

**Vehicle Research and Test Center
MDB into Left Side of
2008 Nissan Sentra
Child Safety Research
Q3s and Hybrid III 3Cs
TRC Inc. Test Number: 080917**

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**Final Report
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**Prepared For
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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	4-6
6	Vehicle Structural Measurements	4-8
7	Vehicle Exterior Crush Profiles - All Levels	4-10
8	Test Vehicle Accelerometer Locations and Data Summary	4-14
9	Deformable Barrier Face Profiles	4-19

List of Figures

<u>Number</u>	<u>Description</u>	<u>Page</u>
1	Dummy Positioning in Vehicle	4-5
2	Vehicle Pre-Test and Post-Test Measurements	4-7
3	Vehicle Side Measurements	4-9
4	Vehicle Damage Profile Distances	4-12
5	Test Vehicle Accelerometer Locations and Data Summary	4-13
6	High-Speed Camera Locations and Data	4-26

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 Right Front View	A-37
Post-Test MDB with Vehicle Right Front 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
Pre-Test Left Rear Dummy Side View	A-46
Post-Test Left Rear Dummy Side View	A-47
Pre-Test Right Side Dummy Occupant Compartment View	A-48
Post-Test Right Side Dummy Occupant Compartment View	A-49
Pre-Test Left Rear Dummy and Door Clearance View	A-50
Post-Test Left Rear Dummy and Door Clearance View	A-51
Pre-Test Left Rear Dummy Showing Belts, Chalking, and Contact Switches	A-52
Pre-Test Left Rear Door Panel View	A-53
Post-Test Left Rear Door Panel View	A-54
Post-Test Left Rear Dummy Overall View	A-55
Pre-Test Right Rear Dummy Side View	A-56

List of Photographs, Continued

<u>Description</u>	<u>Figure</u>
Post-Test Right Rear Dummy Side View	A-57
Pre-Test Left Side Dummy Occupant Compartment View	A-58
Post-Test Left Side Dummy Occupant Compartment View	A-59
Pre-Test Right Rear Dummy and Door Clearance View	A-60
Post-Test Right Rear Dummy and Door Clearance View	A-61
Pre-Test Right Rear Dummy Showing Belts, Chalking, and Contact Switches	A-62
Pre-Test Right Rear Door Panel View	A-63
Post-Test Right Rear Door Panel View	A-64
Post-Test Right Rear Dummy Overall 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 Rear CRS	A-74
Post-Test Front View of Left Rear CRS	A-75
Post-Test Front View of Right Rear CRS	A-76
Pre-Test Left Side View of Rear CRS	A-77
Post-Test Left Side View of Left Rear CRS	A-78
Post-Test Left Side View of Right Rear CRS	A-79
Pre-Test Right Side View of Rear CRS	A-80
Post-Test Right Side View of Left Rear CRS	A-81
Post-Test Right Side View of Right Rear CRS	A-82
Pre-Test Front View of Left Rear Child Dummy	A-83
Post-Test Front View of Left Rear Child Dummy	A-84

List of Photographs, Continued

<u>Description</u>	<u>Figure</u>
Pre-Test Left View of Left Rear Child Dummy	A-85
Post-Test Left View of Left Rear Child Dummy	A-86
Pre-Test Right View of Left Rear Child Dummy	A-87
Post-Test Right View of Left Rear Child Dummy	A-88
Post-Test Left Rear Child Dummy Head Contact - View 1	A-89
Post-Test Left Rear Child Dummy Head Contact - View 2	A-90
Pre-Test Front View of Right Rear Child Dummy	A-91
Post-Test Front View of Right Rear Child Dummy	A-92
Pre-Test Right Side View of Right Rear Child Dummy	A-93
Post-Test Right Side View of Right Rear Child Dummy	A-94
Post-Test Right Rear Child Dummy Head Contact - View 1	A-95
Post-Test Right Rear Child Dummy Head Contact - View 2	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 to perform the test. The MDB impacted the left side of a 2008 Nissan Sentra. Two child side impact dummies representing a 3-year-old - 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 Graco "SafeSeat Step 2" 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

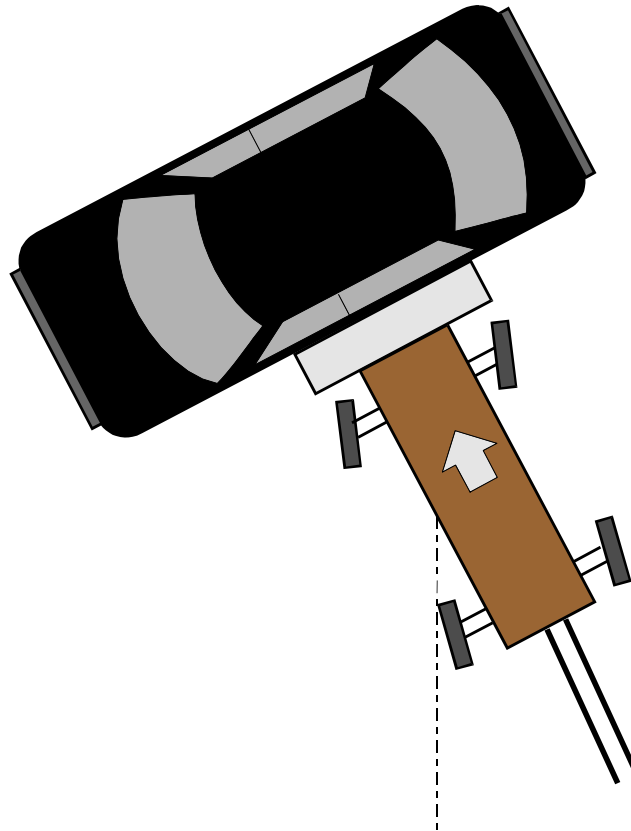
A 2008 Nissan Sentra was impacted on the driver's side by a moving deformable barrier (MDB) which was moving forward in a 27° crabbed position to the monorail at a velocity of 52.9 km/h (32.9 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, Ohio on September 17, 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.

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 Graco SafeSeat Step 2 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 106 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	521	269
Chest Clip 3 ms (mm) CFC 180	N/A	33.3 mm
Chest Deflection (mm) CFC 600	16.5 mm	6.8 mm
Occipital Condyle (Nm) CFC 600		
Flexion	3.1 Nm	12.5 Nm
Extension	-24.2 Nm	-11.9 Nm
Pelvis Resultant (g) CFC 1000	74.3	48.6

	2008 Nissan Sentra
Vehicle Test Weight	1512.2 kg (3333.8 lbs)
Impact Point (Horizontal)-behind center of front axle	400 mm
Maximum Crush	256 mm Level 2
Impact Speed	32.9 mph

Data Acquisition Explanations

The vehicle's rear floorpan above axle Z-axis acceleration data channel, 18FORA000000ACZA, displayed questionable data beginning at approximately 150 milliseconds.

The vehicle's left side sill at front seat Y-axis acceleration data channel, 14SILBFR0000ACYA, exceeded full-scale at approximately 20 milliseconds.

The vehicle's left rear seat track Y-axis acceleration data channel, 14SETRRE0000ACYA, displayed questionable data after approximately 30 milliseconds.

The vehicle's rear door upper center Y-axis acceleration data channel, 14DOORUPMI00ACYA, displayed questionable data after approximately 60 milliseconds.

Section 3

Summary of Test Results

Table 1 General Test Vehicle Parameter Data

Test Vehicle: 2008 Nissan Sentra

Test Date: 09/17/08

TEST VEHICLE INFORMATION

Make	Nissan
Model	Sentra
Body Style	Passenger Car
VIN	3N1AB61E38L743670
Color	Black
Odometer Reading	70
Transmission	3-Speed Automatic
Final Drive	Front wheel drive
Number of Cylinders	4
Engine Displacement	2.0 L
Engine Placement	Straight
Air Conditioning	Yes
Power Windows	Yes
Power Seats	No
Cruise Control	No
Tinted Glass	Yes
Keyless Entry	No

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	No
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., LTD.
Date of Manufacture	07/08

GVWR (lb)	3920
GAWR Front (lb)	2227
GAWR Rear (lb)	1810

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)				385
Cargo Wt. (RCLW) (kg)				45

Table 1 General Test Vehicle Parameter Data, Continued

Test Vehicle: 2008 Nissan Sentra

Test Date 09/17/08

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	420.0	255.6		469.0	264.6	
Right	kg	412.6	248.6		486.2	292.4	
Ratio	%	62.3	37.7		63.2	36.8	
Totals	kg	832.6	504.2	1336.8	955.2	557.0	1512.2

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1336.8
Weight of Q3s (27.2 kg) & H3Cs (27.2 kg)	kg	130.4
Rated Cargo/Luggage Weight (RCLW)	kg	45.0
Calculated Vehicle Target Weight (TVTW)	kg	1512.2

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG(aft of front axle)
As Delivered	mm	688	690	683	685	1011
As Tested	mm	667	663	681	677	987
Fully Loaded	mm	680	685	640	651	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheelbase	mm	2680
Total Vehicle Length at Left Side	mm	4330
Total Vehicle Length at Centerline	mm	4565
Total Vehicle Length at Right Side	mm	4335
Weight of Ballast on Front Passenger Floor	kg	29.5
Amount of Stoddard Solvent in Fuel Tank	liters	51.1

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Impact Reference Line From Front Axle	mm	400
Impact Point	mm	400
Impact Point Difference	mm	0

Table 1 General Test Vehicle Parameter Data, Continued

Test Vehicle: 2008 Nissan Sentra

Test Date 09/17/08

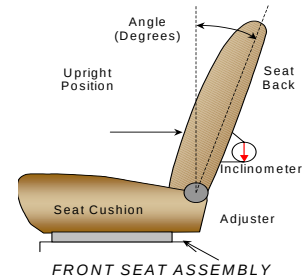
ATD RIDING POSITION

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.

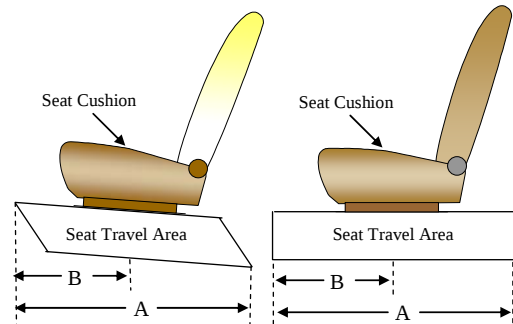


SEAT FORE/AFT POSITIONS

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

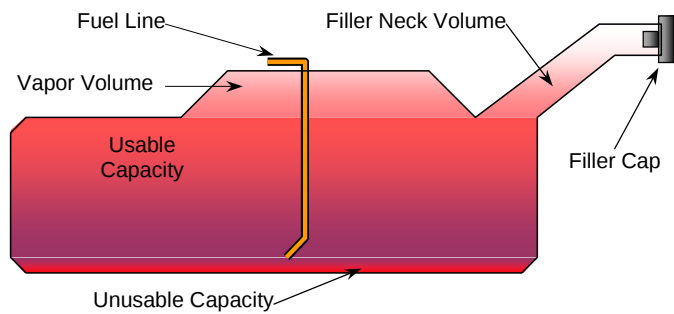
Test Vehicle: 2008 Nissan Sentra

Test Date 09/17/08

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	54.9
Usable Capacity used for FMVSS 301	54.9
Actual Amount of Solvent used	51.1

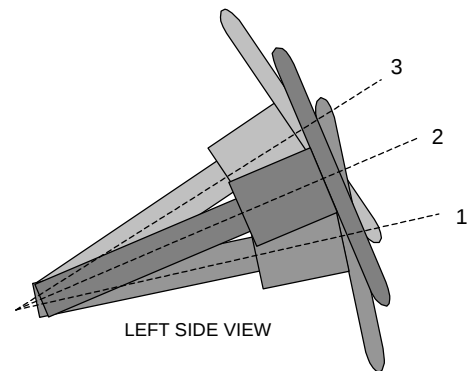
The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies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

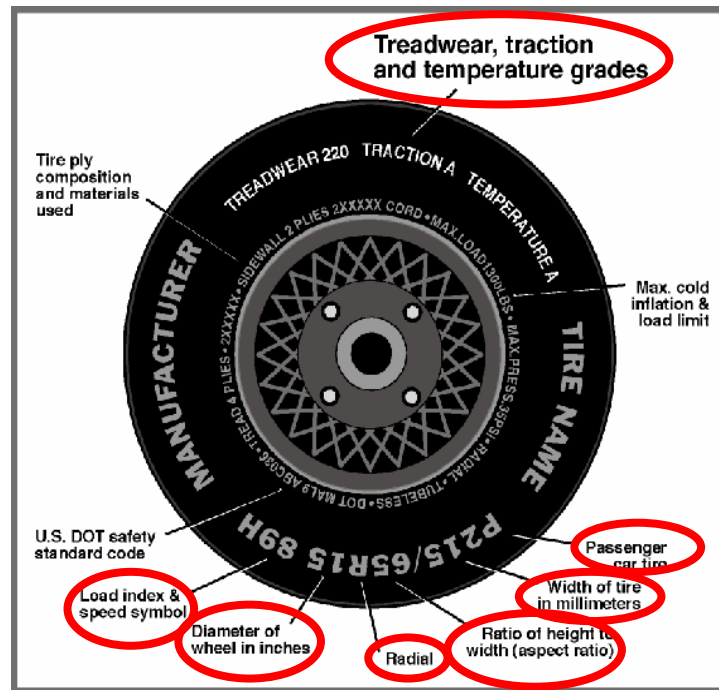
STEERING WHEEL/COLUMN POSITIONS

	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 Sentra

Test Date 09/17/08



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold / Test Pressure (kPa)	230	230
Recommended Tire Size	P205/60R15	P205/60R15
Tire Size on Vehicle	P205/60R15	P205/60R15
Tire Manufacturer	Bridgestone	Bridgestone
Tire Name	Turanza	Turanza
Radial	R	R
Wheel Diameter	15	15
Load Index & Speed Symbol	90H	90H
Treadwear	300	300
Traction Grade	A	A
Temperature Grade	A	A

Table 3 Post-Test Observations

Test Vehicle: 2008 Nissan Sentra

Test Date 09/17/08

CHILD RESTRAINT SYSTEM INFORMATION

Description	Position #4 CRS	Position #3 CRS
Manufacturer	Graco Children's Products, Inc.	Graco Children's Products, Inc.
Model Name	Graco SafeSeat Step 2	Graco SafeSeat Step 2
Model No.	8B05INC2	8B05INC2
Manufacture Date	08/19/08	06/30/08
Type	Toddler	Toddler
Forward/Rearward	Forward	Forward
Internal Harness Pretensioner	1.5 lbs	1.5 lbs
Lower Anchor Pretensioner	10 lbs	10 lbs
Top Tether Pretensioner	5 lbs	5.5 lbs

VISIBLE DUMMY CONTACT POINTS

Description	Position #4	Position #3
Dummy Type / Serial No.	Q3s / 004	H3Cs / 141
Head Contact	Left and right side of CRS	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 Sentra

Test Number: 080917

Driver Dummy Serial Number: 004

		Positive Direction		Negative Direction	
		Max.	Time	Max.	Time
Location		(g)	(ms)	(g)	(ms)
Head Acceleration	X	21.8	158.8	23.4	52.2
	Y	89.5	55.1	5.3	156.2
	Z	17.2	162.6	5.3	156.4
	R	92.2	55.1		
Upper Neck Force	X	56.2	197.5	444.1	52.9
	Y	546.9	51.9	98.8	194.6
	Z	1053.7	55.3	83.8	195.8
Upper Neck Moment	X	3.1	70.5	24.2	50.9
	Y	6.9	198.5	19.3	51.7
	Z	7.7	77.1	3.6	189.7
Shoulder Displacement	Y	3.6	219.8	13.4	51.1
Upper Spine Acceleration	X	23.0	53.2	32.0	46.4
	Y	89.3	45.9	7.9	93.4
	Z	10.6	69.4	16.7	51.4
	R	95.9	46.0		
Thorax IR-TRACC Displacement	Y	16.5	55.8	4.3	168.2
Lumbar Force	X	1.4	36.3	6.0	98.9
	Y	13.9	43.3	1.7	57.8
	Z	2.3	102.7	17.0	58.6
Lumbar Moment	X	2.1	308.2	20.1	43.4
	Y	8.2	45.9	7.0	106.0
	Z	10.2	47.7	4.0	168.6
Pelvis Acceleration	X	36.8	57.9	46.5	57.4
	Y	70.5	41.5	13.7	94.1
	Z	11.5	68.9	25.7	57.4
	R	74.3	42.0		
Pubic Force	Y	522.1	42.2	37.8	54.0

Table 4 Dummy Instrumentation Data, Continued

Vehicle: 2008 Nissan Sentra

Test Number: 080917

Passenger Dummy Serial Number: 141

		Positive Direction		Negative Direction	
		Max.	Time	Max.	Time
Location		(g)	(ms)	(g)	(ms)
Head Acceleration	X	14.8	218.6	24.0	99.2
	Y	31.3	99.9	10.5	218.6
	Z	34.0	83.8	1.5	39.8
	R	44.0	83.8		
Upper Neck Force	X	13.7	228.8	505.3	98.8
	Y	394.4	105.0	225.7	71.4
	Z	806.3	83.4	180.6	279.8
Upper Neck Moment	X	12.5	105.0	11.9	68.3
	Y	12.2	96.6	4.3	134.4
	Z	8.7	99.8	0.4	310.0
Lower Neck Force	X	33.7	225.4	451.2	104.3
	Y	403.8	101.8	105.1	224.2
	Z	105.0	277.8	761.3	60.2
Lower Neck Moment	X	34.0	99.9	10.9	309.8
	Y	45.1	105.8	4.4	225.0
	Z	13.0	97.5	2.5	57.5
Chest Acceleration	X	7.7	113.0	19.4	54.6
	Y	33.6	64.6	13.1	293.9
	Z	9.6	94.6	2.0	59.9
	R	34.3	64.7		
Chest Displacement	X	6.8	60.6	1.2	310.0
Sternum (Rib 1) Acceleration	X	8.0	105.8	24.8	55.0
Sternum (Rib 6) Acceleration	X	10.9	111.9	28.5	53.8

Table 4 Dummy Instrumentation Data, Continued

Vehicle: 2008 Nissan Sentra

Test Number: 080917

Passenger Dummy Serial Number: 141

		Positive Direction Max. Time		Negative Direction Max. Time	
Location		(g)	(ms)	(g)	(ms)
Pelvis Acceleration	X	10.1	92.8	26.3	57.2
	Y	46.2	62.7	18.1	299.4
	Z	10.8	90.2	11.7	60.6
	R	48.6	62.2		

Positive Direction

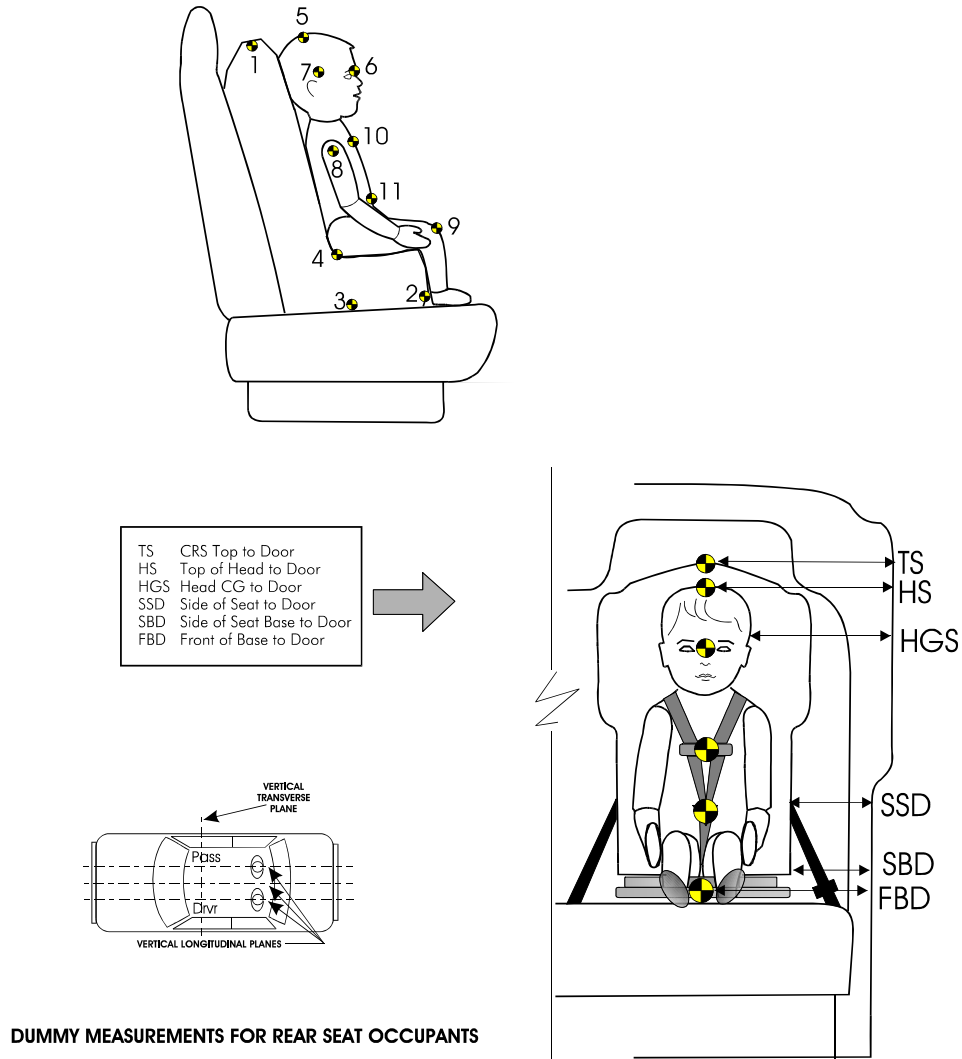
Longitudinal: Forward
Lateral: Rightward
Vertical: Downward

Negative Direction

Longitudinal: Rearward
Lateral: Leftward
Vertical: Upward

Figure 1 Dummy Positioning in Vehicle

Vehicle: 2008 Nissan Sentra



Dummy Positioning Measurements

Code	Description	Units	Position #4 Q3s	Position #3 H3Cs
TS	CRS Top to Door/Window	mm	336	341
HS	Top of Head to Door/Window	mm	Not Taken	Not Taken
HGS	Head CG to Door/Window	mm	277	280
SSD	Side CRS to Door	mm	64.5	71
FBD	CRS Front Base to Door	mm	343	337
SBD	CRS Side Base to Door	mm	115	122.5
	Torso Angle	°	40.2°	Not Recorded

Table 5 Dummy Positioning FARO Measurements¹

Vehicle: 2008 Nissan Sentra

Position #4 Q3s

Code	Description	Units	X	Y	Z
1	CRS Top	mm	-32	401	-305
2	CRS Front Base	mm	629	402	181
3	CRS Side Base	mm	452	189	199
4	CRS Side of Seat	mm	285	182	61
5	Top of Head	mm	101	398	-354
6	Head Front	mm	201	398	-292
7	Head CG	mm	117	332	-265
8	Shoulder	mm	152	289	-146
9	Left Knee	mm	527	307	-16
10	Chest Clip	mm	280	403	-157
11	Buckle	mm	401	403	-37
HS	Top of Head to Door	mm	N/A	N/A	N/A
TS	CRS Top to Door/Window	mm	-32	66	-304
HGS	Head CG to Door/Window Edge	mm	117	54	-265
SSD	Side of CRS to Door	mm	286	117	62
SBD	CRS Side Base to Door	mm	451	73	199
FBD	CRS Front Base to Door	mm	630	58	181

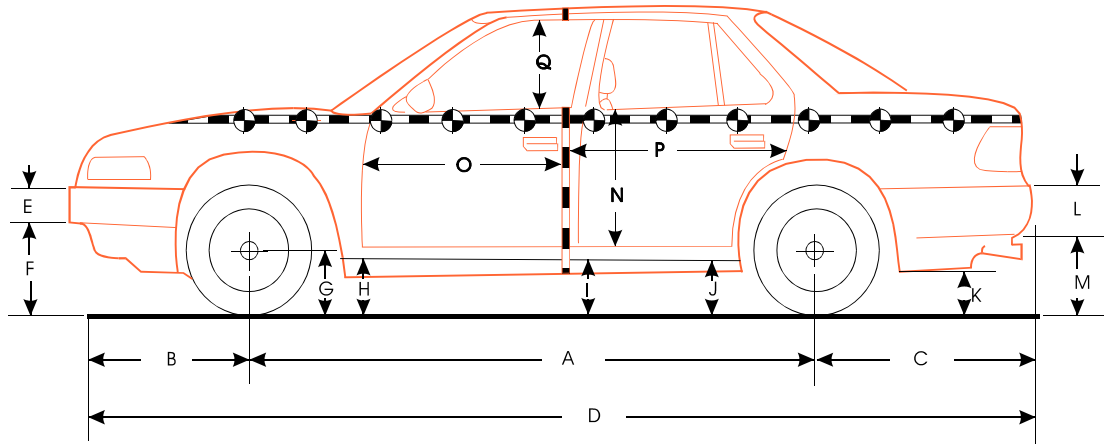
Position #3 H3Cs

Code	Description	Units	X	Y	Z
1	CRS Top	mm	-12	-400	-310
2	CRS Front Base	mm	635	-401	184
3	CRS Side Base	mm	459	-198	206
4	CRS Side of Seat	mm	280	-195	72
5	Top of Head	mm	89	-404	-350
6	Head Front	mm	196	-404	-313
7	Head CG	mm	127	-334	-282
8	Shoulder	mm	173	-269	-142
9	Right Knee	mm	532	-298	-23
10	Chest Clip	mm	264	-398	-164
11	Buckle	mm	403	-394	-37
HS	Top of Head to Door	mm	N/A	N/A	N/A
TS	CRS Top to Door/Window	mm	-13	-58	-308
HGS	Head CG to Door/Window Edge	mm	128	-57	-282
SSD	Side of CRS to Door	mm	281	-123	70
SBD	CRS Side Base to Door	mm	459	-75	205
FBD	CRS Front Base to Door	mm	636	-63	185

¹ The origin of the coordinates is the striker.

Figure 2 Vehicle Pre-Test and Post-Test Measurements

Vehicle: 2008 Nissan Sentra



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	2680	2680	2664	16
B	940	940	934	6
C	945	945	950	-5
D	4565	4565	4565	0
E	170	170	170	0
F	406	385	345	40
G	293	289	289	0
G1	220	204	139	65
H	234	219	192	27
I	246	238	301	-63
J1	210	194	223	-29
J2	262	248	297	-49
K	353	343	375	-32
L	230	230	230	0
M	408	386	444	-58
N	740	740	658	82
O	790	790	741	49
P	1246	1246	1221	25
Q	422	422	418	4
R	4335	4335	4335	0
S	4330	4330	4361	-31
T	1320	1320	1196	124

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	4565
2	Total Width	1320
3	Bumper Top Height	513
4	Bumper Bottom Height	423
5	Longitudinal Member Top Height	513
6	Longitudinal Member Bottom Height	415
7	Distance Between Longitudinal Members	1080
7'	Longitudinal Member Width	80
8	Engine Top Height	850
9	Engine Bottom Height	414
10	Engine and Gearbox Width	900
11	Front Bumper - Engine Distance	450
12	Front Shock Absorber Fixing Height	840
13	Bonnet Leading Edge Height	730
14	Front Shock Absorber Fixing Width	1175
15	Front Bumper - Front Axle Distance	940
16	Front Axle - A Pillar Distance	510
17	A Pillar - B Pillar Distance	1060
18	B Pillar - Rear Axle Distance	1115
19	B Pillar - C Pillar Distance	895
20	Roof Sill Bottom Height	1335
21	Roof Sill Top Height	1383
22	Floor Sill Bottom Height	335
23	Floor Sill Top Height	368

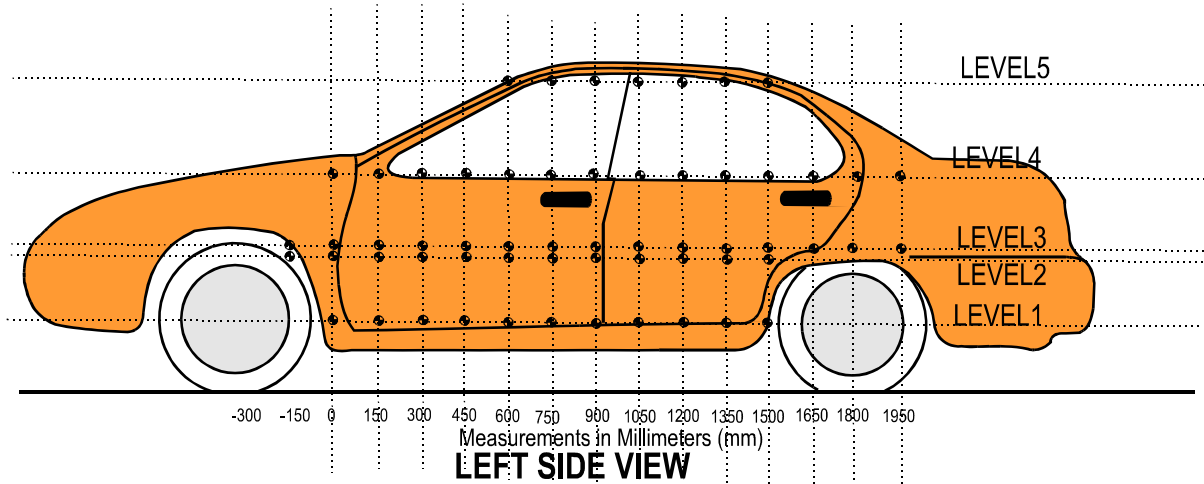
All distance measurements are in millimeters.

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 Sentra



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	1420
4	Window Sill	900
3	Mid Door	625
2	Occupant H-Point	545
1	Side Sill	270

Table 7 Vehicle Exterior Crush Profiles - All Levels

Vehicle: 2008 Nissan Sentra

Location	Height		(mm) From Impact Point													
			-1200	-1050	-900	-750	-600	-450	-300	-150	0	150	300	450	600	750
Level 1 Side Sill	270	Pre									873	827	820	820	821	823
		Post									909	753	756	757	758	755
		Crush									-36	74	64	63	63	68
Level 2 H-Point	545	Pre									874	868	871	875	878	879
		Post									938	643	621	619	628	633
		Crush									-64	225	250	256	250	246
Level 3 Mid-Door	625	Pre								877	870	868	873	877	881	882
		Post								932	925	684	648	638	666	681
		Crush								-55	-55	184	225	239	215	201
Level 4 Window Sill	900	Pre							804	816	826	833	837	841	845	850
		Post							839	836	837	785	725	684	679	676
		Crush							-35	-20	-11	48	112	157	166	174
Level 5 Window Top	1420	Pre									767	741	713	687	663	644
		Post									775	751	722	695	670	648
		Crush									-8	-10	-9	-8	-7	-4

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 Sentra

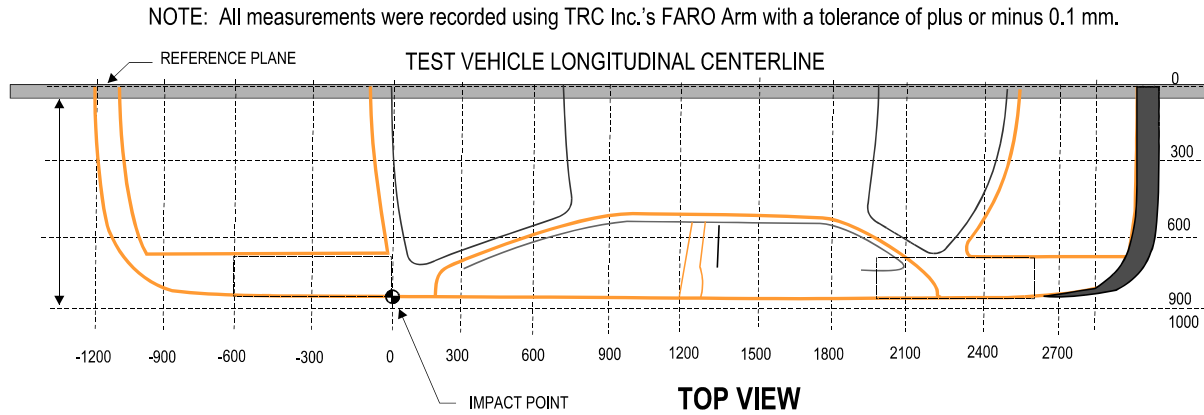
Location	Height		(mm) From Impact Point												
			900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700
Level 1 Side Sill	270	Pre	824	826	828	829	831	834	845						
		Post	755	759	762	766	770	776	789						
		Crush	69	67	66	63	61	58	56						
Level 2 H-Point	545	Pre	879	879	879	879	879	878	880	890					
		Post	641	661	663	651	668	690	723	844					
		Crush	238	218	216	228	211	188	157	46					
Level 3 Mid-Door	625	Pre	883	883	883	884	883	882	882	889	896				
		Post	692	693	677	686	701	697	718	807	863				
		Crush	191	190	206	198	182	185	164	82	33				
Level 4 Window Sill	900	Pre	855	860	864	866	866	865	864	885	861	859	851		
		Post	677	678	686	682	704	732	754	828	841	839	841		
		Crush	178	182	178	184	162	133	110	57	20	20	10		
Level 5 Window Top	1420	Pre	632	624	621	620	621	626	633	642	655	670	683		
		Post	632	621	616	613	614	617	622	631	646	667	679		
		Crush	0	3	5	7	7	9	11	11	9	3	4		

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 Sentra

Test Date: 09/17/08



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

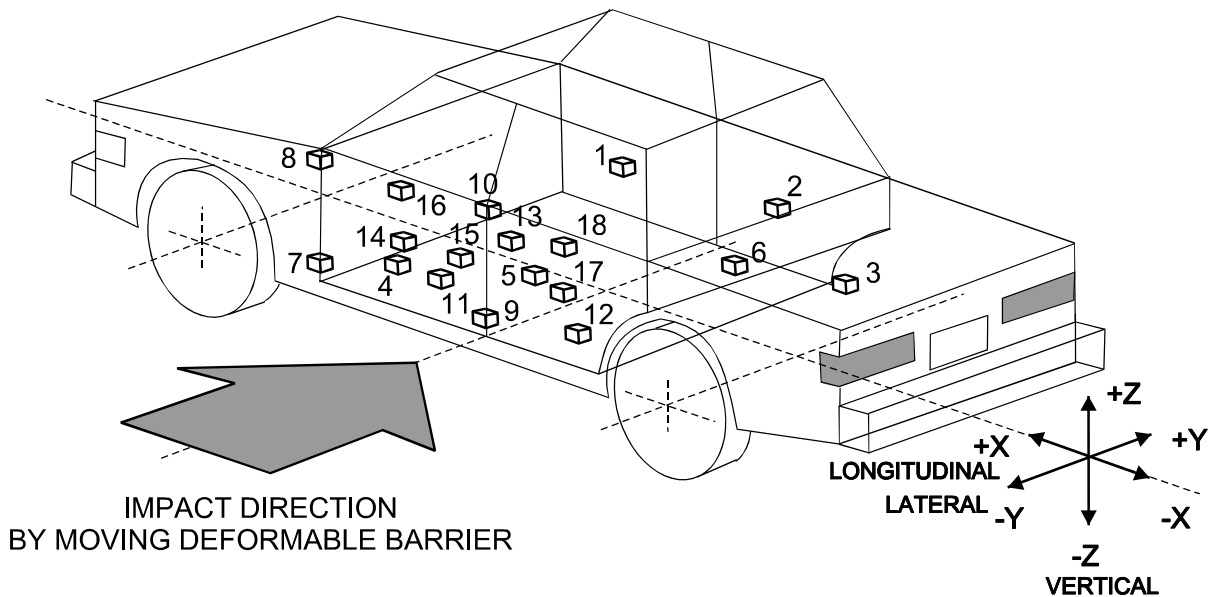
DPD	Distance from Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	2400 mm	4	851	841	10
2	1800 mm	3	882	718	164
3	1200 mm	2	879	663	216
4	600 mm	2	878	628	250
5	0 mm	2	874	938	64
6	-300 mm	4	804	839	35

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 Sentra



- 1-Right Side Sill at Front Seat
- 2-Right Side Sill at Rear Seat
- 3-Rear Floorpan at Rear Seat
- 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 Mid Rear
- 18-Left Rear Door Upper Centerline

Table 8 Test Vehicle Accelerometer Locations and Data Summary

Vehicle: 2008 Nissan Sentra

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	3070	710	259				
Longitudinal				4.2	9.2	5.2	15.0
Lateral				21.8	6.9	2.6	93.6
Vertical				6.0	60.6	9.6	12.6
Resultant				22.1	6.9		
2 Right Side Sill at Rear Seat	2066	700	278				
Longitudinal				4.5	57.4	5.3	15.0
Lateral				27.4	7.6	4.2	106.8
Vertical				5.8	38.8	6.7	11.0
Resultant				27.6	7.7		
3 Rear Floorpan Above Axle	1230	0	500				
Longitudinal				5.8	45.4	9.6	24.3
Lateral				36.0	8.2	2.8	91.5
Vertical ¹				11.0	13.1	28.6	163.7
Resultant				36.3	8.2		
4 Left Side Sill at Front Seat	3110	710	245				
Longitudinal							
Lateral ¹				251.1	15.6	182.4	19.9
Vertical							
5 Left Side Sill at Rear Seat	2060	700	315				
Longitudinal							
Lateral				50.6	4.0	23.4	15.8
Vertical							

¹ See Data Acquisition Explanations

Table 8 Test Vehicle Accelerometer Locations and Data Summary, Continued

Vehicle: 2008 Nissan Sentra

Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
	X	Y	Z	Max. (g)	Time (ms)	Max. (g)	Time (ms)
6 Right Rear Occupant Compartment	1900	560	325				
Longitudinal							
Lateral				26.1	7.4	3.3	108.1
Vertical							
7 Left Lower A-Pillar	3260	850	485				
Longitudinal							
Lateral				90.3	9.7	29.5	21.0
Vertical							
8 Left Upper A-Pillar	3255	830	815				
Longitudinal							
Lateral				45.5	2.8	14.6	20.4
Vertical							
9 Left Lower B-Pillar	2183	785	563				
Longitudinal							
Lateral				102.0	3.8	38.0	60.4
Vertical							
10 Left Upper B-Pillar	2160	785	890				
Longitudinal							
Lateral				95.7	4.7	25.5	49.1
Vertical							
11 Left Front Seat Track	2345	560	259				
Longitudinal							
Lateral				47.3	43.3	21.7	49.3
Vertical							

Table 8 Test Vehicle Accelerometer Locations and Data Summary, Continued

Vehicle: 2008 Nissan Sentra

Location	Coordinates (millimeters)			Positive Direction Max. Time (g) (ms)		Negative Direction Max. Time (g) (ms)	
	X	Y	Z				
12 Left Rear Seat Track	1630	550	360				
Longitudinal Lateral ¹ Vertical							
				141.5	28.4	85.9	33.8
13 Vehicle Center of Gravity	2740	0	415				
Longitudinal Lateral Vertical Resultant				6.4	29.0	12.8	32.8
				34.3	29.3	5.4	32.6
				12.7	29.4	19.0	32.6
				37.1	29.3		
14 Left Front Door on Centerline	2732	755	712				
Longitudinal Lateral Vertical							
				110.6	18.0	107.9	25.4
15 Left Front Door Mid Rear	2373	750	655				
Longitudinal Lateral Vertical							
				158.3	6.0	36.4	17.2
16 Left Front Door Upper Centerline	2732	740	904				
Longitudinal Lateral Vertical							
				209.6	16.9	95.9	25.4
17 Left Rear Door Mid Rear	1500	725	680				
Longitudinal Lateral Vertical							
				79.7	4.7	40.6	20.9

¹ See Data Acquisition Explanations

Table 8 Test Vehicle Accelerometer Locations and Data Summary, Continued

Vehicle: 2008 Nissan Sentra

Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
	X	Y	Z	Max. (g)	Time (ms)	Max. (g)	Time (ms)
18 Left Rear Door Upper Centerline	1765	715	995				
Longitudinal							
Lateral ¹				136.0	18.2	89.0	28.5
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.

¹ See Data Acquisition Explanations

Table 8 Test Vehicle Accelerometer Locations and Data Summary, Continued

Vehicle: 2008 Nissan Sentra

Location	Positive Direction Max. (g)	Time (ms)	Negative Direction Max. (g)	Time (ms)
1 Top of CRS #1				
Longitudinal	20.5	51.2	30.8	154.8
Lateral	42.1	47.3	9.4	109.3
Vertical				
2 Bottom of CRS #1				
Longitudinal	12.0	50.0	13.3	33.5
Lateral	86.2	25.7	30.0	38.7
Vertical				
3 Top of CRS #2				
Longitudinal	21.4	54.1	36.7	69.2
Lateral	27.8	57.7	10.3	233.8
Vertical				
4 Bottom of CRS #2				
Longitudinal	15.6	36.3	16.5	55.8
Lateral	27.5	47.7	19.4	62.2
Vertical				
5 Below Seat Cushion under CRS #1				
Longitudinal	4.3	46.4	14.6	20.3
Lateral	33.2	8.1	2.2	92.0
Vertical				
6 Below Seat Cushion under CRS #2				
Longitudinal	4.7	57.4	6.8	19.1
Lateral	30.4	8.2	3.0	105.4
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 Sentra

Pre-Test			
Index	Xmm	Ymm	Zmm
1	-384.2	799.5	-51.2
2	-384.3	699.1	-51.2
3	-384.4	599.4	-51.3
4	-384.5	499.4	-51.2
5	-384.5	399.0	-51.2
6	-384.8	298.5	-51.4
7	-385.1	198.3	-51.3
8	-384.9	99.1	-51.5
9	-384.9	-2.0	-51.6
10	-384.9	-101.5	-51.8
11	-384.9	-201.0	-51.7
12	-385.0	-301.7	-51.9
13	-384.9	-401.1	-51.6
14	-384.7	-500.8	-51.8
15	-384.8	-601.1	-52.1
16	-384.9	-702.1	-51.8
17	-385.1	-802.1	-51.5
18	-383.8	800.1	-180.2
19	-384.0	699.7	-180.1
20	-384.0	599.0	-180.0
21	-384.1	499.0	-180.0
22	-384.2	399.3	-180.4

Post-Test			
Index	Xmm	Ymm	Zmm
1	-321.9	779.3	-102.0
2	-351.5	683.6	-96.6
3	-371.5	585.4	-92.2
4	-384.6	486.4	-88.1
5	-386.9	386.5	-85.9
6	-381.0	286.3	-83.4
7	-361.4	188.1	-80.8
8	-374.8	91.1	-83.4
9	-382.2	-9.5	-77.4
10	-387.3	-109.2	-71.7
11	-385.9	-209.3	-67.4
12	-383.5	-309.3	-63.8
13	-381.1	-408.9	-59.7
14	-375.1	-508.7	-56.5
15	-362.8	-606.2	-54.7
16	-321.6	-696.3	-59.1
17	-270.3	-781.0	-67.5
18	-328.1	773.8	-224.1
19	-351.9	678.6	-221.6
20	-378.4	582.2	-216.7
21	-372.9	482.7	-215.5
22	-378.0	384.2	-214.1

Difference			
Index	Xmm	Ymm	Zmm
1	-62.3	20.2	50.8
2	-32.8	15.5	45.4
3	-12.9	14.0	40.9
4	0.1	13.0	36.9
5	2.4	12.5	34.7
6	-3.8	12.2	32.0
7	-23.7	10.2	29.5
8	-10.1	8.0	31.9
9	-2.7	7.5	25.8
10	2.4	7.7	19.9
11	1.0	8.3	15.7
12	-1.5	7.6	11.9
13	-3.8	7.8	8.1
14	-9.6	7.9	4.7
15	-22.0	5.1	2.6
16	-63.3	-5.8	7.3
17	-114.8	-21.1	16.0
18	-55.7	26.3	43.9
19	-32.1	21.1	41.5
20	-5.6	16.8	36.7
21	-11.2	16.3	35.5
22	-6.2	15.1	33.7

Table 9 Deformable Barrier Face Profile, Continued

Vehicle: 2008 Nissan Sentra

Pre-Test				Post-Test				Difference			
Index	Xmm	Ymm	Zmm	Index	Xmm	Ymm	Zmm	Index	Xmm	Ymm	Zmm
23	-384.3	299.0	-180.1	23	-375.7	283.9	-211.9	23	-8.6	15.1	31.8
24	-384.6	198.1	-180.4	24	-361.3	184.2	-209.3	24	-23.3	13.9	28.9
25	-384.5	98.9	-180.4	25	-370.4	85.4	-206.1	25	-14.1	13.5	25.7
26	-384.6	-1.3	-180.5	26	-380.4	-14.3	-202.9	26	-4.2	13.0	22.4
27	-384.6	-101.4	-180.3	27	-381.1	-114.2	-199.2	27	-3.5	12.8	18.9
28	-384.7	-201.1	-180.6	28	-380.8	-214.1	-196.0	28	-3.9	13.0	15.4
29	-384.7	-301.2	-180.2	29	-380.0	-313.1	-192.1	29	-4.7	11.9	11.9
30	-384.8	-401.7	-180.8	30	-378.7	-414.0	-188.8	30	-6.1	12.3	8.0
31	-384.7	-501.6	-180.9	31	-376.9	-513.9	-185.2	31	-7.8	12.3	4.3
32	-384.9	-601.9	-180.9	32	-374.3	-613.6	-181.5	32	-10.6	11.7	0.6
33	-384.8	-702.6	-180.6	33	-367.5	-713.7	-177.5	33	-17.3	11.1	-3.1
34	-384.9	-802.1	-180.5	34	-318.5	-796.9	-185.4	34	-66.4	-5.2	4.9
35	-383.5	800.8	-307.3	35	-340.5	782.7	-330.0	35	-43.0	18.1	22.7
36	-383.5	699.9	-306.9	36	-349.4	682.0	-333.9	36	-34.1	17.9	27.0
37	-383.6	600.2	-306.1	37	-356.1	581.7	-334.4	37	-27.5	18.5	28.3
38	-383.7	500.2	-305.9	38	-360.2	481.4	-334.9	38	-23.5	18.8	29.0
39	-383.9	399.9	-306.1	39	-363.2	381.2	-335.7	39	-20.7	18.7	29.6
40	-384.0	300.0	-306.0	40	-364.2	282.8	-336.2	40	-19.8	17.2	30.2
41	-384.1	199.7	-306.1	41	-365.4	181.9	-334.7	41	-18.7	17.8	28.6
42	-384.2	99.0	-306.1	42	-367.1	81.6	-331.3	42	-17.1	17.4	25.2
43	-384.3	-0.8	-306.2	43	-369.2	-18.3	-327.8	43	-15.1	17.5	21.6
44	-384.1	-100.1	-306.9	44	-371.7	-117.9	-325.0	44	-12.4	17.8	18.1

Table 9 Deformable Barrier Face Profile, Continued

Vehicle: 2008 Nissan Sentra

Pre-Test				Post-Test				Difference			
Index	Xmm	Ymm	Zmm	Index	Xmm	Ymm	Zmm	Index	Xmm	Ymm	Zmm
45	-384.2	-200.5	-307.2	45	-373.0	-218.3	-321.9	45	-11.2	17.8	14.7
46	-384.3	-300.6	-307.2	46	-374.1	-318.4	-318.3	46	-10.2	17.8	11.1
47	-384.1	-400.3	-307.8	47	-373.9	-417.6	-315.5	47	-10.2	17.3	7.7
48	-384.1	-500.8	-307.6	48	-373.5	-518.1	-311.5	48	-10.6	17.3	3.9
49	-384.1	-601.1	-307.8	49	-371.4	-618.6	-307.8	49	-12.7	17.5	0.0
50	-384.0	-701.4	-307.7	50	-364.9	-718.6	-303.5	50	-19.1	17.2	-4.2
51	-384.1	-801.8	-307.6	51	-356.4	-816.8	-300.2	51	-27.7	15.0	-7.4
52	-471.5	797.7	-433.9	52	-350.7	776.8	-468.4	52	-120.8	20.9	34.5
53	-485.8	700.7	-434.2	53	-371.7	681.6	-476.1	53	-114.1	19.1	41.9
54	-485.9	600.5	-434.3	54	-379.5	581.4	-477.2	54	-106.4	19.1	42.9
55	-486.2	500.2	-434.2	55	-383.3	481.8	-476.0	55	-102.9	18.4	41.8
56	-486.3	400.7	-434.8	56	-386.3	382.0	-475.2	56	-100.0	18.7	40.4
57	-486.3	301.1	-434.8	57	-387.3	282.2	-473.0	57	-99.0	18.9	38.2
58	-486.4	200.3	-434.7	58	-392.7	181.9	-471.2	58	-93.7	18.4	36.5
59	-486.5	100.2	-435.1	59	-397.2	81.9	-469.9	59	-89.3	18.3	34.8
60	-486.4	0.8	-435.2	60	-401.4	-17.8	-469.5	60	-85.0	18.6	34.3
61	-486.5	-99.8	-435.4	61	-406.0	-117.9	-467.2	61	-80.5	18.1	31.8
62	-486.5	-199.6	-435.9	62	-410.0	-216.8	-466.0	62	-76.5	17.2	30.1
63	-486.4	-299.4	-436.3	63	-413.8	-317.1	-464.2	63	-72.6	17.7	27.9
64	-486.6	-400.1	-436.2	64	-417.3	-417.9	-461.7	64	-69.3	17.8	25.5
65	-486.6	-499.9	-436.1	65	-419.9	-517.7	-459.1	65	-66.7	17.8	23.0
66	-486.4	-599.6	-436.7	66	-416.7	-616.6	-455.3	66	-69.7	17.0	18.6
67	-486.3	-700.1	-436.4	67	-411.3	-716.9	-449.6	67	-75.0	16.8	13.2
68	-473.0	-797.1	-436.1	68	-394.5	-812.2	-441.2	68	-78.5	15.1	5.1

Table 9 Deformable Barrier Face Profile, Continued

Vehicle: 2008 Nissan Sentra

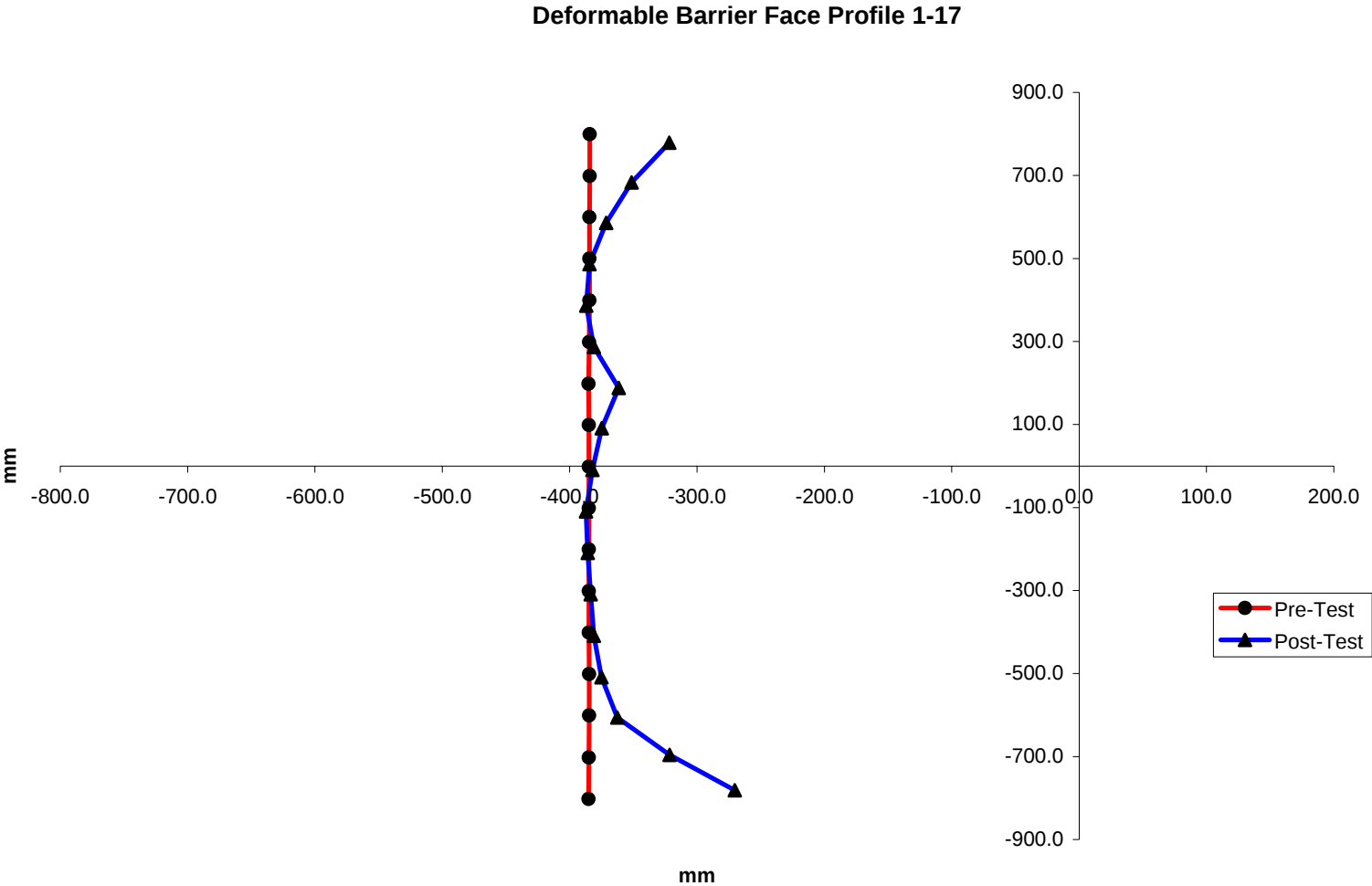


Table 9 Deformable Barrier Face Profile, Continued

Vehicle: 2008 Nissan Sentra

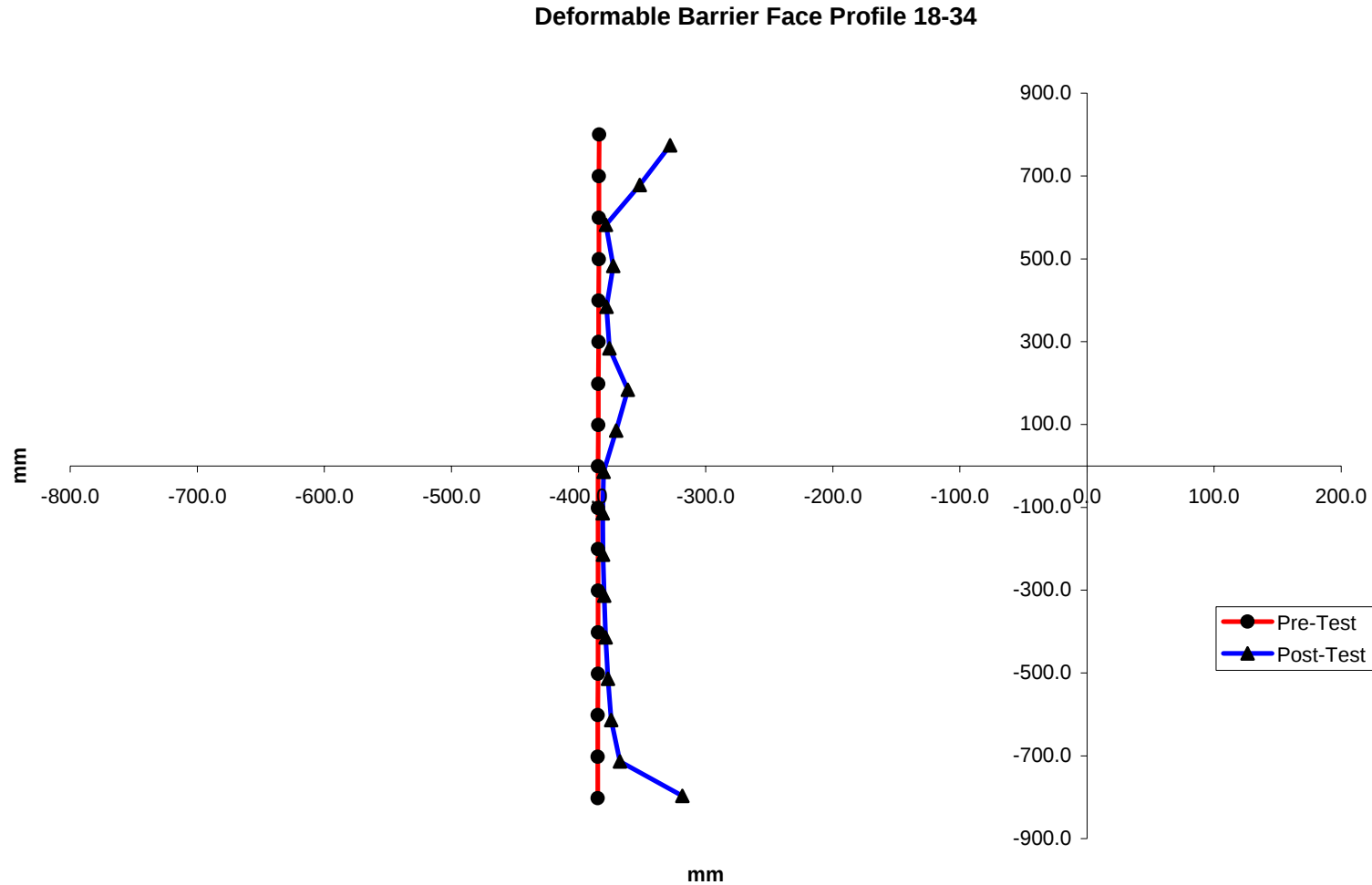


Table 9 Deformable Barrier Face Profile, Continued

Vehicle: 2008 Nissan Sentra

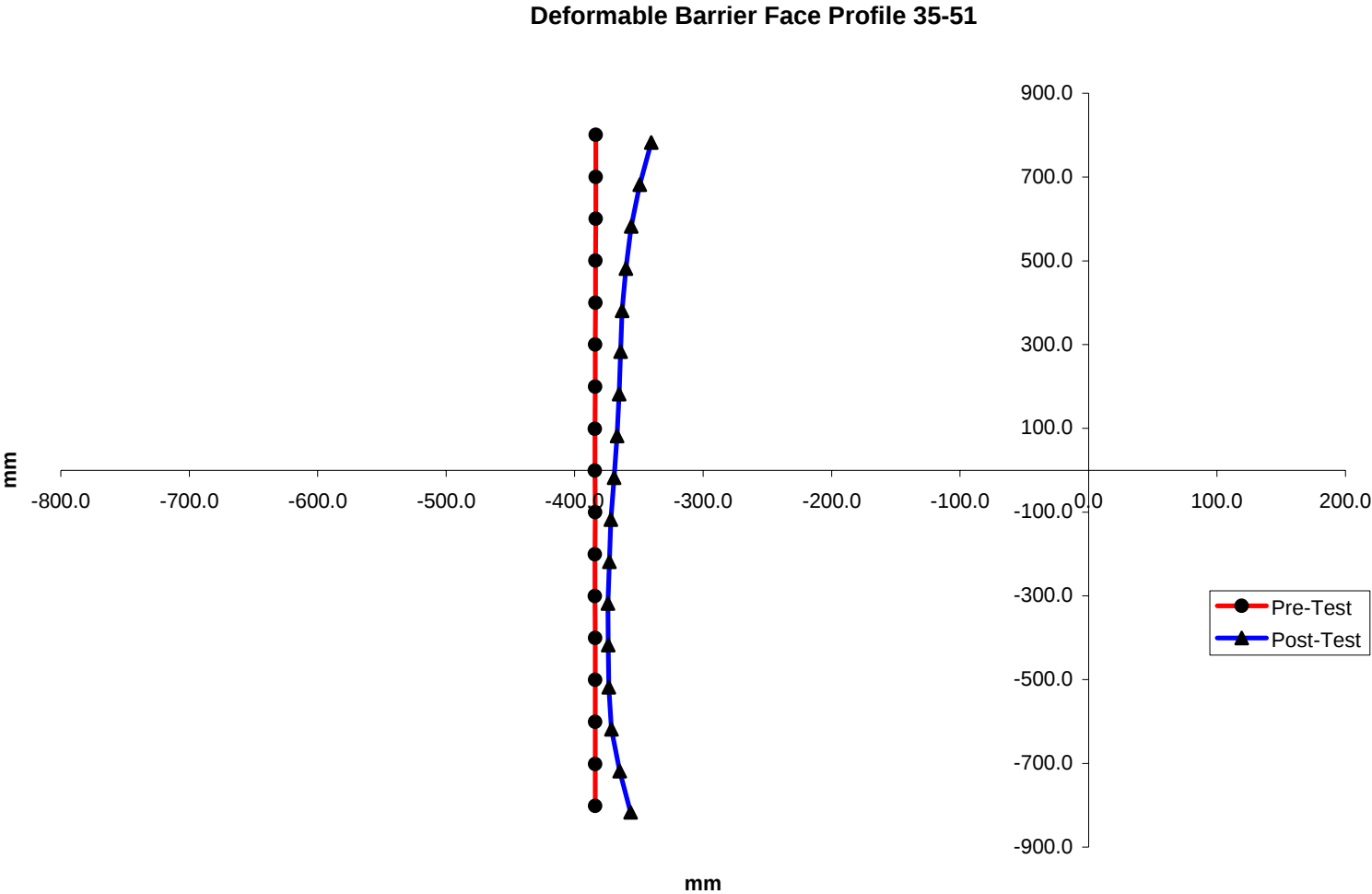


Table 9 Deformable Barrier Face Profile, Continued

Vehicle: 2008 Nissan Sentra

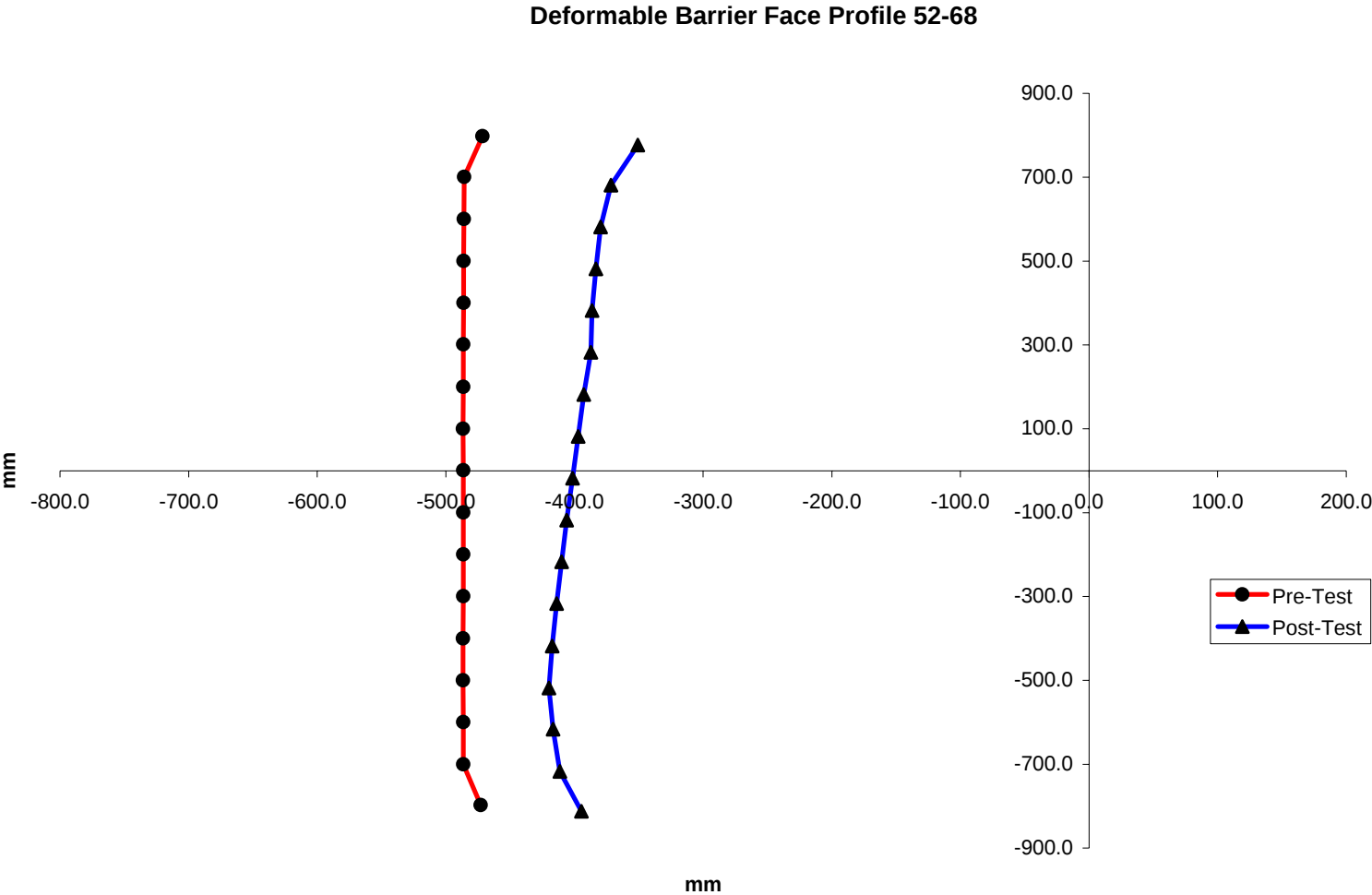
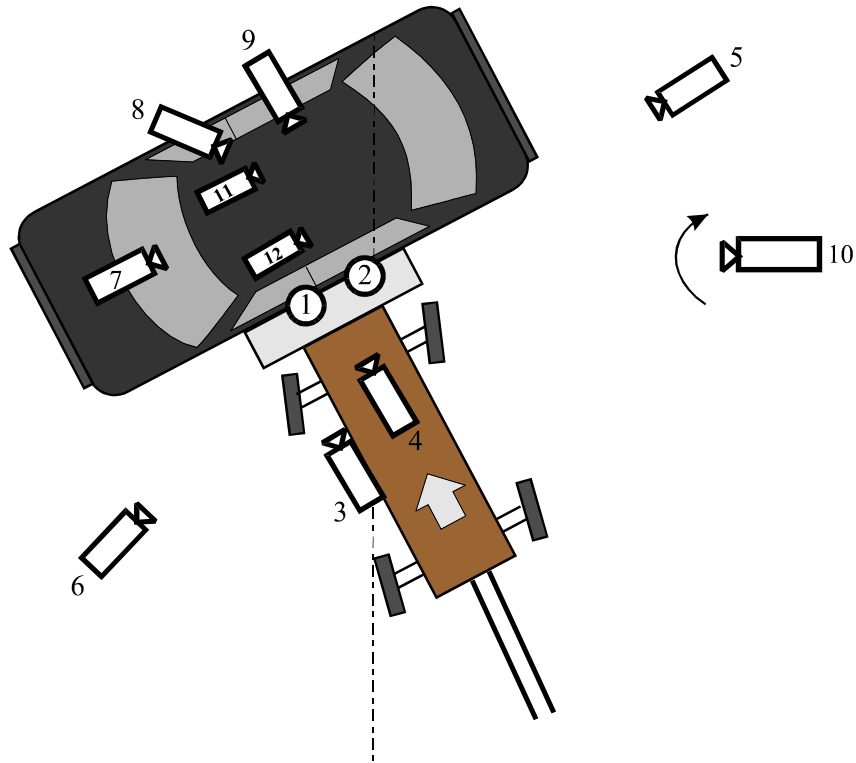


Figure 6 High-Speed Camera Locations and Data Summary

Vehicle: 2008 Nissan Sentra



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	12.5	1000
4	MDB Centerline Impact	2380	0	-1450	5.0	12.5	1000
5	Left Rear	0	10370	-1050	1.6	25	1000
6	Left Side	4780	5680	-1070	2.6	12.5	1000
7	Onboard Front-Driver	850	1330	-1470	0.8	8.5	1000
8	Onboard Right Side Front	1650	20	-1250	8.4	25	1000
9	Onboard Right Side Rear	1540	730	-1350	19.1	6.5	1000
10	Panning	N/A	N/A	N/A	N/A	Zoom	24
11	Onboard Right Rear ATD	1250	180	-1300	13.1	8.5	1000
12	Onboard Left Rear ATD	490	180	-1350	11.0	8.5	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

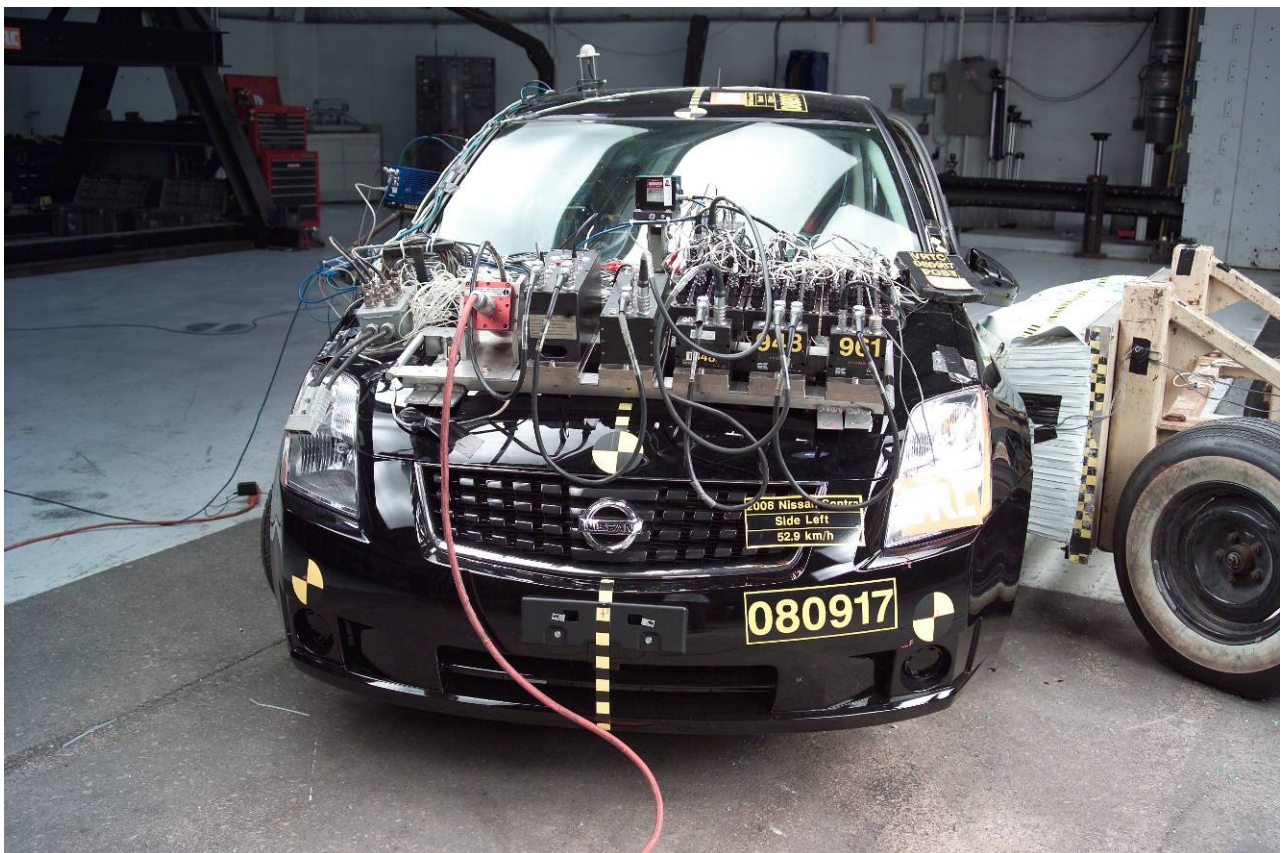


Figure A-2 Post-Test Front View

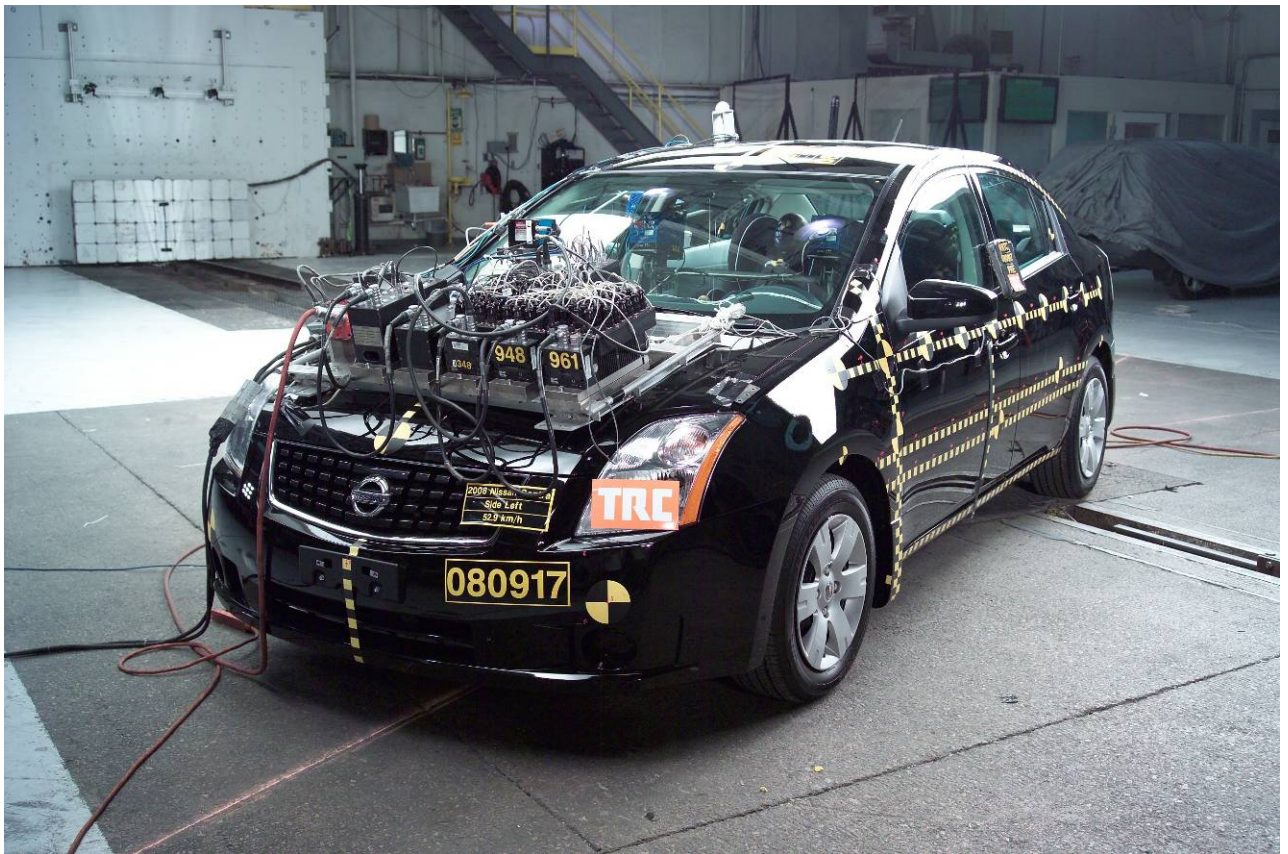


Figure A-3 Pre-Test Left Front View

Photograph Not Available

Figure A-4 Post-Test Left Front View

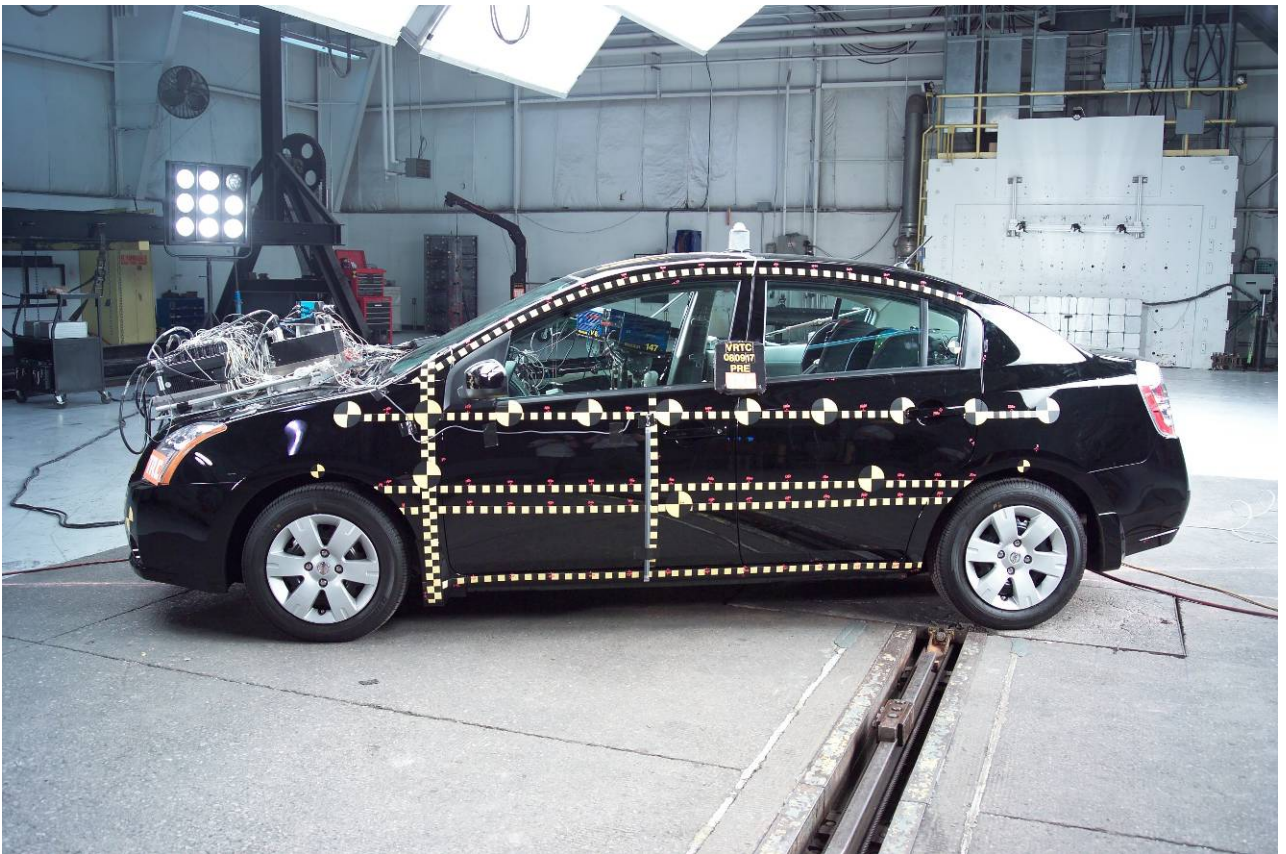


Figure A-5 Pre-Test Left Side View



Figure A-6 Post-Test Left Side View



Figure A-7 Pre-Test Left Rear View

Photograph Not Available

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

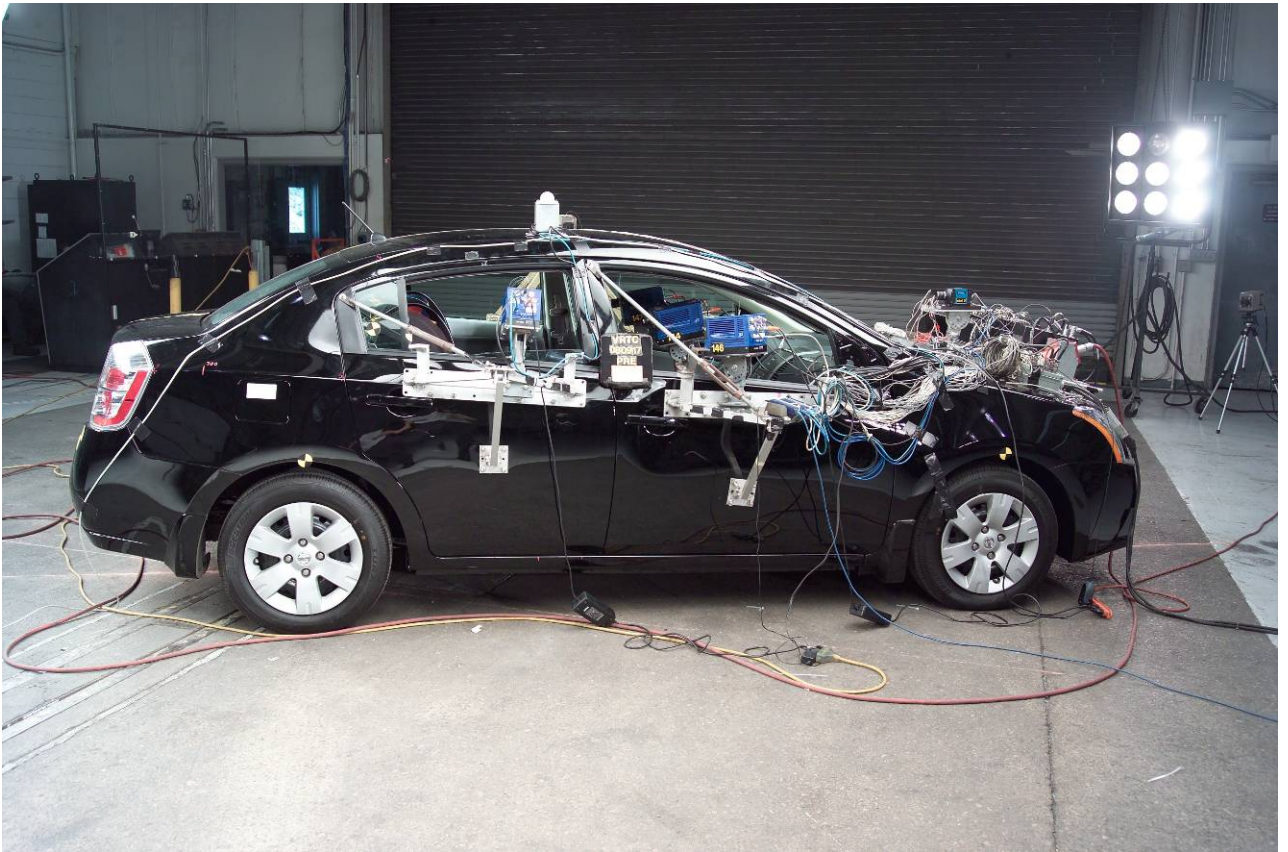


Figure A-13 Pre-Test Right Side View



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

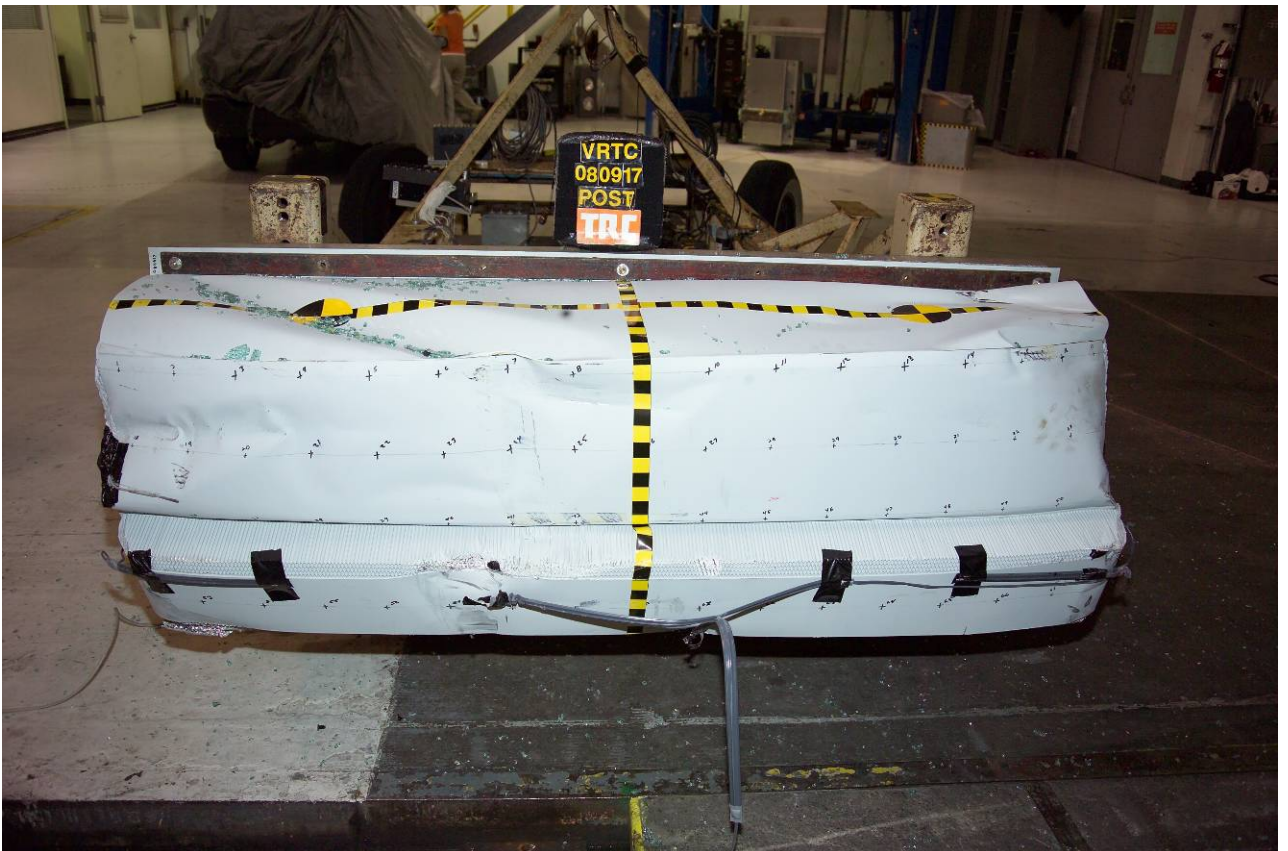


Figure A-24 Post-Test MDB Face Front View



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

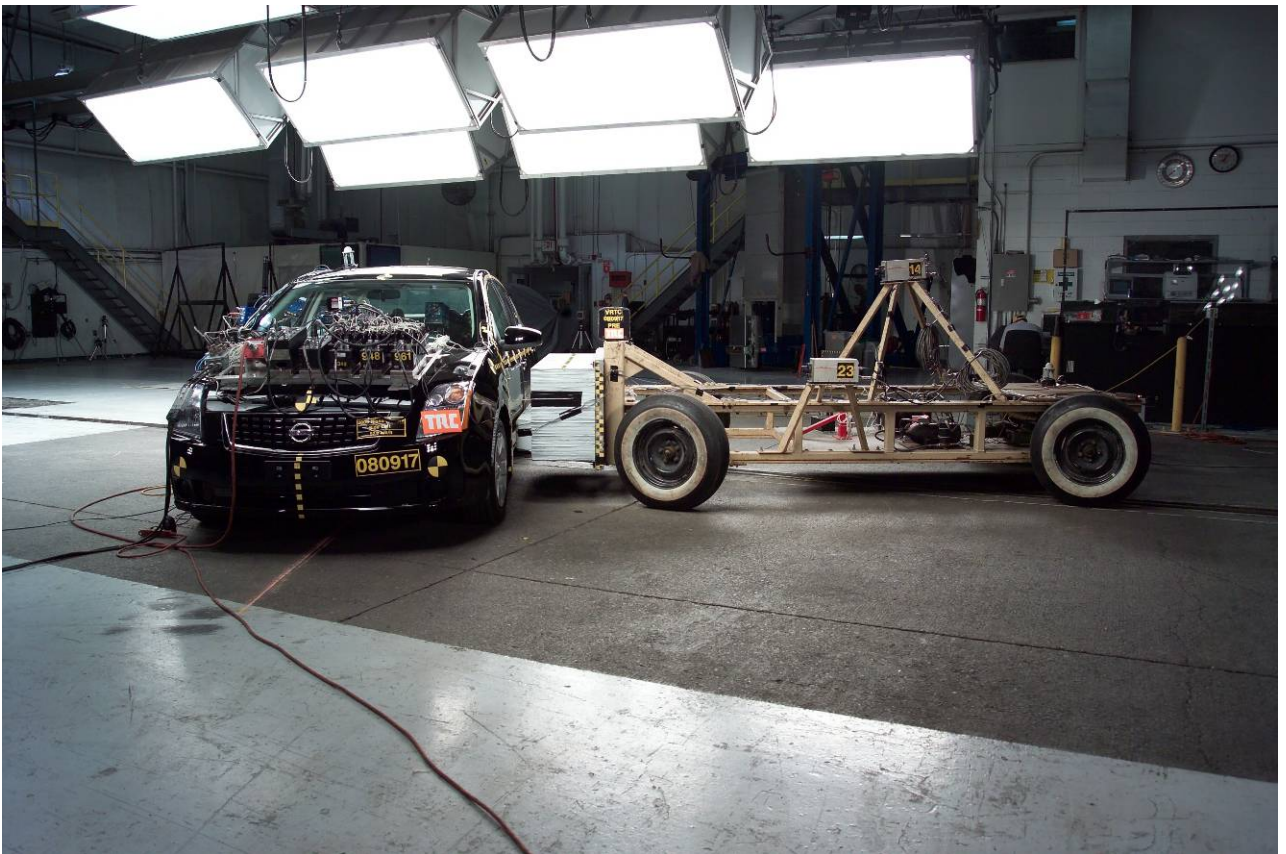


Figure A-31 Pre-Test MDB with Vehicle Left Side Overall View

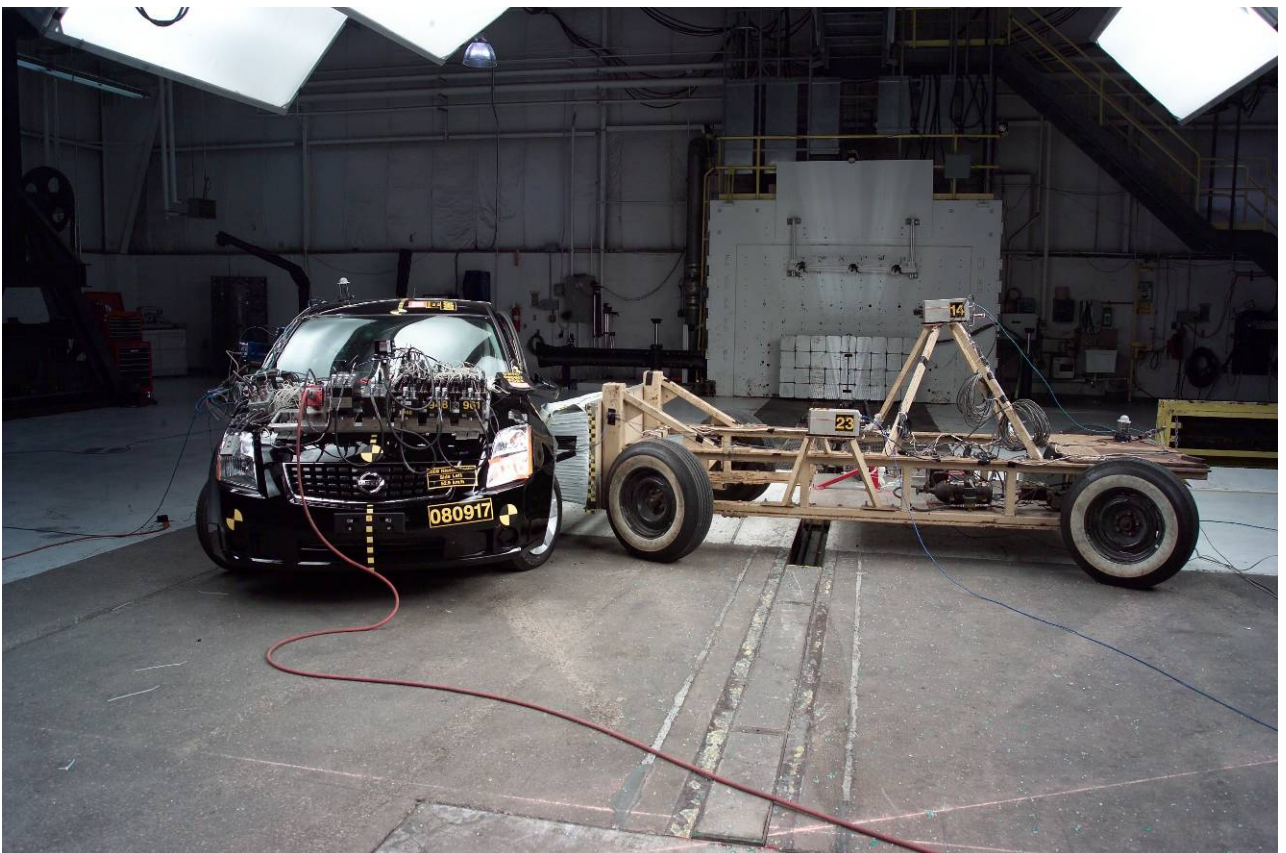


Figure A-32 Post-Test MDB with Vehicle Left Side Overall View



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

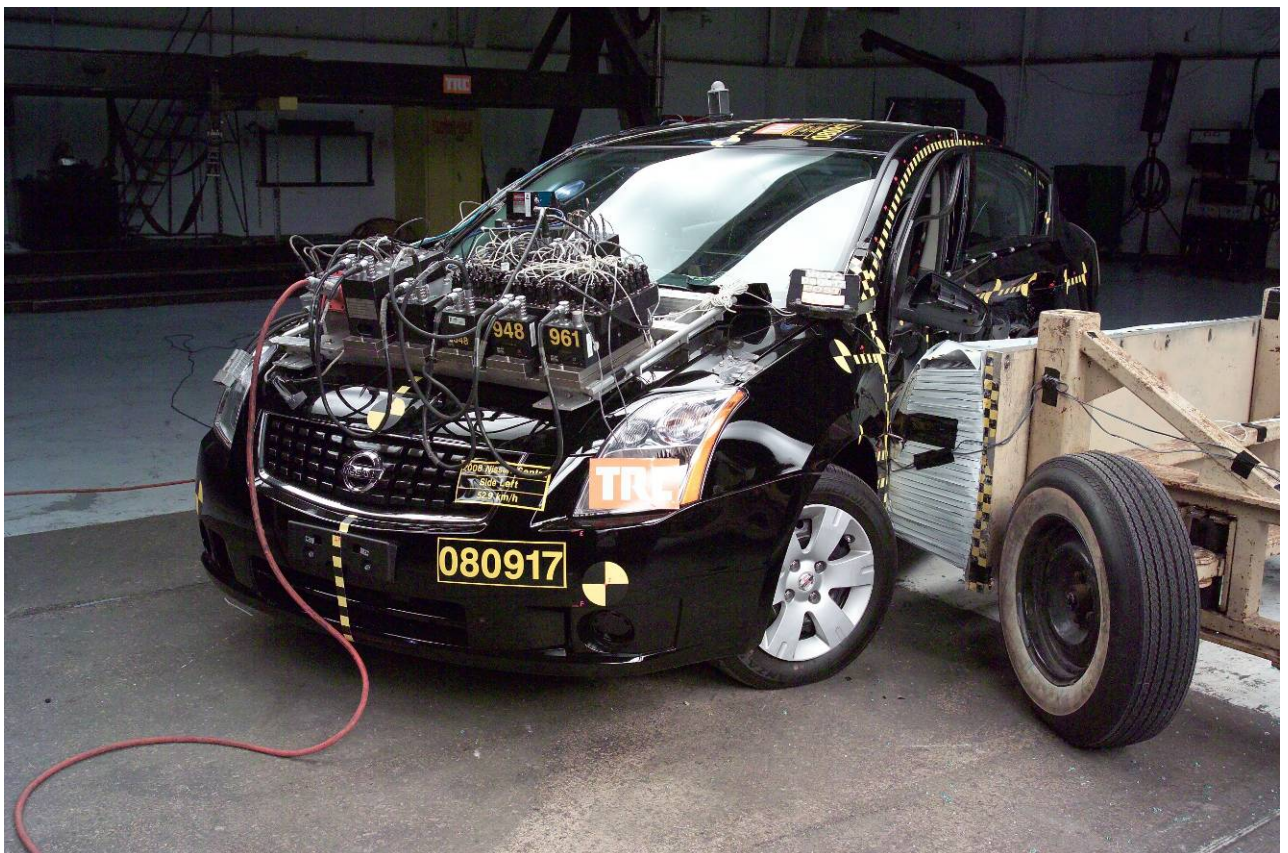


Figure A-34 Post-Test MDB with Vehicle Left Front View



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 Right Front View



Figure A-38 Post-Test MDB with Vehicle Right Front 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

