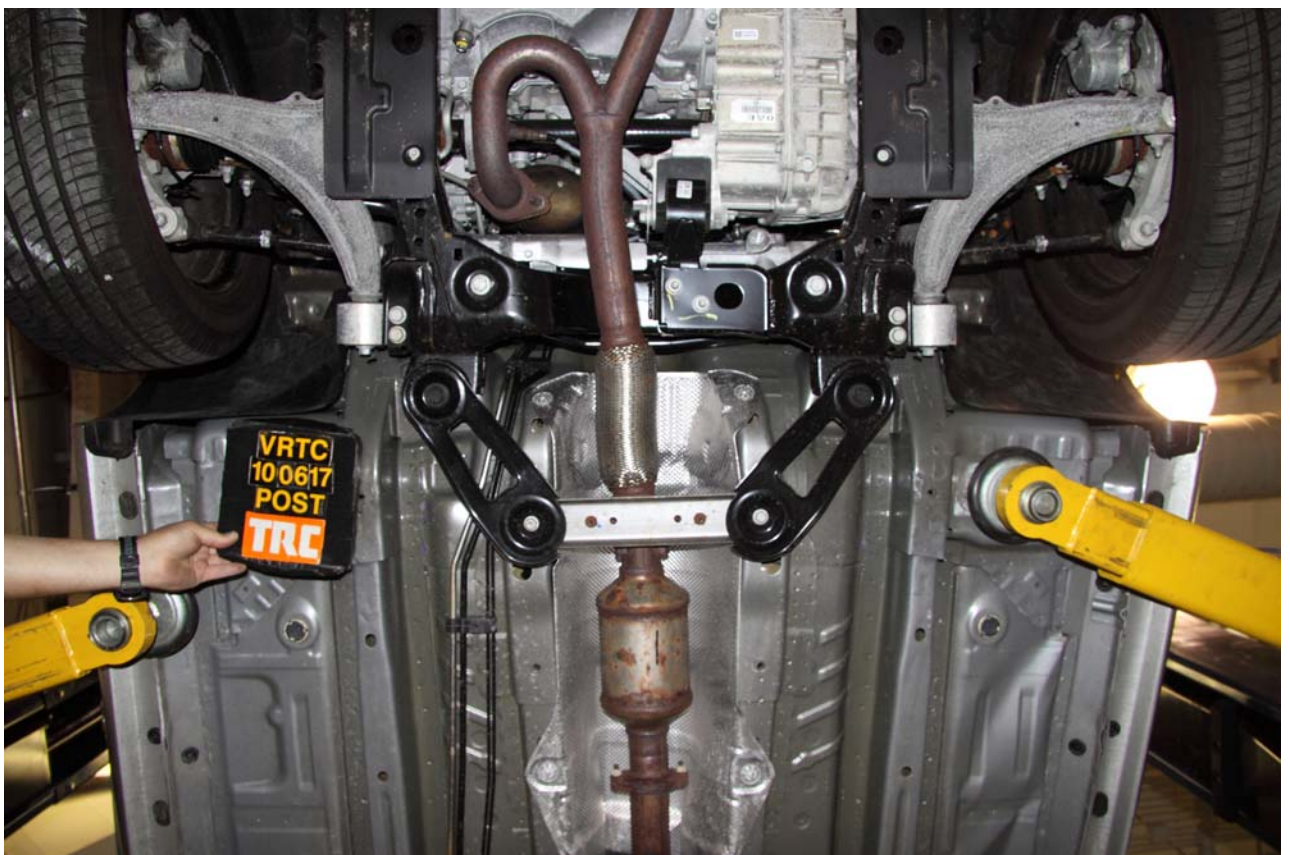


Figure A-24 Post-Test Front Mid Underbody View



Figure A-25 Pre-Test Mid Underbody View

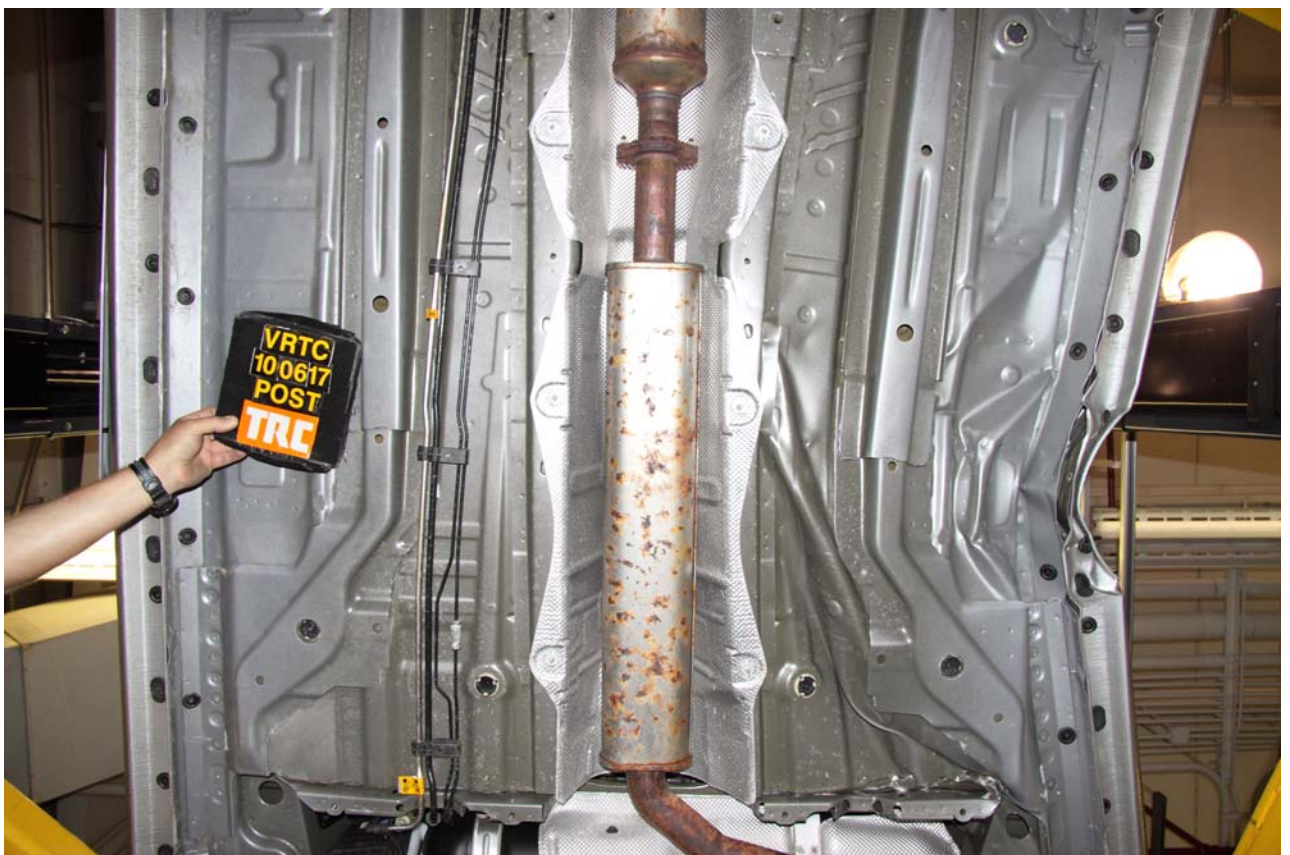


Figure A-26 Post-Test Mid Underbody View

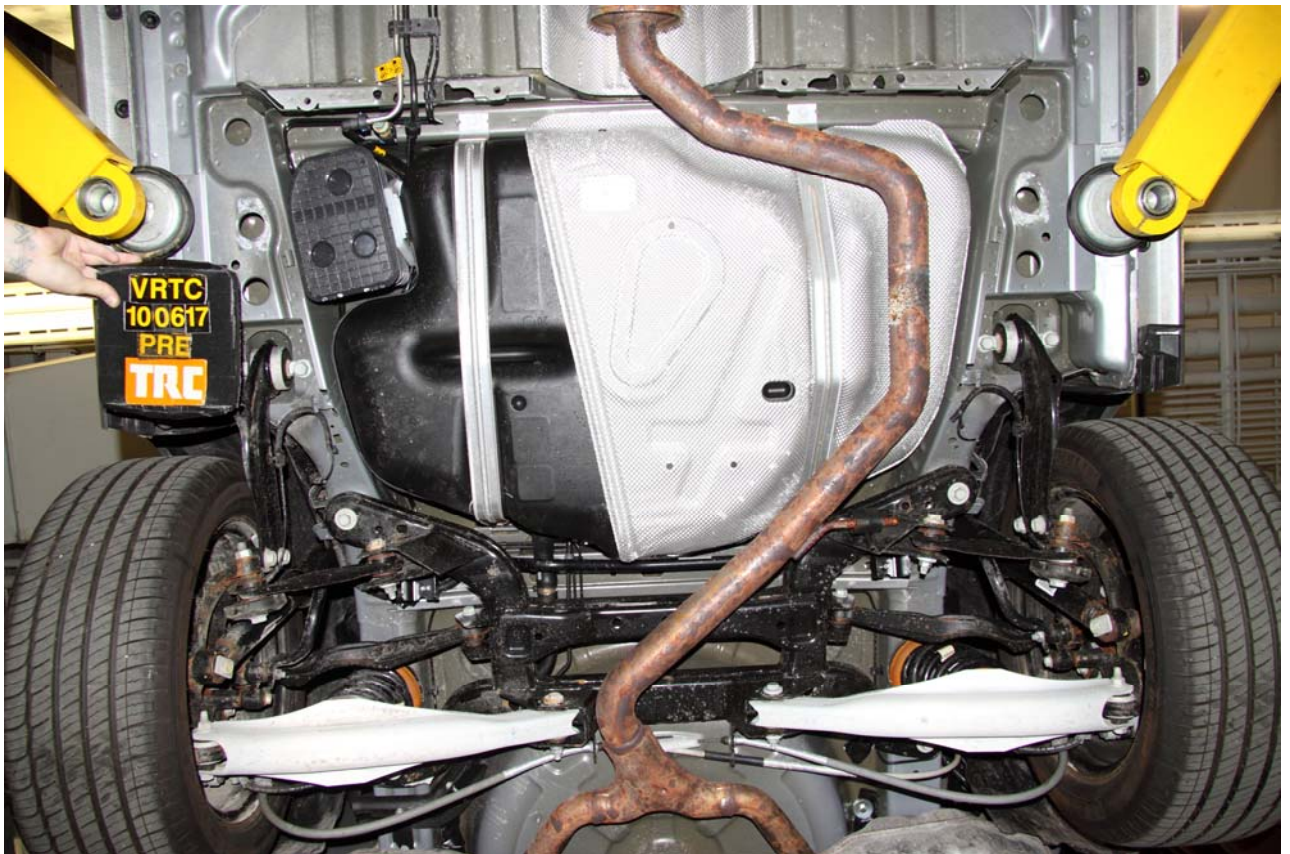


Figure A-27 Pre-Test Rear Mid Underbody View



Figure A-28 Post-Test Rear Mid Underbody View

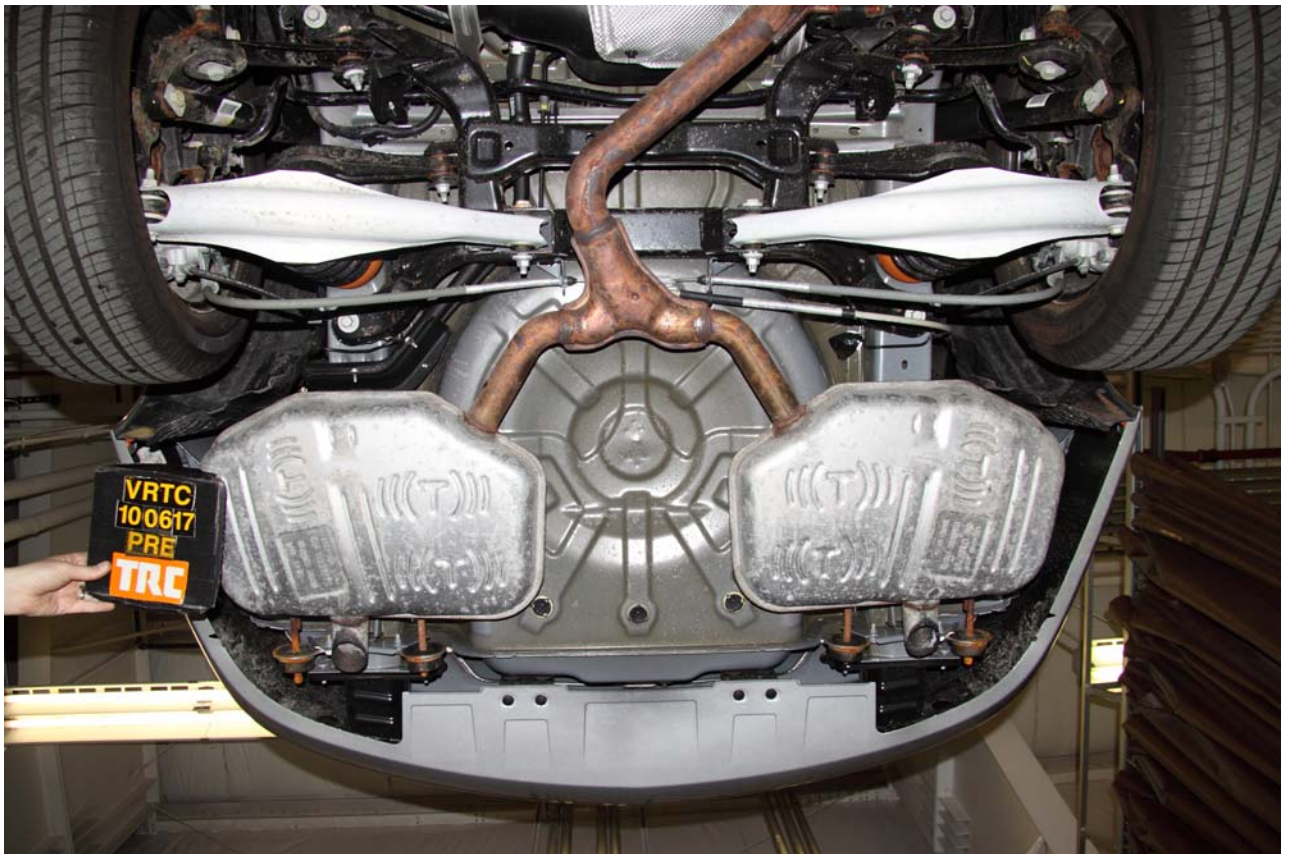


Figure A-29 Pre-Test Rear Underbody View



Figure A-30 Post-Test Rear Underbody View



Figure A-31 Pre-Test Driver Dummy - View 1

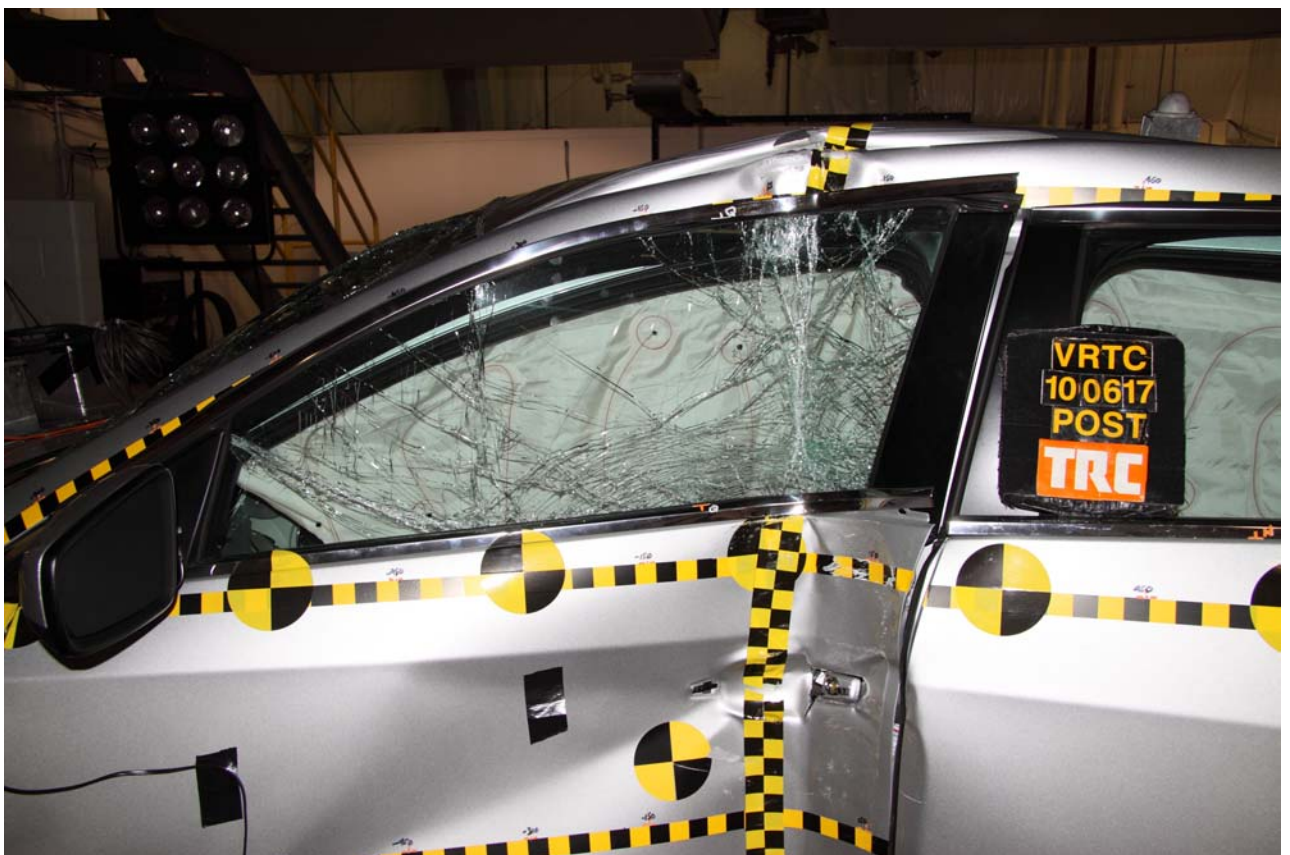


Figure A-32 Post-Test Driver Dummy - View 1



Figure A-33 Pre-Test Driver Dummy - View 2

Intentionally Left Blank



Figure A-34 Pre-Test Driver Dummy - View 3

Intentionally Left Blank



Figure A-35 Pre-Test Driver Dummy - View 4



Figure A-36 Post-Test Driver Dummy - View 4



Figure A-37 Pre-Test Driver Dummy - View 5



Figure A-38 Post-Test Driver Dummy - View 5



Figure A-39 Post-Test Driver Door Panel View



Figure A-40 Post-Test Driver Dummy Contact - View 1



Figure A-41 Post-Test Driver Dummy Contact - View 2



Figure A-42 Post-Test Driver Dummy Contact - View 3



Figure A-43 Post-Test Driver Dummy Contact - View 4

Intentionally Left Blank



Figure A-44 Vehicle Certification Label



Figure A-45 Tire Pressure Label

Appendix B

Data Plots



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

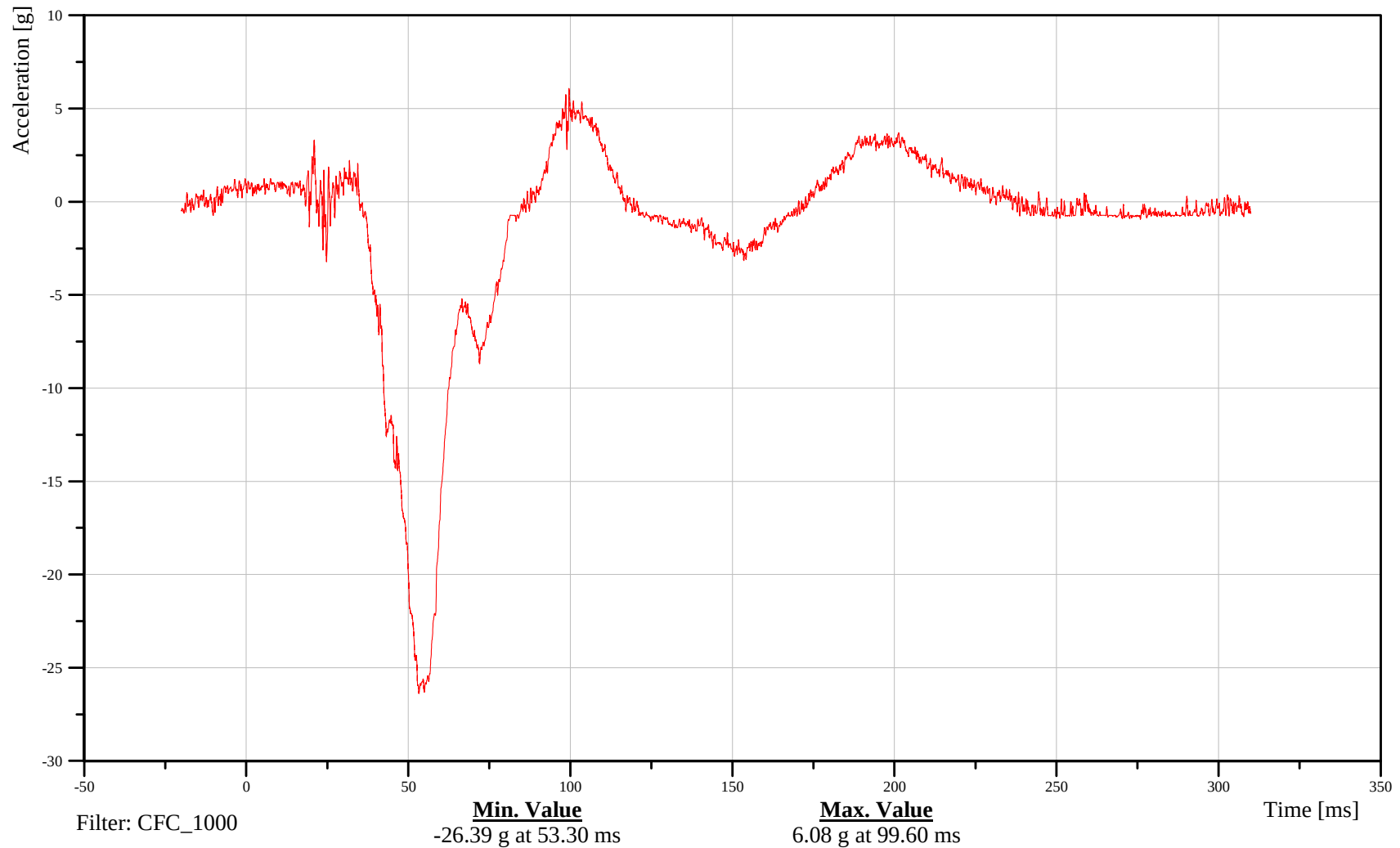
Head X-Axis Acceleration

Customer: VRTC

11HEADCG00WSACXA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-2

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

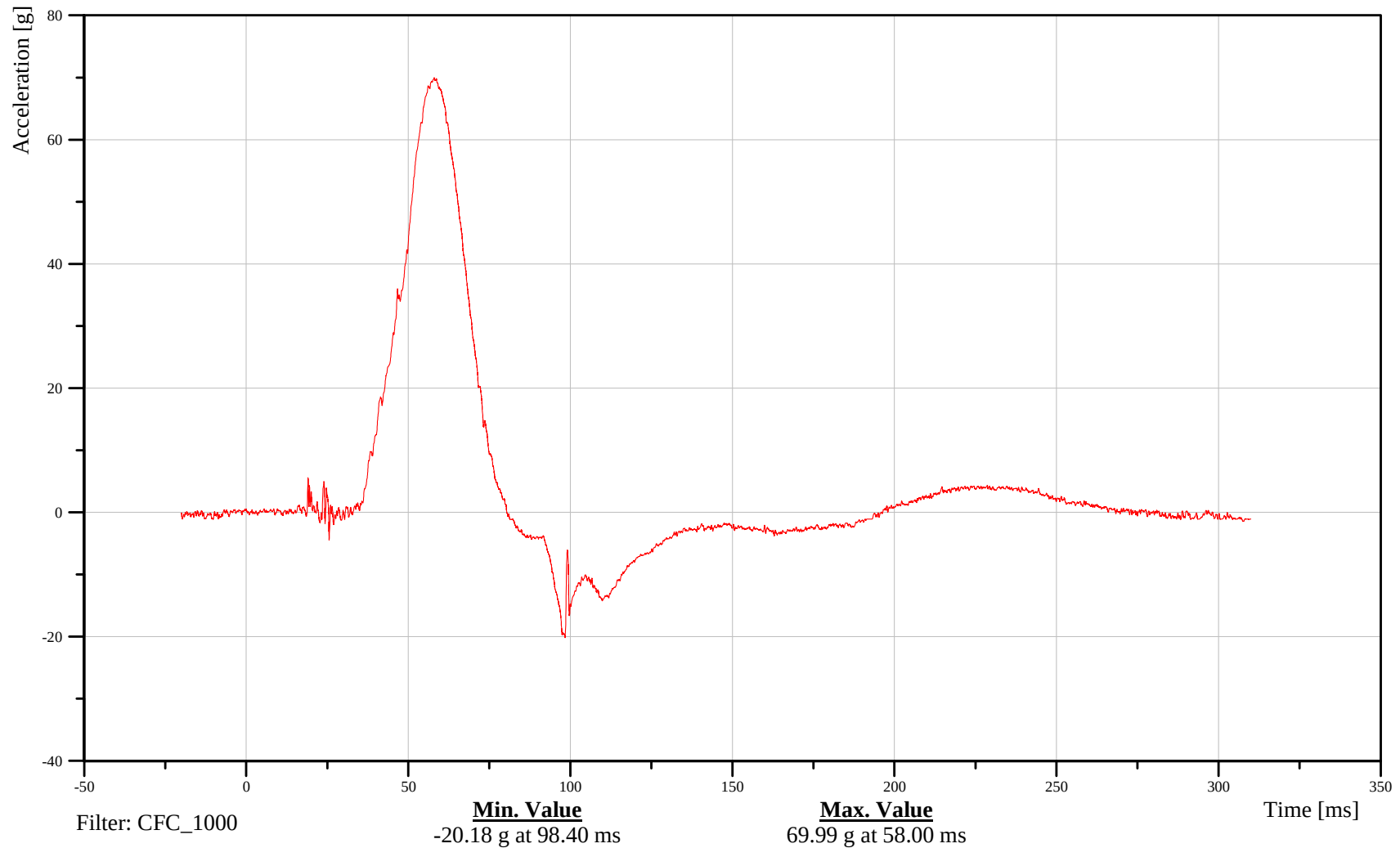
Head Y-Axis Acceleration

Customer: VRTC

11HEADCG00WSACYA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-3

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

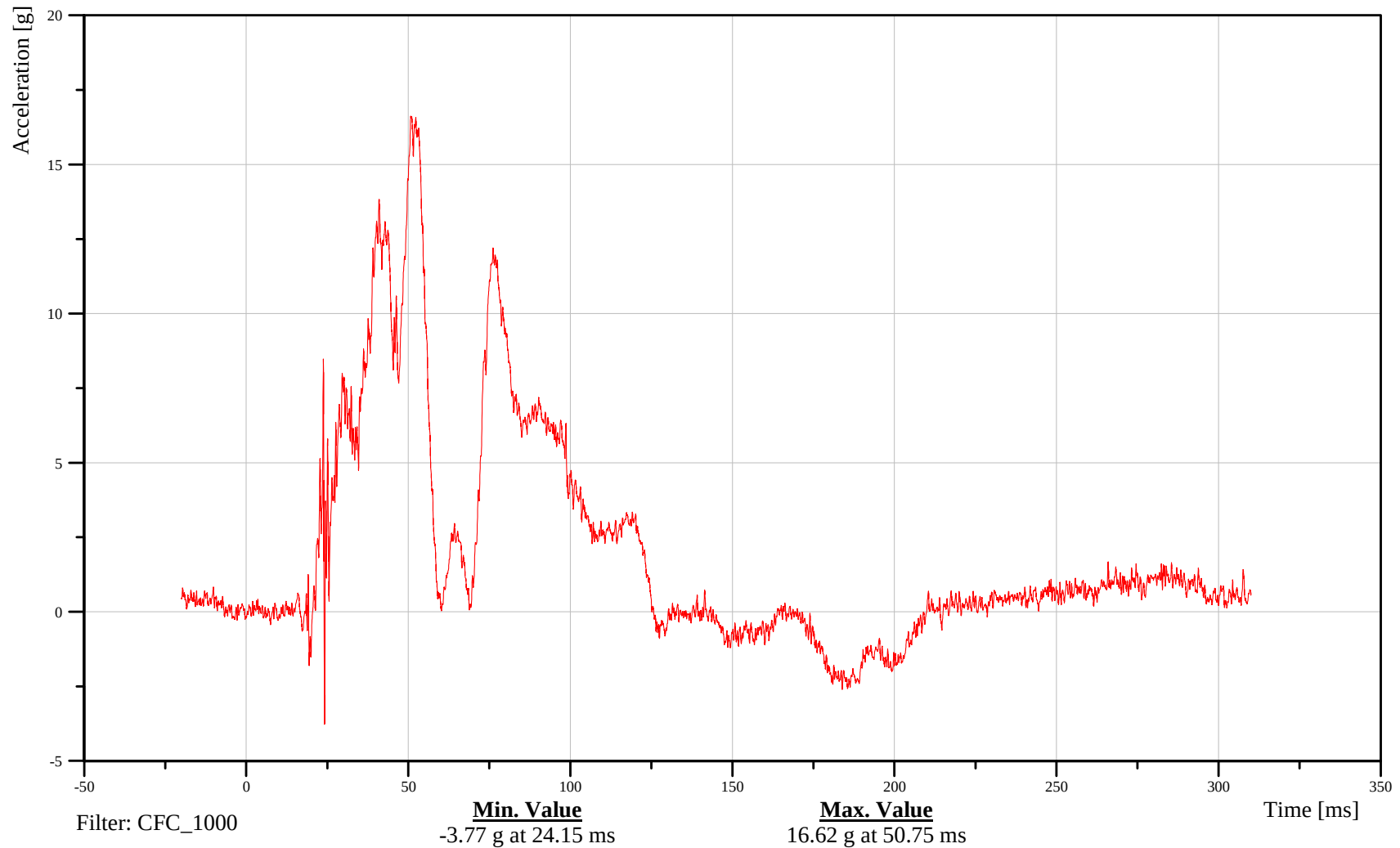
Head Z-Axis Acceleration

Customer: VRTC

11HEADCG00WSACZA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-4

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

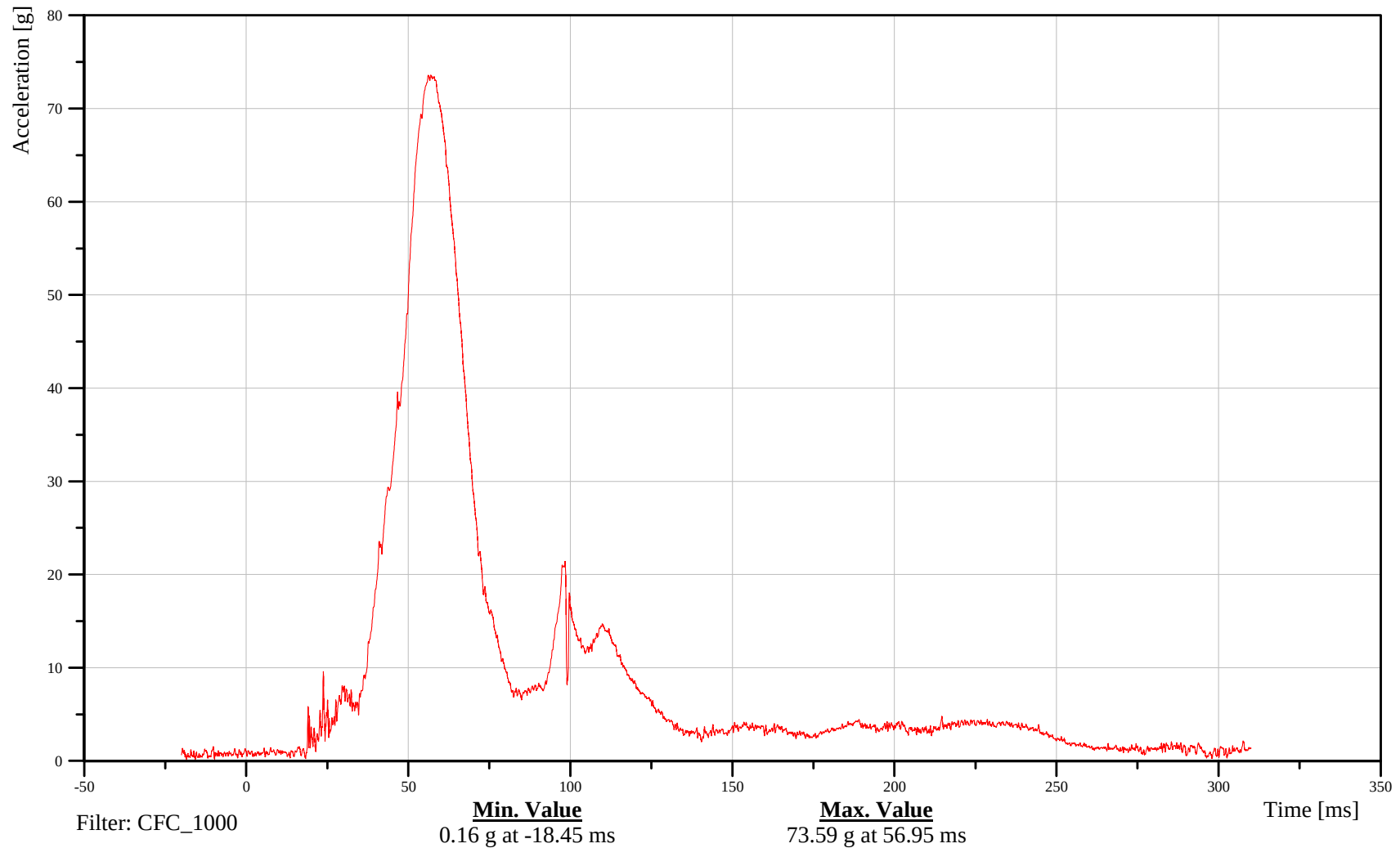
Head Resultant Acceleration

Customer: VRTC

11HEADCG00WSACRA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-5

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

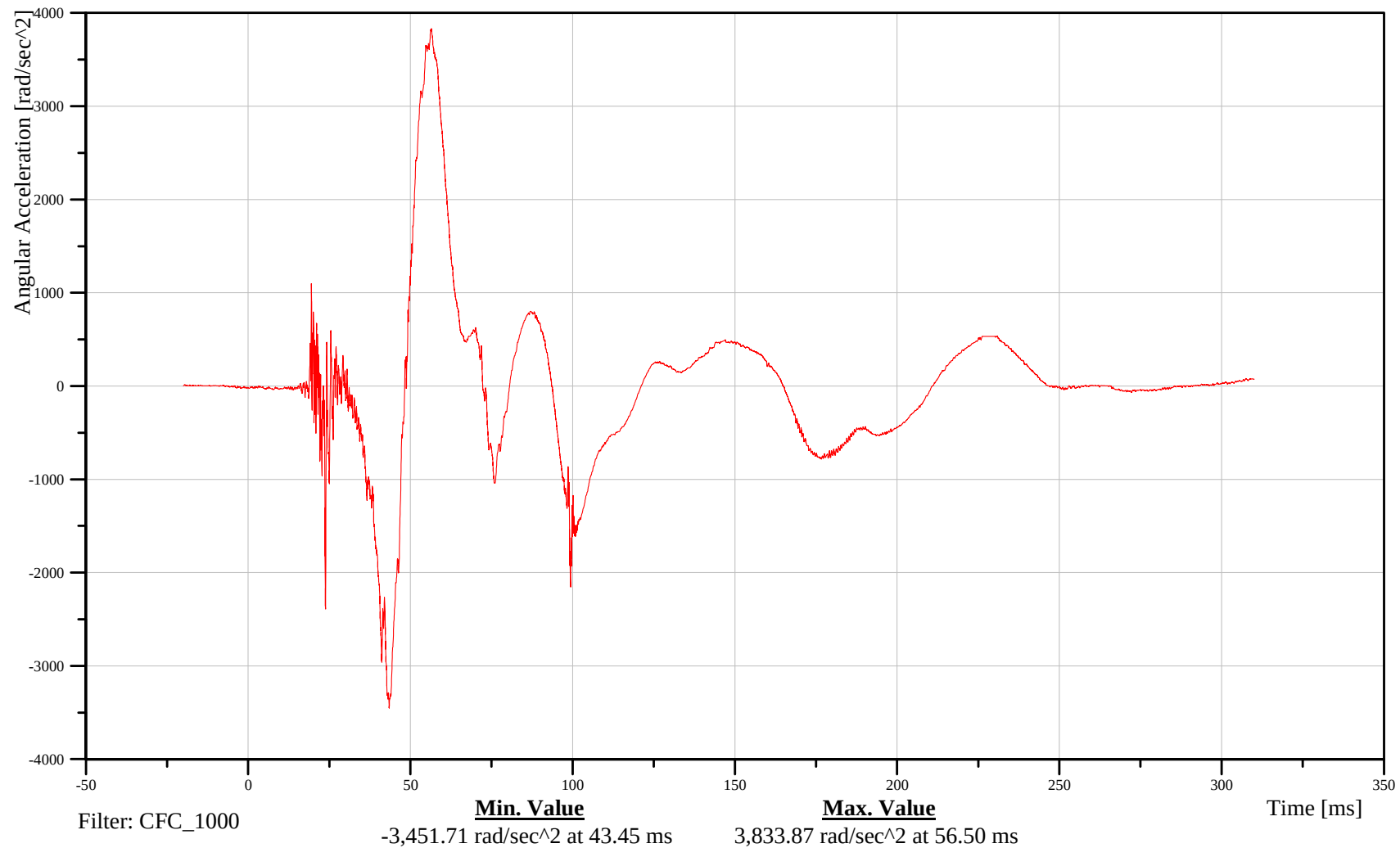
Head X-Axis Angular Displacement

Customer: VRTC

11HEADCG00WSANXA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-6

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

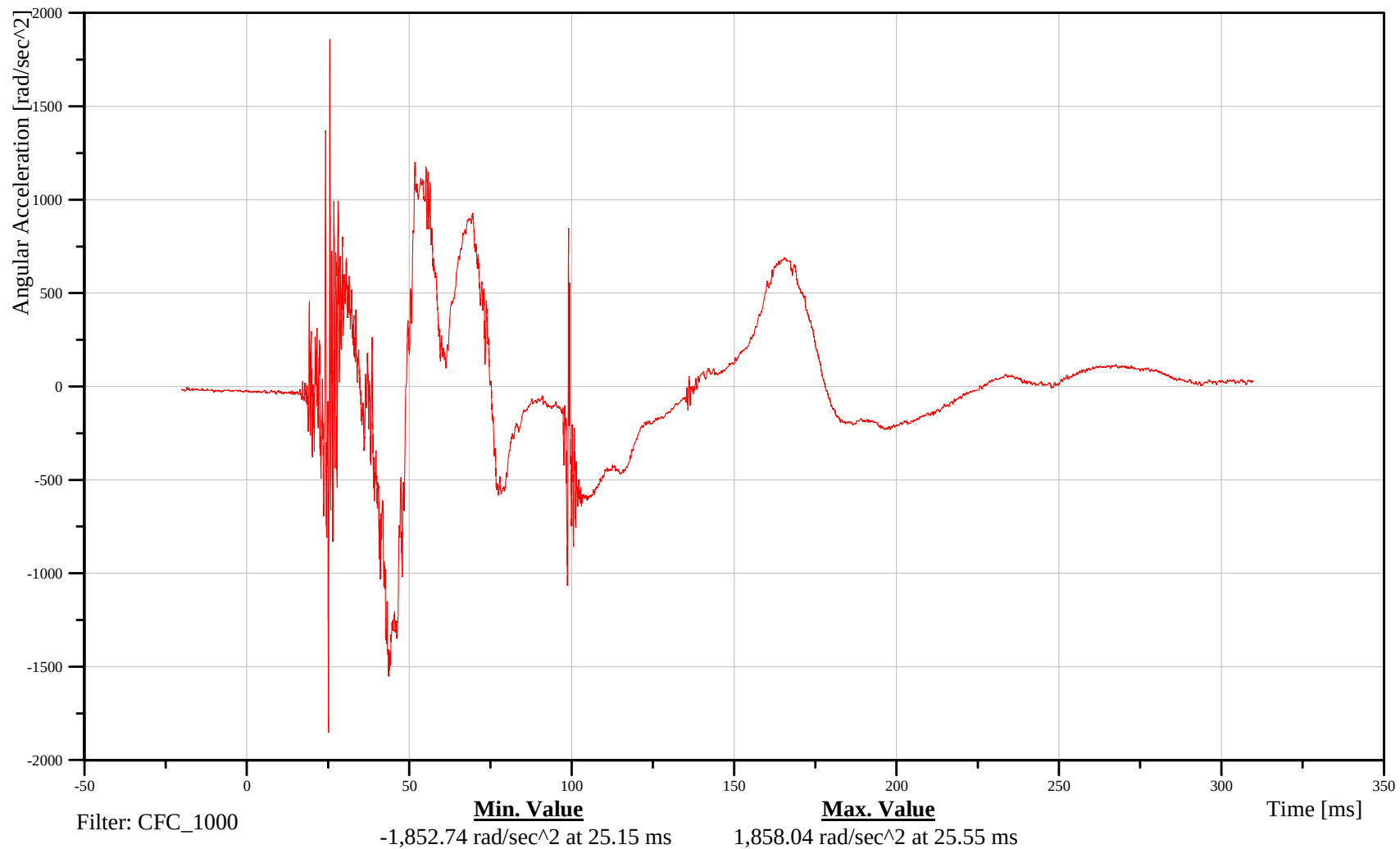
Head Y-Axis Angular Displacement

Customer: VRTC

11HEADCG00WSANYA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-7

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

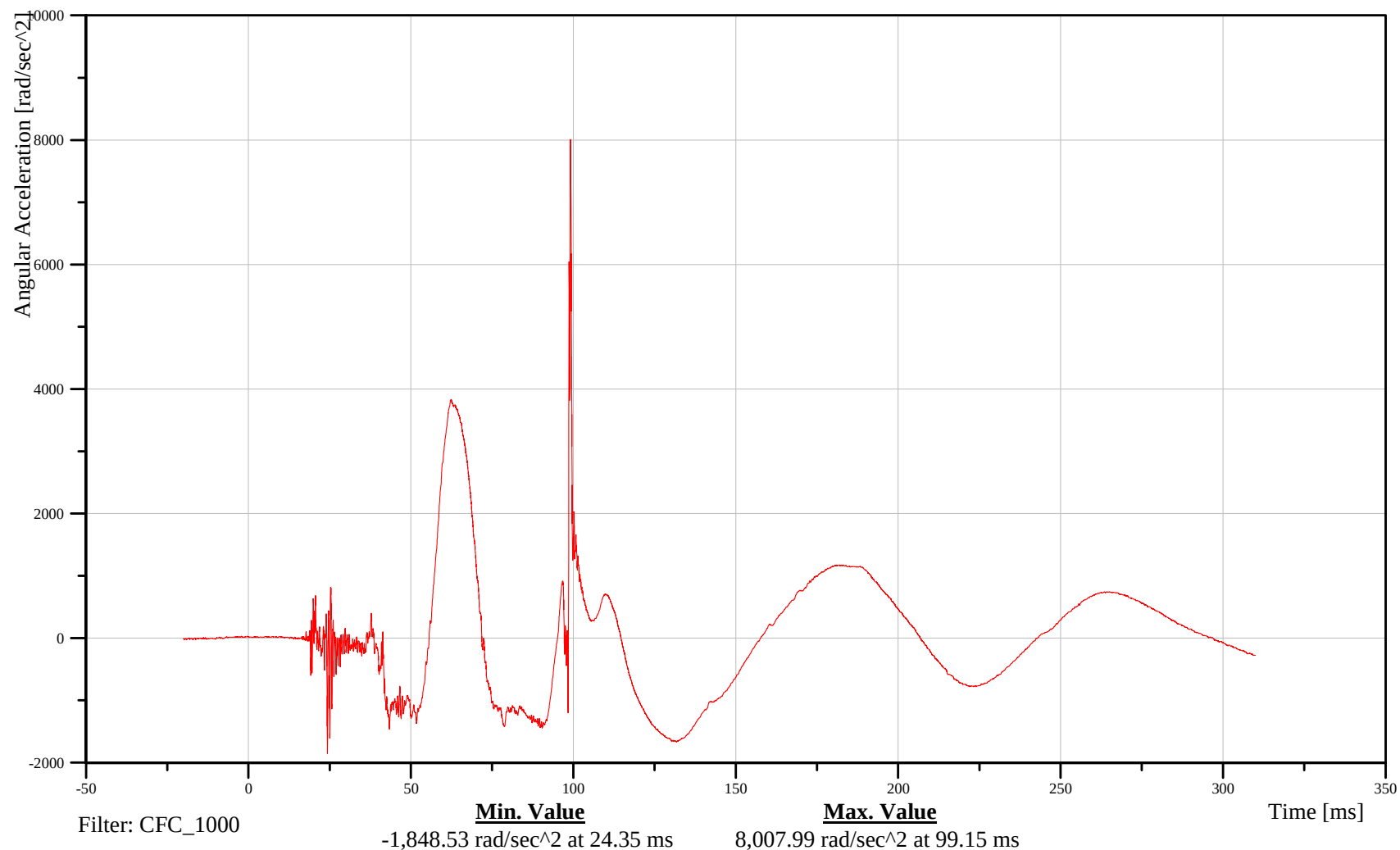
Head Z-Axis Angular Displacement

Customer: VRTC

11HEADCG00WSANZA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-8

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

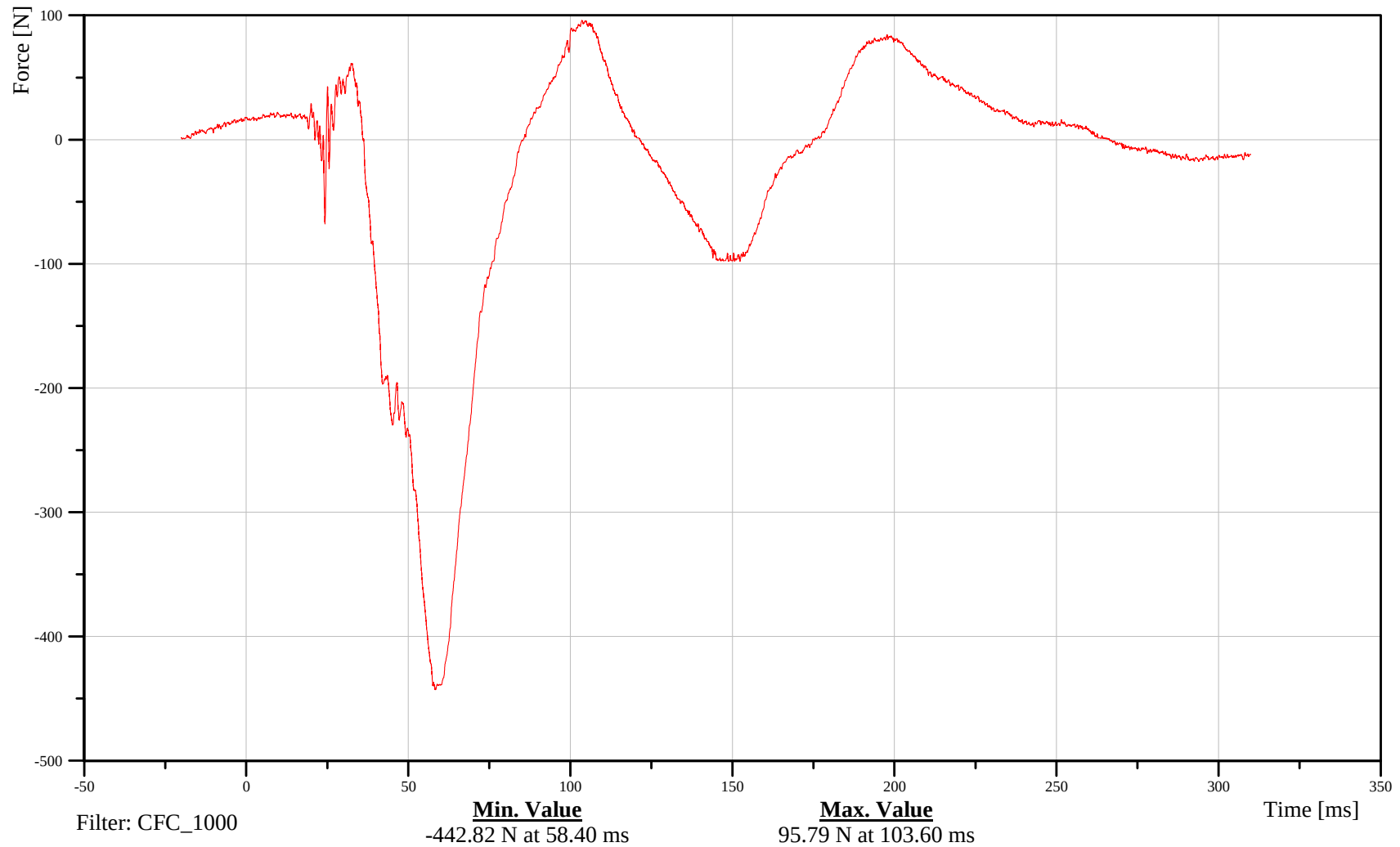
Upper Neck X-Axis Force

Customer: VRTC

11NECKUP00WSFOXA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-9

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

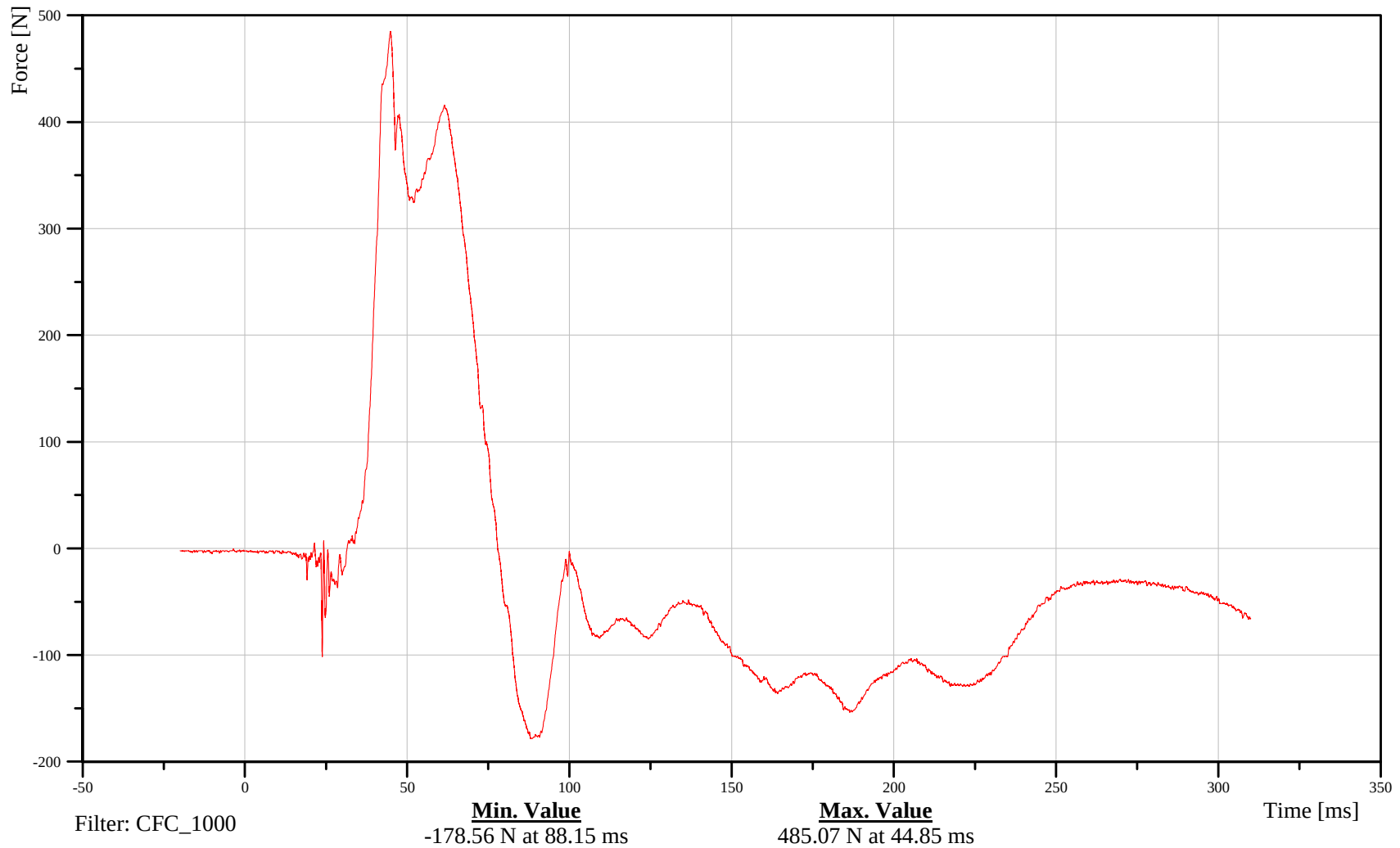
Upper Neck Y-Axis Force

Customer: VRTC

11NECKUP00WSFOYA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-10

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

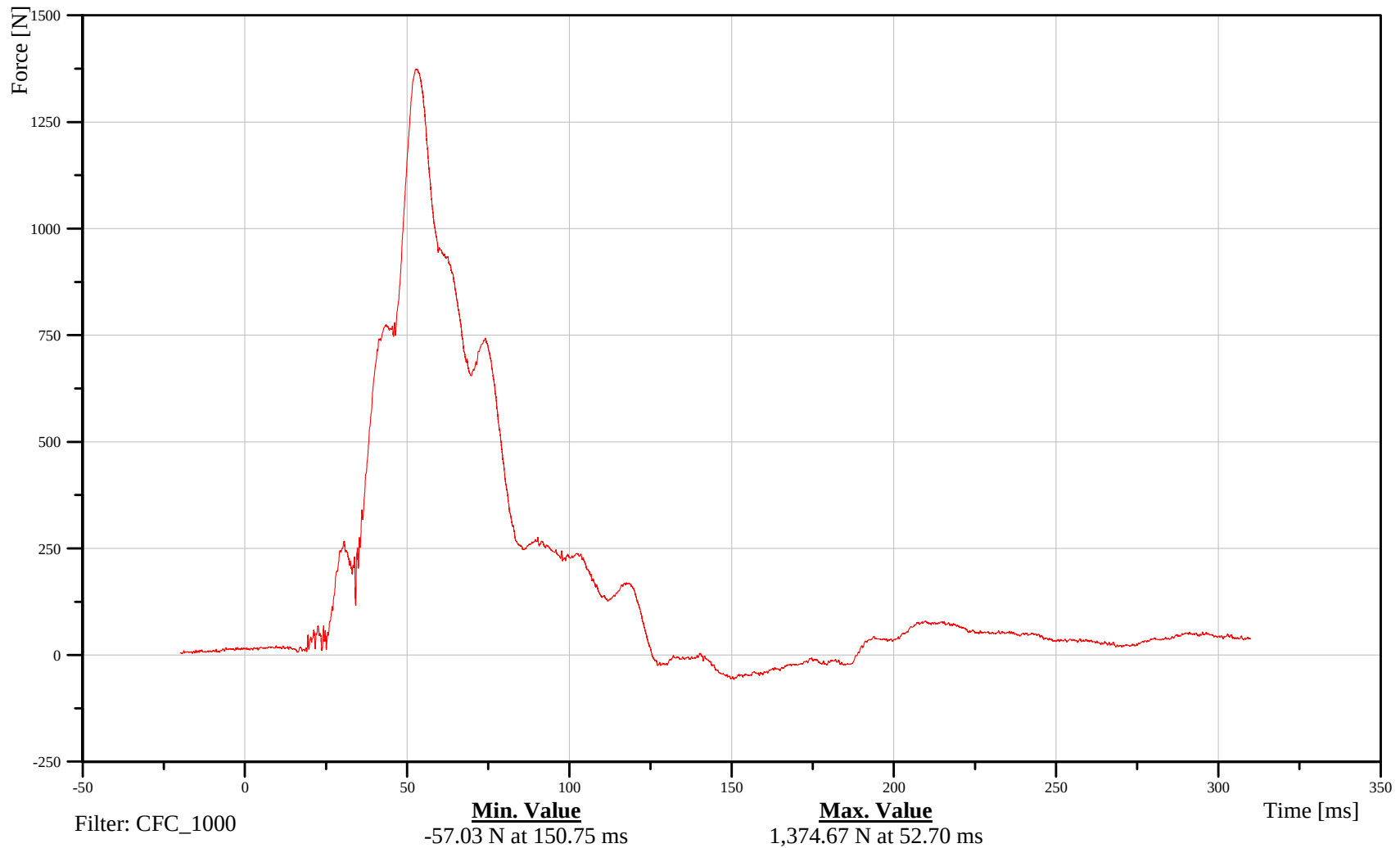
Upper Neck Z-Axis Force

Customer: VRTC

11NECKUP00WSFOZA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-11

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

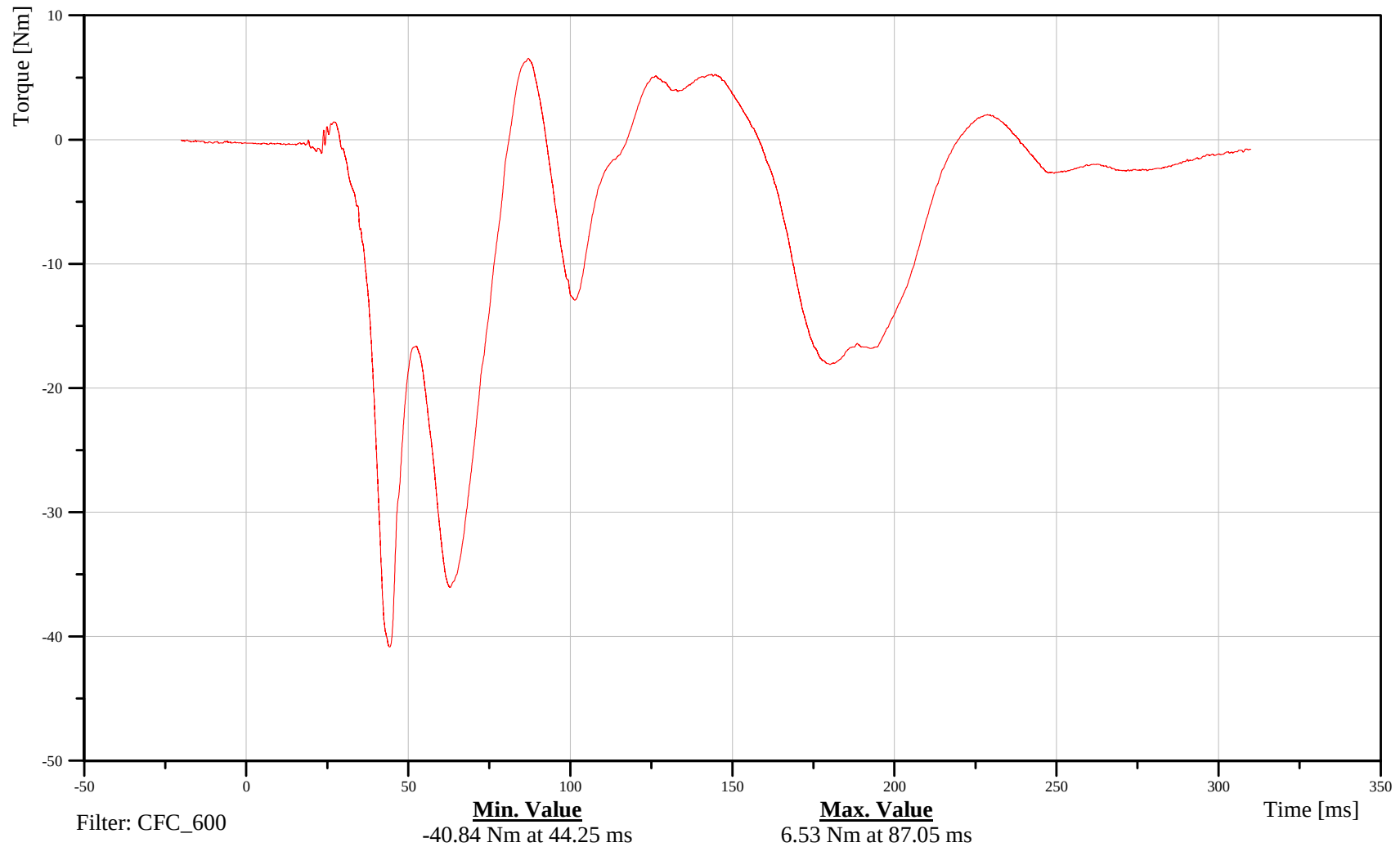
Upper Neck Moment About X Axis

Customer: VRTC

11NECKUP00WSMOXB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-12

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

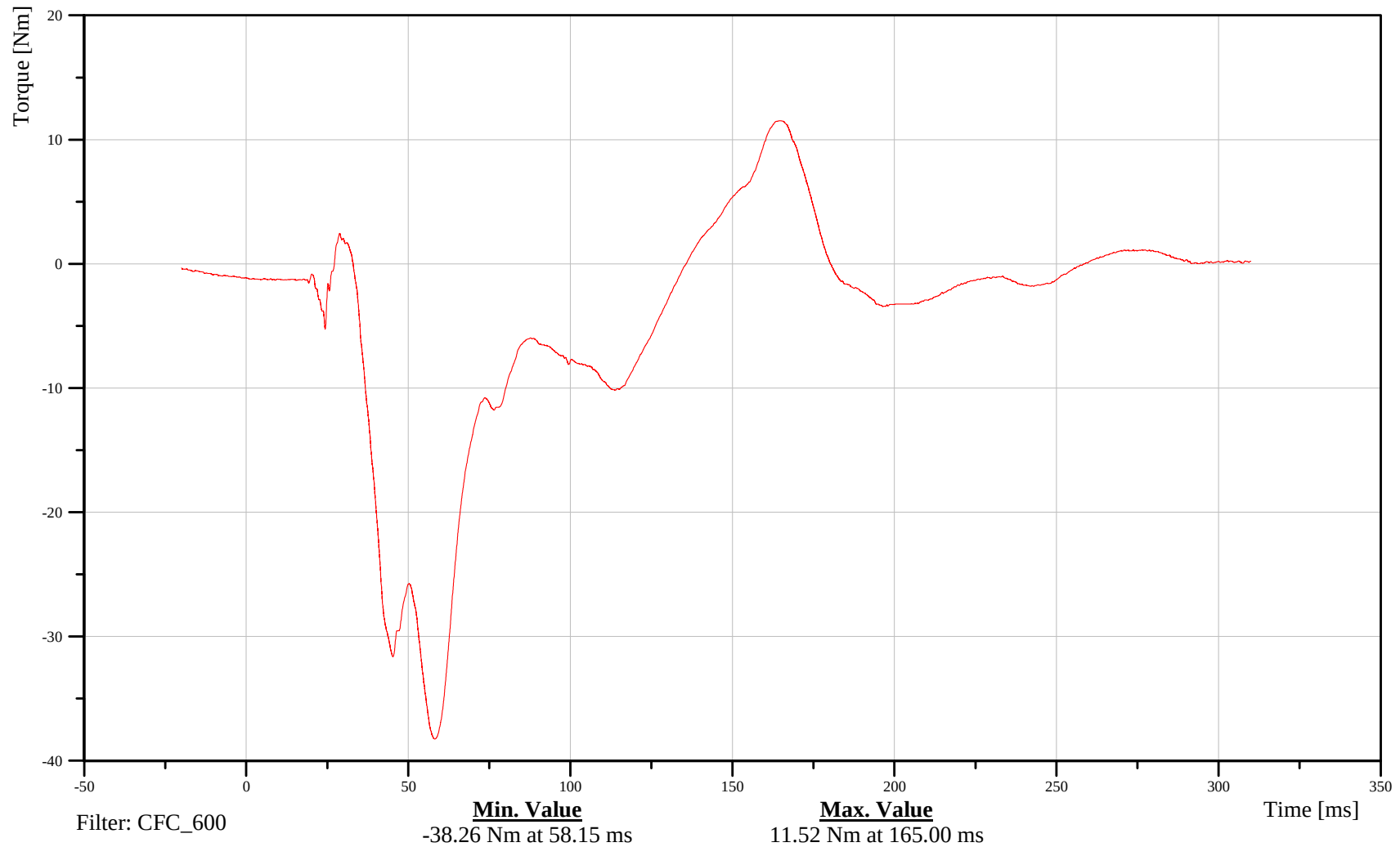
Upper Neck Moment About Y Axis

Customer: VRTC

11NECKUP00WSMOYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-13

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

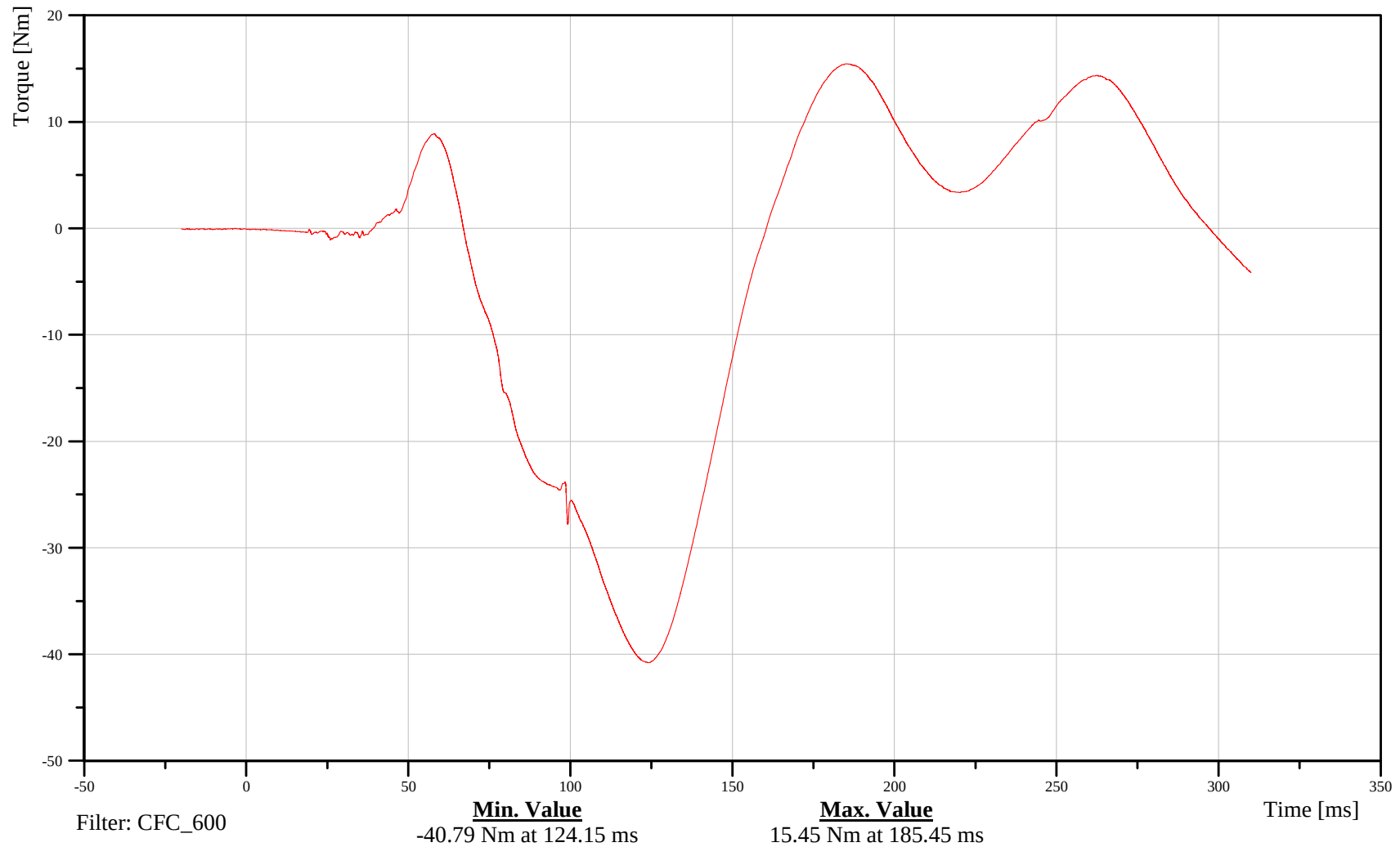
Upper Neck Moment About Z Axis

Customer: VRTC

11NECKUP00WSMOZB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-14

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

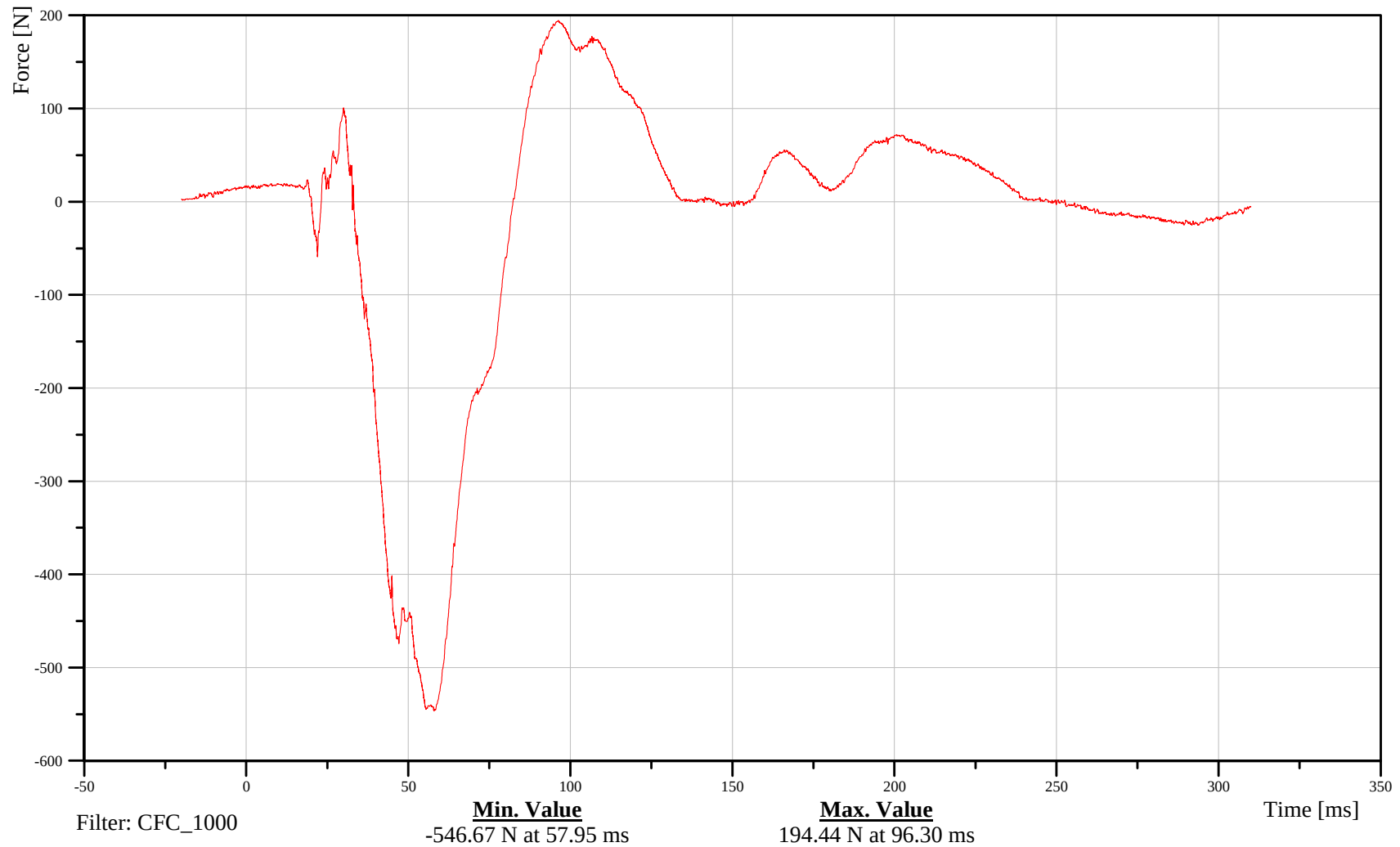
Lower Neck X-Axis Force

Customer: VRTC

11NECKLO00WSFOXA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-15

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

