REPORT NUMBER: 213-CAL-18-030

SAFETY COMPLIANCE TESTING FOR FMVSS 213 CHILD RESTRAINT SYSTEMS

Clek
Foonf, Model FO18U1

PREPARED BY:
CALSPAN CORPOPRATION
4455 GENSESEE ST
BUFFALO, NY 14225

Report Date: April 2018

FINAL REPORT

PREPARED FOR:
U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance
Mail Code: NVS-220, W43-481
1200 New Jersey Avenue, SE
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Prepared by: _____ Date: **April 13, 2018**

Adam Hardbattle, SLED Engineer

Approved by: _____ Date: **April 13, 2018**

William Horn, SLED Director

FINAL REPORT ACCEPTANCE BY OVSC:

ZACHARY R FRASER Digitally signed by ZACHARY R FRASER Date: 2019.05.30 16:00:38 -04'00'

Accepted By: _____

Acceptance Date: _____

213-CAL-18-030

Technical Report Documentation Page

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4. Title and Subtitle Final Report of FMVSS 213 Compliance Testing of Manufacturer: Clek Name: Foonf Model: FO18U1		*5. Report Date* Date: April 13, 2018 *6. Performing Organization Code* CAL	
7. Author(s) Adam Hardbattle, William Horn		*8. Performing Organization Report No.* 213-CAL-18-030	
9. Performing Organization Name and Address Calspan Corporation 4455 Genesee St. Buffalo, NY 14225		*10. Work Unit No.* *11. Contract or Grant No.* DTNH22-17-R-0037	
12. Sponsoring Agency Name and Address U. S. DEPARTMENT OF TRANSPORTATION National Highway Traffic Safety Administration Enforcement Office of Vehicle Safety Compliance Mail Code: NVS-220, W43-481 1200 New Jersey Avenue, SE Washington, DC 20590		*13. Type of Report and Period Covered* Final Test Report April 2018 *14. Sponsoring Agency Code* NVS-220	
15. Supplementary Notes			
16. Abstract Compliance tests were conducted on the Clek, Foonf, Model FO18U1 child restraint systems in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-213-10. Test failures identified as follows: None			
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Form DOT F1700.7 (8-72)

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SECTION 1
PURPOSE AND TEST PROCEDURE

PURPOSE

The tests performed are part of the safety compliance program for the National Highway Traffic Safety Administration (NHTSA) by Calspan Corporation under Contract No. DTNH22-17-R-0037. The purpose of the testing is to determine whether production child restraint systems meet the minimum inspection and dynamic test requirements of TP-213-10, “Child Restraint Systems”.

TEST PROCEDURE

The Calspan Corporation Test Procedure for FMVSS 213, submitted and approved by the Office of Vehicle Safety Compliance, National Highway Traffic Safety Administration contains the specific procedures used to conduct this test. This procedure shall not be interpreted to be in conflict with any portion of FMVSS 213 and amendments in effect as noted in the applicable contract.

SECTION 2
INTRODUCTION AND SUMMARY

This report presents all of the FMVSS 213 compliance inspection and test data obtained on the Clek, Foonf, Model FO18U1 child restraint system. The restraint was dynamically tested in the following configurations:

- H3 3YO, Forward Facing, other configuration, lap belt, top tether, upright recline 2
- 12 month old, CRABI, rear facing, other configuration, Latch, tether free and recline 3
- H3 3YO, Forward Facing, other configuration, latch, top tether, upright recline 2
- 12 month old, CRABI, Forward Facing, other config, latch, top tether, upright recline 2
- H3 W6YO, Forward Facing, other configuration, lap belt, top tether, upright reline 2
- H3 6YO, Forward Facing, other configuration, lap belt, top tether, upright reline 2

Inversion testing was performed in both the forward Y-axis rotation and in the lateral X-axis rotation for the following configurations:

- Newborn, rear facing, other configuration, lap belt, tether free and reclined
- 12 month old, CRABI, forward facing, other configuration, lap belt, tether free and Upright
- 3 year old H3, forward facing, other configuration, lap belt, tether free and Upright

The inspection and testing of the Clek, Foonf, Model FO18U1 child restraint met the requirement(s) of FMVSS No. 213 when tested in accordance with TP-213-10 in the configurations and conditions documented in this report.

No test failures were identified

Restraint system inspection, dynamic sled testing and inversion testing were performed by Calspan Corporation, Buffalo NY. Compliance test data sheets for all tests are found in the Data Sheets and Test Data Sections of this report.

SECTION 3
DATA SHEET 1
CHILD RESTRAINT SYSTEM IDENTIFICATION

Report No. 213-CAL-18-030

Manufacturer:	Clek
Place of Manufacture per S5.5.2(d):	Canada
Model No.	Foonf, FO18U1
Group No.	030

1	Item Code	030-FO18U1-01-3H3FN2TU
	Date of Manufacture	1/30/2018
	Sled Test No.	FM04-18-31A
2	Item Code	030-FO18U1-02-12CRNLFR
	Date of Manufacture	1/30/2018
	Sled Test No.	FM04-18-31B
3	Item Code	030-FO18U1-03-3H3FNLTU
	Date of Manufacture	1/30/2018
	Sled Test No.	FM04-18-32A
4	Item Code	030-FO18U1-04-12CFNLTU
	Date of Manufacture	1/30/2018
	Sled Test No.	FM04-18-32B
5	Item Code	030-FO18U1-05-6W3FN2TU
	Date of Manufacture	1/30/2018
	Sled Test No.	FM04-18-33A
6	Item Code	030-FO18U1-06-6H3FN2TU
	Date of Manufacture	1/30/2018
	Sled Test No.	FM04-18-33B

SECTION 4
DYNAMIC TEST RESULTS DATA SUMMARY

Child Restraint System – Clek / Foonf / FO18U1										
Item Code	**Sled Test No.**	**Dummy Selection and Test Mode (see legend below)**	**Lower Anchors Used Y/N**	**Tether Used Y/N**	**HIC (1000 max)**	**Chest g clip (60 g max)**	**Head Excursion (720 mm max, 813 mm max w/o tether)**	**Knee Excursion (915 mm max)**	**Seat Back Angle (70 deg max)**	**Pass/ Fail**
030-FO18U1-01-3H3FN2TU	04-18-31A	3H3 FFU	N	Y	404	43	597	680	N/A	Pass
030-FO18U1-02-12CRNLFR	04-18-31B	12C RFR	Y	N	337	42	N/A	N/A	55	Pass
030-FO18U1-03-3H3FNLTU	04-18-32A	3H3 FFU	Y	Y	413	40	587	624	N/A	Pass
030-FO18U1-04-12CFNLTU	04-18-32B	12C FFU	Y	Y	324	49	512	538	N/A	Pass
030-FO18U1-05-6W3FN2TU	04-18-33A	6W3 FFU	N	Y	N/A	N/A	643	730	N/A	Pass
030-FO18U1-06-6H3FN2TU	04-18-33B	6H3 FFU	N	Y	472	42	615	721	N/A	Pass

Test Mode:

RF - Rear Facing
FF - Forward Facing
U - Upright mode
R - Reclined mode

ATD:

NIN – Newborn Infant
12C -12 MO, CRABI
3H3 – 3 YO, Hybrid III
6H2 – 6YO Hybrid 2
6H3 – 6YO Hybrid III
6W3 – 6 YO, Weighted Hybrid III
10H3 – 10YO Hybrid III

SECTION 5
DATA SHEET 2
LABELING
(FMVSS 213, S5.3, S5.5)

Report No.:	213-CAL-18-030	Model No::	Foonf, FO18U1
Test Date:	6 April 2018		

Requirement	Pass / Fail
The labels on the subject child restraint system were inspected and compared to the requirements of FMVSS No. 213 S5.3.1(b) and S5.5, as applicable	Pass

The following failures were identified:
No failures

Remarks:
S5.5.2(j): “ALWAYS” has been added to beginning of statement
S5.5.2(l)(2) Diagram only shows connection with top tether, none without.

Photographs of the labels are included in section 9.

Recorded by: _____ Date: April 6, 2018
Adam Hardbattle, SLED Engineer

DATA SHEET 3
PRINTED INSTRUCTIONS FOR PROPER USE
(FMVSS 213, S5.6)

Report No.:	213-CAL-18-030	Model No:	Foonf FO18U1
Test Date:	6 April 2018		

Requirement	Pass / Fail
The printed instructions accompanying the subject child restraint system were inspected and compared to the requirements of FMVSS No. 213 S5.6, as applicable	Pass

The following failures were identified:
No failures

Remarks:
None

Recorded by:  Date: April 6, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 4
REGISTRATION FORM
(FMVSS 213, S5.8)

Report No.:	213-CAL-18-030	Model No::	Foonf FO18U1
Test Date:	6 April 2018		

Requirement	Pass / Fail
The printed registration form accompanying the subject child restraint system and the electronic registration form were inspected and compared to the requirements of FMVSS No. 213 S5.6, as applicable	Pass

The following failures were identified:
No failures

Remarks:
There is a help chat window that will pop up. It is not advertisement, appears to be actual seat usage help.

Photographs of the registration are included in section 9.

Recorded by: _____ Date: April 6, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 5
MAXIMUM CHILD WEIGHT FOR LOWER ANCHOR USE
(FMVSS 213, S5.5.2(I)(3))

Report No.:	213-CAL-18-030
Test Date:	6 April 2018

Model No:	Foonf FO18U1

For child restraints manufactured on or after February 27, 2015:

Installation Mode	A Max Child weight is Required for this installation mode (Y or N)	Installation Diagram Shown (Y or N)	Max Child Weight Indicated on Installation Diagram (lb)
Rear Facing	Y	Y	25
Forward Facing	Y	Y	35

CRS Weight (lb)	Child Weight (CW) Calculation (lb)	Rounded CW Limit permitted under S5.5.2(I)(3)(A)
34 lbs FF 39 lbs RF	Rear Facing 60-CRS Weight = 21 lbs	25 lbs
	Forward Facing 65-CRS Weight = 31 lbs	35 lbs

Calculated CW	Rounded CW
15 < CW ≤ 20	20
20 < CW ≤ 25	25
25 < CW ≤ 30	30
30 < CW ≤ 35	35
35 < CW ≤ 40	40
40 < CW ≤ 45	45
45 < CW ≤ 50	50
50 < CW ≤ 55	55
55 < CW ≤ 60	60

Section	Requirement	Pass / Fail
S5.5.2(I)(3)(A)	A maximum child weight is required on an installation diagram when the CRS+child weight is greater than 65 lb for CRS that are used with the internal harness and installed with lower anchors. The maximum weight on the label conforms to the limits established in S5.5.2(I)(3)(A)	Pass
S5.5.2(I)(3)(B)	For CRS that can be used both forward and rear-facing either: (1) separate diagrams are provided and labeled; or (2) only one diagram is applicable, provided, and labeled; or (3) two diagrams are applicable and the diagram shown contains the lesser of the permitted weights	Pass

The following failures were identified:
No failures

Remarks:
None

Recorded by:  Date: April 6, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 6
ATTACHMENT TO ANCHORAGE SYSTEM
(FMVSS 213, S5.9)

Report No.:	213-CAL-18-030	Model No:	Foonf FO18U1
Test Date:	6 April 2018		

Section	Requirement	Pass / Fail
S5.9(a)	This add-on child restraint system (excluding car beds, harnesses and belt-positioning seats) has a permanently attached anchorage system having components that enable the restraint to be securely fastened to the lower anchorages.	Pass
	The anchorage system has components which can only be removed with a tool, such as a screwdriver.	Pass
	Note: If this is a rear facing child restraint system with a detachable base, then only the base is required to have the components.	Pass
S5.9(b)	This child restraint system has components for attaching the system to a tether anchorage, and those components include a tether hook that conforms to the configuration and geometry specified in Figure 22 of TP-213-10.	Pass
S5.9(c)	This child restraint system has adjustable components for attaching the system to a tether anchorage or to lower anchors to allow the restraint to be tightened to the vehicle.	Pass
S5.9(d)	If the anchorage system on this child restraint has components other than hooks, that enables the restraint to be securely fastened to the lower anchors, it provides either an indication when each attachment to the lower anchorage becomes fully latched or attached, or provides a visual indication that all attachments to the lower anchorages are fully latched or attached.	Pass
	Visual indications are visible under normal daylight lighting conditions.	Pass

The following failures were identified:
No failures

Remarks:
None

Recorded by:  Date: April 6, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 7
INSTALLATION
(FMVSS 213, S5.3)

Report No.:	213-CAL-18-030	Model No:	Foonf FO18U1
Test Date:	6 April 2018		

Section	Requirement						Pass / Fail
S5.3.1	Add-on child restraints meet either (a) or (b) as appropriate						Pass
S5.3.1(a)	Except for components designed to attach a child restraint anchorage system, this add-on child restraint does not have any means designed for attaching the system to a vehicle seat cushion or vehicle seta back and any component (except belts) that is designed to be inserted between the vehicle seat cushion and vehicle seat back						Pass
S5.3.1(b)	Harness manufactured for use on school bus seats must meet S5.3.1(a) unless labeled appropriately. Refer to the labeling data sheet for the specific requirements.						N/A
S5.3.2	The child restraint system is capable of being installed as required by Table S5.3.2 of FMVSS No. 213. Shaded section indicate installation means required by standard.						Pass
		Lap Belt	*Lap belt & Tether (if needed)*	*Lower Anchors*	*Lap & Shoulder belt*	*Seat back Mount*	
	Harnesses per S5.3.1(b)(1)-(3) & Figure 12						N/A
	Other Harnesses						N/A
	Car Beds						N/A
	Rear-Facing Restraints	X		X	X		Pass
	Belt-Positioning Seats						N/A
	All other child restraints	X	X	X	X		Pass
S5.3.3	If a car bed, this child restraint system is designed to be installed laterally.						N/A

The following failures were identified:
No failures

Remarks:
None

Recorded by:  Date: April 6, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 8
MINIMUM HEAD SUPPORT SURFACE
(FMVSS 213, S5.2.1)

Report No.:	213-CAL-18-030	Model No:	Foonf FO18U1
Test Date:	6 April 2018		

Section	Requirement	
S5.2.1.2	The child restraint system is exempt from S5.2.1.1 if it is a forward facing restraint and the target points on either side of the dummy's head (using the largest test dummy specified in S7, excluding the 6-year old) is below the top of the test seat	
S5.2.1.1(a)	**Maximum Recommended Child Weight**	**Minimum Seat Back Height Required**
	≤ 18 kg (39.7 lb)	50 cm (19.7 in.)
	> 18 kg (39,7 lb)	56 cm (22 in.)
S5.2.1.1(b)	**Side Wing Depth**	**Minimum Back Support Width**
	< 102 mm (4.0 in)	**203 mm (8 in.)**
	≥ 102 mm (4.0 in)	**156 mm (6 in.)**

The child restraint system is exempt from S5.2.1.1 **NO**

Back Support Height

Manufacturers Recommended Maximum Child Weight kg (lb)	Measured Height mm (in)	Pass / Fail
29.5 (65)	560mm (22in)	Pass

Back Support Width

Measured Side Wing Depth mm (in)	Measured Width mm (in)	Pass / Fail
76 (3)	260mm (10.2)	Pass

The following failures were identified:
No failures

Remarks:
None

Recorded by:  Date: April 6, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 9
TORSO IMPACT PROTECTION
(FMVSS 213, S5.2.2)

Report No.:	213-CAL-18-030	Model No:	Foonf FO18U1
Test Date:	6 April 2018		

Section	Surface Requirement	Contour Requirement	Other Requirement
S5.2.2.1(a)	Back Support Surface	Flat or concave	Continuous surface area of ≥ 85 in²
S5.2.2.1(b)	Side Support Surface	Flat or concave	Continuous surface area of ≥ 24 in² for restraints having a recommended child weight of ≥ 20 lb
		Flat or concave	Continuous surface area of ≥ 48 in² for restraints having a recommended child weight of < 20 lb
S5.2.2.1(c)	Horizontal Cross Sections of Surfaces Restraining Torso Forward Movement	Flat or concave	
	Vertical Longitudinal Cross Sections of Surfaces Restraining Torso Forward Movement	Flat or concave	Radius of Curvature ≥ 2 in
S5.2.2.2	Fixed or Moveable Surface Forward of Dummy		Must be used to restrain dummy and allow compliance with injury & excursion data

Support Surface Results

Surface	Contour	Measured Area	Pass / Fail
Back Support	Flat	≥ 85 in²	Pass
Side Support	Flat	≥ 24 in²	Pass

Surfaces Restraining Torso Forward Movement Results

	Contour	Measured Area	Pass / Fail
Horizontal Cross Section	N/A	N/A	N/A
Vertical Cross Section	N/A	N/A	N/A

Fixed or Movable Surfaces Forward of Dummy Results

Yes/No	Pass / Fail
No	Pass

The following failures were identified:
No failures

Remarks:
None

Recorded by:  Date: April 6, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 10
PROTRUSION LIMITATION
(FMVSS 213, S5.2.4)

Report No.:	213-CAL-18-030	Model No:	Foonf FO18U1
Test Date:	6 April 2018		

S5.2.4 Any portion of a rigid structural component within or underlying a contactable surface is subject to the protrusion limitations described below.

Test	Compliance Requirement	Test Result	Pass/Fail
Height	≤ 9.53 mm (3/8 in.)	≤9.53mm (≤3/8in)	Pass
Edge Radius	≥ 6.35 mm (1/4 in.)	≥6.35mm (≥1/4in)	Pass

The following failures were identified:
No failures

Remarks:
None

Recorded by: _____ Date: April 6, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 11
DYNAMIC IMPACT TEST CONDITIONS – TEST 1
(FMVSS 213, S6.1)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-31A
Test Date:	6 April 2018	Item Code	030-FO18U1-01-3H3FN2TU

Laboratory Ambient Conditions During Testing:

Temperature Degrees C (F)	21.0C (69.8F)
Relative Humidity %	28%

Pulse:

Test Configuration (I or II):	I
Velocity (km/h (mph)):	46.8 km/h (29.1 mph)

Dummy:

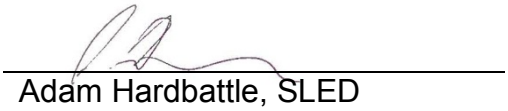
Dummy Description:	H3 3 Year Old (Part 572R)
Dummy Serial Number:	034

Restraint Installation:

Installed Direction:	Forward Facing
Base Usage:	Other Configuration
Attachment Method:	Lap belt
Tether Usage:	Top Tether
Seat Back Position:	Upright #2
Internal Shoulder Harness Position:	Slot 5, Counted from bottom up
Buckle Harness Position:	Forward

Remarks:

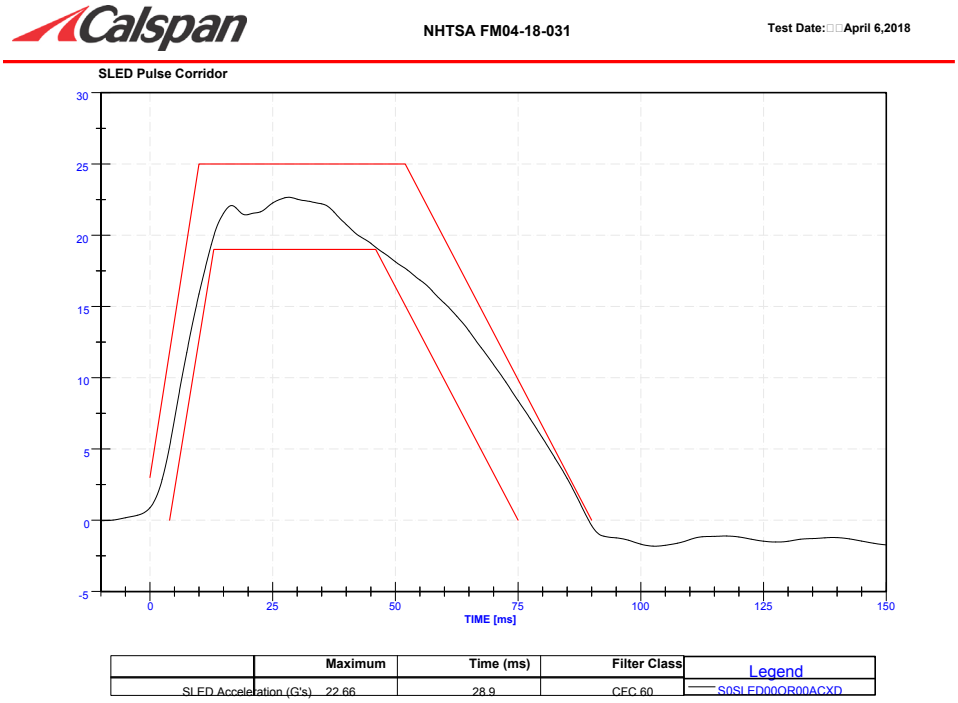
Pre and Post Test Photos are presented in Section 9.

Recorded by:  Date: April 13, 2018

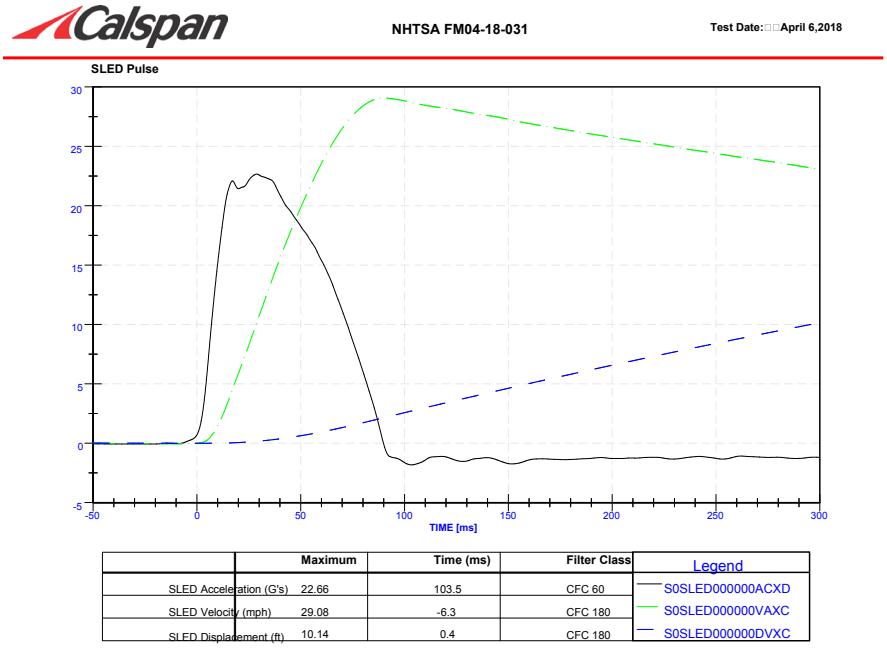
Adam Hardbattle, SLED Engineer

DYNAMIC IMPACT SLED PULSE – TEST 1
(FMVSS 213, S6.1)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-31A
Test Date:	6 April 2018	Item Code	030-FO18U1-01-3H3FN2TU



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	22.66	28.9	CFC 60	S0SLED000R00ACXD



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	22.66	103.5	CFC 60	S0SLED000000ACXD
SLED Velocity (mph)	29.08	-6.3	CFC 180	S0SLED000000VAXC
SLED Displacement (ft)	10.14	0.4	CFC 180	S0SLED000000DVXC

DATA SHEET 12
BELT RESTRAINT – TEST 1
(FMVSS 213, S5.4.3)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-31A
Test Date:	6 April 2018	Item Code	030-FO18U1-01-3H3FN2TU

Section	Requirement	Pass / Fail
S5.4.3.1	**Snug Fit of Belts.** Belts that are part of the restraint and designed to restrain the child are adjustable to snugly fit any child of height and weight identified by the manufacturer in accordance with the manufacturers installation instructions.	Pass

Section	Requirement	Yes / No	Pass / Fail
S5.4.3.2	**Direct Restraint.** Belts impose no loads on the child resulting from mass of the system or the test seat		Pass
	The restraint has one or more belts that contact the dummy for restraint	Yes	If all are "Yes" Restraint fails S5.4.3.2
	The restraint has a rigid structure behind the dummy	Yes	
	The restraint could move relative to the belt	No	

Section	Requirement	Pass / Fail
S5.4.3.3	**Seating Systems.** Except for harness and infant restraints for children up to 10kg (22lb), each restraint designed for a child in a seated position and having belts shall provide.	Pass
S5.4.3.3(a)	Upper torso restraint (either belts or a shield)	Pass
S5.4.3.3(b)	Lower torso restraint (either belts or a shield)	Pass
S5.4.3.3(c)	Crotch restraint (either a belt attached to the lap belt or a shield)	Pass

Section	Requirement	Pass / Fail
S5.4.3.4	**Harnesses.** Each harness shall:	N/A
S5.4.3.3(a)	Provide upper torso restraint)	N/A
S5.4.3.3(b)	Provide lower torso restraint (lap & crotch)	N/A
S5.4.3.3(c)	Prevent Standing	N/A

Remarks

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 13
BUCKLE RELEASE – TEST 1
(FMVSS 213, S5.4.3.5, S6.2)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-31A
Test Date:	6 April 2018	Item Code	030-FO18U1-01-3H3FN2TU

Section	Requirement	Measurement	Pass / Fail
S5.4.3.5(a)	**Pre-Impact Release Force** Releases under 40-60 N	51 N	Pass
S5.4.3.5(a)	**Post-Impact Release Force*** Releases ≤ 71 N	51 N	Pass
S5.4.3.5(a)	**Minimum Surface Area of Buckle** ≥ 3.9 cm² (0.6 in²)	4 cm²	Pass
S5.4.3.5(a)	**Buckle Integrity** Shall not release during testing	No Release	Pass

*Not applicable unless determined using the largest test dummy specified in S7 for use in testing the seat.