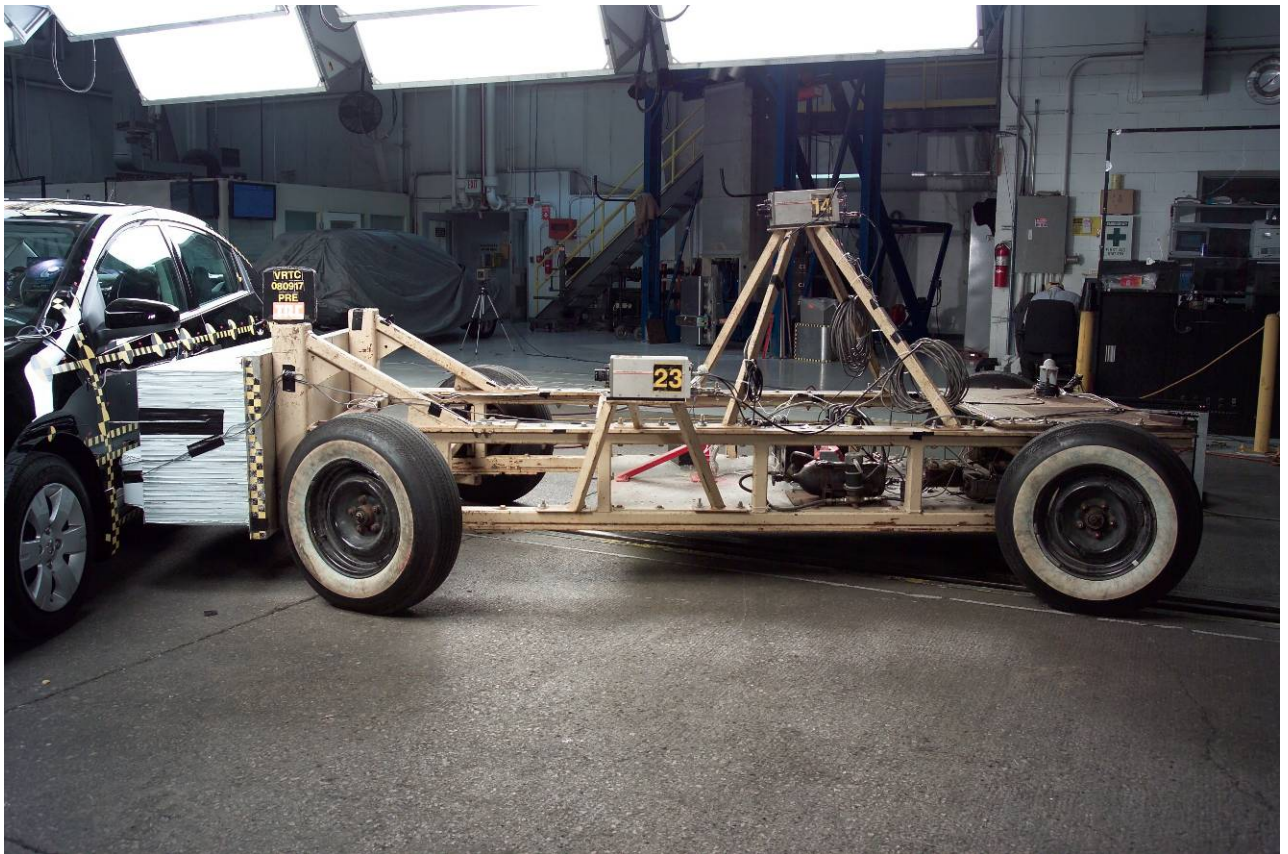


Figure A-41 Pre-Test MDB Left Side Overall View

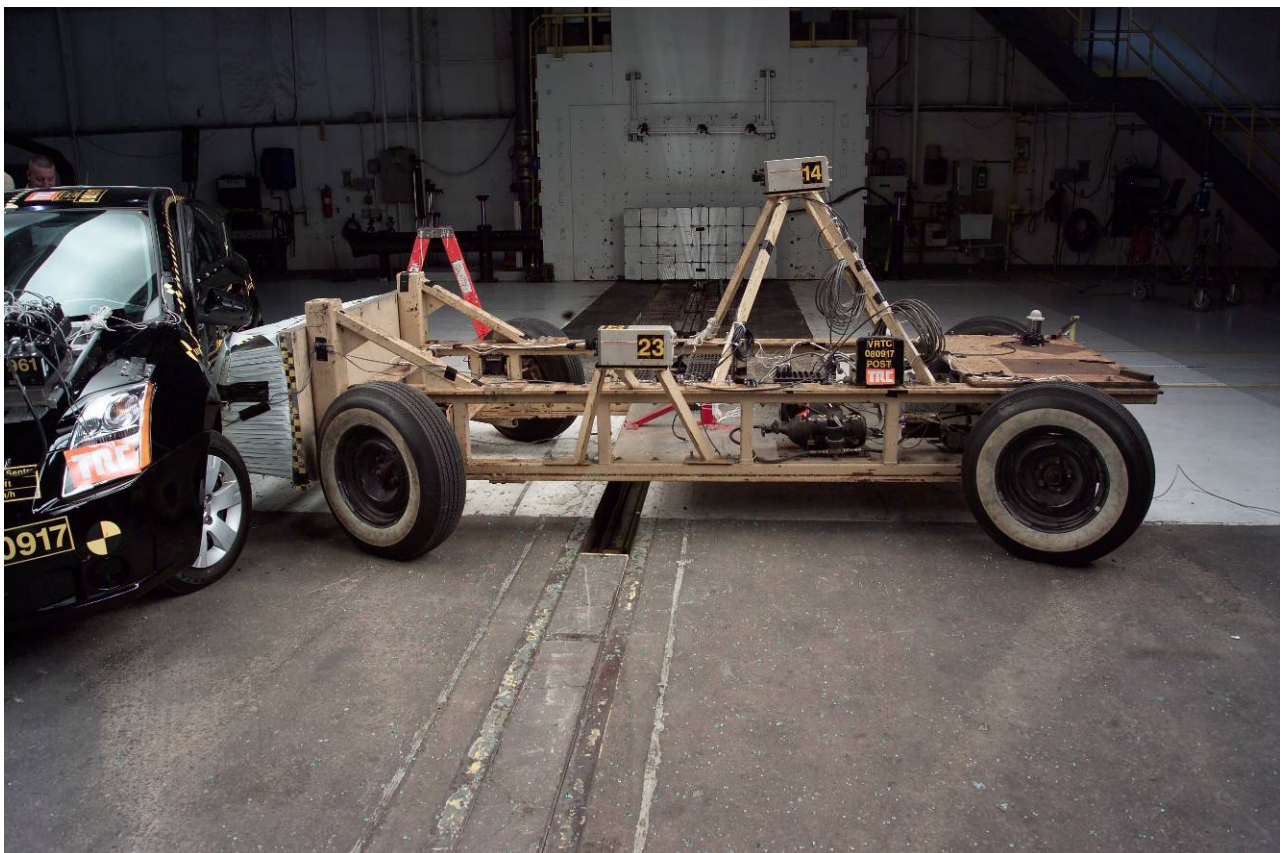


Figure A-42 Post-Test MDB Left Side Overall View

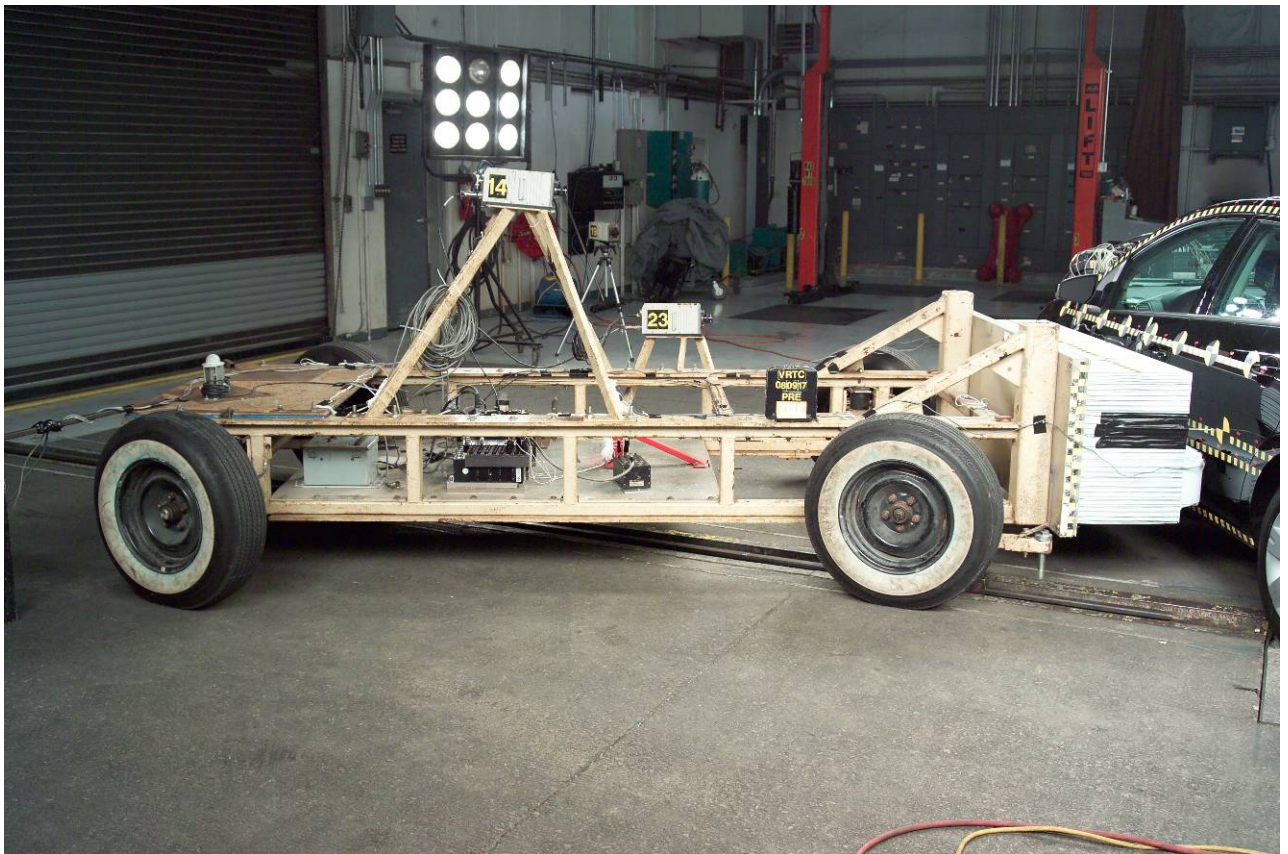


Figure A-43 Pre-Test MDB Right Side Overall View

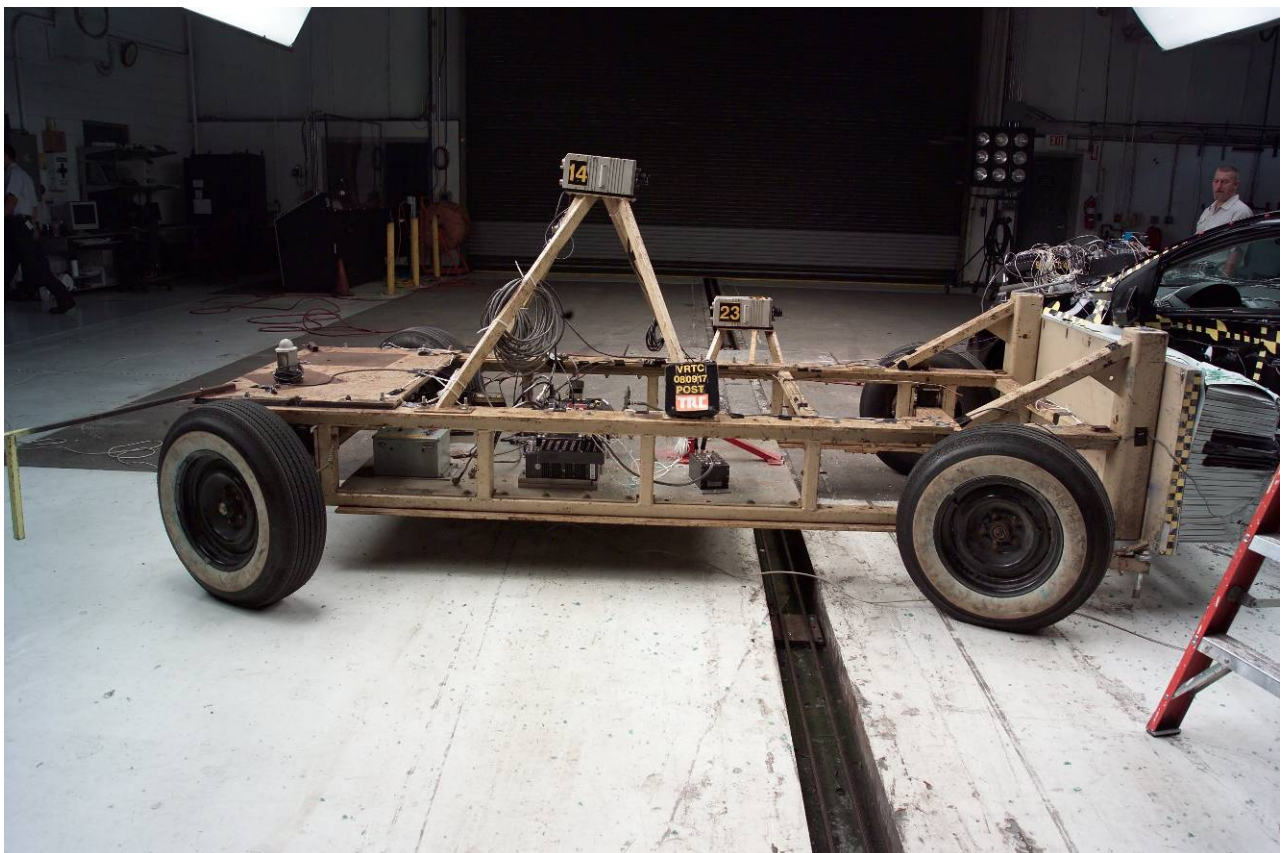


Figure A-44 Post-Test MDB Right Side Overall View



Figure A-45 Pre-Test MDB Alignment Overhead View

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Figure A-46 Pre-Test Left Rear Dummy Side View



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



Figure A-48 Pre-Test Right Side Dummy Occupant Compartment View

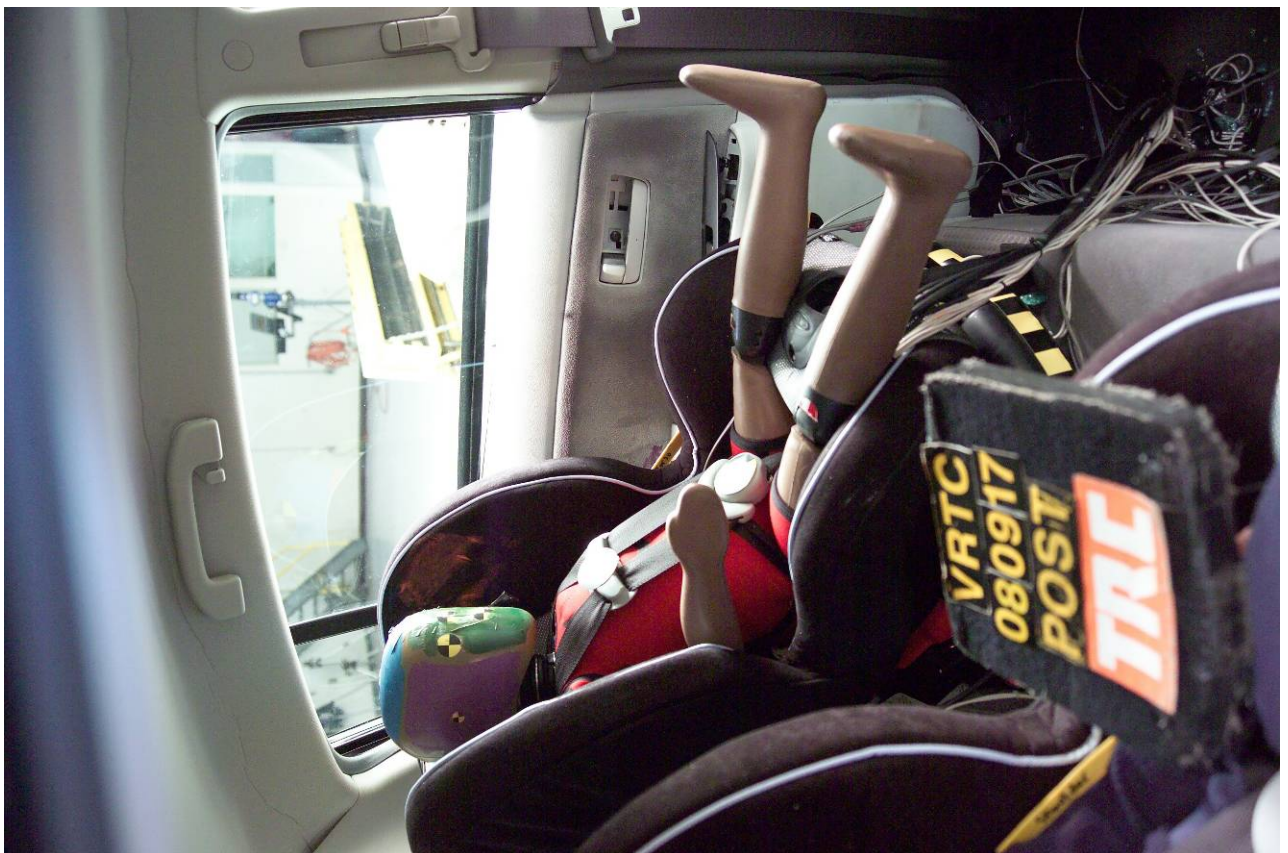


Figure A-49 Post-Test Right Side Dummy Occupant Compartment View



Figure A-50 Pre-Test Left Rear Dummy and Door Clearance View

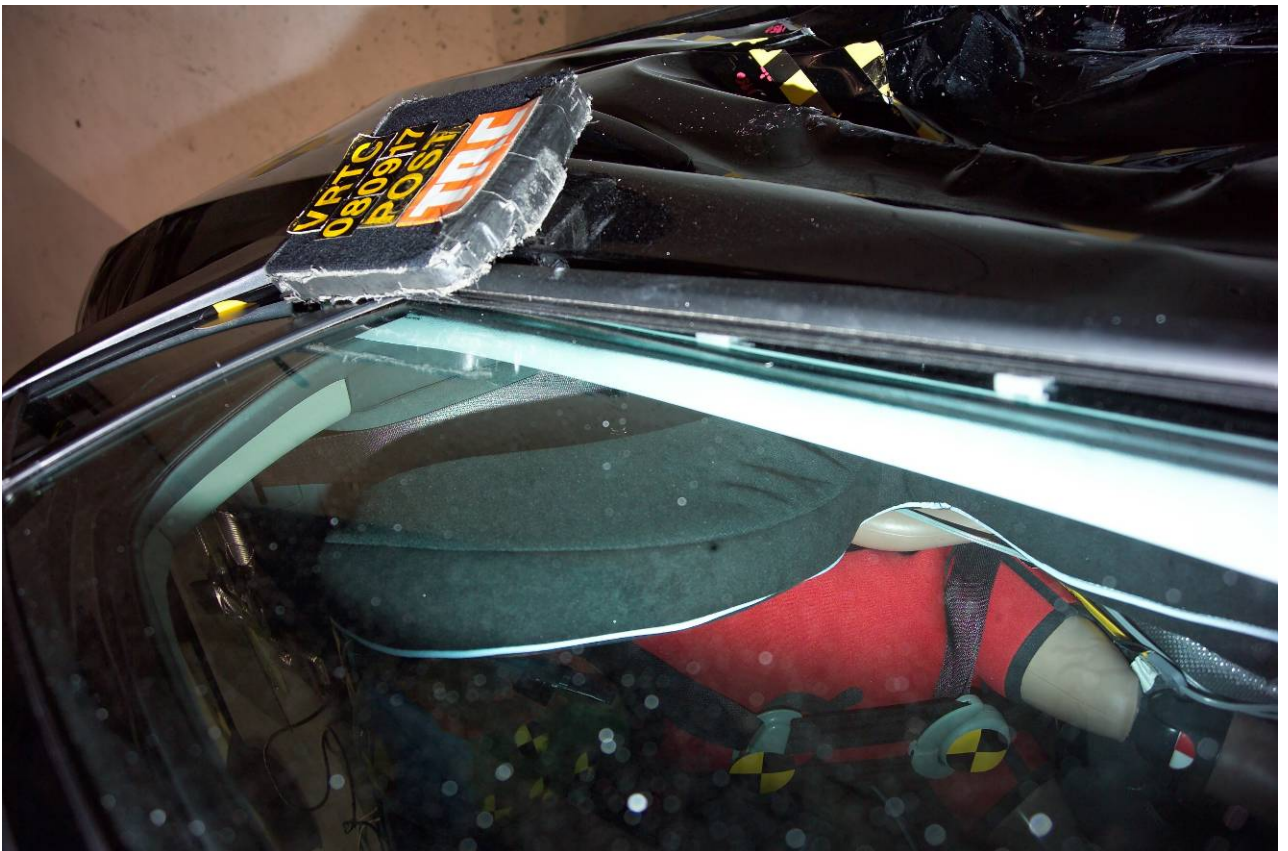


Figure A-51 Post-Test Left Rear Dummy and Door Clearance View



Figure A-52 Pre-Test Left Rear Dummy Showing Belts, Chalking, and Contact Switches

Intentionally Left Blank

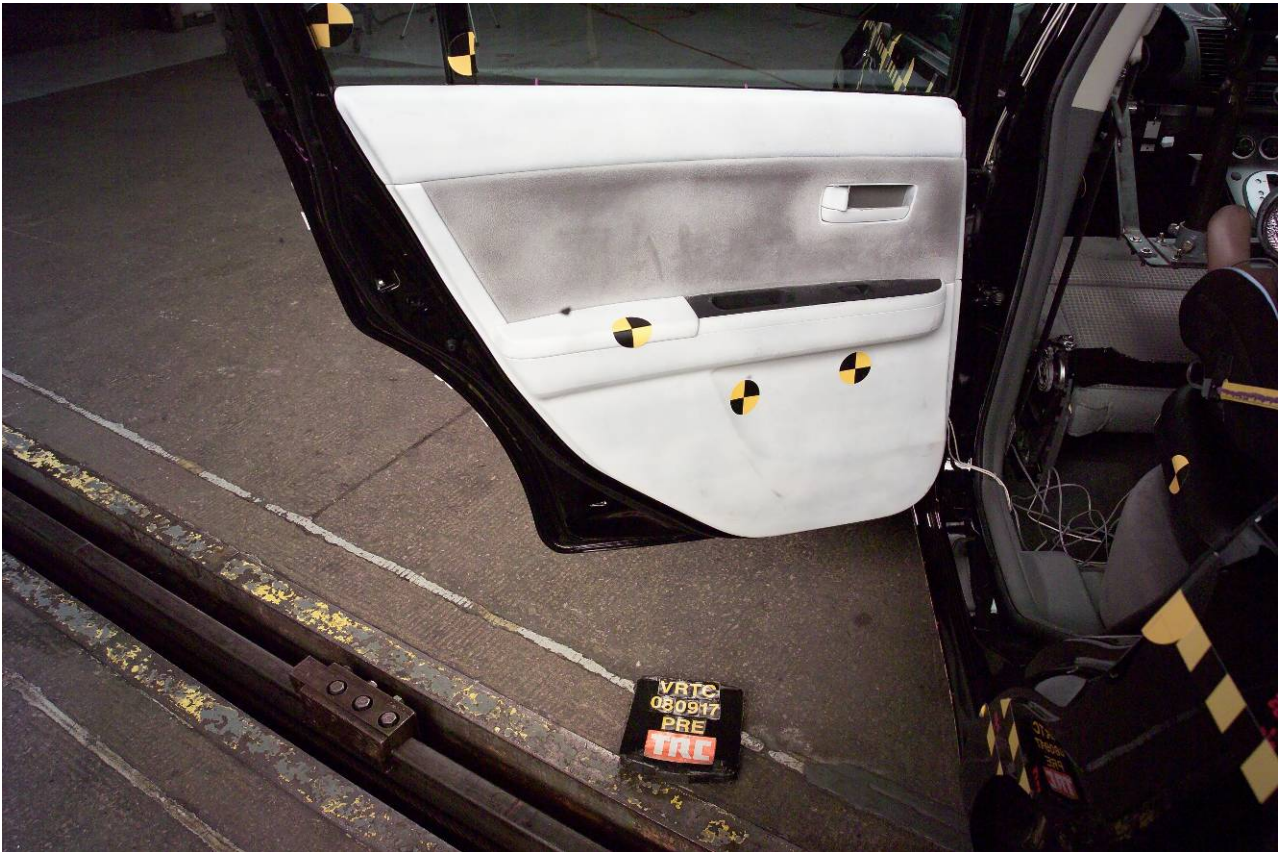


Figure A-53 Pre-Test Left Rear Door Panel View



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



Figure A-55 Post-Test Left Rear Dummy Overall View

Intentionally Left Blank

Photograph Not Available

Figure A-56 Pre-Test Right Rear Dummy Side View



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



Figure A-58 Pre-Test Left Side Dummy Occupant Compartment View

Photograph Not Available

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

Photograph Not Available

Figure A-60 Pre-Test Right Rear Dummy and Door Clearance View

Photograph Not Available

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



Figure A-62 Pre-Test Right Rear Dummy Showing Belts, Chalking, and Contact Switches

Intentionally Left Blank

Photograph Not Available

Figure A-63 Pre-Test Right Rear Door Panel View

Photograph Not Available

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



Figure A-65 Post-Test Right Rear Dummy Overall View

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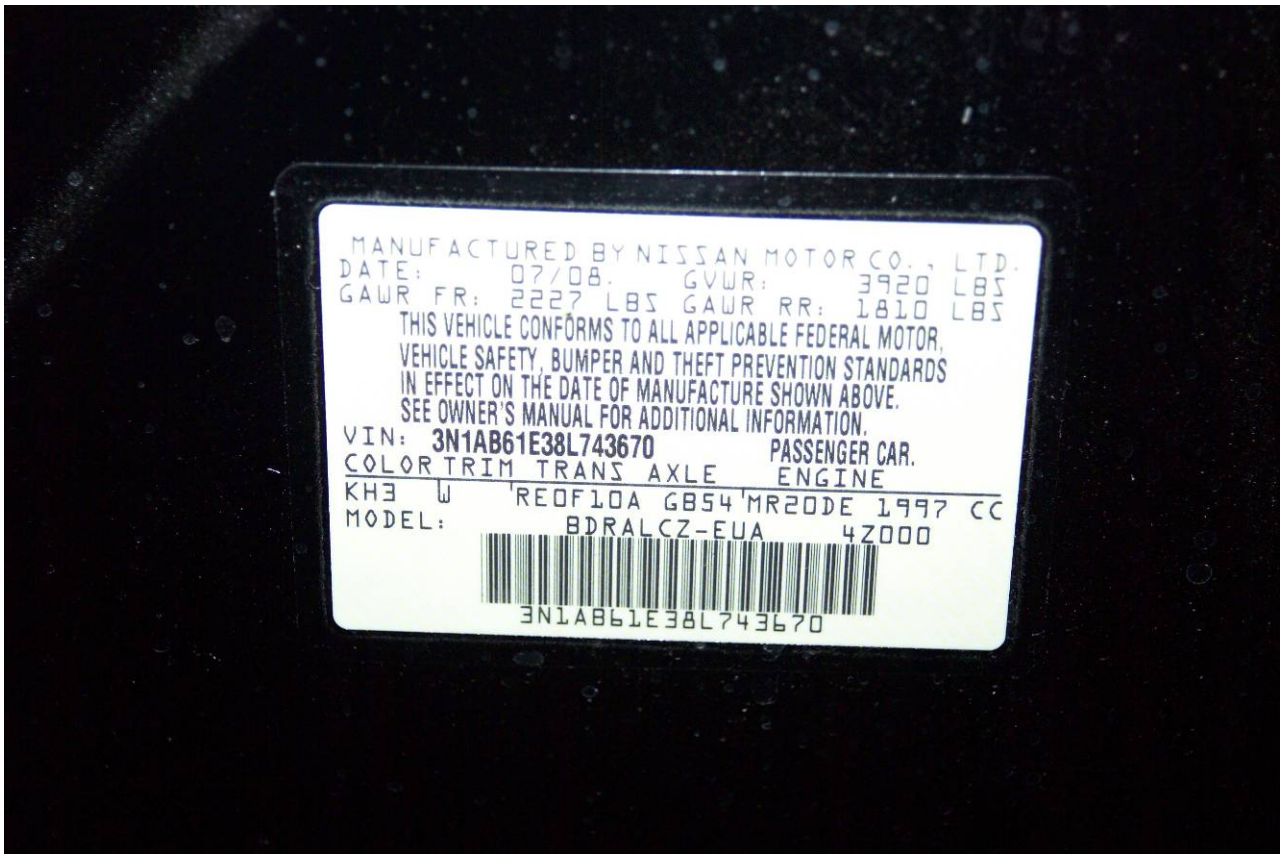


Figure A-66 Certification Label View

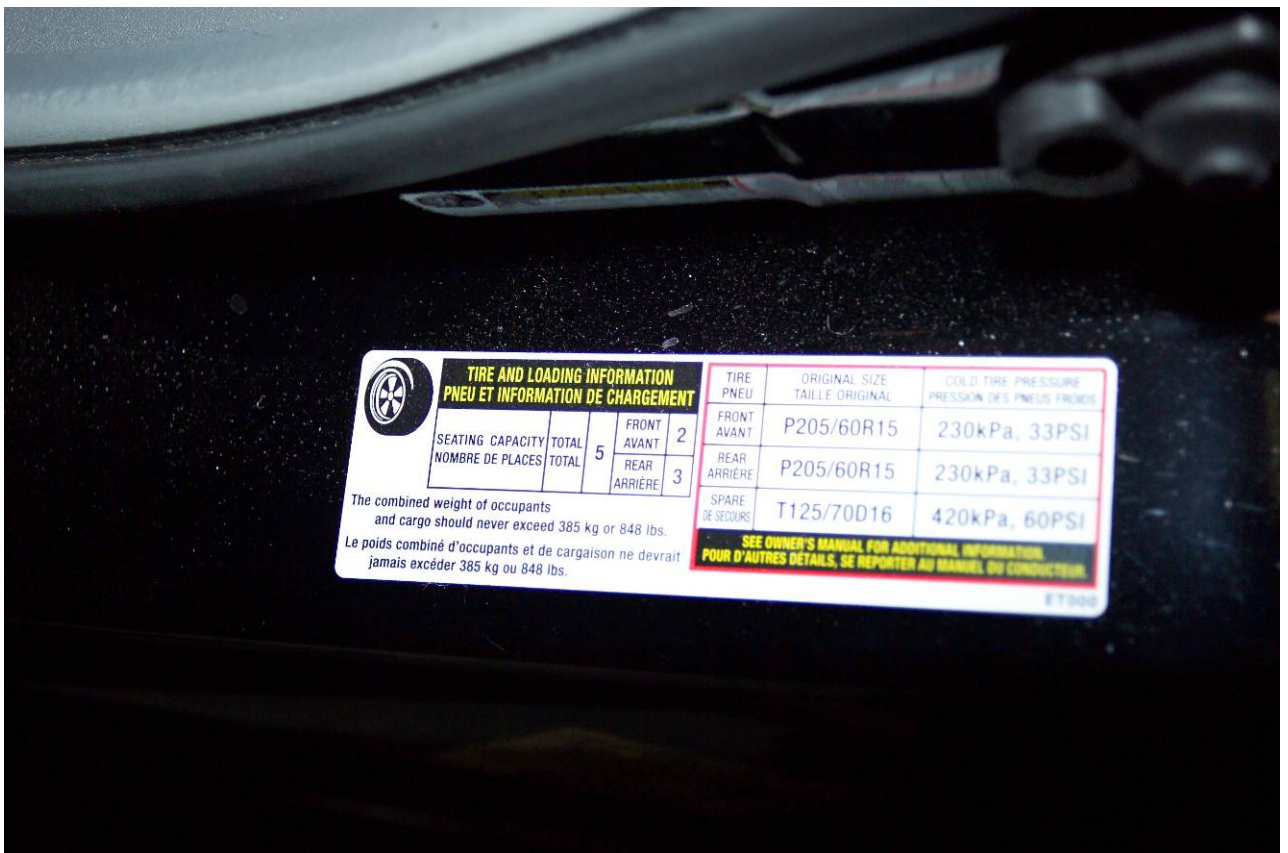


Figure A-67 Recommended Tire Pressure Label View



Figure A-68 Pre-Test Ballast View



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

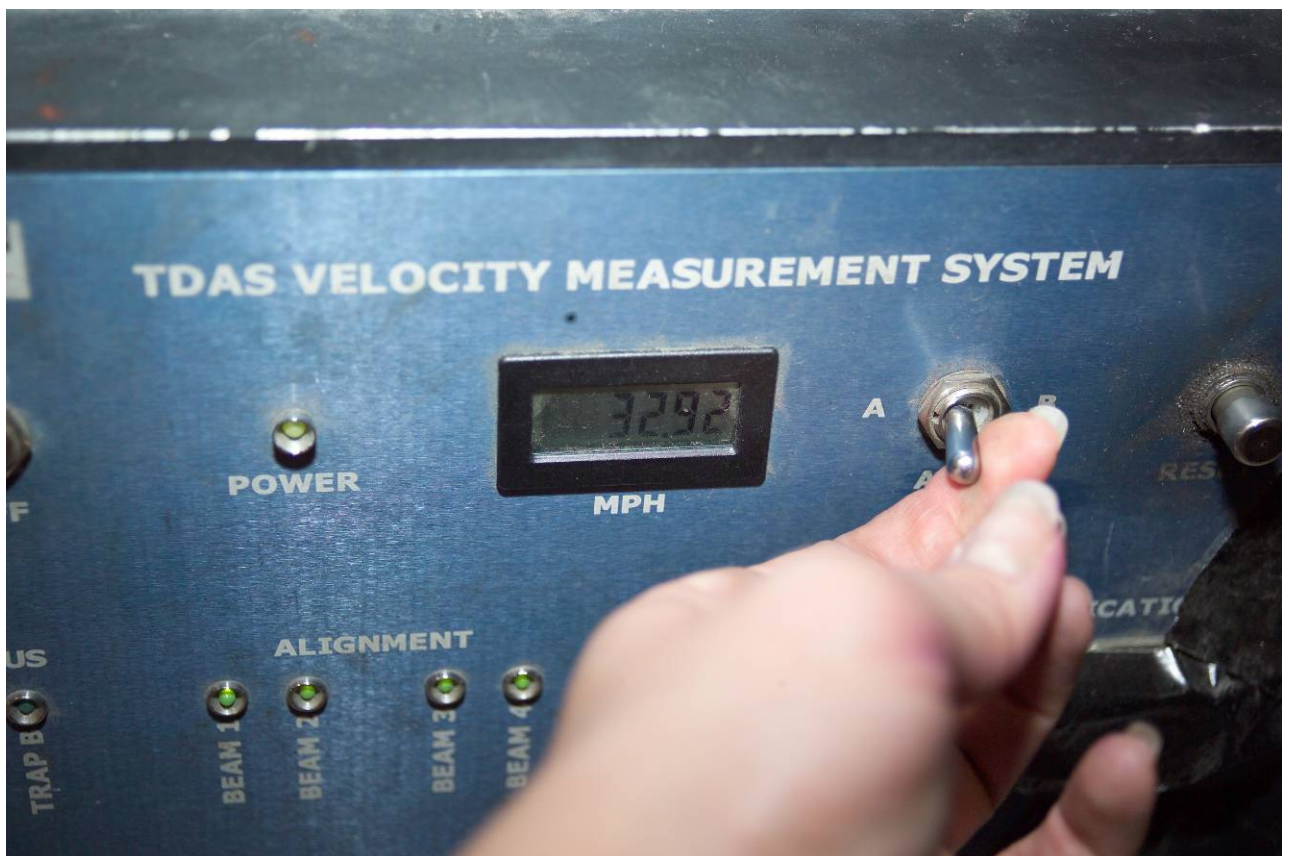


Figure A-70 Post-Test Digital Light Trap Read-Out - View 2

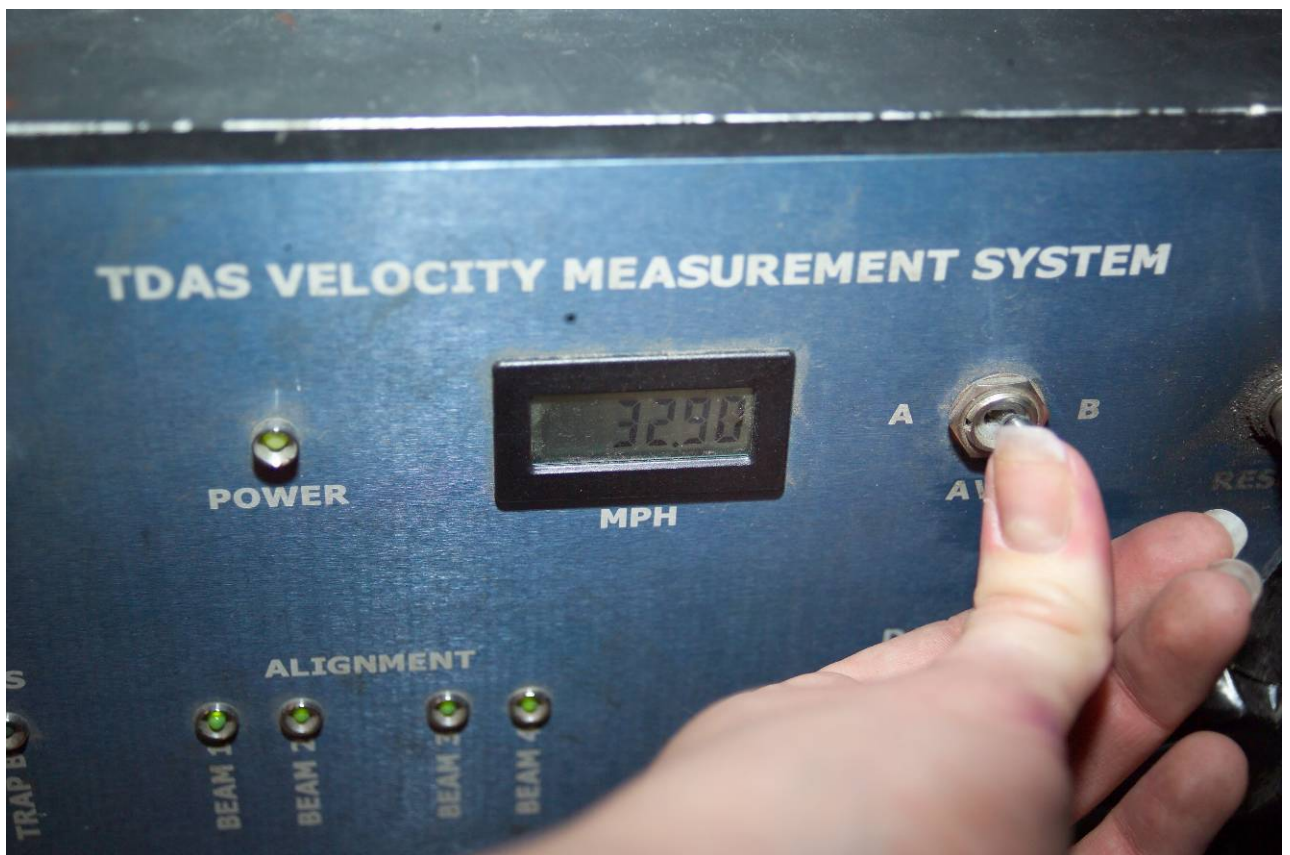


Figure A-71 Post-Test Digital Light Trap Read-Out - View 3

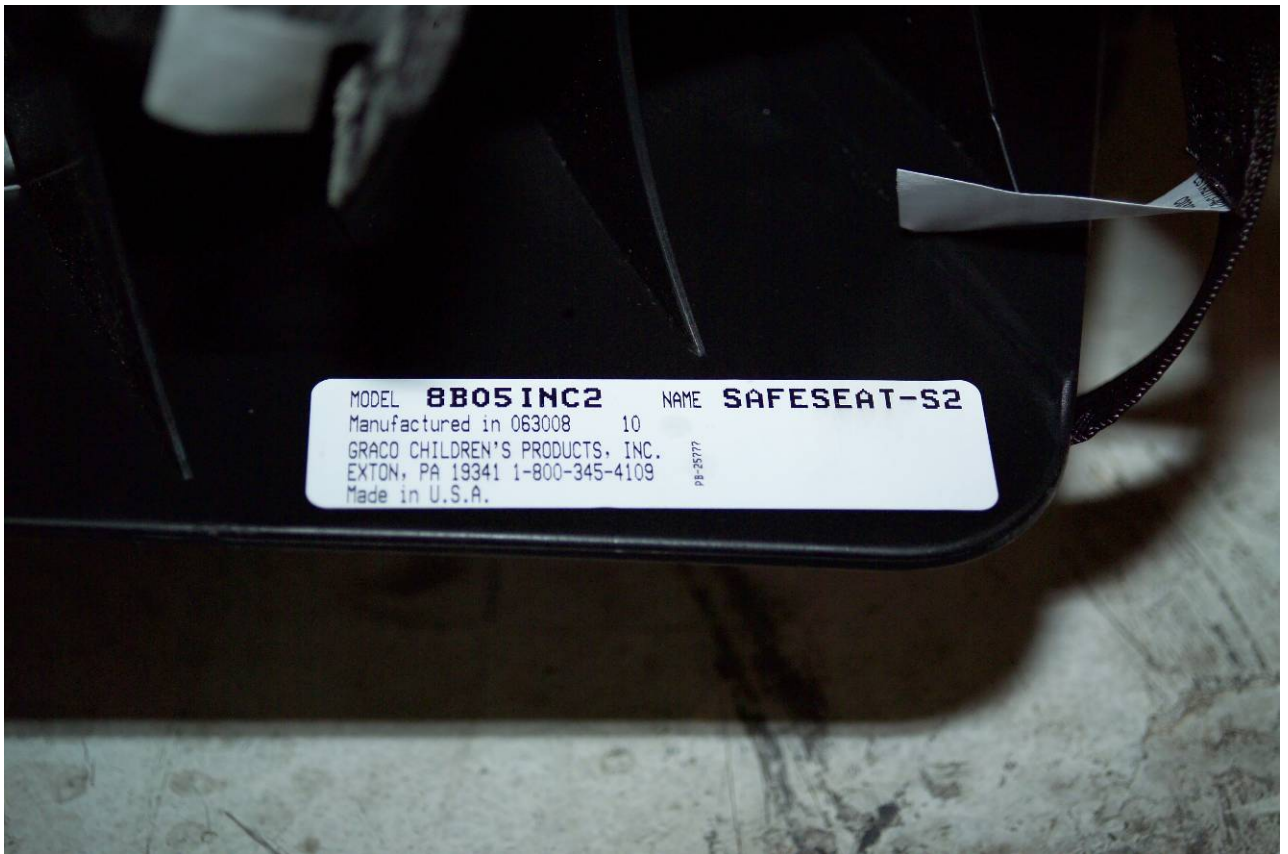


Figure A-72 Left Rear CRS Certification Label View



Figure A-73 Right Rear CRS Certification Label View



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



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



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

Intentionally Left Blank



Figure A-77 Pre-Test Left Side View of Rear CRS



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



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

Intentionally Left Blank



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



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

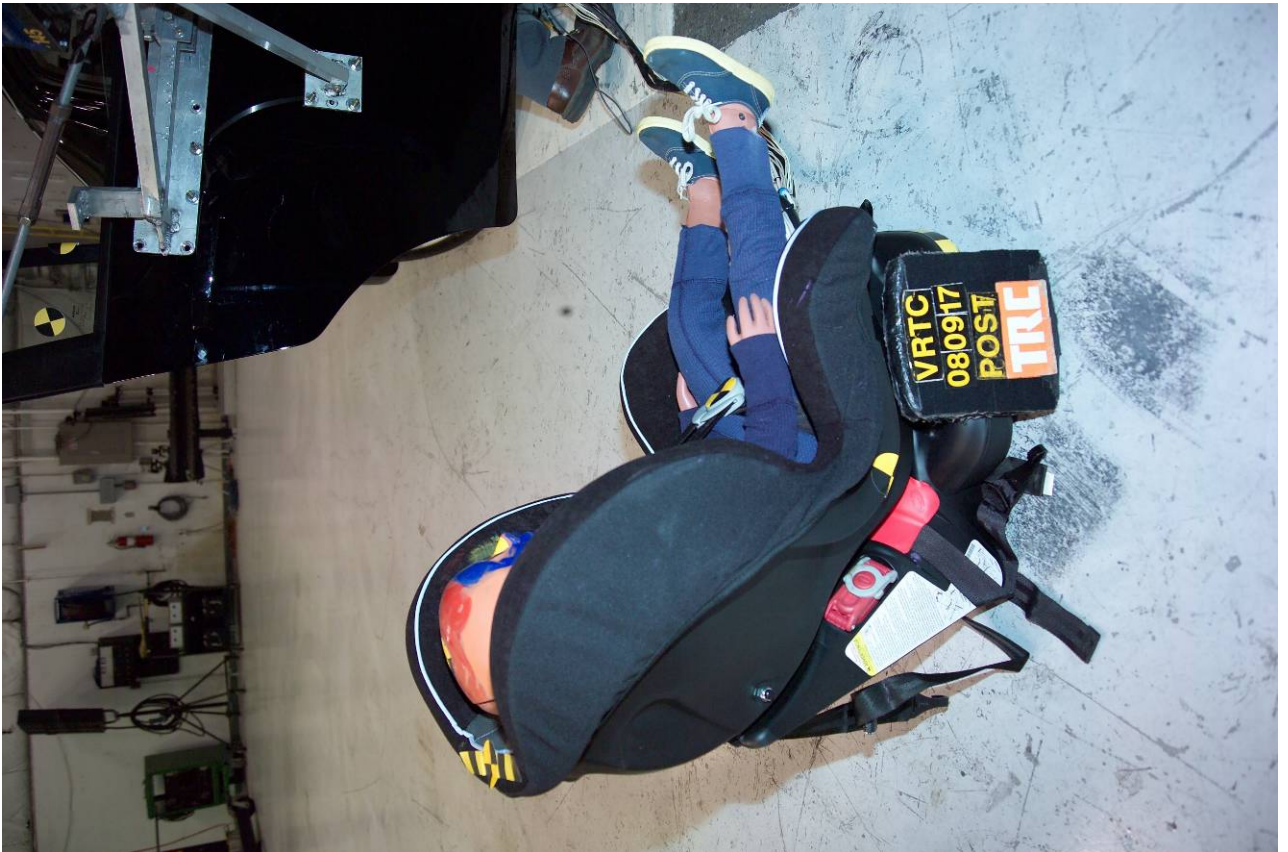


Figure A-82 Post-Test Right Side View of Right Rear CRS

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Figure A-83 Pre-Test Front View of Left Rear Child Dummy



Figure A-84 Post-Test Front View of Left Rear Child Dummy

Photograph Not Available

Figure A-85 Pre-Test Left View of Left Rear Child Dummy



Figure A-86 Post-Test Left View of Left Rear Child Dummy

Photograph Not Available

Figure A-87 Pre-Test Right View of Left Rear Child Dummy



Figure A-88 Post-Test Right View of Left Rear Child Dummy

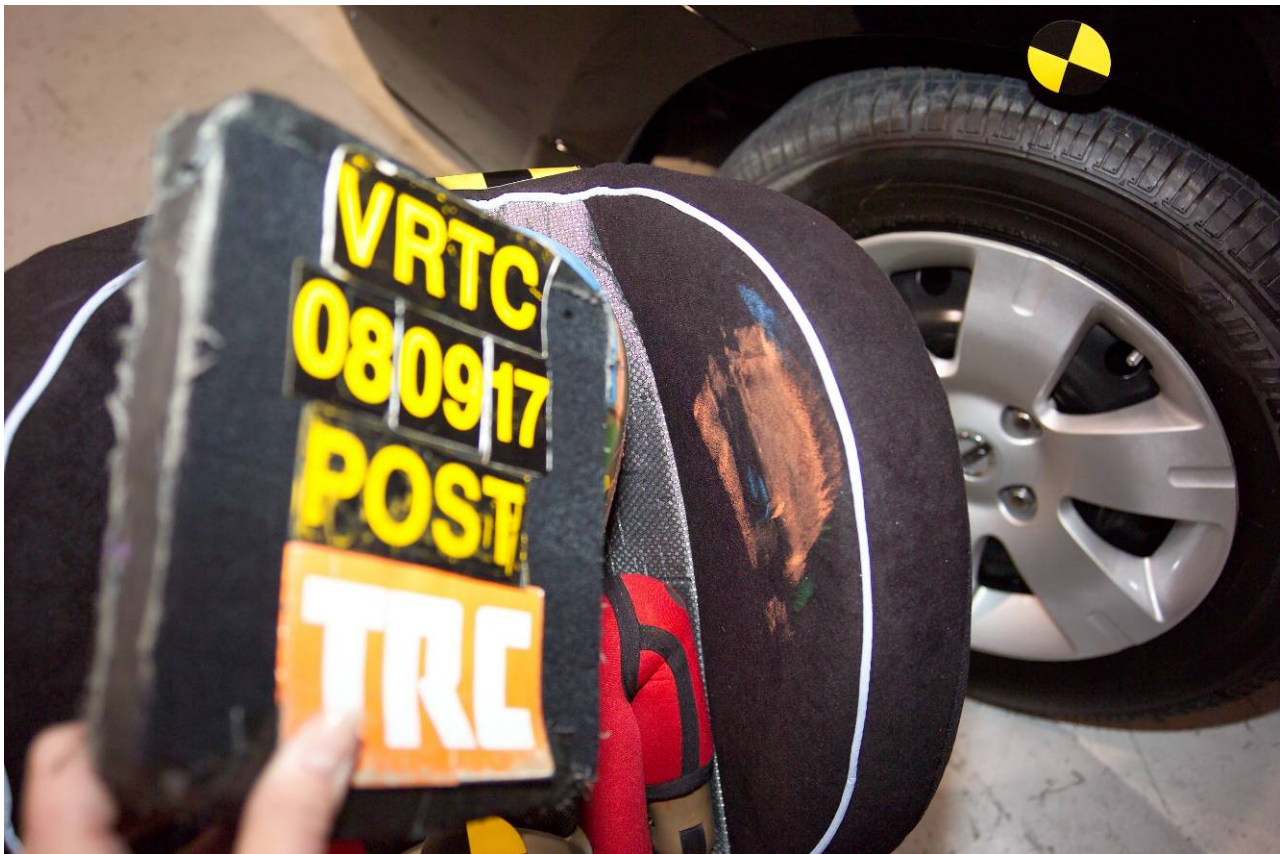


Figure A-89 Post-Test Left Rear Child Dummy Head Contact - View 1



Figure A-90 Post-Test Left Rear Child Dummy Head Contact - View 2



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

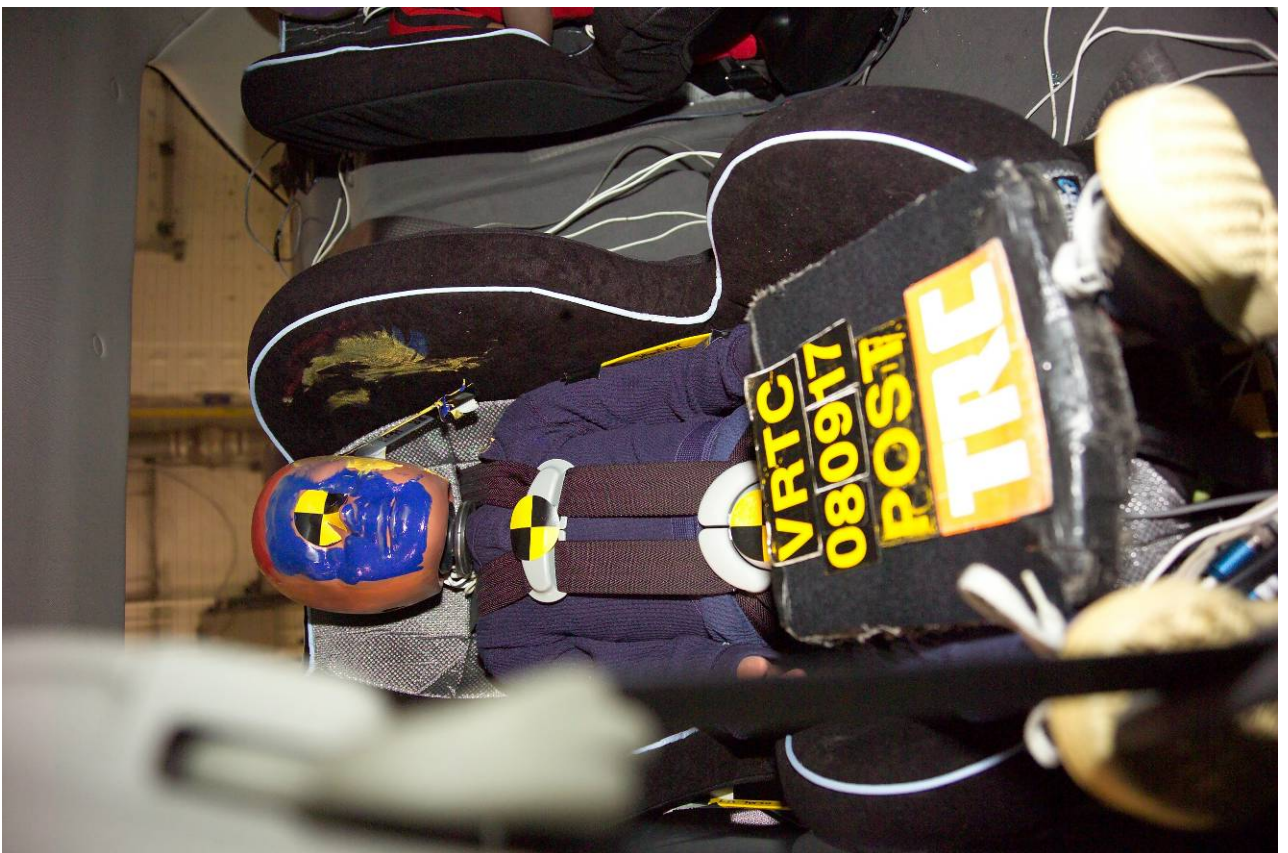


Figure A-92 Post-Test Front View of Right Rear Child Dummy

Photograph Not Available

Figure A-93 Pre-Test Right Side View of Right Rear Child Dummy



Figure A-94 Post-Test Right Side View of Right Rear Child Dummy



Figure A-95 Post-Test Right Rear Child Dummy Head Contact - View 1



Figure A-96 Post-Test Right Rear Child Dummy Head Contact - View 2

Appendix B

Data Plots



Child Safety Research

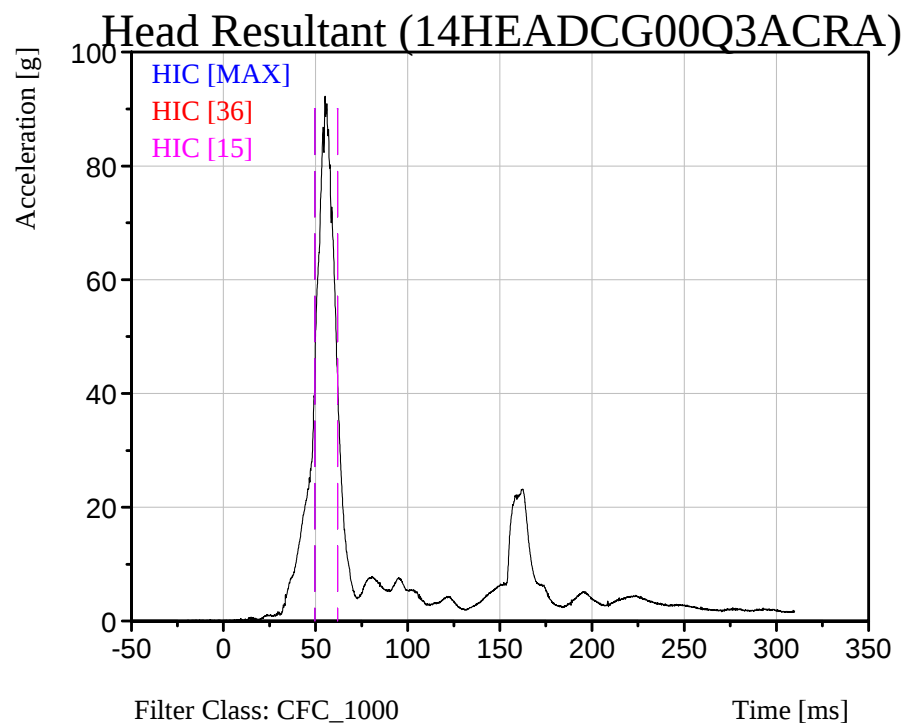
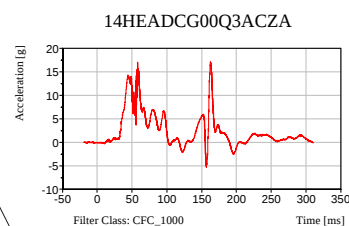
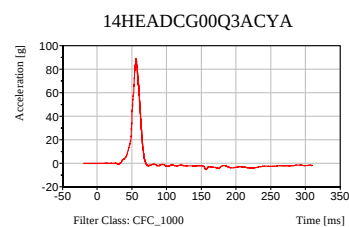
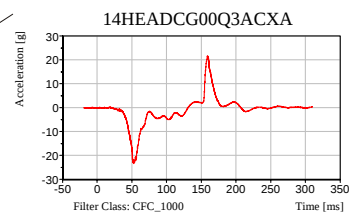
Head Injury Criterion (HIC)

Date: 09/17/2008
Time: 14:47

Customer: VRTC

TRC Inc. Test Lab: CTF

Test Number: 080917-1



	<u>T1</u> (Begin)	<u>T2</u> (End)	<u>Avg. g T1 to T2</u>
HIC [Max.] = 521.06	49.60 ms	61.92 ms	70.69 g
HIC [36] = 521.06	49.60 ms	61.92 ms	70.69 g
HIC [15] = 521.06	49.60 ms	61.92 ms	70.69 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

080917



Child Safety Research

Head Injury Criterion (HIC)

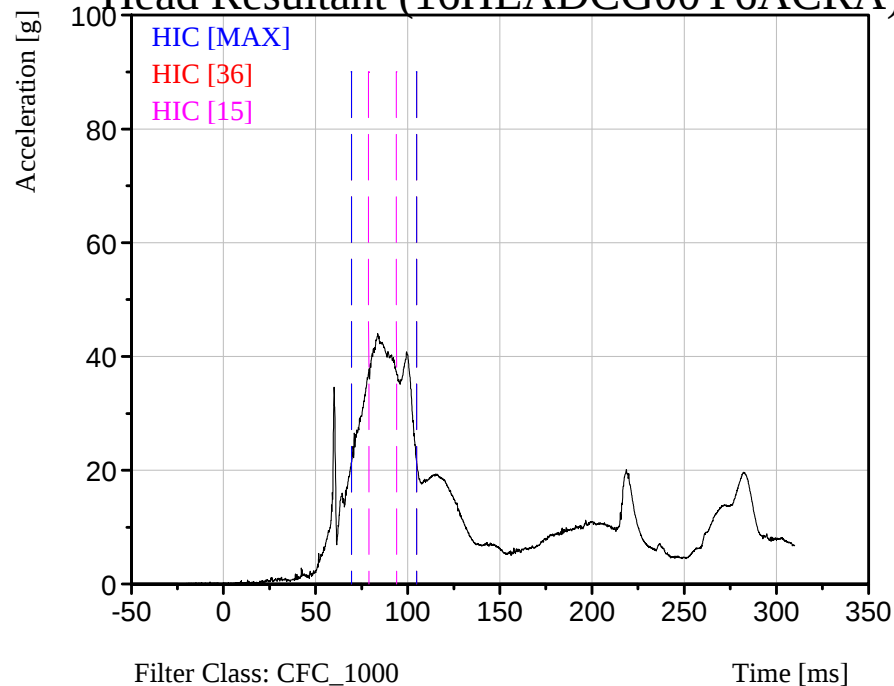
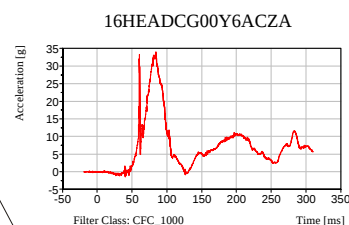
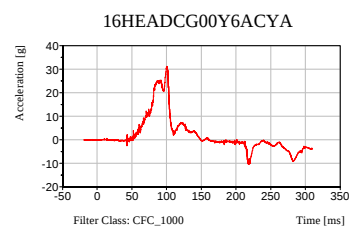
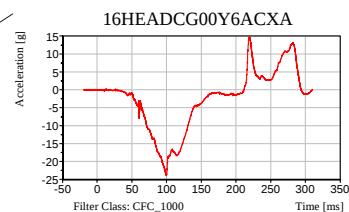
Date: 09/17/2008
Time: 14:47

Customer: VRTC

TRC Inc. Test Lab: CTF

Test Number: 080917-1

Head Resultant (16HEADCG00Y6ACRA)



	<u>T1</u> (Begin)	<u>T2</u> (End)	<u>Avg. g T1 to T2</u>
HIC [Max.] = 269.44	69.52 ms	104.80 ms	35.71 g
HIC [36] = 269.44	69.52 ms	104.80 ms	35.71 g
HIC [15] = 158.65	78.88 ms	93.92 ms	40.65 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

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Child Safety Research
Left Rear Head X-Axis Acceleration

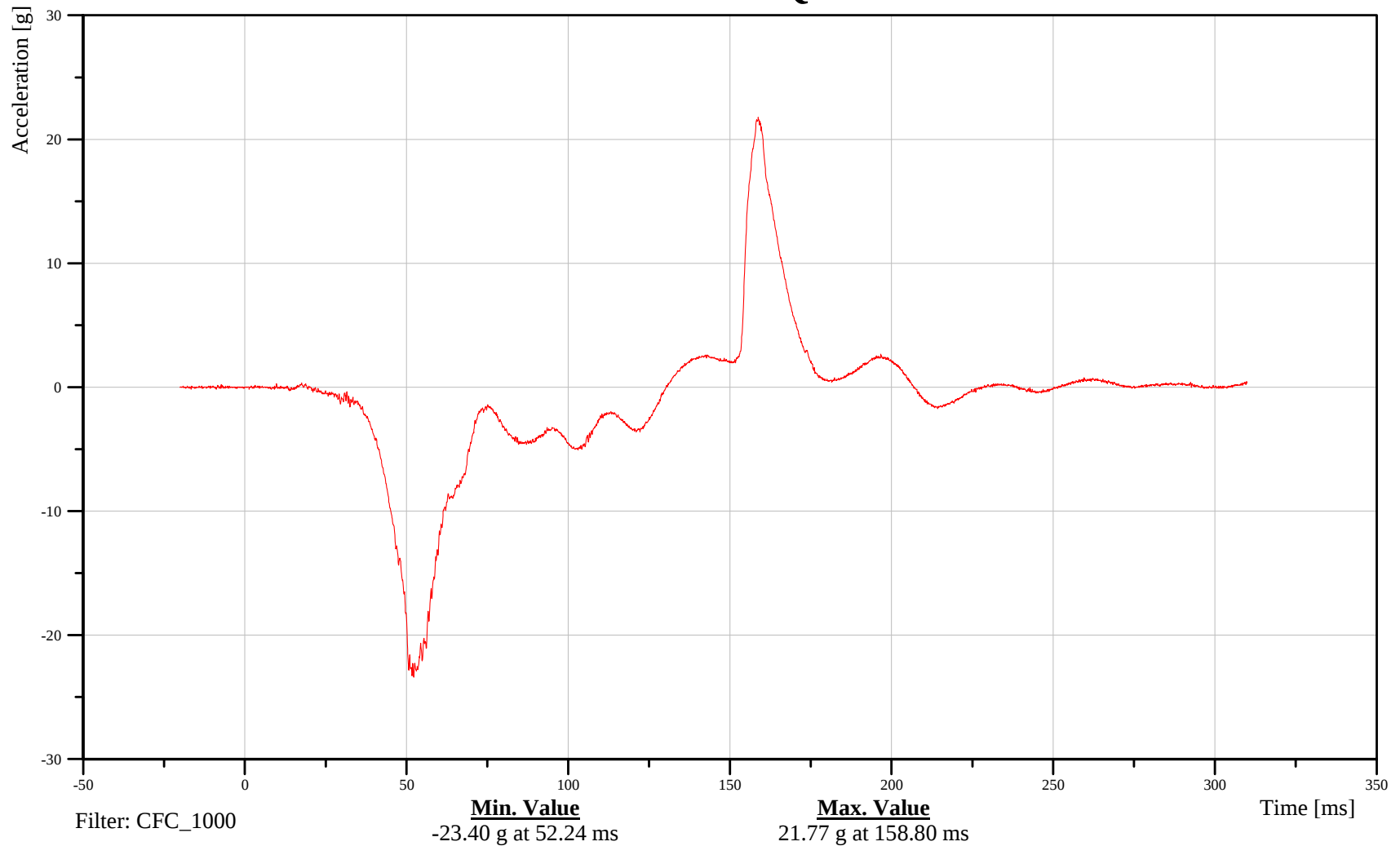
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Time: 14:47

Customer: VRTC

14HEADCG00Q3ACXA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-4

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Child Safety Research
Left Rear Head Y-Axis Acceleration

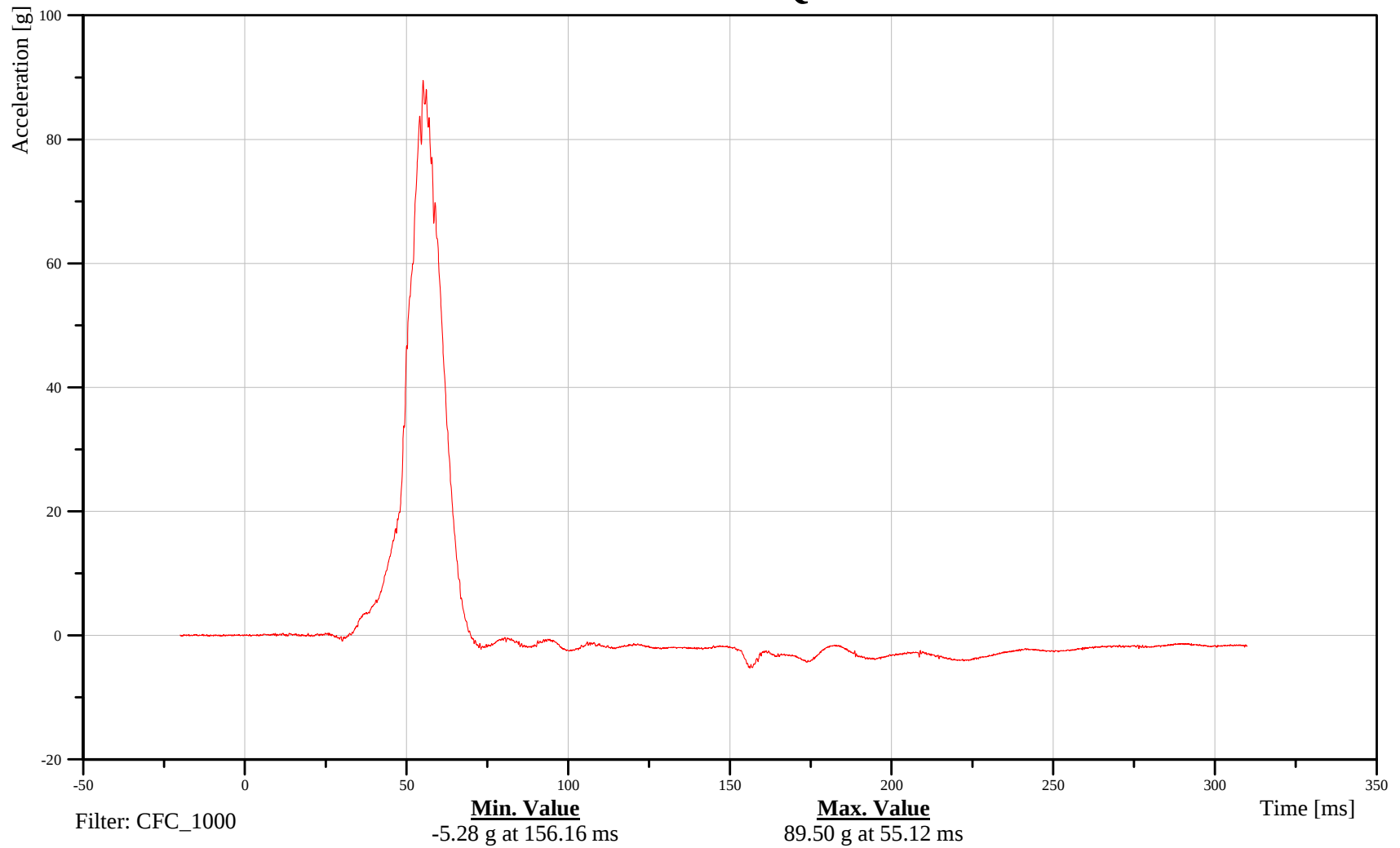
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Time: 14:47

Customer: VRTC

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TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-5

080917



Child Safety Research
Left Rear Head Z-Axis Acceleration

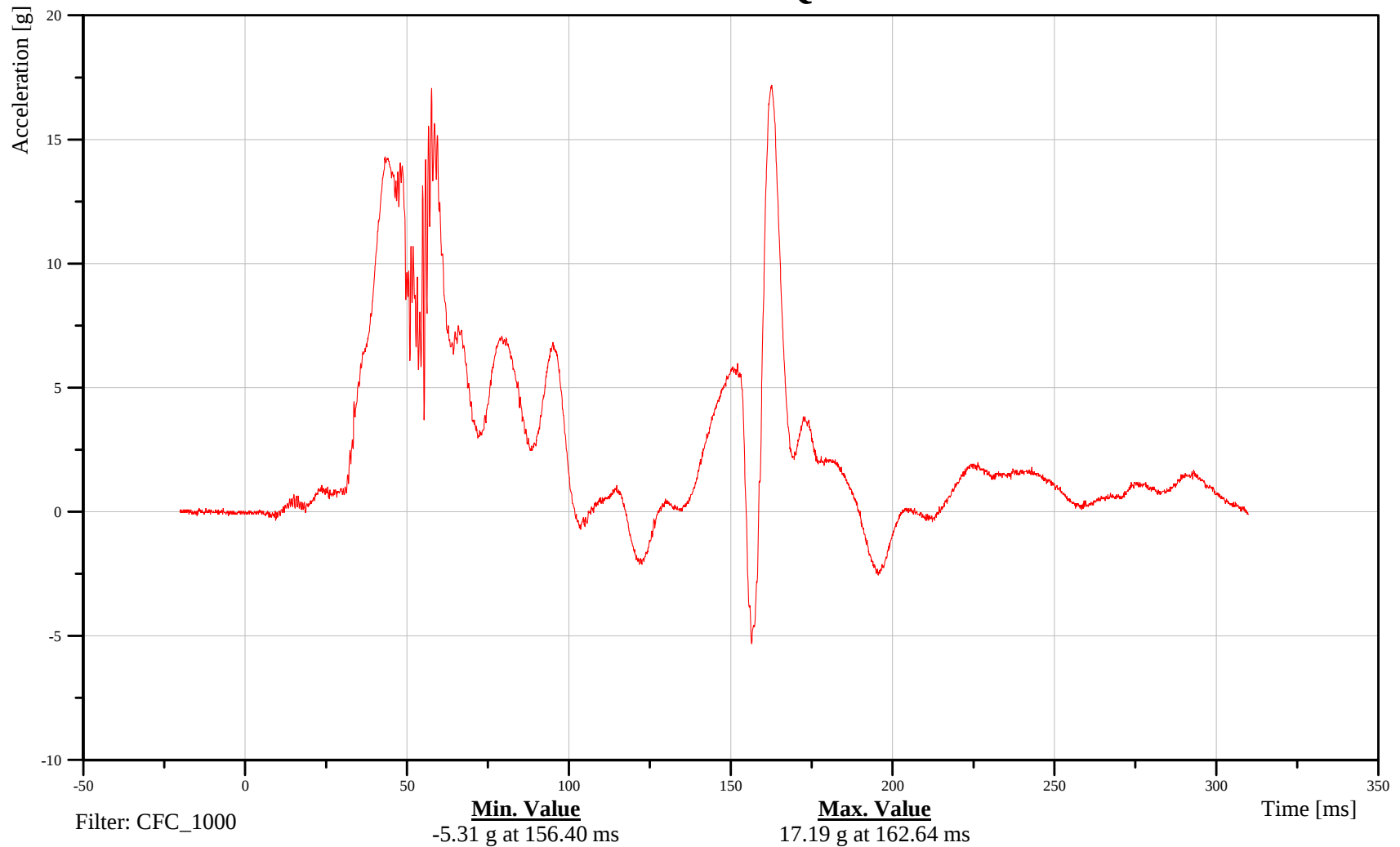
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Customer: VRTC

