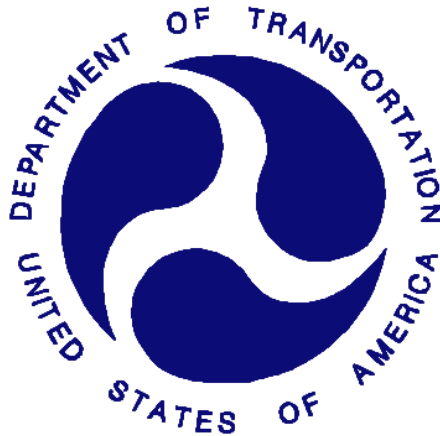


**NEW CAR ASSESSMENT PROGRAM (NCAP)
SIDE IMPACT POLE TEST**

**Nissan Motor Co., LTD.
2016 Nissan Rogue S AWD**

**PREPARED BY:
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Report Date: July 30, 2016

DRAFT REPORT

**PREPARED FOR:
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TRC TEST NUMBER: 160329

Project Manager, Melinda Lackey

Report Approved July 30, 2016:

Transportation Research Center Inc.

Final Report Accepted by:

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Date: 8/12/16

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Section 1

Purpose and Test Procedure

Purpose

This rigid pole side impact test is part of the Federal Motor Vehicle Safety Standard 214 Side Impact Protection program. It was conducted for the National Highway Traffic Safety Administration's (NHTSA) Vehicle Research and Test Center (VRTC) by Transportation Research Center Inc. (TRC Inc.). The purpose of this test was to perform crash tests with the WorldSID 50th dummy to refine the seating procedure and to evaluate dummy response. The test was conducted using the National Highway Traffic Safety Administration's new car assessment program (NCAP) or side impact rigid pole test procedure (TP-SPNCAP-POLE) dated October 2015 and VRTC guidance:

WorldSID-50M dummy was used instead of the SIDIIIs listed in the test procedure.

SECTION 2

SUMMARY OF TEST RESULTS

A 2016 Nissan Rogue S AWD impacted the rigid pole on the left side, at a velocity of 33.25 km/h (20.04 mph). The target vehicle was moving and was positioned at an angle of 285°. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, Ohio on March 29, 2016. Pre-test and post-test photographs of the test vehicle, the rigid pole, and the side impact dummy (WorldSID-50M) are included in Appendix A.

One restrained Side Impact Dummy (WorldSID-50M) S/N 016, was placed in the driver (Position #1) designated seating position according to the instructions specified in the VRTC WS50M Draft Seating Procedure¹. The dummy was calibrated prior to this test using specifications found in the Humanetics User Manual². The side impact test was documented by two (2) real-time cameras and nine (9) high-speed digital cameras. Camera locations and other pertinent camera information are included in this report.

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

The WorldSID dummy was instrumented with one-hundred twenty-seven (127) dummy channels of acceleration, force, moment, angle, and displacement data were collected for this test. It was also instrumented with a Ribeye system manufactured by Boxboro Systems³ in the chest in place of the IRTRACCs. Each rib (1 shoulder, 3 thorax, and 2 abdomen) had three LEDs placed at the middle, front and rear location to measure X, Y, and Z position location. The position measurements were used to calculate a change of length at each rib at each location.

Additional information about the Ribeye locations and calculations can be found in Appendix E. The 50th male WorldSID dummy had a fifty-nine (59) channel chest band on thorax rib 1 using only fifty-six (56) channels. The results of the chest band data can be found in Appendix F. All of the dummy channels are detailed in section 3 Table 1.

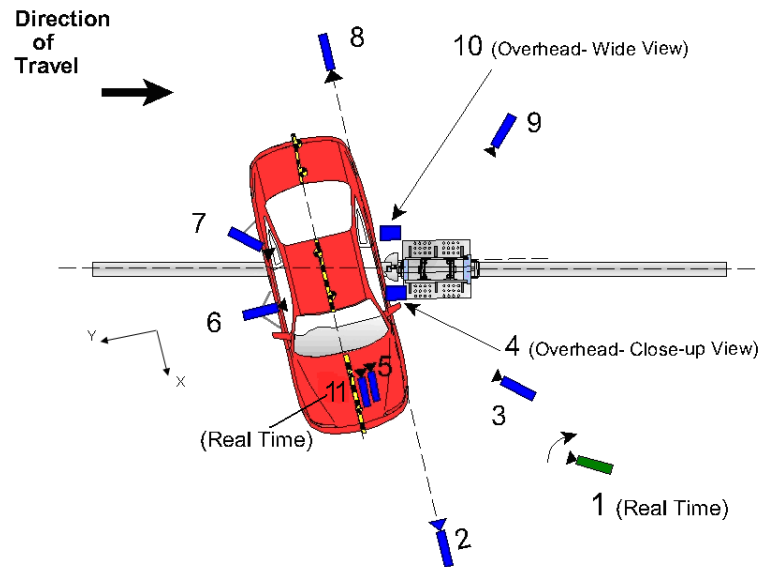
¹ See Appendix G for WorldSID Draft Seating Procedure used for this testing.

² Humanetics User Manual: <http://www.humaneticsatd.com>

³ <http://www.boxborosystems.com/ribeye.html>

A total of two-hundred twenty-one (221) channels of data were recorded. Appendix A contains pre-test and post-test photographs. Appendix B contains the vehicle, barrier and dummy response data traces. A summary of the side impact dummy (WorldSID-50M) configuration and verification test data can be found in Appendix C. Appendix D contains miscellaneous test information. Appendix E contains Ribeye information and Appendix F contains chest band information.

Test Results Summary



	Driver WorldSID 50th (#016)
HIC15 (g) CFC 1000	517
HIC36 (g) CFC 1000	609
BRIC Injury Criteria	.083
Shoulder Force (N) CFC 600	-1920
Maximum Shoulder Deflection (mm)	40
Maximum Thoracic Rib 1-3 Deflection (mm)	24
Maximum Abdomen Rib 1-2 Deflection (mm)	22
Lower Spine Resultant (g) CFC 180	45
Pelvis Resultant Acceleration	44
Pubic Symphysis Force (N) CFC 600	-1039
Sacro Iliac FY (N) CFC 600	--- ¹

¹ See data acquisitions explanations

	2016 Nissan Rogue S AWD
Vehicle Test Weight	1740.0 kg
Impact Point (Horizontal) rearward of front axle	1290 mm
Impact Angle	285°
Maximum Crush	390 mm Level 3
Impact Speed	32.25 km/h

Data Acquisition Explanations

Sacro-Iliac Left Y-Axis Force exceeded full scale between 25-60 milliseconds; due to data acquisition anomaly.

W50-30 Chest band strain gage recorded no valid data throughout the event.

Ribeye Position: Shoulder rear XYZ : Recorded questionable data between 41.0 to 50.0 milliseconds.

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Nissan Rogue S AWD
 Test Program: SPNCAP Side Impact

Test Date: 3/29/16

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.		Traction Control System (TCS)	Yes
Model Year	2016	Auto-Leveling System	No
Make	Nissan	Automatic Door Locks (ADL)	Yes
Model	Rogue S	Power Window Auto-Reverse	Yes
Body Style	MPV	Other Optional Feature	No
VIN	KNMAT2MV7GP615174	Driver Front Airbag	Yes
Body Color	Arctic Blue Metallic	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	32 mi	Driver Head/Torso Airbag	No
Engine Displacement (L)	2.5	Driver Torso Airbag	No
Type/No. Cylinders	4	Driver Torso/Pelvis Airbag	Yes
Engine Placement	Front/Transverse	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	No
Transmission Speeds	CVT	Rear Pass. Curtain Airbag	Yes
Overdrive	Yes	Rear Pass. Head/Torso Airbag	No
Final Drive	AWD	Rear Pass. Torso Airbag	No
Roof Rack	No	Rear Pass. Torso/Pelvis Airbag	No
Sunroof/T-Top	No	Rear Pass. Pelvis Airbag	No
Running Boards	No	Driver Seat Belt Pretensioner	Yes
Tilt Steering Wheel	Yes	Rear Pass. Seat Belt Pretensioner	No
Power Seats	No	Driver Load Limiter	Yes
Anti-Lock Brakes (ABS)	Yes	Rear Pass. Load Limiter	No
		Other Safety Restraint	No

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

No

DATA FROM CERTIFICATION LABEL

Manufactured By	Nissan Motor Co, LTD	GVWR (kg)	2122
Date of Manufacturer	10/15	GAWR Front (kg)	1072
Vehicle Type	MPV	GAWR Rear (kg)	1089

VEHICLE SEATING AND WEIGHT CAPACITY DATA

	Front	Rear	Third	Total
Designated Seating Capacity (DSC)	2	3		5
Vehicle Capacity Weight (VCW) (kg)				408
DSC X 68.04 kg				340.2
Rated Cargo and Luggage Weight (RCLW) (kg)				67.8

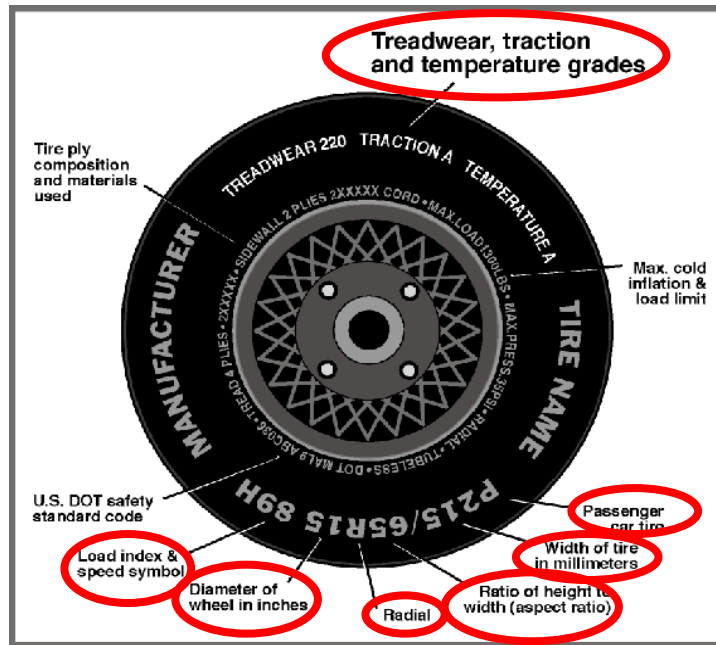
VEHICLE SEAT TYPE

Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						W/ Lever	W/ Knob
Front Seat	Yes					Yes	
Rear or Second Row Seat			Yes	Yes	Yes		
Third row seat							

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

Test Vehicle: 2016 Nissan Rogue S AWD
 Test Program: SPNCAP Side Impact

Test Date: 3/29/16



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	230	230
Recommended Tire Size	225/65R17	225/65R17
Tire Size on Vehicle	225/65R17	225/65R17
Tire Manufacturer	Kumho	Kumho
Tire Model	Solus KL21	Solus KL21
Treadwear	500	500
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2	2
Tire Plies Body	4	4
Load Index/Speed Symbol	102 H	102 H
Tire Material	Steel, Polyester, Nylon	Steel, Polyester, Nylon
DOT Safety Code Left	H2EJ YAL9 4115	H2EJ YAL9 4115
DOT Safety Code Right	H2EJ YAL9 4115	H2EJ YAL9 4115

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

Test Vehicle: 2016 Nissan Rogue S AWD

Test Program: SPNCAP Side Impact

Test Date: 3/29/16

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	262	262	262	276
Tire Placard	kPa	230	230	230	230
Owner's Manual	kPa				
As Tested	kPa	230	230	230	230

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	467.8	343.2		504.6	387.6		504.0	414.6	
Right	kg	455.2	335.8		470.8	377.0		457.8	376.0	
Ratio	%	57.6	42.4		56.1	43.9		54.9	45.1	
Totals	kg	923.0	679.0	1602.0	975.4	764.6	1740.0	961.8	790.6	1752.4

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	1602.0	(A)
Actual Weight of 1 ATD (WorldSID) Dummy Used	kg	75.0	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	67.8	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1744.8	(A+B+C)

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight – 4.5 kg to 9 kg)? ☒ YES ☐ NO

TEST VEHICLE ATTITUDES AND CG

	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	Deg.	-1.1	-.08	-0.8	Yes
Front Passenger Sill Angle (front-to-rear)*	Deg.	-0.7	-.05	-0.5	Yes
Front Bumper-Line Angle (left-to-right)**	Deg.	0.0	-.02	-0.2	Yes
Rear Bumper-Line Angle (left-to-right)**	Deg.	-0.3	-0.4	-0.4	Yes
Vehicle CG (Aft of Front Axle)	mm	1147	1188	1221	
Vehicle CG (Left (+) / Right (-) from longitudinal Centerline)	mm	+10	+21	+38	

*ND=Nose Down (-), NU=Nose Up (+) **LD=Left Down (-), LU=Left Up (+)

*** The "As Tested" vehicle attitude measurements must be equal to or between the "As Delivered" and "Fully Loaded" vehicle attitude measurements. Indicate "Yes" or "No" for "Meets Requirements".

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Ballast:	0.0
Components removed: Rear bumper beam and fascia, left and rear tail lights, interior tailgate trim panel and rear wheel arch moldings,	18.0

Test height adjustable suspension setting, if applicable:

N/A

DATA SHEET NO. 2

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

Test Vehicle: 2016 Nissan Rogue S AWD

Test Program: SPNCAP Side Impact

Test Date: 3/29/16

SCRL ANGLE RANGE

Seat	SCRL(°)		
	Max.	Min.	Mid
Driver Seat	14.7	11.4	13.1
Front Passenger Seat			12.9
Front Center Seat*			
Struck Side Rear Seat			
Non-Struck Side Rear Seat			
Rear Center Seat*			

* If applicable.

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRIP Height (mm)	SCRIP Height Position	SCRIP Height (mm)		
				Rearmost	Mid- Fore/Aft	Forward- Most
Driver Seat	13.1	235 at MT -20 mm	Max			
			Mid	229	237	324
			Min			
Front Passenger Seat	12.9	248	Max			
			Mid	240	248	335
			Min			
Front Center Seat*			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max			
			Mid			
			Min			
Non-Struck Side Rear Seat	Fixed	Fixed	Max			
			Mid			
			Min			
Rear Center Seat*	Fixed	Fixed	Max			
			Mid			
			Min			

* If applicable.

DATA SHEET NO. 2 (CONTINUED)

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

Test Vehicle: 2016 Nissan Rogue S AWD

Test Program: SPNCAP Side Impact

Test Date: 3/29/16

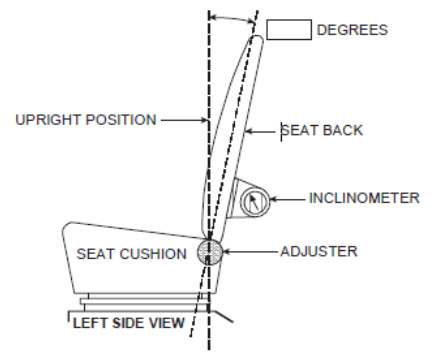
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position from Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	240	25	140	15
Front Passenger Seat	240	25	120	13
Front Center Seat*				
Struck Side Rear Seat	230	15	0	0
Non-Struck Side Rear Seat	230	15	0	0
Rear Center Seat*	230	15	0	0

* If applicable.

Driver seat: The driver's seat back is positioned at 3.3° measured at the head rest post per Form 1 instructions. The seat was positioned 20 millimeters rearward of mid-track fore and aft travel.

Right Front Passenger Seat: The right front passenger seat back was positioned in a similar manner as the driver's seat back.



FRONT SEAT ASSEMBLY

Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detent*
Driver Seat w/ Seated Dummy			3.3	8
Front Passenger Seat			3.1	8
Front Center Seat*				
Struck Side Rear Seat	18.1	10	0	0
Non-Struck Side Rear Seat	18.3	10	0	0
Rear Center Seat*	18.1	10	0	0

* If applicable.

SEAT BELT ANCHORAGE ADJUSTMENT

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

	Total # of Positions	Placed in Position #
Driver Seat	4	1

HEAD RESTRAINT ADJUSTMENT

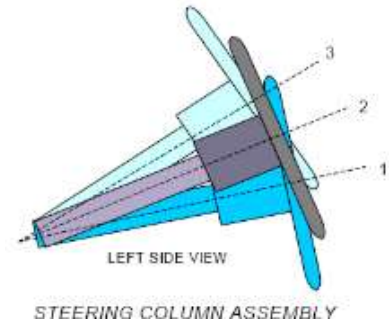
Head restraints are adjusted to the highest and full rearward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	4	1

DATA SHEET NO. 2 (CONTINUED)**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA**Test Vehicle: 2016 Nissan Rogue S AWDTest Program: SPNCAP Side ImpactTest Date: 3/29/16**STEERING COLUMN ADJUSTMENT**

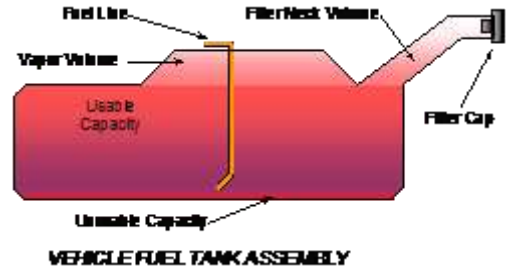
Steering wheel and column adjustments are made so that the steering wheel geometric locus it describes when moved through its full range of motion.

	Degrees	Fore/Aft Position, mm
Lowermost, Position No. 1	29.5	
Geometric Center, Position No. 2	27.0	
Uppermost, Position No. 3	24.5	
Telescoping Steering Wheel Travel		
Test Position	27.0	

**FUEL PUMP**

Describe the fuel pump type, details about how it operates and the location of the fuel filler neck:

Pump will run for about 3 seconds when the key is turned on and then will not run unless the engine is cranking or running

**FUEL TANK CAPACITY****VEHICLE FUEL TANK ASSEMBLY**

	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	54.9
Usable Capacity of "Optional" Tank (see Form No. 1)	
Usable Capacity of Standard Tank (see Owner's Manual)	54.9
Usable Capacity of Optional Tank (see Owner's Manual)	
93% of Usable Capacity	51.1
Actual Amount of Solvent Used in Test	51.1
1/3 of Usable Capacity	18.3

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

Table 1 WorldSID Instrumentation Data

Test Vehicle: 2016 Nissan Rogue S AWD

Test Program: SPNCAP Side Impact

Test Date: 3/29/16

Driver Dummy Serial Number: 016

Location		Positive Direction		Negative Direction	
		Max.	Time (ms)	Max.	Time (ms)
Head Acceleration (g)	X	6.24	146.40	-18.73	51.05
	Y	68.84	50.65	-11.60	132.60
	Z	14.36	49.70	-0.94	86.30
	R	72.41	50.70		
Head Angular Velocity	X	1932.84	76.55	-1198.03	189.25
	Y	411.00	300.85	-887.30	238.35
	Z	911.32	76.20	-1473.98	217.20
Upper Neck Force	X	166.11	150.90	-244.62	75.60
	Y	284.67	39.65	-465.10	146.75
	Z	1089.01	48.20	-57.72	86.65
Upper Neck Moment	X	9.67	68.25	-38.93	83.15
	Y	14.70	85.45	-17.49	40.20
	Z	22.43	237.80	-19.06	91.15
Lower Neck Force	X	315.85	147.15	-331.53	41.15
	Y	631.13	40.30	-652.58	128.90
	Z	1235.54	48.45	-327.68	149.35
Lower Neck Moment	X	54.08	41.20	-108.16	137.65
	Y	39.97	75.05	-50.06	166.15
	Z	23.28	236.80	-21.29	101.30
T1 Acceleration (g)	X	6.36	142.10	-14.27	18.00
	Y	36.98	32.80	-12.41	123.10
	Z	9.62	54.30	-3.39	129.15
	R	39.09	32.80		
T4 Acceleration (g)	X	5.10	143.25	-11.11	33.70
	Y	37.45	33.15	-9.08	123.20
	Z	10.43	54.45	-3.79	102.10
	R	39.16	33.15		
T12 Acceleration (g)	X	5.41	119.55	-14.75	22.45
	Y	44.13	40.55	-10.01	90.35
	Z	6.87	54.60	-5.98	102.65
	R	44.68	40.55		

Table 1 WorldSID Instrumentation Data (Continued)

Test Vehicle: 2016 Nissan Rogue S AWD
 Test Program: SPNCAP Side Impact

Test Date: 3/29/16

Driver Dummy Serial Number: 016

Location		Positive Direction		Negative Direction	
		Max.	Time (ms)	Max.	Time (ms)
Shoulder Force (N)	X	138.00	248.25	-530.77	19.30
	Y	65.06	103.05	-1920.05	34.55
	Z	846.35	34.60	-66.99	107.95
Pubic Symphysis (N)	Y	9.89	17.00	-1038.79	43.30
Sacro-Iliac Left Force (N)*	X	106.48	19.50	-445.21	50.95
	Y	3.42	-14.75	-1648.80	54.25
	Z	190.90	107.80	-328.06	61.75
Sacro-Iliac Left Moment (Nm)	X	14.93	259.75	-43.34	45.45
	Y	24.11	50.80	-6.38	29.80
	Z	25.19	39.80	-18.69	63.45
Lumbar Force (N)	X	356.57	60.55	-225.98	19.50
	Y	662.08	44.90	-122.61	23.25
	Z	1075.51	60.60	-129.94	105.50
Lumbar Moment (Nm)	X	39.79	129.65	-12.94	23.40
	Y	9.89	19.60	-18.00	50.20
	Z	11.31	49.25	-9.10	97.65
Pelvis Acceleration (g)	X	9.22	60.95	-10.00	22.80
	Y	42.25	39.50	-17.00	81.80
	Z	8.57	18.95	-6.23	118.10
	R	42.60	39.50		
Left Femur Force (N)	X	23.47	21.15	-163.09	34.70
	Y	113.91	46.40	-143.41	122.55
	Z	406.18	58.55	-82.81	20.75
Left Femur Moment (Nm)	X	144.61	37.70	-3.84	20.45
	Y	50.99	36.35	-20.80	91.20
	Z	16.02	41.40	-13.86	90.25
Left Femoral Neck Force (N)	X	282.26	37.95	-187.11	92.30
	Y	44.33	260.45	-1349.29	36.90
	Z	17.39	-12.50	-1241.42	42.05

*Sacro-Iliac Left Y-Axis Force exceeded full scale between 25-60 milliseconds; due to data acquisition anomaly.

Table 1 WorldSID Instrumentation Data, (Continued)

Test Vehicle: 2016 Nissan Rogue S AWD
 Test Program: SPNCAP Side Impact

Test Date: 3/29/16

Driver Dummy Serial Number: 016

Location		Positive Direction		Negative Direction	
		Max.	Time (ms)	Max.	Time (ms)
Shoulder Rear Ribeye Position (mm)*	X	-20.98	41.20	-48.45	262.10
	Y	-62.45	53.70	-96.16	47.90
	Z	-42.17	110.80	-132.90	47.90
Length of Change (mm)*		24.80	53.30		
Shoulder Middle Ribeye Position (mm)	X	18.27	45.20	-18.09	264.80
	Y	-52.95	54.80	-96.24	20.20
	Z	-42.93	110.70	-78.00	37.80
Length of Change (mm)		39.68	54.80		
Shoulder Front Ribeye Position (mm)	X	62.74	46.70	17.98	258.50
	Y	-34.29	54.70	-89.91	19.10
	Z	-45.55	110.00	-81.64	38.20
Length of Change (mm)		32.38	61.70		
Thorax Rib 1 Rear Ribeye Position (mm)	X	-17.97	46.20	-37.94	133.80
	Y	-84.32	48.70	-103.25	78.70
	Z	1.86	101.90	-10.38	43.60
Length of Change (mm)		20.82	48.70		
Thorax Rib 1 Middle Ribeye Position (mm)	X	24.13	46.10	-4.24	133.60
	Y	-87.55	48.60	-114.38	81.70
	Z	2.33	102.60	-11.91	43.60
Length of Change (mm)		21.59	48.60		
Thorax Rib 1 Front Ribeye Position (mm)	X	62.55	45.20	29.91	135.90
	Y	-76.72	47.90	-105.09	79.50
	Z	1.67	105.10	-12.22	38.40
Length of Change (mm)		9.52	49.60		
Thorax Rib 2 Rear Ribeye Position (mm)	X	-22.73	45.30	-36.16	135.40
	Y	-80.15	43.90	-104.01	74.90
	Z	41.95	102.40	32.71	47.80
Length of Change (mm)		22.61	43.90		
Thorax Rib 2 Middle Ribeye Position (mm)	X	21.30	45.20	-2.79	133.10
	Y	-84.25	47.20	-116.12	76.50
	Z	44.23	102.00	34.10	46.10
Length of Change (mm)		23.62	47.20		

*Ribeye generated an error or questionable data: see Data Acquisition Explanations

Table 1 WorldSID Instrumentation Data, (Continued)

Test Vehicle: 2016 Nissan Rogue S AWD
 Test Program: SPNCAP Side Impact

Test Date: 3/29/16

Driver Dummy Serial Number: 016

Location		Positive Direction		Negative Direction	
		Max.	Time (ms)	Max.	Time (ms)
Thorax Rib 2 Front Ribeye Position (mm)	X	64.50	46.40	30.12	132.00
	Y	-77.05	47.00	-109.05	75.40
	Z	47.78	102.50	37.93	51.70
Length of Change (mm)		9.16	47.90		
Thorax Rib 3 Rear Ribeye Position (mm)	X	-24.53	44.10	-30.80	33.70
	Y	-81.48	46.50	-95.50	131.50
	Z	-33.54	103.40	-40.84	65.10
Length of Change (mm)		13.62	46.50		
Thorax Rib 3 Middle Ribeye Position (mm)	X	14.13	48.90	-0.49	134.40
	Y	-85.10	46.10	-103.75	132.60
	Z	-31.78	102.80	-39.51	48.90
Length of Change (mm)		16.39	46.10		
Thorax Rib 3 Front Ribeye Position (mm)	X	49.55	45.30	29.16	133.10
	Y	-75.16	45.70	-94.60	132.60
	Z	-32.42	102.60	-39.31	59.20
Length of Change (mm)		8.70	46.30		
Abdomen Rib 1 Rear Ribeye Position (mm)	X	-27.85	246.70	-36.02	31.70
	Y	-82.12	44.90	-97.27	5.50
	Z	2.25	116.50	-9.13	65.80
Length of Change (mm)		14.88	44.90		
Abdomen Rib 1 Middle Ribeye Position (mm)	X	10.81	47.80	0.37	96.00
	Y	-90.35	46.20	-118.68	162.00
	Z	5.73	162.00	-9.39	65.70
Length of Change (mm)		17.49	46.20		
Abdomen Rib 1 Front Ribeye Position (mm)	X	45.98	46.90	32.13	133.80
	Y	-81.01	46.40	-98.97	156.30
	Z	2.61	117.20	-9.59	62.80
Length of Change (mm)		10.40	46.40		
Abdomen Rib 2 Rear Ribeye Position (mm)	X	-29.28	242.40	-38.64	32.60
	Y	-74.68	46.10	-93.77	-13.20
	Z	37.07	120.20	22.82	65.80
Length of Change (mm)		17.77	46.10		

Table 1 WorldSID Instrumentation Data, (Continued)

Test Vehicle: 2016 Nissan Rogue S AWD

Test Program: SPNCAP Side Impact

Test Date: 3/29/16

Driver Dummy Serial Number: 016

Location		Positive Direction		Negative Direction	
		Max.	Time (ms)	Max.	Time (ms)
Abdomen Rib 2 Middle Ribeye Position (mm)	X	8.52	49.10	-7.76	94.10
	Y	-81.71	45.00	-103.88	-13.20
	Z	36.87	118.50	19.39	64.30
Length of Change (mm)		21.67	45.00		
Abdomen Rib 2 Front Ribeye Position (mm)	X	42.96	48.90	24.10	96.20
	Y	-74.50	46.40	-95.79	-13.30
	Z	38.06	119.60	21.10	66.00
Length of Change (mm)		13.96	46.20		

Positive Direction

Longitudinal: Forward
Lateral: Rightward
Vertical: Downward

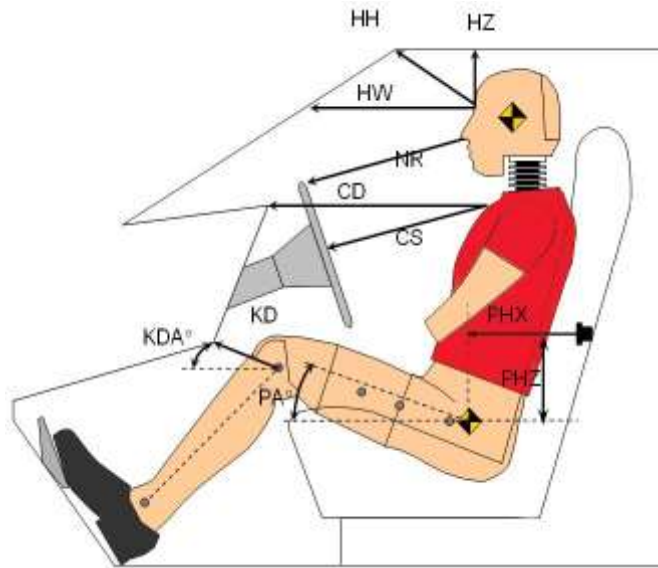
Negative Direction

Longitudinal: Rearward
Lateral: Leftward
Vertical: Upward

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Nissan Rogue S AWD
 Test Program: SPNCAP Side Impact

Test Date: 3/29/16



Left Side View

Code	Measurement Description	Driver WorldSID # 016	
		Length (mm)	Angle
HH	Header to Header	392	
HW	Header to Windshield	652	
HZ	Head to Roof Liner	213	
NR	Nose to Rim/Seat Back	477	
CD	Chest to Dash/Seat Back	628	
CS	Chest to Steering Wheel	356	
KD(L)/KDA(L)°	Left Knee to Dash/Seat Back	105	-14.4
KD(R)/KDA(R)°	Right Knee to Dash/Seat Back	77	-22.6
PAX°	Pelvic Tilt Angle X		1.0
PAY°	Pelvic Tilt Angle Y		0.3
PHX	Hip Point to Striker (X-Axis)	348	
PHZ	Hip Point to Striker (Z-Axis)	81	
HAX°	Head Tilt Angle X		0.0
HAY ¹ °	Head Tilt Angle Y		-1.6
TAX°	Thorax Tilt Angle X		1.2
TAY°	Thorax Tilt Angle Y		1.2
	Head Rest Angle		3.3
	H-Point Tool Angle		47.0
	Torso Angle		14.3
	Windshield Angle		N/A

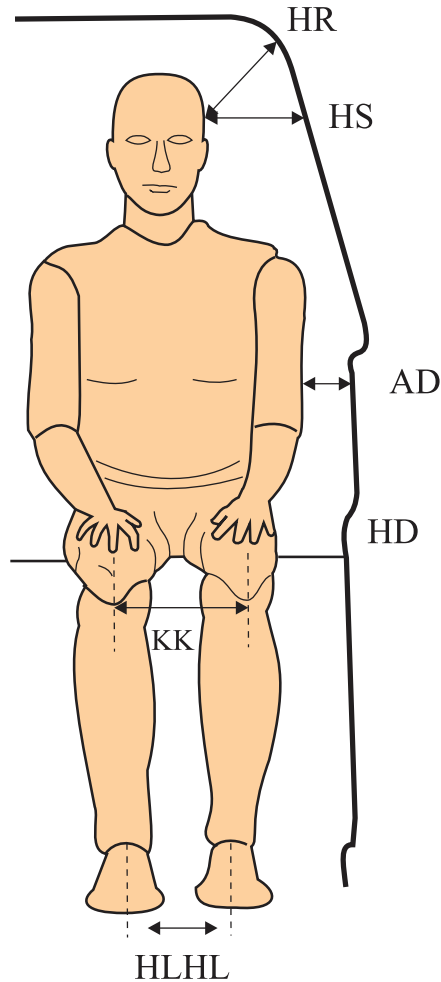
Note: All measurements are in millimeters. 2-door vehicle shown. Rear dummy HX, HZ, PHX and PHZ measurements for 4-door vehicle would use the C-post striker as a reference point.

All tilt sensor angles are recorded digitally

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Nissan Rogue S AWD
 Test Program: SPNCAP Side Impact

Test Date: 3/29/16



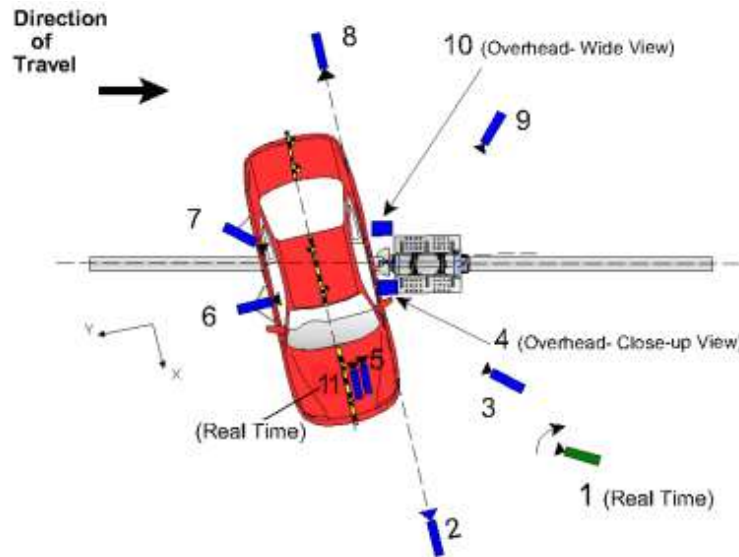
Code	Measurement Description	Driver WorldSID # 016
HR	Head to Side Header	231
HS	Head to Side Window	345
AD	Arm to Door	81
HD	Hip Point to Door	111
KK	Knee to Knee	411
HLHL	Heel to Heel	358

Note: All measurements are in millimeters.

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2016 Nissan Rogue S AWD
 Test Program: SPNCAP Side Impact

Test Date: 3/29/16



REFERENCE: (from point of impact for X and Y; from ground for Z)
 + X = Forward of vehicle, + Y = Right of vehicle, + Z = Down

Camera No.	View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Real time (24-30 fps) pan view of impact				Zoom	30
2	Front ground level – impact view	5601	0	-1436	12	1000
3	Impact side 45° – forward pole view	3421	-1045	-1349	20	1000
4	Overhead Close-up view of impact	0	0	-5702	28	1000
5	Onboard – dummy front view				25	1000
6	Onboard – dummy side view				12.5	1000
7	Onboard – dummy rear oblique view				8.5	1000
8	Rear ground level – impact view	-6359	-254	-1571	Zoom	1000
9	Impact side 45° – rearward pole view	-3274	-2217	-1448	12	1000
10	Overhead wide view of impact	-137	400	-5727	12.5	1000
11	Real time dummy front view				Zoom	30

All measurements accurate to +/- 6 mm.

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

If applicable, explain why camera(s) did not run: Not Applicable

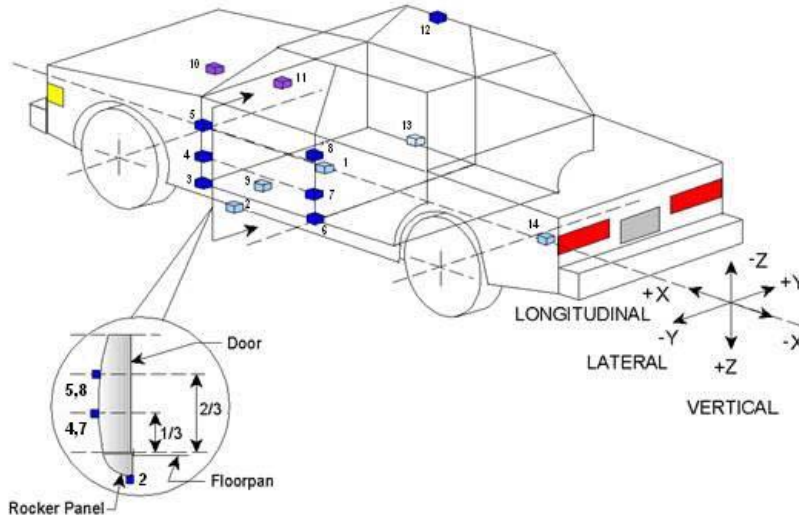
INSTRUMENTATION

	Number of Channels
Driver Dummy	127
Chest Band	56
Vehicle Structure	30
Pole Load Cells	8
TOTAL	221

DATA SHEET NO. 6
VEHICLE ACCELEROMETER DATA

Test Vehicle: 2016 Nissan Rogue S AWD
 Test Program: SPNCAP Side Impact

Test Date: 3/29/16



Location		Coordinates (mm)			Positive Direction		Negative Direction	
		X	Y	Z	Max	Time (ms)	Max	Time (ms)
1	Vehicle CG	2821	113	-398				
	Longitudinal (g)				2.85	125.80	-5.69	34.70
	Lateral (g)				28.27	17.95	-15.86	36.70
	Vertical (g)				10.12	55.30	-6.49	76.65
	Resultant (g)				28.56	17.95		
2	Left Floor Sill	2762	-685	-385				
	Lateral (g)				56.86	13.80	-45.60	20.20
3	Left A-Pillar Sill	3134	-685	-370				
	Lateral (g)				21.41	14.00	-2.46	37.90
4	Left Lower A-Pillar	3210	-825	-625				
	Lateral (g)				4.04	9.20	-42.97	20.05
5	Left Mid A-Pillar	3210	-805	-1015				
	Lateral (g)				50.85	39.90	-18.72	54.60
6	Left B-Pillar Sill	2031	-685	-370				
	Lateral (g)				50.18	15.40	-2.19	24.60
7	Left Lower B-Pillar	2120	-815	-690				
	Lateral (g)				47.33	17.95	-6.31	64.80
8	Left Mid B-Pillar	2090	-815	-820				
	Lateral (g)				47.93	17.70	-7.79	65.05
9	Driver Seat Track at Dummy H-Point	2469	-540	-422				
	Lateral (g)				106.90	33.20	-47.57	38.70
10	Engine Top	3975	38	-970				
	Longitudinal (g)				7.78	81.55	-21.08	35.65
	Lateral (g)				19.97	76.00	-4.35	66.45

DATA SHEET NO. 6 (Continued)
VEHICLE ACCELEROMETER DATA

Test Vehicle: 2016 Nissan Rogue S AWD
 Test Program: SPNCAP Side Impact

Test Date: 3/29/16

Location		Coordinates (mm)			Positive Direction		Negative Direction	
		X	Y	Z	Max	Time (ms)	Max	Time (ms)
11	Firewall Center	3659	-20	-962				
	Lateral (g)				16.23	43.10	-1.67	37.15
12	Right Roof at Vertical Impact Reference Line	2030	613	-1620				
	Lateral (g)				29.96	38.40	-5.16	52.85
13	Right Sill at Vertical Impact Reference Line	2815	685	-382				
	Lateral (g)				1.94	37.75	-18.41	17.80
14	Rear Floorpan Behind Rear Axle at Centerline	1061	-10	-591				
	Longitudinal (g)				6.72	89.55	-2.75	125.95
	Lateral (g)				14.17	56.30	-1.16	195.70
15	Left Front Door Mid Centerline	2554	-750	-1075				
	Lateral (g)				103.21	10.45	-36.32	33.20
16	Left Front Door Mid Rear	2554	-750	-780				
	Lateral (g)				134.00	18.45	-56.71	10.00
17	Left Front Door Upper Centerline	2310	-760	-780				
	Lateral (g)				73.02	17.40	-61.93	22.15
18	Left Rear Door Mid Rear	1568	-750	-775				
	Lateral (g)				25.63	51.50	-2.87	45.45
19	Left Rear Door Upper Centerline	1392	-725	-1110				
	Lateral (g)				43.11	49.05	-20.26	74.10

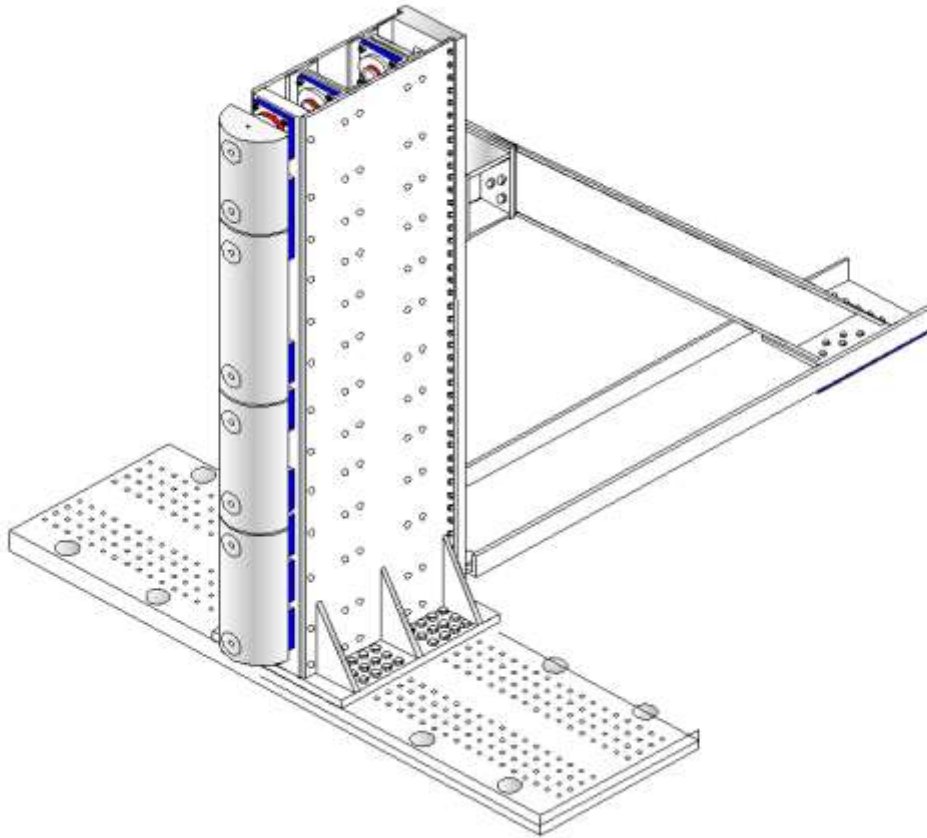
*0,0,0 located at rear bumper

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

Test Vehicle: 2016 Nissan Rogue S AWD
Test Program: SPNCAP Side Impact

Test Date: 3/29/16

FOIL 300K RIGID POLE



Load Cell Locations	
ID	Height From Top of Carrier (mm)
1	87
2	468
3	648
4	978
5	1168
6	1651
7	1816
8	2057

DATA SHEET NO. 8
POST TEST OBSERVATIONS

Test Vehicle: 2016 Nissan Rogue S AWD
Test Program: SPNCAP Side Impact

Test Date: 3/29/16

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Driver SID-11s Dummy
Face	SCAB
Top of Head	SCAB
Left Side of Head	SCAB
Back of Head	SCAB, Head Rest
Left Shoulder	Torso/Pelvis Airbag
Upper Torso	Torso/Pelvis Airbag
Lower Torso	Torso/Pelvis Airbag
Left Hip	Torso/Pelvis Airbag
Left Knee	Door Panel

POST TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/ Other Door
	Front	Rear	Front	Rear	
Remained Closed and Operational	No	No	Yes	Yes	Yes
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	No
Latch or Hinge Systems Pulled Out of Their Anchorages	No	No	No	No	No
Disengaged from Latched Position	No	No	No	No	No
Latch Separated from Striker	No	No	No	No	No
Jammed Shut	Yes	Yes	No	No	No
If Door Opened at Striker, Record Width of Opening at Striker (mm)	N/A	N/A	N/A	N/A	N/A

* Indicate "Yes", "No", or "NA".

POST-TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	None	None	None	None
Seat Disengagement from Floor pan	None	None	None	None
Seat Back Movement from Initial Position	None	None	None	None
Seat Back Collapse	None	None	None	None

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Major Deformation
Sill Separation	None Visible
Windshield Damage	Broken
Side Window Damage	Driver window shattered; left rear undamaged
Other Notable Effects	None

DATA SHEET NO. 8 (CONTINUED)
POST TEST OBSERVATIONS

Test Vehicle: 2016 Nissan Rogue S AWD
 Test Program: SPNCAP Side Impact

Test Date: 3/29/16

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side (Driver)		Struck Side (Rear Passenger)	
	Mounted	Deployed	Mounted	Deployed
Front Airbag	Yes	No		
Knee Airbag	No	No		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	Yes	Yes	Yes	Yes
Side Torso Airbag	No	No	No	No
Seat Belt Pretensioner	Yes	Yes	No	No
Seat Belt Load Limiter	Yes	No	No	No
Other	No	No	No	No

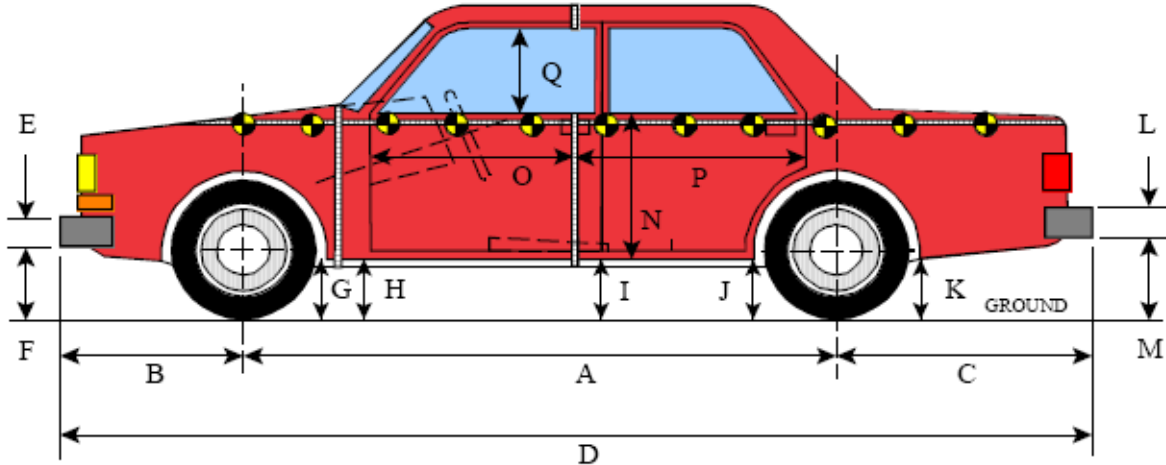
VEHICLE SPEED, VEHICLE ANGLE AT IMPACT AND IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1283
Actual Impact Point (Aft of Front Axle)	mm		1290
Horizontal Offset (+ forward / - rearward)	mm	+/- 38 of Intended Impact point	-7
Angle Between Vehicle's Longitudinal Centerline and Line of Motion	degrees	75 +/- 3	75
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.25
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.27

DATA SHEET NO. 9
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2016 Nissan Rogue S AWD
 Test Program: SPNCAP Side Impact

Test Date: 3/29/16



LEFT SIDE VIEW

All MEASUREMENTS IN (mm) WITH TOLERANCE OF ± 3 mm

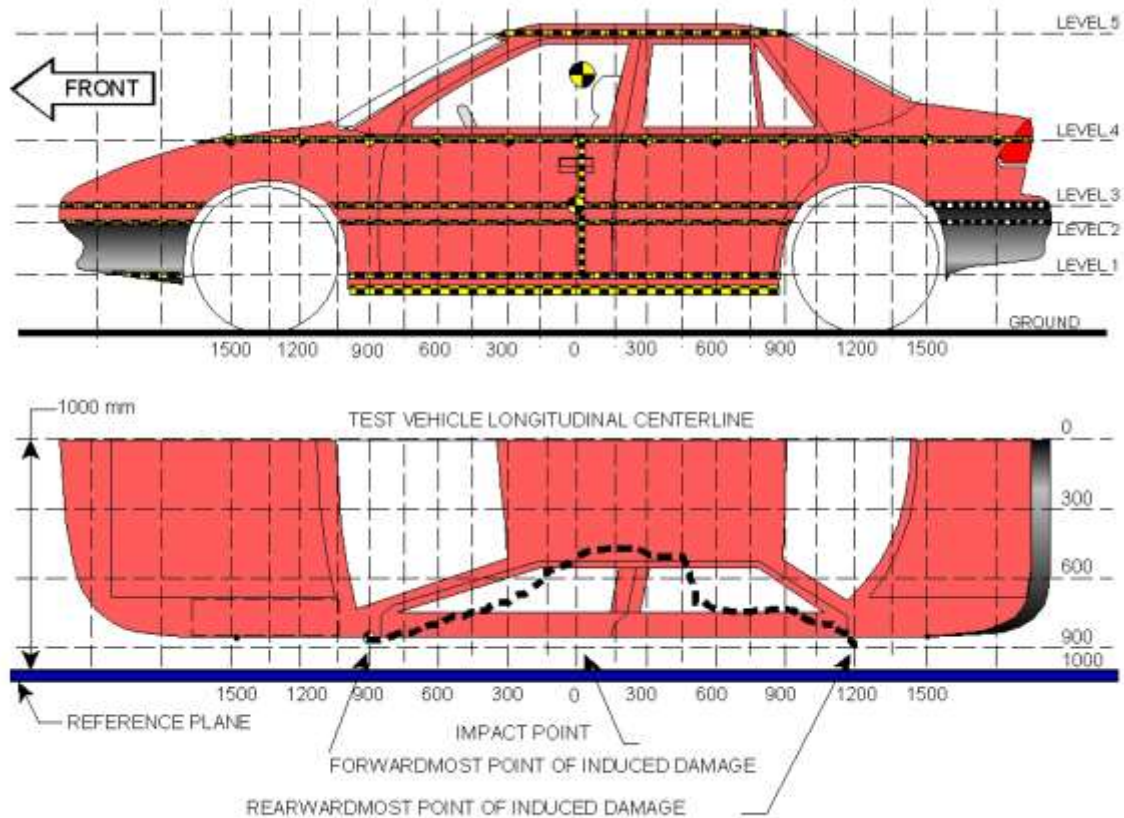
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2706	2620	86
B	Front Axle to Front Surface of Vehicle	940	885	55
C	Rear Axle to Rear Surface of Vehicle	1000	1103	-103
D	Total Length at Centerline	4650	4608	42
E	Front Bumper Thickness	110	110	0
F	Front Bumper Bottom to Ground	515	550	-35
G	Sill Height at Front Wheel Well	390	398	-8
H	Sill Height at Front Door Leading Edge	390	398	-8
I	Sill Height at B-Pillar	420	452	-32
J1	Sill Height at Rear Wheel Well	420	474	-54
J2	Pinch Weld Height at Rear Wheel Well	280	307	-27
K	Sill Height Aft of Rear Wheel Well	474	502	-28
L	Rear Bumper Thickness	92	92	0
M	Rear Bumper Bottom to Ground	545	560	-15
N	Sill Height to Bottom of Front Window Sill	719	787	-68
O	Front Door Leading Edge to Impact CL	812	560	252
P	Rear Door Trailing Edge to Impact CL	1362	1385	-23
Q	Front Window Opening	430	404	26
R	Right Side Length	4539	4545	-6
S	Left Side Length	4539	4488	51
T	Vehicle Width at "B" Pillars	1820	1645	175
U	Maximum Width	1841	1830	11

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2016 Nissan Rogue S AWD
 Test Program: SPNCAP Side Impact

Test Date: 3/29/16



MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	449	359	0
2	Occupant H-Point	711	386	0
3	Mid-Door	748	390	0
4	Window Sill	1075	342	0
5	Window Top	1600	149	0

NOTE: The above measurements should be taken along the vertical impact reference line. Vehicle measurements forward of the vertical impact reference line are negative.

DATA SHEET NO. 10 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2016 Nissan Rogue S AWD
 Test Program: SPNCAP Side Impact

Test Date: 3/29/16

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900	880	902	903	825		898	927	928	850		-18	-25	-25	-25	
-750	877	897	899	814		837	854	858	806		40	43	41	8	
-600	877	895	898	807		773	778	781	735		104	117	117	72	
-450	877	895	898	815		711	718	717	677		166	177	181	138	
-300	878	895	897	826		647	644	643	615		231	251	254	211	
-150	879	895	897	836		554	554	553	538		325	341	344	298	
0	880	895	897	843	587	521	509	507	501	438	359	386	390	342	149
150	878	894	896	848	594	619	606	604	604	470	259	288	292	244	124
300	878	892	894	849	597	718	733	732	684	499	160	159	162	165	98
450	874	891	892	851	597	746	769	766	721	525	128	122	126	130	72
600	878	893	894	853	597	805	812	809	755	550	73	81	85	98	47
750	881	898	899	855	597	845	857	853	789	572	36	41	46	66	25
900	883	903	904	855	595	885	883	886	821	583	-2	20	18	34	12
1050			901	874	593			907	870	585			-6	4	8
1200				852	589				880	584				-28	5
1350				856	582				846	578				10	4
1500				852	573				847	571				5	2
1650				840					838					2	
1800				825					825						
1950															
2100															
2250															

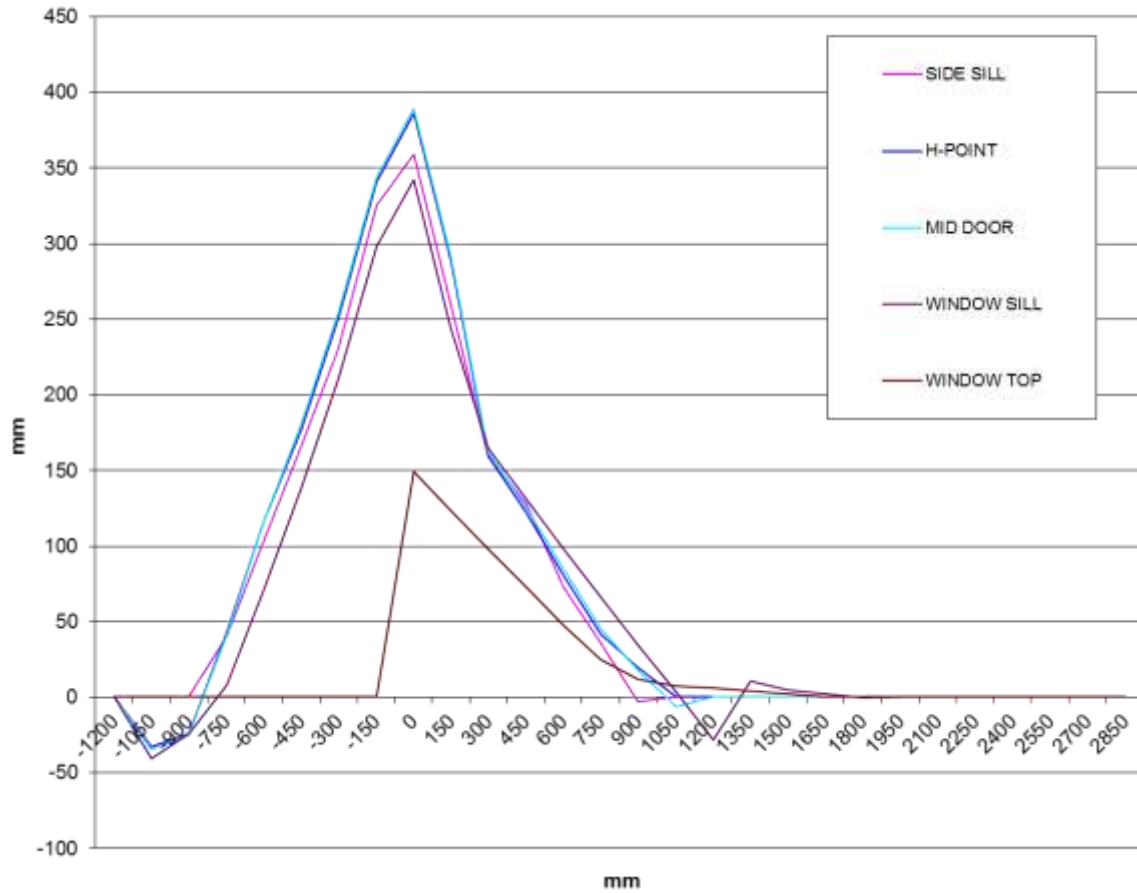
NOTE: Pre-test measurements are taken when the vehicle is in the “As Tested” weight condition. Vehicle measurements forward of the vertical impact reference line are negative. The crush profile grid is established prior to the test based on an estimated impact point. The final distance from impact is determined after the final dummy positioning and the pole is aligned with the center of gravity of the dummy’s head.

¹ The vertical impact reference line was set at (0, 0, 0) with the seat set mid track minus 20 mm per the COR.

DATA SHEET NO. 10 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2016 Nissan Rogue S AWD
Test Program: SPNCAP Side Impact

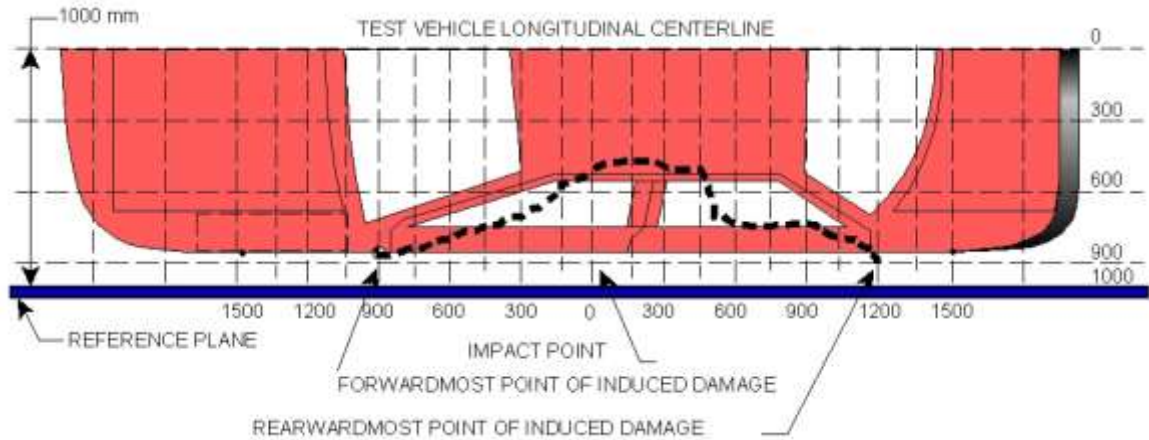
Test Date: 3/29/16



DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2016 Nissan Rogue S AWD
 Test Program: SPNCAP Side Impact

Test Date: 3/29/16

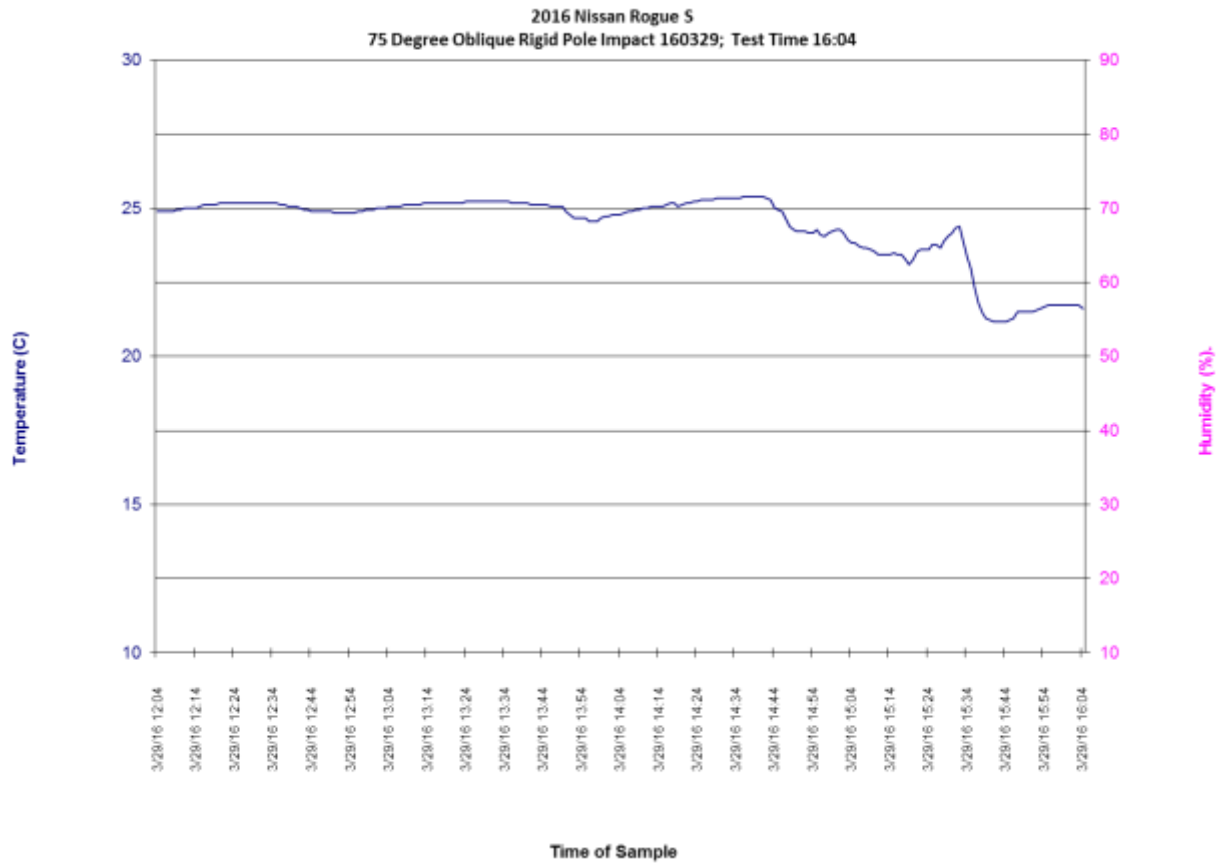


VEHICLE DAMAGE PROFILE DISTANCES¹

DPD	Distance From Impact Point (mm)	Level	Post-Test (mm)	Pre-Test (mm)	Crush (mm)
1	1650	4	838	840	0
2	1050	5	585	593	8
3	750	4	789	855	66
4	150	3	604	896	292
5	-300	3	643	897	254
6	-750	2	854	897	0

¹ DPD 1 and 6 defined as zero crush since the crush does not extend to the end of the vehicle.

DATA SHEET NO. 12
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA¹
 Test Vehicle: 2016 Nissan Rogue S AWD
 Test Program: SPNCAP Side Impact Test Date: 3/29/16



¹ Humidity was not recorded

APPENDIX A
PHOTOGRAPHS



Figure A-1 As Delivered Right Front $\frac{3}{4}$ View of Test Vehicle



Figure A-2 As Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle



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



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



Figure A-5 Pre-Test Left Front $\frac{3}{4}$ View of Test Vehicle



Figure A-6 Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle



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



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



Figure A-9 Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



Figure A-10 Post-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



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



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



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



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



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



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



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



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



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



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



Figure A-21 Pre-Test Front Close-Up View of Dummy Head and Chest



Figure A-22 Post-Test Front Close-Up View of Dummy



Figure A-23 Pre-Test Left Side View of Dummy Showing Belt and Chalking



Figure A-24 Pre-Test Left Side View of Dummy Shoulder and Door Top View



Figure A-25 Post-Test Left Side View of Dummy Shoulder and Door Top View



Figure A-26 Pre-Test Front View of Seat Back Prior to Dummy Positioning



Figure A-27 Pre-Test Front View of Dummy Head and Shoulders in Relation to Head Restraint

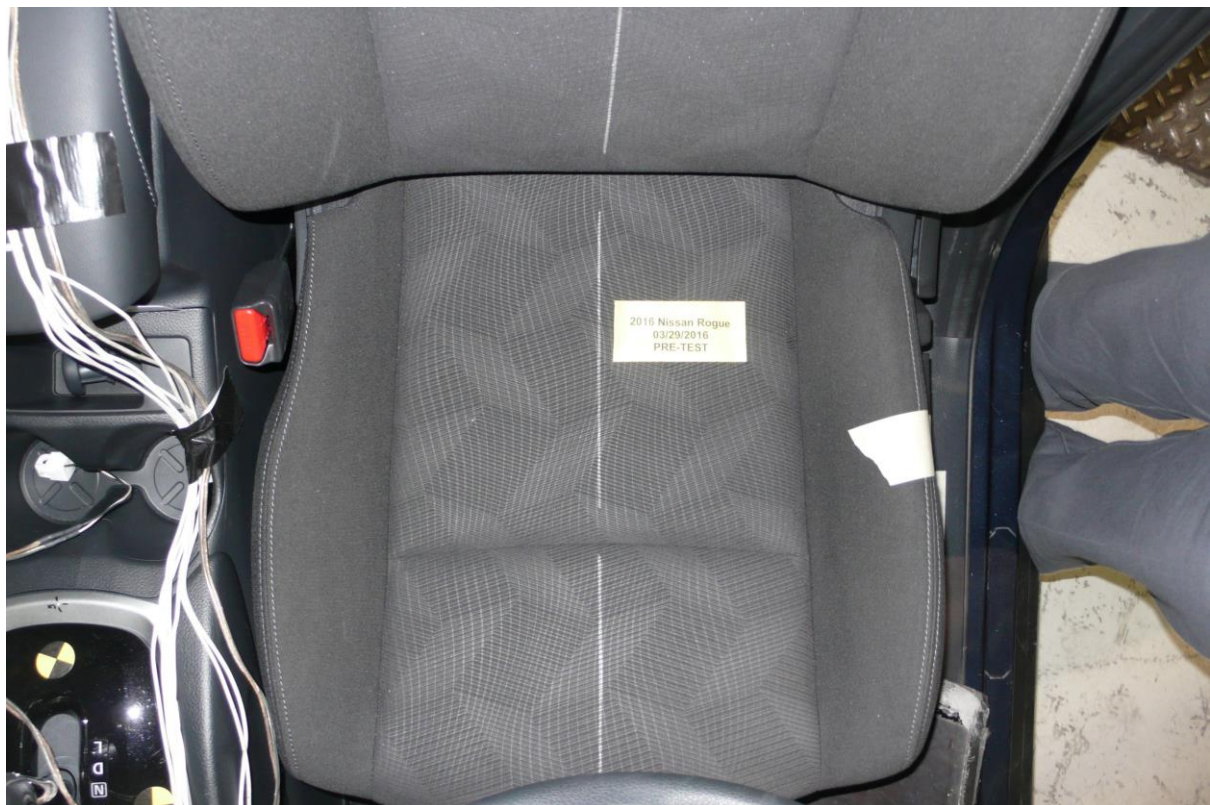


Figure A-28 Pre-Test Front View of Seat Pan Prior to Dummy Positioning



Figure A-29 Pre-Test Overhead View of Dummy Thighs on Seat Pan

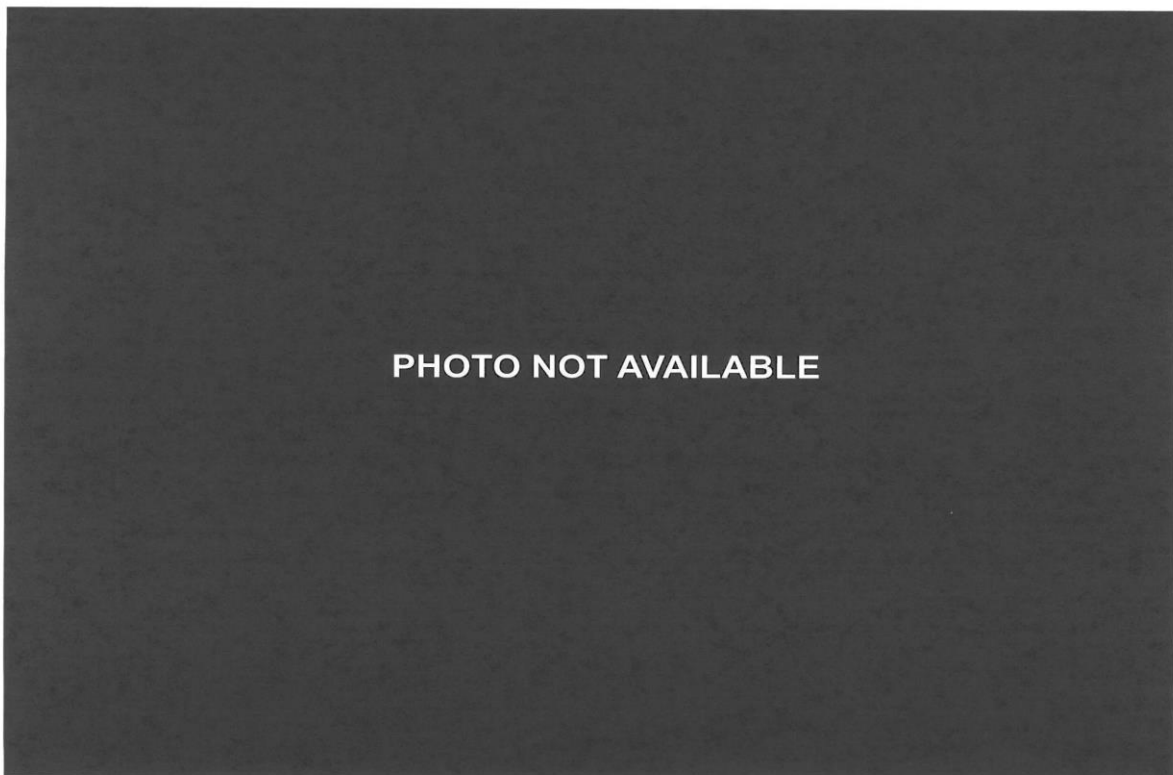


Figure A-30 Pre-Test Left Side View of Dummy Neck Showing Position of Adjustable Neck Bracket



Figure A-31 Pre-Test Left Side View of Dummy Head Showing Dummy Head is Level



Figure A-32 Pre-Test Placement of Dummy Feet



Figure A-33 Pre-Test View of Belt Anchorage for Dummy



Figure A-34 Pre-Test Left Side View of Steering Wheel



Figure A-35 View of Disengaged Parking Brake



Figure A-36 Pre-Test View of Parking Brake



Figure A-37 Pre-Test Close-Up Left Side View of Driver Seat Track

Intentionally Left Blank



Figure A-38 Pre-Test Dummy and Door Clearance View



Figure A-39 Post-Test Dummy and Door Clearance View



Figure A-40 Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment



Figure A-41 Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment



Figure A-42 Pre-Test Inner Driver Door Panel View



Figure A-43 Post-Test Inner Door Panel View



Figure A-44 Post-Test Dummy Close-Up Head Contact with Side Airbag View



Figure A-45 Post-Test Dummy Close-Up Head Contact with Vehicle Interior View



Figure A-46 Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



Figure A-47 Post-Test Dummy Close-Up Torso Contact with Side Airbag View



Figure A-48 Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View



Figure A-49 Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View



Figure A-50 Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View

Intentionally Left Blank



Figure A-51 Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



Figure A-52 Post-Test View of Fuel Filler Cap or Fuel Filler Neck



Figure A-53 Close-Up View of Vehicle Certification Label

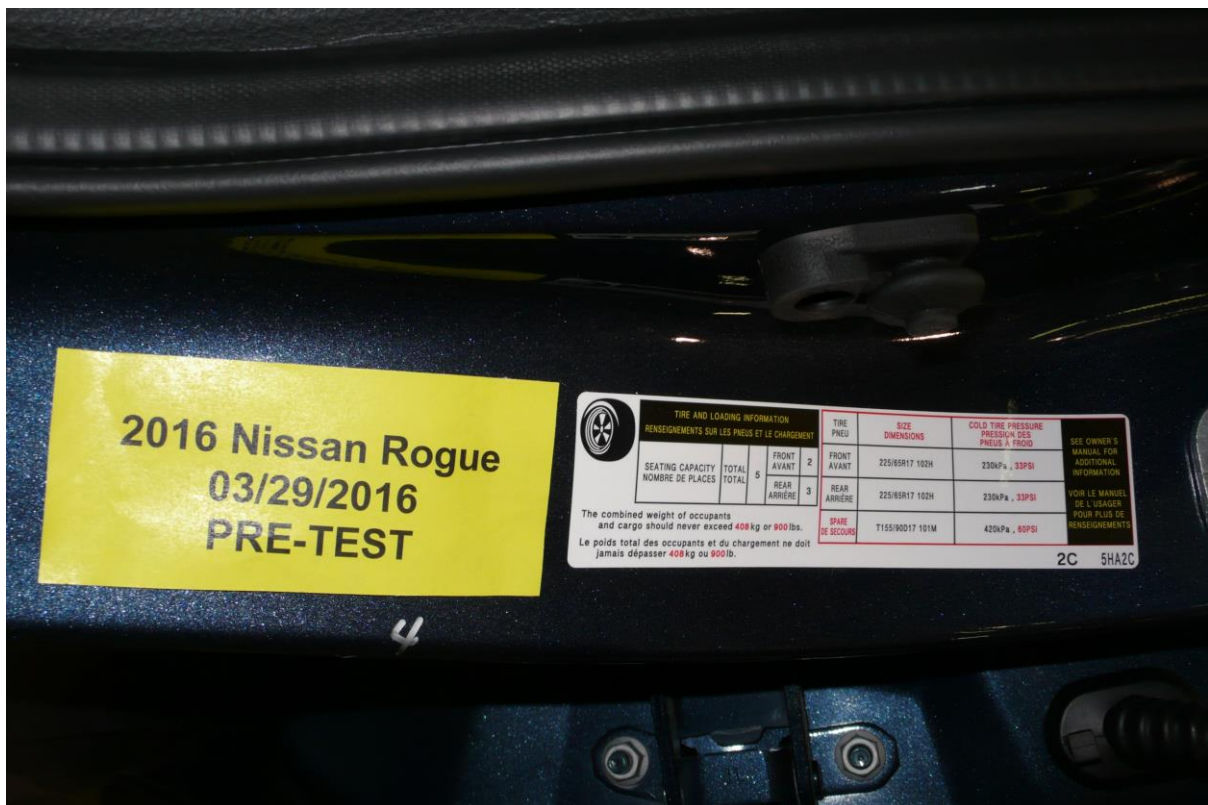


Figure A-54 Close-Up View of Vehicle Tire Information Placard or Label



Figure A-55 Pre-Test Pole Barrier Front View

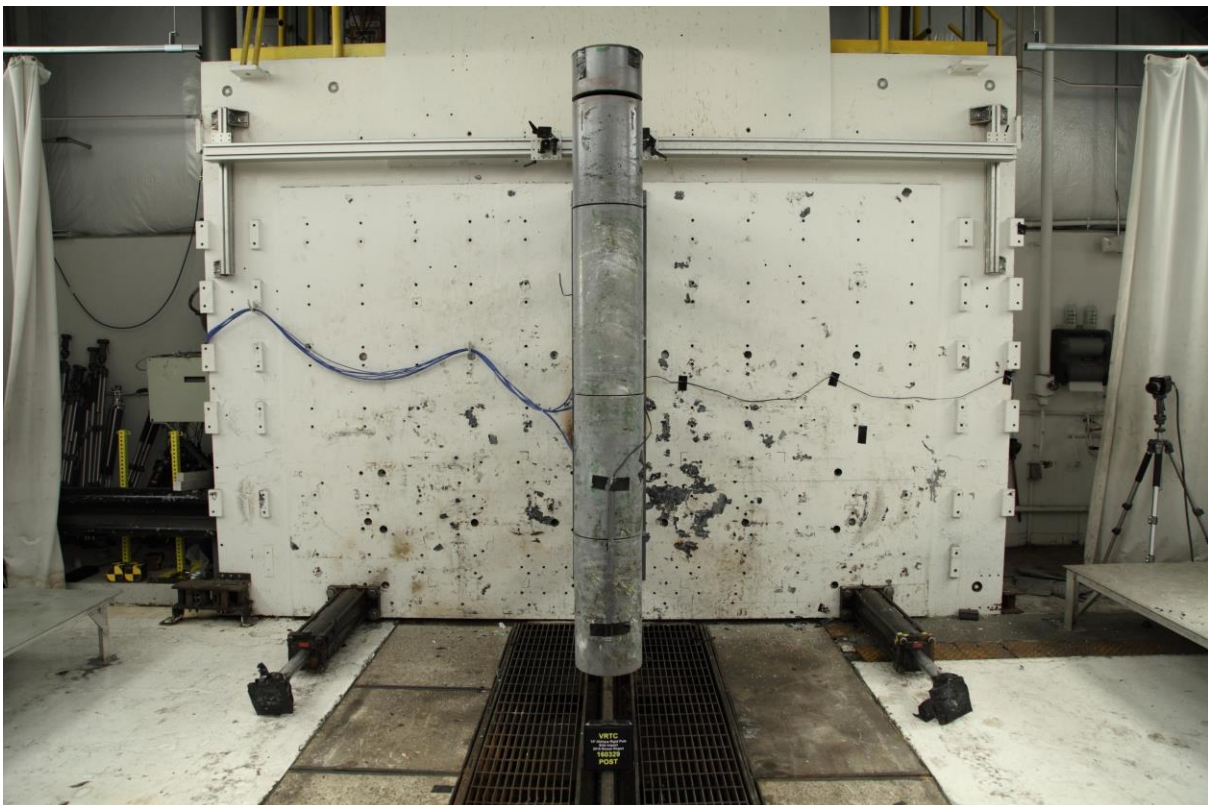


Figure A-56 Post-Test Pole Barrier Front View

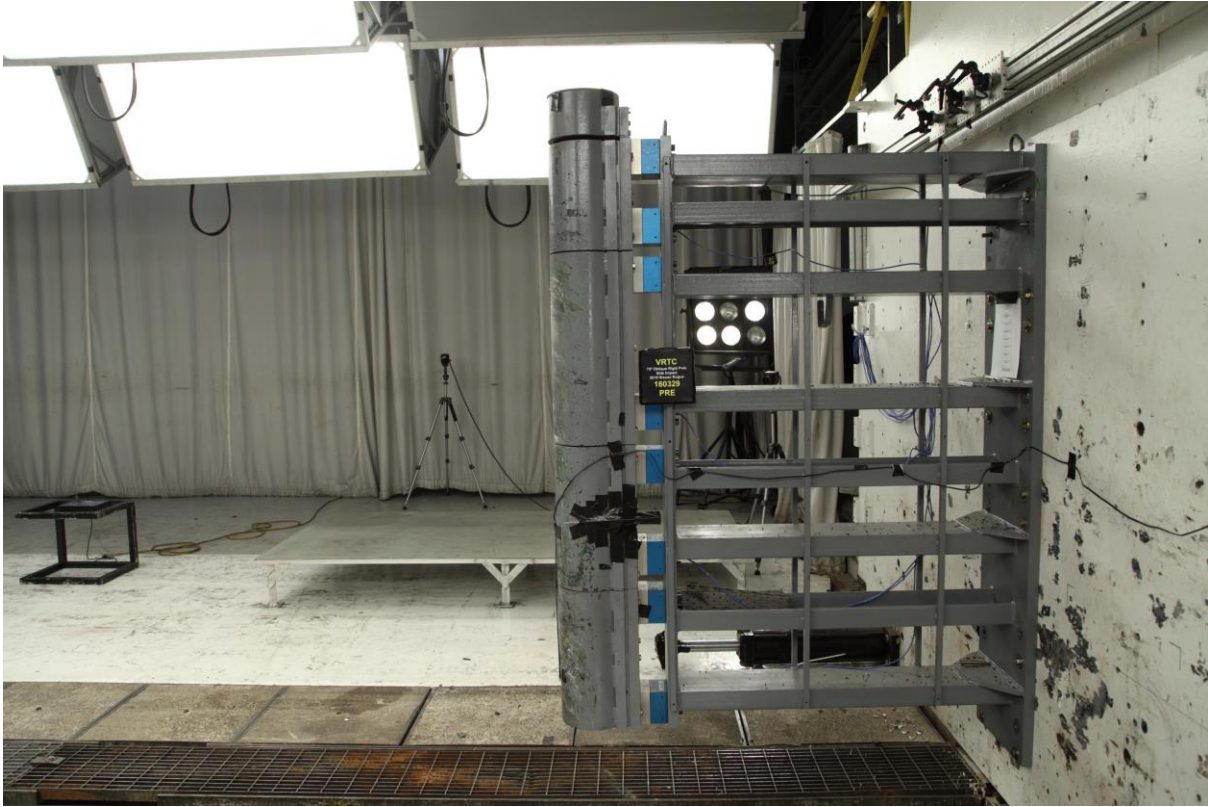


Figure A-57 Pre-Test Pole Barrier Side View

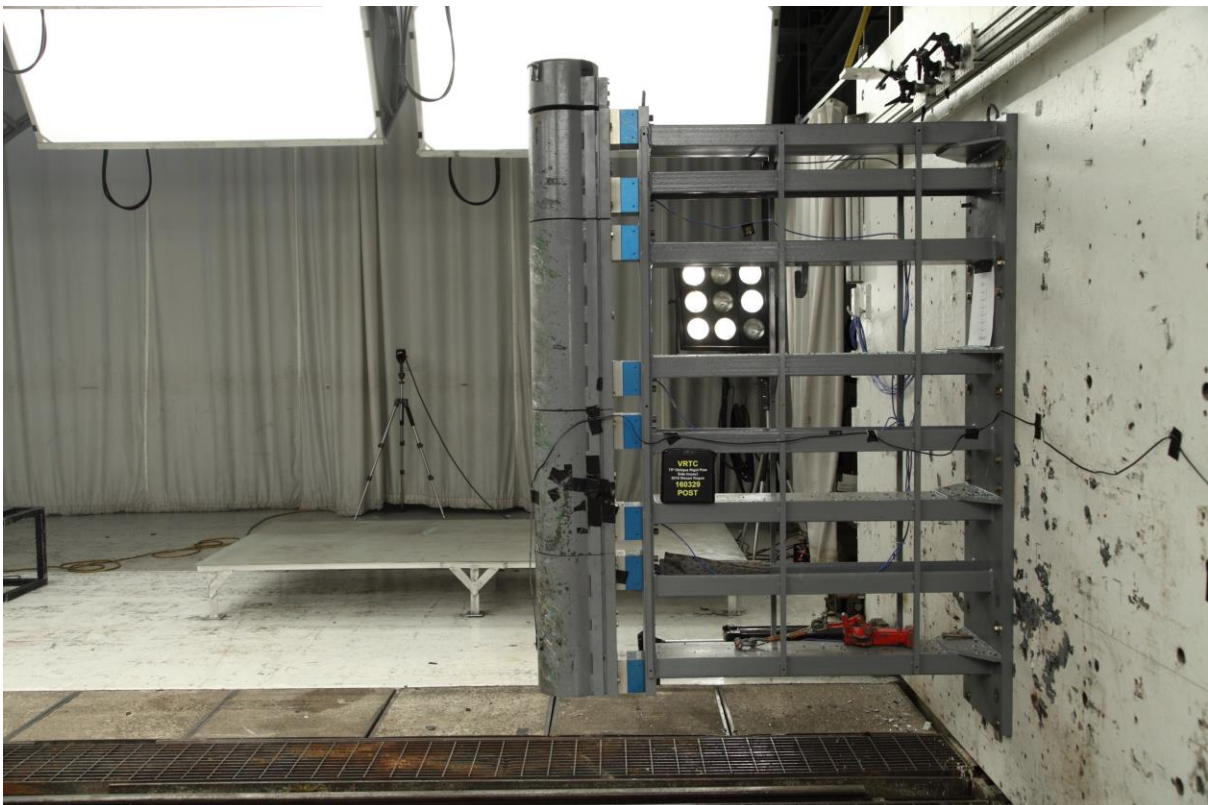


Figure A-58 Post-Test Pole Barrier Side View

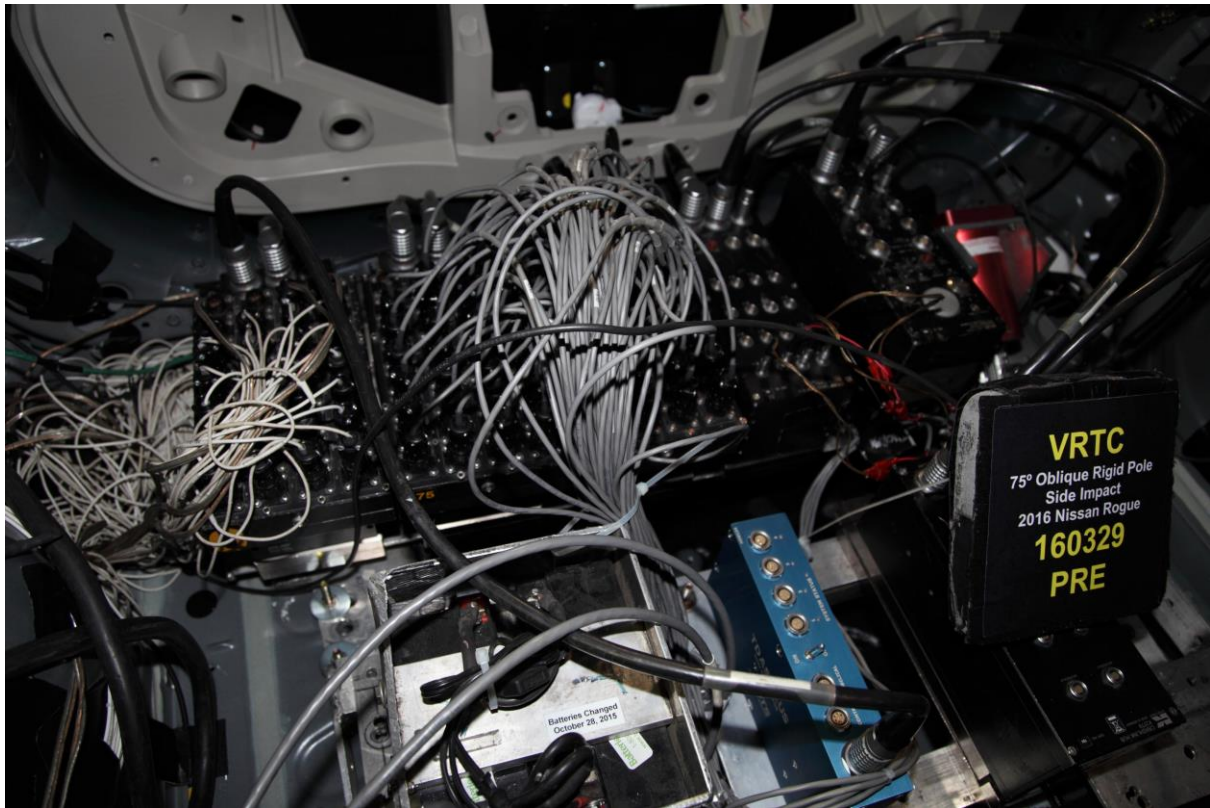


Figure A-59 Pre-Test Ballast View



Figure A-60 Post-Test Primary and Redundant Speed Trap Read-Out



Figure A-61 Impact Event



**2016 NISSAN ROGUE
S AWD**

Scan QR code for general model information & options

Fuel Economy and Environment

Fuel Economy

28 MPG

combined city/hwy 25 city 32 highway

3.6 gallons per 100 miles

Annual fuel cost \$1,600

Fuel Economy & Greenhouse Gas Rating

7

Smog Rating

5

fueleconomy.gov

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score ★★★★★

Frontal Crash ★★★★★

Side Crash ★★★★★

Rollover ★★★★★

DELIVERY

VEHICLE COLORS:

EXT: ARCTIC BLUE MET

INT: CHARCOAL

FINAL ASSEMBLY POINT:

LOS ANGELES

TRANSPORT METHOD:

TRUCK

DEALER:

ZEIGLER NISSAN GURNEE LLC

18800 W GRAND AVENUE

LAKE VILLA IL

60046

MECHANICAL & PERFORMANCE

2.5-liter DOHC I-4 Engine

170 Horsepower and 176 lb-ft of Torque

Xtronic CVT6 (Continuously Variable Transmission) with Sport & Eco Modes

All-Wheel Drive

4-Wheel Front and Rear Disc Brakes

17" Steel Wheels with Full Wheel Covers

All Season Tires/Temporary Spare Tire

Hill Start Assist

10000lb Tow Capacity

(Additional Equipment Required*****)

Front Independent Suspension

Rear Multilink Suspension

SAFETY & SECURITY

Driver & Front Passenger Side-Impact, Curtain Air Bags

Lower Anchors and Tethers for Children (i-ATC)

4-Wheel Anti-Lock Braking System

Vehicle Dynamic Control (VDC)

Traction Control System (TCS)

Electronic Brake Force Distribution (EBD)

Brake Assist (BA)

Nissan Vehicle Immobilizer System

Vehicle Security System

Tire Pressure Monitoring System (TPMS) with Easy Fill Tire Alert

COMFORT & CONVENIENCE

EZ Fuel-Fill System

40/20/40 Folding and Reclining

60/40 Sliding 2nd Row

Auxiliary Audio Input Jack

NissanConnect™ w/ Mobile App****

5" Color Audio Display

4-Speaker AM/FM/CD Audio System

SiriusXM Satellite Radio*

USB Connection Port For iPod®

Interface and Other Compatible Devices

Bluetooth® Hands-Free Phone System

Streaming Audio via Bluetooth®

Hands-Free Text Messaging Assistant****

Cruise Control

RearView Monitor

312-volt Power Points

Figure A-62 Monroney Label

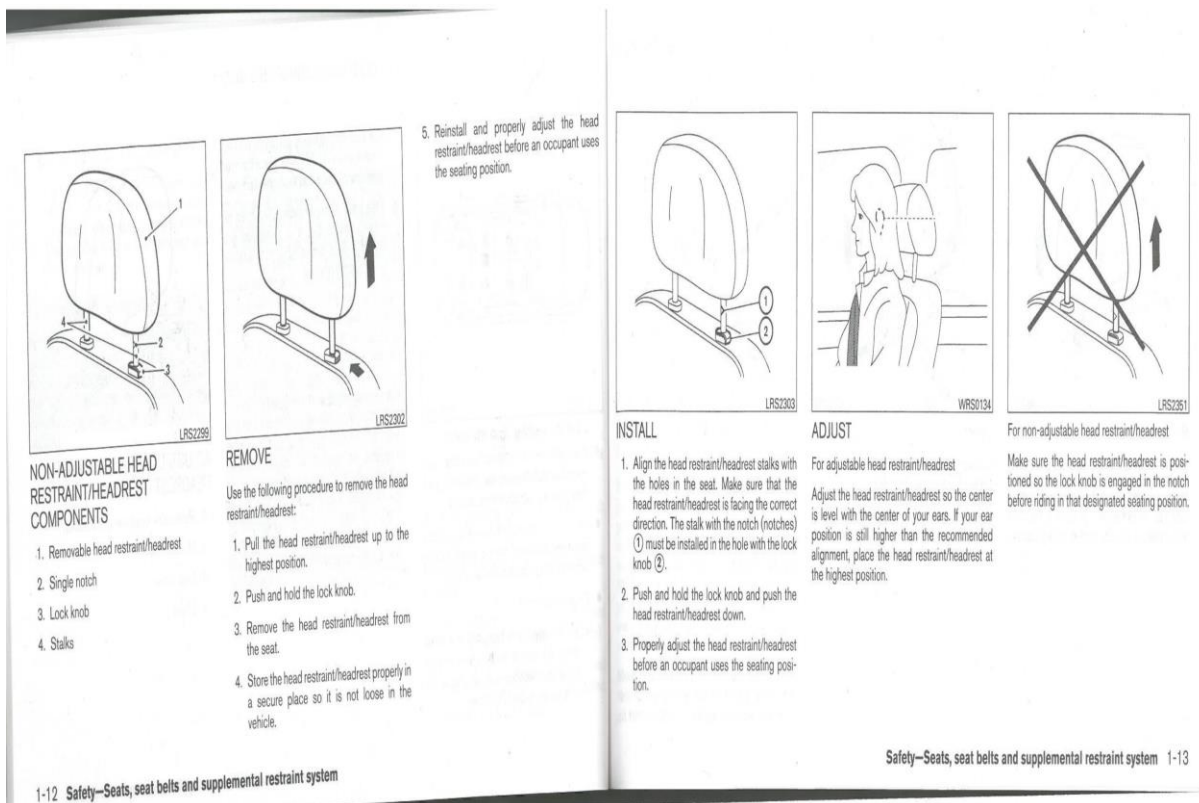


Figure A-63 Head Restraint Use and Adjustment Information from Vehicle Owner Manual

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS



2016 Nissan Rogue Side Pole Impact

Head X-Axis Acceleration

Date: 03/29/2016

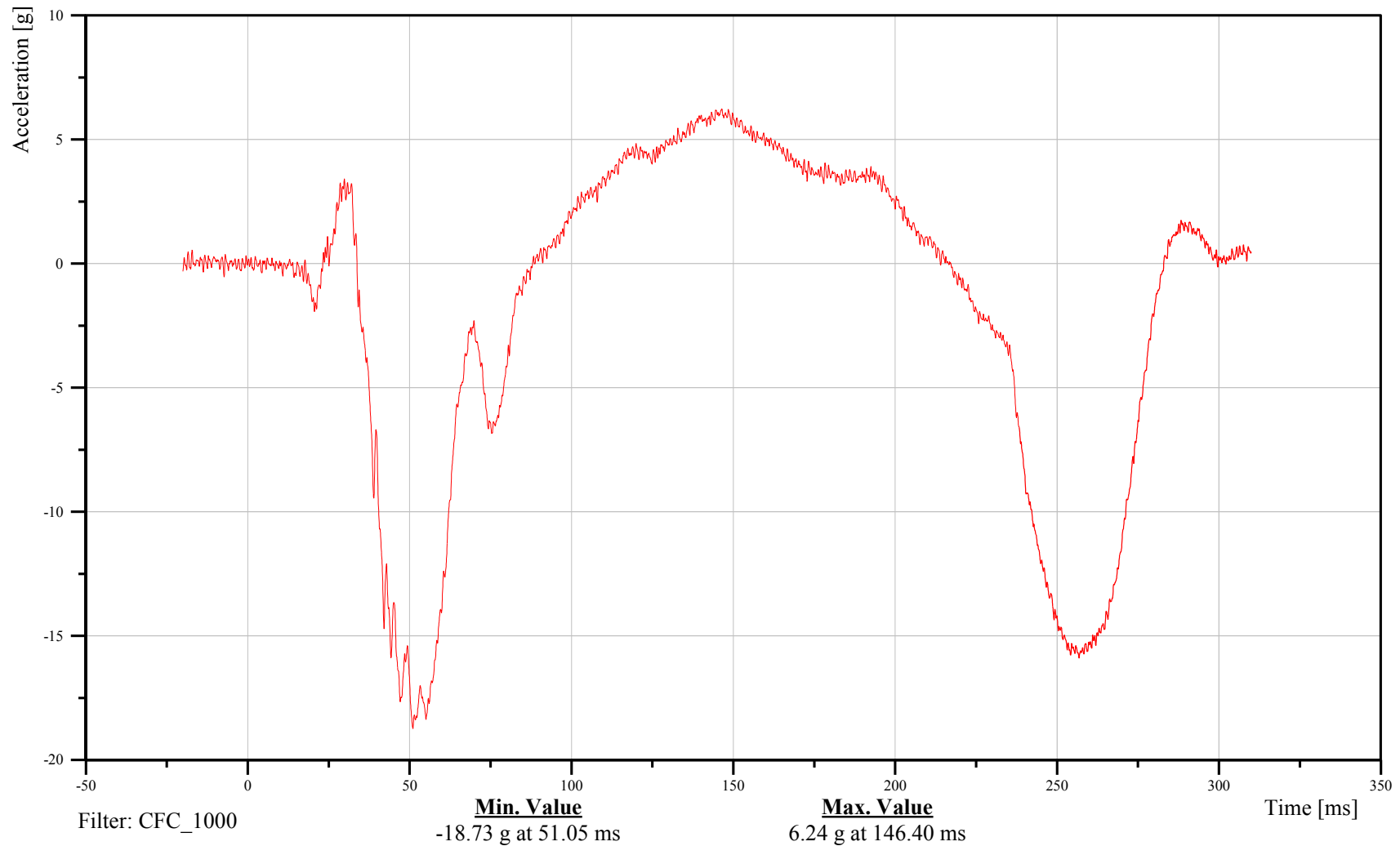
Time: 16:04

Customer: VRTC

11HEADCG00WSACXA

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Head Y-Axis Acceleration

Date: 03/29/2016

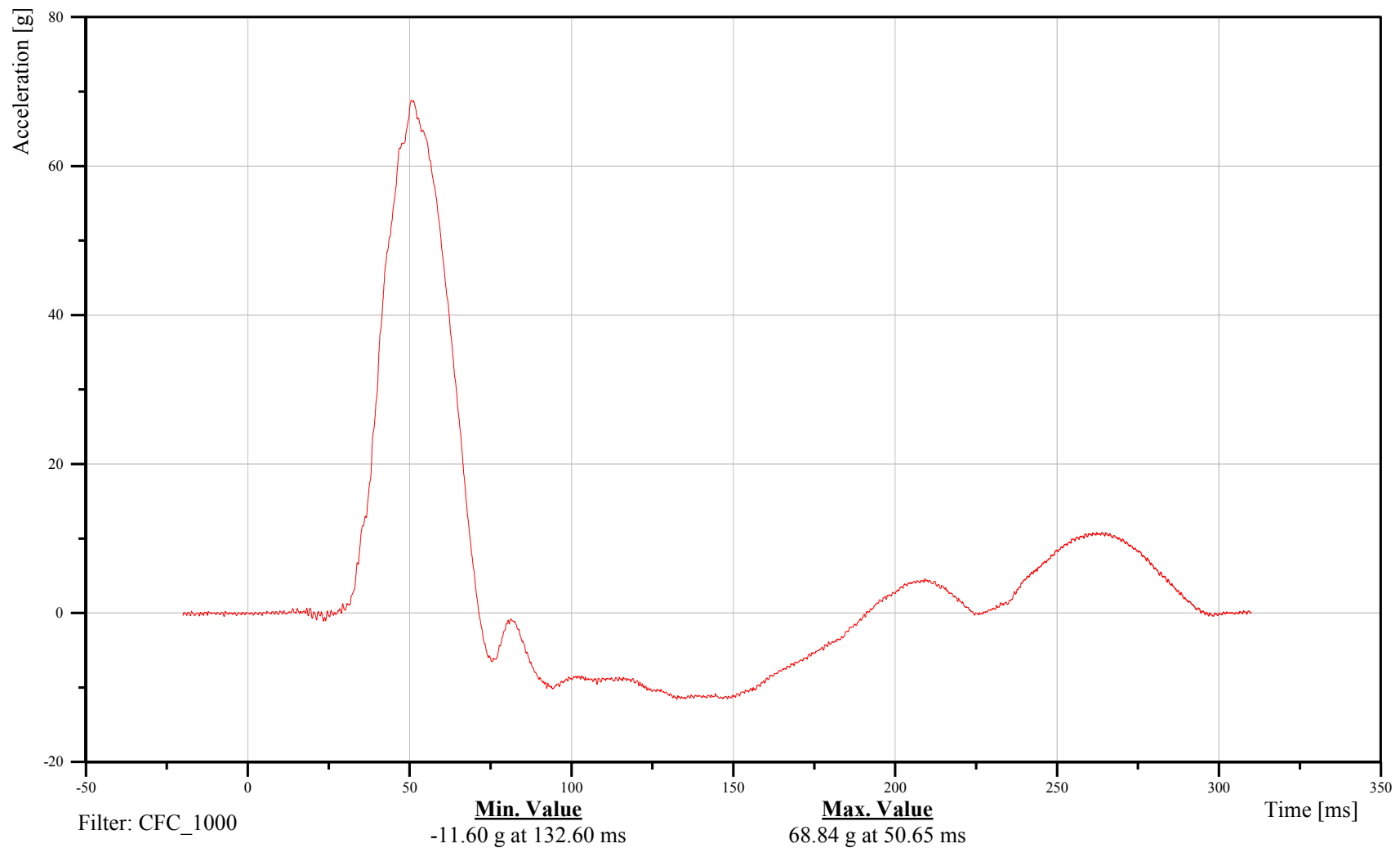
Time: 16:04

Customer: VRTC

11HEADCG00WSACYA

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Head Z-Axis Acceleration

Date: 03/29/2016

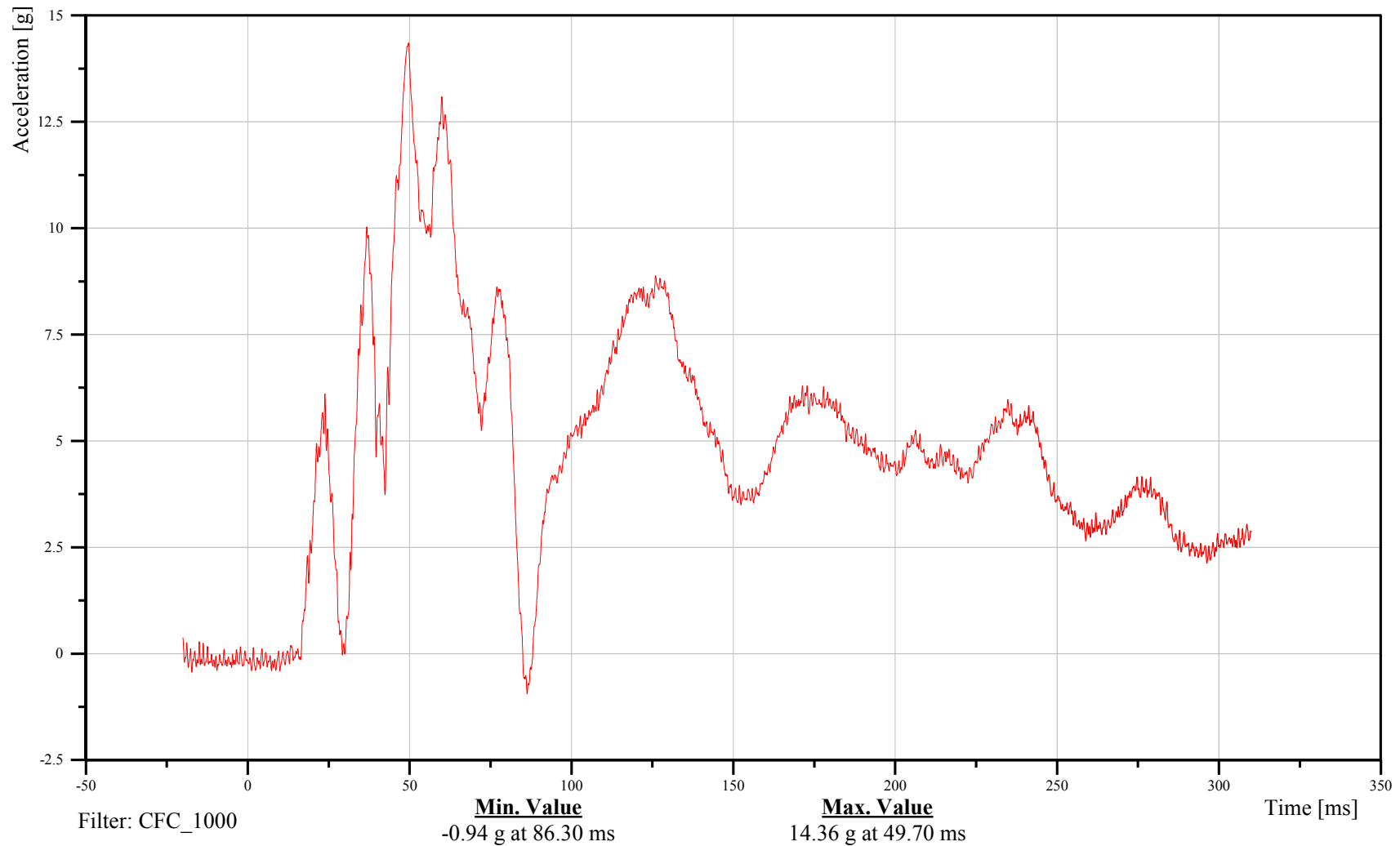
Time: 16:04

Customer: VRTC

11HEADCG00WSACZA

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Head A Resultant

Date: 03/29/2016

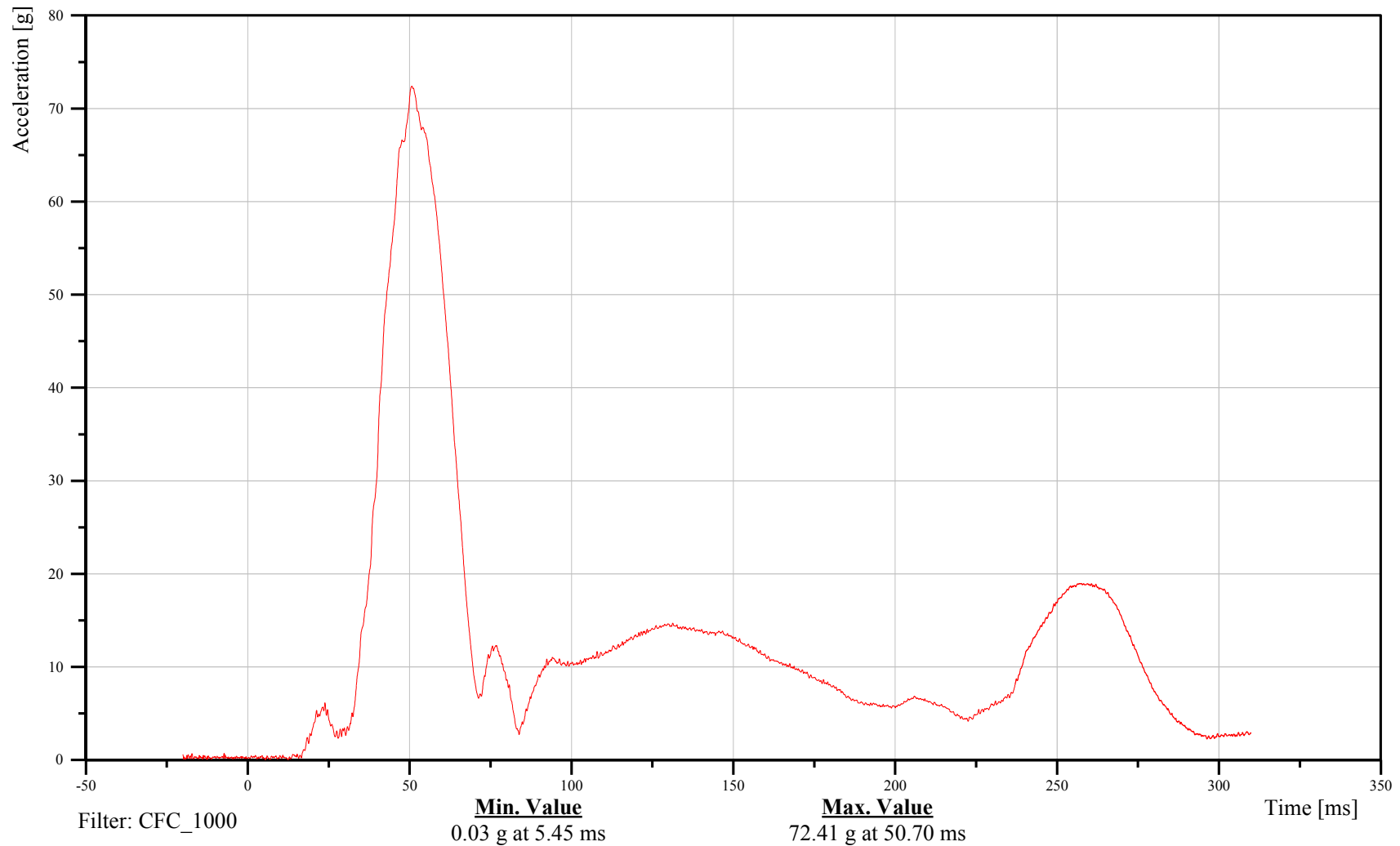
Time: 16:04

Customer: VRTC

11HEADCG00WSACRA

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Head X-Axis Angular Velocity

Date: 03/29/2016

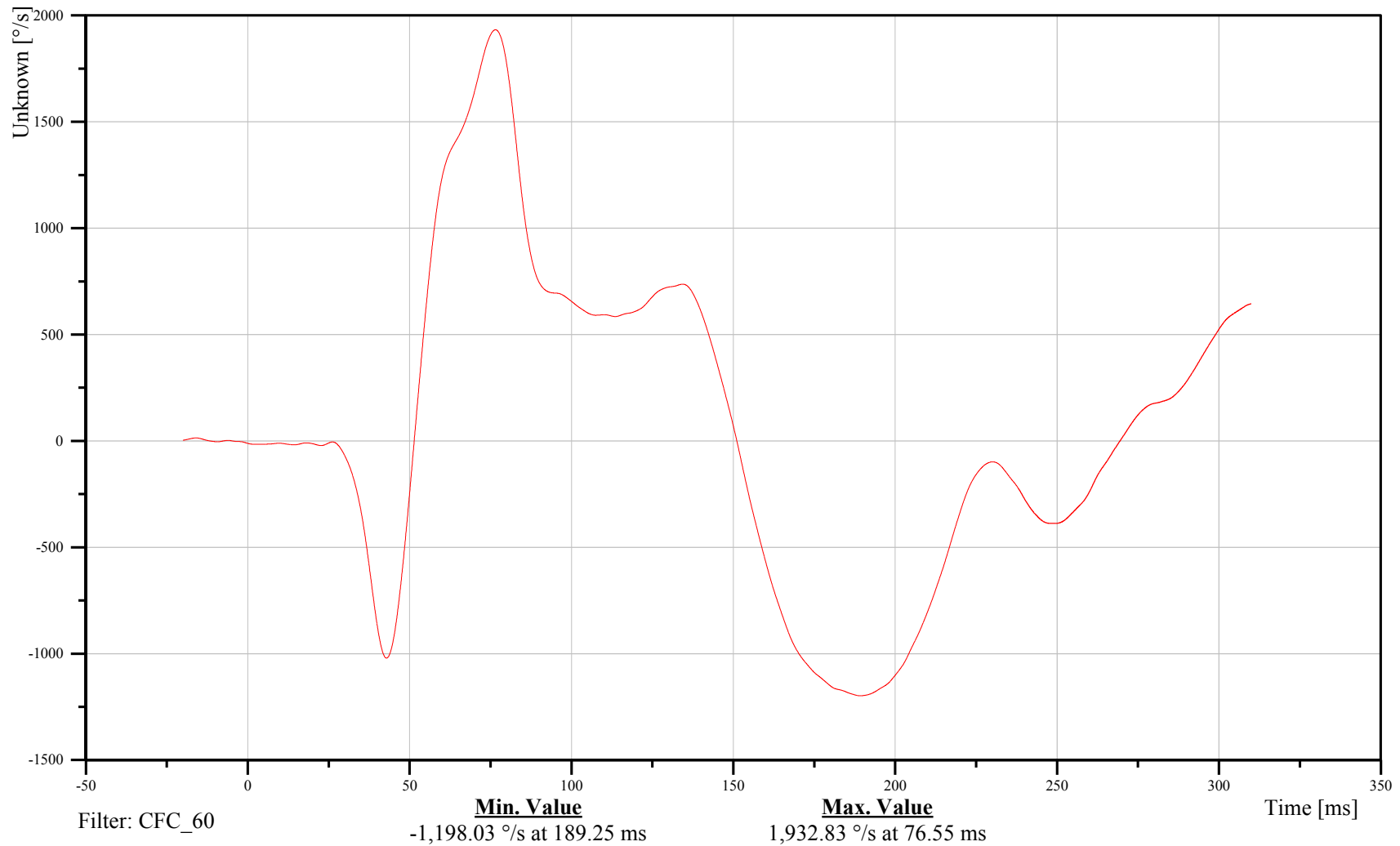
Time: 16:04

Customer: VRTC

11HEADCG00WSAVXD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Head Y-Axis Angular Velocity

Date: 03/29/2016

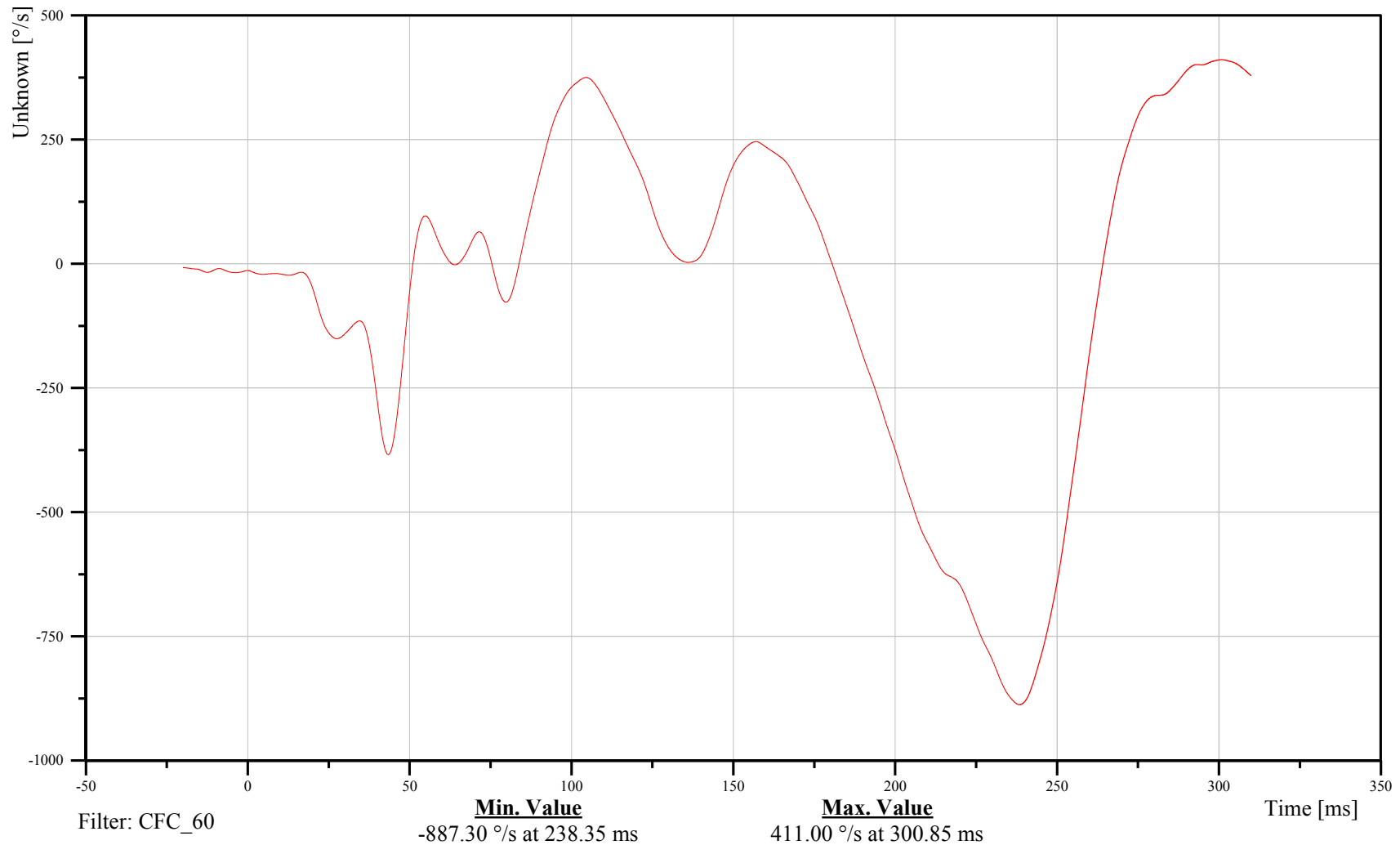
Time: 16:04

Customer: VRTC

11HEADCG00WSAVYD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Head Z-Axis Angular Velocity

Date: 03/29/2016

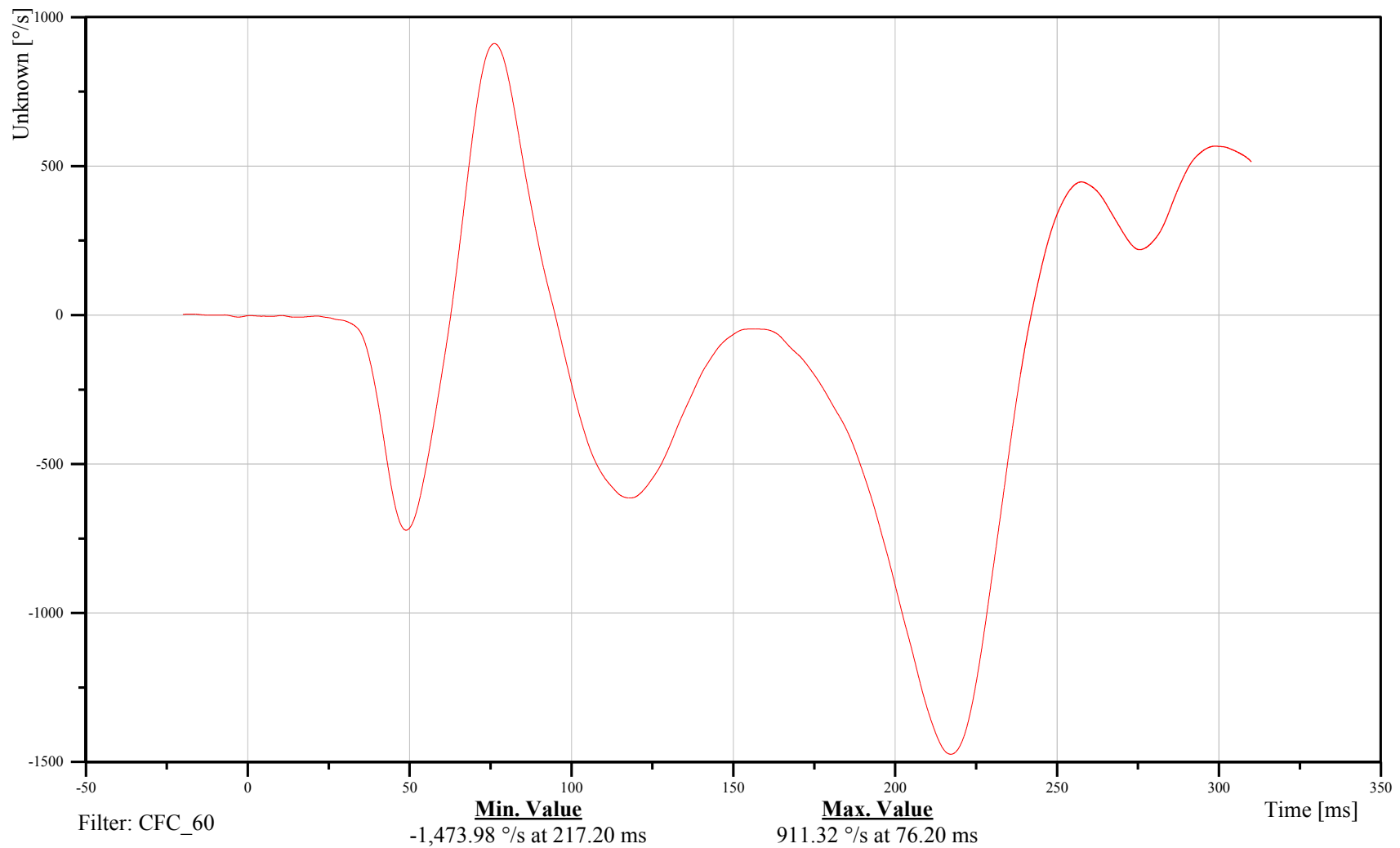
Time: 16:04

Customer: VRTC

11HEADCG00WSAVZD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Upper Neck X-Axis Force

Date: 03/29/2016

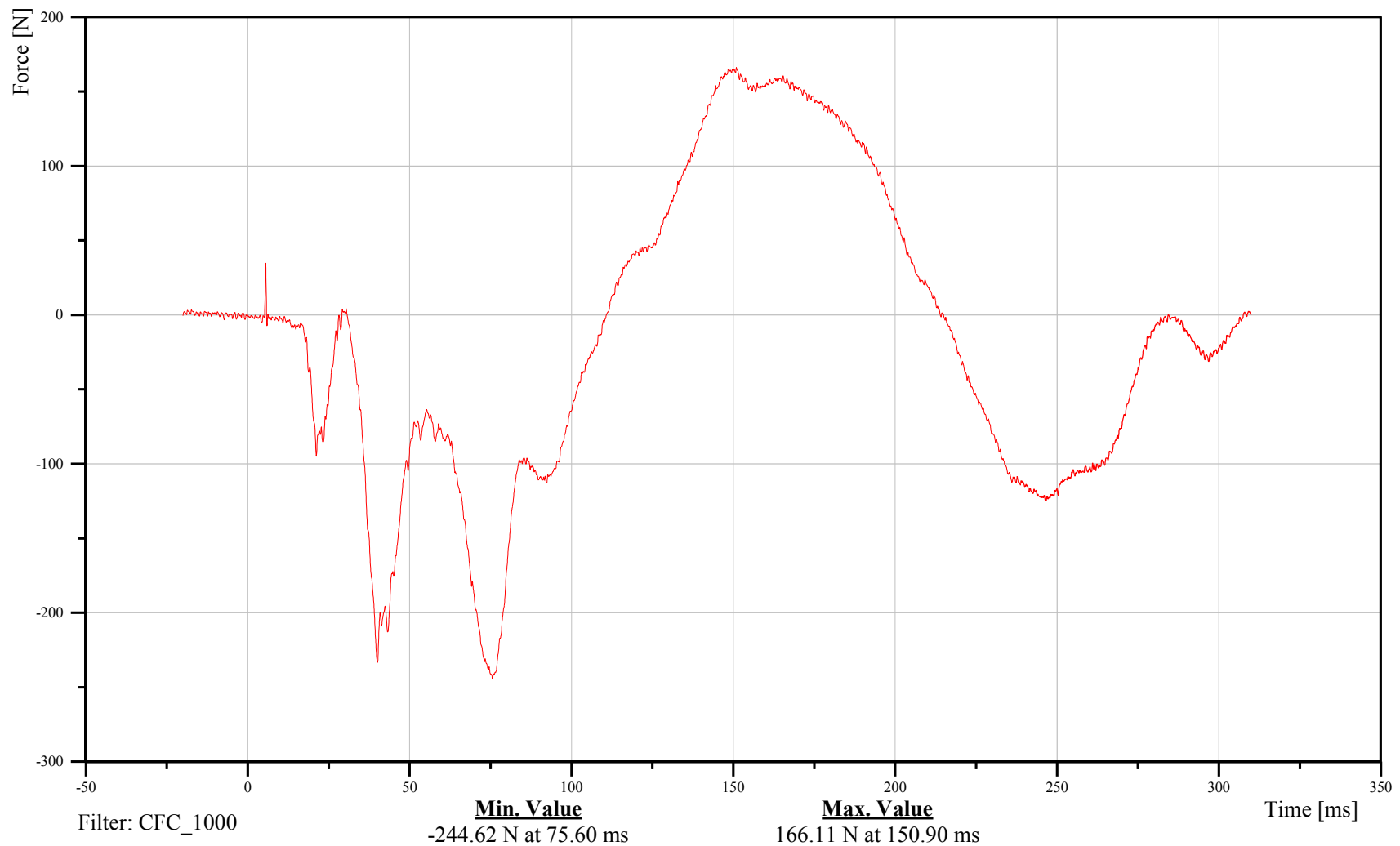
Time: 16:04

Customer: VRTC

11NECKUP00WSFOXA

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Upper Neck Y-Axis Force

Date: 03/29/2016

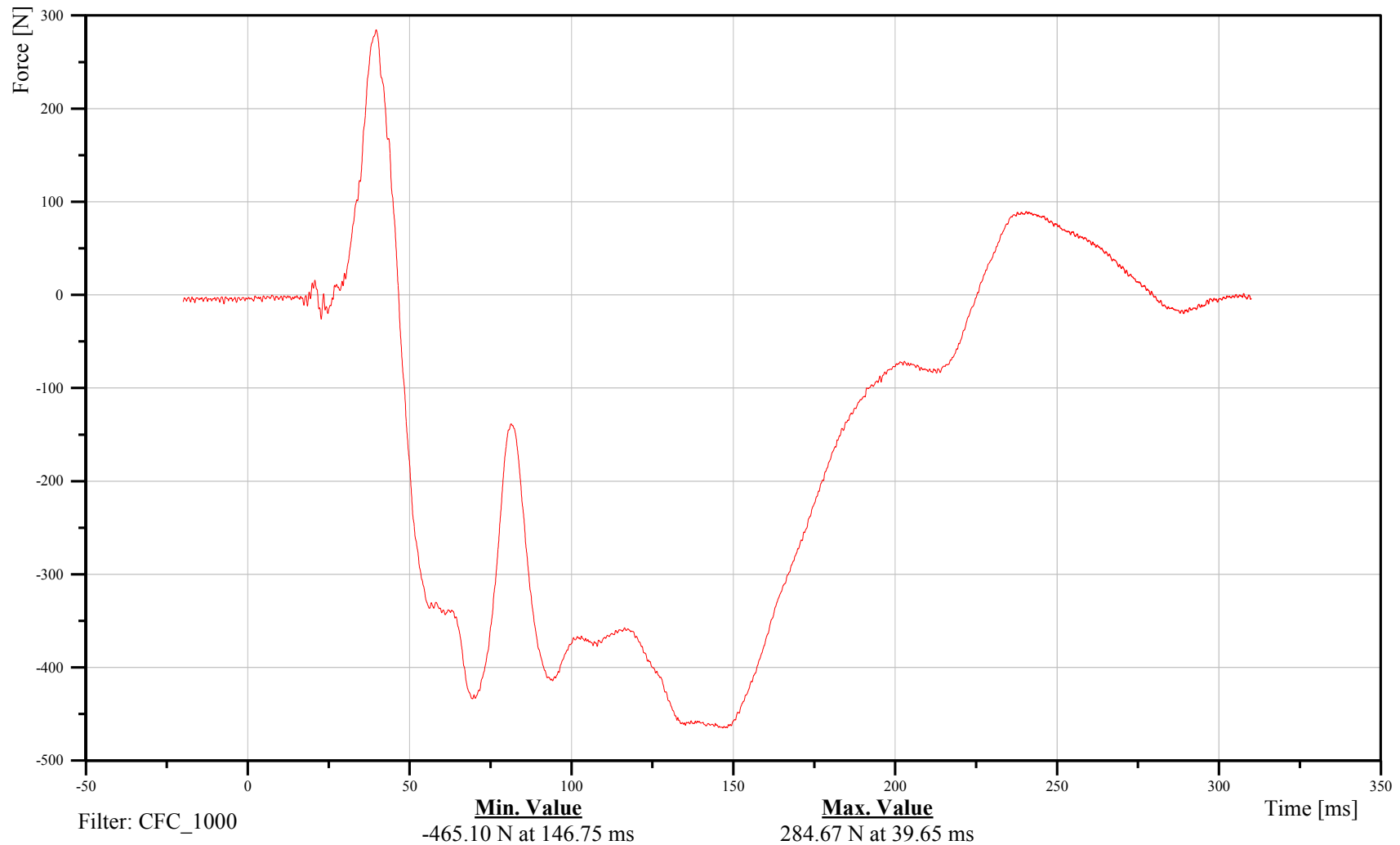
Time: 16:04

Customer: VRTC

11NECKUP00WSFOYA

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Upper Neck Z-Axis Force

Date: 03/29/2016

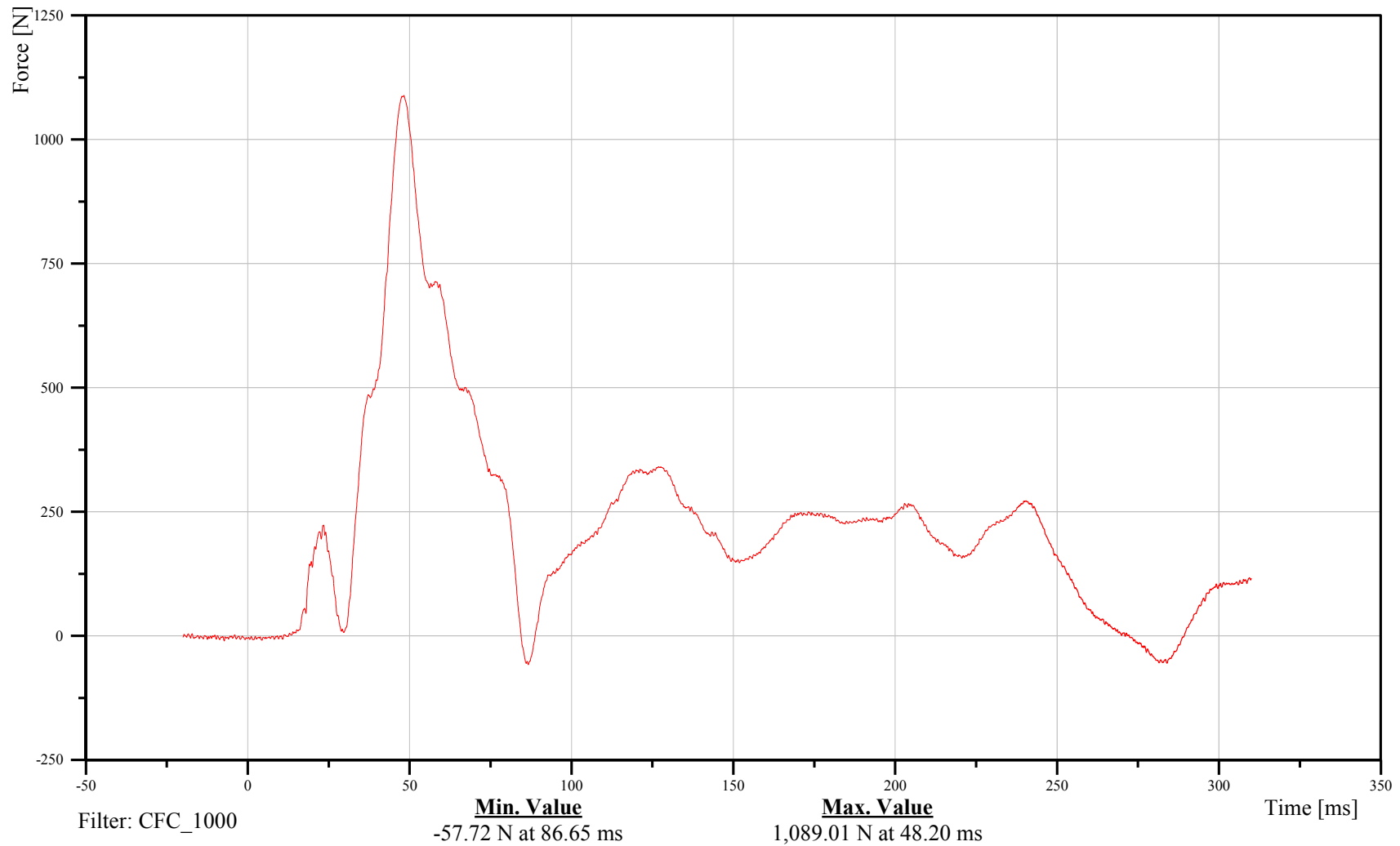
Time: 16:04

Customer: VRTC

11NECKUP00WSFOZA

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Upper Neck Moment About X Axis

Date: 03/29/2016

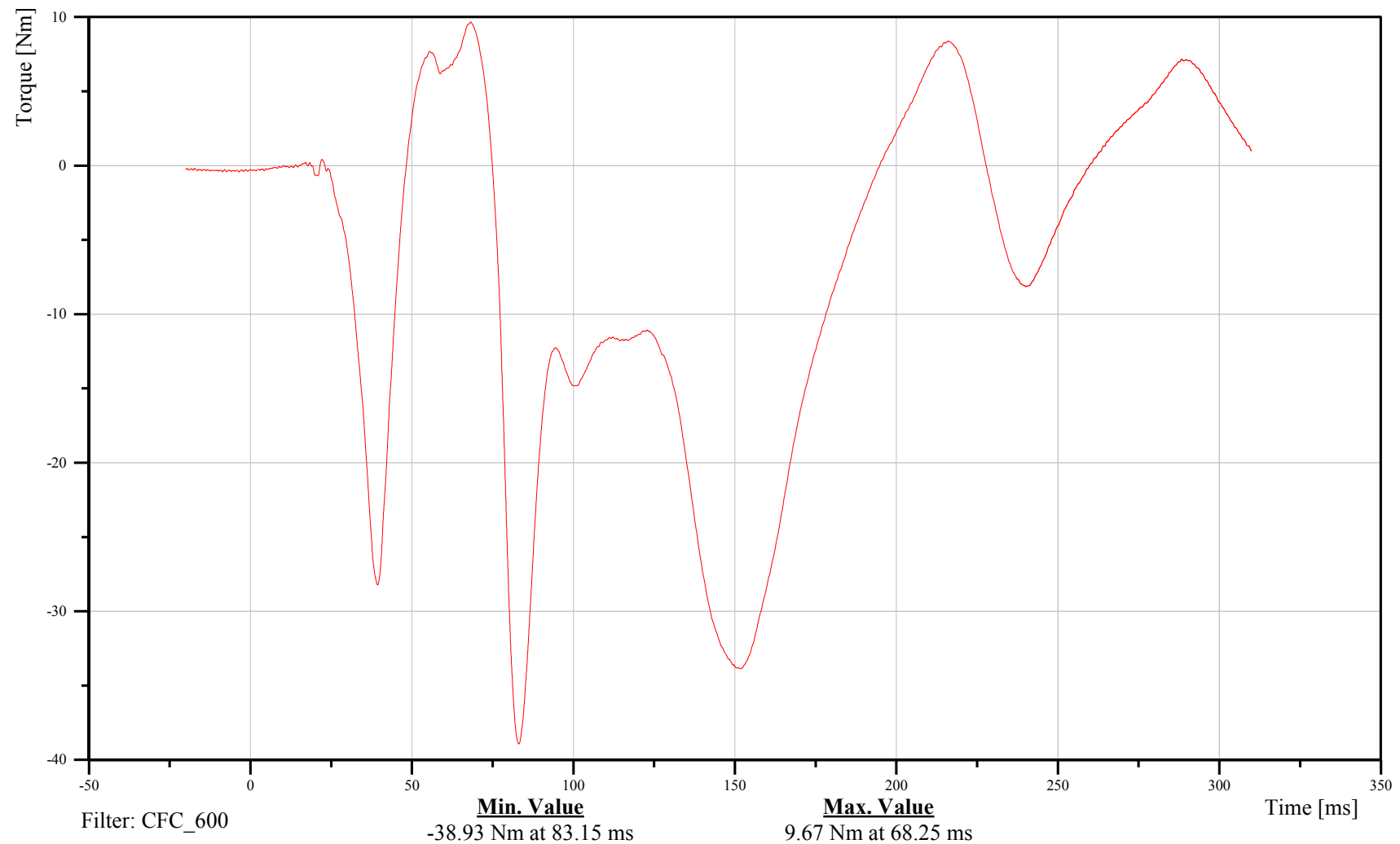
Time: 16:04

Customer: VRTC

11NECKUP00WSMOXB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Upper Neck Moment About Y Axis

Date: 03/29/2016

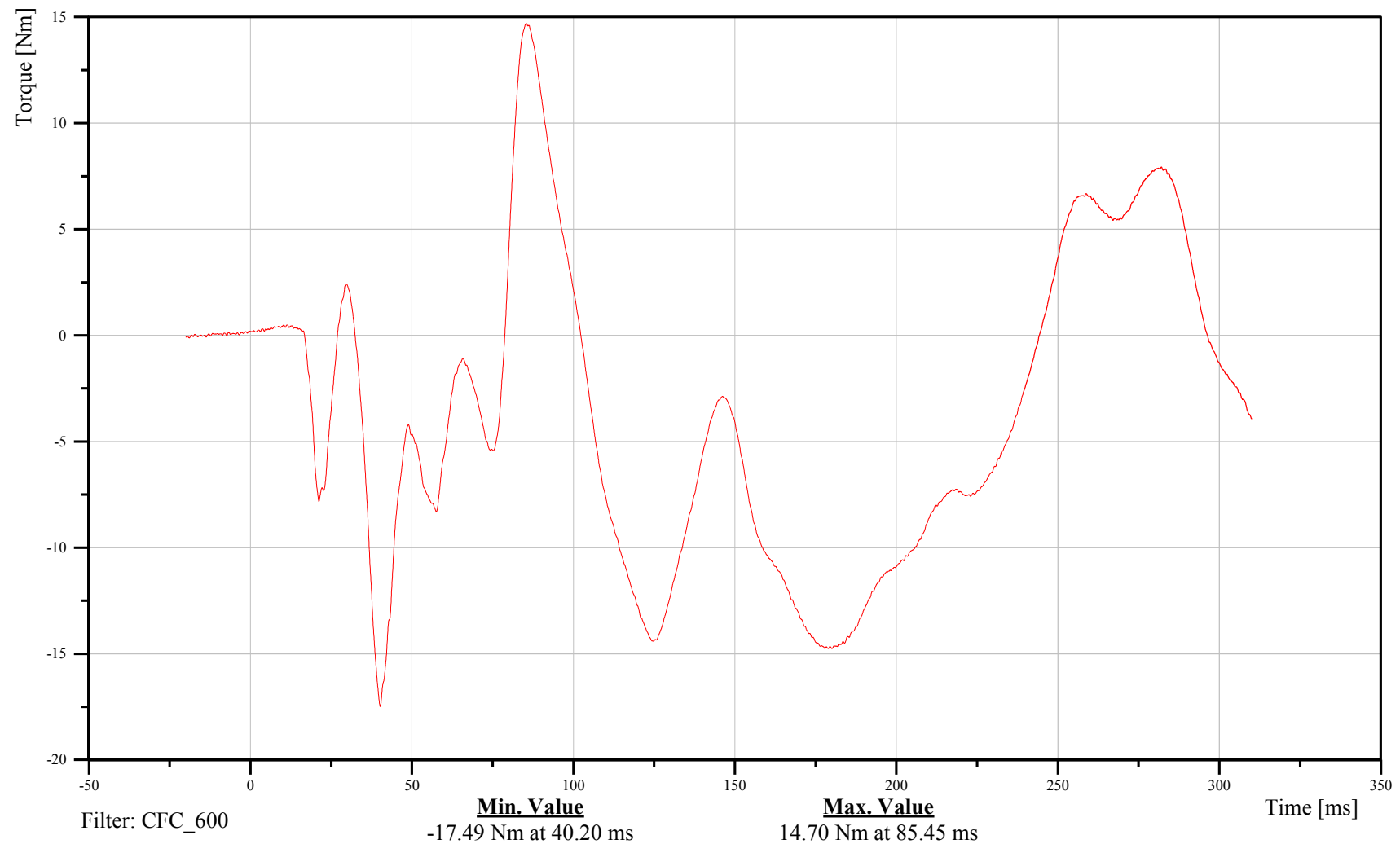
Time: 16:04

Customer: VRTC

11NECKUP00WSMOYB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Upper Neck Moment About Z Axis

Date: 03/29/2016

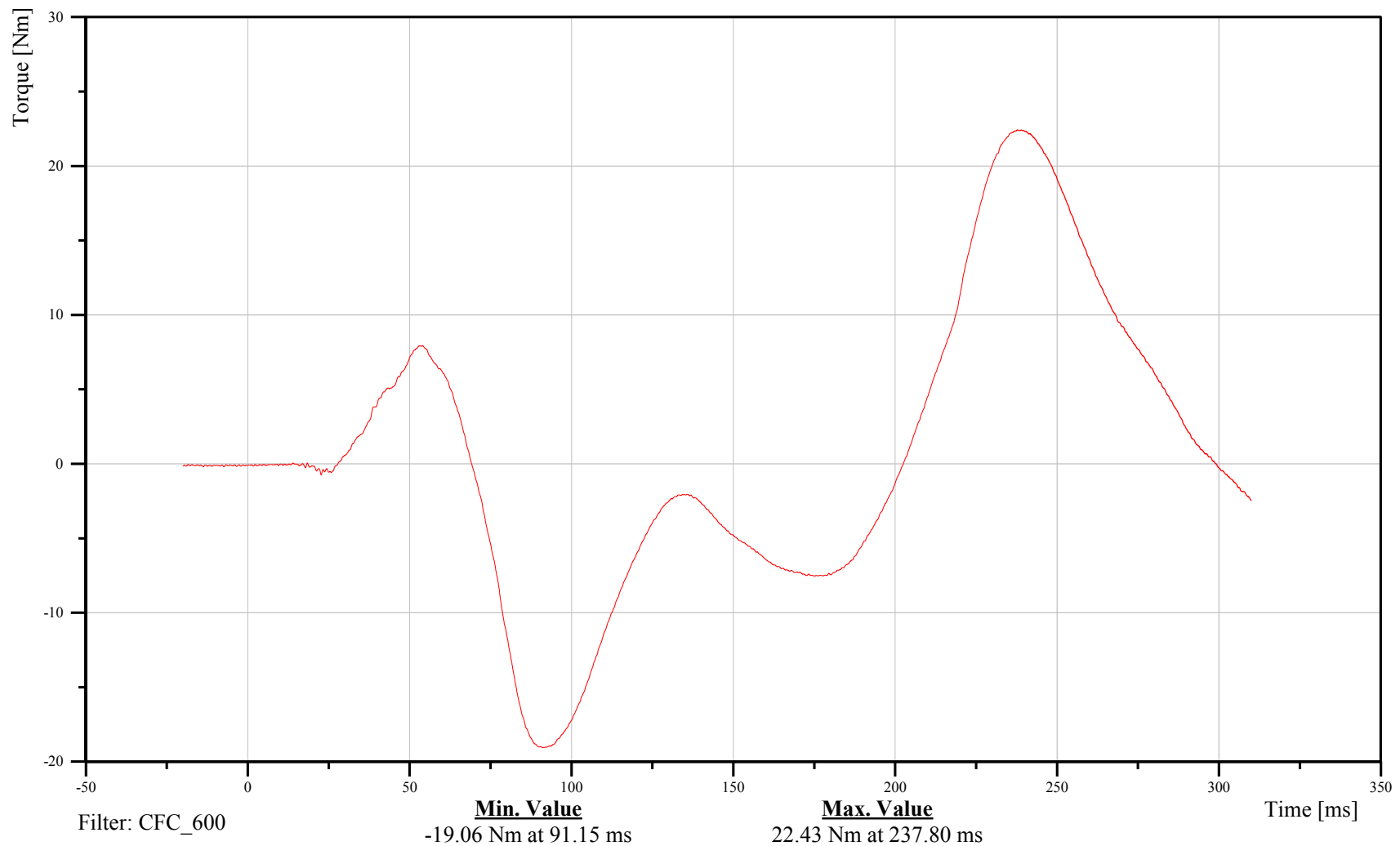
Time: 16:04

Customer: VRTC

11NECKUP00WSMOZB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Lower Neck X-Axis Force

