

***DOG RESTRAINT
SLED TEST
Frontal Impact***

*Report Number: 4762-18-01
Report Date: June 21, 2018*

Test Date: June 19, 2018

Test Conducted By:

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

Prepared For:

**Kurgo
2D Fanaras Drive
Salisbury, MA 01952**

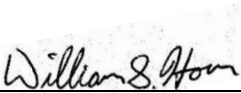


DISCLAIMER

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: 
Adam Hardbattle, SLED Engineer

Date: June 21, 2018

Authorized by: 
William Horn, SLED Director

Date: June 21, 2018

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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 Kurgo during June 19, 2018. 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 proposed standards set forth in the Pet Safety Harness Restraint Systems Testing Procedure.

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 #
Large K9	N	--	001A, 003A,
Medium K9	N	--	002A, 002B
Small K9	N	--	001B, 003B

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.



Kurgo - FRONTAL IMPACT SLED TEST - DATA SUMMARY

Sled Test # Date	FMVSS / CMVSS	Veh. Seat Position	Dog 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)	Knee Ex (in)	Vertical Head CG Exceeded (Y/N)	Test G's (g's)	Velocity (mph)
KU06-18-001B 06/19/2018	-	P5	Tru-Fit Smart Harness Enhanced Strength v.3	-	-	-	FF	Type 2	N	Small Dog	--	--	--	26	--	--	23.8	30
Comments: - Small Dog. Model: TFSH-Black-S. Part # 01256. PO # 4853. 813146012567. Lap and shoulder belts are routed through the carabiner. No post-test issues.																		
KU06-18-002A 06/19/2018	-	P2	Tru-Fit Smart Harness Enhanced Strength v.3	-	-	-	FF	Type 2	N	Medium Dog	--	--	--	28.7	--	--	23.4	29.6
Comments: - Medium Dog. Model: TFSH-Black-M. Part # 01257. PO # 4853. 813146012574. Lap and shoulder belts are routed through the carabiner. Carabiner has slight deformation.																		
KU06-18-002B 06/19/2018	-	P5	Impact Dog Seatbelt Harness	-	-	-	FF	Type 2	N	Medium Dog	--	--	--	25.6	--	--	23.4	29.6
Comments: - Medium Dog. Model: Impact Harness-M. Part # 01607. PO # 4139. 81314601607. Lap and shoulder belts are routed through restraint straps. No post-test issues.																		
KU06-18-003A 06/19/2018	-	P2	Impact Dog Seatbelt Harness	-	-	-	FF	Type 2	N	Large Dog	--	--	--	30.4	--	--	23.6	29.8
Comments: - Large Dog. Model: Impact Harness-L. Part # 01608. PO # 4139. 813146016084. Lap and shoulder belts are routed through restraint straps. Neck straps detached from chest pad.																		
KU06-18-003B 06/19/2018	-	P5	Impact Dog Seatbelt Harness	-	-	-	FF	Type 2	N	Small Dog	--	--	--	20.8	--	--	23.6	29.8
Comments: - Small Dog. Model: Impact Harness-S. Part # 01606. PO # 4139. 813146016060. Lap and shoulder belts are routed through restraint straps. No post-test issues.																		



Kurgo - FRONTAL IMPACT SLED TEST - DATA SUMMARY

Sled Test # Date	FIMVSS / CIMVSS	Veh. Seat Position	Dog 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 (in)	Knee (in)	Vertical Head CG Exceeded (Y/N)	Test G's (g's)	Velocity (mph)
KU06-18-004B 06/19/2018	-	P5	Tru-Fit Smart Harness Enhanced Strength v.3	-	-	-	FF	Type 2	N	Large Dog	--	--	--	32.9	--	--	23.6	29.8

Comments: - Large Dog. Model: TFSH-Black-L. Part # 01258. PO # 4904. 81314601258. Lap and shoulder belts are routed through the carabiner. Slight bend in connector where harness joins on back.



Run #	Product Name (Basic Model)	UPC# (Basic Model)	Pass/Fail
1A	Tru-Fit Smart Harness Enhanced Strength v.3	813146012581	Pass
1B	Tru-Fit Smart Harness Enhanced Strength v.3	813146012567	Pass
2A	Tru-Fit Smart Harness Enhanced Strength v.3	813146012574	Pass
2B	Impact Dog Seatbelt Harness	81314601607	Pass
3A	Impact Dog Seatbelt Harness	813146016084	Pass
3B	Impact Dog Seatbelt Harness	813146016060	Pass

SECTION 3
TEST DATA

This section contains information reporting on the following Data Sections:

- Bench Data
- Data Traces
- Corridor
- Synopsi

SLED TEST RUN: KU06-18-001

Kurgo - FRONTAL IMPACT SLED TEST - DATA SUMMARY

Sled Test # Date	FMVSS / CMVSS	Veh. Seat Position	Dog 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 (in)	Ex Knee (in)	Ex Head CG Exceeded (Y/N)	Test G's (g's)	Velocity (mph)
KU06-18-001B 06/19/2018	-	P5	Tru-Fit Smart Harness Enhanced Strength v.3	-	-	-	FF	Type 2	N	Small Dog	--	--	--	26	--	--	23.8	30

Comments: - Small Dog. Model: TFSH-Black-S. Part # 01256. PO # 4853. 813146012567. Lap and shoulder belts are routed through the carabiner. No post-test issues.



Kurgo KU06-18-001
Bench B

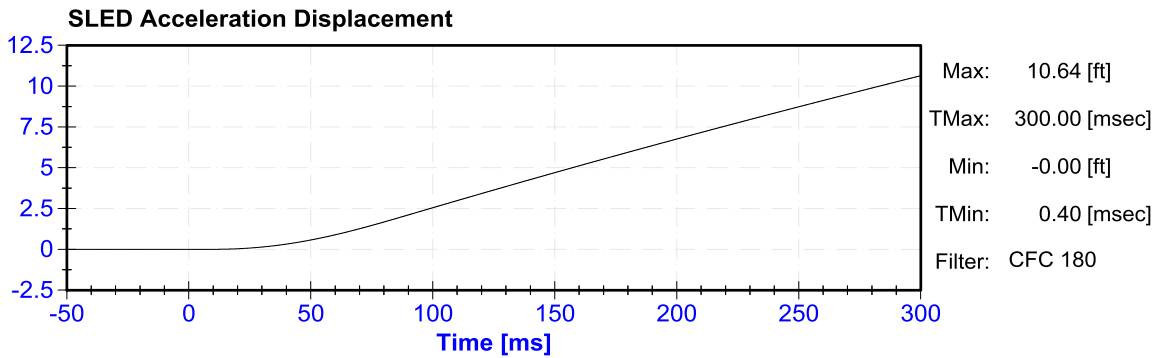
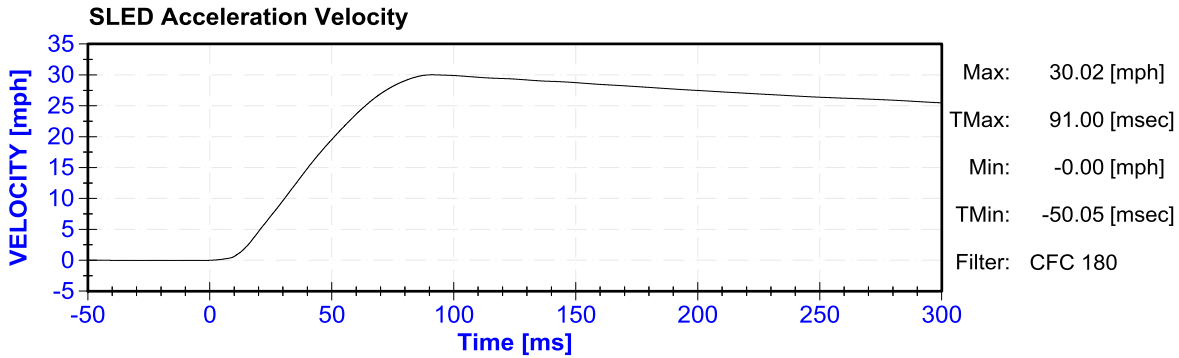
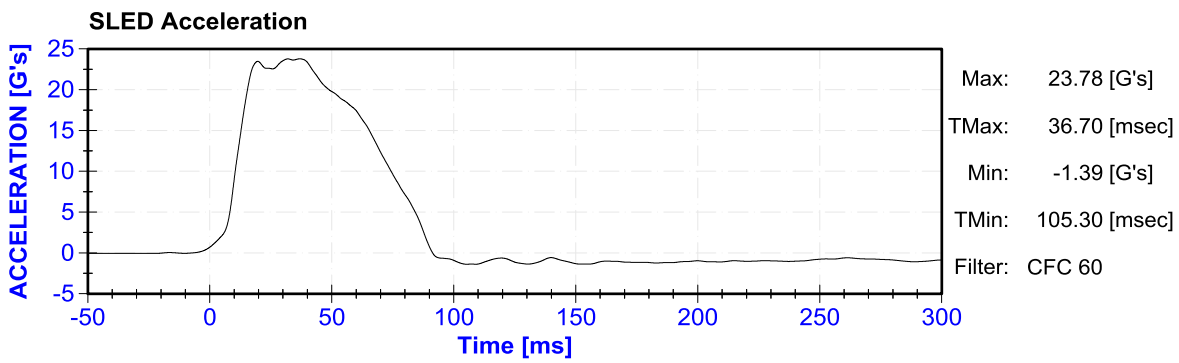
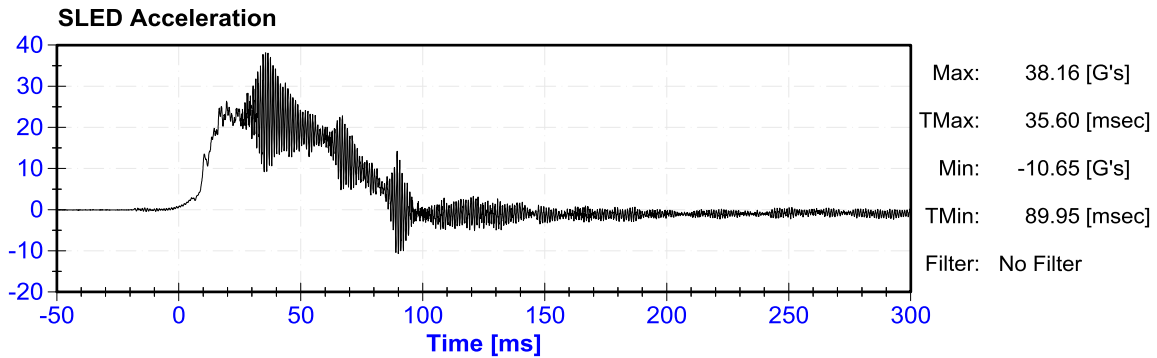
Test Date:
6/19/2018

