

***SLED TEST  
213 Frontal***

***KneeGuardKids  
COMMON SENSE II***

*Report Number: 6545-15-01  
Report Date: July 14, 2015*

Test Date: July 10, 2015

**Test Conducted By:**

Calspan Corporation  
Transportation Test Operations  
4455 Genesee Street  
Buffalo, New York 14225  
716.632.7500  
1.800.CALSPAN

**Prepared For:**

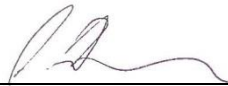
KneeGuardKids  
#313 5F Garden 5, Tool, 10,  
Chungmin-ro, Songpa-gu  
Seoul, Korea.



## DISCLAIMER

*The contents of this report relate only to the specific product evaluated under the specific test conditions, as defined within this report. The findings and conclusions are those of the author(s) and not necessarily those of Calspan Corporation. For the purposes of this report, Calspan Corporation provided test services only and was not involved with the consulting, design or manufacture of any product. Calspan Corporation does not endorse products or manufacturers. Further, Calspan Corporation (to include: any of its affiliates, parent companies or subsidiaries) assumes no liability associated with the contents of this report or the use of this report.*

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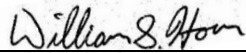


Adam Hardbattle, SLED Engineer

Date:

July 14, 2015

Approved by:



William Horn, SLED Director

Date:

July 14, 2015

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## **SECTION 1**

### **TEST PURPOSE**

This report represents the results of a sled test program performed at Calspan's Transportation Test Operations for KneeGuardKids during July 10, 2015. All tests were performed on the Transportation Research Group's tandem configuration Hydraulically Controlled, Gas Energized (HYGE) Sled utilizing non-reinforced seat covers on both benches. The standard seats were equipped with certified foam inserts prior to each day of testing, and again at mid-shift. The objective of these tests was to obtain data in accordance with the standards set forth in the Federal Motor Vehicle Safety Standard (FMVSS-213) and/or Transport Canada SOR (CMVSS-213), Child Restraint Systems.

The tests conducted under this program are indicator tests of dynamic restraint performance and are not to be considered tests that assure passage of any government standards. The indicator test data presented in this report is solely advisory and is intended to assist in determining the appropriateness of any future action and is not to be considered a warranty or guarantee of performance for any specific purpose.

**SECTION 2**  
**TEST SUMMARY**

The following ATDs and Anchor systems were used during this test project. Please refer to the test summary page for additional test details.

ATD			
TYPE	WEIGHTED	SERIAL #	RUN #
6-YO HYB II	N	05	001B

The SLED Test Data Summary Table lists the test matrix and correlates the dummy and restraint configurations. Data pertaining to each test can be found in section 3 of this report. Each test is broken into individual bench data tables, data traces, corridor, synopsis, and photographs for a test. The tests are arranged according to their order in the test summary in section 2.



Sled Test # Date	FMVSS / CMVSS	Veh. Seat Position	Child Restraint	Harness Position	Crotch Position	Recline Position	Seat Direction / Mode	Restraint System	Tether (Y/N)	ATD	Canadian Head Clip 3ms (g's)	HIC 36ms (g's)	Chest 3ms (g's)	Head Ex (in) Pre SB Angle (deg)	Knee Ex (in) Post SB Angle (deg)	Vertical Head CG Exceeded (Y/N)	Test G's (g's)	Velocity (mph)
KG07-15-001B 07/10/2015	F	P5	Common Sense II	5	M	1	FF	LATCH	Y	6-YO HYB II SN 05	42.6	211.4	44.8	22.8	30	--	23.8	30
<b>Comments:</b> - Alpha omega elite car seat utilized. Common Sense II placed under car seat height and angle adjusted to fit ATD. Foot plate is at 20° and in position 5. Latch anchors used to secure. Locked in place. Feet are contacting foot plate. No post-test issues.																		