Date: 03/29/2016

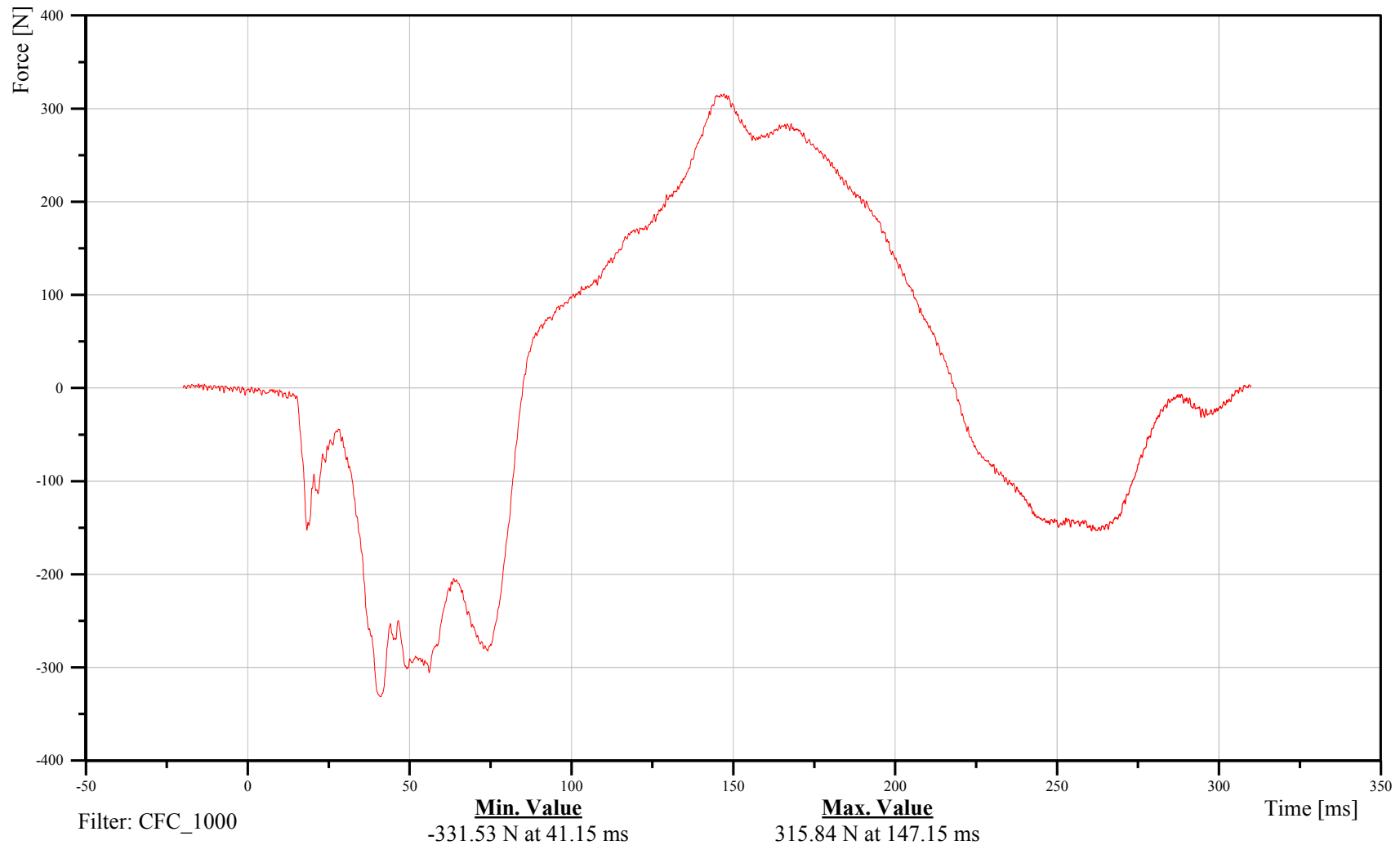
Time: 16:04

Customer: VRTC

11NECKLO00WSFOXA

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Lower Neck Y-Axis Force

Date: 03/29/2016

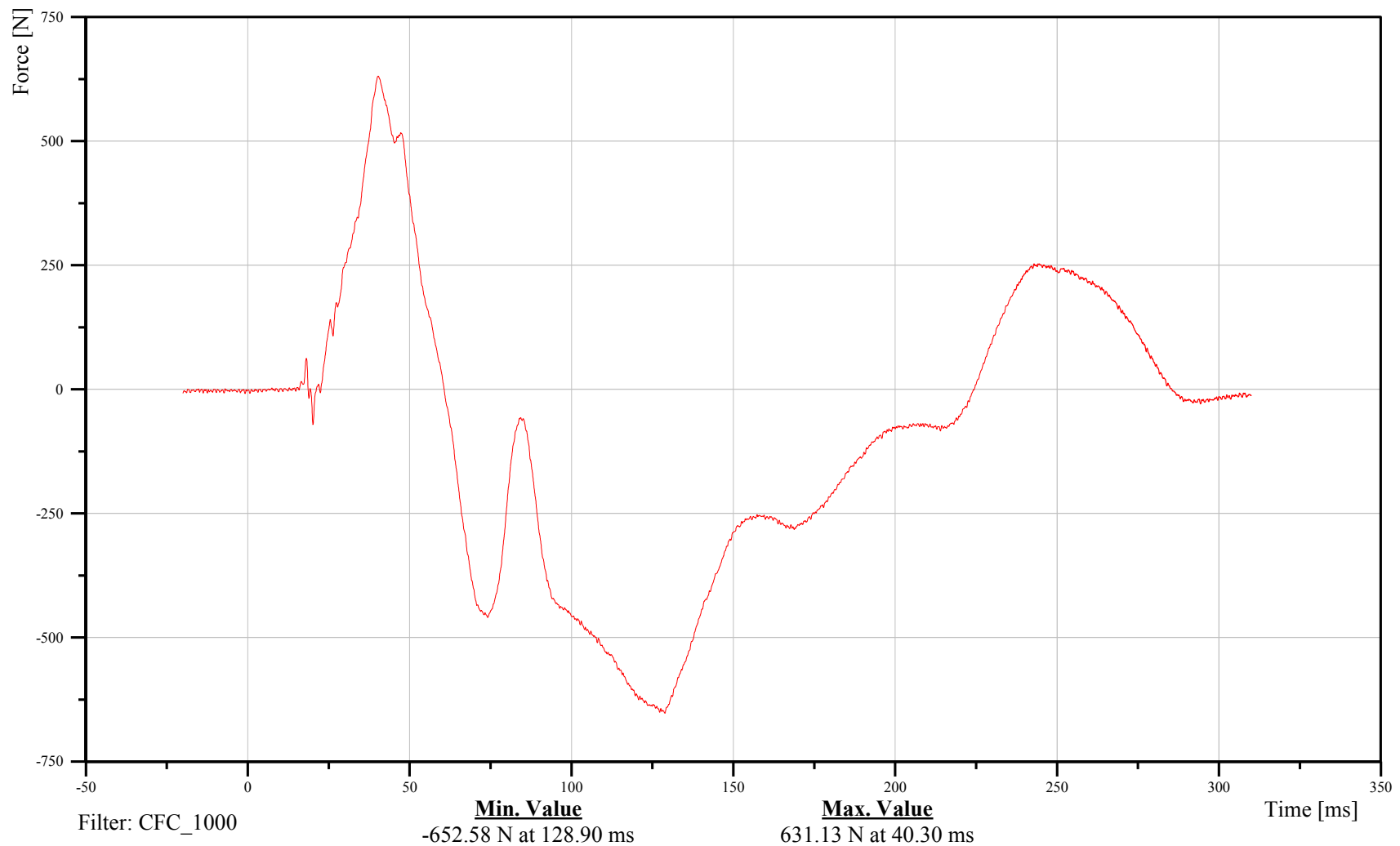
Time: 16:04

Customer: VRTC

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TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Lower Neck Z-Axis Force

Date: 03/29/2016

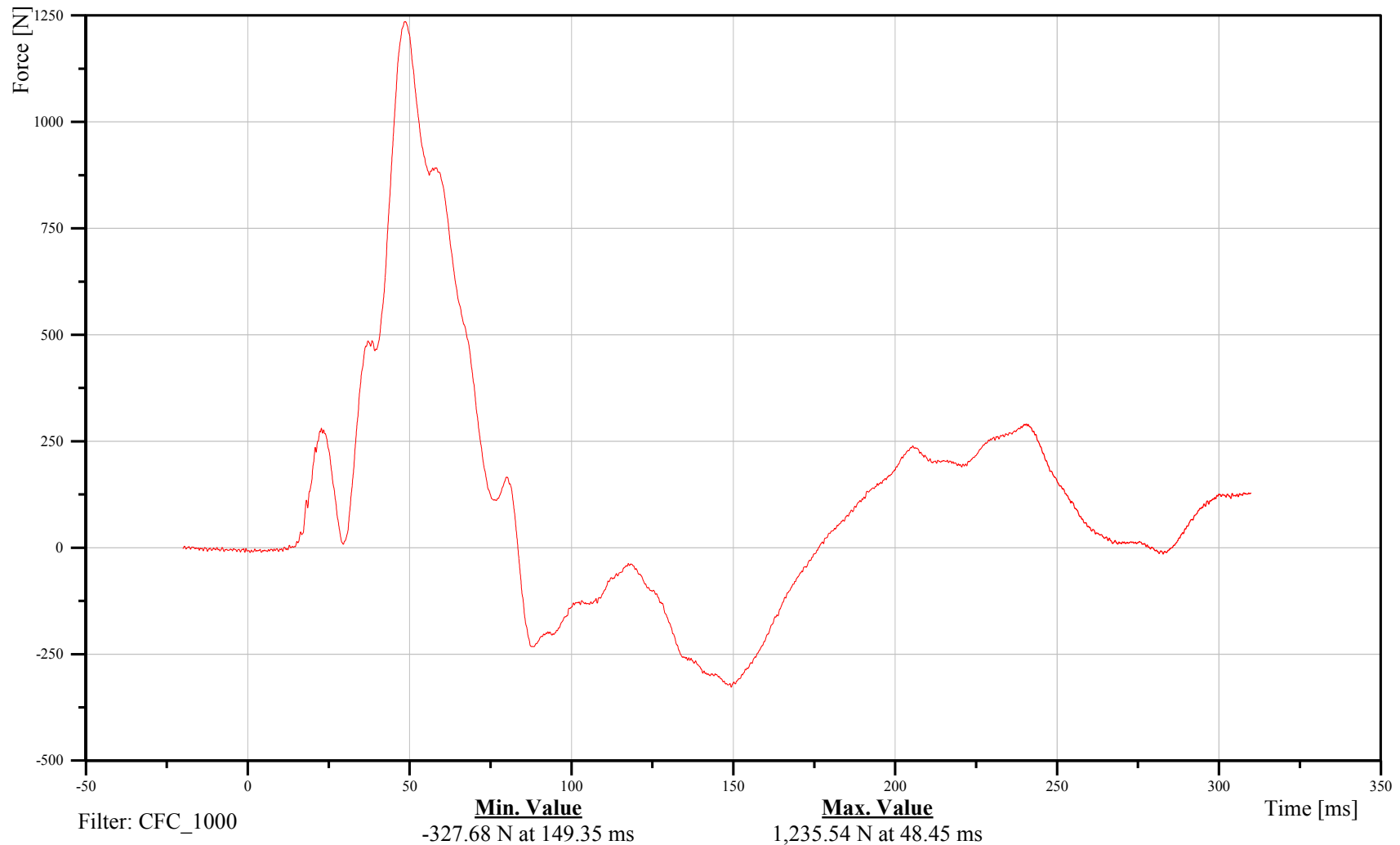
Time: 16:04

Customer: VRTC

11NECKLO00WSFOZA

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Lower Neck Moment About X Axis

Date: 03/29/2016

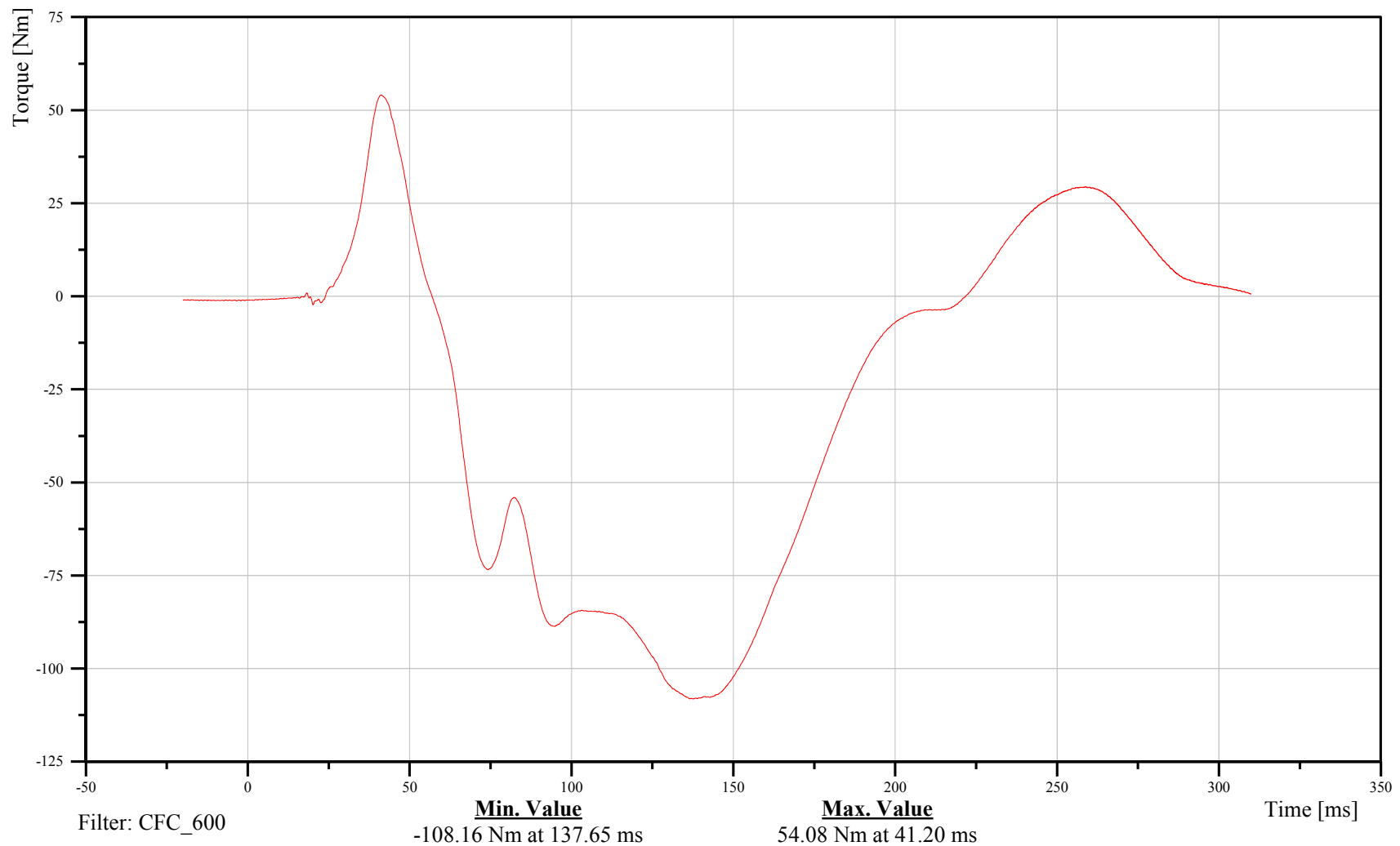
Time: 16:04

Customer: VRTC

11NECKLO00WSMOXB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Lower Neck Moment About Y Axis

Date: 03/29/2016

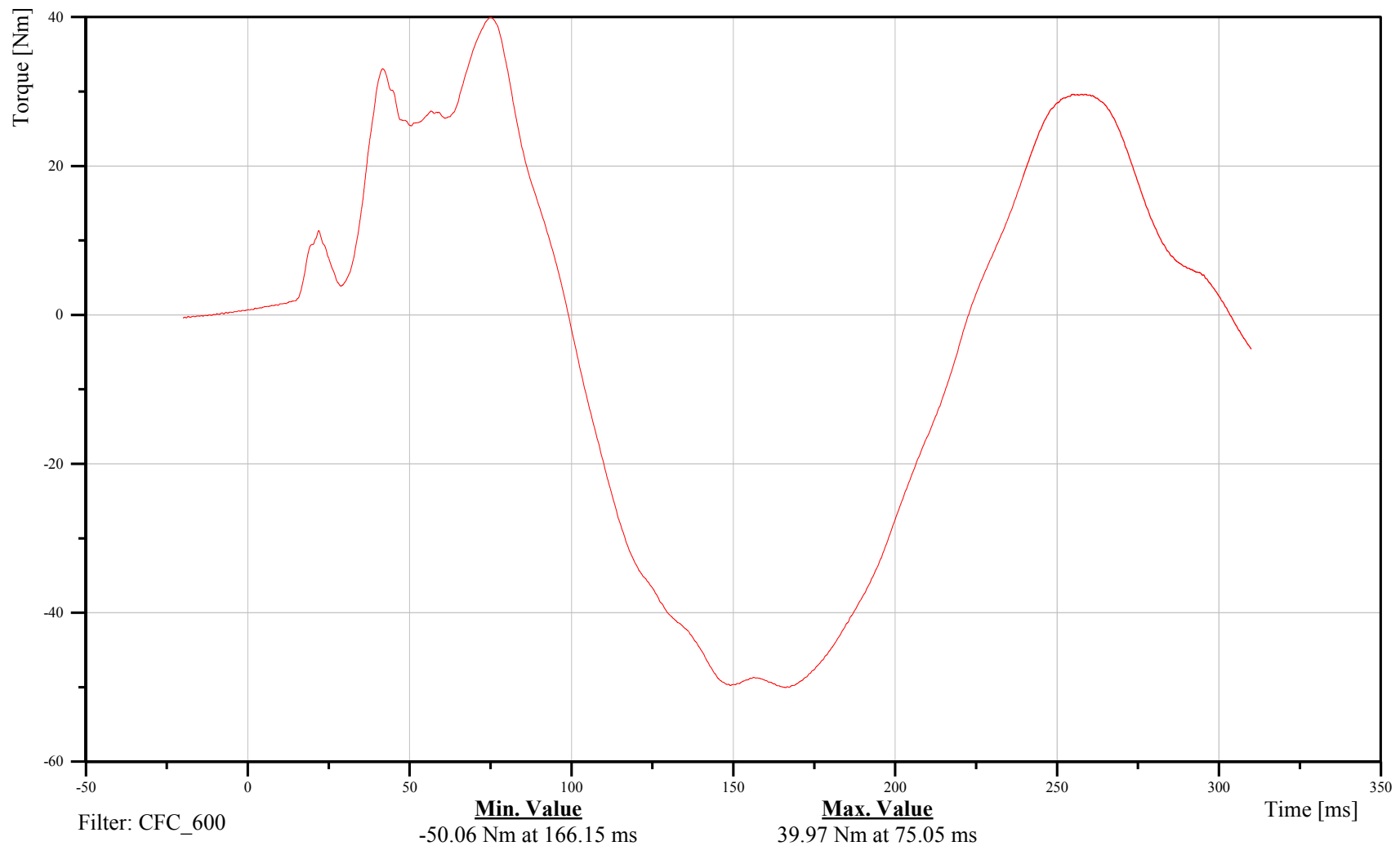
Time: 16:04

Customer: VRTC

11NECKLO00WSMOYB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Lower Neck Moment About Z Axis

Date: 03/29/2016

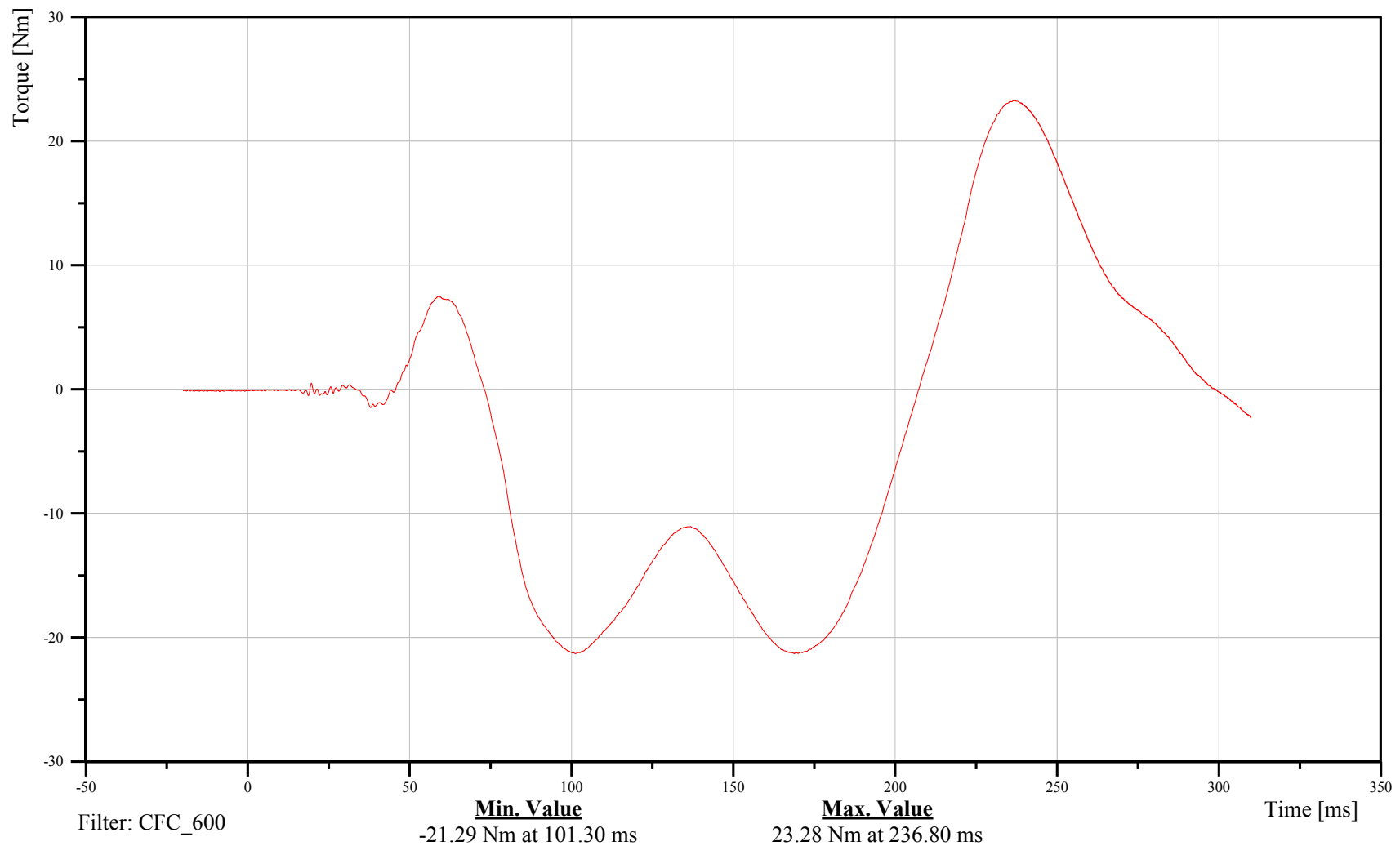
Time: 16:04

Customer: VRTC

11NECKLO00WSMOZB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

T1 Longitudinal Ax

Date: 03/29/2016

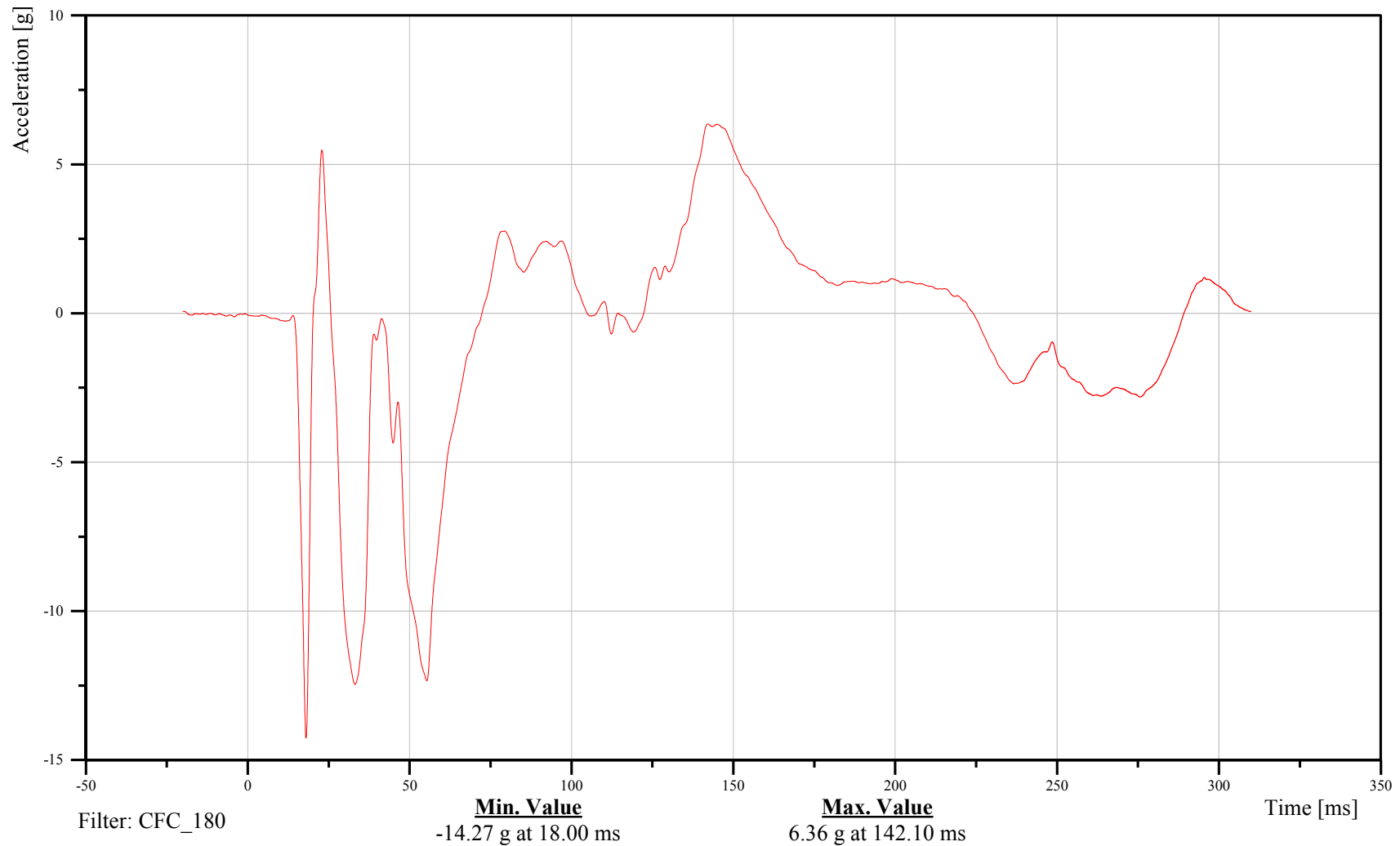
Time: 16:04

Customer: VRTC

11THSP0100WSACXC

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

T1 Lateral Ay

Date: 03/29/2016

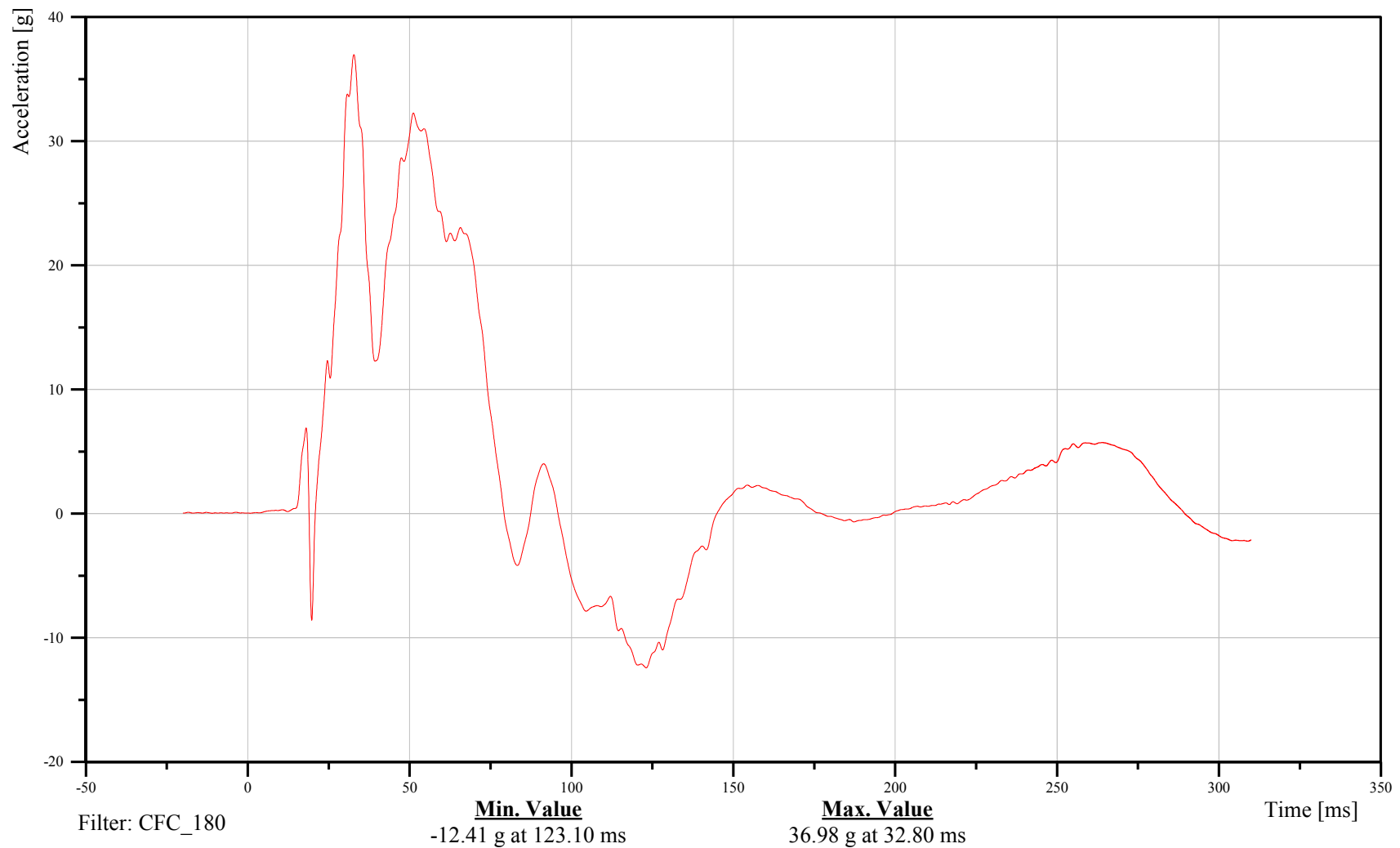
Time: 16:04

Customer: VRTC

11THSP0100WSACYC

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

T1 Vertical Az

Date: 03/29/2016

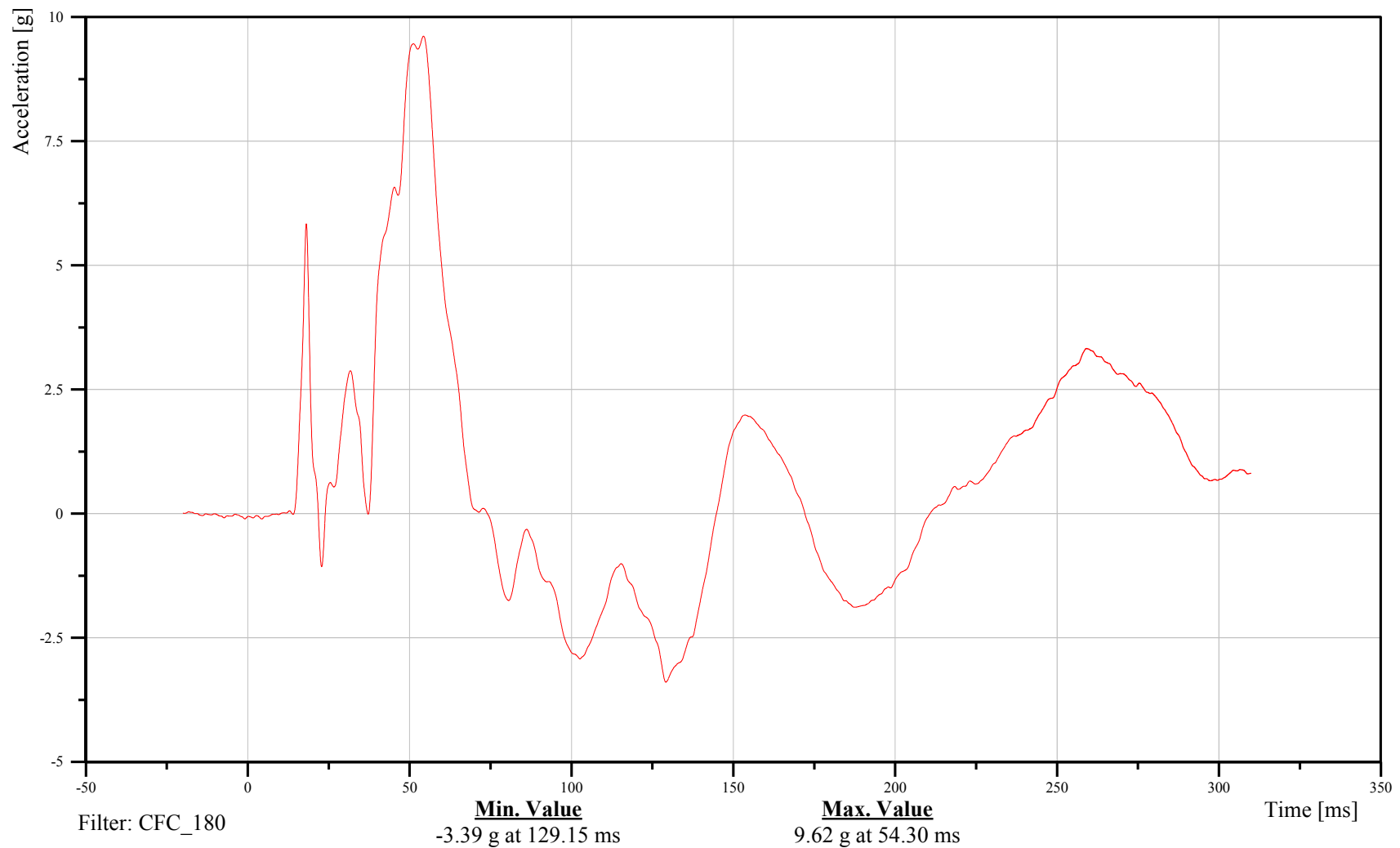
Time: 16:04

Customer: VRTC

11THSP0100WSACZC

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

T1 A Resultant

Date: 03/29/2016

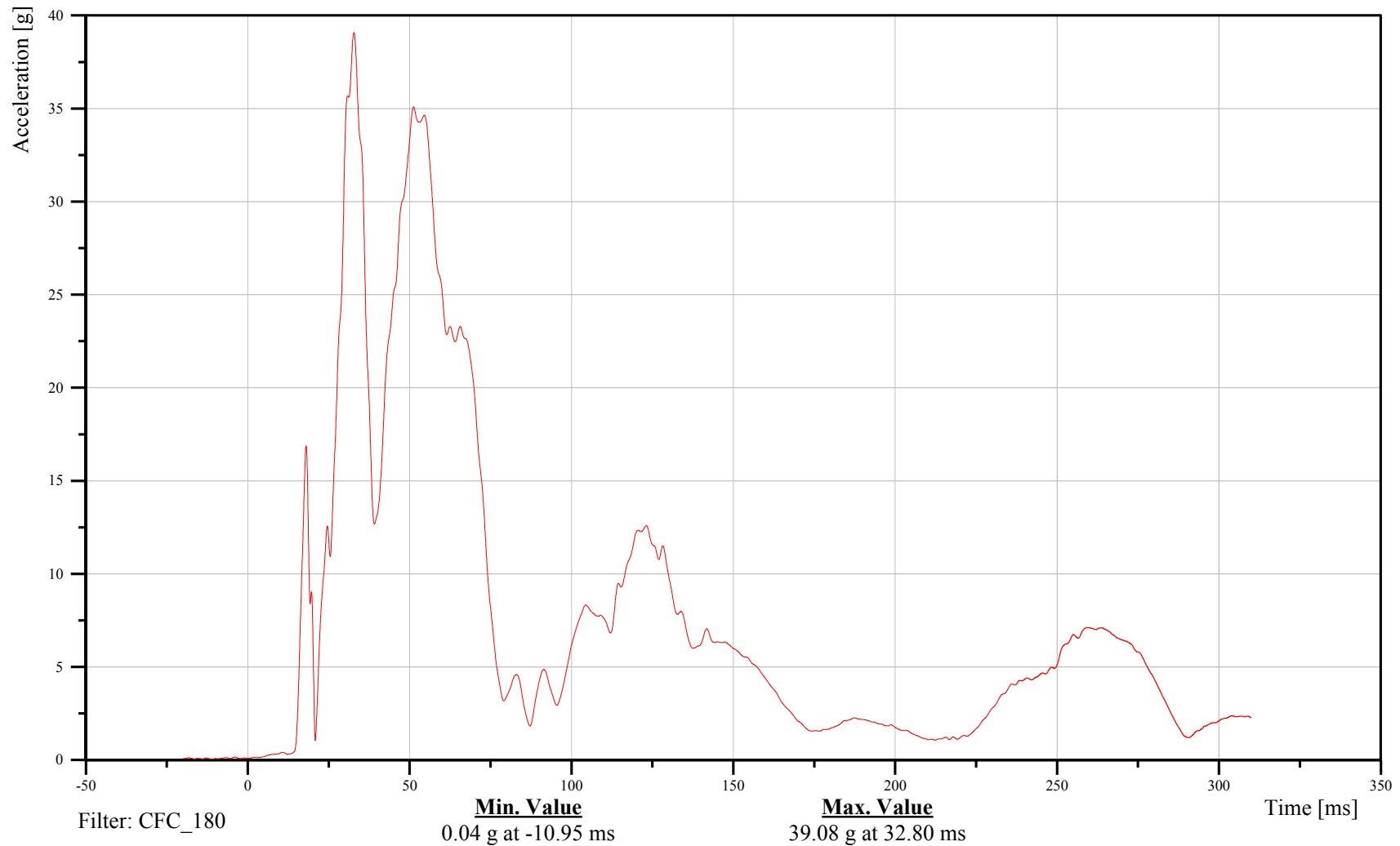
Time: 16:04

Customer: VRTC

11THSP0100WSACRC

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

T4 Longitudinal Ax

Date: 03/29/2016

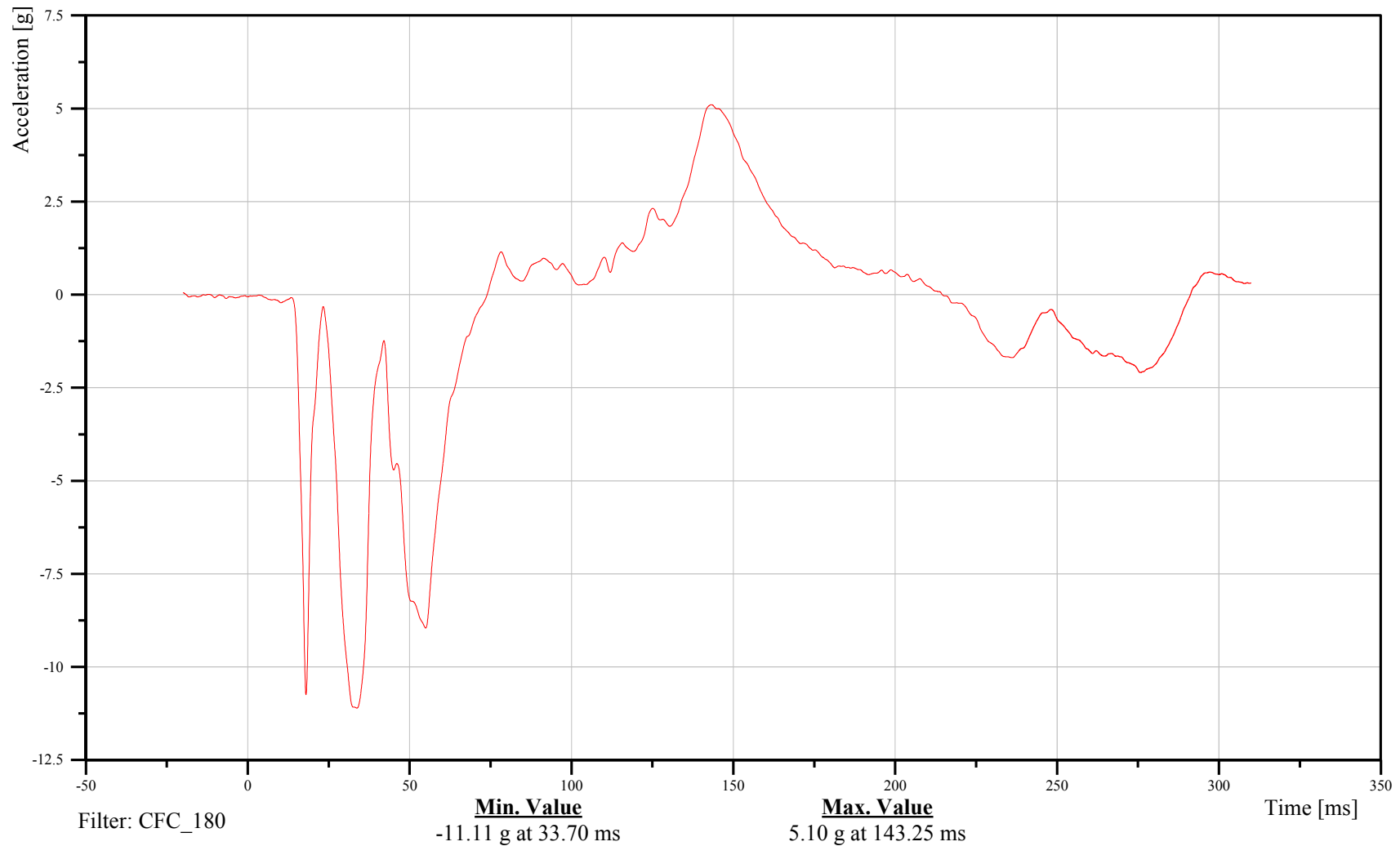
Time: 16:04

Customer: VRTC

11THSP0400WSACXC

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

T4 Lateral Ay

Date: 03/29/2016

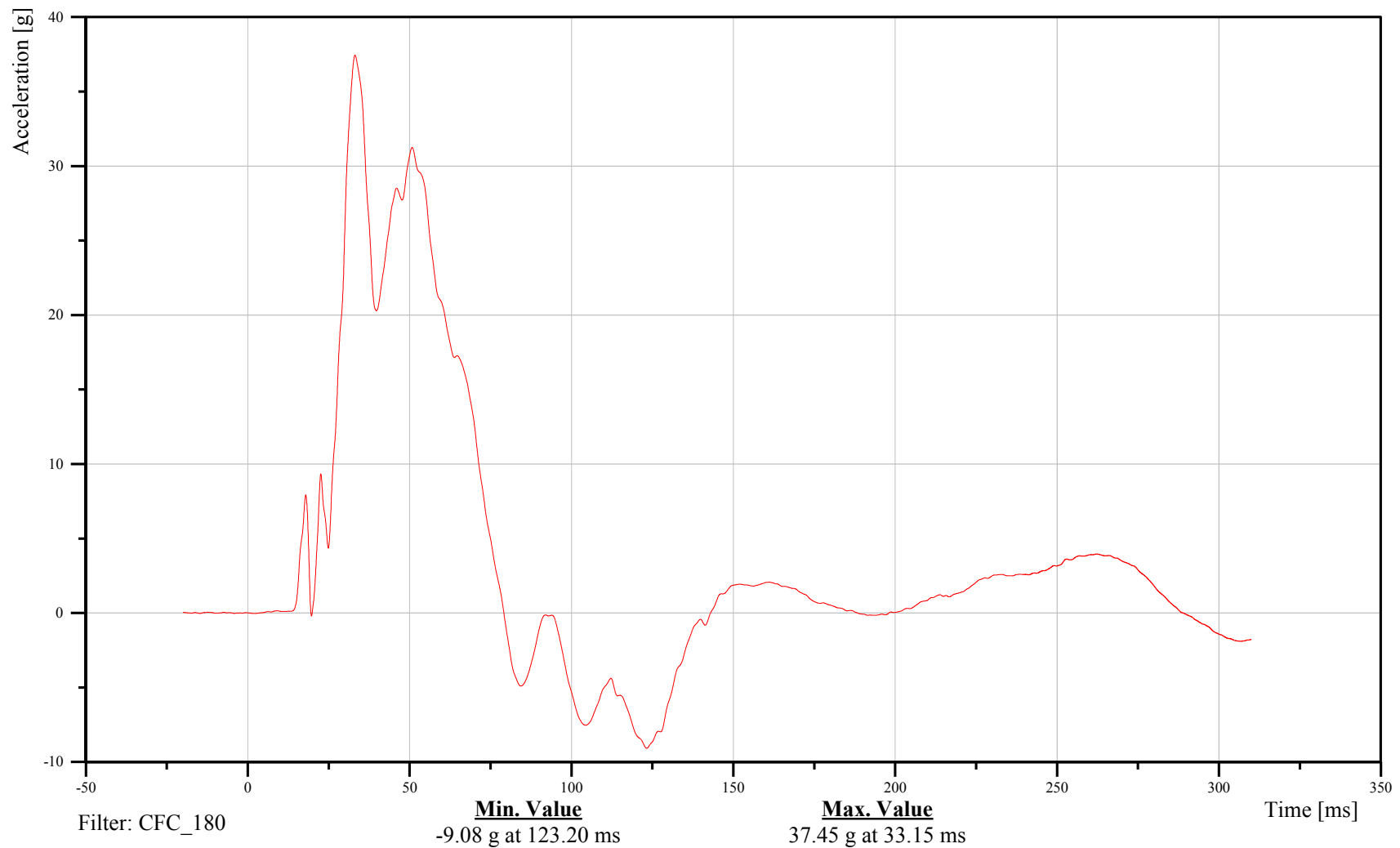
Time: 16:04

Customer: VRTC

11THSP0400WSACYC

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

T4 Vertical Az

Date: 03/29/2016

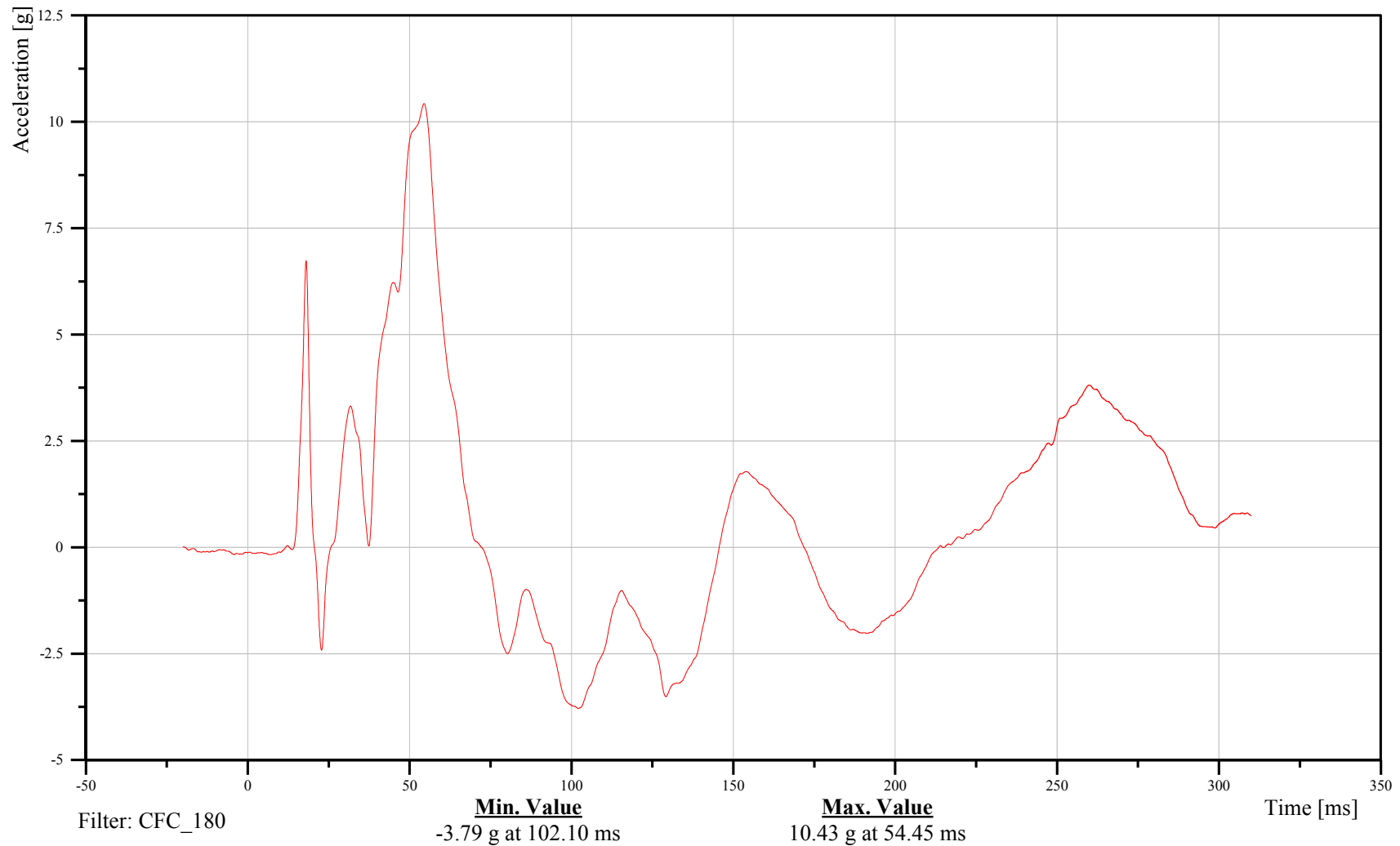
Time: 16:04

Customer: VRTC

11THSP0400WSACZC

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

T4 A Resultant

Date: 03/29/2016

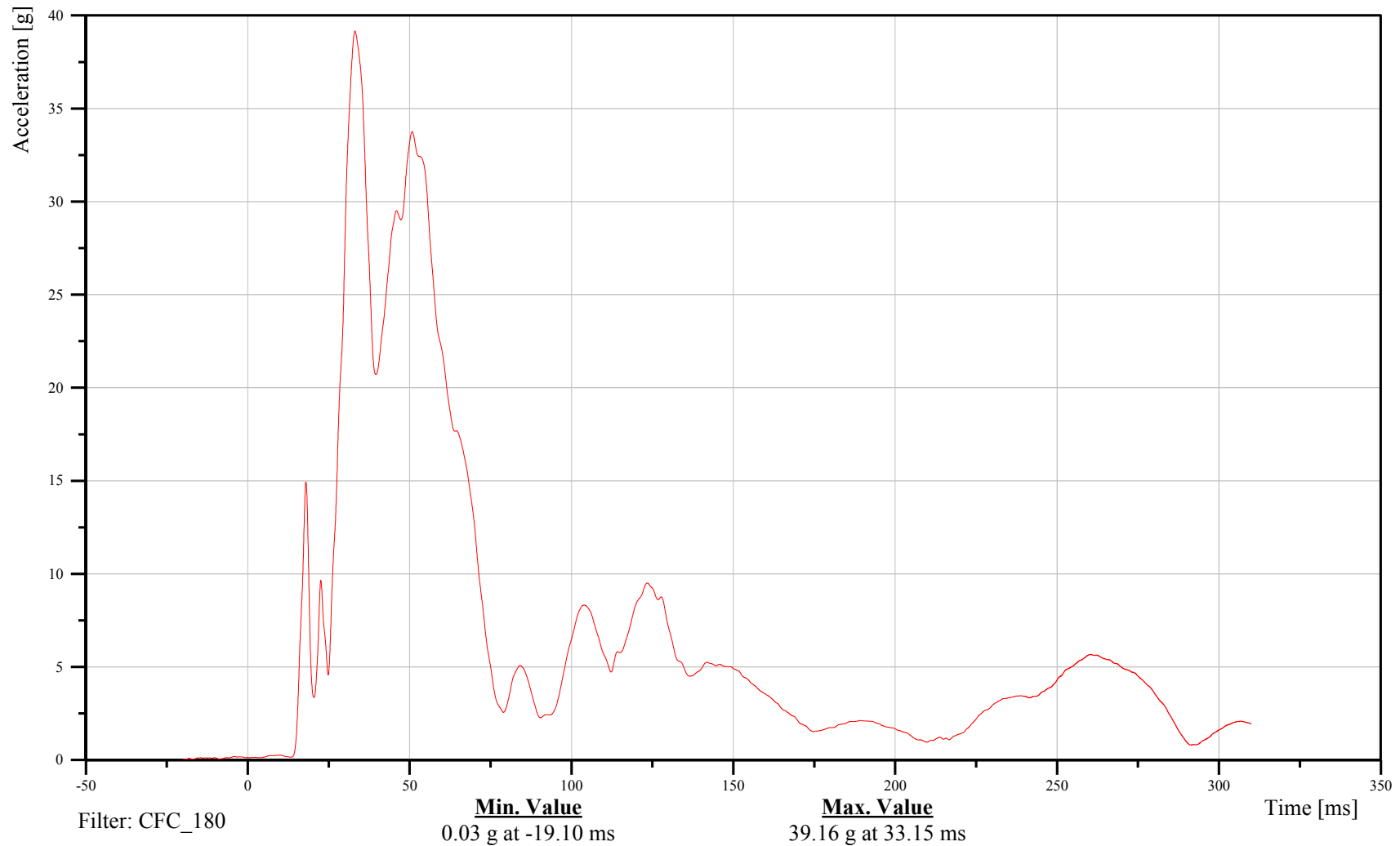
Time: 16:04

Customer: VRTC

11THSP0400WSACRC

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

T12 Longitudinal Ax

Date: 03/29/2016

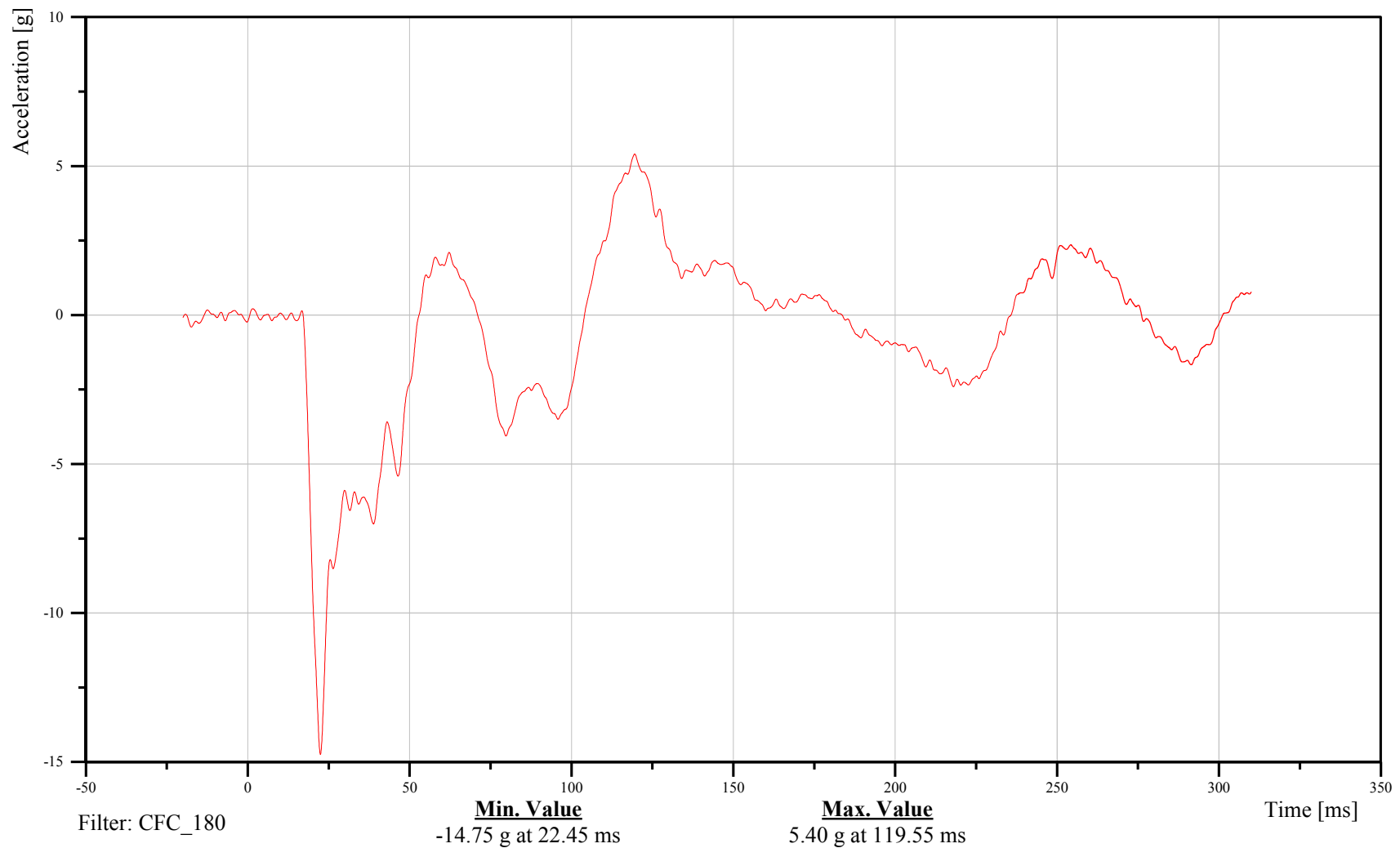
Time: 16:04

Customer: VRTC

11THSP1200WSACXC

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

T12 Lateral Ay

Date: 03/29/2016

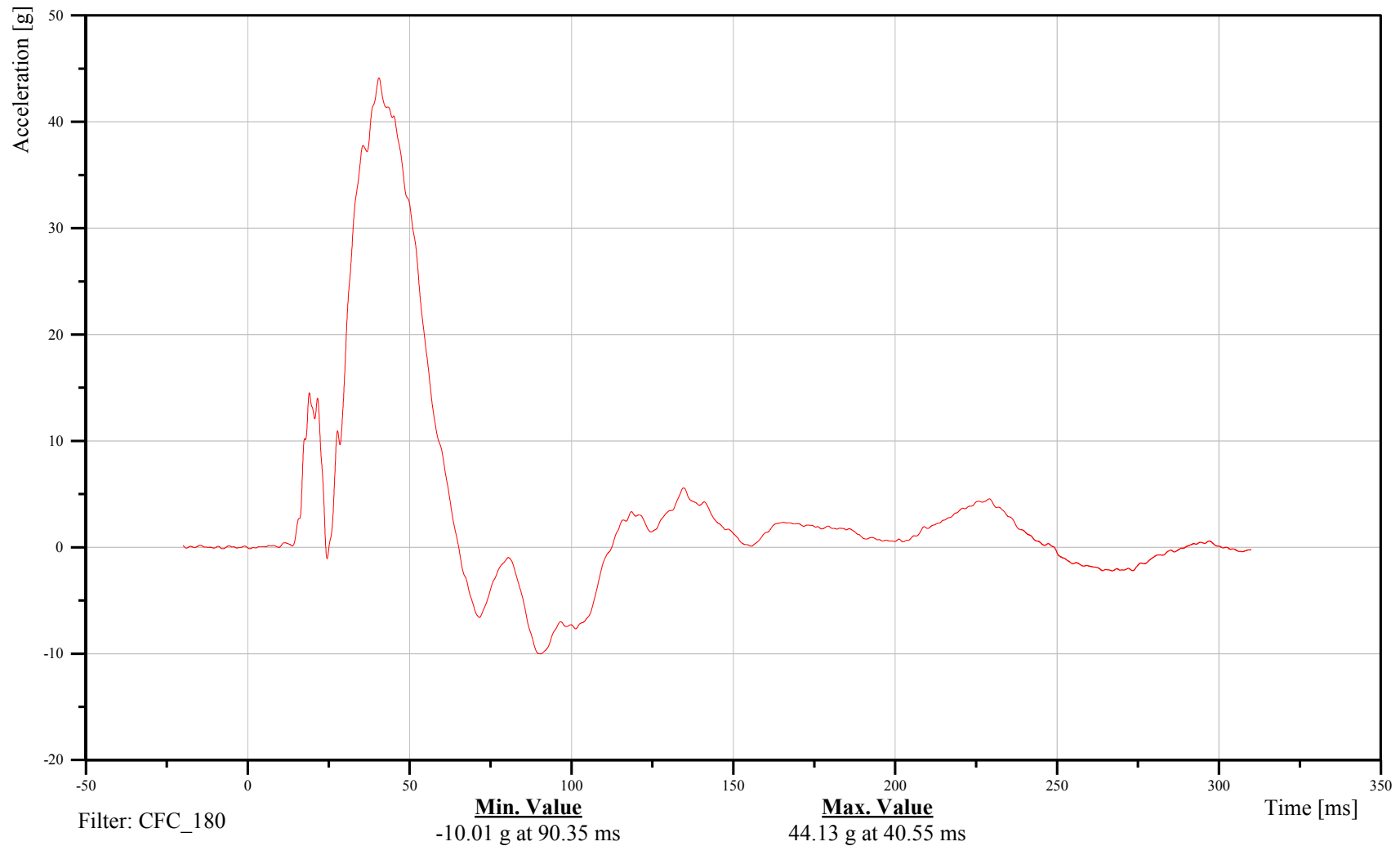
Time: 16:04

Customer: VRTC

11THSP1200WSACYC

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

T12 Vertical Az

Date: 03/29/2016

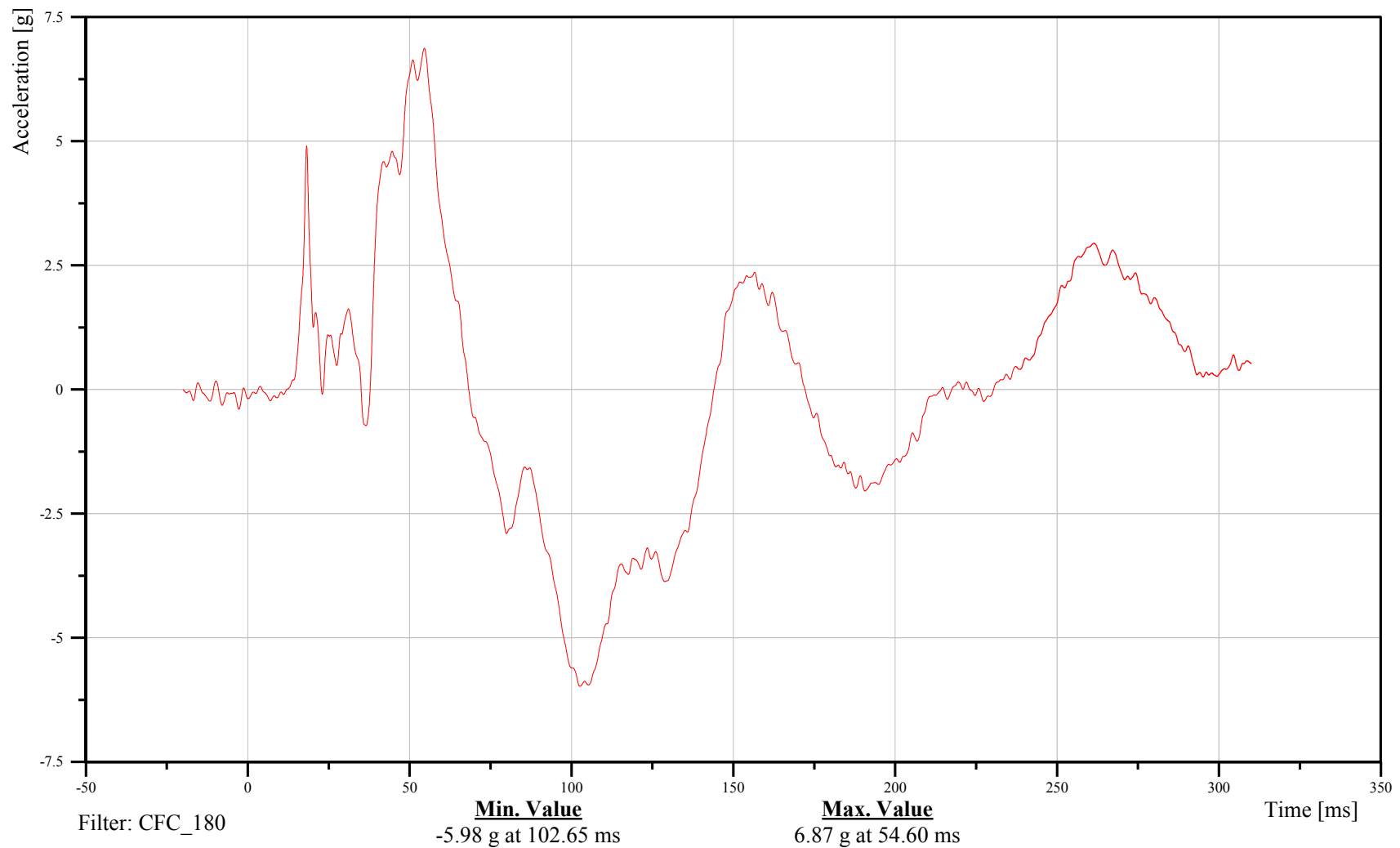
Time: 16:04

Customer: VRTC

11THSP1200WSACZC

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

T12 A Resultant

Date: 03/29/2016

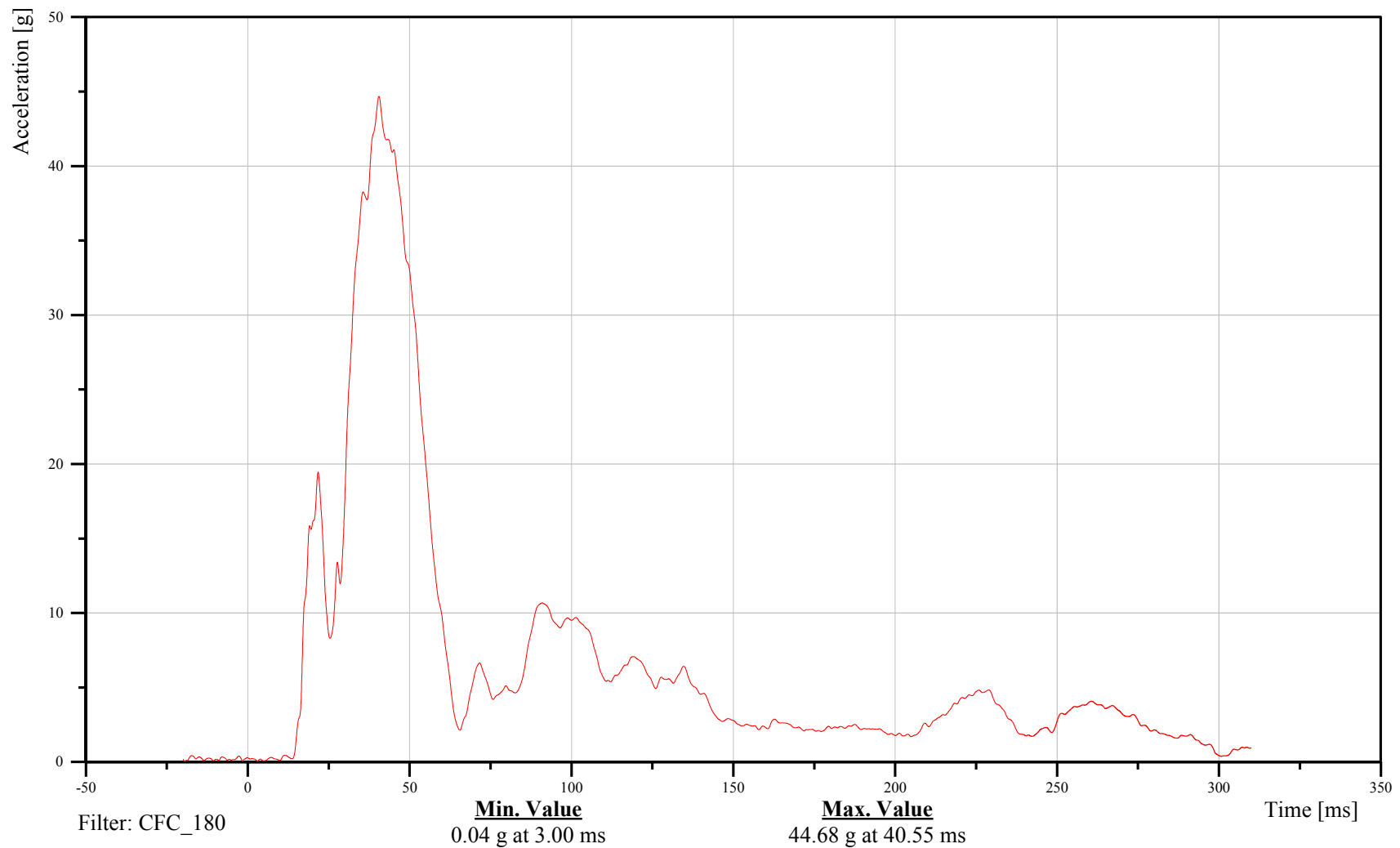
Time: 16:04

Customer: VRTC

11THSP1200WSACRC

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Shoulder X-Axis Force

Date: 03/29/2016

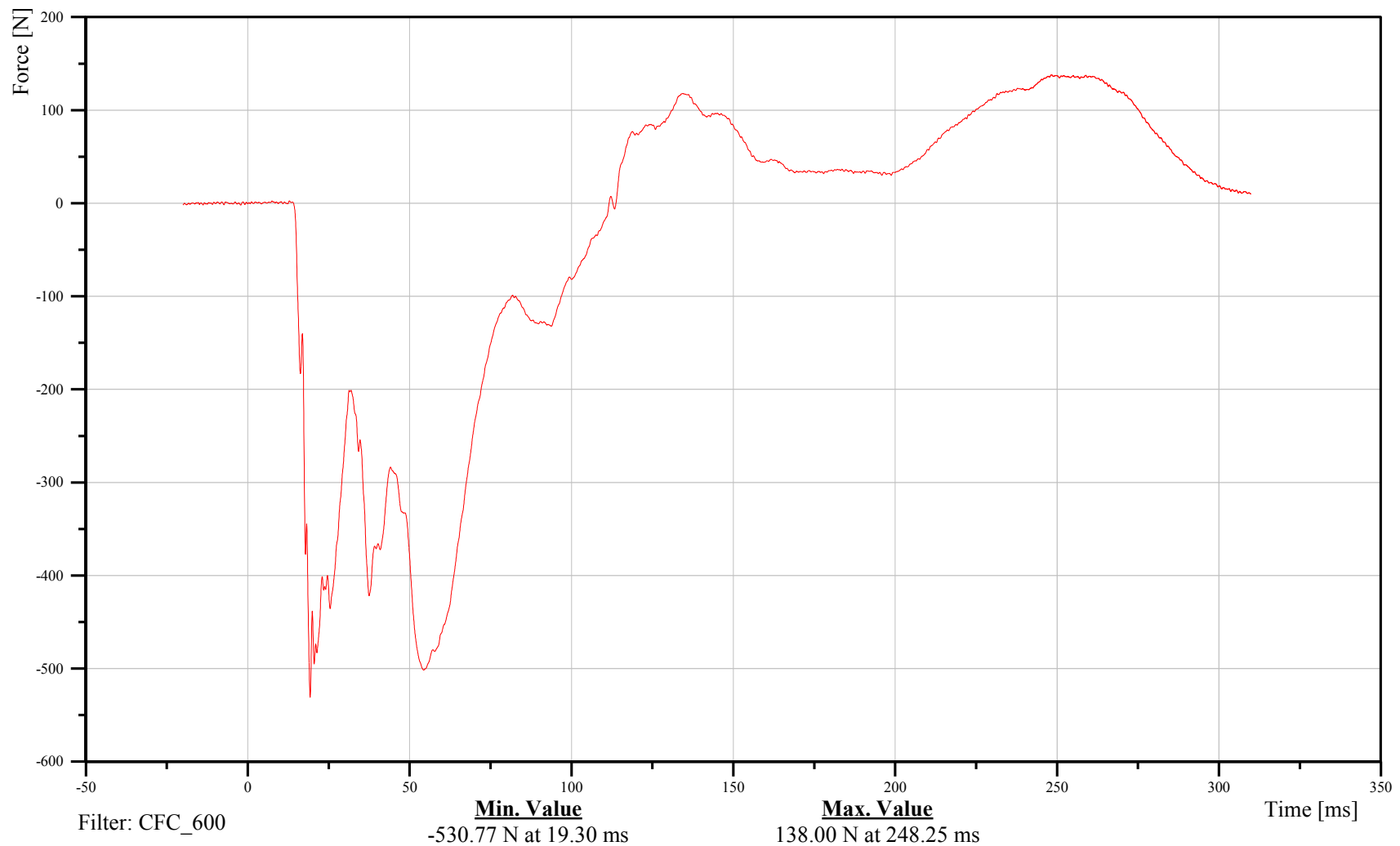
Time: 16:04

Customer: VRTC

11SHLDLE00WSFOXB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Shoulder Y-Axis Force

Date: 03/29/2016

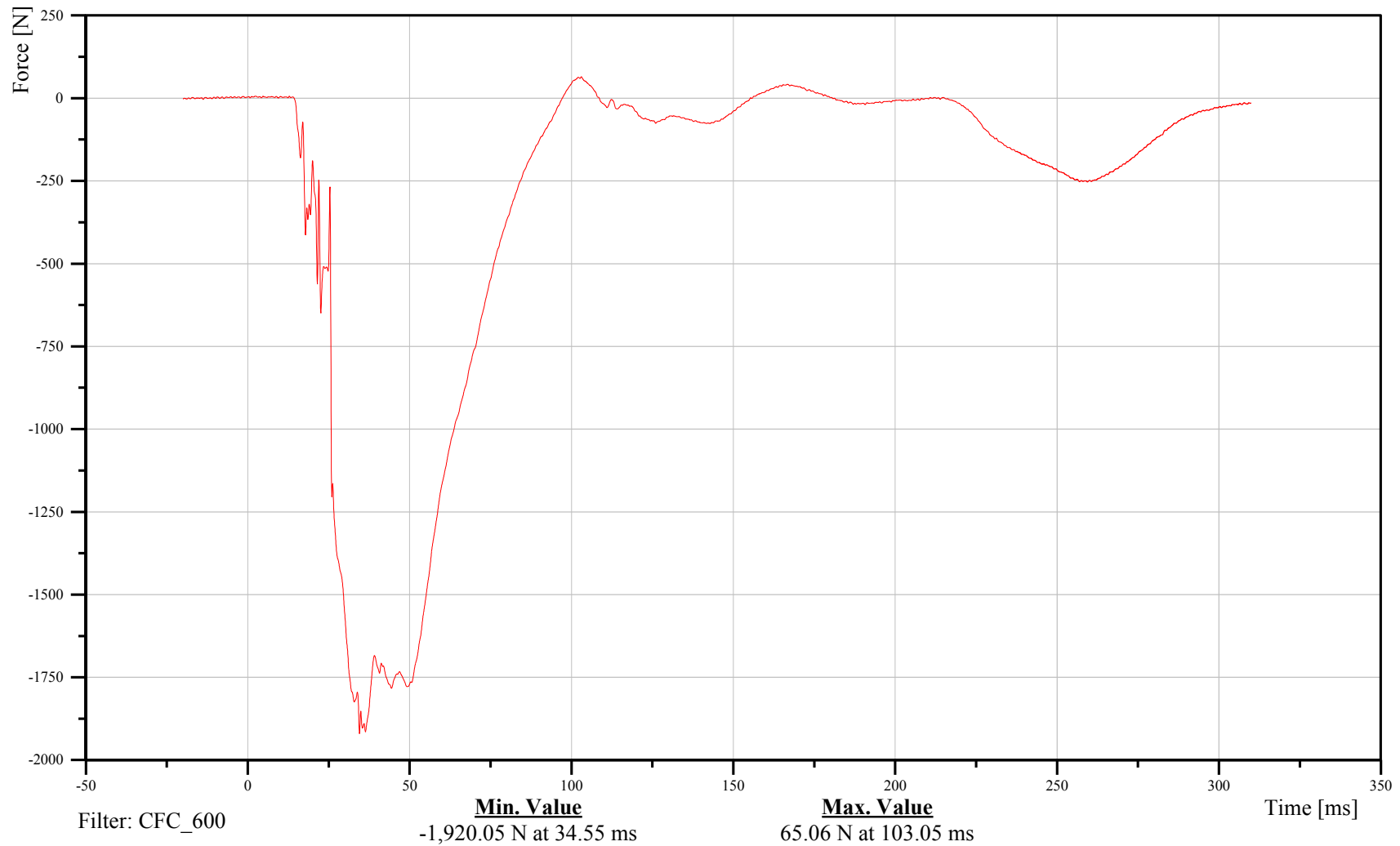
Time: 16:04

Customer: VRTC

11SHLDLE00WSFOYB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Shoulder Z-Axis Force

Date: 03/29/2016

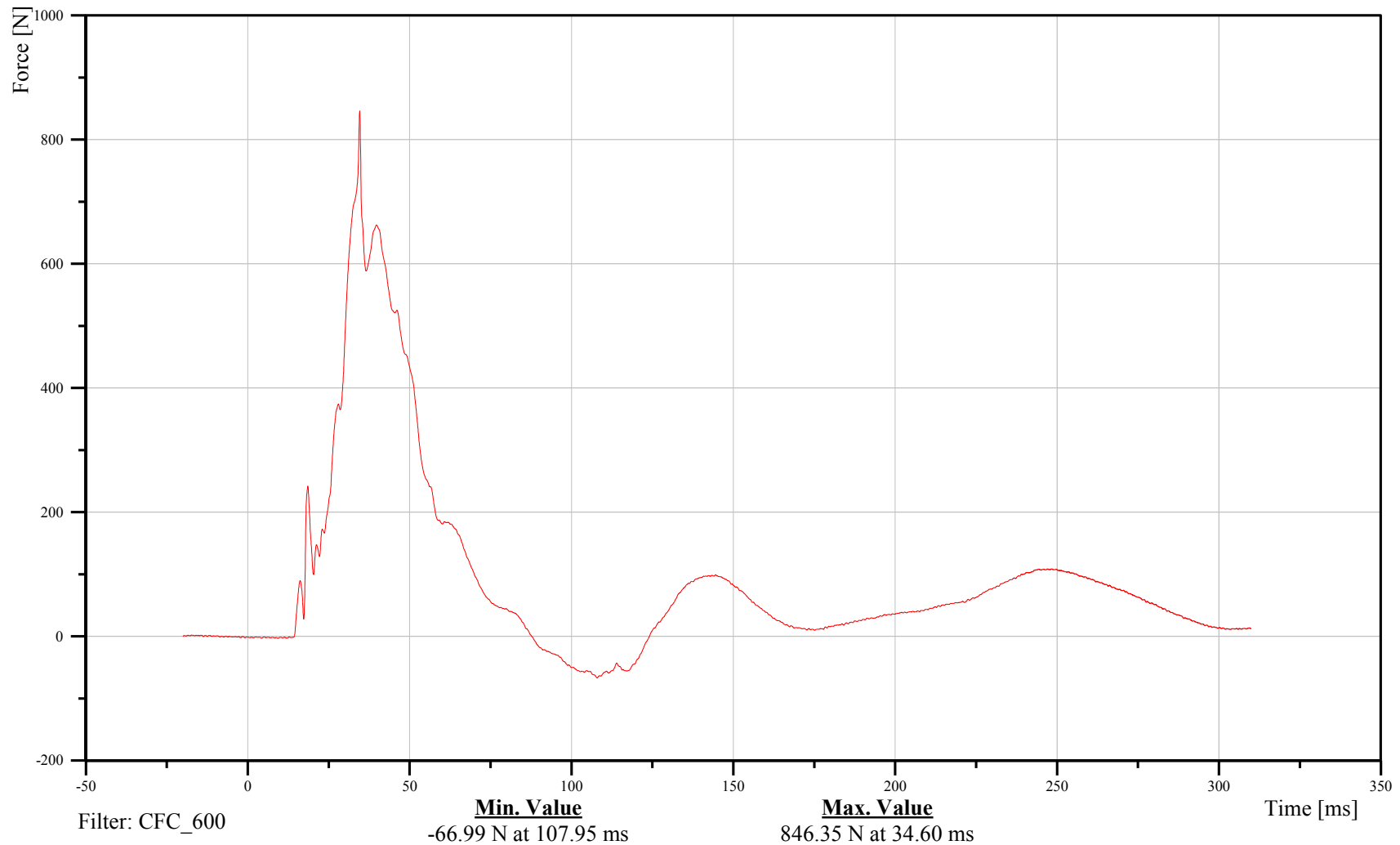
Time: 16:04

Customer: VRTC

11SHLDLE00WSFOZB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Pubic Symphysis Y-Axis Force

Date: 03/29/2016

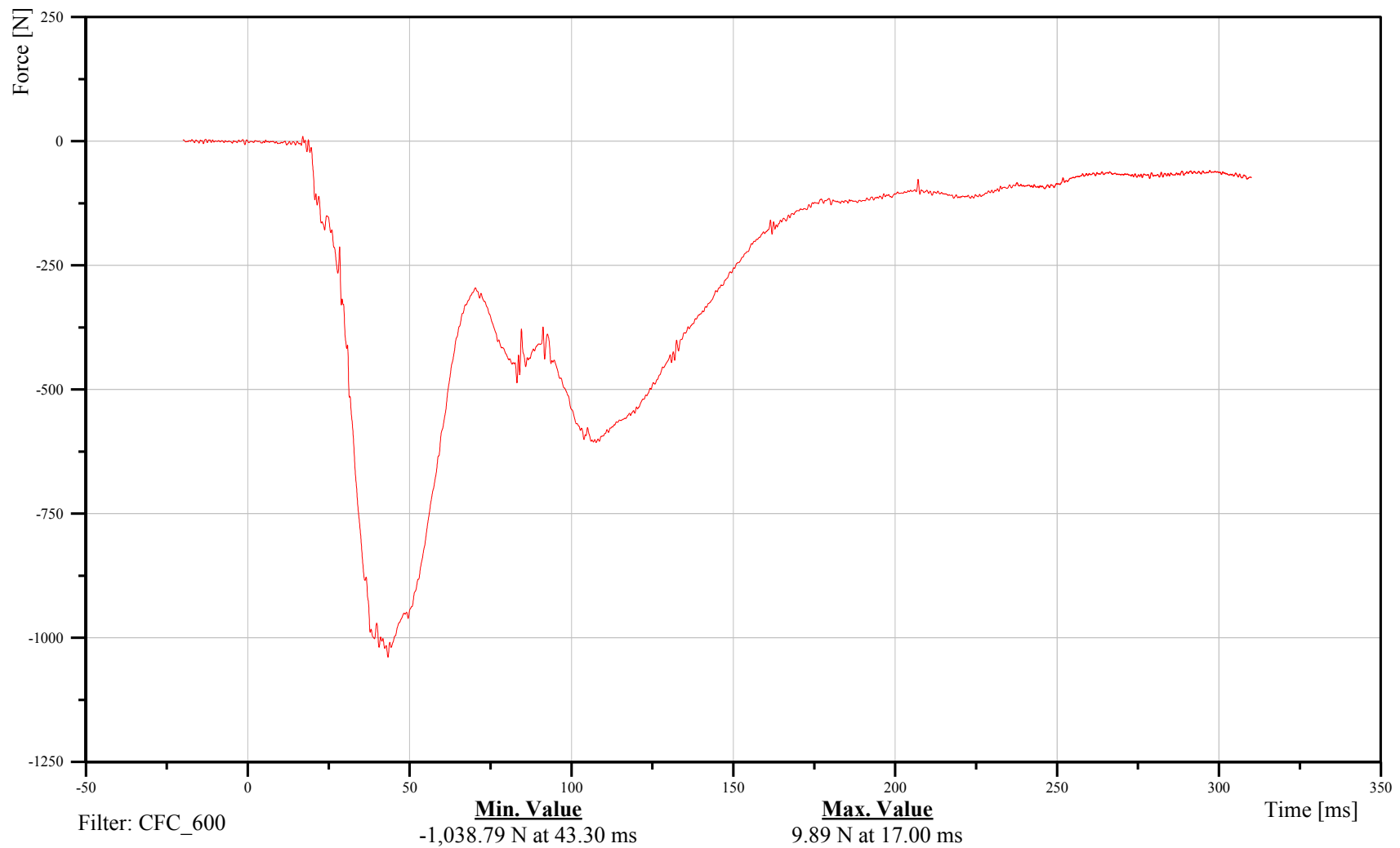
Time: 16:04

Customer: VRTC

11PUBC0000WSFOYB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Sacro-Iliac Left X-Axis Force

Date: 03/29/2016

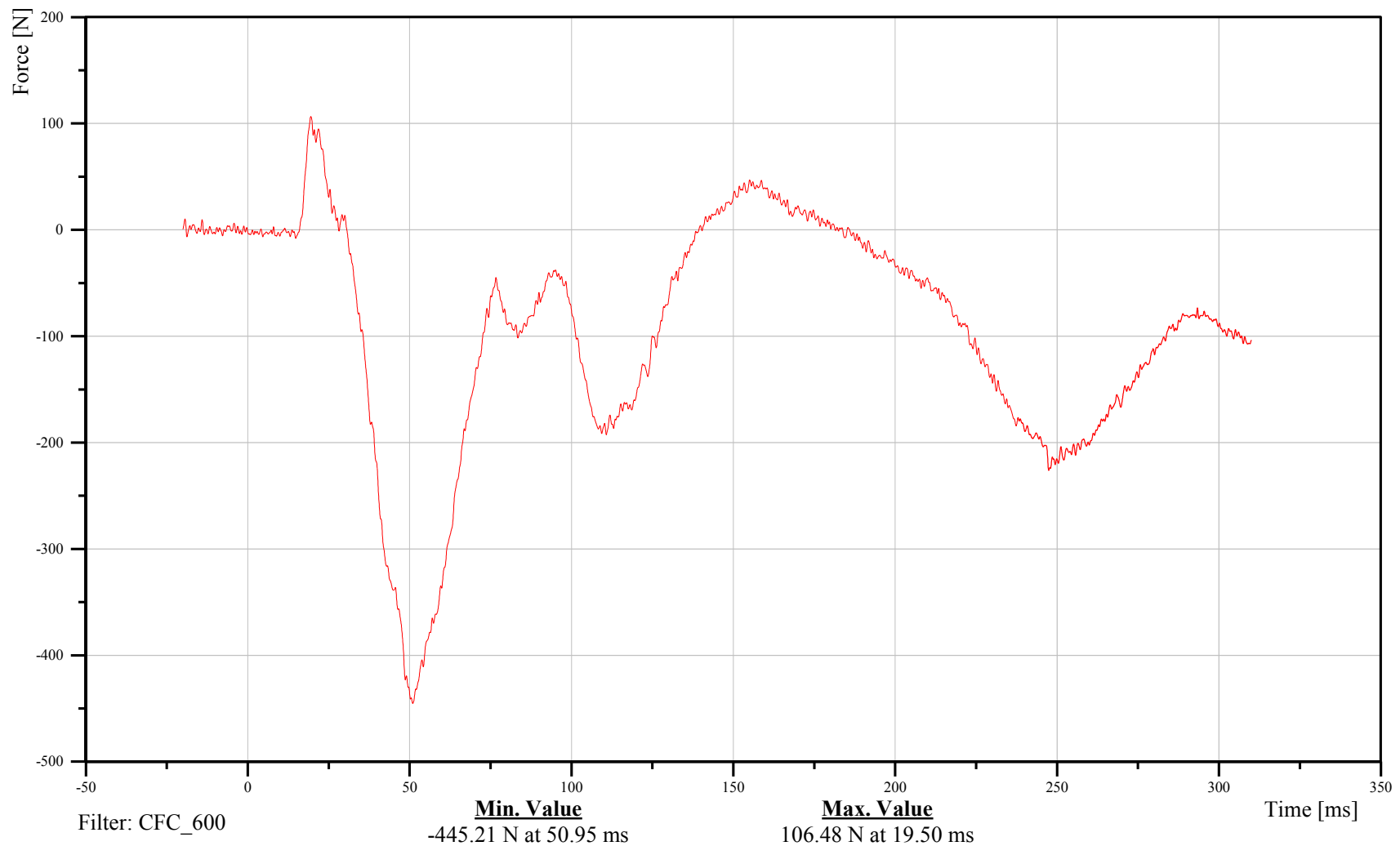
Time: 16:04

Customer: VRTC

11SACRLE00WSFOXB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Sacro-Iliac Left Y-Axis Force

Date: 03/29/2016

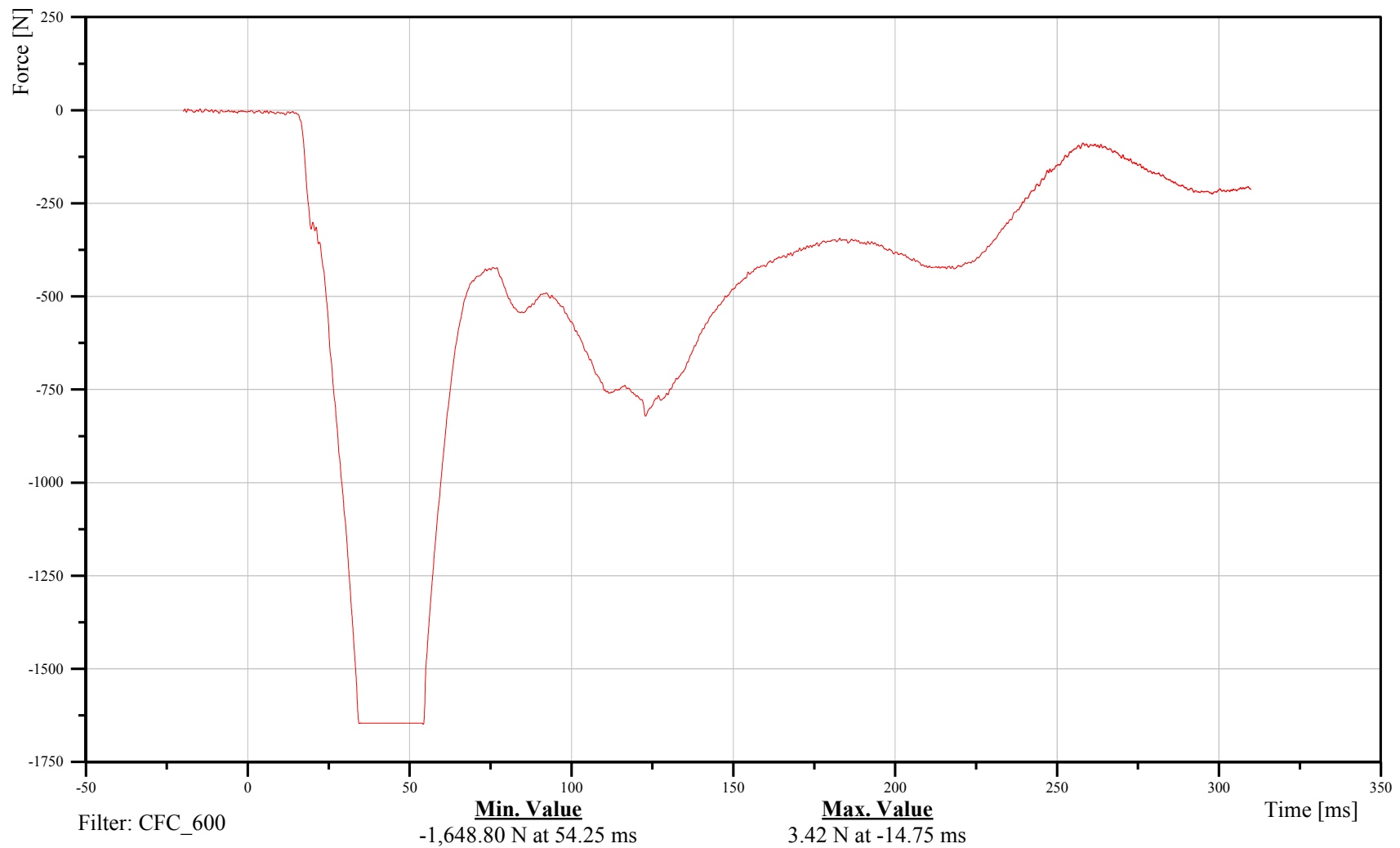
Time: 16:04

Customer: VRTC

11SACRLE00WSFOYB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Sacro-Iliac Left Z-Axis Force

Date: 03/29/2016

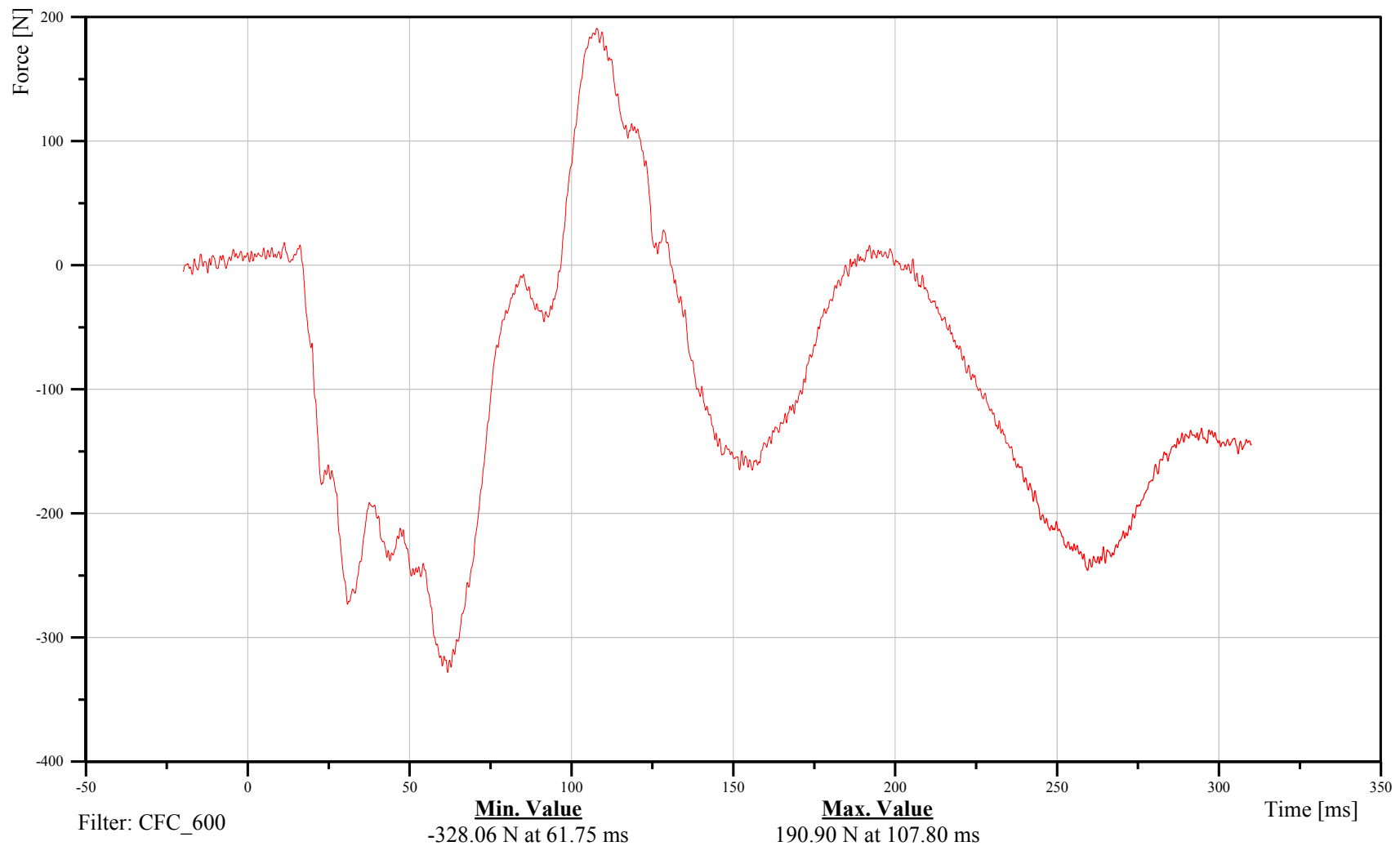
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Customer: VRTC

11SACRLE00WSFOZB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

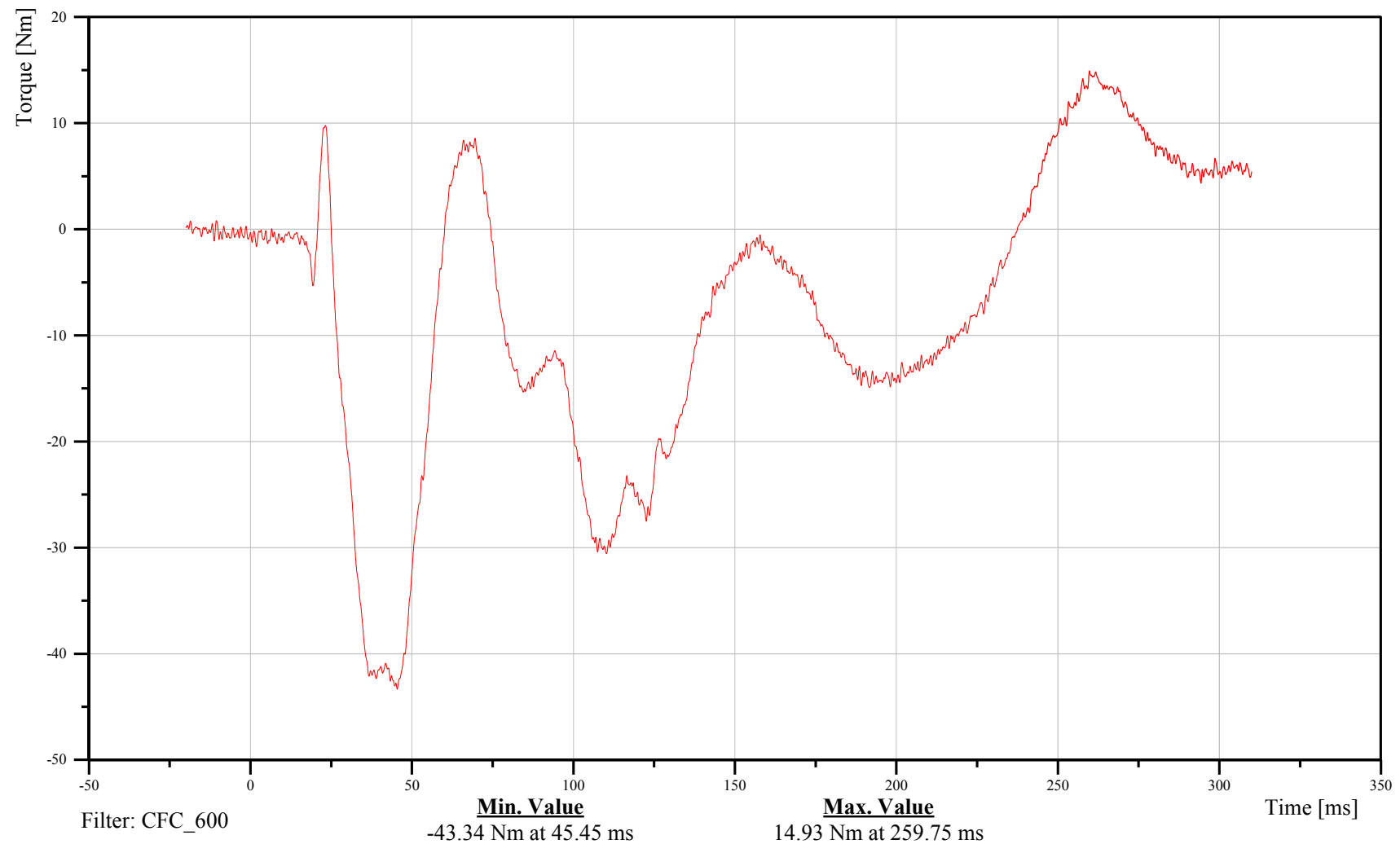
Sacro-Iliac Left Moment About X Axis

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11SACRLE00WSMOXB

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

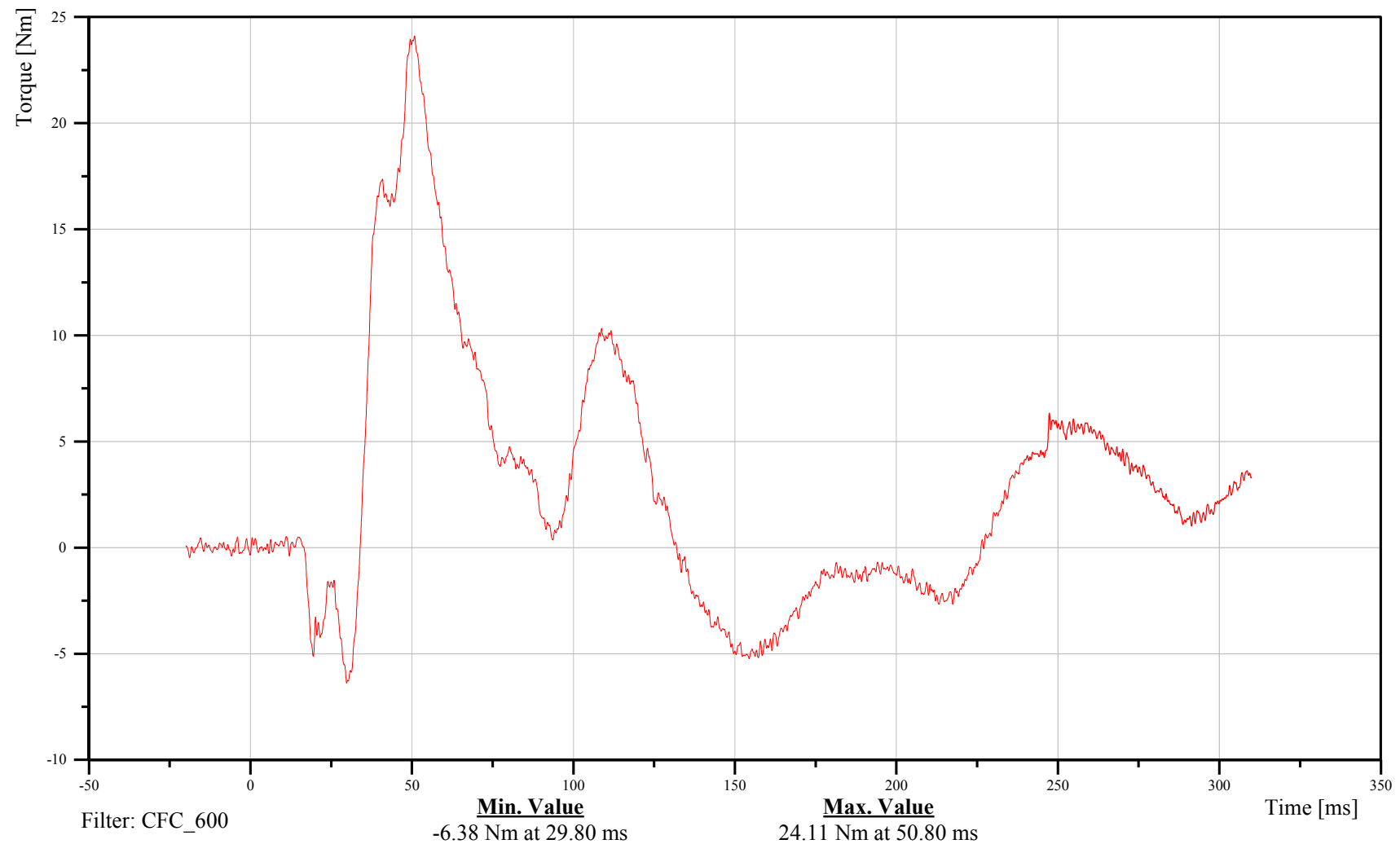
Sacro-Iliac Left Moment About Y Axis

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11SACRLE00WSMOYB

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

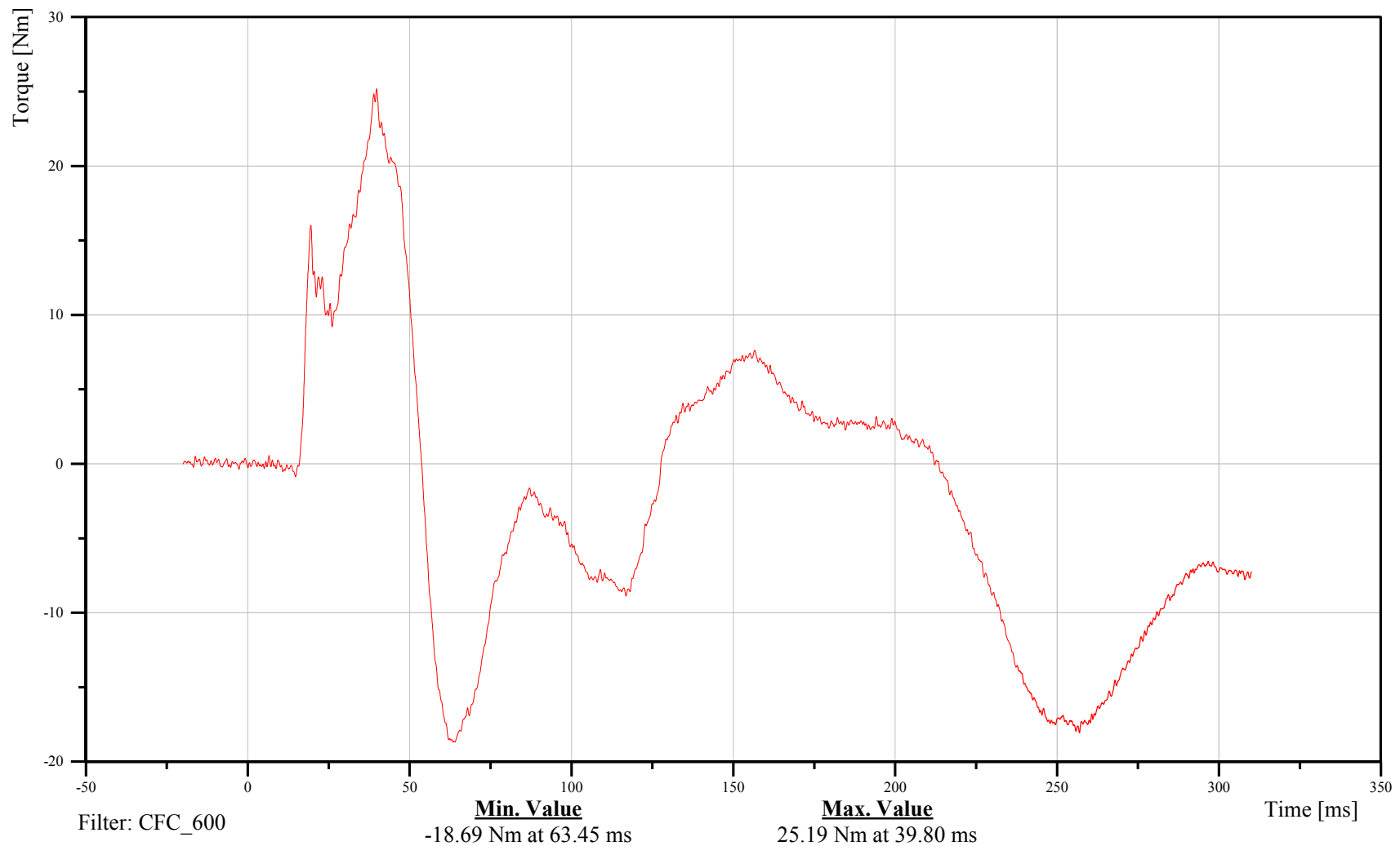
Sacro-Iliac Left Moment About Z Axis

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11SACRLE00WSMOZB

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Lumbar X-Axis Force

Date: 03/29/2016

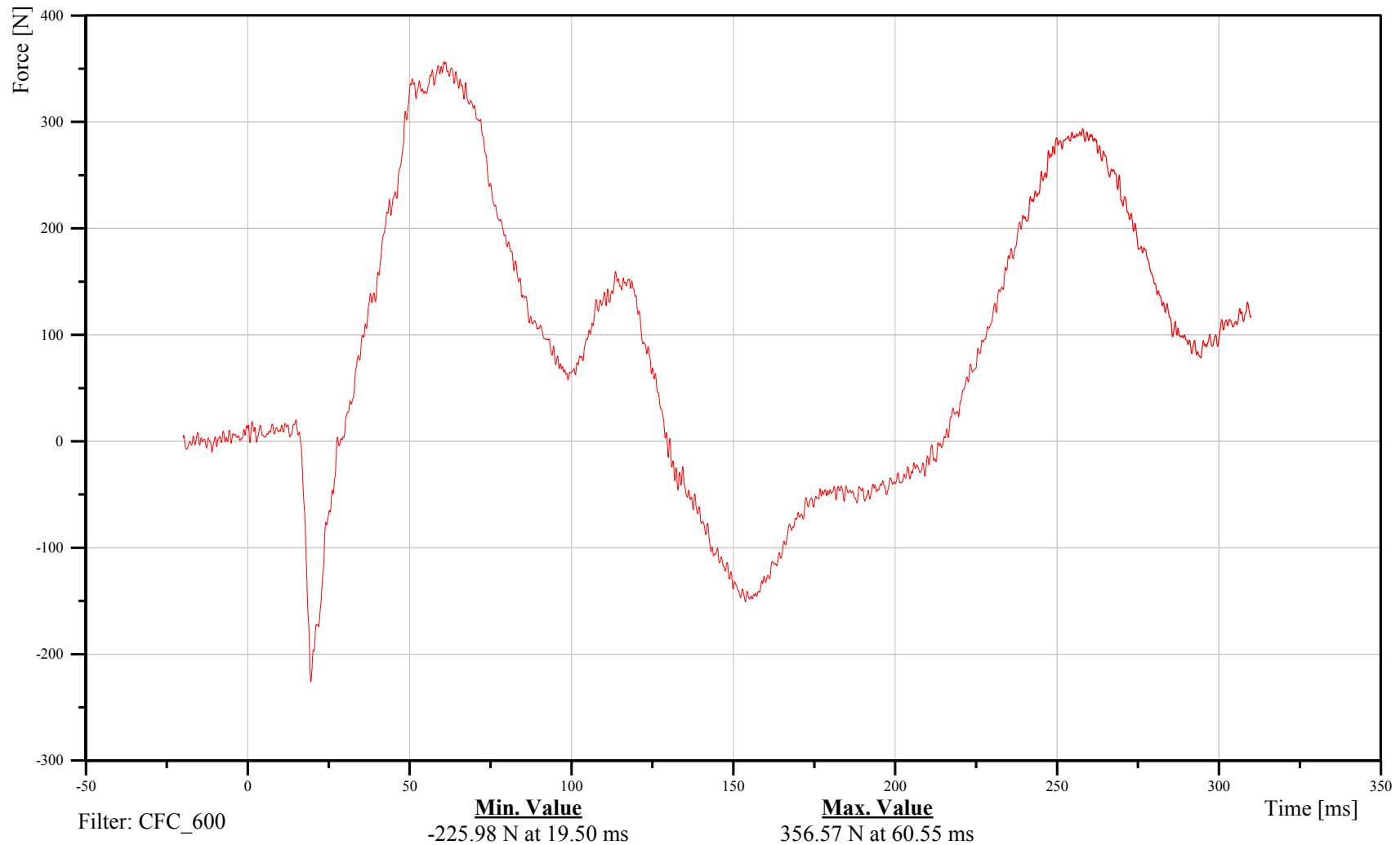
Time: 16:04

Customer: VRTC

11LUSP0000WSFOXB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Lumbar Y-Axis Force

Date: 03/29/2016

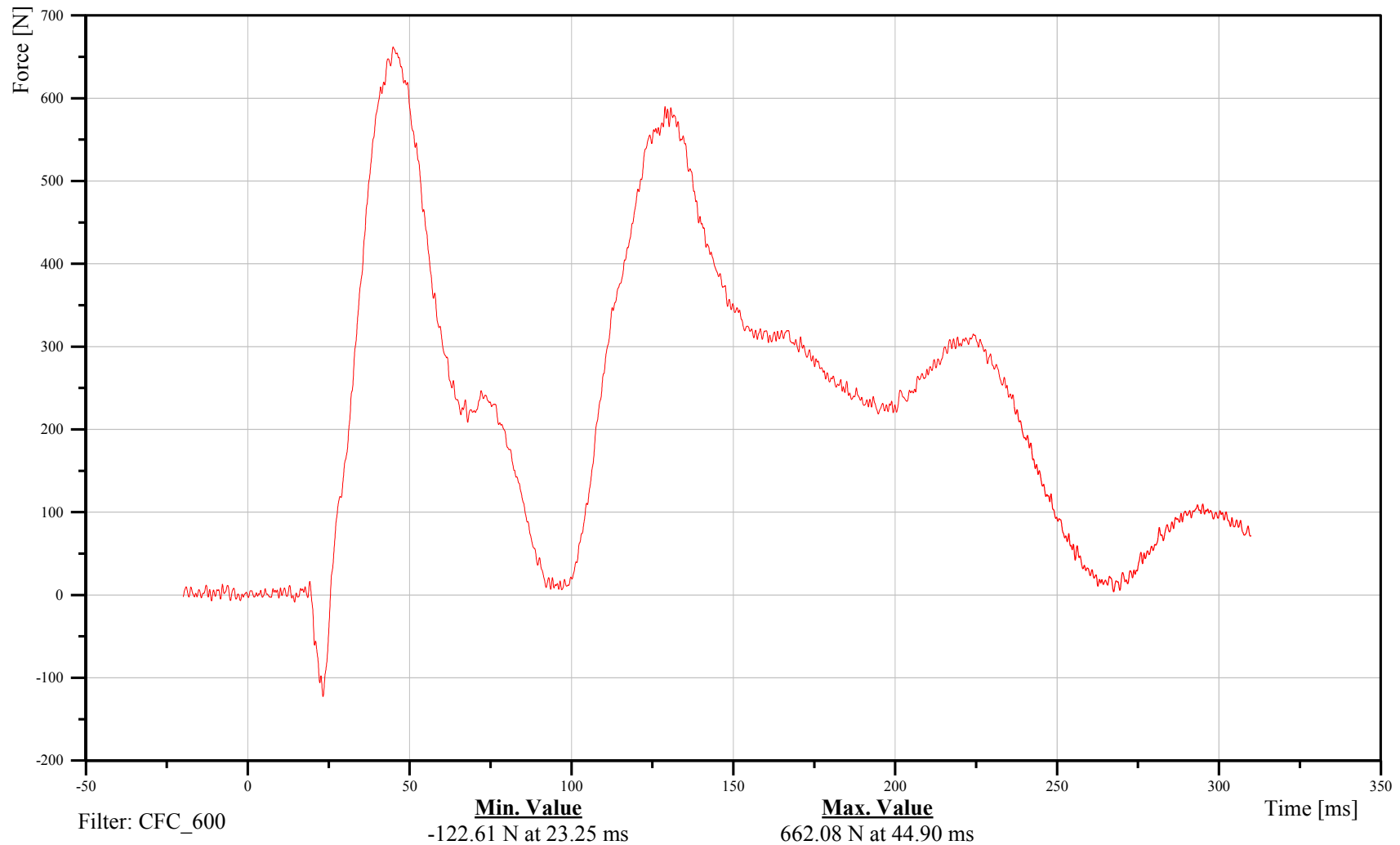
Time: 16:04

Customer: VRTC

11LUSP0000WSFOYB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Lumbar Z-Axis Force

Date: 03/29/2016

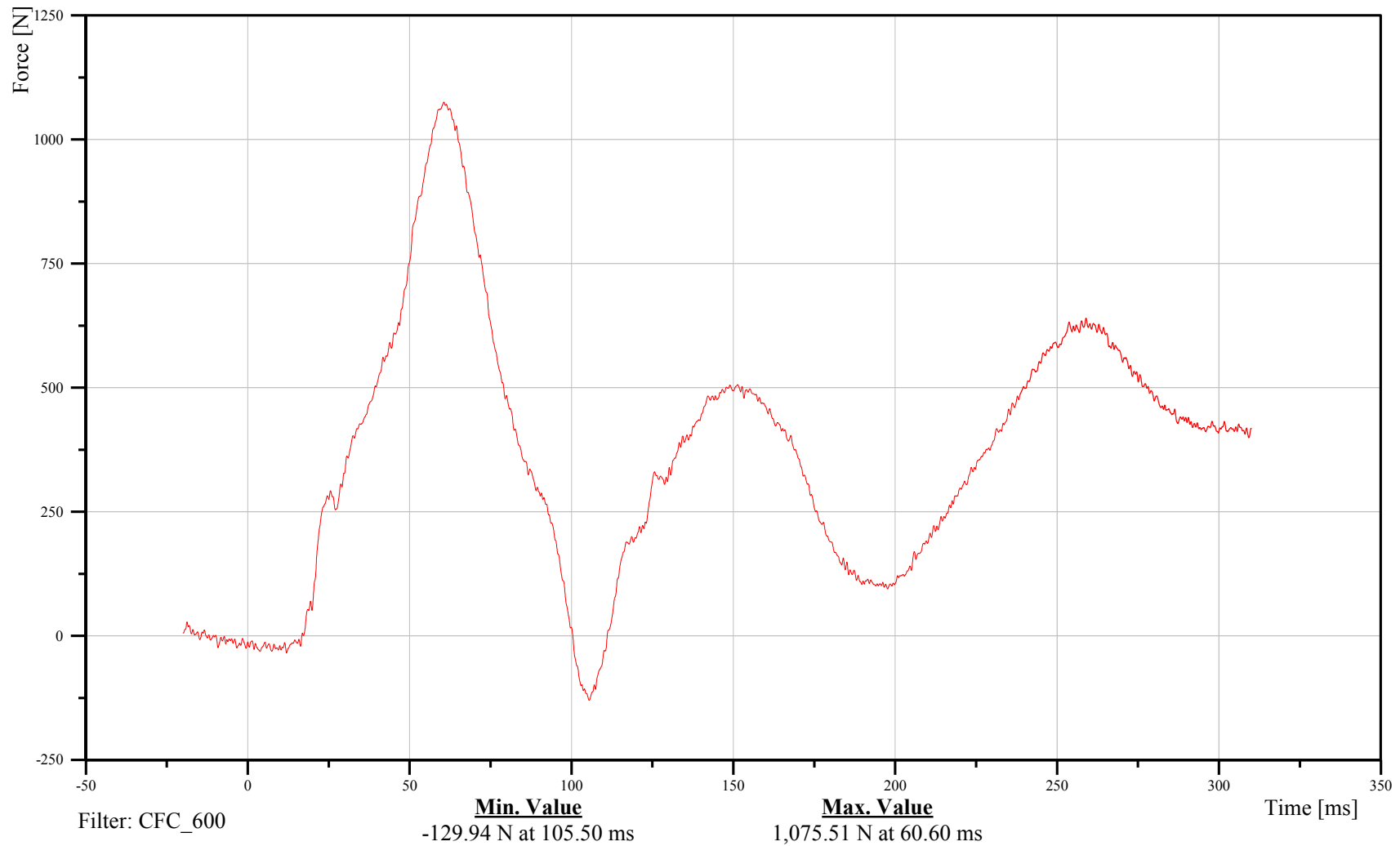
Time: 16:04

Customer: VRTC

11LUSP0000WSFOZB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Lumbar Moment About X Axis

Date: 03/29/2016

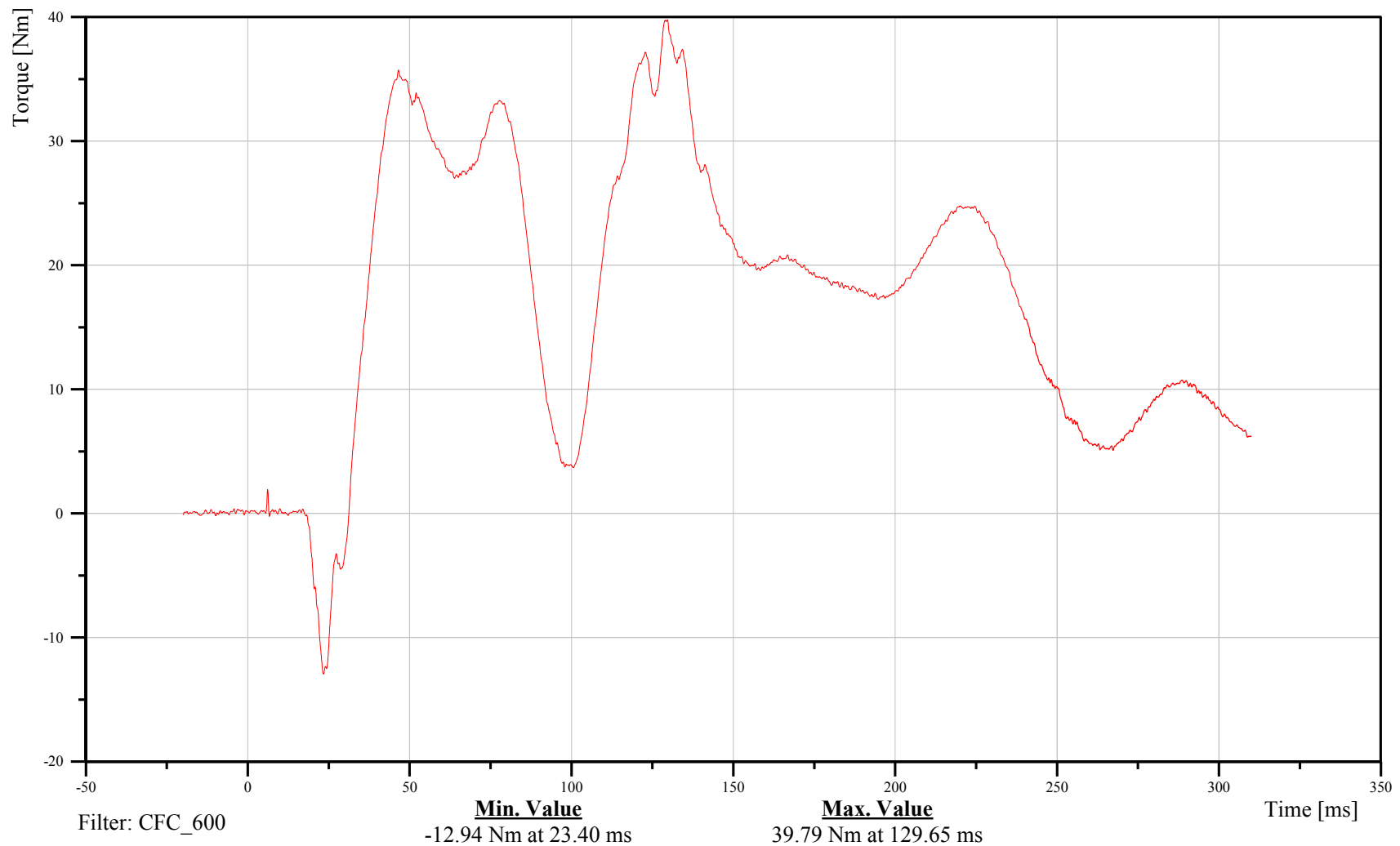
Time: 16:04

Customer: VRTC

11LUSP0000WSMOXB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Lumbar Moment About Y Axis

Date: 03/29/2016

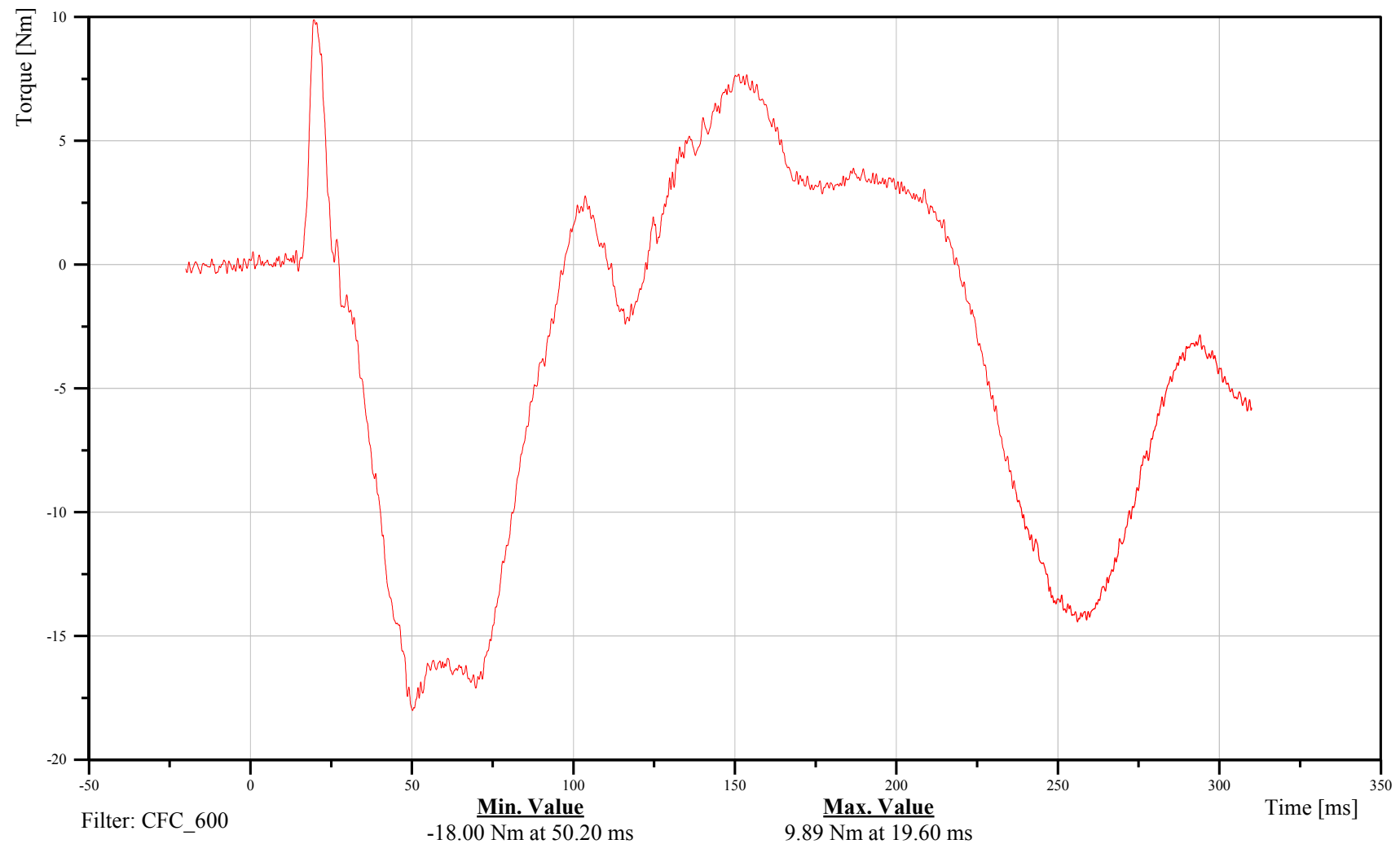
Time: 16:04

Customer: VRTC

11LUSP0000WSMOYB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Lumbar Moment About Z Axis

Date: 03/29/2016

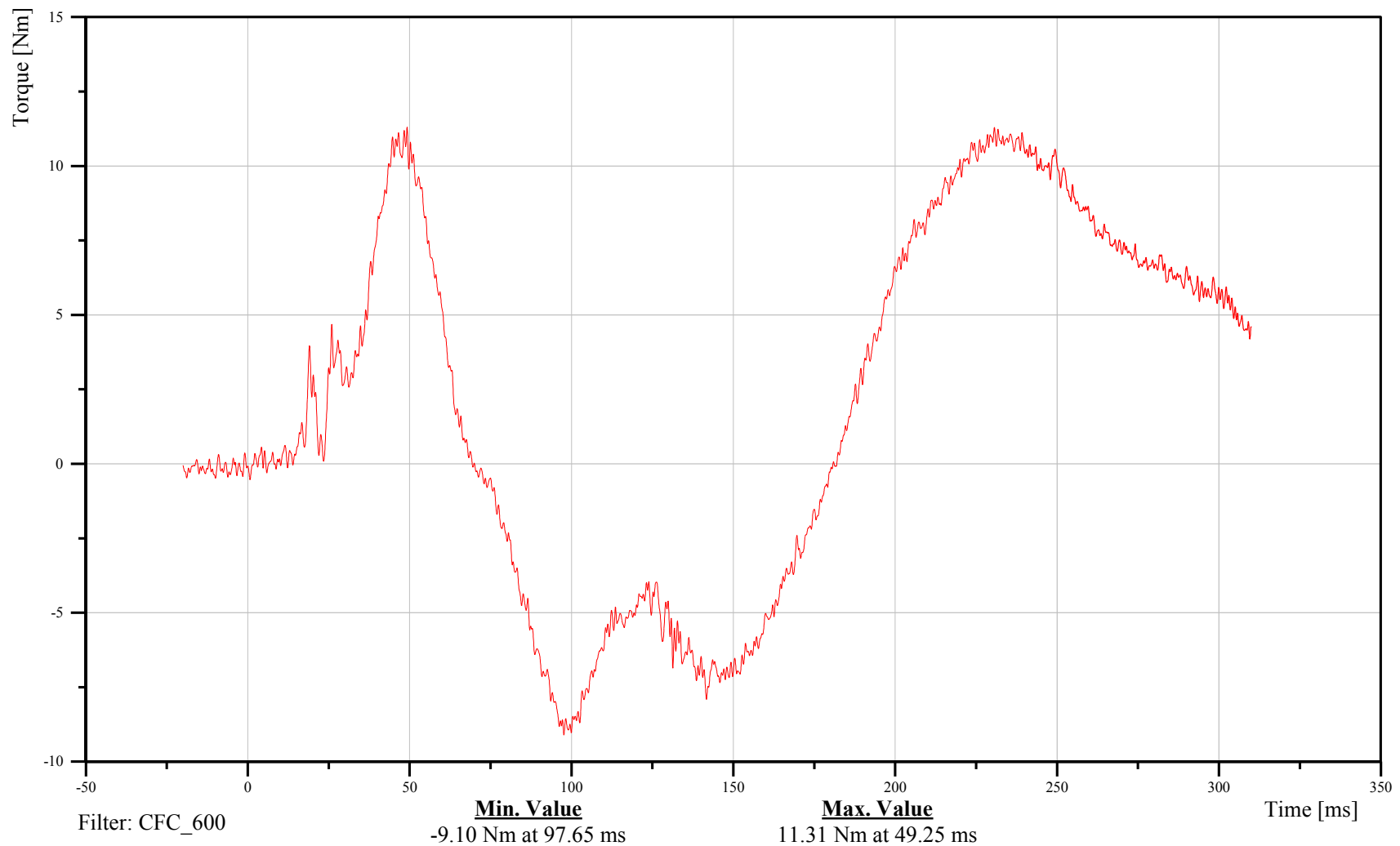
Time: 16:04

Customer: VRTC

11LUSP0000WSMOZB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Pelvis Longitudinal Ax

Date: 03/29/2016

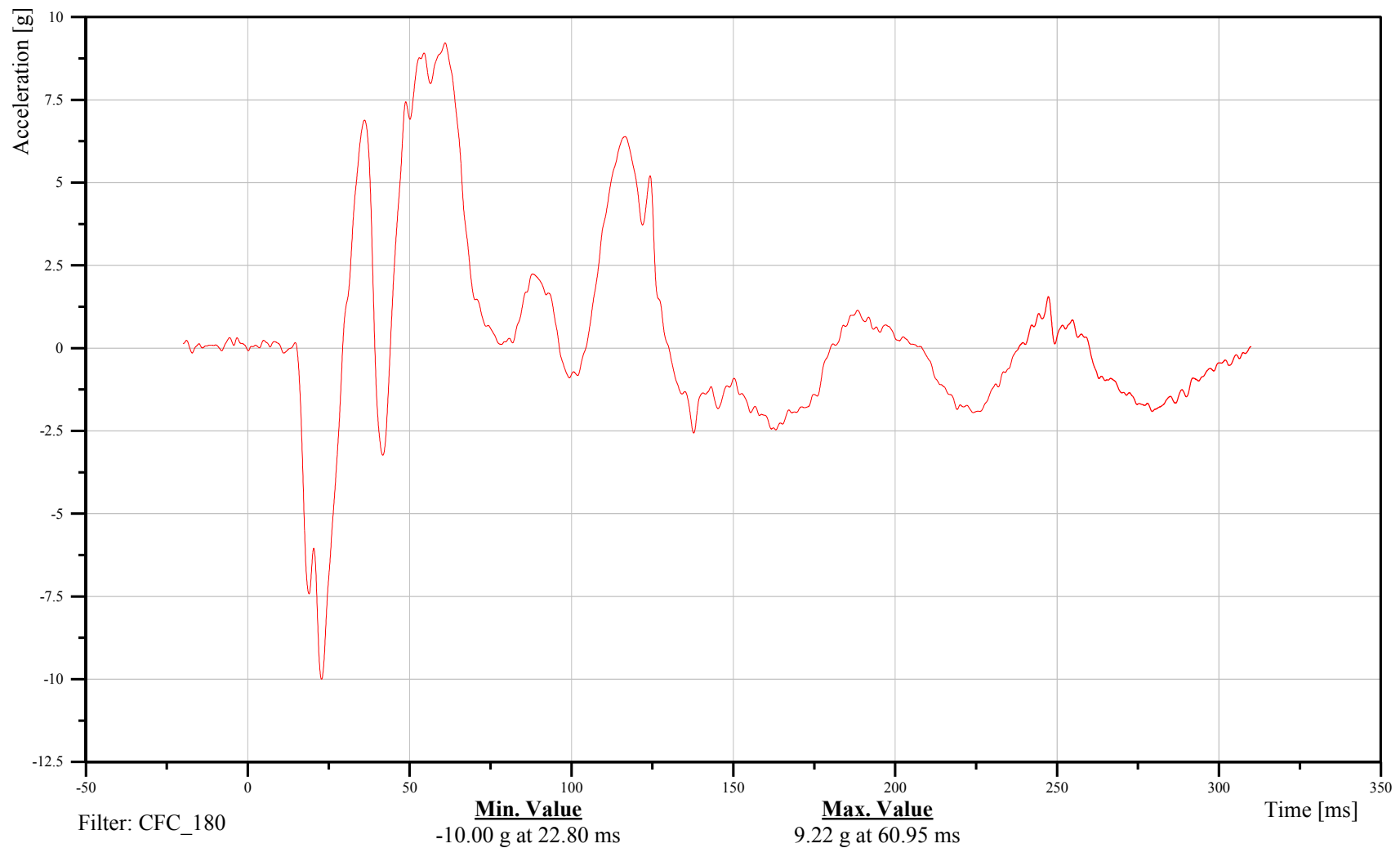
Time: 16:04

Customer: VRTC

11PELV0000WSACXC

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Pelvis Lateral Ay

Date: 03/29/2016

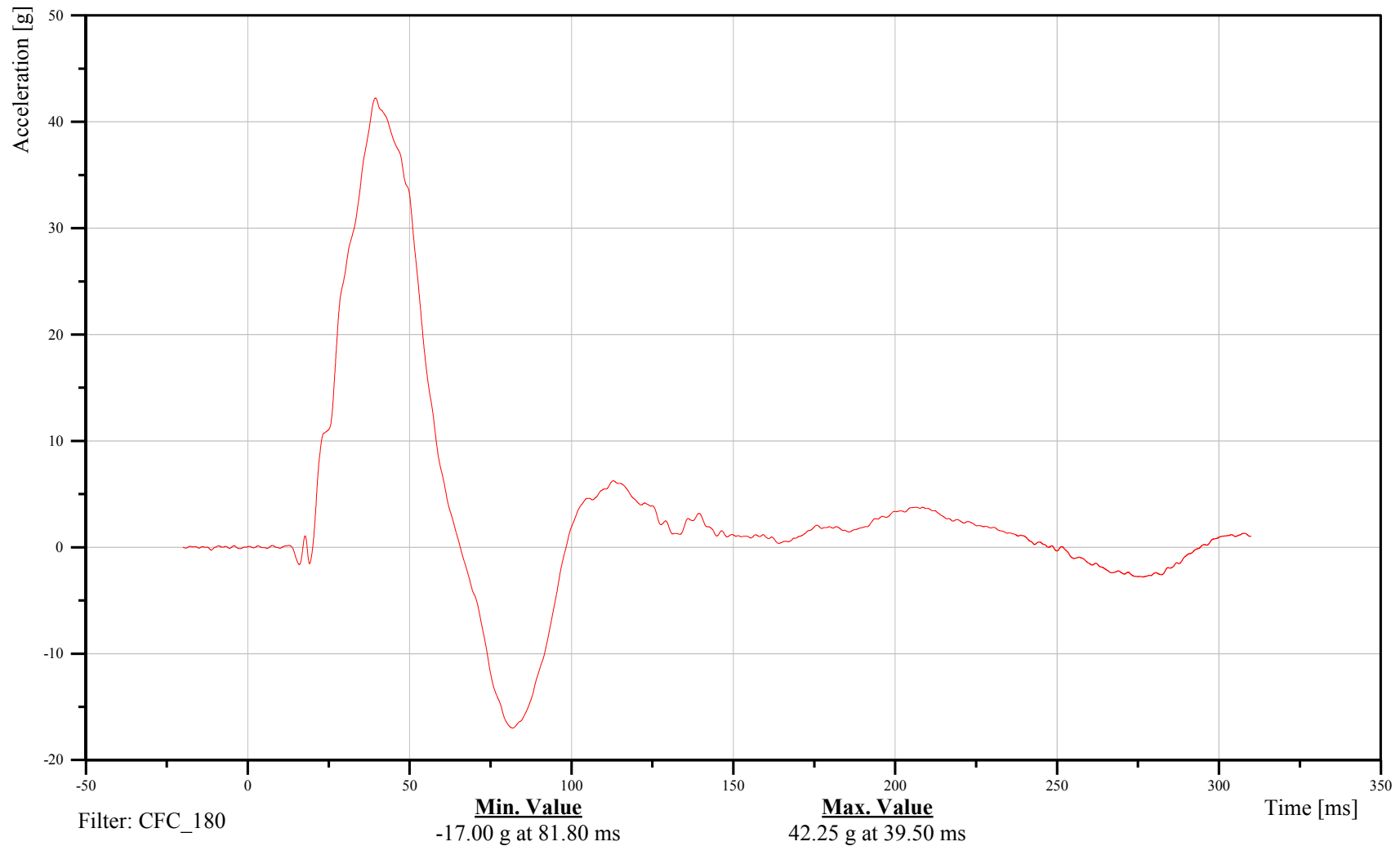
Time: 16:04

Customer: VRTC

11PELV0000WSACYC

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Pelvis Vertical Az

Date: 03/29/2016

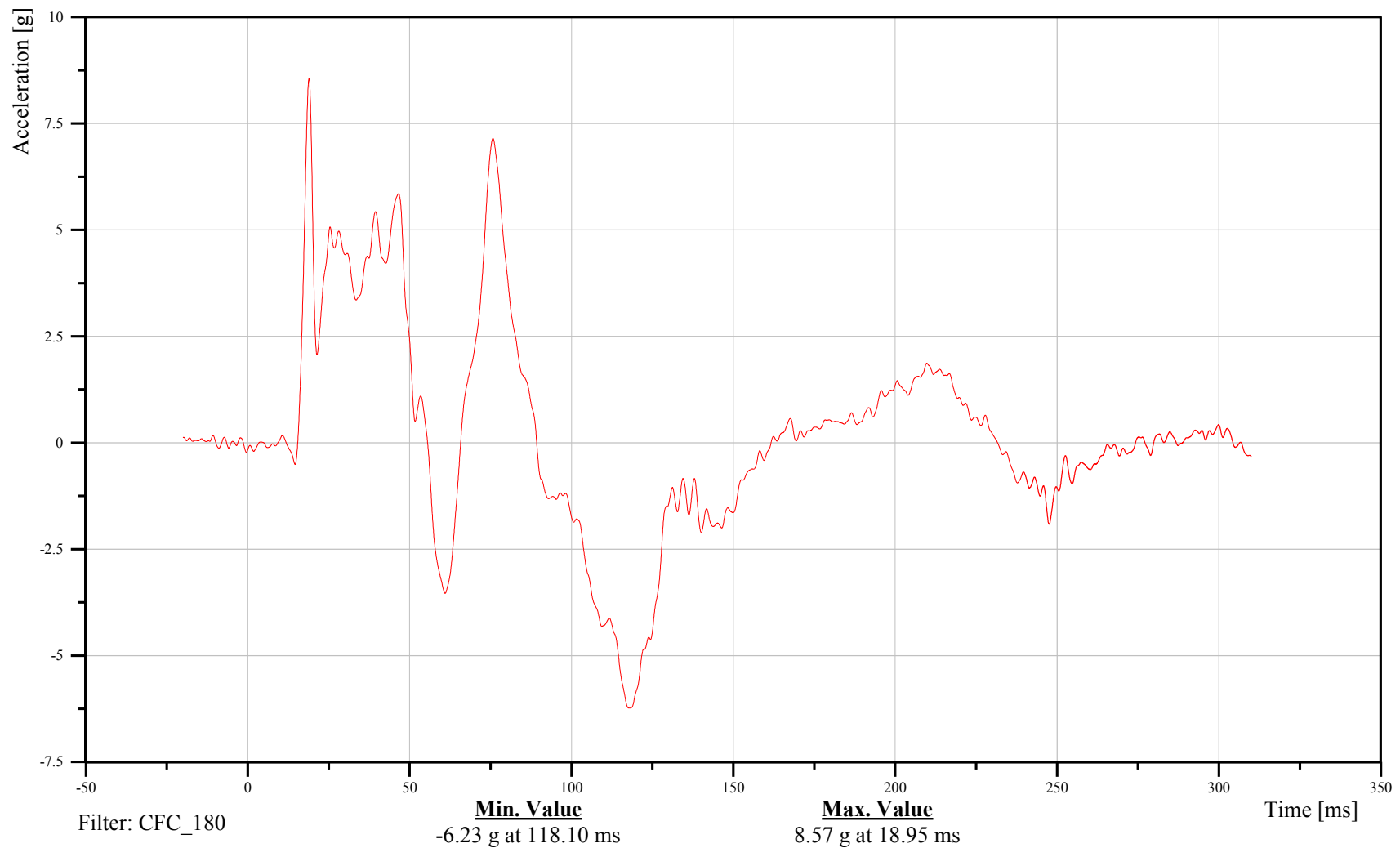
Time: 16:04

Customer: VRTC

11PELV0000WSACZC

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Pelvis A Resultant

Date: 03/29/2016

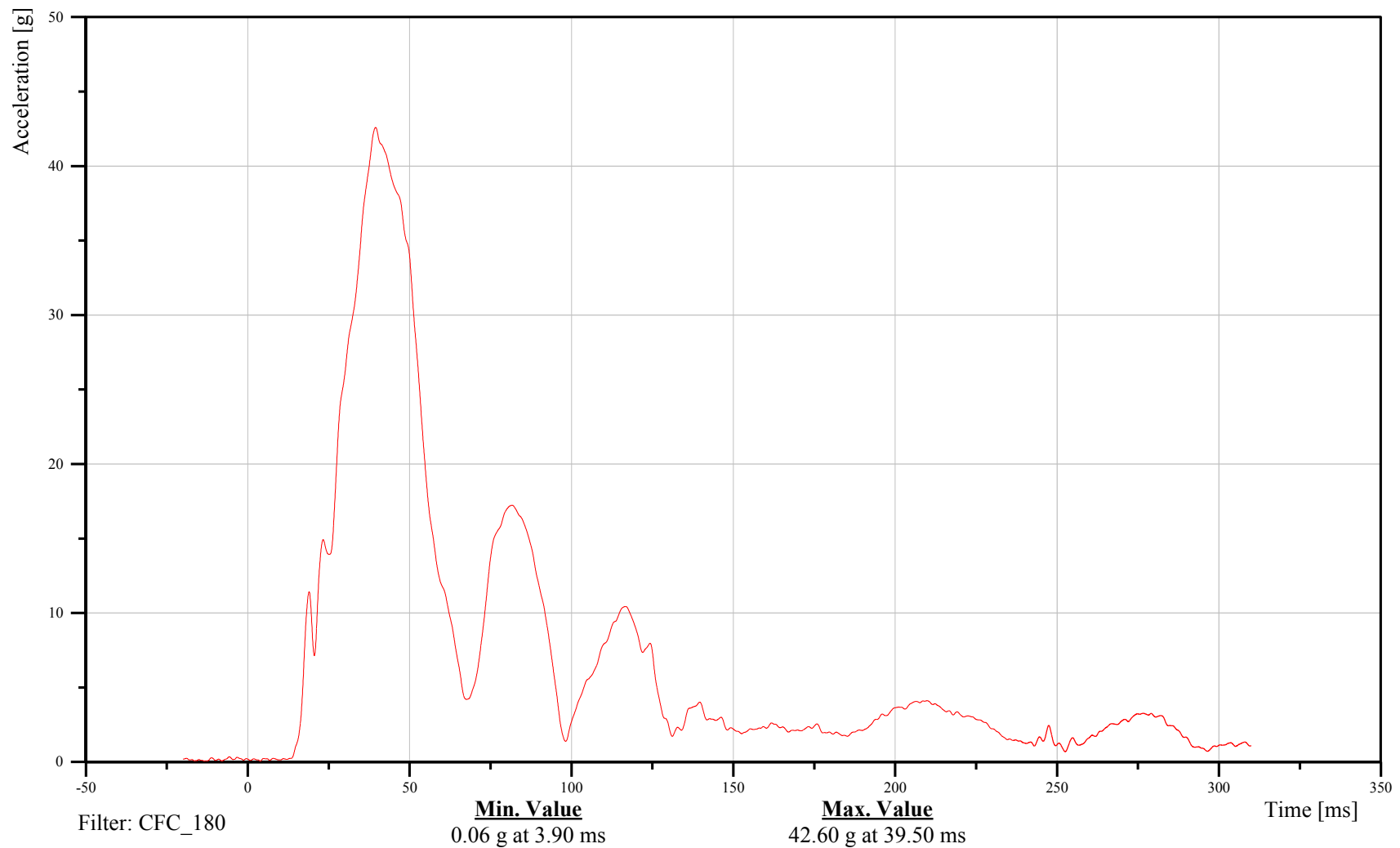
Time: 16:04

Customer: VRTC

11PELV0000WSACRC

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Left Femur X-Axis Force

Date: 03/29/2016

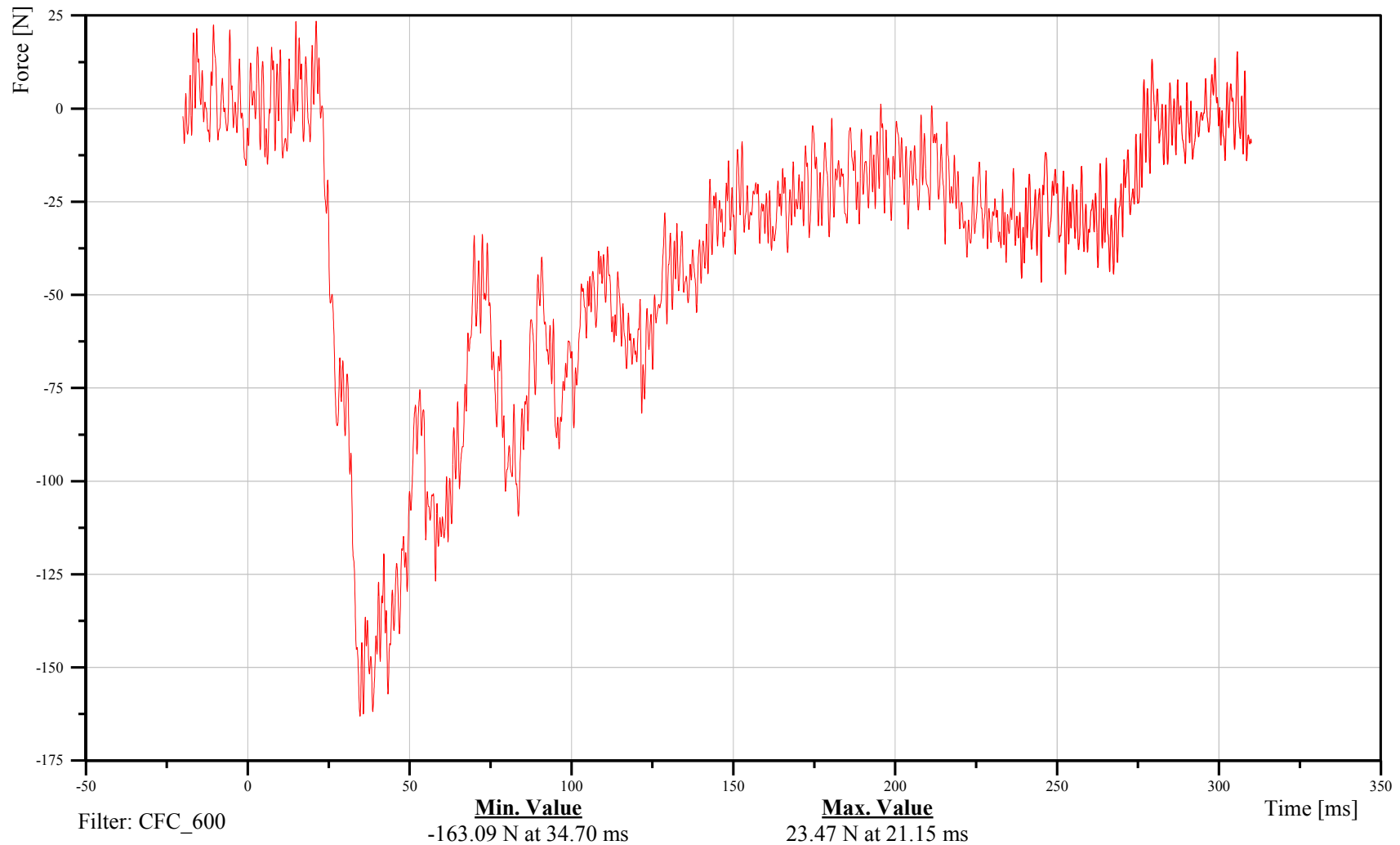
Time: 16:04

Customer: VRTC

11FEMRLE00WSFOXB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Left Femur Y-Axis Force