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TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-6

080917



Child Safety Research
Left Rear Head Resultant Acceleration

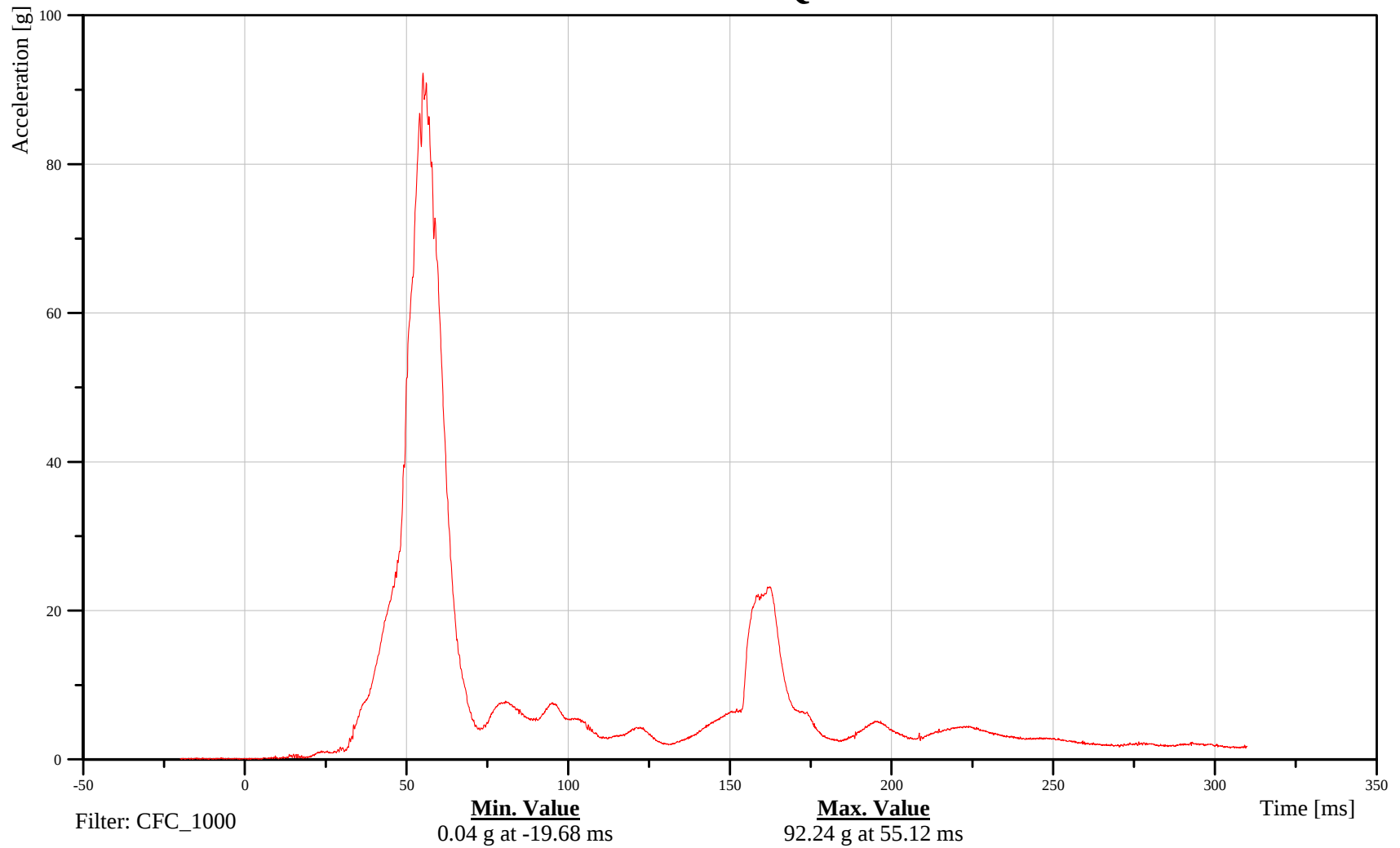
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Customer: VRTC

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TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-7

080917



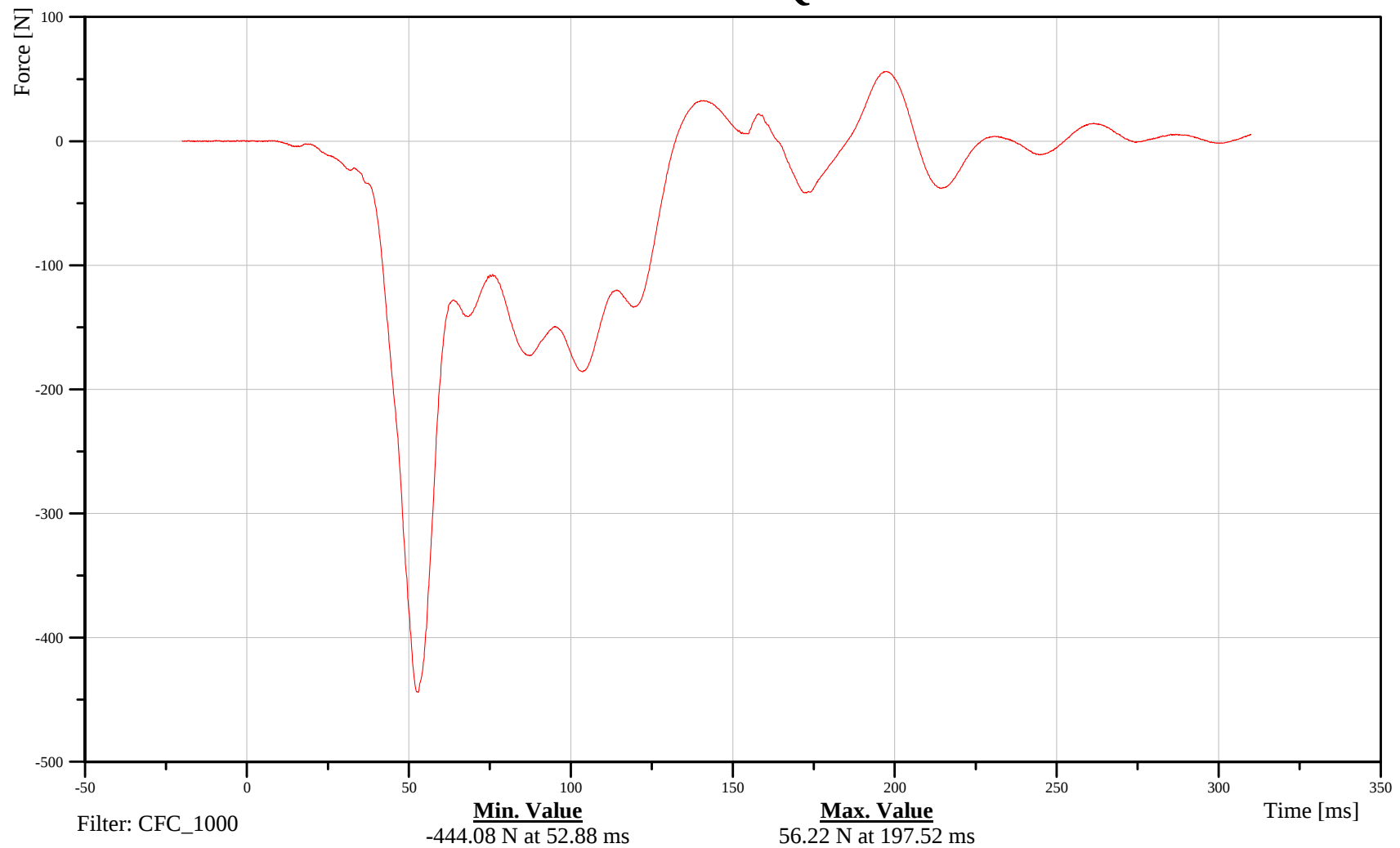
Child Safety Research
Left Rear Upper Neck X-Axis Force

Date: 09/17/2008
Time: 14:47

Customer: VRTC

14NECKUP00Q3FOXA

TRC Inc. Test Lab: CTF
Test Number: 080917-1



B-8

080917



Child Safety Research
Left Rear Upper Neck Y-Axis Force

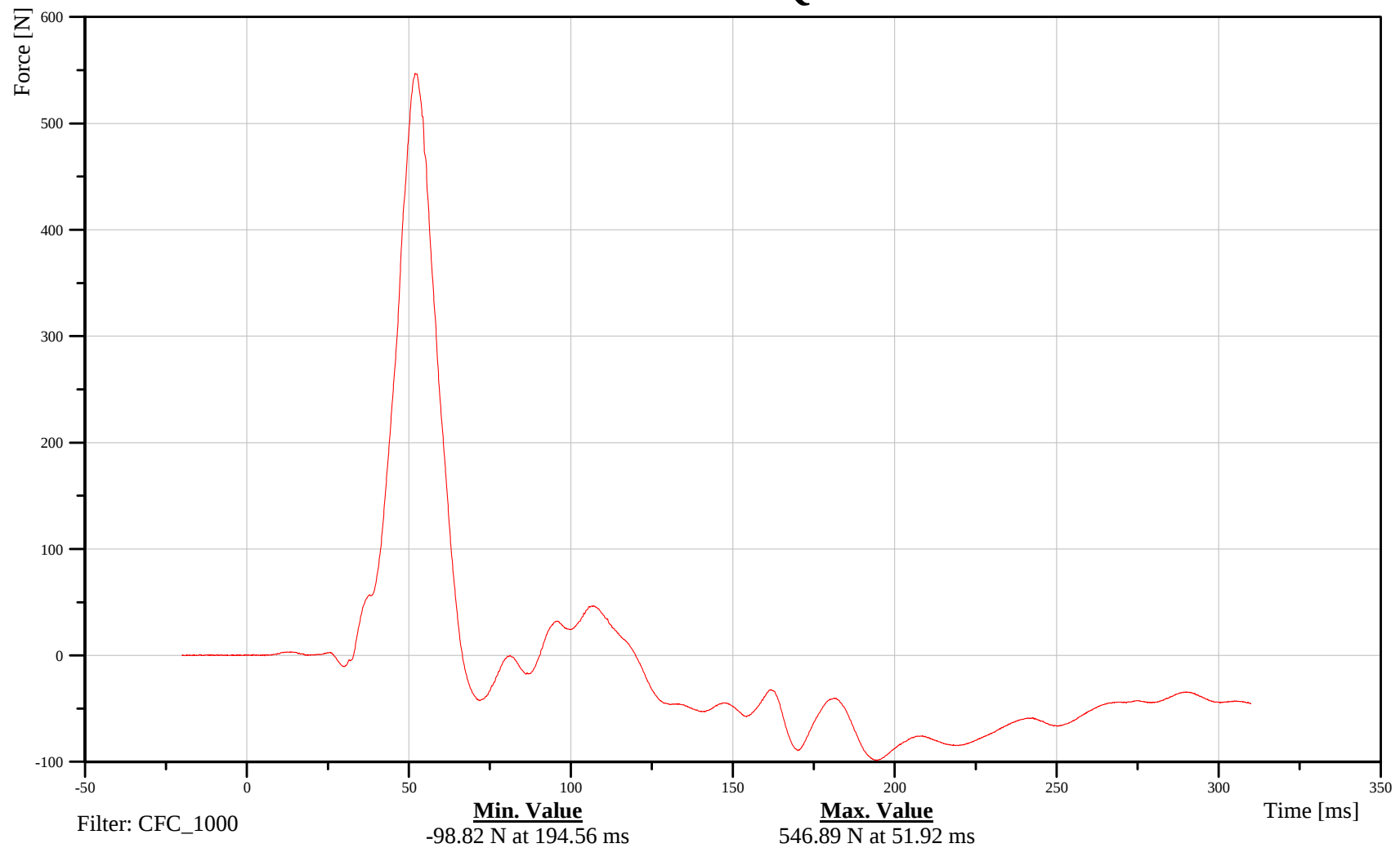
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14NECKUP00Q3FOYA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-9

080917



Child Safety Research
Left Rear Upper Neck Z-Axis Force

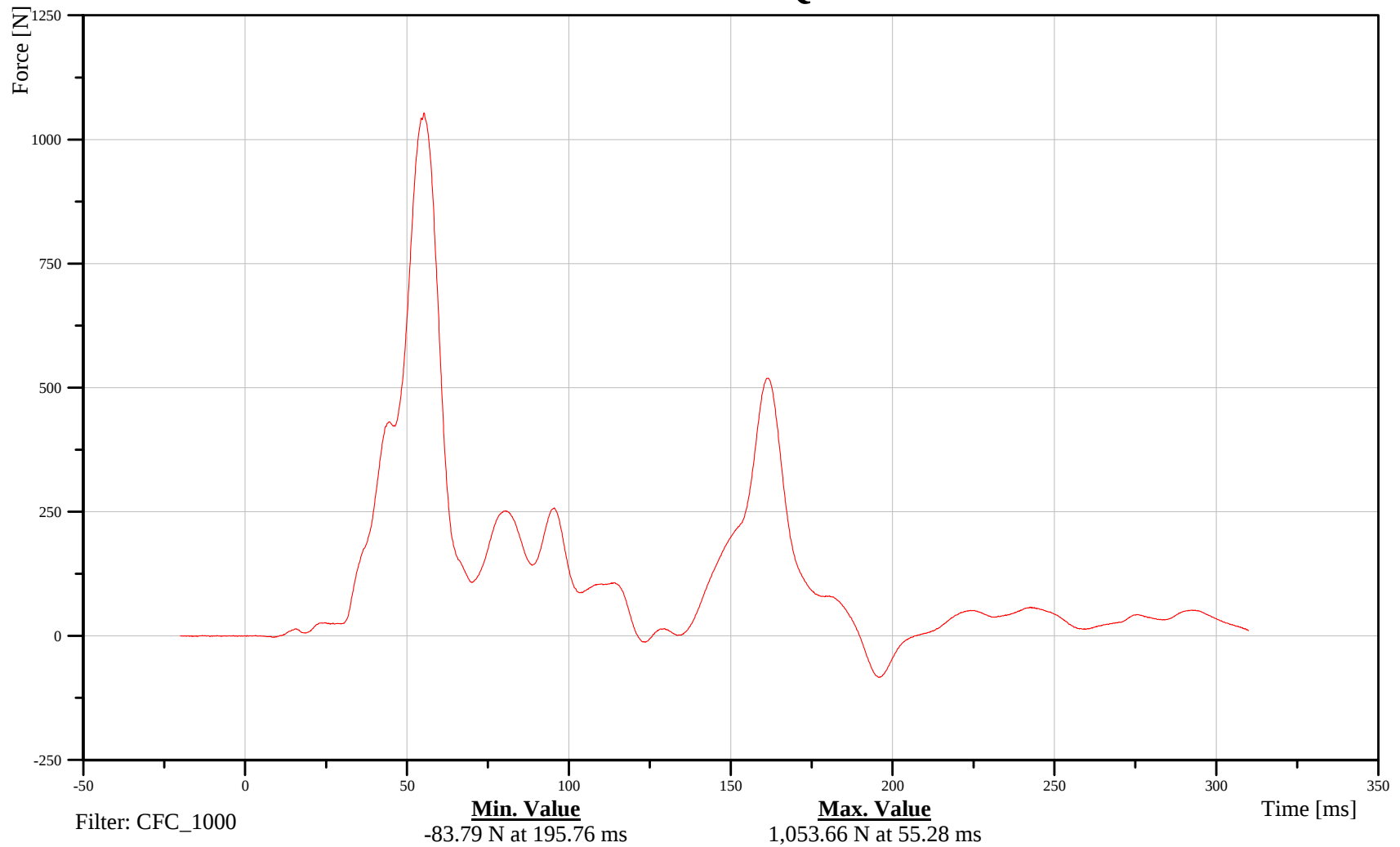
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14NECKUP00Q3FOZA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-10

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

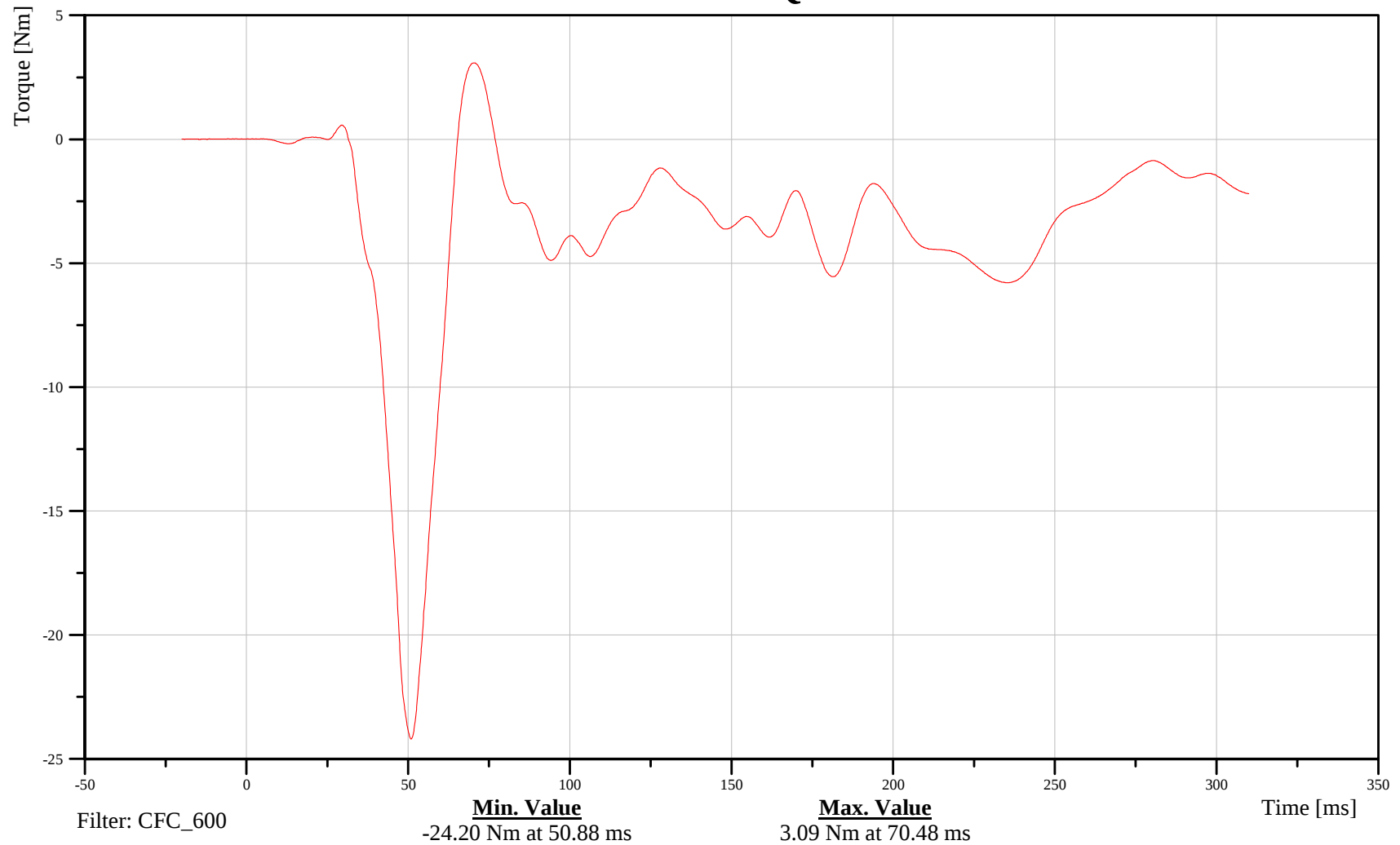
Left Rear Upper Neck Moment About X Axis

Customer: VRTC

14NECKUP00Q3MOXB

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-11

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

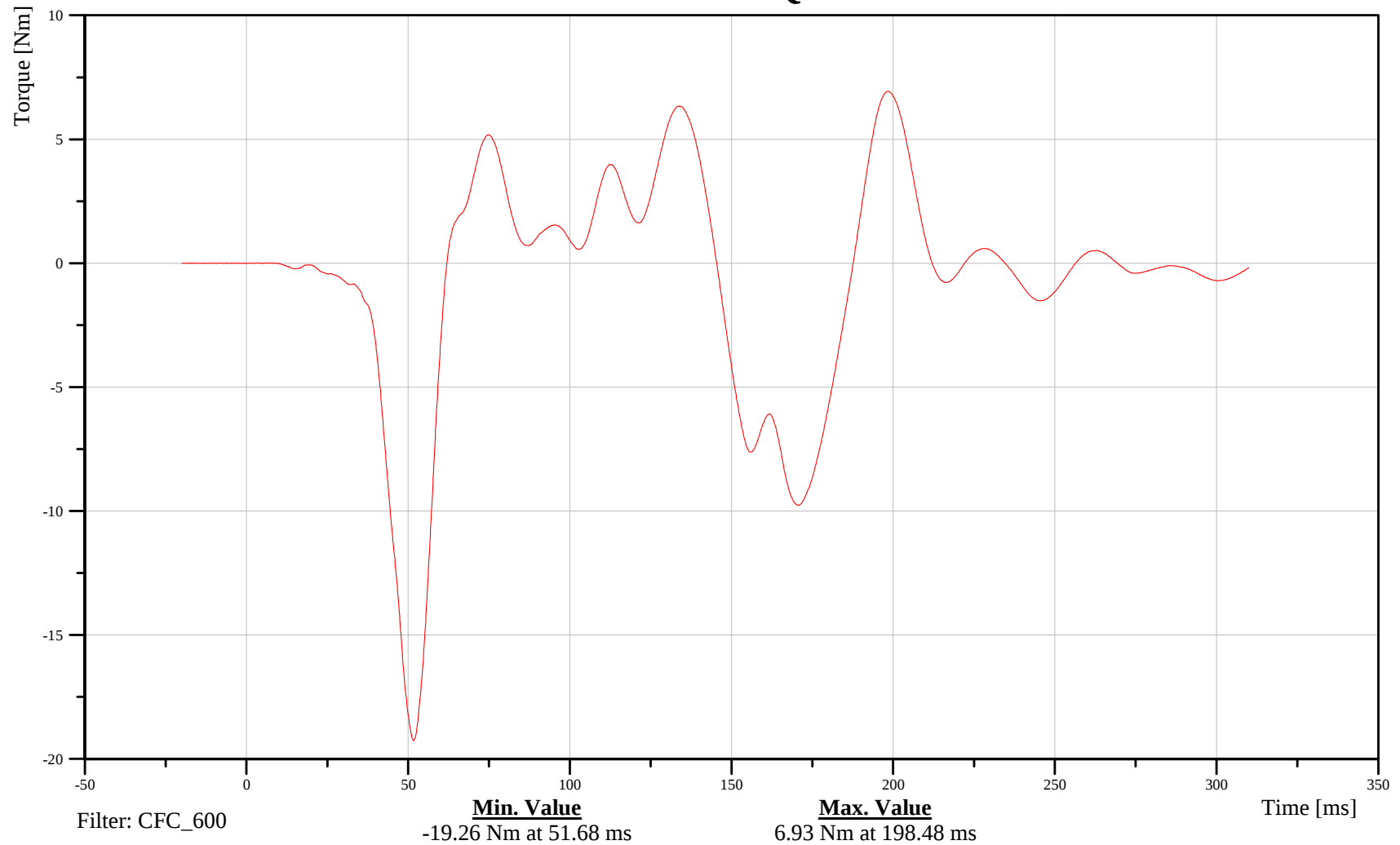
Left Rear Upper Neck Moment About Y Axis

Customer: VRTC

14NECKUP00Q3MOYB

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-12

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

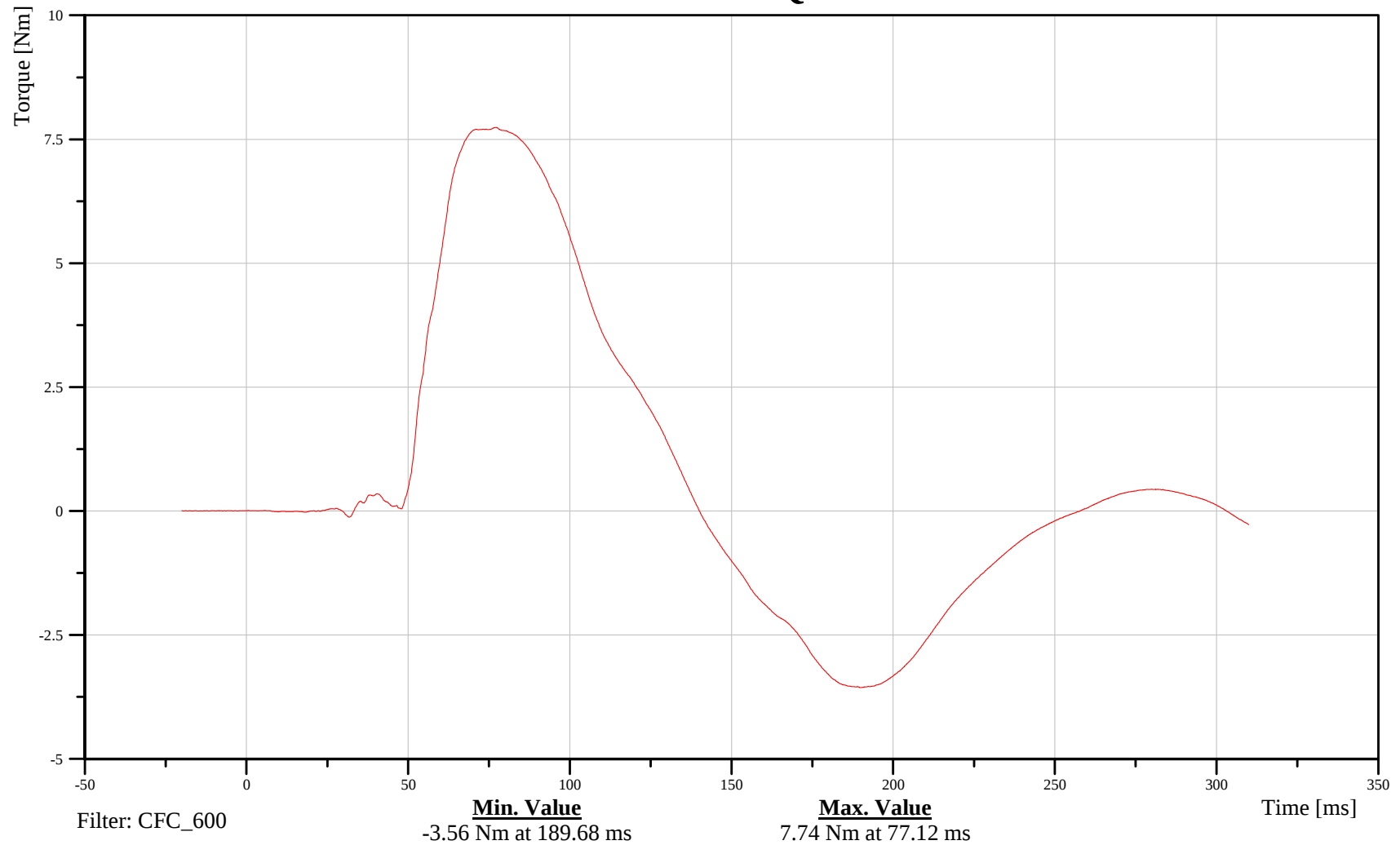
Left Rear Upper Neck Moment About Z Axis

Customer: VRTC

14NECKUP00Q3MOZB

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-13

080917



Child Safety Research
Left Rear Shoulder Y-Axis Displacement

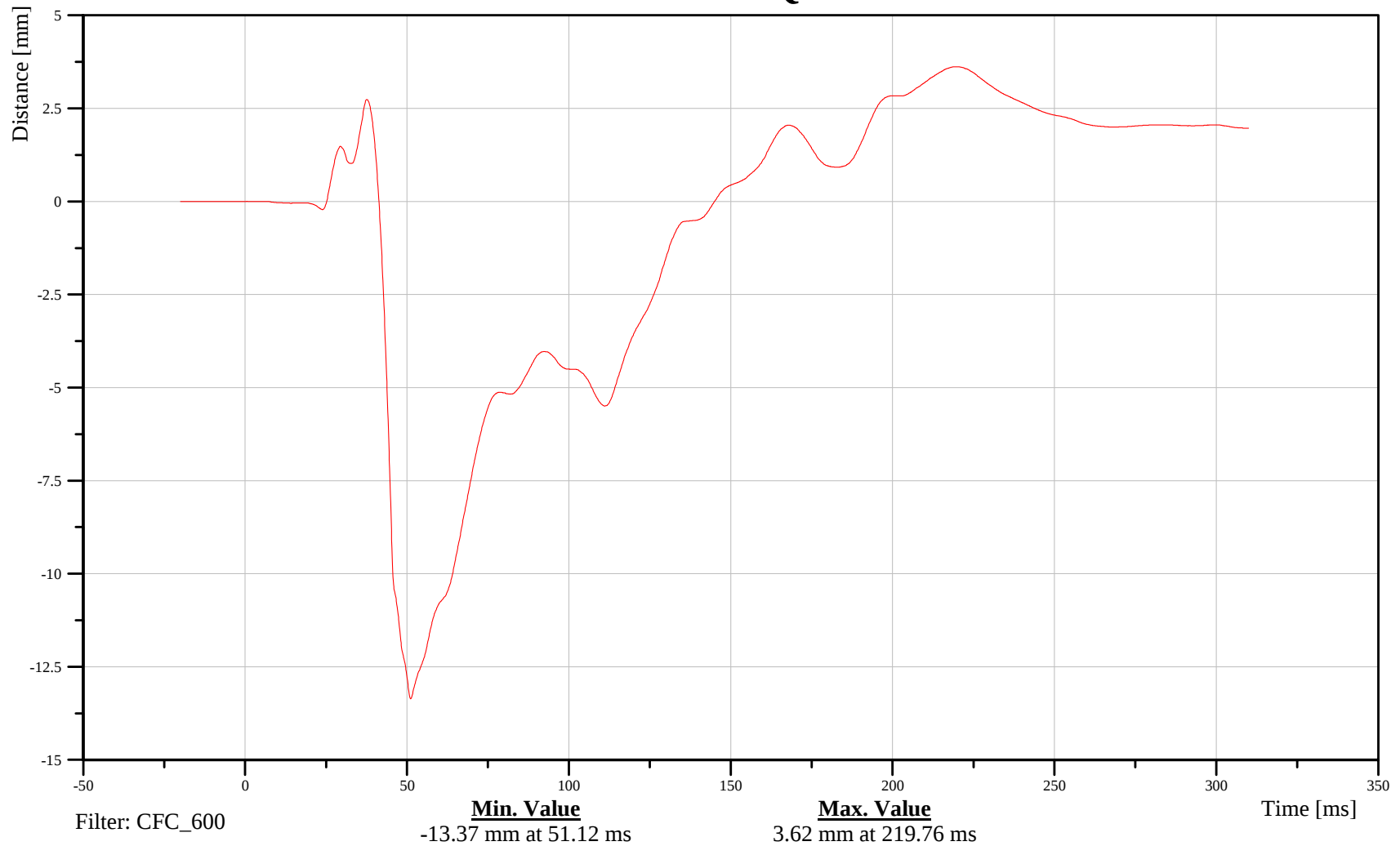
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14SHLD0000Q3DSYB

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-14

080917



Child Safety Research
Left Rear Upper Chest X-Axis Acceleration

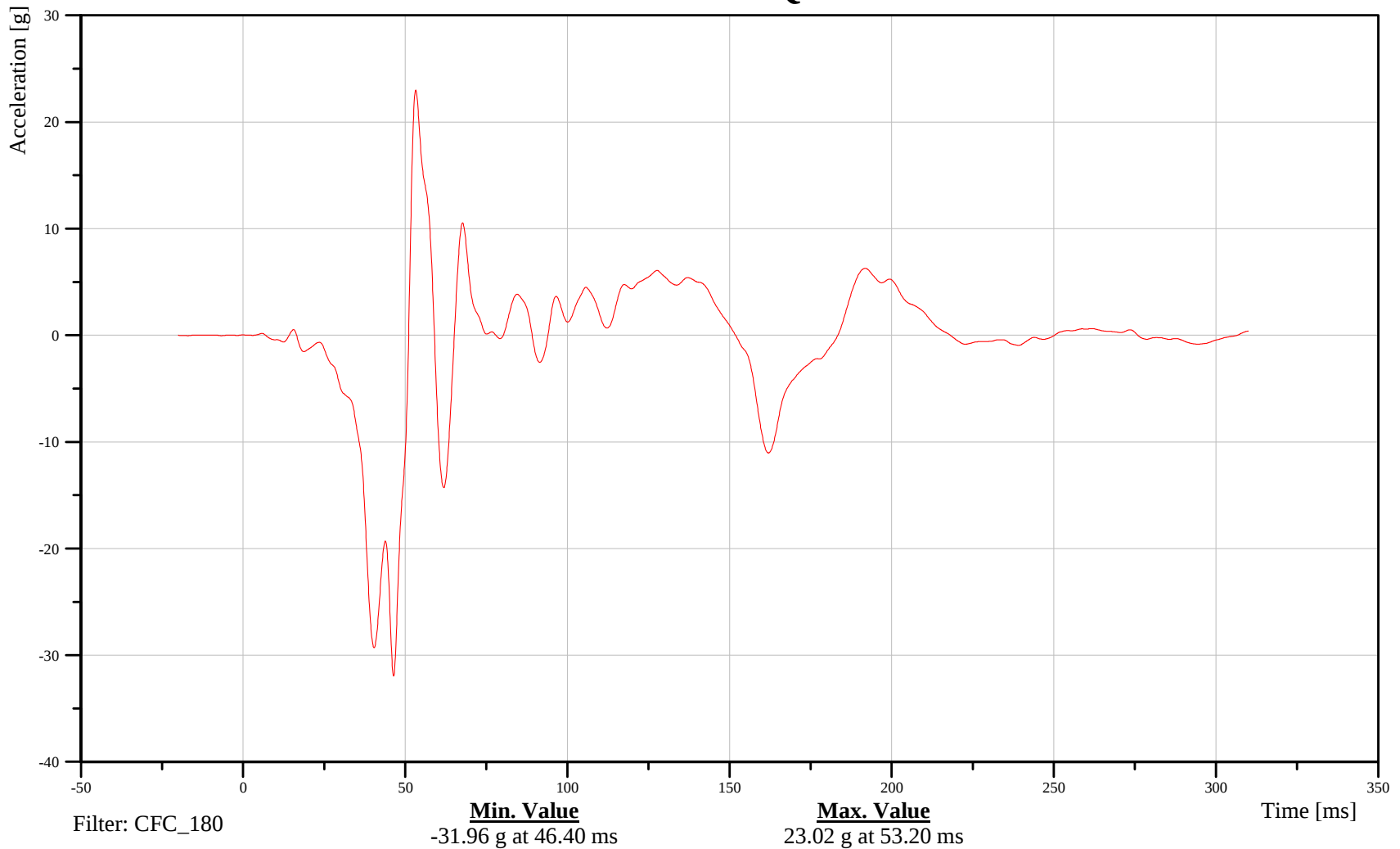
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14CHSTUP00Q3ACXC

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-15

080917



Child Safety Research
Left Rear Upper Chest Y-Axis Acceleration

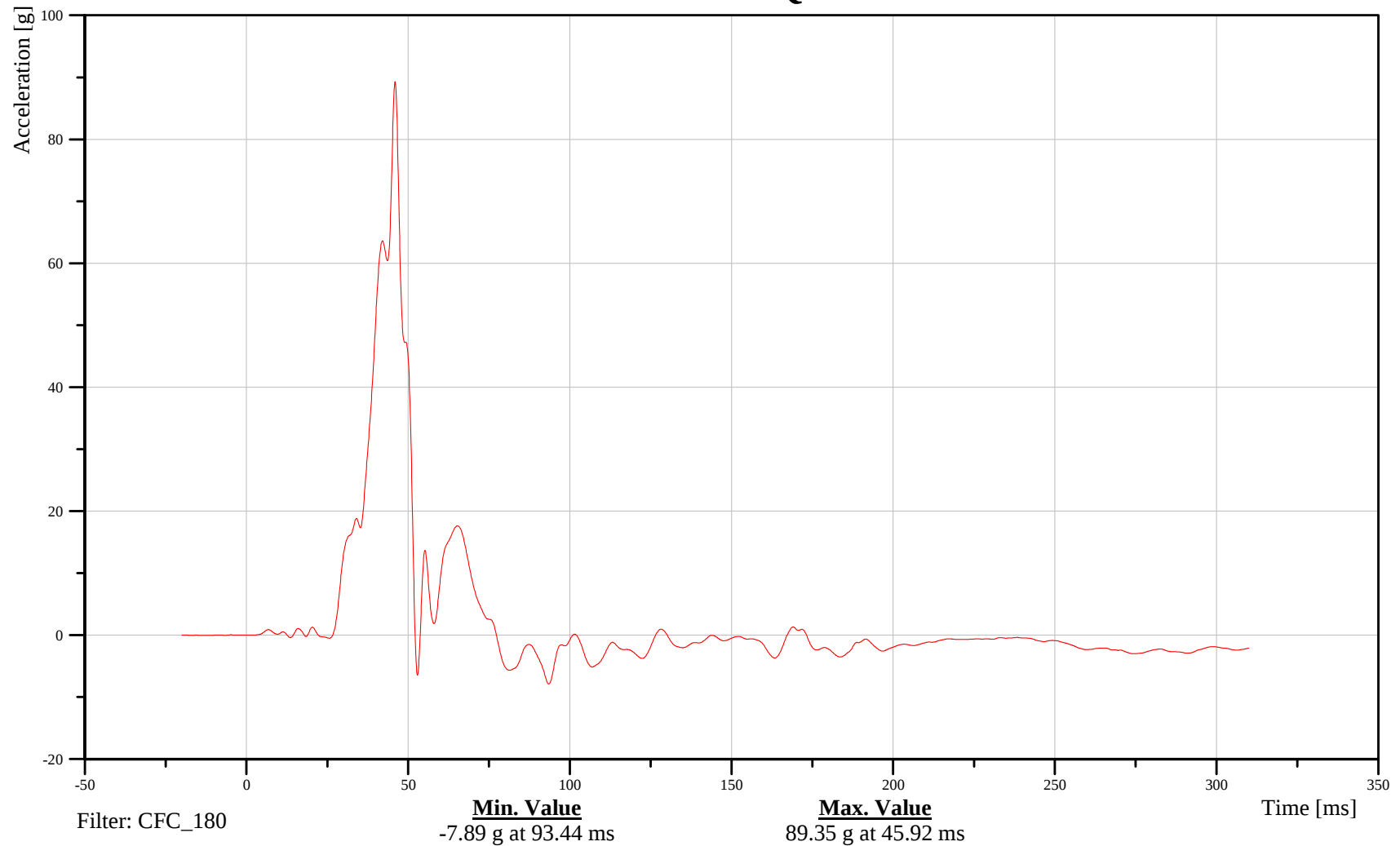
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14CHSTUP00Q3ACYC

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-16

080917



Child Safety Research
Left Rear Upper Chest Z-Axis Acceleration

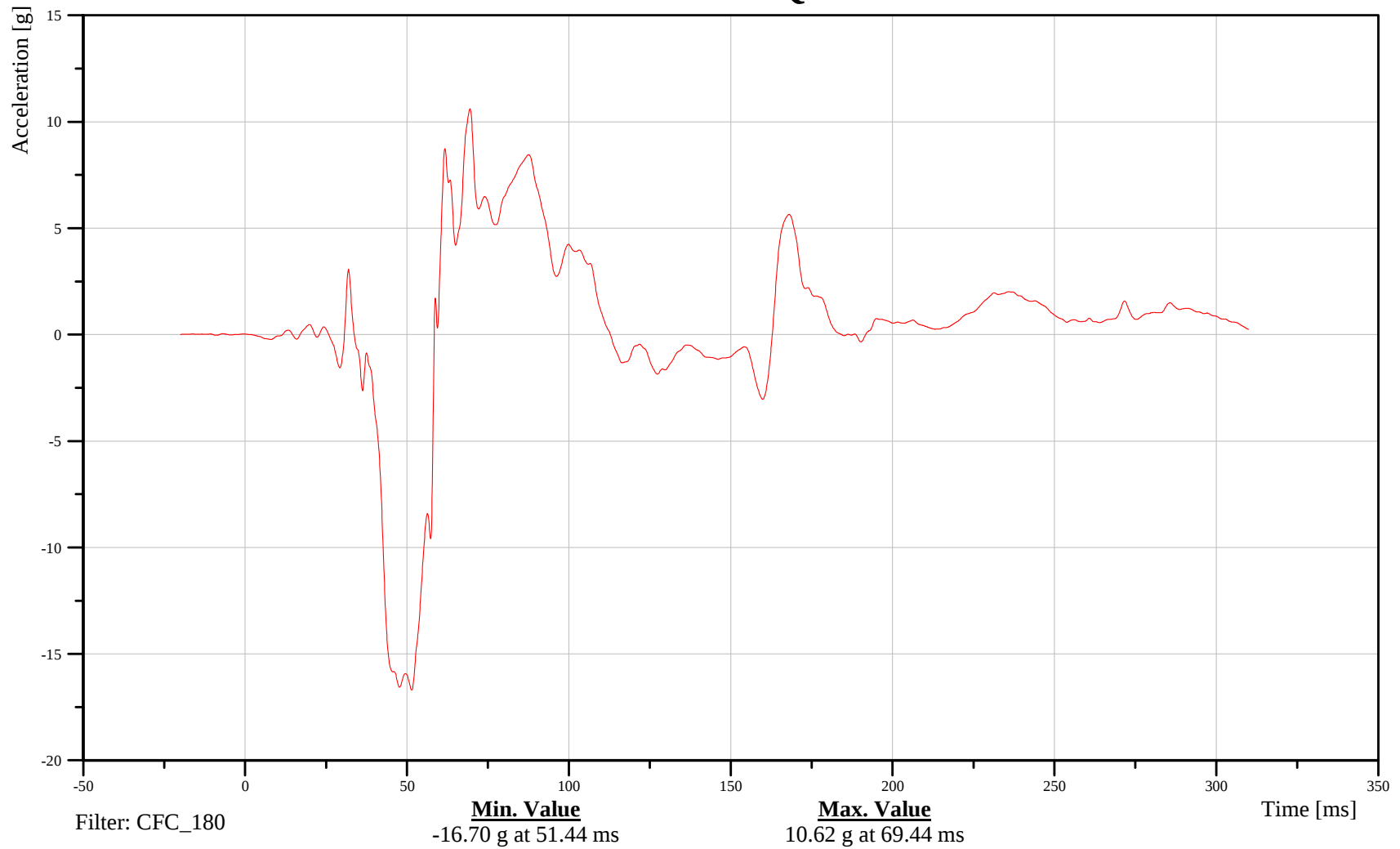
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14CHSTUP00Q3ACZC

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-17

080917



Child Safety Research
Left Rear Upper Chest Resultant Acceleration

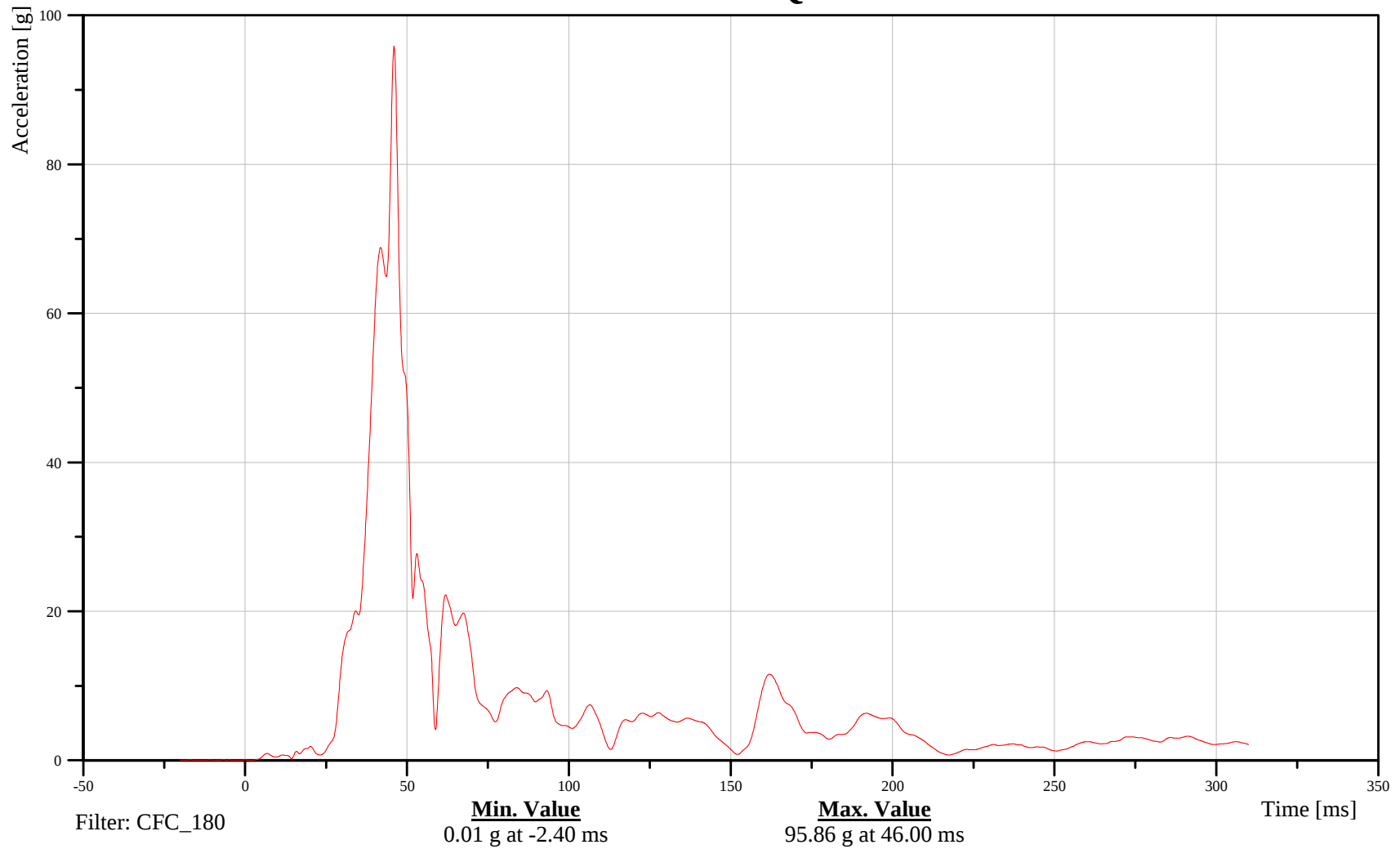
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14CHSTUP00Q3ACRC

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-18

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

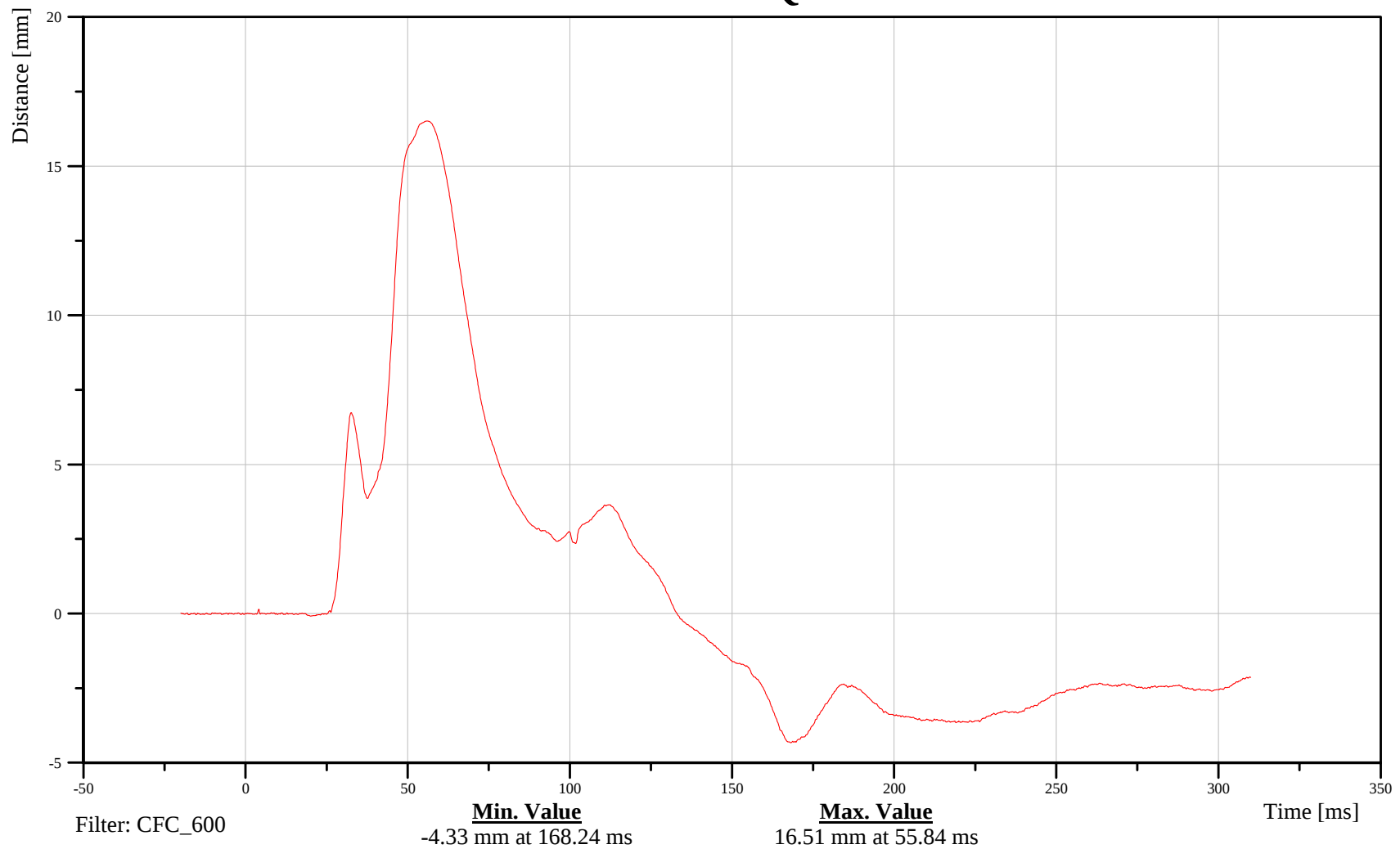
Left Rear Thorax IR-TRACC Y-Axis Displacement

Customer: VRTC

14CHST0000Q3DSYB

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-19

080917



Child Safety Research
Left Rear Lumbar X-Axis Force

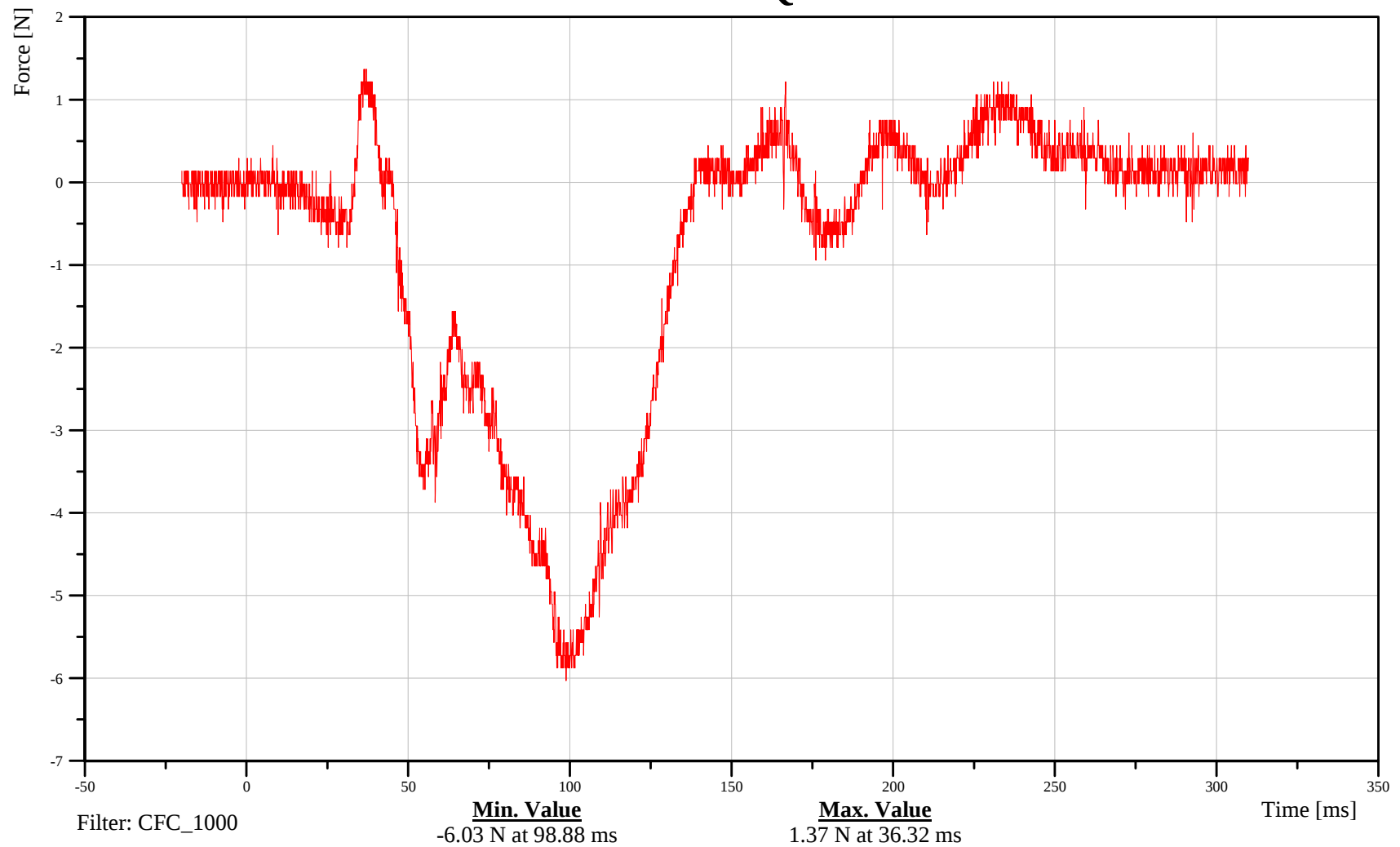
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14LUSP0000Q3FOXA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-20

080917



Child Safety Research
Left Rear Lumbar Y-Axis Force

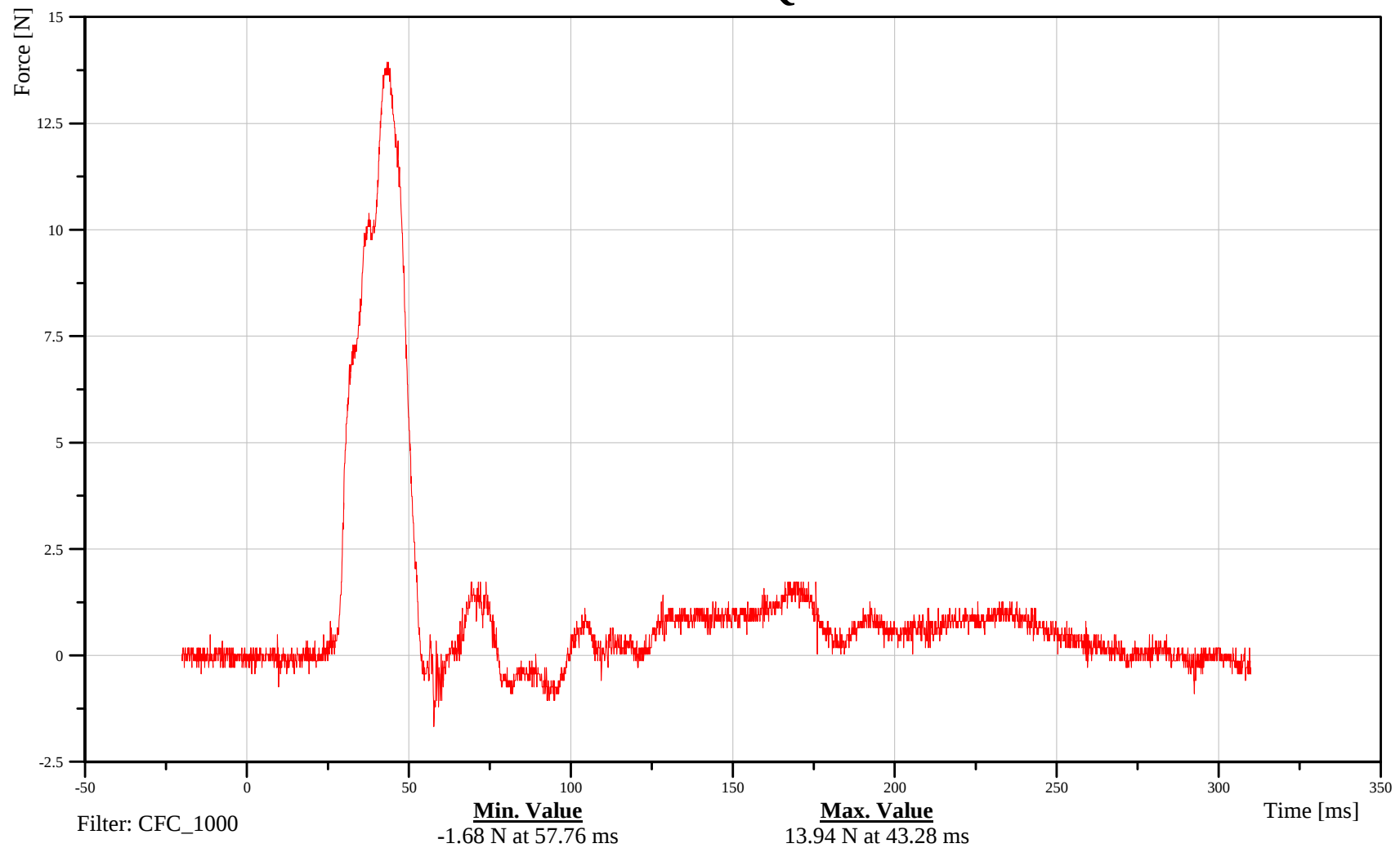
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14LUSP0000Q3FOYA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-21

080917



Child Safety Research
Left Rear Lumbar Z-Axis Force

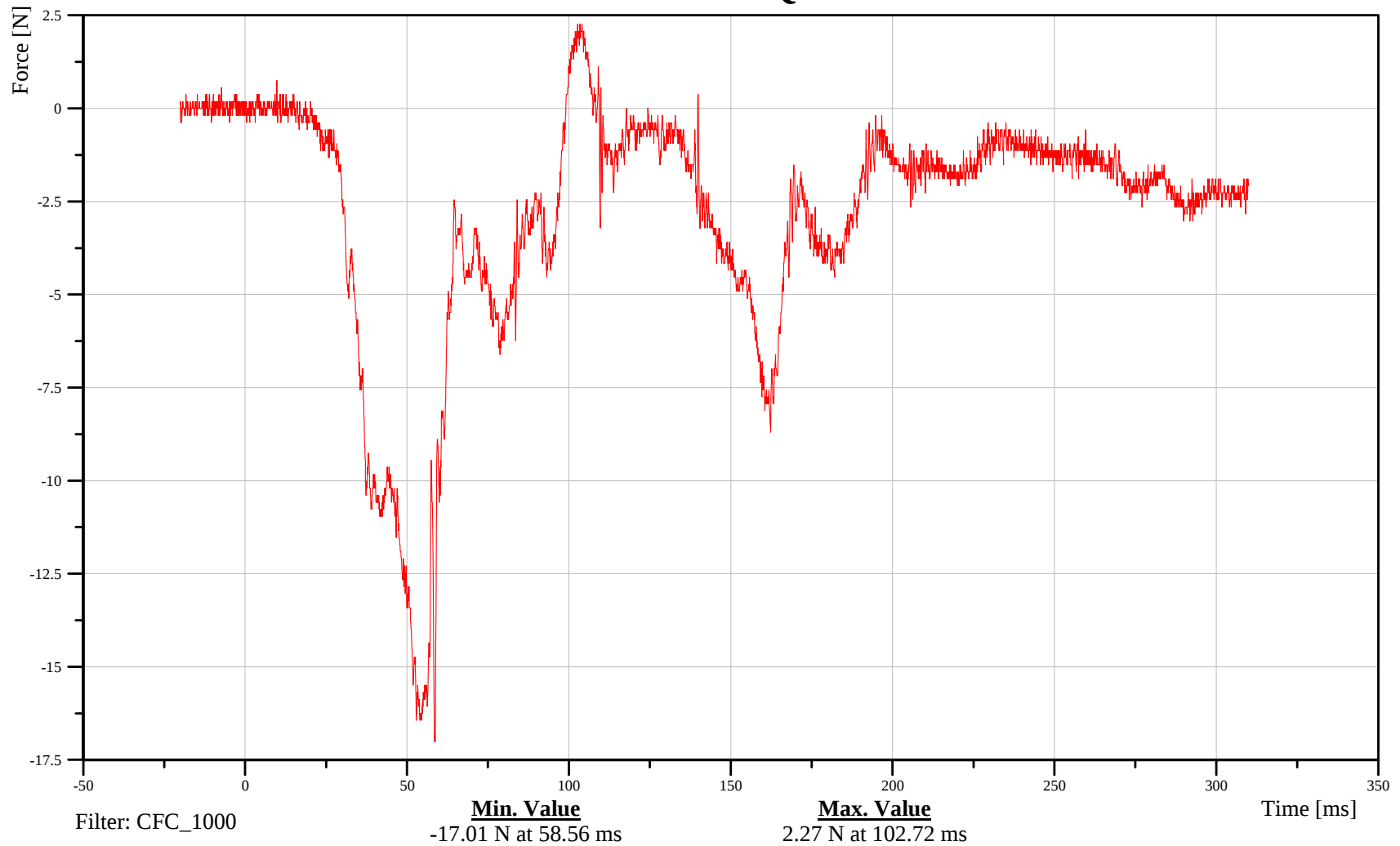
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14LUSP0000Q3FOZA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-22

080917



Child Safety Research
Left Rear Lumbar Moment About X Axis

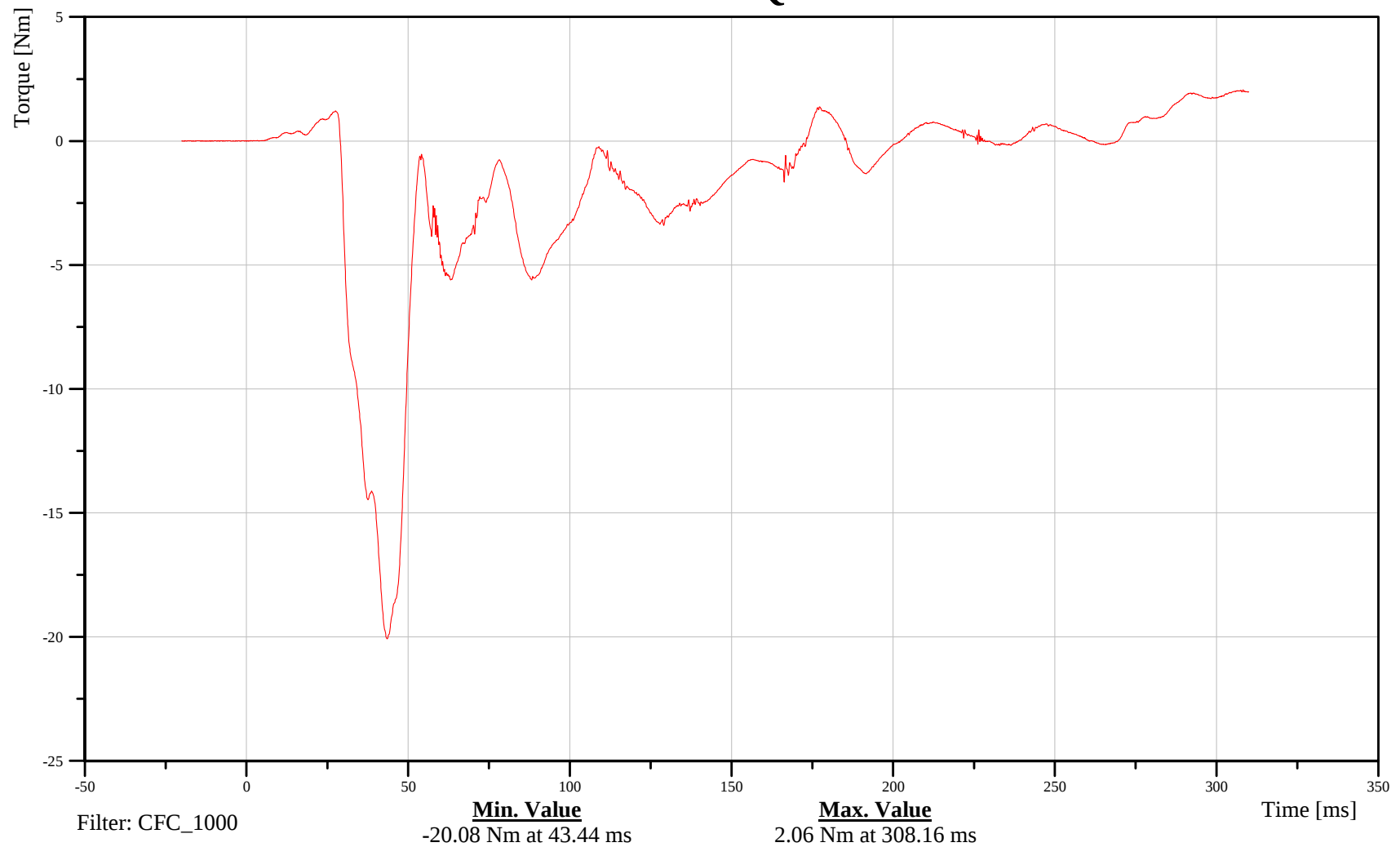
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14LUSP0000Q3MOXA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-23

080917



Child Safety Research
Left Rear Lumbar Moment About Y Axis

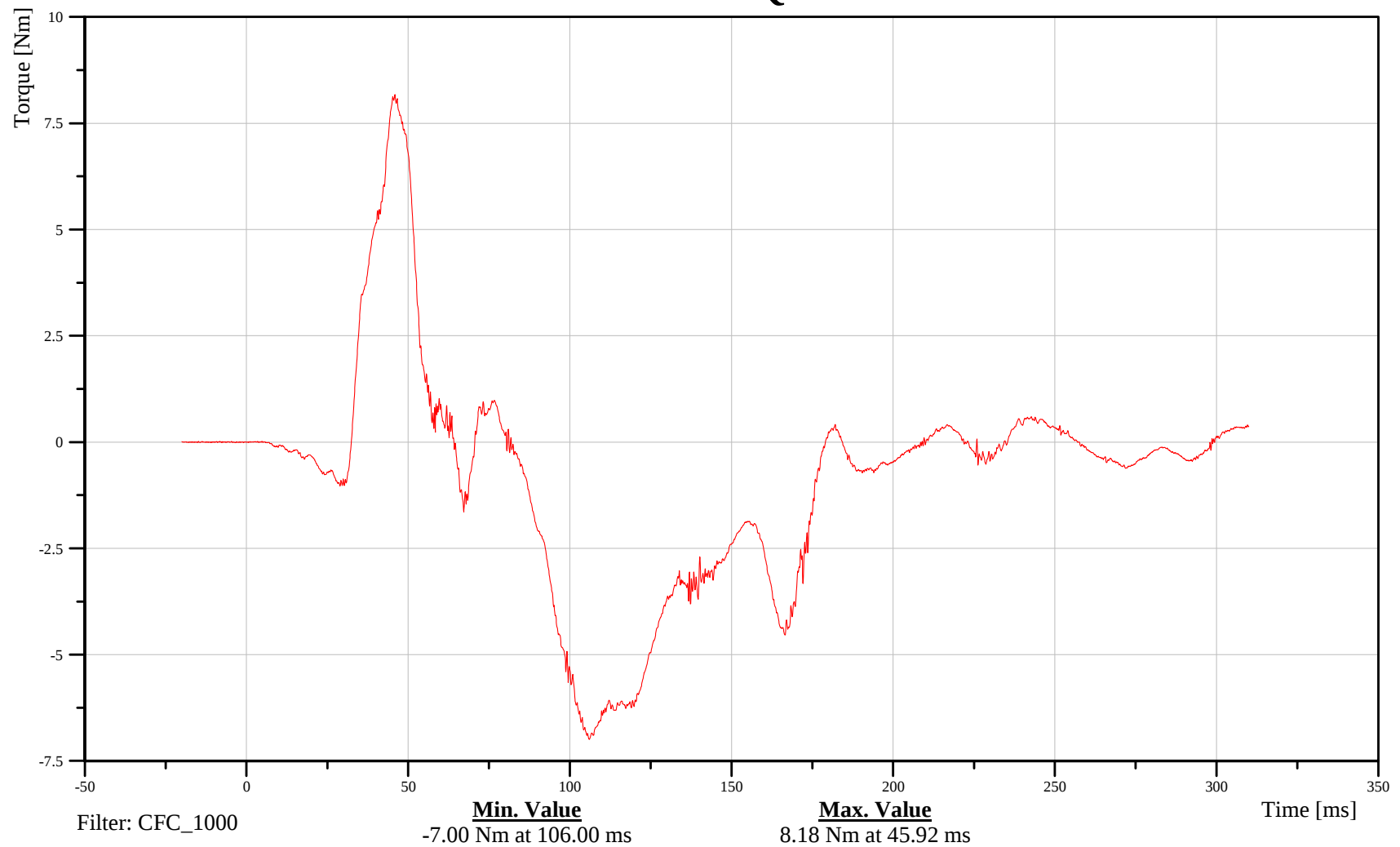
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14LUSP0000Q3MOYA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-24

080917



Child Safety Research
Left Rear Lumbar Moment About Z Axis

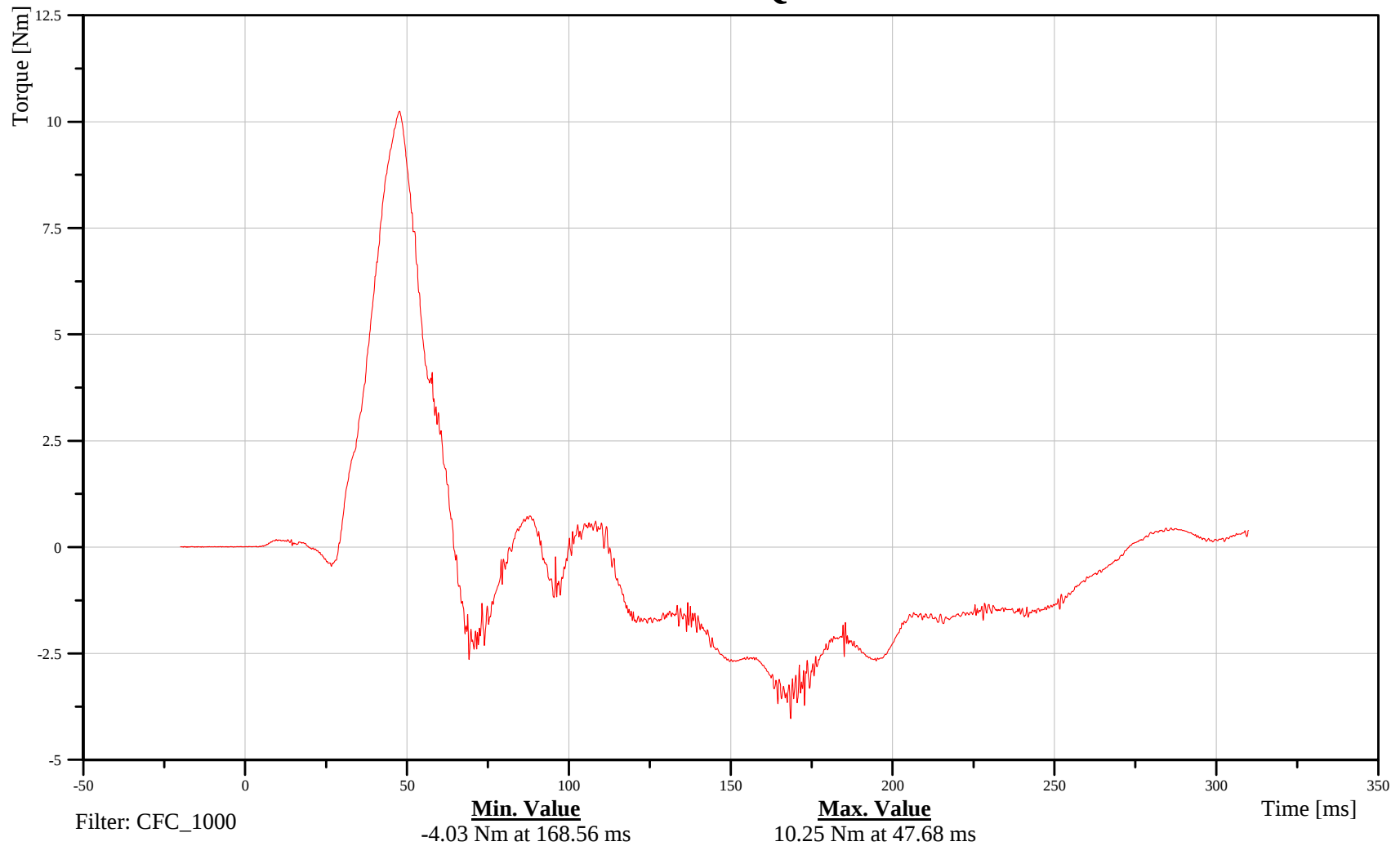
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14LUSP0000Q3MOZA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-25

080917



Child Safety Research
Left Rear Pelvis X-Axis Acceleration

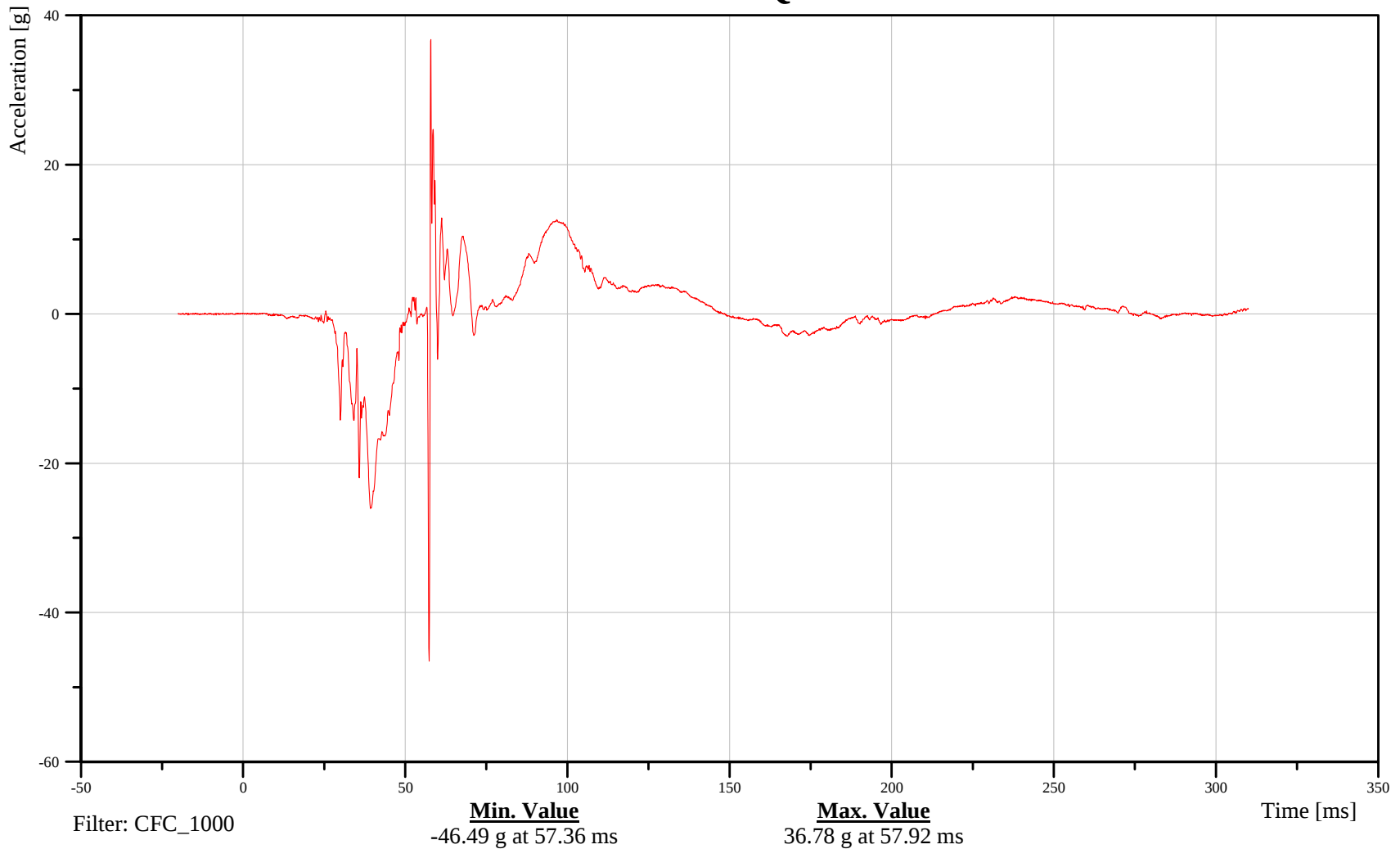
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14PELV0000Q3ACXA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-26

080917



Child Safety Research
Left Rear Pelvis Y-Axis Acceleration

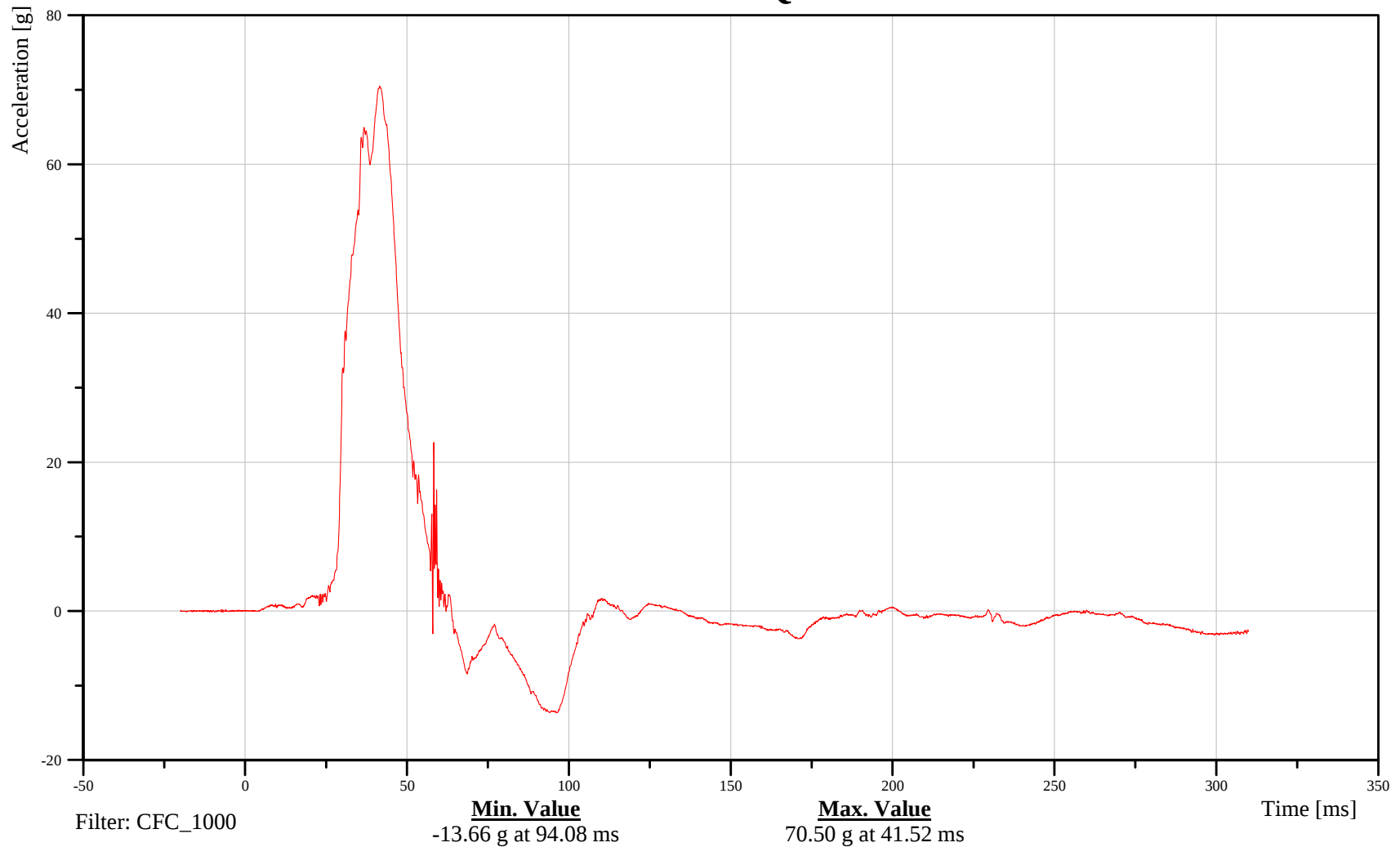
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14PELV0000Q3ACYA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-27

080917



Child Safety Research
Left Rear Pelvis Z-Axis Acceleration

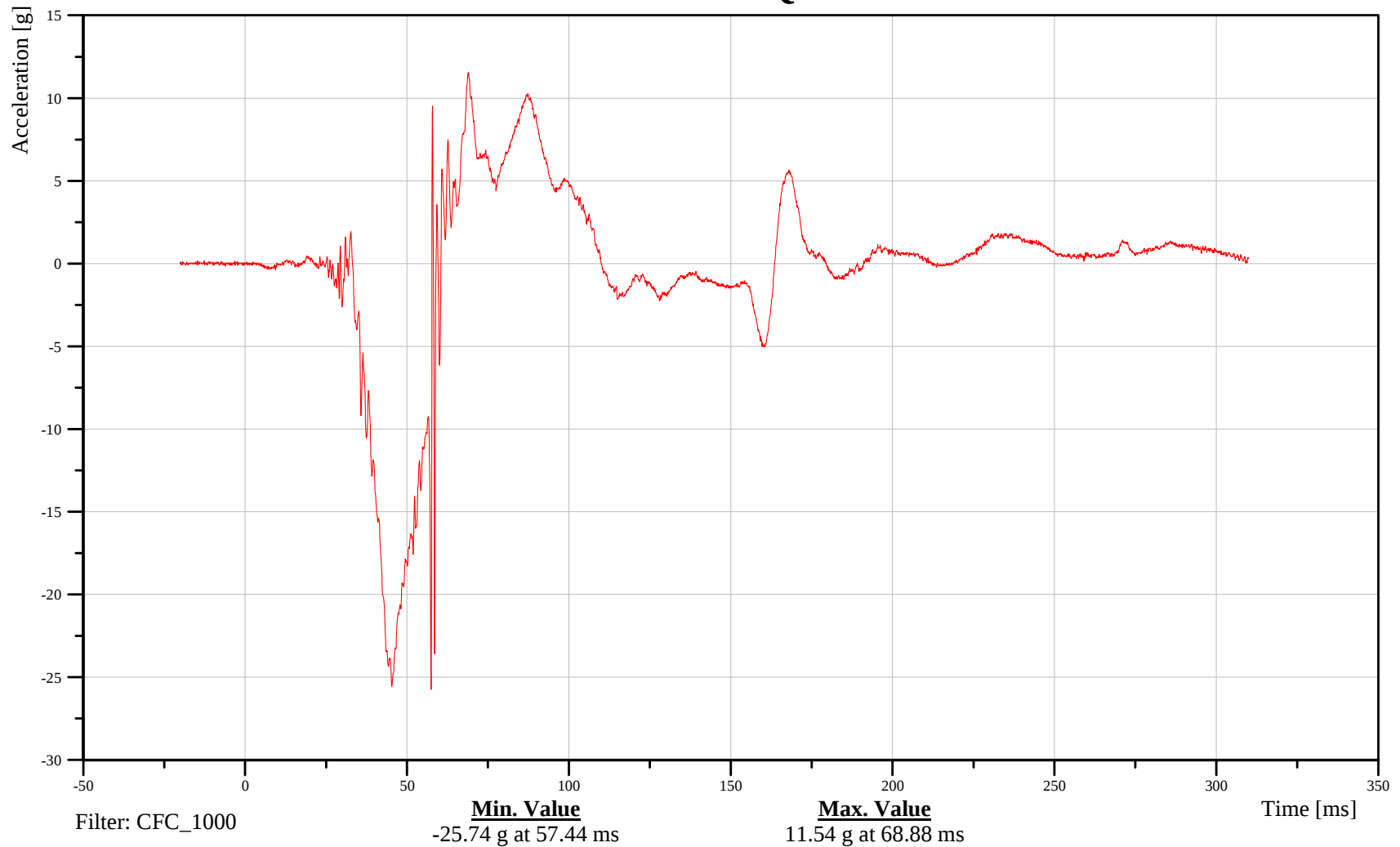
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14PELV0000Q3ACZA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-28