### **SECTION 3**

### **TEST DATA**

This section contains information reporting on the following Data Sections:

- Bench Data
- Data Traces
- Corridor
- Synopsis
- Photos

## SLED TEST RUN: KG07-15-001

Knee Guard - FRONTAL IMPACT SLED TEST - DATA SUMMARY																		
Sled Test # Date	FMVSS / CMVSS	Veh. Seat Position	Child Restraint	Harness Position	Crotch Position	Recline Position	Seat Direction / Mode	Restraint System	Tether (Y/N)	ATD	Canadian Head Clip 3ms (g's)	HIC 36ms (g's)	Chest 3ms (g's)	Head Ex	Knee Ex	Vertical Head CG Exceeded (Y/N)	Test G's (g's)	Velocity (mph)
														(in)	(in)			
														Pre SB Angle (deg)	Post SB Angle (deg)			
KG07-15-001B 07/10/2015	F	P5	Common Sense II	5	M	1	FF	LATCH	Y	6-YO HYB II SN 05	42.6	211.4	44.8	20.8	27.5	--	23.8	30
Comments: - Alpha omega elite car seat utilized. Common Sense II placed under car seat height and angle adjusted to fit ATD. Foot plate is at 20° and in position 5. Latch anchors used to secure. Locked in place. Feet are contacting foot plate. No post-test issues.																		



KneeGuardKids COMMON SENSE II KG07-15-001  
Bench B

Test Date:  
7/10/2015

### Critical Injury Values

Test Parameter	Limit	Value	Time 1 msec	Time 2 msec	Duration
Head Injury (36 ms)	1000	211.4	65.2	101.2	36
Head Clip (3 ms)	80.0	42.6	72.7	75.7	3.0
Resultant Chest Clip	60	44.8	57.2	60.2	3.0

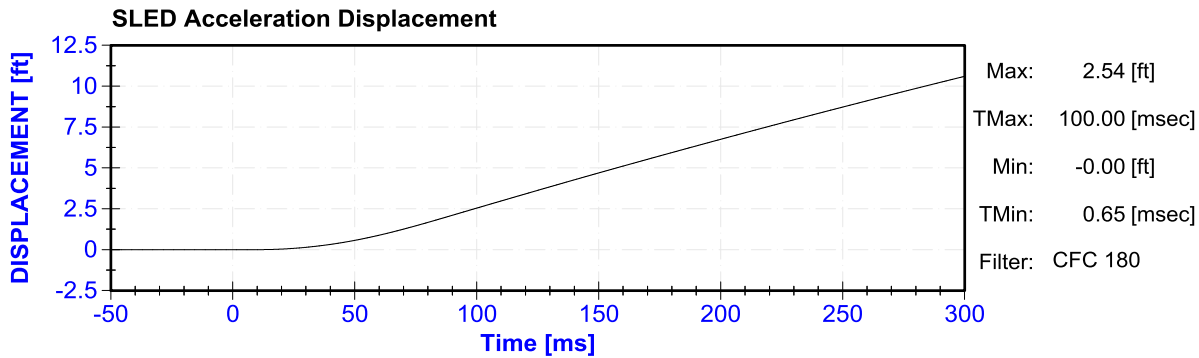
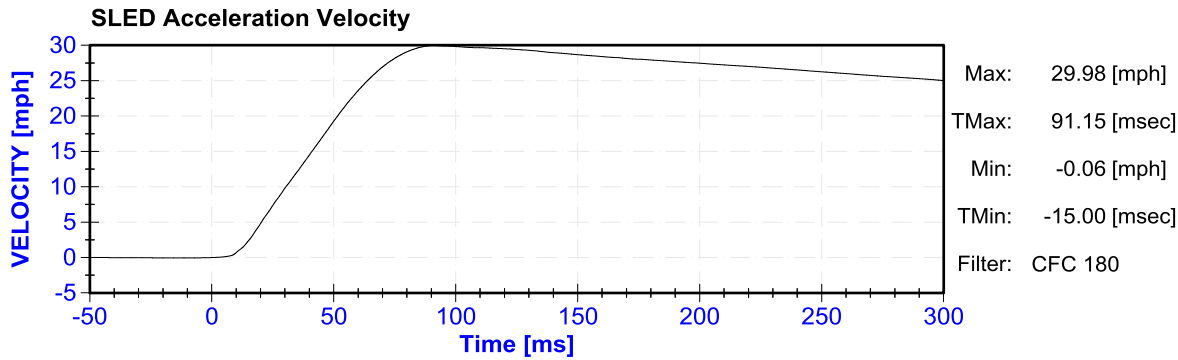
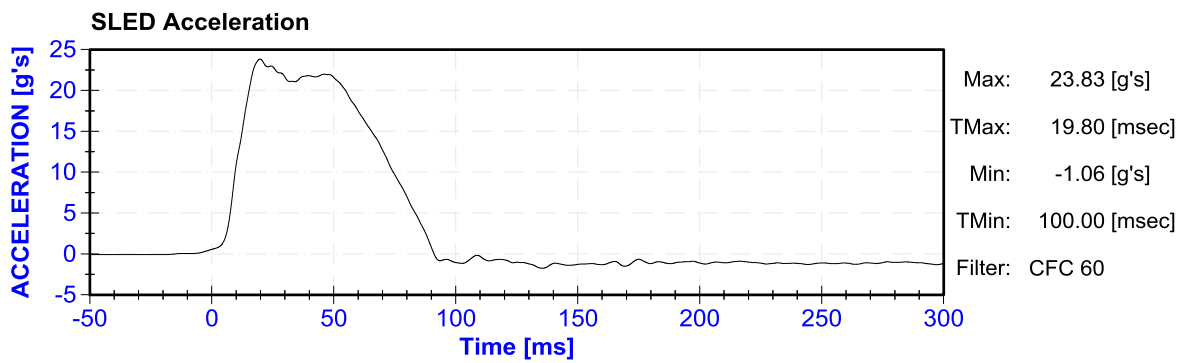
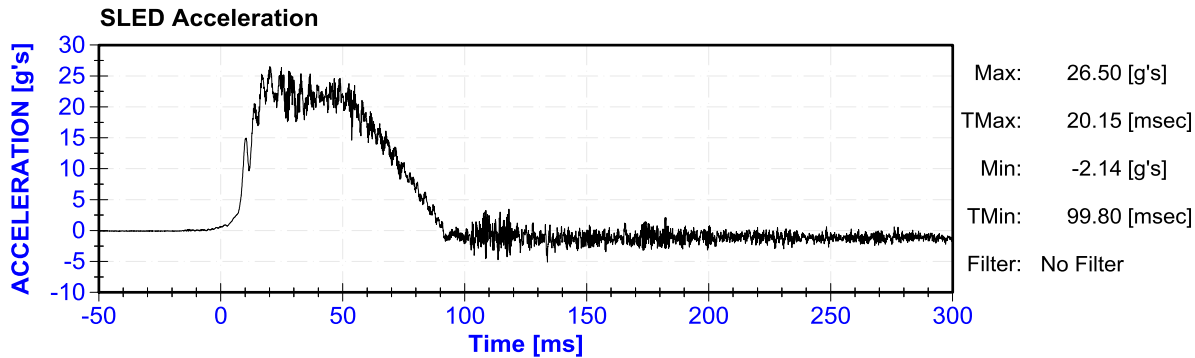
### Maximum / Minimum Values