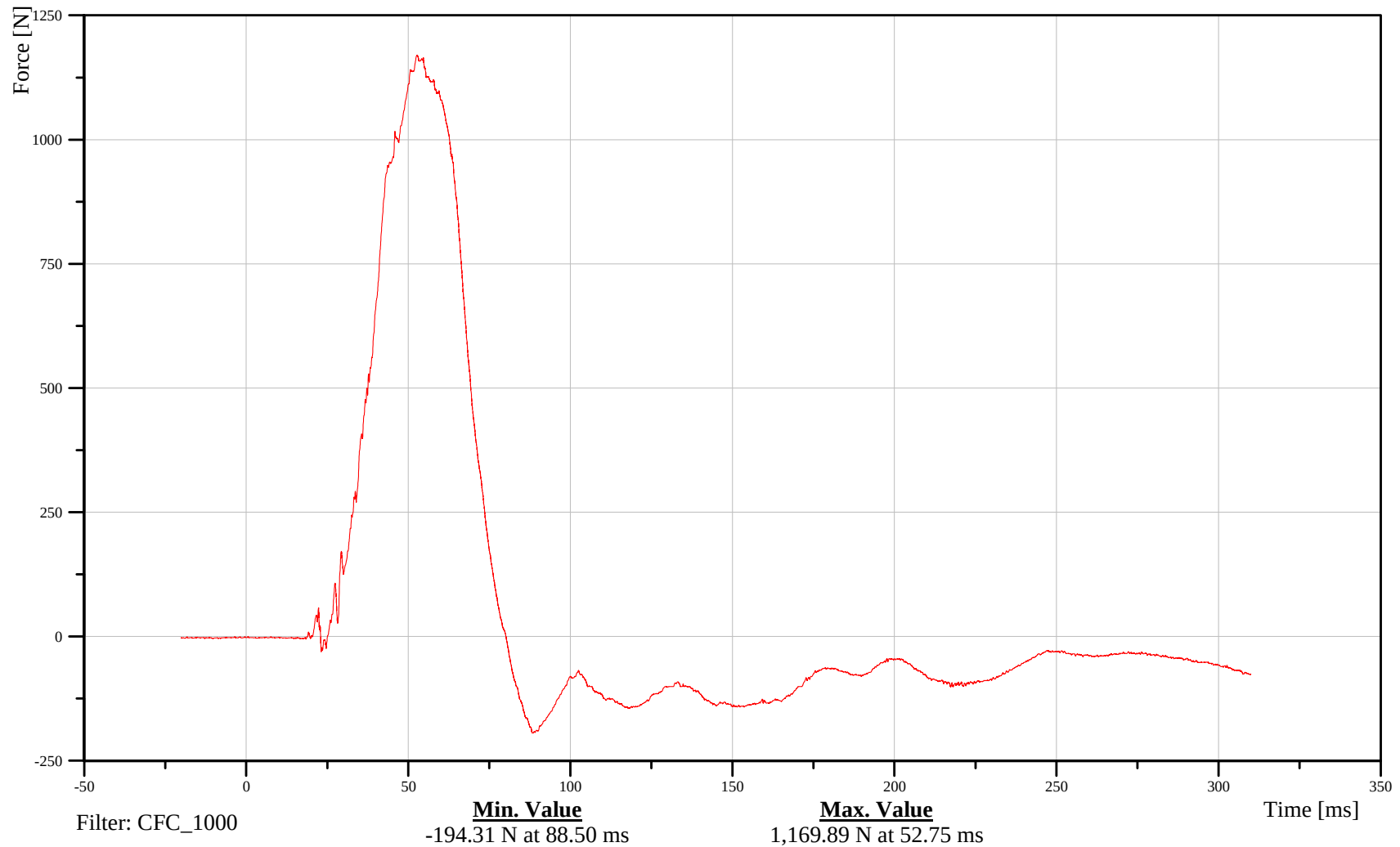
Lower Neck Y-Axis Force

Customer: VRTC

11NECKLO00WSFOYA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-16

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

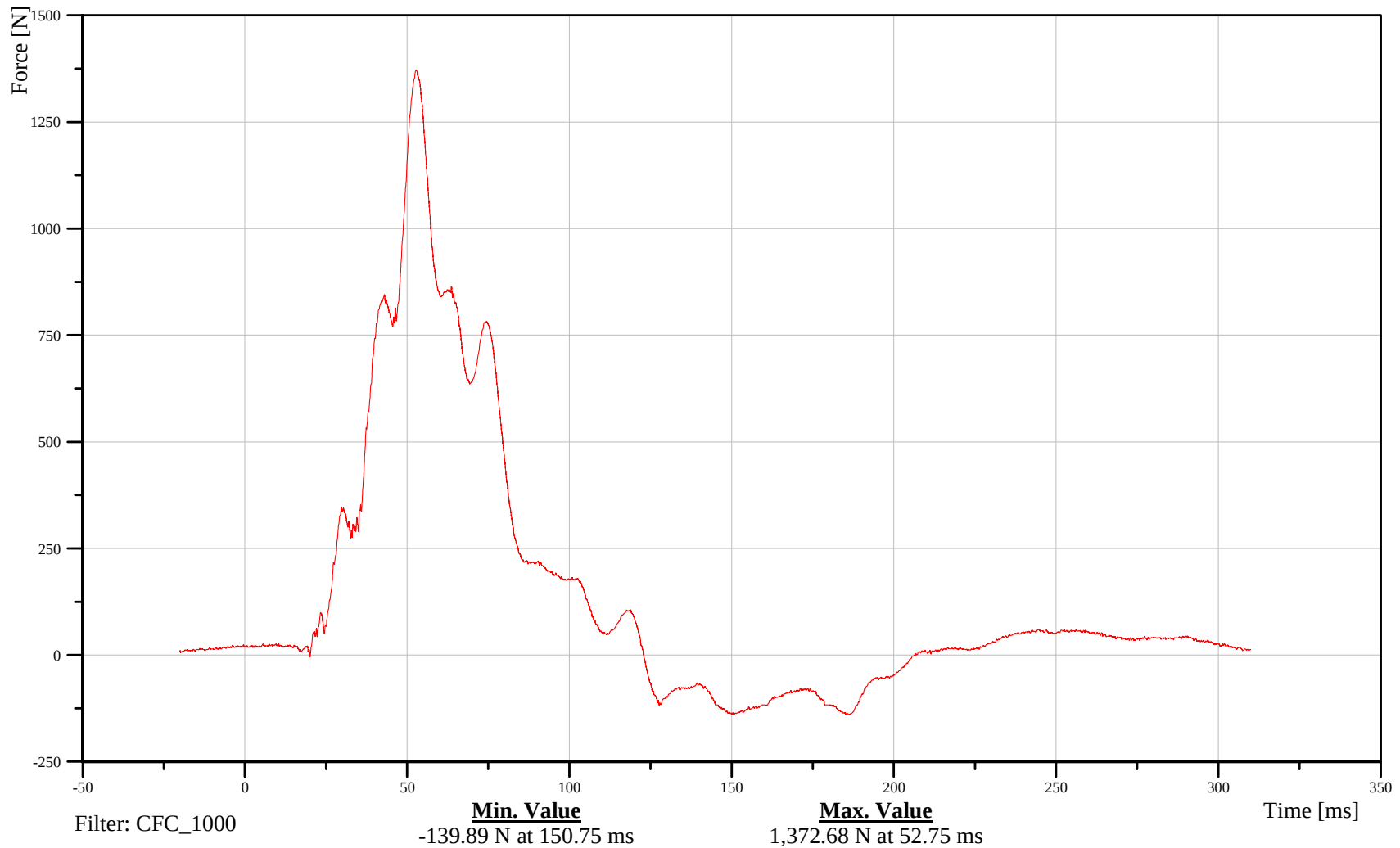
Lower Neck Z-Axis Force

Customer: VRTC

11NECKLO00WSFOZA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-17

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

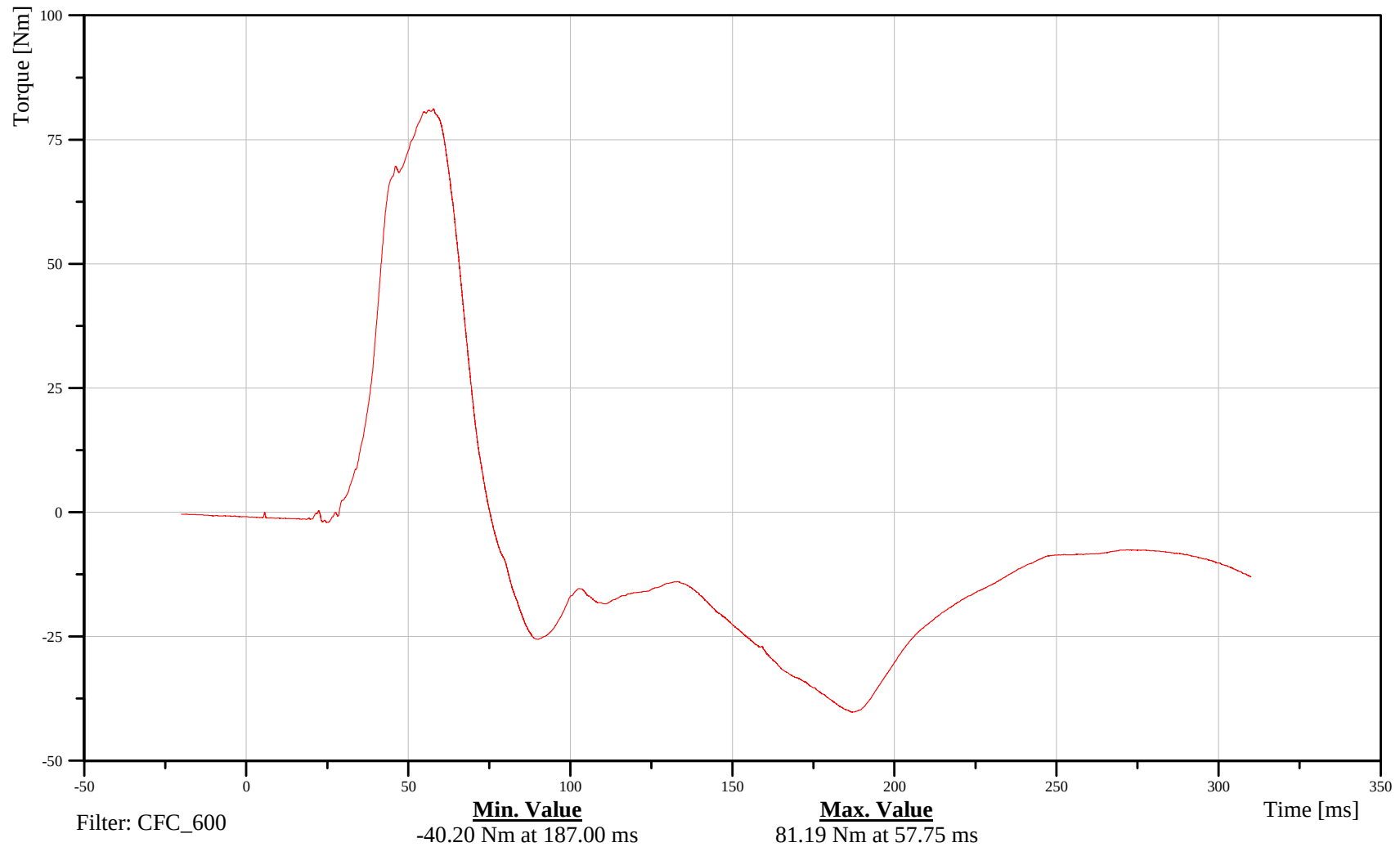
Lower Neck Moment About X Axis

Customer: VRTC

11NECKLO00WSMOXB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-18

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

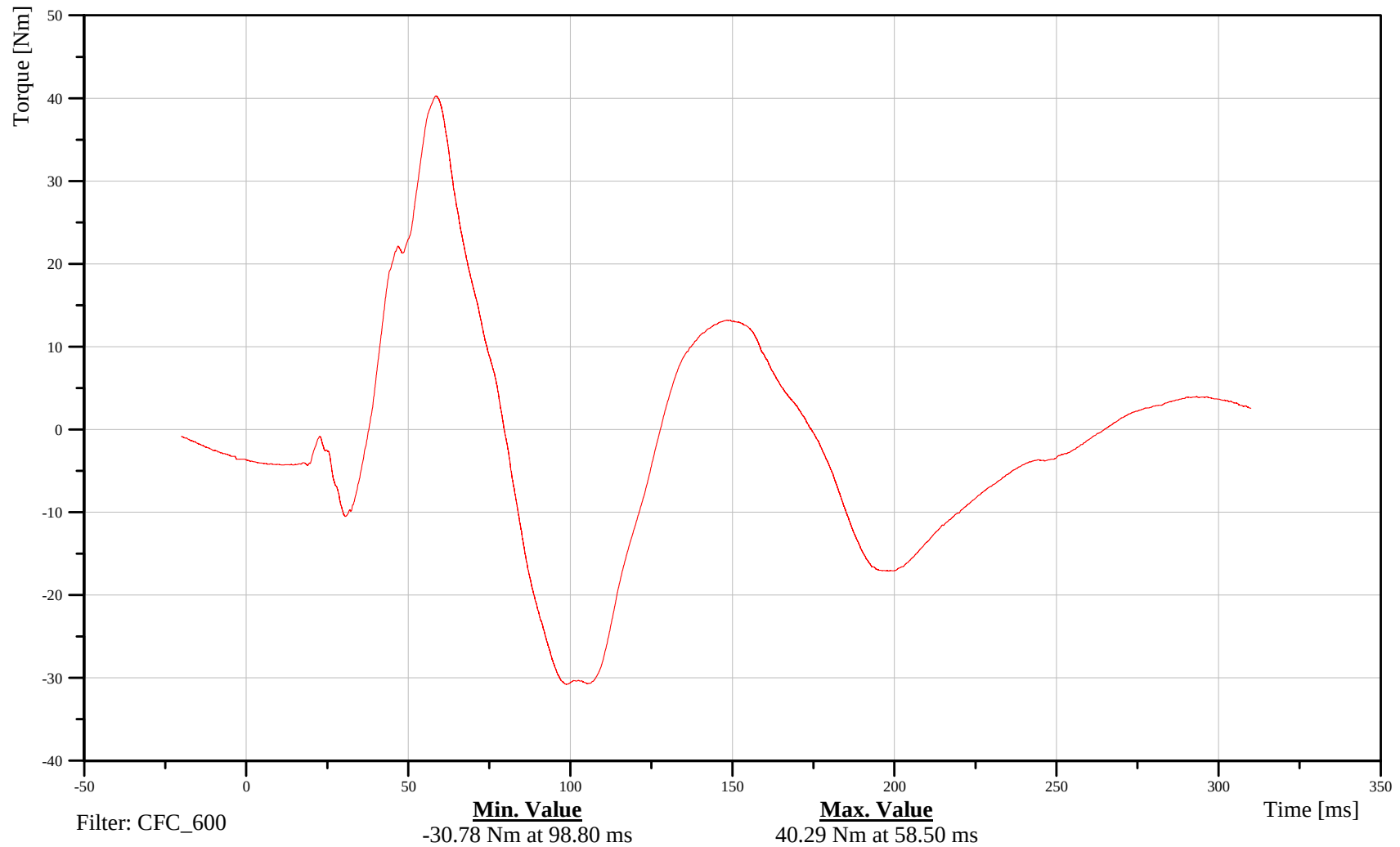
Lower Neck Moment About Y Axis

Customer: VRTC

11NECKLO00WSMOYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-19

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

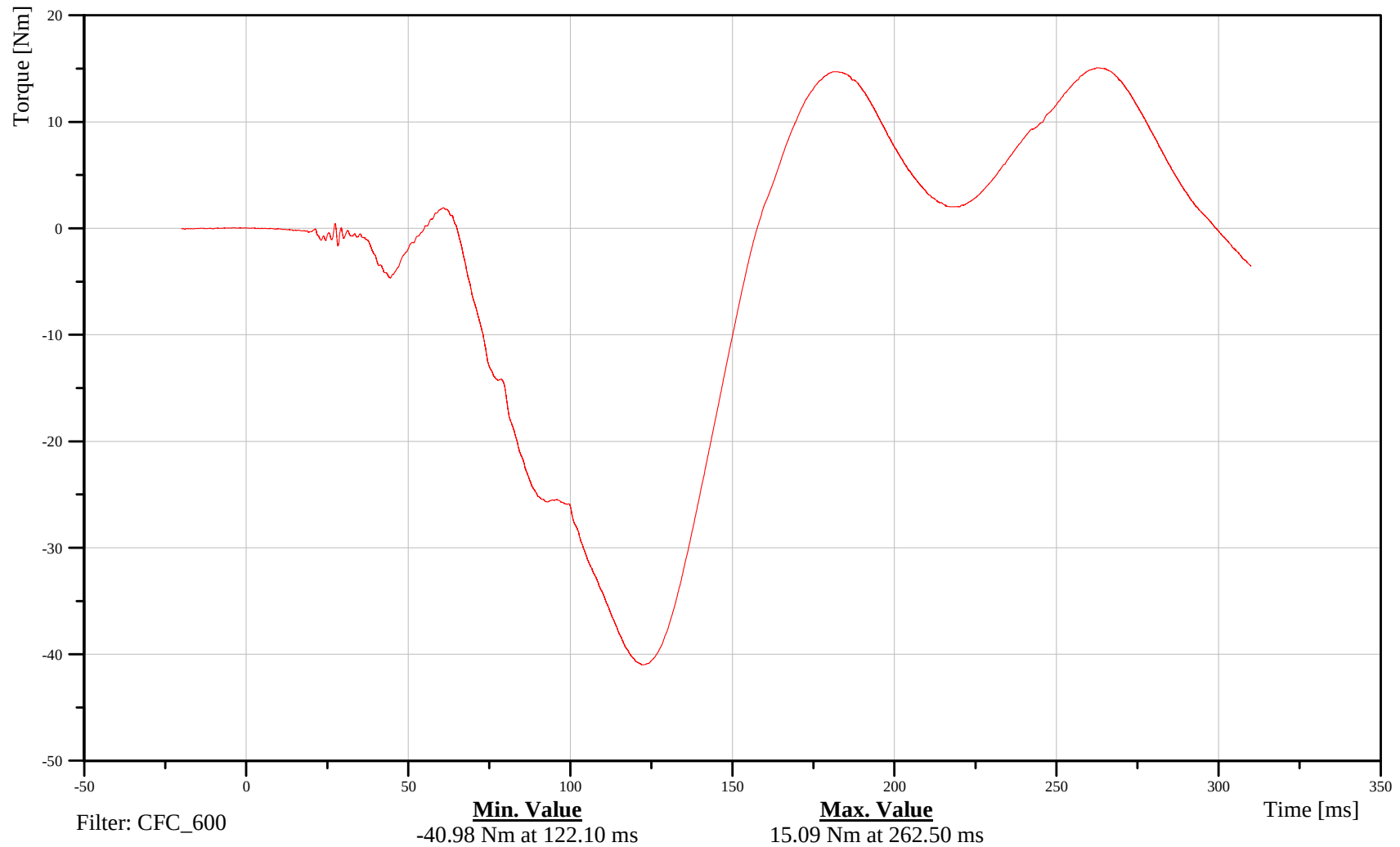
Lower Neck Moment About Z Axis

Customer: VRTC

11NECKLO00WSMOZB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-20

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

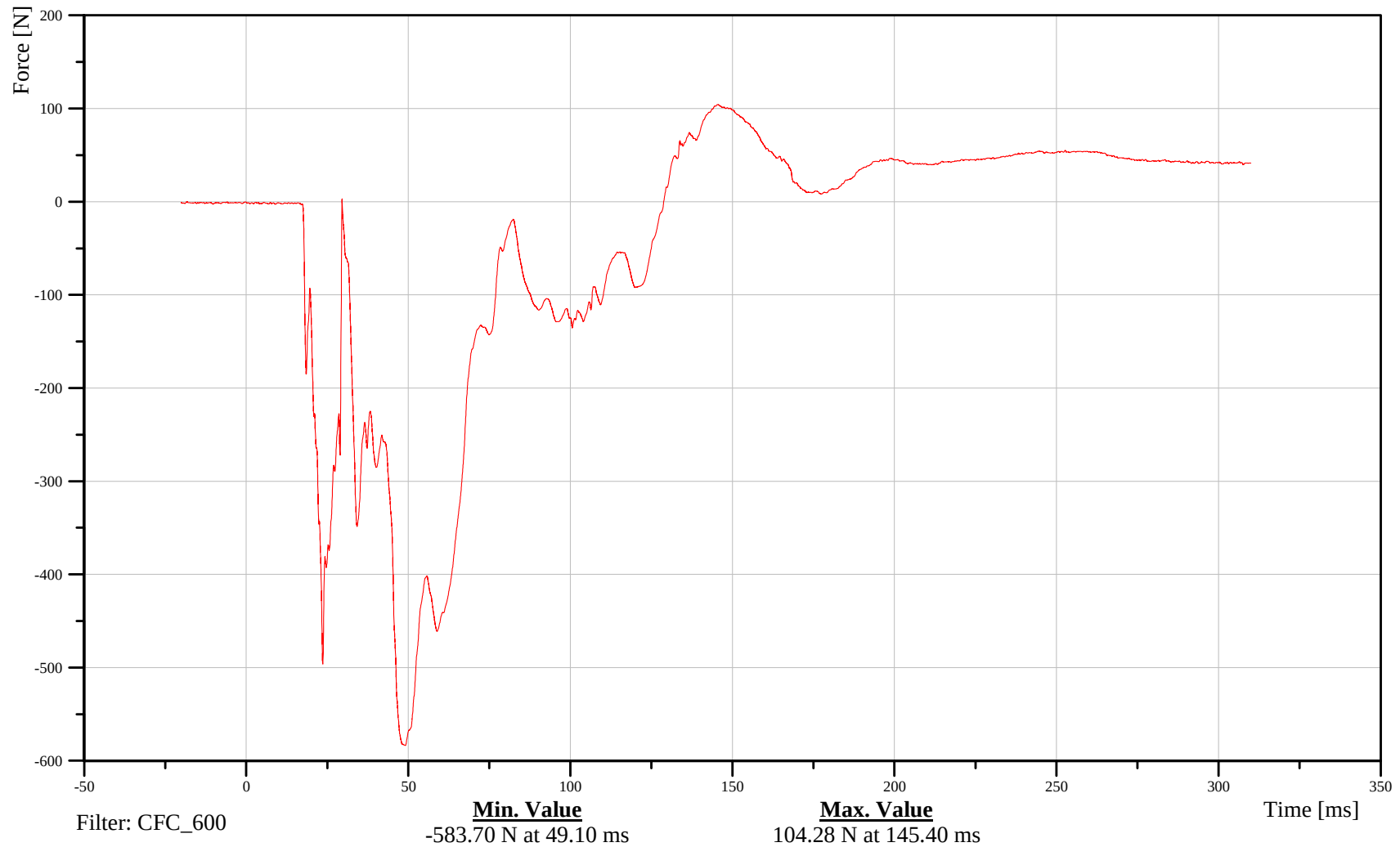
Shoulder X-Axis Force

Customer: VRTC

11SHLDLE00WSFOXB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-21

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

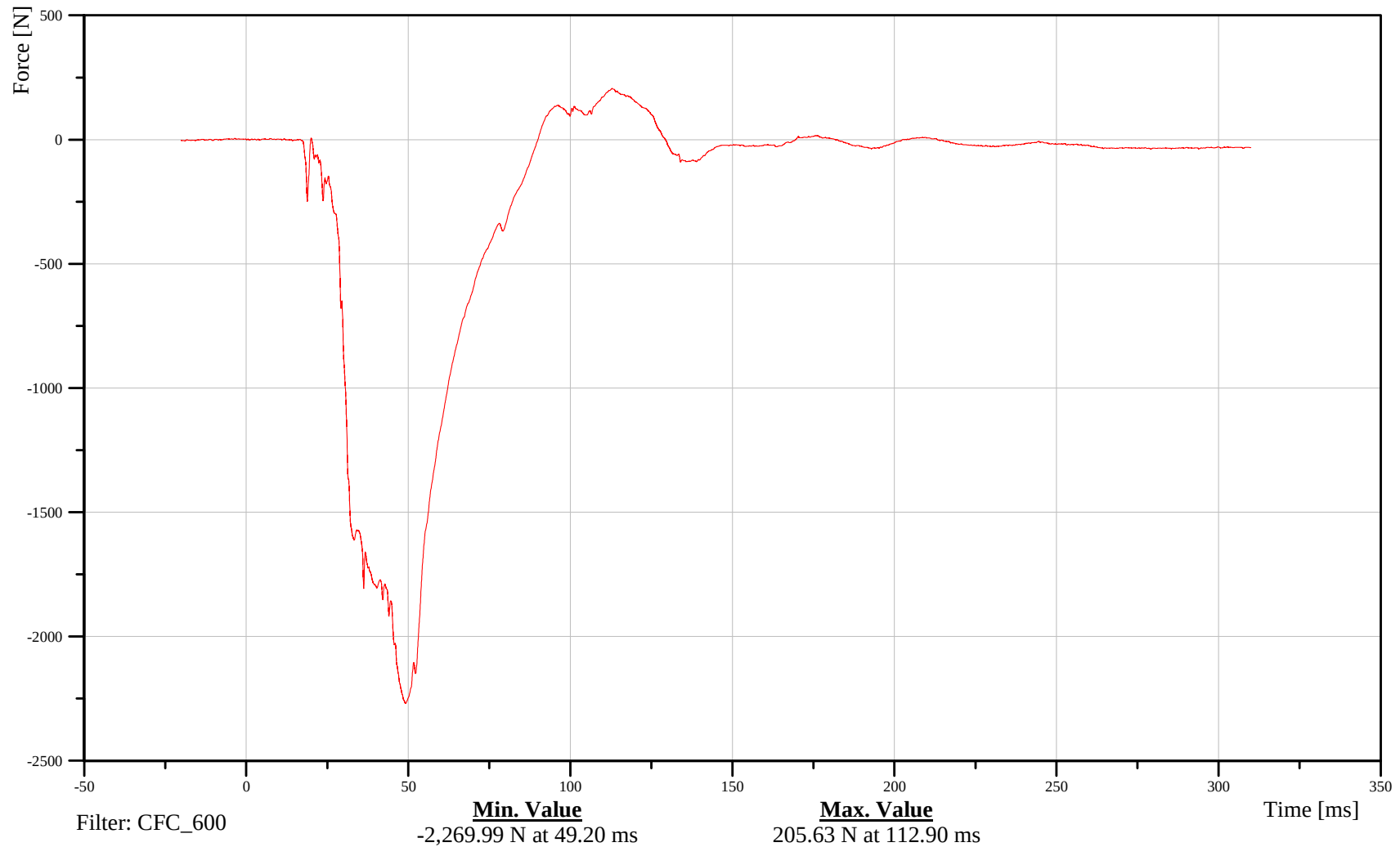
Shoulder Y-Axis Force

Customer: VRTC

11SHLDLE00WSFOYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-22

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

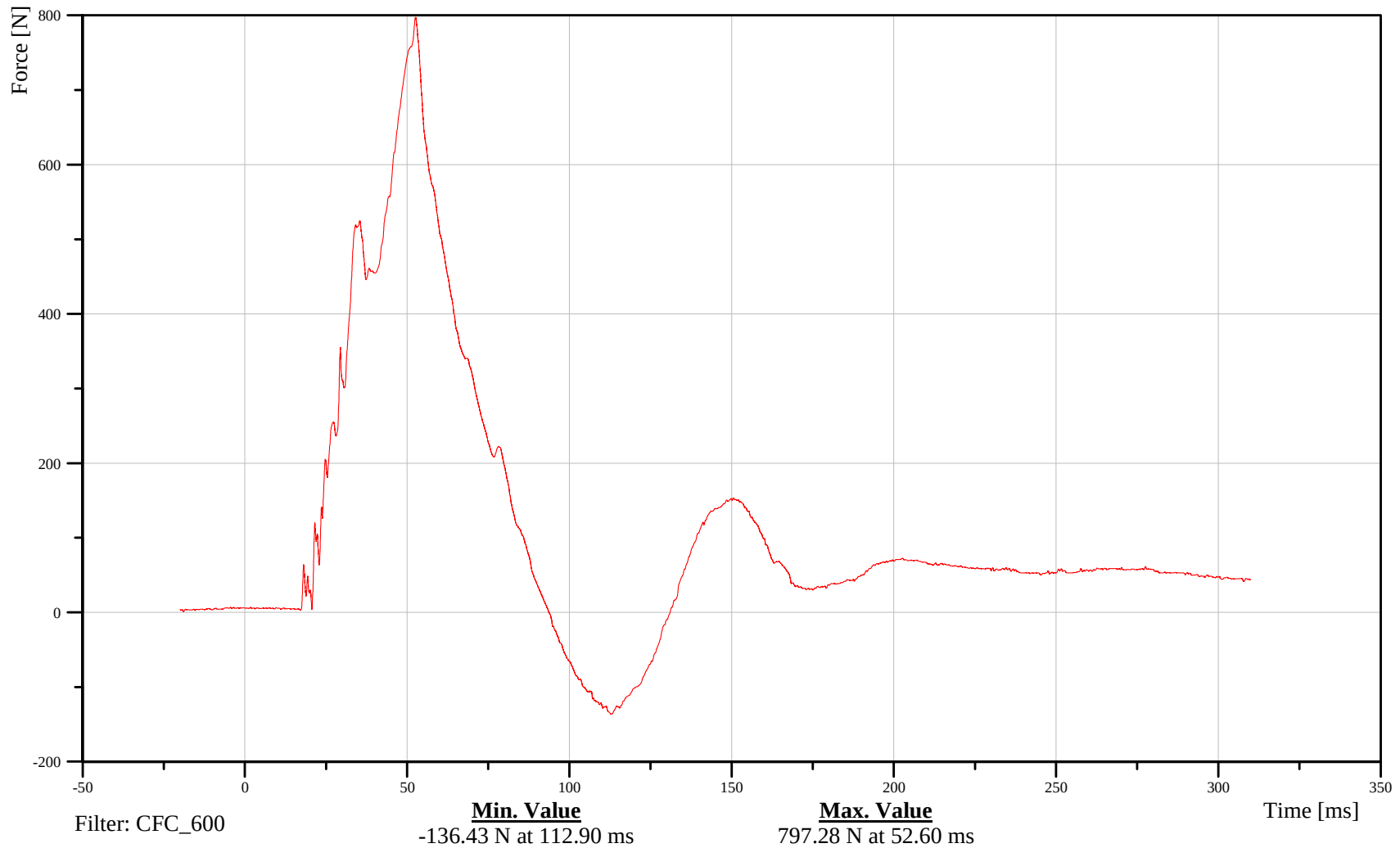
Shoulder Z-Axis Force

Customer: VRTC

11SHLDLE00WSFOZB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-23

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

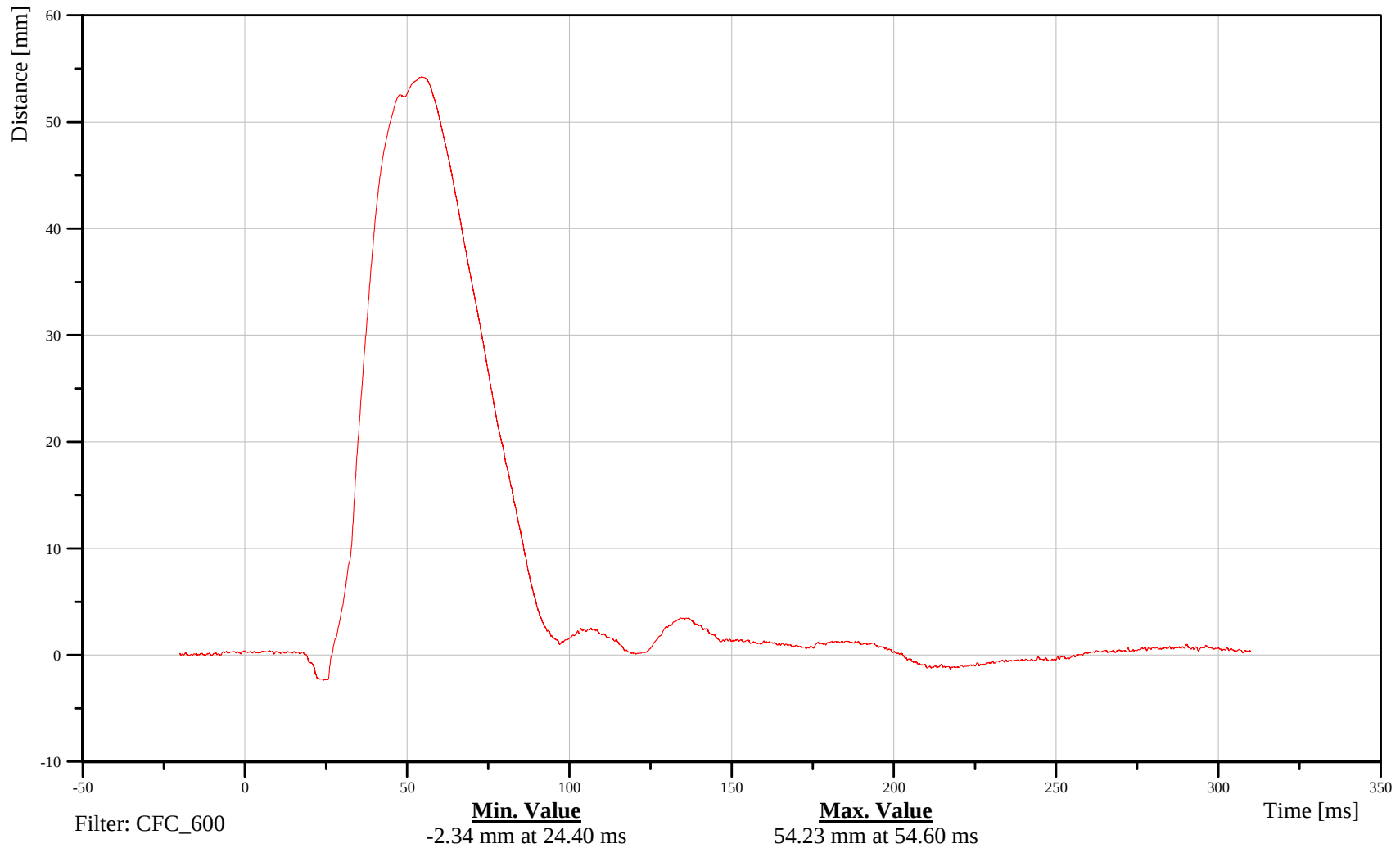
Shoulder Y-Axis Displacement

Customer: VRTC

11SHLDLE00WSDSYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-24

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

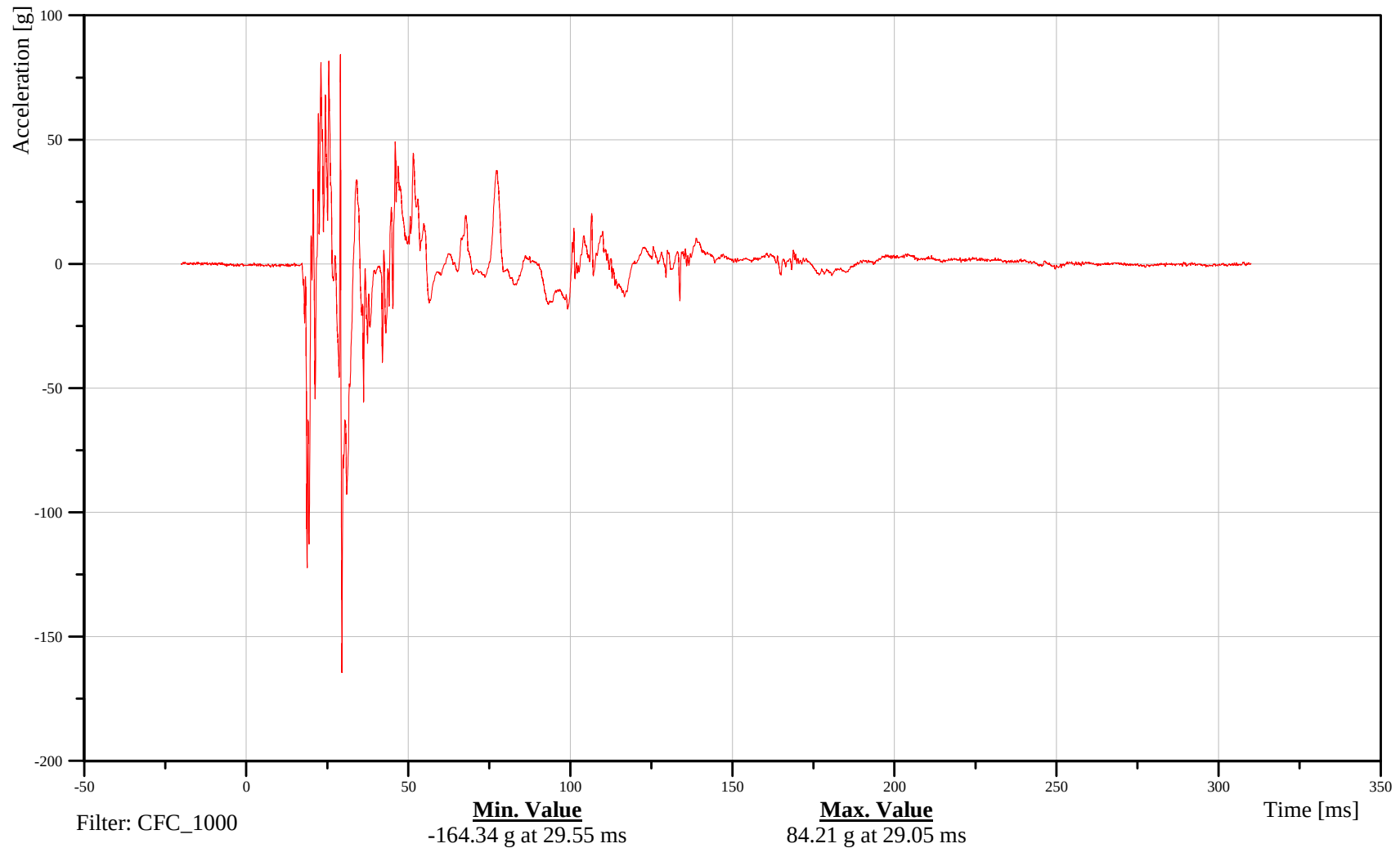
Shoulder X-Axis Acceleration

Customer: VRTC

11SHLDLE00WSACXA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-25

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

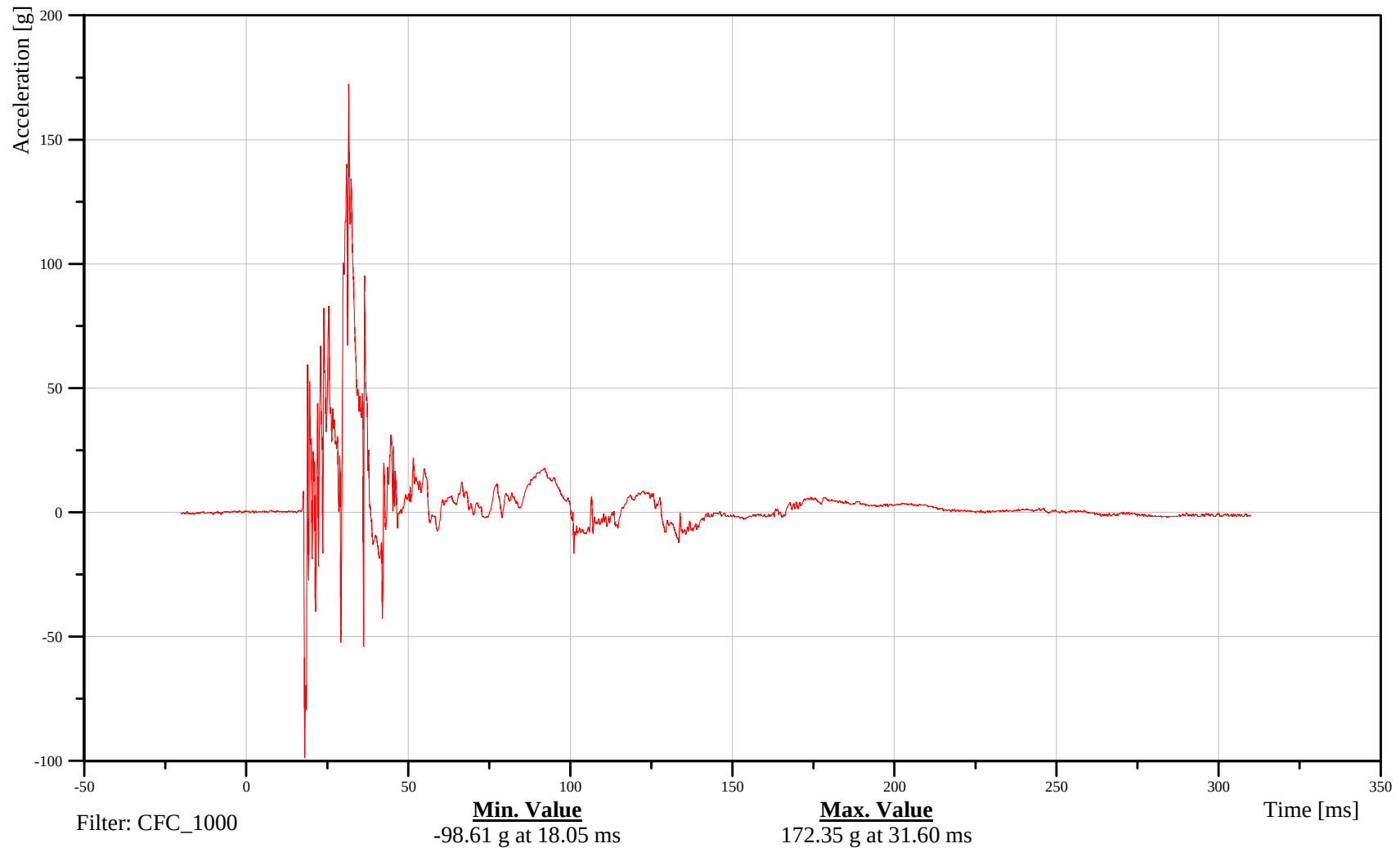
Shoulder Y-Axis Acceleration

Customer: VRTC

11SHLDLE00WSACYA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-26

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

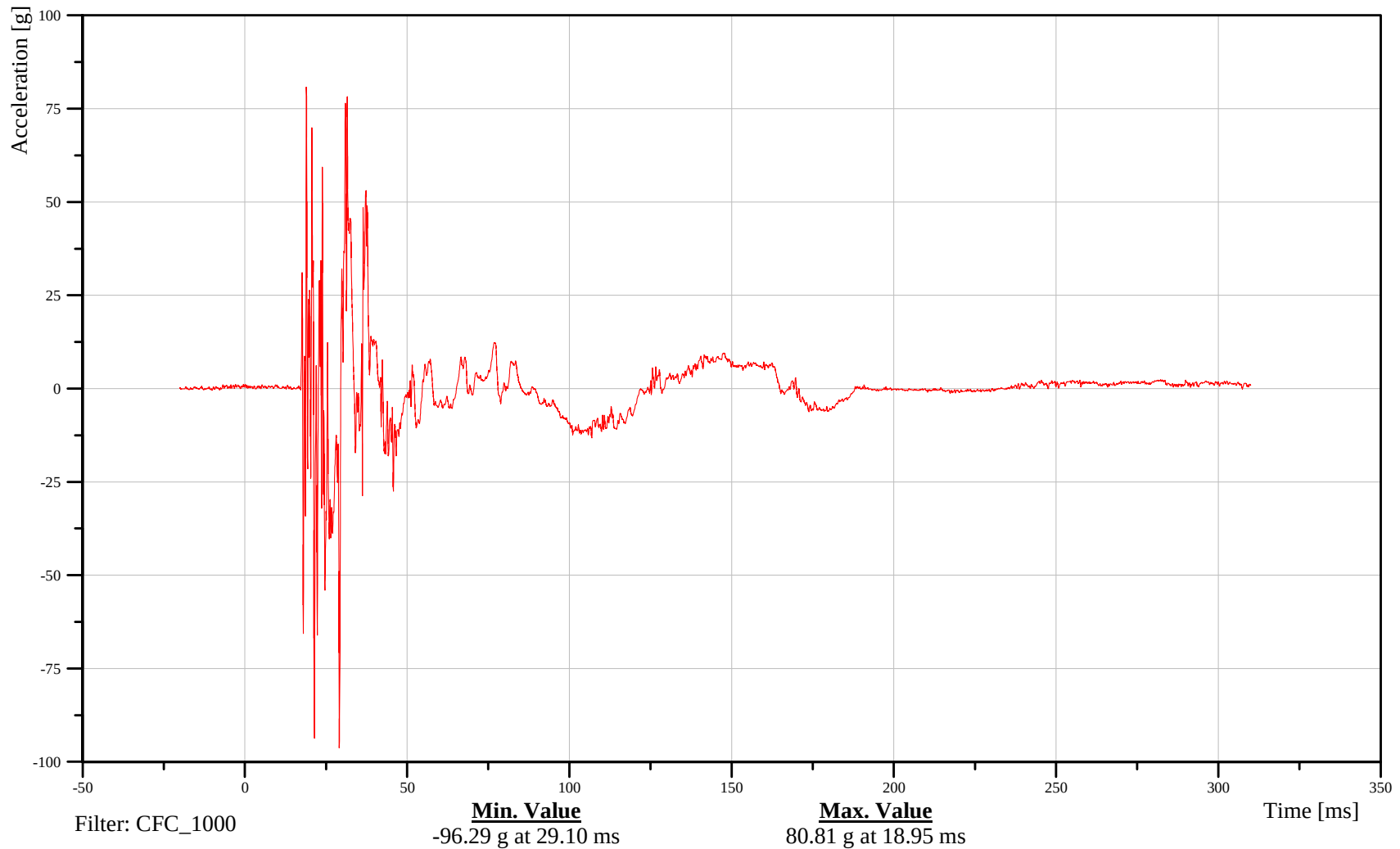
Shoulder Z-Axis Acceleration

Customer: VRTC

11SHLDLE00WSACZA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-27

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

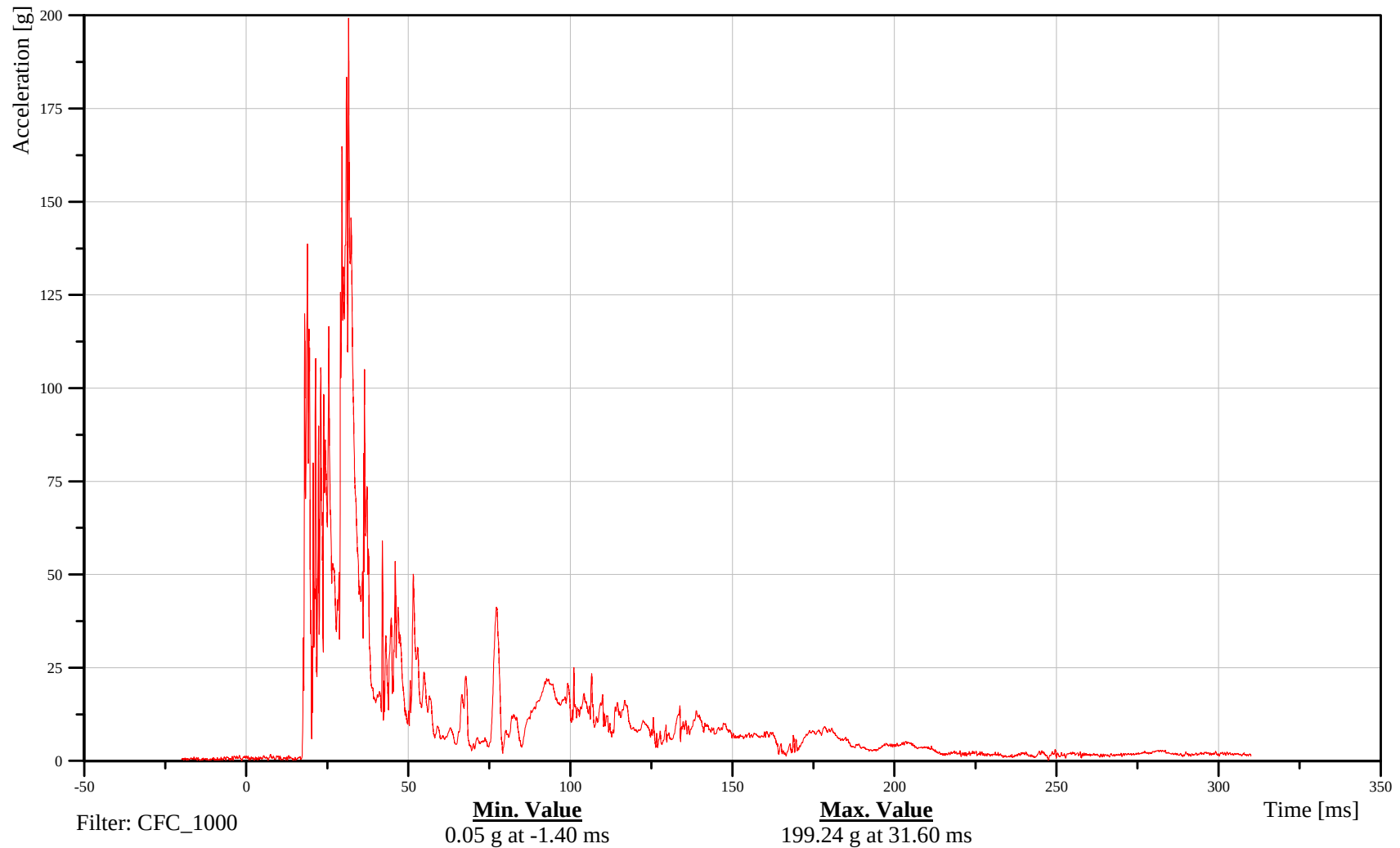
Shoulder Resultant Acceleration

Customer: VRTC

11SHLDLE00WSACRA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-28

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

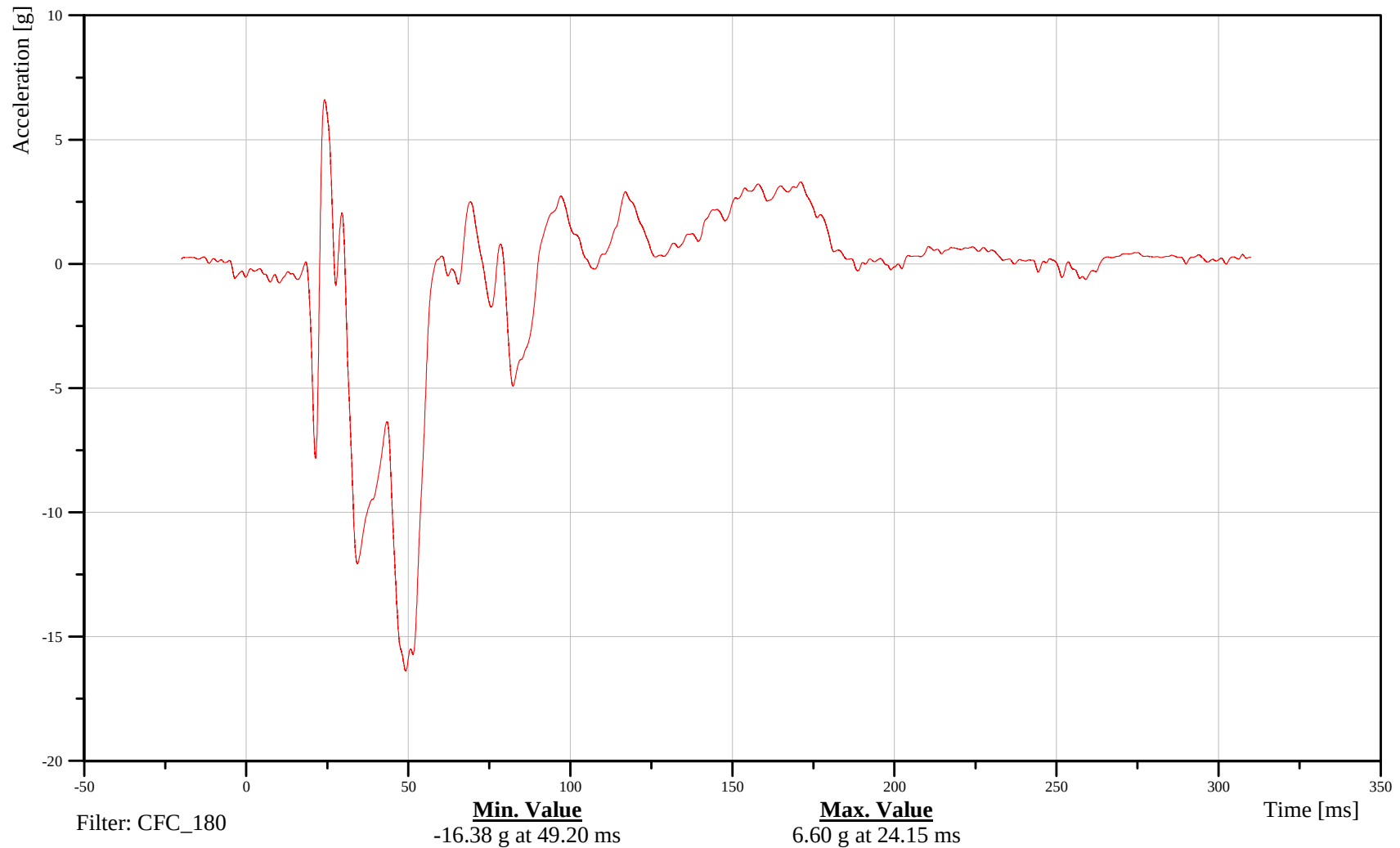
T1 X-Axis Acceleration

Customer: VRTC

11THSP0100WSACXC

TRC Inc. Test Lab: CTF

Test Number: 100617



B-29

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

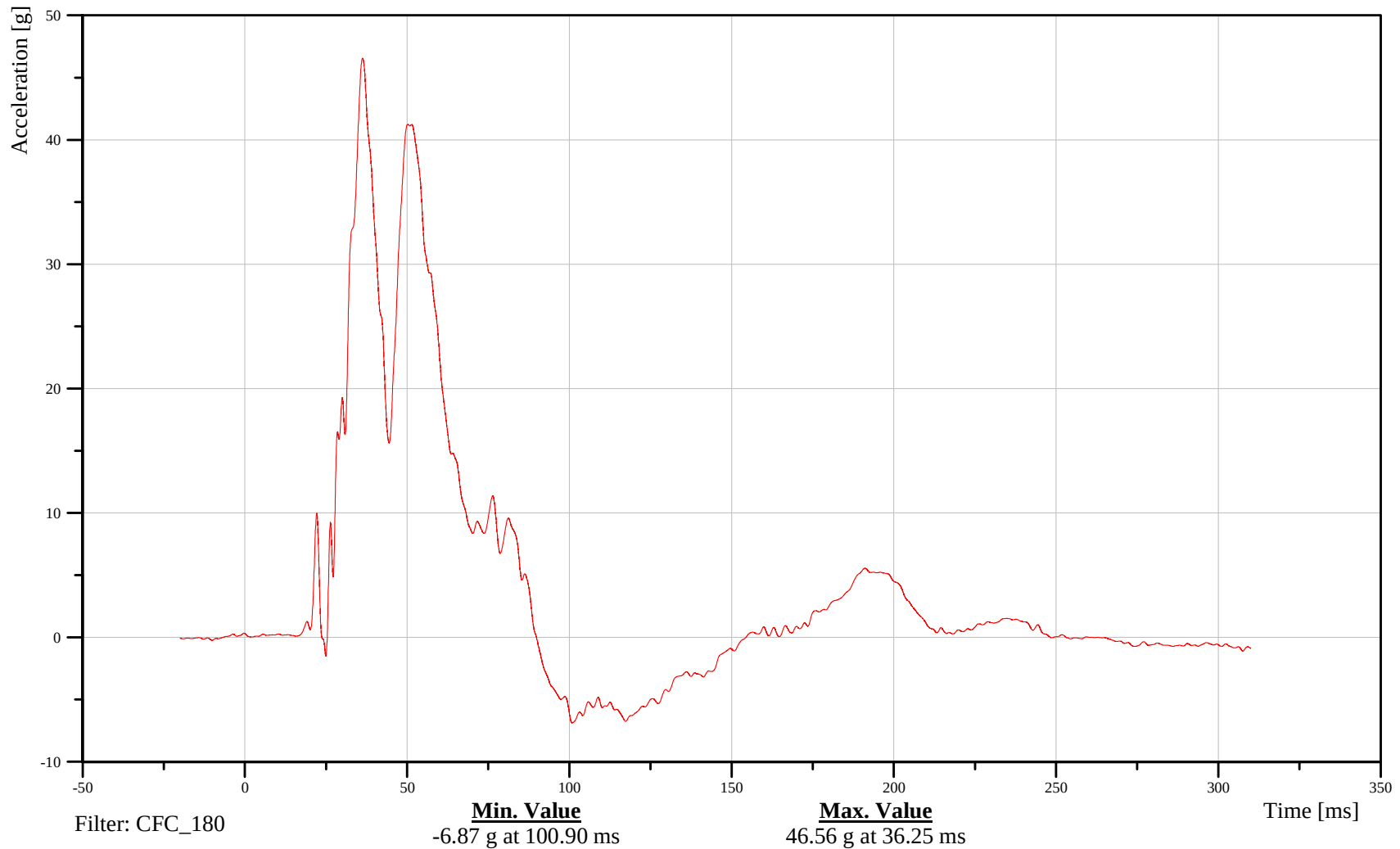
T1 Y-Axis Acceleration

Customer: VRTC

11THSP0100WSACYC

TRC Inc. Test Lab: CTF

Test Number: 100617



B-30

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

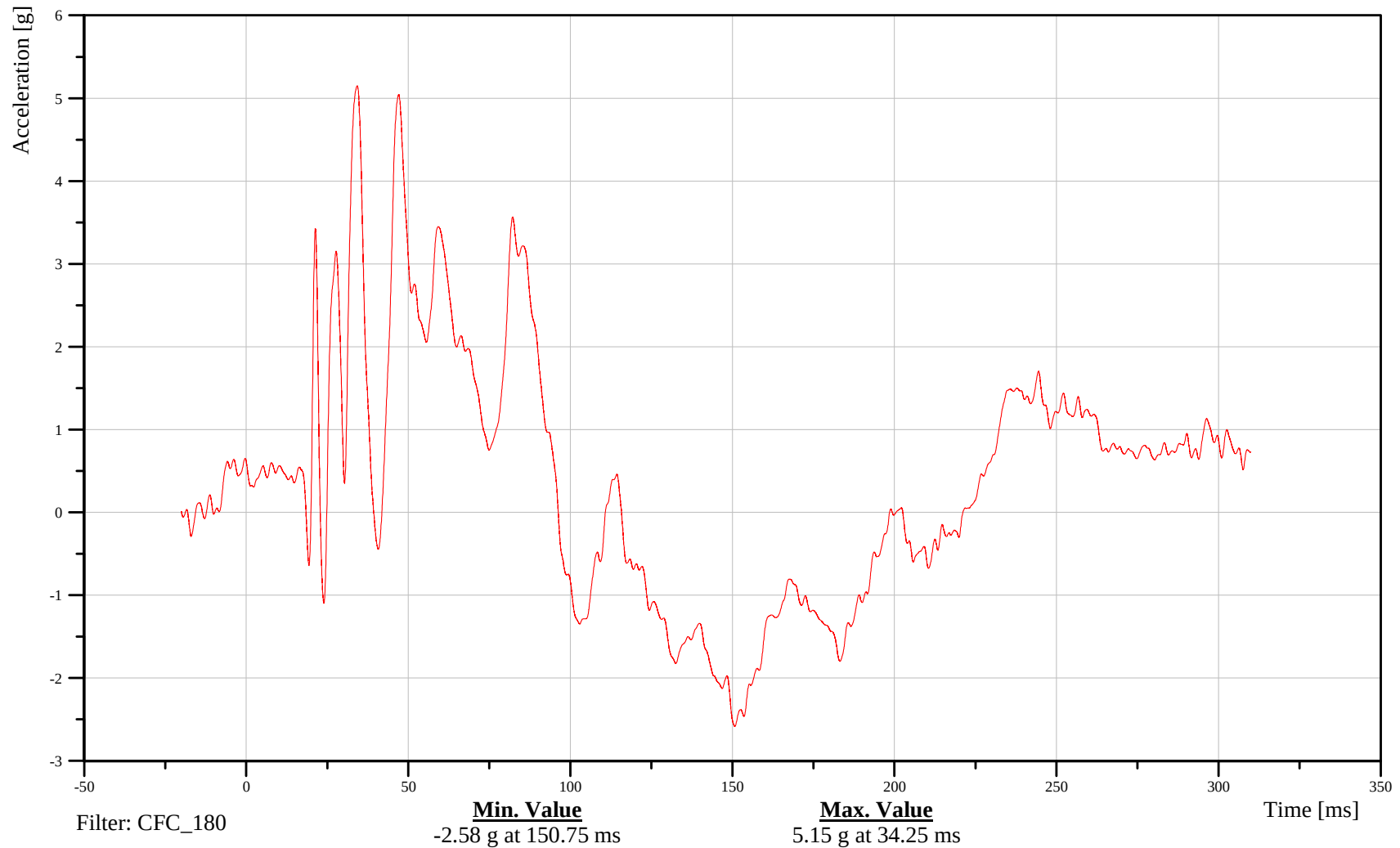
T1 Z-Axis Acceleration

Customer: VRTC

11THSP0100WSACZC

TRC Inc. Test Lab: CTF

Test Number: 100617



B-31

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

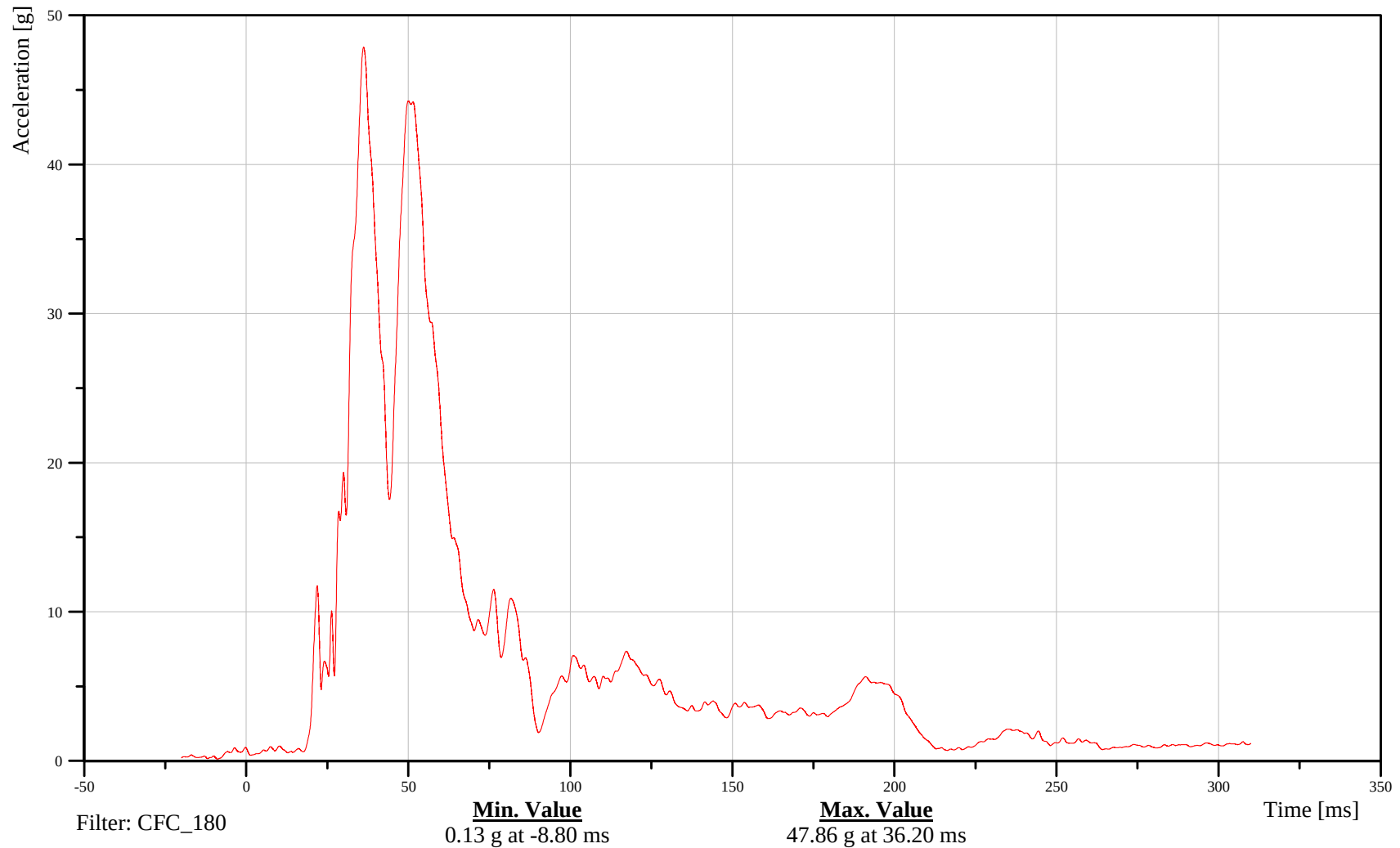
T1 Resultant Acceleration

Customer: VRTC

11THSP0100WSACRC

TRC Inc. Test Lab: CTF

Test Number: 100617



B-32

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

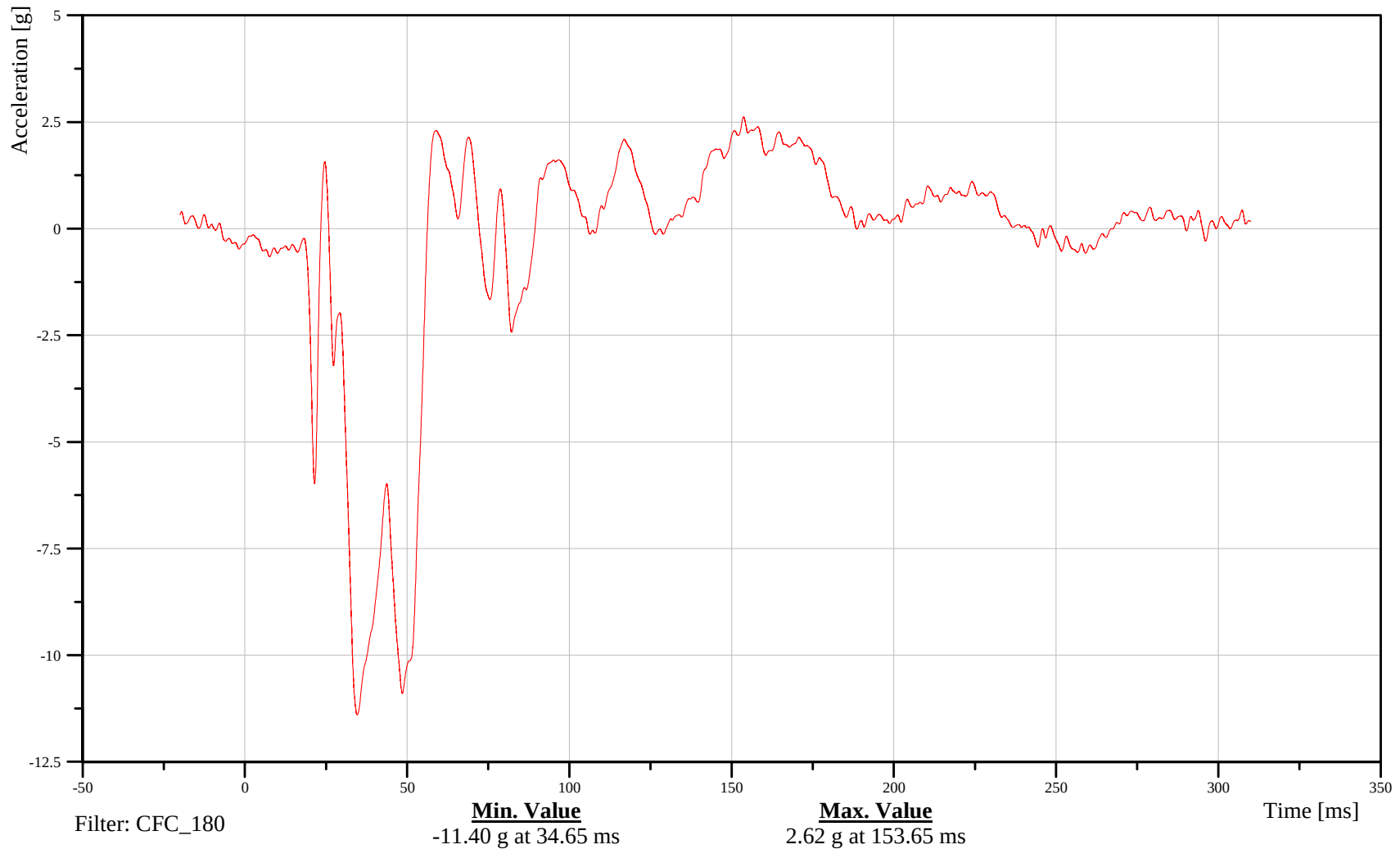
T4 X-Axis Acceleration

Customer: VRTC

11THSP0400WSACXC

TRC Inc. Test Lab: CTF

Test Number: 100617





2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

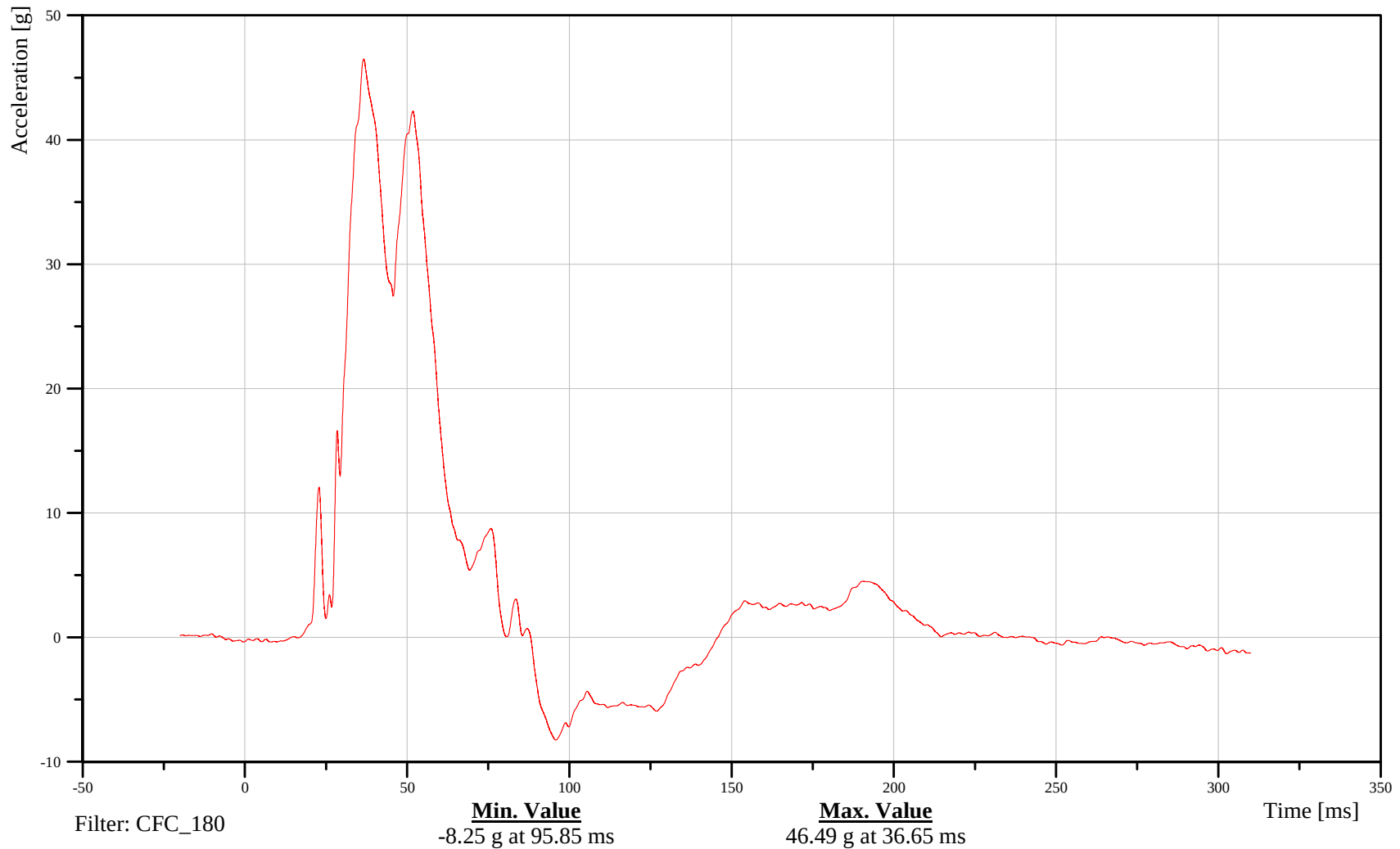
T4 Y-Axis Acceleration

Customer: VRTC

11THSP0400WSACYC

TRC Inc. Test Lab: CTF

Test Number: 100617



B-34

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

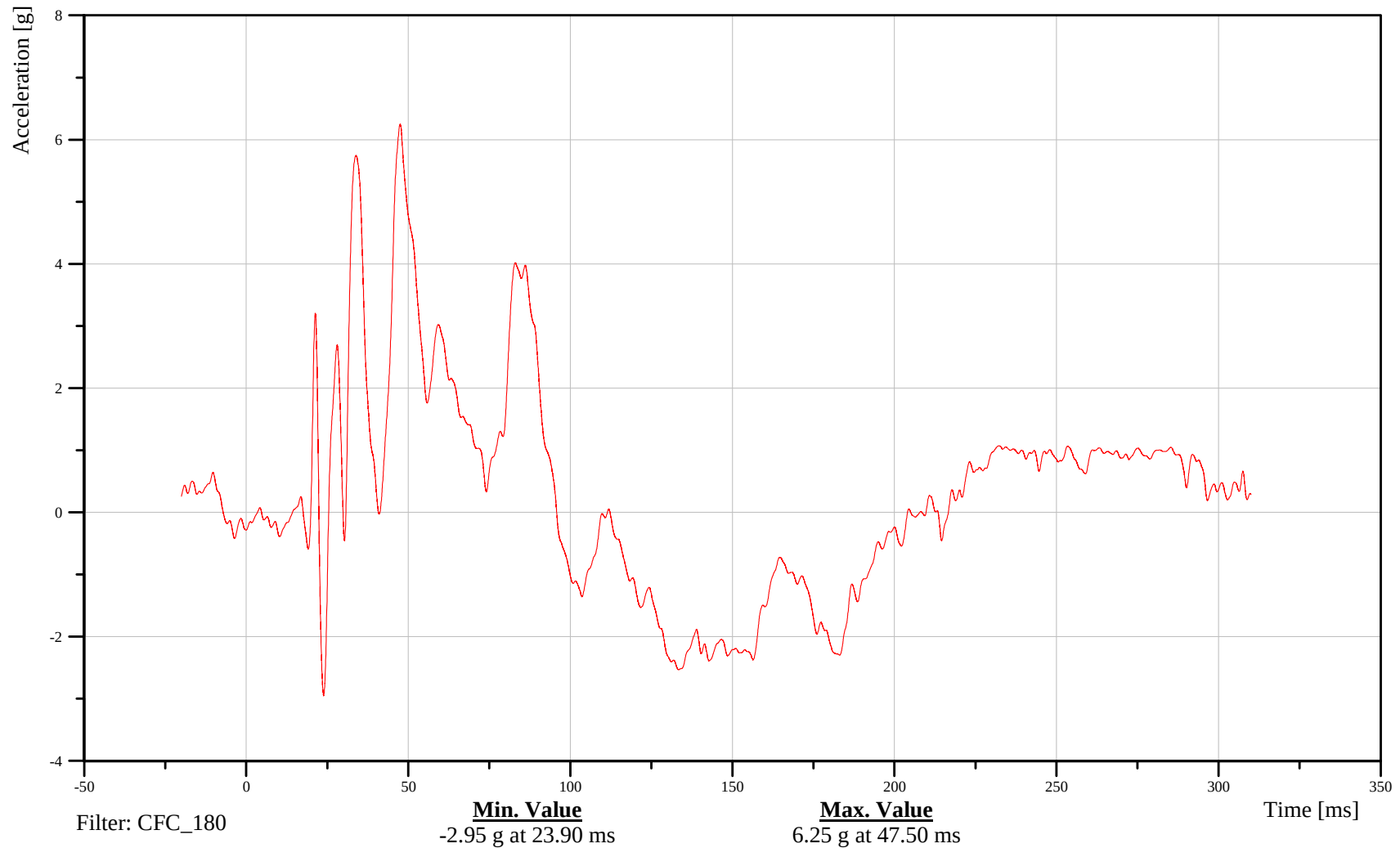
T4 Z-Axis Acceleration

Customer: VRTC

11THSP0400WSACZC

TRC Inc. Test Lab: CTF

Test Number: 100617



B-35

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

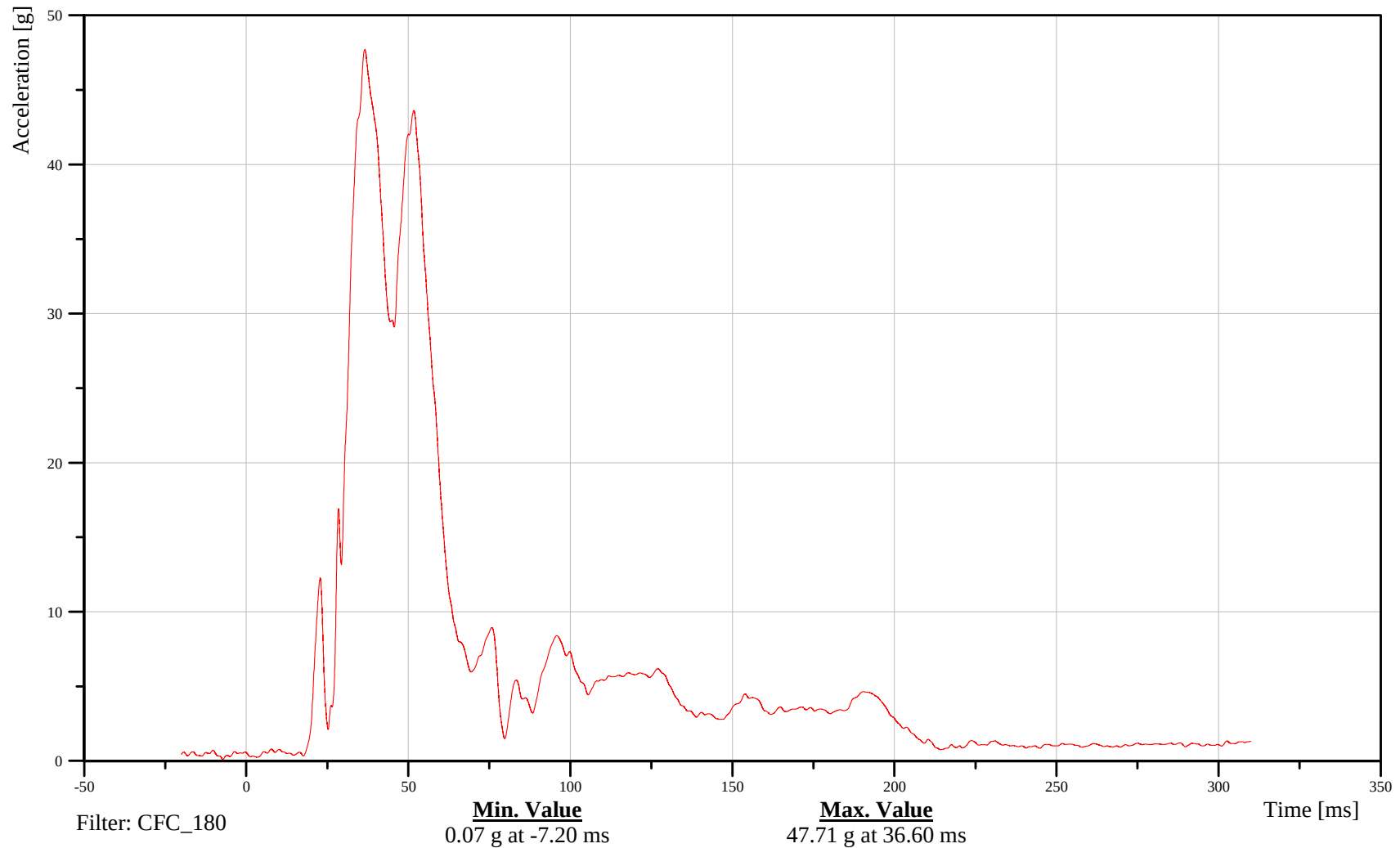
T4 Resultant Acceleration

Customer: VRTC

11THSP0400WSACRC

TRC Inc. Test Lab: CTF

Test Number: 100617