Remarks
None

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 14
SYSTEM INTEGRITY – TEST 1
(FMVSS 213, S5.1.1)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-31A
Test Date:	6 April 2018	Item Code	030-FO18U1-01-3H3FN2TU

S5.1.1 When dynamically tested, the child restraint shall:

Section	Requirement	Pass / Fail
S5.1.1(a)	**Structural Integrity –** Exhibit no complete separation of any load bearing structural element	Pass
	Exhibit no partial separation with exposing surfaces with a radius of less than 9.53 mm (3/8 in.)	Pass
	Exhibit no partial separation with exposing surfaces with protrusions greater than 6.35 mm (1/4 in.)	Pass
S5.1.1(b)(1)	**Adjustment Position –** Remain in the same adjustment position during the test that it was immediately before the test	Pass
S5.1.1(b)(2)(ii)	**Exposed Openings –** Have no exposed opening larger than 6.35 mm (1/4 in.) before the test becomes smaller during the testing as a result of the movement of the seating service relative to the restraint system as a whole.	Pass
S5.1.1(c)	**Seating Surface Angle –** Forward facing restraints do not allow the angle between the system's back support surface and seating surface and seating surface to be less than 45 degrees at the completion of the test	Pass

Remarks
None

Recorded by: _____ Date: April 13, 2018
Adam Hardbattle, SLED Engineer

DATA SHEET 15
INJURY CRITERIA – TEST 1
(FMVSS 213, S5.1.2)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-31A
Test Date:	6 April 2018	Item Code	030-FO18U1-01-3H3FN2TU

Section	Requirement
S5.1.2.1(a)	**Head Injury Criterion** The maximum calculated head injury criterion for a 36 millisecond time interval (HIC36) shall not exceed 1,000. HIC is not calculated when using the 6-year-old weighted and 10-year-old test dummies.
S5.1.2.1(b)	**Chest Injury Criterion** The chest acceleration shall not exceed 60g for intervals whose cumulative duration is more than 3 milliseconds

Head Injury Criterion Results

Calculated HIC36	Pass / Fail
404	Pass

Chest Injury Criterion Results

Max Acceleration lasting 3ms (g)	Pass / Fail
43	Pass

Remarks
None

Recorded by: _____ Date: April 13, 2018

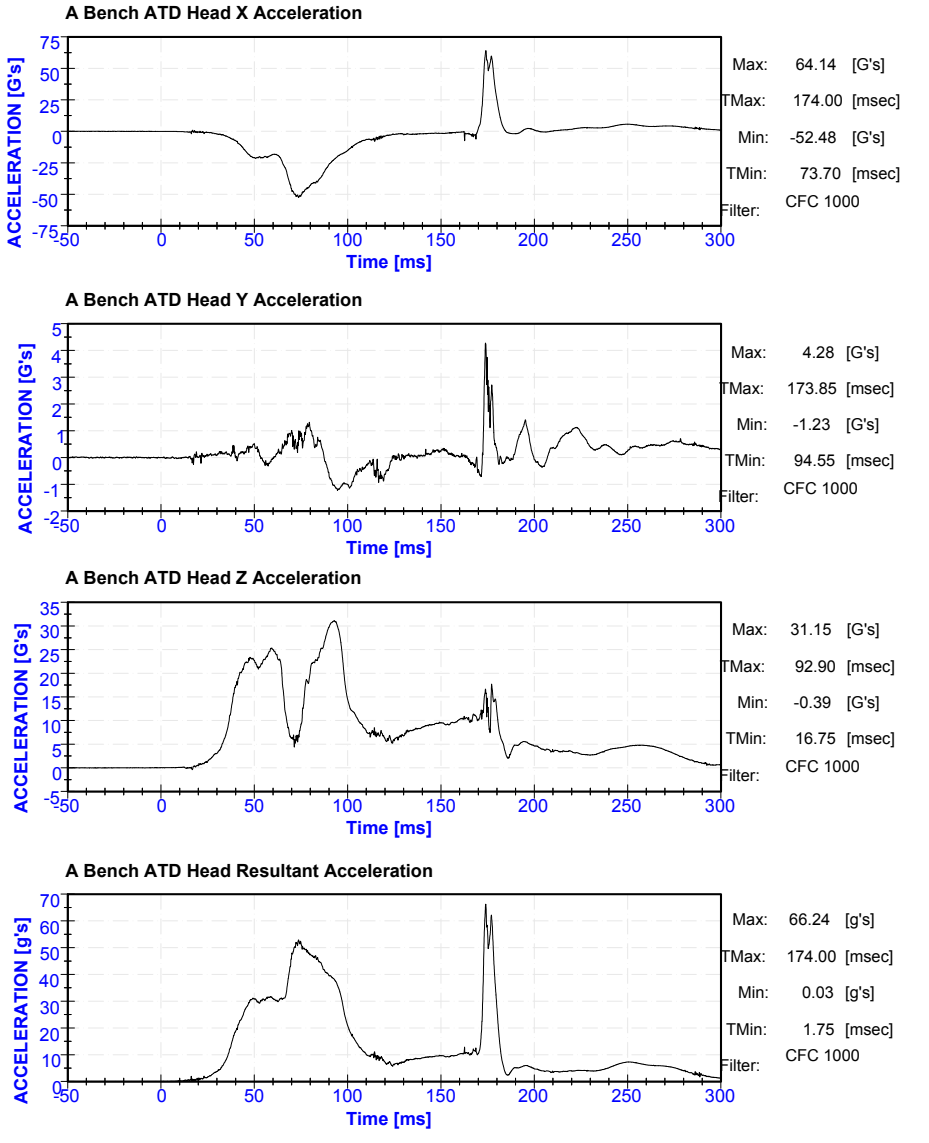
Adam Hardbattle, SLED Engineer

INJURY CRITERIA – HEAD ACCELERATION PLOTS – TEST 1
(FMVSS 213, S5.1.2)

Report No.:	213-CAL-18-030
Test Date:	6 April 2018
HIC 36ms	404

Sled Test No.	FM04-18-31A
Item Code	030-FO18U1-01-3H3FN2TU
Resultant	66 g's

Calspan NHTSA FM04-18-031 Test Date: April 6,2



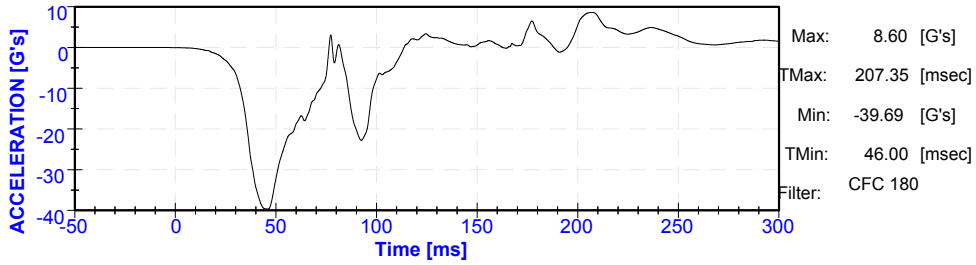
INJURY CRITERIA – CHEST ACCELERATION PLOTS – TEST 1 (FMVSS 213, S5.1.2)

Report No.:	213-CAL-18-030
Test Date:	6 April 2018
3ms Clip	43 g's

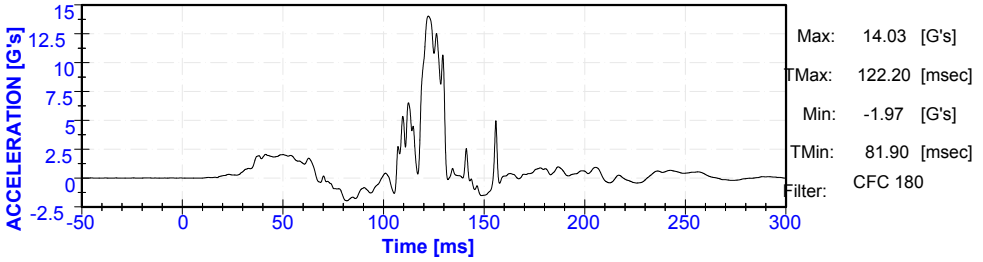
Sled Test No.	FM04-18-31A
Item Code	030-FO18U1-01-3H3FN2TU
Resultant	44 g's

Calspan NHTSA FM04-18-031 Test Date: April 6,2

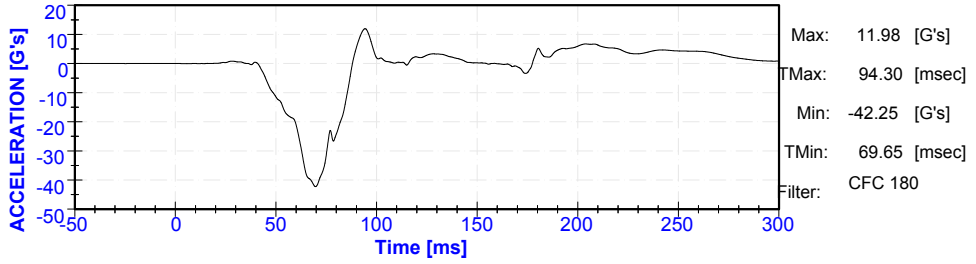
A Bench ATD Chest X Acceleration



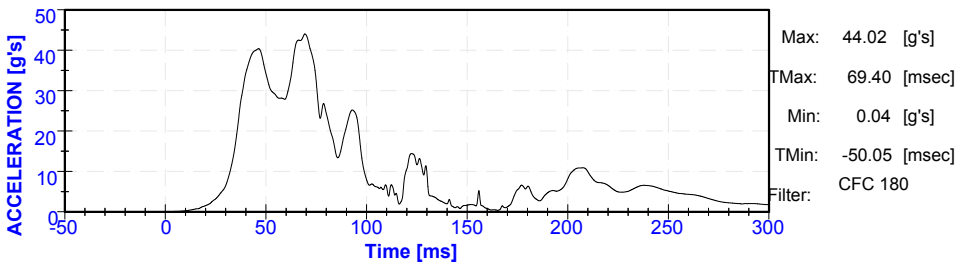
A Bench ATD Chest Y Acceleration



A Bench ATD Chest Z Acceleration



A Bench ATD Chest Resultant Acceleration



DATA SHEET 16
OCCUPANT EXCURSION – TEST 1
(FMVSS 213, S5.1.3, S5.1.4, S5.2.1.1(c))

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-31A
Test Date:	6 April 2018	Item Code	030-FO18U1-01-3H3FN2TU

FORWARD-FACING RESTRAINTS

Section	Requirement	Measurement	Pass / Fail
S5.1.3.1	**Torso Retention –** CRS shall retain the torso within system		Pass
S5.1.3.1(a)(1)	**Head Excursion -** ≤ 720 mm (28.4 in.) with tether ≤ 813 mm (32 in.) No tether	597	Pass
S5.1.3.1(a)(2)	**Knee Excursion -** ≤ 91.5 cm (36 in.)	680	Pass
S5.2.1.1(c)	**Head-Torso Angle -** Rearward change ≤ 45 degrees	≤ 45	Pass

REAR-FACING RESTRAINTS

Section	Requirement	Measurement	Pass / Fail
S5.1.3.2	**Torso Retention –** CRS shall retain the torso within system		N/A
S5.1.3.2	**Head Target Excursion –** Not beyond restraint's top and forward edge		N/A
S5.1.4	**Back Support Angle -** Angle between the back support surface and vertical ≤ 70 degrees	N/A	N/A
S5.2.1.1(c)	**Head-Torso Angle -** Rearward change ≤ 45 degrees	N/A	N/A

Remarks
Excursion camera locations (forward of Z point) are 28.4", Camera speed = 2000fps and focal length of lenses = 12.5mm

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 17
OCCUPANT EXCURSION – TEST 1
(FMVSS 213, S5.1.3.3)

CAR BED RESTRAINTS

Section	Requirement	Measurement	Pass / Fail
Head – Torso Retention (FMVSS 213, S5.1.3.3)	Retain within confines of system	N/A	N/A

Remarks

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 18
DYNAMIC IMPACT TEST CONDITIONS – TEST 2
(FMVSS 213, S6.1)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-31B
Test Date:	6 April 2018	Item Code	030-FO18U1-02-12CRNLFR

Laboratory Ambient Conditions During Testing:

Temperature Degrees C (F)	21.0C (69.8F)
Relative Humidity %	28.0%

Pulse:

Test Configuration (I or II):	I
Velocity (km/h (mph)):	46.8 km/h (29.1 mph)

Dummy:

Dummy Description:	CRABI 12 Month Old (Part 572R)
Dummy Serial Number:	085

Restraint Installation:

Installed Direction:	Rearward Facing
Base Usage:	Use of *Required* wedge
Attachment Method:	Lower Anchors
Tether Usage:	Tether Free
Seat Back Position:	Recline 1
Internal Shoulder Harness Position:	Slot 3, Counted from bottom up
Buckle Harness Position:	Rearward

Remarks:

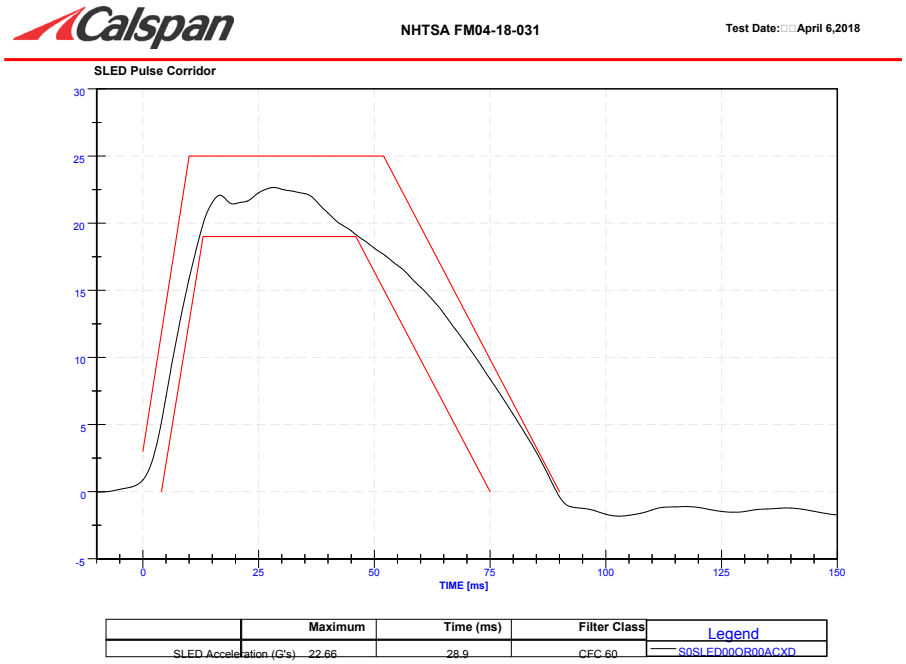
Pre and Post Test Photos are presented in Section 9.

Recorded by: _____ Date: April 13, 2018

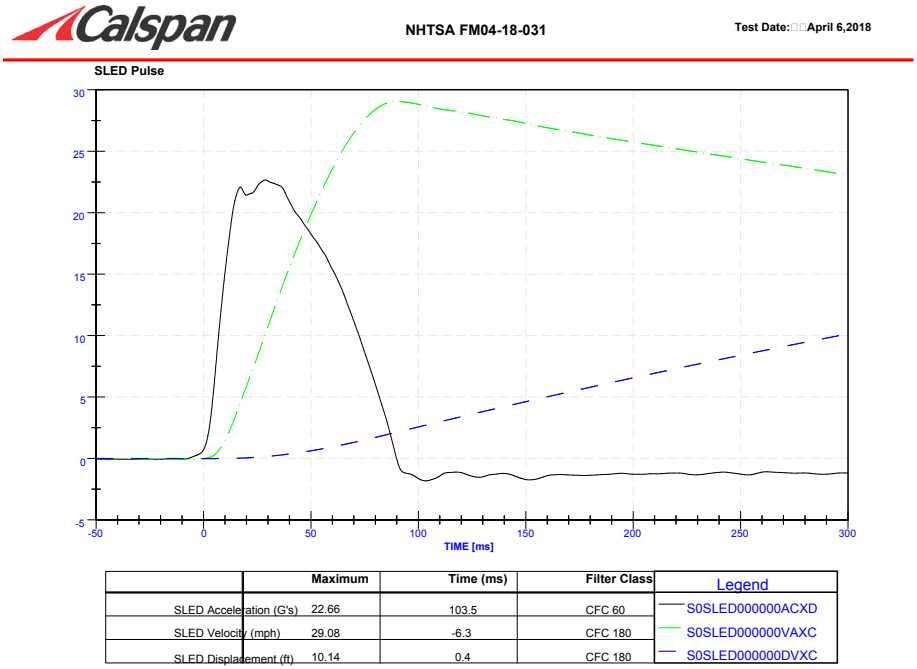
Adam Hardbattle, SLED Engineer

DYNAMIC IMPACT SLED PULSE – TEST 2
(FMVSS 213, S6.1)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-31B
Test Date:	6 April 2018	Item Code	030-FO18U1-02-12CRNLFR



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	22.66	28.9	CFC 60	S0SLED00OR00ACXD



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	22.66	103.5	CFC 60	S0SLED000000ACXD
SLED Velocity (mph)	29.08	-6.3	CFC 180	S0SLED000000VAXC
SLED Displacement (ft)	10.14	0.4	CFC 180	S0SLED000000DVXC

DATA SHEET 19
BELT RESTRAINT – TEST 2
(FMVSS 213, S5.4.3)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-31B
Test Date:	6 April 2018	Item Code	030-FO18U1-02-12CRNLFR

Section	Requirement	Pass / Fail
S5.4.3.1	**Snug Fit of Belts.** Belts that are part of the restraint and designed to restrain the child are adjustable to snugly fit any child of height and weight identified by the manufacturer in accordance with the manufacturers installation instructions.	Pass

Section	Requirement	Yes / No	Pass / Fail
S5.4.3.2	**Direct Restraint.** Belts impose no loads on the child resulting from mass of the system or the test seat		Pass
	The restraint has one or more belts that contact the dummy for restraint	Yes	If all are "Yes" Restraint fails S5.4.3.2
	The restraint has a rigid structure behind the dummy	Yes	
	The restraint could move relative to the belt	No	

Section	Requirement	Pass / Fail
S5.4.3.3	**Seating Systems.** Except for harness and infant restraints for children up to 10kg (22lb), each restraint designed for a child in a seated position and having belts shall provide.	Pass
S5.4.3.3(a)	Upper torso restraint (either belts or a shield)	Pass
S5.4.3.3(b)	Lower torso restraint (either belts or a shield)	Pass
S5.4.3.3(c)	Crotch restraint (either a belt attached to the lap belt or a shield)	Pass

Section	Requirement	Pass / Fail
S5.4.3.4	**Harnesses.** Each harness shall:	N/A
S5.4.3.3(a)	Provide upper torso restraint)	N/A
S5.4.3.3(b)	Provide lower torso restraint (lap & crotch)	N/A
S5.4.3.3(c)	Prevent Standing	N/A

Remarks

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 20
BUCKLE RELEASE – TEST 2
(FMVSS 213, S5.4.3.5, S6.2)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-31B
Test Date:	6 April 2018	Item Code	030-FO18U1-02-12CRNLFR

Section	Requirement	Measurement	Pass / Fail
S5.4.3.5(a)	**Pre-Impact Release Force** Releases under 40-60 N	50 N	Pass
S5.4.3.5(a)	**Post-Impact Release Force*** Releases ≤ 71 N	56 N	Pass
S5.4.3.5(a)	**Minimum Surface Area of Buckle** ≥ 3.9 cm² (0.6 in²)	4 cm²	Pass
S5.4.3.5(a)	**Buckle Integrity** Shall not release during testing	No Release	Pass

*Not applicable unless determined using the largest test dummy specified in S7 for use in testing the seat.

Remarks
None

Recorded by: _____ Date: April 13, 2018
Adam Hardbattle, SLED Engineer

DATA SHEET 21
SYSTEM INTEGRITY – TEST 2
(FMVSS 213, S5.1.1)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-31B
Test Date:	6 April 2018	Item Code	030-FO18U1-02-12CRNLFR

S5.1.1 When dynamically tested, the child restraint shall:

Section	Requirement	Pass / Fail
S5.1.1(a)	**Structural Integrity –** Exhibit no complete separation of any load bearing structural element	Pass
	Exhibit no partial separation with exposing surfaces with a radius of less than 9.53 mm (3/8 in.)	Pass
	Exhibit no partial separation with exposing surfaces with protrusions greater than 6.35 mm (1/4 in.)	Pass
S5.1.1(b)(1)	**Adjustment Position –** Remain in the same adjustment position during the test that it was immediately before the test	Pass
S5.1.1(b)(2)(ii)	**Exposed Openings –** Have no exposed opening larger than 6.35 mm (1/4 in.) before the test becomes smaller during the testing as a result of the movement of the seating service relative to the restraint system as a whole.	Pass
S5.1.1(c)	**Seating Surface Angle –** Forward facing restraints do not allow the angle between the system's back support surface and seating surface and seating surface to be less than 45 degrees at the completion of the test	N/A

Remarks
None

Recorded by: _____ Date: April 13, 2018
Adam Hardbattle, SLED Engineer

DATA SHEET 22
INJURY CRITERIA – TEST 2
(FMVSS 213, S5.1.2)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-31B
Test Date:	6 April 2018	Item Code	030-FO18U1-02-12CRNLFR

Section	Requirement
S5.1.2.1(a)	**Head Injury Criterion** The maximum calculated head injury criterion for a 36 millisecond time interval (HIC36) shall not exceed 1,000. HIC is not calculated when using the 6-year-old weighted and 10-year-old test dummies.
S5.1.2.1(b)	**Chest Injury Criterion** The chest acceleration shall not exceed 60g for intervals whose cumulative duration is more than 3 milliseconds

Head Injury Criterion Results

Calculated HIC36	Pass / Fail
337	Pass

Chest Injury Criterion Results

Max Acceleration lasting 3ms (g)	Pass / Fail
42	Pass

Remarks
None

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

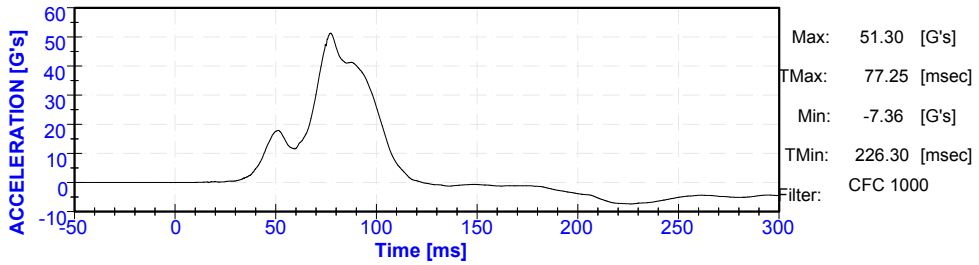
INJURY CRITERIA – HEAD ACCELERATION PLOTS – TEST 2 (FMVSS 213, S5.1.2)

Report No.:	213-CAL-18-030
Test Date:	6 April 2018
HIC 36ms	337

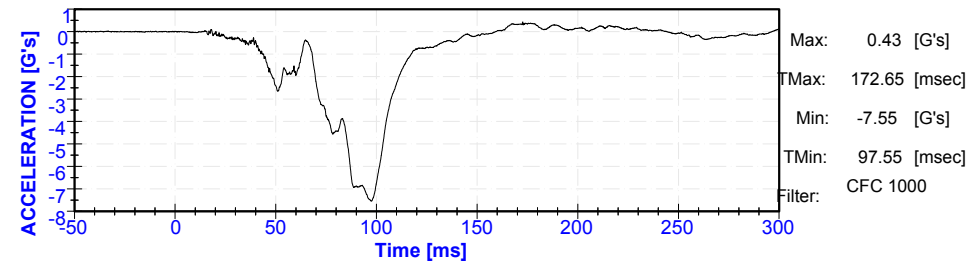
Sled Test No.	FM04-18-31B
Item Code	030-FO18U1-02-12CRNLFR
Resultant	53 g's