Channel	Unit	Max	Max Time msec	Min	Min Time msec	Filter
SLED Acceleration	g's	23.8	19.8	-1.1	100.0	CFC 60
SLED Acceleration Velocity	mph	30.0	91.2	-0.0	-15.0	CFC 180
SLED Acceleration Displacement	ft	2.5	100.0	-0.0	0.7	CFC 180
B Bench ATD Head X Acceleration	g's	17.0	63.0	-24.0	62.5	CFC 1000
B Bench ATD Head Y Acceleration	g's	4.1	79.4	-0.2	33.0	CFC 1000
B Bench ATD Head Z Acceleration	g's	45.3	74.9	-0.0	-5.0	CFC 1000
B Bench ATD Head Resultant Acceleration	g's	45.3	74.9	0.0	-29.7	CFC 1000
B Bench ATD Chest X Acceleration	g's	1.4	83.9	-43.4	57.9	CFC 180
B Bench ATD Chest Y Acceleration	g's	5.9	59.4	-1.8	82.3	CFC 180
B Bench ATD Chest Z Acceleration	g's	7.8	43.9	-17.8	74.7	CFC 180
B Bench ATD Chest Resultant Acceleration	g's	45.8	58.4	0.0	-18.5	CFC 180



KneeGuardKids COMMON SENSE II KG07-15-001

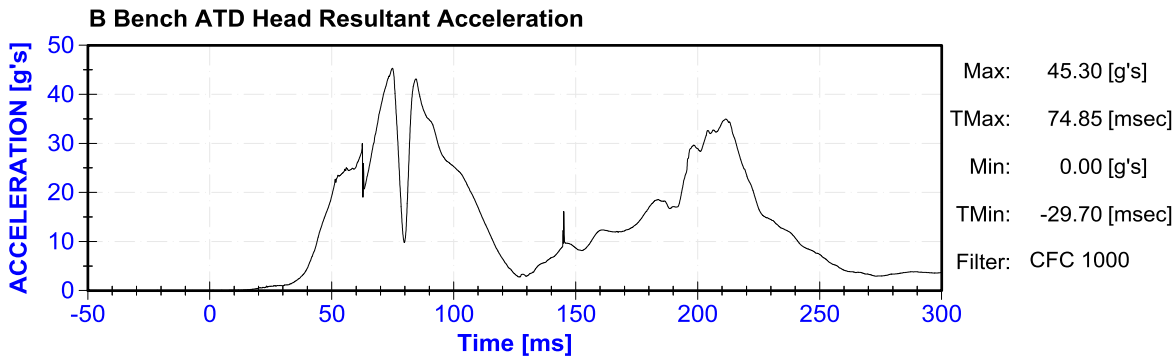
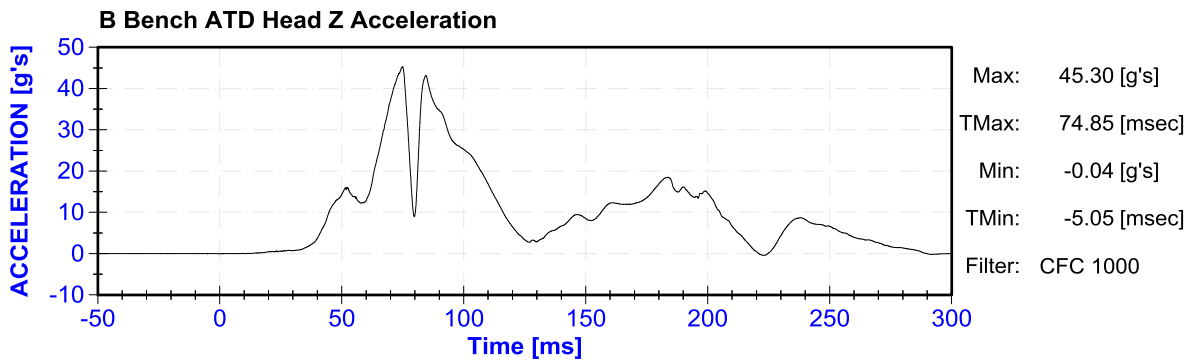
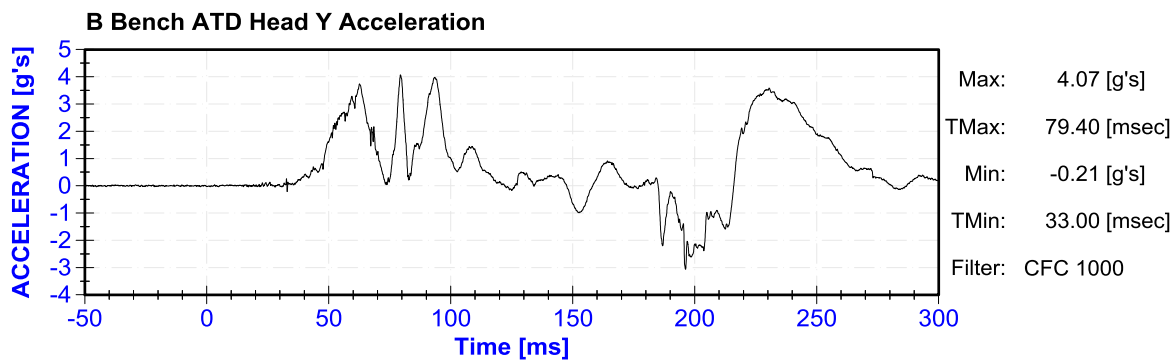
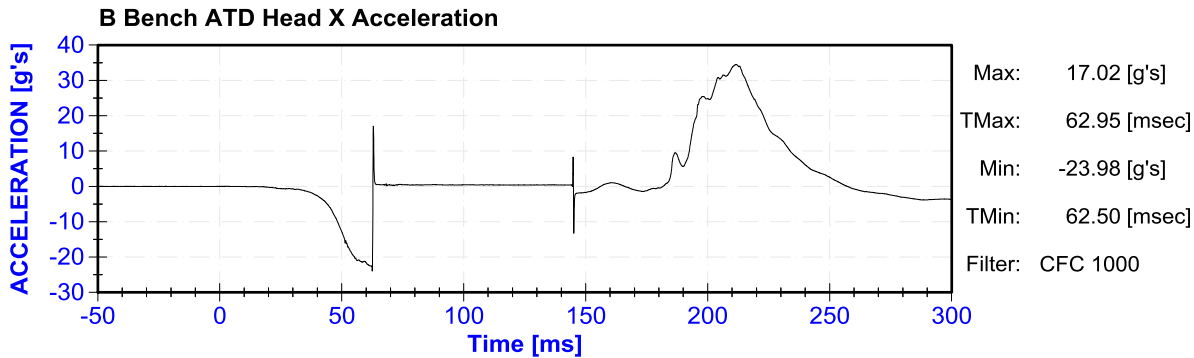
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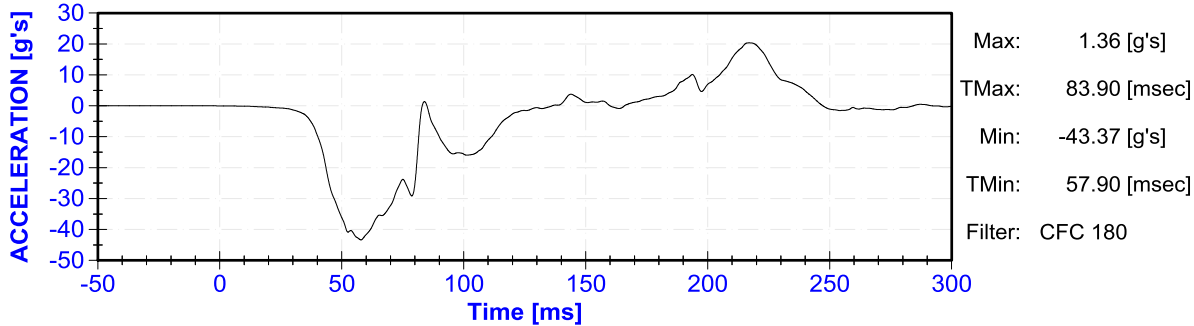