Maximum / Minimum Values

Channel	Unit	Max	Max Time msec	Min	Min Time msec	Filter
SLED Acceleration	G's	23.8	36.7	-1.4	105.3	CFC 60
SLED Acceleration Velocity	mph	30.0	91.0	-0.0	-50.1	CFC 180
SLED Acceleration Displacement	ft	10.6	300.0	-0.0	0.4	CFC 180

Kurgo KU06-18-001

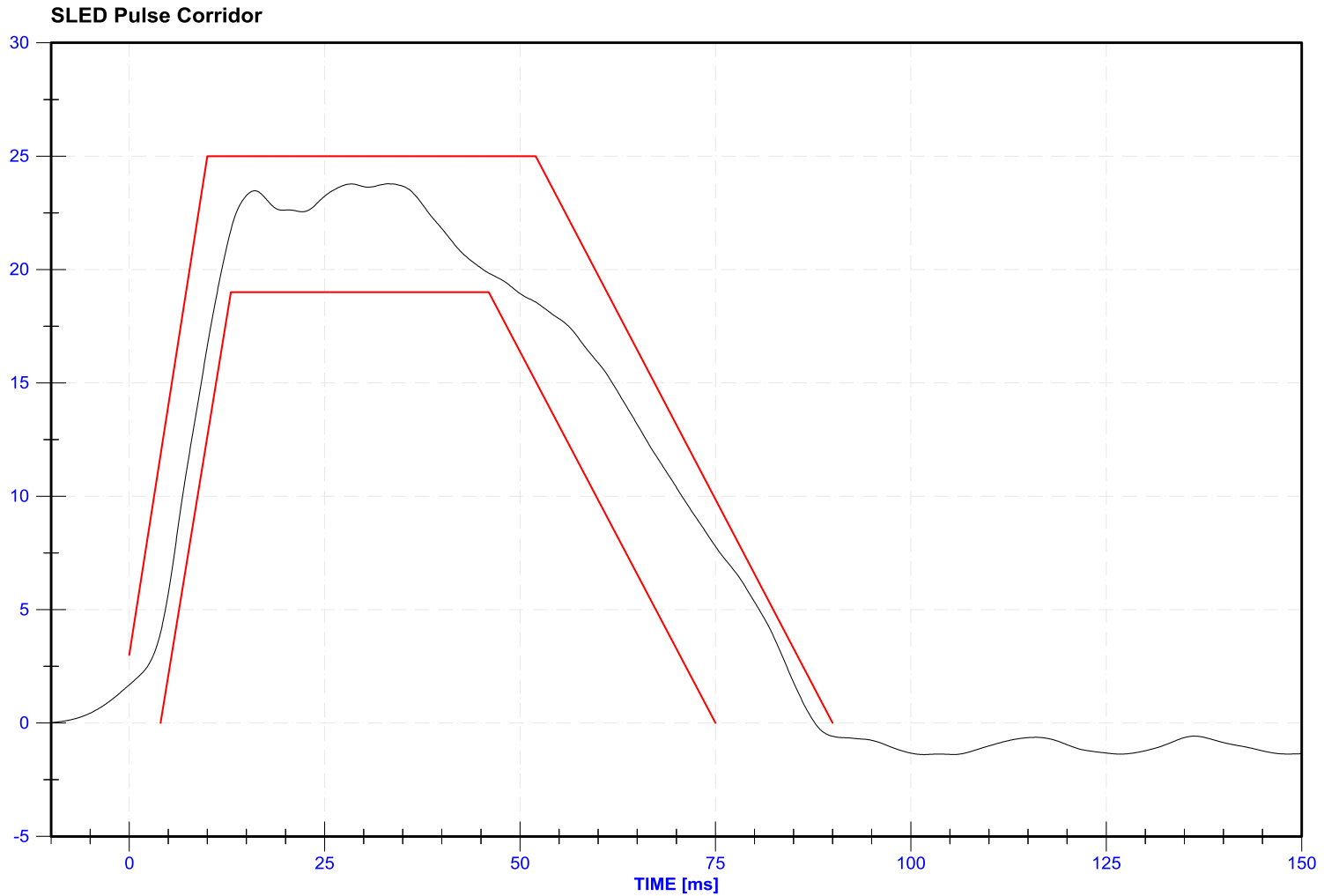
Test Date:
June 19, 2018





Kurgo KU06-18-001

Test Date:
June 19,2018

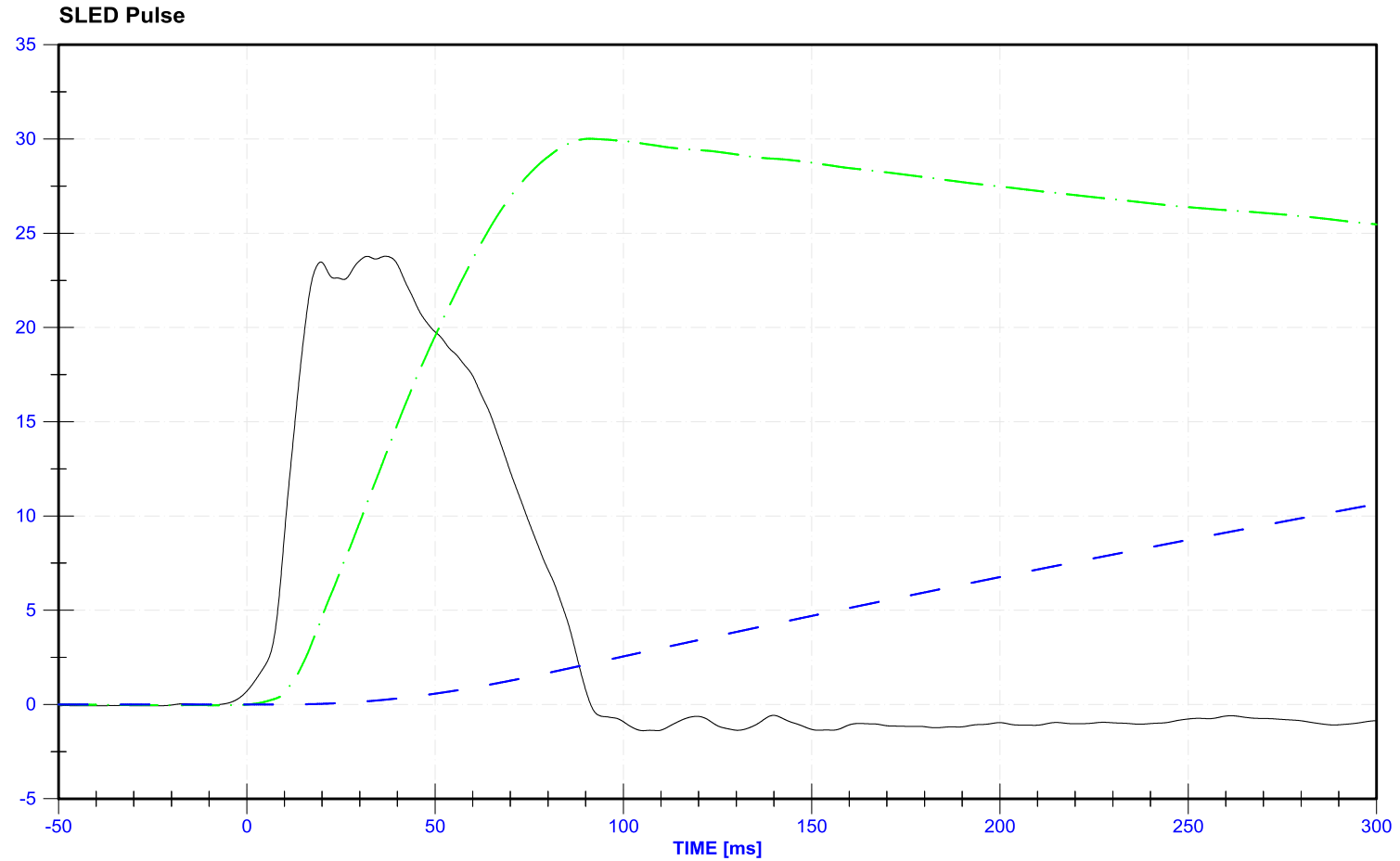


	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	23.78	36.7	CFC 60	S0SLED00OR00ACXD



Kurgo KU06-18-001

Test Date:
June 19,2018



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	23.78	105.3	CFC 60	— S0SLED000000ACXD
SLED Velocity (mph)	30.01	-8.1	CFC 180	— S0SLED000000VAXC
SLED Displacement (ft)	10.63	0.4	CFC 180	— S0SLED000000DVXC

SLED TEST RUN: KU06-18-002

Kurgo - FRONTAL IMPACT SLED TEST - DATA SUMMARY																		