2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

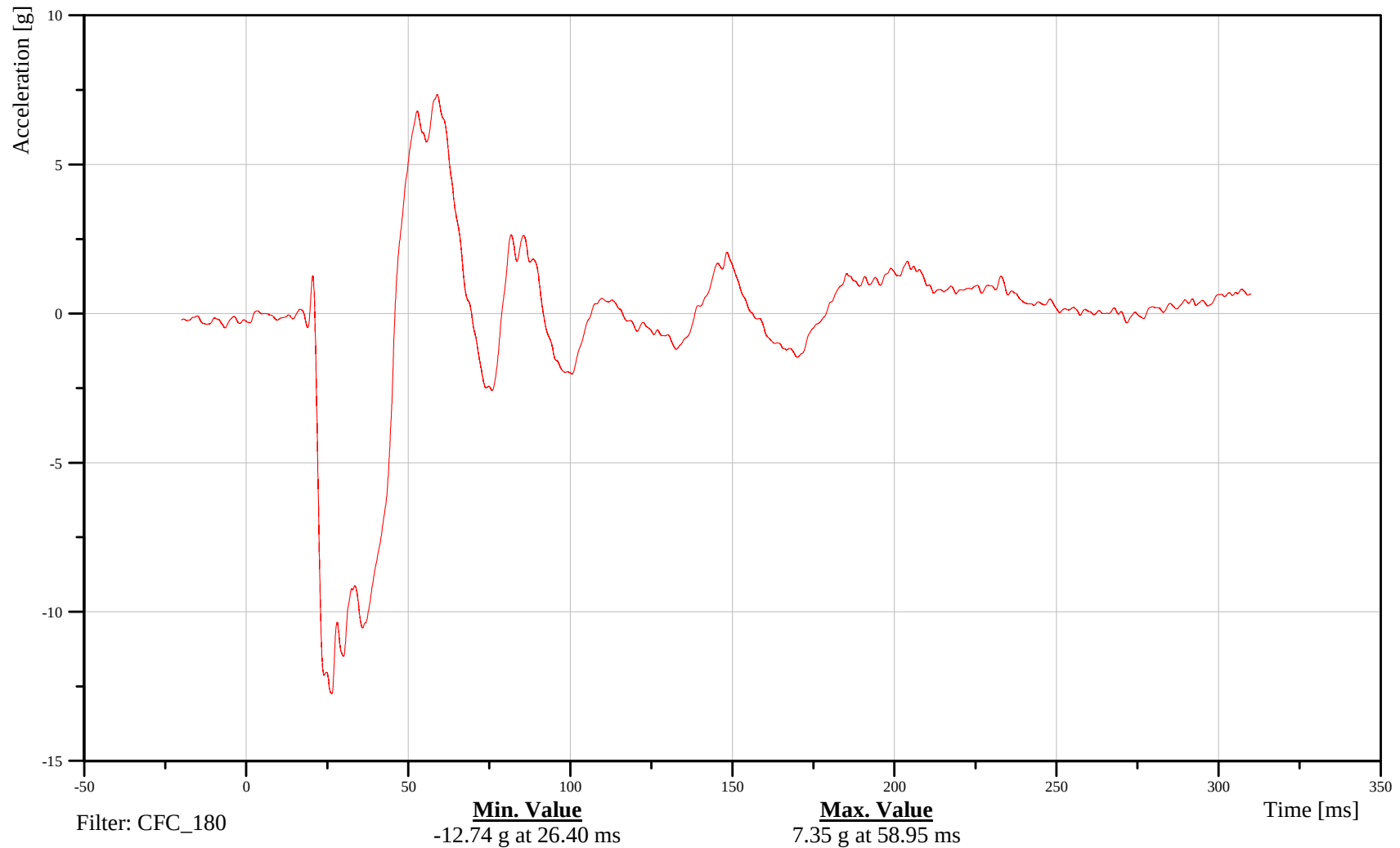
T12 X-Axis Acceleration

Customer: VRTC

11THSP1200WSACXC

TRC Inc. Test Lab: CTF

Test Number: 100617



B-37

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

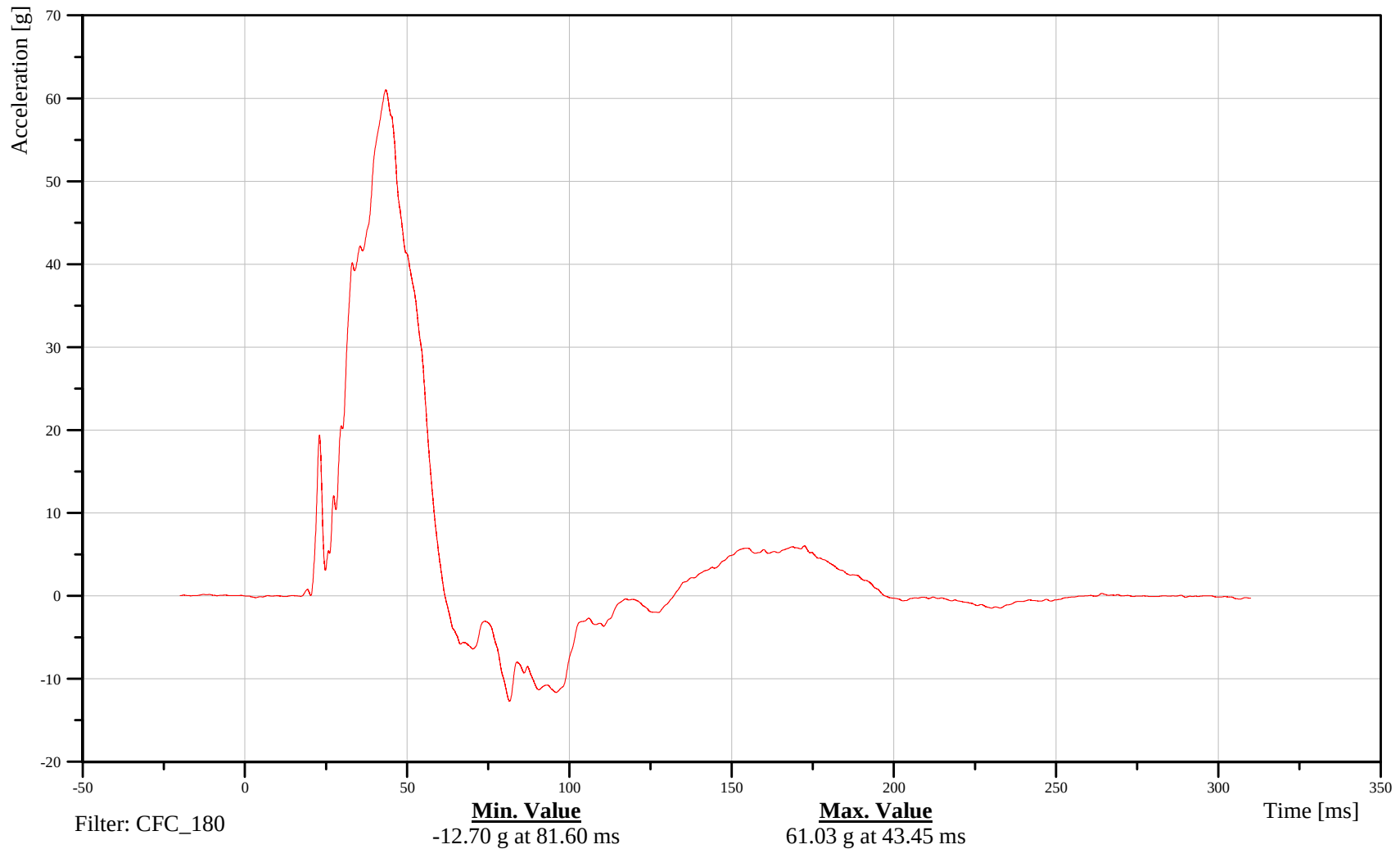
T12 Y-Axis Acceleration

Customer: VRTC

11THSP1200WSACYC

TRC Inc. Test Lab: CTF

Test Number: 100617



B-38

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

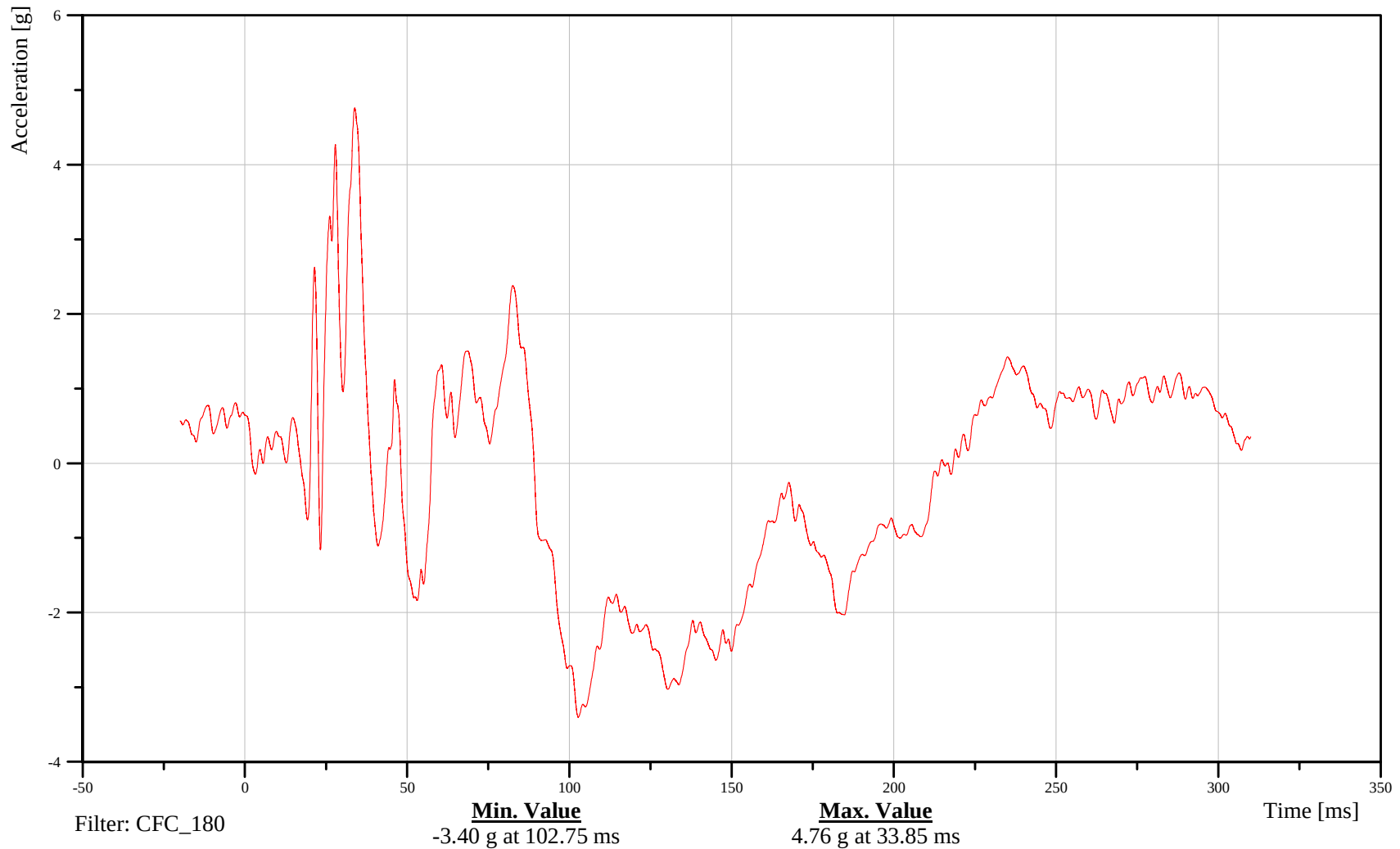
T12 Z-Axis Acceleration

Customer: VRTC

11THSP1200WSACZC

TRC Inc. Test Lab: CTF

Test Number: 100617



B-39

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

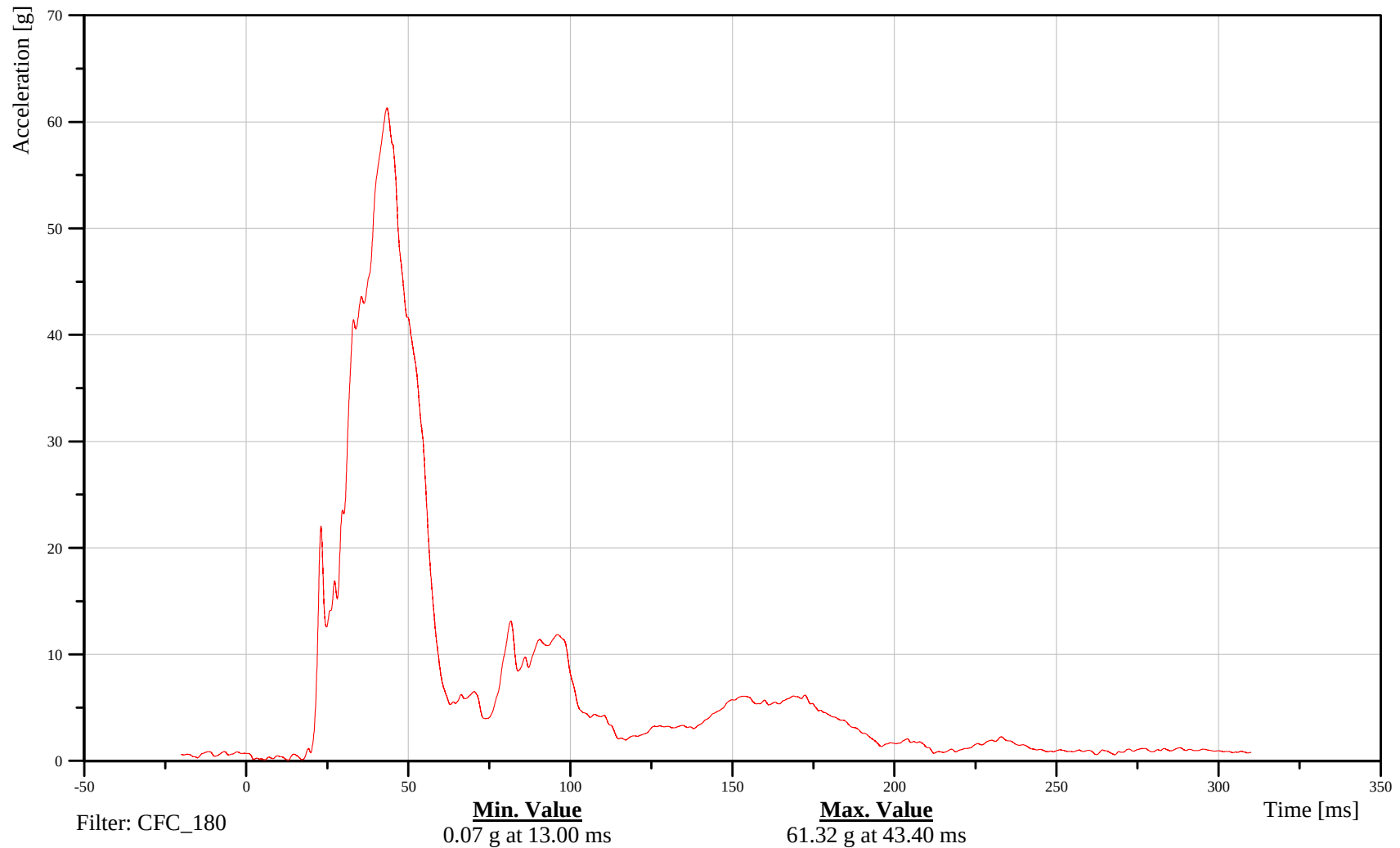
T12 Resultant Acceleration

Customer: VRTC

11THSP1200WSACRC

TRC Inc. Test Lab: CTF

Test Number: 100617



B-40

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

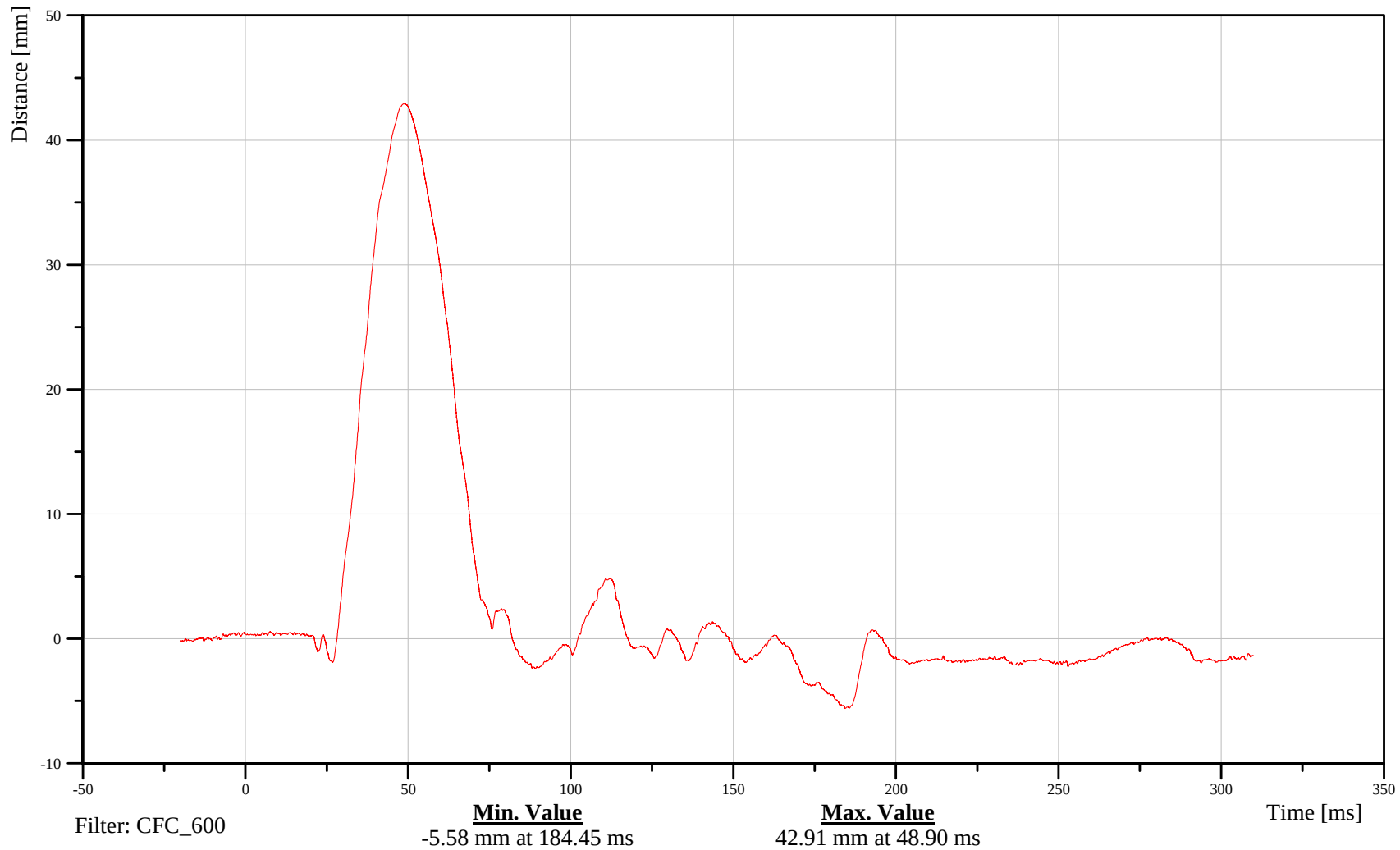
Thorax Rib 1 Y-Axis Displacement

Customer: VRTC

11TRRILE01WSDSYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-41

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

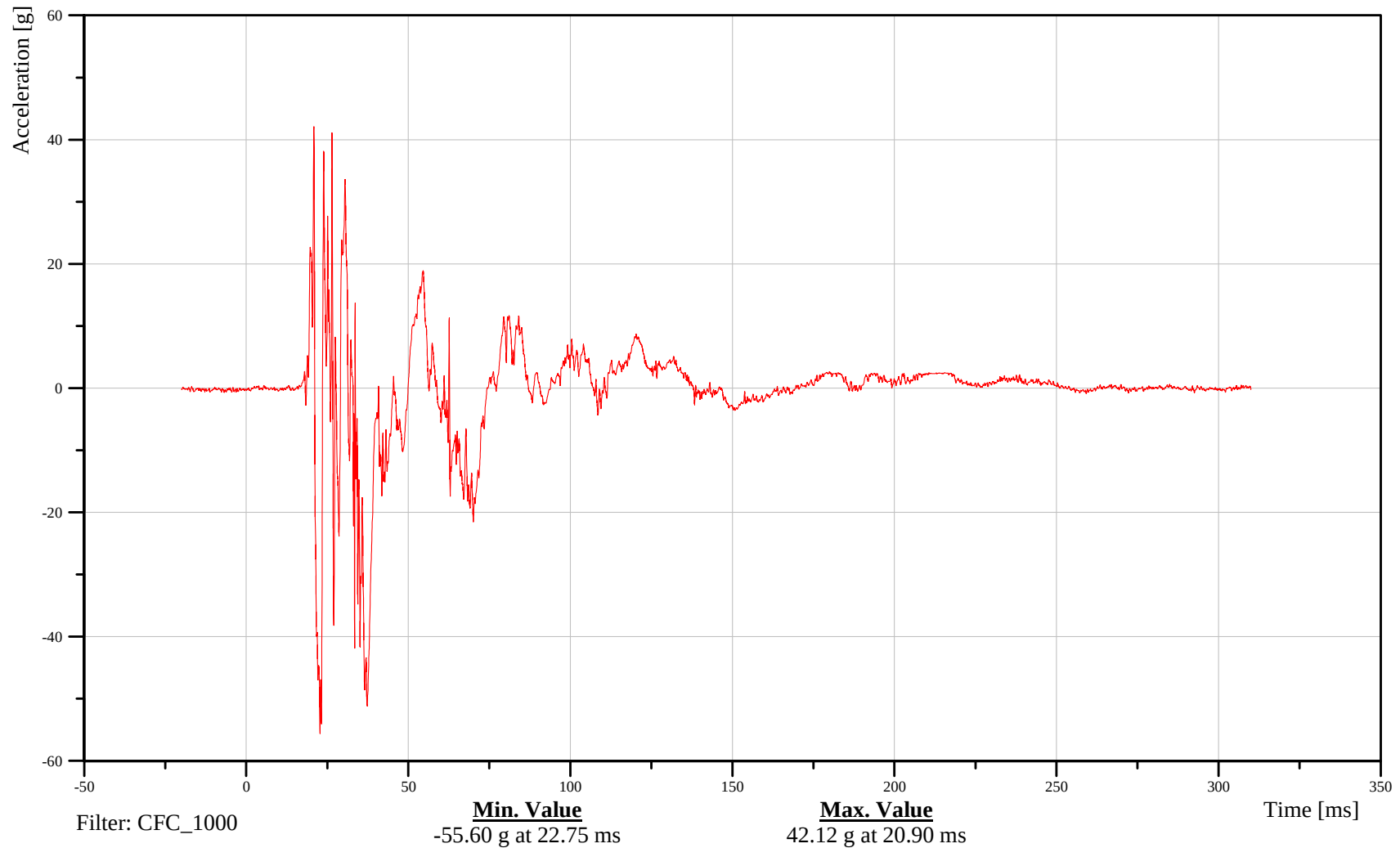
Thorax Rib 1 X-Axis Acceleration

Customer: VRTC

11TRRILE01WSACXA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-42

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

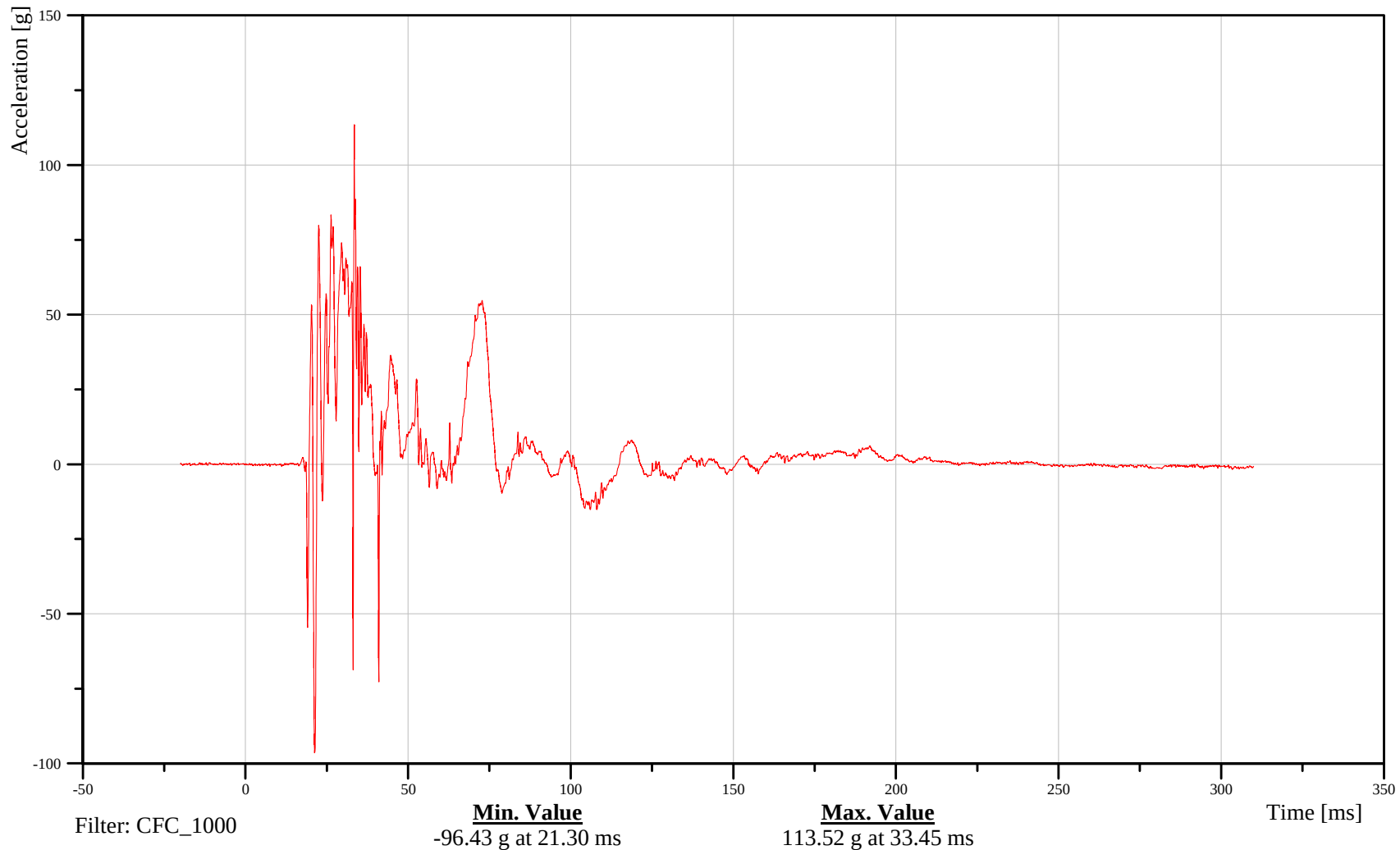
Thorax Rib 1 Y-Axis Acceleration

Customer: VRTC

11TRRILE01WSACYA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-43

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

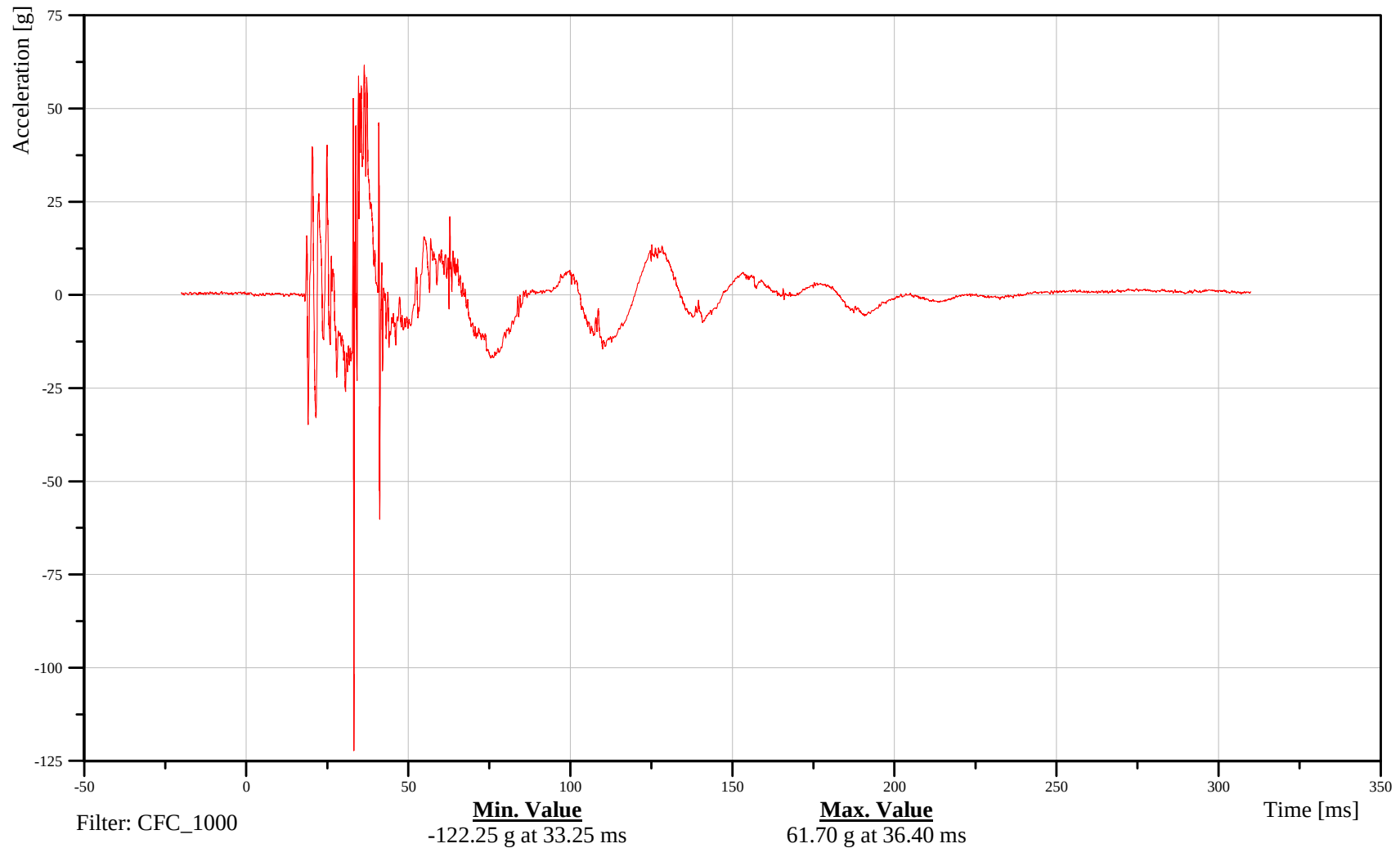
Thorax Rib 1 Z-Axis Acceleration

Customer: VRTC

11TRRILE01WSACZA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-44

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

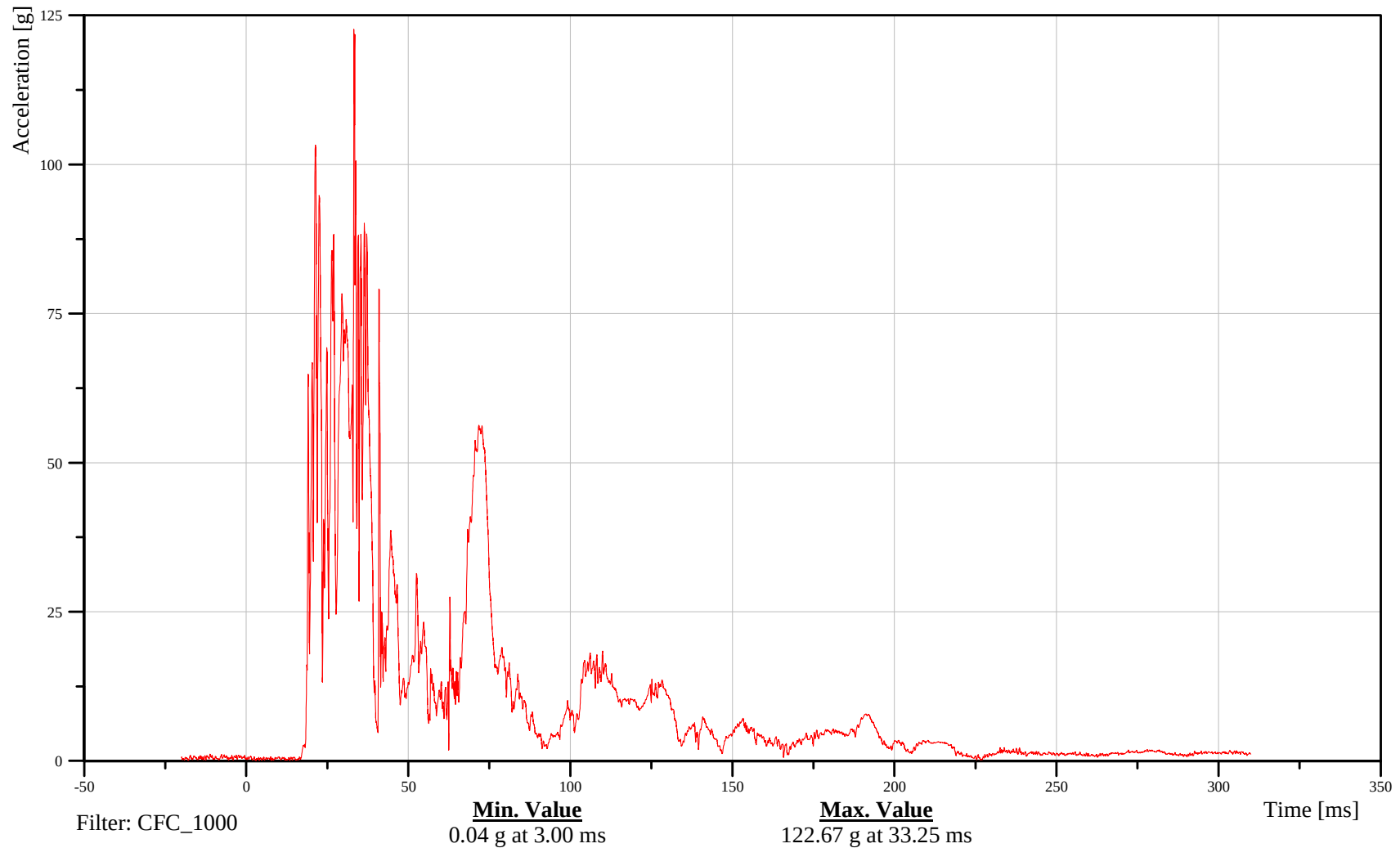
Thorax Rib 1 Resultant Acceleration

Customer: VRTC

11TRRILE01WSACRA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-45

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

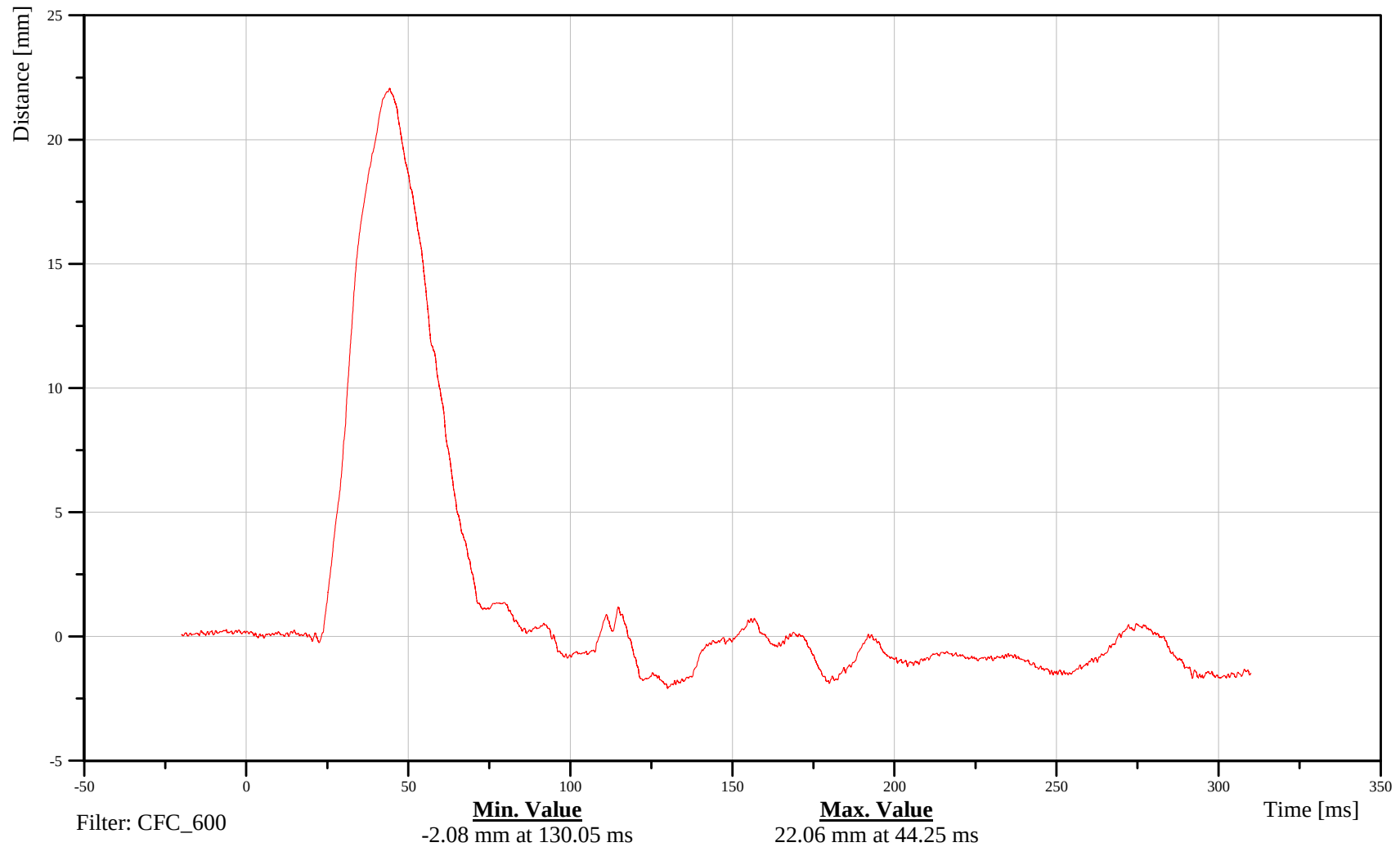
Thorax Rib 2 Y-Axis Displacement

Customer: VRTC

11TRRILE02WSDSYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-46

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

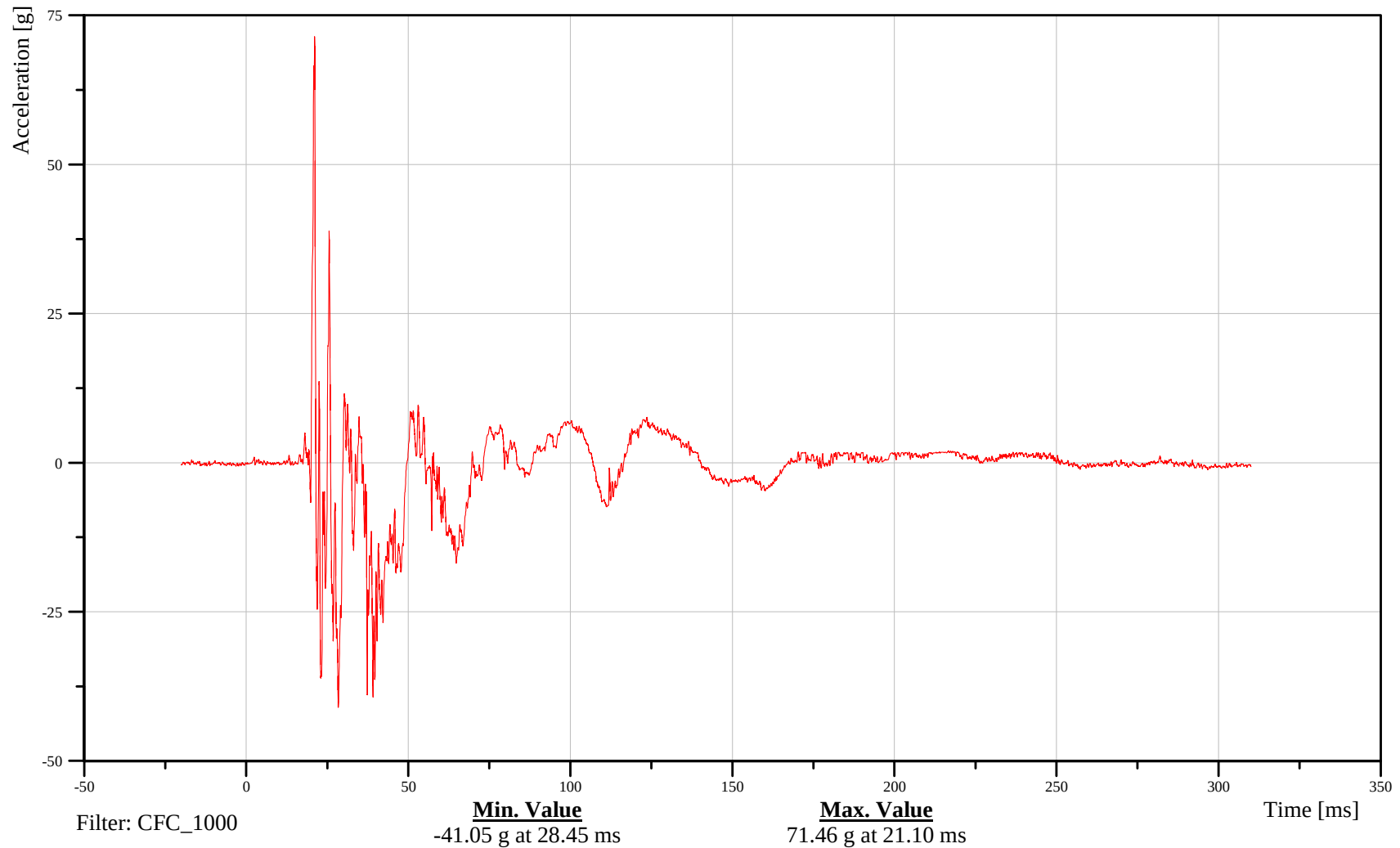
Thorax Rib 2 X-Axis Acceleration

Customer: VRTC

11TRRILE02WSACXA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-47

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

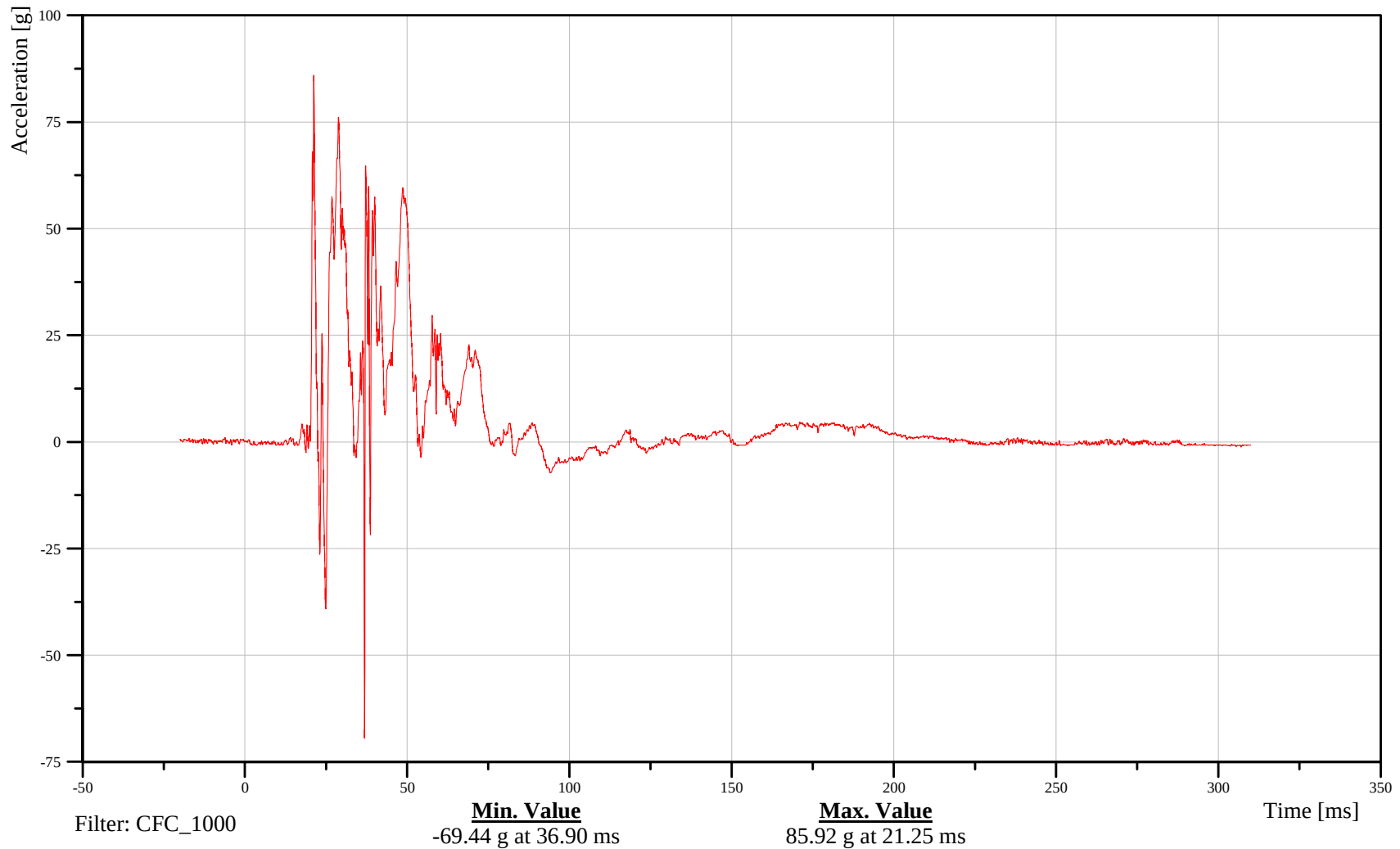
Thorax Rib 2 Y-Axis Acceleration

Customer: VRTC

11TRRILE02WSACYA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-48

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

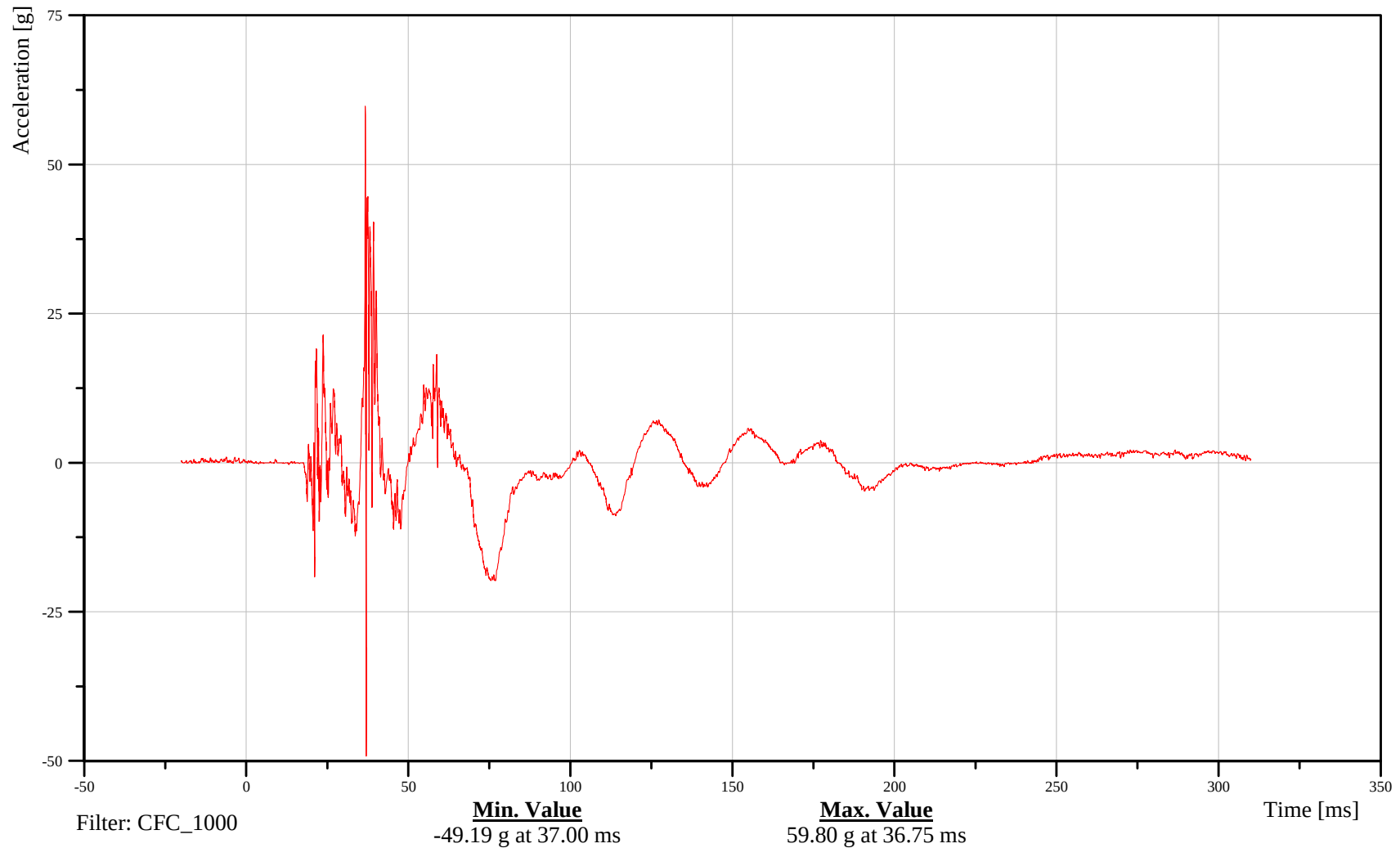
Thorax Rib 2 Z-Axis Acceleration

Customer: VRTC

11TRRILE02WSACZA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-49

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

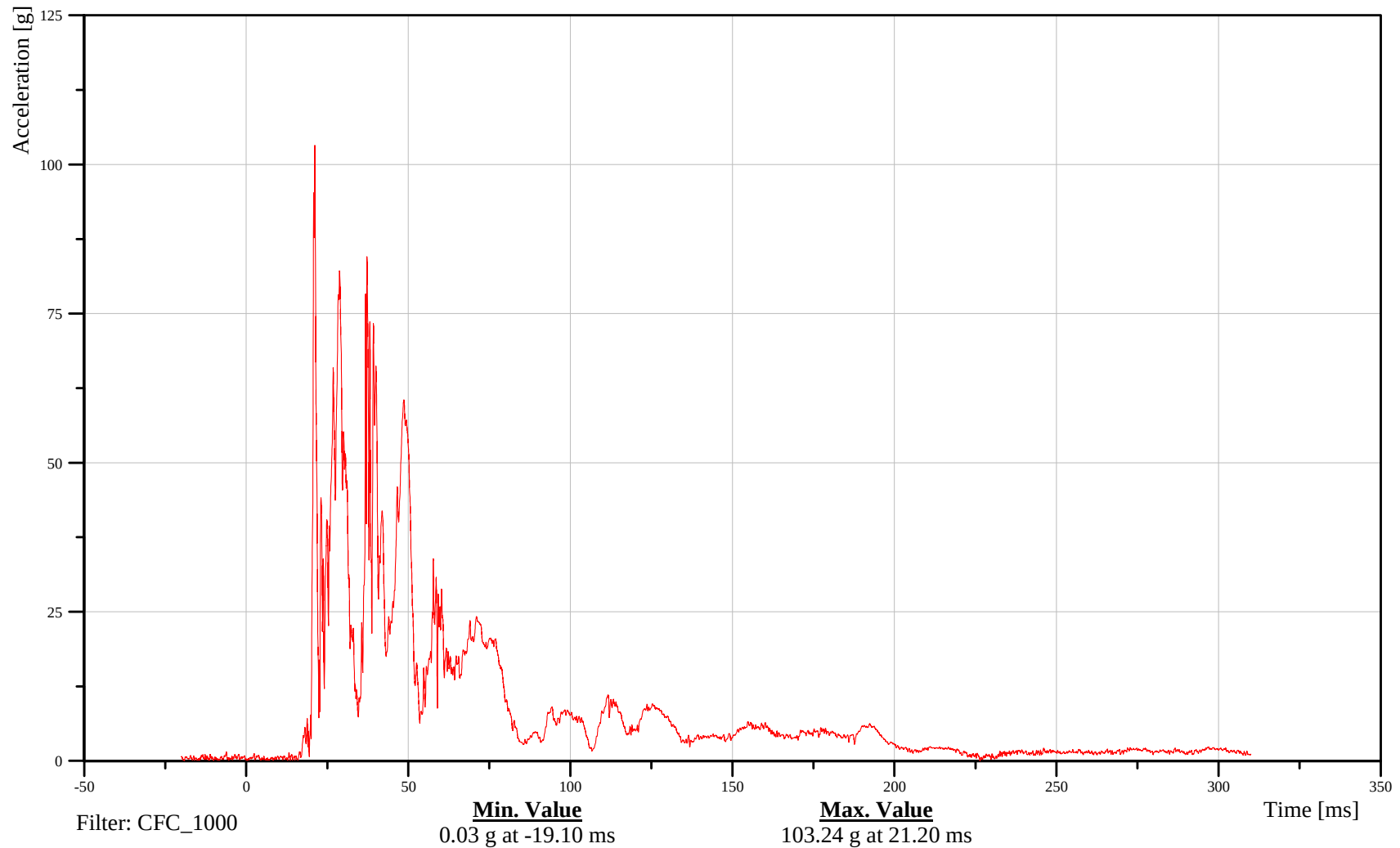
Thorax Rib 2 Resultant Acceleration

Customer: VRTC

11TRRILE02WSACRA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-50

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

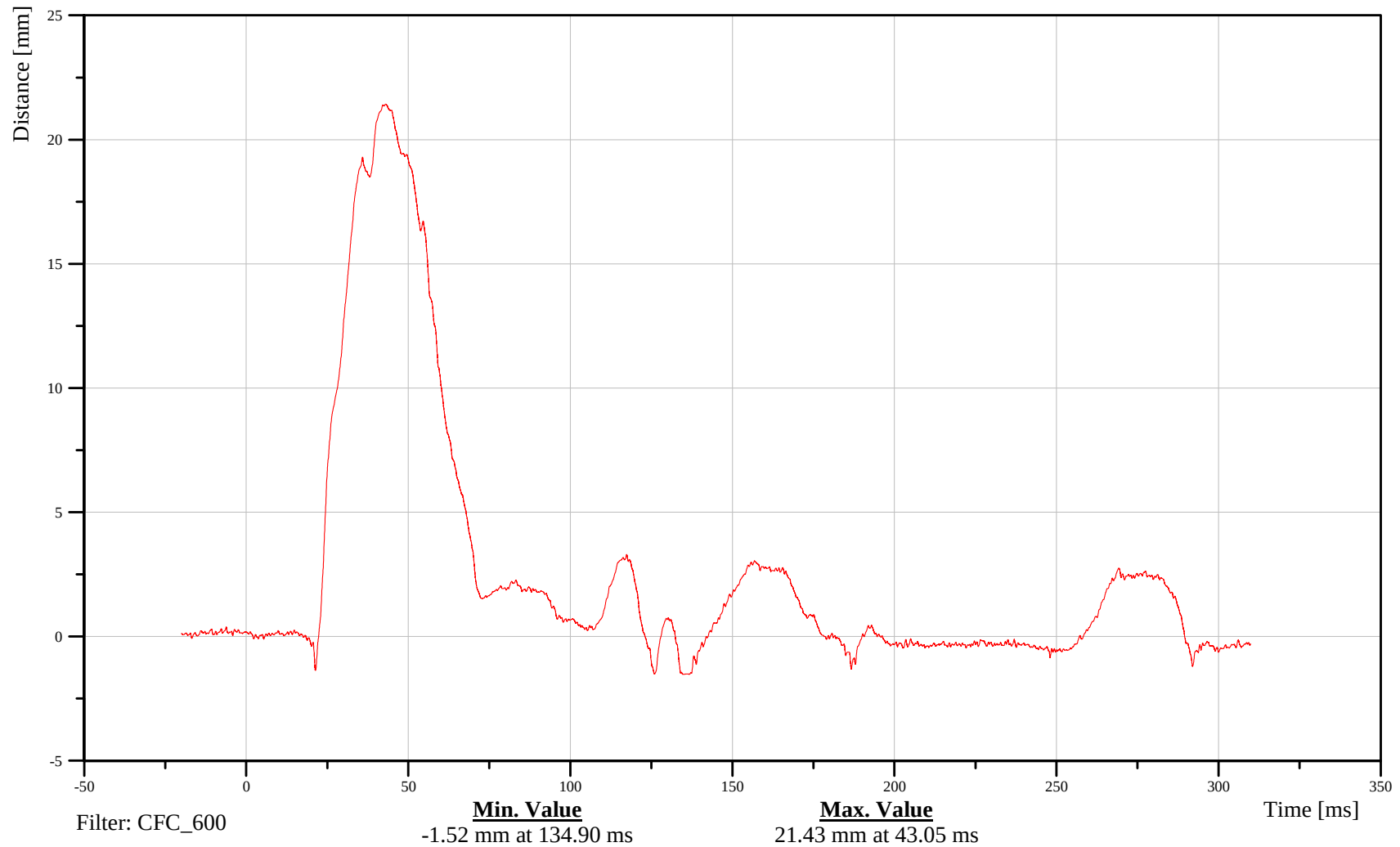
Thorax Rib 3 Y-Axis Displacement

Customer: VRTC

11TRRILE03WSDSYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-51

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

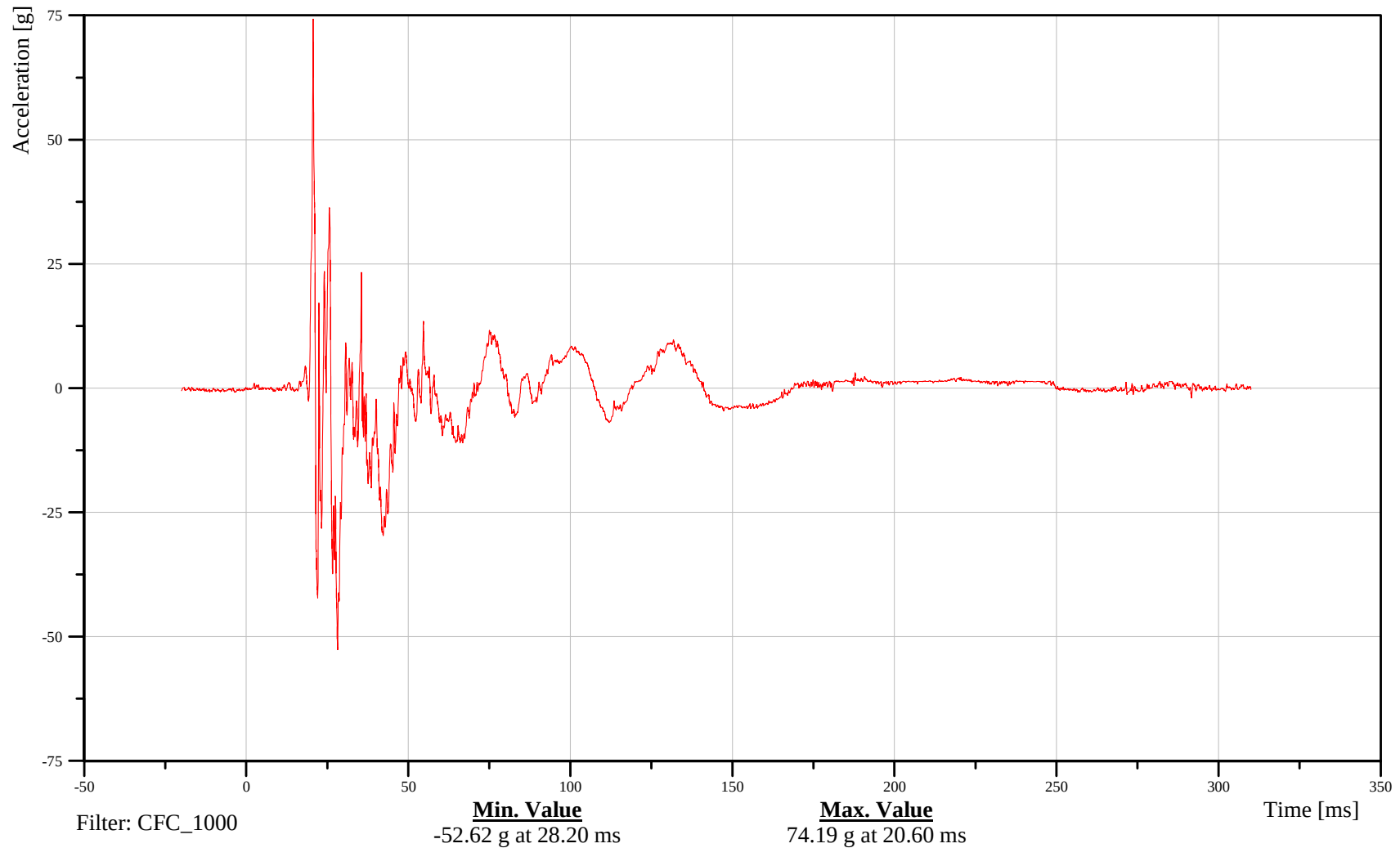
Thorax Rib 3 X-Axis Acceleration

Customer: VRTC

11TRRILE03WSACXA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-52

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

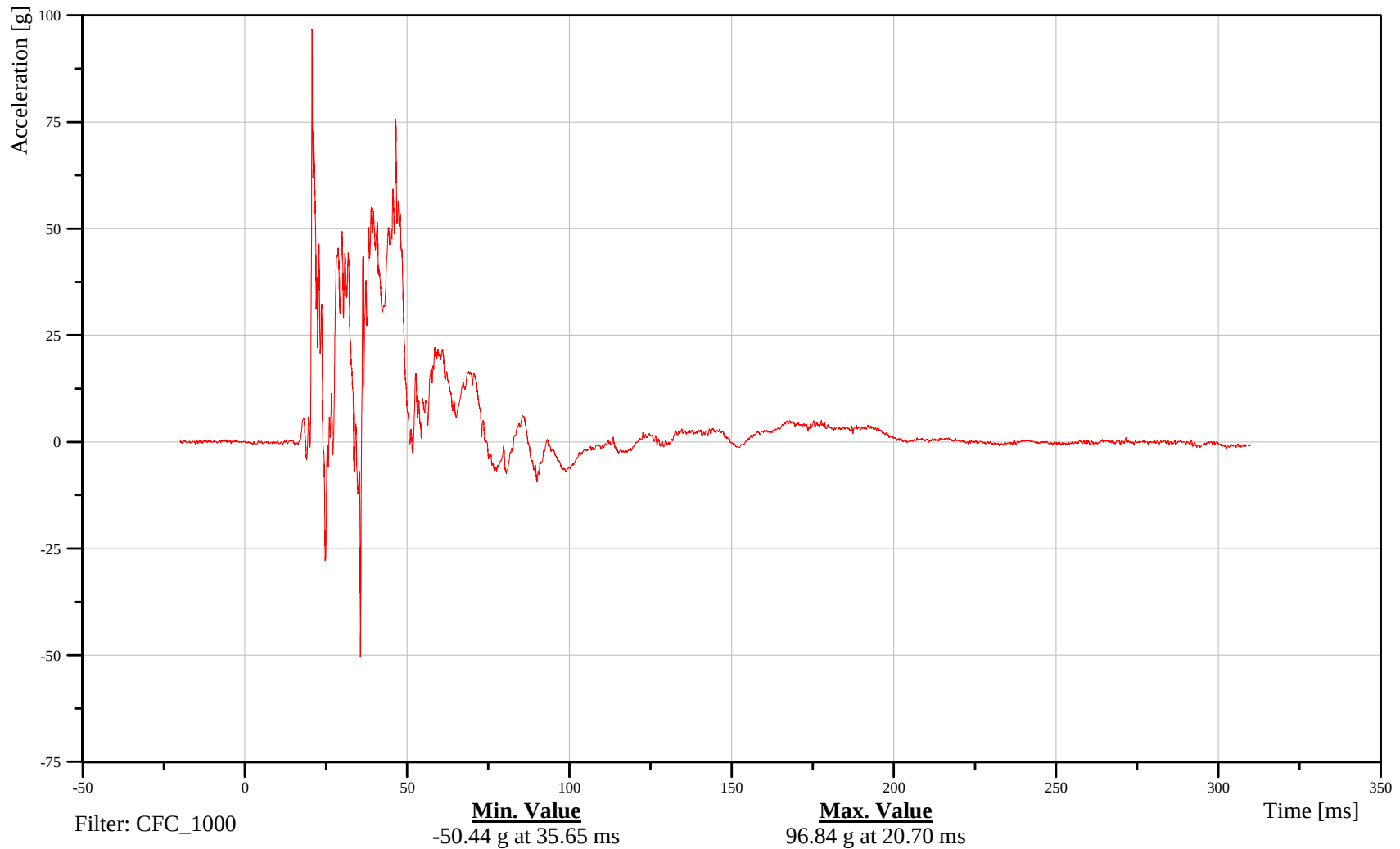
Thorax Rib 3 Y-Axis Acceleration

Customer: VRTC

11TRRILE03WSACYA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-53

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

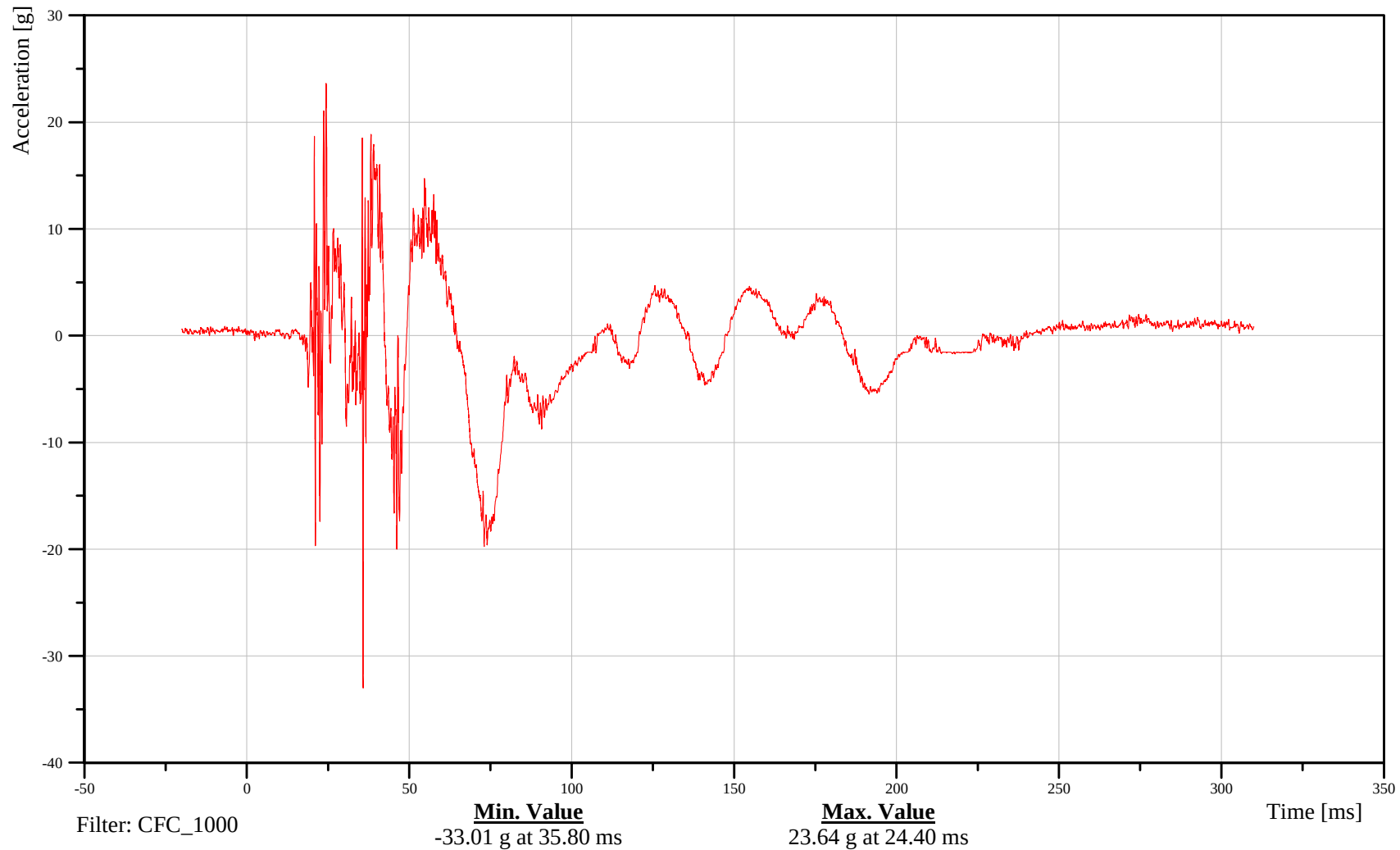
Thorax Rib 3 Z-Axis Acceleration

Customer: VRTC

11TRRILE03WSACZA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-54

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

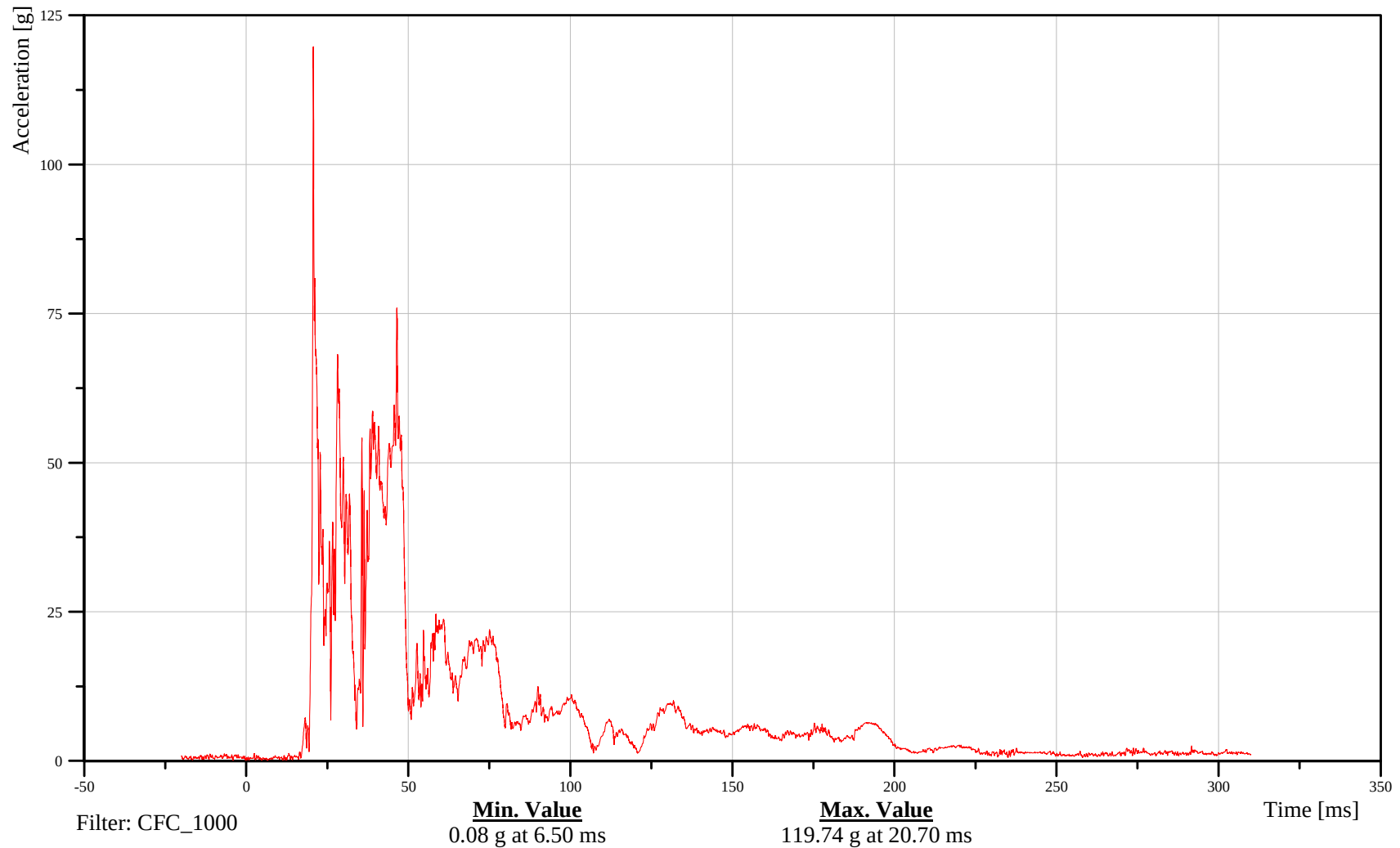
Thorax Rib 3 Resultant Acceleration

Customer: VRTC

11TRRILE03WSACRA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-55

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

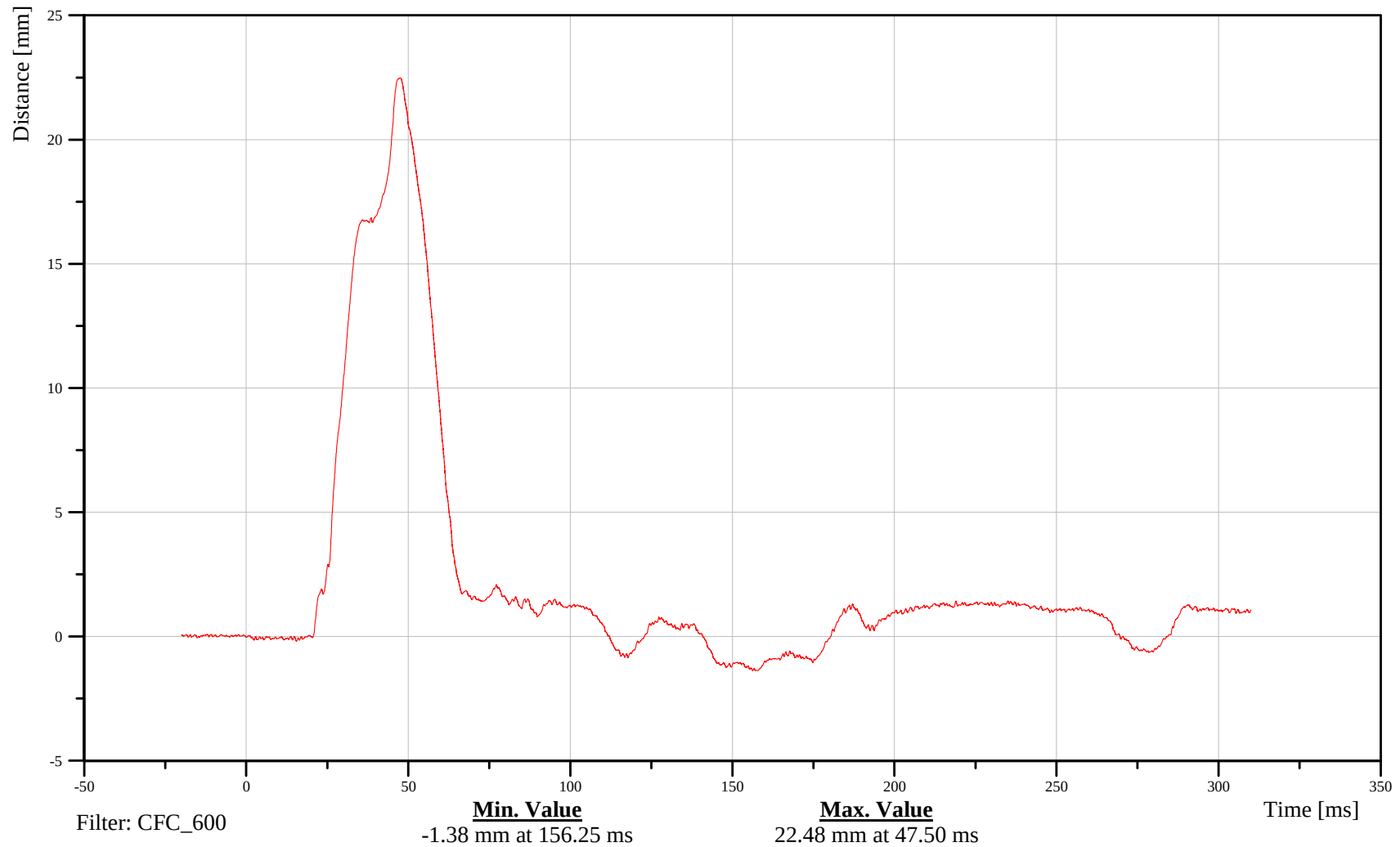
Abdominal Rib 1 Y-Axis Displacement

Customer: VRTC

11ABRILE01WSDSYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-56

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

