

**Vehicle Research and Test Center
MDB into Left Side of
2008 Nissan Versa
Child Safety Research
Q3s and Hybrid III 3Cs
TRC Inc. Test Number: 081029**

**Prepared By:
Transportation Research Center Inc.
10820 State Route 347
P. O. Box B-67
East Liberty, OH 43319**

**Final Report
October - November 2008**

**Prepared For
Vehicle Research and Test Center
P. O. Box 37
East Liberty, OH 43319**

Notice

Transportation Research Center Inc. does not endorse or certify products of manufacturers. The manufacturer's name appears solely to identify the test article. Transportation Research Center Inc. assumes no liability for the report or use thereof. It is responsible for the facts and the accuracy of the data presented herein. This report does not constitute a standard, specification, or regulation.

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

Table of Contents

<u>Section</u>	<u>Description</u>	<u>Page</u>
1	Purpose and Test Procedure	1-1
2	Side Impact Test Results	2-1
3	Summary of Test Results	3-1
4	Occupant, Vehicle, and Barrier Information	4-1
Appendix A	Photographs	A-1
Appendix B	Data Plots	B-1
Appendix C	ATD Configuration and Performance Verification Data	C-1
Appendix D	Miscellaneous Test Information	D-1

List of Tables

<u>Number</u>	<u>Description</u>	<u>Page</u>
1	General Vehicle Test Parameter Data	3-2
2	Test Vehicle Tire Information	3-6
3	Post-Test Observations	3-7
4	Dummy Instrumentation Data	4-2
5	Dummy Positioning FARO Measurements	4-7
6	Vehicle Structural Measurements	4-9
7	Vehicle Exterior Crush Profiles - All Levels	4-11
8	Test Vehicle Accelerometer Locations and Data Summary	4-15
9	Deformable Barrier Face Profiles	4-20

List of Figures

<u>Number</u>	<u>Description</u>	<u>Page</u>
1	Dummy Positioning in Vehicle	4-6
2	Vehicle Pre-Test and Post-Test Measurements	4-8
3	Vehicle Side Measurements	4-10
4	Vehicle Damage Profile Distances	4-13
5	Test Vehicle Accelerometer Locations and Data Summary	4-14
6	High-Speed Camera Locations and Data	4-27

List of Photographs

<u>Description</u>	<u>Figure</u>
Pre-Test Front View	A-1
Post-Test Front View	A-2
Pre-Test Left Front View	A-3
Post-Test Left Front View	A-4
Pre-Test Left Side View	A-5
Post-Test Left Side View	A-6
Pre-Test Left Rear View	A-7
Post-Test Left Rear View	A-8
Pre-Test Rear View	A-9
Post-Test Rear View	A-10
Pre-Test Right Rear View	A-11
Post-Test Right Rear View	A-12
Pre-Test Right Side View	A-13
Post-Test Right Side View	A-14
Pre-Test Right Front View	A-15
Post-Test Right Front View	A-16
Pre-Test Impact Alignment View	A-17
Post-Test Impact Alignment View	A-18
Pre-Test Primary Impact Point View	A-19
Post-Test Primary Impact Point View	A-20
Pre-Test Secondary Impact Point View	A-21
Post-Test Secondary Impact Point View	A-22
Pre-Test MDB Face Front View	A-23
Post-Test MDB Face Front View	A-24
Pre-Test MDB Face Left Side View	A-25
Post-Test MDB Face Left Side View	A-26
Pre-Test MDB Face Right Side View	A-27
Post-Test MDB Face Right Side View	A-28

List of Photographs, Continued

<u>Description</u>	<u>Figure</u>
Pre-Test MDB Face Overhead View	A-29
Post-Test MDB Face Overhead View	A-30
Pre-Test MDB with Vehicle Left Side Overall View	A-31
Post-Test MDB with Vehicle Left Side Overall View	A-32
Pre-Test MDB with Vehicle Left Front View	A-33
Post-Test MDB with Vehicle Left Front View	A-34
Pre-Test MDB with Vehicle Right Side Overall View	A-35
Post-Test MDB with Vehicle Right Side Overall View	A-36
Pre-Test MDB with Vehicle Left Rear View	A-37
Post-Test MDB with Vehicle Left Rear View	A-38
Pre-Test MDB with Vehicle Perpendicular to Struck Side View	A-39
Post-Test MDB with Vehicle Perpendicular to Struck Side View	A-40
Pre-Test MDB Left Side Overall View	A-41
Post-Test MDB Left Side Overall View	A-42
Pre-Test MDB Right Side Overall View	A-43
Post-Test MDB Right Side Overall View	A-44
Pre-Test MDB Alignment Overhead View	A-45
Post-Test MDB Alignment Overhead View	A-46
Pre-Test Left Rear Dummy Side View	A-47
Post-Test Left Rear Dummy Side View	A-48
Pre-Test Right Side Dummy Occupant Compartment View	A-49
Post-Test Right Side Dummy Occupant Compartment View	A-50
Pre-Test Left Rear Dummy and Door Clearance View	A-51
Post-Test Left Rear Dummy and Door Clearance View	A-52
Pre-Test Left Rear Dummy Showing Belts, Chalking, and Contact Switches	A-53
Pre-Test Left Rear Door Panel View	A-54
Post-Test Left Rear Door Panel View	A-55
Post-Test Dummy Overall View	A-56

List of Photographs, Continued

<u>Description</u>	<u>Figure</u>
Pre-Test Right Rear Dummy Side View	A-57
Post-Test Right Rear Dummy Side View	A-58
Pre-Test Left Side Dummy Occupant Compartment View	A-59
Post-Test Left Side Dummy Occupant Compartment View	A-60
Pre-Test Right Rear Dummy and Door Clearance View	A-61
Post-Test Right Rear Dummy and Door Clearance View	A-62
Pre-Test Right Rear Dummy Showing Belts, Chalking, and Contact Switches	A-63
Pre-Test Right Rear Door Panel View	A-64
Post-Test Right Rear Door Panel View	A-65
Certification Label View	A-66
Recommended Tire Pressure Label View	A-67
Pre-Test Ballast View	A-68
Post-Test Digital Light Trap Read-Out - View 1	A-69
Post-Test Digital Light Trap Read-Out - View 2	A-70
Post-Test Digital Light Trap Read-Out - View 3	A-71
Left Rear CRS Certification Label View	A-72
Right Rear CRS Certification Label View	A-73
Pre-Test Front View of Left Rear CRS	A-74
Post-Test Front View of Left Rear CRS	A-75
Pre-Test Front View of Right Rear CRS	A-76
Post-Test Front View of Right Rear CRS	A-77
Pre-Test Left Side View of Left Rear CRS	A-78
Post-Test Left Side View of Left Rear CRS	A-79
Pre-Test Left Side View of Right Rear CRS	A-80
Post-Test Left Side View of Right Rear CRS	A-81
Pre-Test Right Side View of Left Rear CRS	A-82
Post-Test Right Side View of Left Rear CRS	A-83

List of Photographs, Continued

<u>Description</u>	<u>Figure</u>
Pre-Test Right Side View of Right Rear CRS	A-84
Post-Test Right Side View of Right Rear CRS	A-85
Pre-Test Front View of Left Rear Child Dummy	A-86
Post-Test Front View of Left Rear Child Dummy	A-87
Post-Test Left Rear Child Dummy Head Contact - View 1	A-88
Post-Test Left Rear Child Dummy Head Contact - View 2	A-89
Post-Test Left Rear Child Dummy Head Contact - View 3	A-90
Pre-Test Front View of Right Rear Child Dummy	A-91
Post-Test Front View of Right Rear Child Dummy	A-92
Post-Test Right Rear Child Dummy Head Contact - View 1	A-93
Post-Test Right Rear Child Dummy Head Contact - View 2	A-94
Post-Test Right Rear Child Dummy Head Contact - View 3	A-95
Post-Test Right Rear Child Dummy Head Contact - View 4	A-96

Section 1.0

Purpose and Test Procedure

Purpose

This side impact test was performed as part of the National Highway Traffic Safety Administration's (NHTSA) evaluation of child occupant protection in side impacts. NHTSA's FMVSS No. 214D "Side Impact Protection" test procedure TP-214D-08 and moving deformable barrier (MDB) were used, with the exception that the MDB was positioned 228.6 mm rearward of the impact location specified in FMVSS No. 214. This repositioning of the MDB provided a more direct impact of the MDB with the child restraint. The MDB impacted the left side of a 2008 Nissan Versa. Two child side impact dummies representing a 3-year-old child - a Q3s and a Hybrid III 3Cs (H3Cs) - were seated in the left rear and right rear passenger positions, respectively. Each child dummy was properly restrained in a Maxi Cosi Priori forward-facing child restraint system (CRS) which was installed in the vehicle using the LATCH anchorage system. This test was conducted for the National Highway Traffic Safety Administration's (NHTSA) Vehicle Research and Test Center (VRTC) by the Transportation Research Center, Inc. (TRC Inc.).

Section 2.0

Side Impact Test

Summary of Side Impact Test

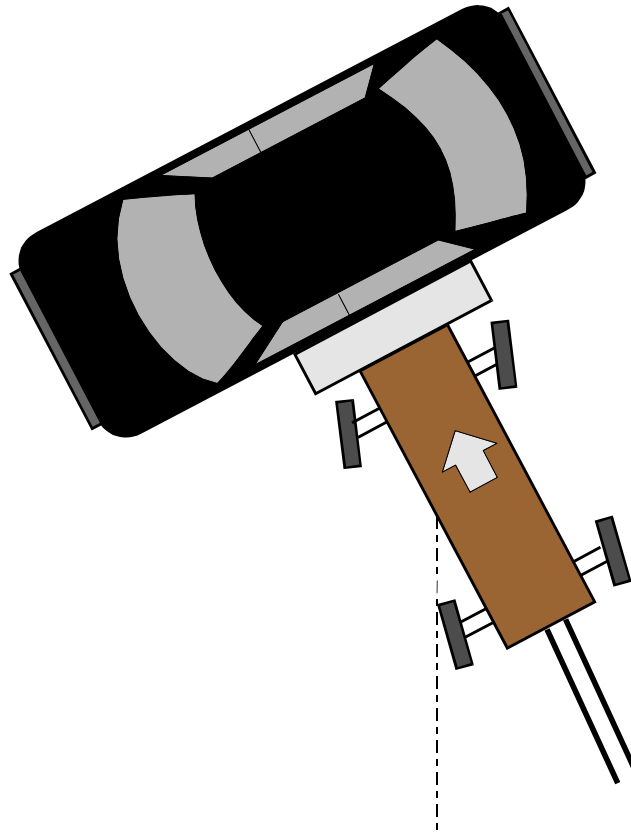
A 2008 Nissan Versa was impacted on the driver's side by a moving deformable barrier (MDB) which was moving forward in a 27° crabbed position to the monorail at a velocity of 53.2 km/h (33.1 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, Ohio on October 29, 2008. Pre-test and post-test photographs of the test vehicle, the moving deformable barrier (MDB), and the side impact dummies are included in Appendix A.

The MDB was equipped with a FMVSS 214 style deformable barrier face and eight (8) accelerometers to measure longitudinal, lateral, and vertical axis accelerations. The barrier's specified impact velocity range was 52.0 to 53.6 km/h. The MDB was positioned 228.6 mm (9 inches) rearward of the impact location specified in FMVSS No. 214D.

Two restrained Child Side Impact Dummies (Q3s and H3Cs) were placed in the left rear (Pos. #4) (Q3s) and right rear (Pos. #3) (H3Cs) designated seating positions according to the instructions specified in the TP214D-08 Seating Procedure. Both child dummies were calibrated prior to this test and were restrained by Maxi COSI Priori child restraint systems. The side impact test was documented by one (1) real-time camera and eleven (11) high-speed digital cameras. Camera locations and other pertinent camera information are included in this report.

The dummies' instrumentation is detailed in Table 4. Forty-eight (48) dummy channels of acceleration, force, moment, and displacement data were collected for this test.

A summary of the side impact dummy configuration and verification test data can be found in Appendix C. A total of 104 channels of data were recorded. Appendix B contains the vehicle, barrier, and dummy response data traces.



	Left Rear Q3s (#004)	Right Rear H3Cs (#141)
HIC36 (g) CFC 1000	273	492
Chest Clip 3 ms (mm) CFC 180	N/A	40.2
Chest Deflection (mm) CFC 600	12.7	-5.7
Occipital Condyle (Nm) CFC 600		
Flexion	30.8	13.9
Extension	-26.8	-15.7
Pelvis Resultant (g) CFC 1000	101.8	39.2

	2008 Nissan Versa
Vehicle Test Weight	1422.6 kg (3136.3 lbs)
Impact Point (Horizontal)-behind center of front axle	588 mm
Maximum Crush	223 mm Level 2
Impact Speed	33.1 mph

Data Acquisition Explanations

The vehicle's left lower B-post Y-axis acceleration data channel, 14BPILLO0000ACYA, displayed questionable data spikes beginning at approximately 2 milliseconds.

The vehicle's left rear seat track Y-axis acceleration data channel, 14SETRRE0000ACYA, displayed questionable data spikes beginning at approximately 5 milliseconds.

Section 3

Summary of Test Results

Table 1 General Test Vehicle Parameter Data

Test Vehicle: 2008 Nissan Versa

Test Date: 10/29/08

TEST VEHICLE INFORMATION

Make	Nissan
Model	Versa
Body Style	Passenger Car
VIN	3N1BC13E08L461990
Color	Black
Odometer Reading	254
Transmission	3-Speed Automatic
Final Drive	Front wheel drive
Number of Cylinders	4
Engine Displacement	1.8 L
Engine Placement	Straight
Air Conditioning	Yes
Power Windows	Yes
Power Seats	No
Cruise Control	Yes
Tinted Glass	Yes
Keyless Entry	Yes

TEST VEHICLE OPTIONS

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Nissan Motor Co.
Date of Manufacture	03/08

GVWR (lb)	3770
GAWR Front (lb)	1993
GAWR Rear (lb)	1795

Measured Parameter	Front	Mid	Rear	Total
Type of Seats	Bucket	N/A	Split-Bench	
Number Of Occupants	2	N/A	3	5
Capacity Wt. (VCW) (kg)				390
Cargo Wt. (RCLW) (kg)				50

Table 1 General Test Vehicle Parameter Data, Continued

Test Vehicle: 2008 Nissan Versa

Test Date 10/29/08

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	371.8	247.8		430.2	255.6	
Right	kg	376.4	246.2		452.6	284.2	
Ratio	%	60.2	39.8		62.1	37.9	
Totals	kg	748.2	494.0	1242.2	882.8	539.8	1422.6

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1242.2
Weight of Q3s (27.2 kg) & H3Cs (27.2 kg)	kg	130.4
Rated Cargo/Luggage Weight (RCLW)	kg	50.0
Calculated Vehicle Target Weight (TVTW)	kg	1422.6

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG(aft of front axle)
As Delivered	mm	685	684	682	691	1030
As Tested	mm	662	647	677	675	982
Fully Loaded	mm	676	681	645	651	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheelbase	mm	2590
Total Vehicle Length at Left Side	mm	4030
Total Vehicle Length at Centerline	mm	4307
Total Vehicle Length at Right Side	mm	4030
Weight of Ballast on Hood	kg	0
Amount of Stoddard Solvent in Fuel Tank	liters	50.3

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Impact Reference Line From Front Axle	mm	588
Impact Point	mm	588
Impact Point Difference	mm	0

Table 1 General Test Vehicle Parameter Data, Continued

Test Vehicle: 2008 Nissan Versa

Test Date 10/29/08

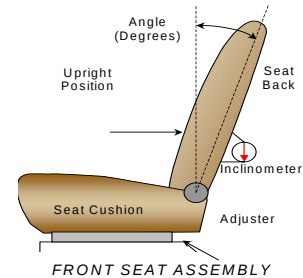
ATD RIDING POSITION

The driver and passenger seat back is positioned to the manufacturer's designated angle.

Driver: Total Number of detents: N/A

Test detent (with the forward-most detent defined as 0): N/A

Driver seat back angle: The front seats were removed for this test.
The dummies were positioned in the left rear and right rear
outboard seating positions.

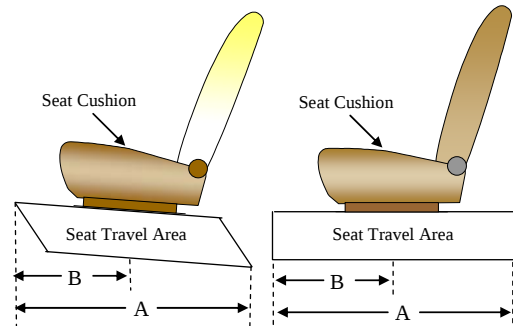


SEAT FORE/AFT POSITIONS

The total seat travel was measured from forward most position to rearmost position, irrespective of vertical seat height in those positions. The seat was set at the longitudinal mid position with vertical adjustment at the lowest position obtainable for both the driver and passenger.

SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position No.
Driver Seat	N/A	N/A
Rear Seat	Fixed	Fixed



SEAT BELT UPPER ANCHORAGE

	Total No. of Positions	Placed in Position No.
Driver Seat	N/A	N/A
Rear Seat	Fixed	N/A

Position number one is the uppermost adjustment position.

Table 1 General Test Vehicle Parameter Data, Continued

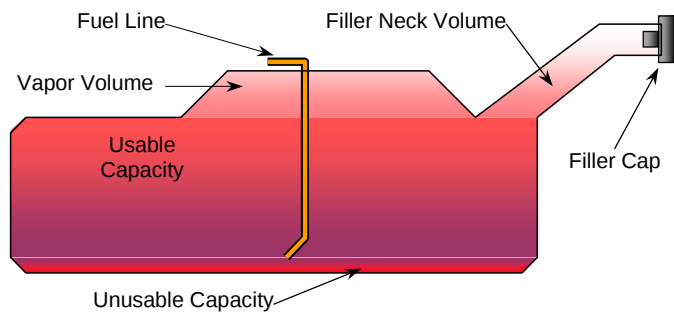
Test Vehicle: 2008 Nissan Versa

Test Date 10/29/08

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	54.1
Usable Capacity used for FMVSS 301	54.1
Actual Amount of Solvent used	50.3

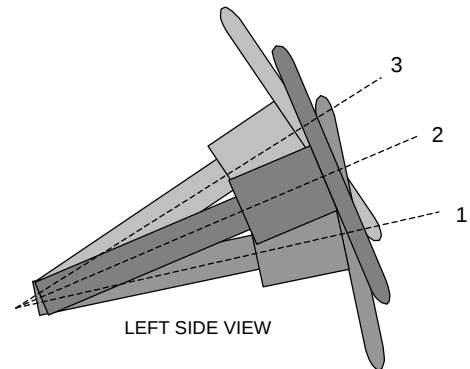
The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies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



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

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



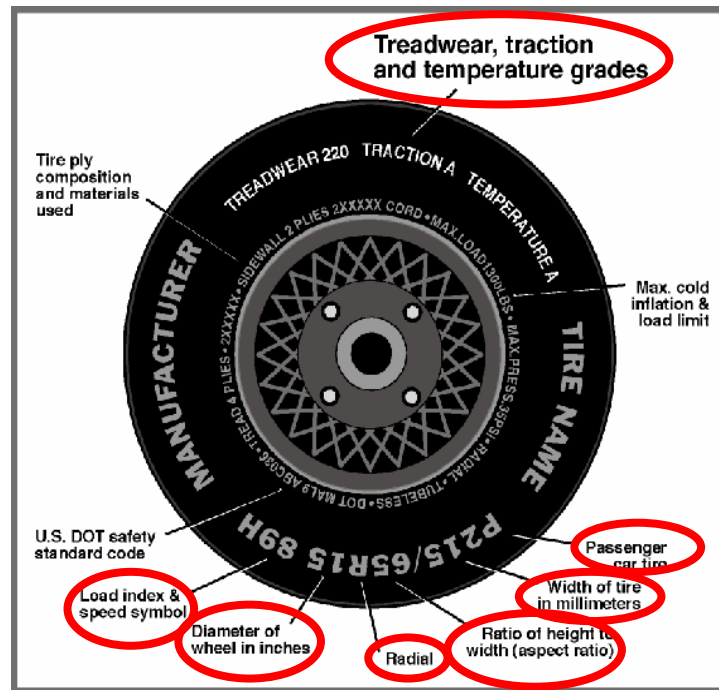
STEERING COLUMN ASSEMBLY

STEERING WHEEL/COLUMN POSITIONS

	Degrees	Fore/Aft Position, mm
Lowermost Position	N/A	N/A
Geometric Center Position	N/A	N/A
Uppermost Position	N/A	N/A

Table 2 Test Vehicle Tire Information

Test Vehicle: 2008 Nissan Versa

Test Date 10/29/08

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold / Test Pressure (kPa)	230	230
Recommended Tire Size	P185/65R15	P185/65R15
Tire Size on Vehicle	P185/65R15	P185/65R15
Tire Manufacturer	Continental	Continental
Tire Name	Conti-Contact	Conti-Contact
Radial	R	R
Wheel Diameter	15	15
Load Index & Speed Symbol	86H	86H
Treadwear	400	400
Traction Grade	AA	AA
Temperature Grade	A	A

Table 3 Post-Test Observations

Test Vehicle: 2008 Nissan Versa

Test Date 10/29/08

CHILD RESTRAINT SYSTEM INFORMATION

Description	Position #4 CRS	Position #3 CRS
Manufacturer	Dorel Juvenile Group	Dorel Juvenile Group
Model Name	Maxi Cosi Priori	Maxi Cosi Priori
Model No.	22486-CRI	22486-CRI
Manufacture Date	03/04/2008	03/04/2008
Type	Toddler	Toddler
Forward/Rearward	Forward	Forward
Internal Harness Pretensioner	2.5 lbs	2.5 lbs
Lower Anchor Pretensioner	Not Available	Not Available
Top Tether Pretensioner	8 lbs	8 lbs

VISIBLE DUMMY CONTACT POINTS

Description	Position #4	Position #3
Dummy Type / Serial No.	Q3s / 004	H3Cs / 141
Head Contact	Left side of CRS and door panel	Left and right side of CRS
Upper Torso Contact	None	None
Lower Torso Contact	None	None
Left Knee Contact	None	None
Right Knee Contact	None	None

POST TEST DOOR OPENINGS

Description	Front	Rear
Locked/Unlocked Doors	Unlocked	Unlocked
Left Side Door Opening	Jammed & Latched	Jammed & Latched
Right Side Door Opening	Closed & Latched	Closed & Latched

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Did not separate from vehicle
Sill Separation	Did not separate from vehicle
Windshield Damage	None
Window Damage	Left side front shattered
Other Notable Effects	None

Section 4

Occupant and Vehicle Information

Table 4 Dummy Instrumentation Data

Vehicle: 2008 Nissan Versa

Test Number: 081029

Driver Dummy Serial Number: 004

		Positive Direction		Negative Direction	
		Max.	Time	Max.	Time
Location		(g)	(ms)	(g)	(ms)
Head Acceleration	X	13.1	172.8	32.9	67.2
	Y	44.4	50.9	5.4	256.8
	Z	58.4	57.6	5.2	103.1
	R	59.1	57.6		
Upper Neck Force	X	64.4	59.1	341.6	69.2
	Y	538.5	49.2	602.3	63.1
	Z	2219.5	57.4	11.8	218.9
Upper Neck Moment	X	30.8	63.5	26.8	47.9
	Y	7.9	57.9	13.1	50.4
	Z	7.3	63.0	7.9	222.2
Shoulder Displacement	Y	18.3	103.0	0.7	33.3
Upper Chest Acceleration	X	39.2	57.0	27.2	60.6
	Y	91.6	43.8	24.1	63.0
	Z	28.4	69.3	21.3	56.8
	R	95.9	43.8		
Thorax IR-TRACC Displacement	Y	12.7	53.4	2.8	278.1
Lumbar Force	X	1.4	32.3	7.6	99.5
	Y	17.7	37.4	4.2	65.2
	Z	24.9	57.4	5.2	103.6
Lumbar Moment	X	1.1	25.6	8.8	76.7
	Y	4.1	43.8	8.2	110.2
	Z	6.4	68.7	4.5	94.9
Pelvis Acceleration	X	43.0	45.8	67.4	45.4
	Y	97.3	35.8	16.6	65.4
	Z	25.6	68.6	39.5	45.4
	R	101.8	35.8		

Table 4 Dummy Instrumentation Data, Continued

Vehicle: 2008 Nissan Versa

Test Number: 081029

Passenger Dummy Serial Number: 004

		Positive Direction		Negative Direction	
		Max.	Time	Max.	Time
Location		(g)	(ms)	(g)	(ms)
Pubic Force	Y	799.8	36.0	46.4	51.5

Positive Direction

Longitudinal: Forward
Lateral: Rightward
Vertical: Downward

Negative Direction

Longitudinal: Rearward
Lateral: Leftward
Vertical: Upward

Table 4 Dummy Instrumentation Data, Continued

Vehicle: 2008 Nissan Versa

Test Number: 081029

Passenger Dummy Serial Number: 141

		Positive Direction		Negative Direction	
		Max.	Time	Max.	Time
Location		(g)	(ms)	(g)	(ms)
Head Acceleration	X	4.1	247.1	28.9	89.1
	Y	68.1	76.6	13.6	268.1
	Z	57.0	75.7	1.4	119.8
	R	86.7	76.2		
Upper Neck Force	X	0.7	7.6	505.0	99.4
	Y	324.1	72.1	284.1	101.1
	Z	1313.1	79.0	58.9	267.1
Upper Neck Moment	X	13.9	101.1	15.7	68.2
	Y	3.3	130.5	13.9	100.8
	Z	8.2	92.3	2.1	282.7
Lower Neck Force	X	15.3	55.4	330.7	99.4
	Y	141.9	108.1	434.1	64.7
	Z	597.5	78.9	208.8	90.8
Lower Neck Moment	X	29.7	83.0	6.6	56.3
	Y	31.5	99.8	1.9	235.0
	Z	14.4	92.3	1.6	47.4
Chest Acceleration	X	9.6	78.9	15.1	57.8
	Y	38.1	62.3	12.8	275.0
	Z	9.9	85.0	4.0	125.5
	R	40.7	62.0		
Chest Displacement	X	0.6	280.7	5.7	60.6
Sternum (Rib 1) Acceleration	X	14.3	98.2	27.3	61.2
Sternum (Rib 6) Acceleration	X	14.5	111.0	26.8	56.5

Table 4 Dummy Instrumentation Data, Continued

Vehicle: 2008 Nissan Versa

Test Number: 081029

Passenger Dummy Serial Number: 141

		Positive Direction Max. Time		Negative Direction Max. Time	
Location		(g)	(ms)	(g)	(ms)
Pelvis Acceleration	X	11.1	75.9	14.9	49.4
	Y	36.5	49.7	10.8	280.8
	Z	11.3	58.1	6.3	56.5
	R	39.2	49.4		

Positive Direction

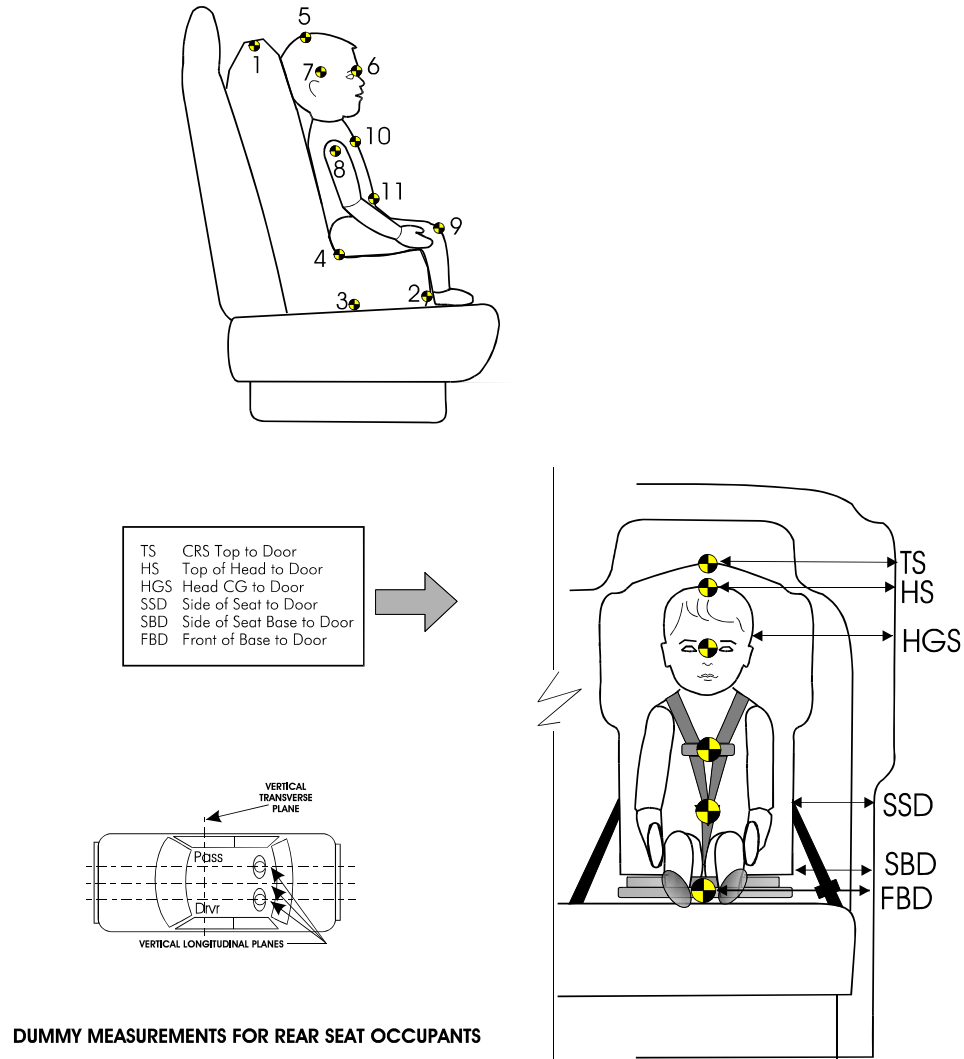
Longitudinal: Forward
Lateral: Rightward
Vertical: Downward

Negative Direction

Longitudinal: Rearward
Lateral: Leftward
Vertical: Upward

Figure 1 Dummy Positioning in Vehicle

Vehicle: 2008 Nissan Versa



Dummy Positioning Measurements

Code	Description	Units	Position #4 Q3s	Position #3 H3Cs
TS	CRS Top to Door/Window	mm	355	367
HS	Top of Head to Door/Window	mm	353	359
HGS	Head CG to Door/Window	mm	314	319
SSD	Side CRS to Door	mm	93	94
FBD	CRS Front Base to Door	mm	362	363
SBD	CRS Side Base to Door	mm	105	107
	Torso Angle	°	42°	39°

Table 5 Dummy Positioning FARO Measurements¹

Vehicle: 2008 Nissan Versa

Position #4 Q3s

Code	Description	Units	X	Y	Z
1	CRS Top	mm	-7	401	-336
2	CRS Front Base	mm	497	402	253
3	CRS Side Base	mm	294	226	258
4	CRS Side of Seat	mm	149	209	69
5	Top of Head	mm	130	402	-369
6	Head Front	mm	215	403	-285
7	Head CG	mm	128	338	-277
8	Shoulder	mm	133	293	-156
9	Left Knee	mm	514	320	45
10	Chest Clip	mm	271	401	-138
11	Buckle	mm	375	400	26
HS	Top of Head to Door	mm	130	49	-369
TS	CRS Top to Door/Window	mm	-8	46	-337
HGS	Head CG to Door/Window Edge	mm	127	24	-277
SSD	Side of CRS to Door	mm	151	115	71
SBD	CRS Side Base to Door	mm	294	122	257
FBD	CRS Front Base to Door	mm	496	39	254

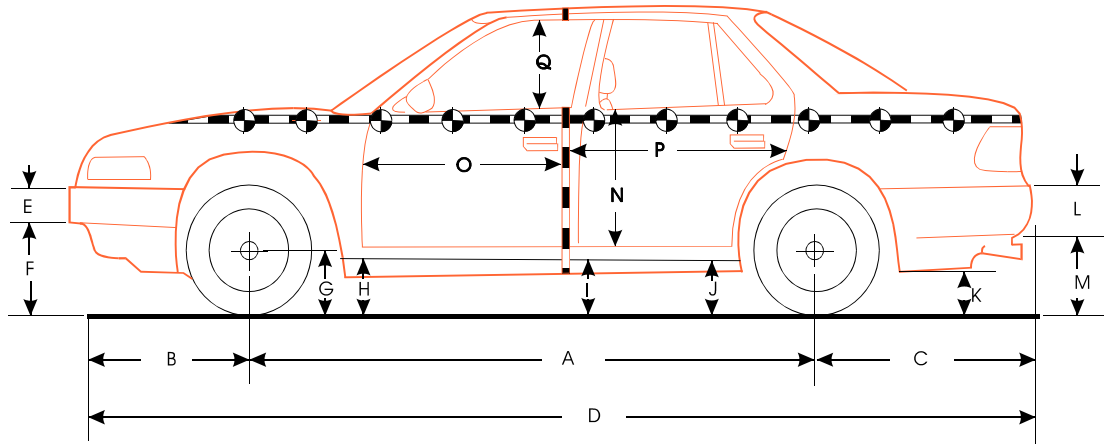
Position #3 H3Cs

Code	Description	Units	X	Y	Z
1	CRS Top	mm	-20	-407	-331
2	CRS Front Base	mm	500	-403	241
3	CRS Side Base	mm	300	-228	262
4	CRS Side of Seat	mm	151	-207	68
5	Top of Head	mm	110	-405	-366
6	Head Front	mm	196	-402	-295
7	Head CG	mm	118	-339	-281
8	Shoulder	mm	121	-286	-128
9	Right Knee	mm	482	-310	30
10	Chest Clip	mm	232	-404	-144
11	Buckle	mm	359	-404	17
HS	Top of Head to Door	mm	110	-45	-366
TS	CRS Top to Door/Window	mm	-18	-39	-325
HGS	Head CG to Door/Window Edge	mm	116	-20	-280
SSD	Side of CRS to Door	mm	150	-113	67
SBD	CRS Side Base to Door	mm	301	-121	262
FBD	CRS Front Base to Door	mm	499	-39	241

¹ The origin of the coordinates is the striker.

Figure 2 Vehicle Pre-Test and Post-Test Measurements

Vehicle: 2008 Nissan Versa



Left Side View

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

	Pre-Test (as delivered)	Pre-Test (as tested)	Post-Test (as tested)	Change
A	2590	2590	2604	-14
B	905	905	902	3
C	802	802	798	4
D	4307	4307	4311	-4
E	90	90	90	0
F	447	414	419	-5
G	292	286	286	0
G1	281	255	253	2
H	264	238	256	-18
I	246	232	298	-66
J1	185	178	200	-22
J2	251	241	327	-86
K	340	335	320	15
L	177	177	177	0
M	450	441	438	3
N	755	755	684	71
O	1020	1020	986	34
P	1029	1029	1020	9
Q	437	437	381	56
R	4030	4030	4033	-3
S	4030	4030	4026	4
T	1270	1270	1164	106

D = Length at centerline

E and L = Bumper Thickness

R = Right Side Length

S = Left Side Length

T = Width at B-pillar

J1 = To Pinch Weld

J2 = To Sill

¹ Could not locate measurement point due to door skin falling off during the event.

Table 6 Vehicle Structural Measurements^{1,2}

	Elements	Pre-Test
1	Total Length	4307
2	Total Width	1694
3	Bumper Top Height	496
4	Bumper Bottom Height	418
5	Longitudinal Member Top Height	513
6	Longitudinal Member Bottom Height	450
7	Distance Between Longitudinal Members	1095
7'	Longitudinal Member Width	50
8	Engine Top Height	886
9	Engine Bottom Height	172
10	Engine and Gearbox Width	620
11	Front Bumper - Engine Distance	530
12	Front Shock Absorber Fixing Height	858
13	Bonnet Leading Edge Height	711
14	Front Shock Absorber Fixing Width	1170
15	Front Bumper - Front Axle Distance	905
16	Front Axle - A Pillar Distance	553
17	A Pillar - B Pillar Distance	992
18	B Pillar - Rear Axle Distance	1057
19	B Pillar - C Pillar Distance	890
20	Roof Sill Bottom Height	1378
21	Roof Sill Top Height	1428
22	Floor Sill Bottom Height	302
23	Floor Sill Top Height	356

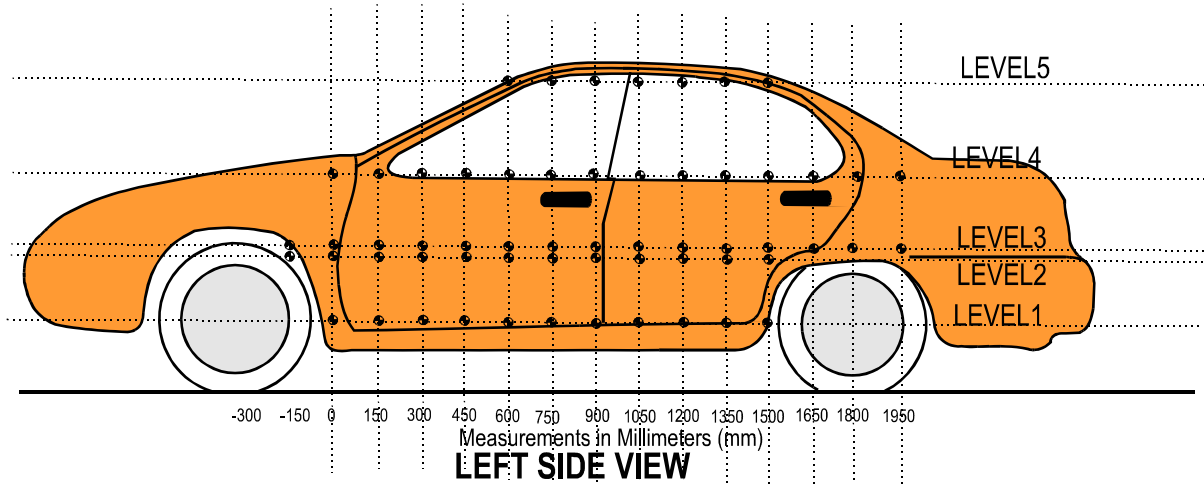
All distance measurements are in millimeters.

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

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

Figure 3 Vehicle Side Measurements

Vehicle: 2008 Nissan Versa



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

Measurements along the vertical 750 mm line shown above.

Measurements vehicle forward of the impact line are negative.

All measurements below in mm.

Level	Measurement Description	Height Above Ground
5	Window Top	1490
4	Window Sill	930
3	Mid Door	640
2	Occupant H-Point	580
1	Side Sill	280

Table 7 Vehicle Exterior Crush Profiles - All Levels

Vehicle: 2008 Nissan Versa

Location	Height		(mm) From Impact Point													
			-1200	-1050	-900	-750	-600	-450	-300	-150	0	150	300	450	600	750
Level 1 Side Sill	280	Pre										835	824	821	821	820
		Post										812	787	776	769	762
		Crush										23	37	45	52	58
Level 2 H-Point	580	Pre									862	855	855	857	857	858
		Post									851	823	721	655	654	657
		Crush									11	32	134	202	203	201
Level 3 Mid-Door	640	Pre									860	855	856	857	858	859
		Post									851	805	724	667	674	681
		Crush									9	50	132	190	184	178
Level 4 Window Sill	93	Pre							757	770	780	788	796	803	808	812
		Post							761	770	776	791	768	733	711	717
		Crush							-4	0	4	-3	28	70	97	95
Level 5 Window Top	1490	Pre								758	729	706	685	660	638	620
		Post								757	728	705	685	659	637	620
		Crush								1	1	1	0	1	1	0

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

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

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

Table 7 Vehicle Exterior Crush Profiles - All Levels, Continued

Vehicle: 2008 Nissan Versa

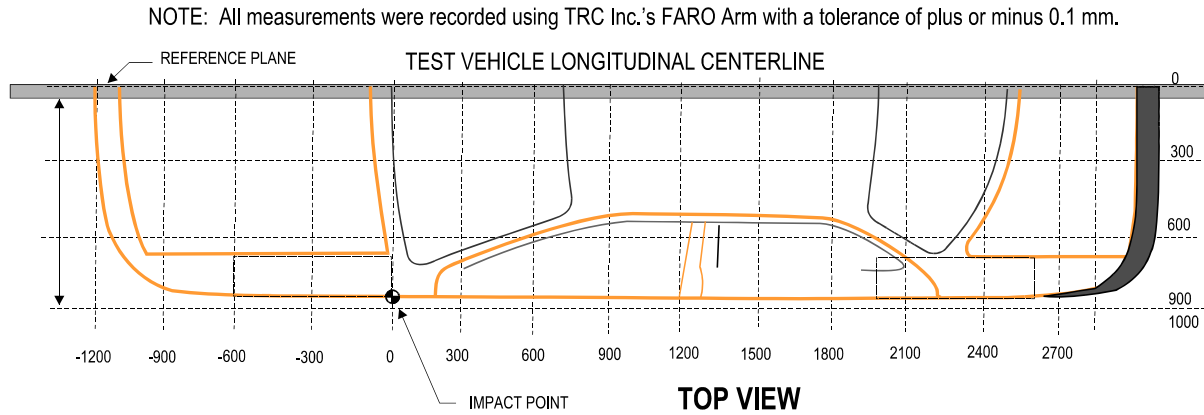
Location	Height		(mm) From Impact Point												
			900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700
Level 1 Side Sill	280	Pre	820	819	818	818	818	820	831						
		Post	754	746	736	733	734	734	744						
		Crush	66	73	82	85	84	86	87						
Level 2 H-Point	580	Pre	858	857	857	855	854	853	850	856					
		Post	662	661	667	632	636	647	659	667					
		Crush	196	196	190	223	218	206	191	189					
Level 3 Mid-Door	640	Pre	859	858	858	856	855	854	851	852	857				
		Post	687	686	689	665	677	682	682	685	689				
		Crush	172	172	169	191	178	172	169	167	168				
Level 4 Window Sill	930	Pre	815	818	819	819	819	818	817	833	809	803	796	787	
		Post	715	718	708	699	691	683	682	725	745	753	768	776	
		Crush	100	100	111	120	128	135	135	108	64	50	28	11	
Level 5 Window Top	1490	Pre	611	605	603	601	603	604	607	610	614	617	605		
		Post	608	600	596	594	594	594	595	595	594	605	605		
		Crush	3	5	7	7	9	10	12	15	20	12	0		

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

Figure 4 Vehicle Damage Profile Distances

Test Vehicle: 2008 Nissan Versa

Test Date: 10/29/08



MEASUREMENT CONVENTIONS:

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

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

DAMAGE PROFILE DISTANCES

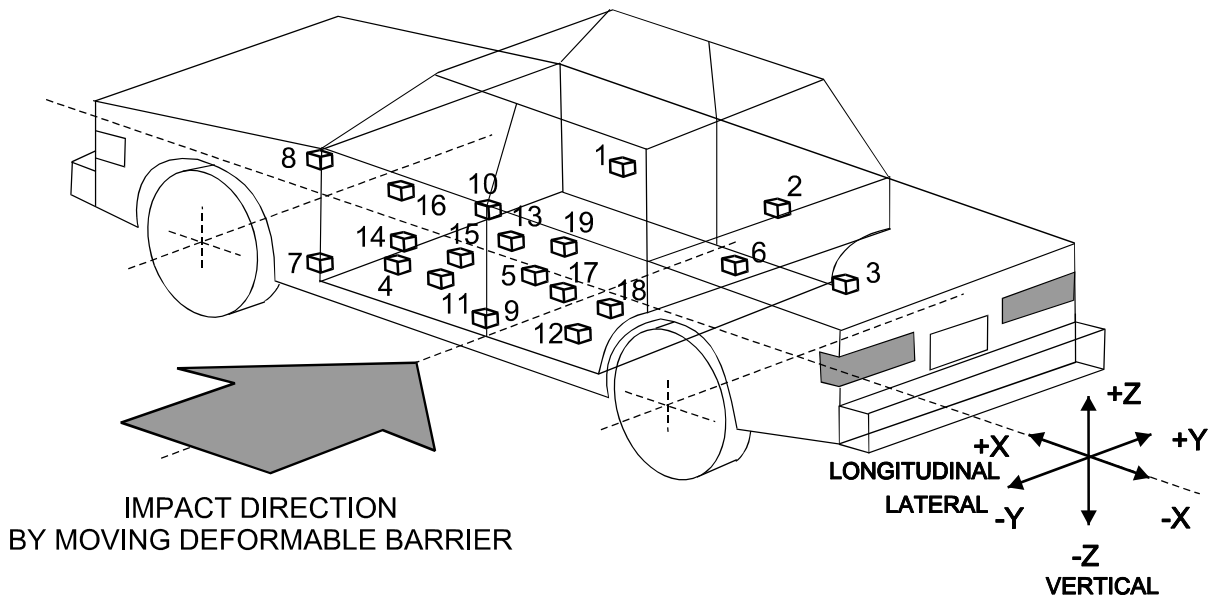
DPD	Distance from Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	2550 mm	4	787	776	11
2	1950 mm	2	856	667	189
3	1350 mm	2	855	632	223
4	750 mm	2	858	657	201
5	150 mm	3	855	805	50
6	-300 mm	4	757	761	-4

Reference plane is parallel to test vehicle longitudinal centerline.

Given dimensions = Reference plane to car body.

Figure 5 Test Vehicle Accelerometer Locations and Data Summary

Vehicle: 2008 Nissan Versa



- 1-Right Side Sill at Front Seat
- 2-Right Side Sill at Rear Seat
- 3-Rear Floorpan above Axle
- 4-Left Side Sill at Front Seat
- 5-Left Side Sill at Rear Seat
- 6-Right Rear Occupant Compartment
- 7-Left Lower A-Pillar
- 8-Left Upper A-Pillar
- 9-Left Lower B-Pillar

- 10-Left Upper B-Pillar
- 11-Left Front Seat Track
- 12-Left Rear Seat Track
- 13-Vehicle Center of Gravity
- 14-Left Front Door Centerline
- 15-Left Front Door Mid Rear
- 16-Left Front Door Upper Centerline
- 17-Left Rear Door Centerline
- 18- Left Rear Door Mid Rear
- 19- Left Rear Door Upper Centerline

Table 8 Test Vehicle Accelerometer Locations and Data Summary

Vehicle: 2008 Nissan Versa

Location	Coordinates (millimeters)			Positive Direction Max. Time (g) (ms)		Negative Direction Max. Time (g) (ms)	
	X	Y	Z				
1 Right Side Sill at Front Seat	2938	660	283				
Longitudinal				4.6	4.6	2.3	9.2
Lateral				24.7	8.5	3.8	69.4
Vertical				5.3	56.1	6.0	9.0
Resultant				25.5	8.6		
2 Right Side Sill at Rear Seat	2010	662	296				
Longitudinal				4.7	44.5	2.7	21.9
Lateral				24.4	6.6	3.0	96.3
Vertical				6.1	37.6	7.5	19.2
Resultant				24.4	6.6		
3 Rear Floorpan Above Axle	1371	0	464				
Longitudinal				6.1	46.8	7.9	4.1
Lateral				27.8	35.9	2.4	91.4
Vertical				7.5	37.8	9.6	12.5
Resultant				28.8	36.9		
4 Left Side Sill at Front Seat	2980	660	295				
Longitudinal							
Lateral				104.5	4.6	19.1	8.6
Vertical							
5 Left Side Sill at Rear Seat	1993	662	306				
Longitudinal							
Lateral				73.1	3.4	28.2	14.6
Vertical							

Table 8 Test Vehicle Accelerometer Locations and Data Summary, Continued

Vehicle: 2008 Nissan Versa

Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
	X	Y	Z	Max. (g)	Time (ms)	Max. (g)	Time (ms)
6 Right Rear Occupant Compartment	1890	450	311				
Longitudinal							
Lateral				23.9	5.8	3.0	95.9
Vertical							
7 Left Lower A-Pillar	3280	780	485				
Longitudinal							
Lateral				70.9	4.8	24.7	9.2
Vertical							
8 Left Upper A-Pillar	3280	750	838				
Longitudinal							
Lateral				22.2	5.8	2.5	138.0
Vertical							
9 Left Lower B-Pillar	2160	770	473				
Longitudinal							
Lateral ¹				199.7	3.1	49.4	9.1
Vertical							
10 Left Upper B-Pillar	2170	750	865				
Longitudinal							
Lateral				99.1	4.8	14.5	35.4
Vertical							
11 Left Front Seat Track	2293	550	273				
Longitudinal							
Lateral				29.0	5.0	7.8	51.0
Vertical							

¹ See Data Acquisition Explanations

Table 8 Test Vehicle Accelerometer Locations and Data Summary, Continued

Vehicle: 2008 Nissan Versa

Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
	X	Y	Z	Max. (g)	Time (ms)	Max. (g)	Time (ms)
12 Left Rear Seat Track	1560	545	415				
Longitudinal Lateral ¹ Vertical							
				75.3	17.0	6.2	51.1
13 Vehicle Center of Gravity	2690	0	421				
Longitudinal Lateral Vertical Resultant				4.9	43.9	9.3	26.2
				19.8	6.8	2.6	70.7
				8.3	20.6	7.1	55.2
				20.7	7.0		
14 Left Front Door on Centerline	2775	725	660				
Longitudinal Lateral Vertical							
				155.3	8.9	67.2	26.0
15 Left Front Door Mid Rear	2404	710	660				
Longitudinal Lateral Vertical							
				113.0	12.1	57.9	17.1
16 Left Front Door Upper Centerline	2775	705	743				
Longitudinal Lateral Vertical							
				97.9	23.3	51.4	29.2
17 Left Rear Door on Centerline	1777	700	698				
Longitudinal Lateral Vertical							
				85.2	20.7	27.7	34.0

¹ See Data Acquisition Explanations

Table 8 Test Vehicle Accelerometer Locations and Data Summary, Continued

Vehicle: 2008 Nissan Versa

Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
	X	Y	Z	Max. (g)	Time (ms)	Max. (g)	Time (ms)
18 Left Rear Door Mid Rear	1777	705	698				
Longitudinal							
Lateral				140.8	16.5	36.5	10.2
Vertical							
19 Left Rear Door Upper Centerline	1515	700	961				
Longitudinal							
Lateral				79.9	18.2	61.0	36.3
Vertical							

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

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

Table 8 Test Vehicle Accelerometer Locations and Data Summary, Continued

Vehicle: 2008 Nissan Versa

Location	Positive Direction Max. Time (g) (ms)		Negative Direction Max. Time (g) (ms)	
1 Top of CRS #1				
Longitudinal	22.7	93.4	22.0	36.1
Lateral	62.6	38.8	25.3	79.4
Vertical				
2 Bottom of CRS #1				
Longitudinal	19.0	35.0	29.0	27.9
Lateral	87.1	29.0	18.2	35.8
Vertical				
3 Top of CRS #2				
Longitudinal	14.7	81.9	12.7	68.7
Lateral	29.5	38.8	9.8	262.1
Vertical				
4 Bottom of CRS #2				
Longitudinal	12.6	80.2	13.5	59.9
Lateral	27.6	27.9	8.7	256.8
Vertical				
5 Below Seat Cushion under CRS #1				
Longitudinal	5.3	47.2	12.5	4.0
Lateral	27.0	35.5	1.9	95.4
Vertical				
6 Below Seat Cushion under CRS #2				
Longitudinal	4.9	57.1	3.5	5.8
Lateral	26.1	36.5	2.6	92.6
Vertical				

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

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

Table 9 Deformable Barrier Face Profile

Vehicle: 2008 Nissan Versa

Pre-Test			
Index	Xmm	Ymm	Zmm
1	-384.7	804.3	-49.7
2	-385.0	704.5	-50.1
3	-385.1	603.5	-50.4
4	-385.2	502.8	-50.6
5	-385.1	403.1	-50.4
6	-385.0	301.9	-51.1
7	-385.0	200.2	-51.2
8	-385.1	98.8	-51.8
9	-385.1	-2.3	-52.4
10	-385.1	-102.4	-52.7
11	-385.1	-202.6	-52.8
12	-385.0	-302.6	-52.6
13	-384.9	-402.2	-53.1
14	-384.7	-502.4	-53.7
15	-384.6	-602.7	-54.2
16	-384.4	-702.8	-54.6
17	-384.3	-803.1	-55.3
18	-384.4	805.1	-179.4
19	-384.4	704.8	-179.5
20	-384.4	604.0	-179.5
21	-384.5	503.5	-179.9
22	-384.5	403.5	-179.8

Post-Test			
Index	Xmm	Ymm	Zmm
1	-338.3	788.2	-76.8
2	-368.3	692.9	-75.7
3	-384.2	593.3	-75.1
4	-393.1	493.6	-74.5
5	-392.3	394.2	-73.4
6	-389.7	293.0	-73.2
7	-385.1	190.9	-73.2
8	-367.3	90.1	-75.5
9	-342.8	-7.4	-78.3
10	-371.3	-104.5	-76.2
11	-379.9	-204.4	-72.8
12	-383.3	-304.0	-69.4
13	-384.0	-403.6	-66.6
14	-379.2	-503.1	-64.6
15	-375.6	-602.2	-62.4
16	-367.0	-702.3	-60.2
17	-337.0	-797.0	-63.2
18	-330.6	784.8	-204.1
19	-361.1	689.9	-203.1
20	-383.8	594.2	-204.1
21	-385.7	493.6	-203.8
22	-384.7	394.3	-202.9

Difference			
Index	Xmm	Ymm	Zmm
1	-46.4	16.1	27.1
2	-16.7	11.6	25.6
3	-0.9	10.2	24.7
4	7.9	9.2	23.9
5	7.2	8.9	23.0
6	4.7	8.9	22.1
7	0.1	9.3	22.0
8	-17.8	8.7	23.7
9	-42.3	5.1	25.9
10	-13.8	2.1	23.5
11	-5.2	1.8	20.0
12	-1.7	1.4	16.8
13	-0.9	1.4	13.5
14	-5.5	0.7	10.9
15	-9.0	-0.5	8.2
16	-17.4	-0.5	5.6
17	-47.3	-6.1	7.9
18	-53.8	20.3	24.7
19	-23.3	14.9	23.6
20	-0.6	9.8	24.6
21	1.2	9.9	23.9
22	0.2	9.2	23.1

Table 9 Deformable Barrier Face Profile, Continued

Vehicle: 2008 Nissan Versa

Pre-Test				Post-Test				Difference			
Index	Xmm	Ymm	Zmm	Index	Xmm	Ymm	Zmm	Index	Xmm	Ymm	Zmm
23	-384.5	302.5	-180.2	23	-382.3	292.9	-202.2	23	-2.2	9.6	22.0
24	-384.5	200.5	-180.2	24	-378.2	191.9	-201.7	24	-6.3	8.6	21.5
25	-384.6	99.0	-180.7	25	-378.1	90.5	-203.7	25	-6.5	8.5	23.0
26	-384.6	-1.2	-180.8	26	-364.8	-7.9	-204.5	26	-19.8	6.7	23.7
27	-384.5	-101.5	-181.6	27	-371.7	-106.8	-204.1	27	-12.8	5.3	22.5
28	-384.4	-202.3	-181.7	28	-380.7	-207.0	-201.4	28	-3.7	4.7	19.7
29	-384.3	-302.3	-182.2	29	-381.4	-306.7	-198.6	29	-2.9	4.4	16.4
30	-384.3	-402.3	-182.2	30	-381.7	-406.6	-195.5	30	-2.6	4.3	13.3
31	-384.2	-502.3	-182.4	31	-381.0	-506.5	-192.7	31	-3.2	4.2	10.3
32	-384.0	-602.2	-182.7	32	-380.0	-606.4	-189.8	32	-4.0	4.2	7.1
33	-383.8	-701.9	-182.8	33	-378.4	-706.5	-187.1	33	-5.4	4.6	4.3
34	-383.6	-801.6	-182.9	34	-372.8	-805.6	-184.2	34	-10.8	4.0	1.3
35	-384.1	806.4	-308.3	35	-366.2	795.2	-317.8	35	-17.9	11.2	9.5
36	-384.2	705.0	-307.4	36	-370.3	695.1	-324.8	36	-13.9	9.9	17.4
37	-384.0	604.7	-307.9	37	-369.8	594.6	-326.0	37	-14.2	10.1	18.1
38	-384.0	503.8	-308.4	38	-369.9	494.2	-325.7	38	-14.1	9.6	17.3
39	-384.4	404.4	-308.3	39	-368.2	394.0	-325.7	39	-16.2	10.4	17.4
40	-384.1	302.7	-308.9	40	-367.9	293.4	-326.3	40	-16.2	9.3	17.4
41	-384.2	201.2	-309.5	41	-366.5	191.6	-326.6	41	-17.7	9.6	17.1
42	-384.0	98.9	-309.7	42	-365.0	89.3	-326.7	42	-19.0	9.6	17.0
43	-384.3	-1.2	-310.6	43	-367.9	-9.5	-324.9	43	-16.4	8.3	14.3
44	-383.9	-100.6	-310.0	44	-367.7	-109.7	-329.4	44	-16.2	9.1	19.4

Table 9 Deformable Barrier Face Profile, Continued

Vehicle: 2008 Nissan Versa

Pre-Test				Post-Test				Difference			
Index	Xmm	Ymm	Zmm	Index	Xmm	Ymm	Zmm	Index	Xmm	Ymm	Zmm
45	-383.9	-202.0	-309.9	45	-369.6	-210.2	-328.0	45	-14.3	8.2	18.1
46	-383.9	-301.5	-310.7	46	-370.2	-310.6	-325.1	46	-13.7	9.1	14.4
47	-383.8	-401.9	-310.5	47	-371.0	-411.0	-321.7	47	-12.8	9.1	11.2
48	-383.6	-501.4	-310.4	48	-370.9	-510.5	-318.6	48	-12.7	9.1	8.2
49	-383.5	-602.5	-311.1	49	-370.3	-610.8	-316.3	49	-13.2	8.3	5.2
50	-383.5	-702.3	-311.0	50	-368.5	-710.5	-313.6	50	-15.0	8.2	2.6
51	-383.3	-800.6	-311.7	51	-367.0	-808.0	-311.7	51	-16.3	7.4	0.0
52	-470.5	798.4	-435.1	52	-393.0	787.2	-455.0	52	-77.5	11.2	19.9
53	-485.5	703.3	-432.9	53	-407.3	690.3	-457.5	53	-78.2	13.0	24.6
54	-485.5	602.0	-433.3	54	-406.2	591.7	-456.1	54	-79.3	10.3	22.8
55	-485.6	501.4	-433.1	55	-407.0	490.4	-456.2	55	-78.6	11.0	23.1
56	-485.6	401.6	-433.6	56	-406.2	390.7	-455.8	56	-79.4	10.9	22.2
57	-485.6	301.6	-434.1	57	-405.5	290.6	-455.1	57	-80.1	11.0	21.0
58	-485.5	201.6	-434.9	58	-404.6	190.5	-455.0	58	-80.9	11.1	20.1
59	-485.6	101.1	-434.8	59	-391.8	91.7	-450.3	59	-93.8	9.4	15.5
60	-485.6	0.7	-435.7	60	-402.6	-8.2	-453.1	60	-83.0	8.9	17.4
61	-485.6	-99.7	-435.7	61	-406.5	-109.2	-453.4	61	-79.1	9.5	17.7
62	-485.5	-199.3	-436.2	62	-411.2	-208.8	-454.0	62	-74.3	9.5	17.8
63	-485.5	-299.5	-435.5	63	-412.5	-308.5	-454.2	63	-73.0	9.0	18.7
64	-485.4	-399.8	-435.7	64	-413.4	-409.2	-453.7	64	-72.0	9.4	18.0
65	-485.3	-499.3	-435.8	65	-414.1	-508.4	-452.9	65	-71.2	9.1	17.1
66	-485.2	-600.3	-436.7	66	-414.5	-610.0	-452.4	66	-70.7	9.7	15.7
67	-485.0	-699.4	-436.9	67	-414.7	-709.0	-451.4	67	-70.3	9.6	14.5
68	-471.3	-796.1	-437.3	68	-401.0	-807.1	-445.7	68	-70.3	11.0	8.4

Table 9 Deformable Barrier Face Profile, Continued

Vehicle: 2008 Nissan Versa

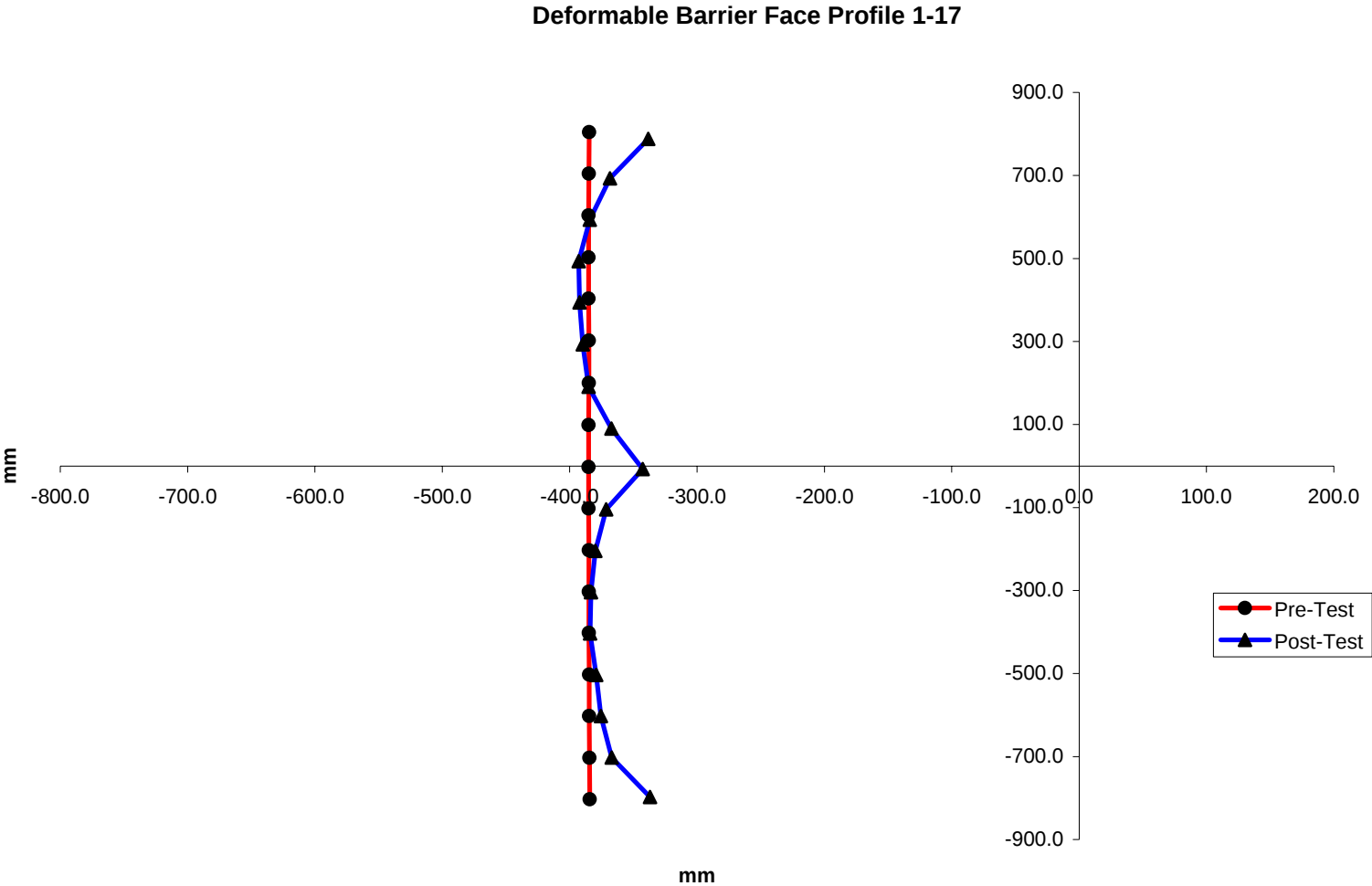


Table 9 Deformable Barrier Face Profile, Continued

Vehicle: 2008 Nissan Versa

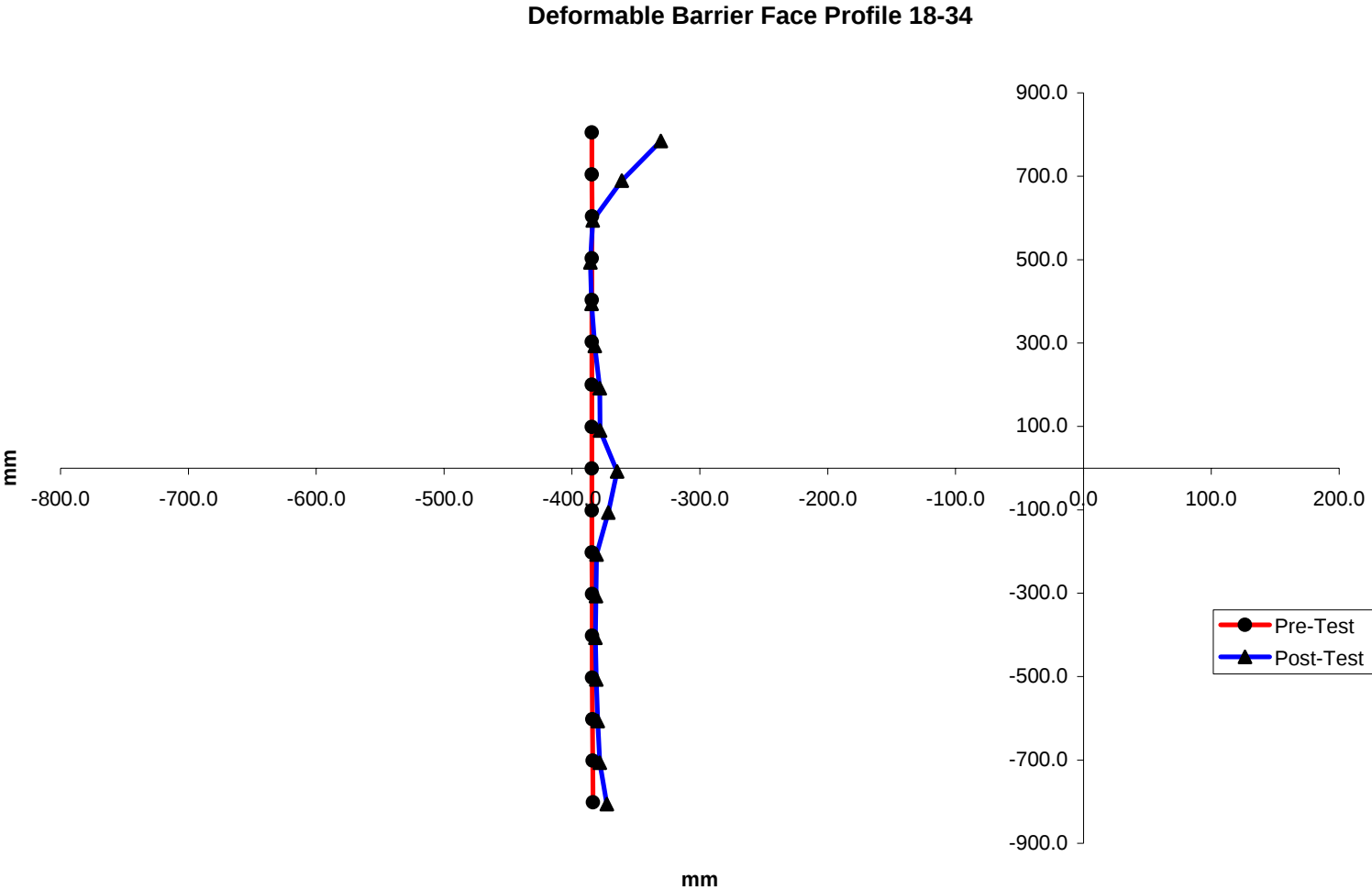


Table 9 Deformable Barrier Face Profile, Continued

Vehicle: 2008 Nissan Versa

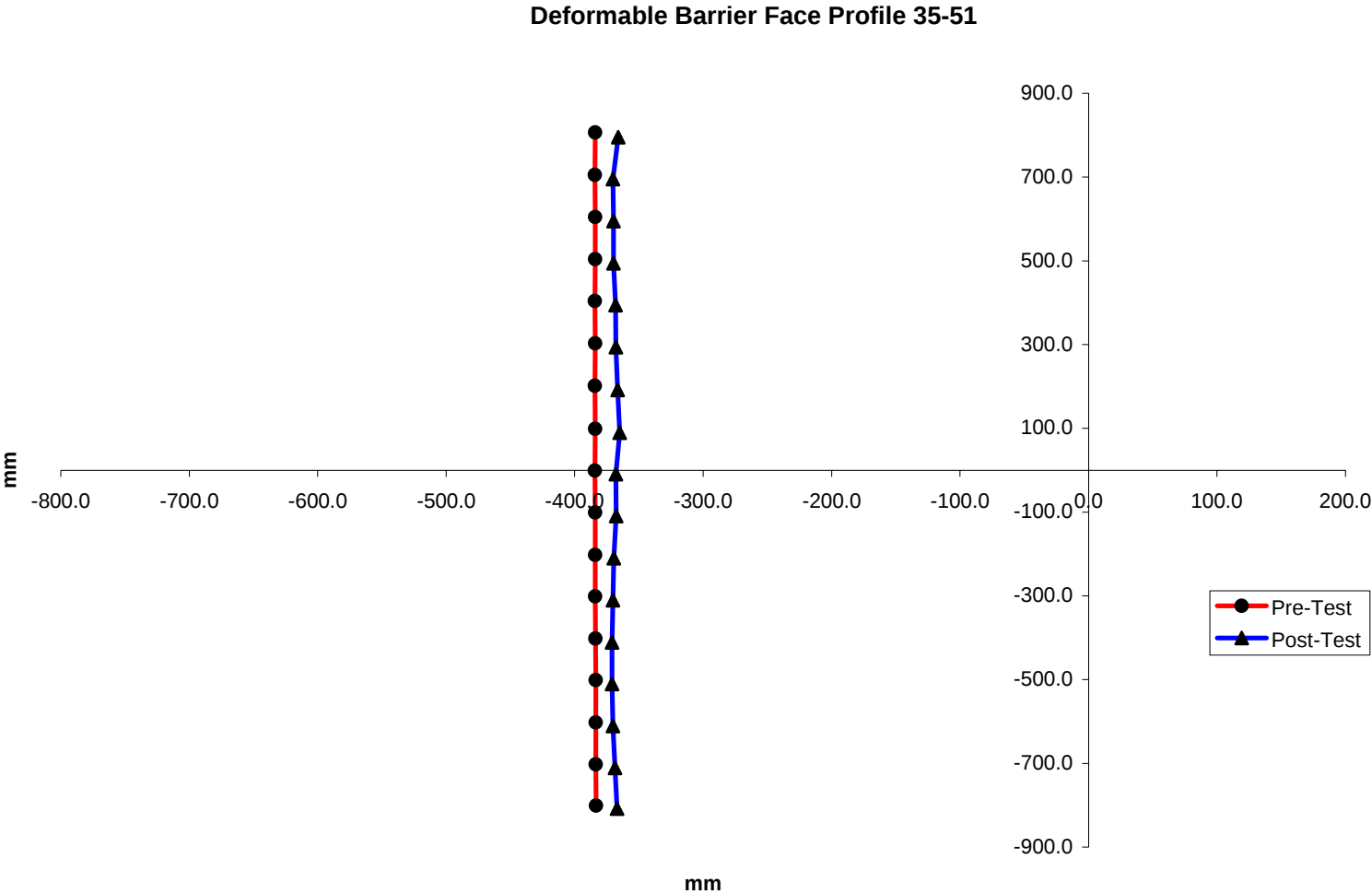


Table 9 Deformable Barrier Face Profile, Continued

Vehicle: 2008 Nissan Versa

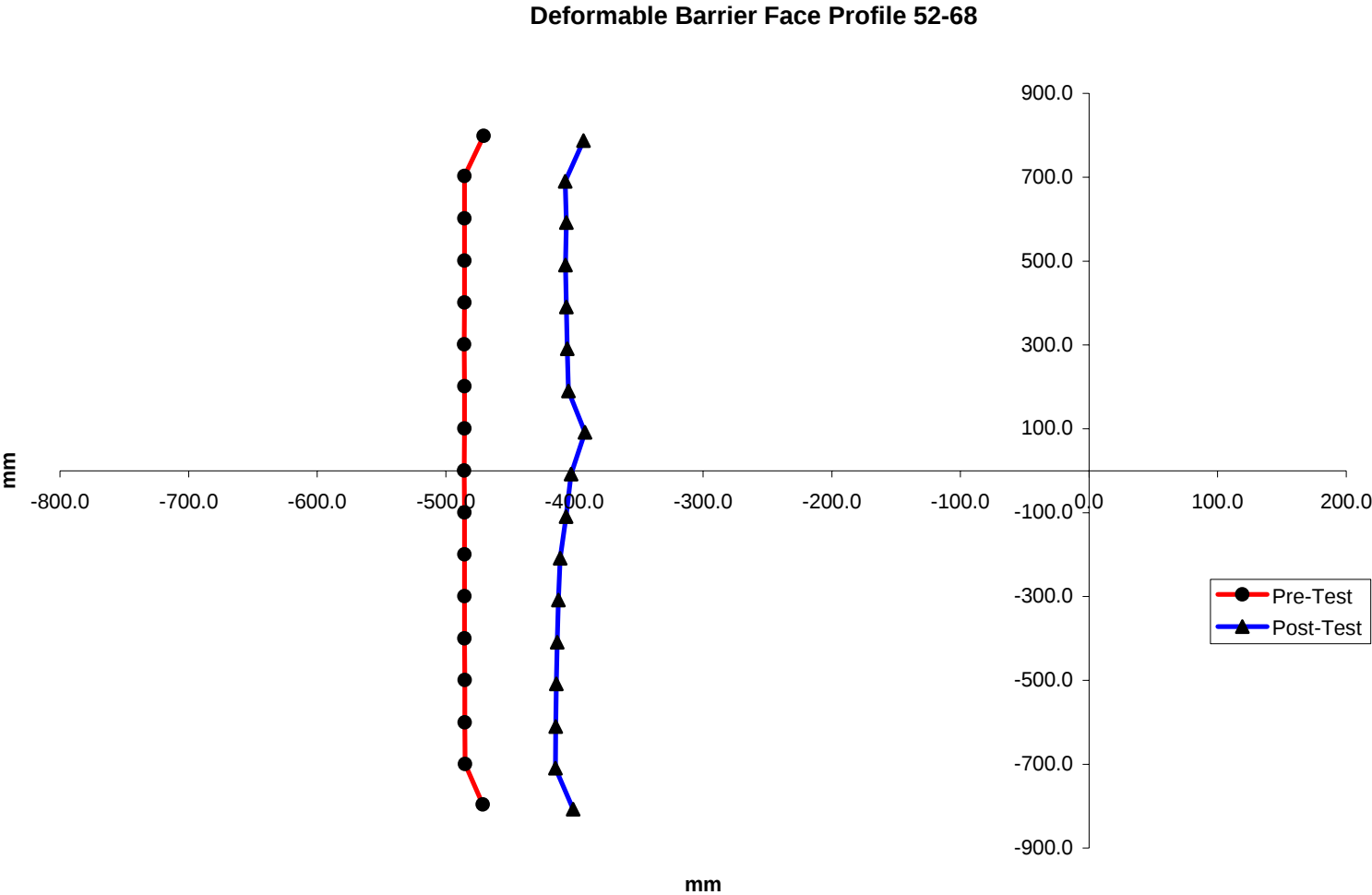
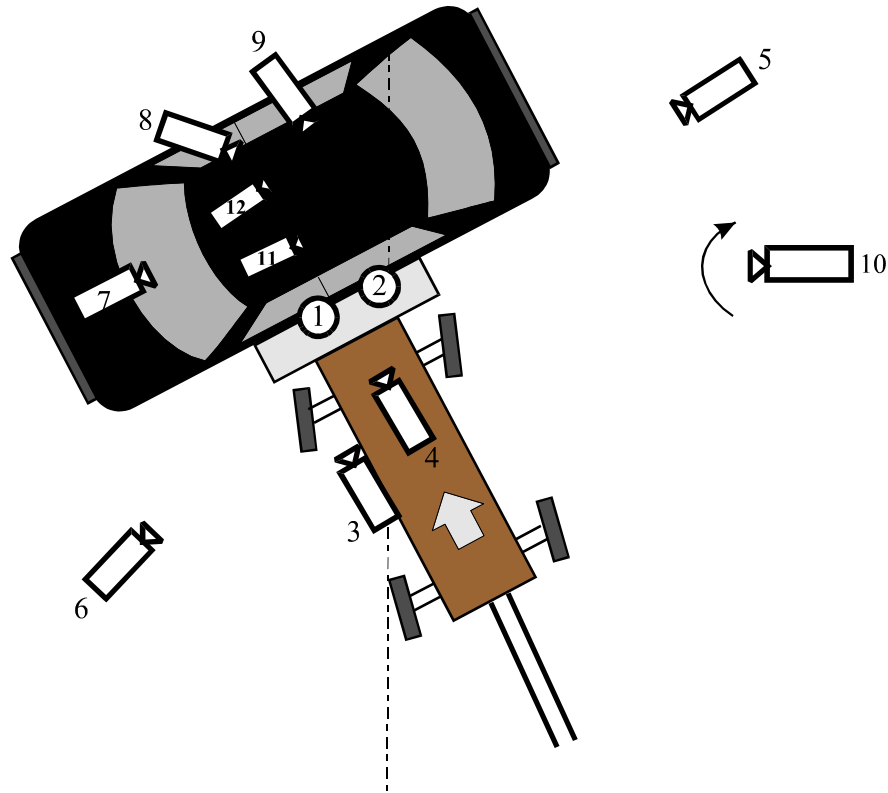


Figure 6 High-Speed Camera Locations and Data Summary

Vehicle: 2008 Nissan Versa



No.	Camera View	Location (mm)			Angle (deg.)	Lens (mm)	Speed (fps)
		X	Y	Z			
1	Overhead Wide	0	350	-7000	90.0	12.5	1000
2	Overhead Tight	0	600	-7000	90.0	25	1000
3	MDB Left Front	1680	870	-820	0.1	25	1000
4	MDB Centerline Impact	2380	0	-1450	5.0	12.5	1000
5	Left Rear	0	10880	-1350	-0.7	25	1000
6	Left Side	3100	-4470	-1320	-3.9	12.5	1000
7	Onboard Front-Driver	760	-710	-1350	-7.8	12.5	1000
8	Onboard Right Side Front	1340	610	-1300	-15.0	12.5	1000
9	Onboard Right Side Rear	1110	700	-1230	-15.1	8.5	1000
10	Panning	N/A	N/A	N/A	N/A	Zoom	24
11	Onboard Left Rear ATD	510	700	-1230	-20.8	8.5	1000
12	Onboard Right Rear ATD	1360	1390	-1300	-36.7	6.5	1000

+X: Forward from impact point
+Y: Rightward from impact point
+Z: Downward from ground level