<i>Sled Test # Date</i>	<i>FMVSS / CMVSS</i>	<i>Veh. Seat Position</i>	<i>Dog Restraint</i>	<i>Harness Position</i>	<i>Crotch Position</i>	<i>Recline Position</i>	<i>Seat Direction / Mode</i>	<i>Restraint System</i>	<i>Tether (Y/N)</i>	<i>ATD</i>	<i>Canadian Head Clip 3ms (g's)</i>	<i>HIC 36ms (g's)</i>	<i>Chest 3ms (g's)</i>	<i>Head Ex (in)</i>	<i>Knee Ex (in)</i>	<i>Vertical Head CG Exceeded (Y/N)</i>	<i>Test G's (g's)</i>	<i>Velocity (mph)</i>
KU06-18-002A 06/19/2018	-	P2	Tru-Fit Smart Harness Enhanced Strength v.3	-	-	-	FF	Type 2	N	Medium Dog	--	--	--	28.7	--	--	23.4	29.6
Comments: - Medium Dog. Model: TFSH-Black-M. Part # 01257. PO # 4853. 813146012574. Lap and shoulder belts are routed through the carabiner. Carabiner has slight deformation.																		



Kurgo KU06-18-002
Bench A

Test Date:
6/19/2018

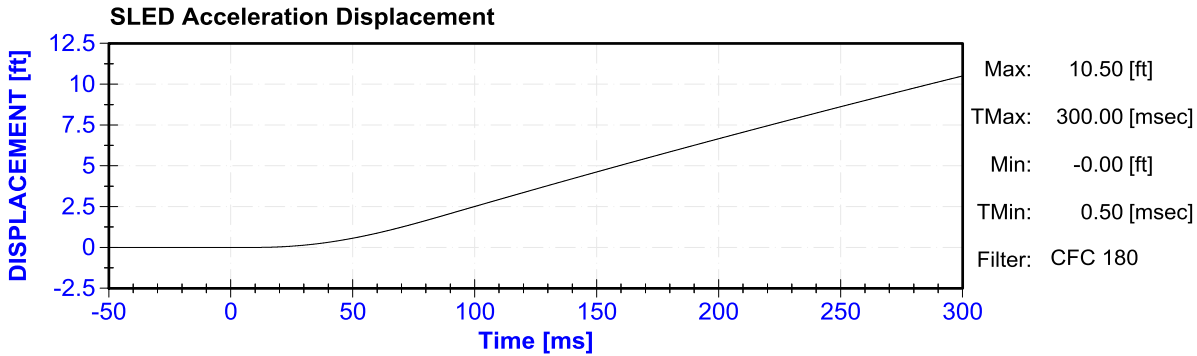
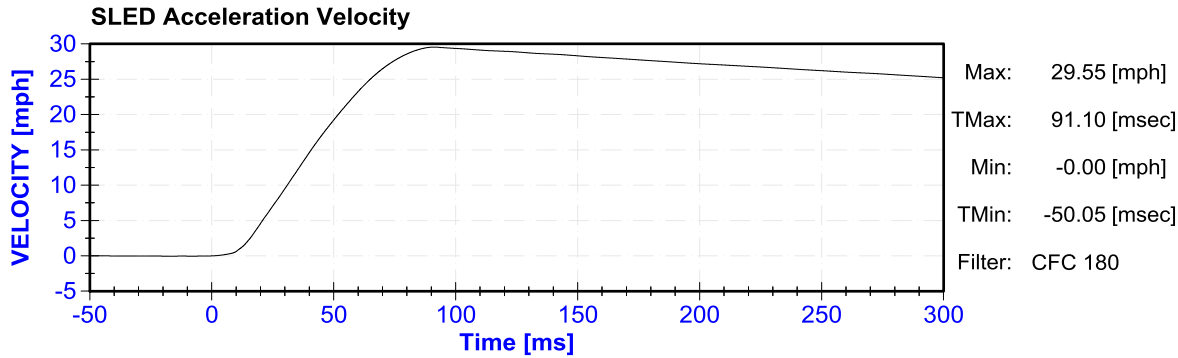
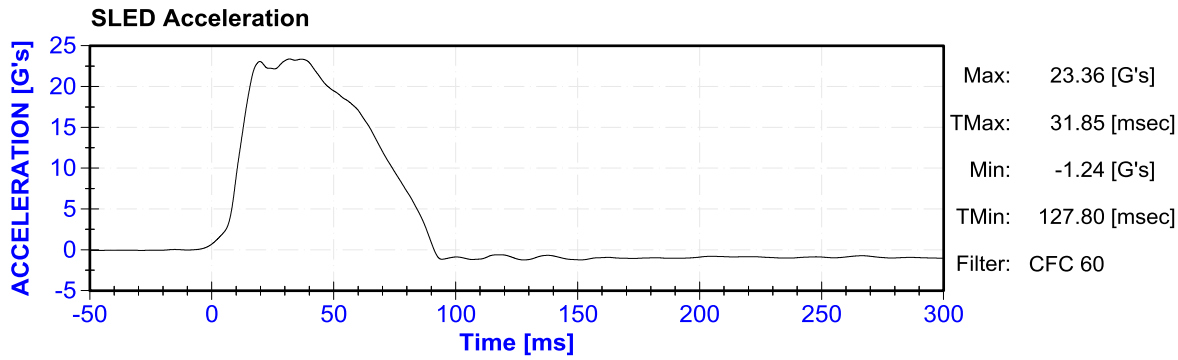
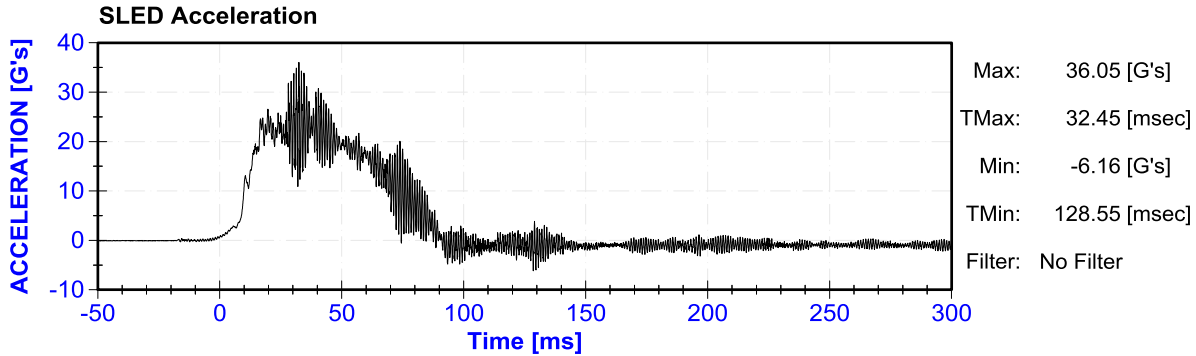
Maximum / Minimum Values