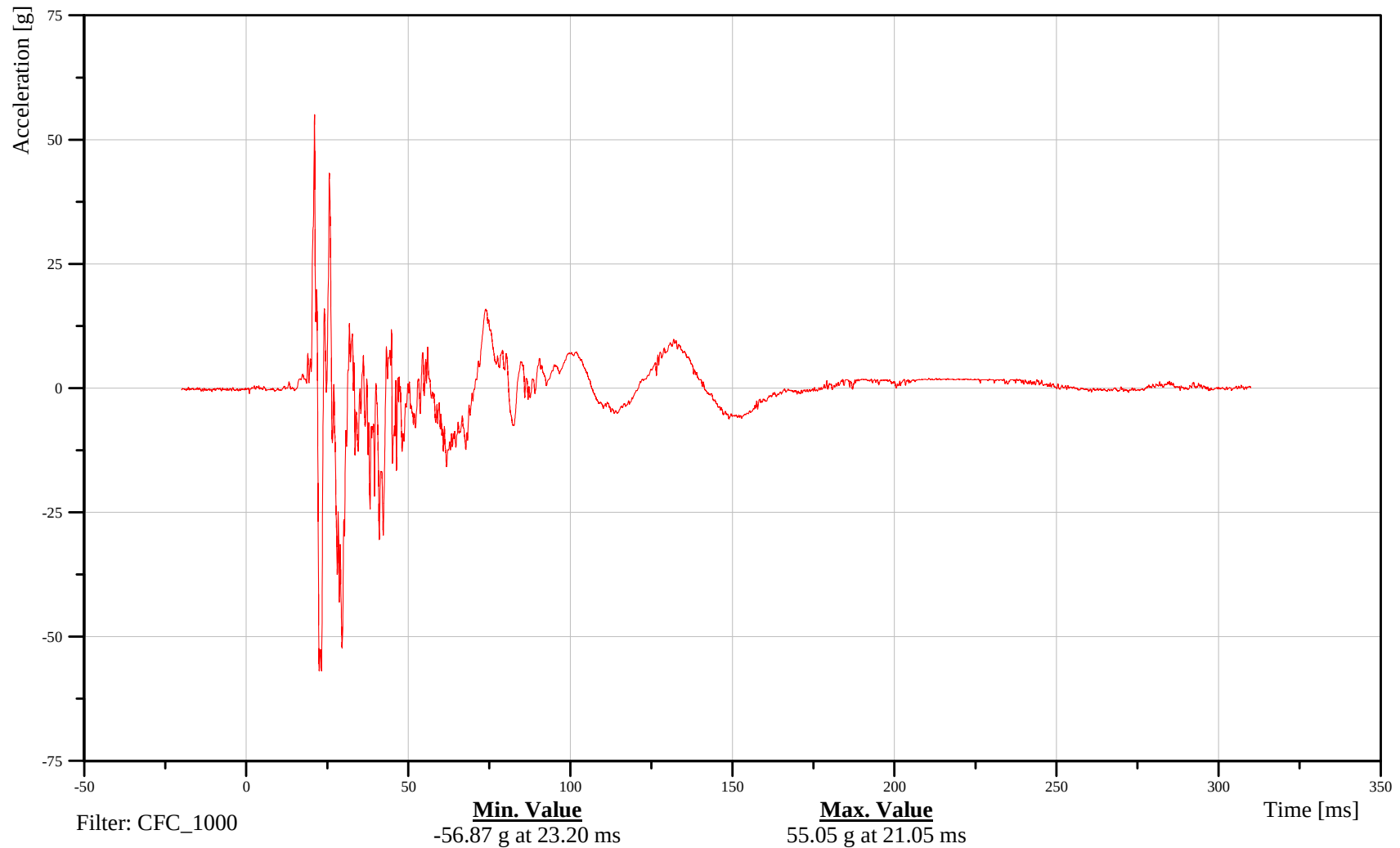
Abdominal Rib 1 X-Axis Acceleration

Customer: VRTC

11ABRILE01WSACXA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-57

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

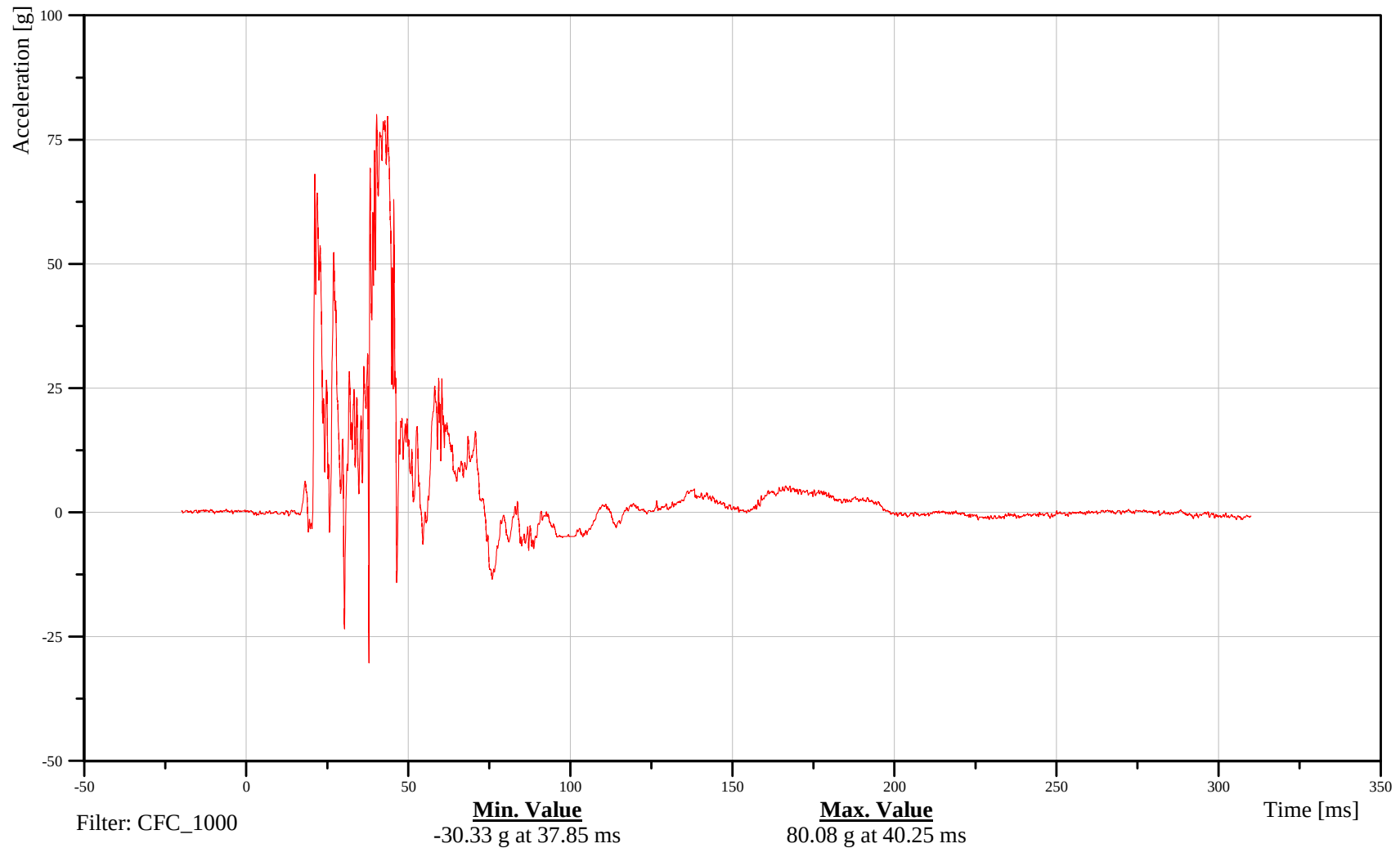
Abdominal Rib 1 Y-Axis Acceleration

Customer: VRTC

11ABRILE01WSACYA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-58

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

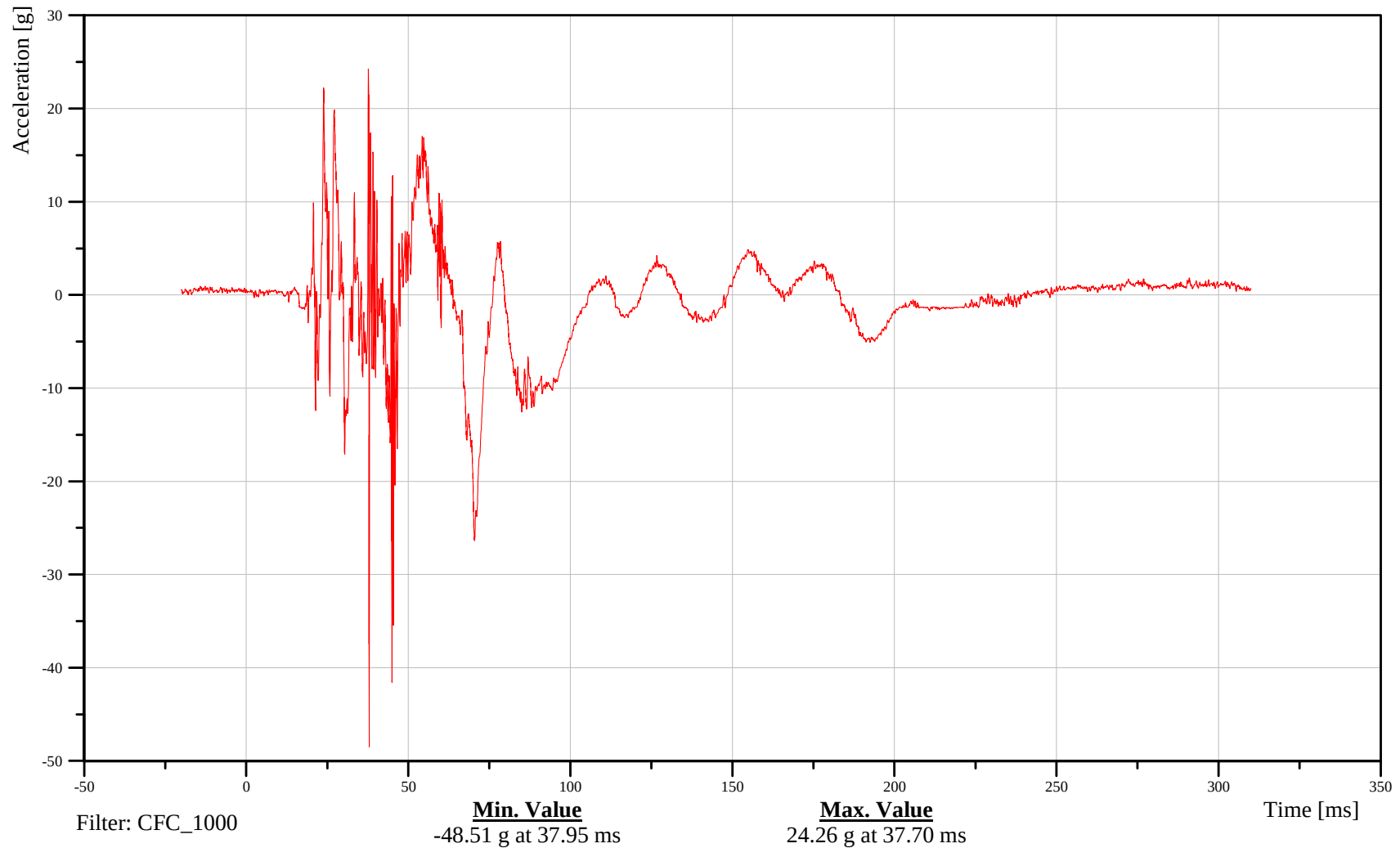
Abdominal Rib 1 Z-Axis Acceleration

Customer: VRTC

11ABRILE01WSACZA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-59

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

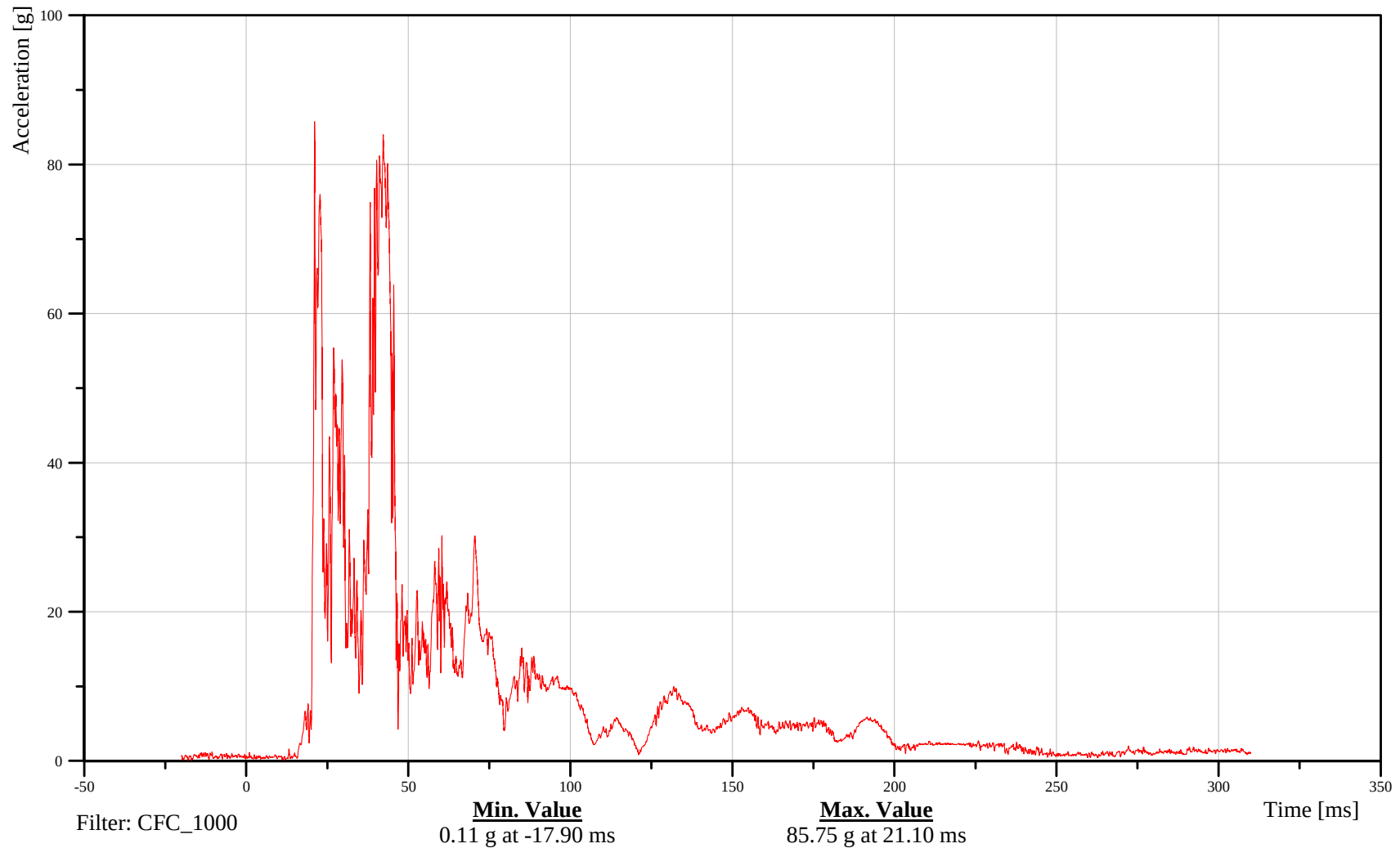
Abdominal Rib 1 Resultant Acceleration

Customer: VRTC

11ABRILE01WSACRA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-60

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

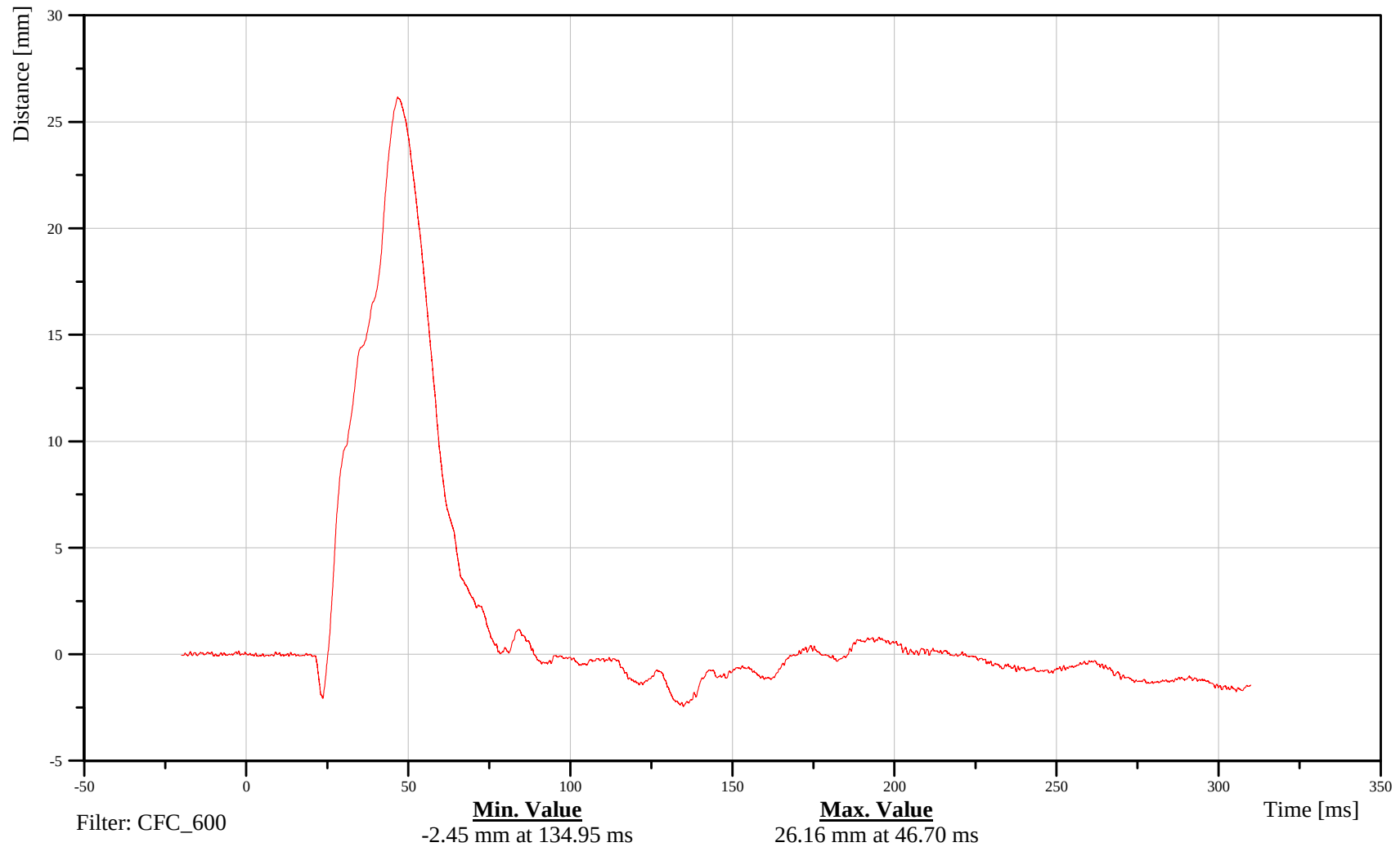
Abdominal Rib 2 Y-Axis Displacement

Customer: VRTC

11ABRILE02WSDSYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-61

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

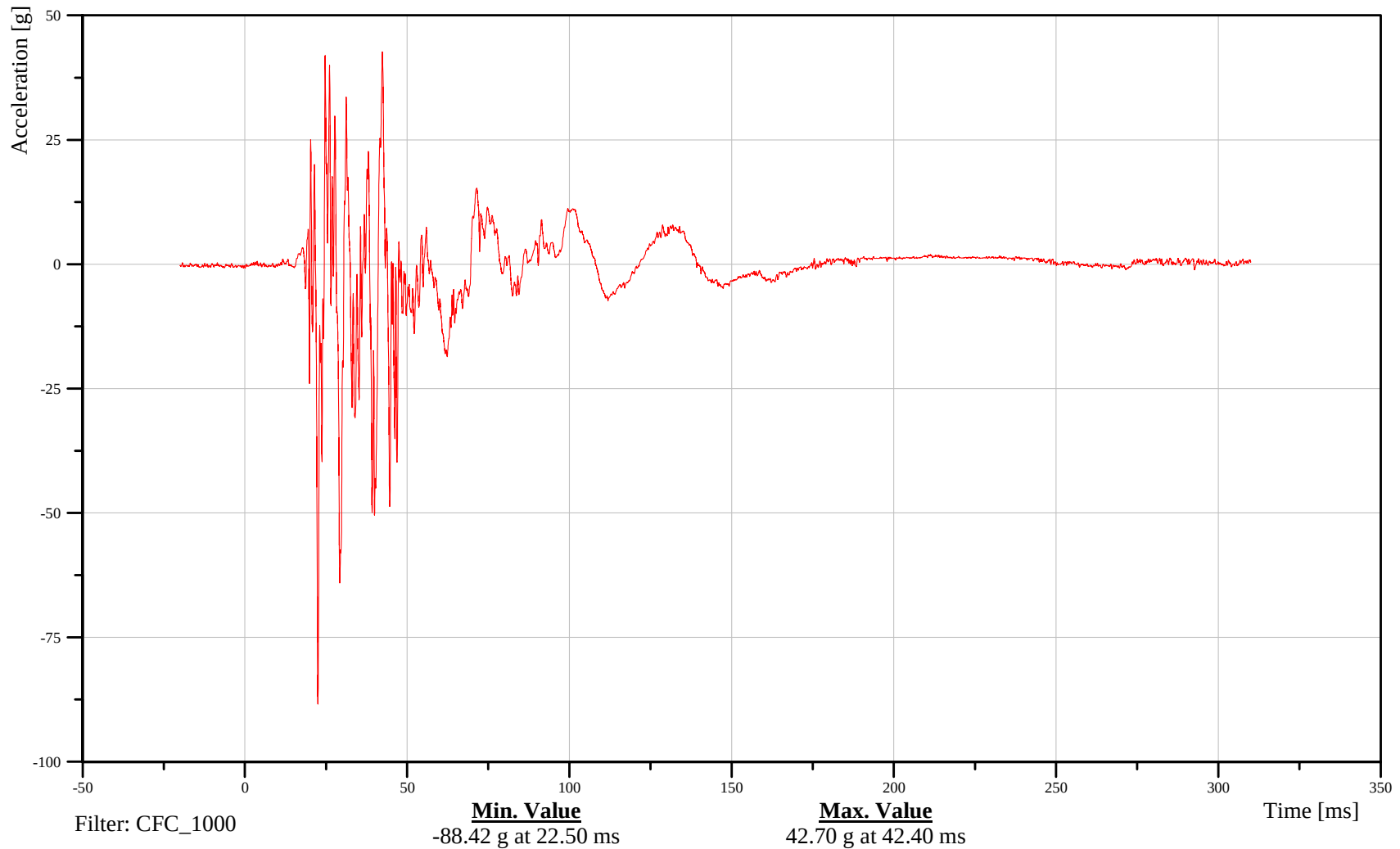
Abdominal Rib 2 X-Axis Acceleration

Customer: VRTC

11ABRILE02WSACXA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-62

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

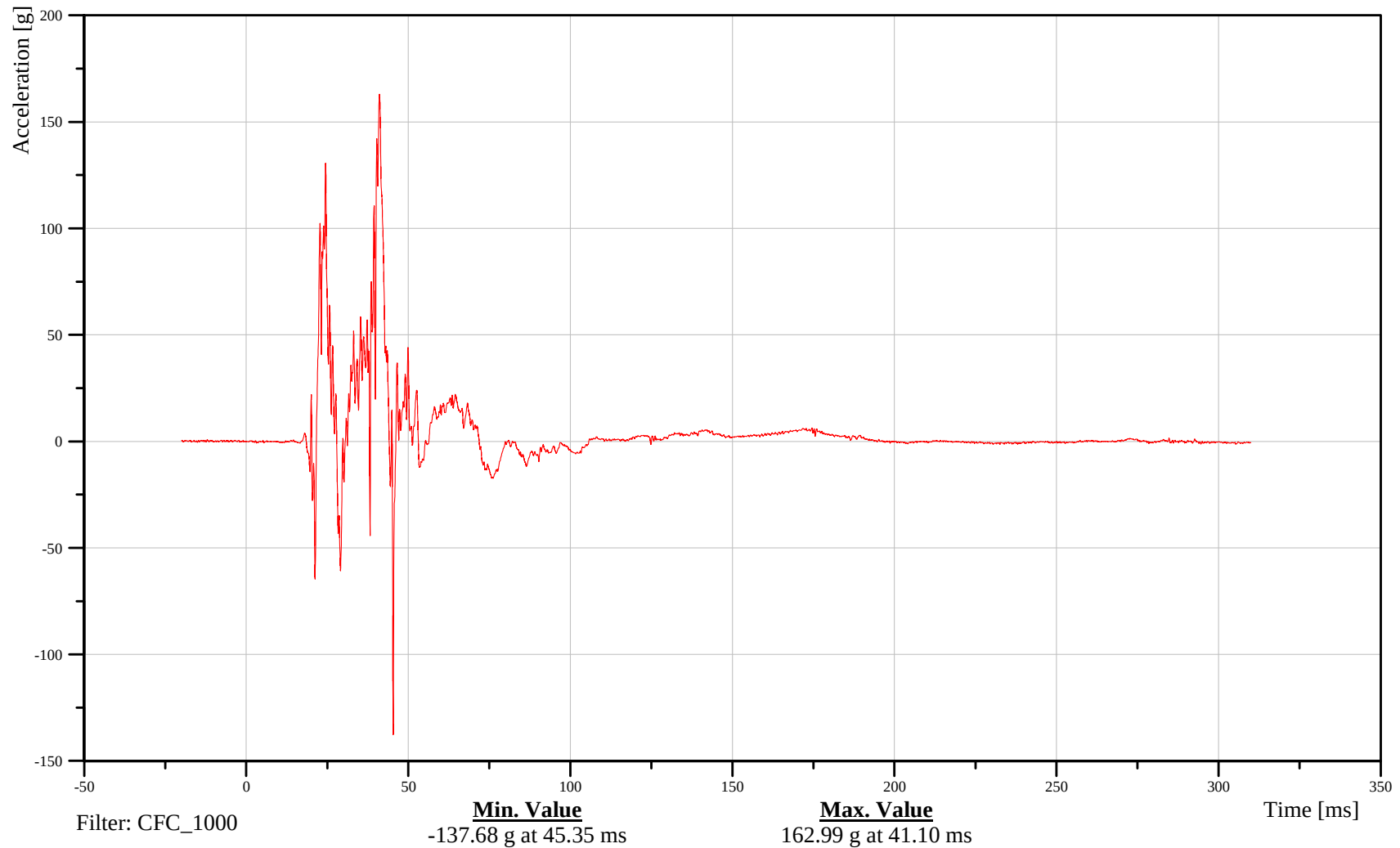
Abdominal Rib 2 Y-Axis Acceleration

Customer: VRTC

11ABRILE02WSACYA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-63

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

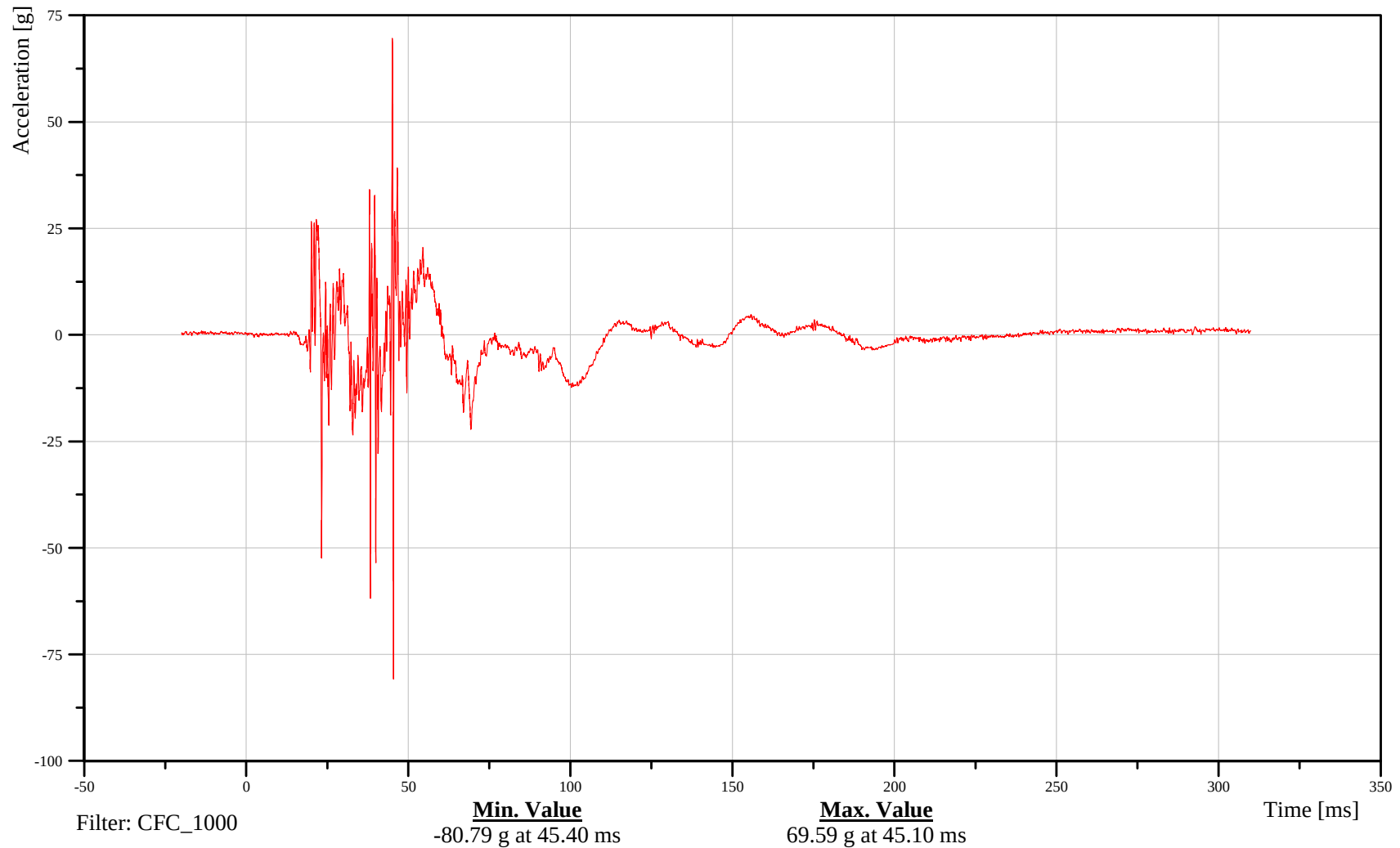
Abdominal Rib 2 Z-Axis Acceleration

Customer: VRTC

11ABRILE02WSACZA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-64

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

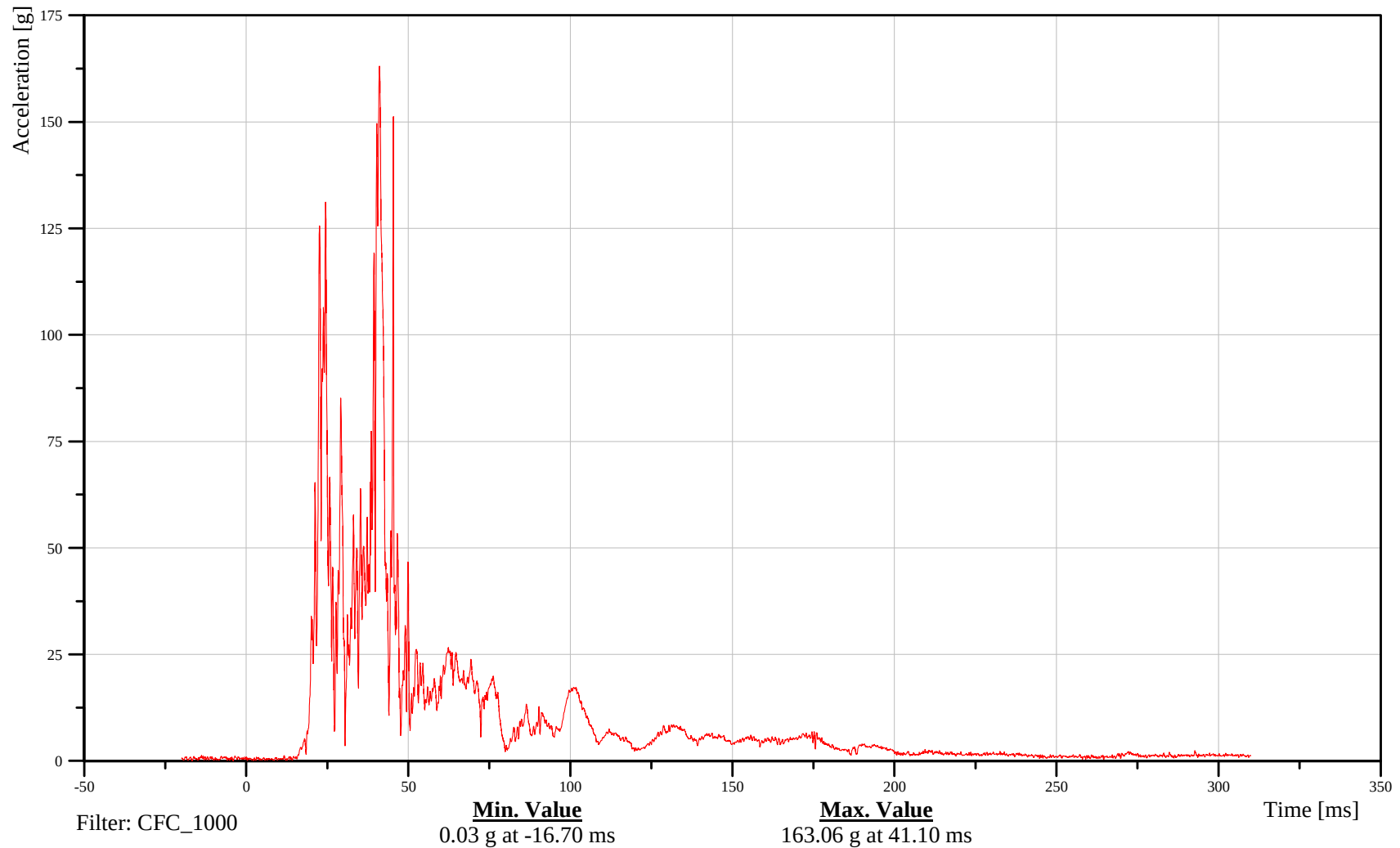
Abdominal Rib 2 Resultant Acceleration

Customer: VRTC

11ABRILE02WSACRA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-65

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

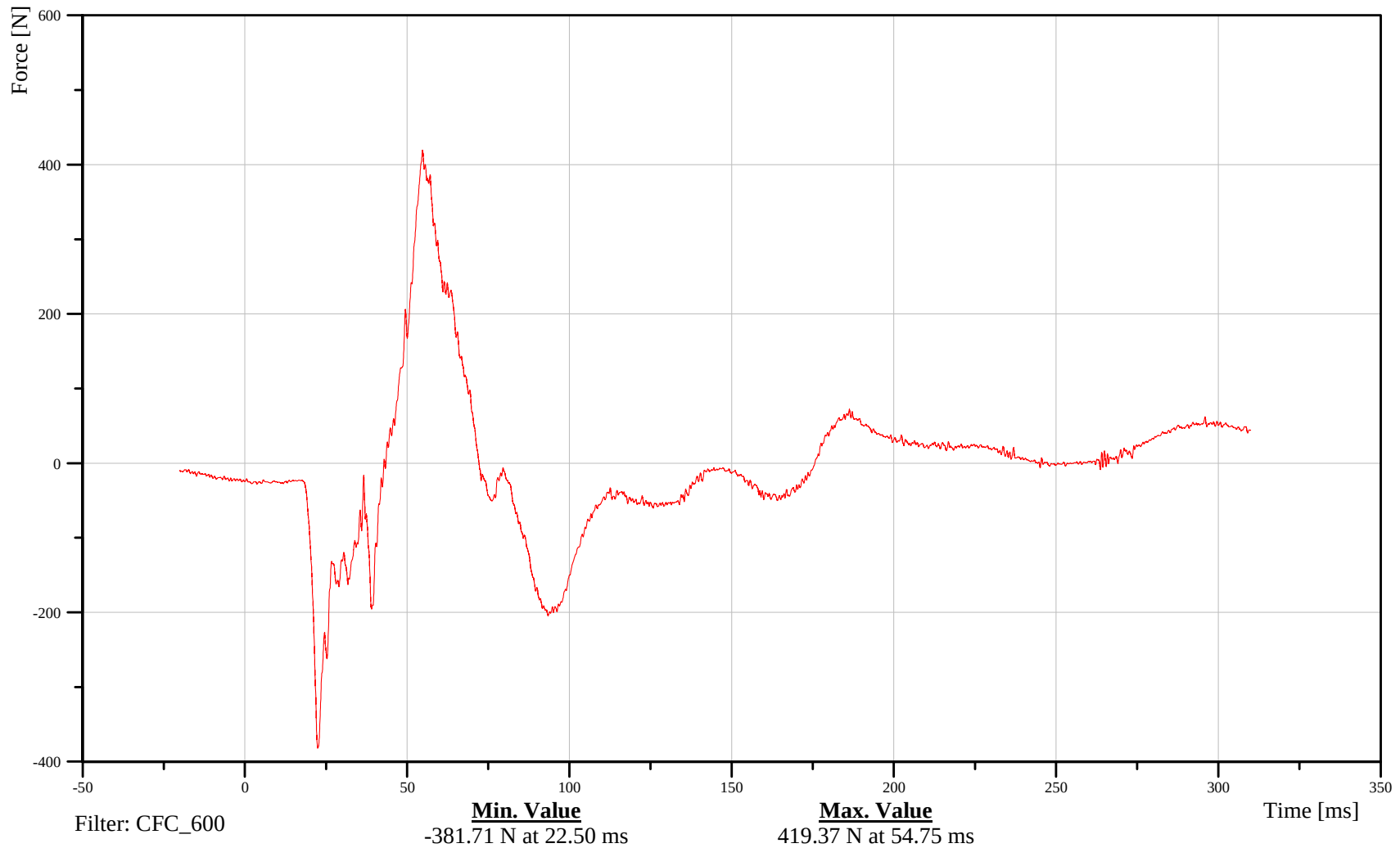
Lumbar X-Axis Force

Customer: VRTC

11LUSP0000WSFOXB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-66

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

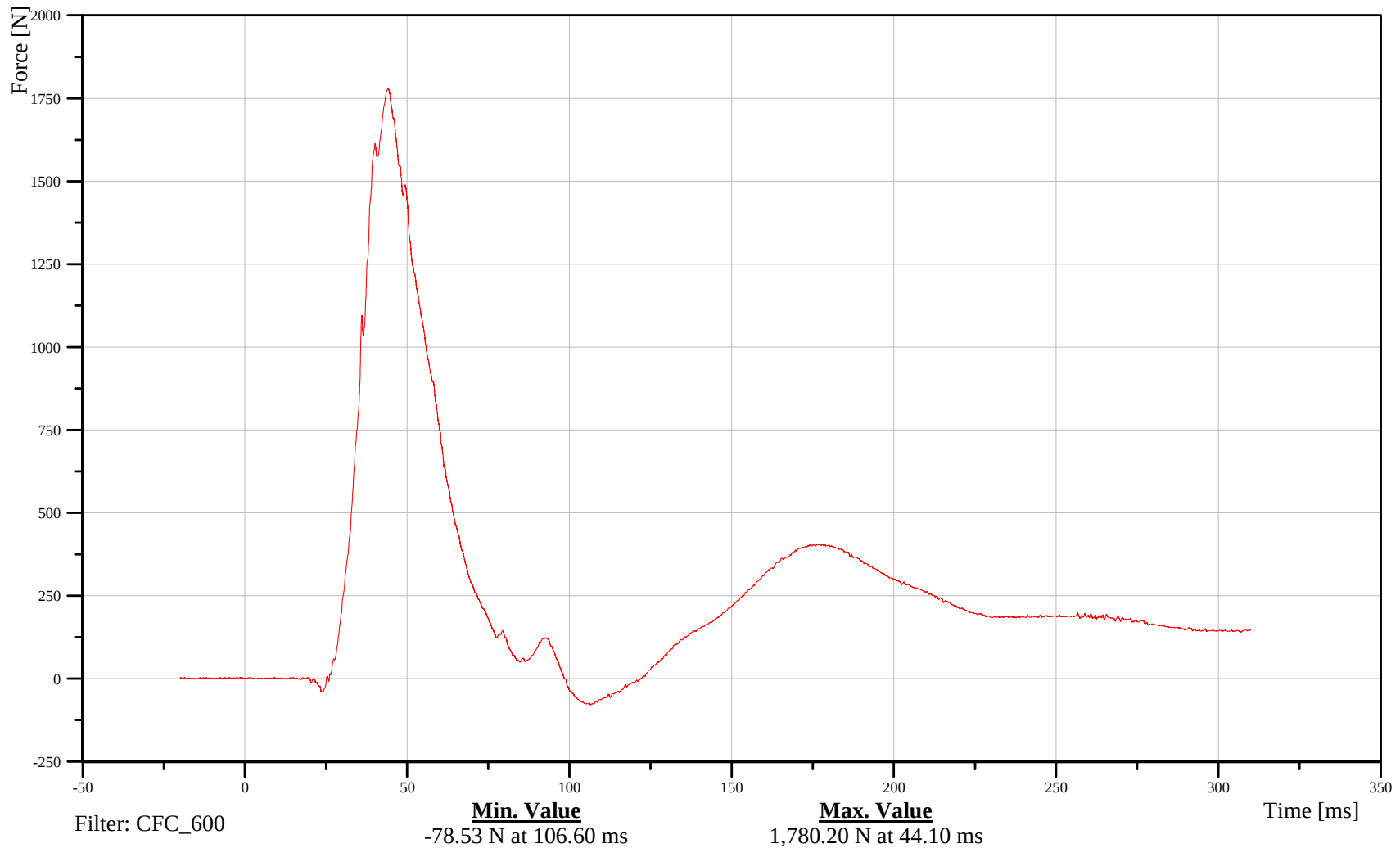
Lumbar Y-Axis Force

Customer: VRTC

11LUSP0000WSFOYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-67

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

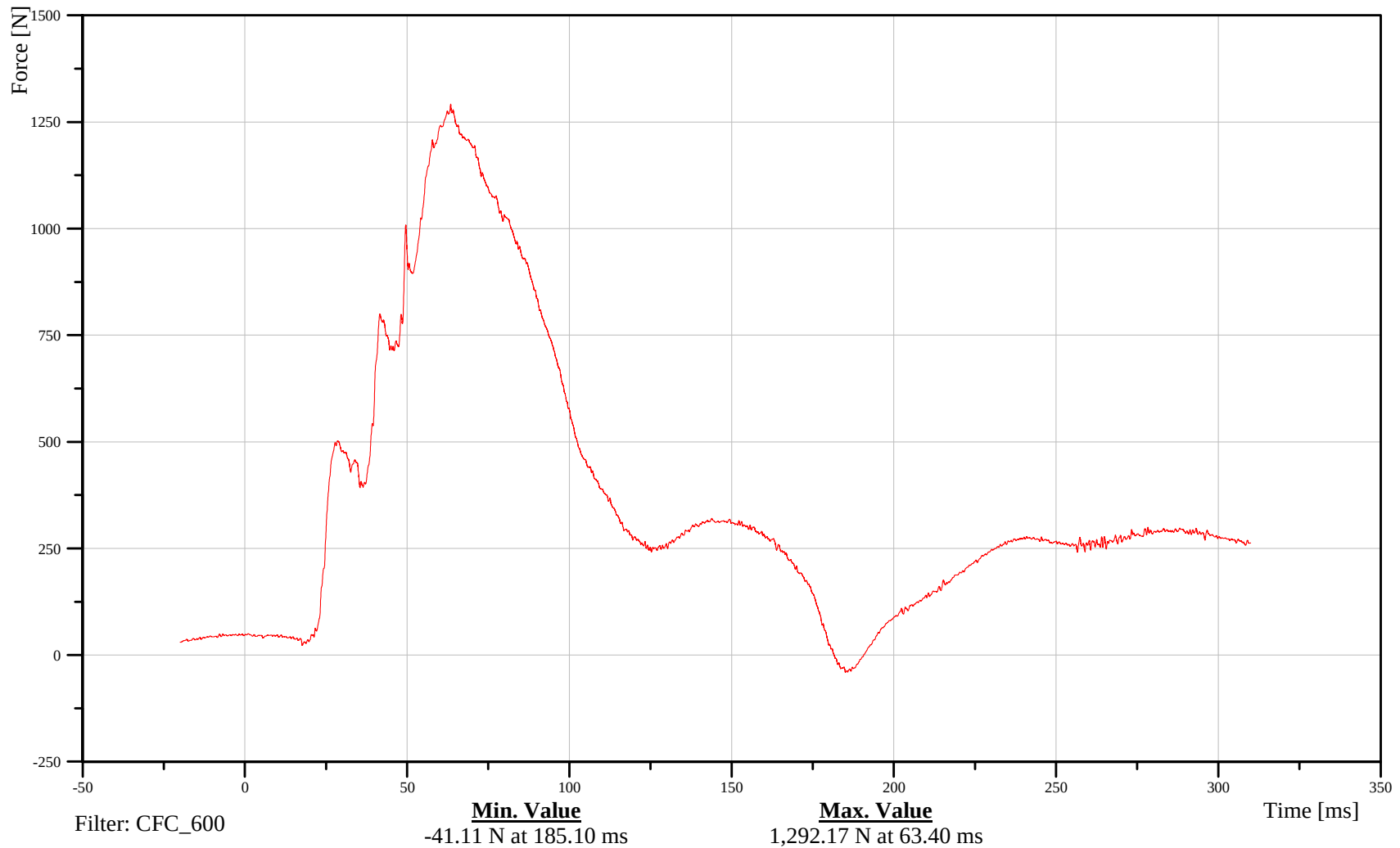
Lumbar Z-Axis Force

Customer: VRTC

11LUSP0000WSFOZB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-68

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

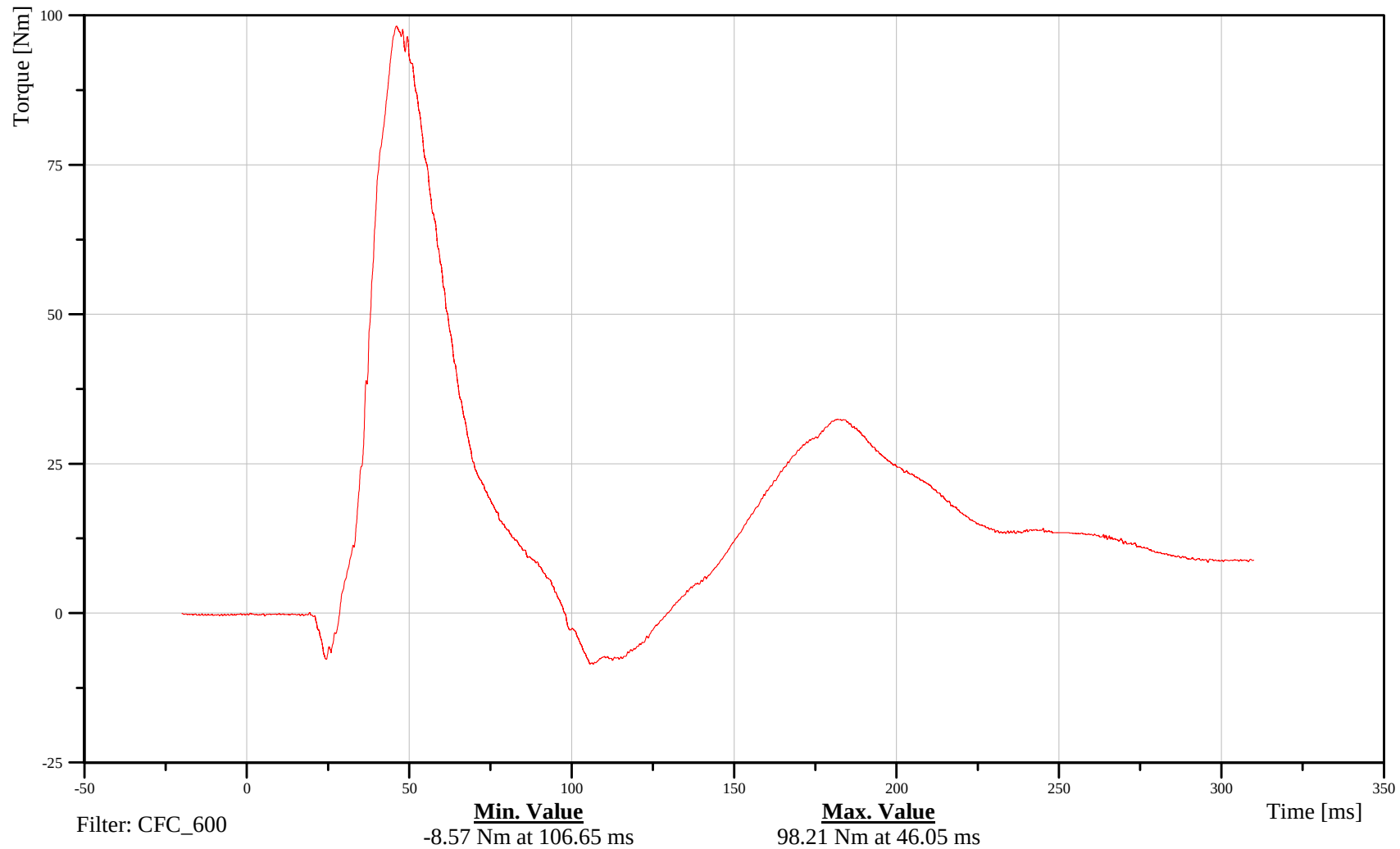
Lumbar Moment About X Axis

Customer: VRTC

11LUSP0000WSMOXB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-69

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

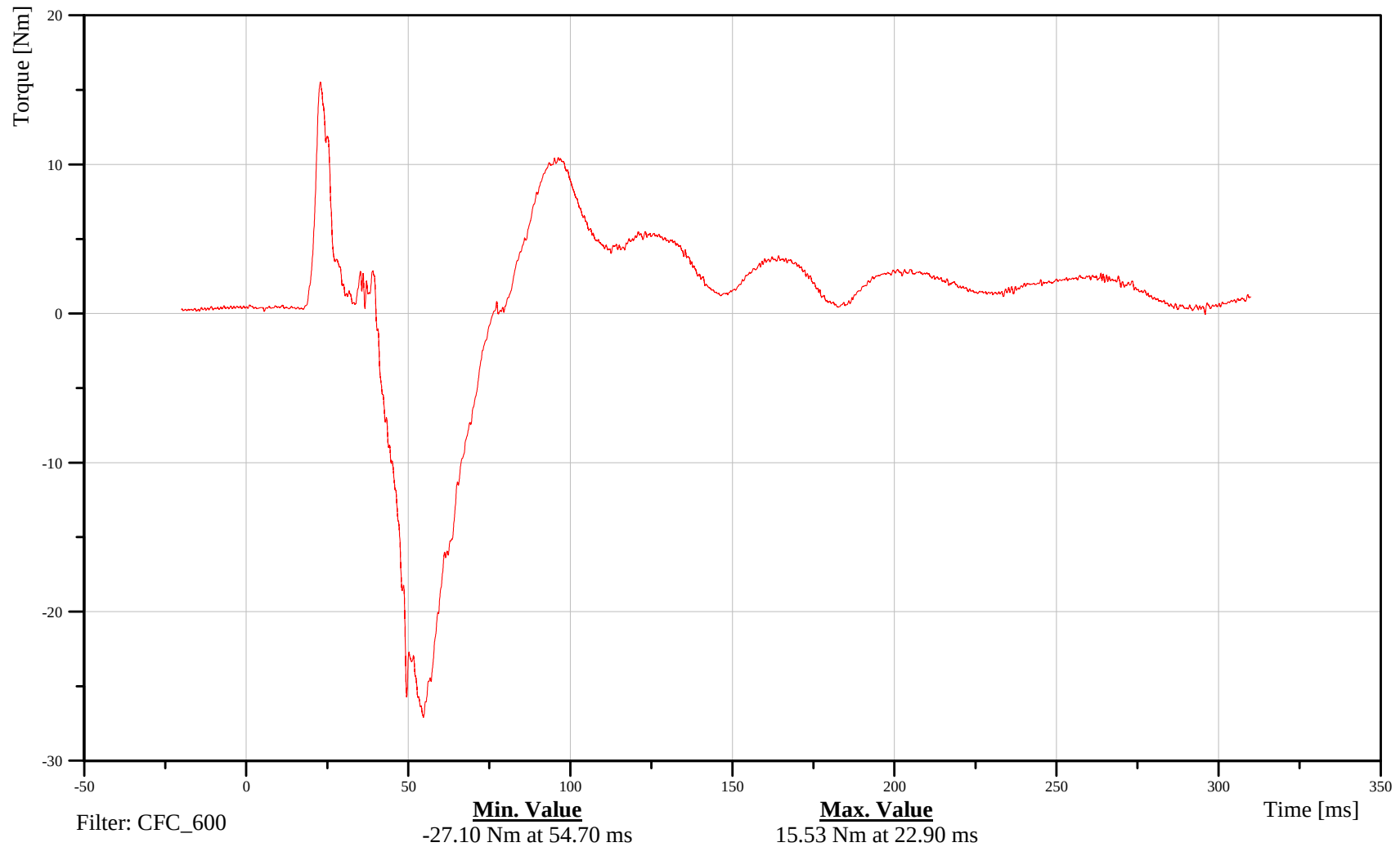
Lumbar Moment About Y Axis

Customer: VRTC

11LUSP0000WSMOYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-70

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

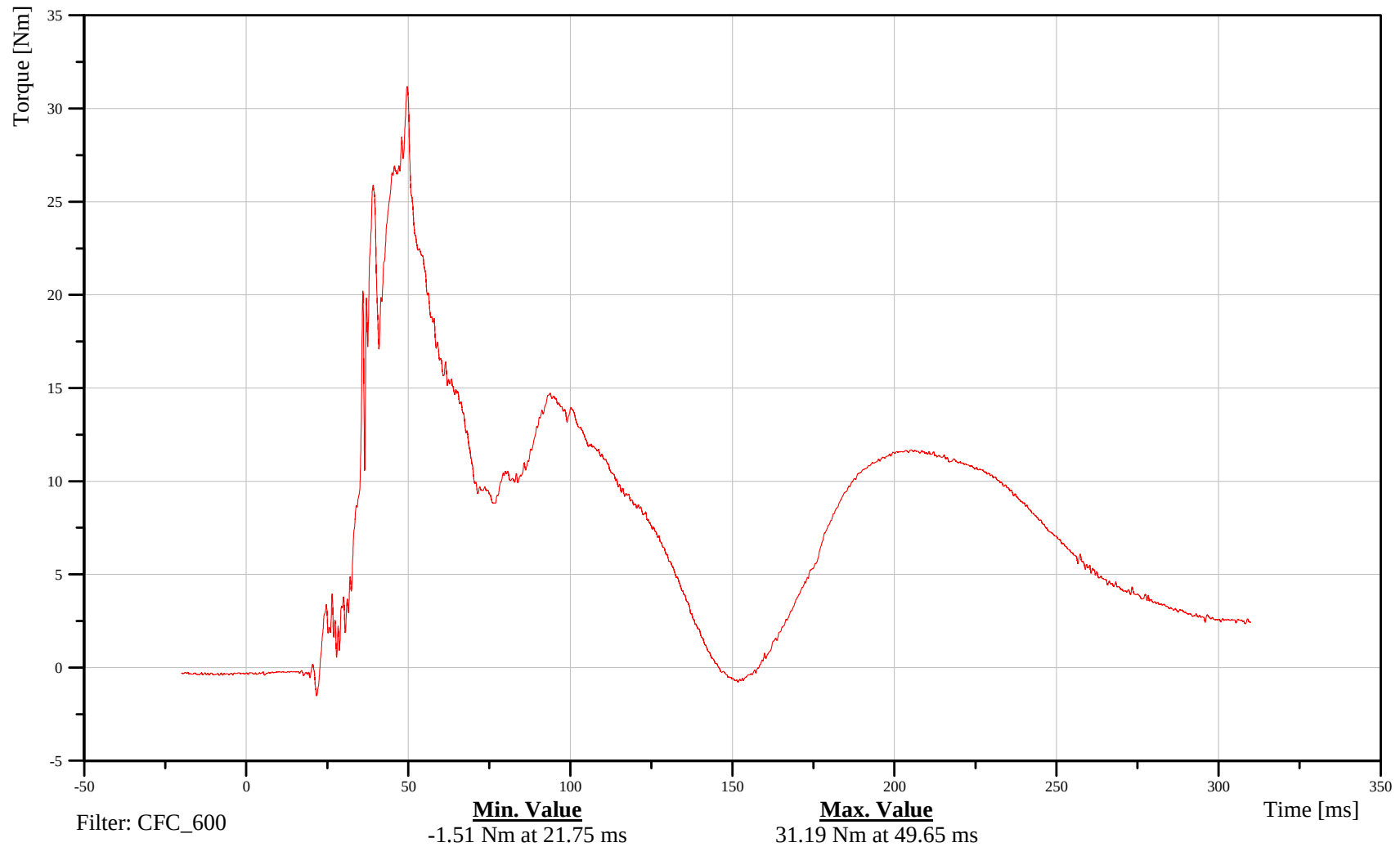
Lumbar Moment About Z Axis

Customer: VRTC

11LUSP0000WSMOZB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-71

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

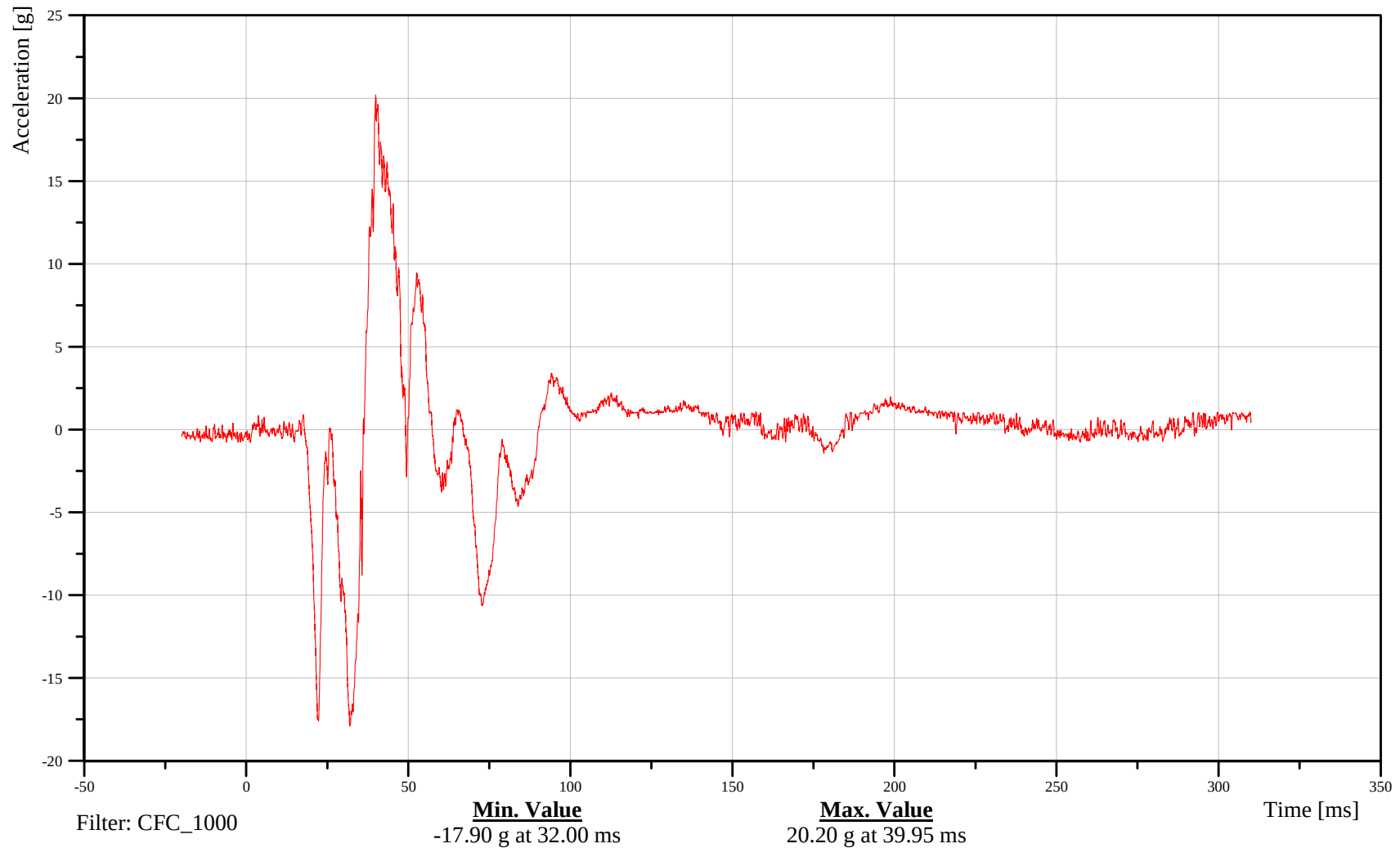
Pelvis X-Axis Acceleration

Customer: VRTC

11PELVCG00WSACXA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-72

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

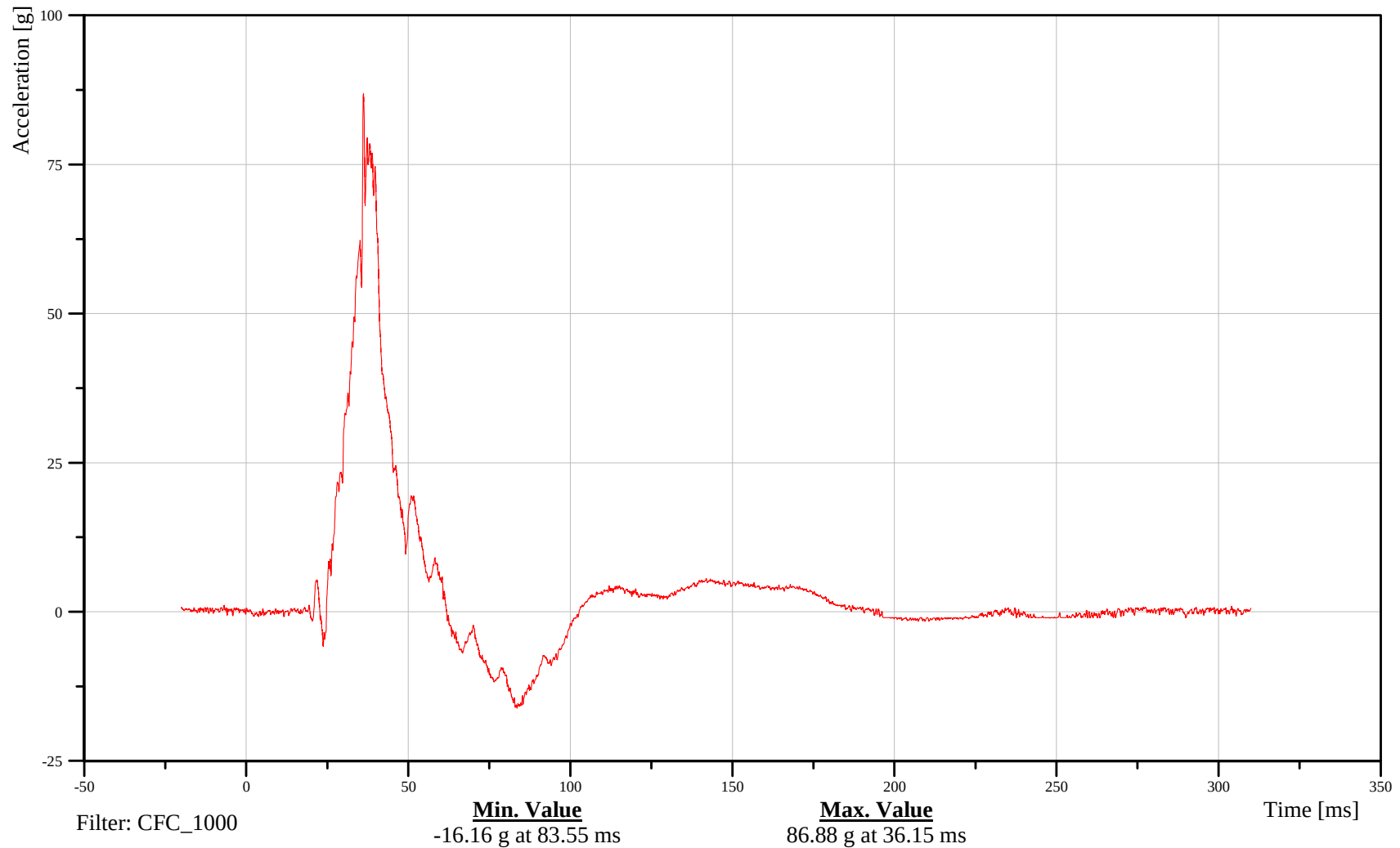
Pelvis Y-Axis Acceleration

Customer: VRTC

11PELVCG00WSACYA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-73

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

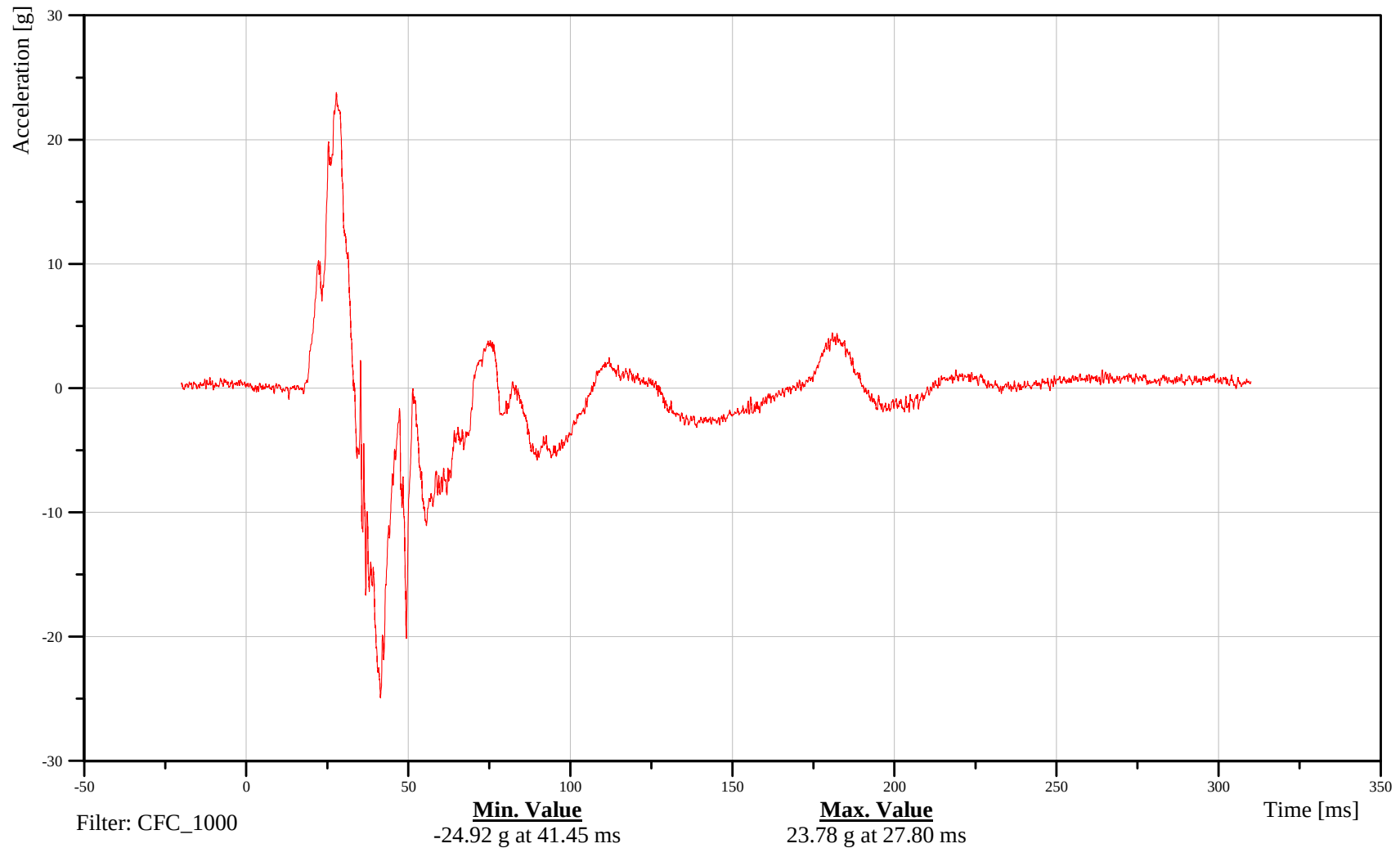
Pelvis Z-Axis Acceleration

Customer: VRTC

11PELVCG00WSACZA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-74

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

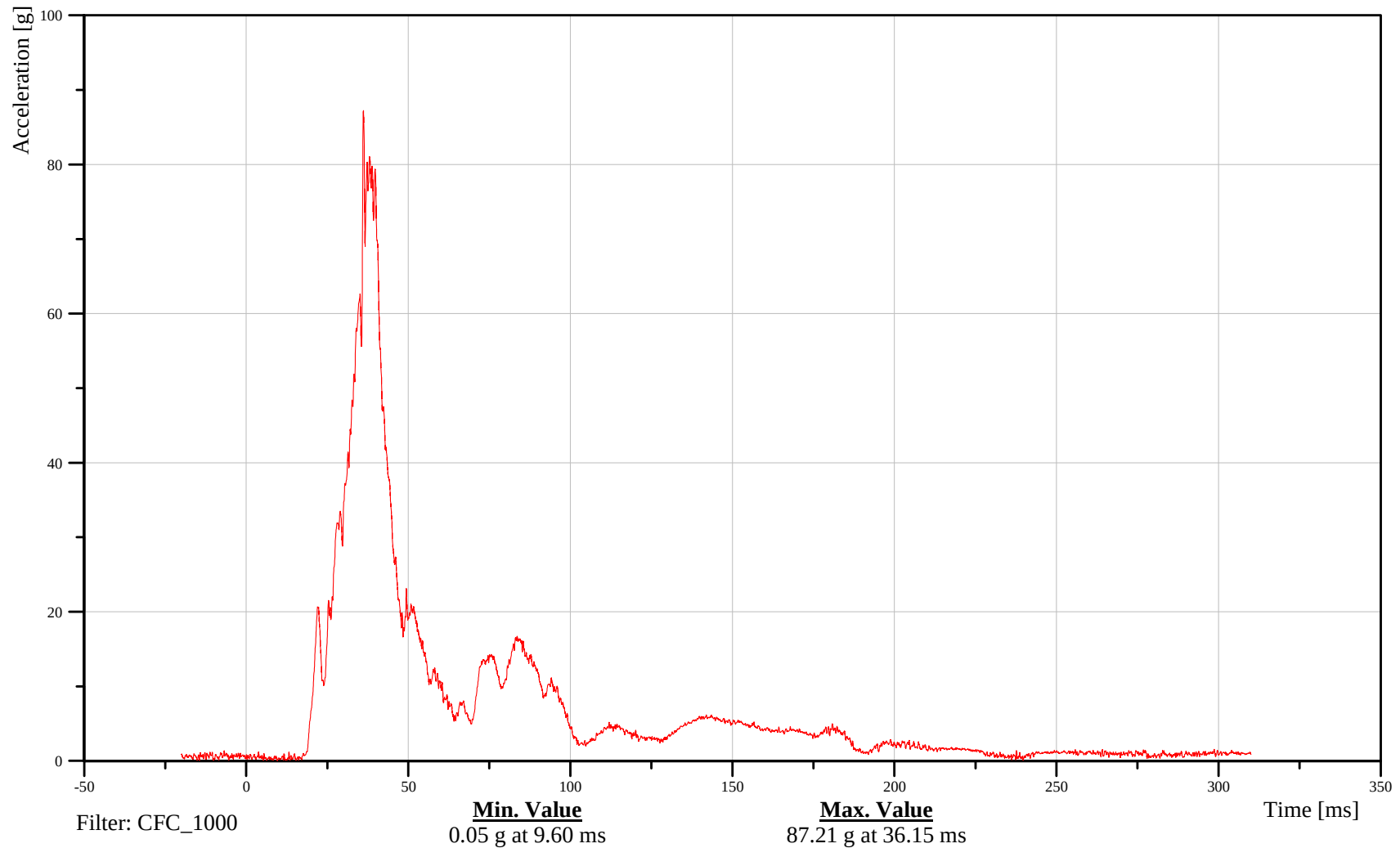
Pelvis Resultant Acceleration

Customer: VRTC

11PELVCG00WSACRA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-75

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

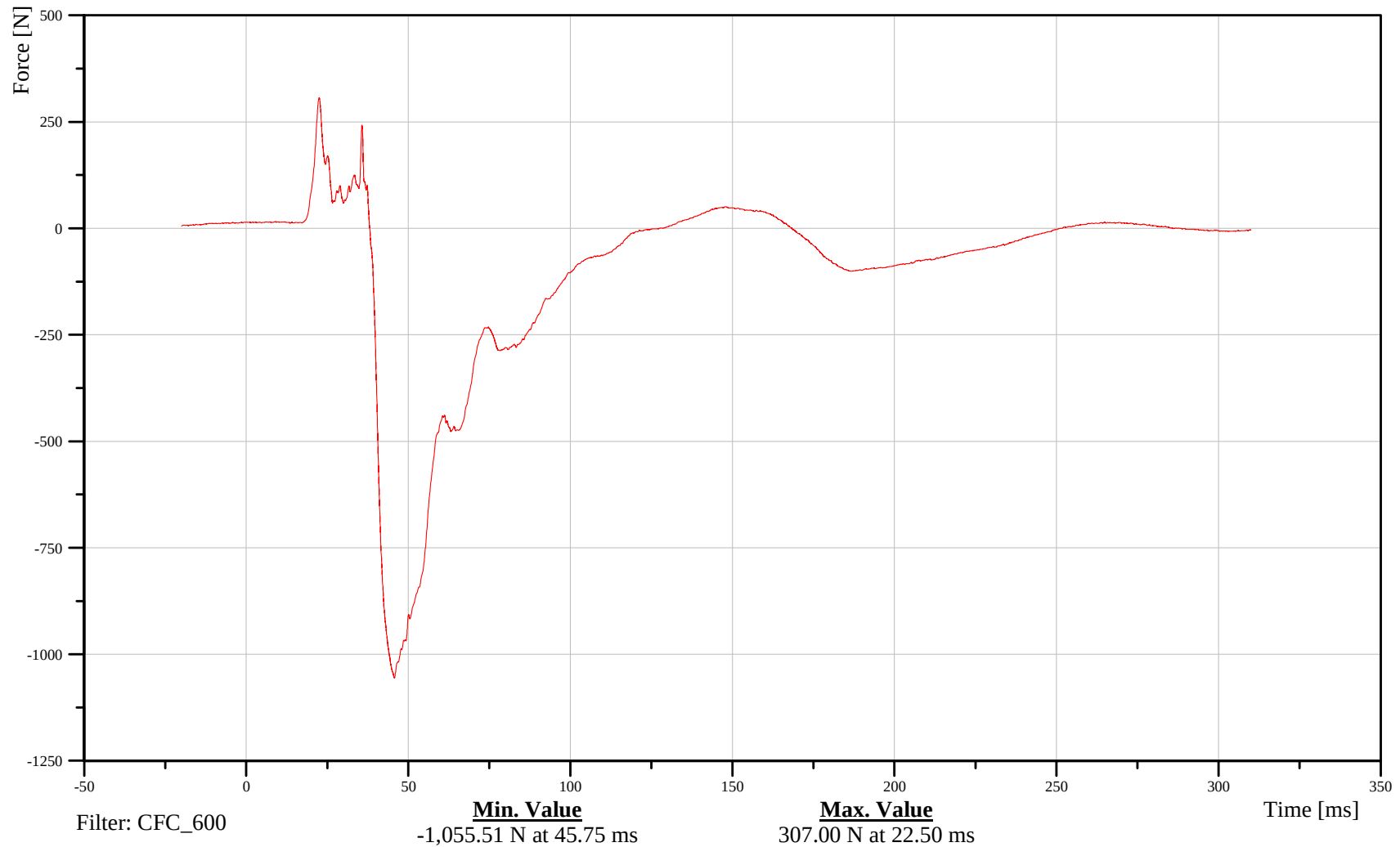
Sacro-Iliac Left X-Axis Force

Customer: VRTC

11SACRLE00WSFOXB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-76

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

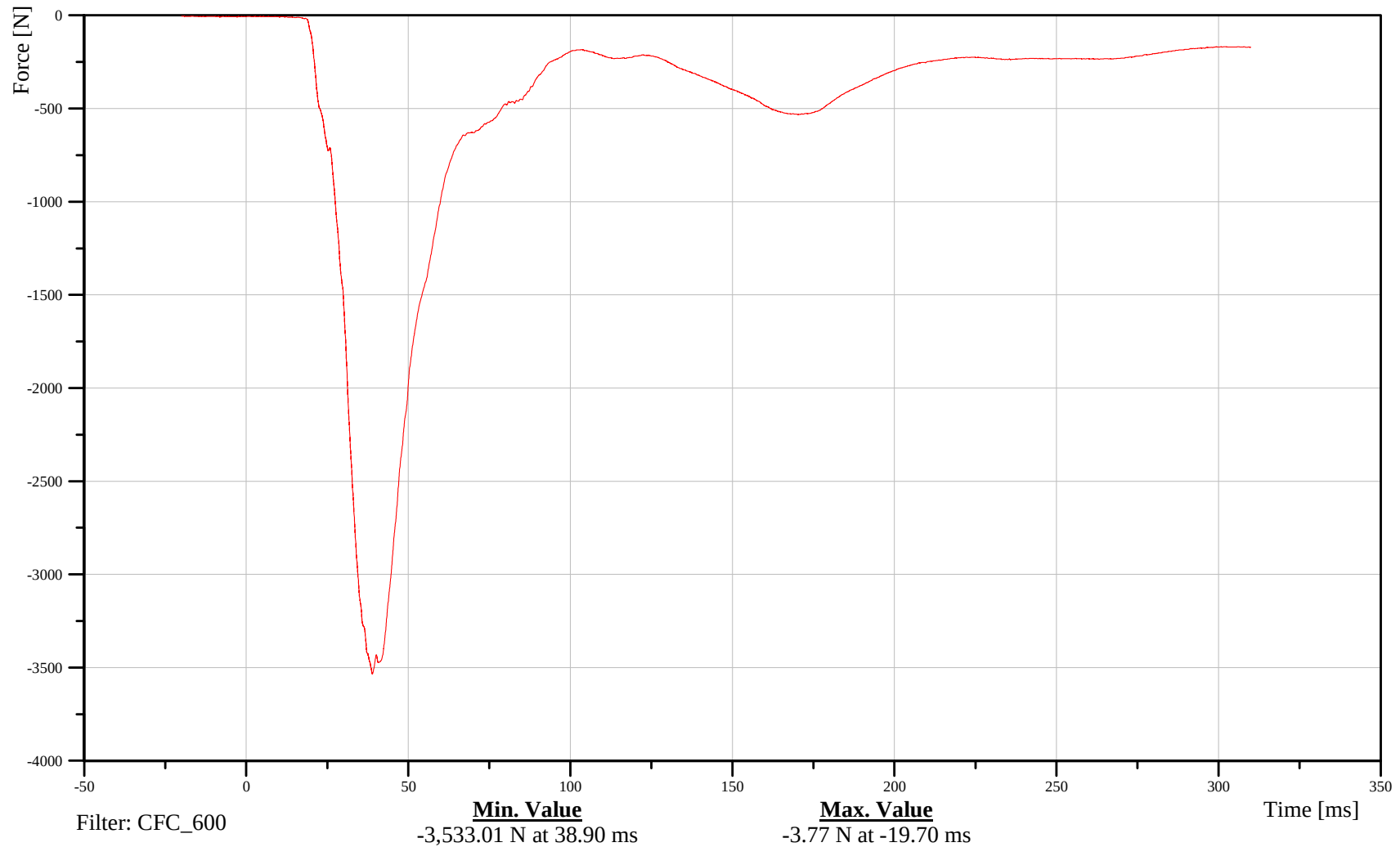