Appendix A

Photographs



Figure A-1 Pre-Test Front View

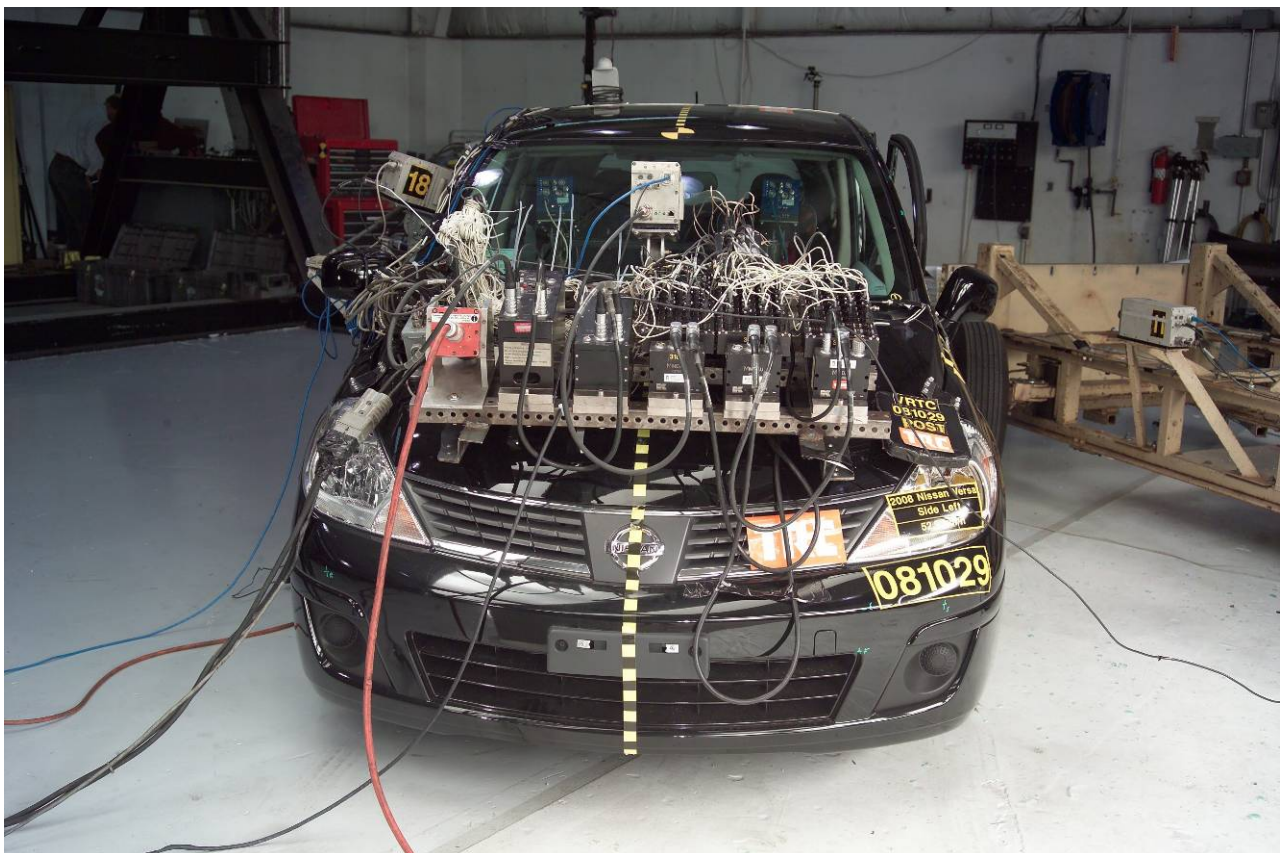


Figure A-2 Post-Test Front View

Photograph Not Available

Figure A-3 Pre-Test Left Front View



Figure A-4 Post-Test Left Front View

Photograph Not Available

Figure A-5 Pre-Test Left Side View



Figure A-6 Post-Test Left Side View

Photograph Not Available

Figure A-7 Pre-Test Left Rear View



Figure A-8 Post-Test Left Rear View



Figure A-9 Pre-Test Rear View

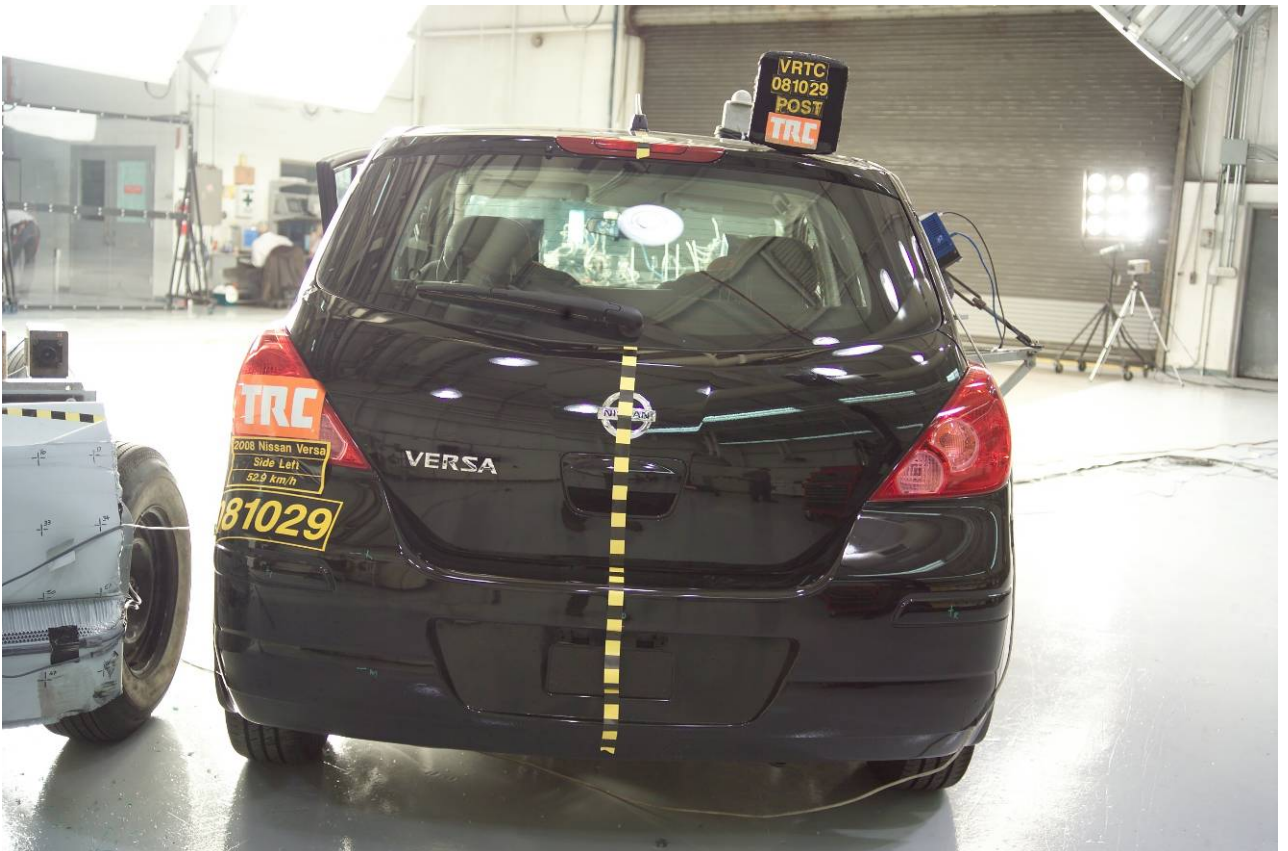


Figure A-10 Post-Test Rear View



Figure A-11 Pre-Test Right Rear View

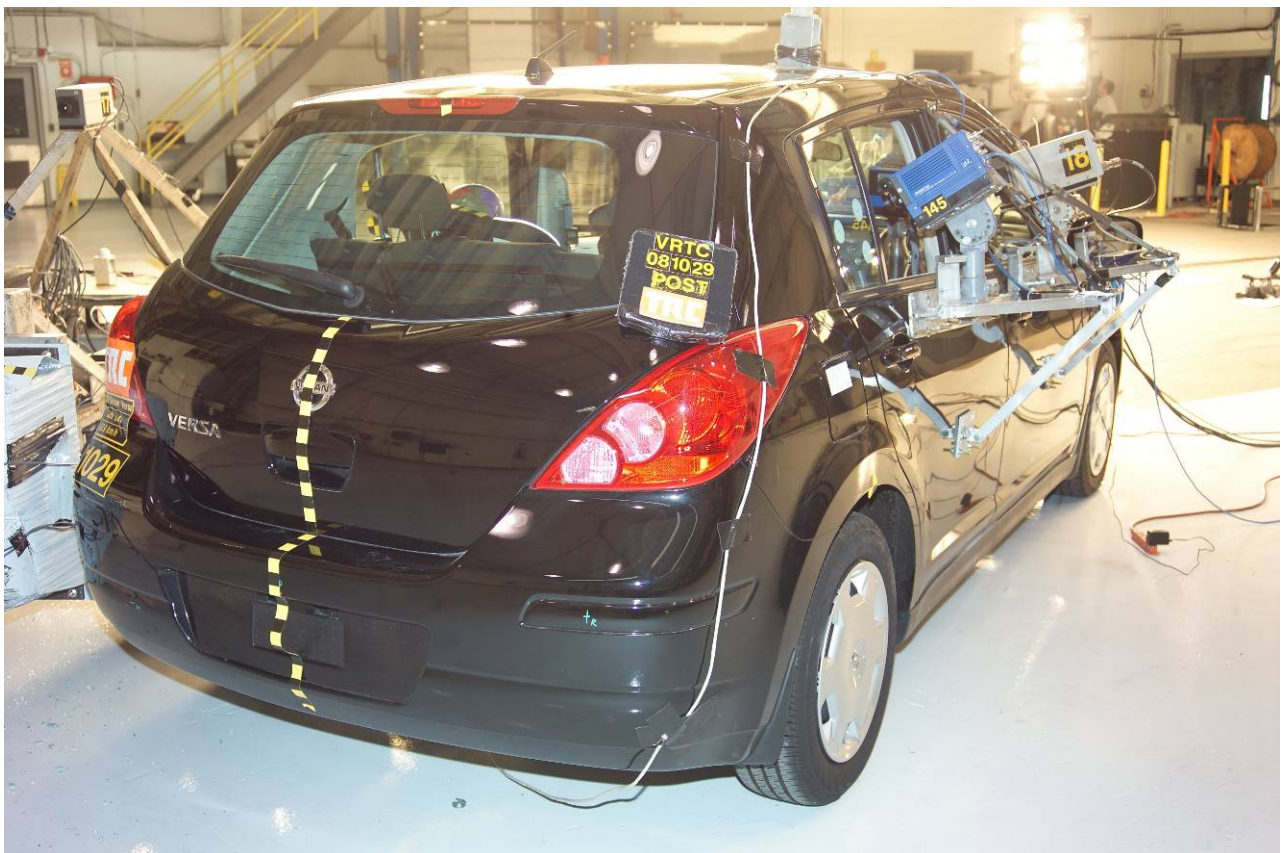


Figure A-12 Post-Test Right Rear View



Figure A-13 Pre-Test Right Side View



Figure A-14 Post-Test Right Side View



Figure A-15 Pre-Test Right Front View

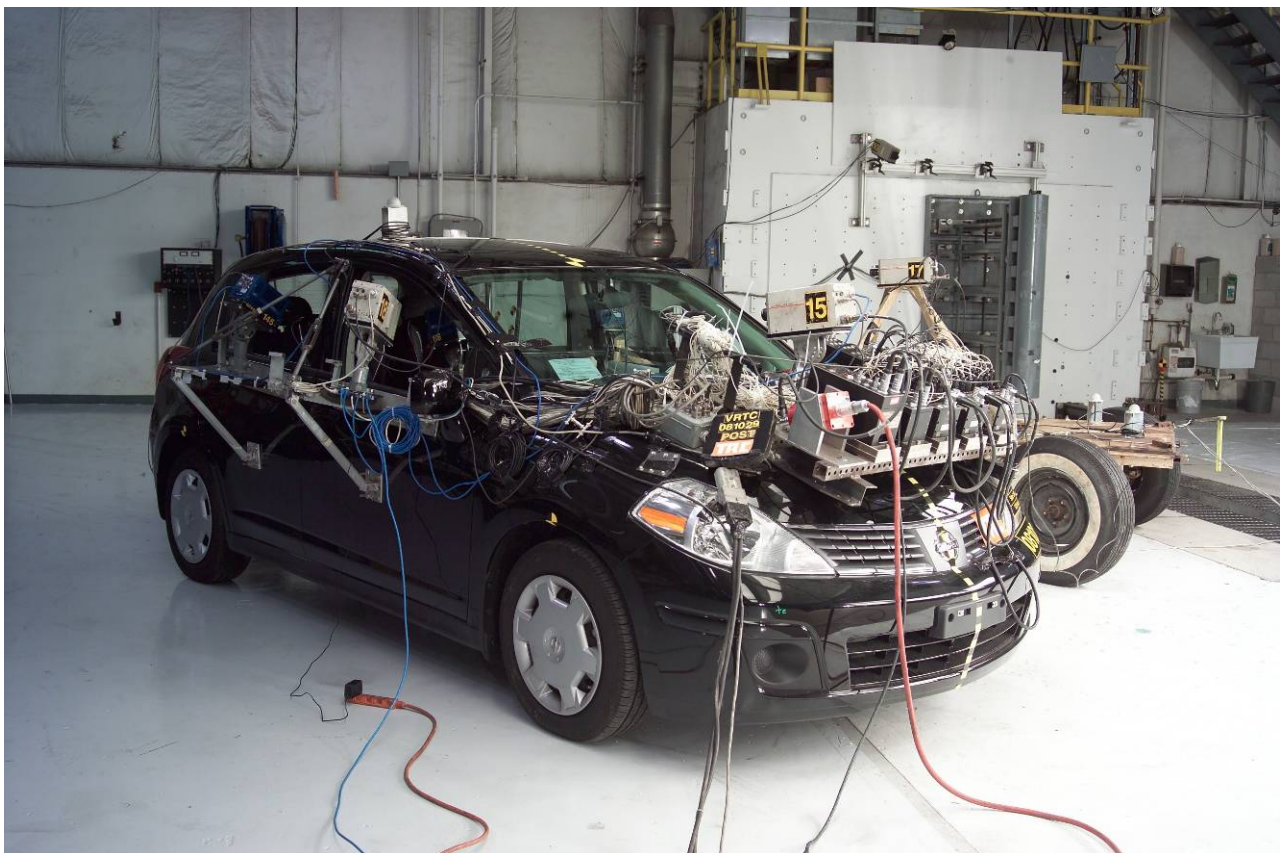


Figure A-16 Post-Test Right Front View

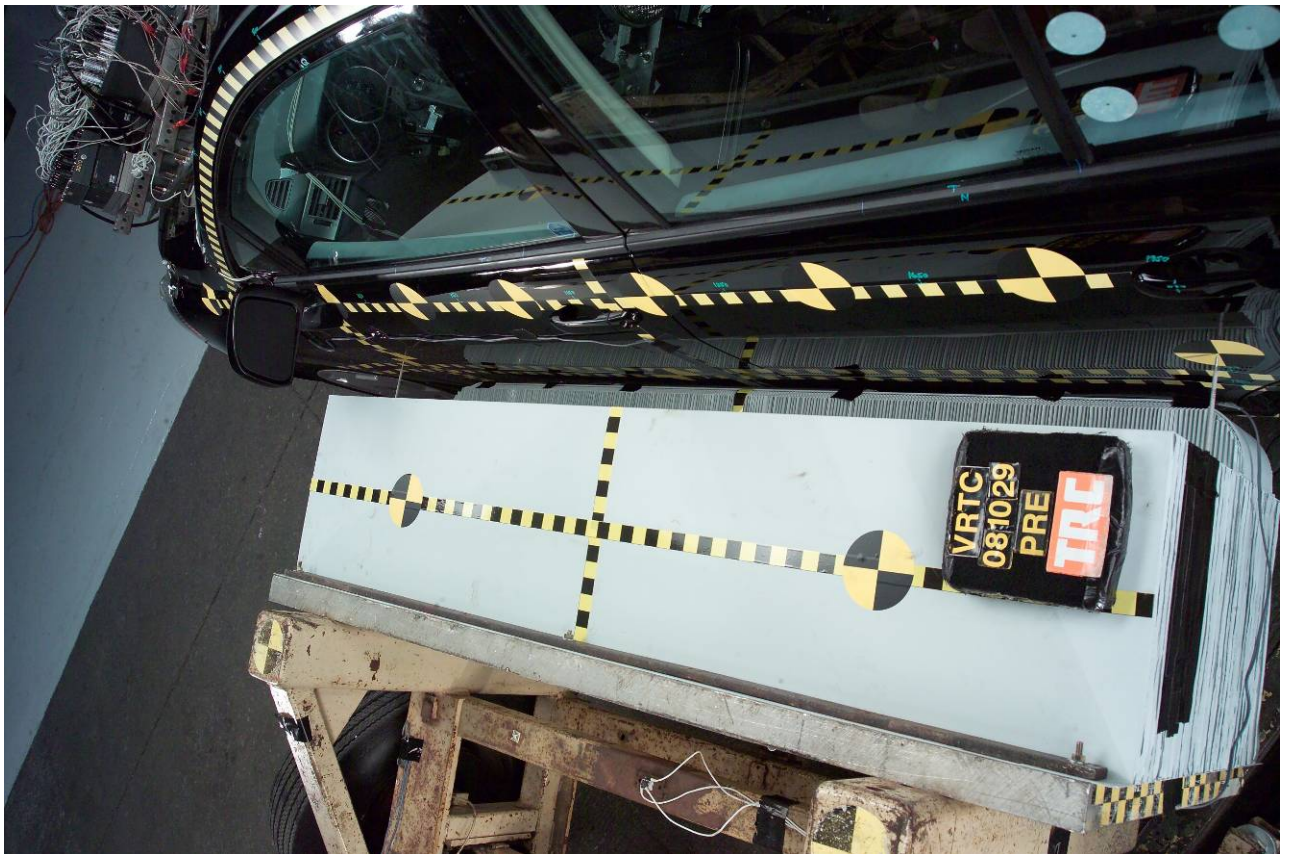


Figure A-17 Pre-Test Impact Alignment View

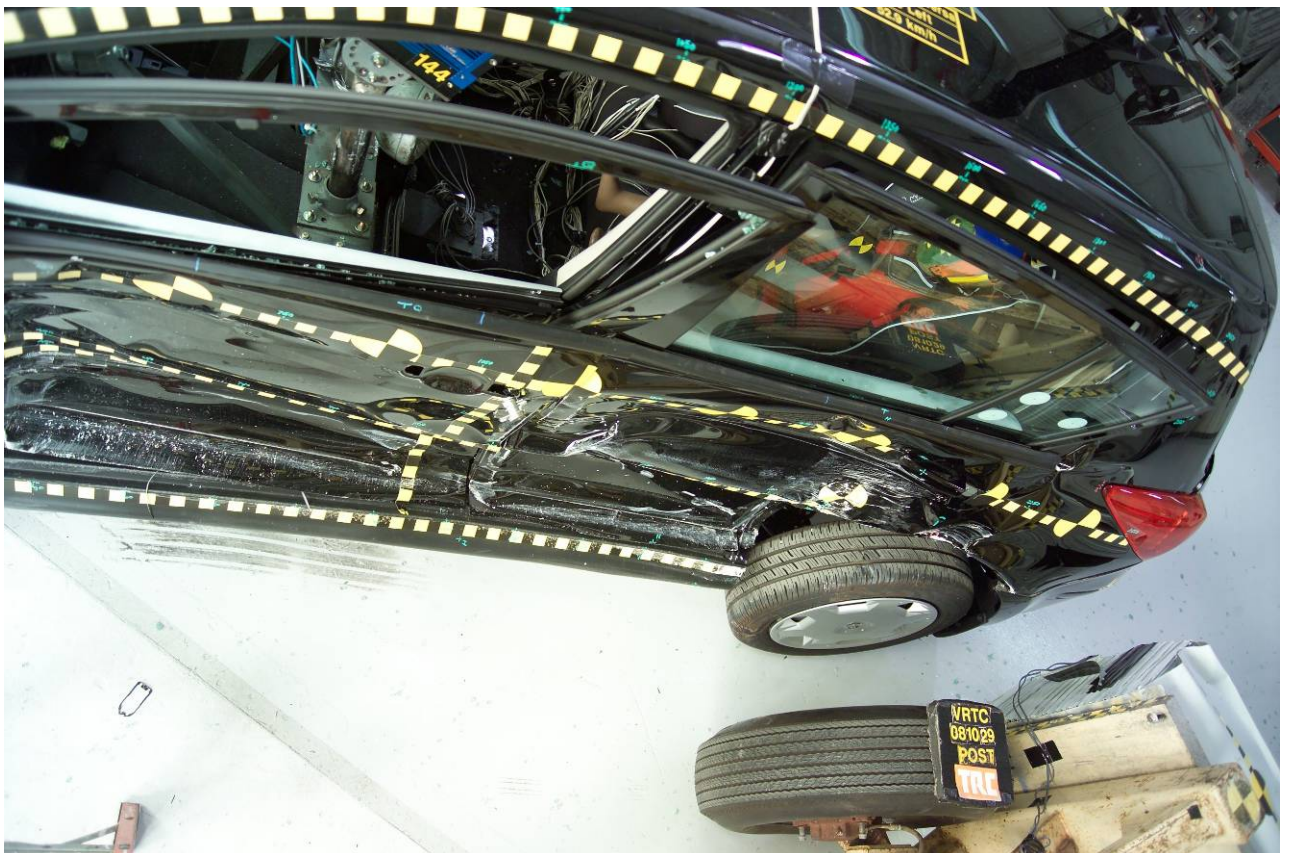


Figure A-18 Post-Test Impact Alignment View



Figure A-19 Pre-Test Primary Impact Point View



Figure A-20 Post-Test Primary Impact Point View



Figure A-21 Pre-Test Secondary Impact Point View



Figure A-22 Post-Test Secondary Impact Point View



Figure A-23 Pre-Test MDB Face Front View

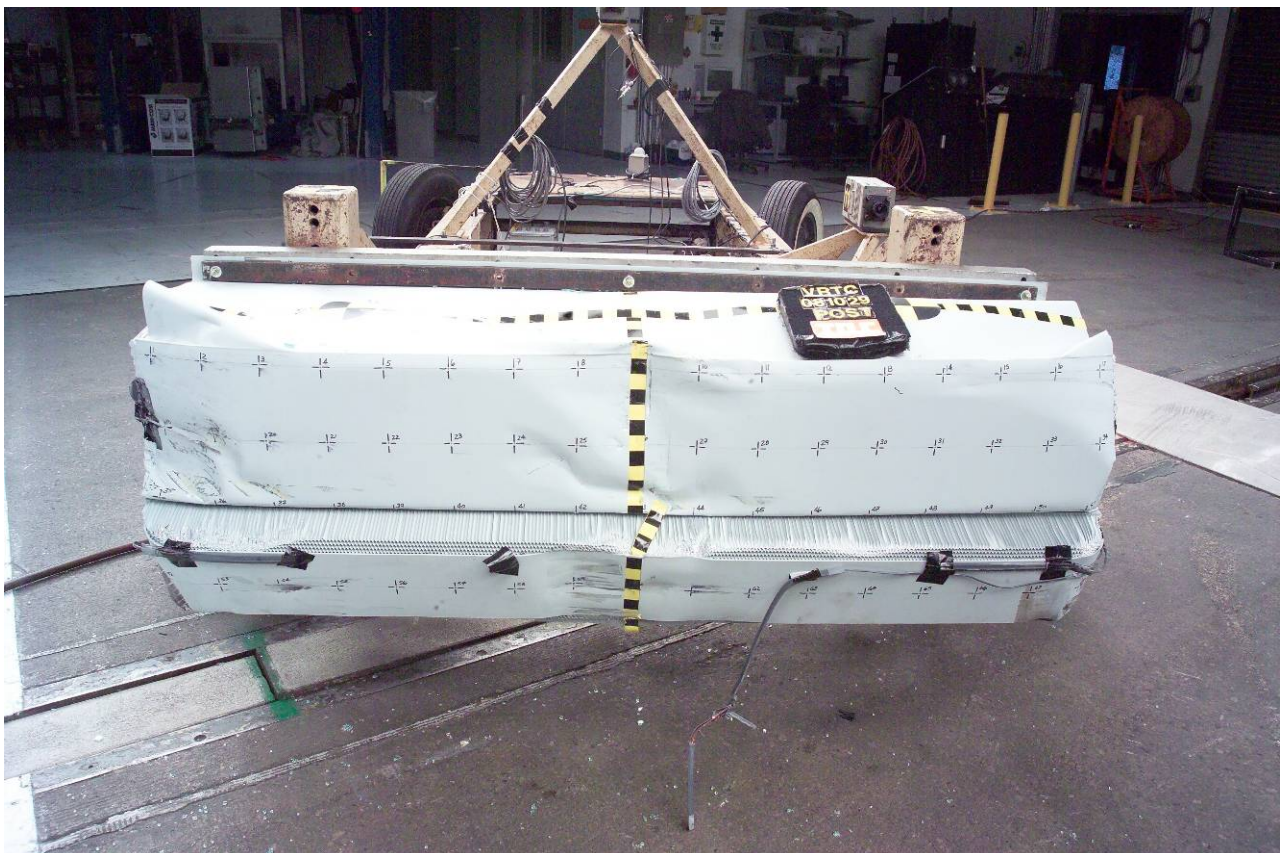


Figure A-24 Post-Test MDB Face Front View



Figure A-25 Pre-Test MDB Face Left Side View



Figure A-26 Post-Test MDB Face Left Side View



Figure A-27 Pre-Test MDB Face Right Side View

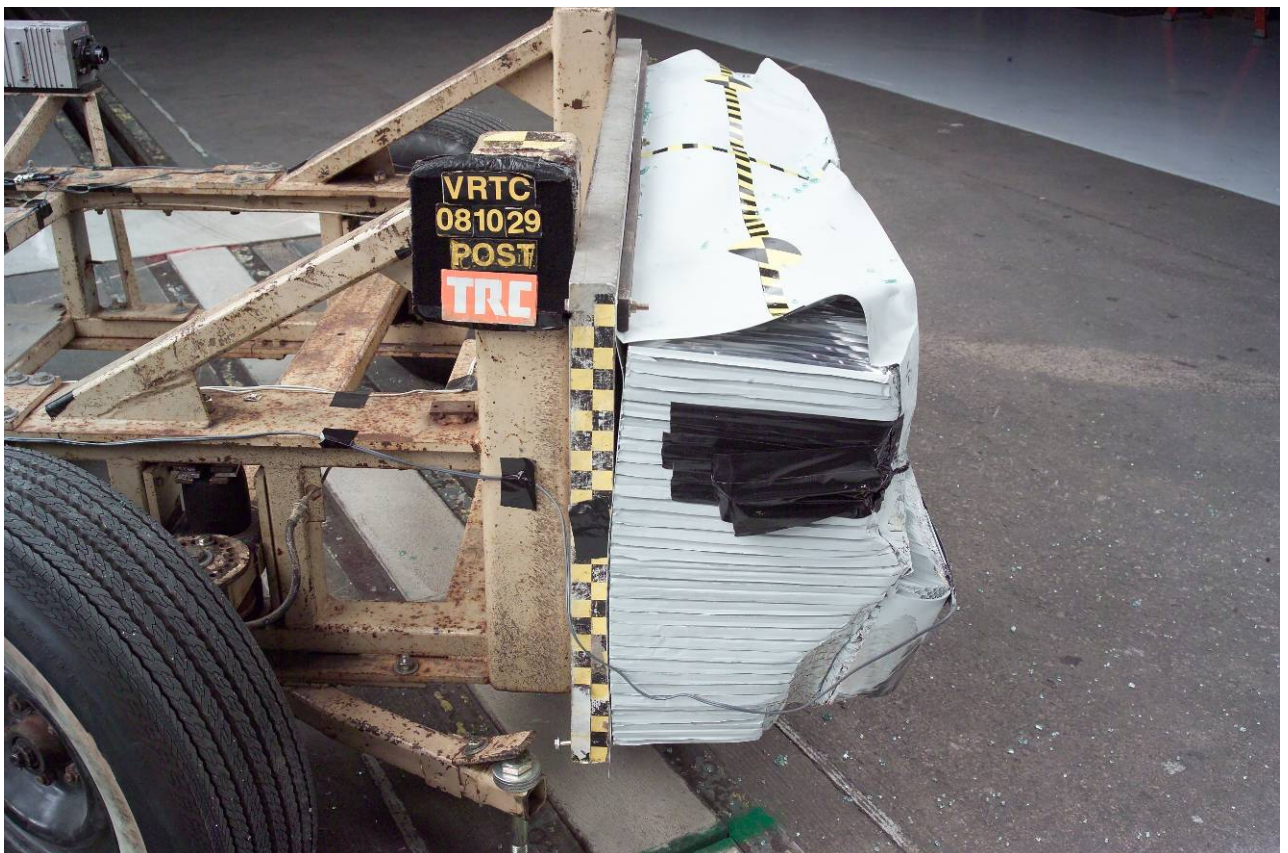


Figure A-28 Post-Test MDB Face Right Side View



Figure A-29 Pre-Test MDB Face Overhead View



Figure A-30 Post-Test MDB Face Overhead View

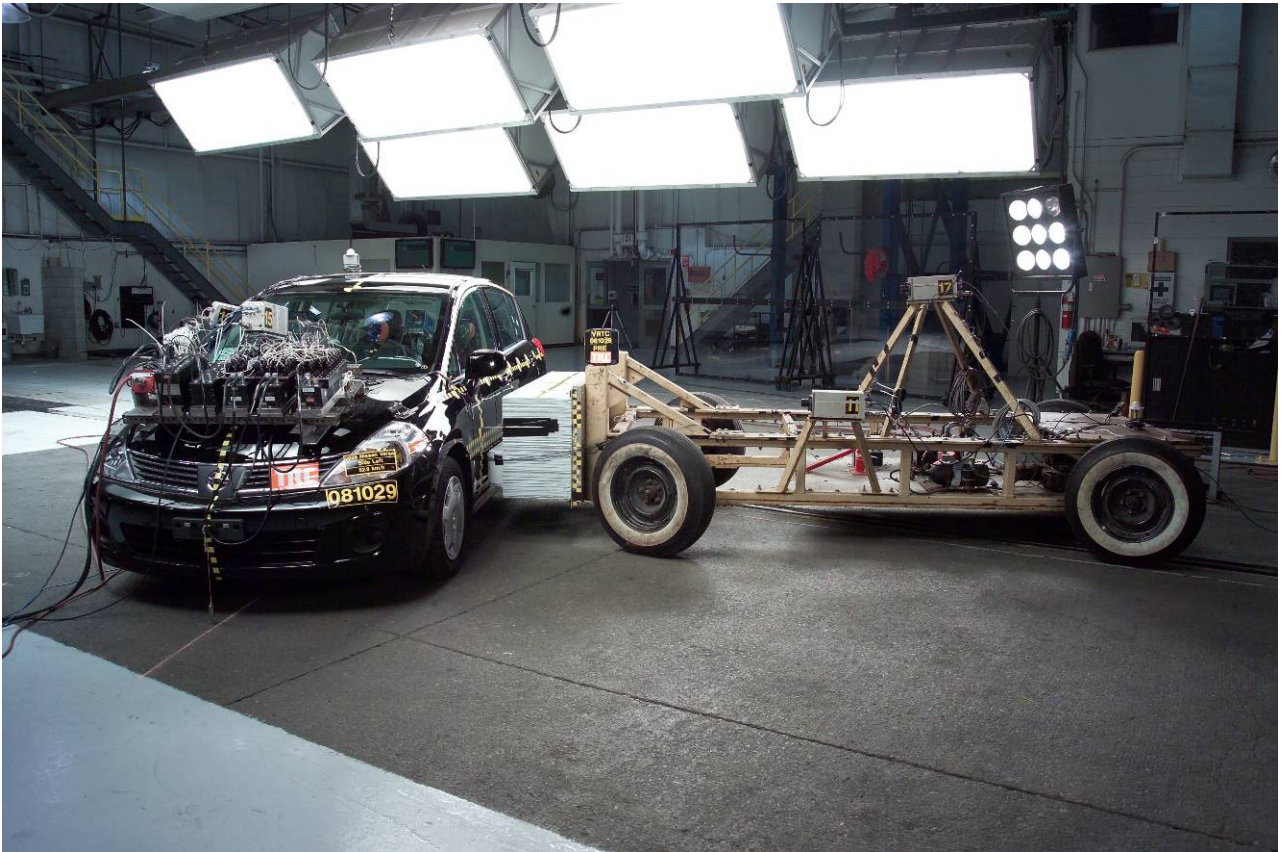


Figure A-31 Pre-Test MDB with Vehicle Left Side Overall View



Figure A-32 Post-Test MDB with Vehicle Left Side Overall View



Figure A-33 Pre-Test MDB with Vehicle Left Front View



Figure A-34 Post-Test MDB with Vehicle Left Front View



Figure A-35 Pre-Test MDB with Vehicle Right Side Overall View

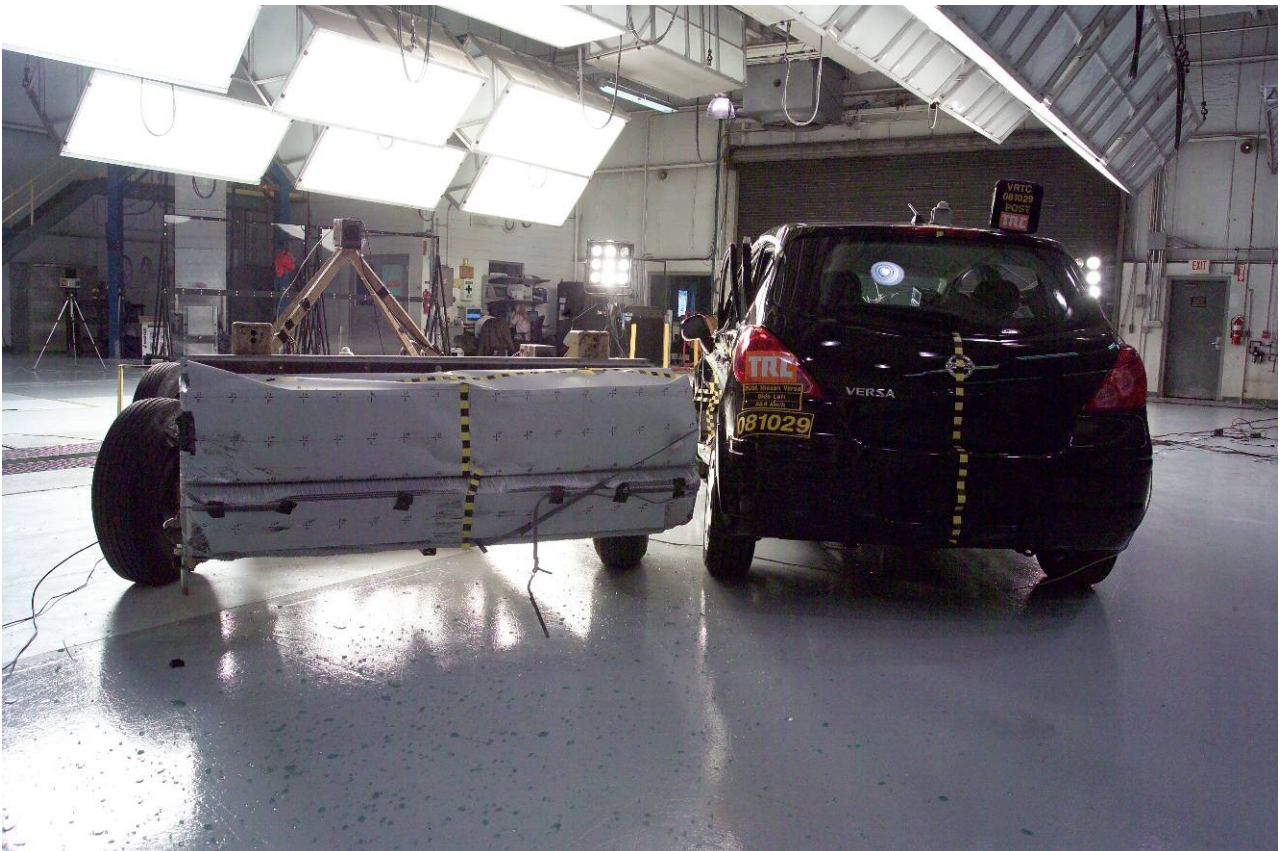


Figure A-36 Post-Test MDB with Vehicle Right Side Overall View

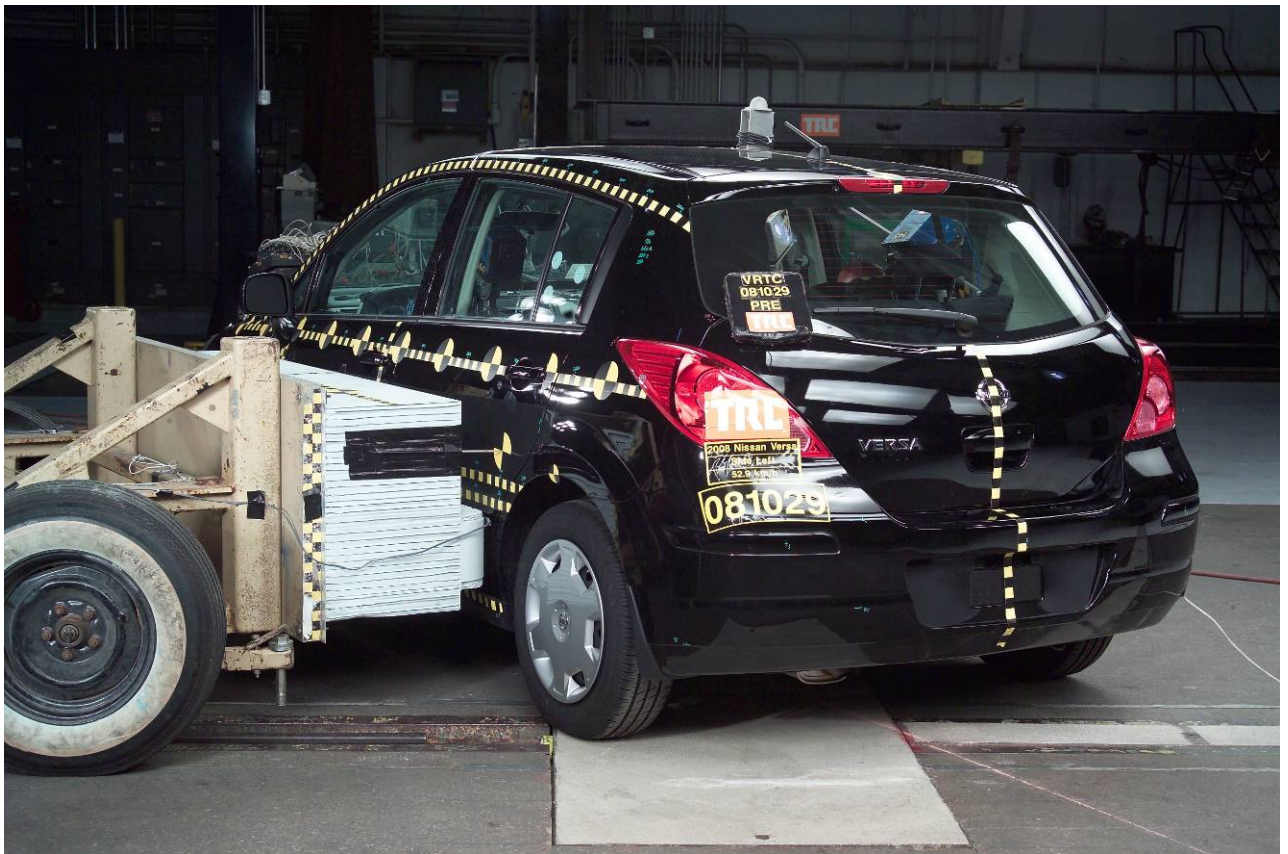


Figure A-37 Pre-Test MDB with Vehicle Left Rear View



Figure A-38 Post-Test MDB with Vehicle Left Rear View



Figure A-39 Pre-Test MDB with Vehicle Perpendicular to Struck Side View



Figure A-40 Post-Test MDB with Vehicle Perpendicular to Struck Side View



Figure A-41 Pre-Test MDB Left Side Overall View

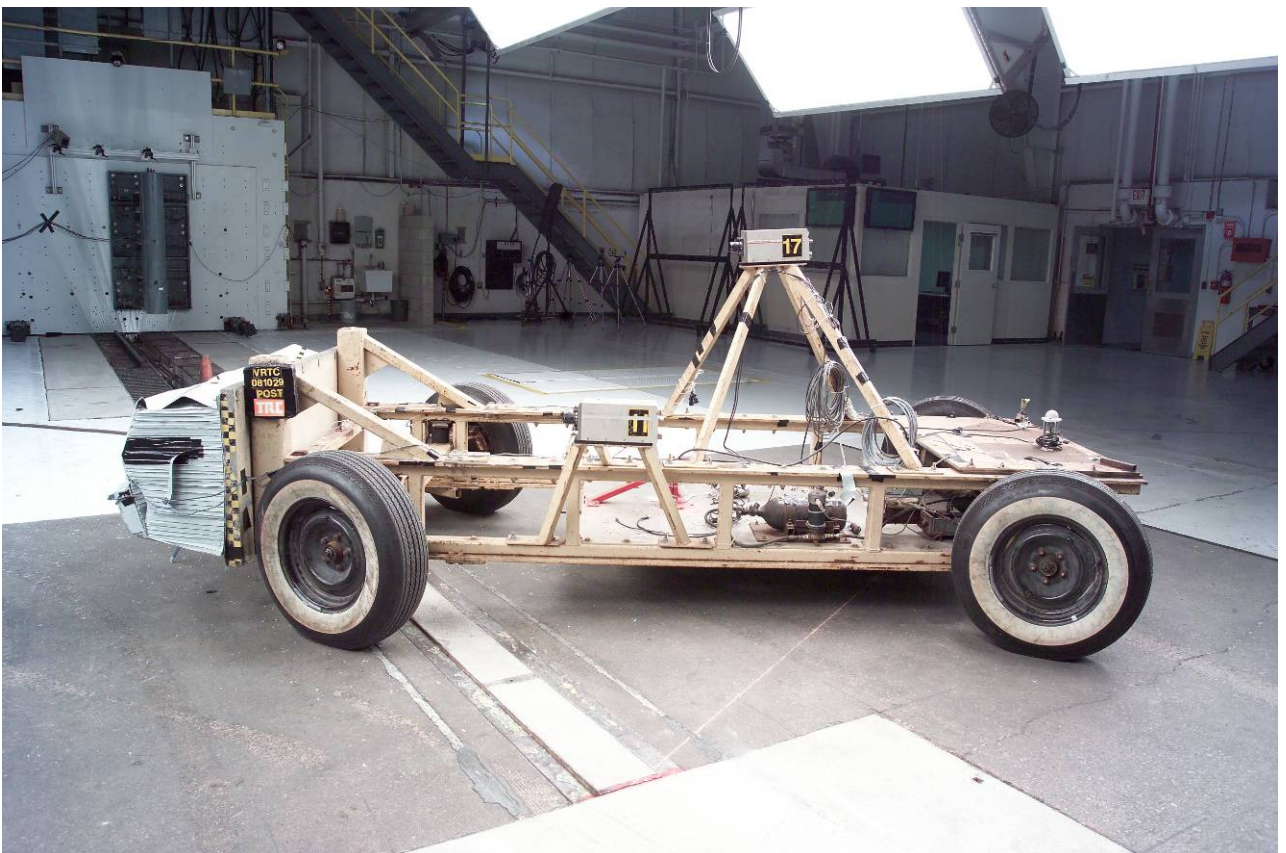


Figure A-42 Post-Test MDB Left Side Overall View



Figure A-43 Pre-Test MDB Right Side Overall View



Figure A-44 Post-Test MDB Right Side Overall View



Figure A-45 Pre-Test MDB Alignment Overhead View

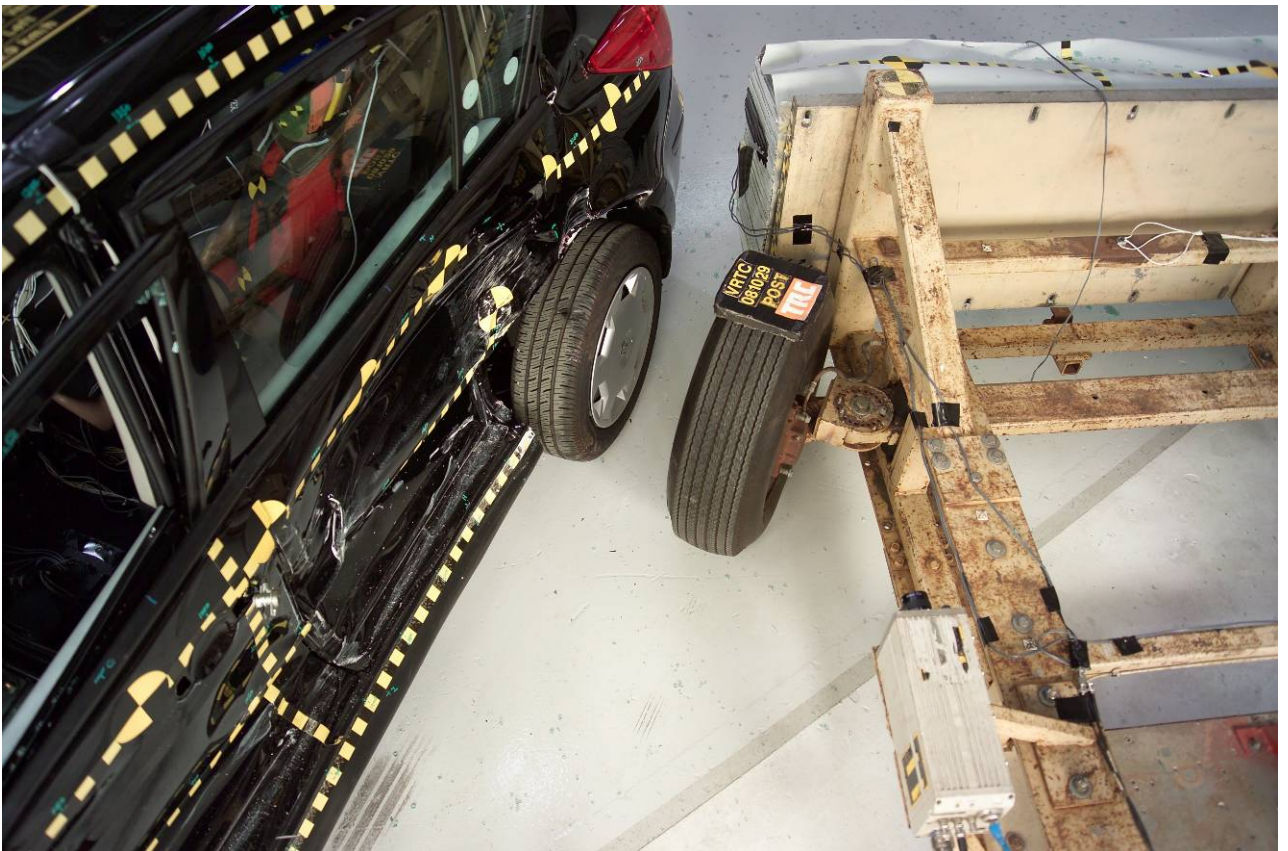


Figure A-46 Post-Test MDB Alignment Overhead View

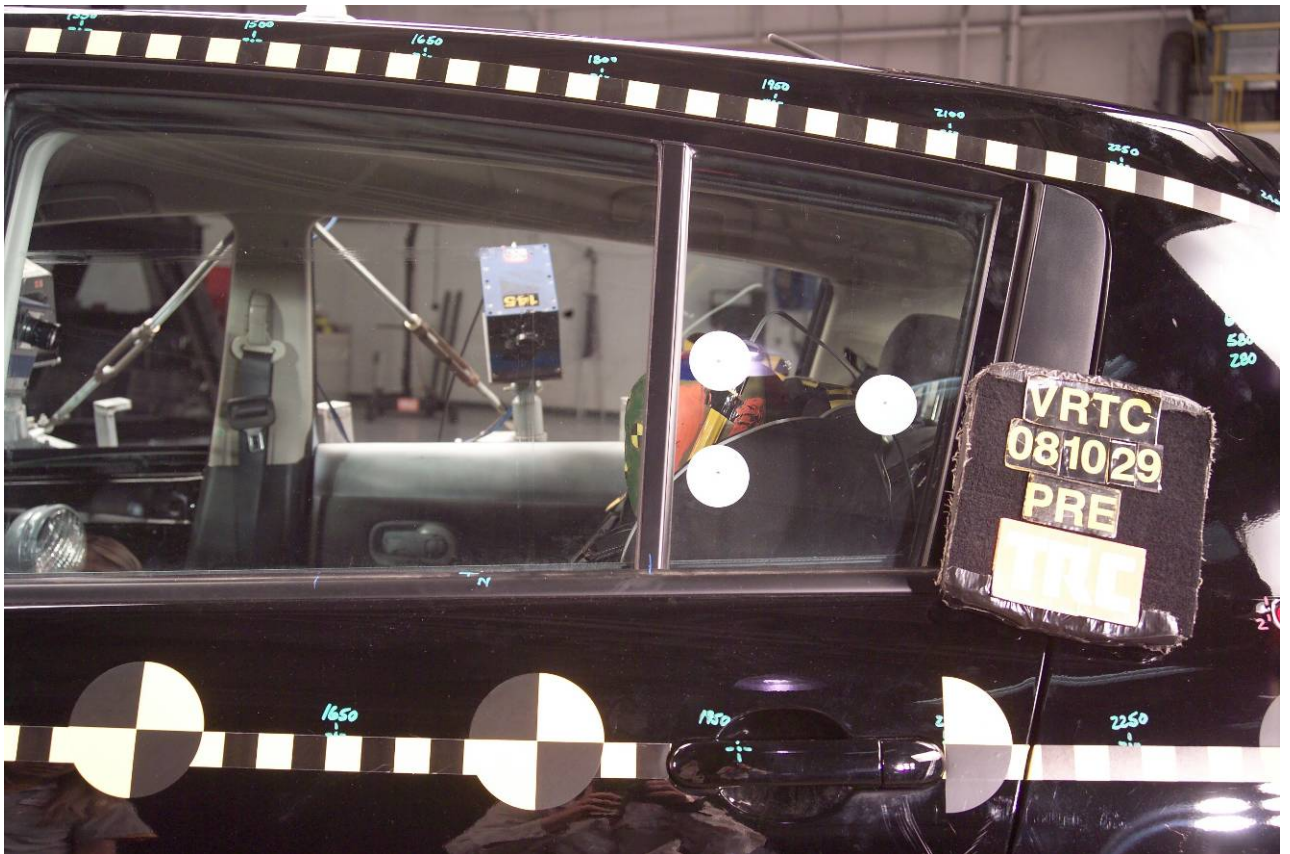


Figure A-47 Pre-Test Left Rear Dummy Side View



Figure A-48 Post-Test Left Rear Dummy Side View



Figure A-49 Pre-Test Right Side Dummy Occupant Compartment View



Figure A-50 Post-Test Right Side Dummy Occupant Compartment View



Figure A-51 Pre-Test Left Rear Dummy and Door Clearance View



Figure A-52 Post-Test Left Rear Dummy and Door Clearance View



Figure A-53 Pre-Test Left Rear Dummy Showing Belts, Chalking, and Contact Switches

Intentionally Left Blank



Figure A-54 Pre-Test Left Rear Door Panel View



Figure A-55 Post-Test Left Rear Door Panel View



Figure A-56 Post-Test Dummy Overall View

Intentionally Left Blank



Figure A-57 Pre-Test Right Rear Dummy Side View



Figure A-58 Post-Test Right Rear Dummy Side View



Figure A-59 Pre-Test Left Side Dummy Occupant Compartment View



Figure A-60 Post-Test Left Side Dummy Occupant Compartment View

Photograph Not Available

Figure A-61 Pre-Test Right Rear Dummy and Door Clearance View

Photograph Not Available

Figure A-62 Post-Test Right Rear Dummy and Door Clearance View



Figure A-63 Pre-Test Right Rear Dummy Showing Belts, Chalking, and Contact Switches

Intentionally Left Blank

Photograph Not Available

Figure A-64 Pre-Test Right Rear Door Panel View

Photograph Not Available

Figure A-65 Post-Test Right Rear Door Panel View



Figure A-66 Certification Label View



Figure A-67 Recommended Tire Pressure Label View

Photography Not Available

Figure A-68 Pre-Test Ballast View



Figure A-69 Post-Test Digital Light Trap Read-Out - View 1

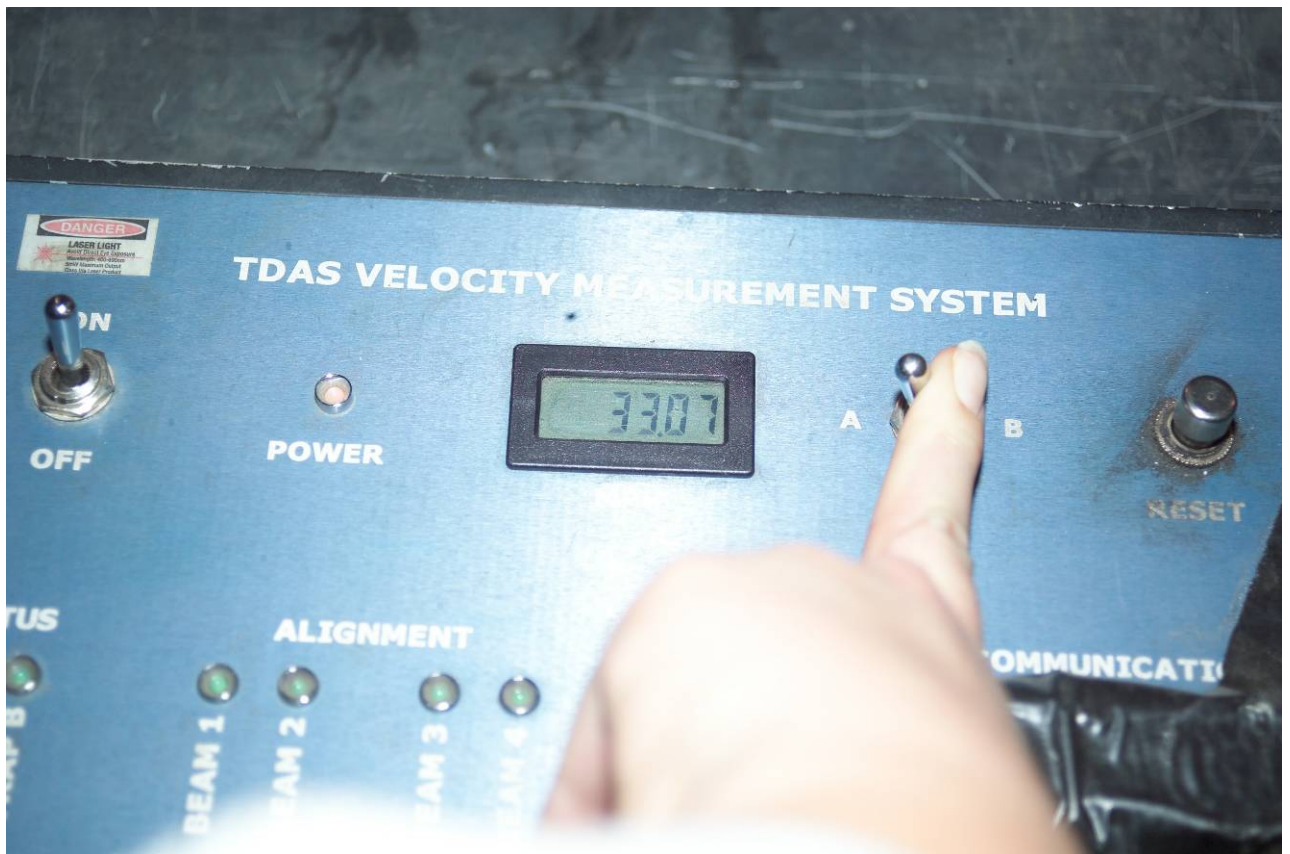


Figure A-70 Post-Test Digital Light Trap Read-Out - View 2



Figure A-71 Post-Test Digital Light Trap Read-Out - View 3

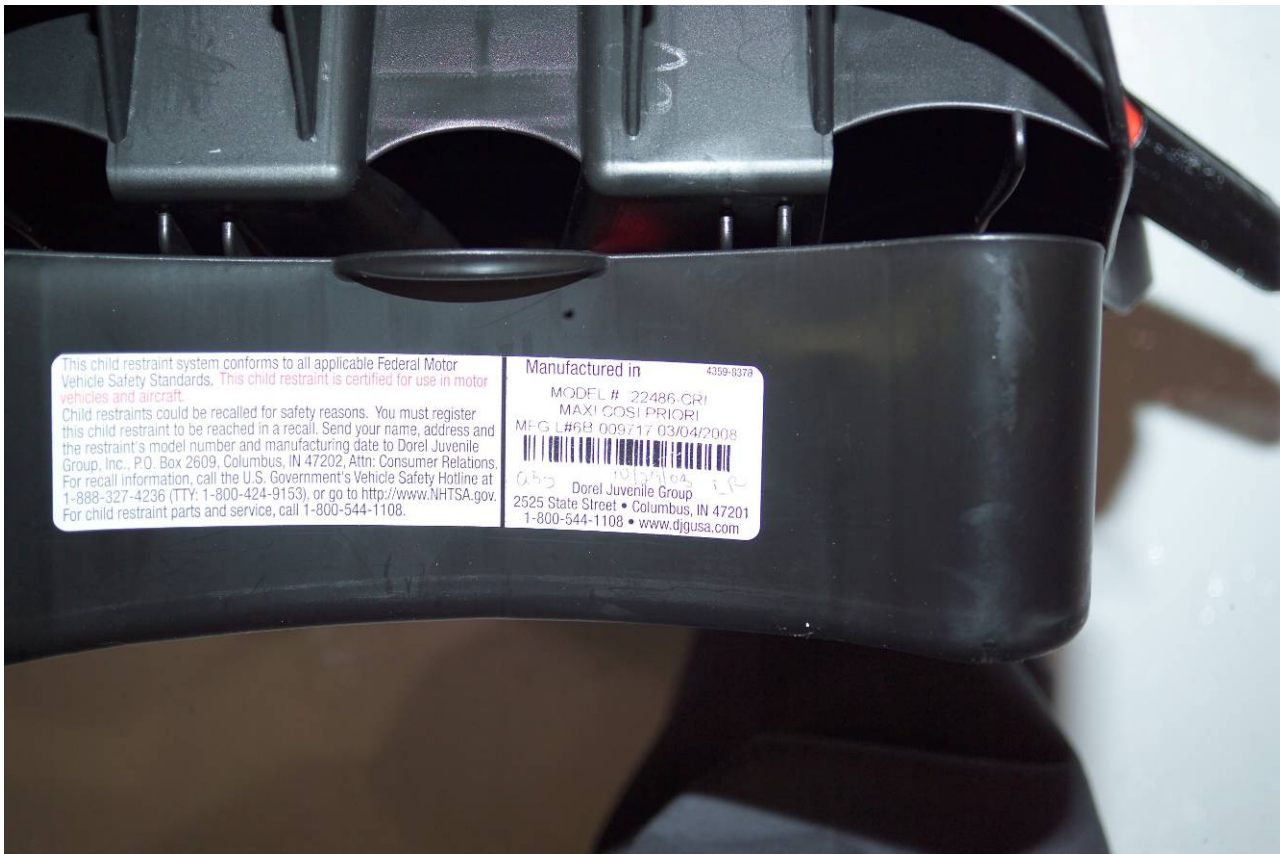


Figure A-72 Left Rear CRS Certification Label View



Figure A-73 Right Rear CRS Certification Label View



Figure A-74 Pre-Test Front View of Left Rear CRS



Figure A-75 Post-Test Front View of Left Rear CRS



Figure A-76 Pre-Test Front View of Right Rear CRS



Figure A-77 Post-Test Front View of Right Rear CRS



Figure A-78 Pre-Test Left Side View of Left Rear CRS



Figure A-79 Post-Test Left Side View of Left Rear CRS



Figure A-80 Pre-Test Left Side View of Right Rear CRS



Figure A-81 Post-Test Left Side View of Right Rear CRS



Figure A-82 Pre-Test Right Side View of Left Rear CRS



Figure A-83 Post-Test Right Side View of Left Rear CRS



Figure A-84 Pre-Test Right Side View of Right Rear CRS



Figure A-85 Post-Test Right Side View of Right Rear CRS



Figure A-86 Pre-Test Front View of Left Rear Child Dummy



Figure A-87 Post-Test Front View of Left Rear Child Dummy



Figure A-88 Post-Test Left Rear Child Dummy Head Contact - View 1



Figure A-89 Post-Test Left Rear Child Dummy Head Contact - View 2

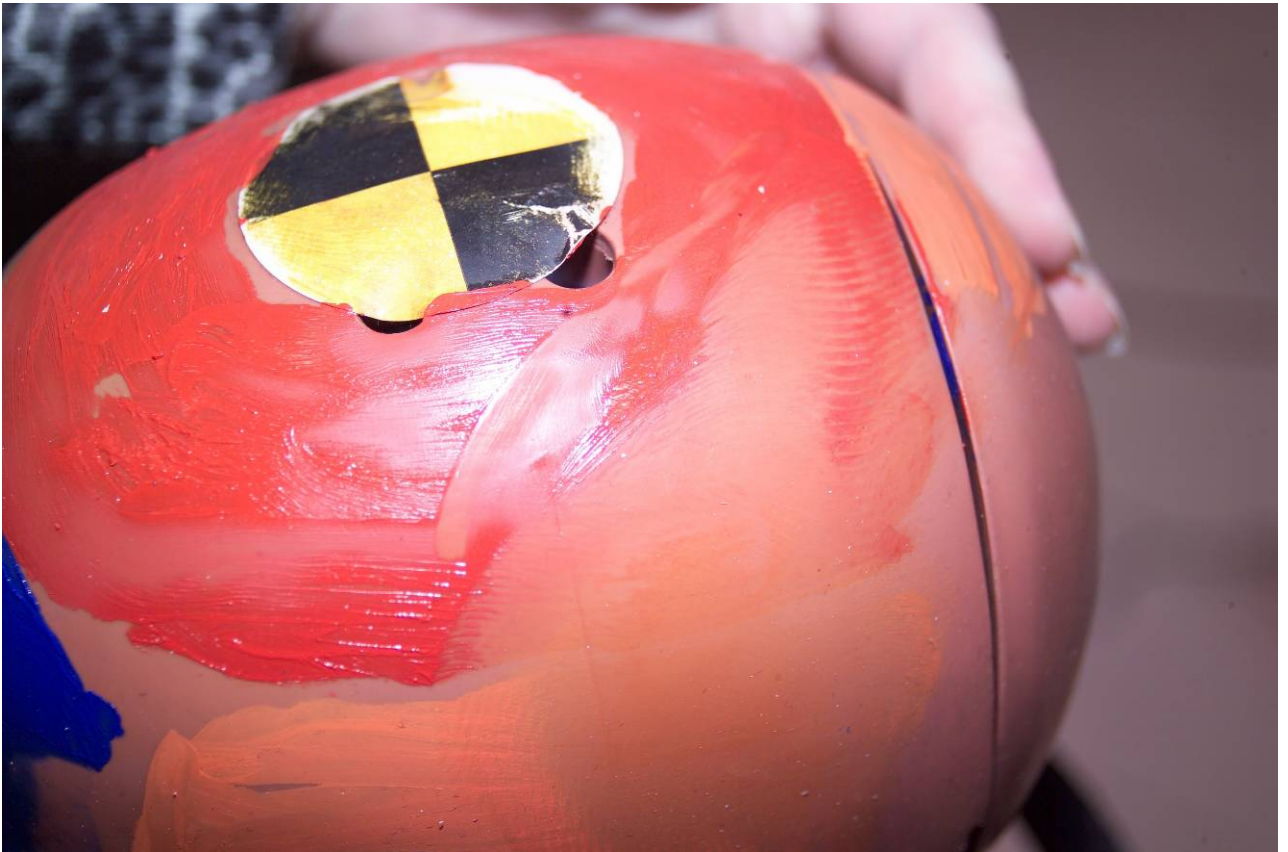


Figure A-90 Post-Test Left Rear Child Dummy Head Contact - View 3

Intentionally Left Blank



Figure A-91 Pre-Test Front View of Right Rear Child Dummy



Figure A-92 Post-Test Front View of Right Rear Child Dummy



Figure A-93 Post-Test Right Rear Child Dummy Head Contact - View 1



Figure A-94 Post-Test Right Rear Child Dummy Head Contact - View 2



Figure A-95 Post-Test Right Rear Child Dummy Head Contact - View 3

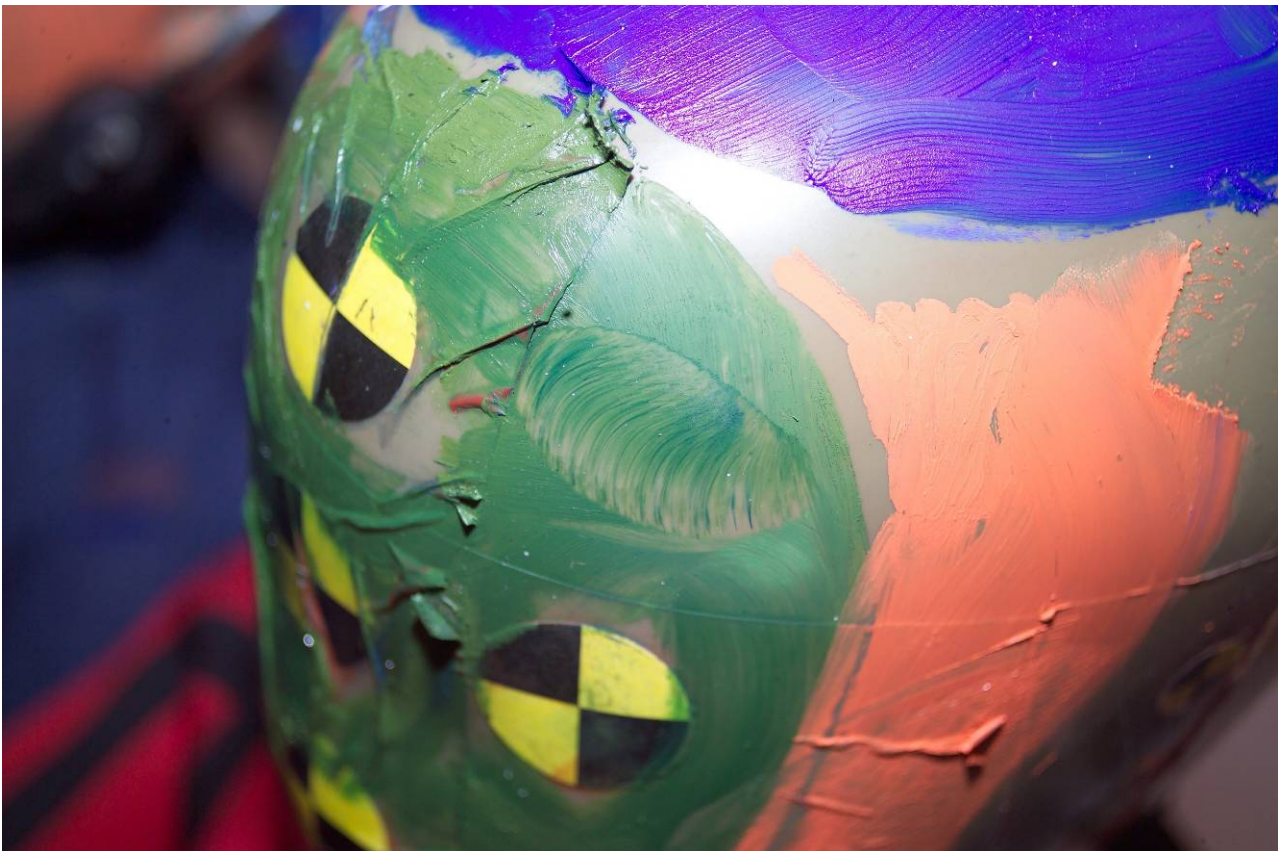


Figure A-96 Post-Test Right Rear Child Dummy Head Contact - View 4

Appendix B

Data Plots



Child Safety Research

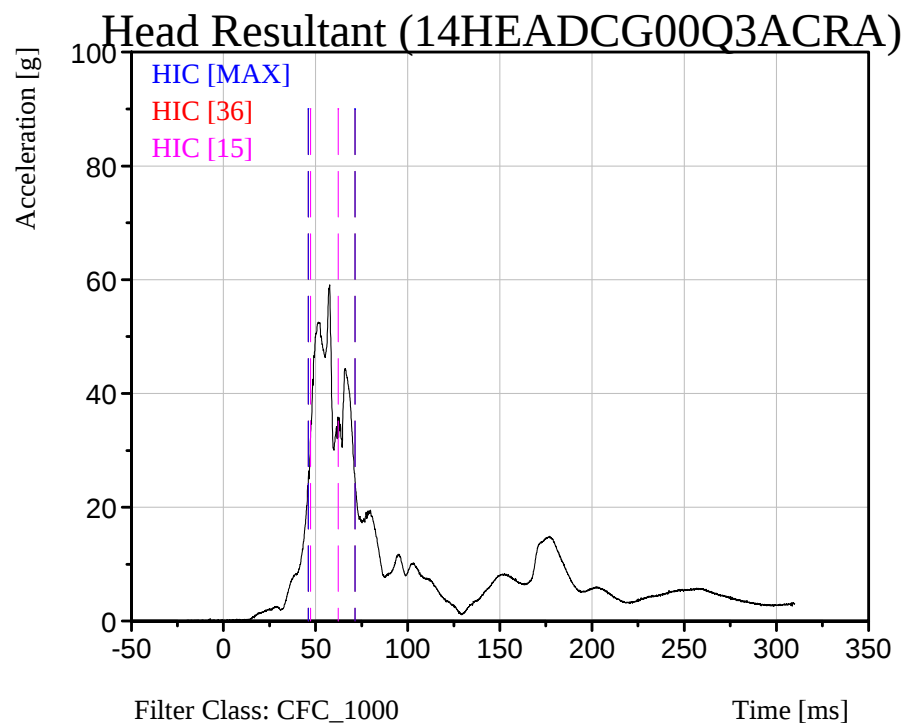
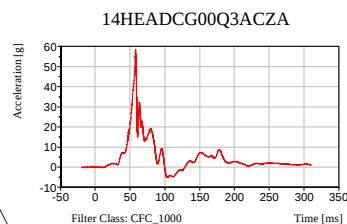
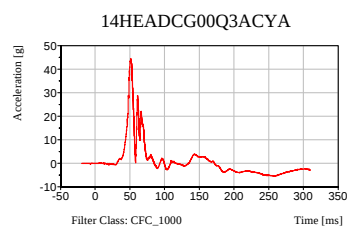
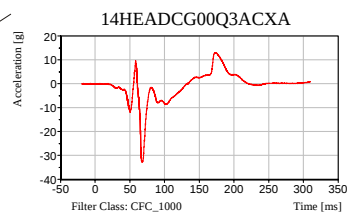
Head Injury Criterion (HIC)

Date: 10/29/2008
Time: 14:39

Customer: VRTC

TRC Inc. Test Lab: CTF

Test Number: 081029-1



	<u>T1</u> (Begin)	<u>T2</u> (End)	<u>Avg. g T1 to T2</u>
HIC [Max.] = 273.08	46.16 ms	71.44 ms	41.01 g
HIC [36] = 273.08	46.16 ms	71.44 ms	41.01 g
HIC [15] = 203.01	47.28 ms	62.32 ms	44.82 g

Dummy:Q3
Seating Position:
Left Rear Passenger

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

B-2

081029



Child Safety Research

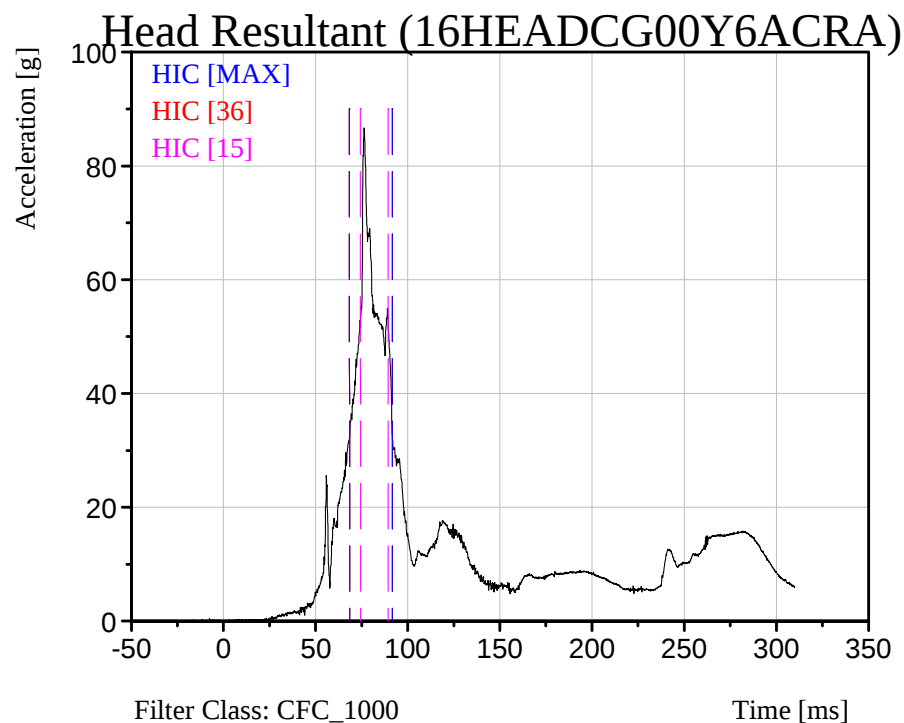
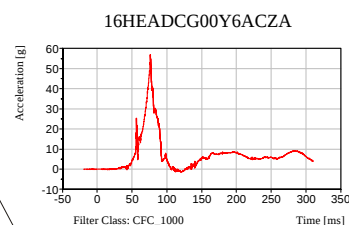
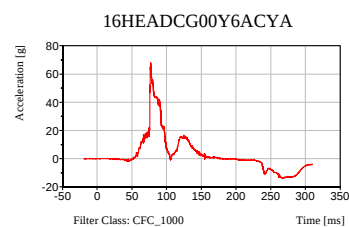
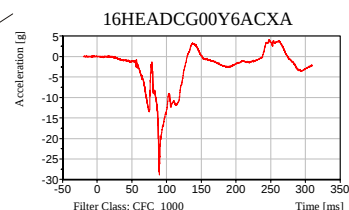
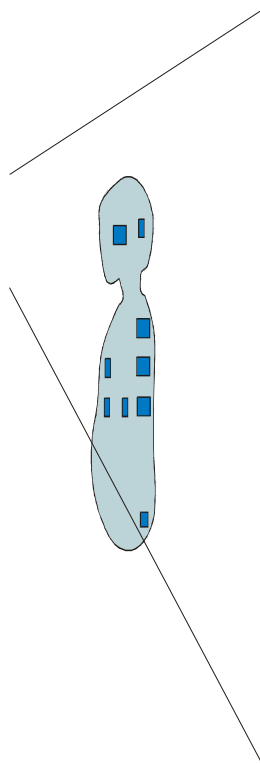
Head Injury Criterion (HIC)

Date: 10/29/2008
Time: 14:39

Customer: VRTC

TRC Inc. Test Lab: CTF

Test Number: 081029-1



	<u>T1</u> (Begin)	<u>T2</u> (End)	<u>Avg. g T1 to T2</u>
HIC [Max.] = 491.79	68.40 ms	91.68 ms	53.62 g
HIC [36] = 491.79	68.40 ms	91.68 ms	53.62 g
HIC [15] = 413.97	74.40 ms	89.44 ms	59.65 g

Dummy: HIII 3 Year Old
Seating Position:
Right Rear Passenger

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

B-3

081029



Child Safety Research
Left Rear Head X-Axis Acceleration

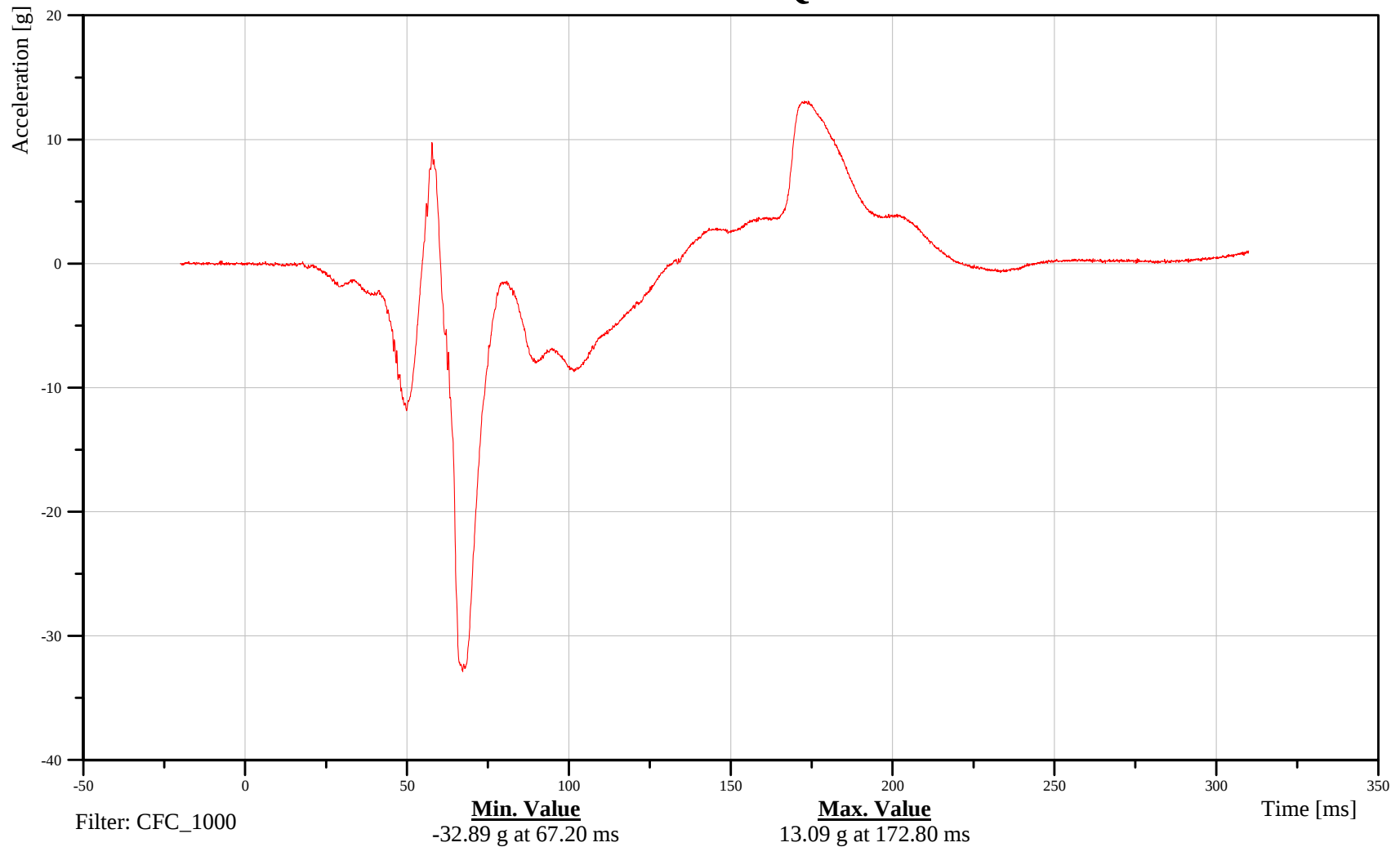
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14HEADCG00Q3ACXA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-4

081029



Child Safety Research
Left Rear Head Y-Axis Acceleration

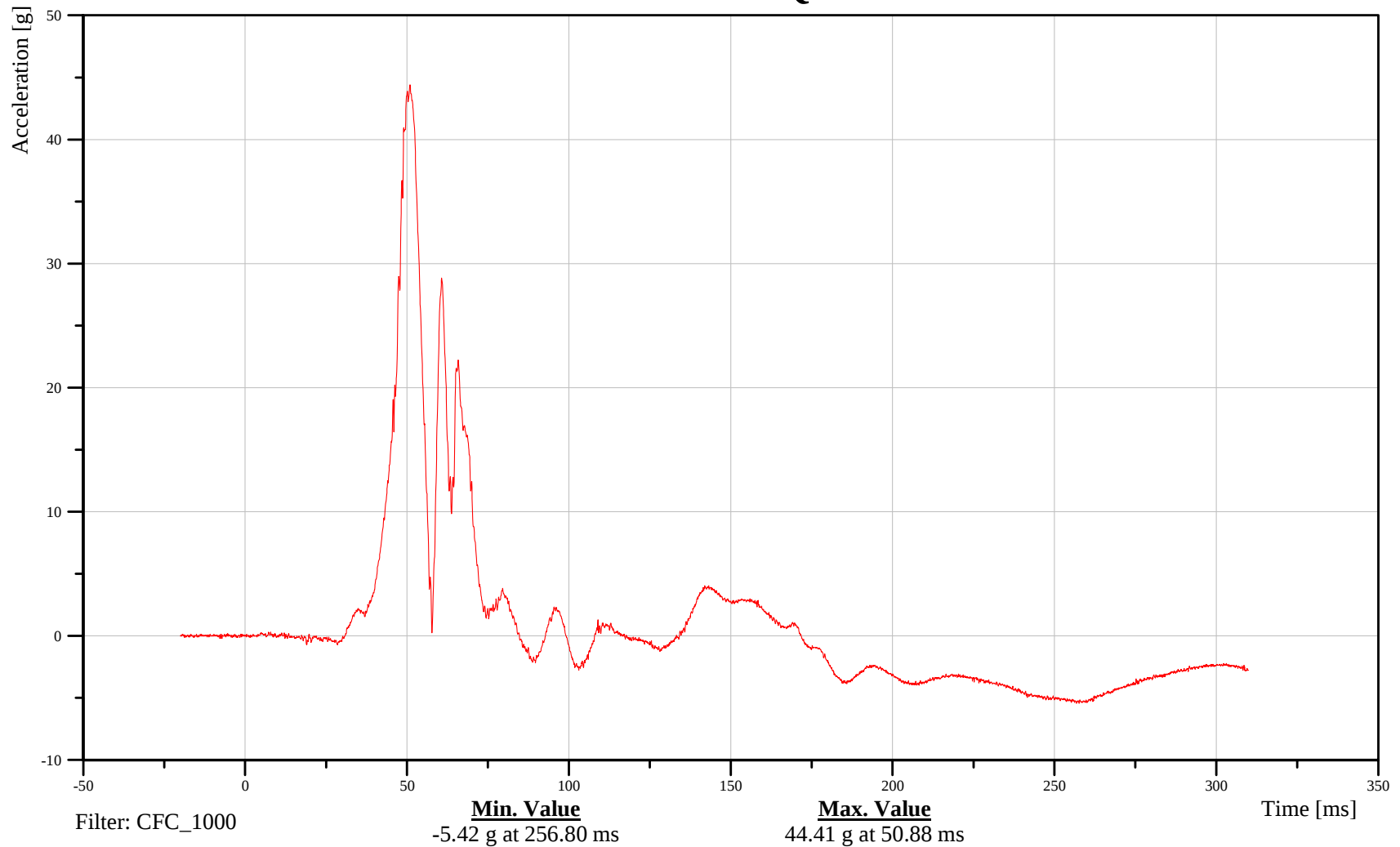
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14HEADCG00Q3ACYA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-5

081029



Child Safety Research
Left Rear Head Z-Axis Acceleration

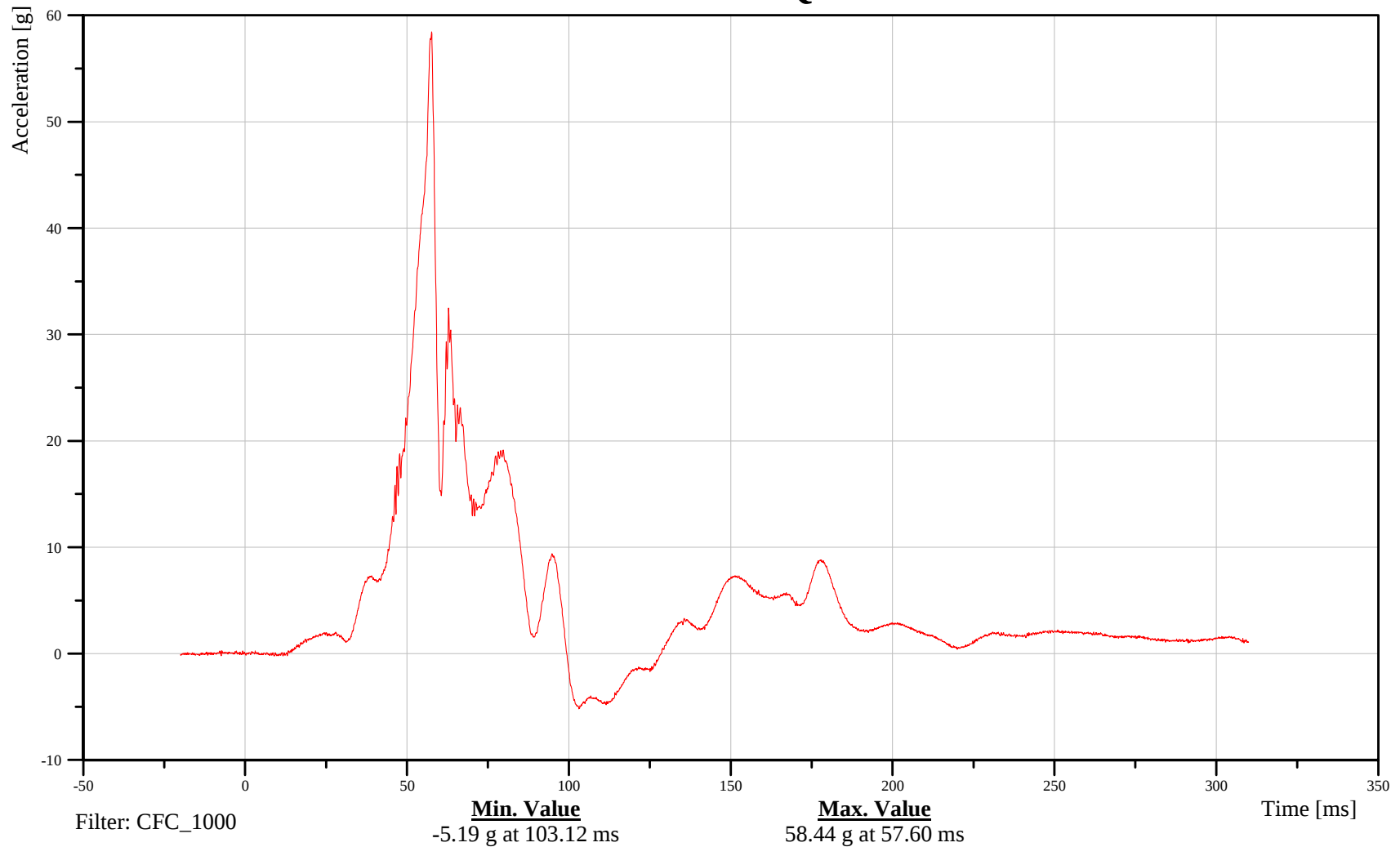
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14HEADCG00Q3ACZA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-6

081029



Child Safety Research
Left Rear Head Resultant Acceleration

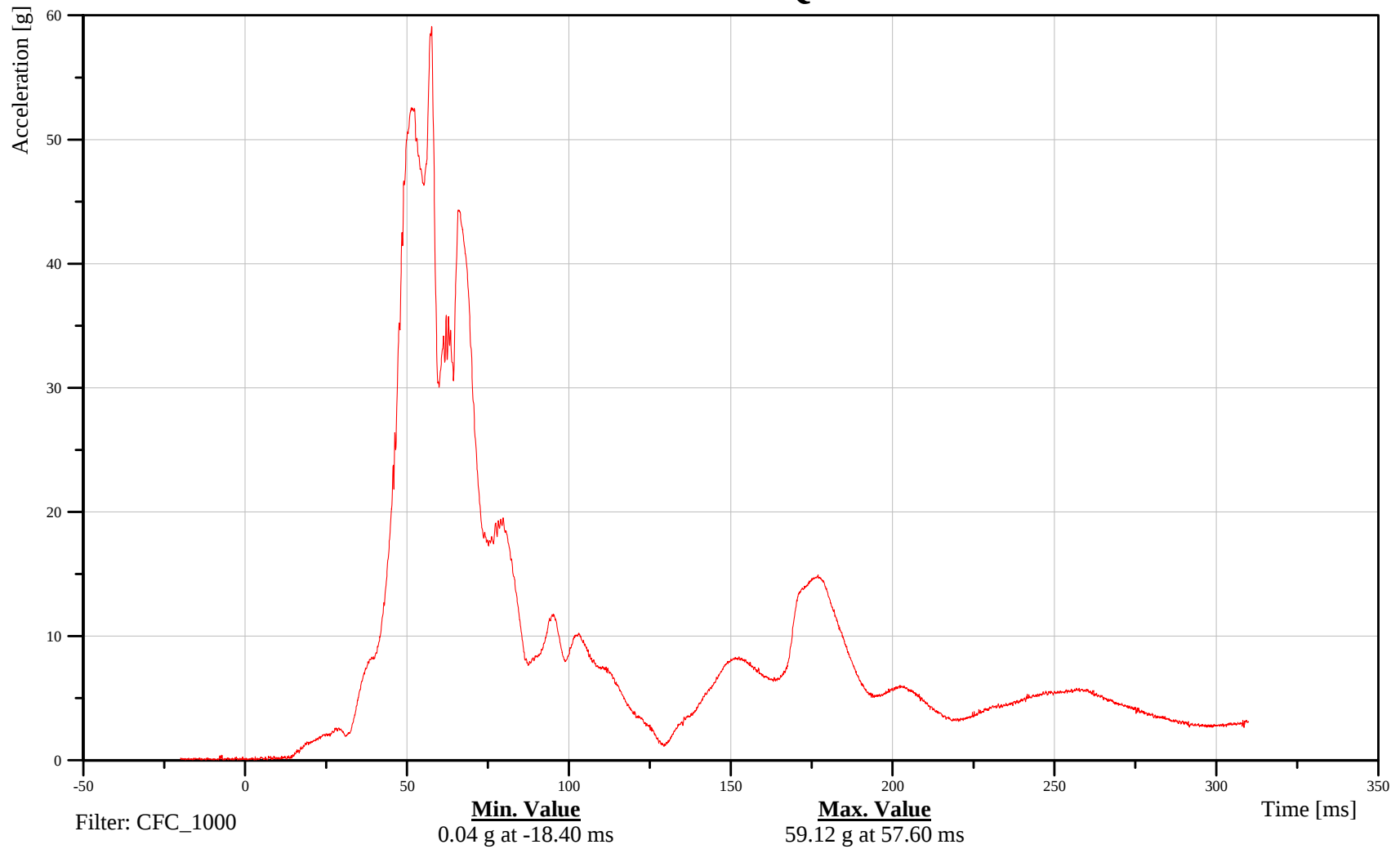
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14HEADCG00Q3ACRA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-7

081029



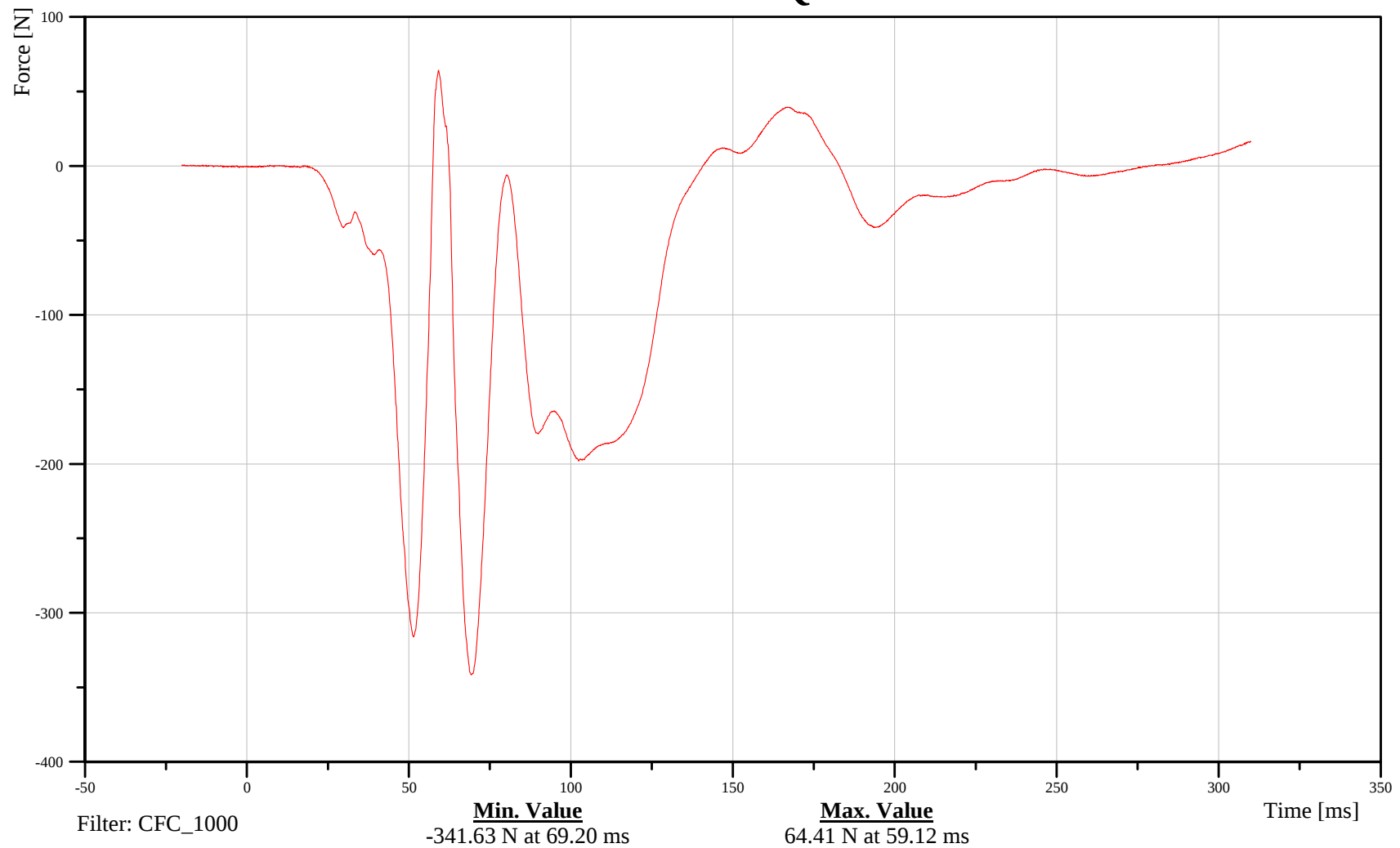
Child Safety Research
Left Rear Upper Neck X-Axis Force