Channel	Unit	Max	Max Time msec	Min	Min Time msec	Filter
SLED Acceleration	G's	23.4	31.9	-1.2	127.8	CFC 60
SLED Acceleration Velocity	mph	29.5	91.1	-0.0	-50.1	CFC 180
SLED Acceleration Displacement	ft	10.5	300.0	-0.0	0.5	CFC 180



Kurgo KU06-18-002

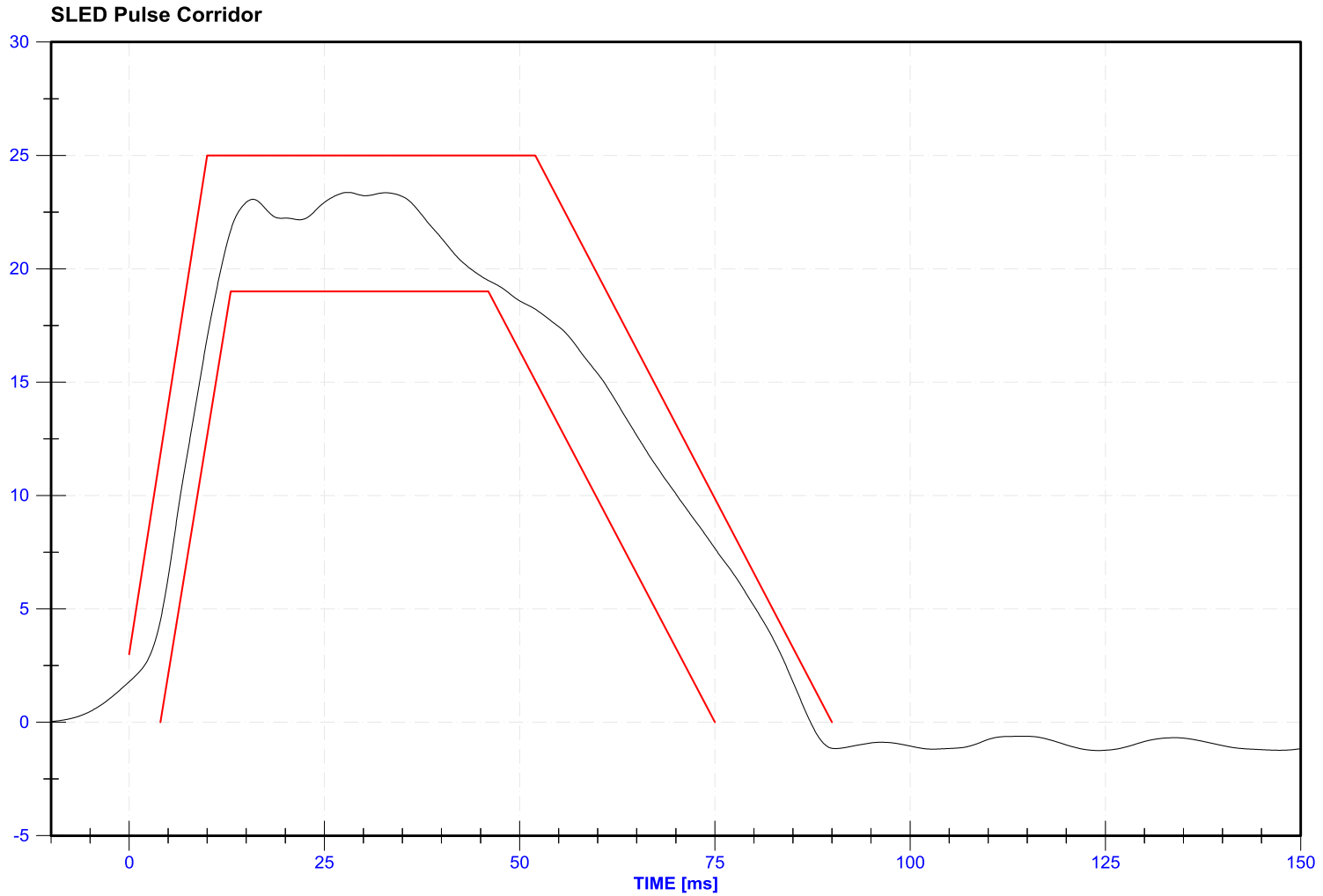
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June 19, 2018