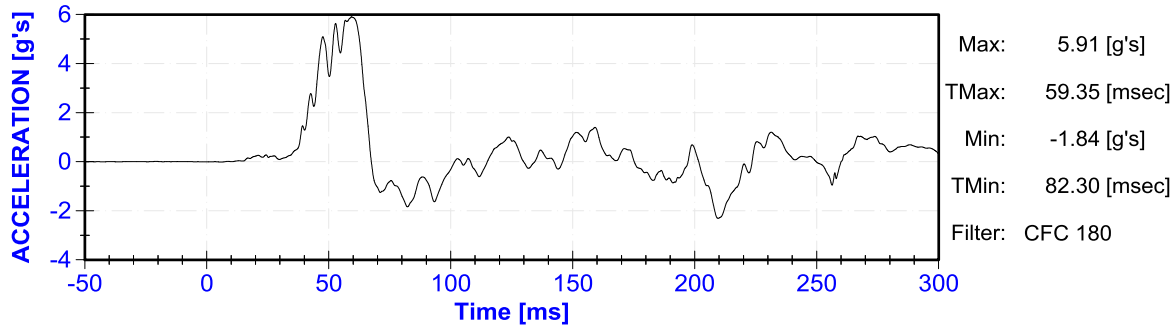
KneeGuardKids COMMON SENSE II KG07-15-001

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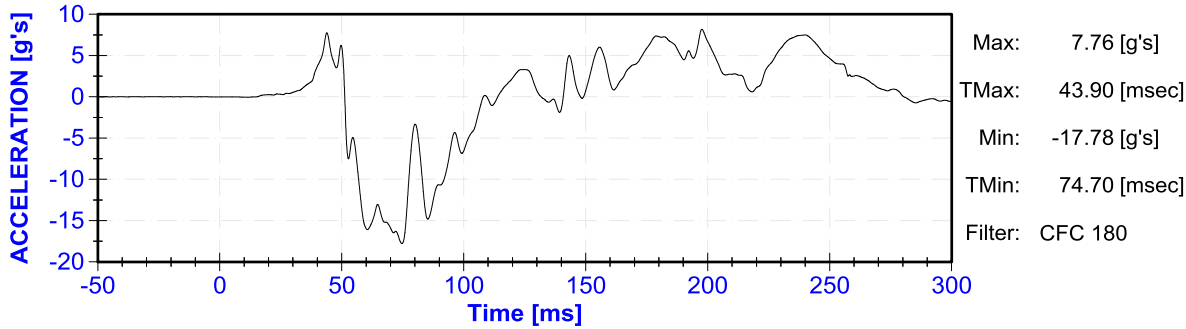
B Bench ATD Chest X Acceleration