Date: 10/29/2008
Time: 14:39

Customer: VRTC

14NECKUP00Q3FOXA

TRC Inc. Test Lab: CTF
Test Number: 081029-1



B-8

081029



Child Safety Research
Left Rear Upper Neck Y-Axis Force

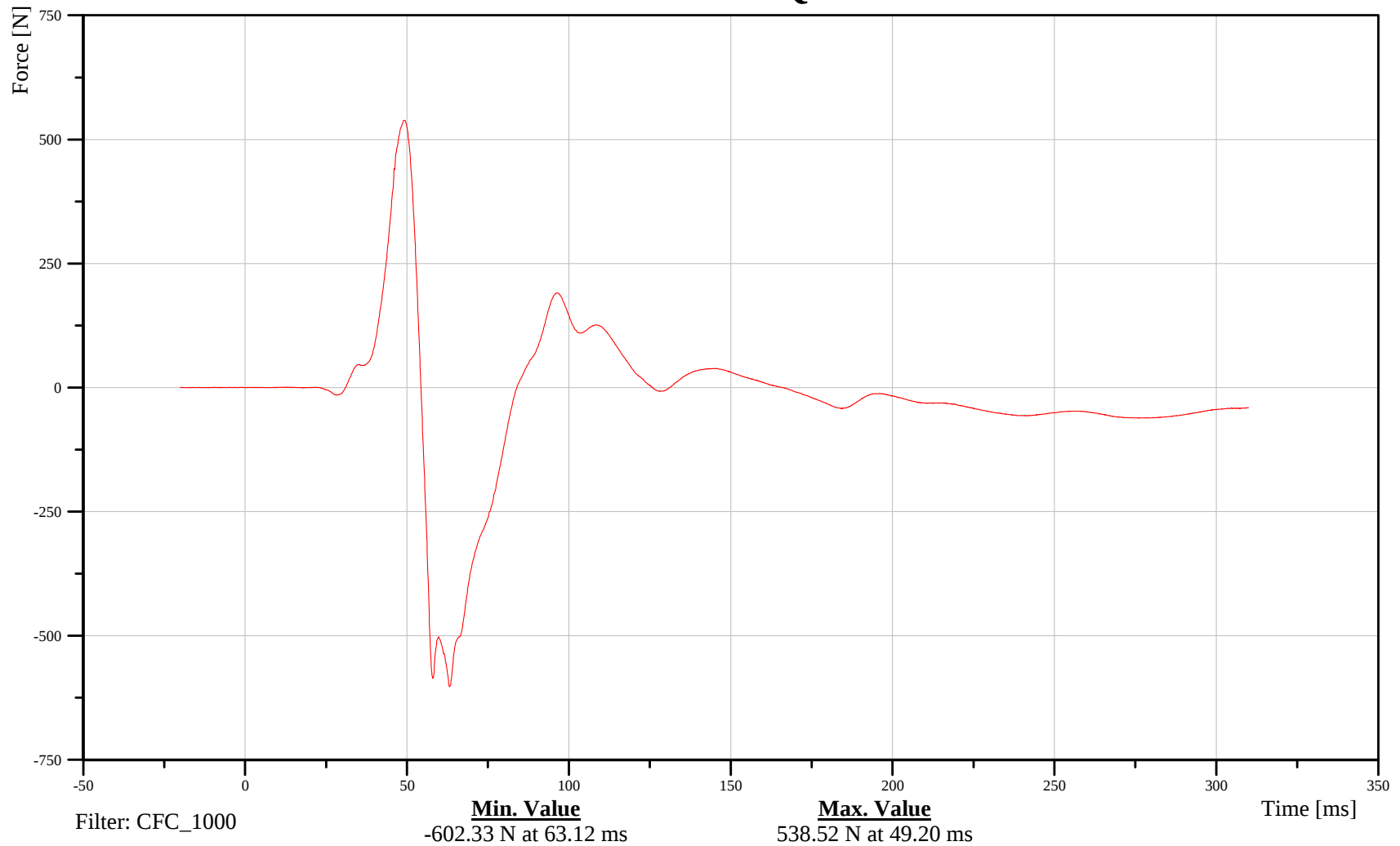
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14NECKUP00Q3FOYA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-9

081029



Child Safety Research
Left Rear Upper Neck Z-Axis Force

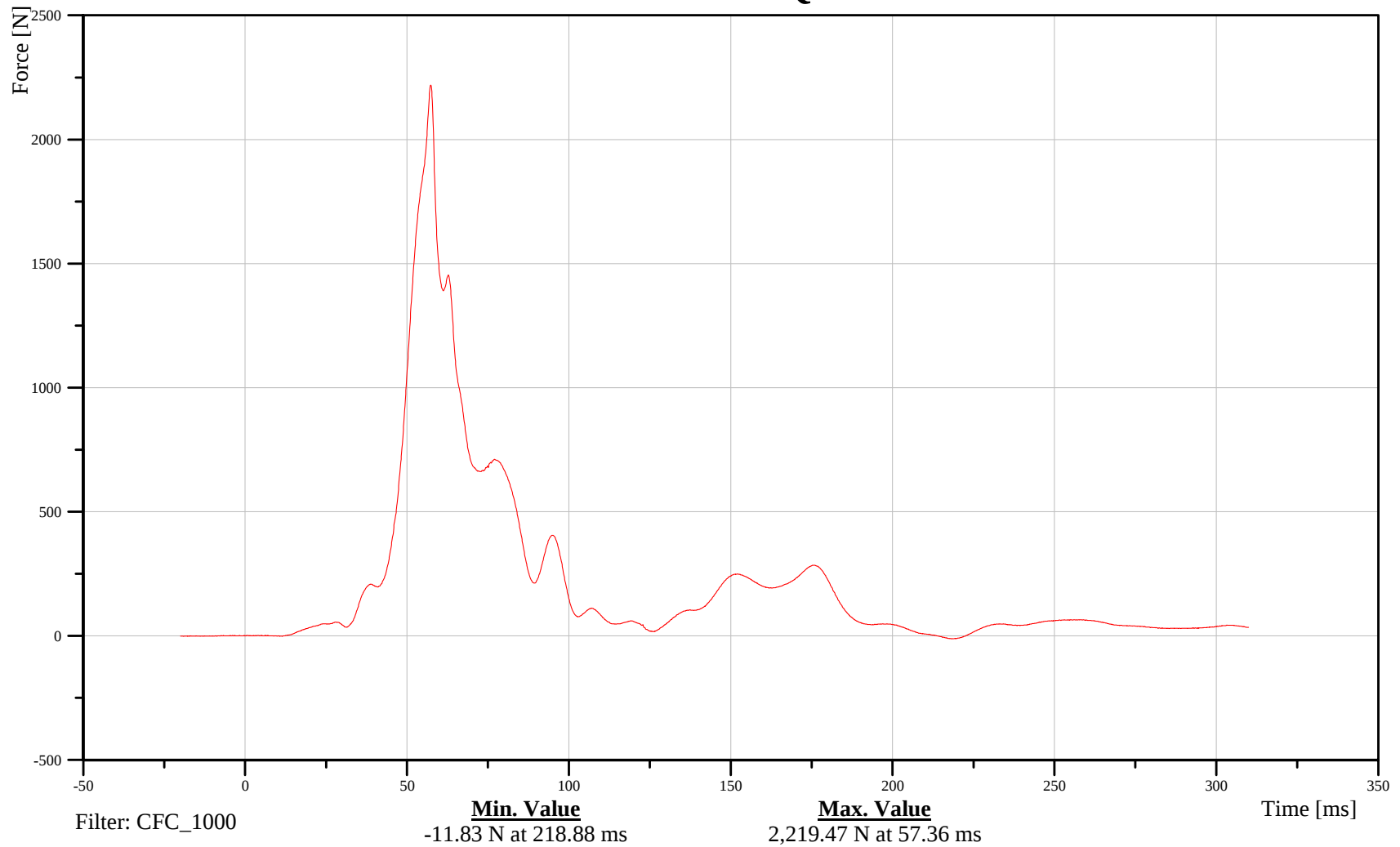
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14NECKUP00Q3FOZA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-10

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

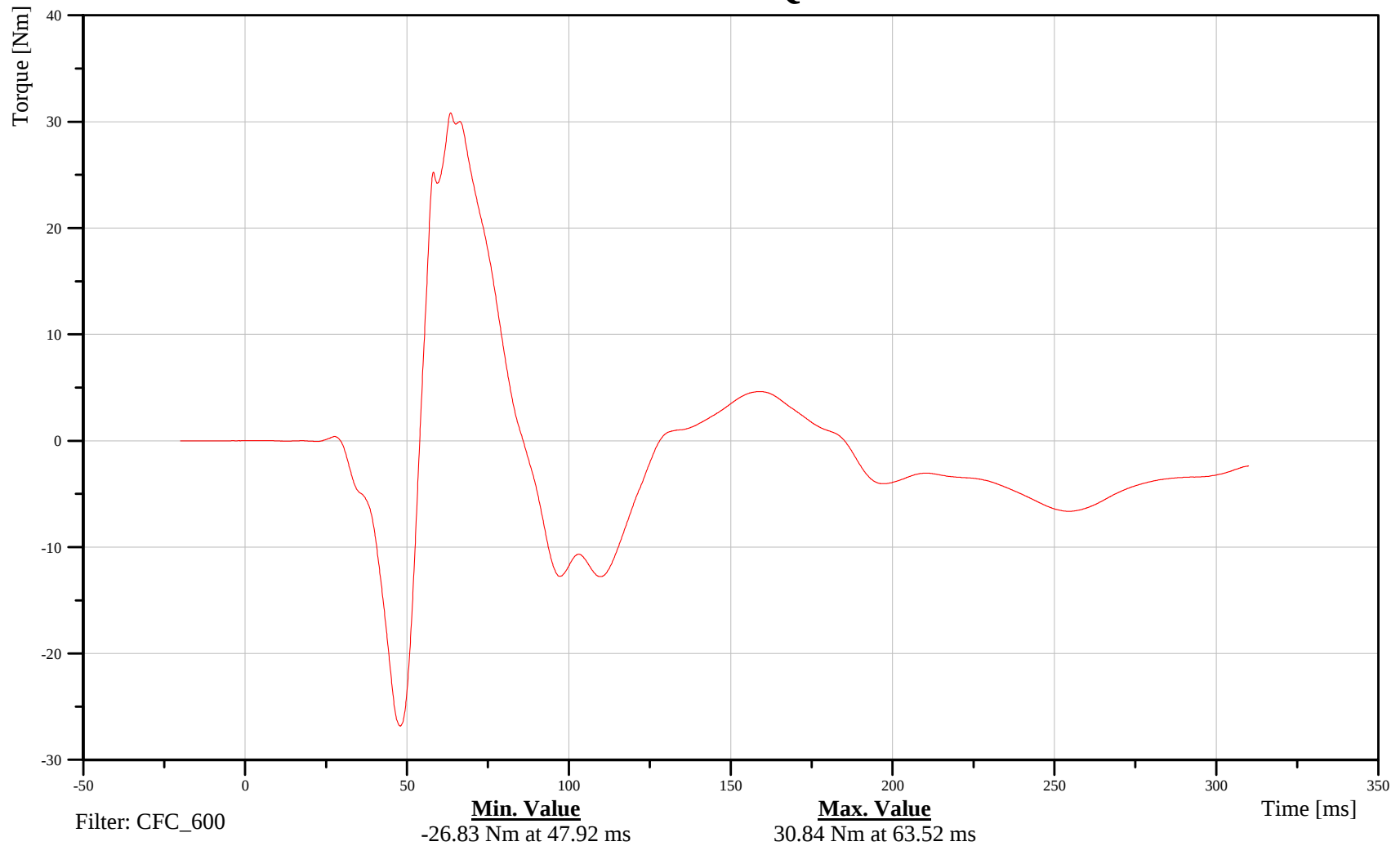
Left Rear Upper Neck Moment About X Axis

Customer: VRTC

14NECKUP00Q3MOXB

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-11

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

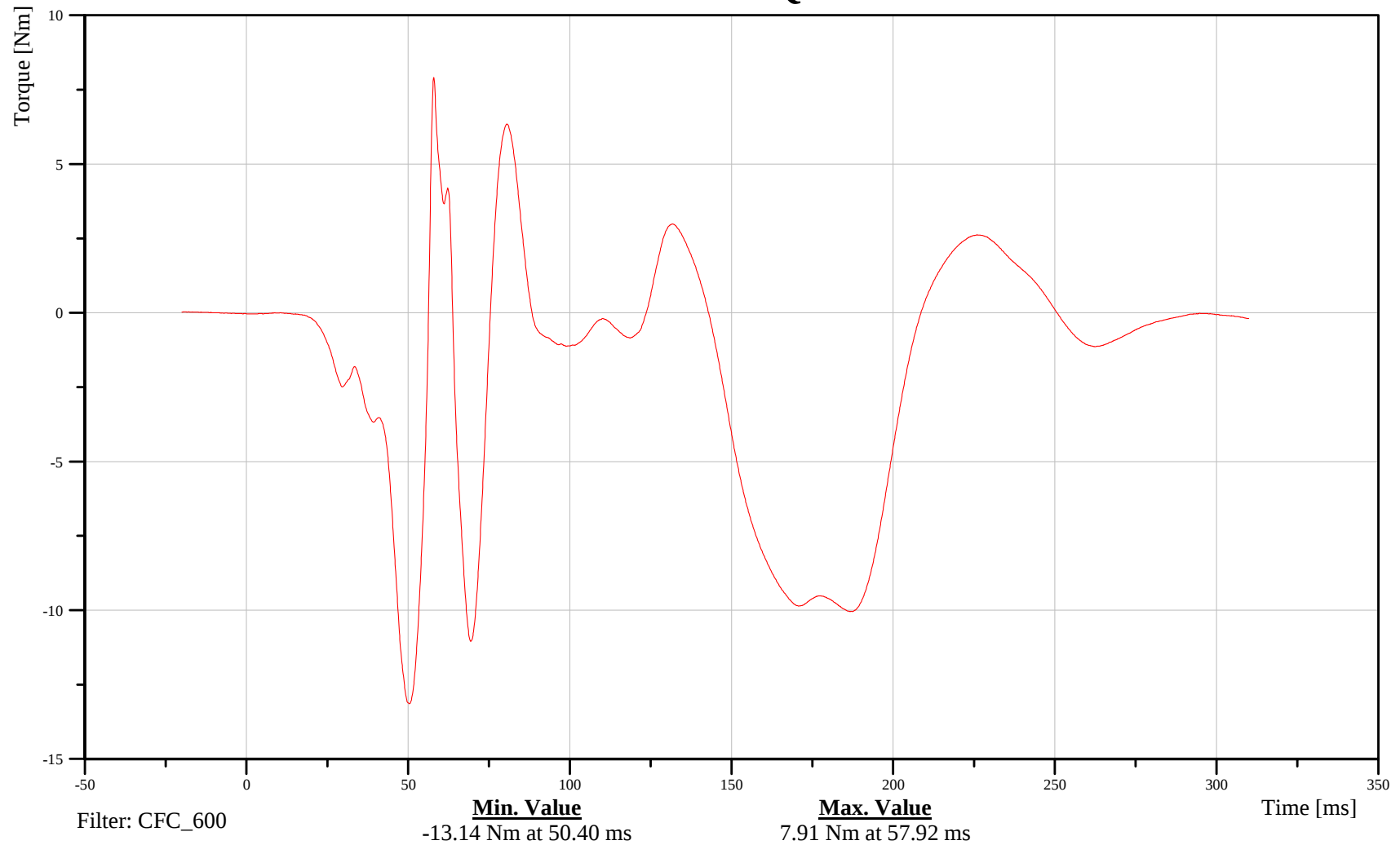
Left Rear Upper Neck Moment About Y Axis

Customer: VRTC

14NECKUP00Q3MOYB

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-12

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

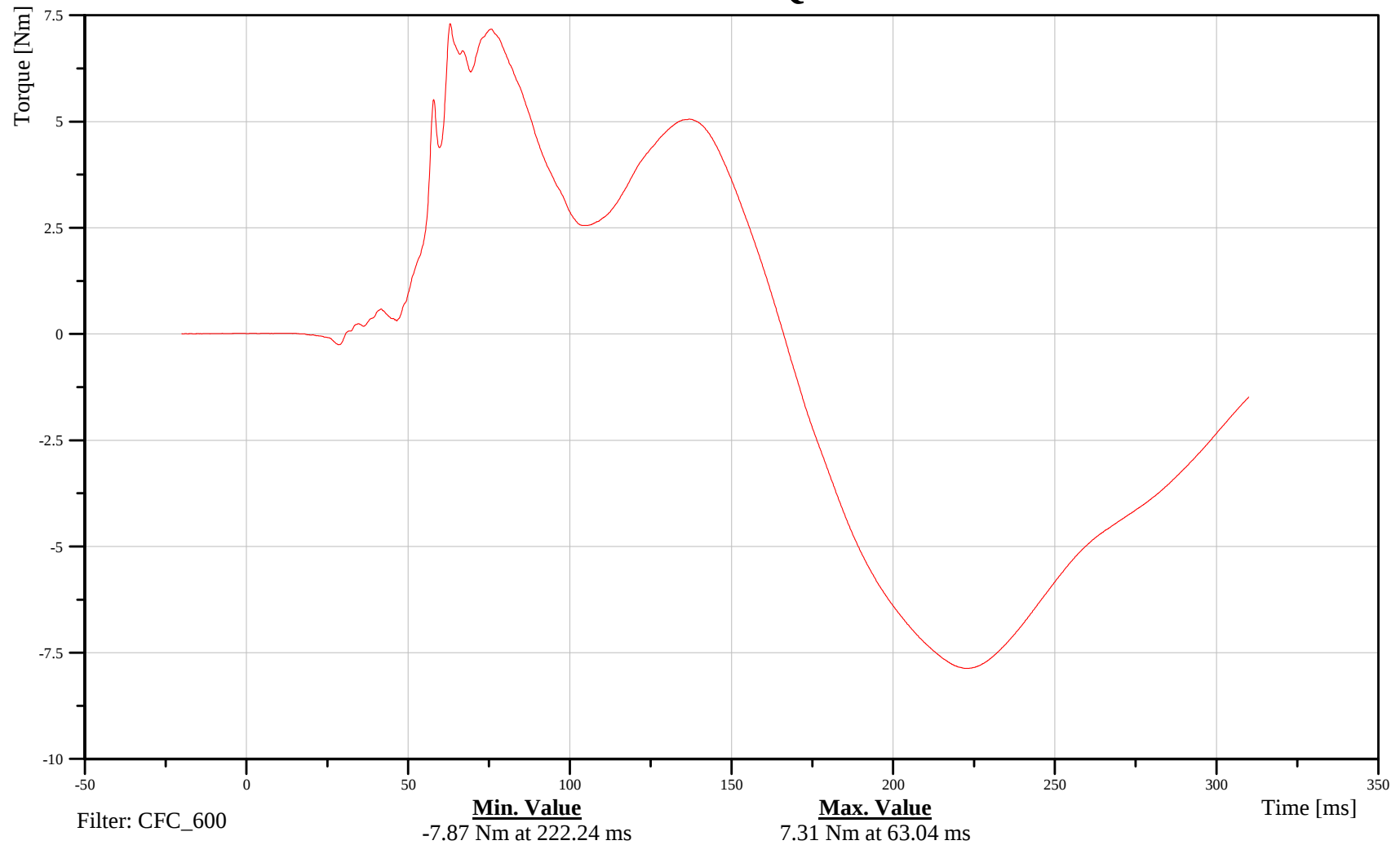
Left Rear Upper Neck Moment About Z Axis

Customer: VRTC

14NECKUP00Q3MOZB

TRC Inc. Test Lab: CTF

Test Number: 081029-1





Child Safety Research
Left Rear Shoulder Y-Axis Displacement

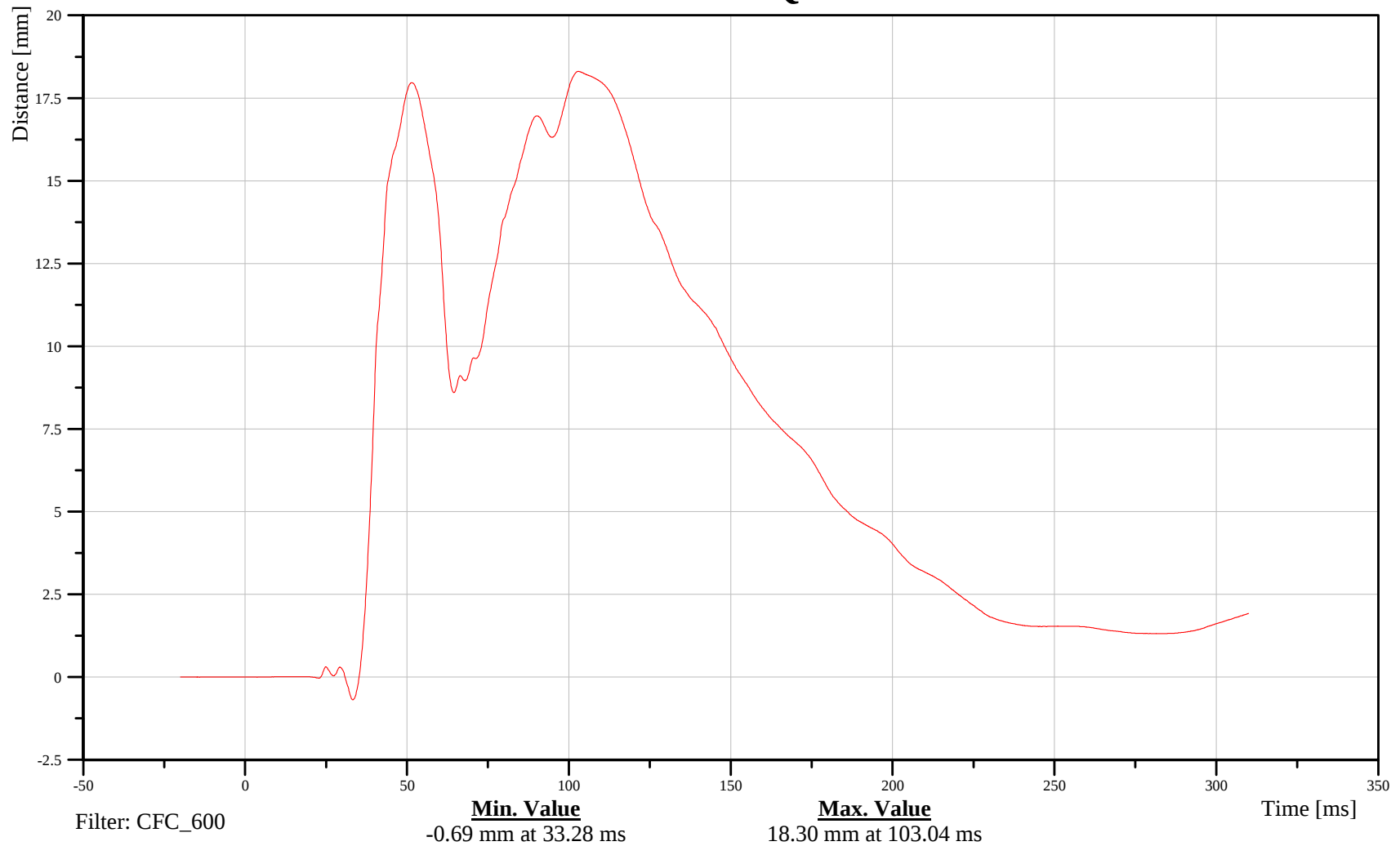
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14SHLD0000Q3DSYB

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-14

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

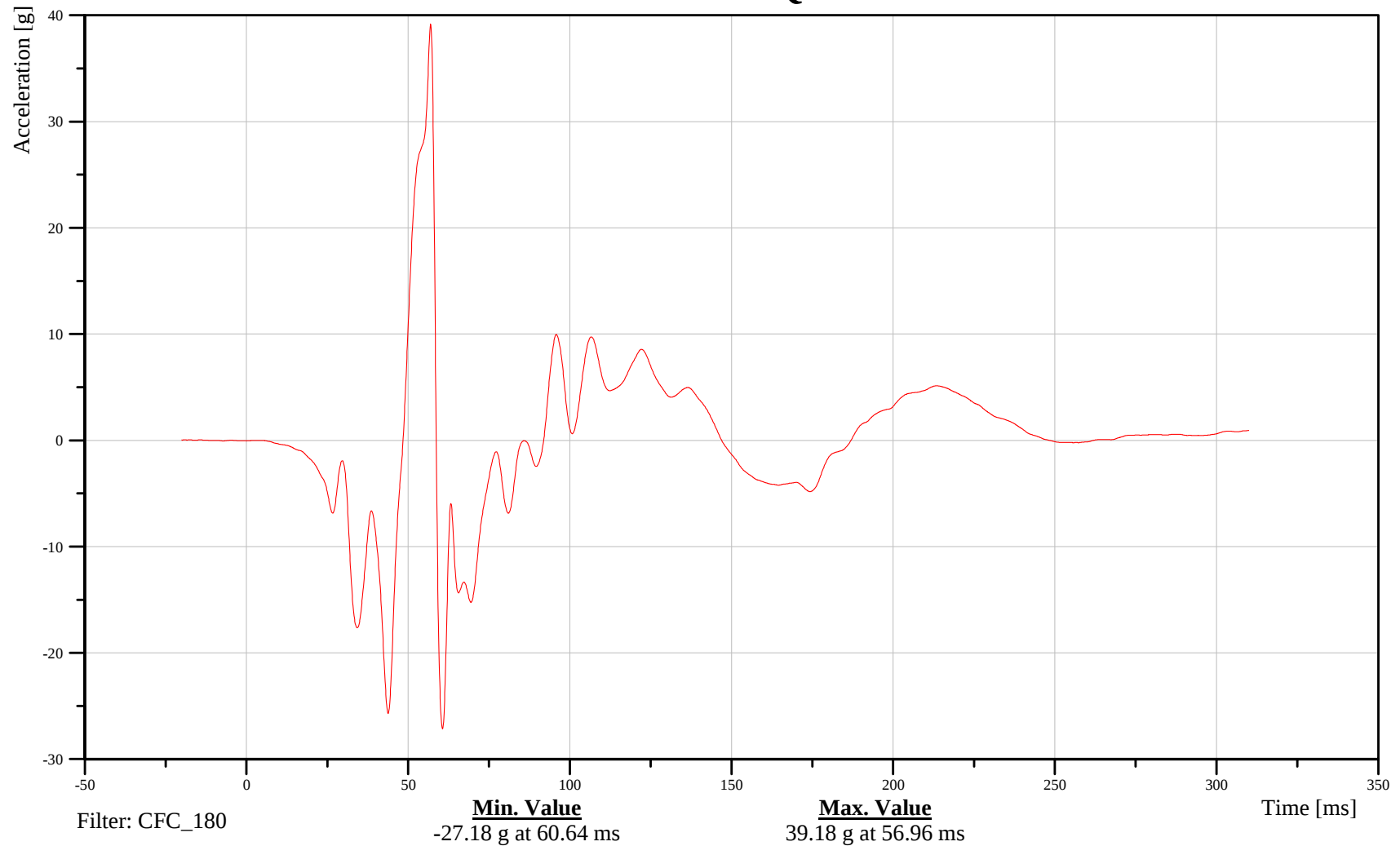
Left Rear Upper Chest X-Axis Acceleration

Customer: VRTC

14CHSTUP00Q3ACXC

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-15

081029



Child Safety Research
Left Rear Upper Chest Y-Axis Acceleration

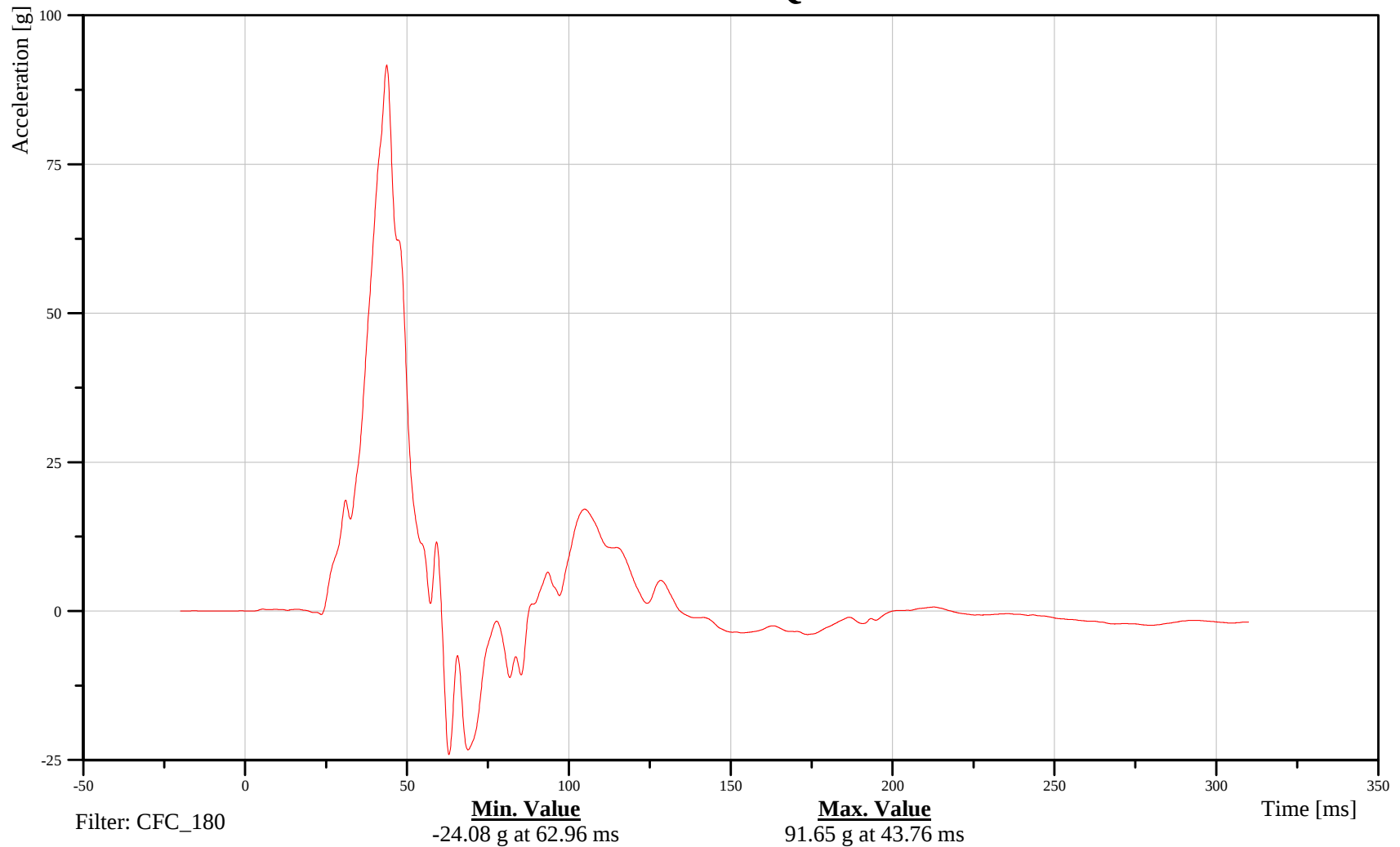
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14CHSTUP00Q3ACYC

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-16

081029



Child Safety Research
Left Rear Upper Chest Z-Axis Acceleration

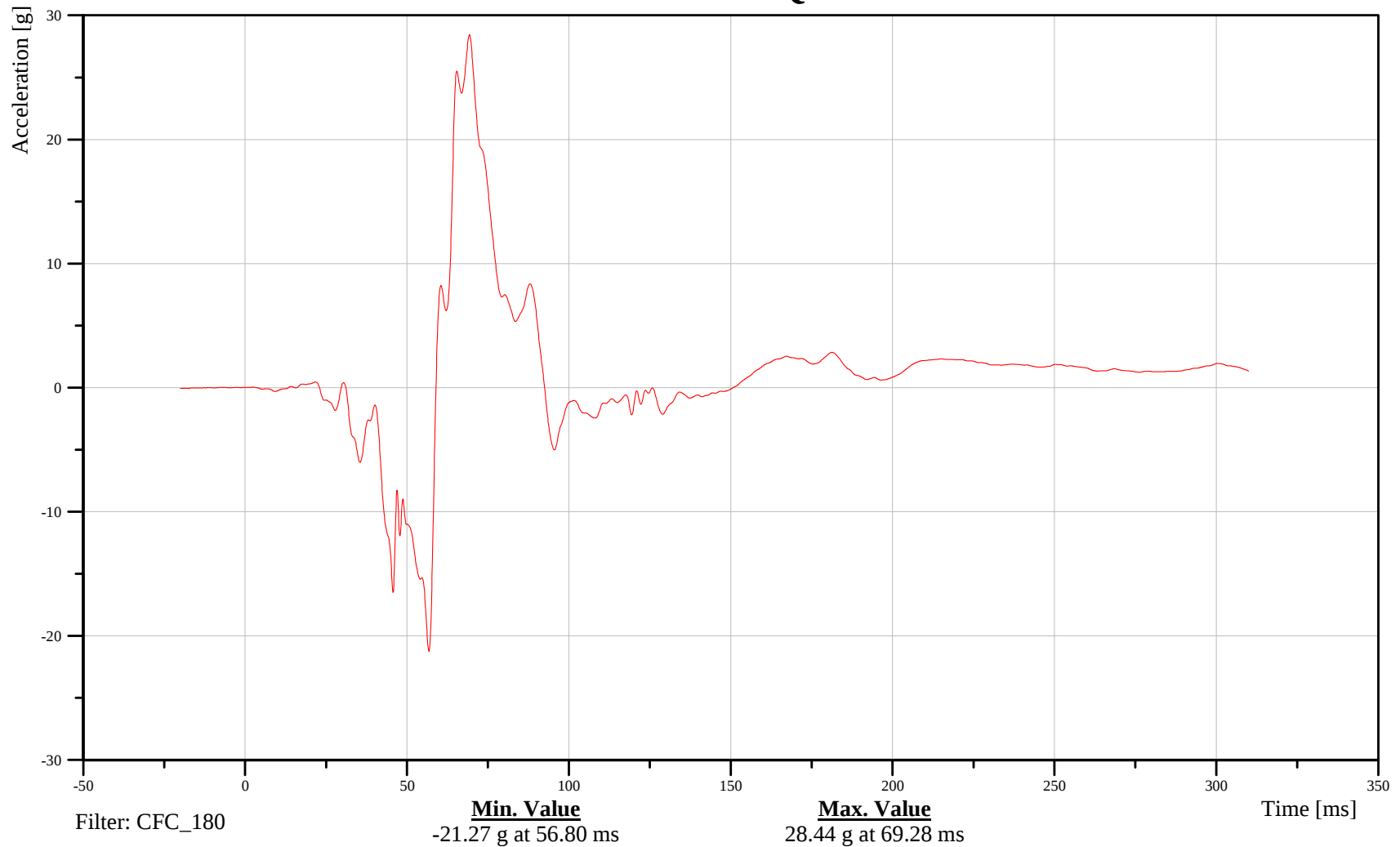
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14CHSTUP00Q3ACZC

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-17

081029



Child Safety Research

Date: 10/29/2008

Time: 14:39

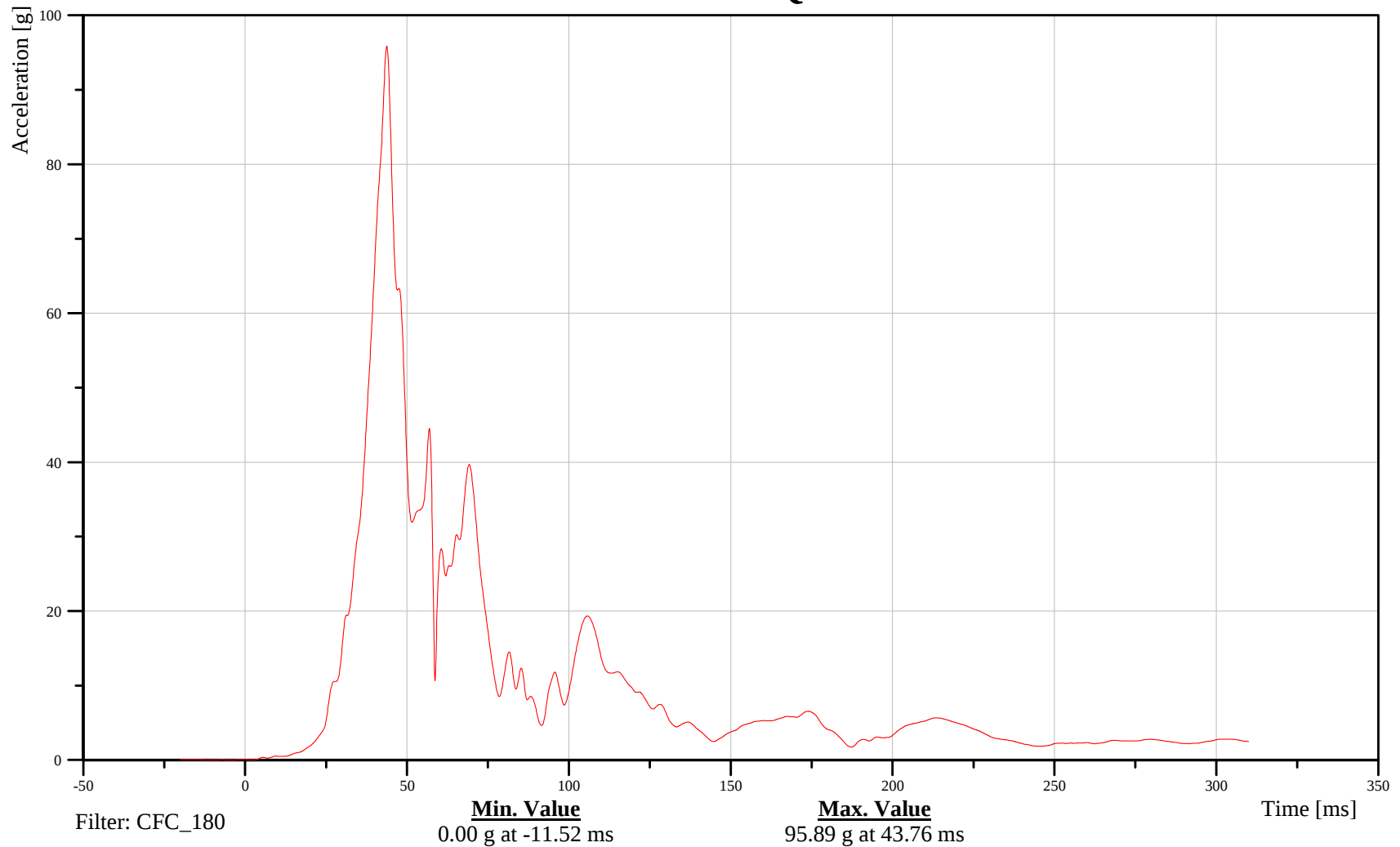
Left Rear Upper Chest Resultant Acceleration

Customer: VRTC

14CHSTUP00Q3ACRC

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-18

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

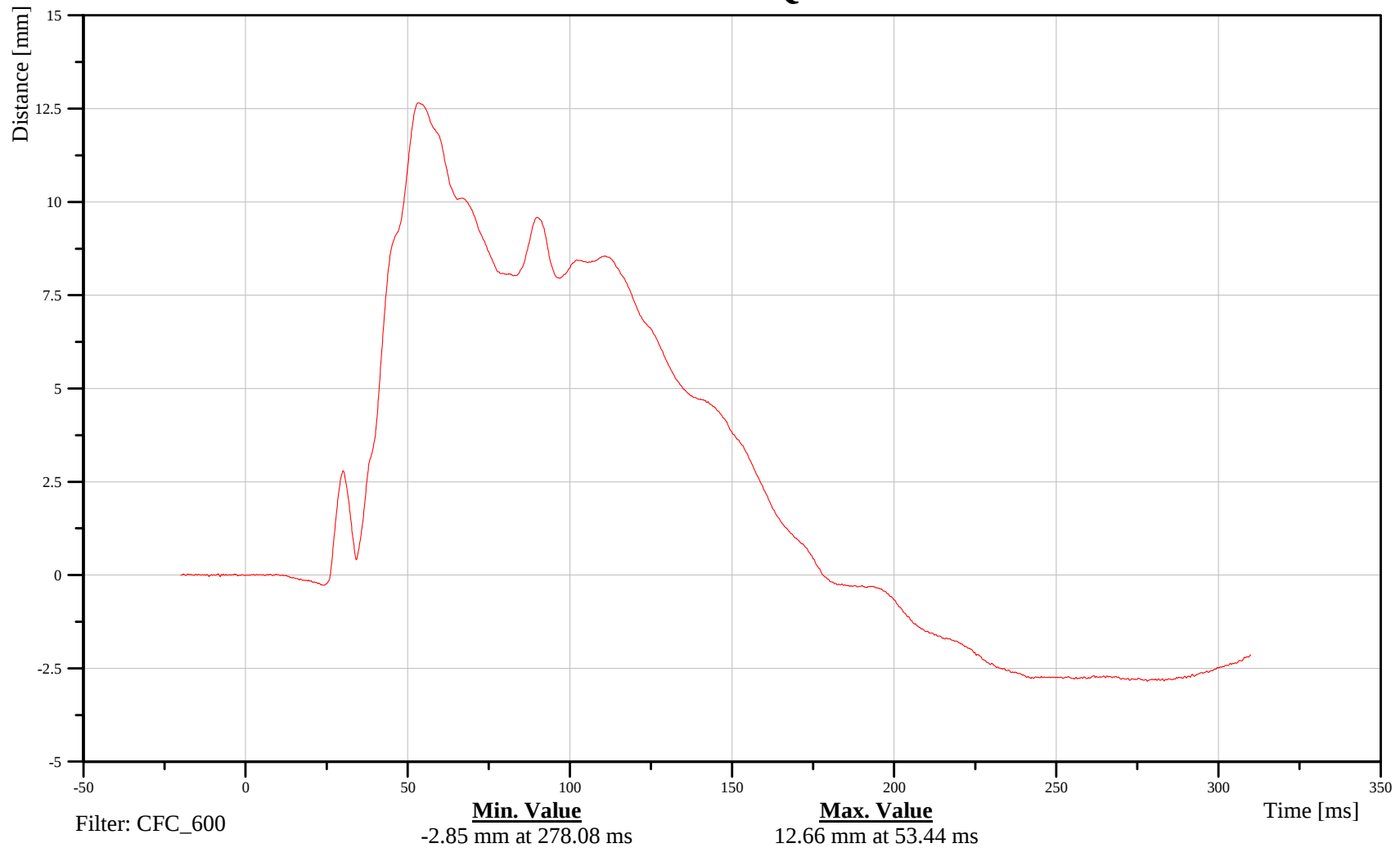
Left Rear Thorax IR-TRACC Y-Axis Displacement

Customer: VRTC

14CHST0000Q3DSYB

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-19

081029



Child Safety Research
Left Rear Lumbar X-Axis Force

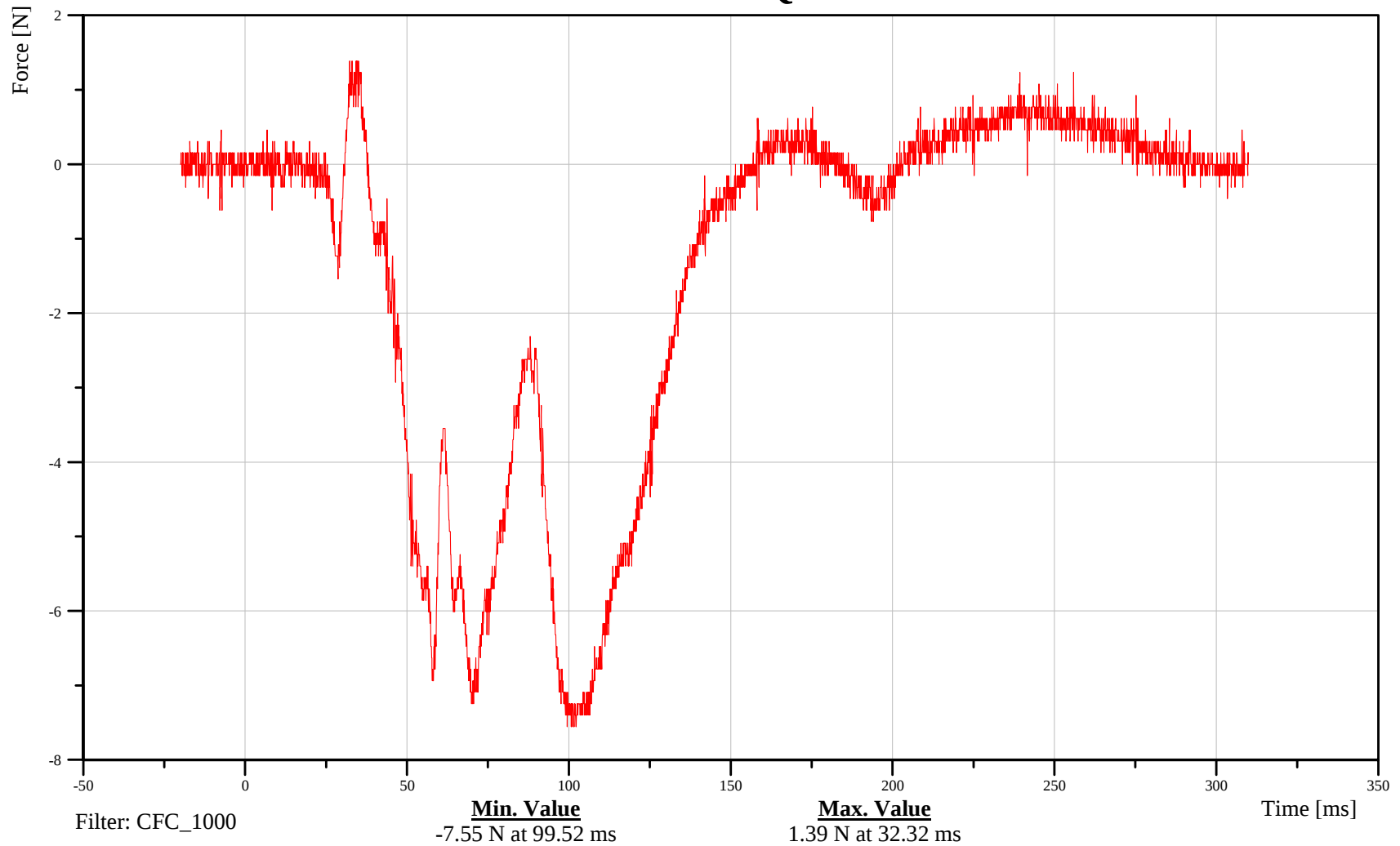
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14LUSP0000Q3FOXA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-20

081029



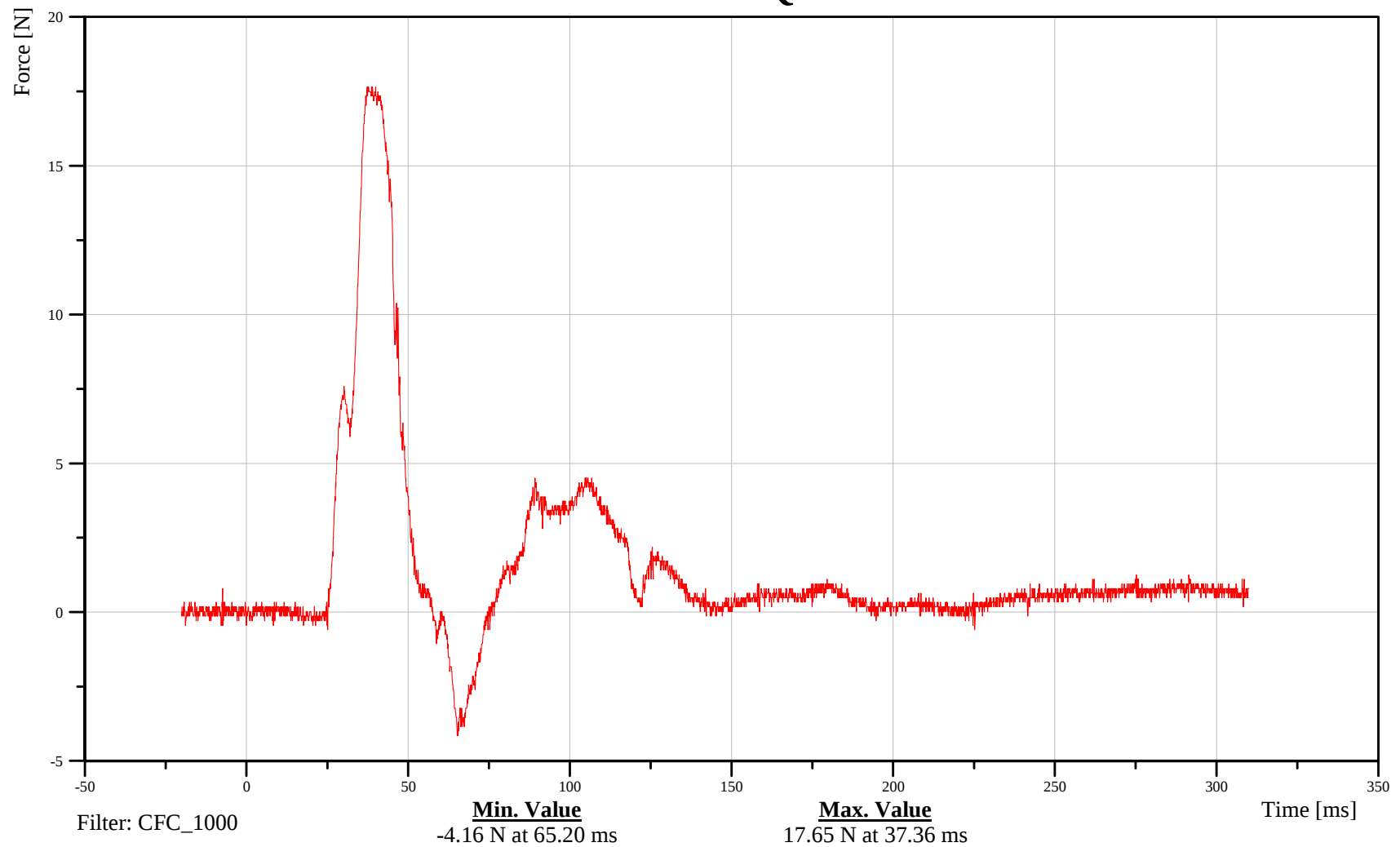
Child Safety Research
Left Rear Lumbar Y-Axis Force

Date: 10/29/2008
Time: 14:39

Customer: VRTC

14LUSP0000Q3FOYA

TRC Inc. Test Lab: CTF
Test Number: 081029-1



B-21

081029



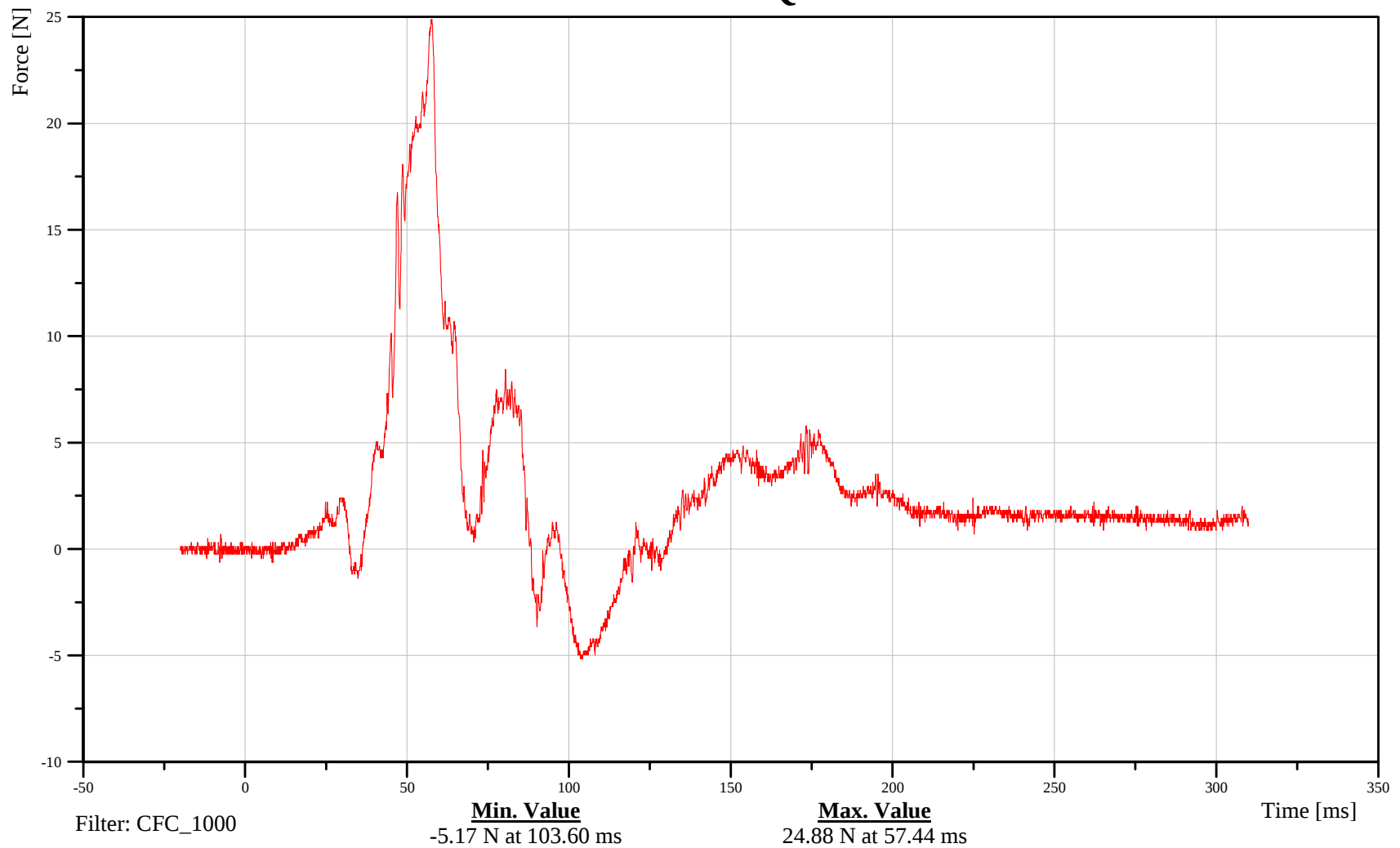
Child Safety Research
Left Rear Lumbar Z-Axis Force

Date: 10/29/2008
Time: 14:39

Customer: VRTC

14LUSP0000Q3FOZA

TRC Inc. Test Lab: CTF
Test Number: 081029-1



B-22

081029



Child Safety Research
Left Rear Lumbar Moment About X Axis

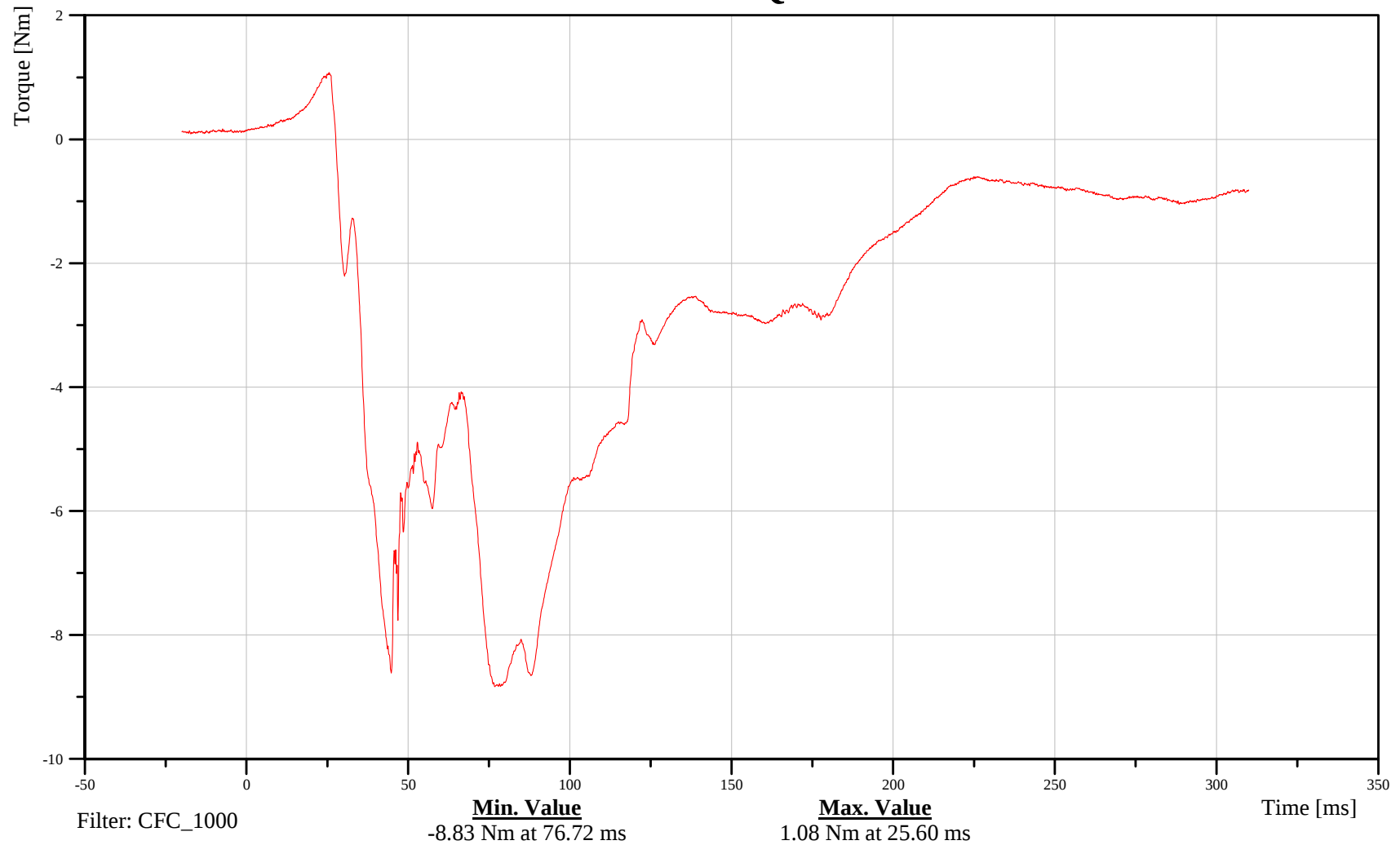
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14LUSP0000Q3MOXA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-23

081029



Child Safety Research
Left Rear Lumbar Moment About Y Axis

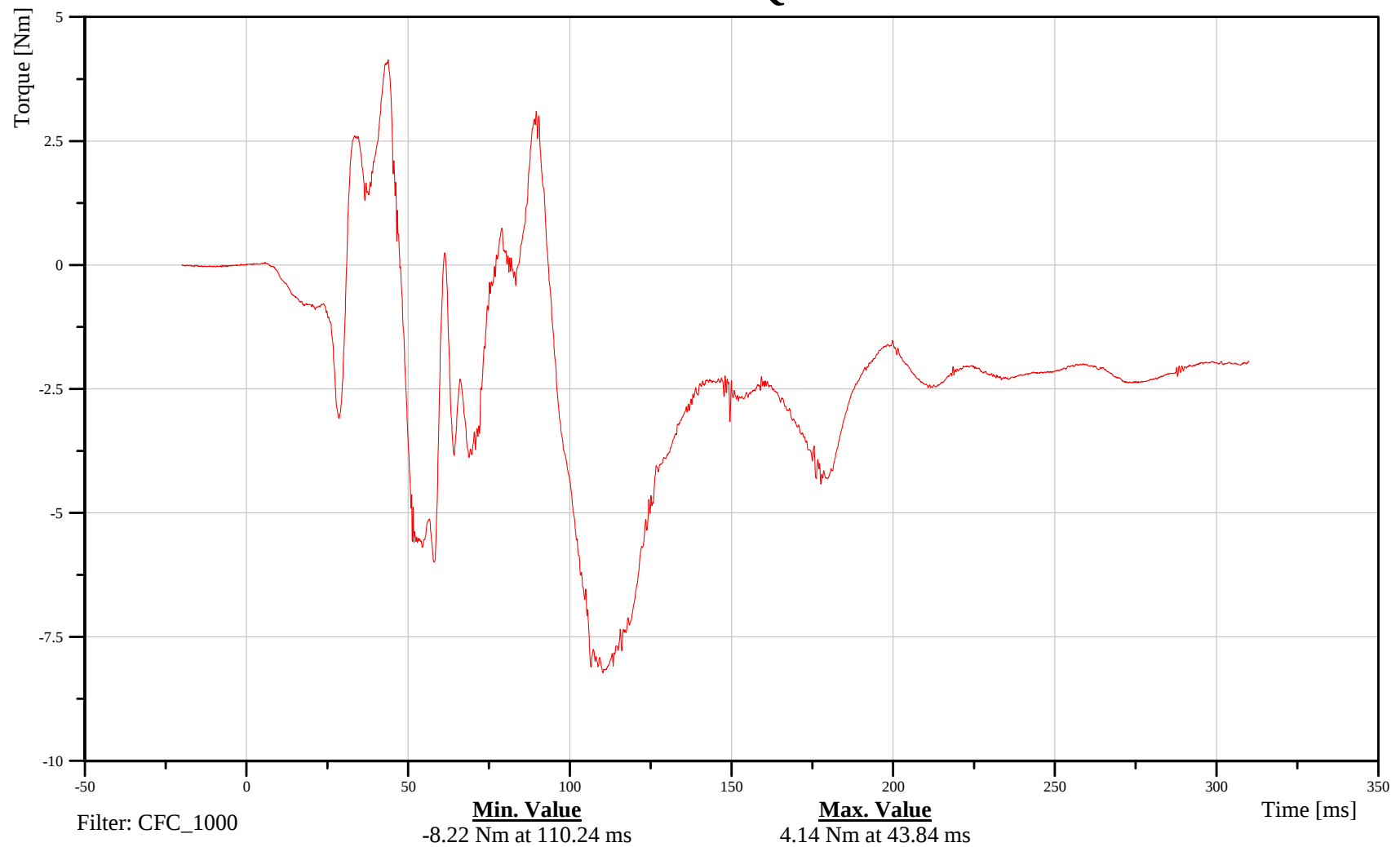
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14LUSP0000Q3MOYA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-24

081029



Child Safety Research
Left Rear Lumbar Moment About Z Axis

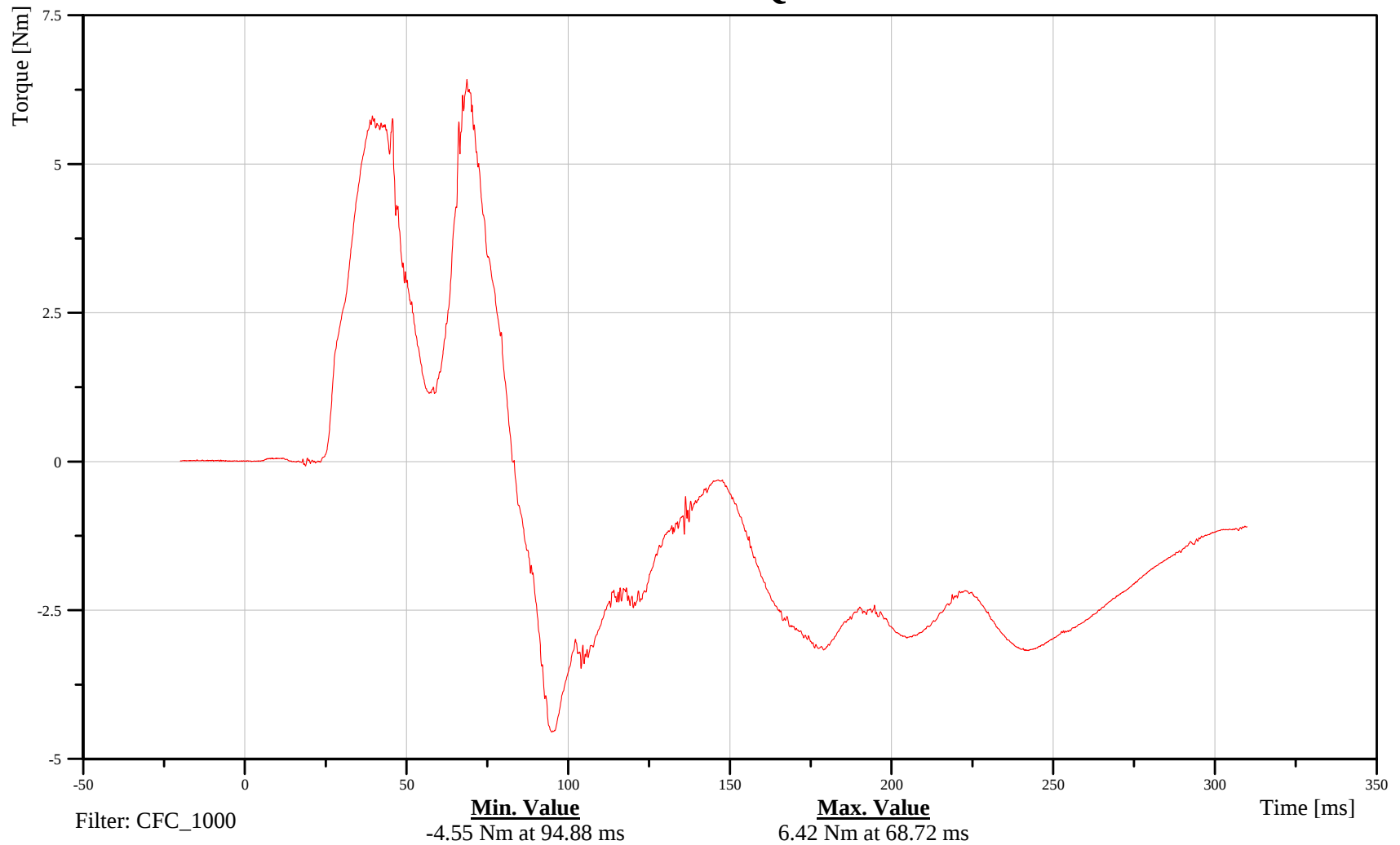
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14LUSP0000Q3MOZA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-25

081029



Child Safety Research
Left Rear Pelvis X-Axis Acceleration

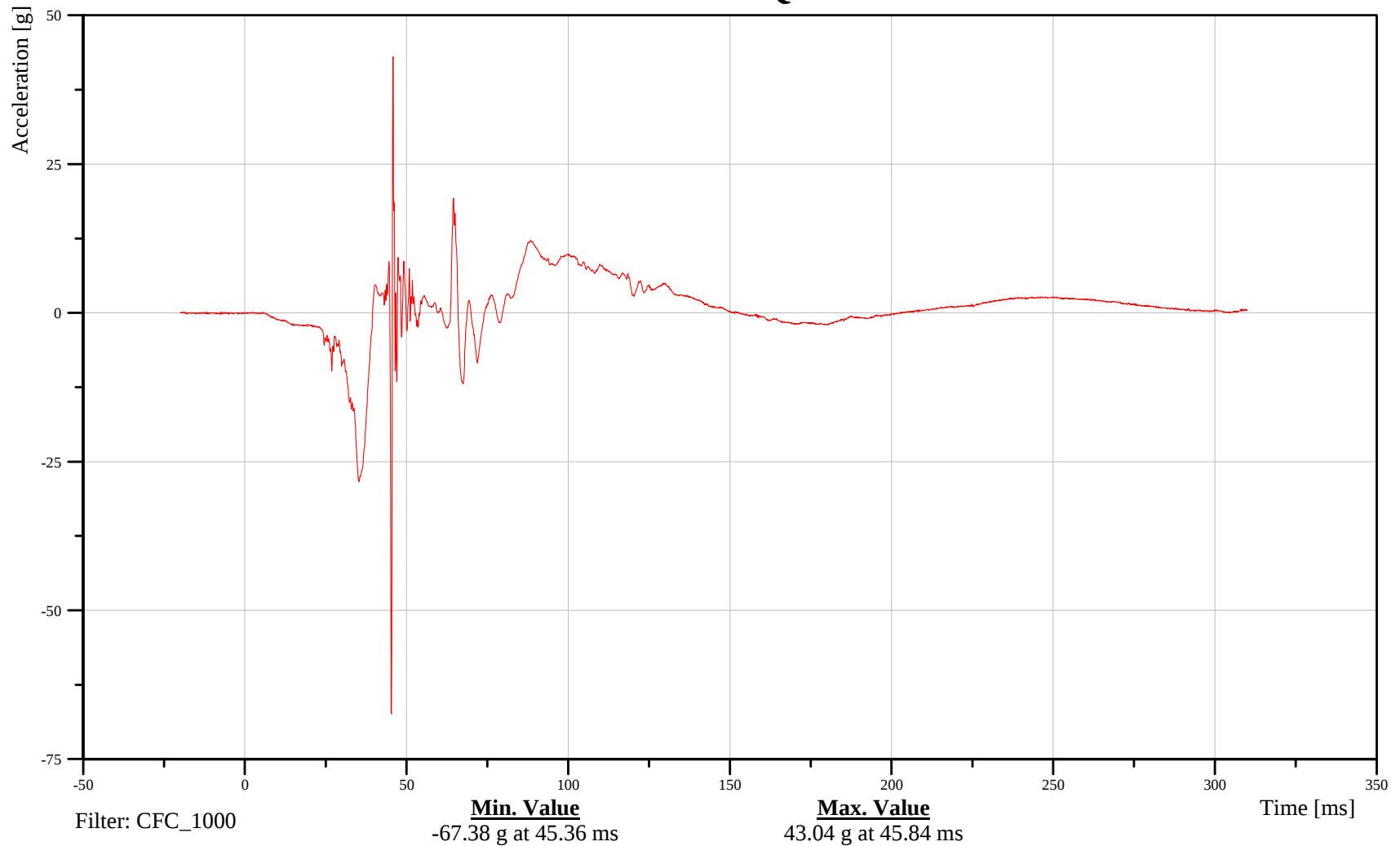
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14PELV0000Q3ACXA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-26

081029



Child Safety Research
Left Rear Pelvis Y-Axis Acceleration

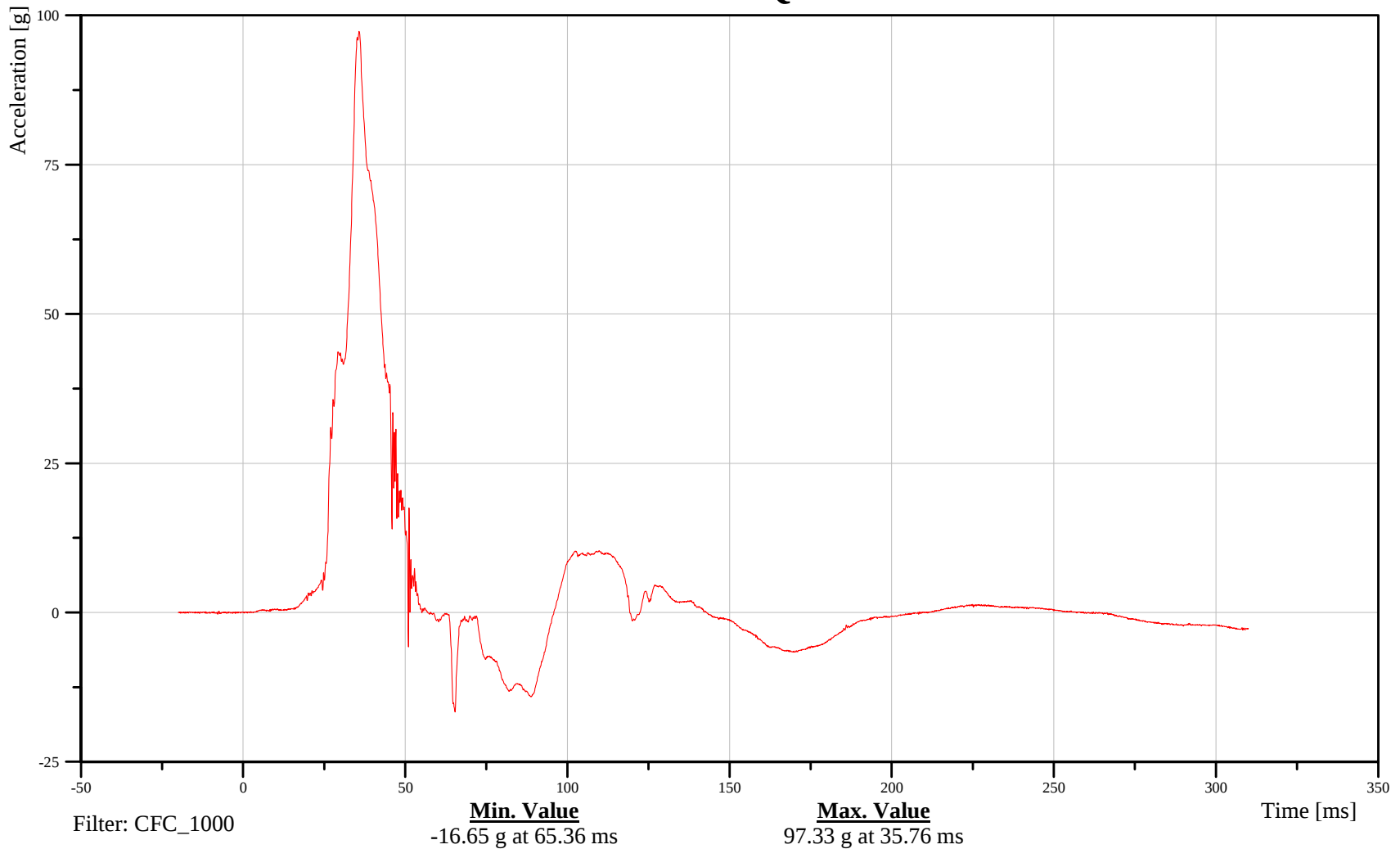
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14PELV0000Q3ACYA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-27

081029



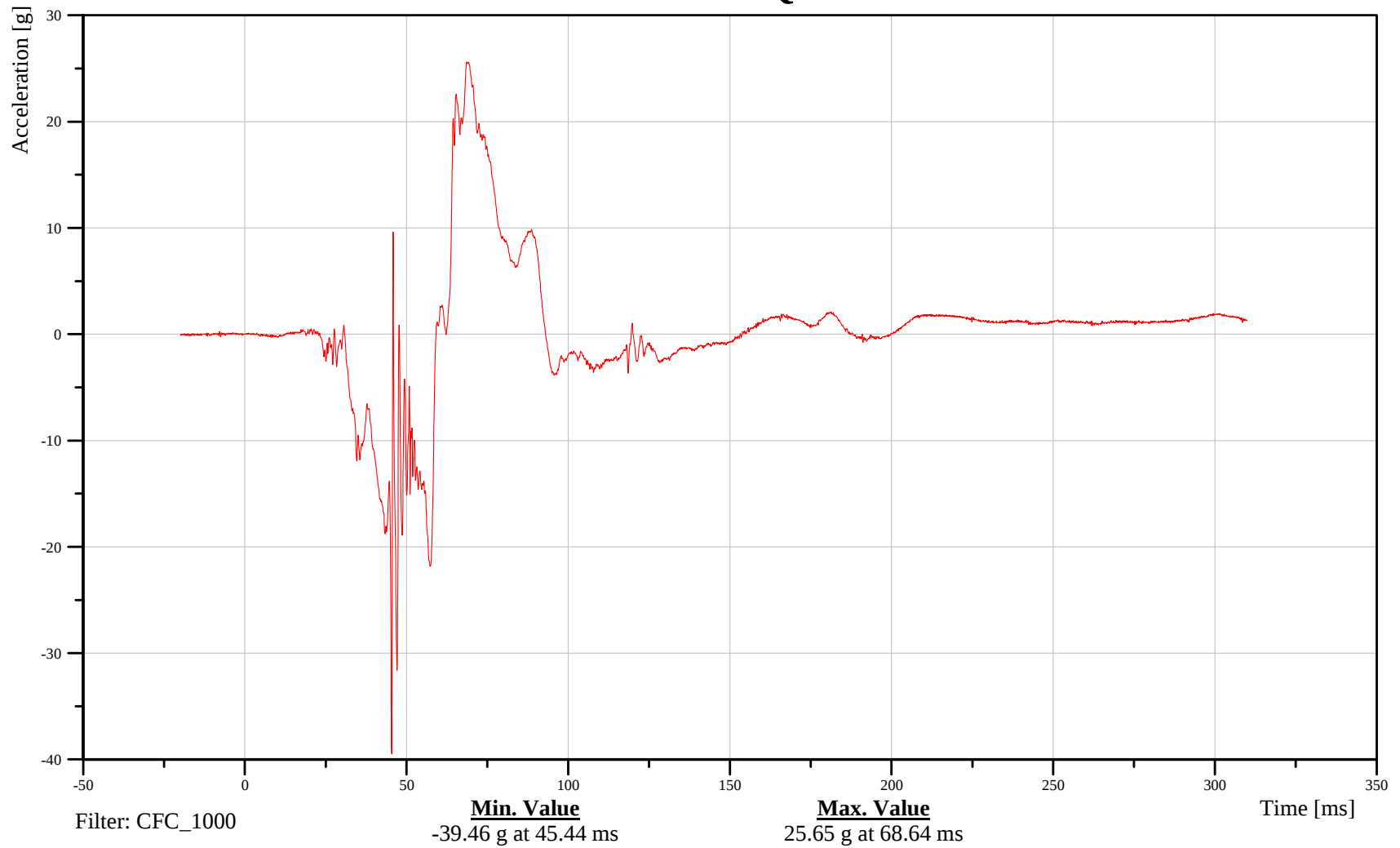
Child Safety Research
Left Rear Pelvis Z-Axis Acceleration

Date: 10/29/2008
Time: 14:39

Customer: VRTC

14PELV0000Q3ACZA

TRC Inc. Test Lab: CTF
Test Number: 081029-1



B-28

081029



Child Safety Research
Left Rear Pelvis Resultant Acceleration

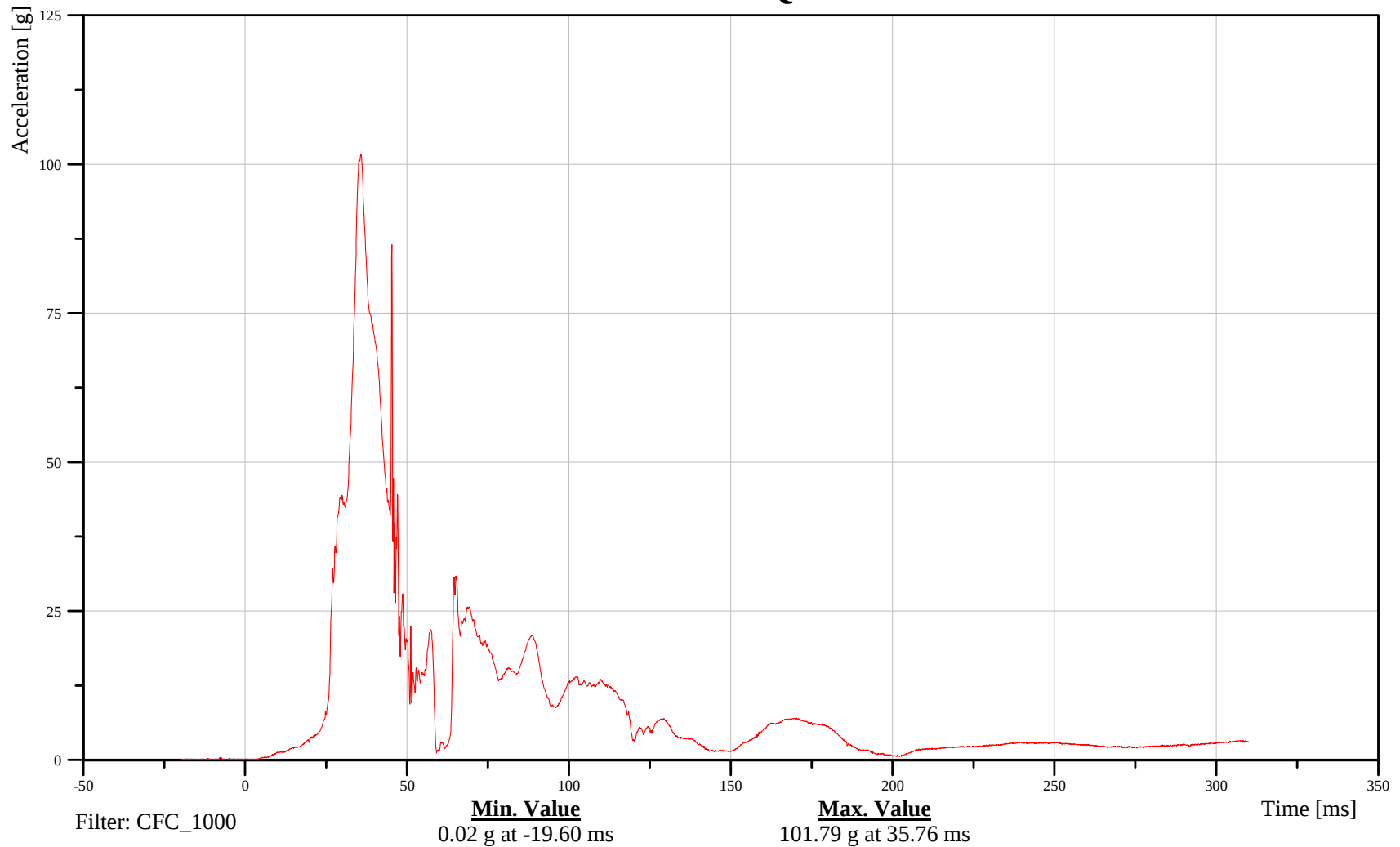
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14PELV0000Q3ACRA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-29

081029



Child Safety Research
Left Rear Pubic Y-Axis Force

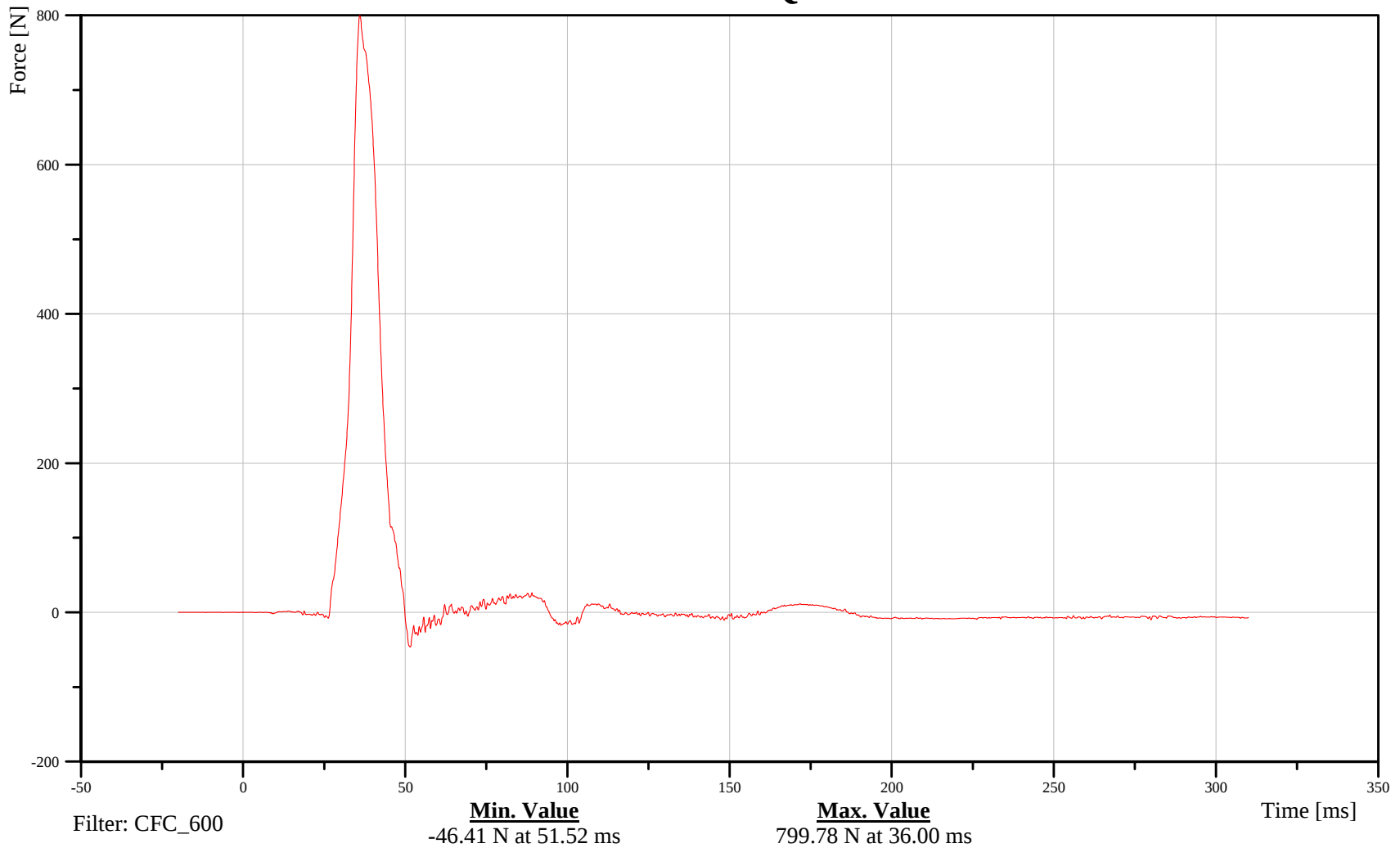
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14PUBC0000Q3FOYB