Sacro-Iliac Left Y-Axis Force

Customer: VRTC

11SACRLE00WSFOYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-77

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

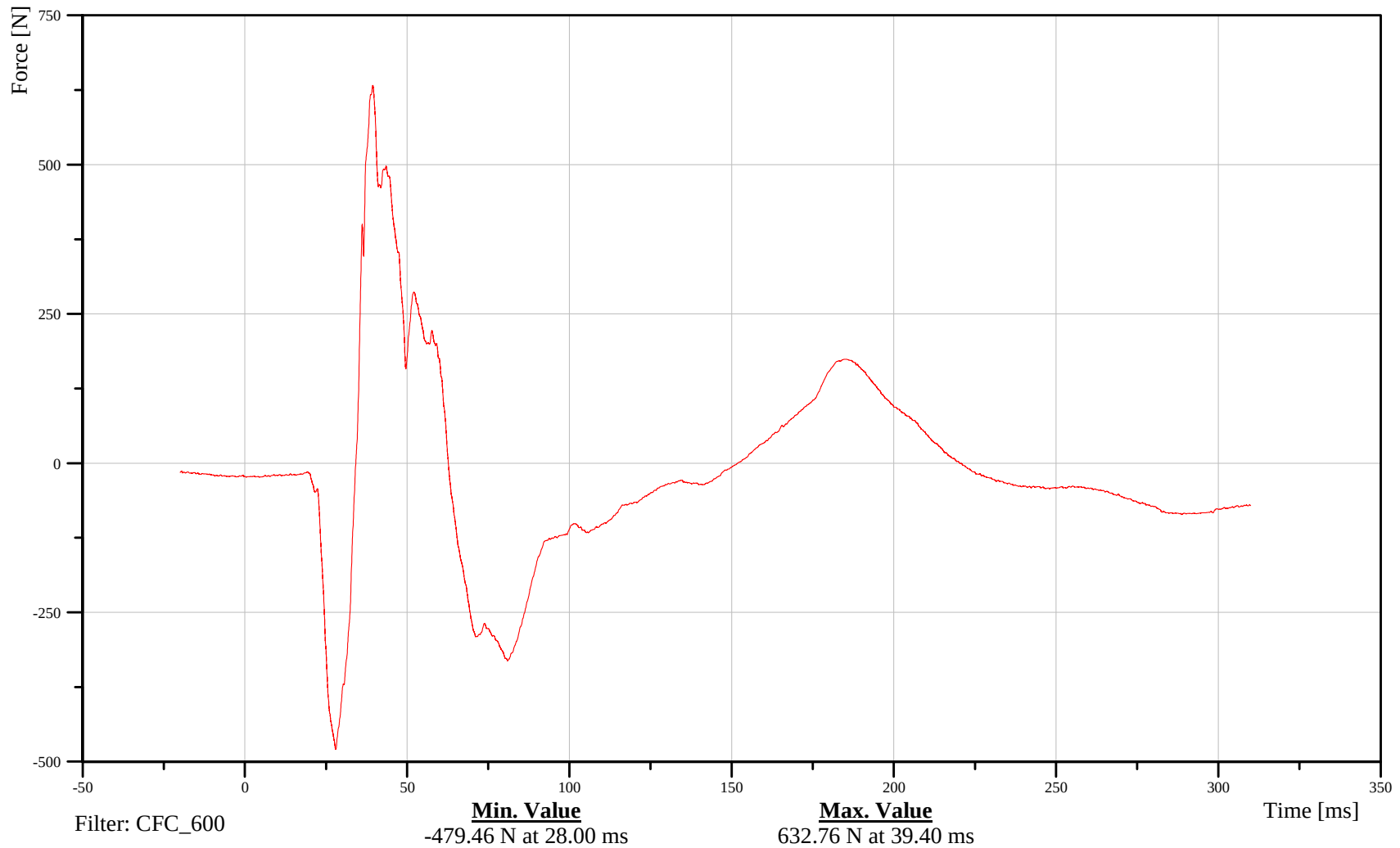
Sacro-Iliac Left Z-Axis Force

Customer: VRTC

11SACRLE00WSFOZB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-78

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

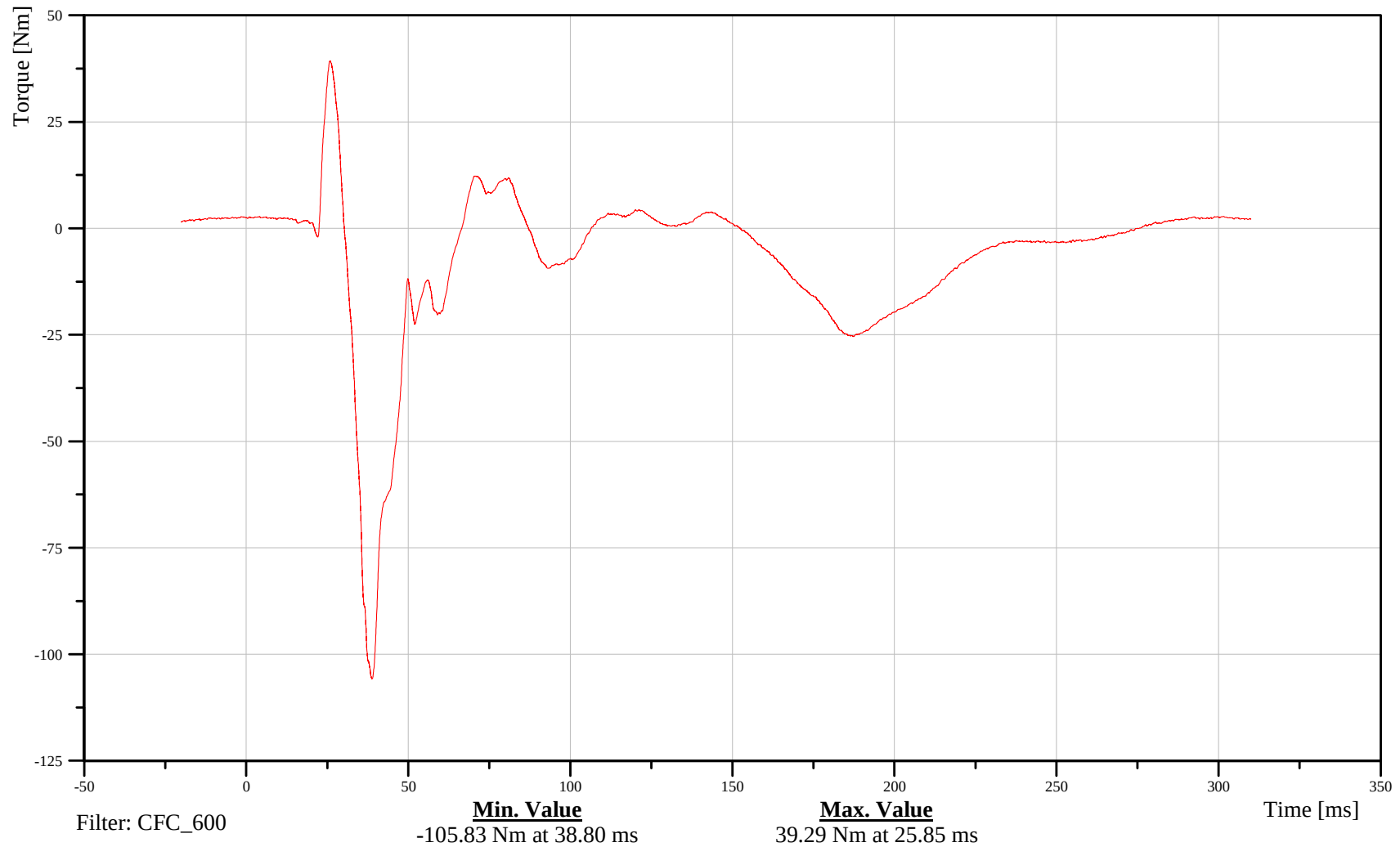
Sacro-Iliac Left Moment About X Axis

Customer: VRTC

11SACRLE00WSMOXB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-79

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

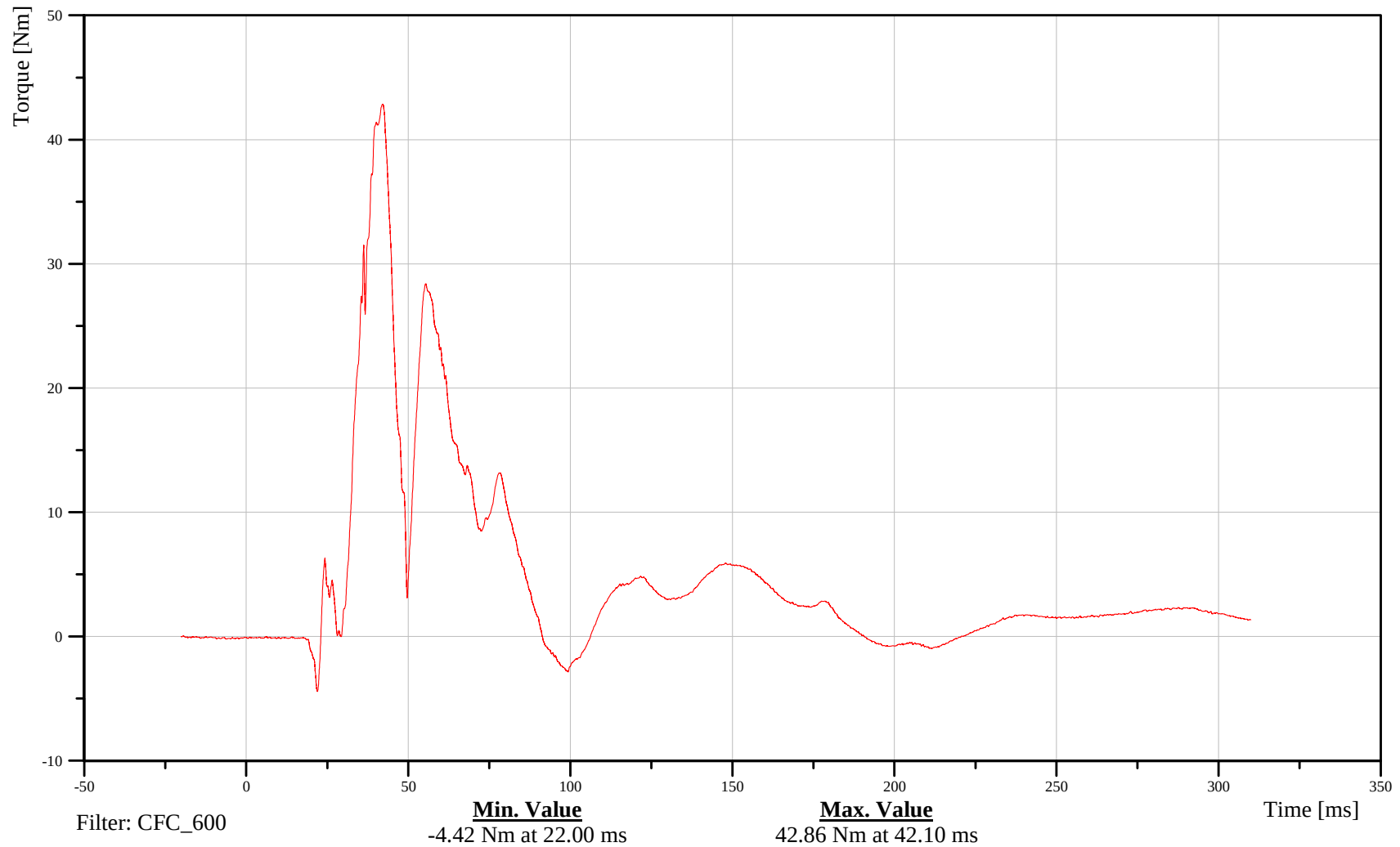
Sacro-Iliac Left Moment About Y Axis

Customer: VRTC

11SACRLE00WSMOYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-80

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

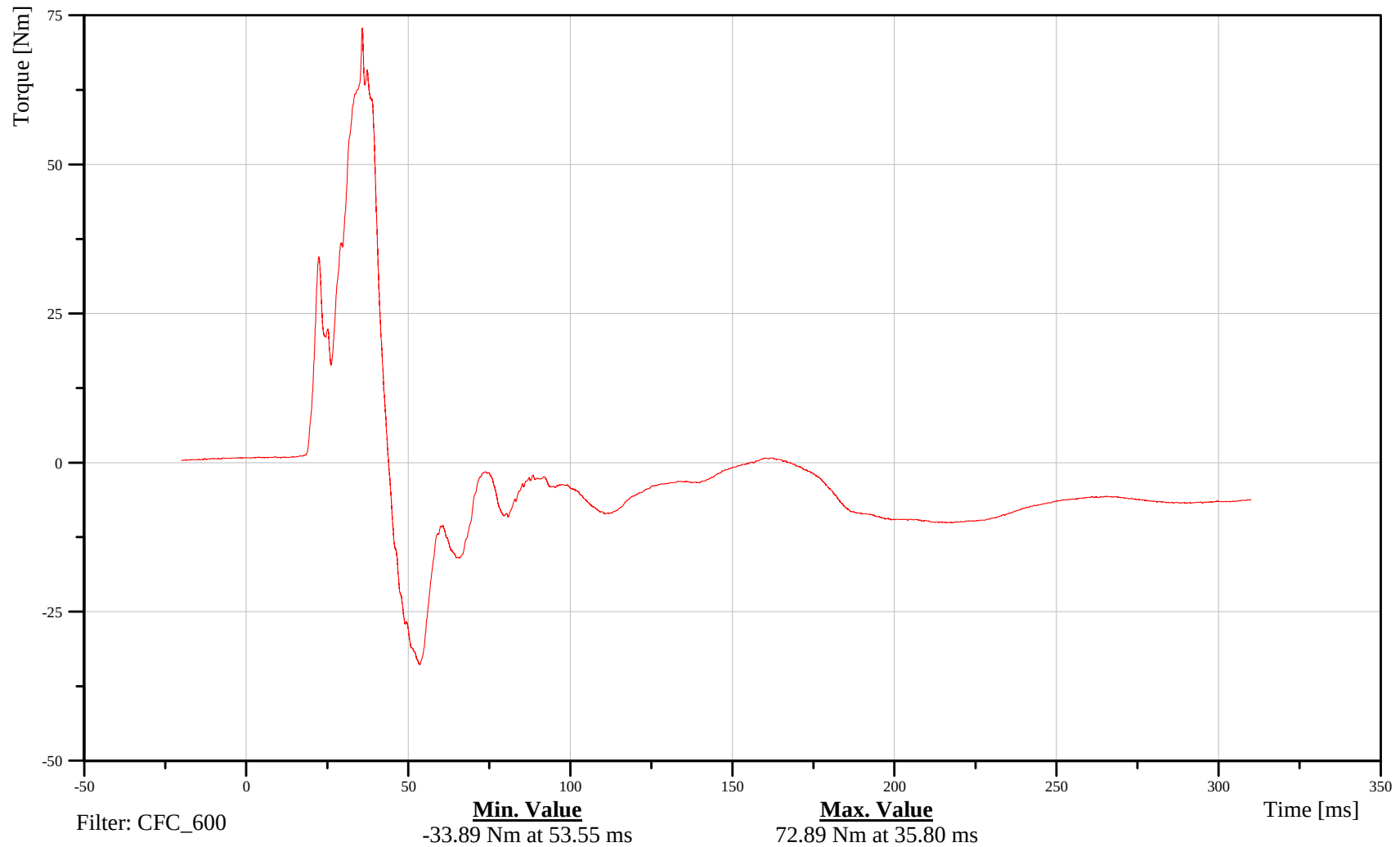
Sacro-Iliac Left Moment About Z Axis

Customer: VRTC

11SACRLE00WSMOZB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-81

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

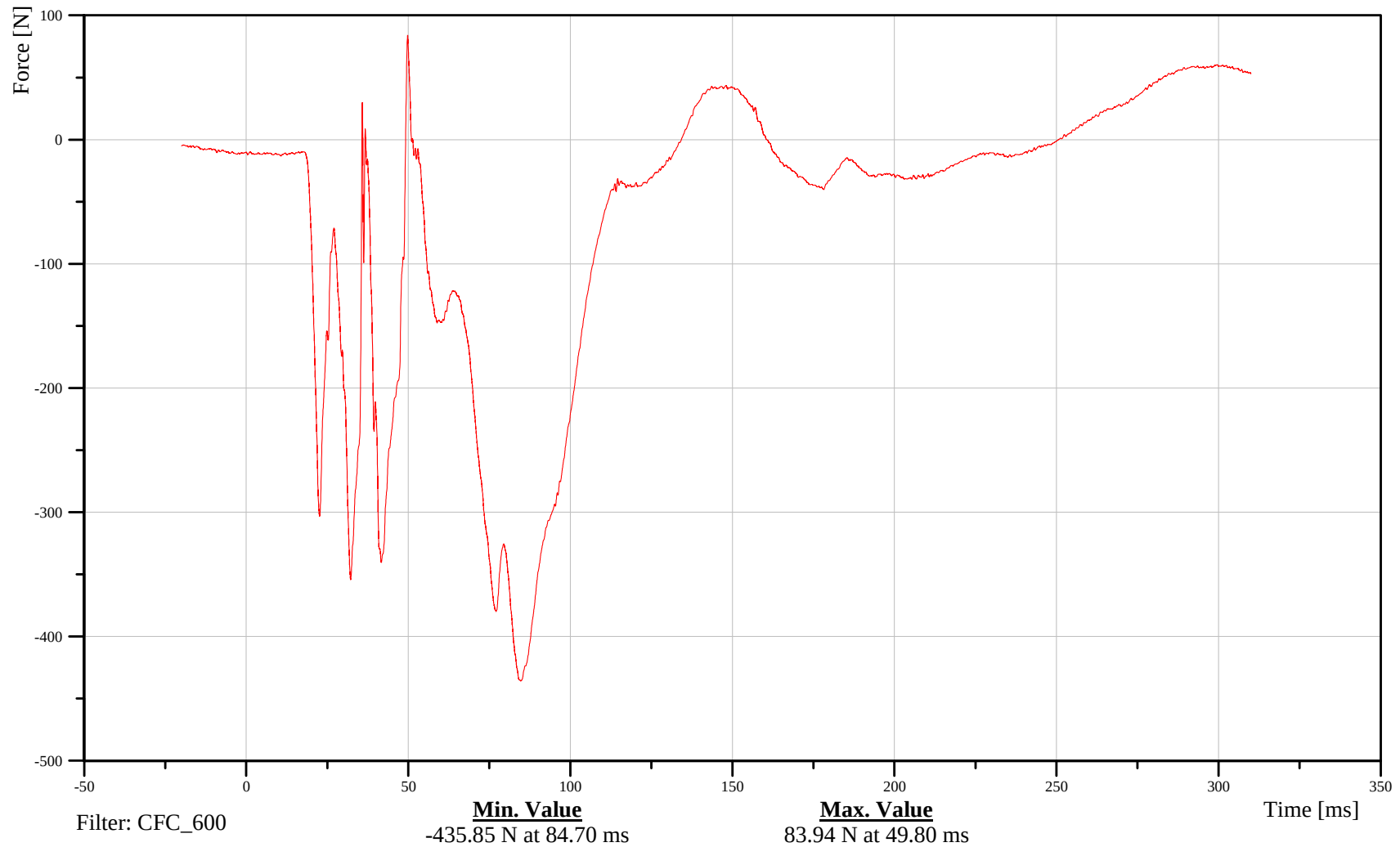
Sacro-Iliac Right X-Axis Force

Customer: VRTC

11SACRRI00WSFOXB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-82

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

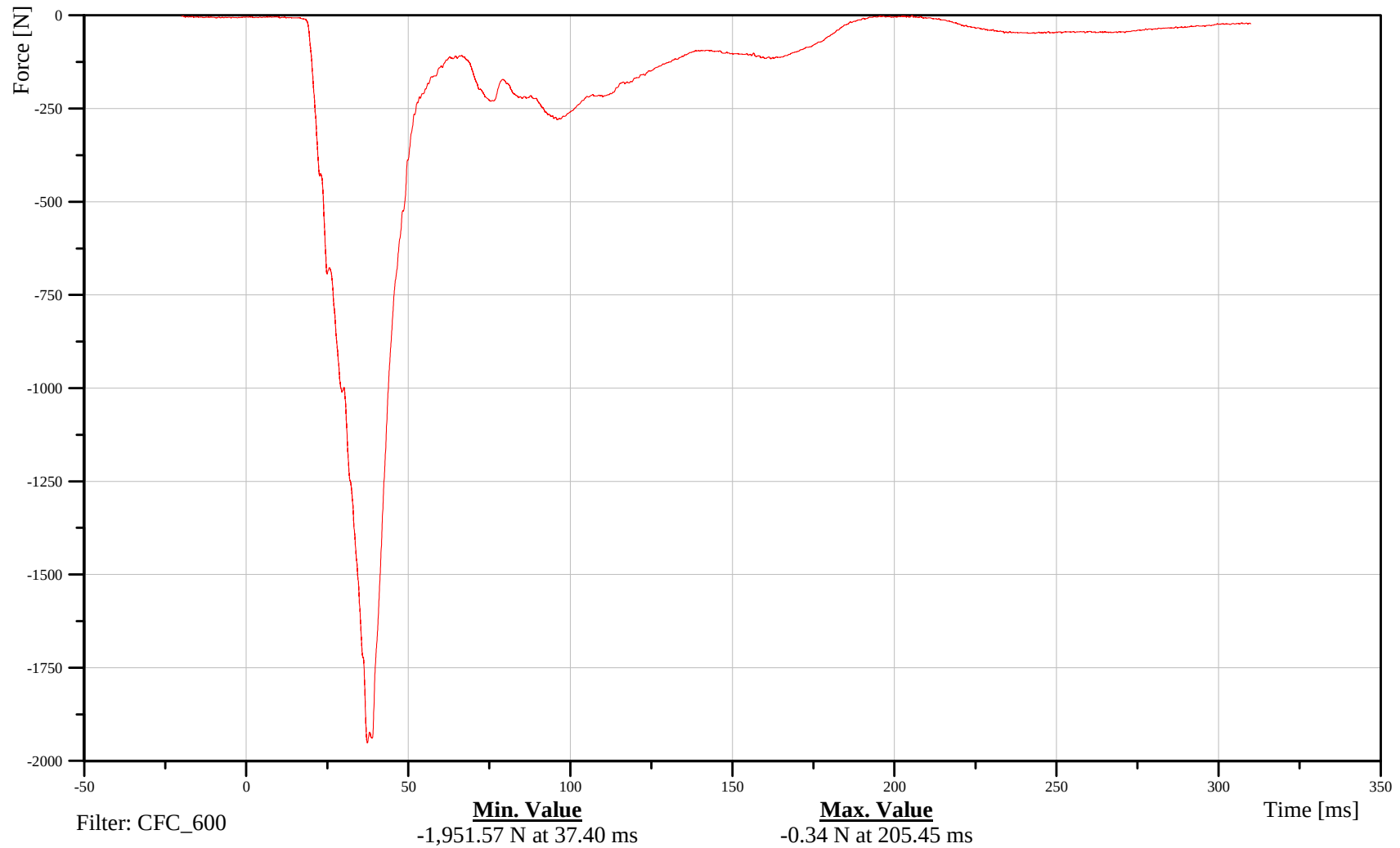
Sacro-Iliac Right Y-Axis Force

Customer: VRTC

11SACRRI00WSFOYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-83

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

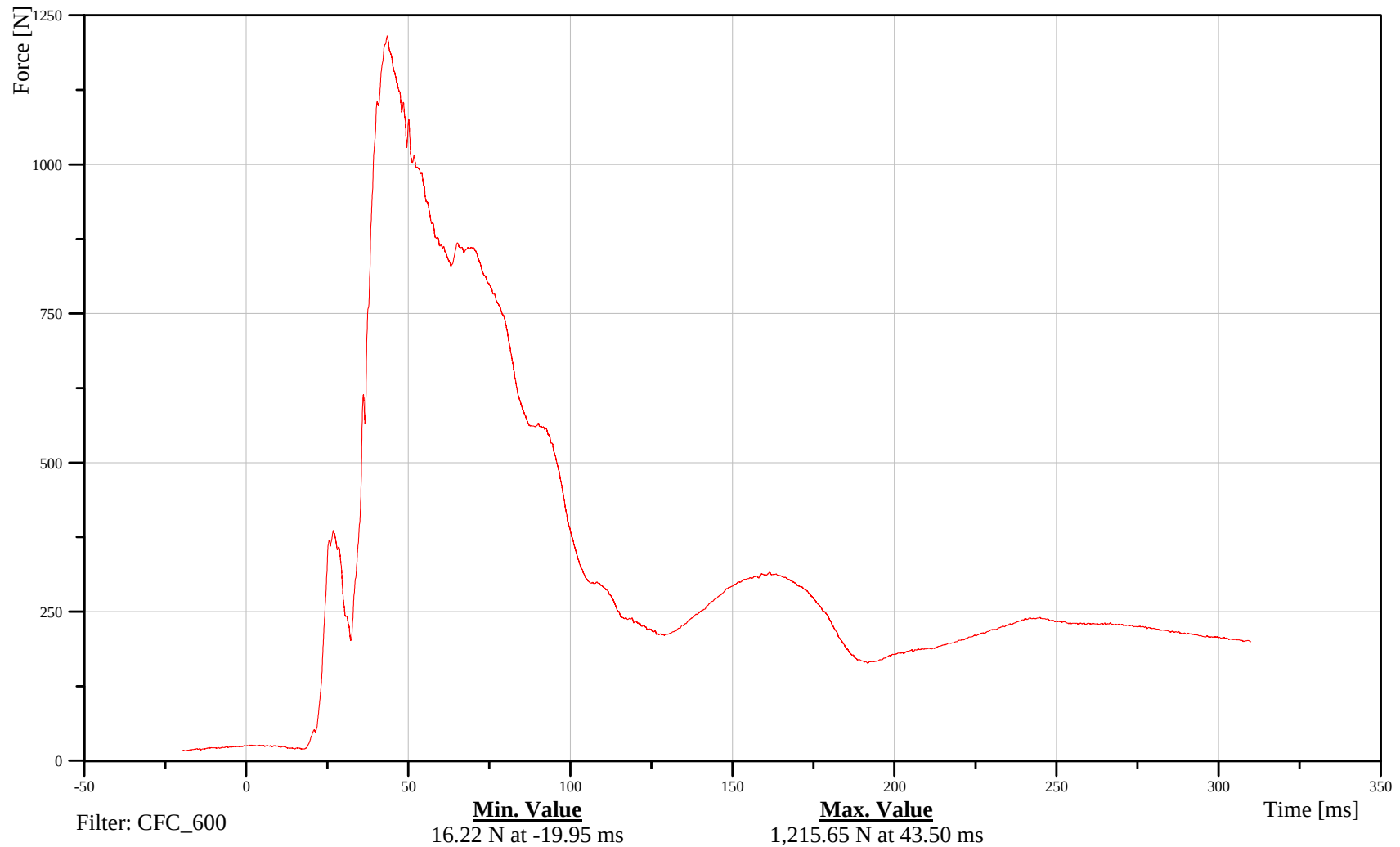
Sacro-Iliac Right Z-Axis Force

Customer: VRTC

11SACRRI00WSFOZB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-84

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

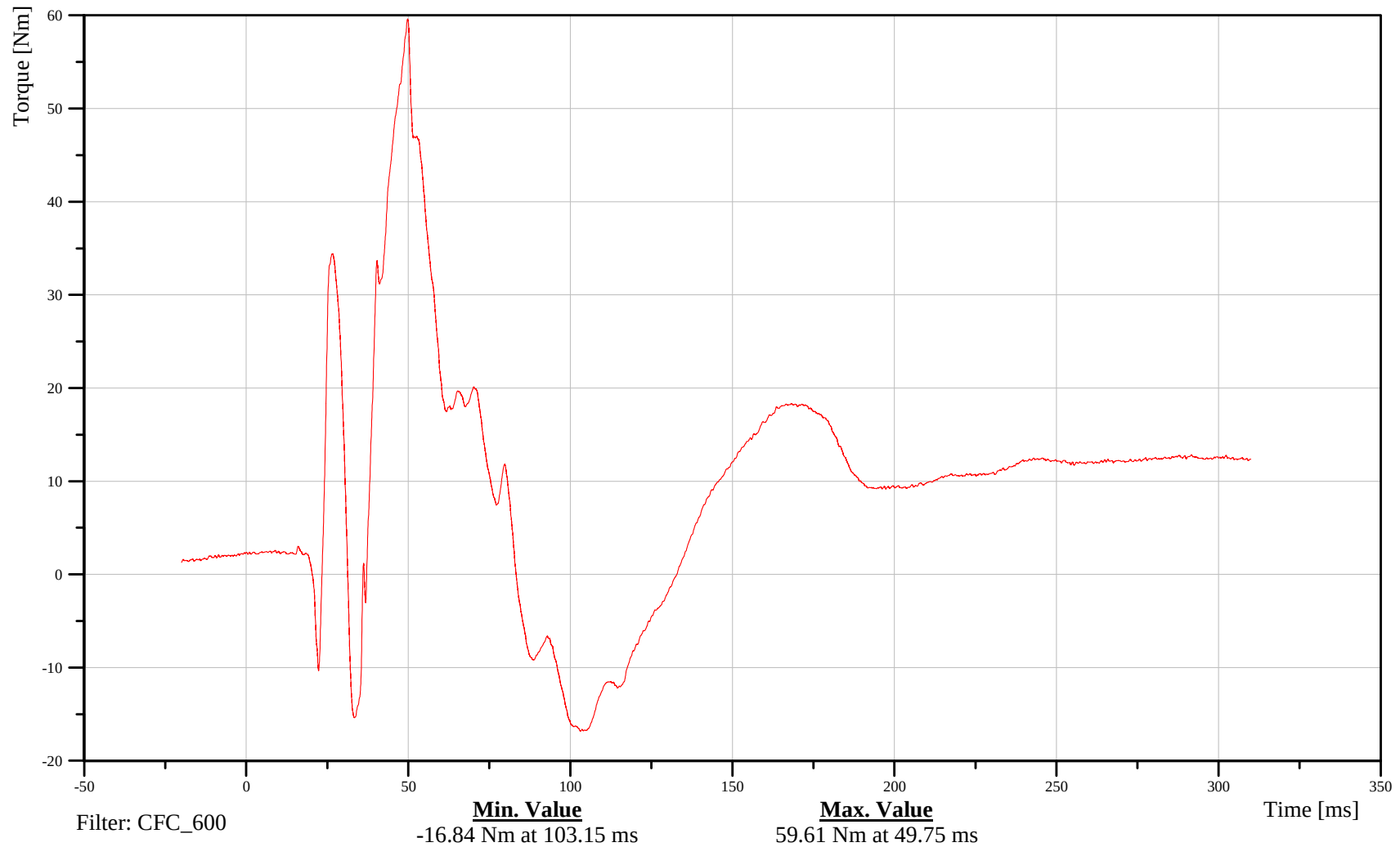
Sacro-Iliac Right Moment About X Axis

Customer: VRTC

11SACRRI00WSMOXB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-85

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

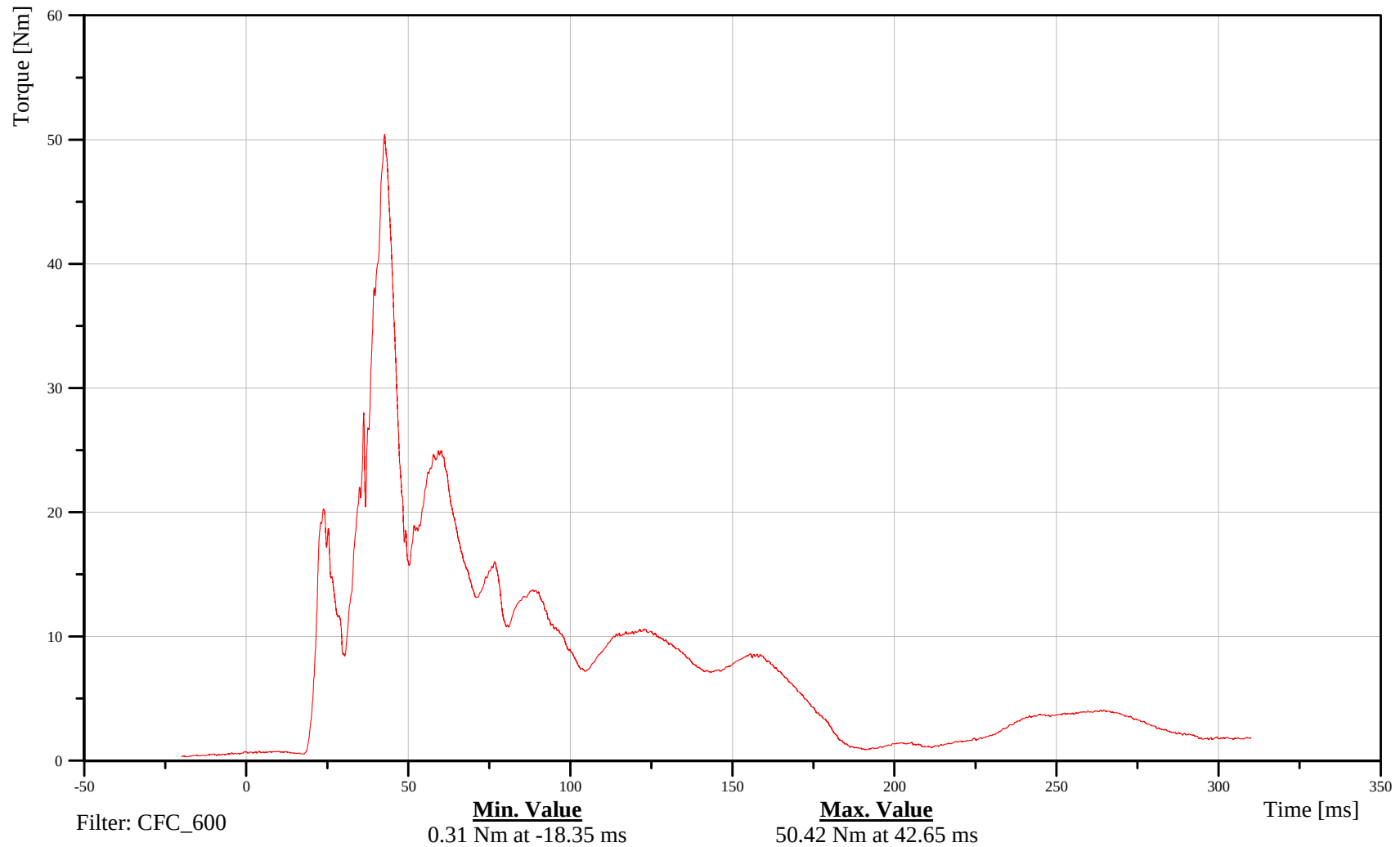
Sacro-Iliac Right Moment About Y Axis

Customer: VRTC

11SACRRI00WSMOYB

TRC Inc. Test Lab: CTF

Test Number: 100617





2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

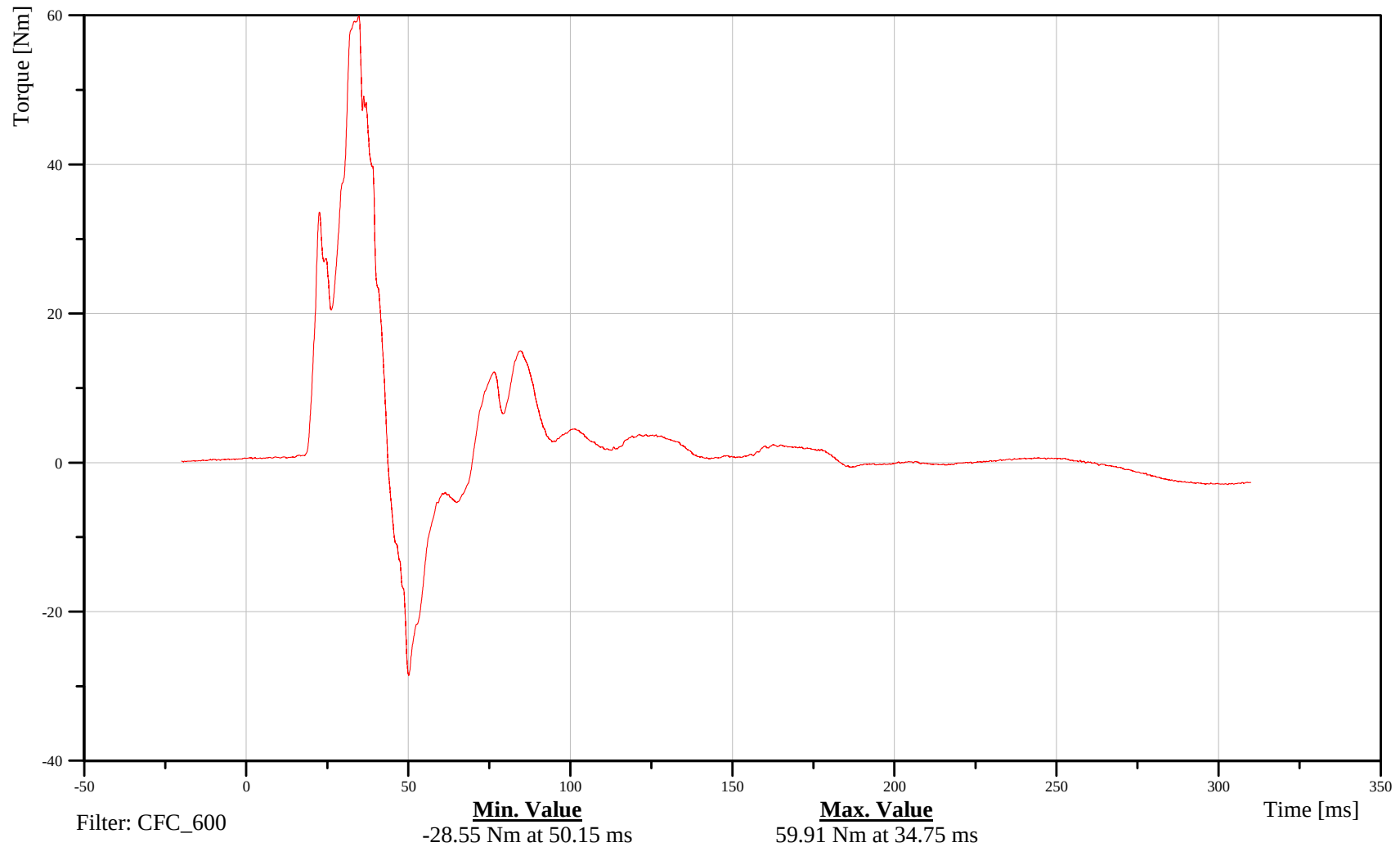
Sacro-Iliac Right Moment About Z Axis

Customer: VRTC

11SACRRI00WSMOZB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-87

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

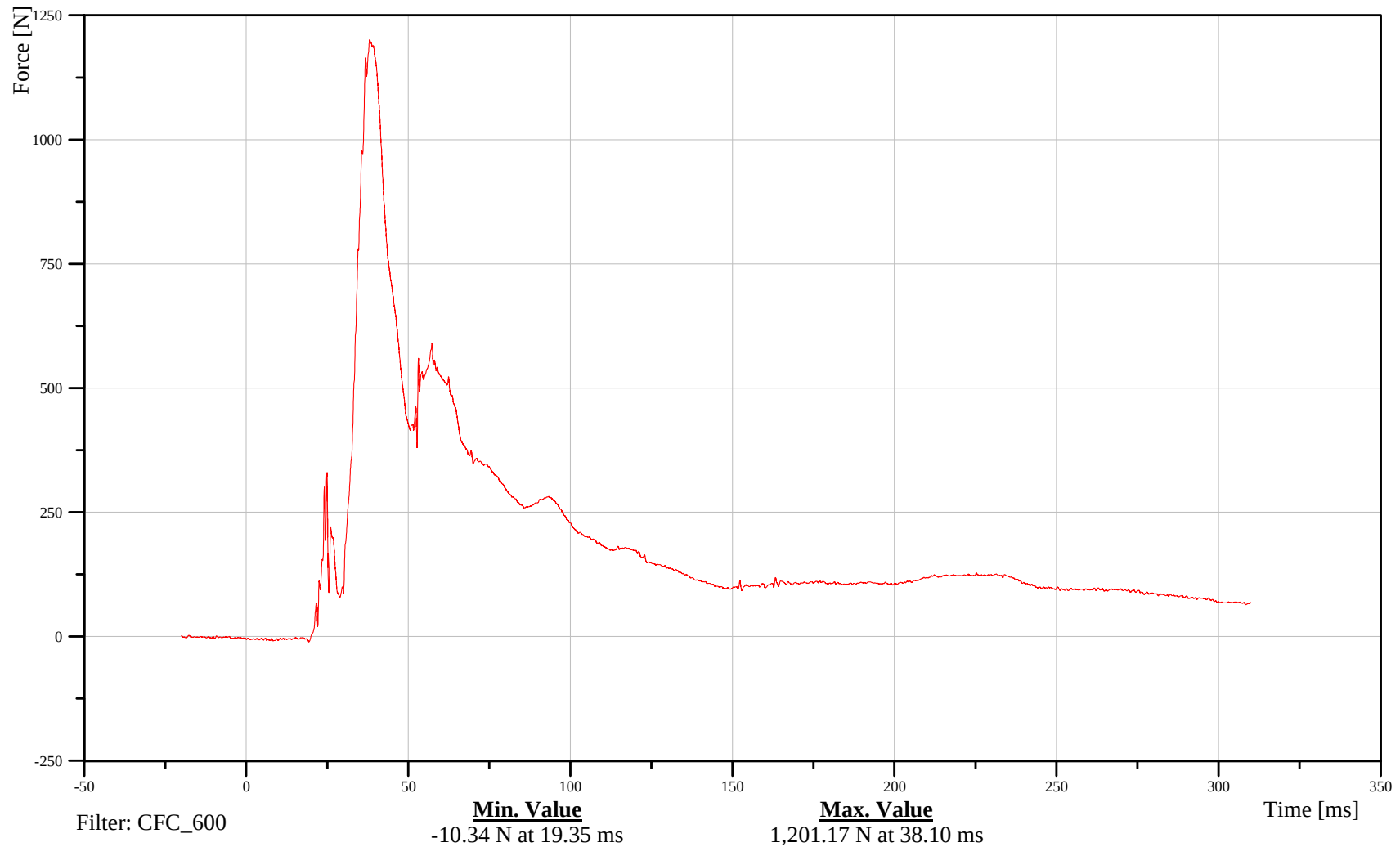
Pubic Y-Axis Force

Customer: VRTC

11PUBC0000WSFOYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-88

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

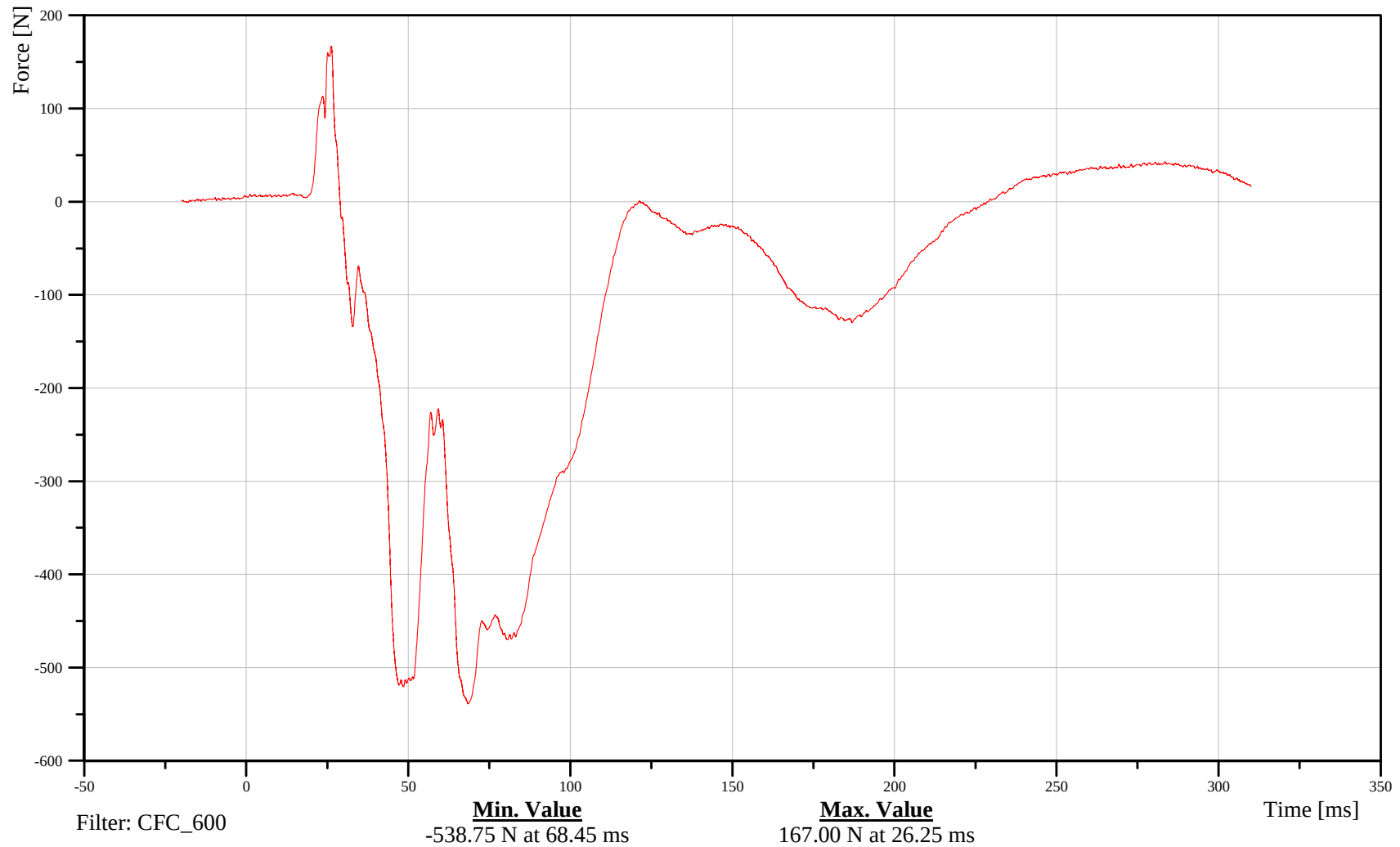
Left Femur X-Axis Force

Customer: VRTC

11FEMRLL00WSFOXB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-89

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

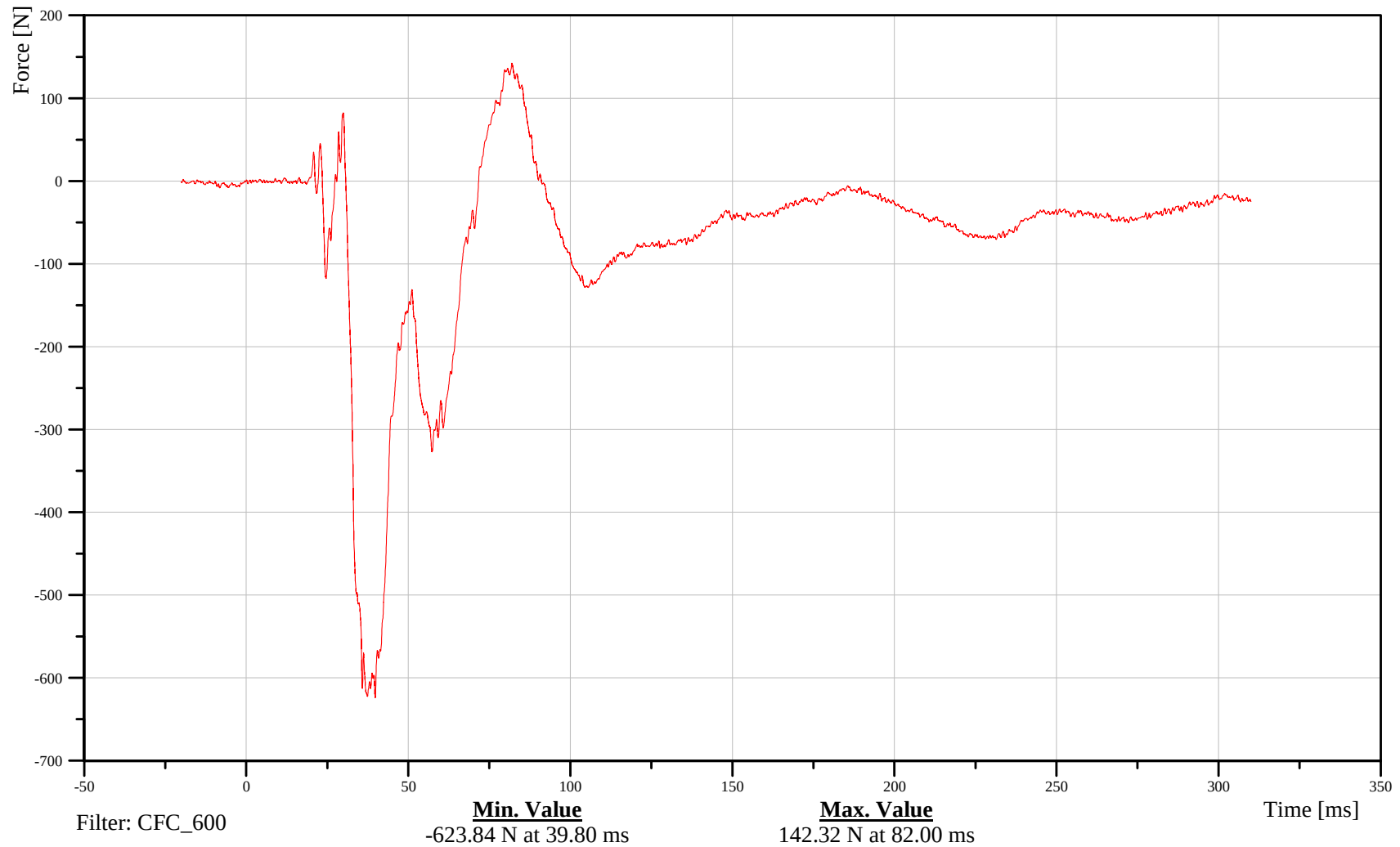
Left Femur Y-Axis Force

Customer: VRTC

11FEMRLL00WSFOYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-90

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

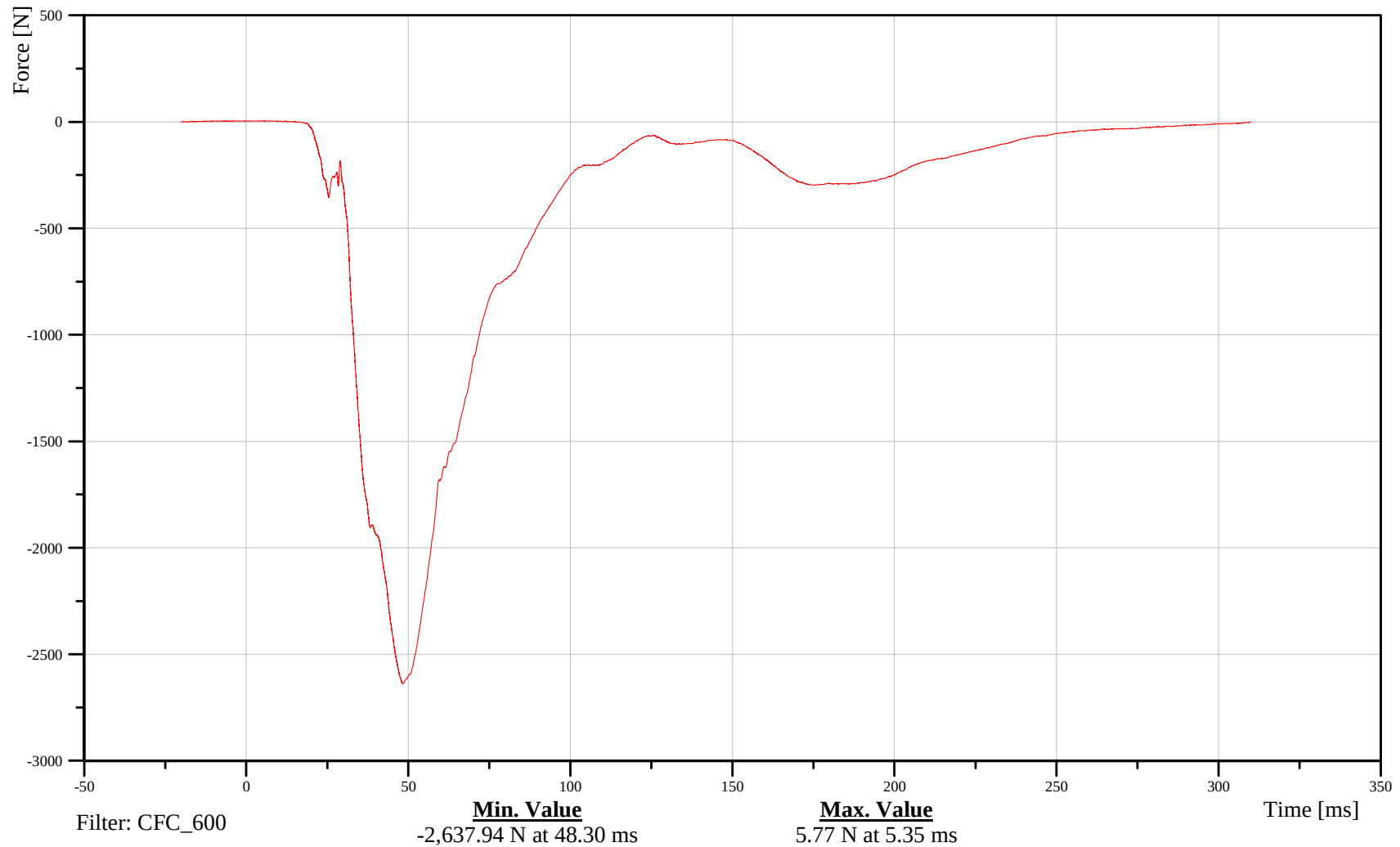
Left Femur Z-Axis Force

Customer: VRTC

11FEMRLL00WSFOZB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-91

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

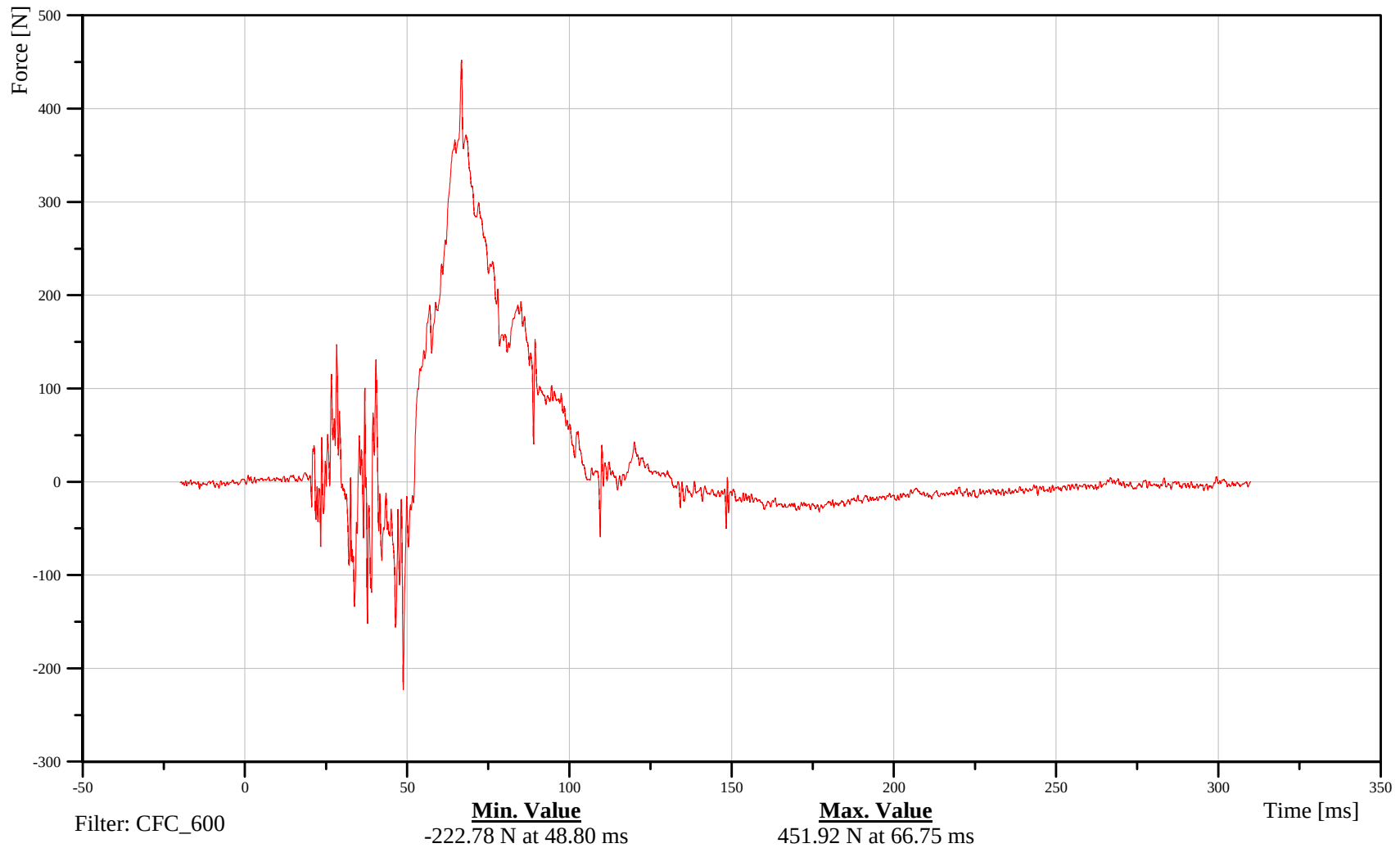
Left Knee Outboard Y-Axis Force

Customer: VRTC

11KNEELEOUWSFOYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-92

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

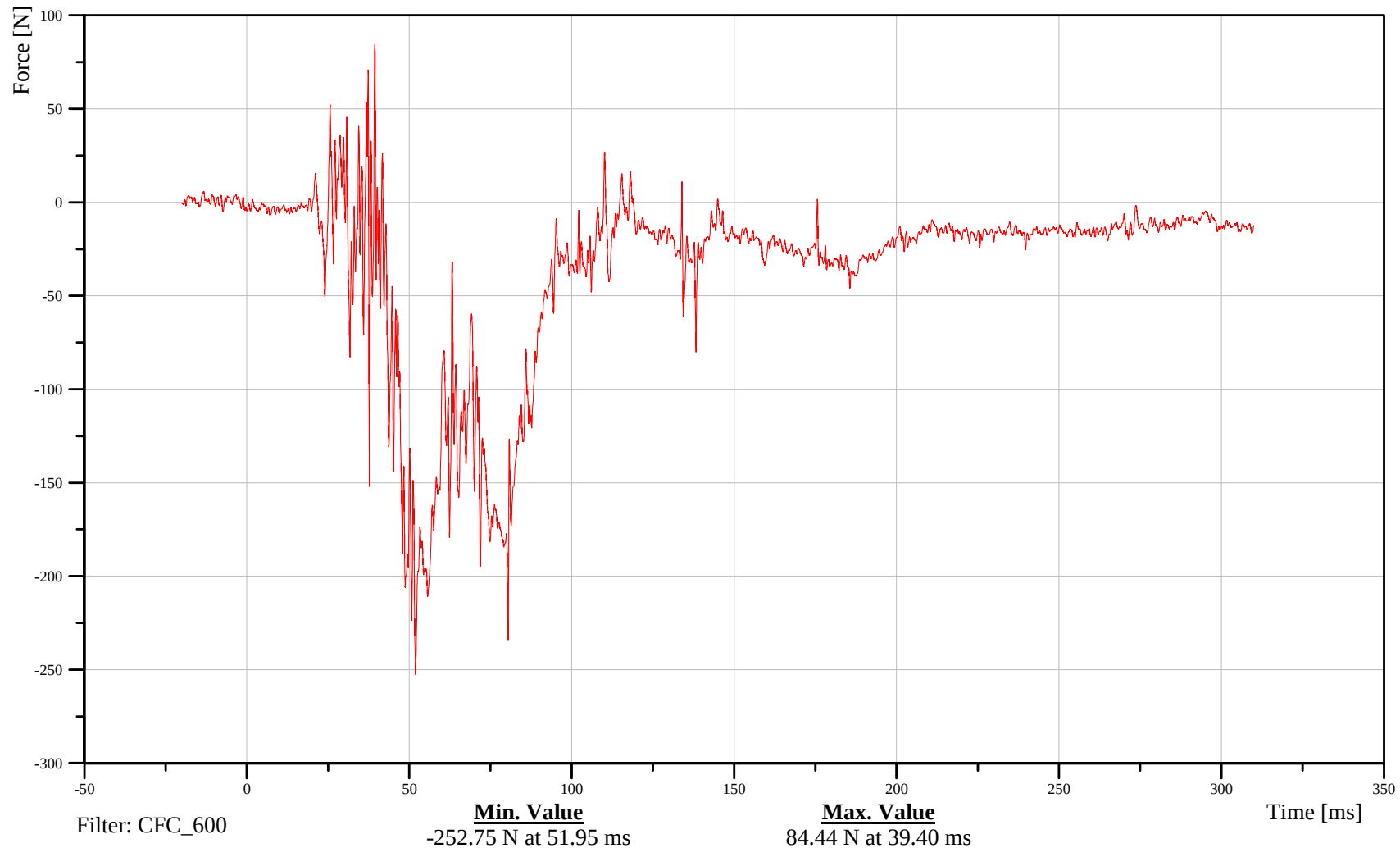
Left Knee Inboard Y-Axis Force

Customer: VRTC

11KNEELEINWSFOYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-93

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

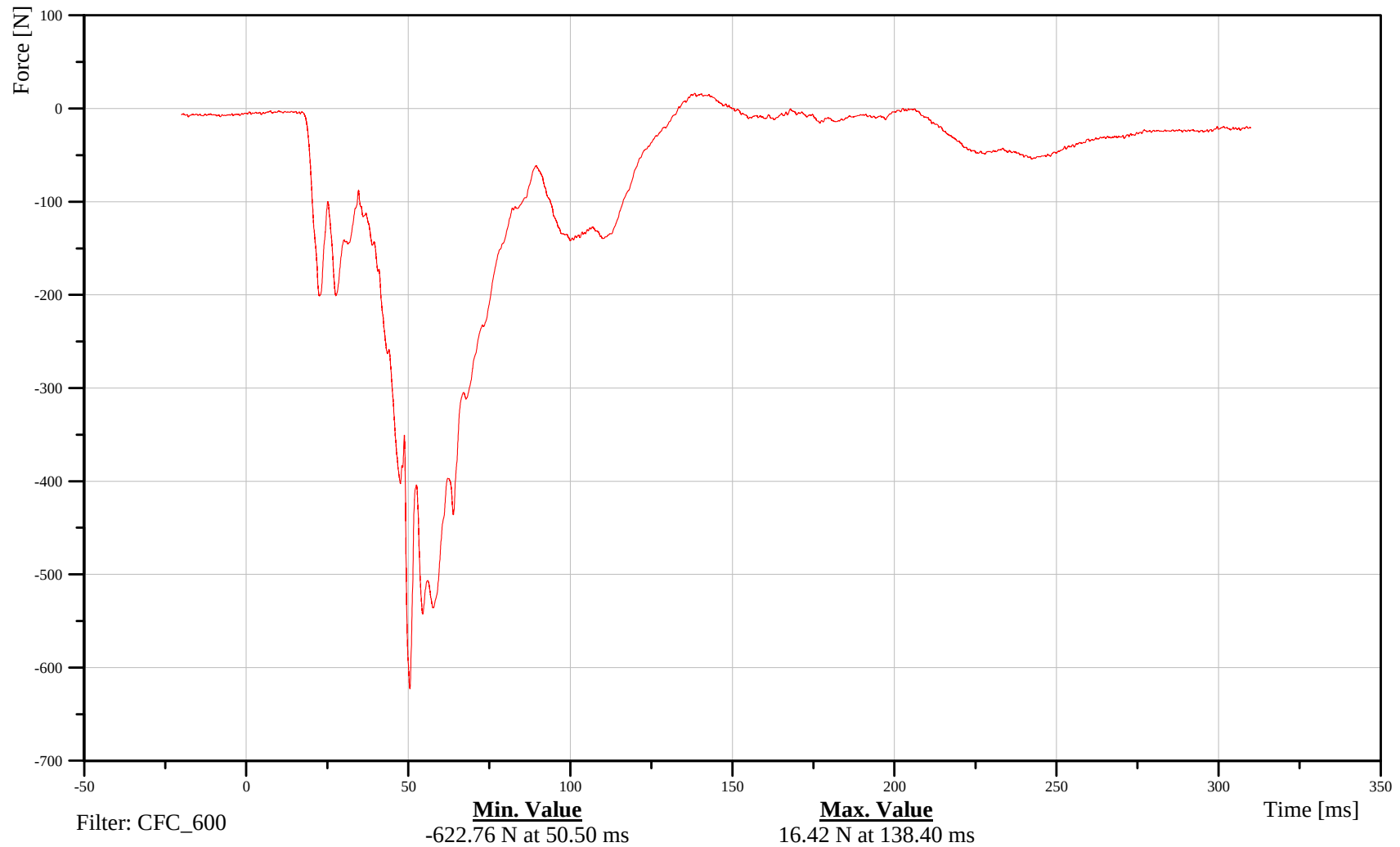
Right Femur X-Axis Force

Customer: VRTC

11FEMRRL00WSFOXB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-94

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

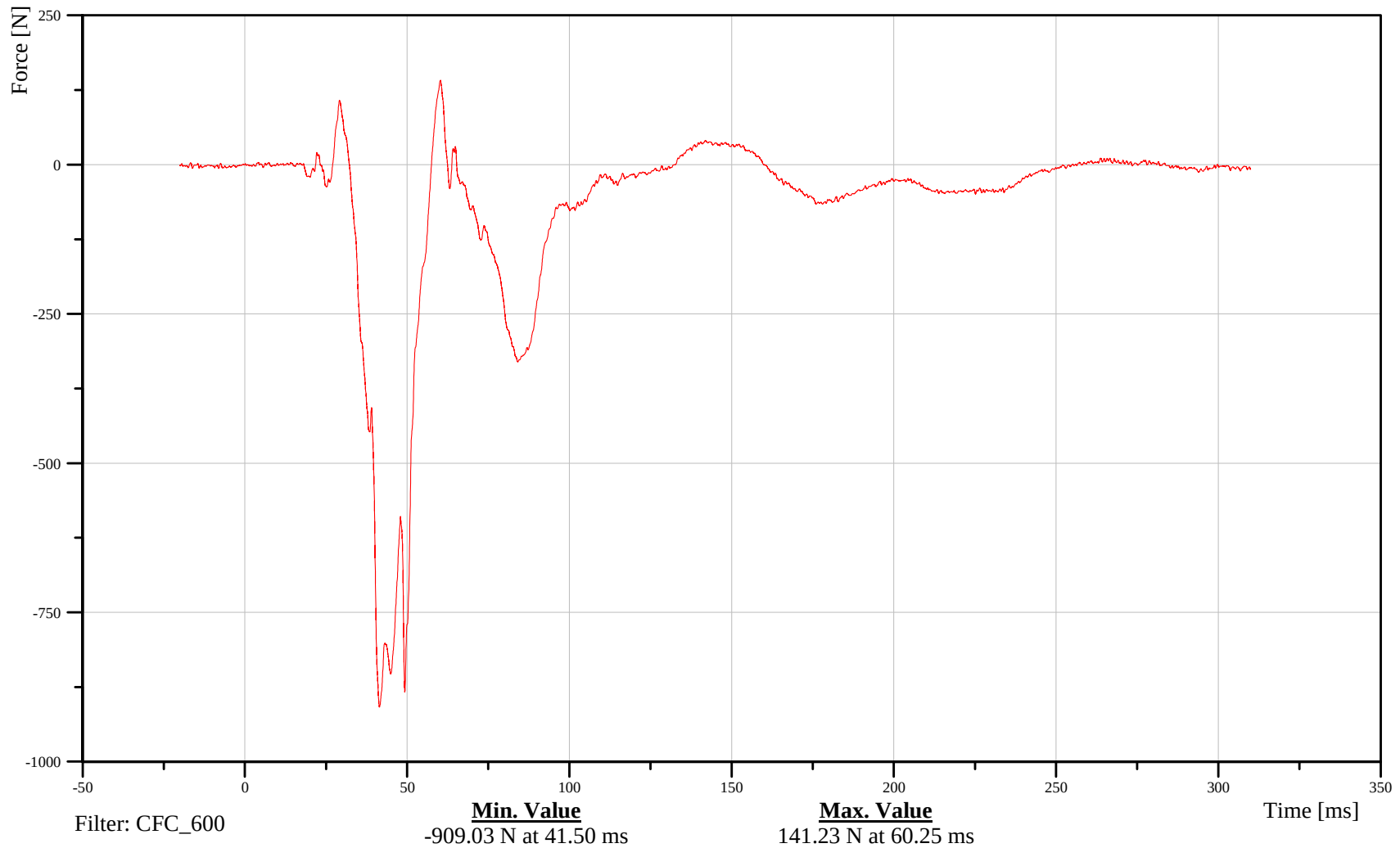
Right Femur Y-Axis Force

Customer: VRTC

11FEMRRL00WSFOYB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-95

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

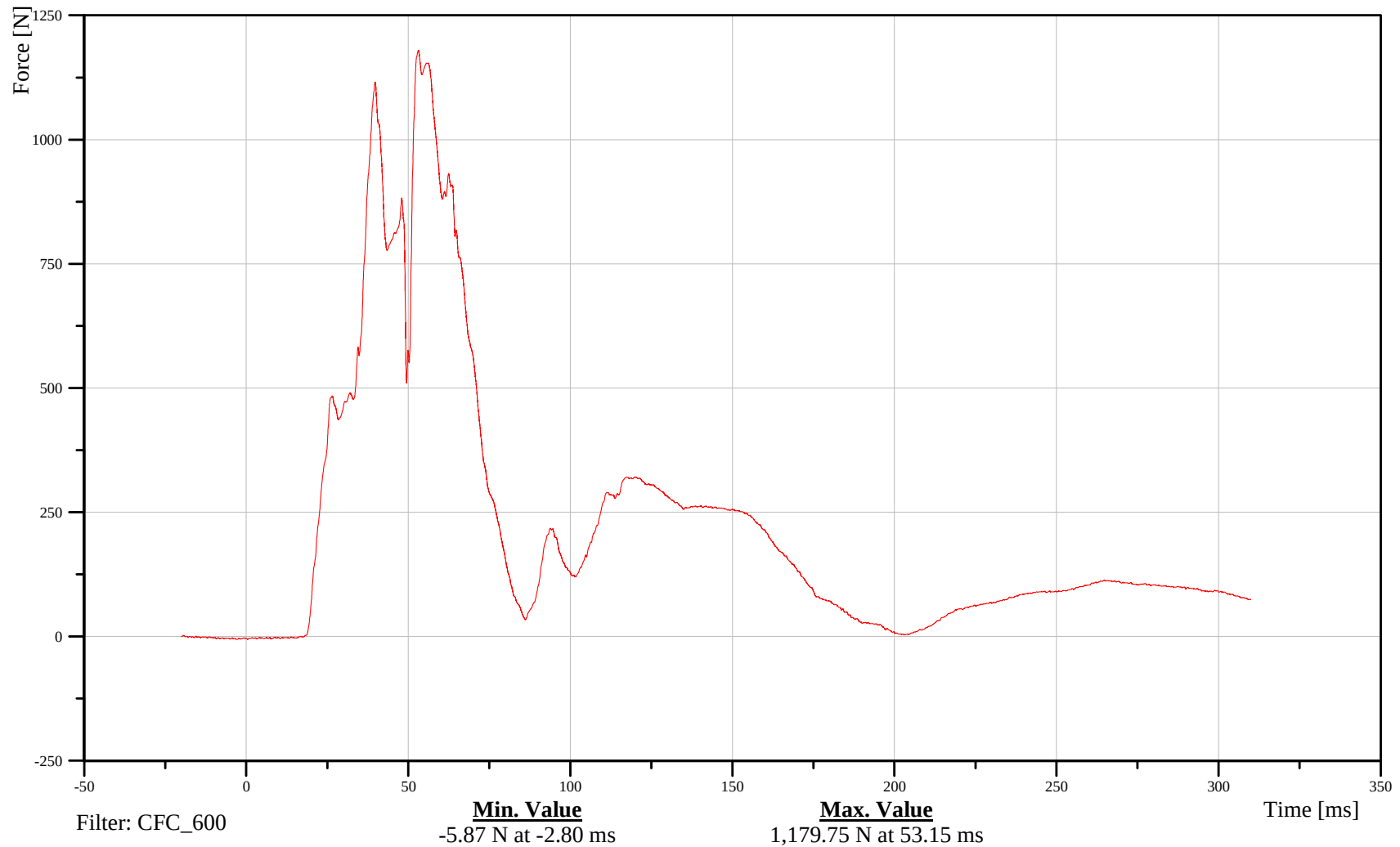
Right Femur Z-Axis Force

Customer: VRTC

11FEMRRL00WSFOZB

TRC Inc. Test Lab: CTF

Test Number: 100617



B-96

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

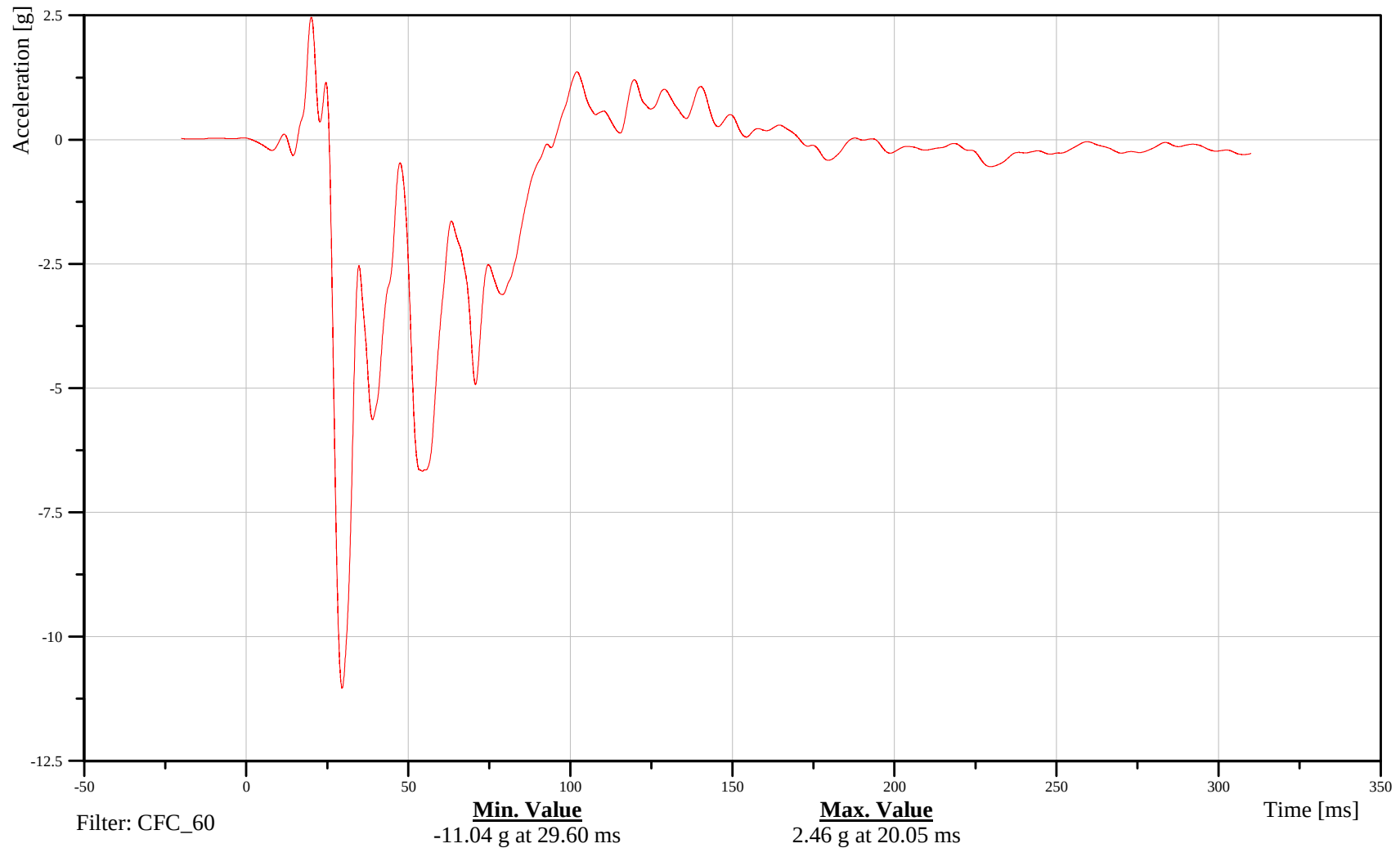
Vehicle Center of Gravity X-Axis Acceleration