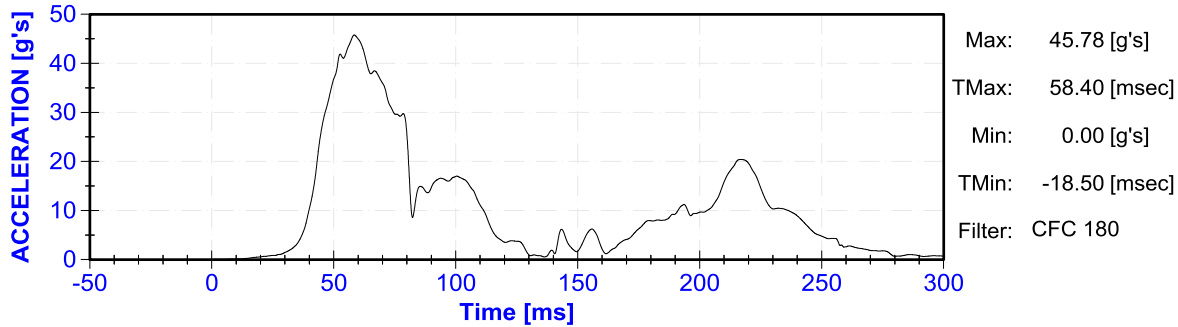
B Bench ATD Chest Y Acceleration



B Bench ATD Chest Z Acceleration



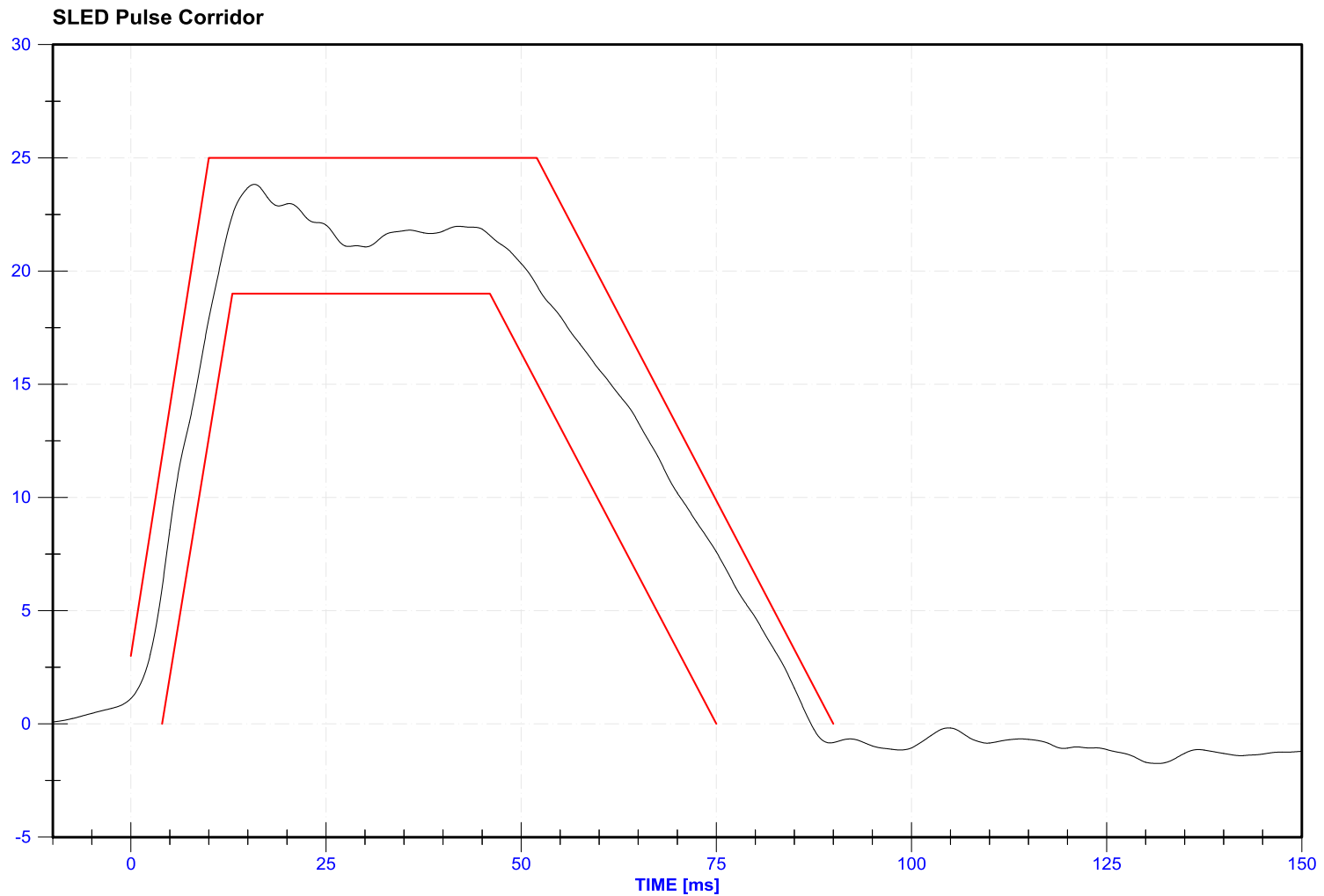
B Bench ATD Chest Resultant Acceleration