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-30

081029



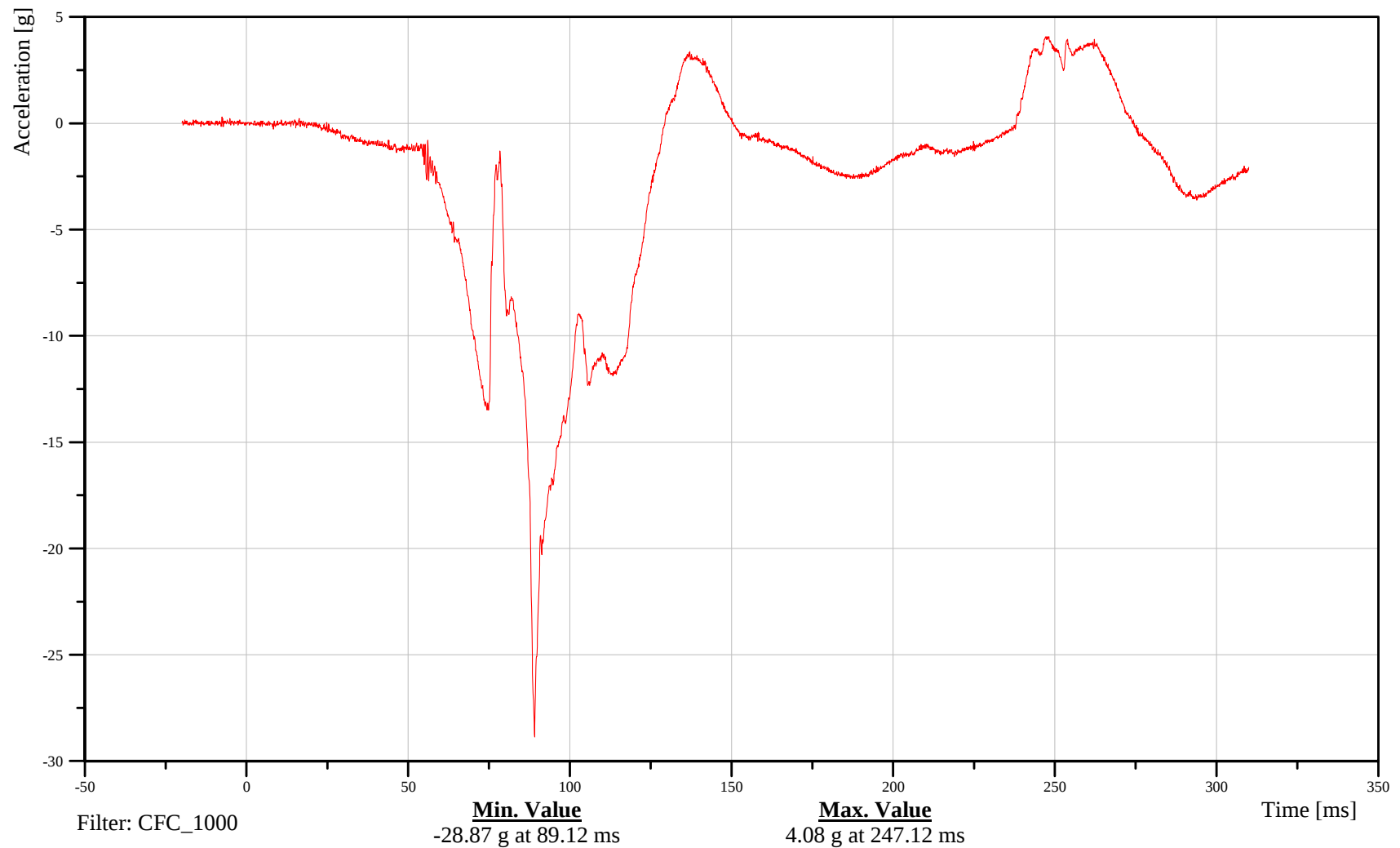
Child Safety Research
Right Rear Head X-Axis Acceleration

Date: 10/29/2008
Time: 14:39

Customer: VRTC

16HEADCG00Y6ACXA

TRC Inc. Test Lab: CTF
Test Number: 081029-1



B-31

081029



Child Safety Research
Right Rear Head Y-Axis Acceleration

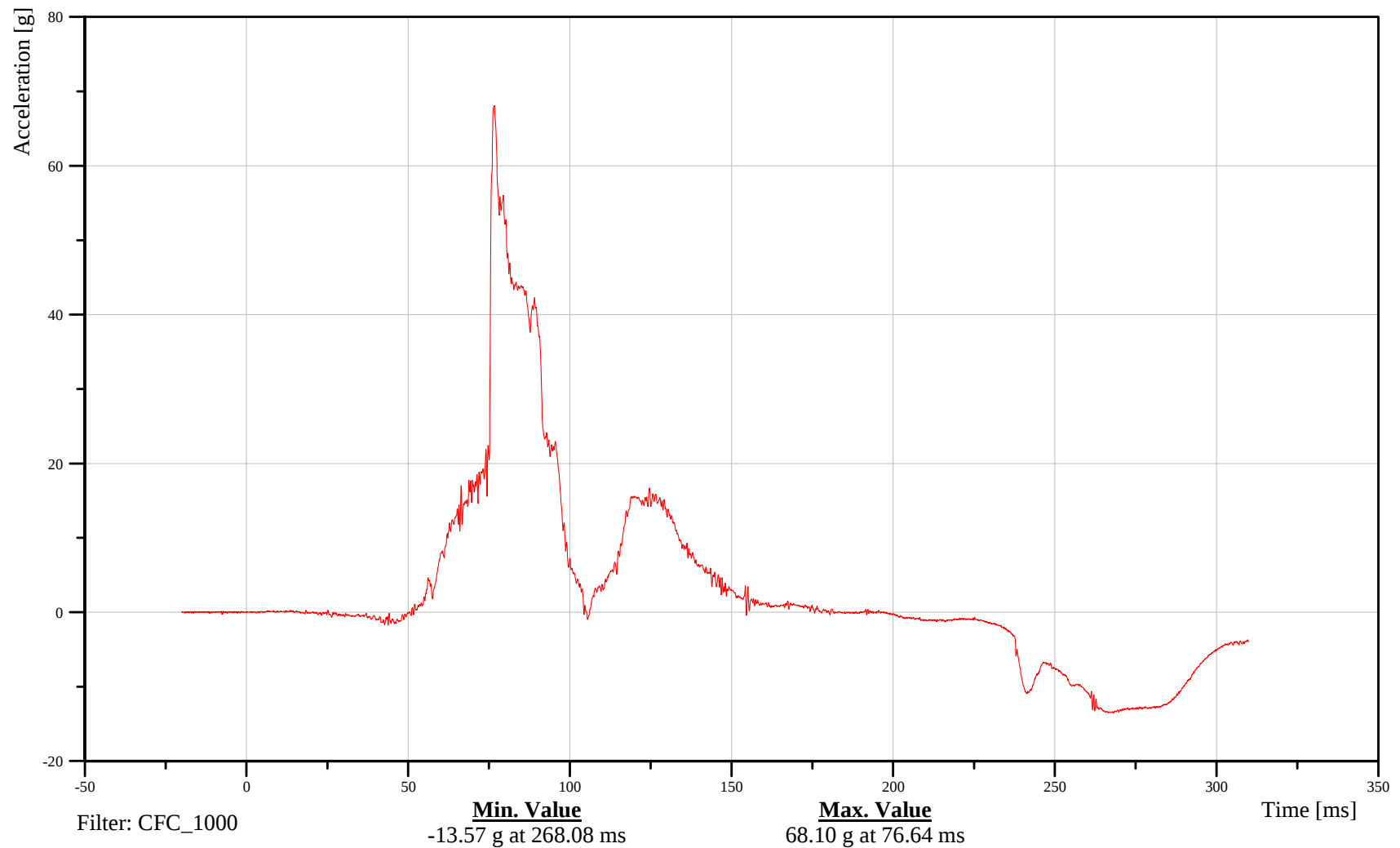
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16HEADCG00Y6ACYA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-32

081029



Child Safety Research
Right Rear Head Z-Axis Acceleration

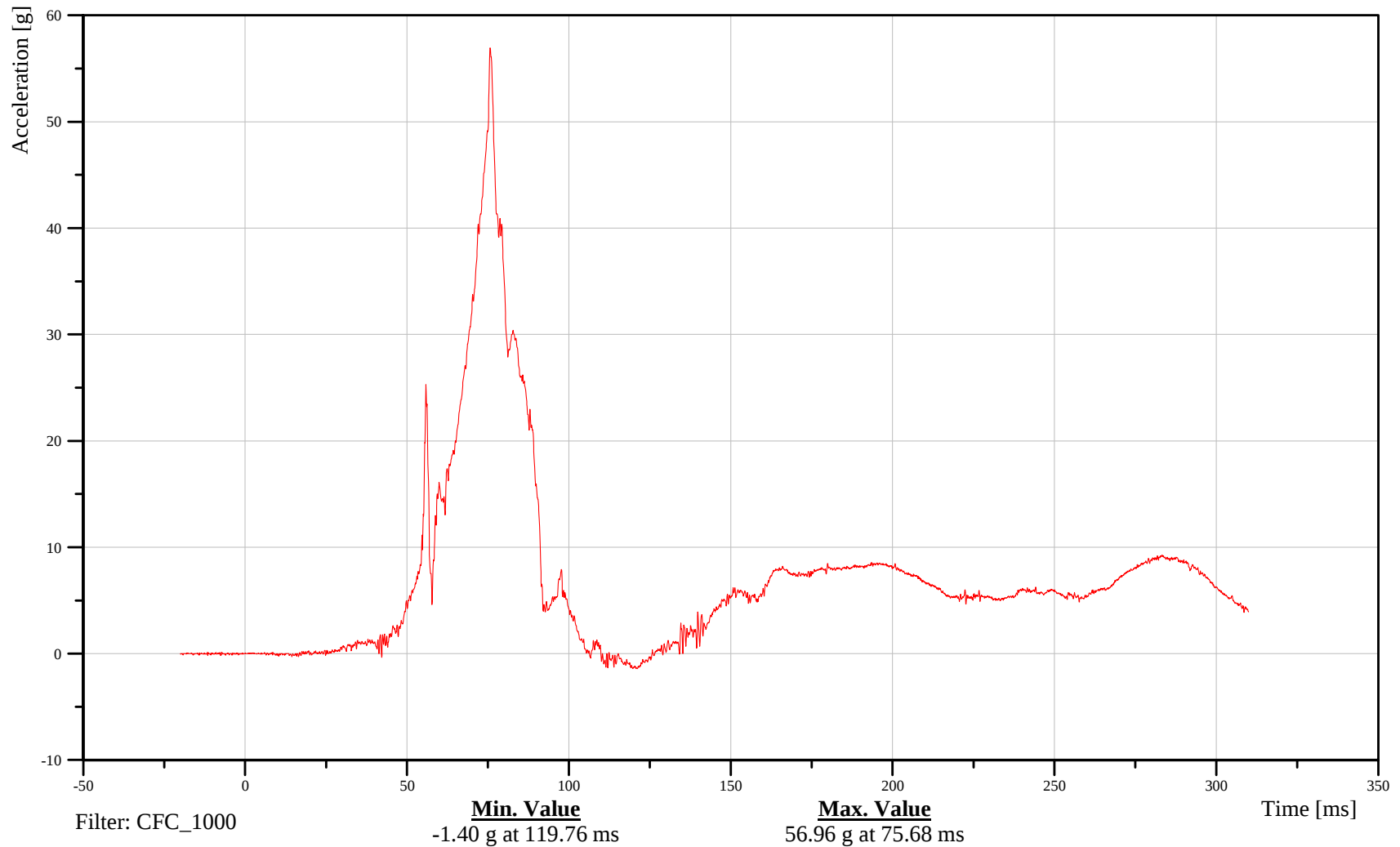
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16HEADCG00Y6ACZA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-33

081029



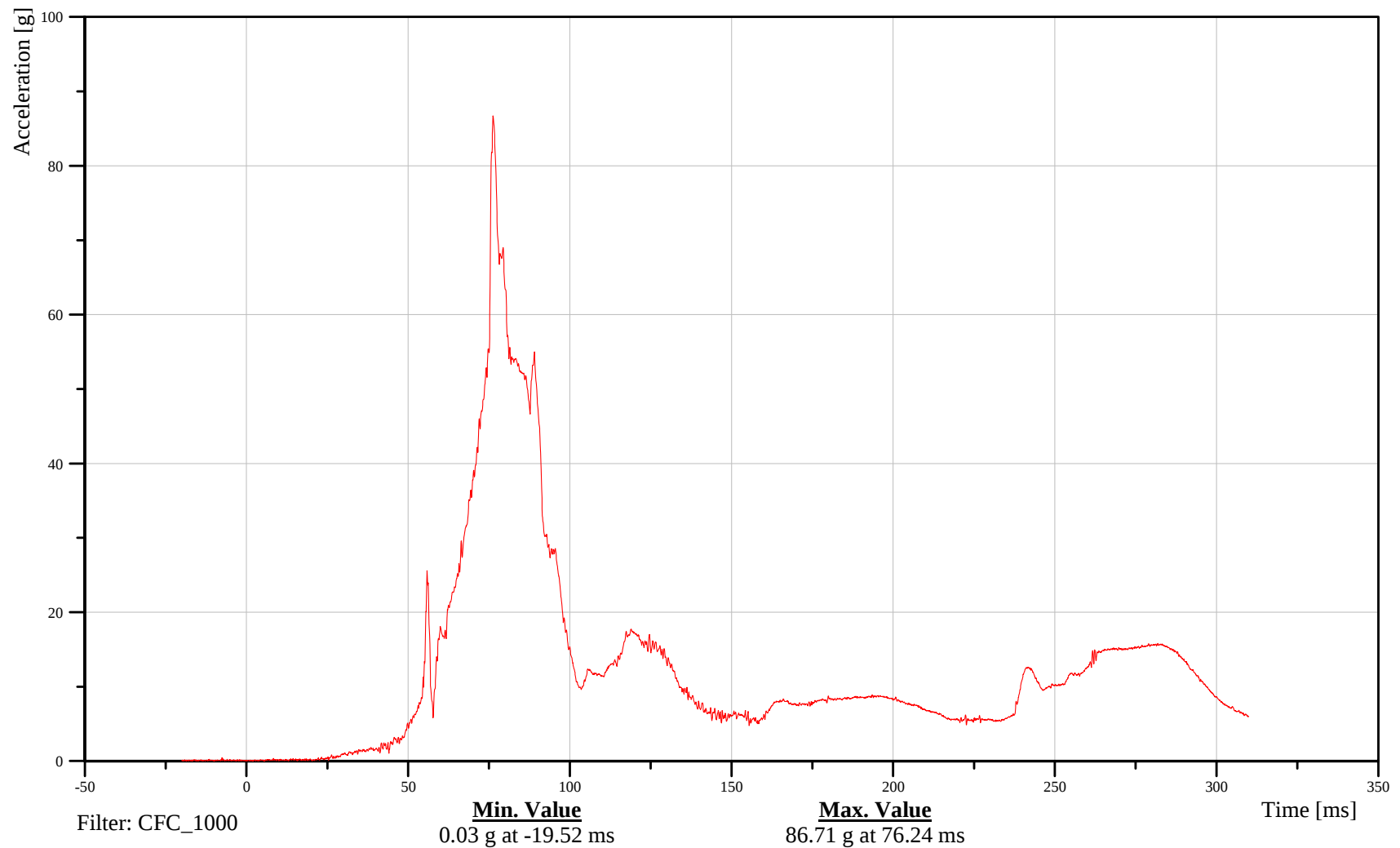
Child Safety Research
Right Rear Head Resultant Acceleration

Date: 10/29/2008
Time: 14:39

Customer: VRTC

16HEADCG00Y6ACRA

TRC Inc. Test Lab: CTF
Test Number: 081029-1



B-34

081029



Child Safety Research
Right Rear Upper Neck X-Axis Force

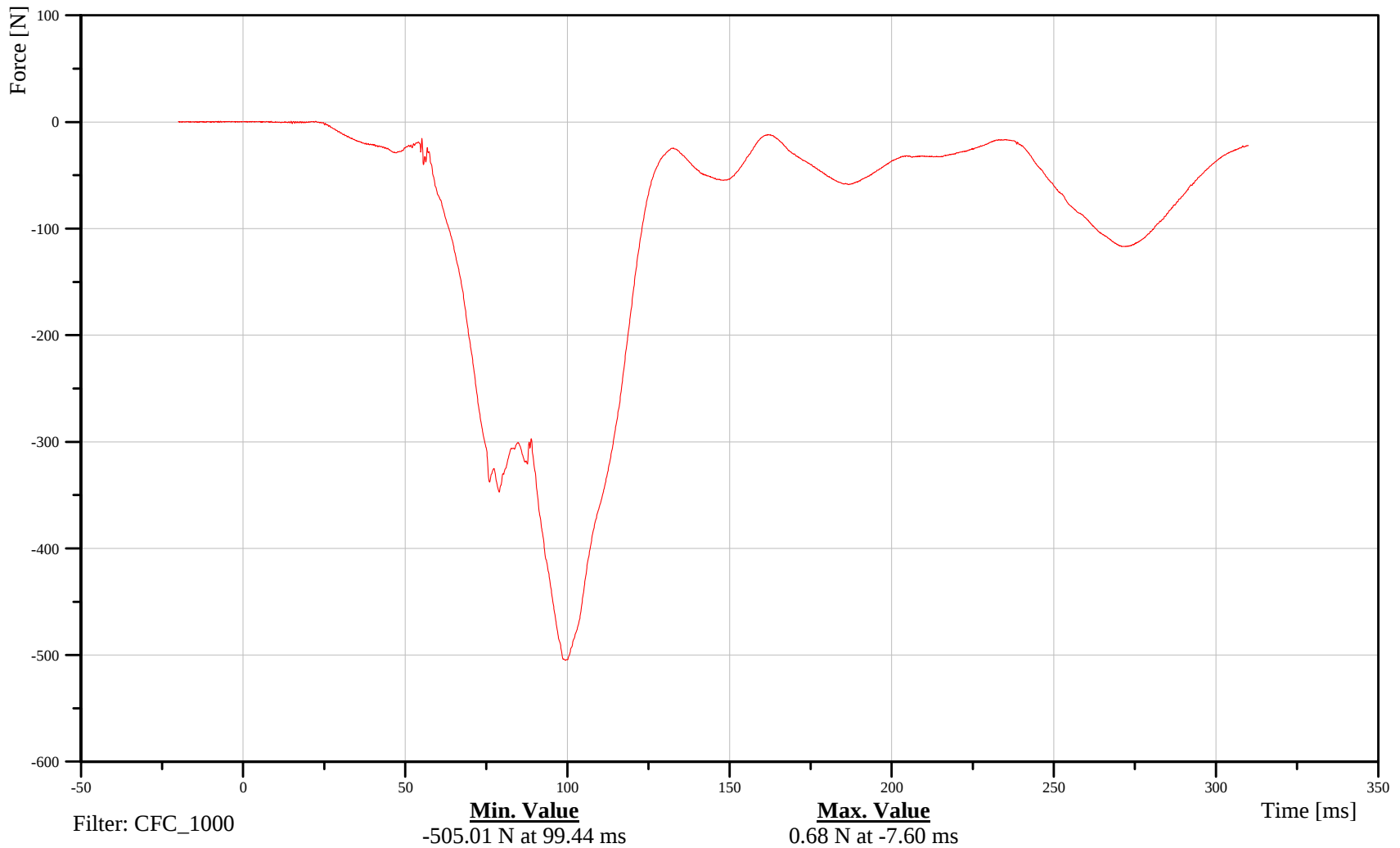
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16NECKUP00Y6FOXA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-35

081029



Child Safety Research
Right Rear Upper Neck Y-Axis Force

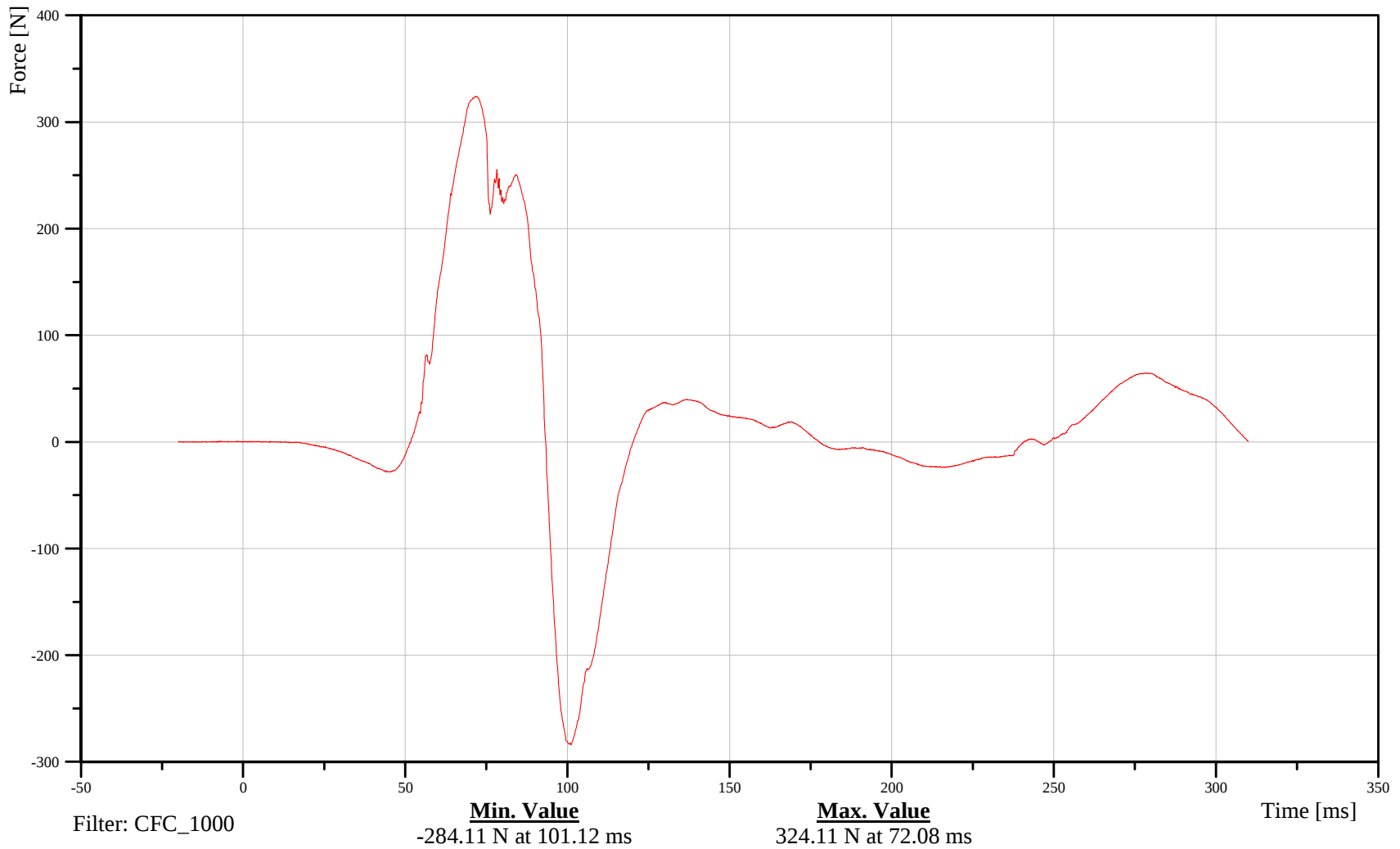
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16NECKUP00Y6FOYA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-36

081029



Child Safety Research
Right Rear Upper Neck Z-Axis Force

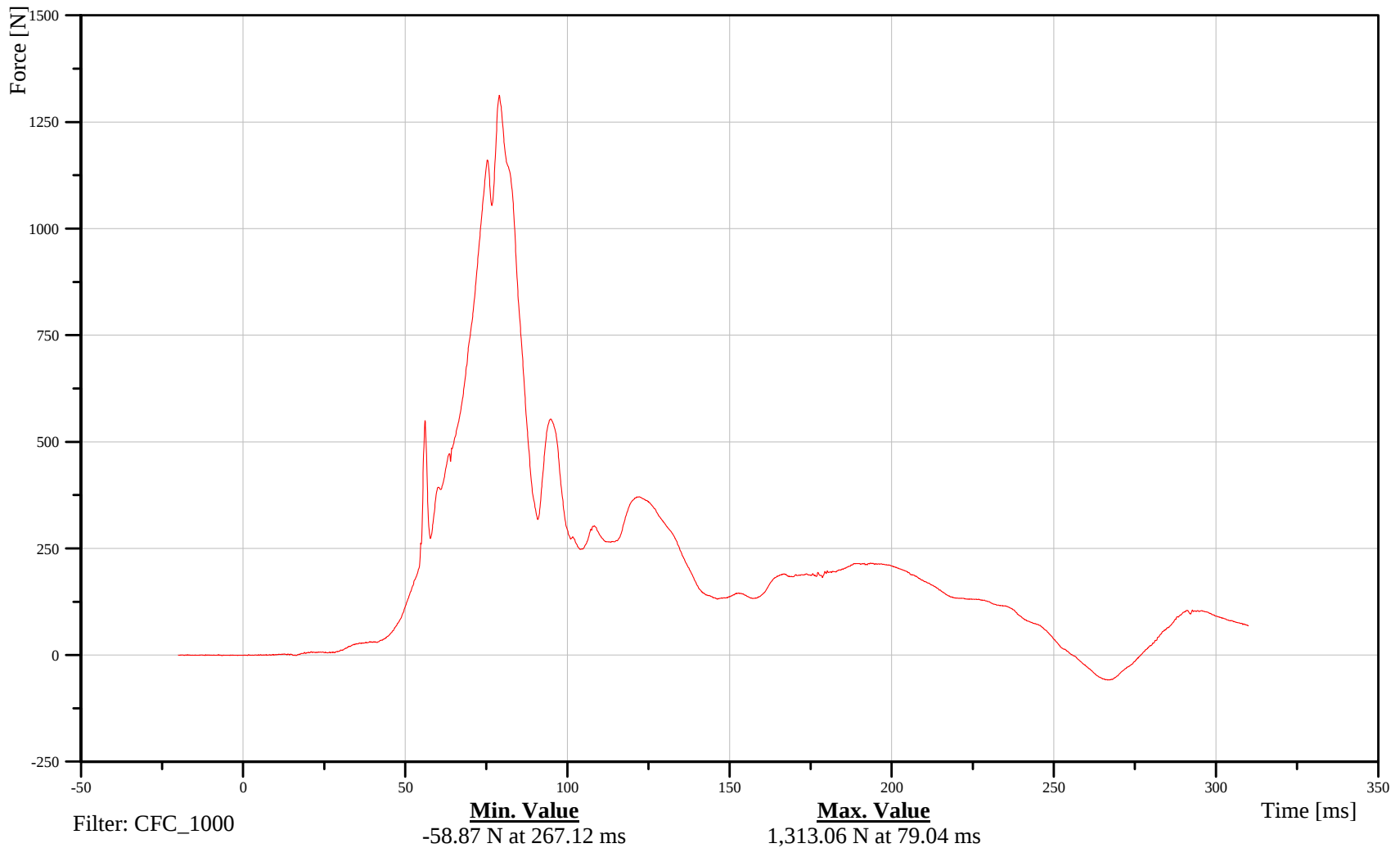
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16NECKUP00Y6FOZA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-37

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

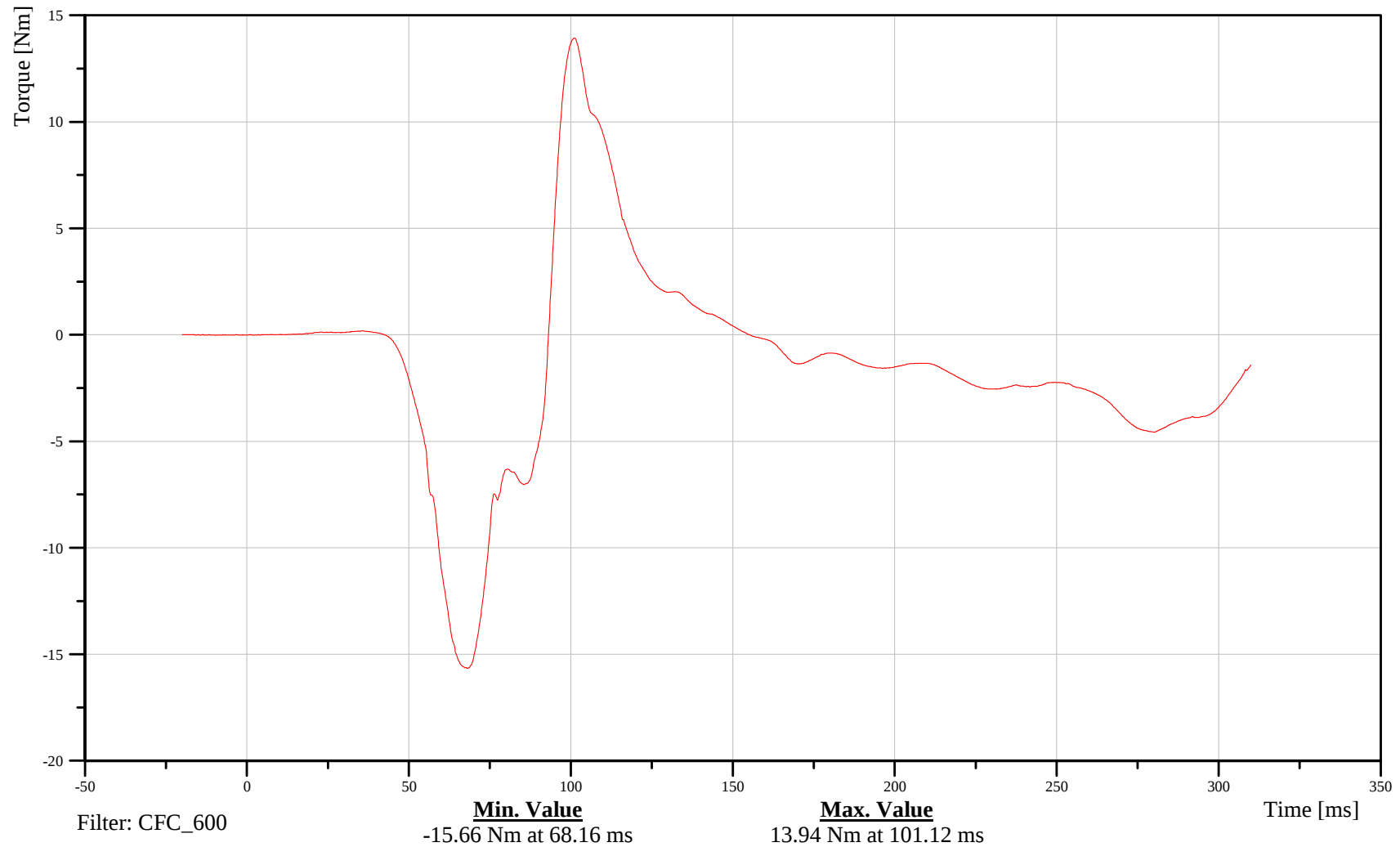
Right Rear Upper Neck Moment About X Axis

Customer: VRTC

16NECKUP00Y6MOXB

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-38

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

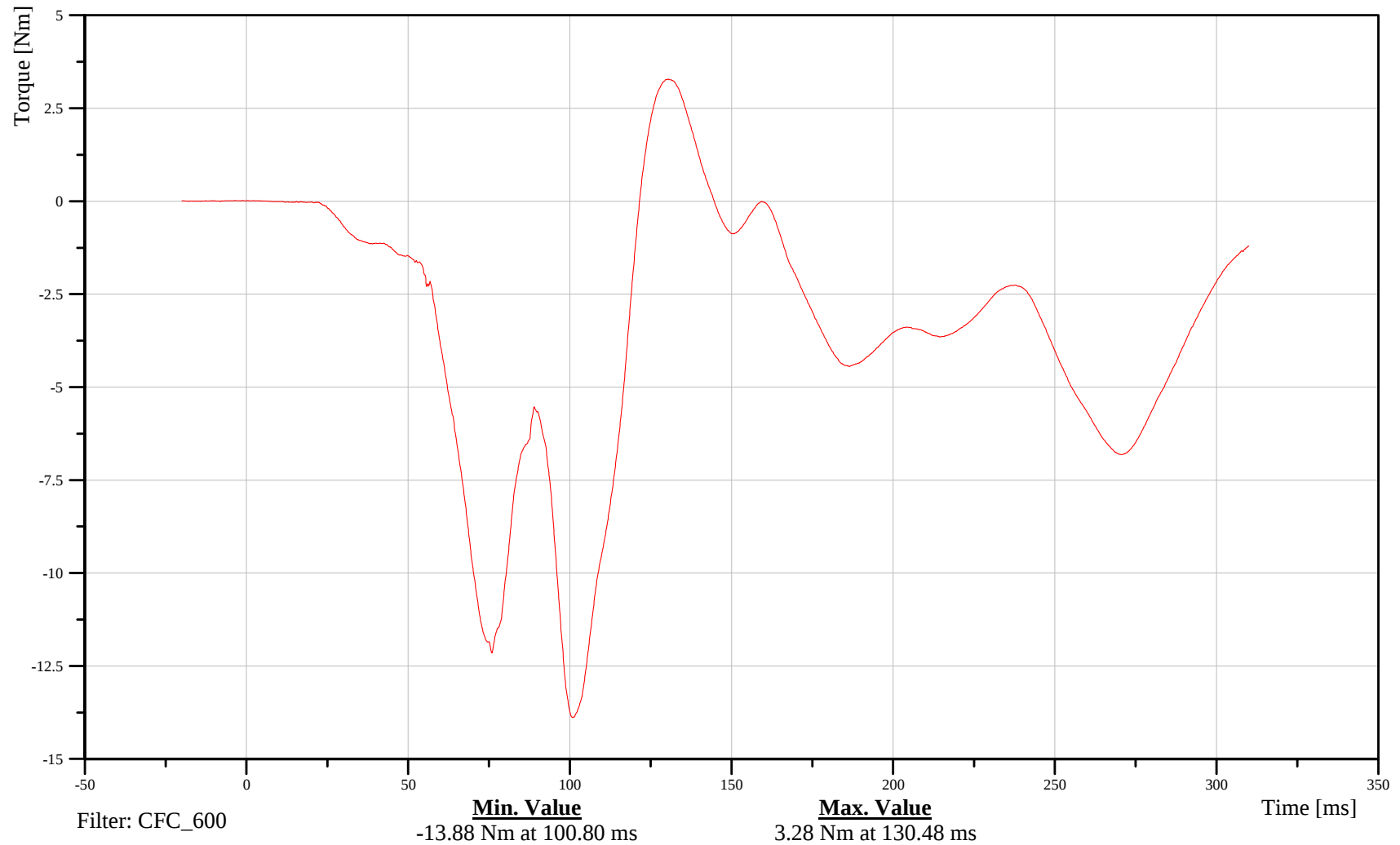
Right Rear Upper Neck Moment About Y Axis

Customer: VRTC

16NECKUP00Y6MOYB

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-39

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

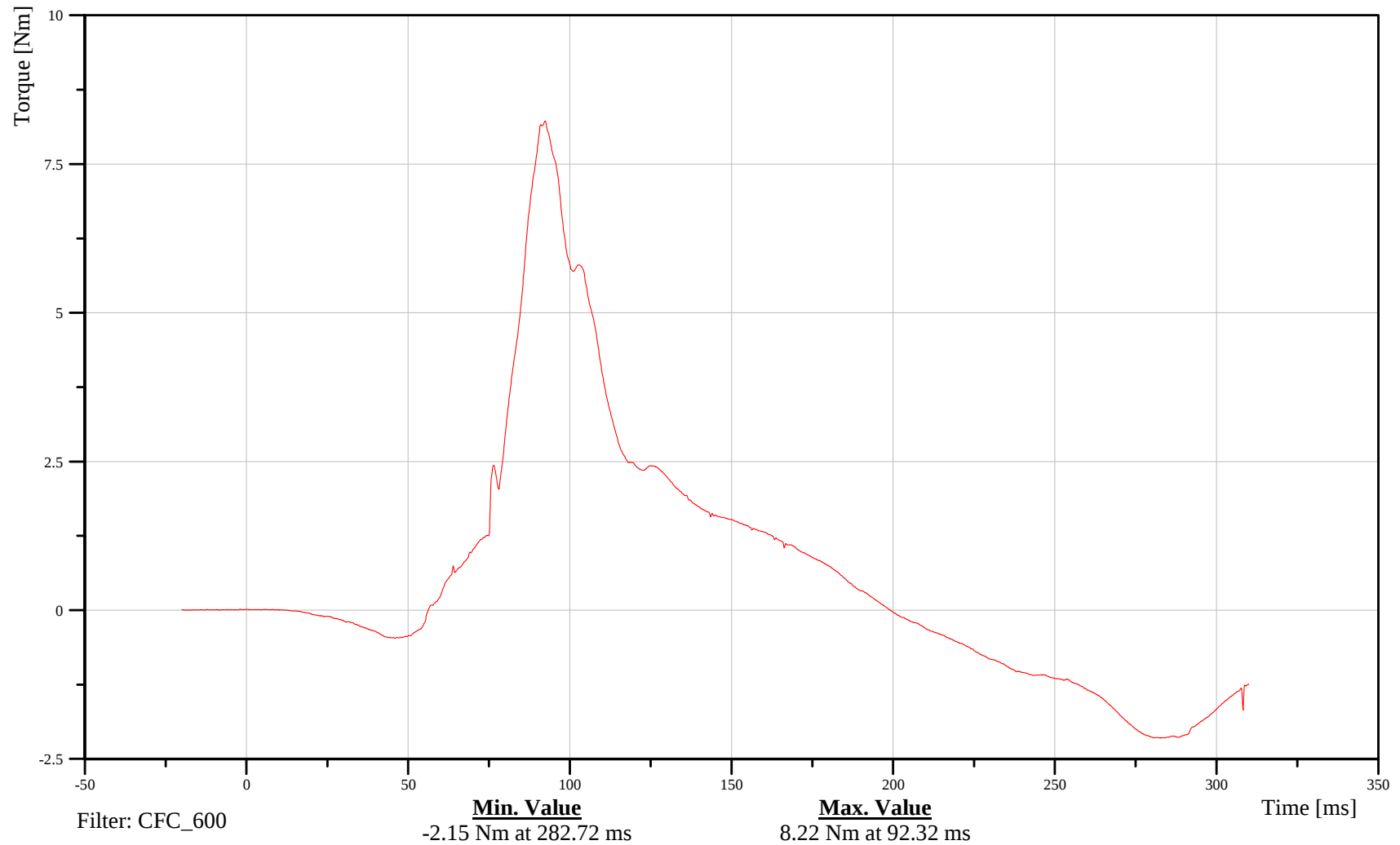
Right Rear Upper Neck Moment About Z Axis

Customer: VRTC

16NECKUP00Y6MOZB

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-40

081029



Child Safety Research
Right Rear Lower Neck X-Axis Force

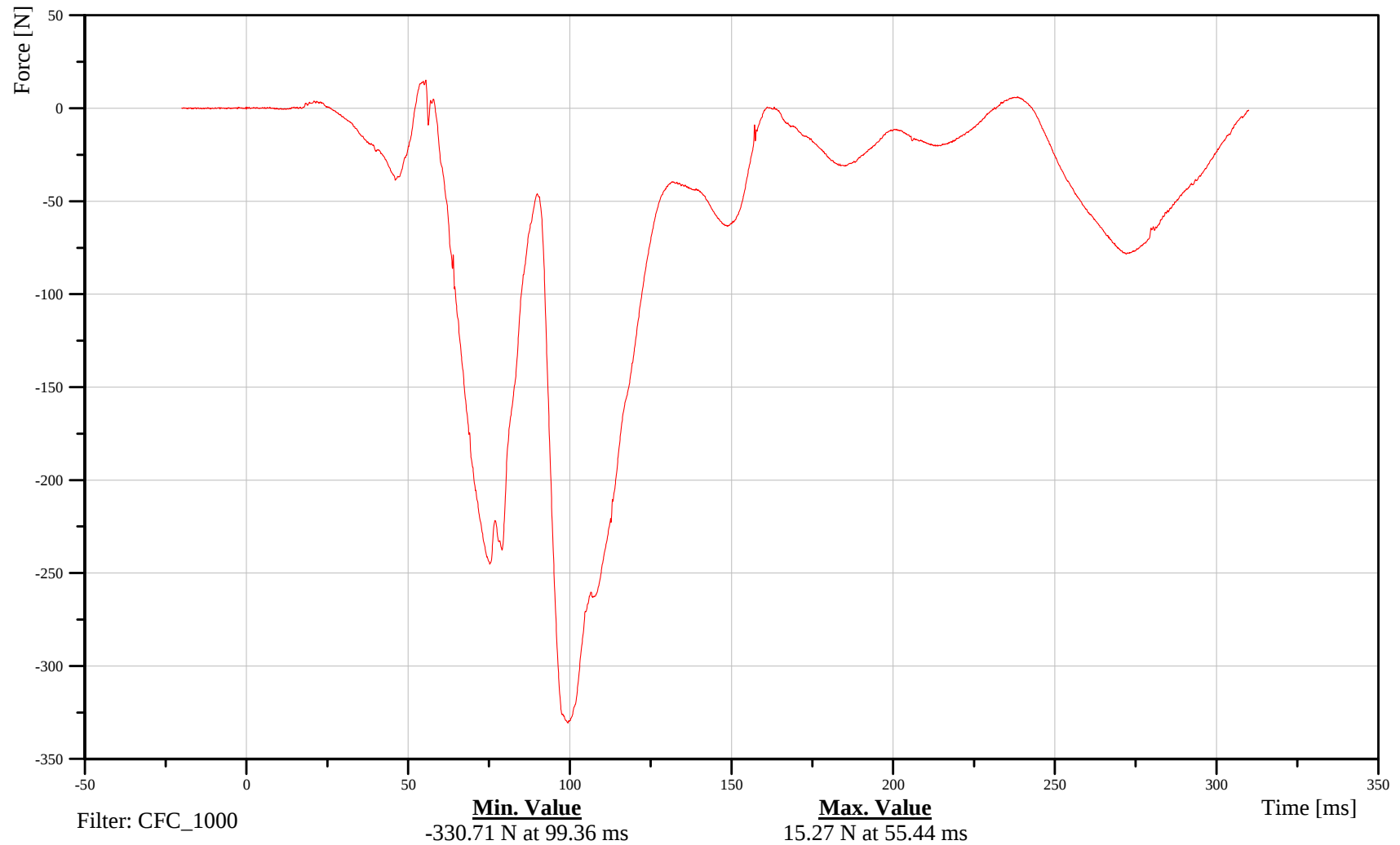
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16NECKLO00Y6FOXA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-41

081029



Child Safety Research
Right Rear Lower Neck Y-Axis Force

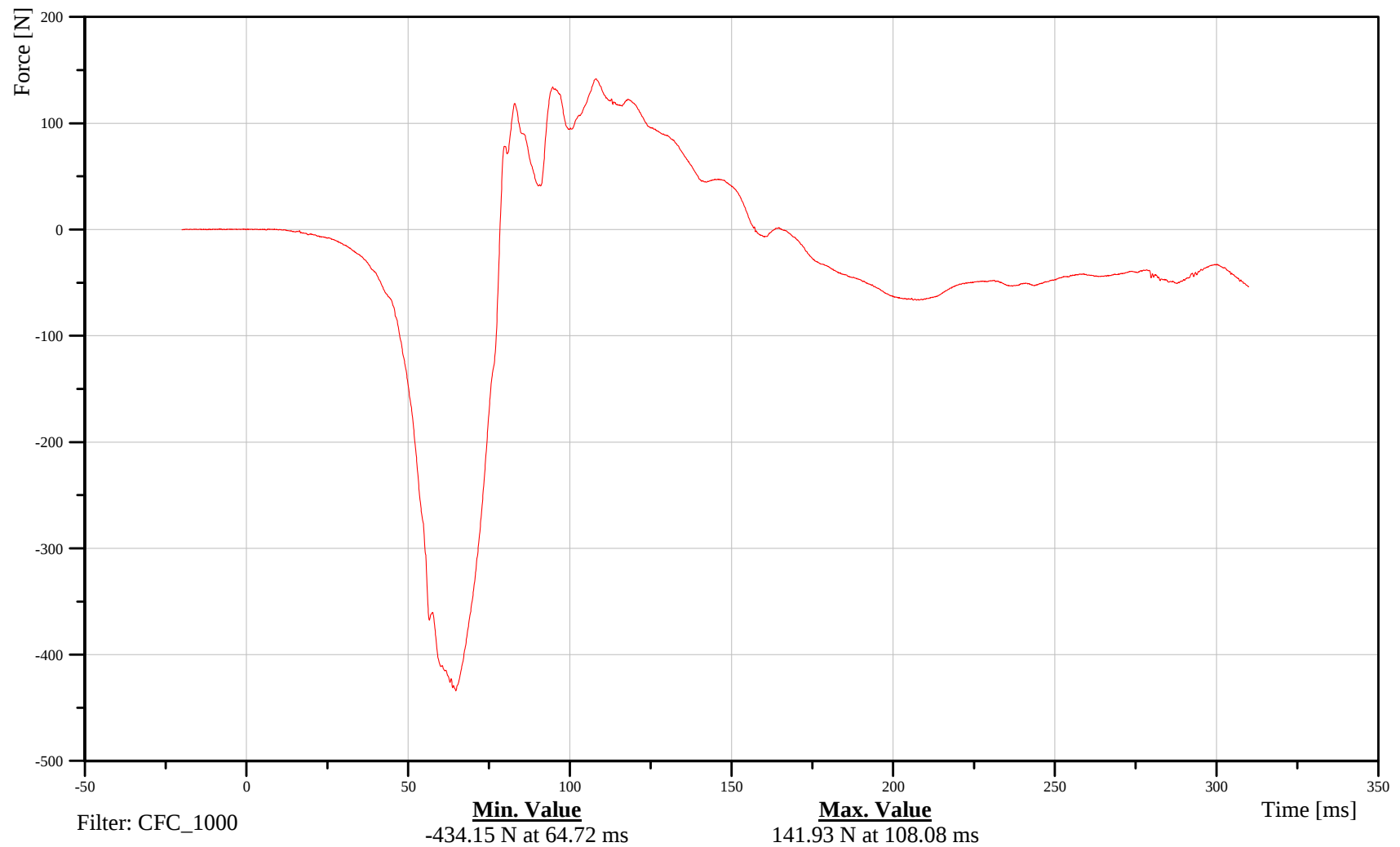
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16NECKLO00Y6FOYA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-42

081029



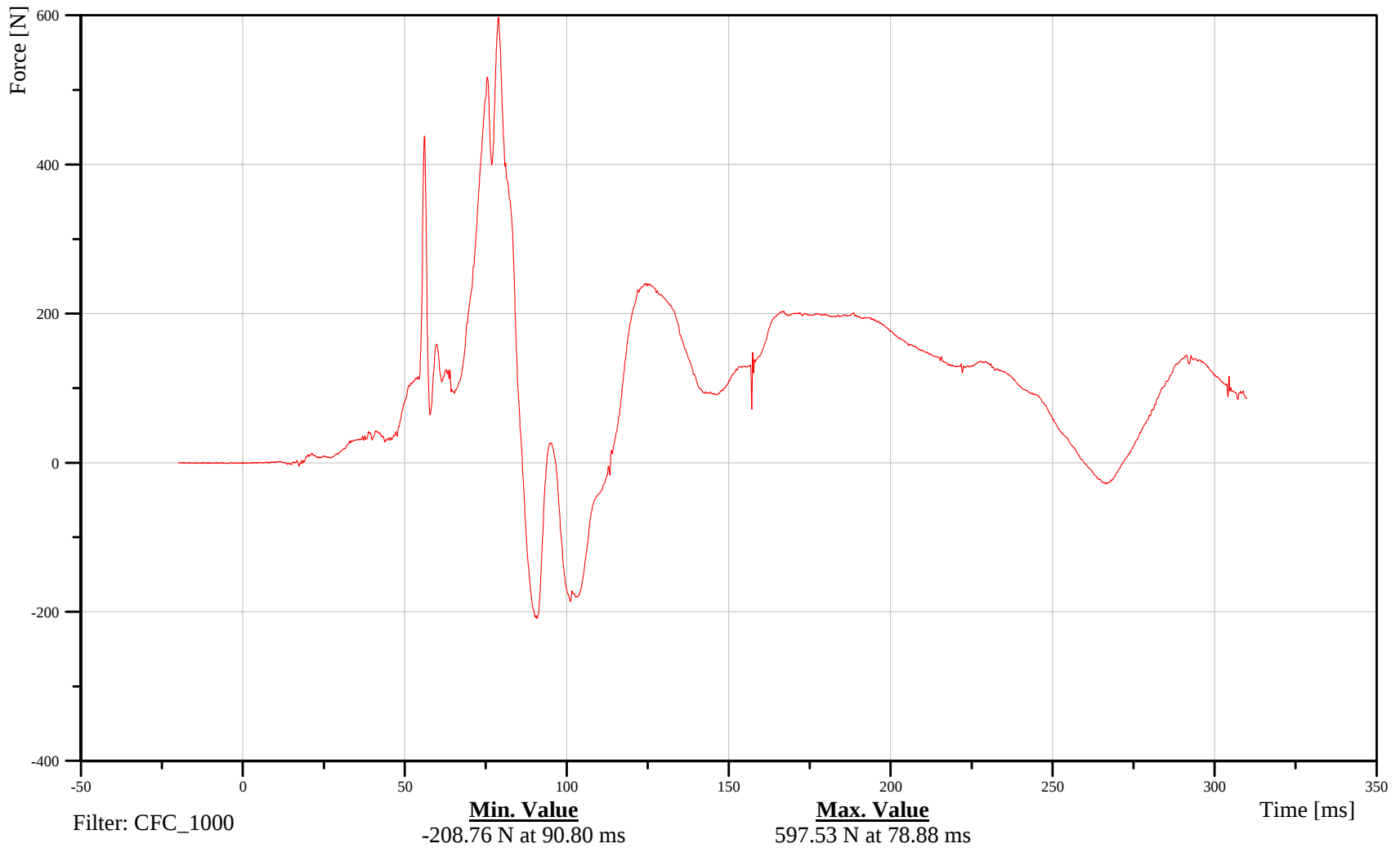
Child Safety Research
Right Rear Lower Neck Z-Axis Force

Date: 10/29/2008
Time: 14:39

Customer: VRTC

16NECKLO00Y6FOZA

TRC Inc. Test Lab: CTF
Test Number: 081029-1



B-43

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

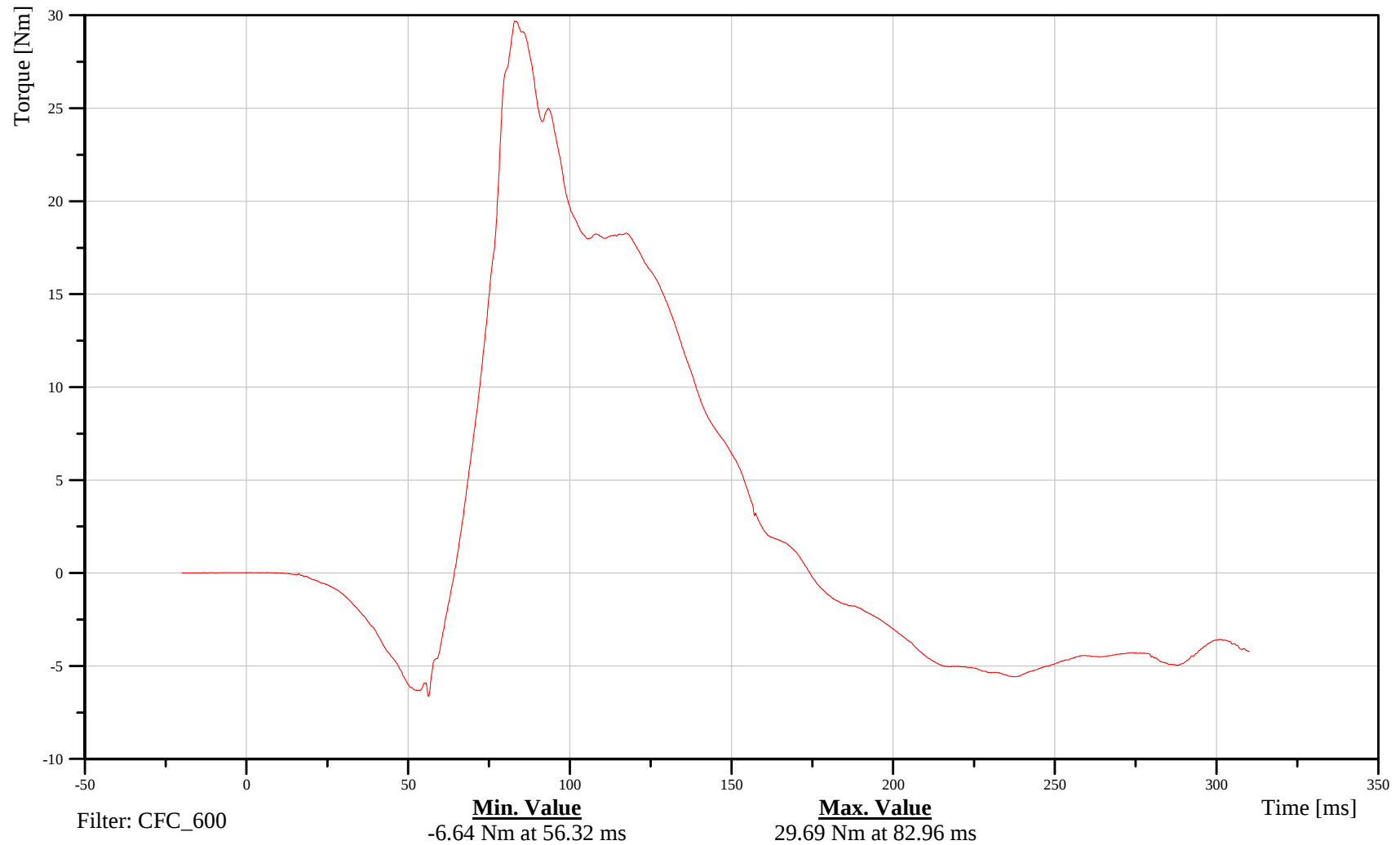
Right Rear Lower Neck Moment About X Axis

Customer: VRTC

16NECKLO00Y6MOXB

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-44

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

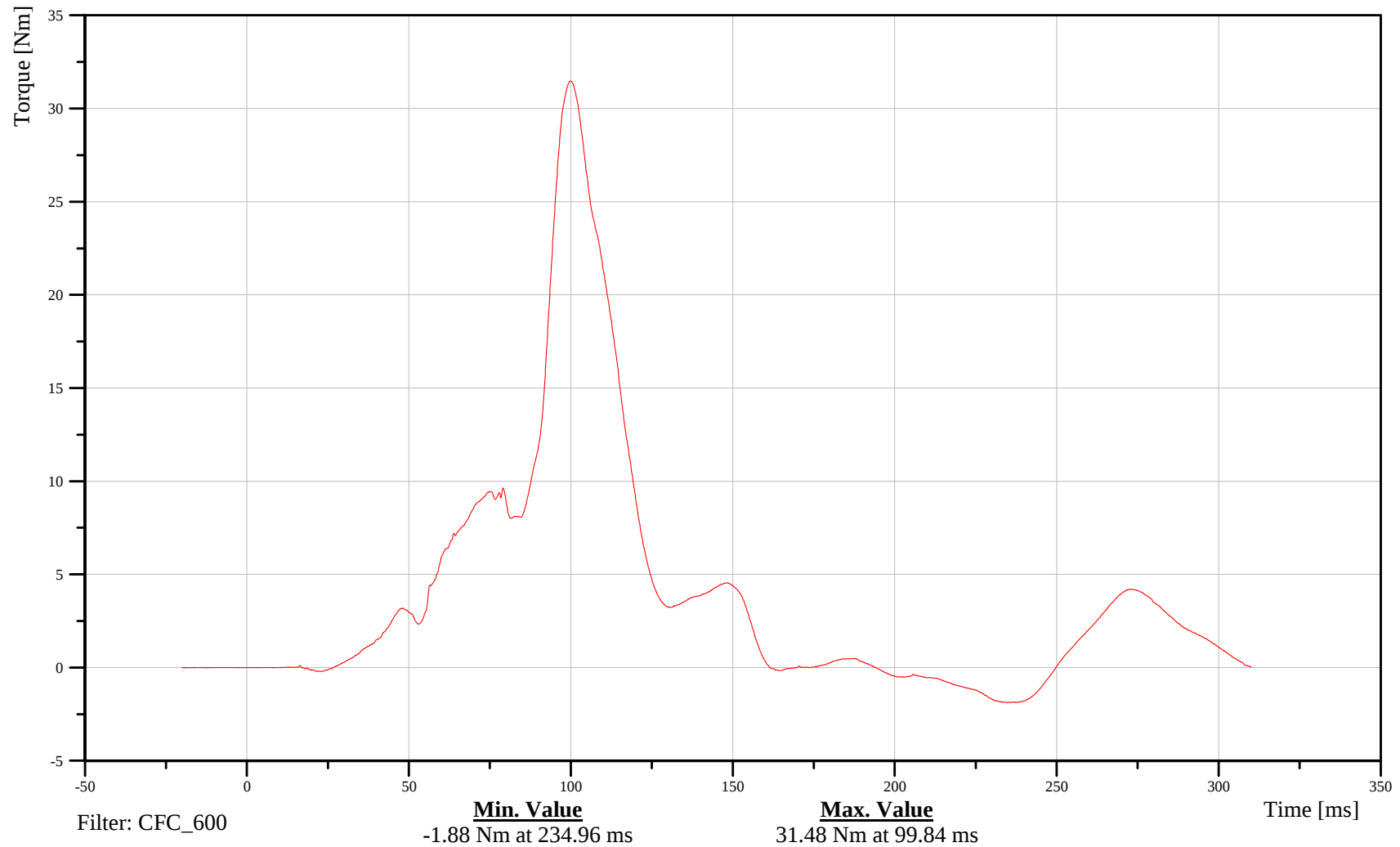
Right Rear Lower Neck Moment About Y Axis

Customer: VRTC

16NECKLO00Y6MOYB

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-45

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

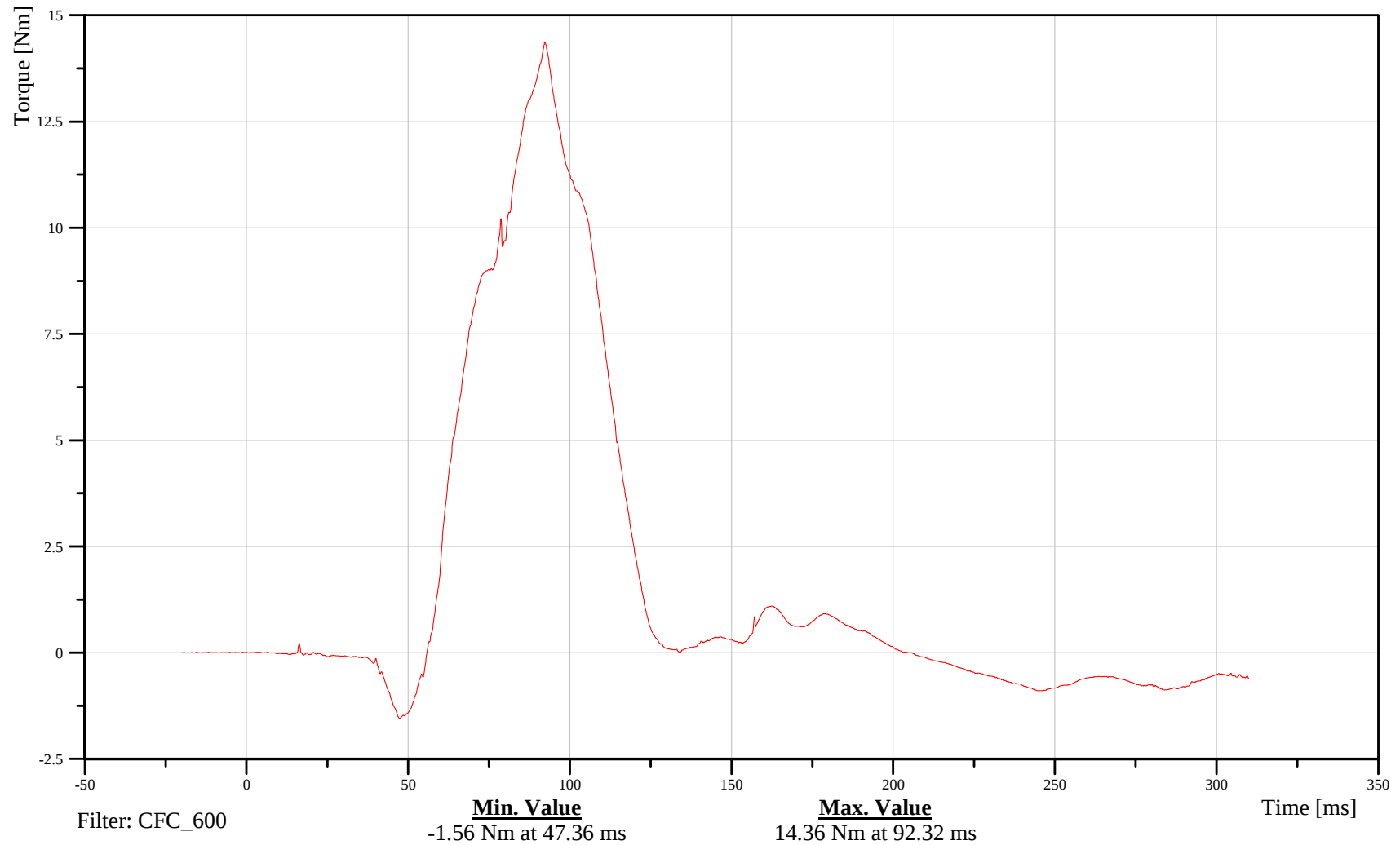
Right Rear Lower Neck Moment About Z Axis

Customer: VRTC

16NECKLO00Y6MOZB

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-46

081029



Child Safety Research
Right Rear Chest X-Axis Acceleration

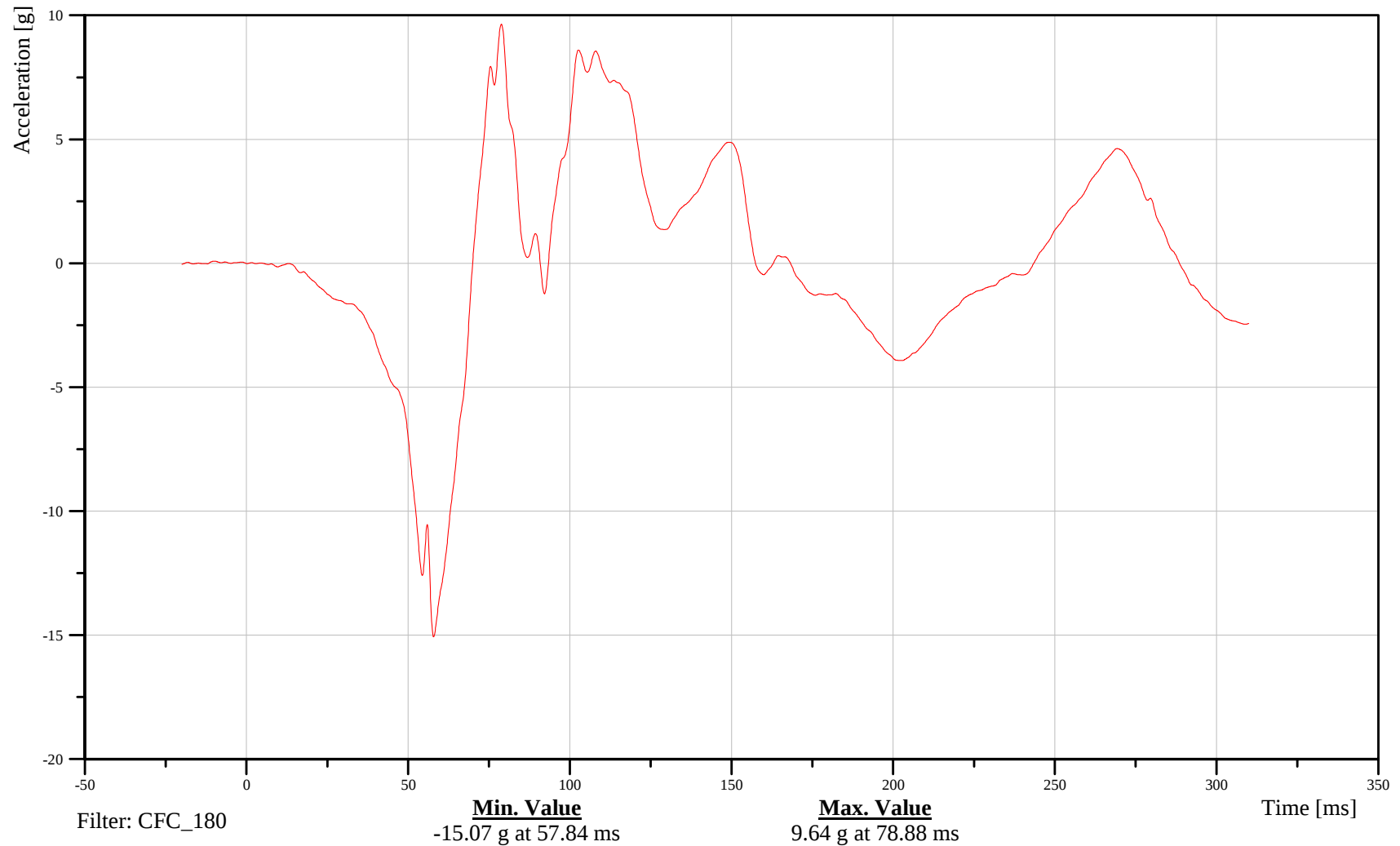
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16CHSTCG00Y6ACXC

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-47

081029



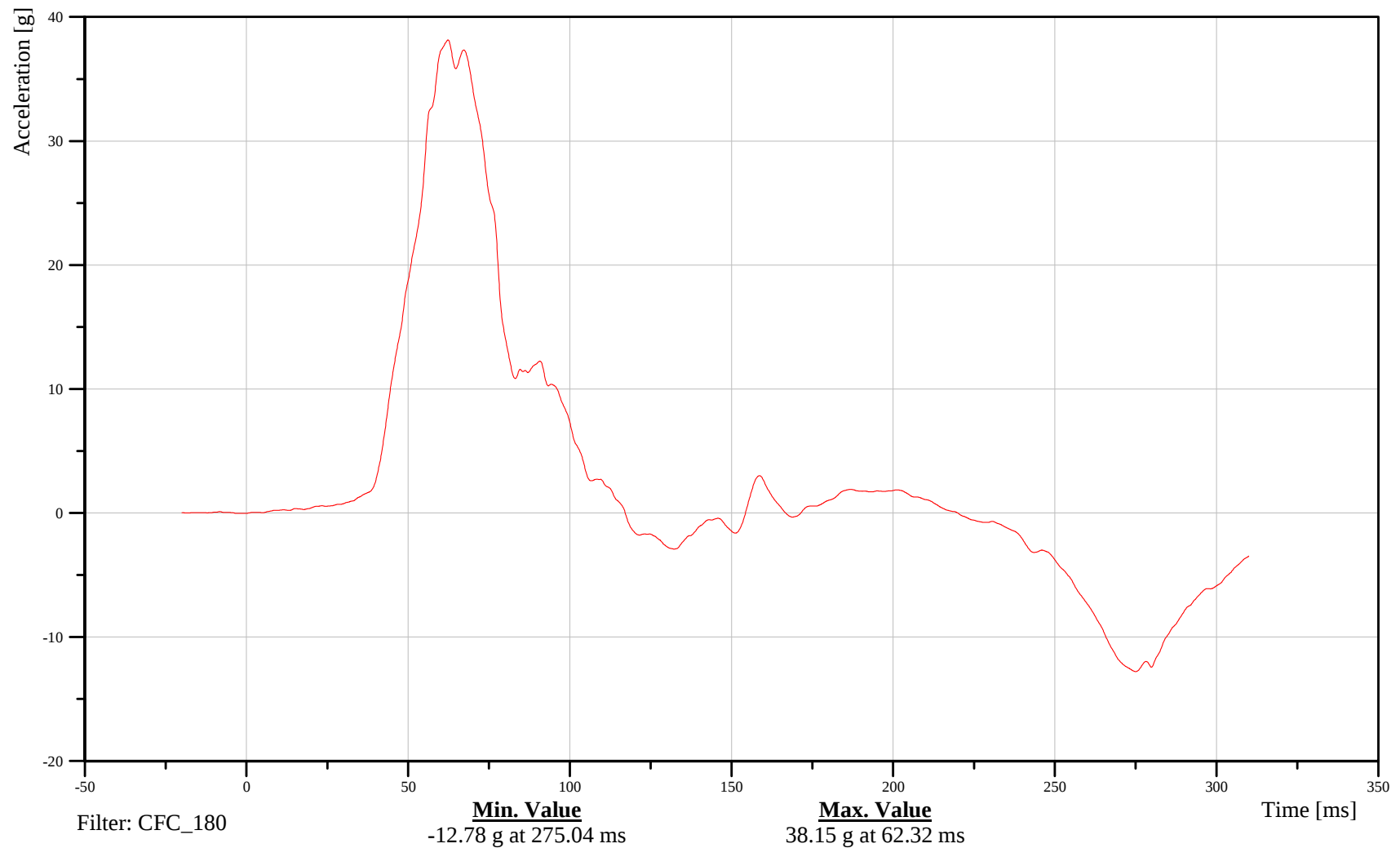
Child Safety Research
Right Rear Chest Y-Axis Acceleration

Date: 10/29/2008
Time: 14:39

Customer: VRTC

16CHSTCG00Y6ACYC

TRC Inc. Test Lab: CTF
Test Number: 081029-1



B-48

081029



Child Safety Research
Right Rear Chest Z-Axis Acceleration

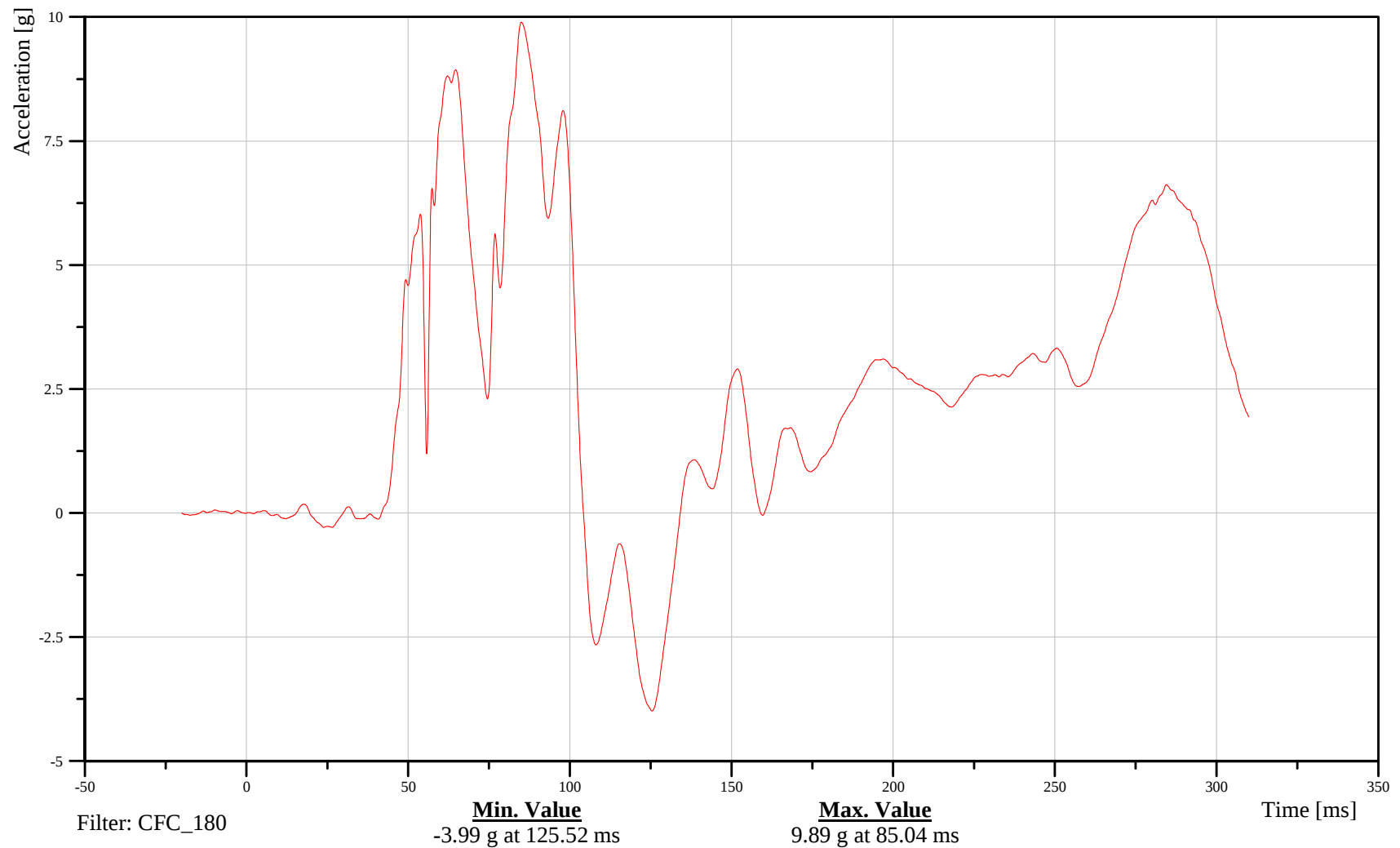
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16CHSTCG00Y6ACZC

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-49

081029



Child Safety Research
Right Rear Chest Resultant Acceleration

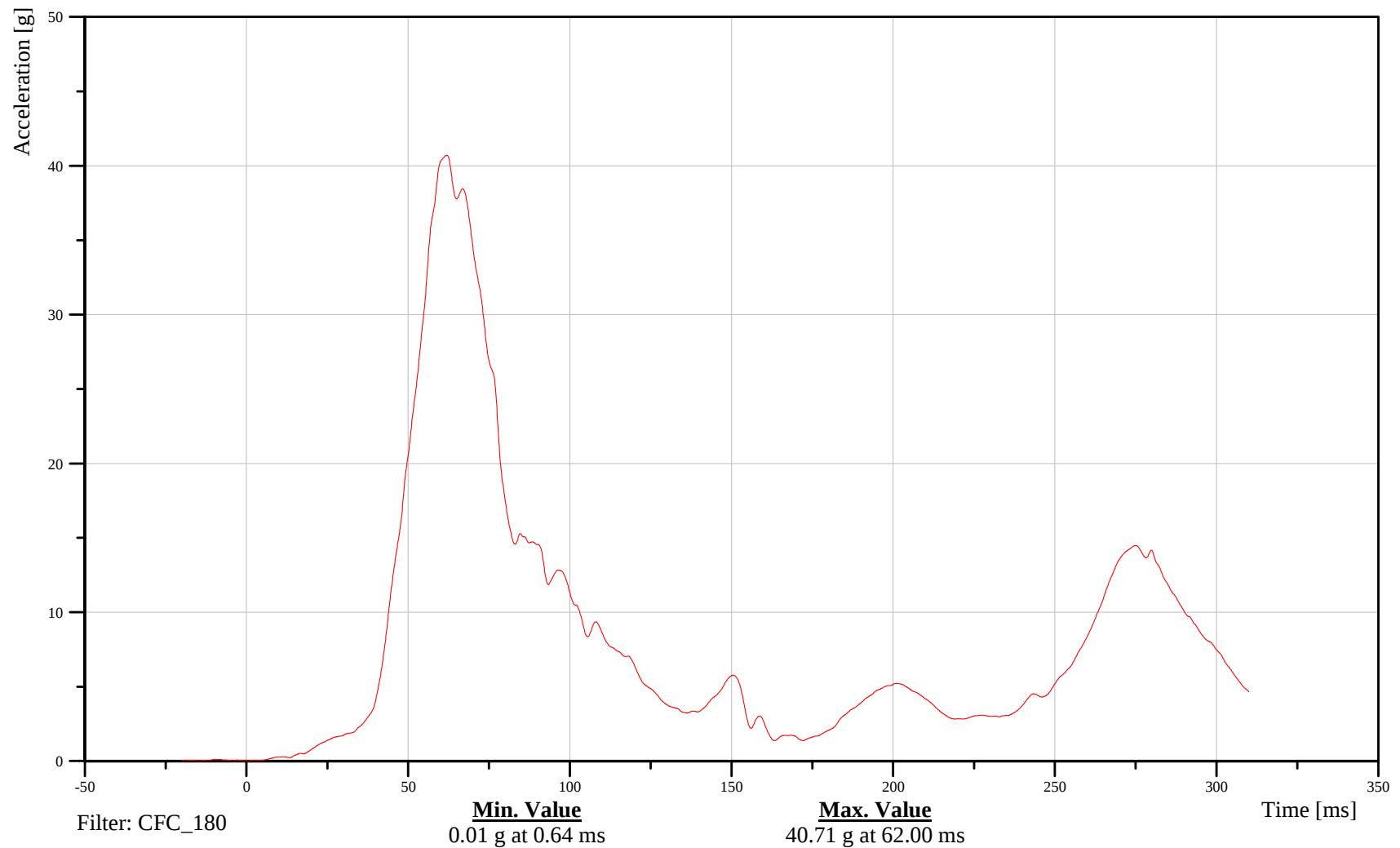
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16CHSTCG00Y6ACRC

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-50

081029



Child Safety Research
Right Rear Chest X-Axis Displacement

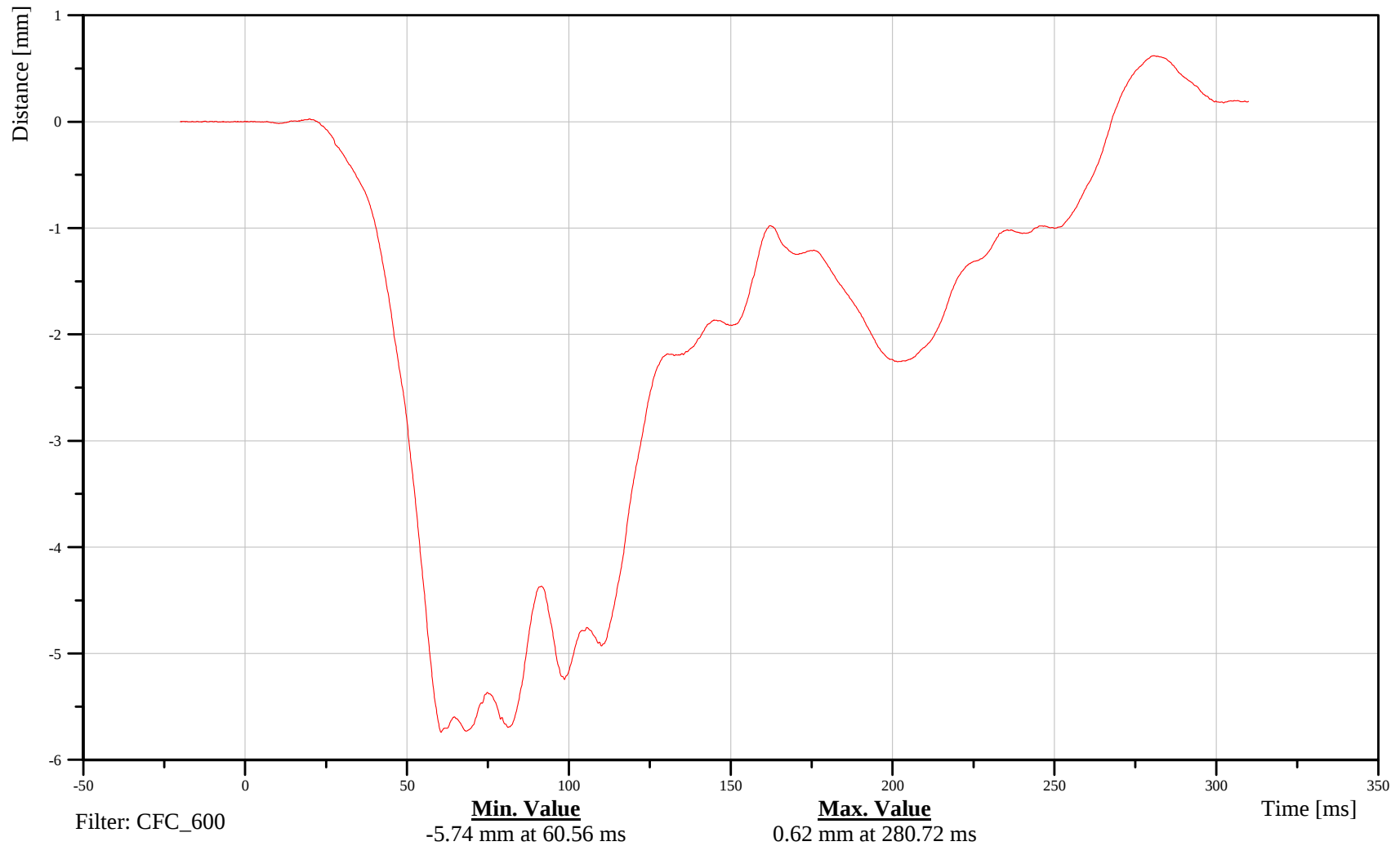
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16CHST0000Y6DSXB

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-51

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

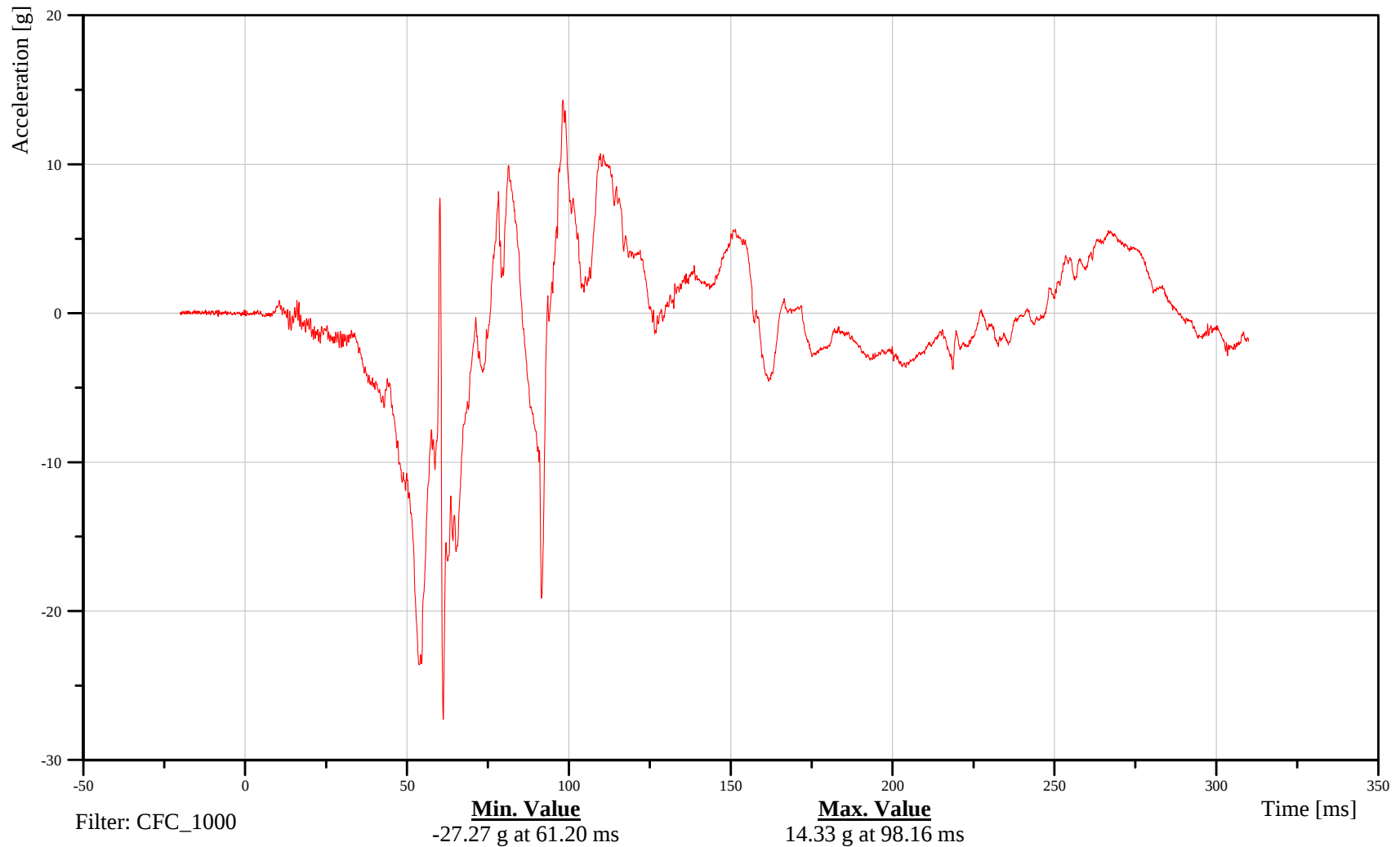
Right Rear Sternum (Rib 1) X-Axis Acceleration