Date: 03/29/2016

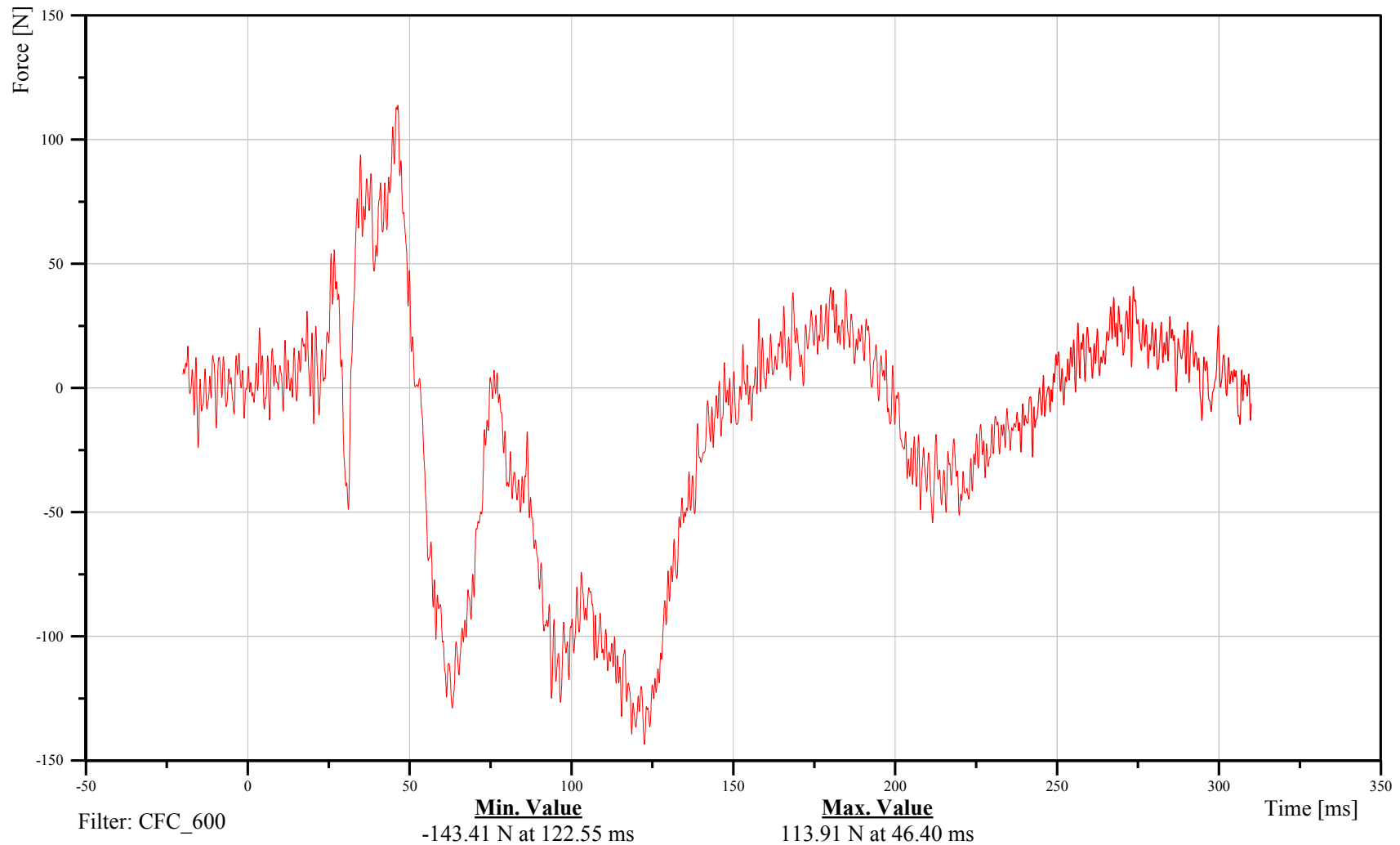
Time: 16:04

Customer: VRTC

11FEMRLE00WSFOYB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Left Femur Z-Axis Force

Date: 03/29/2016

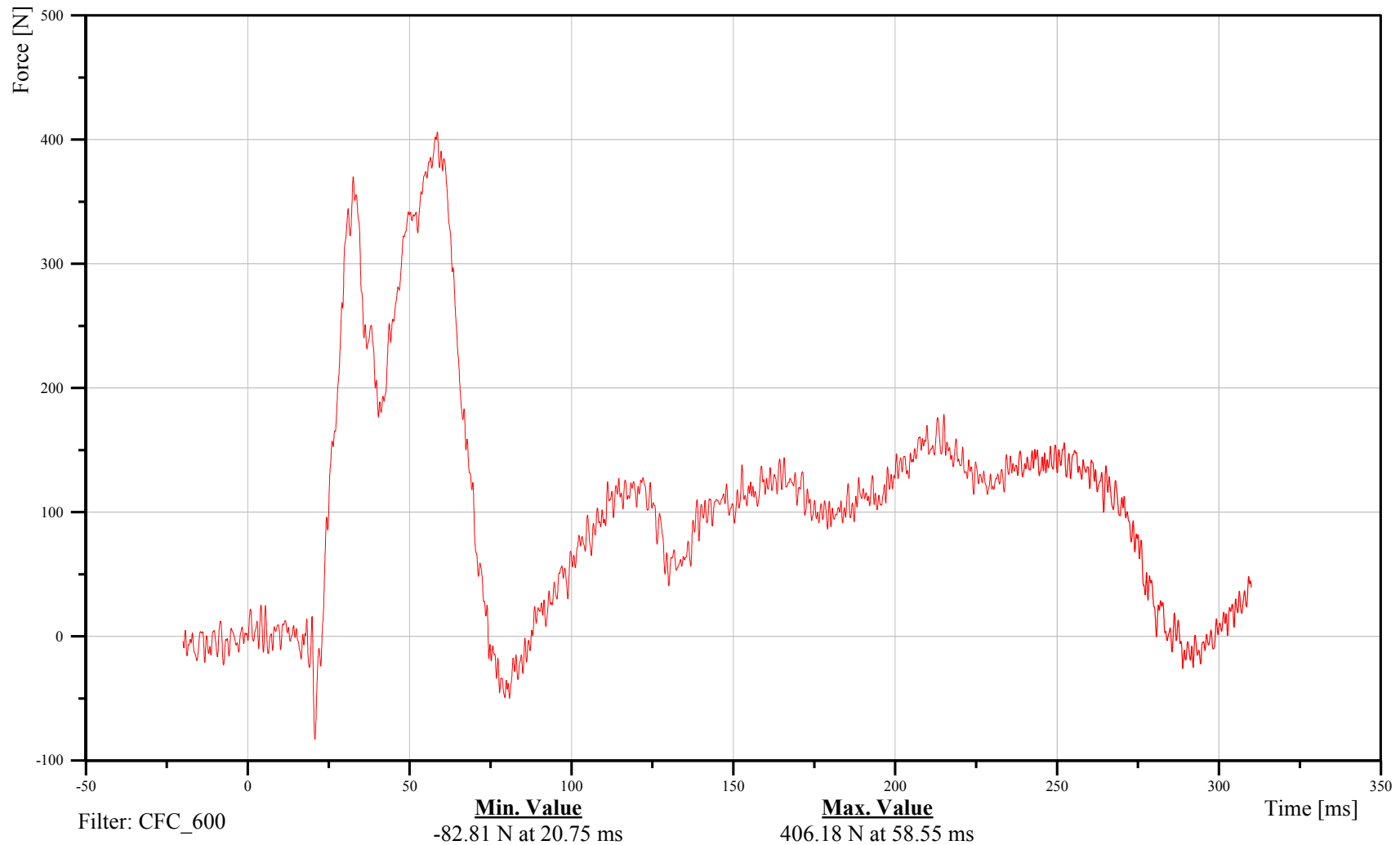
Time: 16:04

Customer: VRTC

11FEMRLE00WSFOZB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Left Femur Moment About X Axis

Date: 03/29/2016

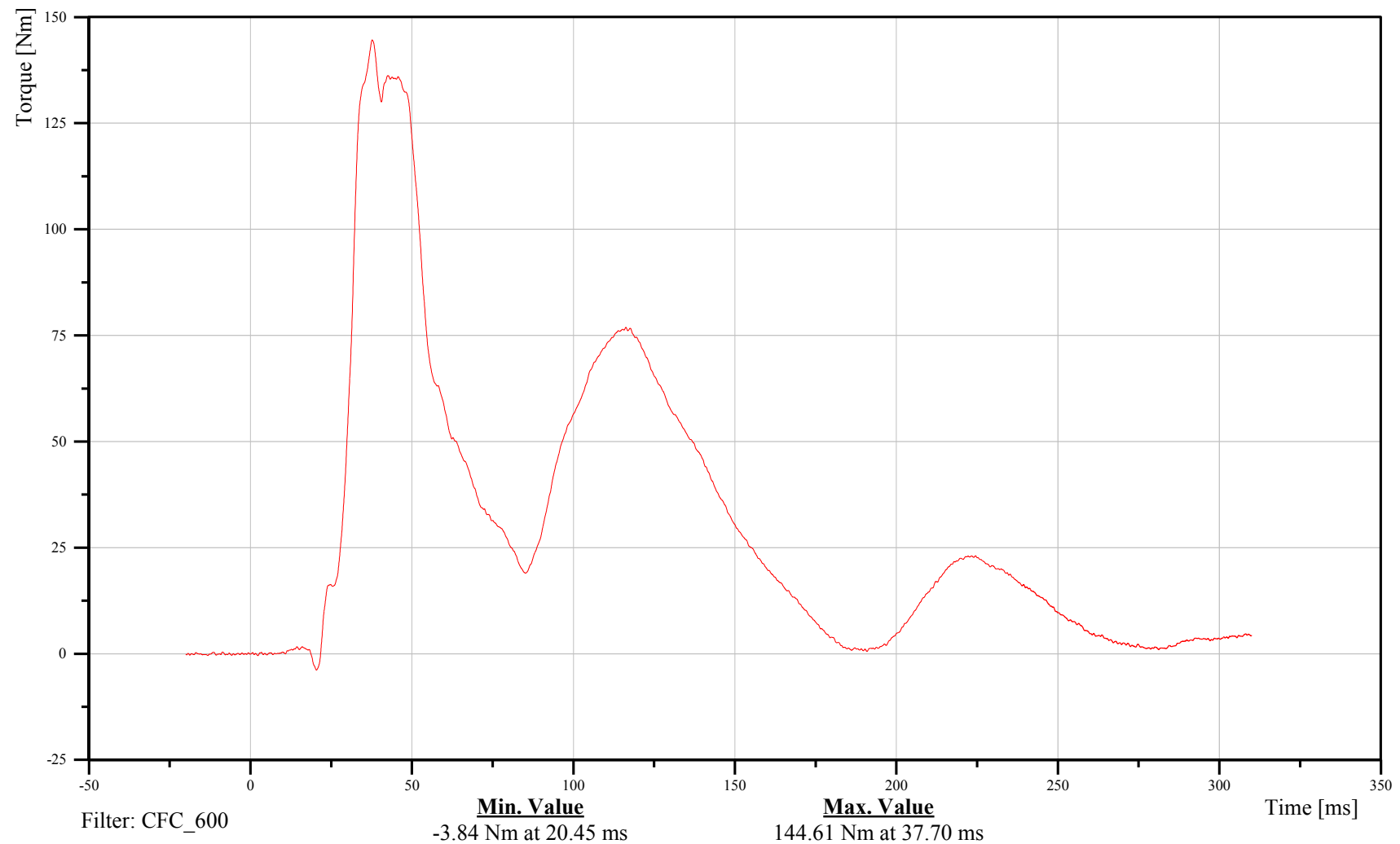
Time: 16:04

Customer: VRTC

11FEMRLE00WSMOXB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Left Femur Moment About Y Axis

Date: 03/29/2016

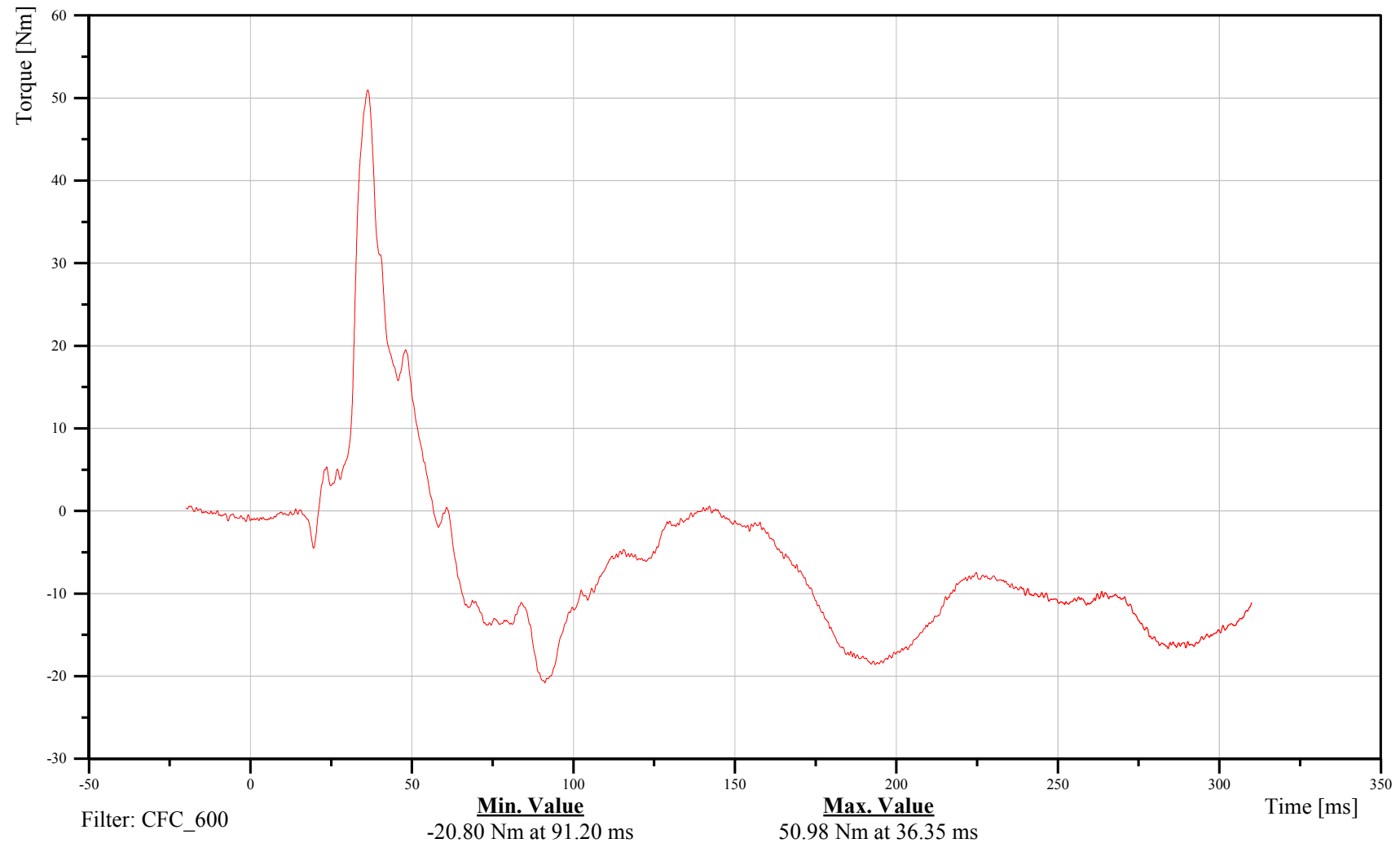
Time: 16:04

Customer: VRTC

11FEMRLE00WSMOYB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Left Femur Moment About Z Axis

Date: 03/29/2016

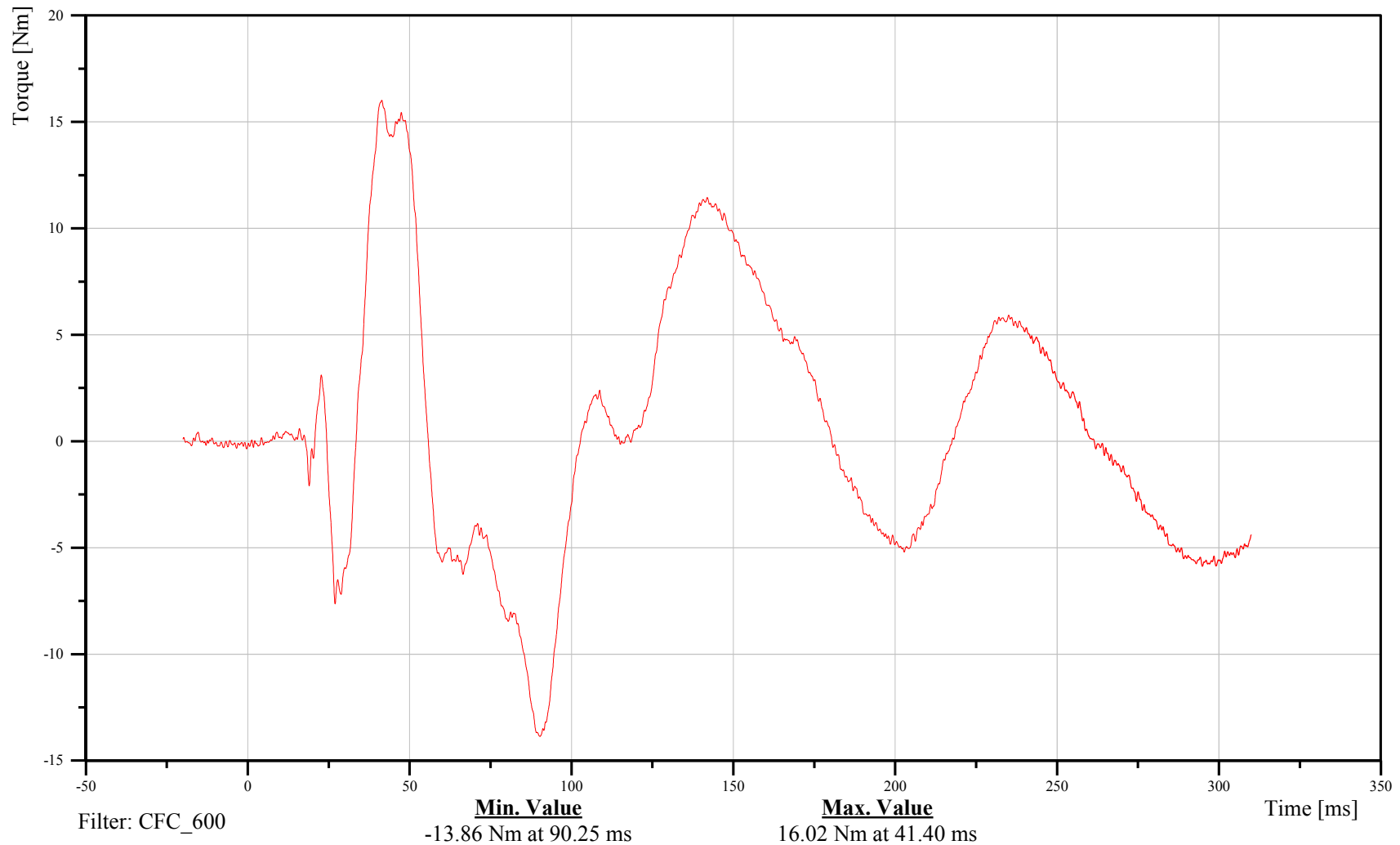
Time: 16:04

Customer: VRTC

11FEMRLE00WSMOZB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Left Femoral Neck Force X

Date: 03/29/2016

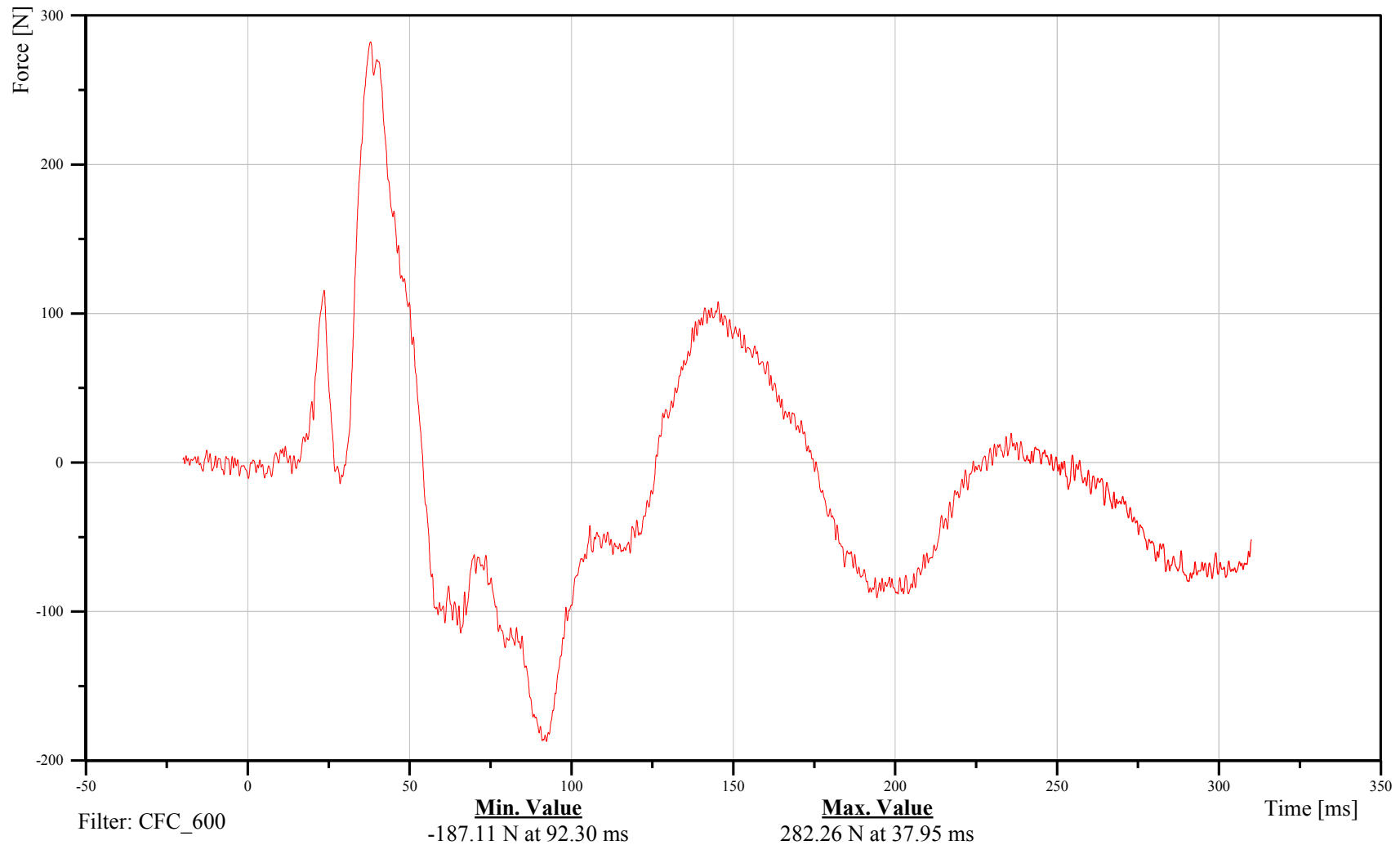
Time: 16:04

Customer: VRTC

11FEACLE00WSFOXB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Left Femoral Neck Force Y

Date: 03/29/2016

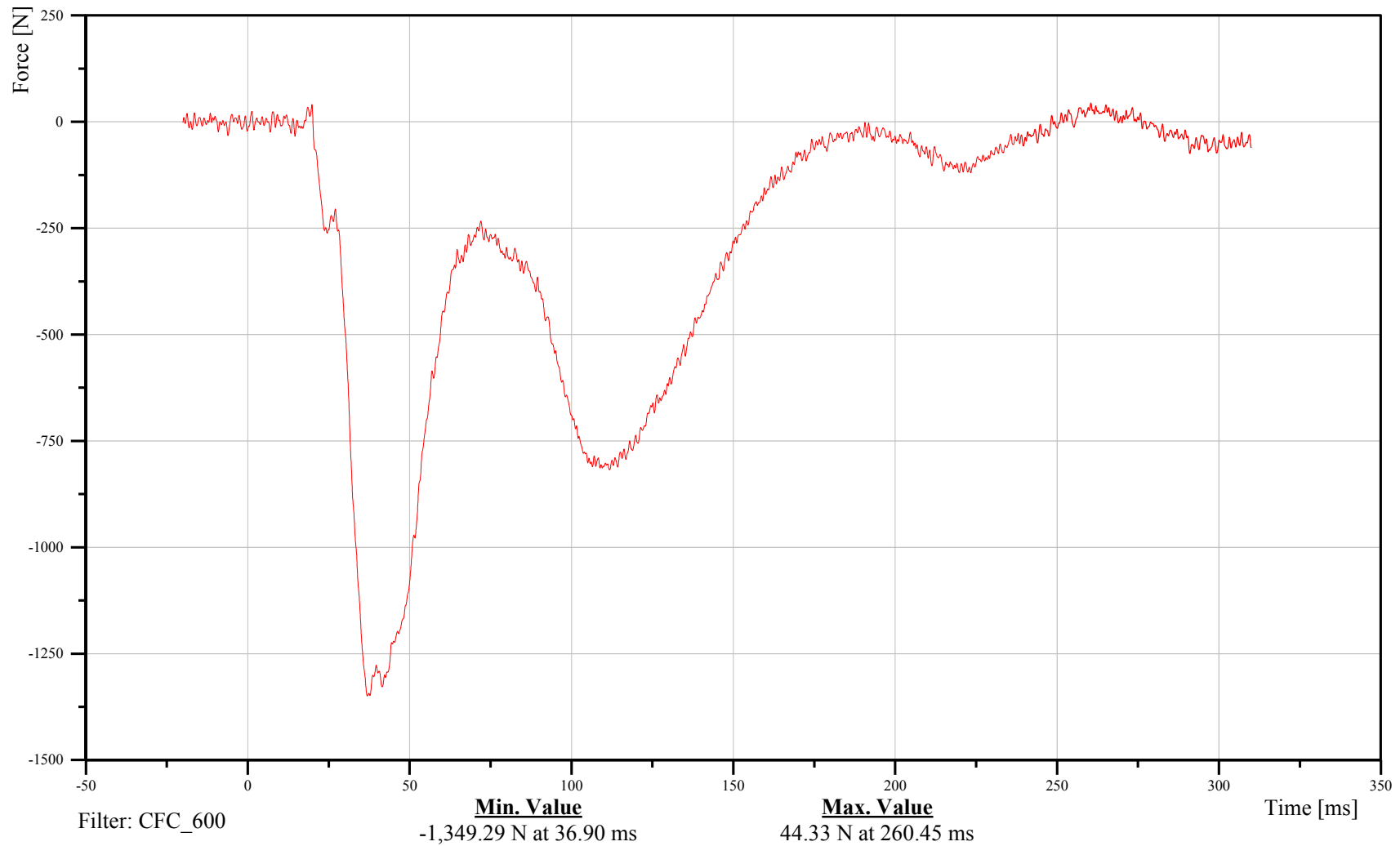
Time: 16:04

Customer: VRTC

11FEACLE00WSFOYB

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Left Femoral Neck Force Z

Date: 03/29/2016

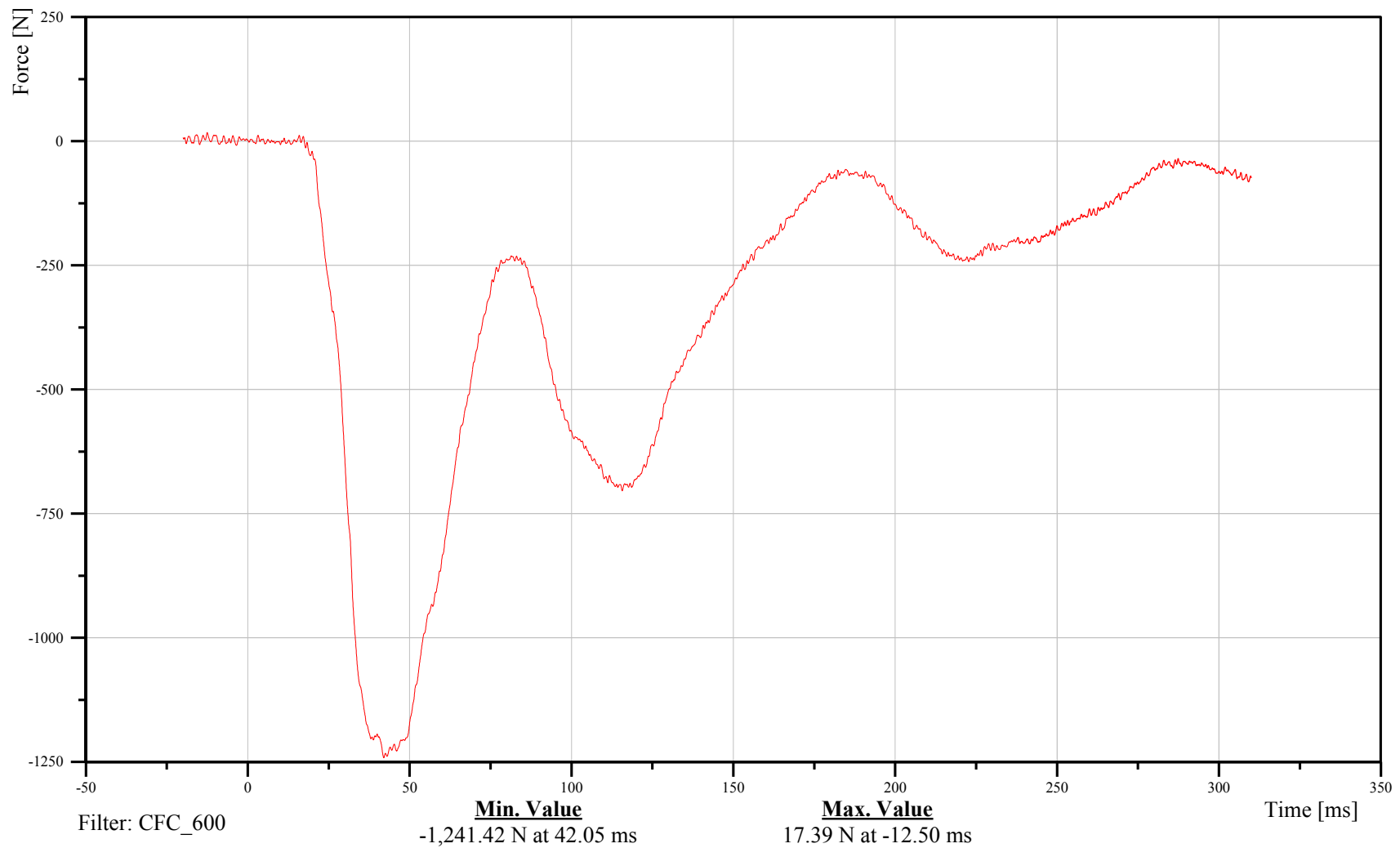
Time: 16:04

Customer: VRTC

11FEACLE00WSFOZB

TRC Inc. Test Lab: CTF

Test Number: 160329





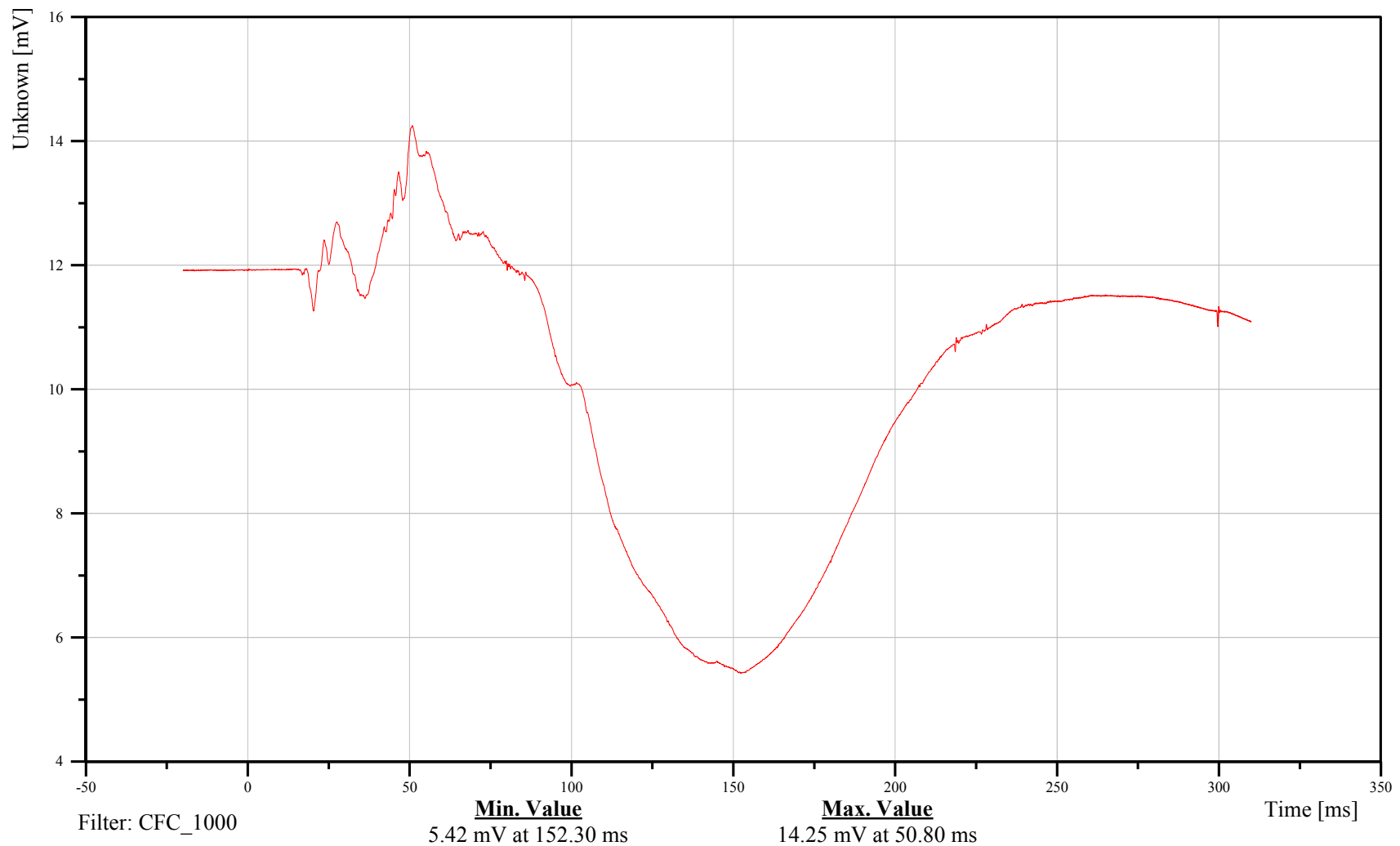
2016 Nissan Rogue Side Pole Impact W50-1

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA0100WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





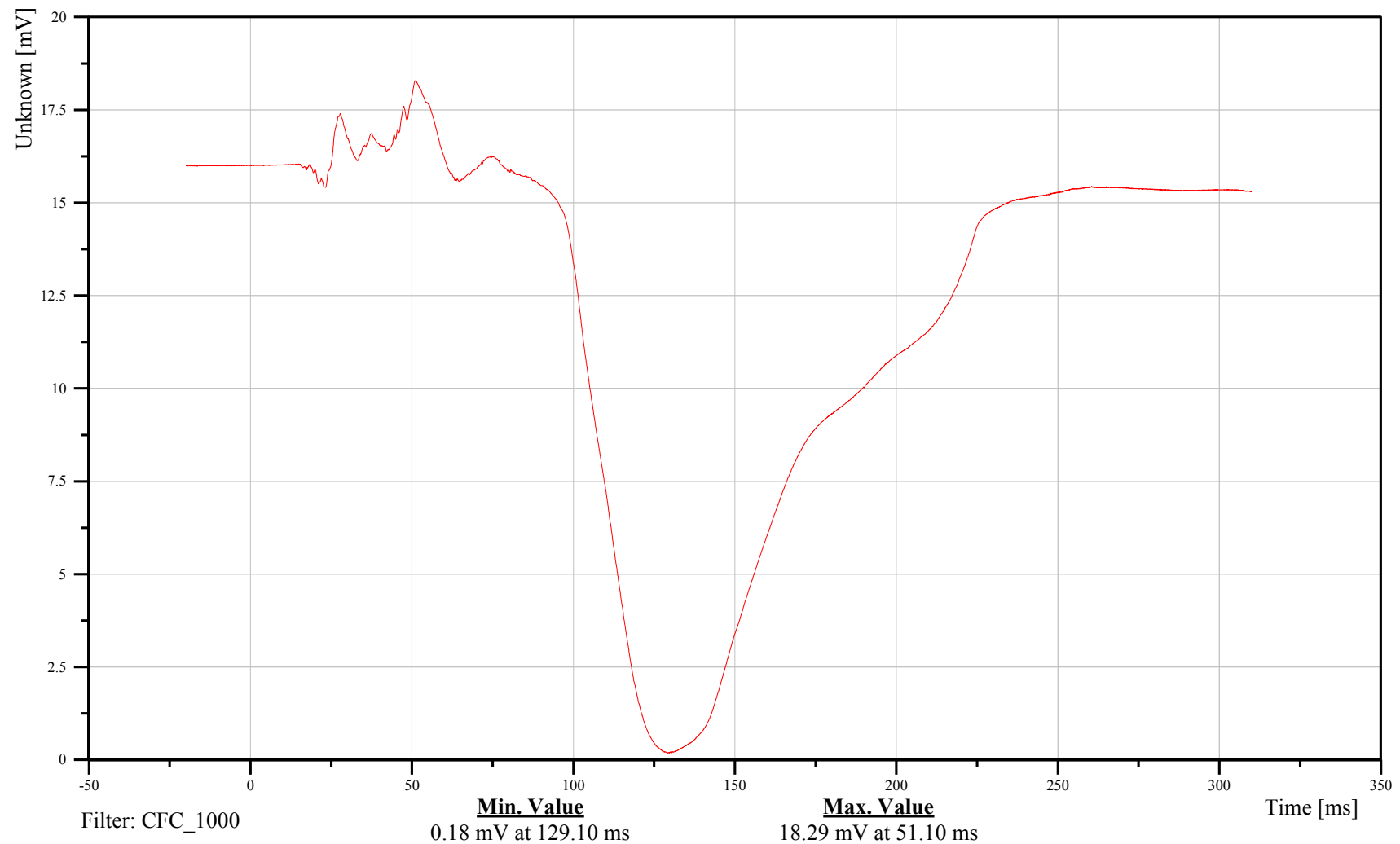
2016 Nissan Rogue Side Pole Impact W50-2

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA0200WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





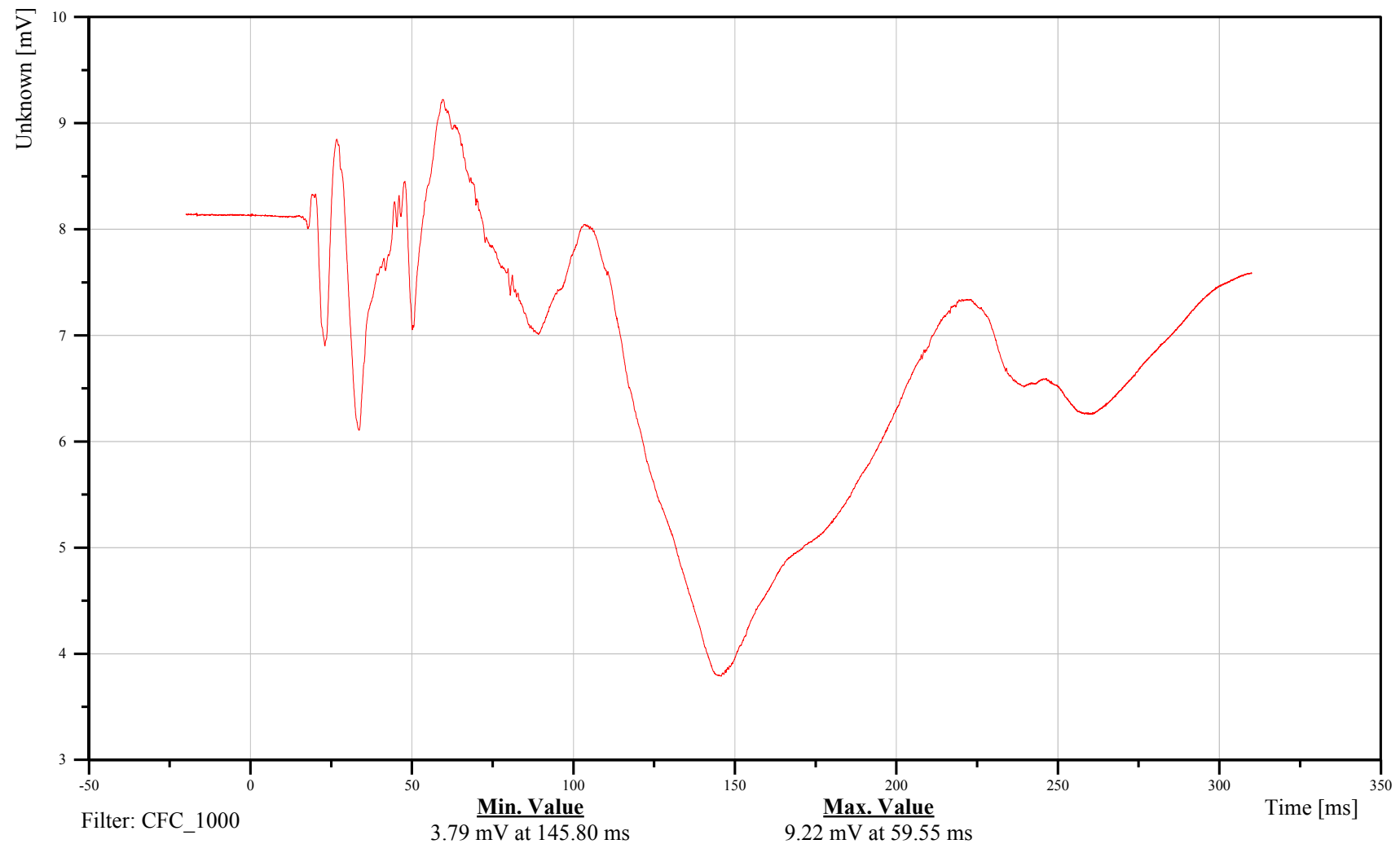
2016 Nissan Rogue Side Pole Impact W50-3

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA0300WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

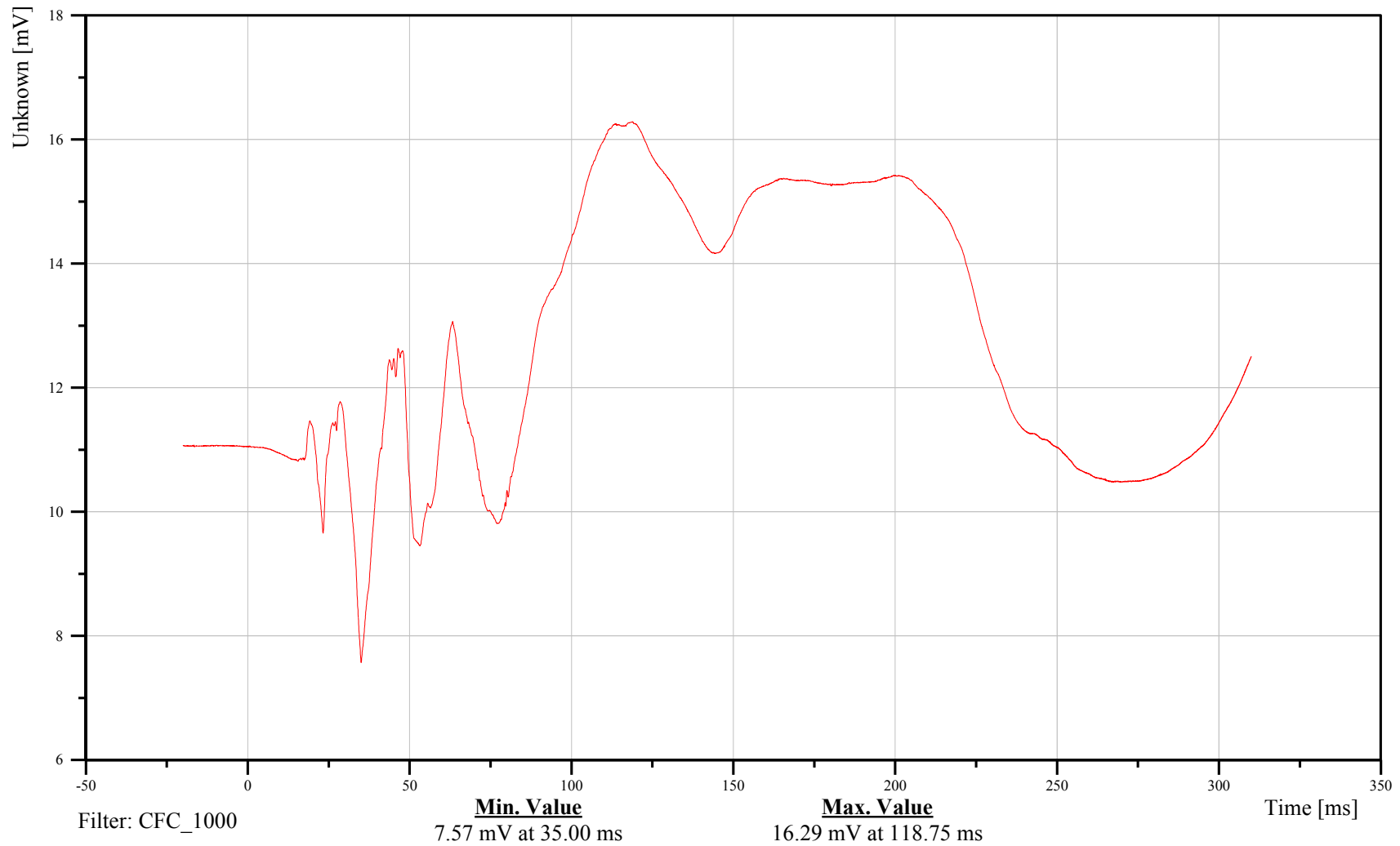
W50-4

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA0400WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





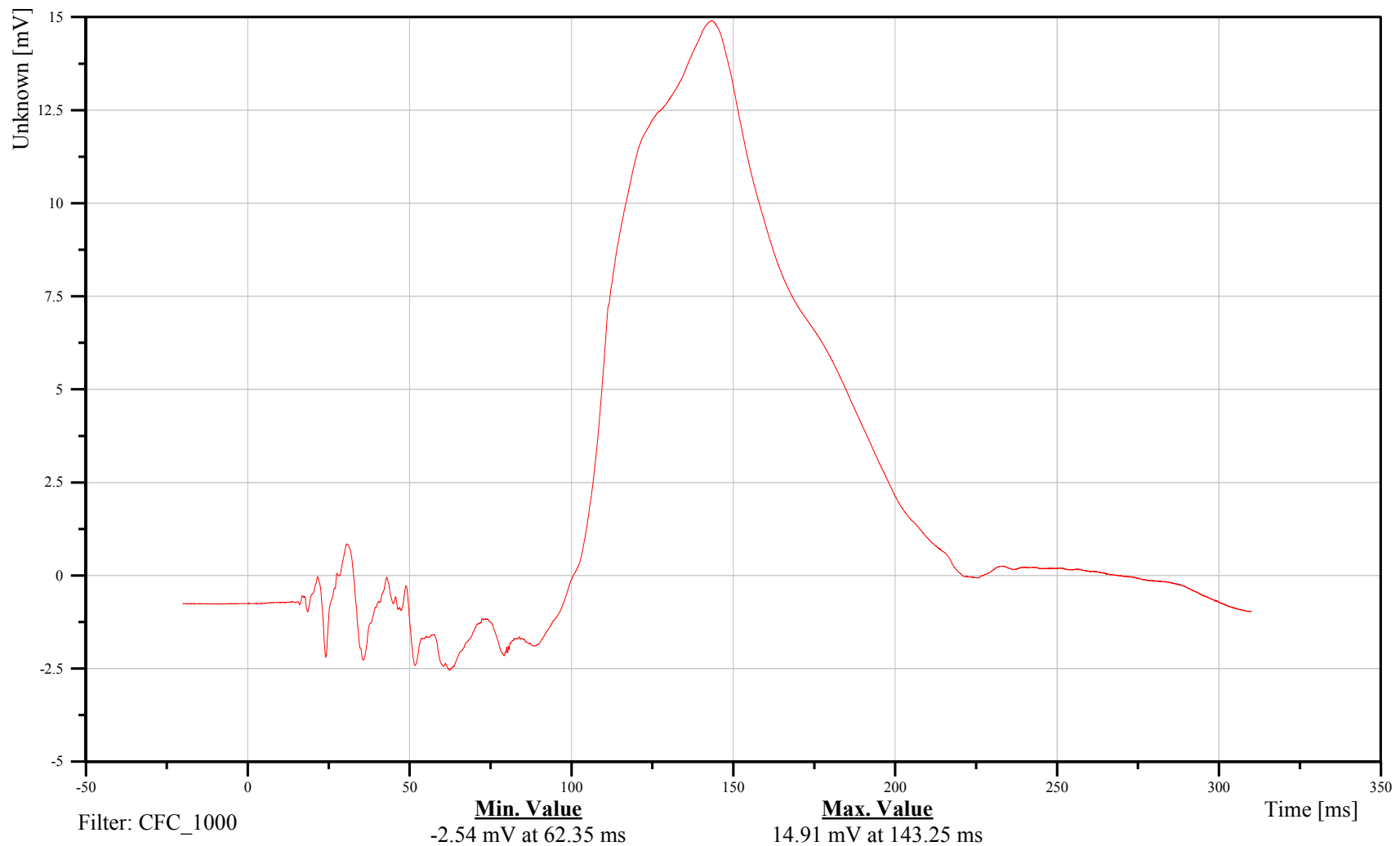
2016 Nissan Rogue Side Pole Impact W50-5

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA0500WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





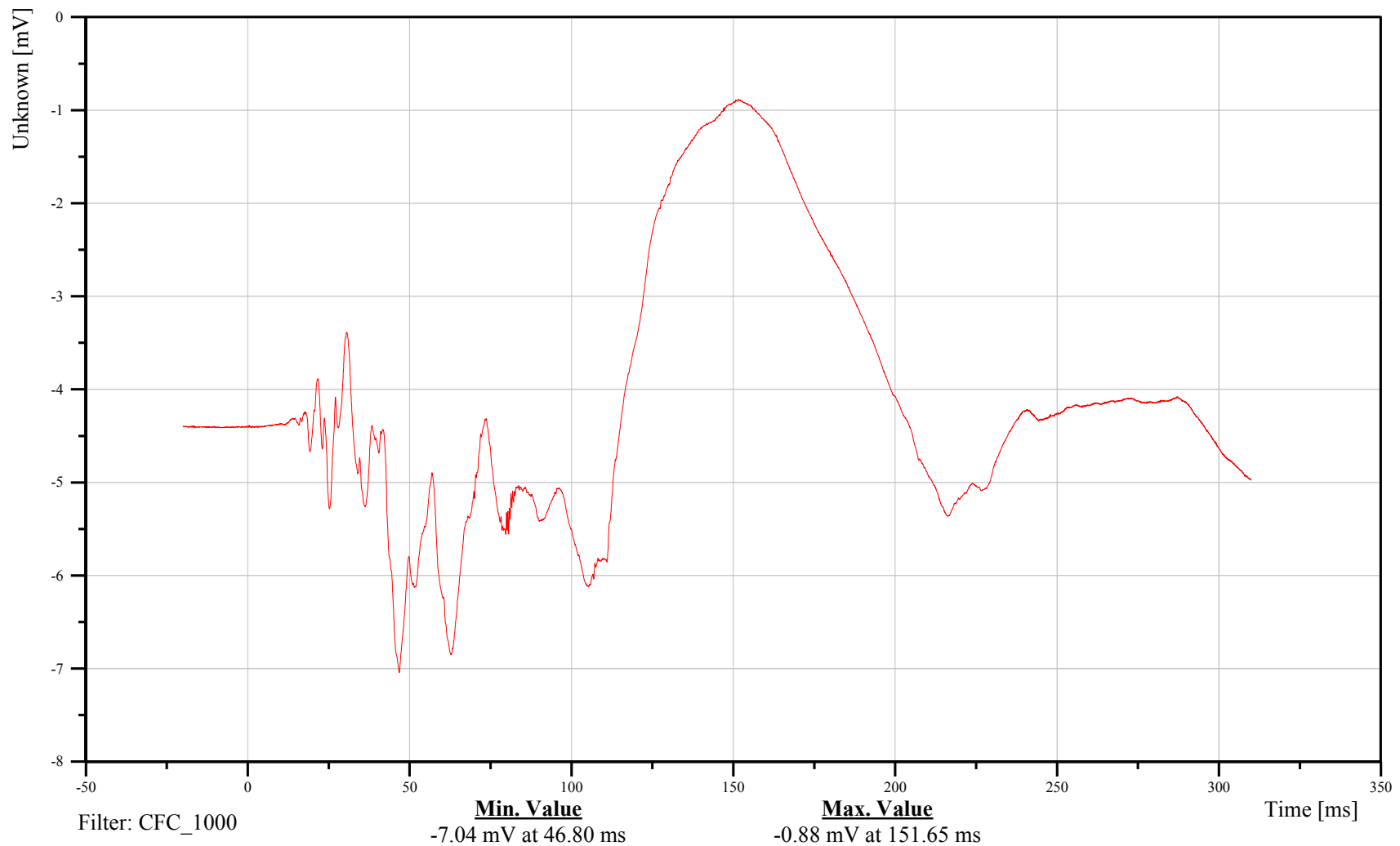
2016 Nissan Rogue Side Pole Impact W50-6

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA0600WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





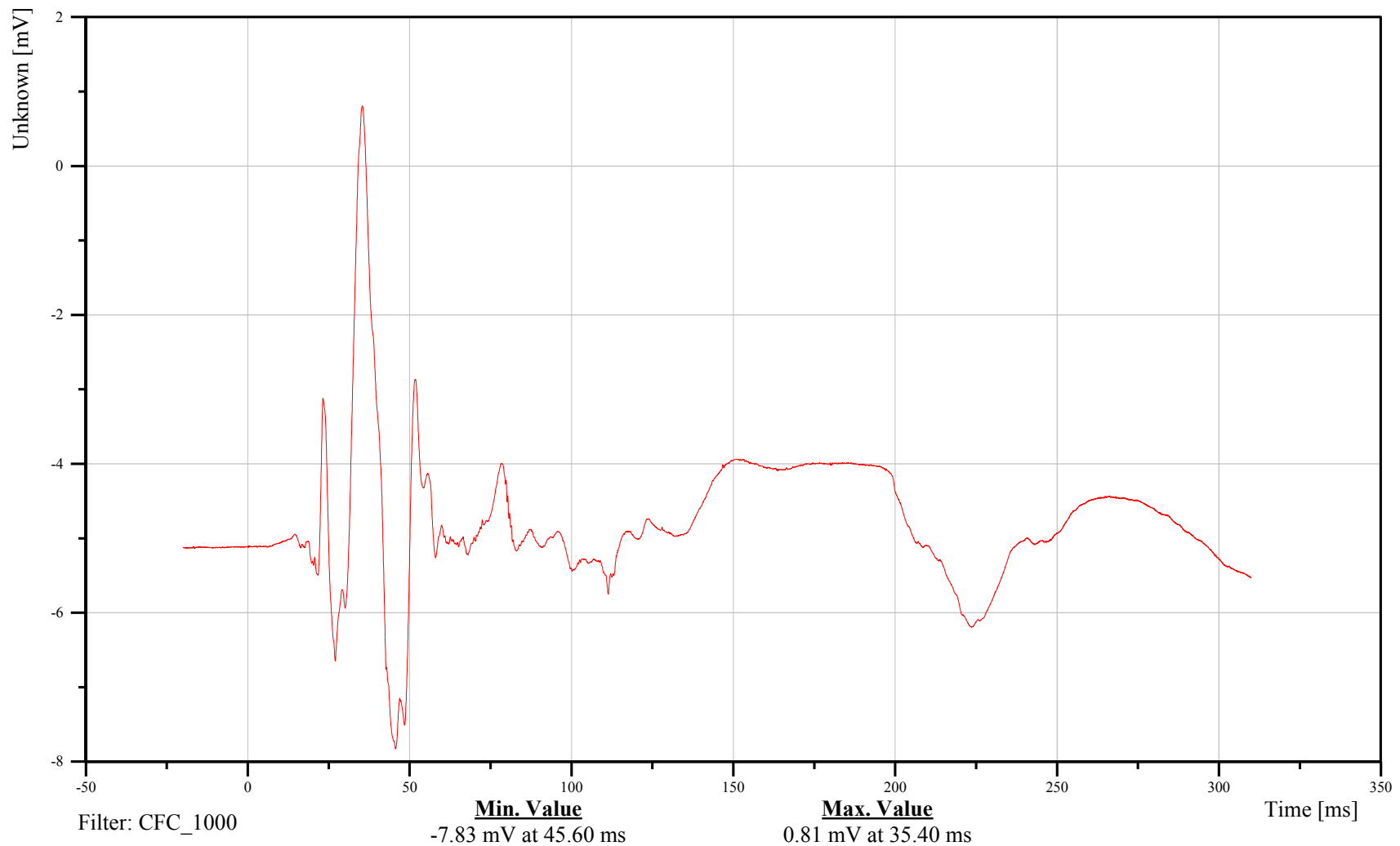
2016 Nissan Rogue Side Pole Impact W50-7

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA0700WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





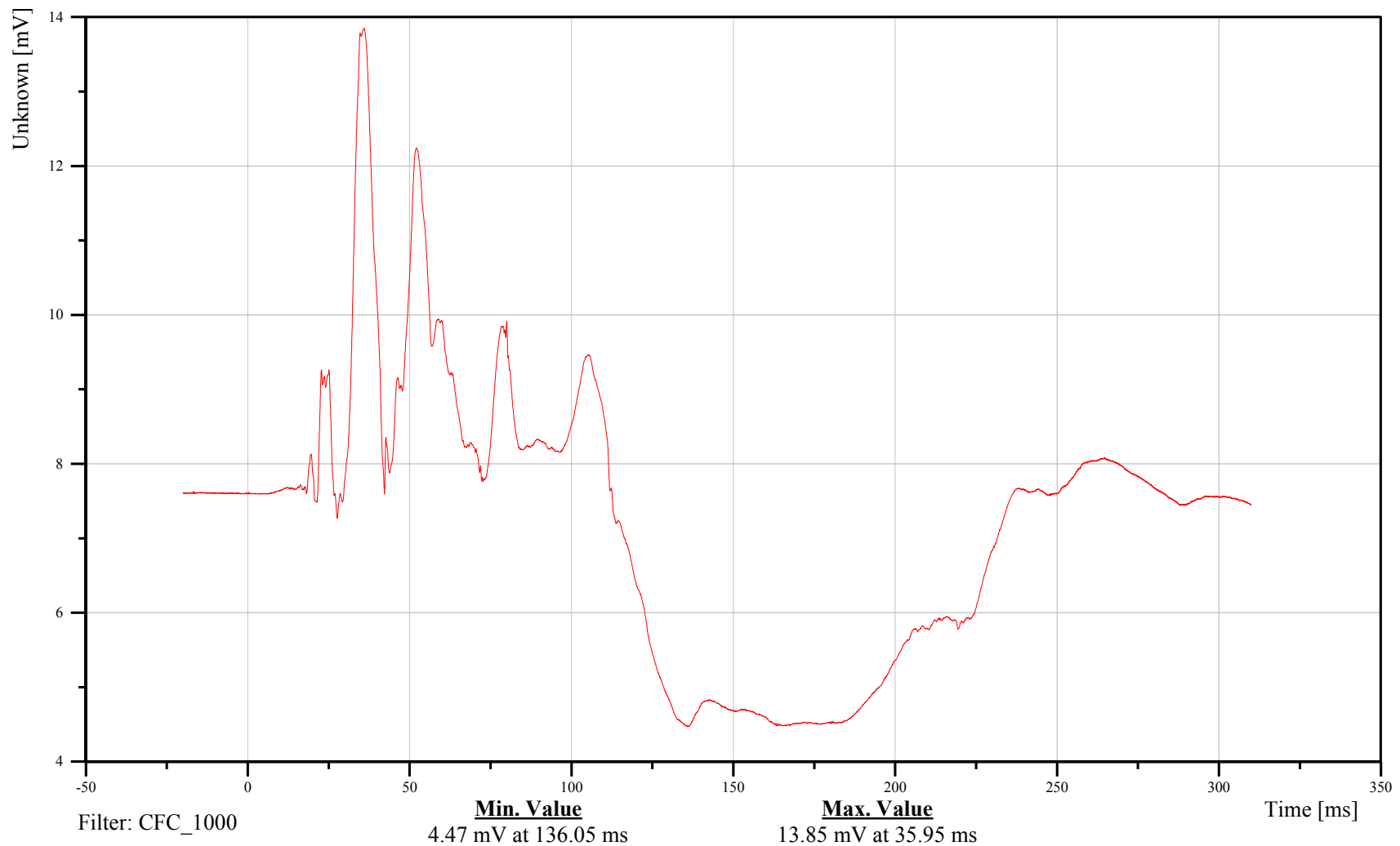
2016 Nissan Rogue Side Pole Impact W50-8

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA0800WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





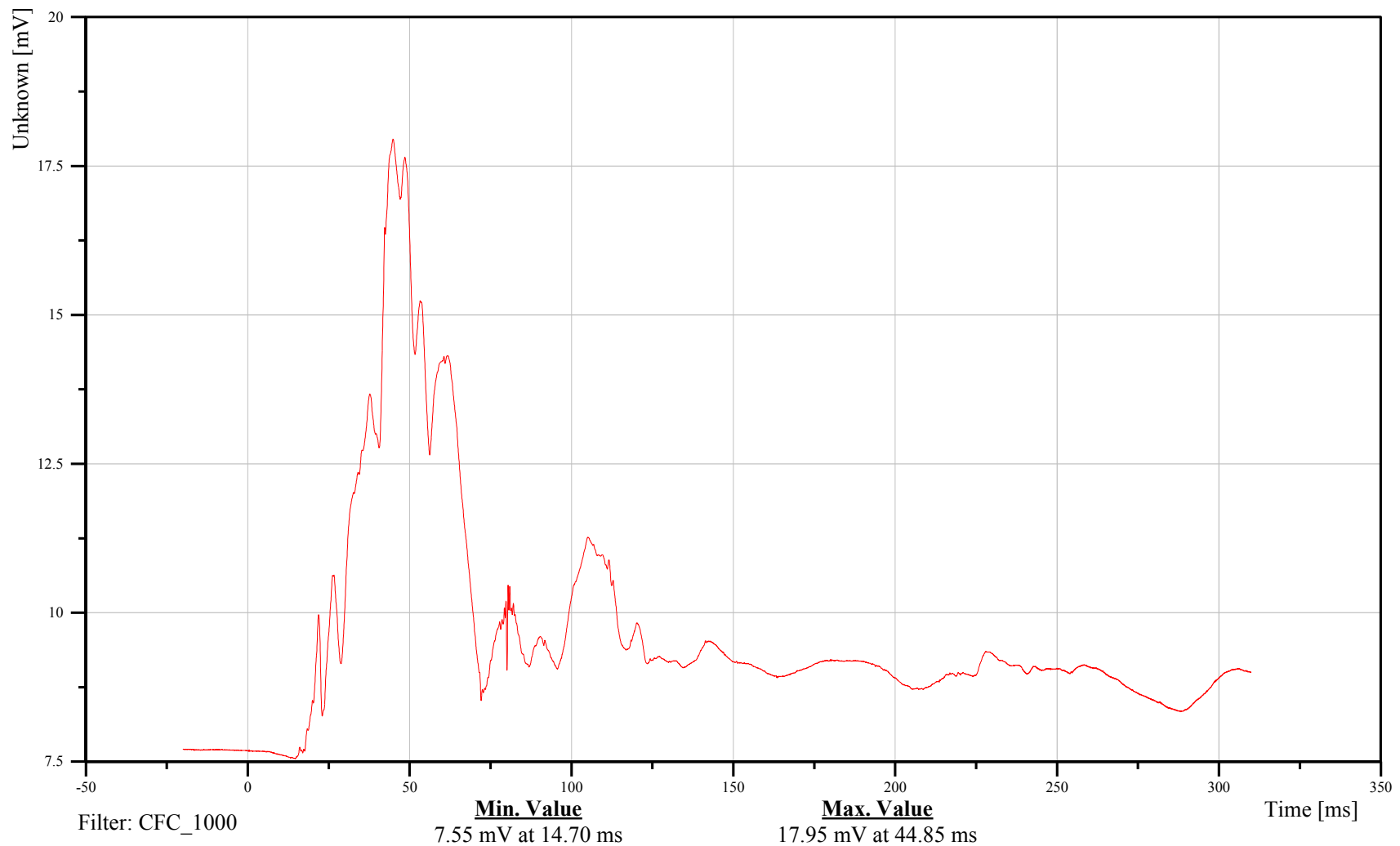
2016 Nissan Rogue Side Pole Impact W50-9

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA0900WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





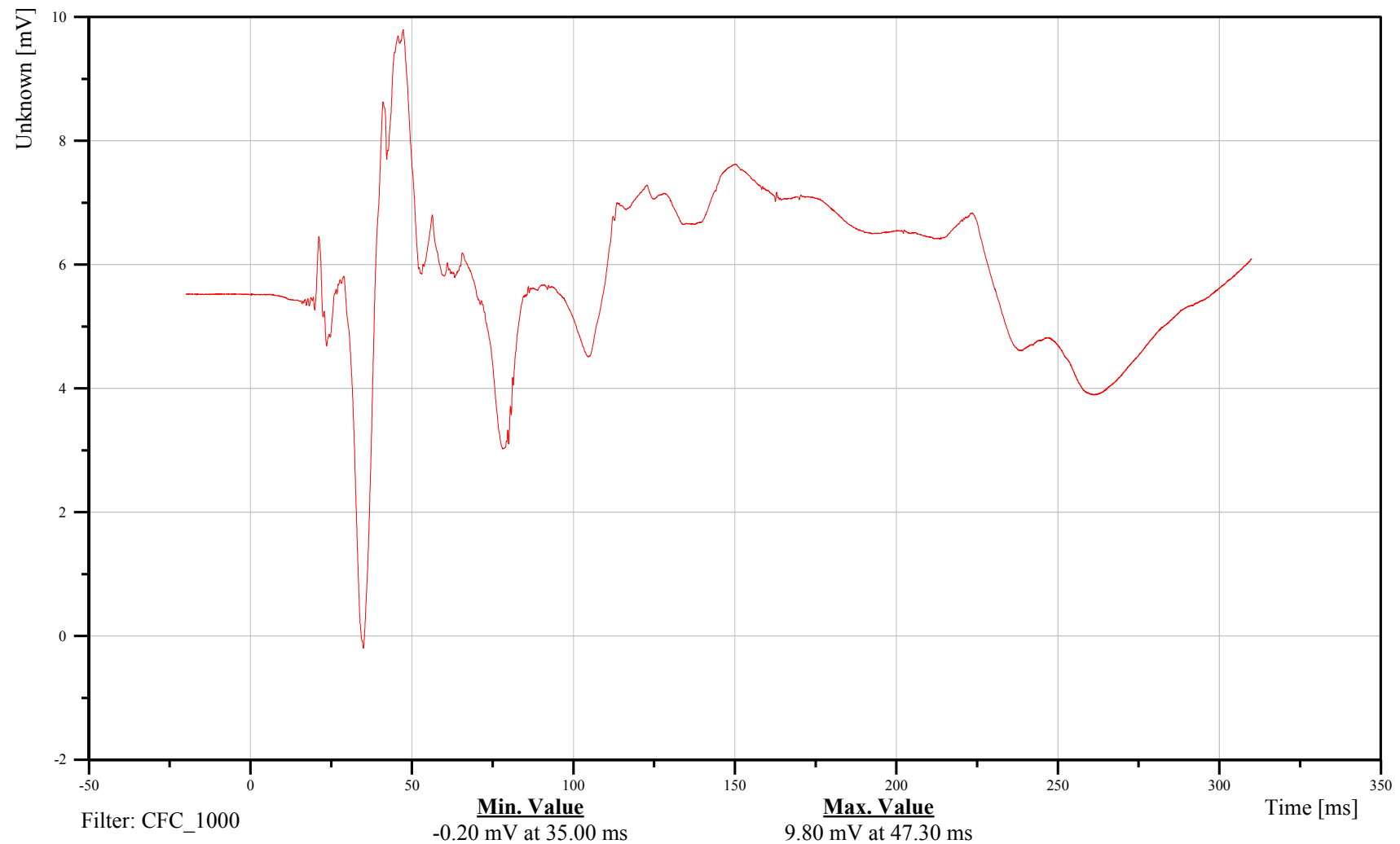
2016 Nissan Rogue Side Pole Impact W50-10

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA1000WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





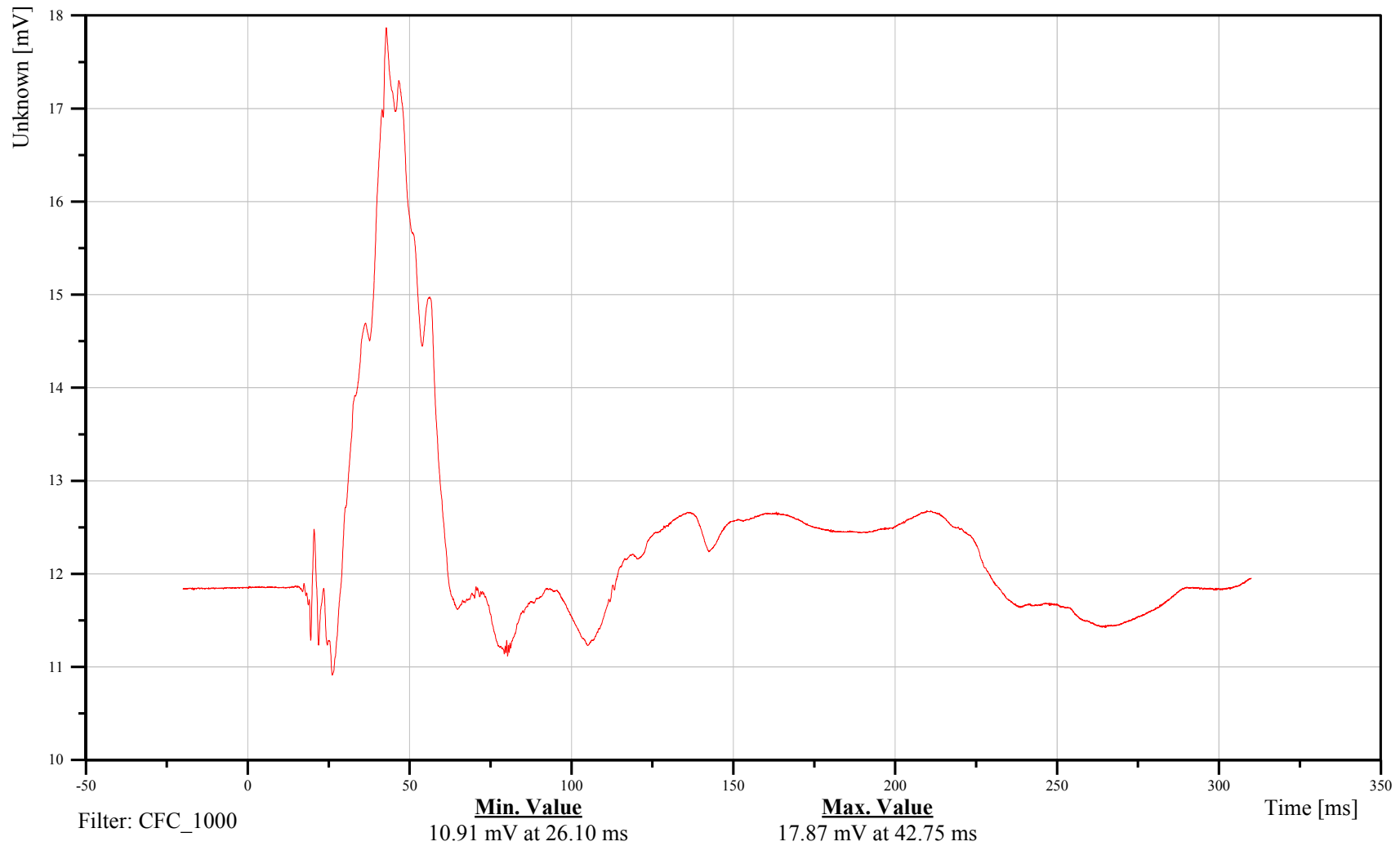
2016 Nissan Rogue Side Pole Impact W50-11

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA1100WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





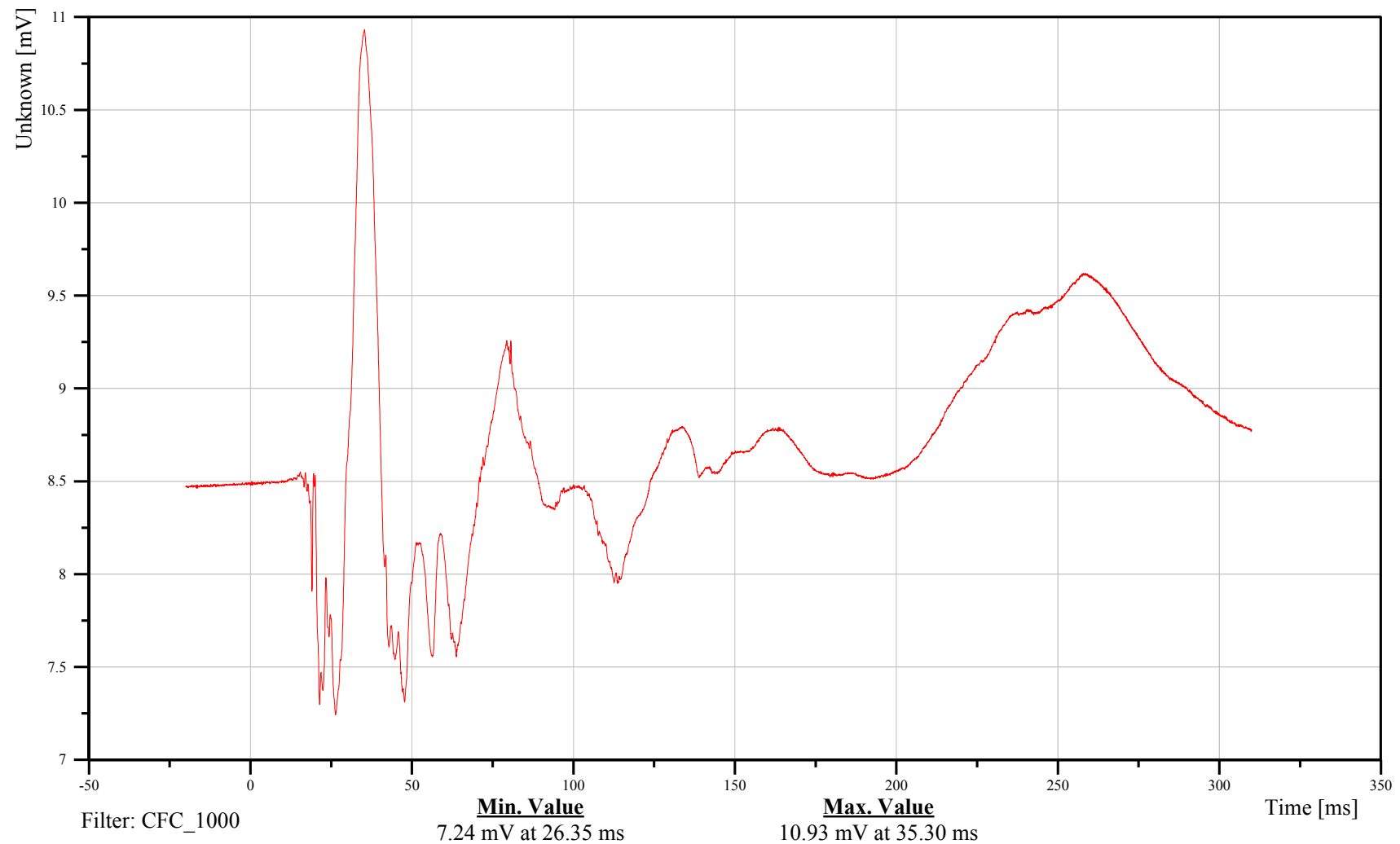
2016 Nissan Rogue Side Pole Impact W50-12

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA1200WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





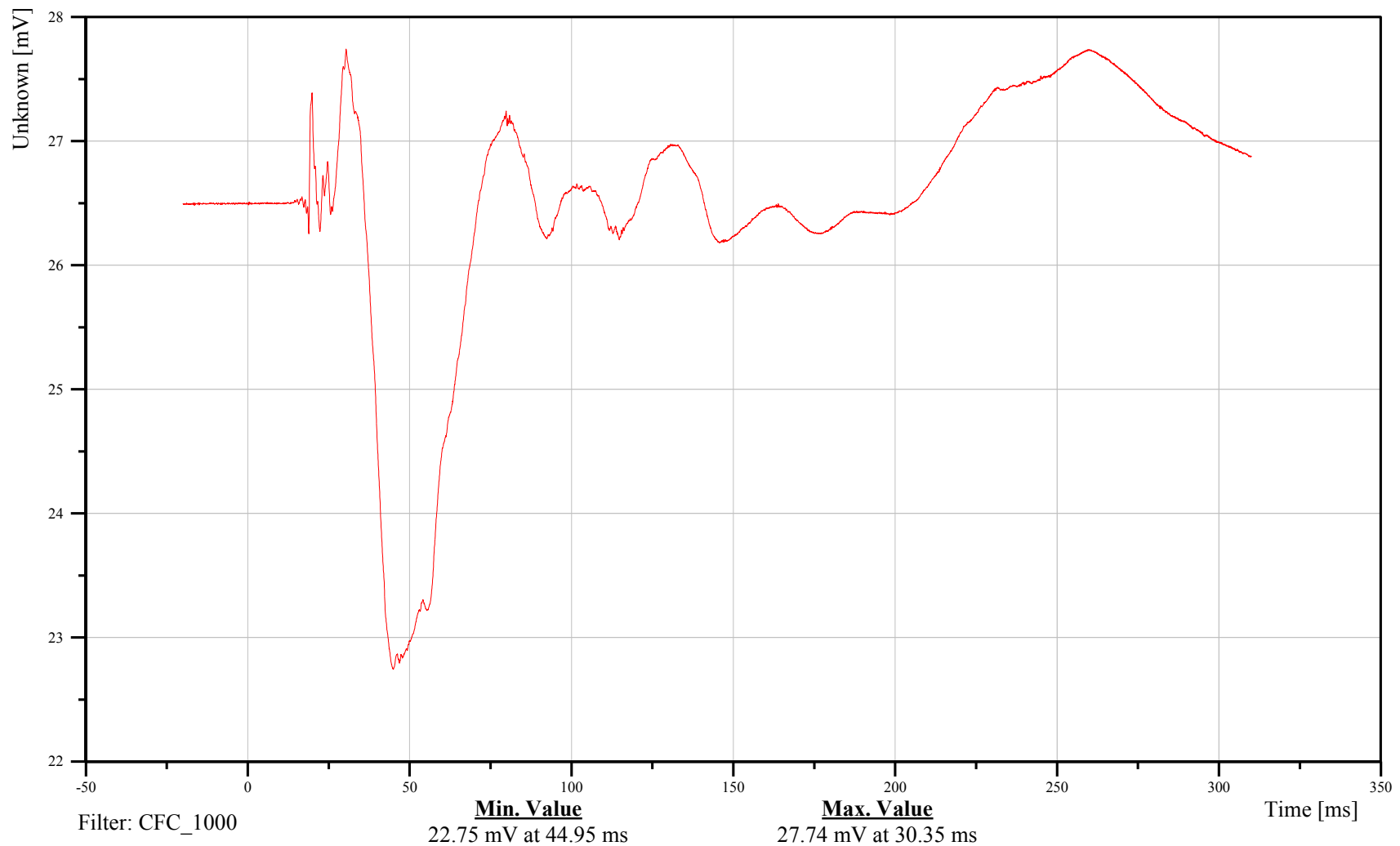
2016 Nissan Rogue Side Pole Impact W50-13

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA1300WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

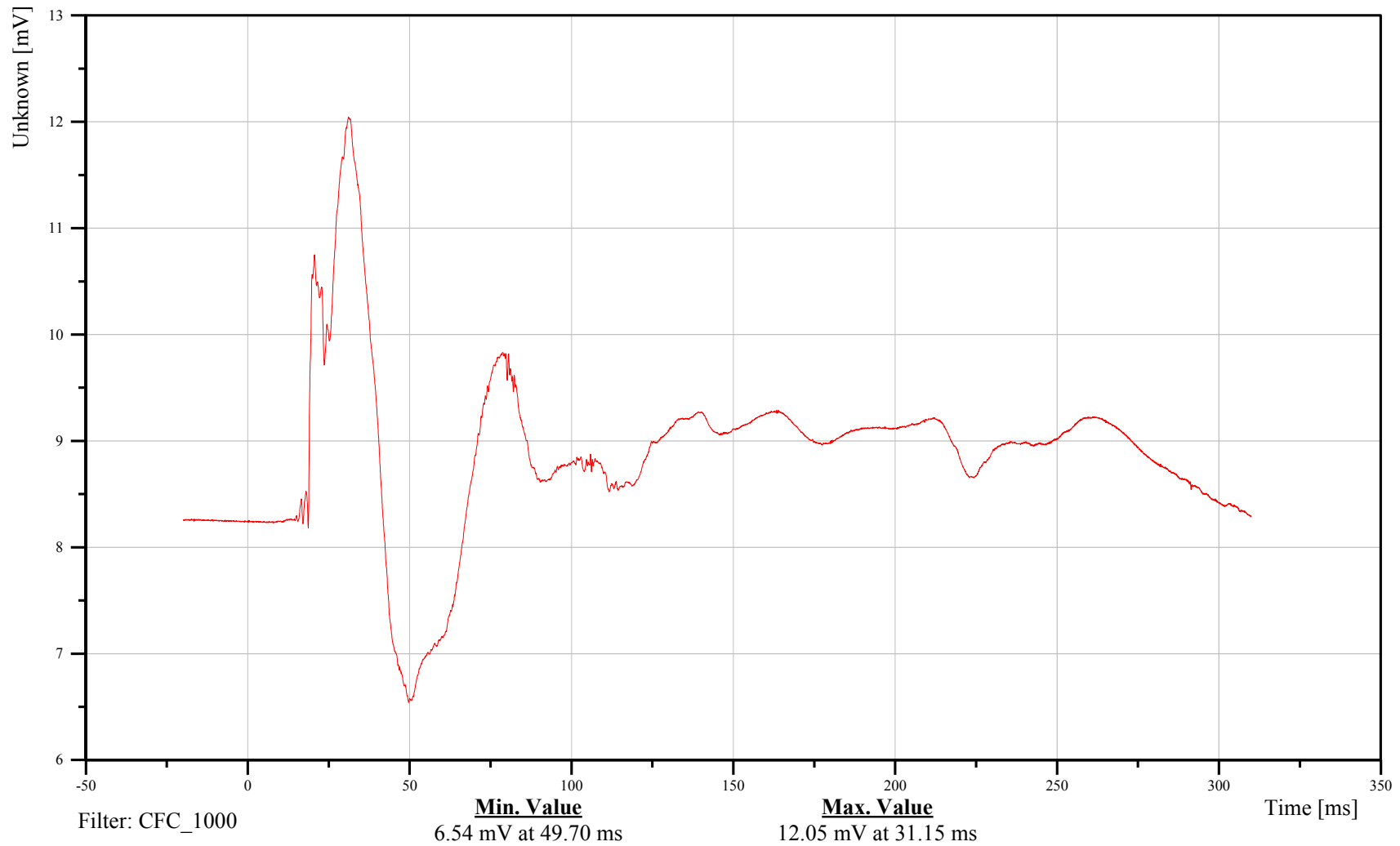
W50-14

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA1400WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





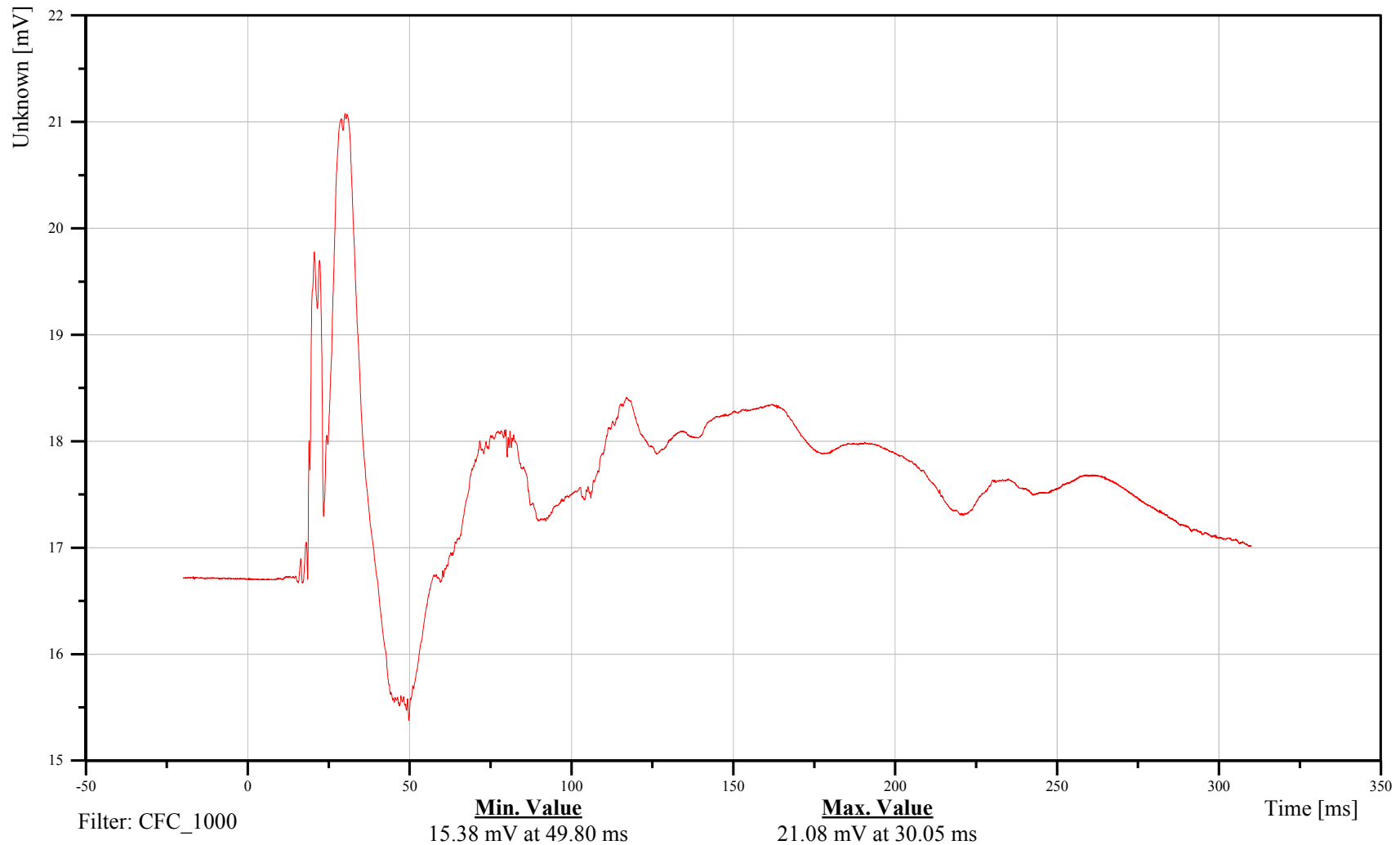
2016 Nissan Rogue Side Pole Impact W50-15

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA1500WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





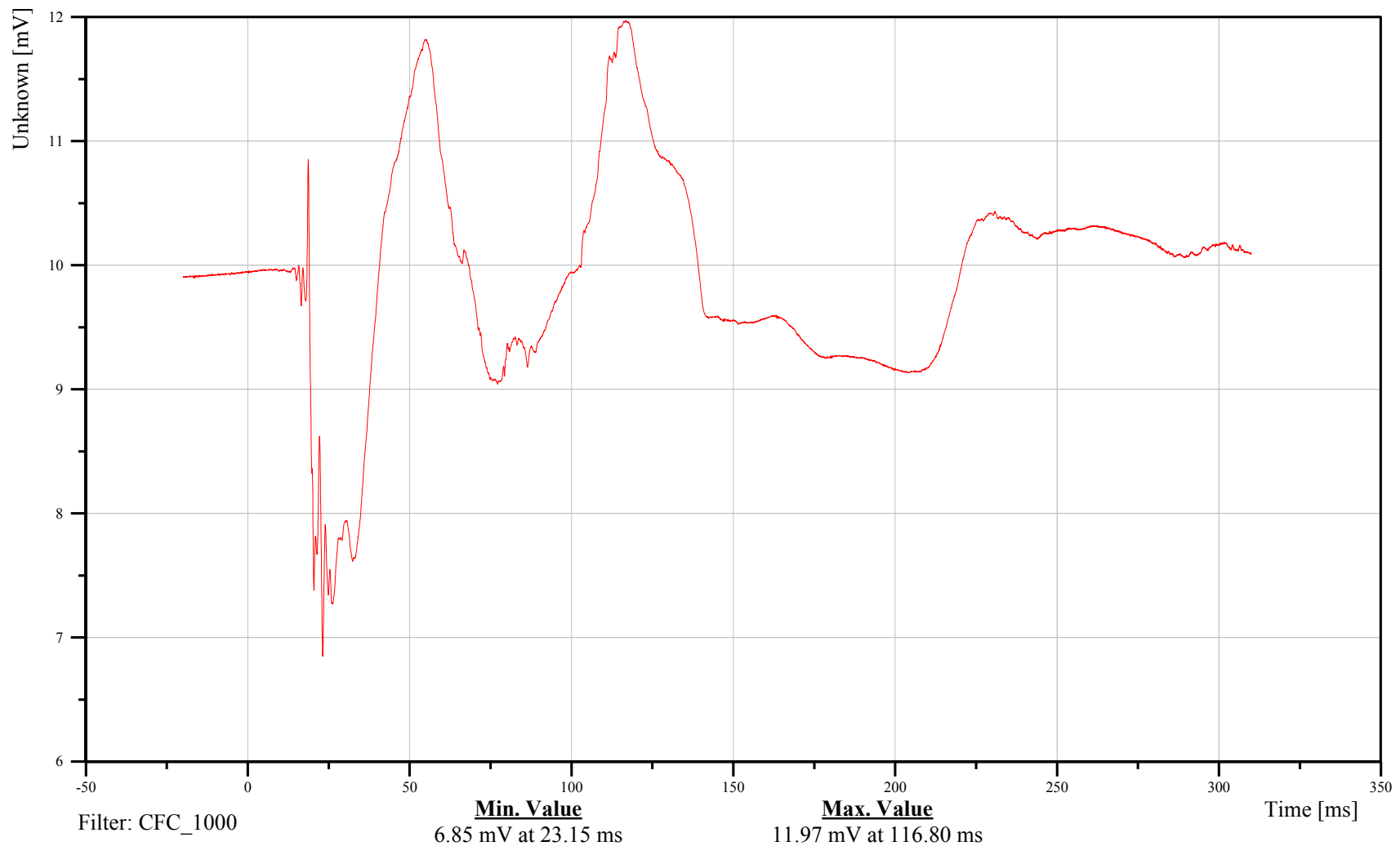
2016 Nissan Rogue Side Pole Impact W50-16

Date: 03/29/2016
Time: 16:04

Customer: VRTC

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TRC Inc. Test Lab: CTF
Test Number: 160329





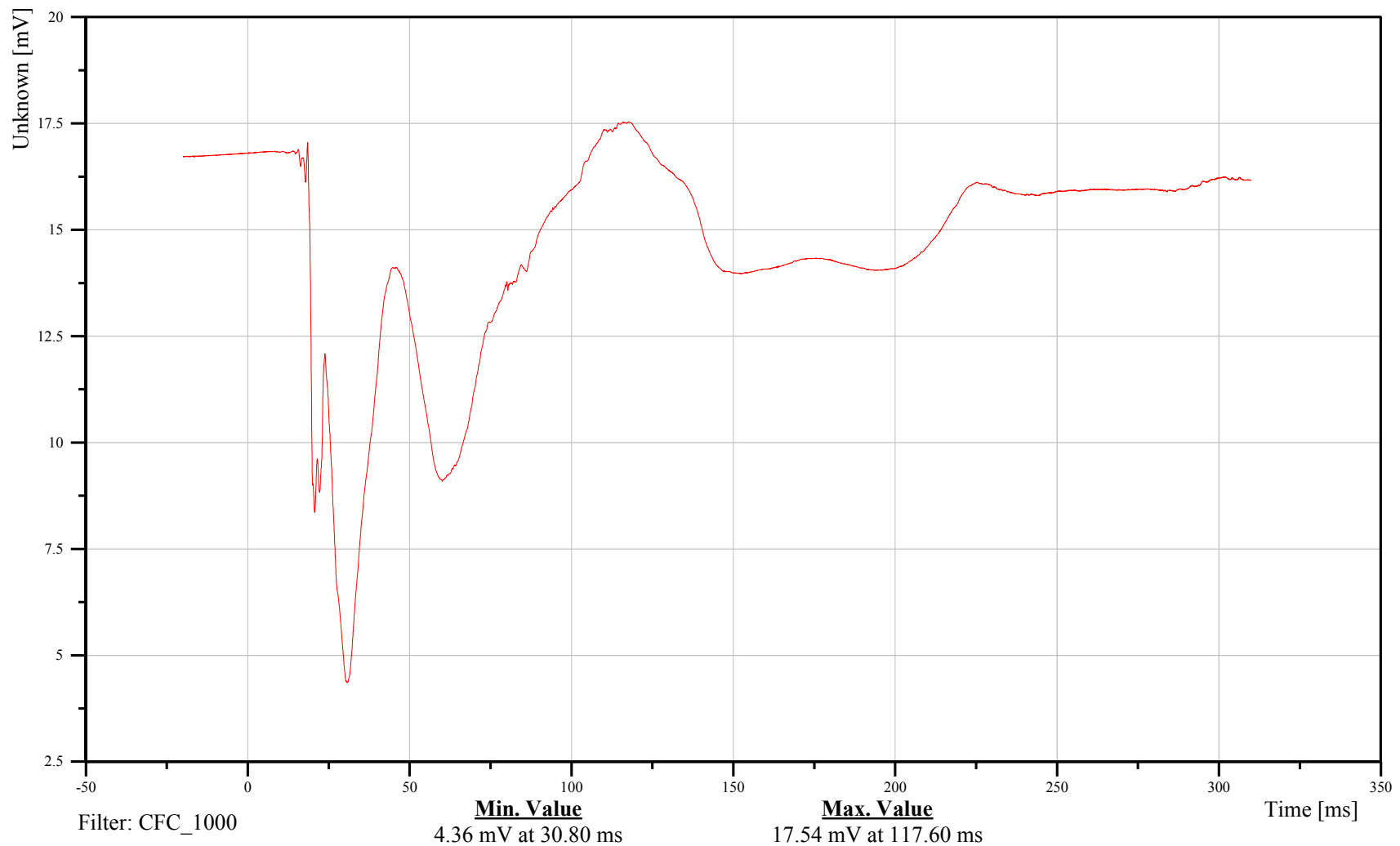
2016 Nissan Rogue Side Pole Impact W50-17

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA1700WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





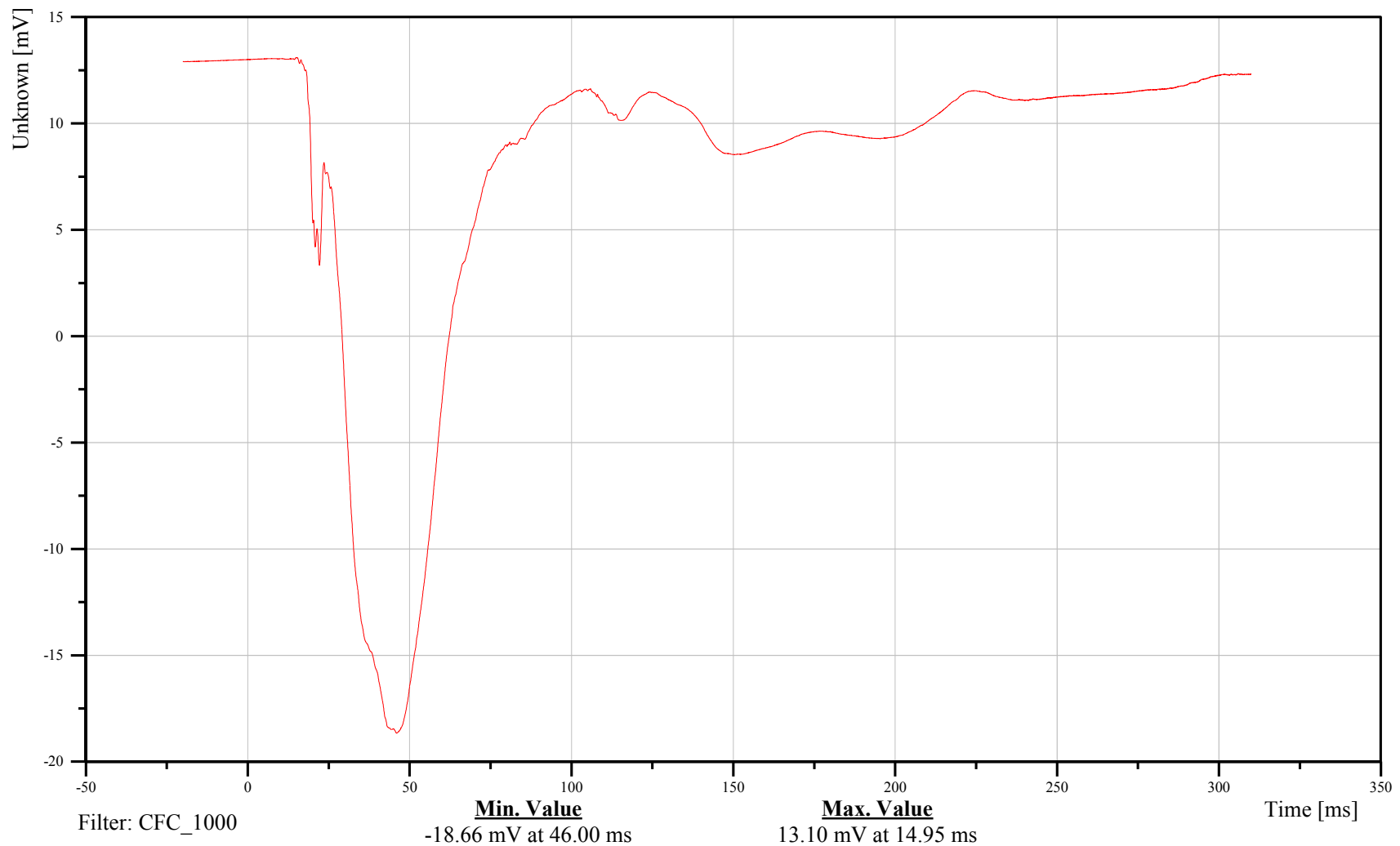
2016 Nissan Rogue Side Pole Impact W50-18

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA1800WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





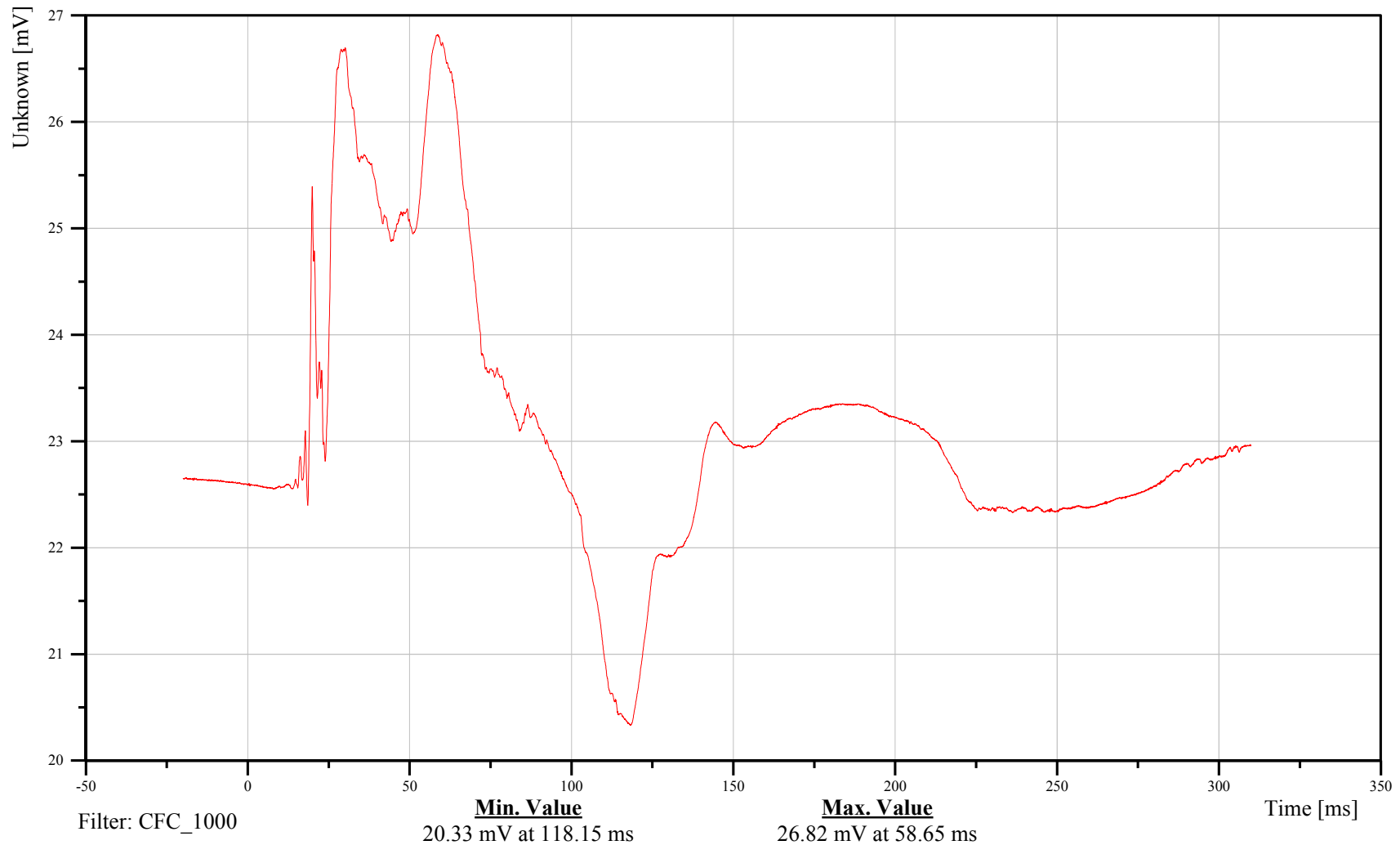
2016 Nissan Rogue Side Pole Impact W50-19

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA1900WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





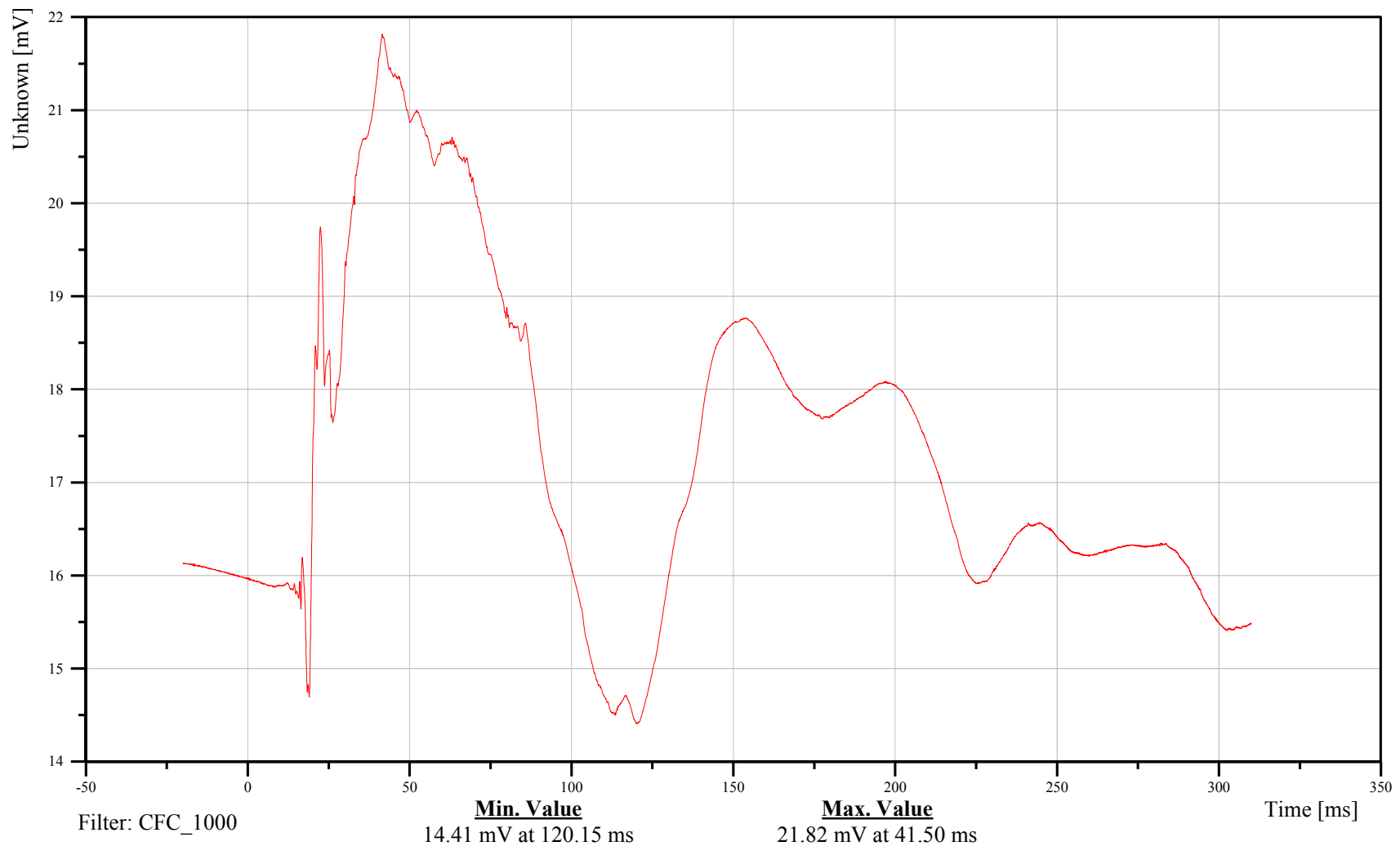
2016 Nissan Rogue Side Pole Impact W50-20

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA2000WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





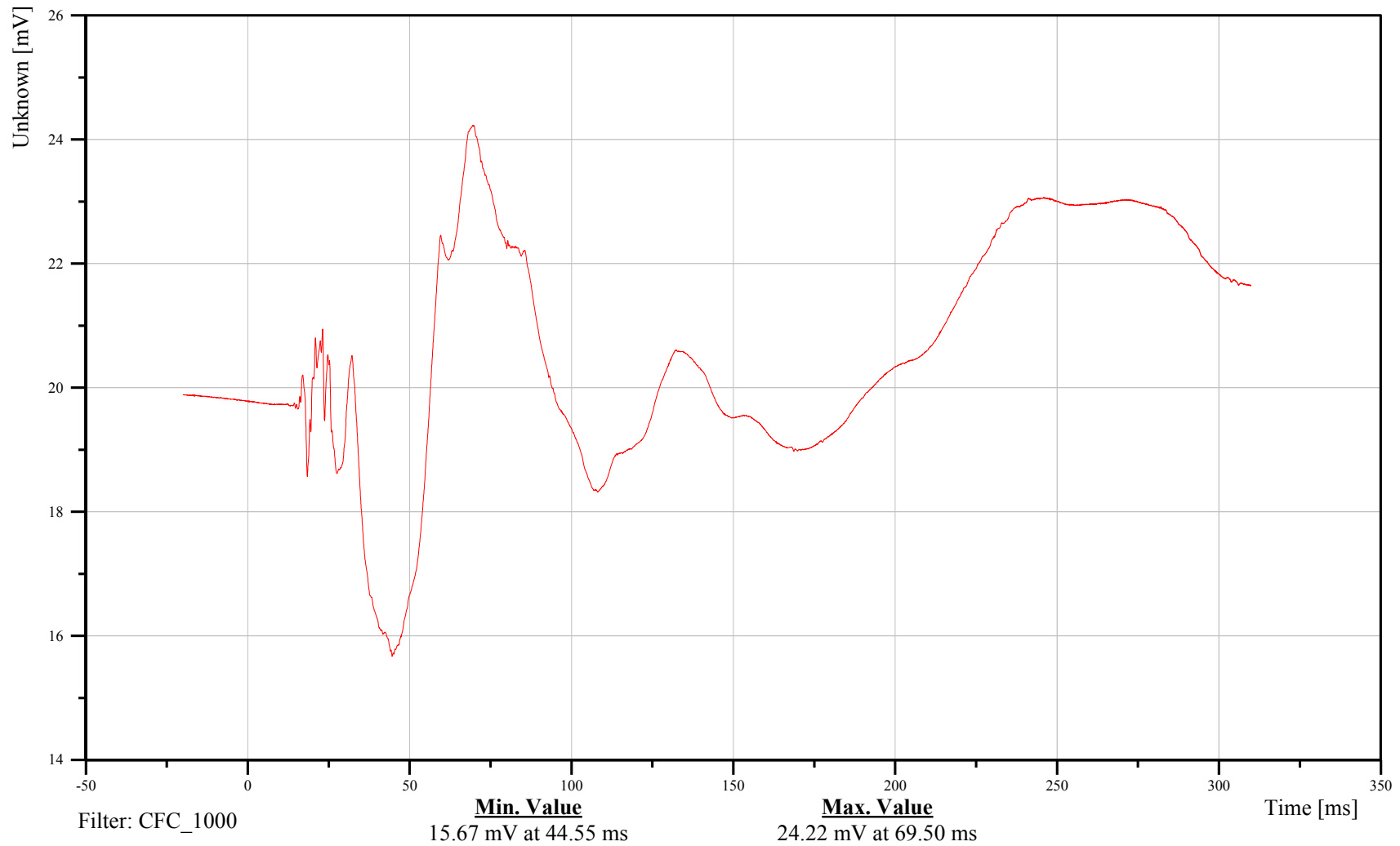
2016 Nissan Rogue Side Pole Impact W50-21

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA2100WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





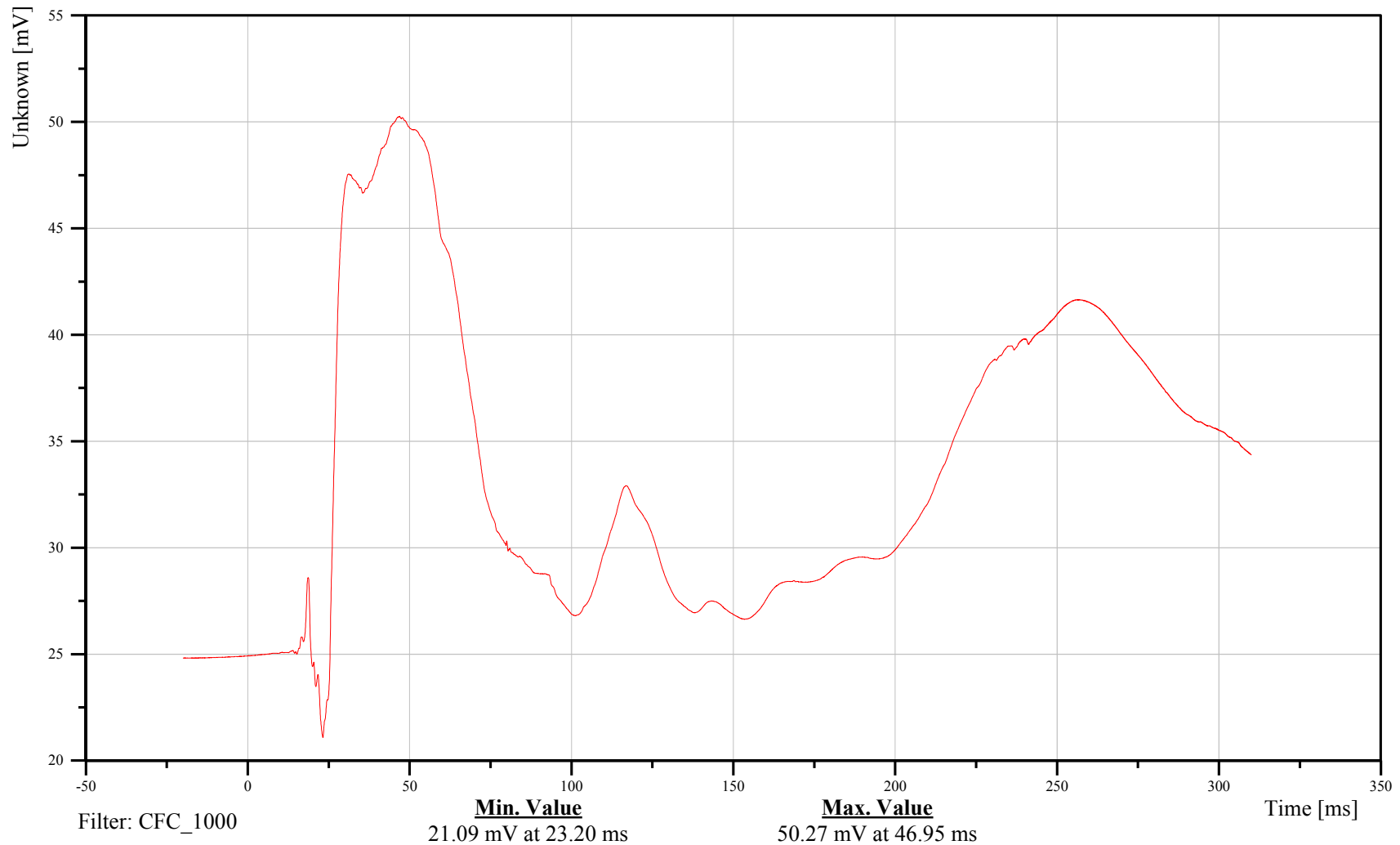
2016 Nissan Rogue Side Pole Impact W50-22

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA2200WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





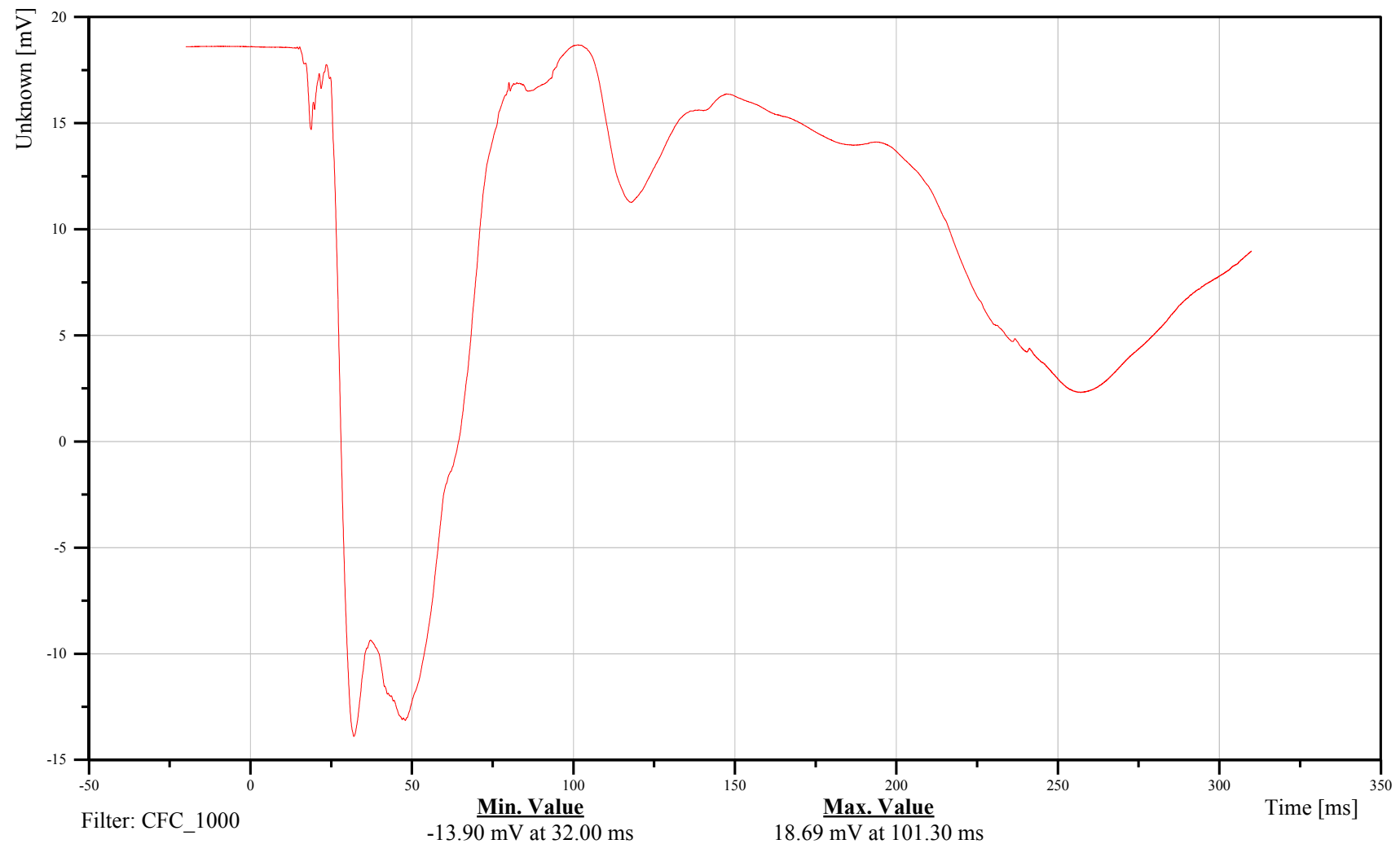
2016 Nissan Rogue Side Pole Impact W50-23

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA2300WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





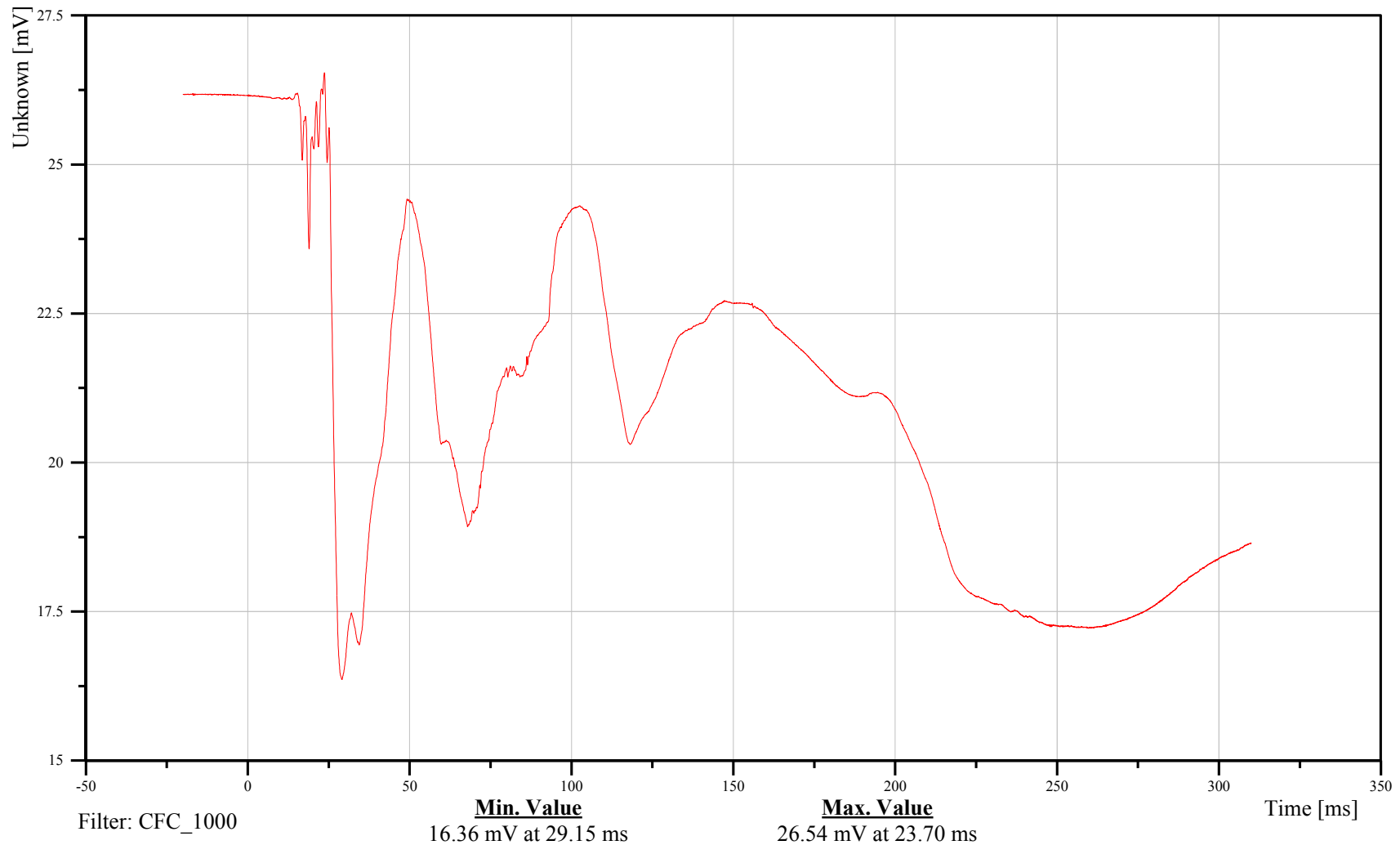
2016 Nissan Rogue Side Pole Impact W50-24

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA2400WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





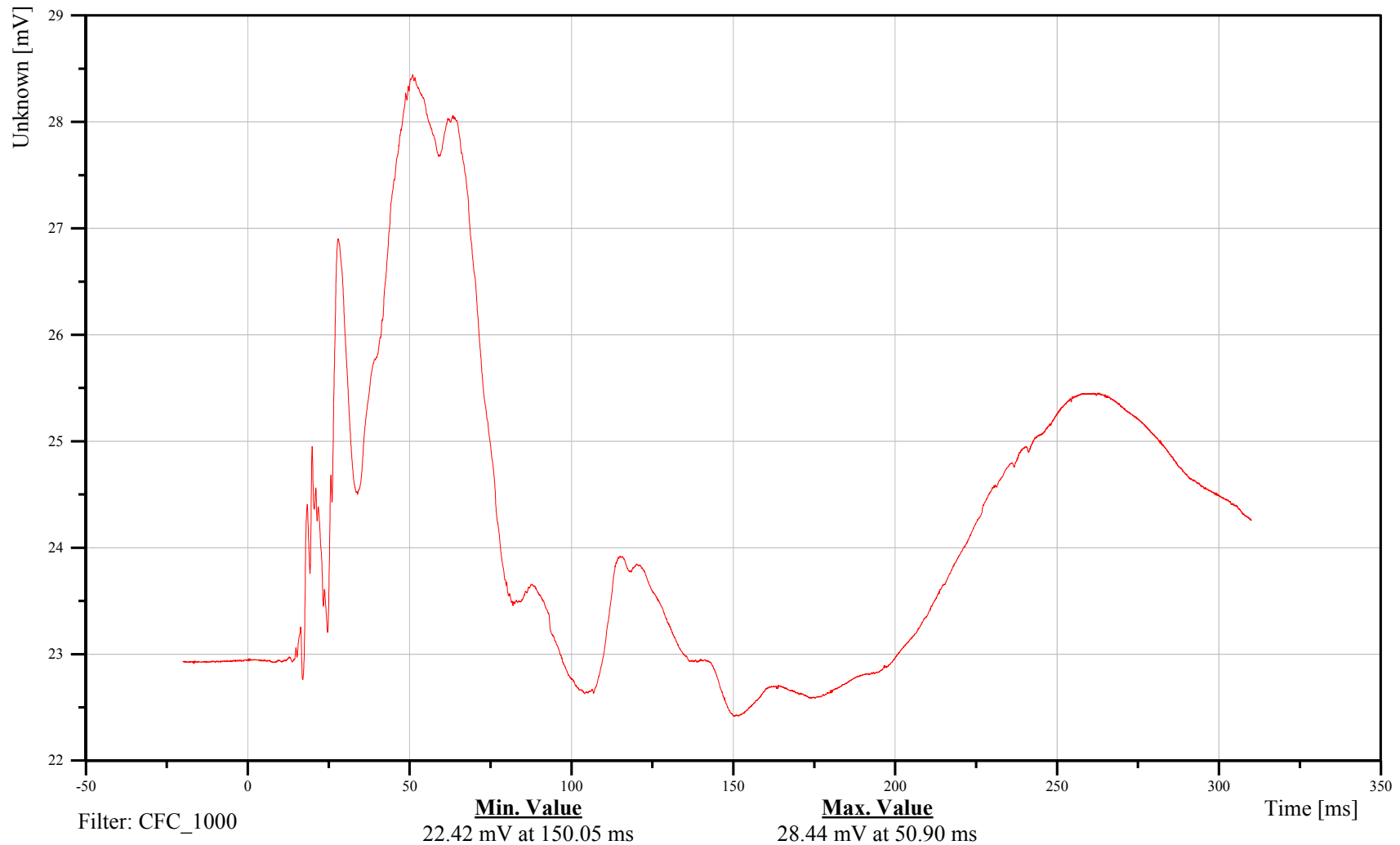
2016 Nissan Rogue Side Pole Impact W50-25

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA2500WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





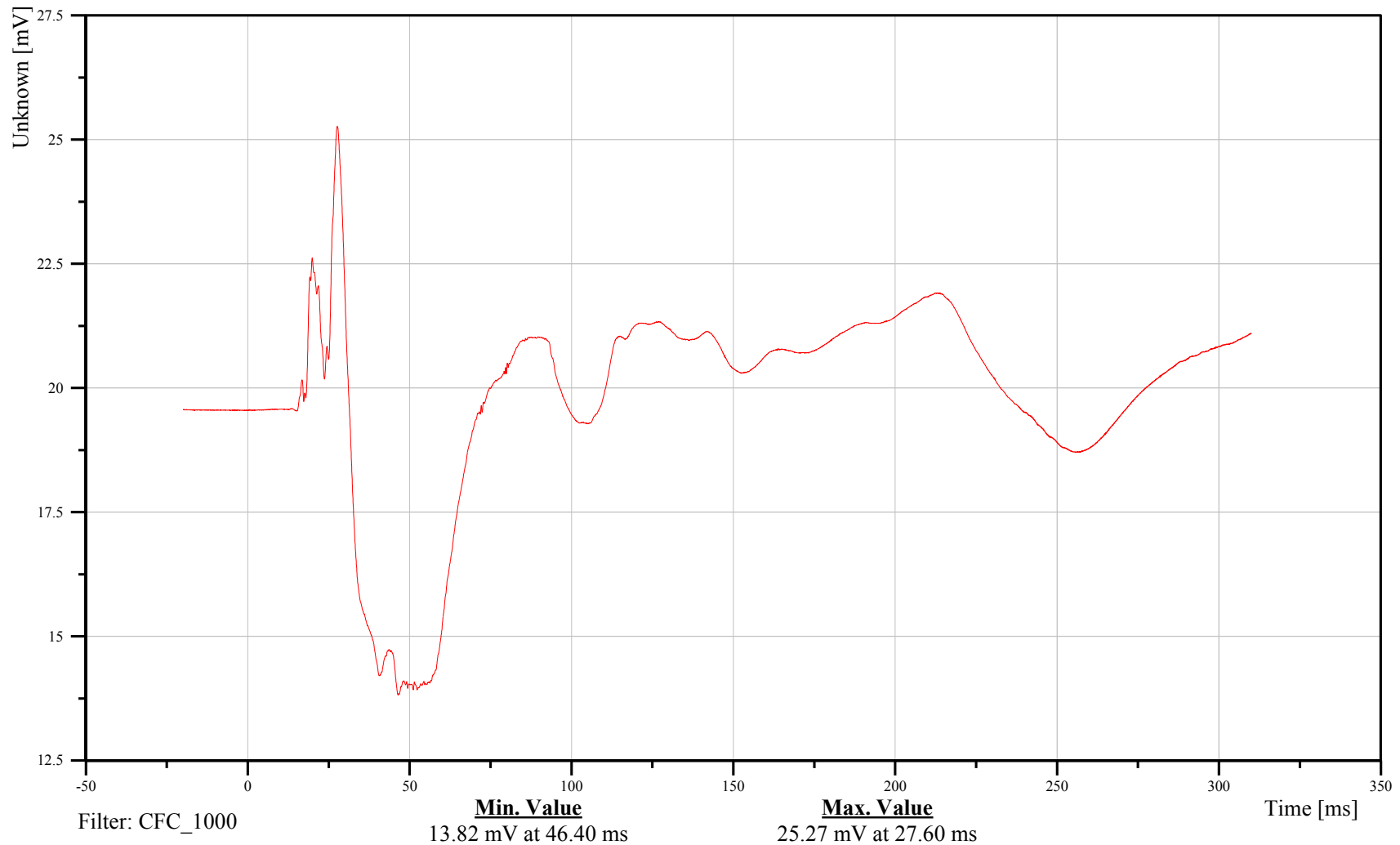
2016 Nissan Rogue Side Pole Impact W50-26

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA2600WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





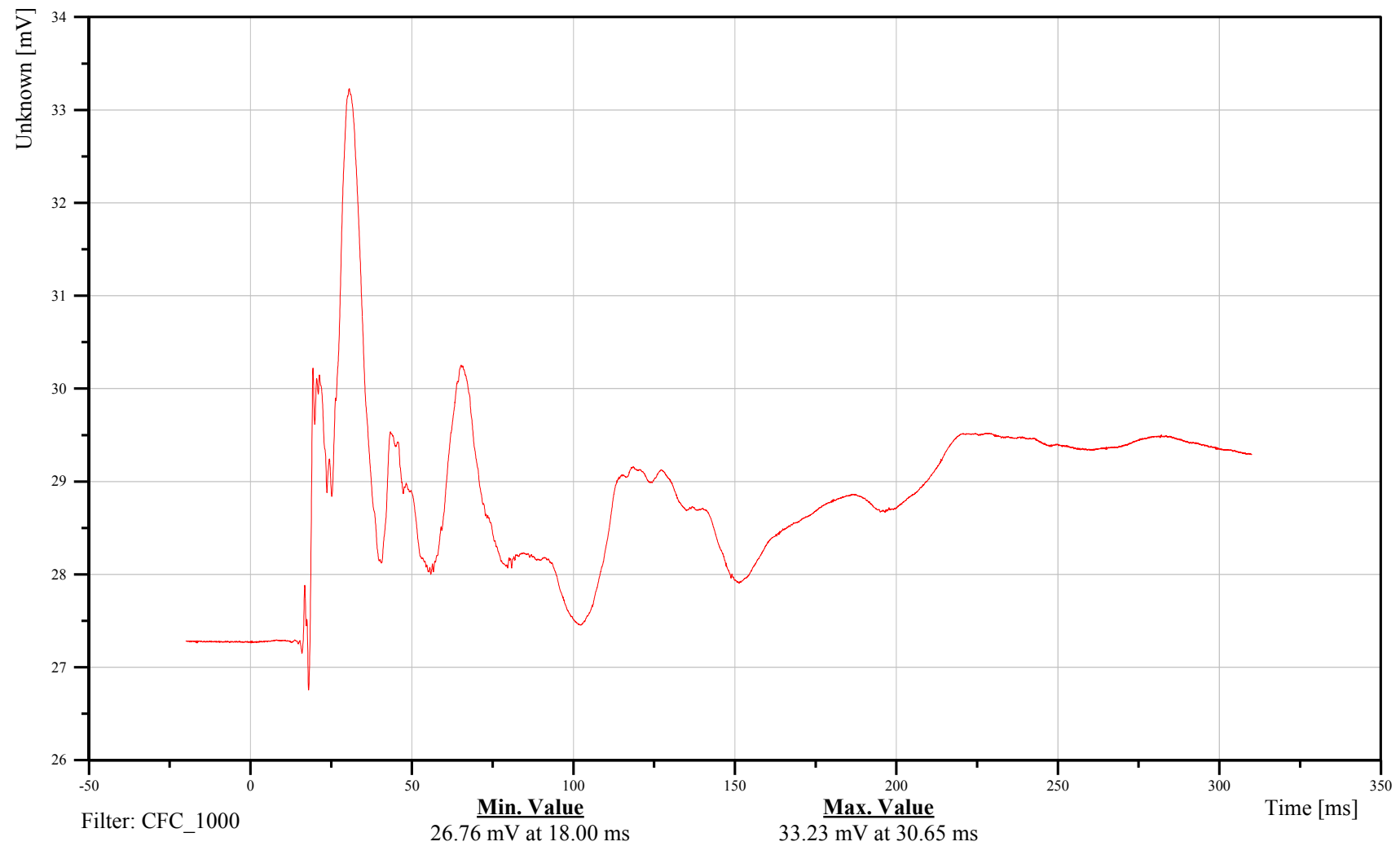
2016 Nissan Rogue Side Pole Impact W50-27

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA2700WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





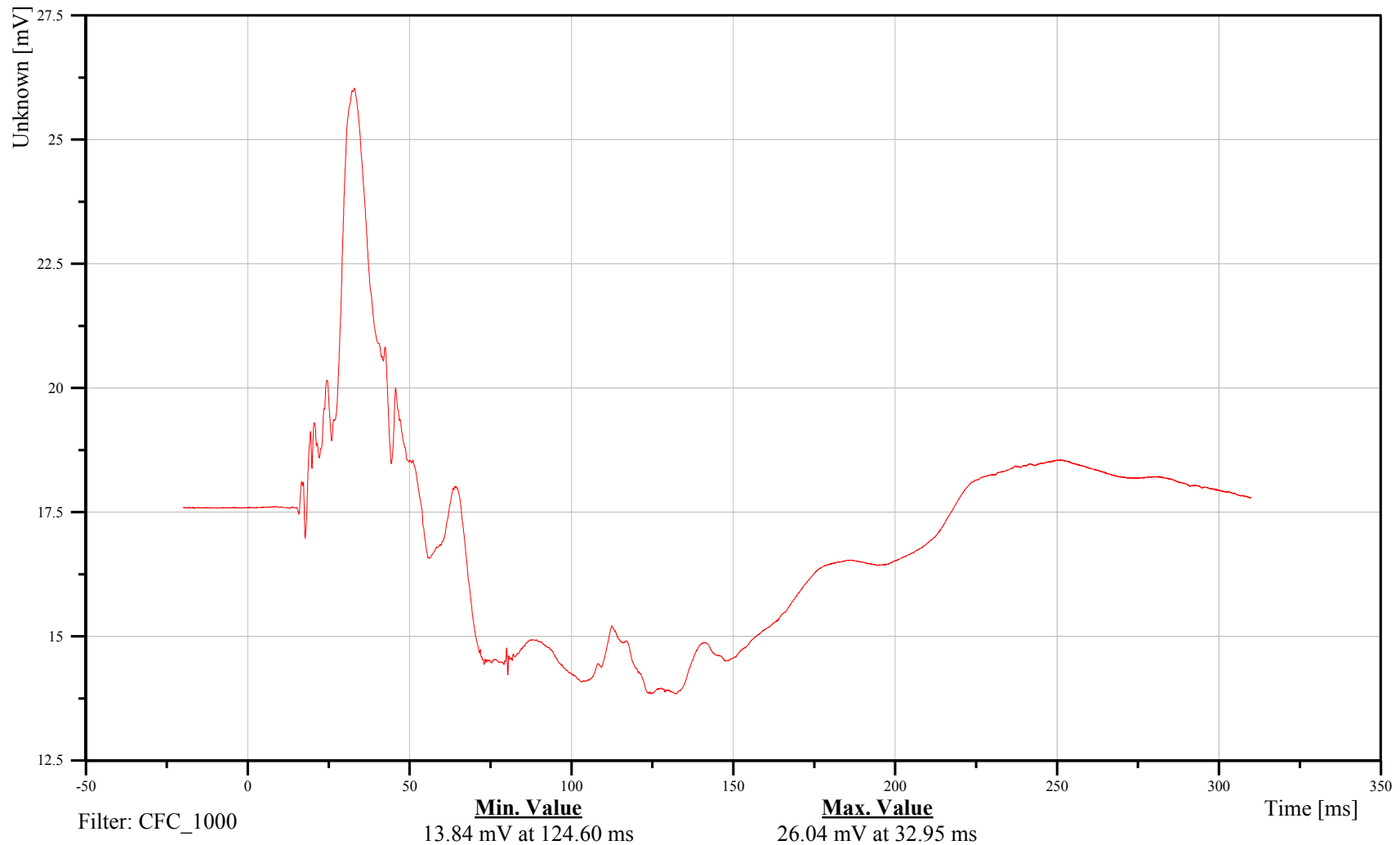
2016 Nissan Rogue Side Pole Impact W50-28

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA2800WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





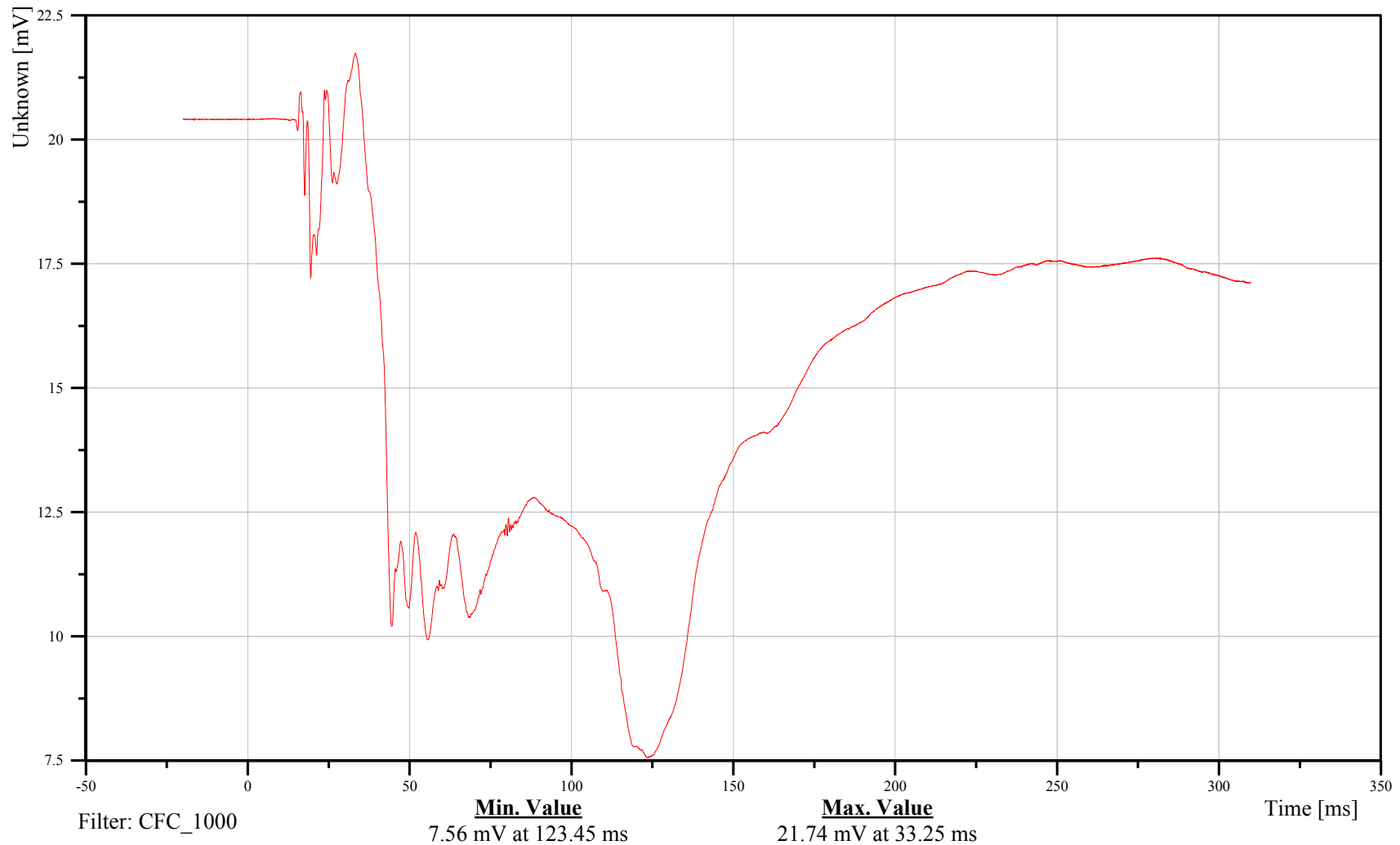
2016 Nissan Rogue Side Pole Impact W50-29

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA2900WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