080917



Child Safety Research
Left Rear Pelvis Resultant Acceleration

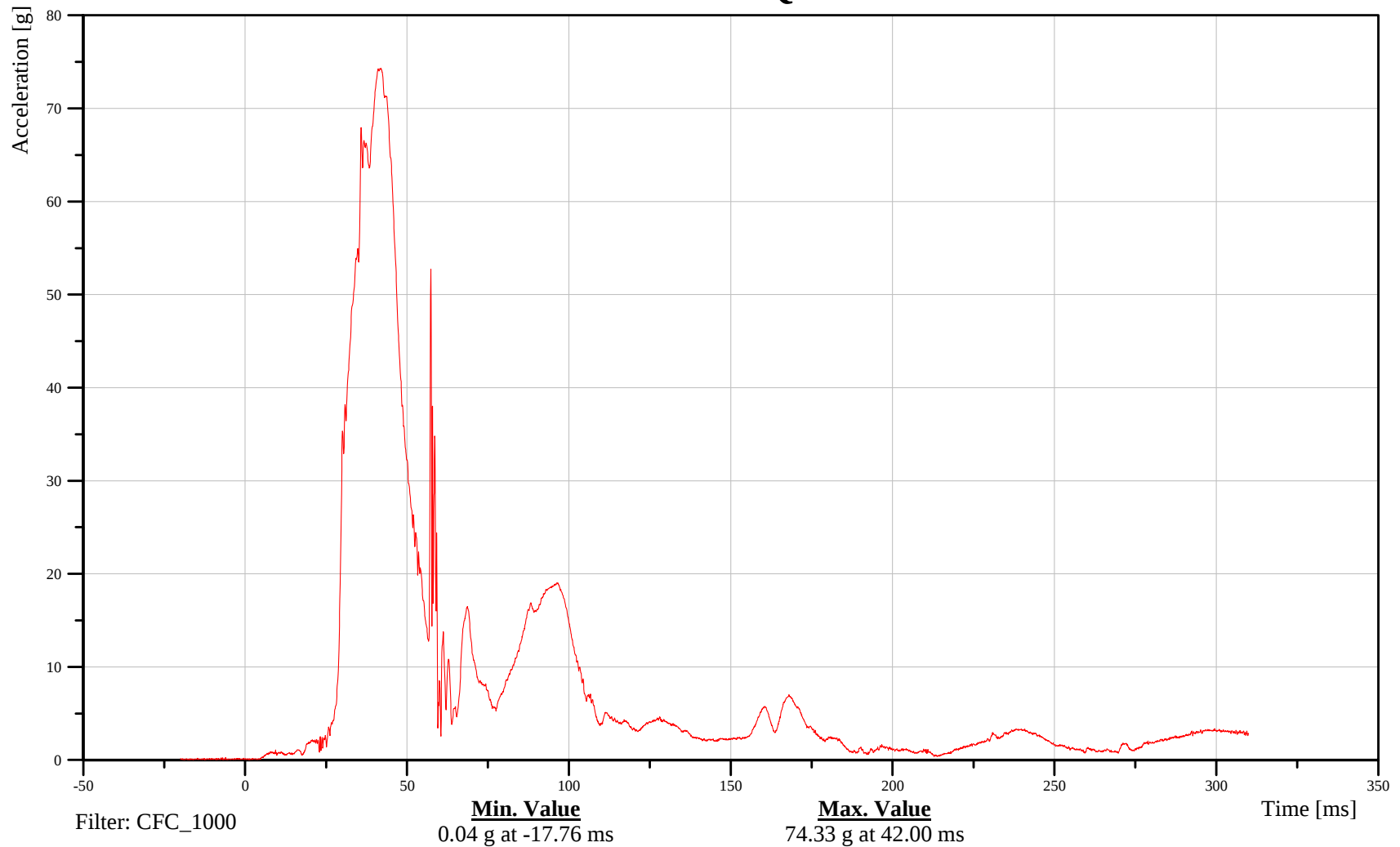
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14PELV0000Q3ACRA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-29

080917



Child Safety Research
Left Rear Pubic Y-Axis Force

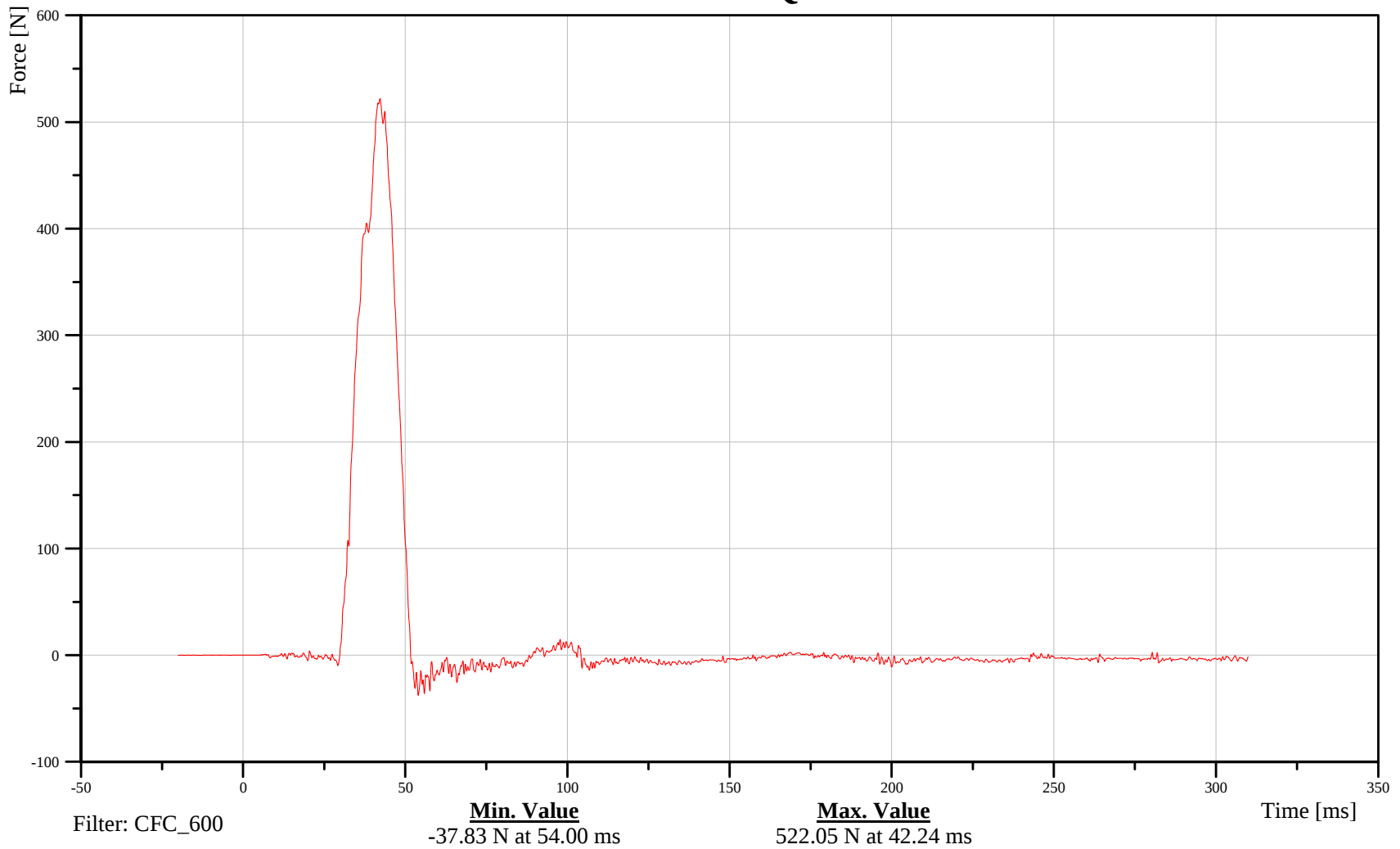
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14PUBC0000Q3FOYB

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-30

080917



Child Safety Research
Right Rear Head X-Axis Acceleration

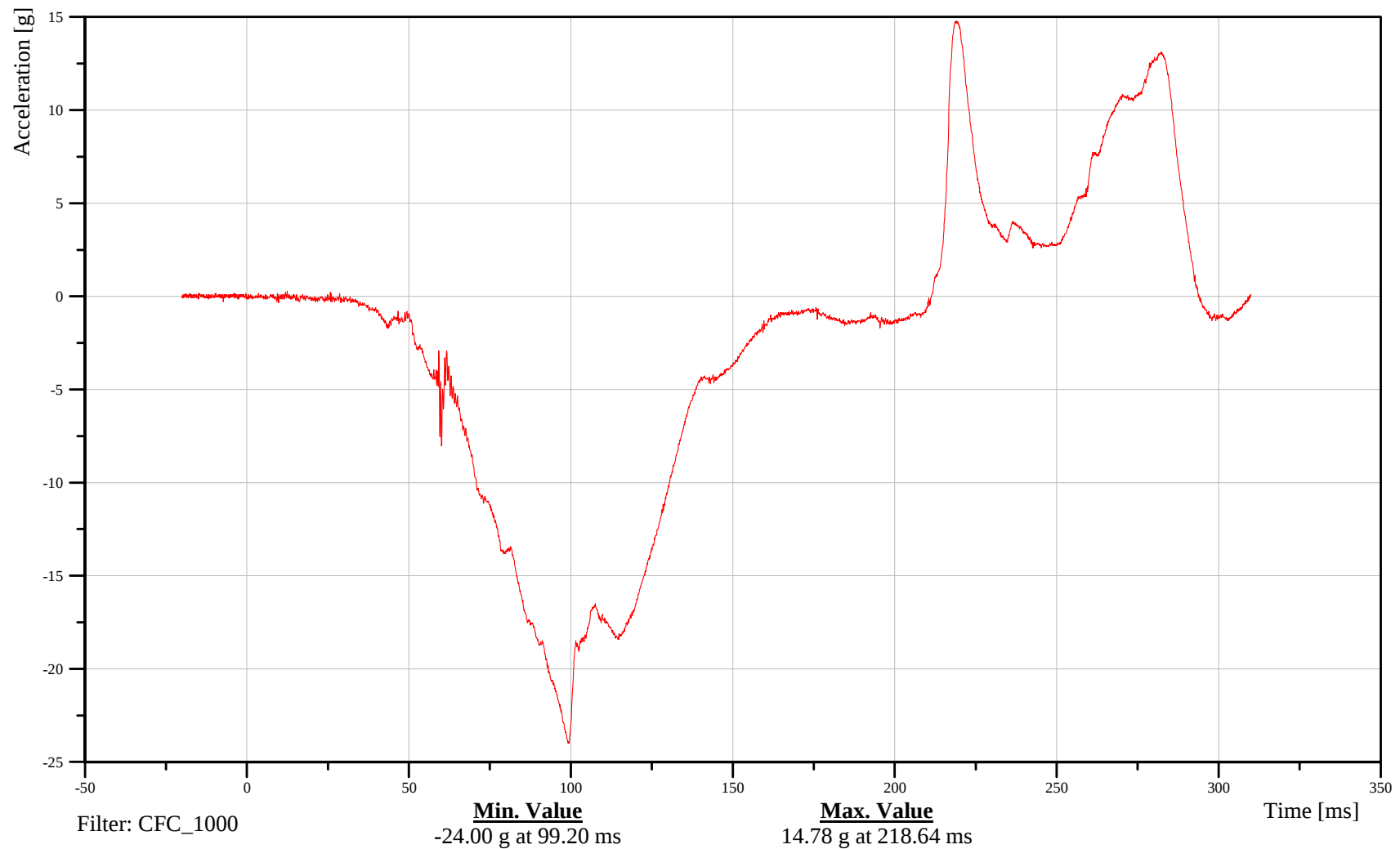
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16HEADCG00Y6ACXA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-31

080917



Child Safety Research
Right Rear Head Y-Axis Acceleration

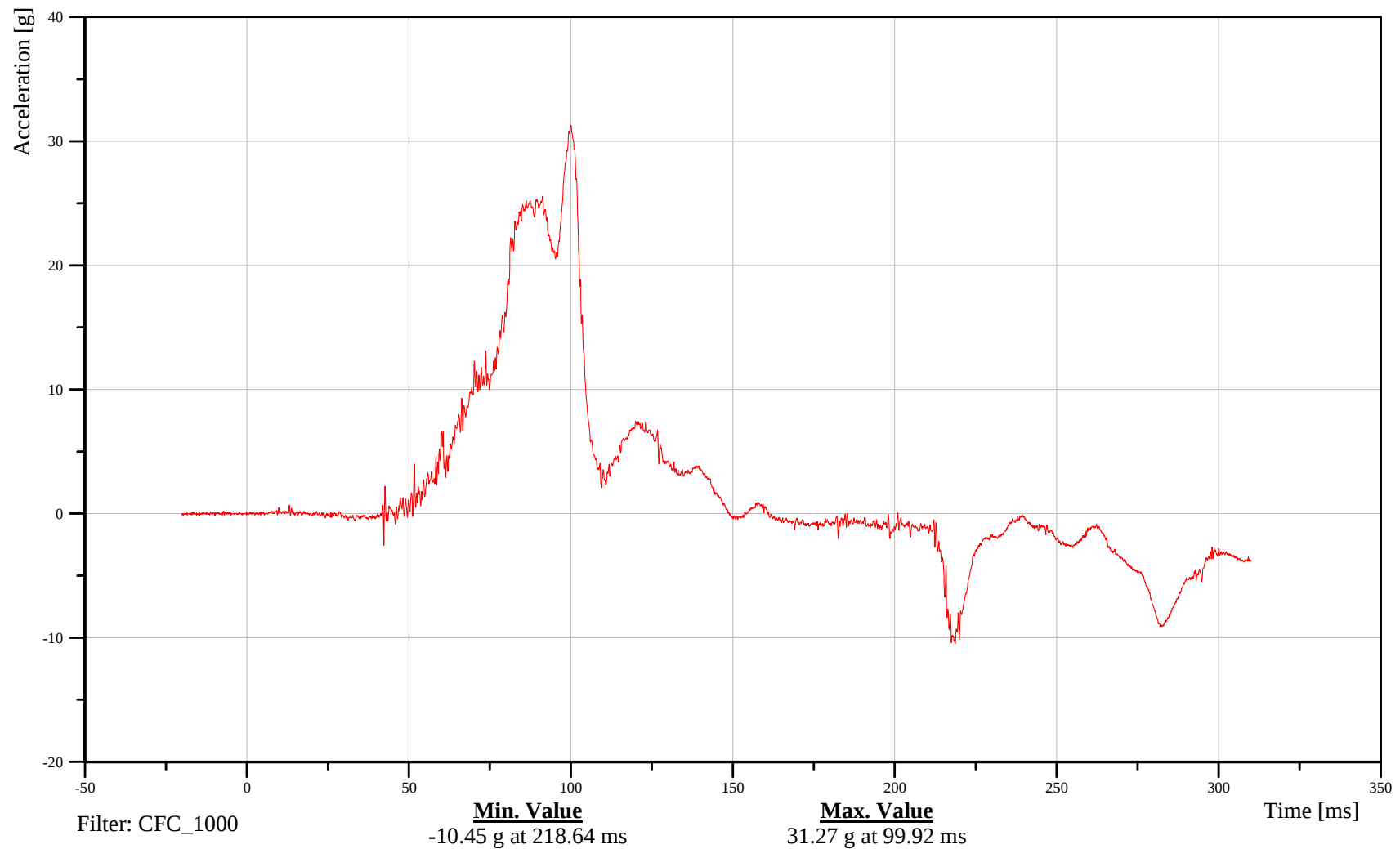
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16HEADCG00Y6ACYA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-32

080917



Child Safety Research
Right Rear Head Z-Axis Acceleration

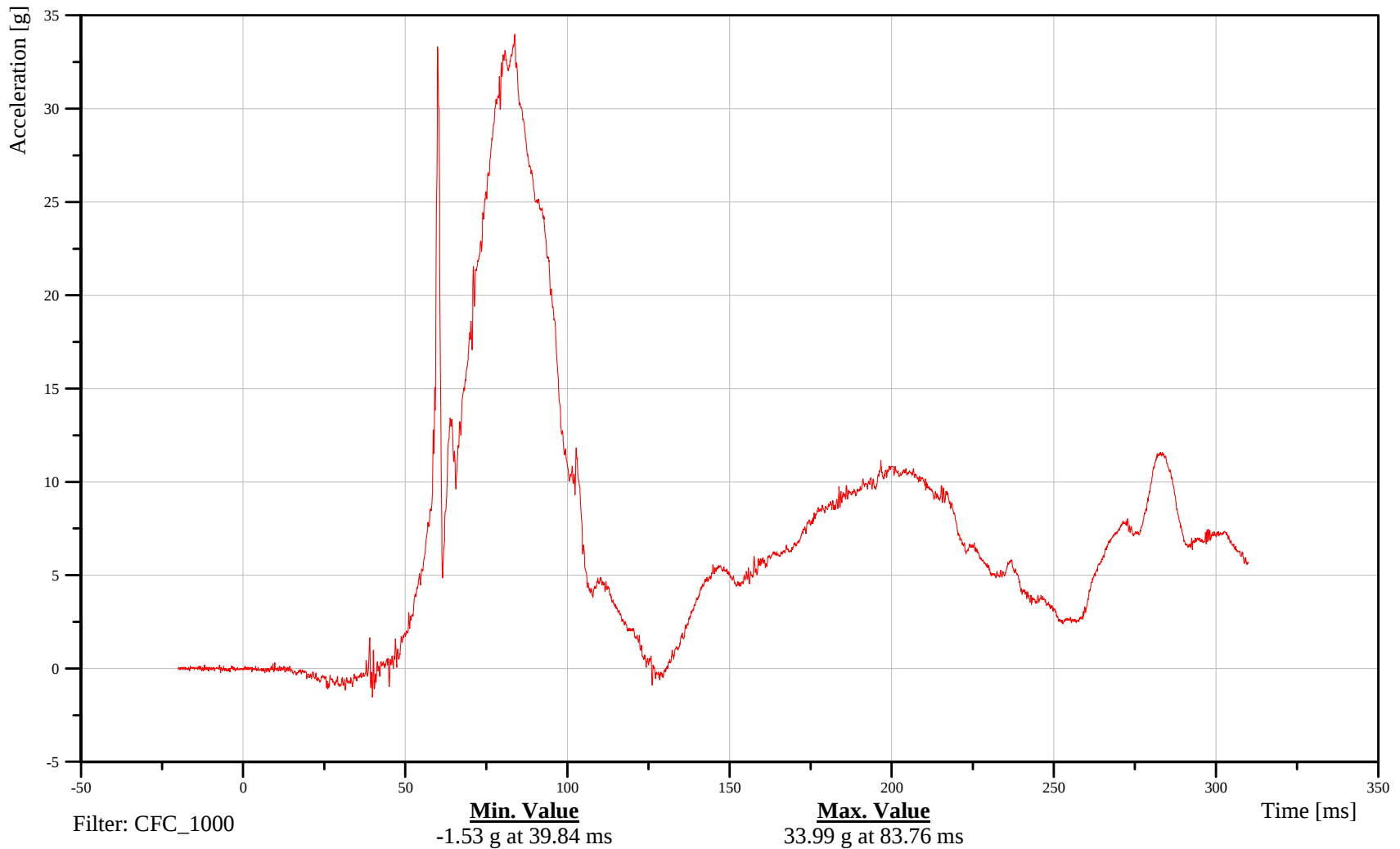
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16HEADCG00Y6ACZA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-33

080917



Child Safety Research
Right Rear Head Resultant Acceleration

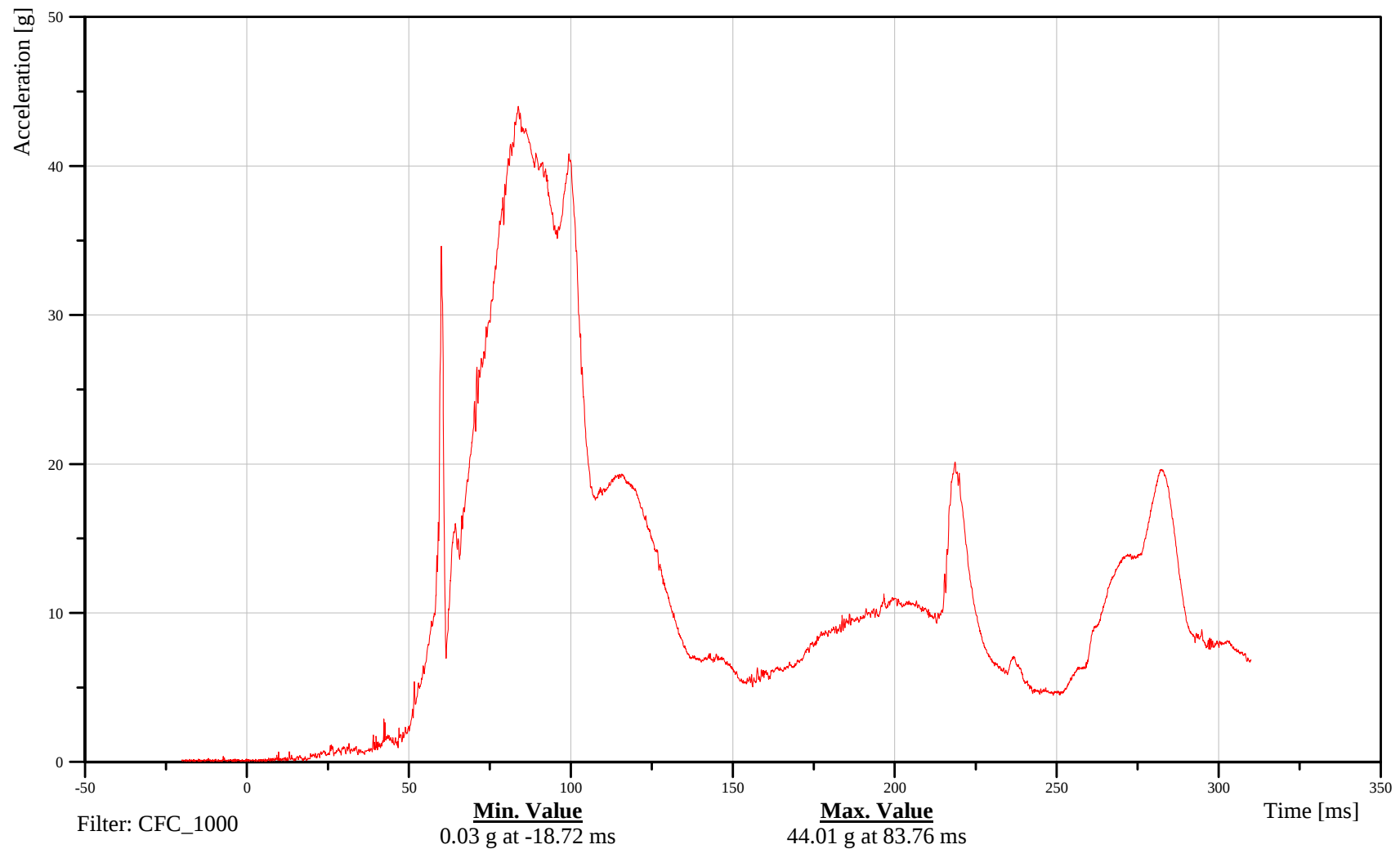
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16HEADCG00Y6ACRA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-34

080917



Child Safety Research
Right Rear Upper Neck X-Axis Force

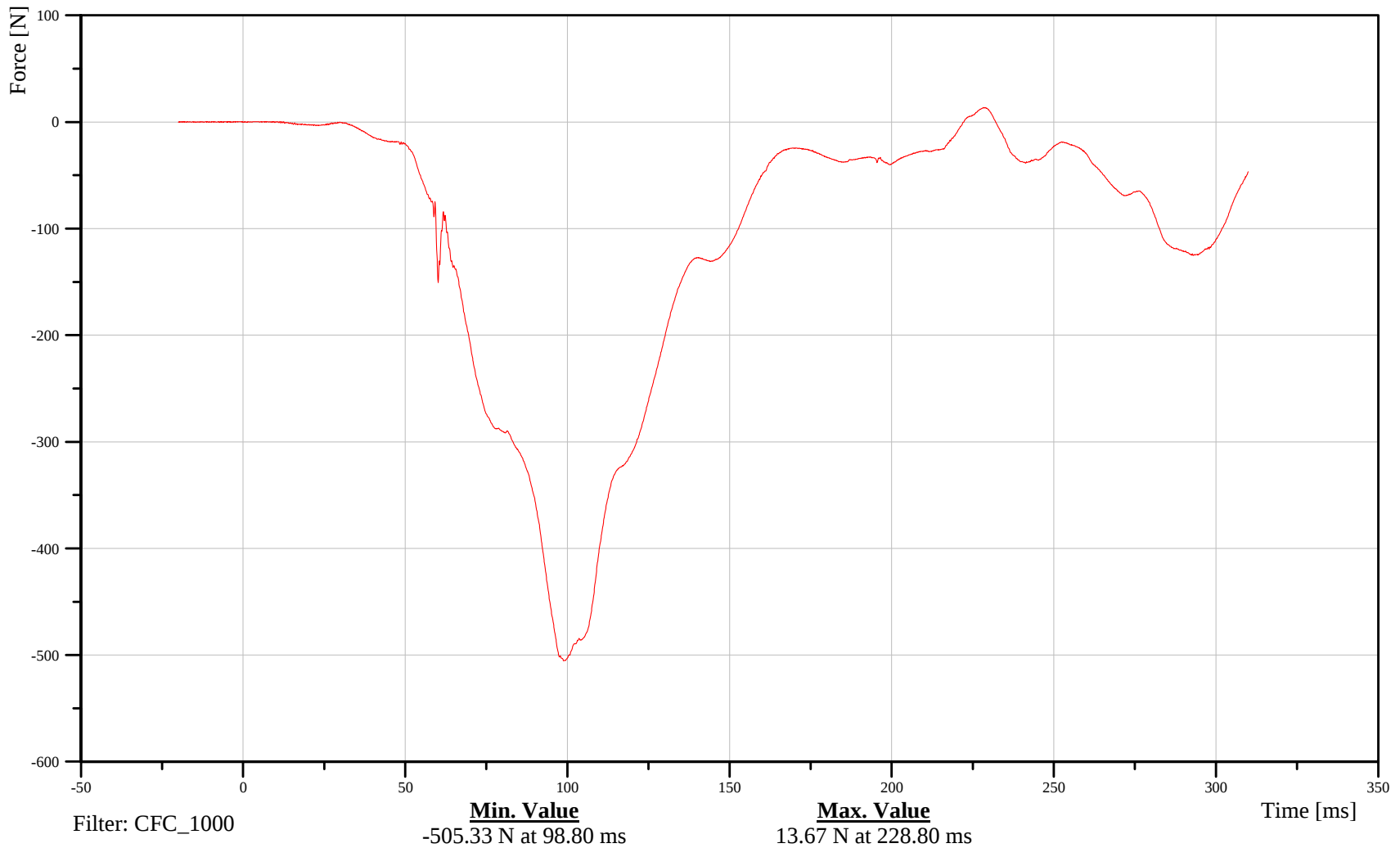
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16NECKUP00Y6FOXA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-35

080917



Child Safety Research
Right Rear Upper Neck Y-Axis Force

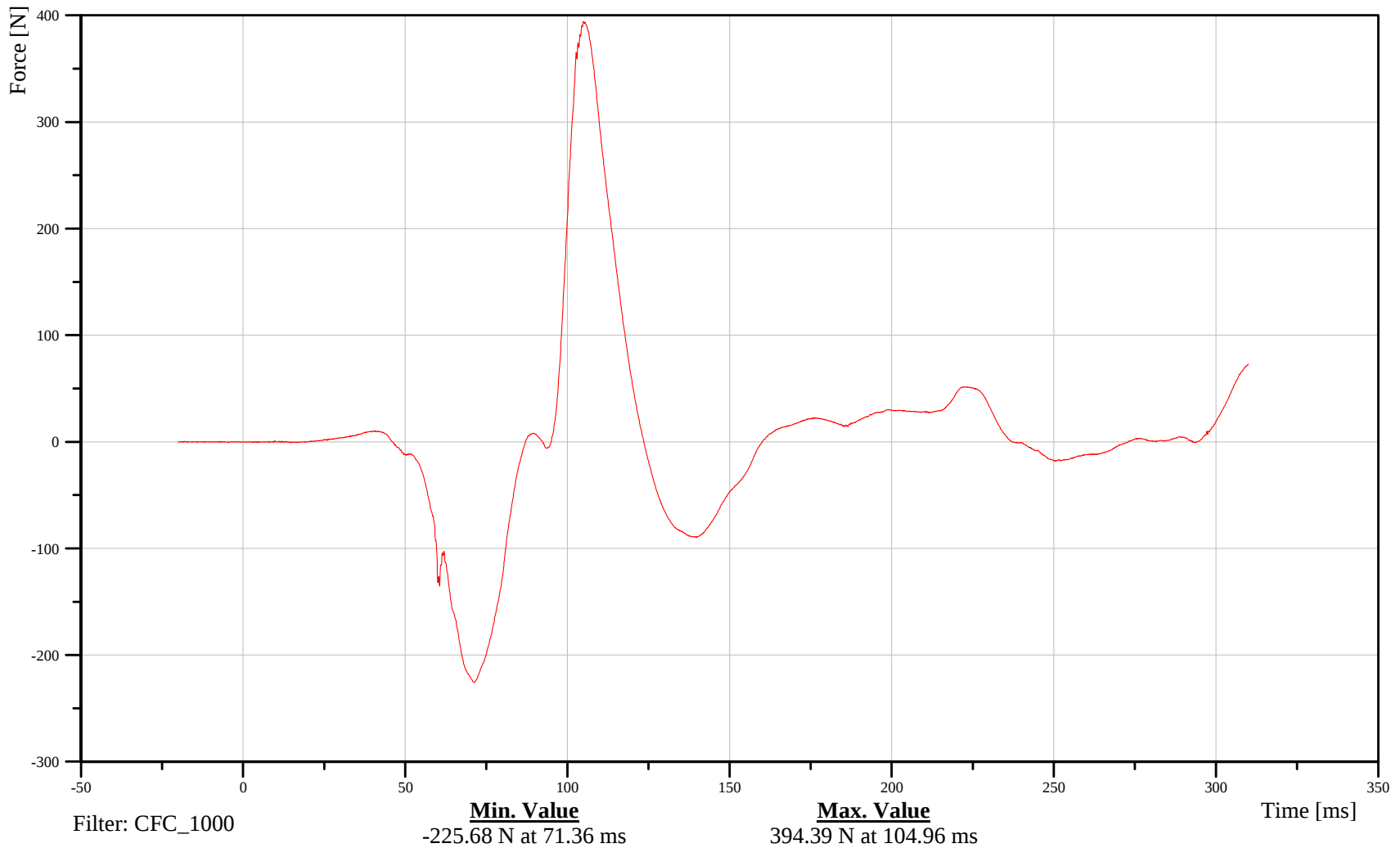
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16NECKUP00Y6FOYA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-36

080917



Child Safety Research
Right Rear Upper Neck Z-Axis Force

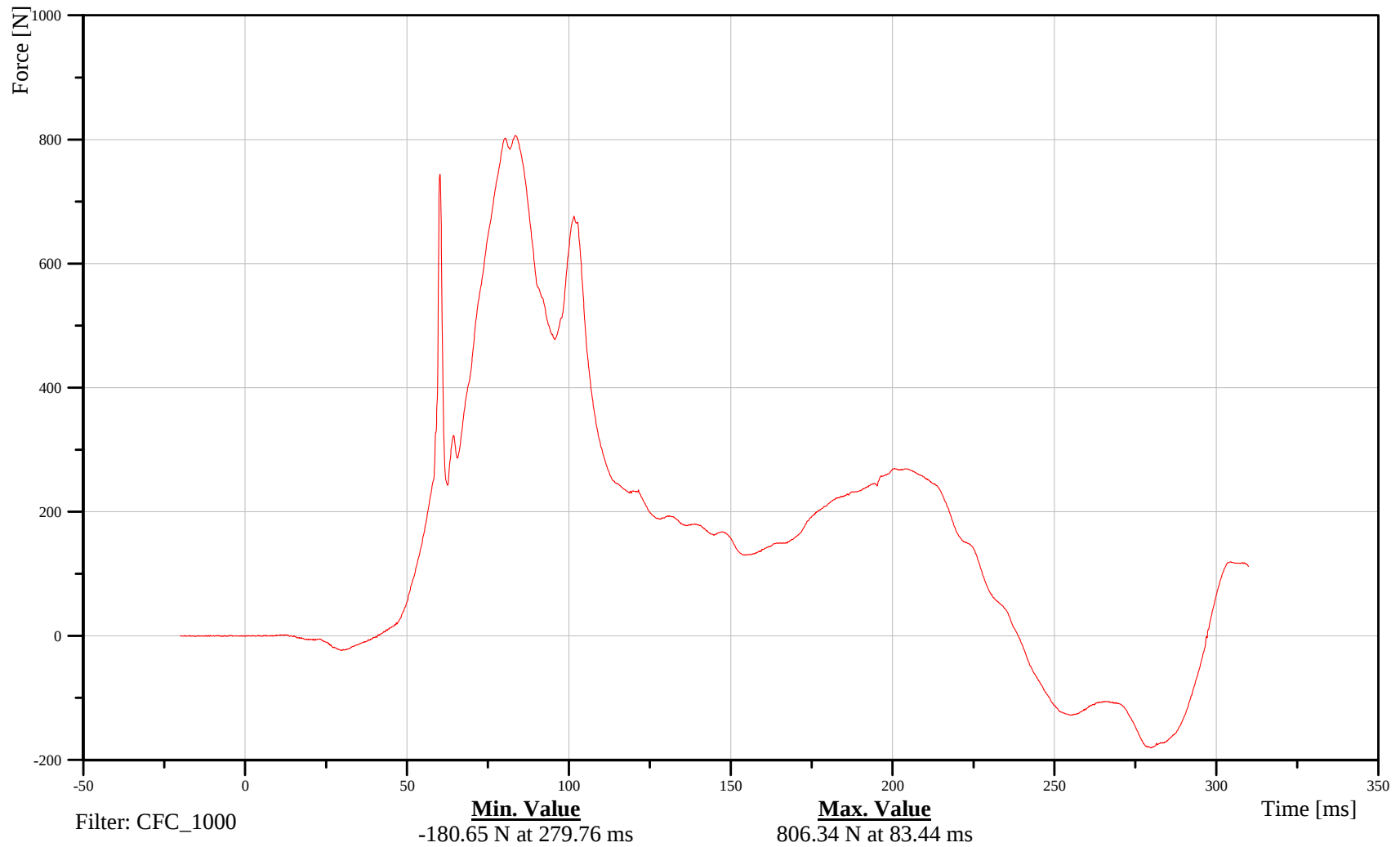
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16NECKUP00Y6FOZA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-37

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

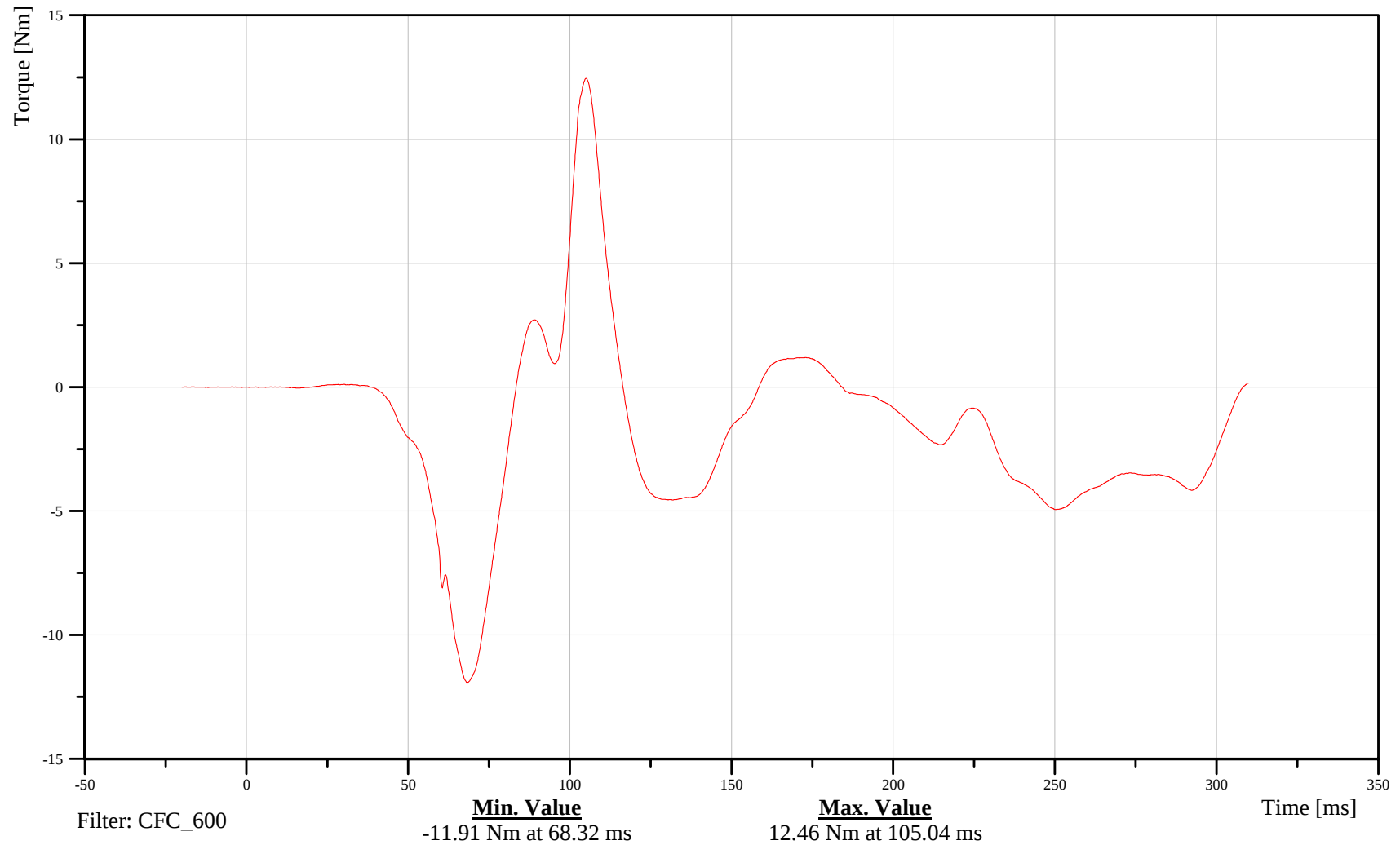
Right Rear Upper Neck Moment About X Axis

Customer: VRTC

16NECKUP00Y6MOXB

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-38

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

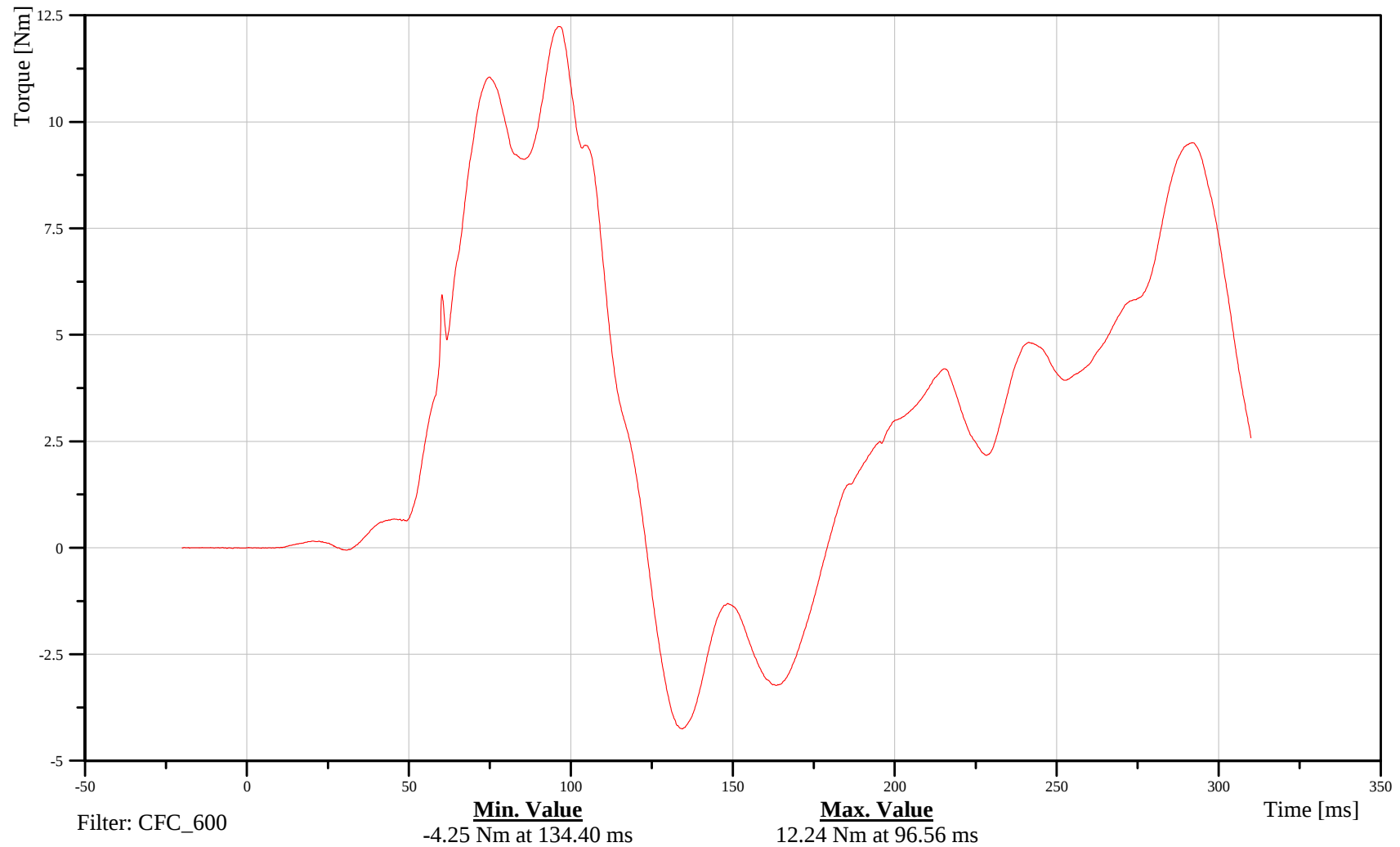
Right Rear Upper Neck Moment About Y Axis

Customer: VRTC

16NECKUP00Y6MOYB

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-39

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

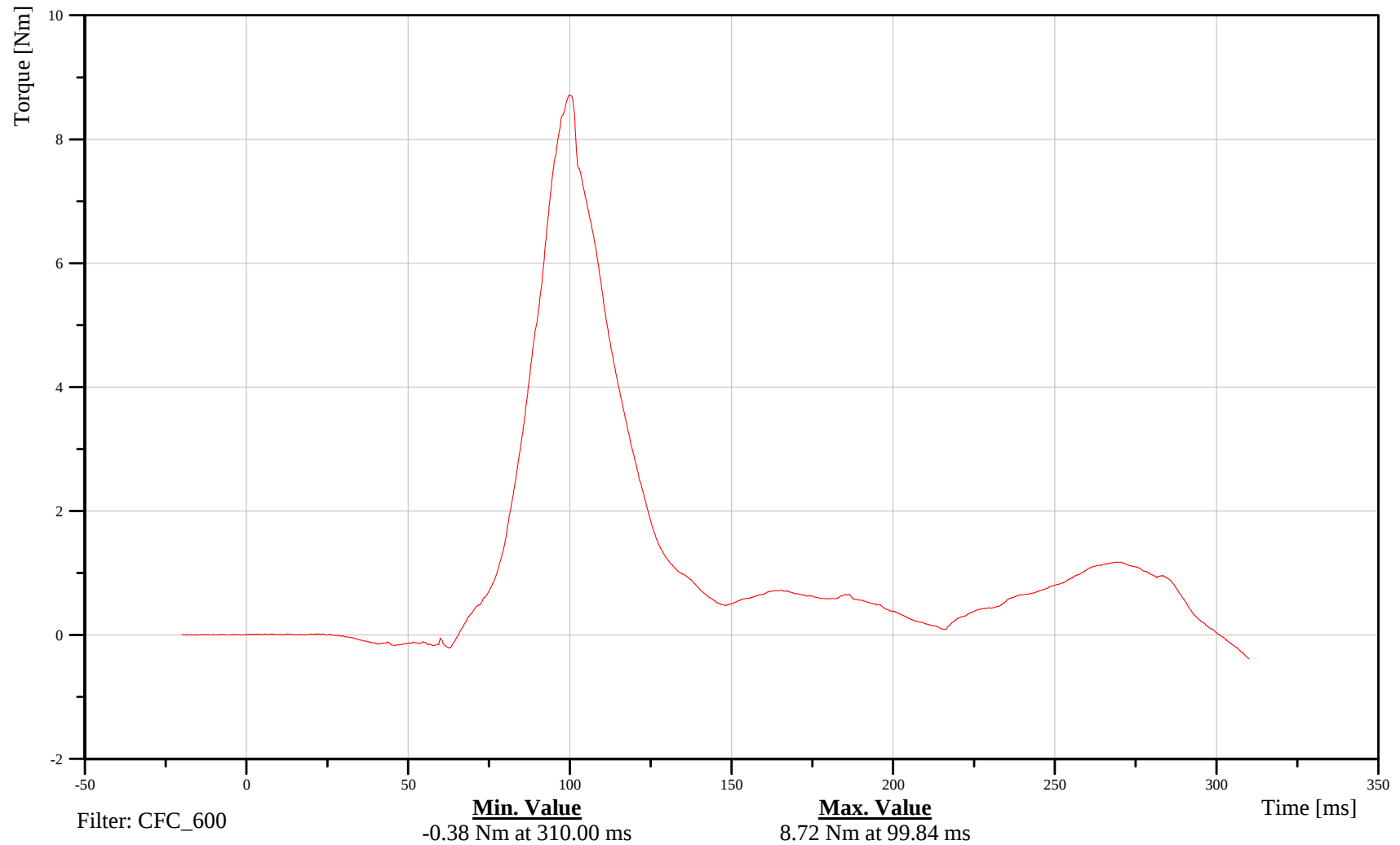
Right Rear Upper Neck Moment About Z Axis

Customer: VRTC

16NECKUP00Y6MOZB

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-40

080917



Child Safety Research
Right Rear Lower Neck X-Axis Force

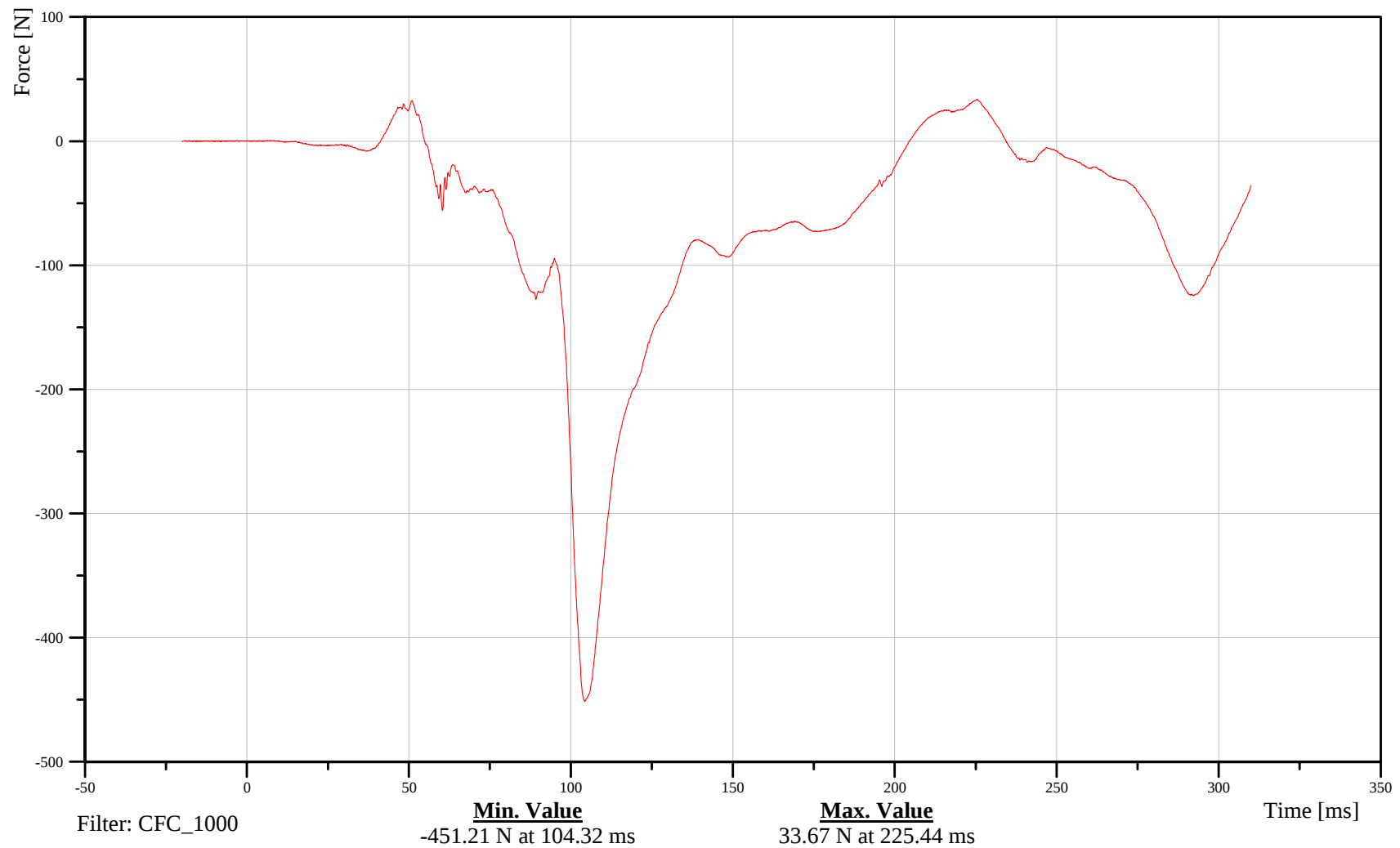
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16NECKLO00Y6FOXA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-41

080917



Child Safety Research
Right Rear Lower Neck Y-Axis Force

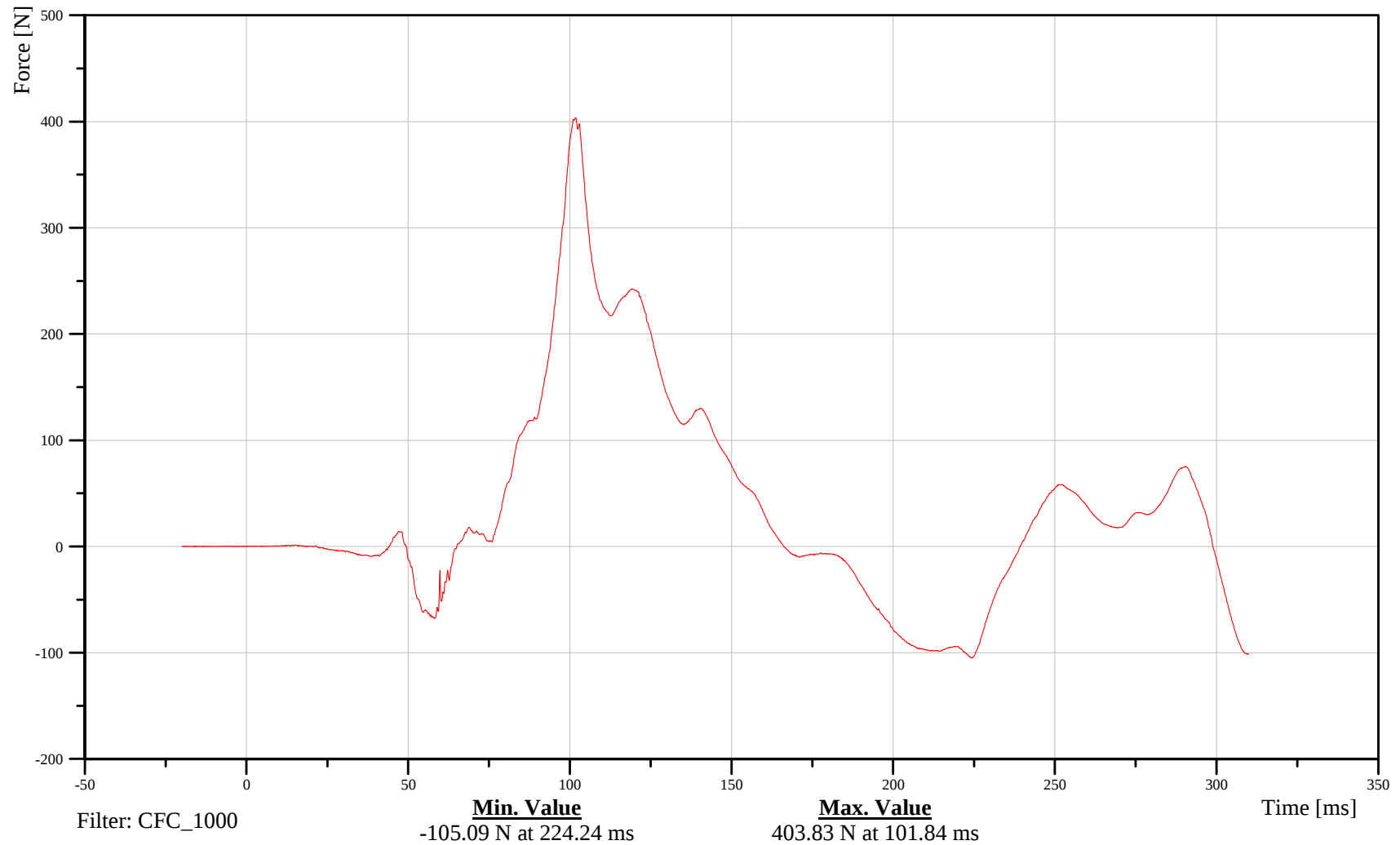
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16NECKLO00Y6FOYA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-42

080917



Child Safety Research
Right Rear Lower Neck Z-Axis Force

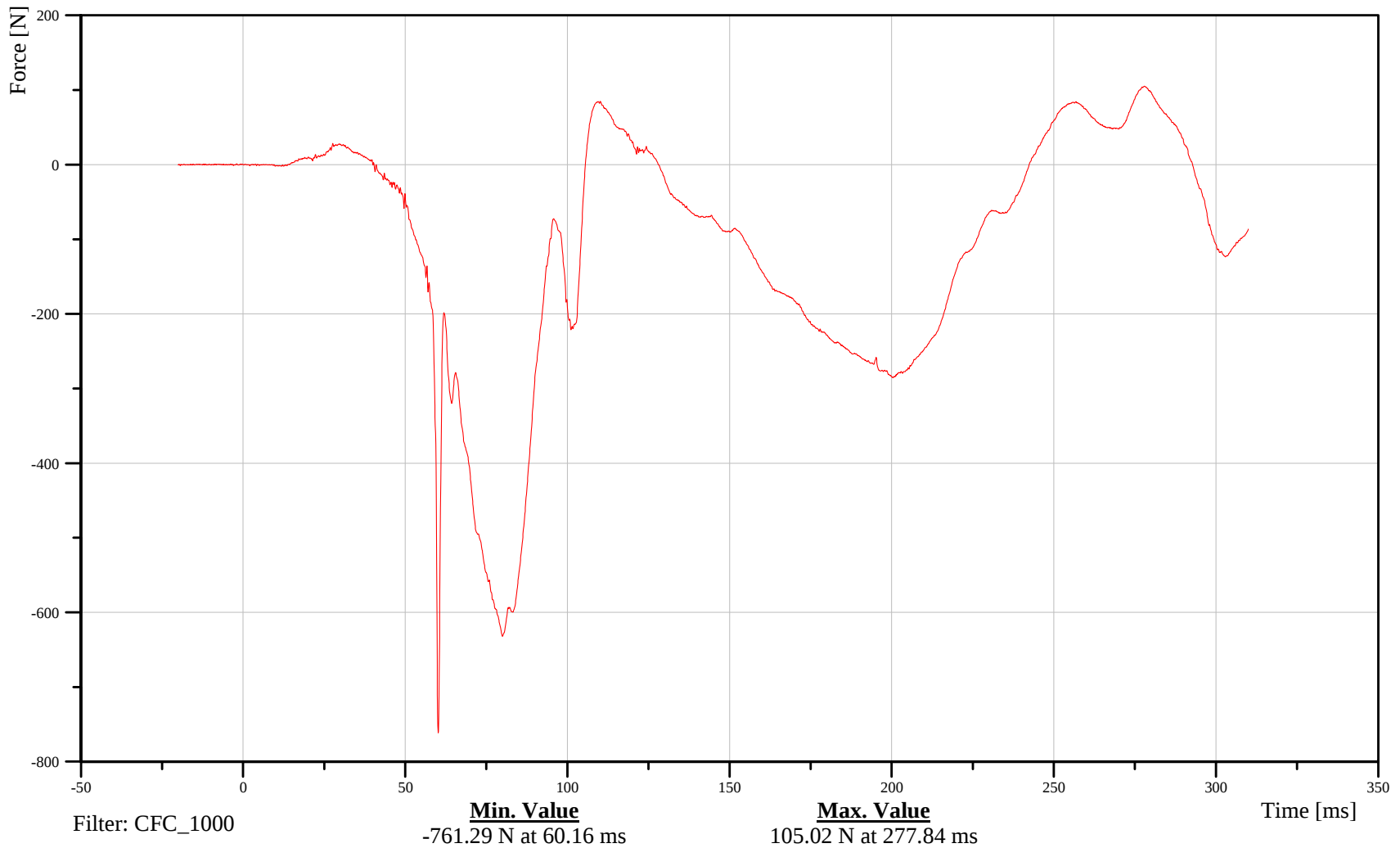
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16NECKLO00Y6FOZA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-43

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

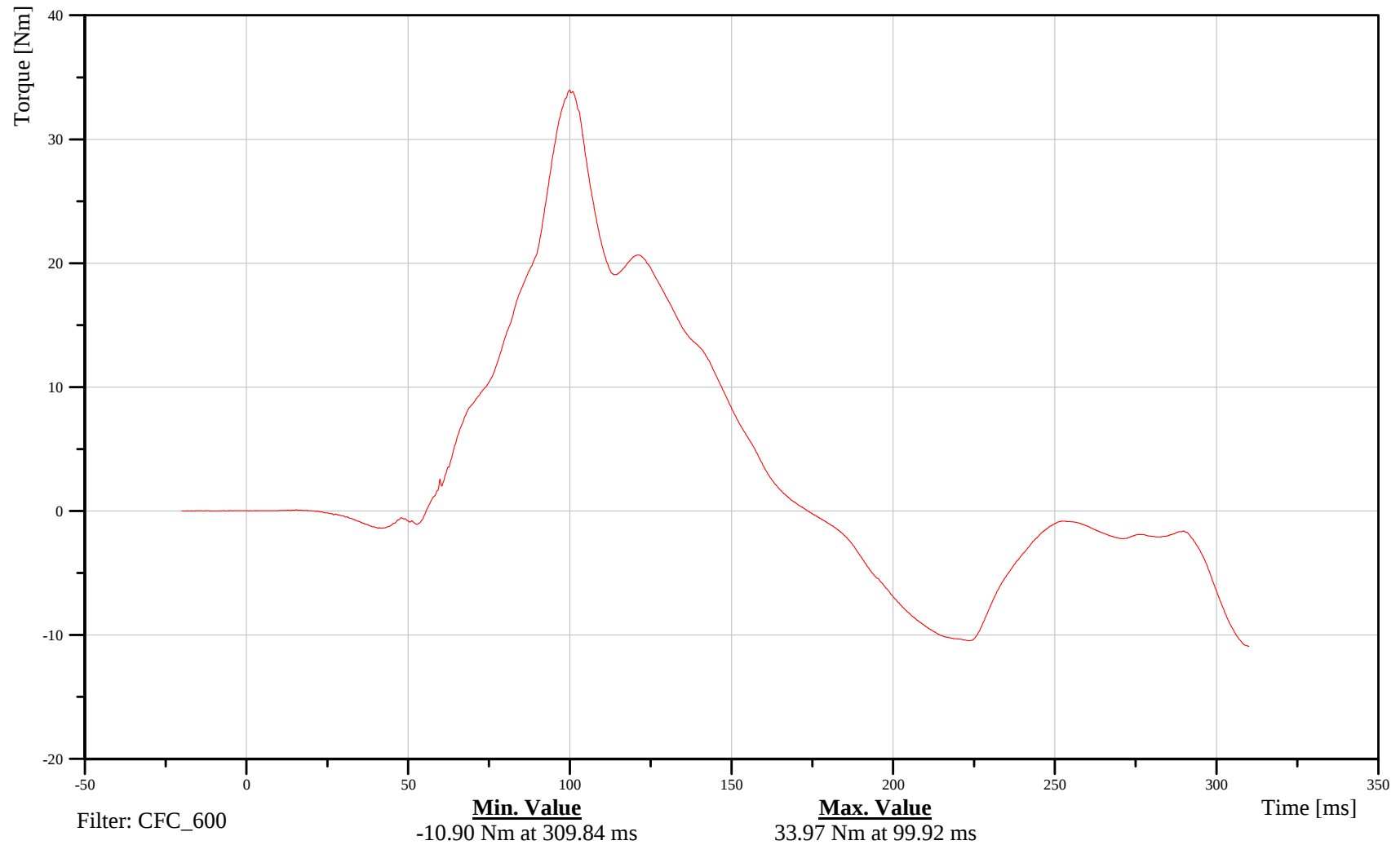
Right Rear Lower Neck Moment About X Axis

Customer: VRTC

16NECKLO00Y6MOXB

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-44

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

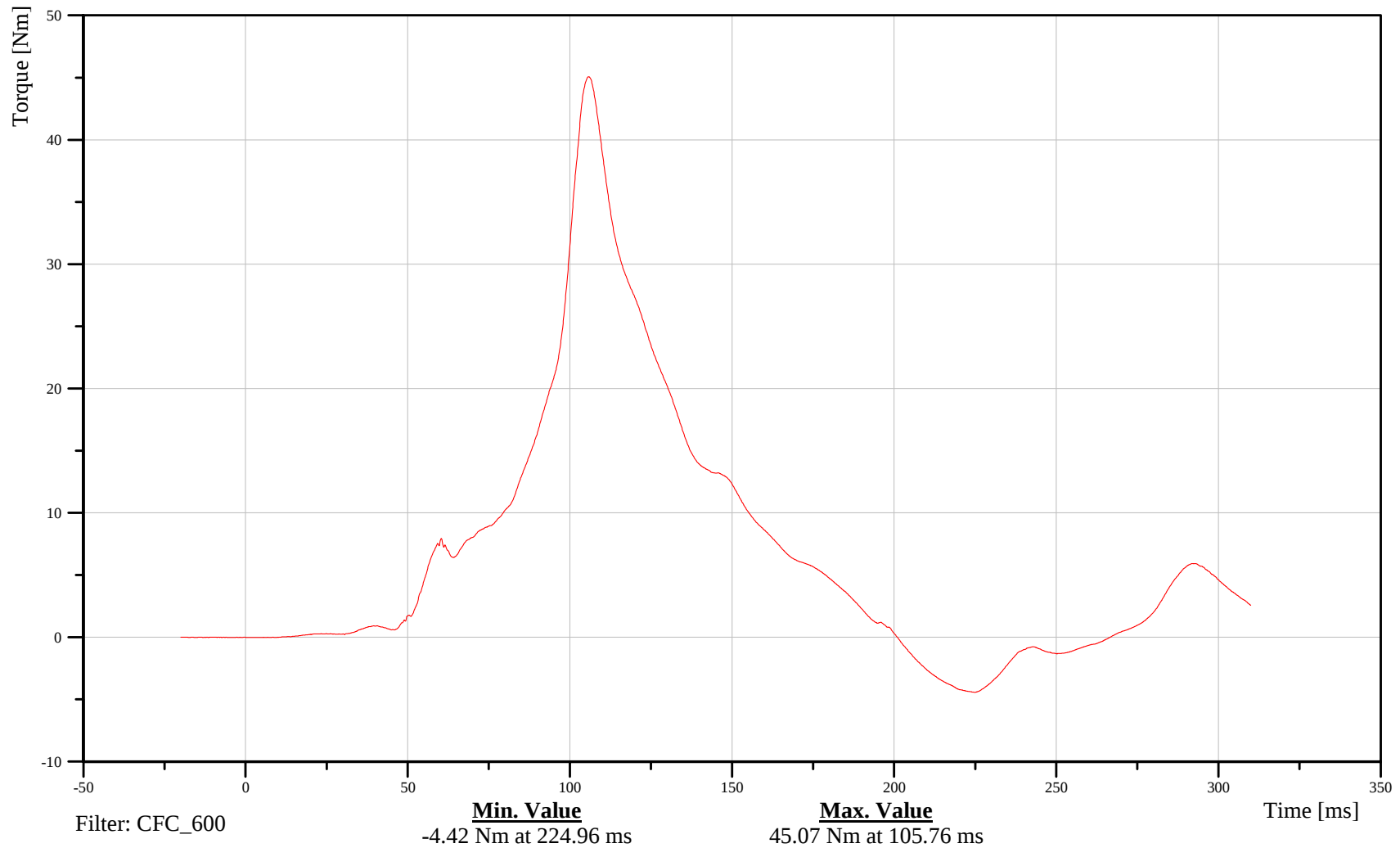
Right Rear Lower Neck Moment About Y Axis

Customer: VRTC

16NECKLO00Y6MOYB

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-45

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

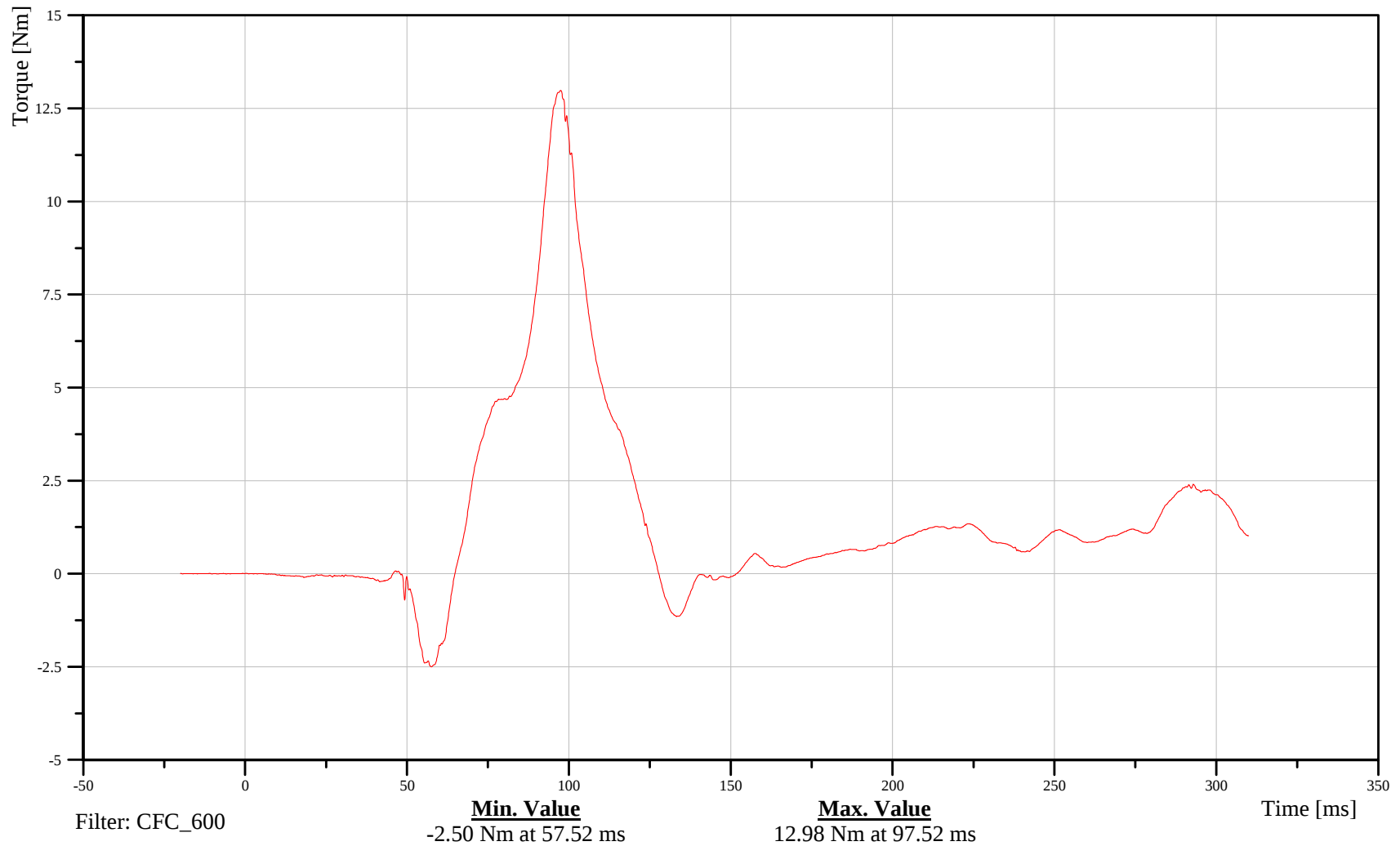
Right Rear Lower Neck Moment About Z Axis

Customer: VRTC

16NECKLO00Y6MOZB

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-46

080917



Child Safety Research
Right Rear Chest X-Axis Acceleration

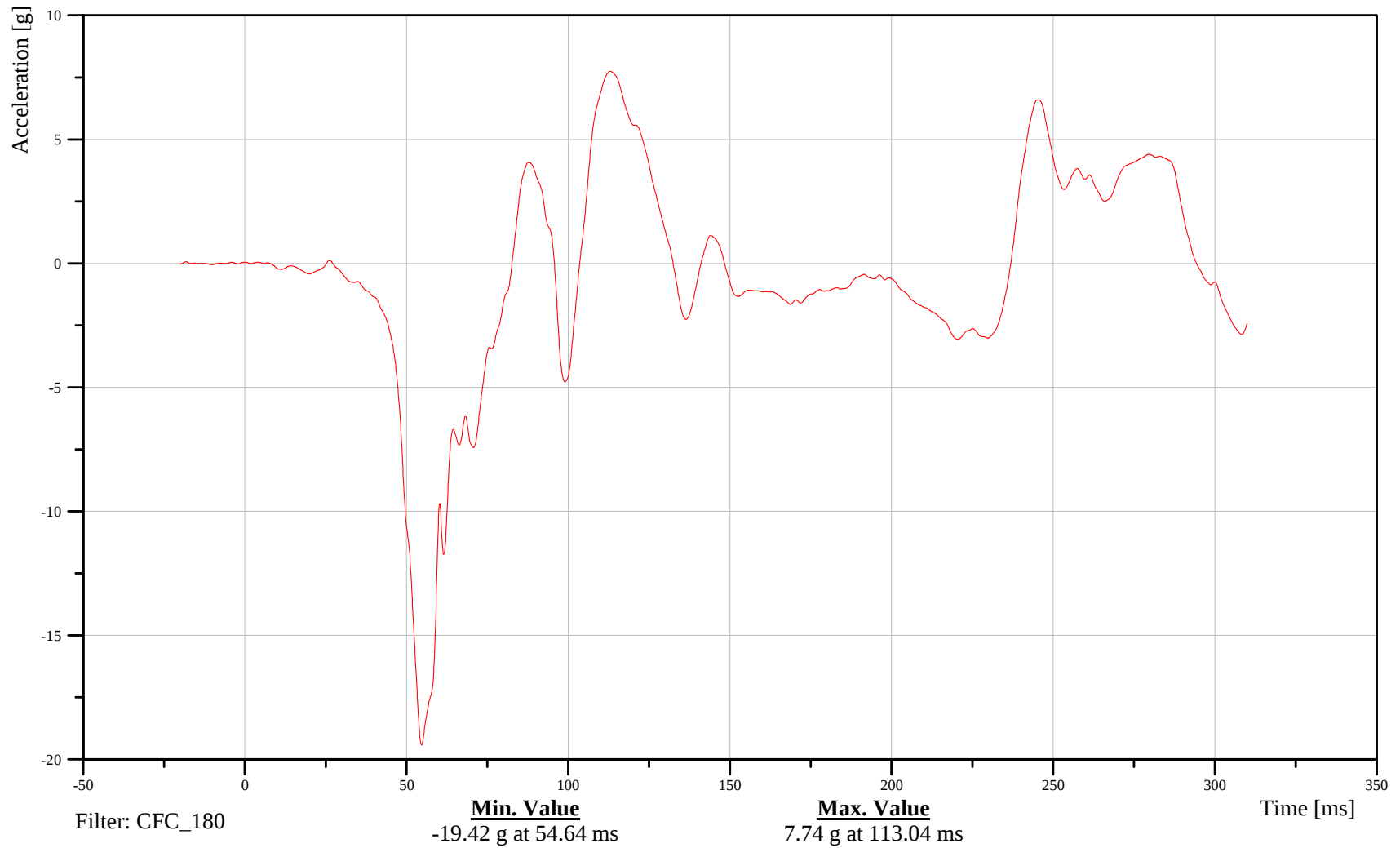
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16CHSTCG00Y6ACXC

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-47

080917



Child Safety Research
Right Rear Chest Y-Axis Acceleration

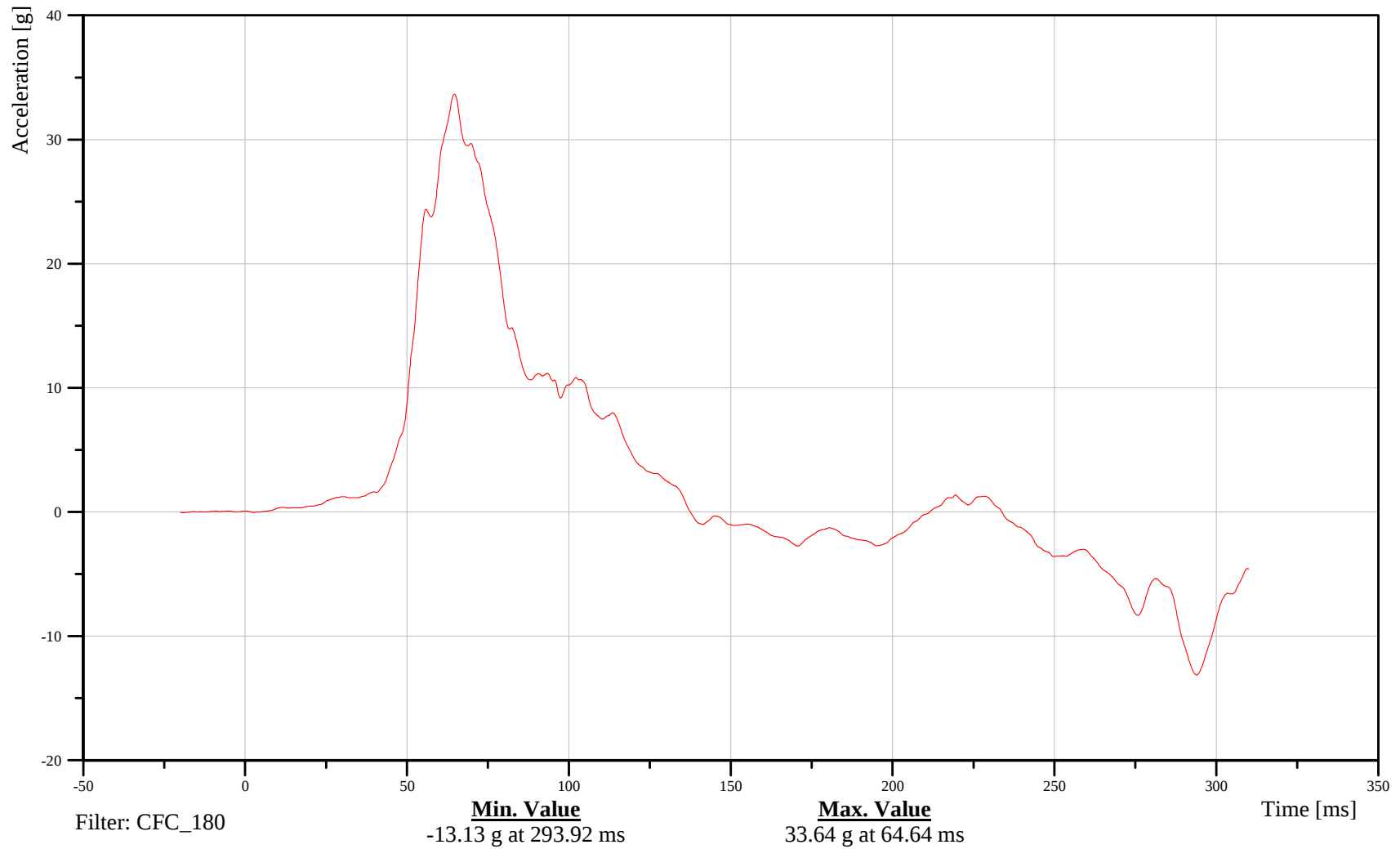
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16CHSTCG00Y6ACYC

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-48

080917



Child Safety Research
Right Rear Chest Z-Axis Acceleration

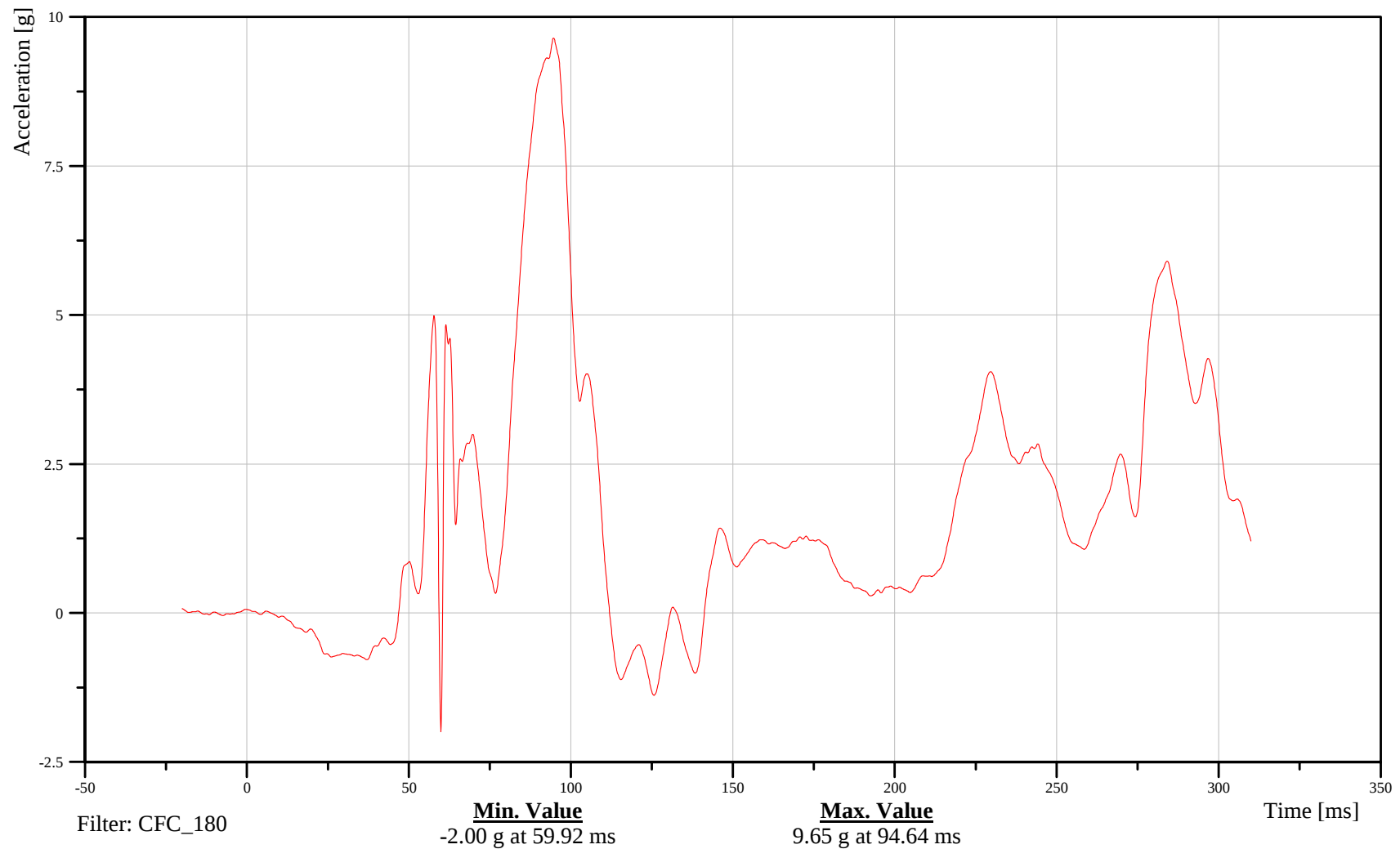
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16CHSTCG00Y6ACZC