Kurgo KU06-18-002

Test Date:
June 19,2018

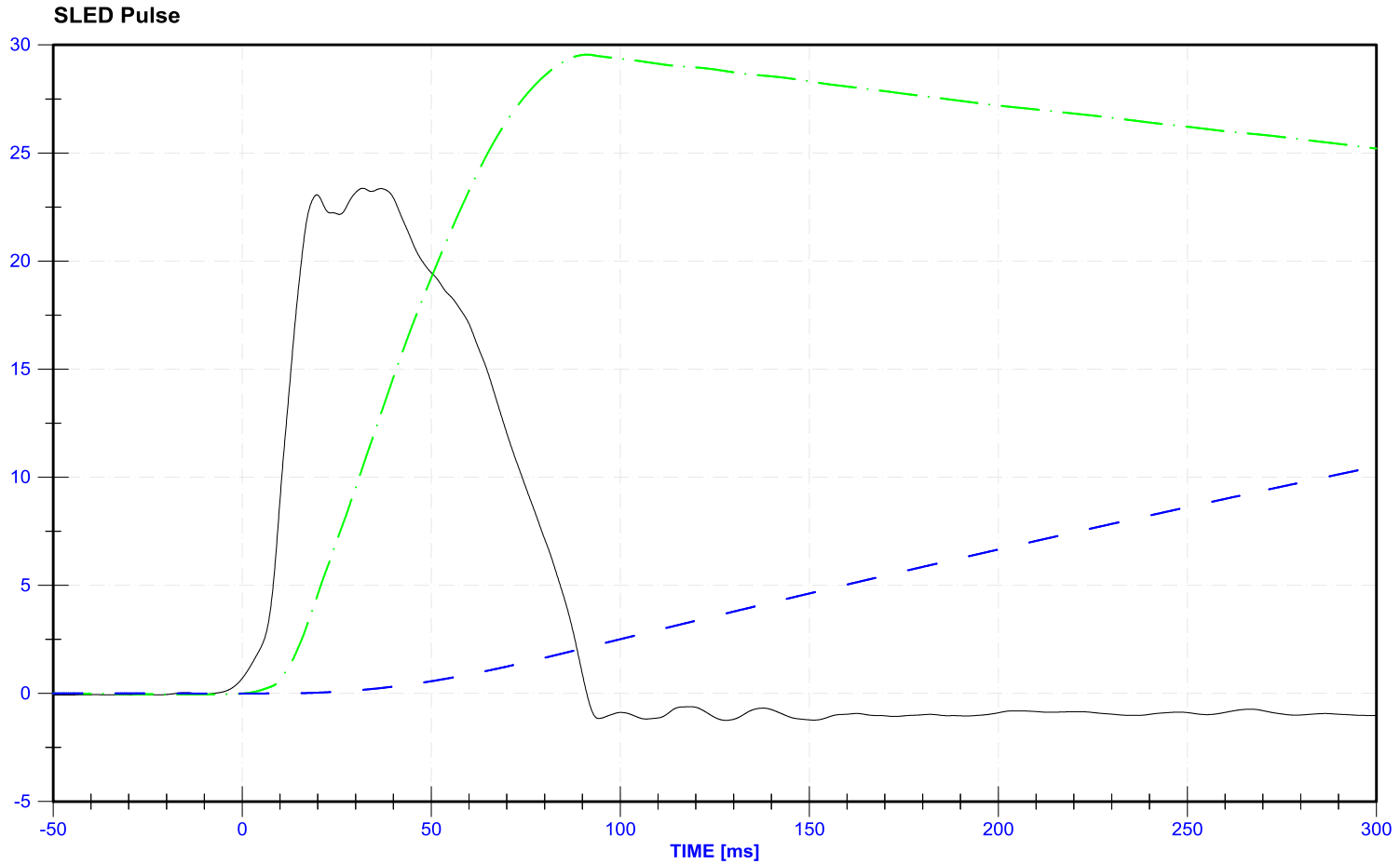


	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	23.36	31.9	CFC 60	— S0SLED00OR00ACXD



Kurgo KU06-18-002

Test Date:
June 19,2018



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	23.36	127.8	CFC 60	— S0SLED000000ACXD
SLED Velocity (mph)	29.54	-17.7	CFC 180	— S0SLED000000VAXC
SLED Displacement (ft)	10.50	0.5	CFC 180	— S0SLED000000DVXC

SLED TEST RUN: KU06-18-002

Kurgo - FRONTAL IMPACT SLED TEST - DATA SUMMARY																		
<i>Sled Test # Date</i>	<i>FMVSS / CMVSS</i>	<i>Veh. Seat Position</i>	<i>Dog Restraint</i>	<i>Harness Position</i>	<i>Crotch Position</i>	<i>Recline Position</i>	<i>Seat Direction / Mode</i>	<i>Restraint System</i>	<i>Tether (Y/N)</i>	<i>ATD</i>	<i>Canadian Head Clip 3ms (g's)</i>	HIC <i>36ms (g's)</i>	Chest <i>3ms (g's)</i>	Head <i>(in)</i>	Ex Knee Ex <i>(in)</i>	Vertical Head CG Exceeded (Y/N)	Test G's (g's)	Velocity (mph)
KU06-18-002B 06/19/2018	-	P5	Impact Dog Seatbelt Harness	-	-	-	FF	Type 2	N	Medium Dog	--	--	--	25.6	--	--	23.4	29.6
Comments: - Medium Dog. Model: Impact Harness-M. Part # 01607. PO # 4139. 81314601607. Lap and shoulder belts are routed through restraint straps. No post-test issues.																		



Kurgo KU06-18-002
Bench B

Test Date:
6/19/2018

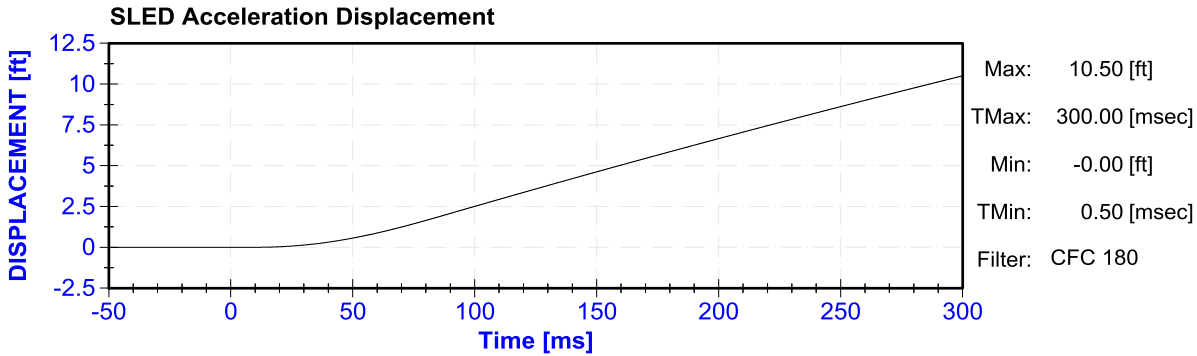
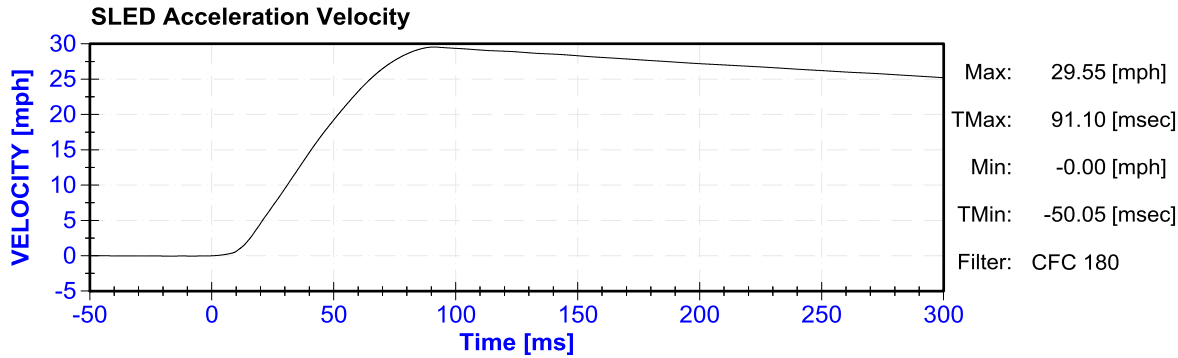
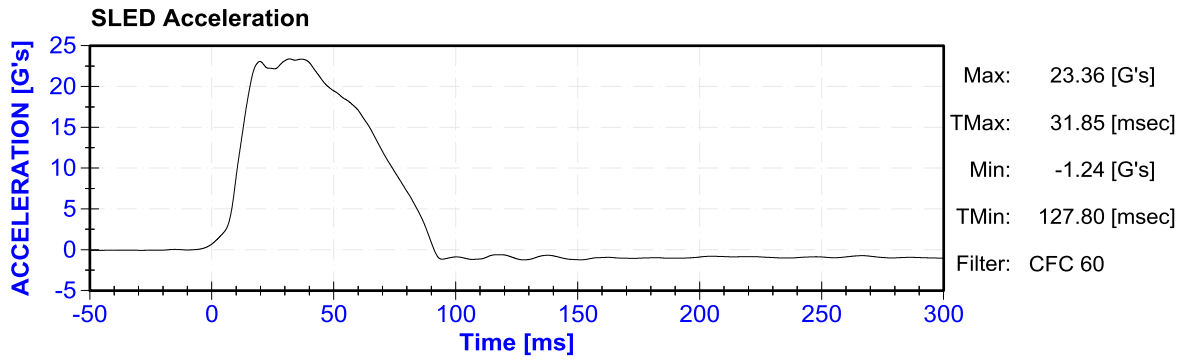
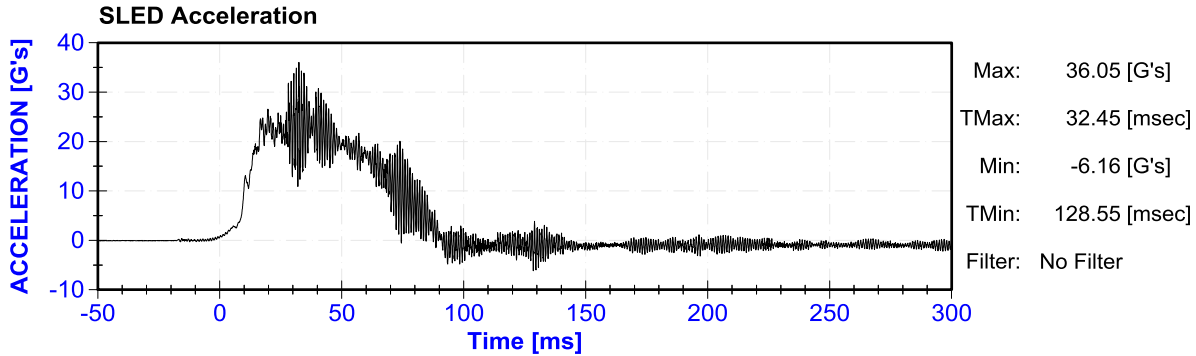
Maximum / Minimum Values