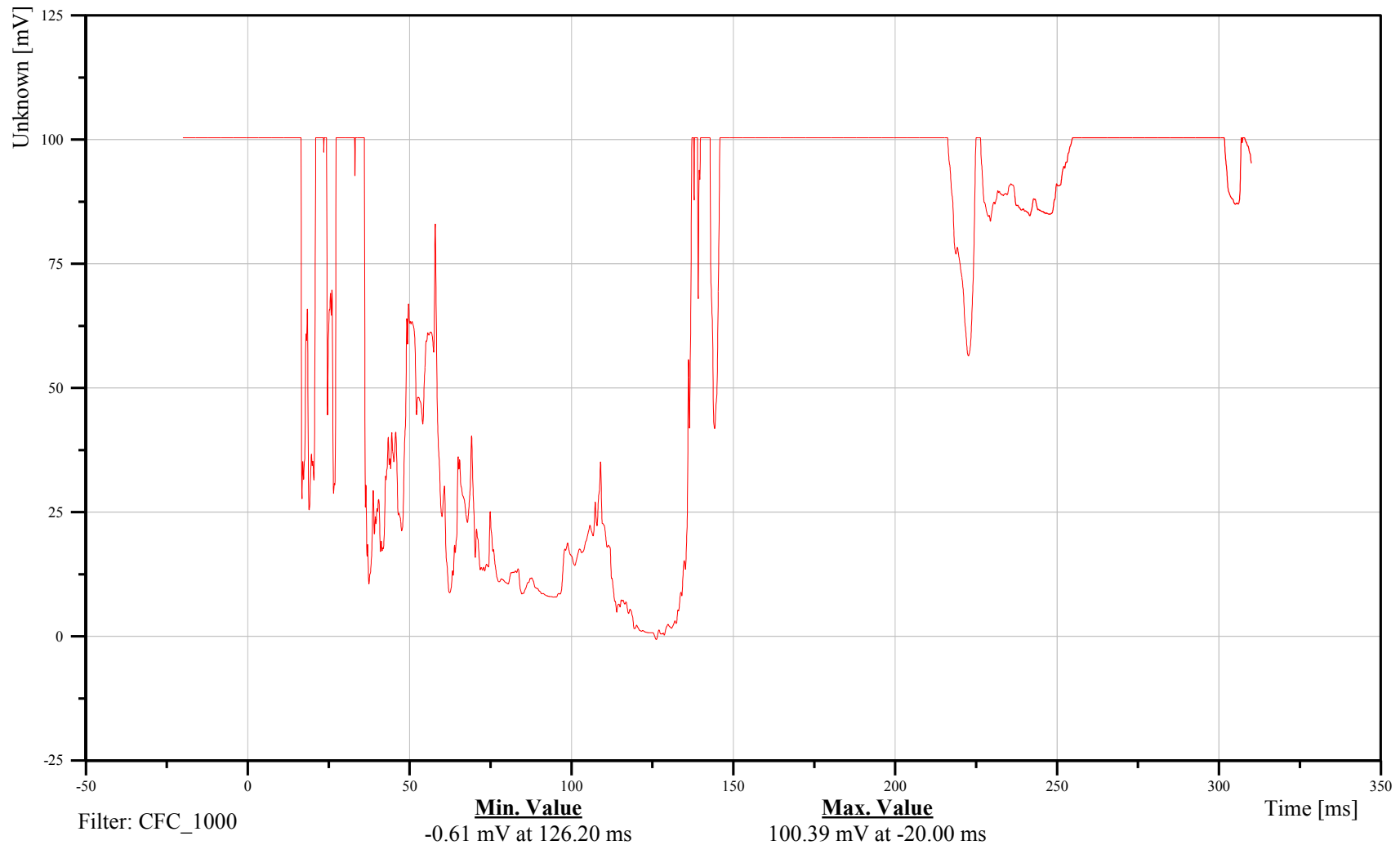
2016 Nissan Rogue Side Pole Impact W50-30

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA3000WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





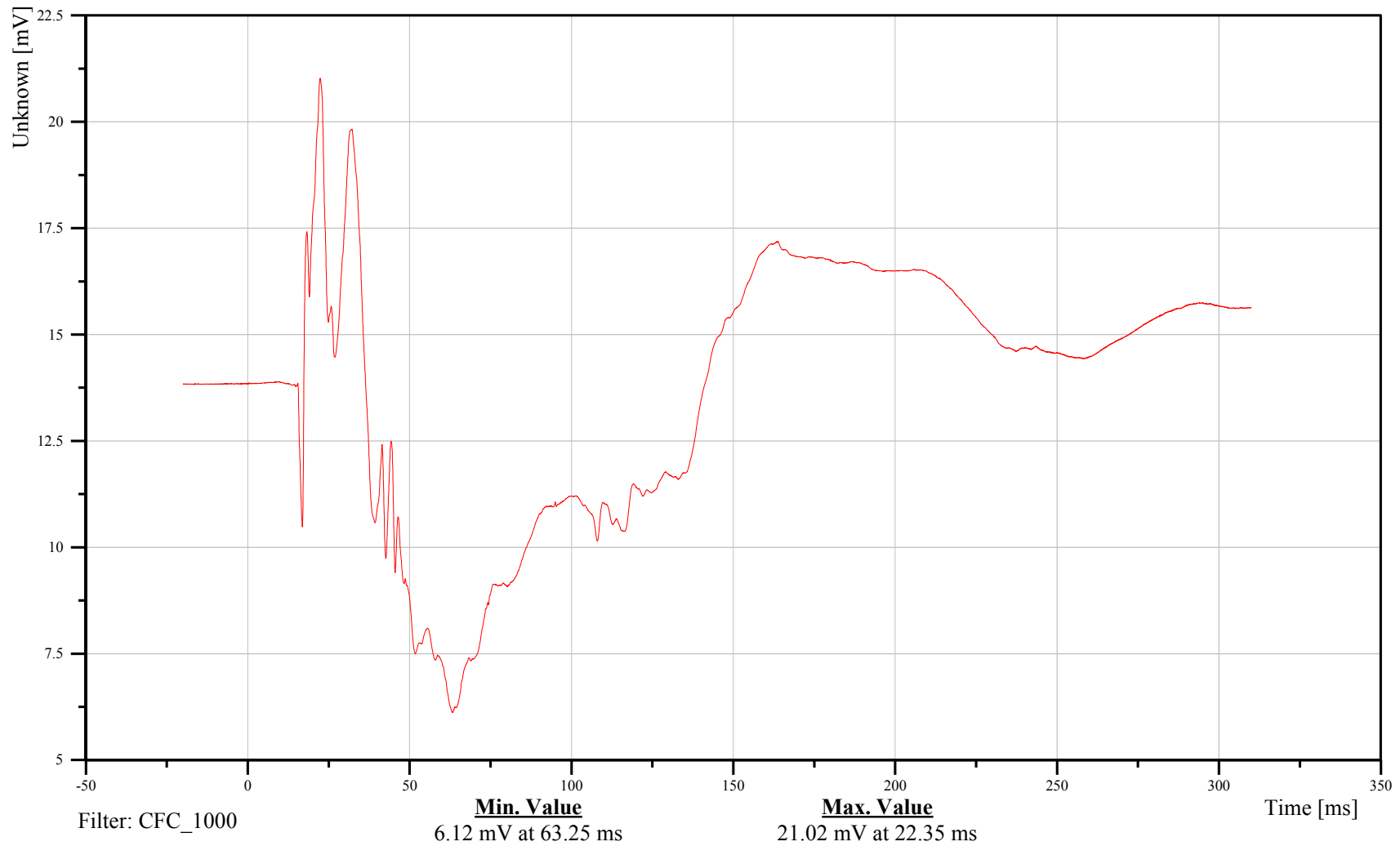
2016 Nissan Rogue Side Pole Impact W50-31

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA3100WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





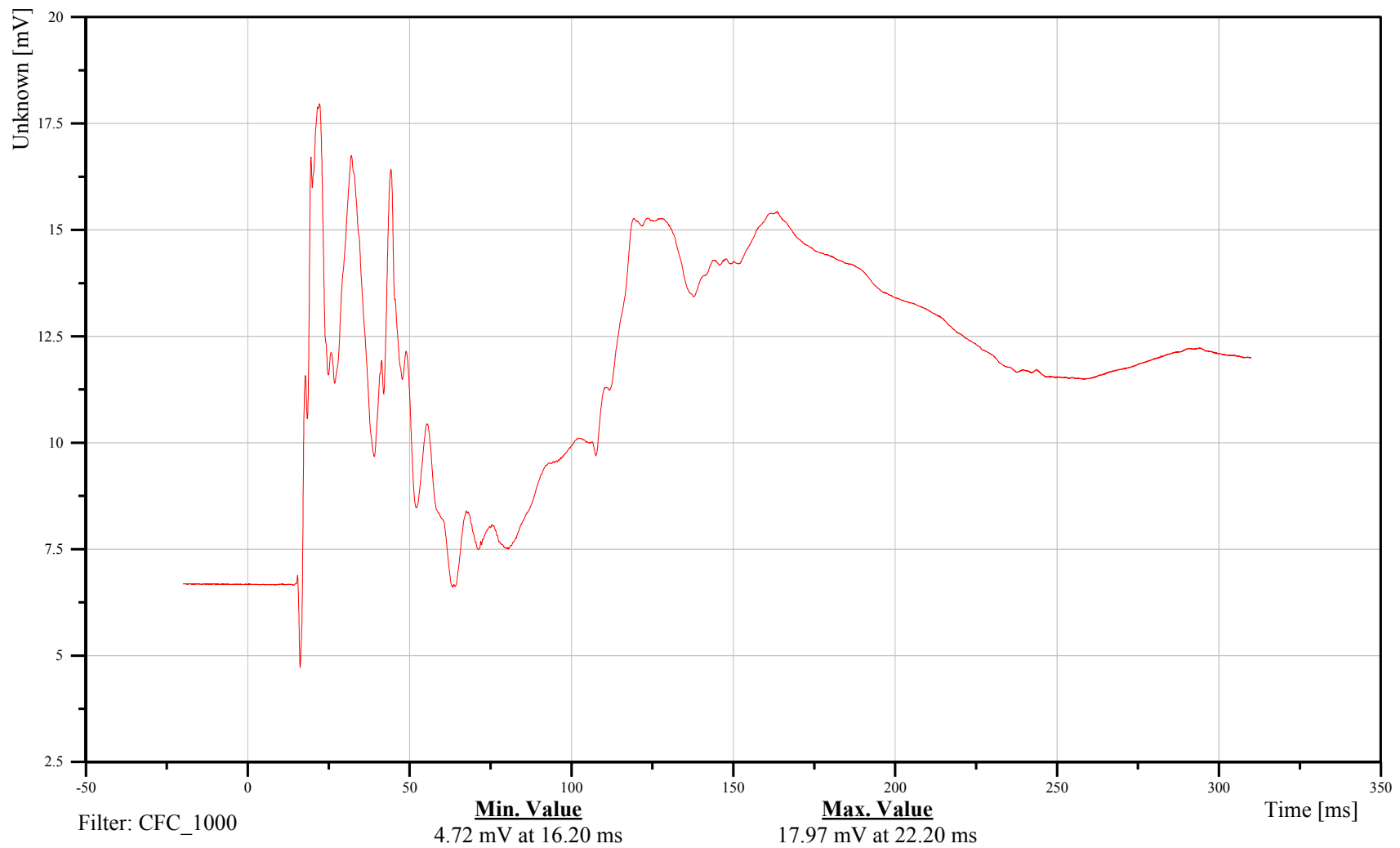
2016 Nissan Rogue Side Pole Impact W50-32

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA3200WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





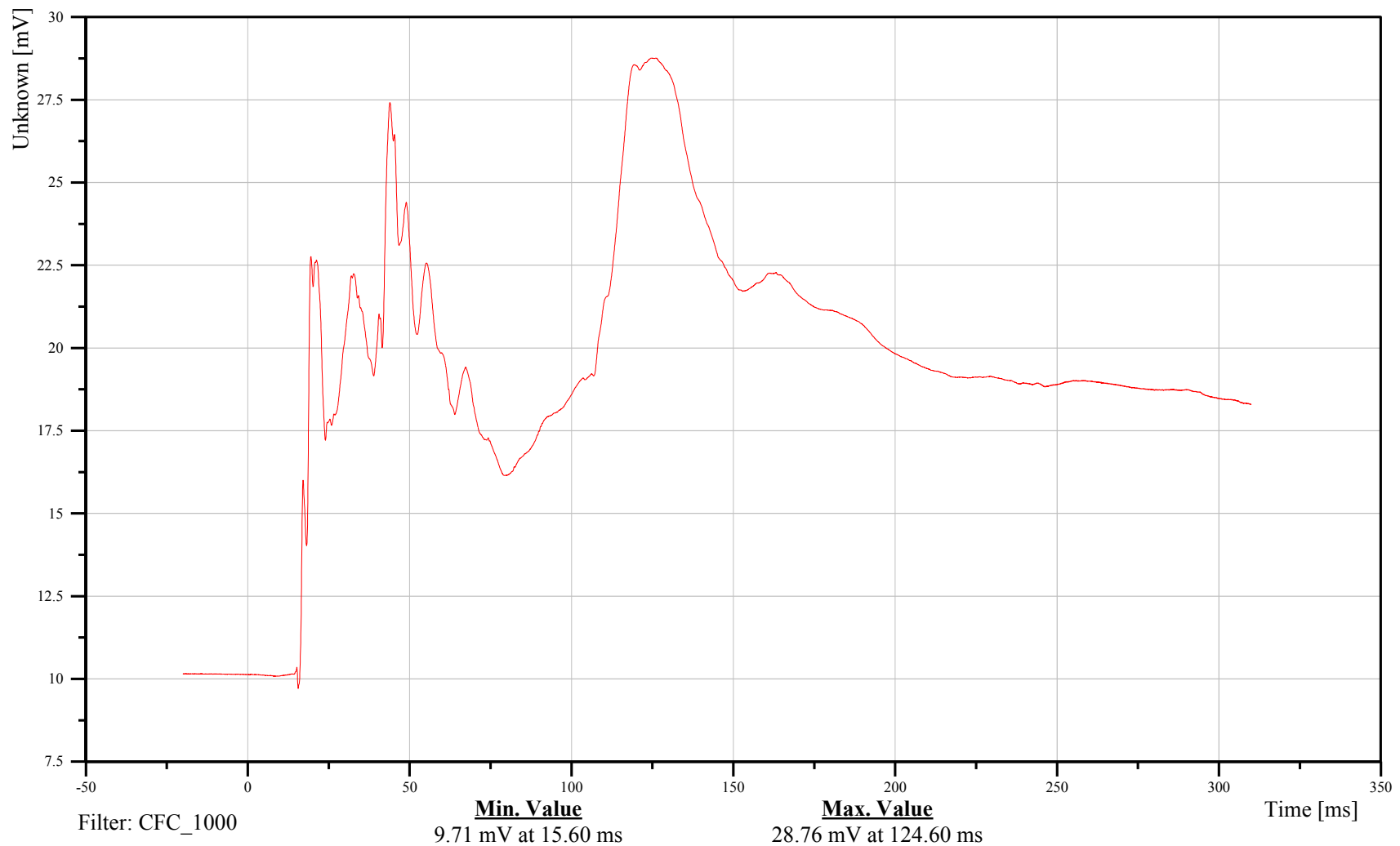
2016 Nissan Rogue Side Pole Impact W50-33

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA3300WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





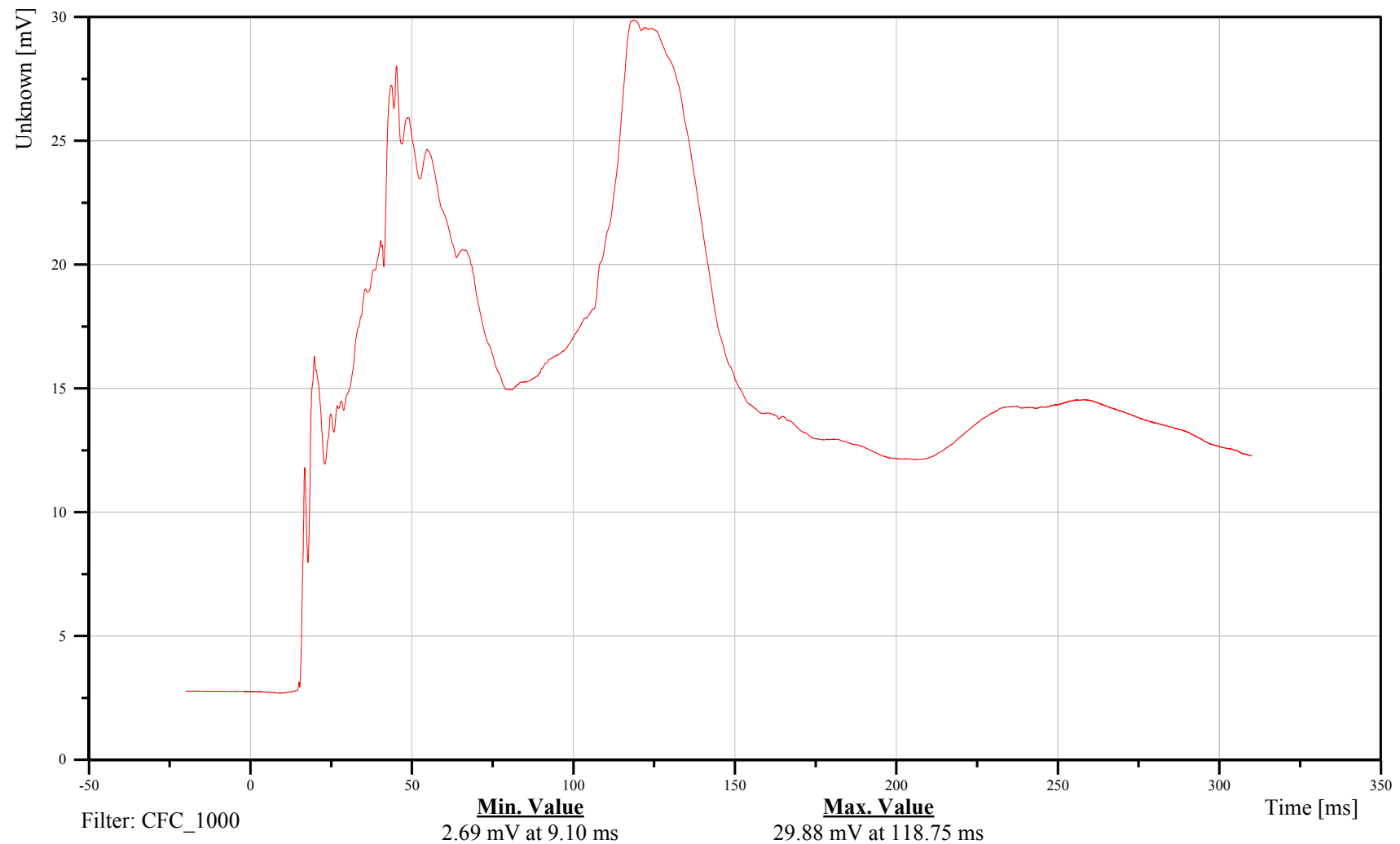
2016 Nissan Rogue Side Pole Impact W50-34

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA3400WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





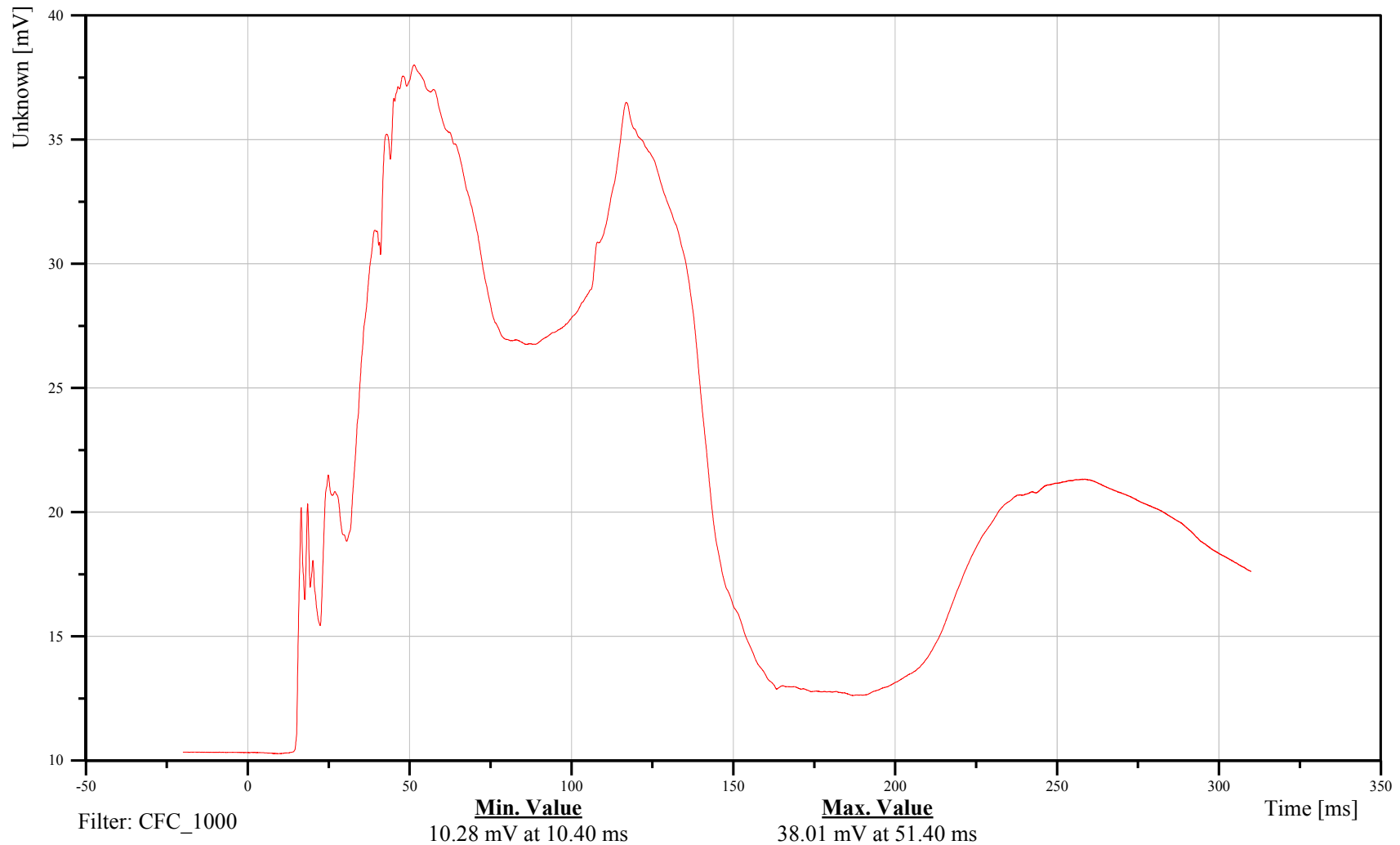
2016 Nissan Rogue Side Pole Impact W50-35

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA3500WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





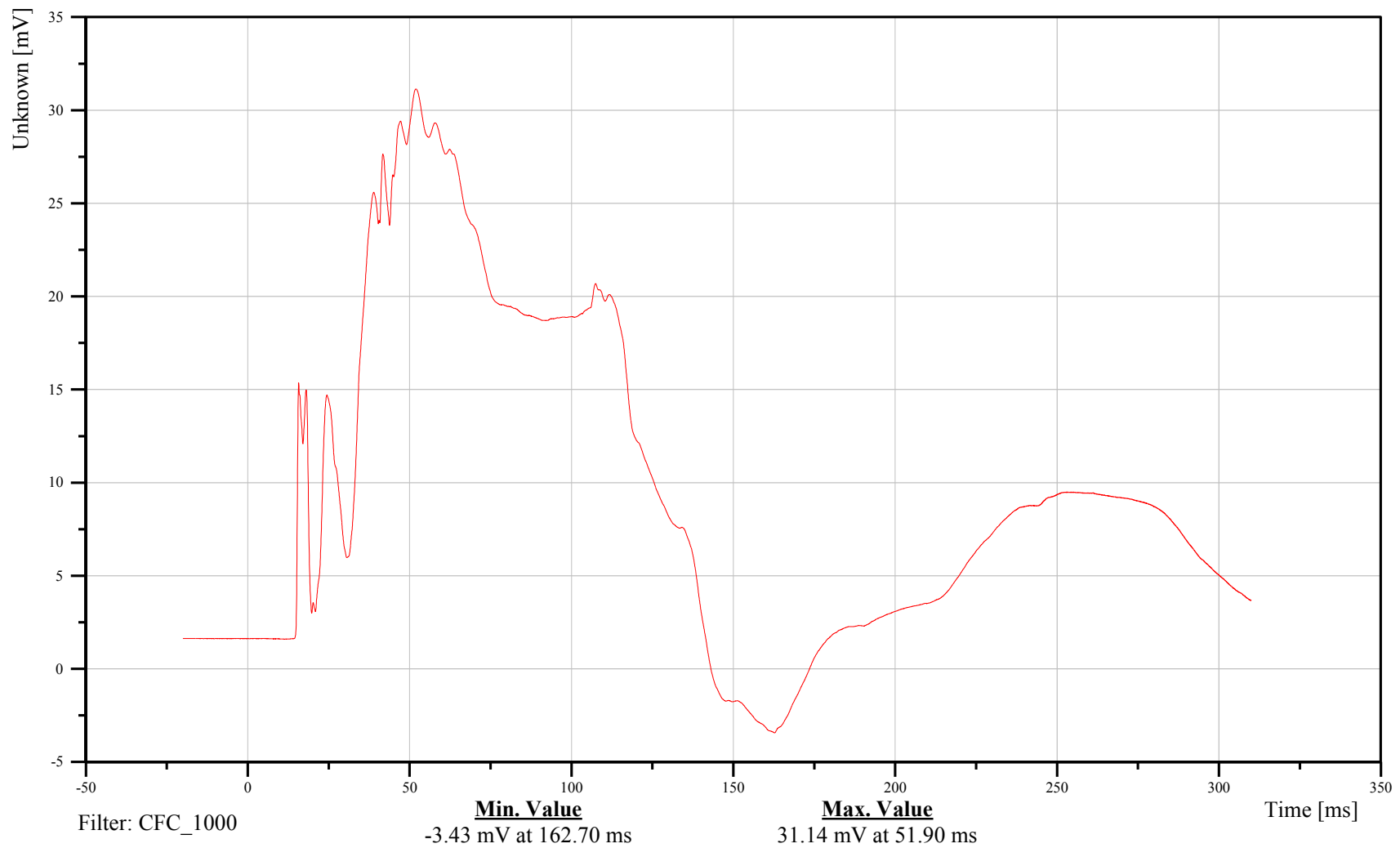
2016 Nissan Rogue Side Pole Impact W50-36

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA3600WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





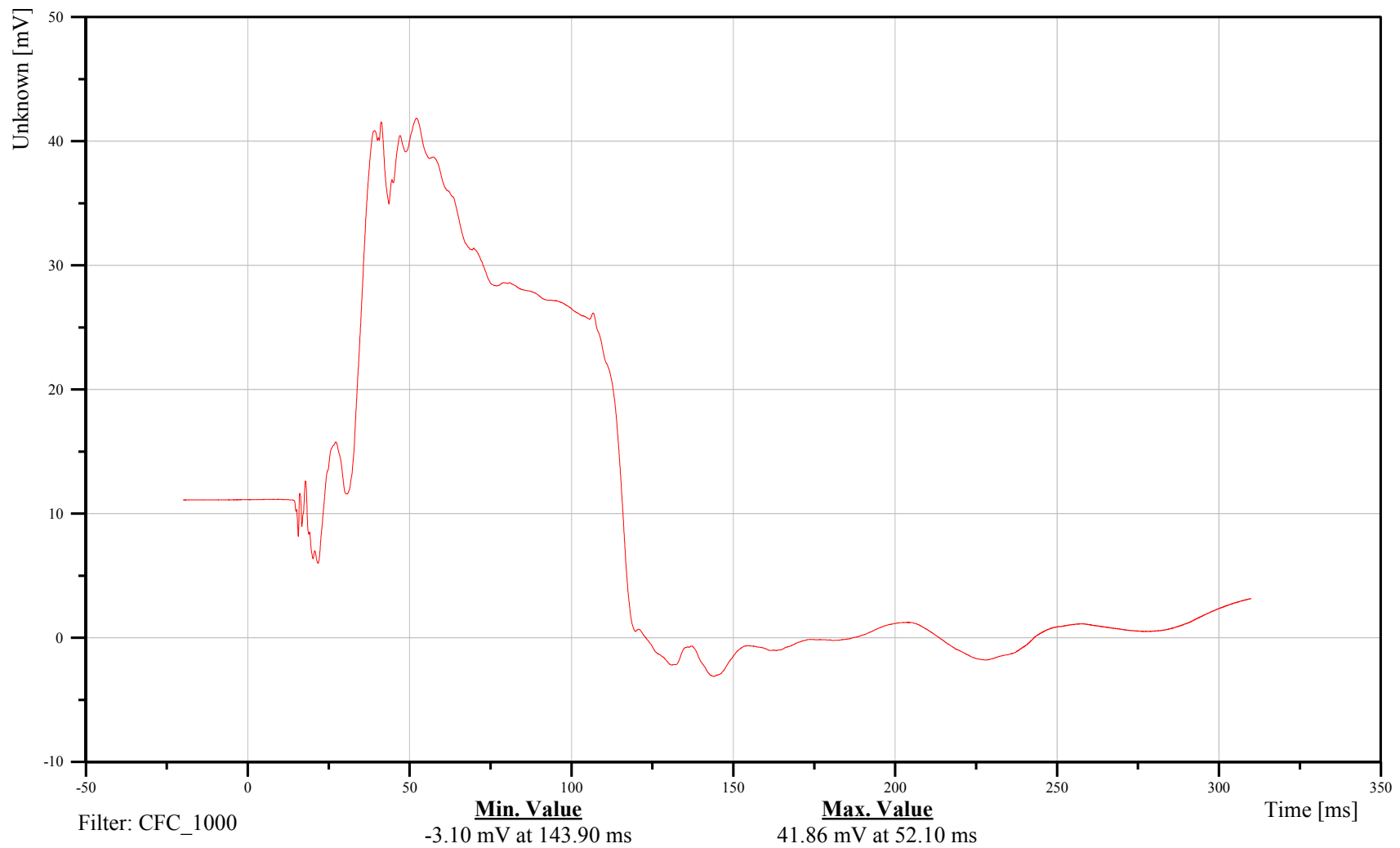
2016 Nissan Rogue Side Pole Impact W50-37

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA3700WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





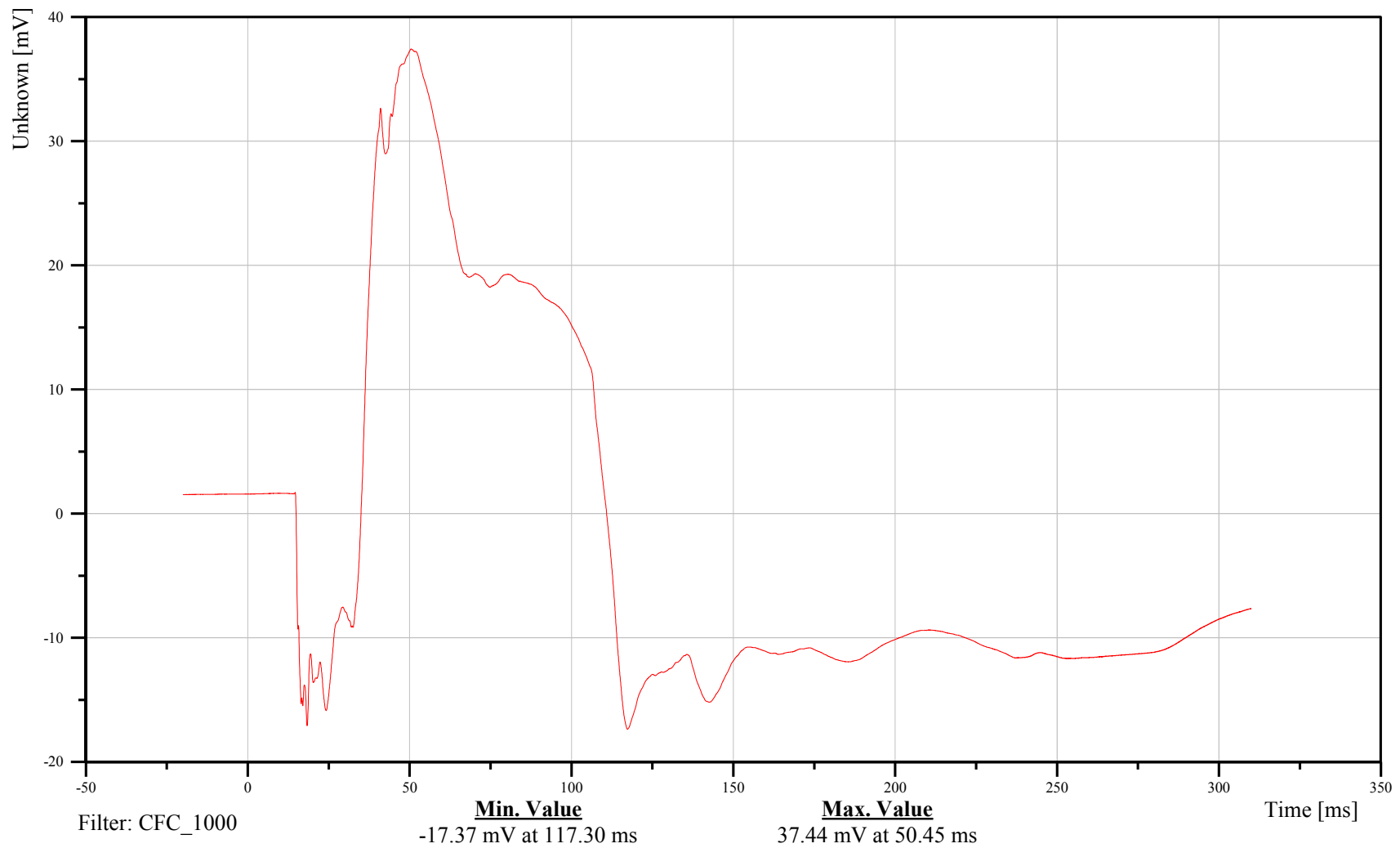
2016 Nissan Rogue Side Pole Impact W50-38

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA3800WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





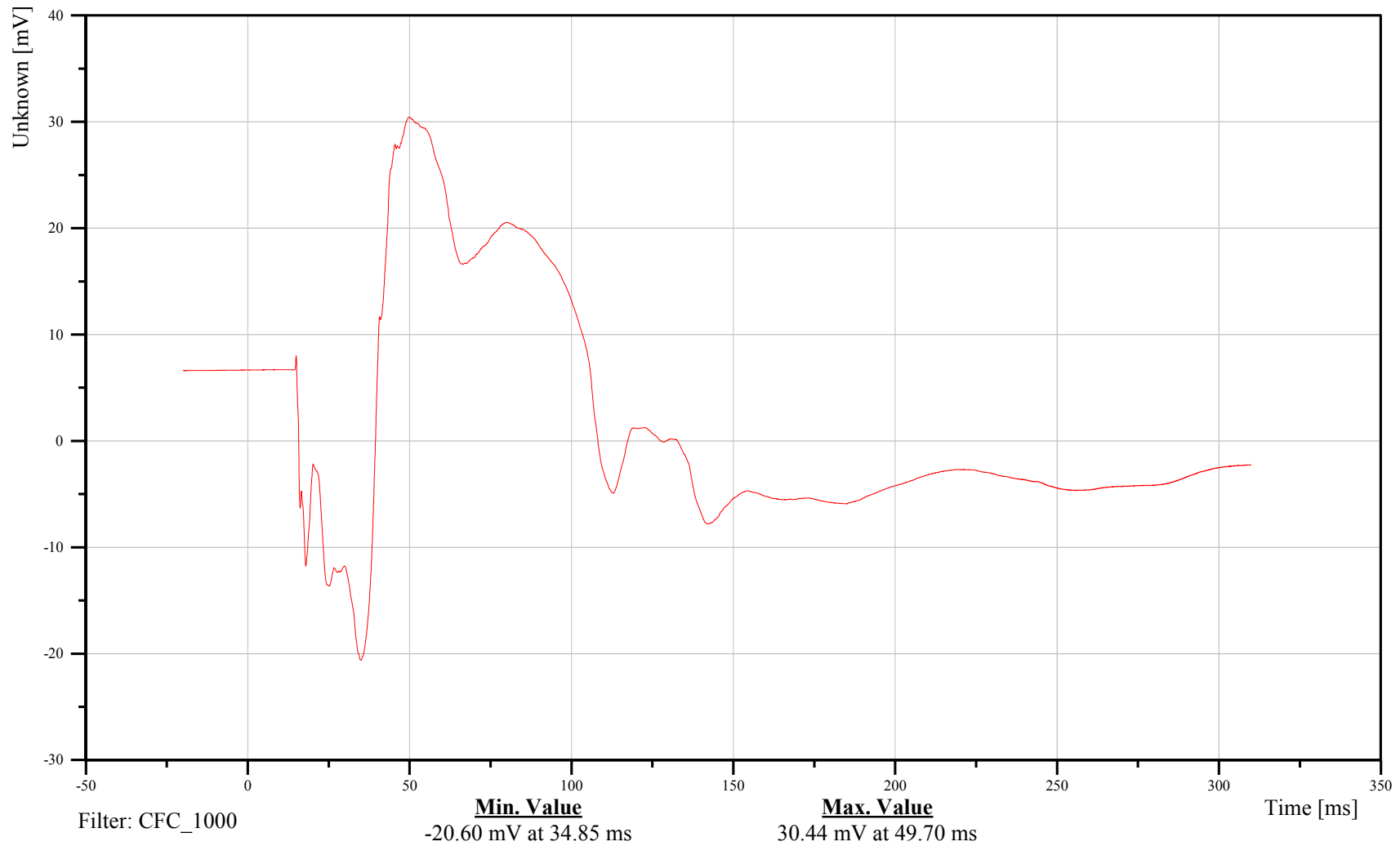
2016 Nissan Rogue Side Pole Impact W50-39

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA3900WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





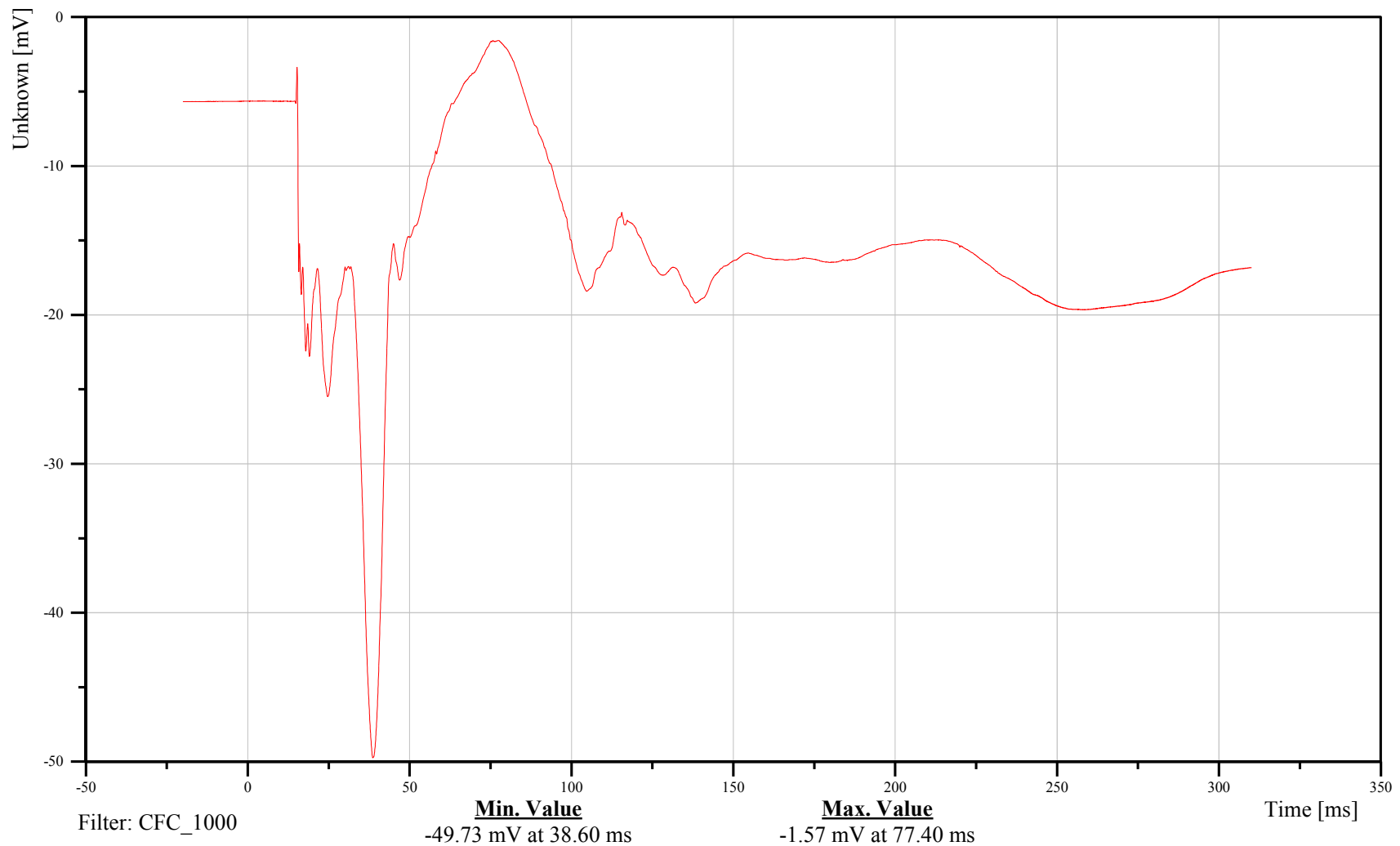
2016 Nissan Rogue Side Pole Impact W50-40

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA4000WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





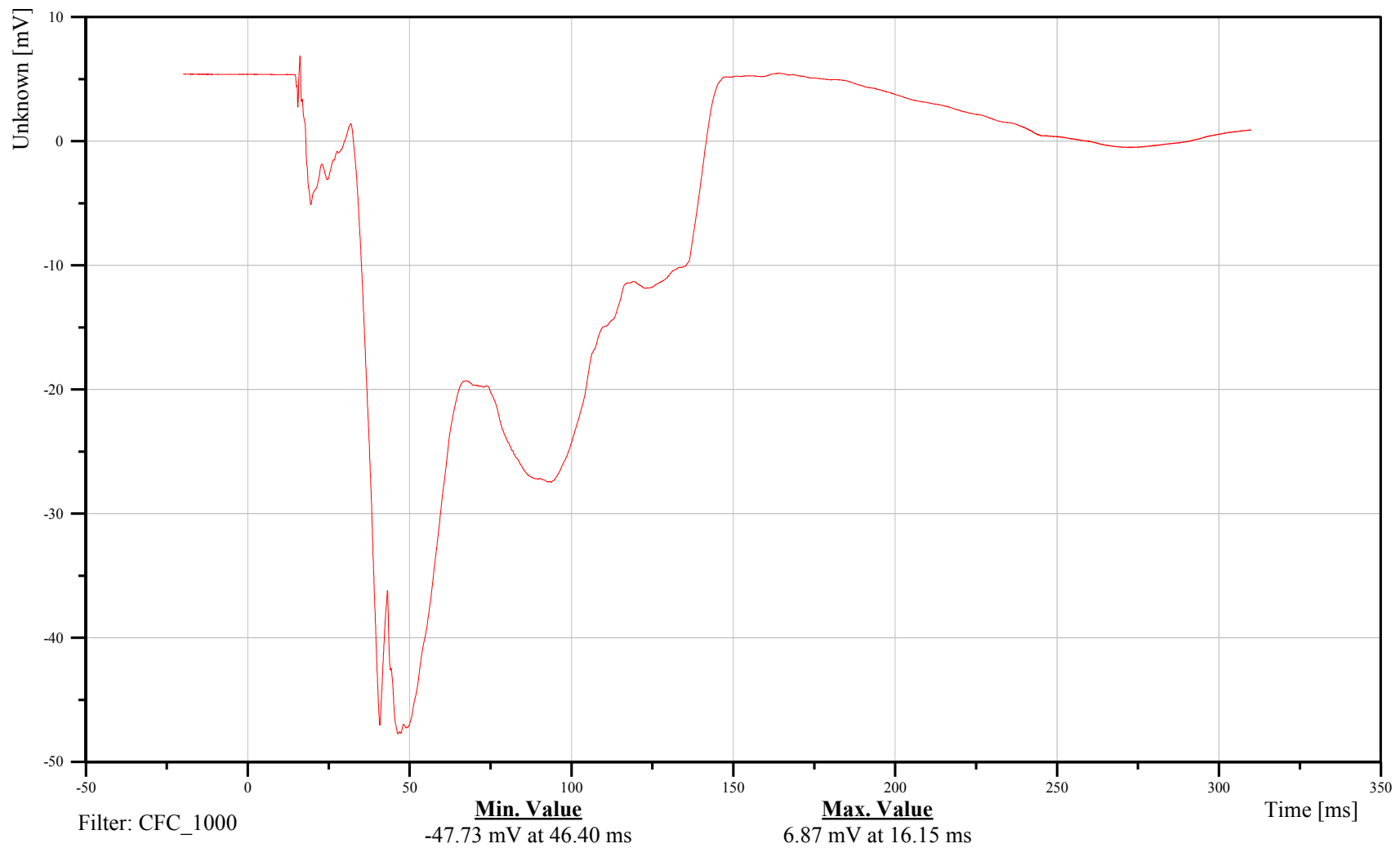
2016 Nissan Rogue Side Pole Impact W50-41

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA4100WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





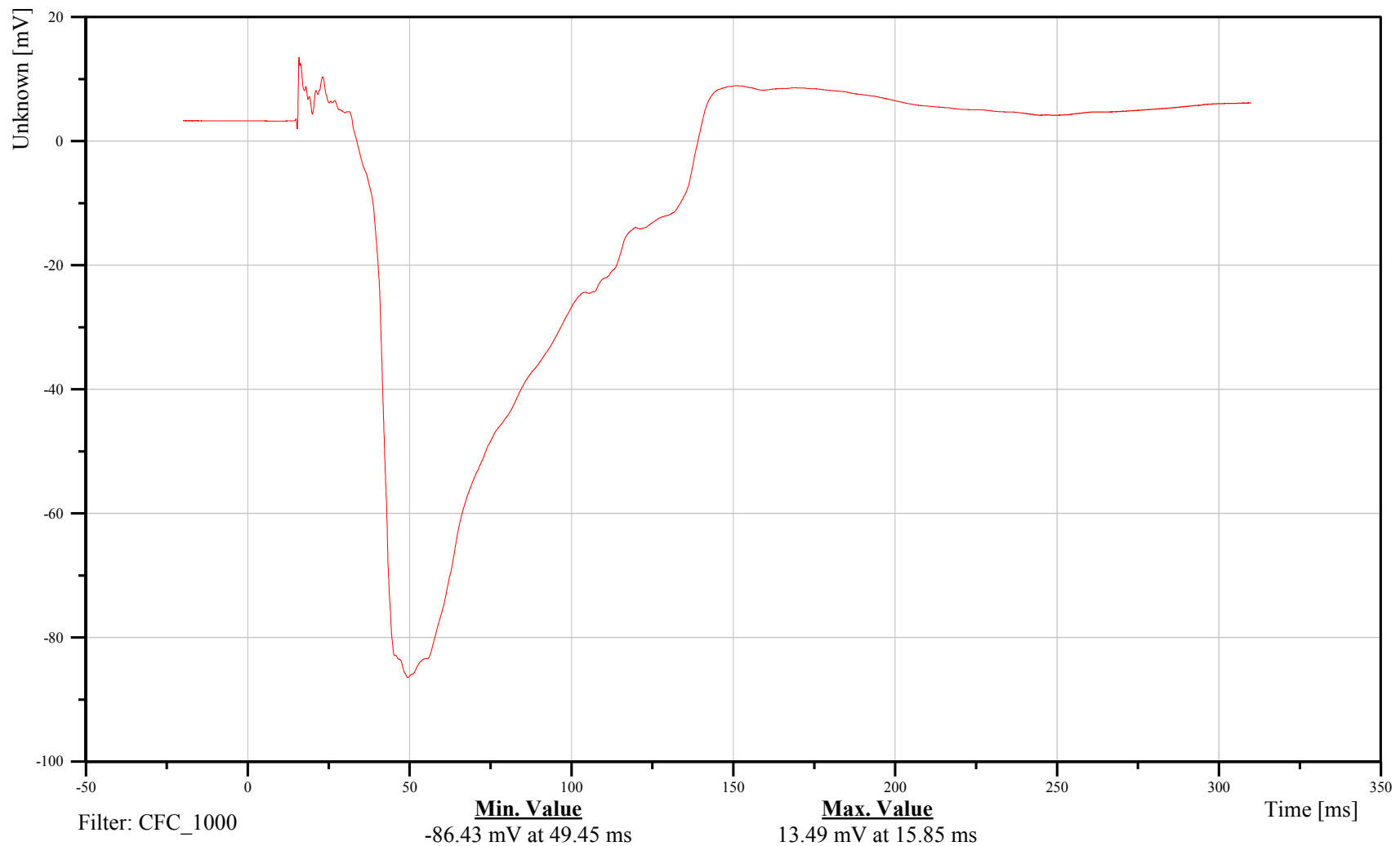
2016 Nissan Rogue Side Pole Impact W50-42

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA4200WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





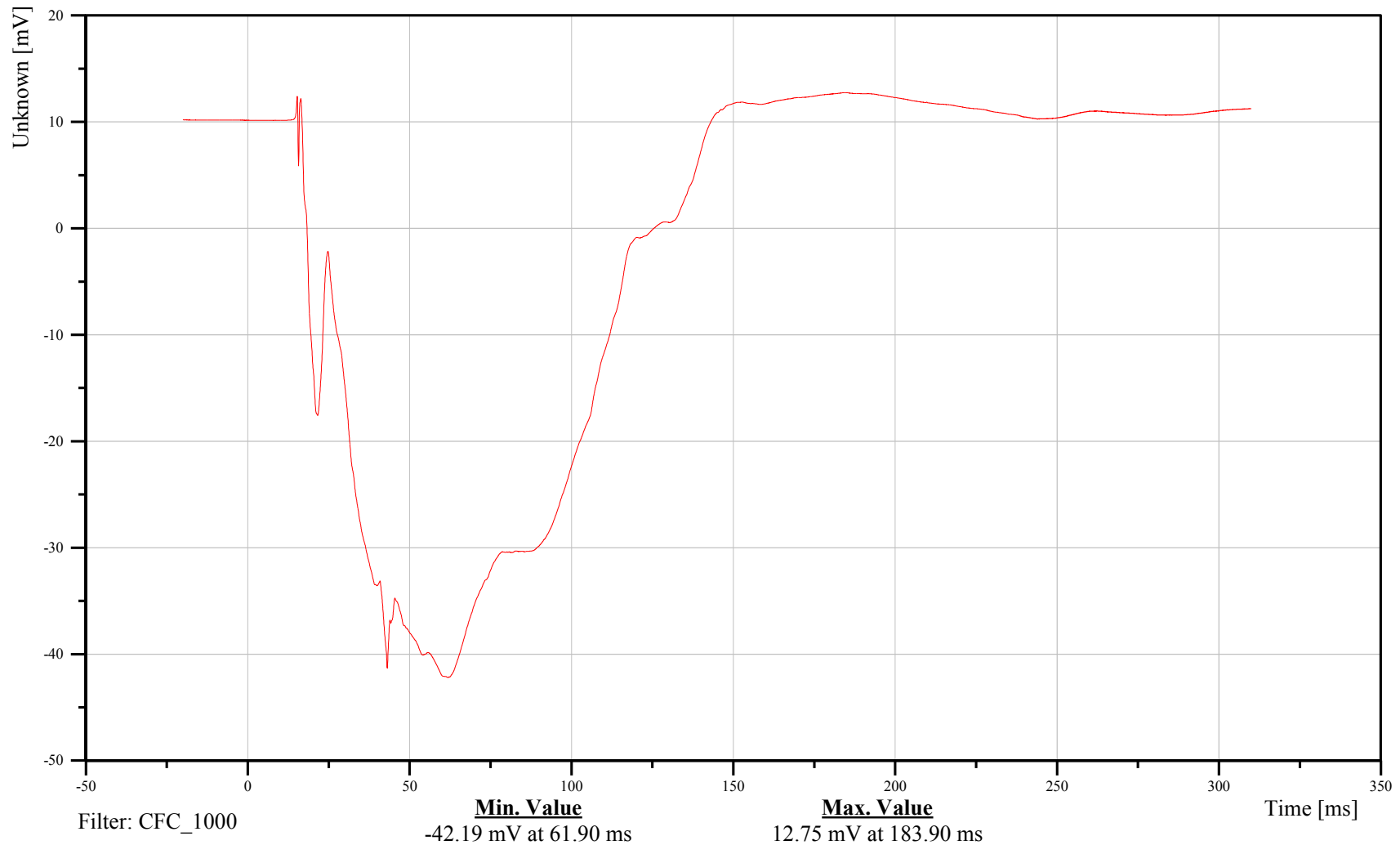
2016 Nissan Rogue Side Pole Impact W50-43

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA4300WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





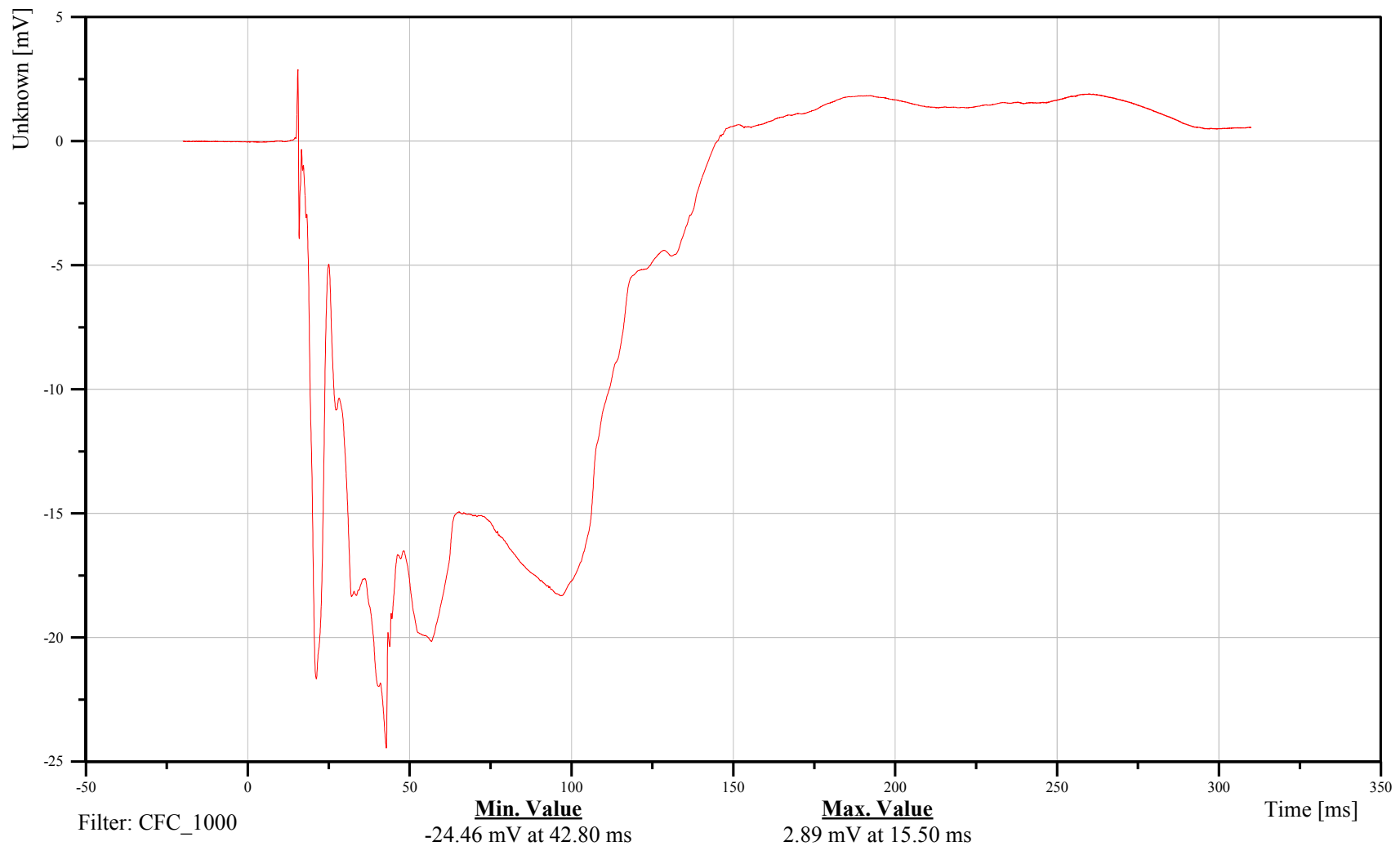
2016 Nissan Rogue Side Pole Impact W50-44

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA4400WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





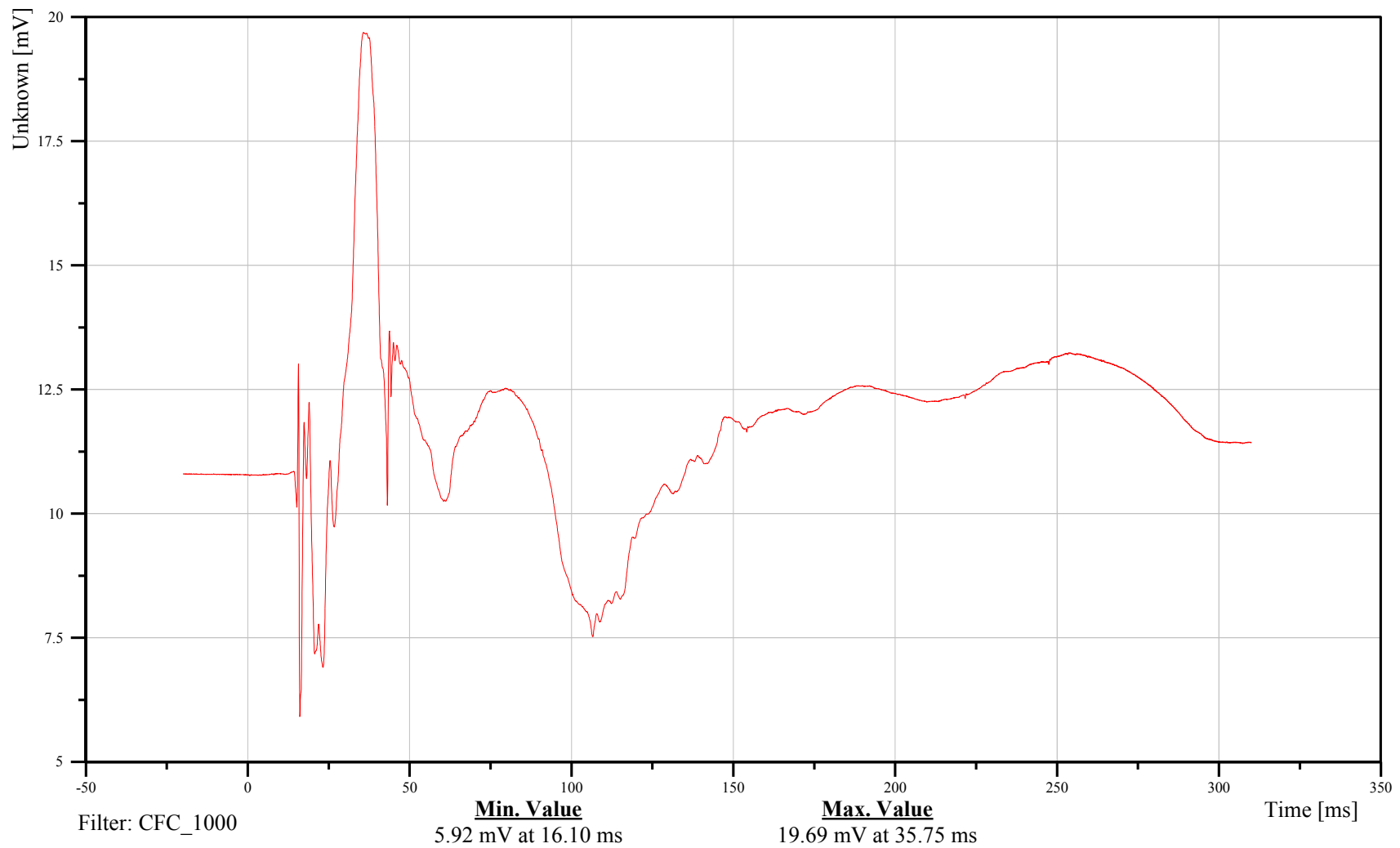
2016 Nissan Rogue Side Pole Impact W50-45

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA4500WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





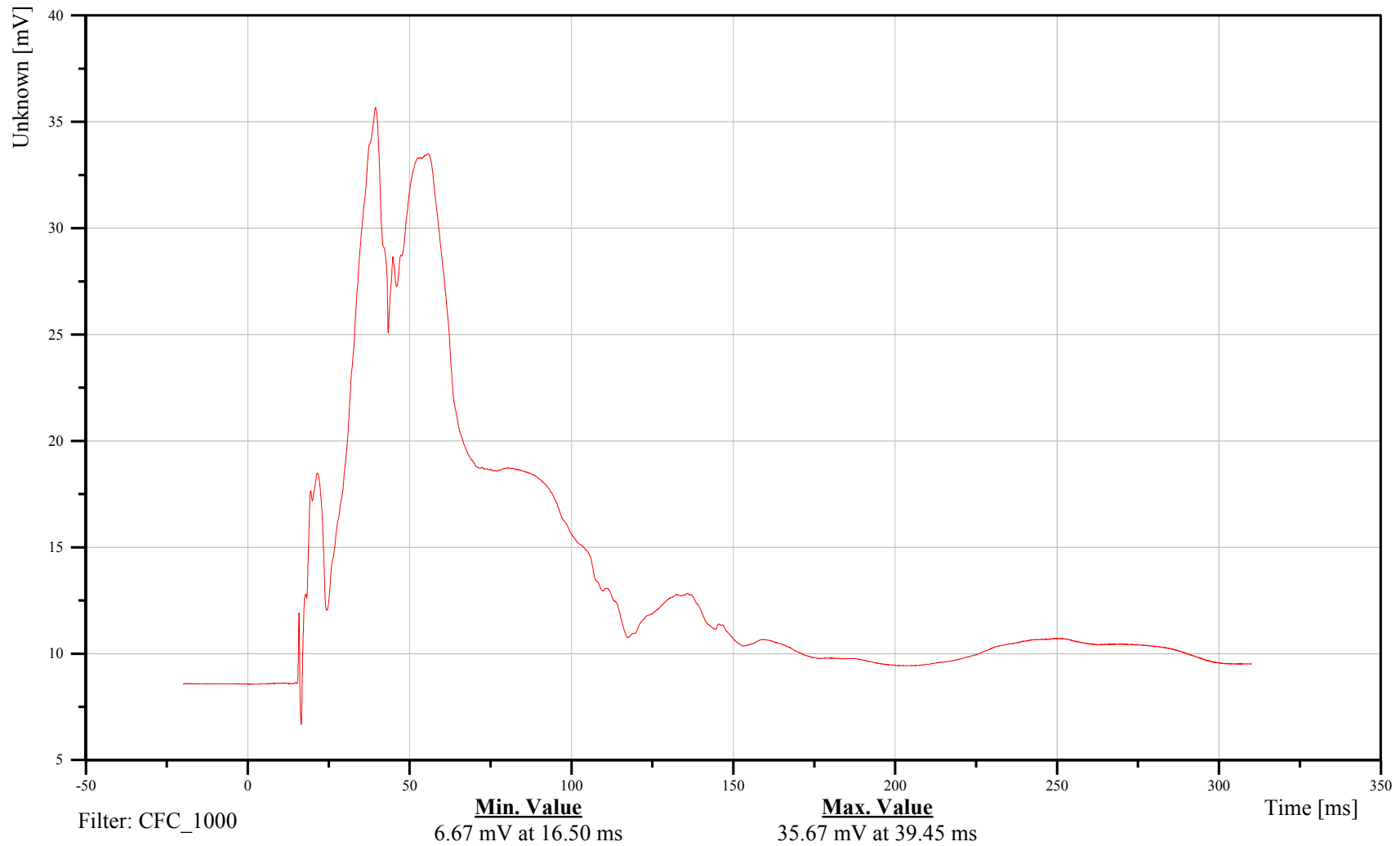
2016 Nissan Rogue Side Pole Impact W50-46

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA4600WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





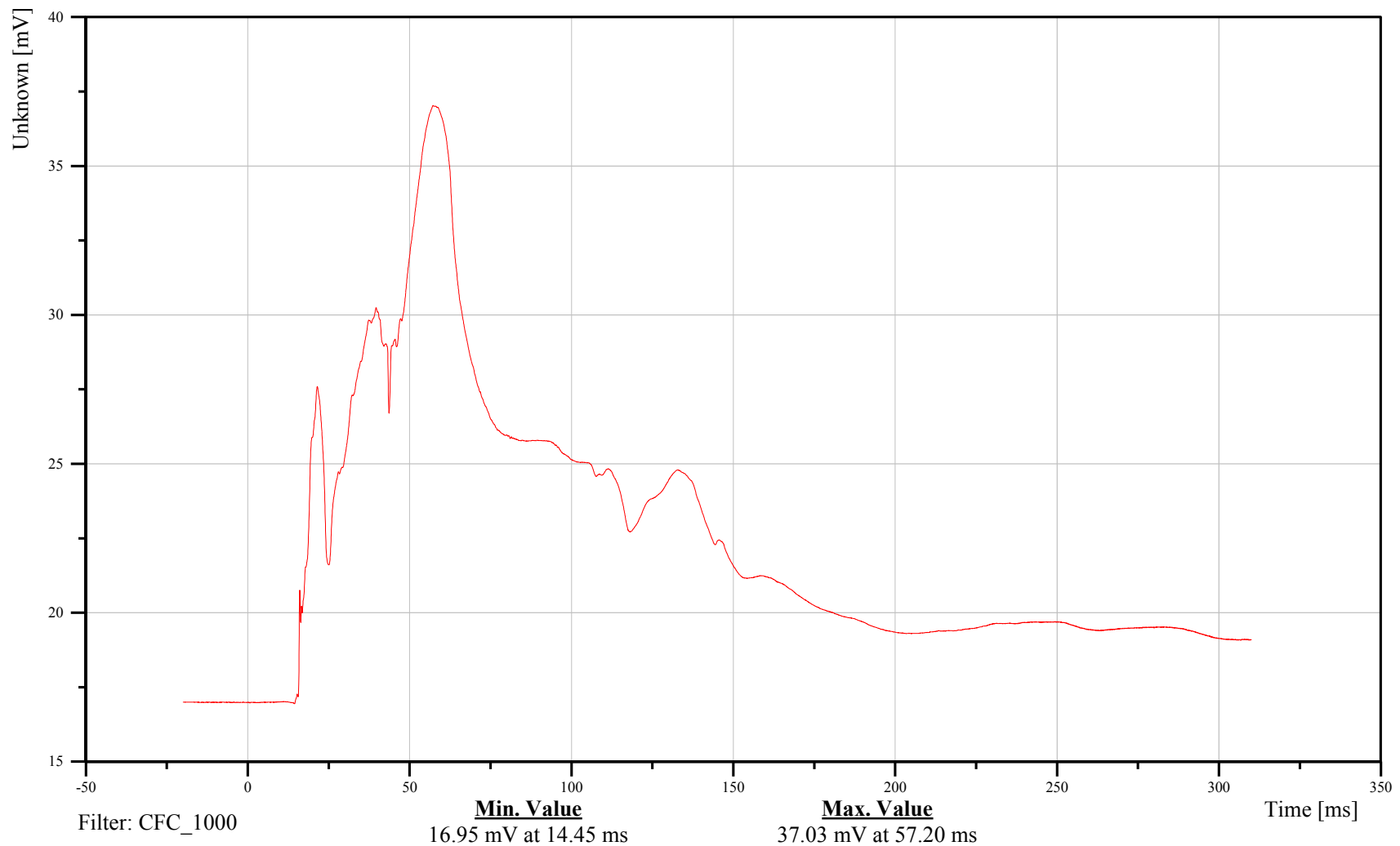
2016 Nissan Rogue Side Pole Impact W50-47

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA4700WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





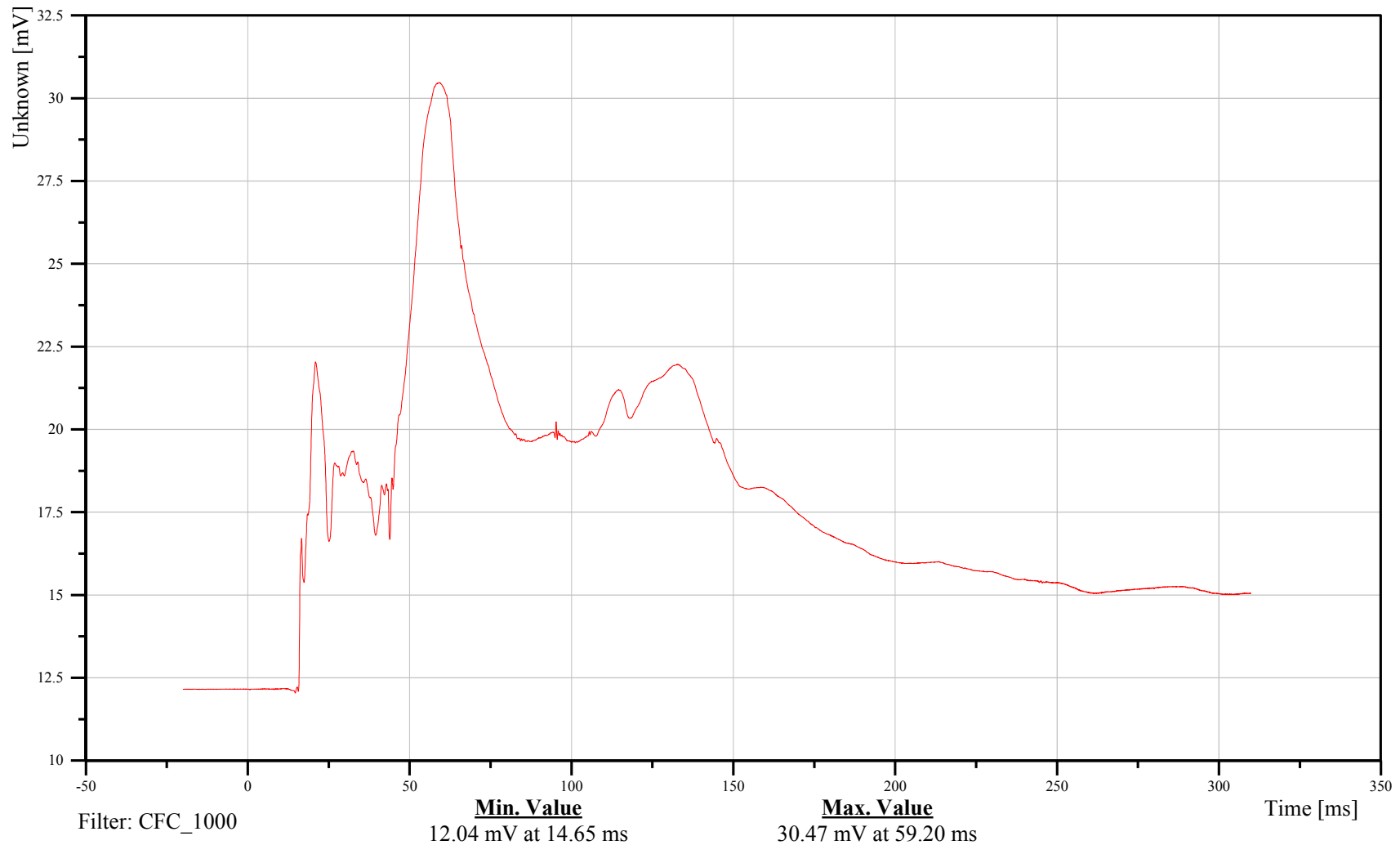
2016 Nissan Rogue Side Pole Impact W50-48

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA4800WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





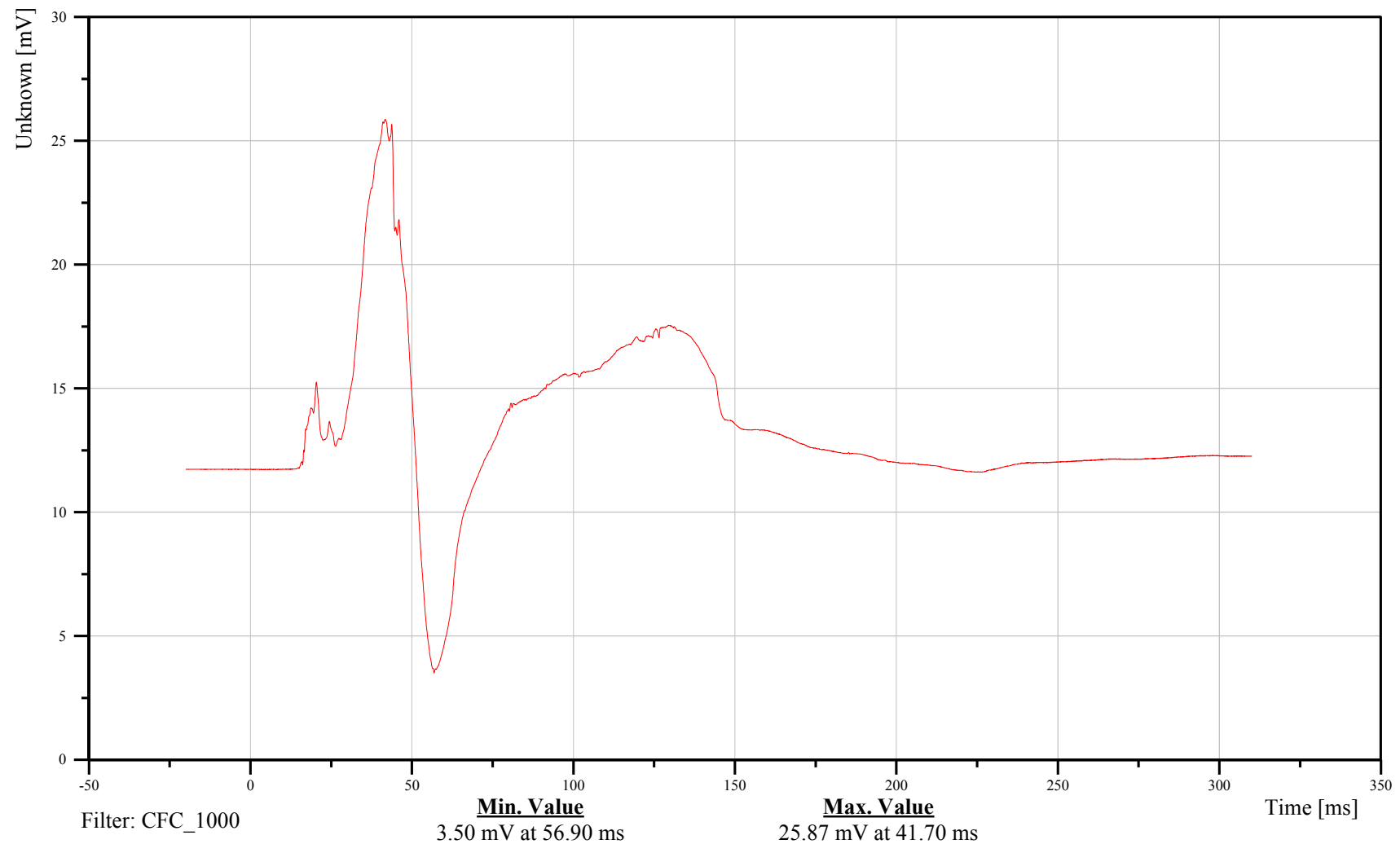
2016 Nissan Rogue Side Pole Impact W50-49

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA4900WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





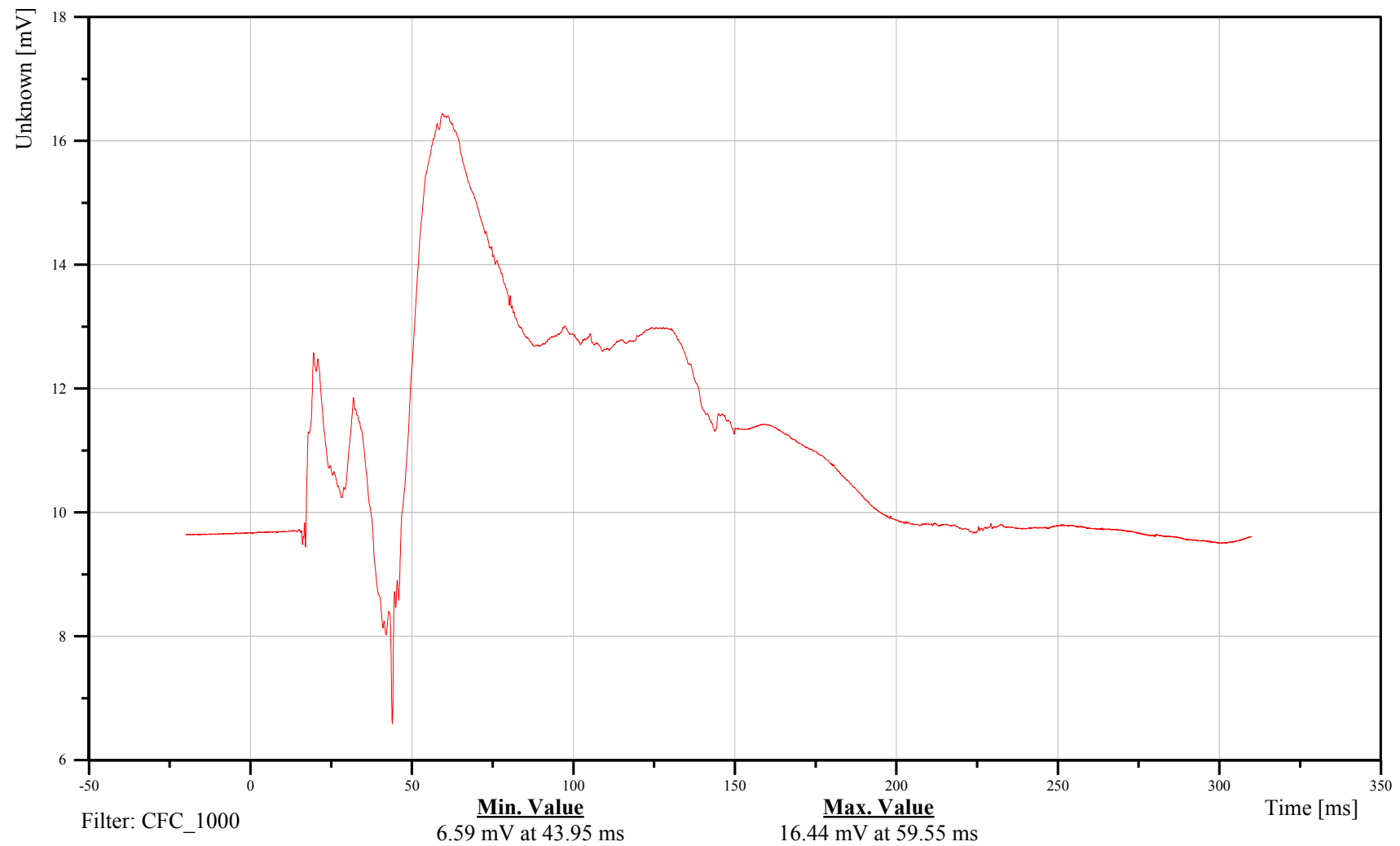
2016 Nissan Rogue Side Pole Impact W50-50

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA5000WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





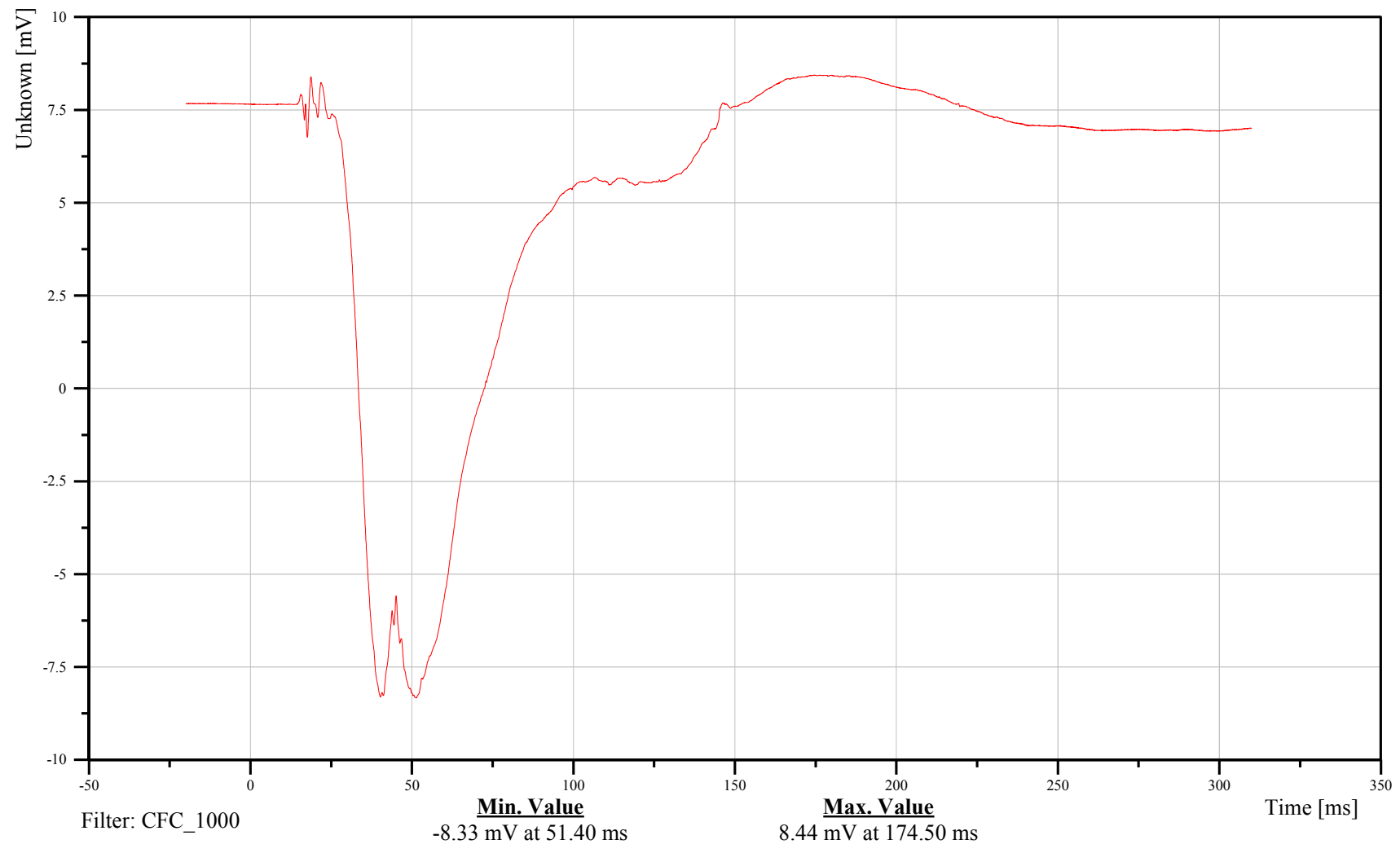
2016 Nissan Rogue Side Pole Impact W50-51

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA5100WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





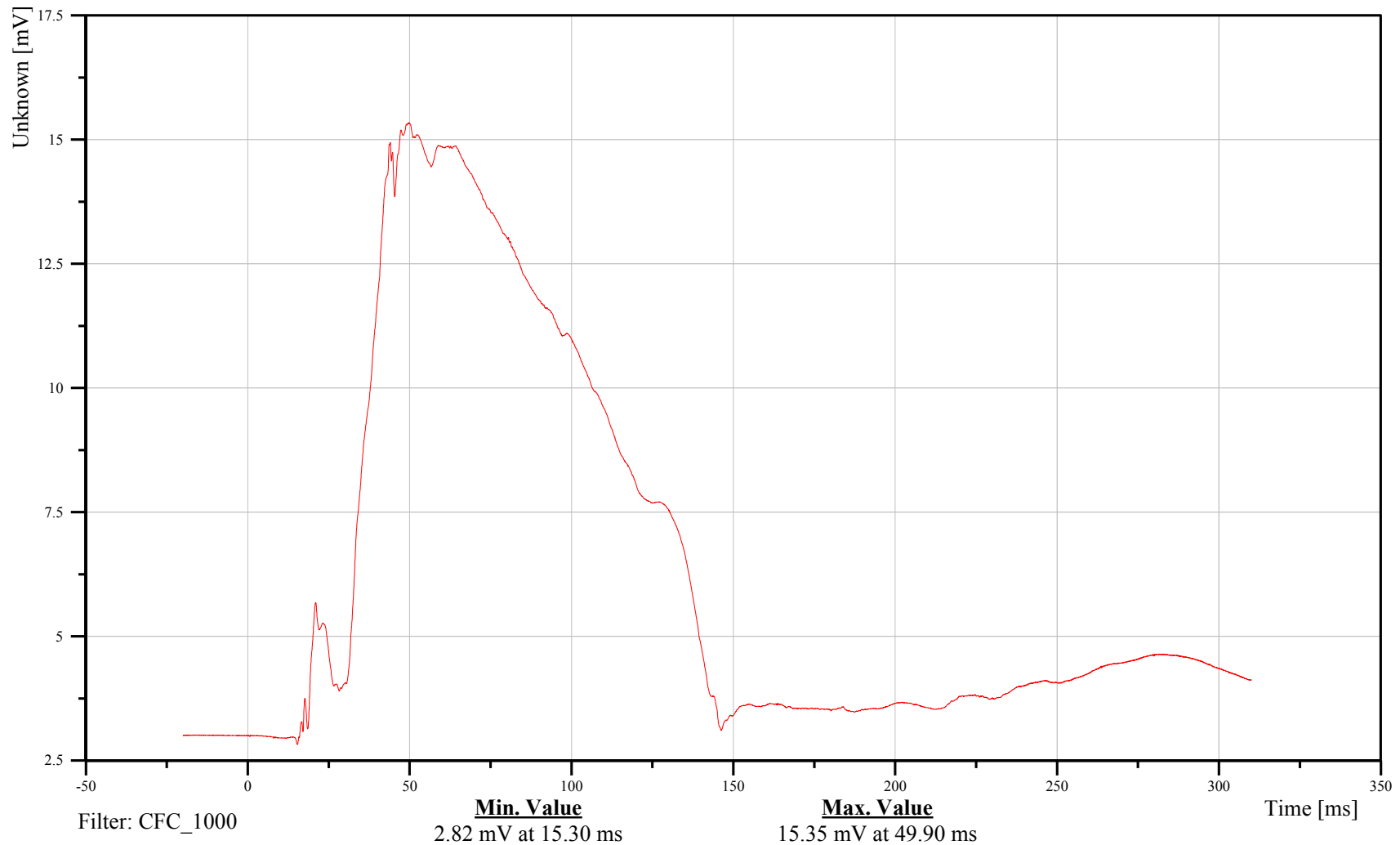
2016 Nissan Rogue Side Pole Impact W50-52

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA5200WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





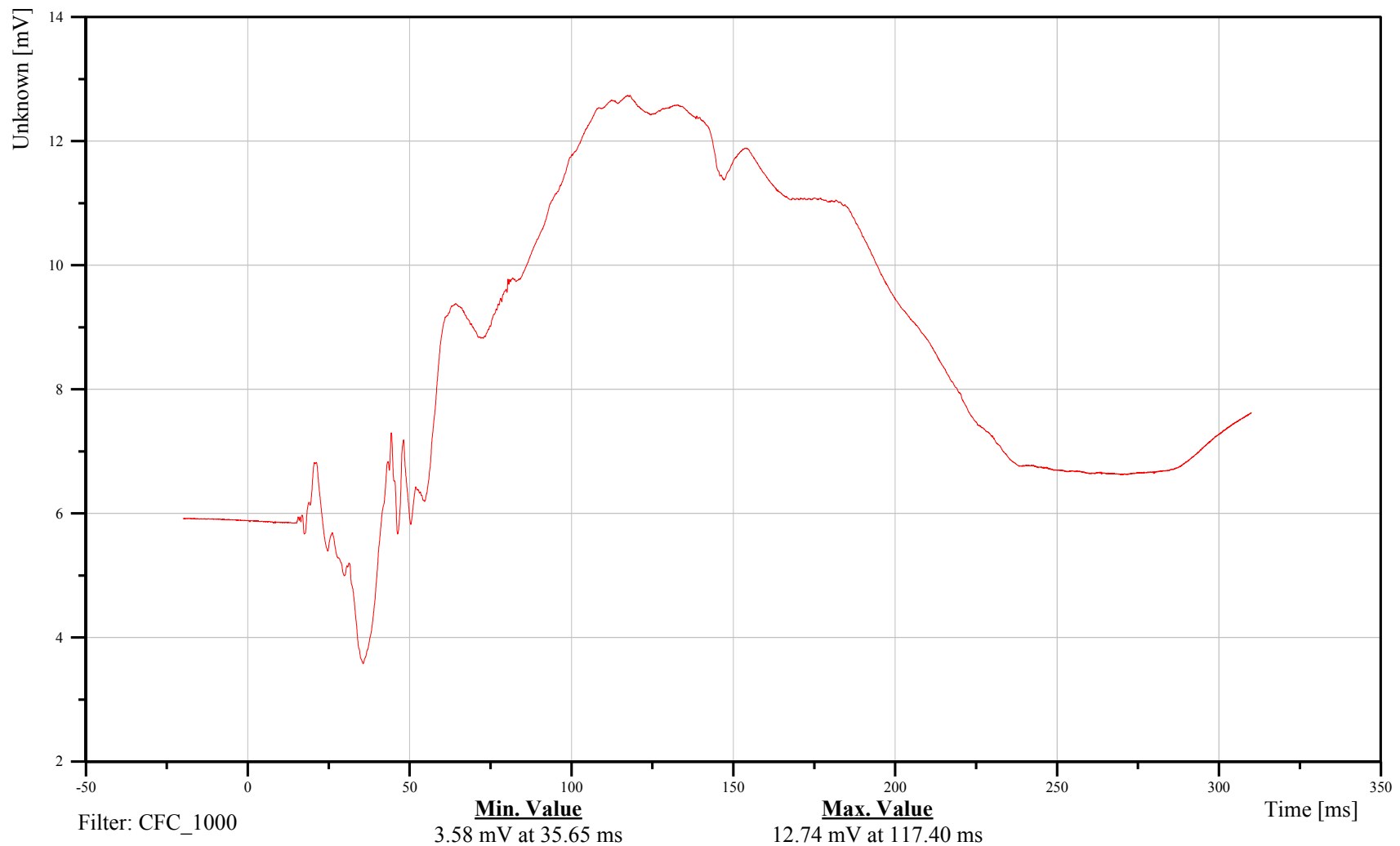
2016 Nissan Rogue Side Pole Impact W50-53

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA5300WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





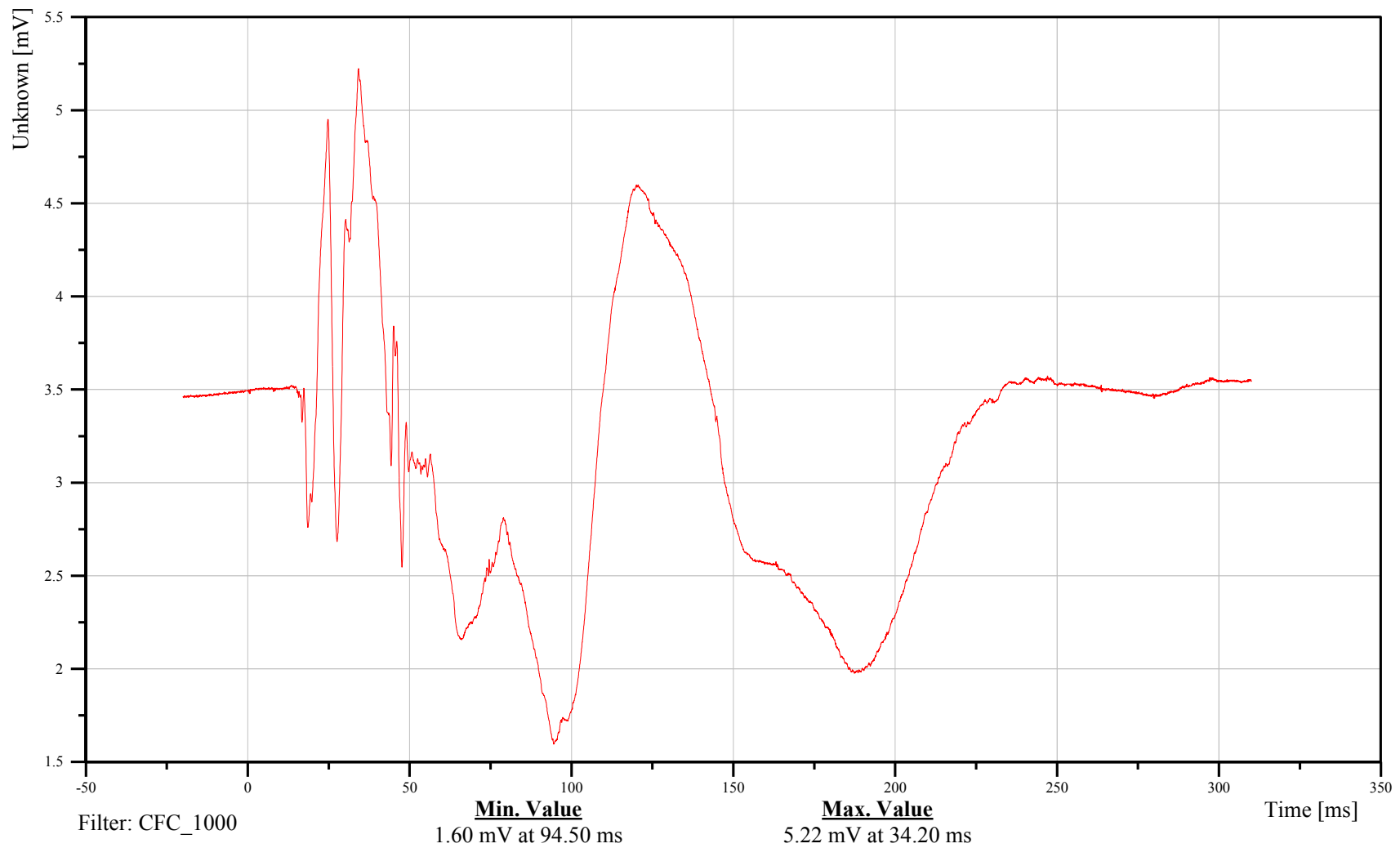
2016 Nissan Rogue Side Pole Impact W50-54

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA5400WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





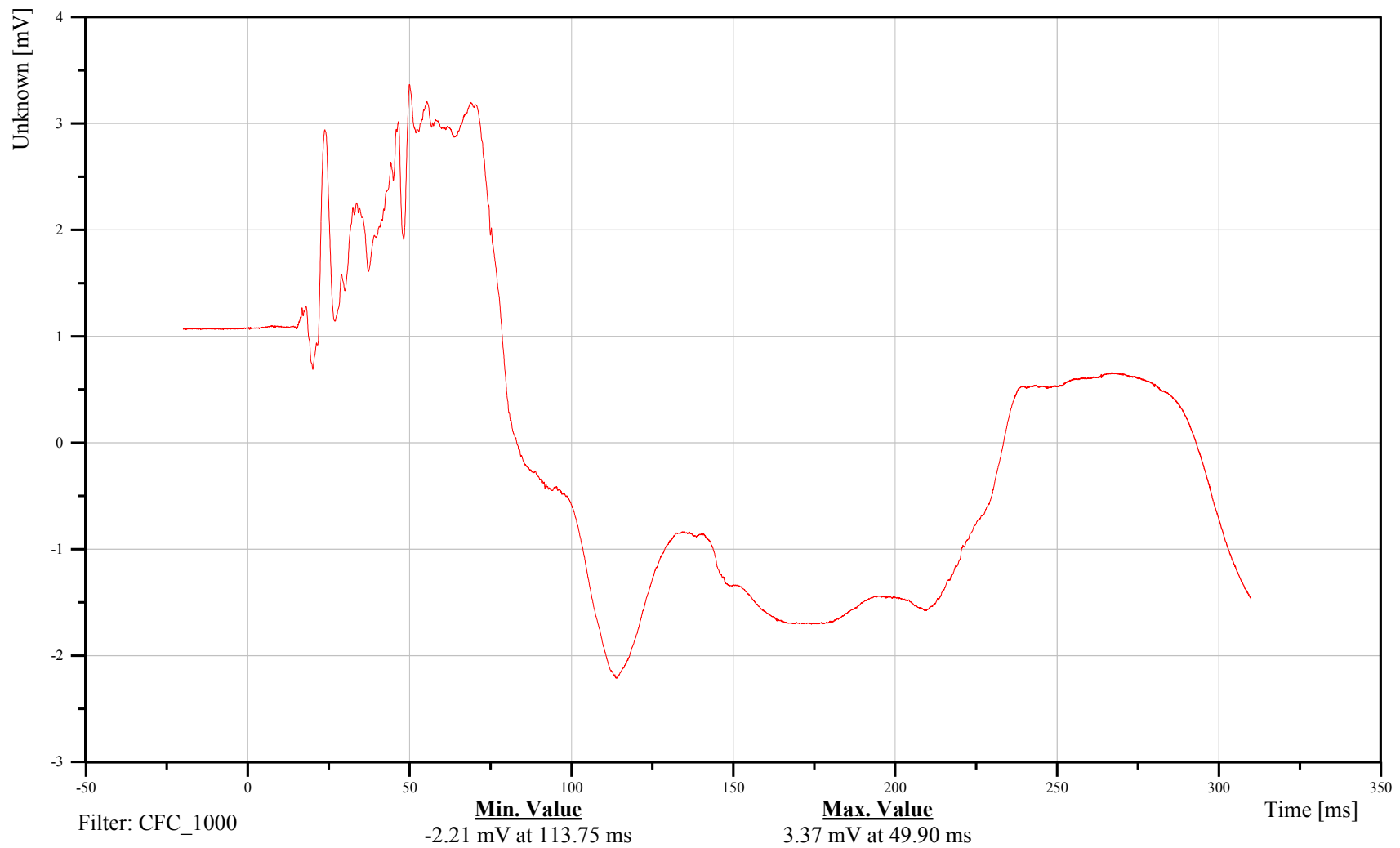
2016 Nissan Rogue Side Pole Impact W50-55

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA5500WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





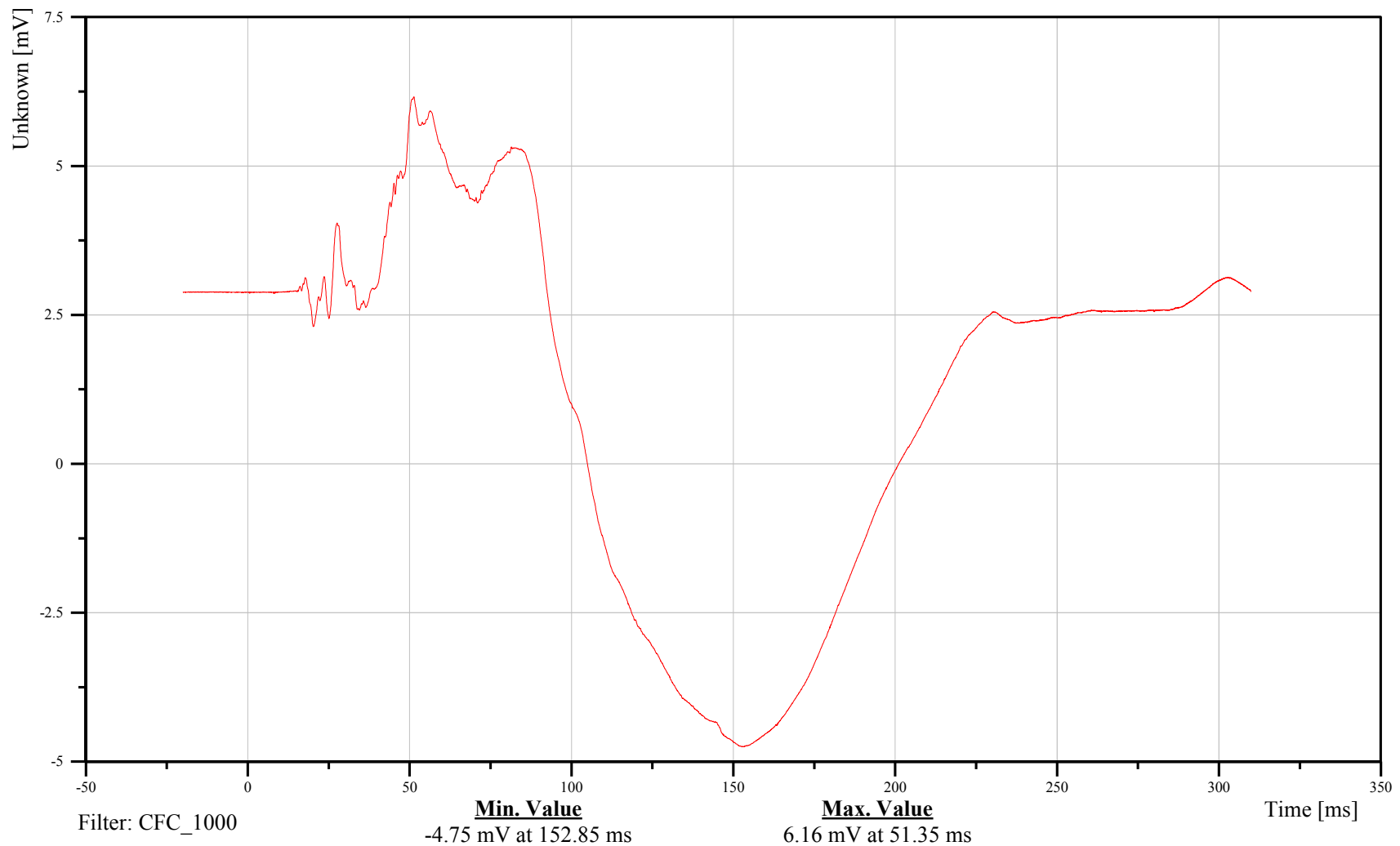
2016 Nissan Rogue Side Pole Impact W50-56

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11CHBA5600WSVO0A

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

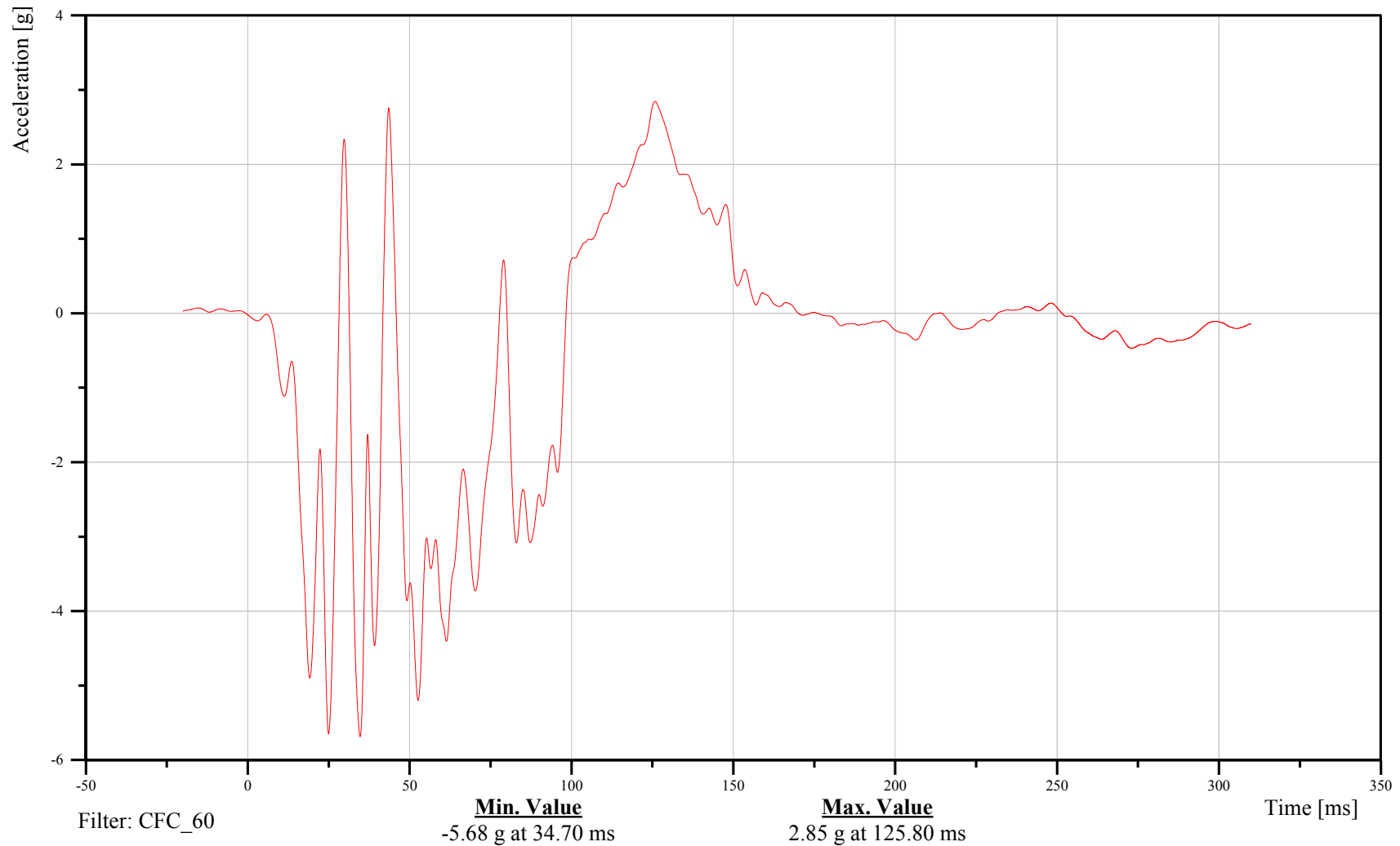
Vehicle Center of Gravity X-Axis Acceleration

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11VEHCCG0000ACXD

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

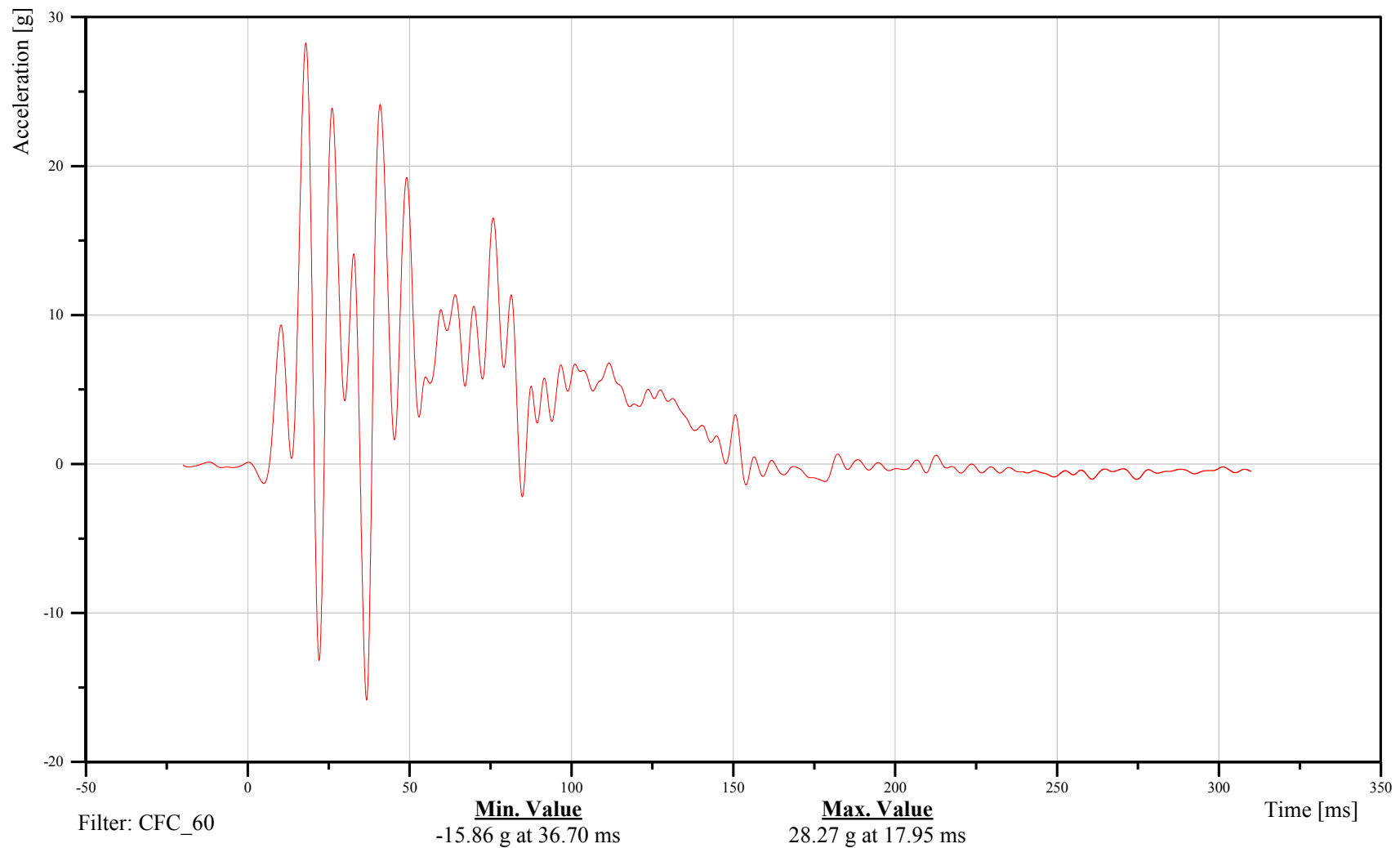
Vehicle Center of Gravity Y-Axis Acceleration

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11VEHCCG0000ACYD

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

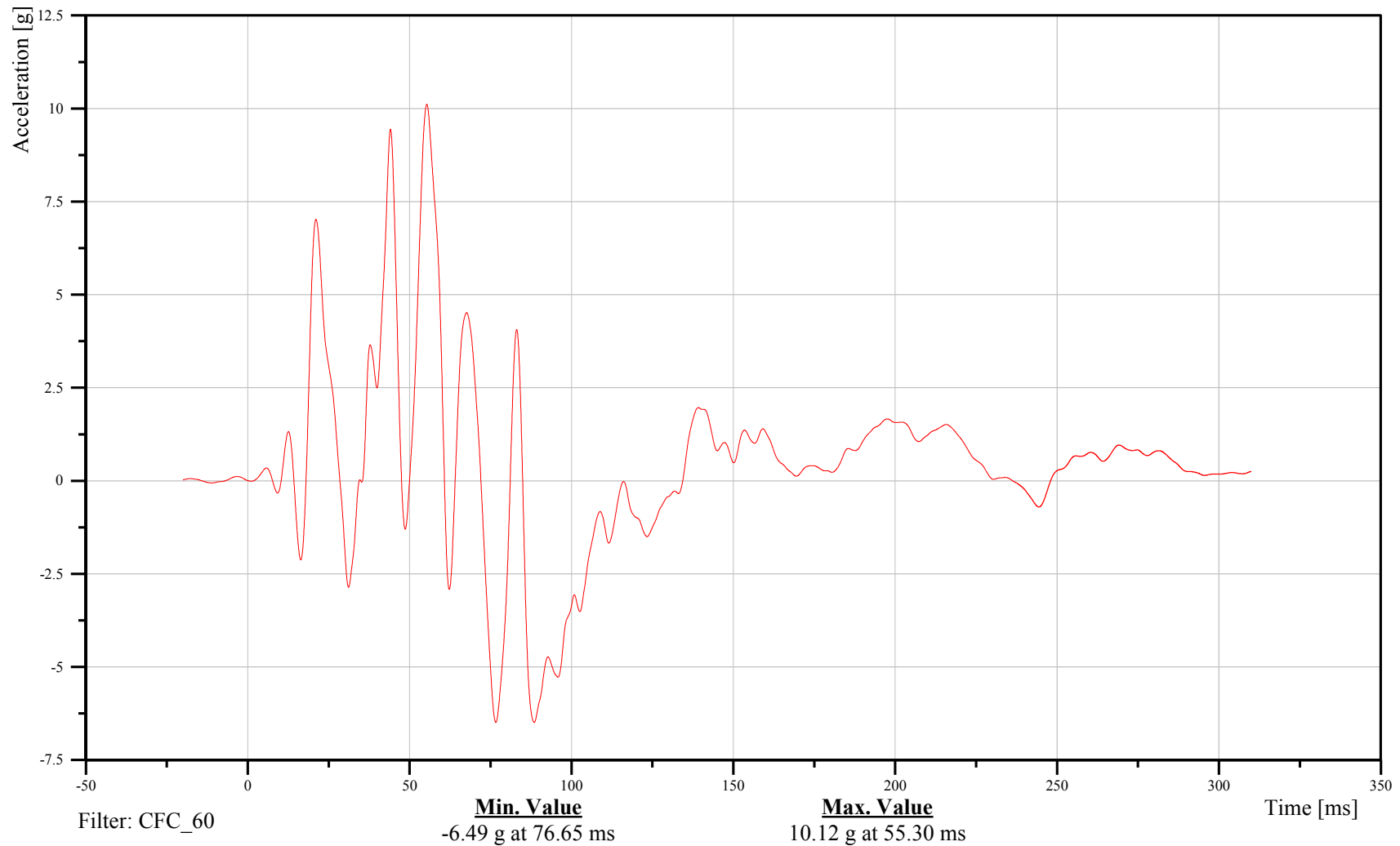
Vehicle Center of Gravity Z-Axis Acceleration

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11VEHCCG0000ACZD

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

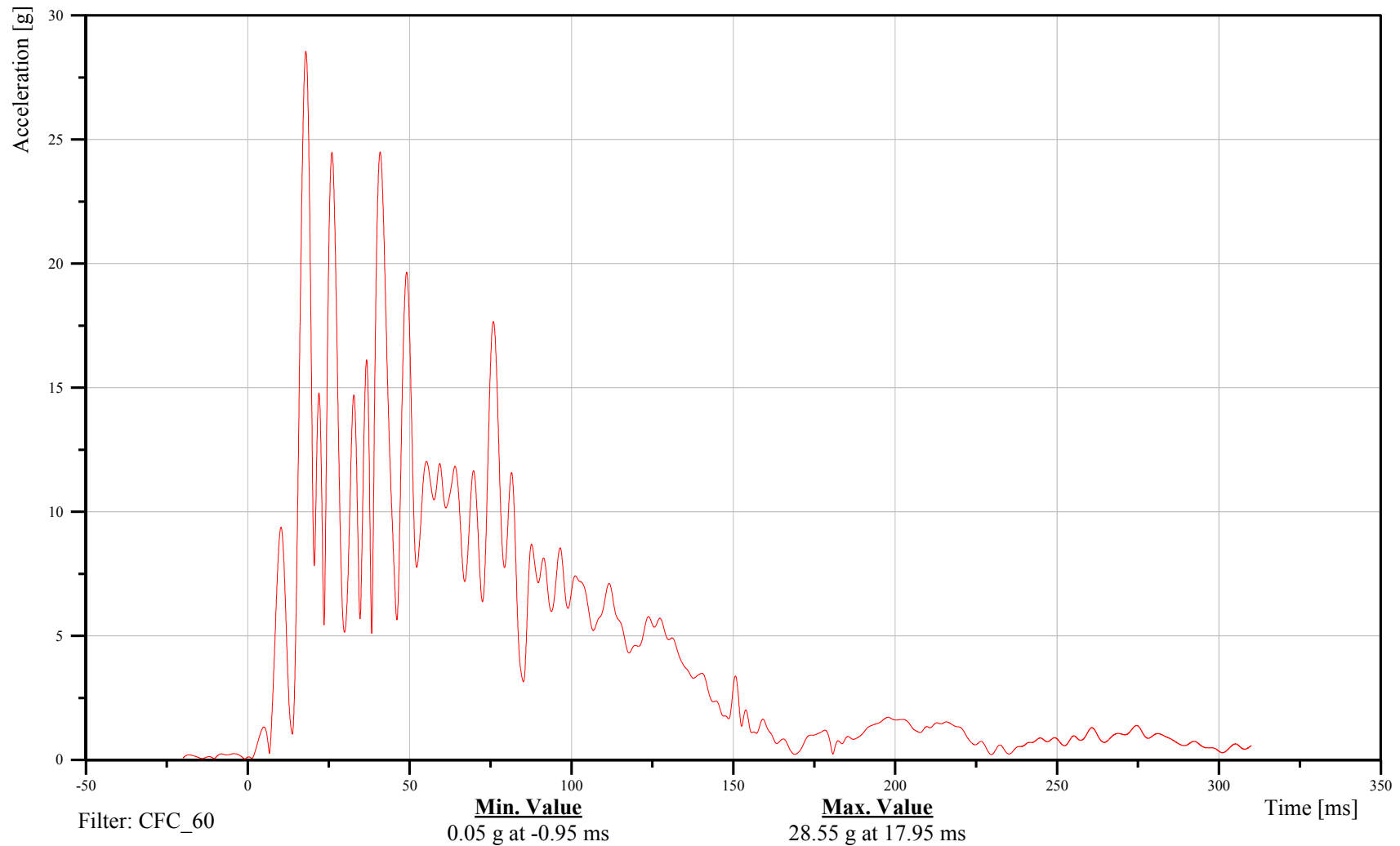
Vehicle Center of Gravity Resultant Acceleration

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11VEHCCG0000ACRD

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

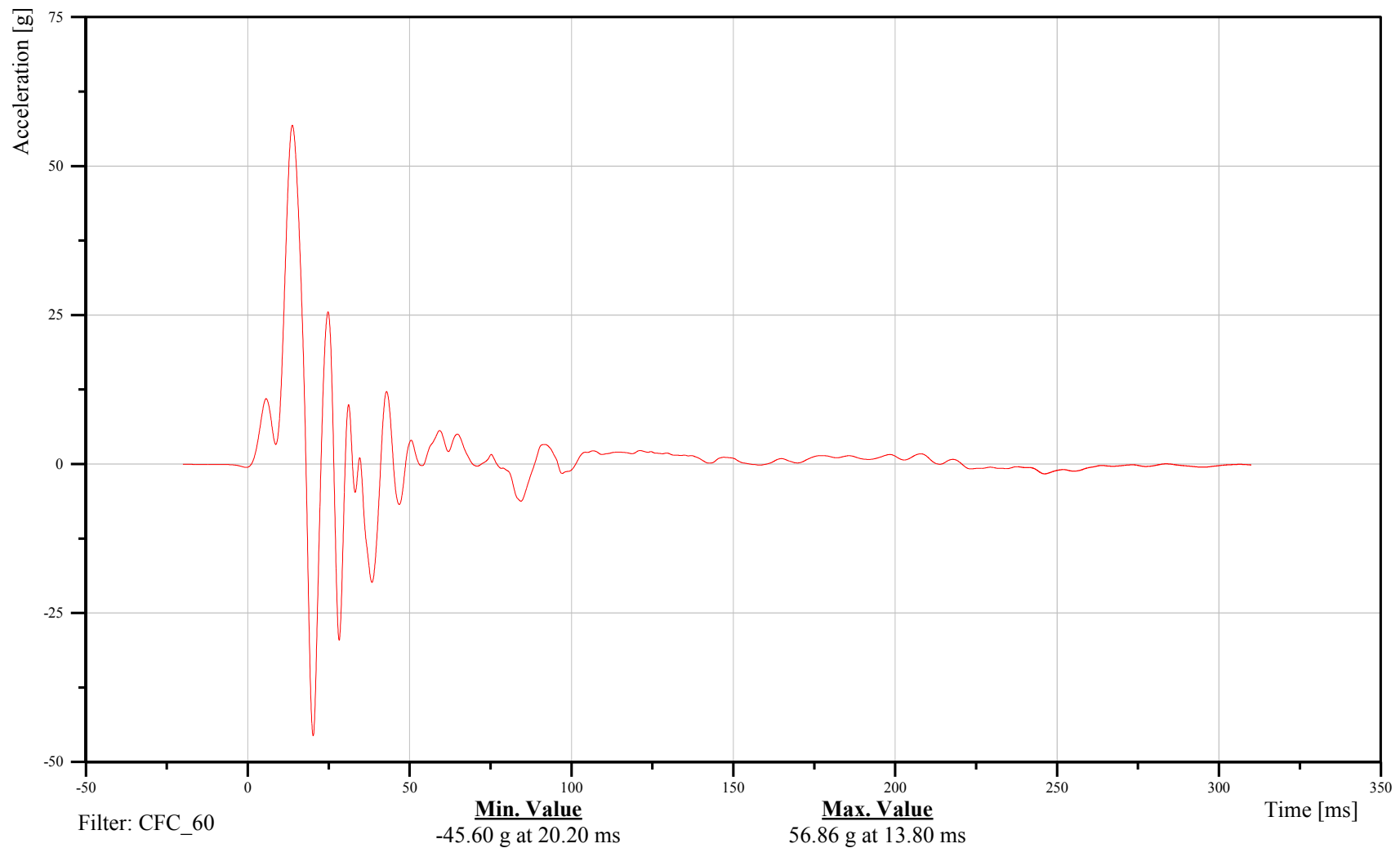
Left Floor Sill Y

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11VEHC00LO00ACYD

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Left A-Pillar Sill Y-Axis Acceleration

Date: 03/29/2016

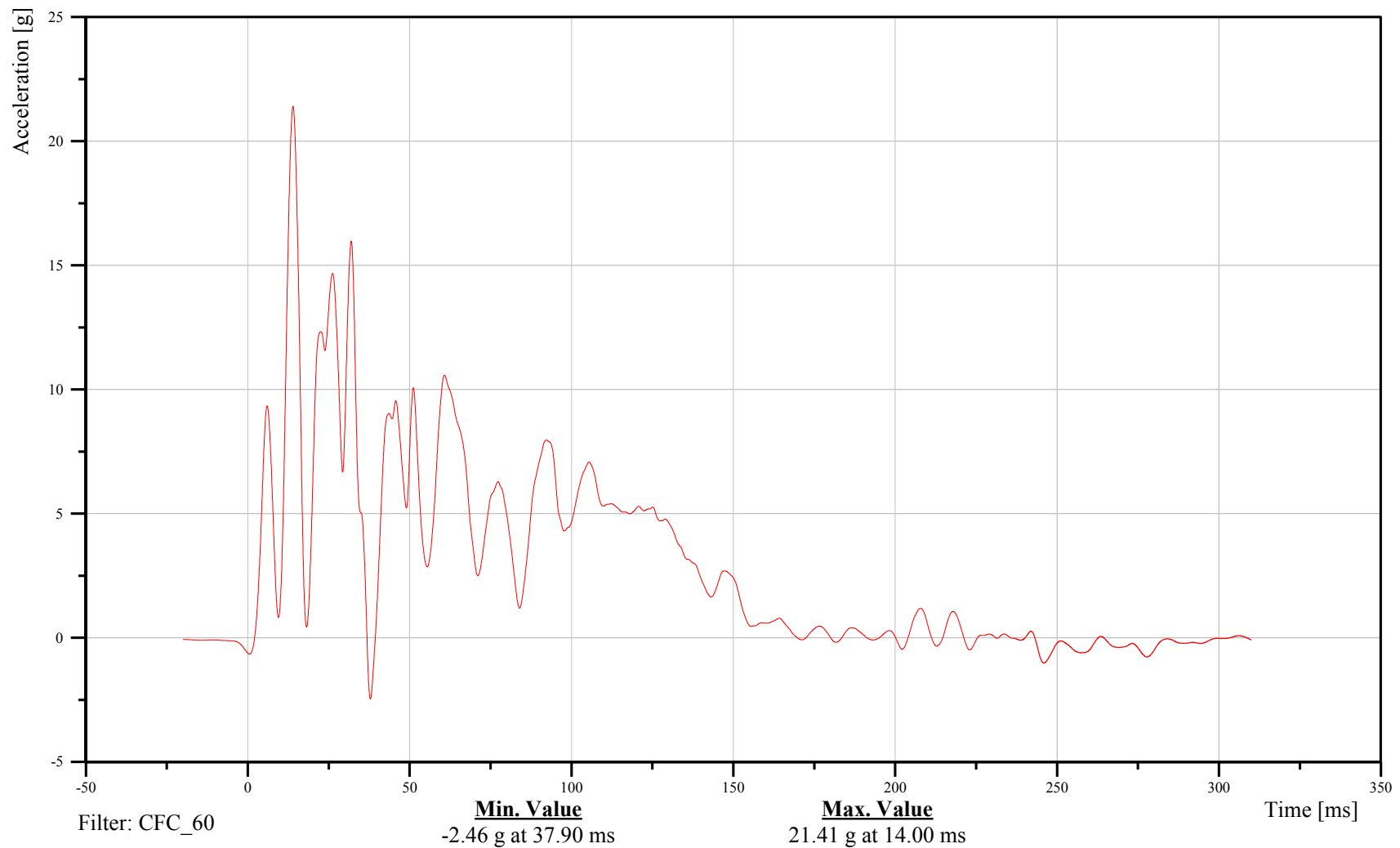
Time: 16:04

Customer: VRTC

11APIL000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Left Lower A-Pillar Y-Axis Acceleration

Date: 03/29/2016

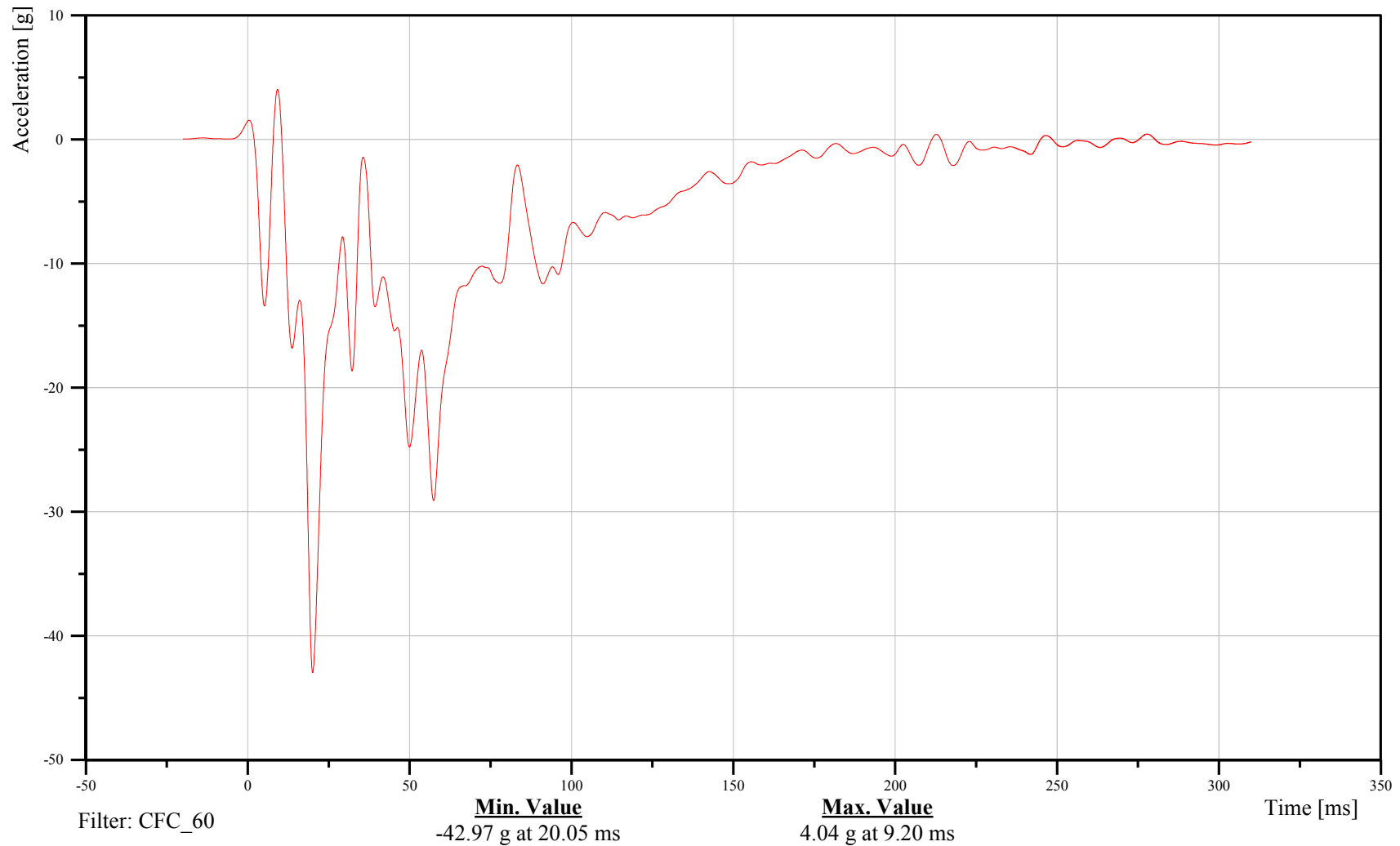
Time: 16:04

Customer: VRTC

11APILLO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Left Mid A-Pillar Y-Axis Acceleration

Date: 03/29/2016

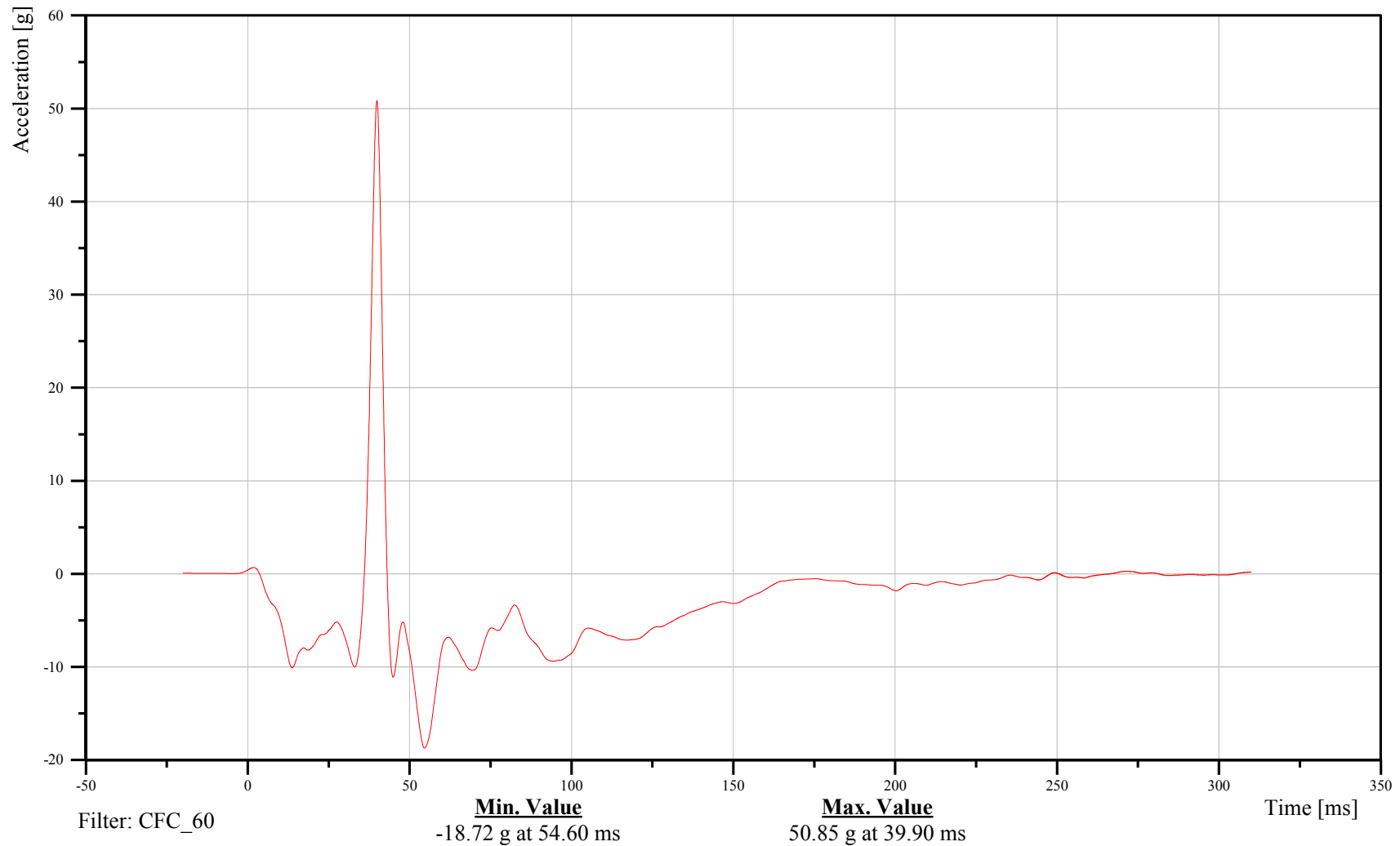
Time: 16:04

Customer: VRTC

11APILMI0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Left B-Pillar Sill Y-Axis Acceleration

Date: 03/29/2016

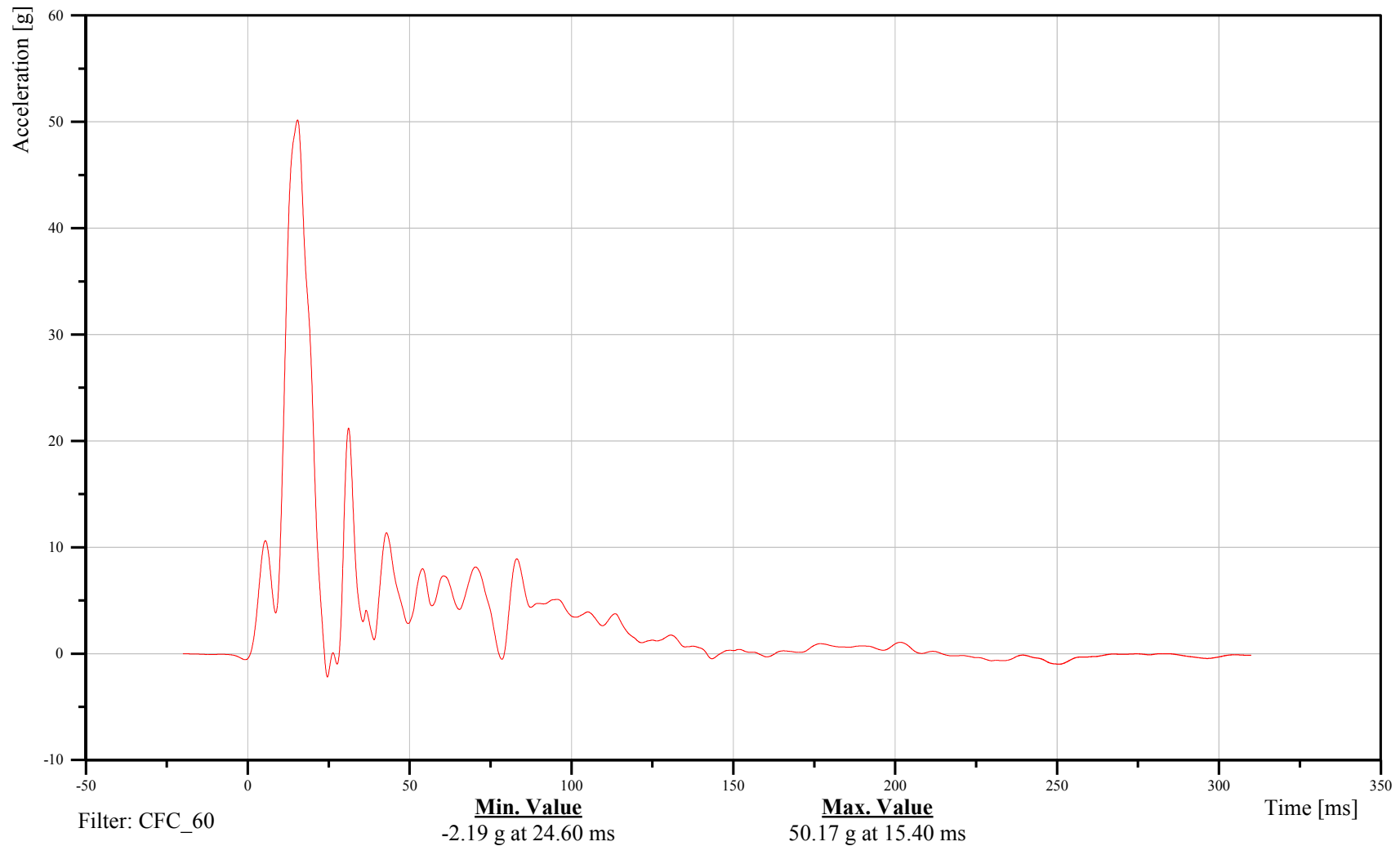
Time: 16:04

Customer: VRTC

11BPIL000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Left Lower B-Pillar Y-Axis Acceleration

Date: 03/29/2016

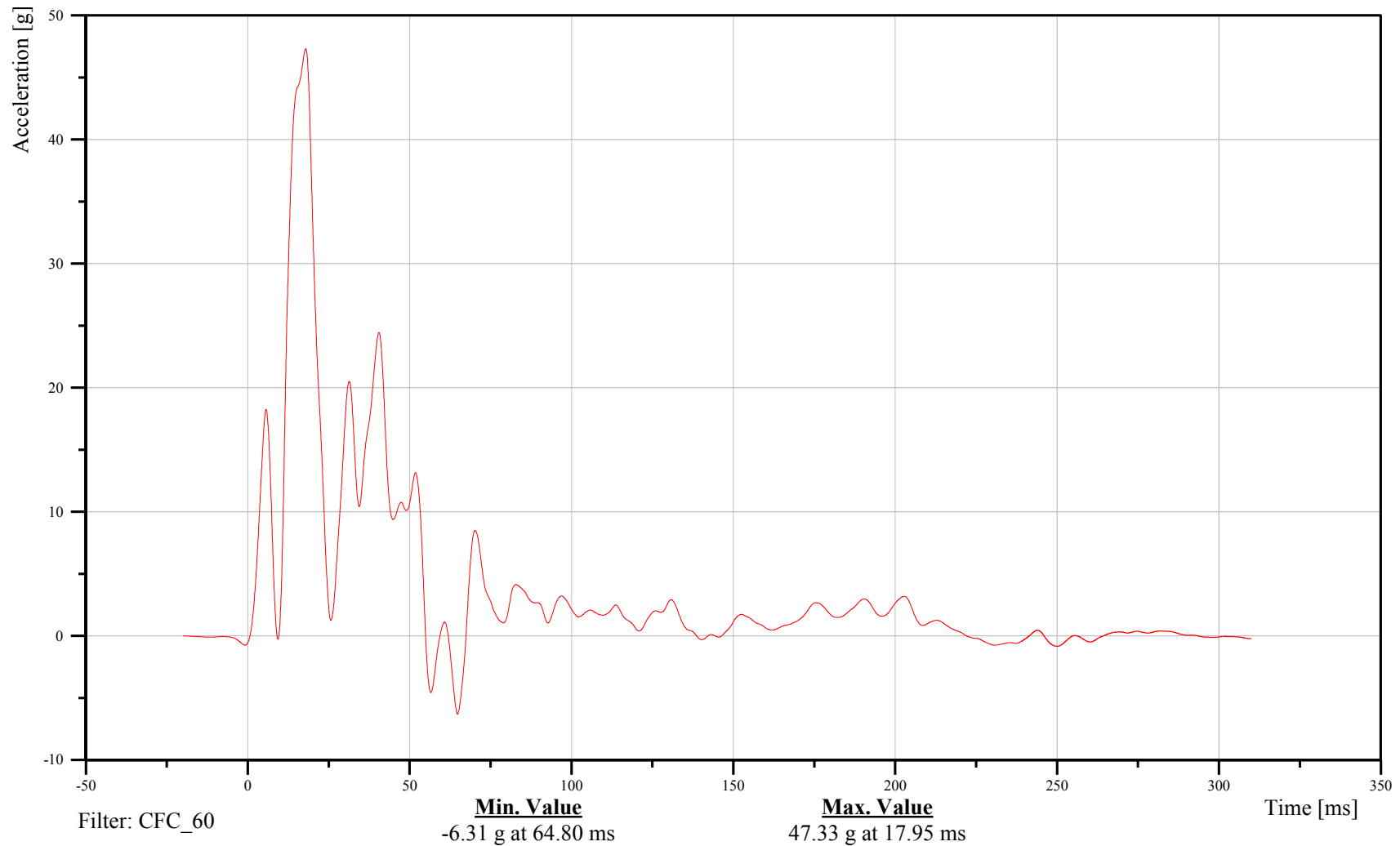
Time: 16:04

Customer: VRTC

11BPILLO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Left Mid B-Pillar Y-Axis Acceleration

Date: 03/29/2016

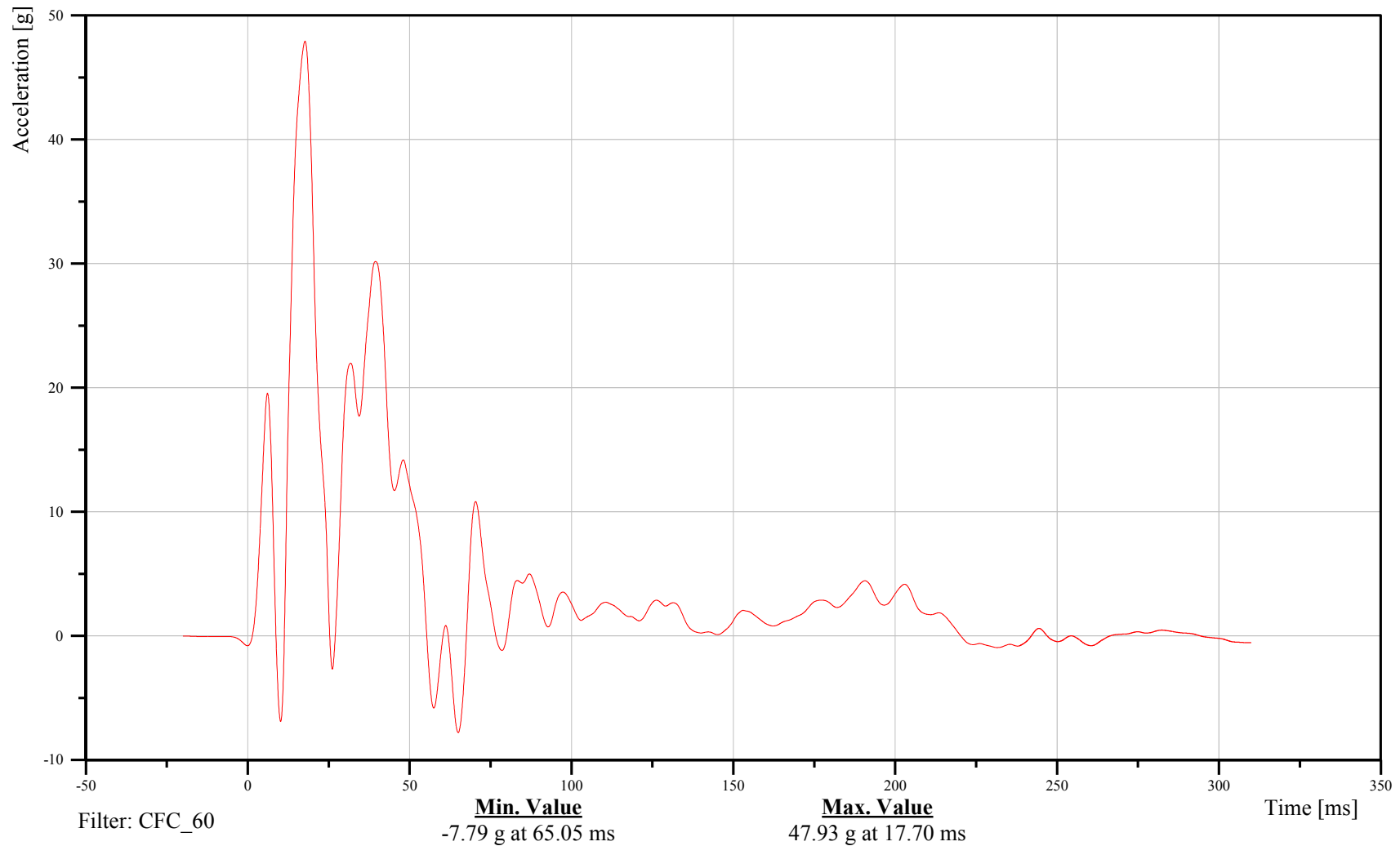
Time: 16:04

Customer: VRTC

11BPILMI0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

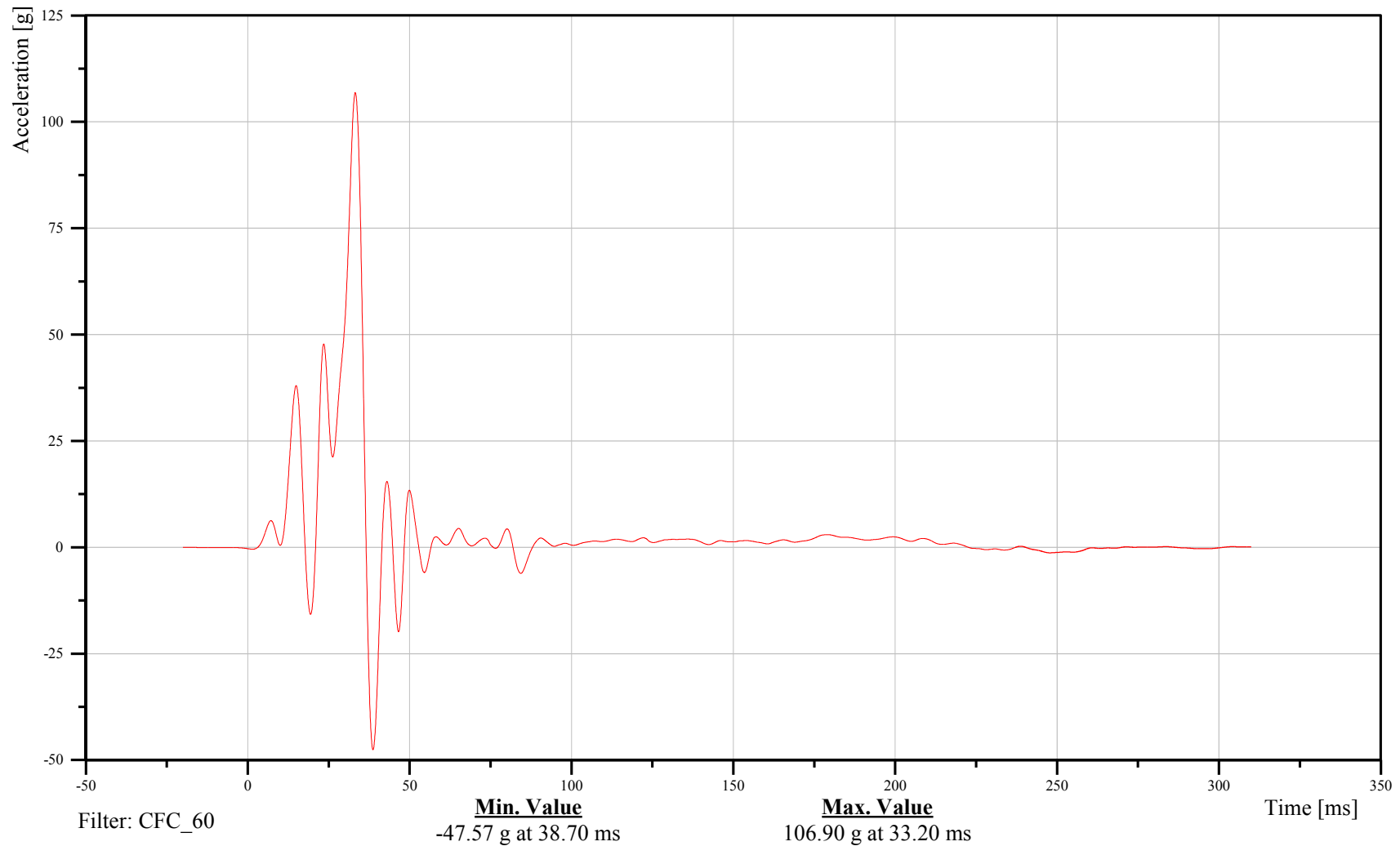
Driver Seat Track at Dummy H-Point Y-Axis Acceleration