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-49

080917



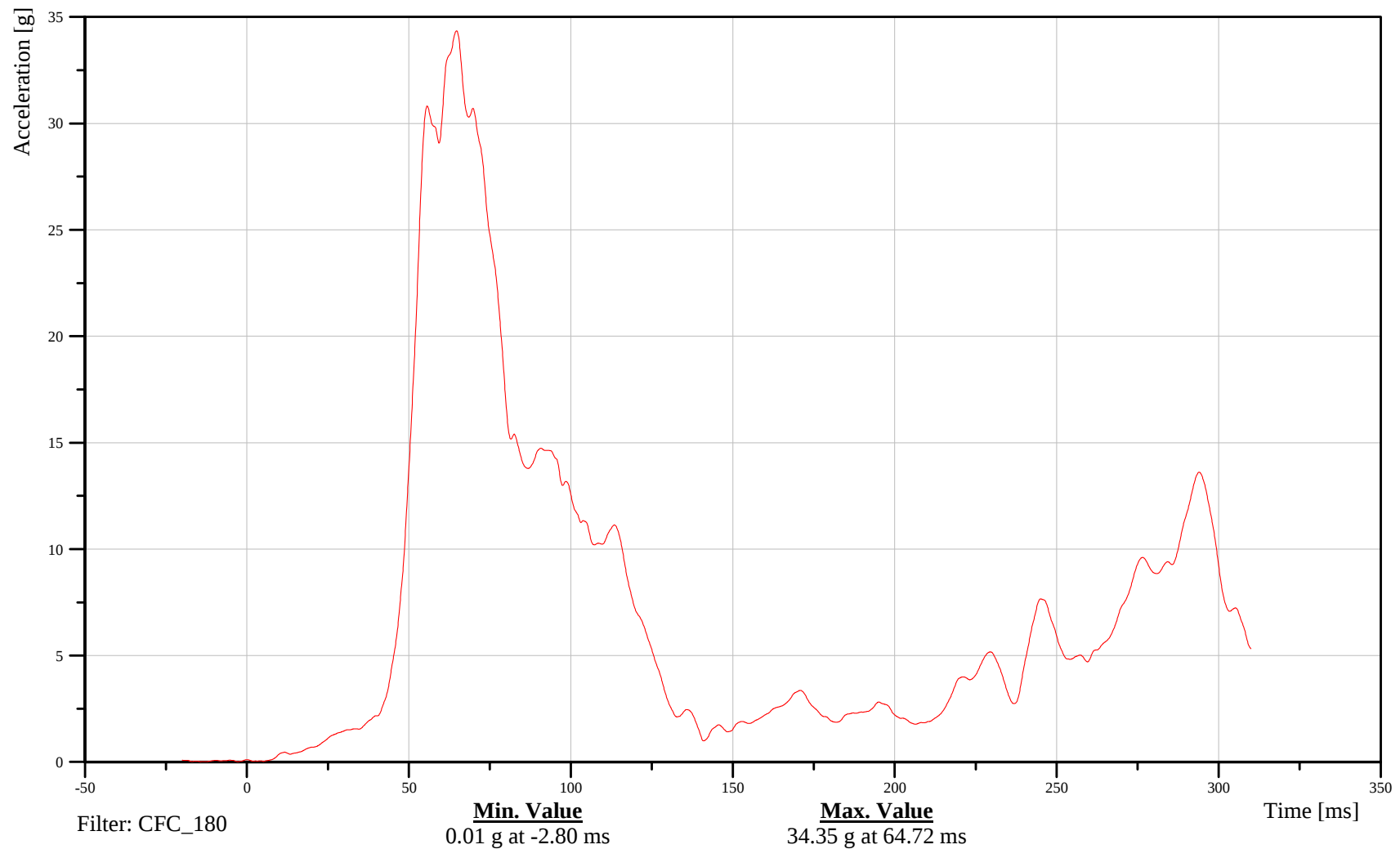
Child Safety Research
Right Rear Chest Resultant Acceleration

Date: 09/17/2008
Time: 14:47

Customer: VRTC

16CHSTCG00Y6ACRC

TRC Inc. Test Lab: CTF
Test Number: 080917-1



B-50

080917



Child Safety Research
Right Rear Chest X-Axis Displacement

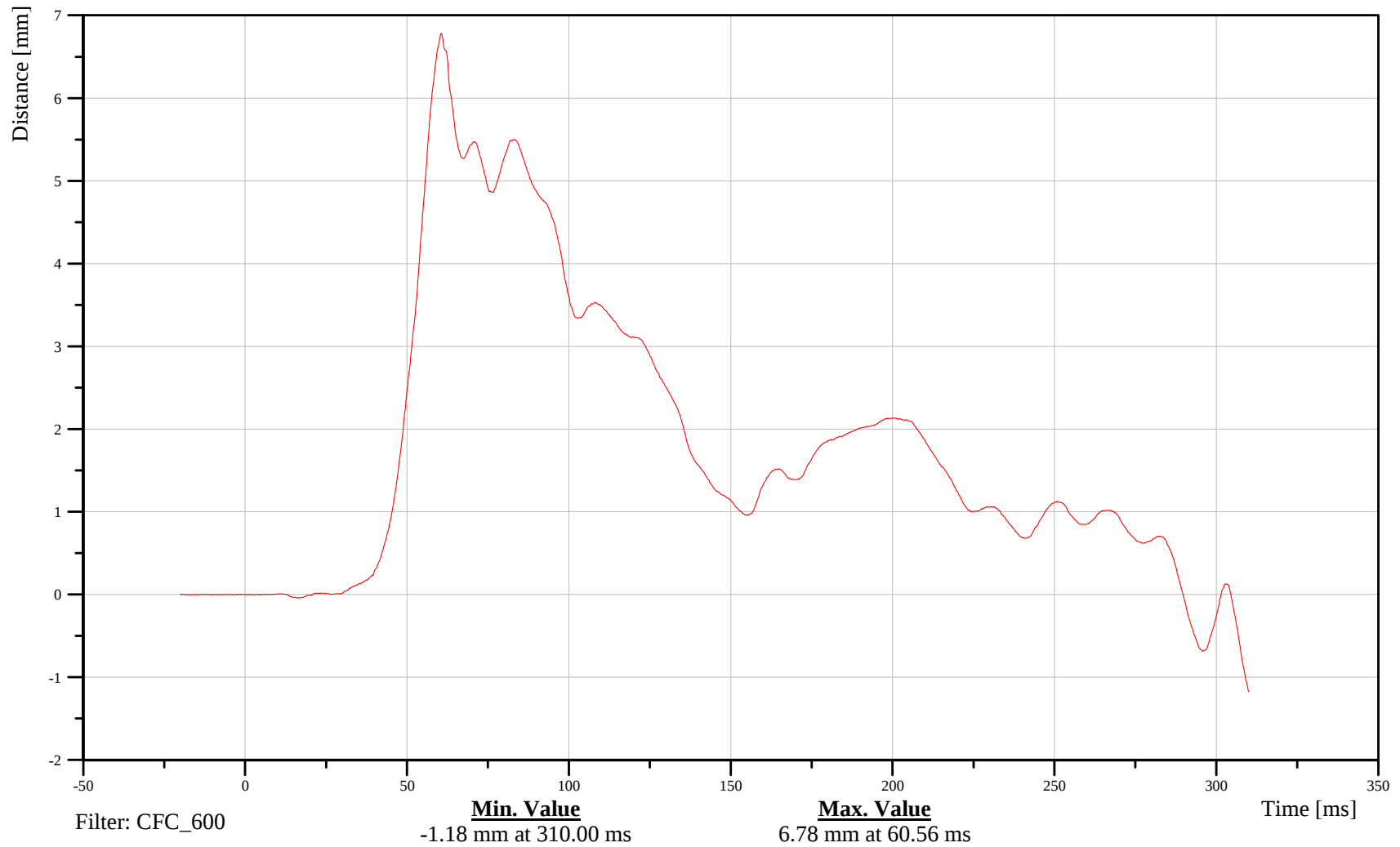
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16CHST0000Y6DSXB

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-51

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

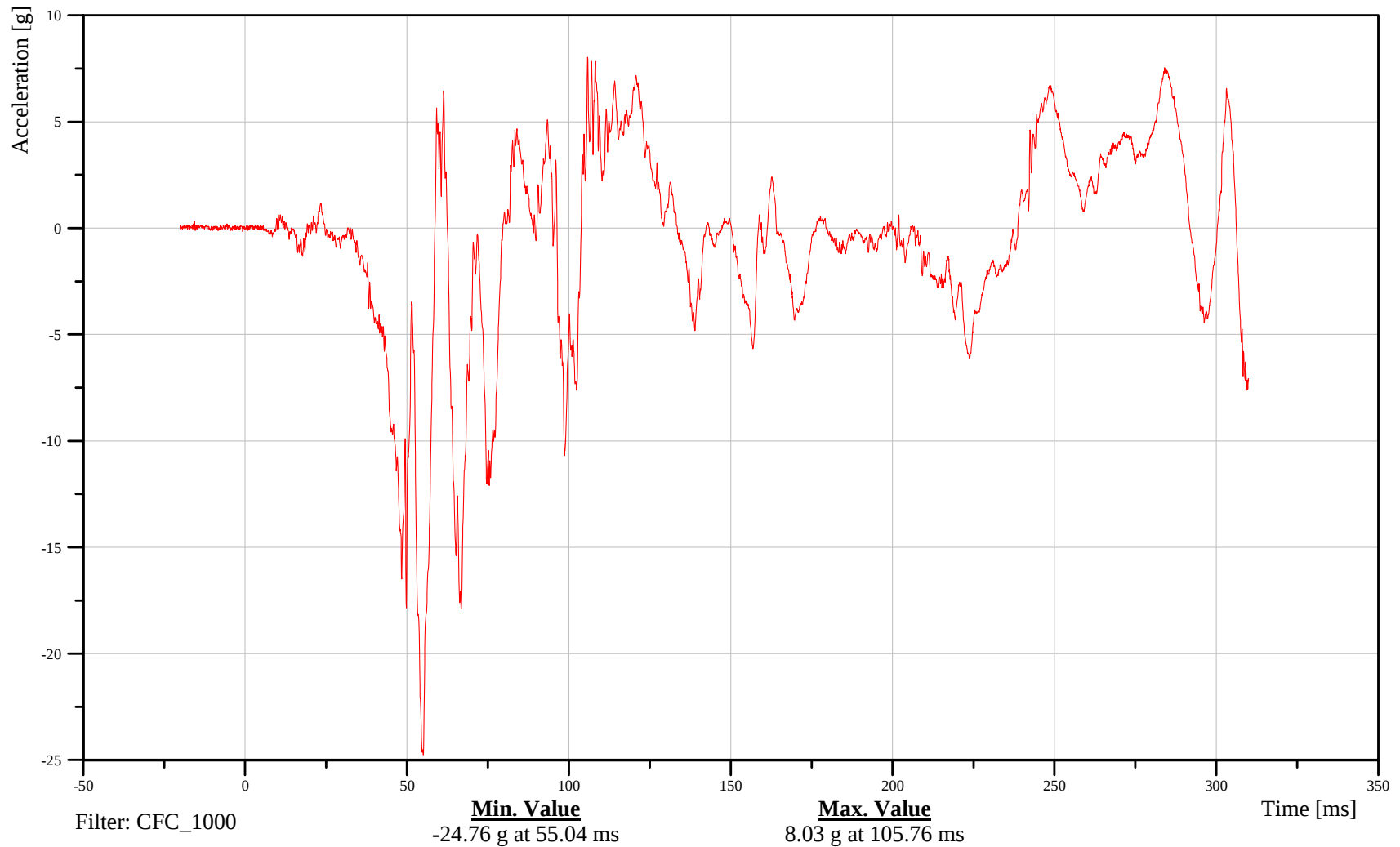
Right Rear Sternum (Rib 1) X-Axis Acceleration

Customer: VRTC

16STRN0100Y6ACXA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-52

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

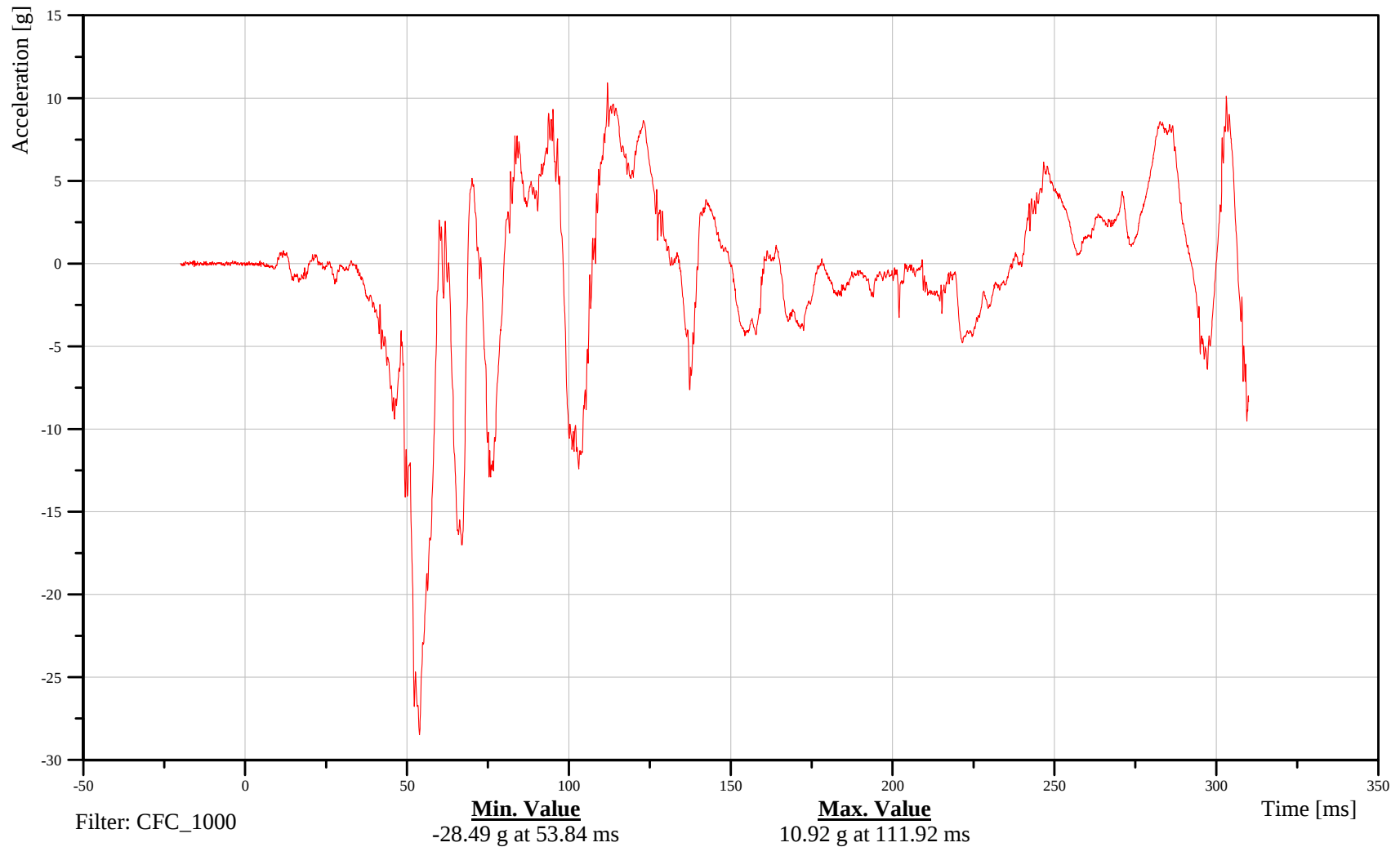
Right Rear Sternum (Rib 6) X-Axis Acceleration

Customer: VRTC

16STRN0600Y6ACXA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-53

080917



Child Safety Research
Right Rear Pelvis X-Axis Acceleration

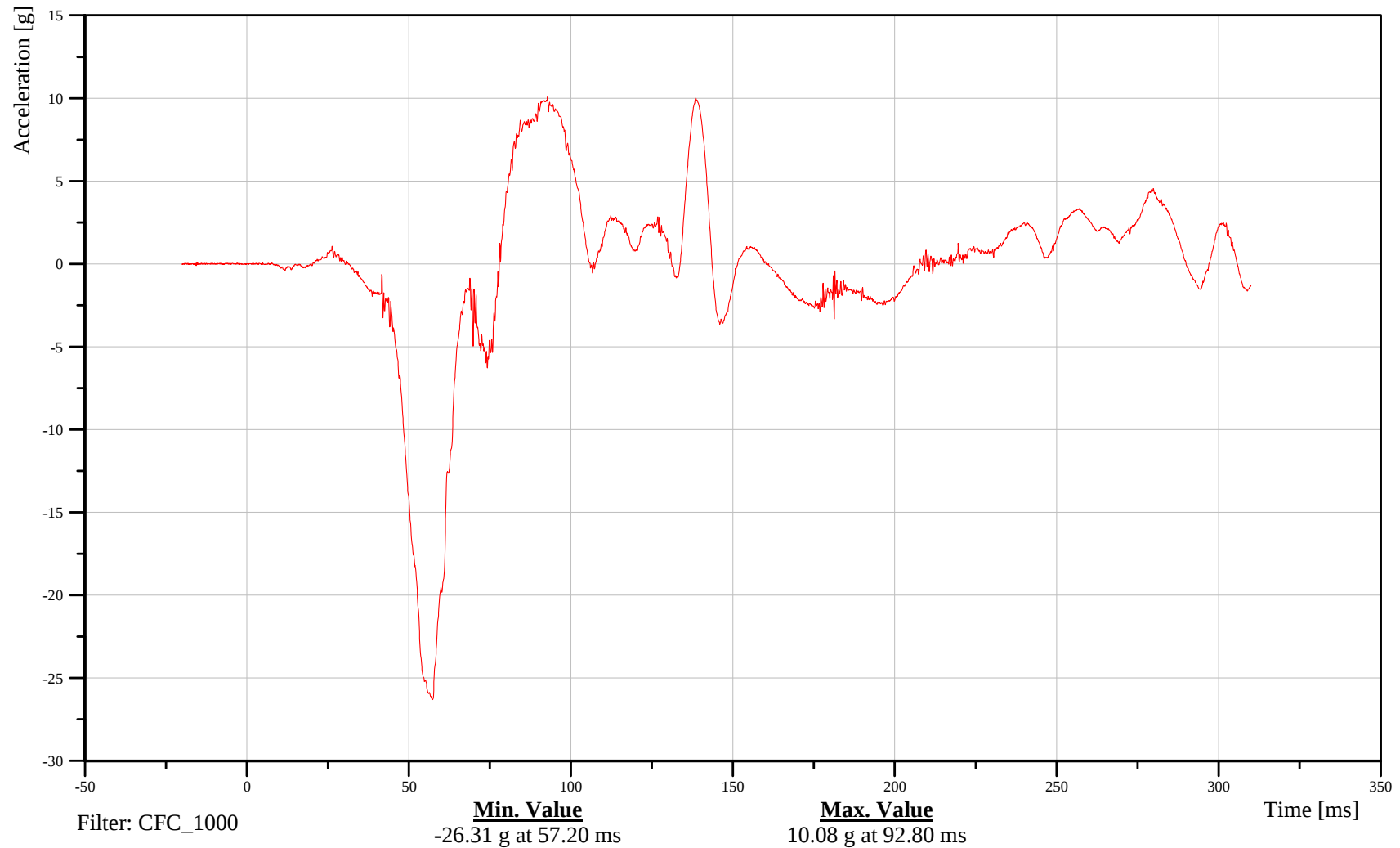
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16PELVCG00Y6ACXA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-54

080917



Child Safety Research
Right Rear Pelvis Y-Axis Acceleration

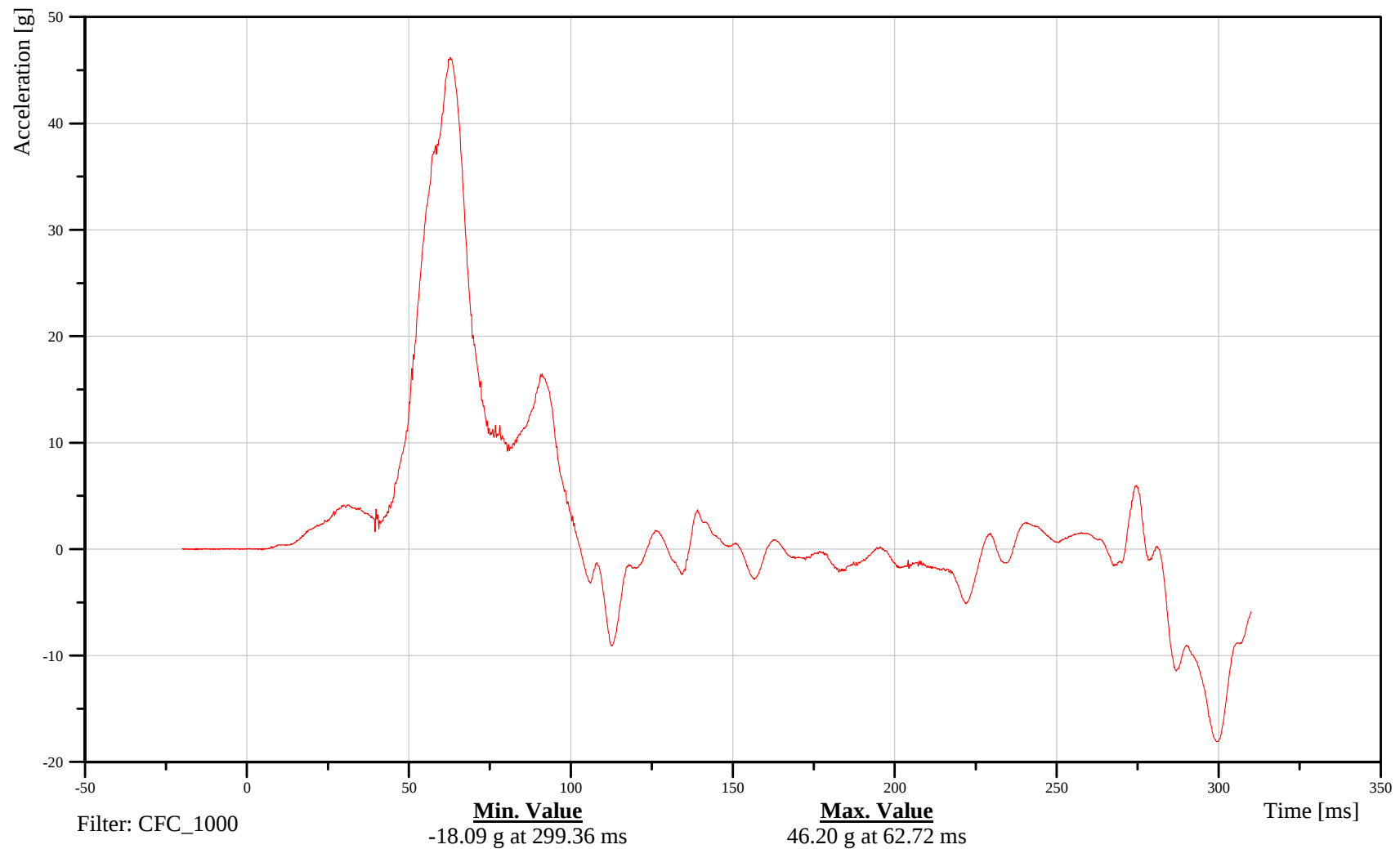
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16PELVCG00Y6ACYA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-55

080917



Child Safety Research
Right Rear Pelvis Z-Axis Acceleration

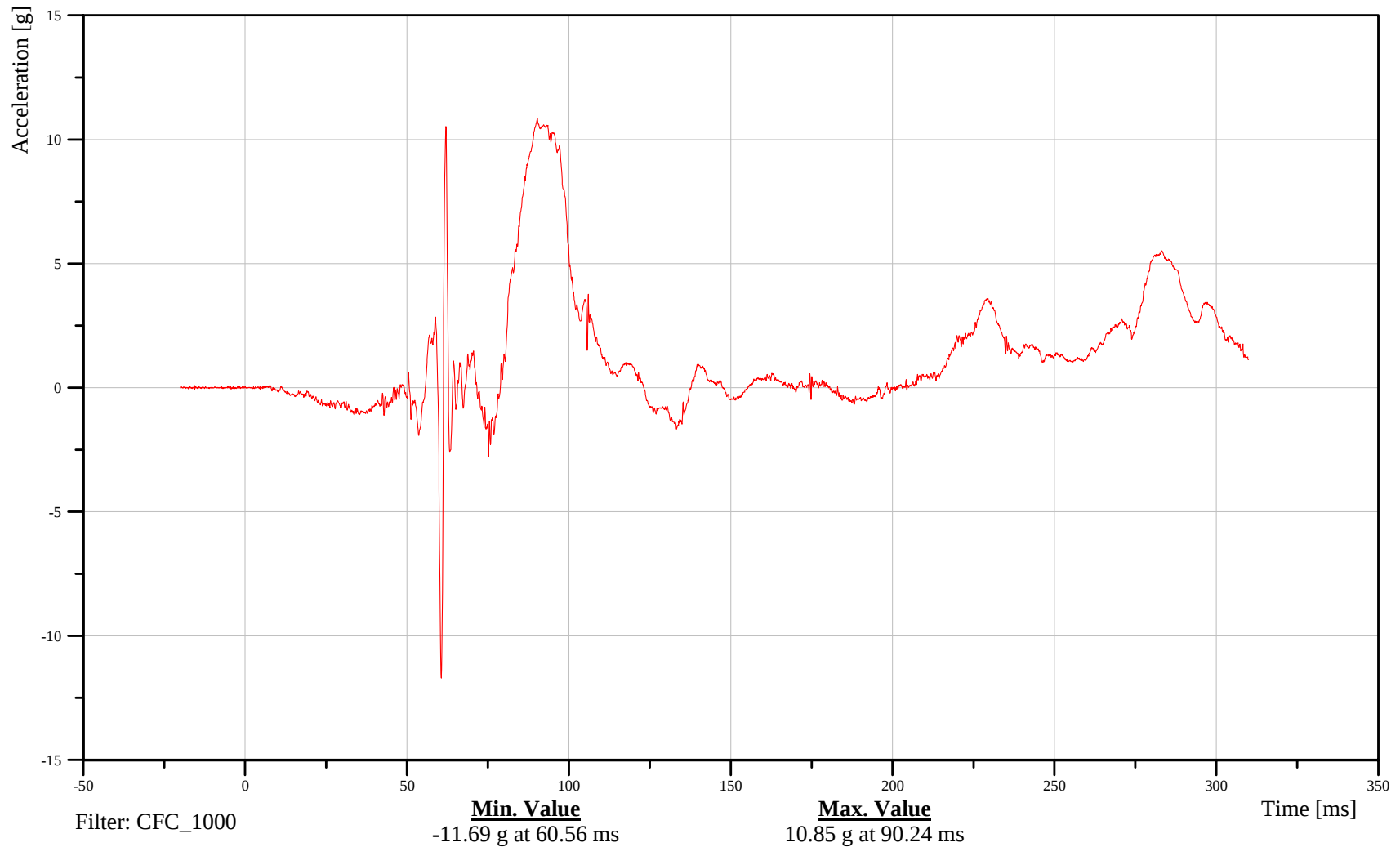
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16PELVCG00Y6ACZA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-56

080917



Child Safety Research
Right Rear Pelvis Resultant Acceleration

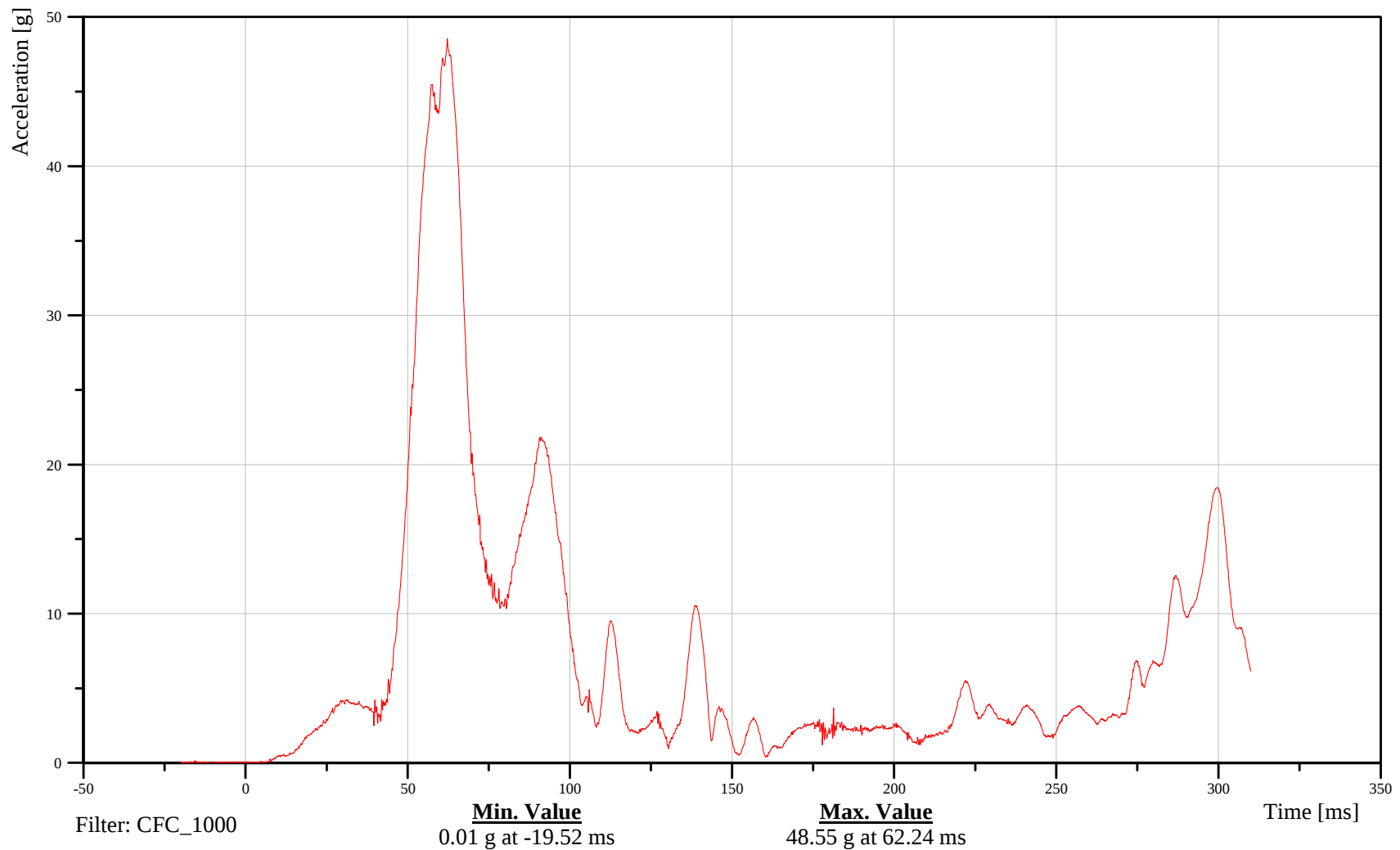
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16PELVCG00Y6ACRA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-57

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

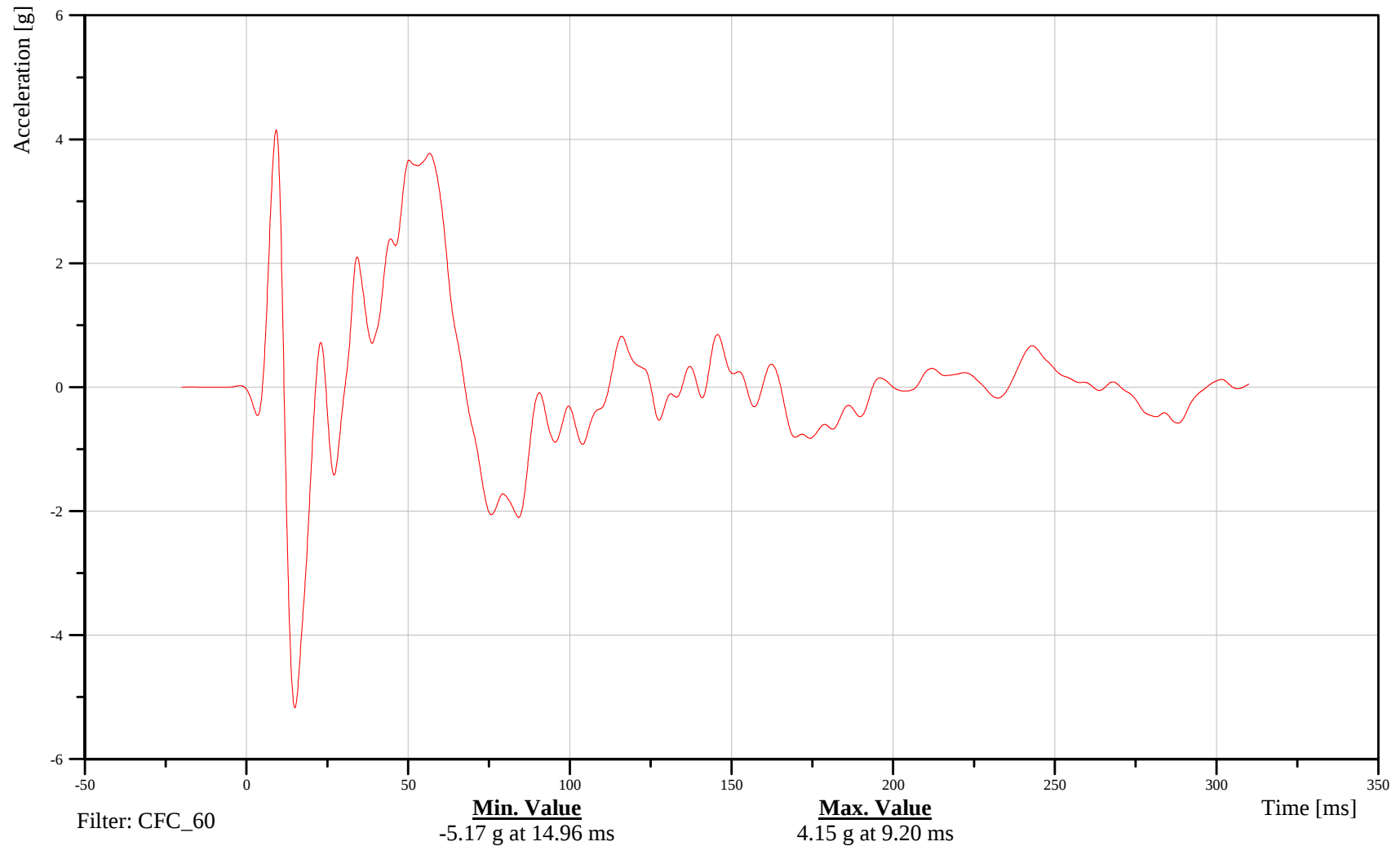
Right Side Sill at Front Seat X-Axis Acceleration

Customer: VRTC

16SILBFR0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-58

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

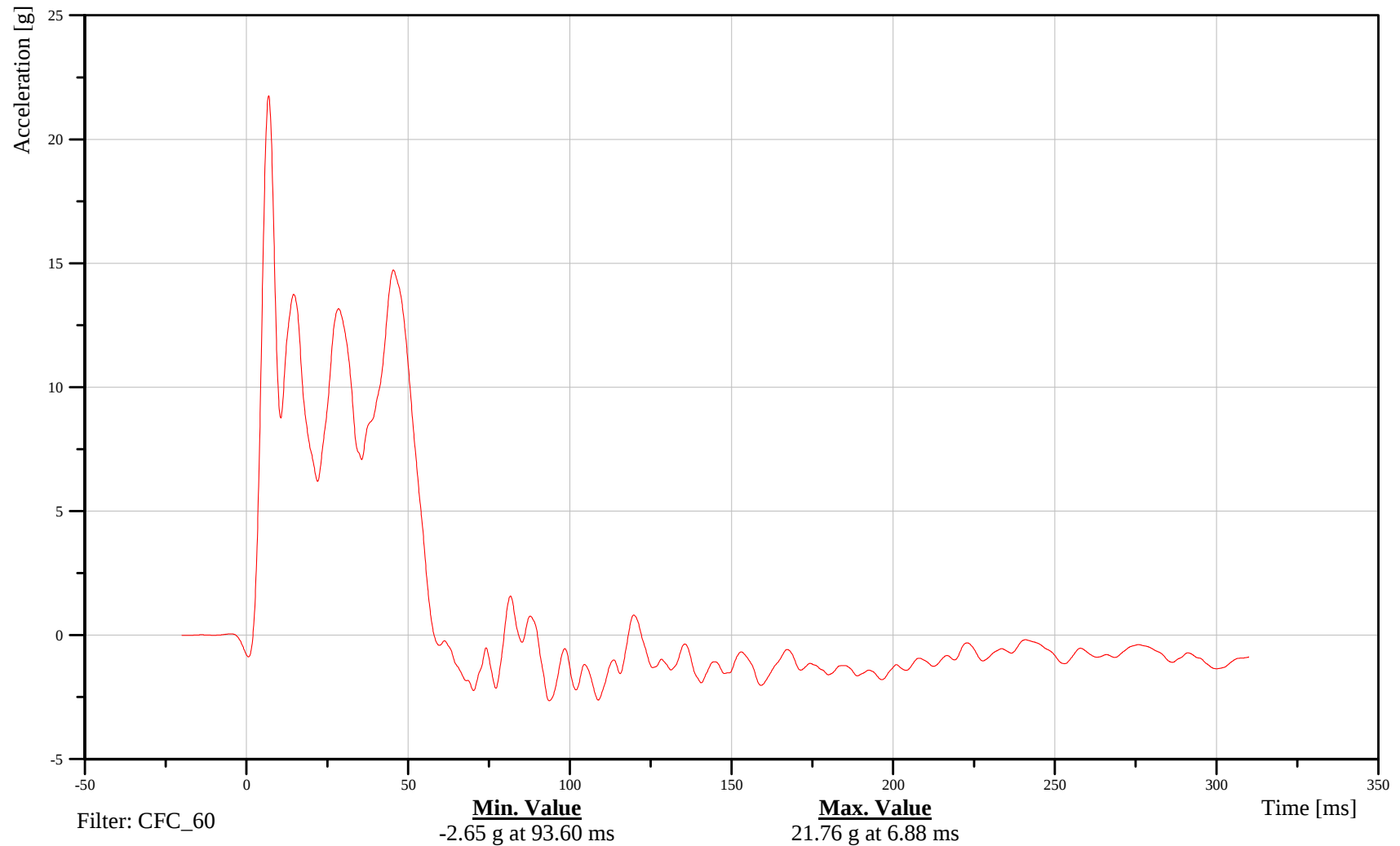
Right Side Sill at Front Seat Y-Axis Acceleration

Customer: VRTC

16SILBFR0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-59

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

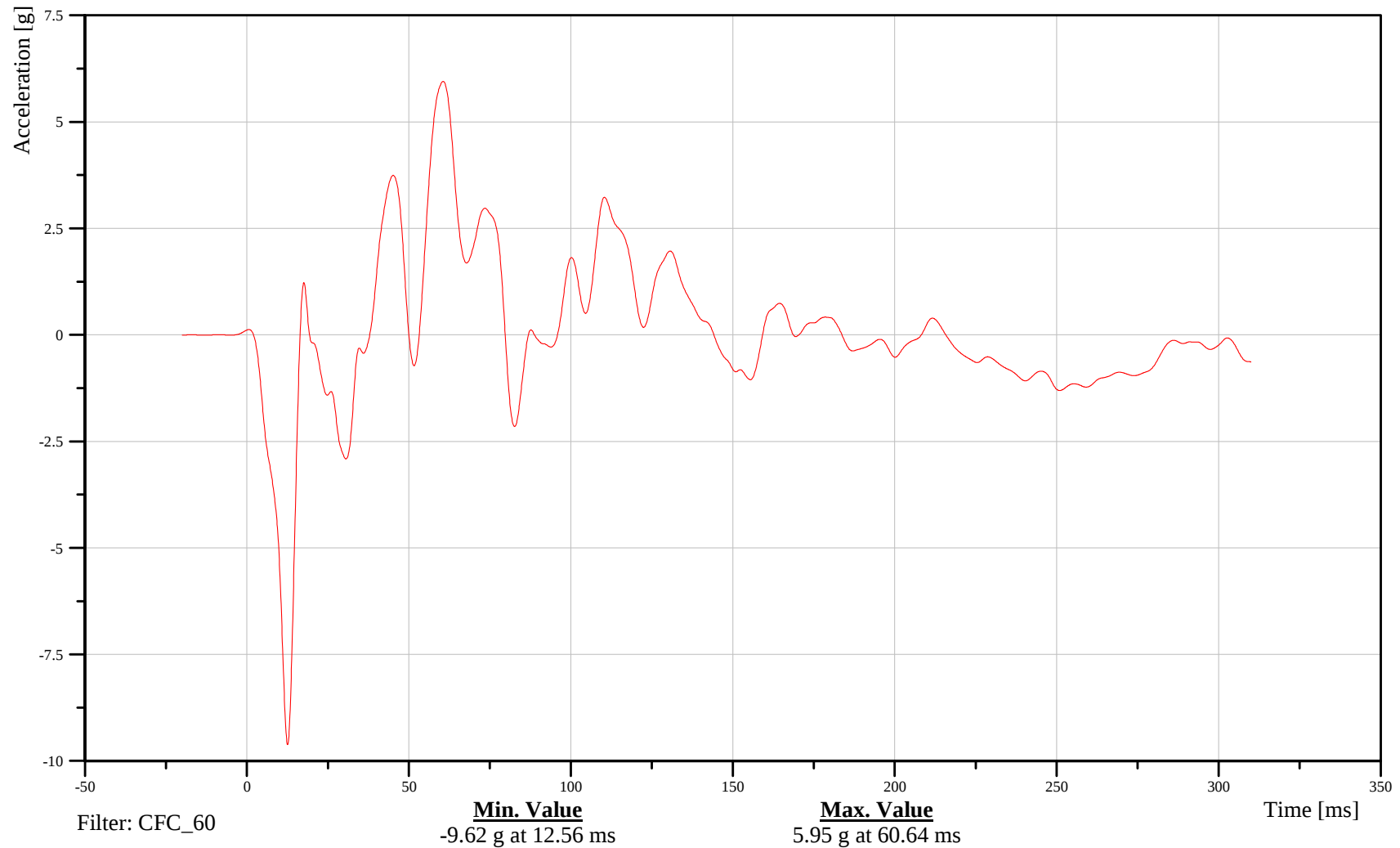
Right Side Sill at Front Seat Z-Axis Acceleration

Customer: VRTC

16SILBFR0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-60

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

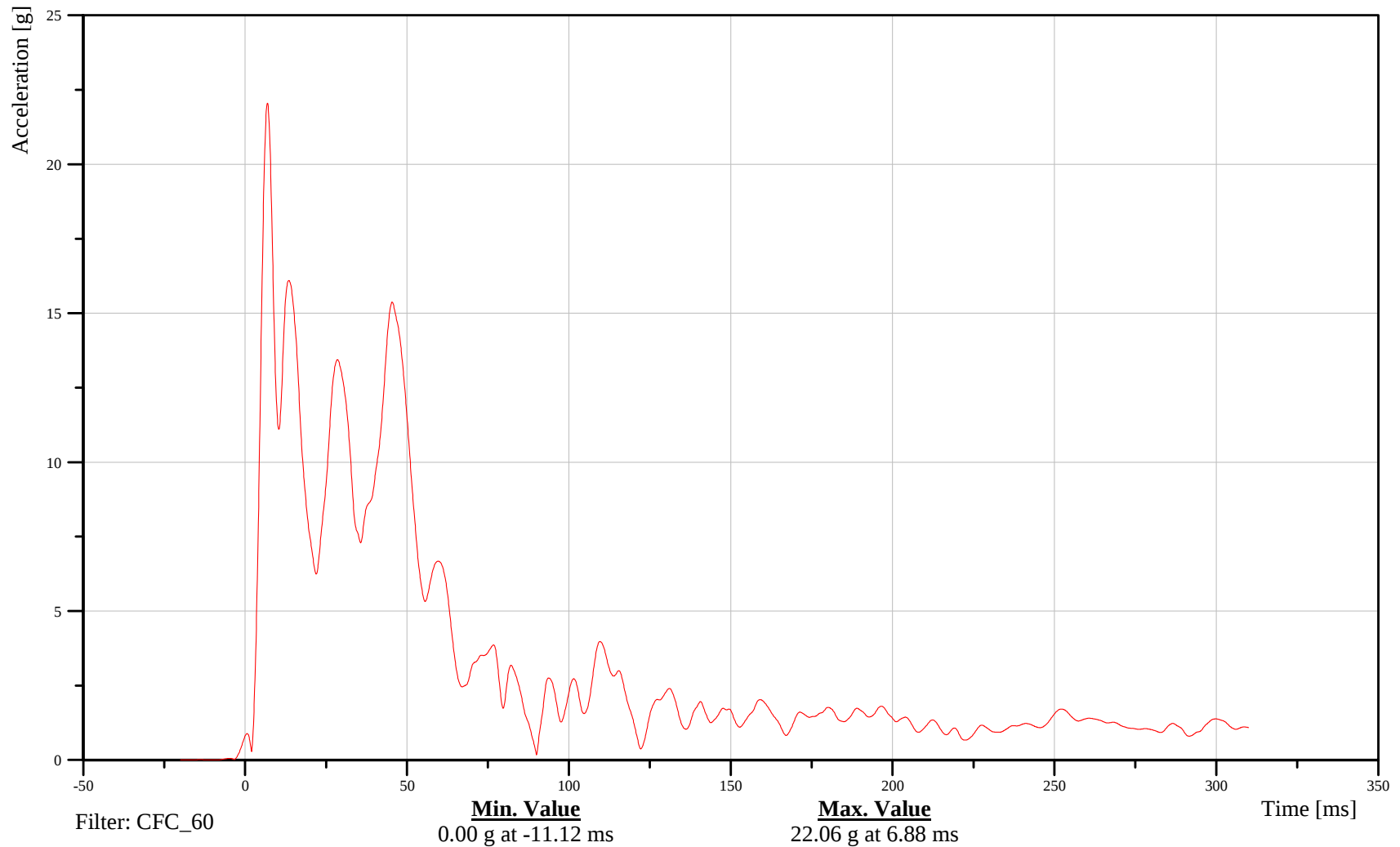
Right Side Sill at Front Seat Resultant Acceleration

Customer: VRTC

16SILBFR0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-61

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

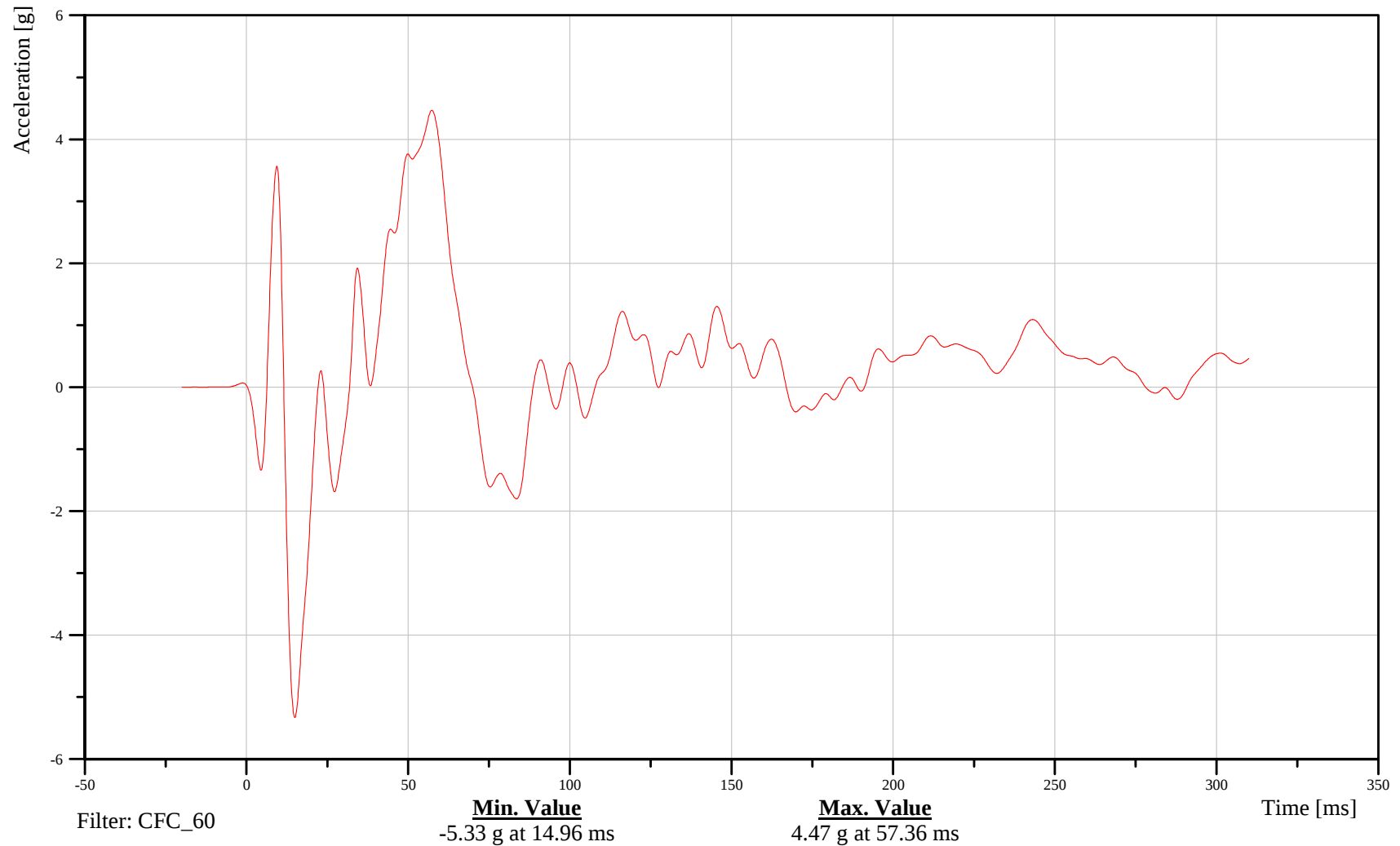
Right Side Sill at Rear Seat X-Axis Acceleration

Customer: VRTC

16SILBRE0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-62

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

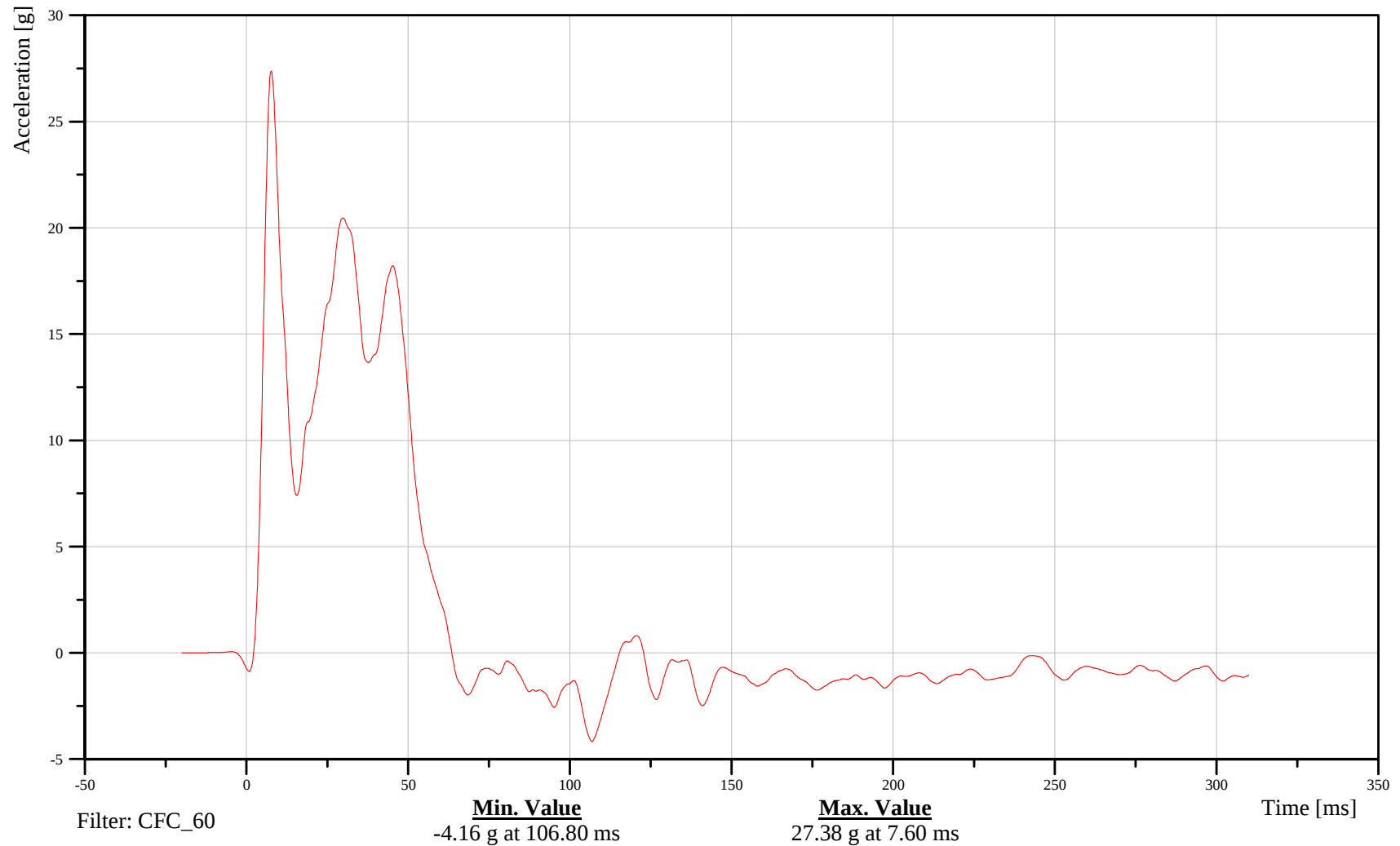
Right Side Sill at Rear Seat Y-Axis Acceleration

Customer: VRTC

16SILBRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-63

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

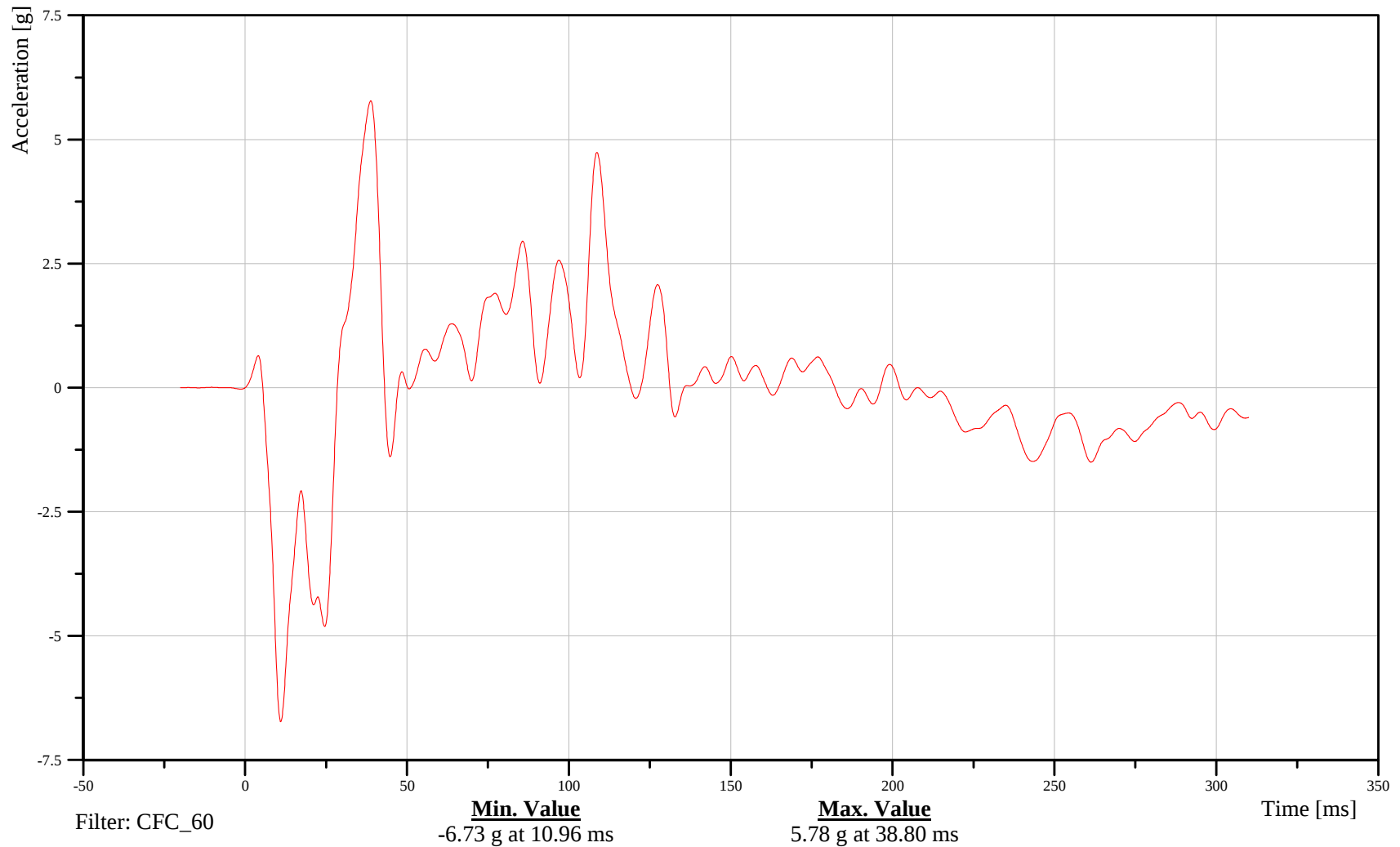
Right Side Sill at Rear Seat Z-Axis Acceleration

Customer: VRTC

16SILBRE0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-64

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

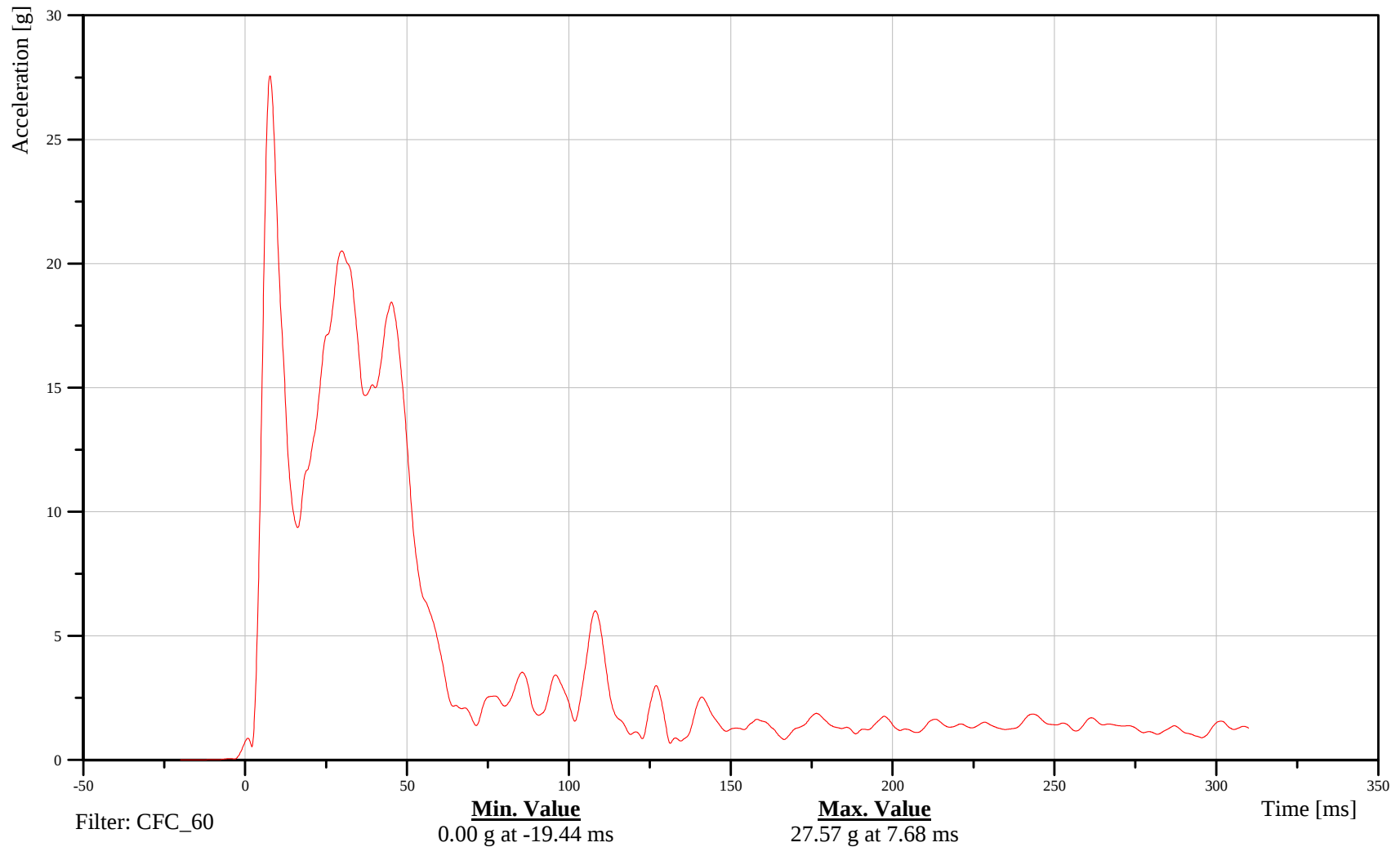
Right Side Sill at Rear Seat Resultant Acceleration

Customer: VRTC

16SILBRE0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-65

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

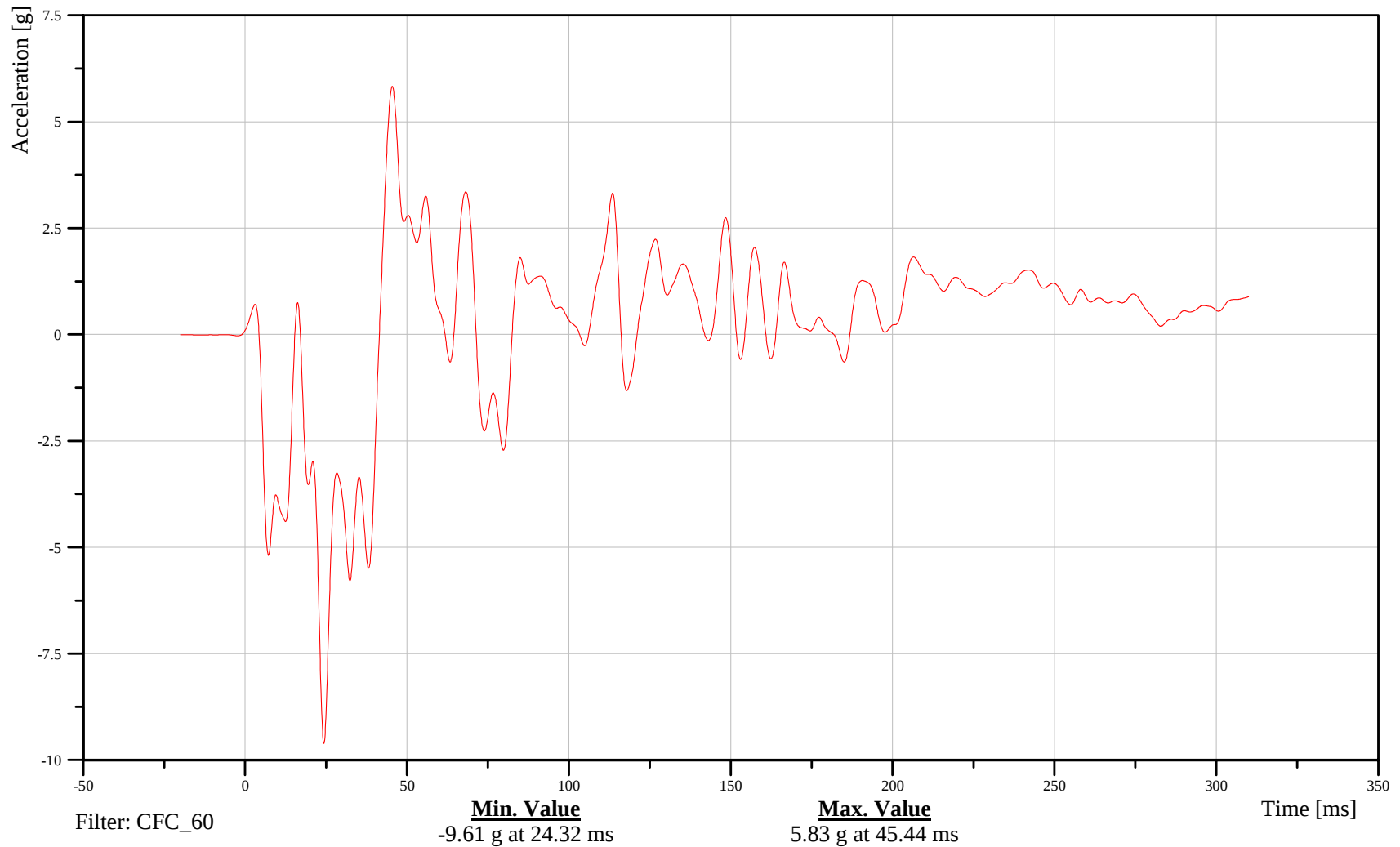
Rear Floorpan Above Axle X-Axis Acceleration

Customer: VRTC

18FORA000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-66

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

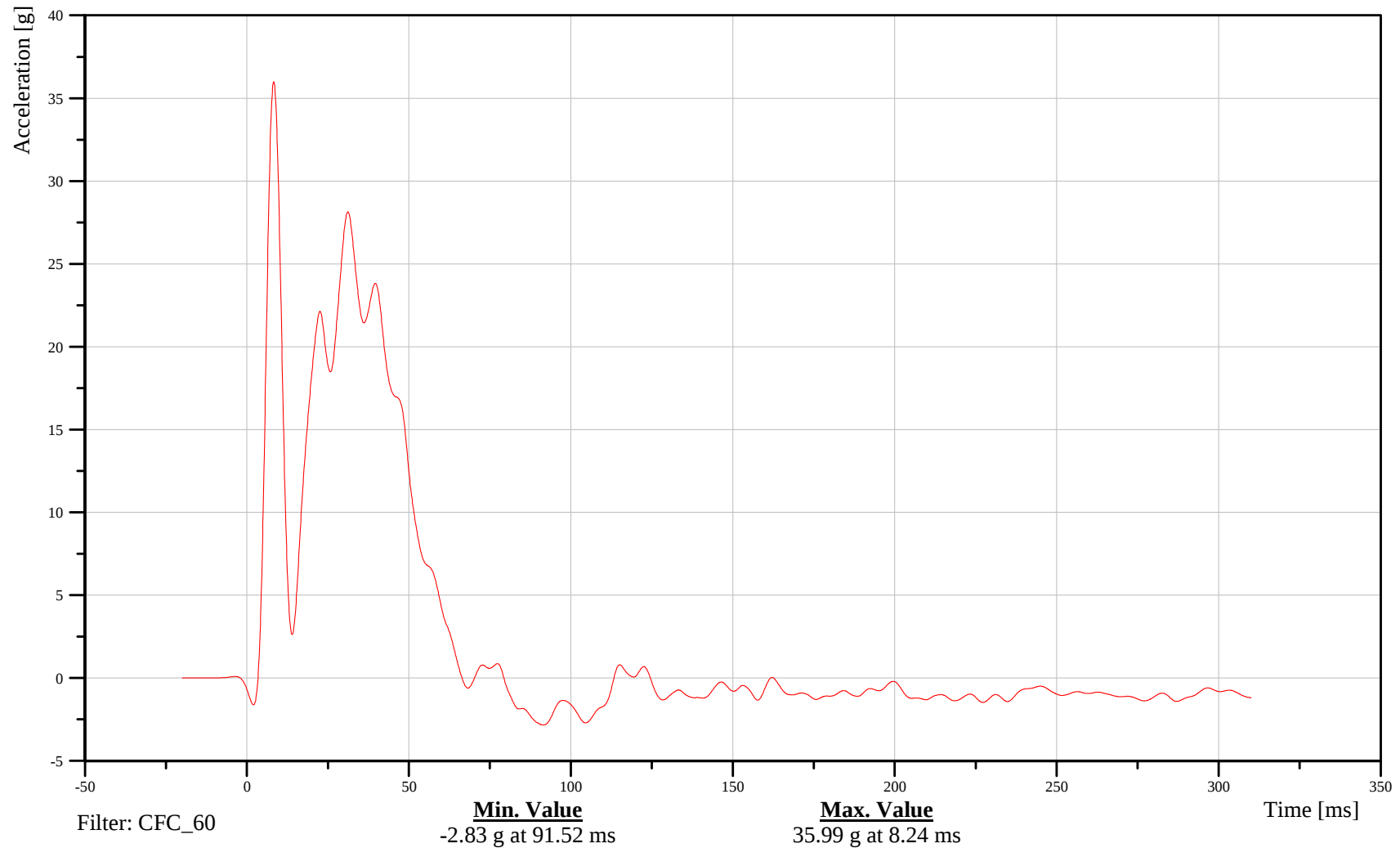
Rear Floorpan Above Axle Y-Axis Acceleration

Customer: VRTC

18FORA000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-67

080917



Child Safety Research

Rear Floorpan Above Axle Z-Axis Acceleration

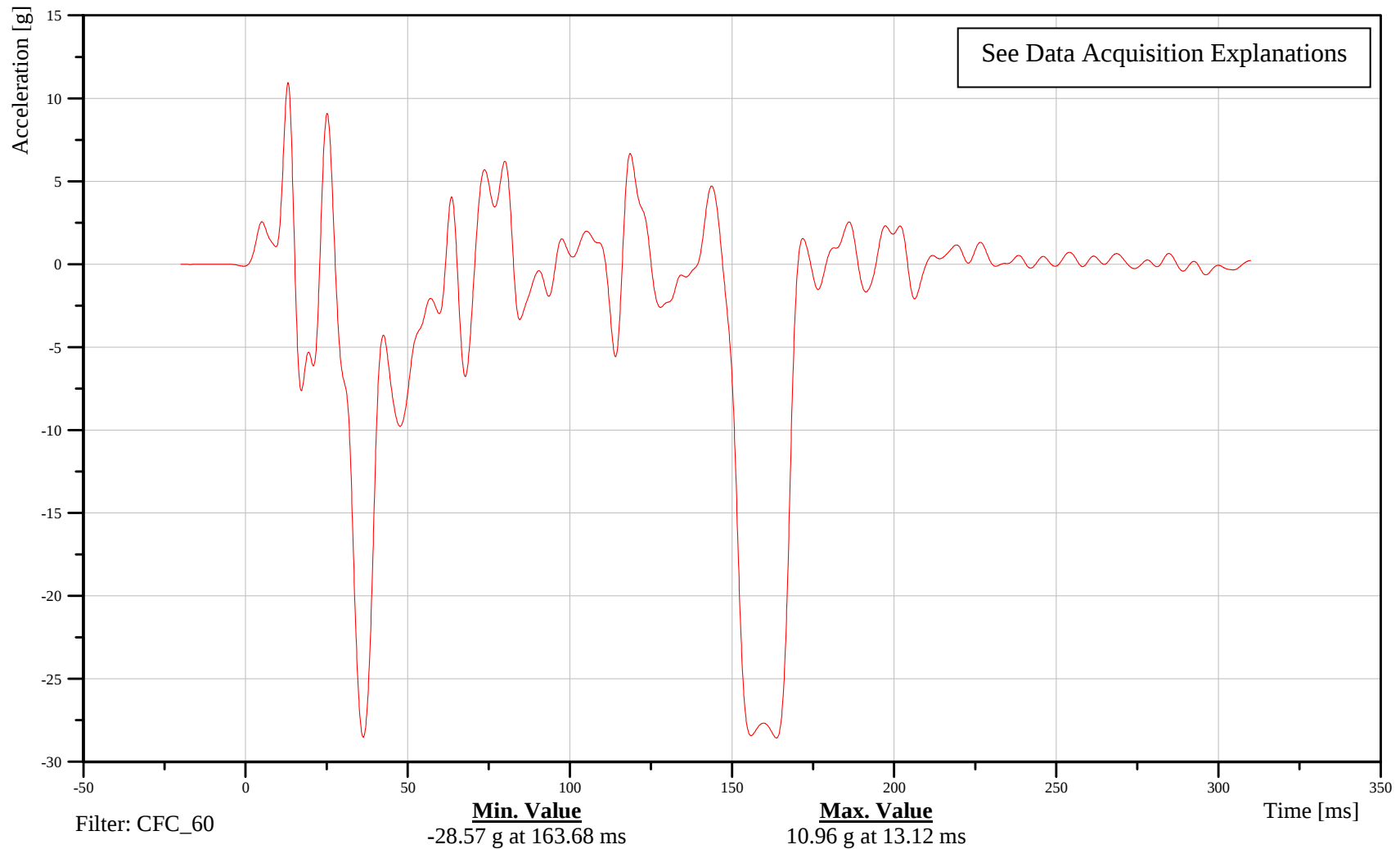
Date: 09/17/2008
Time: 14:47

Customer: VRTC

18FORA000000ACZD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-68

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

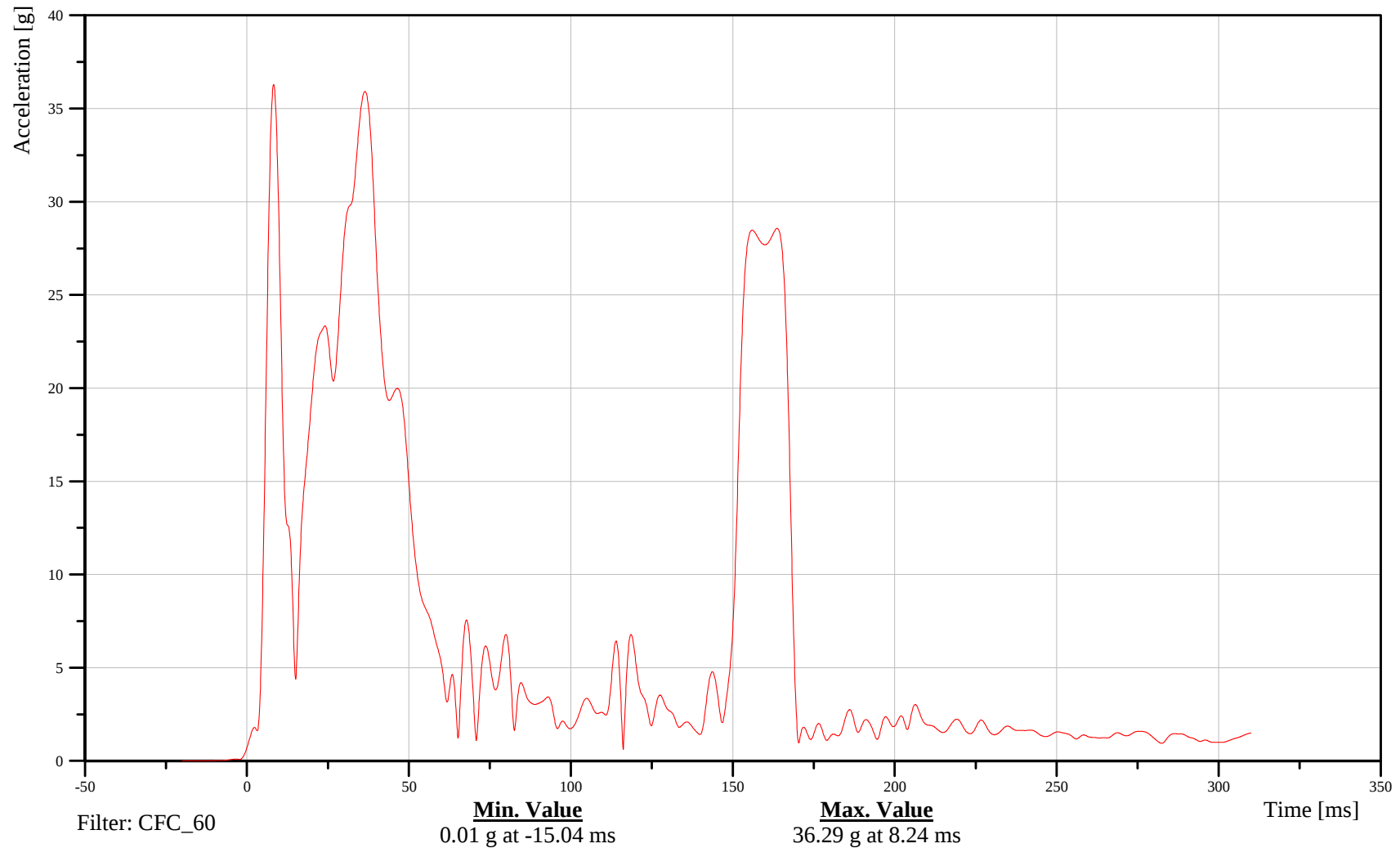
Rear Floorpan Above Axle Resultant Acceleration

Customer: VRTC

18FORA000000ACRD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-69

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

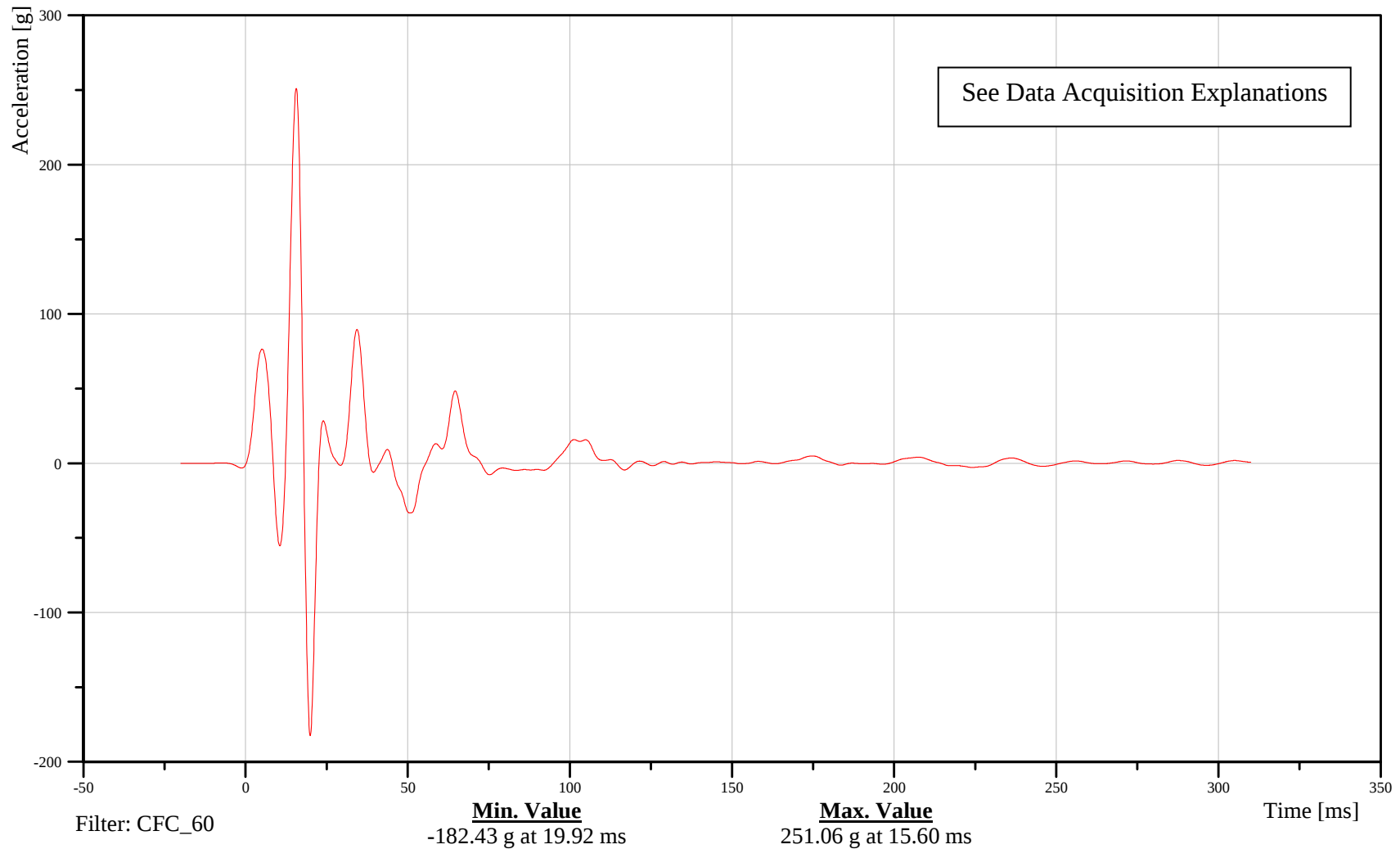
Left Side Sill at Front Seat Y-Axis Acceleration

Customer: VRTC

14SILBFR0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-70

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

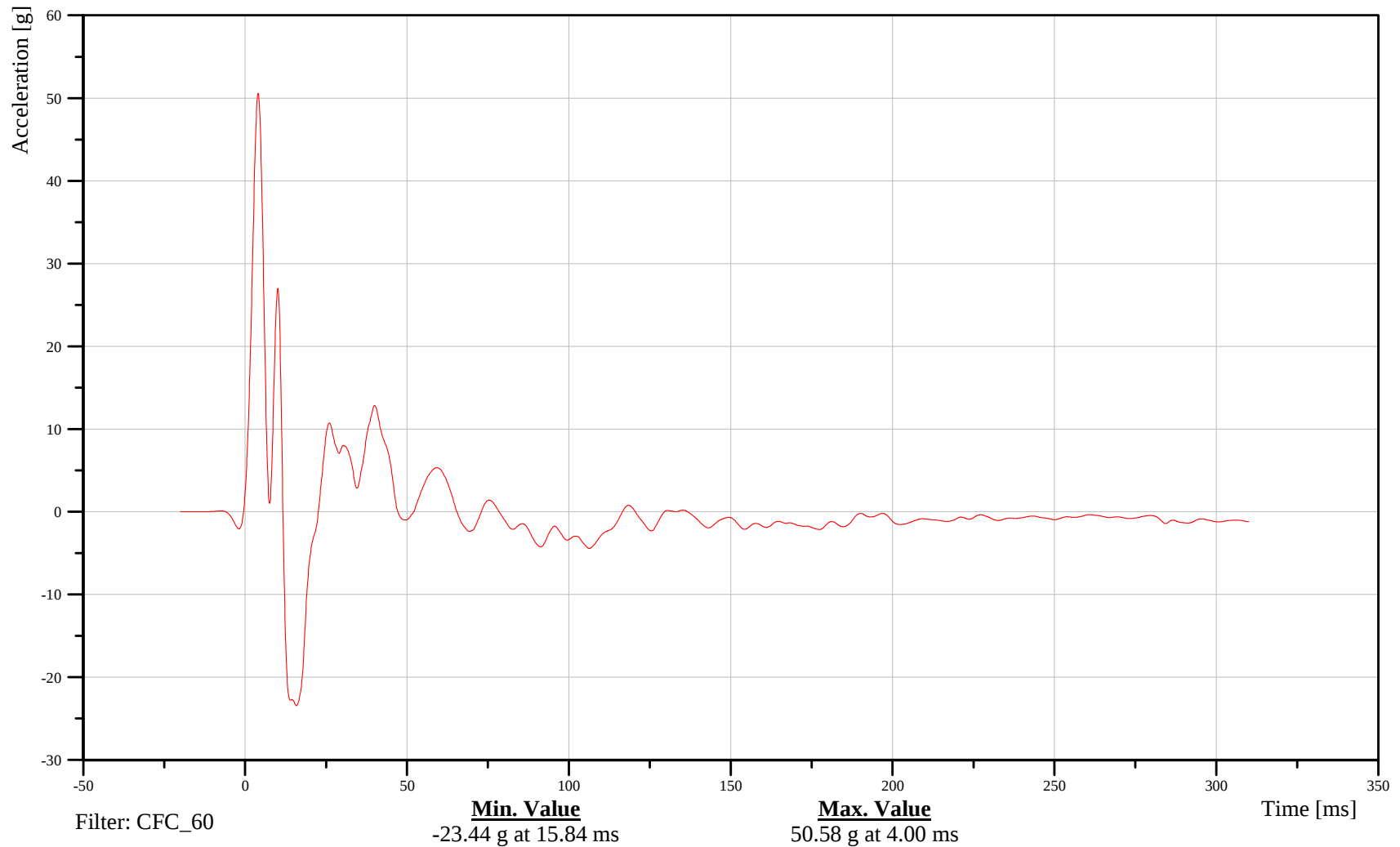
Left Side Sill at Rear Seat Y-Axis Acceleration