Channel	Unit	Max	Max Time msec	Min	Min Time msec	Filter
SLED Acceleration	G's	23.4	31.9	-1.2	127.8	CFC 60
SLED Acceleration Velocity	mph	29.5	91.1	-0.0	-50.1	CFC 180
SLED Acceleration Displacement	ft	10.5	300.0	-0.0	0.5	CFC 180



Kurgo KU06-18-002

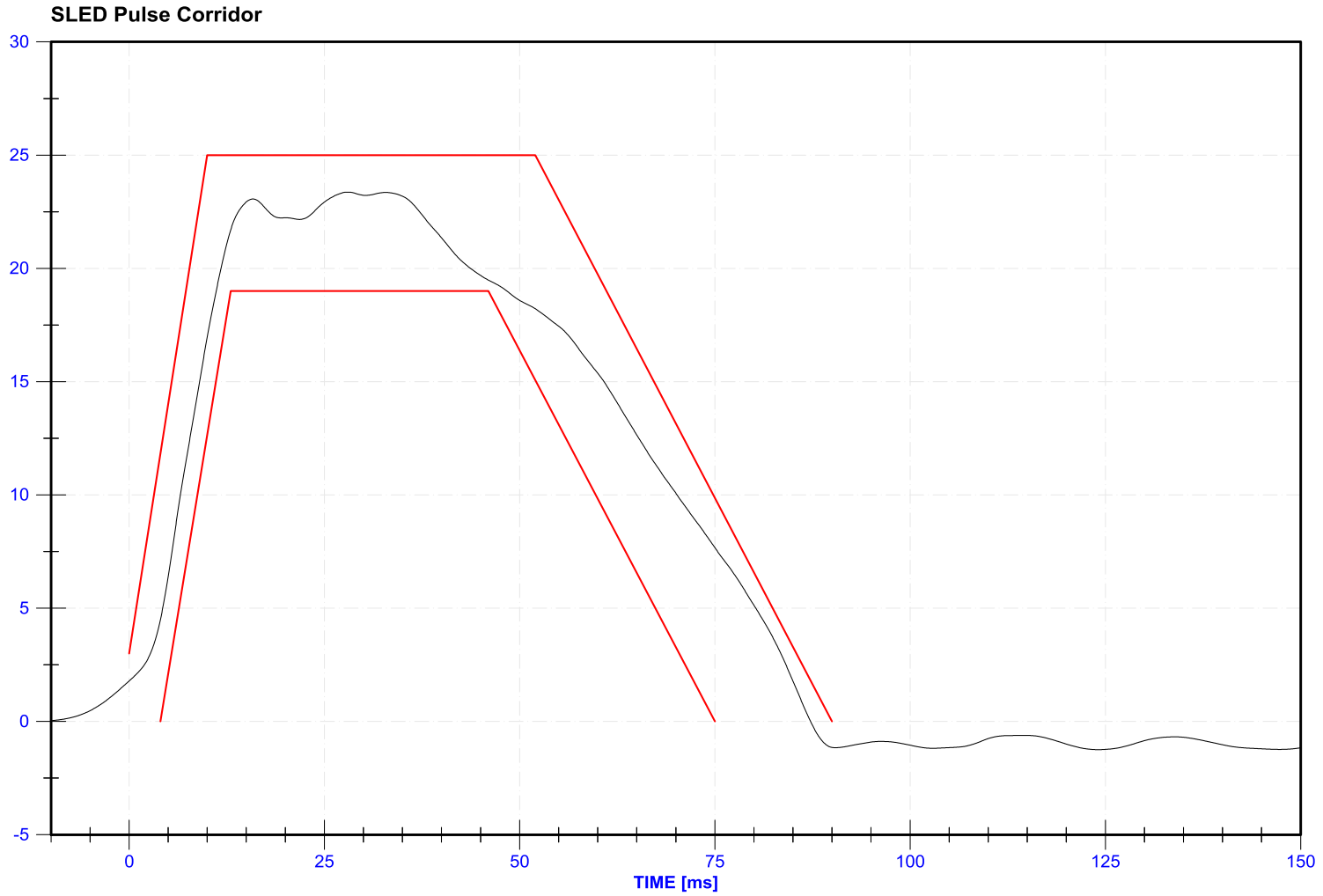
Test Date:
June 19, 2018





Kurgo KU06-18-002

Test Date:
June 19,2018

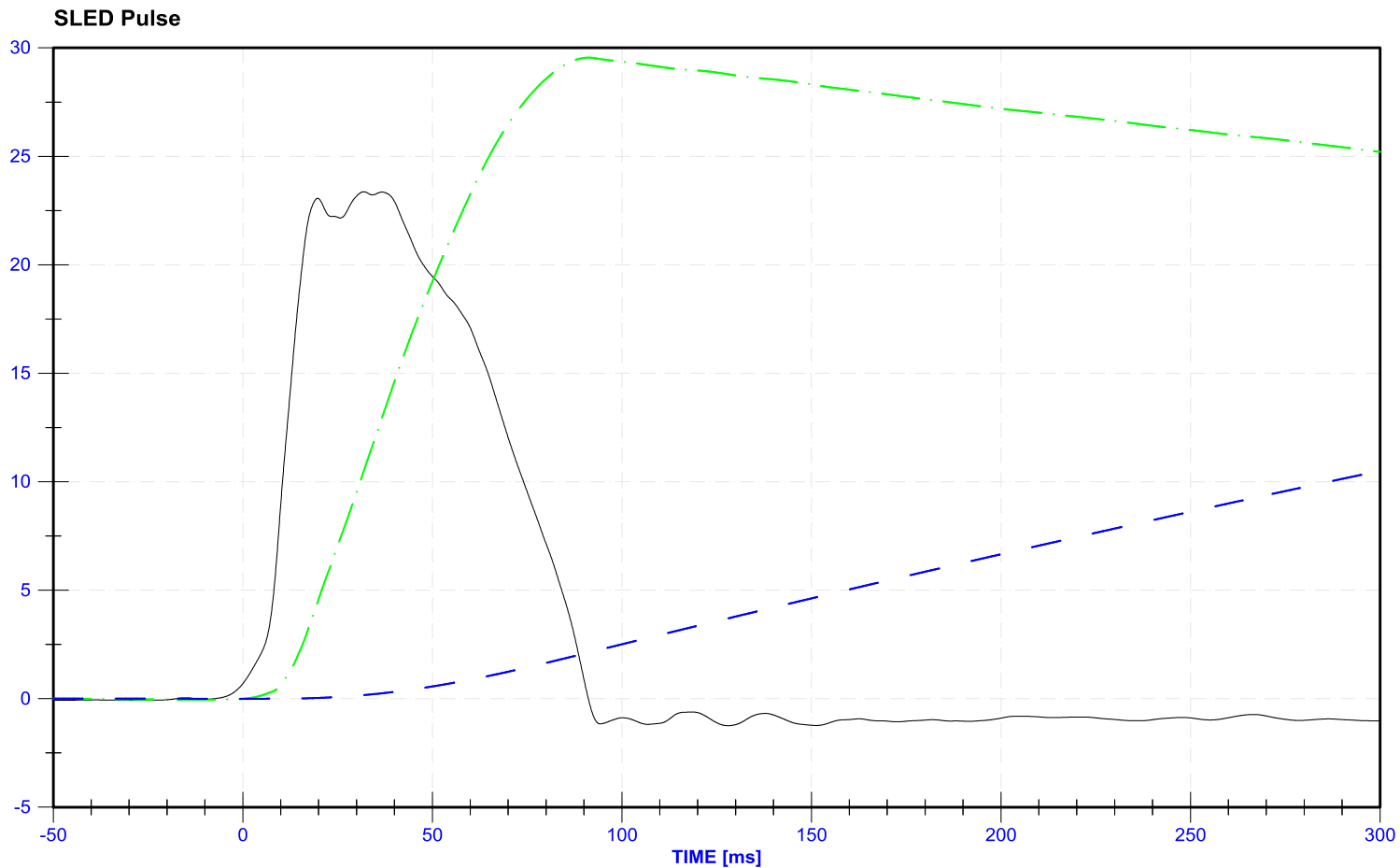


	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	23.36	31.9	CFC 60	S0SLED00OR00ACXD