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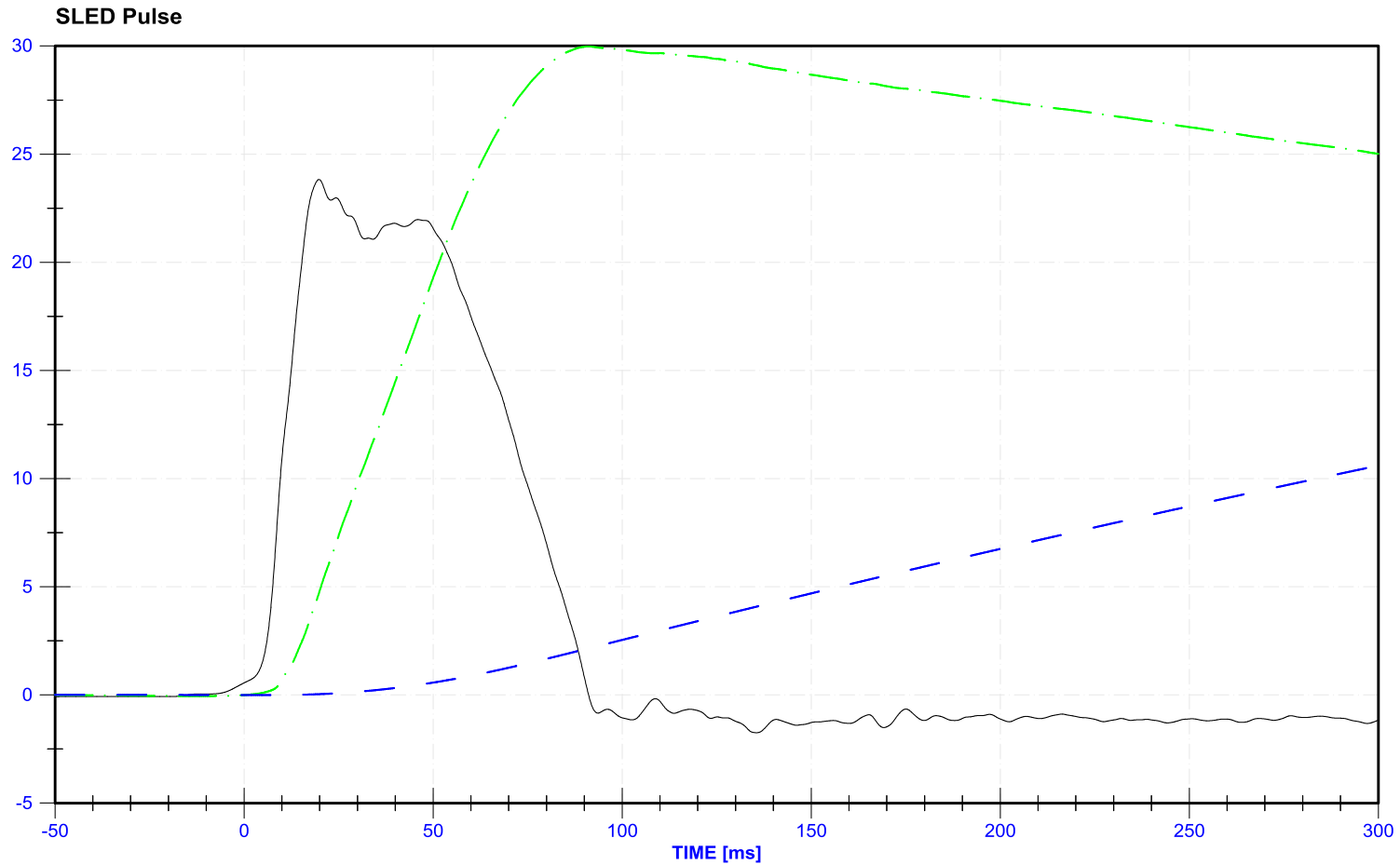