Customer: VRTC

14SILBRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-71

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

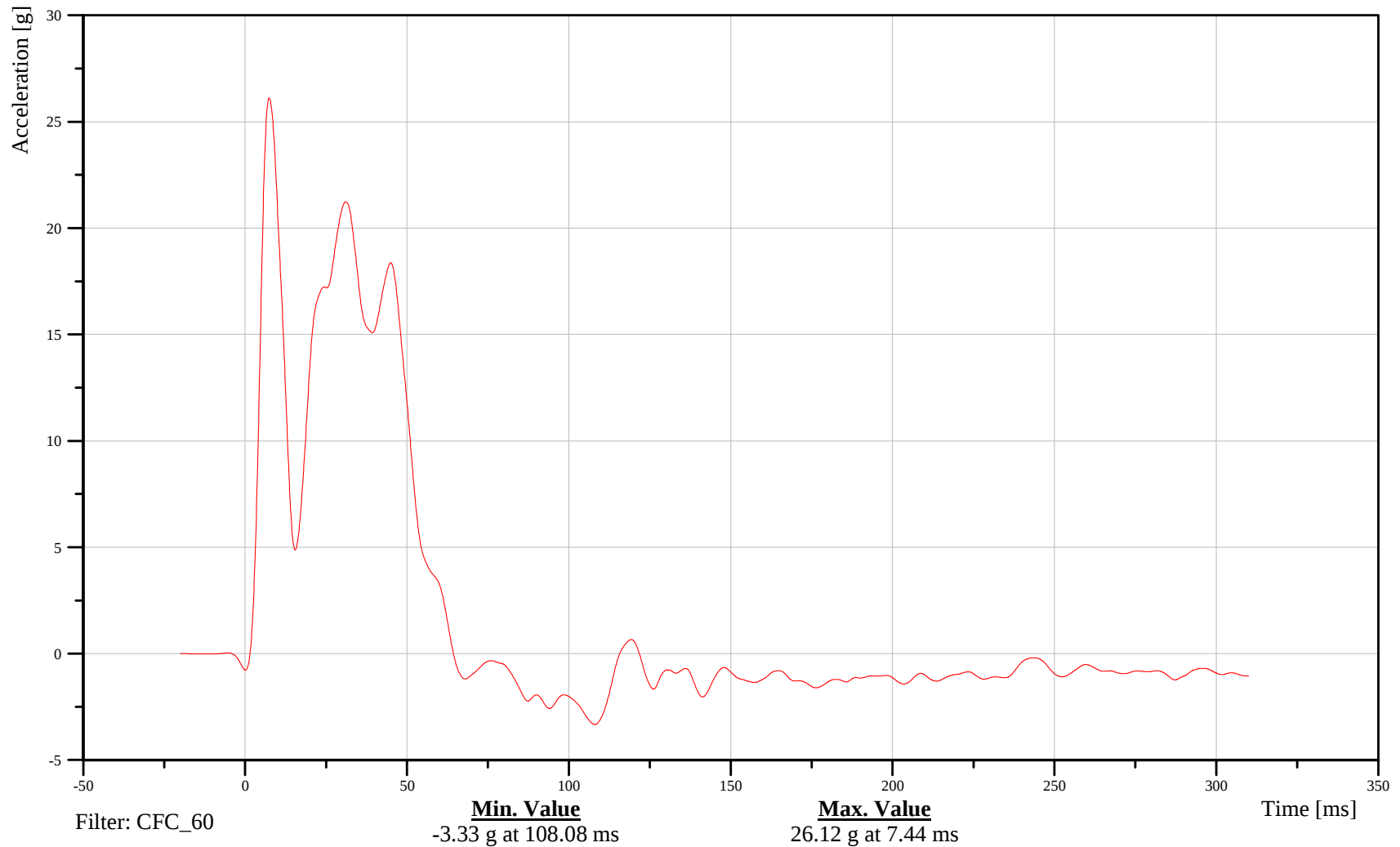
Right Rear Occupant Compartment Y-Axis Acceleration

Customer: VRTC

16VEHCRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-72

080917



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

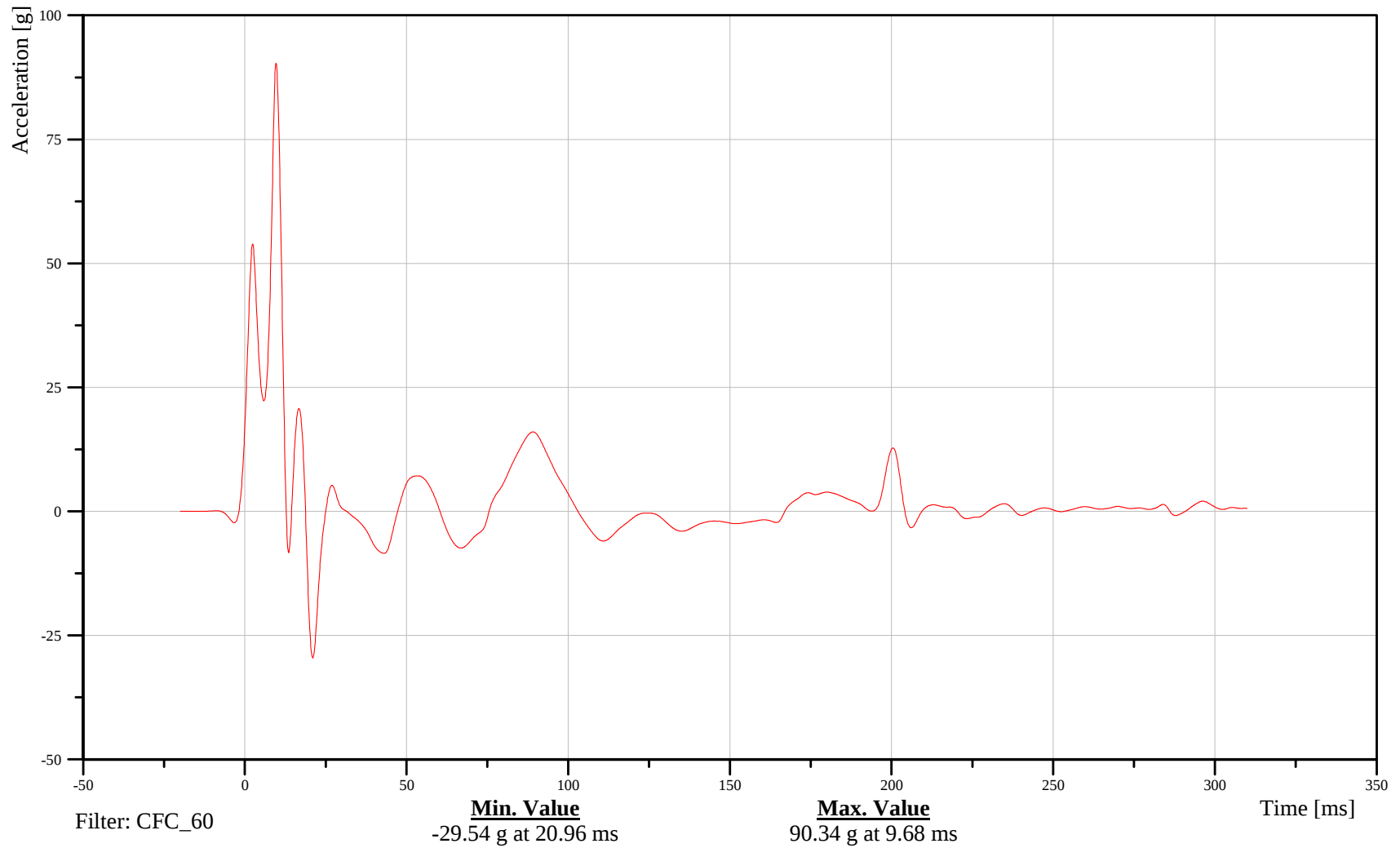
Date: 09/17/2008
Time: 14:47

Customer: VRTC

11APILLO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-73

080917



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

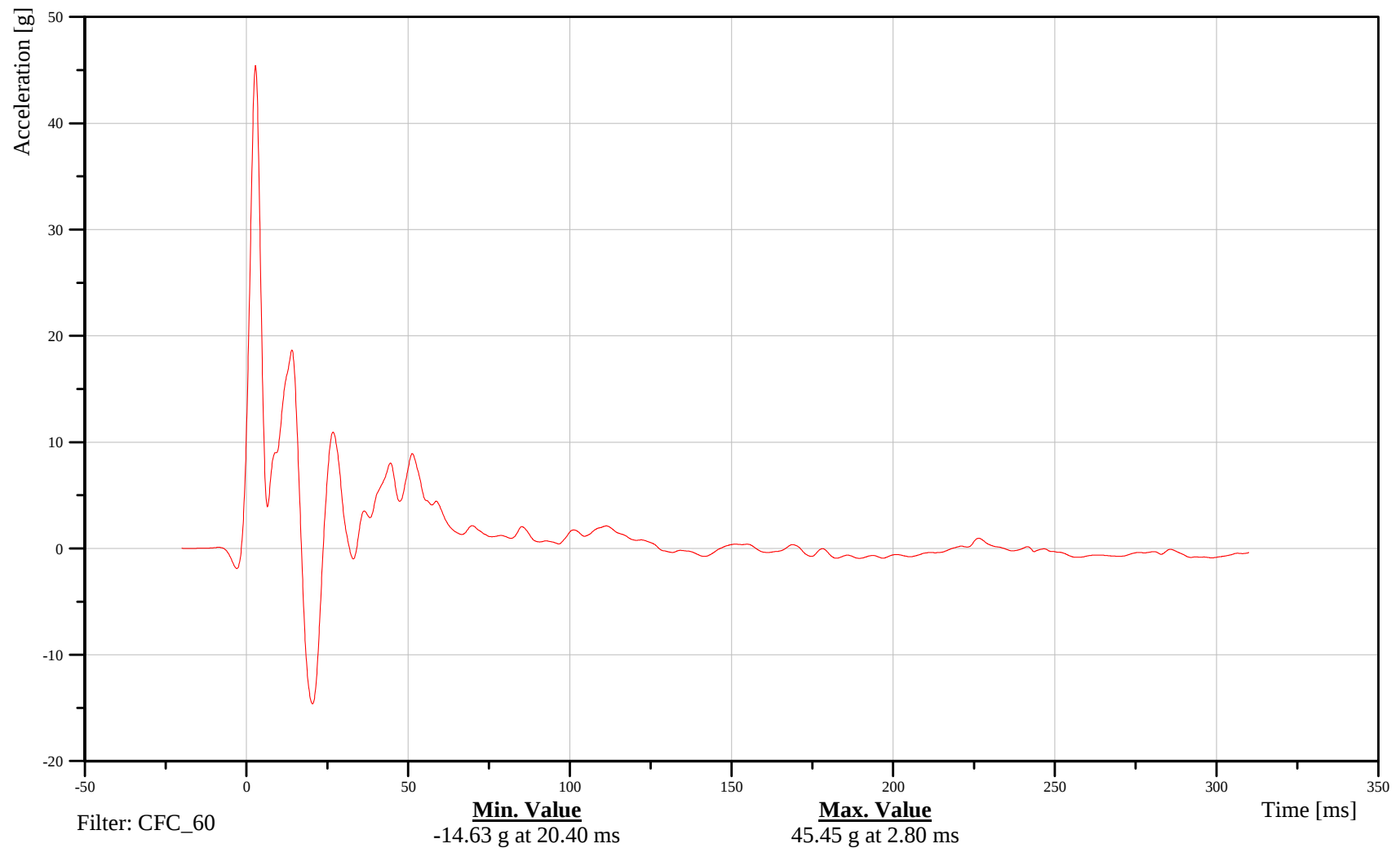
Date: 09/17/2008
Time: 14:47

Customer: VRTC

11APILUP0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-74

080917



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

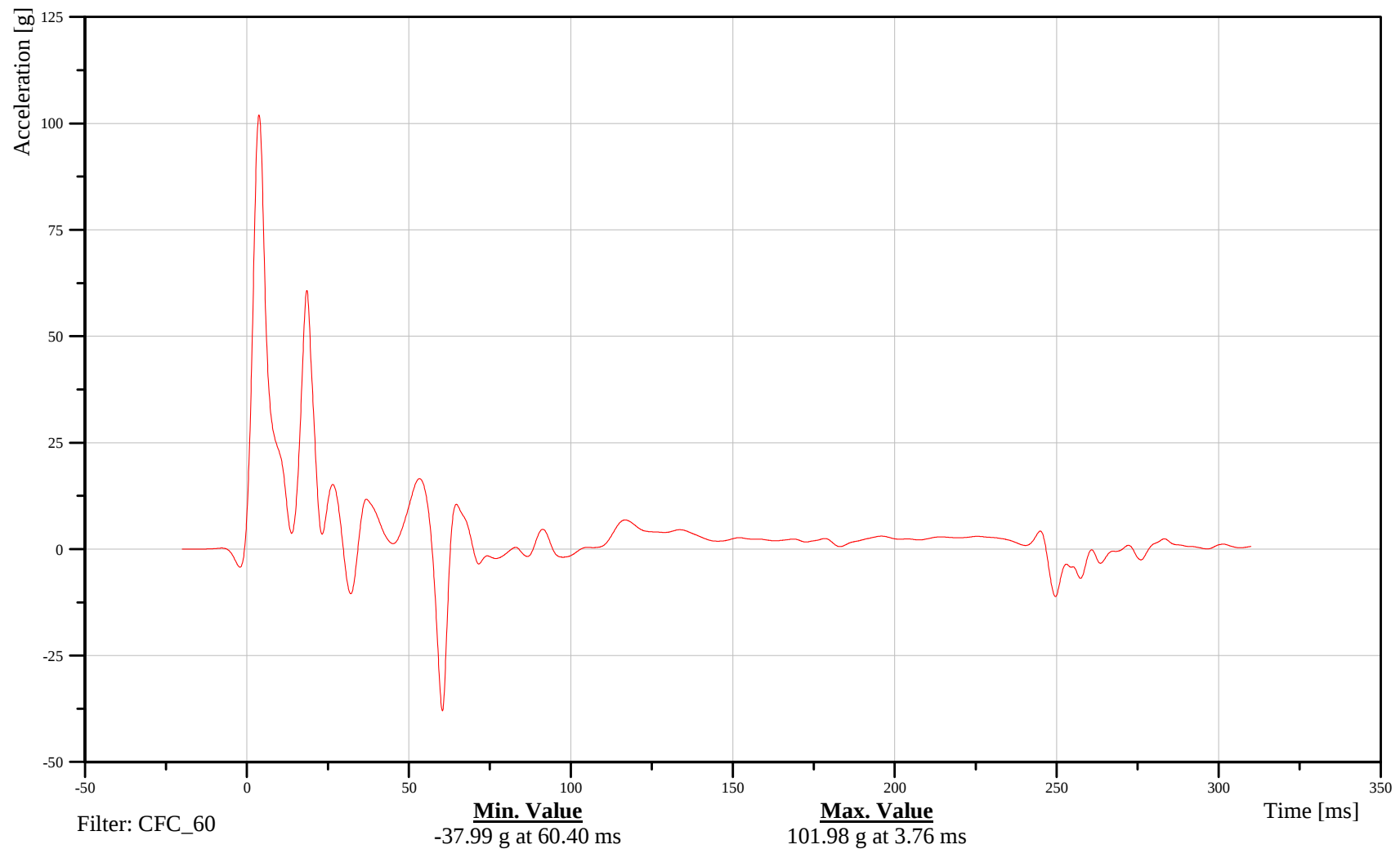
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14BPILLO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-75

080917



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

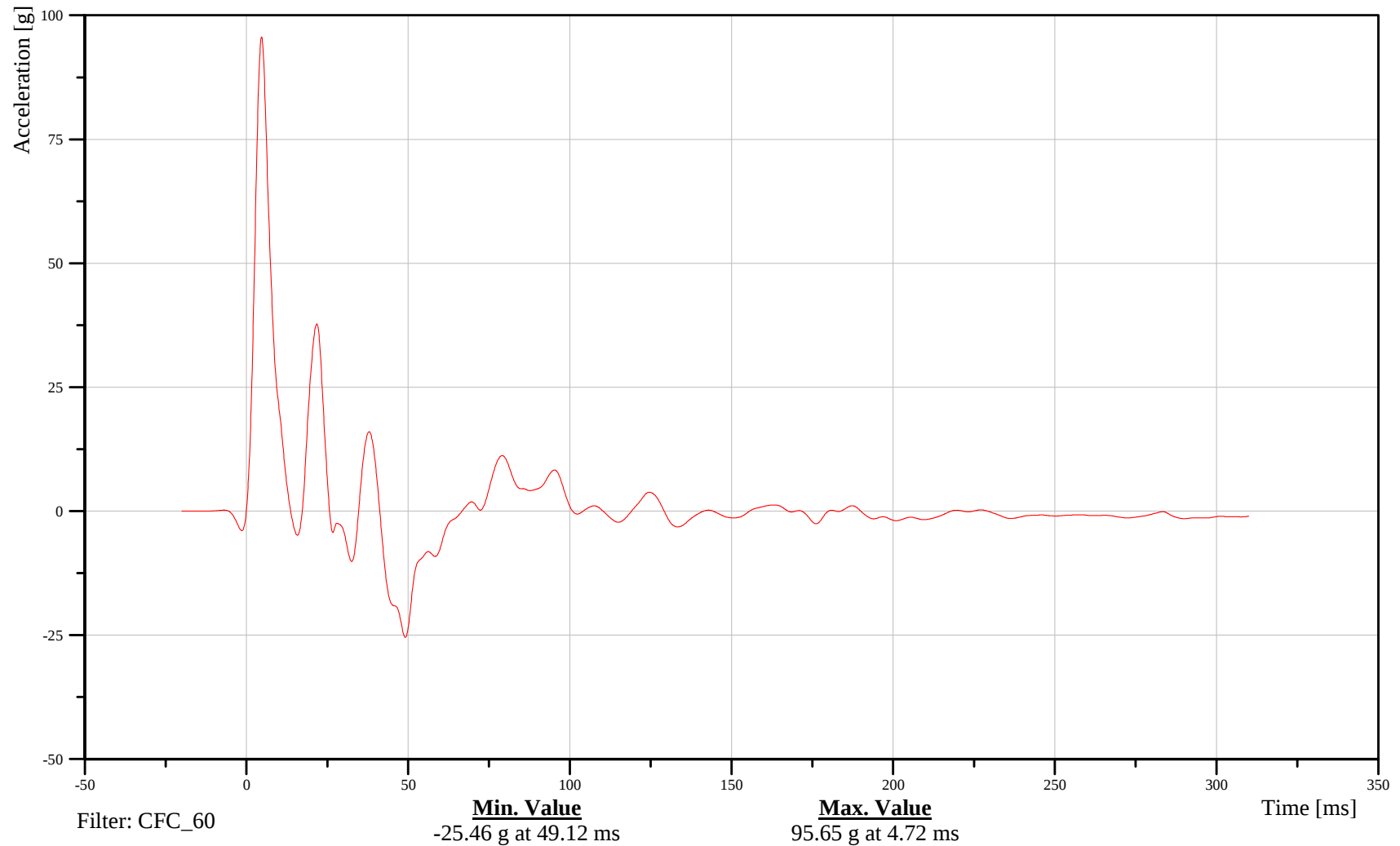
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14BPILUP0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-76

080917



Child Safety Research
Left Front Seat Track Y-Axis Acceleration

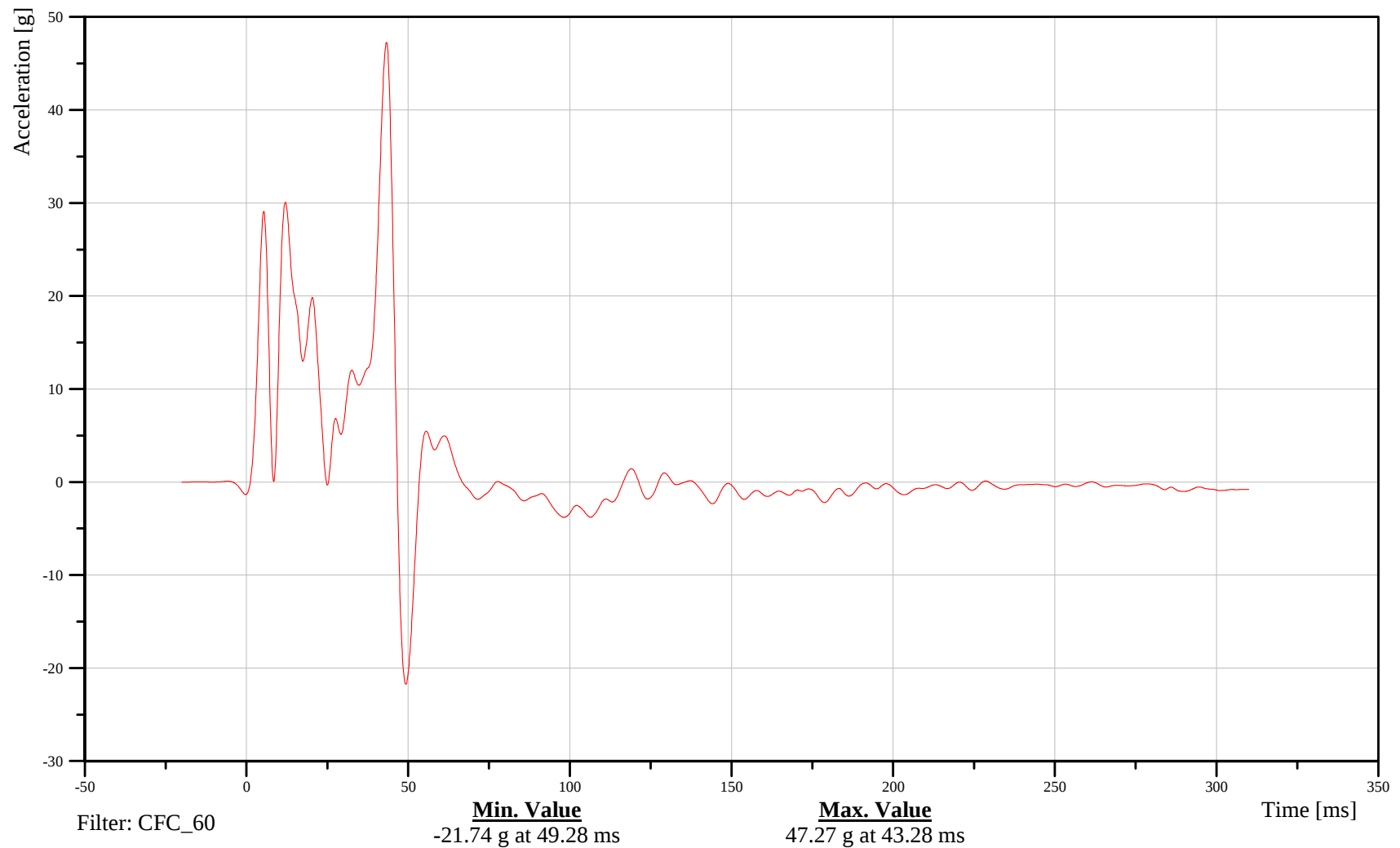
Date: 09/17/2008
Time: 14:47

Customer: VRTC

11SETRFR0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-77

080917



Child Safety Research
Left Rear Seat Track Y-Axis Acceleration

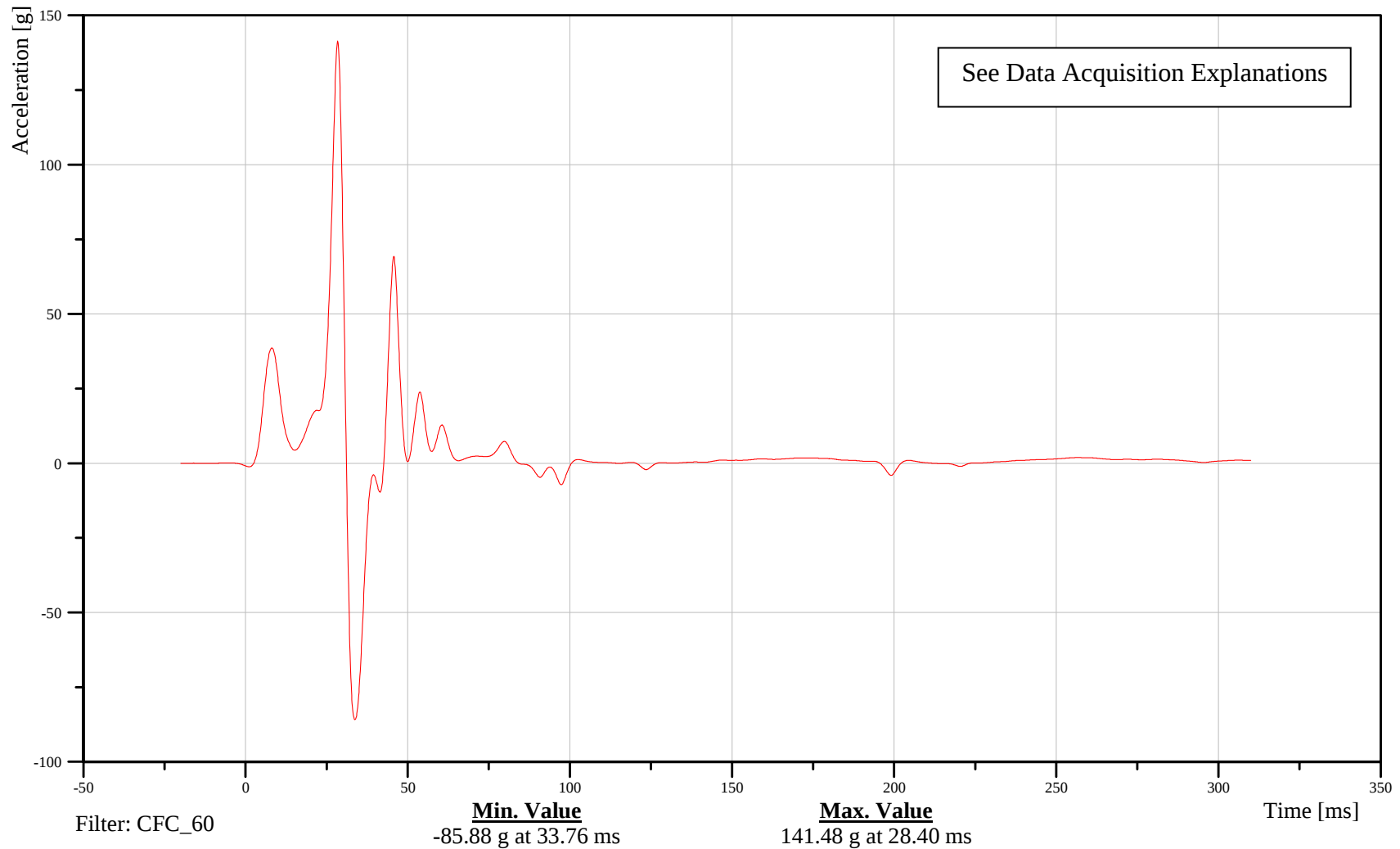
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14SETRRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-78

080917



Child Safety Research
Vehicle Center of Gravity X-Axis Acceleration

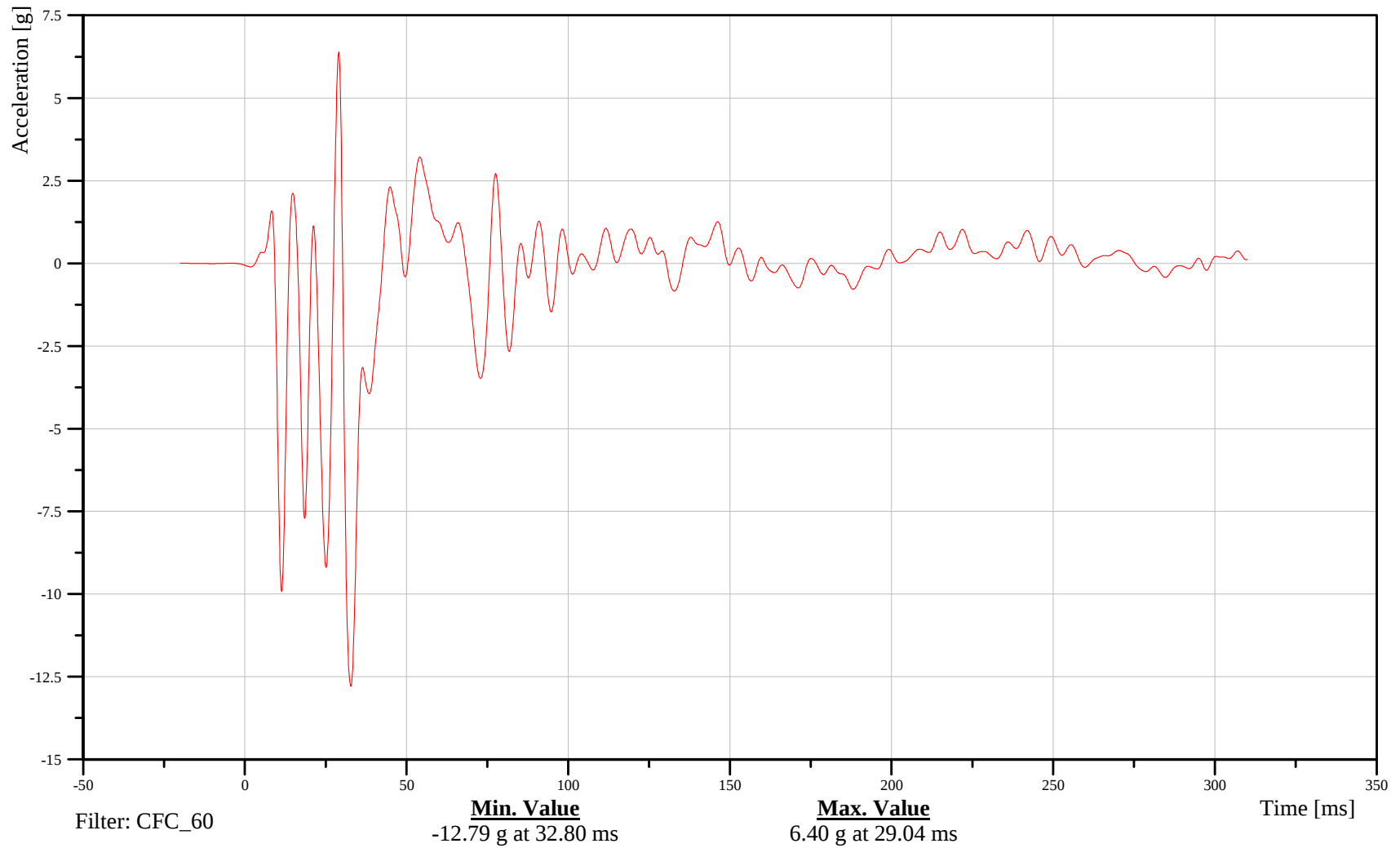
Date: 09/17/2008
Time: 14:47

Customer: VRTC

10VEHCCG0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-79

080917



Child Safety Research
Vehicle Center of Gravity Y-Axis Acceleration

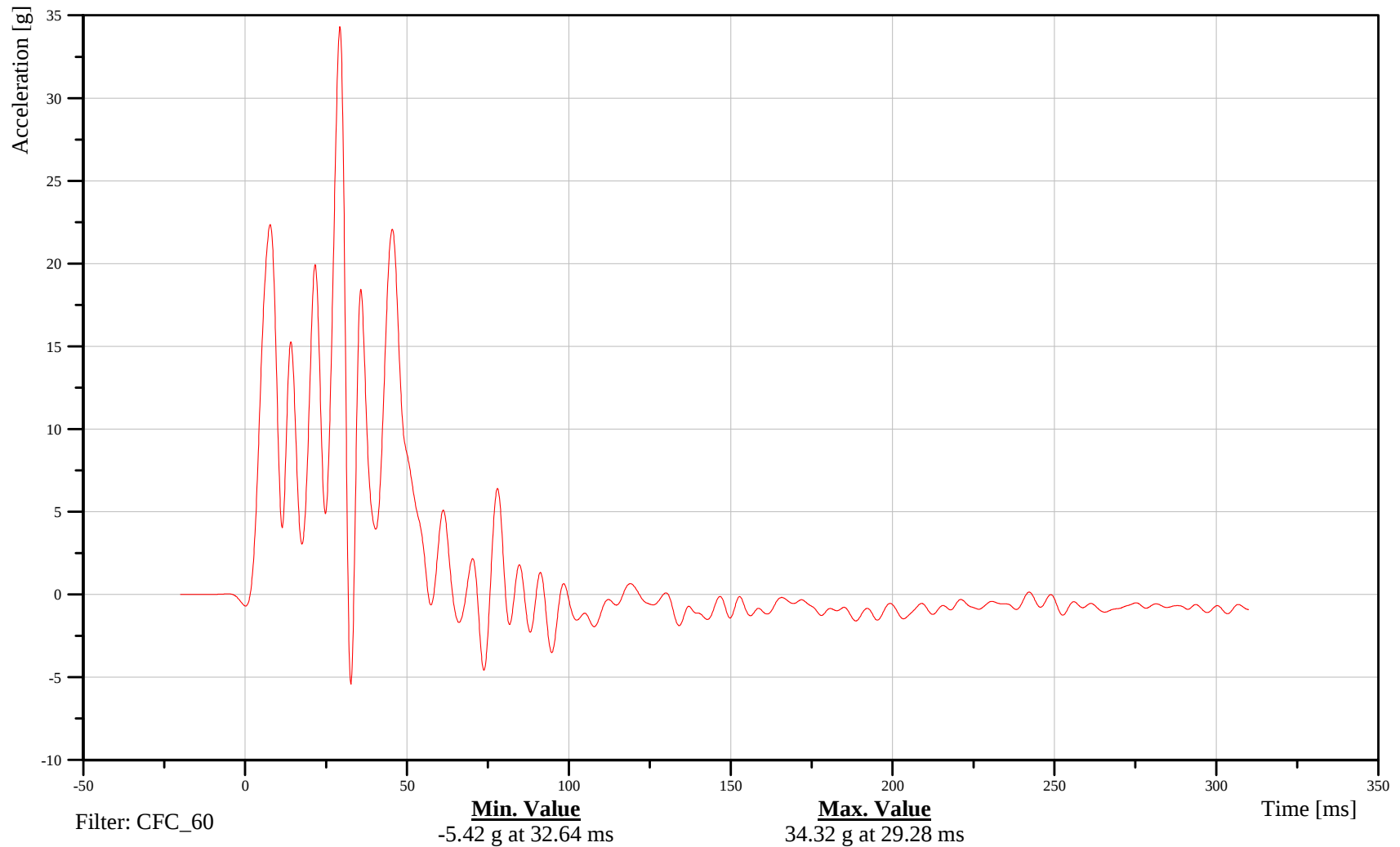
Date: 09/17/2008
Time: 14:47

Customer: VRTC

10VEHCCG0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-80

080917



Child Safety Research
Vehicle Center of Gravity Z-Axis Acceleration

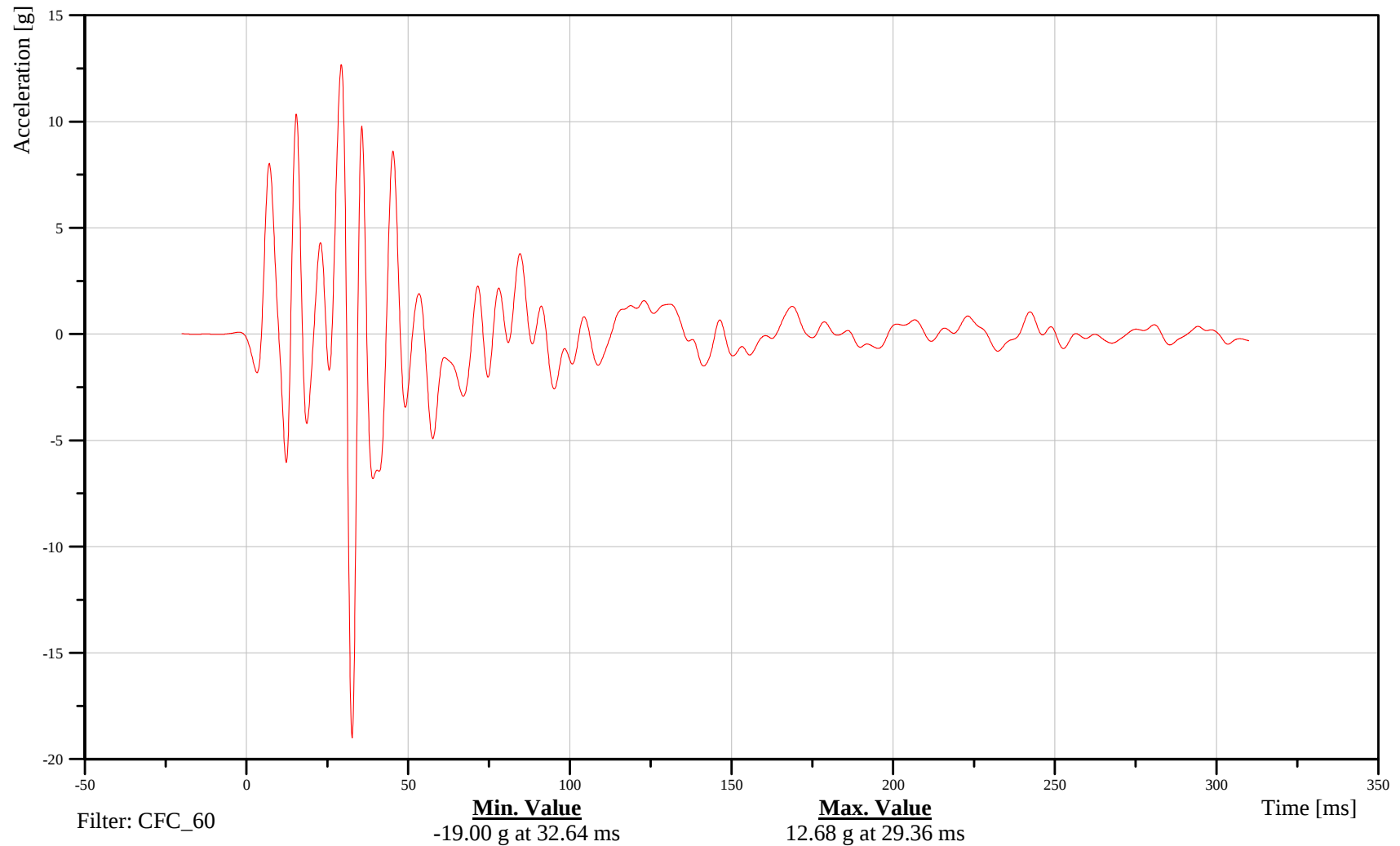
Date: 09/17/2008
Time: 14:47

Customer: VRTC

10VEHCCG0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-81

080917



Child Safety Research
Vehicle Center of Gravity Resultant Acceleration

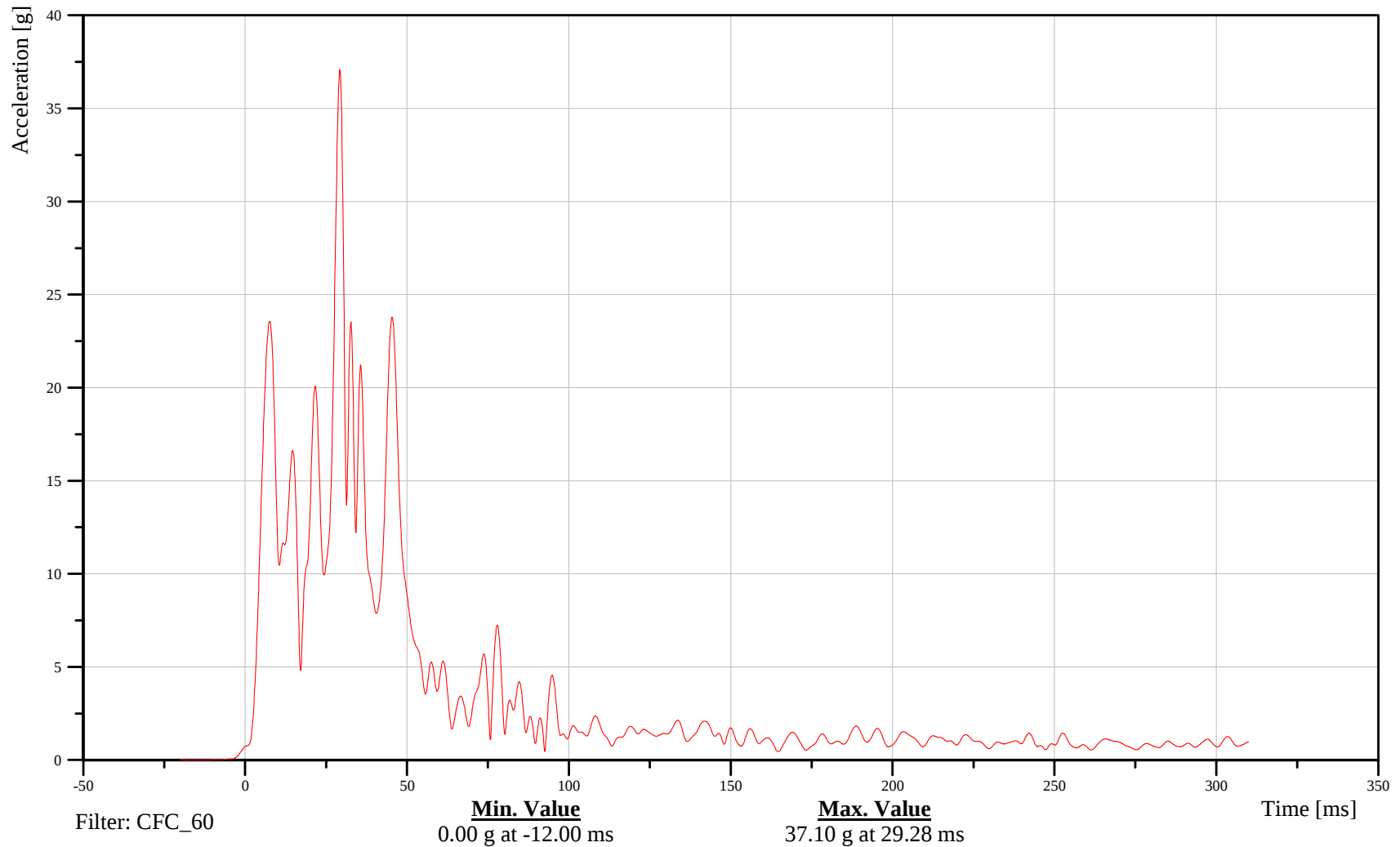
Date: 09/17/2008
Time: 14:47

Customer: VRTC

10VEHCCG0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-82

080917



Child Safety Research
Driver Side Curtain Airbag

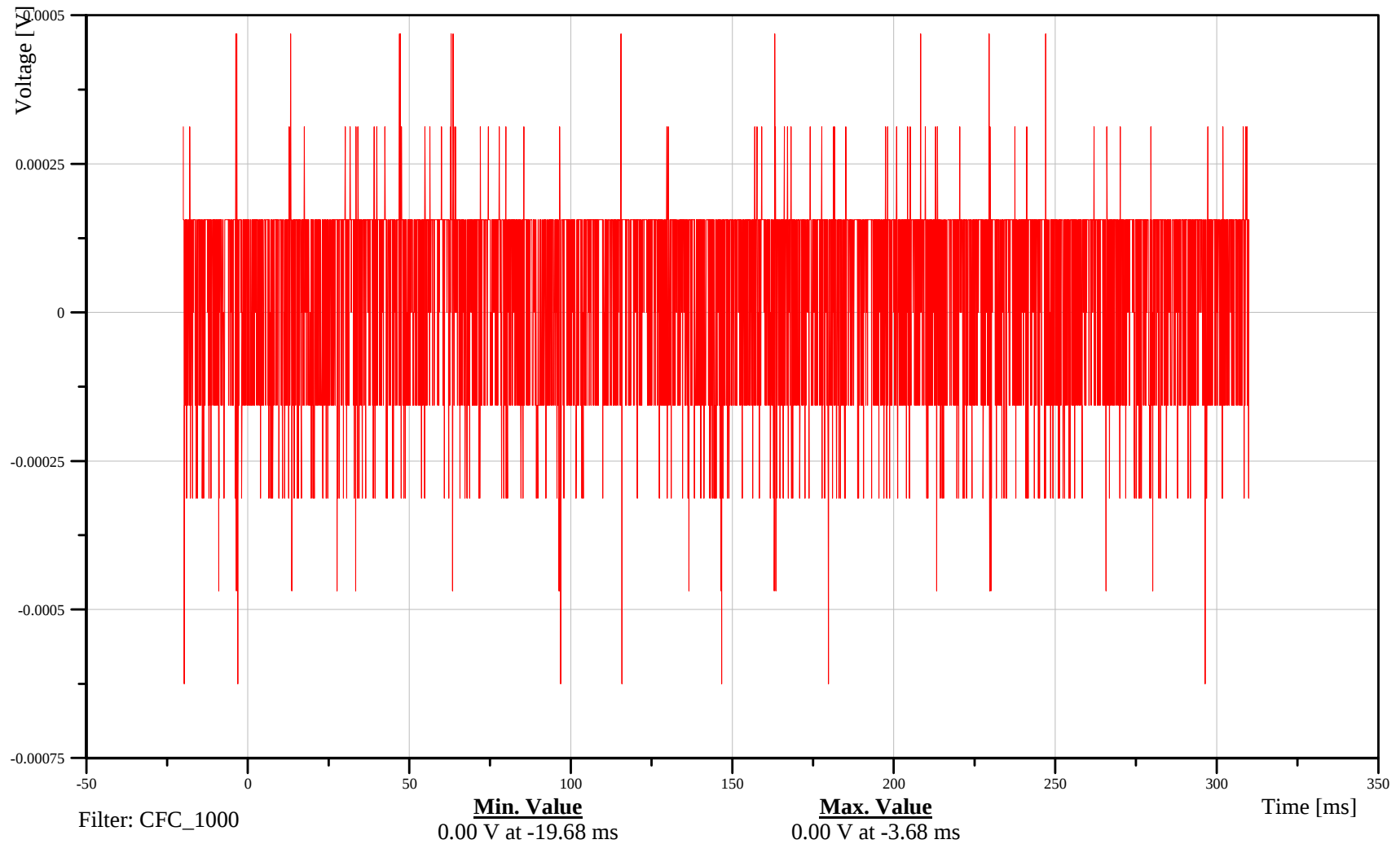
Date: 09/17/2008
Time: 14:47

Customer: VRTC

11AIRBLE2300CU0A

TRC Inc. Test Lab: CTF

Test Number: 080917-1





Child Safety Research
Passenger Side Curtain Airbag

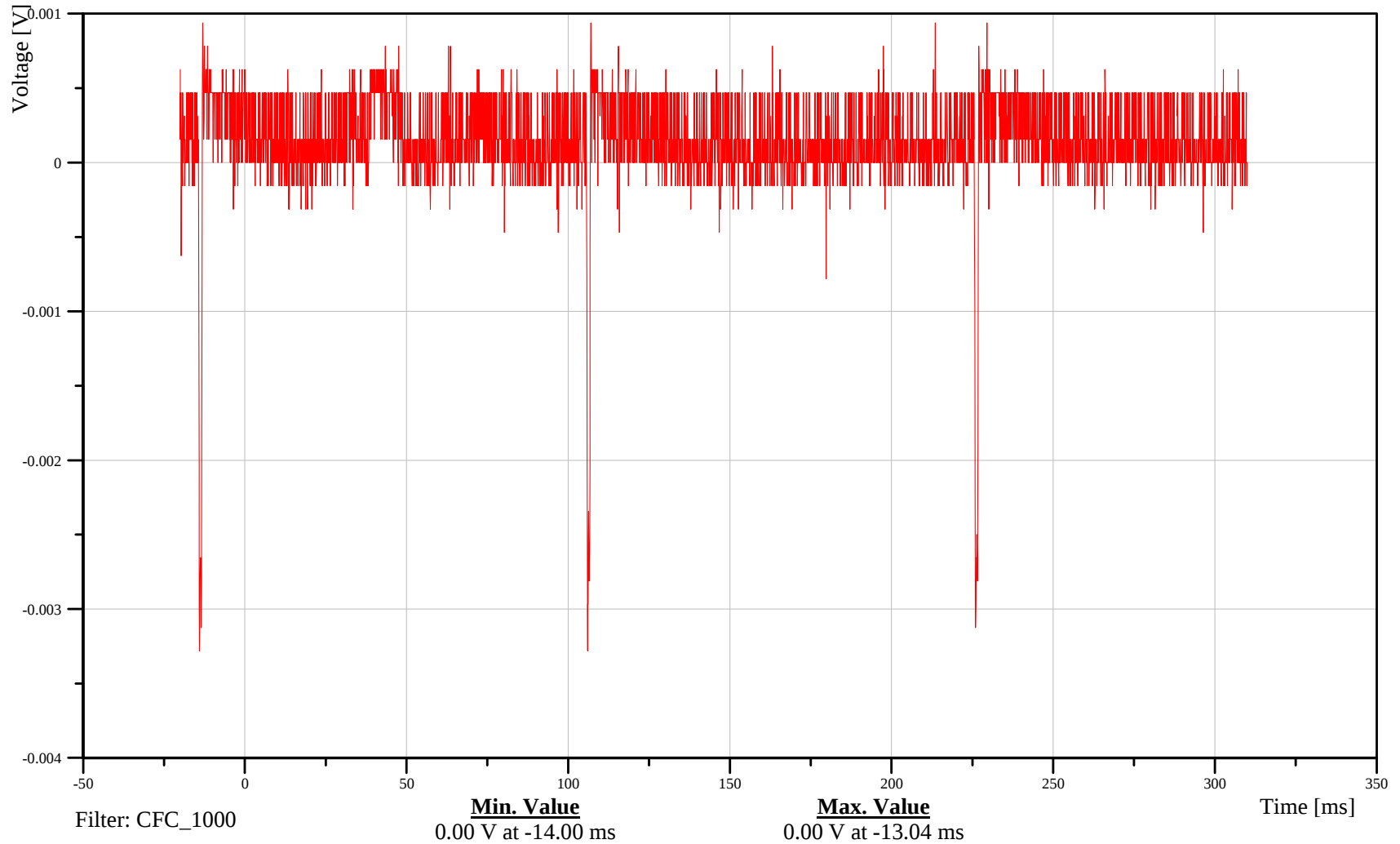
Date: 09/17/2008
Time: 14:47

Customer: VRTC

12AIRBLE2300CU0A

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-84

080917



Child Safety Research

Driver ELR Pretensioner

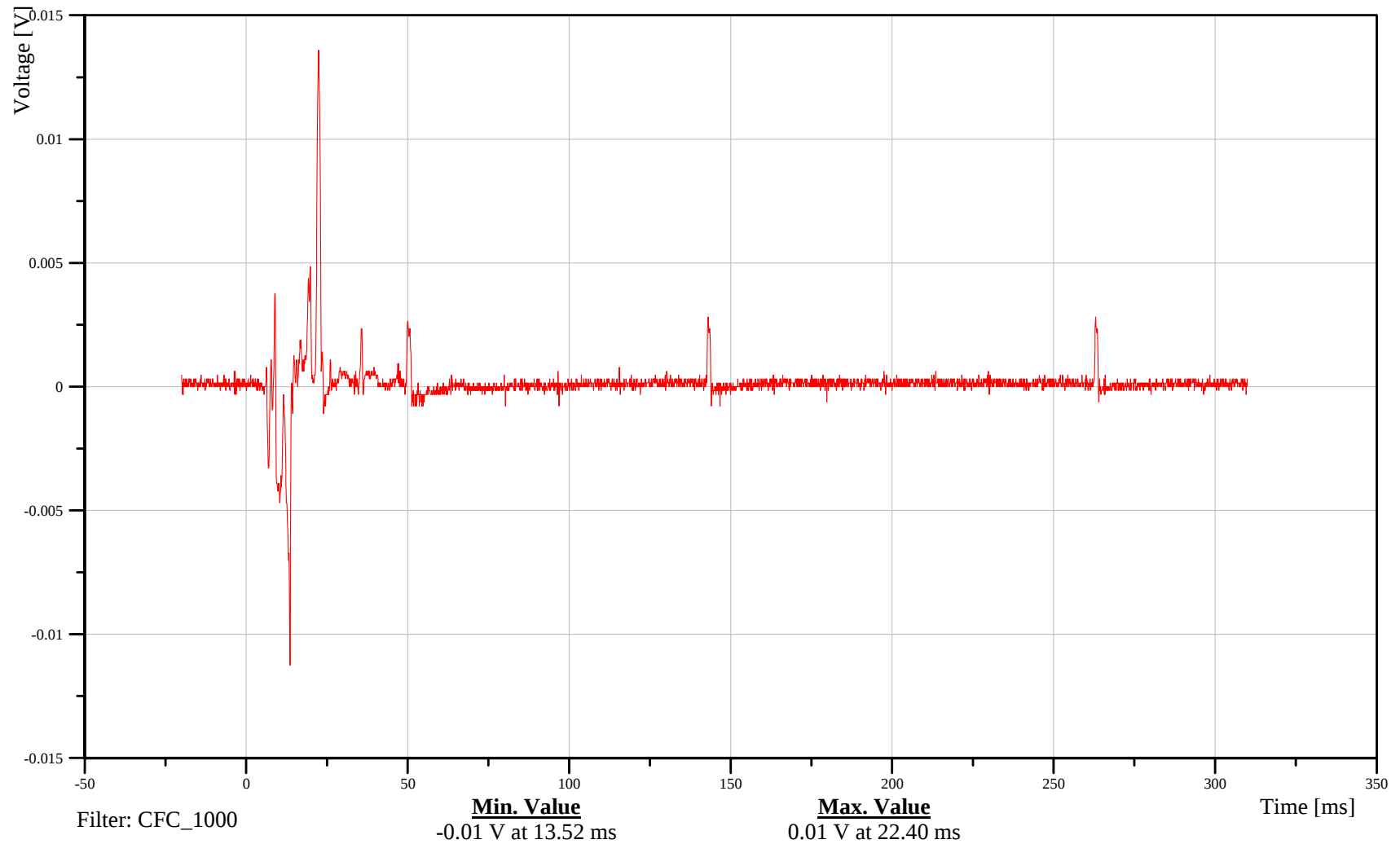
Date: 09/17/2008
Time: 14:47

Customer: VRTC

11PRET000000CU0A

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-85

080917



Child Safety Research
Front Door Centerline Y-Axis Acceleration

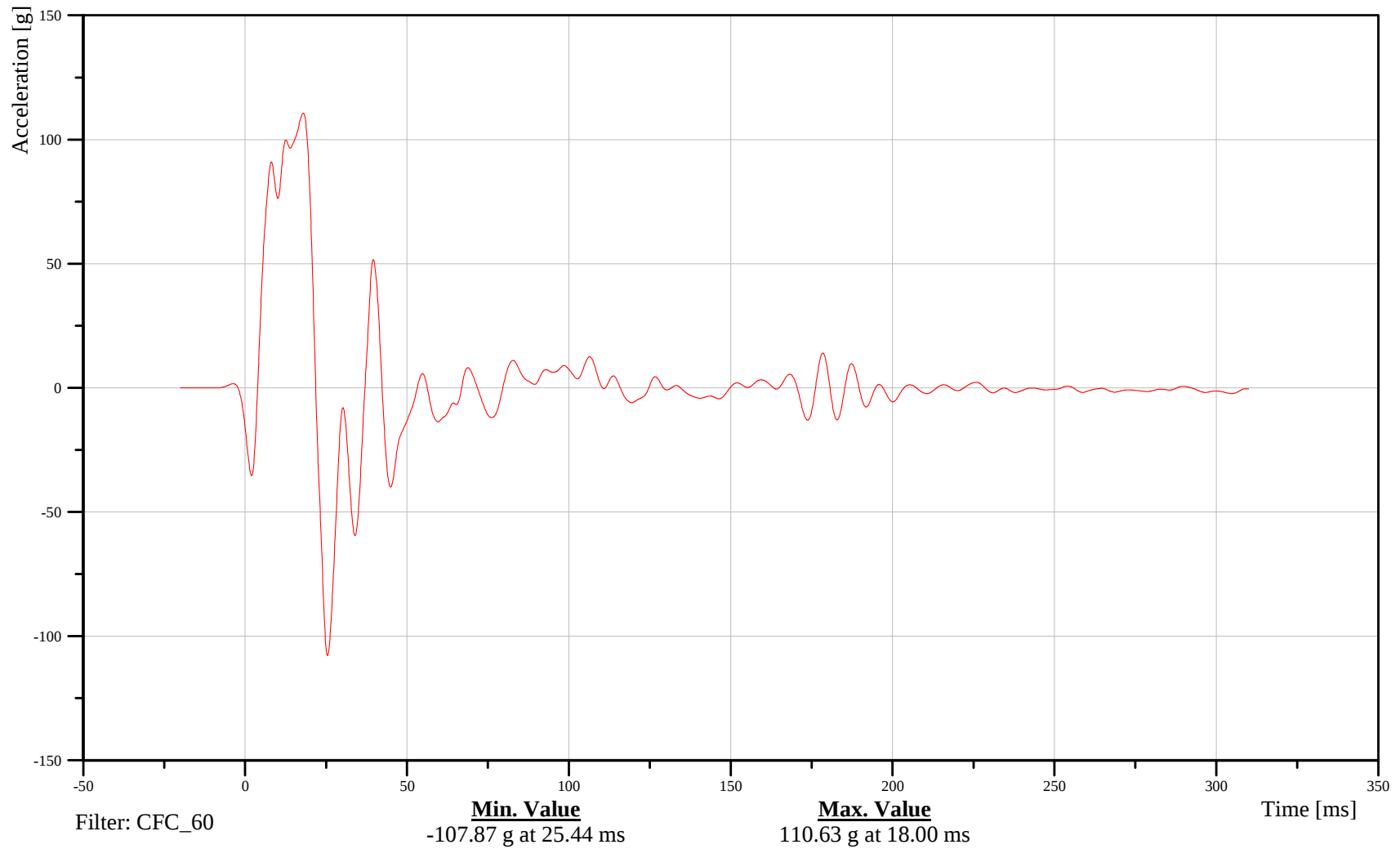
Date: 09/17/2008
Time: 14:47

Customer: VRTC

11DOORMI0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-86

080917



Child Safety Research

Front Door Mid-Rear Y-Axis Acceleration

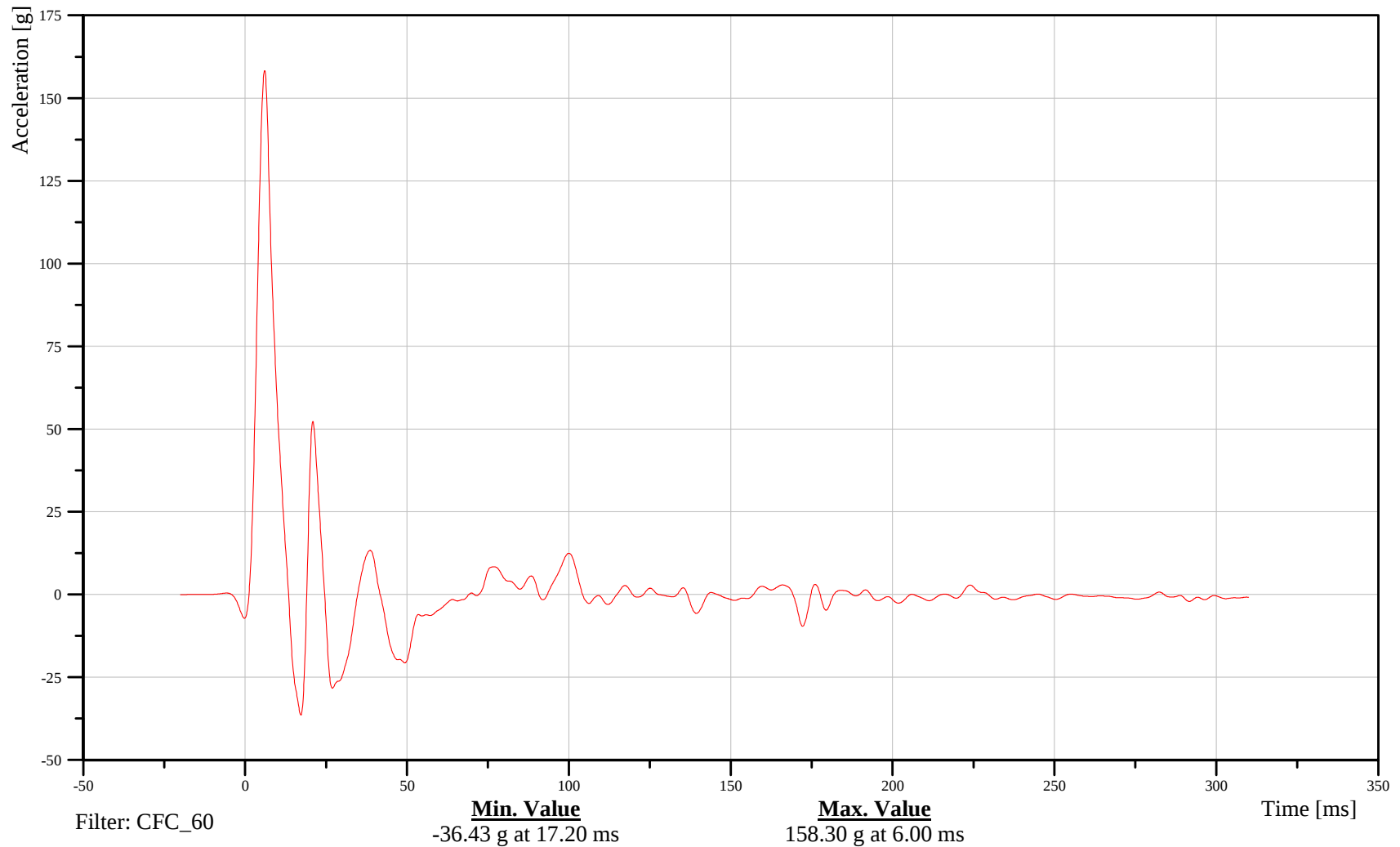
Date: 09/17/2008
Time: 14:47

Customer: VRTC

11DOORMIRE00ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-87

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

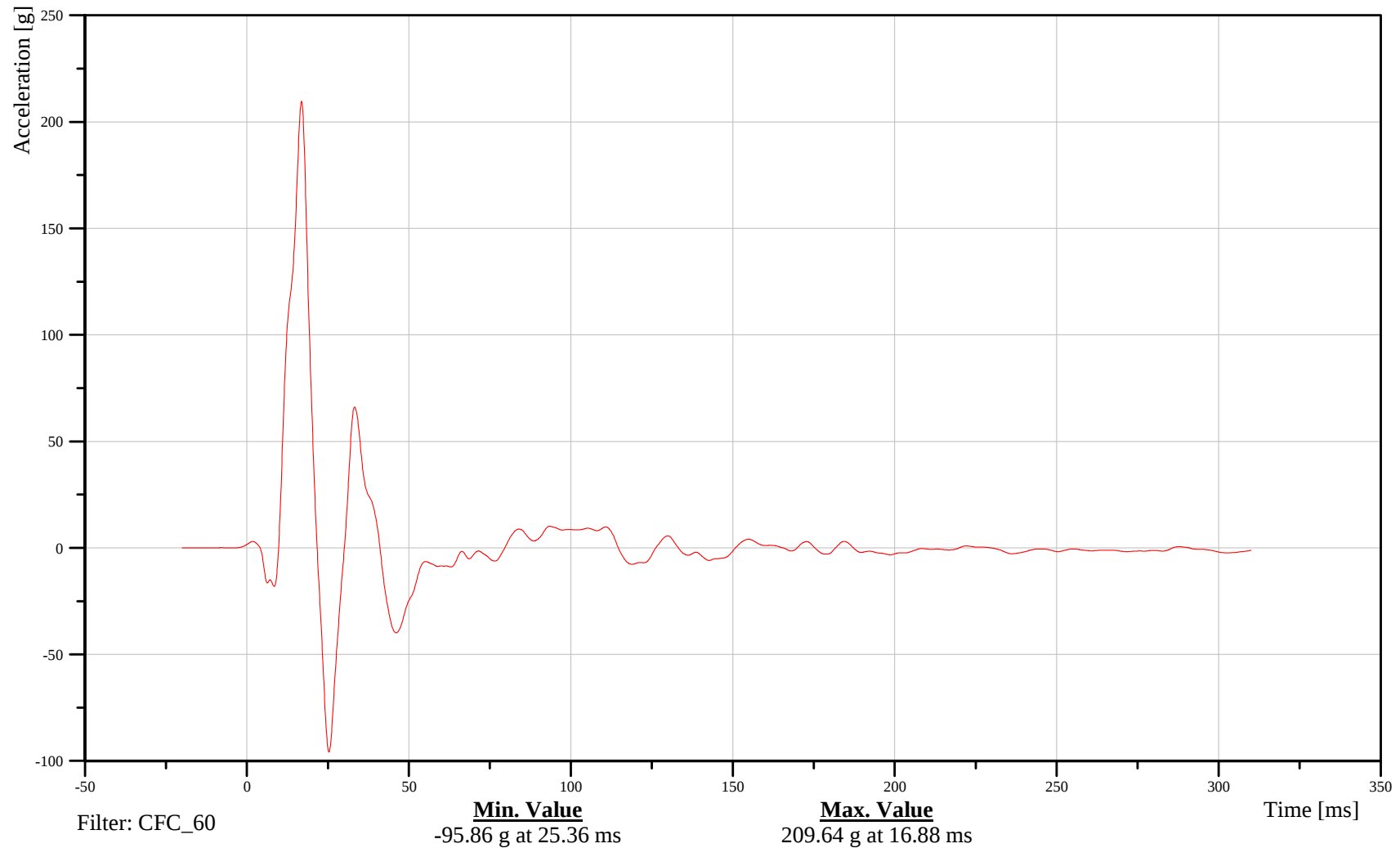
Front Door Upper Centerline Y-Axis Acceleration

Customer: VRTC

11DOORUPMI00ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-88

080917



Child Safety Research

Rear Door Mid-Rear Y-Axis Acceleration

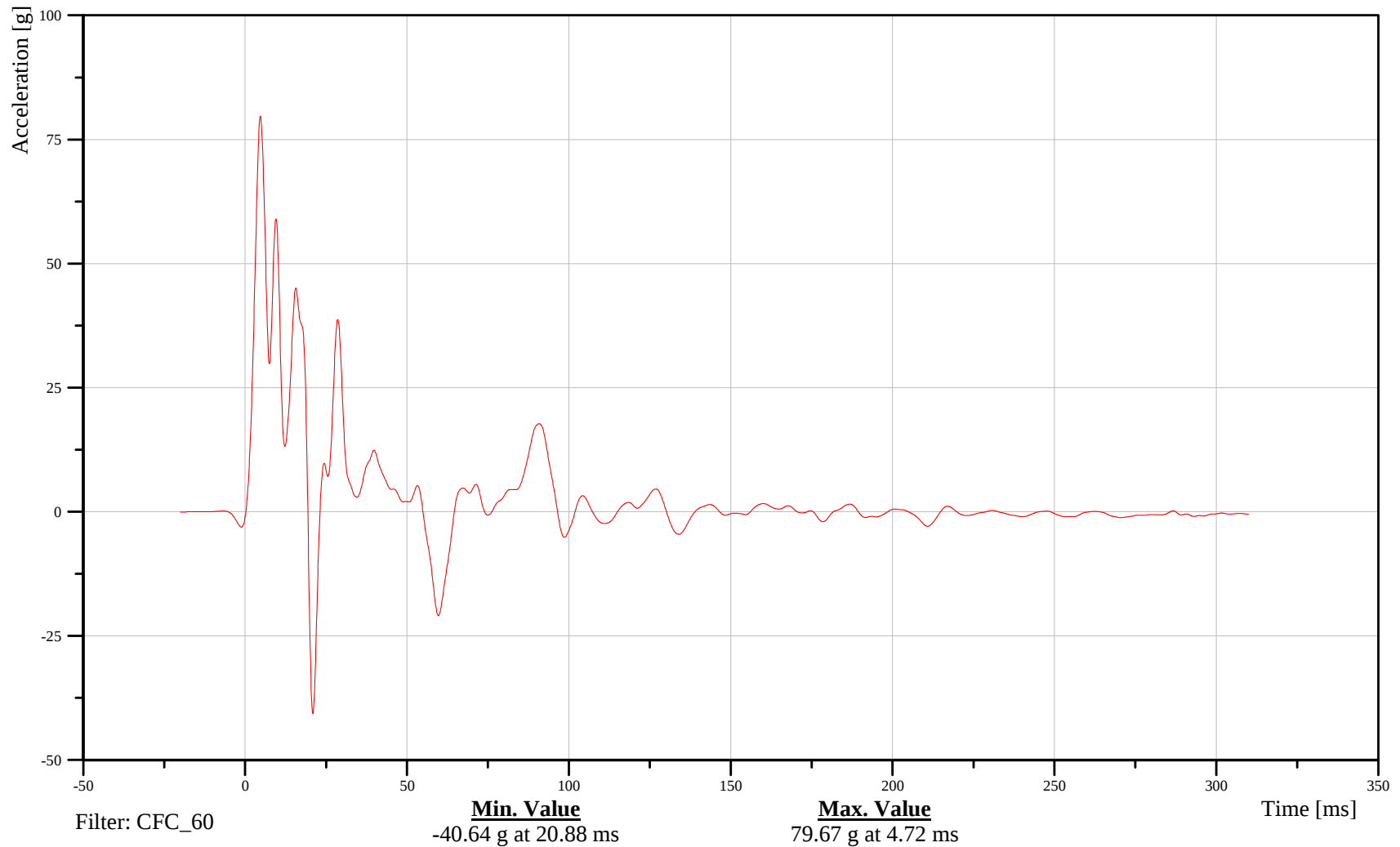
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14DOORMIRE00ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-89

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

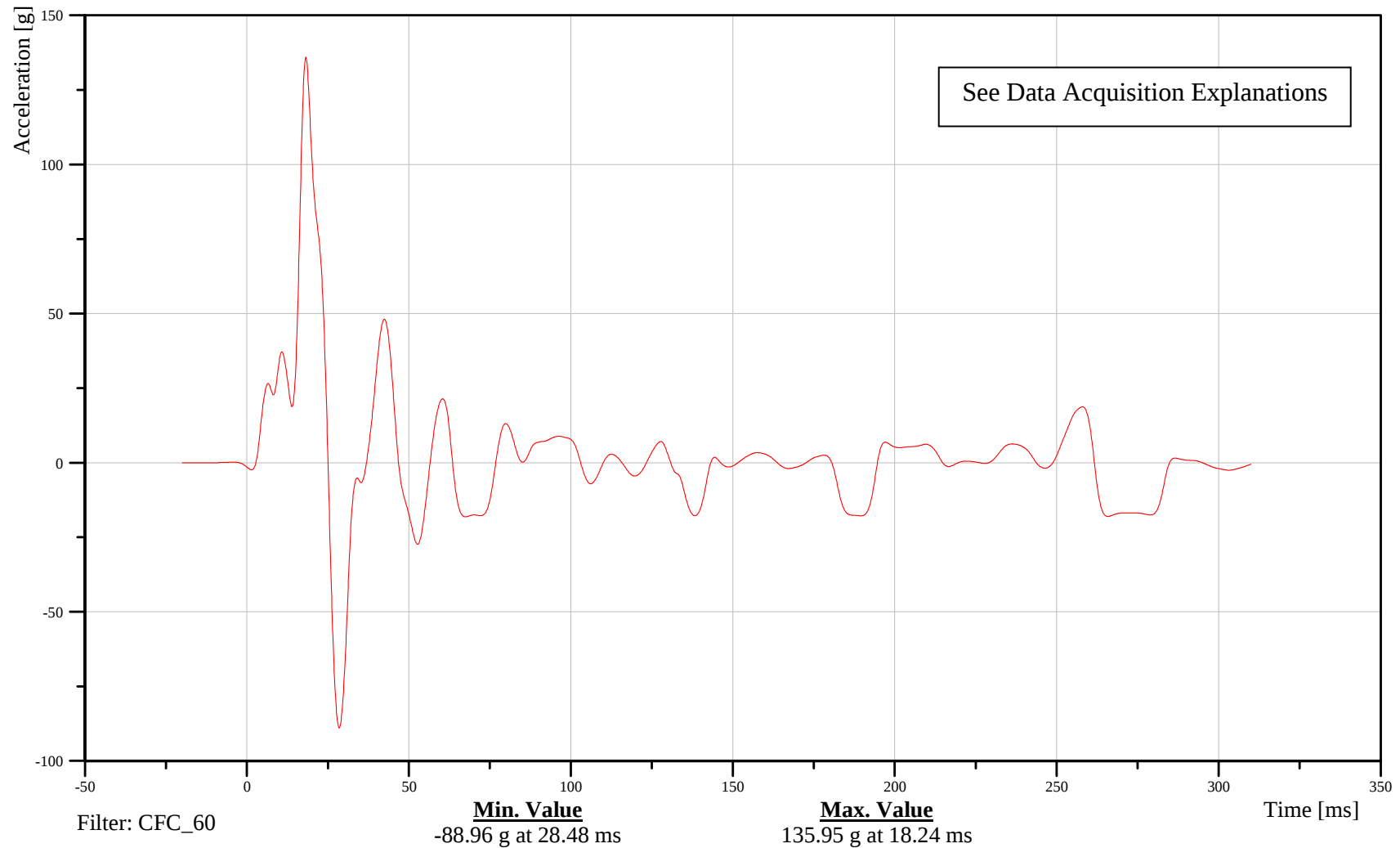
Rear Door Upper Centerline Y-Axis Acceleration

Customer: VRTC

14DOORUPMI00ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-90

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

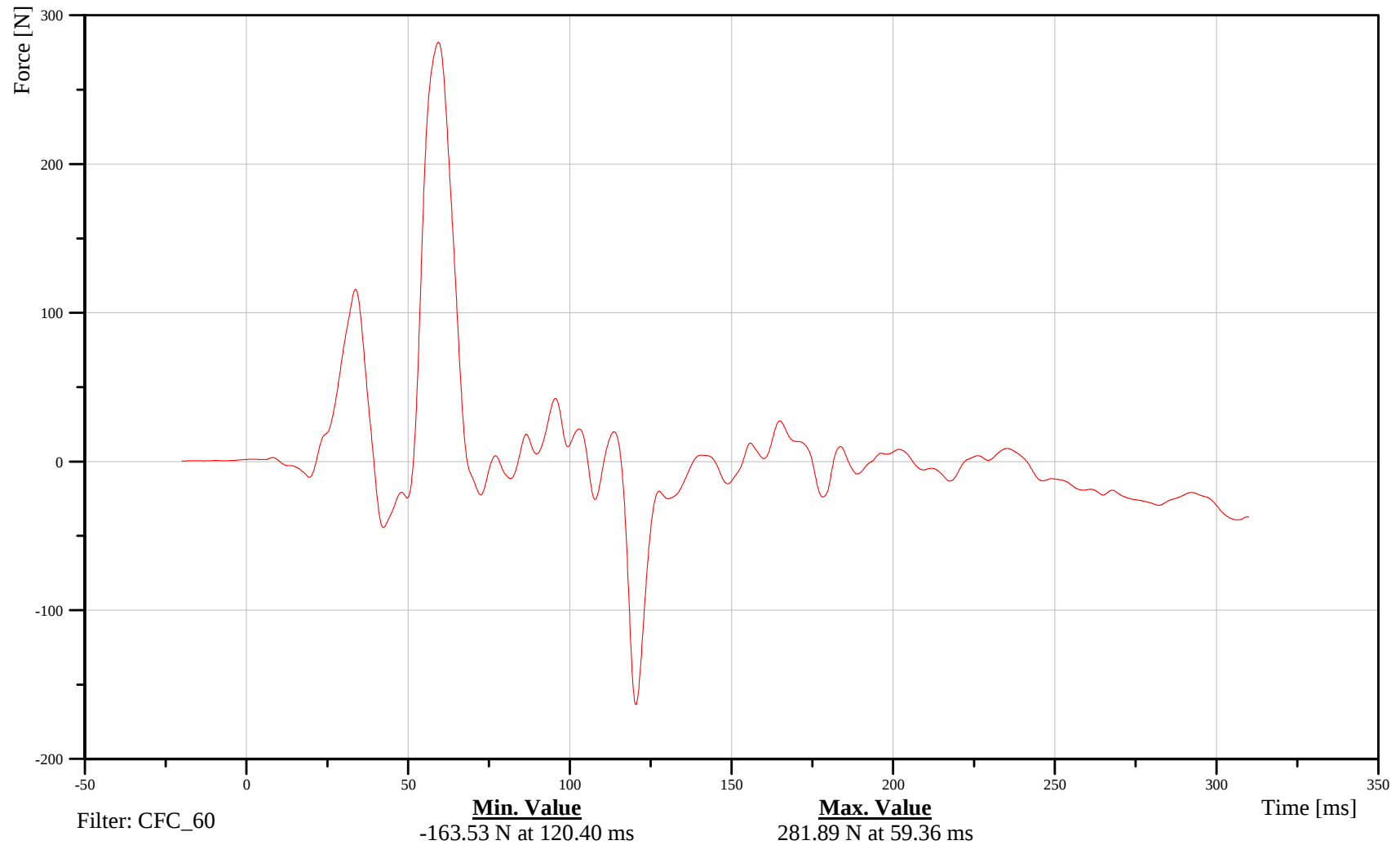
Left Rear Shoulder Belt Force (Top Tether)

Customer: VRTC

14TOPT0000B3FO0D

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-91

080917



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

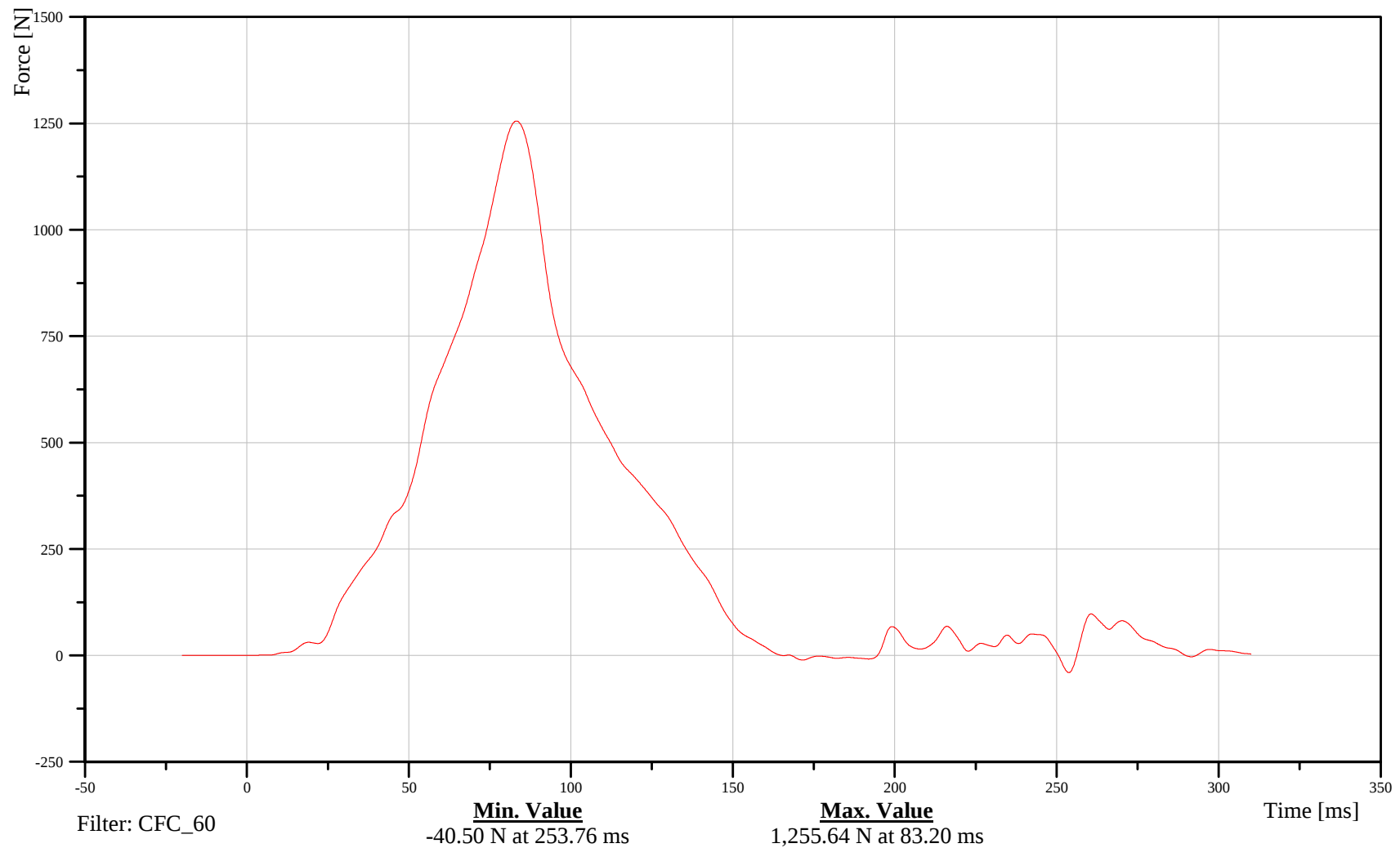
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16TOPT0000B3FO0D

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-92

080917



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

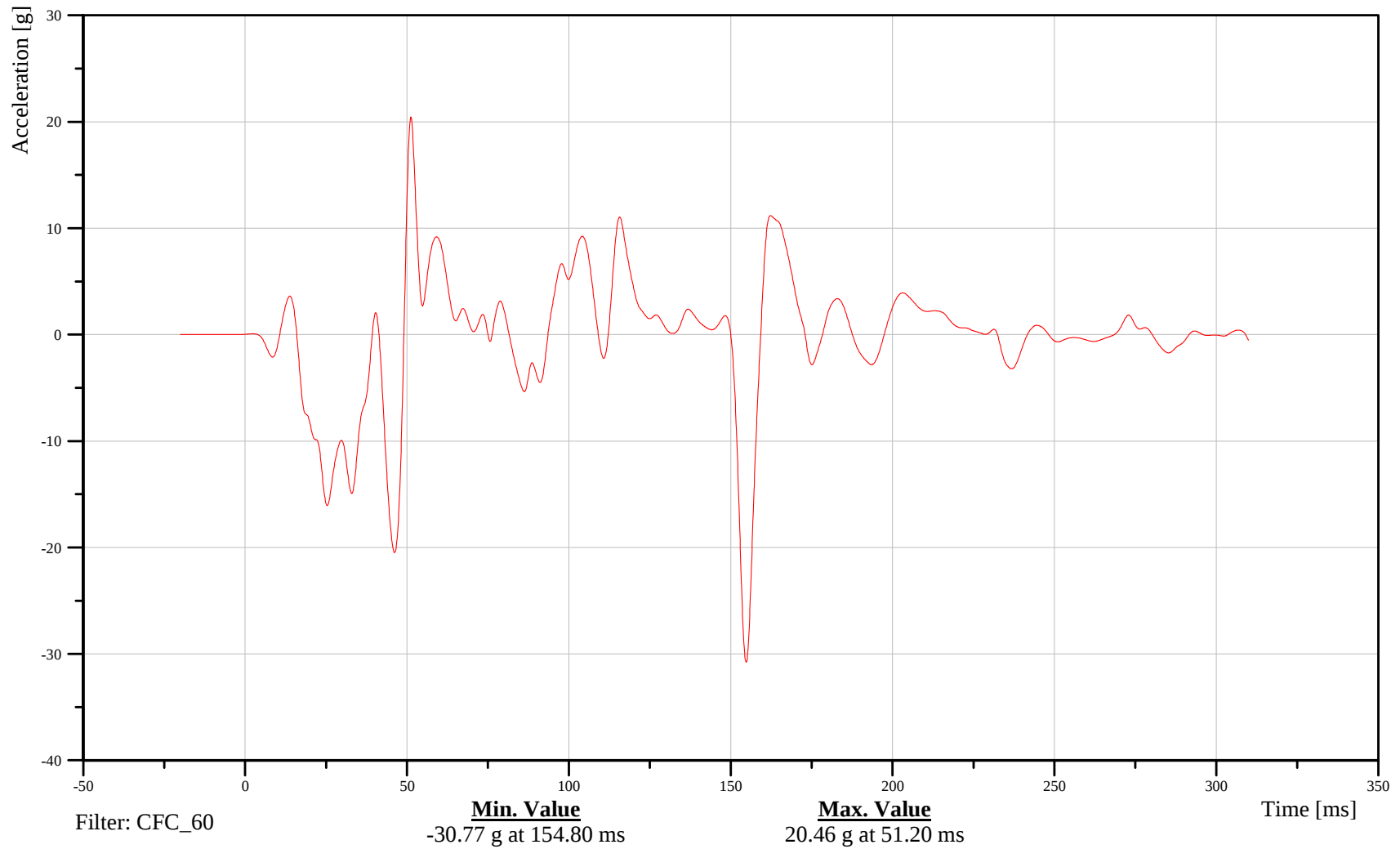
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14SEATTP0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-93