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11SETR000000ACYD

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Engine Top X-Axis Acceleration

Date: 03/29/2016

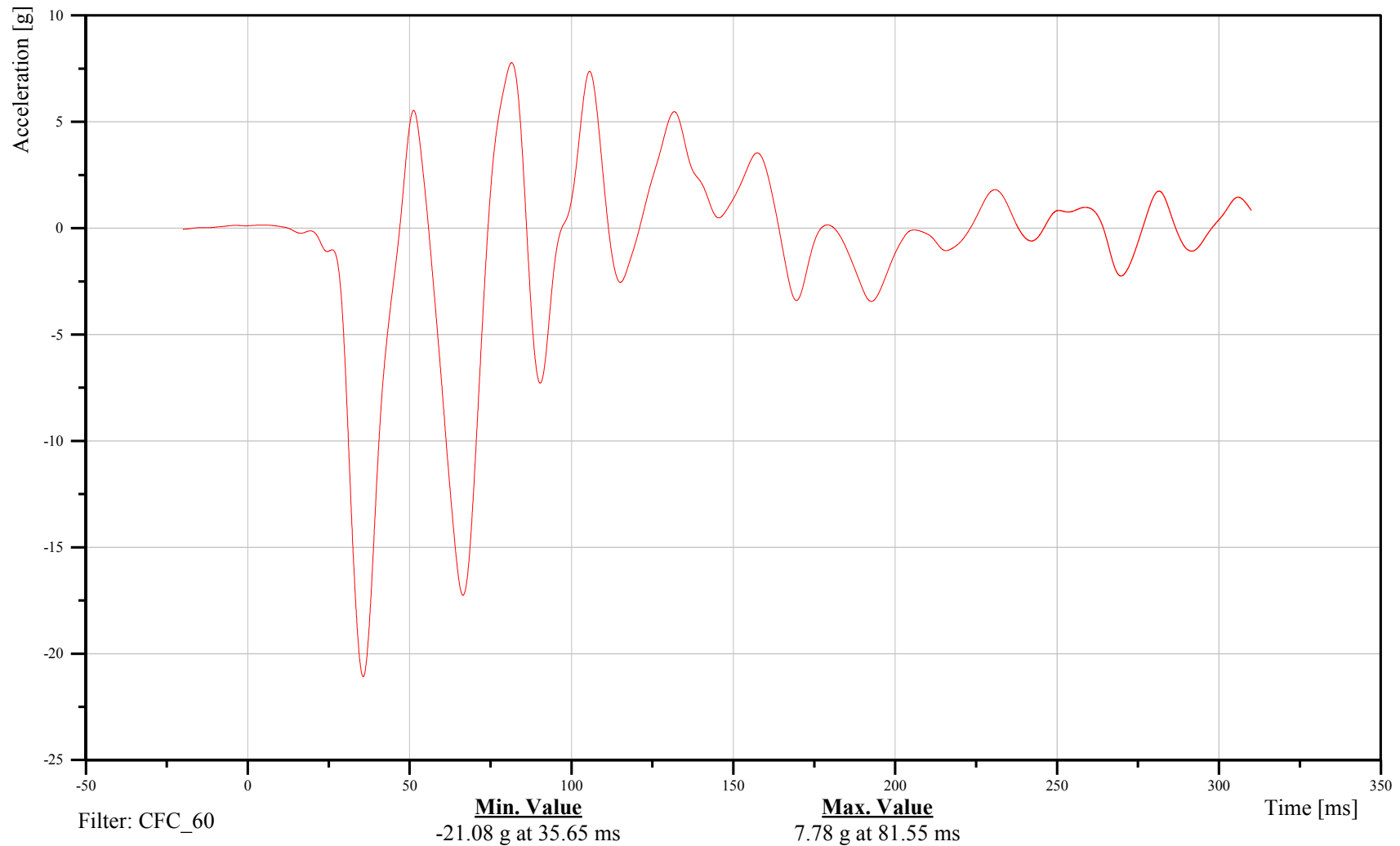
Time: 16:04

Customer: VRTC

11ENGNTTP0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Engine Top Y-Axis Acceleration

Date: 03/29/2016

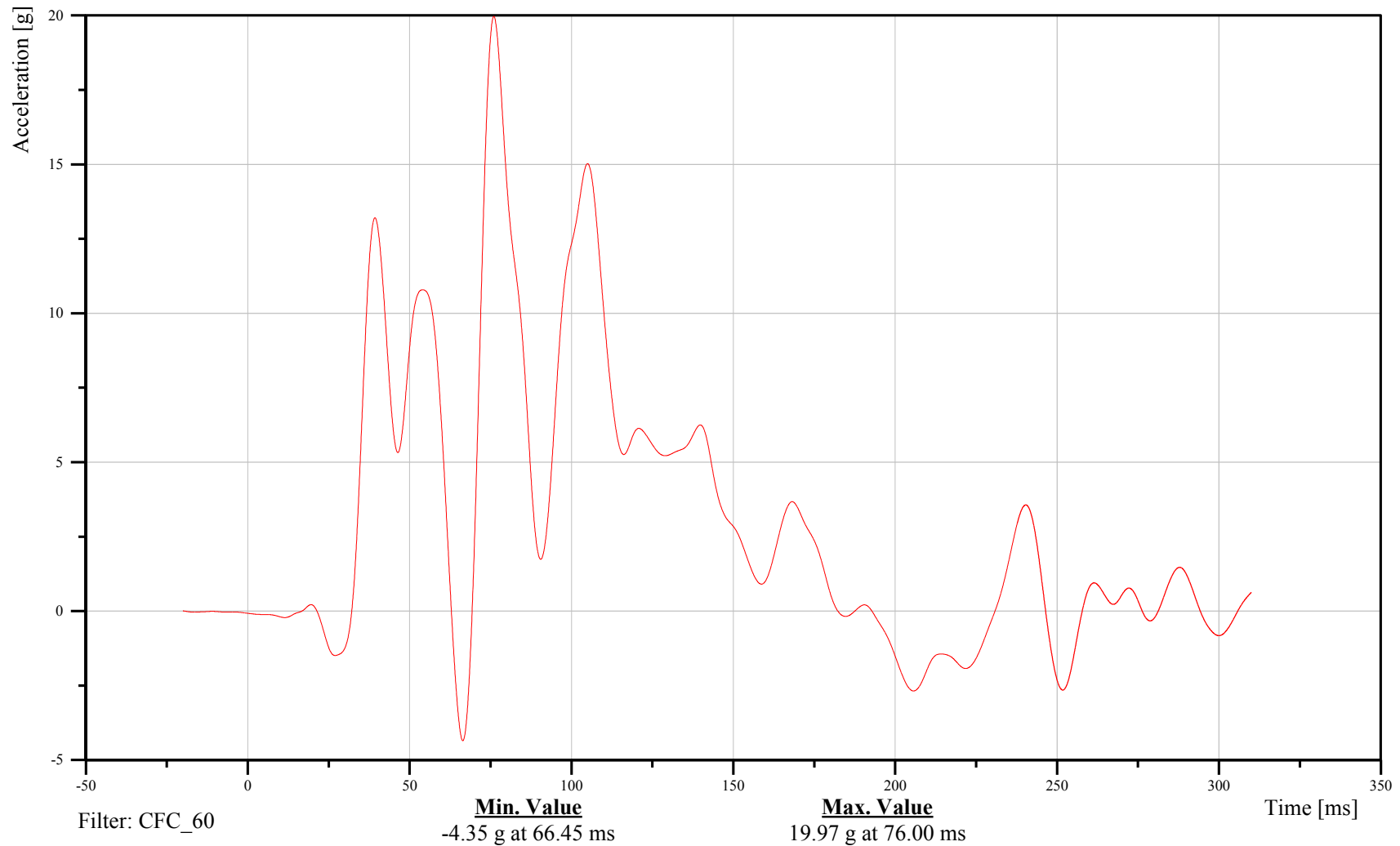
Time: 16:04

Customer: VRTC

11ENGNTTP0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Firewall Center Y-Axis Acceleration

Date: 03/29/2016

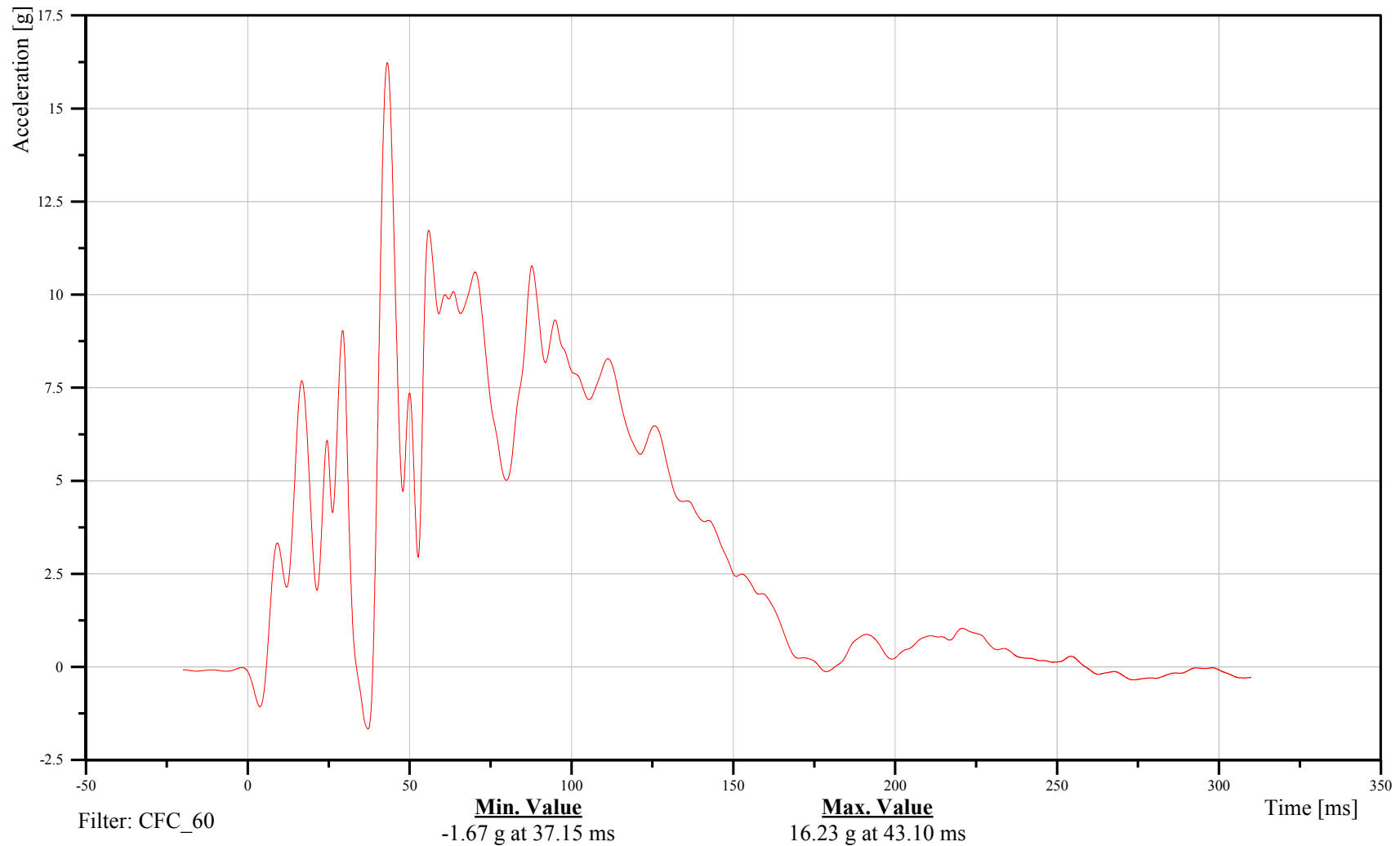
Time: 16:04

Customer: VRTC

12FIRCX00000ACYD

TRC Inc. Test Lab: CTF

Test Number: 160329





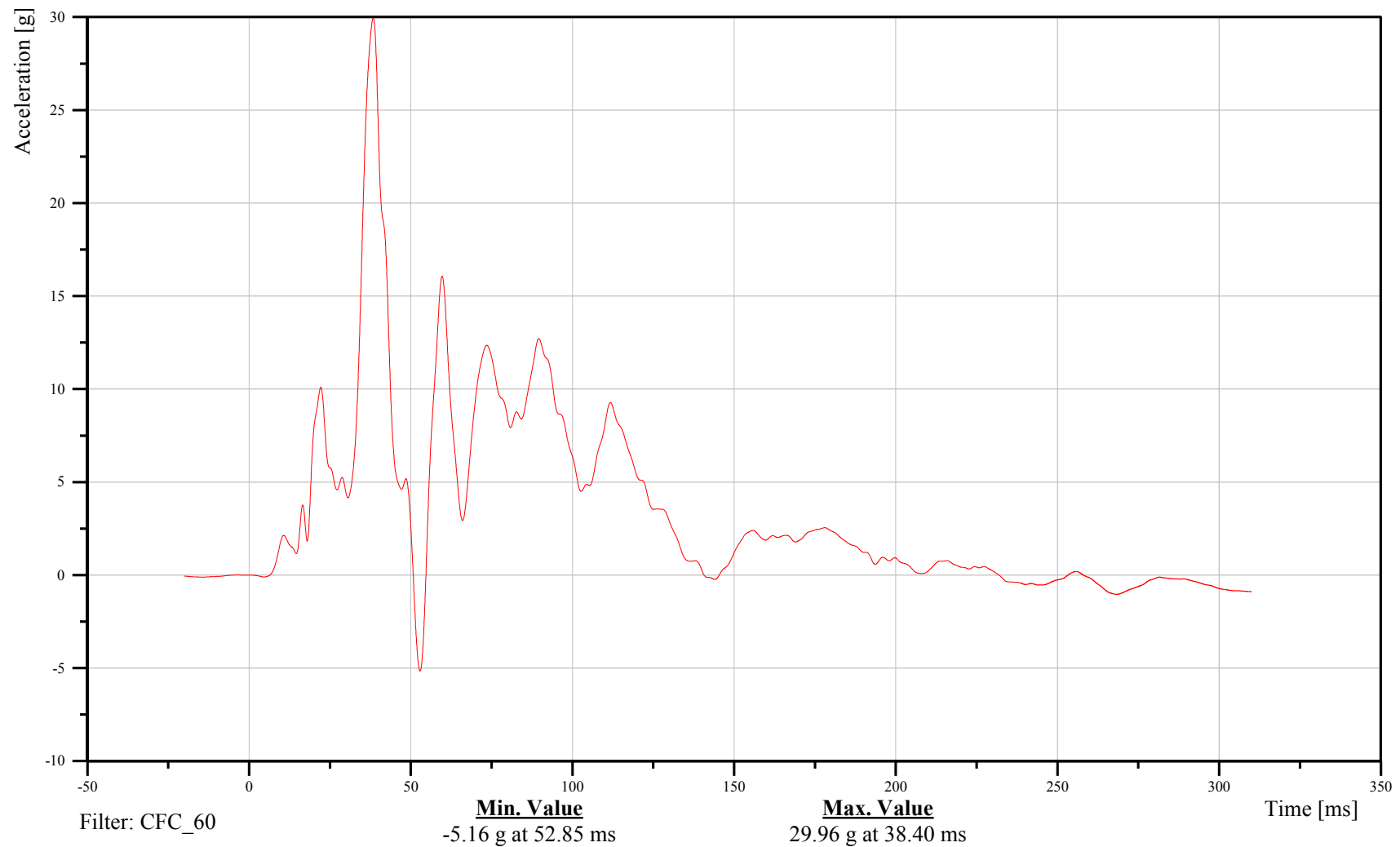
2016 Nissan Rogue Side Pole Impact
Right Roof at Vertical Impact Reference Line Y-Axis Acceleration

Date: 03/29/2016
Time: 16:04

Customer: VRTC

13ROFR000000ACYD

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

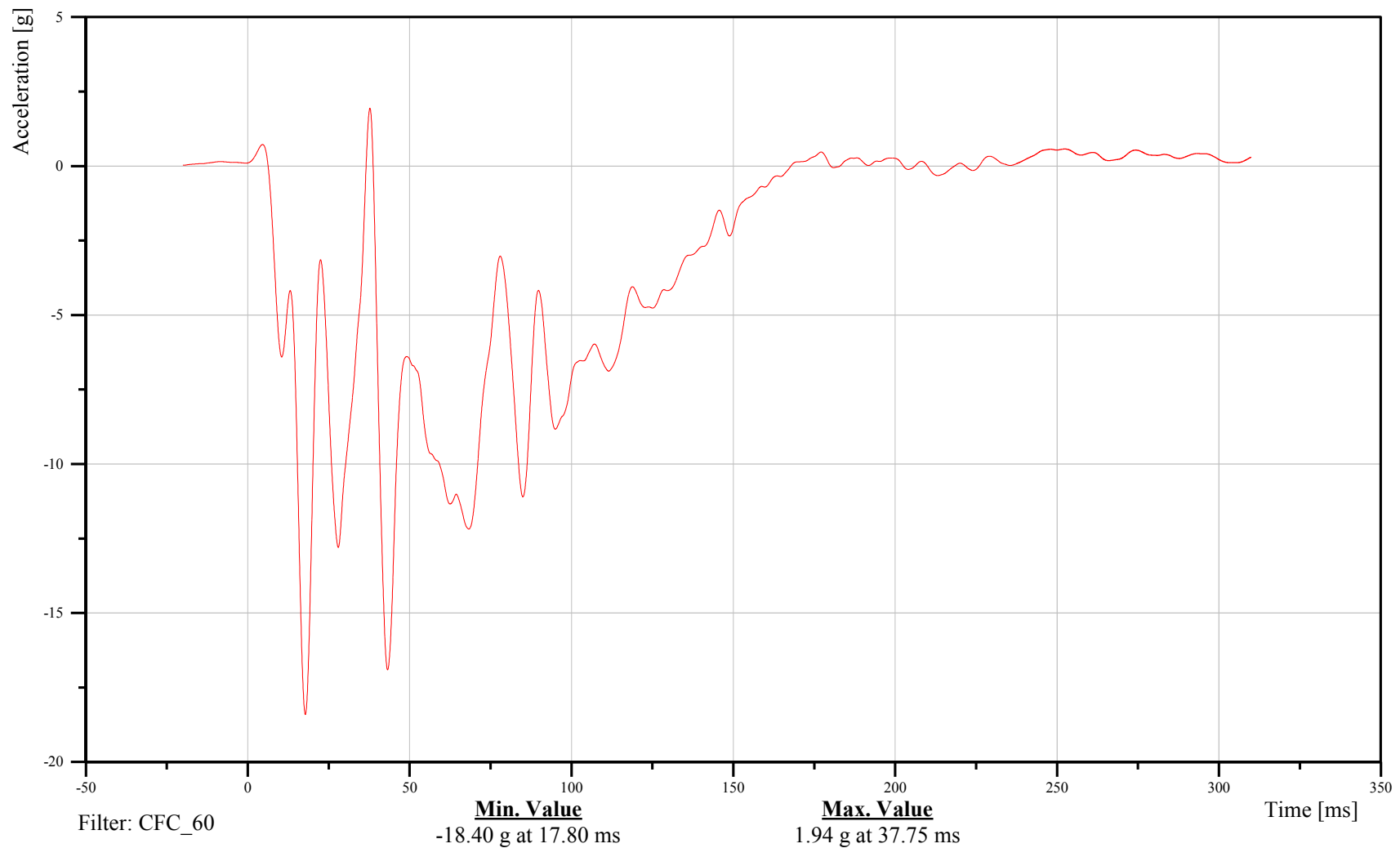
Right Sill at Vertical Impact Reference Line Y-Axis Acceleration

Date: 03/29/2016
Time: 16:04

Customer: VRTC

13SILB000000ACYD

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Date: 03/29/2016
Time: 16:04

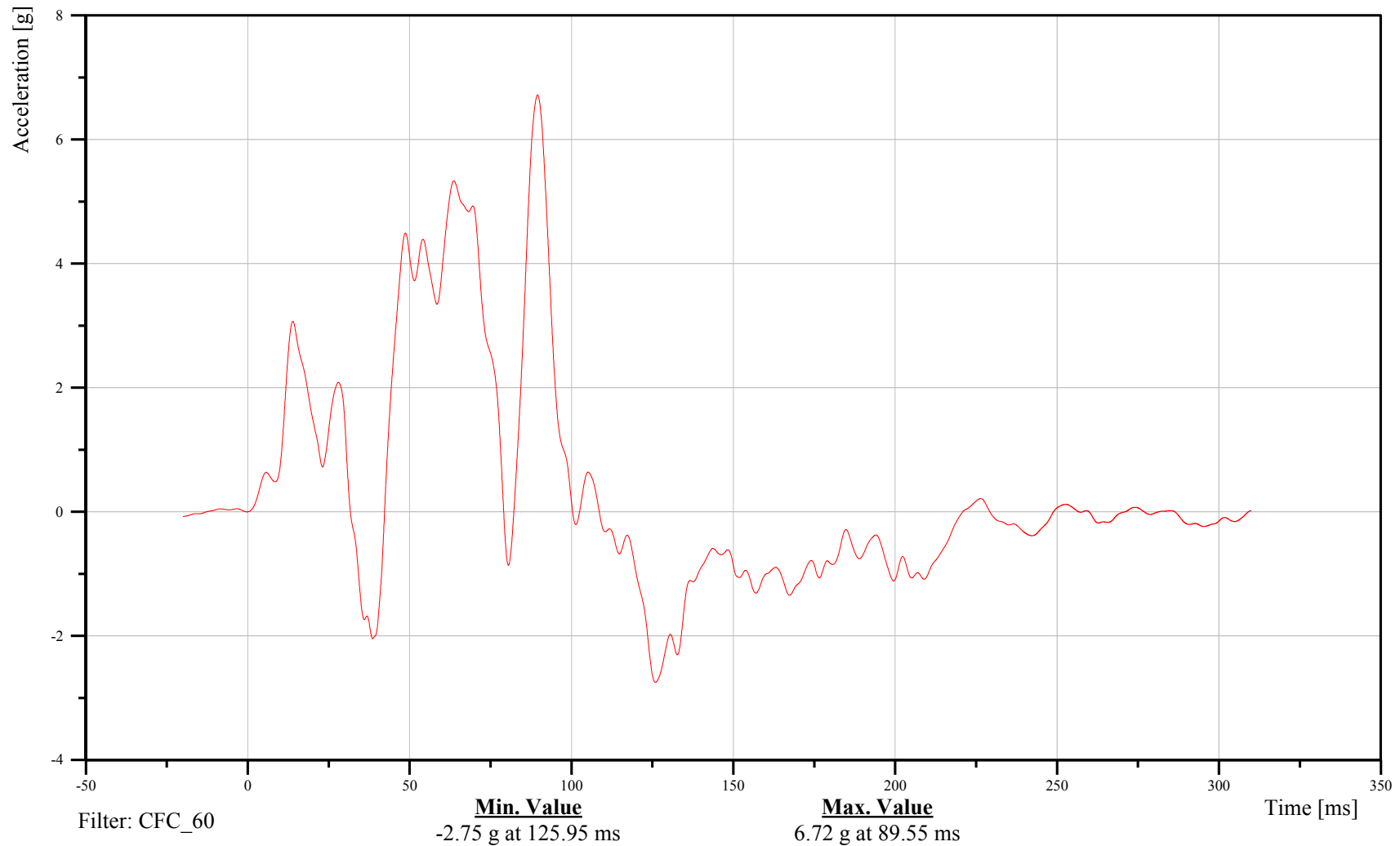
Rear Floorpan Behind Rear Axle at Centerline Acceleration X-Axis Acceleration

Customer: VRTC

11FORA000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

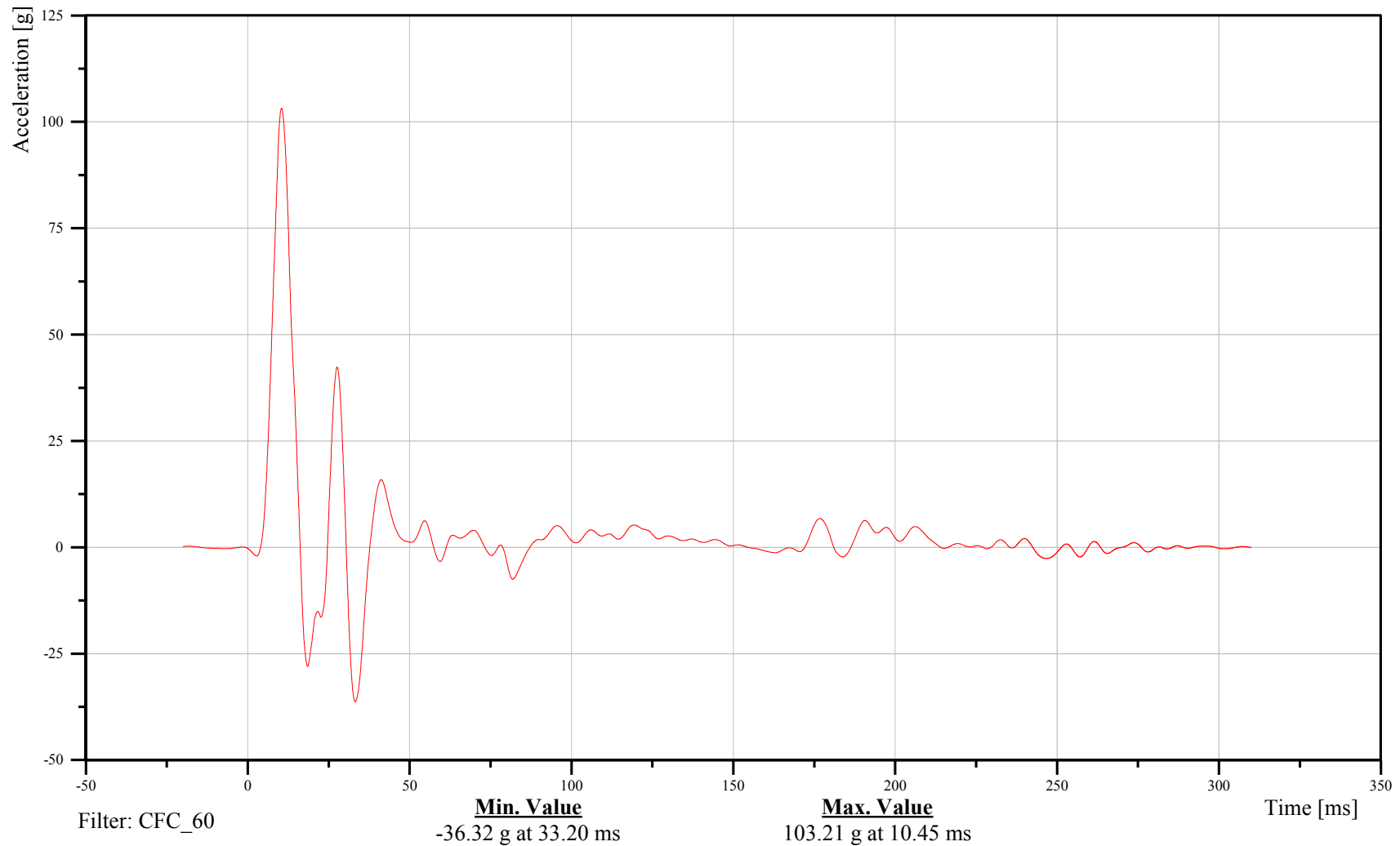
Left Front Door Mid Centerline (Y)

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11DOORMIMI71ACYD

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Left Front Door Mid Rear (Y)

Date: 03/29/2016

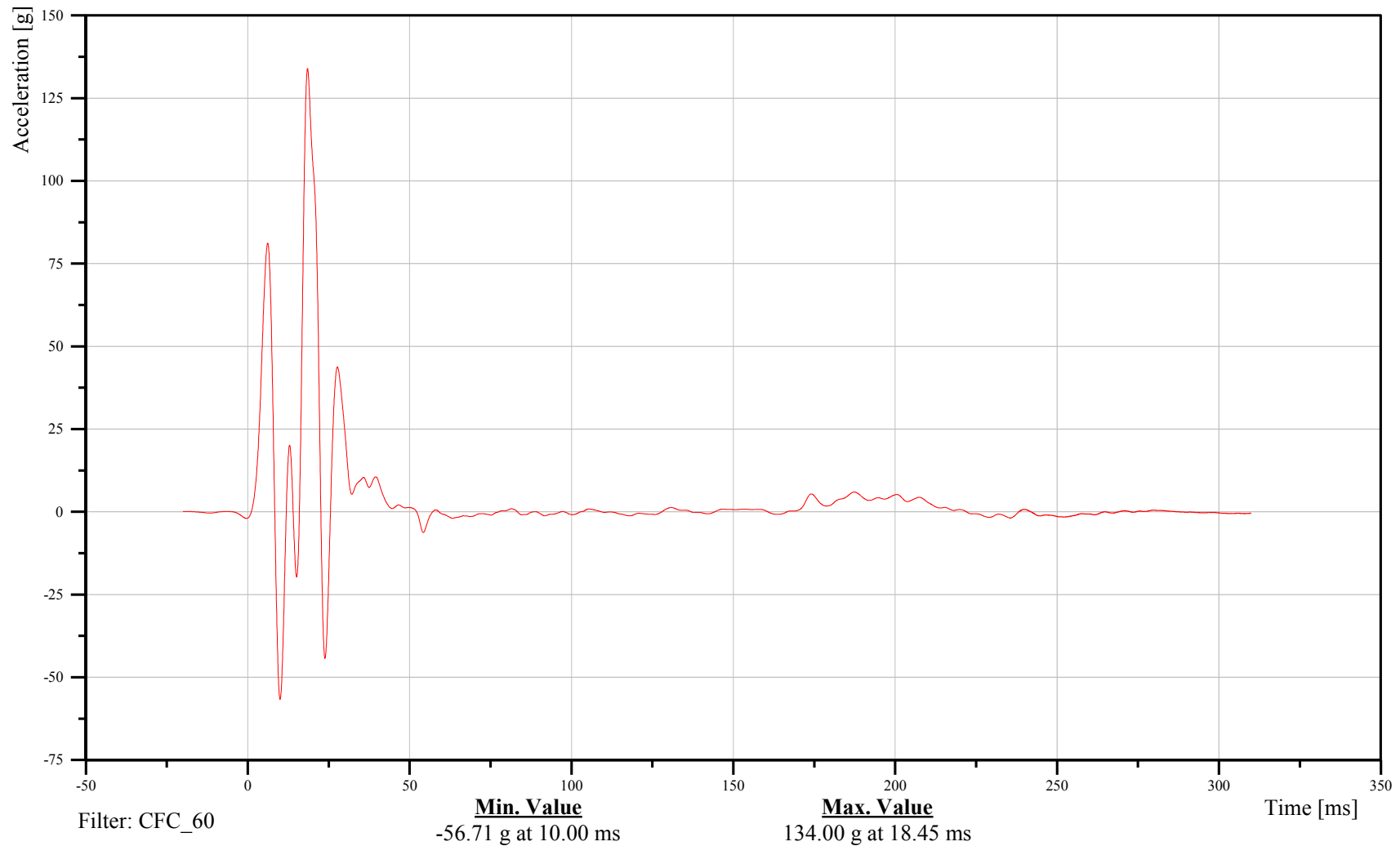
Time: 16:04

Customer: VRTC

11DOORMIRE71ACYD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

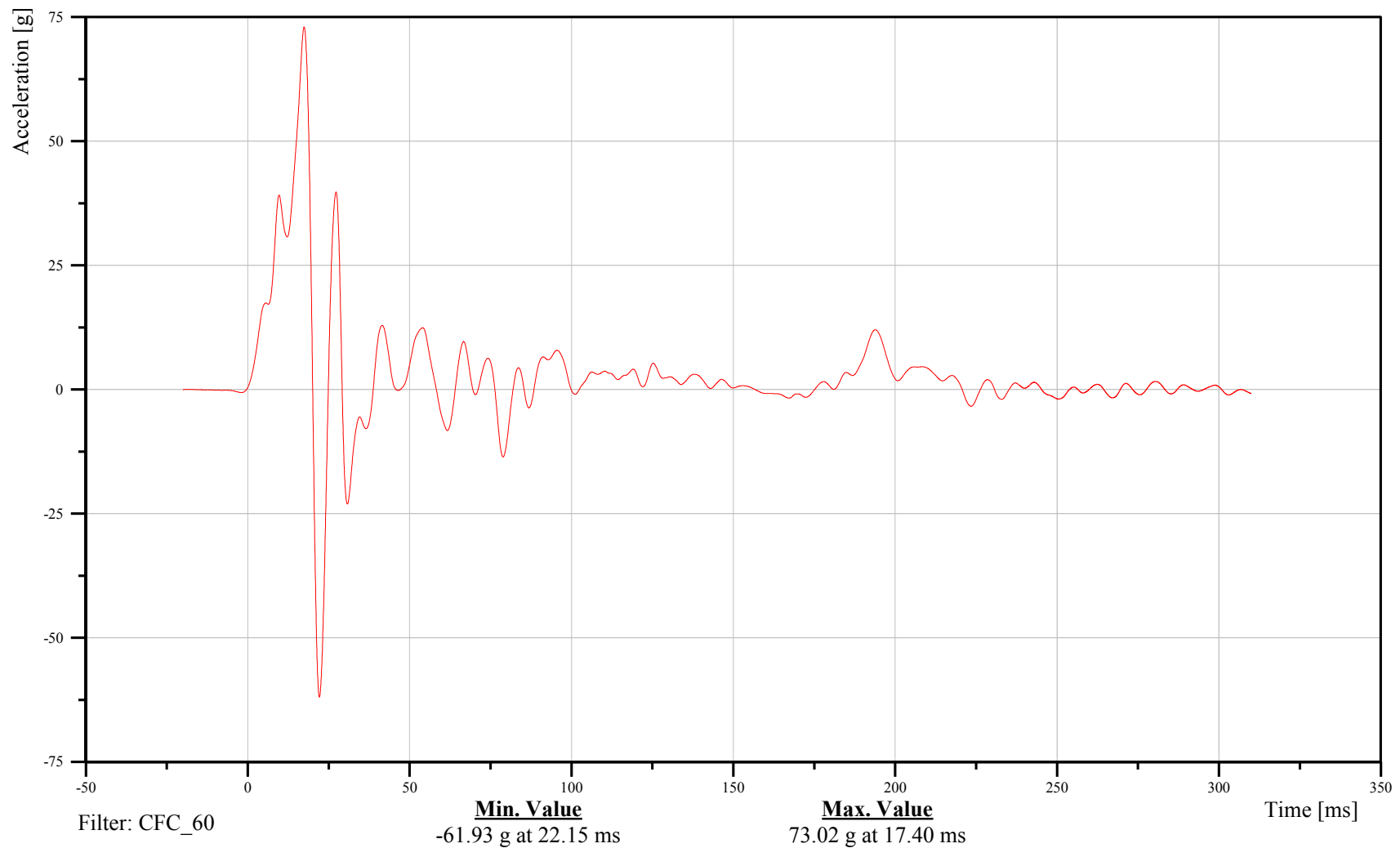
Left Front Door Upper Centerline (Y)

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11DOORMIUP71ACYD

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Left Rear Door Mid Rear (Y)

Date: 03/29/2016

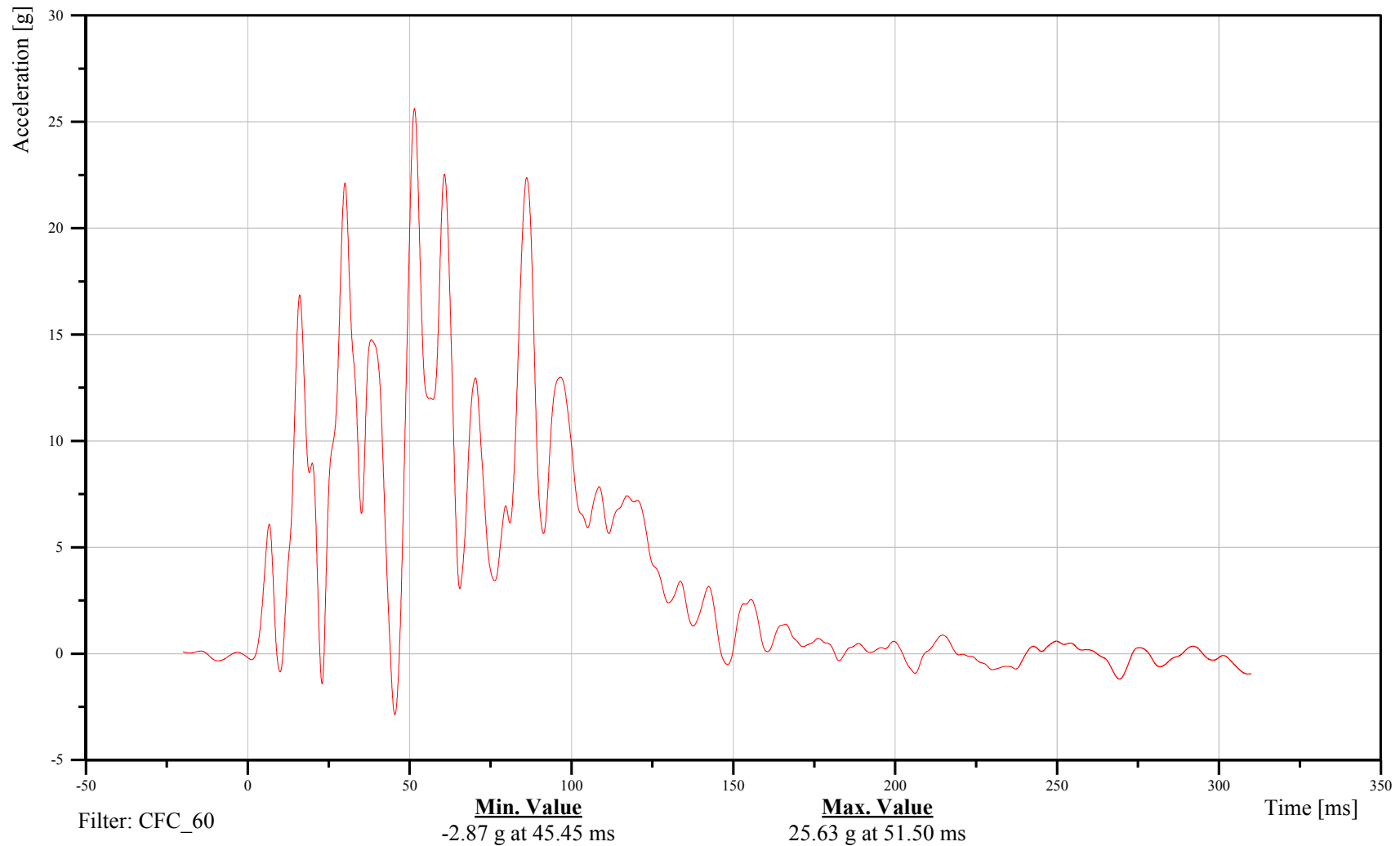
Time: 16:04

Customer: VRTC

14DOORMIRE71ACYD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Left Rear Door Upper Centerline (Y)

Date: 03/29/2016

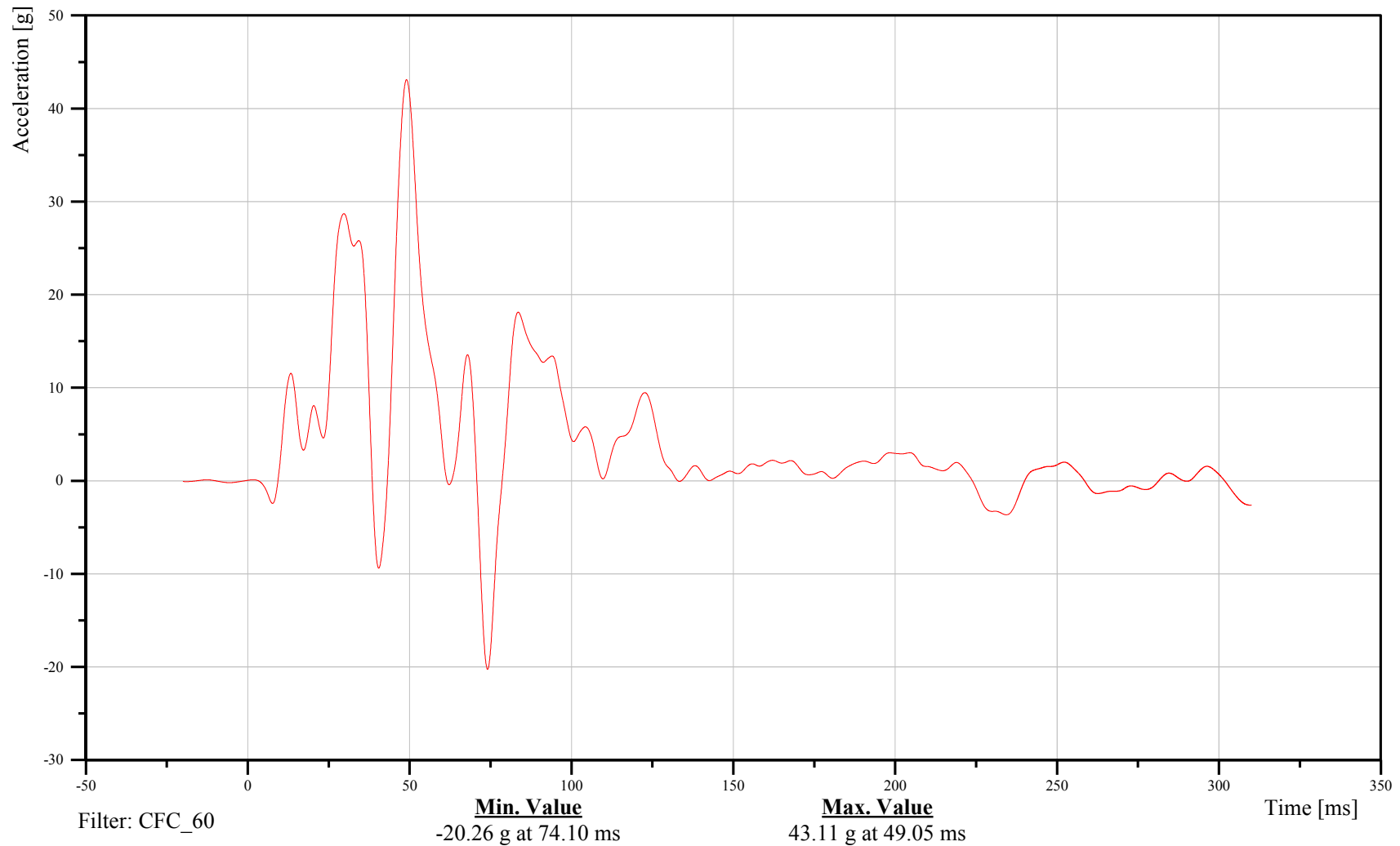
Time: 16:04

Customer: VRTC

14DOORMIUP71ACYD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Date: 03/29/2016

Time: 16:04

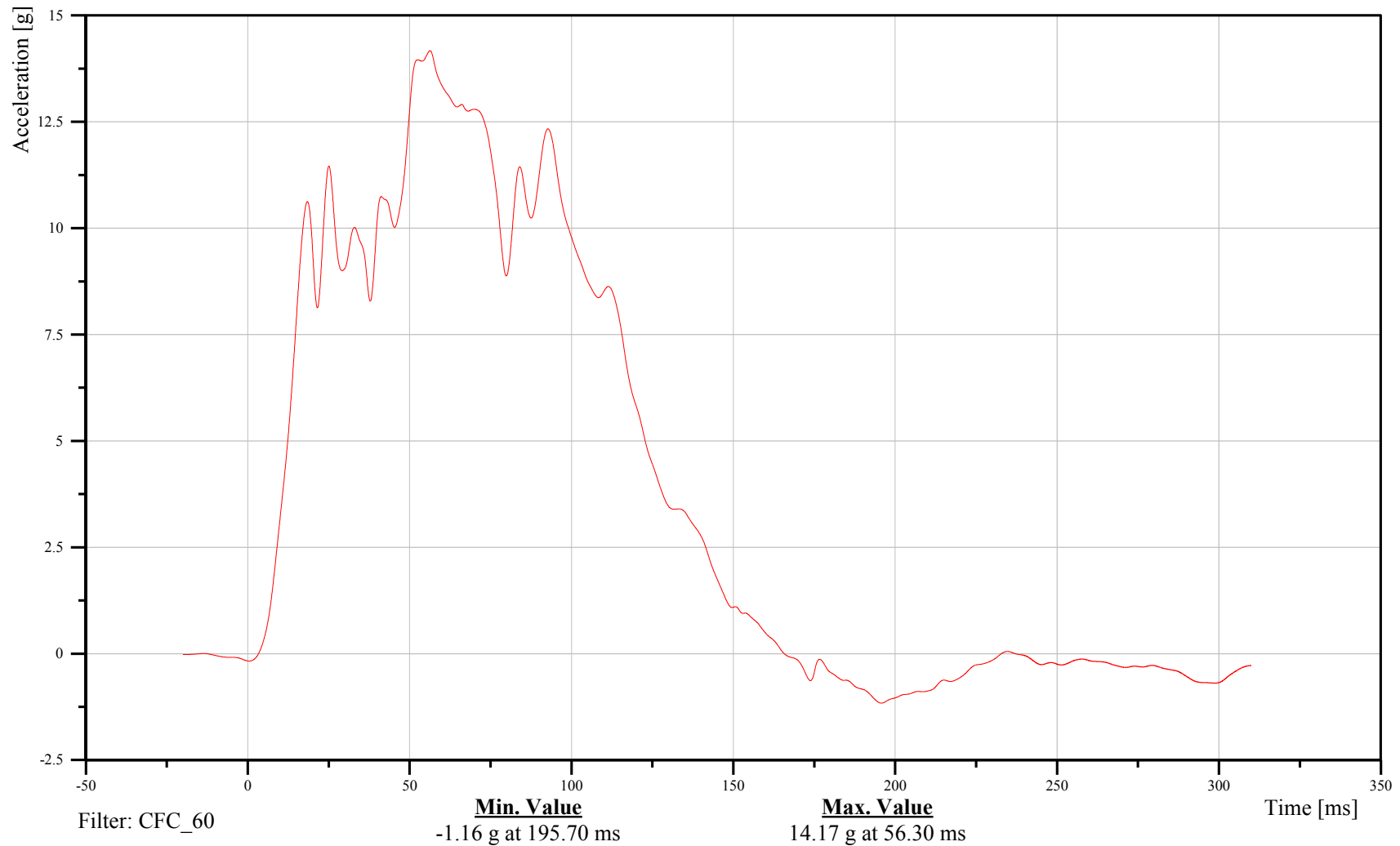
Rear Floorpan Behind Rear Axle at Centerline Acceleration Y-Axis Acceleration

Customer: VRTC

11FORA000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

DR Frontal Airbag Timing Ind

Date: 03/29/2016

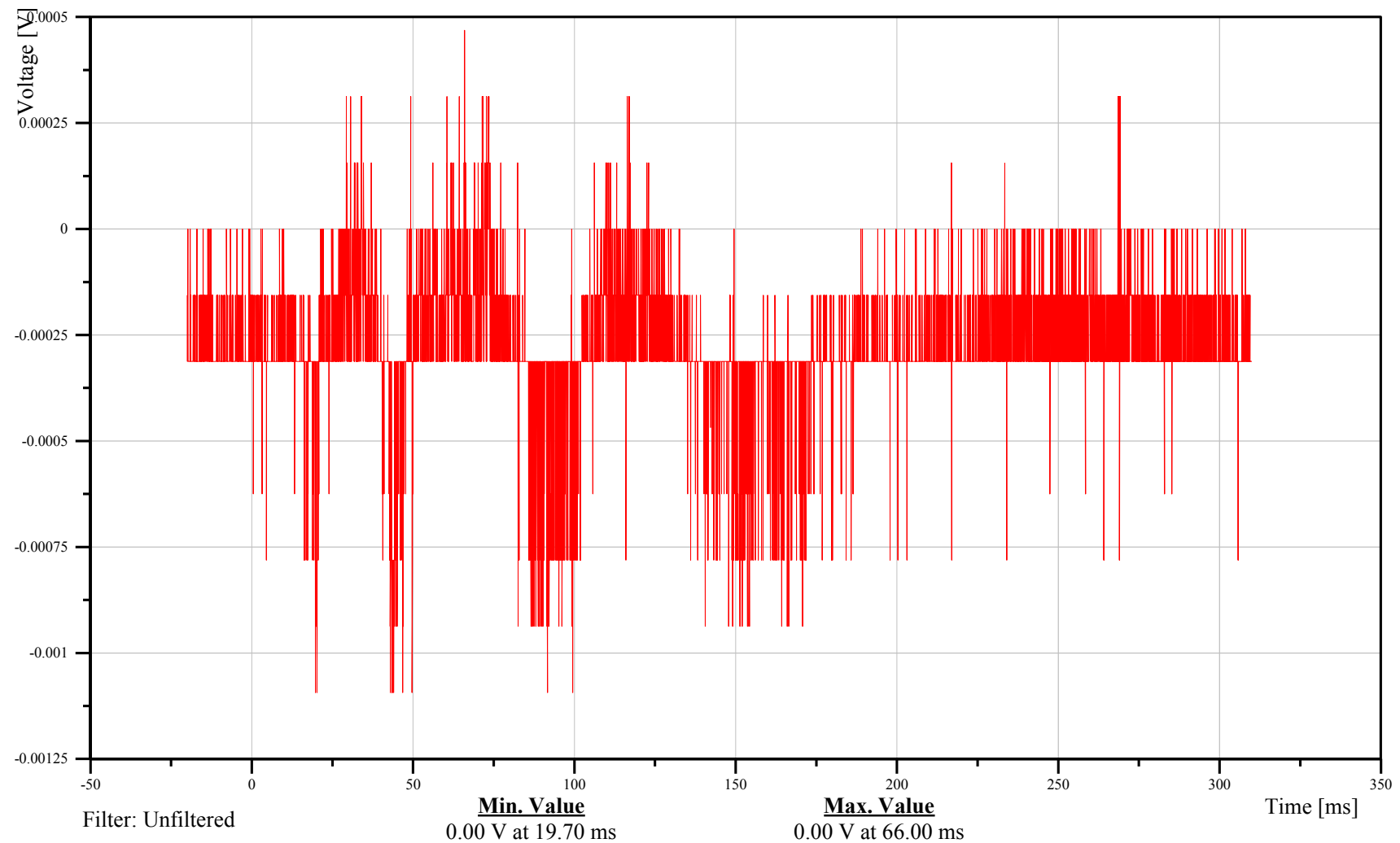
Time: 16:04

Customer: VRTC

11SENS030000VO00

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Driver SAB Timing Ind.

Date: 03/29/2016

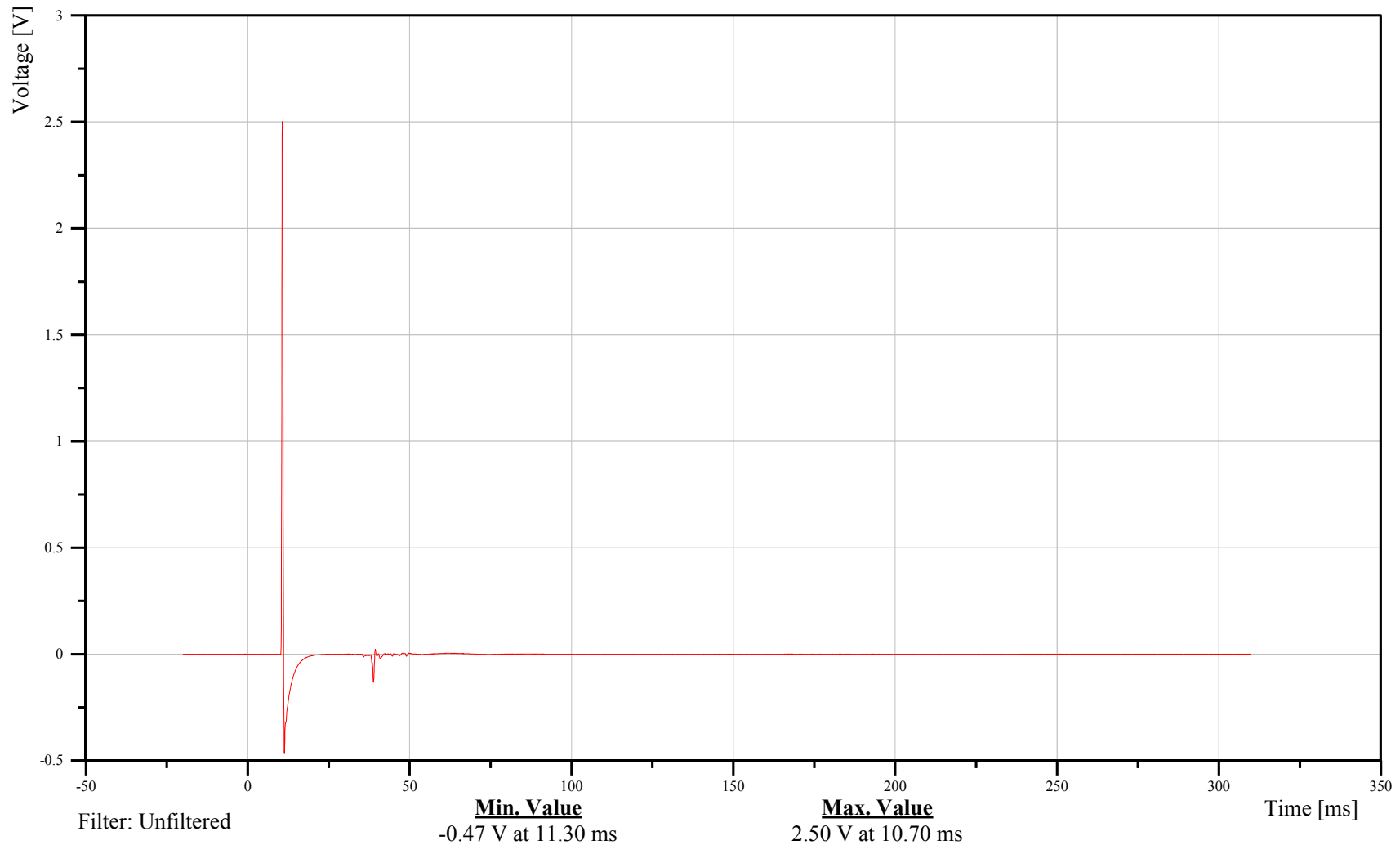
Time: 16:04

Customer: VRTC

11SENS010000VO00

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Driver SCAB Timing Ind.

Date: 03/29/2016

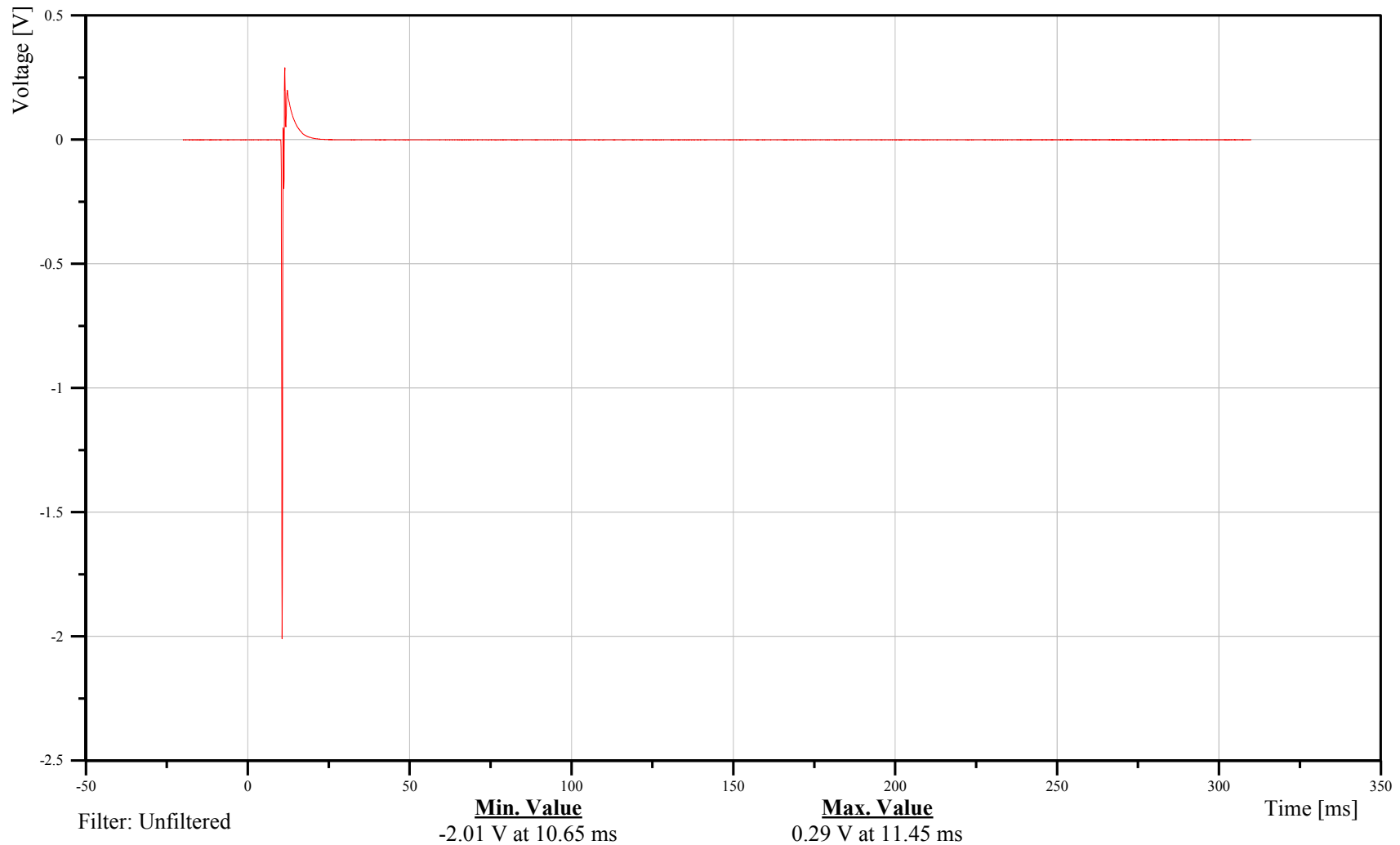
Time: 16:04

Customer: VRTC

11SENS020000VO00

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Head Contact

Date: 03/29/2016

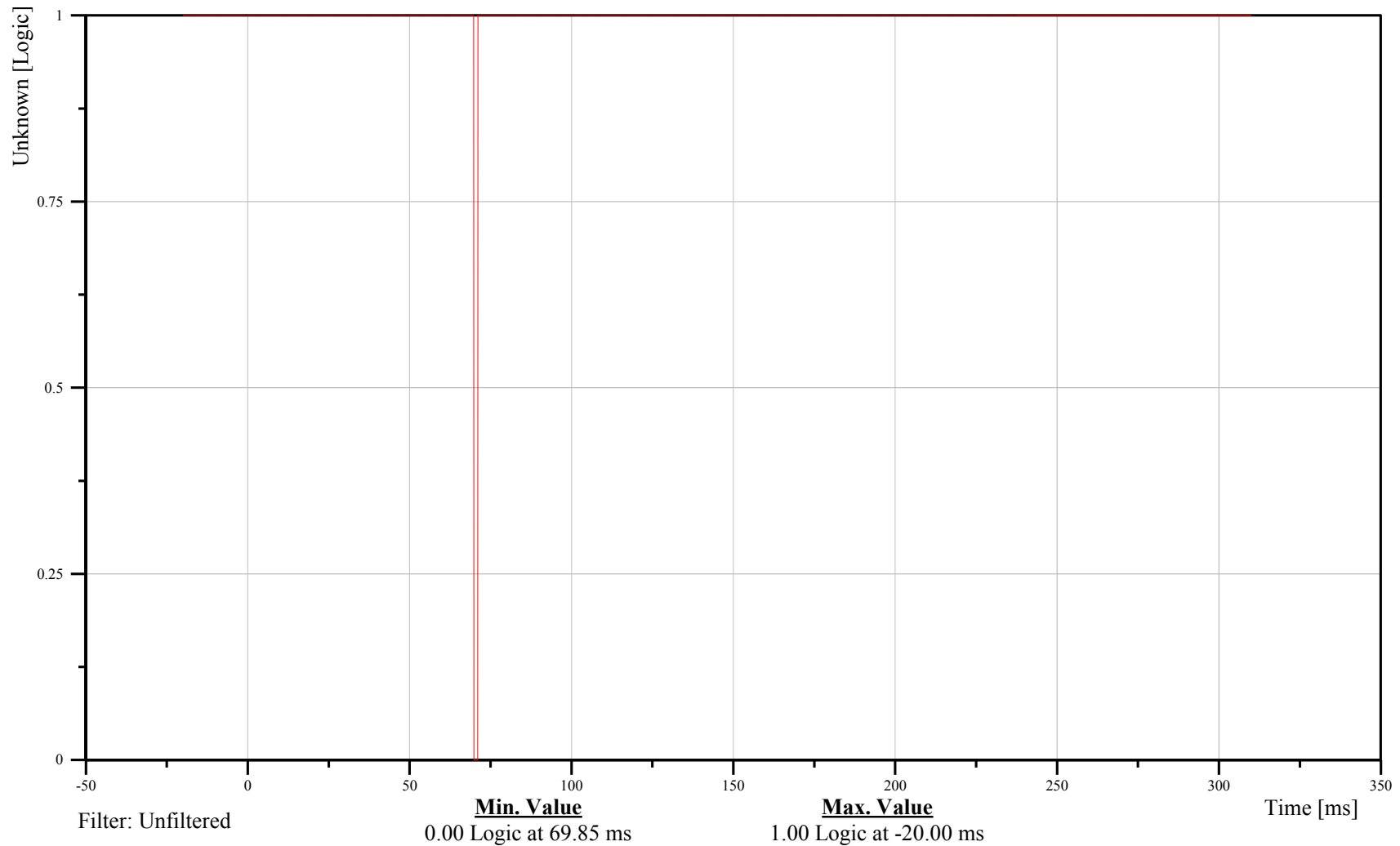
Time: 16:04

Customer: VRTC

11HEAD000000EV00

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Shoulder Contact

Date: 03/29/2016

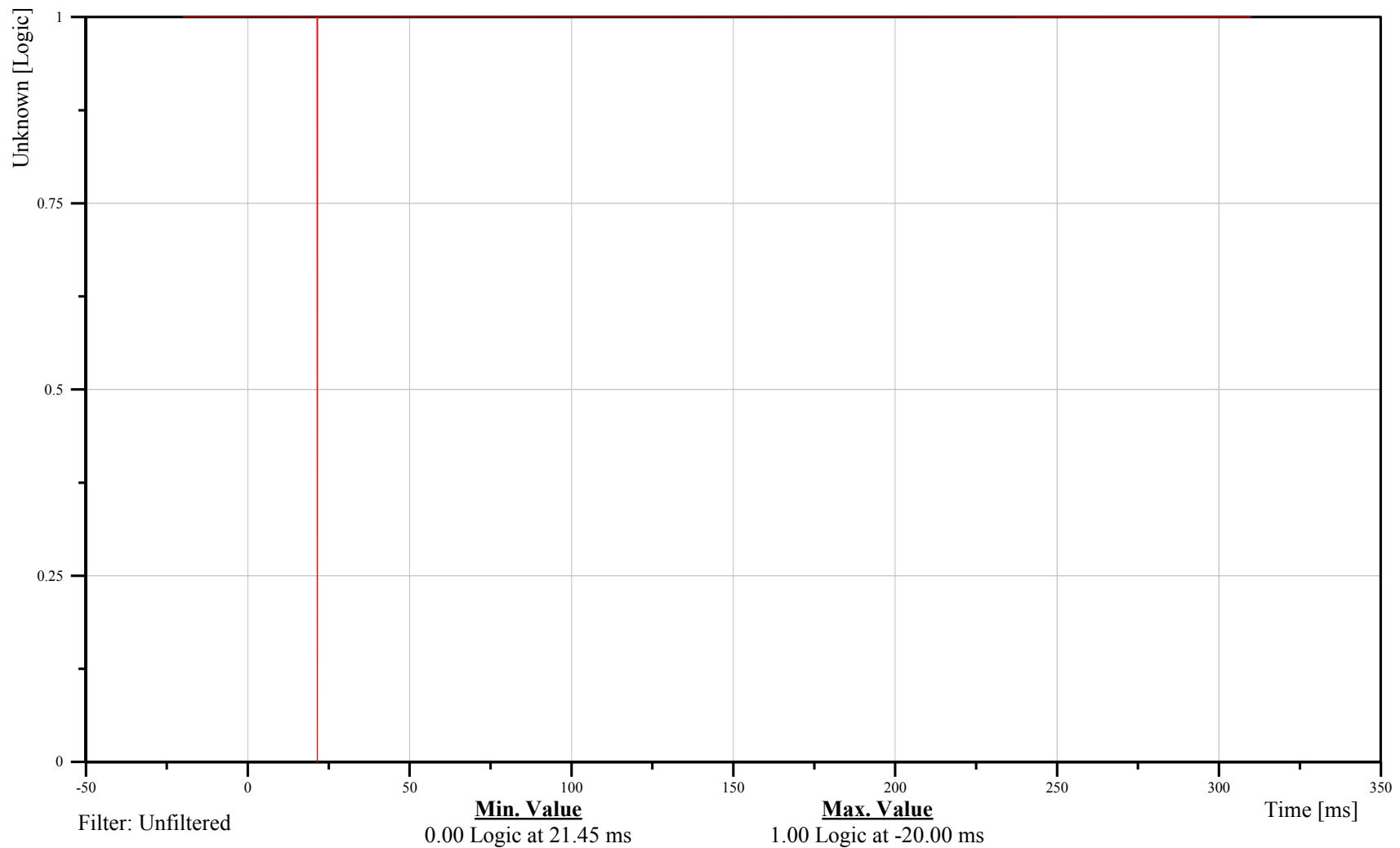
Time: 16:04

Customer: VRTC

11SHLD000000EV00

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Thorax Contact

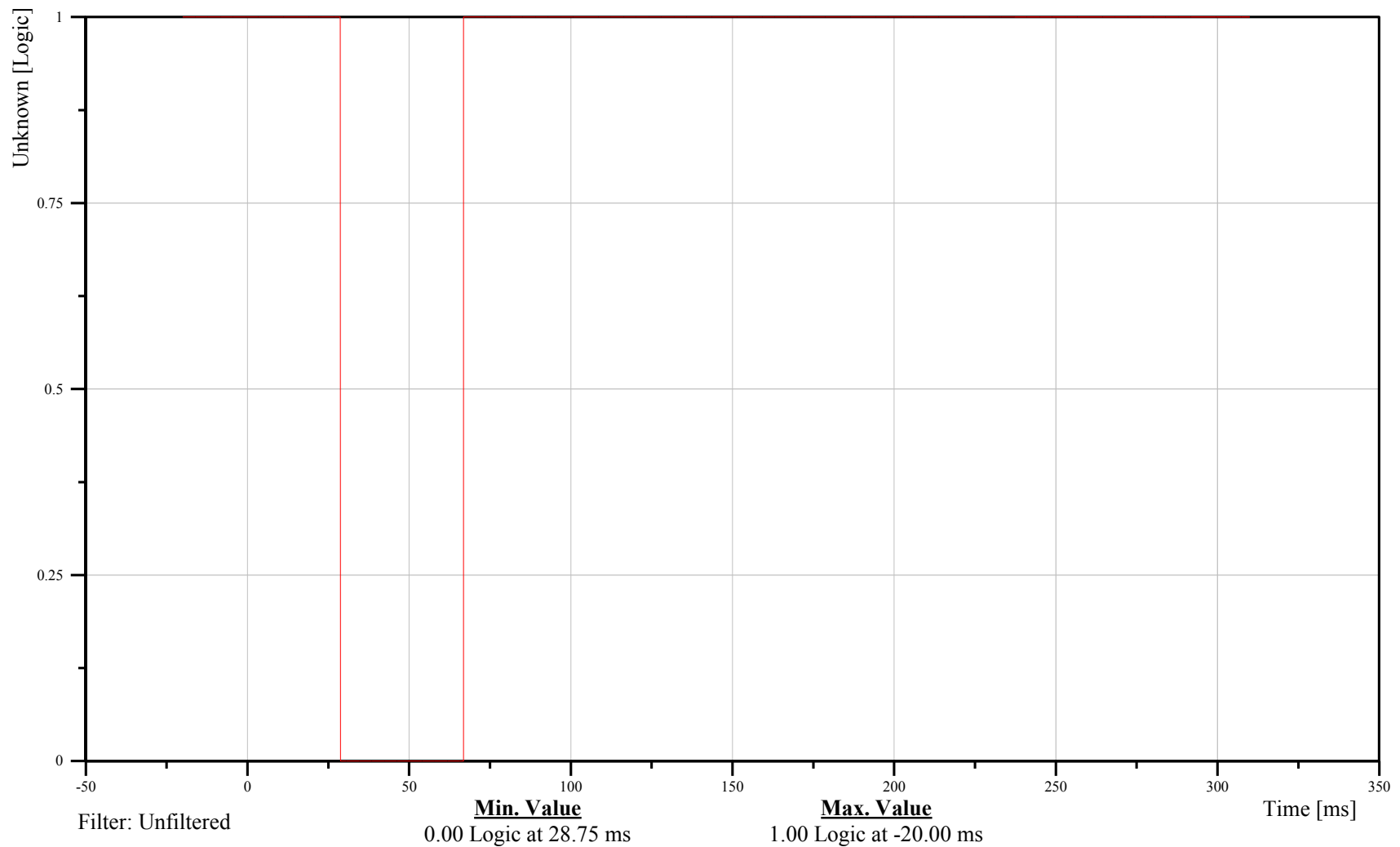
Date: 03/29/2016
Time: 16:04

Customer: VRTC

11TRRI000000EV00

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Pelvis Contact

Date: 03/29/2016

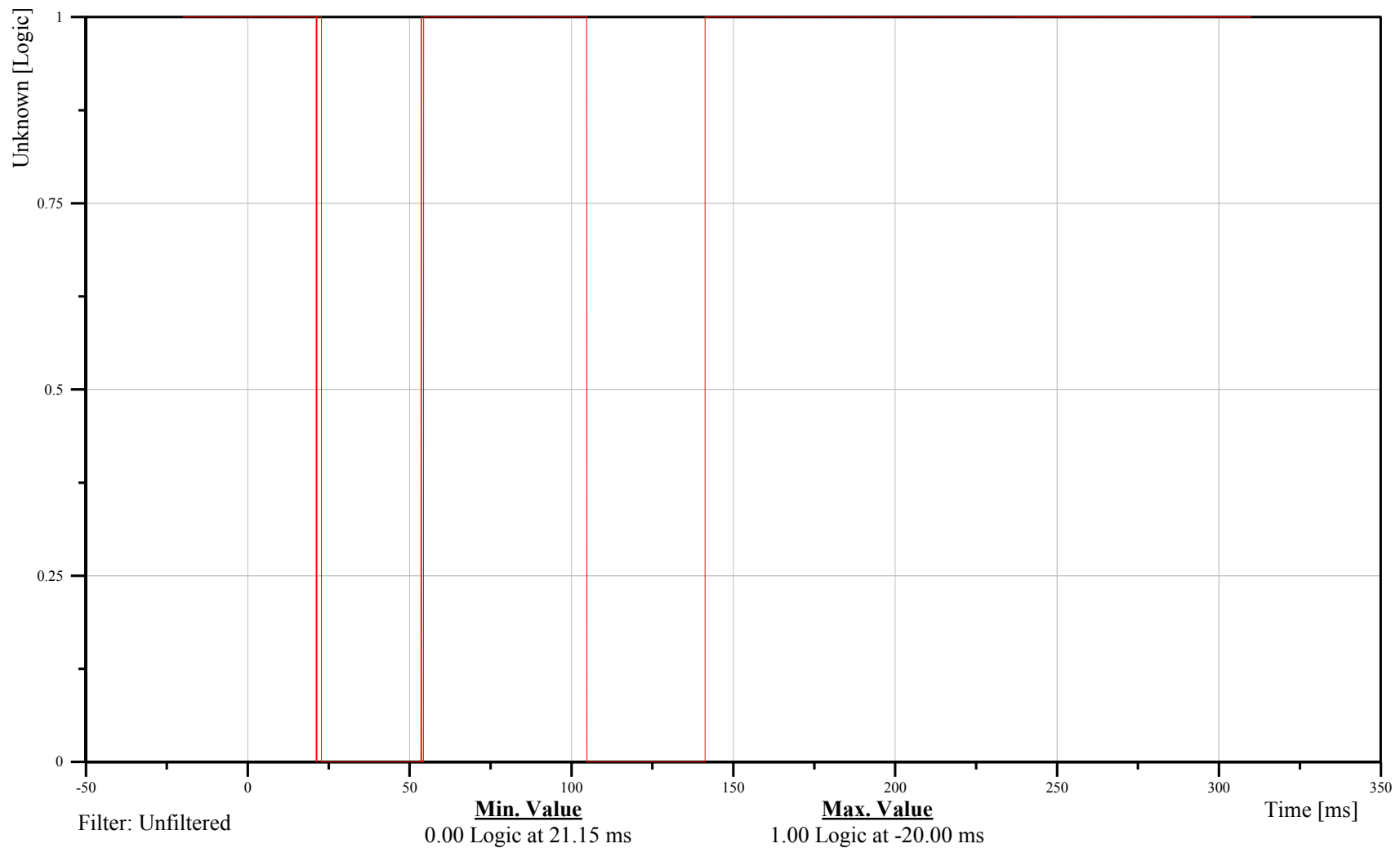
Time: 16:04

Customer: VRTC

11PELV000000EV00

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

POLE LOAD CELL 1

Date: 03/29/2016

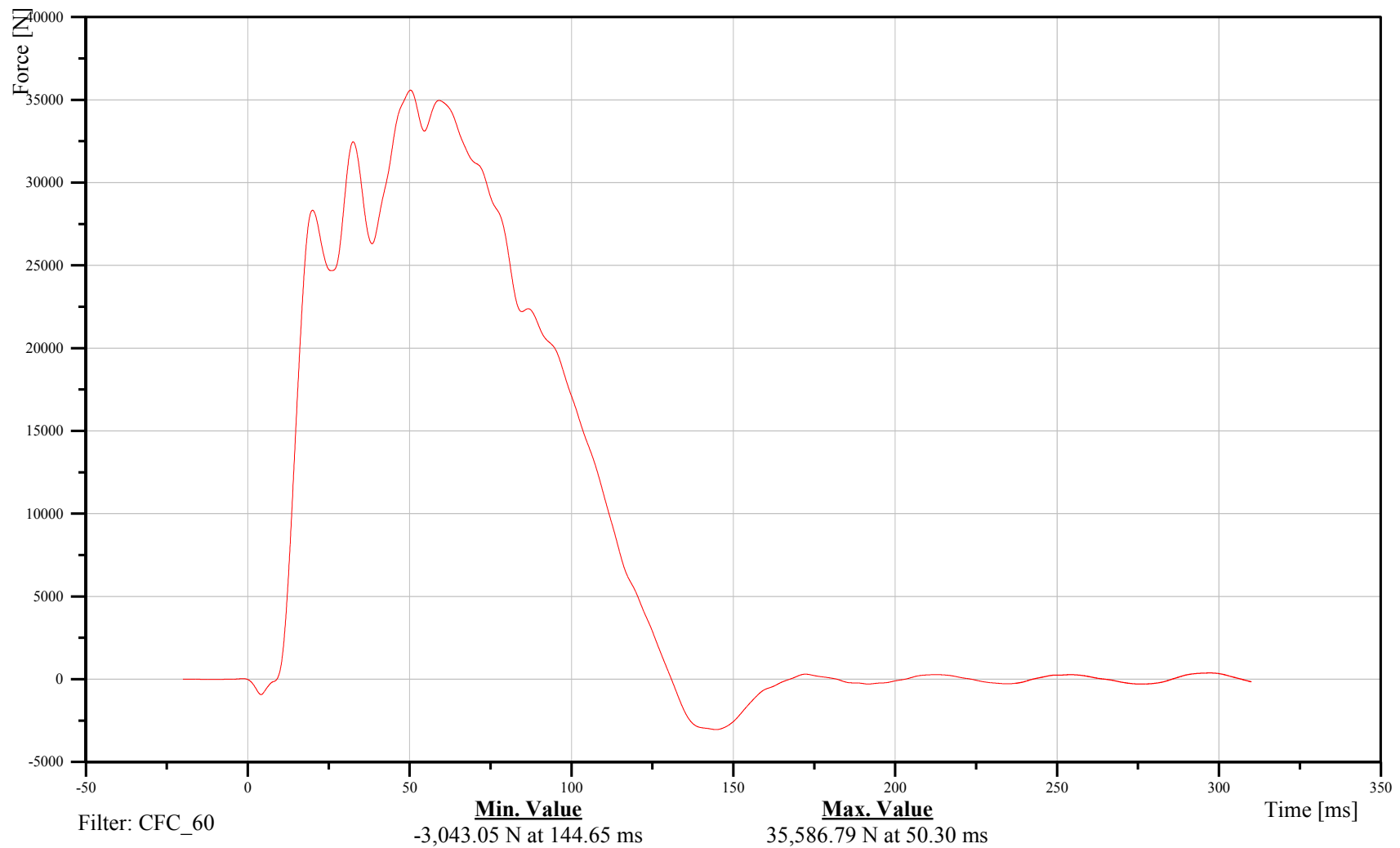
Time: 16:04

Customer: VRTC

K0FBAR010000FOXD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

POLE LOAD CELL 2

Date: 03/29/2016

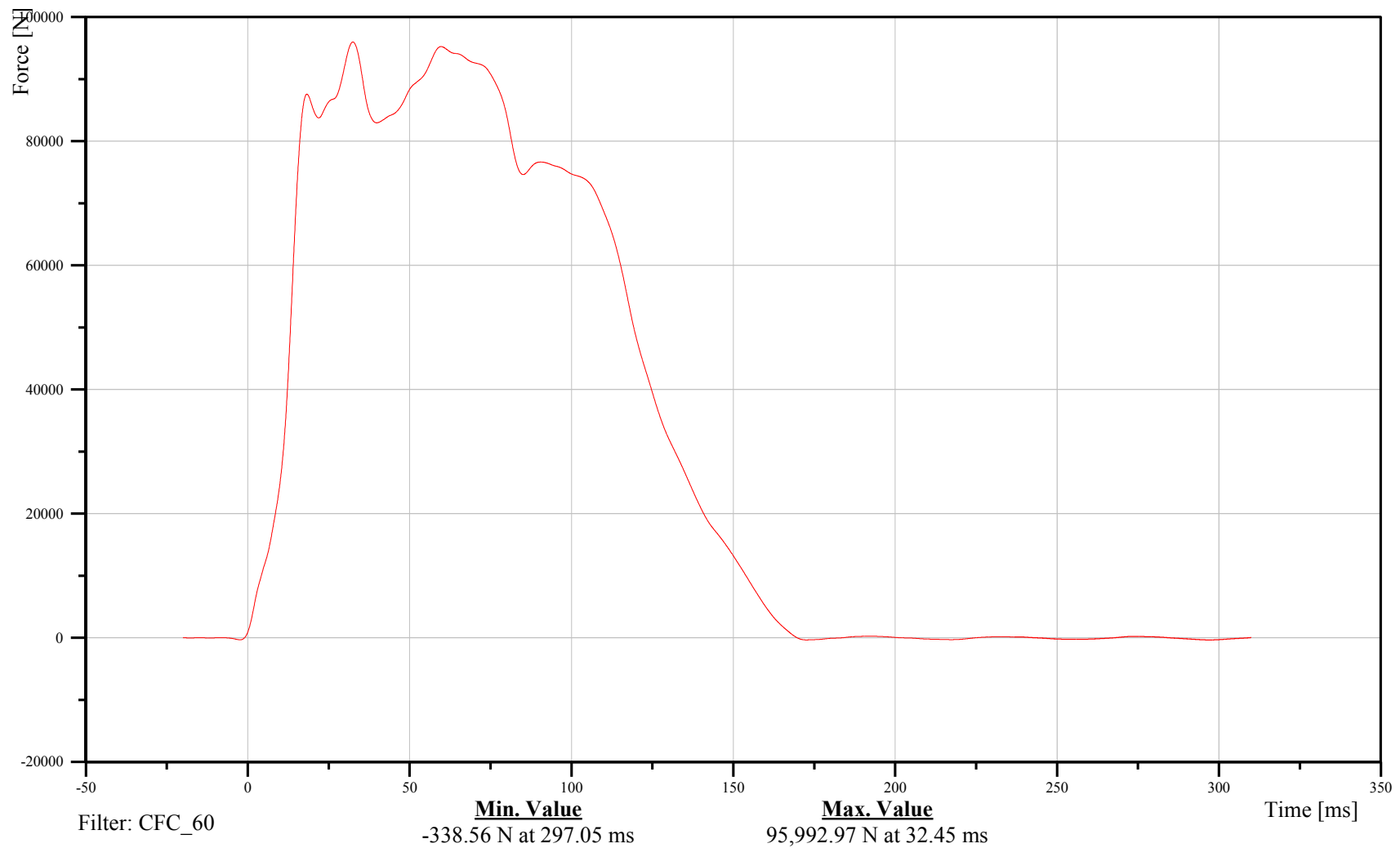
Time: 16:04

Customer: VRTC

K0FBAR020000FOXD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

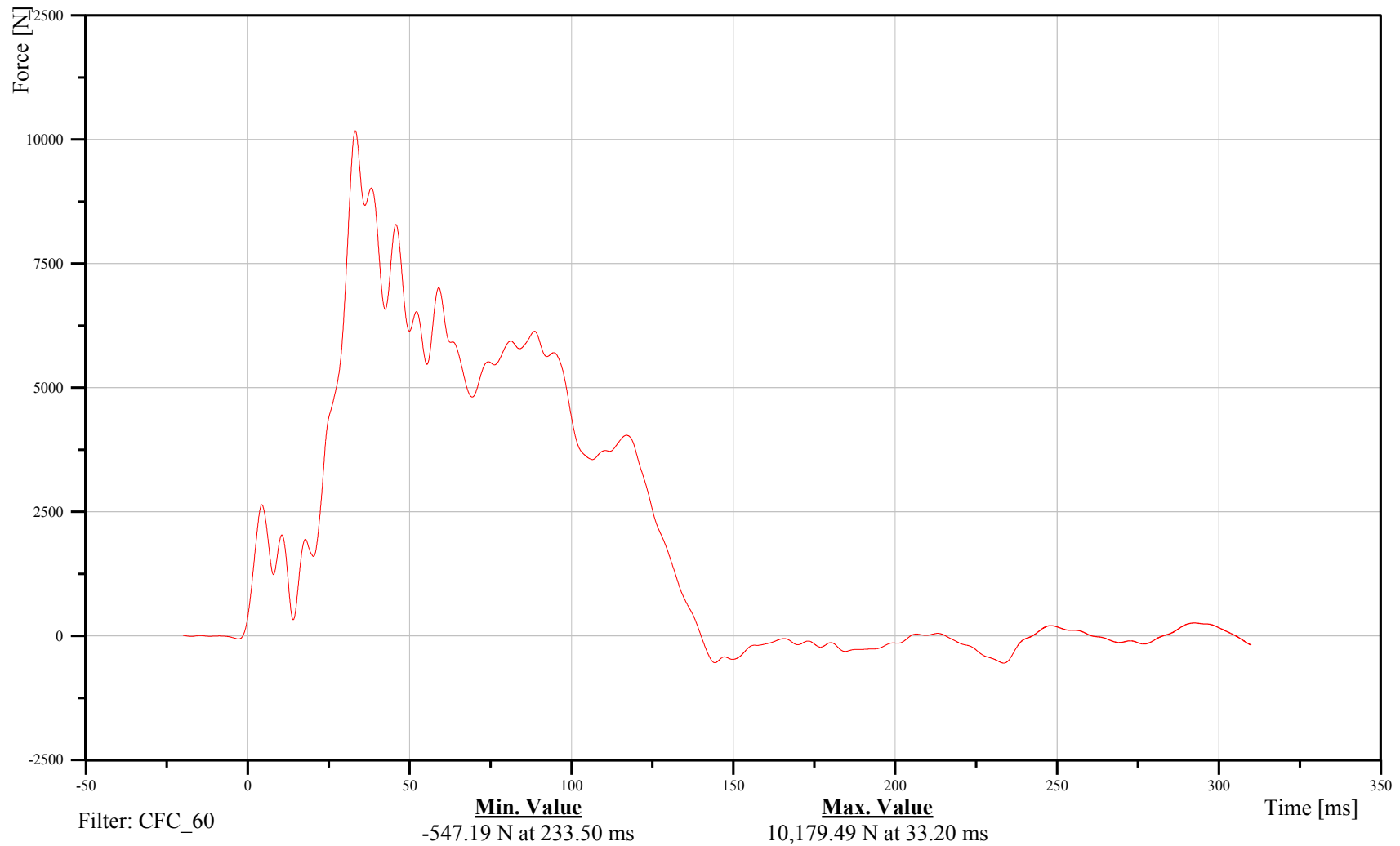
POLE LOAD CELL 3

Date: 03/29/2016
Time: 16:04

Customer: VRTC

K0FBAR030000FOXD

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

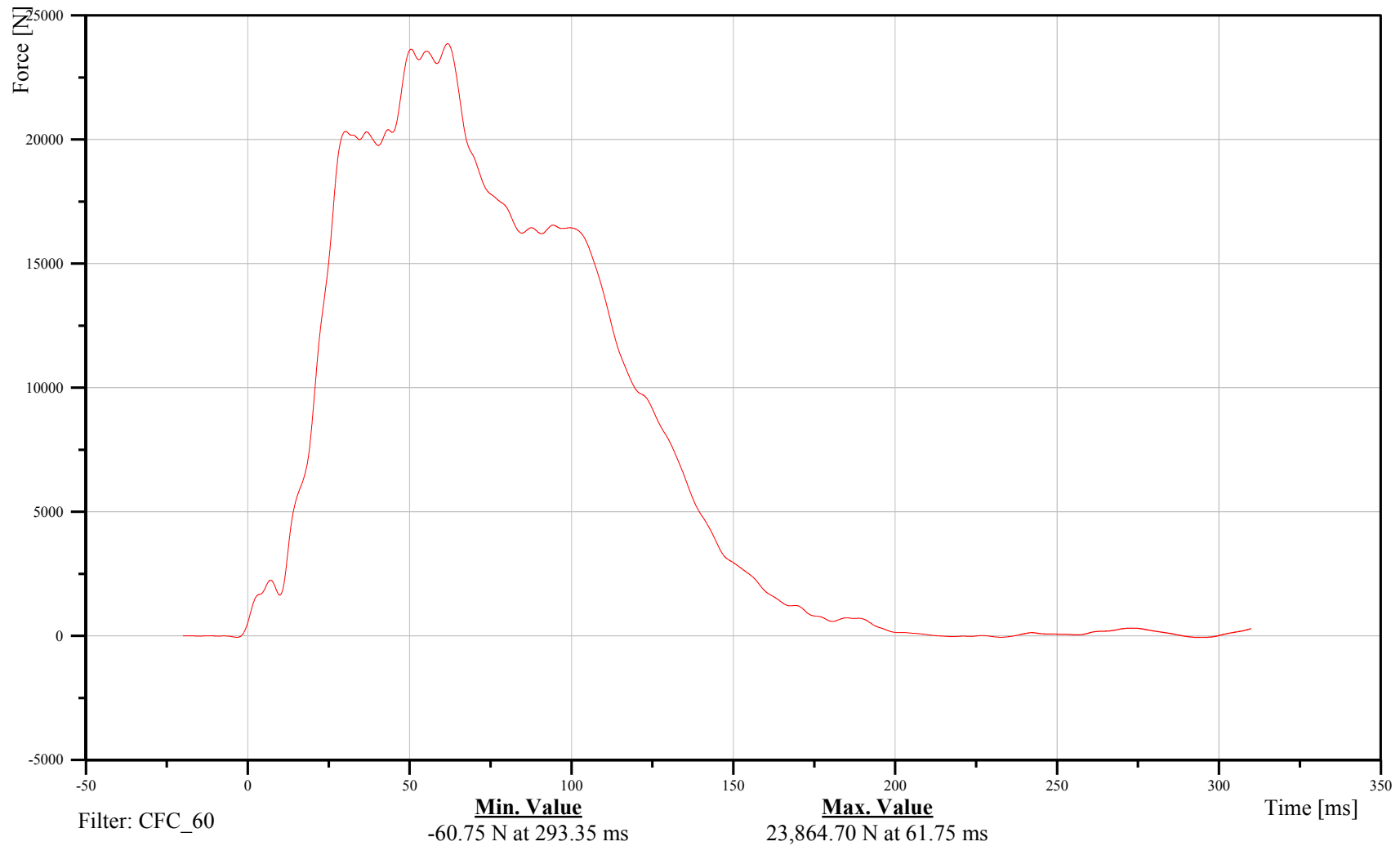
POLE LOAD CELL 4

Date: 03/29/2016
Time: 16:04

Customer: VRTC

K0FBAR040000FOXD

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

POLE LOAD CELL 5

Date: 03/29/2016

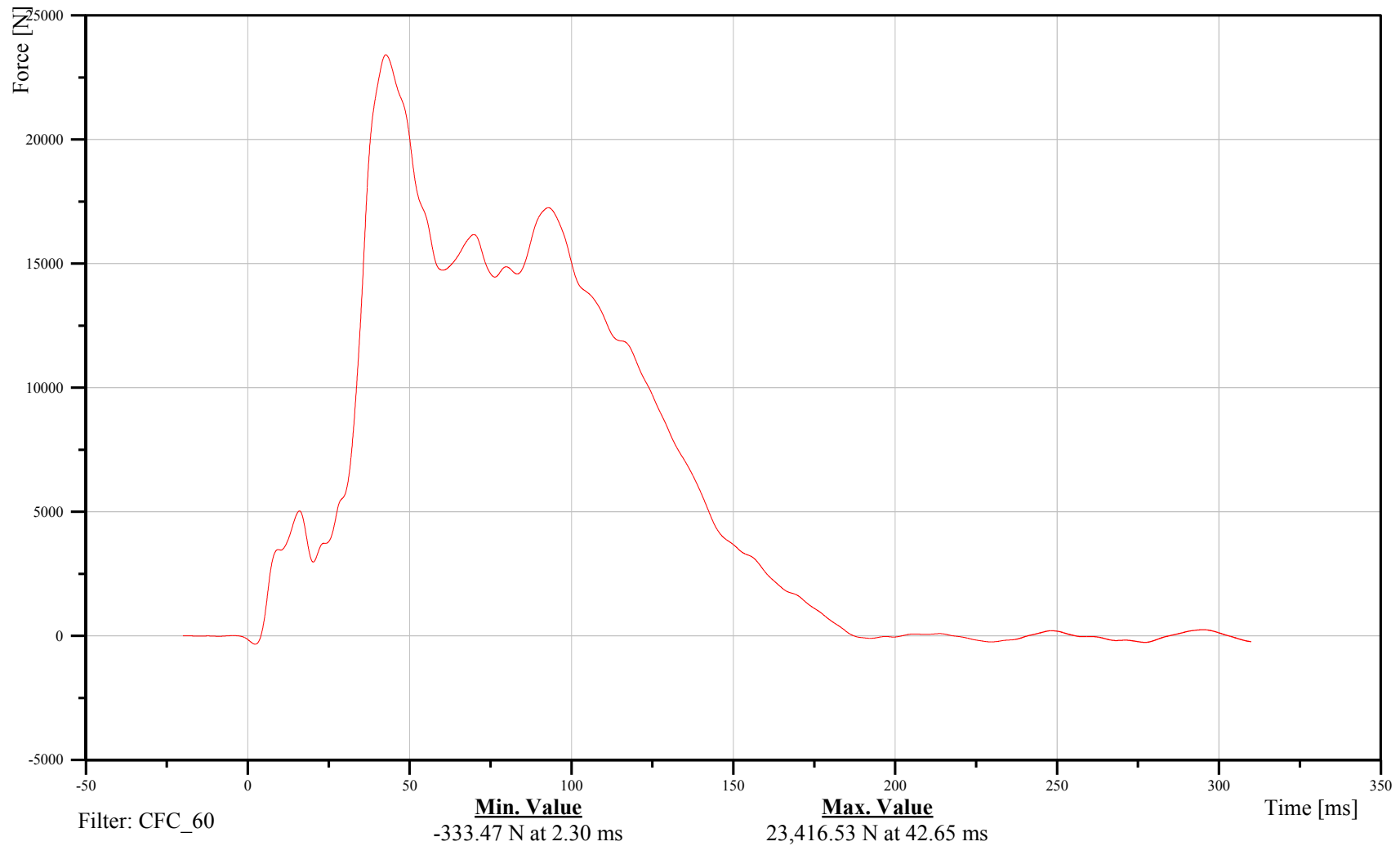
Time: 16:04

Customer: VRTC

K0FBAR050000FOXD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

POLE LOAD CELL 6

Date: 03/29/2016

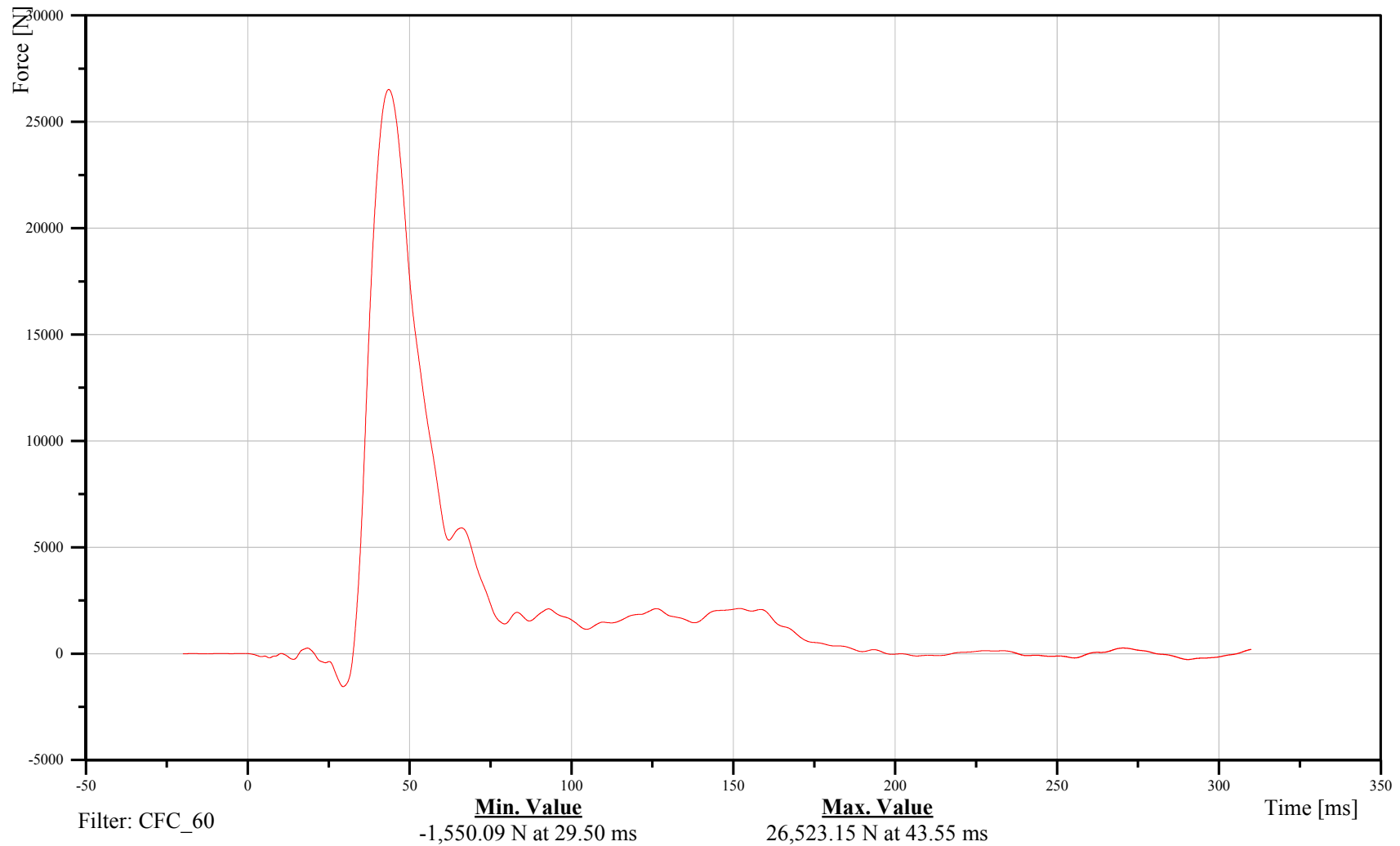
Time: 16:04

Customer: VRTC

K0FBAR060000FOXD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

POLE LOAD CELL 7

Date: 03/29/2016

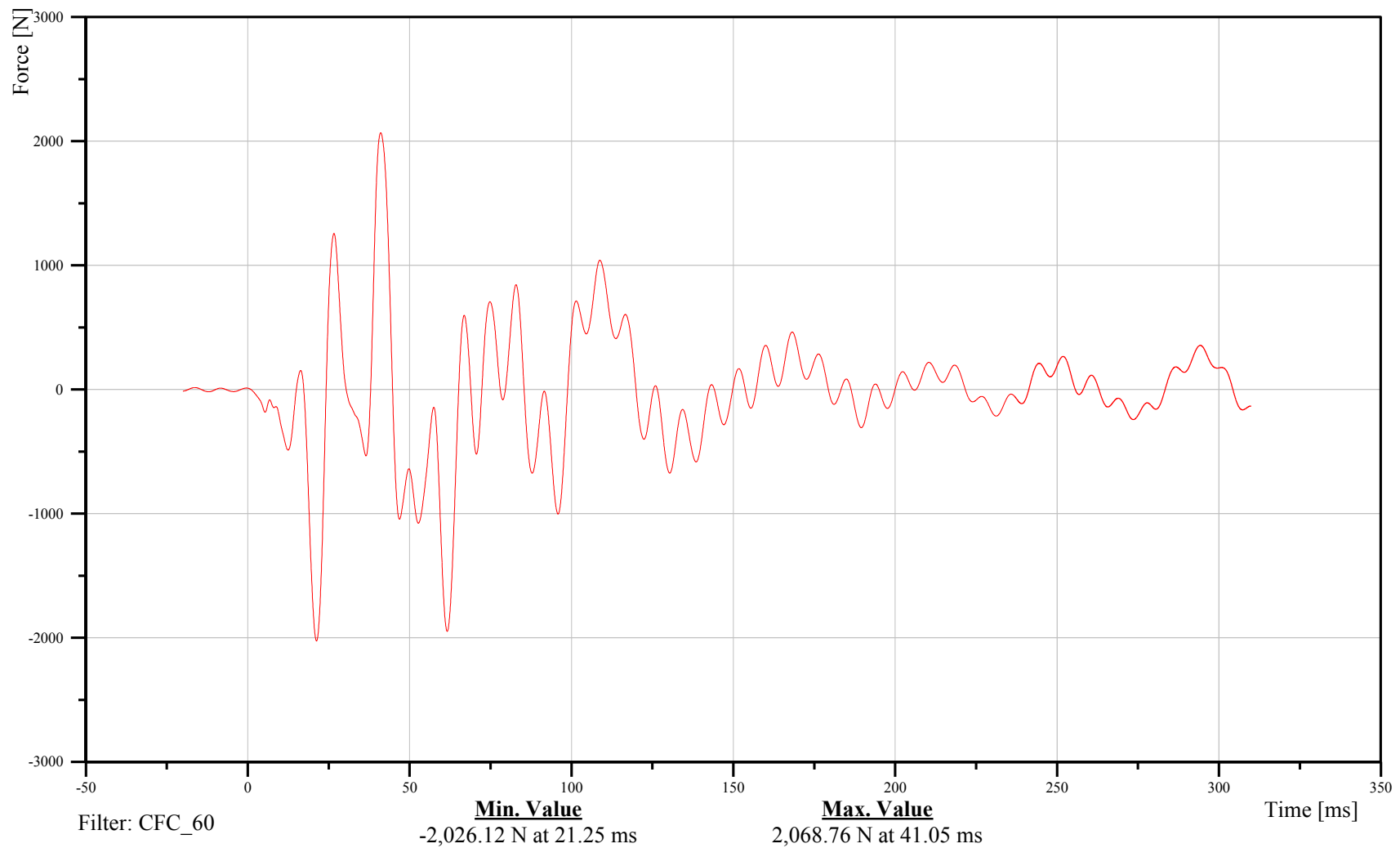
Time: 16:04

Customer: VRTC

K0FBAR070000FOXD

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

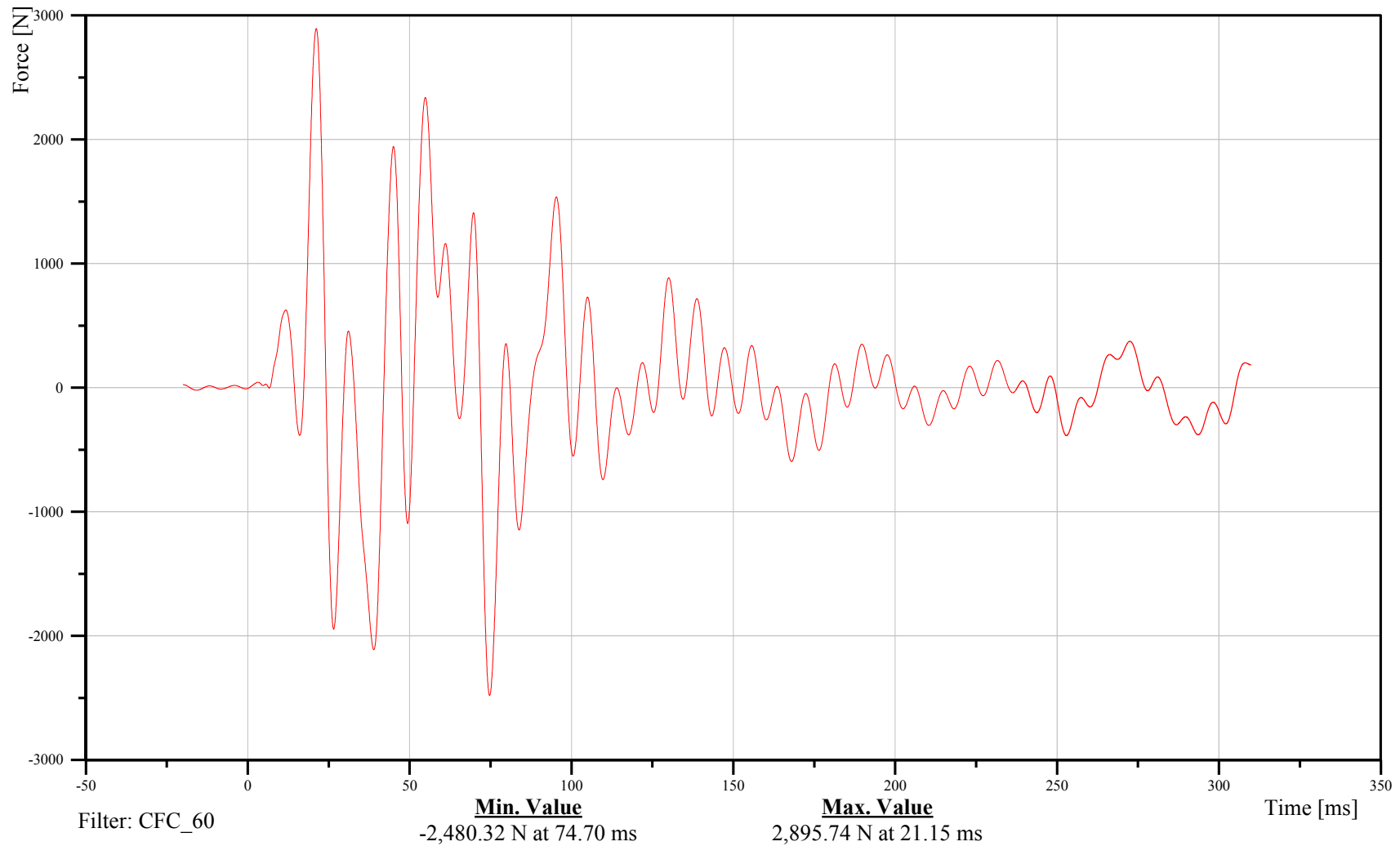
POLE LOAD CELL 8

Date: 03/29/2016
Time: 16:04

Customer: VRTC

K0FBAR080000FOXD

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

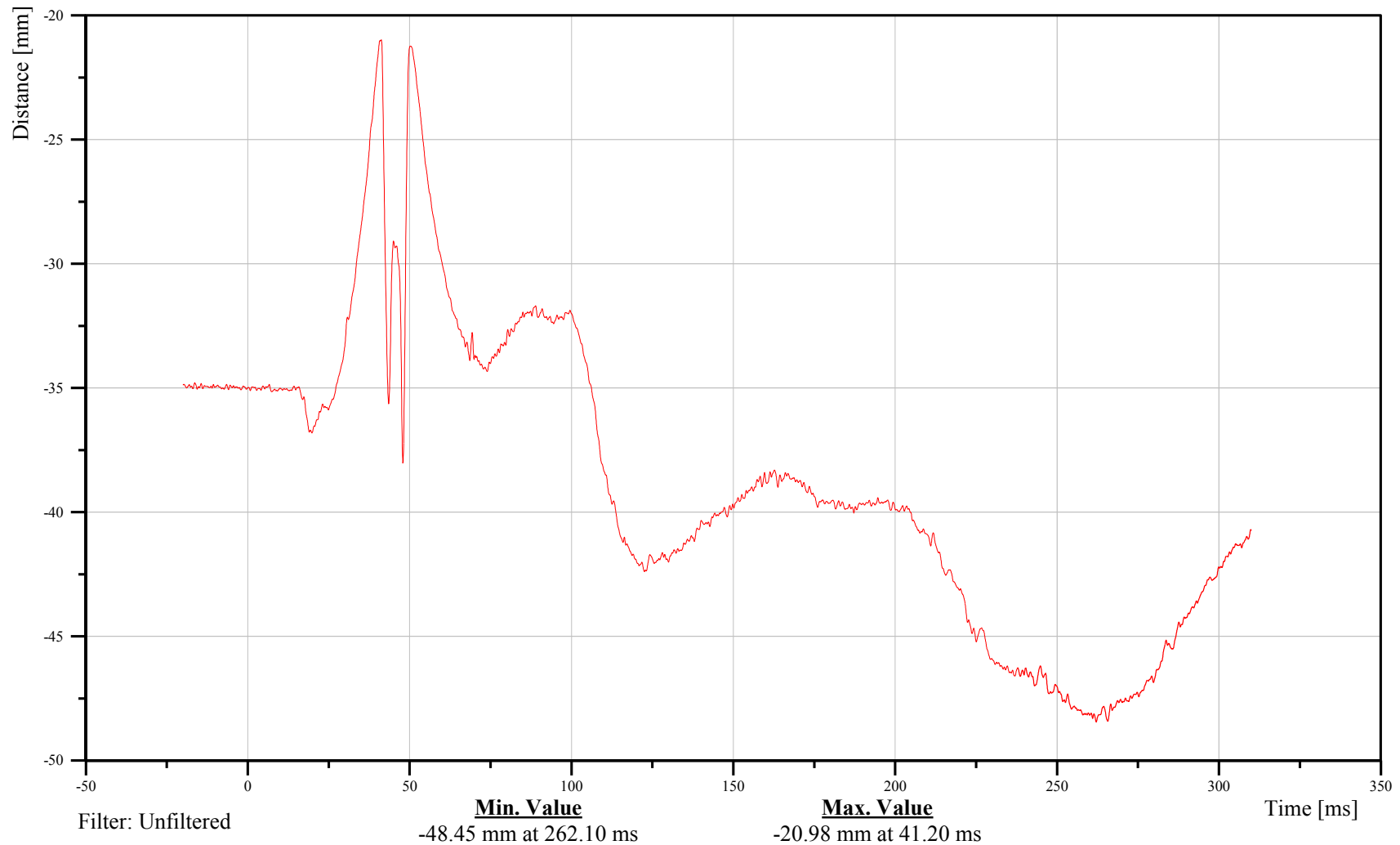
Shoulder Rear Ribeye X-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11SHRI00REWSDSX0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

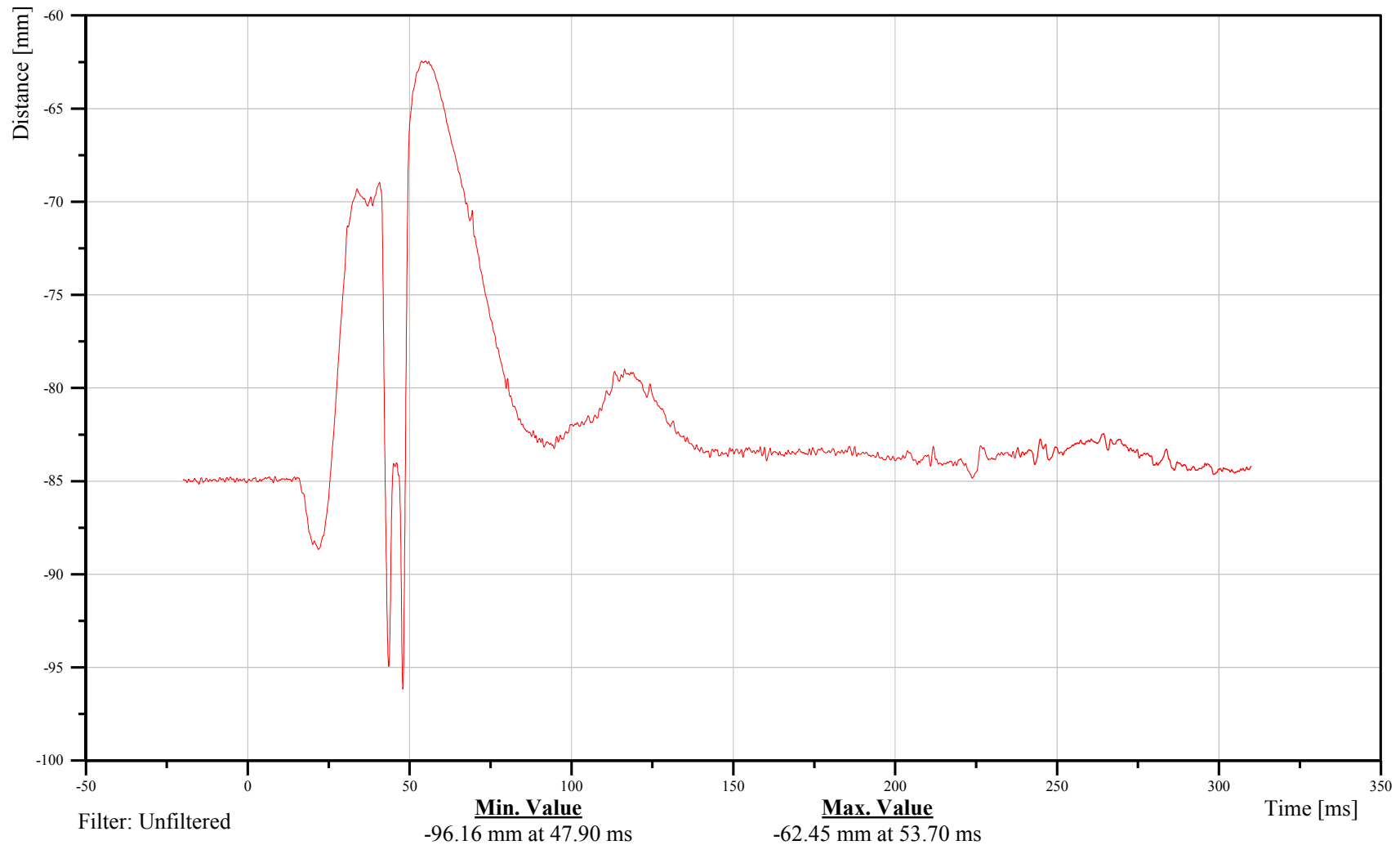
Shoulder Rear Ribeye Y-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11SHRI00REWSDSY0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

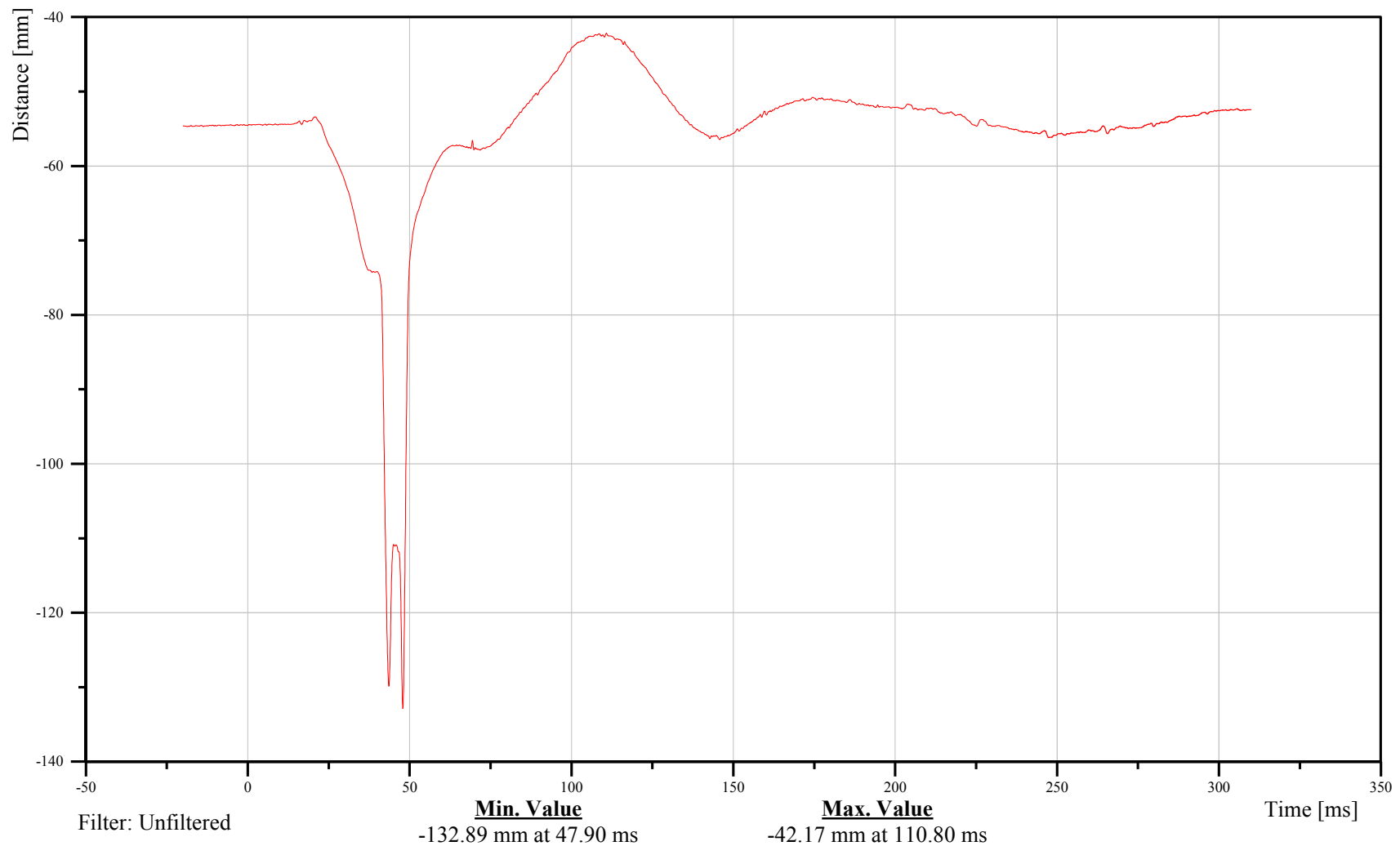
Shoulder Rear Ribeye Z-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11SHRI00REWSDSZ0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

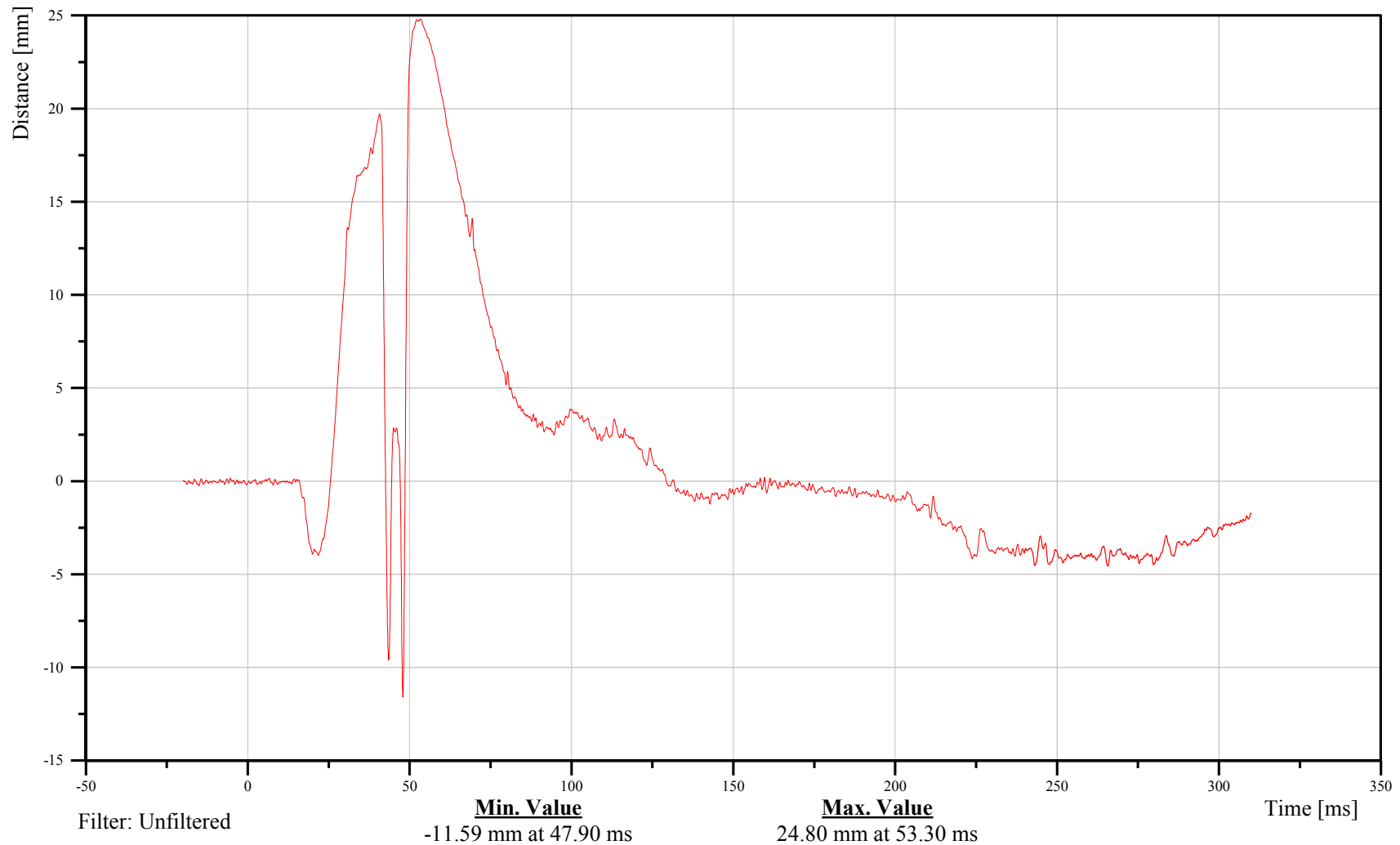
Shoulder Rear Ribeye Length Change

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11SHRI00REWSDS00

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

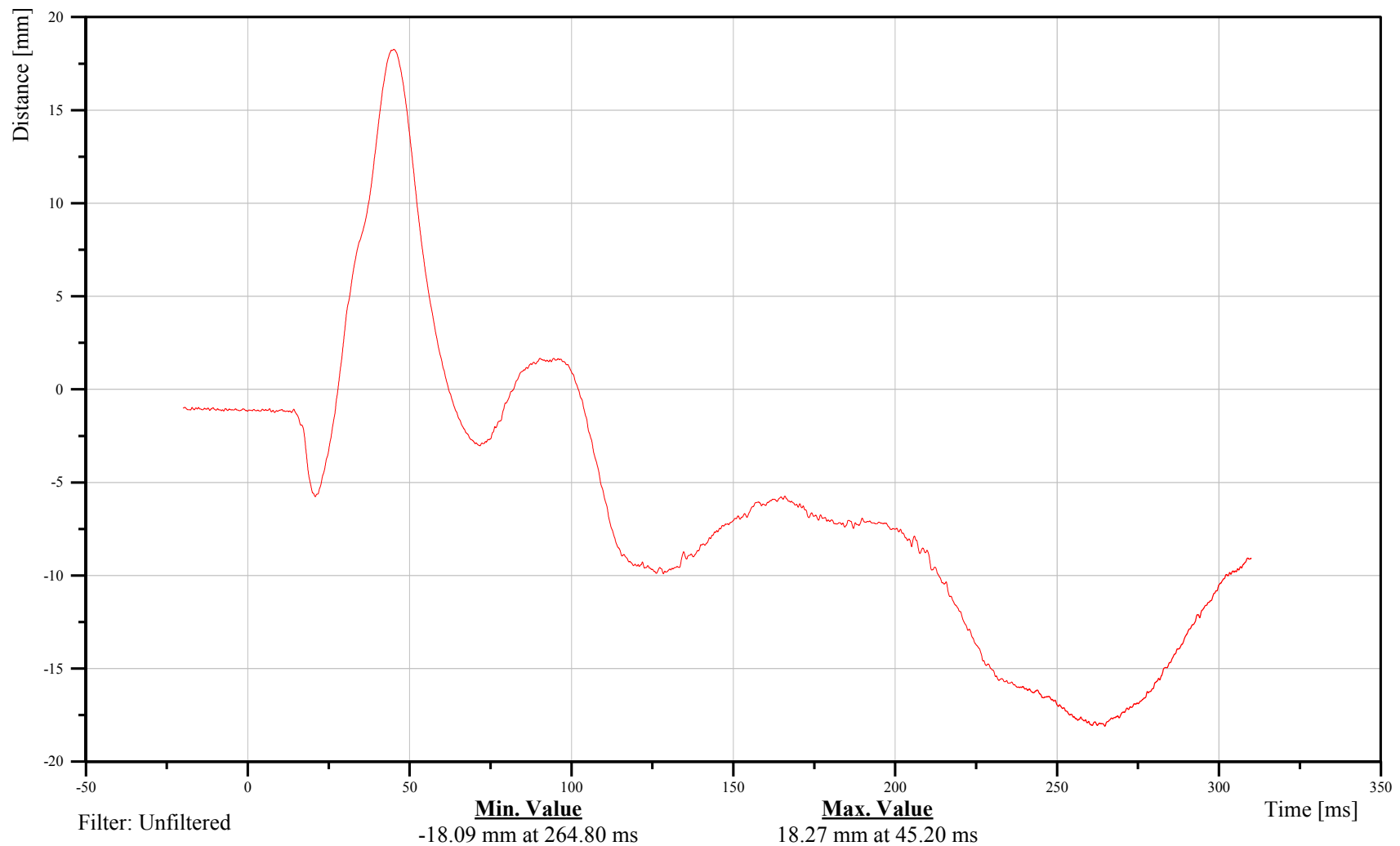
Shoulder Middle Ribeye X-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11SHRI00MIWSDSX0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

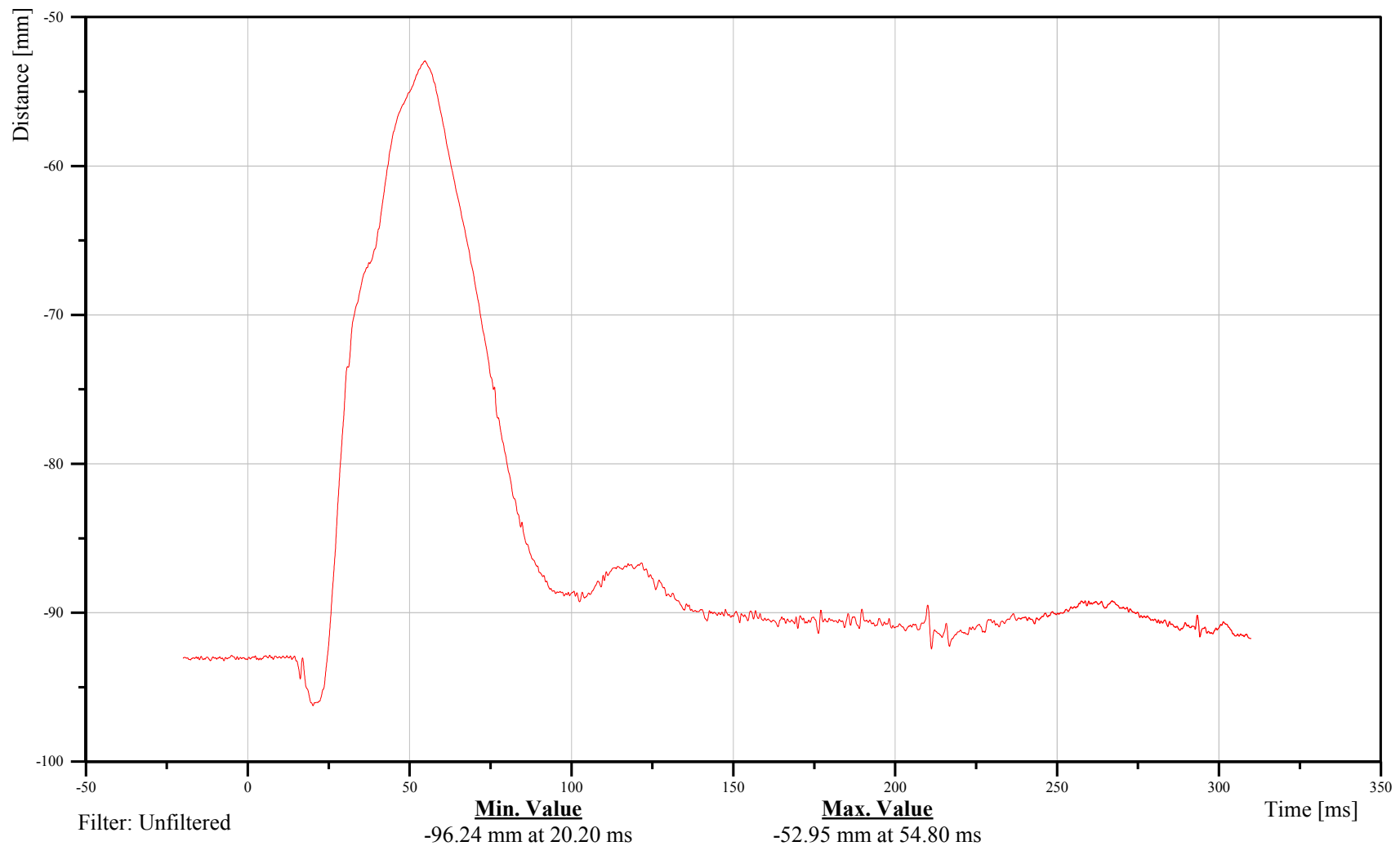
Shoulder Middle Ribeye Y-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11SHRI00MIWSDSY0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

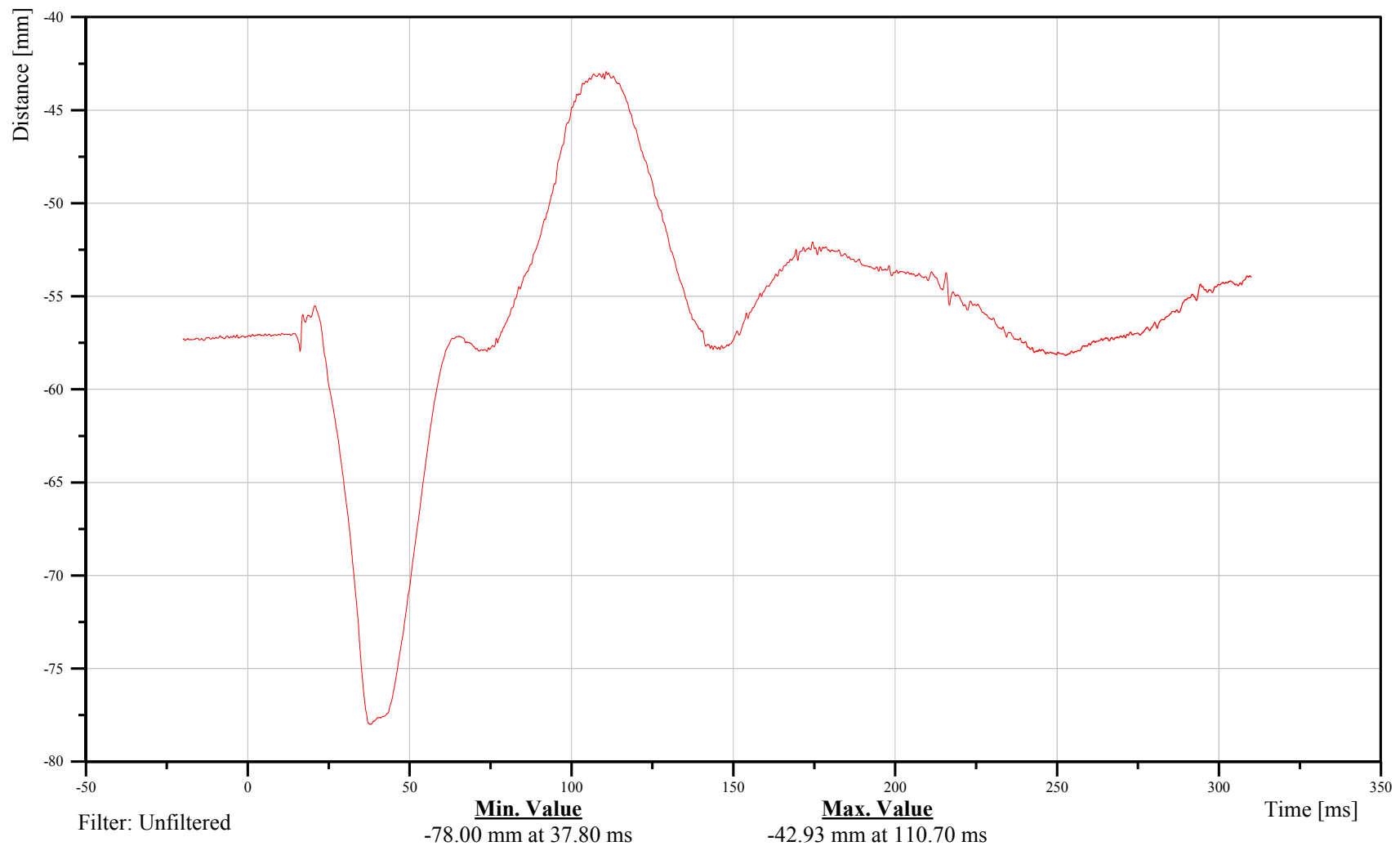
Shoulder Middle Ribeye Z-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11SHRI00MIWSDSZ0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Shoulder Middle Ribeye Length Change

Date: 03/29/2016

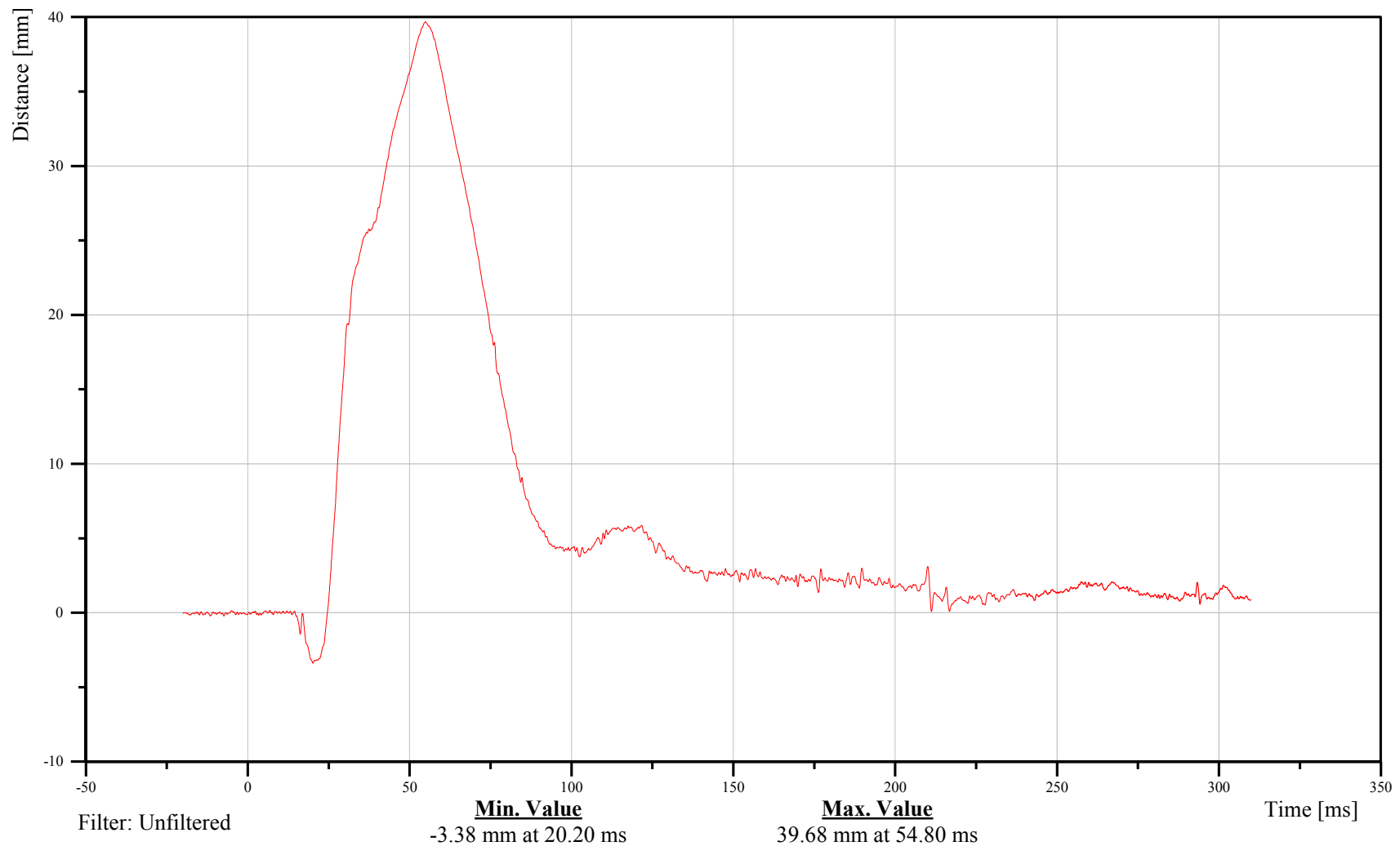
Time: 16:04

Customer: VRTC

11SHRI00MIWSDS00

TRC Inc. Test Lab: CTF

Test Number: 160329





2016 Nissan Rogue Side Pole Impact

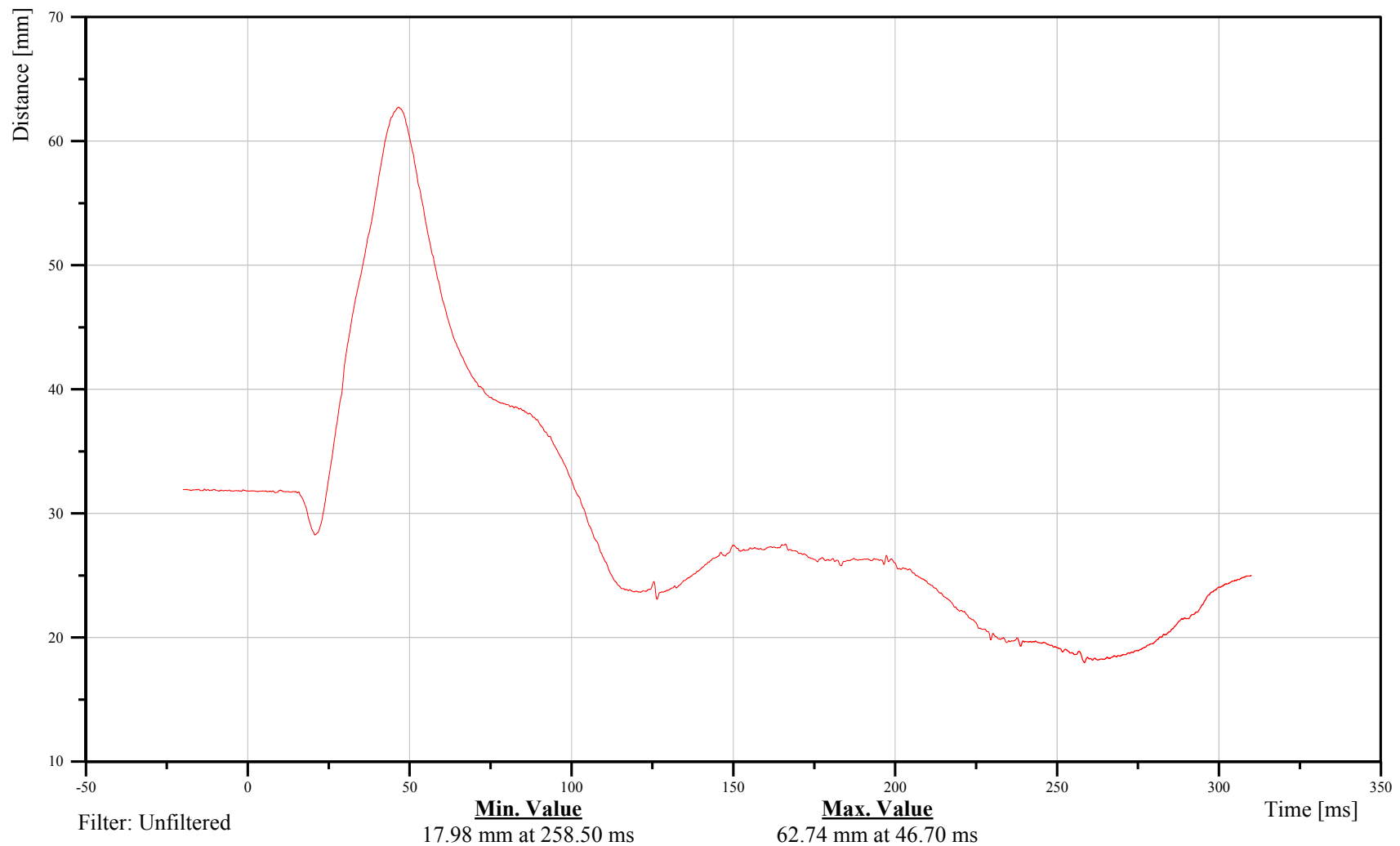
Shoulder Front Ribeye X-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11SHRI00FRWSDSX0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

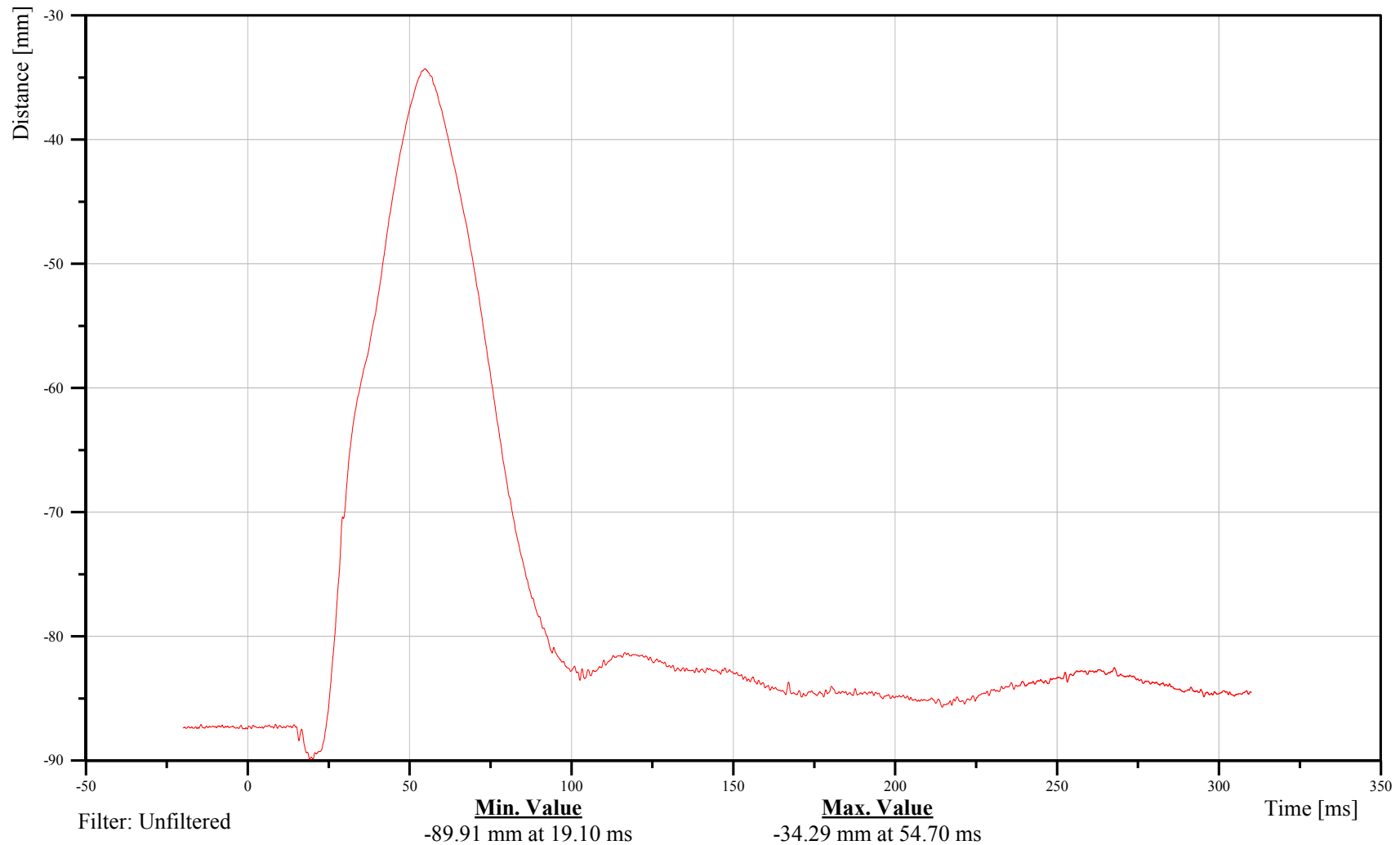
Shoulder Front Ribeye Y-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11SHRI00FRWSDSY0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