Calspan NHTSA FM04-18-031 Test Date: April 6,2

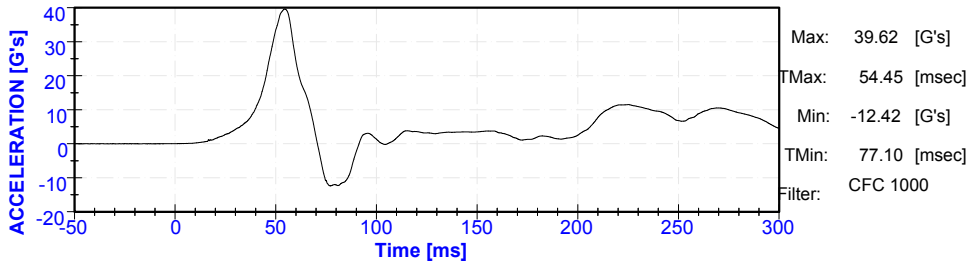
B Bench ATD Head X Acceleration



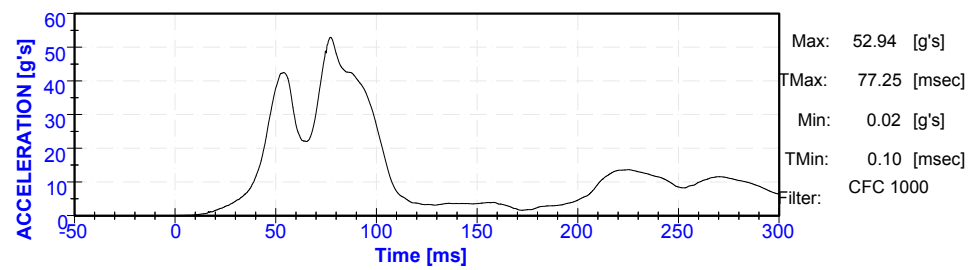
B Bench ATD Head Y Acceleration



B Bench ATD Head Z Acceleration



B Bench ATD Head Resultant Acceleration



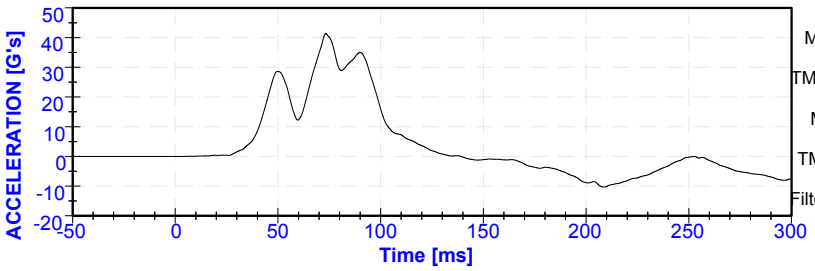
INJURY CRITERIA – CHEST ACCELERATION PLOTS – TEST 2 (FMVSS 213, S5.1.2)

Report No.:	213-CAL-18-030
Test Date:	6 April 2018
3ms Clip	42 g's

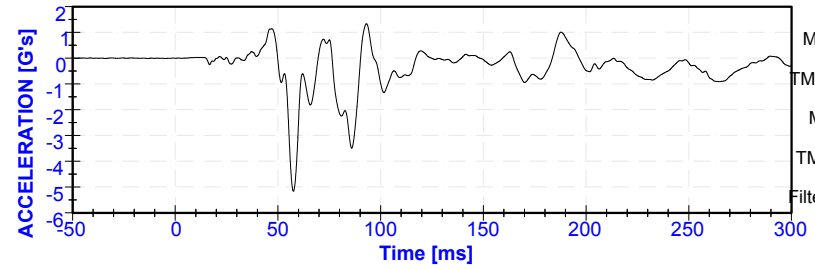
Sled Test No.	FM04-18-31B
Item Code	030-FO18U1-02-12CRNLFR
Resultant	43 g's

Calspan NHTSA FM04-18-031 Test Date: April 6,2

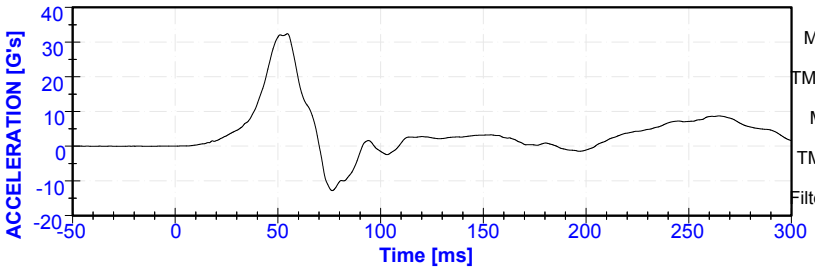
B Bench ATD Chest X Acceleration



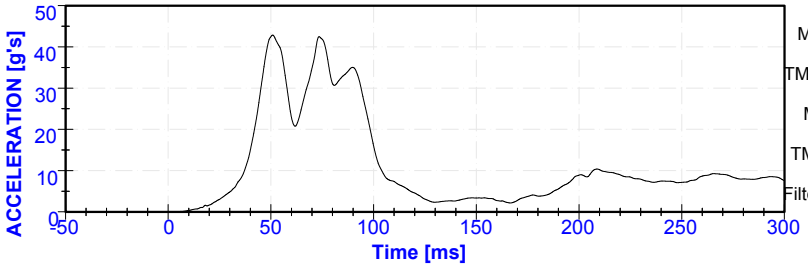
B Bench ATD Chest Y Acceleration



B Bench ATD Chest Z Acceleration



B Bench ATD Chest Resultant Acceleration



DATA SHEET 23
OCCUPANT EXCURSION – TEST 2
(FMVSS 213, S5.1.3, S5.1.4, S5.2.1.1(c))

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-31B
Test Date:	6 April 2018	Item Code	030-FO18U1-02-12CRNLFR

FORWARD-FACING RESTRAINTS

Section	Requirement	Measurement	Pass / Fail
S5.1.3.1	**Torso Retention –** CRS shall retain the torso within system		N/A
S5.1.3.1(a)(1)	**Head Excursion -** ≤ 720 mm (28.4 in.) with tether ≤ 813 mm (32 in.) No tether	N/A	N/A
S5.1.3.1(a)(2)	**Knee Excursion -** ≤ 91.5 cm (36 in.)	N/A	N/A
S5.2.1.1(c)	**Head-Torso Angle -** Rearward change ≤ 45 degrees	N/A	N/A

REAR-FACING RESTRAINTS

Section	Requirement	Measurement	Pass / Fail
S5.1.3.2	**Torso Retention –** CRS shall retain the torso within system		Pass
S5.1.3.2	**Head Target Excursion –** Not beyond restraint's top and forward edge		Pass
S5.1.4	**Back Support Angle -** Angle between the back support surface and vertical ≤ 70 degrees	55	Pass
S5.2.1.1(c)	**Head-Torso Angle -** Rearward change ≤ 45 degrees	≤ 45˚	Pass

Remarks
Excursion camera locations (forward of Z point) are 28.4", Camera speed = 2000fps and focal length of lenses = 12.5mm

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 24
OCCUPANT EXCURSION – TEST 2
(FMVSS 213, S5.1.3.3)

CAR BED RESTRAINTS

Section	Requirement	Measurement	Pass / Fail
Head – Torso Retention (FMVSS 213, S5.1.3.3)	Retain within confines of system	N/A	N/A

Remarks

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 25
DYNAMIC IMPACT TEST CONDITIONS – TEST 3
(FMVSS 213, S6.1)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-32A
Test Date:	6 April 2018	Item Code	030-FO18U1-03-3H3FNLTU

Laboratory Ambient Conditions During Testing:

Temperature Degrees C (F)	21.2C (70.2F)
Relative Humidity %	28.4%

Pulse:

Test Configuration (I or II):	I
Velocity (km/h (mph)):	47.3 km/h (29.4 mph)

Dummy:

Dummy Description:	H3 3 Year Old (Part 572R)
Dummy Serial Number:	034

Restraint Installation:

Installed Direction:	Forward Facing
Base Usage:	Other Configuration
Attachment Method:	Lower Anchorage
Tether Usage:	Top Tether
Seat Back Position:	Upright #2
Internal Shoulder Harness Position:	Slot 5, Counted from bottom up
Buckle Harness Position:	Forward

Remarks:

Pre and Post Test Photos are presented in Section 9.

Recorded by: _____ Date: April 13, 2018

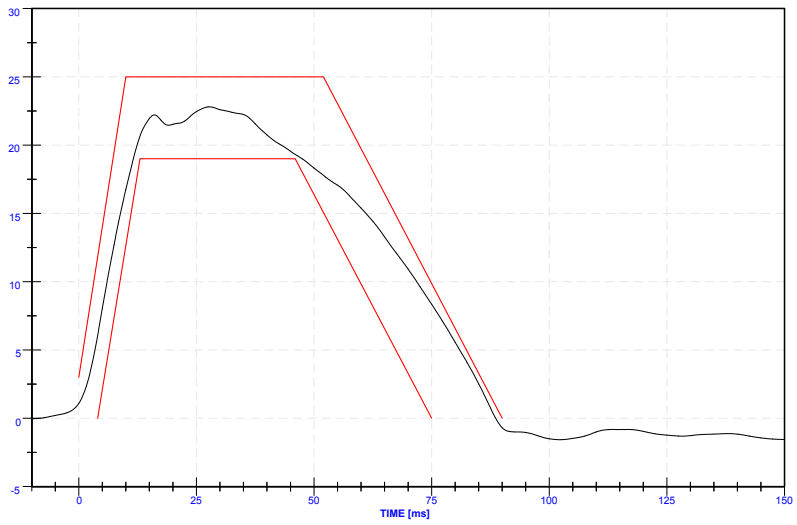
Adam Hardbattle, SLED Engineer

DYNAMIC IMPACT SLED PULSE – TEST 3
(FMVSS 213, S6.1)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-32A
Test Date:	6 April 2018	Item Code	030-FO18U1-03-3H3FNLTU

Calspan NHTSA FM04-18-032 Test Date: April 6,2018

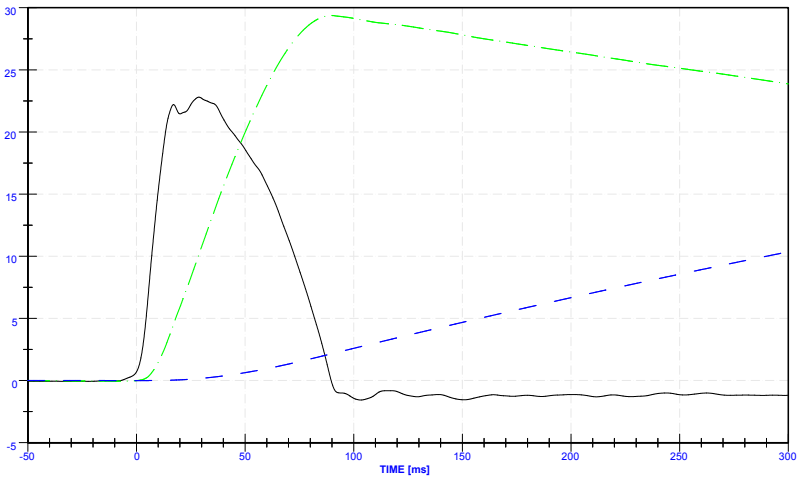
SLED Pulse Corridor



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	22.80	28.8	CFC 60	S0SLED00OR00ACXD

Calspan NHTSA FM04-18-032 Test Date: April 6,2018

SLED Pulse



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	22.80	103.2	CFC 60	S0SLED000000ACXD
SLED Velocity (mph)	29.37	-6.2	CFC 180	S0SLED000000VAXC
SLED Displacement (ft)	10.35	0.5	CFC 180	S0SLED000000DVXC

DATA SHEET 26
BELT RESTRAINT – TEST 3
(FMVSS 213, S5.4.3)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-32A
Test Date:	6 April 2018	Item Code	030-FO18U1-03-3H3FNLTU

Section	Requirement	Pass / Fail
S5.4.3.1	**Snug Fit of Belts.** Belts that are part of the restraint and designed to restrain the child are adjustable to snugly fit any child of height and weight identified by the manufacturer in accordance with the manufacturers installation instructions.	Pass

Section	Requirement	Yes / No	Pass / Fail
S5.4.3.2	**Direct Restraint.** Belts impose no loads on the child resulting from mass of the system or the test seat		Pass
	The restraint has one or more belts that contact the dummy for restraint	Yes	If all are "Yes" Restraint fails S5.4.3.2
	The restraint has a rigid structure behind the dummy	Yes	
	The restraint could move relative to the belt	No	

Section	Requirement	Pass / Fail
S5.4.3.3	**Seating Systems.** Except for harness and infant restraints for children up to 10kg (22lb), each restraint designed for a child in a seated position and having belts shall provide.	Pass
S5.4.3.3(a)	Upper torso restraint (either belts or a shield)	Pass
S5.4.3.3(b)	Lower torso restraint (either belts or a shield)	Pass
S5.4.3.3(c)	Crotch restraint (either a belt attached to the lap belt or a shield)	Pass

Section	Requirement	Pass / Fail
S5.4.3.4	**Harnesses.** Each harness shall:	N/A
S5.4.3.3(a)	Provide upper torso restraint)	N/A
S5.4.3.3(b)	Provide lower torso restraint (lap & crotch)	N/A
S5.4.3.3(c)	Prevent Standing	N/A

Remarks

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 27
BUCKLE RELEASE – TEST 3
(FMVSS 213, S5.4.3.5, S6.2)

Report No.:	213-CAL-18-030
Test Date:	6 April 2018

Sled Test No.	FM04-18-32A
Item Code	030-FO18U1-03-3H3FNLTU

Section	Requirement	Measurement	Pass / Fail
S5.4.3.5(a)	**Pre-Impact Release Force** Releases under 40-60 N	53 N	Pass
S5.4.3.5(a)	**Post-Impact Release Force*** Releases ≤ 71 N	51 N	Pass
S5.4.3.5(a)	**Minimum Surface Area of Buckle** ≥ 3.9 cm² (0.6 in²)	4 cm²	Pass
S5.4.3.5(a)	**Buckle Integrity** Shall not release during testing	No Release	Pass

*Not applicable unless determined using the largest test dummy specified in S7 for use in testing the seat.

Remarks
None

Recorded by: _____ Date: April 13, 2018
Adam Hardbattle, SLED Engineer

DATA SHEET 28
SYSTEM INTEGRITY – TEST 3
(FMVSS 213, S5.1.1)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-32A
Test Date:	6 April 2018	Item Code	030-FO18U1-03-3H3FNLTU

S5.1.1 When dynamically tested, the child restraint shall:

Section	Requirement	Pass / Fail
S5.1.1(a)	**Structural Integrity –** Exhibit no complete separation of any load bearing structural element	Pass
	Exhibit no partial separation with exposing surfaces with a radius of less than 9.53 mm (3/8 in.)	Pass
	Exhibit no partial separation with exposing surfaces with protrusions greater than 6.35 mm (1/4 in.)	Pass
S5.1.1(b)(1)	**Adjustment Position –** Remain in the same adjustment position during the test that it was immediately before the test	Pass
S5.1.1(b)(2)(ii)	**Exposed Openings –** Have no exposed opening larger than 6.35 mm (1/4 in.) before the test becomes smaller during the testing as a result of the movement of the seating service relative to the restraint system as a whole.	Pass
S5.1.1(c)	**Seating Surface Angle –** Forward facing restraints do not allow the angle between the system's back support surface and seating surface and seating surface to be less than 45 degrees at the completion of the test	Pass

Remarks
None

Recorded by: _____ Date: April 13, 2018
Adam Hardbattle, SLED Engineer

DATA SHEET 29
INJURY CRITERIA – TEST 3
(FMVSS 213, S5.1.2)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-32A
Test Date:	6 April 2018	Item Code	030-FO18U1-03-3H3FNLTU

Section	Requirement
S5.1.2.1(a)	**Head Injury Criterion** The maximum calculated head injury criterion for a 36 millisecond time interval (HIC36) shall not exceed 1,000. HIC is not calculated when using the 6-year-old weighted and 10-year-old test dummies.
S5.1.2.1(b)	**Chest Injury Criterion** The chest acceleration shall not exceed 60g for intervals whose cumulative duration is more than 3 milliseconds

Head Injury Criterion Results

Calculated HIC36	Pass / Fail
413	Pass

Chest Injury Criterion Results

Max Acceleration lasting 3ms (g)	Pass / Fail
40	Pass

Remarks

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

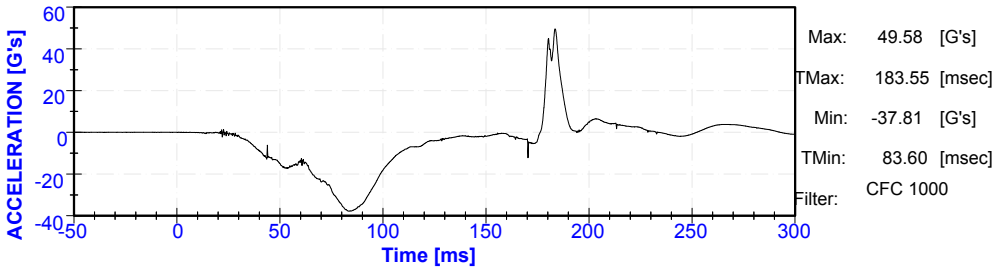
INJURY CRITERIA – HEAD ACCELERATION PLOTS – TEST 3 (FMVSS 213, S5.1.2)

Report No.:	213-CAL-18-030
Test Date:	6 April 2018
HIC 36ms	413

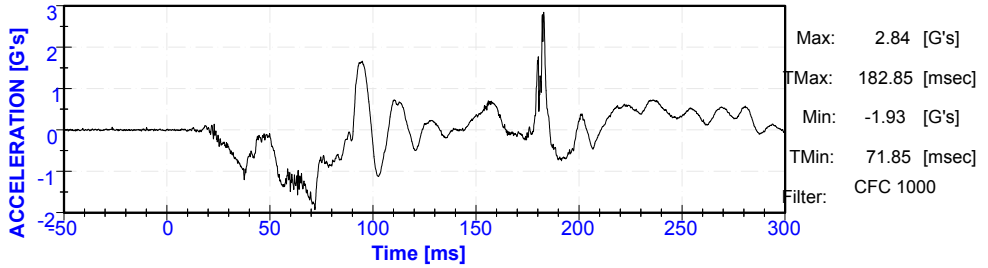
Sled Test No.	FM04-18-32A
Item Code	030-FO18U1-03-3H3FNLTU
Resultant	55 g's

Calspan NHTSA FM04-18-032 Test Date: April 6,2

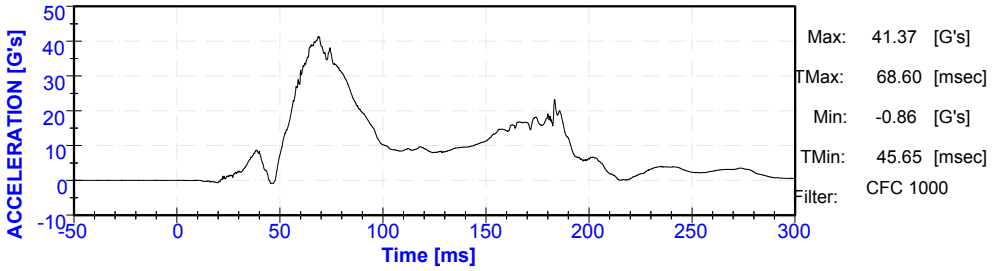
A Bench ATD Head X Acceleration



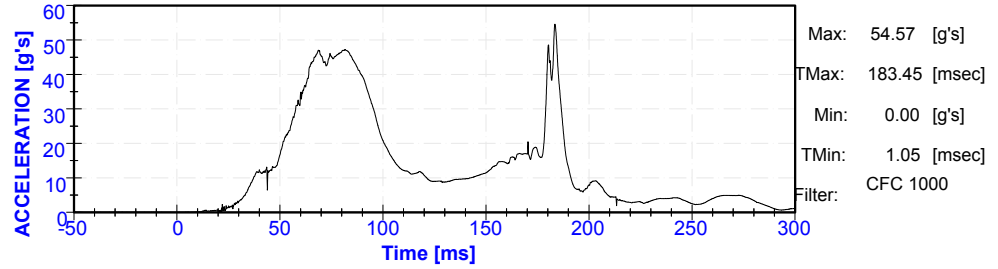
A Bench ATD Head Y Acceleration



A Bench ATD Head Z Acceleration



A Bench ATD Head Resultant Acceleration



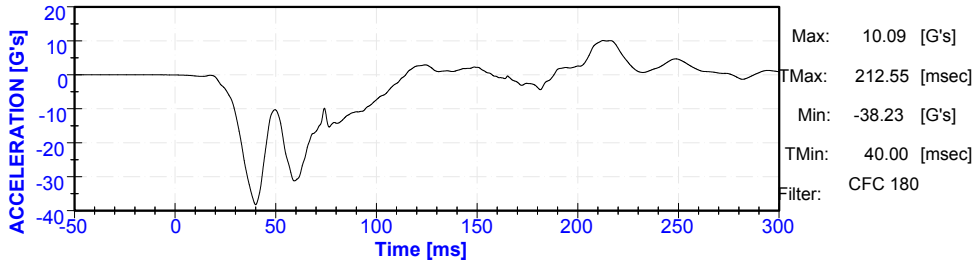
INJURY CRITERIA – CHEST ACCELERATION PLOTS – TEST 3 (FMVSS 213, S5.1.2)

Report No.:	213-CAL-18-030
Test Date:	6 April 2018
3ms Clip	40 g's

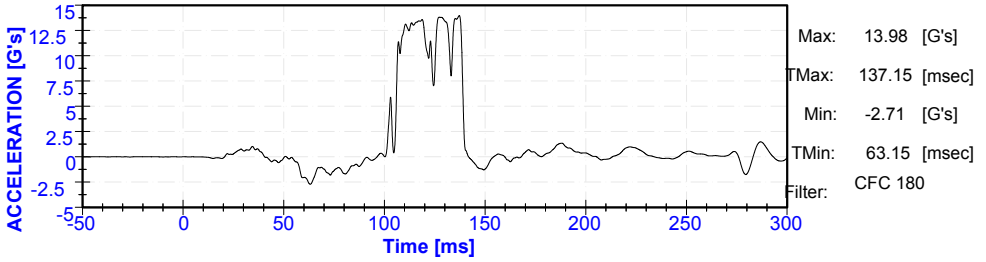
Sled Test No.	FM04-18-32A
Item Code	030-FO18U1-03-3H3FNLTU
Resultant	42 g's

Calspan NHTSA FM04-18-032 Test Date: April 6,2

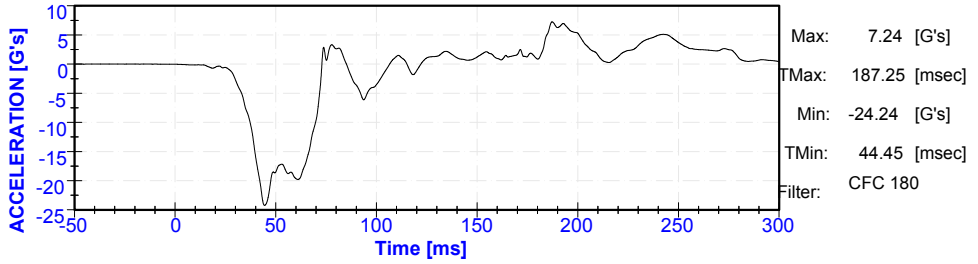
A Bench ATD Chest X Acceleration



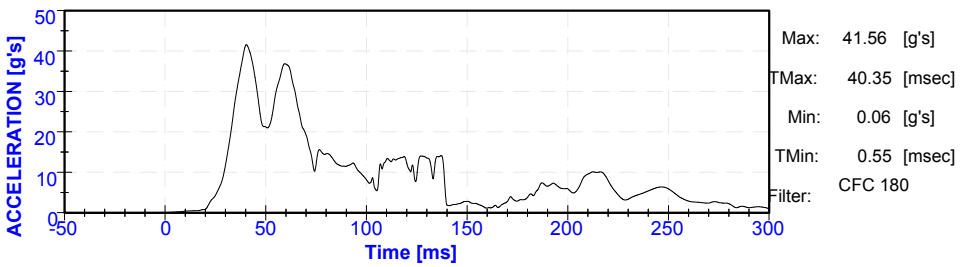
A Bench ATD Chest Y Acceleration



A Bench ATD Chest Z Acceleration



A Bench ATD Chest Resultant Acceleration



DATA SHEET 30
OCCUPANT EXCURSION – TEST 3
(FMVSS 213, S5.1.3, S5.1.4, S5.2.1.1(c))

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-32A
Test Date:	6 April 2018	Item Code	030-FO18U1-03-3H3FNLTU

FORWARD-FACING RESTRAINTS

Section	Requirement	Measurement	Pass / Fail
S5.1.3.1	**Torso Retention –** CRS shall retain the torso within system		Pass
S5.1.3.1(a)(1)	**Head Excursion -** ≤ 720 mm (28.4 in.) with tether ≤ 813 mm (32 in.) No tether	587	Pass
S5.1.3.1(a)(2)	**Knee Excursion -** ≤ 91.5 cm (36 in.)	624	Pass
S5.2.1.1(c)	**Head-Torso Angle -** Rearward change ≤ 45 degrees	≤ 45˚	Pass

REAR-FACING RESTRAINTS

Section	Requirement	Measurement	Pass / Fail
S5.1.3.2	**Torso Retention –** CRS shall retain the torso within system		N/A
S5.1.3.2	**Head Target Excursion –** Not beyond restraint's top and forward edge		N/A
S5.1.4	**Back Support Angle -** Angle between the back support surface and vertical ≤ 70 degrees	N/A	N/A
S5.2.1.1(c)	**Head-Torso Angle -** Rearward change ≤ 45 degrees	N/A	N/A

Remarks

Excursion camera locations (forward of Z point) are 28.4", Camera speed = 2000fps and focal length of lenses = 12.5mm

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 31
OCCUPANT EXCURSION – TEST 3
(FMVSS 213, S5.1.3.3)

CAR BED RESTRAINTS

Section	Requirement	Measurement	Pass / Fail
Head – Torso Retention (FMVSS 213, S5.1.3.3)	Retain within confines of system	N/A	N/A

Remarks

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 32
DYNAMIC IMPACT TEST CONDITIONS – TEST 4
(FMVSS 213, S6.1)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-32B
Test Date:	6 April 2018	Item Code	030-FO18U1-04-12CFNLTU

Laboratory Ambient Conditions During Testing:

Temperature Degrees C (F)	21.2C (70.2 F)
Relative Humidity %	13.4%

Pulse:

Test Configuration (I or II):	I
Velocity (km/h (mph)):	47.3 km/h (29.4 mph)

Dummy:

Dummy Description:	CRABI 12 Month Old (Part 572R)
Dummy Serial Number:	085

Restraint Installation:

Installed Direction:	Forward Facing
Base Usage:	Other Configuration
Attachment Method:	Lowe Anchors
Tether Usage:	Top Tether
Seat Back Position:	Recline #2
Internal Shoulder Harness Position:	Slot 4, Counted from bottom up
Buckle Harness Position:	Forward

Remarks:

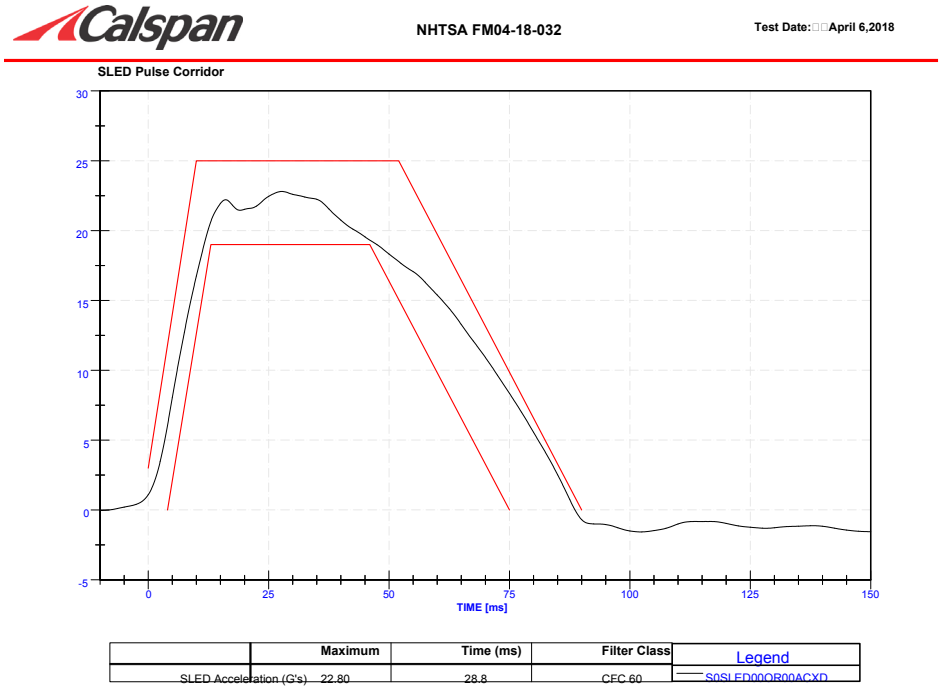
Pre and Post Test Photos are presented in Section 9.