Kurgo KU06-18-002

Test Date:
June 19,2018



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	23.36	127.8	CFC 60	— S0SLED000000ACXD
SLED Velocity (mph)	29.54	-17.7	CFC 180	— S0SLED000000VAXC
SLED Displacement (ft)	10.50	0.5	CFC 180	— S0SLED000000DVXC

SLED TEST RUN: KU06-18-003

Kurgo - FRONTAL IMPACT SLED TEST - DATA SUMMARY																		
Sled Test # Date	FMVSS / CMVSS	Veh. Seat Position	Dog 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 (in)	Ex Knee (in)	Ex Vertical Head CG Exceeded (Y/N)	Test G's (g's)	Velocity (mph)
KU06-18-003A 06/19/2018	-	P2	Impact Dog Seatbelt Harness	-	-	-	FF	Type 2	N	Large Dog	--	--	--	30.4	--	--	23.6	29.8
Comments: - Large Dog. Model: Impact Harness-L. Part # 01608. PO # 4139. 813146016084. Lap and shoulder belts are routed through restraint straps. Neck straps detached from chest pad.																		



Kurgo KU06-18-003
Bench A

Test Date:
6/19/2018

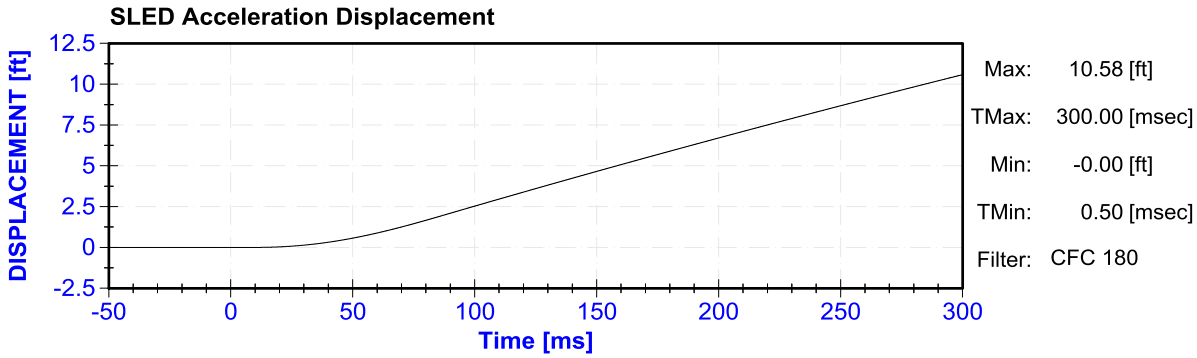
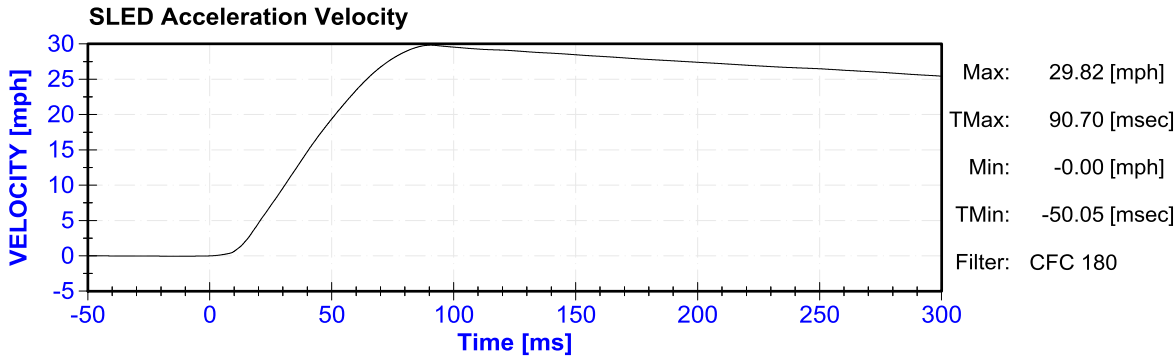
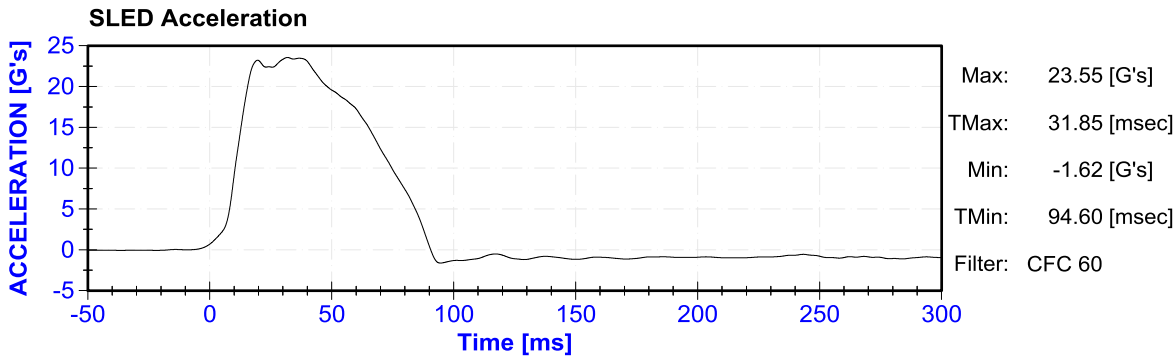
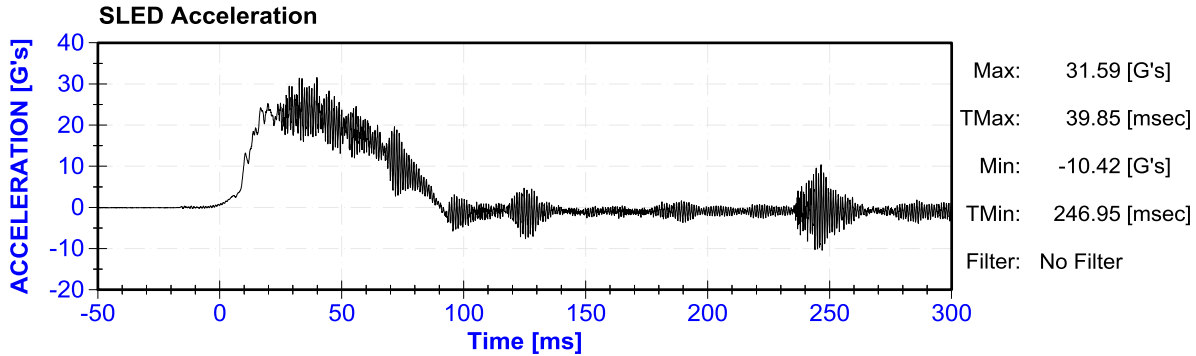
Maximum / Minimum Values

Channel	Unit	Max	Max Time msec	Min	Min Time msec	Filter
SLED Acceleration	G's	23.6	31.9	-1.6	94.6	CFC 60
SLED Acceleration Velocity	mph	29.8	90.7	-0.0	-50.1	CFC 180
SLED Acceleration Displacement	ft	10.6	300.0	-0.0	0.5	CFC 180