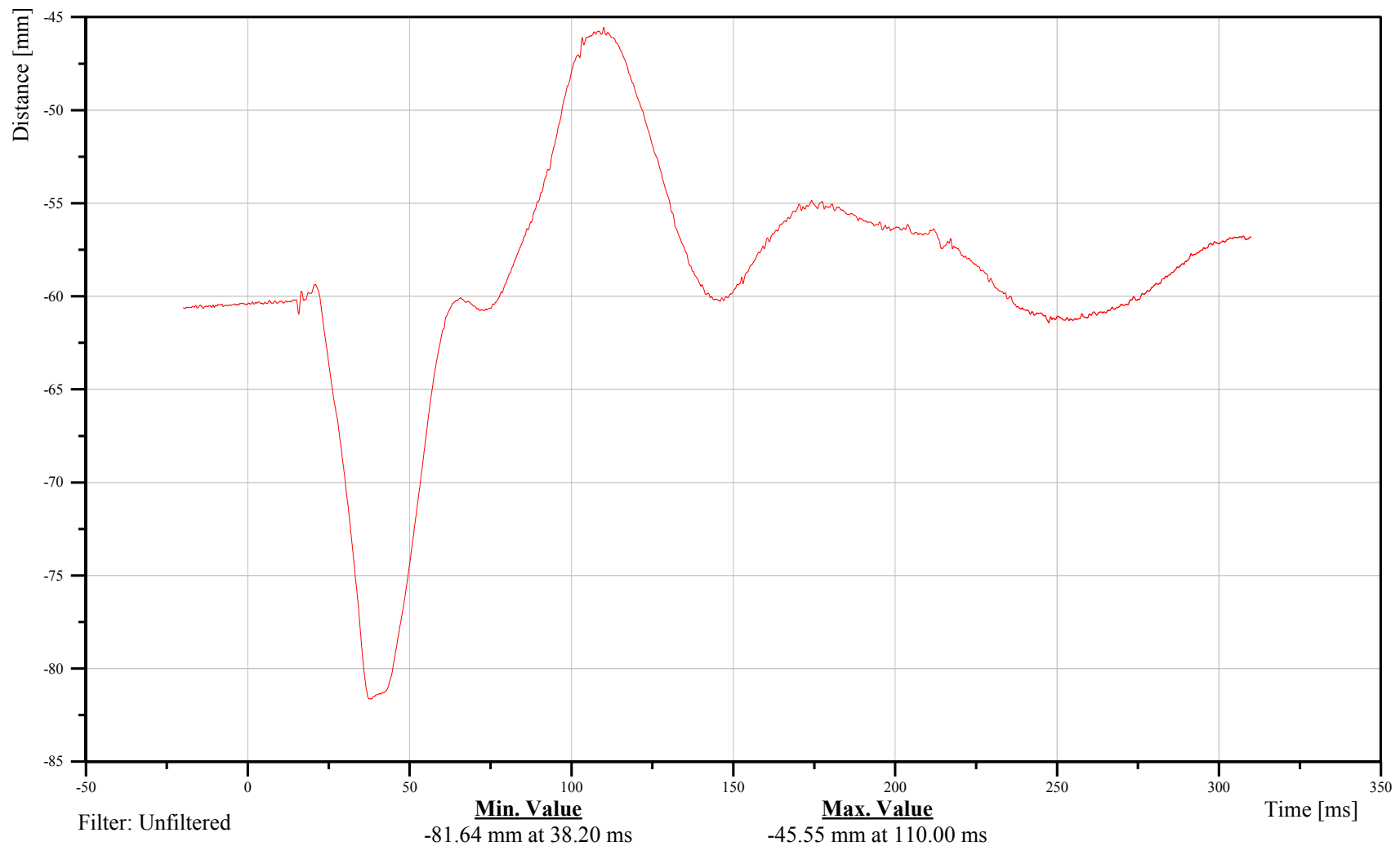
Shoulder Front Ribeye Z-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11SHRI00FRWSDSZ0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Shoulder Front Ribeye Length Change

Date: 03/29/2016

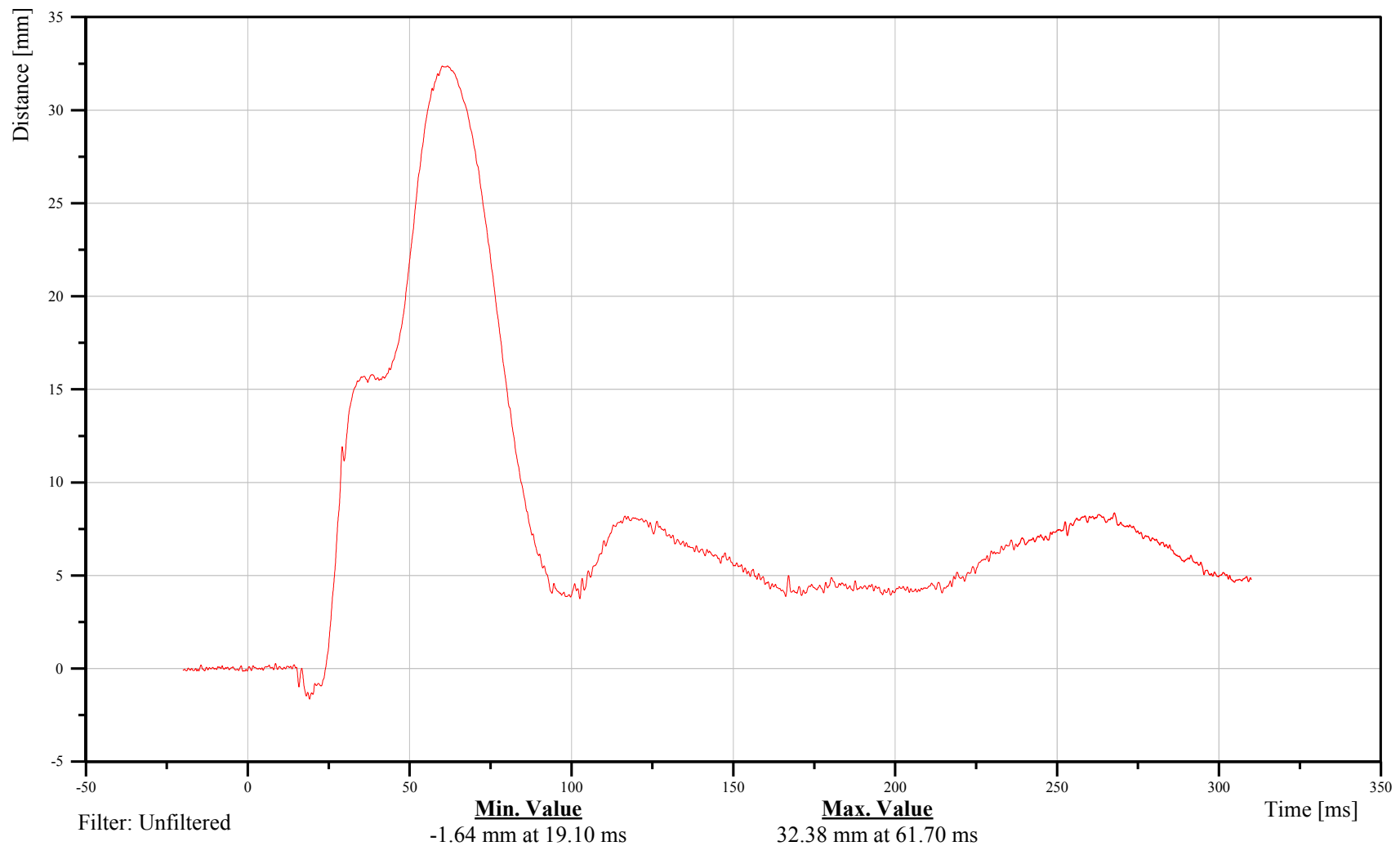
Time: 16:04

Customer: VRTC

11SHRI00FRWSDS00

TRC Inc. Test Lab: CTF

Test Number: 160329





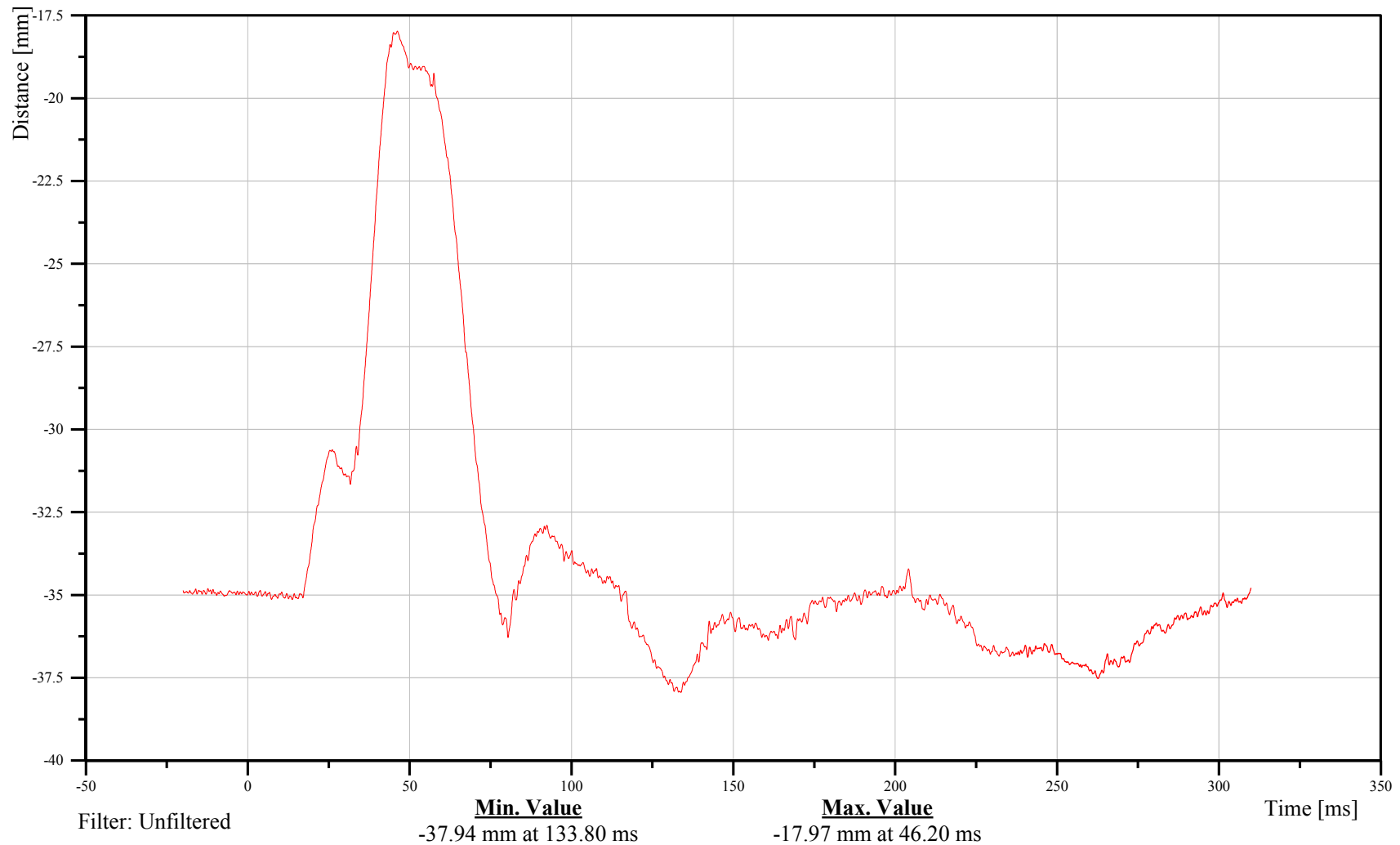
2016 Nissan Rogue Side Pole Impact
Thorax Rib 1 Rear Ribeye X-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI01REWSDSX0

TRC Inc. Test Lab: CTF
Test Number: 160329





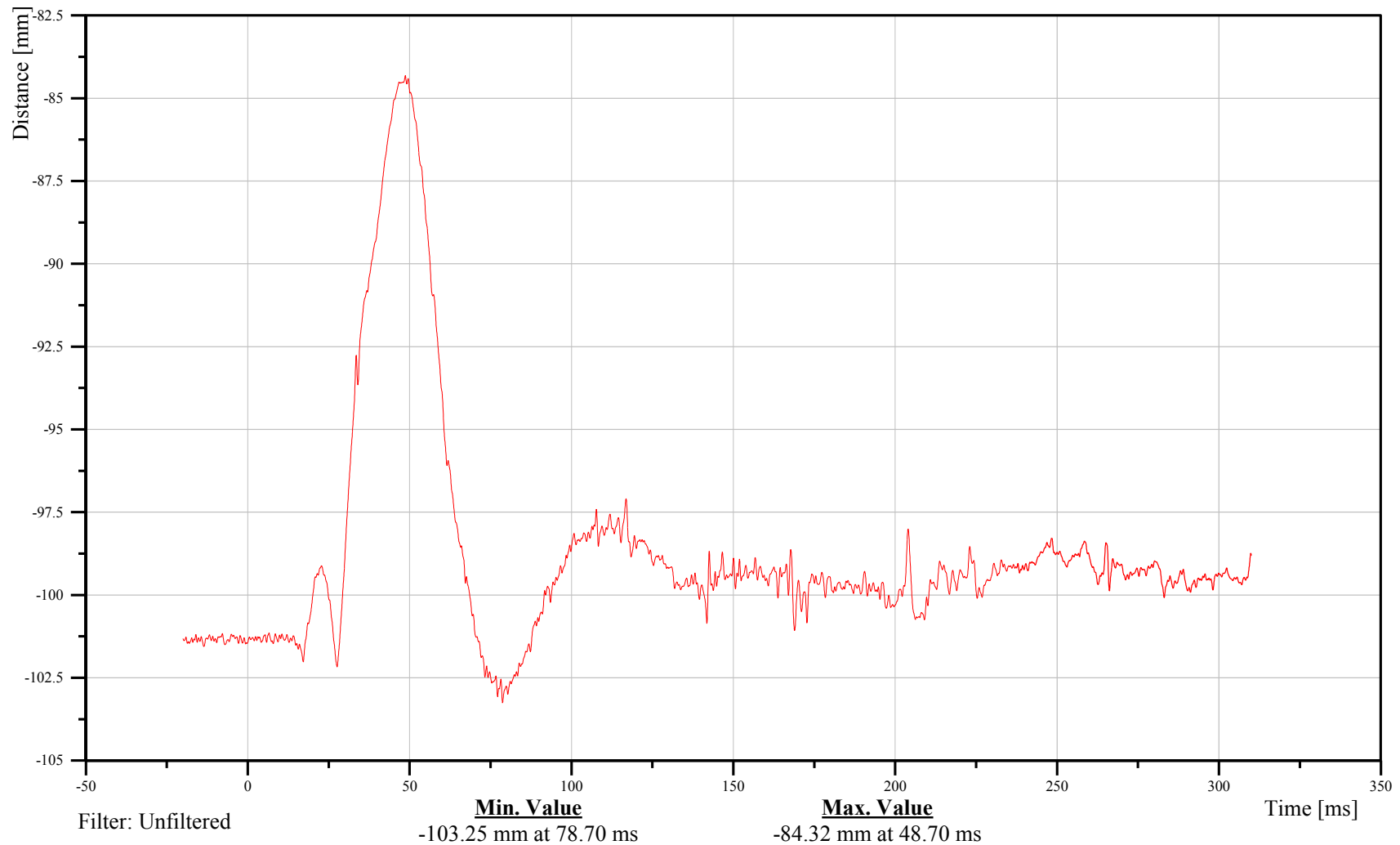
2016 Nissan Rogue Side Pole Impact
Thorax Rib 1 Rear Ribeye Y-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI01REWSDSY0

TRC Inc. Test Lab: CTF
Test Number: 160329





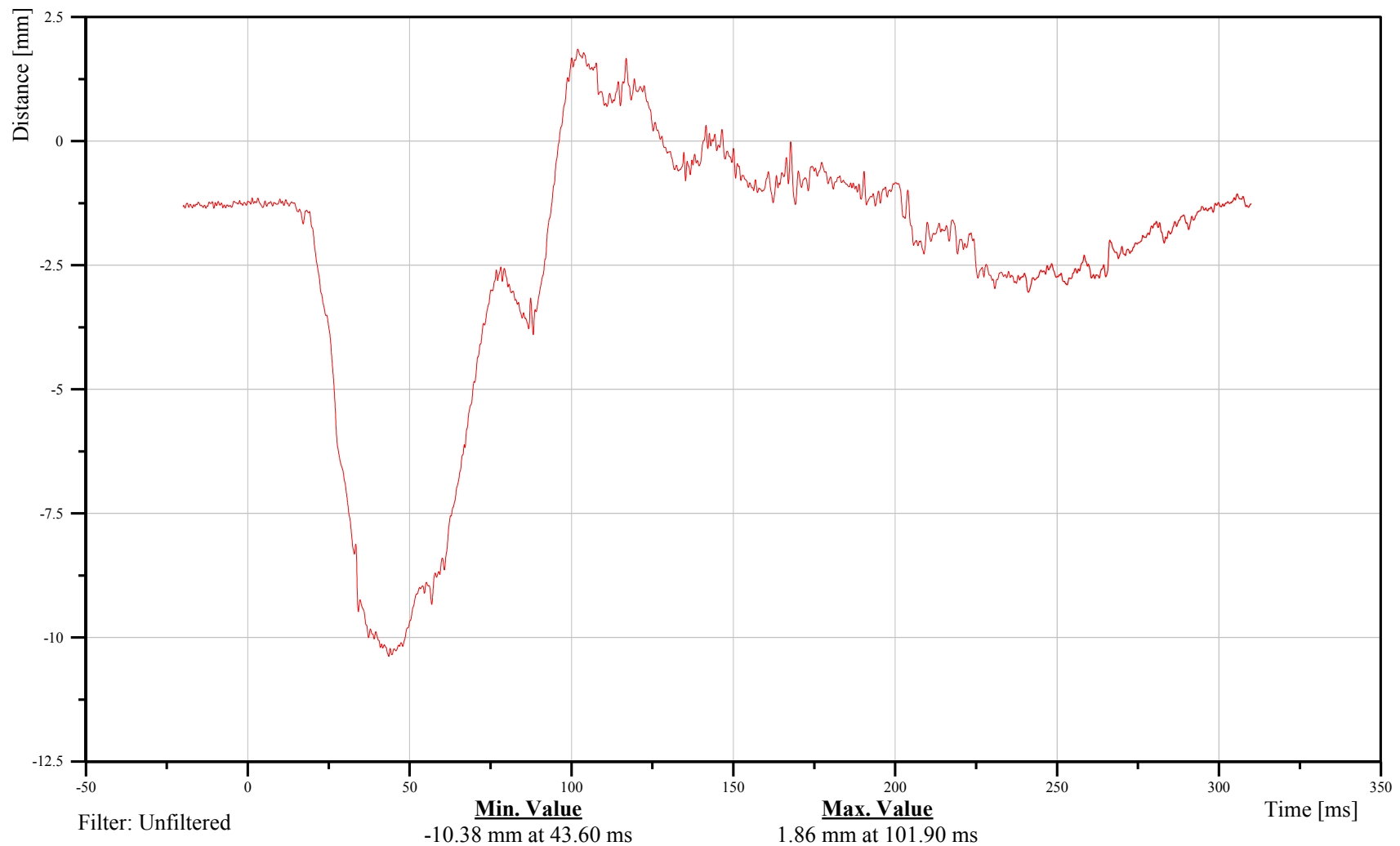
2016 Nissan Rogue Side Pole Impact
Thorax Rib 1 Rear Ribeye Z-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI01REWSDSZ0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Thorax Rib 1 Rear Ribeye Length Change

Date: 03/29/2016

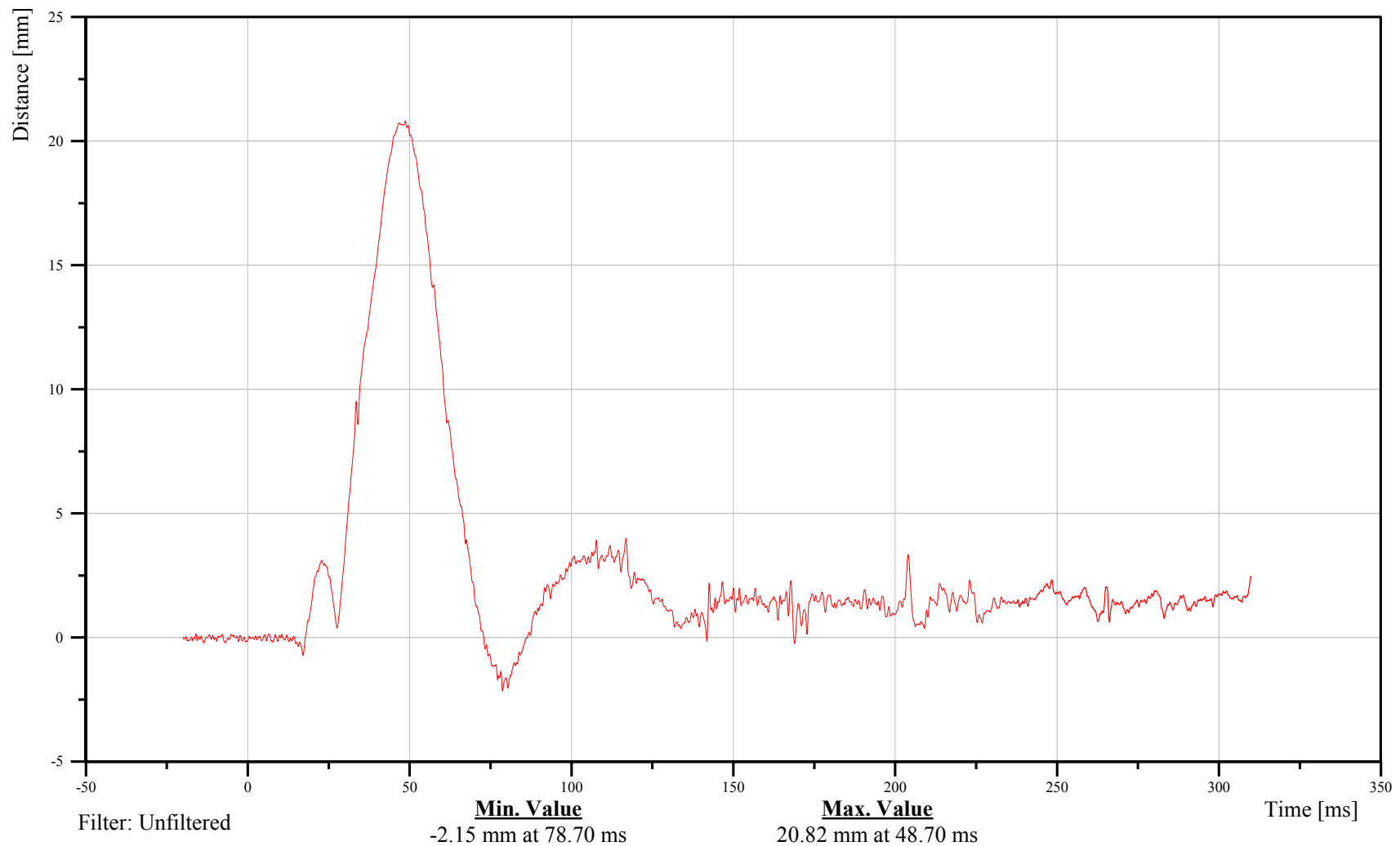
Time: 16:04

Customer: VRTC

11THRI01REWSDS00

TRC Inc. Test Lab: CTF

Test Number: 160329





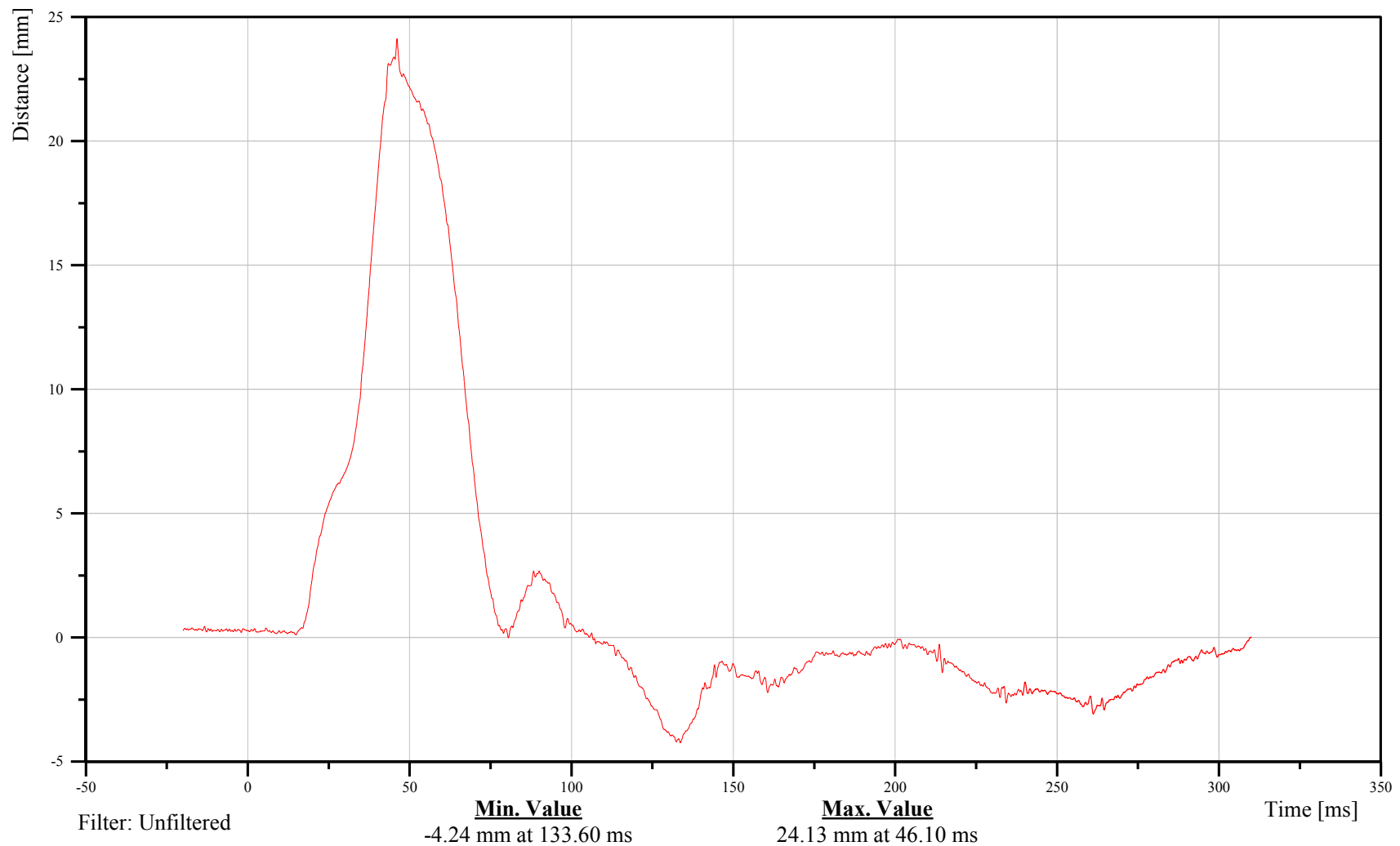
2016 Nissan Rogue Side Pole Impact
Thorax Rib 1 Middle Ribeye X-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI01MIWSDSX0

TRC Inc. Test Lab: CTF
Test Number: 160329





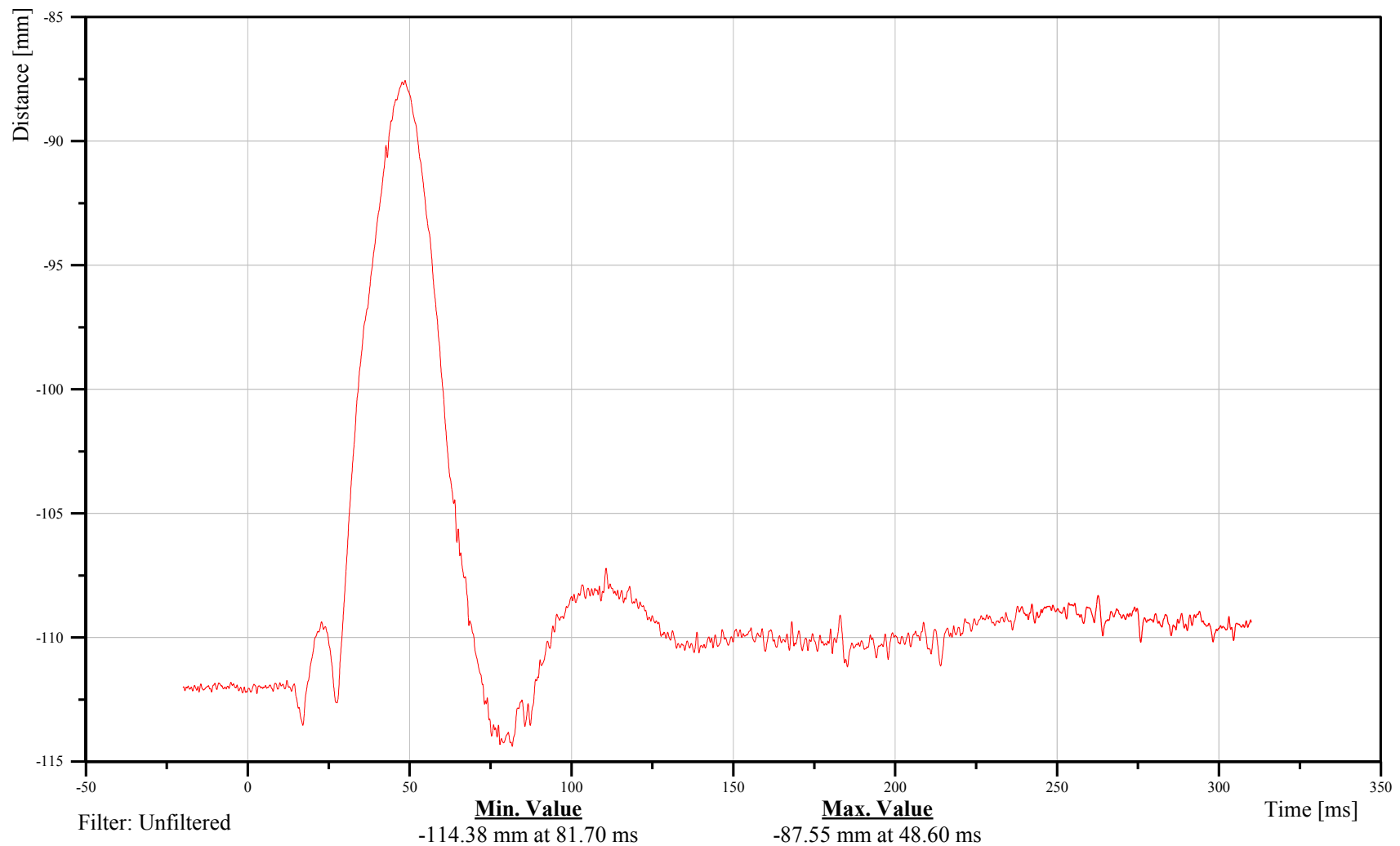
2016 Nissan Rogue Side Pole Impact
Thorax Rib 1 Middle Ribeye Y-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI01MIWSDSY0

TRC Inc. Test Lab: CTF
Test Number: 160329





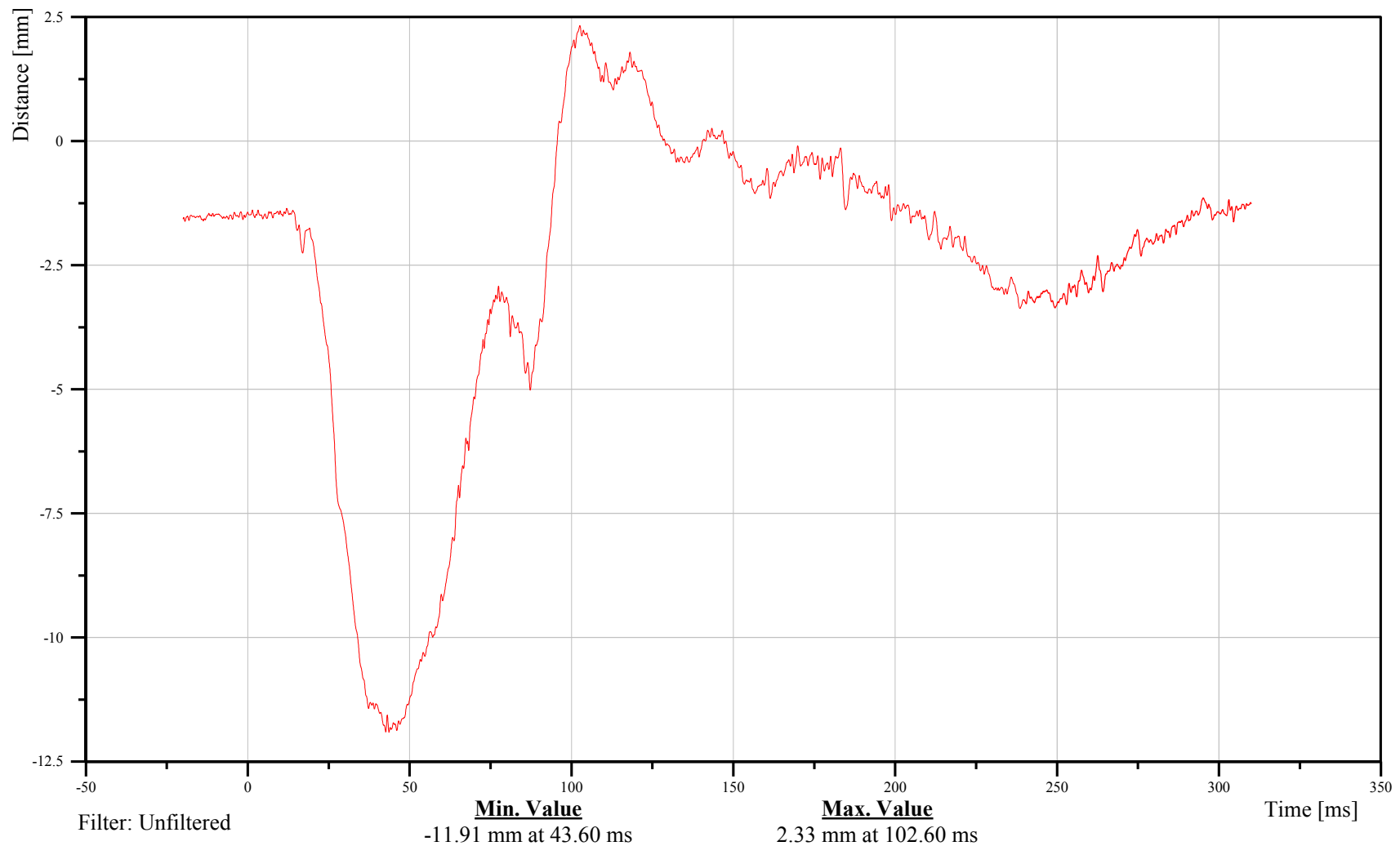
2016 Nissan Rogue Side Pole Impact
Thorax Rib 1 Middle Ribeye Z-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI01MIWSDSZ0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

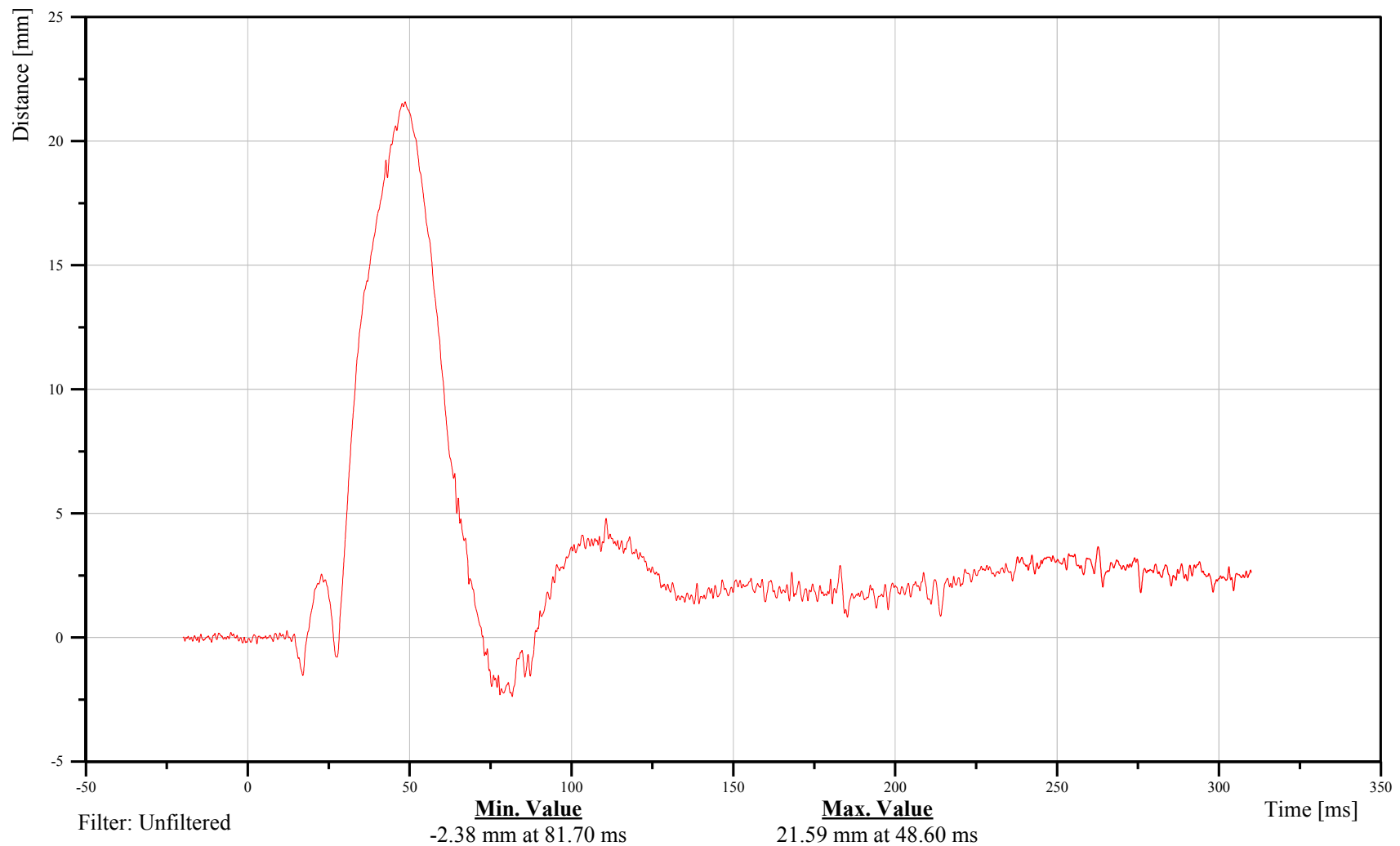
Thorax Rib 1 Middle Ribeye Length Change

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI01MIWSDS00

TRC Inc. Test Lab: CTF
Test Number: 160329





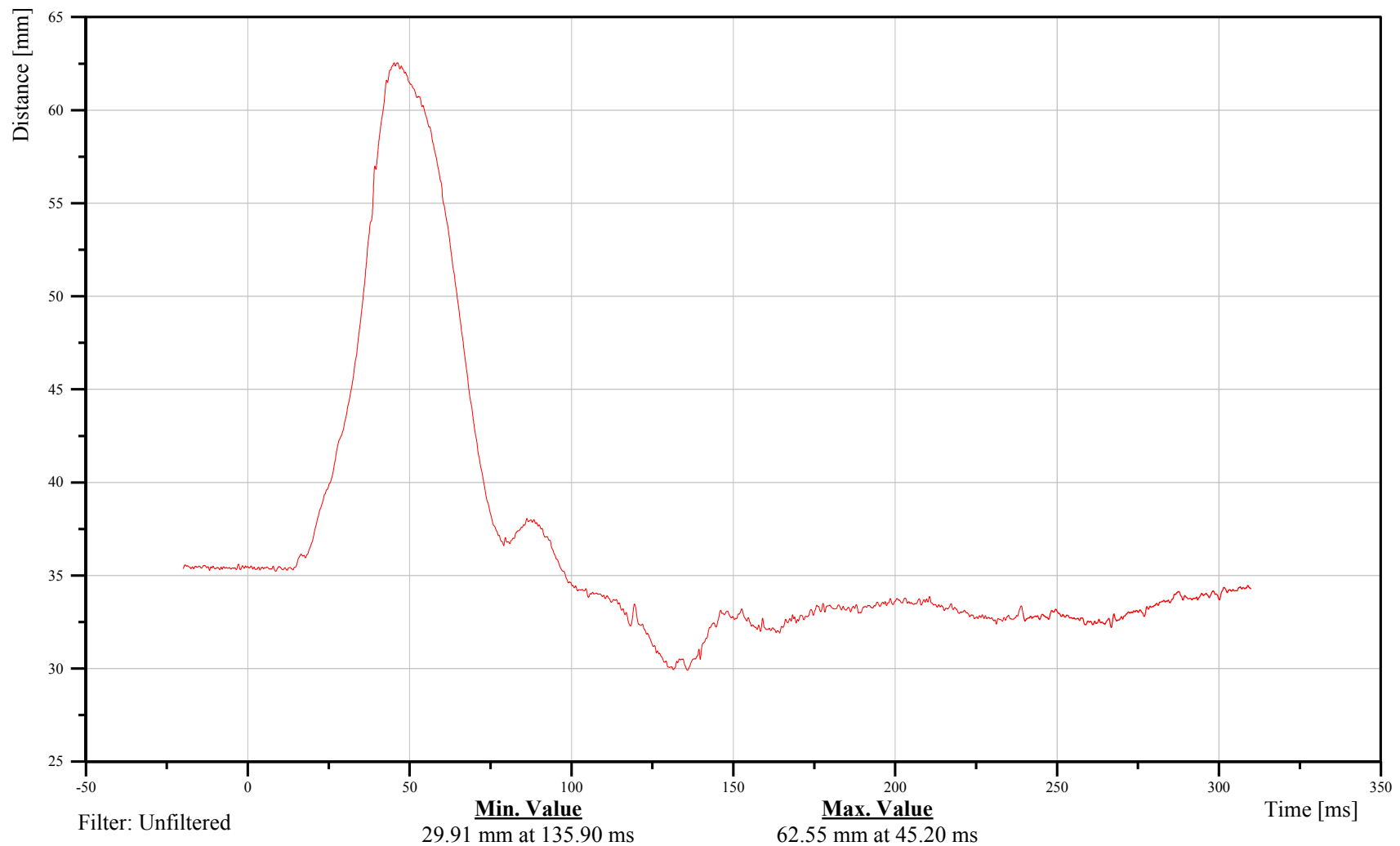
2016 Nissan Rogue Side Pole Impact
Thorax Rib 1 Front Ribeye X-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI01FRWSDSX0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

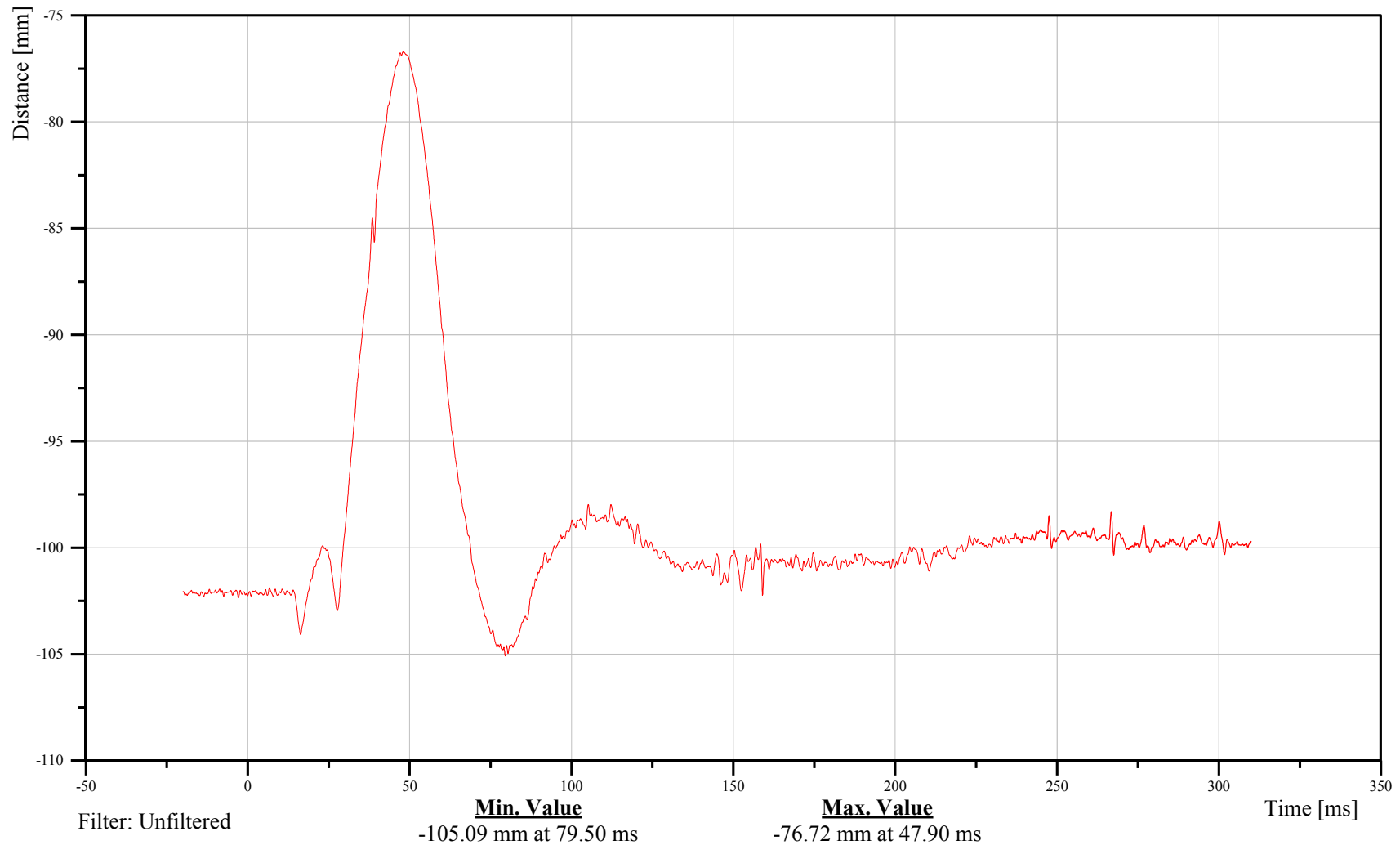
Thorax Rib 1 Front Ribeye Y-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI01FRWSDSY0

TRC Inc. Test Lab: CTF
Test Number: 160329





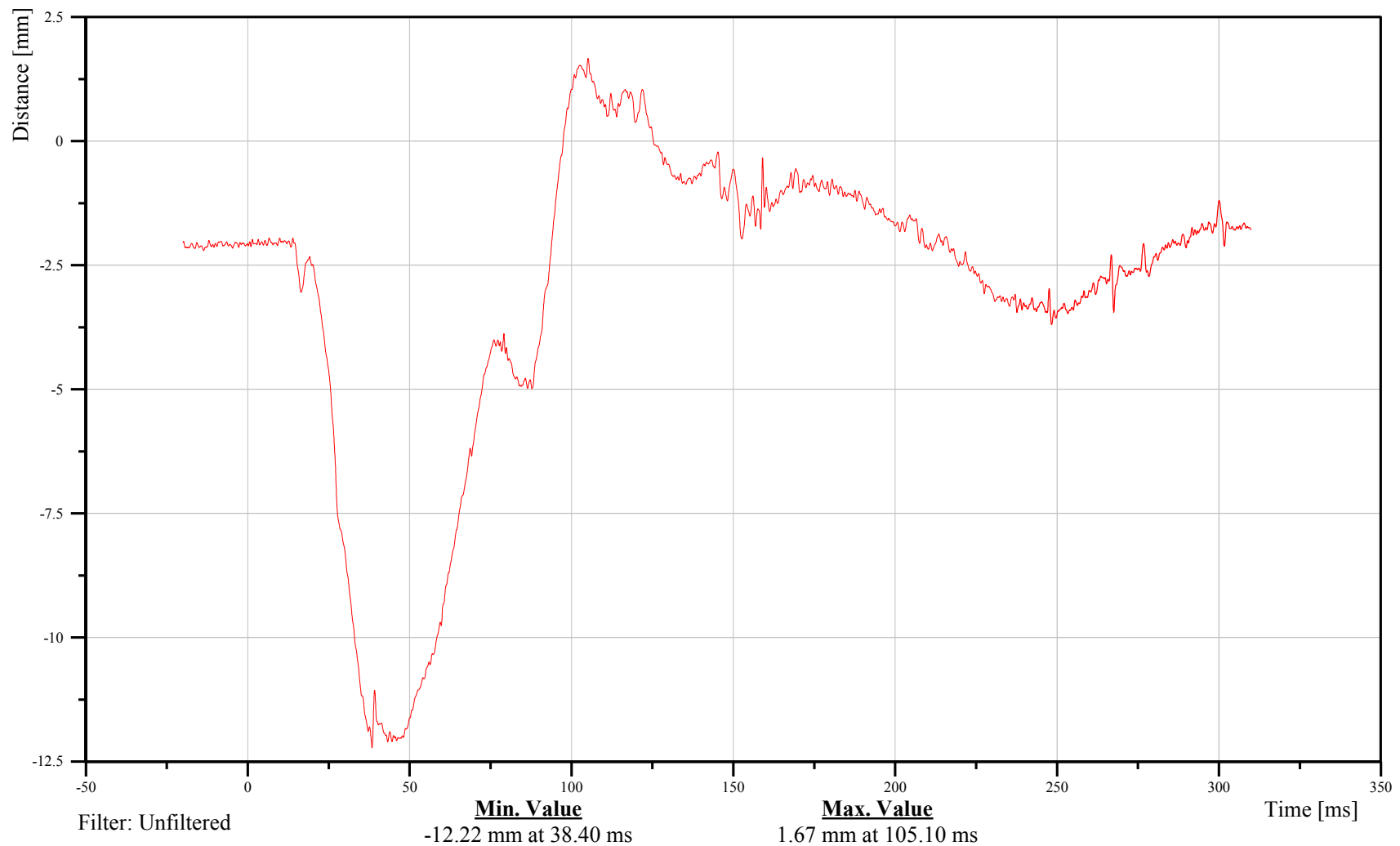
2016 Nissan Rogue Side Pole Impact
Thorax Rib 1 Front Ribeye Z-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI01FRWSDSZ0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Thorax Rib 1 Front Ribeye Length Change

Date: 03/29/2016

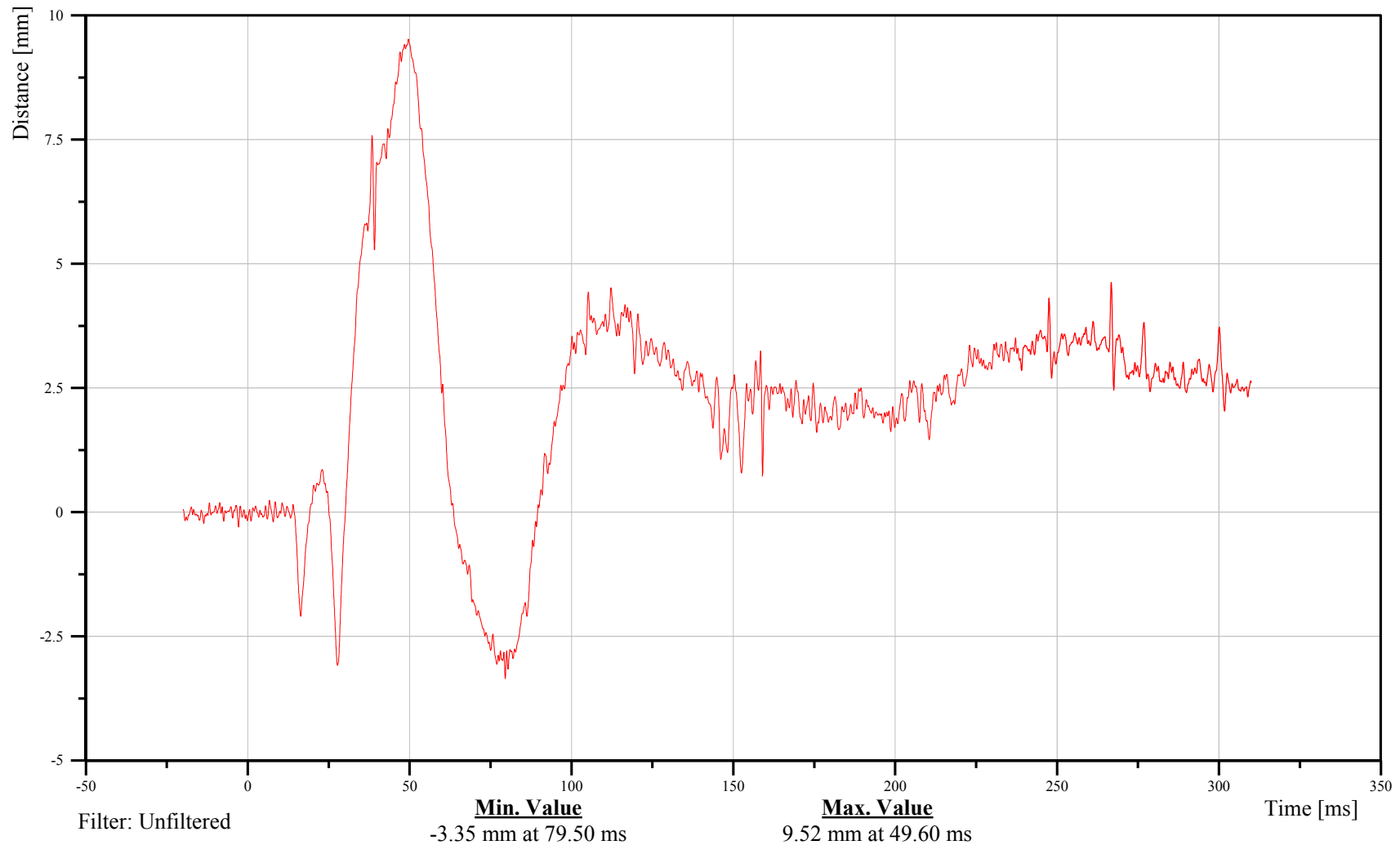
Time: 16:04

Customer: VRTC

11THRI01FRWSDS00

TRC Inc. Test Lab: CTF

Test Number: 160329





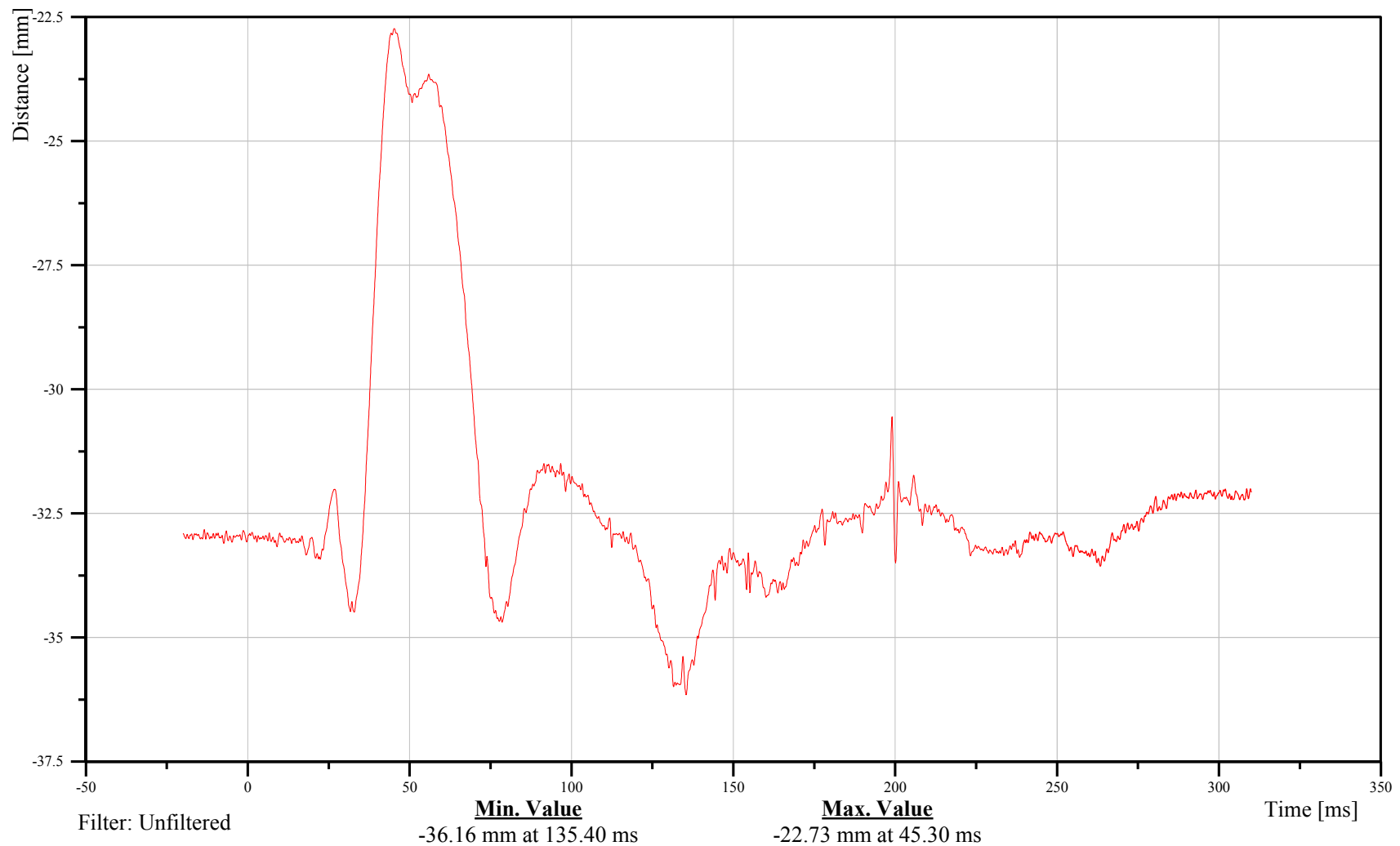
2016 Nissan Rogue Side Pole Impact
Thorax Rib 2 Rear Ribeye X-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI02REWSDSX0

TRC Inc. Test Lab: CTF
Test Number: 160329





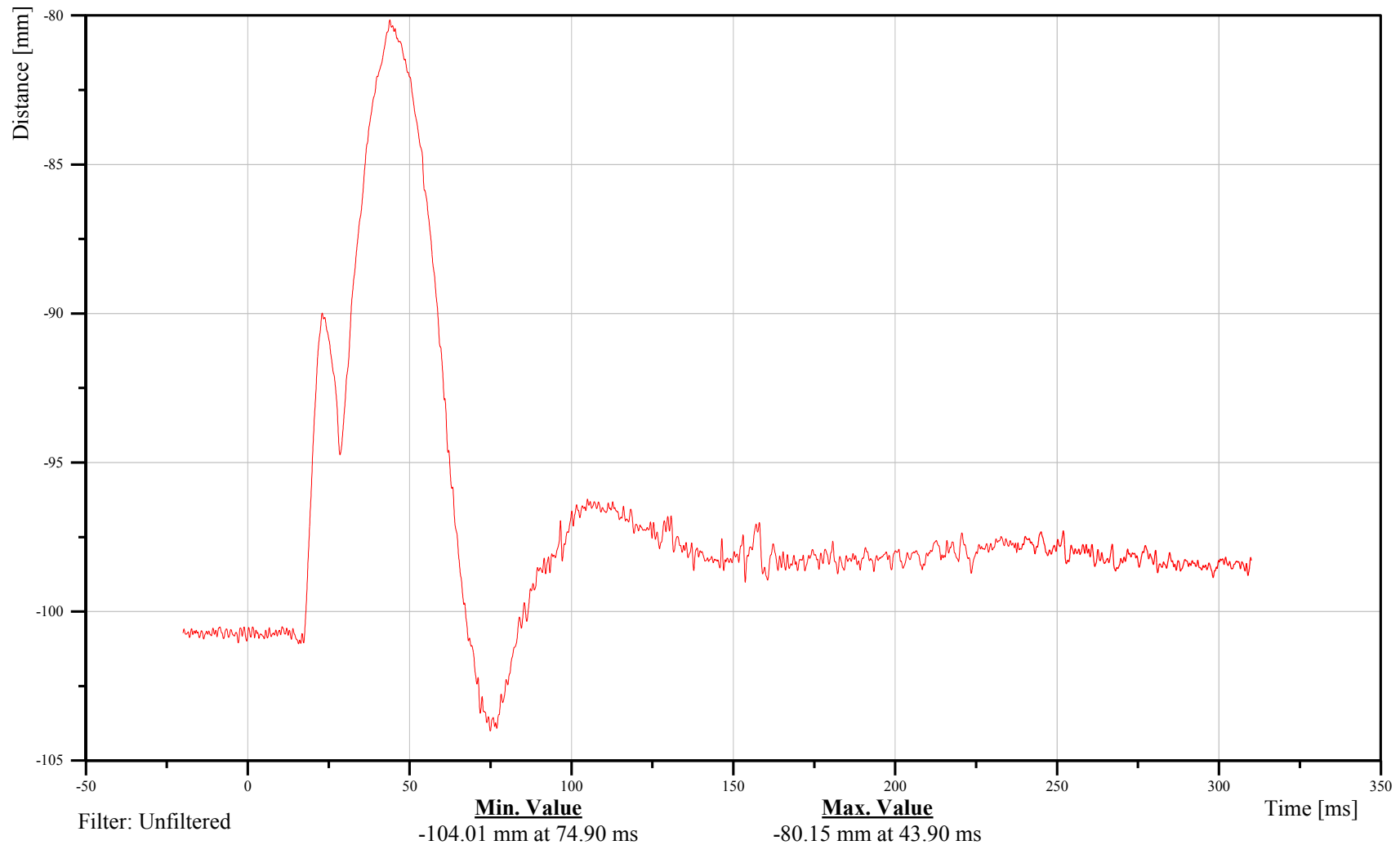
2016 Nissan Rogue Side Pole Impact
Thorax Rib 2 Rear Ribeye Y-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI02REWSDSY0

TRC Inc. Test Lab: CTF
Test Number: 160329





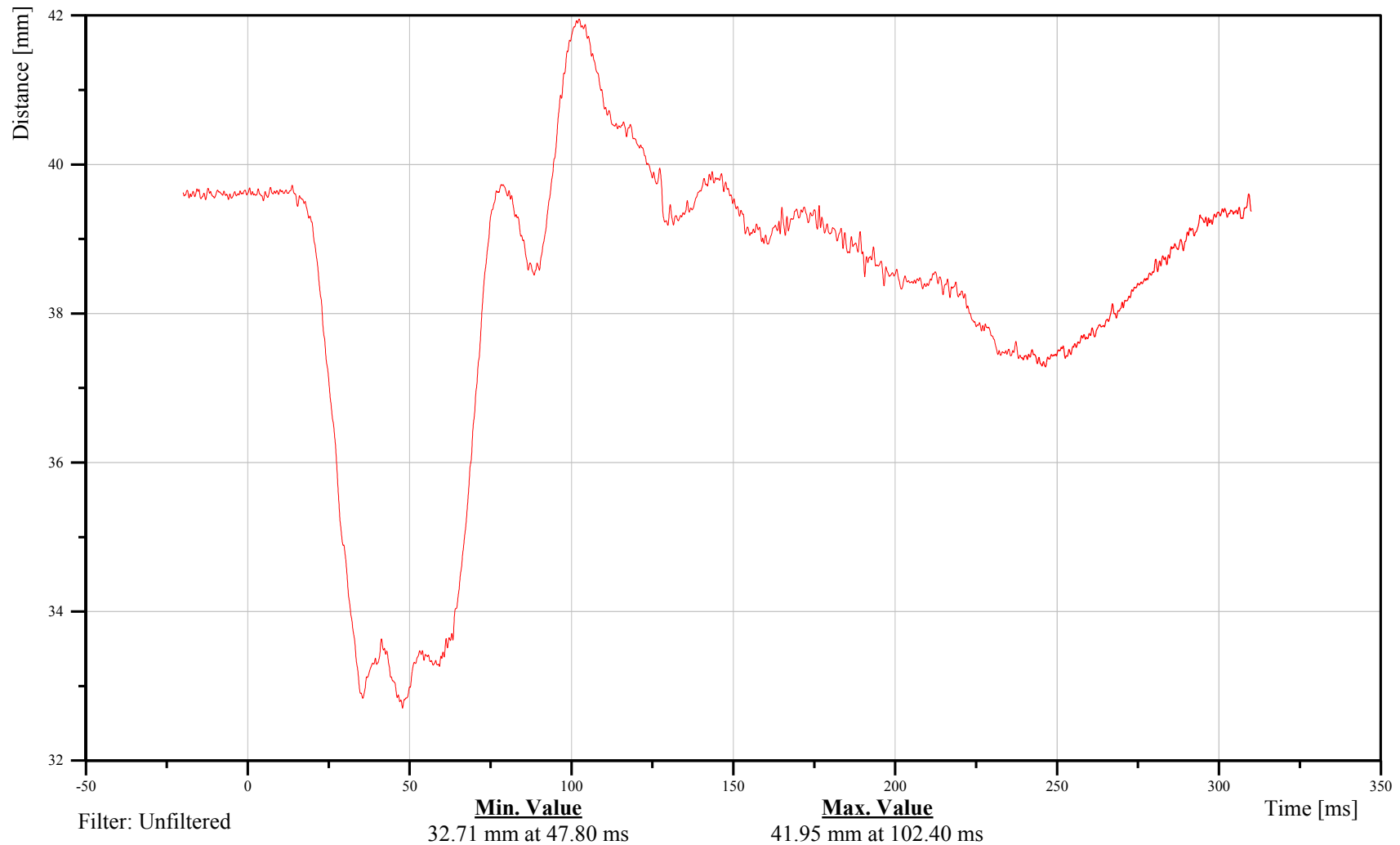
2016 Nissan Rogue Side Pole Impact
Thorax Rib 2 Rear Ribeye Z-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI02REWSDSZ0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Thorax Rib 2 Rear Ribeye Length Change

Date: 03/29/2016

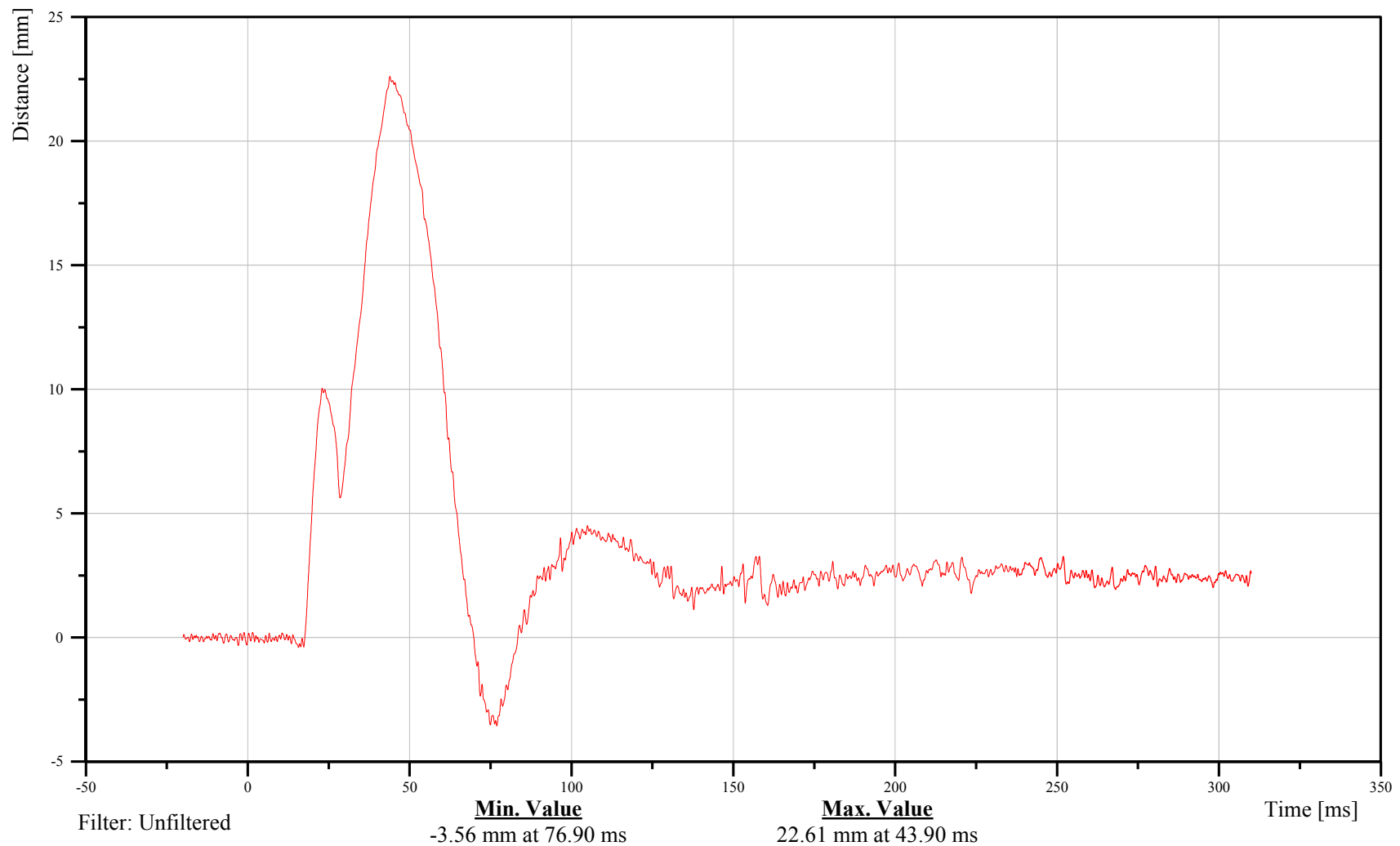
Time: 16:04

Customer: VRTC

11THRI02REWSDS00

TRC Inc. Test Lab: CTF

Test Number: 160329





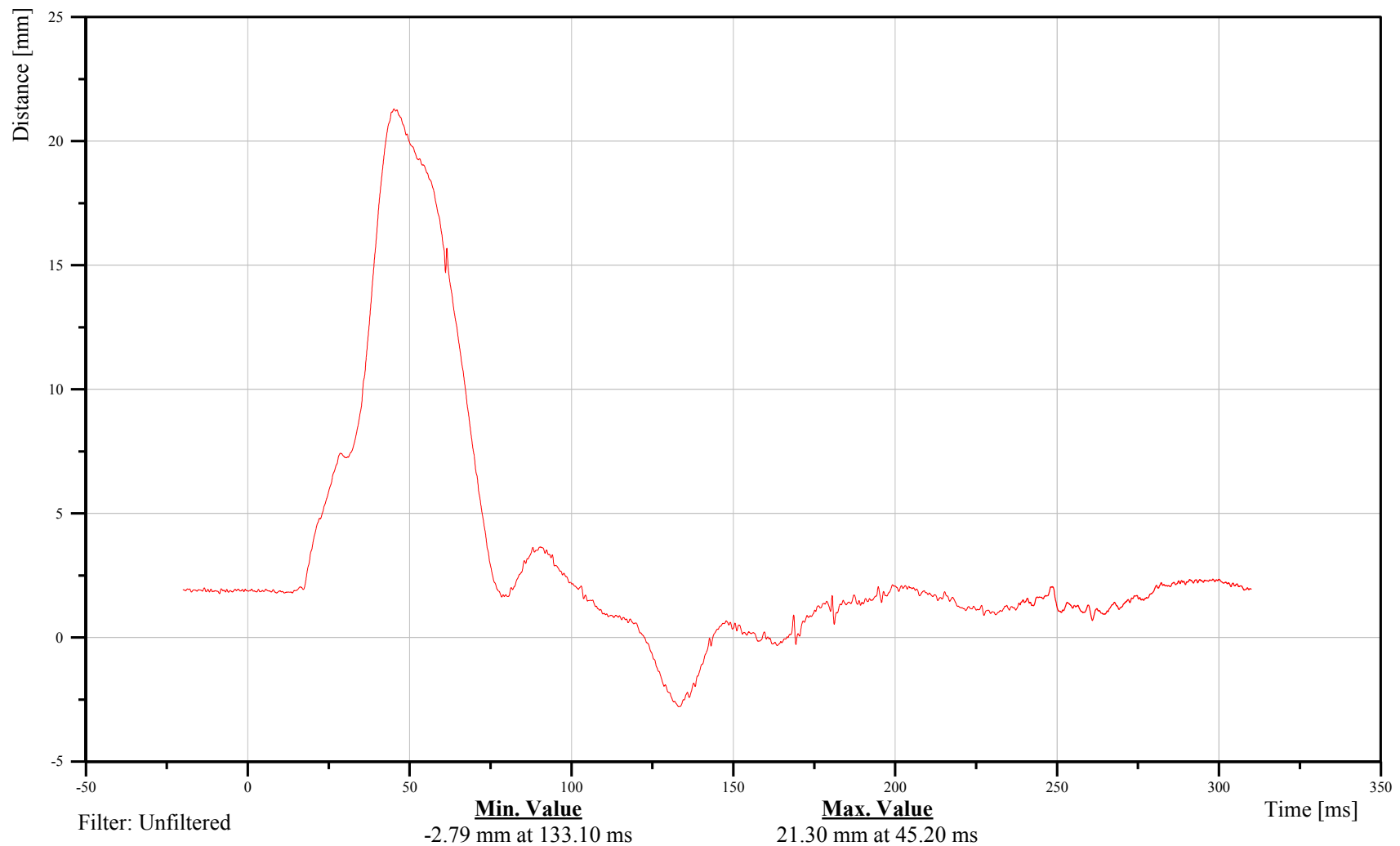
2016 Nissan Rogue Side Pole Impact
Thorax Rib 2 Middle Ribeye X-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI02MIWSDSX0

TRC Inc. Test Lab: CTF
Test Number: 160329





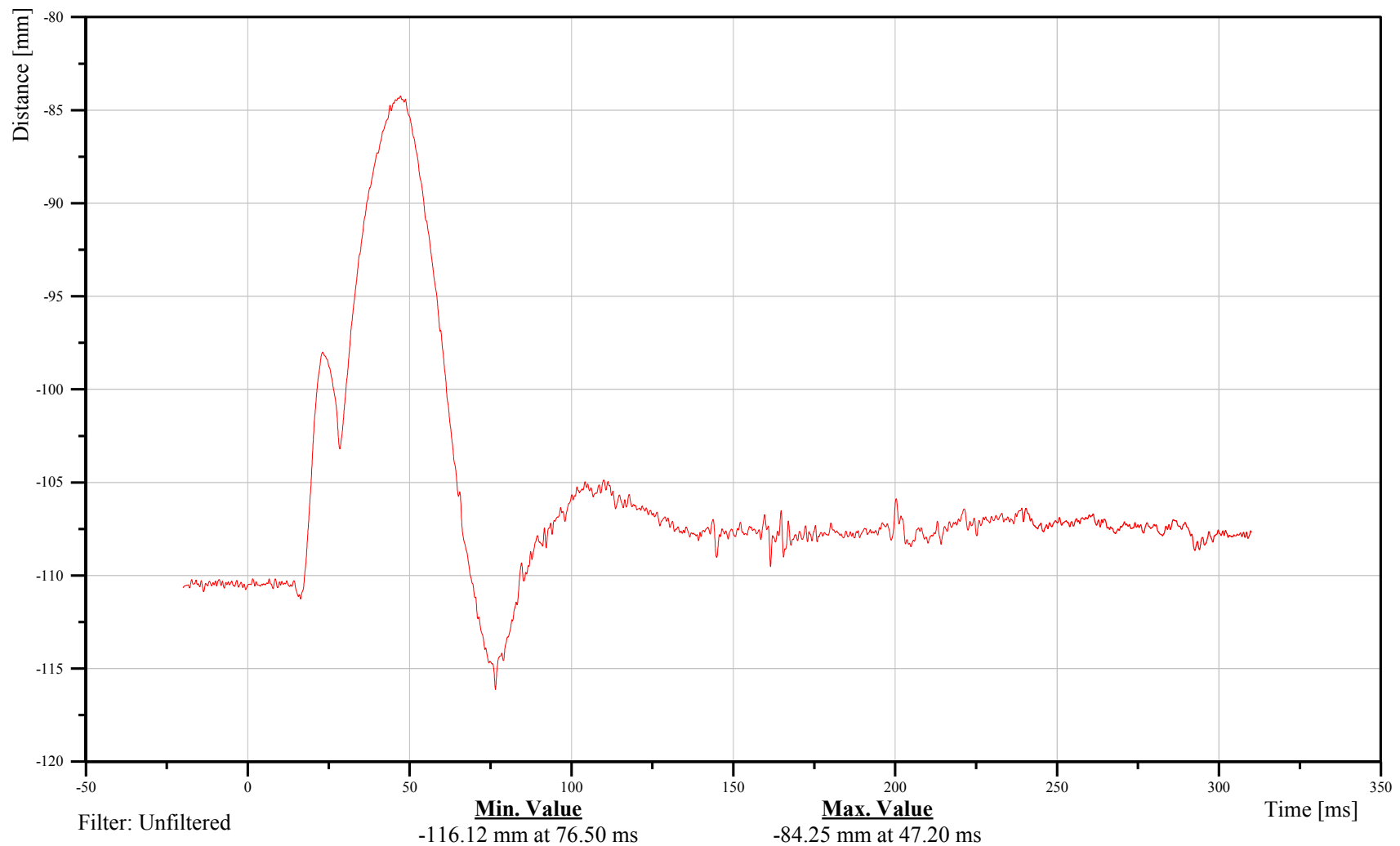
2016 Nissan Rogue Side Pole Impact
Thorax Rib 2 Middle Ribeye Y-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI02MIWSDSY0

TRC Inc. Test Lab: CTF
Test Number: 160329





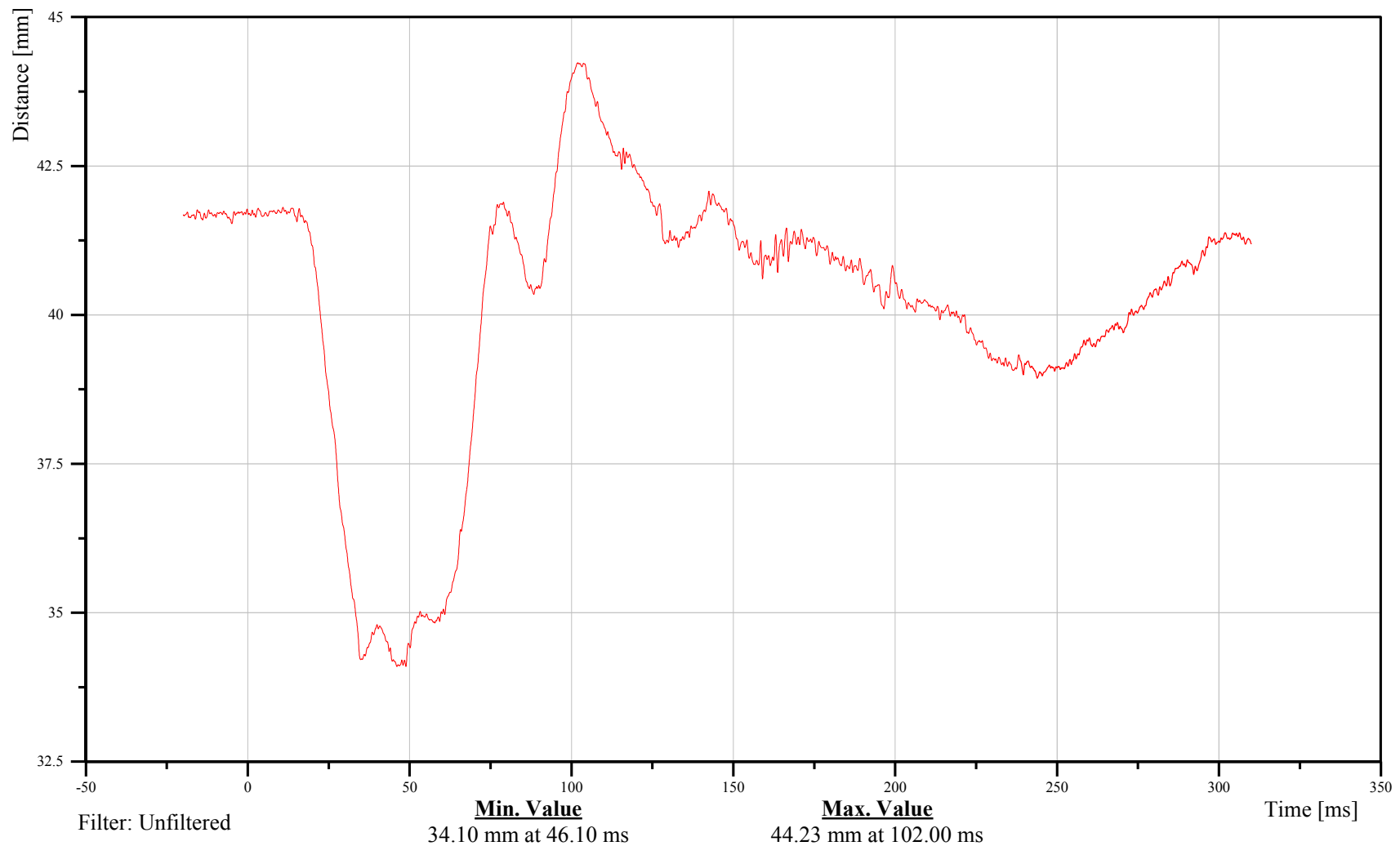
2016 Nissan Rogue Side Pole Impact
Thorax Rib 2 Middle Ribeye Z-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI02MIWSDSZ0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

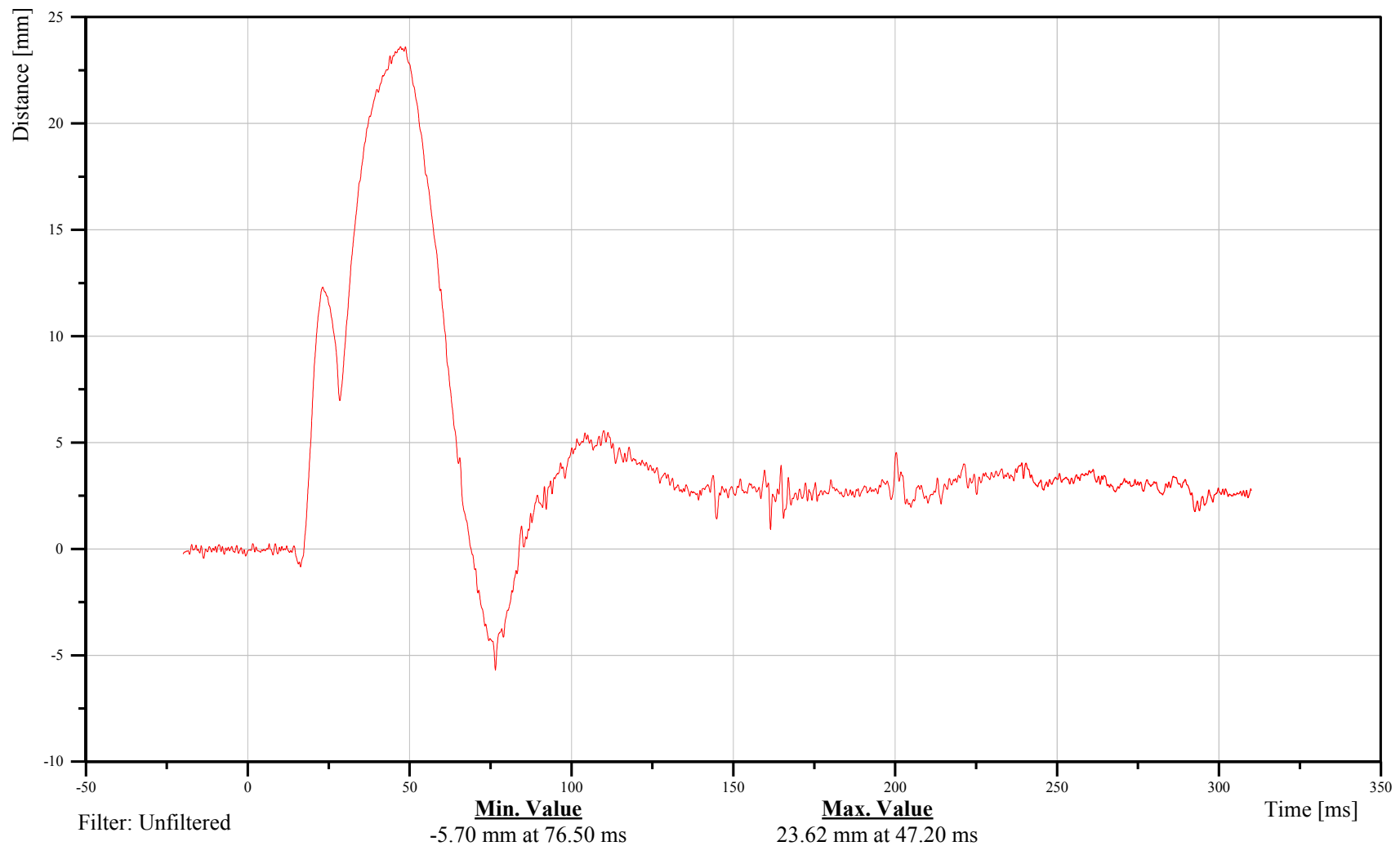
Thorax Rib 2 Middle Ribeye Length Change

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI02MIWSDS00

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

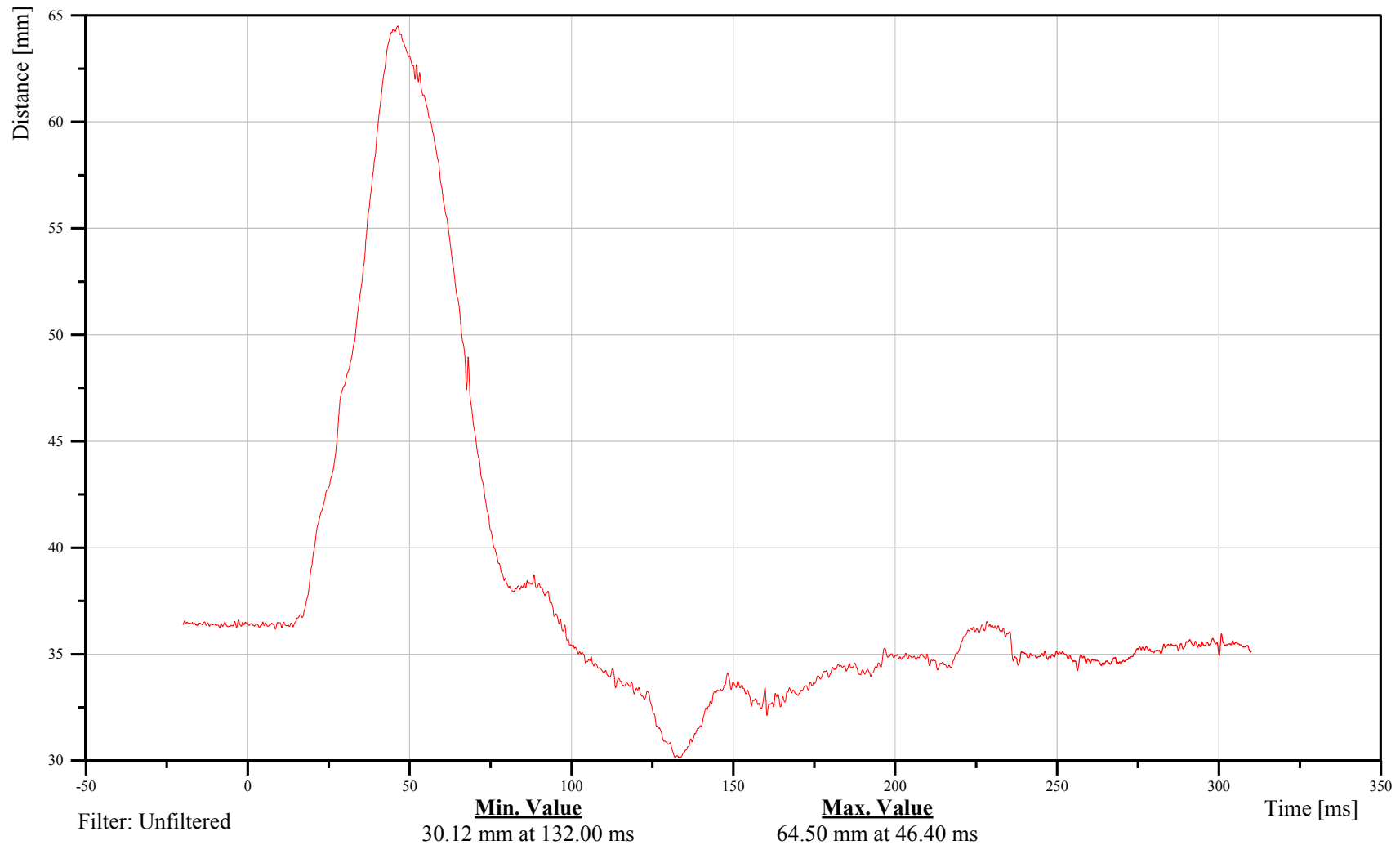
Thorax Rib 2 Front Ribeye X-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI02FRWSDSX0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

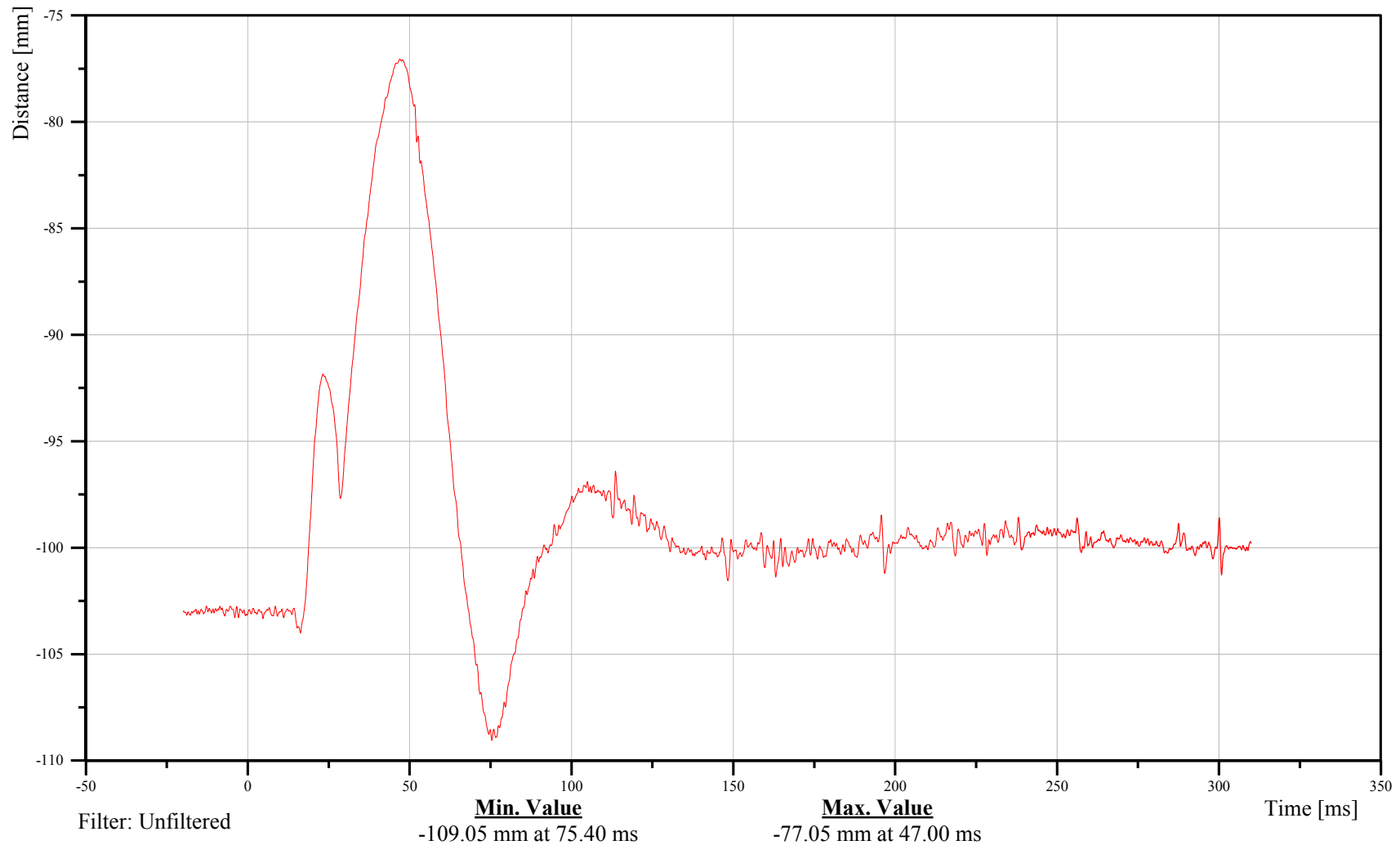
Thorax Rib 2 Front Ribeye Y-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI02FRWSDSY0

TRC Inc. Test Lab: CTF
Test Number: 160329





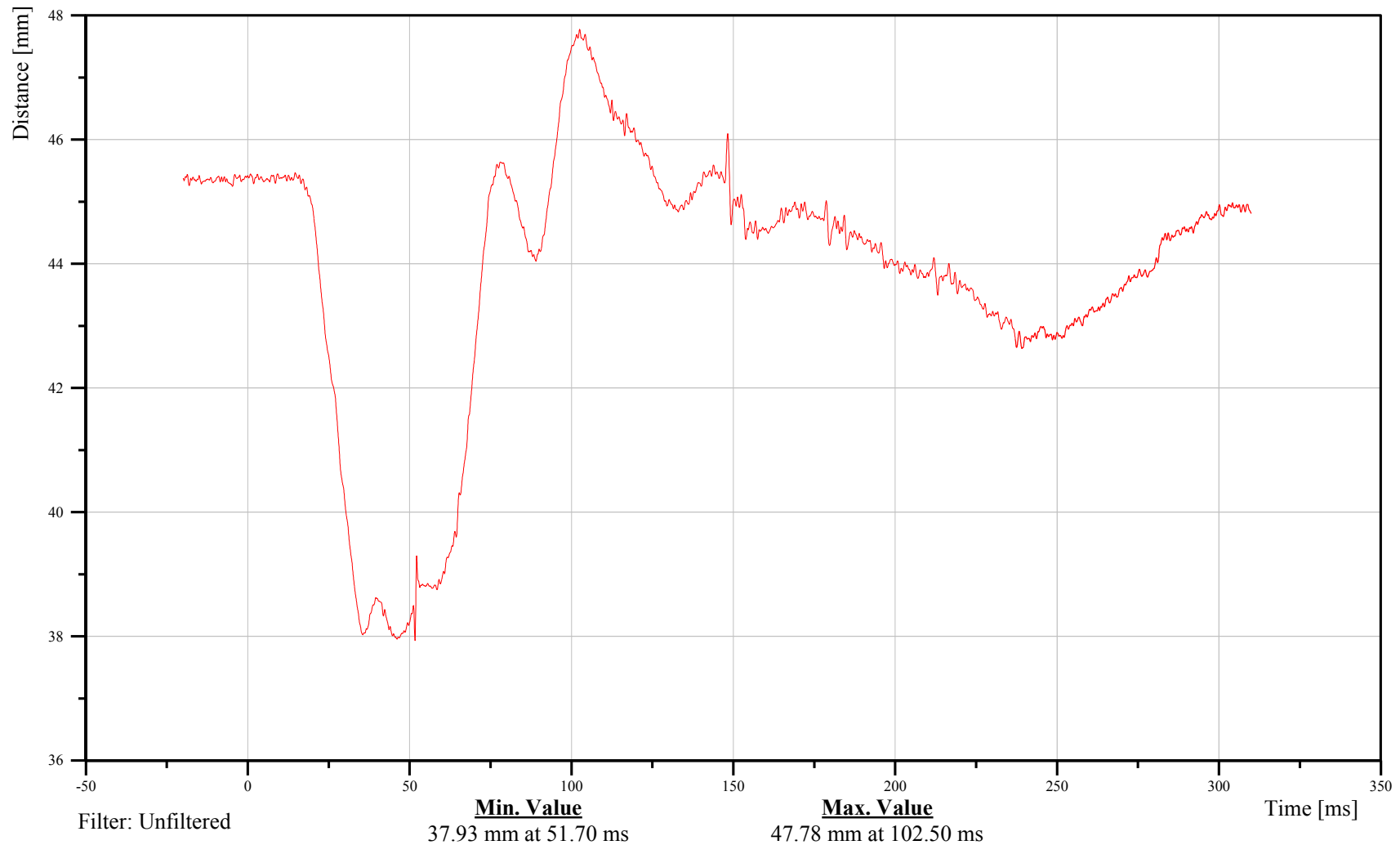
2016 Nissan Rogue Side Pole Impact
Thorax Rib 2 Front Ribeye Z-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI02FRWSDSZ0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Thorax Rib 2 Front Ribeye Length Change

Date: 03/29/2016

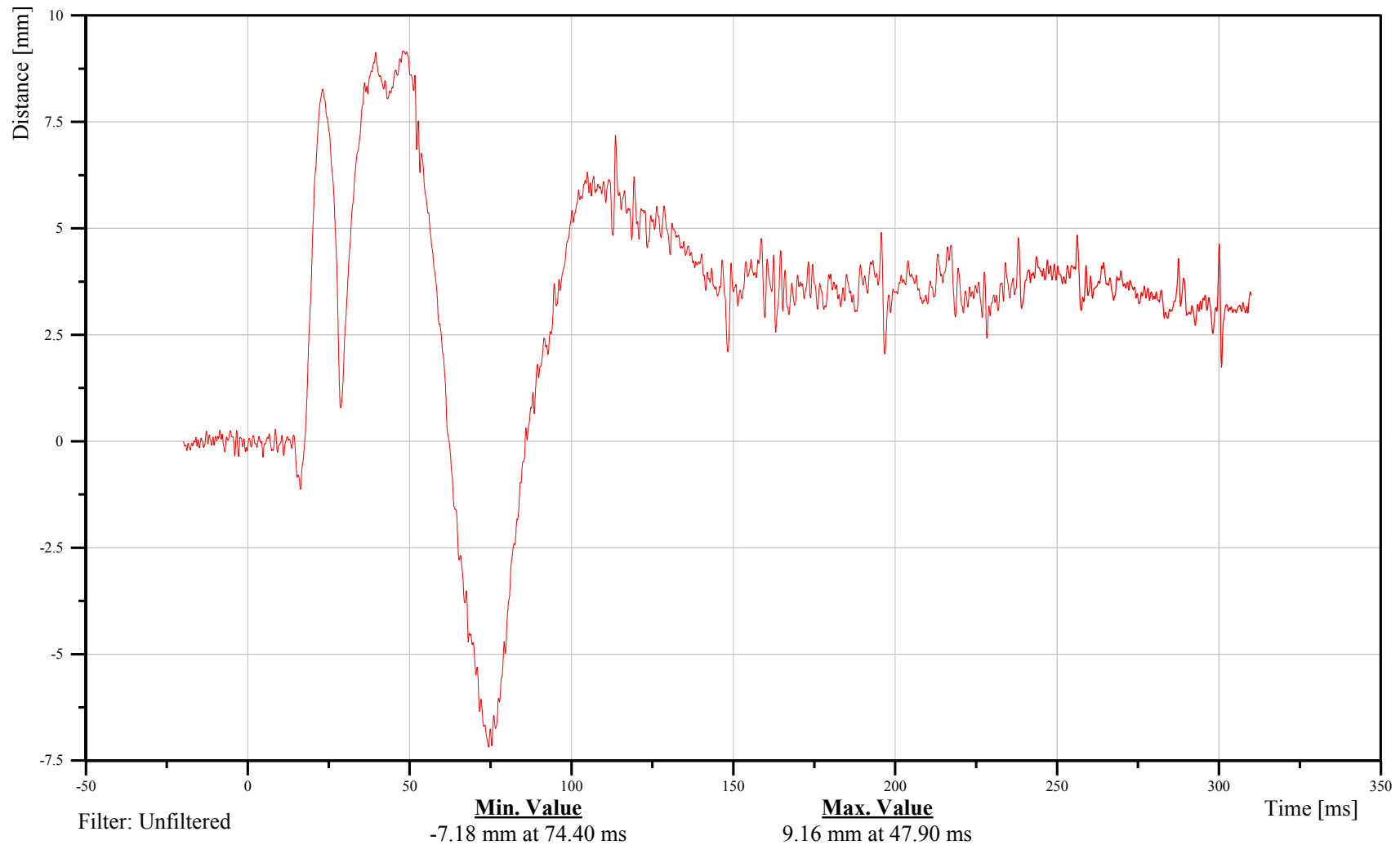
Time: 16:04

Customer: VRTC

11THRI02FRWSDS00

TRC Inc. Test Lab: CTF

Test Number: 160329





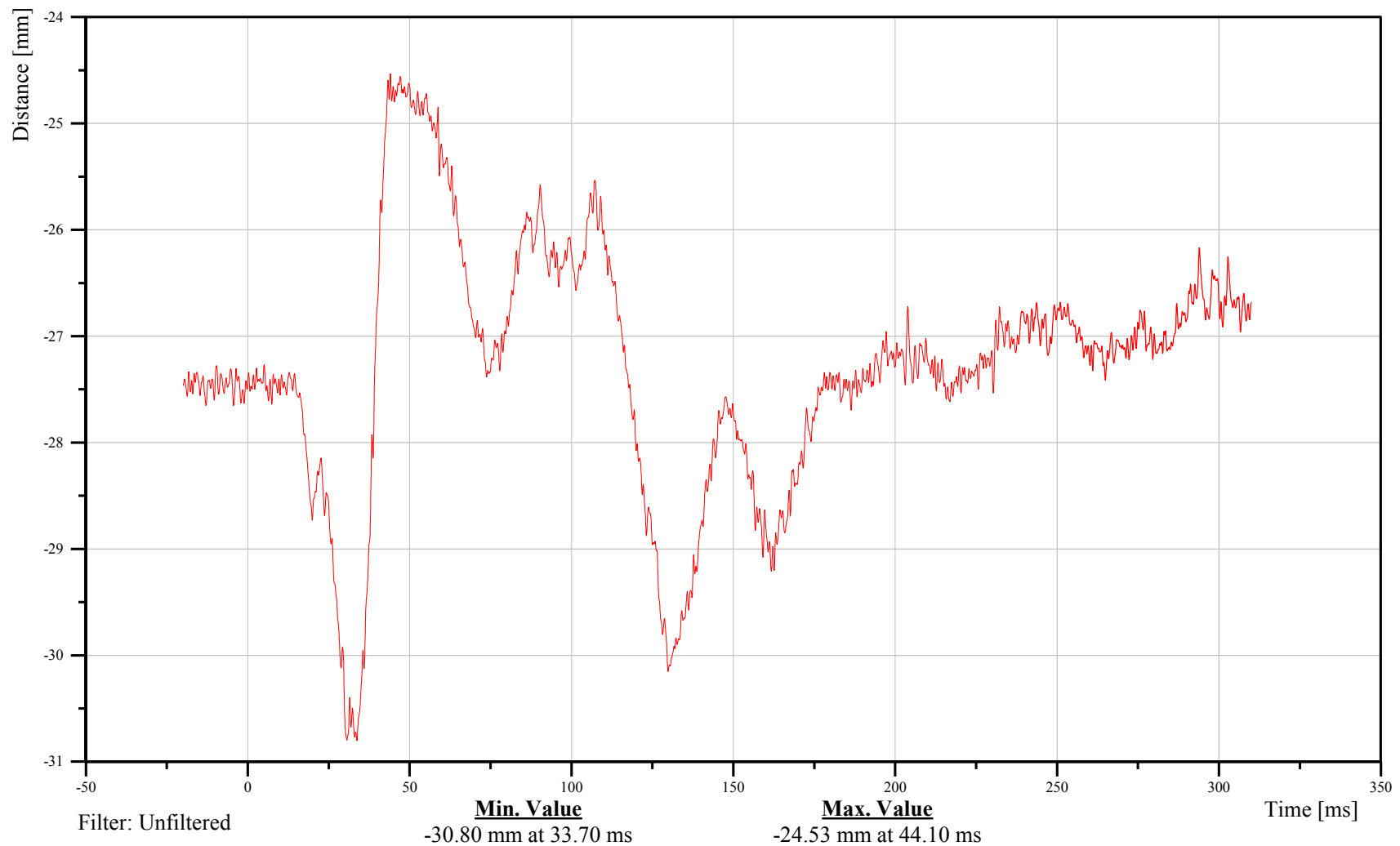
2016 Nissan Rogue Side Pole Impact
Thorax Rib 3 Rear Ribeye X-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI03REWSDSX0

TRC Inc. Test Lab: CTF
Test Number: 160329





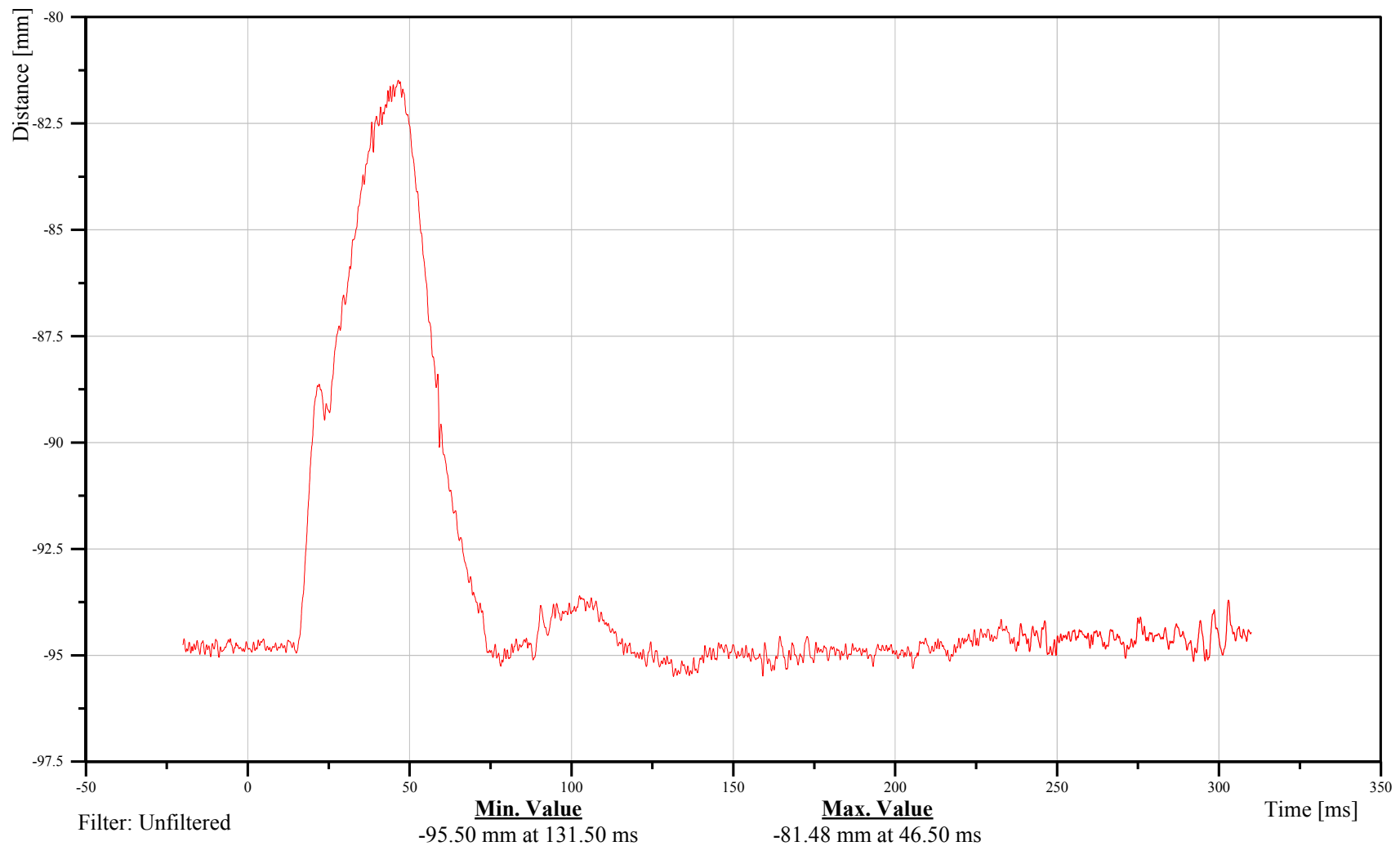
2016 Nissan Rogue Side Pole Impact
Thorax Rib 3 Rear Ribeye Y-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI03REWSDSY0

TRC Inc. Test Lab: CTF
Test Number: 160329





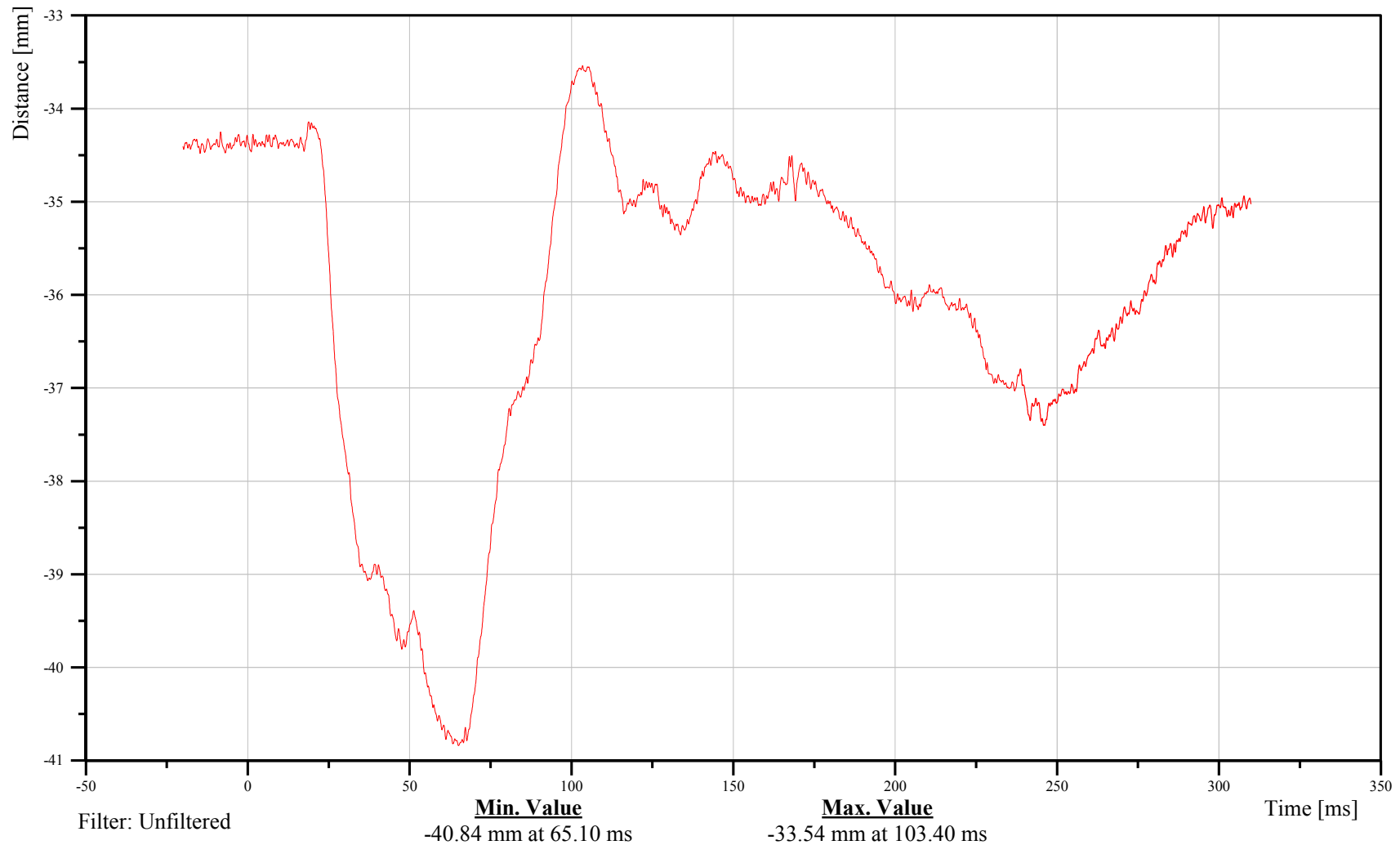
2016 Nissan Rogue Side Pole Impact
Thorax Rib 3 Rear Ribeye Z-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI03REWSDSZ0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Thorax Rib 3 Rear Ribeye Length Change

Date: 03/29/2016

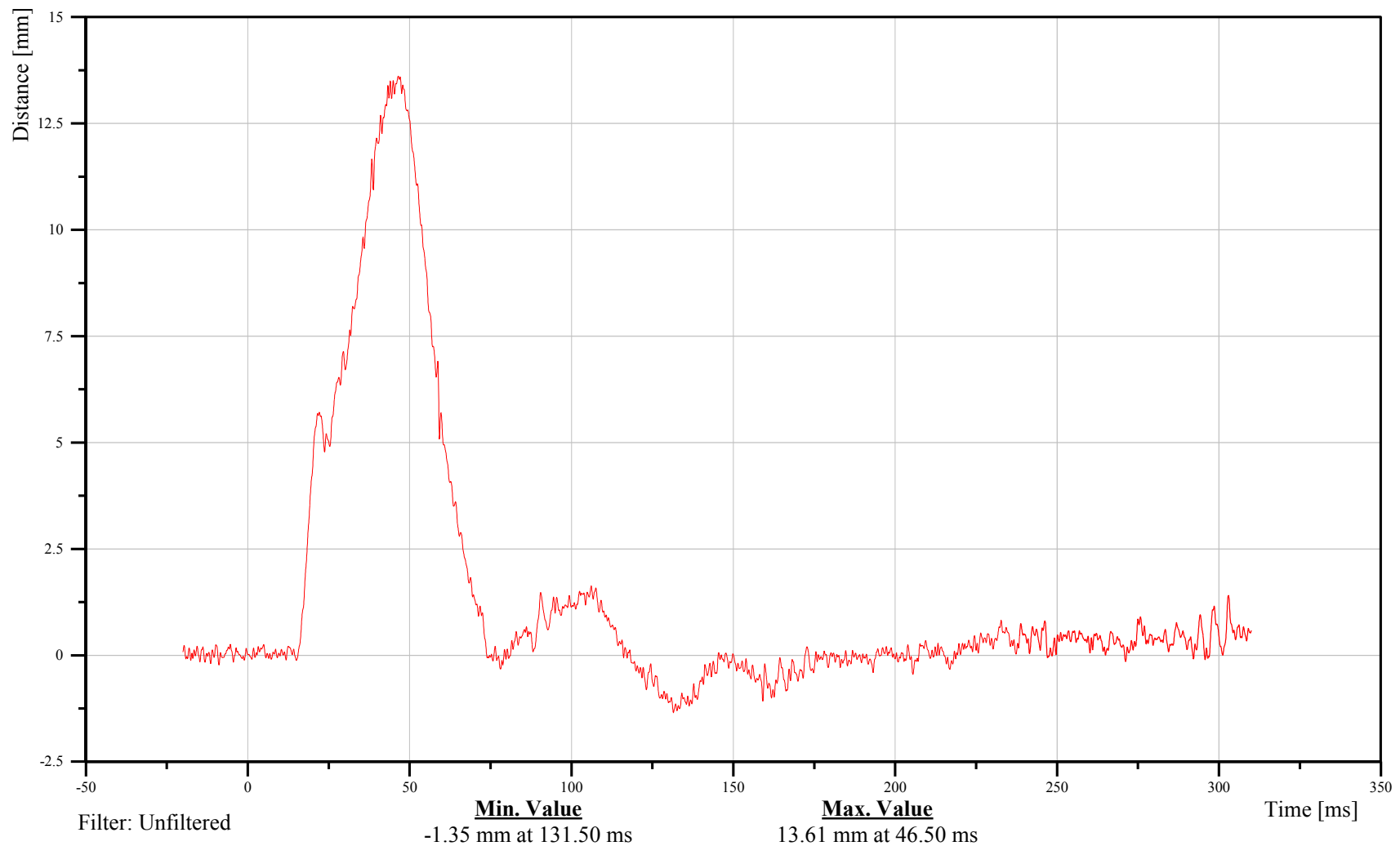
Time: 16:04

Customer: VRTC

11THRI03REWSDS00

TRC Inc. Test Lab: CTF

Test Number: 160329





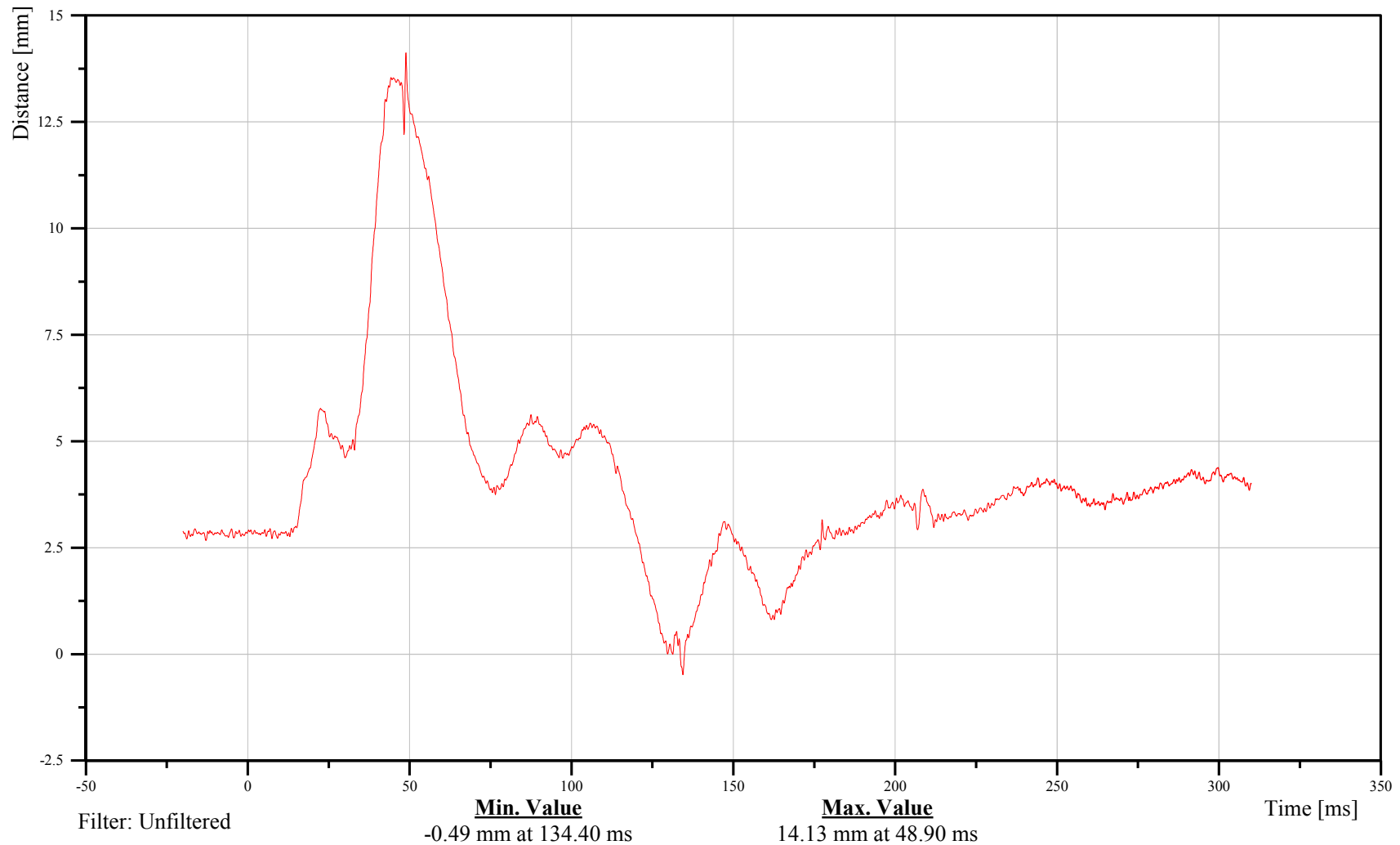
2016 Nissan Rogue Side Pole Impact
Thorax Rib 3 Middle Ribeye X-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI03MIWSDSX0

TRC Inc. Test Lab: CTF
Test Number: 160329





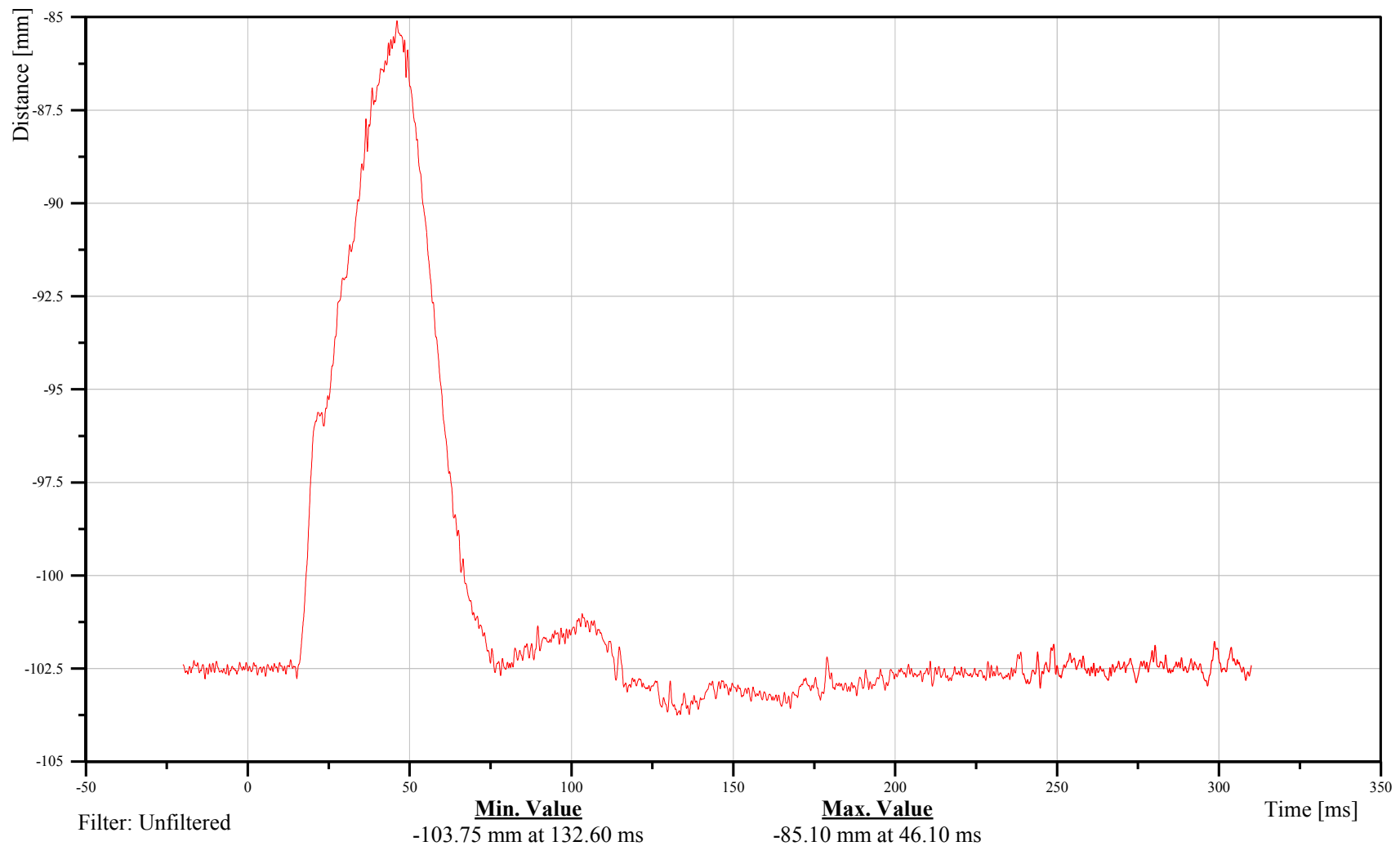
2016 Nissan Rogue Side Pole Impact
Thorax Rib 3 Middle Ribeye Y-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI03MIWSDSY0

TRC Inc. Test Lab: CTF
Test Number: 160329





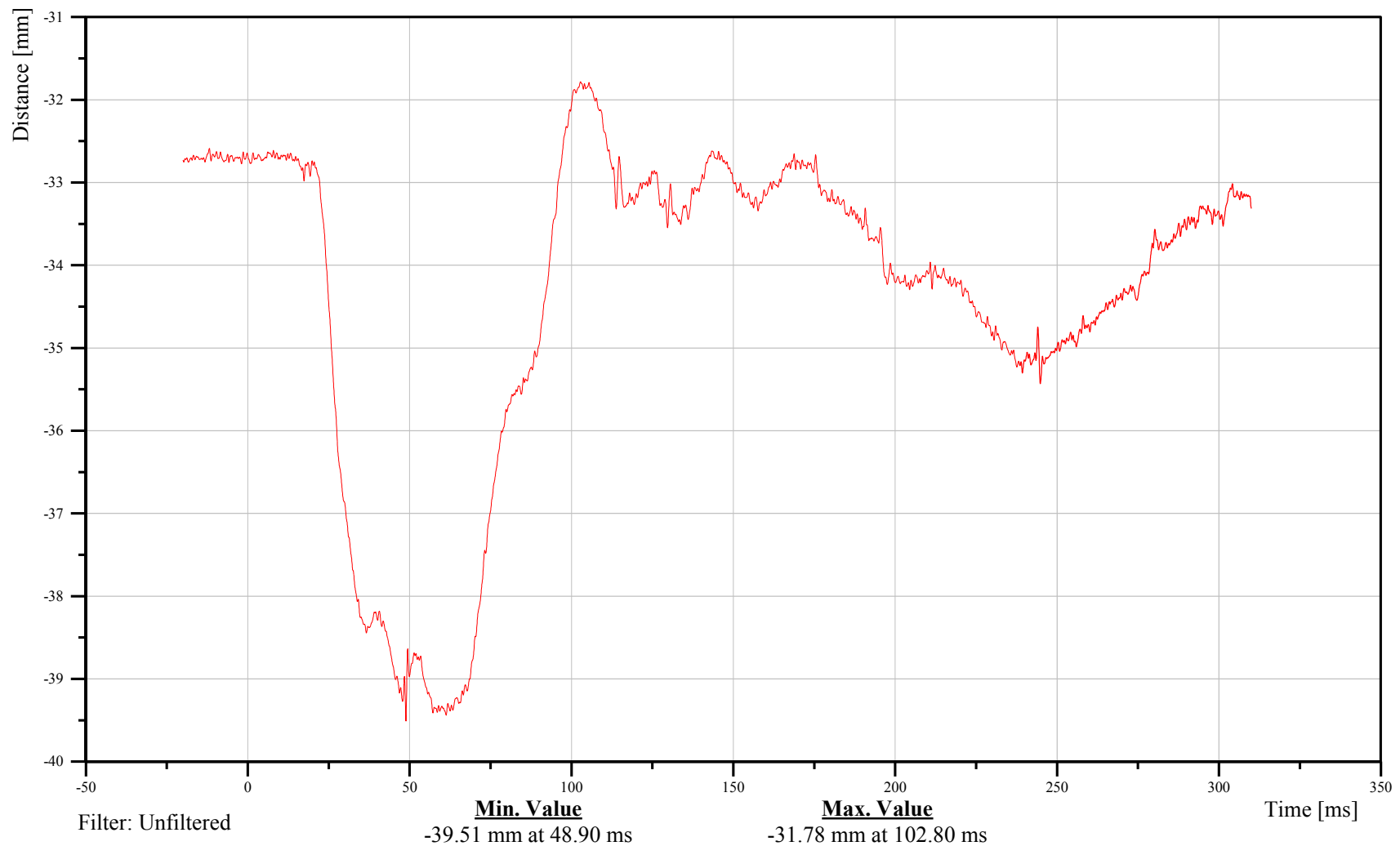
2016 Nissan Rogue Side Pole Impact
Thorax Rib 3 Middle Ribeye Z-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI03MIWSDSZ0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

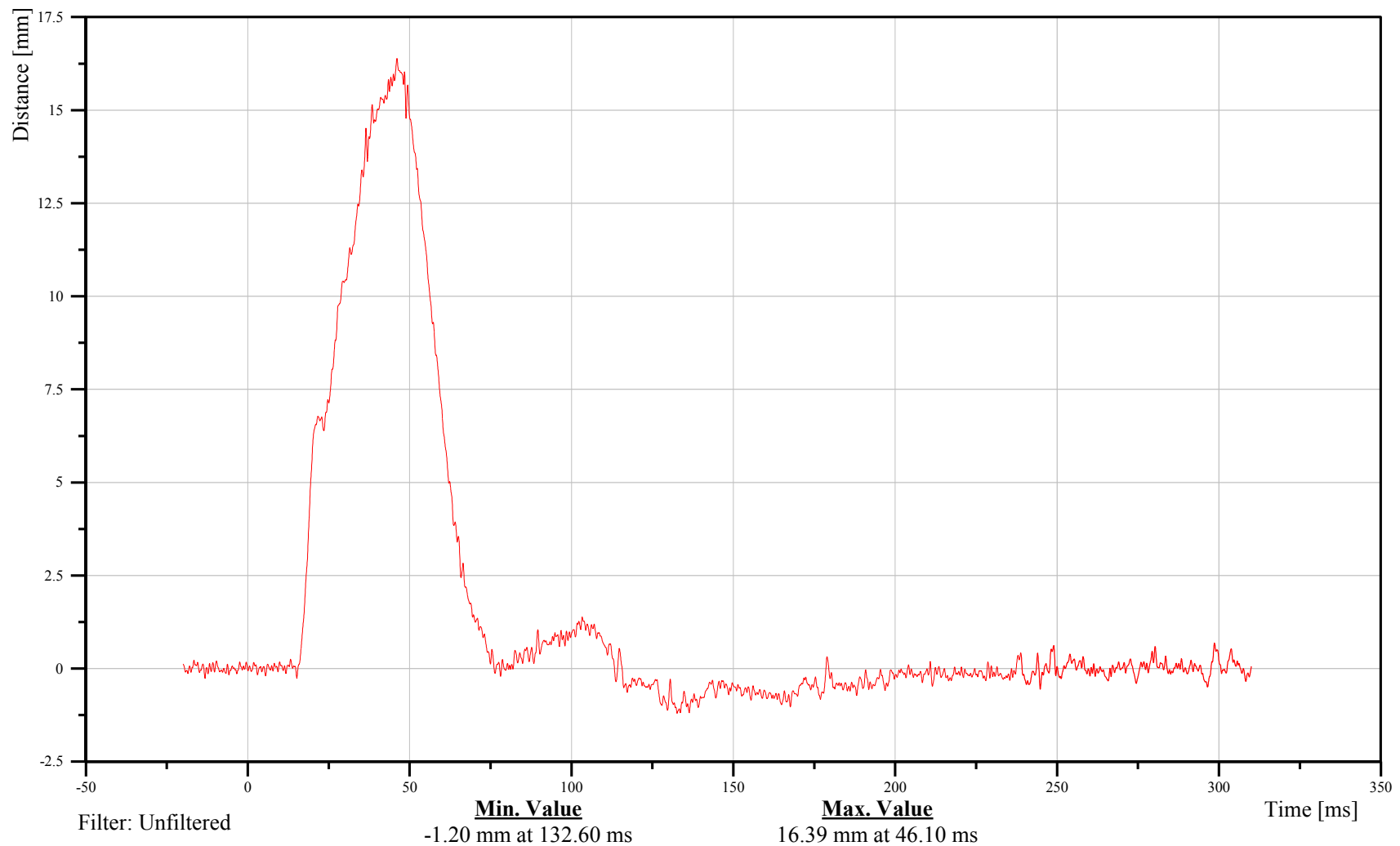
Thorax Rib 3 Middle Ribeye Length Change

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI03MIWSDS00

TRC Inc. Test Lab: CTF
Test Number: 160329





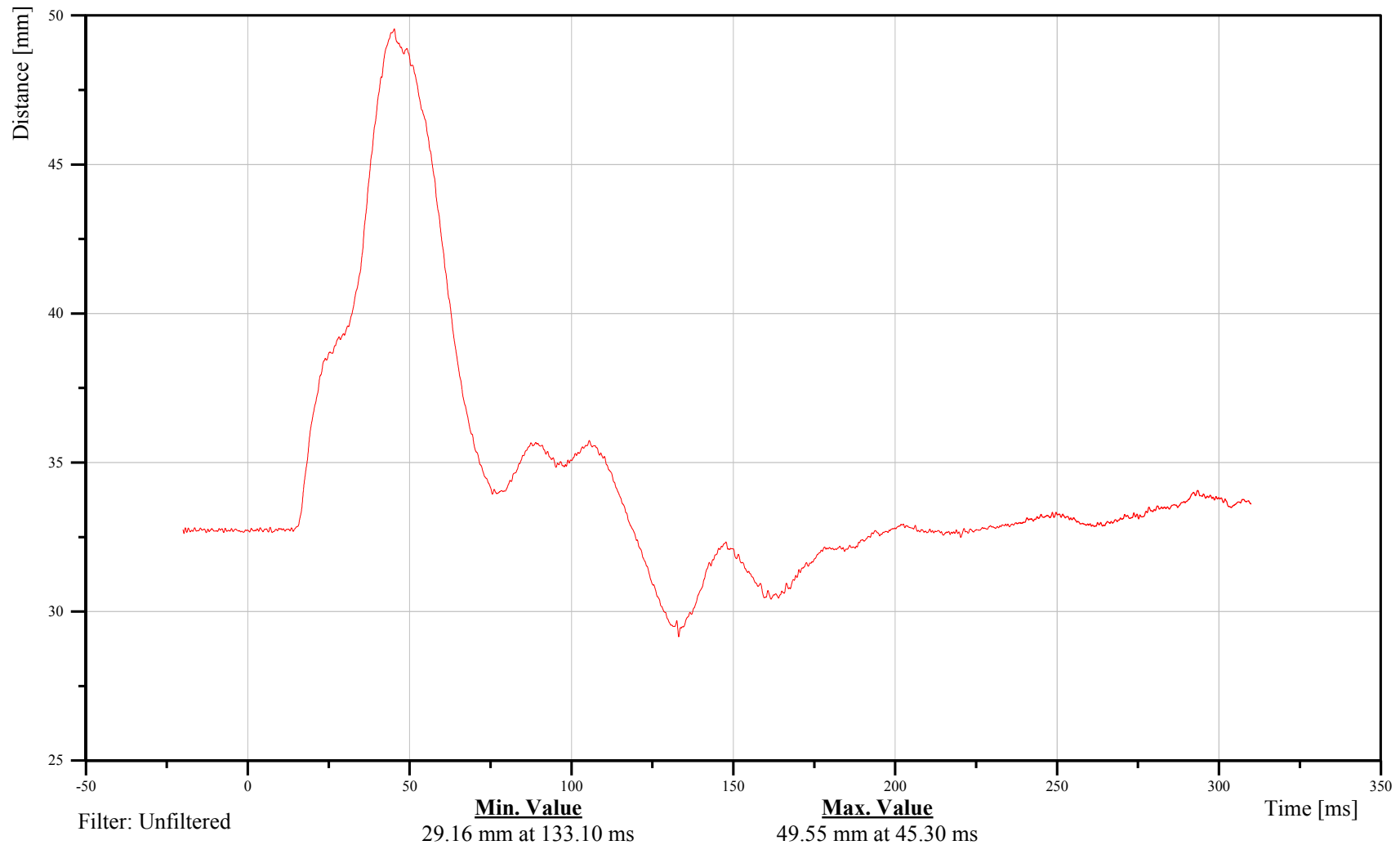
2016 Nissan Rogue Side Pole Impact
Thorax Rib 3 Front Ribeye X-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI03FRWSDSX0

TRC Inc. Test Lab: CTF
Test Number: 160329





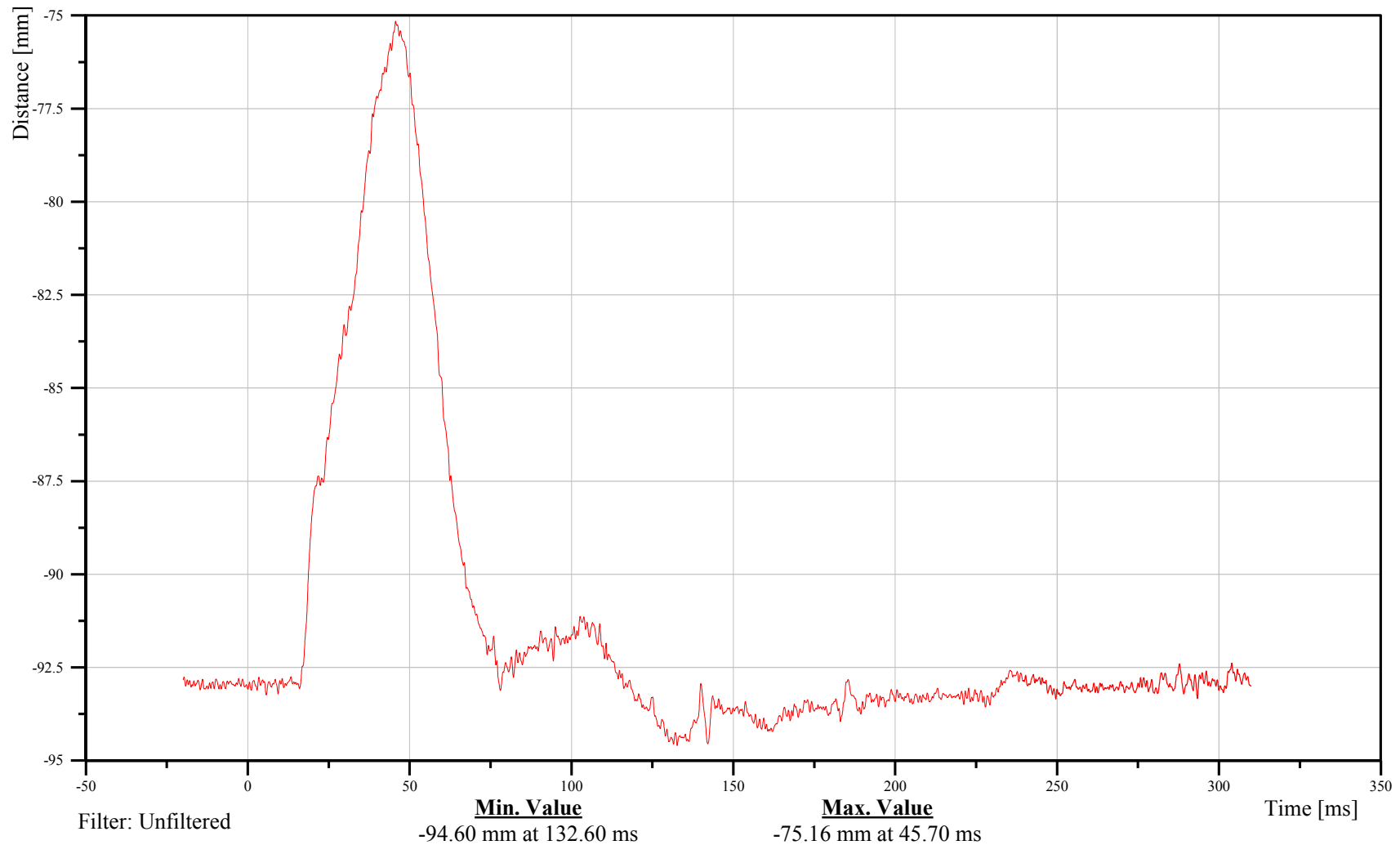
2016 Nissan Rogue Side Pole Impact
Thorax Rib 3 Front Ribeye Y-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI03FRWSDSY0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

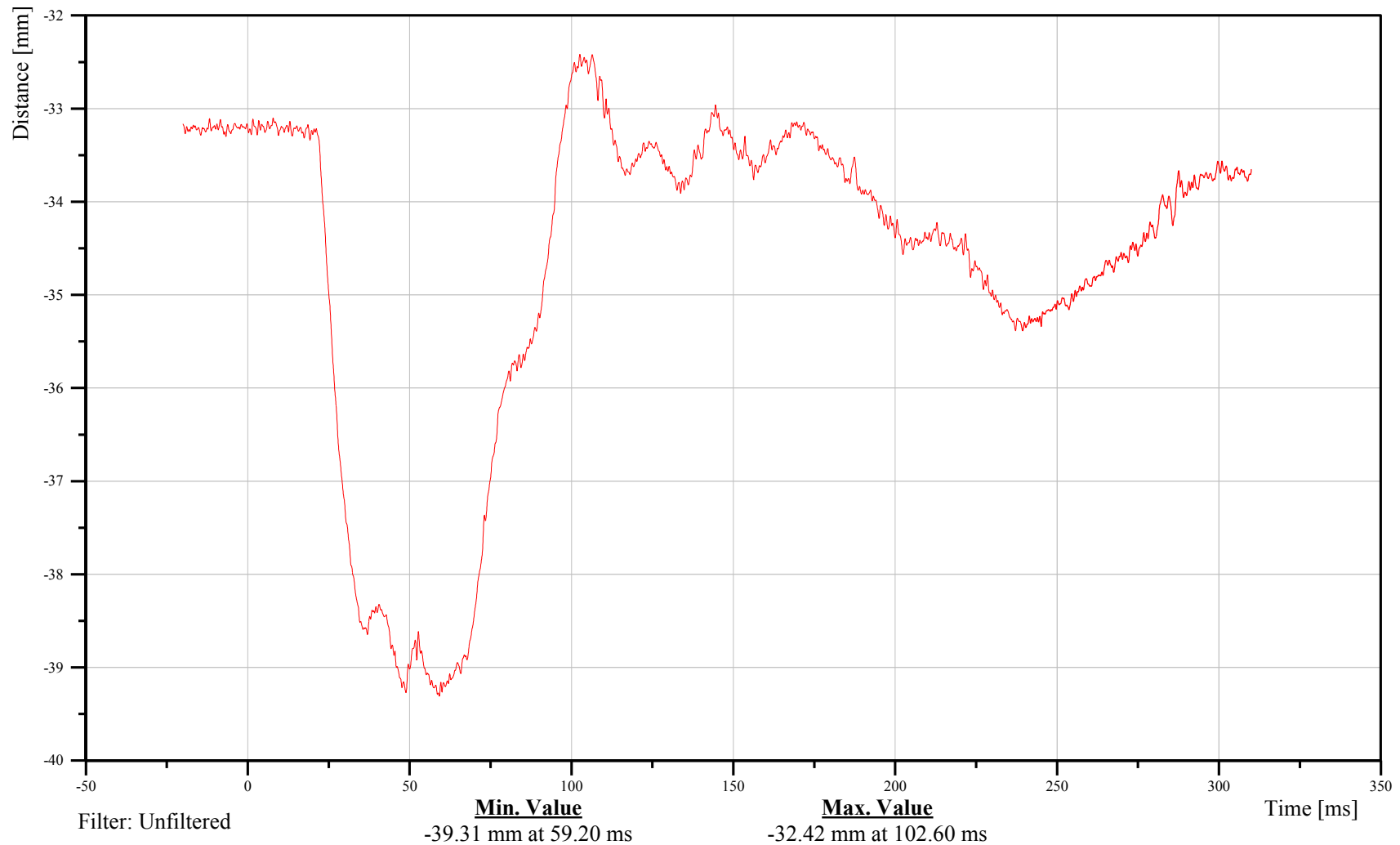
Thorax Rib 3 Front Ribeye Z-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11THRI03FRWSDSZ0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