Recorded by: _____ Date: April 13, 2018

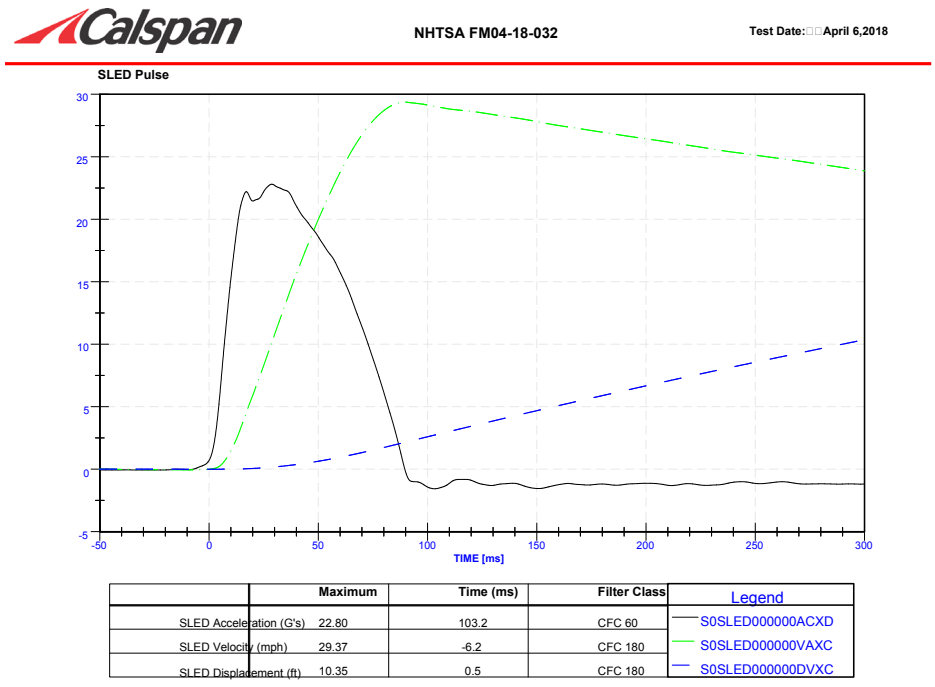
Adam Hardbattle, SLED Engineer

DYNAMIC IMPACT SLED PULSE – TEST 4
(FMVSS 213, S6.1)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-32B
Test Date:	6 April 2018	Item Code	030-FO18U1-04-12CFNLTU



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	22.80	28.8	CFC 60	S0SLED00OR00ACXD



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	22.80	103.2	CFC 60	S0SLED000000ACXD
SLED Velocity (mph)	29.37	-6.2	CFC 180	S0SLED000000VAXC
SLED Displacement (ft)	10.35	0.5	CFC 180	S0SLED000000DVXC

DATA SHEET 33
BELT RESTRAINT – TEST 4
(FMVSS 213, S5.4.3)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-32B
Test Date:	6 April 2018	Item Code	030-FO18U1-04-12CFNLTU

Section	Requirement	Pass / Fail
S5.4.3.1	**Snug Fit of Belts.** Belts that are part of the restraint and designed to restrain the child are adjustable to snugly fit any child of height and weight identified by the manufacturer in accordance with the manufacturers installation instructions.	Pass

Section	Requirement	Yes / No	Pass / Fail
S5.4.3.2	**Direct Restraint.** Belts impose no loads on the child resulting from mass of the system or the test seat		Pass
	The restraint has one or more belts that contact the dummy for restraint	Yes	If all are "Yes" Restraint fails S5.4.3.2
	The restraint has a rigid structure behind the dummy	Yes	
	The restraint could move relative to the belt	No	

Section	Requirement	Pass / Fail
S5.4.3.3	**Seating Systems.** Except for harness and infant restraints for children up to 10kg (22lb), each restraint designed for a child in a seated position and having belts shall provide.	Pass
S5.4.3.3(a)	Upper torso restraint (either belts or a shield)	Pass
S5.4.3.3(b)	Lower torso restraint (either belts or a shield)	Pass
S5.4.3.3(c)	Crotch restraint (either a belt attached to the lap belt or a shield)	Pass

Section	Requirement	Pass / Fail
S5.4.3.4	**Harnesses.** Each harness shall:	N/A
S5.4.3.3(a)	Provide upper torso restraint)	N/A
S5.4.3.3(b)	Provide lower torso restraint (lap & crotch)	N/A
S5.4.3.3(c)	Prevent Standing	N/A

Remarks

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 34
BUCKLE RELEASE – TEST 4
(FMVSS 213, S5.4.3.5, S6.2)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-32B
Test Date:	6 April 2018	Item Code	030-FO18U1-04-12CFNLTU

Section	Requirement	Measurement	Pass / Fail
S5.4.3.5(a)	**Pre-Impact Release Force** Releases under 40-60 N	49 N	Pass
S5.4.3.5(a)	**Post-Impact Release Force*** Releases ≤ 71 N	55 N	Pass
S5.4.3.5(a)	**Minimum Surface Area of Buckle** ≥ 3.9 cm² (0.6 in²)	4 cm²	Pass
S5.4.3.5(a)	**Buckle Integrity** Shall not release during testing	No Release	Pass

*Not applicable unless determined using the largest test dummy specified in S7 for use in testing the seat.

Remarks
None

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 35
SYSTEM INTEGRITY – TEST 4
(FMVSS 213, S5.1.1)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-32B
Test Date:	6 April 2018	Item Code	030-FO18U1-04-12CFNLTU

S5.1.1 When dynamically tested, the child restraint shall:

Section	Requirement	Pass / Fail
S5.1.1(a)	**Structural Integrity –** Exhibit no complete separation of any load bearing structural element	Pass
	Exhibit no partial separation with exposing surfaces with a radius of less than 9.53 mm (3/8 in.)	Pass
	Exhibit no partial separation with exposing surfaces with protrusions greater than 6.35 mm (1/4 in.)	Pass
S5.1.1(b)(1)	**Adjustment Position –** Remain in the same adjustment position during the test that it was immediately before the test	Pass
S5.1.1(b)(2)(ii)	**Exposed Openings –** Have no exposed opening larger than 6.35 mm (1/4 in.) before the test becomes smaller during the testing as a result of the movement of the seating service relative to the restraint system as a whole.	Pass
S5.1.1(c)	**Seating Surface Angle –** Forward facing restraints do not allow the angle between the system's back support surface and seating surface and seating surface to be less than 45 degrees at the completion of the test	Pass

Remarks
None

Recorded by: _____ Date: April 13, 2018
Adam Hardbattle, SLED Engineer

DATA SHEET 36
INJURY CRITERIA – TEST 4
(FMVSS 213, S5.1.2)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-32B
Test Date:	6 April 2018	Item Code	030-FO18U1-04-12CFNLTU

Section	Requirement
S5.1.2.1(a)	**Head Injury Criterion** The maximum calculated head injury criterion for a 36 millisecond time interval (HIC36) shall not exceed 1,000. HIC is not calculated when using the 6-year-old weighted and 10-year-old test dummies.
S5.1.2.1(b)	**Chest Injury Criterion** The chest acceleration shall not exceed 60g for intervals whose cumulative duration is more than 3 milliseconds

Head Injury Criterion Results

Calculated HIC36	Pass / Fail
324	Pass

Chest Injury Criterion Results

Max Acceleration lasting 3ms (g)	Pass / Fail
49	Pass

Remarks

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

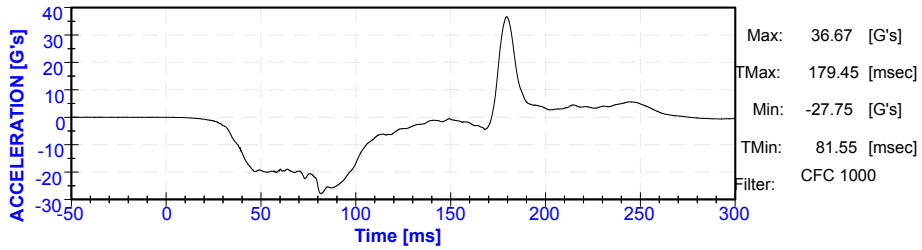
INJURY CRITERIA – HEAD ACCELERATION PLOTS – TEST 4 (FMVSS 213, S5.1.2)

Report No.:	213-CAL-18-030
Test Date:	6 April 2018
HIC 36ms	324

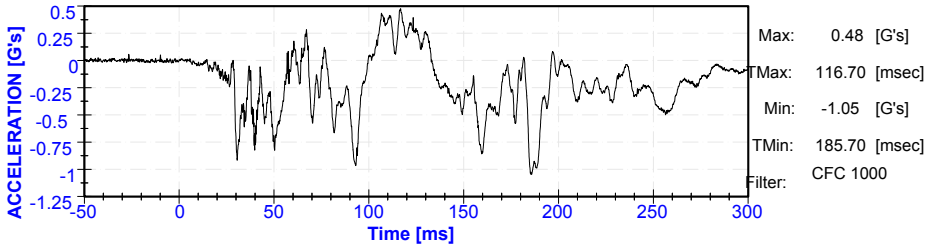
Sled Test No.	FM04-18-32B
Item Code	030-FO18U1-04-12CFNLTU
Resultant	45 g's

Calspan NHTSA FM04-18-032 Test Date: April 6,2

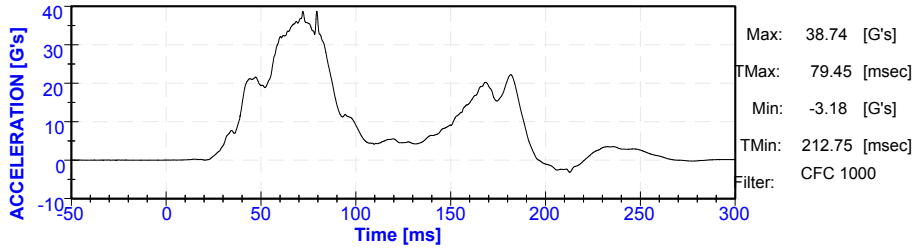
B Bench ATD Head X Acceleration



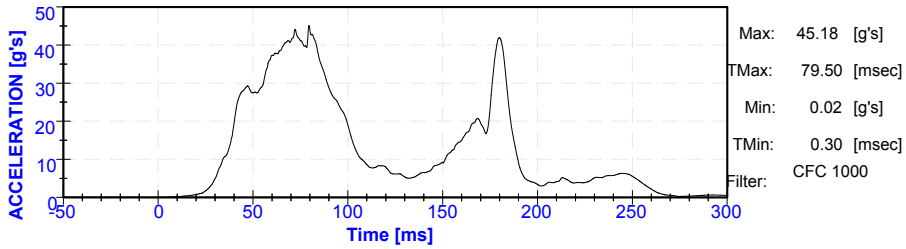
B Bench ATD Head Y Acceleration



B Bench ATD Head Z Acceleration



B Bench ATD Head Resultant Acceleration



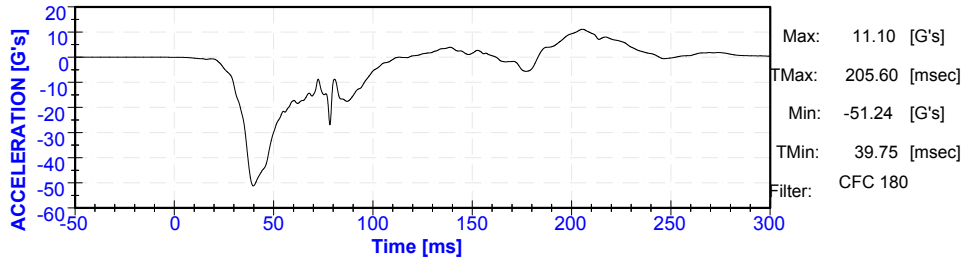
INJURY CRITERIA – CHEST ACCELERATION PLOTS – TEST 4 (FMVSS 213, S5.1.2)

Report No.:	213-CAL-18-030
Test Date:	6 April 2018
3ms Clip	49 g's

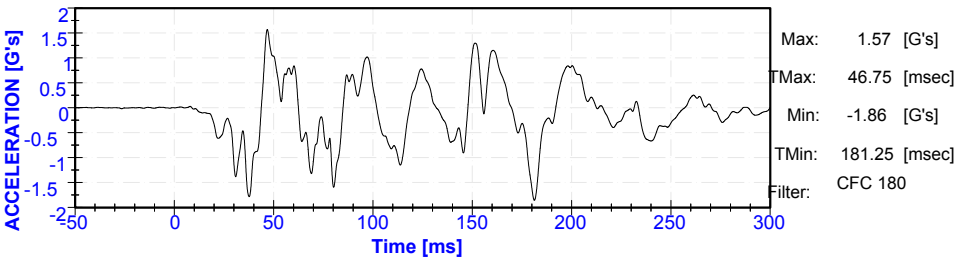
Sled Test No.	FM04-18-32B
Item Code	030-FO18U1-04-12CFNLTU
Resultant	51 g's

Calspan NHTSA FM04-18-032 Test Date: April 6,2

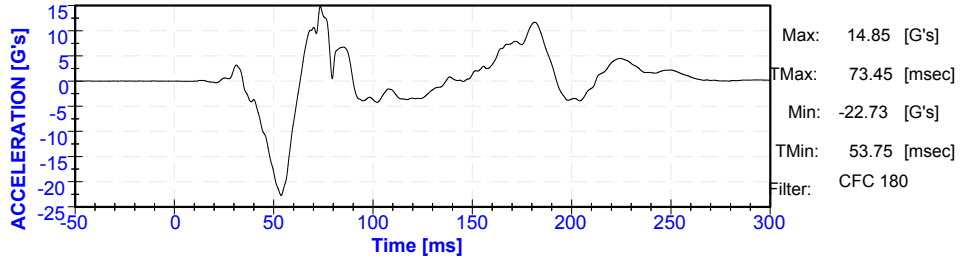
B Bench ATD Chest X Acceleration



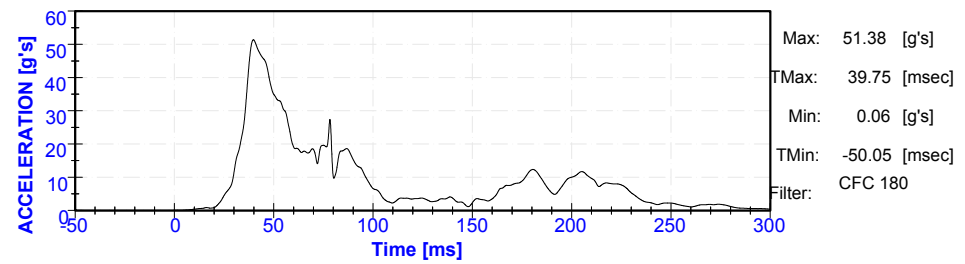
B Bench ATD Chest Y Acceleration



B Bench ATD Chest Z Acceleration



B Bench ATD Chest Resultant Acceleration



DATA SHEET 37
OCCUPANT EXCURSION – TEST 4
(FMVSS 213, S5.1.3, S5.1.4, S5.2.1.1(c))

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-32B
Test Date:	6 April 2018	Item Code	030-FO18U1-04-12CFNLTU

FORWARD-FACING RESTRAINTS

Section	Requirement	Measurement	Pass / Fail
S5.1.3.1	**Torso Retention –** CRS shall retain the torso within system		Pass
S5.1.3.1(a)(1)	**Head Excursion -** ≤ 720 mm (28.4 in.) with tether ≤ 813 mm (32 in.) No tether	512	Pass
S5.1.3.1(a)(2)	**Knee Excursion -** ≤ 91.5 cm (36 in.)	538	Pass
S5.2.1.1(c)	**Head-Torso Angle -** Rearward change ≤ 45 degrees	≤ 45°	Pass

REAR-FACING RESTRAINTS

Section	Requirement	Measurement	Pass / Fail
S5.1.3.2	**Torso Retention –** CRS shall retain the torso within system		N/A
S5.1.3.2	**Head Target Excursion –** Not beyond restraint's top and forward edge		N/A
S5.1.4	**Back Support Angle -** Angle between the back support surface and vertical ≤ 70 degrees	N/A	N/A
S5.2.1.1(c)	**Head-Torso Angle -** Rearward change ≤ 45 degrees	N/A	N/A

Remarks

Excursion camera locations (forward of Z point) are 28.4", Camera speed = 2000fps and focal length of lenses = 12.5mm

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 38
OCCUPANT EXCURSION – TEST 4
(FMVSS 213, S5.1.3.3)

CAR BED RESTRAINTS

Section	Requirement	Measurement	Pass / Fail
Head – Torso Retention (FMVSS 213, S5.1.3.3)	Retain within confines of system	N/A	N/A

Remarks

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 39
DYNAMIC IMPACT TEST CONDITIONS – TEST 5
(FMVSS 213, S6.1)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-33A
Test Date:	6 April 2018	Item Code	030-FO18U1-05-6W3FN2TU

Laboratory Ambient Conditions During Testing:

Temperature Degrees C (F)	21.4C (70.5F)
Relative Humidity %	28.9%

Pulse:

Test Configuration (I or II):	I
Velocity (km/h (mph)):	46.6 km/h (29.0 mph)

Dummy:

Dummy Description:	H3 Weighted 6 Year Old (Part 572R)
Dummy Serial Number:	163

Restraint Installation:

Installed Direction:	Forward Facing
Base Usage:	Other Configuration
Attachment Method:	Lap Belt
Tether Usage:	Top Tether
Seat Back Position:	Upright #2
Internal Shoulder Harness Position:	Slot 6, Counted from bottom up
Buckle Harness Position:	Forward

Remarks:

Pre and Post Test Photos are presented in Section 9.

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

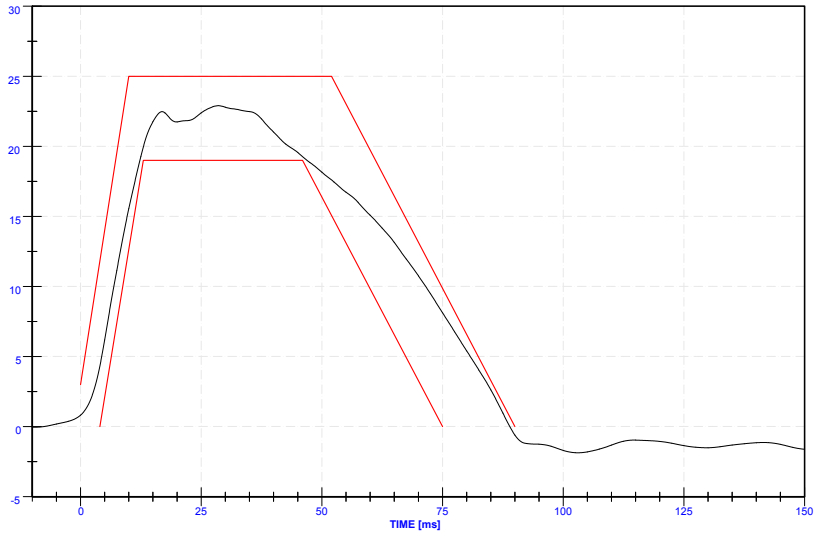
DYNAMIC IMPACT SLED PULSE – TEST 5
(FMVSS 213, S6.1)

Report No.:	213-CAL-18-030
Test Date:	6 April 2018

Sled Test No.	FM04-18-33A
Item Code	030-FO18U1-05-6W3FN2TU

Calspan NHTSA FM04-18-033 Test Date: April 6,2018

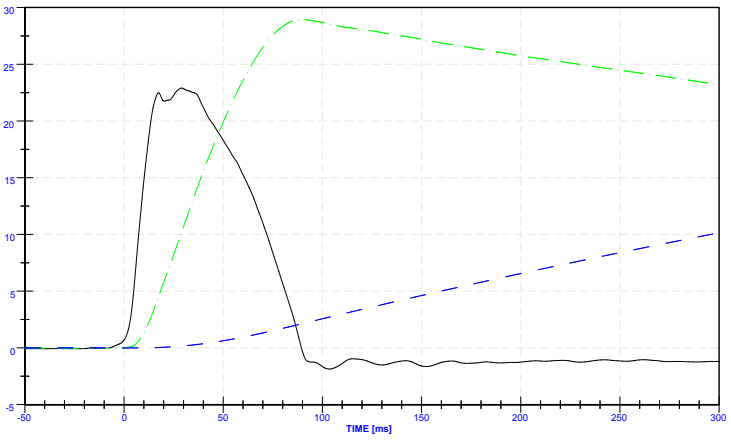
SLED Pulse Corridor



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	22.90	29.1	CFC 60	S0SLED00OR00ACXD

Calspan NHTSA FM04-18-033 Test Date: April 6,2018

SLED Pulse



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	22.90	103.5	CFC 60	S0SLED000000ACXD
SLED Velocity (mph)	28.95	-6.4	CFC 180	S0SLED000000VAXC
SLED Displacement (ft)	10.14	0.5	CFC 180	S0SLED000000DVXC

DATA SHEET 40
BELT RESTRAINT – TEST 5
(FMVSS 213, S5.4.3)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-33A
Test Date:	6 April 2018	Item Code	030-FO18U1-05-6W3FN2TU

Section	Requirement	Pass / Fail
S5.4.3.1	**Snug Fit of Belts.** Belts that are part of the restraint and designed to restrain the child are adjustable to snugly fit any child of height and weight identified by the manufacturer in accordance with the manufacturers installation instructions.	Pass

Section	Requirement	Yes / No	Pass / Fail
S5.4.3.2	**Direct Restraint.** Belts impose no loads on the child resulting from mass of the system or the test seat		Pass
	The restraint has one or more belts that contact the dummy for restraint	Yes	If all are "Yes" Restraint fails S5.4.3.2
	The restraint has a rigid structure behind the dummy	Yes	
	The restraint could move relative to the belt	No	

Section	Requirement	Pass / Fail
S5.4.3.3	**Seating Systems.** Except for harness and infant restraints for children up to 10kg (22lb), each restraint designed for a child in a seated position and having belts shall provide.	Pass
S5.4.3.3(a)	Upper torso restraint (either belts or a shield)	Pass
S5.4.3.3(b)	Lower torso restraint (either belts or a shield)	Pass
S5.4.3.3(c)	Crotch restraint (either a belt attached to the lap belt or a shield)	Pass

Section	Requirement	Pass / Fail
S5.4.3.4	**Harnesses.** Each harness shall:	N/A
S5.4.3.3(a)	Provide upper torso restraint)	N/A
S5.4.3.3(b)	Provide lower torso restraint (lap & crotch)	N/A
S5.4.3.3(c)	Prevent Standing	N/A

Remarks

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 41
BUCKLE RELEASE – TEST 5
(FMVSS 213, S5.4.3.5, S6.2)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-33A
Test Date:	6 April 2018	Item Code	030-FO18U1-05-6W3FN2TU

Section	Requirement	Measurement	Pass / Fail
S5.4.3.5(a)	**Pre-Impact Release Force** Releases under 40-60 N	53 N	Pass
S5.4.3.5(a)	**Post-Impact Release Force*** Releases ≤ 71 N	55 N	Pass
S5.4.3.5(a)	**Minimum Surface Area of Buckle** ≥ 3.9 cm² (0.6 in²)	4 cm²	Pass
S5.4.3.5(a)	**Buckle Integrity** Shall not release during testing	No Release	Pass

*Not applicable unless determined using the largest test dummy specified in S7 for use in testing the seat.

