PJLA
Testing
Accreditation #76654

CHILD RESTRAINT
SLED TEST
FMVSS 213 Frontal Impact

Report Number: 6545-17-02
Report Date: April 28, 2017

Test Date: April 28, 2017

Test Conducted By:

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Transportation Test Operations
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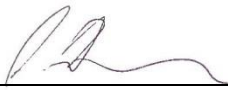
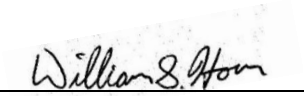
DISCLAIMER

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.

Prepared by:  Date: April 28, 2017

Adam Hardbattle, SLED Engineer

Authorized by:  Date: April 28, 2017

William Horn, SLED Director

TABLE OF CONTENTS

REVISION HISTORY

Revision	Revision Date	Description

SECTION 1
TEST PURPOSE

This report represents the results of a sled test program performed at Calspan's Transportation Test Operations for inGarden Corporation during April 28, 2017. 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	002A

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.

inGarden - 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 (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)
KG04-17-002A 04/28/2017	F	P2	KneeGuard Kids 3	-	-	-	FF	Type 2	N	6-YO HYB II SN 05	63.6	641	46.7	21.2	25.2	--	23.1	29.9

Comments: - Graco Turbo HB. Model # 1893811. SN # 0272060. DOM 03/02/17. Headrest is in position 2. KneeGuard Kids 3 footrest accessory is used and anchored using LATCH. Footrest angle is 27.3°. Armrest on booster changed position. No issues with KneeGuard Kids 3.

SECTION 3
TEST DATA

This section contains information reporting on the following Data Sections:

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

SLED TEST RUN: KG04-17-002

inGarden - 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 (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)
KG04-17-002A 04/28/2017	F	P2	KneeGuard Kids 3	-	-	-	FF	Type 2	N	6-YO HYB II SN 05	63.6	641	46.7	21.2	25.2	--	23.1	29.9

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inGarden KG04-17-002
Bench A

Test Date:
4/28/2017

Critical Injury Values

Test Parameter	Limit	Value	Time 1 msec	Time 2 msec	Duration
Head Injury (15 ms)	**-**	**376.8**	57.8	72.8	15
Head Injury (36 ms)	**1000**	**641.0**	55.9	91.9	36
Head Clip (3 ms)	**80**	**63.6**	64.7	67.7	3.0
Head Max	**80**	**64.9**	0.0	0.0	0.0
Resultant Chest Clip	**60**	**46.7**	47.4	50.4	3.0
Chest Max	**60**	**48.9**	0.0	0.0	0.0

Maximum / Minimum Values

Channel	Unit	Max	Max Time msec	Min	Min Time msec	Filter
SLED Acceleration	g's	23.1	29.0	-1.4	128.8	CFC 60
SLED Acceleration Velocity	mph	29.9	89.4	-0.0	-50.0	CFC 180
SLED Acceleration Displacement	ft	10.7	300.0	-0.0	0.6	CFC 180
A Bench ATD Head X Acceleration	G's	34.7	175.5	-36.0	75.1	CFC 1000
A Bench ATD Head Y Acceleration	G's	1.4	112.6	-20.3	73.7	CFC 1000
A Bench ATD Head Z Acceleration	G's	62.3	66.8	-0.1	13.2	CFC 1000
A Bench ATD Head Resultant Acceleration	g's	64.9	66.8	0.0	1.2	CFC 1000
A Bench ATD Chest X Acceleration	g's	8.1	239.1	-48.7	49.2	CFC 180
A Bench ATD Chest Y Acceleration	g's	3.1	73.8	-6.3	44.7	CFC 180
A Bench ATD Chest Z Acceleration	g's	13.4	74.3	-8.2	53.2	CFC 180
A Bench ATD Chest Resultant Acceleration	g's	48.9	49.2	0.0	-50.0	CFC 180