Customer: VRTC

16STRN0100Y6ACXA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-52

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

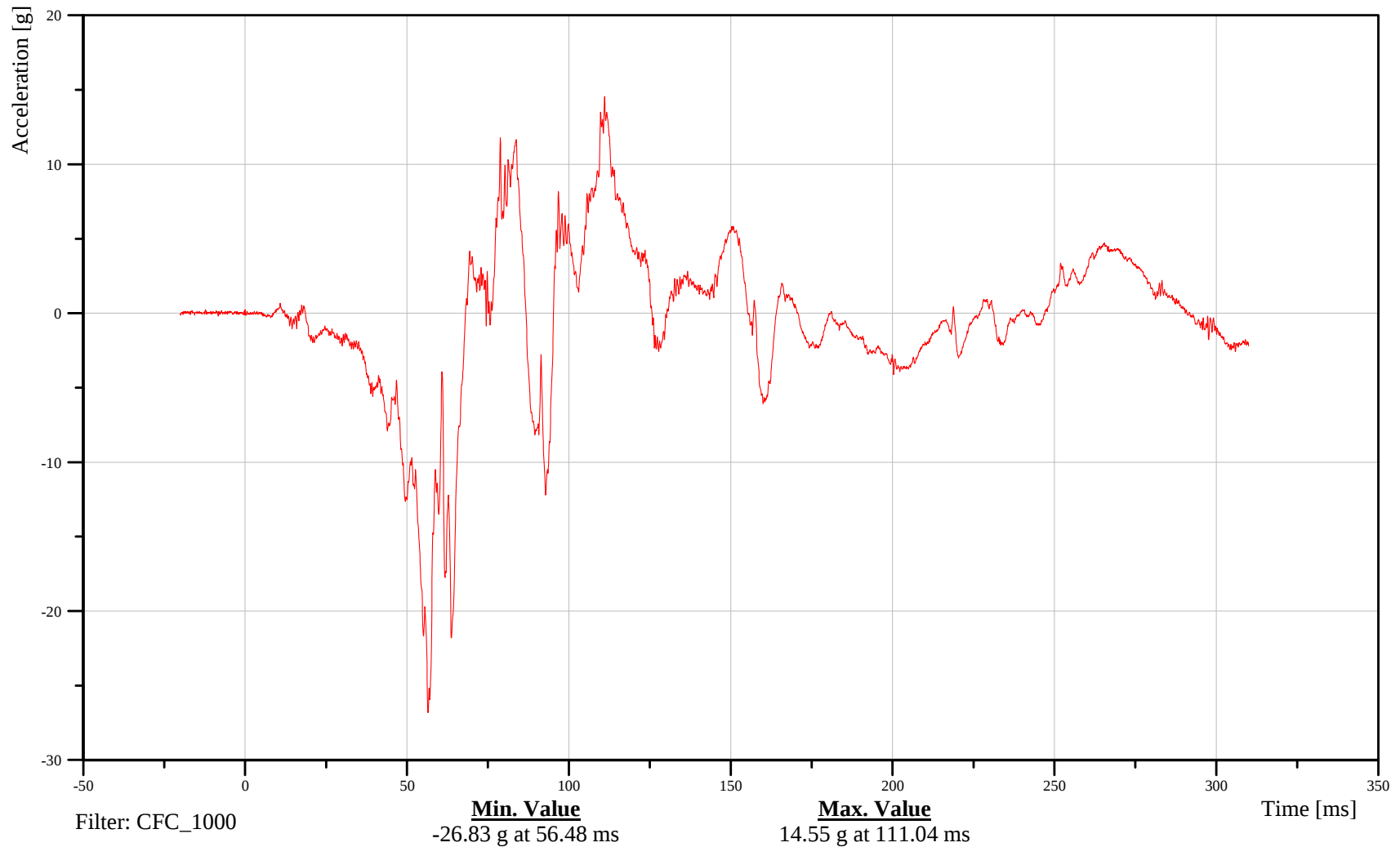
Right Rear Sternum (Rib 6) X-Axis Acceleration

Customer: VRTC

16STRN0600Y6ACXA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-53

081029



Child Safety Research
Right Rear Pelvis X-Axis Acceleration

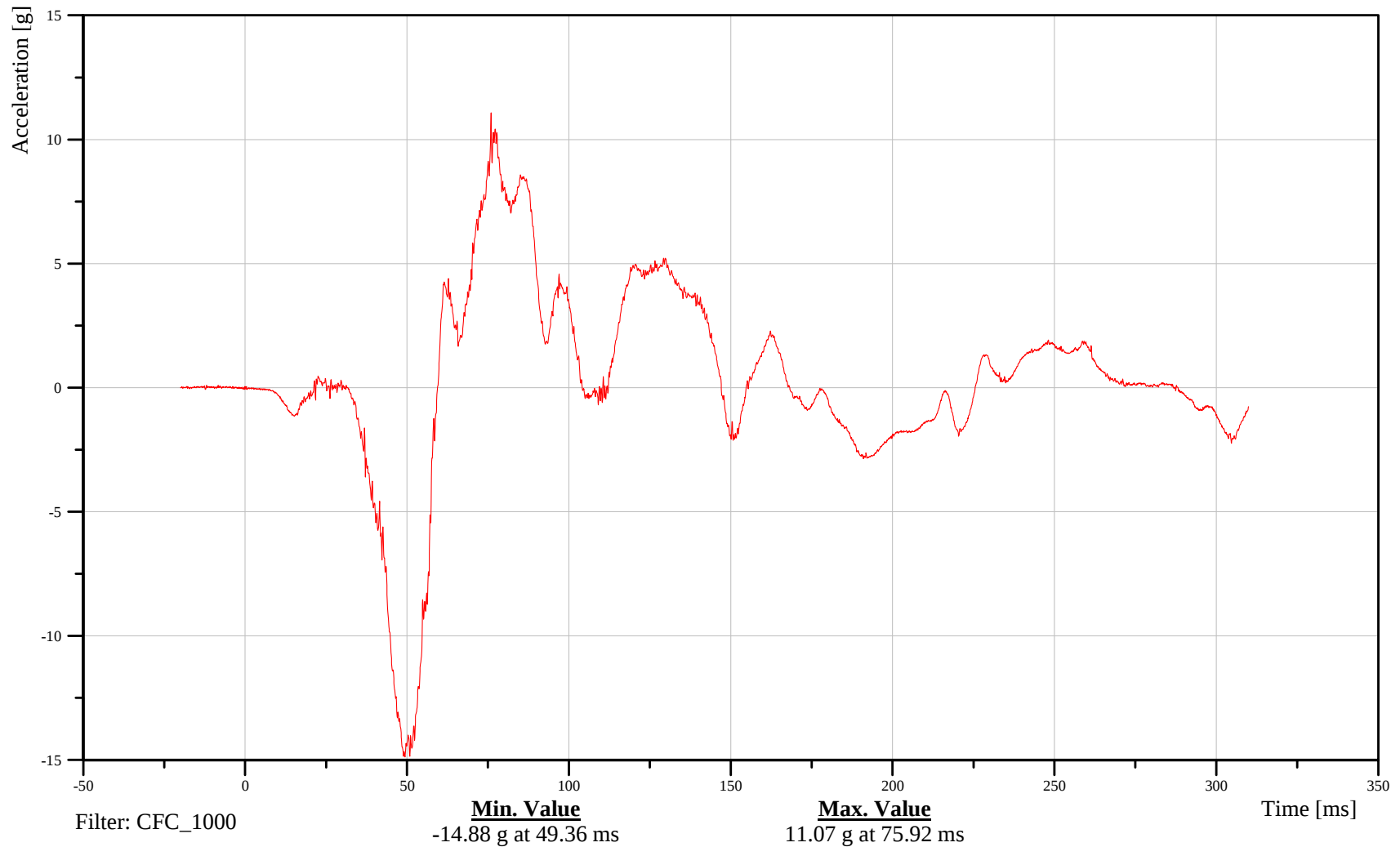
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16PELVCG00Y6ACXA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-54

081029



Child Safety Research
Right Rear Pelvis Y-Axis Acceleration

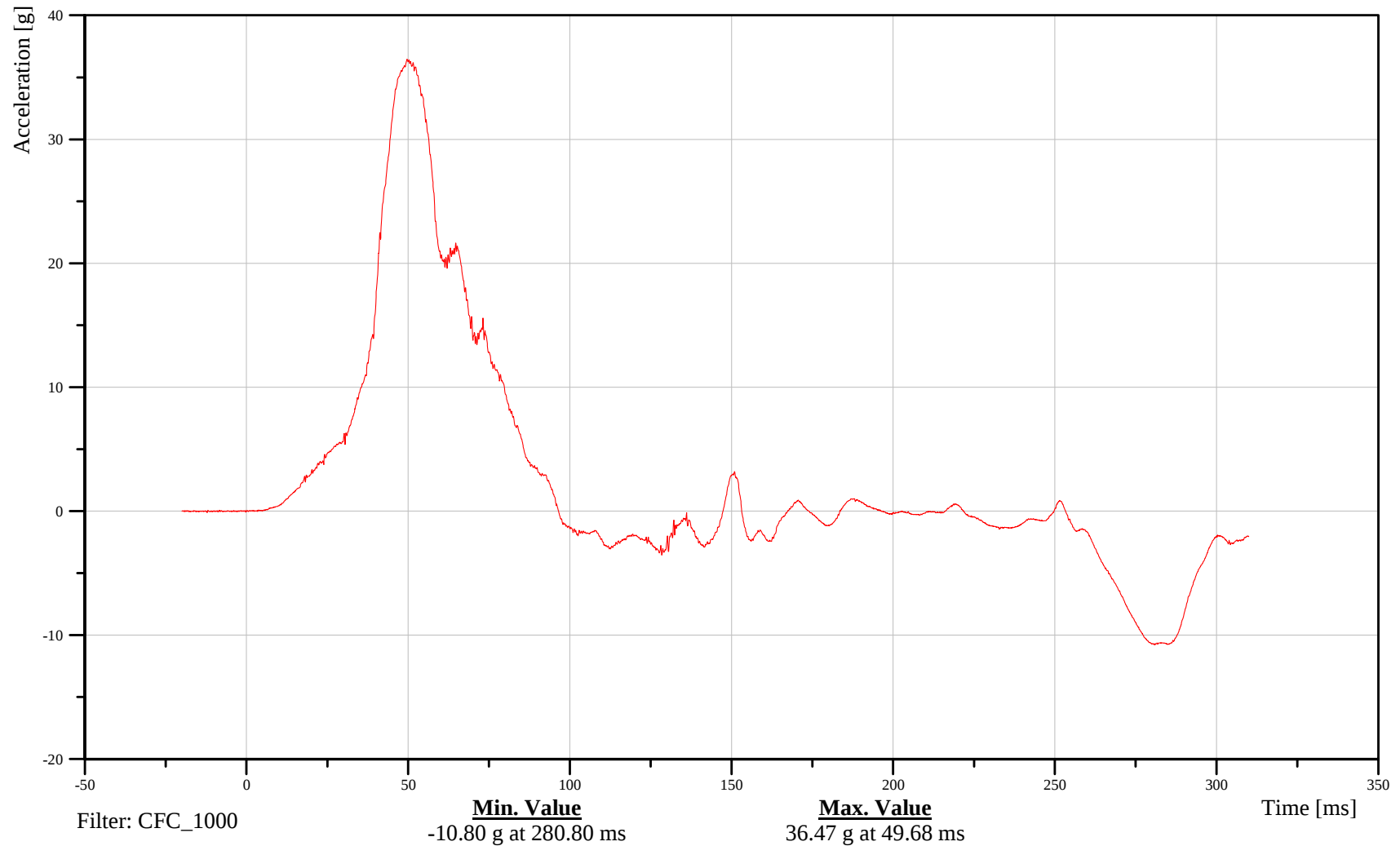
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16PELVCG00Y6ACYA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-55

081029



Child Safety Research
Right Rear Pelvis Z-Axis Acceleration

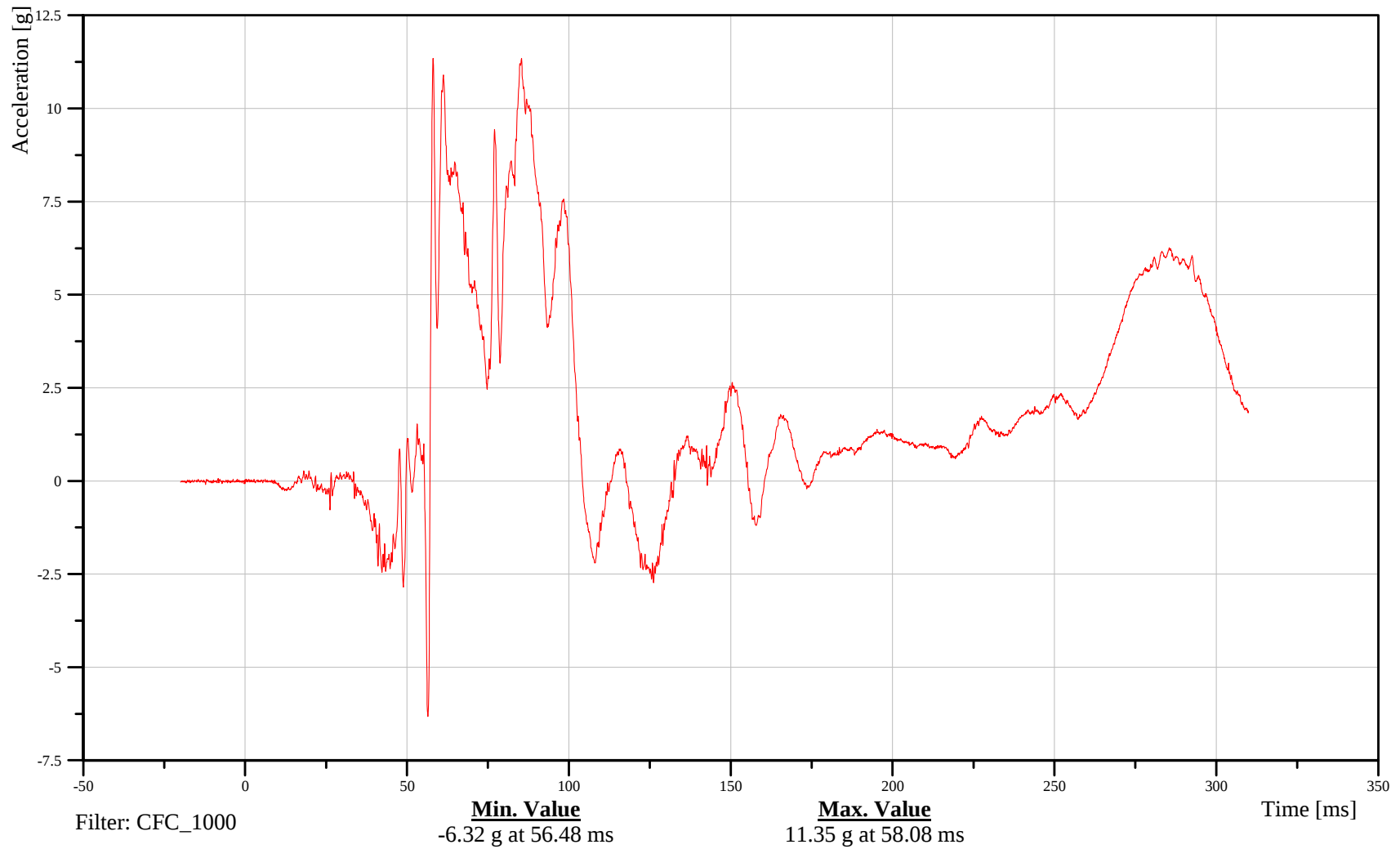
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16PELVCG00Y6ACZA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-56

081029



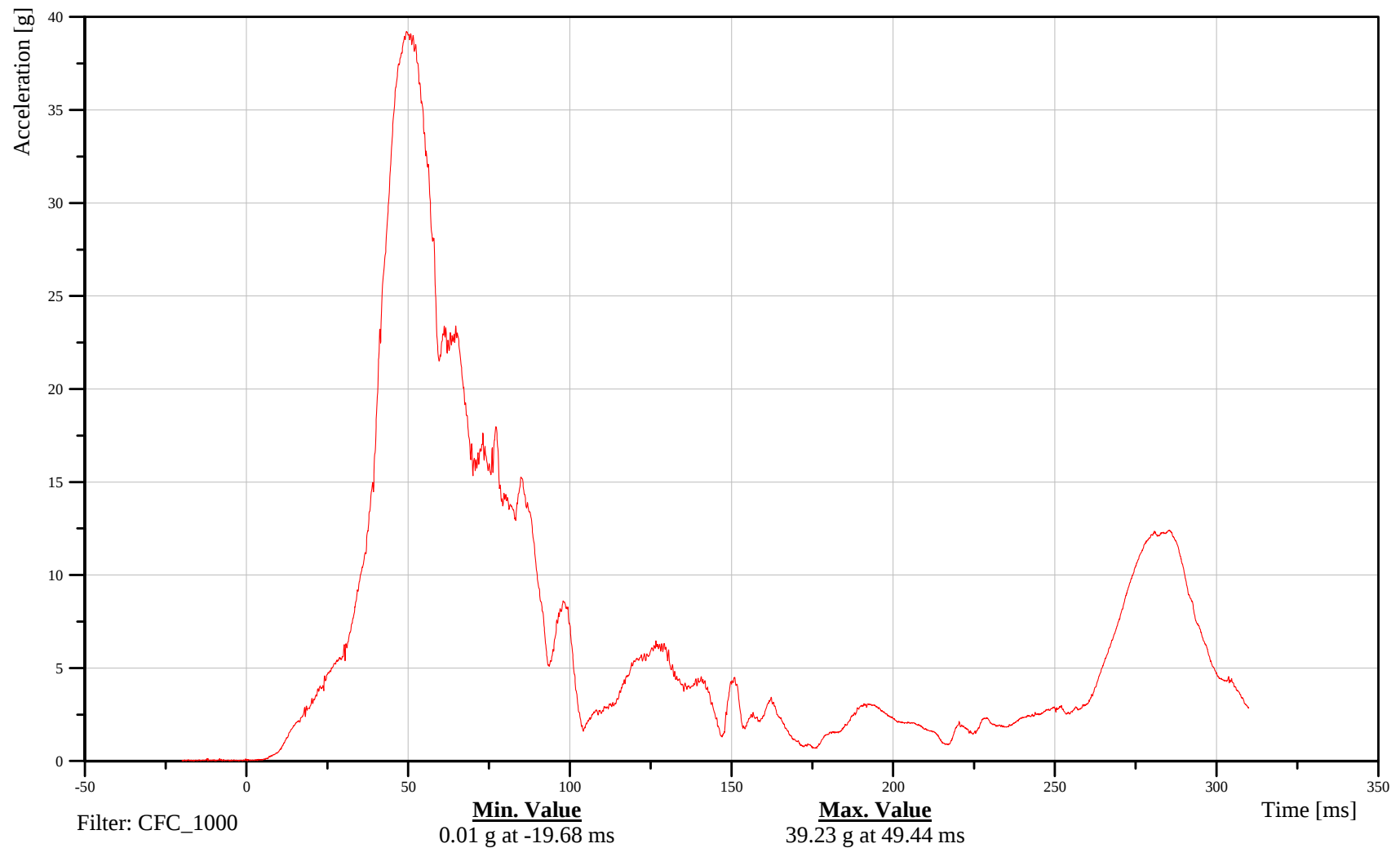
Child Safety Research
Right Rear Pelvis Resultant Acceleration

Date: 10/29/2008
Time: 14:39

Customer: VRTC

16PELVCG00Y6ACRA

TRC Inc. Test Lab: CTF
Test Number: 081029-1



B-57

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

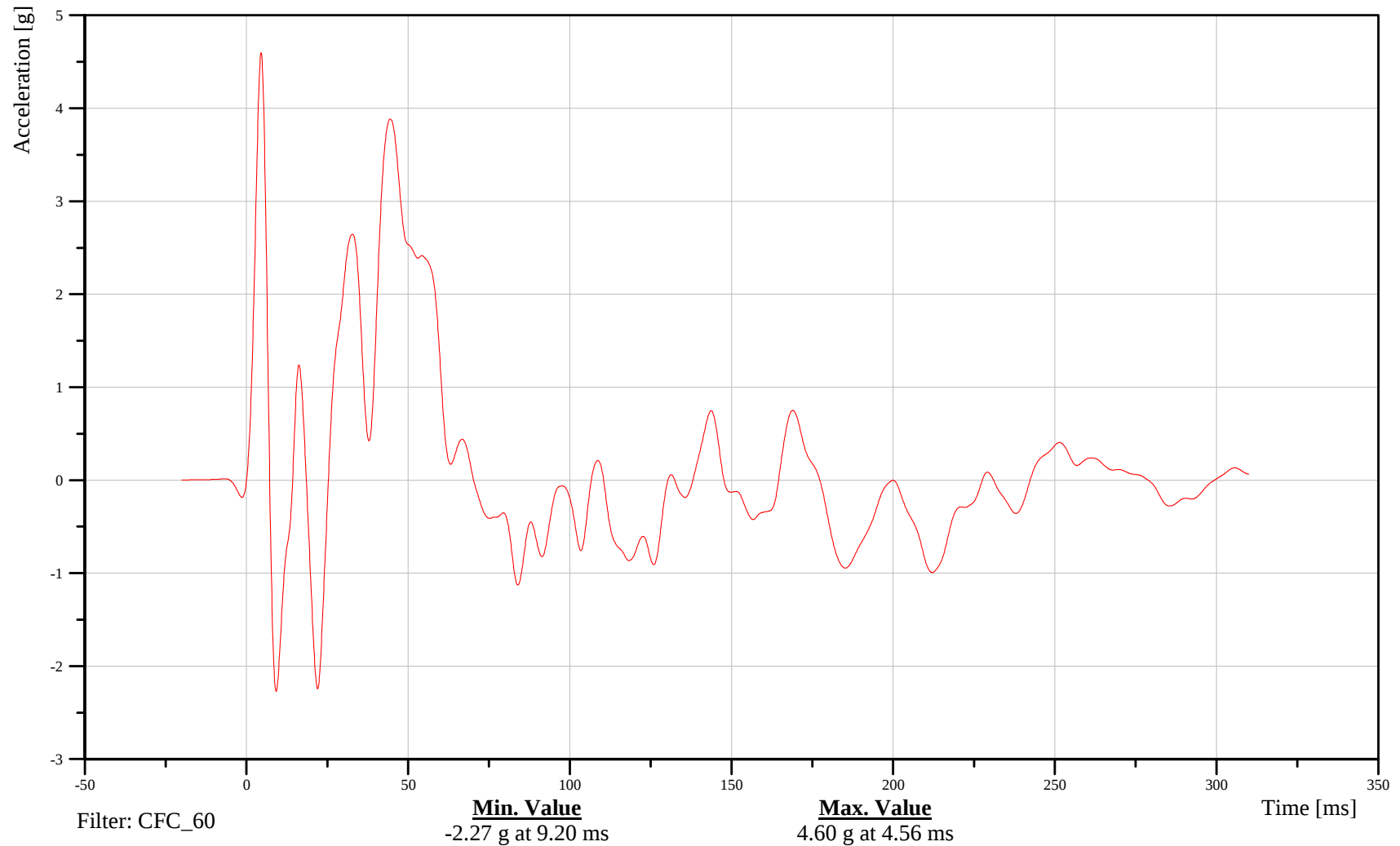
Right Side Sill at Front Seat X-Axis Acceleration

Customer: VRTC

16SILBFR0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-58

081029



Child Safety Research
Right Side Sill at Front Seat Y-Axis Acceleration

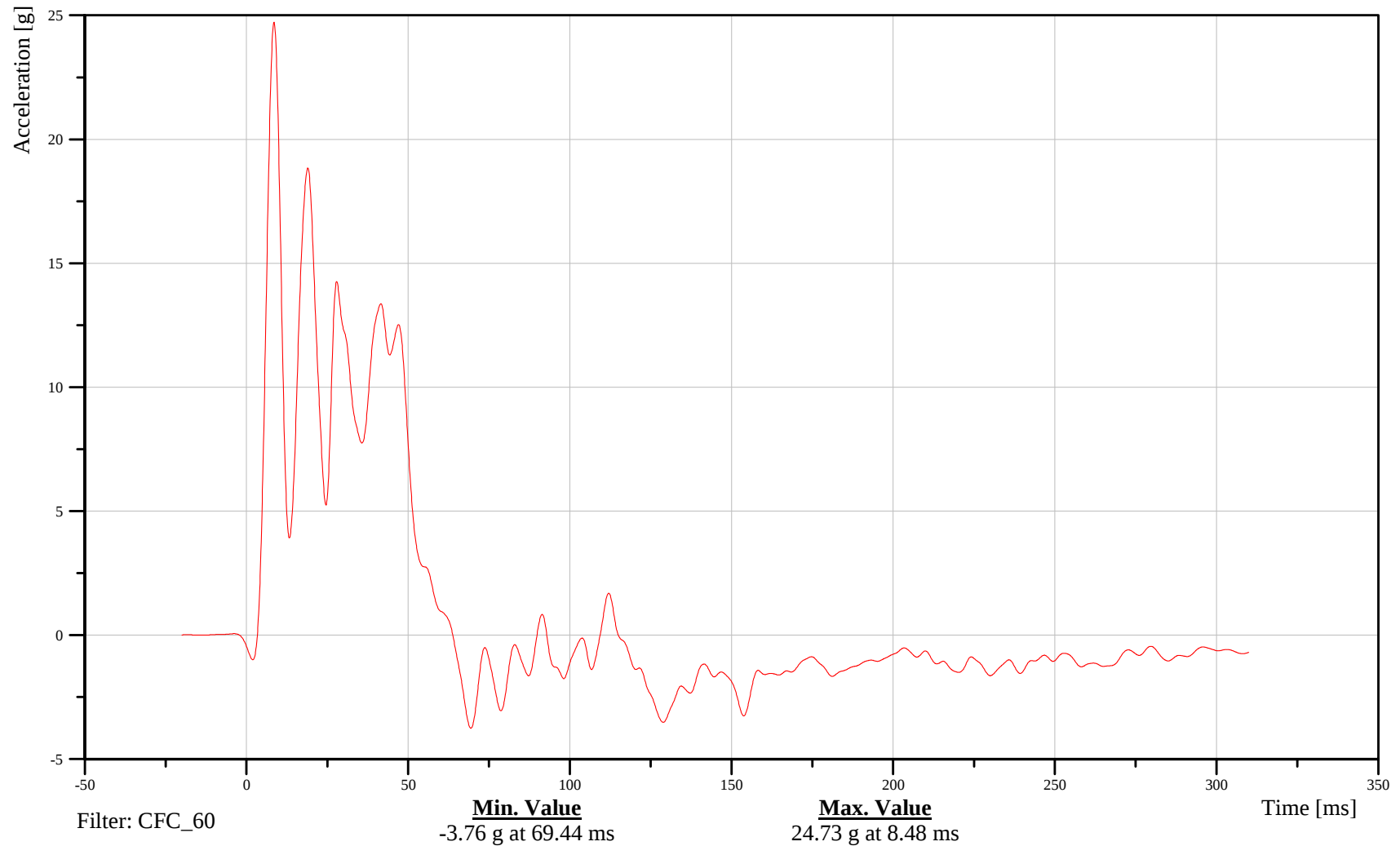
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16SILBFR0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-59

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

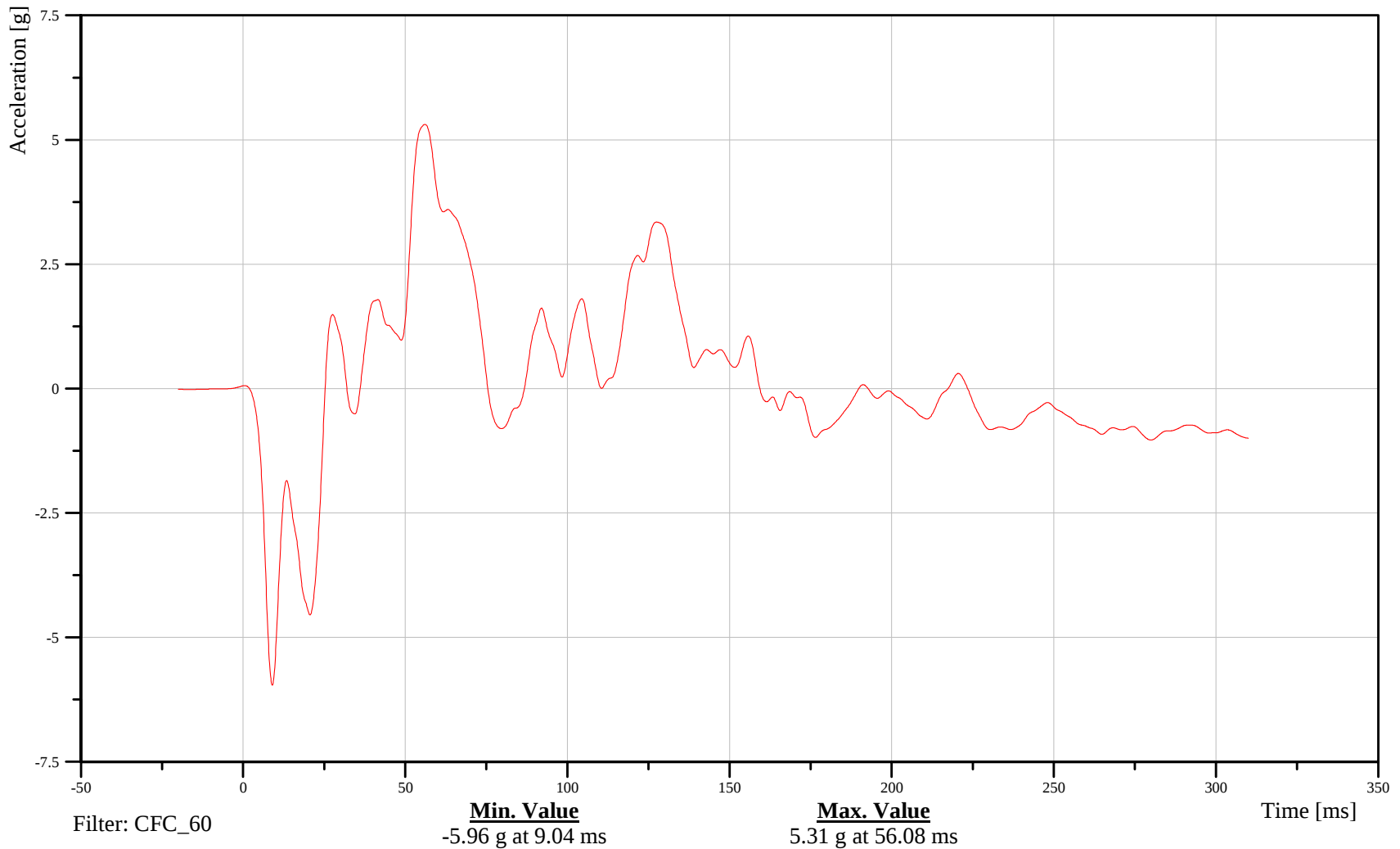
Right Side Sill at Front Seat Z-Axis Acceleration

Customer: VRTC

16SILBFR0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-60

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

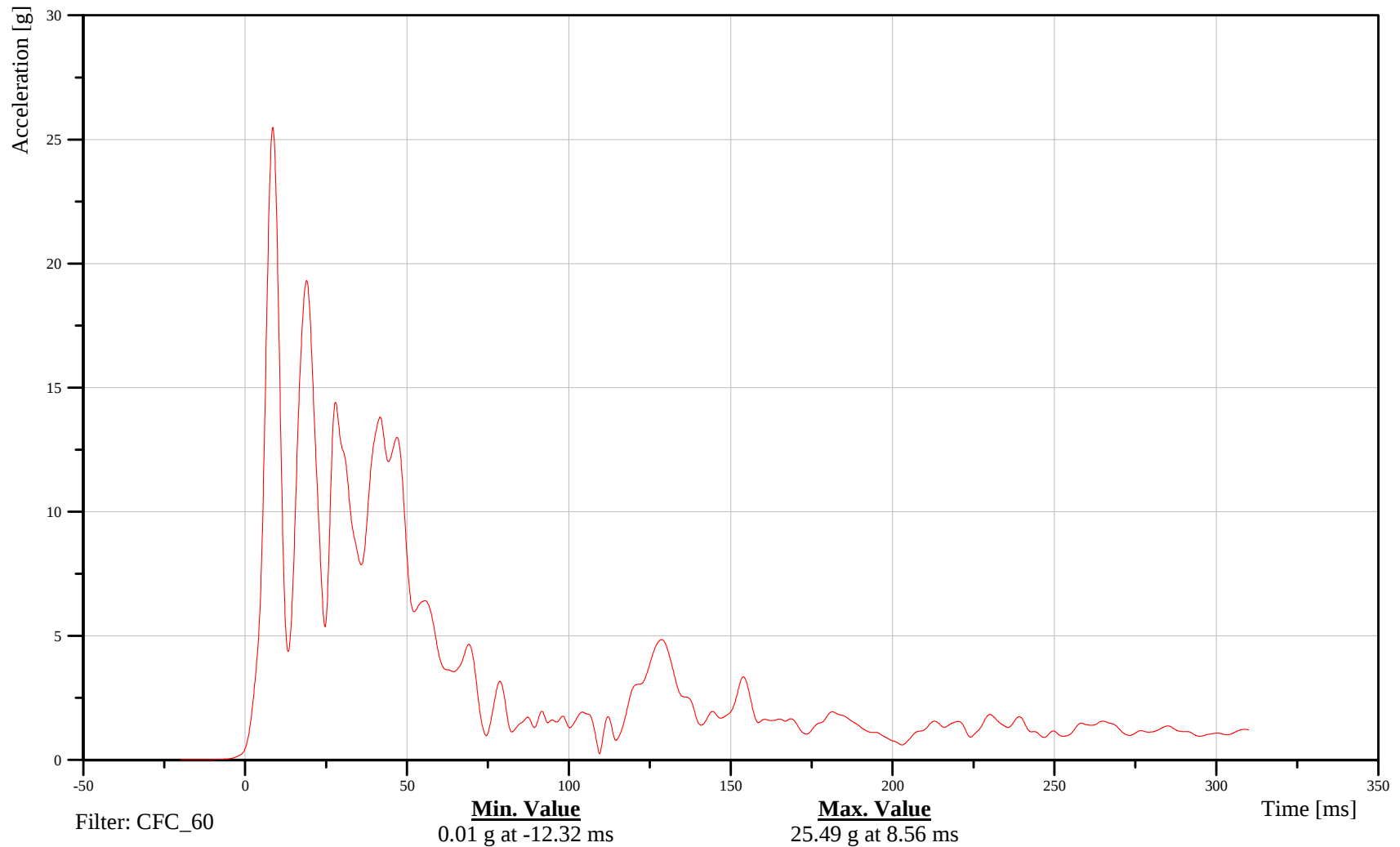
Right Side Sill at Front Seat Resultant Acceleration

Customer: VRTC

16SILBFR0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-61

081029



Child Safety Research
Right Side Sill at Rear Seat X-Axis Acceleration

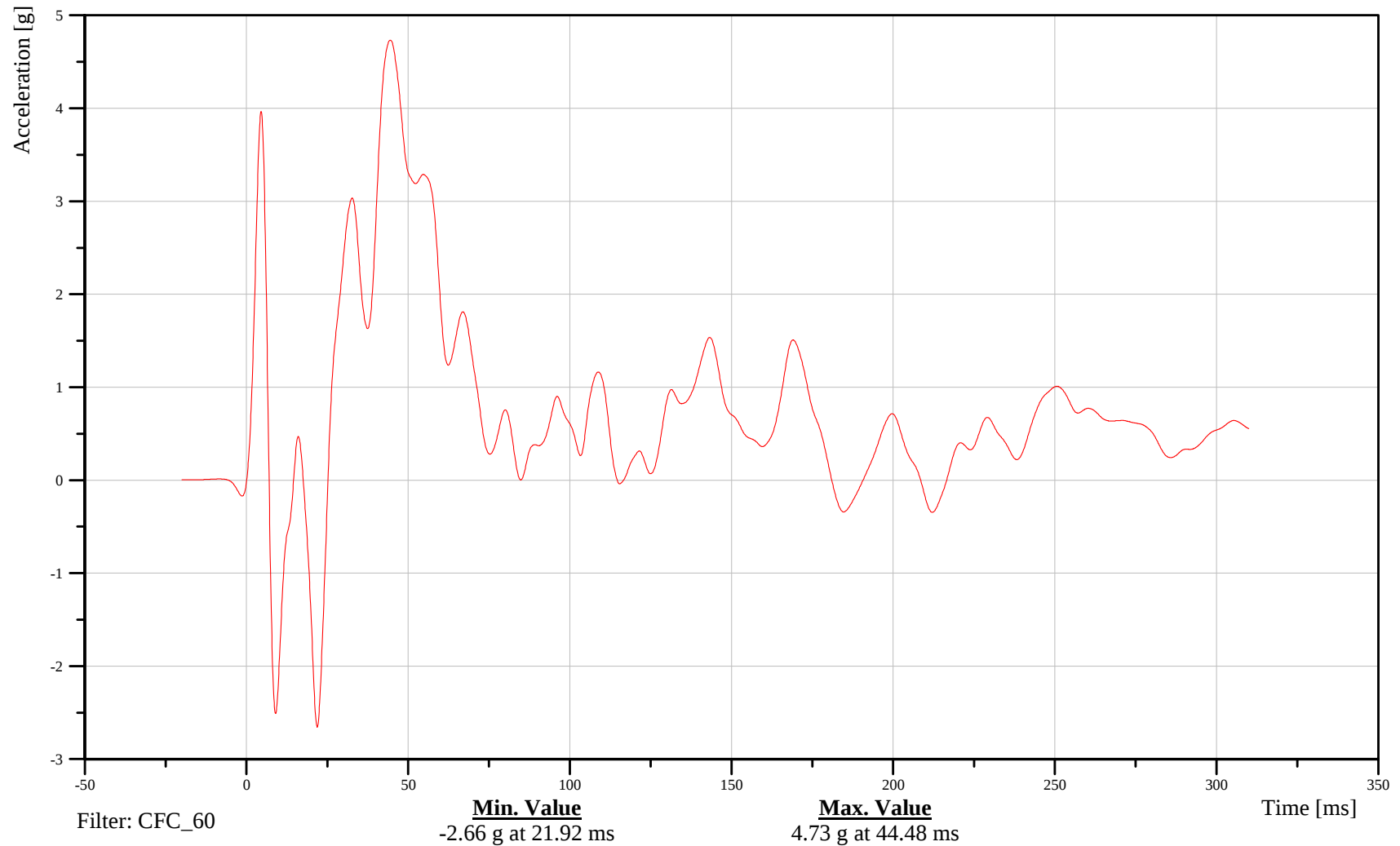
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16SILBRE0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-62

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

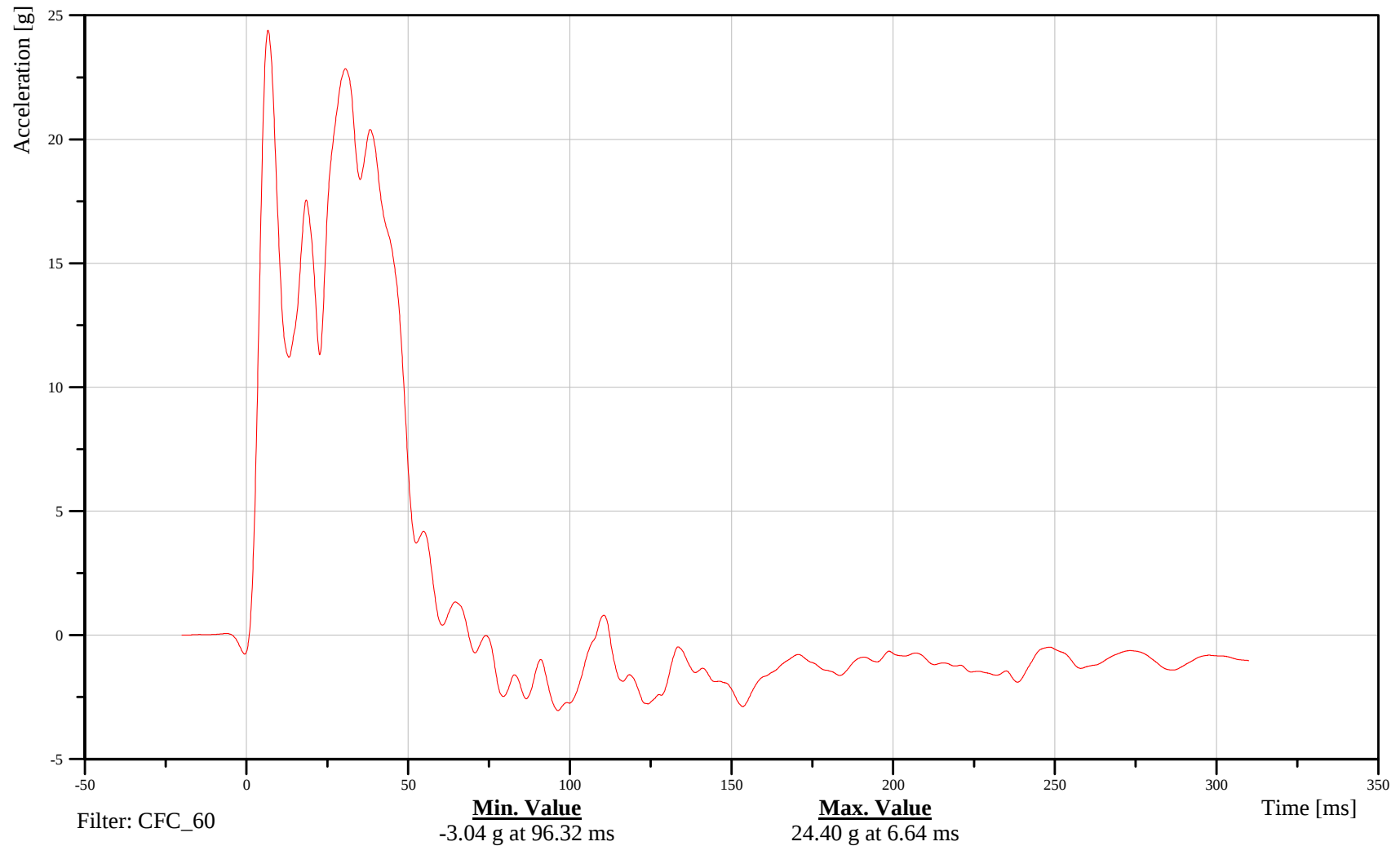
Right Side Sill at Rear Seat Y-Axis Acceleration

Customer: VRTC

16SILBRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-63

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

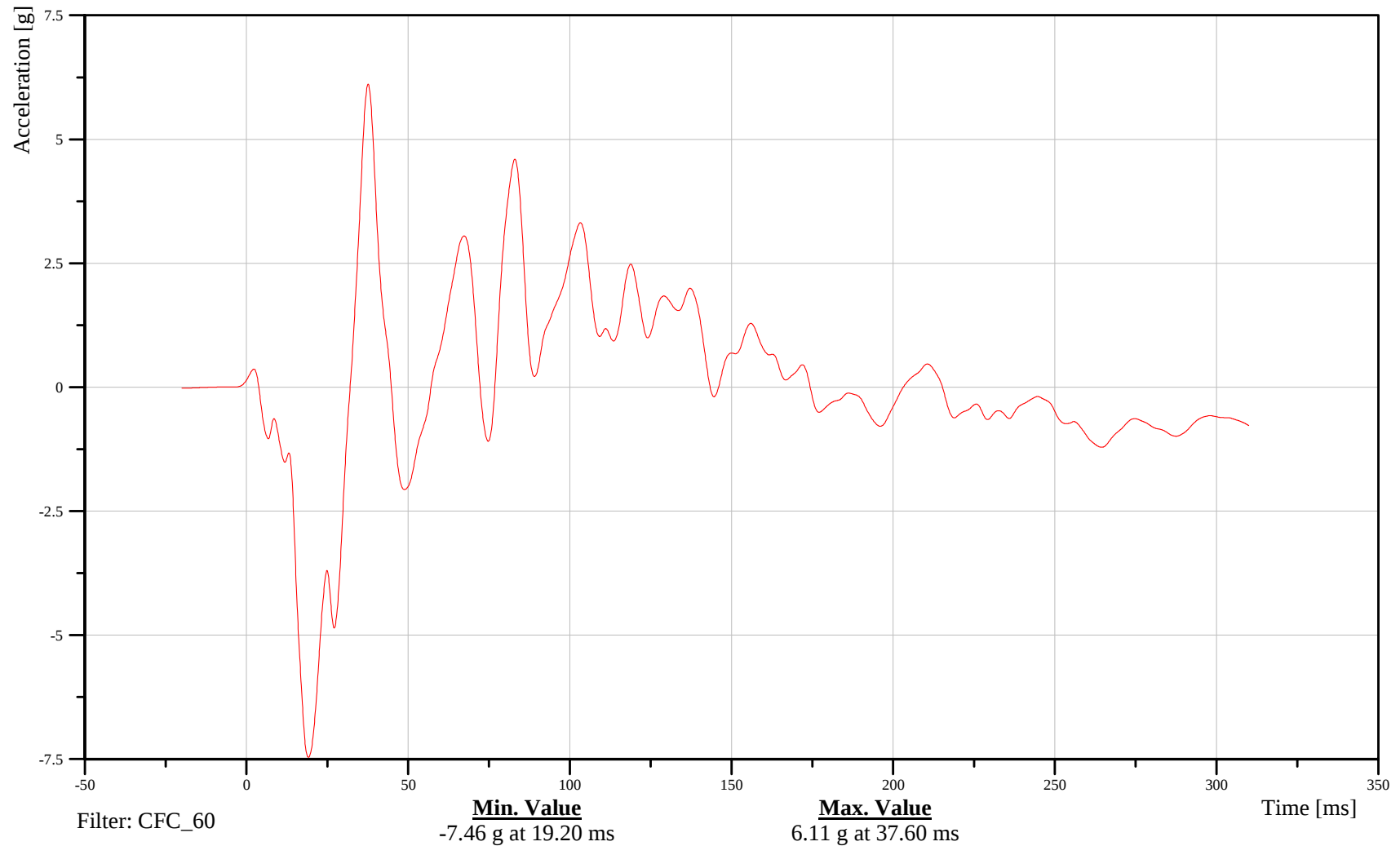
Right Side Sill at Rear Seat Z-Axis Acceleration

Customer: VRTC

16SILBRE0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-64

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

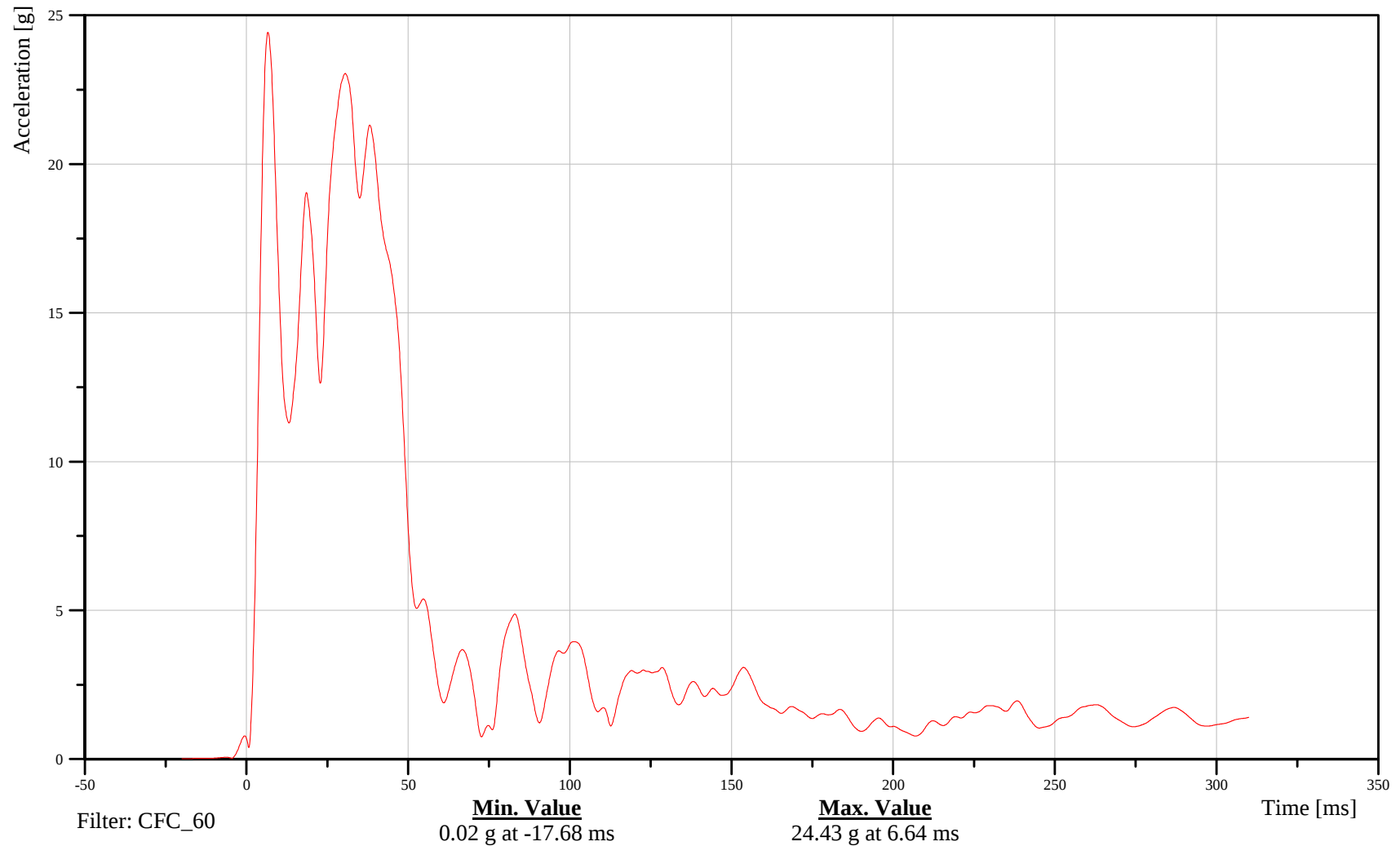
Right Side Sill at Rear Seat Resultant Acceleration

Customer: VRTC

16SILBRE0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-65

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

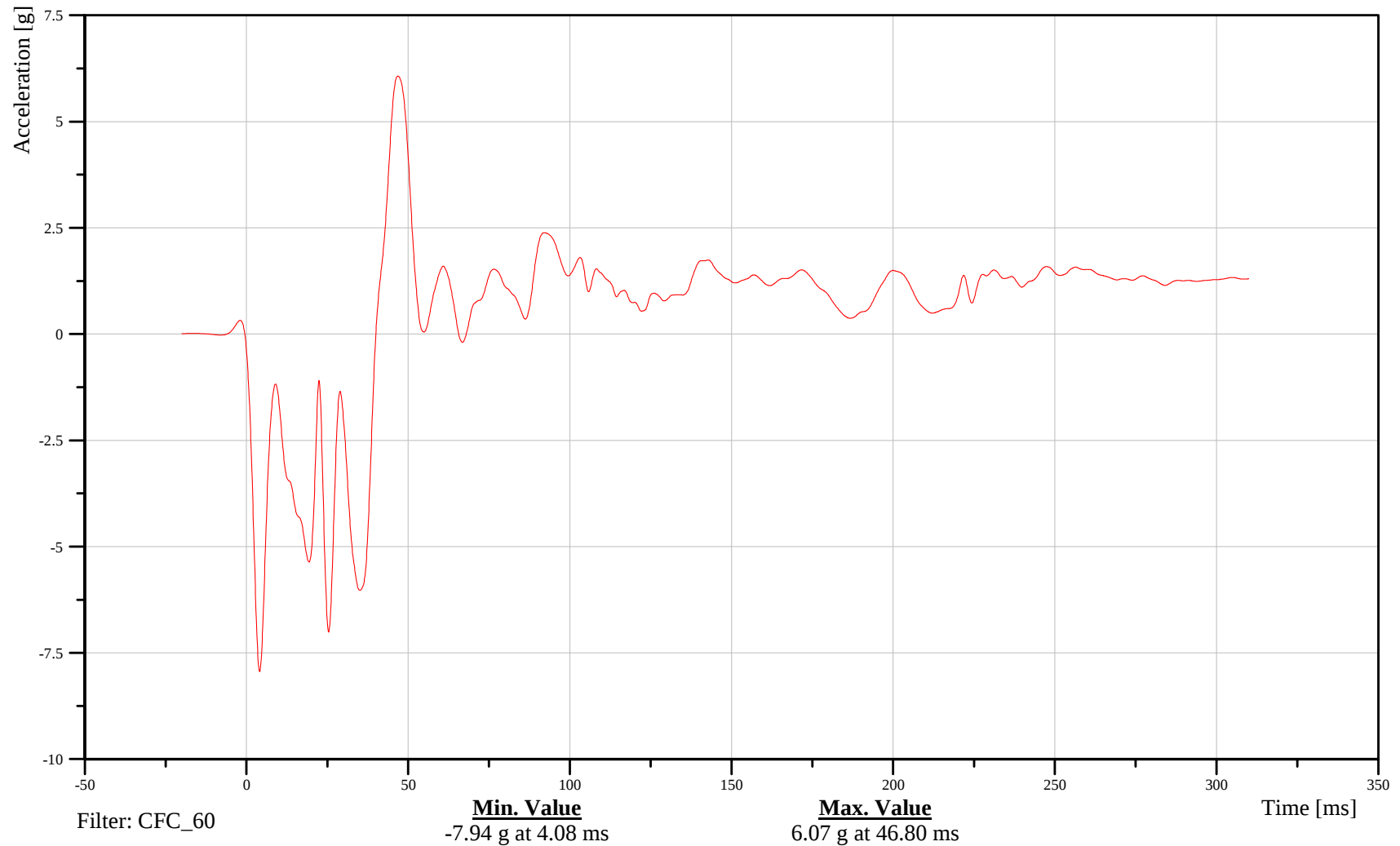
Rear Floorpan Above Axle X-Axis Acceleration

Customer: VRTC

18FORA000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-66

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

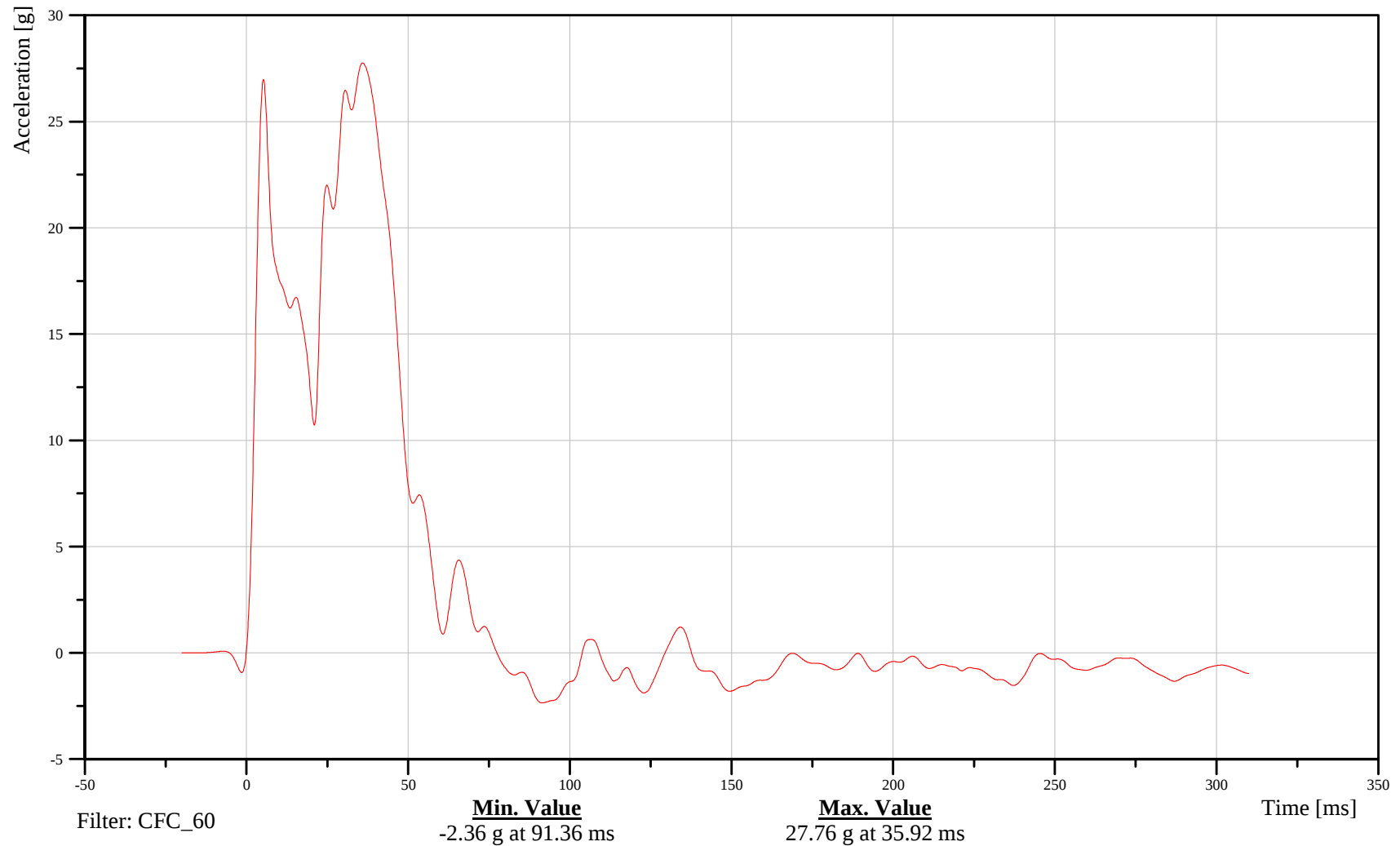
Rear Floorpan Above Axle Y-Axis Acceleration

Customer: VRTC

18FORA000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-67

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

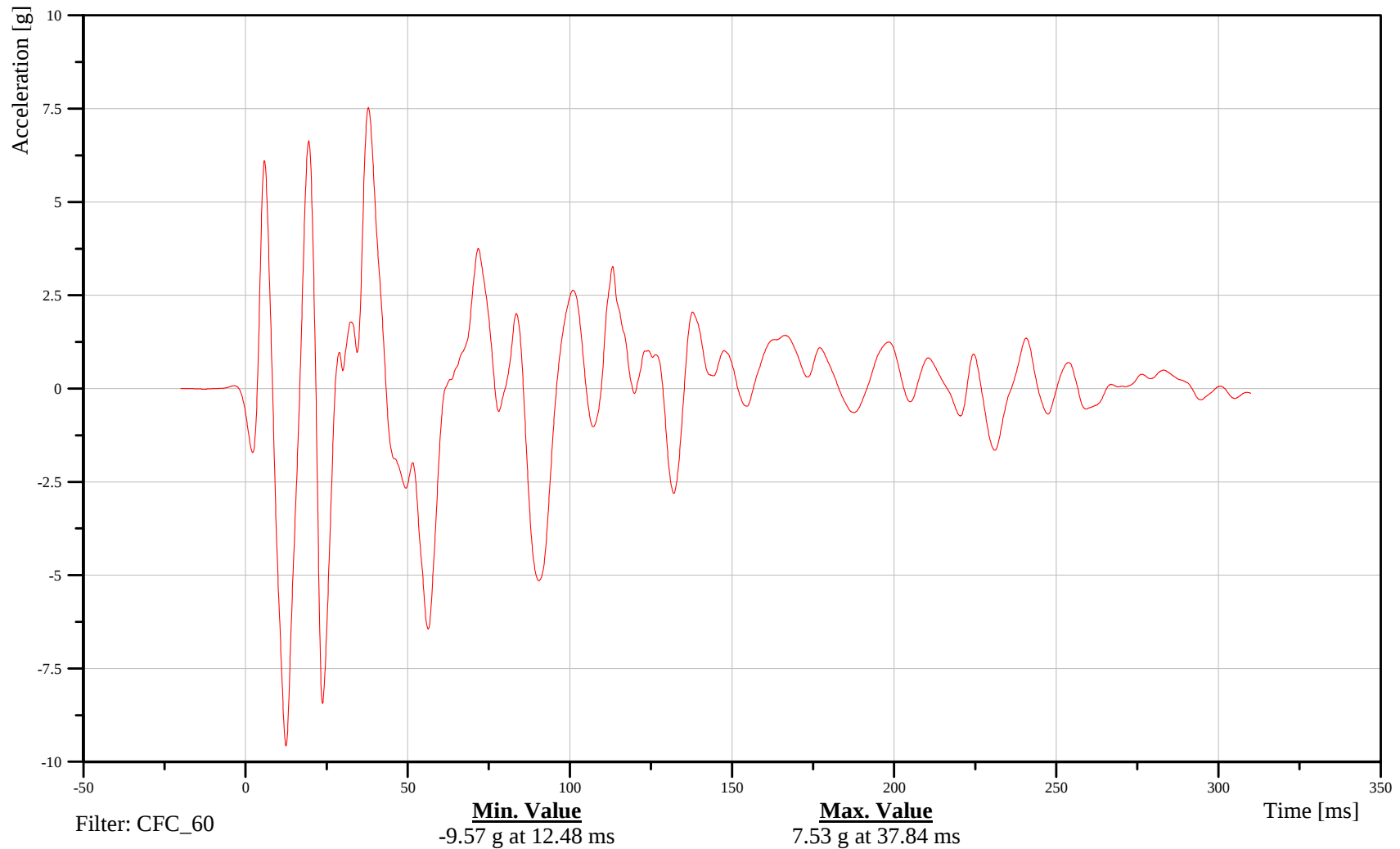
Rear Floorpan Above Axle Z-Axis Acceleration

Customer: VRTC

18FORA000000ACZD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-68

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

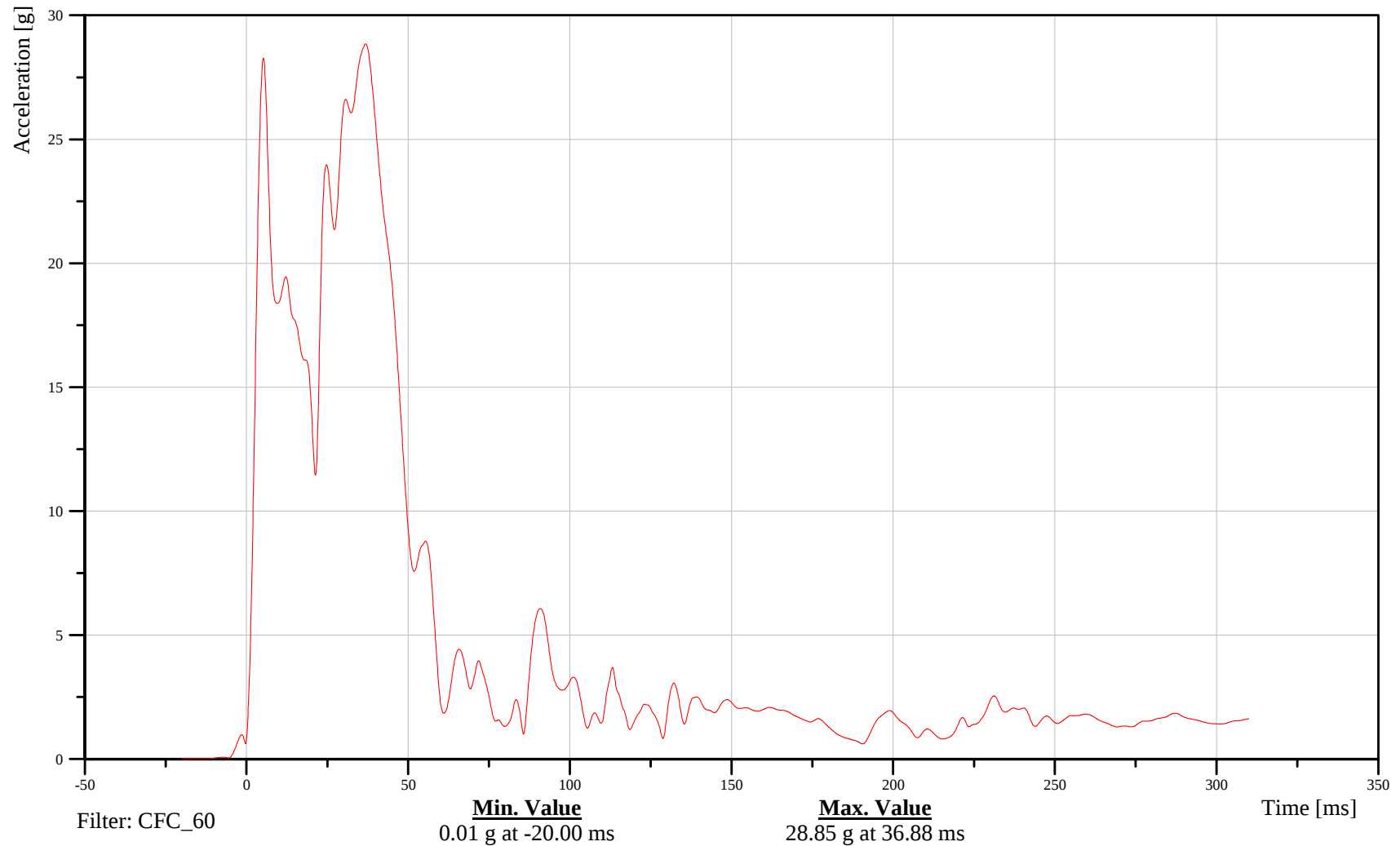
Rear Floorpan Above Axle Resultant Acceleration

Customer: VRTC

18FORA000000ACRD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-69

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

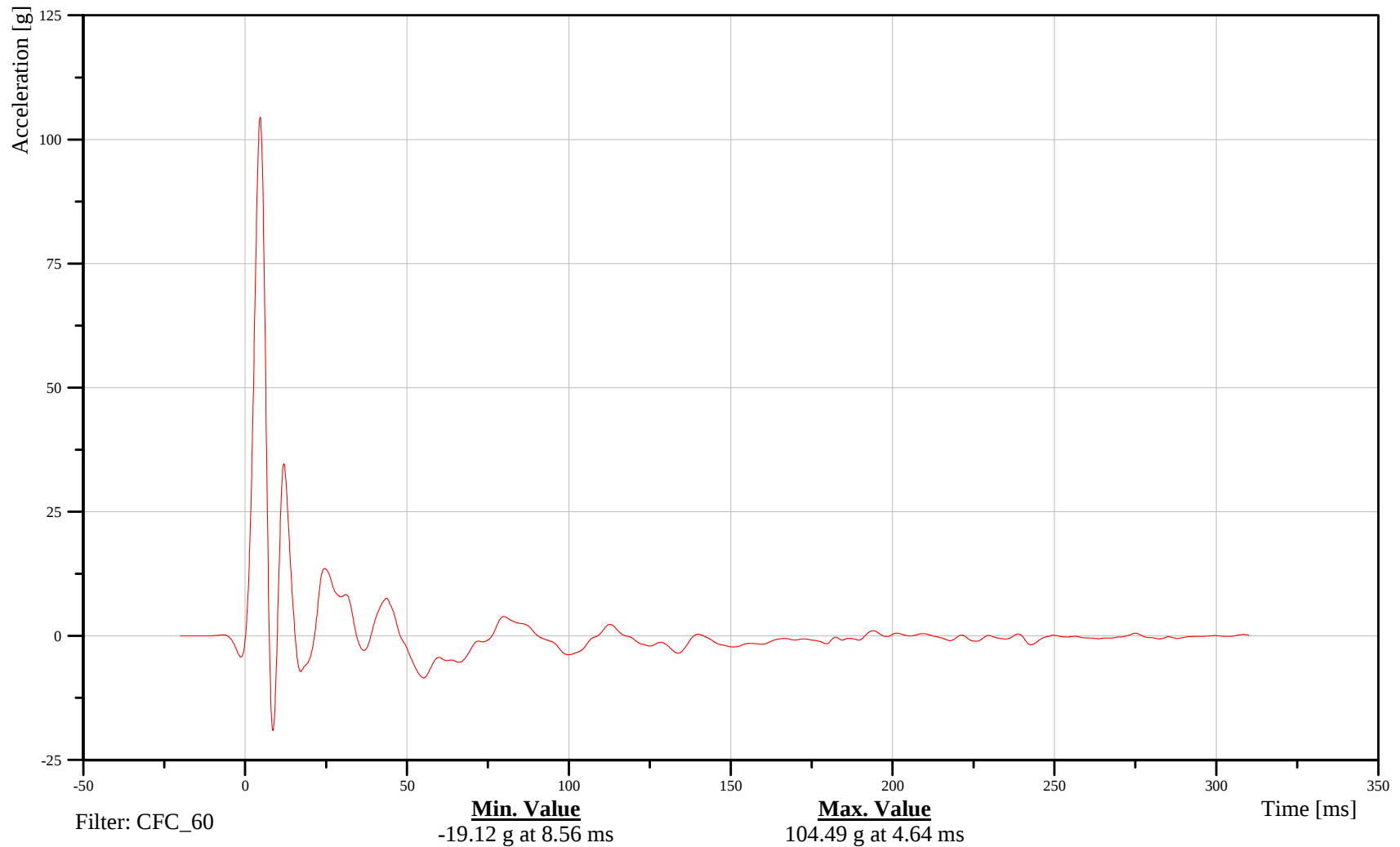
Left Side Sill at Front Seat Y-Axis Acceleration

Customer: VRTC

14SILBFR0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-70

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

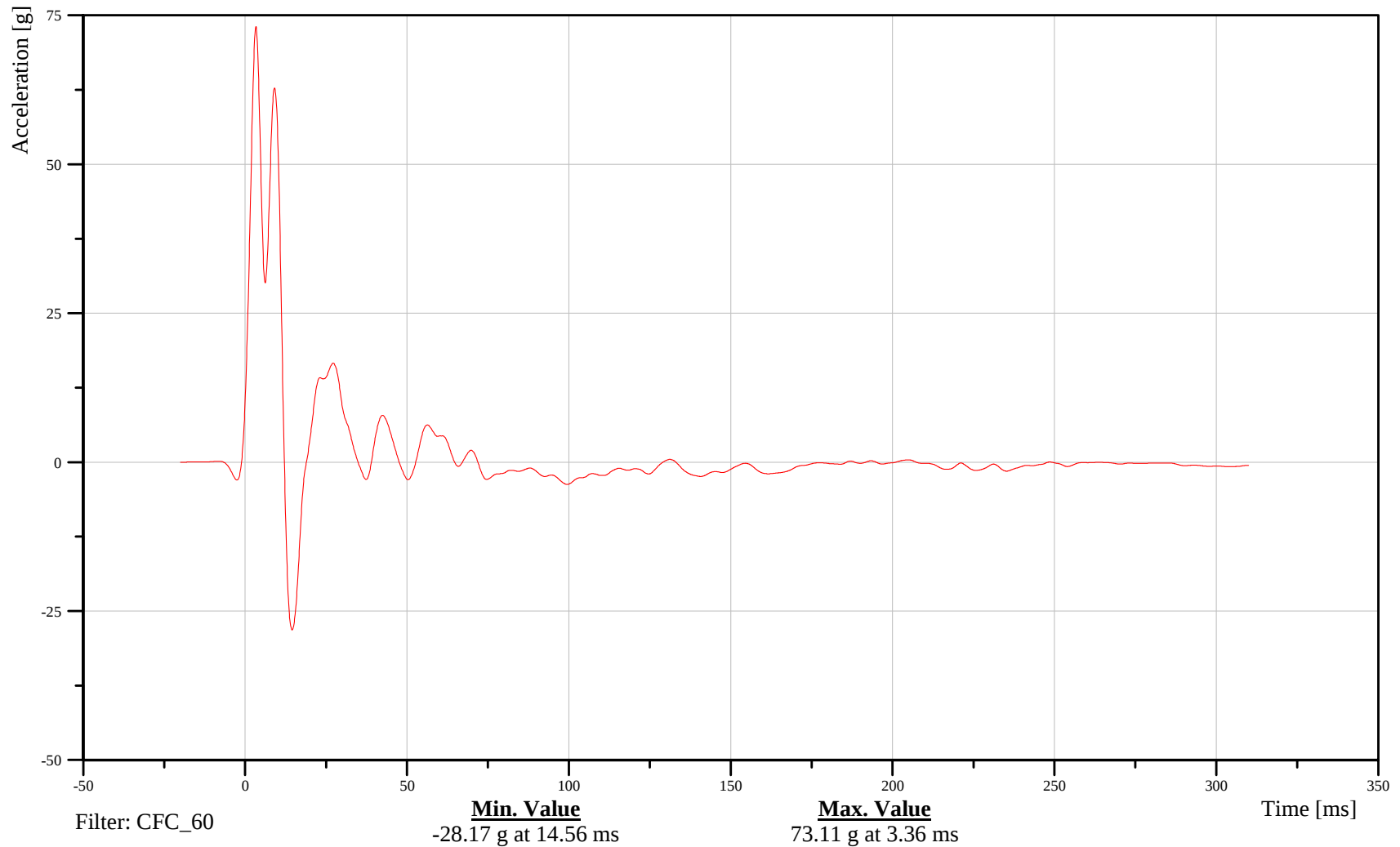
Left Side Sill at Rear Seat Y-Axis Acceleration

Customer: VRTC

14SILBRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-71

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

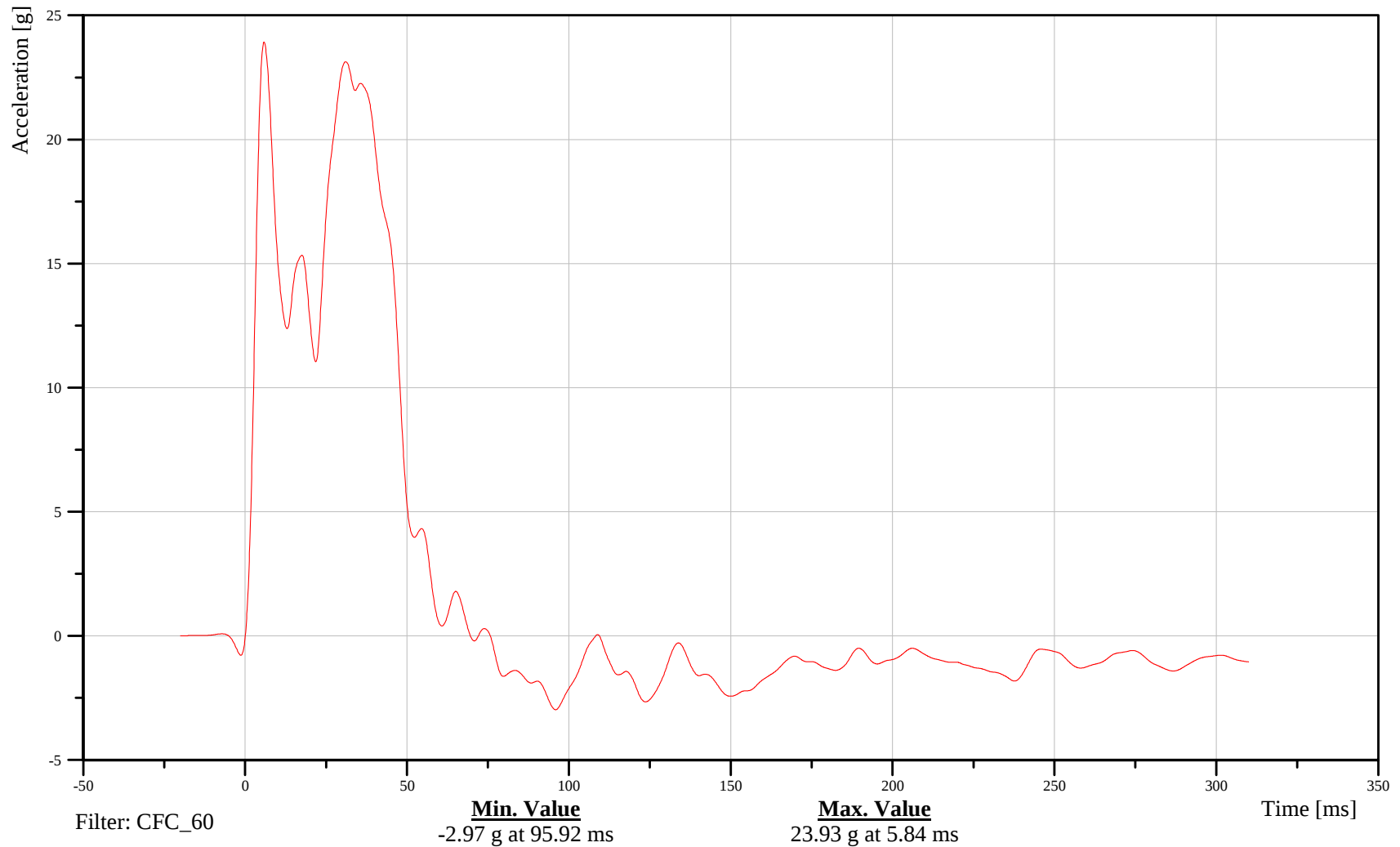
Right Rear Occupant Compartment Y-Axis Acceleration

Customer: VRTC

16VEHCRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-72

081029



Child Safety Research
Left Lower A-Post Y-Axis Acceleration

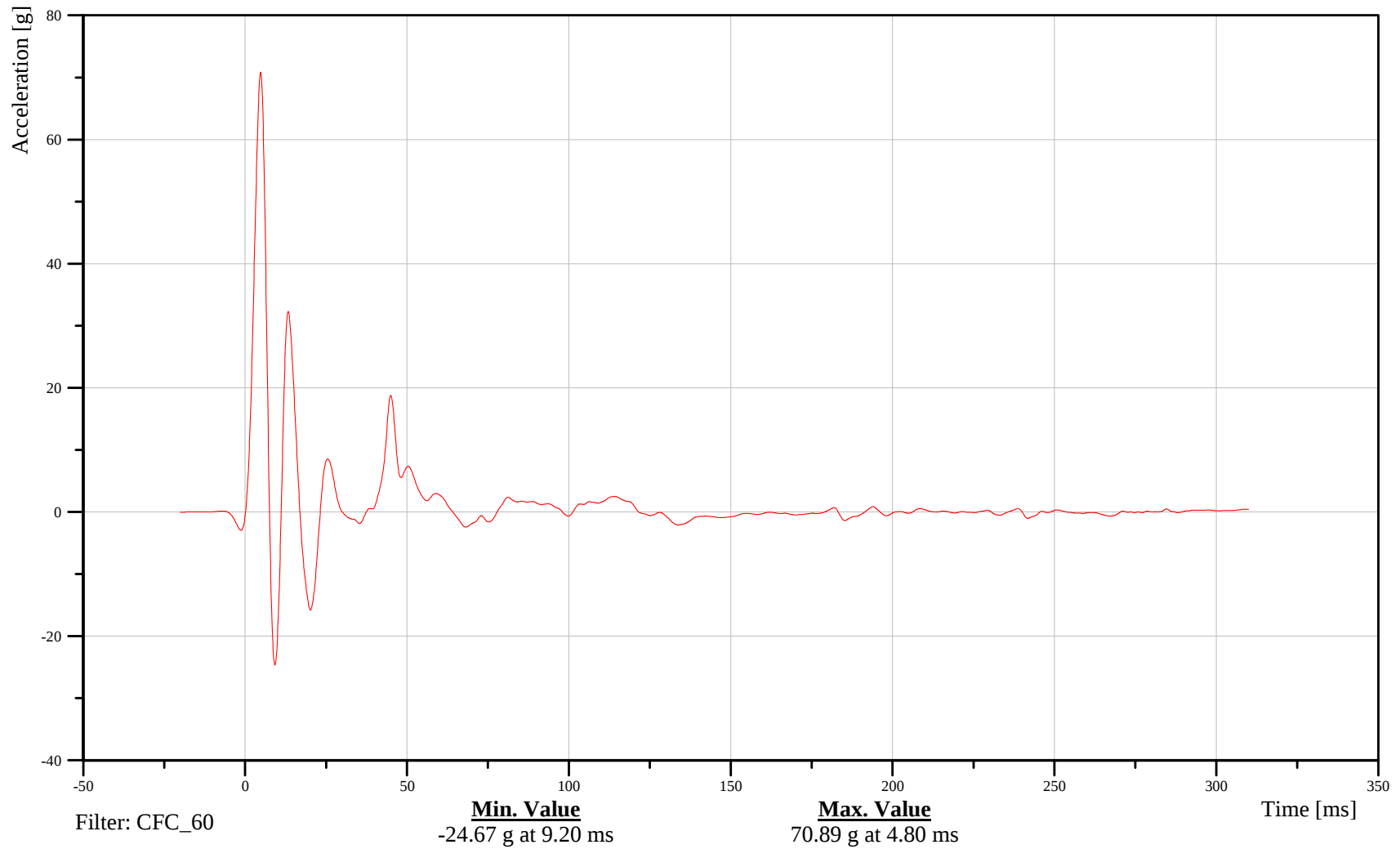
Date: 10/29/2008
Time: 14:39

Customer: VRTC

11APILLO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-73

081029



Child Safety Research
Left Upper A-Post Y-Axis Acceleration

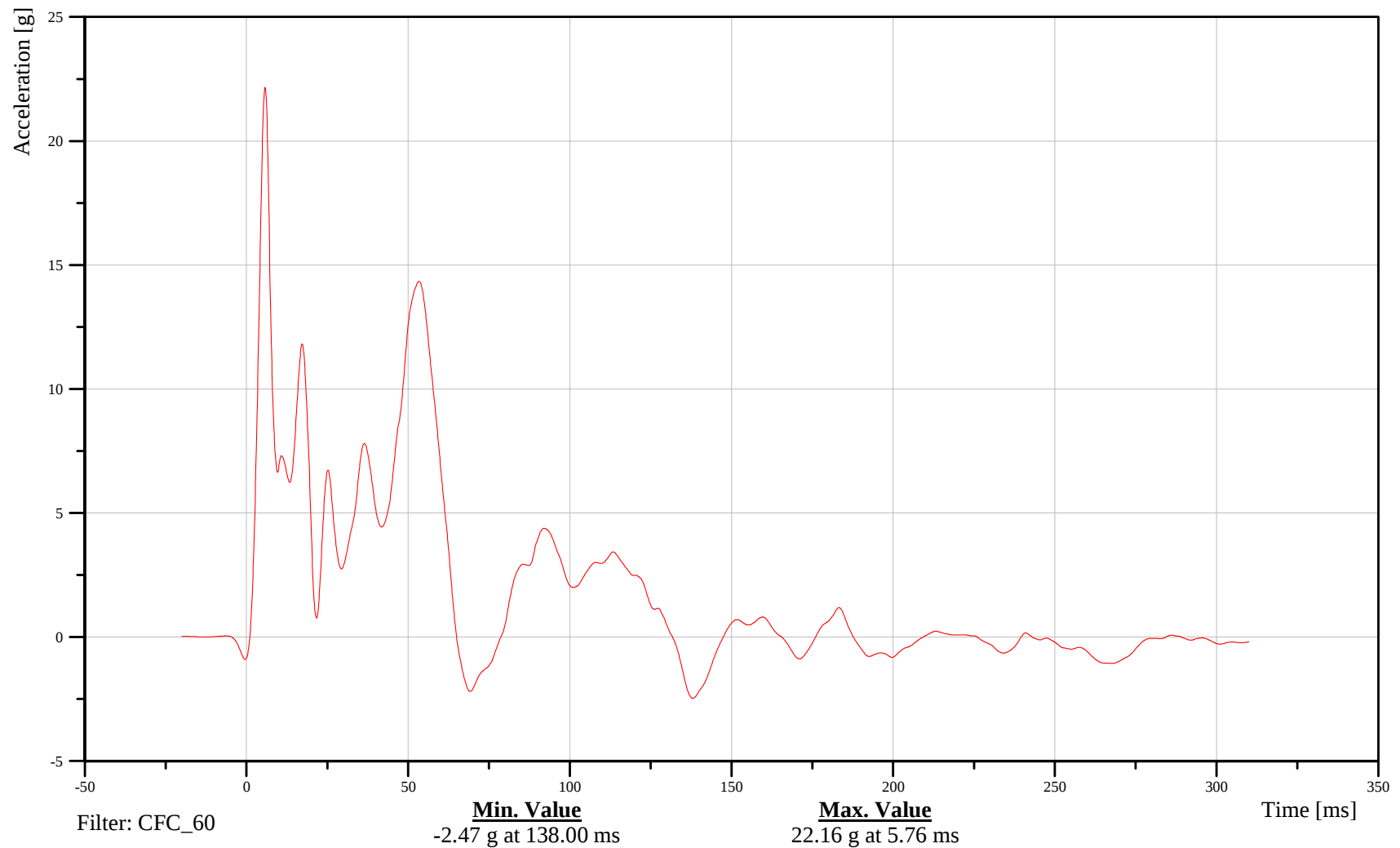
Date: 10/29/2008
Time: 14:39

Customer: VRTC

11APILUP0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-74

081029



Child Safety Research
Left Lower B-Post Y-Axis Acceleration

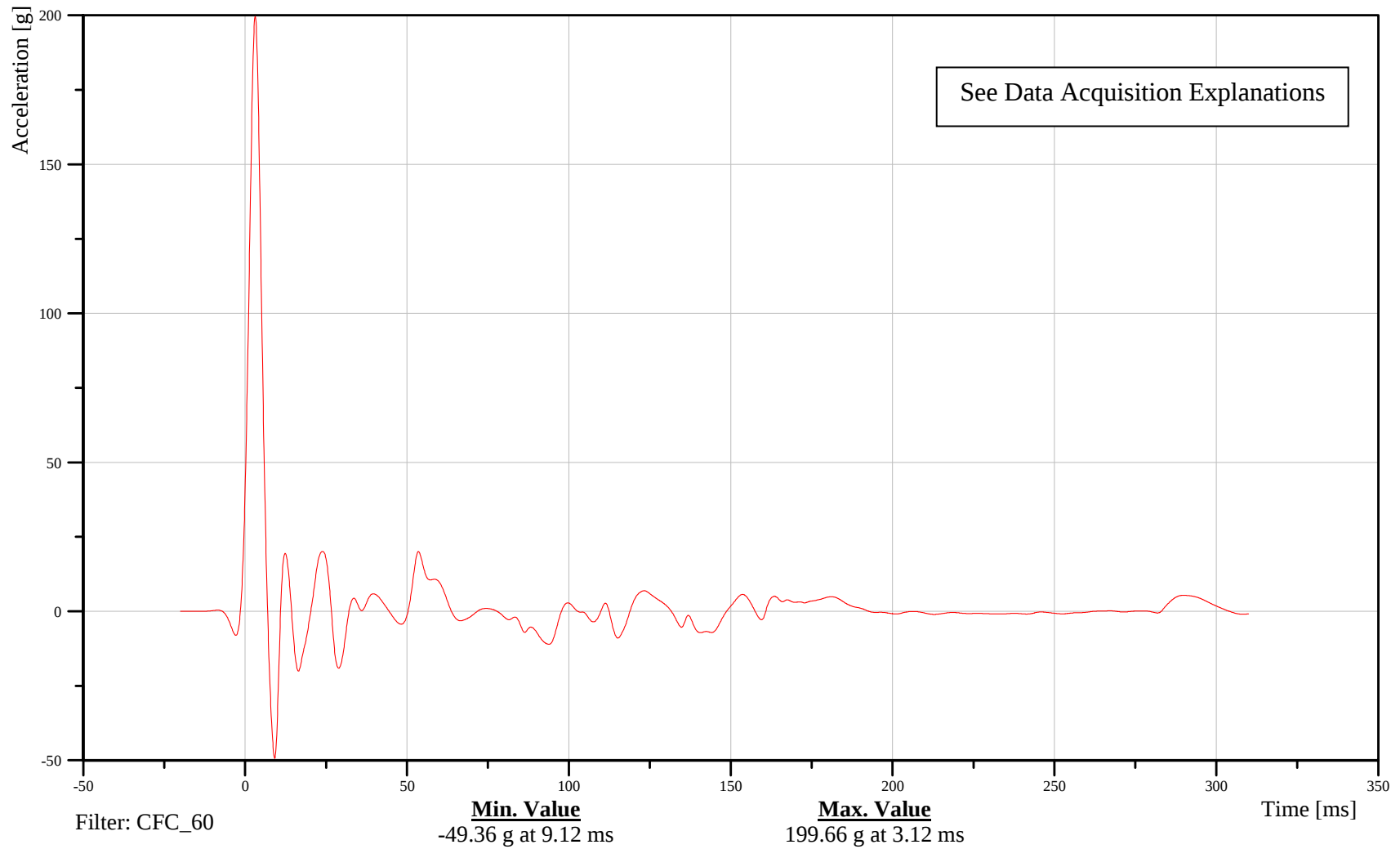
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14BPILLO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-75