Remarks
None

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 42
SYSTEM INTEGRITY – TEST 5
(FMVSS 213, S5.1.1)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-33A
Test Date:	6 April 2018	Item Code	030-FO18U1-05-6W3FN2TU

S5.1.1 When dynamically tested, the child restraint shall:

Section	Requirement	Pass / Fail
S5.1.1(a)	**Structural Integrity –** Exhibit no complete separation of any load bearing structural element	Pass
	Exhibit no partial separation with exposing surfaces with a radius of less than 9.53 mm (3/8 in.)	Pass
	Exhibit no partial separation with exposing surfaces with protrusions greater than 6.35 mm (1/4 in.)	Pass
S5.1.1(b)(1)	**Adjustment Position –** Remain in the same adjustment position during the test that it was immediately before the test	Pass
S5.1.1(b)(2)(ii)	**Exposed Openings –** Have no exposed opening larger than 6.35 mm (1/4 in.) before the test becomes smaller during the testing as a result of the movement of the seating service relative to the restraint system as a whole.	Pass
S5.1.1(c)	**Seating Surface Angle –** Forward facing restraints do not allow the angle between the system's back support surface and seating surface and seating surface to be less than 45 degrees at the completion of the test	Pass

Remarks
None

Recorded by: _____ Date: April 13, 2018
Adam Hardbattle, SLED Engineer

DATA SHEET 43
INJURY CRITERIA – TEST 5
(FMVSS 213, S5.1.2)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-33A
Test Date:	6 April 2018	Item Code	030-FO18U1-05-6W3FN2TU

Section	Requirement
S5.1.2.1(a)	**Head Injury Criterion** The maximum calculated head injury criterion for a 36 millisecond time interval (HIC36) shall not exceed 1,000. HIC is not calculated when using the 6-year-old weighted and 10-year-old test dummies.
S5.1.2.1(b)	**Chest Injury Criterion** The chest acceleration shall not exceed 60g for intervals whose cumulative duration is more than 3 milliseconds

Head Injury Criterion Results

Calculated HIC36	Pass / Fail
N/A	N/A

Chest Injury Criterion Results

Max Acceleration lasting 3ms (g)	Pass / Fail
N/A	N/A

Remarks
Weighted H3-6YO: No Injury Criteria

Recorded by:  Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 44
OCCUPANT EXCURSION – TEST 5
(FMVSS 213, S5.1.3, S5.1.4, S5.2.1.1(c))

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-33A
Test Date:	6 April 2018	Item Code	030-FO18U1-05-6W3FN2TU

FORWARD-FACING RESTRAINTS

Section	Requirement	Measurement	Pass / Fail
S5.1.3.1	**Torso Retention –** CRS shall retain the torso within system		Pass
S5.1.3.1(a)(1)	**Head Excursion -** ≤ 720 mm (28.4 in.) with tether ≤ 813 mm (32 in.) No tether	643	Pass
S5.1.3.1(a)(2)	**Knee Excursion -** ≤ 91.5 cm (36 in.)	730	Pass
S5.2.1.1(c)	**Head-Torso Angle -** Rearward change ≤ 45 degrees	≤ 45˚	Pass

REAR-FACING RESTRAINTS

Section	Requirement	Measurement	Pass / Fail
S5.1.3.2	**Torso Retention –** CRS shall retain the torso within system		N/A
S5.1.3.2	**Head Target Excursion –** Not beyond restraint's top and forward edge		N/A
S5.1.4	**Back Support Angle -** Angle between the back support surface and vertical ≤ 70 degrees	N/A	N/A
S5.2.1.1(c)	**Head-Torso Angle -** Rearward change ≤ 45 degrees	N/A	N/A

Remarks

Excursion camera locations (forward of Z point) are 28.4", Camera speed = 2000fps and focal length of lenses = 12.5mm

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 45
OCCUPANT EXCURSION – TEST 5
(FMVSS 213, S5.1.3.3)

CAR BED RESTRAINTS

Section	Requirement	Measurement	Pass / Fail
Head – Torso Retention (FMVSS 213, S5.1.3.3)	Retain within confines of system	N/A	N/A

Remarks

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 46
DYNAMIC IMPACT TEST CONDITIONS – TEST 6
(FMVSS 213, S6.1)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-33B
Test Date:	6 April 2018	Item Code	030-FO18U1-06-6H3FN2TU

Laboratory Ambient Conditions During Testing:

Temperature Degrees C (F)	21.4C (70.5F)
Relative Humidity %	28.9%

Pulse:

Test Configuration (I or II):	I
Velocity (km/h (mph)):	46.6 km/h (29.0 mph)

Dummy:

Dummy Description:	H3 6 Year Old (Part 572R)
Dummy Serial Number:	158

Restraint Installation:

Installed Direction:	Forward Facing
Base Usage:	Other Configuration
Attachment Method:	Lap Belt
Tether Usage:	Top Tether
Seat Back Position:	Recline #2
Internal Shoulder Harness Position:	Slot 6, Counted from bottom up
Buckle Harness Position:	Forward

Remarks:

Pre and Post Test Photos are presented in Section 9.

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

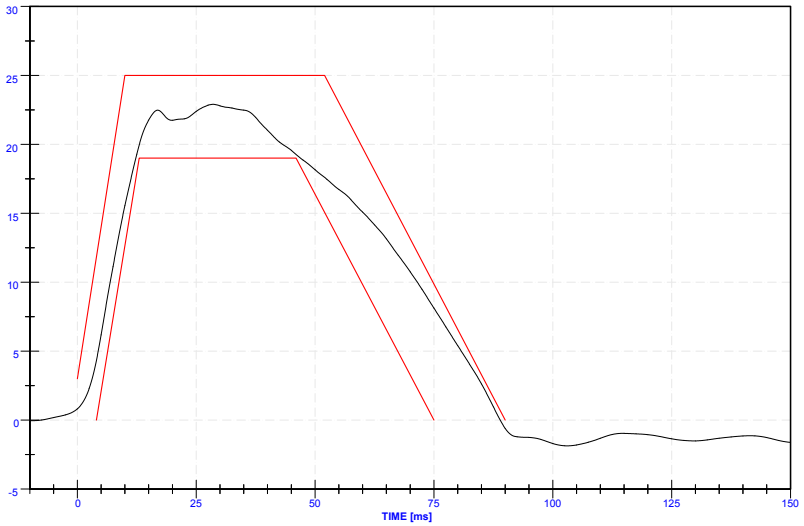
DYNAMIC IMPACT SLED PULSE – TEST 6
(FMVSS 213, S6.1)

Report No.:	213-CAL-18-030
Test Date:	6 April 2018

Sled Test No.	FM04-18-33B
Item Code	030-FO18U1-06-6H3FN2TU

Calspan NHTSA FM04-18-033 Test Date: April 6,2018

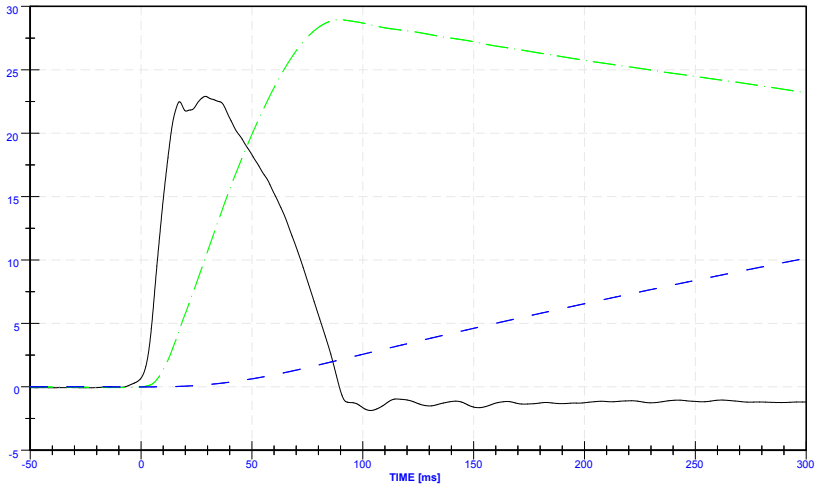
SLED Pulse Corridor



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	22.90	29.1	CFC 60	S0SLED00OR00ACXD

Calspan NHTSA FM04-18-033 Test Date: April 6,2018

SLED Pulse



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	22.90	103.5	CFC 60	S0SLED000000ACXD
SLED Velocity (mph)	28.95	-6.4	CFC 180	S0SLED000000VAXC
SLED Displacement (ft)	10.14	0.5	CFC 180	S0SLED000000DVXC

DATA SHEET 47
BELT RESTRAINT – TEST 6
(FMVSS 213, S5.4.3)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-33B
Test Date:	6 April 2018	Item Code	030-FO18U1-06-6H3FN2TU

Section	Requirement	Pass / Fail
S5.4.3.1	**Snug Fit of Belts.** Belts that are part of the restraint and designed to restrain the child are adjustable to snugly fit any child of height and weight identified by the manufacturer in accordance with the manufacturers installation instructions.	Pass

Section	Requirement	Yes / No	Pass / Fail
S5.4.3.2	**Direct Restraint.** Belts impose no loads on the child resulting from mass of the system or the test seat		Pass
	The restraint has one or more belts that contact the dummy for restraint	Yes	If all are "Yes" Restraint fails S5.4.3.2
	The restraint has a rigid structure behind the dummy	Yes	
	The restraint could move relative to the belt	No	

Section	Requirement	Pass / Fail
S5.4.3.3	**Seating Systems.** Except for harness and infant restraints for children up to 10kg (22lb), each restraint designed for a child in a seated position and having belts shall provide.	Pass
S5.4.3.3(a)	Upper torso restraint (either belts or a shield)	Pass
S5.4.3.3(b)	Lower torso restraint (either belts or a shield)	Pass
S5.4.3.3(c)	Crotch restraint (either a belt attached to the lap belt or a shield)	Pass

Section	Requirement	Pass / Fail
S5.4.3.4	**Harnesses.** Each harness shall:	N/A
S5.4.3.3(a)	Provide upper torso restraint)	N/A
S5.4.3.3(b)	Provide lower torso restraint (lap & crotch)	N/A
S5.4.3.3(c)	Prevent Standing	N/A

Remarks

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 48
BUCKLE RELEASE – TEST 6
(FMVSS 213, S5.4.3.5, S6.2)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-33B
Test Date:	6 April 2018	Item Code	030-FO18U1-06-6H3FN2TU

Section	Requirement	Measurement	Pass / Fail
S5.4.3.5(a)	**Pre-Impact Release Force** Releases under 40-60 N	56 N	Pass
S5.4.3.5(a)	**Post-Impact Release Force*** Releases ≤ 71 N	66 N	Pass
S5.4.3.5(a)	**Minimum Surface Area of Buckle** ≥ 3.9 cm² (0.6 in²)	4 cm²	Pass
S5.4.3.5(a)	**Buckle Integrity** Shall not release during testing	No Release	Pass

*Not applicable unless determined using the largest test dummy specified in S7 for use in testing the seat.

Remarks
None

Recorded by: _____ Date: April 13, 2018
Adam Hardbattle, SLED Engineer

DATA SHEET 49
SYSTEM INTEGRITY – TEST 6
(FMVSS 213, S5.1.1)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-33B
Test Date:	6 April 2018	Item Code	030-FO18U1-06-6H3FN2TU

S5.1.1 When dynamically tested, the child restraint shall:

Section	Requirement	Pass / Fail
S5.1.1(a)	**Structural Integrity –** Exhibit no complete separation of any load bearing structural element	Pass
	Exhibit no partial separation with exposing surfaces with a radius of less than 9.53 mm (3/8 in.)	Pass
	Exhibit no partial separation with exposing surfaces with protrusions greater than 6.35 mm (1/4 in.)	Pass
S5.1.1(b)(1)	**Adjustment Position –** Remain in the same adjustment position during the test that it was immediately before the test	Pass
S5.1.1(b)(2)(ii)	**Exposed Openings –** Have no exposed opening larger than 6.35 mm (1/4 in.) before the test becomes smaller during the testing as a result of the movement of the seating service relative to the restraint system as a whole.	Pass
S5.1.1(c)	**Seating Surface Angle –** Forward facing restraints do not allow the angle between the system's back support surface and seating surface and seating surface to be less than 45 degrees at the completion of the test	Pass

Remarks
None

Recorded by: _____ Date: April 13, 2018
Adam Hardbattle, SLED Engineer

DATA SHEET 50
INJURY CRITERIA – TEST 6
(FMVSS 213, S5.1.2)

Report No.:	213-CAL-18-030	Sled Test No.	FM04-18-33B
Test Date:	6 April 2018	Item Code	030-FO18U1-06-6H3FN2TU

Section	Requirement
S5.1.2.1(a)	**Head Injury Criterion** The maximum calculated head injury criterion for a 36 millisecond time interval (HIC36) shall not exceed 1,000. HIC is not calculated when using the 6-year-old weighted and 10-year-old test dummies.
S5.1.2.1(b)	**Chest Injury Criterion** The chest acceleration shall not exceed 60g for intervals whose cumulative duration is more than 3 milliseconds

Head Injury Criterion Results

Calculated HIC36	Pass / Fail
472	Pass

Chest Injury Criterion Results

Max Acceleration lasting 3ms (g)	Pass / Fail
42	Pass

Remarks
None

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

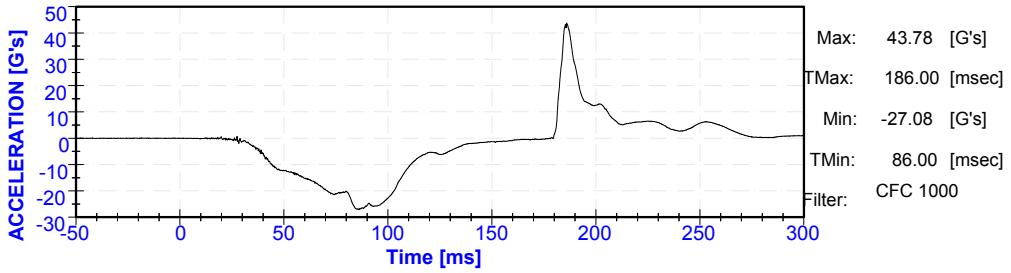
INJURY CRITERIA – HEAD ACCELERATION PLOTS – TEST 6 (FMVSS 213, S5.1.2)

Report No.:	213-CAL-18-030
Test Date:	6 April 2018
HIC 36ms	472

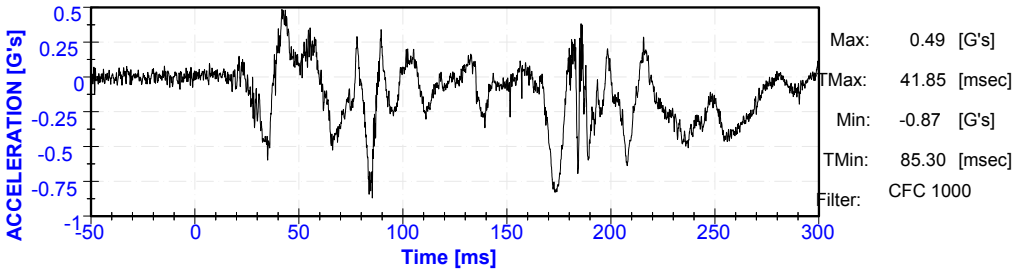
Sled Test No.	FM04-18-33B
Item Code	030-FO18U1-06-6H3FN2TU
Resultant	57 g's

Calspan NHTSA FM04-18-033 Test Date: April 6,2

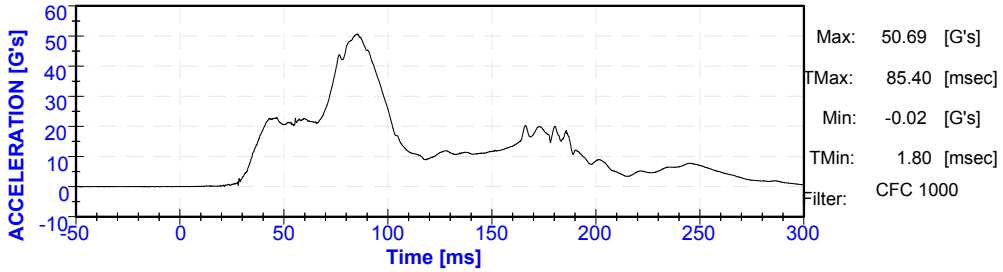
B Bench ATD Head X Acceleration



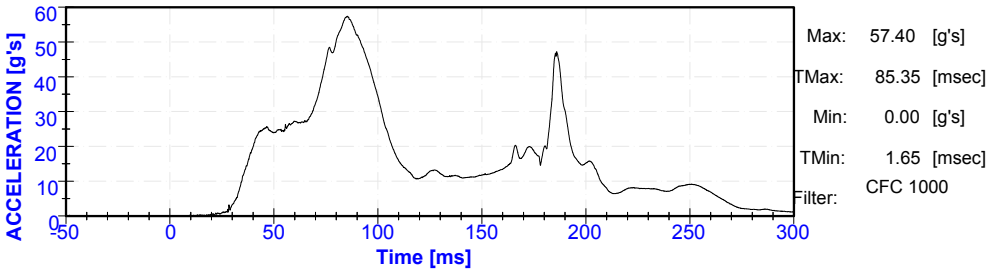
B Bench ATD Head Y Acceleration



B Bench ATD Head Z Acceleration



B Bench ATD Head Resultant Acceleration



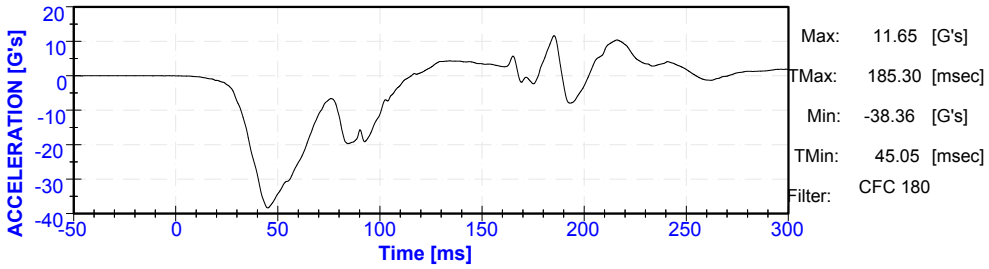
INJURY CRITERIA – CHEST ACCELERATION PLOTS – TEST 6 (FMVSS 213, S5.1.2)

Report No.:	213-CAL-18-030
Test Date:	6 April 2018
3ms Clip	42 g's

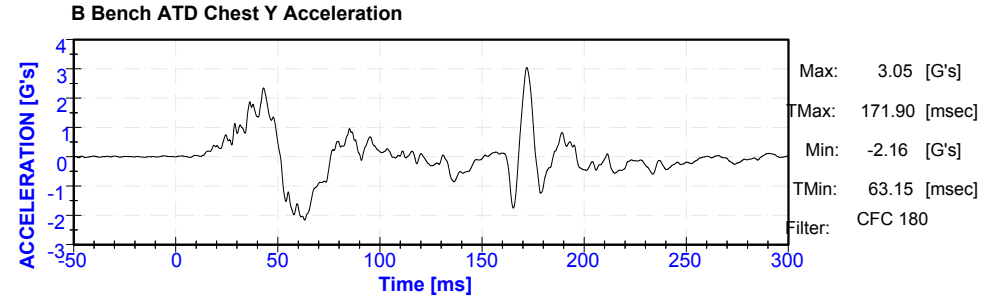
Sled Test No.	FM04-18-33B
Item Code	030-FO18U1-06-6H3FN2TU
Resultant	42 g's

Calspan NHTSA FM04-18-033 Test Date: April 6,2

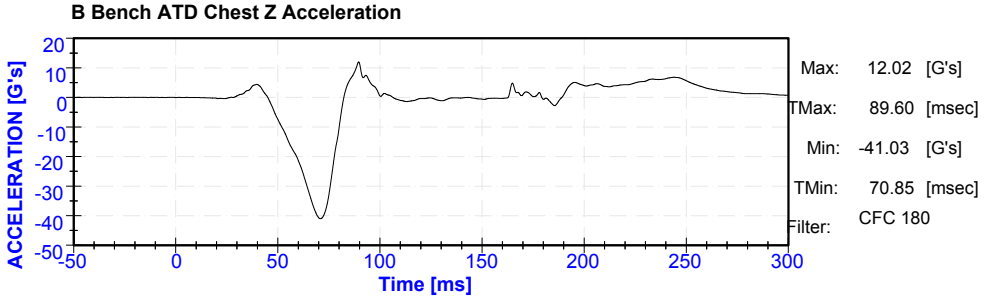
B Bench ATD Chest X Acceleration



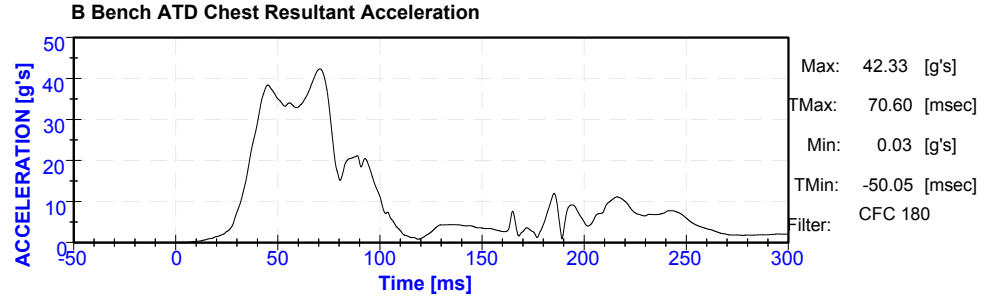
B Bench ATD Chest Y Acceleration



B Bench ATD Chest Z Acceleration



B Bench ATD Chest Resultant Acceleration



DATA SHEET 51
OCCUPANT EXCURSION – TEST 6
(FMVSS 213, S5.1.3, S5.1.4, S5.2.1.1(c))

Report No.:	213-CAL-18-03	Sled Test No.	FM04-18-33B
Test Date:	6 April 2018	Item Code	030-FO18U1-06-6H3FN2TU

FORWARD-FACING RESTRAINTS

Section	Requirement	Measurement	Pass / Fail
S5.1.3.1	**Torso Retention –** CRS shall retain the torso within system		Pass
S5.1.3.1(a)(1)	**Head Excursion -** ≤ 720 mm (28.4 in.) with tether ≤ 813 mm (32 in.) No tether	615	Pass
S5.1.3.1(a)(2)	**Knee Excursion -** ≤ 91.5 cm (36 in.)	721	Pass
S5.2.1.1(c)	**Head-Torso Angle -** Rearward change ≤ 45 degrees	≤ 45°	Pass

REAR-FACING RESTRAINTS

Section	Requirement	Measurement	Pass / Fail
S5.1.3.2	**Torso Retention –** CRS shall retain the torso within system		N/A
S5.1.3.2	**Head Target Excursion –** Not beyond restraint's top and forward edge		N/A
S5.1.4	**Back Support Angle -** Angle between the back support surface and vertical ≤ 70 degrees	N/A	N/A
S5.2.1.1(c)	**Head-Torso Angle -** Rearward change ≤ 45 degrees	N/A	N/A

Remarks

Excursion camera locations (forward of Z point) are 28.4", Camera speed = 2000fps and focal length of lenses = 12.5mm

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 52
OCCUPANT EXCURSION – TEST 6
(FMVSS 213, S5.1.3.3)

CAR BED RESTRAINTS

Section	Requirement	Measurement	Pass / Fail
Head – Torso Retention (FMVSS 213, S5.1.3.3)	Retain within confines of system	N/A	N/A

Remarks

Recorded by: _____ Date: April 13, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 53
AIRCRAFT PASSENGER SEAT INVERSION – TEST A
(FMVSS 213, S8.2, S8.2.5, S8.2.6)

Report No.:	213-CAL-18-030
Test Date:	11 April 2018

Test No.	FM04-18-34
Item Code	030-FO18U1-Inv01-NINRN2FR

Laboratory Ambient Conditions During Testing:

Temperature Degrees C (F)	21.9C (71.4F)
Relative Humidity %	20.7%

Dummy:

Dummy Description:	CAMI Newborn (Part 572R)
Dummy Serial Number:	032

Restraint Installation:

Installed Direction:	Rearward Facing
Base Usage:	Use of *Required* wedge
Attachment Method	Lap belt
Tether Usage	No
Seat Back Position:	Recline #3
Internal Harness Shoulder Strap Position:	Slot 1, Counted from bottom up
Internal Harness Crotch Strap Position:	Rearward and short

Rotation About Y-Axis (Forward):

Section	Requirement	Pass/Fail
S8.2.5	The test dummy shall be retained within the CRS	Pass
S8.2.5	The CRS shall be restrained within the aircraft seat	Pass

Rotation About X-Axis (Lateral):

Section	Requirement	Pass/Fail
S8.2.6	The test dummy shall be retained within the CRS	Pass
S8.2.6	The CRS shall be restrained within the aircraft seat	Pass

Remarks:

None

Recorded by:  Date: April 11, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 54
AIRCRAFT PASSENGER SEAT INVERSION - TEST B
(FMVSS 213, S8.2, S8.2.5, S8.2.6)

Report No.:	213-CAL-18-030
Test Date:	11 April 2018

Test No.	FM04-18-35
Item Code	030-FO18U1-Inv02-12CFN2FU

Laboratory Ambient Conditions During Testing:

Temperature Degrees C (F)	21.0C (69.8F)
Relative Humidity %	21.6%

Dummy:

Dummy Description:	CRABI 12 Month Old (Part 572R)
Dummy Serial Number:	085

Restraint Installation:

Installed Direction:	Forward Facing
Base Usage:	No
Attachment Method	Lap belt
Tether Usage	No
Seat Back Position:	Recline #2
Internal Harness Shoulder Strap Position:	Slot 4, Counted from bottom up
Internal Harness Crotch Strap Position:	Forward-Long

Rotation About Y-Axis (Forward):

Section	Requirement	Pass/Fail
S8.2.5	The test dummy shall be retained within the CRS	Pass
S8.2.5	The CRS shall be restrained within the aircraft seat	Pass

Rotation About X-Axis (Lateral):

Section	Requirement	Pass/Fail
S8.2.6	The test dummy shall be retained within the CRS	Pass
S8.2.6	The CRS shall be restrained within the aircraft seat	Pass

Remarks:

None

Recorded by:  Date: April 11, 2018

Adam Hardbattle, SLED Engineer

DATA SHEET 55
AIRCRAFT PASSENGER SEAT INVERSION - TEST C
(FMVSS 213, S8.2, S8.2.5, S8.2.6)

Report No.:	213-CAL-18-030
Test Date:	11 April 2018

Test No.	FM04-18-36
Item Code	030-FO18U1-Inv03-3H3FN2FU

Laboratory Ambient Conditions During Testing:

Temperature Degrees C (F)	21.6C (70.9F)
Relative Humidity %	21.3%

Dummy:

Dummy Description:	H3 3 Year Old (Part 572R)
Dummy Serial Number:	034

Restraint Installation:

Installed Direction:	Forward Facing
Base Usage:	N/A
Attachment Method	Lap belt
Tether Usage	No
Seat Back Position:	Recline #2
Internal Harness Shoulder Strap Position:	Slot 5, Counted from bottom up
Internal Harness Crotch Strap Position:	Forward-Long

Rotation About Y-Axis (Forward):

Section	Requirement	Pass/Fail
S8.2.5	The test dummy shall be retained within the CRS	Pass
S8.2.5	The CRS shall be restrained within the aircraft seat	Pass

Rotation About X-Axis (Lateral):

Section	Requirement	Pass/Fail
S8.2.6	The test dummy shall be retained within the CRS	Pass
S8.2.6	The CRS shall be restrained within the aircraft seat	Pass

Remarks:

None

Recorded by:  Date: April 11, 2018

Adam Hardbattle, SLED Engineer

SECTION 6

INTERPRETATION AND/OR DEVIATIONS FROM FMVSS 213

There were no deviations from FMVSS 213

SECTION 7
TEST CONFIGURATION CODES

The following table explains the code used to describe the test configurations in this report. For example, the test configuration code 12CFNLFU indicates that the child restraint sled test was conducted using a 12-month old CRABI dummy, installed in the forward facing direction with no optional base, the latch system, no tether, and in the upright position.