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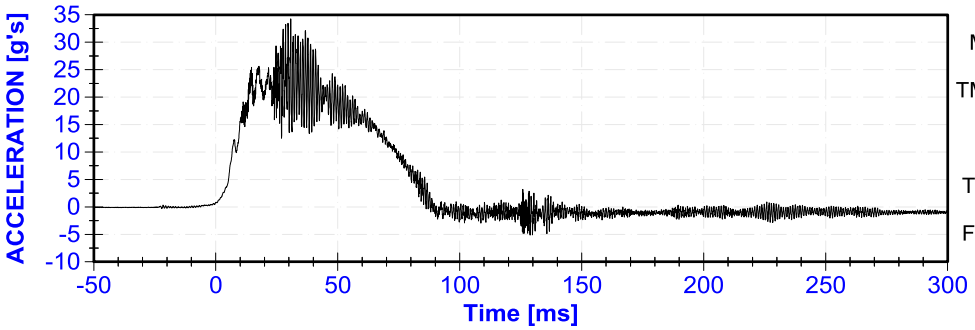
inGarden KG04-17-002

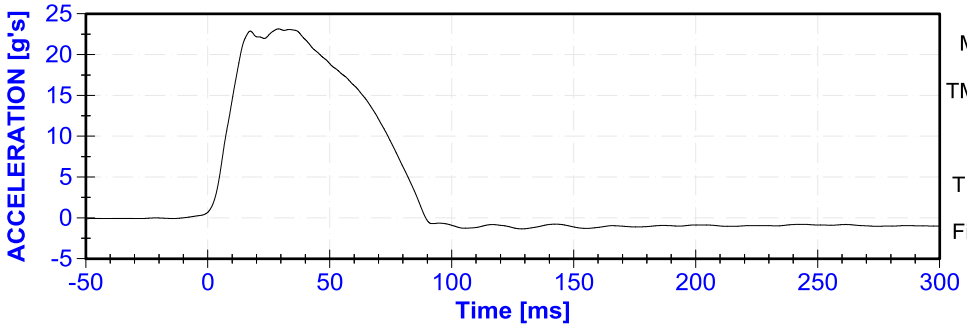
Test Date: April 28,2017

SLED Acceleration



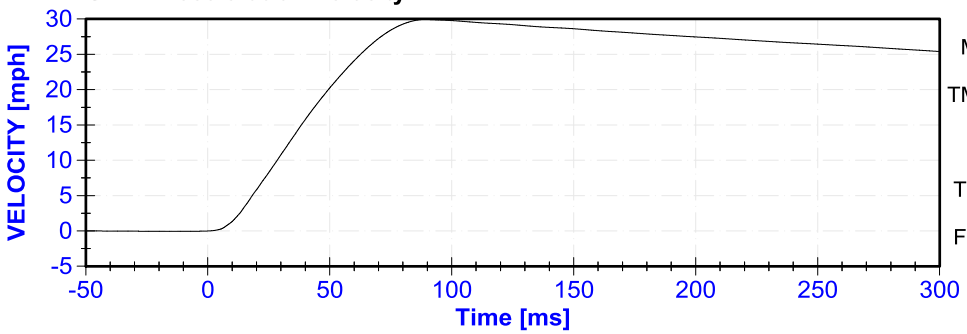
Max: 34.24 [g's]
TMax: 30.75 [msec]
Min: -5.13 [g's]
TMin: 128.85 [msec]
Filter: No Filter

SLED Acceleration



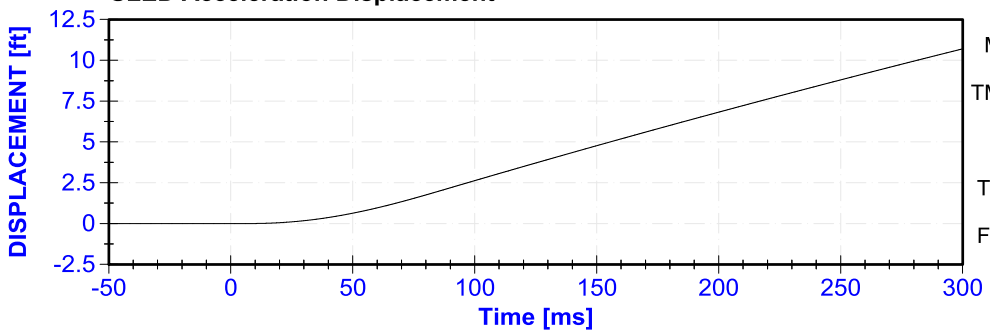
Max: 23.15 [g's]
TMax: 29.00 [msec]
Min: -1.35 [g's]
TMin: 128.75 [msec]
Filter: CFC 60

SLED Acceleration Velocity



Max: 29.94 [mph]
TMax: 89.35 [msec]
Min: -0.00 [mph]
TMin: -49.95 [msec]
Filter: CFC 180