Customer: VRTC

10VEHCCG0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-97

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

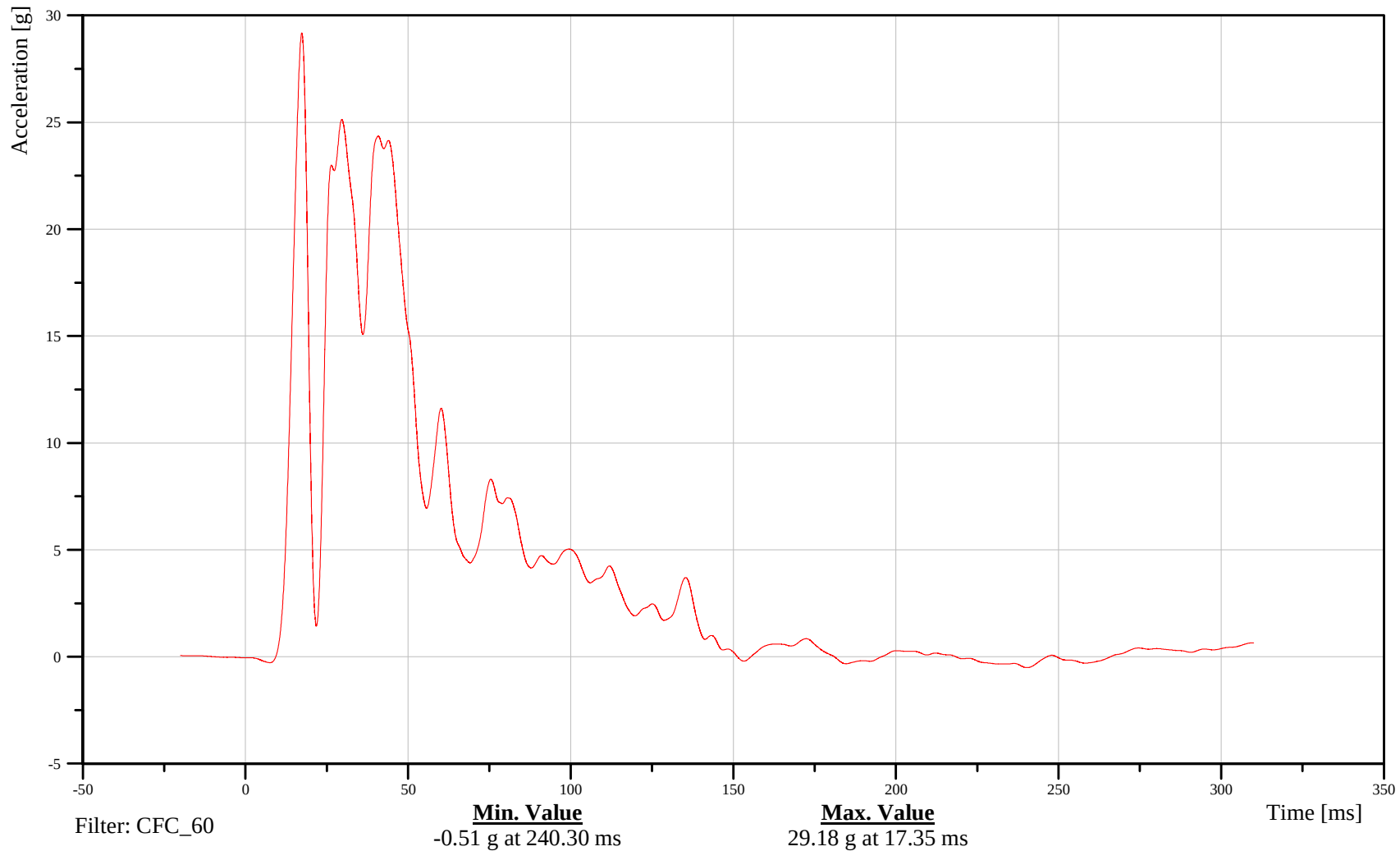
Vehicle Center of Gravity Y-Axis Acceleration

Customer: VRTC

10VEHCCG0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-98

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

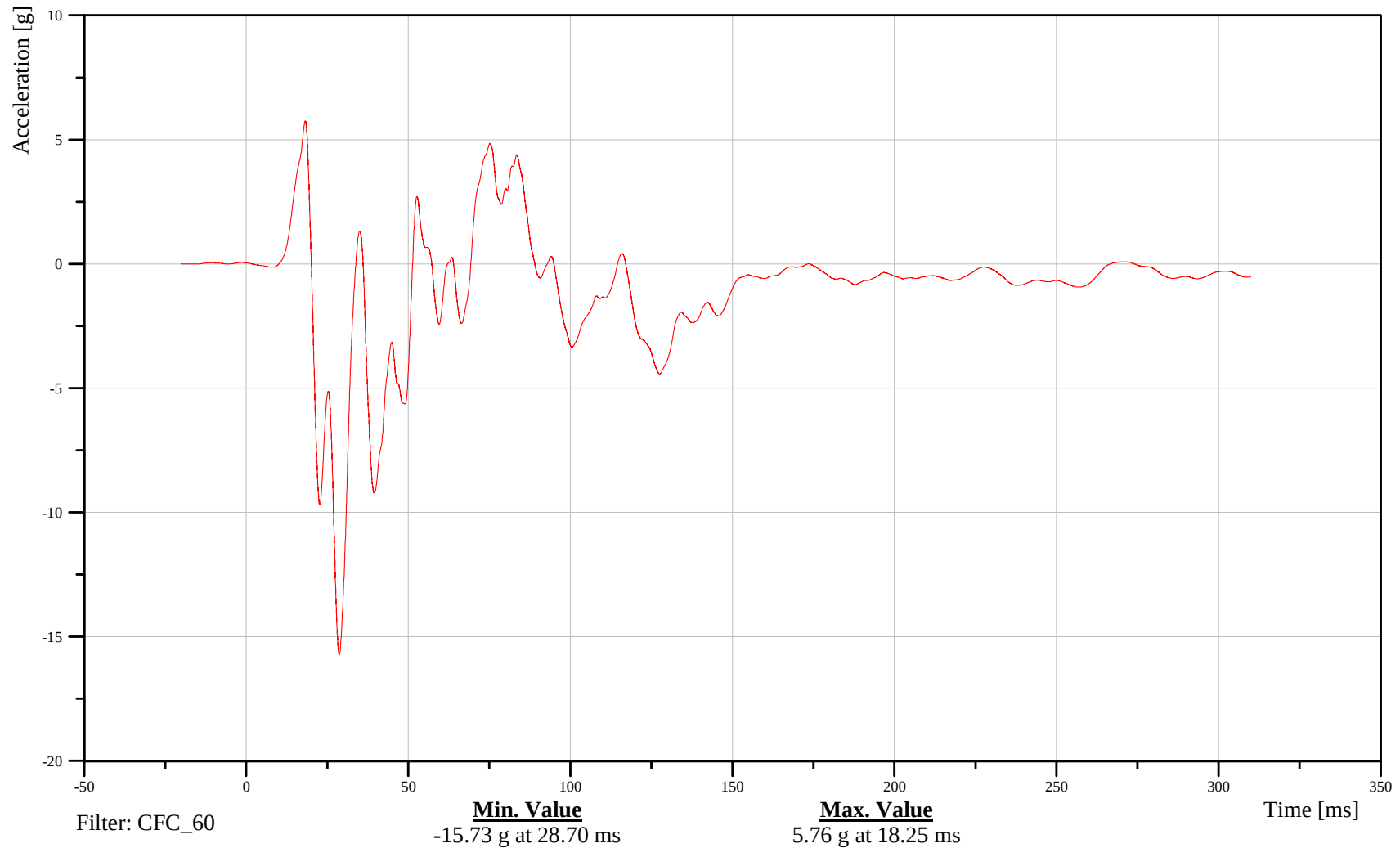
Vehicle Center of Gravity Z-Axis Acceleration

Customer: VRTC

10VEHCCG0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-99

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

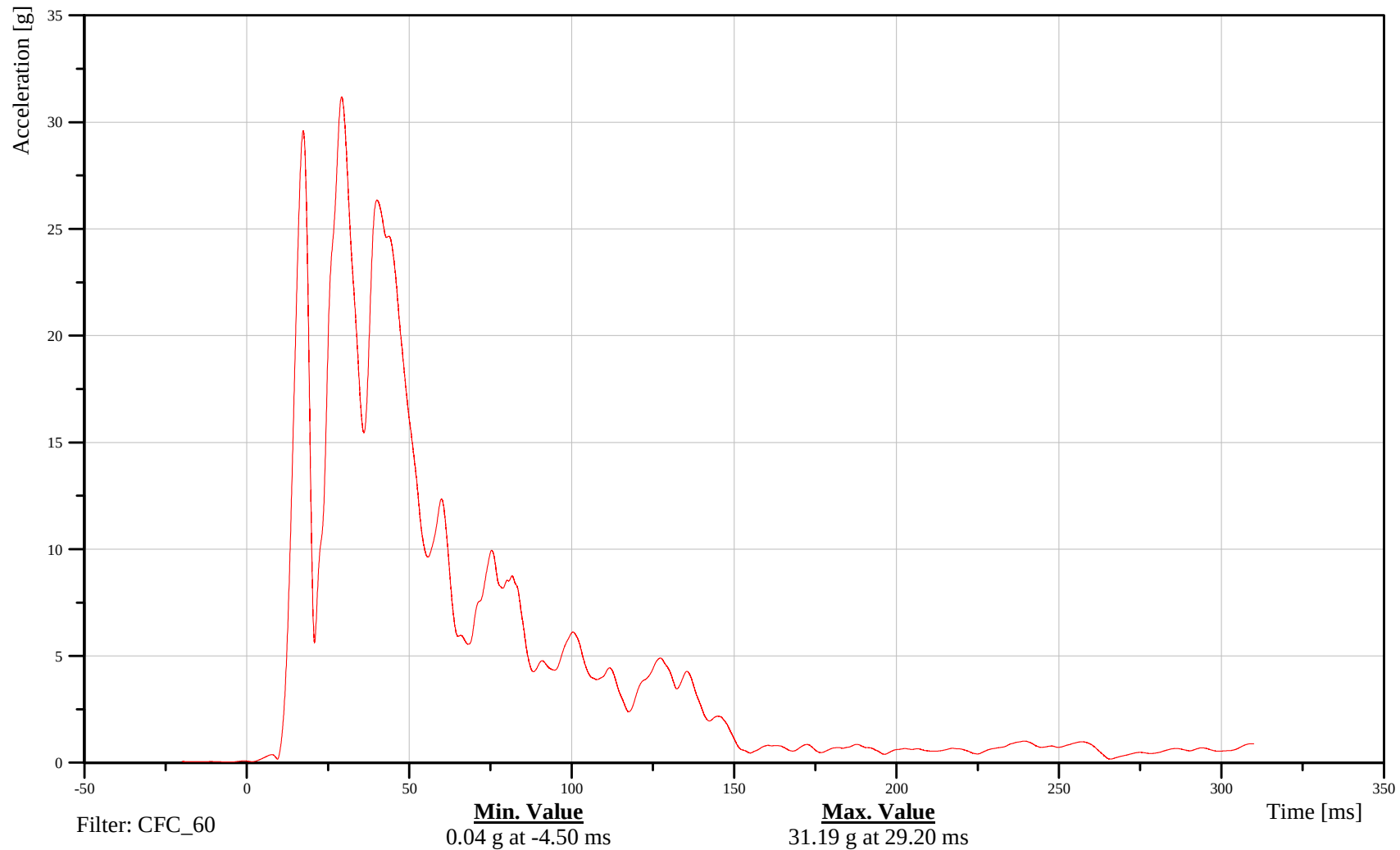
Vehicle Center of Gravity Resultant Acceleration

Customer: VRTC

10VEHCCG0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-100

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

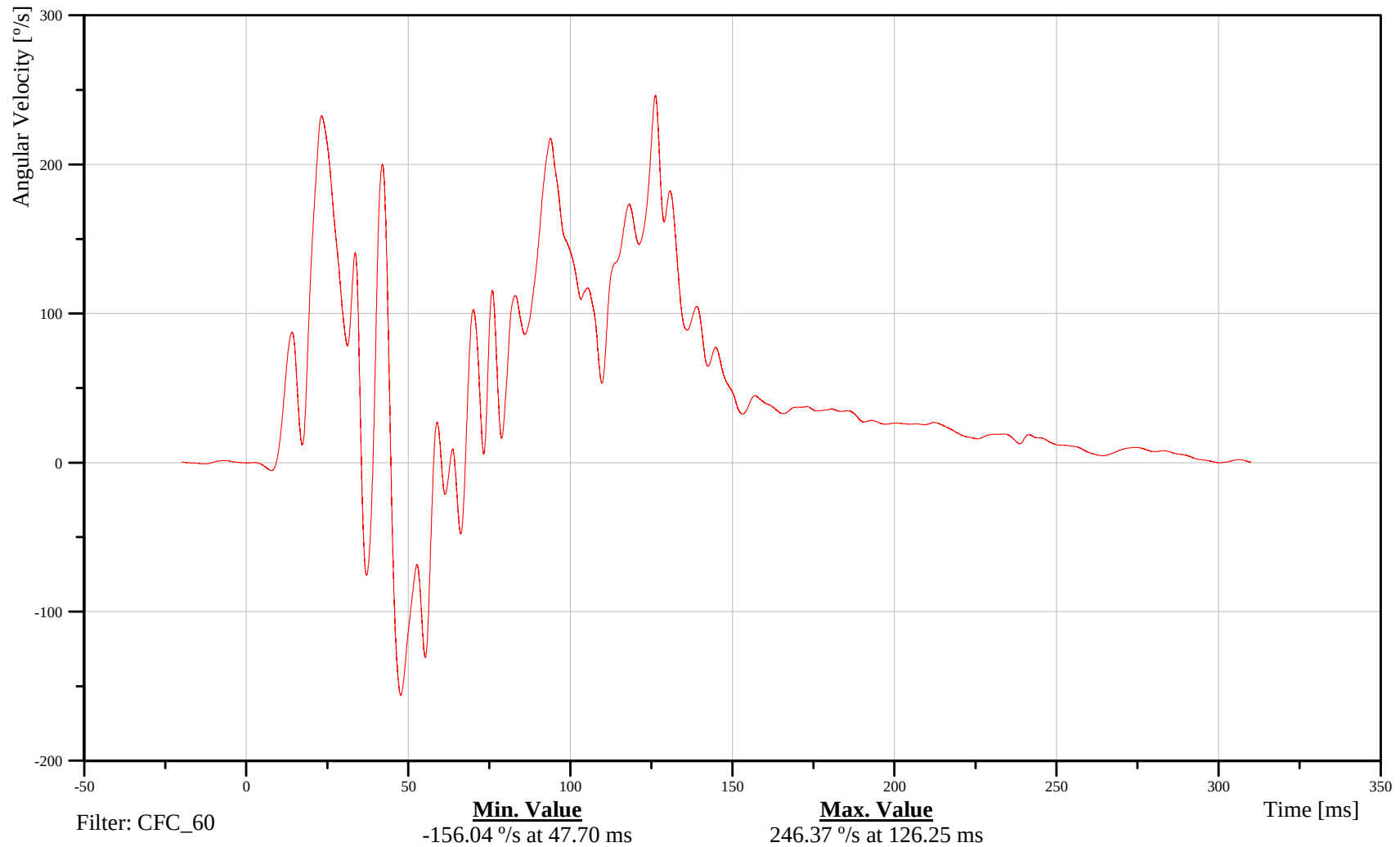
Vehicle Center of Gravity Roll Rate Gyroscope

Customer: VRTC

10VEHCCG0000AVXD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-101

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

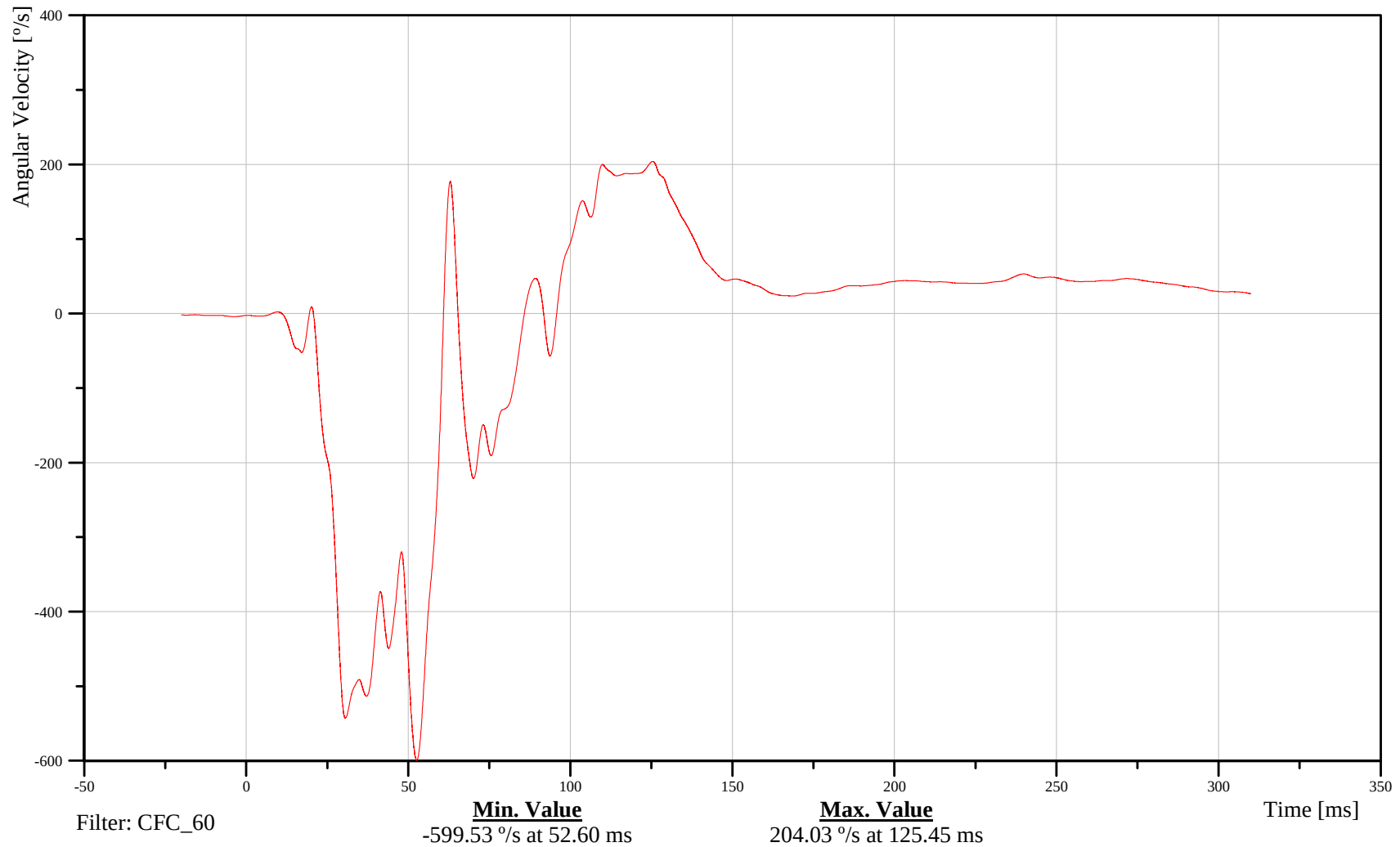
Vehicle Center of Gravity Pitch Rate Gyroscope

Customer: VRTC

10VEHCCG0000AVYD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-102

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010

Time: 14:32

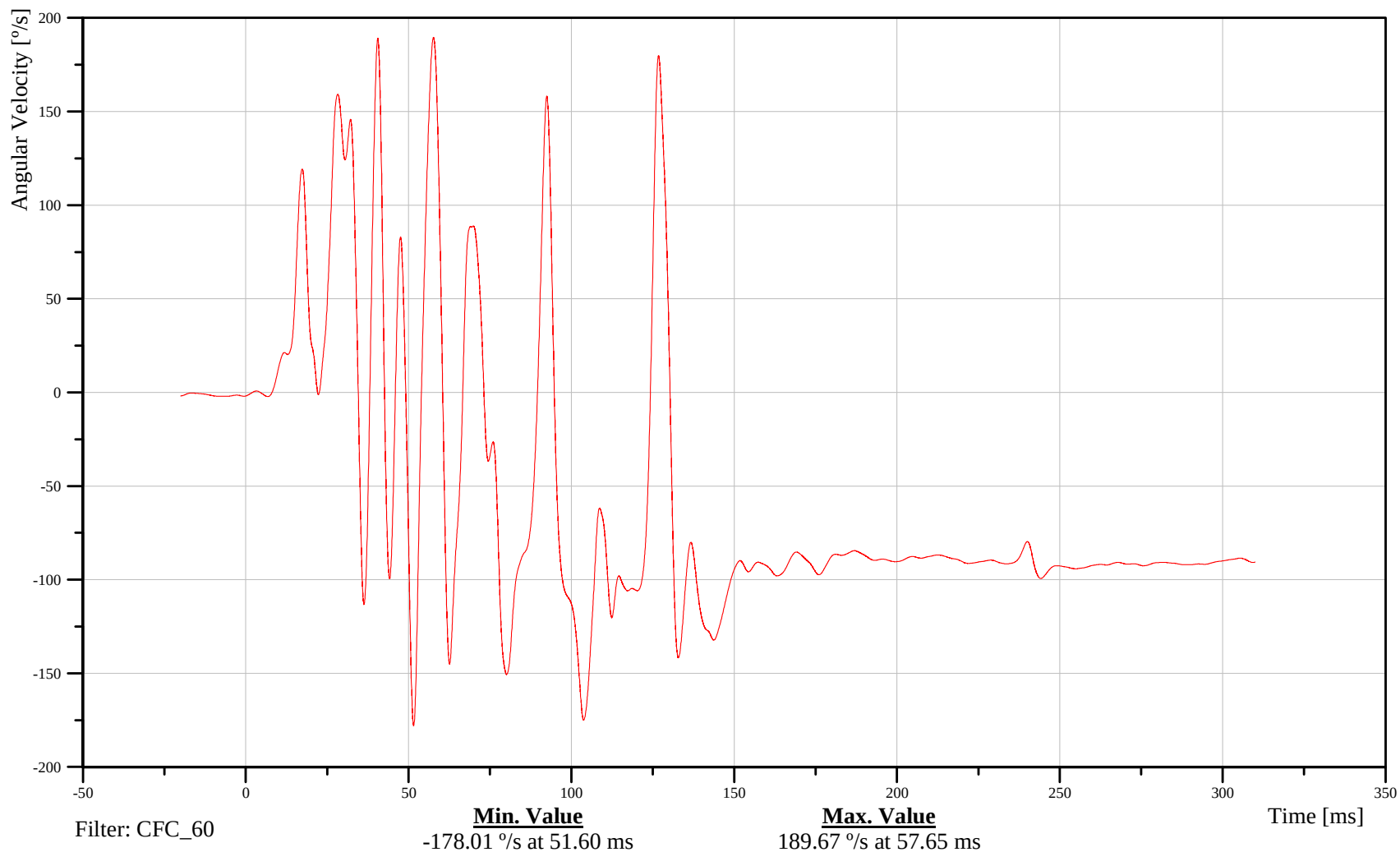
Vehicle Center of Gravity Yaw Rate Gyroscope

Customer: VRTC

10VEHCCG0000AVZD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-103

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

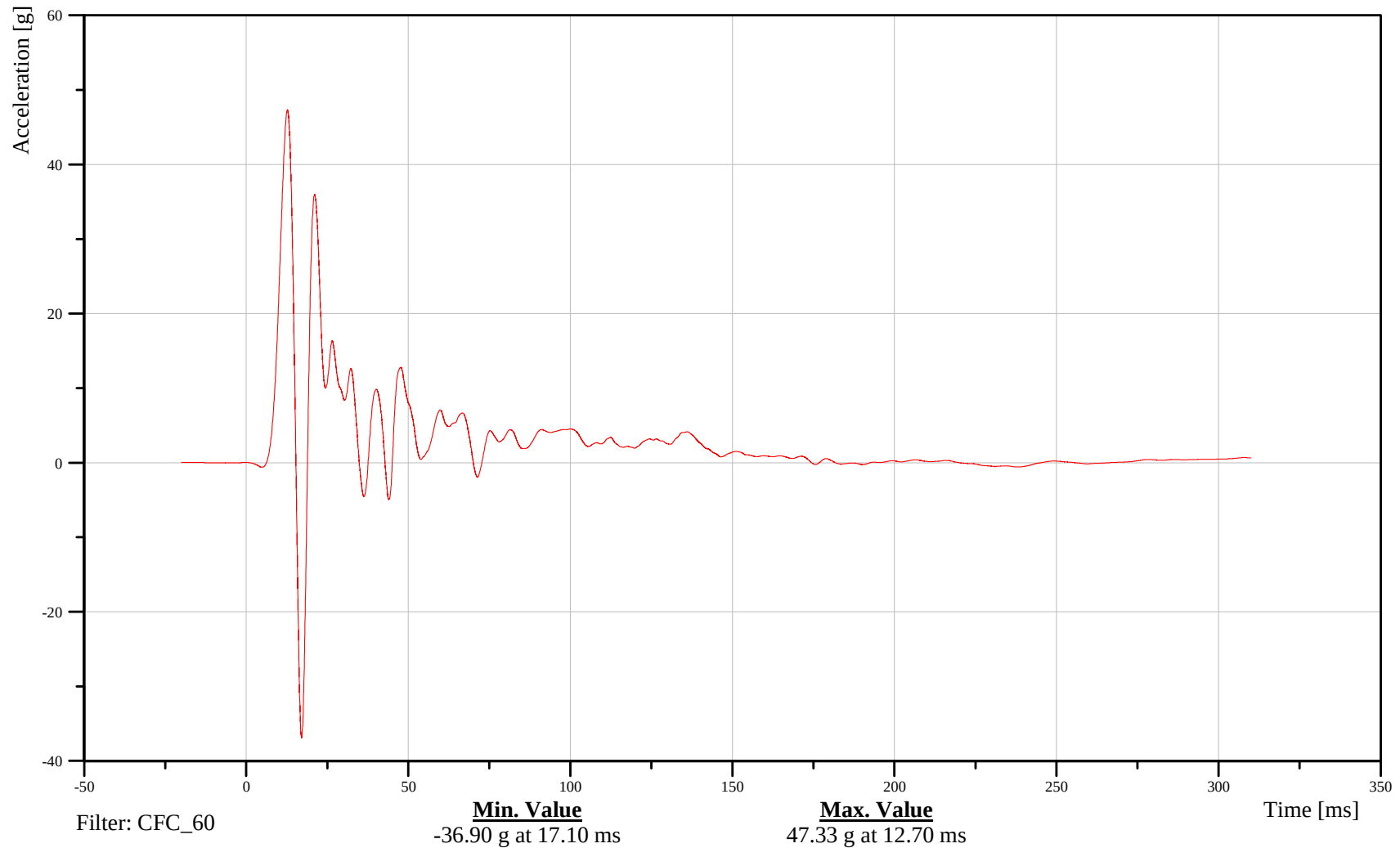
Left Side Sill Near Impact Point Y-Axis Acceleration

Customer: VRTC

11SILBRE0100ACYD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-104

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

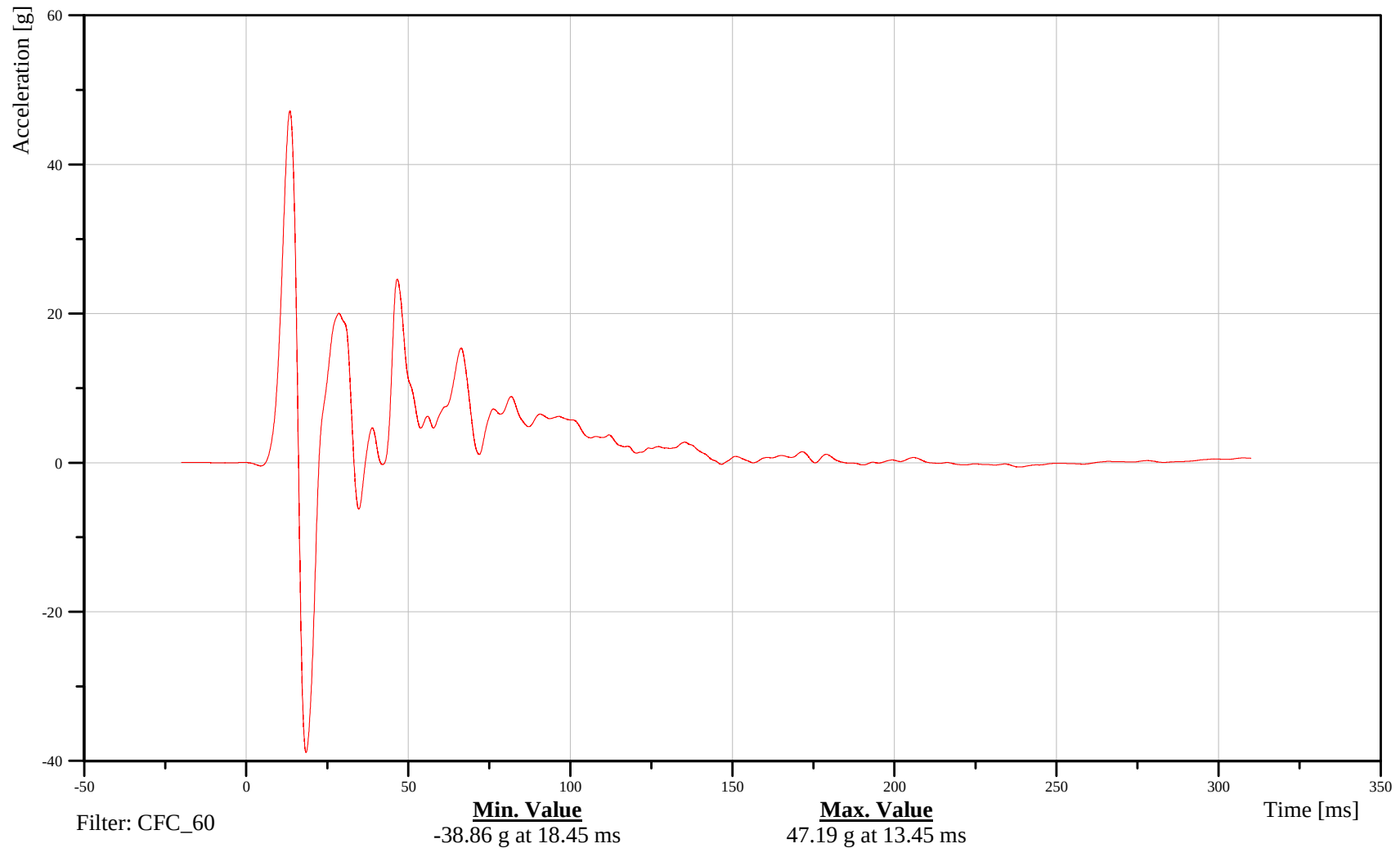
Left A-Pillar Side Sill Y-Axis Acceleration

Customer: VRTC

14SILBFR0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-105

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

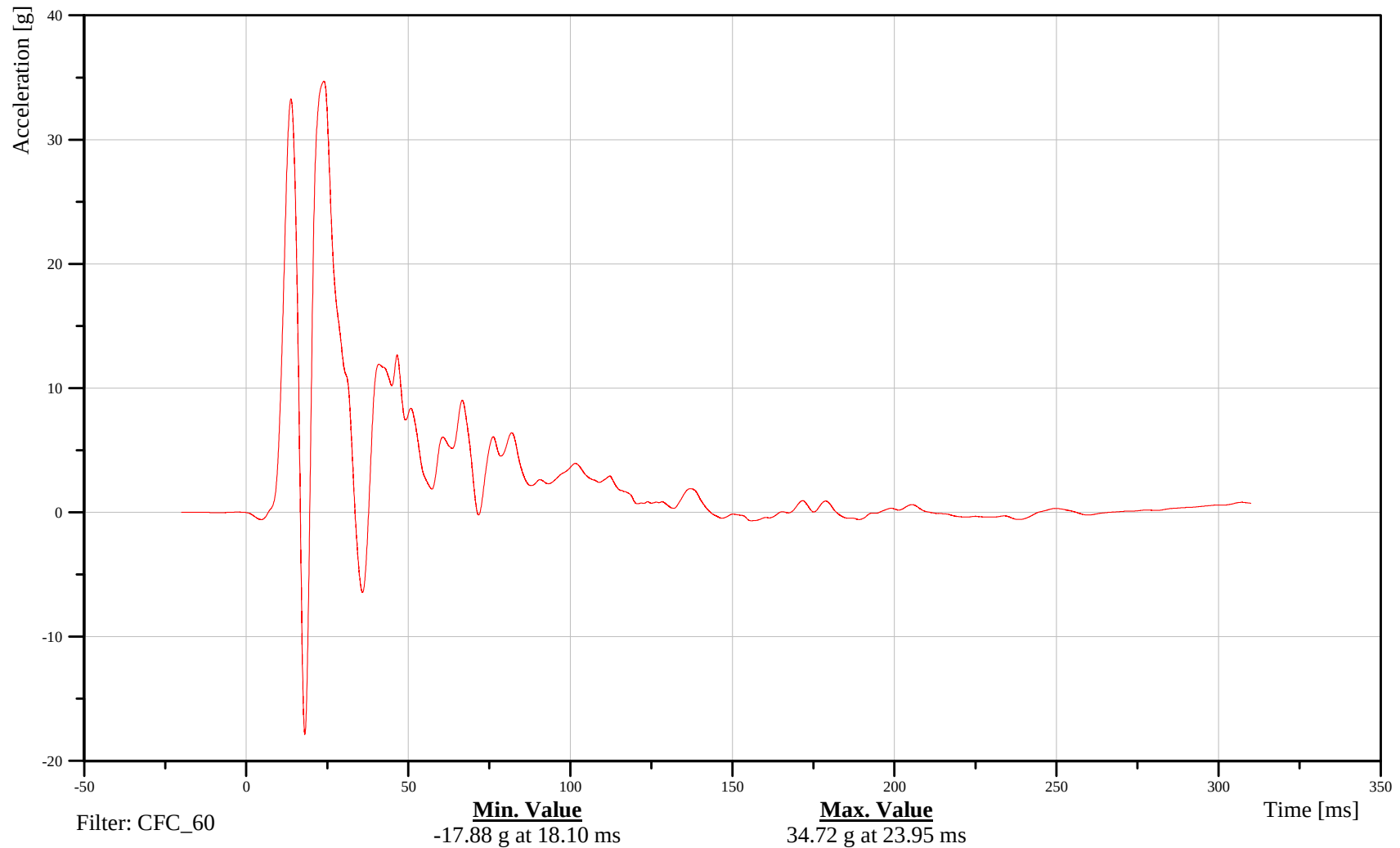
Left Lower A-Pillar Y-Axis Acceleration

Customer: VRTC

11APILO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-106

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010

Time: 14:32

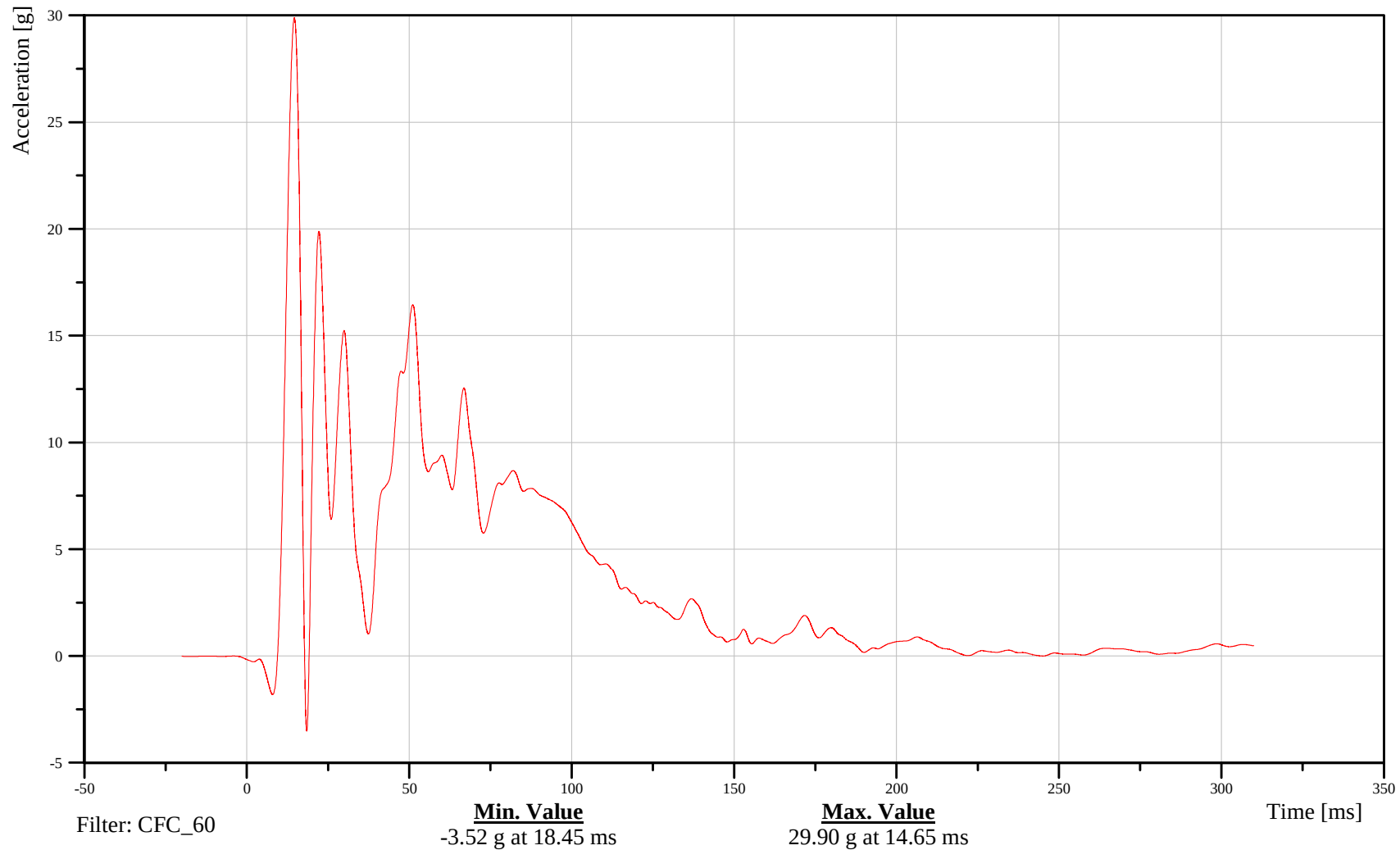
Left Mid A-Pillar Y-Axis Acceleration

Customer: VRTC

11APILMI0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-107

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010

Time: 14:32

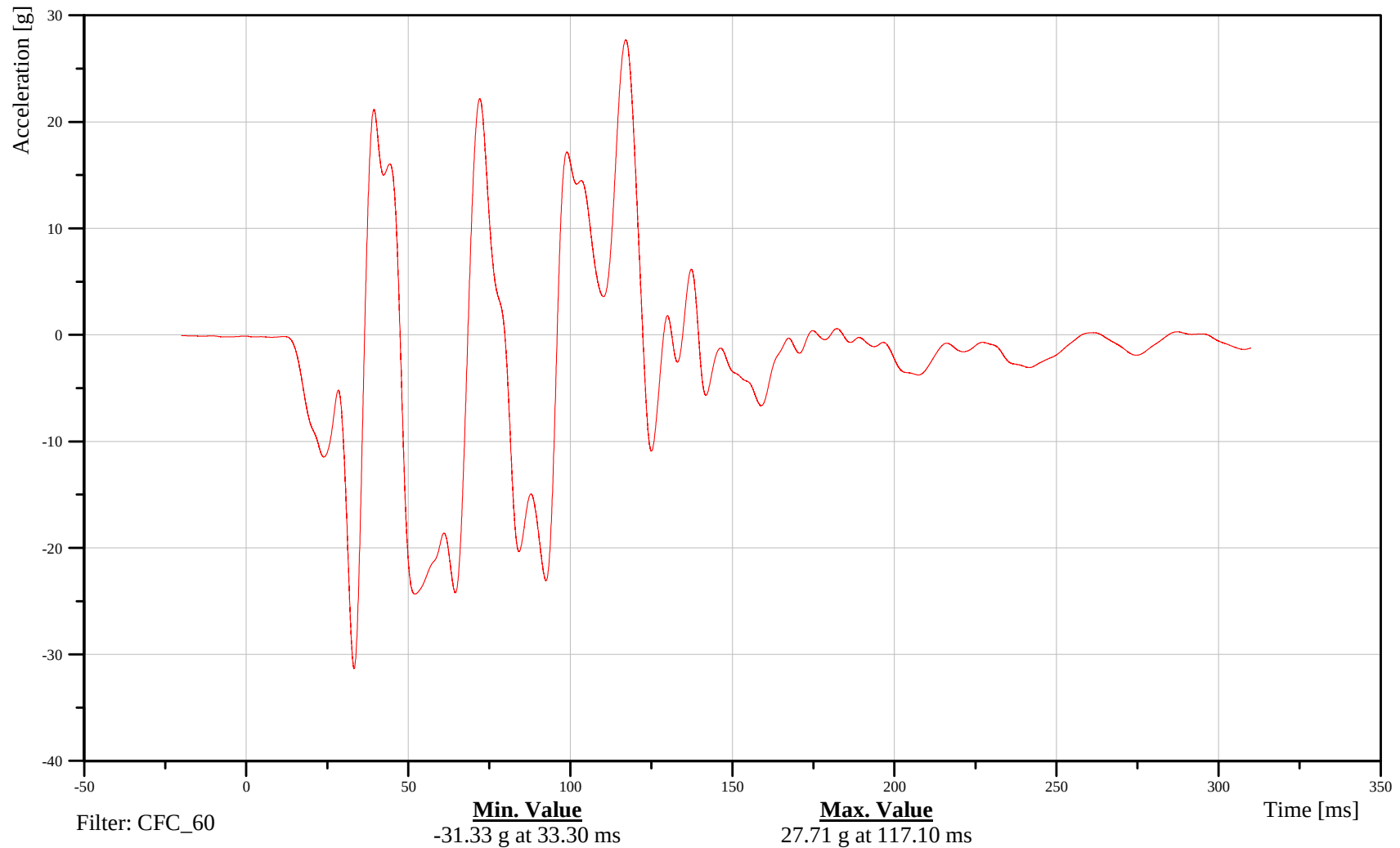
Left Side Sill at Rear Seat Y-Axis Acceleration

Customer: VRTC

14SILBRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-108

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

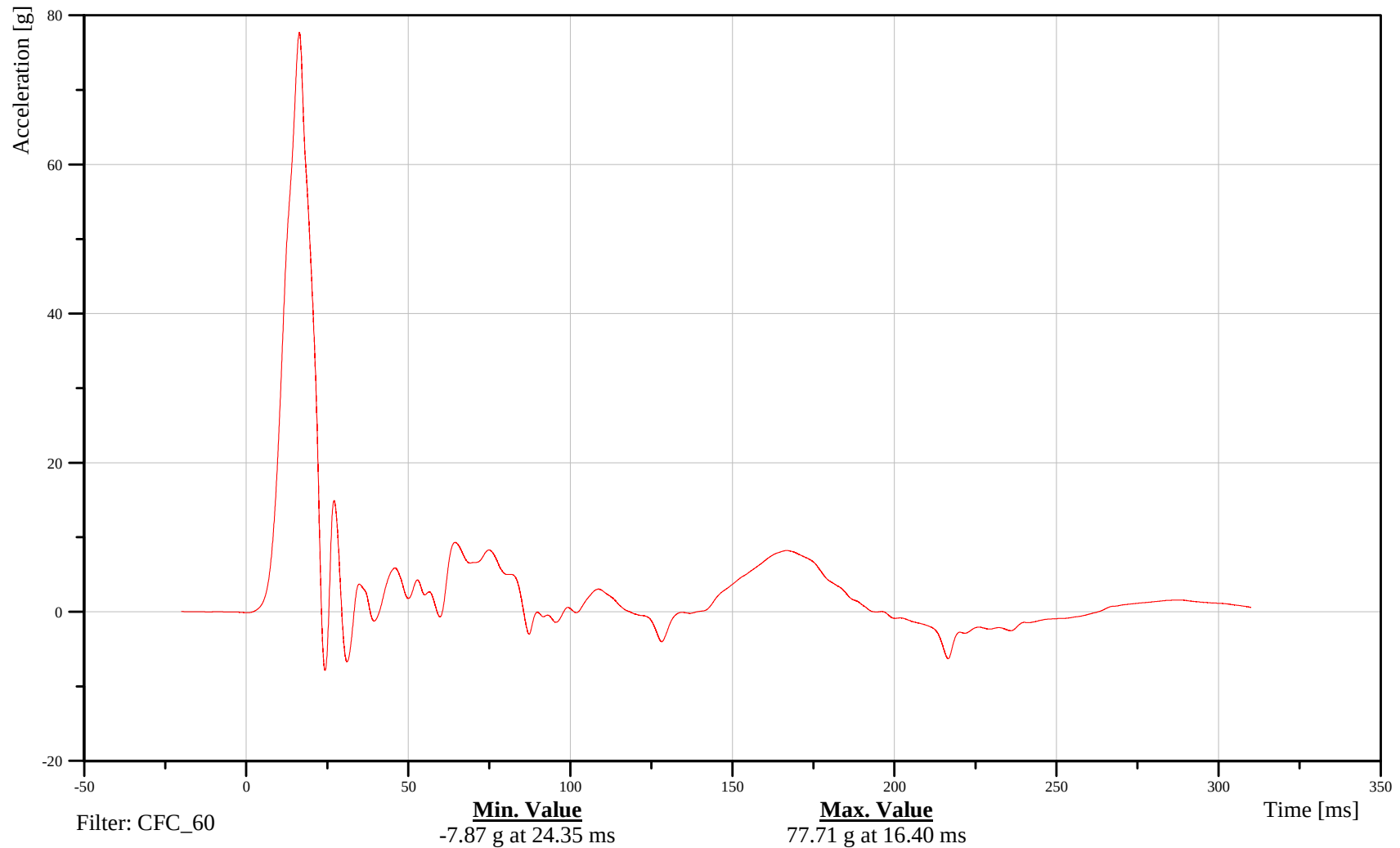
Left Lower B-Pillar Y-Axis Acceleration

Customer: VRTC

14BPILLO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-109

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

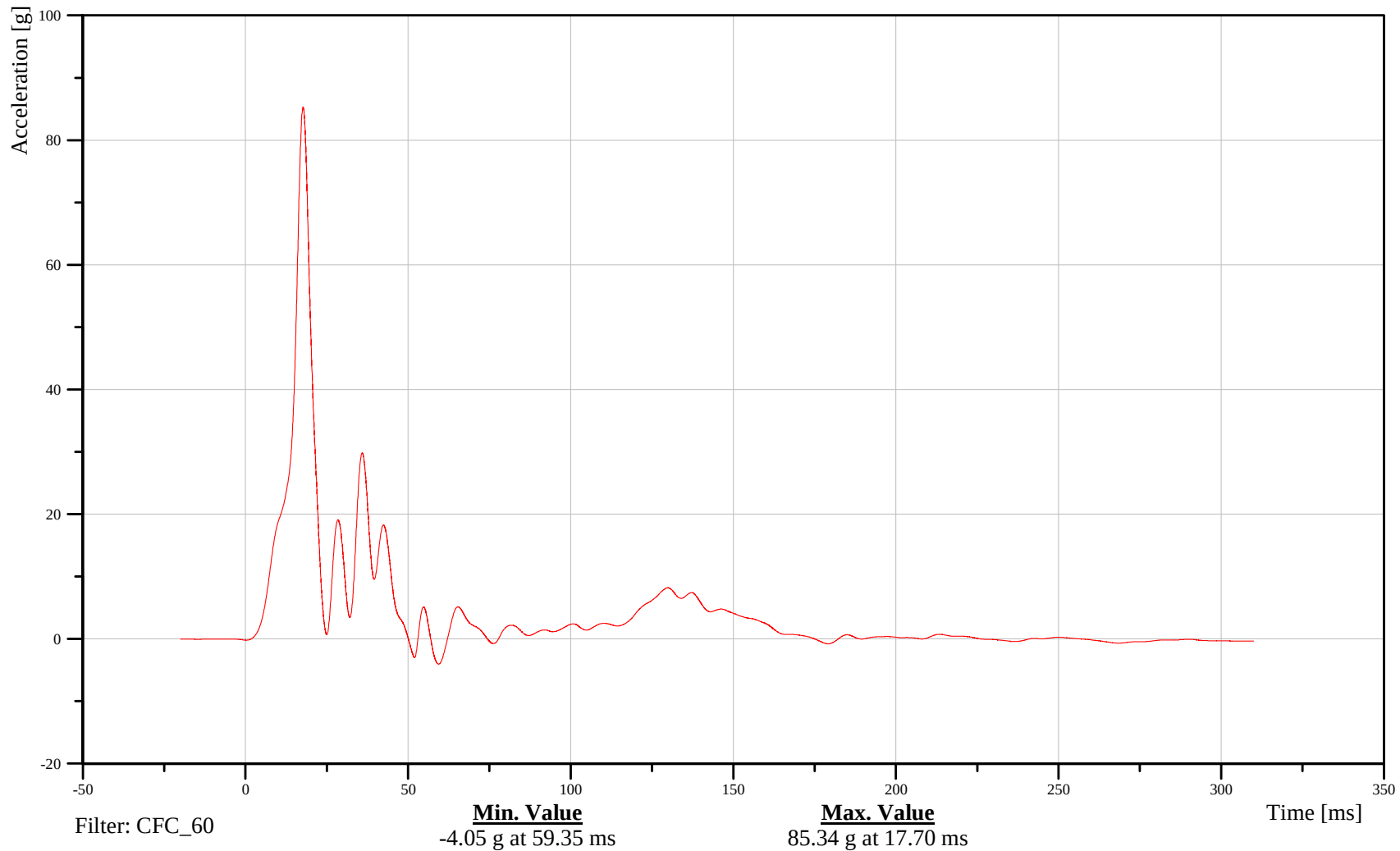
Left Mid B-Pillar Y-Axis Acceleration

Customer: VRTC

14BPILMI0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-110

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

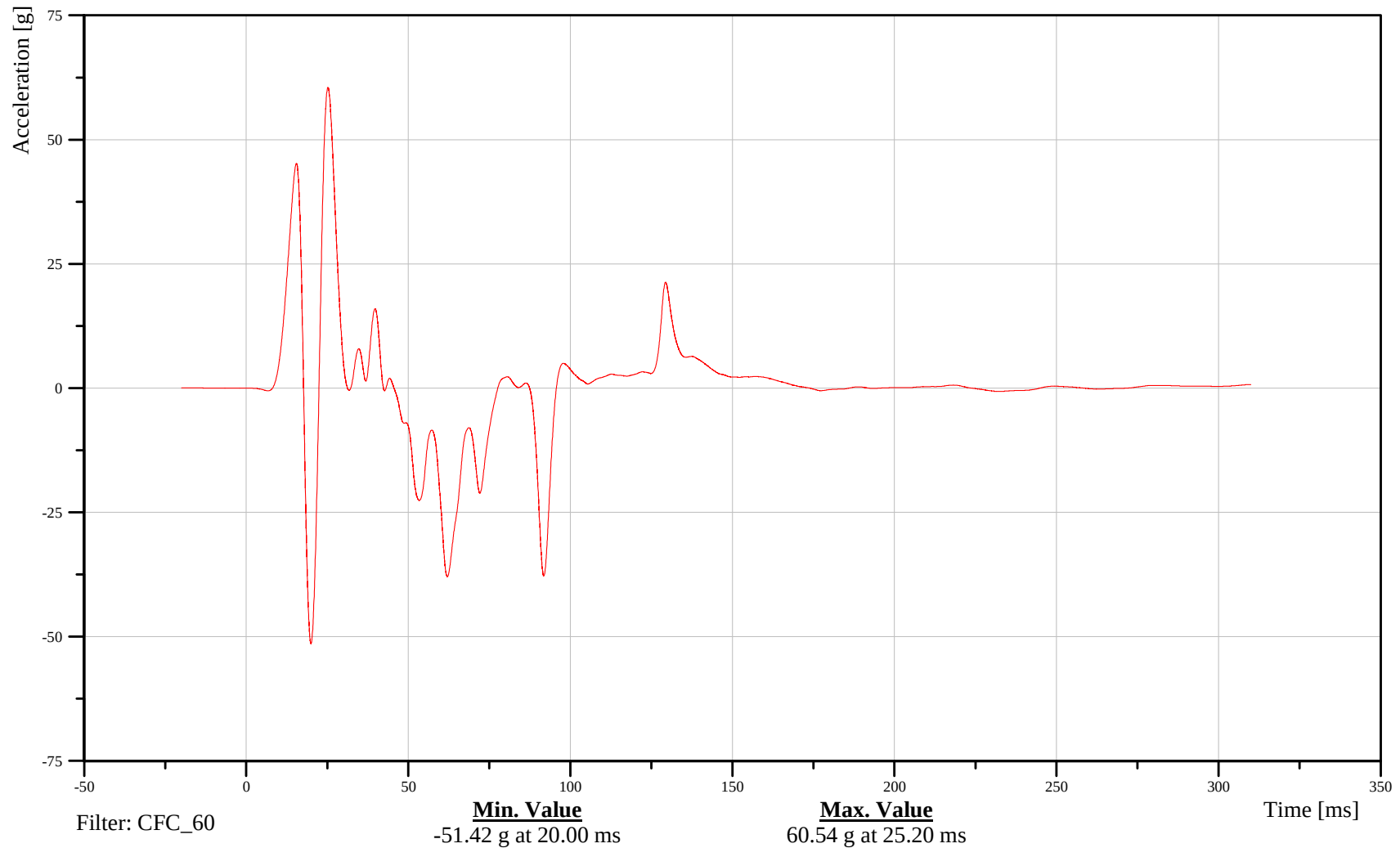
Left Front Seat Track at H-Point Y-Axis Acceleration

Customer: VRTC

11SETRFR0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-111

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

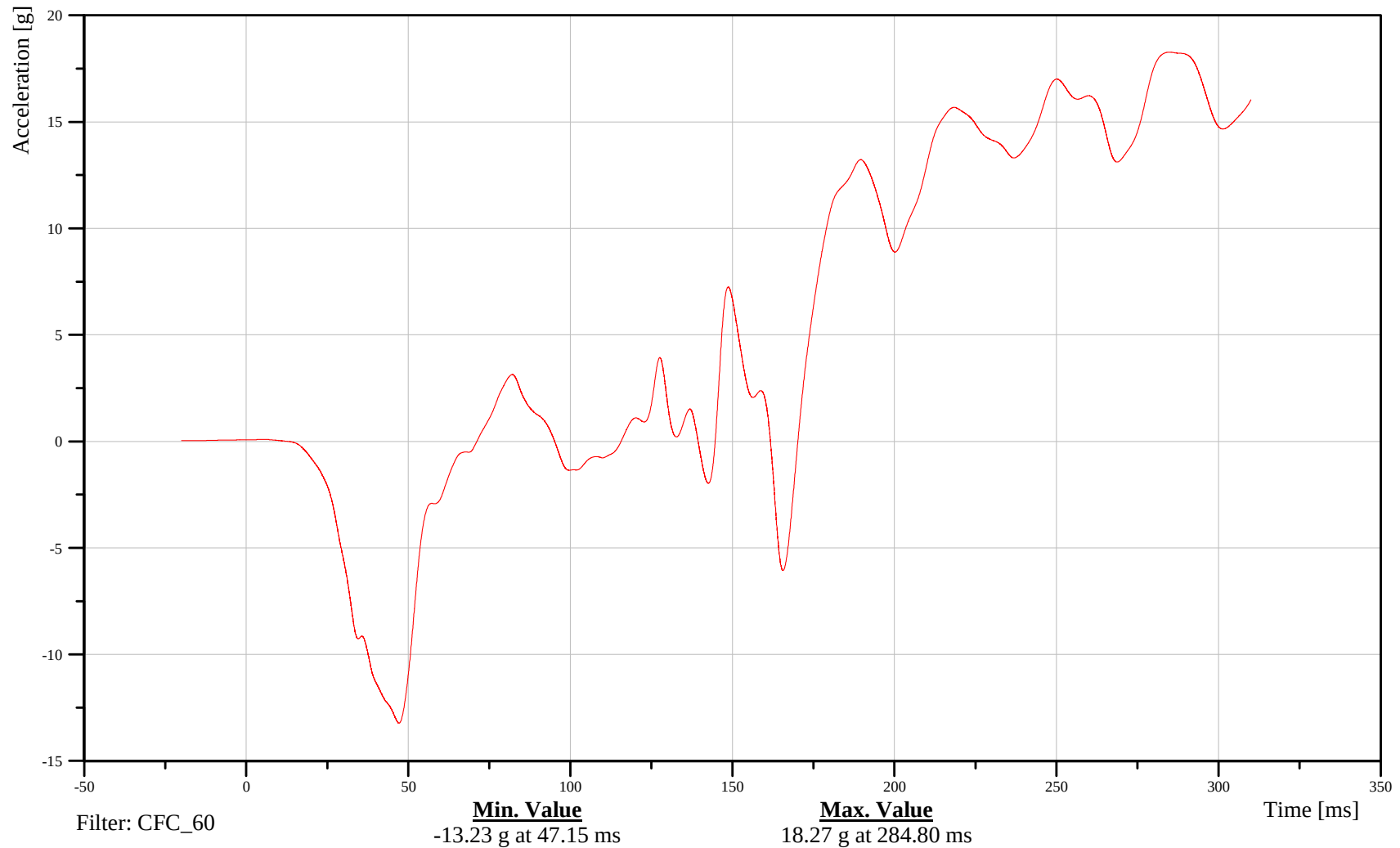
Top of Engine X-Axis Acceleration

Customer: VRTC

12ENGNTTP0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-112

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

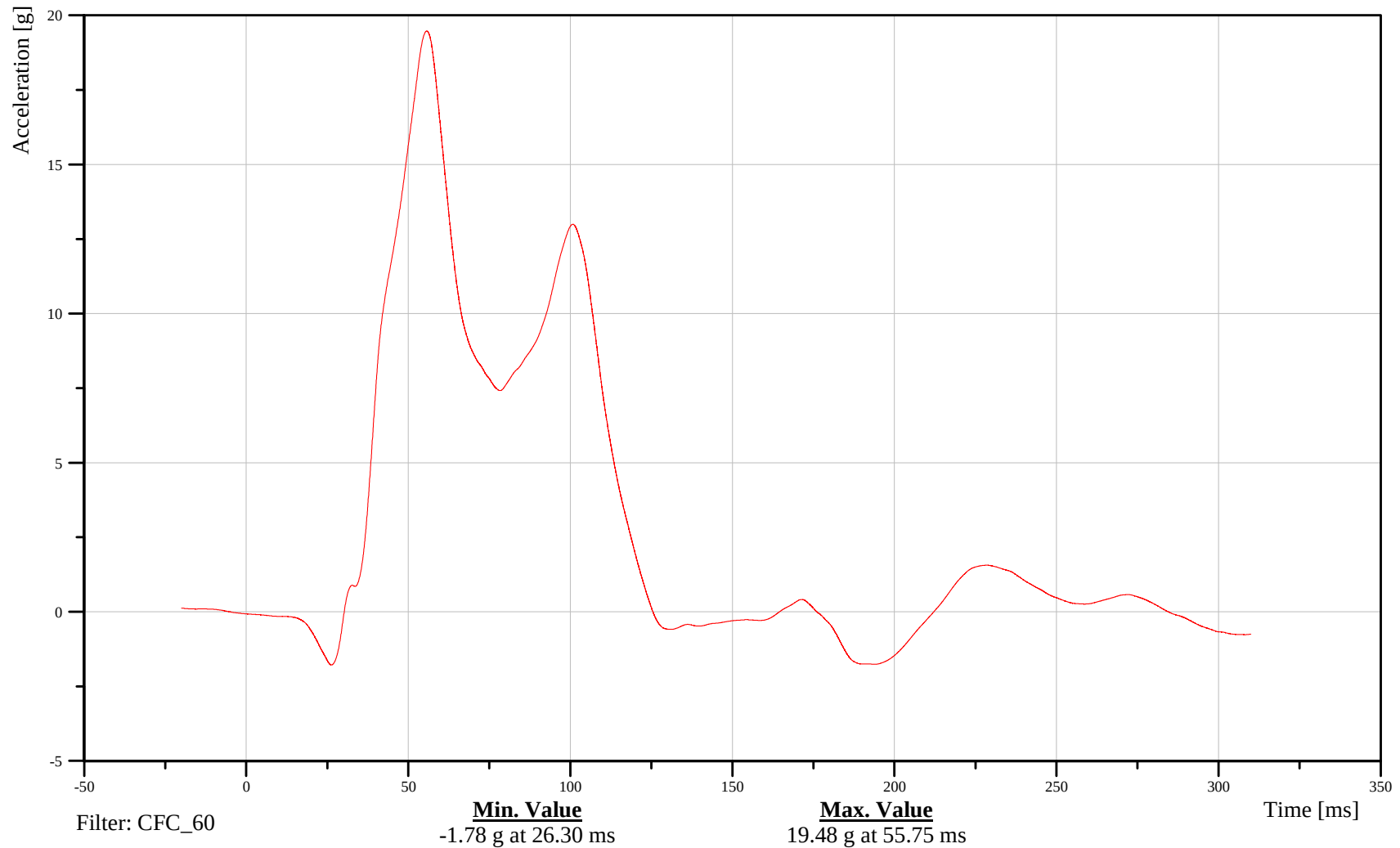
Top of Engine Y-Axis Acceleration

Customer: VRTC

12ENGNTTP0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-113

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

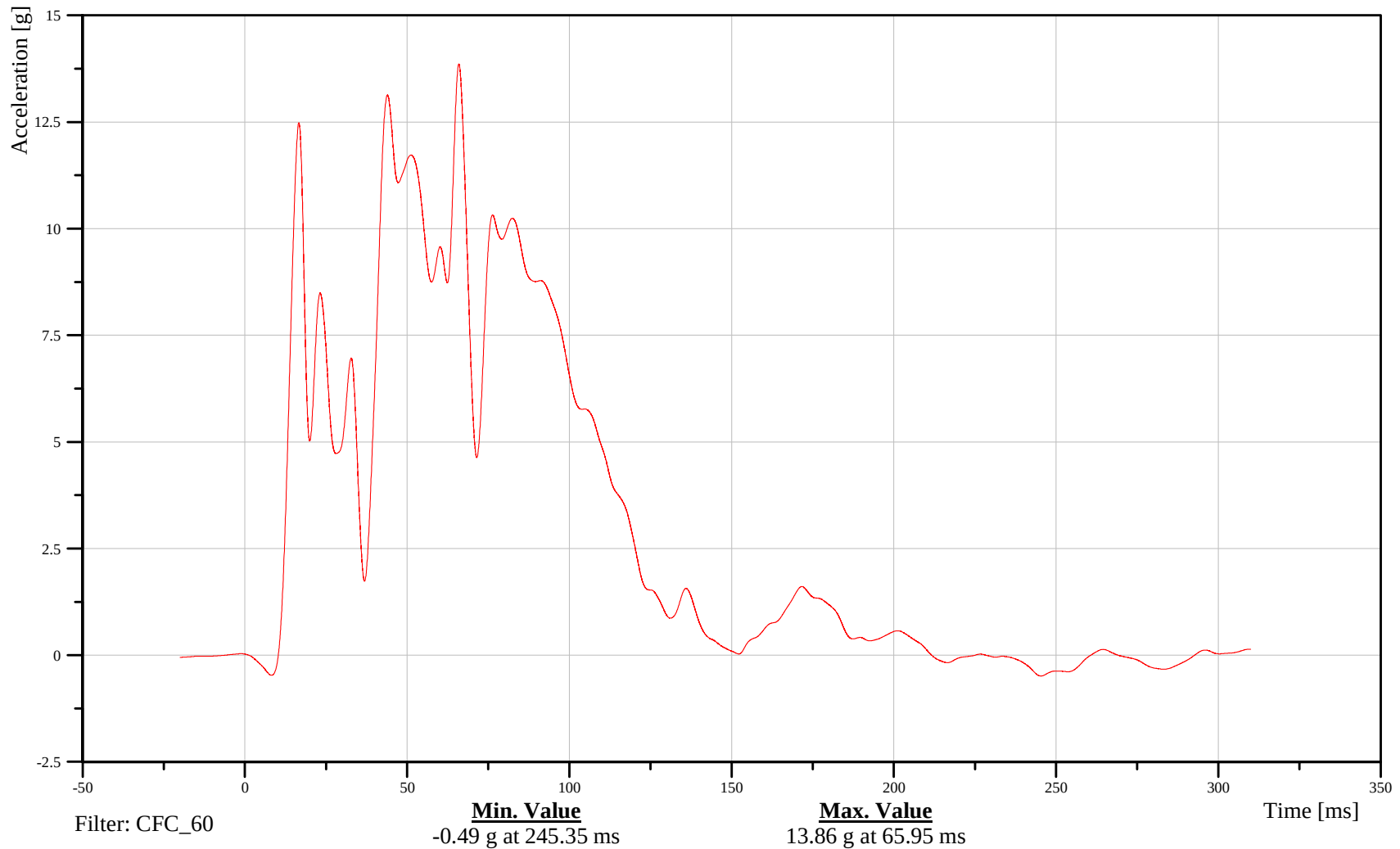
Firewall Y-Axis Acceleration

Customer: VRTC

12VEHC000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-114

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

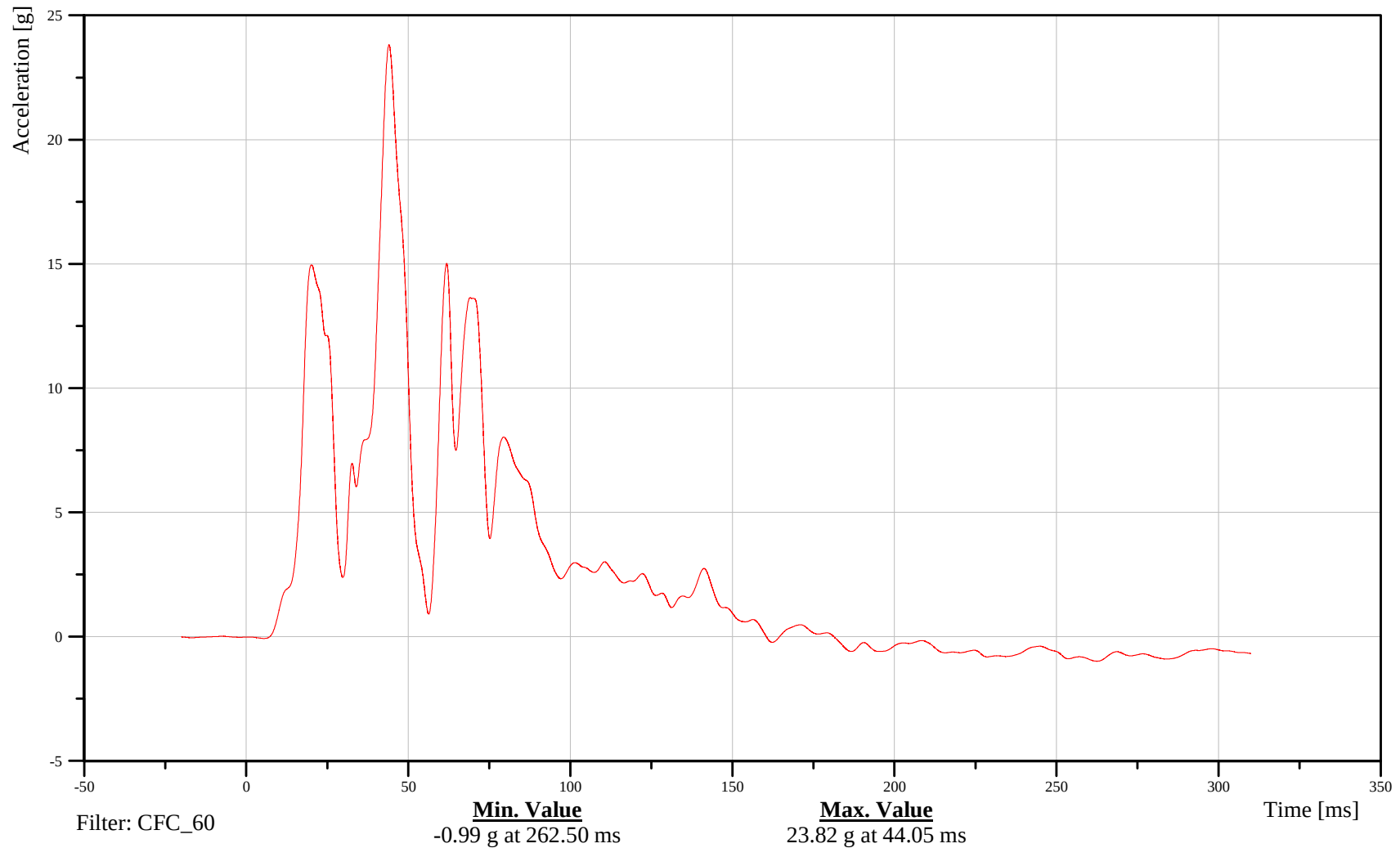
Right Side Roof Rail Y-Axis Acceleration

Customer: VRTC

13ROOF000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-115

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

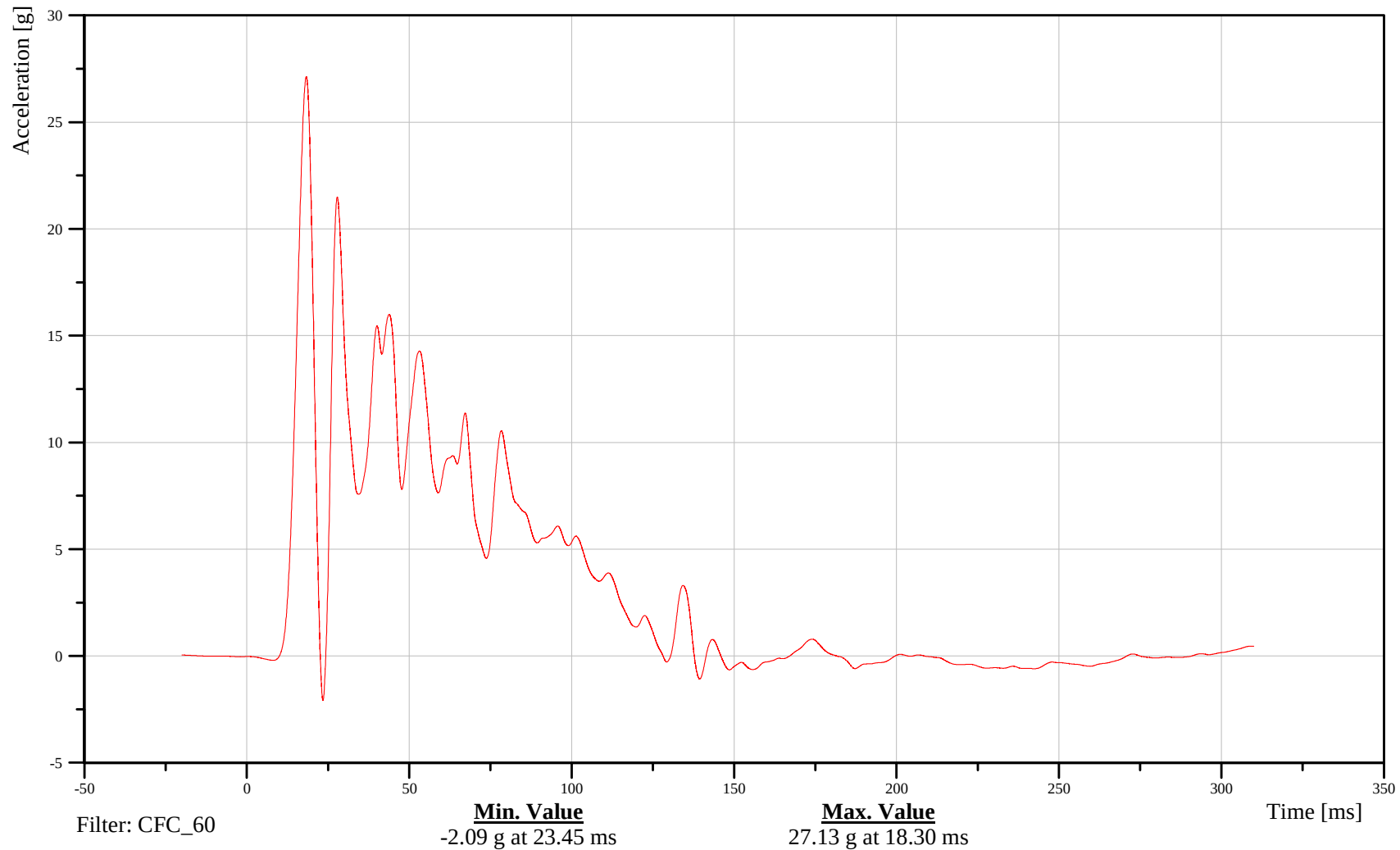
Right Side Sill Y-Axis Acceleration

Customer: VRTC

13SILBFR0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-116

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

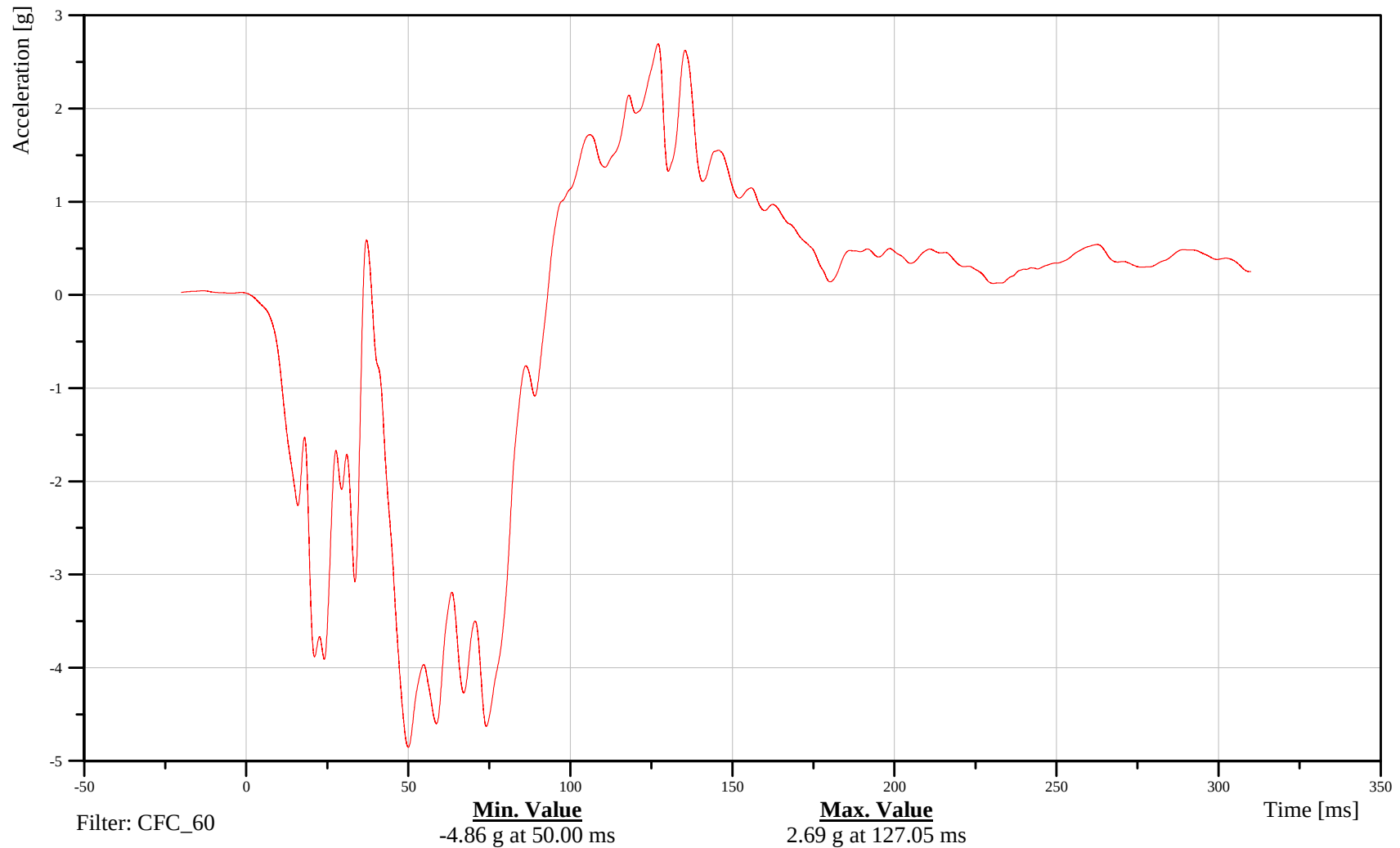
Rear Deck Behind Rear Axle X-Axis Acceleration

Customer: VRTC

18DECK000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-117

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

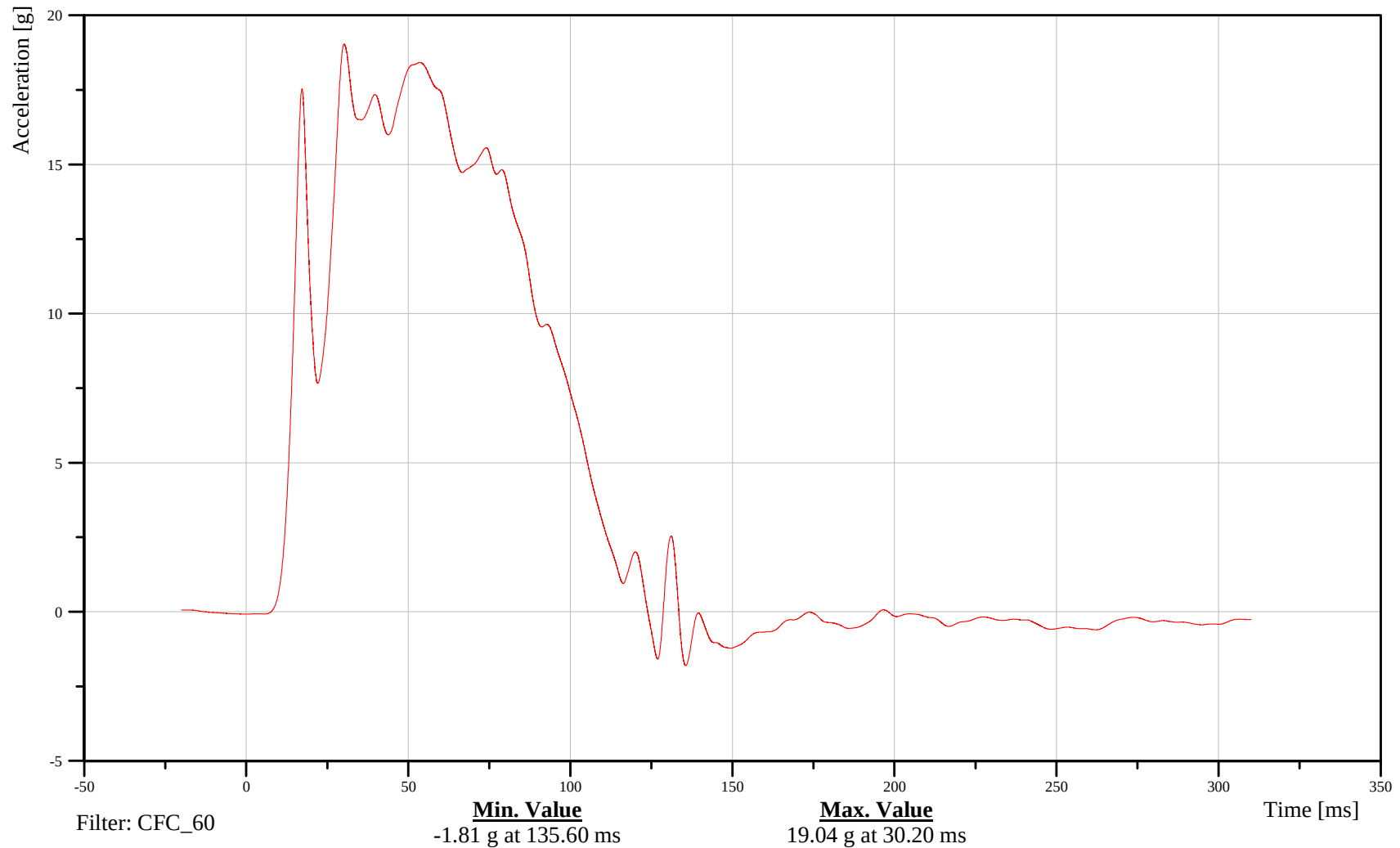
Rear Deck Behind Rear Axle Y-Axis Acceleration