080917



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

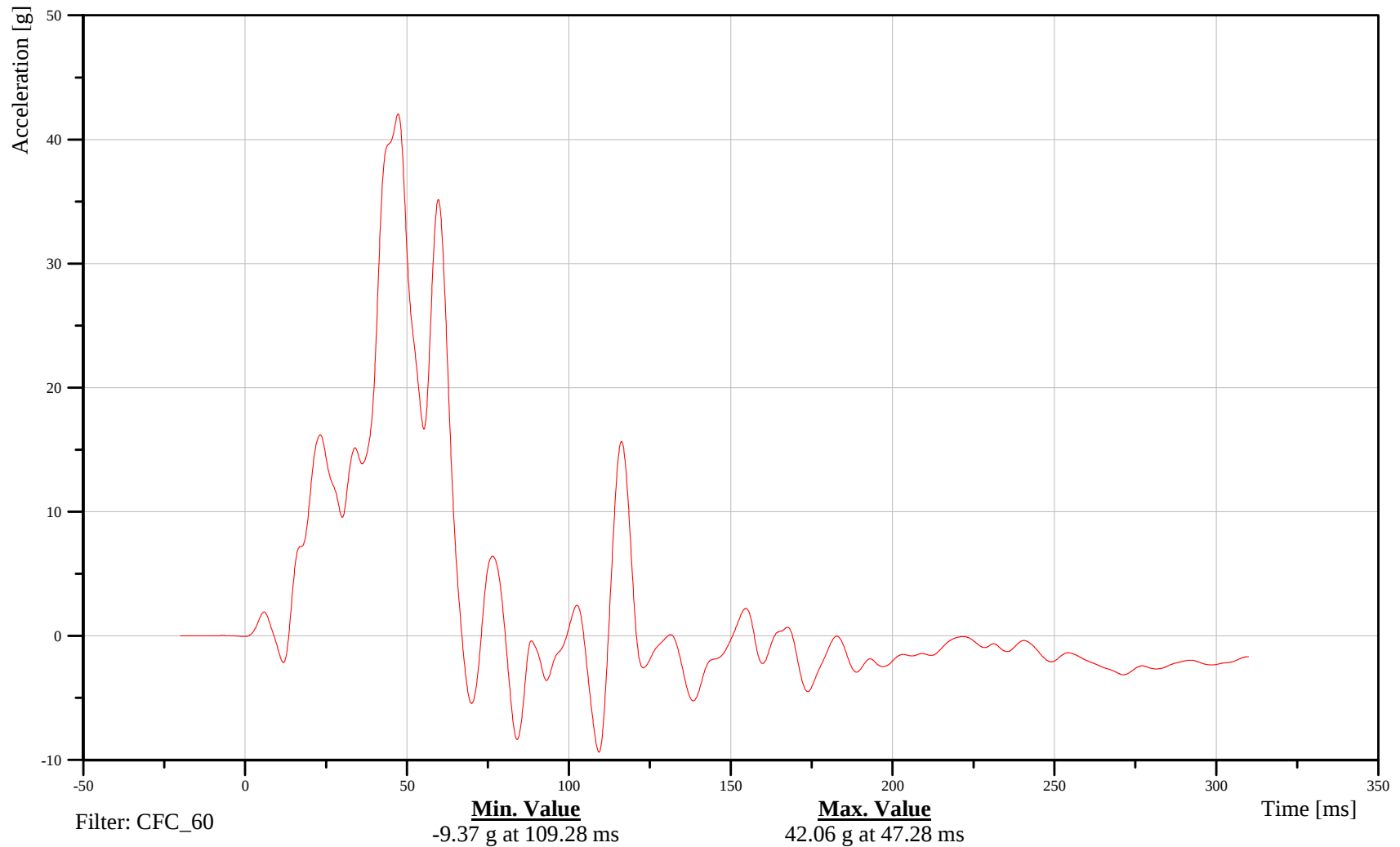
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14SEATTP0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-94

080917



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

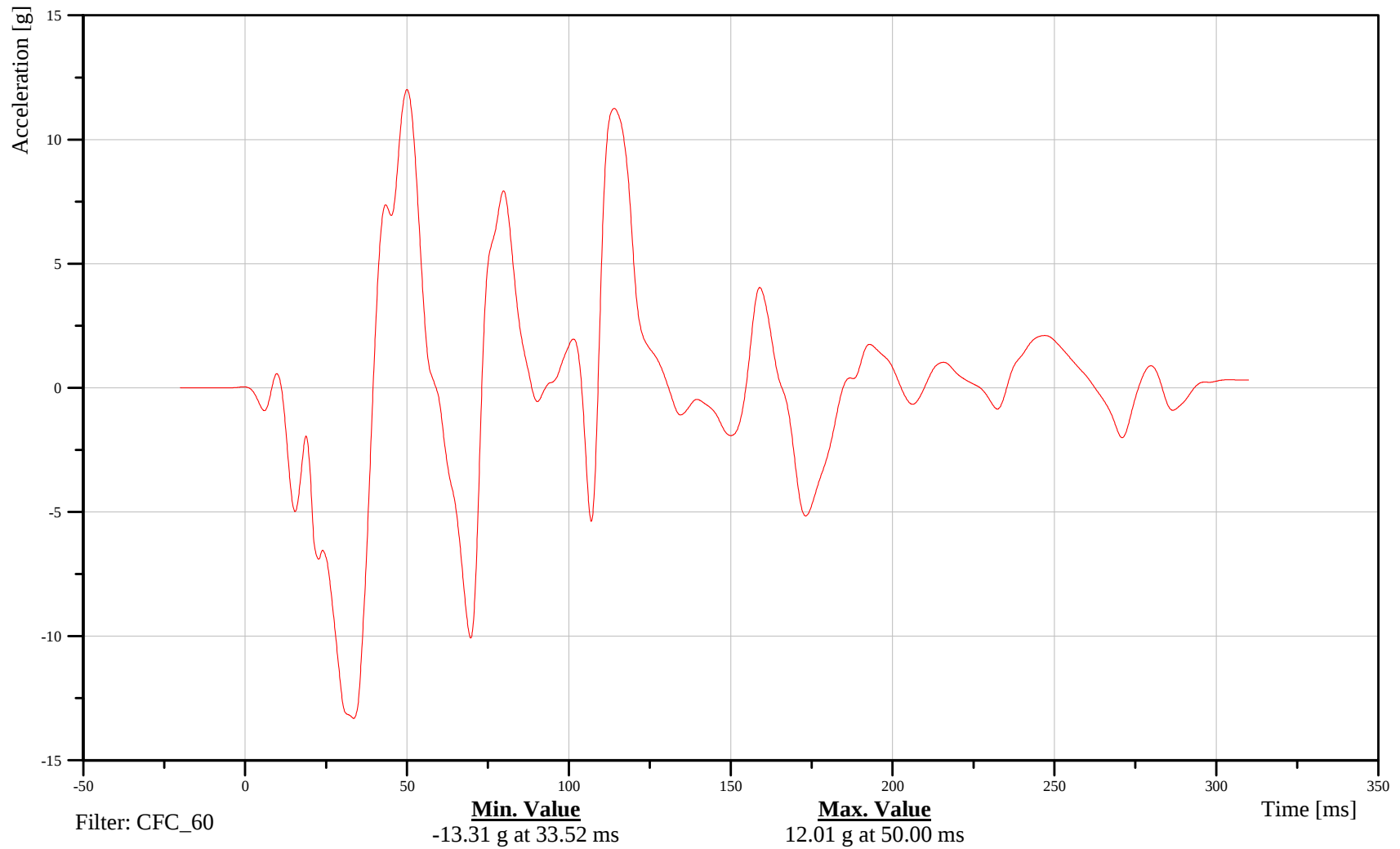
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14SEATBO0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-95

080917



Child Safety Research

Bottom of CRS #1 Y-Axis Acceleration

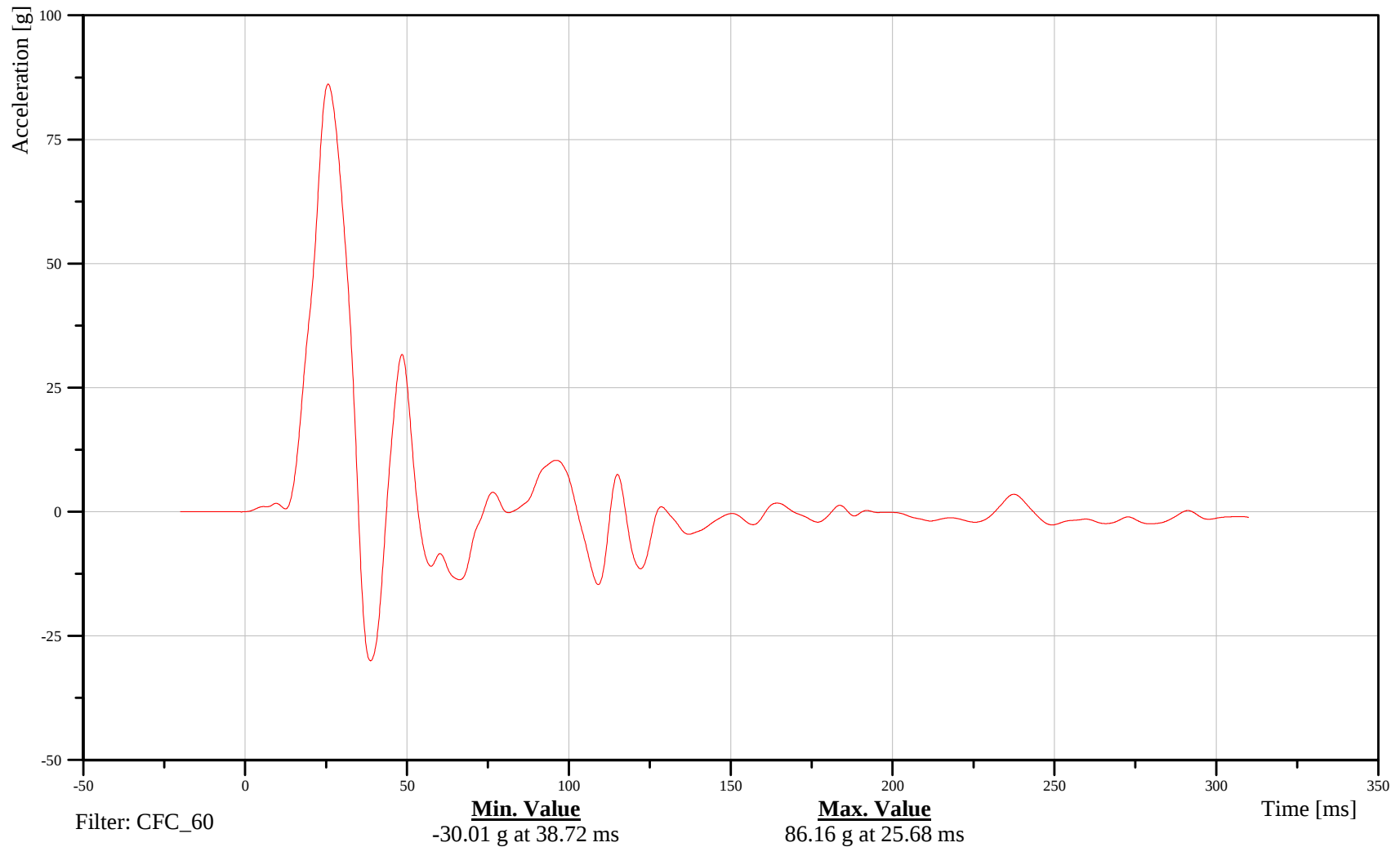
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14SEATBO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-96

080917



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

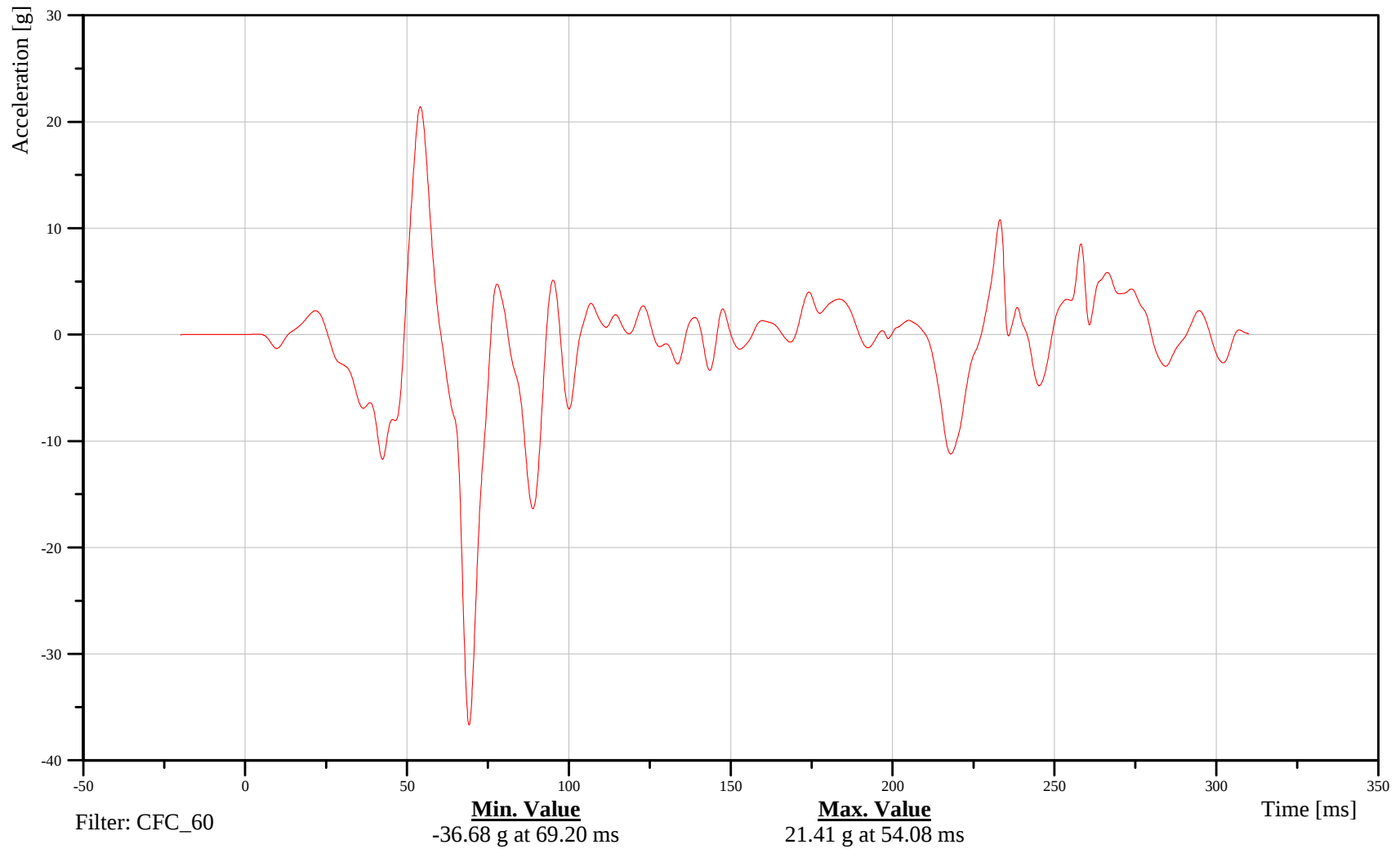
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16SEATTP0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-97

080917



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

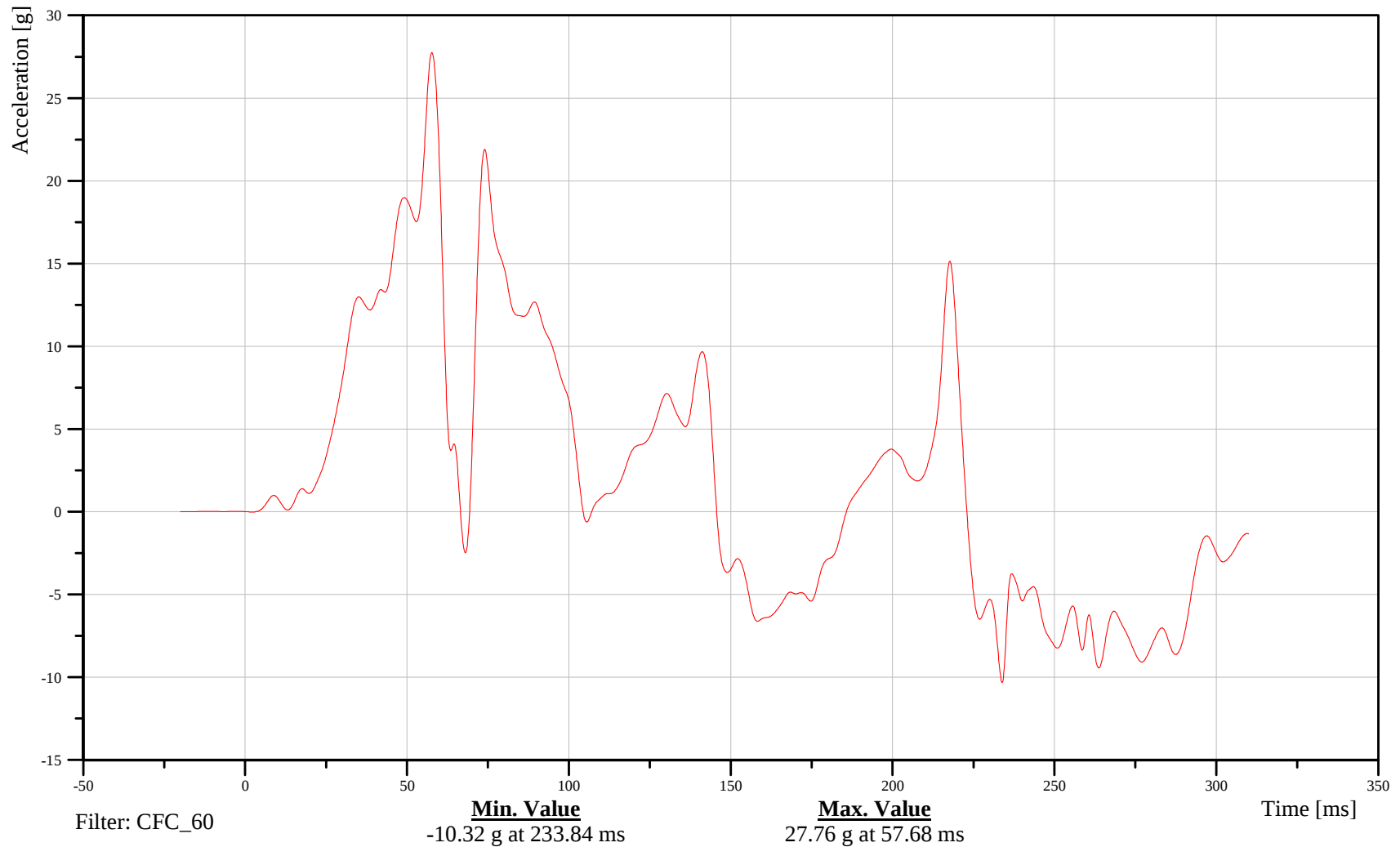
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16SEATTP0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-98

080917



Child Safety Research

Bottom of CRS #2 X-Axis Acceleration

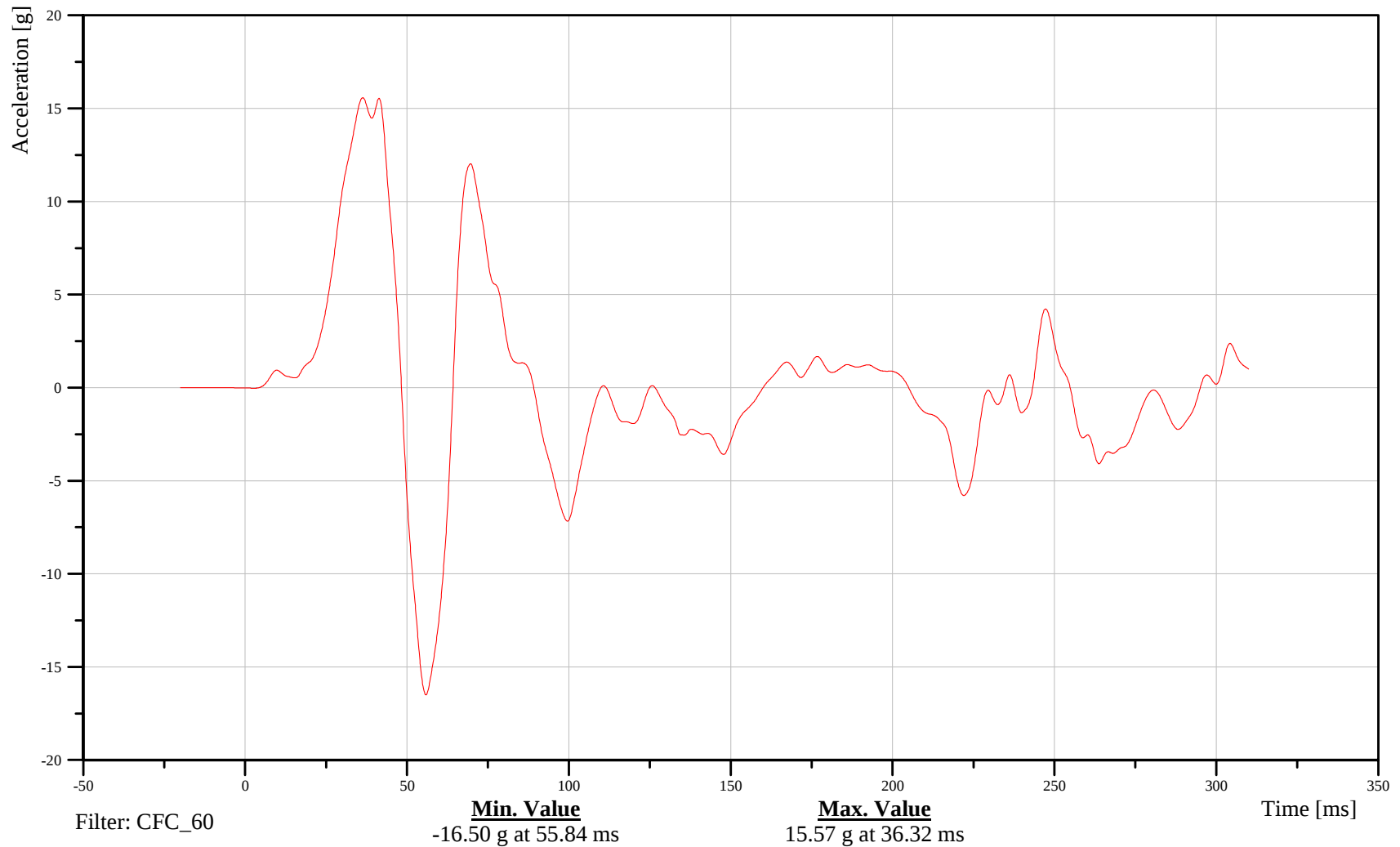
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16SEATBO0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-99

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

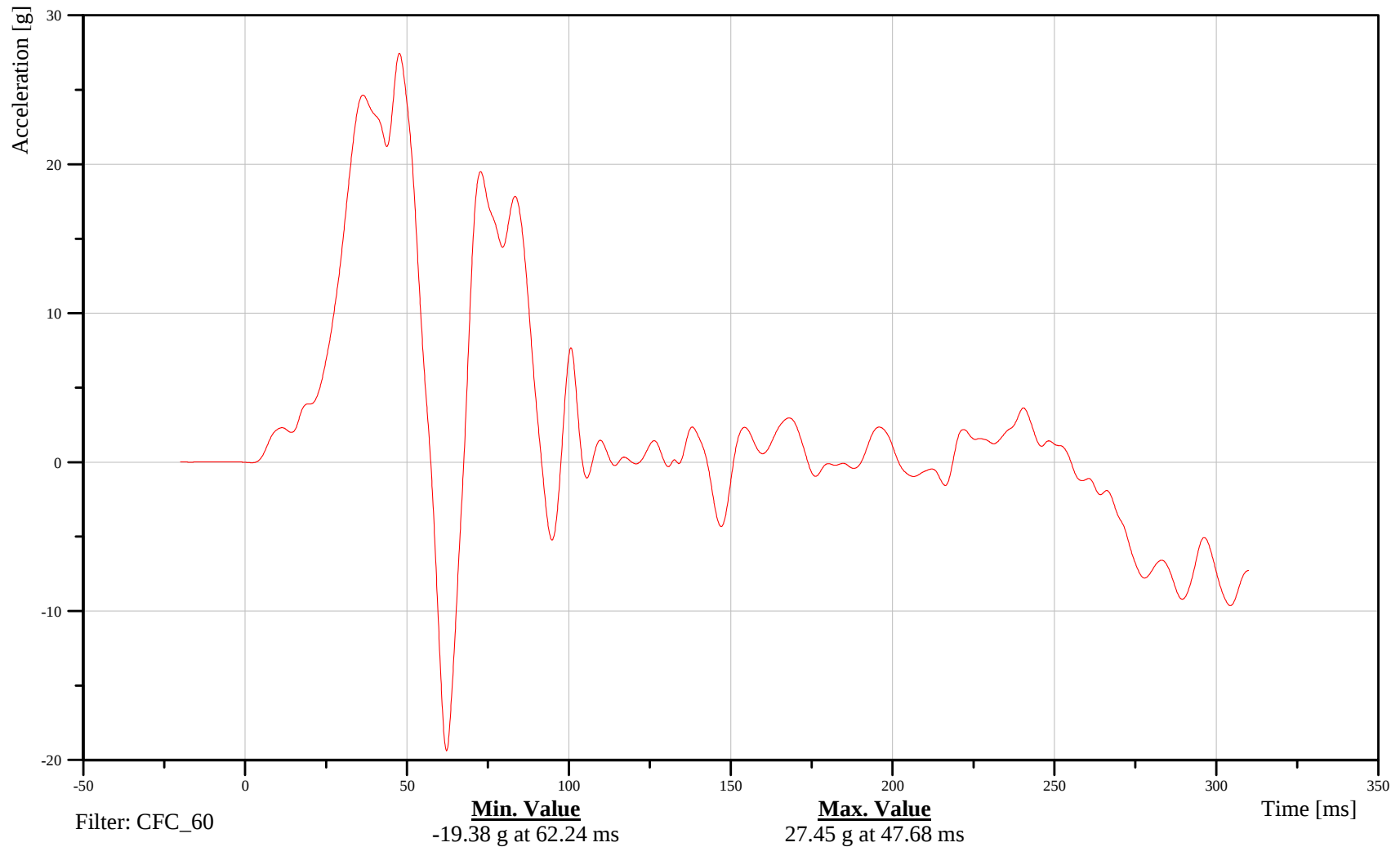
Bottom of CRS #2 Y-Axis Acceleration

Customer: VRTC

16SEATBO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-100

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

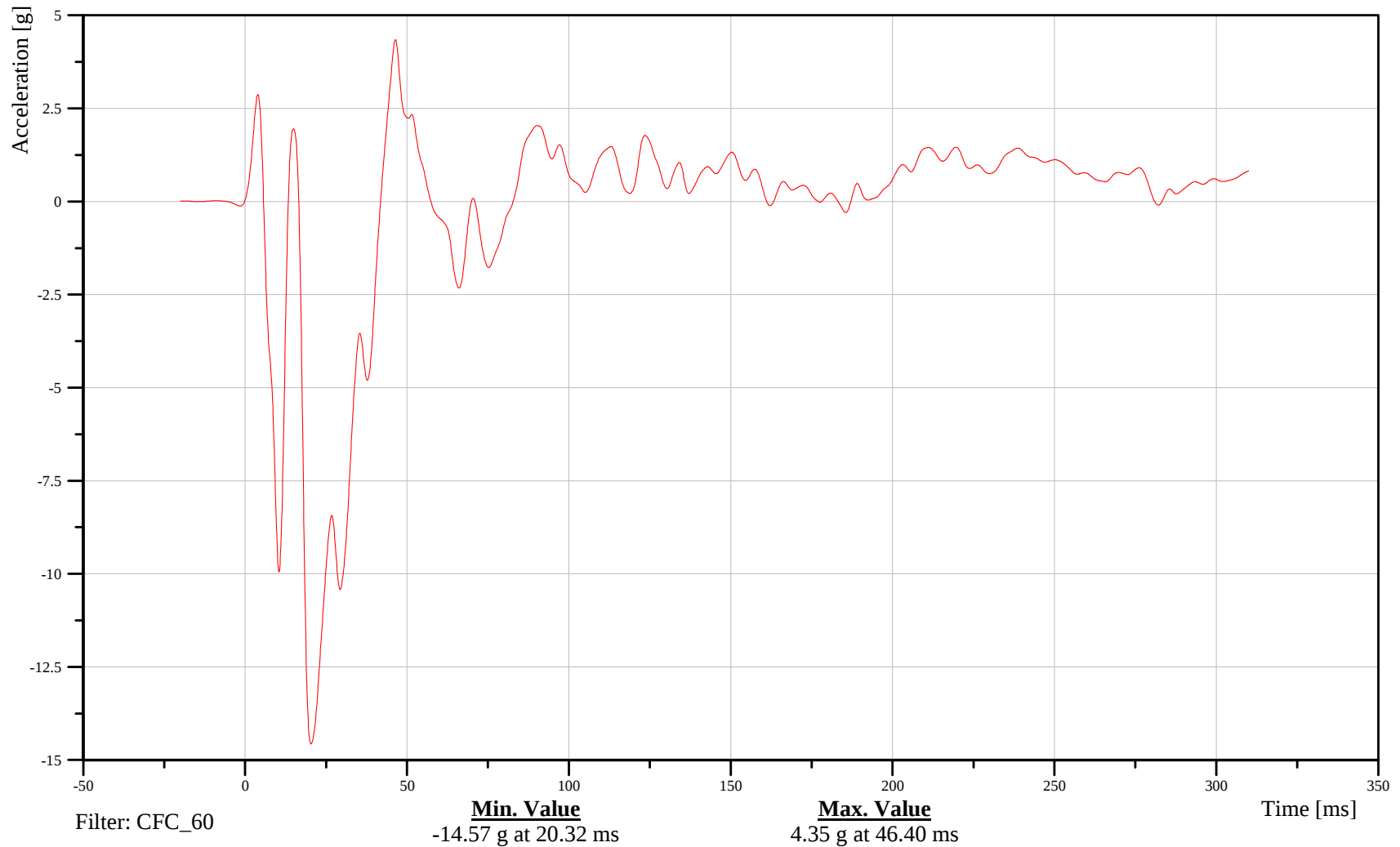
Below Seat Cushion Under CRS #1 X-Axis Acceleration

Customer: VRTC

14SEATLO0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-101

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

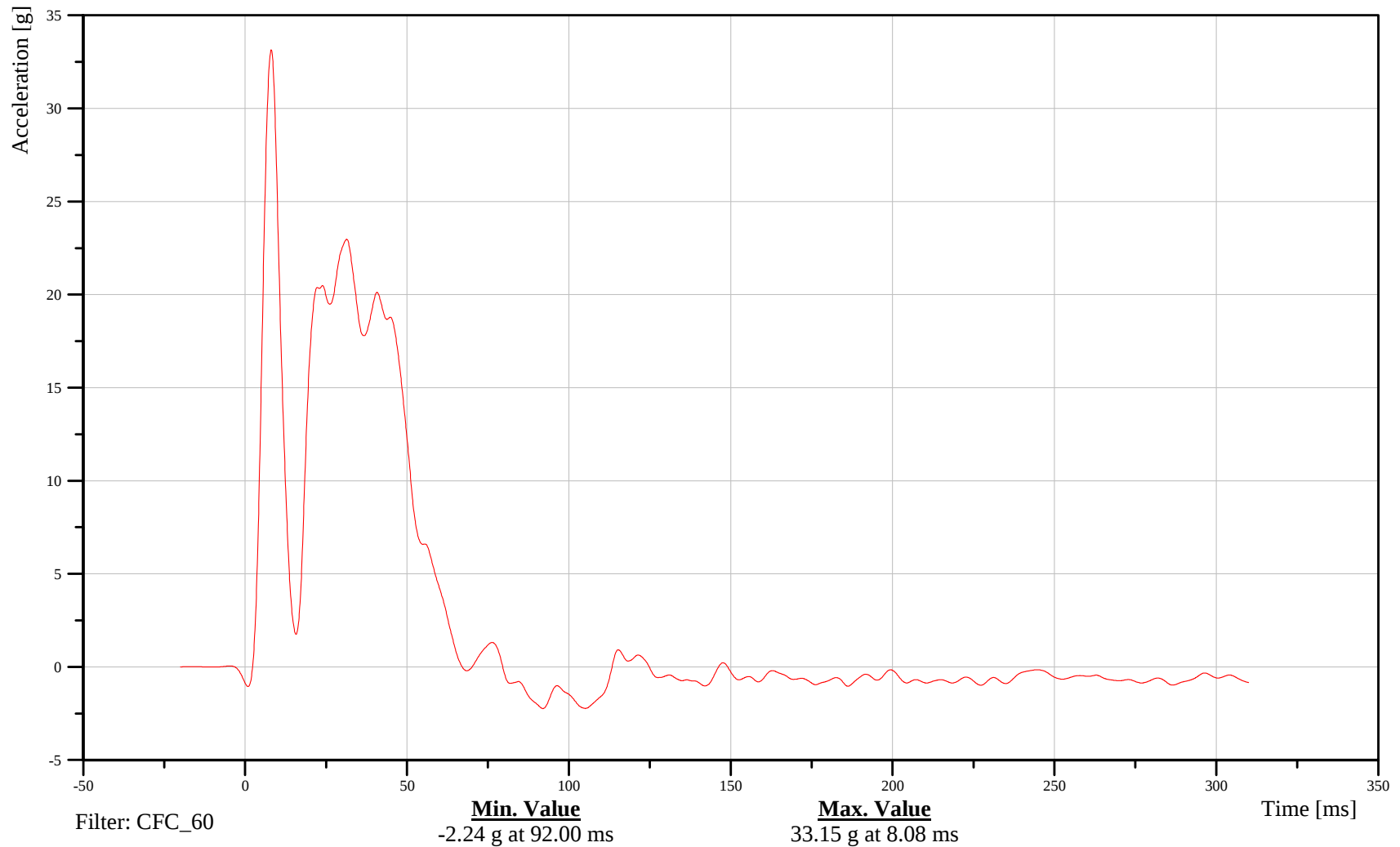
Below Seat Cushion Under CRS #1 Y-Axis Acceleration

Customer: VRTC

14SEATLO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-102

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

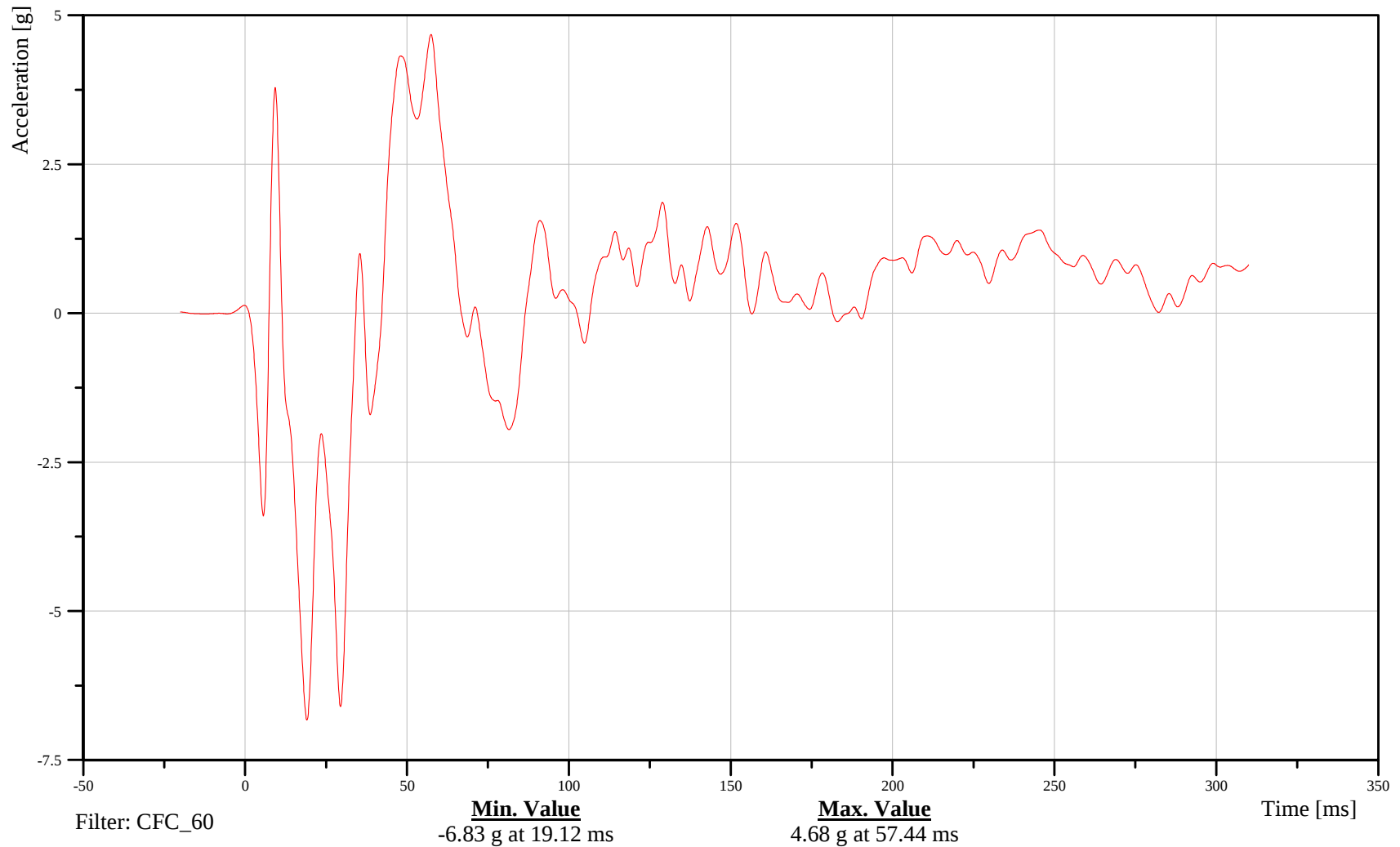
Below Seat Cushion Under CRS #2 X-Axis Acceleration

Customer: VRTC

16SEATLO0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-103

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

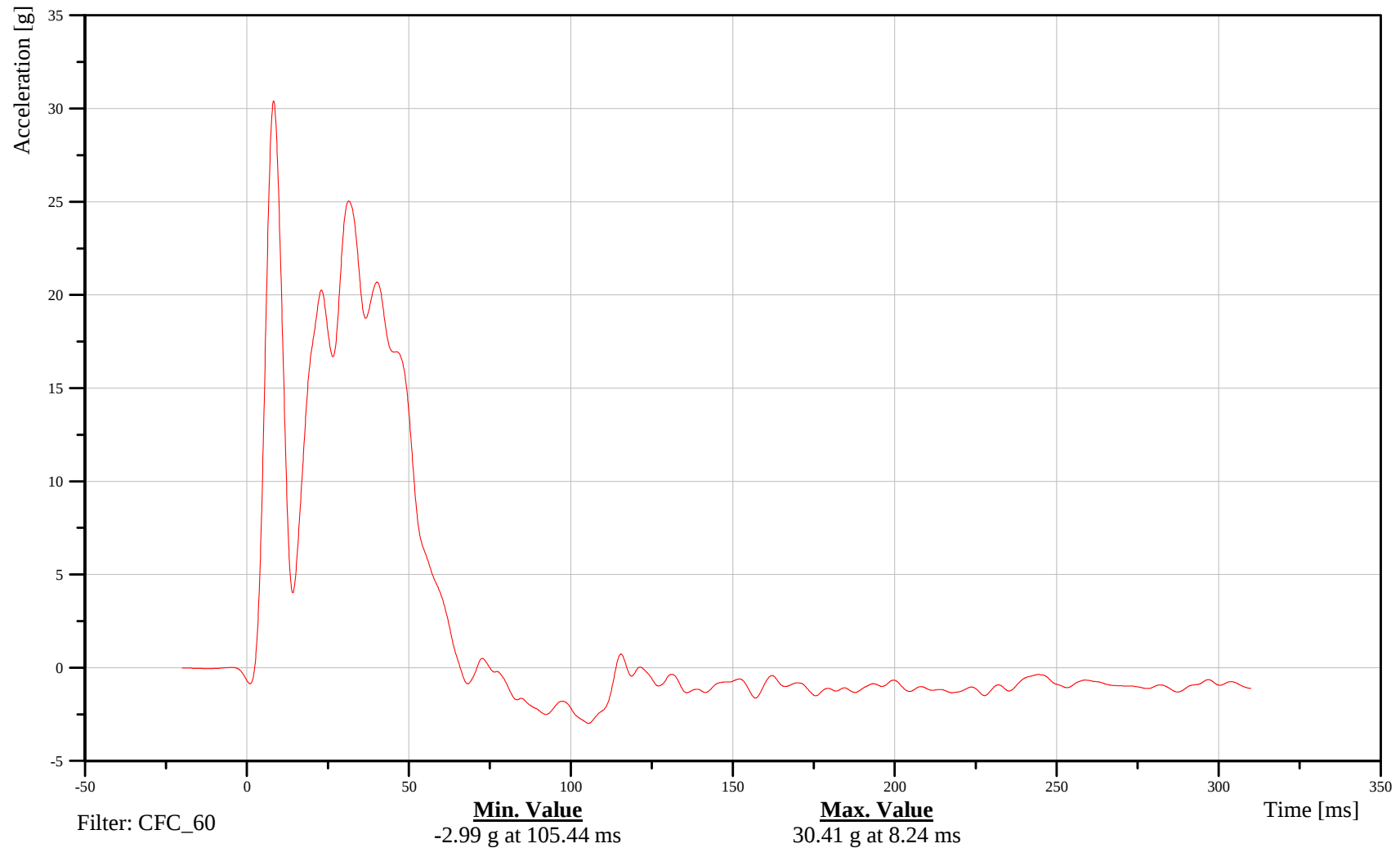
Below Seat Cushion Under CRS #2 Y-Axis Acceleration

Customer: VRTC

16SEATLO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-104

080917



Child Safety Research
Left Rear Head Contact Switch

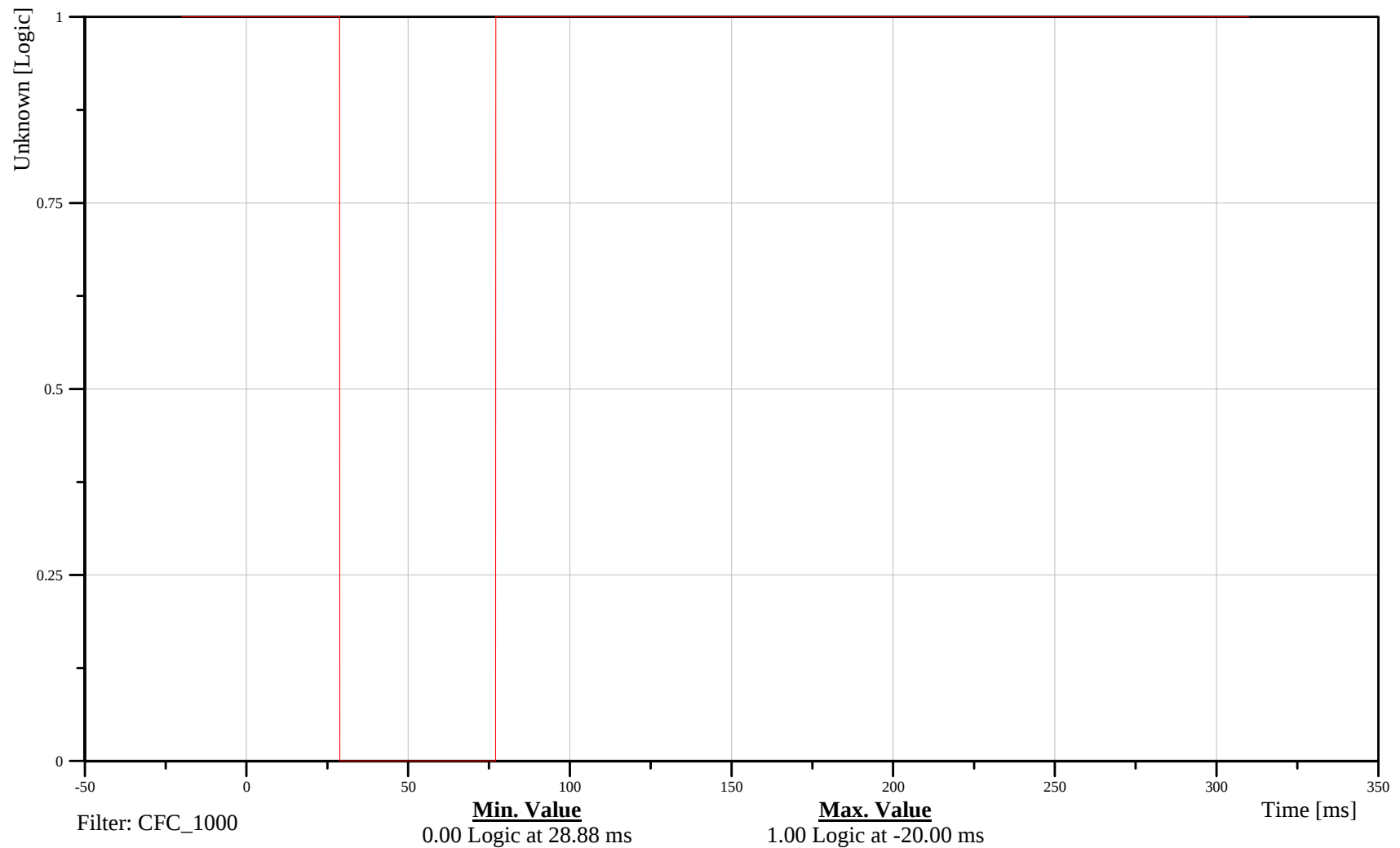
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14HEAD000000VO0A

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-105

080917



Child Safety Research
Left Rear Shoulder Contact Switch

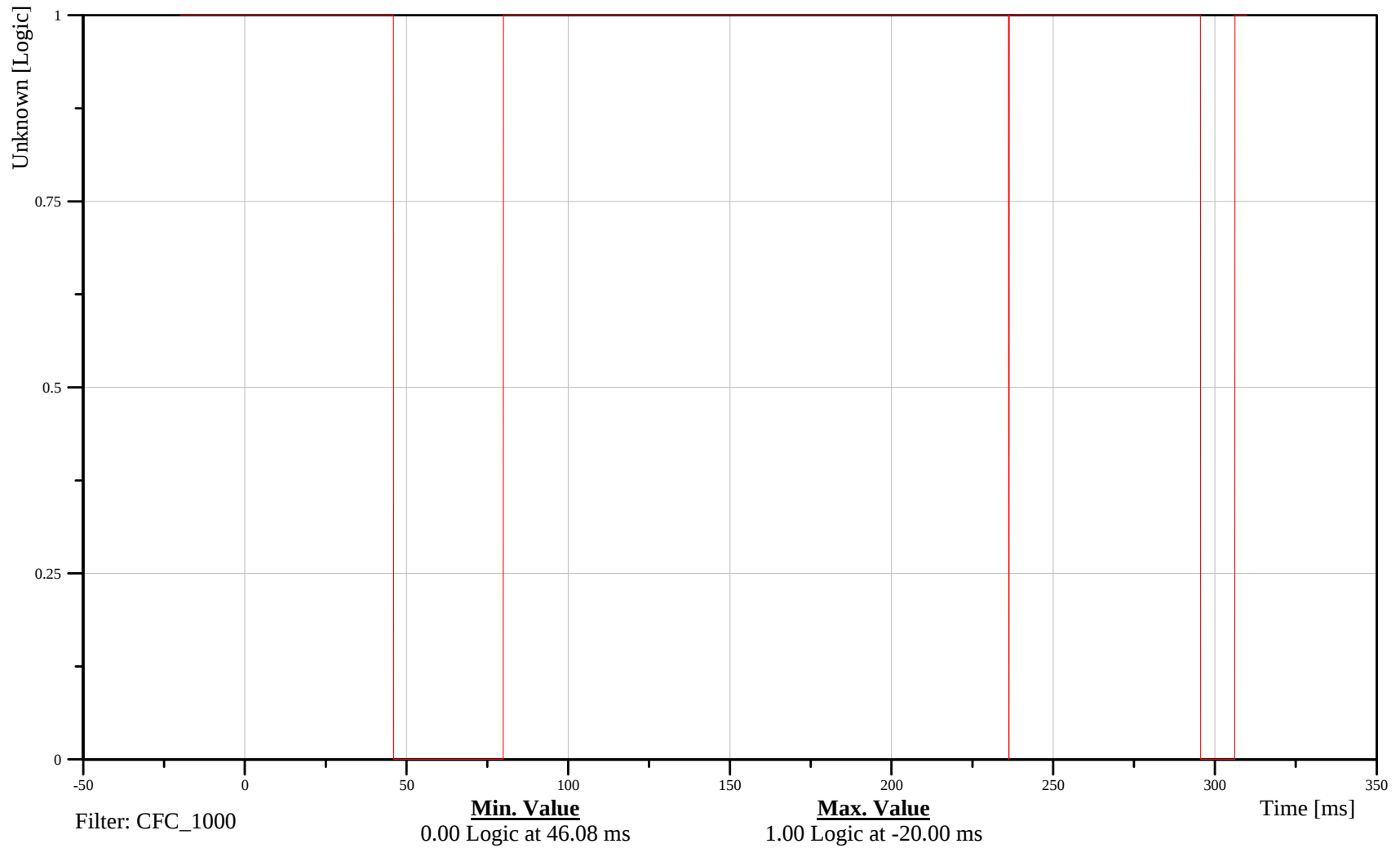
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14SHLD000000VO0A

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-106

080917



Child Safety Research
Left Rear Car Seat Contact Switch

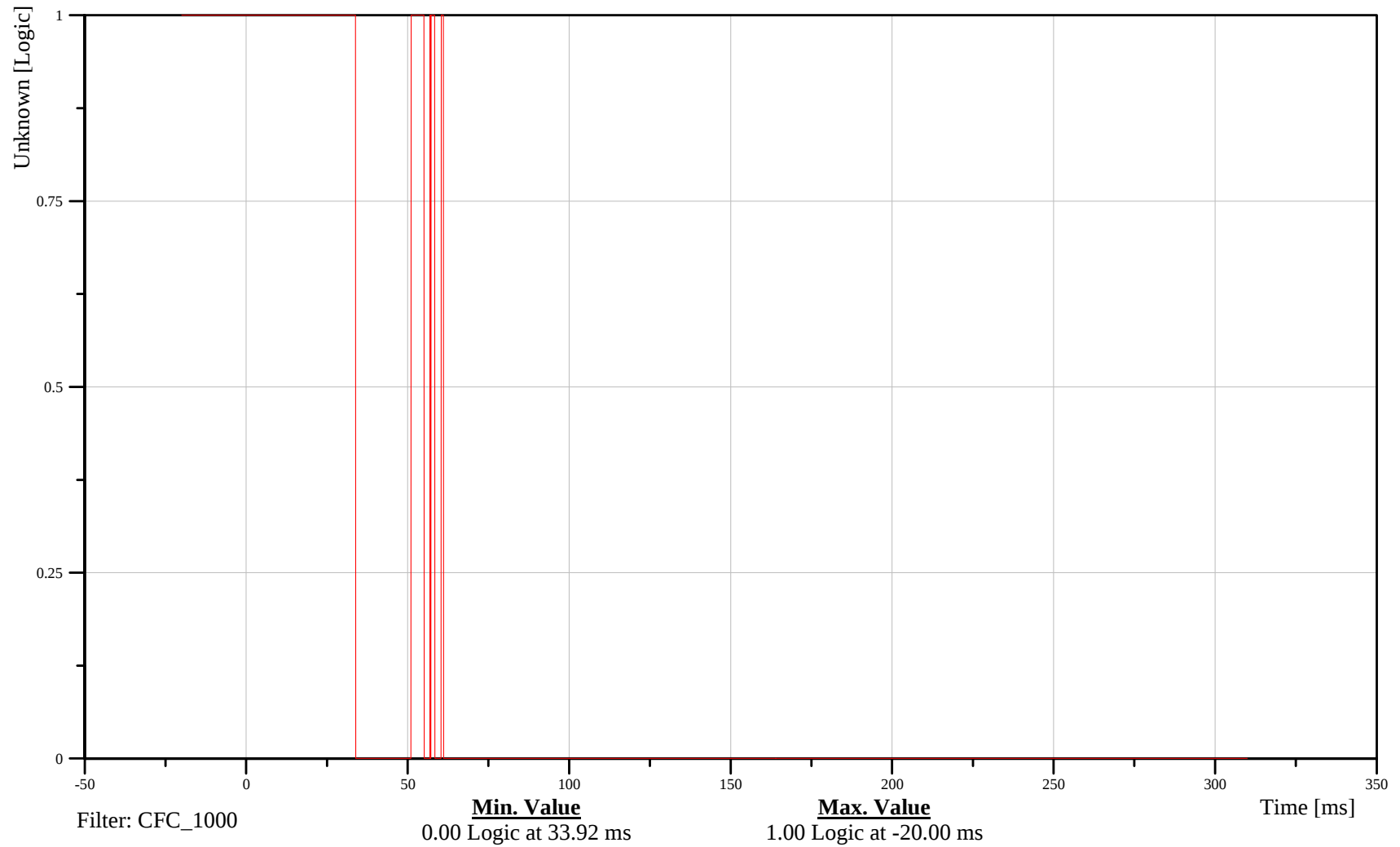
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14VEHC000000VO0A

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-107

080917



Child Safety Research
Left Rear Leg Contact Switch

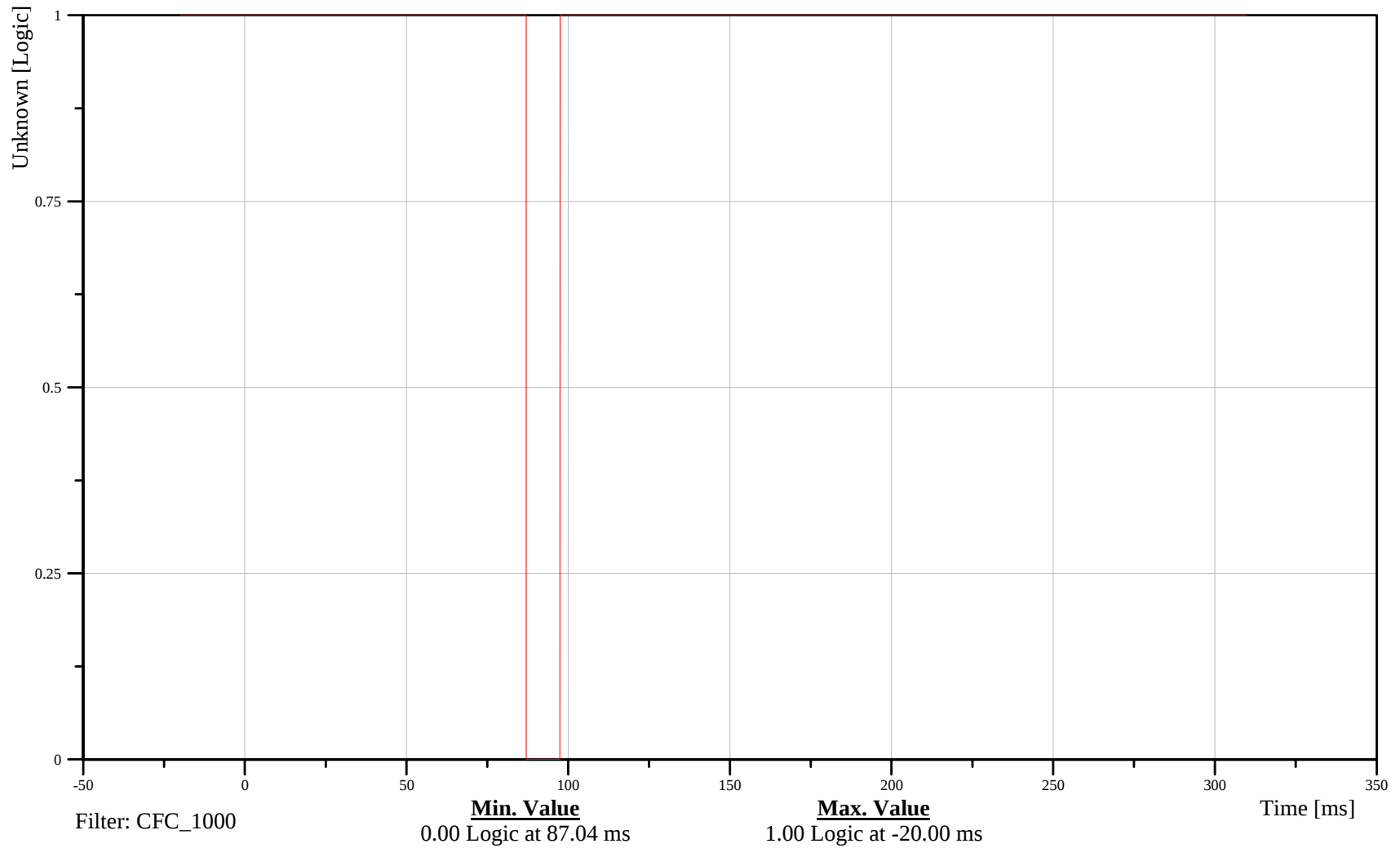
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14LEGLE00000VO0A

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-108

080917



Child Safety Research
Right Rear Head Contact Switch

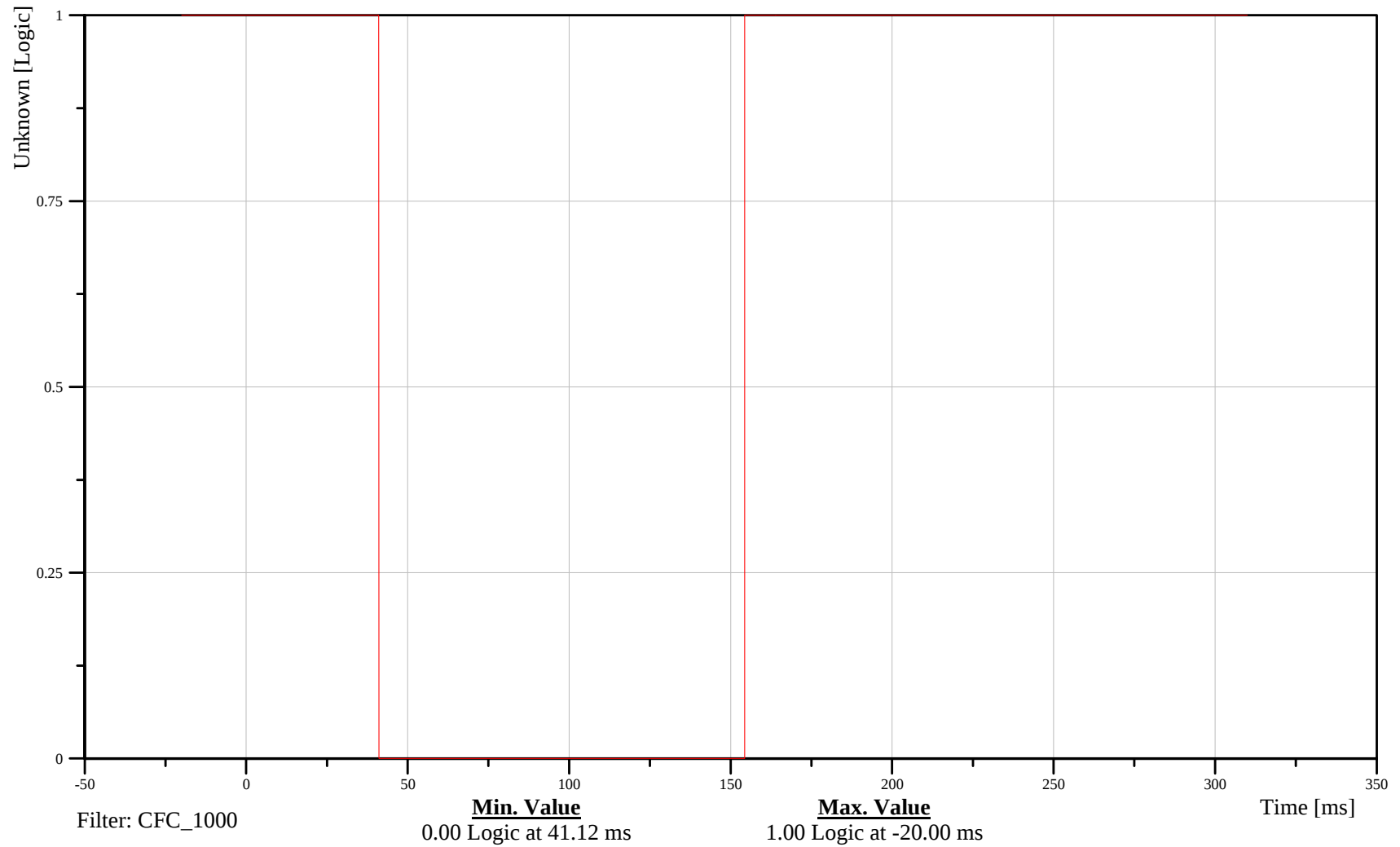
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16HEAD000000VO0A

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-109

080917



Child Safety Research
Right Rear Shoulder Contact Switch

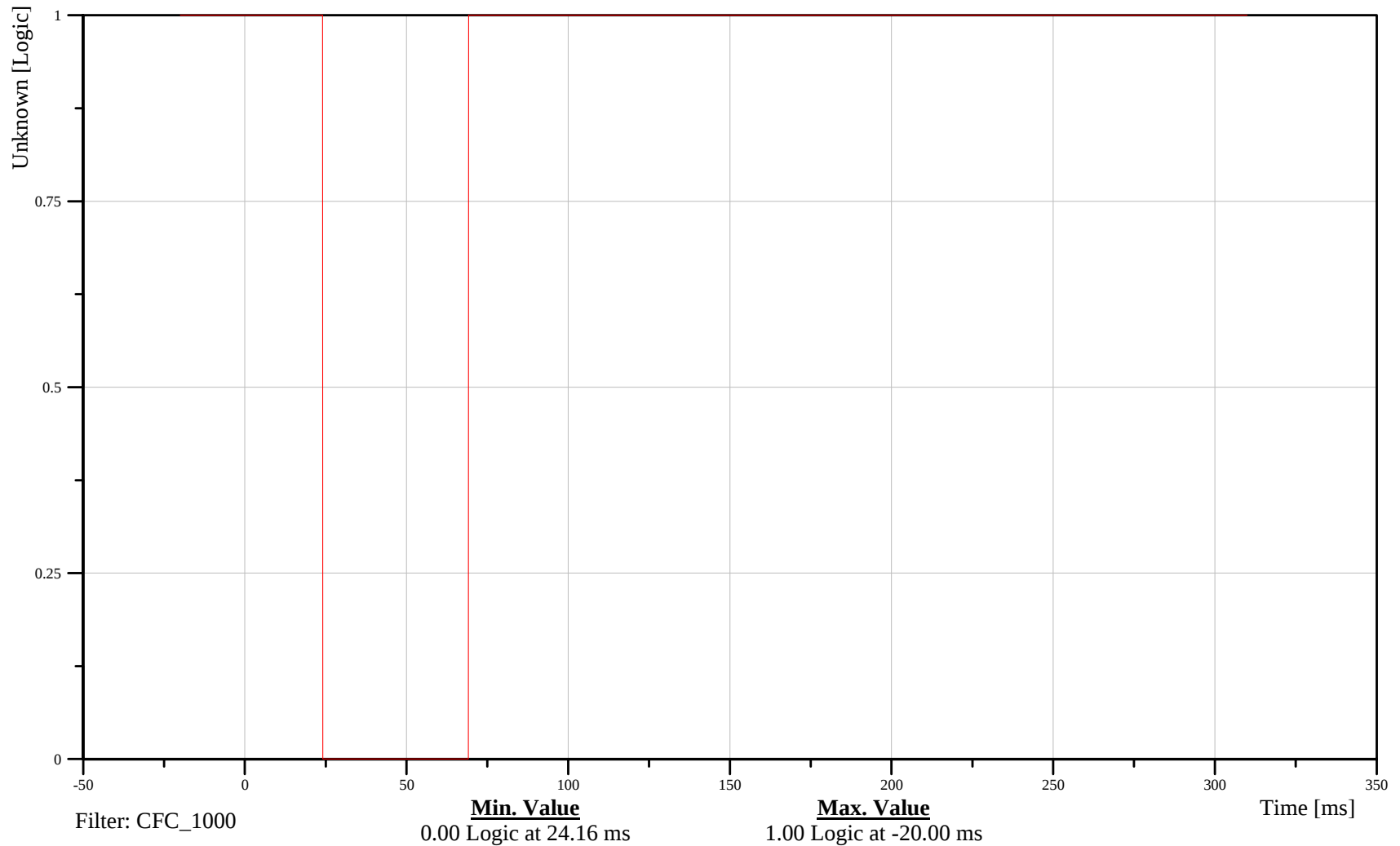
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16SHLD000000VO0A

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-110

080917



Child Safety Research
Right Rear Car Seat Contact Switch

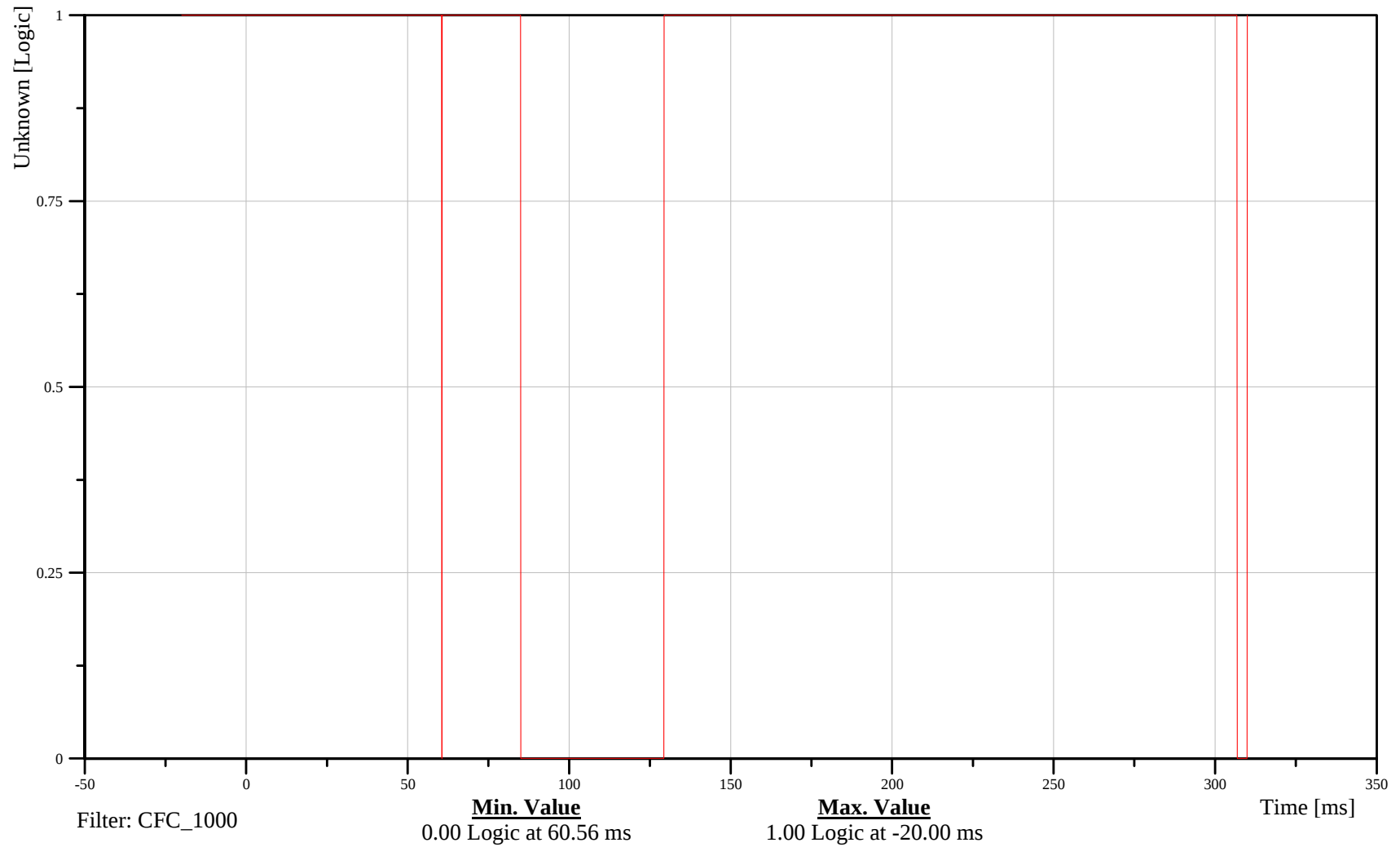
Date: 09/17/2008
Time: 14:47

Customer: VRTC

16VEHC000000VO0A

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-111

080917



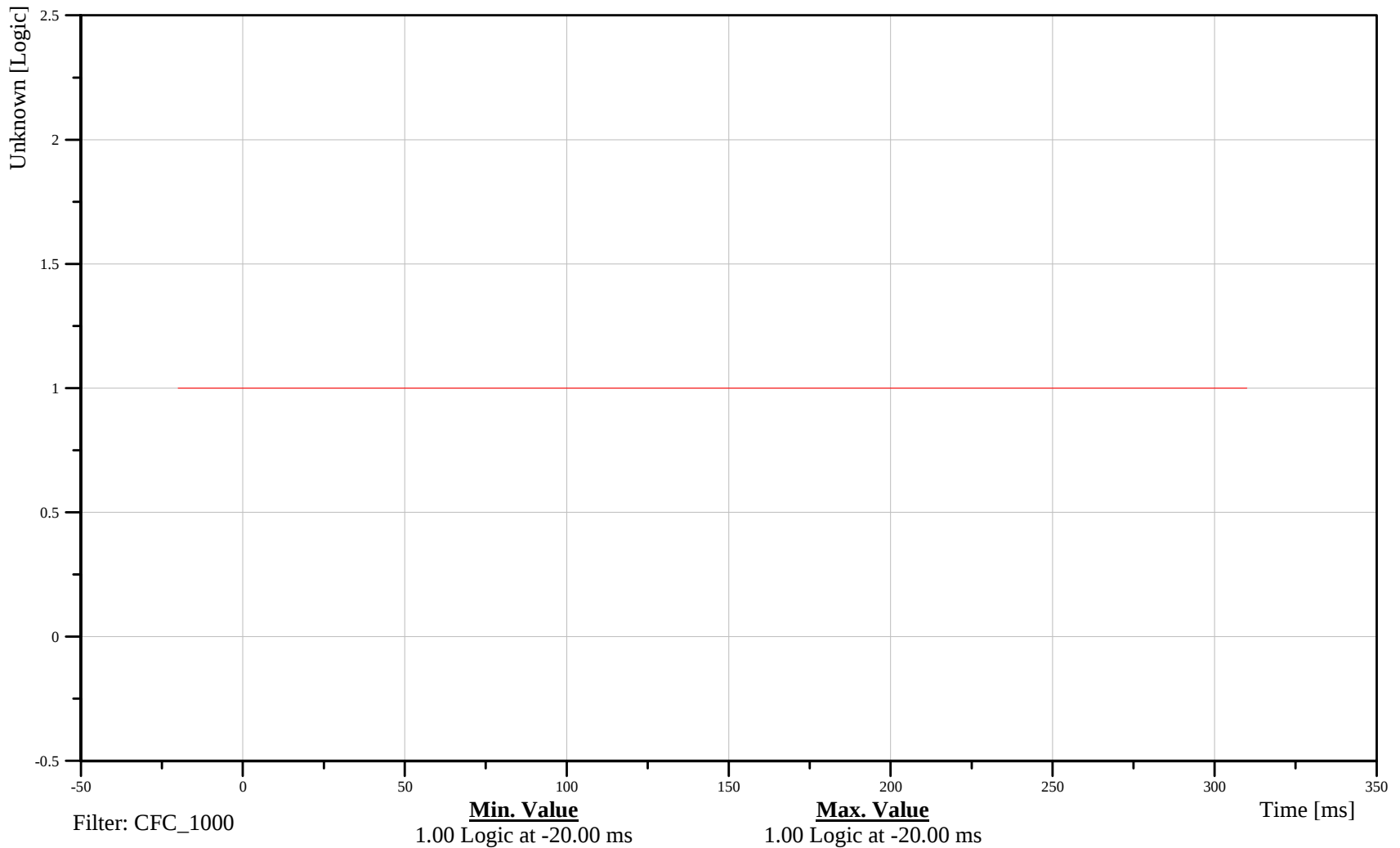
Child Safety Research
Right Rear Leg Contact Switch

Date: 09/17/2008
Time: 14:47

Customer: VRTC

16LEGLE00000VO0A

TRC Inc. Test Lab: CTF
Test Number: 080917-1



B-112

080917



Child Safety Research
MDB Center of Gravity X-Axis Acceleration

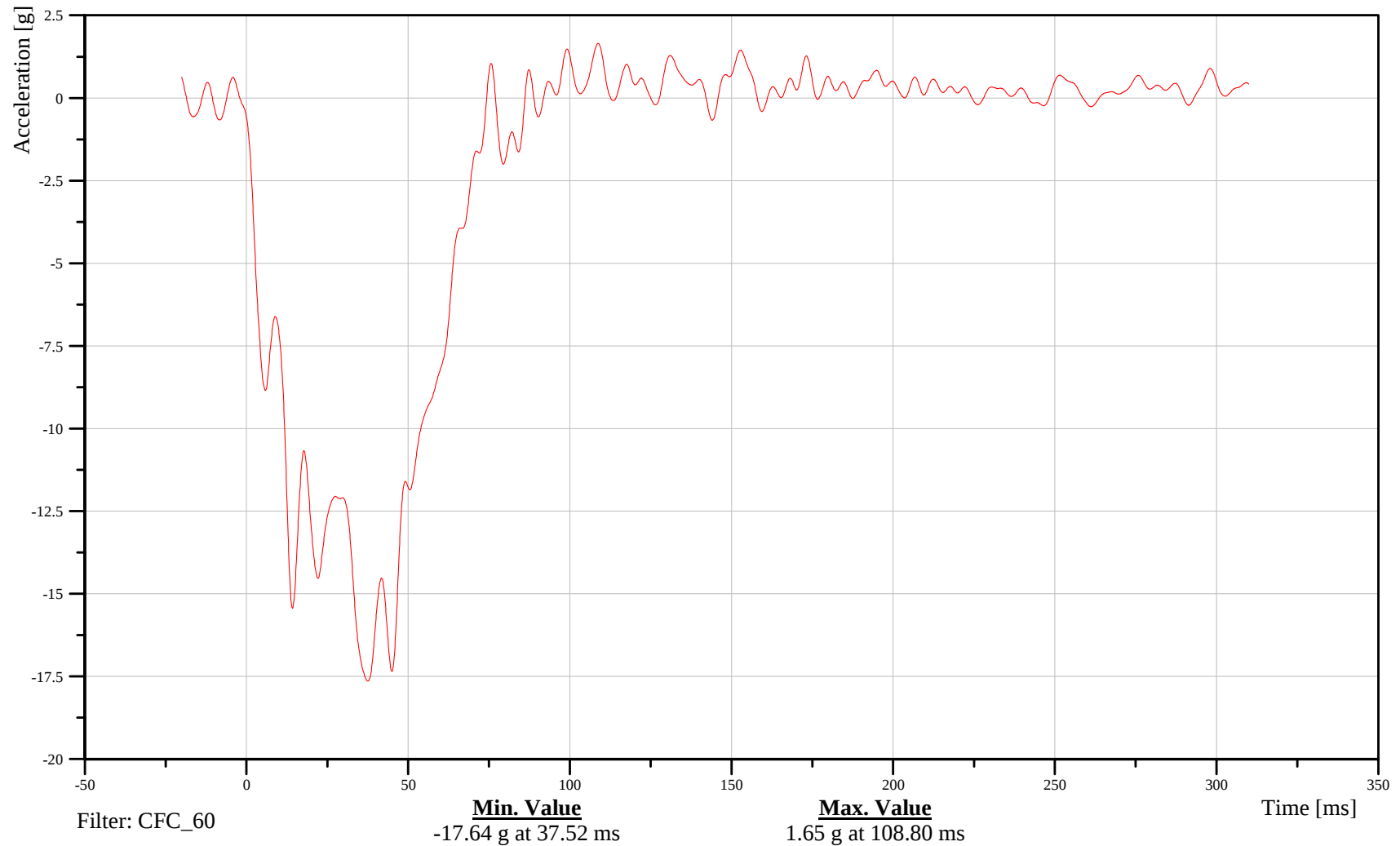
Date: 09/17/2008
Time: 14:47

Customer: VRTC

M0VEHCCG0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-113

080917



Child Safety Research

MDB Center of Gravity Y-Axis Acceleration

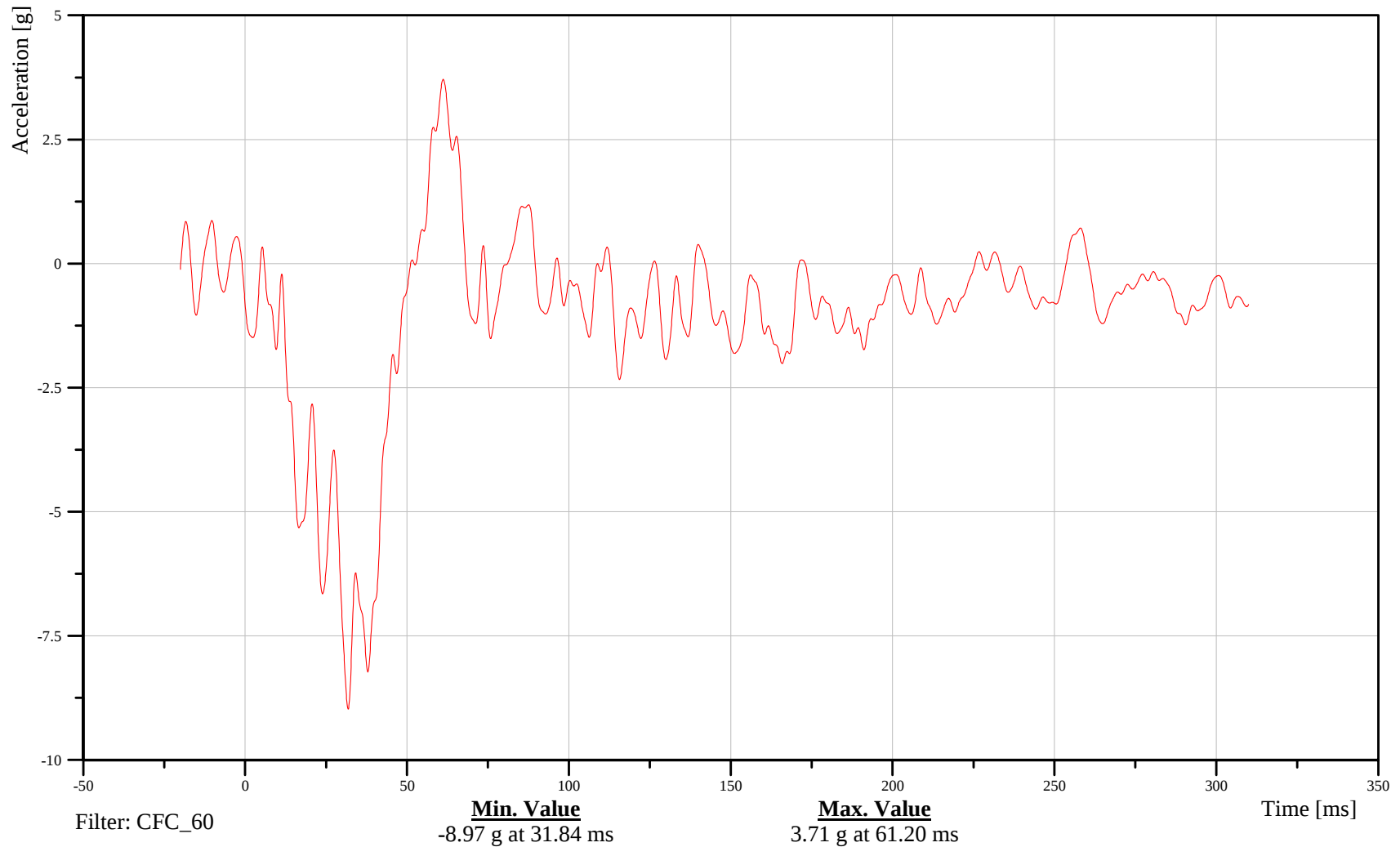
Date: 09/17/2008
Time: 14:47

Customer: VRTC

M0VEHCCG0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-114

080917



Child Safety Research
MDB Center of Gravity Z-Axis Acceleration

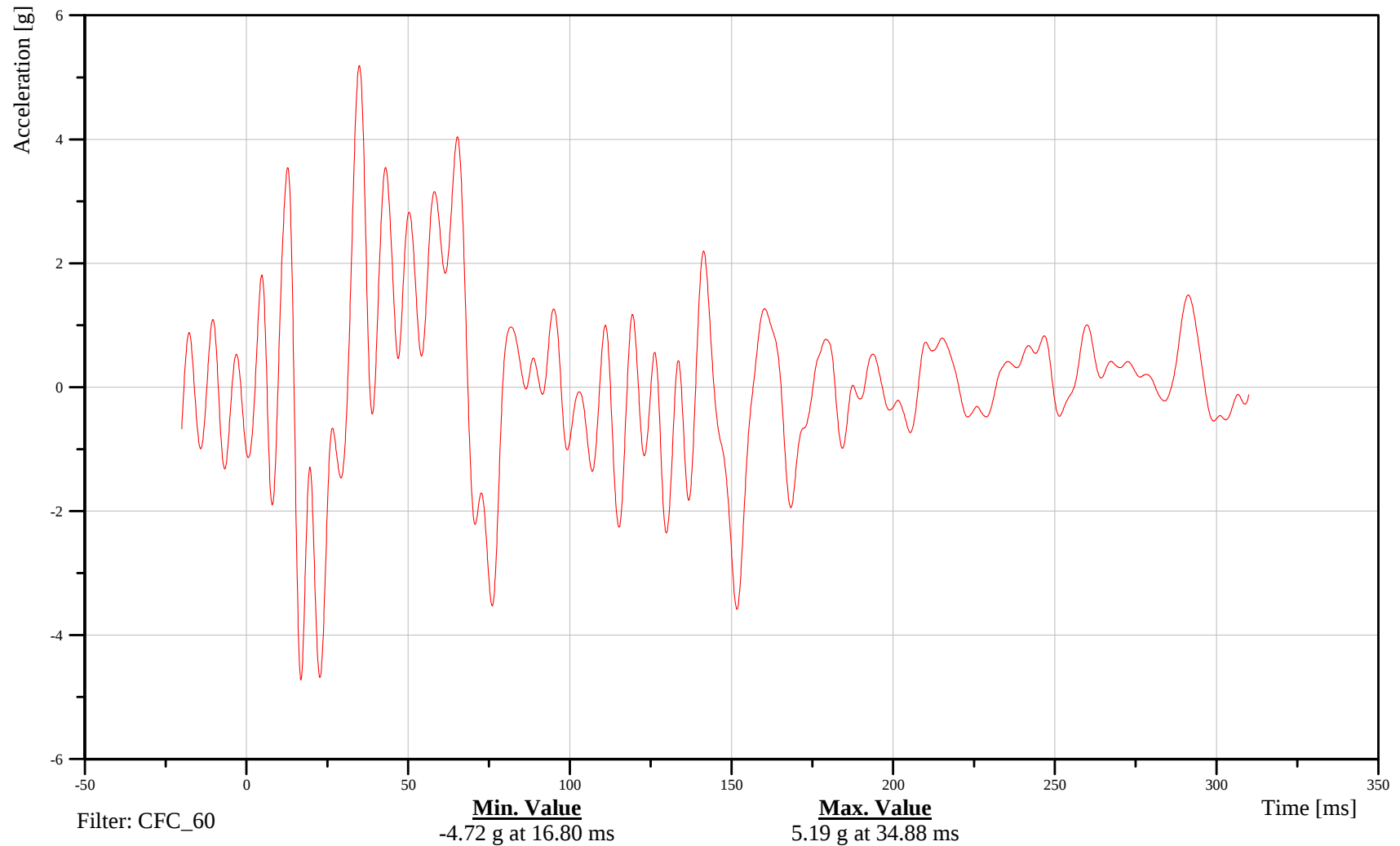
Date: 09/17/2008
Time: 14:47

Customer: VRTC

M0VEHCCG0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-115

080917



Child Safety Research

Date: 09/17/2008
Time: 14:47

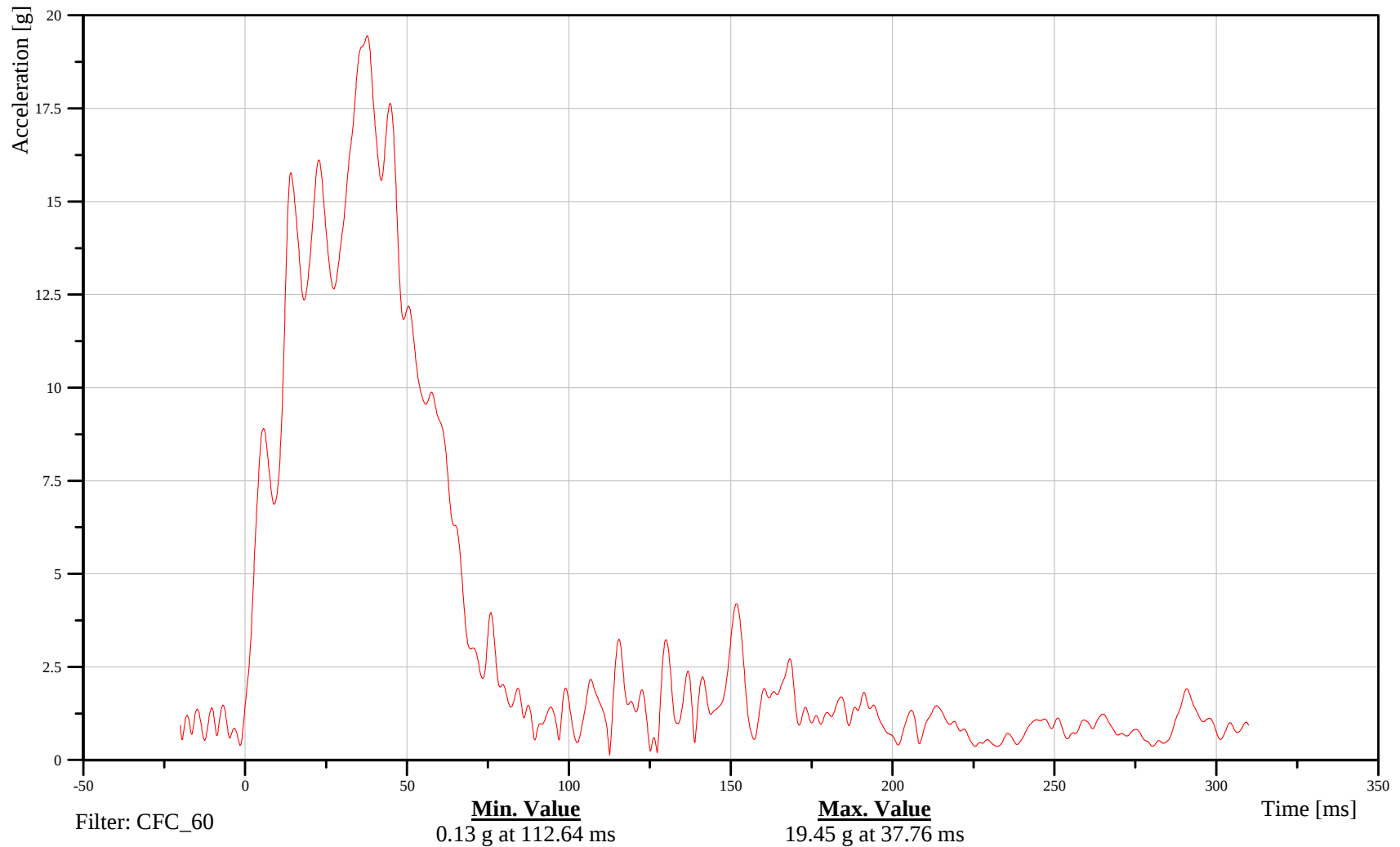
MDB Center of Gravity Resultant Acceleration