SLED Acceleration Displacement



Max: 10.70 [ft]
TMax: 300.00 [msec]
Min: -0.00 [ft]
TMin: 0.55 [msec]
Filter: CFC 180

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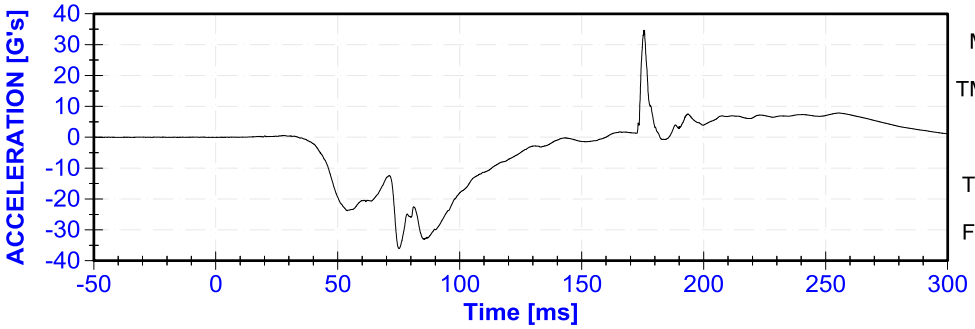
inGarden KG04-17-002

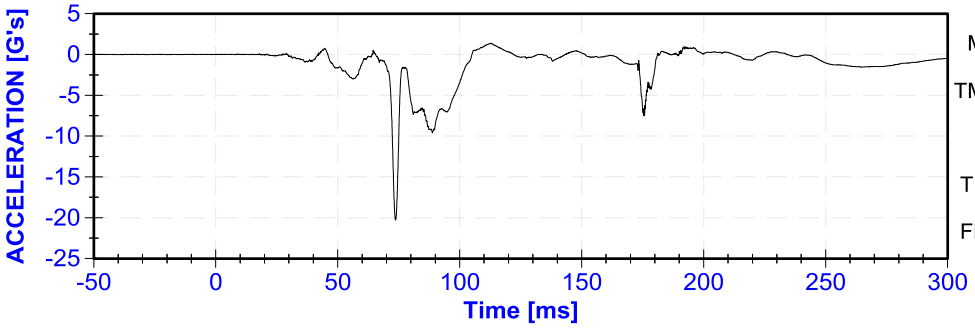
Test Date: April 28,2017

A Bench ATD Head X Acceleration



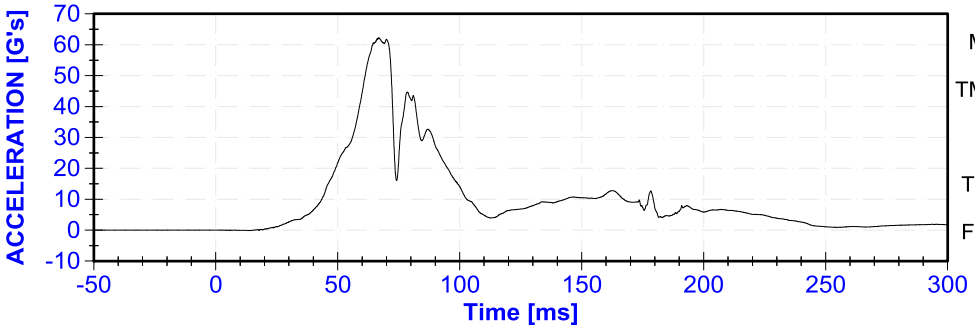
Max: 34.70 [G's]
TMax: 175.50 [msec]
Min: -36.03 [G's]
TMin: 75.05 [msec]
Filter: CFC 1000

A Bench ATD Head Y Acceleration



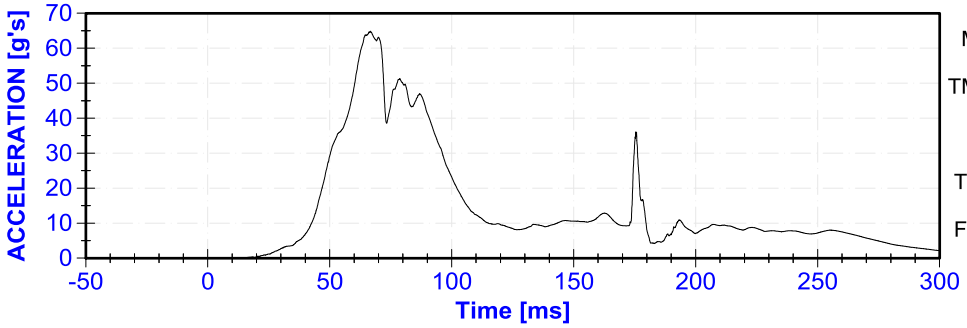
Max: 1.36 [G's]
TMax: 112.60 [msec]
Min: -20.28 [G's]
TMin: 73.70 [msec]
Filter: CFC 1000