Dummy Description	NIN – Newborn Infant
	3H3 – 3 YO, Hybrid III
	12C -12 MO, CRABI
	6H2 – 6YO Hybrid II
	6H3 – 6YO, Hybrid III
	6W3 – 6 YO, Weighted Hybrid III
	10H3 – 10YO, Hybrid III
Installed Direction	R – Rear Facing
	F – Forward Facing
	S- Faces Sideways (applies to carbeds)
Base Usage	B – Optional base used with CRS
	N – All other configurations
Attachment Method	L – Lower anchors
	2 – Lap belt
	3 – Lap & shoulder belt
	M – Seat back mount
Tether Usage	T – Tether
	F – Tether Free
Seat Back Position	U – Upright
	R – Reclined
	N – Not Applicable

SECTION 8
INSTRUMENTATION CALIBRATION

Sled and Facility Calibrations

Instrument	*Serial Number*	*Certification Test*	*Calibration Date*	*Due Date*
KT Minidau Unit #1	ESL 400186	All	5/12/2017	5/11/2018
Temp and Humidity Recorder Onset HOBO	ESL 400632	All	11/14/2017	11/13/2018
Digital Angle Gauge Digi-Pas	ESL 400482	All	9/12/2017	9/11/2018
Bosch/Kent Moore Belt Tension Gauge +/- 1 lb.	ESL 400415	All	1/10/2018	7/9/2018
Bosch/Kent Moore Belt Tension Gauge +/- 1 lb..	ESL 400943	All	1/10/2018	7/9/2018
Imada Force Gauge Model DPSH-440R	ESL 400931	All	3/06/2018	3/05/2019
Imada Force Gauge Model DS2-110	ESL 400368	All	7/25/2017	7/24/2018
Imada Force Gauge Model ZTS-550	ESL 400474	All	8/18/2017	8/17/2018
Proto Torque Wrench	ESL 400460	All	7/11/2017	7/10/2018
Sled Primary x Accelerometer Endevco	AC-10302	All	1/22/2018	7/21/2018
Sled Secondary X Endevco 7264	AC-P69795	All	1/22/2018	7/21/2018
Sled Secondary Y Endevco 7264	AC-P69794	All	1/22/2018	7/21/2018
Sled Secondary Z Endevco 7264	AC-P71301	All	1/22/2018	7/21/2018

ATD Calibrations

Instrument	*Serial Number*	*Certification Test*	*Calibration Date*	*Due Date*
NewBorn	032	ATD	NA	NA

Instrument	*Serial Number*	*Certification Test*	*Calibration Date*	*Due Date*
12 Month CRABI	85	ATD	2/28/2018	4/28/2018
Instrument	***Serial Number***	***Certification Test***	***Calibration Date***	***Due Date***
Head X Accelerometer Endevco 7264	AC-P83422	ATD	10/26/2017	4/25/2018
Head Y Accelerometer Endevco 7264	AC-P84349	ATD	10/26/2017	4/25/2018
Head Z Accelerometer Endevco 7264	AC-P82321	ATD	10/26/2017	4/25/2018
Chest X Accelerometer Endevco 7264	AC-P74971	ATD	10/26/2017	4/25/2018
Chest Y Accelerometer Endevco 7264	AC-P74780	ATD	10/26/2017	4/25/2018
Chest Z Accelerometer Endevco 7264	AC-P52158	ATD	10/26/2017	4/25/2018

Instrument	*Serial Number*	*Certification Test*	*Calibration Date*	*Due Date*
3 year old Hybrid 3	034	ATD	1/04/2018	4/28/2018
Instrument	***Serial Number***	***Certification Test***	***Calibration Date***	***Due Date***
Head X Accelerometer Endevco 7264	AC-P51732	ATD	2/12/2018	8/11/2018
Head Y Accelerometer Endevco 7264	AC-P77601	ATD	2/12/2018	8/11/2018
Head Z Accelerometer Endevco 7264	AC-P64084	ATD	2/12/2018	8/11/2018
Chest X Accelerometer Endevco 7264	AC-P51874	ATD	2/12/2018	8/11/2018
Chest Y Accelerometer Endevco 7264	AC-P74969	ATD	2/12/2018	8/11/2018
Chest Z Accelerometer Endevco 7264	AC-P58862	ATD	2/12/2018	8/11/2018

Instrument	***Serial Number***	***Certification Test***	***Calibration Date***	***Due Date***
6 year old Hybrid 3	158	ATD	1/11/2018	4/28/2018
Instrument	***Serial Number***	***Certification Test***	***Calibration Date***	***Due Date***
Head X Accelerometer Endevco 7264	AC-P52128	ATD	10/16/2017	4/15/2018
Head Y Accelerometer Endevco 7264	AC-P83340	ATD	10/26/2017	4/25/2018
Head Z Accelerometer Endevco 7264	AC-P51684	ATD	10/16/2017	4/15/2018
Chest X Accelerometer Endevco 7264	AC-P51878	ATD	10/25/2017	4/24/2018
Chest Y Accelerometer Endevco 7264	AC-P63954	ATD	10/25/2017	4/24/2018
Chest Z Accelerometer Endevco 7264	AC-P74950	ATD	10/26/2017	4/25/2018

Instrument	***Serial Number***	***Certification Test***	***Calibration Date***	***Due Date***
6 year old Weighted Hybrid 3	163	ATD	1/22/2018	4/27/2018

Bench Foam Calibrations

Test #	Calibration	Bottom 2”	Bottom 4”	Back 2”	Back 4”
FM04-18-31A	**Pre**	C153-2x20 53.9 lbs	T50-4x20 26.2 lbs	H71-2x24 52.8 lbs	S22-4x24 26.6 lbs
	Post	C153-2x20 53.5 lbs	T50-4x20 25.4 lbs	H71-2x24 52.5 lbs	S22-4x24 25.7 lbs
FM04-18-31B	**Pre**	C176-2x20 53.2 lbs	T55-4x20 26.1 lbs	H90-2x24 51.5 lbs	S28-4x24 24.1 lbs
	Post	C176-2x20 54.5 lbs	T55-4x20 25.2 lbs	H90-2x24 52.4 lbs	S28-4x24 25.3 lbs
FM04-18-32A	**Pre**	C171-2x20 51.8 lbs	T53-4x20 25.7 lbs	H89-2x24 53.6 lbs	S31-4x24 25.8 lbs
	Post	C171-2x20 53.3 lbs	T53-4x20 26.7 lbs	H89-2x24 54.5 lbs	S31-4x24 25.6 lbs
FM04-18-32B	**Pre**	C144-2x20 53.9 lbs	T45-4x20 26.8 lbs	H80-2x24 49.1 lbs	S21-4x24 26.3 lbs
	Post	C144-2x20 53.5 lbs	T45-4x20 26.7 lbs	H80-2x24 49.4 lbs	S21-4x24 26.0 lbs
FM04-18-33A	**Pre**	C140-2x20 53.8 lbs	T40-4x20 26.8 lbs	H72-2x24 53.5 lbs	S22-4x24 26.3 lbs
	Post	C140-2x20 53.3 lbs	T40-4x20 24.6 lbs	H72-2x24 54.1 lbs	S22-4x24 25.7 lbs
FM04-18-33B	**Pre**	C173-2x20 52.2 lbs	T52-4x20 26.3 lbs	H87-2x24 52.0 lbs	S27-4x24 24.9 lbs
	Post	C173-2x20 53.8 lbs	T52-4x20 25.7 lbs	H87-2x24 53.7 lbs	S27-4x24 25.6 lbs

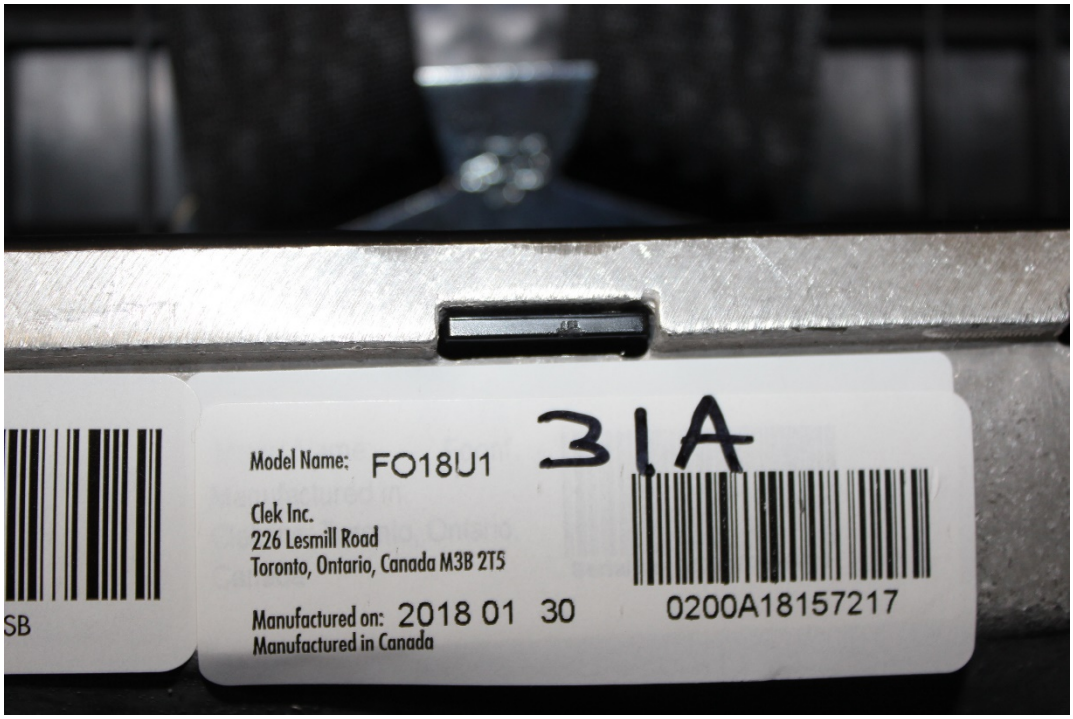
Section 9
PHOTOGRAPHS

Sled Photos

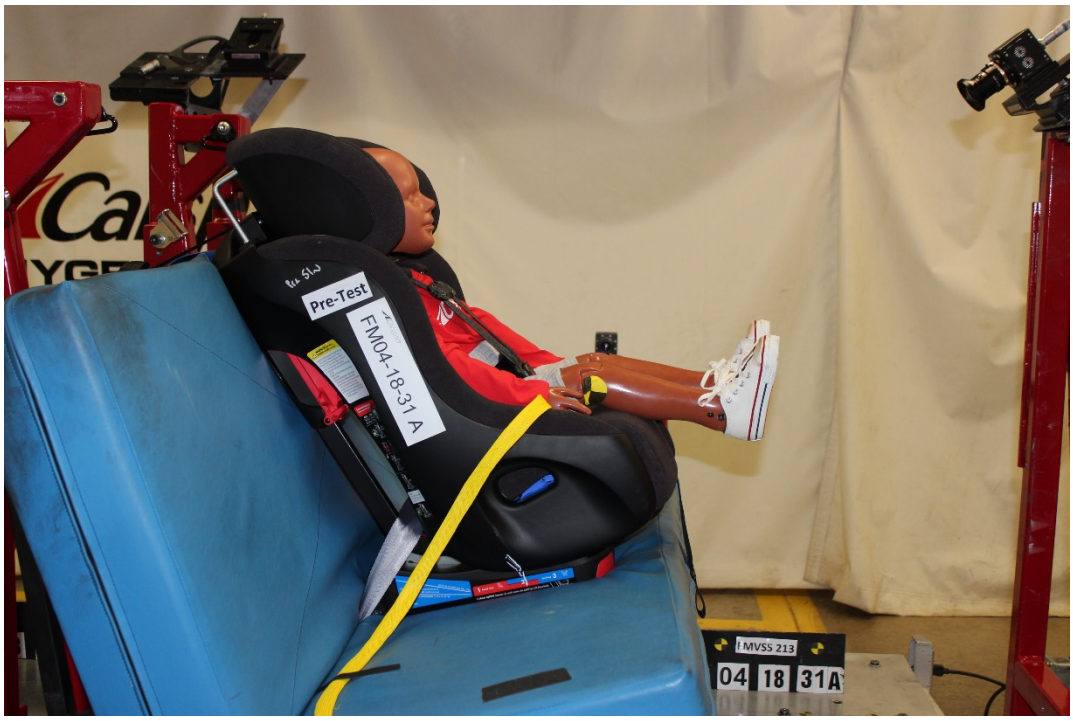
Sled Buck – Standard Bench Seat and Configuration 213-CAL-18-030	
030-FO18U1-01-3H3FN2TU	030-FO18U1-02-12CRNLFR
030-FO18U1-03-3H3FNLTU	030-FO18U1-04-12CFNLTU
030-FO18U1-05-6W3FN2TU	030-FO18U1-06-6H3FN2TU

Dynamic Test Photos

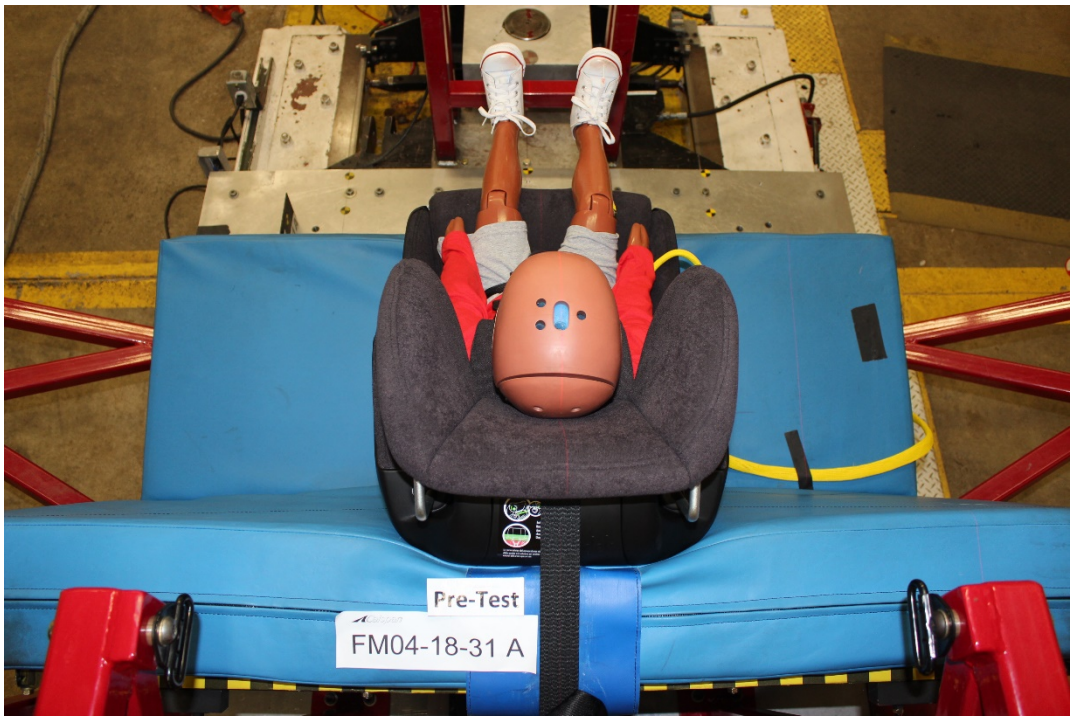
030-FO18U1-01-3H3FN2TU Pre Test	213-CAL-18-030 FM04-18-31A



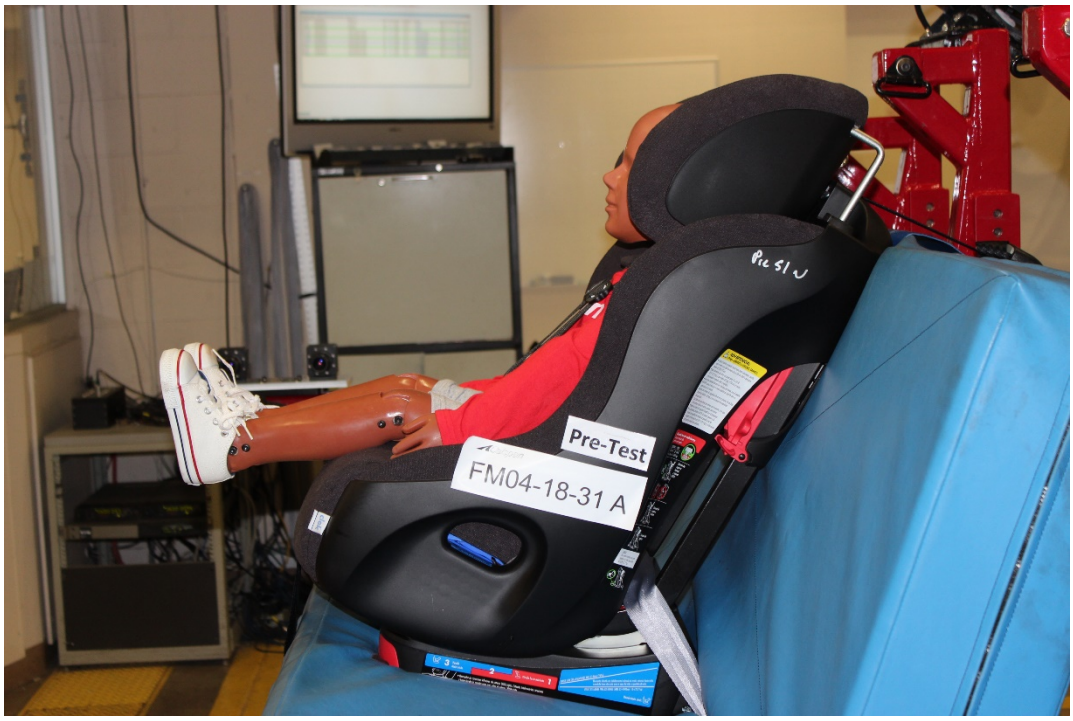
030-FO18U1-01-3H3FN2TU Pre Test	213-CAL-18-030 FM04-18-31A



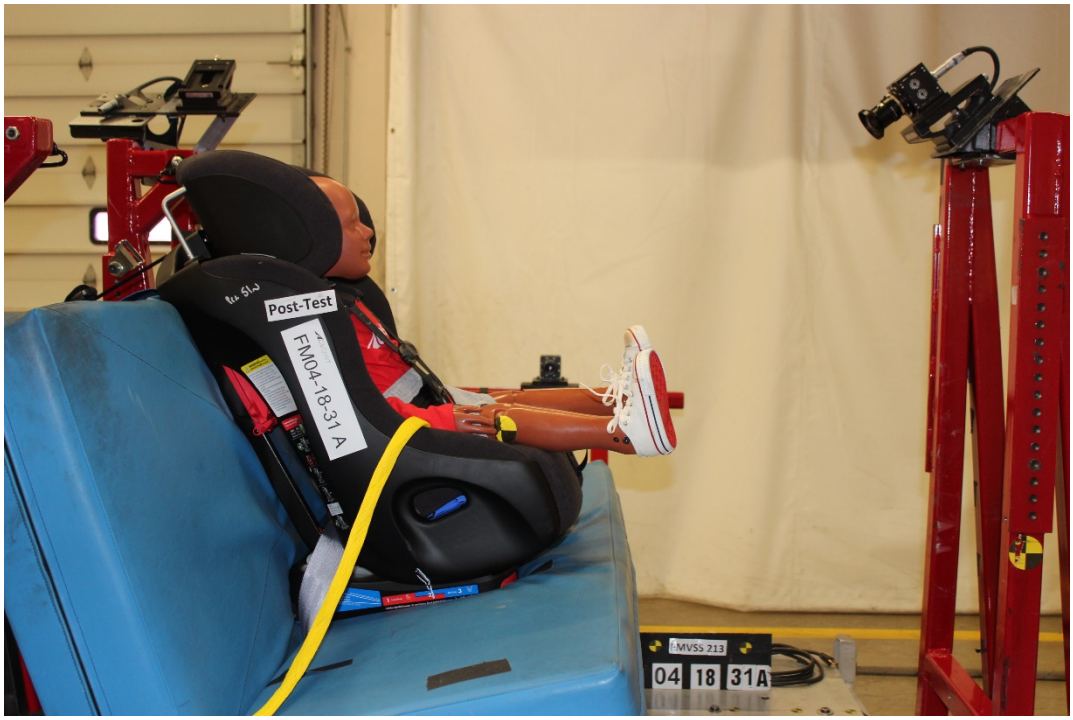
030-FO18U1-01-3H3FN2TU Pre Test	213-CAL-18-030 FM04-18-31A



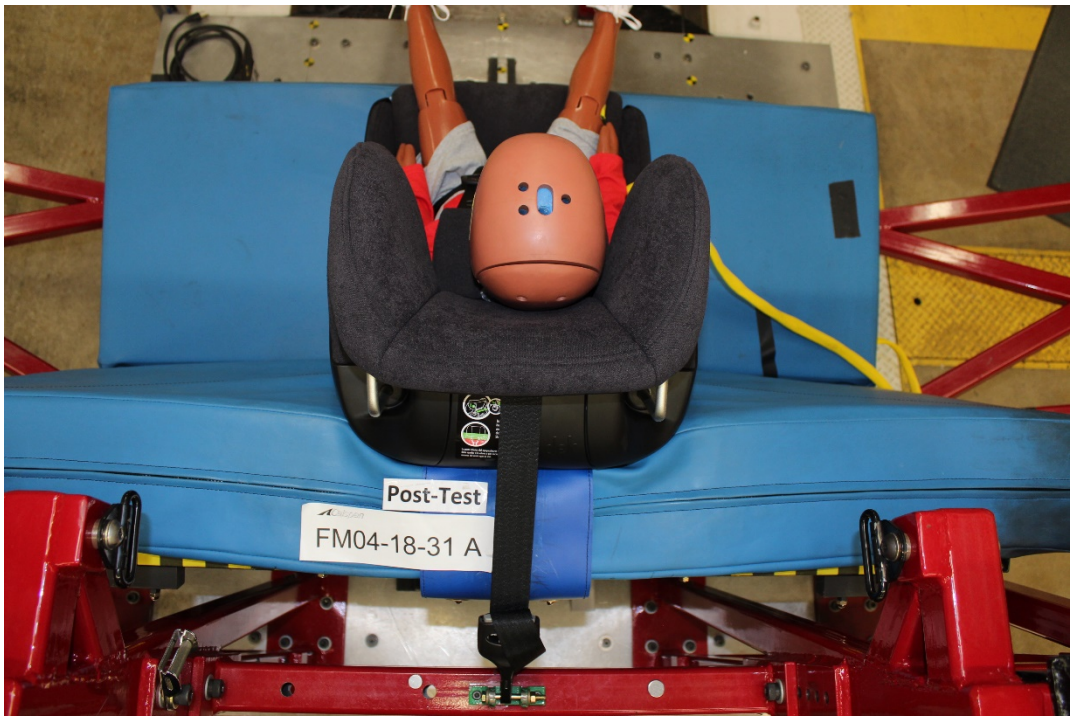
030-FO18U1-01-3H3FN2TU Pre Test	213-CAL-18-030 FM04-18-31A