Customer: VRTC

M0VEHCCG0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-116

080917



Child Safety Research
MDB Rear X-Axis Acceleration

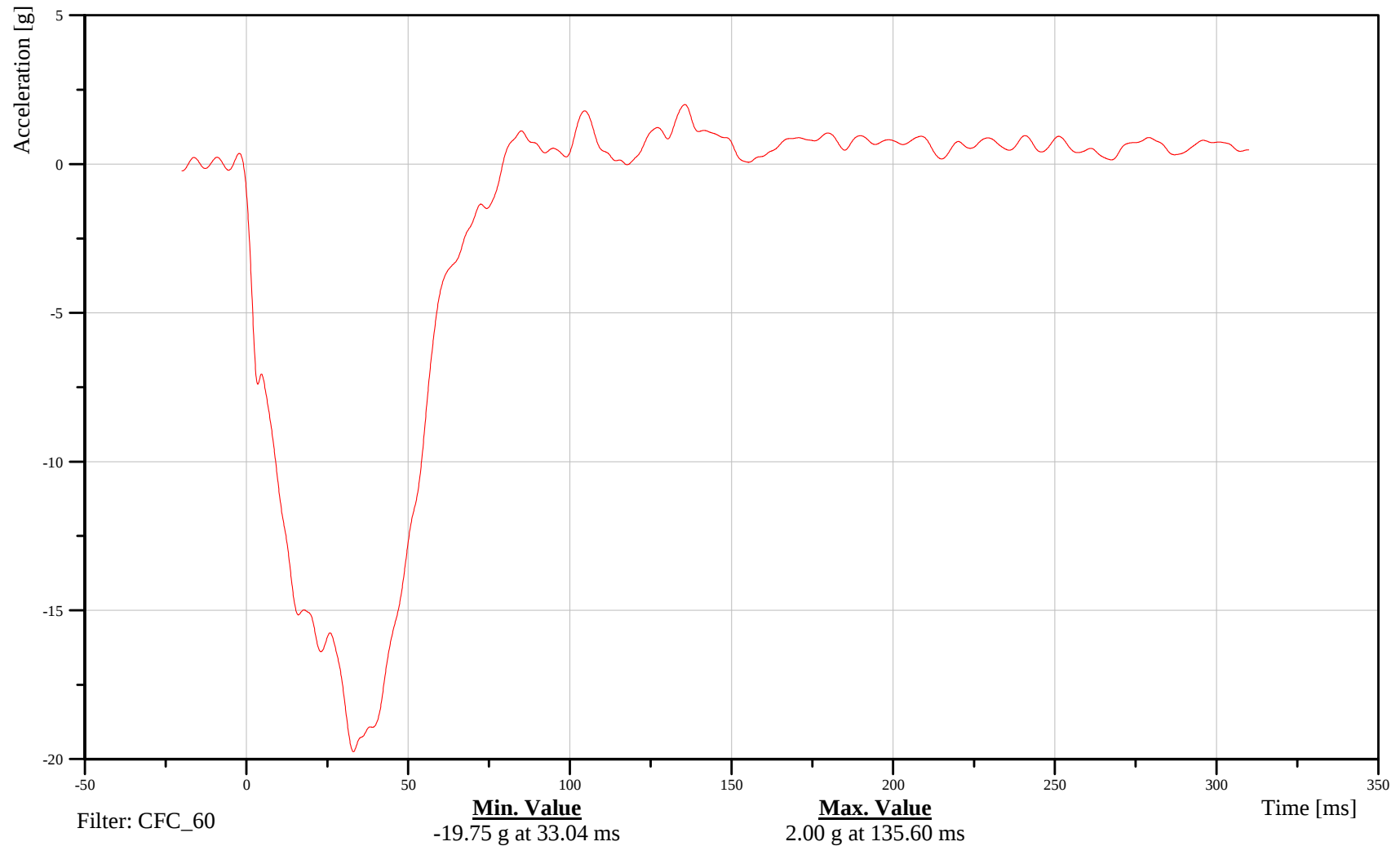
Date: 09/17/2008
Time: 14:47

Customer: VRTC

M7FRAM000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-117

080917



Child Safety Research
MDB Rear Y-Axis Acceleration

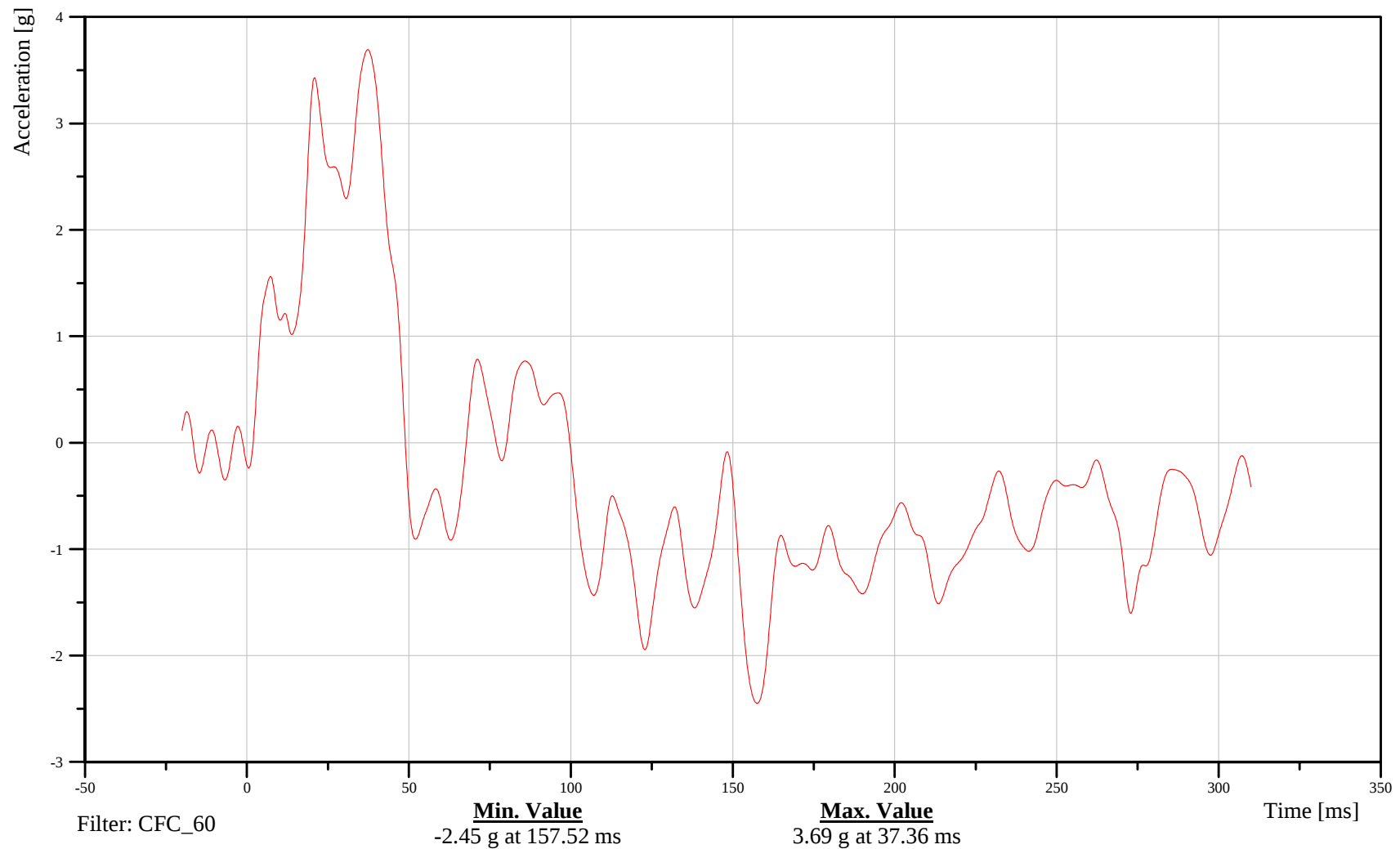
Date: 09/17/2008
Time: 14:47

Customer: VRTC

M7FRAM000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-118

080917



Child Safety Research
MDB Right Contact Switch

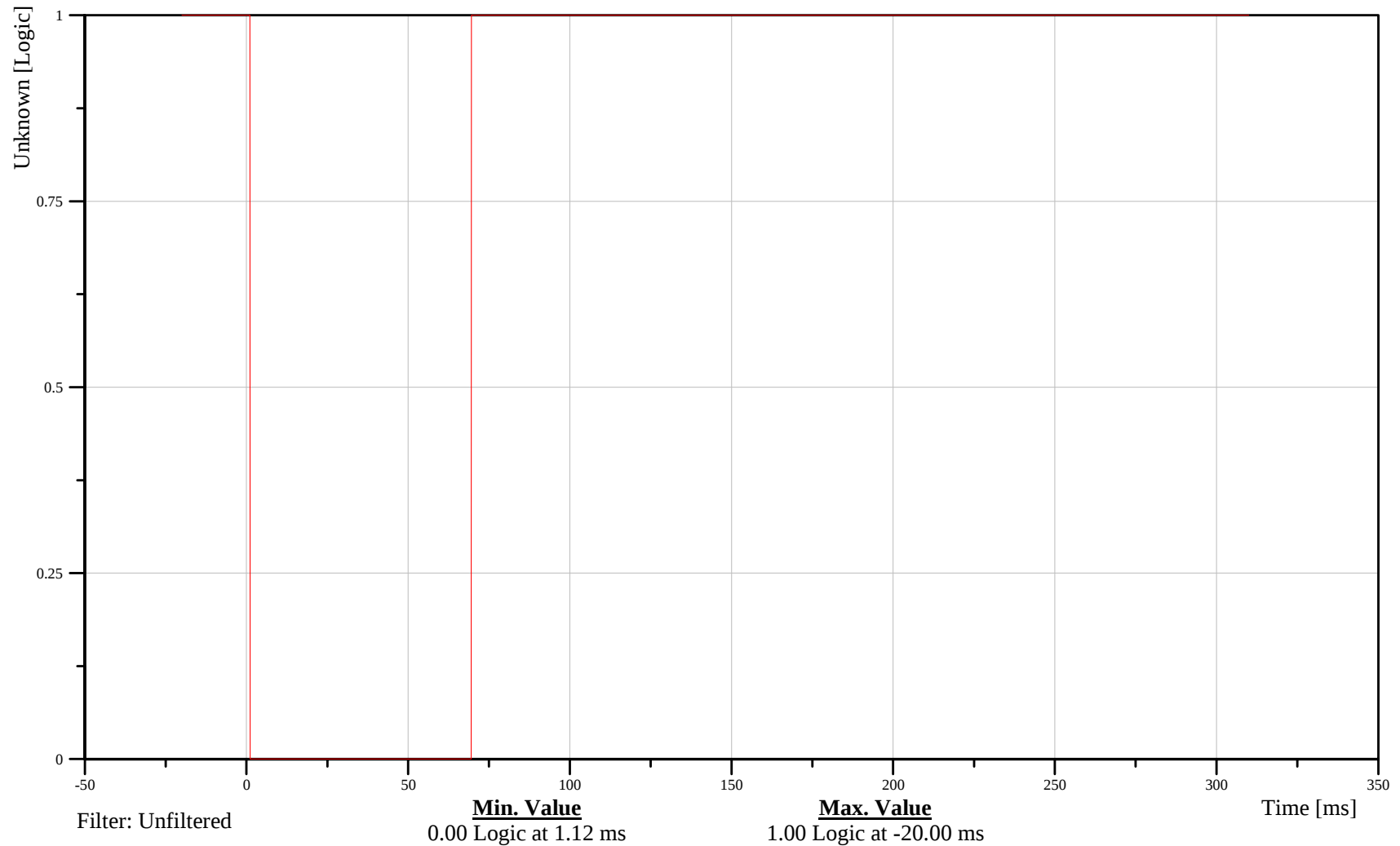
Date: 09/17/2008
Time: 14:47

Customer: VRTC

M3CONT000000VO00

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-119

080917



Child Safety Research

MDB Left Contact Switch

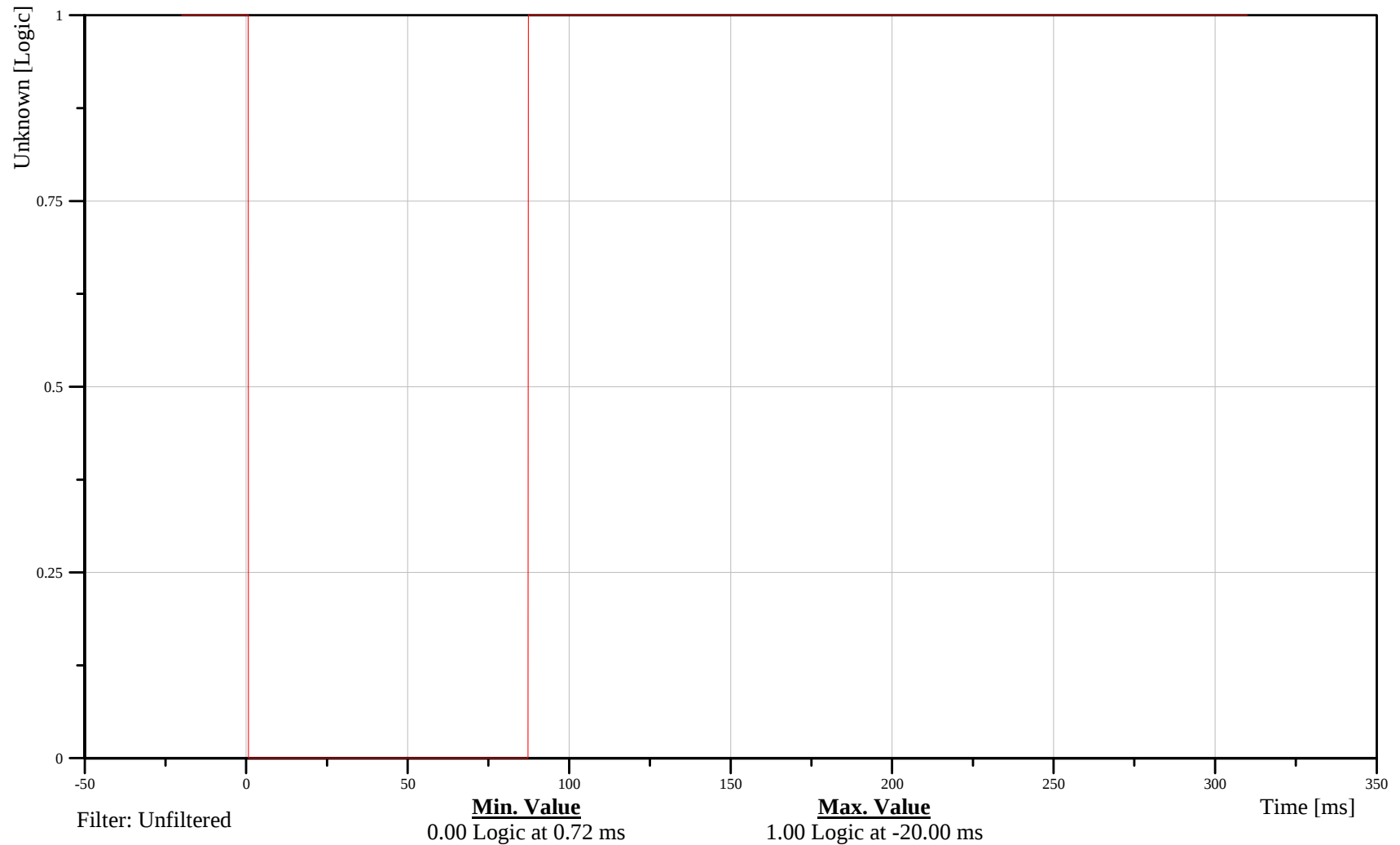
Date: 09/17/2008
Time: 14:47

Customer: VRTC

M1CONT000000VO00

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-120

080917



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

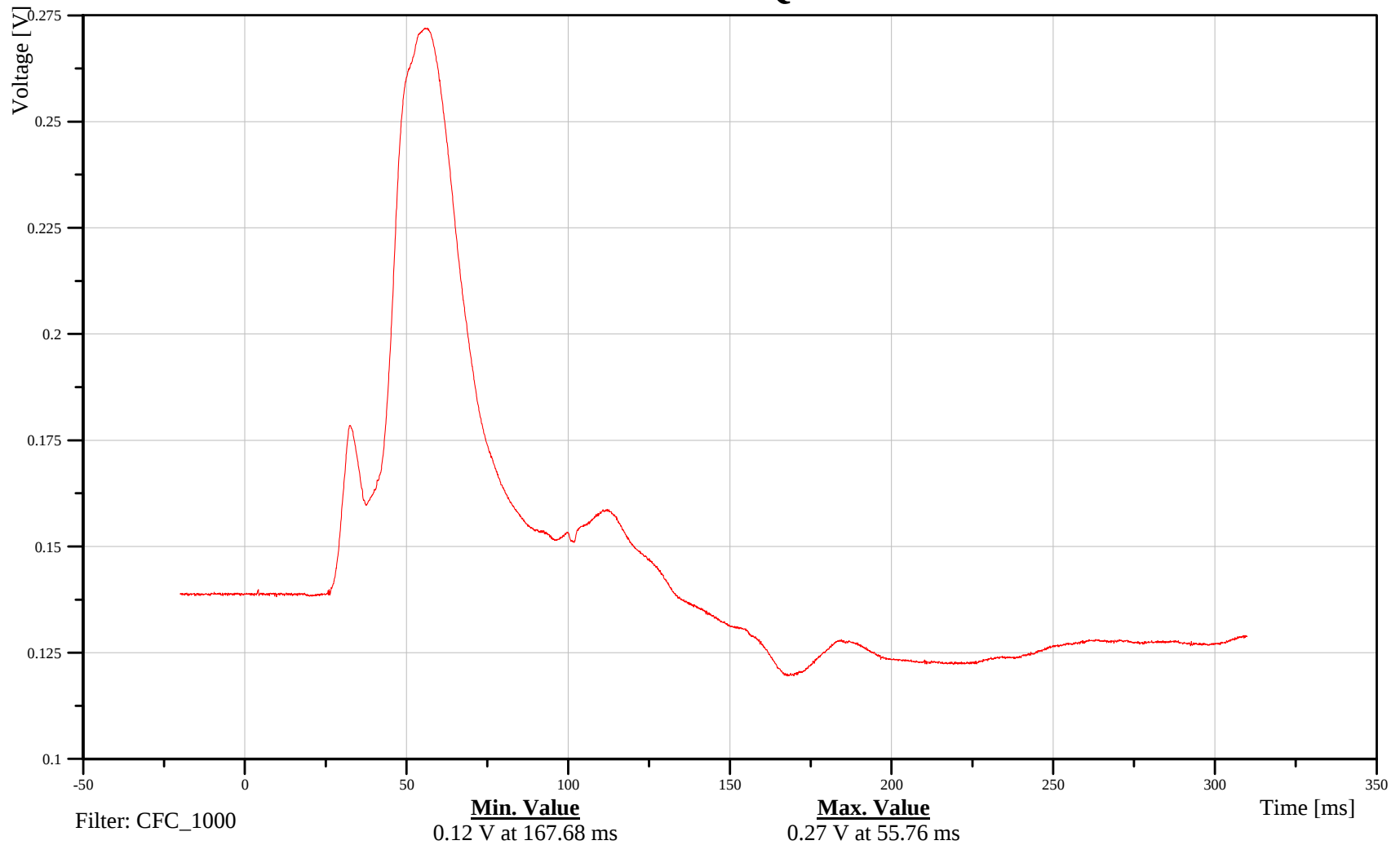
Date: 09/17/2008
Time: 14:47

Customer: VRTC

14CHST0000Q3VOYA

TRC Inc. Test Lab: CTF

Test Number: 080917-1



B-121

080917

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

Approved

Raul Brand

Ken Stoney



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

Ron B...

Approved

Ron Stoner

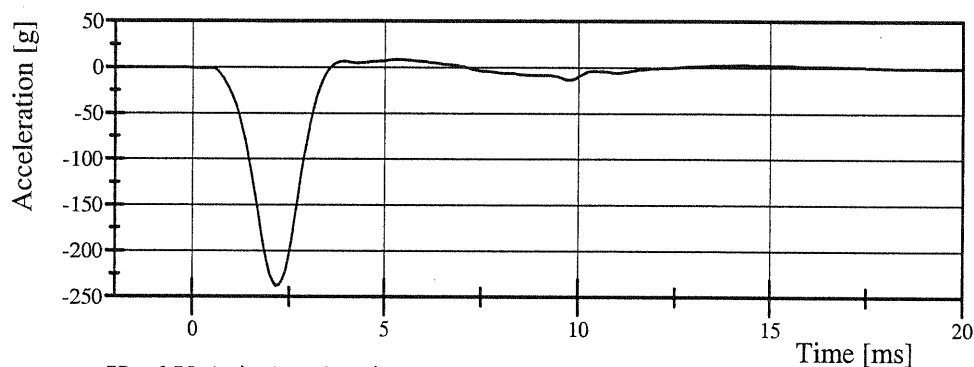
Transportation Research Center Inc.

Front Head Drop

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

Test Date: 5/1/2007

Head X-Axis Acceleration

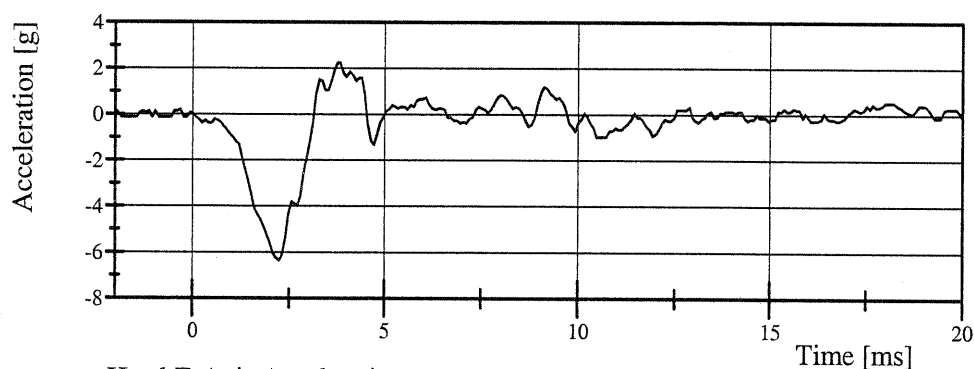


Filter Class: CFC_1000

Max: 8.8 g at 5.4 ms

Min: -237.6 g at 2.2 ms

Head Y-Axis Acceleration

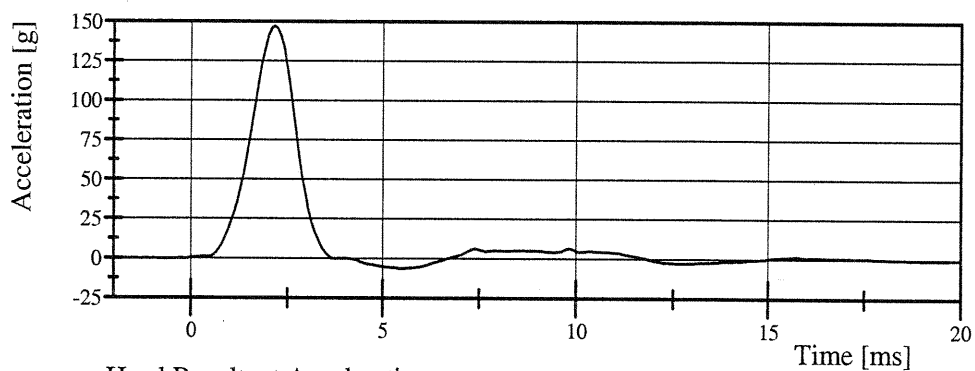


Filter Class: CFC_1000

Max: 2.2 g at 3.8 ms

Min: -6.4 g at 2.2 ms

Head Z-Axis Acceleration

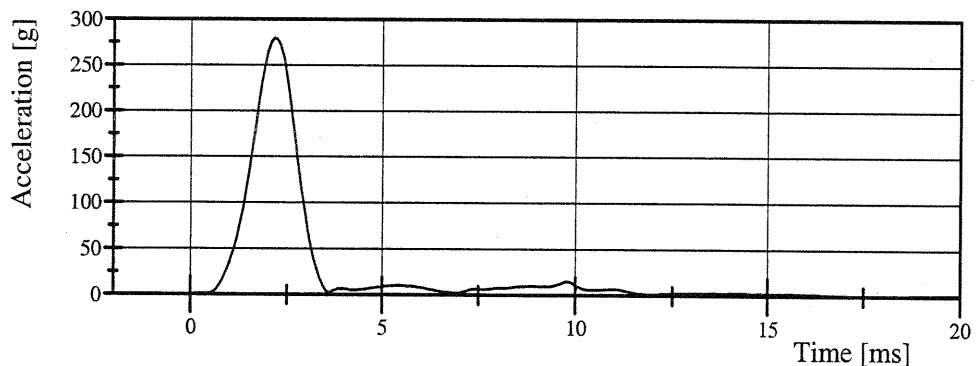


Filter Class: CFC_1000

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

Rout Brand

Approved

Don Stoner

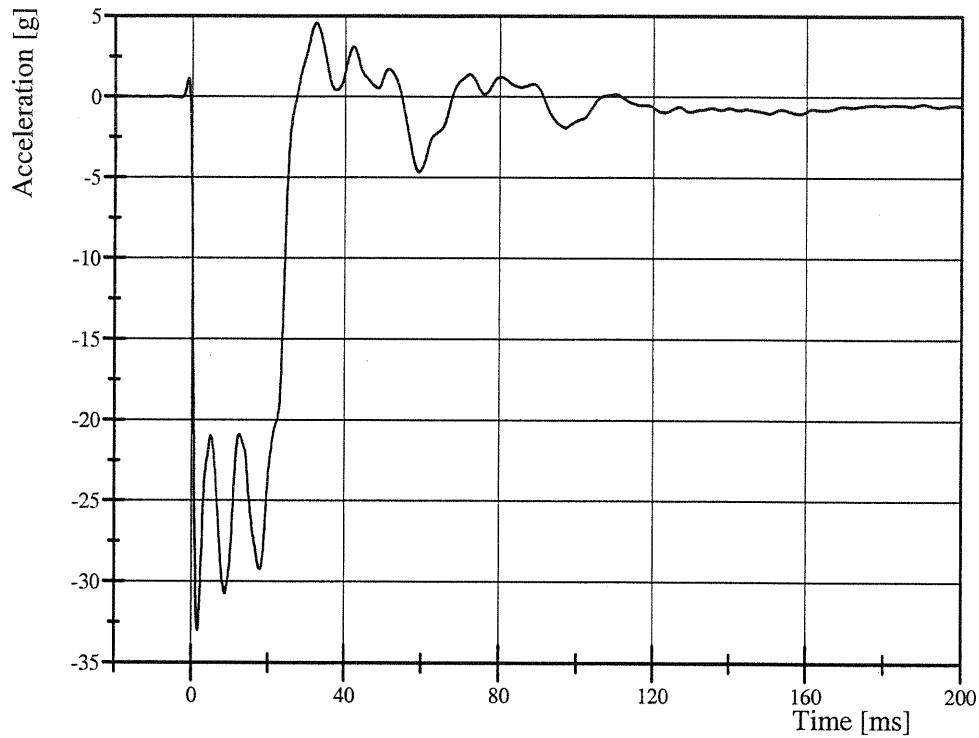
Transportation Research Center Inc.

Neck Flexion

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

Test Date: 5/2/2007

Pendulum Acceleration

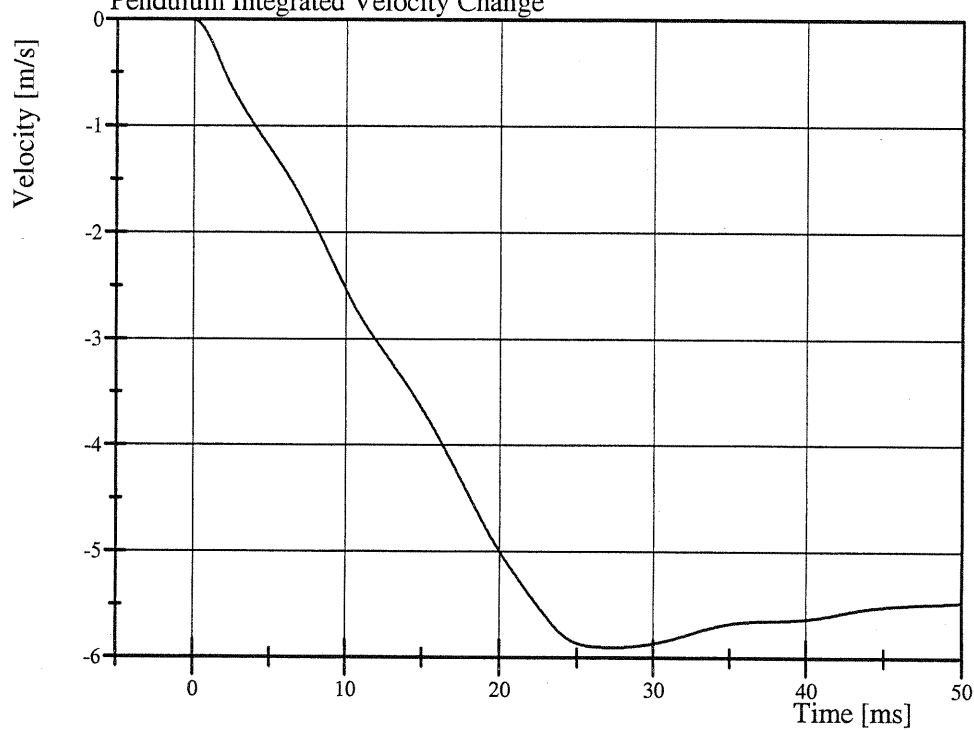


Filter Class: CFC_180

Max: 4.6 g at 32.5 ms

Min: -33.0 g at 1.6 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180

Max: 0.0 m/s at 0.0 ms

Min: -5.9 m/s at 27.4 ms

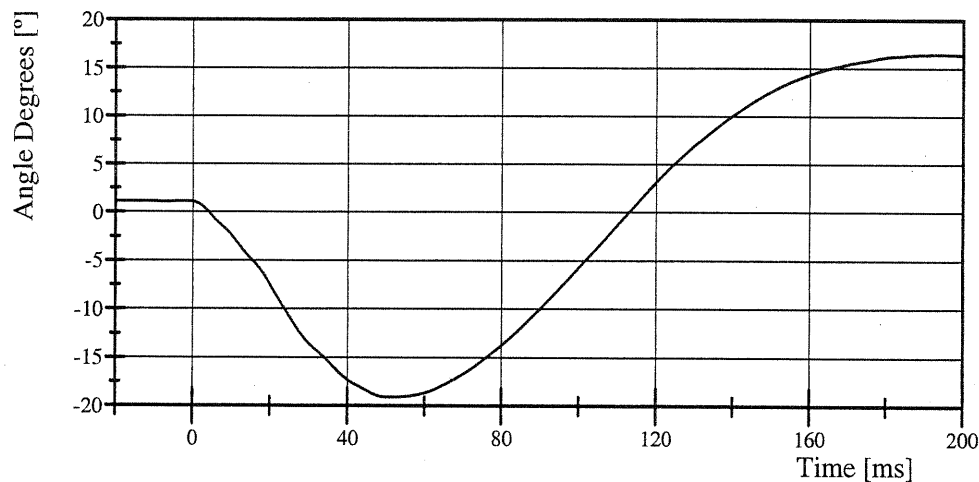
Transportation Research Center Inc.

Neck Flexion

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

Test Date: 5/2/2007

Pot Rotation at the Base of Neck

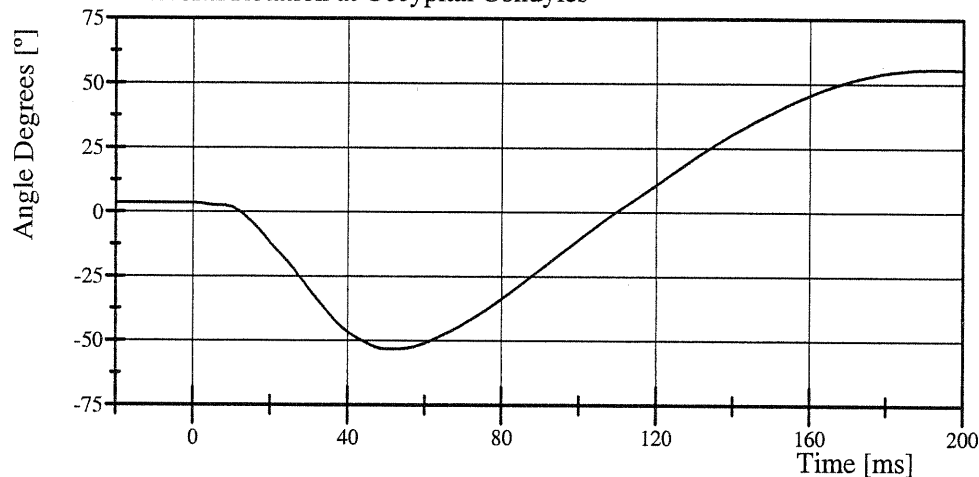


Filter Class: CFC_60

Max: 16.5 ° at 194.0 ms

Min: -19.1 ° at 51.2 ms

Headform Rotation at Occipital Condyles

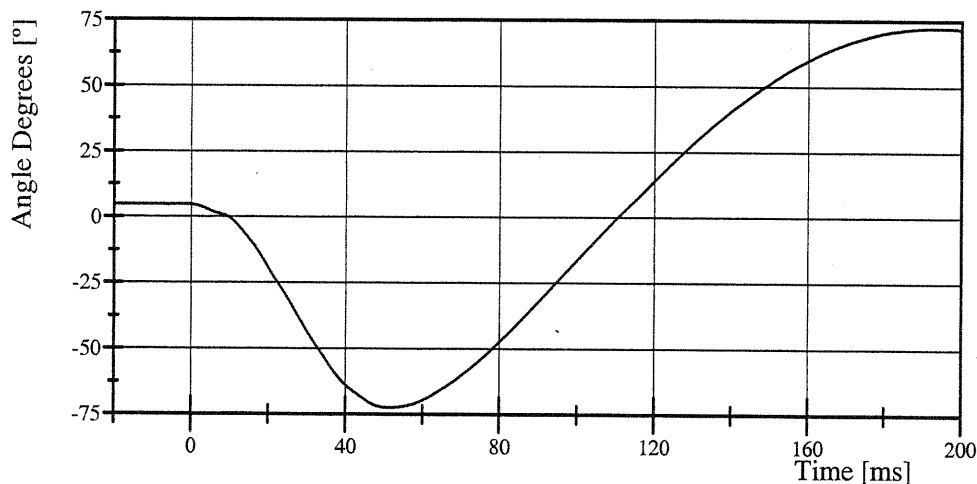


Filter Class: CFC_60

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

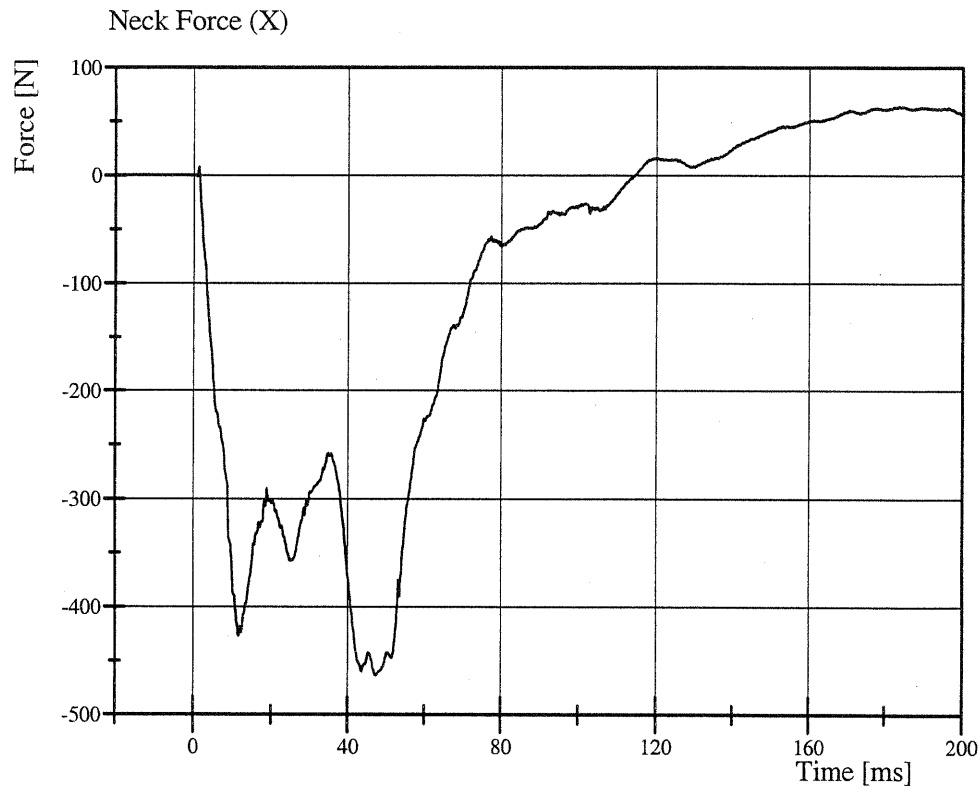
Min: -72.4 ° at 51.2 ms

Transportation Research Center Inc.

Neck Flexion

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

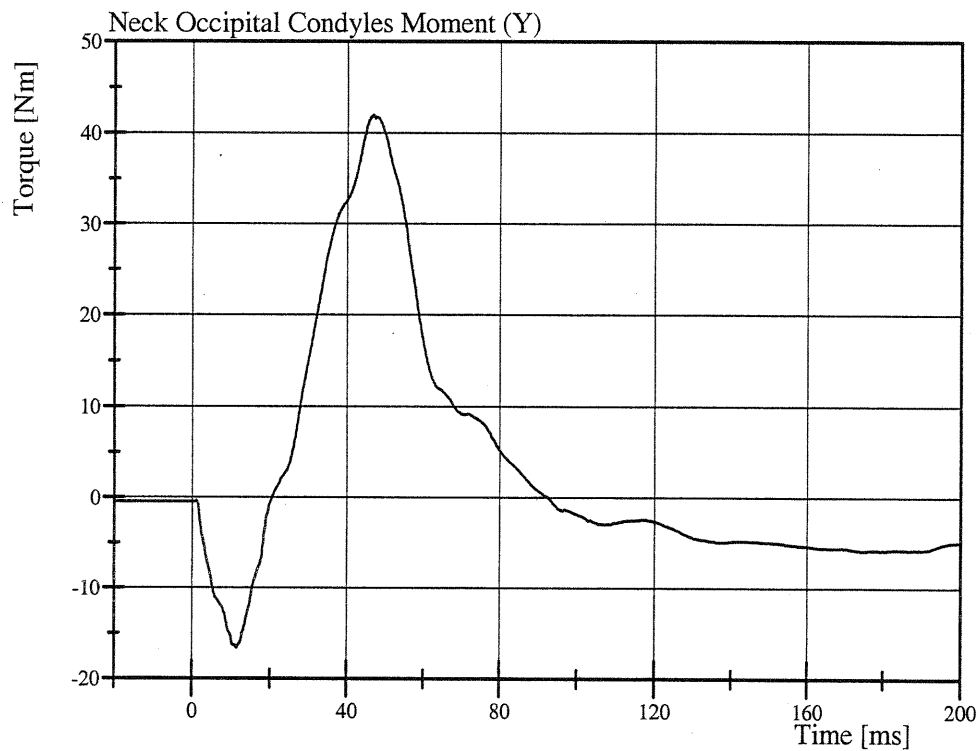
Test Date: 5/2/2007



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

HHH 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

Rand Baur

Approved

Ron Stoner

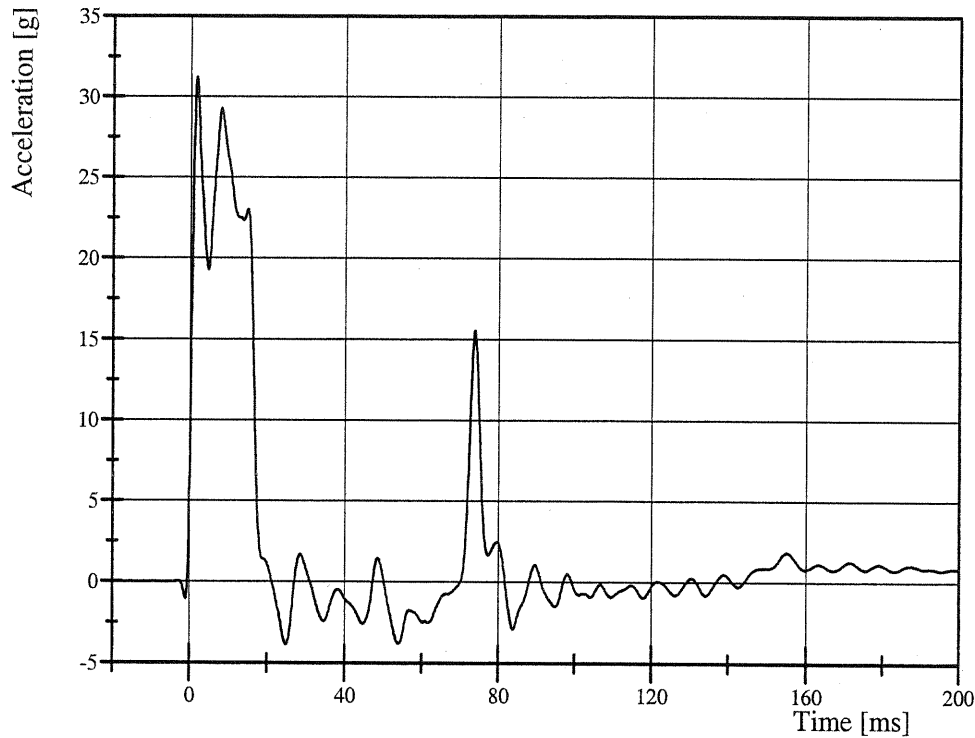
Transportation Research Center Inc.

Neck Extension

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

Test Date: 5/3/2007

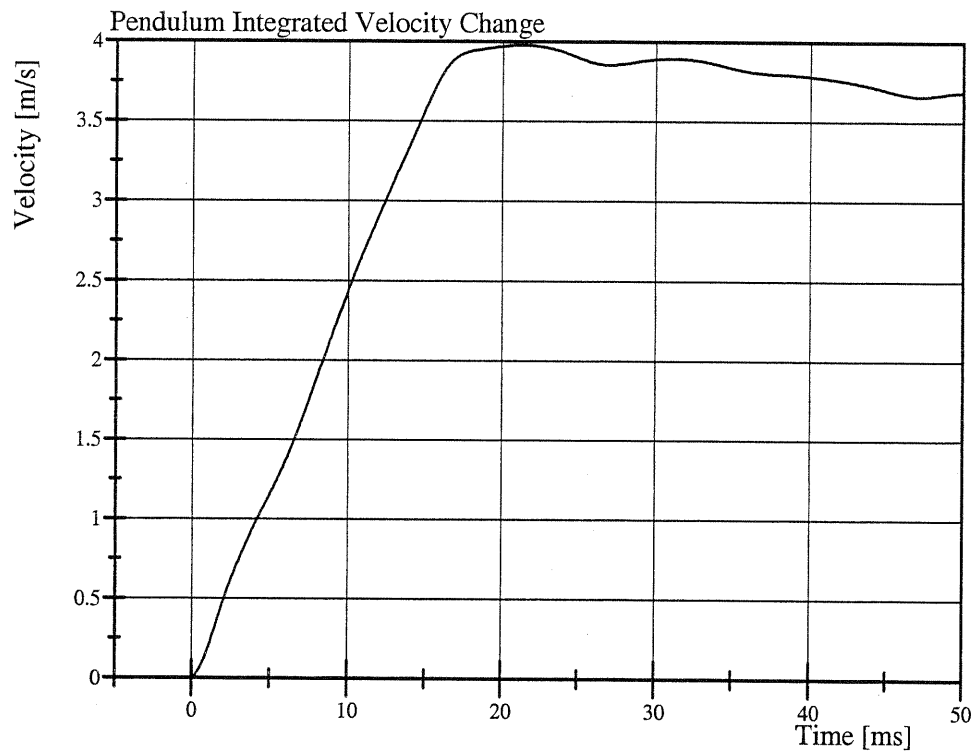
Pendulum Acceleration



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

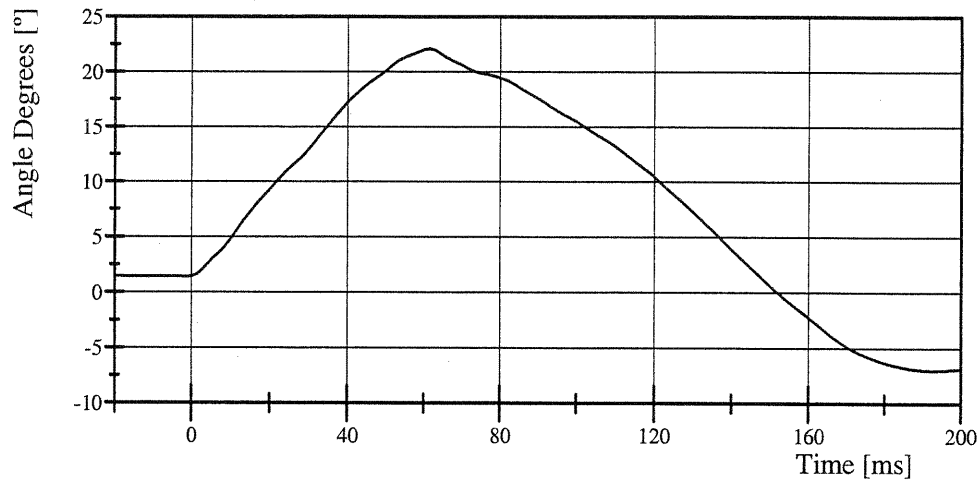
Transportation Research Center Inc.

Neck Extension

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

Test Date: 5/3/2007

Pot Rotation at the Base of Neck

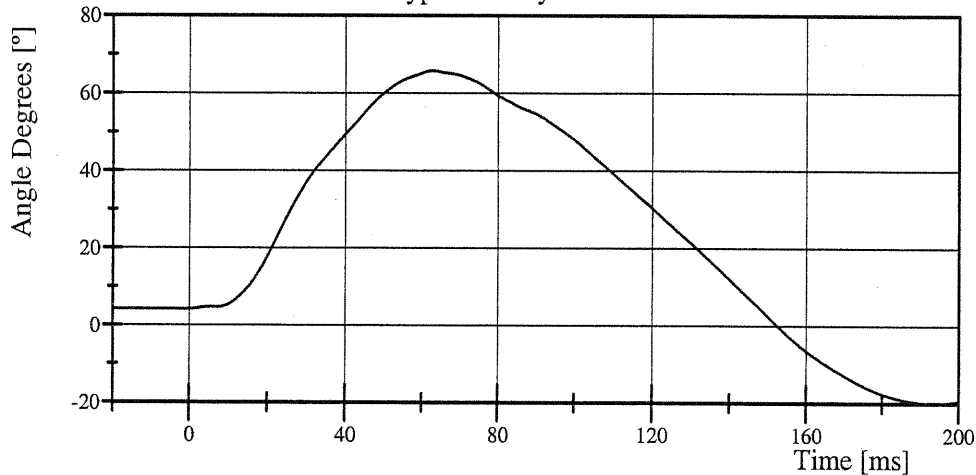


Filter Class: CFC_60

Max: 22.1 ° at 61.4 ms

Min: -7.0 ° at 192.9 ms

Headform Rotation at Occipital Condyles

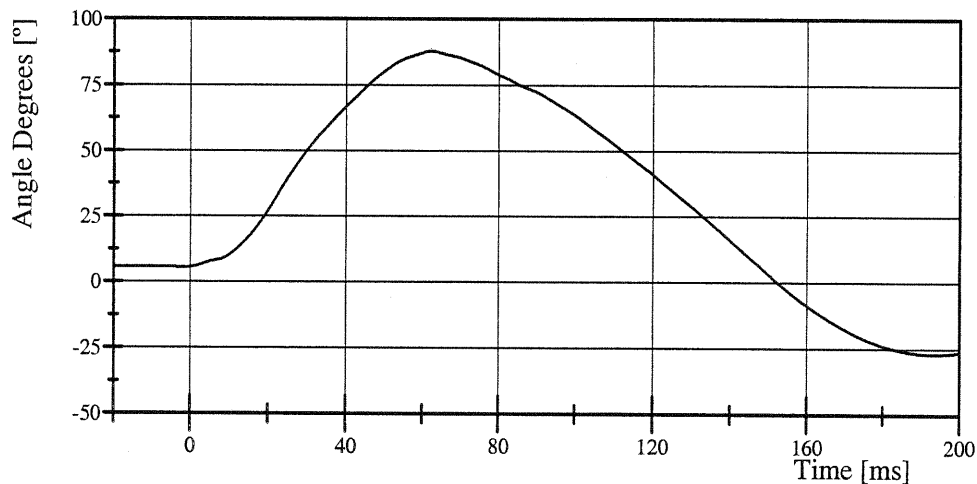


Filter Class: CFC_60

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

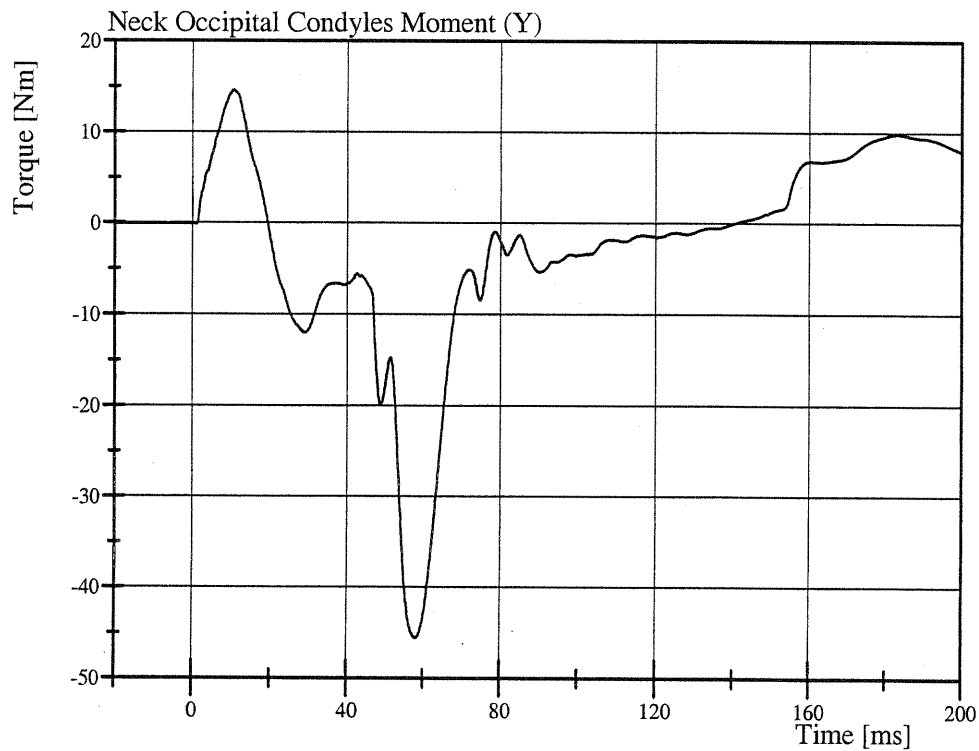
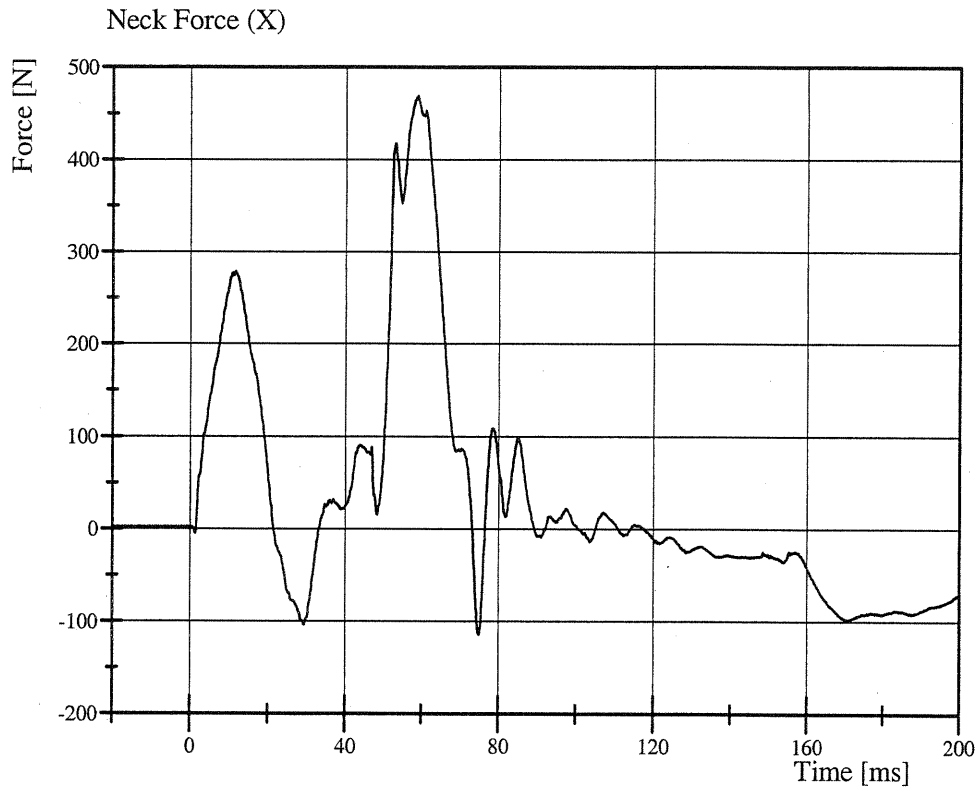
Min: -26.9 ° at 193.4 ms

Transportation Research Center Inc.

Neck Extension

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

Test Date: 5/3/2007



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	>= (-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



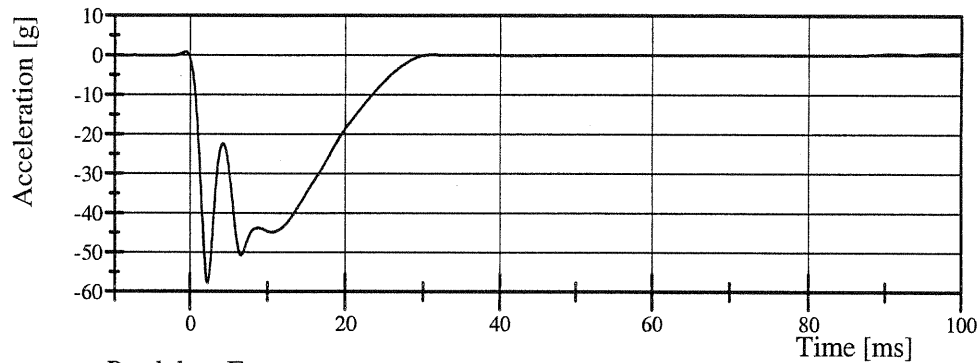
Transportation Research Center Inc.

Front Thorax

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

Test Date: 5/1/2007

Pendulum Acceleration

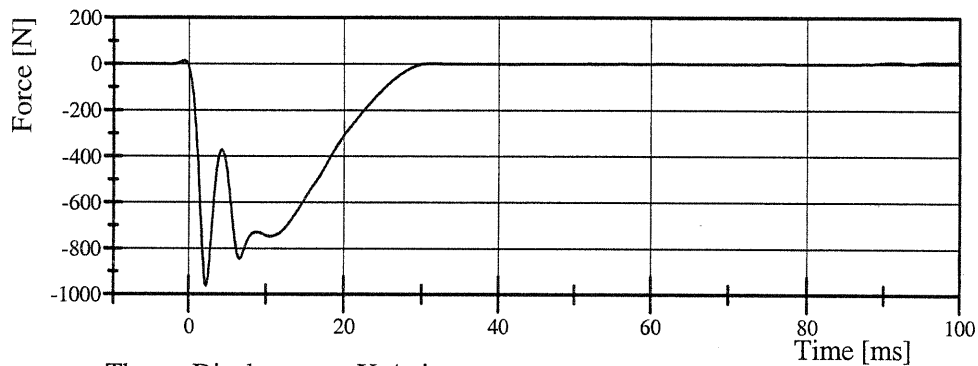


Filter Class: CFC_180

Max: 0.8 g at -0.6 ms

Min: -57.8 g at 2.2 ms

Pendulum Force

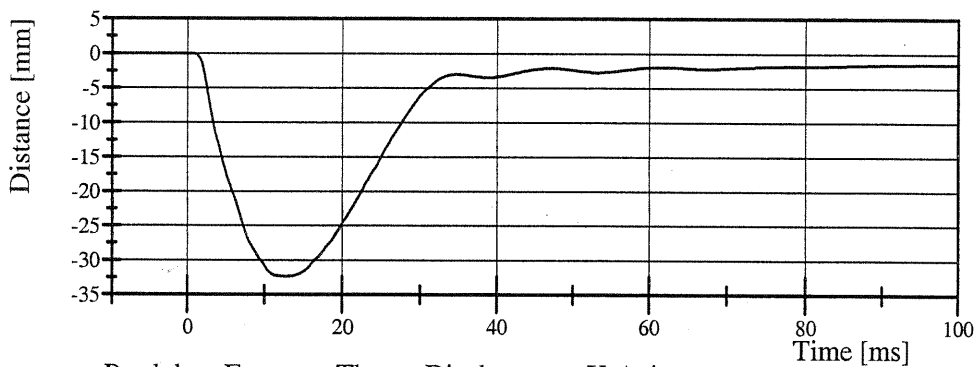


Filter Class: CFC_180

Max: 13.7 N at -0.6 ms

Min: -963.7 N at 2.2 ms

Thorax Displacement X-Axis

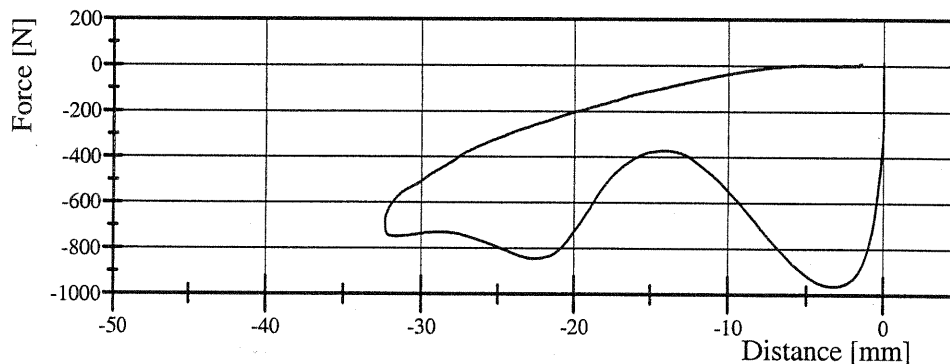


Filter Class: CFC_600

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 UNSUPPORTTED 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 080917

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	99H30-Z14	14PELV0000Q3ACZA	PELVIS ACCEL Z	2000	g	-Bipolar	4-004 Q3s VRTC.023
25	IF-539-103-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

Channel Report Test Number 080917

Ref	Transducer ID	ISO Signal Identifier	Description	FScale	Units	Polarity	Assembly
46	J29006	16STRN0600Y6ACXA	Sternum (Rib 6) Accel X	2000	g	Bipolar	6-141 HIII 3 YO FTSS.025
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	p57846	16SILBFR0000ACXA	RIGHT SIDE SILL AT FRONT SEAT (X) ACCELERATION VS TIME (#1)	400	g	-Bipolar	
51	P57210	16SILBFR0000ACYA	RIGHT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME (#1)	1000	g	-Bipolar	
52	P56432	16SILBFR0000ACZA	RIGHT SIDE SILL AT FRONT SEAT (Z) ACCELERATION VS TIME (#1)	400	g	Bipolar	
53	P61352	16SILBRE0000ACXA	RIGHT SIDE SILL AT REAR SEAT (X) ACCELERATION VS TIME (#2)	400	g	-Bipolar	
54	P53907	16SILBRE0000ACYA	RIGHT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME (#2)	1000	g	-Bipolar	
55	P61361	16SILBRE0000ACZA	RIGHT SIDE SILL AT REAR SEAT (Z) ACCELERATION VS TIME (#2)	400	g	Bipolar	
56	P61380	18FORA000000ACXA	REAR FLOORPAN ABOVE AXLE (X) ACCELERATION VS TIME (#3)	1000	g	-Bipolar	
57	P58024	18FORA000000ACYA	REAR FLOORPAN ABOVE AXLE (Y) ACCELERATION VS TIME (#3)	1000	g	-Bipolar	
58	P45665	18FORA000000ACZA	REAR FLOORPAN ABOVE AXLE (Z) ACCELERATION VS TIME (#3)	1000	g	-Bipolar	
59	P61399	14SILBFR0000ACYA	LEFT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME (#5)	1000	g	Bipolar	
60	P61535	14SILBRE0000ACYA	LEFT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME	1000	g	Bipolar	
61	P61340	16VEHCRE0000ACYA	RIGHT REAR OCCUPANT COMPARTMENT (Y) ACCELERATION VS TIME (#7)	1500	g	-Bipolar	
62	P61285	11APILLO0000ACYA	LEFT LOWER A-POST (Y) ACCELERATION VS TIME (#14)	1500	g	-Bipolar	
63	P57161	11APILUP0000ACYA	LEFT UPPER A-POST (Y) ACCELERATION VS TIME (#15)	1500	g	-Bipolar	
64	P57927	14BPILLO0000ACYA	LEFT LOWER B-POST (Y) ACCELERATION VS TIME (#12)	1500	g	-Bipolar	
65	P59055	14BPILUP0000ACYA	LEFT UPPER B-POST (Y) ACCELERATION VS TIME (#13)	1500	g	-Bipolar	
66	P58572	11SETRFR0000ACYA	LEFT FRONT SEAT TRACK (Y) ACCELERATION VS TIME (#16)	1500	g	Bipolar	
67	P61299	14SETRRE0000ACYA	LEFT REAR SEAT TRACK (Y) ACCELERATION VS TIME	1500	g	-Bipolar	
68	P61444	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	ABFire1	11AIRBLE2300CU0A	Driver Side Curtain airbag (if equipped)	5	V	Bipolar	
72	ABFire2	12AIRBLE2300CU0A	Passenger Side Curtain airbag (if equipped)	5	V	Bipolar	
73	ABFire3	11PRET000000CU0A	ELR P/T DRIV	5	V	Bipolar	
74	P61343	11DOORMI0000ACYA	FRONT DOOR CENTERLINE (#6) Y-Axis Accel	2000	g	Bipolar	
75	P57784	11DOORMIRE00ACYA	FRONT DOOR MID REAR (#8) Y-Axis Accel	2000	g	Bipolar	
76	P58544	11DOORUPMI00ACYA	FRONT DOOR UPPER CENTER (#9) Y-Axis Accel	2000	g	Bipolar	
77	P48074	14DOORMIRE00ACYA	REAR DOOR MID REAR (#10) Y-Axis Accel (J-16)	2000	g	Bipolar	
78	P57814	14DOORUPMI00ACYA	REAR DOOR UPPER CENTER (#11) Y-Axis Accel (J-2)	2000	g	Bipolar	
79	3419-830	14TOPT0000B3FO0A	Left Rear Shoulder Belt Load Cell (top tether) (s1504) (W-14)	15568	N	Bipolar	
80	3419T-843	16TOPT0000B3FO0A	Right Rear Shoulder Belt Load Cell (top tether) (2014)	15568	N	Bipolar	
81	P61271	14SEATTP0000ACXA	Top of CRS #1 X (J-14)	600	g	Bipolar	
82	P56430	14SEATTP0000ACYA	Top of CRS #1 Y (J-17)	600	g	Bipolar	
83	P61319	14SEATBO0000ACXA	Bottom of CRS #1 X	600	g	-Bipolar	
84	P61282	14SEATBO0000ACYA	Bottom of CRS #1 Y	600	g	-Bipolar	
85	P61437	16SEATTP0000ACXA	Top of CRS #2 X	600	g	Bipolar	
86	P58023	16SEATTP0000ACYA	Top of CRS #2 Y	600	g	Bipolar	
87	P61385	16SEATBO0000ACXA	Bottom of CRS #2 X	600	g	Bipolar	
88	P61326	16SEATBO0000ACYA	Bottom of CRS #2 Y	600	g	-Bipolar	
89	P58614	14SEATLO0000ACXA	Below seat cushion under CRS #1 X	2000	g	-Bipolar	
90	P61297	14SEATLO0000ACYA	Below seat cushion under CRS #1 Y	2000	g	-Bipolar	

Channel Report Test Number 080917

Ref	Transducer ID	ISO Signal Identifier	Description	FScale	Units	Polarity	Assembly
91	P61313	16SEATLO0000ACXA	Below seat cushion under CRS #2 X	2000	g	-Bipolar	
92	P61289	16SEATLO0000ACYA	Below seat cushion under CRS #2 Y	2000	g	-Bipolar	
93	Bit.01	14HEAD000000VO0A	04 DUMMY HEAD CONTACT SWITCH (R)	1	Logic	Bipolar	
94	Bit.02	14SHLD000000VO0A	04 DUMMY SHOULDER CONTACT SWITCH (B)	1	Logic	Bipolar	
95	Bit.03	14VEHC000000VO0A	04 LT SIDE SEAT CONTACT SWITCH (F)	1	Logic	Bipolar	
96	Bit.04	14LEGLE000000VO0A	04 DUMMY LEFT LEGS CONTACT SWITCH (H)	1	Logic	Bipolar	
97	Bit.05	16HEAD000000VO0A	06 DUMMY HEAD CONTACT SWITCH (P)	1	Logic	Bipolar	
98	Bit.06	16SHLD000000VO0A	06 DUMMY SHOULDER CONTACT SWITCH (A)	1	Logic	Bipolar	
99	Bit.07	16VEHC000000VO0A	06 RT SIDE SEAT CONTACT SWITCH (Z)	1	Logic	Bipolar	
100	Bit.08	16LEGLE000000VO0A	06 DUMMY LEFT LEGS CONTACT SWITCH (I)	1	Logic	Bipolar	
101	P49049	M0VEHCCG0000ACXA	MDB CENTER OF GRAVITY (X) ACCELERATION VS TIME (#1)	2000	g	Bipolar	
102	P61466	M0VEHCCG0000ACYA	MDB CENTER OF GRAVITY (Y) ACCELERATION VS TIME(#1)	2000	g	Bipolar	
103	P49041	M0VEHCCG0000ACZA	MDB CENTER OF GRAVITY (Z) ACCELERATION VS TIME(#1)	2000	g	-Bipolar	
104	P49022	M7FRAM000000ACXA	MDB REAR (X) ACCELERATION VS TIME (#2)	2000	g	Bipolar	
105	P45016	M7FRAM000000ACYA	MDB REAR (Y) ACCELERATION VS TIME (#2)	2000	g	-Bipolar	
106	Bit.00	M3CONT000000VO00	MDB RIGHT CONTACT SWITCH	1	Logic	Bipolar	
107	Bit.01	M1CONT000000VO00	MDB LEFT CONTACT SWITCH	1	Logic	Bipolar	

Command File Test Number 080917

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 080917

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

D-10

080917

Command File Test Number 080917

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	11AIRBLE2300CU0A	Driver Side Curtain Airbag	1000	+	no	5
71	12AIRBLE2300CU0A	Passenger Side Curtain Airbag	1000	+	no	5
72	11PRET000000CU0A	Driver ELR Pretensioner	1000	+	no	5
73	11DOORMI0000ACYA	Front Door Centerline Y-Axis Acceleration	60	+	yes	2000
74	11DOORMIRE00ACYA	Front Door Mid-Rear Y-Axis Acceleration	60	+	yes	2000
75	11DOORUPMI00ACYA	Front Door Upper Centerline Y-Axis Acceleration	60	+	yes	2000
76	14DOORMIRE00ACYA	Rear Door Mid-Rear Y-Axis Acceleration	60	+	yes	2000
77	14DOORUPMI00ACYA	Rear Door Upper Centerline Y-Axis Acceleration	60	+	yes	2000
78	14TOPT0000B3FO0A	Left Rear Shoulder Belt Force (Top Tether)	60	+	yes	15568
79	16TOPT0000B3FO0A	Right Rear Shoulder Belt Force (Top Tether)	60	+	yes	15568
80	14SEATTP0000ACXA	Top of CRS #1 X-Axis Acceleration	60	+	yes	600
81	14SEATTP0000ACYA	Top of CRS #1 Y-Axis Acceleration	60	+	yes	600
82	14SEATBO0000ACXA	Bottom of CRS #1 X-Axis Acceleration	60	+	yes	600
83	14SEATBO0000ACYA	Bottom of CRS #1 Y-Axis Acceleration	60	+	yes	600
84	16SEATTP0000ACXA	Top of CRS #2 X-Axis Acceleration	60	+	yes	600
85	16SEATTP0000ACYA	Top of CRS #2 Y-Axis Acceleration	60	+	yes	600
86	16SEATBO0000ACXA	Bottom of CRS #2 X-Axis Acceleration	60	+	yes	600
87	16SEATBO0000ACYA	Bottom of CRS #2 Y-Axis Acceleration	60	+	yes	600
88	14SEATLO0000ACXA	Below Seat Cushion Under CRS #1 X-Axis Acceleration	60	+	yes	2000
89	14SEATLO0000ACYA	Below Seat Cushion Under CRS #1 Y-Axis Acceleration	60	+	yes	2000
90	16SEATLO0000ACXA	Below Seat Cushion Under CRS #2 X-Axis Acceleration	60	+	yes	2000
91	16SEATLO0000ACYA	Below Seat Cushion Under CRS #2 Y-Axis Acceleration	60	+	yes	2000
92	14HEAD000000VO0A	Left Rear Head Contact Switch	1000	+	no	1
93	14SHLD000000VO0A	Left Rear Shoulder Contact Switch	1000	+	no	1
94	14VEHC000000VO0A	Left Rear Car Seat Contact Switch	1000	+	no	1
95	14LEGLE000000VO0A	Left Rear Leg Contact Switch	1000	+	no	1
96	16HEAD000000VO0A	Right Rear Head Contact Switch	1000	+	no	1
97	16SHLD000000VO0A	Right Rear Shoulder Contact Switch	1000	+	no	1
98	16VEHC000000VO0A	Right Rear Car Seat Contact Switch	1000	+	no	1
99	16LEGLE000000VO0A	Right Rear Leg Contact Switch	1000	+	no	1
100	M0VEHCCG0000ACXA	MDB Center of Gravity X-Axis Acceleration	60	+	yes	2000
101	M0VEHCCG0000ACYA	MDB Center of Gravity Y-Axis Acceleration	60	+	yes	2000

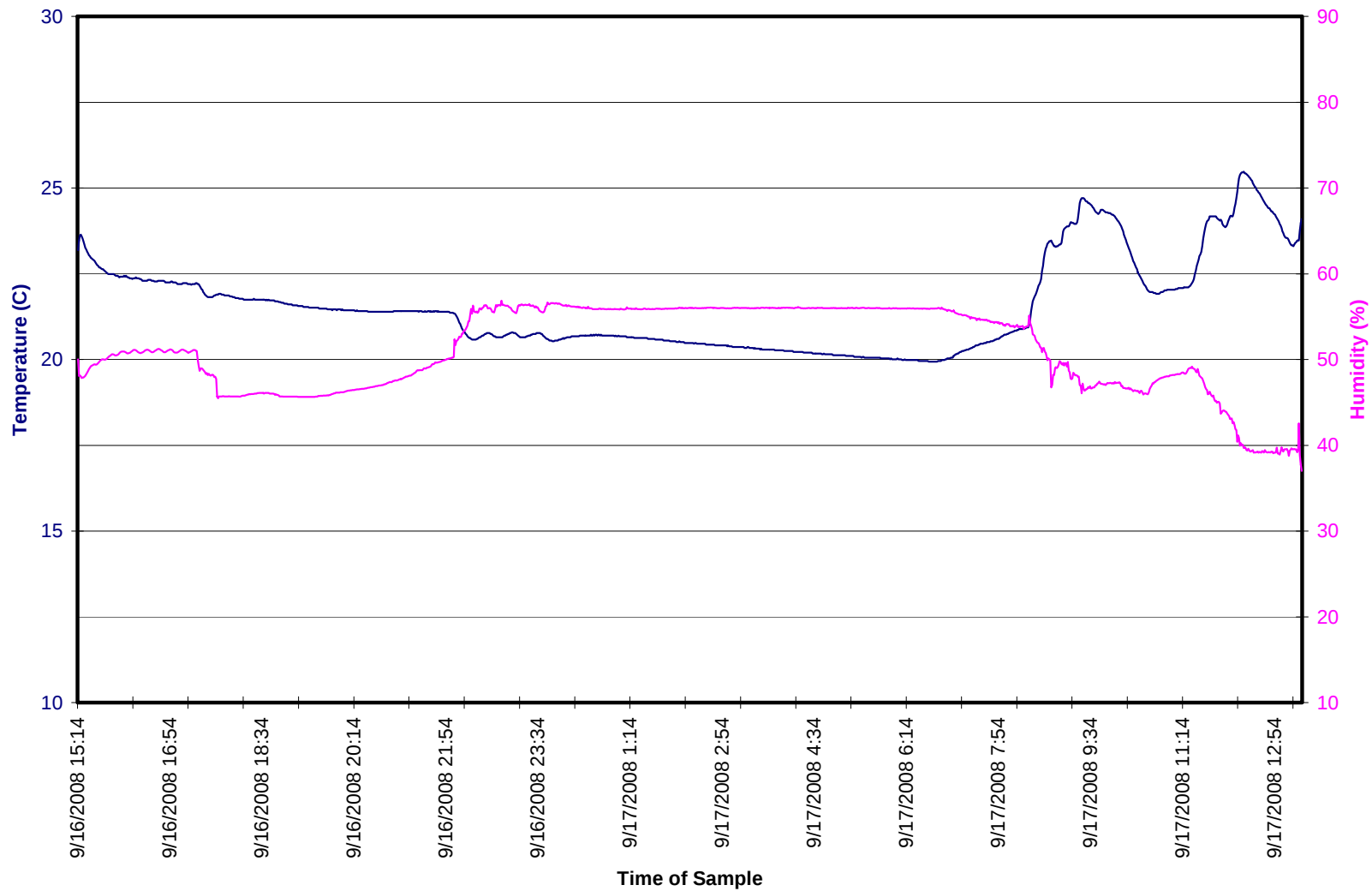
Command File Test Number 080917

Channel	ISO mnemonic	Channel Title	Filter Class	Flip	Zero	Full Scale
102	M0VEHCCG0000ACZA	MDB Center of Gravity Z-Axis Acceleration	60	+	yes	2000
102A	M0VEHCCG0000ACRA	MDB Center of Gravity Resultant Acceleration	60			
103	M7FRAM000000ACXA	MDB Rear X-Axis Acceleration	60	+	yes	2000
104	M7FRAM000000ACYA	MDB Rear Y-Axis Acceleration	60	+	yes	2000
105	M3CONT000000VO00	MDB Right Contact Switch	0	+	no	1
106	M1CONT000000VO00	MDB Left Contact Switch	0	+	no	1

D-13

080917

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



CERTIFICATE OF CONFORMITY

Serial No. **14694**

Certificate No. **37794**

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
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PE29 6EF
United Kingdom

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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

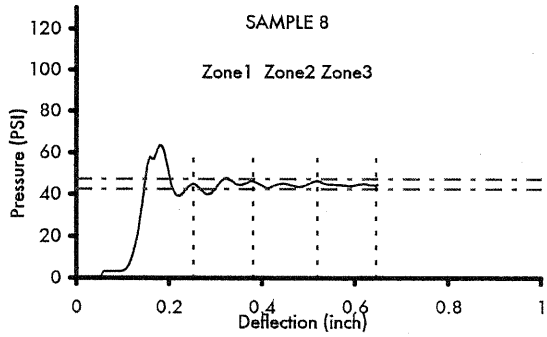
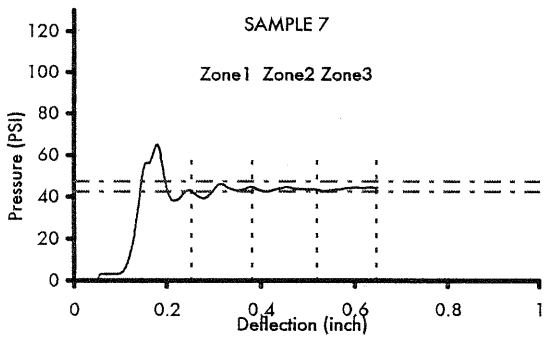
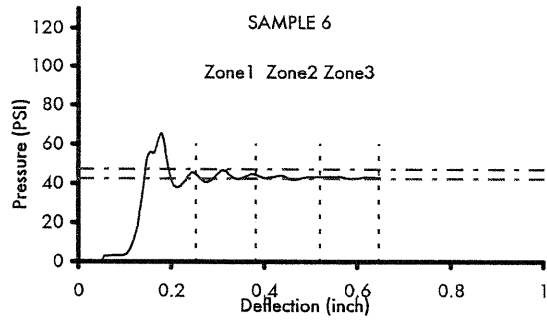
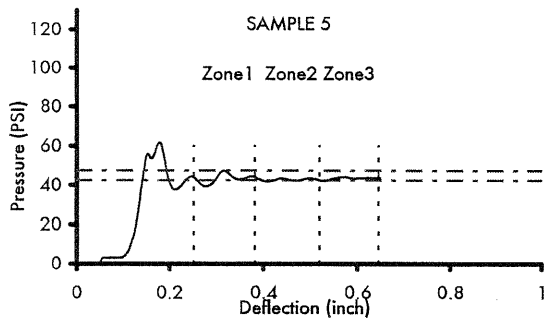
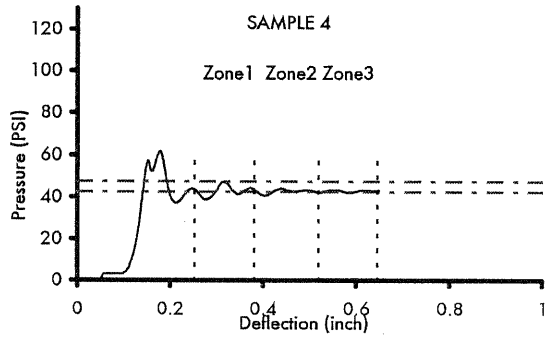
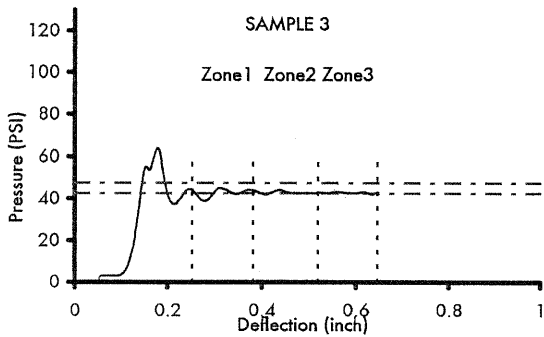
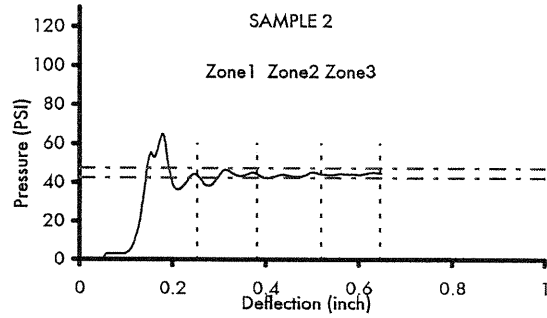
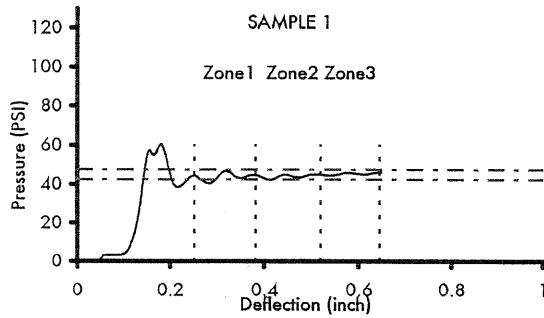
NHTSA / IIHS DEFORMABLE SIDE IMPACT BARRIER
MAIN BLOCK

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