A Bench ATD Head Z Acceleration



Max: 62.32 [G's]
TMax: 66.75 [msec]
Min: -0.12 [G's]
TMin: 13.20 [msec]
Filter: CFC 1000

A Bench ATD Head Resultant Acceleration



Max: 64.88 [g's]
TMax: 66.75 [msec]
Min: 0.00 [g's]
TMin: 1.20 [msec]
Filter: CFC 1000

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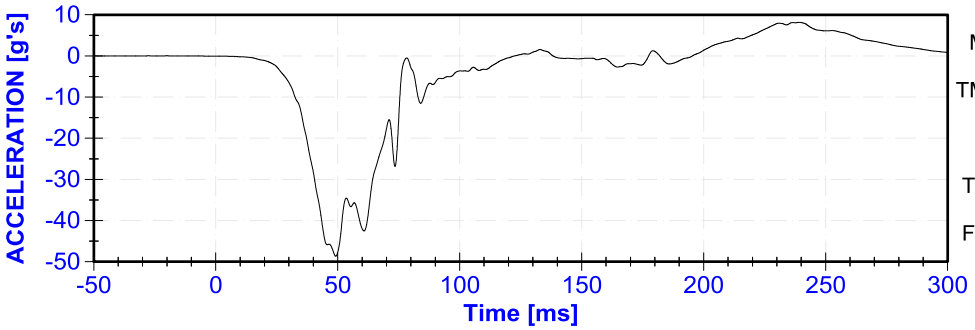
inGarden KG04-17-002

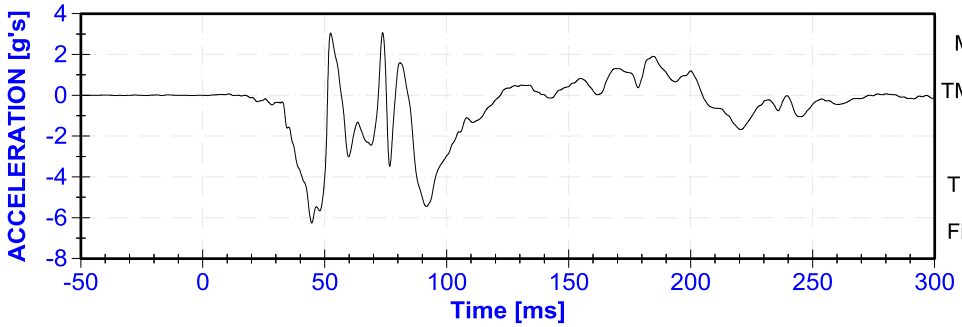
Test Date: April 28,2017

A Bench ATD Chest X Acceleration



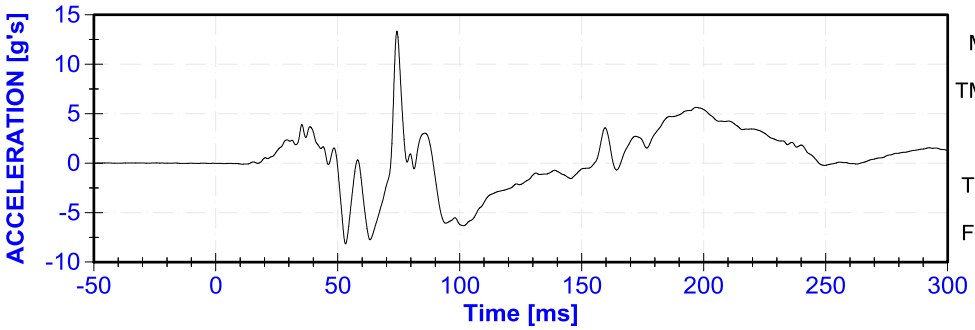
Max: 8.15 [g's]
TMax: 239.10 [msec]
Min: -48.67 [g's]
TMin: 49.20 [msec]
Filter: CFC 180