030-FO18U1-01-3H3FN2TU Post Test	213-CAL-18-030 FM04-18-31A



030-FO18U1-01-3H3FN2TU Post Test	213-CAL-18-030 FM04-18-31A

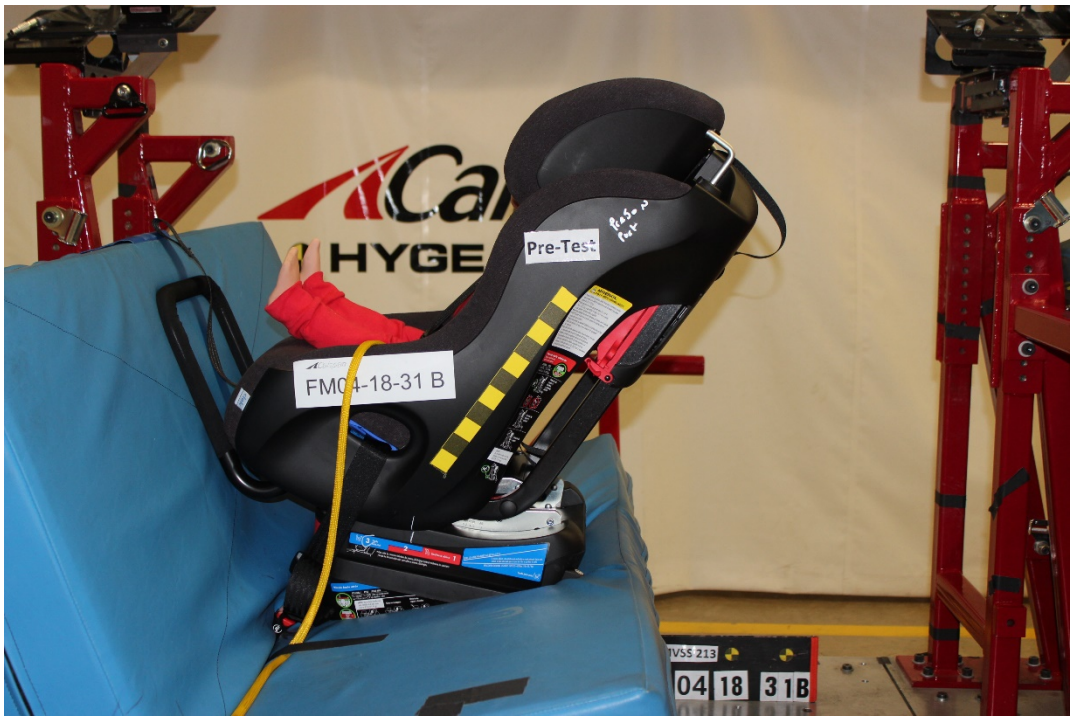


030-FO18U1-01-3H3FN2TU Post Test	213-CAL-18-030 FM04-18-31A

Dynamic Test Photos

030-FO18U1-02-12CRNLFR Pre Test	213-CAL-18-030 FM04-18-31B

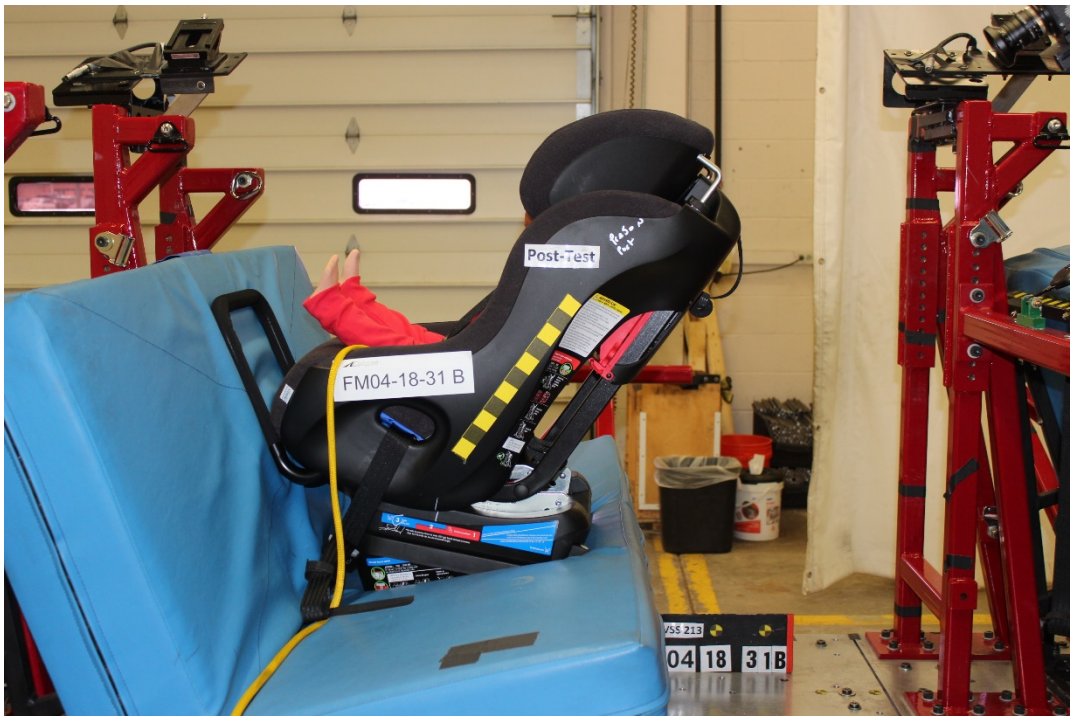
030-FO18U1-02-12CRNLFR Pre Test	213-CAL-18-030 FM04-18-31B



030-FO18U1-02-12CRNLFR Pre Test	213-CAL-18-030 FM04-18-31B

030-FO18U1-02-12CRNLFR Pre Test	213-CAL-18-030 FM04-18-31B

030-FO18U1-02-12CRNLFR Post Test	213-CAL-18-030 FM04-18-31B

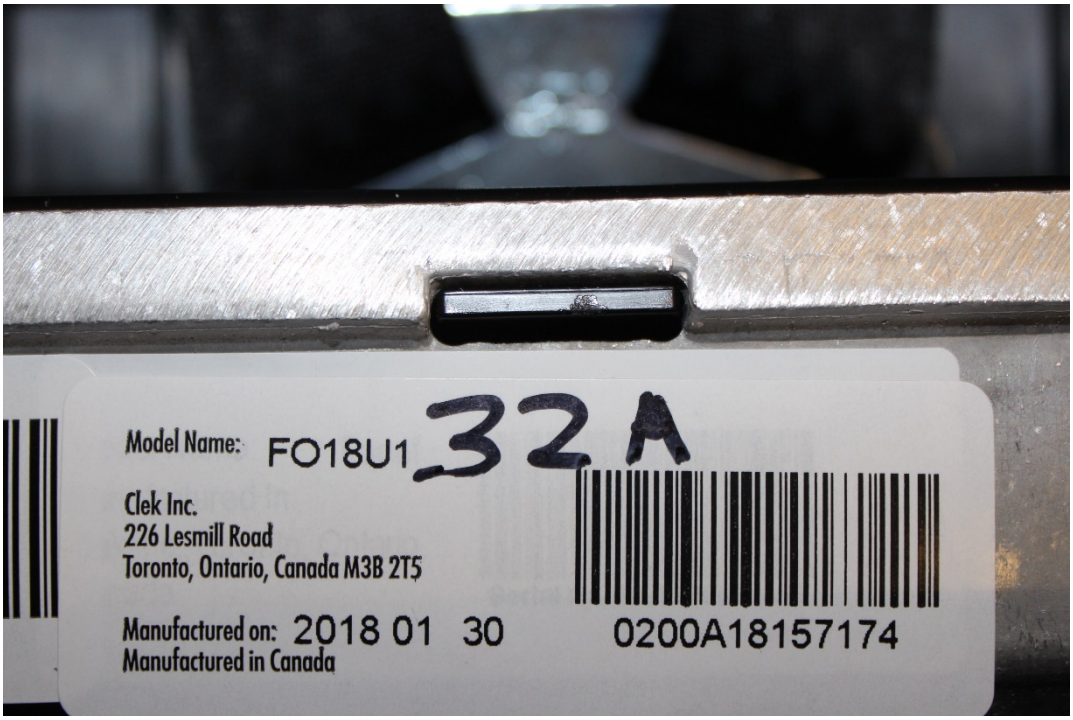


030-FO18U1-02-12CRNLFR Post Test	213-CAL-18-030 FM04-18-31B

030-FO18U1-02-12CRNLFR Post Test	213-CAL-18-030 FM04-18-31B

Dynamic Test Photos

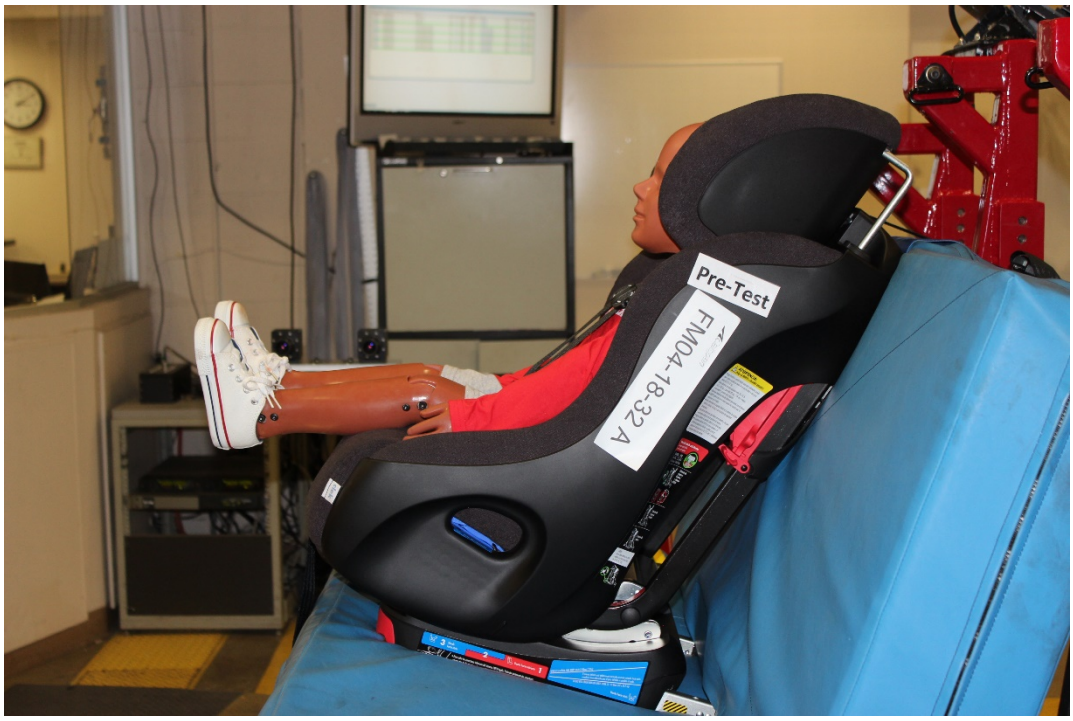
030-FO18U1-03-3H3FNLTU Pre Test	213-CAL-18-030 FM04-18-32A



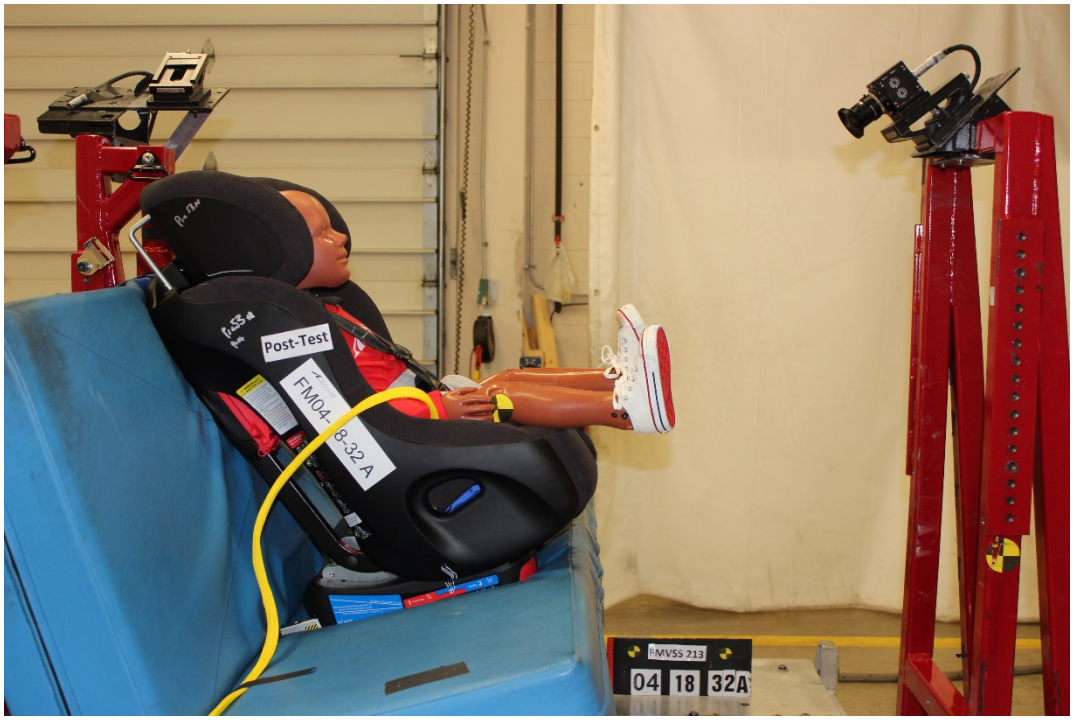
030-FO18U1-03-3H3FNLTU Pre Test	213-CAL-18-030 FM04-18-32A

030-FO18U1-03-3H3FNLTU Pre Test	213-CAL-18-030 FM04-18-32A

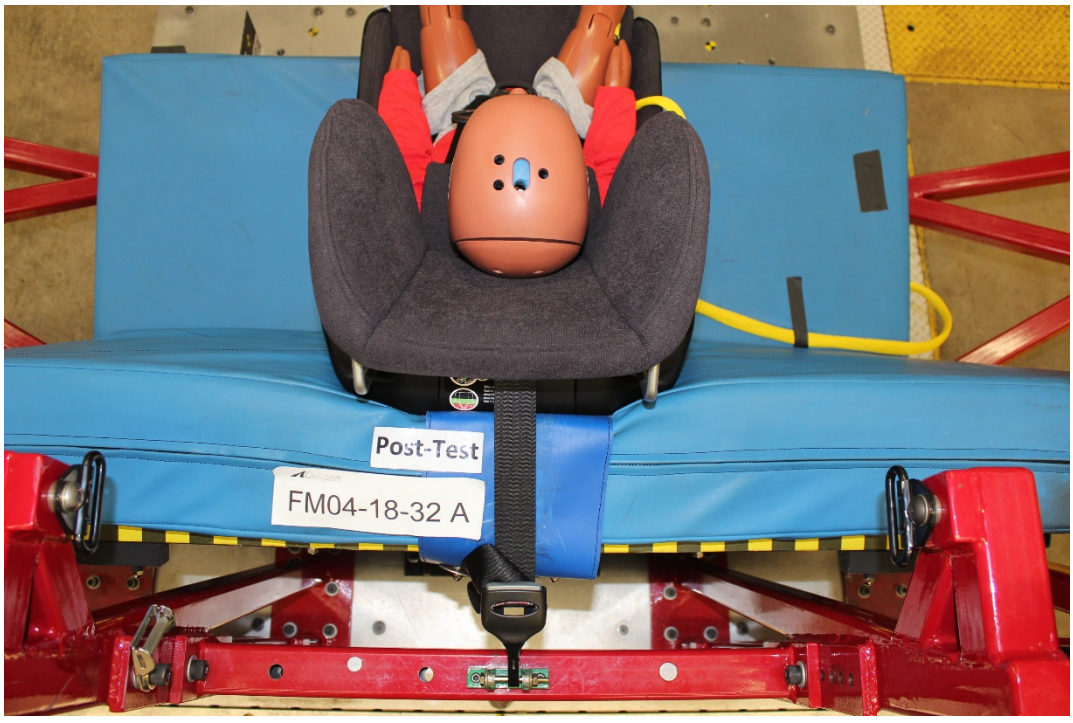
030-FO18U1-03-3H3FNLTU Pre Test	213-CAL-18-030 FM04-18-32A



030-FO18U1-03-3H3FNLTU Post Test	213-CAL-18-030 FM04-18-32A



030-FO18U1-03-3H3FNLTU Post Test	213-CAL-18-030 FM04-18-32A



030-FO18U1-03-3H3FNLTU Post Test	213-CAL-18-030 FM04-18-32A

Dynamic Test Photos

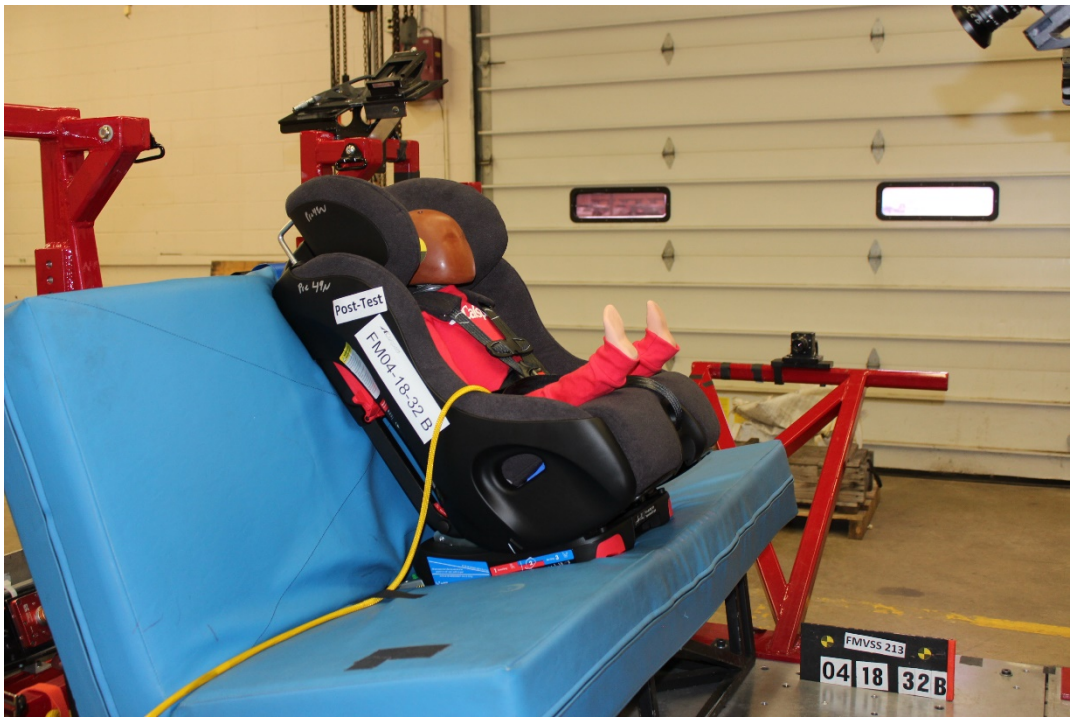
030-FO18U1-04-12CFNLTU Pre Test	213-CAL-18-030 FM04-18-32B

030-FO18U1-04-12CFNLTU Pre Test	213-CAL-18-030 FM04-18-32B

030-FO18U1-04-12CFNLTU Pre Test	213-CAL-18-030 FM04-18-32B

030-FO18U1-04-12CFNLTU Pre Test	213-CAL-18-030 FM04-18-32B

030-FO18U1-04-12CFNLTU Post Test	213-CAL-18-030 FM04-18-32B



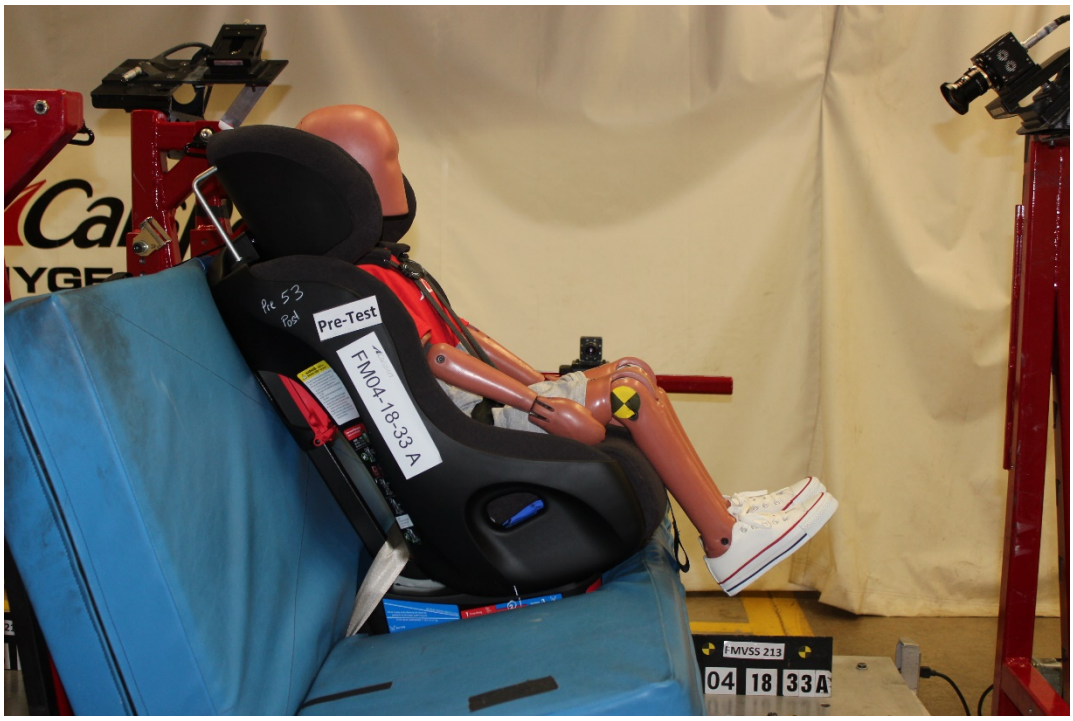
030-FO18U1-04-12CFNLTU Post Test	213-CAL-18-030 FM04-18-32B

030-FO18U1-04-12CFNLTU Post Test	213-CAL-18-030 FM04-18-32B

Dynamic Test Photos

030-FO18U1-05-6W3FN2TU Pre Test	213-CAL-18-030 FM04-18-33A

030-FO18U1-05-6W3FN2TU Pre Test	213-CAL-18-030 FM04-18-33A



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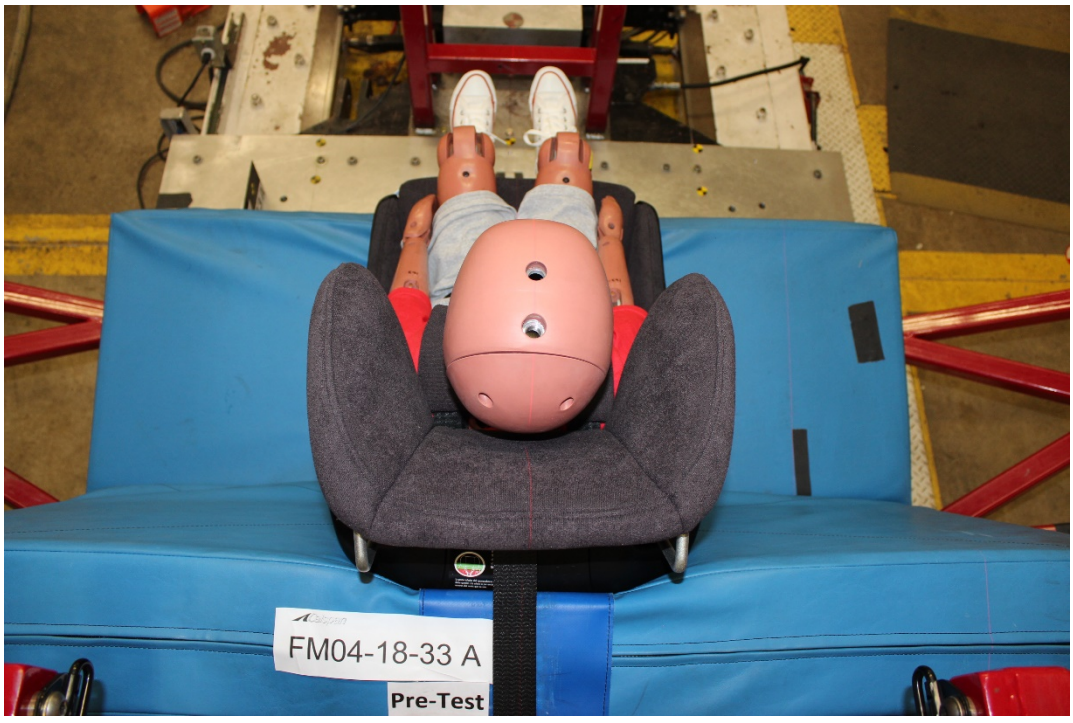