Thorax Rib 3 Front Ribeye Length Change

Date: 03/29/2016

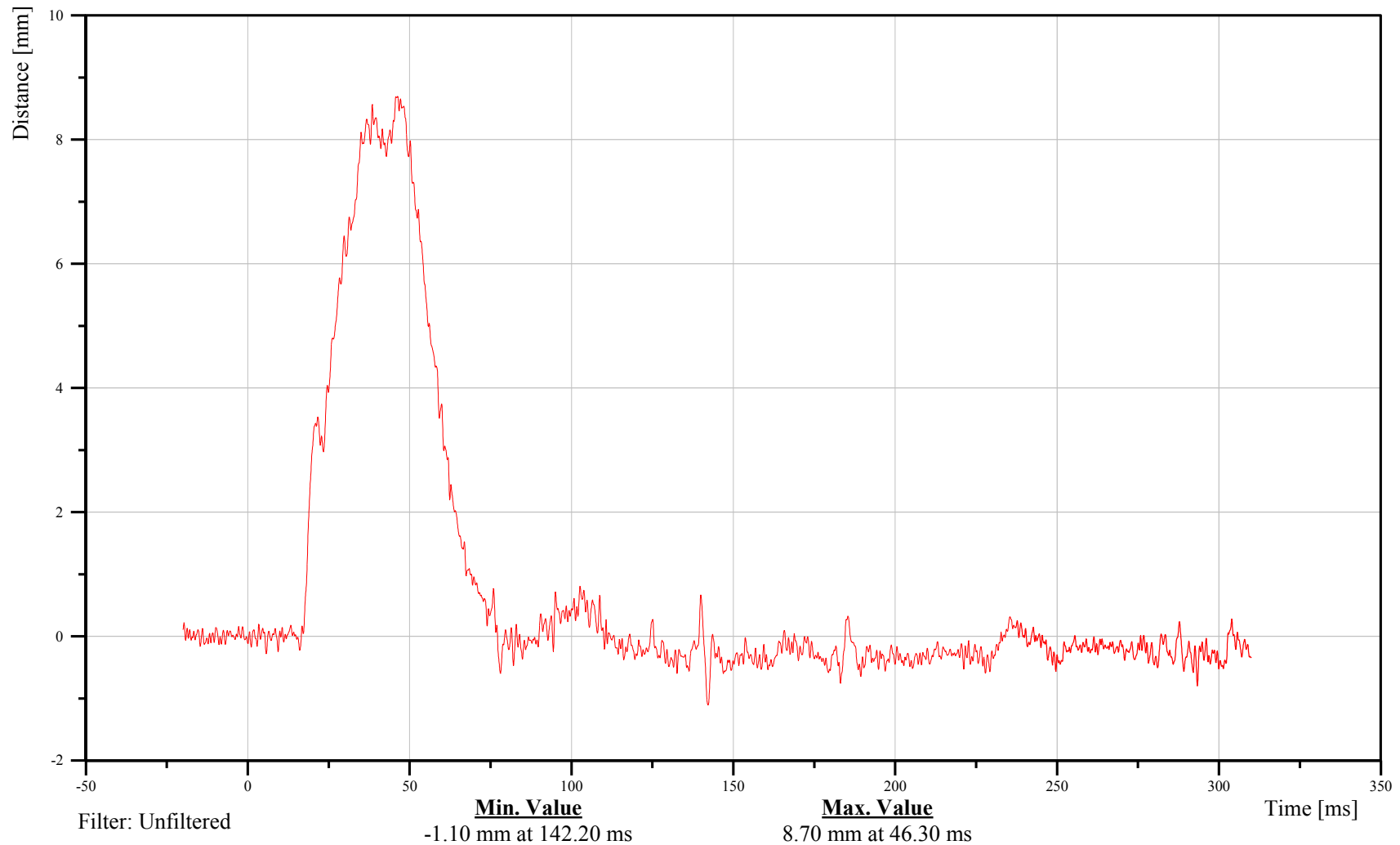
Time: 16:04

Customer: VRTC

11THRI03FRWSDS00

TRC Inc. Test Lab: CTF

Test Number: 160329





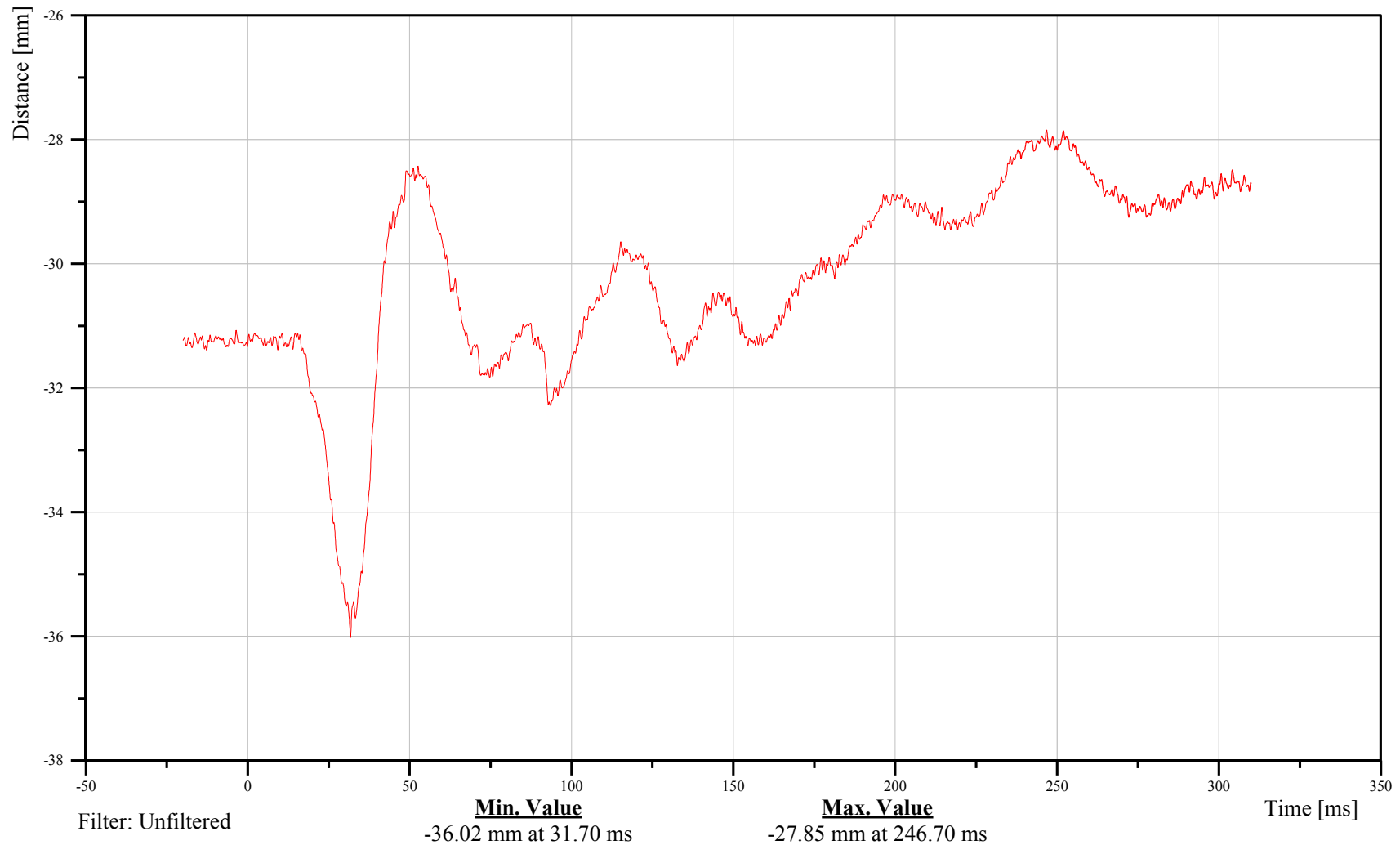
2016 Nissan Rogue Side Pole Impact
Abdomen Rib 1 Rear Ribeye X-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI01REWSDSX0

TRC Inc. Test Lab: CTF
Test Number: 160329





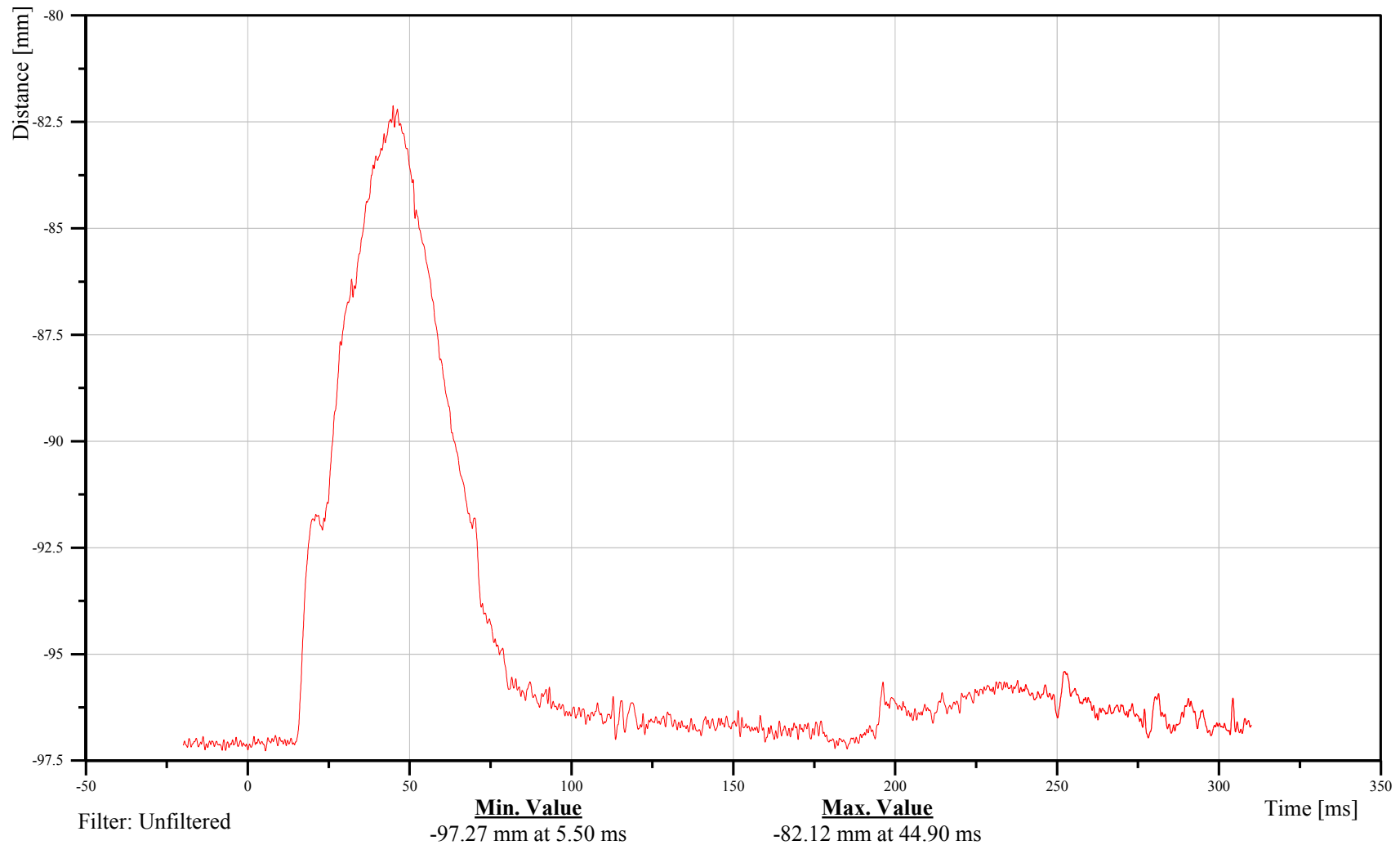
2016 Nissan Rogue Side Pole Impact
Abdomen Rib 1 Rear Ribeye Y-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI01REWSDSY0

TRC Inc. Test Lab: CTF
Test Number: 160329





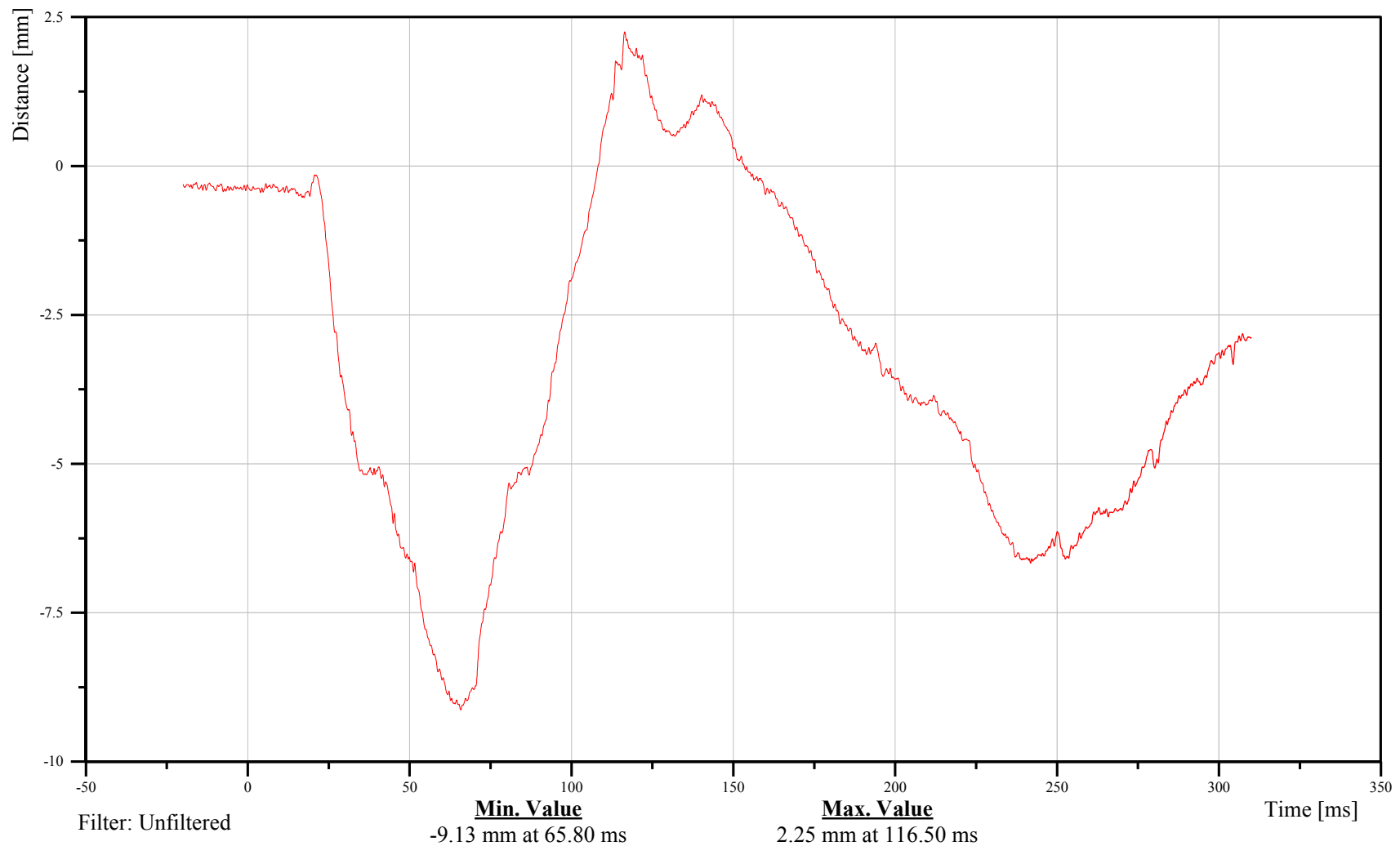
2016 Nissan Rogue Side Pole Impact
Abdomen Rib 1 Rear Ribeye Z-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI01REWSDSZ0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

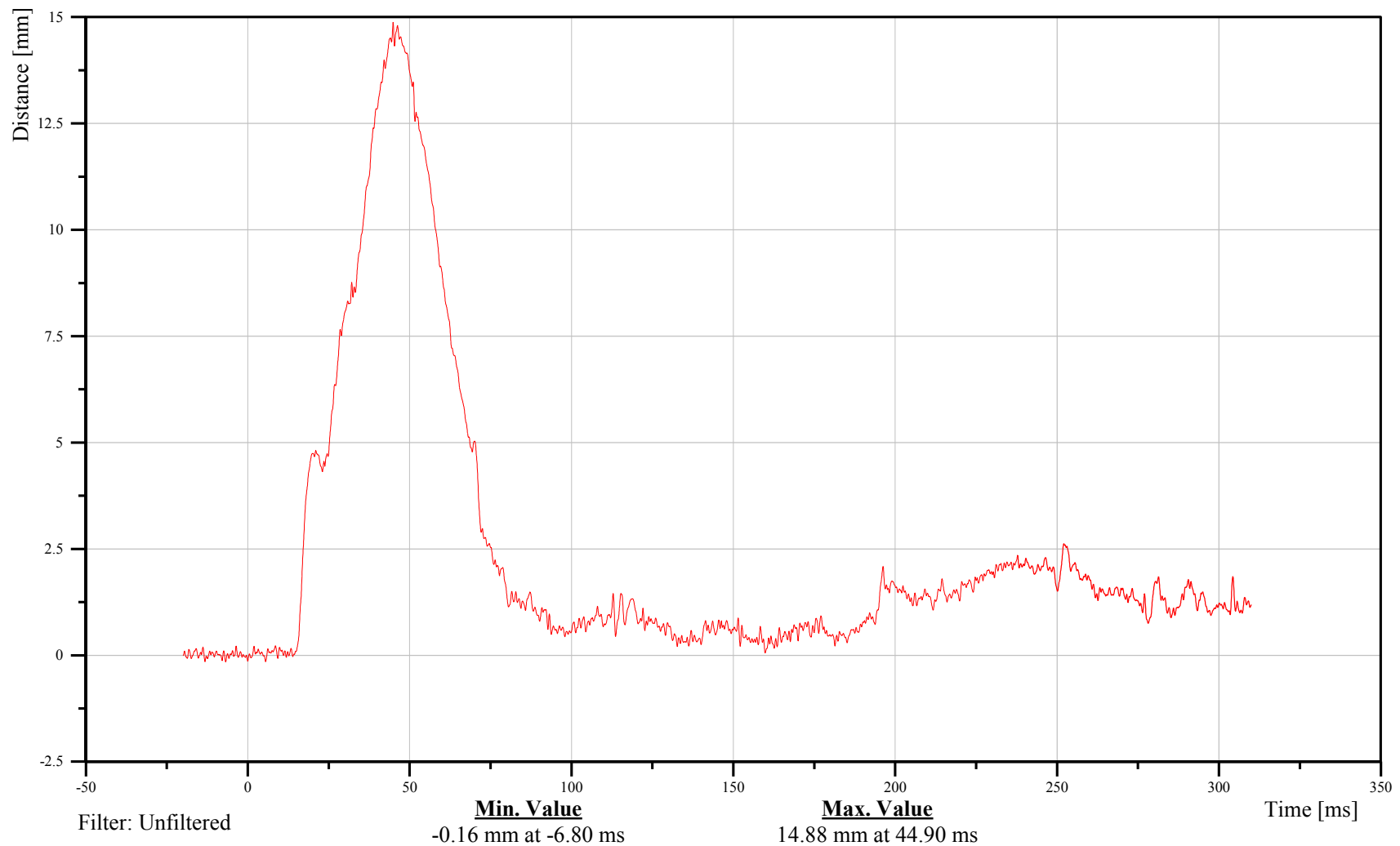
Abdomen Rib 1 Rear Ribeye Length Change

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI01REWSDS00

TRC Inc. Test Lab: CTF
Test Number: 160329





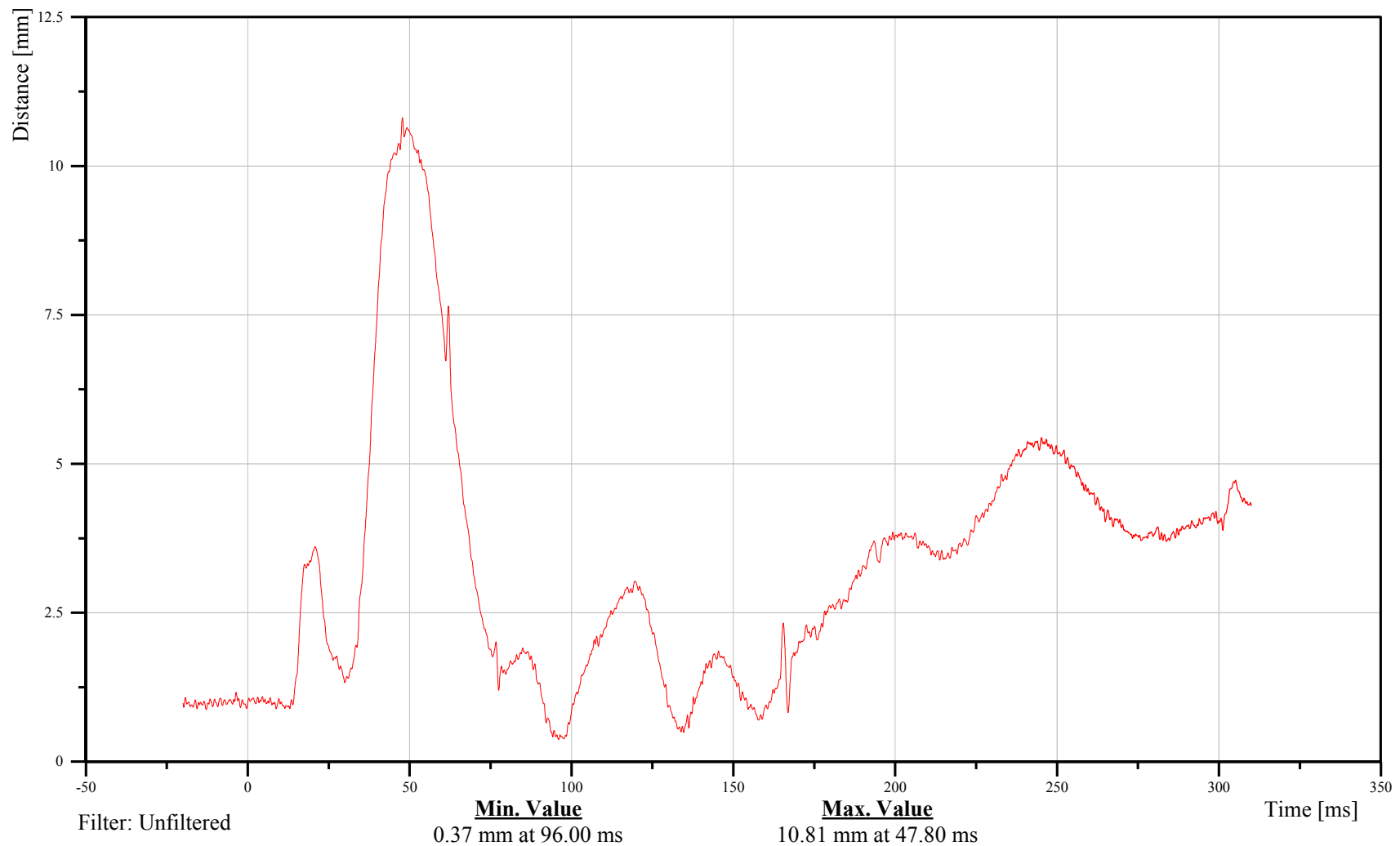
2016 Nissan Rogue Side Pole Impact
Abdomen Rib 1 Middle Ribeye X-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI01MIWSDSX0

TRC Inc. Test Lab: CTF
Test Number: 160329





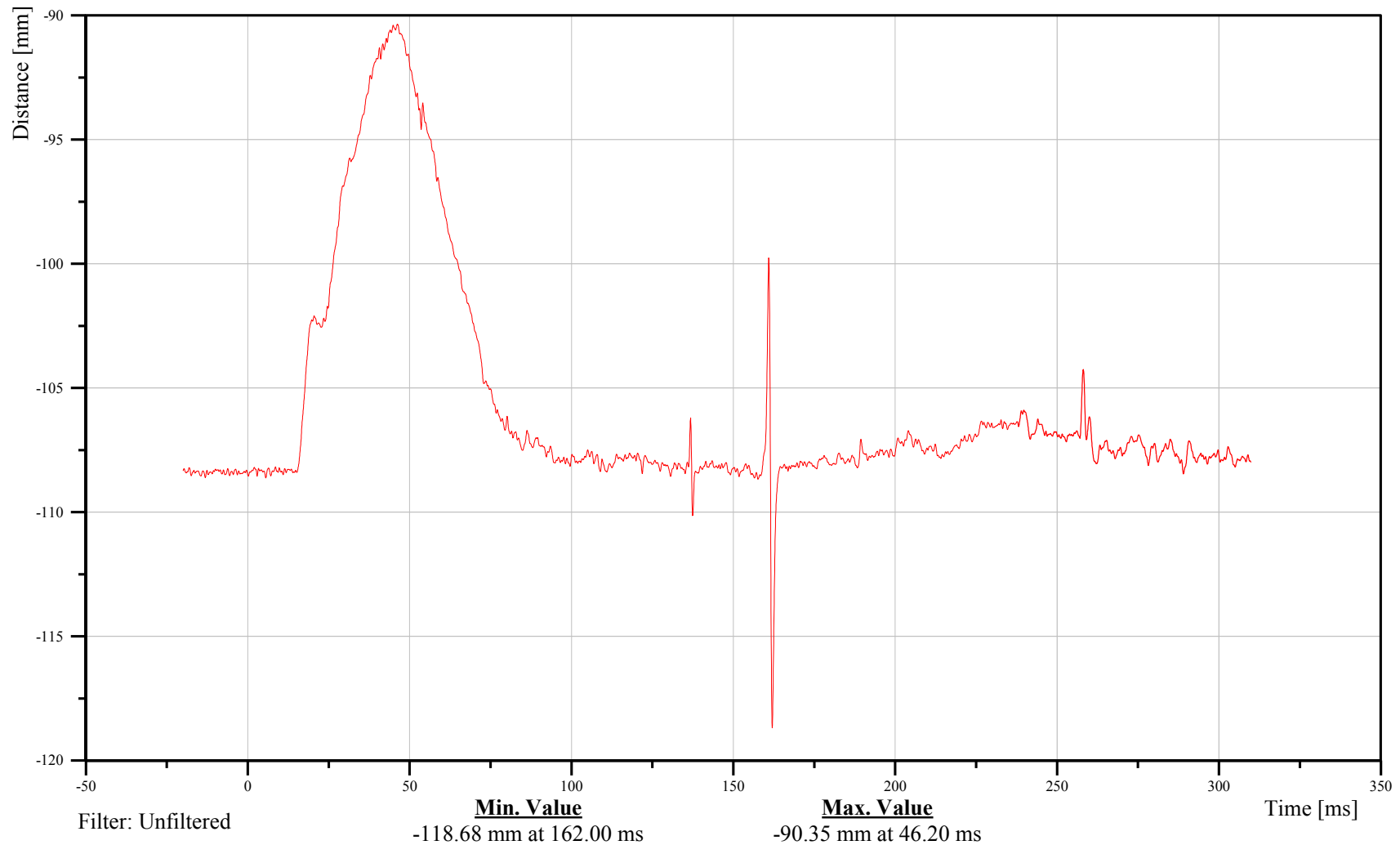
2016 Nissan Rogue Side Pole Impact
Abdomen Rib 1 Middle Ribeye Y-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI01MIWSDSY0

TRC Inc. Test Lab: CTF
Test Number: 160329





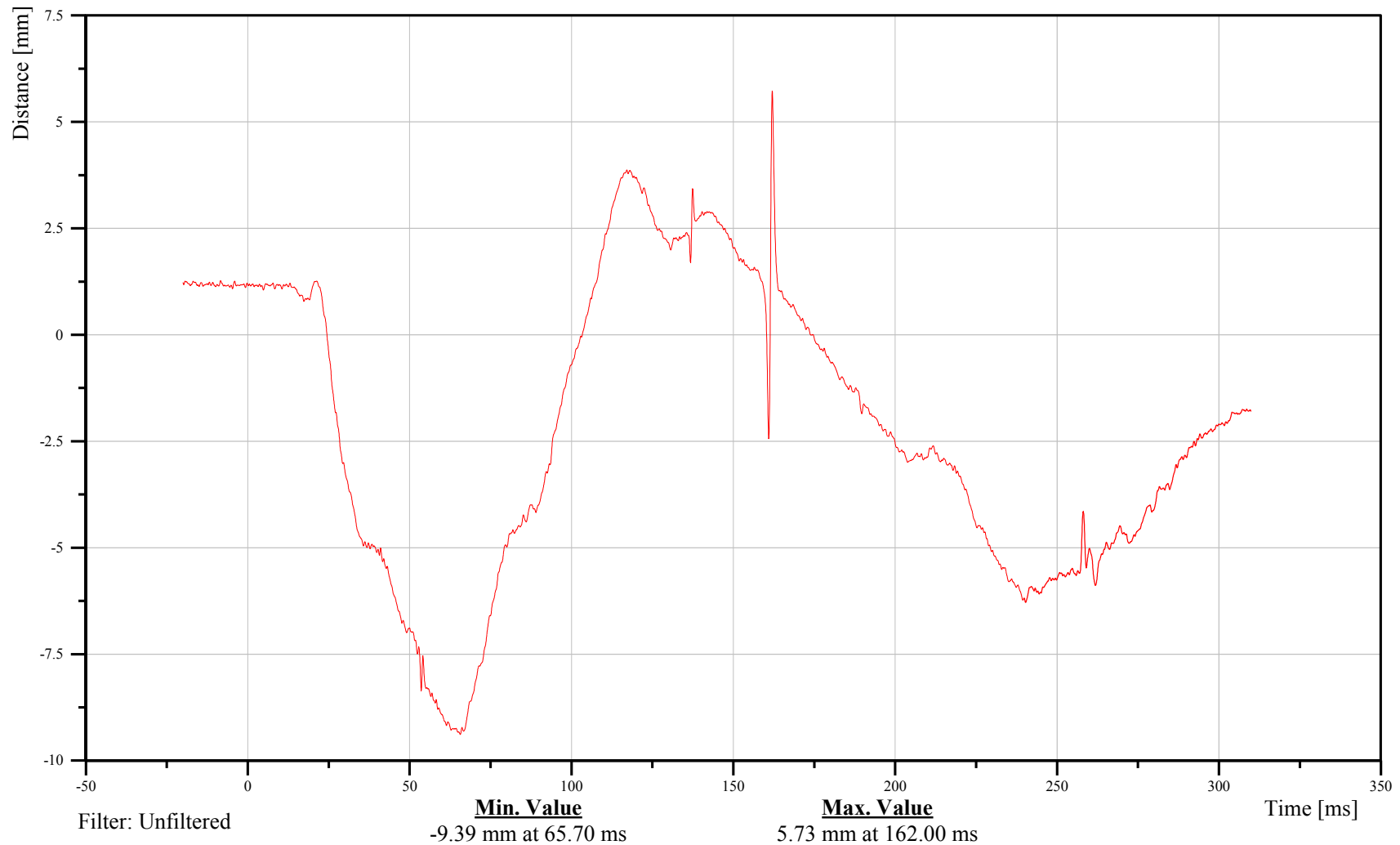
2016 Nissan Rogue Side Pole Impact
Abdomen Rib 1 Middle Ribeye Z-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI01MIWSDSZ0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

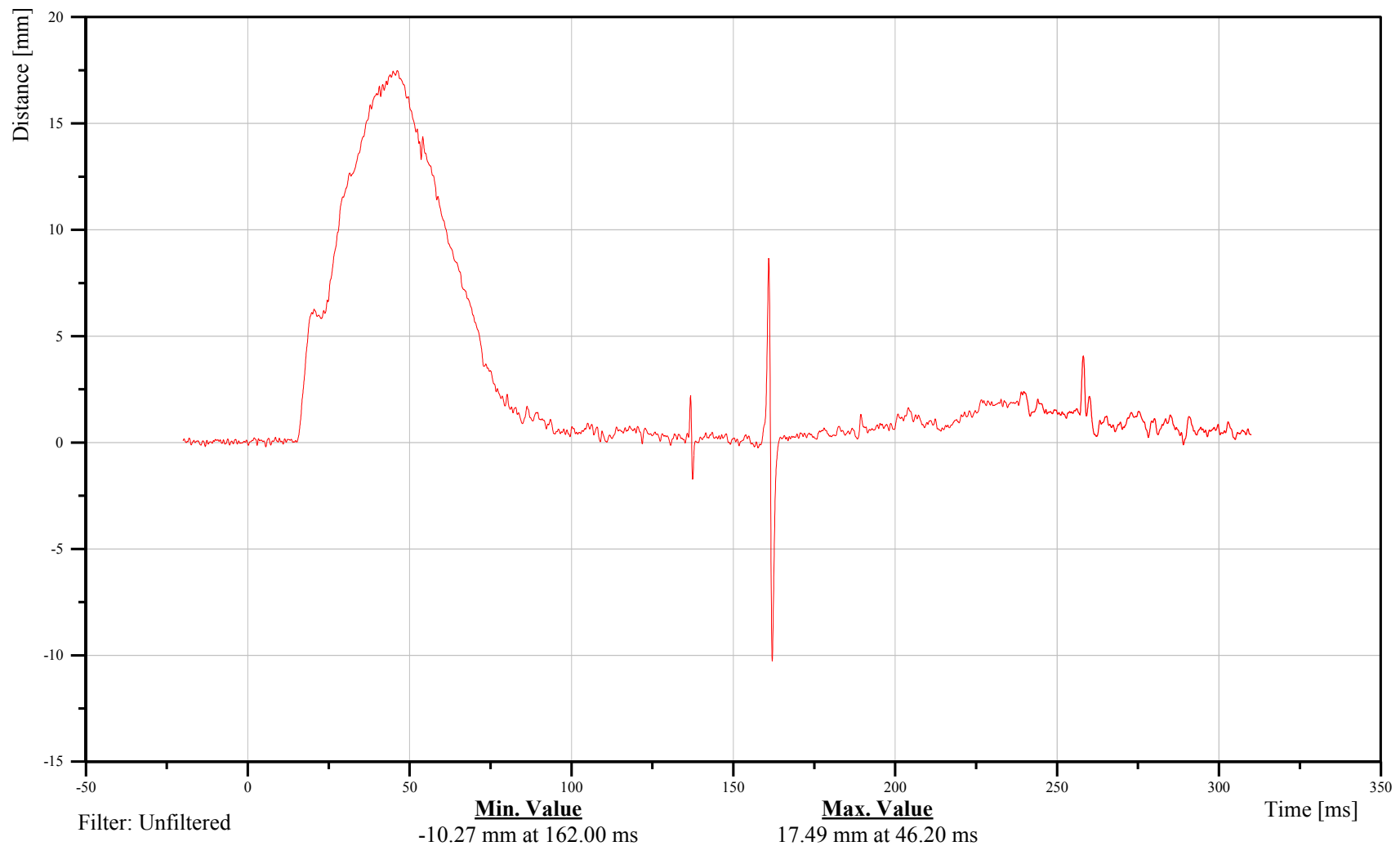
Abdomen Rib 1 Middle Ribeye Length Change

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI01MIWSDS00

TRC Inc. Test Lab: CTF
Test Number: 160329





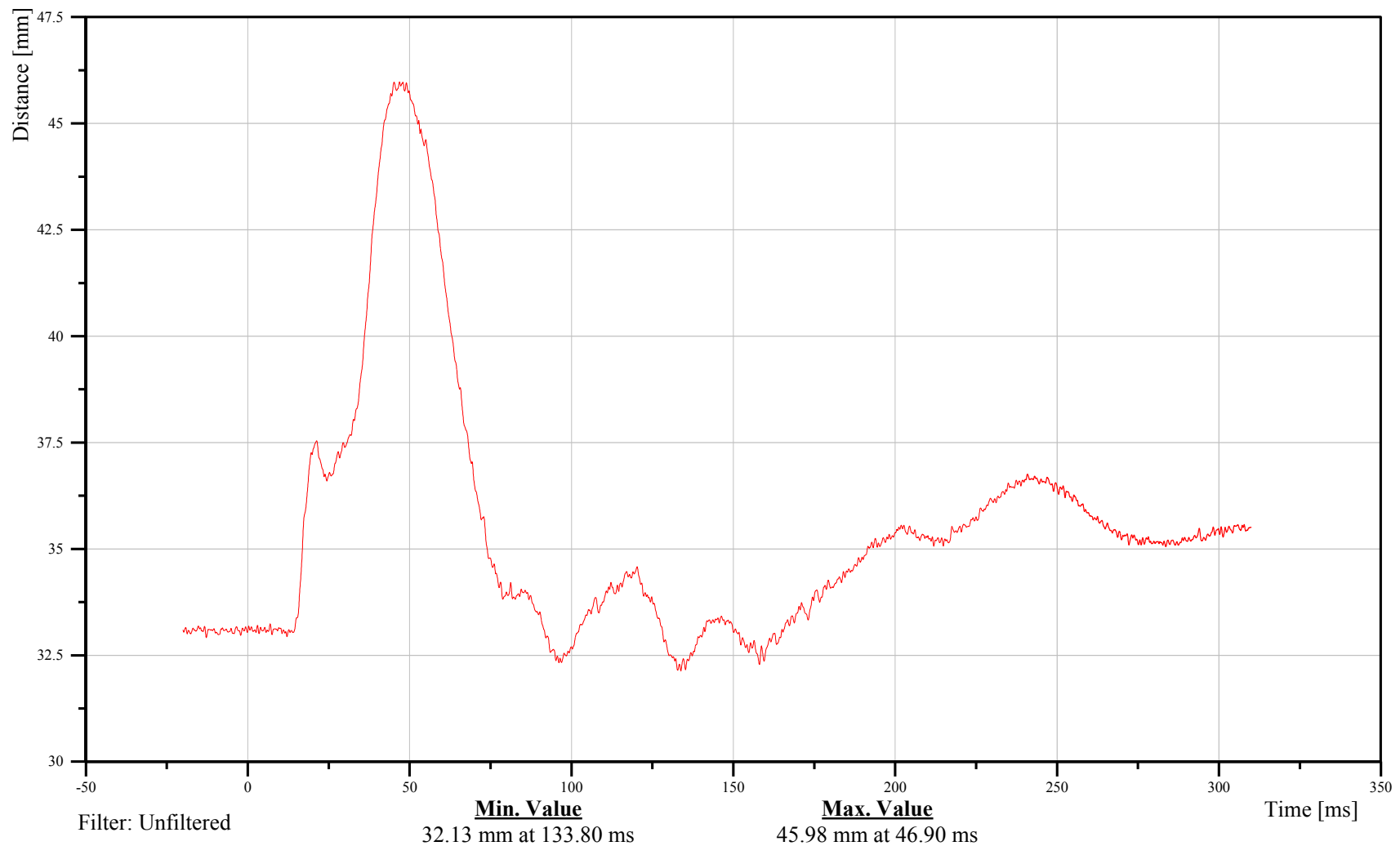
2016 Nissan Rogue Side Pole Impact
Abdomen Rib 1 Front Ribeye X-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI01FRWSDSX0

TRC Inc. Test Lab: CTF
Test Number: 160329





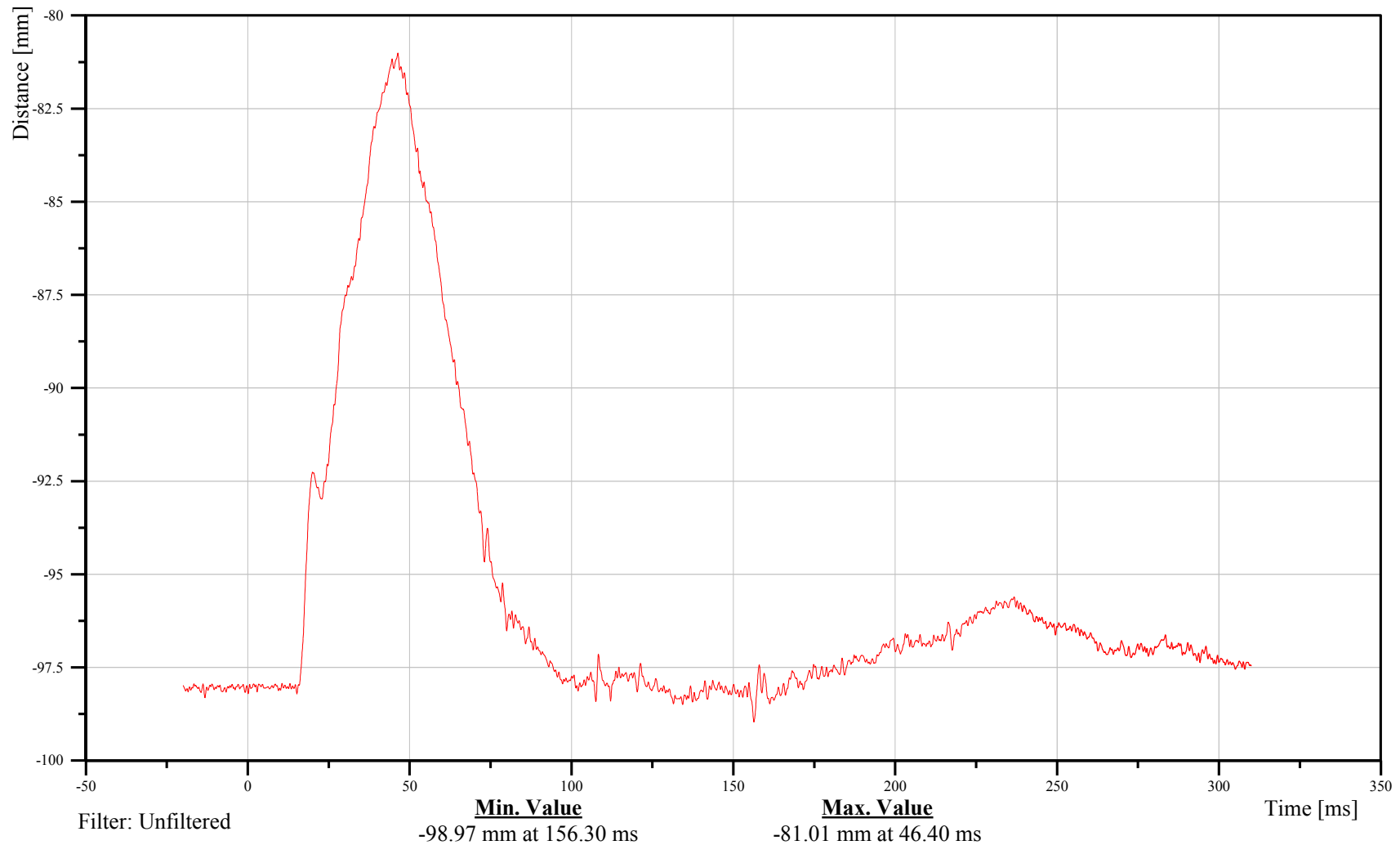
2016 Nissan Rogue Side Pole Impact
Abdomen Rib 1 Front Ribeye Y-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI01FRWSDSY0

TRC Inc. Test Lab: CTF
Test Number: 160329





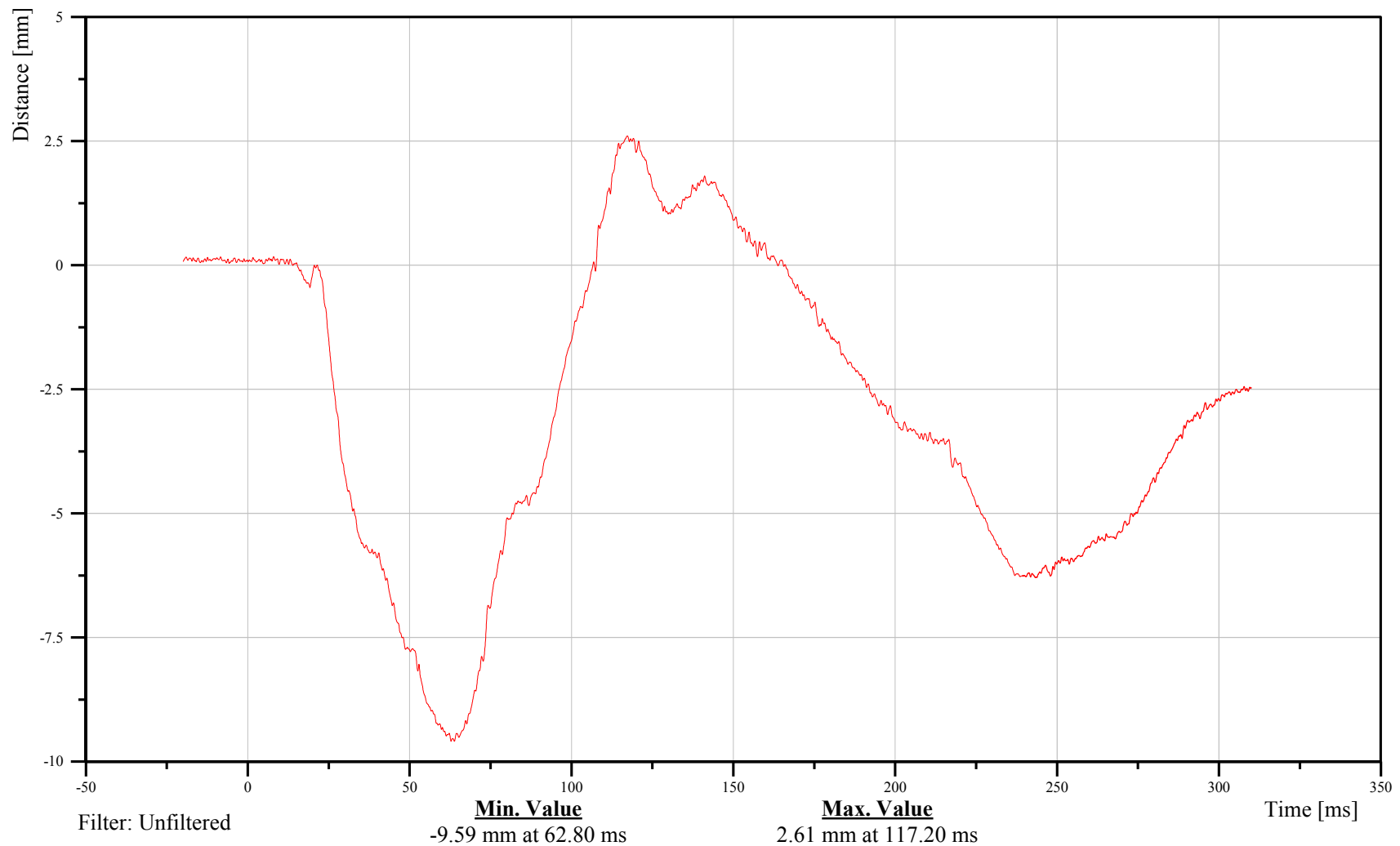
2016 Nissan Rogue Side Pole Impact
Abdomen Rib 1 Front Ribeye Z-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI01FRWSDSZ0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

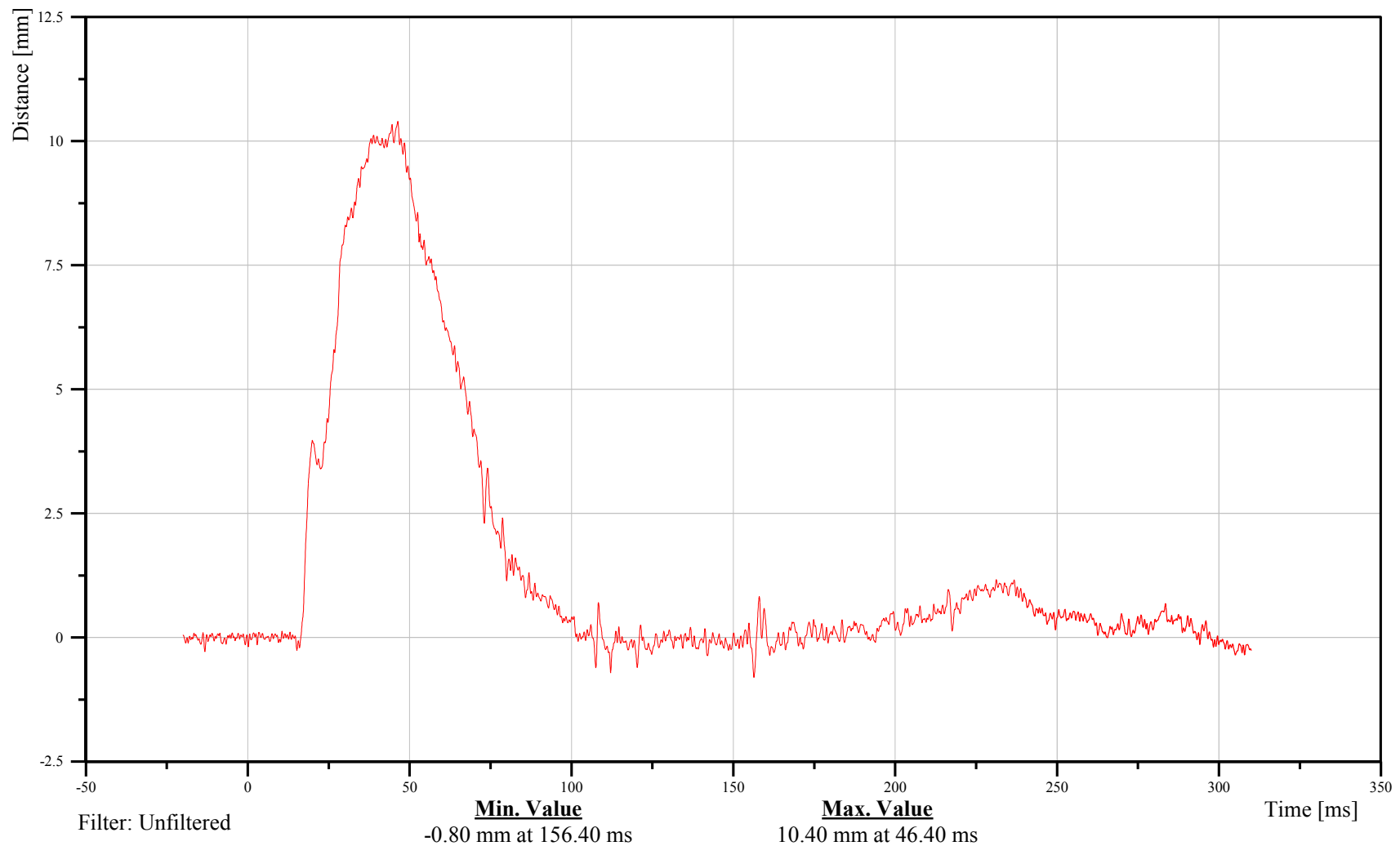
Abdomen Rib 1 Front Ribeye Length Change

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI01FRWSDS00

TRC Inc. Test Lab: CTF
Test Number: 160329





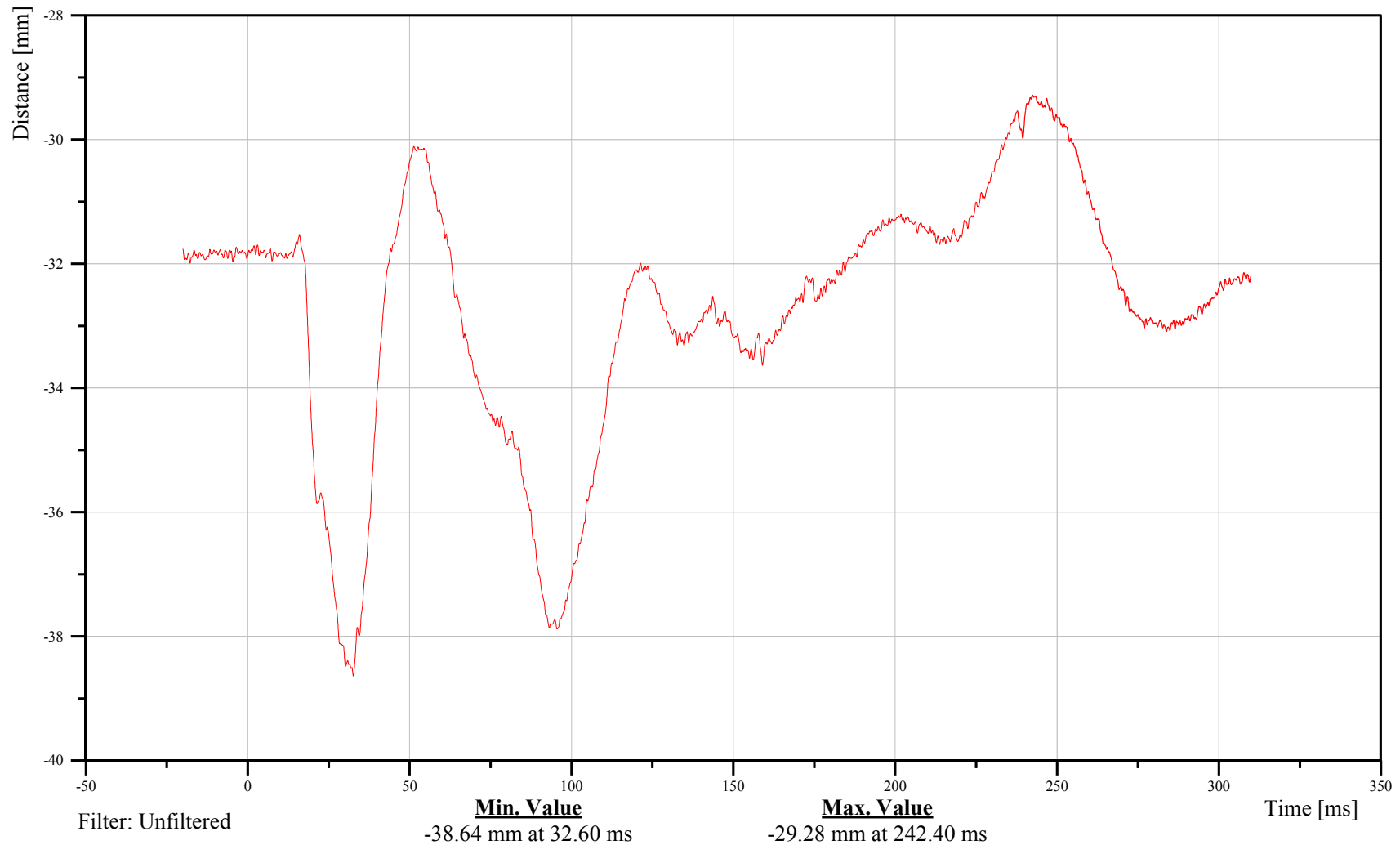
2016 Nissan Rogue Side Pole Impact
Abdomen Rib 2 Rear Ribeye X-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI02REWSDSX0

TRC Inc. Test Lab: CTF
Test Number: 160329





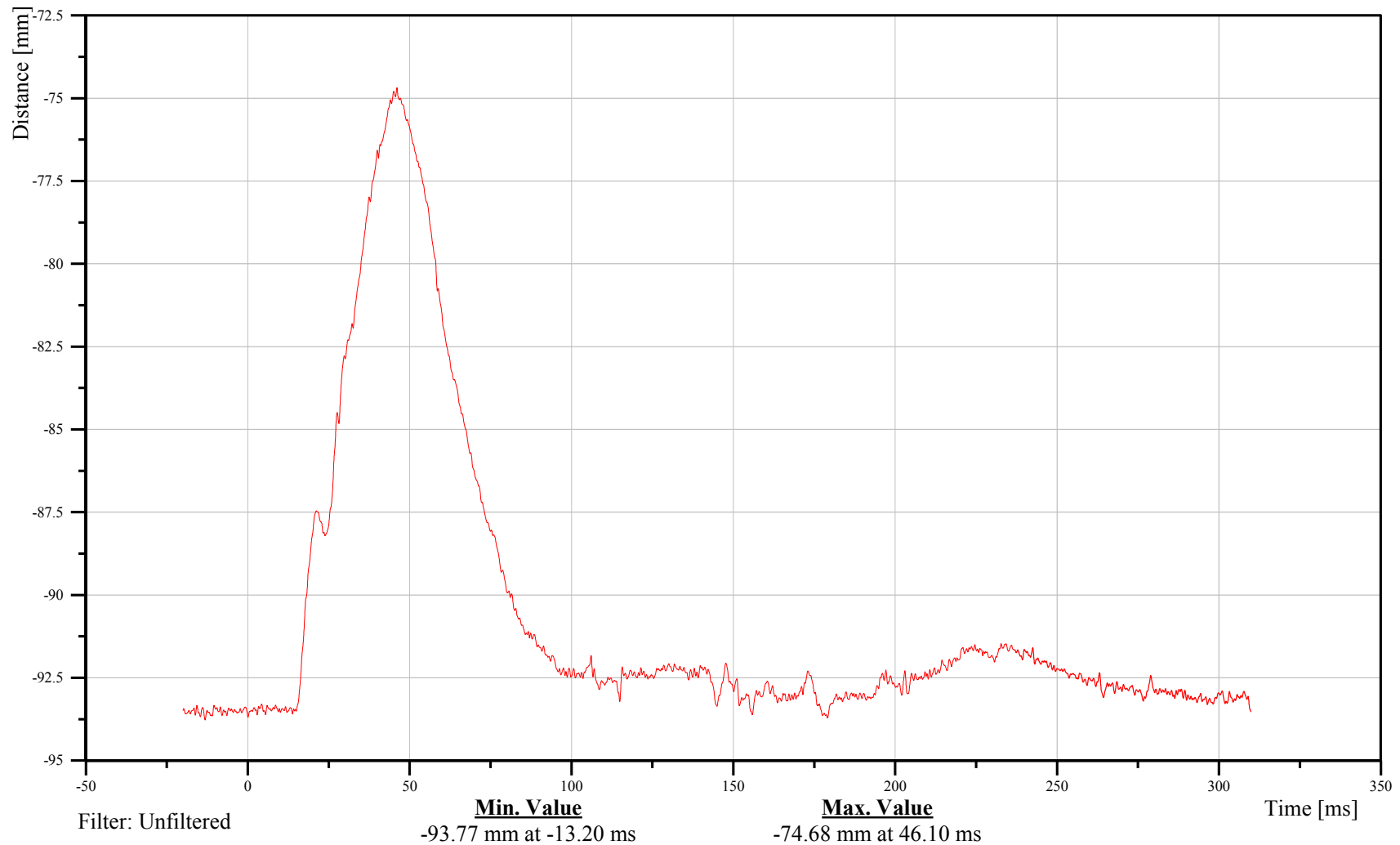
2016 Nissan Rogue Side Pole Impact
Abdomen Rib 2 Rear Ribeye Y-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI02REWSDSY0

TRC Inc. Test Lab: CTF
Test Number: 160329





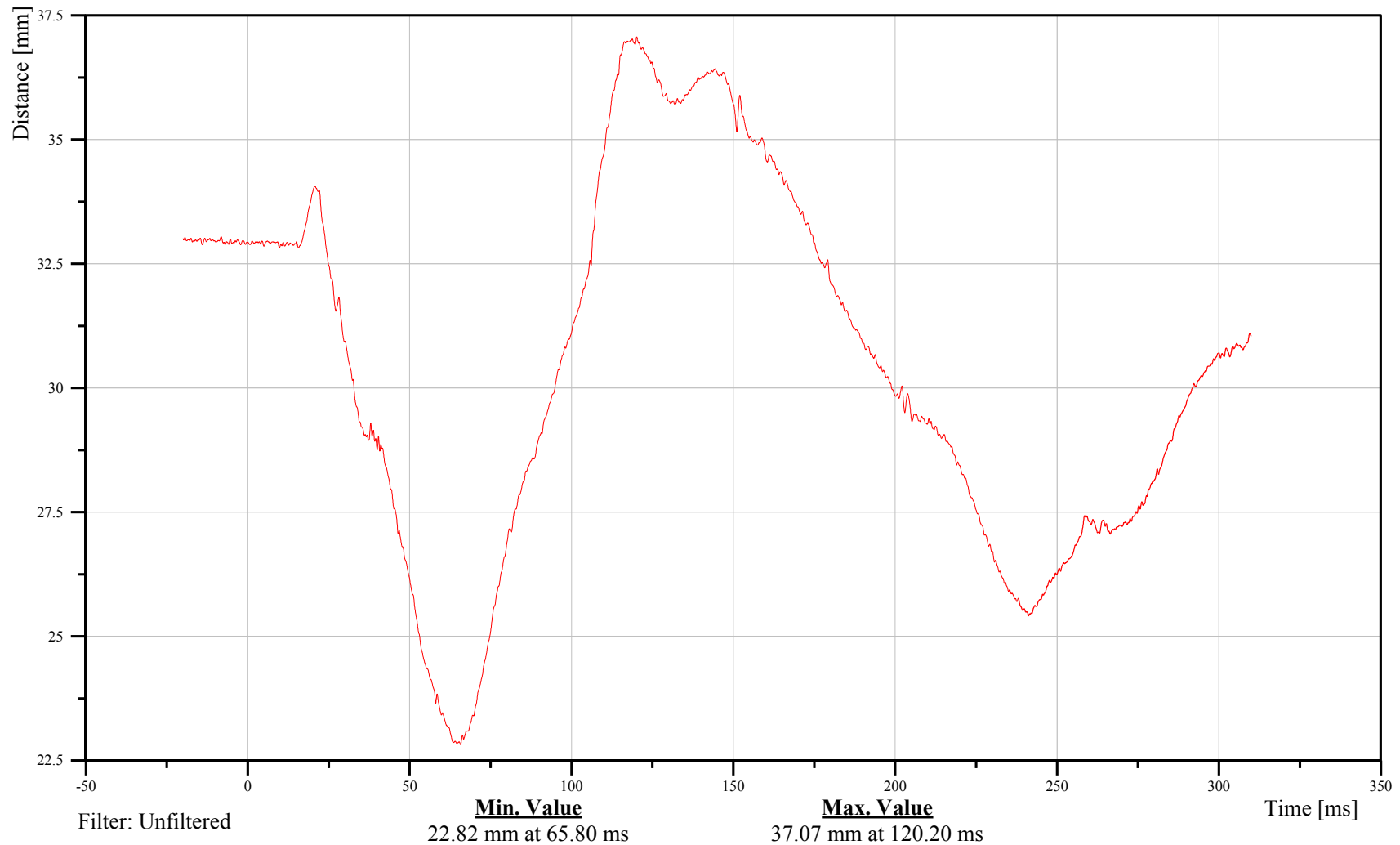
2016 Nissan Rogue Side Pole Impact
Abdomen Rib 2 Rear Ribeye Z-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI02REWSDSZ0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

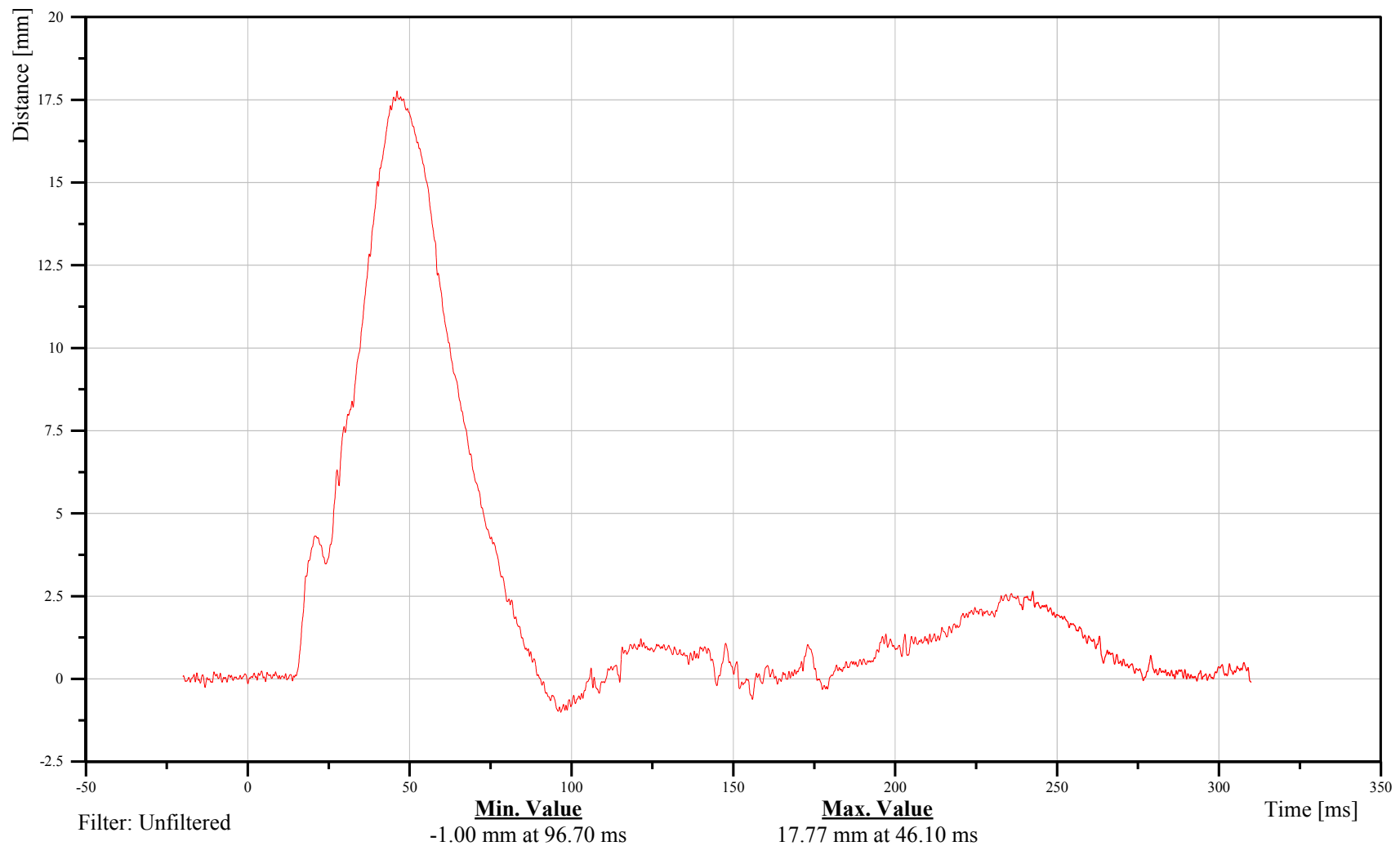
Abdomen Rib 2 Rear Ribeye Length Change

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI02REWSDS00

TRC Inc. Test Lab: CTF
Test Number: 160329





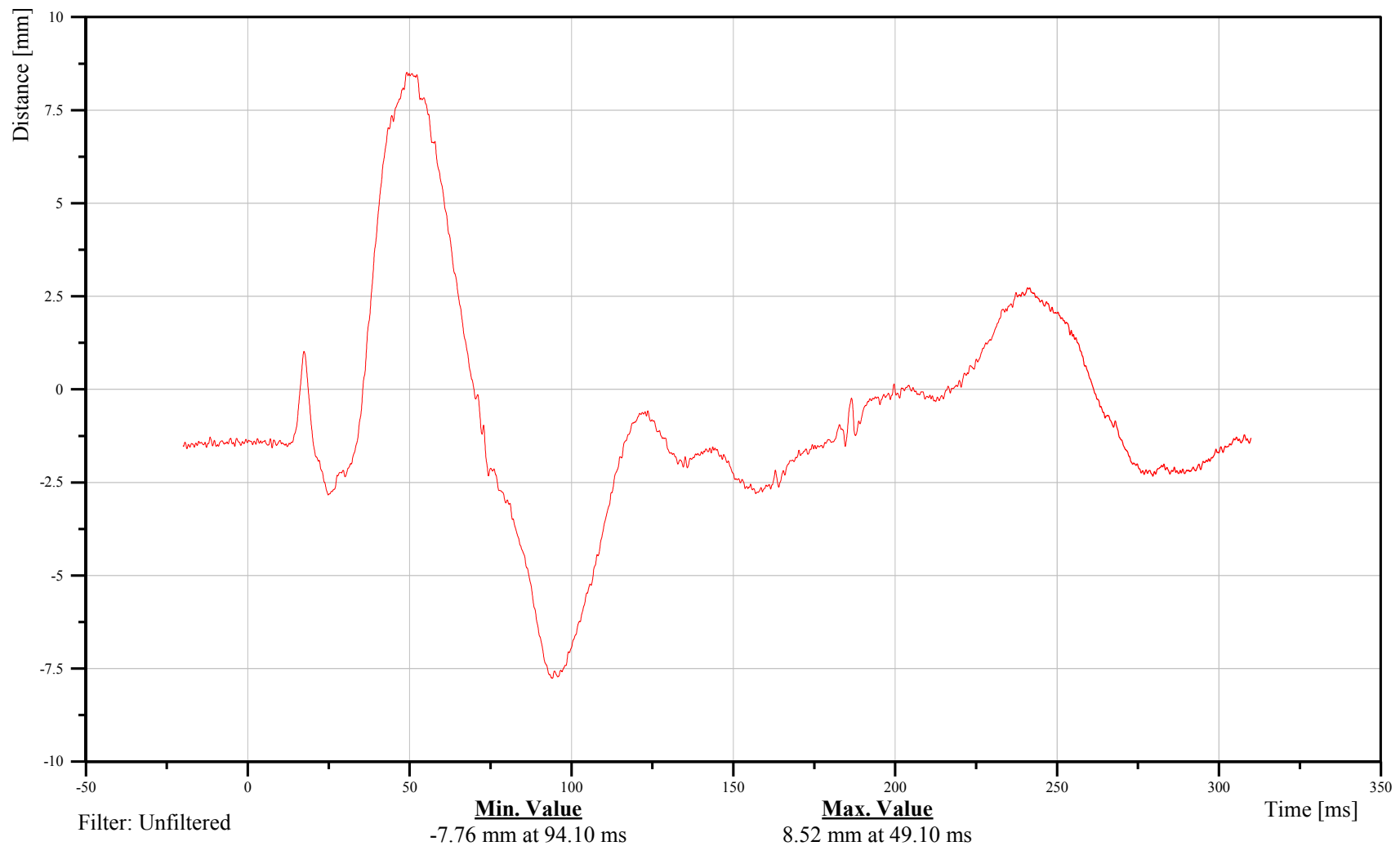
2016 Nissan Rogue Side Pole Impact
Abdomen Rib 2 Middle Ribeye X-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI02MIWSDSX0

TRC Inc. Test Lab: CTF
Test Number: 160329





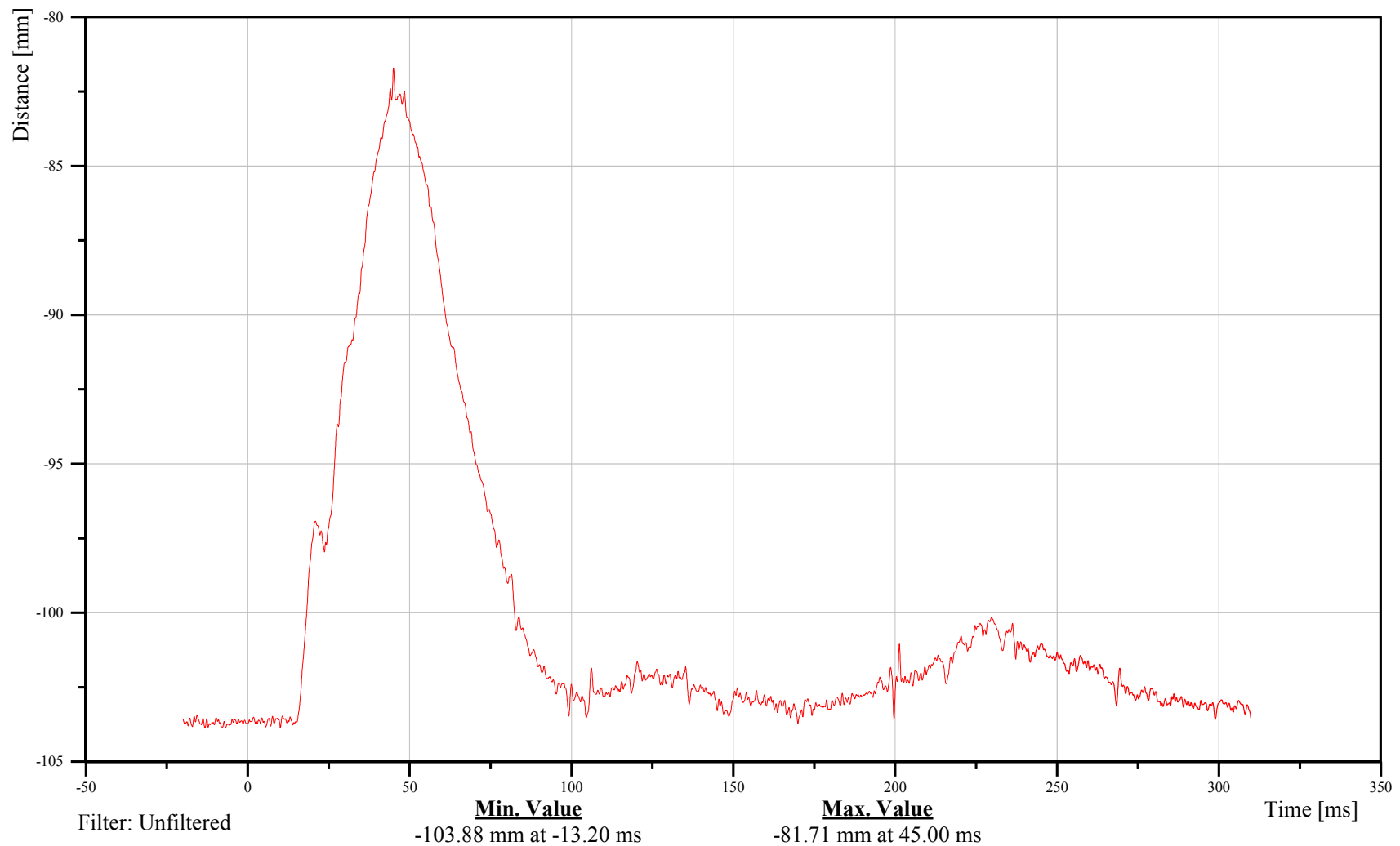
2016 Nissan Rogue Side Pole Impact
Abdomen Rib 2 Middle Ribeye Y-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI02MIWSDSY0

TRC Inc. Test Lab: CTF
Test Number: 160329





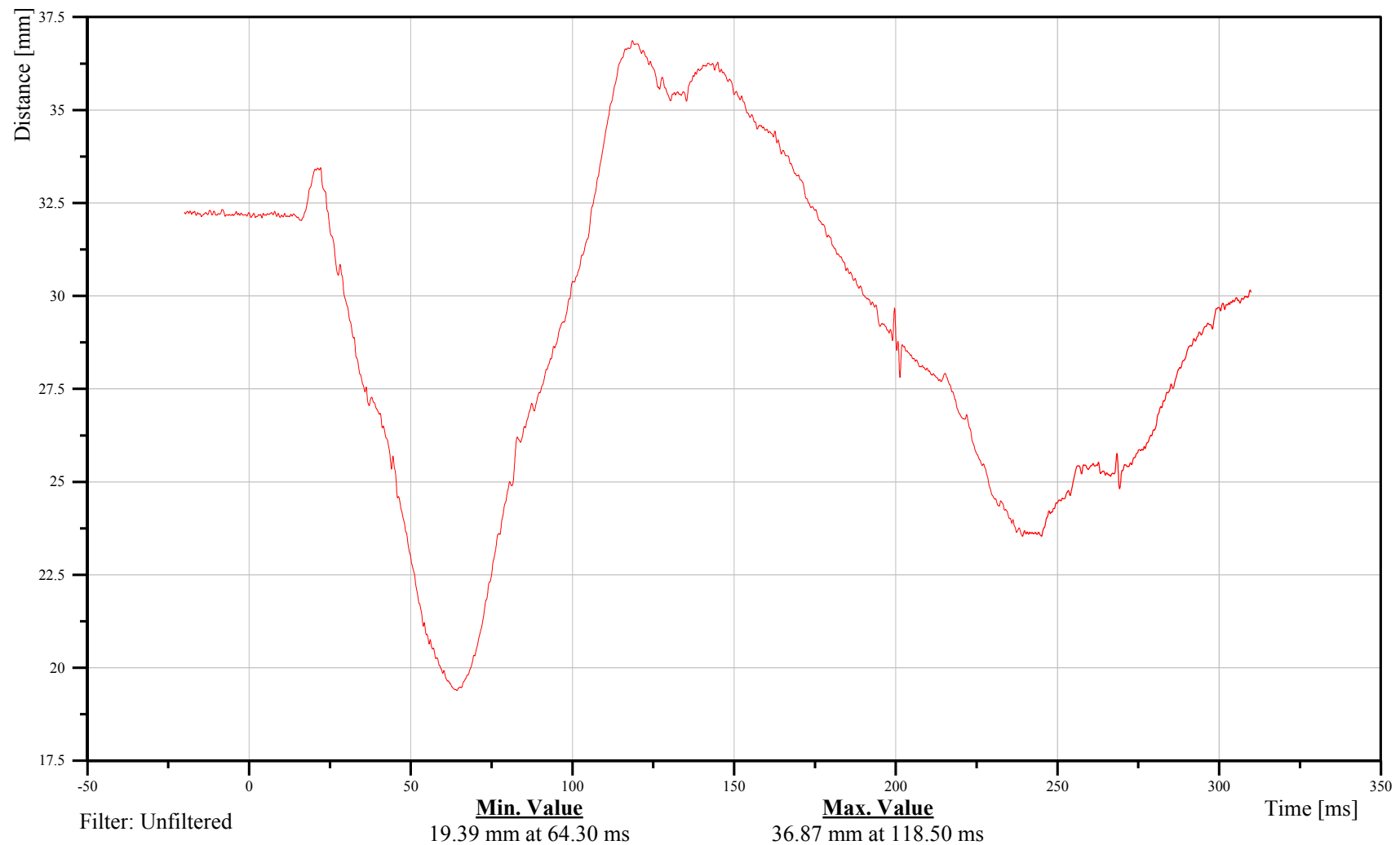
2016 Nissan Rogue Side Pole Impact
Abdomen Rib 2 Middle Ribeye Z-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI02MIWSDSZ0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

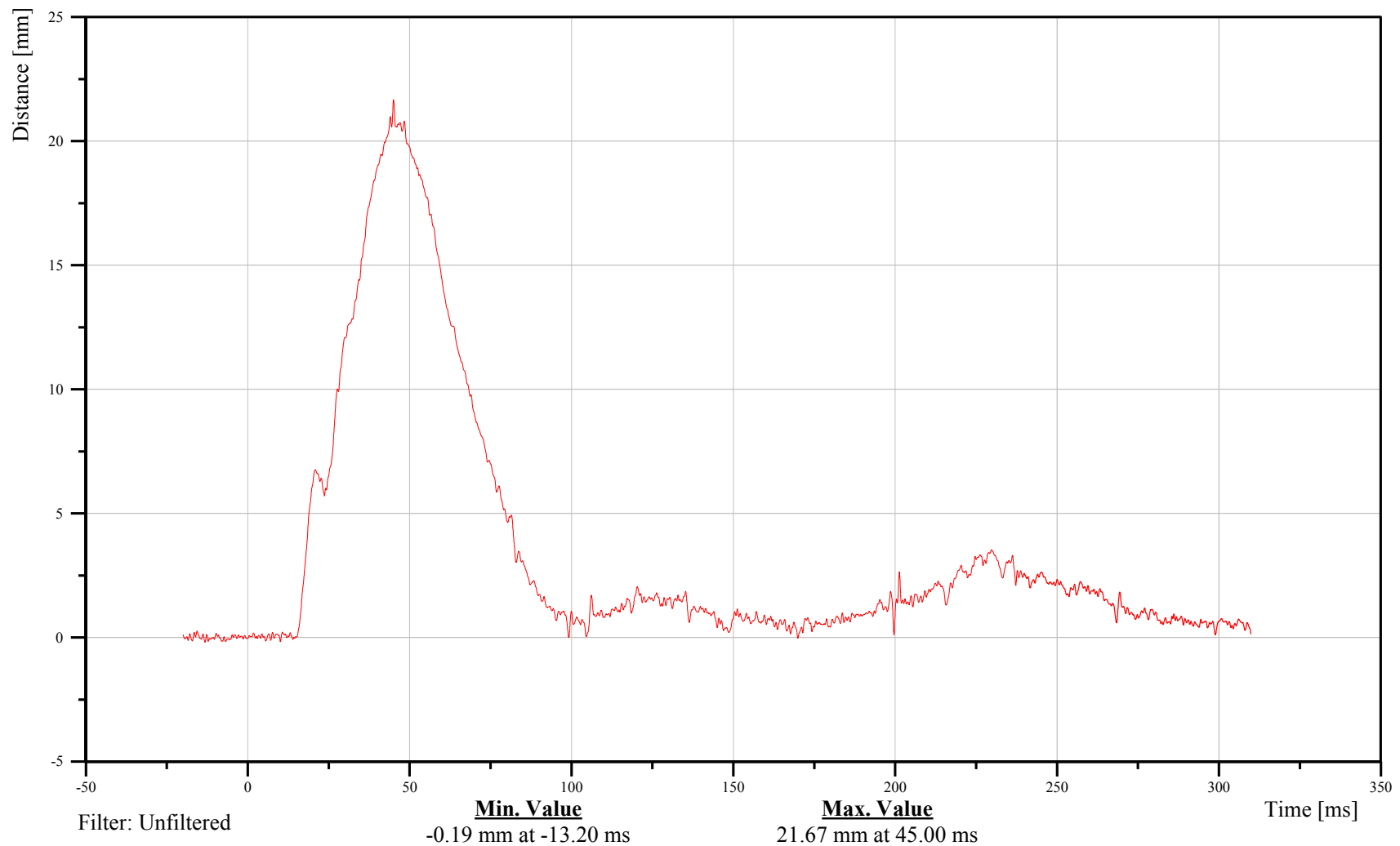
Abdomen Rib 2 Middle Ribeye Length Change

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI02MIWSDS00

TRC Inc. Test Lab: CTF
Test Number: 160329





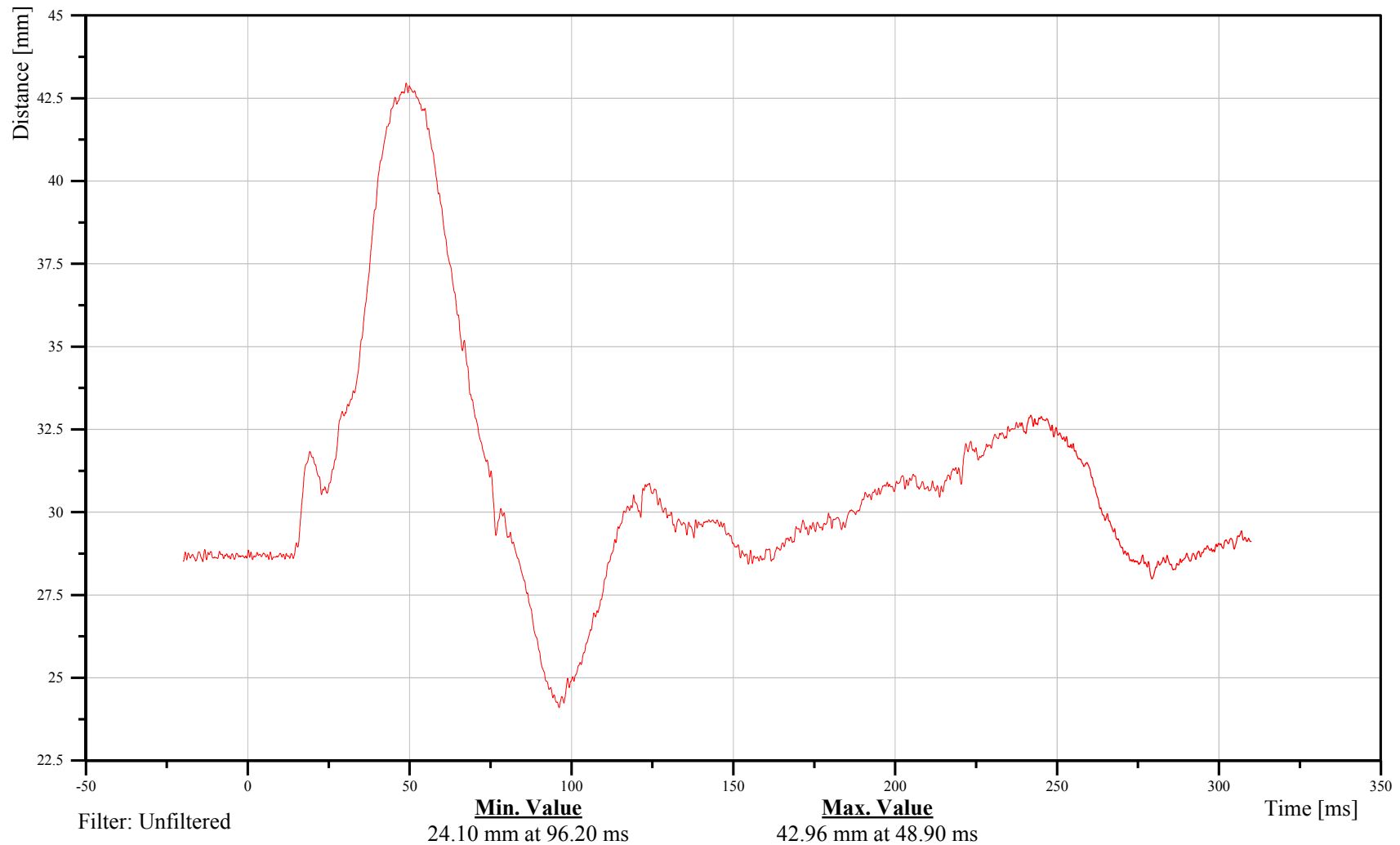
2016 Nissan Rogue Side Pole Impact
Abdomen Rib 2 Front Ribeye X-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI02FRWSDSX0

TRC Inc. Test Lab: CTF
Test Number: 160329





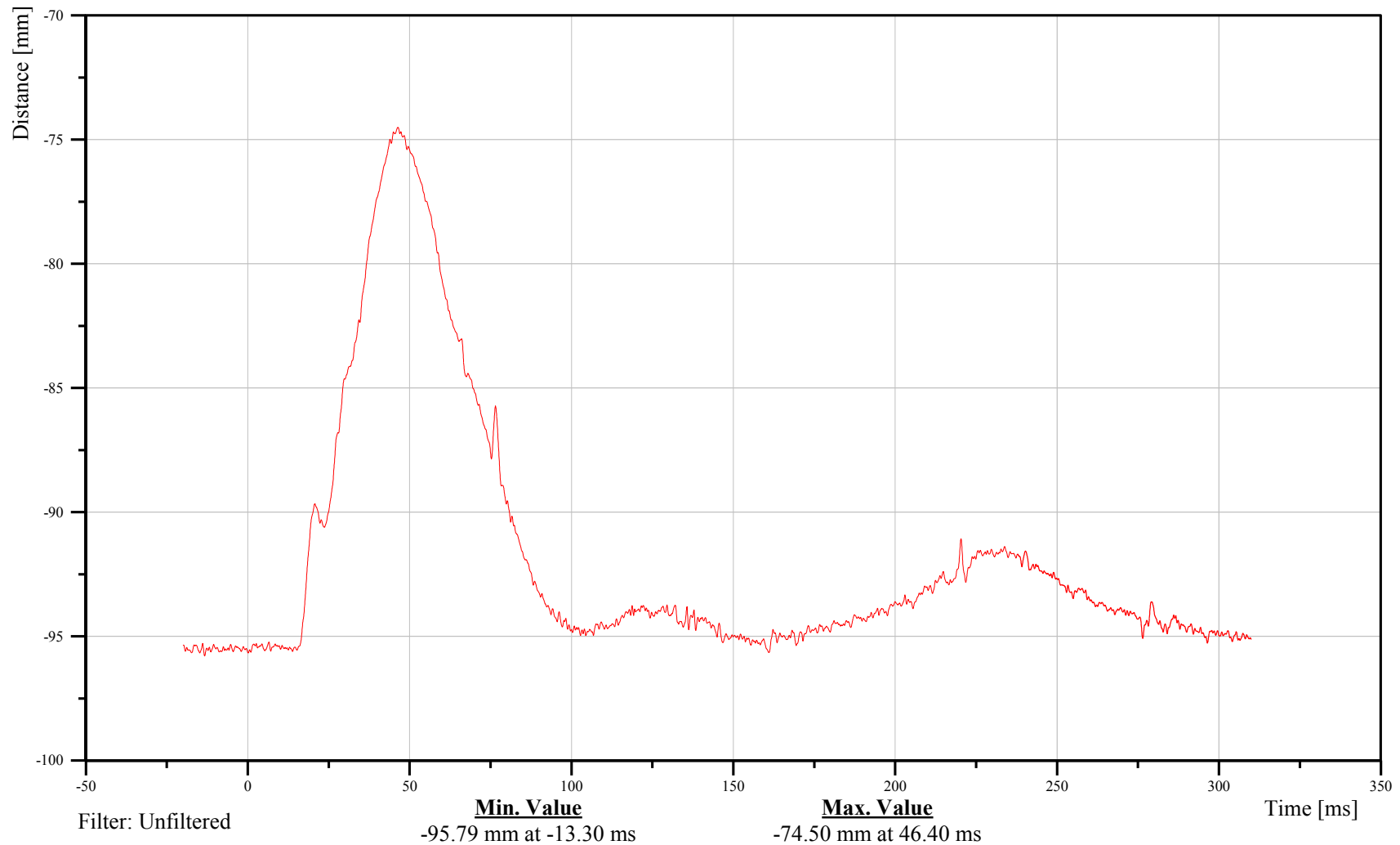
2016 Nissan Rogue Side Pole Impact
Abdomen Rib 2 Front Ribeye Y-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI02FRWSDSY0

TRC Inc. Test Lab: CTF
Test Number: 160329





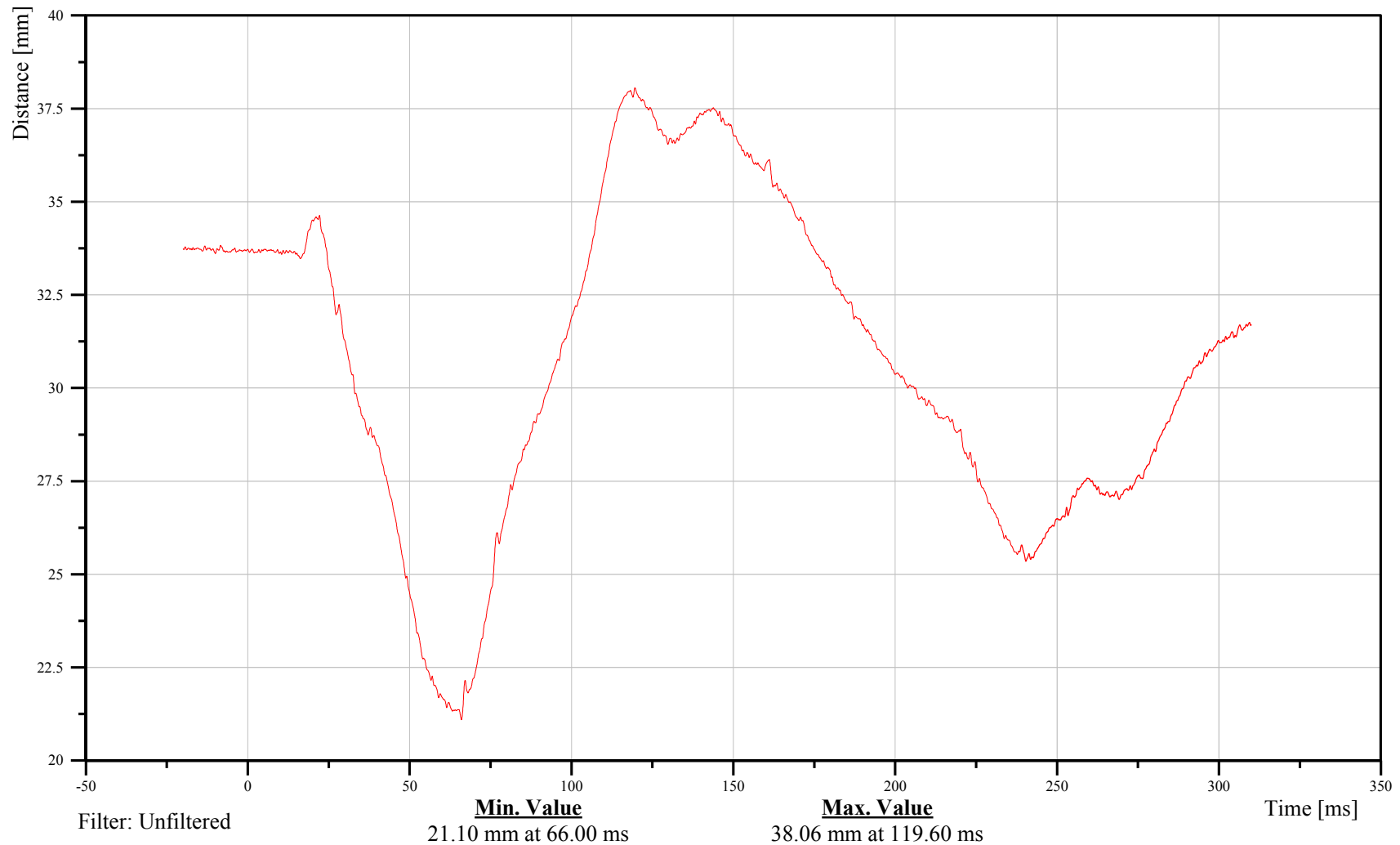
2016 Nissan Rogue Side Pole Impact
Abdomen Rib 2 Front Ribeye Z-Axis Displacement

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI02FRWSDSZ0

TRC Inc. Test Lab: CTF
Test Number: 160329





2016 Nissan Rogue Side Pole Impact

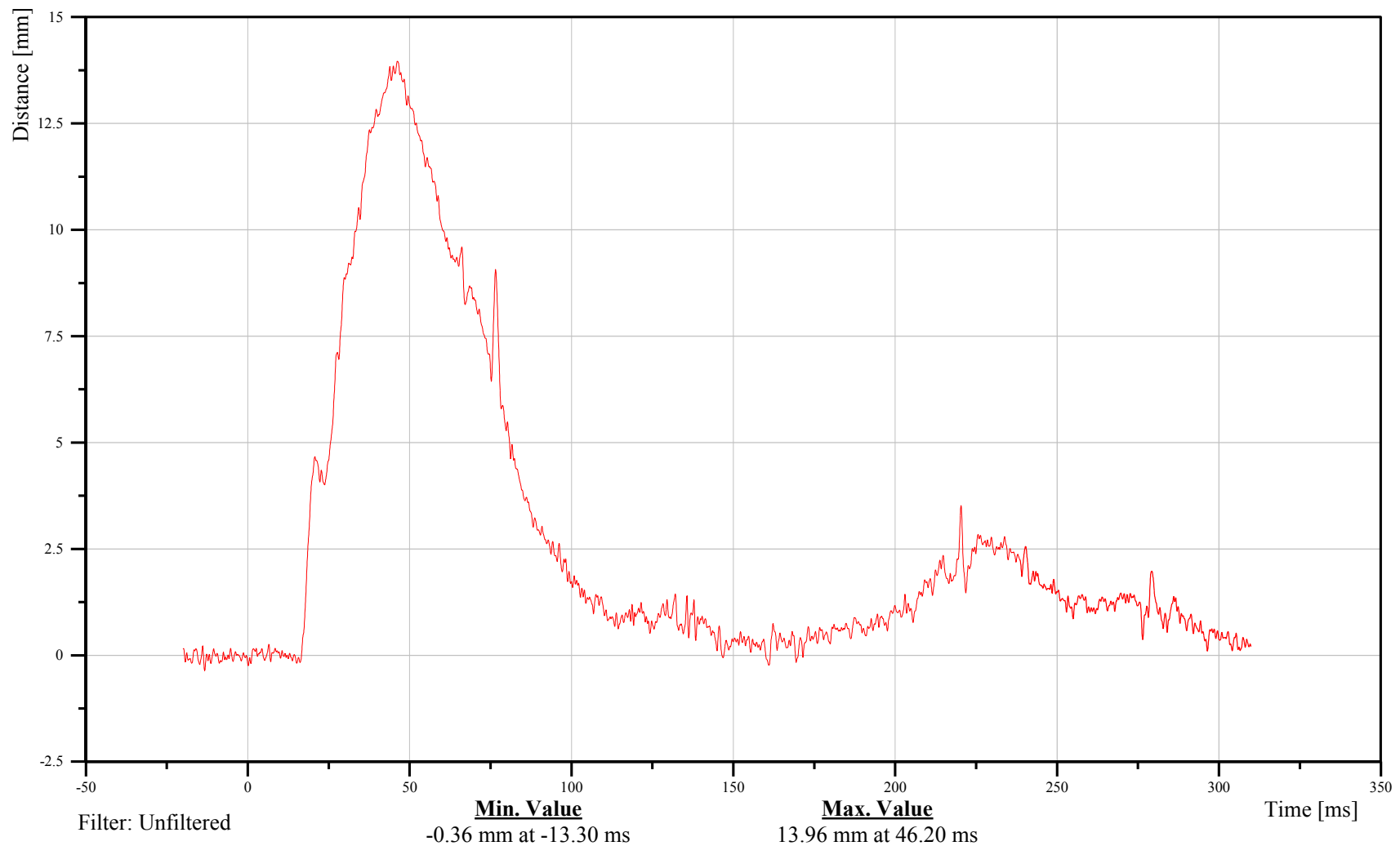
Abdomen Rib 2 Front Ribeye Length Change

Date: 03/29/2016
Time: 16:04

Customer: VRTC

11ABRI02FRWSDS00

TRC Inc. Test Lab: CTF
Test Number: 160329



APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

CALIBRATION TEST RESULTS
WorldSID-50M 016

Transportation Research Center Inc.

ATD Calibration Report

for

VRTC

World SID Serial No. 016



Transportation Research Center Inc.
P.O. Box B-67
10820 St. Rt. 347
East Liberty, OH 43319-0367

Transportation Research Center Inc.

Front Head Drop

WorldSID 50th Serial No. 016 Certification No. XX-1

Test Date: 3/16/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	N/A	N/A
Relative Humidity	10 - 70 %	N/A	N/A
Peak Head Resultant Acceleration	205 - 255 g	242.8 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	2.3 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

Head: DL8882

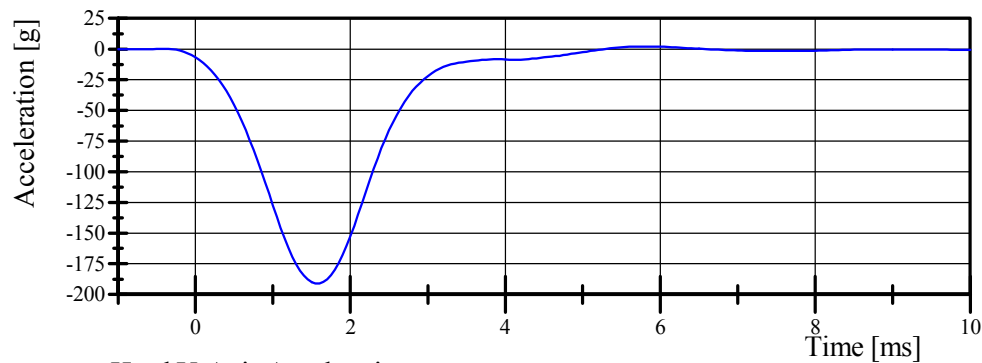
Transportation Research Center Inc.

Front Head Drop

WorldSID 50th Serial No. 016 Certification No. 0-1

Test Date: 3/16/2016

Head X-Axis Acceleration

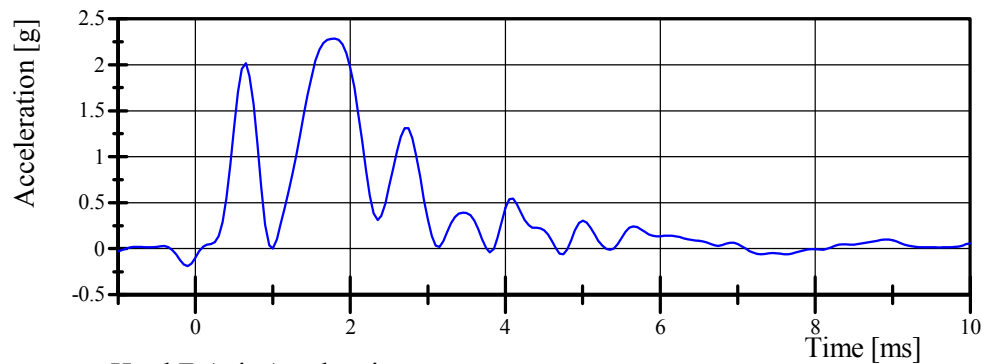


Filter Class: CFC_1000

Max: 2.1 g at 5.8 ms

Min: -191.1 g at 1.6 ms

Head Y-Axis Acceleration

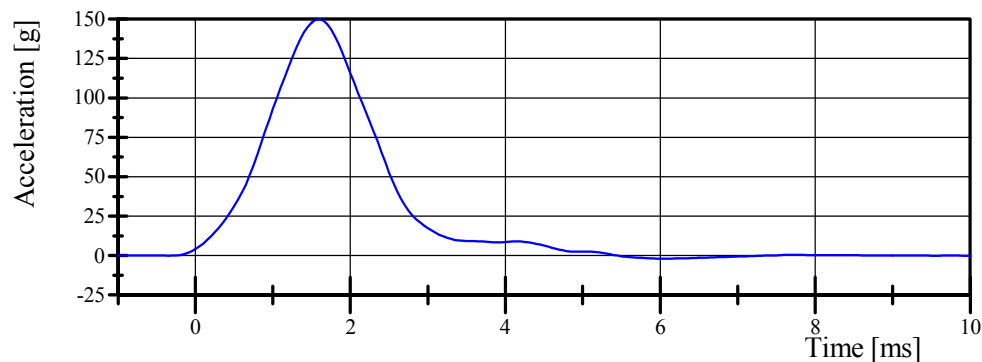


Filter Class: CFC_1000

Max: 2.3 g at 1.8 ms

Min: -0.2 g at -0.1 ms

Head Z-Axis Acceleration

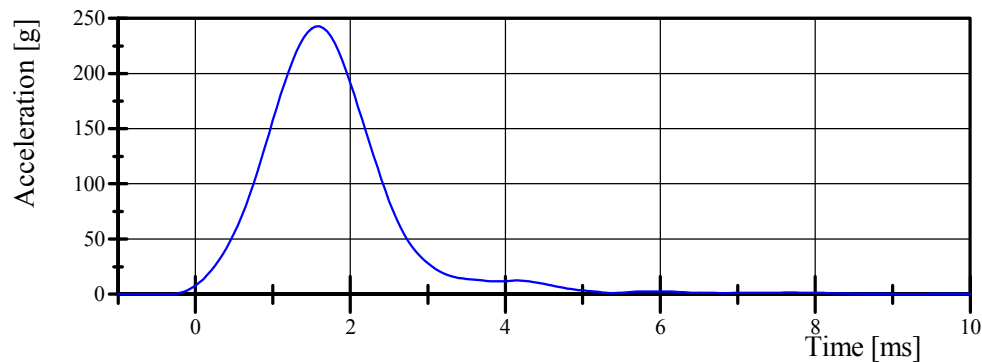


Filter Class: CFC_1000

Max: 149.7 g at 1.6 ms

Min: -2.0 g at 6.1 ms

Head Resultant Acceleration



Filter Class: CFC_1000

Max: 242.8 g at 1.6 ms

Min: 0.0 g at -0.6 ms

Transportation Research Center Inc.

Left Lateral Head Drop

WorldSID 50th Serial No. 016 Certification No. XX-1

Test Date: 3/16/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	N/A	N/A
Relative Humidity	10 - 70 %	N/A	N/A
Peak Head Resultant Acceleration	104 - 123 g	122.2 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	13.7 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

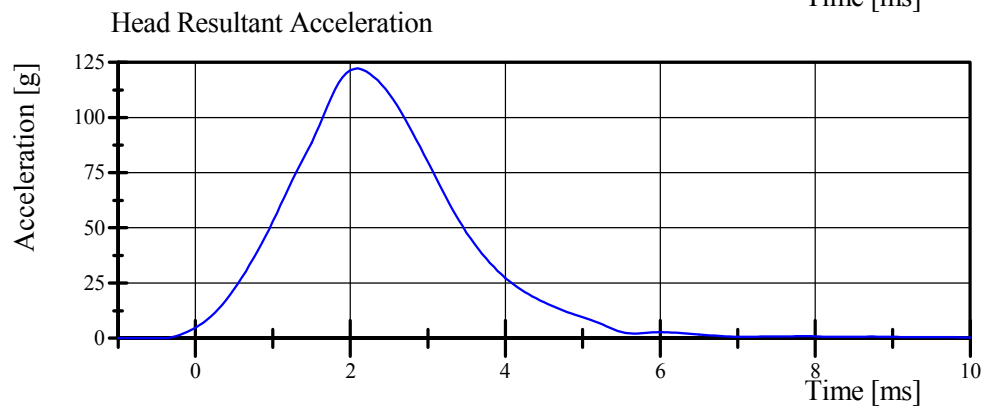
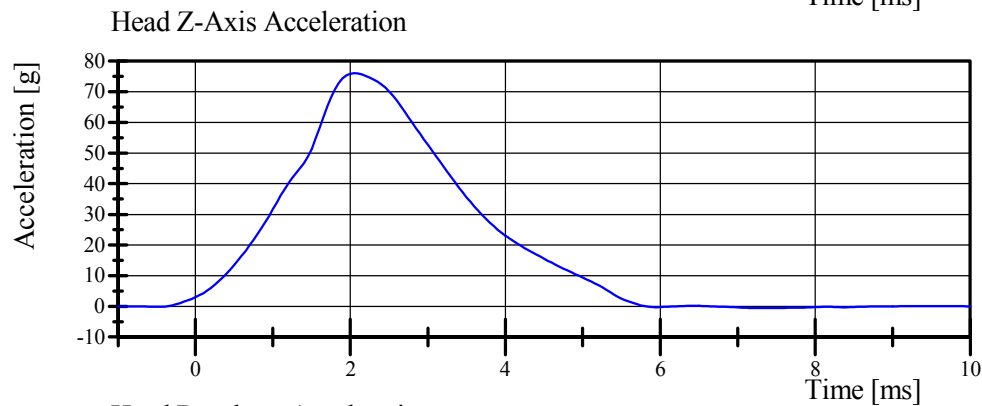
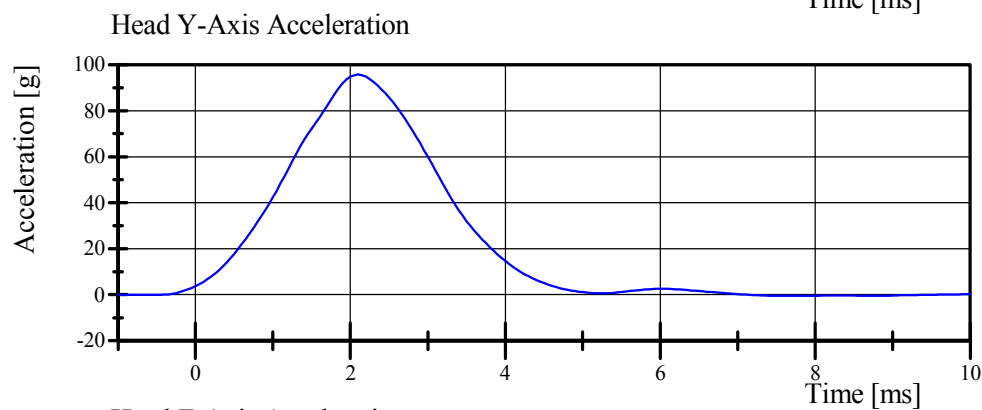
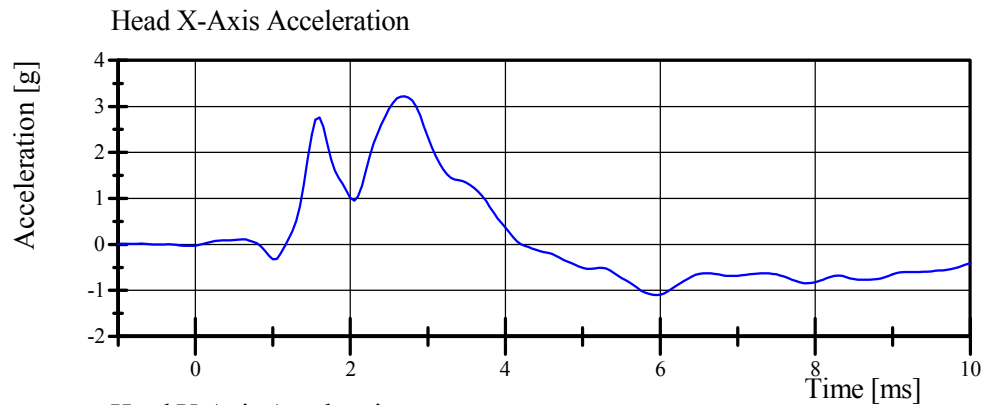
Head: DL8882

Transportation Research Center Inc.

Left Lateral Head Drop

WorldSID 50th Serial No. 016 Certification No. 0-1

Test Date: 3/16/2016



Transportation Research Center Inc.

Right Lateral Head Drop

WorldSID 50th Serial No. 016 Certification No. XX-1

Test Date: 3/16/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	N/A	N/A
Relative Humidity	10 - 70 %	N/A	N/A
Peak Head Resultant Acceleration	104 - 123 g	121.3 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	14.4 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

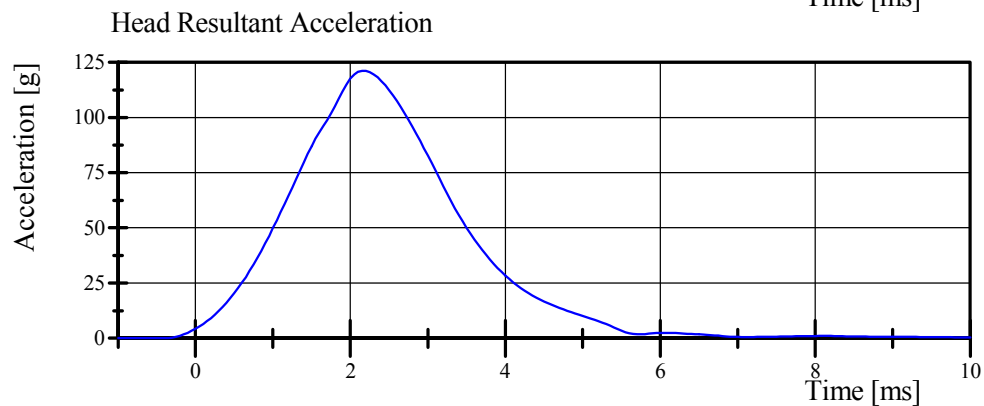
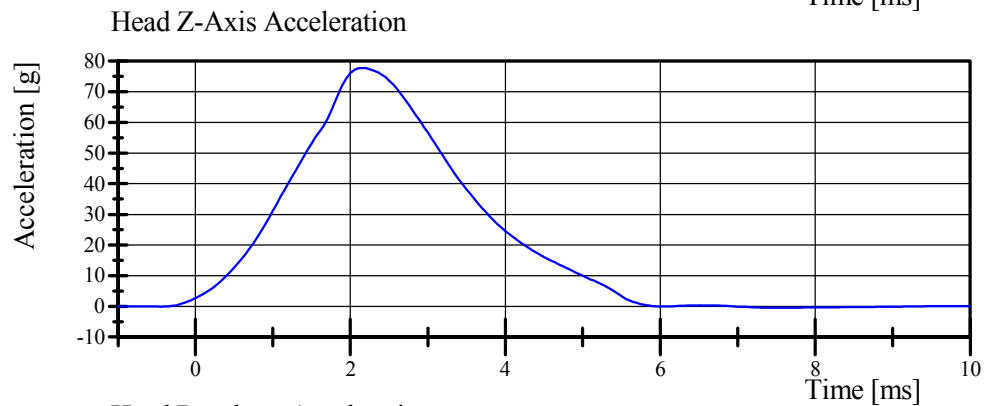
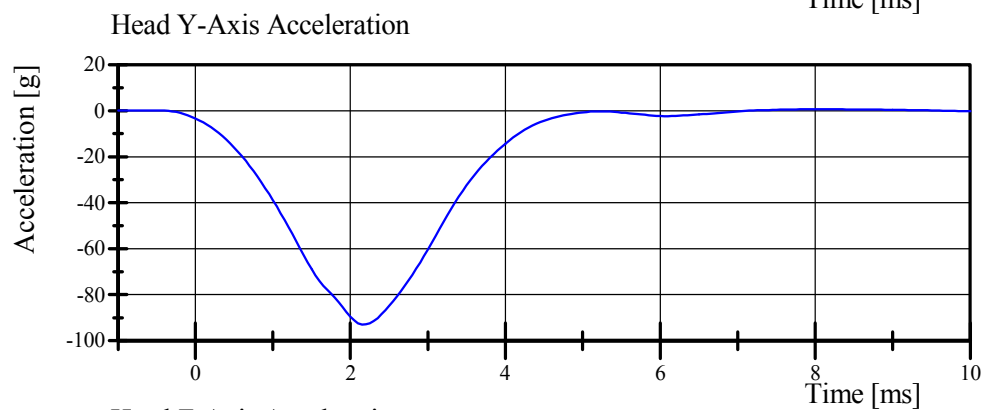
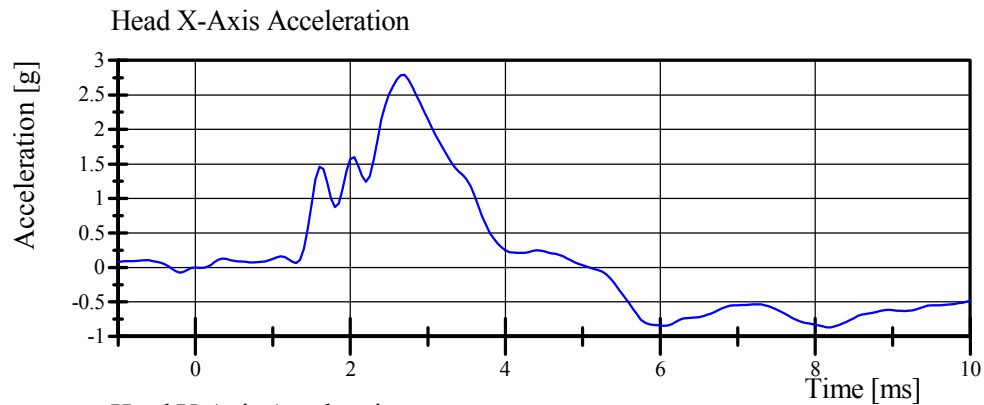
Head: DL8882

Transportation Research Center Inc.

Right Lateral Head Drop

WorldSID 50th Serial No. 016 Certification No. 0-1

Test Date: 3/16/2016



Transportation Research Center Inc.

Left Lateral Neck

WorldSID 50th Serial No. 016 Certification No. 17-2

Test Date: 3/10/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	54 %	Yes
Pendulum Velocity	(-3.3) - (-3.5) m/s	-3.39 m/s	Yes
Pendulum Integrated Velocity			
Change at 4 ms	0.77 - 1.04 m/s	0.878 m/s	Yes
Change at 8 ms	1.6 - 1.9 m/s	1.80 m/s	Yes
Change at 12 ms	2.43 - 3.29 m/s	2.798 m/s	Yes
Maximum Headform Flexion	(-50) - (-61) deg	-51.1 deg	Yes
Headform Flexion Decay			
- from Peak to Zero Degrees	58 - 72 ms	59.9 ms	Yes
Total Neck Occipital Condyles Moment	55 - 68 N·m	65.3 N·m	Yes
Total Neck Occipital Condyles Moment			
Decay Time to 0 N·m	71 - 87 ms	73.3 ms	Yes
Maximum Forward Pot Rotation			
Peak	(-32) - (-39) °	-33.4 °	Yes
Time of Peak	56 - 68 ms	57.3 ms	Yes
Maximum Rear Pot Rotation			
Peak	(-30) - (-37) °	-30.3 °	Yes
Time of Peak	56 - 68 ms	59.7 ms	Yes

Test meets specifications.

Comments:

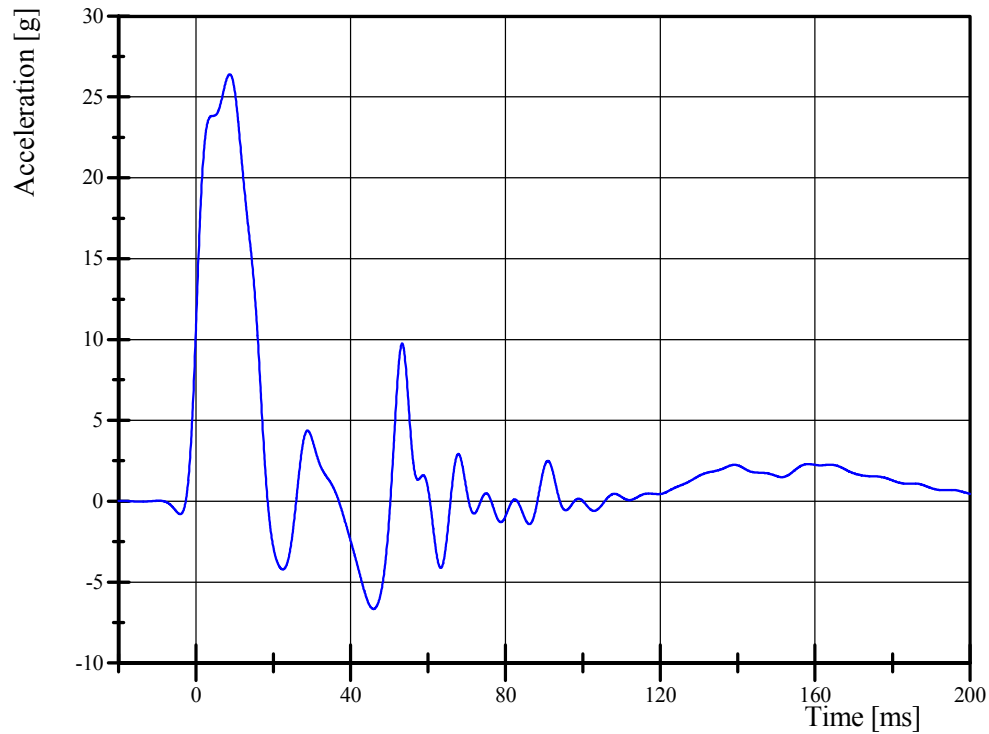
Transportation Research Center Inc.

Left Lateral Neck

WorldSID 50th Serial No. 016 Certification No. 17-2

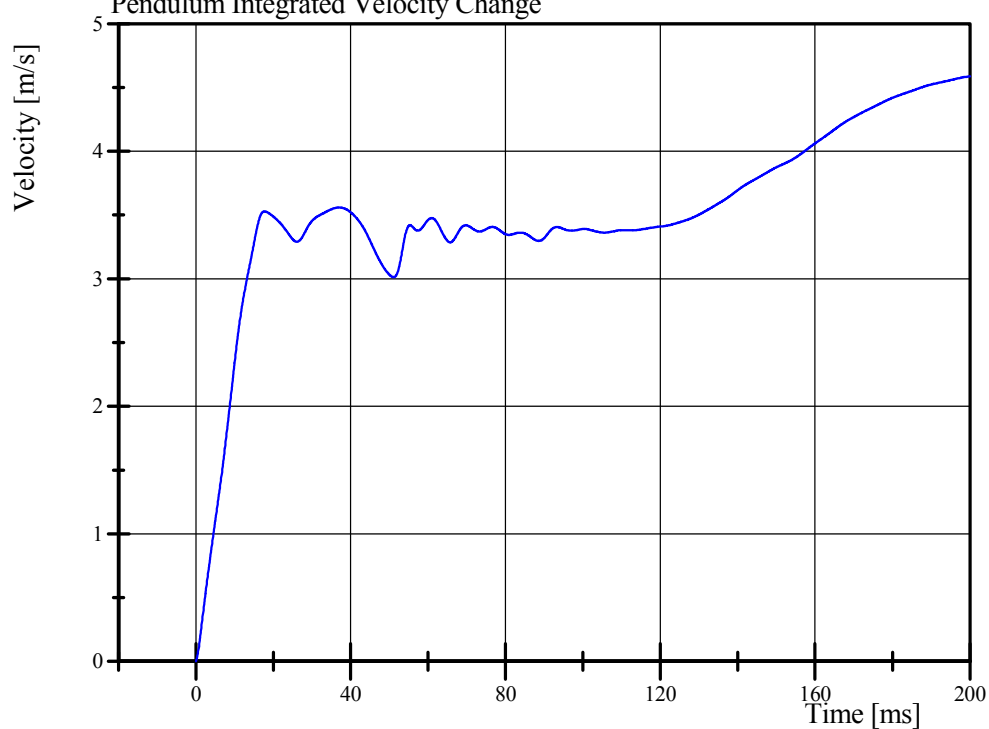
Test Date: 3/10/2016

Pendulum Acceleration



Filter Class: CFC_60
Max: 26.4 g at 8.8 ms
Min: -6.7 g at 45.9 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180
Max: 4.6 m/s at 200.0 ms
Min: 0.0 m/s at 0.0 ms

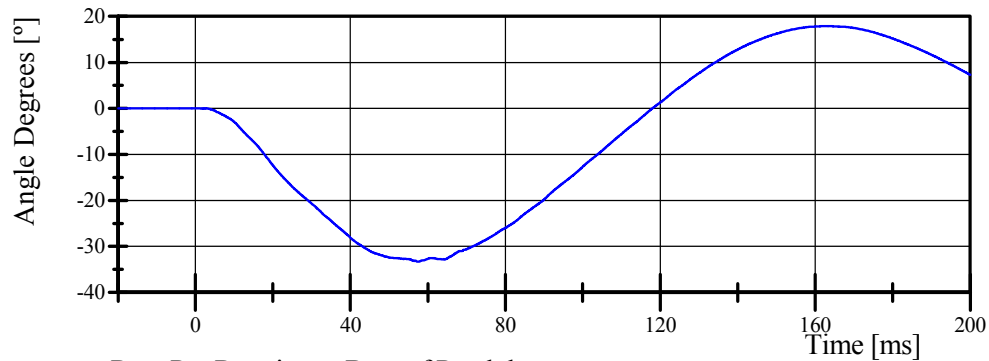
Transportation Research Center Inc.

Left Lateral Neck

WorldSID 50th Serial No. 016 Certification No. 17-2

Test Date: 3/10/2016

Forward Pot Rotation at Base of Pendulum

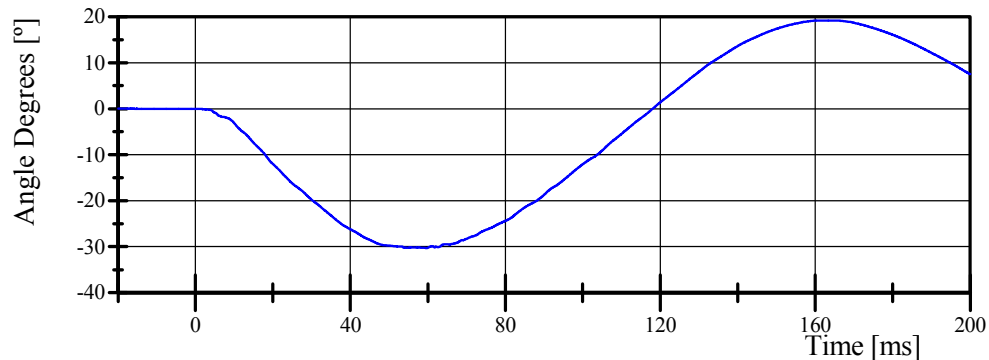


Filter Class: CFC_1000

Max: 17.9 ° at 162.9 ms

Min: -33.4 ° at 57.3 ms

Rear Pot Rotation at Base of Pendulum

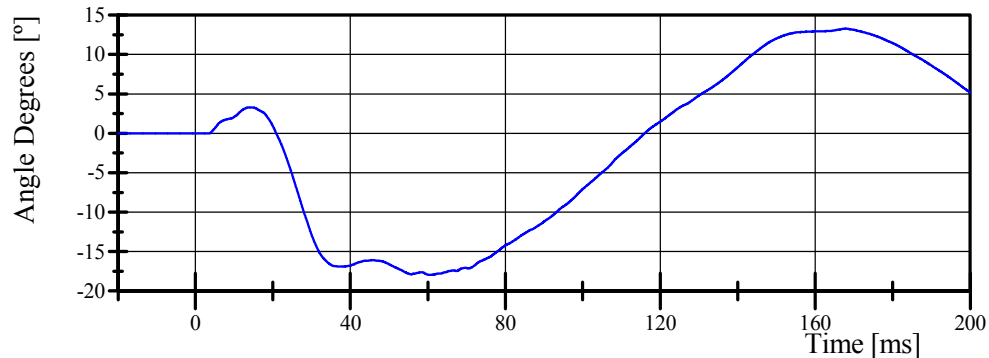


Filter Class: CFC_1000

Max: 19.2 ° at 163.4 ms

Min: -30.3 ° at 59.7 ms

Center Headform Pot Rotation at Center of Gravity

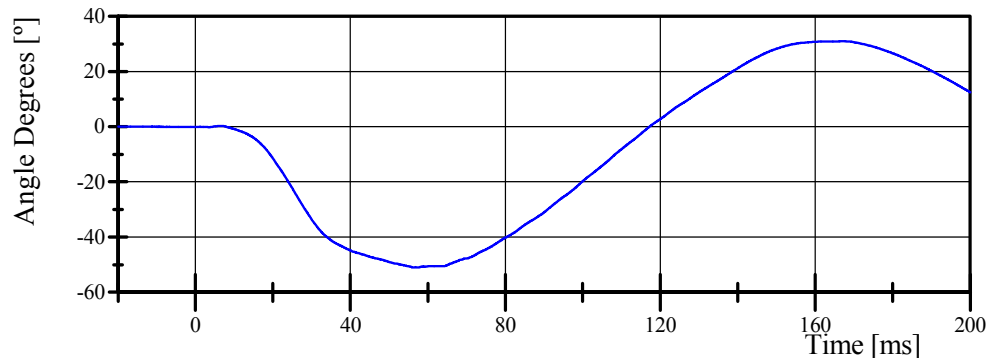


Filter Class: CFC_1000

Max: 13.3 ° at 167.8 ms

Min: -18.0 ° at 60.7 ms

Total Headform Flexion



Filter Class: CFC_1000

Max: 31.0 ° at 167.4 ms

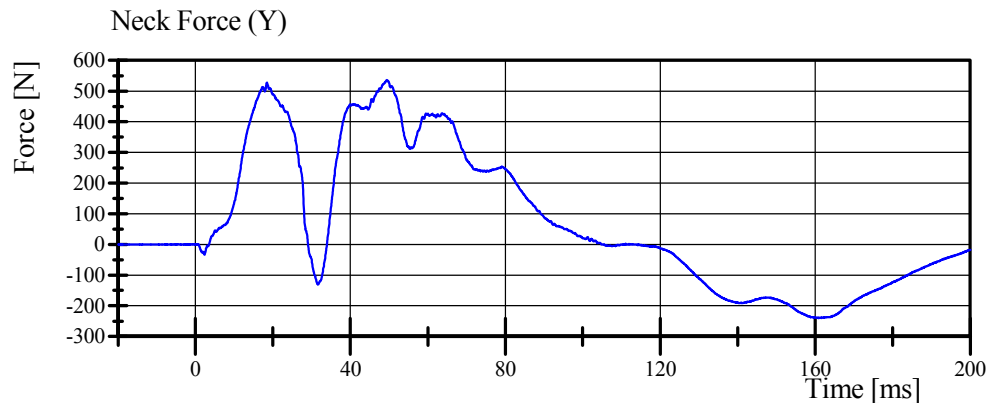
Min: -51.1 ° at 57.3 ms

Transportation Research Center Inc.

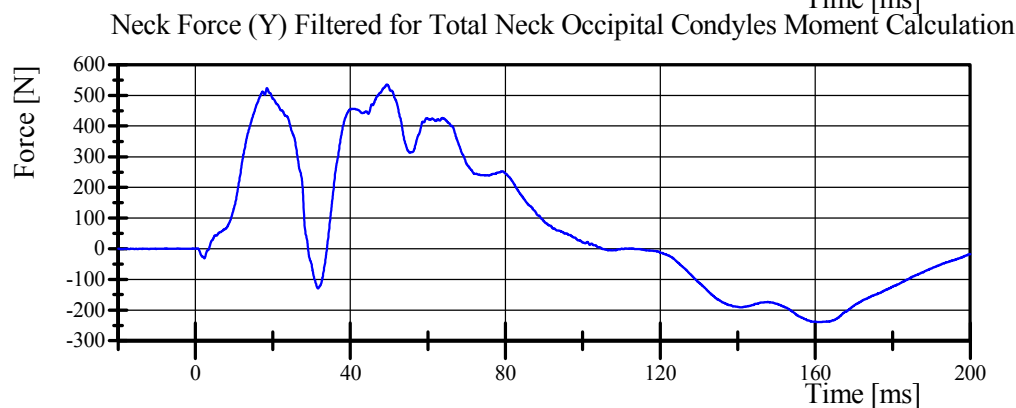
Left Lateral Neck

WorldSID 50th Serial No. 016 Certification No. 17-2

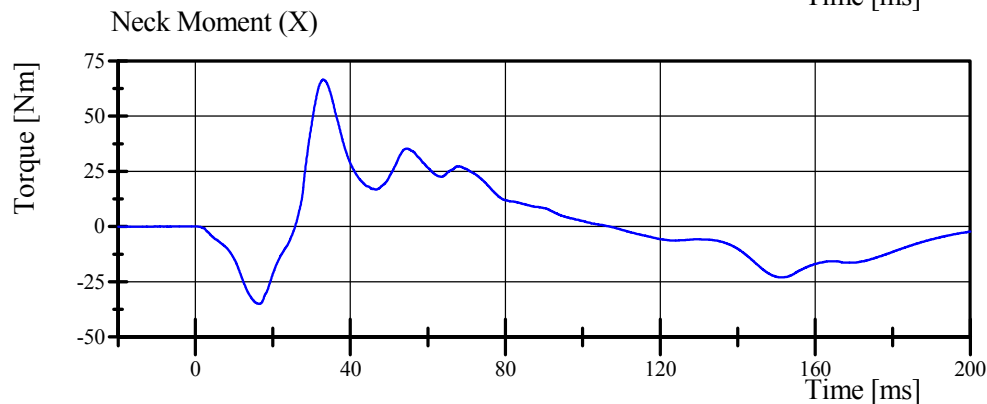
Test Date: 3/10/2016



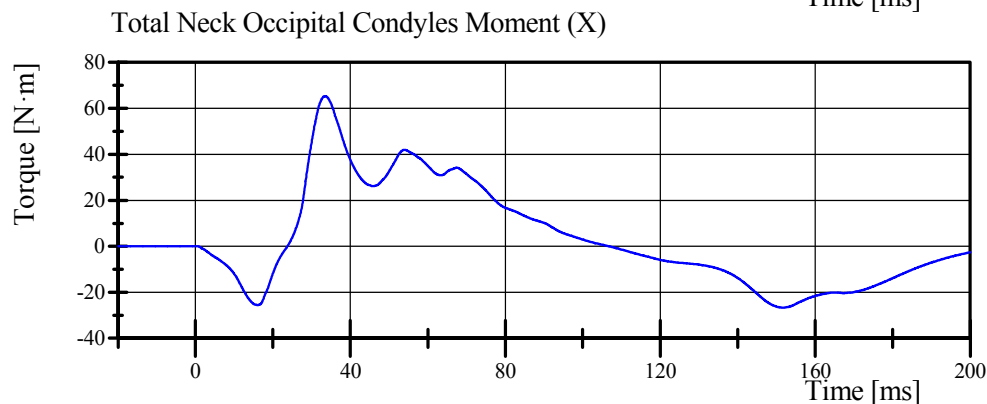
Filter Class: CFC_1000
Max: 536.1 N at 49.4 ms
Min: -239.9 N at 160.9 ms



Filter Class: CFC_600
Max: 535.3 N at 49.5 ms
Min: -239.5 N at 161.0 ms



Filter Class: CFC_600
Max: 66.5 Nm at 33.1 ms
Min: -34.9 Nm at 16.5 ms



Filter Class: Without_(Constar
Max: 65.3 N·m at 33.5 ms
Min: -26.6 N·m at 151.9 ms

Transportation Research Center Inc.

Right Lateral Neck

WorldSID 50th Serial No. 016 Certification No. 17-1

Test Date: 3/11/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Pendulum Velocity	3.3 - 3.5 m/s	3.44 m/s	Yes
Pendulum Integrated Velocity			
Change at 4 ms	(-0.77) - (-1.04) m/s	-0.878 m/s	Yes
Change at 8 ms	(-1.6) - (-1.9) m/s	-1.82 m/s	Yes
Change at 12 ms	(-2.43) - (-3.29) m/s	-2.798 m/s	Yes
Maximum Headform Flexion	50 - 61 deg	51.8 deg	Yes
Headform Flexion Decay			
- from Peak to Zero Degrees	58 - 72 ms	61.0 ms	Yes
Total Neck Occipital Condyles Moment	(-55) - (-68) N·m	-67.4 N·m	Yes
Total Neck Occipital Condyles Moment			
Decay Time to 0 N·m	71 - 87 ms	74.5 ms	Yes
Maximum Forward Pot Rotation			
Peak	32 - 39 °	33.6 °	Yes
Time of Peak	56 - 68 ms	56.7 ms	Yes
Maximum Rear Pot Rotation			
Peak	30 - 37 °	30.4 °	Yes
Time of Peak	56 - 68 ms	57.5 ms	Yes

Test meets specifications.

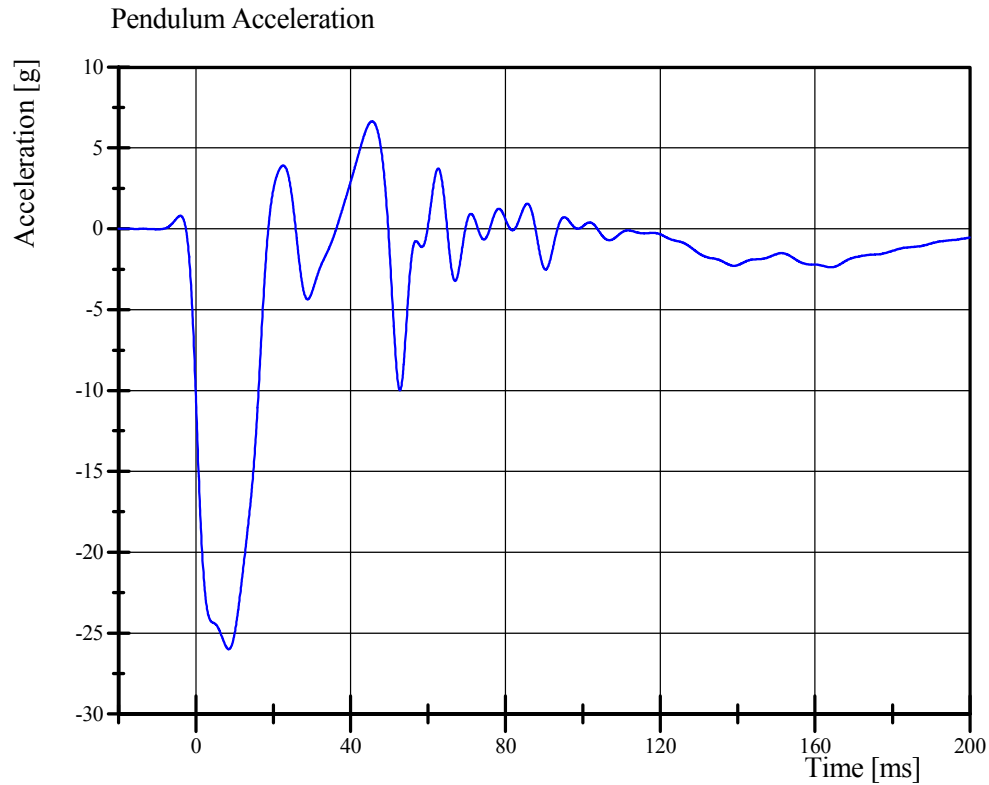
Comments:

Transportation Research Center Inc.

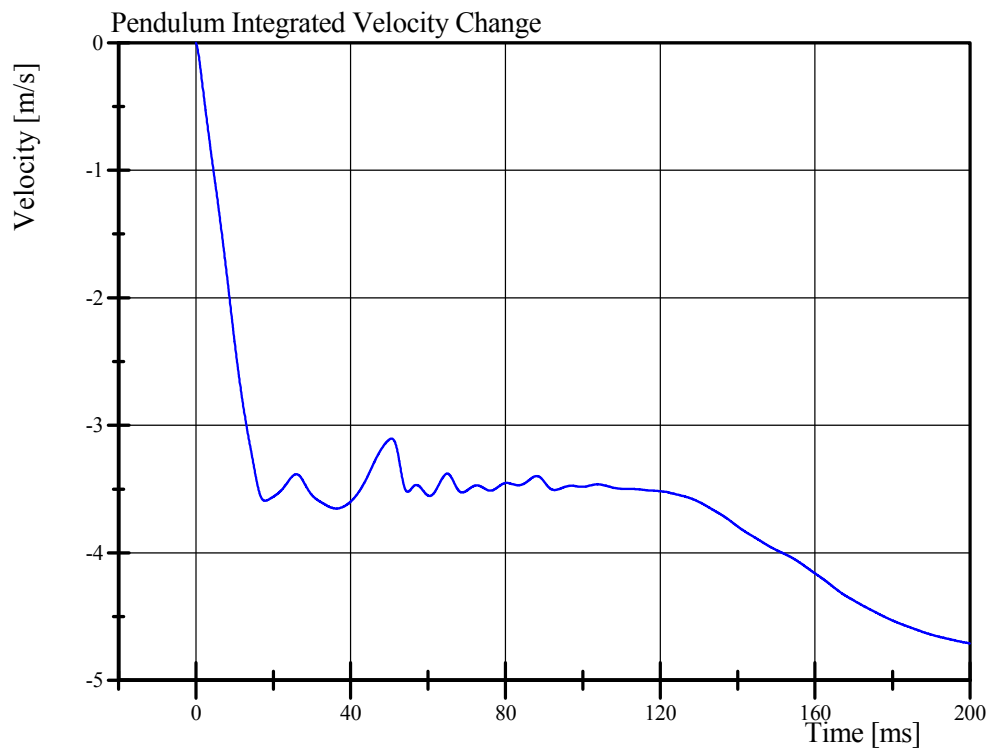
Right Lateral Neck

WorldSID 50th Serial No. 016 Certification No. 17-1

Test Date: 3/11/2016



Filter Class: CFC_60
Max: 6.7 g at 45.6 ms
Min: -26.0 g at 8.5 ms



Filter Class: CFC_180
Max: 0.0 m/s at 0.0 ms
Min: -4.7 m/s at 200.0 ms

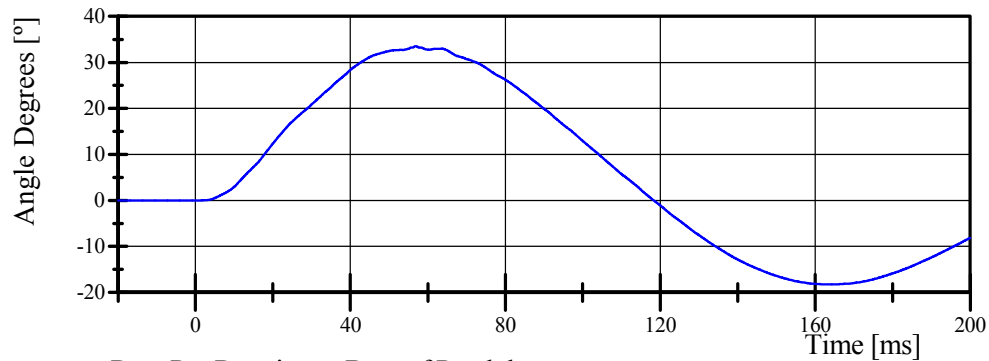
Transportation Research Center Inc.

Right Lateral Neck

WorldSID 50th Serial No. 016 Certification No. 17-1

Test Date: 3/11/2016

Forward Pot Rotation at Base of Pendulum

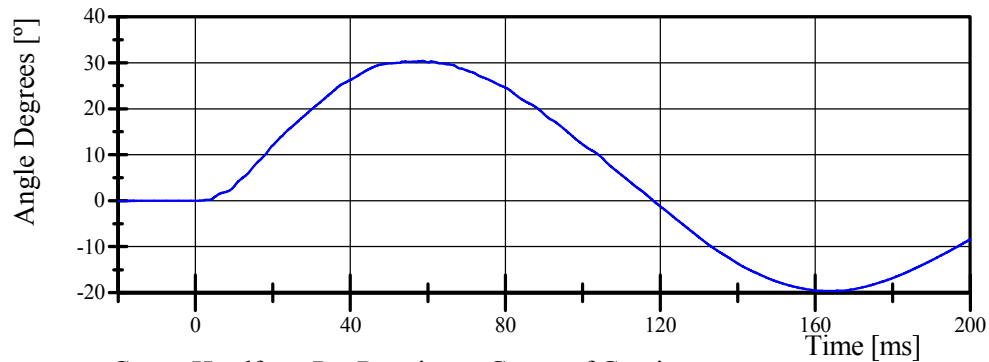


Filter Class: CFC_1000

Max: 33.6 ° at 56.7 ms

Min: -18.3 ° at 163.8 ms

Rear Pot Rotation at Base of Pendulum

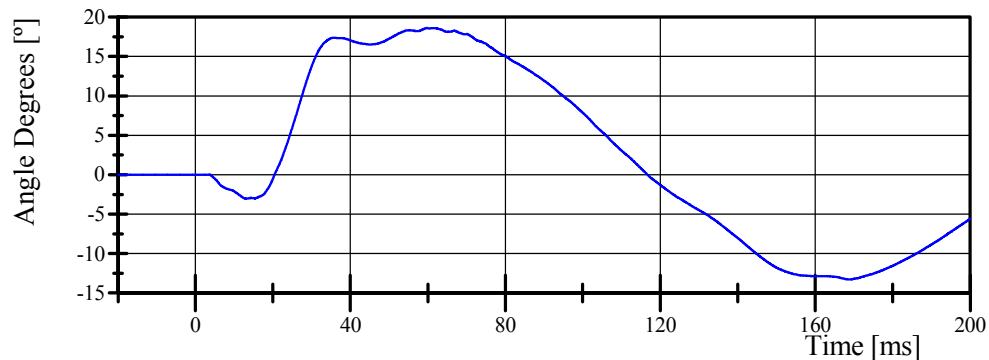


Filter Class: CFC_1000

Max: 30.4 ° at 57.5 ms

Min: -19.6 ° at 163.5 ms

Center Headform Pot Rotation at Center of Gravity

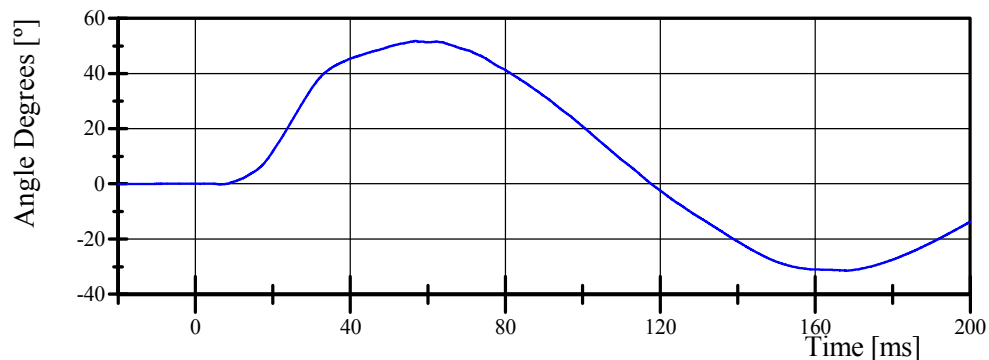


Filter Class: CFC_1000

Max: 18.6 ° at 59.8 ms

Min: -13.3 ° at 168.8 ms

Total Headform Flexion



Filter Class: CFC_1000

Max: 51.8 ° at 56.7 ms

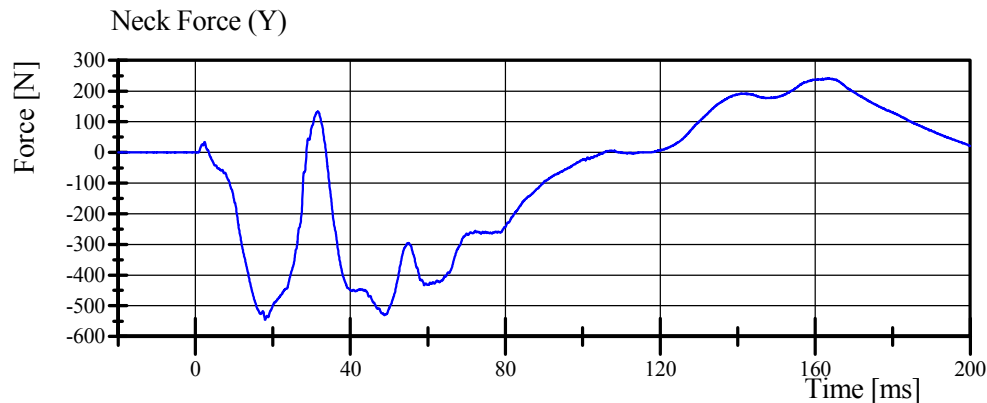
Min: -31.4 ° at 168.3 ms

Transportation Research Center Inc.