A Bench ATD Chest Y Acceleration



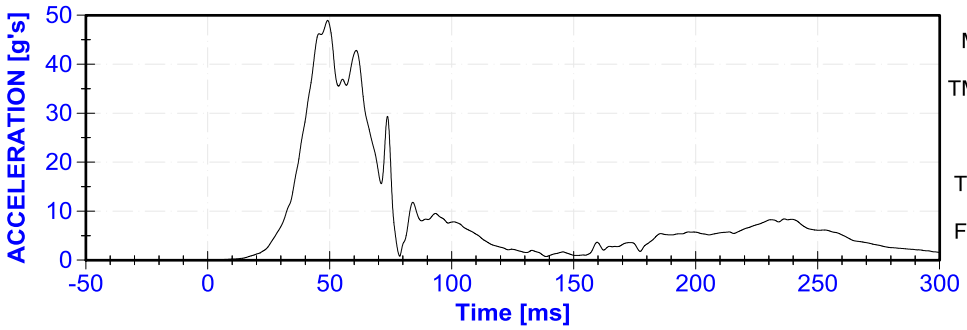
Max: 3.07 [g's]
TMax: 73.75 [msec]
Min: -6.26 [g's]
TMin: 44.70 [msec]
Filter: CFC 180

A Bench ATD Chest Z Acceleration



Max: 13.36 [g's]
TMax: 74.25 [msec]
Min: -8.17 [g's]
TMin: 53.20 [msec]
Filter: CFC 180

A Bench ATD Chest Resultant Acceleration



Max: 48.95 [g's]
TMax: 49.15 [msec]
Min: 0.05 [g's]
TMin: -49.95 [msec]
Filter: CFC 180

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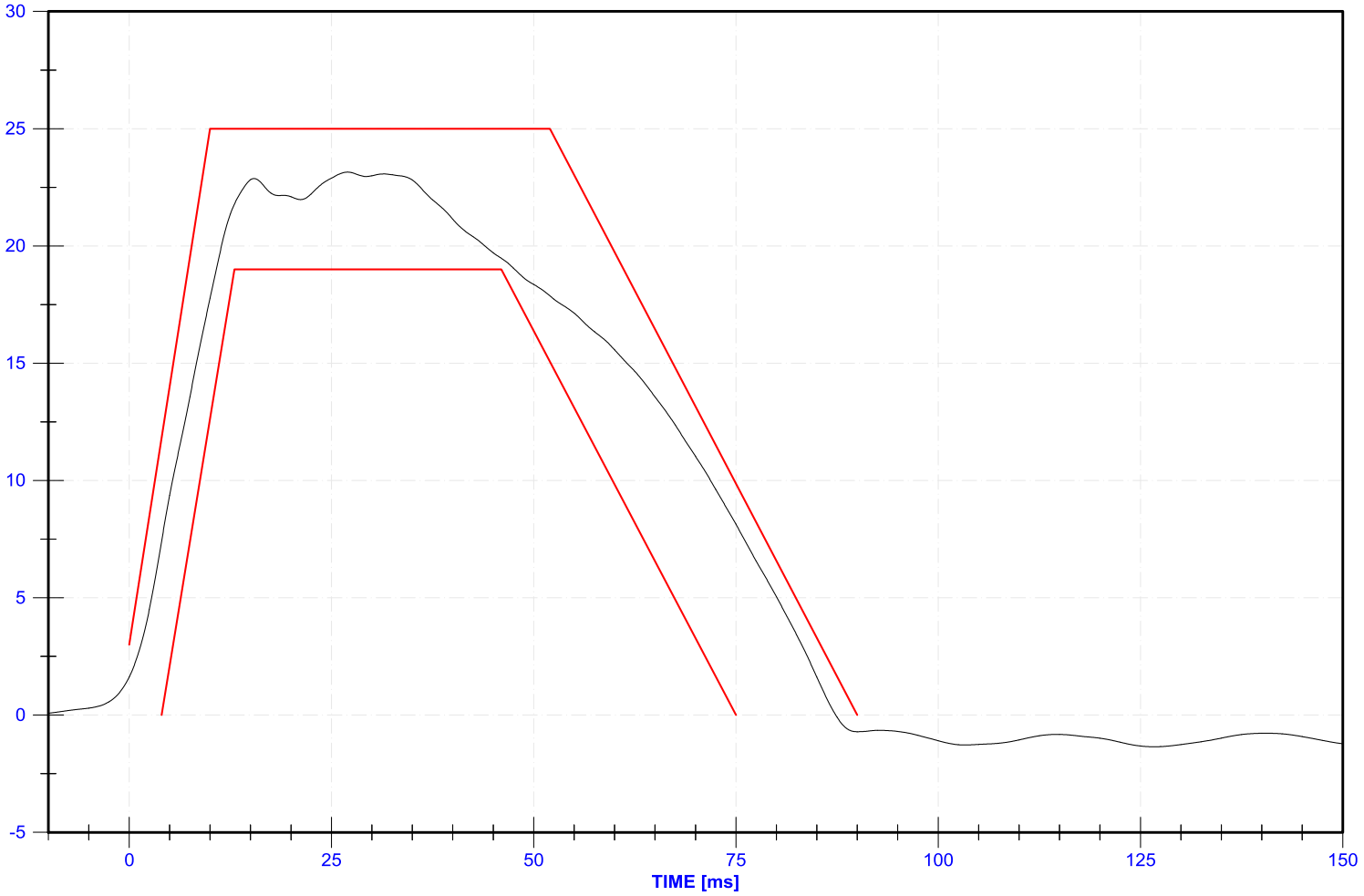
inGarden KG04-17-002