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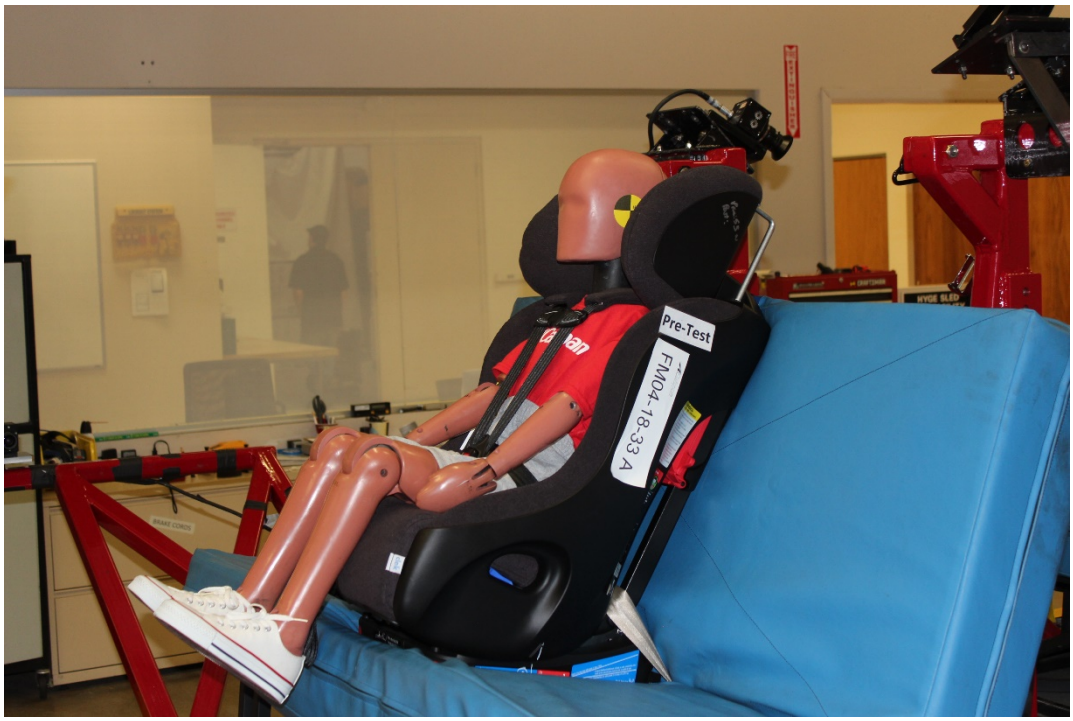
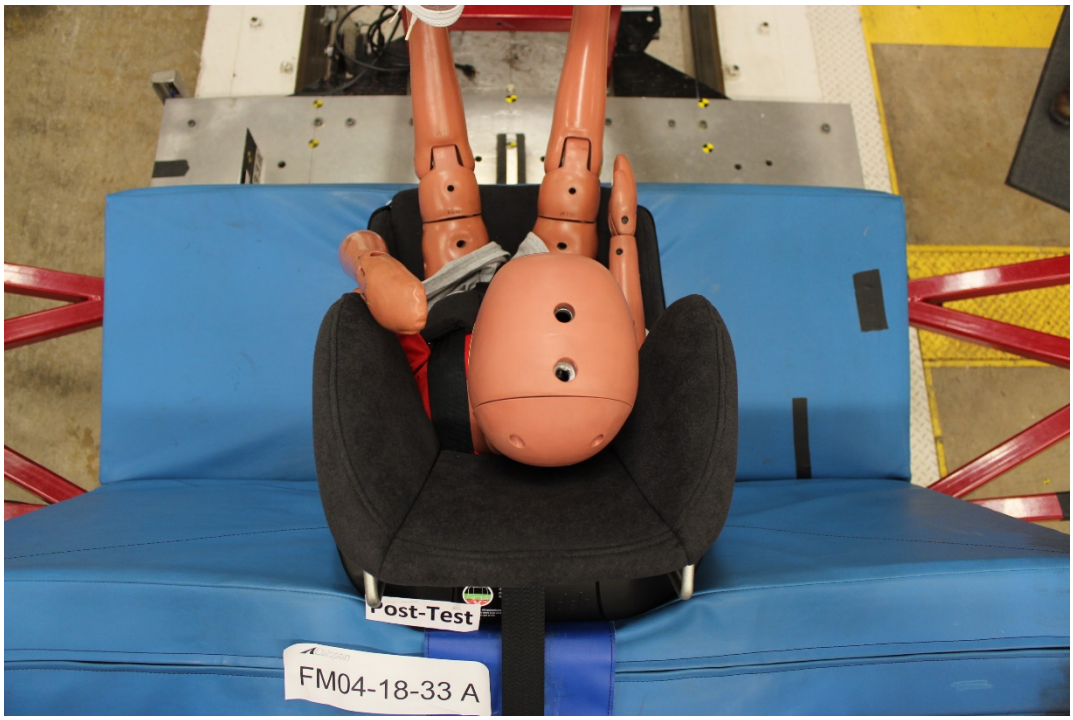


030-FO18U1-05-6W3FN2TU Post Test	213-CAL-18-030 FM04-18-33A

030-FO18U1-05-6W3FN2TU Post Test	213-CAL-18-030 FM04-18-33A



030-FO18U1-05-6W3FN2TU Post Test	213-CAL-18-030 FM04-18-33A

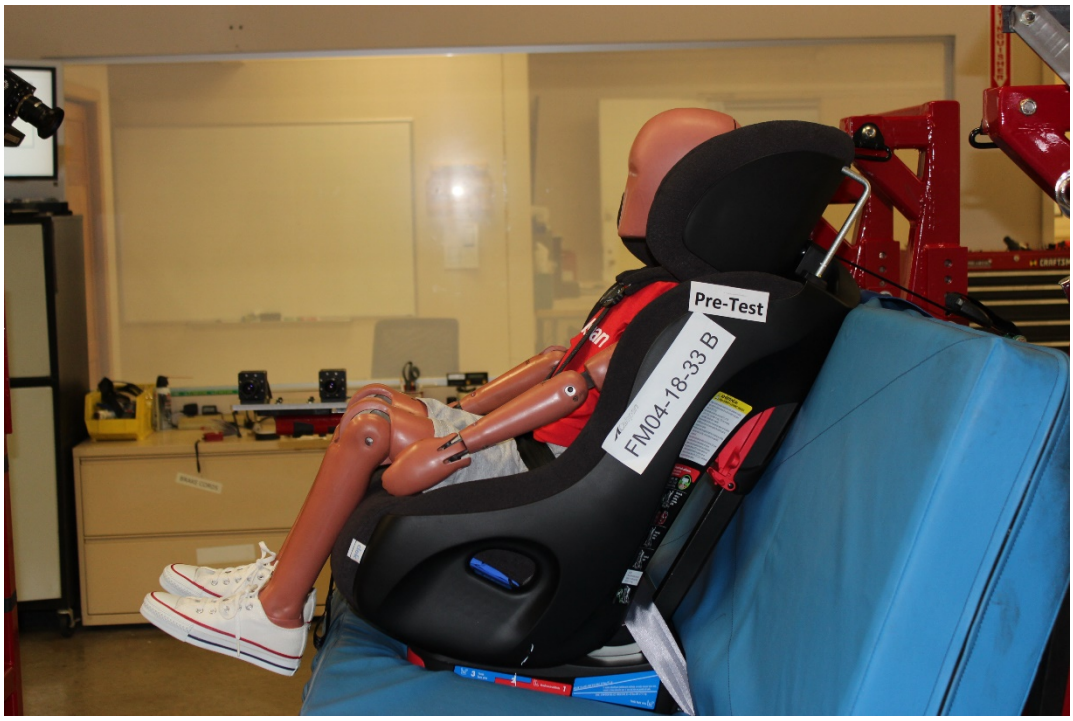
Dynamic Test Photos

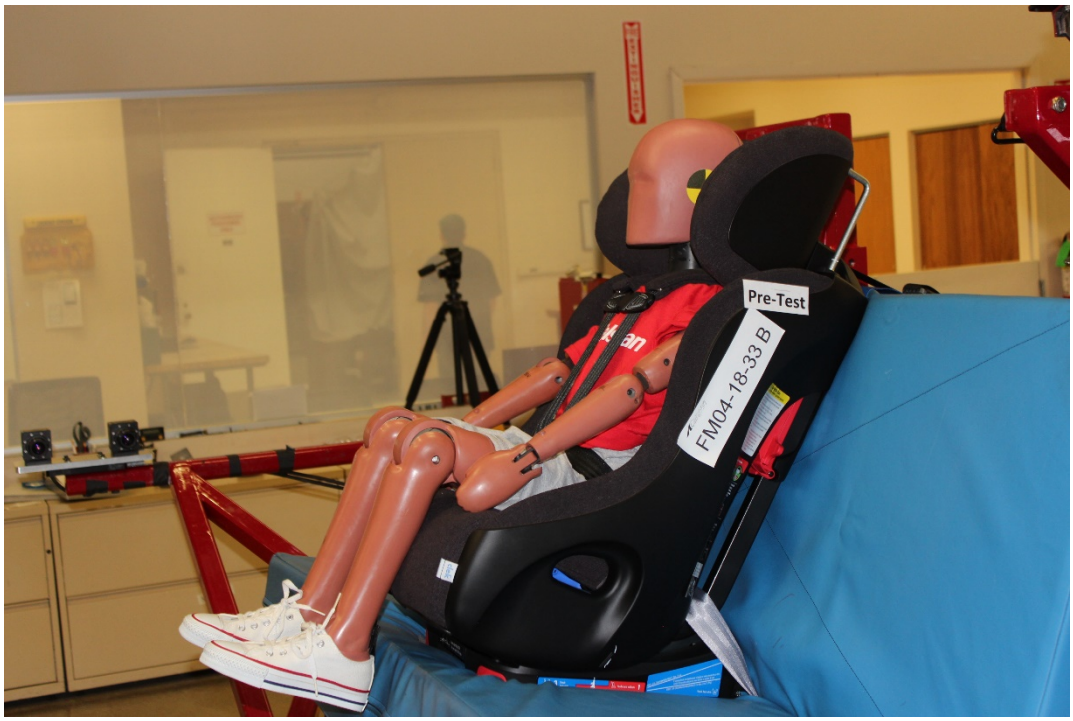
030-FO18U1-06-6H3FN2TU Pre Test	213-CAL-18-030 FM04-18-33B

030-FO18U1-06-6H3FN2TU Pre Test	213-CAL-18-030 FM04-18-33B

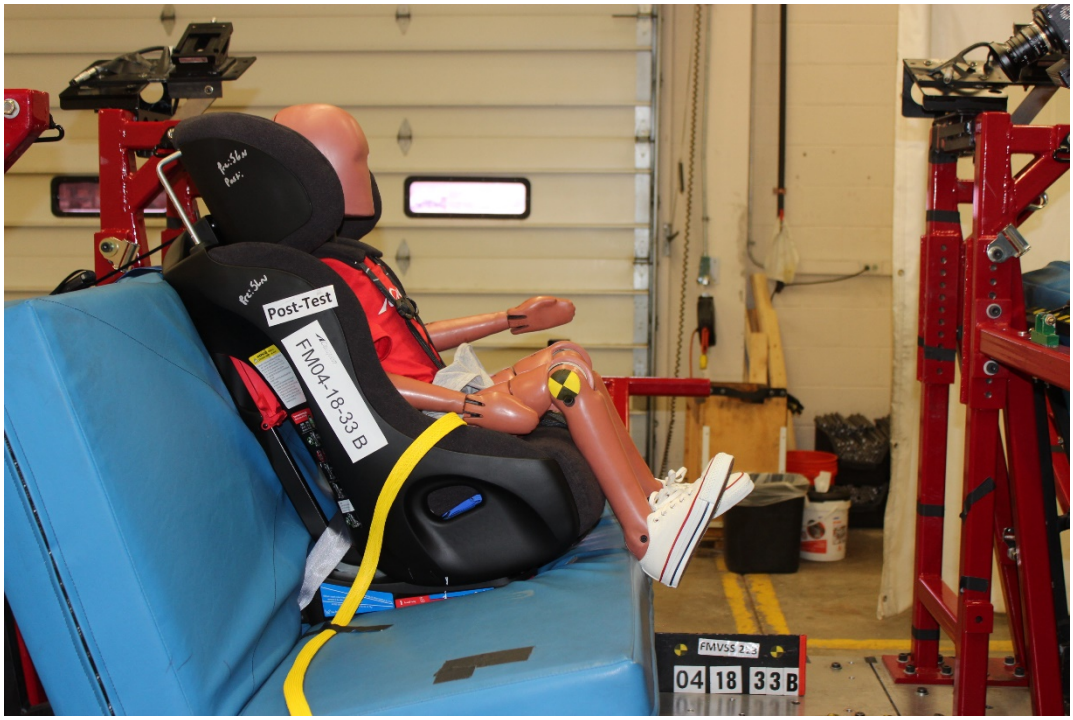
030-FO18U1-06-6H3FN2TU Pre Test	213-CAL-18-030 FM04-18-33B

030-FO18U1-06-6H3FN2TU Pre Test	213-CAL-18-030 FM04-18-33B

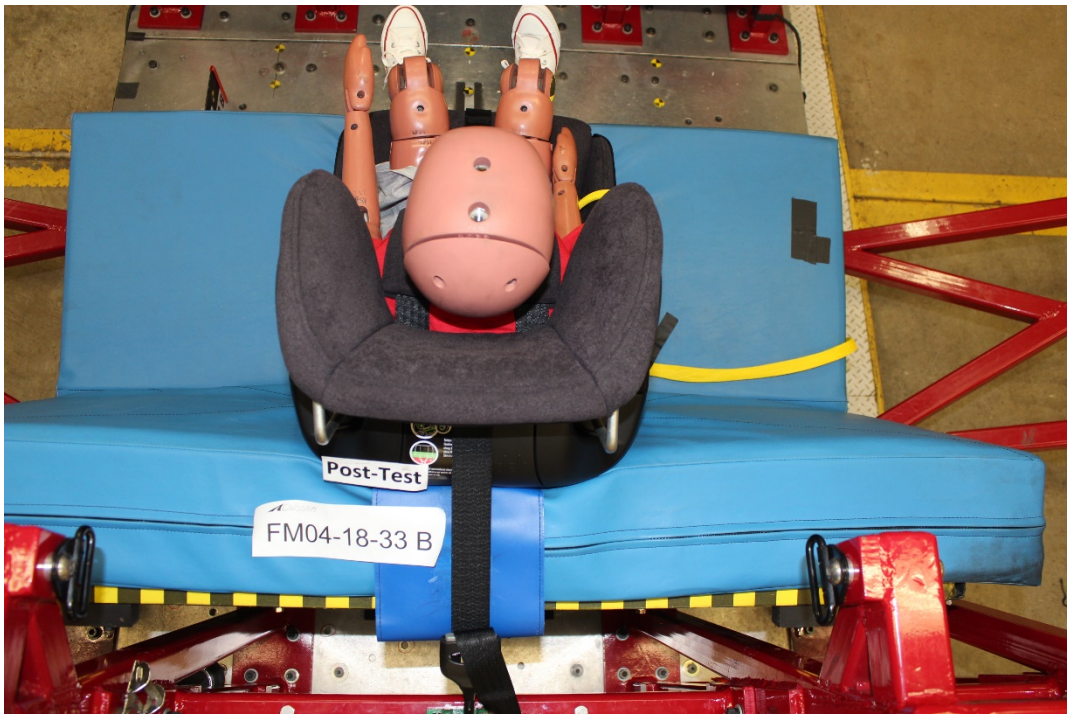




030-FO18U1-06-6H3FN2TU Post Test	213-CAL-18-030 FM04-18-33B



030-FO18U1-06-6H3FN2TU Post Test	213-CAL-18-030 FM04-18-33B



030-FO18U1-06-6H3FN2TU Post Test	213-CAL-18-030 FM04-18-33B

Inversion Test Photos

030-FO18U1-INV01-NINRN2FR Pre Test Y-Axis	213-CAL-18-030 FM04-18-34

030-FO18U1-INV01-NINRN2FR Post Test Y-Axis	213-CAL-18-030 FM04-18-34

Inversion Test Photos

030-FO18U1-INV01-NINRN2FR Pre Test X-Axis	213-CAL-18-030 FM04-18-34

030-FO18U1-INV01-NINRN2FR Post Test X-Axis	213-CAL-18-030 FM04-18-34

Inversion Test Photos

030-FO18U1-INV02-12CFN2FU Pre Test Y-Axis	213-CAL-18-030 FM04-18-35

030-FO18U1-INV02-12CFN2FU Post Test Y-Axis	213-CAL-18-030 FM04-18-35

Inversion Test Photos

030-FO18U1-INV02-12CFN2FU Pre Test X-Axis	213-CAL-18-030 FM04-18-35

030-FO18U1-INV02-12CFN2FU	213-CAL-18-030
Post Test X-Axis	FM04-18-35

Inversion Test Photos

030-FO18U1-INV03-3H3FN2FU Pre Test Y-Axis	213-CAL-18-030 FM04-18-36

030-FO18U1-INV03-3H3FN2FU Post Test Y-Axis	213-CAL-18-030 FM04-18-36

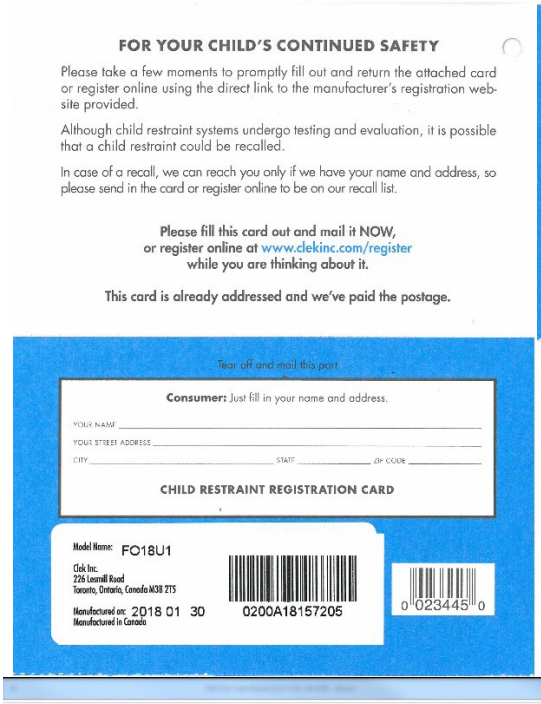
Inversion Test Photos

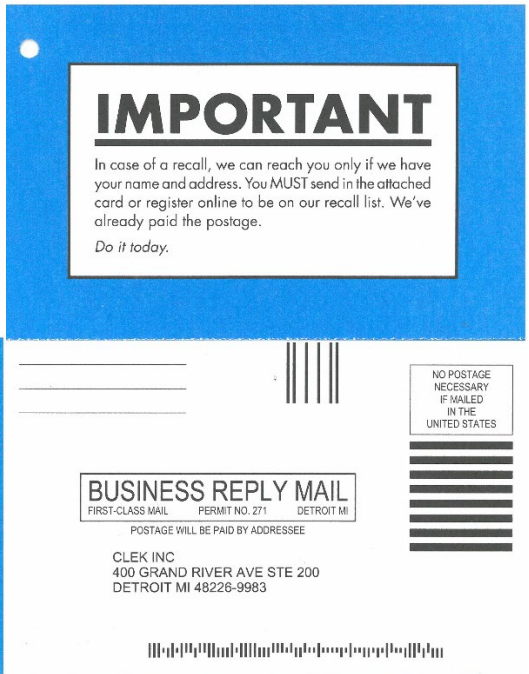
030-FO18U1-INV03-3H3FN2FU Pre Test X-Axis	213-CAL-18-030 FM04-18-36

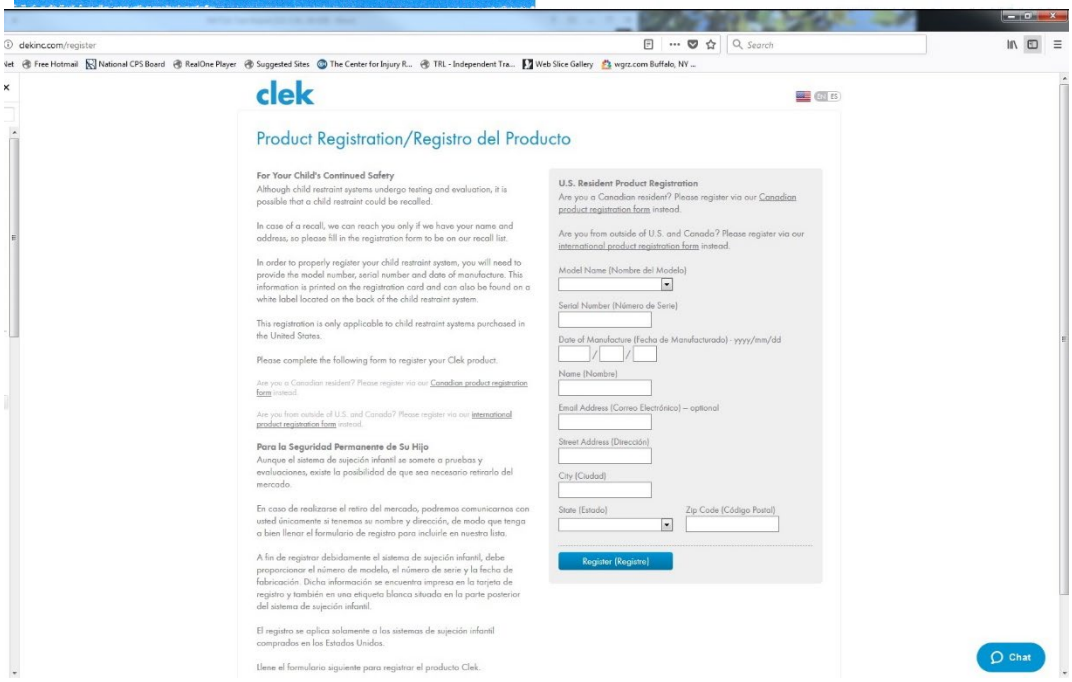
030-FO18U1-INV03-3H3FN2FU Post Test X-Axis	213-CAL-18-030 FM04-18-36

Inspection Photos

Registration 213-CAL-18-030	
030-FO18U1-01-3H3FN2TU	030-FO18U1-02-12CRNLFR
030-FO18U1-03-3H3FNLTU	030-FO18U1-04-12CFNLTU
030-FO18U1-05-6W3FN2TU	030-FO18U1-06-6H3FN2TU







Label Photos

Labels 213-CAL-18-030	
030-FO18U1-01-3H3FN2TU	030-FO18U1-02-12CRNLFR
030-FO18U1-03-3H3FNLTU	030-FO18U1-04-12CFNLTU
030-FO18U1-05-6W3FN2TU	030-FO18U1-06-6H3FN2TU

Labels 213-CAL-18-030	
030-FO18U1-01-3H3FN2TU	030-FO18U1-02-12CRNLFR
030-FO18U1-03-3H3FNLTU	030-FO18U1-04-12CFNLTU
030-FO18U1-05-6W3FN2TU	030-FO18U1-06-6H3FN2TU

Labels	
213-CAL-18-030	
030-FO18U1-01-3H3FN2TU	030-FO18U1-02-12CRNLFR
030-FO18U1-03-3H3FNLTU	030-FO18U1-04-12CFNLTU
030-FO18U1-05-6W3FN2TU	030-FO18U1-06-6H3FN2TU

Labels	
213-CAL-18-030	
030-FO18U1-01-3H3FN2TU	030-FO18U1-02-12CRNLFR
030-FO18U1-03-3H3FNLTU	030-FO18U1-04-12CFNLTU
030-FO18U1-05-6W3FN2TU	030-FO18U1-06-6H3FN2TU

Labels	
213-CAL-18-030	
030-FO18U1-01-3H3FN2TU	030-FO18U1-02-12CRNLFR
030-FO18U1-03-3H3FNLTU	030-FO18U1-04-12CFNLTU
030-FO18U1-05-6W3FN2TU	030-FO18U1-06-6H3FN2TU

213-CAL-18-030	
030-FO18U1-01-3H3FN2TU	030-FO18U1-02-12CRNLFR
030-FO18U1-03-3H3FNLTU	030-FO18U1-04-12CFNLTU
030-FO18U1-05-6W3FN2TU	030-FO18U1-06-6H3FN2TU

213-CAL-18-030	
030-FO18U1-01-3H3FN2TU	030-FO18U1-02-12CRNLFR
030-FO18U1-03-3H3FNLTU	030-FO18U1-04-12CFNLTU
030-FO18U1-05-6W3FN2TU	030-FO18U1-06-6H3FN2TU

213-CAL-18-030	
030-FO18U1-01-3H3FN2TU	030-FO18U1-02-12CRNLFR
030-FO18U1-03-3H3FNLTU	030-FO18U1-04-12CFNLTU
030-FO18U1-05-6W3FN2TU	030-FO18U1-06-6H3FN2TU