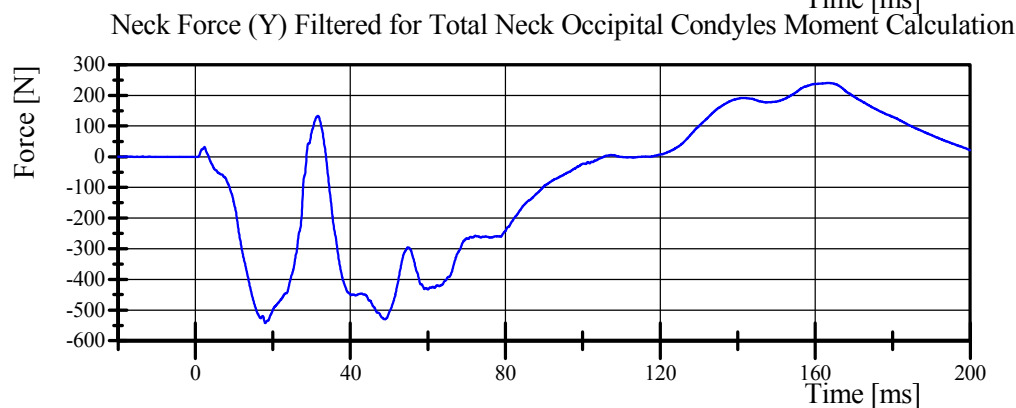
Right Lateral Neck

WorldSID 50th Serial No. 016 Certification No. 17-1

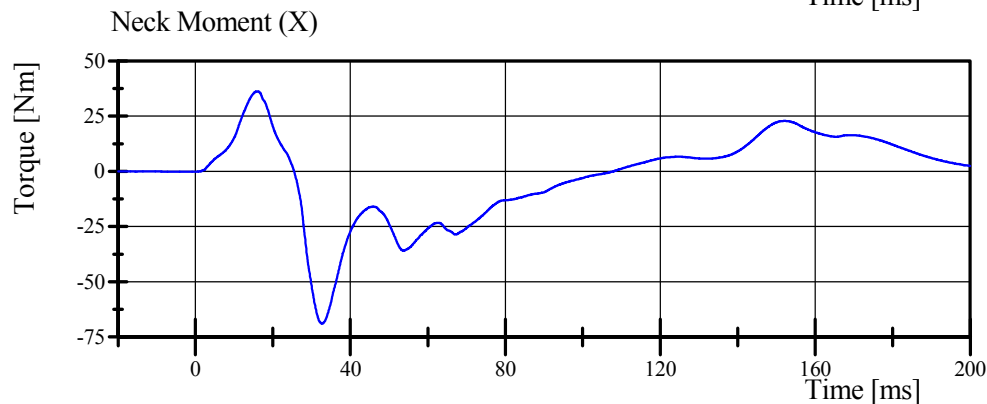
Test Date: 3/11/2016



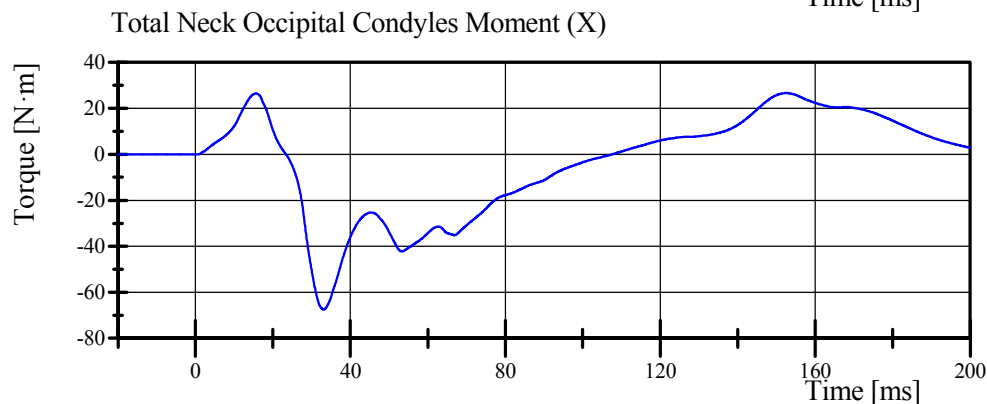
Filter Class: CFC_1000
Max: 241.0 N at 163.1 ms
Min: -545.1 N at 18.0 ms



Filter Class: CFC_600
Max: 240.5 N at 163.2 ms
Min: -543.0 N at 18.1 ms



Filter Class: CFC_600
Max: 36.3 Nm at 16.0 ms
Min: -68.9 Nm at 32.8 ms



Filter Class: Without_(Constar
Max: 26.6 N·m at 152.7 ms
Min: -67.4 N·m at 33.1 ms

Transportation Research Center Inc.

Left Lateral Shoulder

WorldSID 50th Serial No. 016 Certification No. XX-3

Test Date: 3/28/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	N/A	N/A
Relative Humidity	10 - 70 %	N/A	N/A
Impactor Velocity	4.20 - 4.40 m/s	4.3 m/s	Yes
Impactor Force	(-2,600) - (-3,300) N	-2,913.4 N	Yes
Shoulder Displacement	35 - 45 mm	38.1 mm	Yes

Test meets specifications.

Comments:

Shoulder Rib: DW1916

Thorax Rib 1: DW8861

Thorax Rib 2: DW8862

Thorax Rib 3: DW8863

Abdomen Rib 1: DW9381

Abdomen Rib 2: DW9382

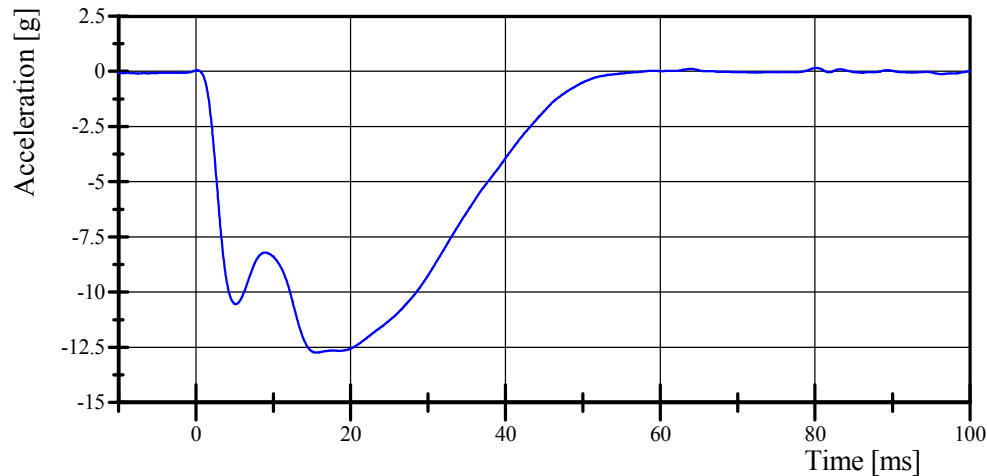
Transportation Research Center Inc.

Left Lateral Shoulder

WorldSID 50th Serial No. 016 Certification No. 0-3

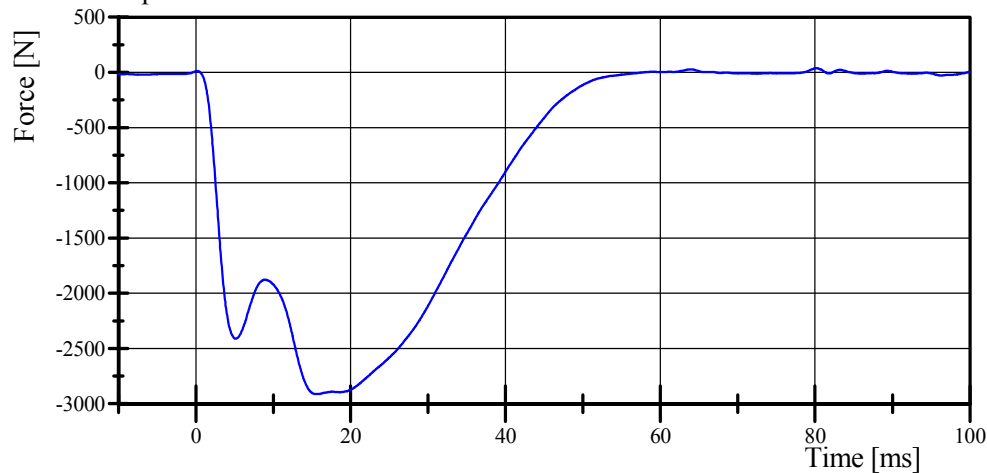
Test Date: 3/28/2016

Impactor Acceleration



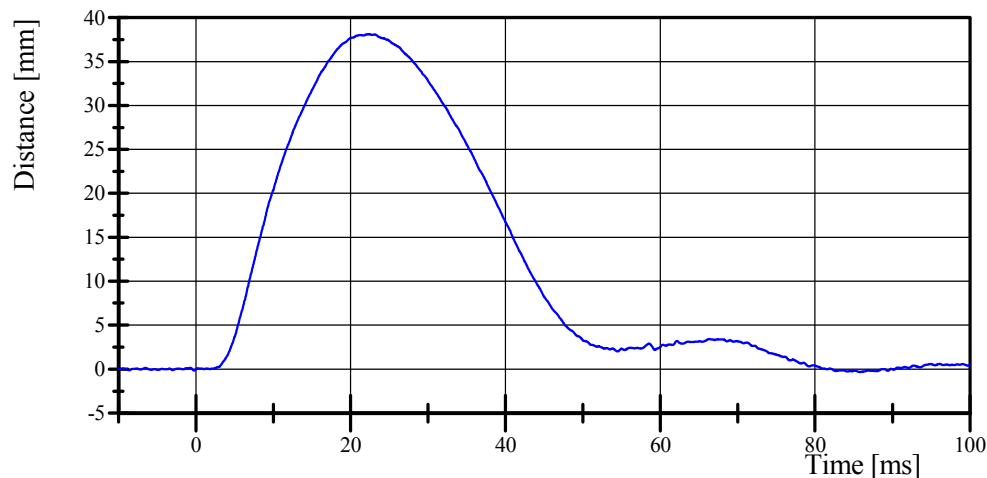
Filter Class: CFC_180
Max: 0.2 g at 80.2 ms
Min: -12.7 g at 15.6 ms

Impactor Force



Filter Class: CFC_180
Max: 36.5 N at 80.2 ms
Min: -2,913.4 N at 15.6 ms

Shoulder Displacement



Filter Class: CFC_600
Max: 38.1 mm at 22.4 ms
Min: -0.3 mm at 85.9 ms

Transportation Research Center Inc.

Left Lateral Thorax with Arm

WorldSID 50th Serial No. 016 Certification No. XX-3

Test Date: 3/28/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	N/A	N/A
Relative Humidity	10 - 70 %	N/A	N/A
Impactor Velocity	6.60 - 6.80 m/s	6.7	Yes
Impactor Force	(-4,900) - (-5,800) N	-5,685.2 N	Yes
Upper Thorax Rib Displacement	35 - 47 mm	39.0 mm	Yes
Center Thorax Rib Displacement	46 - 56 mm	44.2 mm	No
Lower Thorax Rib Displacement	39 - 46 mm	37.7 mm	No
Upper Spine Lateral Acceleration	28 - 37 g	30.1 g	Yes
Lower Spine Lateral Acceleration	22 - 28 g	21.5 g	No

Test does not meet specifications.

Comments:

Shoulder Rib: DW1916

Thorax Rib 1: DW8861

Thorax Rib 2: DW8862

Thorax Rib 3: DW8863

Abdomen Rib 1: DW9381

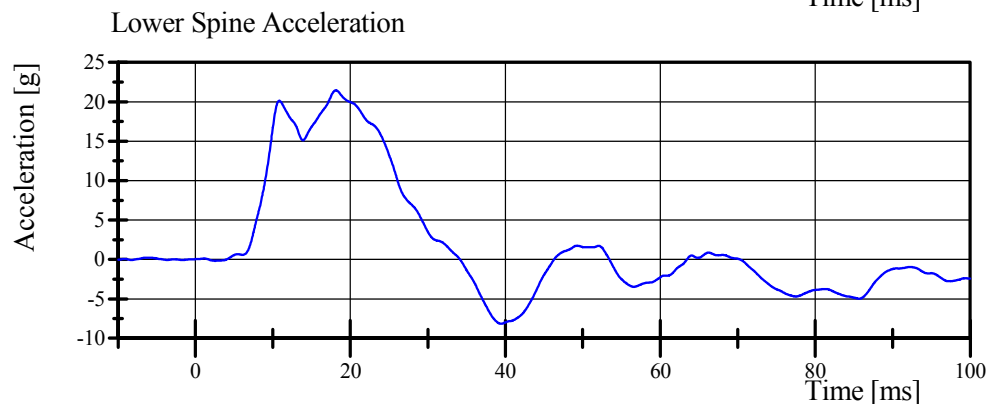
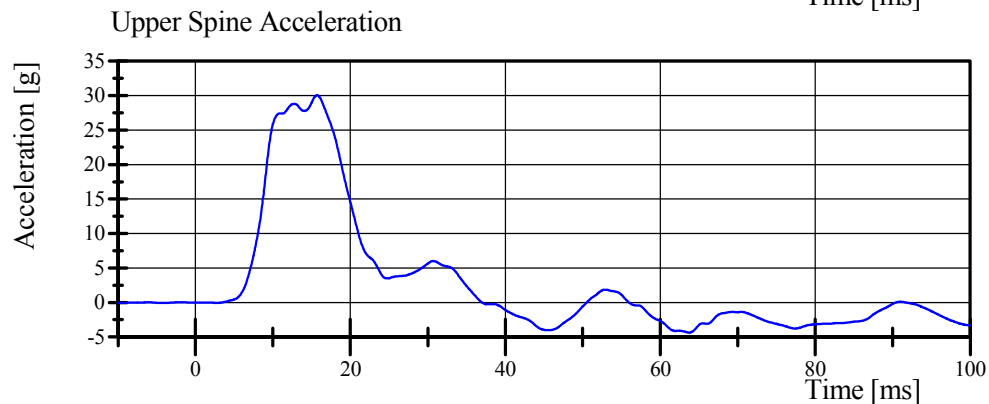
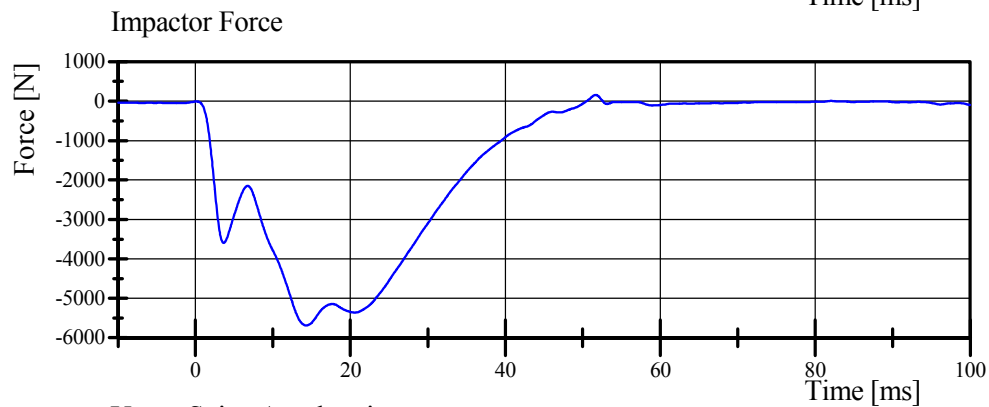
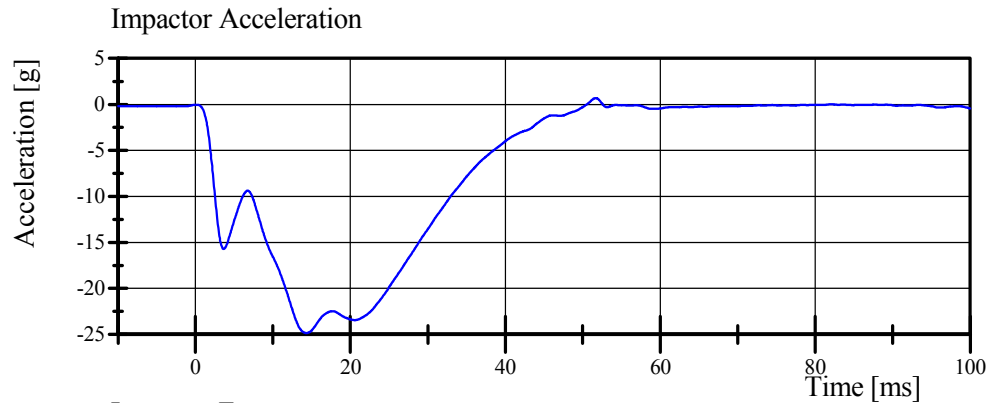
Abdomen Rib 2: DW9382

Transportation Research Center Inc.

Left Lateral Thorax with Arm

WorldSID 50th Serial No. 016 Certification No. 0-3

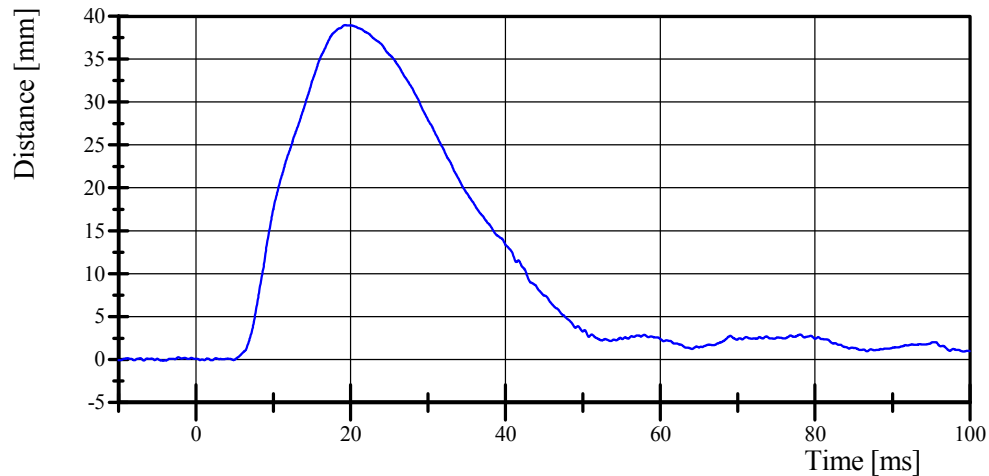
Test Date: 3/28/2016



Transportation Research Center Inc.

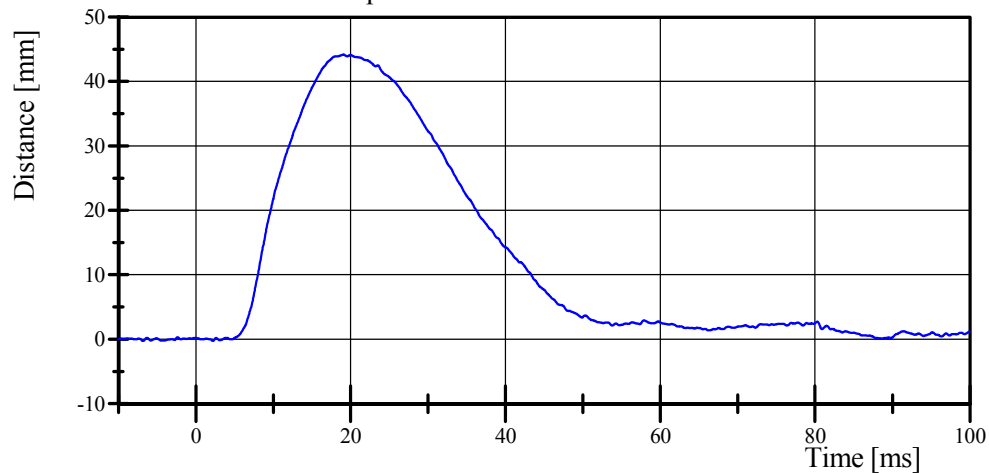
Left Lateral Thorax with Arm
WorldSID 50th Serial No. 016 Certification No. 0-3
Test Date: 3/28/2016

Upper Thorax Rib Displacement



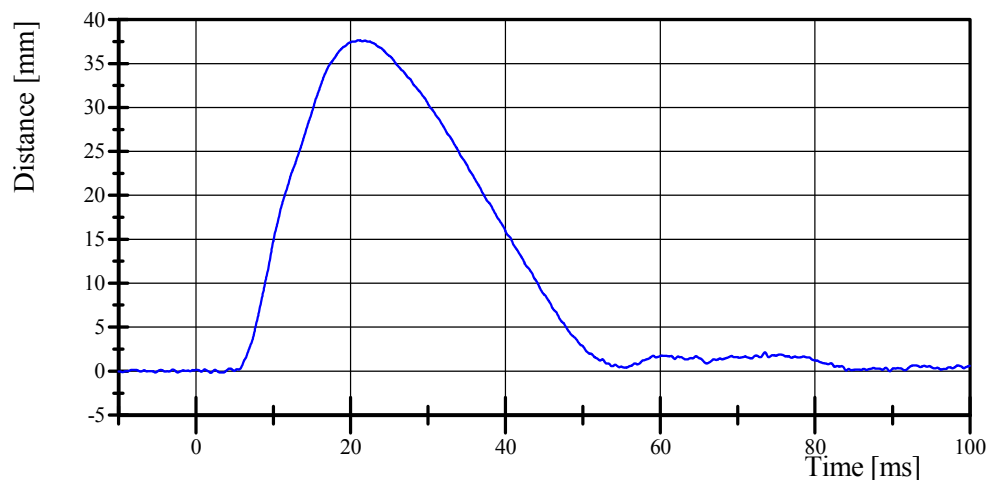
Filter Class: CFC_600
Max: 39.0 mm at 19.3 ms
Min: -0.1 mm at -4.3 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 44.2 mm at 19.1 ms
Min: -0.2 mm at 2.2 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 37.7 mm at 21.0 ms
Min: -0.2 mm at 2.0 ms

Transportation Research Center Inc.

Left Lateral Thorax without Arm

WorldSID 50th Serial No. 016 Certification No. XX-2

Test Date: 3/25/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	N/A	N/A
Relative Humidity	10 - 70 %	N/A	N/A
Impactor Velocity	4.20 - 4.40 m/s	4.29 m/s	Yes
Impactor Force	(-3,200) - (-3,800) N	-3,824.8 N	No
Upper Thorax Rib Displacement	33 - 43 mm	38.0 mm	Yes
Center Thorax Rib Displacement	35 - 43 mm	41.8 mm	Yes
Lower Thorax Rib Displacement	32 - 40 mm	33.4 mm	Yes
Upper Spine Lateral Acceleration	14 - 20 g	14.4 g	Yes
Lower Spine Lateral Acceleration	14 - 22 g	14.9 g	Yes

Test does not meet specifications.

Comments:

Shoulder Rib: DW1916

Thorax Rib 1: DW8861

Thorax Rib 2: DW8862

Thorax Rib 3: DW8863

Abdomen Rib 1: DW9381

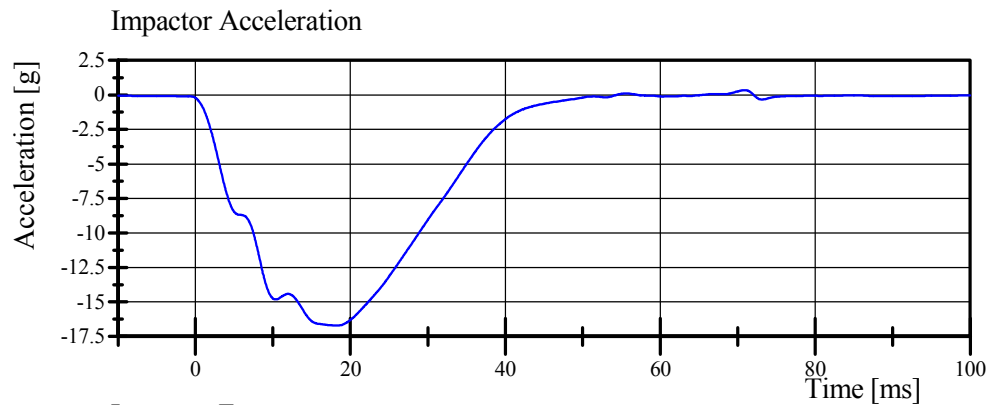
Abdomen Rib 2: DW9382

Transportation Research Center Inc.

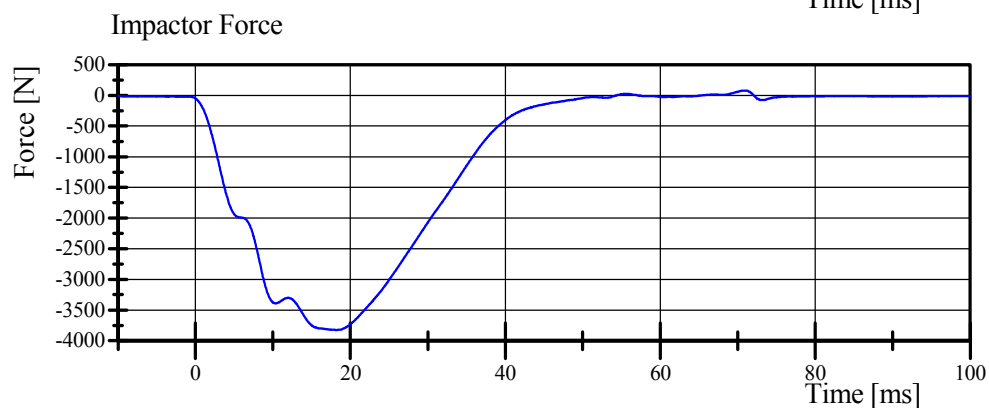
Left Lateral Thorax without Arm

WorldSID 50th Serial No. 016 Certification No. 0-2

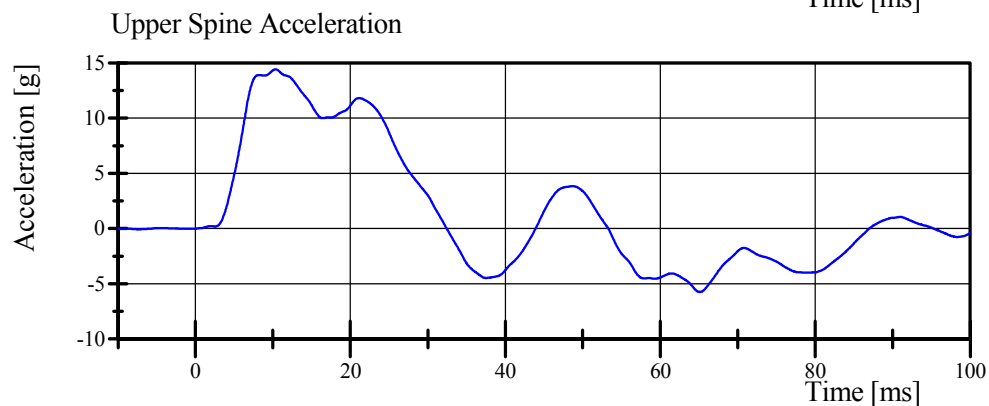
Test Date: 3/25/2016



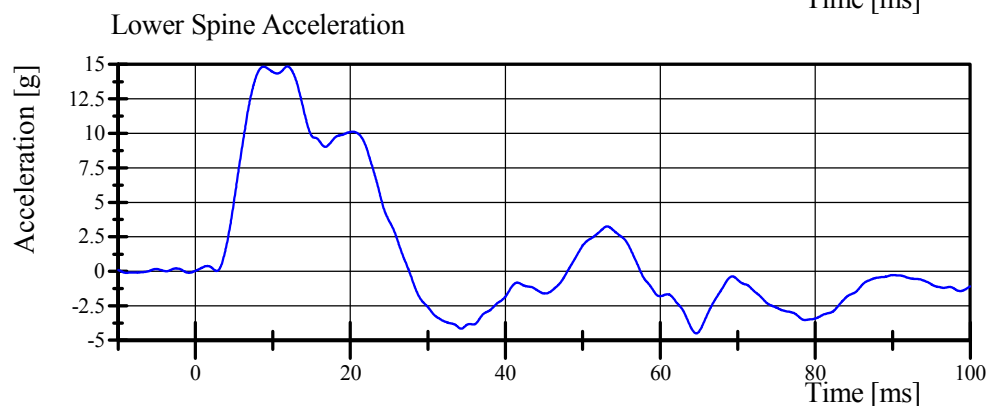
Filter Class: CFC_180
Max: 0.3 g at 70.9 ms
Min: -16.7 g at 18.3 ms



Filter Class: CFC_180
Max: 78.2 N at 70.9 ms
Min: -3,824.8 N at 18.3 ms



Filter Class: CFC_180
Max: 14.4 g at 10.4 ms
Min: -5.7 g at 65.1 ms

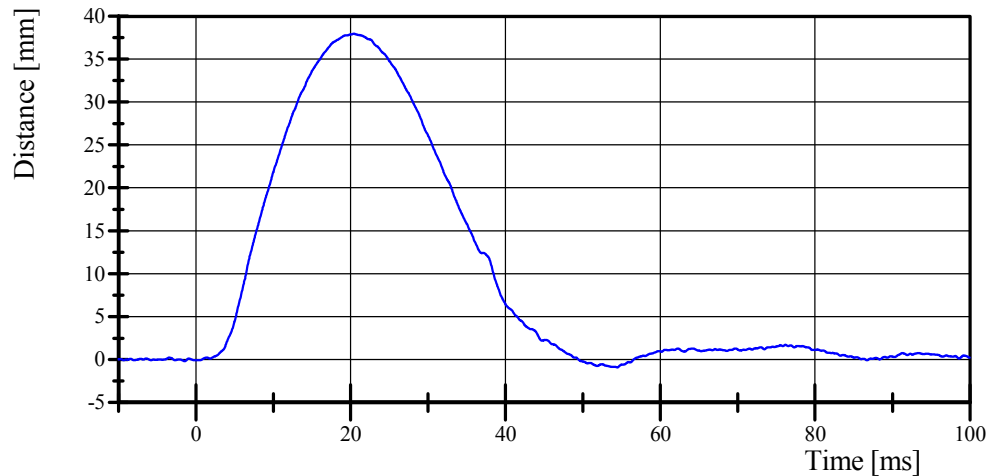


Filter Class: CFC_180
Max: 14.9 g at 11.9 ms
Min: -4.5 g at 64.7 ms

Transportation Research Center Inc.

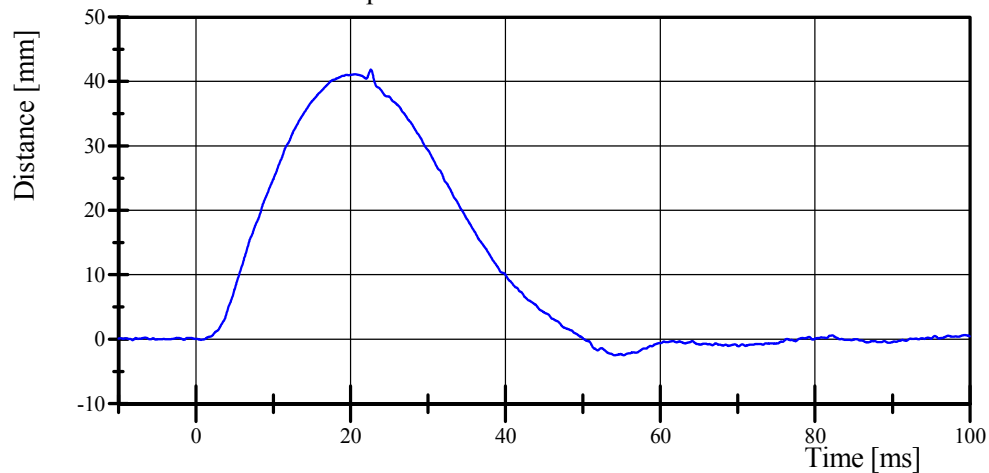
Left Lateral Thorax without Arm
WorldSID 50th Serial No. 016 Certification No. 0-2
Test Date: 3/25/2016

Upper Thorax Rib Displacement



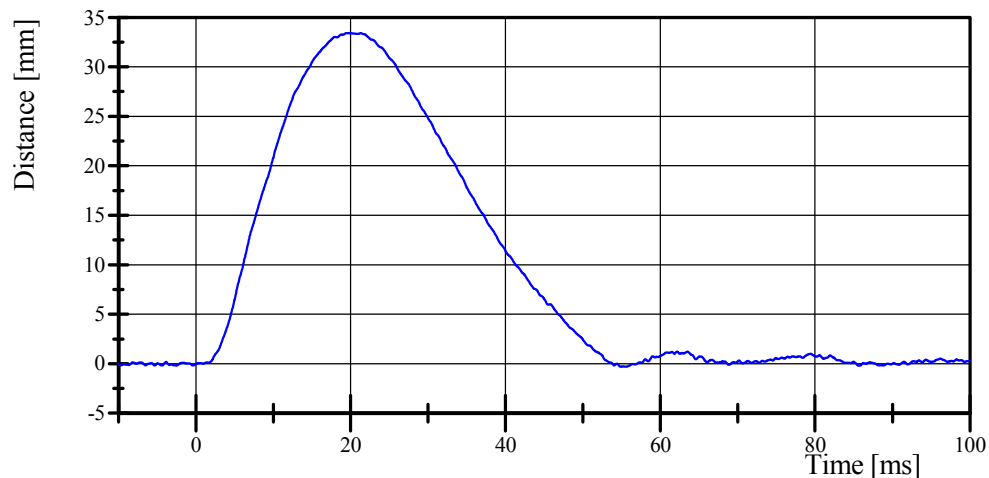
Filter Class: CFC_600
Max: 38.0 mm at 20.4 ms
Min: -0.9 mm at 54.5 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 41.8 mm at 22.6 ms
Min: -2.5 mm at 55.3 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 33.4 mm at 19.9 ms
Min: -0.3 mm at 55.6 ms

Transportation Research Center Inc.

Left Lateral Abdomen

WorldSID 50th Serial No. 016 Certification No. XX-1

Test Date: 3/28/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	N/A	N/A
Relative Humidity	10 - 70 %	N/A	N/A
Impactor Velocity	4.20 - 4.40 m/s	4.29 m/s	Yes
Impactor Force	(-2,700) - (-3,100) N	-3,116.6 N	No
Upper Abdominal Rib Displacement	33 - 40 mm	33.0 mm	Yes
Lower Abdominal Rib Displacement	30 - 36 mm	31.8 mm	Yes
Lower Spine Lateral Acceleration	15 - 20 g	17.0 g	Yes

Test does not meet specifications.

Comments:

Shoulder Rib: DW1916

Thorax Rib 1: DW8861

Thorax Rib 2: DW8862

Thorax Rib 3: DW8863

Abdomen Rib 1: DW9381

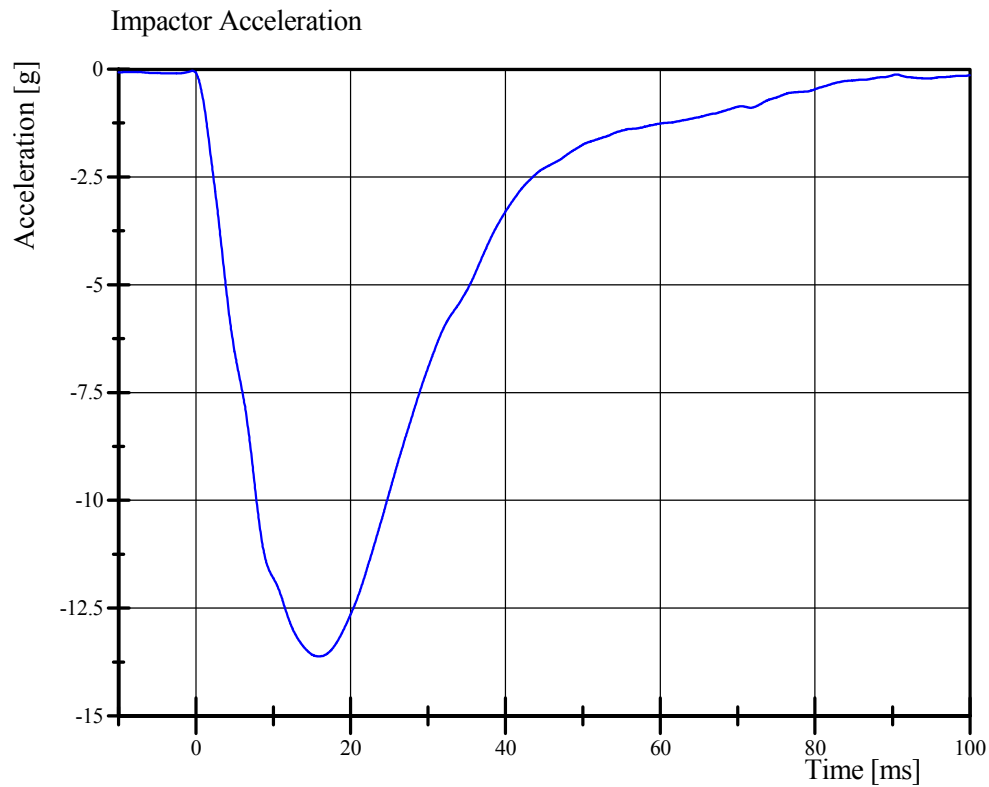
Abdomen Rib 2: DW9382

Transportation Research Center Inc.

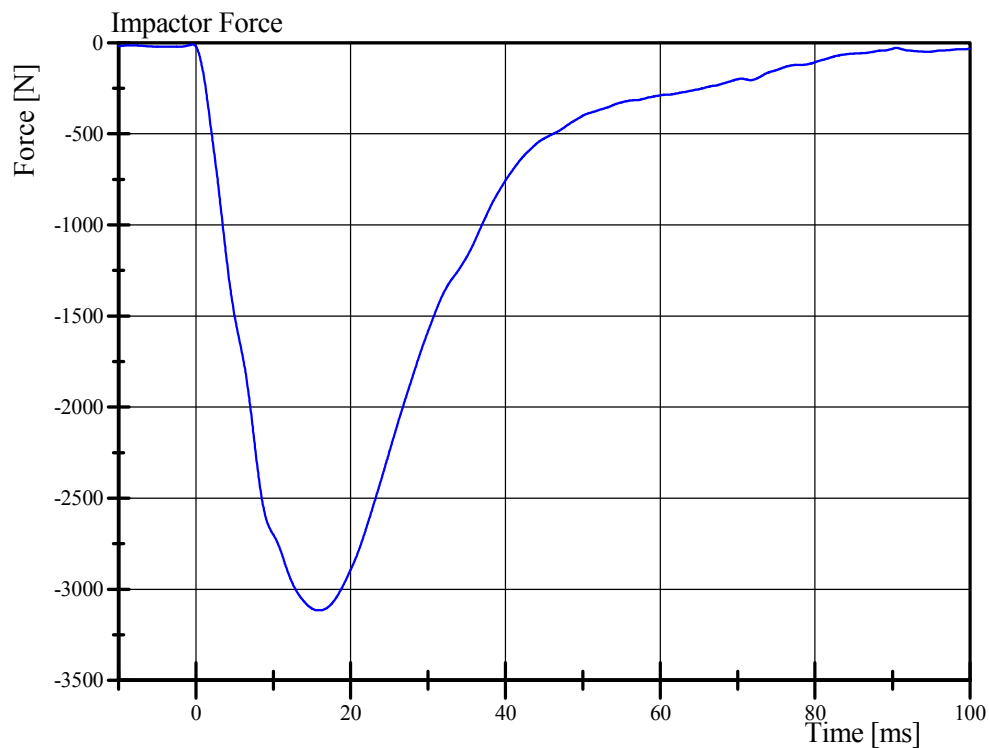
Left Lateral Abdomen

WorldSID 50th Serial No. 016 Certification No. 0-1

Test Date: 3/28/2016



Filter Class: CFC_180
Max: -0.0 g at -0.4 ms
Min: -13.6 g at 15.9 ms



Filter Class: CFC_180
Max: -9.4 N at -0.4 ms
Min: -3,116.6 N at 15.9 ms

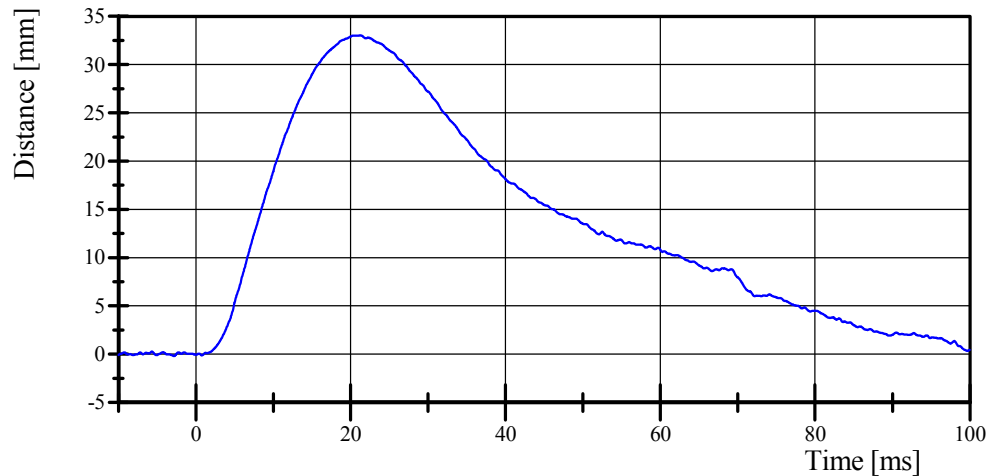
Transportation Research Center Inc.

Left Lateral Abdomen

WorldSID 50th Serial No. 016 Certification No. 0-1

Test Date: 3/28/2016

Upper Abdominal Rib Displacement

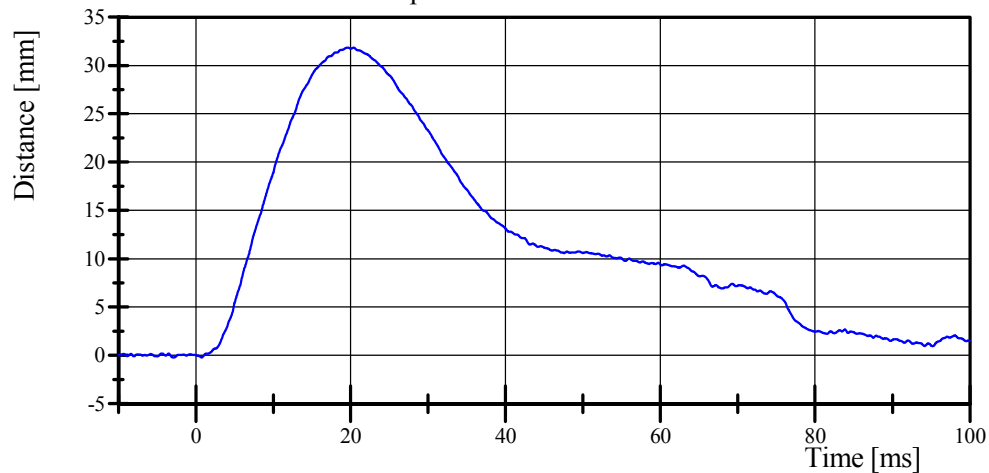


Filter Class: CFC_600

Max: 33.0 mm at 21.3 ms

Min: -0.2 mm at -2.9 ms

Lower Abdominal Rib Displacement

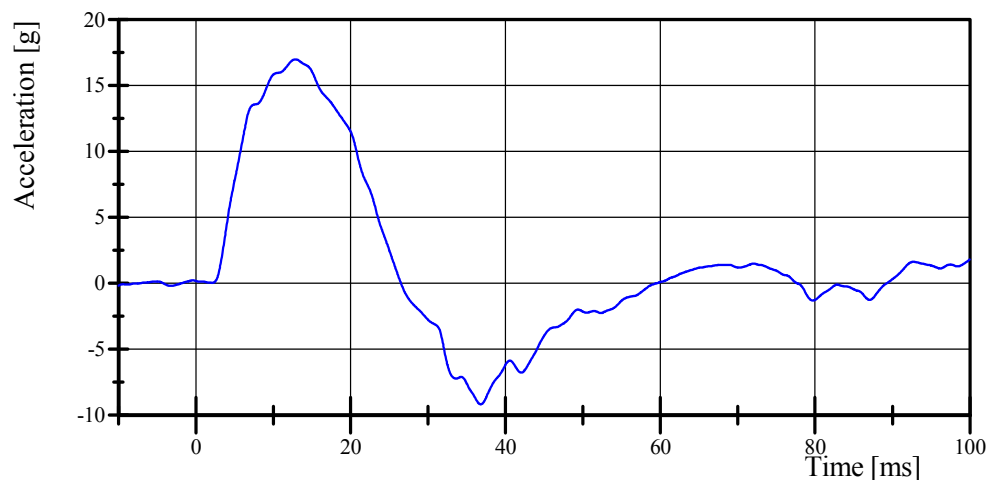


Filter Class: CFC_600

Max: 31.8 mm at 19.7 ms

Min: -0.2 mm at -3.0 ms

Lower Spine Acceleration (Y)



Filter Class: CFC_180

Max: 17.0 g at 12.9 ms

Min: -9.2 g at 36.8 ms

Transportation Research Center Inc.

Left Lateral Pelvis

WorldSID 50th Serial No. 016 Certification No. XX-1

Test Date: 3/21/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	22.2 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.77 m/s	Yes
Impactor Force	(-6,800) - (-8,200) N	-7,253.6 N	Yes
Pelvis Lateral Acceleration	37 - 47 g	40.5 g	Yes
Lower Spine Lateral Acceleration	10 - 14 g	13.6 g	Yes

Test meets specifications.

Comments:

Shoulder Rib: DW1916

Thorax Rib 1: DW8861

Thorax Rib 2: DW8862

Thorax Rib 3: DW8863

Abdomen Rib 1: DW9381

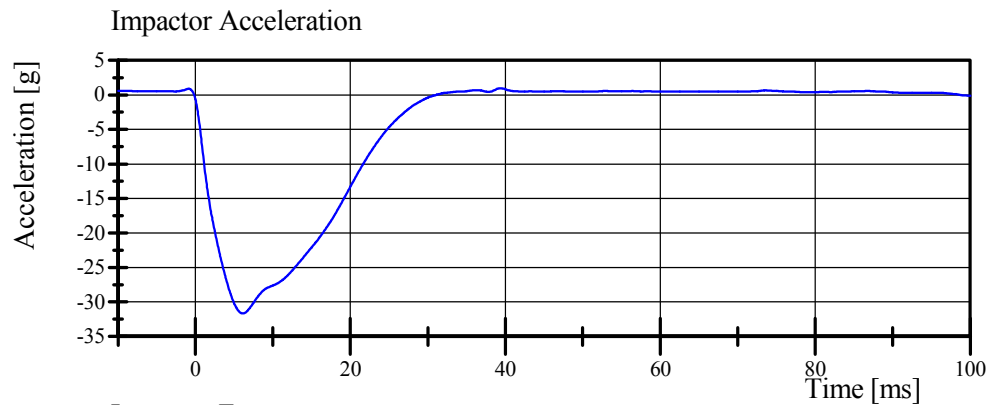
Abdomen Rib 2: DW9382

Transportation Research Center Inc.

Left Lateral Pelvis

WorldSID 50th Serial No. 016 Certification No. 0-1

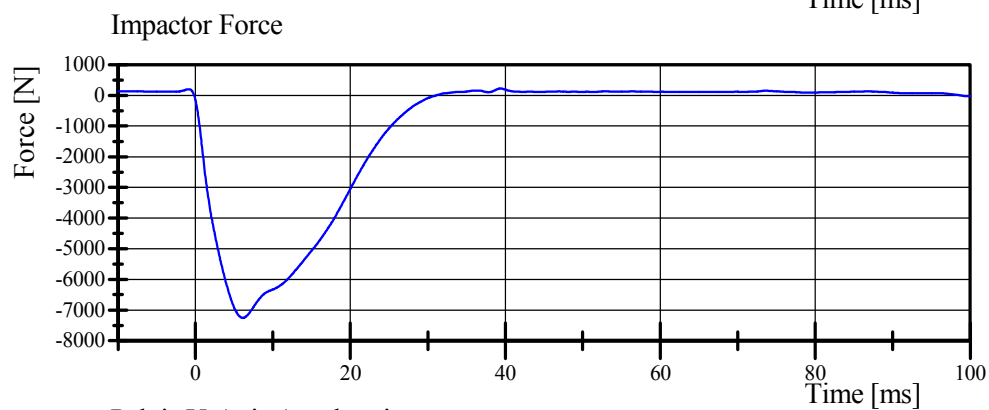
Test Date: 3/21/2016



Filter Class: CFC_180

Max: 1.0 g at 39.4 ms

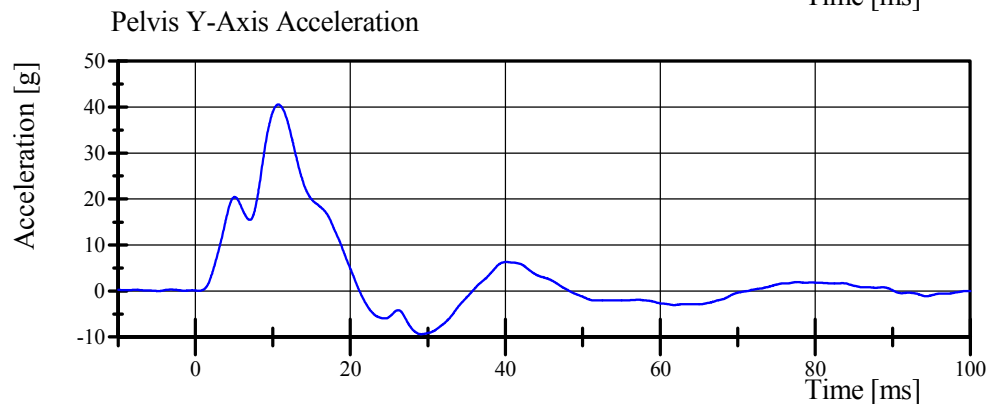
Min: -31.7 g at 6.1 ms



Filter Class: CFC_180

Max: 224.8 N at 39.4 ms

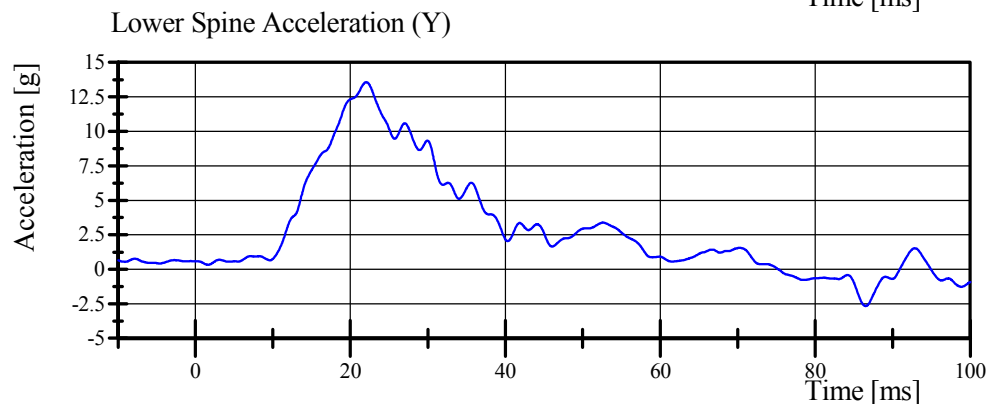
Min: -7,253.6 N at 6.1 ms



Filter Class: CFC_180

Max: 40.5 g at 10.7 ms

Min: -9.4 g at 29.2 ms



Filter Class: CFC_180

Max: 13.6 g at 22.1 ms

Min: -2.7 g at 86.5 ms

APPENDIX D
MISCELLANEOUS TEST INFORMATION

TABLE 1 – DUMMY INSTRUMENTATION (WSID-50M)

		WSID-50M S/N 016		
		Serial Number	Manufacturer	Calibration Date
Head Accelerometers	X	10172-1	Endevco	13-Jan-16
	Y	10172-3	Endevco	13-Jan-16
	Z	10172-2	Endevco	13-Jan-16
Head Gyros	X	ARS5988	DTS	1-Mar-16
	Y	ARS5989	DTS	26-Jan-16
	Z	ARS6017	DTS	26-Jan-16
Upper Neck Force	X	75	Denton	7-Jan-16
	Y	75	Denton	7-Jan-16
	Z	75	Denton	7-Jan-16
Upper Neck Moment	X	75	Denton	7-Jan-16
	Y	75	Denton	7-Jan-16
	Z	75	Denton	7-Jan-16
Lower Neck Force	X	DQ6781	Denton	7-Jan-16
	Y	DQ6781	Denton	7-Jan-16
	Z	DQ6781	Denton	7-Jan-16
Lower Neck Moment	X	DQ6781	Denton	7-Jan-16
	Y	DQ6781	Denton	7-Jan-16
	Z	DQ6781	Denton	7-Jan-16
Upper Spine Accelerometers (T1)	X	10659-3	Endevco	13-Jan-16
	Y	10659-2	Endevco	13-Jan-16
	Z	10659-1	Endevco	13-Jan-16
Middle Spine Accelerometers (T4)	X	10839-3	Endevco	13-Jan-16
	Y	10839-2	Endevco	13-Jan-16
	Z	10839-1	Endevco	13-Jan-16
Lower Spine Accelerometers (T12)	X	10848-3	Endevco	13-Jan-16
	Y	10848-2	Endevco	13-Jan-16
	Z	10848-1	Endevco	13-Jan-16
Shoulder Force	X	92	Humanetics	15-Jan-16
	Y	92	Humanetics	15-Jan-16
	Z	92	Humanetics	15-Jan-16
Pubic Symphysis Force	Y	AC4889	FTSS	14-Jan-16
Sacro-Iliac Left Force	X	87	Denton	14-Jan-16
	Y	87	Denton	14-Jan-16
	Z	87	Denton	14-Jan-16
Sacro-Iliac Left Moment	X	87	Denton	14-Jan-16
	Y	87	Denton	14-Jan-16
	Z	87	Denton	14-Jan-16

TABLE 1 – DUMMY INSTRUMENTATION (WSID-50M) (CONTINUED)

		WSID-50M S/N 016		
		Serial Number	Manufacturer	Calibration Date
Lumbar Force	X	95	Denton	15-Jan-16
	Y	95	Denton	15-Jan-16
	Z	95	Denton	15-Jan-16
Lumbar Moment	X	95	Denton	15-Jan-16
	Y	95	Denton	15-Jan-16
	Z	95	Denton	15-Jan-16
Pelvis Accelerometers	X	10046-3	Endevco	13-Jan-16
	Y	10046-2	Endevco	13-Jan-16
	Z	10046-1	Endevco	13-Jan-16
Left Femur Force	X	91	Humanetics	8-Jan-16
	Y	91	Humanetics	8-Jan-16
	Z	91	Humanetics	8-Jan-16
Left Femur Moment	X	91	Humanetics	8-Jan-16
	Y	91	Humanetics	8-Jan-16
	Z	91	Humanetics	8-Jan-16
Left Femoral Neck Force	X	78	Humanetics	15-Jan-16
	Y	78	Humanetics	15-Jan-16
	Z	78	Humanetics	15-Jan-16

TABLE 1 – DUMMY INSTRUMENTATION (WSID-50M) (CONTINUED)

			WSID-50M S/N 016		
			Serial Number	Manufacturer	Calibration Date
Shoulder Ribeye	Front	X	123	Boxboro Systems	29/Jan/2016
		Y	123	Boxboro Systems	29/Jan/2016
		Z	123	Boxboro Systems	29/Jan/2016
	Middle	X	123	Boxboro Systems	29/Jan/2016
		Y	123	Boxboro Systems	29/Jan/2016
		Z	123	Boxboro Systems	29/Jan/2016
	Rear	X	123	Boxboro Systems	29/Jan/2016
		Y	123	Boxboro Systems	29/Jan/2016
		Z	123	Boxboro Systems	29/Jan/2016
Thorax Rib 1	Front	X	123	Boxboro Systems	29/Jan/2016
		Y	123	Boxboro Systems	29/Jan/2016
		Z	123	Boxboro Systems	29/Jan/2016
	Middle	X	123	Boxboro Systems	29/Jan/2016
		Y	123	Boxboro Systems	29/Jan/2016
		Z	123	Boxboro Systems	29/Jan/2016
	Rear	X	123	Boxboro Systems	29/Jan/2016
		Y	123	Boxboro Systems	29/Jan/2016
		Z	123	Boxboro Systems	29/Jan/2016
Thorax Rib 2	Front	X	123	Boxboro Systems	29/Jan/2016
		Y	123	Boxboro Systems	29/Jan/2016
		Z	123	Boxboro Systems	29/Jan/2016
	Middle	X	123	Boxboro Systems	29/Jan/2016
		Y	123	Boxboro Systems	29/Jan/2016
		Z	123	Boxboro Systems	29/Jan/2016
	Rear	X	123	Boxboro Systems	29/Jan/2016
		Y	123	Boxboro Systems	29/Jan/2016
		Z	123	Boxboro Systems	29/Jan/2016
Thorax Rib 3	Front	X	123	Boxboro Systems	29/Jan/2016
		Y	123	Boxboro Systems	29/Jan/2016
		Z	123	Boxboro Systems	29/Jan/2016
	Middle	X	123	Boxboro Systems	29/Jan/2016
		Y	123	Boxboro Systems	29/Jan/2016
		Z	123	Boxboro Systems	29/Jan/2016
	Rear	X	123	Boxboro Systems	29/Jan/2016
		Y	123	Boxboro Systems	29/Jan/2016
		Z	123	Boxboro Systems	29/Jan/2016

TABLE 1 – DUMMY INSTRUMENTATION (WSID-50M) (CONTINUED)

			WSID-50M S/N 016		
			Serial Number	Manufacturer	Calibration Date
Abdomen Rib 1	Front	X	123	Boxboro Systems	29/Jan/2016
		Y	123	Boxboro Systems	29/Jan/2016
		Z	123	Boxboro Systems	29/Jan/2016
	Middle	X	123	Boxboro Systems	29/Jan/2016
		Y	123	Boxboro Systems	29/Jan/2016
		Z	123	Boxboro Systems	29/Jan/2016
	Rear	X	123	Boxboro Systems	29/Jan/2016
		Y	123	Boxboro Systems	29/Jan/2016
		Z	123	Boxboro Systems	29/Jan/2016
Abdomen Rib 2	Front	X	123	Boxboro Systems	29/Jan/2016
		Y	123	Boxboro Systems	29/Jan/2016
		Z	123	Boxboro Systems	29/Jan/2016
	Middle	X	123	Boxboro Systems	29/Jan/2016
		Y	123	Boxboro Systems	29/Jan/2016
		Z	123	Boxboro Systems	29/Jan/2016
	Rear	X	123	Boxboro Systems	29/Jan/2016
		Y	123	Boxboro Systems	29/Jan/2016
		Z	123	Boxboro Systems	29/Jan/2016

TABLE 2 – Chest Band INSTRUMENTATION

	Serial Number	Manufacturer	Calibration Date
W50-1	DK0833 01	HUMANETICS	13-JAN-2016
W50-2	DK0833 02	HUMANETICS	13-JAN-2016
W50-3	DK0833 03	HUMANETICS	13-JAN-2016
W50-4	DK0833 04	HUMANETICS	13-JAN-2016
W50-5	DK0833 05	HUMANETICS	13-JAN-2016
W50-6	DK0833 06	HUMANETICS	13-JAN-2016
W50-7	DK0833 07	HUMANETICS	13-JAN-2016
W50-8	DK0833 08	HUMANETICS	13-JAN-2016
W50-9	DK0833 09	HUMANETICS	13-JAN-2016
W50-10	DK0833 10	HUMANETICS	13-JAN-2016
W50-11	DK0833 11	HUMANETICS	13-JAN-2016
W50-12	DK0833 12	HUMANETICS	13-JAN-2016
W50-13	DK0833 13	HUMANETICS	13-JAN-2016
W50-14	DK0833 14	HUMANETICS	13-JAN-2016
W50-15	DK0833 15	HUMANETICS	13-JAN-2016
W50-16	DK0833 16	HUMANETICS	13-JAN-2016
W50-17	DK0833 17	HUMANETICS	13-JAN-2016
W50-18	DK0833 18	HUMANETICS	13-JAN-2016
W50-19	DK0833 19	HUMANETICS	13-JAN-2016
W50-20	DK0833 20	HUMANETICS	13-JAN-2016
W50-21	DK0833 21	HUMANETICS	13-JAN-2016
W50-22	DK0833 22	HUMANETICS	13-JAN-2016
W50-23	DK0833 23	HUMANETICS	13-JAN-2016
W50-24	DK0833 24	HUMANETICS	13-JAN-2016
W50-25	DK0833 25	HUMANETICS	13-JAN-2016
W50-26	DK0833 26	HUMANETICS	13-JAN-2016
W50-27	DK0833 27	HUMANETICS	13-JAN-2016
W50-28	DK0833 28	HUMANETICS	13-JAN-2016
W50-29	DK0833 29	HUMANETICS	13-JAN-2016
W50-30	DK0833 30	HUMANETICS	13-JAN-2016
W50-31	DK0833 31	HUMANETICS	13-JAN-2016
W50-32	DK0833 32	HUMANETICS	13-JAN-2016
W50-33	DK0833 33	HUMANETICS	13-JAN-2016
W50-34	DK0833 34	HUMANETICS	13-JAN-2016
W50-35	DK0833 35	HUMANETICS	13-JAN-2016
W50-36	DK0833 36	HUMANETICS	13-JAN-2016
W50-37	DK0833 37	HUMANETICS	13-JAN-2016

TABLE 2 – Chest Band INSTRUMENTATION (Continued)

W50-38	DK0833 38	HUMANETICS	13-JAN-2016
W50-39	DK0833 39	HUMANETICS	13-JAN-2016
W50-40	DK0833 40	HUMANETICS	13-JAN-2016
W50-41	DK0833 41	HUMANETICS	13-JAN-2016
W50-42	DK0833 42	HUMANETICS	13-JAN-2016
W50-43	DK0833 43	HUMANETICS	13-JAN-2016
W50-44	DK0833 44	HUMANETICS	13-JAN-2016
W50-45	DK0833 45	HUMANETICS	13-JAN-2016
W50-46	DK0833 46	HUMANETICS	13-JAN-2016
W50-47	DK0833 47	HUMANETICS	13-JAN-2016
W50-48	DK0833 48	HUMANETICS	13-JAN-2016
W50-49	DK0833 49	HUMANETICS	13-JAN-2016
W50-50	DK0833 50	HUMANETICS	13-JAN-2016
W50-51	DK0833 51	HUMANETICS	13-JAN-2016
W50-52	DK0833 52	HUMANETICS	13-JAN-2016
W50-53	DK0833 53	HUMANETICS	13-JAN-2016
W50-54	DK0833 54	HUMANETICS	13-JAN-2016
W50-55	DK0833 55	HUMANETICS	13-JAN-2016
W50-56	DK0833 56	HUMANETICS	13-JAN-2016

TABLE 3 – VEHICLE INSTRUMENTATION

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	P50463	ENDEVCO	24-Nov-2015
	Y	P82047	ENDEVCO	25-Mar-2016
	Z	P61285	ENDEVCO	25-Mar-2016
Left Floor Sill	Y	P79651	ENDEVCO	25-Mar-2016
Left A-Pillar Sill	Y	P91180	ENDEVCO	3-Mar-2016
Left Lower A-Pillar	Y	P81599	ENDEVCO	14-Jan-2016
Left Mid A-Pillar	Y	P75523	ENDEVCO	14-Jan-2016
Left B-Pillar Sill	Y	P92001	ENDEVCO	29-Feb-2016
Left Lower B-Pillar	Y	P79649	ENDEVCO	15-Mar-2016
Left Mid B-Pillar	Y	P91177	ENDEVCO	29-Feb-2016
Driver Seat Track at Dummy H-Point	Y	A179463	Measurement Specialties	3-Nov-2015
Engine Top	X	P79650	ENDEVCO	15-Mar-2016
	Y	P91960	ENDEVCO	29-Feb-2016
Firewall Center	Y	P91870	ENDEVCO	29-Feb-2016
Right Roof at Vertical Impact Reference Line	Y	P33817	ENDEVCO	22-Feb-2016
Right Sill at Vertical Impact Reference Line	Y	P91999	ENDEVCO	29-Feb-2016
Rear Floorpan Behind Rear Axle at Centerline	X	P91186	ENDEVCO	29-Feb-2016
Left Front Door Mid Centerline	Y	P88563	ENDEVCO	25-Mar-2016
Left Front Door Mid Rear	Y	P87459	ENDEVCO	25-Mar-2016
Left Front Door Upper Centerline	Y	P88034	ENDEVCO	25-Mar-2016
Left Rear Door Mid Rear	Y	P91482	ENDEVCO	25-Feb-2016
Left Rear Door Upper Centerline	Y	P91173	ENDEVCO	29-Feb-2016
Rear Floorpan Behind Rear Axle at Centerline	Y	P81616	ENDEVCO	1-Feb-2016

TABLE 4 – POLE INSTRUMENTATION

Pole Instrumentation	Serial Number	Manufacturer	Calibration Date
Load Cell 1	5763-88-FX	Denton	13-Nov-2015
Load Cell 2	5763-77-FX	Denton	13-Nov-2015
Load Cell 3	5764-103-FX	Denton	13-Nov-2015
Load Cell 4	5764-101-FX	Denton	13-Nov-2015
Load Cell 5	5763-92-FX	Denton	13-Nov-2015
Load Cell 6	5763-84-FX	Denton	13-Nov-2015
Load Cell 7	5764-97-FX	Denton	13-Nov-2015
Load Cell 8	5763-87-FX	Denton	13-Nov-2015

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

Channel Number	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
1	11HEADCG00WSACXP	Head X-Axis Acceleration	1000	+	no	2000
2	11HEADCG00WSACYP	Head Y-Axis Acceleration	1000	+	no	2000
3	11HEADCG00WSACZP	Head Z-Axis Acceleration	1000	+	no	2000
3A	11HEADCG00WSACRP	Head A Resultant	1000			
4	11HEADCG00WSAVXP	Head X-Axis Angular Velocity	60	+	no	18000
5	11HEADCG00WSAVYP	Head Y-Axis Angular Velocity	60	+	no	18000
6	11HEADCG00WSAVZP	Head Z-Axis Angular Velocity	60	+	no	18000
7	11NECKUP00WSFOXP	Upper Neck X-Axis Force	1000	+	no	10000
8	11NECKUP00WSFOYP	Upper Neck Y-Axis Force	1000	+	no	10000
9	11NECKUP00WSFOZP	Upper Neck Z-Axis Force	1000	+	no	12000
10	11NECKUP00WSMOXP	Upper Neck Moment About X Axis	600	+	no	300
11	11NECKUP00WSMOYP	Upper Neck Moment About Y Axis	600	+	no	300
12	11NECKUP00WSMOZP	Upper Neck Moment About Z Axis	600	+	no	200
13	11NECKLO00WSFOXP	Lower Neck X-Axis Force	1000	+	no	10000
14	11NECKLO00WSFOYP	Lower Neck Y-Axis Force	1000	+	no	10000
15	11NECKLO00WSFOZP	Lower Neck Z-Axis Force	1000	+	no	12000
16	11NECKLO00WSMOXP	Lower Neck Moment About X Axis	600	+	no	300
17	11NECKLO00WSMOYP	Lower Neck Moment About Y Axis	600	+	no	300
18	11NECKLO00WSMOZP	Lower Neck Moment About Z Axis	600	+	no	200
19	11THSP0100WSACXP	T1 Longitudinal Ax	180	+	no	2000
20	11THSP0100WSACYP	T1 Lateral Ay	180	+	no	2000
21	11THSP0100WSACZP	T1 Vertical Az	180	+	no	2000
21A	11THSP0100WSACRP	T1 A Resultant	180			
22	11THSP0400WSACXP	T4 Longitudinal Ax	180	+	no	2000
23	11THSP0400WSACYP	T4 Lateral Ay	180	+	no	2000
24	11THSP0400WSACZP	T4 Vertical Az	180	+	no	2000
24A	11THSP0400WSACRP	T4 A Resultant	180			
25	11THSP1200WSACXP	T12 Longitudinal Ax	180	+	no	2000
26	11THSP1200WSACYP	T12 Lateral Ay	180	+	no	2000
27	11THSP1200WSACZP	T12 Vertical Az	180	+	no	2000
27A	11THSP1200WSACRP	T12 A Resultant	180			
28	11SHLDLE00WSFOXP	Shoulder X-Axis Force	600	+	no	5000
29	11SHLDLE00WSFOYP	Shoulder Y-Axis Force	600	+	no	10000
30	11SHLDLE00WSFOZP	Shoulder Z-Axis Force	600	+	no	5000
31	11PUBC0000WSFOYP	Pubic Symphysis Y-Axis Force	600	+	no	12000
32	11SACRLE00WSFOXP	Sacro-Iliac Left X-Axis Force	600	+	no	6000
33	11SACRLE00WSFOYP	Sacro-Iliac Left Y-Axis Force	600	+	no	12000
34	11SACRLE00WSFOZP	Sacro-Iliac Left Z-Axis Force	600	+	no	6000
35	11SACRLE00WSMOXP	Sacro-Iliac Left Moment About X Axis	600	+	no	800
36	11SACRLE00WSMOYP	Sacro-Iliac Left Moment About Y Axis	600	+	no	400
37	11SACRLE00WSMOZP	Sacro-Iliac Left Moment About Z Axis	600	+	no	400
38	11LUSP0000WSFOXP	Lumbar X-Axis Force	600	+	no	10000
39	11LUSP0000WSFOYP	Lumbar Y-Axis Force	600	+	no	10000
40	11LUSP0000WSFOZP	Lumbar Z-Axis Force	600	+	no	12000
41	11LUSP0000WSMOXP	Lumbar Moment About X Axis	600	+	no	300

Channel Number	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
42	11LUSP0000WSMOYP	Lumbar Moment About Y Axis	600	+	no	300
43	11LUSP0000WSMOZP	Lumbar Moment About Z Axis	600	+	no	200
44	11PELV0000WSACXP	Pelvis Longitudinal Ax	180	+	no	2000
45	11PELV0000WSACYP	Pelvis Lateral Ay	180	+	no	2000
46	11PELV0000WSACZP	Pelvis Vertical Az	180	+	no	2000
46A	11PELV0000WSACRP	Pelvis A Resultant	180			
47	11FEMRLE00WSFOXP	Left Femur X-Axis Force	600	+	no	15000
48	11FEMRLE00WSFOYP	Left Femur Y-Axis Force	600	+	no	15000
49	11FEMRLE00WSFOZP	Left Femur Z-Axis Force	600	+	no	15000
50	11FEMRLE00WSMOXP	Left Femur Moment About X Axis	600	+	no	350
51	11FEMRLE00WSMOYP	Left Femur Moment About Y Axis	600	+	no	350
52	11FEMRLE00WSMOZP	Left Femur Moment About Z Axis	600	+	no	300
53	11FEACLE00WSFOXP	Left Femoral Neck Force X	600	+	no	10000
54	11FEACLE00WSFOYP	Left Femoral Neck Force Y	600	+	no	25000
55	11FEACLE00WSFOZP	Left Femoral Neck Force Z	600	+	no	10000
56	11SHRI00REWSDSX0	Shoulder Rear Ribeye X-Axis Displacement	0	+	no	60
57	11SHRI00REWSDSY0	Shoulder Rear Ribeye Y-Axis Displacement	0	+	no	60
58	11SHRI00REWSDSZ0	Shoulder Rear Ribeye Z-Axis Displacement	0	+	no	60
59	11SHRI00REWSDS00	Shoulder Rear Ribeye Length Change	0	+	no	60
60	11SHRI00MIWSDSX0	Shoulder Middle Ribeye X-Axis Displacement	0	+	no	60
61	11SHRI00MIWSDSY0	Shoulder Middle Ribeye Y-Axis Displacement	0	+	no	60
62	11SHRI00MIWSDSZ0	Shoulder Middle Ribeye Z-Axis Displacement	0	+	no	60
63	11SHRI00MIWSDS00	Shoulder Middle Ribeye Length Change	0	+	no	60
64	11SHRI00FRWSDSX0	Shoulder Front Ribeye X-Axis Displacement	0	+	no	60
65	11SHRI00FRWSDSY0	Shoulder Front Ribeye Y-Axis Displacement	0	+	no	60
66	11SHRI00FRWSDSZ0	Shoulder Front Ribeye Z-Axis Displacement	0	+	no	60
67	11SHRI00FRWSDS00	Shoulder Front Ribeye Length Change	0	+	no	60
68	11THRI01REWSDSX0	Thorax Rib 1 Rear Ribeye X-Axis Displacement	0	+	no	60
69	11THRI01REWSDSY0	Thorax Rib 1 Rear Ribeye Y-Axis Displacement	0	+	no	60
70	11THRI01REWSDSZ0	Thorax Rib 1 Rear Ribeye Z-Axis Displacement	0	+	no	60

Channel Number	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
71	11THRI01REWSDS00	Thorax Rib 1 Rear Ribeye Length Change	0	+	no	60
72	11THRI01MIWSDSX0	Thorax Rib 1 Middle Ribeye X-Axis Displacement	0	+	no	60
73	11THRI01MIWSDSY0	Thorax Rib 1 Middle Ribeye Y-Axis Displacement	0	+	no	60
74	11THRI01MIWSDSZ0	Thorax Rib 1 Middle Ribeye Z-Axis Displacement	0	+	no	60
75	11THRI01MIWSDS00	Thorax Rib 1 Middle Ribeye Length Change	0	+	no	60
76	11THRI01FRWSDSX0	Thorax Rib 1 Front Ribeye X-Axis Displacement	0	+	no	60
77	11THRI01FRWSDSY0	Thorax Rib 1 Front Ribeye Y-Axis Displacement	0	+	no	60
78	11THRI01FRWSDSZ0	Thorax Rib 1 Front Ribeye Z-Axis Displacement	0	+	no	60
79	11THRI01FRWSDS00	Thorax Rib 1 Front Ribeye Length Change	0	+	no	60
80	11THRI02REWSDSX0	Thorax Rib 2 Rear Ribeye X-Axis Displacement	0	+	no	60
81	11THRI02REWSDSY0	Thorax Rib 2 Rear Ribeye Y-Axis Displacement	0	+	no	60
82	11THRI02REWSDSZ0	Thorax Rib 2 Rear Ribeye Z-Axis Displacement	0	+	no	60
83	11THRI02REWSDS00	Thorax Rib 2 Rear Ribeye Length Change	0	+	no	60
84	11THRI02MIWSDSX0	Thorax Rib 2 Middle Ribeye X-Axis Displacement	0	+	no	60
85	11THRI02MIWSDSY0	Thorax Rib 2 Middle Ribeye Y-Axis Displacement	0	+	no	60
86	11THRI02MIWSDSZ0	Thorax Rib 2 Middle Ribeye Z-Axis Displacement	0	+	no	60
87	11THRI02MIWSDS00	Thorax Rib 2 Middle Ribeye Length Change	0	+	no	60
88	11THRI02FRWSDSX0	Thorax Rib 2 Front Ribeye X-Axis Displacement	0	+	no	60
89	11THRI02FRWSDSY0	Thorax Rib 2 Front Ribeye Y-Axis Displacement	0	+	no	60
90	11THRI02FRWSDSZ0	Thorax Rib 2 Front Ribeye Z-Axis Displacement	0	+	no	60
91	11THRI02FRWSDS00	Thorax Rib 2 Front Ribeye Length Change	0	+	no	60
92	11THRI03REWSDSX0	Thorax Rib 3 Rear Ribeye X-Axis Displacement	0	+	no	60

Channel Number	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
93	11THRI03REWSDSY0	Thorax Rib 3 Rear Ribeye Y-Axis Displacement	0	+	no	60
94	11THRI03REWSDSZ0	Thorax Rib 3 Rear Ribeye Z-Axis Displacement	0	+	no	60
95	11THRI03REWSDS00	Thorax Rib 3 Rear Ribeye Length Change	0	+	no	60
96	11THRI03MIWSDSX0	Thorax Rib 3 Middle Ribeye X-Axis Displacement	0	+	no	60
97	11THRI03MIWSDSY0	Thorax Rib 3 Middle Ribeye Y-Axis Displacement	0	+	no	60
98	11THRI03MIWSDSZ0	Thorax Rib 3 Middle Ribeye Z-Axis Displacement	0	+	no	60
99	11THRI03MIWSDS00	Thorax Rib 3 Middle Ribeye Length Change	0	+	no	60
100	11THRI03FRWSDSX0	Thorax Rib 3 Front Ribeye X-Axis Displacement	0	+	no	60
101	11THRI03FRWSDSY0	Thorax Rib 3 Front Ribeye Y-Axis Displacement	0	+	no	60
102	11THRI03FRWSDSZ0	Thorax Rib 3 Front Ribeye Z-Axis Displacement	0	+	no	60
103	11THRI03FRWSDS00	Thorax Rib 3 Front Ribeye Length Change	0	+	no	60
104	11ABRI01REWSDSX0	Abdomen Rib 1 Rear Ribeye X-Axis Displacement	0	+	no	60
105	11ABRI01REWSDSY0	Abdomen Rib 1 Rear Ribeye Y-Axis Displacement	0	+	no	60
106	11ABRI01REWSDSZ0	Abdomen Rib 1 Rear Ribeye Z-Axis Displacement	0	+	no	60
107	11ABRI01REWSDS00	Abdomen Rib 1 Rear Ribeye Length Change	0	+	no	60
108	11ABRI01MIWSDSX0	Abdomen Rib 1 Middle Ribeye X-Axis Displacement	0	+	no	60
109	11ABRI01MIWSDSY0	Abdomen Rib 1 Middle Ribeye Y-Axis Displacement	0	+	no	60
110	11ABRI01MIWSDSZ0	Abdomen Rib 1 Middle Ribeye Z-Axis Displacement	0	+	no	60
111	11ABRI01MIWSDS00	Abdomen Rib 1 Middle Ribeye Length Change	0	+	no	60
112	11ABRI01FRWSDSX0	Abdomen Rib 1 Front Ribeye X-Axis Displacement	0	+	no	60
113	11ABRI01FRWSDSY0	Abdomen Rib 1 Front Ribeye Y-Axis Displacement	0	+	no	60
114	11ABRI01FRWSDSZ0	Abdomen Rib 1 Front Ribeye Z-Axis Displacement	0	+	no	60

Channel Number	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
115	11ABRI01FRWSDS00	Abdomen Rib 1 Front Ribeye Length Change	0	+	no	60
116	11ABRI02REWSDSX0	Abdomen Rib 2 Rear Ribeye X-Axis Displacement	0	+	no	60
117	11ABRI02REWSDSY0	Abdomen Rib 2 Rear Ribeye Y-Axis Displacement	0	+	no	60
118	11ABRI02REWSDSZ0	Abdomen Rib 2 Rear Ribeye Z-Axis Displacement	0	+	no	60
119	11ABRI02REWSDS00	Abdomen Rib 2 Rear Ribeye Length Change	0	+	no	60
120	11ABRI02MIWSDSX0	Abdomen Rib 2 Middle Ribeye X-Axis Displacement	0	+	no	60
121	11ABRI02MIWSDSY0	Abdomen Rib 2 Middle Ribeye Y-Axis Displacement	0	+	no	60
122	11ABRI02MIWSDSZ0	Abdomen Rib 2 Middle Ribeye Z-Axis Displacement	0	+	no	60
123	11ABRI02MIWSDS00	Abdomen Rib 2 Middle Ribeye Length Change	0	+	no	60
124	11ABRI02FRWSDSX0	Abdomen Rib 2 Front Ribeye X-Axis Displacement	0	+	no	60
125	11ABRI02FRWSDSY0	Abdomen Rib 2 Front Ribeye Y-Axis Displacement	0	+	no	60
126	11ABRI02FRWSDSZ0	Abdomen Rib 2 Front Ribeye Z-Axis Displacement	0	+	no	60
127	11ABRI02FRWSDS00	Abdomen Rib 2 Front Ribeye Length Change	0	+	no	60
128	11CHBA0100WSVO0A	W50-1	1000	+	no	100
129	11CHBA0200WSVO0A	W50-2	1000	+	no	100
130	11CHBA0300WSVO0A	W50-3	1000	+	no	100
131	11CHBA0400WSVO0A	W50-4	1000	+	no	100
132	11CHBA0500WSVO0A	W50-5	1000	+	no	100
133	11CHBA0600WSVO0A	W50-6	1000	+	no	100
134	11CHBA0700WSVO0A	W50-7	1000	+	no	100
135	11CHBA0800WSVO0A	W50-8	1000	+	no	100
136	11CHBA0900WSVO0A	W50-9	1000	+	no	100
138	11CHBA1100WSVO0A	W50-11	1000	+	no	100
139	11CHBA1200WSVO0A	W50-12	1000	+	no	100
140	11CHBA1300WSVO0A	W50-13	1000	+	no	100
141	11CHBA1400WSVO0A	W50-14	1000	+	no	100
142	11CHBA1500WSVO0A	W50-15	1000	+	no	100
143	11CHBA1600WSVO0A	W50-16	1000	+	no	100
144	11CHBA1700WSVO0A	W50-17	1000	+	no	100
145	11CHBA1800WSVO0A	W50-18	1000	+	no	100
146	11CHBA1900WSVO0A	W50-19	1000	+	no	100
147	11CHBA2000WSVO0A	W50-20	1000	+	no	100

Channel Number	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
148	11CHBA2100WSVO0A	W50-21	1000	+	no	100
149	11CHBA2200WSVO0A	W50-22	1000	+	no	100
150	11CHBA2300WSVO0A	W50-23	1000	+	no	100
151	11CHBA2400WSVO0A	W50-24	1000	+	no	100
152	11CHBA2500WSVO0A	W50-25	1000	+	no	100
153	11CHBA2600WSVO0A	W50-26	1000	+	no	100
154	11CHBA2700WSVO0A	W50-27	1000	+	no	100
155	11CHBA2800WSVO0A	W50-28	1000	+	no	100
156	11CHBA2900WSVO0A	W50-29	1000	+	no	100
157	11CHBA3000WSVO0A	W50-30	1000	+	no	100
158	11CHBA3100WSVO0A	W50-31	1000	+	no	100
159	11CHBA3200WSVO0A	W50-32	1000	+	no	100
160	11CHBA3300WSVO0A	W50-33	1000	+	no	100
161	11CHBA3400WSVO0A	W50-34	1000	+	no	100
162	11CHBA3500WSVO0A	W50-35	1000	+	no	100
163	11CHBA3600WSVO0A	W50-36	1000	+	no	100
164	11CHBA3700WSVO0A	W50-37	1000	+	no	100
165	11CHBA3800WSVO0A	W50-38	1000	+	no	100
166	11CHBA3900WSVO0A	W50-39	1000	+	no	100
167	11CHBA4000WSVO0A	W50-40	1000	+	no	100
168	11CHBA4100WSVO0A	W50-41	1000	+	no	100
169	11CHBA4200WSVO0A	W50-42	1000	+	no	100
170	11CHBA4300WSVO0A	W50-43	1000	+	no	100
171	11CHBA4400WSVO0A	W50-44	1000	+	no	100
172	11CHBA4500WSVO0A	W50-45	1000	+	no	100
173	11CHBA4600WSVO0A	W50-46	1000	+	no	100
174	11CHBA4700WSVO0A	W50-47	1000	+	no	100
175	11CHBA4800WSVO0A	W50-48	1000	+	no	100
176	11CHBA4900WSVO0A	W50-49	1000	+	no	100
177	11CHBA5000WSVO0A	W50-50	1000	+	no	100
178	11CHBA5100WSVO0A	W50-51	1000	+	no	100
179	11CHBA5200WSVO0A	W50-52	1000	+	no	100
180	11CHBA5300WSVO0A	W50-53	1000	+	no	100
181	11CHBA5400WSVO0A	W50-54	1000	+	no	100
182	11CHBA5500WSVO0A	W50-55	1000	+	no	100
183	11CHBA5600WSVO0A	W50-56	1000	+	no	100
184	11VEHCCG0000ACXA	Vehicle Center of Gravity X-Axis Acceleration	60	+	no	2000
185	11VEHCCG0000ACYA	Vehicle Center of Gravity Y-Axis Acceleration	60	+	no	2000
186	11VEHCCG0000ACZA	Vehicle Center of Gravity Z-Axis Acceleration	60	+	no	2000
186A	11VEHCCG0000ACRA	Vehicle Center of Gravity Resultant Acceleration	60			

Channel Number	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
187	11VEHC00LO00ACYA	Left Floor Sill Y	60	+	no	2000
188	11APIL000000ACYA	Left A-Pillar Sill Y-Axis Acceleration	60	+	no	2000
189	11APILLO0000ACYA	Left Lower A-Pillar Y-Axis Acceleration	60	+	no	2000
190	11APILMI0000ACYA	Left Mid A-Pillar Y-Axis Acceleration	60	+	no	2000
191	11BPIL000000ACYA	Left B-Pillar Sill Y-Axis Acceleration	60	+	no	2000
192	11BPILLO0000ACYA	Left Lower B-Pillar Y-Axis Acceleration	60	+	no	2000
193	11BPILMI0000ACYA	Left Mid B-Pillar Y-Axis Acceleration	60	+	no	2000
194	11SETR000000ACYA	Driver Seat Track at Dummy H-Point Y-Axis Acceleration	60	+	no	2000
195	11ENGNT00000ACXA	Engine Top X-Axis Acceleration	60	+	no	2000
196						
197	11ENGNT00000ACYA	Engine Top Y-Axis Acceleration	60	+	no	2000
198	12FIRCX00000ACYA	Firewall Center Y-Axis Acceleration	60	+	no	2000
199	13ROFR000000ACYA	Right Roof at Vertical Impact Reference Line Y-Axis Acceleration	60	+	no	2000
200	13SILB000000ACYA	Right Sill at Vertical Impact Reference Line Y-Axis Acceleration	60	+	no	2000
201	11FORA000000ACXA	Rear Floorpan Behind Rear Axle at Centerline Acceleration X-Axis Acceleration	60	+	no	2000
202	11DOORMIMI71ACYA	Left Front Door Mid Centerline (Y)	60	+	no	2000
203	11DOORMIRE71ACYA	Left Front Door Mid Rear (Y)	60	+	no	2000
204	11DOORMIUP71ACYA	Left Front Door Upper Centerline (Y)	60	+	no	2000
205	14DOORMIRE71ACYA	Left Rear Door Mid Rear (Y)	60	+	no	2000
206	14DOORMIUP71ACYA	Left Rear Door Upper Centerline (Y)	60	+	no	2000
207	11FORA000000ACYA	Rear Floorpan Behind Rear Axle at Centerline Acceleration Y-Axis Acceleration	60	+	no	2000
208	11SENS030000VO00	DR Frontal Airbag Timing Ind	0	+	no	5
209	11SENS010000VO00	Driver SAB Timing Ind.	0	+	no	5
210	11SENS020000VO00	Driver SCAB Timing Ind.	0	+	no	5
211	11HEAD000000EV00	Head Contact	0	+	no	1
212	11SHLD000000EV00	Shoulder Contact	0	+	no	1
213	11TRRI000000EV00	Thorax Contact	0	+	no	1
214	11PELV000000EV00	Pelvis Contact	0	+	no	1
215	K0FBAR010000FOXA	POLE LOAD CELL 1	60	+	no	100000
216	K0FBAR020000FOXA	POLE LOAD CELL 2	60	+	no	100000
217	K0FBAR030000FOXA	POLE LOAD CELL 3	60	+	no	100000
218	K0FBAR040000FOXA	POLE LOAD CELL 4	60	+	no	100000
219	K0FBAR050000FOXA	POLE LOAD CELL 5	60	+	no	100000
220	K0FBAR060000FOXA	POLE LOAD CELL 6	60	+	no	100000
221	K0FBAR070000FOXA	POLE LOAD CELL 7	60	+	no	100000
191	K0FBAR080000FOXA	POLE LOAD CELL 8	60	+	no	100000

Driver WSID 50th Seating Worksheet

Vehicle	2016 Nissan Rogue S	Technician	Mike Tonneman
VIN #	KNMAT2MV7GP615174	Position	Engineering Technician
ATD	WorldSID 50th	Date	3/29/2016
SEATING #			

SCRL Angle	Max	14.7	WSID 50th Tilt Sensors	X	Y
	Min -	11.4	Head	0°±2	-1.6
	Difference	3.3	T1	0°±2	
	/2	1.65	T6	0°±2	-1.2
	Min +	1.65	T12	0°±2	
	Mid Angle	13.05	Pelvis	0°±2	0.3

Seat Back Angle	W/Level °		HEAD REST POST		FINAL HEAD REST
Seat Pan Angle	W/Level °	13.1	ANGLE	3.3	POST ANGLE
					3.3

Pelvis Angle	WSID 50th 0° +/-2.5°	Manual Inclinometer	Tilt Sensor
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Collected Points			
Name	Meas X	Meas Y	Meas Z
SBU -	-27.766	1.057	-12.364
SBL -	-26.218	-1.217	13.586
STRIKER -	-1.046	-0.223	-1.049
FOSB -			
FISB -			
ROSB -			
RISB -			
RHP -	949.649	616.555	436.685
LHP -	949.978	242.599	433.828
SO -	557.305	428.201	-247.956
TS -	646.375	433.724	-395.764
BS -	487.706	421.475	-82.127
SC1 -			
OSCAR H-POINT -	263.867	231.833	94.419
DR PROJECTED WSID H-POINT AT MID-POSITION -			
DRIVER STP 14.27 MID-POSITION -	284.002	181.341	179.217
DRIVER STP STEP 17.6 TRIAL 1 -			
DR PROJECTED WSID H-POINT STEP 17.6.2 TRIAL 1 -			
DRIVER STP STEP 17.6 TRIAL 2 -			
DR PROJECTED WSID H-POINT STEP 17.6.2 TRIAL 2 -			
DRIVER STP STEP 17.6 TRIAL 3 -			
DR PROJECTED WSID H-POINT STEP 17.6.2 TRIAL 3 -			
3DRHCG-	117.881	512.320	-582.786
3DLHCG-	119.311	360.057	-579.373
LHDCG -	96.499	357.179	-581.394
BON -	191.380	437.341	-578.829
TN -	189.093	439.463	-531.037
TC -	175.120	437.084	-458.527
SHLD R1 -	149.906	435.569	-354.562
THX R1 -	186.059	436.493	-278.005
THX R2 -	227.989	436.402	-215.853
THX R3 -	242.222	435.796	-164.005
ABD R1 -	260.705	435.682	-110.876
ABD R2 -	279.416	435.572	-63.297

C1 -	156.120	436.138	-335.234
C2 -	201.646	428.367	-247.140
C3 -	259.352	421.875	-82.480
SHT -	65.796	216.502	-328.036
E1 -	284.347	154.652	-183.102
P1 -	212.317	209.561	31.605
H-POINT -	265.467	208.458	80.882
OK -	672.998	209.039	-23.474
IK -	689.743	620.291	-29.913
OA -	913.550	223.567	317.229
IA -	913.318	559.855	331.991
OH -	948.497	229.999	443.551
IH -	961.618	588.101	447.037
OP -	-117.090	341.770	-401.676
R -	191.916	437.931	-792.069
H -	556.592	436.809	-721.586
W1 -	843.668	437.541	-578.223
W2 -			
D1 -	782.620	435.608	-374.146
D2 -	774.861	209.203	-49.583
D3 -	761.293	620.199	-59.644
HRP -	190.532	238.664	-697.192
HSP -	190.584	92.037	-578.922
ADP -	284.352	73.228	-183.636
HDP -	265.976	97.094	80.296

Calculated Measurements					
Name	Cal X	Cal Y	Cal Z	Cal 3D Distance	Deg
HZ -			213.2401306		
HH -				392.1214653	
HW -	652.2874484				
NR -				476.9053278	
CD -				627.7068669	
CS -	355.65848				
IKD -				77.48101348	
OKD -				105.1557999	
HR -				231.2644715	
HS -		345.3039383			
AD -		81.42410755			
HD -		111.3637571			
HUHL -				358.3594583	
KK -				411.6424921	
SH -				348.2664511	
HRA -					3.3
H-POINT TOOL ANGLE -					47.16542379
TORSO ANGLE -					14.31267439
WINDSHIELD ANGLE -					N/A missing W2

APPENDIX E
RIBEYE INFORMATION

RibEye

A relatively new instrument called RibEye was used in the WorldSID 50th percentile dummy to evaluate the ability of RibEye to capture maximum deflection. When configured for the WorldSID 50th dummy, the RibEye consists of two groups of three sensors (receivers) mounted on the impact side of the spine box, one at each rib level, and three Light Emitting Diodes (LEDs) per rib, mounted on the inner surface of the inner rib on the impact side (Figure 1). The RibEye measures x, y, and z positions for each LED at 10,000 samples per second. The top set of sensors uses red optical filters and monitors the red LEDs mounted on the top three ribs (shoulder, thorax rib 1, and thorax rib 2). The bottom set of sensors uses blue optical filters and monitors the blue LEDs mounted on the bottom three ribs (thorax rib 3, abdomen ribs 1 and 2). Within each group of three sensors, position data from each sensor is reported with respect to a coordinate system that has its origin in the middle sensor of each set. Within each group of three sensors, the LEDs are installed using angled mounting blocks on the top and bottom ribs, and no mounting block on the middle rib (Figure 1). Note that the sensors (Figure 2) are also angled on the top and bottom ribs and flat on the middle rib. The LEDs and sensors are mounted this way so that the LED light is better aimed toward the sensors. The RibEye also includes its own data acquisition system and controller, which are installed on the non-impact side of the spine box. The WorldSID 50th Dummy RibEye Hardware Manual¹ calls for an optional shoulder rib foam strap and stopper plate, which were not utilized in this evaluation. Figure 3 shows the final placement of the LEDs when used in this series of crash testing.

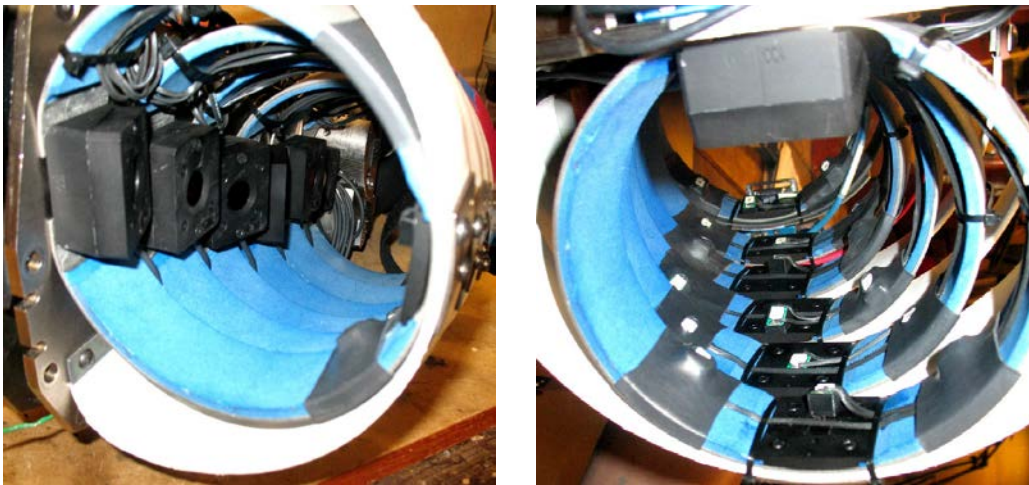


Figure 1. RibEye sensors (left) and LEDs (right) installed in WorldSID 50th dummy. Note that for a group of three sensors, the sensors for the top and bottom ribs are mounted at an angle, and the sensor for the middle rib is mounted flat. View is from pelvis upward. Photo copyright Boxboro Systems.

¹ Boxboro Systems, "Hardware User Manual - RibEye™ Multi-Point Deflection Measurement System: 3-Axis Version for the WorldSID 50th Male ATD," www.boxborosystems.com, May 2016

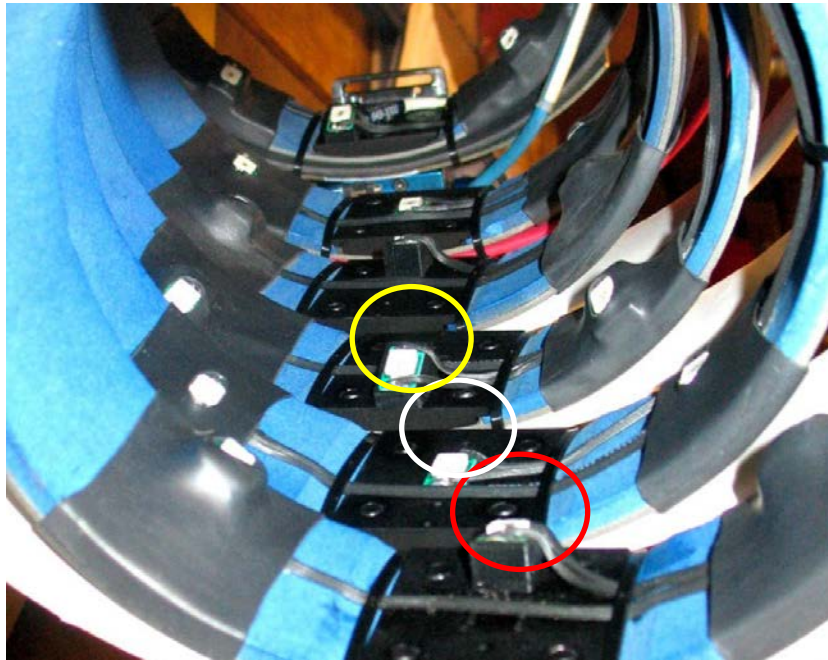


Figure 2. Close-up view of LEDs mounted to ribs. Circles denote angled mounting blocks on the top and bottom ribs (yellow and red), and no mounting block on the middle rib (white). Photo copyright Boxboro Systems.

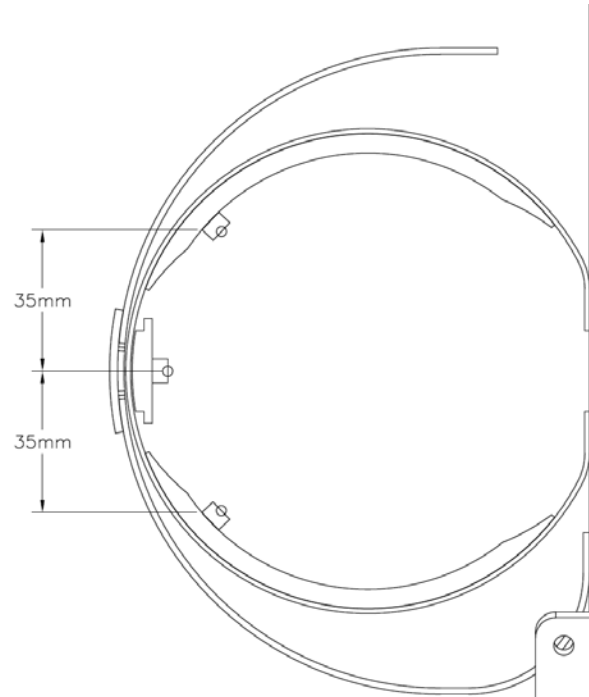


Figure 3. Schematic of a rib showing the final locations for the three LEDs used in the crash tests

RibEye Field of View and Error Codes

Each sensor has a finite field of view, within which it can sense the position of the LEDs. If an LED moves outside the field of view of the sensor, its position can no longer be sensed, and an error code will be produced by the RibEye software. If an error code occurs, all three axes (x, y, and z) will be forced to the same error code. In addition, error codes can occur if the light from an LED gets blocked and cannot be reached by one of the sensors. Too much ambient light can also cause the RibEye to generate error codes. Before a sensor becomes completely blocked, it gets partially blocked, which causes the sensor to report bad data. Thus, if an error code occurs, the data a few milliseconds before and after the error code should be discounted. The error code values are single digit numbers 1-9 and can be positive or negative. Each code indicates a different error (Table 1). It is important to note that removing the bias or filtering can alter the values of the error codes, which could be misleading. Thus, it is important to review the unfiltered absolute position data in order to preserve the error codes. To determine if an LED moved beyond the field of view of the RibEye sensor's range, an X-Y or Y-Z plot of the absolute position data and the RibEye range should be plotted together as shown in Figure 4.

Table 1. RibEye Error Code Descriptions

Error Code	Description
1	The top sensor is blocked or sees too much ambient light
2	The bottom sensor is blocked or sees too much ambient light
3	Both top and bottom sensors are blocked or see too much ambient light
4	The middle sensor is blocked or sees too much ambient light
5	The middle and top sensors are blocked or see too much ambient light
6	The middle and bottom sensors are blocked or see too much ambient
7	All three sensors are blocked or see too much ambient light
8	A divide-by-zero condition occurred in the data processing
9	Data goes past the end of the calibration curves

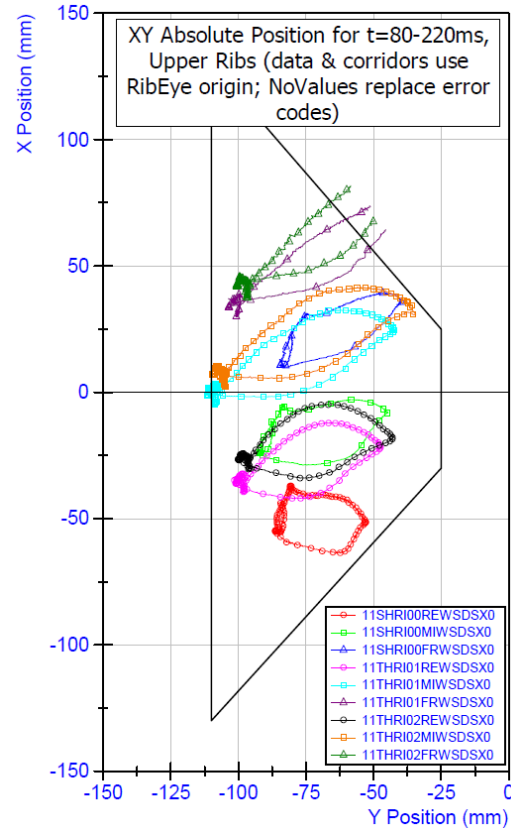


Figure 4. RibEye X-Y position (see legend) and sensor range (trapezoidal area outlined in black) for upper three ribs. Note that thorax rib 1 and thorax rib 2 front LEDs moved beyond the sensor range and their positions were no longer measured.

RibEye Change in Length

In order to assess injury, deflection toward the spine is calculated from the x and y position data from the RibEye as the x-y change in length (or deflection) of the LED from the RibEye origin. However, since the RibEye origin is located at the middle sensor for each group of three sensors, in order to measure the x-y length change for each LED, the origin is first translated to the same relative location for the rib of interest (i.e., for the shoulder rib, the middle sensor origin at thorax rib 1 is translated to the top sensor). Because the WorldSID dummy's ribs are offset in the x (anterior-posterior) and z (superior-inferior) directions, the RibEye origin must be translated in both of these directions so that all of the rib deflections will be measured relative to the center of the inside face of the sensor of the rib of interest (Figure 5).

Table 2 lists the offsets from the RibEye origin for each rib's sensor, measured with the RibEye origin sensor setting the x- and z-axis directions parallel to- and perpendicular to- it, respectively.

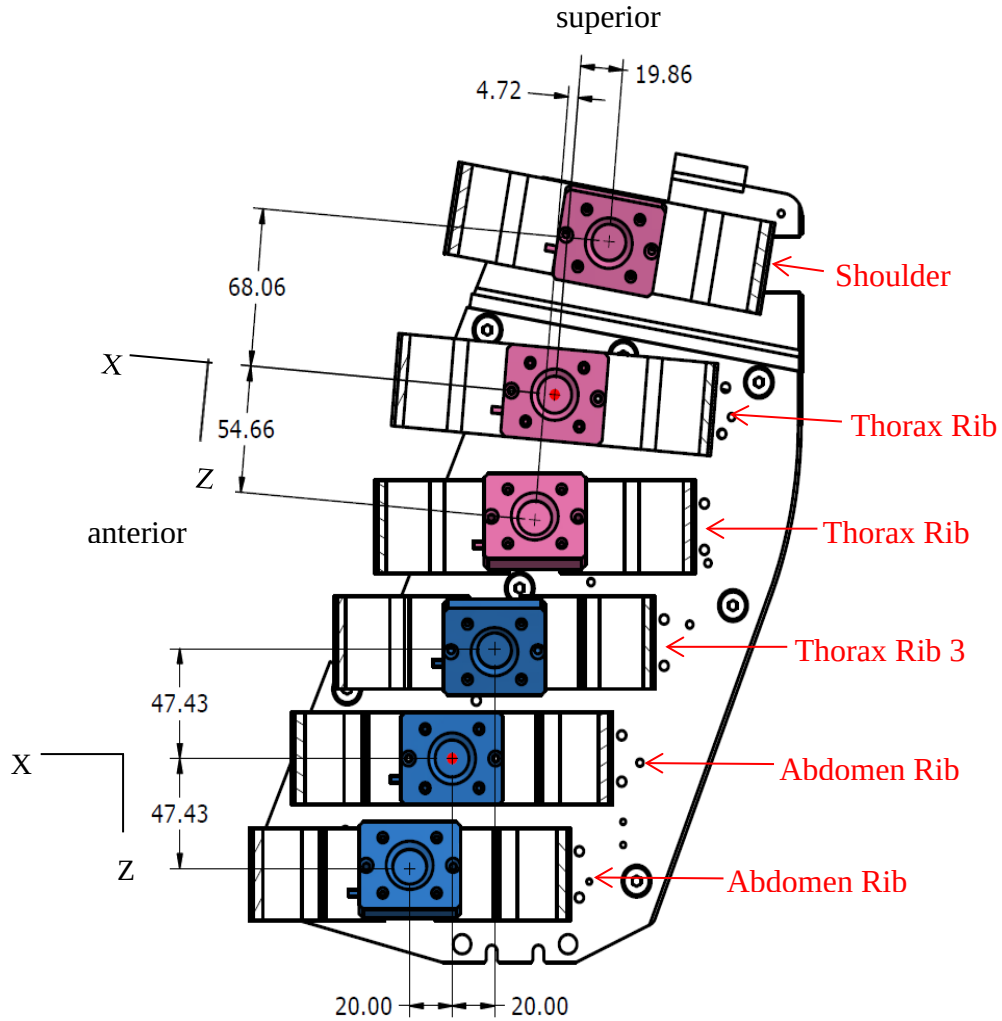


Figure 5. Schematic showing left side cross-section view of thorax with RibEye sensors. Upper set of sensors shown in pink; lower set of sensors shown in blue. RibEye origins denoted by red dots; x and z axes directions defined by the orientation of the origin sensor for each set of sensors. Dimensions indicate location of center of top and bottom sensors from the origin for the upper and lower sets of three sensors.

Table 2. RibEye Origin Offset for Each Rib

RibEye Sensor Group	Rib	Offset from RibEye Origin (mm)	
		X	Z
Red	Shoulder	-19.86	-68.06
	Thorax Rib 1	0	0
	Thorax Rib 2	4.72	54.66
Blue	Thorax Rib 3	-20	-47.43
	Abdomen Rib 1	0	0
	Abdomen Rib 2	20	47.43

For example, if we are interested in the x-y displacement of thorax Rib 2, the RibEye origin would need to be translated in the x and z directions from its location at the middle sensor of thorax rib 1. Then, the change in length is calculated as shown in Figure 6 and Equations 1-3 for any time, t . This measurement is similar to the change in length of the IR-TRACC telescoping tube.

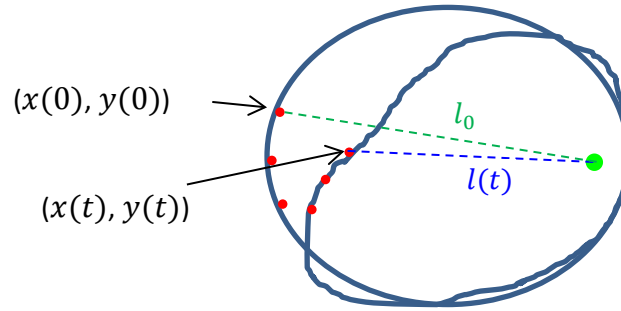


Figure 6. Schematic showing inner rib prior to impact and deformed at some time t , LEDs (red), origin at the rib of interest (green), and lengths between the front LED and the origin at time zero (l_0) and at time t , ($l(t)$). The change in length is $l_0 - l(t)$.

$$l_0 = \sqrt{x(0)^2 + y(0)^2} \quad (1)$$

$$l(t) = \sqrt{x(t)^2 + y(t)^2} \quad (2)$$

$$\text{Length change} = l_0 - l(t) \quad (3)$$

If error codes occur in the RibEye data, they can cause the length change calculation to be problematic, so to avoid this, the error codes are replaced with null data. Filtering null data may generate erroneous data. After the length change is calculated, the null data are put back in, removing the erroneous data due to filtering null data.

Given these conditions, the data processing steps used for RibEye are as follows:

1. Replace error codes in unfiltered absolute position data with null data
2. Filter at CFC 600
3. Translate absolute position data in x and z directions (per Table 2) to get position data relative to the center of the inside face of the sensor for each rib
4. Calculate length change
5. Replace filtered null data with null data

For more information on the RibEye system and or implementation see the following reports located in the NHTSA Docket.

- “Implementation of RibEye in the WorldSID 50th Percentile Dummy,” May 2016, Rhule, H., Mallory, A., Millis, W., Stricklin, J.; NHTSA docket no. NHTSA-2015-0119.
- “Evaluation of RibEye Installed in the WorldSID 50th Percentile Dummy,” July 2016, Rhule, H., Stricklin, J., Millis, W., Suntay, B.; NHTSA docket no. NHTSA-2015-0119.

APPENDIX F
CHEST BAND INFORMATION

APPENDIX - CHEST BAND INFORMATION

One 59-channel chest band was installed on the WorldSID 50th male dummy in the driver seat. The chest band was installed directly on the rib denoted in Table 1 using double-sided foam tape to ensure that the band followed the rib's motion (Figures 1-4). The band was used in this test to determine the shape of the rib contour throughout the crash event. Pertinent information regarding the location of the band on the dummy (Table 1) may be used for processing the chest band data in RBandPC or CrashStar software. Table 1 and Figure 5 show results from processing the chest band data using CrashStar. Deflections are measured from each chest band gage left of the spine and sternum to a location that corresponds to the Ribeye origin. Deflection is calculated to be the difference between the initial and final distances of the gage relative to the origin. Information related to the chest band used in this test may be directed to heather.rhule@dot.gov.

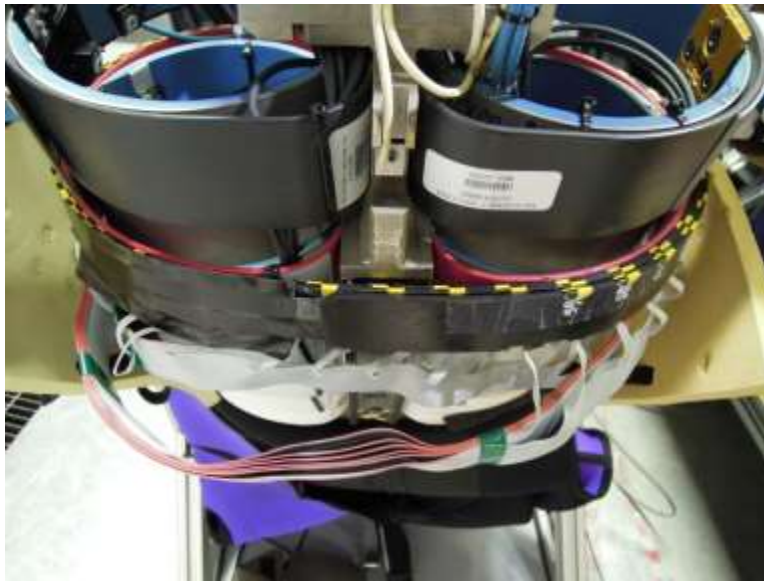


Figure 1. Rear of WorldSID 50th male dummy showing chest band location



Figure 2. Left side of WorldSID 50th male dummy showing chest band location



Figure 3. Front of WorldSID 50th male dummy showing chest band location

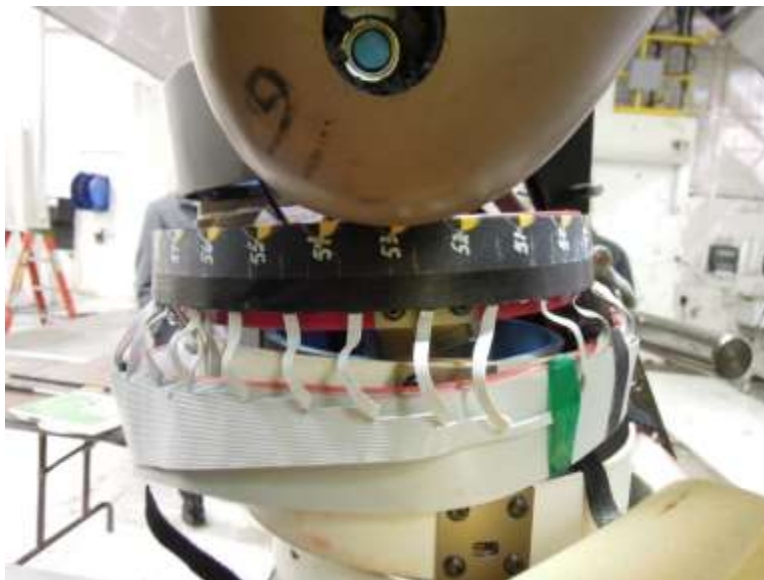


Figure 4. Right side of WorldSID 50th male dummy showing chest band location

Table 1. Chest Band Information

Test date	3/29/2016
Test vehicle	2016 Nissan Rogue
Dummy	WorldSID 50 th Male
Seating position	Driver seat
Chest band location	Thorax Rib 1
Chest circumference	937.4 mm
Number of active gages*	55
Gage closest to spine	7
Distance from spine**	0 mm
Gage closest to sternum	39
Distance from sternum**	-3 mm
Maximum chest deflection from chest band data	23.9 mm
Gage of Max Deflection	18

*The number of active gages is the number of gages encircling the subject.

**Distance from anatomical reference (spine or sternum) is positive when the closest gage lies before the anatomical reference when moving around the chest band in a clock-wise direction

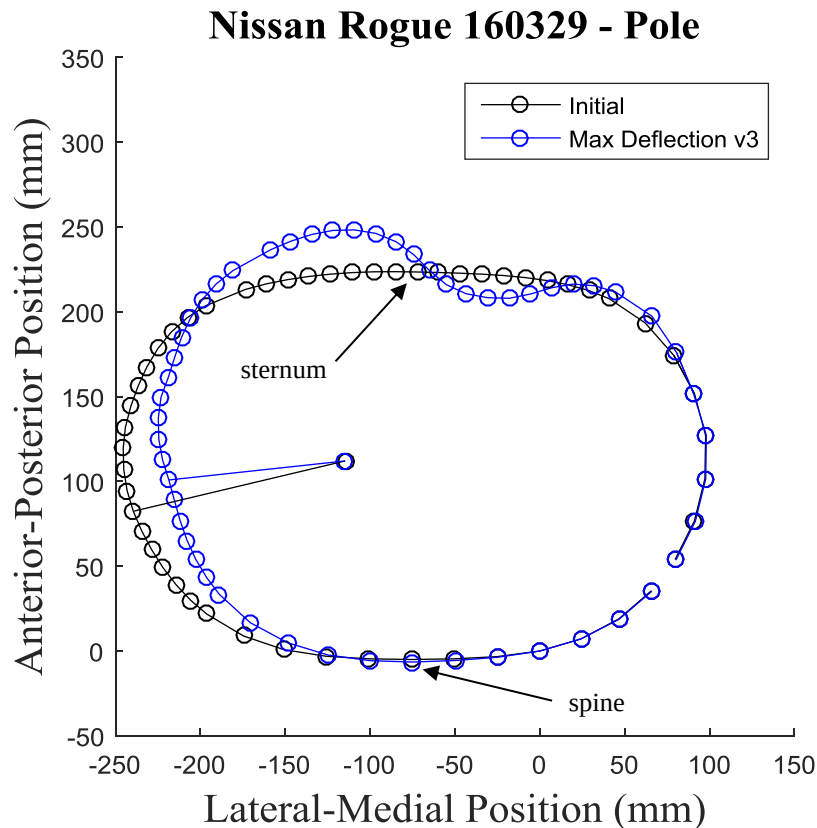


Figure 5. Chest band contours at initial position and maximum deflection for the WorldSID 50th dummy. Chest band gage #30 was removed due to a poor signal.

APPENDIX G
WORLD SID DRAFT SEATING PROCEDURE

- SEATING AND DUMMY POSITIONING PROCEDURES FOR THE WSID 50TH MALE DRIVER DUMMY

__1 Determine the seat type

Visually inspect the seats to determine type (i.e., bucket or bench).

Driver seat:

☐ Bench

☐ Bucket

__2 Position lumbar supports

Position the seat's adjustable lumbar supports to the lowest, retracted or deflated adjustment positions.

☐ N/A No lumbar adjustment

__3 Position additional supports

Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position.

☐ N/A No additional support adjustment

__4 Position leg supports

Position an adjustable leg support system in its rearmost position.

☐ N/A No adjustable leg support system

__5 Position the head restraint

☐ 5.1 Using any adjustment of the head restraint, position it to its highest position.

☐ 5.2 Using any adjustment of the head restraint, position it to the full rearward position. If it rotates, rotate it such that the head restraint extends as far rearward as possible.

☐ N/A The test vehicle is equipped with automatically adjusting head restraints or there is no head restraint adjustment,

__6 Mark the centerline of the seats in the XZ plane (complete ONLY the one that is applicable to seat being marked)

☐ 6.1 Bucket Seat: Locate and **mark** for future reference the centerline of the seat cushion in the XZ plane. The intersection of the XZ plane that passes through the SgRP and the seat cushion upper surface determines the centerline of a bucket seat cushion.

☐ 6.2 Bench Seat:

Locate and **mark** for future reference the line on the seat cushion that marks the intersection of the XZ plane through the centerline of the steering wheel and the seat cushion upper surface.

__7 Mark the range of seat travel

Prior to marking the seat for fore/aft travel, move the seat through its full range of motion using all available controls. Separately, operate each control to determine whether it moves the seat and/or seat cushion primarily in the fore-aft or up-down directions.

Seating procedures used for March-June 2016 testing

__7.1 Mark a point (seat cushion reference point - **SCR**P) on the side of the seat cushion that is between 150 mm and 250 mm from the front edge of the seat cushion. For seat cushions that move up and down independently from the seat housing, mark the point on the side of the cushion in an area that will not be obscured by the seat housing when the seat cushion is at its lowest height position.

__7.2 Draw a horizontal line (seat cushion reference line - **SCR**L) through the **SCR**P.

__7.3 Use only the controls that primarily move the seat in the fore-aft direction to move the **SCR**P to the rearmost position.

__7.4 If the seat cushion adjusts fore-aft, independent of the seat back, use only the controls that primarily move the seat cushion in the fore-aft direction to move the **SCR**P to the rearmost position.

__ N/A No independent fore-aft seat cushion adjustment

__7.5 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the **SCR**L and to set the **SCR**L at mid-angle. Record the maximum, minimum and mid-angles in the table below.

SCR L°	Max	Min	Mid
Driver			

__7.6 If the seat and/or seat cushion height is adjustable, use any part of any control other than the parts which primarily move the seat or seat cushion fore-aft, to put the **SCR**P in its lowest position with the **SCR**L angle at the mid-angle found in 7.5.

__ N/A No seat height adjustment

__7.7 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position

__7.8 Use only the controls that primarily move the seat in the fore-aft direction to **mark** the fore-aft seat positions. **Mark** each position so that there is a visual indication when the seat is at a particular position. For manual seats, move the seat forward one detent at a time and **mark** each detent. For power seats, **mark** only the rearmost, middle, and foremost positions. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the closest adjustment position to the rear of the mid-point), and R for rearmost.

Measure the SCRP fore-aft travel for each seat position on the table below.

	SCRL Mid-Angle°							SCRP Height (mm) Spacing measurement Between detents (if applicable)
		Rearmost		Mid-fore/aft		Full forward		
		X	Z	X	Z	X	Z	X
Driver								

__7.8.1 While at mid-position, also mark or label 25 mm rearward on the seat travel.

Two possible methods for marking the fore-aft seat positions are illustrated in the photos below.



__8 Locate and mark the Right Heel Point (RHP) on the carpet.

__8.1 Find the Pedal Center Point (PCP).

Place adjustable pedals in the full forward position (towards the front of the vehicle.)

__N/A – the pedals are not adjustable.

__8.2 Using Diagrams below locate the midpoint between left most and right most edge of the accelerator pedal surface; mark a line on the accelerator pedal and floor pan that represents the intersection of the accelerator midpoint and the vertical longitudinal plane. This center line shall be referred to as L1.

__8.3 Find and mark the Pedal Center Point (PCP) using measurement PL from the top to the bottom edge illustrated in the picture below.

__8.4 Mark a point on the outboard edge of the accelerator pedal surface at the same height as the

PCP. This point shall be referred to as A.

__8.5 Using a 200mm bar, place one end on the outboard edge of the accelerator pedal at point A and sweep the other end in a downward arc in the vertical longitudinal plane until contacting the floor pan. This point of contact shall be referred to as A'.

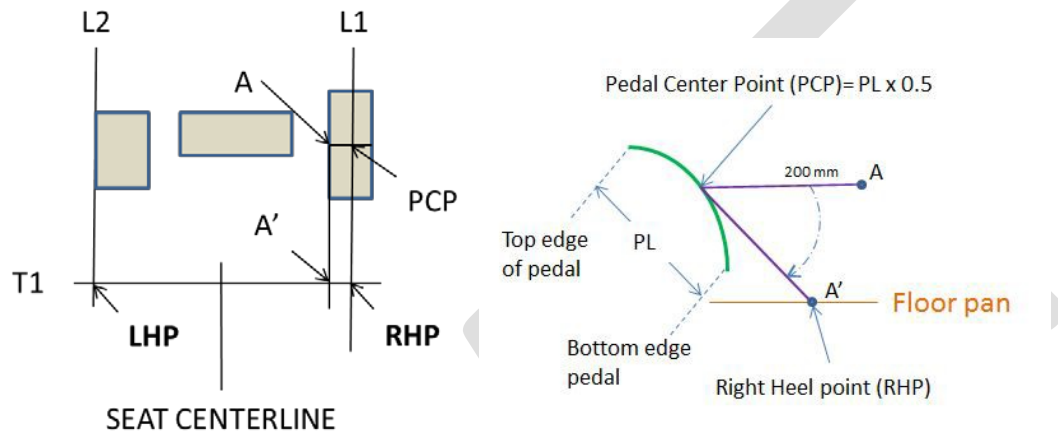
__8.6 Mark a transverse line T1 through the point A' on the floor pan. The intersection of the T1 Line and the L1 line becomes the Right Heel Point (RHP). Mark this location for future placement of the right heel.

Seating procedures used for March-June 2016 testing

__9 Locate and mark the Left Heel Point (LHP) on the carpet.

__9.1 Mark a point on line T1 the same distance to the left of the seat centerline as the RHP is to the right the seat centerline. This point is the Left Heel Point (LHP). Mark a line on the floor pan and toe board that represents the intersection of the LHP and the vertical longitudinal plane. This line shall be referred to as L2.

__9.2 Mark two lines on the floor pan parallel to line T1, the first 10mm forward and the second 10mm rearward of the T1. This zone between these two lines will be used for placement of both the left and right heels.



__10 Set the seat for a test dummy

Using the reference marks on the seat, set the seat in the mid fore-aft, lowest height at mid seat cushion angle position as follows;

__10.1 If the seat or seat cushion height is adjustable, other than by the controls that primarily move the seat or seat cushion fore and aft set the height of the **SCR**P to the minimum height, with the **SCR**L set as closely as possible to the mid-angle determined in previous sheets.

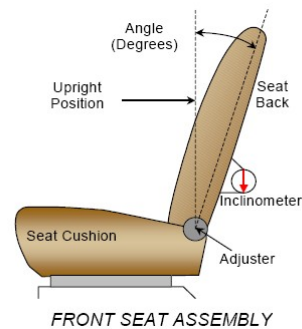
__10.2 Using the control that primarily moves the seat fore and aft, move the **SCR**P to the mid-travel (i.e., mid-fore aft) position.

10.3 Set the seat back angle at the manufacturer's nominal design riding position for a 50th

If the position is not specified, set the seat back in the position that produces a torso (back) angle of 25° from vertical when measured with the SAE J826 H-point machine. For seat backs with discrete positions, if a torso (back) angle of 25° from vertical cannot be achieved, set the seat back in the detent that yields a torso (back) angle as close as possible to 25° from vertical. Describe the method used to achieve the nominal design riding position and record the seat back angle.

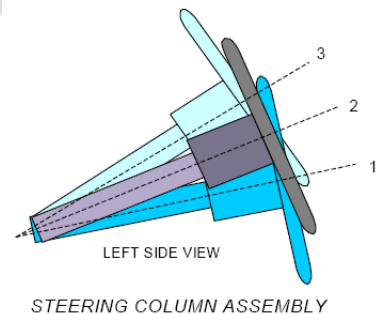
Seat Back Angle _____°

___N/A The seat back does not adjust.



11 Set the steering wheel to the mid-position

Use the markings to position the steering wheel hub at the geometric center of full range of driving positions including any telescoping positions. For steering columns with discrete positions and no detent at the mid-angle, position the column in the next lowest detent from the mid-angle.



Complete the following table;

	Degrees	Fore/Aft Position (mm)
Lowermost - Position 1		
Geometric Center – Position 2		
Uppermost – Position 3		
Telescoping Steering Wheel Travel		
Test Position		

___N/A The steering wheel does not adjust.

__12 Set adjustable seat belt upper anchorages

Use the markings to position an adjustable seat belt upper anchorage at the manufacturer's nominal design position for a 50th percentile male adult occupant. Fill in the following table;

Seat	Total # of Positions	Placed in Position #
Driver		

__N/A The seat belt upper anchorage does not adjust.

__13 Retract the armrest

Retract any folding armrest

__N/A No armrest or armrest is fixed, not retractable.

__14 Determine the H-point location with the H-Point machine;

Position the three dimensional H-point manikin (i.e., H-point machine) specified in Society of Automotive Engineers (SAE) Surface Vehicle Standard J826, revised July 1995, Devices for Use in Defining and Measuring Vehicle Seating Accommodation in the seat as follows;

__14.1 Place a 910 mm² piece of muslin cotton cloth over the seat area. (The muslin cloth shall be comparable to 48 threads/in² and density of 2.85 lb/yd.) Tuck the muslin cloth in a sufficient amount to prevent hammocking of the material.

__14.2 Place the seat and back assembly of the H-Point machine such that its plane of symmetry is coincident with the centerline marking on the seat.

__14.3 Install the lower leg, and foot segments.

__14.4 Set the length of the lower leg segment at 414 mm (16.3 in) and the length of the thigh bar at 401 mm (15.8 in).

__14.5 Leg and foot placement

__14.5.1 Insert the pin so that the right foot angle is not less than 87°.

__14.5.2 Place the right foot on the un-depressed accelerator pedal with the sole of the foot on the pedal and the heel as far forward as allowable. Do not place the heel on the toe board.

__14.5.3 Adjust the left leg to be the same distance from H-point machine centerline as the right leg.

__14.5.4 With the T-bar level, place the left foot on the toe board with the rearmost point of the heel resting on the floor pan as close as possible to the point of intersection of the planes described by the toe board and the floor pan and not on the wheel well projection. If the foot cannot be positioned on the toe board, set it on the floor pan.

__Foot on toe board

__Foot on floor pan

__14.6 Apply the lower leg weights.

__14.7 Apply the thigh weights.

__14.8 Tilt the back pan forward against the forward stop and draw the H-point machine away from the seatback using the T-bar.

Seating procedures used for March-June 2016 testing

- __14.9 Re-positioning the H-point machine.
- __14.9.1 Allow the H-point machine to slide rearward until a forward horizontal restraining load on the T-bar is no longer required due to the seat pan contacting the seat back.
- __The seat pan does not slide rearward. Go to 14.9.2
- __14.9.2 Slide the H-point machine rearward by a horizontal rearward load applied at the T-bar until the seat pan contacts the seat back.
- __14.10 Apply a 10 kg load at the intersection of the hip angle quadrant and the T-bar housing along a line from the above intersection to a point just above the thigh bar housing.
- __14.11 Again apply a 10 kg load at the intersection of the hip angle quadrant and the T-bar housing along a line from the above intersection to a point just above the thigh bar housing.
- __14.12 Carefully return the back pan to the seat back.
- __14.13 Install the right and left buttock weights.
- __14.14 Install the eight torso weights alternately the installation between right and left.
- __14.15 Tilt the back pan forward until the stop is contacted.
- __14.16 Rock the H-point from side to side over a 10° arc (5° to each side of the vertical centerline) for three complete cycles. Restrain the T-bar during rocking so that the seat pan does not change position. Minimize any inadvertent exterior loads applied in a vertical or fore-aft direction. The feet are free to move during this rocking motion.
- __14.17 Without applying a forward or lateral load, lift the right foot off the floor the minimum amount necessary until no additional forward foot movement is obtained.
- __14.18 Lower the right foot until the heel is in contact with the floor pan and the ball of the foot is in contact with the floor, toe board, or undepressed accelerator pedal.
- __14.19 Without applying a forward or lateral load, lift the left foot off the floor the minimum amount necessary until no additional forward foot movement is obtained.
- __14.20 Lower the left foot until the heel is in contact with the floor pan and the ball of the foot is in contact with the floor or toe board.
- __14.21 Is the seat pan level?
- __Yes. Go to 14.23
- __No. Go to 14.22
- __14.22 Apply a sufficient lateral load to the top of the seatback pan to level the H-point machine seat pan on the seat.
- __14.23 Holding the T-bar to prevent the H-point from sliding forward on the seat cushion, return the seatback pan to the seatback.
- __14.24 Holding the T-bar to prevent the H-point from sliding forward on the seat cushion, apply rearward force perpendicular to the back angle bar just above the torso weights until either 66 N (15 lb) of force is reached or the hip angle is increased by 3°, whichever occurs first. Minimize the exterior downward or side forces applied to the H-point machine. Release the force. Repeat this step until the resulting hip angle readout is identical. Complete as many force applications as necessary and record the results in the following table:

Force App.	Hip Angle
1	
2	
3	
4	
5	

__14.25 Is the H-point machine level?

__Yes, Go to 14.26

__No, Go back to step 14.15 and repeat steps to re-level H-point machine.

__14.26 Record the H-point location in the table below;

Oscar H-point location	
Torso Angle	°
X (Positive (+) forward of striker)	(mm)
Z (Positive (+) below striker)	(mm)



Reference:

X-Axis is Positive forward of Striker

Y-Axis is Positive Right of Striker

Z-Axis Is Positive Below Striker

__14.27 Create a Seat Tracking Point (STP): Place a target point 20mm forward of the Oscar H- point on a rigid part of the seat and record its location in the table below. (This reference point will be used to locate the dummy H-point relative to the seat if the seat cannot be set to the mid fore-aft position.)

Seat Tracking Point (STP) location at mid-position	
X (Positive (+) forward of striker)	(mm)
Z (Positive (+) below striker)	(mm)

__14.28 Remove the H-point machine

Seating procedures used for March-June 2016 testing

__15 Calculate the WSID 50TH H-point Target at Mid-position

__15.1 The WSID 50TH H-point is offset 20mm forward and 20mm above the Oscar H-point as determined in the table below:

WSID 50TH Target H-point at Mid-position			
	Oscar H-point (14.26)	+/- Offset	= WSID 50TH H-Point at Mid-position
X (Positive (+) forward of striker)	()	+ 20mm	mm
Z (Positive (+) below striker)	()	- 20mm	mm

Once the H-point has been determined, position a qualified WSID 50TH test dummy in the driver seat of the test vehicle.

__16 Check that all joints are set between 1 and 2 g. If they are not, follow the procedures in the WSID 50TH Qualification Manual for setting the joint torques.

__16.1 Place size 11EEE shoes meeting MIL-S-13192(1976) on each foot.

__16.2 Make sure the head and pelvis tilt sensors installed in the dummy are reading correctly about the X & Y axes.

__17 Positioning the test dummy in the seat

__17.1 Move the seat to the full rearward position and place the test dummy in the seat.

__17.2 Position the test dummy in the seat such that its plane of symmetry (i.e., mid-sagittal plane) is coincident with the centerline marking on the seat cushion, seat back and head restraint and its H-point is directly above the STP.

__17.3 Bend the upper torso forward and then lay it back against the seat back. Push the shoulders of the dummy fully rearward. Position the dummy so that it sits square and level in the seat.

__17.4 Align the centerline of the right foot with the centerline of the accelerator pedal while keeping the leg as vertical as practicable.

__17.4.1 Does this vehicle have a footrest?

__Yes, Starting with the foot and leg inboard of the footrest, rotate the leg about the hip the minimal amount needed in order to maximize coverage of the sole of the shoe over the footrest (when viewed longitudinally) while keeping the midline of the foot in a vertical plane and the leg as vertical as practicable.

__ No, Adjust the left leg so the knees are an equal distance from seat center line apart measured at the outer knee flange while keeping the leg as vertical as practicable.

__17.5 Lift the feet and slide the seat forward to 25 mm rearward of mid-position or the detent closest to this position that is **not greater than 25mm** rearward of mid-position

__17.6 Verify the SCRP position then measure the Seat Tracking Point (STP) and record in table below

Seating procedures used for March-June 2016 testing

Seat Tracking Point location	
X (Positive (+) forward of striker)	(mm)
Z (Positive (+) below striker)	(mm)
Seat Tracking Point location Trial 2 (if applicable)	
X (Positive (+) forward of striker)	(mm)
Z (Positive (+) below striker)	(mm)
Seat Tracking Point location Trial 3 (if applicable)	
X (Positive (+) forward of striker)	(mm)
Z (Positive (+) below striker)	(mm)

__17.6.1 Calculate and record the Seat Tracking Point Difference (**STPD**)

$$\text{STPD} = \text{Current (STP) from step 17.6} - (\text{STP}) \text{ Measured in step 14.27}$$

Record in table below

Trial 1			
	Results from 17.6	-	Results from 14.27 = STPD
X (Positive (+) forward of striker)	()	-	() mm
Z (Positive (+) below striker)	()	-	() mm

Trial 2			
	Results from 17.6	-	Results from 14.27 = STPD
X (Positive (+) forward of striker)	()	-	() mm
Z (Positive (+) below striker)	()	-	() mm

Trial 3			
	Results from 17.6	-	Results from 14.27 = STPD
X (Positive (+) forward of striker)	()	-	() mm
Z (Positive (+) below striker)	()	-	() mm

__17.6.2 Calculate and record the Current WSID 50TH Target H-point for seat position.

X: WSID 50TH Target H-point 17.6.2 = (WSID 50TH Target H-point from 15.1) + (STPD from 17.6.1)

Z: WSID 50TH Target H-point 17.6.2 = (WSID 50TH Target H-point from 15.1) + (STPD from 17.6.1)

Trial 1			
	Results from 15.1	- Results from 17.6.1 =	Current Target H-point
X (Positive (+) forward of striker)	()	+	() mm
Z (Positive (+) below striker)	()	+	() mm

Trial 2			
	Results from 15.1	- Results from 17.6.1 =	Current Target H-point
X (Positive (+) forward of striker)	()		() mm
Z (Positive (+) below striker)	()	+	() mm

Trial 3			
	Results from 15.1	- Results from 17.6.1 =	Current Target H-point
X (Positive (+) forward of striker)	()	+	() mm
Z (Positive (+) below striker)	()	+	() mm

Note: When Seat is at the Mid-Position the WSID 50TH H-point Target should be within the tolerance of the values from step 15.1

__17.7 Confirm that the dummy is positioned such that a horizontal (lateral) line passing through the dummy's hip pivot center is perpendicular to the center XZ plane of the seat – adjust the dummy if necessary.

__17.8 Measure the pelvic angles using the tilt angle sensors installed in the test dummy. Verify that the pelvic angle is $0^\circ \pm 2.5^\circ$ (X) and $0^\circ \pm 2.5^\circ$ (Y).

__17.9 Confirm that the H-point is within $\pm 5\text{mm}$ of the location (X & Z) determined in step 17.6 – adjust the dummy if necessary.

__17.10 Is the pelvis tilt angle within specification (described in step 17.8)?

__Yes, Go to step 17.11

__No, Go back to step 17.7 and repeat steps to re-adjust pelvic angle the position of the test dummy.

__Proper position cannot be achieved, contact COTR immediately.

__17.11 Measure the head angles using the tilt angle sensors installed in the test dummy. Verify that the head angle is $0^\circ \pm 2.5^\circ$ (X) and $0^\circ \pm 2.5^\circ$ (Y).

__17.11.1 Is the head level within specification?

__Yes, Go to step 17.12

__No, Head is not touching head rest, go back to step 17.7 and adjust the pelvis angle while maintaining the H-point Target position within tolerance to try to achieve head level.

__No, Head is not level, pelvis has been adjusted and head is not touching headrest.

– Go to step 17.11.2

__No, Head is touching head rest.

Note: If the seat back has not already been adjusted from of the Manufactures specified angle and moving the seat it will help achieve a closer (0°) head angle – Go to Step 17.11.3

– Go to step 17.11.3

__No, Seat back has been adjusted already, contact COTR immediately.

Record Final Head Angle _____

__17.11.2 Adjust the Neck Bracket to adjust the head tilt sensor to $0^\circ \pm 2.5^\circ$ (X) and $0^\circ \pm 2.5^\circ$ (Y).

__Neck was adjusted to achieve Head Level

__Neck was adjusted, Head is now touching Head rest and Head is still not level

–Go to Step 17.11.3

__17.11.3 Adjust seatback a maximum of 1 detent for manual seats and not more than 2° from the manufactures recommended angle found in Step 8.3, to bring the head level to $0^\circ \pm 2.5^\circ$ and return to step 17.7

Record original angle before adjustment: _____ ° Record the new angle: _____ °

__17.12 Right Foot Placement

__17.12.2 Without inducing pelvis or torso movement, position the right foot in contact with the accelerator pedal such that the midline of the foot is in the same vertical plane as L1 (which passes through the center of the accelerator pedal) and heel is resting in the heel point zone as close as practicable to the right heel point (RHP) (as determined in steps 8 and 9). To the extent practicable keep the right thigh and the leg in a vertical plane by measuring at knee flange. Rotate the toe towards the shin of the dummy to minimize the compression of the accelerator pedal while maintaining contact with the pedal. The heel shall remain within the heel point zone as close as practicable to the right heel point (RHP).

__17.12.3 If there is no footrest, rotate the left leg and thigh laterally to equalize the distance between each knee and the seat cushion marking as determined in step 6. The knees should be placed equal distance apart from seat center line measured at the outer knee flange. If either of the dummy's legs contact the steering wheel, separate the knees the minimum amount required to avoid contact, not to exceed 5 mm clearance.

__N/A- there was no leg contact

__Knees were separated for clearance

Final Knee Spacing: _____ mm

__17.12.4 **Left Foot Placement** – Does the vehicle have a footrest?

__Yes, Go to 17.12.5

__No, Go to 17.12.7

__17.12.5 Does the foot rest elevate the left heel more than 20mm above the right heel?

__Yes, Go to 17.12.7 and position the foot off the foot rest

__No, Go to 17.12.6

__17.12.6 To the extent practicable, keep the left thigh and leg in a vertical plane. Rotate the leg about the hip the minimal amount needed in order to maximize contact with the sole of the shoe and the foot rest while keeping the midline of the foot in a vertical plane. Place the heel on the floor pan at the intersection of the foot rest and the floor pan. Go to step 17.13

__17.12.7 To the extent practicable keep the left thigh and the leg in a vertical plane throughout the procedure. With the midline of the foot in the same vertical plane as L2, place the heel on the left heel point (LHP) within the heel point zone. If the left heel cannot be placed within the heel point zone, place the heel as near to the heel point zone and the LHP as practicable while keeping the midline of the foot in the same vertical plane as L2. Rotate the foot towards the toe board (plantar flexion) to the maximum extent practicable while maintaining the heel position. Check the **ONLY** one of the following that applies.

__The left foot reaches the toe board without adjusting the foot or leg. Go to step 17.13

__The foot does not reach the toe board and does not contact the brake or clutch pedal with foot rotated forward as far as possible (plantar flexion), Go to step 17.13

__The left foot contacts the brake or clutch pedal.

__Rotate the foot about the leg (abduction) the minimal amount needed to avoid pedal contact. If the heel is not in the heel point zone, move the heel forward to the middle of the heel point zone and the LHP to the extent practicable. Rotate the foot towards the toe board (plantar flexion) to the maximum extent practicable while maintaining the heel position. If the foot still contacts the brake or clutch pedal continue to the next step, otherwise Go to step 17.13.

__Rotate the leg outboard about the hip the minimum distance necessary to avoid pedal contact. If the heel is not in the heel point zone, move the heel forward to the middle of the heel point zone to the extent practicable. Rotate the foot towards the toe board (plantar flexion) to the maximum extent practicable while maintain the heel position. Go to step 17.13

__17.13 For a seat that is not in mid-position, if the dummy leg to knee bolster/instrument panel has a clearance of 5 mm or greater, the seat may be moved forward.

__N/A, seat already at mid-position. Go to step 17.14

__ Dummy leg to knee bolster/instrument panel clearance is greater than 5 mm. Adjust the seat forward **without going past mid-position** until a clearance of 5 mm or less is achieved or the seat is in the closest position to mid-position that does not cause dummy contact.

Record seat position: _____ mm rearward of mid-position and Return to step 17.6

Seating procedures used for March-June 2016 testing

__Clearance unchanged. No adjustments required.

Record seat position: _____mm rearward of Mid-position. Go to 17.14

__17.14 Arm and Belt Placement for test dummy placed in driver seating position

__17.14.1 Place right arm at the first detent downward of the most upward detent.

Is the driver seat belt used for this test?

__Yes, Continue

__No, Go to 17.15

__17.14.2 Fasten the seat belt around the dummy.

__17.14.3 Remove all slack from the lap belt portion.

__17.14.4 Pull the upper torso webbing out of the retractor and allow it to retract; repeat this four times.

__17.14.5 Apply a 2 to 4 pound tension load to the lap belt.

__pound load applied

__17.14.6 Is the belt system equipped with a tension-relieving device?

__Yes, Continue

__No, Go to 17.15

__17.14.7 Introduce the maximum amount of slack into the upper torso bet that is recommended by the vehicle manufacturer in the vehicle owner's manual.

__17.15 Place left arm at the first detent downward of the most upward detent.

14.26	
Oscar H-point location	
Torso Angle	°
X (Positive (+) forward of striker)	mm
Z (Positive (+) below striker)	mm

14.27	
Seat Tracking Point (STP) location at mid-position	
X (Positive (+) forward of striker)	mm
Z (Positive (+) below striker)	mm

15.1				
WSID Target H-point at Mid-position				
	Oscar H-point (14.26)	+/-	20mm	= WSID H-Point at Mid-position
X (Positive (+) forward of striker)	0	+	20	= mm
Z (Positive (+) below striker)	0	-	20	= mm

17.6	
Seat Tracking Point location	
X (Positive (+) forward of striker)	mm
Z (Positive (+) below striker)	mm
Seat Tracking Point location Trial 2 (if applicable)	
X (Positive (+) forward of striker)	mm
Z (Positive (+) below striker)	mm
Seat Tracking Point location Trial 3 (if applicable)	
X (Positive (+) forward of striker)	mm
Z (Positive (+) below striker)	mm

Fill in cells to calculate H-point Location

WSID H-point Target

WSID H-point Target at midtrack

17.6.1				
Trial 1				
	Results from (17.6)	-	Results from (14.27)	= STPD
X (Positive (+) forward of striker)	0	-	0	= 0 mm
Z (Positive (+) below striker)	0	-	0	= 0 mm

Trial 2				
	Results from (17.6)	-	Results from (14.27)	= STPD
X (Positive (+) forward of striker)	0	-	0	= 0 mm
Z (Positive (+) below striker)	0	-	0	= 0 mm

Trial 2				
	Results from (17.6)	-	Results from (14.27)	= STPD
X (Positive (+) forward of striker)	0	-	0	= 0 mm
Z (Positive (+) below striker)	0	-	0	= 0 mm

17.6.2				
Trial 1				
	Results from (15.1)	+	Results from (17.6.1)	= Current H-point Target
X (Positive (+) forward of striker)	0	+	0	= 0 mm
Z (Positive (+) below striker)	0	+	0	= 0 mm

Trial 2				
	Results from (15.1)	+	Results from (17.6.1)	= Current H-point Target
X (Positive (+) forward of striker)	0	+	0	= 0 mm
Z (Positive (+) below striker)	0	+	0	= 0 mm

Trial 3				
	Results from (15.1)	+	Results from (17.6.1)	= Current H-point Target
X (Positive (+) forward of striker)	0	+	0	= 0 mm
Z (Positive (+) below striker)	0	+	0	= 0 mm