Test Date:
April 28,2017

SLED Pulse Corridor



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (g's)	23.14	29.0	CFC 60	S0SLED00OR00ACXD

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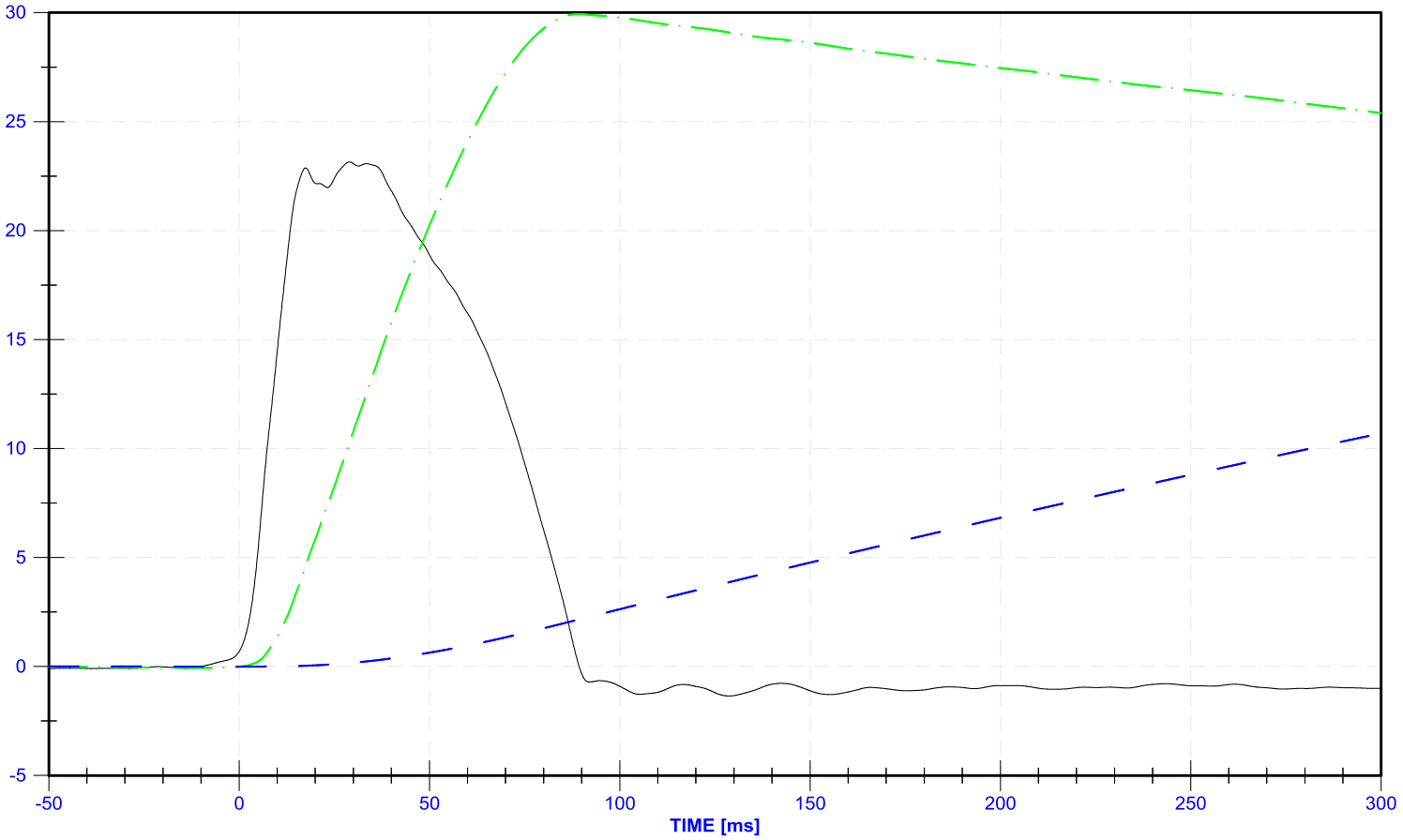
inGarden KG04-17-002