081029



Child Safety Research
Left Upper B-Post Y-Axis Acceleration

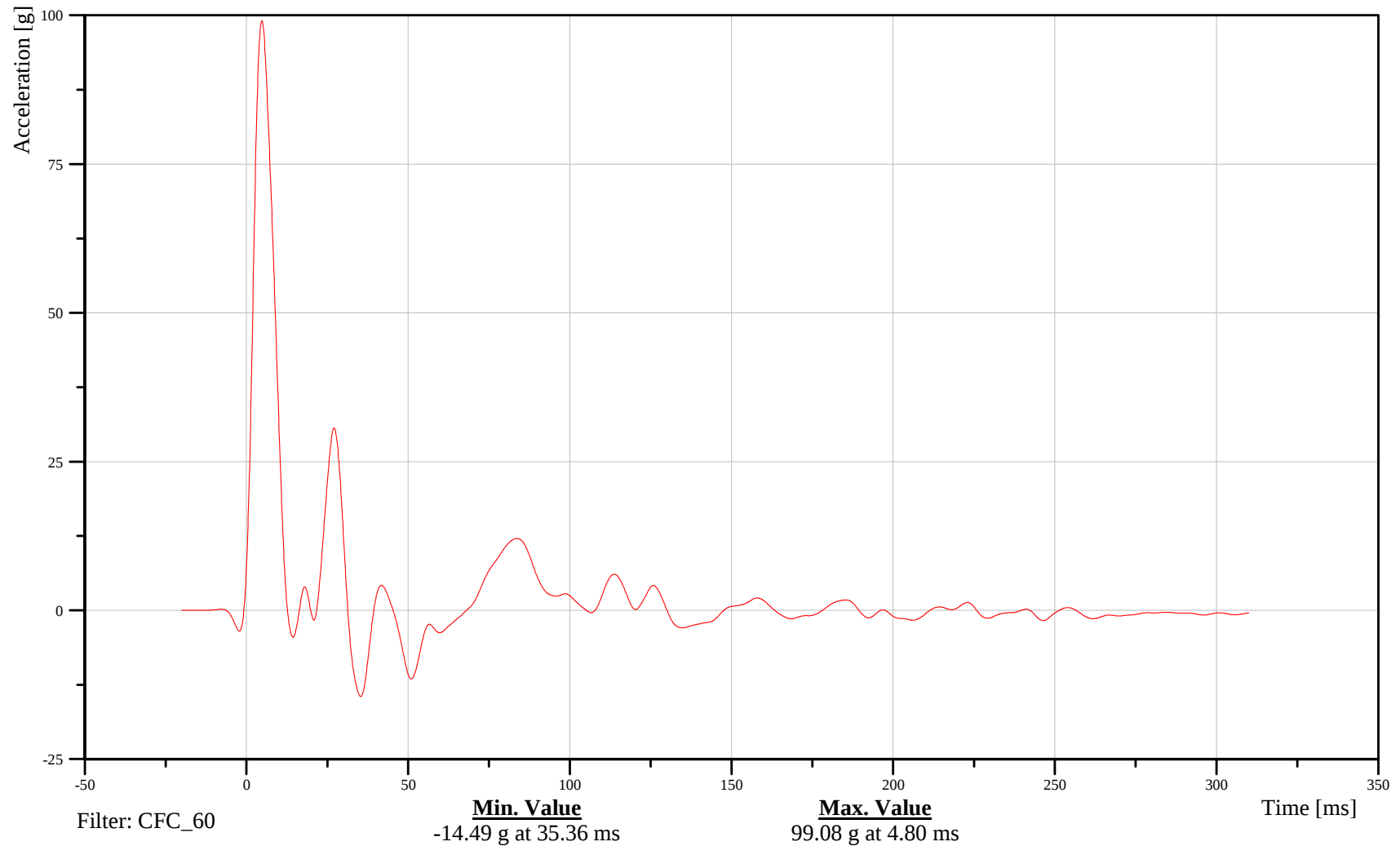
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14BPILUP0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-76

081029



Child Safety Research
Left Front Seat Track Y-Axis Acceleration

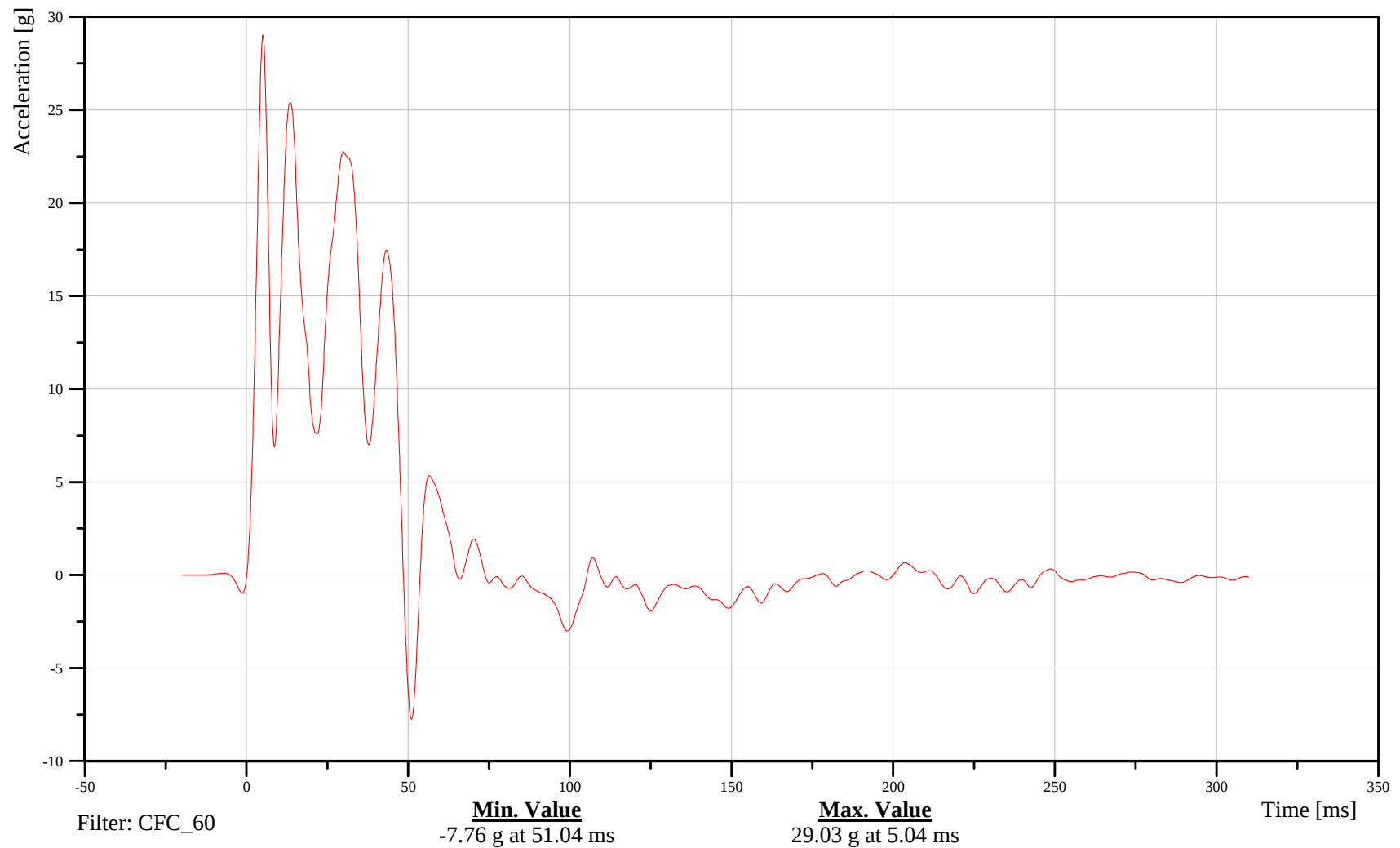
Date: 10/29/2008
Time: 14:39

Customer: VRTC

11SETRFR0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-77

081029



Child Safety Research
Left Rear Seat Track Y-Axis Acceleration

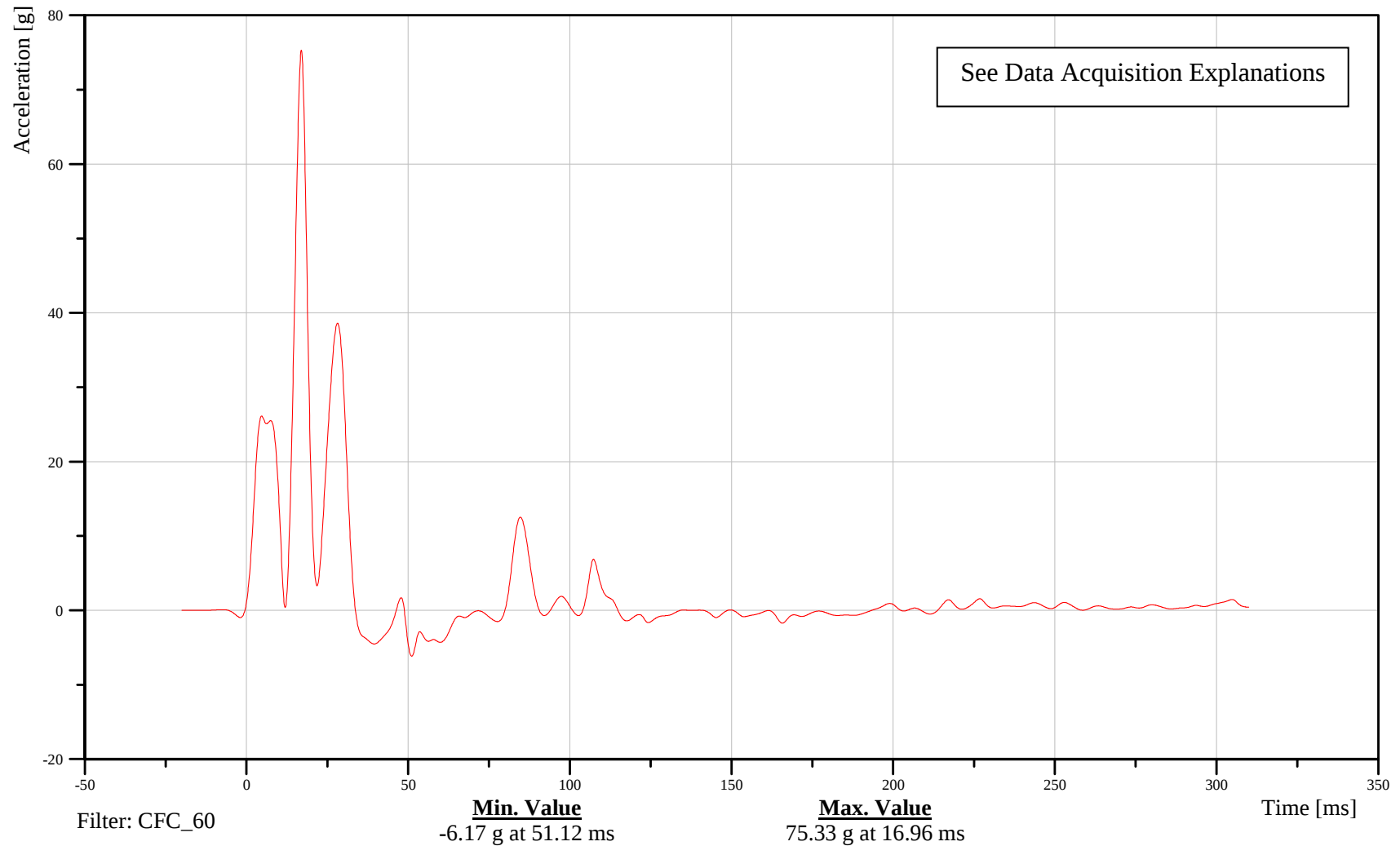
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14SETRRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-78

081029



Child Safety Research
Vehicle Center of Gravity X-Axis Acceleration

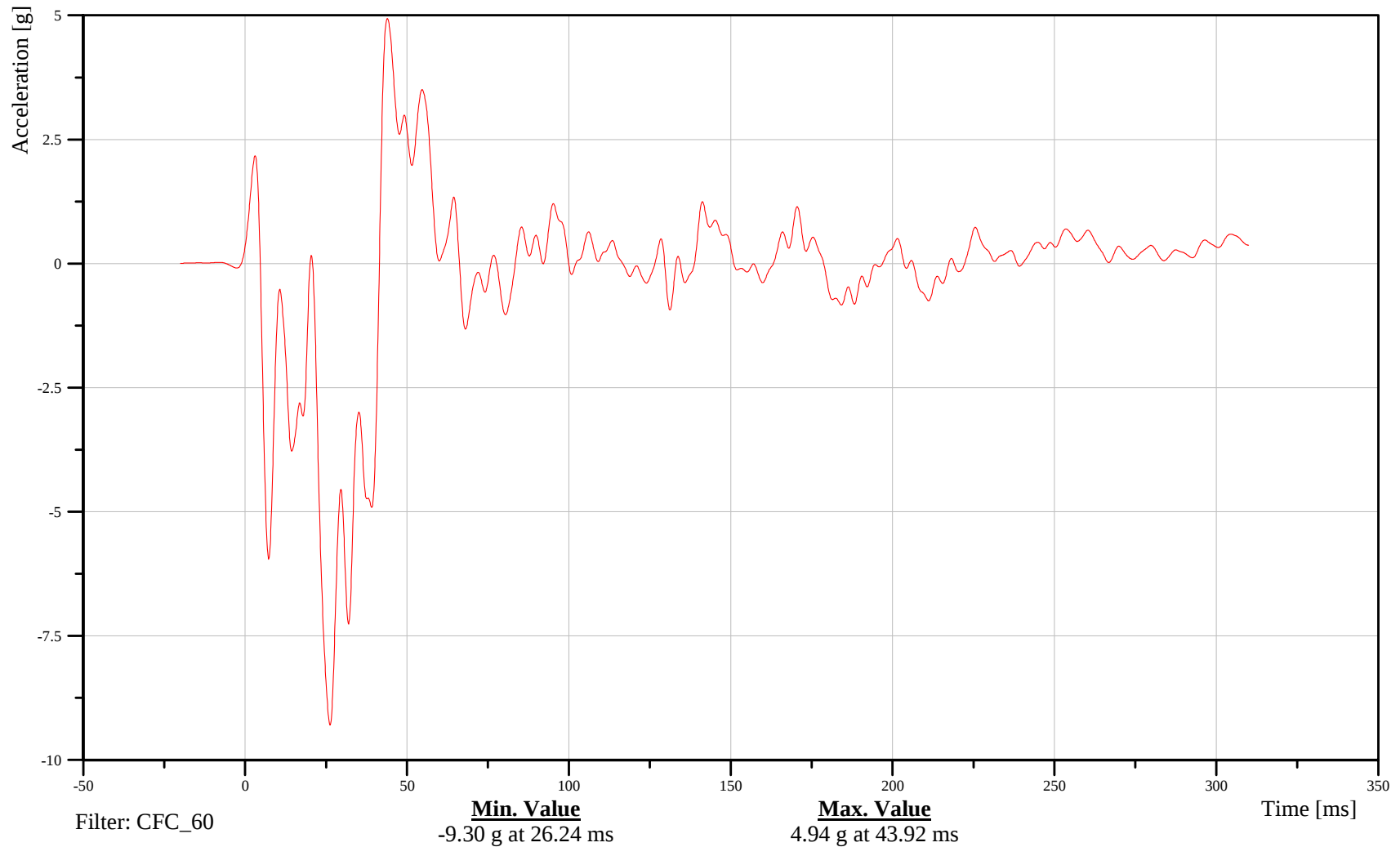
Date: 10/29/2008
Time: 14:39

Customer: VRTC

10VEHCCG0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-79

081029



Child Safety Research
Vehicle Center of Gravity Y-Axis Acceleration

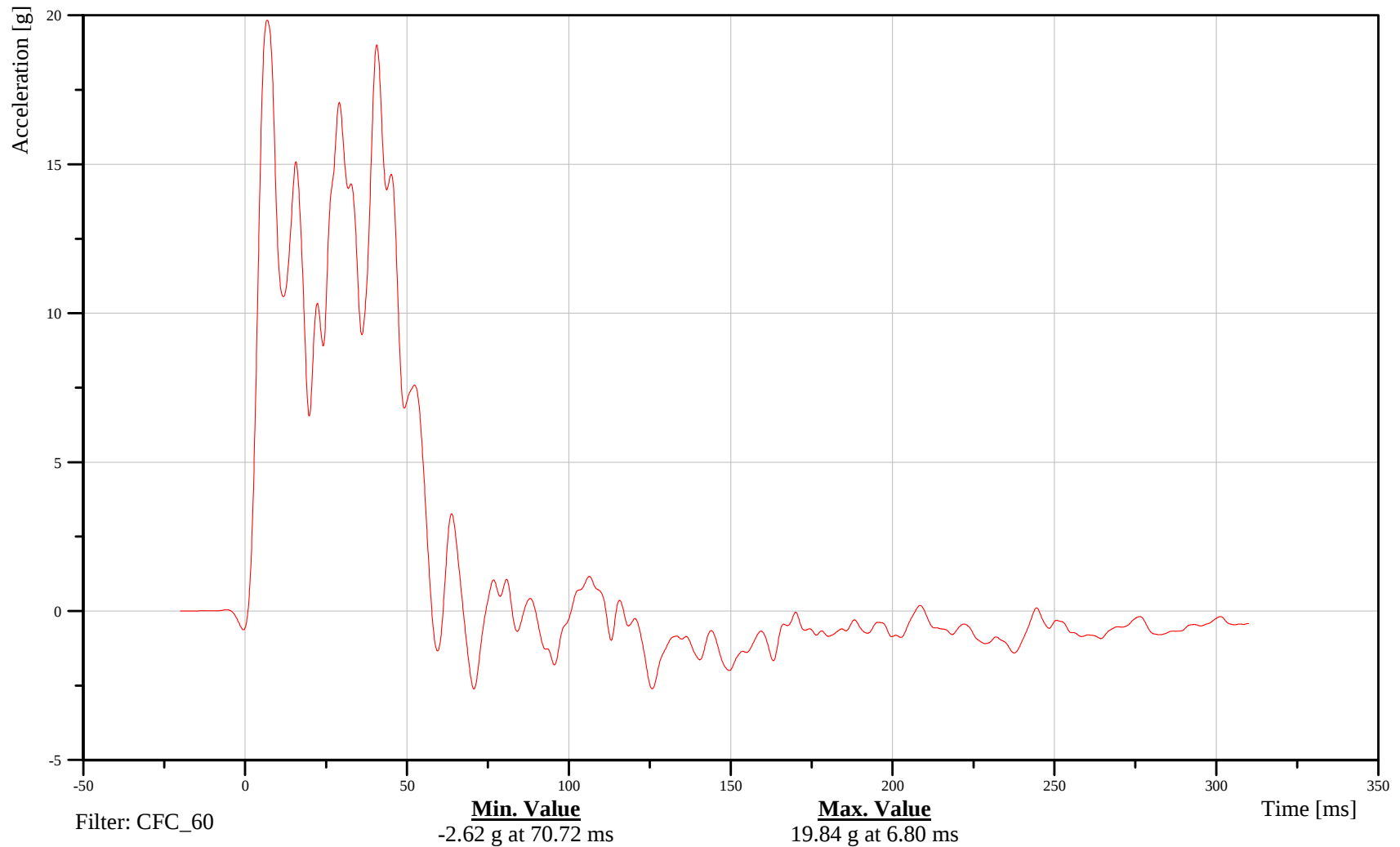
Date: 10/29/2008
Time: 14:39

Customer: VRTC

10VEHCCG0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-80

081029



Child Safety Research
Vehicle Center of Gravity Z-Axis Acceleration

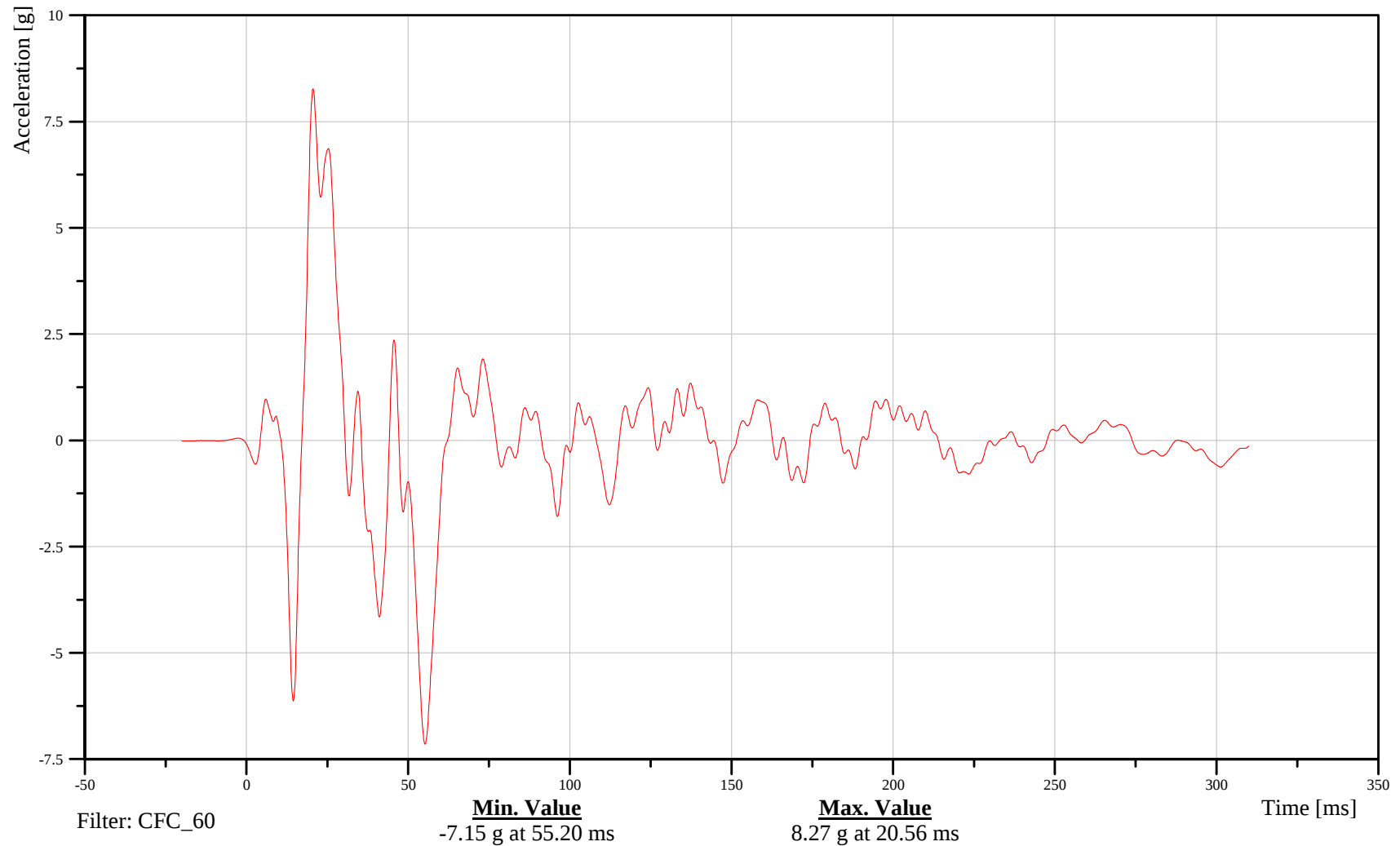
Date: 10/29/2008
Time: 14:39

Customer: VRTC

10VEHCCG0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-81

081029



Child Safety Research
Vehicle Center of Gravity Resultant Acceleration

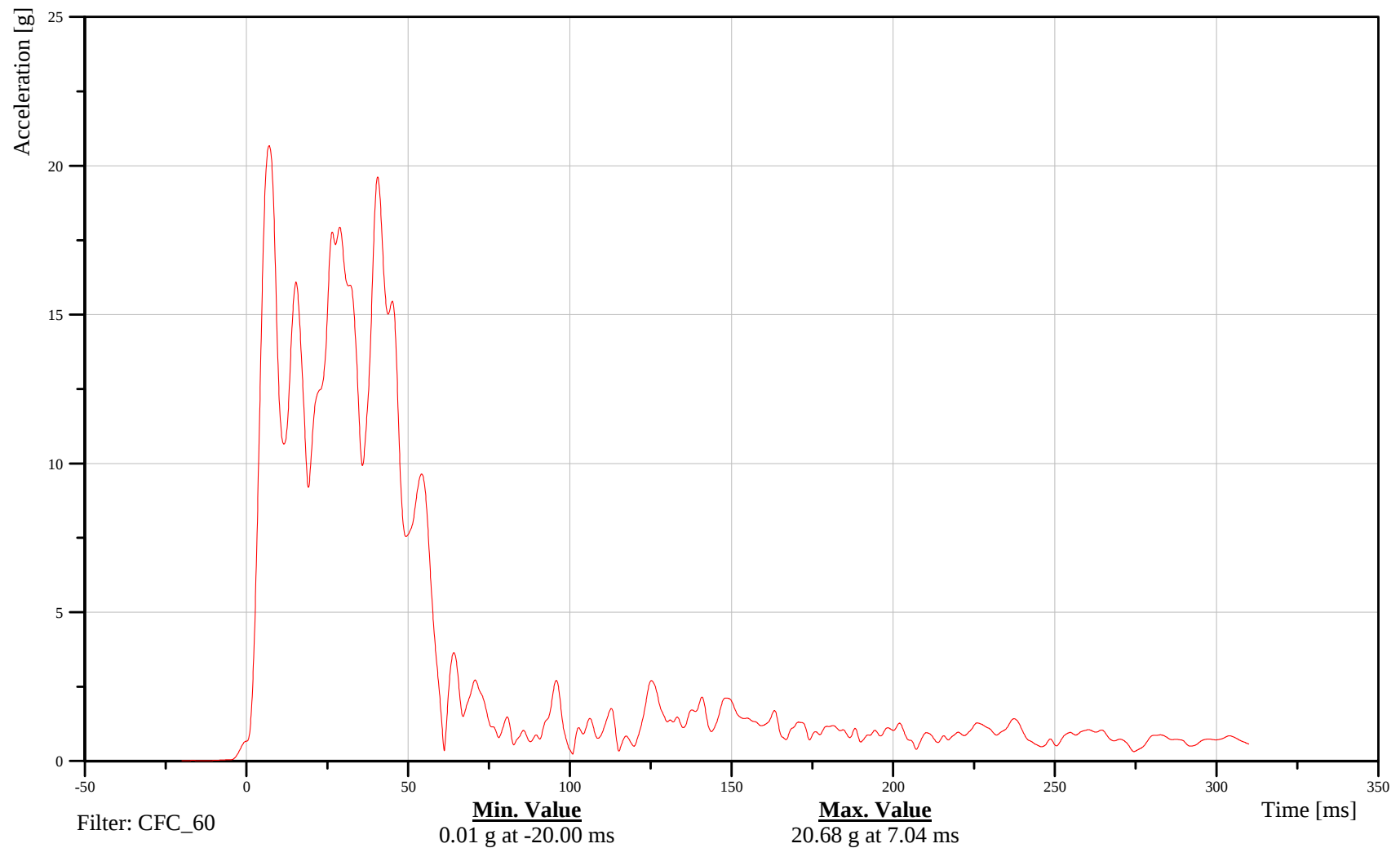
Date: 10/29/2008
Time: 14:39

Customer: VRTC

10VEHCCG0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-82

081029



Child Safety Research
Front Door Centerline Y-Axis Acceleration

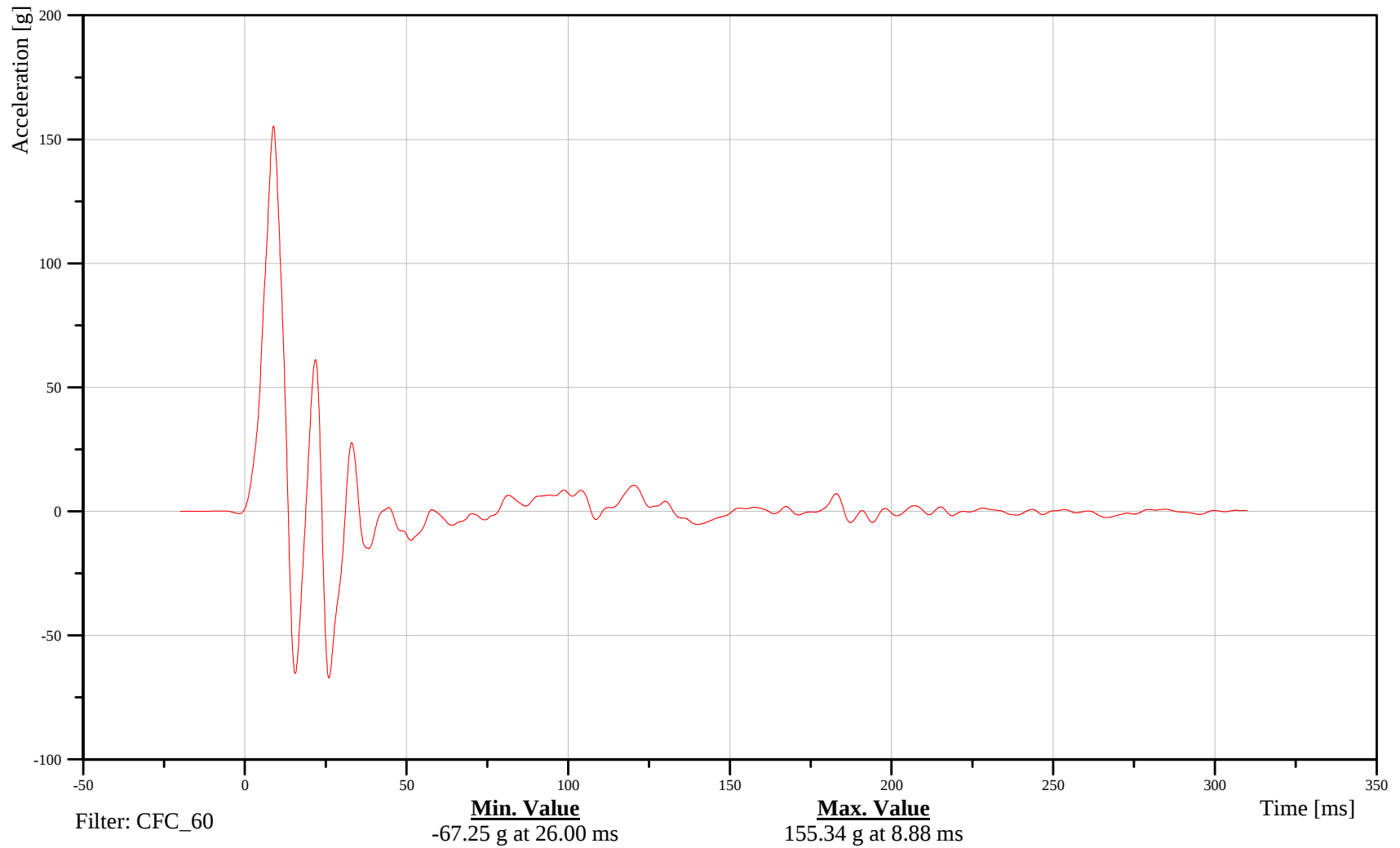
Date: 10/29/2008
Time: 14:39

Customer: VRTC

11DOORMI0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-83

081029



Child Safety Research

Front Door Mid-Rear Y-Axis Acceleration

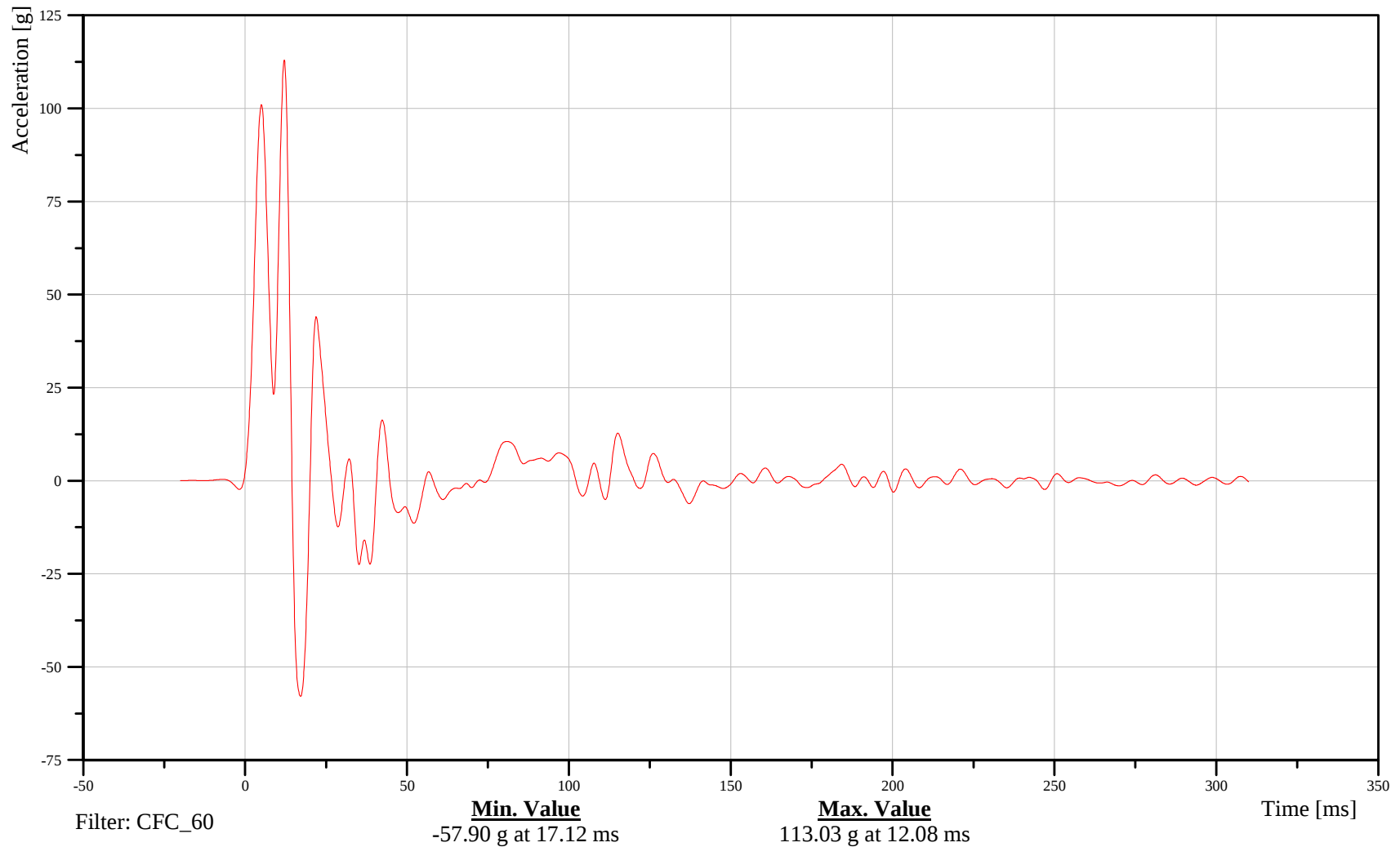
Date: 10/29/2008
Time: 14:39

Customer: VRTC

11DOORMIRE00ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-84

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

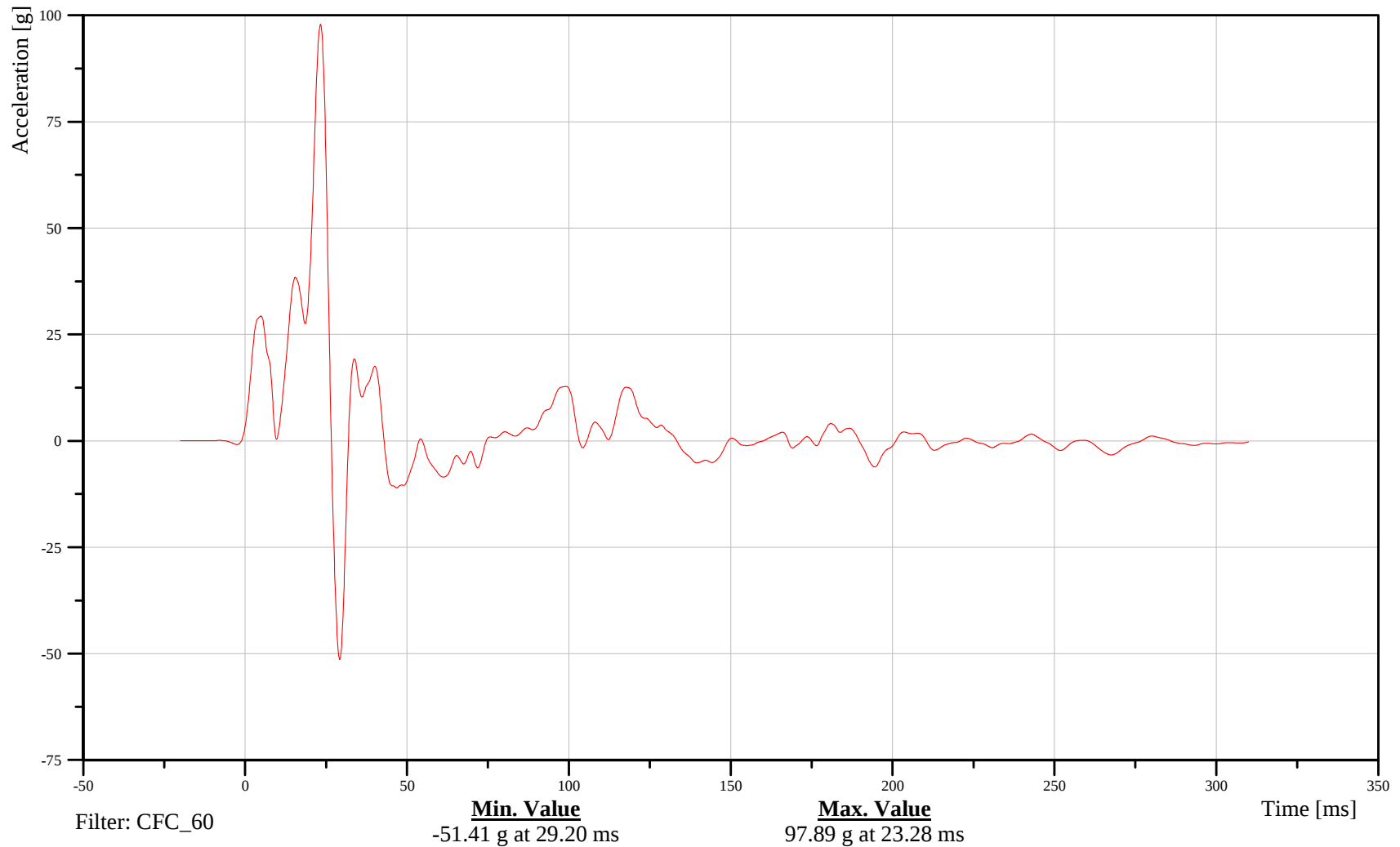
Front Door Upper Centerline Y-Axis Acceleration

Customer: VRTC

11DOORUPMI00ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-85

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

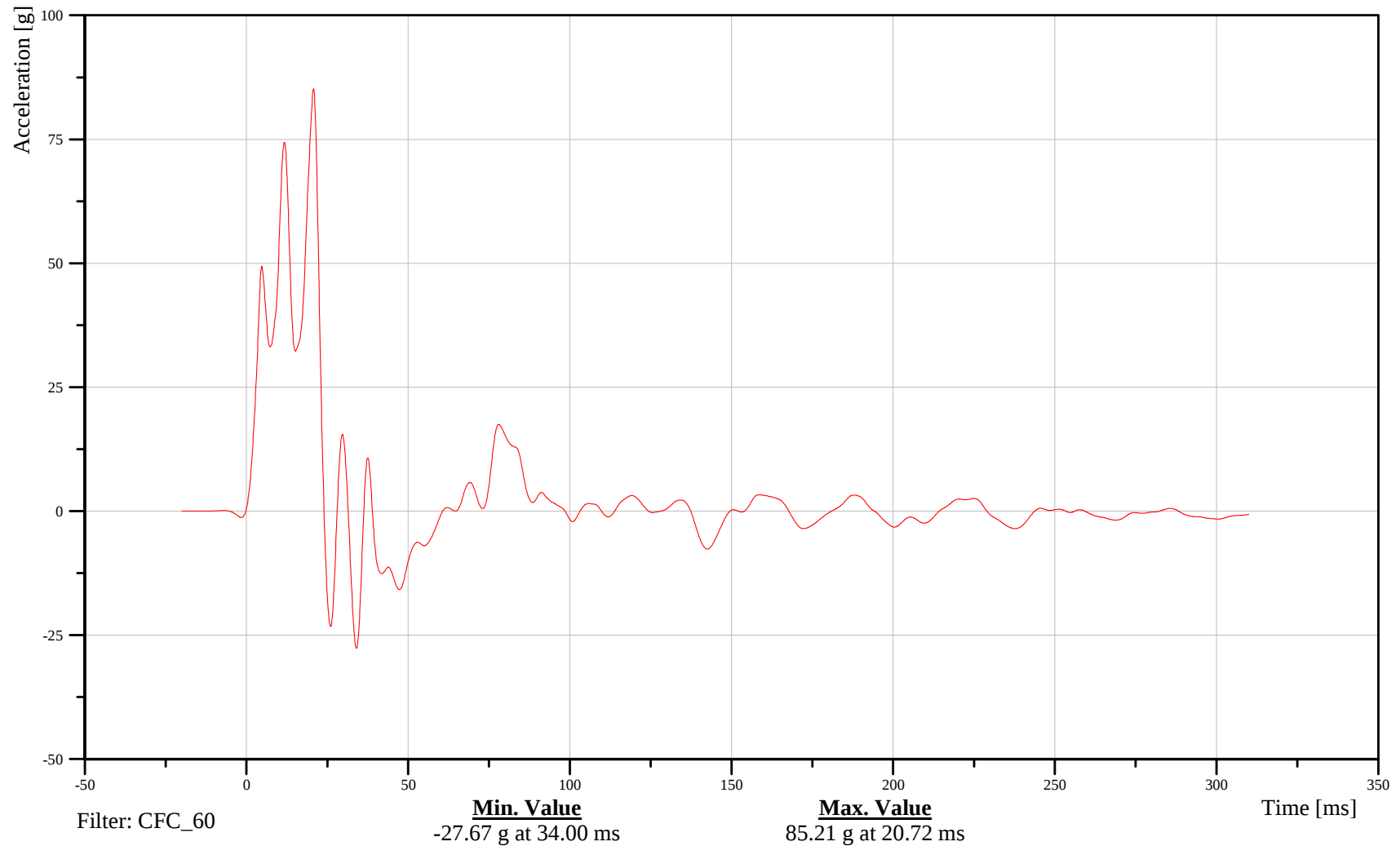
Rear Door Centerline Y-Axis Acceleration

Customer: VRTC

14DOORMI0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-86

081029



Child Safety Research

Rear Door Mid-Rear Y-Axis Acceleration

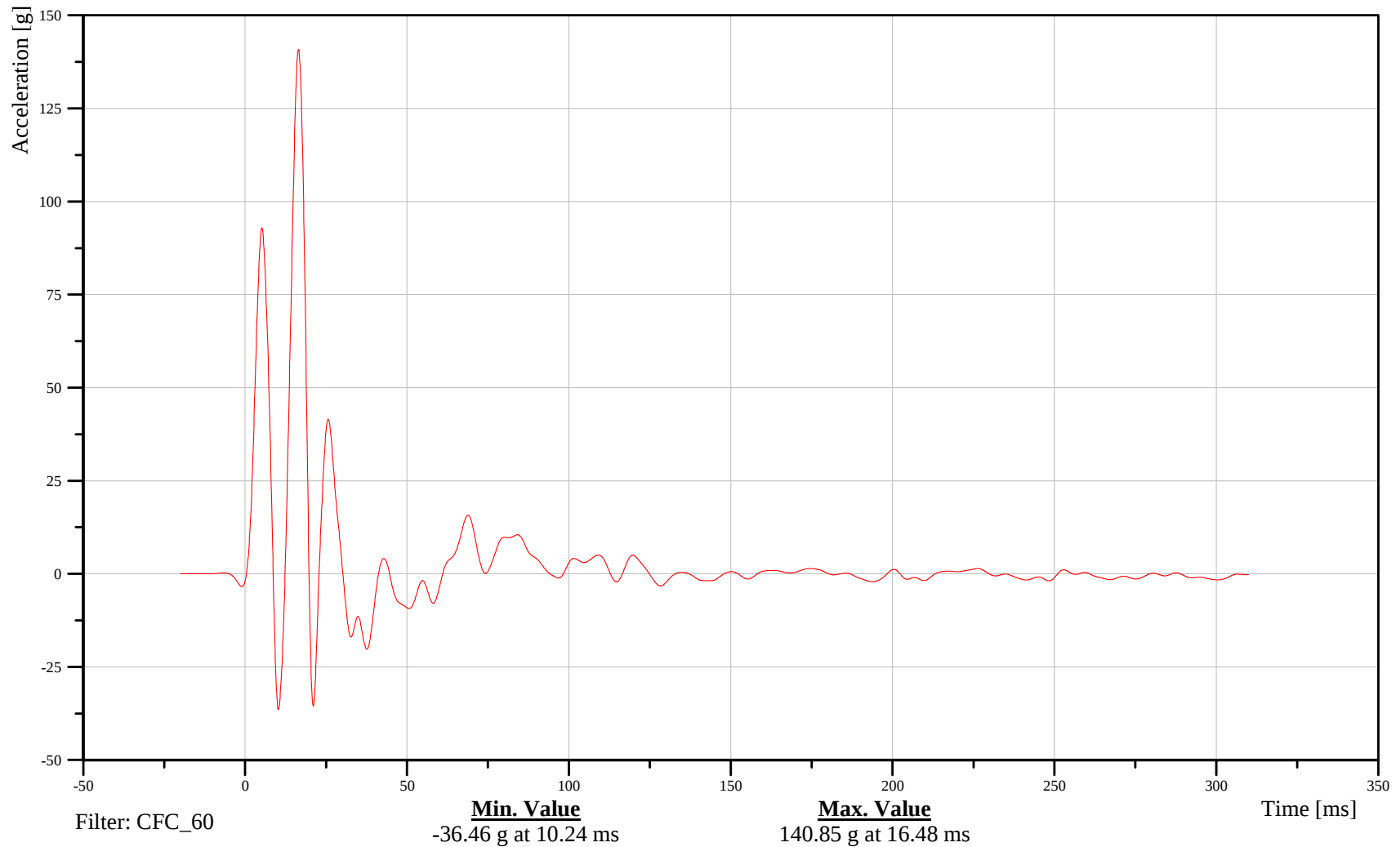
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14DOORMIRE00ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-87

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

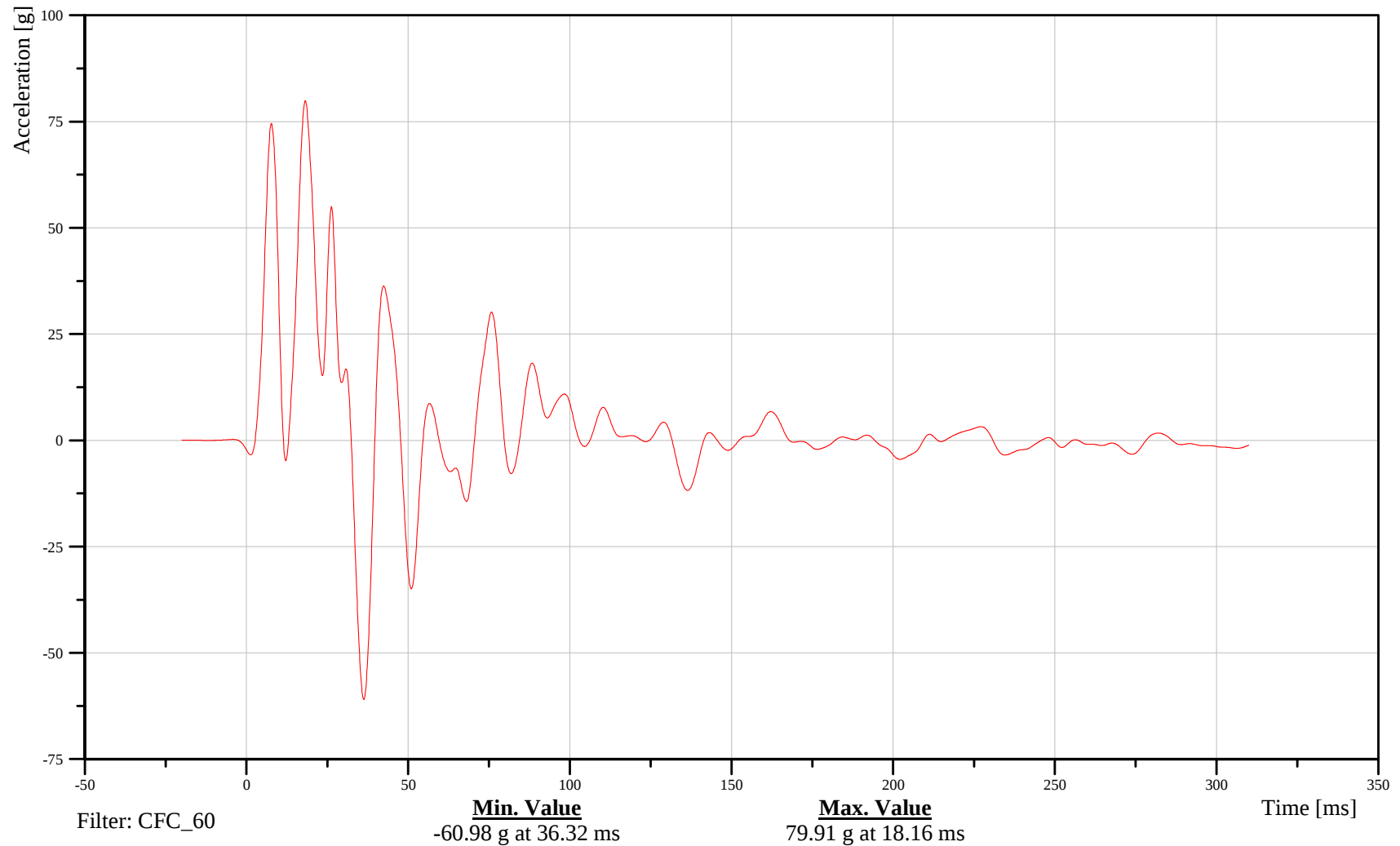
Rear Door Upper Centerline Y-Axis Acceleration

Customer: VRTC

14DOORUPMI00ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-88

081029



Child Safety Research
Left Rear Shoulder Belt Force (Top Tether)

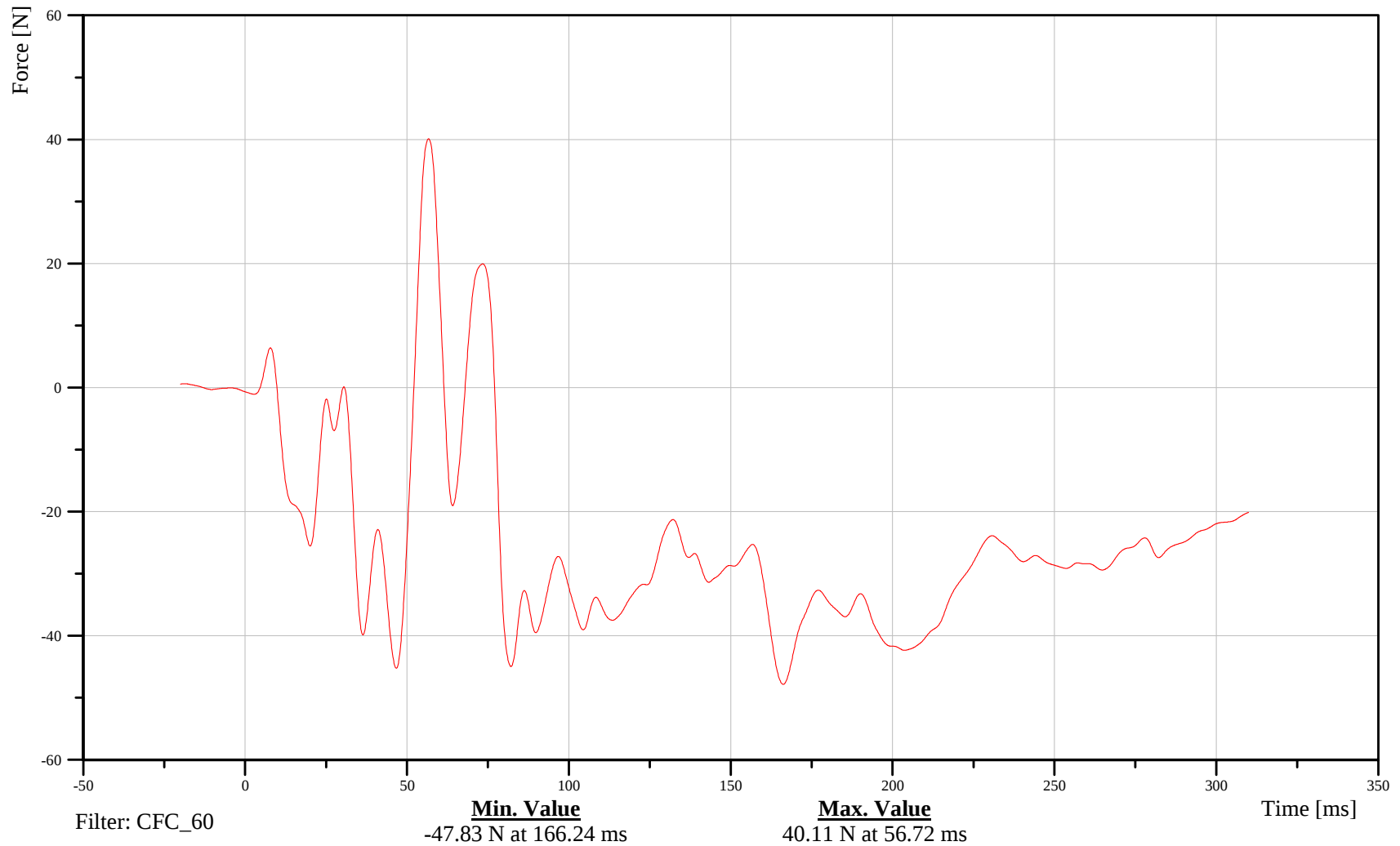
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14SEBE0000B3FO0D

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-89

081029



Child Safety Research
Right Rear Shoulder Belt Force (Top Tether)

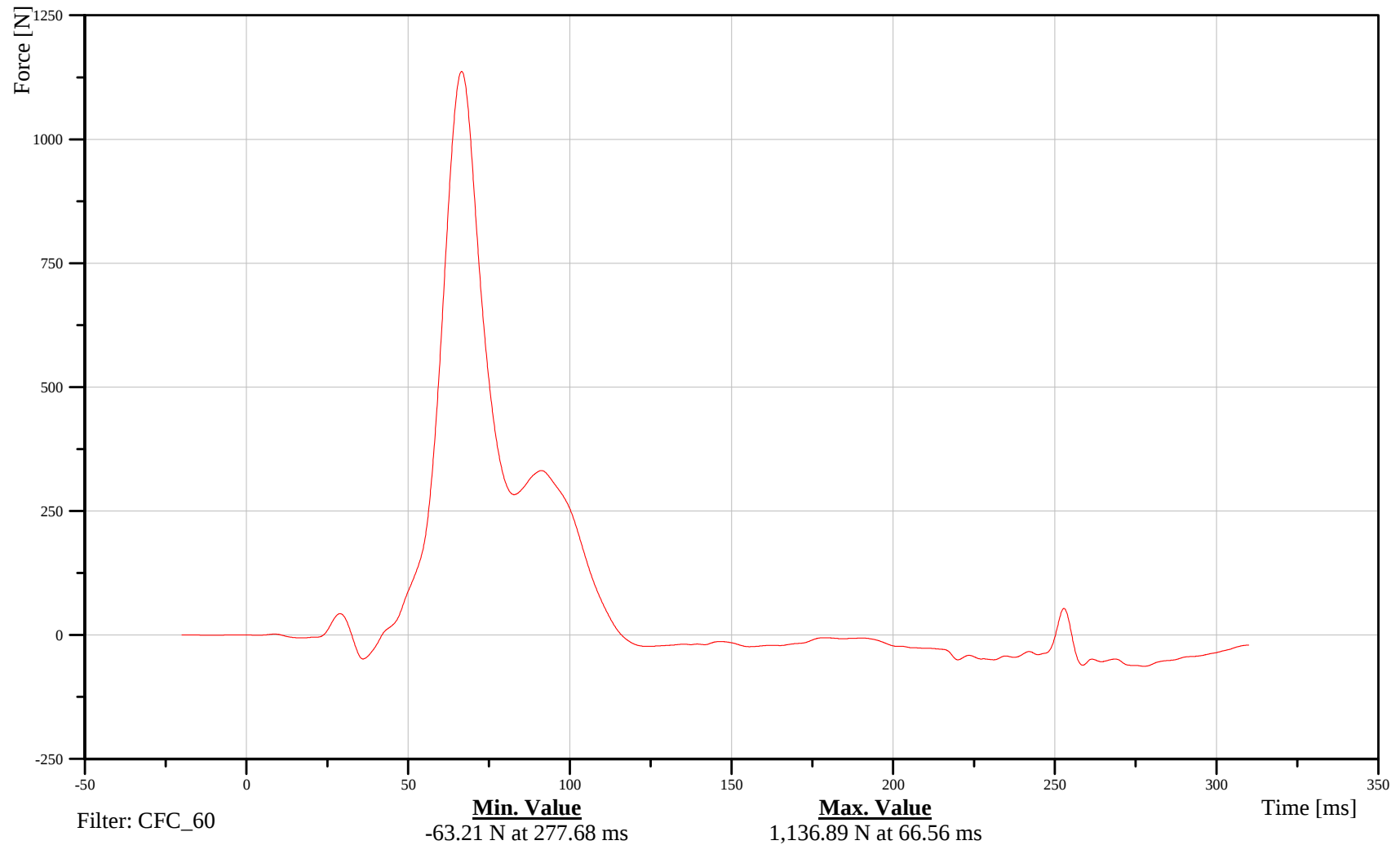
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16SEBE0000B3FO0D

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-90

081029



Child Safety Research
Top of CRS #1 X-Axis Acceleration

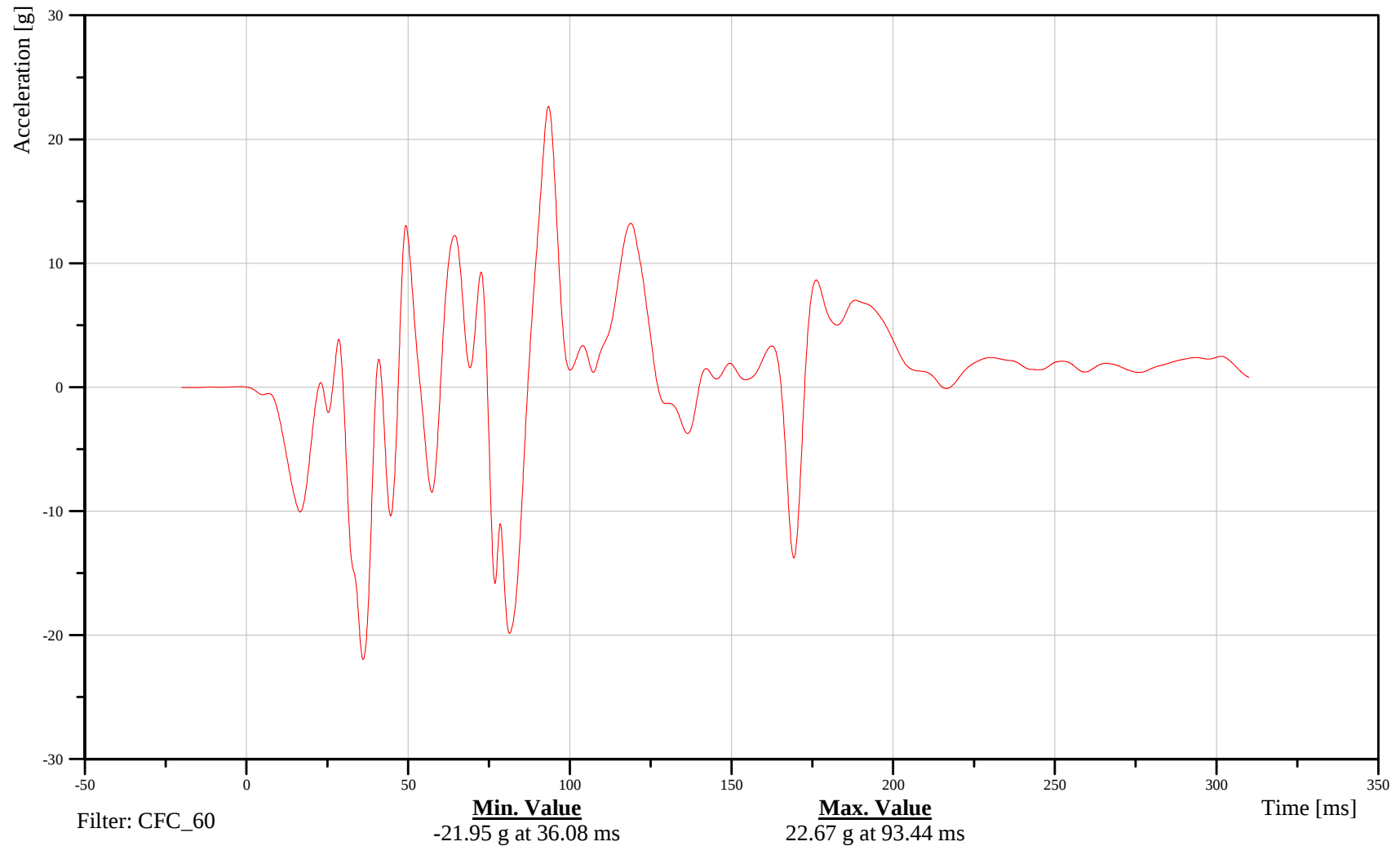
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14SEATTP0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-91

081029



Child Safety Research
Top of CRS #1 Y-Axis Acceleration

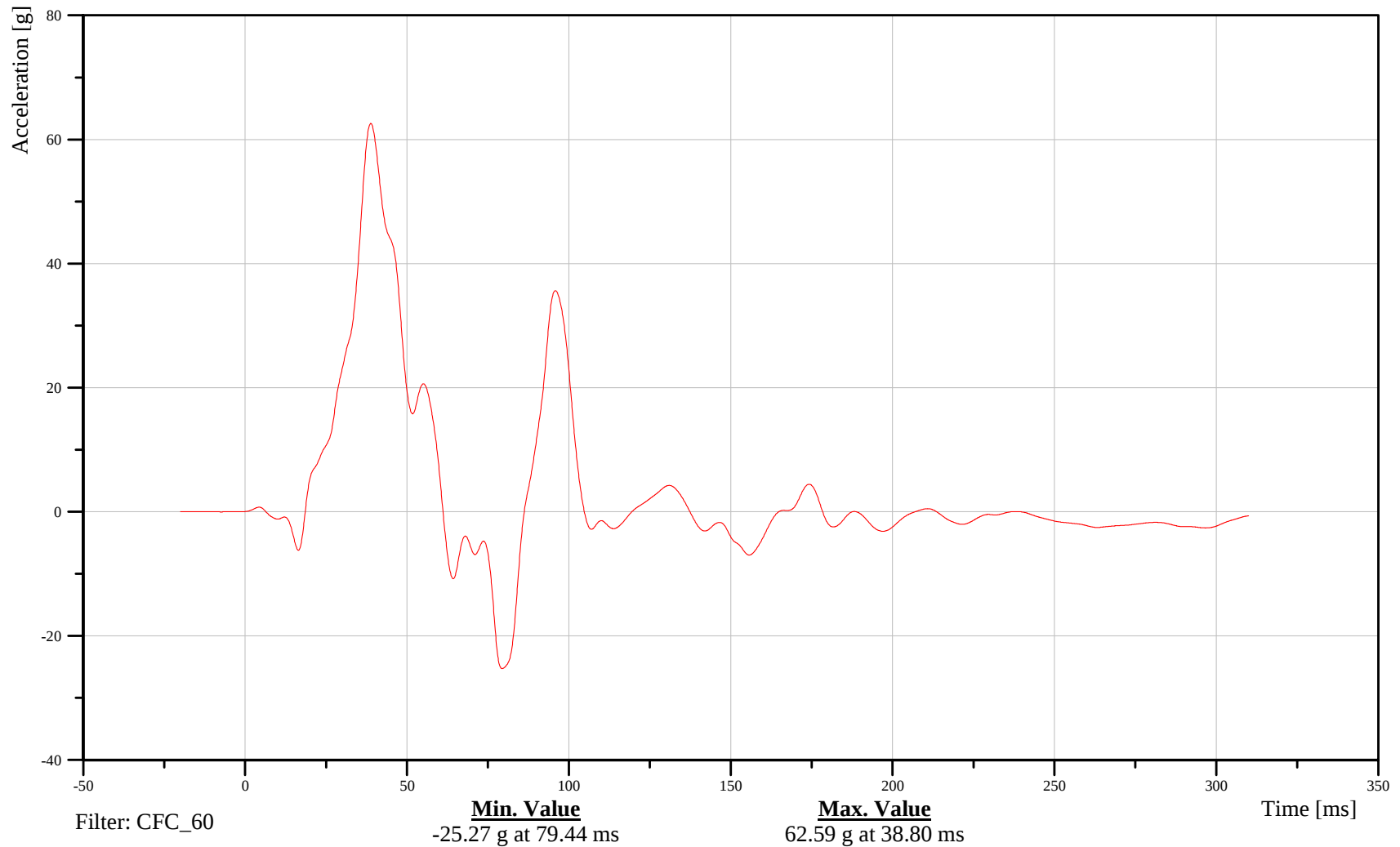
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14SEATTP0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-92

081029



Child Safety Research
Bottom of CRS #1 X-Axis Acceleration

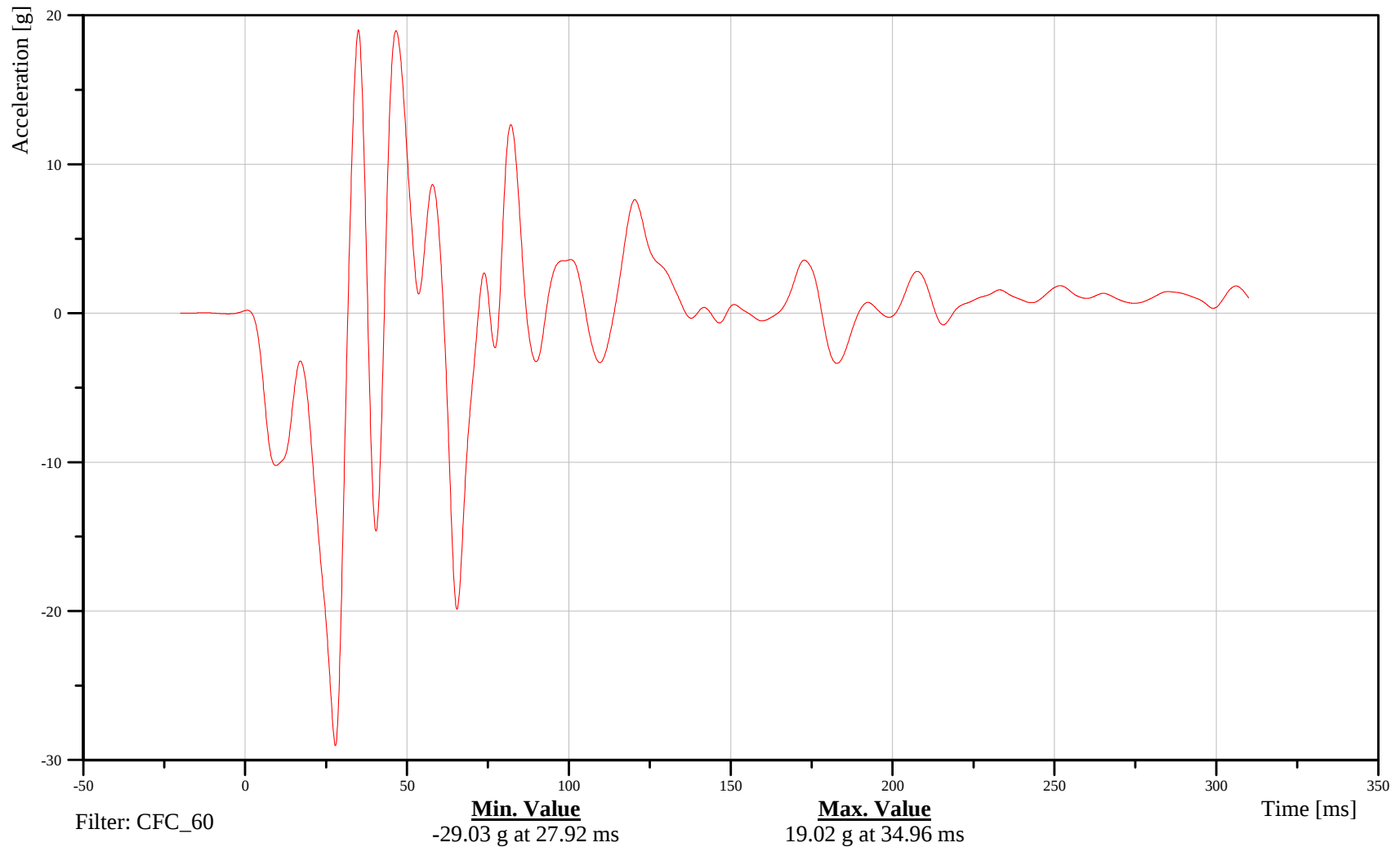
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14SEATBO0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-93

081029



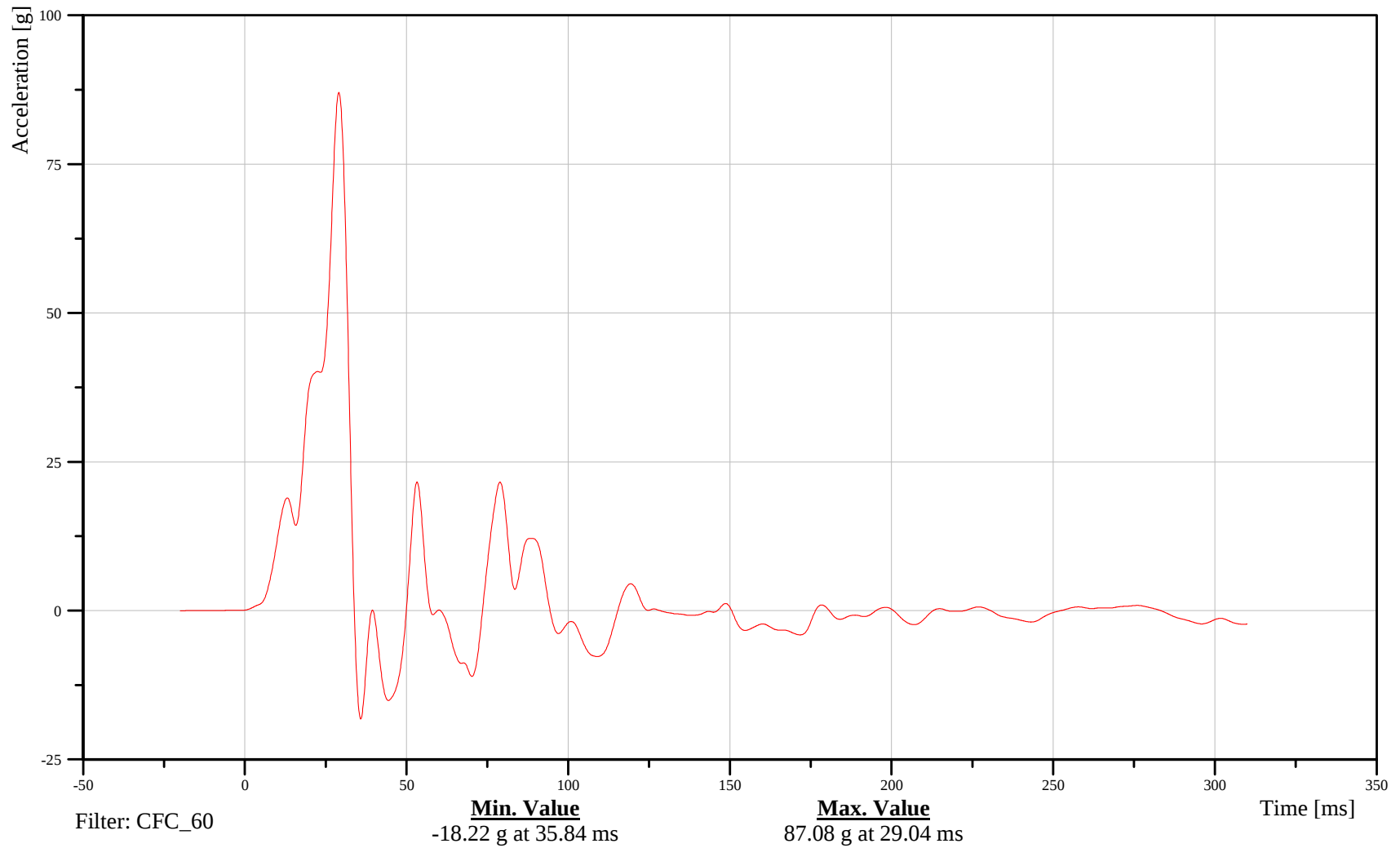
Child Safety Research
Bottom of CRS #1 Y-Axis Acceleration

Date: 10/29/2008
Time: 14:39

Customer: VRTC

14SEATBO0000ACYD

TRC Inc. Test Lab: CTF
Test Number: 081029-1



B-94

081029



Child Safety Research
Top of CRS #2 X-Axis Acceleration

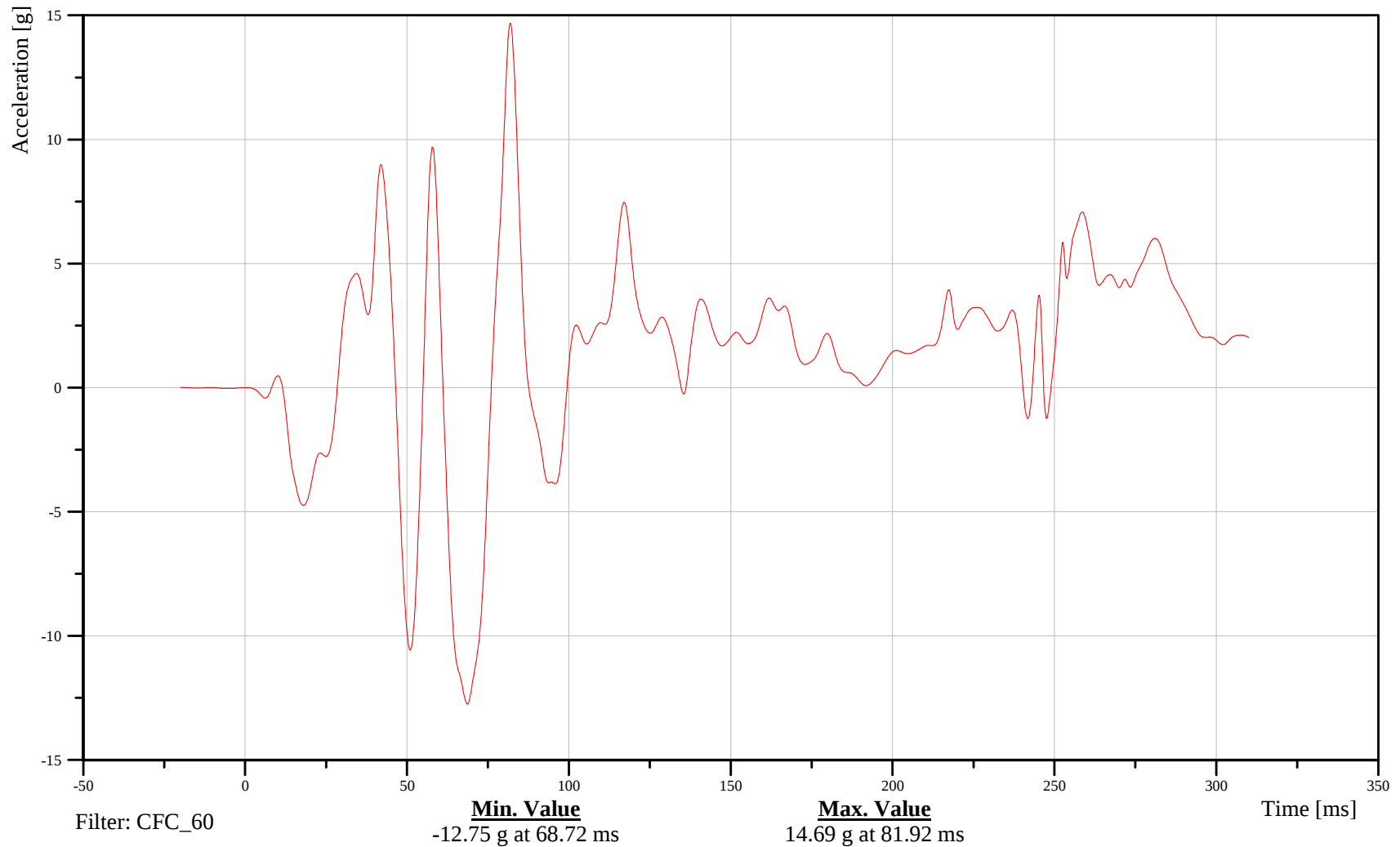
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16SEATTP0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-95

081029



Child Safety Research
Top of CRS #2 Y-Axis Acceleration

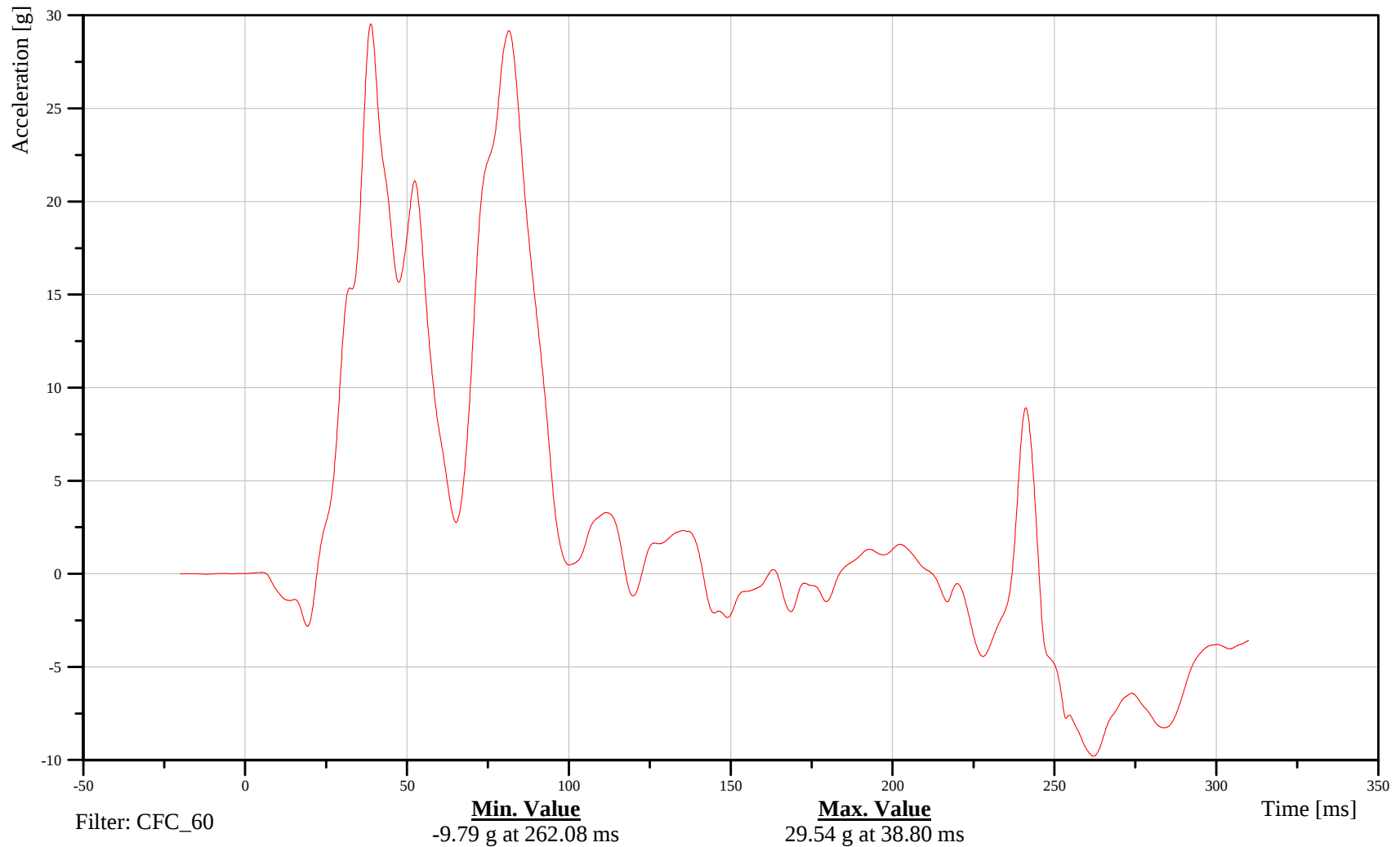
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16SEATTP0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-96

081029



Child Safety Research
Bottom of CRS #2 X-Axis Acceleration

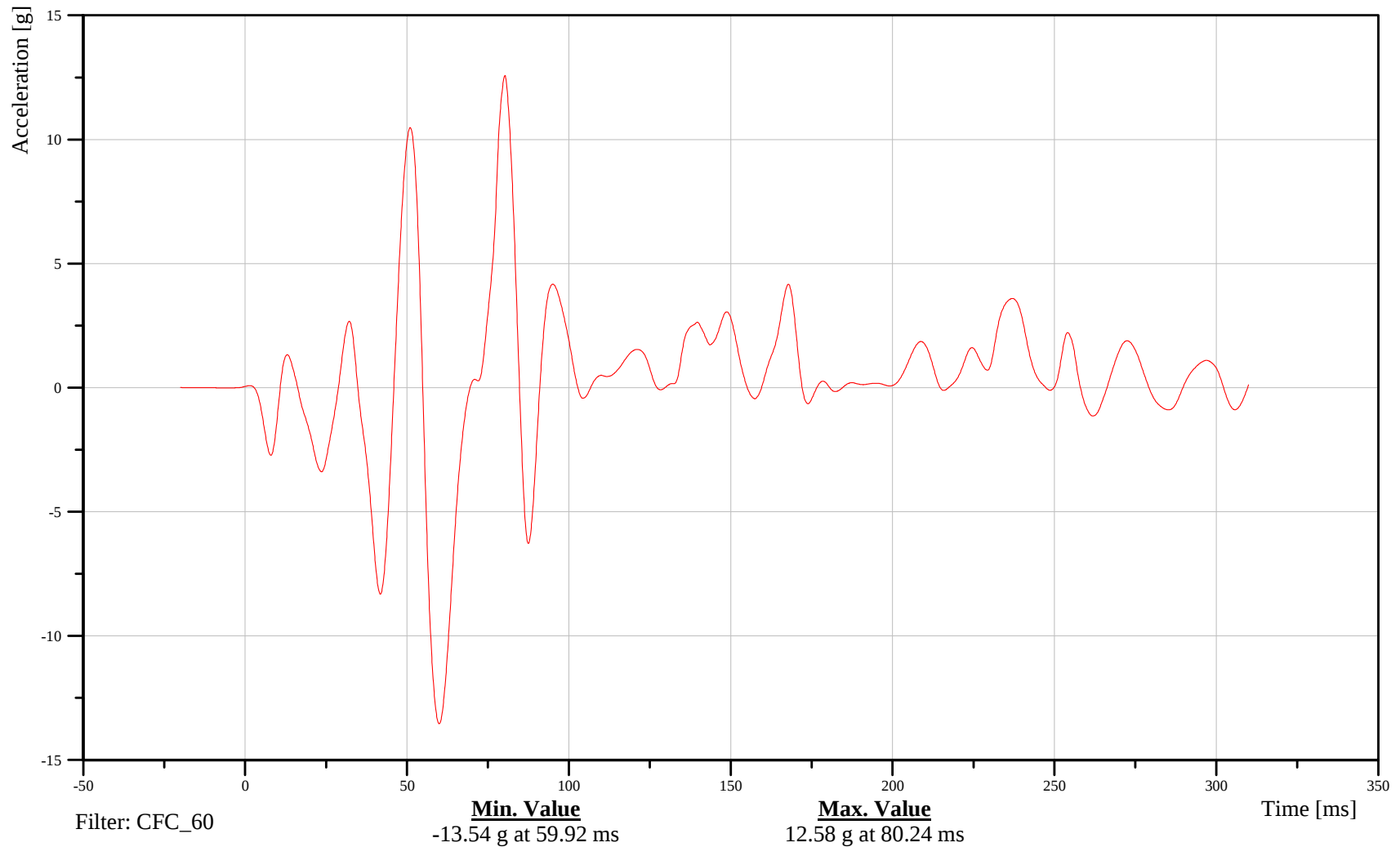
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16SEATBO0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-97