	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (g's)	23.82	135.6	CFC 60	— S0SLED000R00ACXD

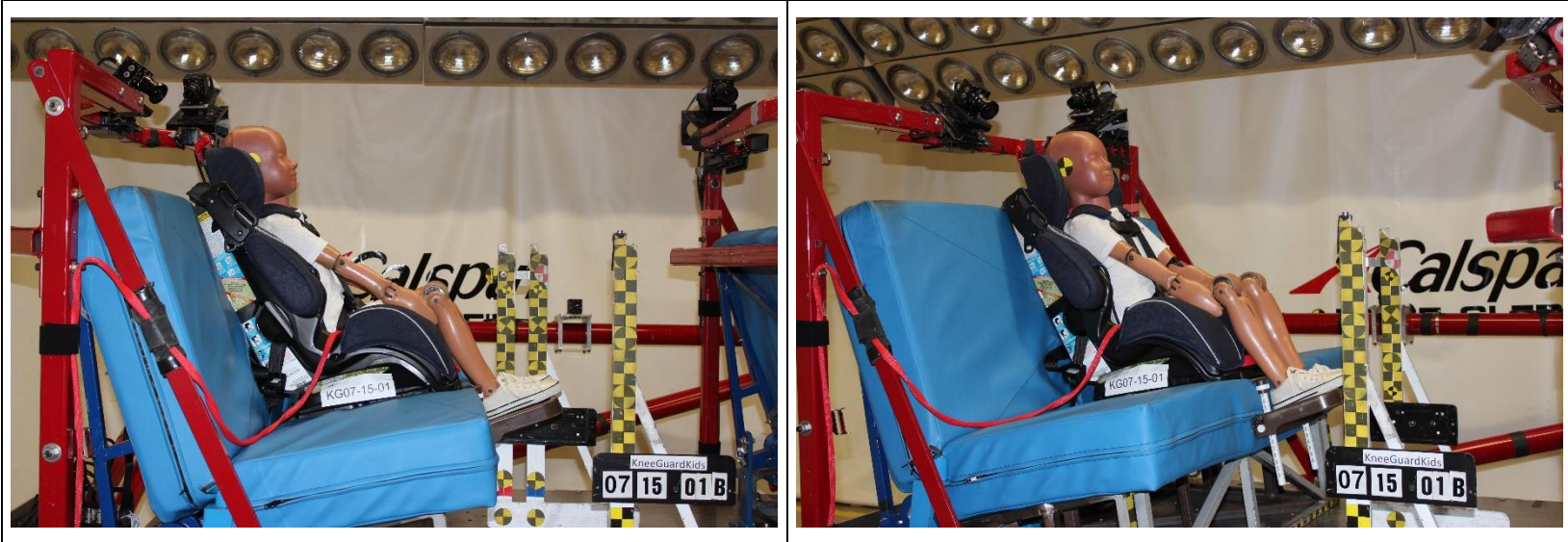


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	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (g's)	23.82	135.6	CFC 60	— S0SLED000000ACXD
SLED Velocity (mph)	29.98	-15.0	CFC 180	— S0SLED000000VAXC
SLED Displacement (ft)	10.60	0.7	CFC 180	— S0SLED000000DVXC



Pre-Test



Pre-Test



Post-Test



Post-Test