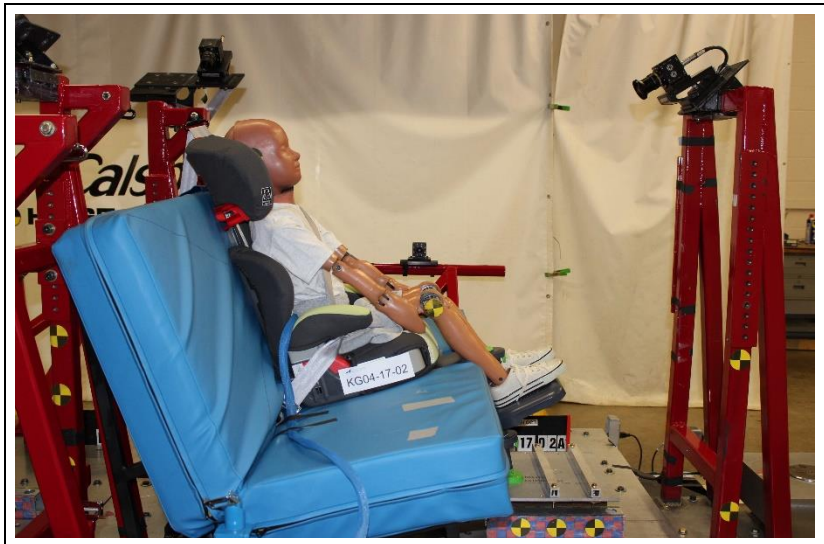
Test Date:
April 28,2017

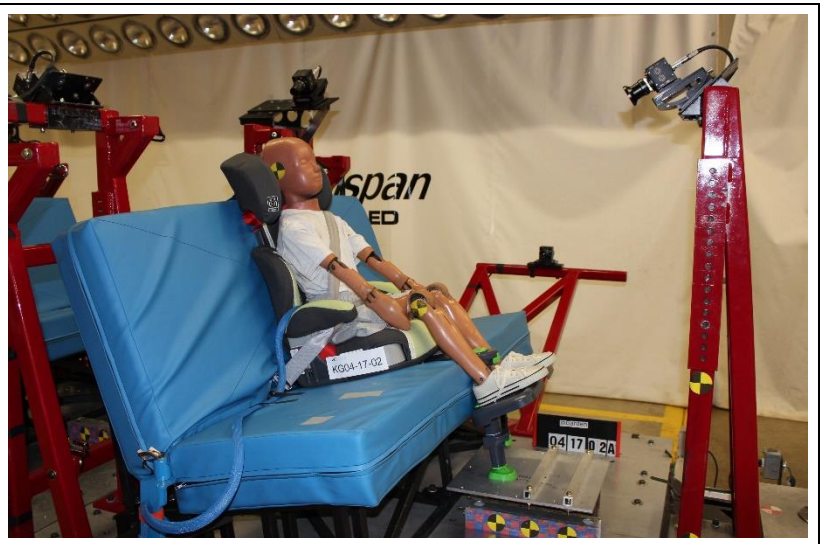
SLED Pulse



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (g's)	23.14	128.8	CFC 60	S0SLED000000ACXD
SLED Velocity (mph)	29.93	-10.5	CFC 180	S0SLED000000VAXC
SLED Displacement (ft)	10.69	0.6	CFC 180	S0SLED000000DVXC

Customer: inGarden Report No: 6545-17-02 Test Date: 04/28/2017





Pre-Test

Post-Test