081029



Child Safety Research
Bottom of CRS #2 Y-Axis Acceleration

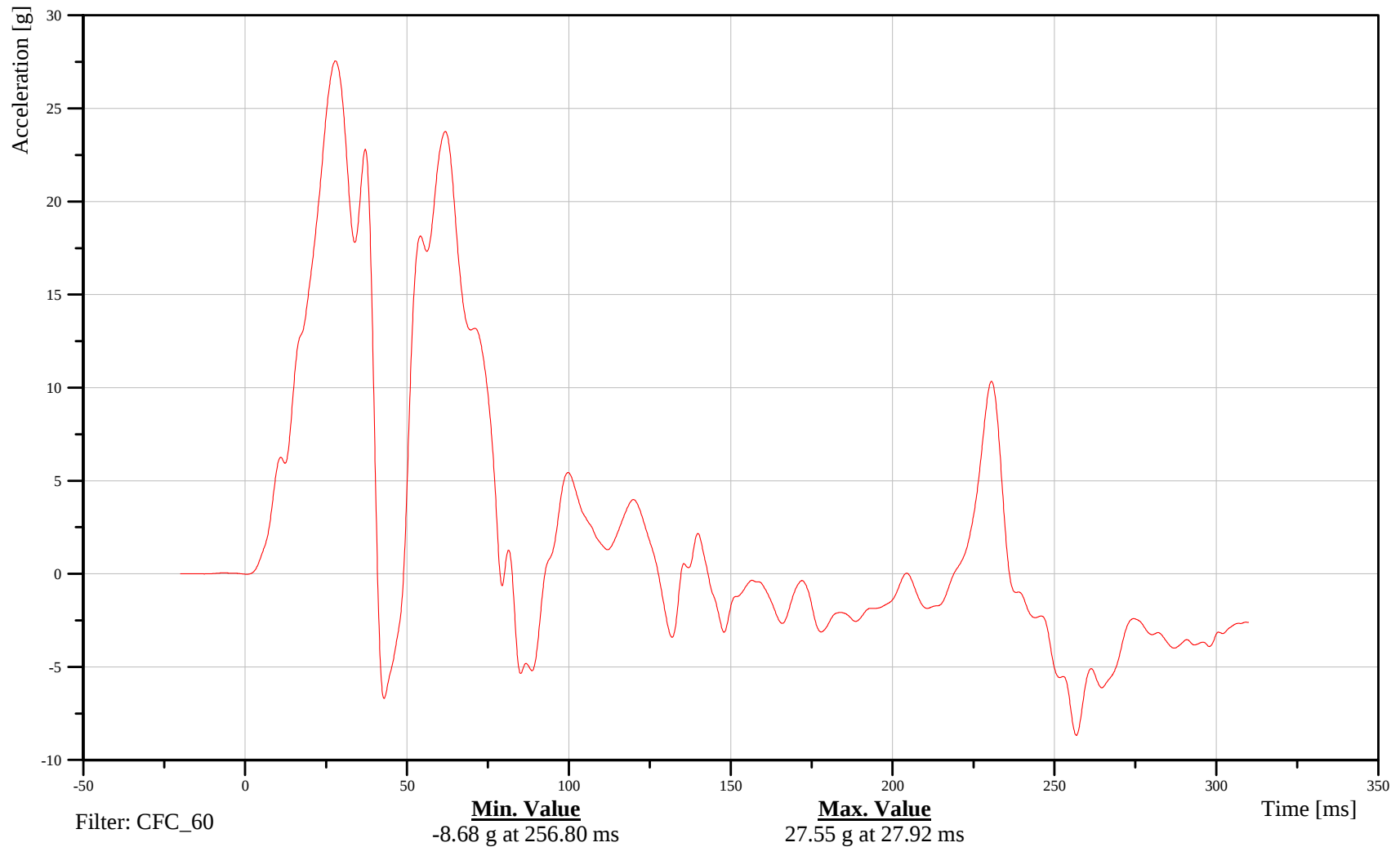
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16SEATBO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-98

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

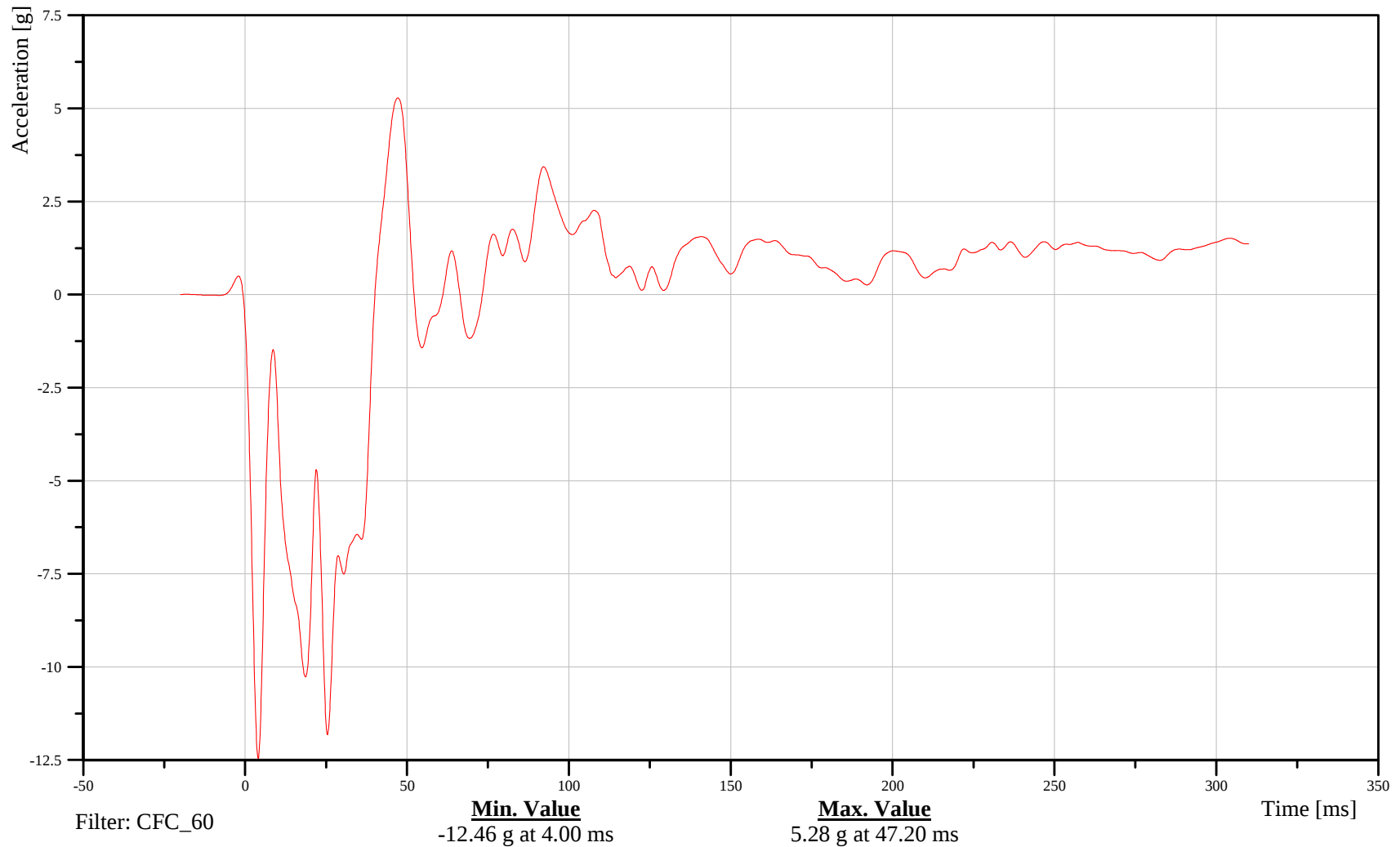
Below Seat Cushion Under CRS #1 X-Axis Acceleration

Customer: VRTC

14SEATLO0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-99

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

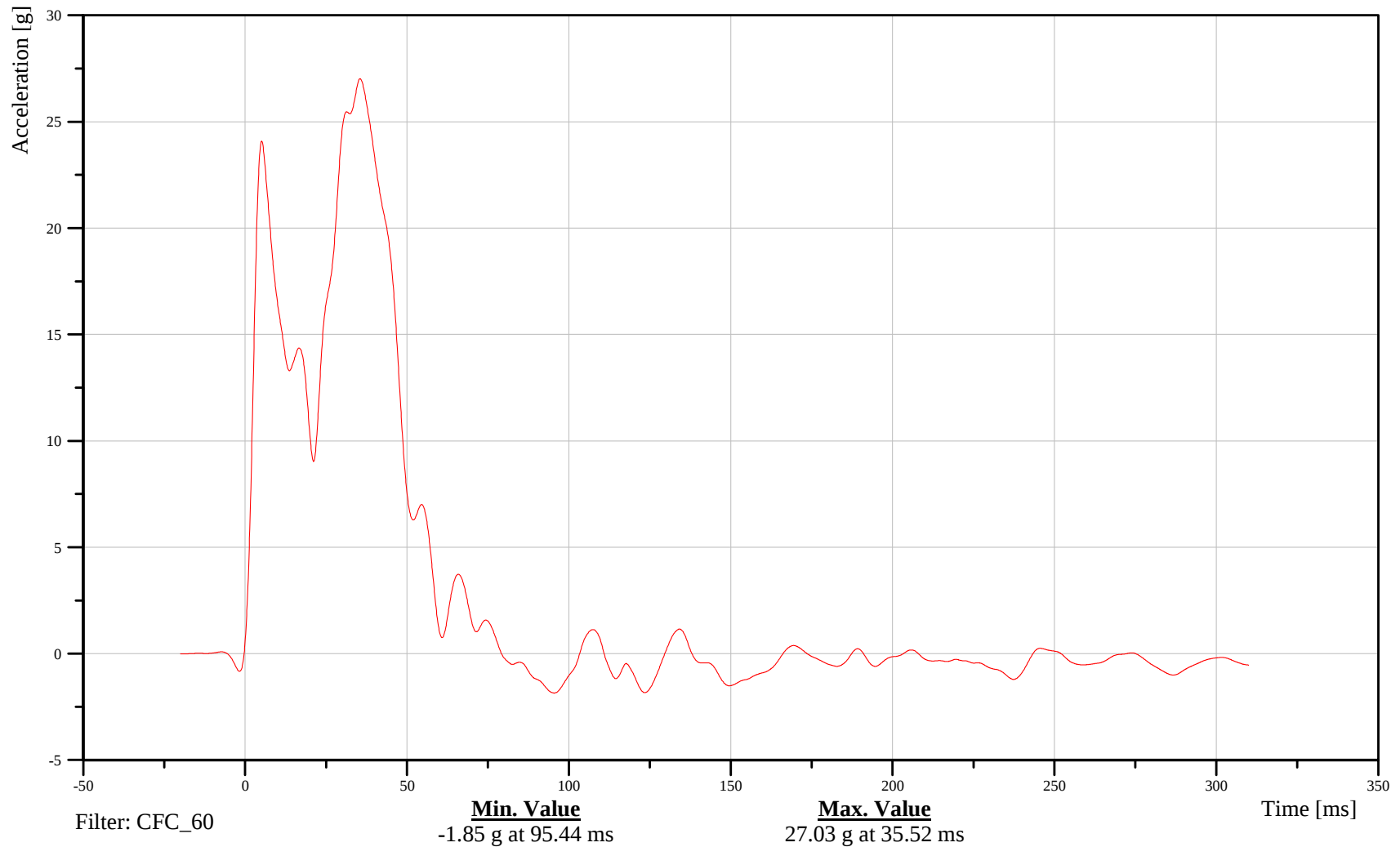
Below Seat Cushion Under CRS #1 Y-Axis Acceleration

Customer: VRTC

14SEATLO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-100

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

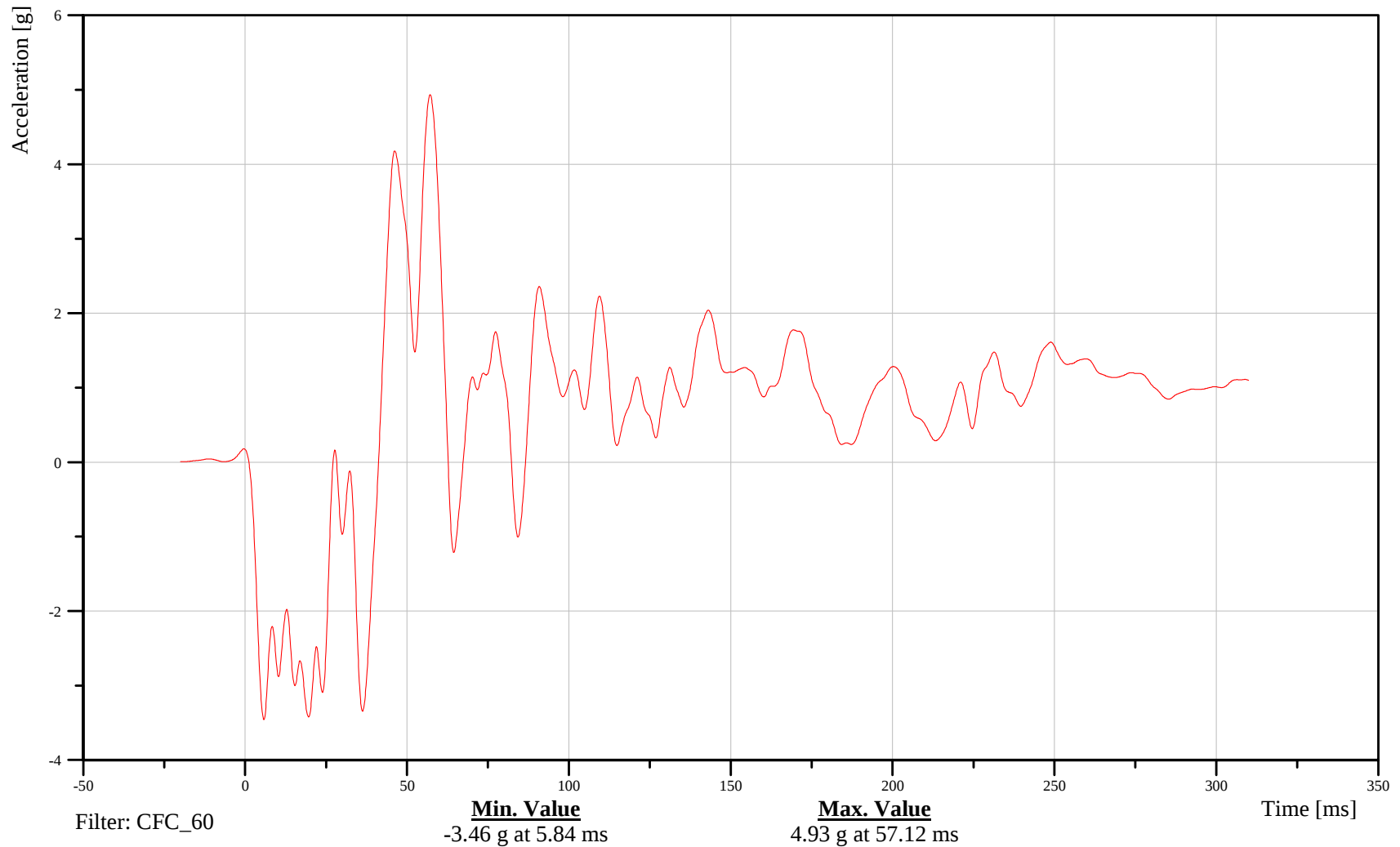
Below Seat Cushion Under CRS #2 X-Axis Acceleration

Customer: VRTC

16SEATLO0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-101

081029



Child Safety Research

Date: 10/29/2008
Time: 14:39

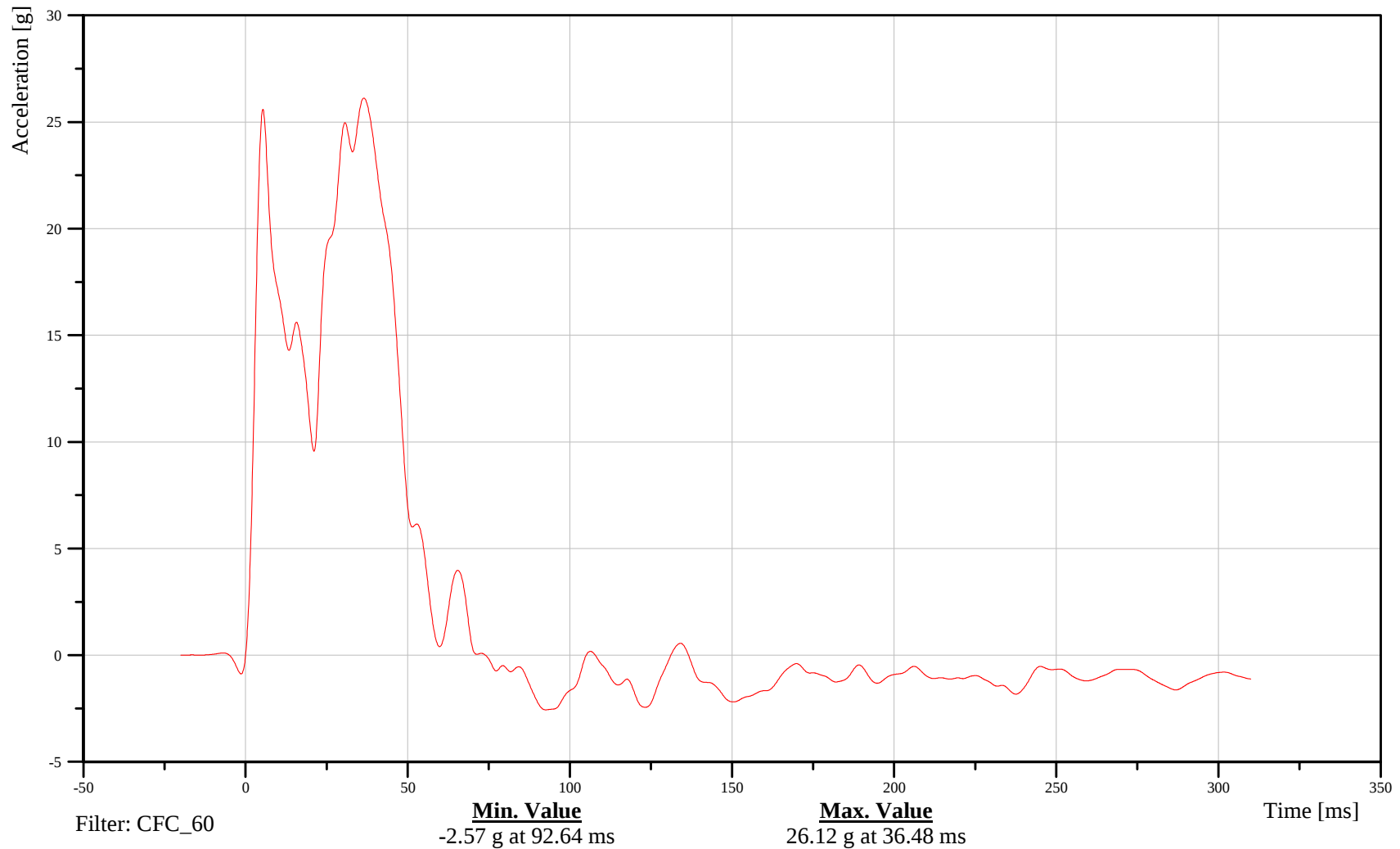
Below Seat Cushion Under CRS #2 Y-Axis Acceleration

Customer: VRTC

16SEATLO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-102

081029



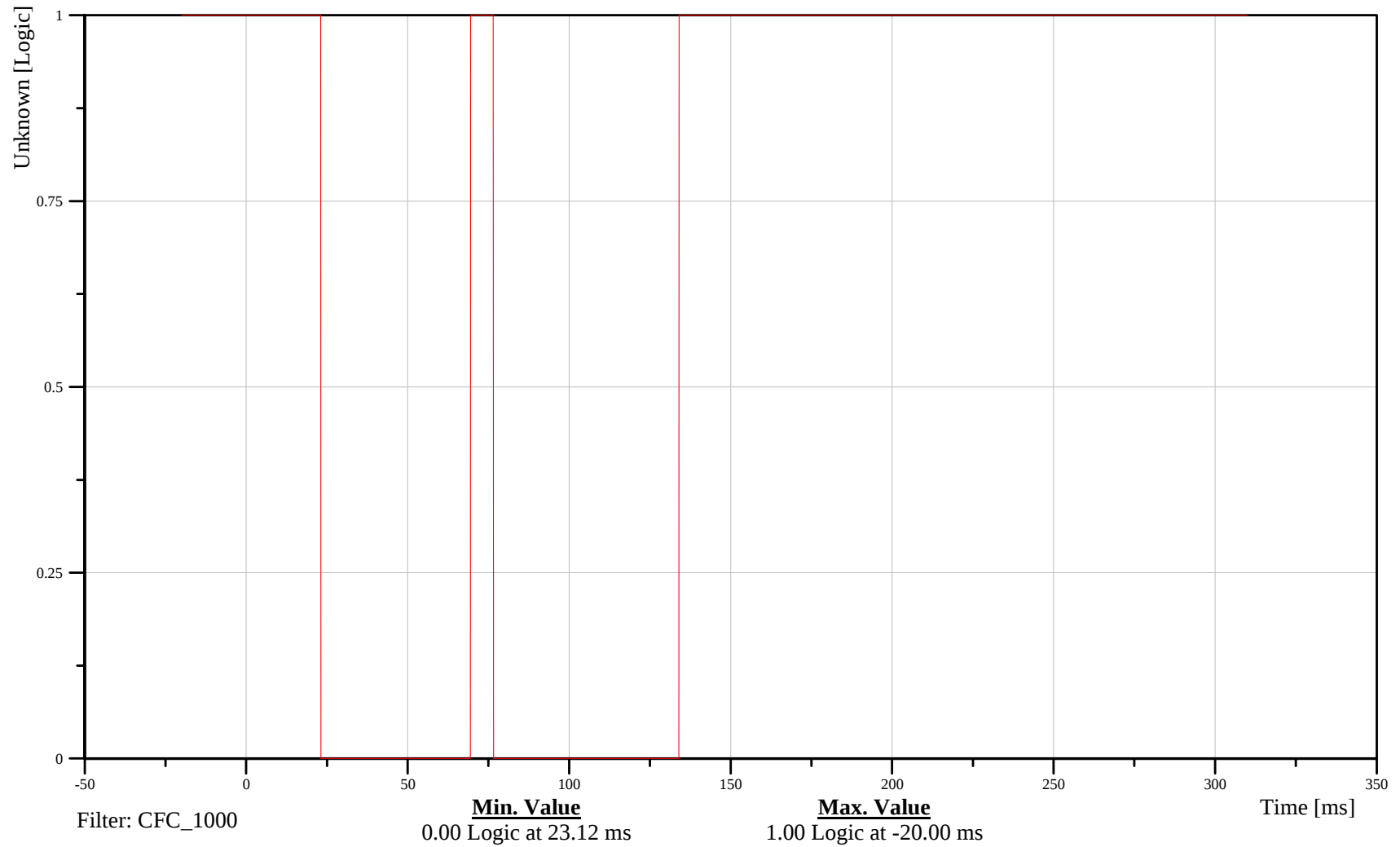
Child Safety Research
Left Rear Head Contact Switch

Date: 10/29/2008
Time: 14:39

Customer: VRTC

14HEAD000000VO0A

TRC Inc. Test Lab: CTF
Test Number: 081029-1



B-103

081029



Child Safety Research
Left Rear Shoulder Contact Switch

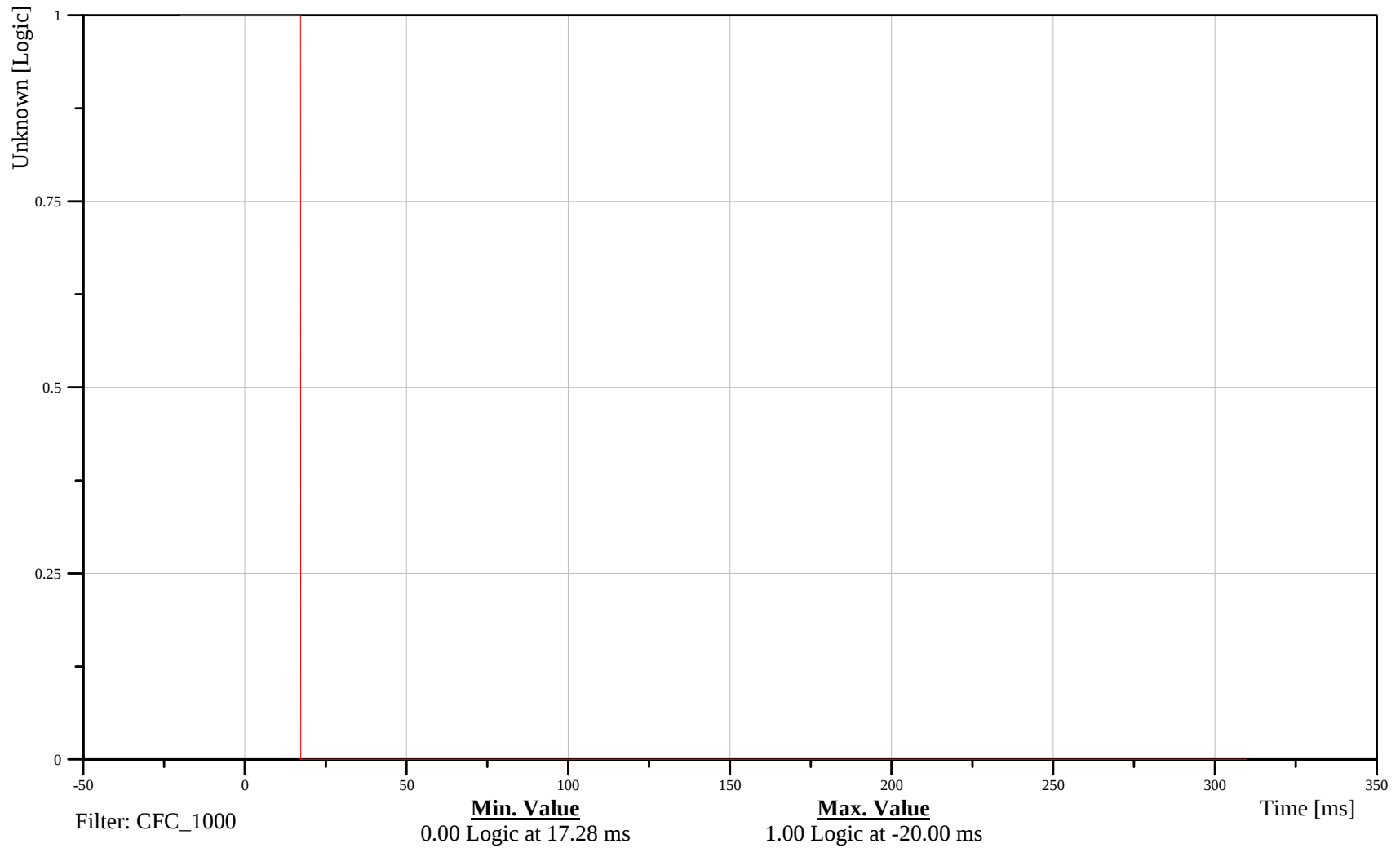
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14SHLD000000VO0A

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-104

081029



Child Safety Research
Left Rear Torso Contact Switch

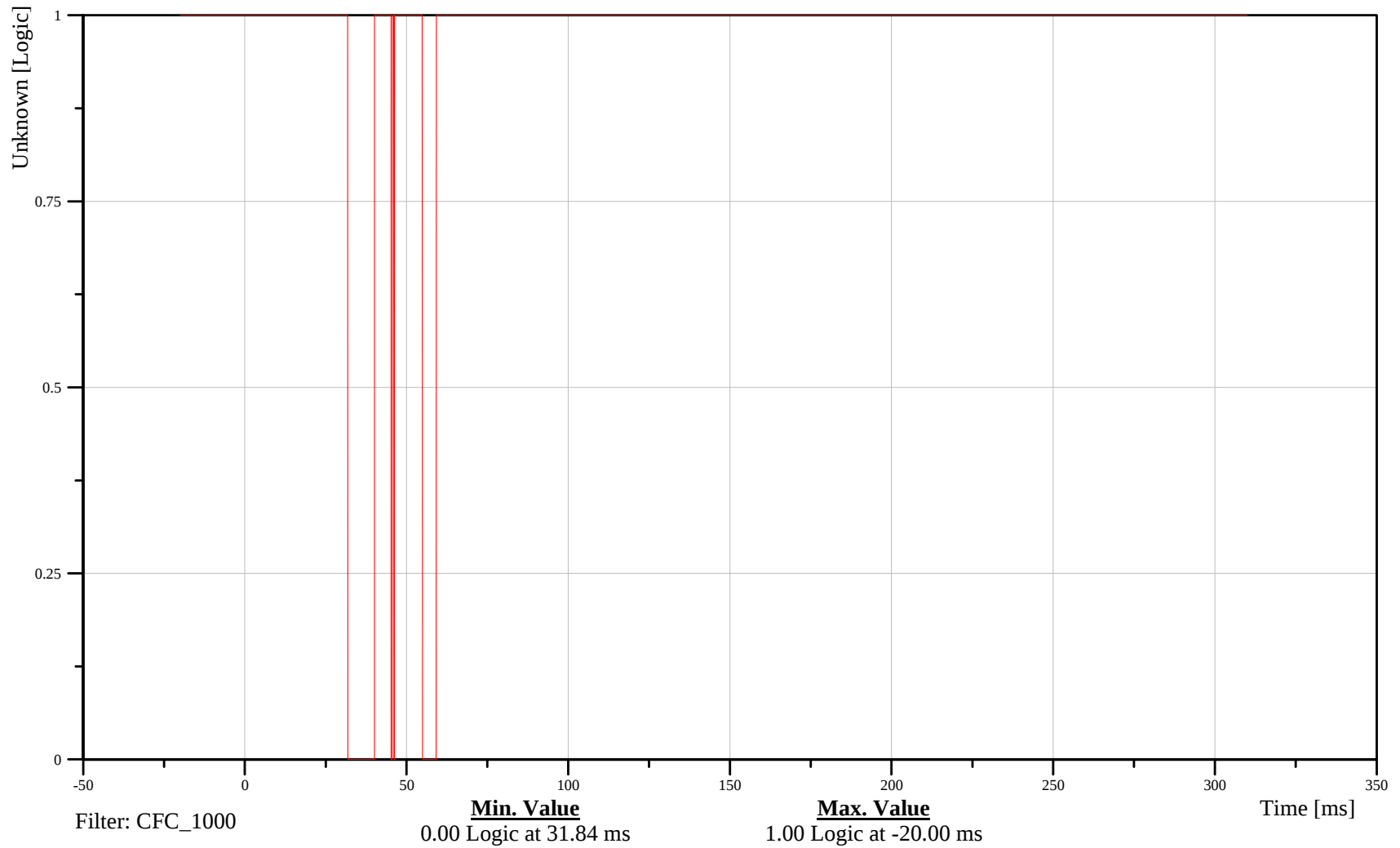
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14TORS000000VO0A

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-105

081029



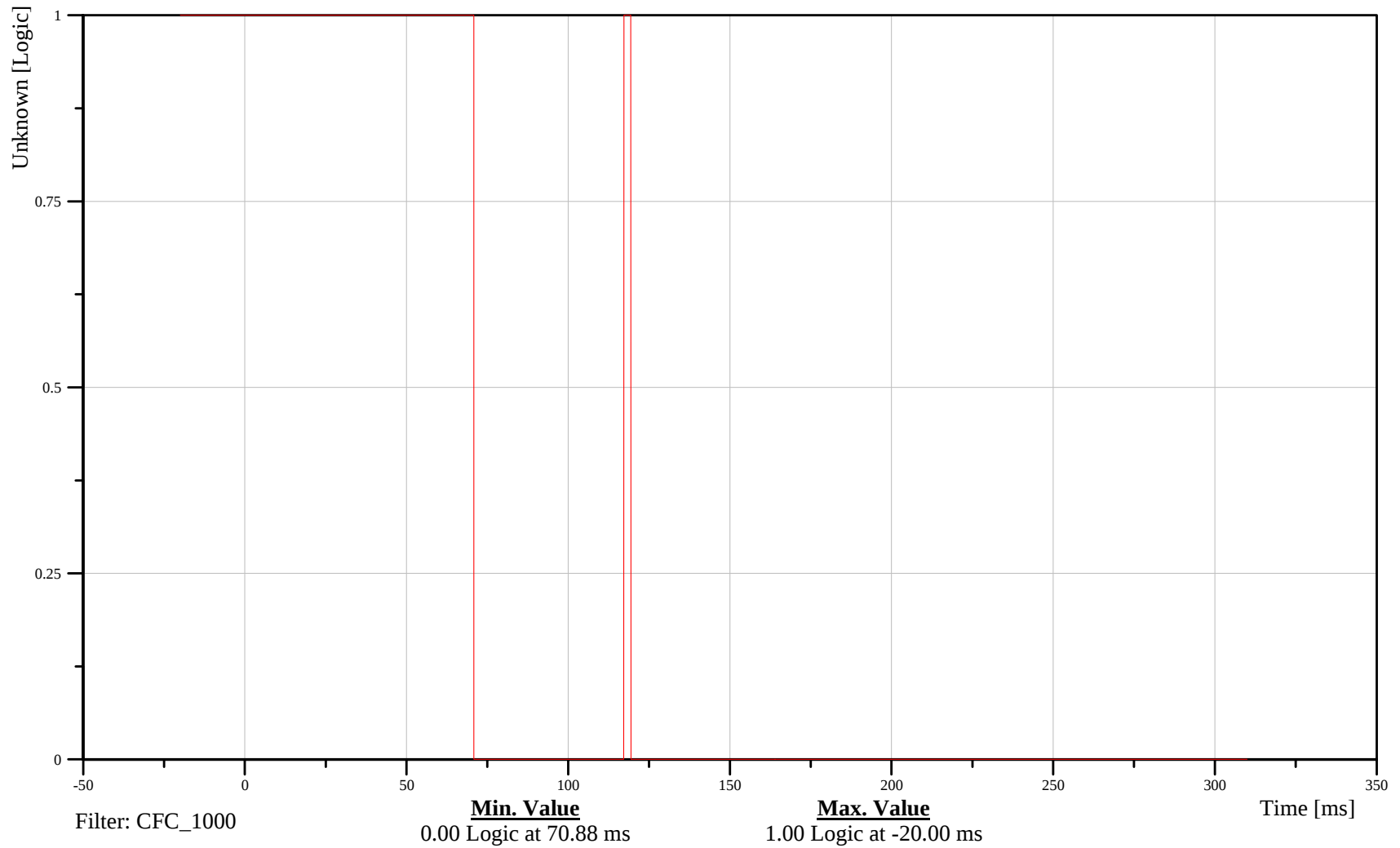
Child Safety Research
Left Rear Leg Contact Switch

Date: 10/29/2008
Time: 14:39

Customer: VRTC

14LEGLE00000VO0A

TRC Inc. Test Lab: CTF
Test Number: 081029-1



B-106

081029



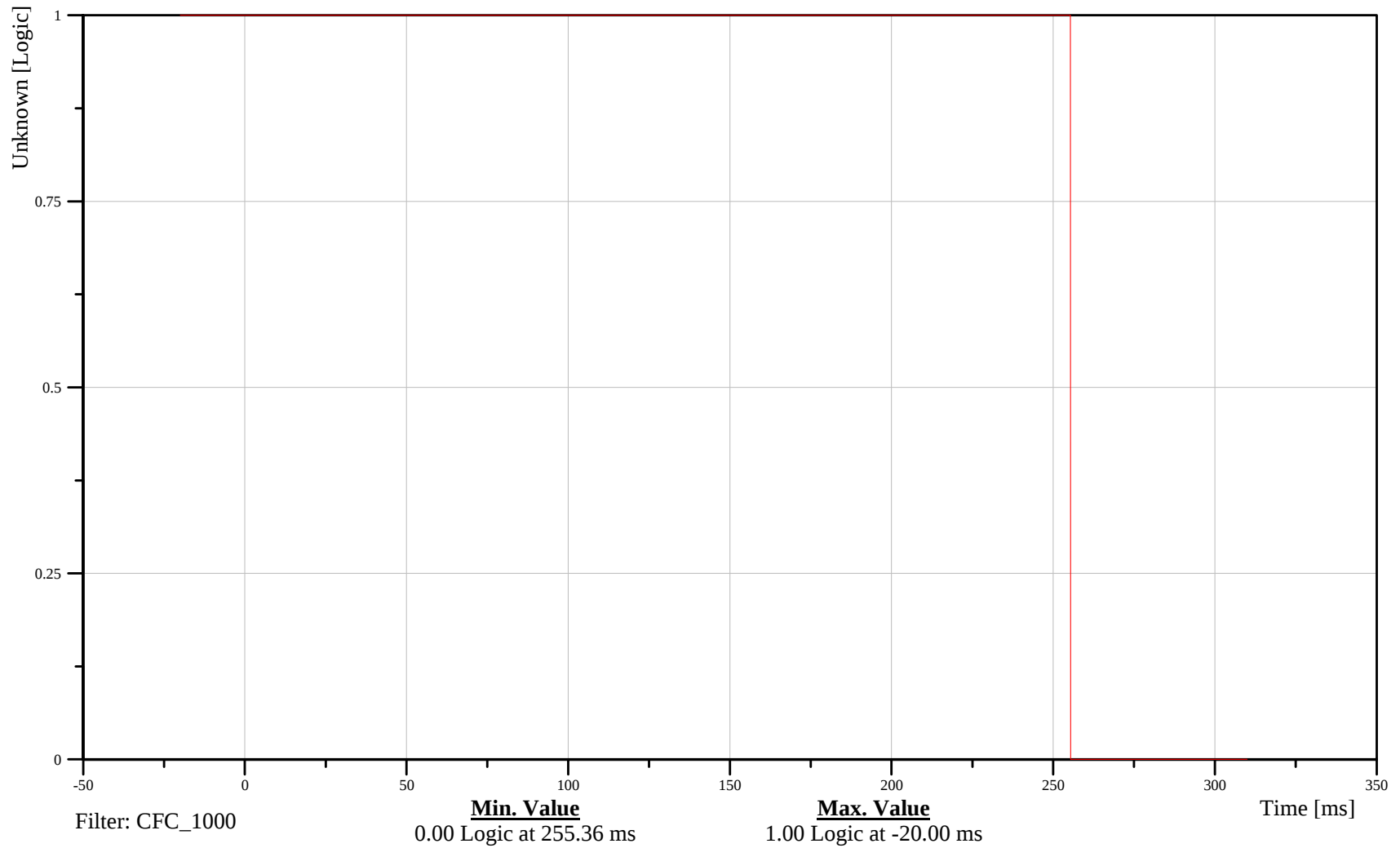
Child Safety Research
Right Rear Head Contact Switch

Date: 10/29/2008
Time: 14:39

Customer: VRTC

16HEAD000000VO0A

TRC Inc. Test Lab: CTF
Test Number: 081029-1



B-107

081029



Child Safety Research
Right Rear Shoulder Contact Switch

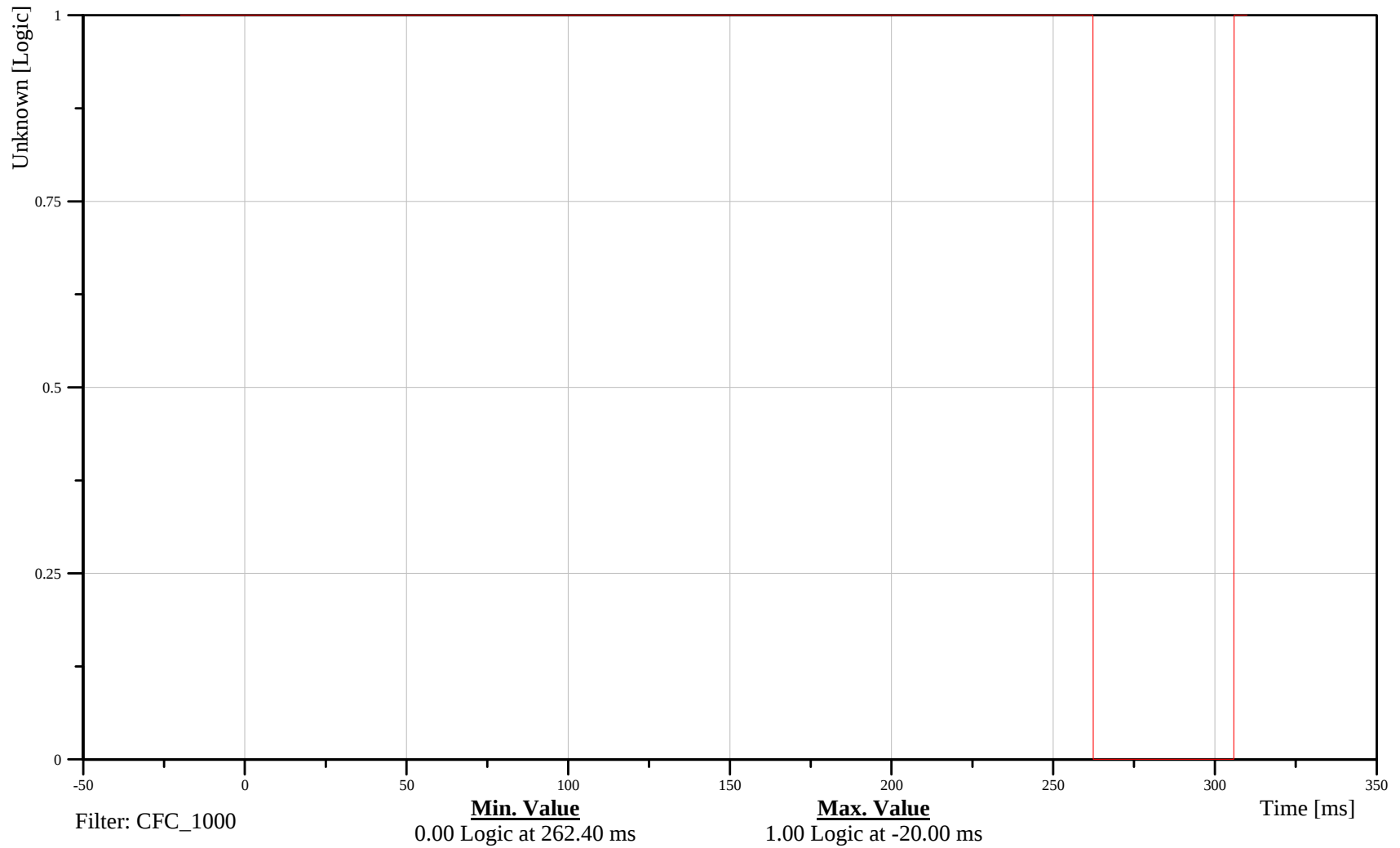
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16SHLD000000VO0A

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-108

081029



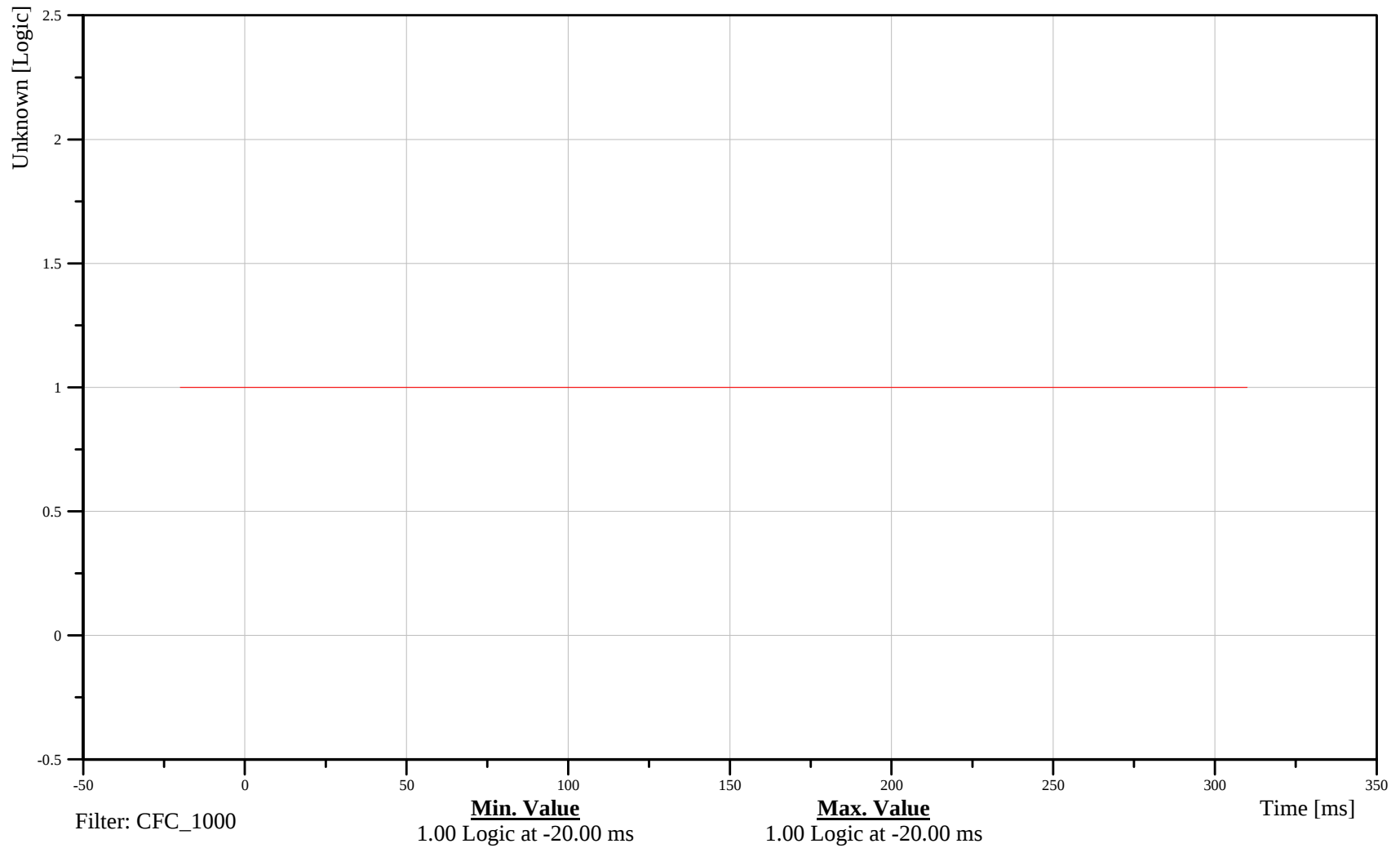
Child Safety Research
Right Rear Torso Contact Switch

Date: 10/29/2008
Time: 14:39

Customer: VRTC

16TORS000000VO0A

TRC Inc. Test Lab: CTF
Test Number: 081029-1



B-109

081029



Child Safety Research
Right Rear Leg Contact Switch

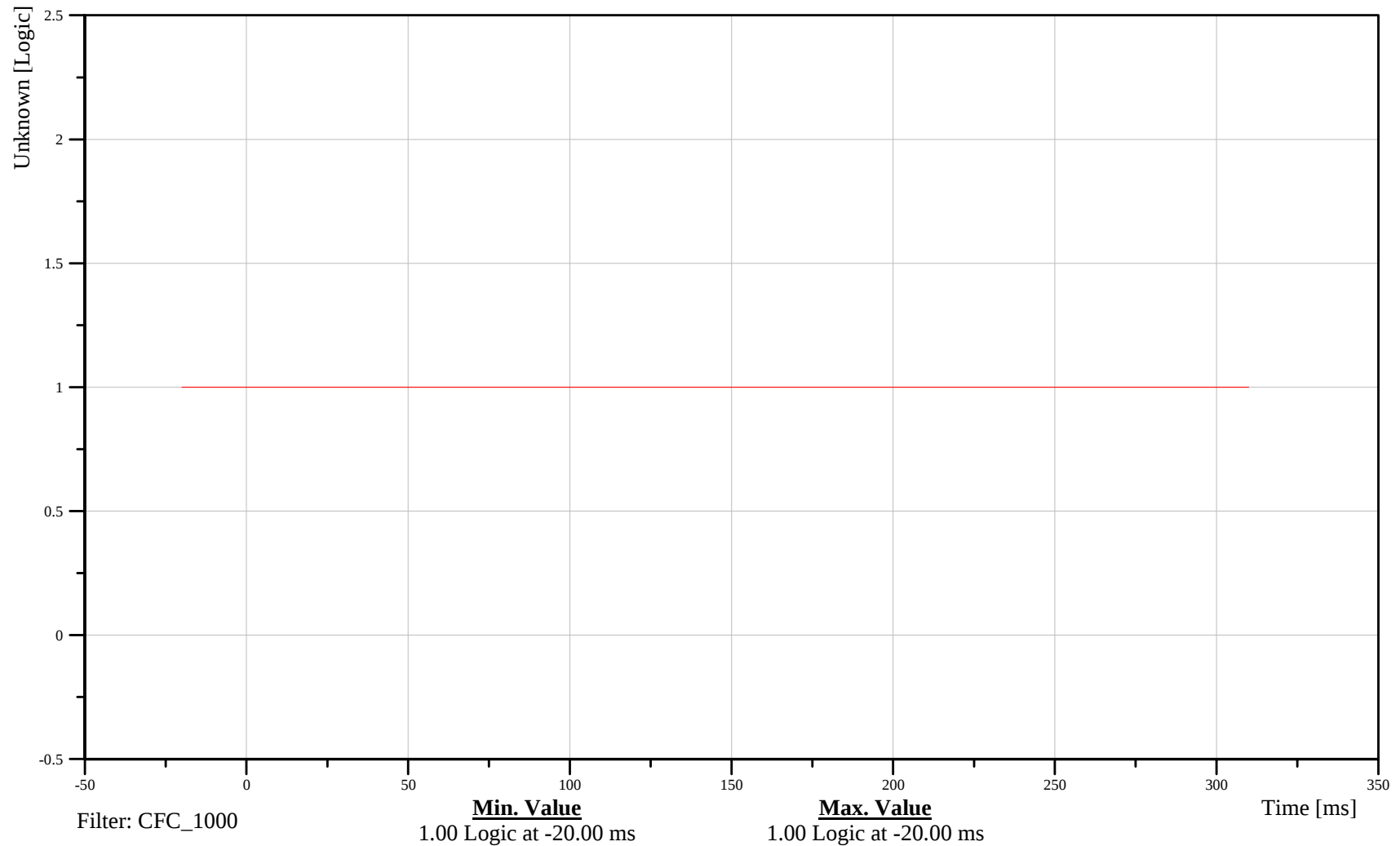
Date: 10/29/2008
Time: 14:39

Customer: VRTC

16LEGLE00000VO0A

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-110

081029



Child Safety Research
MDB Center of Gravity X-Axis Acceleration

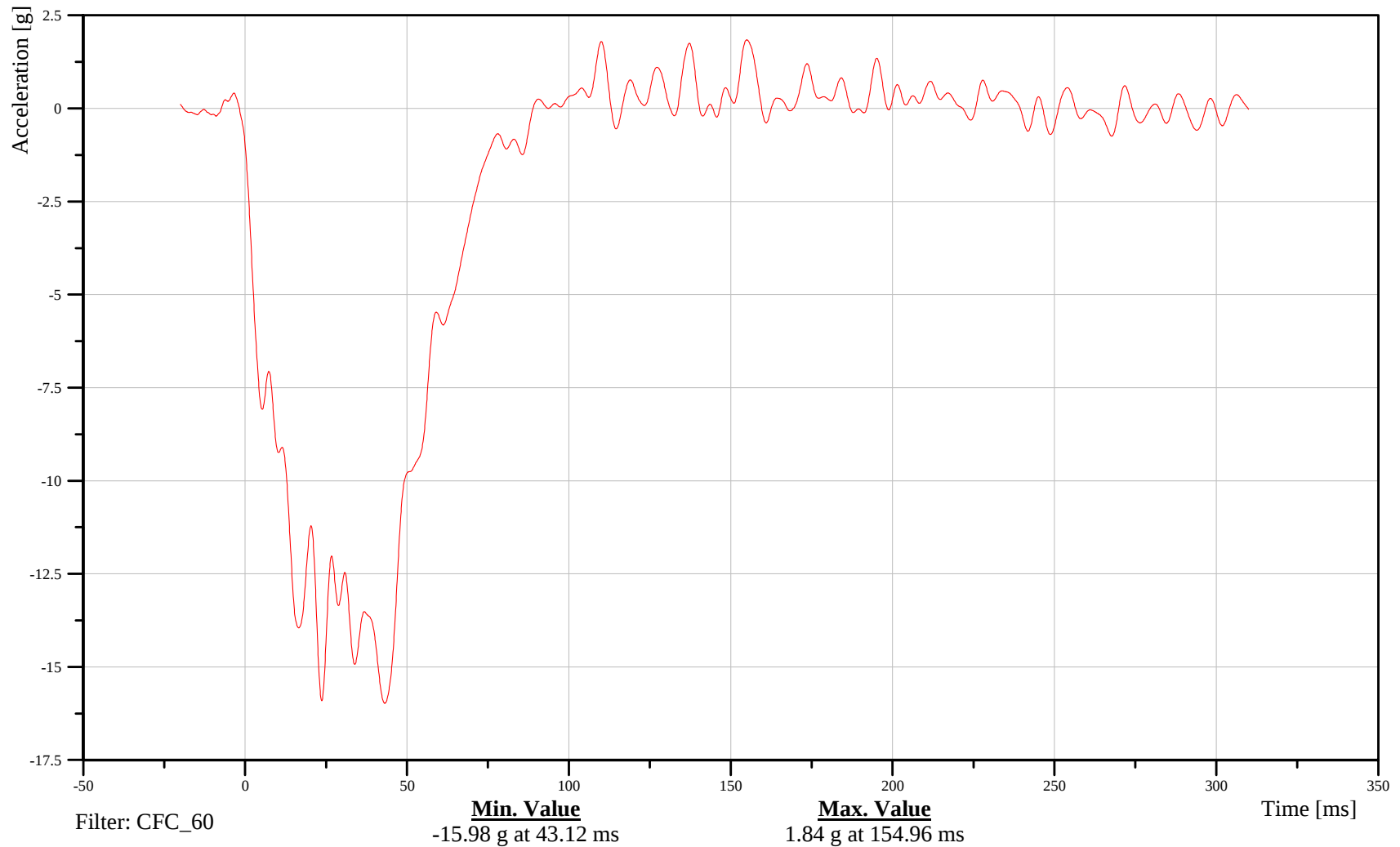
Date: 10/29/2008
Time: 14:39

Customer: VRTC

M0VEHCCG0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-111

081029



Child Safety Research
MDB Center of Gravity Y-Axis Acceleration

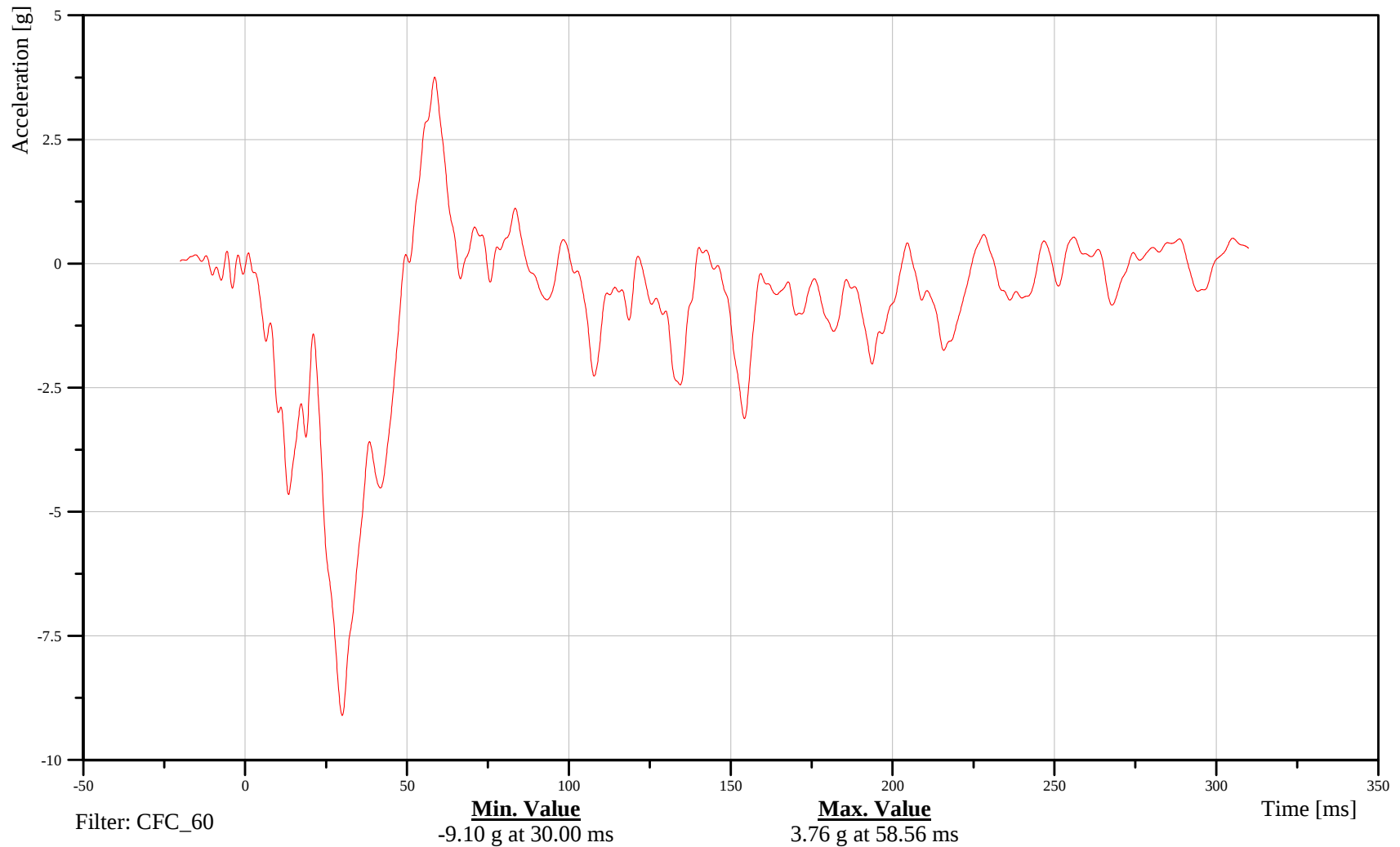
Date: 10/29/2008
Time: 14:39

Customer: VRTC

M0VEHCCG0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-112

081029



Child Safety Research
MDB Center of Gravity Z-Axis Acceleration

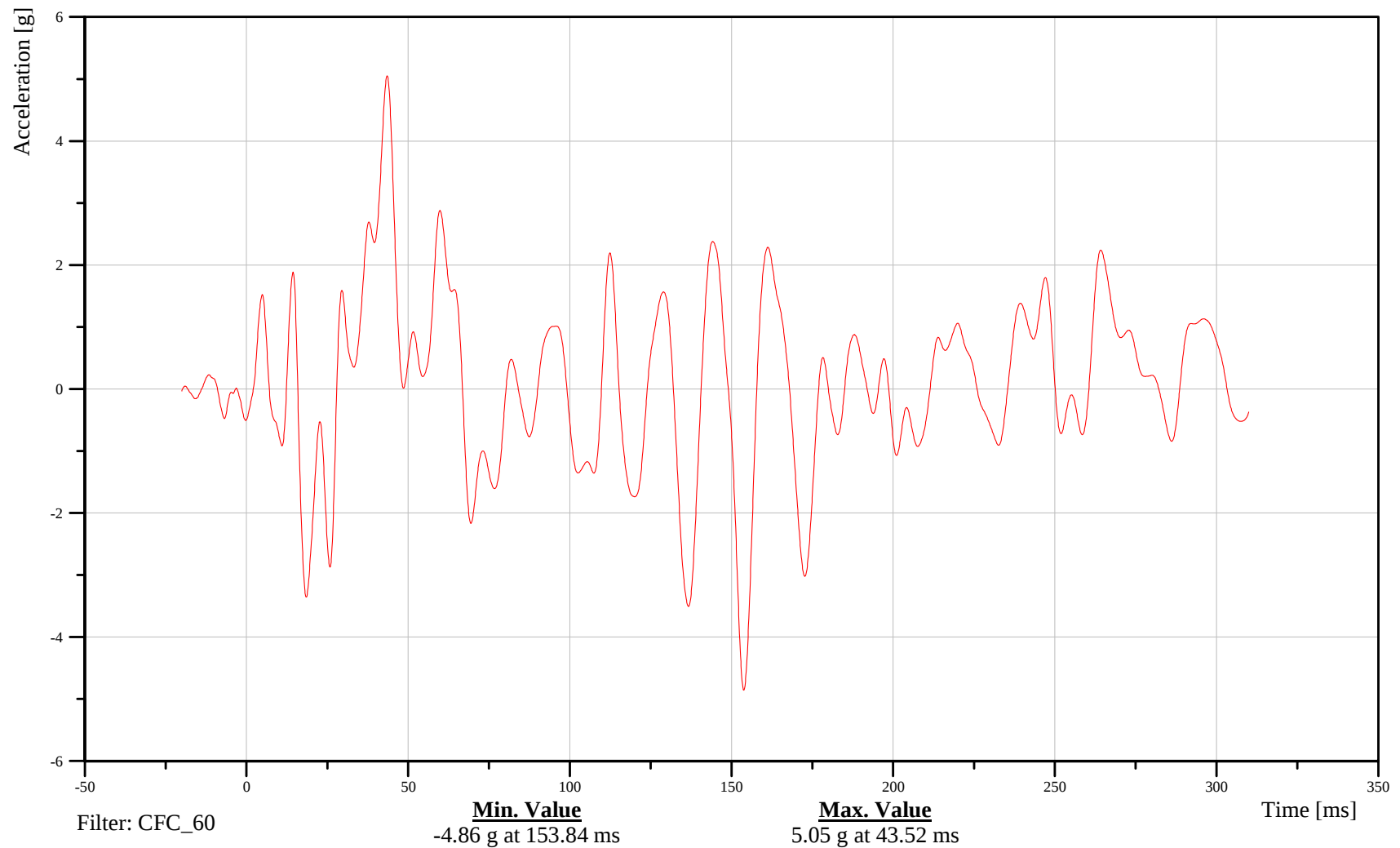
Date: 10/29/2008
Time: 14:39

Customer: VRTC

M0VEHCCG0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-113

081029



Child Safety Research

MDB Center of Gravity Resultant Acceleration

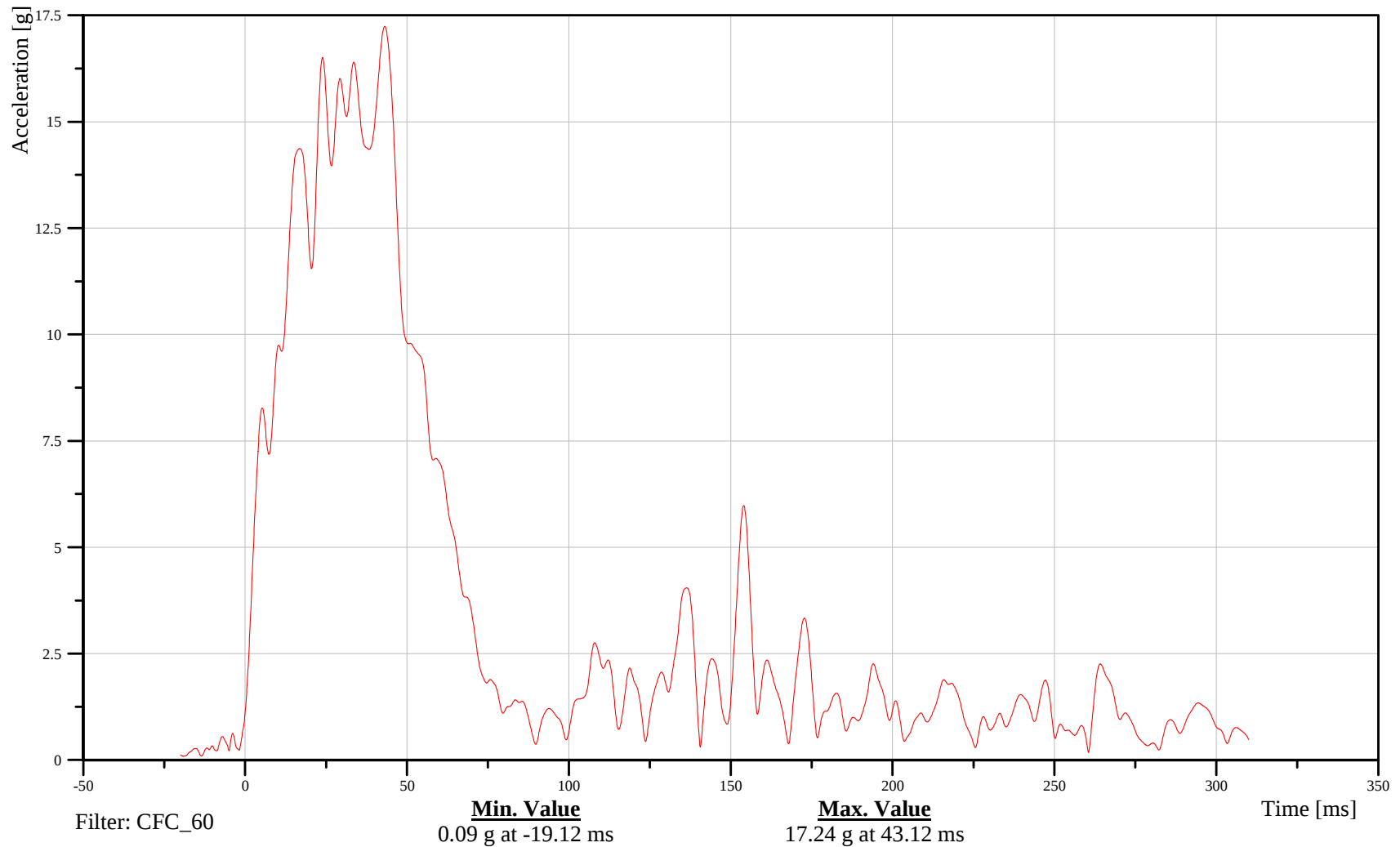
Date: 10/29/2008
Time: 14:39

Customer: VRTC

M0VEHCCG0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-114

081029



Child Safety Research
MDB Rear X-Axis Acceleration

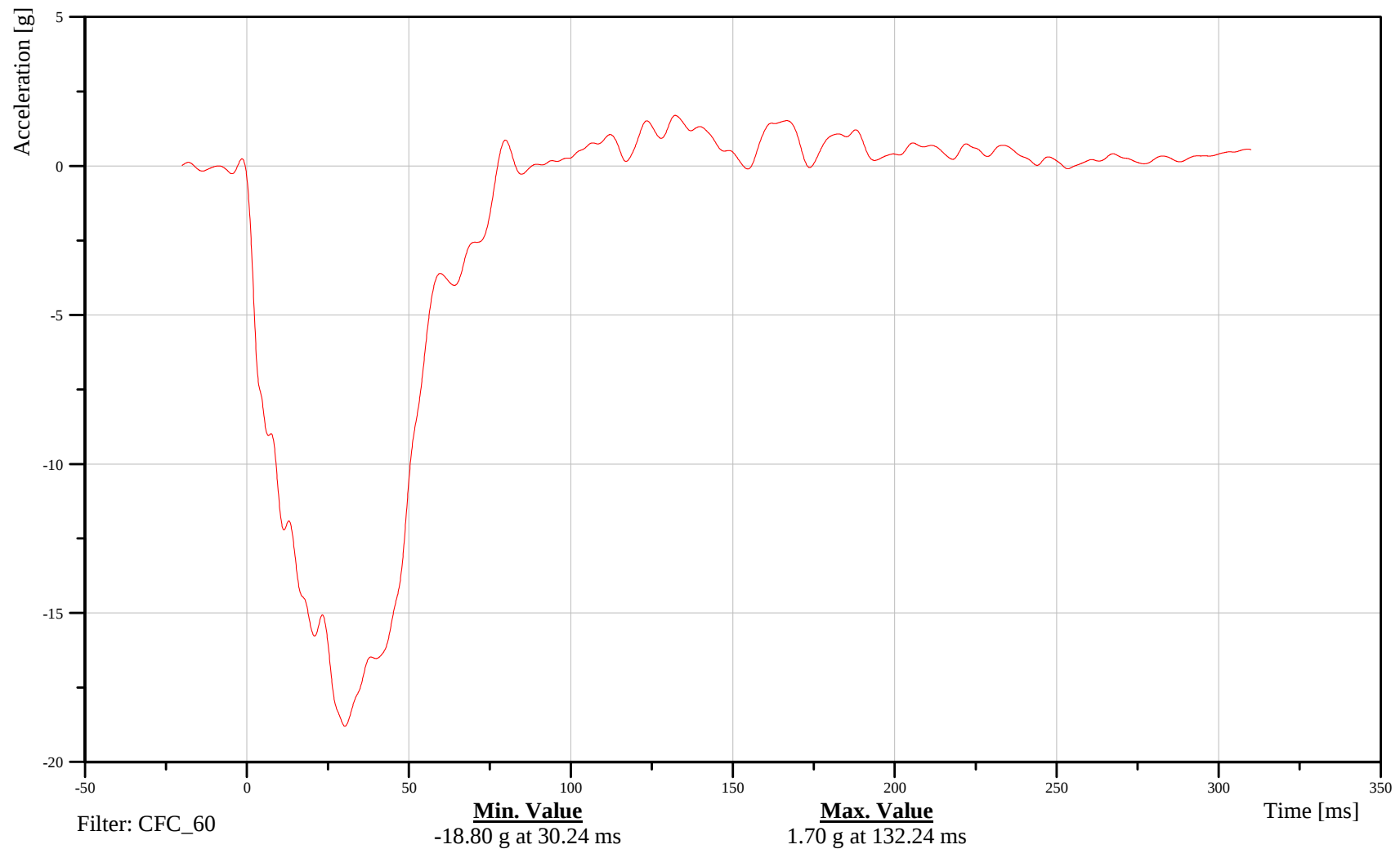
Date: 10/29/2008
Time: 14:39

Customer: VRTC

M7FRAM000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-115

081029



Child Safety Research
MDB Rear Y-Axis Acceleration

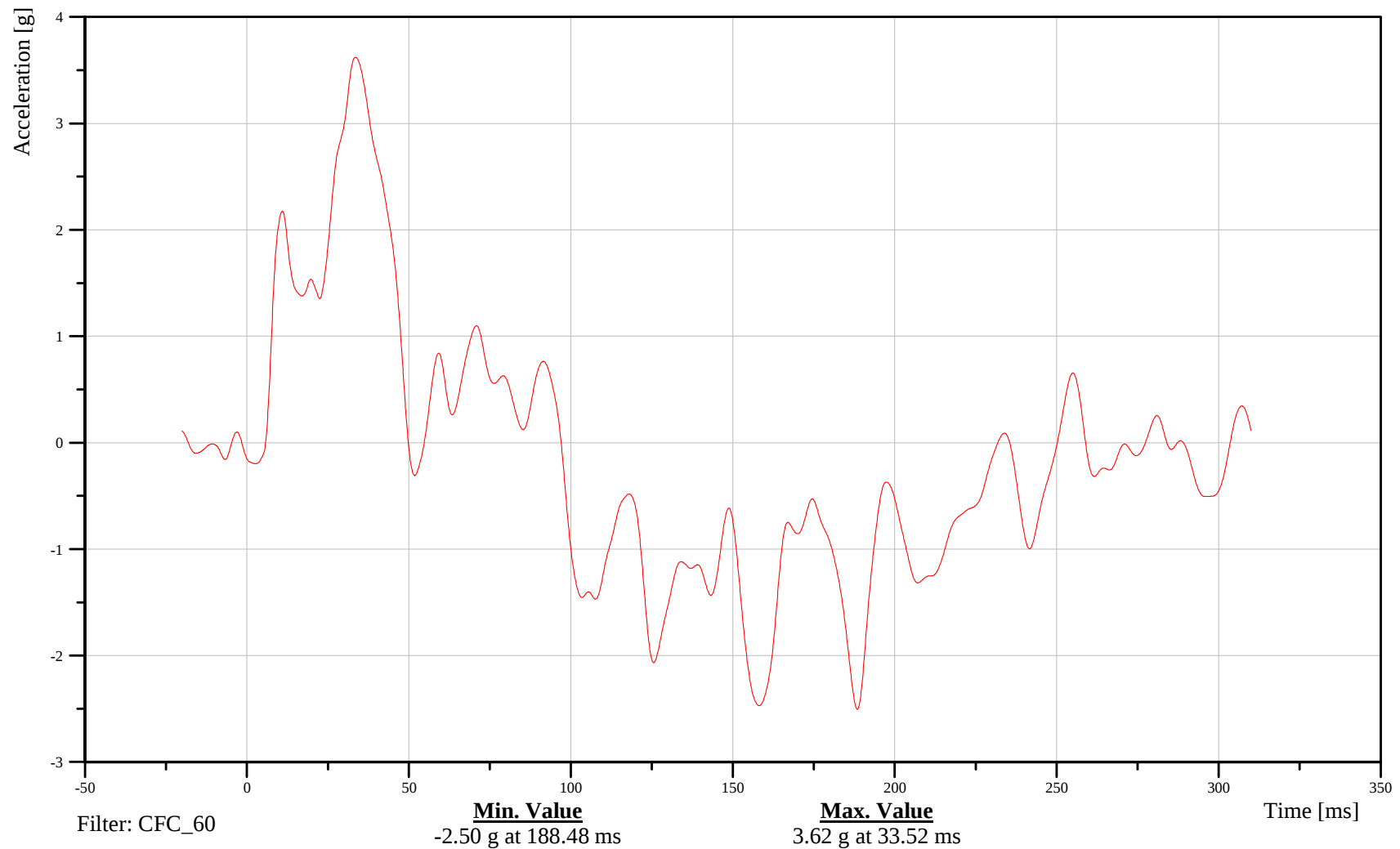
Date: 10/29/2008
Time: 14:39

Customer: VRTC

M7FRAM000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-116

081029



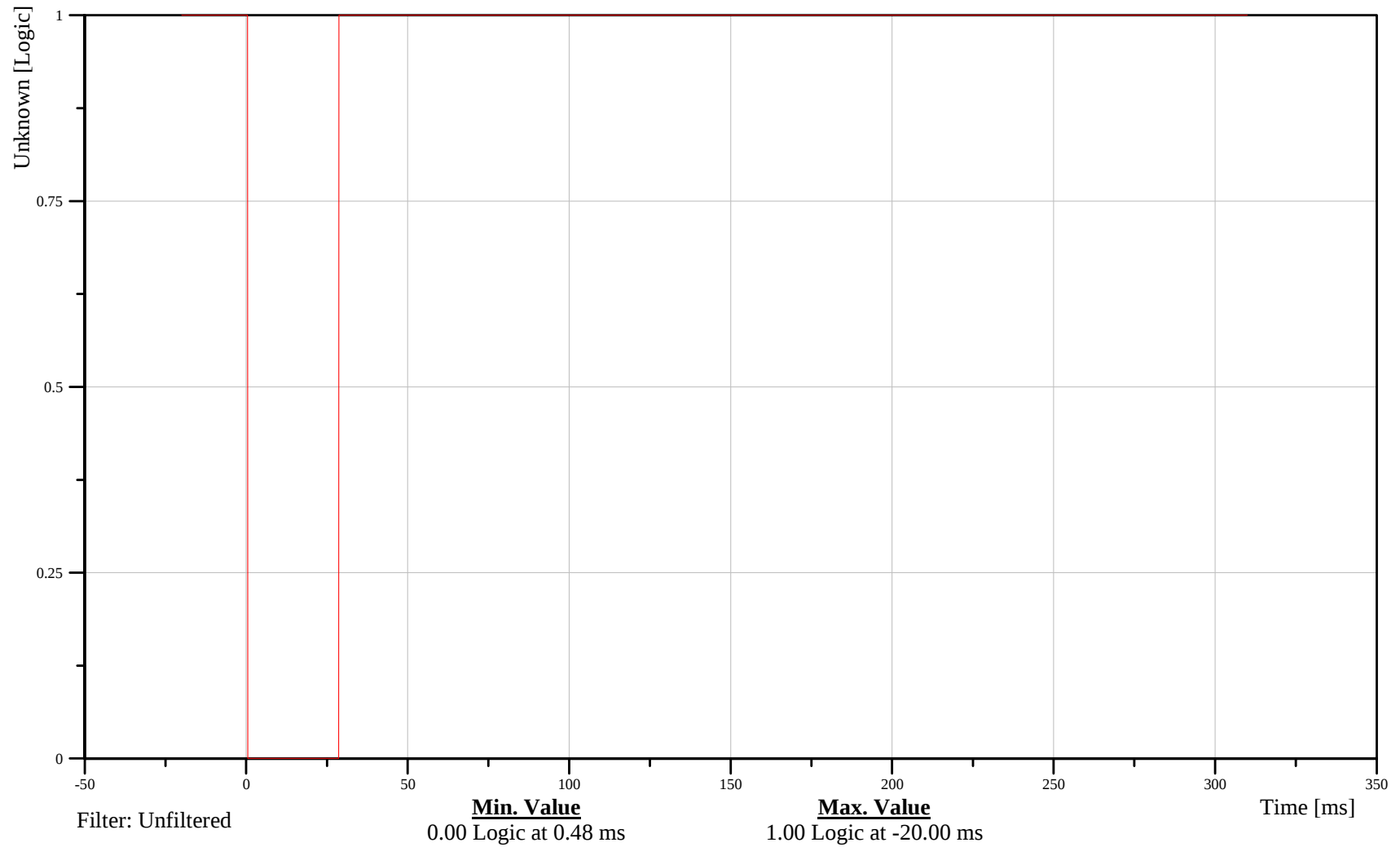
Child Safety Research
MDB Right Contact Switch

Date: 10/29/2008
Time: 14:39

Customer: VRTC

M3CONT000000VO00

TRC Inc. Test Lab: CTF
Test Number: 081029-1



B-117

081029



Child Safety Research

MDB Left Contact Switch

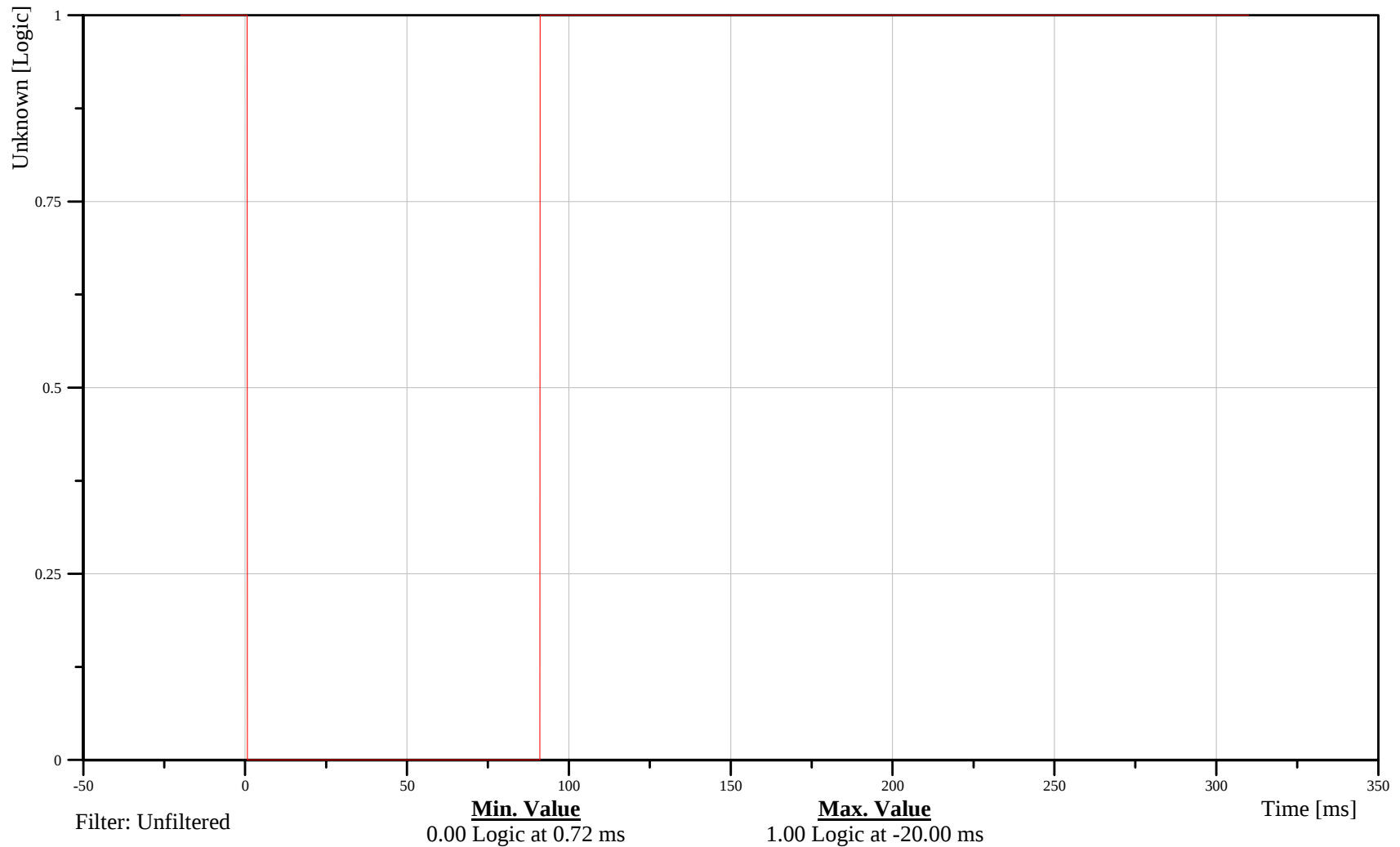
Date: 10/29/2008
Time: 14:39

Customer: VRTC

M1CONT000000VO00

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-118

081029



Child Safety Research
Left Rear Thorax IR-TRACC Y-Axis

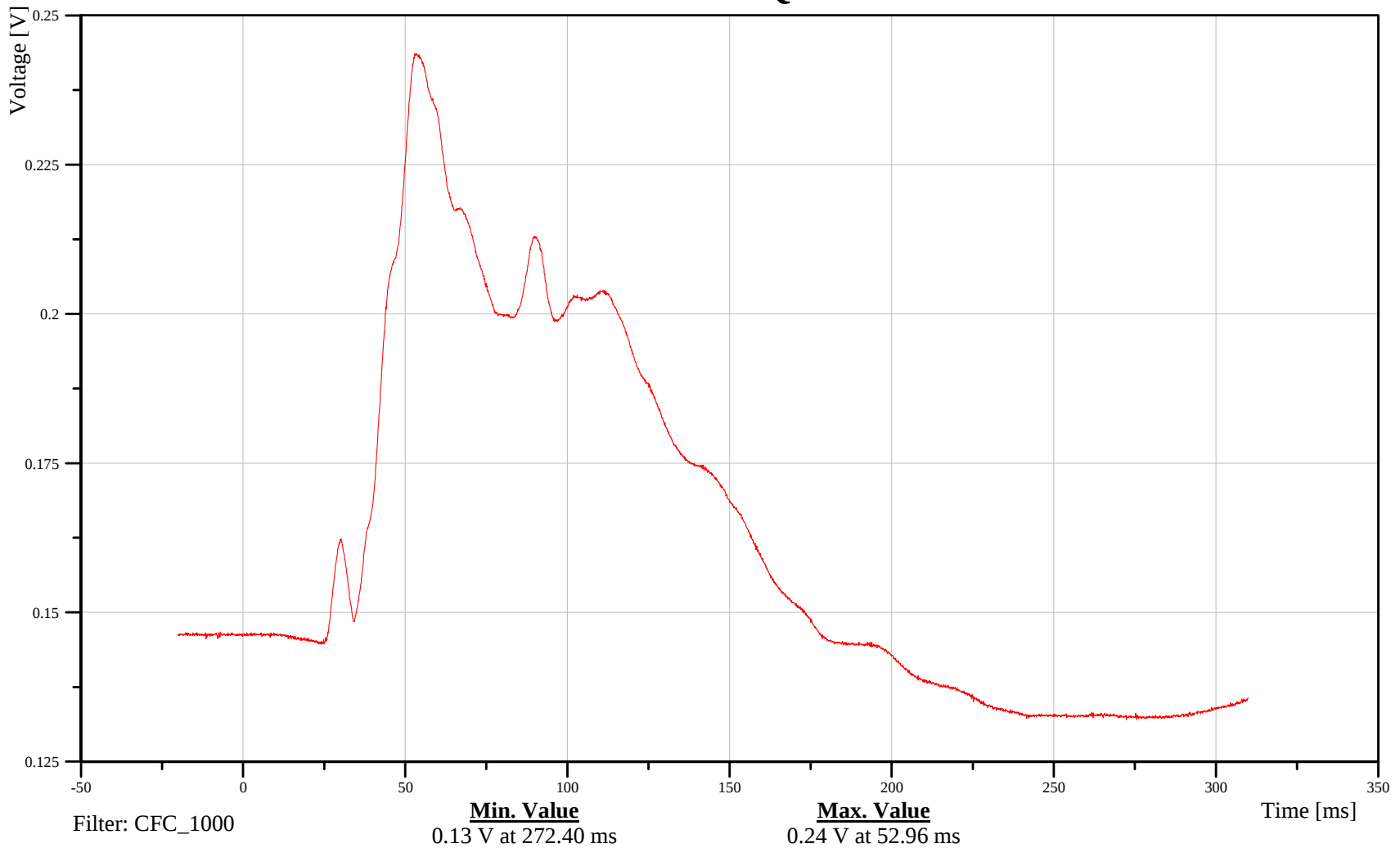
Date: 10/29/2008
Time: 14:39

Customer: VRTC

14CHST0000Q3VOYA

TRC Inc. Test Lab: CTF

Test Number: 081029-1



B-119

081029

Appendix C

ATD Configuration and Performance Verification Data

Calibration Test Results

Pre-Test

Right Rear Child Dummy H3Cs: 141

Configured for Left Side Impact

Transportation Research Center Inc.
572P HIII 3 Year Old Dummy
External Dimensions
Serial No. 141 Calibration No. 12

Test Parameter	Dimension	Specification	Results	Pass
Total Sitting Height	A	538.5 - 553.7 mm	545 mm	Yes
Shoulder Pivot Height	B	307.3 - 322.6 mm	310 mm	Yes
Hip Pivot Height	C	34.3 - 44.4 mm	40 mm	Yes
Hip Pivot from Backline	D	56.9 - 67.1 mm	67 mm	Yes
Shoulder Pivot from Backline	E	61.0 - 71.1 mm	68 mm	Yes
Thigh Clearance	F	81.0 - 91.2 mm	85 mm	Yes
Back of Elbow to Wrist Pivot	G	247.4 - 262.6 mm	260 mm	Yes
Head Back to Backline	H	48.3 - 58.4 mm	54 mm	Yes
Shoulder to Elbow Length	I	185.4 - 200.6 mm	190 mm	Yes
Elbow Rest Height	J	133.6 - 148.8 mm	141 mm	Yes
Buttock to Knee Length	K	284.8 - 300.0 mm	295 mm	Yes
Popliteal Height	L	218.5 - 233.7 mm	229 mm	Yes
Knee to Floor Height	M	241.6 - 256.8 mm	247 mm	Yes
Buttock Popliteal Height	N	218.0 - 233.2 mm	230 mm	Yes
Chest Depth with Jacket	O	138.5 - 153.7 mm	150 mm	Yes
Foot Length	P	137.7 - 147.8 mm	143 mm	Yes
Stature	Q	932.2 - 957.6 mm	940 mm	Yes
Buttock to Knee Pivot Length	R	251.5 - 261.6 mm	258 mm	Yes
Head Breadth	S	128.3 - 143.5 mm	133 mm	Yes
Head Depth	T	167.4 - 182.6 mm	172 mm	Yes
Hip Breadth	U	200.7 - 215.9 mm	210 mm	Yes
Shoulder Breadth	V	236.5 - 251.7 mm	248 mm	Yes
Foot Breadth	W	53.6 - 63.8 mm	58 mm	Yes
Head Circumference	X	500.4 - 515.6 mm	510 mm	Yes
Chest Circumference with Jacket	Y	527.1 - 552.5 mm	545 mm	Yes
Waist Circumference	Z	527.1 - 552.5 mm	535 mm	Yes
Reference Location for Chest Circumference	AA	248.9 - 259.1 mm	255 mm	Yes
Reference Location for Waist Circumference	BB	160.0 - 170.2 mm	165 mm	Yes

Technician

Raul Brand

Approved

Ken Stover



Transportation Research Center Inc.