Customer: VRTC

18DECK000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-118

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

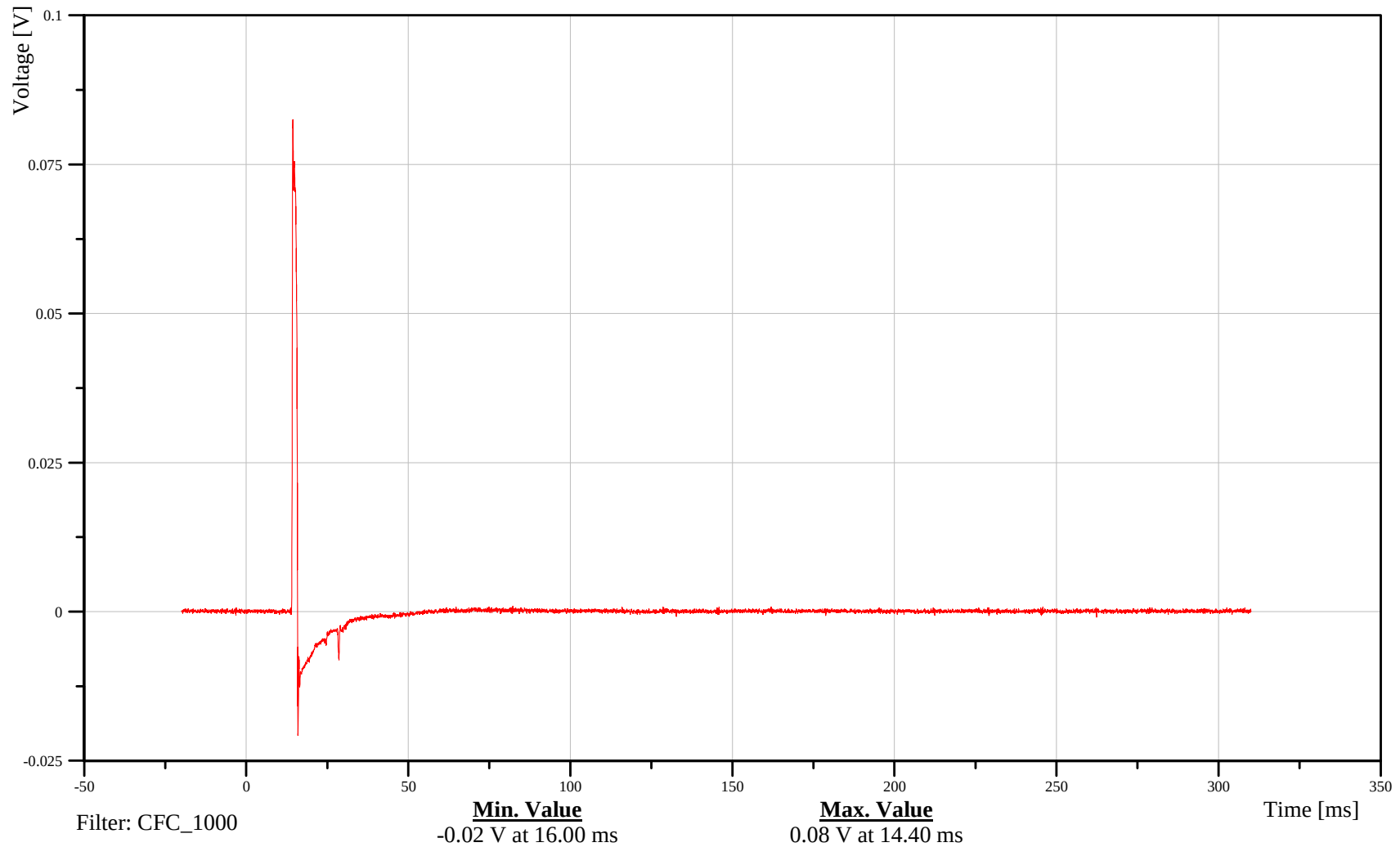
Driver Side Curtain Inductor

Customer: VRTC

11AIRBTPL E00EV0A

TRC Inc. Test Lab: CTF

Test Number: 100617



B-119

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

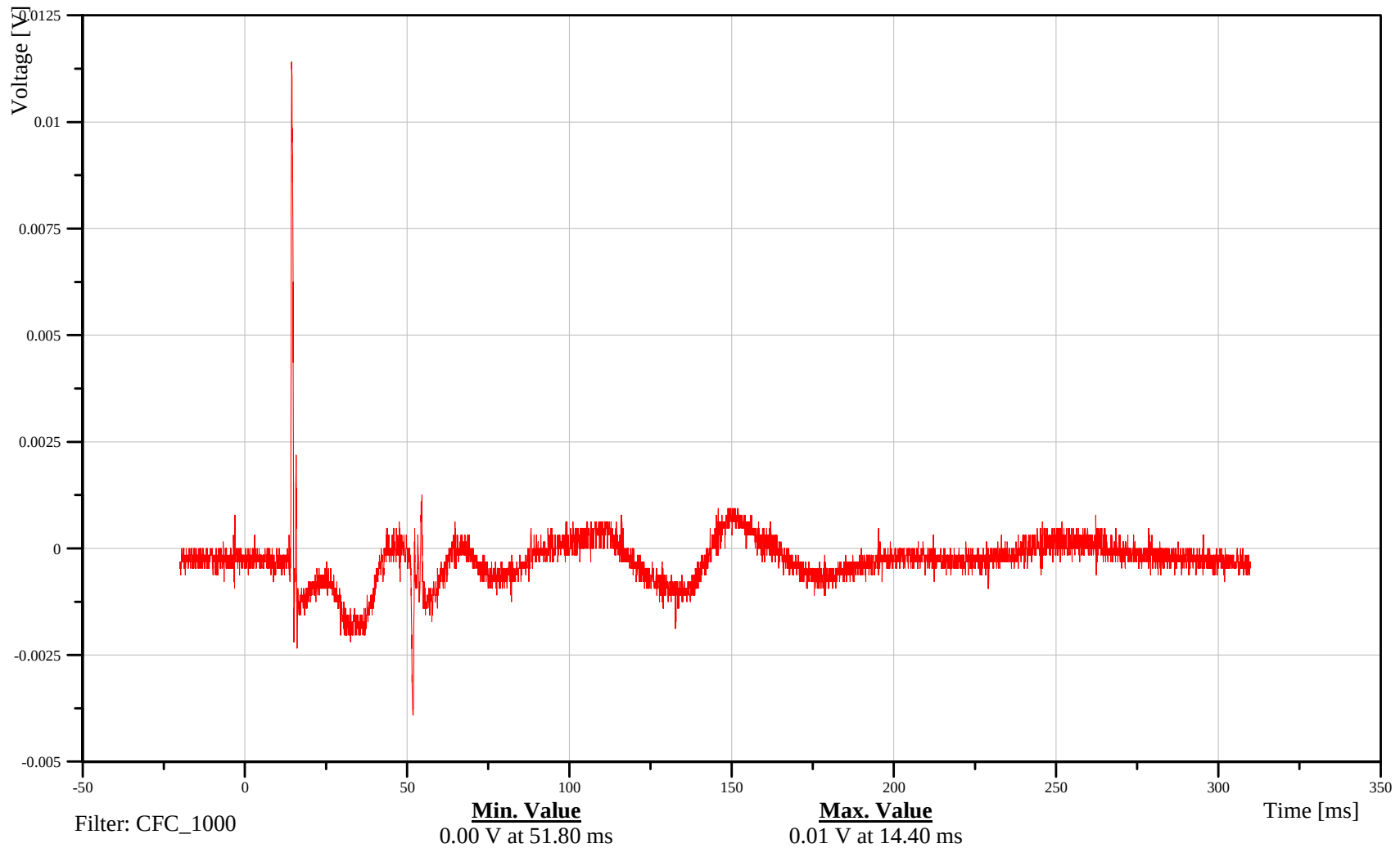
Driver Torso Airbag Fire Inductor

Customer: VRTC

11AIR02N0000EVOA

TRC Inc. Test Lab: CTF

Test Number: 100617



B-120

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

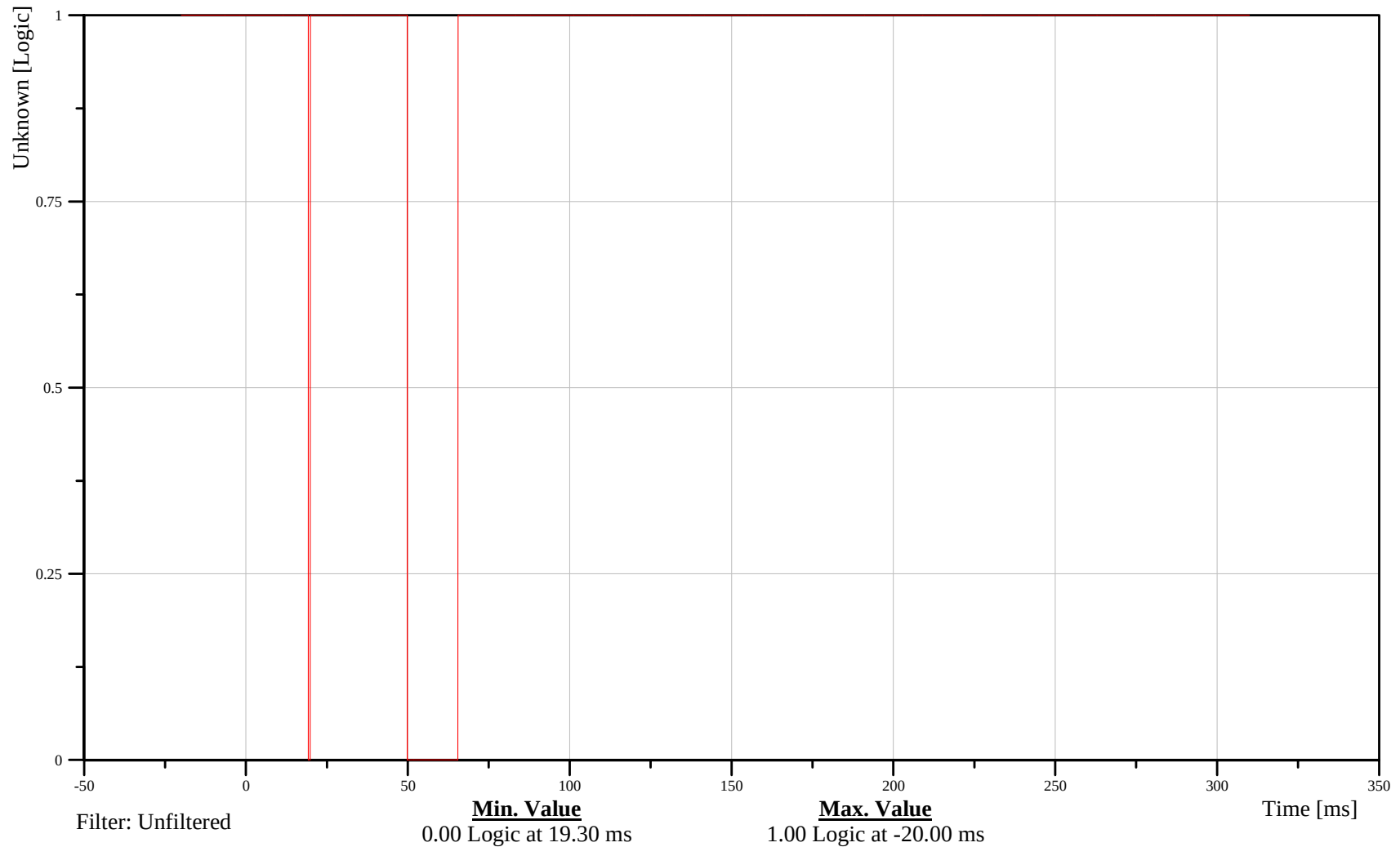
Head Contact Switch

Customer: VRTC

11CONT000001VO00

TRC Inc. Test Lab: CTF

Test Number: 100617



B-121

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

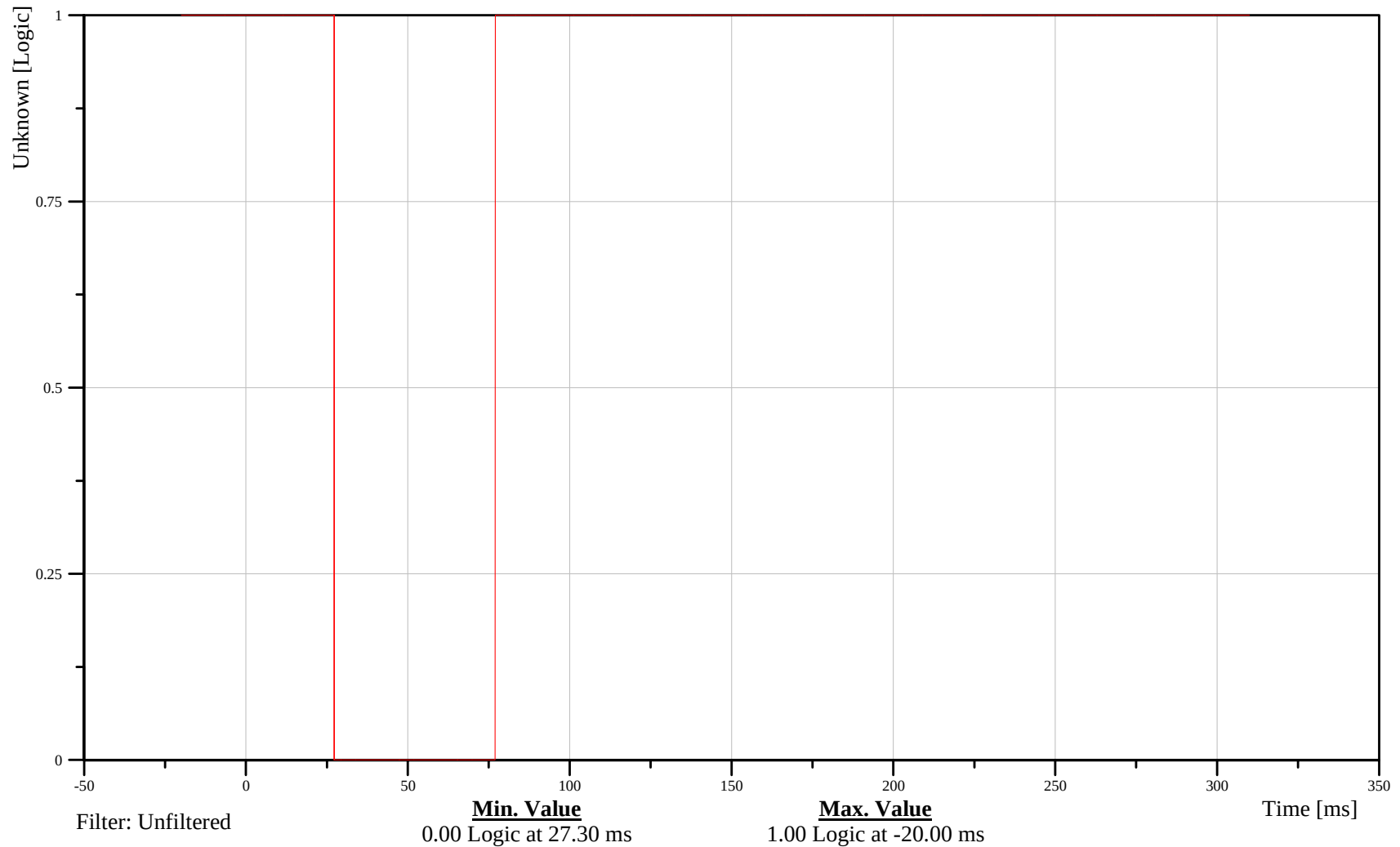
Shoulder Contact Switch

Customer: VRTC

11CONT000002VO00

TRC Inc. Test Lab: CTF

Test Number: 100617



B-122

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

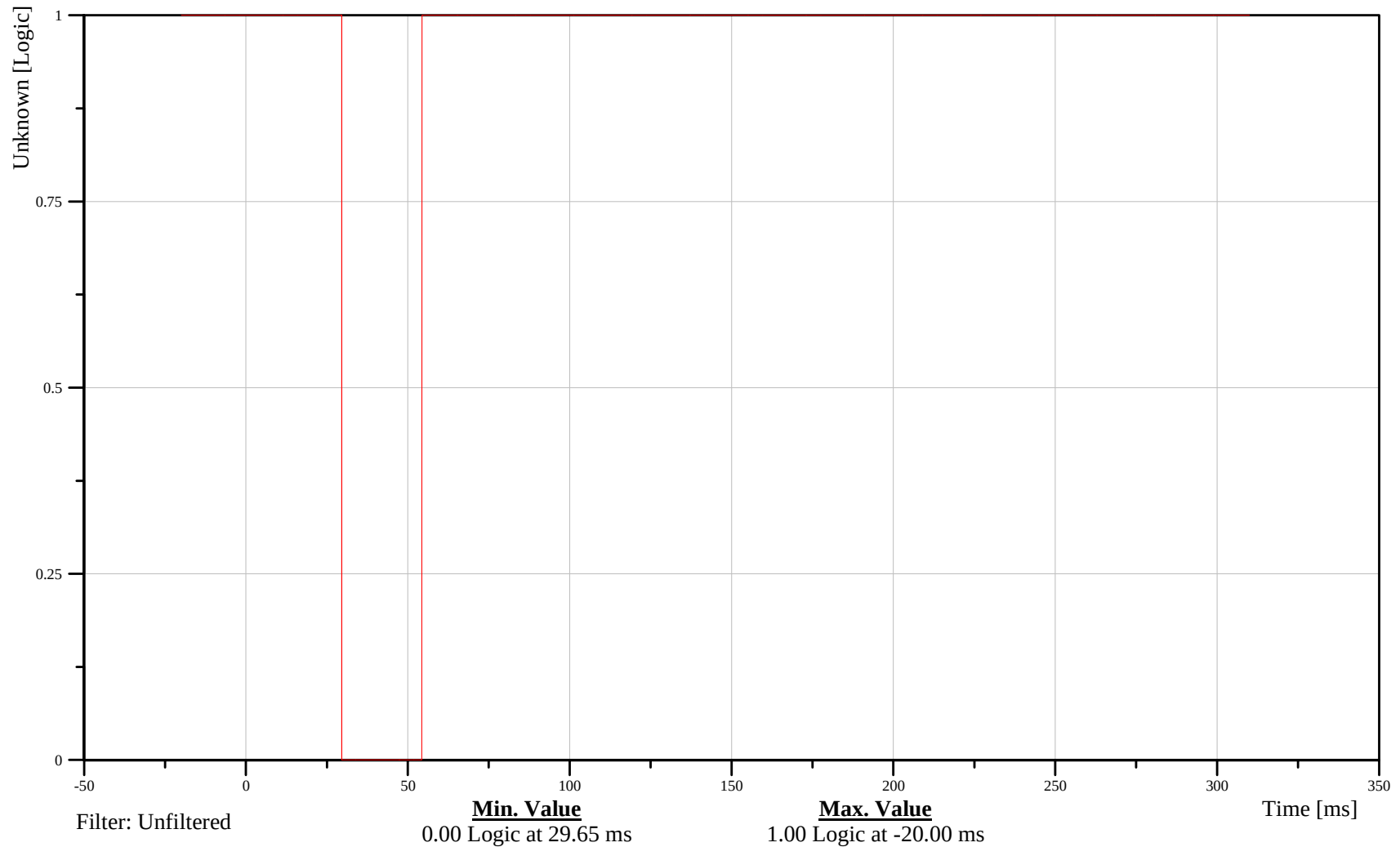
Torso Contact Switch

Customer: VRTC

11CONT000003VO00

TRC Inc. Test Lab: CTF

Test Number: 100617



B-123

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

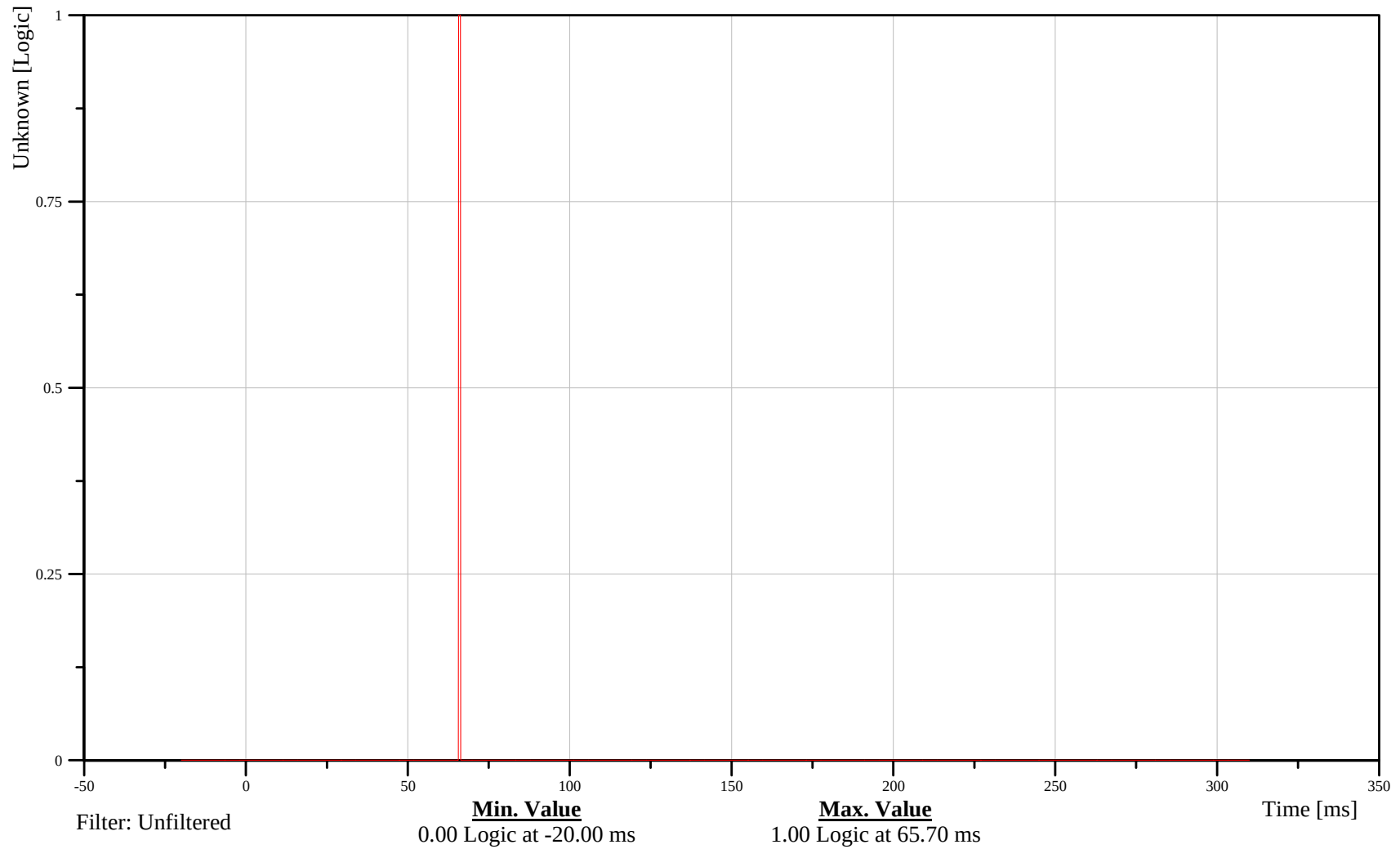
Left Contact Switch

Customer: VRTC

11CONT000004VO00

TRC Inc. Test Lab: CTF

Test Number: 100617



B-124

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

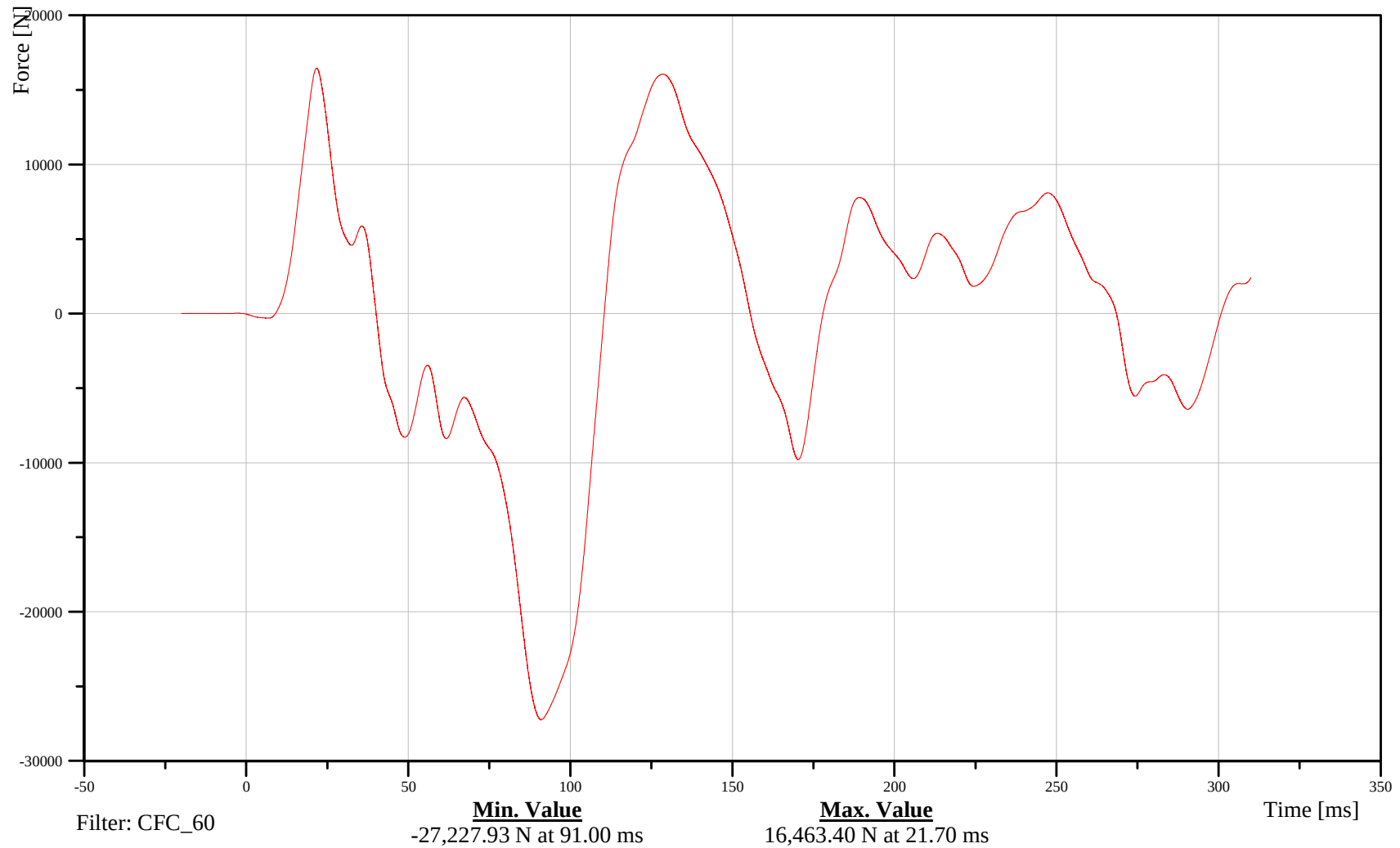
Pole Load Cell 1

Customer: VRTC

K0FBAR010000FOXD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-125

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

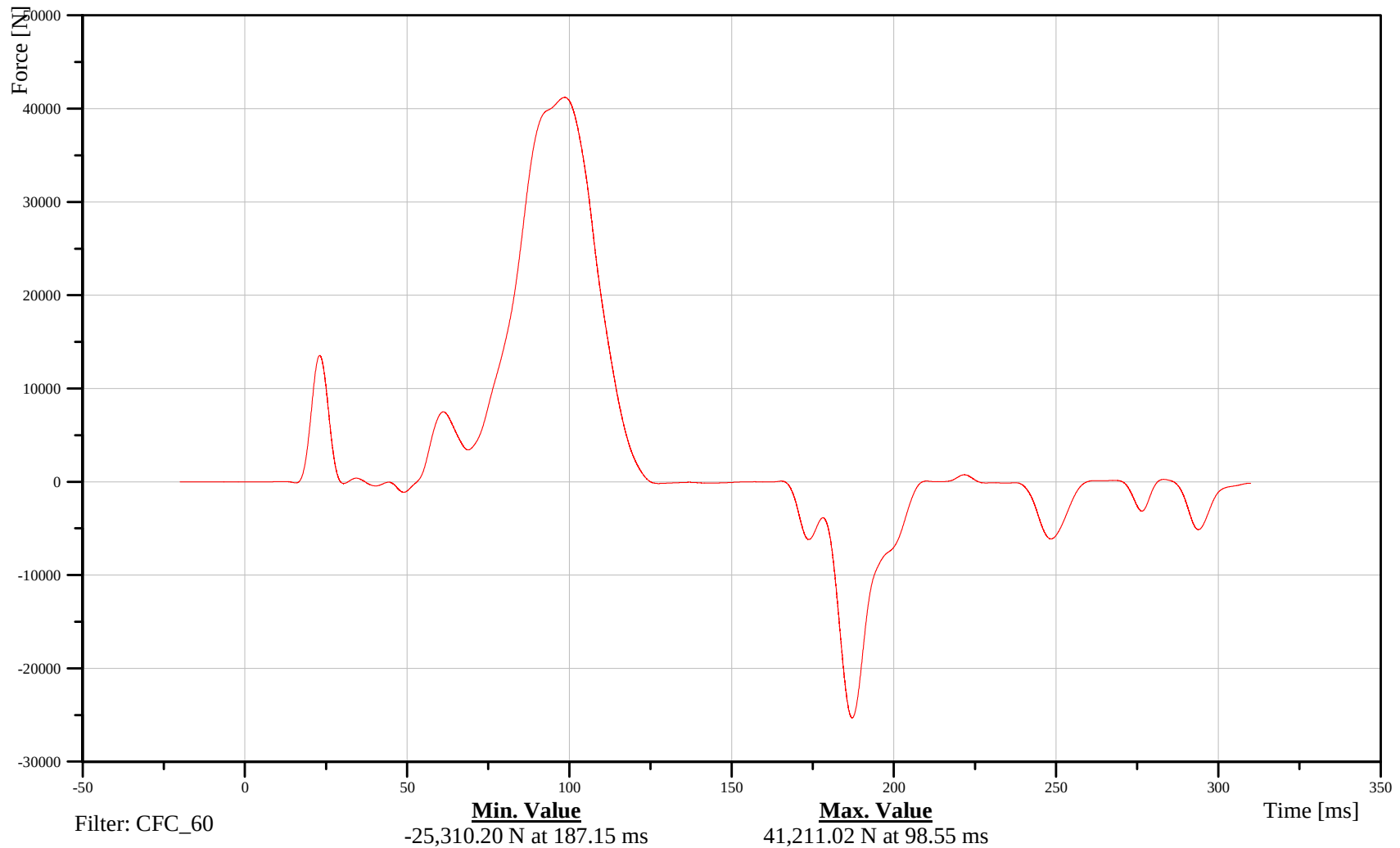
Pole Load Cell 2

Customer: VRTC

K0FBAR020000FOXD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-126

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

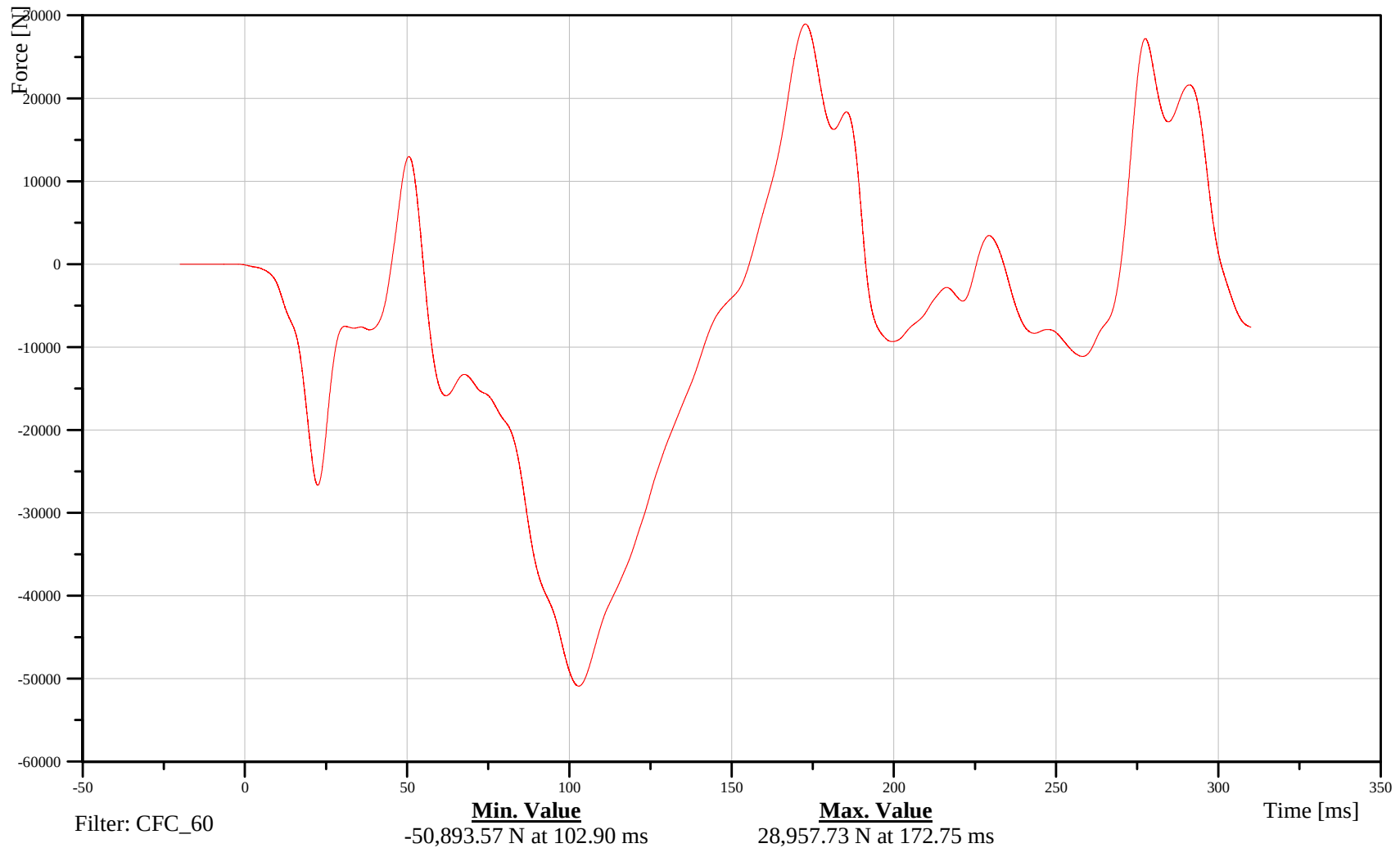
Pole Load Cell 3

Customer: VRTC

K0FBAR030000FOXD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-127

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

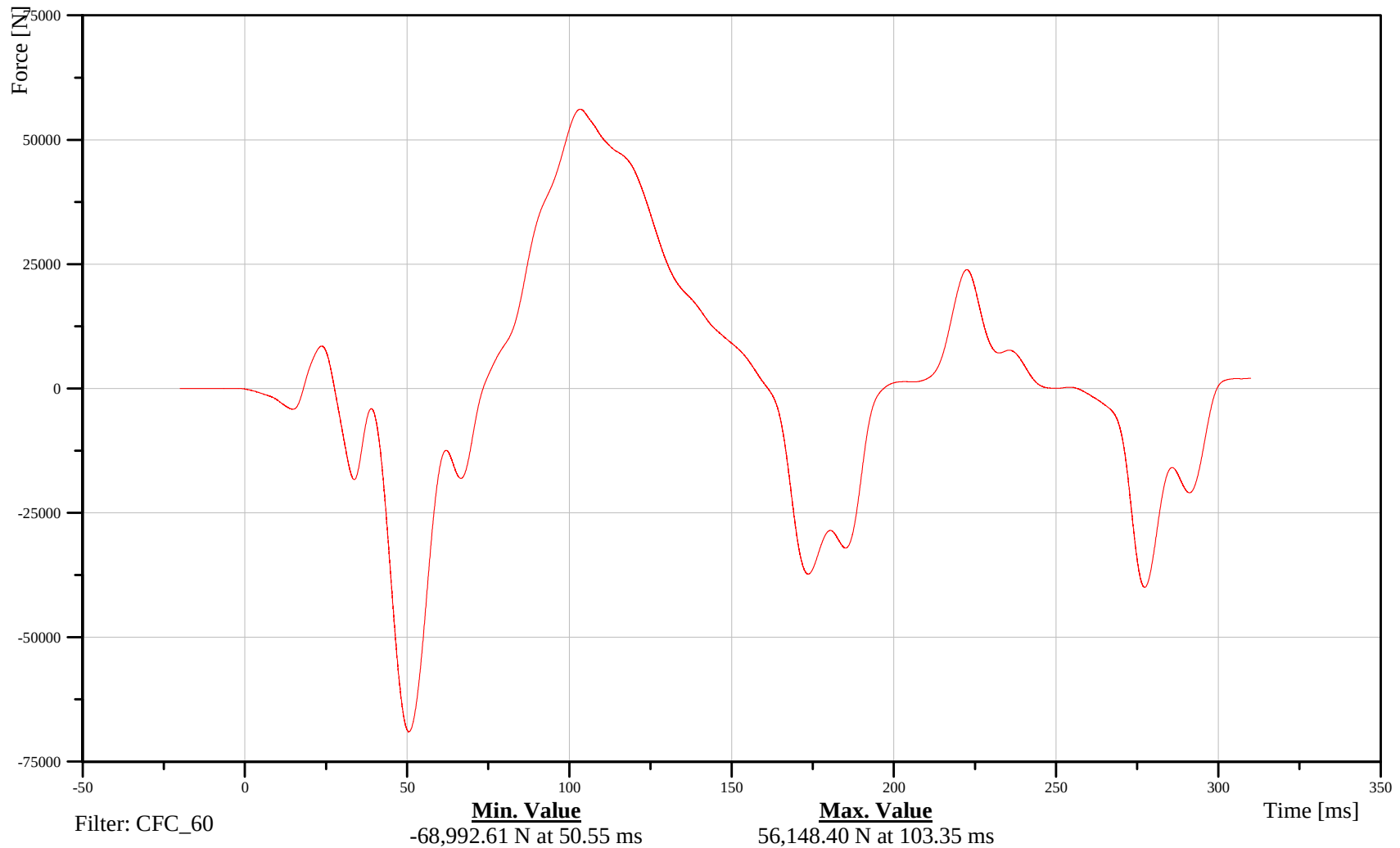
Pole Load Cell 4

Customer: VRTC

K0FBAR040000FOXD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-128

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Pole Load Cell 5

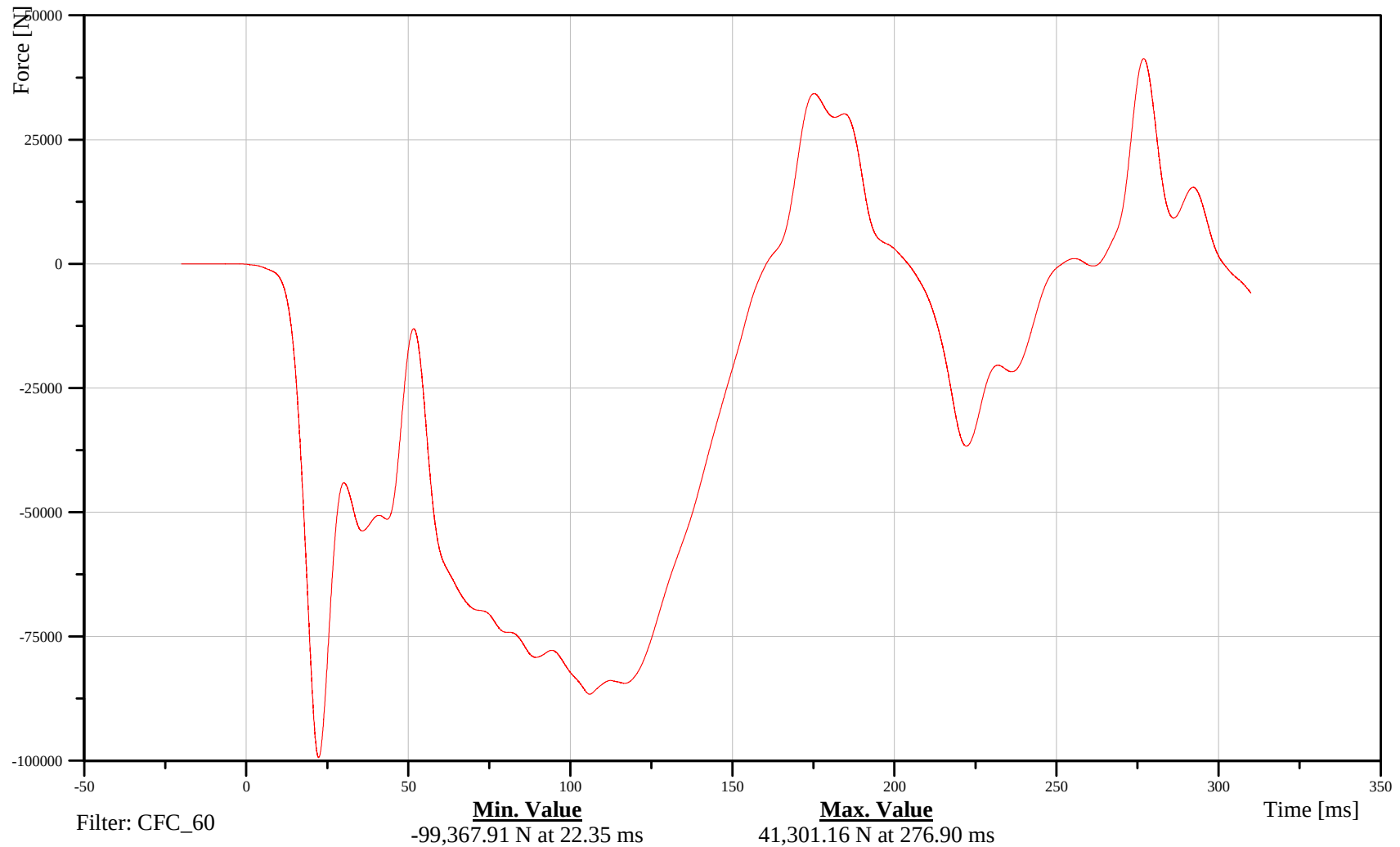
Date: 06/17/2010
Time: 14:32

Customer: VRTC

K0FBAR050000FOXD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-129

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

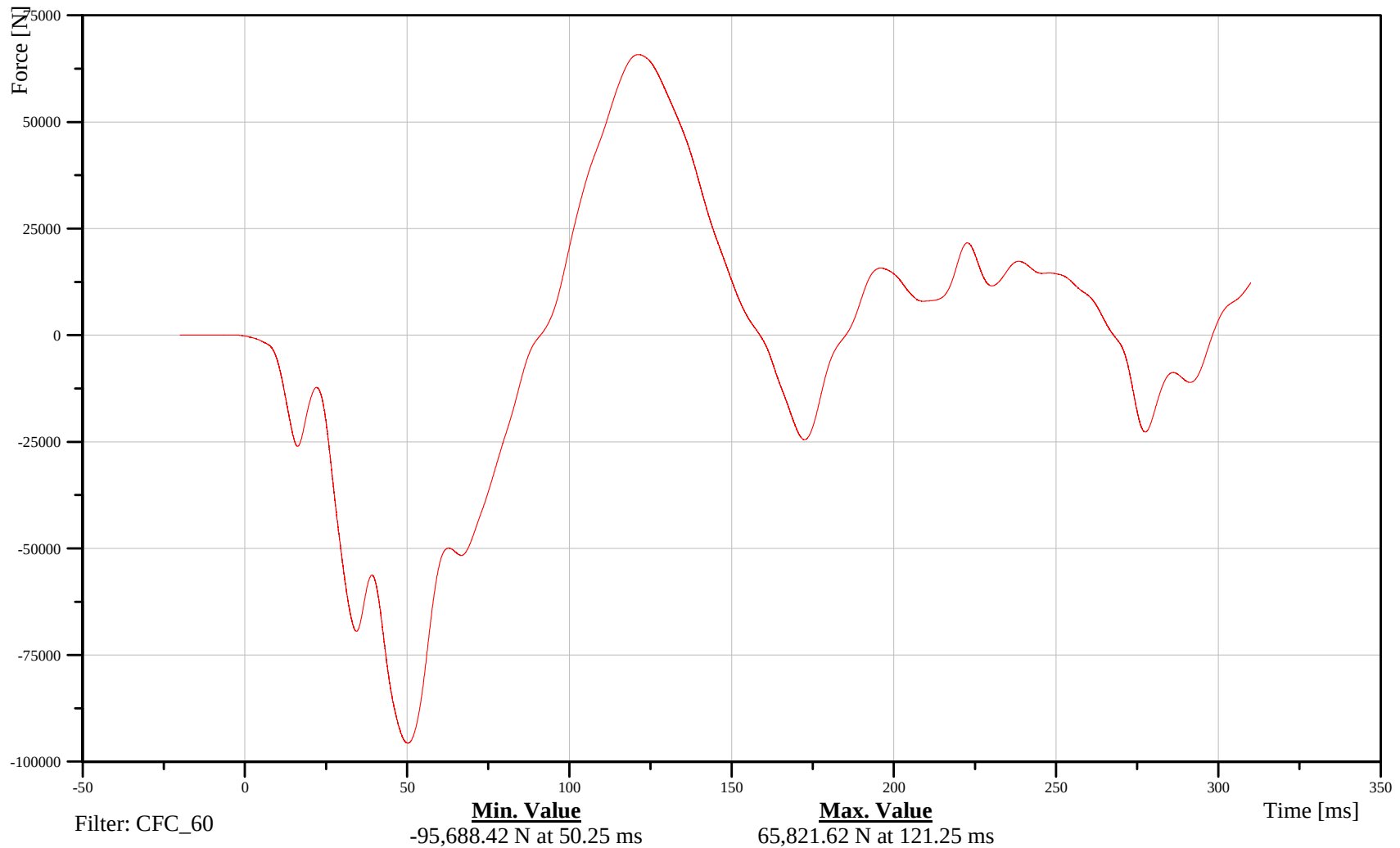
Pole Load Cell 6

Customer: VRTC

K0FBAR060000FOXD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-130

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Pole Load Cell 7

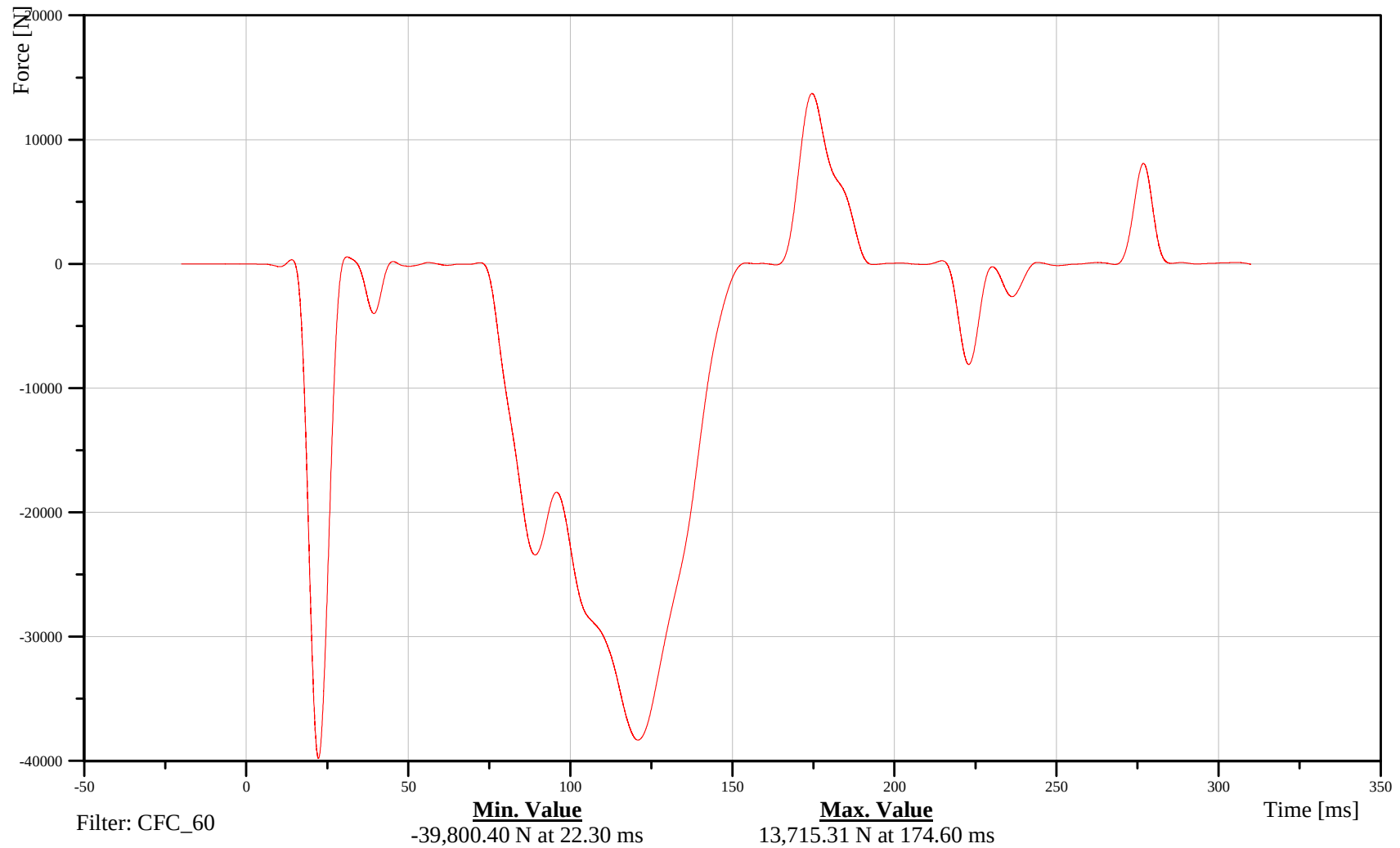
Date: 06/17/2010
Time: 14:32

Customer: VRTC

K0FBAR070000FOXD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-131

100617



2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph

Date: 06/17/2010
Time: 14:32

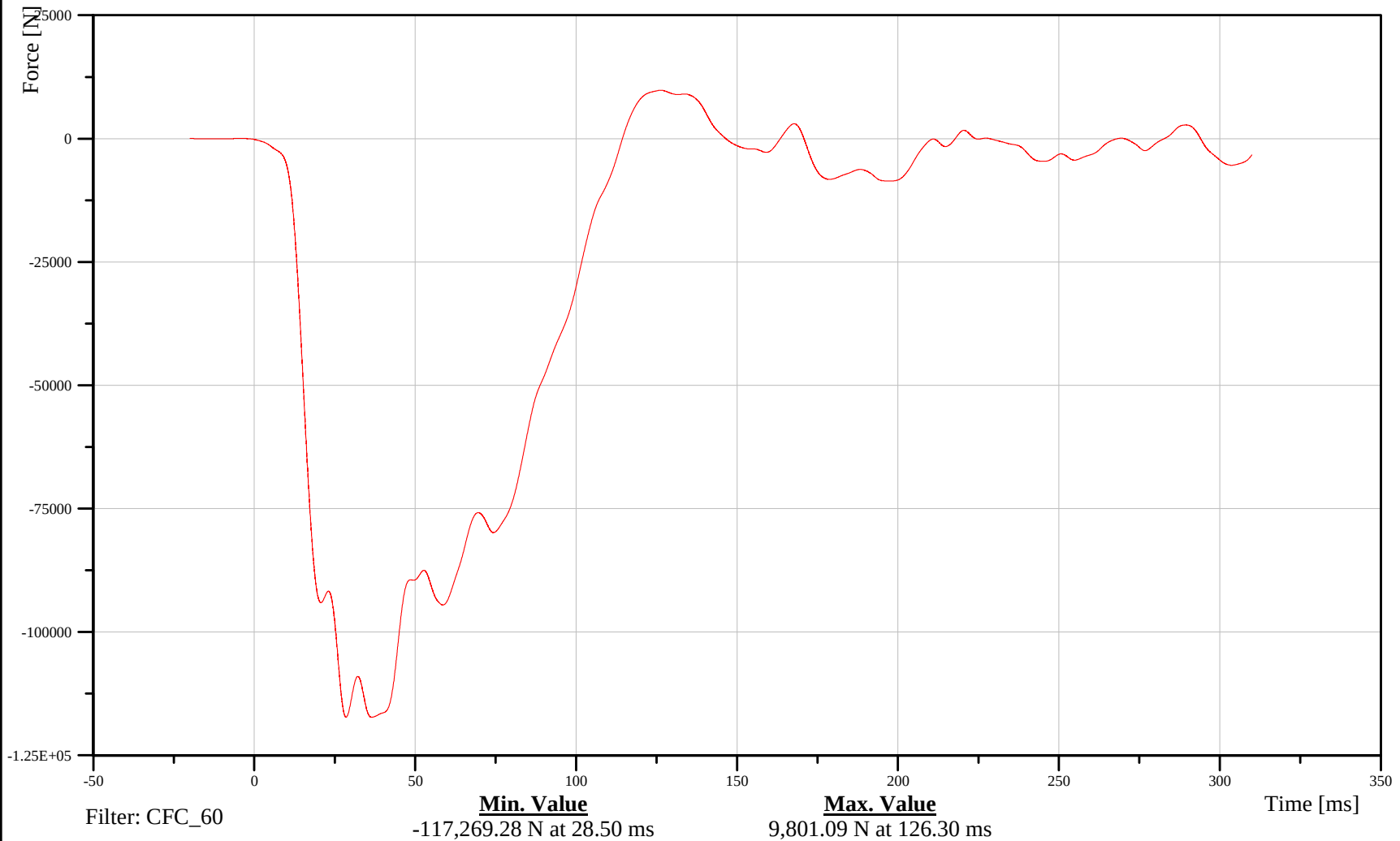
Pole Load Cell 8

Customer: VRTC

K0FBAR080000FOXD

TRC Inc. Test Lab: CTF

Test Number: 100617



B-132

100617

Appendix C

World SID Configuration and Performance Verification Data

Calibration Test Results

Pre-Test

World SID: 016

Configured for Left Side Impact

Transportation Research Center Inc.

Front Head Drop

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-1

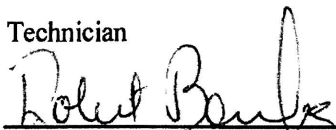
Test Date: 2/3/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Peak Head Resultant Acceleration	225 - 275 g	227.7 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	13.8 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	Yes	Yes	Yes

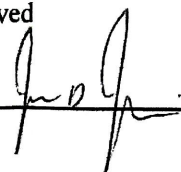
Test meets specifications.

Comments:

Technician



Approved

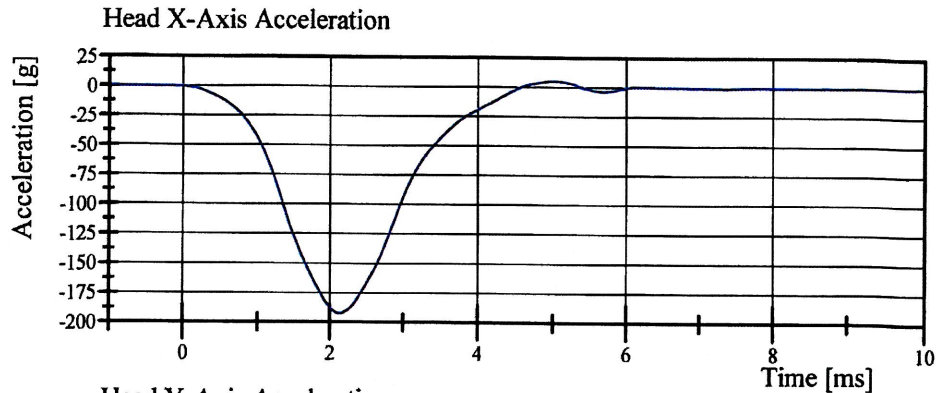


Transportation Research Center Inc.

Front Head Drop

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-1

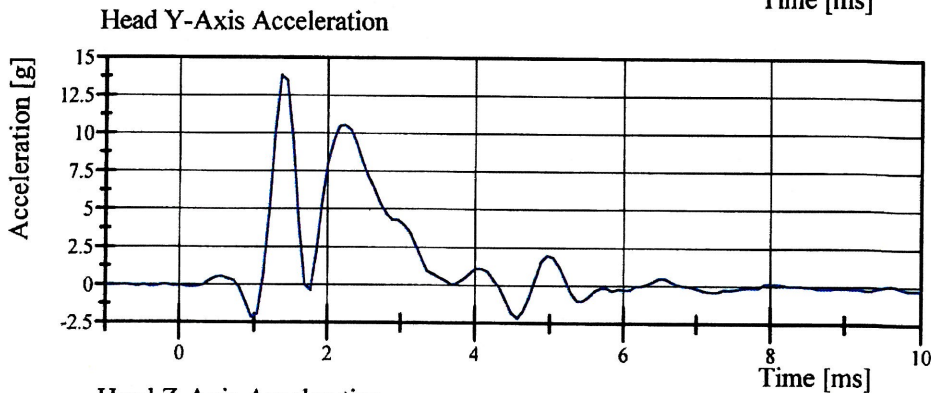
Test Date: 2/3/2010



Filter Class: CFC_1000

Max: 5.3 g at 5.0 ms

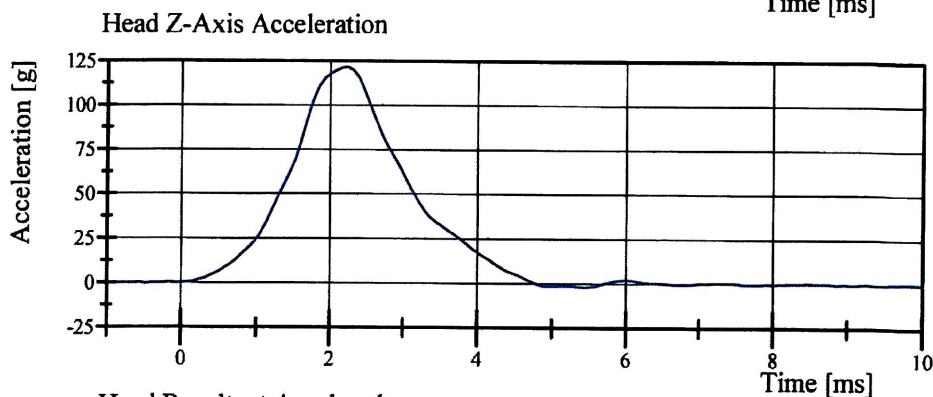
Min: -192.5 g at 2.2 ms



Filter Class: CFC_1000

Max: 13.8 g at 1.4 ms

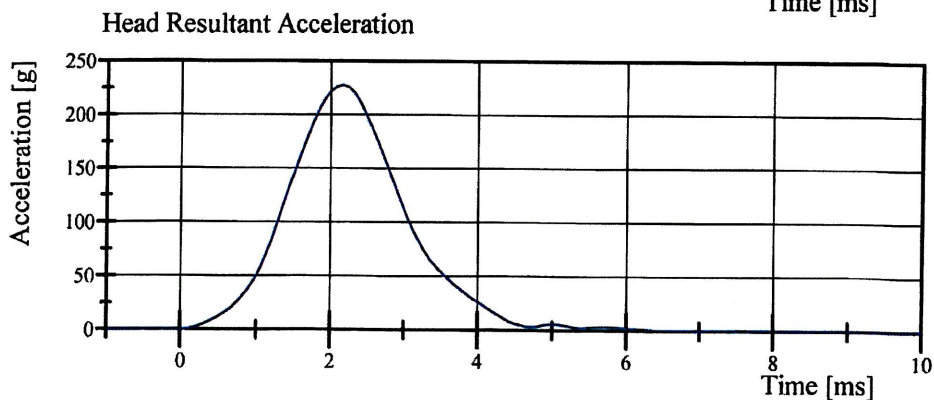
Min: -2.2 g at 1.0 ms



Filter Class: CFC_1000

Max: 121.6 g at 2.2 ms

Min: -1.9 g at 5.4 ms



Filter Class: CFC_1000

Max: 227.7 g at 2.2 ms

Min: 0.0 g at -1.0 ms

Transportation Research Center Inc.

Left Lateral Head Drop

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-1

Test Date: 2/4/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	26 %	Yes
Peak Head Resultant Acceleration	99 - 121 g	112.9 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-6.6 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Robert Baran

Approved

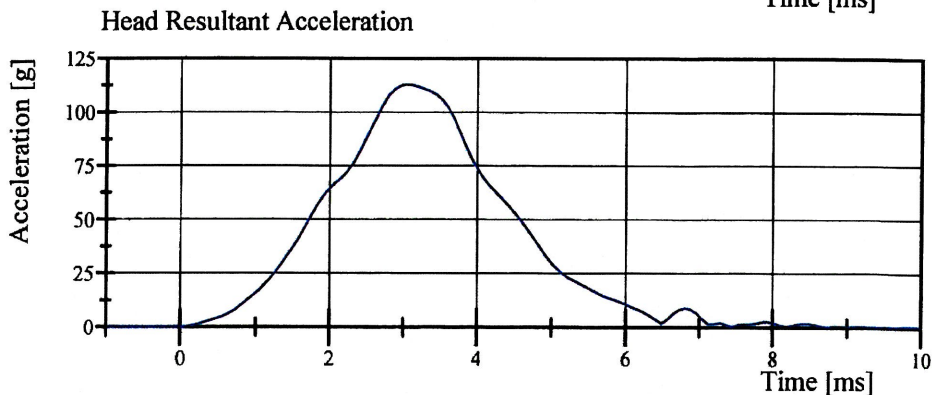
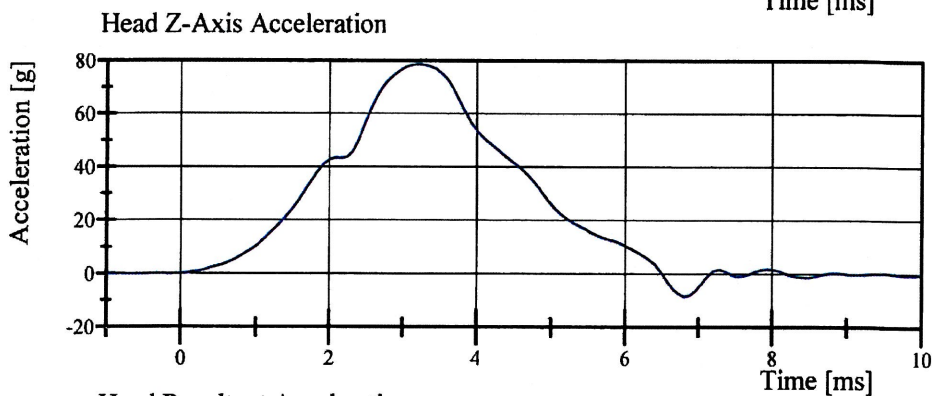
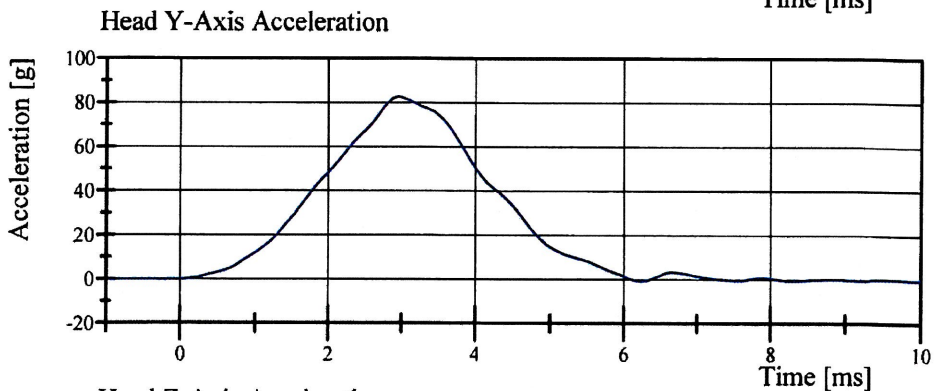
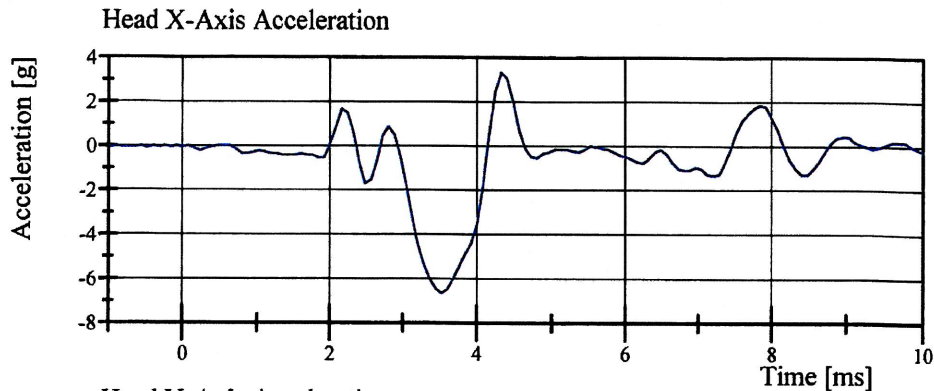
[Signature]

Transportation Research Center Inc.

Left Lateral Head Drop

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-1

Test Date: 2/4/2010



Transportation Research Center Inc.

Right Lateral Head Drop

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-2

Test Date: 2/4/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Peak Head Resultant Acceleration	99 - 121 g	120.4 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-8.1 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	Yes	No	No

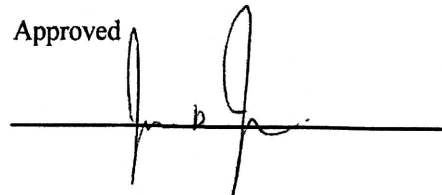
Test does not meet specifications.

Comments:

Technician



Approved

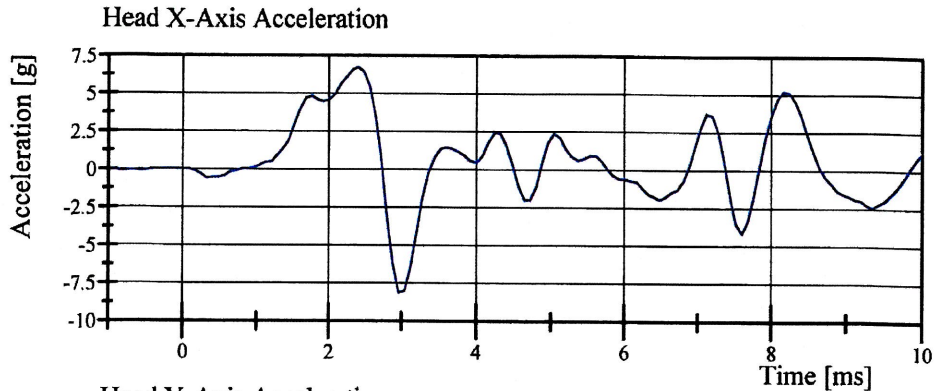


Transportation Research Center Inc.

Right Lateral Head Drop

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-2

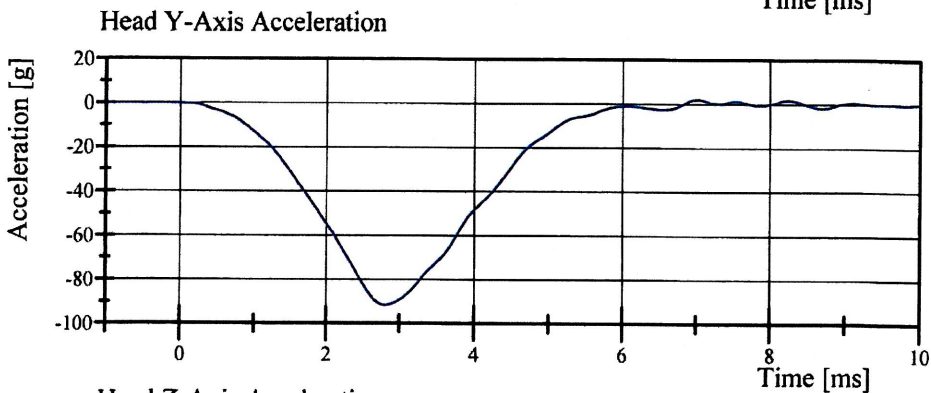
Test Date: 2/4/2010



Filter Class: CFC_1000

Max: 6.8 g at 2.4 ms

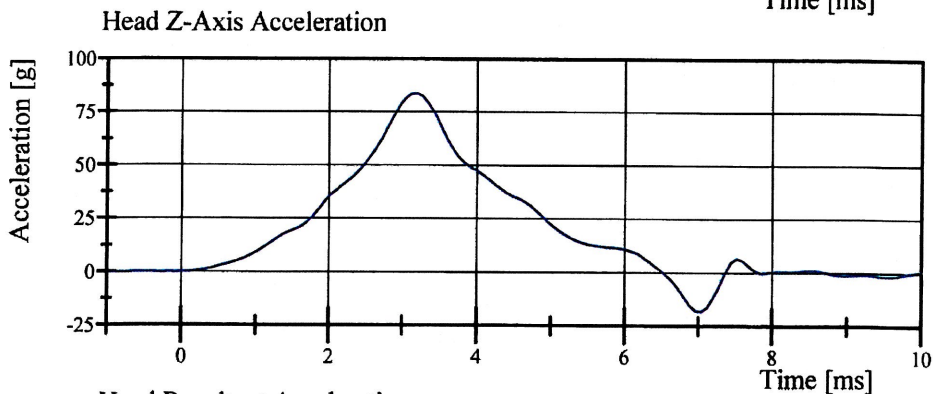
Min: -8.1 g at 3.0 ms



Filter Class: CFC_1000

Max: 2.2 g at 7.0 ms

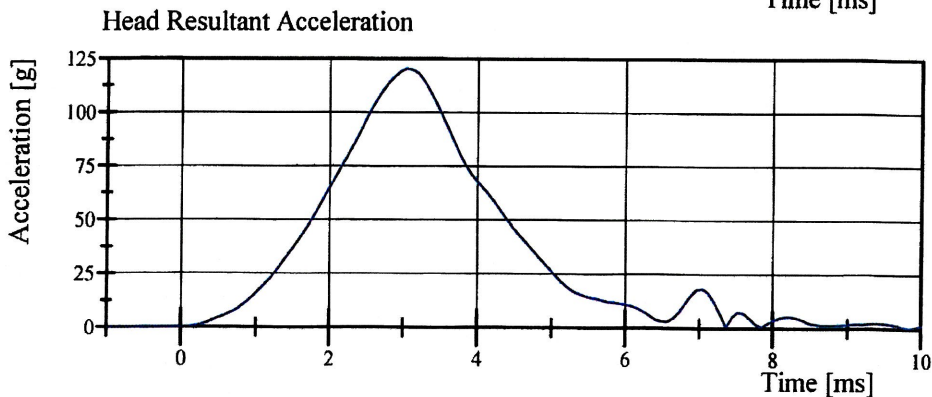
Min: -91.6 g at 2.8 ms



Filter Class: CFC_1000

Max: 83.8 g at 3.2 ms

Min: -18.2 g at 7.0 ms



Filter Class: CFC_1000

Max: 120.4 g at 3.0 ms

Min: 0.0 g at -0.4 ms

Transportation Research Center Inc.

Left Lateral Neck

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-2

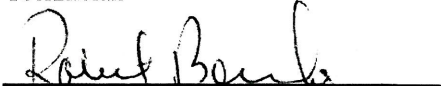
Test Date: 2/3/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	22.1 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Pendulum Velocity	(-3.3) - (-3.5) m/s	-3.35 m/s	Yes
Pendulum Integrated Velocity			
Change at 4 ms	0.77 - 1.04 m/s	0.938 m/s	Yes
Change at 8 ms	1.6 - 2.16 m/s	1.916 m/s	Yes
Change at 12 ms	2.43 - 3.29 m/s	2.977 m/s	Yes
Maximum Headform Flexion	(-50) - (-61) deg	-54.1 deg	Yes
Headform Flexion Decay			
- from Peak to Zero Degrees	58 - 72 ms	64.8 ms	Yes
Total Neck Occipital Condyles Moment	55 - 68 N·m	60.8 N·m	Yes
Total Neck Occipital Condyles Moment			
Decay Time to 0 N·m	71 - 87 ms	79.0 ms	Yes
Maximum Forward Pot Rotation			
Peak	(-32) - (-39) °	-35.0 °	Yes
Time of Peak	56 - 68 ms	57.5 ms	Yes
Maximum Rear Pot Rotation			
Peak	(-30) - (-37) °	-31.5 °	Yes
Time of Peak	56 - 68 ms	58.2 ms	Yes

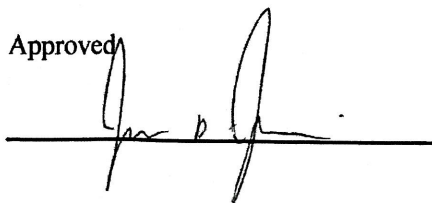
Test meets specifications.

Comments:

Technician



Approved

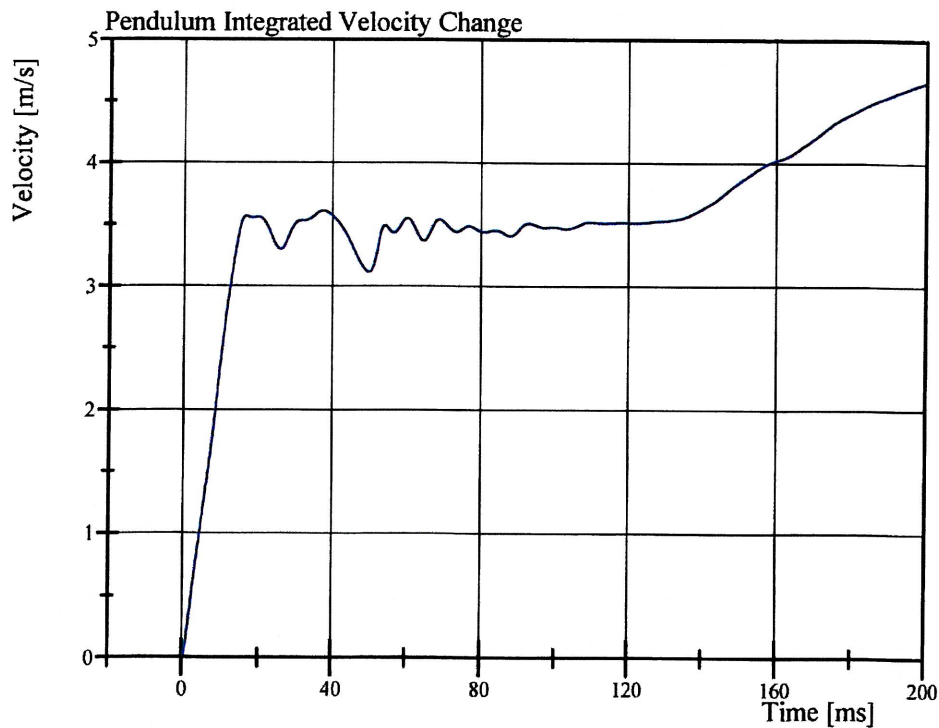
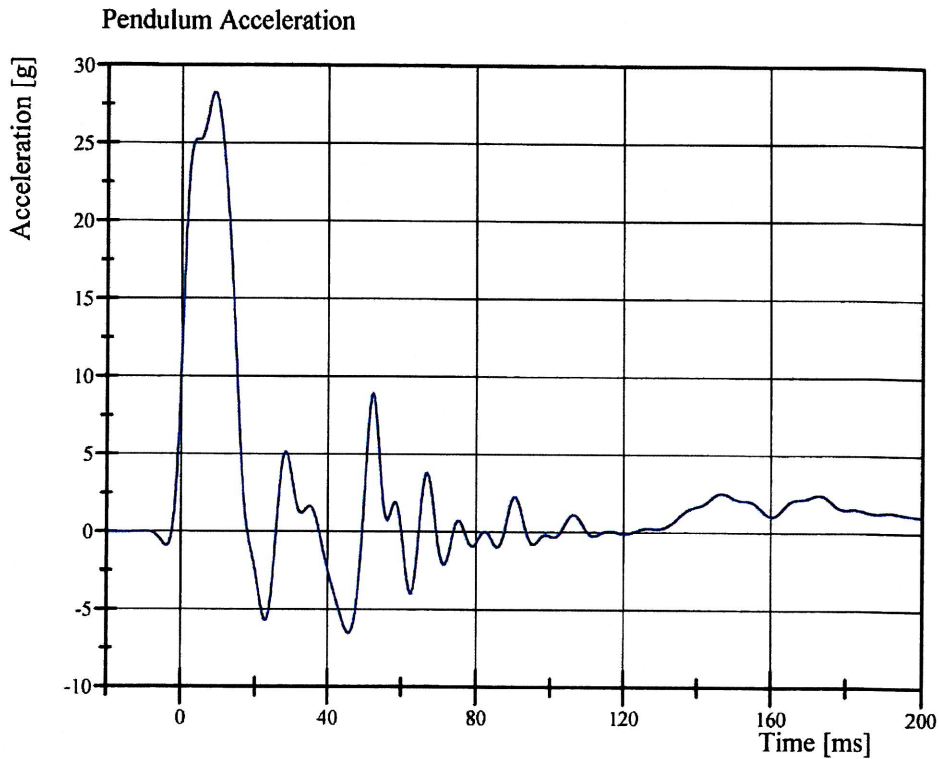


Transportation Research Center Inc.

Left Lateral Neck

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-2

Test Date: 2/3/2010



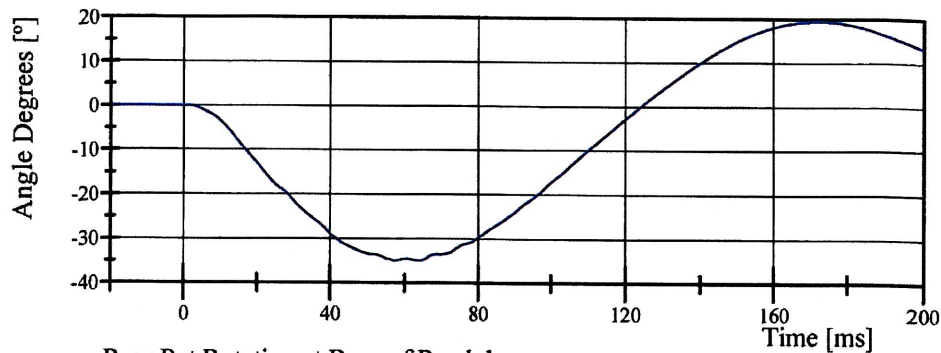
Transportation Research Center Inc.

Left Lateral Neck

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-2

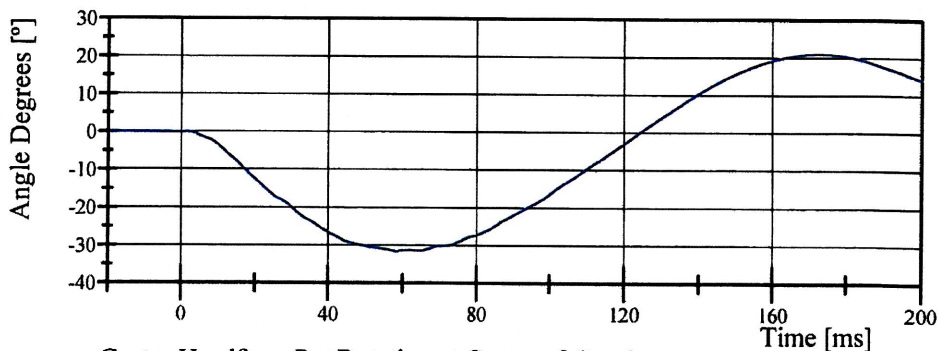
Test Date: 2/3/2010

Forward Pot Rotation at Base of Pendulum



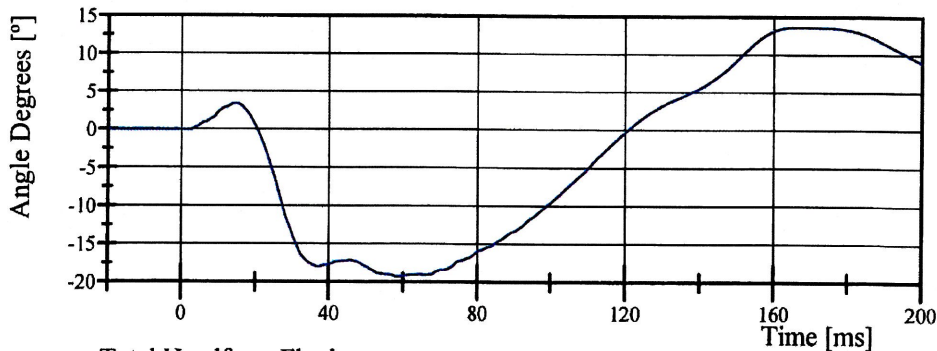
Filter Class: CFC_1000
Max: 19.6 ° at 172.8 ms
Min: -35.0 ° at 57.5 ms

Rear Pot Rotation at Base of Pendulum



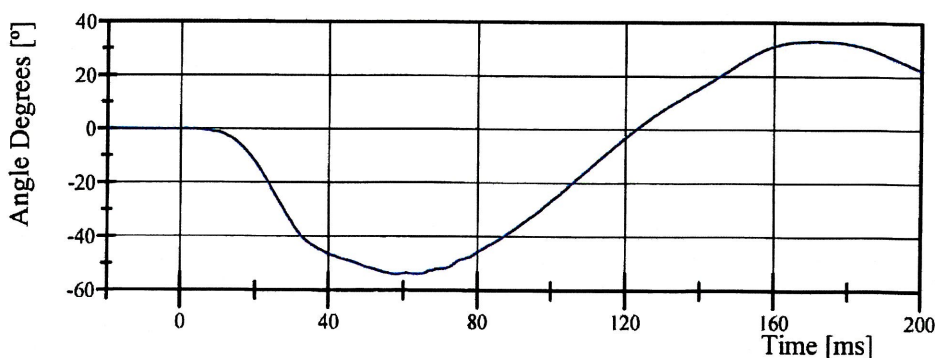
Filter Class: CFC_1000
Max: 21.0 ° at 171.7 ms
Min: -31.5 ° at 58.2 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_1000
Max: 13.7 ° at 165.3 ms
Min: -19.3 ° at 58.5 ms

Total Headform Flexion



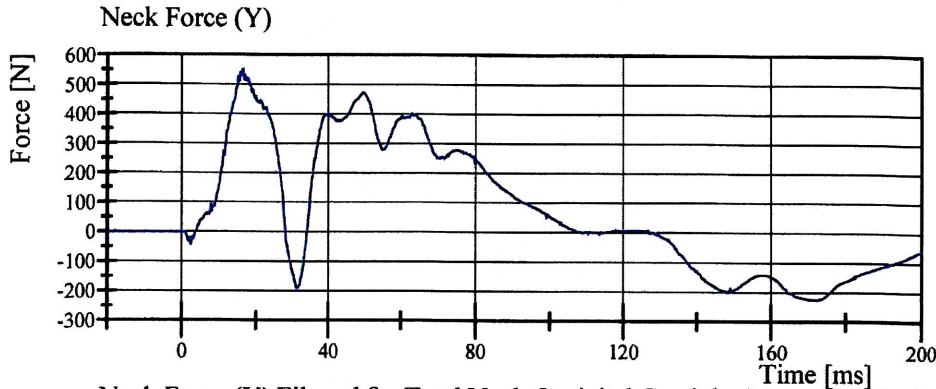
Filter Class: CFC_1000
Max: 33.2 ° at 171.0 ms
Min: -54.1 ° at 58.0 ms

Transportation Research Center Inc.

Left Lateral Neck

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-2

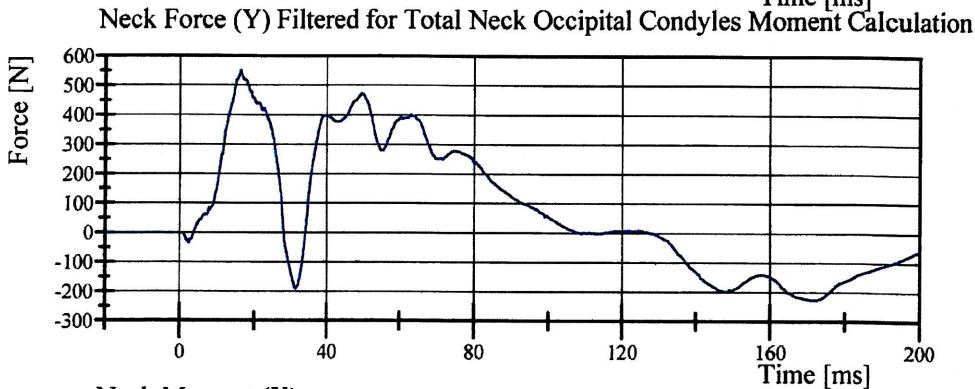
Test Date: 2/3/2010



Filter Class: CFC_1000

Max: 553.2 N at 16.5 ms

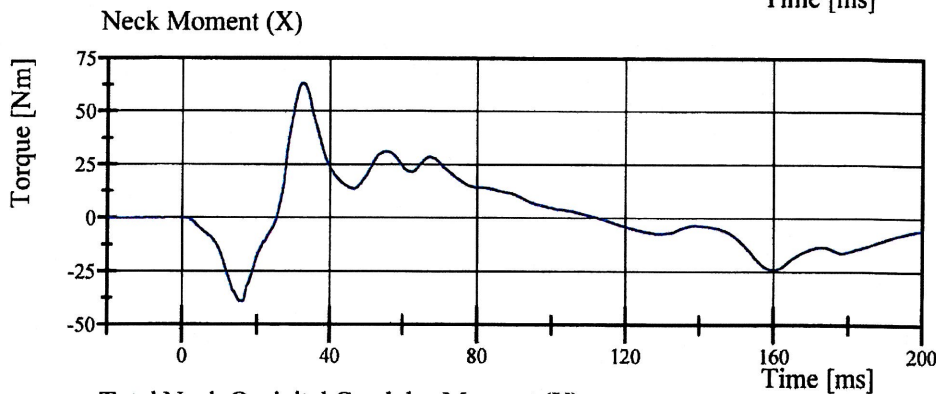
Min: -226.4 N at 172.4 ms



Filter Class: CFC_600

Max: 550.2 N at 16.3 ms

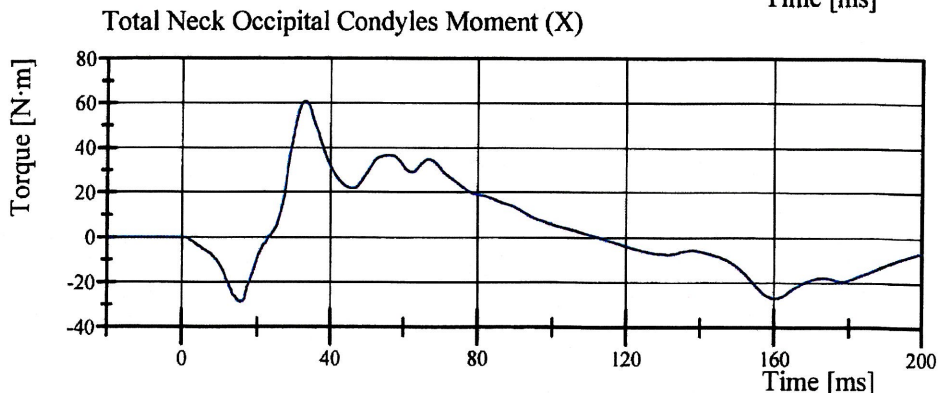
Min: -225.6 N at 172.4 ms



Filter Class: CFC_600

Max: 63.4 Nm at 32.6 ms

Min: -39.2 Nm at 16.1 ms



Filter Class: CFC_600

Max: 60.8 N·m at 33.0 ms

Min: -28.8 N·m at 15.4 ms

Transportation Research Center Inc.

Left Lateral Shoulder

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-1

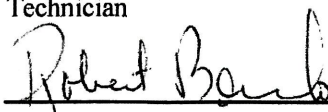
Test Date: 2/8/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	25 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.38 m/s	Yes
Impactor Force	(-2,600) - (-3,300) N	-2,647.0 N	Yes
Shoulder Displacement	35 - 44 mm	37.6 mm	Yes

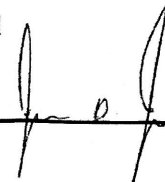
Test meets specifications.

Comments:

Technician



Approved



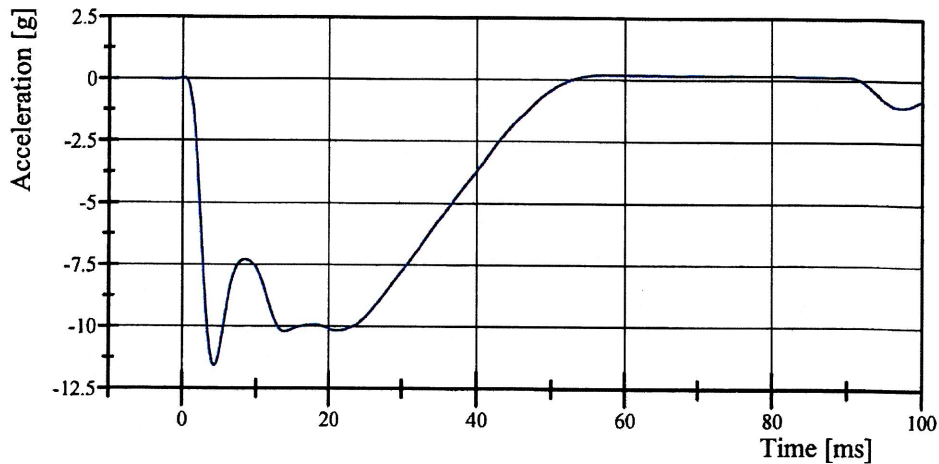
Transportation Research Center Inc.

Left Lateral Shoulder

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-1

Test Date: 2/8/2010

Impactor Acceleration

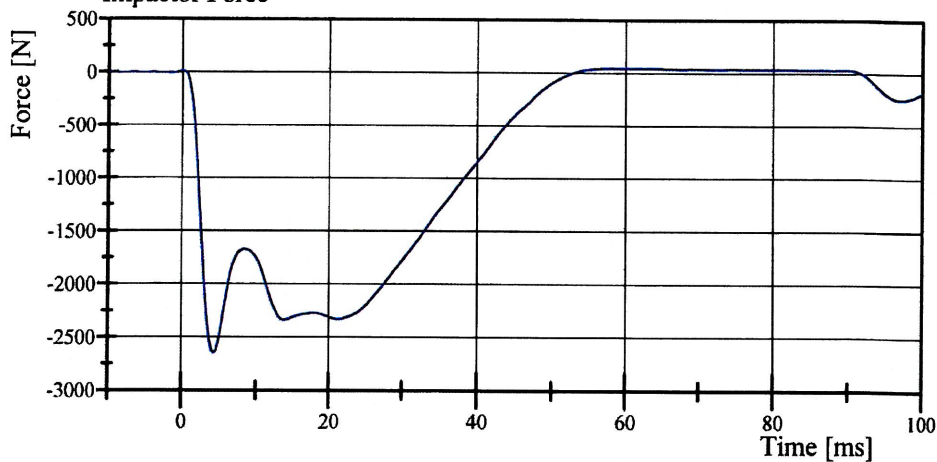


Filter Class: CFC_180

Max: 0.2 g at 58.1 ms

Min: -11.6 g at 4.3 ms

Impactor Force

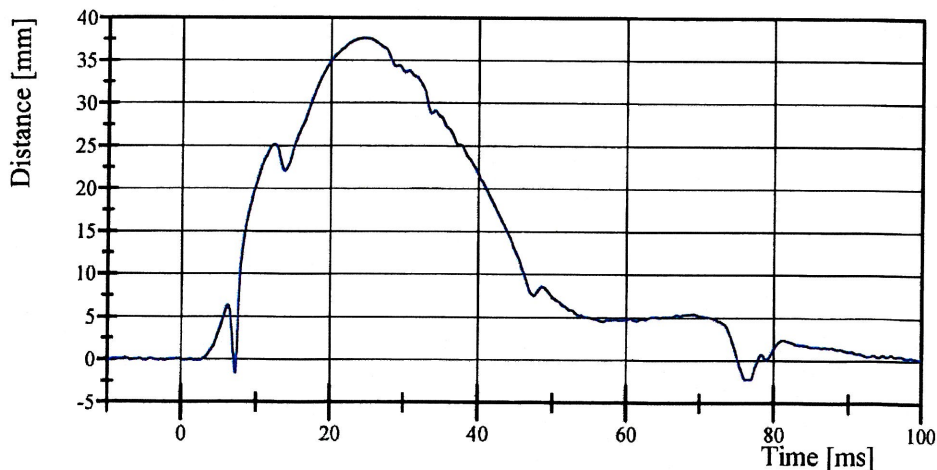


Filter Class: CFC_180

Max: 50.0 N at 58.1 ms

Min: -2,647.0 N at 4.3 ms

Shoulder Displacement



Filter Class: CFC_600

Max: 37.6 mm at 24.6 ms

Min: -2.2 mm at 76.8 ms

Transportation Research Center Inc.

Left Lateral Thorax with Arm

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-4

Test Date: 2/9/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Impactor Velocity	6.6 - 6.8 m/s	6.75 m/s	Yes
Impactor Force	(-4,700) - (-6,400) N	-5,692.0 N	Yes
Upper Thorax Rib Displacement	35 - 47 mm	37.4 mm	Yes
Center Thorax Rib Displacement	42 - 57 mm	47.3 mm	Yes
Lower Thorax Rib Displacement	40 - 54 mm	40.6 mm	Yes
Upper Spine Lateral Acceleration	24 - 33 g	30.7 g	Yes
Lower Spine Lateral Acceleration	20 - 28 g	25.4 g	Yes

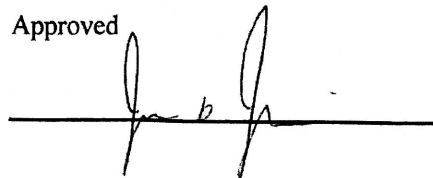
Test meets specifications.

Comments:

Technician



Approved

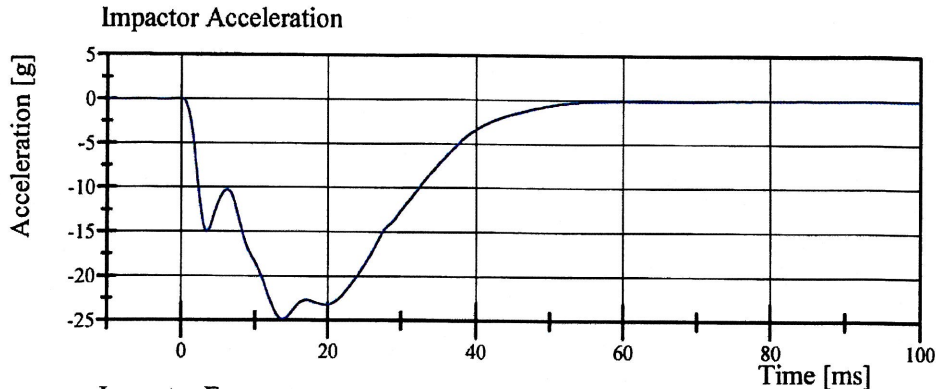


Transportation Research Center Inc.

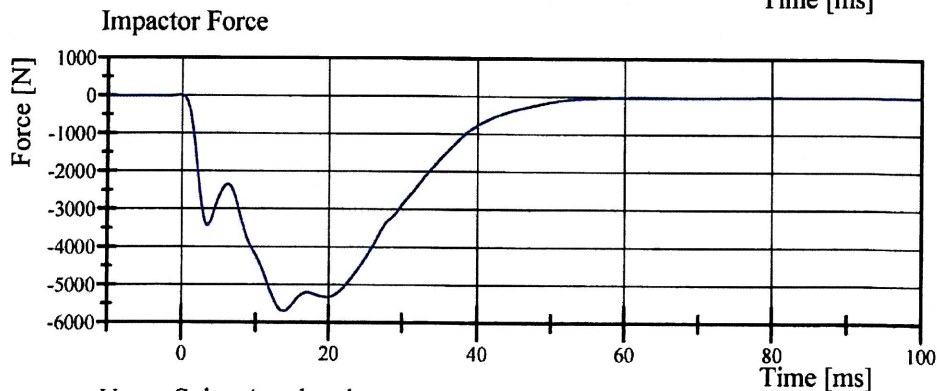
Left Lateral Thorax with Arm

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-4

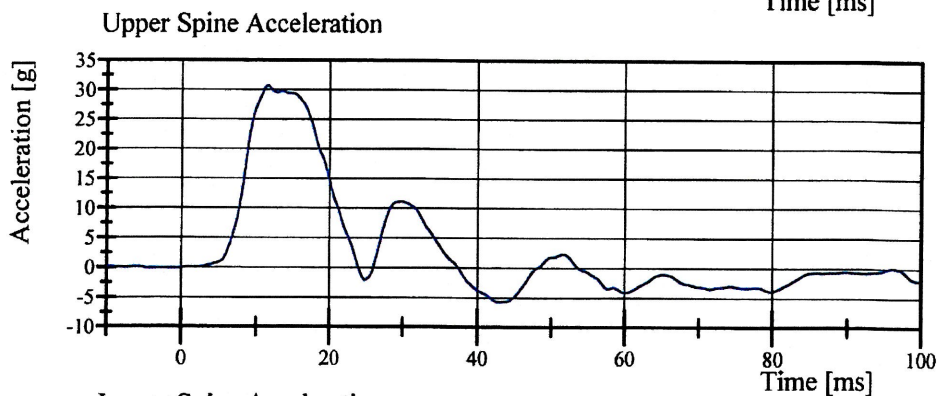
Test Date: 2/9/2010



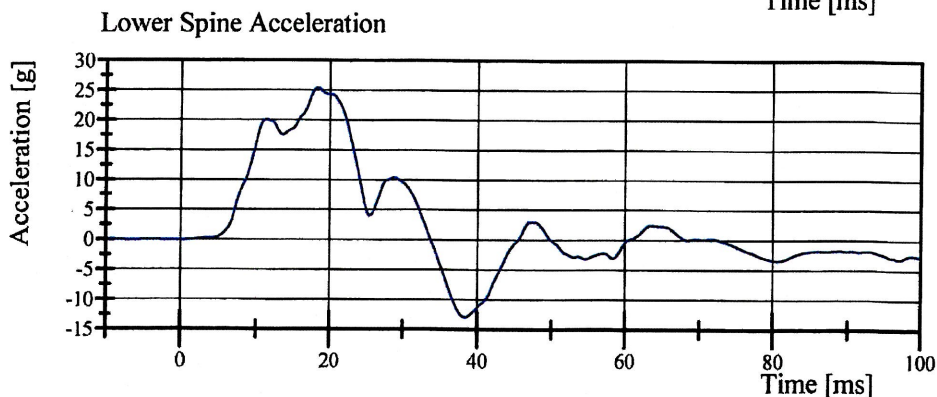
Filter Class: CFC_180
Max: 0.1 g at -0.2 ms
Min: -24.8 g at 13.8 ms



Filter Class: CFC_180
Max: 22.7 N at -0.2 ms
Min: -5,692.0 N at 13.8 ms



Filter Class: CFC_180
Max: 30.7 g at 11.5 ms
Min: -5.8 g at 43.0 ms



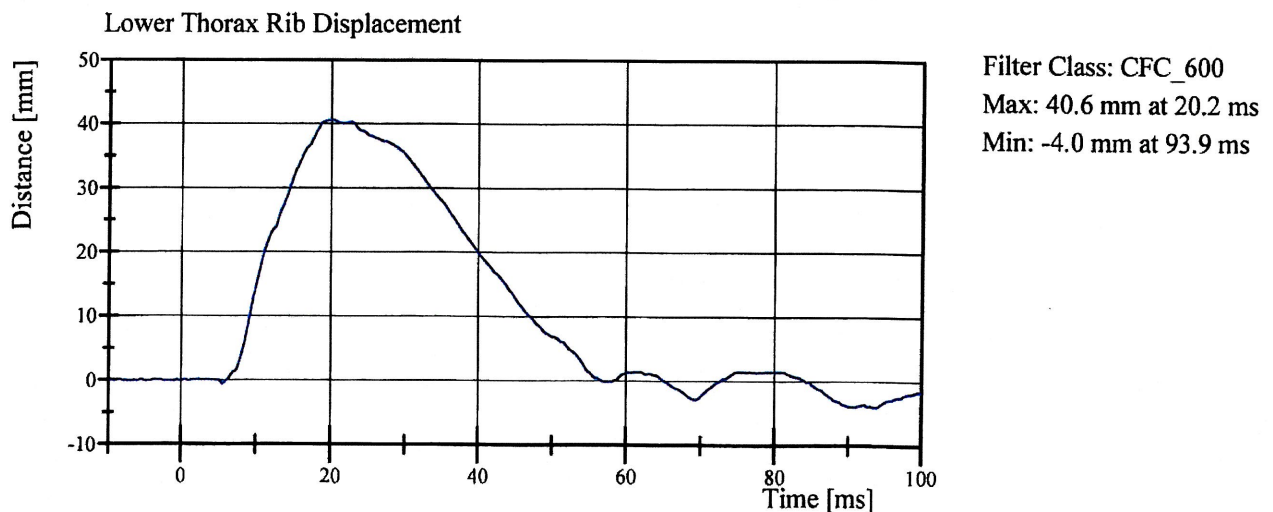
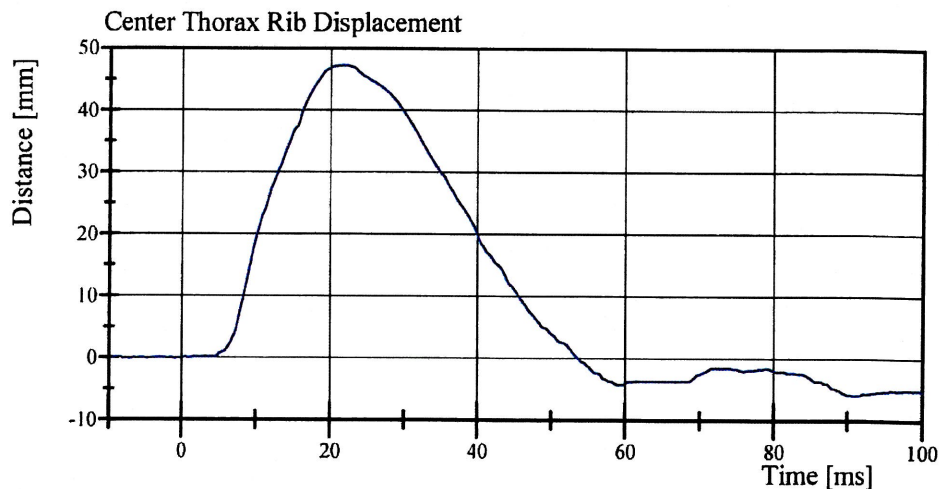
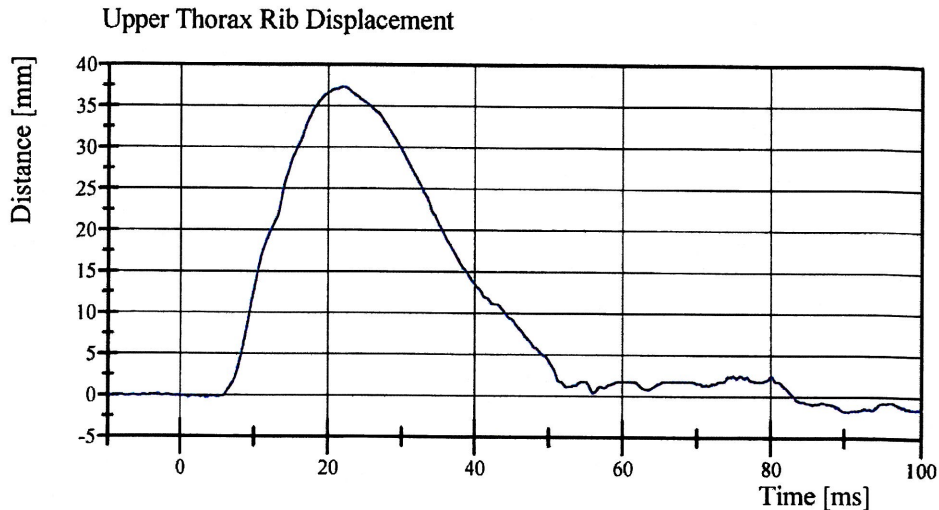
Filter Class: CFC_180
Max: 25.4 g at 18.3 ms
Min: -13.0 g at 38.4 ms

Transportation Research Center Inc.

Left Lateral Thorax with Arm

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-4

Test Date: 2/9/2010



Transportation Research Center Inc.

Left Lateral Thorax without Arm

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-3

Test Date: 2/9/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.351 m/s	Yes
Impactor Force	(-3,200) - (-3,900) N	-3,774.7 N	Yes
Upper Thorax Rib Displacement	34 - 43 mm	33.9 mm	No
Center Thorax Rib Displacement	34 - 43 mm	37.2 mm	Yes
Lower Thorax Rib Displacement	34 - 43 mm	36.7 mm	Yes
Upper Spine Lateral Acceleration	12 - 17 g	15.7 g	Yes
Lower Spine Lateral Acceleration	15 - 21 g	15.4 g	Yes

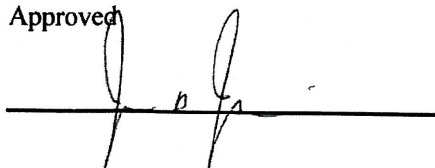
Test does not meet specifications.

Comments:

Technician



Approved

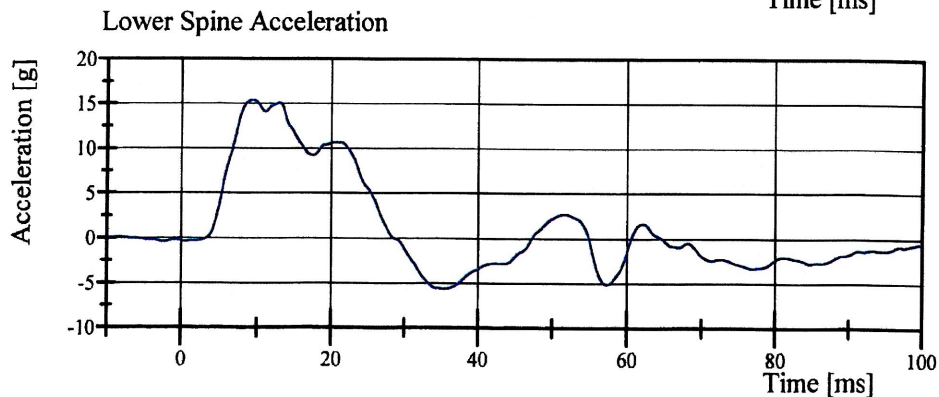
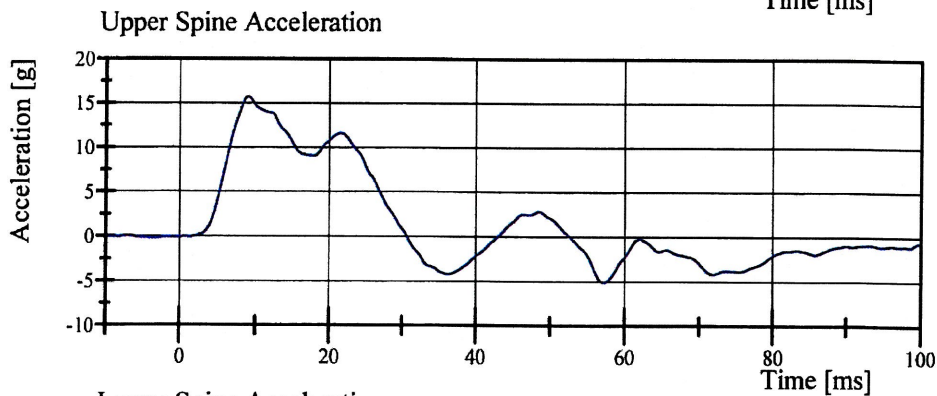
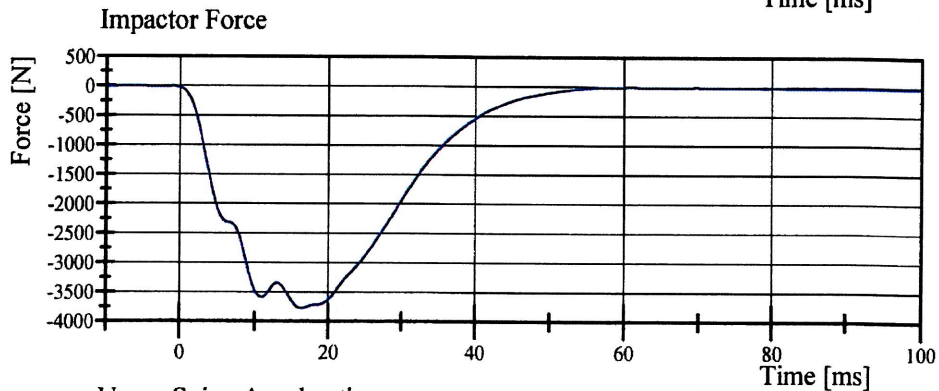
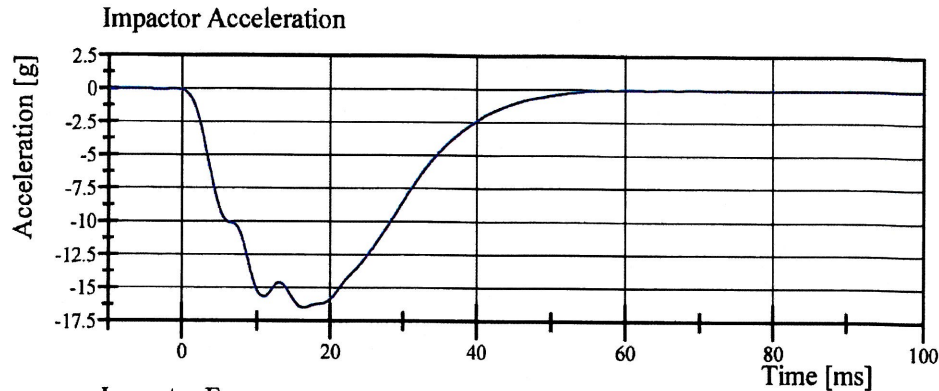


Transportation Research Center Inc.

Left Lateral Thorax without Arm

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-3

Test Date: 2/9/2010



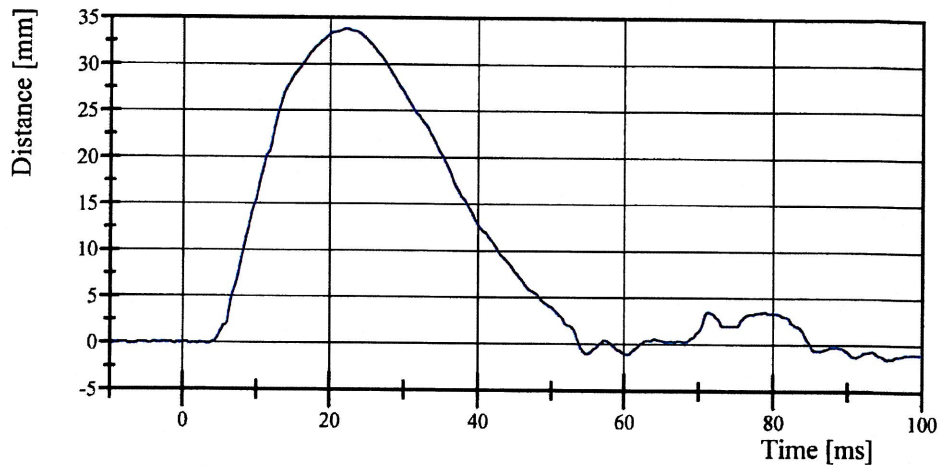
Transportation Research Center Inc.

Left Lateral Thorax without Arm

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-3

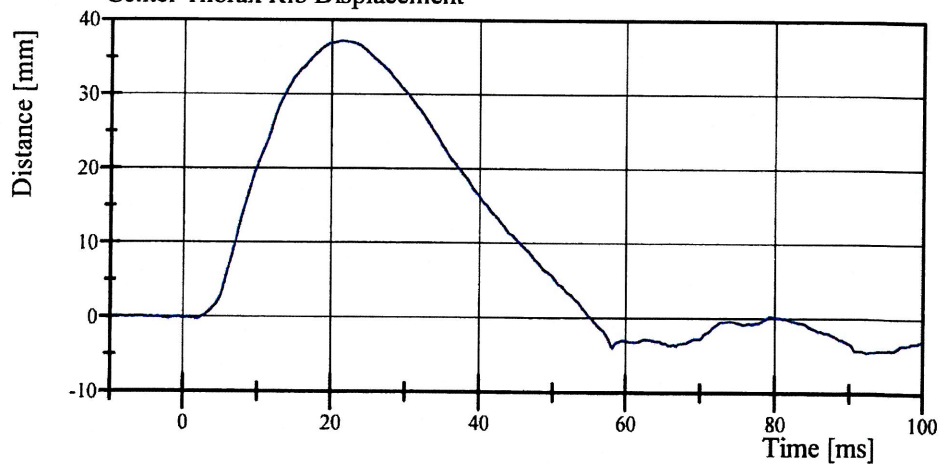
Test Date: 2/9/2010

Upper Thorax Rib Displacement



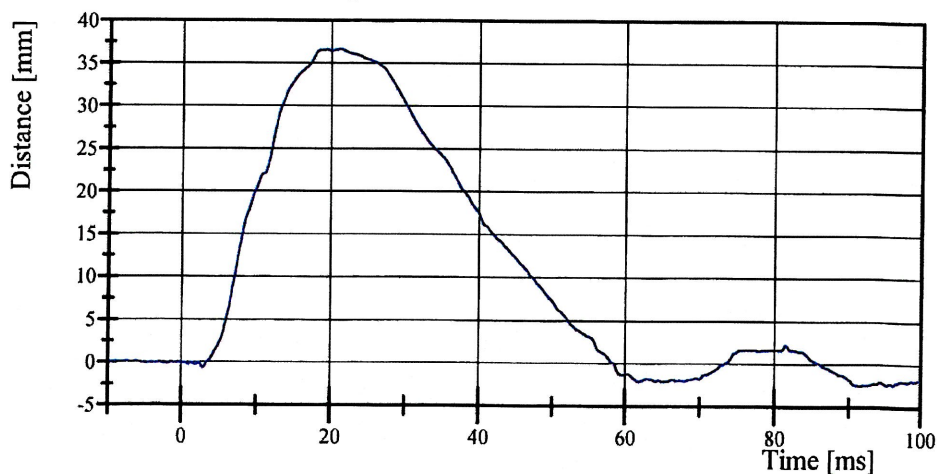
Filter Class: CFC_600
Max: 33.9 mm at 22.2 ms
Min: -1.5 mm at 95.4 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 37.2 mm at 21.4 ms
Min: -4.5 mm at 92.4 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 36.7 mm at 21.2 ms
Min: -2.5 mm at 91.5 ms

Transportation Research Center Inc.

Left Lateral Abdomen

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-3

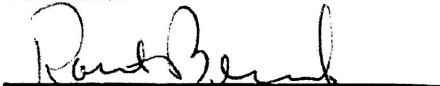
Test Date: 2/9/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	26 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.29 m/s	Yes
Impactor Force	(-2,600) - (-3,300) N	-2,790.1 N	Yes
Upper Abdominal Rib Displacement	33 - 41 mm	37.0 mm	Yes
Lower Abdominal Rib Displacement	31 - 39 mm	32.6 mm	Yes
Lower Spine Lateral Acceleration	15 - 20 g	15.9 g	Yes

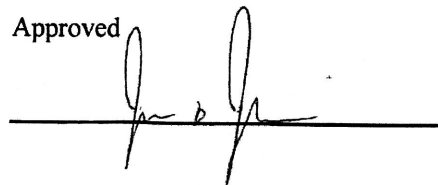
Test meets specifications.

Comments:

Technician



Approved

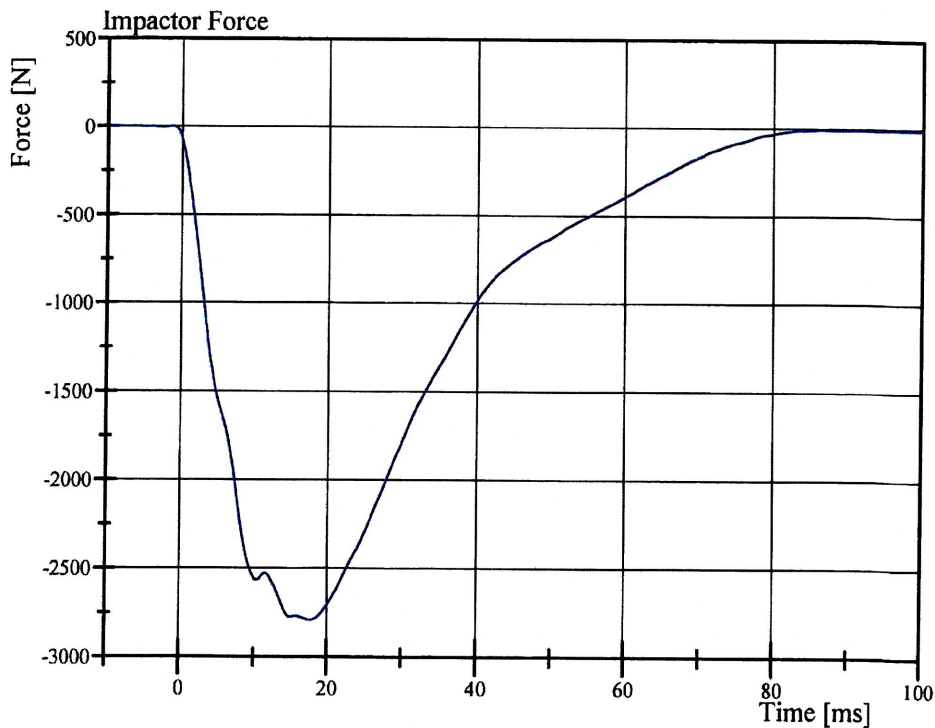
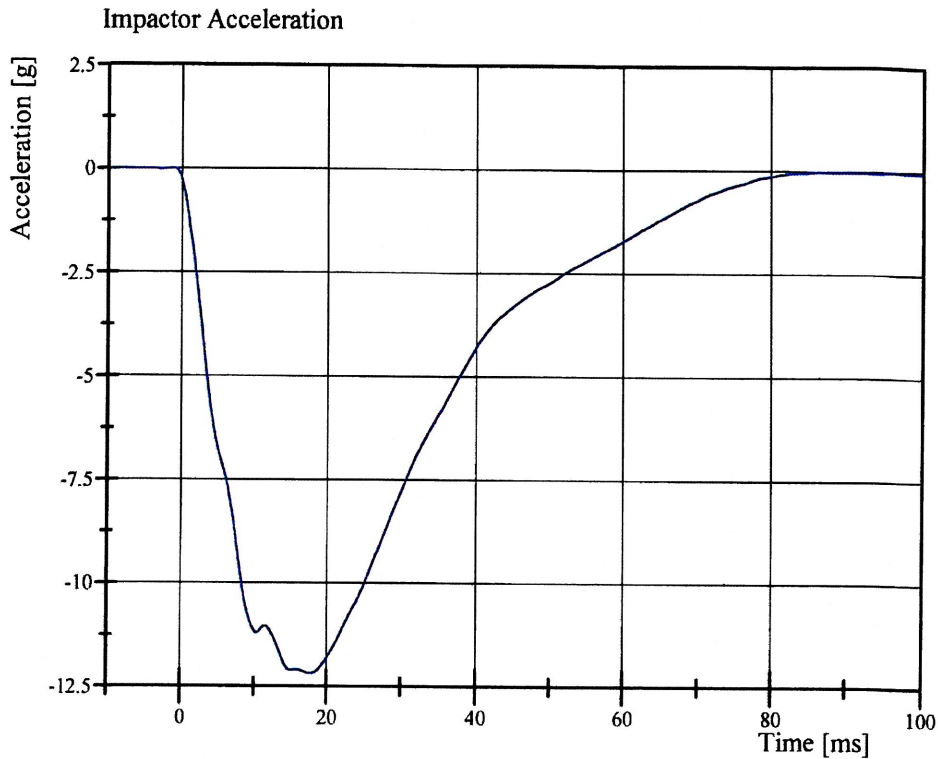


Transportation Research Center Inc.

Left Lateral Abdomen

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-3

Test Date: 2/9/2010



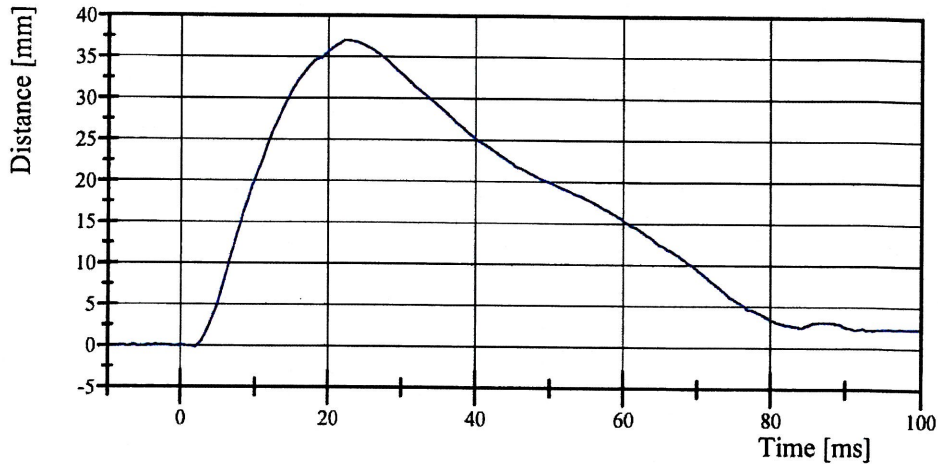
Transportation Research Center Inc.

Left Lateral Abdomen

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-3

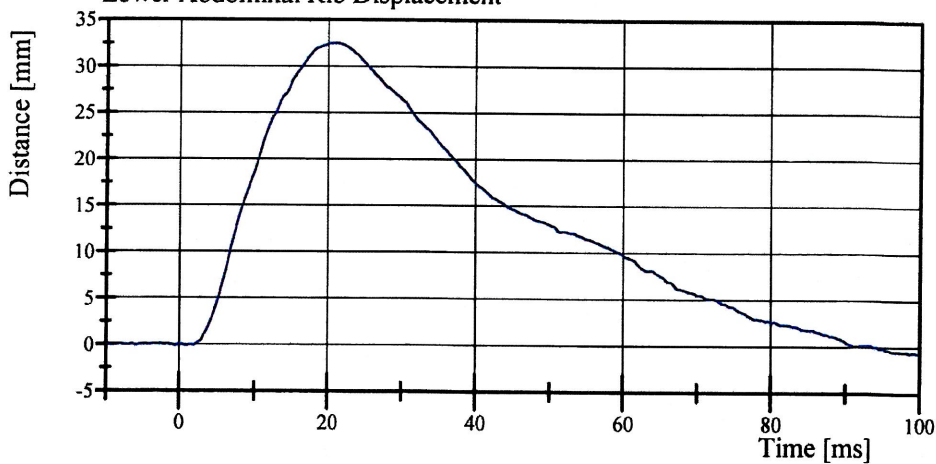
Test Date: 2/9/2010

Upper Abdominal Rib Displacement



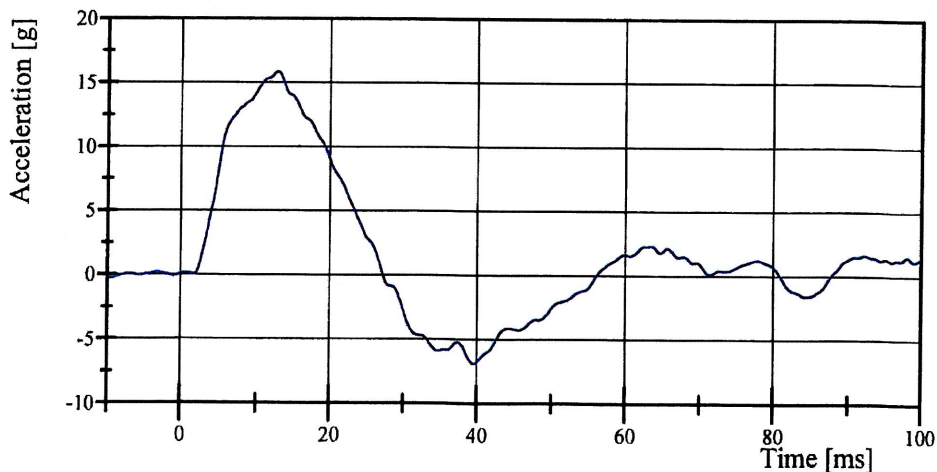
Filter Class: CFC_600
Max: 37.0 mm at 22.4 ms
Min: -0.2 mm at 1.8 ms

Lower Abdominal Rib Displacement



Filter Class: CFC_600
Max: 32.6 mm at 21.2 ms
Min: -0.8 mm at 100.0 ms

Lower Spine Acceleration (Y)



Filter Class: CFC_180
Max: 15.9 g at 12.9 ms
Min: -6.9 g at 39.6 ms

Transportation Research Center Inc.

Left Lateral Pelvis

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-2

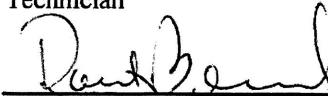
Test Date: 2/9/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Impactor Velocity	6.6 - 6.8 m/s	6.76 m/s	Yes
Impactor Force	(-6,300) - (-7,800) N	-7,500.4 N	Yes
Pelvis Lateral Acceleration	41 - 51 g	43.1 g	Yes
Lower Spine Lateral Acceleration	10 - 14 g	11.4 g	Yes

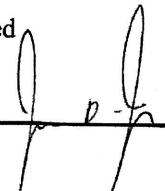
Test meets specifications.

Comments:

Technician



Approved

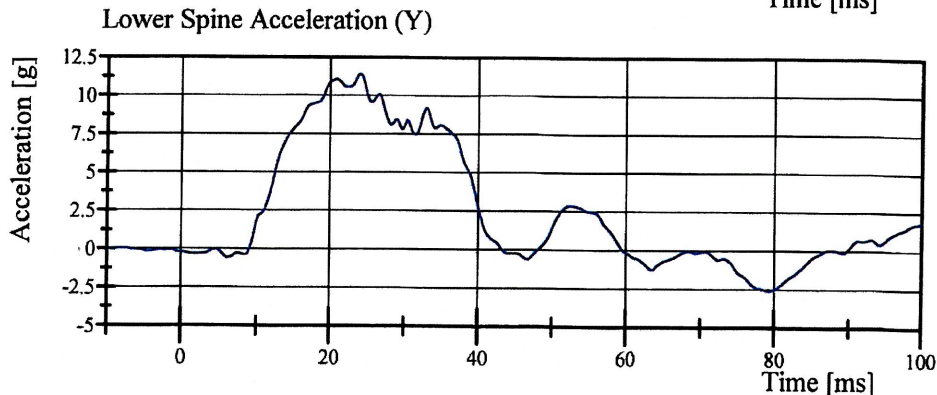
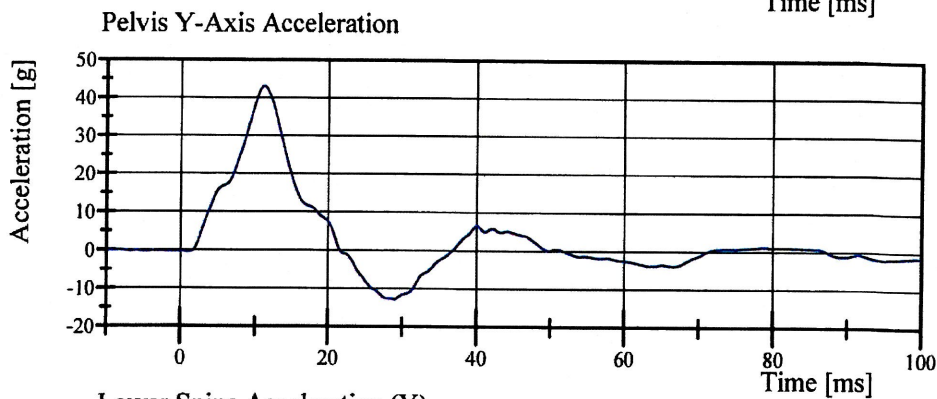
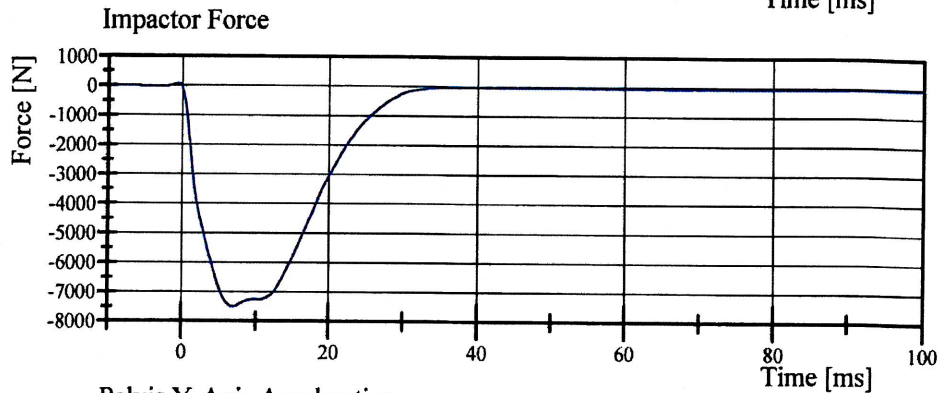
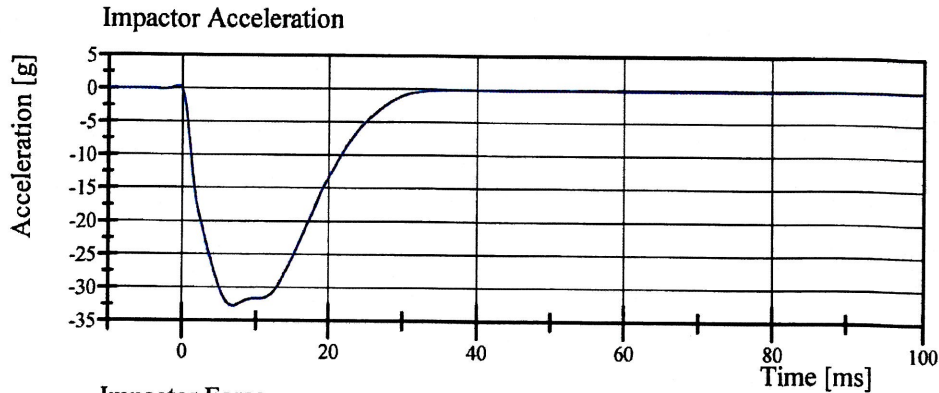


Transportation Research Center Inc.

Left Lateral Pelvis

WorldSID ISO 15830-2 Serial No. 016 Certification No. 7-2

Test Date: 2/9/2010



Appendix D

Test Equipment List and Calibration Information

Sign Convention
SAE J211 MAR95

Accelerometers:

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

Potentiometers:

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

Rotation potentiometers:

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

Load cells:

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

Neck load cells:

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

Tibia load cells:

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

Sign Convention (Continued)
SAE J211 MAR95

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

Frequency Response Classes
SAE J211 MAR95

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

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

Channel Report Test Number 100617

Ref	Transducer ID	ISO Signal Identifier	Description	FScale	Units	Polarity	Assembly
1	Trig D1	10ZERO000000VO0A	EVENT	1	Logic	Bipolar	
2	P64907	10VEHCCG0000ACXA	Vehicle Center of Gravity X-Axis Acceleration	2000	g	Bipolar	
3	P64889	10VEHCCG0000ACYA	Vehicle Center of Gravity Y-Axis Acceleration	2000	g	-Bipolar	
4	P63160	10VEHCCG0000ACZA	Vehicle Center of Gravity Z-Axis Acceleration	2000	g	Bipolar	
5	P62202	11SILBRE0100ACYA	LEFT SIDE SILL Between A-Pillar & Impact Poir	2000	g	Bipolar	
6	P62623	14SILBFR0000ACYA	Left A Pillar Side Sill Y-Axis Acceleration (Locati	2000	g	Bipolar	
7	P61996	11APILLO0000ACYA	Left Lower A-Pillar Y-Axis Acceleration 1/3 from	2000	g	-Bipolar	
8	P62006	11APILMI0000ACYA	Left Mid A-Pillar Y-Axis Acceleration 2/3 from flo	2000	g	-Bipolar	
9	P64866	14SILBRE0000ACYA	Left Side Sill at Rear Seat Y-Axis Acceleration (	2000	g	Bipolar	
10	P63198	14BPILLO0000ACYA	Left Lower B-Pillar Y-Axis Acceleration 1/3 from	2000	g	-Bipolar	
11	P62550	14BPILMI0000ACYA	Left Mid B-Pillar Y-Axis Acceleration 2/3 from flc	2000	g	-Bipolar	
12	P63117	11SETRFR0000ACYA	Left Front Seat Track @ H-Point Y-Axis Acceler:	2000	g	Bipolar	
13	P64913	12ENGNTF0000ACXA	Top of Engine X-Axis Acceleration (Location 10)	2000	g	-Bipolar	
14	P64910	12ENGNTF0000ACYA	Top of Engine Y-Axis Acceleration (Location 10)	2000	g	-Bipolar	
15	P66891	12VEHC000000ACYA	Firewall Centerline Y-Axis Acceleration (Locatio	2000	g	Bipolar	
16	P66736	13ROOF000000ACYA	Right Side Roof Rail (in line with impact point) Y	2000	g	-Bipolar	
17	P45012	13SILBFR0000ACYA	Right Side Floor Sill (in-line with impact location)	2000	g	-Bipolar	
18	P62830	18DECK000000ACXA	Rear Deck Centerline Behind Rear Axle X-Axis ,	2000	g	Bipolar	
19	P61319	18DECK000000ACYA	Rear Deck Centerline Behind Rear Axle Y-Axis ,	2000	g	Bipolar	
20	ARS-1500-ARS1055	10VEHCCG0000AVXA	VEHICLE CENTER OF GRAVITY (X) ROLL RA	1500	%s	Bipolar	
21	ARS-1500-ARS0737	10VEHCCG0000AVYA	VEHICLE CENTER OF GRAVITY (Y) PITCH R/	1500	%s	Bipolar	
22	ARS-1500-ARS2722	10VEHCCG0000AVZA	VEHICLE CENTER OF GRAVITY (Z) YAW RAT	1500	%s	Bipolar	
23	ABFire1	11AIRBTPL000EV0A	Driver Side Curtain Fire Inductor 1018	5	V	Bipolar	
24	ABFire2	11AIR02N0000EVOA	LH Torso Airbag Fire Inductor 1024	5	V	Bipolar	
25	Bit.00	11CONT000001VO00	Head Contact Switch	1	Logic	Bipolar	
26	Bit.01	11CONT000002VO00	Shoulder Contact Switch	1	Logic	Bipolar	
27	Bit.02	11CONT000003VO00	Torso Contact Switch	1	Logic	Bipolar	
28	Bit.03	11CONT000004VO00	Left Contact Switch	1	Logic	Bipolar	
29	68047	K0FBAR010000FOXA	POLE LOAD CELL 1	222400	N	Bipolar	0-Barrier 201 Pole.001
30	1220TX-50K-68054	K0FBAR020000FOXA	POLE LOAD CELL 2	222400	N	Bipolar	0-Barrier 201 Pole.002
31	1220TX-50K-68056A	K0FBAR030000FOXA	POLE LOAD CELL 3	222400	N	Bipolar	0-Barrier 201 Pole.003
32	1220BZY-50K-122061A	K0FBAR040000FOXA	POLE LOAD CELL 4	222400	N	Bipolar	0-Barrier 201 Pole.004
33	1220TX-50K-68022A	K0FBAR050000FOXA	POLE LOAD CELL 5	222400	N	Bipolar	0-Barrier 201 Pole.005
34	1220BZY-50K-122067A	K0FBAR060000FOXA	POLE LOAD CELL 6	222400	N	Bipolar	0-Barrier 201 Pole.006
35	1220BZY-50K-122027A	K0FBAR070000FOXA	POLE LOAD CELL 7	222400	N	Bipolar	0-Barrier 201 Pole.007
36	1220BZY-50K-114016A	K0FBAR080000FOXA	POLE LOAD CELL 8	222400	N	Bipolar	0-Barrier 201 Pole.008

Command File Test Number 100617

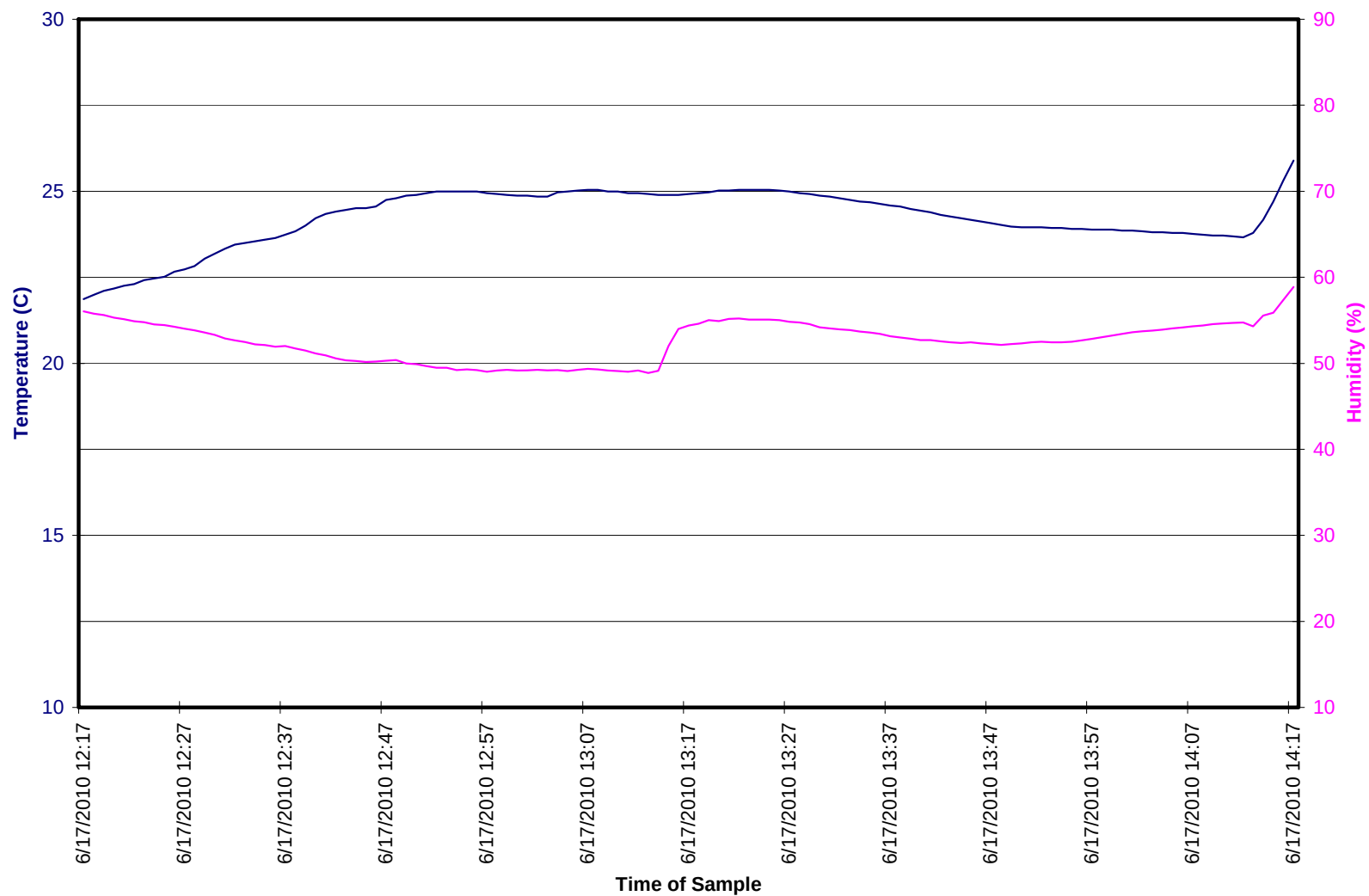
Chan	ISO mnemonic	Channel Title	Filter	Flip	Zerc	Full	Scale
1	11HEADCG00WSACXP	Head X-Axis Acceleration	1000	+	yes	2000	
2	11HEADCG00WSACYP	Head Y-Axis Acceleration	1000	+	yes	2000	
3	11HEADCG00WSACZP	Head Z-Axis Acceleration	1000	+	yes	2000	
3A	11HEADCG00WSACRA	Head Resultant Acceleration	1000				
4	11HEADCG00WSANXP	Head X-Axis Angular Displacement	1000	+	yes	50000	
5	11HEADCG00WSANYP	Head Y-Axis Angular Displacement	1000	+	yes	50000	
6	11HEADCG00WSANZP	Head Z-Axis Angular Displacement	1000	+	yes	50000	
7	11NECKUP00WSFOXP	Upper Neck X-Axis Force	1000	+	yes	10000	
8	11NECKUP00WSFOYP	Upper Neck Y-Axis Force	1000	+	yes	10000	
9	11NECKUP00WSFOZP	Upper Neck Z-Axis Force	1000	+	yes	12000	
10	11NECKUP00WSMOXP	Upper Neck Moment About X Axis	600	+	yes	300	
11	11NECKUP00WSMOYP	Upper Neck Moment About Y Axis	600	+	yes	300	
12	11NECKUP00WSMOZP	Upper Neck Moment About Z Axis	600	+	yes	200	
13	11NECKLO00WSFOXP	Lower Neck X-Axis Force	1000	+	yes	10000	
14	11NECKLO00WSFOYP	Lower Neck Y-Axis Force	1000	+	yes	10000	
15	11NECKLO00WSFOZP	Lower Neck Z-Axis Force	1000	+	yes	12000	
16	11NECKLO00WSMOXP	Lower Neck Moment About X Axis	600	+	yes	300	
17	11NECKLO00WSMOYP	Lower Neck Moment About Y Axis	600	+	yes	300	
18	11NECKLO00WSMOZP	Lower Neck Moment About Z Axis	600	+	yes	200	
19	11SHLDLE00WSFOXP	Shoulder X-Axis Force	600	+	yes	5000	
20	11SHLDLE00WSFOYP	Shoulder Y-Axis Force	600	+	yes	10000	
21	11SHLDLE00WSFOZP	Shoulder Z-Axis Force	600	+	yes	5000	
22	11SHLDLE00WSDSYP	Shoulder Y-Axis Displacement	600	+	yes	90	
23	11SHLDLE00WSACXP	Shoulder X-Axis Acceleration	1000	+	yes	2000	
24	11SHLDLE00WSACYP	Shoulder Y-Axis Acceleration	1000	+	yes	2000	
25	11SHLDLE00WSACZP	Shoulder Z-Axis Acceleration	1000	+	yes	2000	
25A	11SHLDLE00WSACRA	Shoulder Resultant Acceleration	1000				
26	11THSP0100WSACXP	T1 X-Axis Acceleration	180	+	yes	2000	
27	11THSP0100WSACYP	T1 Y-Axis Acceleration	180	+	yes	2000	
28	11THSP0100WSACZP	T1 Z-Axis Acceleration	180	+	yes	2000	
28A	11THSP0100WSACRA	T1 Resultant Acceleration	180				
29	11THSP0400WSACXP	T4 X-Axis Acceleration	180	+	yes	2000	
30	11THSP0400WSACYP	T4 Y-Axis Acceleration	180	+	yes	2000	
31	11THSP0400WSACZP	T4 Z-Axis Acceleration	180	+	yes	2000	
31A	11THSP0400WSACRA	T4 Resultant Acceleration	180				
32	11THSP1200WSACXP	T12 X-Axis Acceleration	180	+	yes	2000	
33	11THSP1200WSACYP	T12 Y-Axis Acceleration	180	+	yes	2000	
34	11THSP1200WSACZP	T12 Z-Axis Acceleration	180	+	yes	2000	
34A	11THSP1200WSACRA	T12 Resultant Acceleration	180				

Chan	ISO mnemonic	Channel Title	Filter	Flip	Zerc	Full Scale
35	11TRRILE01WSDSYP	Thorax Rib 1 Y-Axis Displacement	600	+	yes	90
36	11TRRILE01WSACXP	Thorax Rib 1 X-Axis Acceleration	1000	+	yes	2000
37	11TRRILE01WSACYP	Thorax Rib 1 Y-Axis Acceleration	1000	+	yes	2000
38	11TRRILE01WSACZP	Thorax Rib 1 Z-Axis Acceleration	1000	+	yes	2000
38A	11TRRILE01WSACRA	Thorax Rib 1 Resultant Acceleration	1000			
39	11TRRILE02WSDSYP	Thorax Rib 2 Y-Axis Displacement	600	+	yes	90
40	11TRRILE02WSACXP	Thorax Rib 2 X-Axis Acceleration	1000	+	yes	2000
41	11TRRILE02WSACYP	Thorax Rib 2 Y-Axis Acceleration	1000	+	yes	2000
42	11TRRILE02WSACZP	Thorax Rib 2 Z-Axis Acceleration	1000	+	yes	2000
42A	11TRRILE02WSACRA	Thorax Rib 2 Resultant Acceleration	1000			
43	11TRRILE03WSDSYP	Thorax Rib 3 Y-Axis Displacement	600	+	yes	90
44	11TRRILE03WSACXP	Thorax Rib 3 X-Axis Acceleration	1000	+	yes	2000
45	11TRRILE03WSACYP	Thorax Rib 3 Y-Axis Acceleration	1000	+	yes	2000
46	11TRRILE03WSACZP	Thorax Rib 3 Z-Axis Acceleration	1000	+	yes	2000
46A	11TRRILE03WSACRA	Thorax Rib 3 Resultant Acceleration	1000			
47	11ABRILE01WSDSYP	Abdominal Rib 1 Y-Axis Displacement	600	+	yes	90
48	11ABRILE01WSACXP	Abdominal Rib 1 X-Axis Acceleration	1000	+	yes	2000
49	11ABRILE01WSACYP	Abdominal Rib 1 Y-Axis Acceleration	1000	+	yes	2000
50	11ABRILE01WSACZP	Abdominal Rib 1 Z-Axis Acceleration	1000	+	yes	2000
50A	11ABRILE01WSACRA	Abdominal Rib 1 Resultant Acceleration	1000			
51	11ABRILE02WSDSYP	Abdominal Rib 2 Y-Axis Displacement	600	+	yes	90
52	11ABRILE02WSACXP	Abdominal Rib 2 X-Axis Acceleration	1000	+	yes	2000
53	11ABRILE02WSACYP	Abdominal Rib 2 Y-Axis Acceleration	1000	+	yes	2000
54	11ABRILE02WSACZP	Abdominal Rib 2 Z-Axis Acceleration	1000	+	yes	2000
54A	11ABRILE02WSACRA	Abdominal Rib 2 Resultant Acceleration	1000			
55	11LUSP0000WSFOXP	Lumbar X-Axis Force	600	+	yes	10000
56	11LUSP0000WSFOYP	Lumbar Y-Axis Force	600	+	yes	10000
57	11LUSP0000WSFOZP	Lumbar Z-Axis Force	600	+	yes	12000
58	11LUSP0000WSMOXP	Lumbar Moment About X Axis	600	+	yes	300
59	11LUSP0000WSMOYP	Lumbar Moment About Y Axis	600	+	yes	300
60	11LUSP0000WSMOZP	Lumbar Moment About Z Axis	600	+	yes	200
61	11PELVCG00WSACXP	Pelvis X-Axis Acceleration	1000	+	yes	2000
62	11PELVCG00WSACYP	Pelvis Y-Axis Acceleration	1000	+	yes	2000
63	11PELVCG00WSACZP	Pelvis Z-Axis Acceleration	1000	+	yes	2000
63A	11PELVCG00WSACRA	Pelvis Resultant Acceleration	1000			
64	11SACRLE00WSFOXP	Sacro-Iliac Left X-Axis Force	600	+	yes	6000
65	11SACRLE00WSFOYP	Sacro-Iliac Left Y-Axis Force	600	+	yes	6000
66	11SACRLE00WSFOZP	Sacro-Iliac Left Z-Axis Force	600	+	yes	6000
67	11SACRLE00WSMOXP	Sacro-Iliac Left Moment About X Axis	600	+	yes	1000
68	11SACRLE00WSMOYP	Sacro-Iliac Left Moment About Y Axis	600	+	yes	400

Chan	ISO mnemonic	Channel Title	Filter	Flip	Zerc	Full Scale
69	11SACRLE00WSMOZP	Sacro-Iliac Left Moment About Z Axis	600	+	yes	400
70	11SACRRI00WSFOXP	Sacro-Iliac Right X-Axis Force	600	+	yes	6000
71	11SACRRI00WSFOYP	Sacro-Iliac Right Y-Axis Force	600	+	yes	6000
72	11SACRRI00WSFOZP	Sacro-Iliac Right Z-Axis Force	600	+	yes	6000
73	11SACRRI00WSMOXP	Sacro-Iliac Right Moment About X Axis	600	+	yes	1000
74	11SACRRI00WSMOYP	Sacro-Iliac Right Moment About Y Axis	600	+	yes	400
75	11SACRRI00WSMOZP	Sacro-Iliac Right Moment About Z Axis	600	+	yes	400
76	11PUBC0000WSFOYP	Pubic Y-Axis Force	600	+	yes	12000
77	11FEMRLL00WSFOXP	Left Femur X-Axis Force	600	+	yes	10000
78	11FEMRLL00WSFOYP	Left Femur Y-Axis Force	600	+	yes	25000
79	11FEMRLL00WSFOZP	Left Femur Z-Axis Force	600	+	yes	10000
80	11KNEELE00WSFOYP	Left Knee Outboard Y-Axis Force	600	+	yes	20000
81	11KNEELEINWSFOYP	Left Knee Inboard Y-Axis Force	600	+	yes	20000
82	11FEMRRL00WSFOXP	Right Femur X-Axis Force	600	+	yes	10000
83	11FEMRRL00WSFOYP	Right Femur Y-Axis Force	600	+	yes	25000
84	11FEMRRL00WSFOZP	Right Femur Z-Axis Force	600	+	yes	10000
85	10VEHCCG0000ACXA	Vehicle Center of Gravity X-Axis Acceleration	60	+	yes	2000
86	10VEHCCG0000ACYA	Vehicle Center of Gravity Y-Axis Acceleration	60	+	yes	2000
87	10VEHCCG0000ACZA	Vehicle Center of Gravity Z-Axis Acceleration	60	+	yes	2000
87A	10VEHCCG0000ACRA	Vehicle Center of Gravity Resultant Acceleration	60			
88	10VEHCCG0000AVXA	Vehicle Center of Gravity Roll Rate Gyroscope	60	+	yes	1500
89	10VEHCCG0000AVYA	Vehicle Center of Gravity Pitch Rate Gyroscope	60	+	yes	1500
90	10VEHCCG0000AVZA	Vehicle Center of Gravity Yaw Rate Gyroscope	60	+	yes	1500
91	11SILBRE0100ACYA	Left Side Sill Near Impact Point Y-Axis Acceleration	60	+	yes	2000
92	14SILBFR0000ACYA	Left A-Pillar Side Sill Y-Axis Acceleration	60	+	yes	2000
93	11APILLO0000ACYA	Left Lower A-Pillar Y-Axis Acceleration	60	+	yes	2000
94	11APILMI0000ACYA	Left Mid A-Pillar Y-Axis Acceleration	60	+	yes	2000
95	14SILBRE0000ACYA	Left Side Sill at Rear Seat Y-Axis Acceleration	60	+	yes	2000
96	14BPILLO0000ACYA	Left Lower B-Pillar Y-Axis Acceleration	60	+	yes	2000
97	14BPILMI0000ACYA	Left Mid B-Pillar Y-Axis Acceleration	60	+	yes	2000
98	11SETRFR0000ACYA	Left Front Seat Track at H-Point Y-Axis Acceleration	60	+	yes	2000
99	12ENGNTPO000ACXA	Top of Engine X-Axis Acceleration	60	+	yes	2000
100	12ENGNTPO000ACYA	Top of Engine Y-Axis Acceleration	60	+	yes	2000
101	12VEHC000000ACYA	Firewall Y-Axis Acceleration	60	+	yes	2000
102	13ROOF000000ACYA	Right Side Roof Rail Y-Axis Acceleration	60	+	yes	2000
103	13SILBFR0000ACYA	Right Side Sill Y-Axis Acceleration	60	+	yes	2000
104	18DECK000000ACXA	Rear Deck Behind Rear Axle X-Axis Acceleration	60	+	yes	2000
105	18DECK000000ACYA	Rear Deck Behind Rear Axle Y-Axis Acceleration	60	+	yes	2000
106	11AIRBTPL000EVOA	Driver Side Curtain Inductor	1000	+	no	5
107	11AIR02N0000EVOA	Driver Torso Airbag Fire Inductor	1000	+	no	5

Chan	ISO mnemonic	Channel Title	Filter	Flip	Zerc	Full	Scale
108	11CONT000001VO00	Head Contact Switch	0	+	no		1
109	11CONT000002VO00	Shoulder Contact Switch	0	+	no		1
110	11CONT000003VO00	Torso Contact Switch	0	+	no		1
111	11CONT000004VO00	Left Contact Switch	0	+	no		1
112	K0FBAR010000FOXA	Pole Load Cell 1	60	+	yes	222400	
113	K0FBAR020000FOXA	Pole Load Cell 2	60	+	yes	222400	
114	K0FBAR030000FOXA	Pole Load Cell 3	60	+	yes	222400	
115	K0FBAR040000FOXA	Pole Load Cell 4	60	+	yes	222400	
116	K0FBAR050000FOXA	Pole Load Cell 5	60	+	yes	222400	
117	K0FBAR060000FOXA	Pole Load Cell 6	60	+	yes	222400	
118	K0FBAR070000FOXA	Pole Load Cell 7	60	+	yes	222400	
119	K0FBAR080000FOXA	Pole Load Cell 8	60	+	yes	222400	

2010 Buick LaCrosse Left Side FMVSS 214 Pole Impact 32 kph 100617; Test Time 14:17



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