Front Head Drop

HIII 3YO Serial No. 141 Certification No. 12-2

Test Date: 5/1/2007

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
Peak Head Resultant Acceleration	250 - 280 g	279.6 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	-6.4 g	Yes
Is Acceleration Curve Unimodal?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Rand Bunk

Approved

Ron Stoner

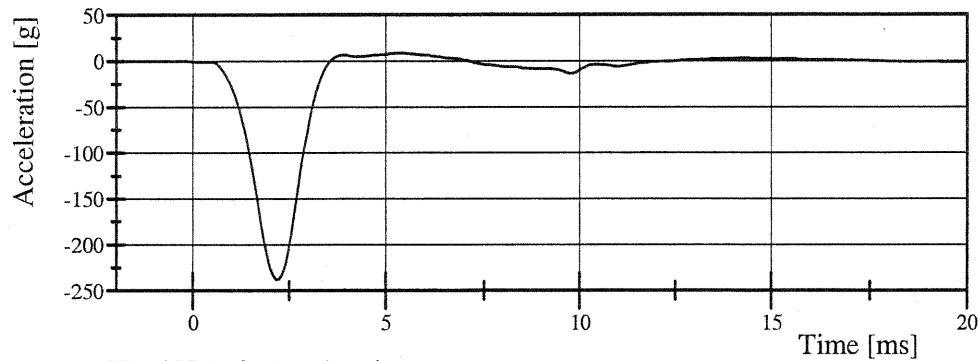
Transportation Research Center Inc.

Front Head Drop

HIII 3YO Serial No. 141 Certification No. 12-2

Test Date: 5/1/2007

Head X-Axis Acceleration

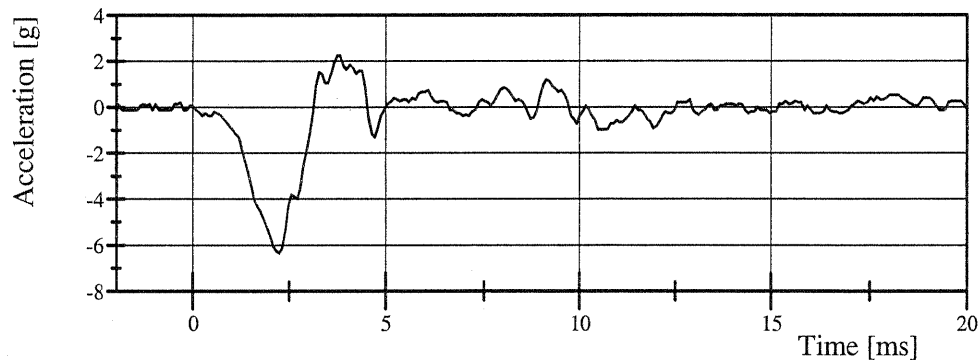


Filter Class: CFC_1000

Max: 8.8 g at 5.4 ms

Min: -237.6 g at 2.2 ms

Head Y-Axis Acceleration

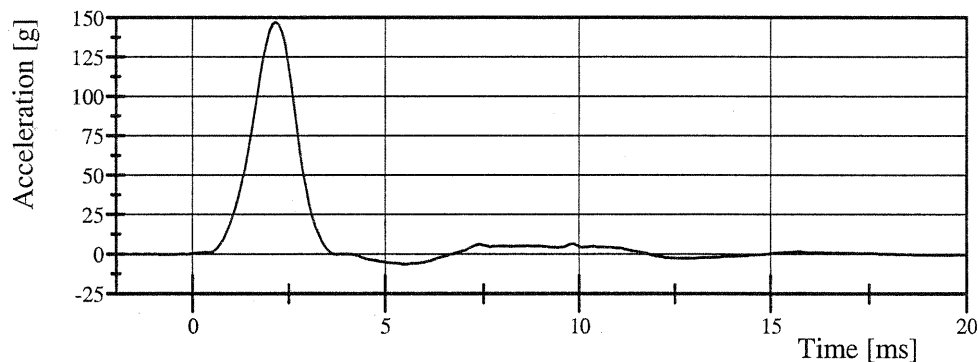


Filter Class: CFC_1000

Max: 2.2 g at 3.8 ms

Min: -6.4 g at 2.2 ms

Head Z-Axis Acceleration

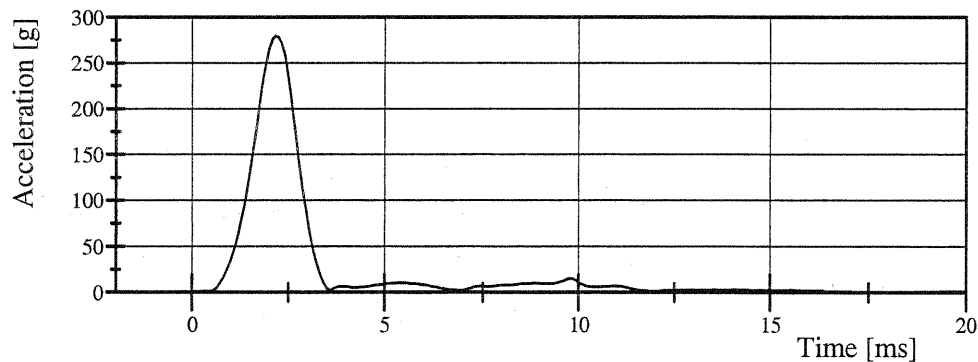


Filter Class: CFC_1000

Max: 147.3 g at 2.2 ms

Min: -6.1 g at 5.6 ms

Head Resultant Acceleration



Filter Class: CFC_1000

Max: 279.6 g at 2.2 ms

Min: 0.1 g at -1.9 ms

Transportation Research Center Inc.

Neck Flexion

HIII 3YO Serial No. 141 Certification No. 12-1

Test Date: 5/2/2007

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Pendulum Impact Velocity	5.40 - 5.60 m/s	5.565 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	(-2.0) - (-2.7) m/s	-2.53 m/s	Yes
Pendulum Integrated Velocity Change at 15 ms	(-3.0) - (-4.0) m/s	-3.65 m/s	Yes
Pendulum Integrated Velocity Change at 20 ms	(-4.0) - (-5.1) m/s	-5.00 m/s	Yes
Total Headform D-Plane Rotation	(-70) - (-82) °	-72.4 °	Yes
Peak Neck Occipital Condyles Moment	42 - 53 Nm	42.0 Nm	Yes
Neck Occipital Condyles Moment Decay to 10 Nm	60 - 80 ms	68.0 ms	Yes

Test meets specifications.

Comments:

Technician



Approved

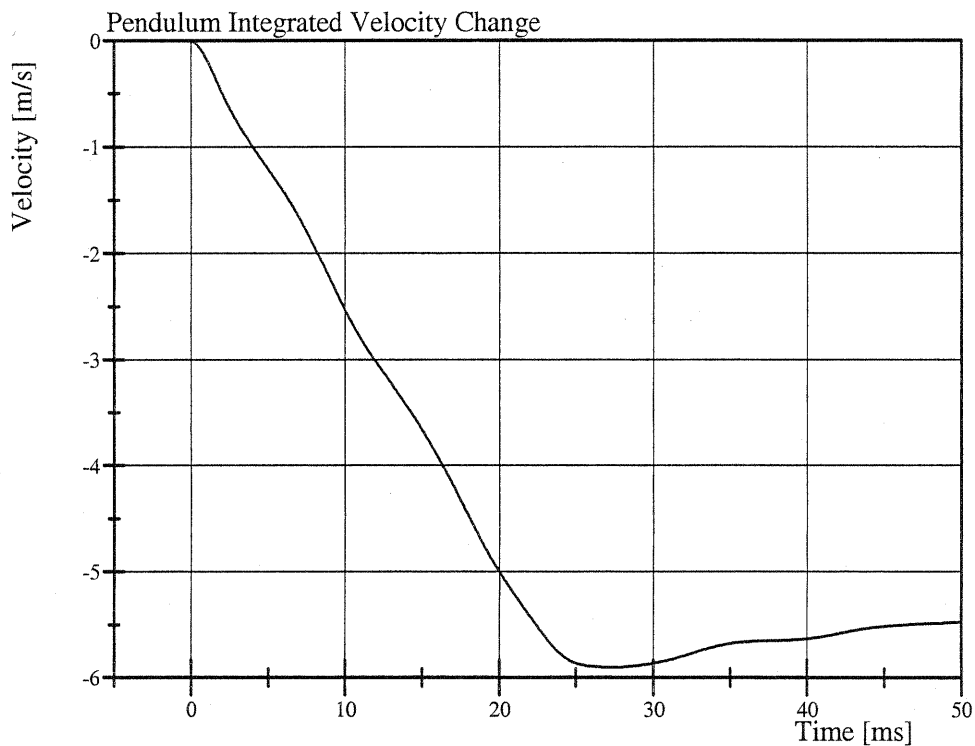
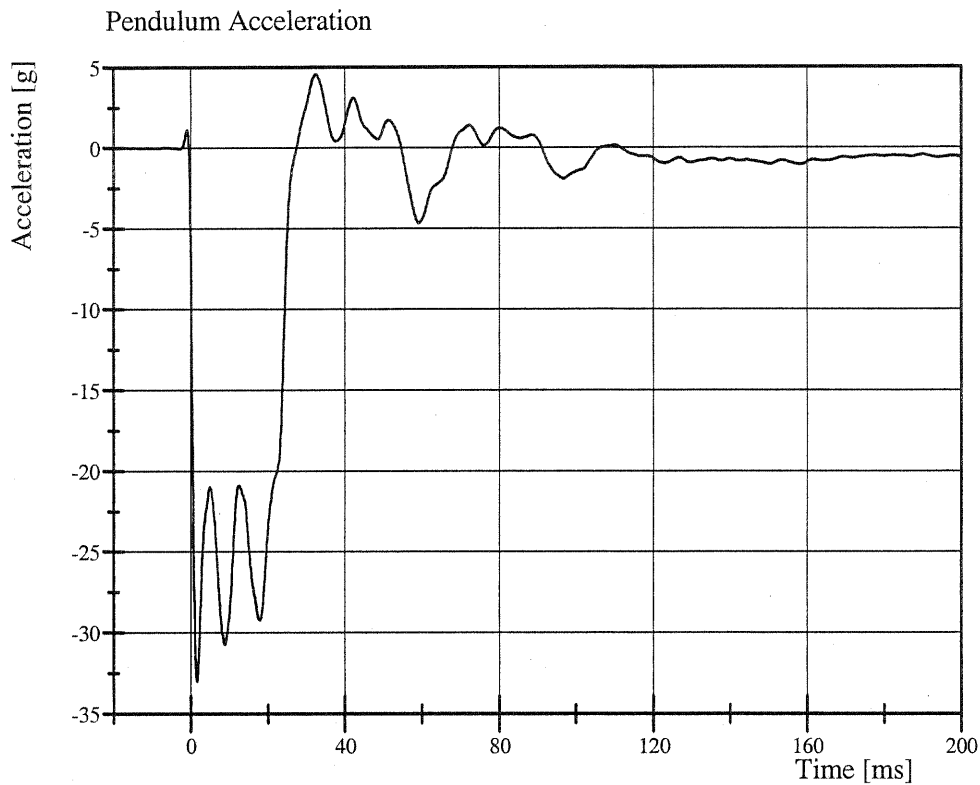


Transportation Research Center Inc.

Neck Flexion

HIII 3YO Serial No. 141 Certification No. 12-1

Test Date: 5/2/2007



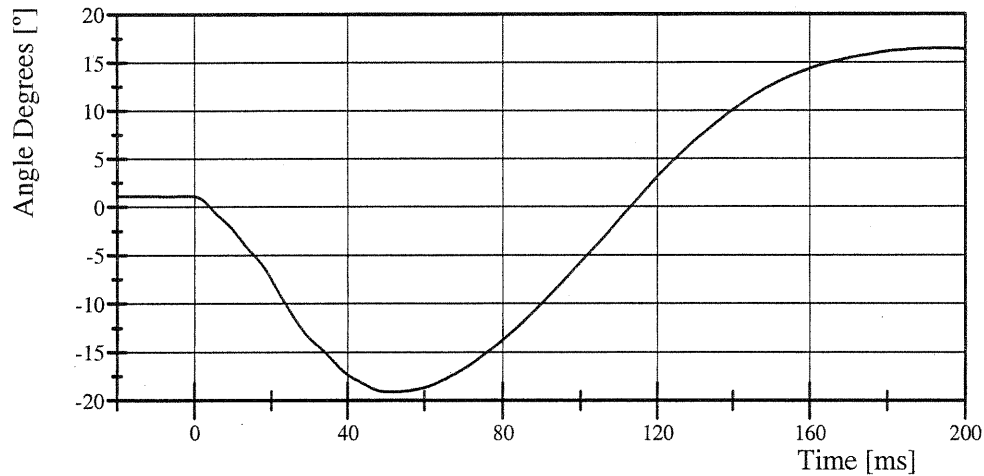
Transportation Research Center Inc.

Neck Flexion

HIII 3YO Serial No. 141 Certification No. 12-1

Test Date: 5/2/2007

Pot Rotation at the Base of Neck

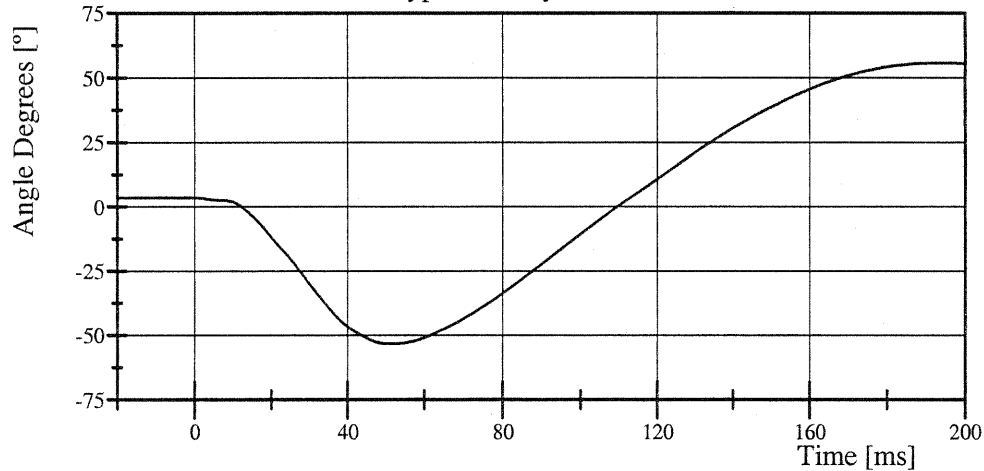


Filter Class: CFC_60

Max: 16.5 ° at 194.0 ms

Min: -19.1 ° at 51.2 ms

Headform Rotation at Occipital Condyles

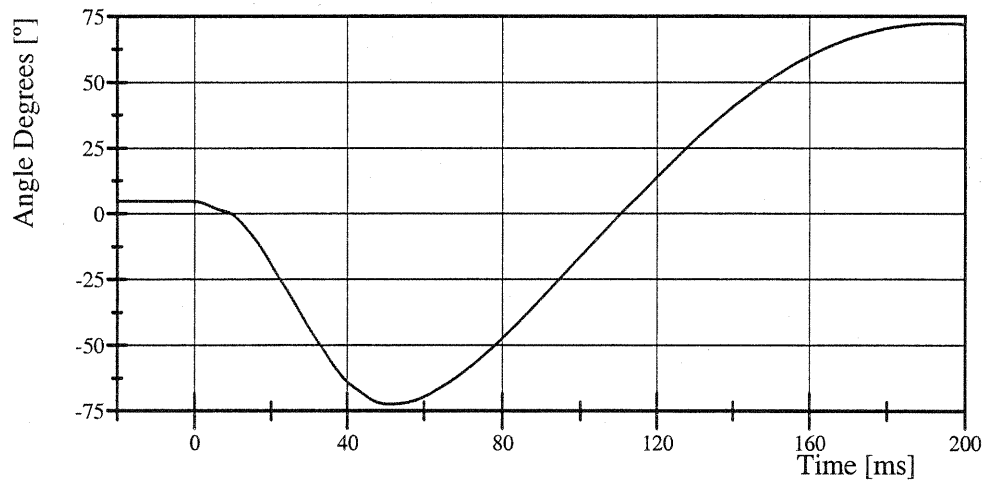


Filter Class: CFC_60

Max: 55.8 ° at 194.2 ms

Min: -53.3 ° at 51.2 ms

Total Headform D-Plane Rotation



Filter Class: CFC_60

Max: 72.3 ° at 194.1 ms

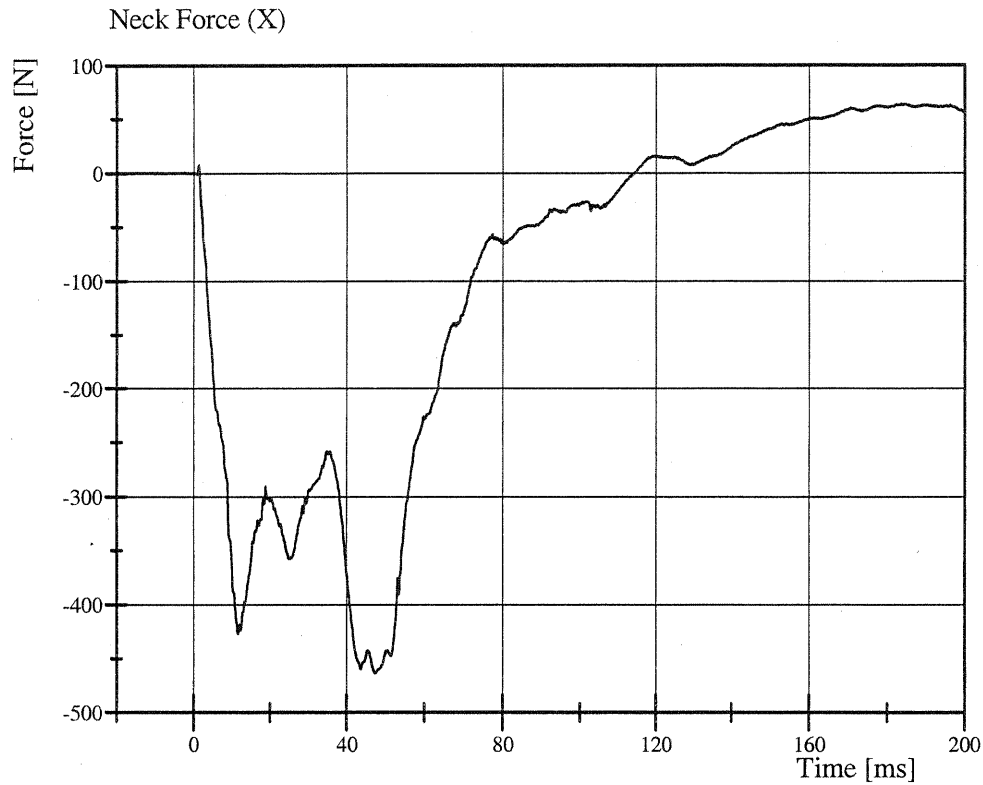
Min: -72.4 ° at 51.2 ms

Transportation Research Center Inc.

Neck Flexion

HIII 3YO Serial No. 141 Certification No. 12-1

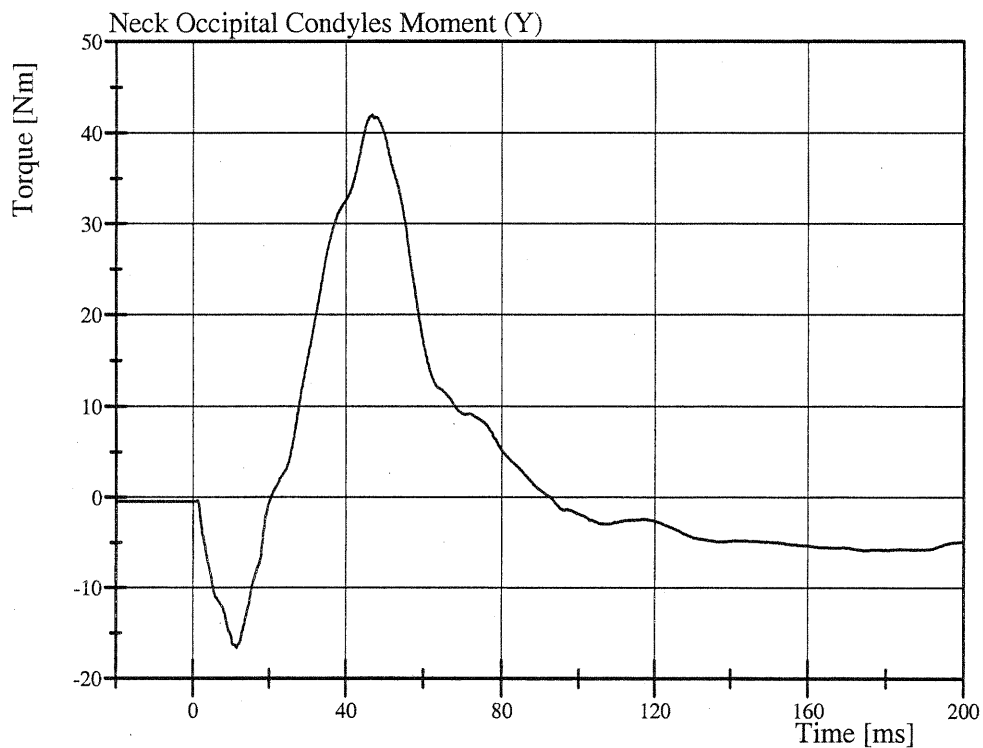
Test Date: 5/2/2007



Filter Class: CFC_1000

Max: 63.8 N at 183.4 ms

Min: -463.2 N at 47.3 ms



Filter Class: CFC_600

Max: 42.0 Nm at 46.7 ms

Min: -16.6 Nm at 11.4 ms

Transportation Research Center Inc.

Neck Extension

HIII 3YO Serial No. 141 Certification No. 12-3

Test Date: 5/3/2007

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
Pendulum Impact Velocity	(-3.55) - (-3.75) m/s	-3.672 m/s	Yes
Pendulum Integrated Velocity Change at 6 ms	1.0 - 1.4 m/s	1.37 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	1.9 - 2.5 m/s	2.44 m/s	Yes
Pendulum Integrated Velocity Change at 14 ms	2.8 - 3.5 m/s	3.35 m/s	Yes
Total Headform D-Plane Rotation	83 - 93 °	87.9 °	Yes
Peak Neck Occipital Condyles Moment	(-43.7) - (-53.3) Nm	-45.56 Nm	Yes
Neck Occipital Condyles Moment Decay to 10 Nm	60 - 80 ms	68.0 ms	Yes

Test meets specifications.

Comments:

Technician

Rout Baur

Approved

Ken Stoner

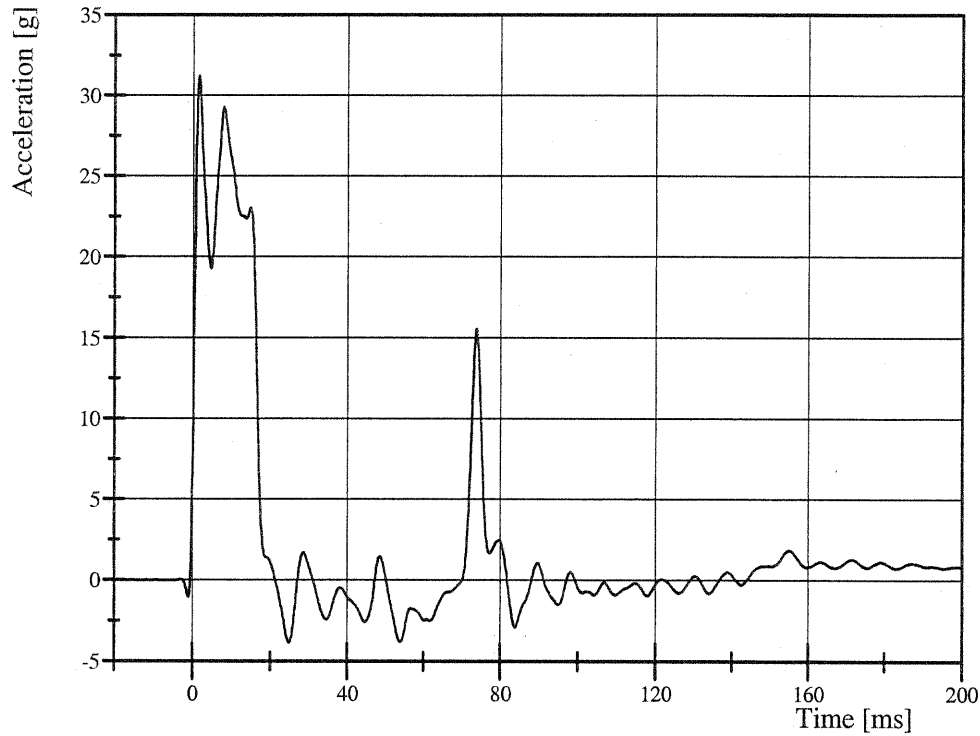
Transportation Research Center Inc.

Neck Extension

HIII 3YO Serial No. 141 Certification No. 12-3

Test Date: 5/3/2007

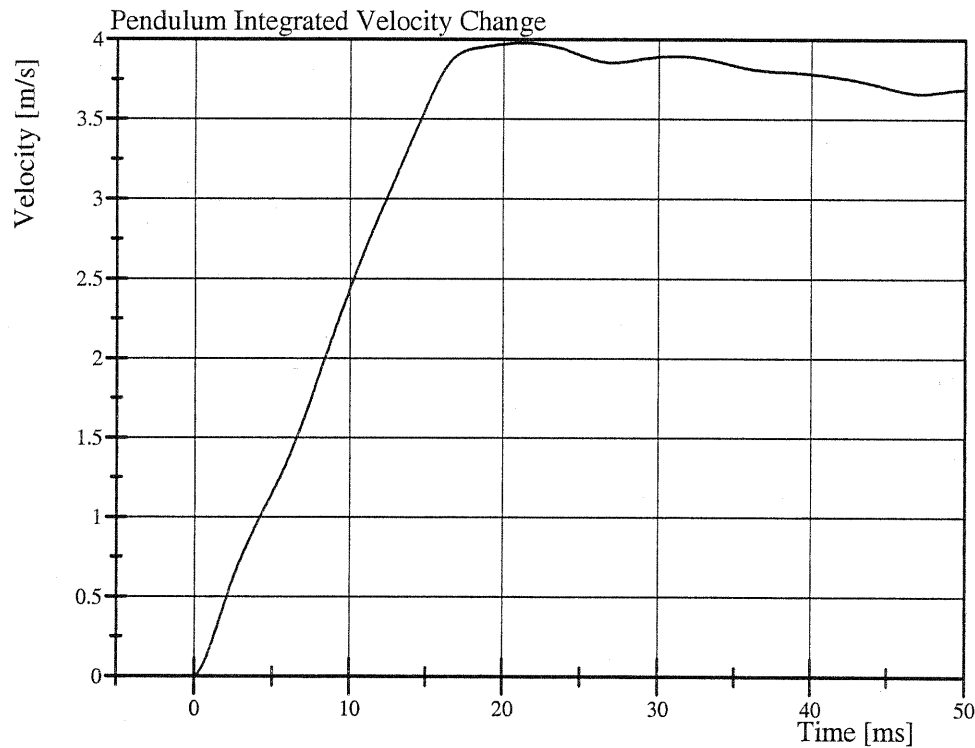
Pendulum Acceleration



Filter Class: CFC_180

Max: 31.2 g at 1.6 ms

Min: -3.8 g at 24.9 ms



Filter Class: CFC_180

Max: 4.0 m/s at 21.3 ms

Min: 0.0 m/s at 0.0 ms

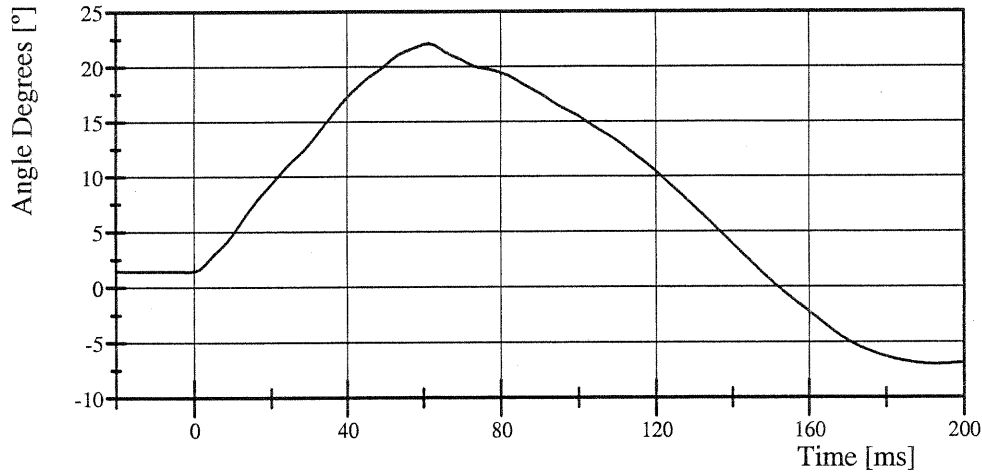
Transportation Research Center Inc.

Neck Extension

HIII 3YO Serial No. 141 Certification No. 12-3

Test Date: 5/3/2007

Pot Rotation at the Base of Neck

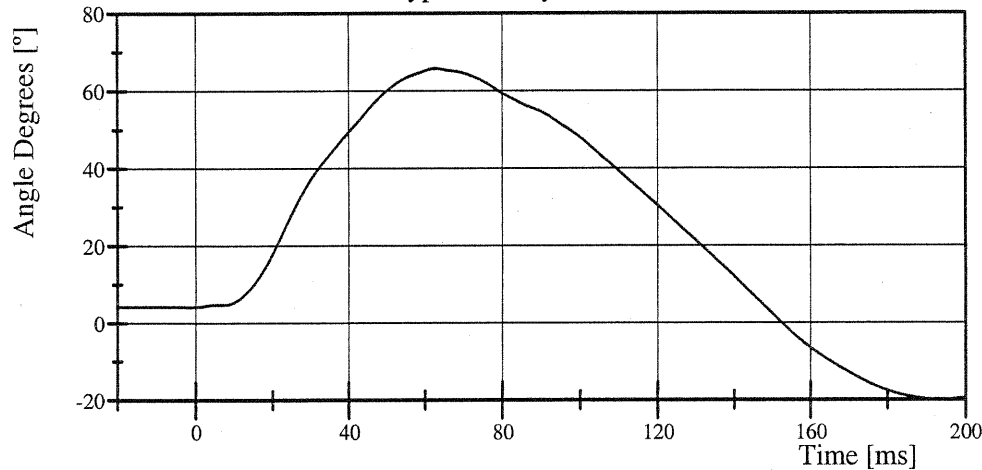


Filter Class: CFC_60

Max: 22.1 ° at 61.4 ms

Min: -7.0 ° at 192.9 ms

Headform Rotation at Occypital Condyles

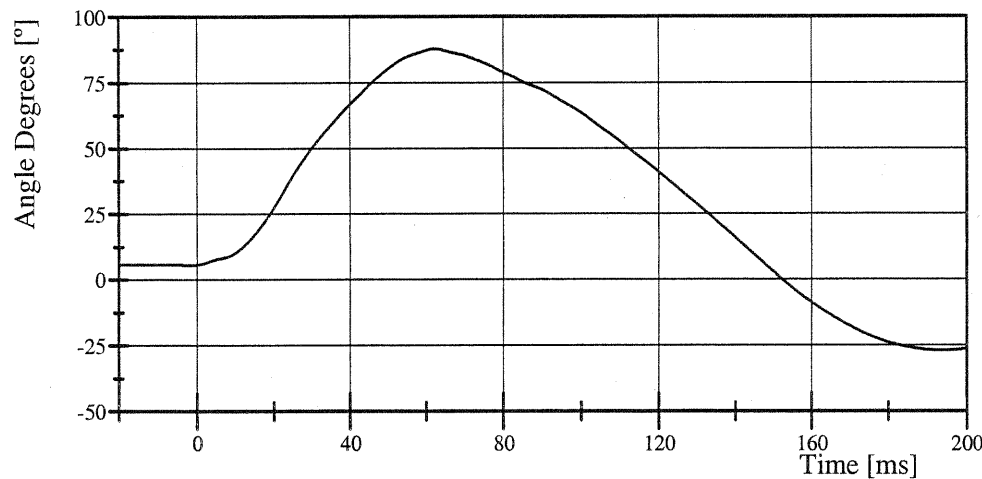


Filter Class: CFC_60

Max: 65.8 ° at 62.8 ms

Min: -19.9 ° at 193.5 ms

Total Headform D-Plane Rotation



Filter Class: CFC_60

Max: 87.9 ° at 62.3 ms

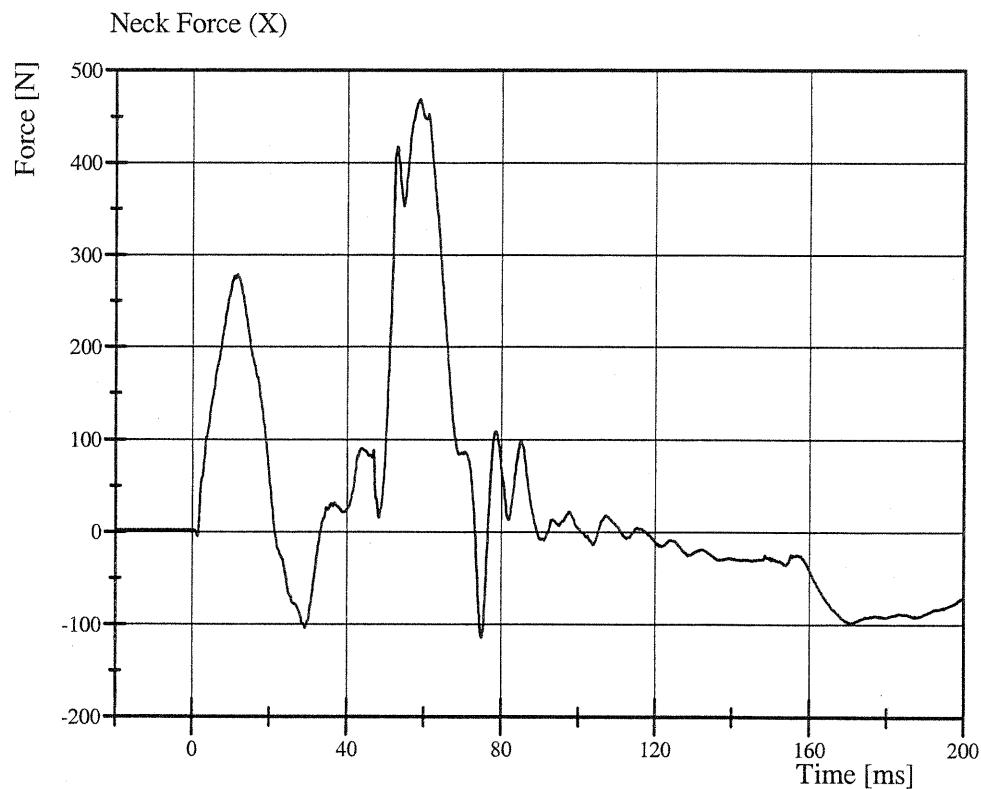
Min: -26.9 ° at 193.4 ms

Transportation Research Center Inc.

Neck Extension

HIII 3YO Serial No. 141 Certification No. 12-3

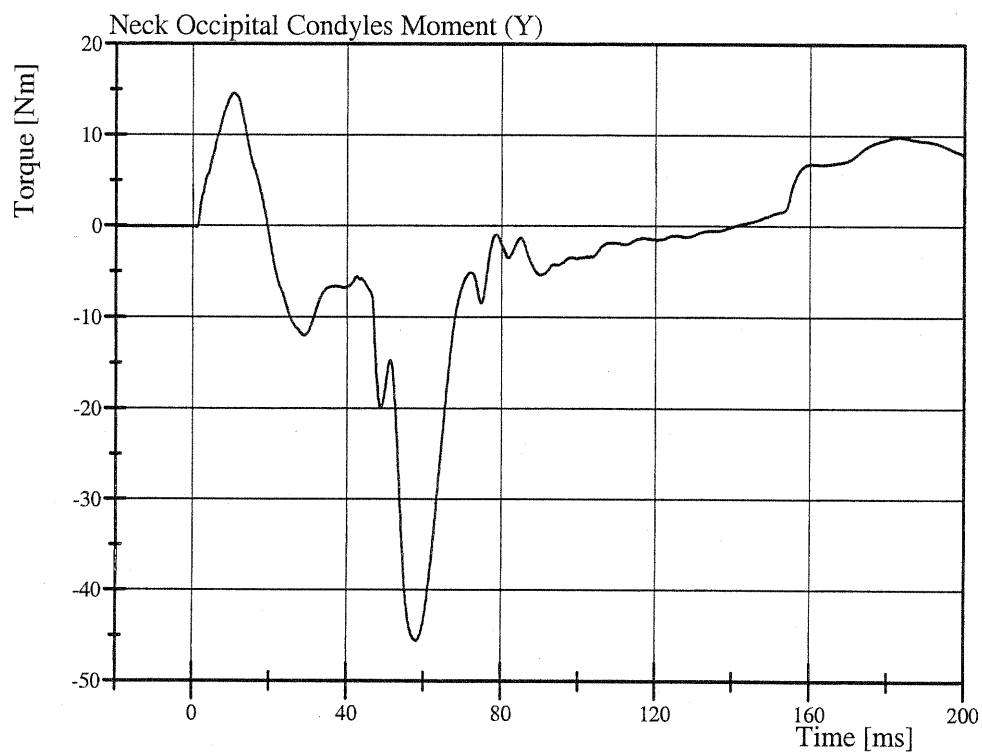
Test Date: 5/3/2007



Filter Class: CFC_1000

Max: 469.1 N at 58.7 ms

Min: -114.0 N at 74.9 ms



Filter Class: CFC_600

Max: 14.6 Nm at 10.6 ms

Min: -45.6 Nm at 58.2 ms

Transportation Research Center Inc.

Front Thorax

HIII 3YO Serial No. 141 Certification No. 12-1

Test Date: 5/1/2007

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	45 %	Yes
Probe Velocity	5.9 - 6.1 m/s	6.03 m/s	Yes
Probe Force Peak Between 32.0 mm and 38.0 mm Chest Deflection	(-680) - (-810) N	-746.0 N	Yes
Probe Force Peak Between 12.5 mm and 32.0 mm Chest Deflection	$\geq$ (-910) N	-844.9 N	Yes
Maximum Chest Compression	(-32) - (-38) mm	-32.3 mm	Yes
Internal Hysteresis	65 - 85 %	73.8 %	Yes

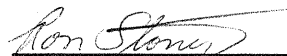
Test meets specifications.

Comments:

Technician



Approved



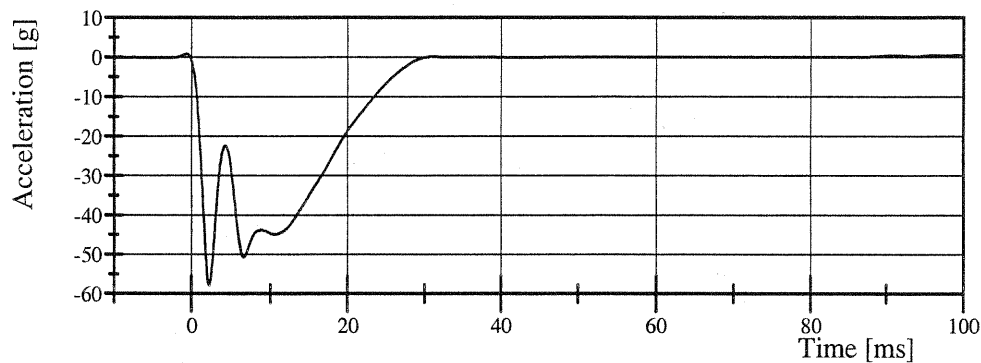
Transportation Research Center Inc.

Front Thorax

HIII 3YO Serial No. 141 Certification No. 12-1

Test Date: 5/1/2007

Pendulum Acceleration

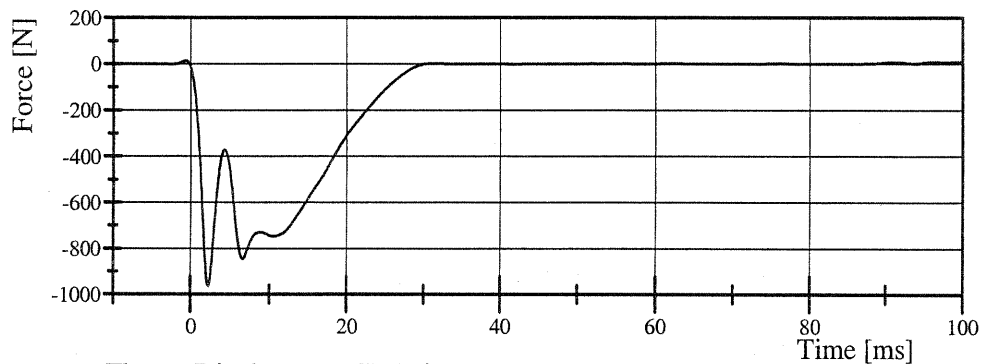


Filter Class: CFC_180

Max: 0.8 g at -0.6 ms

Min: -57.8 g at 2.2 ms

Pendulum Force

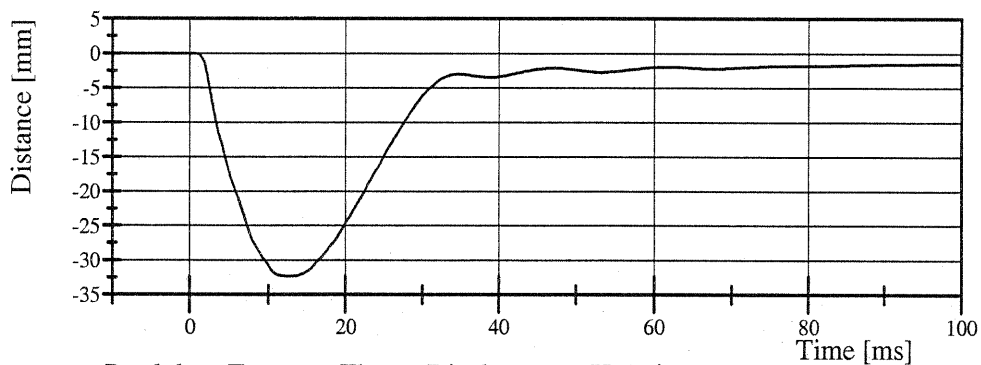


Filter Class: CFC_180

Max: 13.7 N at -0.6 ms

Min: -963.7 N at 2.2 ms

Thorax Displacement X-Axis

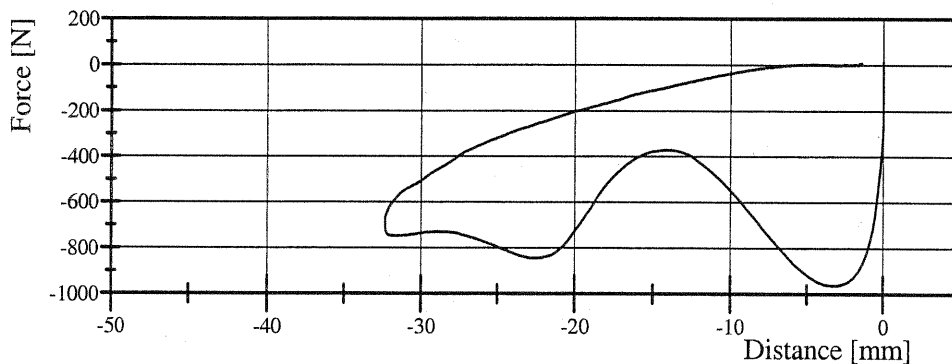


Filter Class: CFC_600

Max: 0.0 mm at 0.7 ms

Min: -32.3 mm at 13.0 ms

Pendulum Force vs. Thorax Displacement X-Axis



Filter Class: CFC_180

Max: 13.7 N at -0.0 mm

Min: -963.7 N at -3.3 mm

TRANSPORTATION RESEARCH CENTER INC.

TORSO FLEXION TEST

HYBRID III THREE YEAR-OLD

CAL DATE: 01-May-07

TRC, INC.

TEST NO: TOFL-01

572N SN141 TORSO FLEX CAL 12

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 – 25.6° C	21.2 ° C
RELATIVE HUMIDITY	10 – 70 %	47 %
INITIAL ANGLE OF UNSUPPORTED DUMMY	<= 15° REFERENCED TO VERTICAL	6.5 °
MAXIMUM FORCE AT 45 DEG. DURING 10 SECOND PERIOD	130 - 180 N	166.3 N
RETURN ANGLE (DIFFERENCE BETWEEN RETURN ANGLE & INTIAL ANGLE)	+/- 10 ° OF INTIAL ANGLE	5.1 °
RATE	0.5° - 1.5°/sec	1.06 °/sec

TEST MEETS SPECIFICATIONS

Comments:

TECHNICIAN

Rout Bond

Appendix D

Test Equipment List and Calibration Information

Sign Convention
SAE J211 MAR95

Accelerometers:

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

Potentiometers:

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

Rotation potentiometers:

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

Load cells:

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

Neck load cells:

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

Tibia load cells:

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

Sign Convention (Continued)
SAE J211 MAR95

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

Frequency Response Classes
SAE J211 MAR95

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

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

Channel Report Test Number 081029

Ref	Transducer ID	ISO Signal Identifier	Description	FScale	Units	Polarity	Assembly
1	Trig D1	10ZERO000000VO0A	EVENT	1	Logic	Bipolar	
2	P51956	14HEADCG00Q3ACXA	HEAD ACCEL X	2000	g	-Bipolar	4-004 Q3s VRTC.001
3	P51961	14HEADCG00Q3ACYA	HEAD ACCEL Y	2000	g	Bipolar	4-004 Q3s VRTC.002
4	03E03E21-M21	14HEADCG00Q3ACZA	HEAD ACCEL Z	2000	g	-Bipolar	4-004 Q3s VRTC.003
5	IF-217-122-FX	14NECKUP00Q3FOXA	NECK FORCE X	5000	N	Bipolar	4-004 Q3s VRTC.004
6	IF-217-122-FY	14NECKUP00Q3FOYA	NECK FORCE Y	5000	N	Bipolar	4-004 Q3s VRTC.005
7	IF-217-122-FZ	14NECKUP00Q3FOZA	NECK FORCE Z	6000	N	Bipolar	4-004 Q3s VRTC.006
8	IF-217-122-MX	14NECKUP00Q3MOXA	NECK MOMENT X	150	Nm	Bipolar	4-004 Q3s VRTC.007
9	IF-217-122-MY	14NECKUP00Q3MOYA	NECK MOMENT Y	150	Nm	Bipolar	4-004 Q3s VRTC.008
10	IF-217-122-MZ	14NECKUP00Q3MOZA	NECK MOMENT Z	80	Nm	Bipolar	4-004 Q3s VRTC.009
11	173-0241-L2N-038888	14SHLD0000Q3DSYA	SHOULDER DISPLACEMENT Y	76	mm	-Bipolar	4-004 Q3s VRTC.010
12	01G19-F03	14CHSTUP00Q3ACXA	UPPER CHEST ACCEL X	2000	g	Bipolar	4-004 Q3s VRTC.011
13	P13574	14CHSTUP00Q3ACYA	UPPER CHEST ACCEL Y	2000	g	Bipolar	4-004 Q3s VRTC.012
14	98H14-K15	14CHSTUP00Q3ACZA	UPPER CHEST ACCEL Z	2000	g	-Bipolar	4-004 Q3s VRTC.013
15	IF-362-191	14CHST0000Q3DSYA	Thorax lateral disp (IR-TRACC LEFT Y)	5	V	Bipolar	4-004 Q3s VRTC.014
16	3715JFL-133-FX	14LUSP0000Q3FOXA	LUMBAR FORCE X	5000	N	Bipolar	4-004 Q3s VRTC.015
17	3715JFL-133-FY	14LUSP0000Q3FOYA	LUMBAR FORCE Y	5000	N	Bipolar	4-004 Q3s VRTC.016
18	3715JFL-133-FZ	14LUSP0000Q3FOZA	LUMBAR FORCE Z	6000	N	-Bipolar	4-004 Q3s VRTC.017
19	3715JFL-133-MX	14LUSP0000Q3MOXA	LUMBAR MOMENT X	150	Nm	Bipolar	4-004 Q3s VRTC.018
20	3715JFL-133-MY	14LUSP0000Q3MOYA	LUMBAR MOMENT Y	150	Nm	Bipolar	4-004 Q3s VRTC.019
21	3715JFL-133-MZ	14LUSP0000Q3MOZA	LUMBAR MOMENT Z	80	Nm	Bipolar	4-004 Q3s VRTC.020
22	00L20-A20	14PELV0000Q3ACXA	PELVIS ACCEL X	2000	g	Bipolar	4-004 Q3s VRTC.021
23	B02A18-N21	14PELV0000Q3ACYA	PELVIS ACCEL Y	2000	g	Bipolar	4-004 Q3s VRTC.022
24	P52130	14PELV0000Q3ACZA	PELVIS ACCEL Z	2000	g	-Bipolar	4-004 Q3s VRTC.023
25	IF-539-106-FY	14PUBC0000Q3FOYA	PUBIC FORCE Y	2220	N	Bipolar	4-004 Q3s VRTC.024
26	05G20-L16	16HEADCG00Y6ACXA	Head Accel X	2000	g	Bipolar	6-141 HIII 3 YO FTSS.001
27	J17988	16HEADCG00Y6ACYA	Head Accel Y	2000	g	-Bipolar	6-141 HIII 3 YO FTSS.002
28	AJ7F6	16HEADCG00Y6ACZA	Head Accel Z	2000	g	-Bipolar	6-141 HIII 3 YO FTSS.003
29	IF-234-120-FX	16NECKUP00Y6FOXA	Neck Force X	4448	N	Bipolar	6-141 HIII 3 YO FTSS.005
30	IF-234-120-FY	16NECKUP00Y6FOYA	Neck Force Y	4448	N	Bipolar	6-141 HIII 3 YO FTSS.006
31	IF-234-120-FZ	16NECKUP00Y6FOZA	Neck Force Z	6670	N	Bipolar	6-141 HIII 3 YO FTSS.007
32	IF-234-120-MX	16NECKUP00Y6MOXA	Neck Moment X	169	Nm	Bipolar	6-141 HIII 3 YO FTSS.008
33	IF-234-120-MY	16NECKUP00Y6MOYA	Neck Moment Y	169	Nm	Bipolar	6-141 HIII 3 YO FTSS.009
34	IF-234-120-MZ	16NECKUP00Y6MOZA	Neck Moment Z	110	Nm	Bipolar	6-141 HIII 3 YO FTSS.010
35	3303-212-FX	16NECKLO00Y6FOXA	Lower Neck Force X	4448	N	-Bipolar	6-141 HIII 3 YO FTSS.011
36	3303-212-FY	16NECKLO00Y6FOYA	Lower Neck Force Y	4448	N	-Bipolar	6-141 HIII 3 YO FTSS.012
37	3303-212-FZ	16NECKLO00Y6FOZA	Lower Neck Force Z	6672	N	-Bipolar	6-141 HIII 3 YO FTSS.013
38	3303-212-MX	16NECKLO00Y6MOXA	Lower Neck Moment X	169.48	Nm	-Bipolar	6-141 HIII 3 YO FTSS.014
39	3303-212-MY	16NECKLO00Y6MOYA	Lower Neck Moment Y	169.48	Nm	-Bipolar	6-141 HIII 3 YO FTSS.015
40	3303-212-MZ	16NECKLO00Y6MOZA	Lower Neck Moment Z	112.9	Nm	Bipolar	6-141 HIII 3 YO FTSS.016
41	J36611	16CHSTCG00Y6ACXA	Chest Accel X	2000	g	Bipolar	6-141 HIII 3 YO FTSS.020
42	J36683	16CHSTCG00Y6ACYA	Chest Accel Y	2000	g	-Bipolar	6-141 HIII 3 YO FTSS.021
43	J18733	16CHSTCG00Y6ACZA	Chest Accel Z	2000	g	-Bipolar	6-141 HIII 3 YO FTSS.022
44	08C1-3179-141	16CHST0000Y6DSXA	Chest Deflection X	100	mm	-Bipolar	6-141 HIII 3 YO FTSS.023
45	ACC14	16STRN0100Y6ACXA	Sternum (Rib 1) Accel X	2000	g	Bipolar	6-141 HIII 3 YO FTSS.024
46	J29006	16STRN0600Y6ACXA	Sternum (Rib 6) Accel X	2000	g	Bipolar	6-141 HIII 3 YO FTSS.025

Channel Report Test Number 081029

Ref	Transducer ID	ISO Signal Identifier	Description	FScale	Units	Polarity	Assembly
47	P58995	16PELVCG00Y6ACXA	Pelvis Accel X	750	g	-Bipolar	6-141 HIII 3 YO FTSS.030
48	P59011	16PELVCG00Y6ACYA	Pelvis Accel Y	750	g	-Bipolar	6-141 HIII 3 YO FTSS.031
49	P58785	16PELVCG00Y6ACZA	Pelvis Accel Z	750	g	-Bipolar	6-141 HIII 3 YO FTSS.032
50	P61433	16SILBFR0000ACXA	RIGHT SIDE SILL AT FRONT SEAT (X) ACCELERATION VS TIME (#1)	400	g	-Bipolar	
51	P58613	16SILBFR0000ACYA	RIGHT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME (#1)	1000	g	-Bipolar	
52	P61435	16SILBFR0000ACZA	RIGHT SIDE SILL AT FRONT SEAT (Z) ACCELERATION VS TIME (#1)	400	g	-Bipolar	
53	P58030	16SILBRE0000ACXA	RIGHT SIDE SILL AT REAR SEAT (X) ACCELERATION VS TIME (#2)	400	g	-Bipolar	
54	P57430	16SILBRE0000ACYA	RIGHT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME (#2)	1000	g	-Bipolar	
55	P61412	16SILBRE0000ACZA	RIGHT SIDE SILL AT REAR SEAT (Z) ACCELERATION VS TIME (#2)	400	g	-Bipolar	
56	P47533	18FORA000000ACXA	REAR FLOORPAN ABOVE AXLE (X) ACCELERATION VS TIME (#3)	1000	g	Bipolar	
57	P49878	18FORA000000ACYA	REAR FLOORPAN ABOVE AXLE (Y) ACCELERATION VS TIME (#3)	1000	g	-Bipolar	
58	P47330	18FORA000000ACZA	REAR FLOORPAN ABOVE AXLE (Z) ACCELERATION VS TIME (#3)	1000	g	-Bipolar	
59	P61385	14SILBFR0000ACYA	LEFT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME (#5)	1000	g	Bipolar	
60	P61378	14SILBRE0000ACYA	LEFT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME	1000	g	Bipolar	
61	P61452	16VEHCRE0000ACYA	RIGHT REAR OCCUPANT COMPARTMENT (Y) ACCELERATION VS TIME (#7)	1500	g	-Bipolar	
62	P61388	11APILLO0000ACYA	LEFT LOWER A-POST (Y) ACCELERATION VS TIME (#14)	1500	g	-Bipolar	
63	P45017	11APILUP0000ACYA	LEFT UPPER A-POST (Y) ACCELERATION VS TIME (#15)	1500	g	-Bipolar	
64	P61436	14BPILLO0000ACYA	LEFT LOWER B-POST (Y) ACCELERATION VS TIME (#12)	1500	g	-Bipolar	
65	P61537	14BPILUP0000ACYA	LEFT UPPER B-POST (Y) ACCELERATION VS TIME (#13)	1500	g	-Bipolar	
66	A043667	11SETRFR0000ACYA	LEFT FRONT SEAT TRACK (Y) ACCELERATION VS TIME (#16)	1500	g	Bipolar	
67	P56999	14SETRRE0000ACYA	LEFT REAR SEAT TRACK (Y) ACCELERATION VS TIME	1500	g	Bipolar	
68	P61451	10VEHCCG0000ACXA	VEHICLE CENTER OF GRAVITY (X) ACCELERATION VS TIME (#18)	1000	g	Bipolar	
69	P61453	10VEHCCG0000ACYA	VEHICLE CENTER OF GRAVITY (Y) ACCELERATION VS TIME (#18)	1000	g	-Bipolar	
70	P58497	10VEHCCG0000ACZA	VEHICLE CENTER OF GRAVITY (Z) ACCELERATION VS TIME (#18)	1000	g	-Bipolar	
71	A044584	11DOORMI0000ACYA	FRONT DOOR CENTERLINE (#6) Y-Axis Accel	2000	g	Bipolar	
72	P44280	11DOORMIRE00ACYA	FRONT DOOR MID REAR (#8) Y-Axis Accel	2000	g	Bipolar	
73	A044566	11DOORUPMI00ACYA	FRONT DOOR UPPER CENTER (#9) Y-Axis Accel	2000	g	Bipolar	
74	A044384	14DOORMI0000ACYA	REAR DOOR CENTERLINE Y-Axis Accel	2000	g	Bipolar	
75	A044578	14DOORMIRE00ACYA	REAR DOOR MID REAR (#10) Y-Axis Accel	2000	g	Bipolar	
76	A043689	14DOORUPMI00ACYA	REAR DOOR UPPER CENTER (#11) Y-Axis Accel	2000	g	Bipolar	
77	3419T-828	14SEBE0000B3FO0A	Left Rear Shoulder Belt Load Cell (15)	15568	N	Bipolar	
78	3419-829	16SEBE0000B3FO0A	Right Rear Shoulder Belt Load Cell (A)	15568	N	Bipolar	
79	A044550	14SEATTP0000ACXA	Top of CRS #1 X	2000	g	-Bipolar	
80	P46517	14SEATTP0000ACYA	Topf of CRS #1 Y	2000	g	-Bipolar	
81	A044592	14SEATBO0000ACXA	Bottom of CRS #1 X	2000	g	-Bipolar	
82	A044158	14SEATBO0000ACYA	Bottn of CRS #1 Y	2000	g	-Bipolar	
83	P58569	16SEATTP0000ACXA	Top of CRS #2 X	2000	g	-Bipolar	
84	P37732	16SEATTP0000ACYA	Topf of CRS #2 Y	2000	g	Bipolar	
85	P57191	16SEATBO0000ACXA	Bottom of CRS #2 X	2000	g	-Bipolar	
86	P57930	16SEATBO0000ACYA	Bottn of CRS #2 Y	2000	g	Bipolar	
87	P61262	14SEATLO0000ACXA	Below Seat Cushion Under CRS #1 X	2000	g	Bipolar	
88	P57876	14SEATLO0000ACYA	Below Seat Cushion Under CRS #1 Y	2000	g	Bipolar	
89	P61328	16SEATLO0000ACXA	Below Seat Cushion Under CRS #2 X	2000	g	-Bipolar	
90	P61359	16SEATLO0000ACYA	Below Seat Cushion Under CRS #2 Y	2000	g	Bipolar	
91	Bit.01	14HEAD000000VO0A	04 DUMMY HEAD CONTACT SWITCH (place on contact side of head) (A)	1	Logic	Bipolar	
92	Bit.02	14SHLD000000VO0A	04 DUMMY SHOULDER CONTACT SWITCH (place on contacted side shoulder (J)	1	Logic	Bipolar	

Channel Report Test Number 081029

Ref	Transducer ID	ISO Signal Identifier	Description	FScale	Units	Polarity	Assembly
93	Bit.03	14TORS000000VO0A	04 DUMMY TORSO CONTACT SWITCH (place on contact side of torso) (P)	1	Logic	Bipolar	
94	Bit.04	14LEGLE000000VO0A	04 DUMMY LEFT LEGS CONTACT SWITCH (place on contacted side leg) (T)	1	Logic	Bipolar	
95	Bit.05	16HEAD000000VO0A	06 DUMMY HEAD CONTACT SWITCH (place on contact side of head) (H)	1	Logic	Bipolar	
96	Bit.06	16SHLD000000VO0A	06 DUMMY SHOULDER CONTACT SWITCH (place on contacted side shoulder) (I)	1	Logic	Bipolar	
97	Bit.07	16TORS000000VO0A	06 DUMMY TORSO CONTACT SWITCH (place on contact side of torso) (F)	1	Logic	Bipolar	
98	Bit.08	16LEGLE000000VO0A	06 DUMMY LEFT LEGS CONTACT SWITCH (place on contacted side leg) (K)	1	Logic	Bipolar	
99	P49049	M0VEHCCG0000ACXA	MDB CENTER OF GRAVITY (X) ACCELERATION VS TIME (#1)	600	g	Bipolar	
100	P61466	M0VEHCCG0000ACYA	MDB CENTER OF GRAVITY (Y) ACCELERATION VS TIME(#1)	600	g	Bipolar	
101	P49041	M0VEHCCG0000ACZA	MDB CENTER OF GRAVITY (Z) ACCELERATION VS TIME(#1)	600	g	-Bipolar	
102	P49022	M7FRAM000000ACXA	MDB REAR (X) ACCELERATION VS TIME (#2)	600	g	Bipolar	
103	P45016	M7FRAM000000ACYA	MDB REAR (Y) ACCELERATION VS TIME (#2)	600	g	-Bipolar	
104	Bit.00	M3CONT000000VO00	MDB RIGHT CONTACT SWITCH	1	Logic	Bipolar	
105	Bit.01	M1CONT000000VO00	MDB LEFT CONTACT SWITCH	1	Logic	Bipolar	

Command File Test Number 081029

Channel	ISO mnemonic	Channel Title	Filter	Class	Flip	Zero	Full Scale
1	14HEADCG00Q3ACXA	Left Rear Head X-Axis Acceleration	1000	+	yes	2000	
2	14HEADCG00Q3ACYA	Left Rear Head Y-Axis Acceleration	1000	+	yes	2000	
3	14HEADCG00Q3ACZA	Left Rear Head Z-Axis Acceleration	1000	+	yes	2000	
3A	14HEADCG00Q3ACRA	Left Rear Head Resultant Acceleration	1000				
4	14NECKUP00Q3FOXA	Left Rear Upper Neck X-Axis Force	1000	+	yes	5000	
5	14NECKUP00Q3FOYA	Left Rear Upper Neck Y-Axis Force	1000	+	yes	5000	
6	14NECKUP00Q3FOZA	Left Rear Upper Neck Z-Axis Force	1000	+	yes	6000	
7	14NECKUP00Q3MOXA	Left Rear Upper Neck Moment About X Axis	600	+	yes	150	
8	14NECKUP00Q3MOYA	Left Rear Upper Neck Moment About Y Axis	600	+	yes	150	
9	14NECKUP00Q3MOZA	Left Rear Upper Neck Moment About Z Axis	600	+	yes	80	
10	14SHLD0000Q3DSYA	Left Rear Shoulder Y-Axis Displacement	600	+	yes	76	
11	14CHSTUP00Q3ACXA	Left Rear Upper Chest X-Axis Acceleration	180	+	yes	2000	
12	14CHSTUP00Q3ACYA	Left Rear Upper Chest Y-Axis Acceleration	180	+	yes	2000	
13	14CHSTUP00Q3ACZA	Left Rear Upper Chest Z-Axis Acceleration	180	+	yes	2000	
13A	14CHSTUP00Q3ACRA	Left Rear Upper Chest Resultant Acceleration	180				
14	14CHST0000Q3DSYA	Left Rear Thorax IR-TRACC Y-Axis Displacement	600	+	yes	100	
15	14LUSP0000Q3FOXA	Left Rear Lumbar X-Axis Force	1000	+	yes	5000	
16	14LUSP0000Q3FOYA	Left Rear Lumbar Y-Axis Force	1000	+	yes	5000	
17	14LUSP0000Q3FOZA	Left Rear Lumbar Z-Axis Force	1000	+	yes	6000	
18	14LUSP0000Q3MOXA	Left Rear Lumbar Moment About X Axis	1000	+	yes	150	
19	14LUSP0000Q3MOYA	Left Rear Lumbar Moment About Y Axis	1000	+	yes	150	
20	14LUSP0000Q3MOZA	Left Rear Lumbar Moment About Z Axis	1000	+	yes	80	
21	14PELV0000Q3ACXA	Left Rear Pelvis X-Axis Acceleration	1000	+	yes	2000	
22	14PELV0000Q3ACYA	Left Rear Pelvis Y-Axis Acceleration	1000	+	yes	2000	
23	14PELV0000Q3ACZA	Left Rear Pelvis Z-Axis Acceleration	1000	+	yes	2000	
23A	14PELV0000Q3ACRA	Left Rear Pelvis Resultant Acceleration	1000				
24	14PUBC0000Q3FOYA	Left Rear Pubic Y-Axis Force	600	+	yes	2220	
25	16HEADCG00Y6ACXA	Right Rear Head X-Axis Acceleration	1000	+	yes	2000	
26	16HEADCG00Y6ACYA	Right Rear Head Y-Axis Acceleration	1000	+	yes	2000	
27	16HEADCG00Y6ACZA	Right Rear Head Z-Axis Acceleration	1000	+	yes	2000	
27A	16HEADCG00Y6ACRA	Right Rear Head Resultant Acceleration	1000				
28	16NECKUP00Y6FOXA	Right Rear Upper Neck X-Axis Force	1000	+	yes	4448	
29	16NECKUP00Y6FOYA	Right Rear Upper Neck Y-Axis Force	1000	+	yes	4448	
30	16NECKUP00Y6FOZA	Right Rear Upper Neck Z-Axis Force	1000	+	yes	6670	
31	16NECKUP00Y6MOXA	Right Rear Upper Neck Moment About X Axis	600	+	yes	169	
32	16NECKUP00Y6MOYA	Right Rear Upper Neck Moment About Y Axis	600	+	yes	169	
33	16NECKUP00Y6MOZA	Right Rear Upper Neck Moment About Z Axis	600	+	yes	110	

Command File Test Number 081029

Channel	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
34	16NECKLO00Y6FOXA	Right Rear Lower Neck X-Axis Force	1000	+	yes	4448
35	16NECKLO00Y6FOYA	Right Rear Lower Neck Y-Axis Force	1000	+	yes	4448
36	16NECKLO00Y6FOZA	Right Rear Lower Neck Z-Axis Force	1000	+	yes	6672
37	16NECKLO00Y6MOXA	Right Rear Lower Neck Moment About X Axis	600	+	yes	169.48
38	16NECKLO00Y6MOYA	Right Rear Lower Neck Moment About Y Axis	600	+	yes	169.48
39	16NECKLO00Y6MOZA	Right Rear Lower Neck Moment About Z Axis	600	+	yes	112.9
40	16CHSTCG00Y6ACXA	Right Rear Chest X-Axis Acceleration	180	+	yes	2000
41	16CHSTCG00Y6ACYA	Right Rear Chest Y-Axis Acceleration	180	+	yes	2000
42	16CHSTCG00Y6ACZA	Right Rear Chest Z-Axis Acceleration	180	+	yes	2000
42A	16CHSTCG00Y6ACRA	Right Rear Chest Resultant Acceleration	180			
43	16CHST0000Y6DSXA	Right Rear Chest X-Axis Displacement	600	+	yes	100
44	16STRN0100Y6ACXA	Right Rear Sternum (Rib 1) X-Axis Acceleration	1000	+	yes	2000
45	16STRN0600Y6ACXA	Right Rear Sternum (Rib 6) X-Axis Acceleration	1000	+	yes	2000
46	16PELVCG00Y6ACXA	Right Rear Pelvis X-Axis Acceleration	1000	+	yes	750
47	16PELVCG00Y6ACYA	Right Rear Pelvis Y-Axis Acceleration	1000	+	yes	750
48	16PELVCG00Y6ACZA	Right Rear Pelvis Z-Axis Acceleration	1000	+	yes	750
48A	16PELVCG00Y6ACRA	Right Rear Pelvis Resultant Acceleration	1000			
49	16SILBFR0000ACXA	Right Side Sill at Front Seat X-Axis Acceleration	60	+	yes	400
50	16SILBFR0000ACYA	Right Side Sill at Front Seat Y-Axis Acceleration	60	+	yes	1000
51	16SILBFR0000ACZA	Right Side Sill at Front Seat Z-Axis Acceleration	60	+	yes	400
51A	16SILBFR0000ACRA	Right Side Sill at Front Seat Resultant Acceleration	60			
52	16SILBRE0000ACXA	Right Side Sill at Rear Seat X-Axis Acceleration	60	+	yes	400
53	16SILBRE0000ACYA	Right Side Sill at Rear Seat Y-Axis Acceleration	60	+	yes	1000
54	16SILBRE0000ACZA	Right Side Sill at Rear Seat Z-Axis Acceleration	60	+	yes	400
54A	16SILBRE0000ACRA	Right Side Sill at Rear Seat Resultant Acceleration	60			
55	18FORA000000ACXA	Rear Floorpan Above Axle X-Axis Acceleration	60	+	yes	1000
56	18FORA000000ACYA	Rear Floorpan Above Axle Y-Axis Acceleration	60	+	yes	1000
57	18FORA000000ACZA	Rear Floorpan Above Axle Z-Axis Acceleration	60	+	yes	1000
57A	18FORA000000ACRA	Rear Floorpan Above Axle Resultant Acceleration	60			
58	14SILBFR0000ACYA	Left Side Sill at Front Seat Y-Axis Acceleration	60	+	yes	1000
59	14SILBRE0000ACYA	Left Side Sill at Rear Seat Y-Axis Acceleration	60	+	yes	1000
60	16VEHCRE0000ACYA	Right Rear Occupant Compartment Y-Axis Acceleration	60	+	yes	1500
61	11APILLO0000ACYA	Left Lower A-Post Y-Axis Acceleration	60	+	yes	1500
62	11APILUP0000ACYA	Left Upper A-Post Y-Axis Acceleration	60	+	yes	1500
63	14BPILLO0000ACYA	Left Lower B-Post Y-Axis Acceleration	60	+	yes	1500
64	14BPILUP0000ACYA	Left Upper B-Post Y-Axis Acceleration	60	+	yes	1500
65	11SETRFR0000ACYA	Left Front Seat Track Y-Axis Acceleration	60	+	yes	1500

Command File Test Number 081029

Channel	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
66	14SETRRE0000ACYA	Left Rear Seat Track Y-Axis Acceleration	60	+	yes	1500
67	10VEHCCG0000ACXA	Vehicle Center of Gravity X-Axis Acceleration	60	+	yes	1000
68	10VEHCCG0000ACYA	Vehicle Center of Gravity Y-Axis Acceleration	60	+	yes	1000
69	10VEHCCG0000ACZA	Vehicle Center of Gravity Z-Axis Acceleration	60	+	yes	1000
69A	10VEHCCG0000ACRA	Vehicle Center of Gravity Resultant Acceleration	60			
70	11DOORMI0000ACYA	Front Door Centerline Y-Axis Acceleration	60	+	yes	2000
71	11DOORMIRE00ACYA	Front Door Mid-Rear Y-Axis Acceleration	60	+	yes	2000
72	11DOORUPMI00ACYA	Front Door Upper Centerline Y-Axis Acceleration	60	+	yes	2000
73	14DOORMI0000ACYA	Rear Door Centerline Y-Axis Acceleration	60	+	yes	2000
74	14DOORMIRE00ACYA	Rear Door Mid-Rear Y-Axis Acceleration	60	+	yes	2000
75	14DOORUPMI00ACYA	Rear Door Upper Centerline Y-Axis Acceleration	60	+	yes	2000
76	14SEBE0000B3FO0A	Left Rear Shoulder Belt Force (Top Tether)	60	+	yes	15568
77	16SEBE0000B3FO0A	Right Rear Shoulder Belt Force (Top Tether)	60	+	yes	15568
78	14SEATTP0000ACXA	Top of CRS #1 X-Axis Acceleration	60	+	yes	2000
79	14SEATTP0000ACYA	Top of CRS #1 Y-Axis Acceleration	60	+	yes	2000
80	14SEATBO0000ACXA	Bottom of CRS #1 X-Axis Acceleration	60	+	yes	2000
81	14SEATBO0000ACYA	Bottom of CRS #1 Y-Axis Acceleration	60	+	yes	2000
82	16SEATTP0000ACXA	Top of CRS #2 X-Axis Acceleration	60	+	yes	2000
83	16SEATTP0000ACYA	Top of CRS #2 Y-Axis Acceleration	60	+	yes	2000
84	16SEATBO0000ACXA	Bottom of CRS #2 X-Axis Acceleration	60	+	yes	2000
85	16SEATBO0000ACYA	Bottom of CRS #2 Y-Axis Acceleration	60	+	yes	2000
86	14SEATLO0000ACXA	Below Seat Cushion Under CRS #1 X-Axis Acceleration	60	+	yes	2000
87	14SEATLO0000ACYA	Below Seat Cushion Under CRS #1 Y-Axis Acceleration	60	+	yes	2000
88	16SEATLO0000ACXA	Below Seat Cushion Under CRS #2 X-Axis Acceleration	60	+	yes	2000
89	16SEATLO0000ACYA	Below Seat Cushion Under CRS #2 Y-Axis Acceleration	60	+	yes	2000
90	14HEAD000000VO0A	Left Rear Head Contact Switch	1000	+	no	1
91	14SHLD000000VO0A	Left Rear Shoulder Contact Switch	1000	+	no	1
92	14TORS000000VO0A	Left Rear Torso Contact Switch	1000	+	no	1
93	14LEGLE000000VO0A	Left Rear Leg Contact Switch	1000	+	no	1
94	16HEAD000000VO0A	Right Rear Head Contact Switch	1000	+	no	1
95	16SHLD000000VO0A	Right Rear Shoulder Contact Switch	1000	+	no	1
96	16TORS000000VO0A	Right Rear Torso Contact Switch	1000	+	no	1
97	16LEGLE000000VO0A	Right Rear Leg Contact Switch	1000	+	no	1
98	M0VEHCCG0000ACXA	MDB Center of Gravity X-Axis Acceleration	60	+	yes	600
99	M0VEHCCG0000ACYA	MDB Center of Gravity Y-Axis Acceleration	60	+	yes	600
100	M0VEHCCG0000ACZA	MDB Center of Gravity Z-Axis Acceleration	60	+	yes	600
100A	M0VEHCCG0000ACRA	MDB Center of Gravity Resultant Acceleration	60			

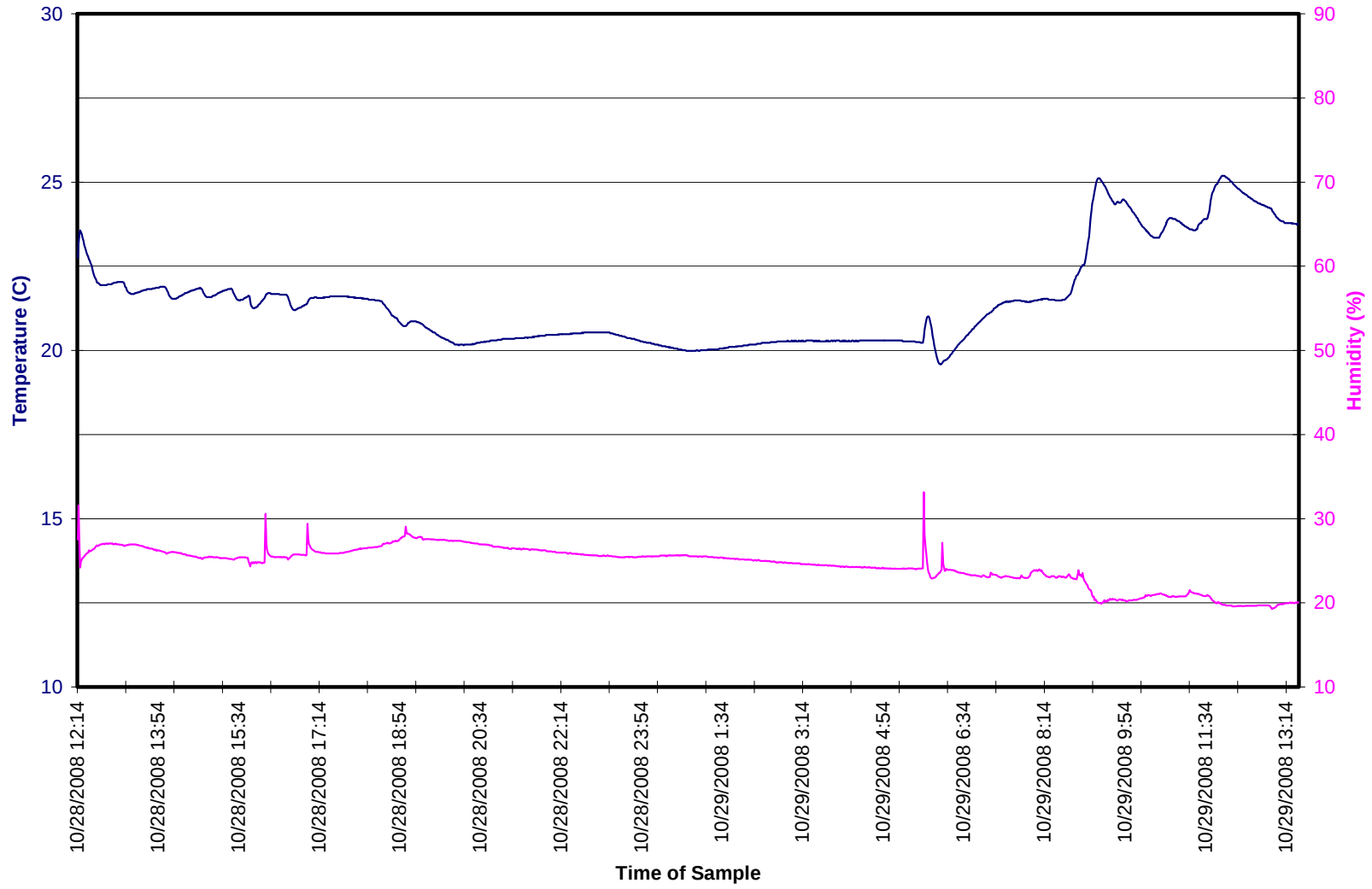
Command File Test Number 081029

Channel	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
101	M7FRAM000000ACXA	MDB Rear X-Axis Acceleration	60	+	yes	600
102	M7FRAM000000ACYA	MDB Rear Y-Axis Acceleration	60	+	yes	600
103	M3CONT000000VO00	MDB Right Contact Switch	0	+	no	1
104	M1CONT000000VO00	MDB Left Contact Switch	0	+	no	1
104A	14CHST00000Q3VOYA	Left Rear Thorax IR-TRACC Y-Axis	1000	+	no	5

D-13

081029

SIDE IMPACT (MDB) INTO LEFT SIDE OF 2008 NISSAN VERSA



CERTIFICATE OF CONFORMITY

Serial No. **14601**

Certificate No. **37784**

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

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

T. +44 (0)1480 435302
F. +44 (0)1480 450181
E. sales@cellbond.com
www.cellbond.com

	Test Results	GR No.	Blk No.
1	48652-8	14545	N/A
2	47755-8	13031	N/A

Declaration.

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

Additional Information...

Company Registration
England 1944904

Registered Office
5 Stukeley Business Centre
Blackstone Road
Huntingdon
Cambridgeshire
PE29 6EF

Cellbond Offices
United Kingdom
United States of America
Spain





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

MAIN BLOCK
Core: 1.6 3/8 5052

Required Crush Strength
42.5 PSI to 47.5 PSI

Test No: 48652-8

GR No: 14545

Block No: N/A

	Crush Strength (PSI)			RESULT
	0.25 to 0.38 inch	0.38 to 0.52 inch	0.52 to 0.65 inch	
Sample* 1	43.885	43.904	45.069	PASS
Sample 2	43.140	43.878	44.286	PASS
Sample 3	42.706	43.205	42.681	PASS
Sample 4	42.938	42.943	42.736	PASS
Sample 5	43.317	43.010	43.312	PASS
Sample 6	43.687	43.362	42.966	PASS
Sample 7	42.925	43.767	43.621	PASS
Sample 8	44.321	44.717	44.435	PASS

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

*Sample size and location as per R94.

RESULT: PASSED

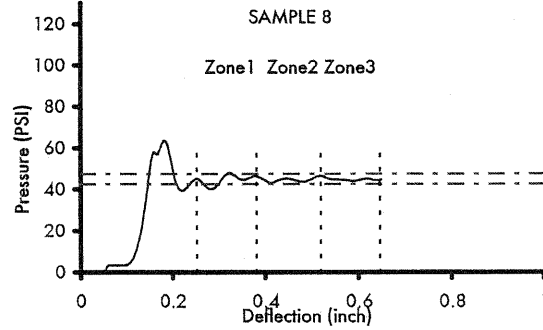
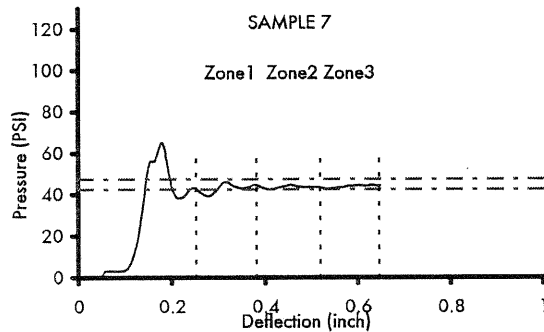
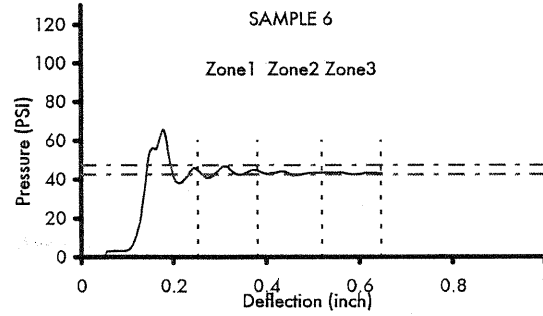
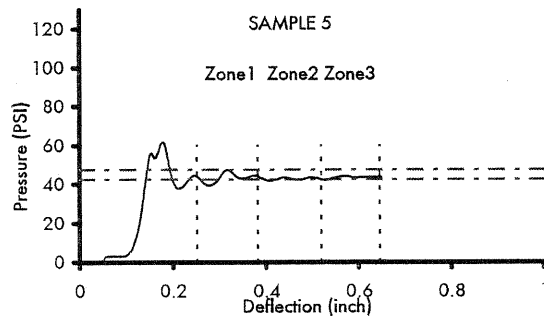
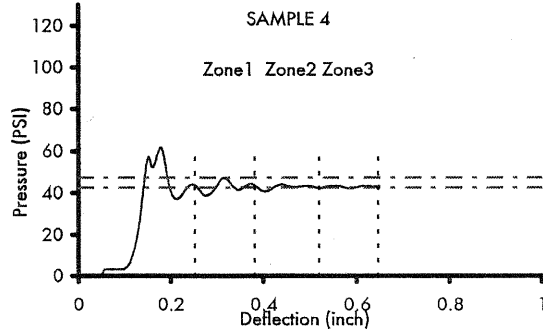
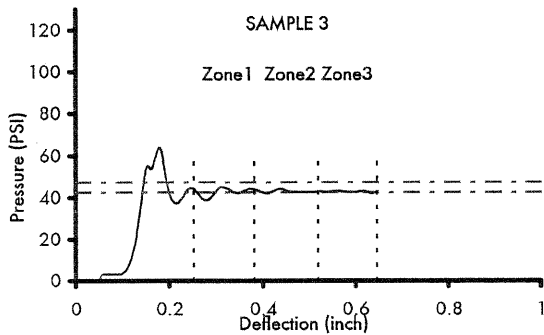
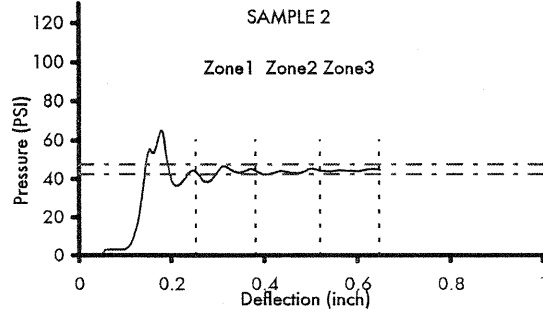
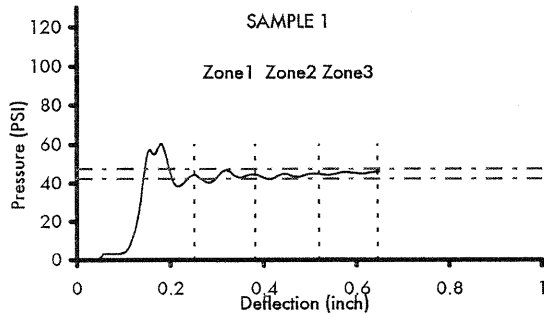
NHTSA / IIHS DEFORMABLE SIDE IMPACT BARRIER
MAIN BLOCK

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

Section 1: 0.25 - 0.38 inch
Section 2: 0.38 - 0.52 inch
Section 3: 0.52 - 0.65 inch
Speed: 0.25 inch/min
Block No: N/A

Test No: 48652-8

GR No: 14545





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

BUMPER

Core: 5.2 1/4 3003

Required Crush Strength
230 PSI to 260 PSI

Test No: 47755-8

GR No: 13031

Block No: N/A

	Crush Strength (PSI)			RESULT
	0.25 to 0.38	0.38 to 0.52	0.52 to 0.65	
Sample* 1	236.35	236.58	236.00	PASS
Sample 2	237.63	235.34	232.57	PASS
Sample 3	237.62	237.75	236.47	PASS
Sample 4	235.16	233.61	231.72	PASS
Sample 5	240.75	240.57	236.49	PASS
Sample 6	242.21	239.24	240.10	PASS
Sample 7	241.00	238.97	238.92	PASS
Sample 8	237.44	240.64	241.65	PASS

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

*Sample size and location as per R94.

RESULT: PASSED

NHTSA / IIHS DEFORMABLE SIDE IMPACT BARRIER
BUMPER

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

Section 1: 0.25 - 0.38 inch
Section 2: 0.38 - 0.52 inch
Section 3: 0.52 - 0.65 inch
Speed: 0.25 inch/min
Block No: N/A

Test No: 47755-8

GR No: 13031