Kurgo KU06-18-003

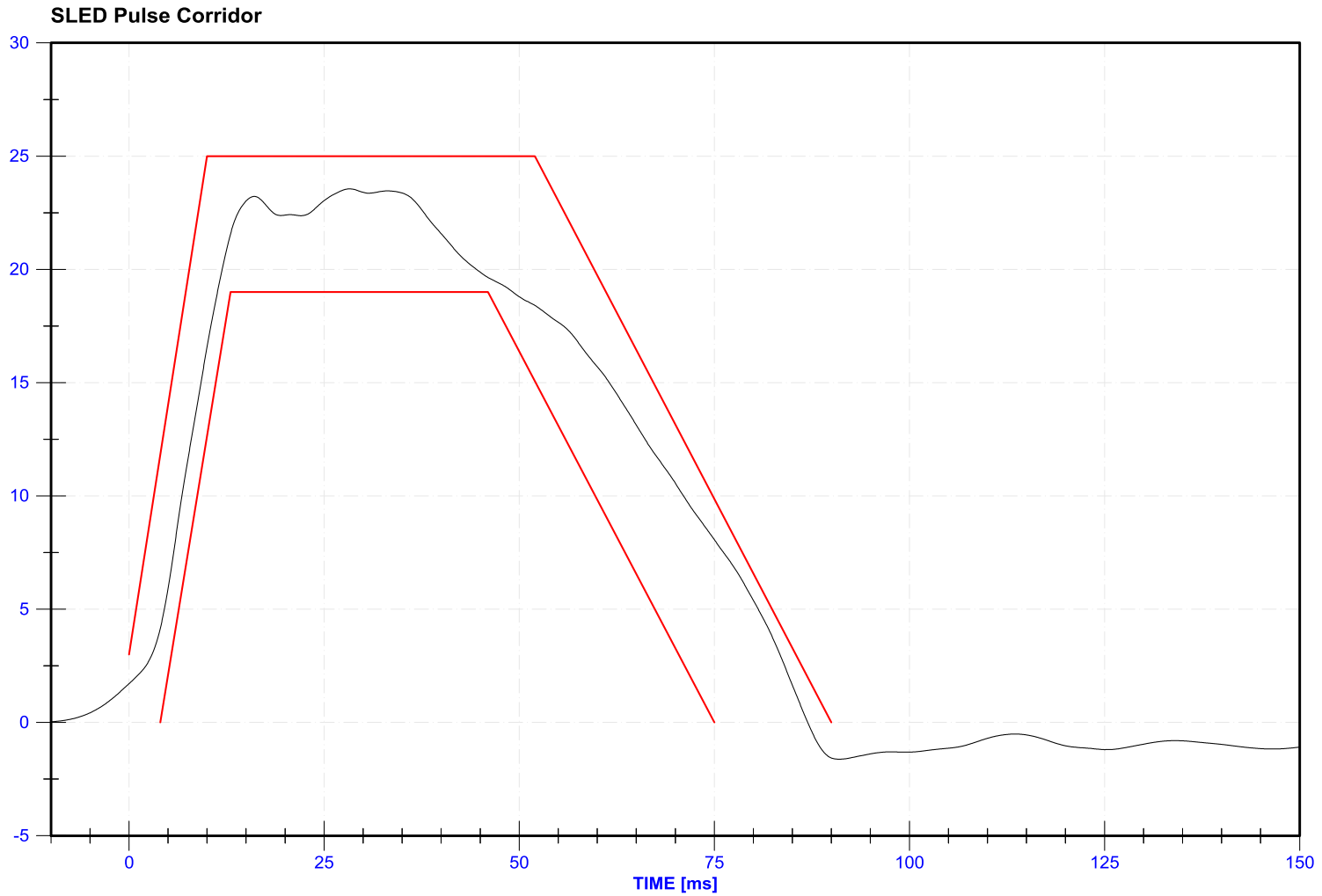
Test Date:
June 19, 2018





Kurgo KU06-18-003

Test Date:
June 19,2018

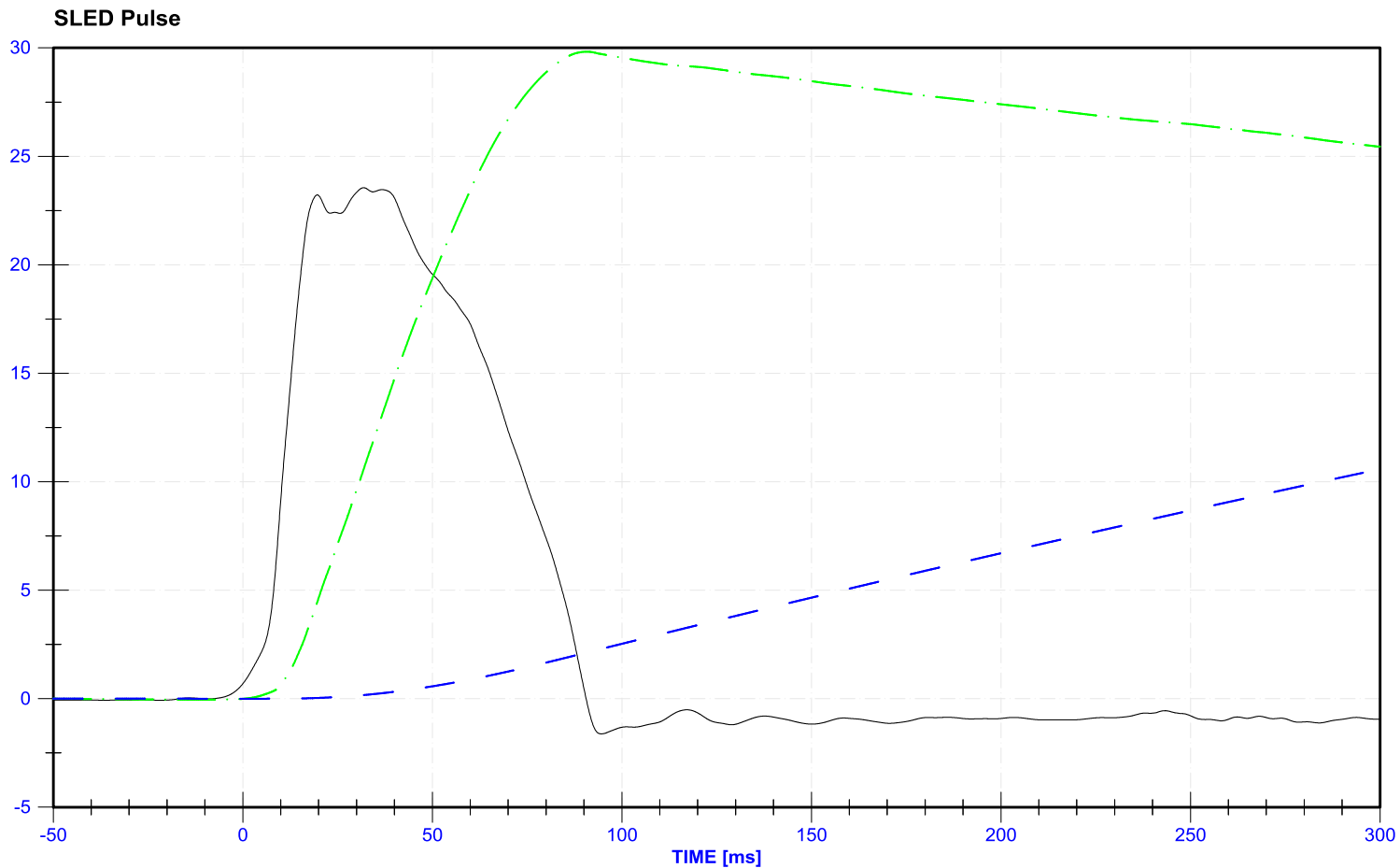


	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	23.55	31.9	CFC 60	— S0SLED00OR00ACXD



Kurgo KU06-18-003

Test Date:
June 19,2018



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	23.55	94.6	CFC 60	— S0SLED000000ACXD
SLED Velocity (mph)	29.82	-16.5	CFC 180	— S0SLED000000VAXC
SLED Displacement (ft)	10.58	0.5	CFC 180	— S0SLED000000DVXC

SLED TEST RUN: KU06-18-003

Kurgo - FRONTAL IMPACT SLED TEST - DATA SUMMARY																		
<i>Sled Test # Date</i>	<i>FMVSS / CMVSS</i>	<i>Veh. Seat Position</i>	<i>Dog Restraint</i>	<i>Harness Position</i>	<i>Crotch Position</i>	<i>Recline Position</i>	<i>Seat Direction / Mode</i>	<i>Restraint System</i>	<i>Tether (Y/N)</i>	<i>ATD</i>	<i>Canadian Head Clip 3ms (g's)</i>	<i>HIC 36ms (g's)</i>	<i>Chest 3ms (g's)</i>	<i>Head Ex (in)</i>	<i>Knee Ex (in)</i>	<i>Vertical Head CG Exceeded (Y/N)</i>	<i>Test G's (g's)</i>	<i>Velocity (mph)</i>
KU06-18-003B 06/19/2018	-	P5	Impact Dog Seatbelt Harness	-	-	-	FF	Type 2	N	Small Dog	--	--	--	20.8	--	--	23.6	29.8
Comments: - Small Dog. Model: Impact Harness-S. Part # 01606. PO # 4139. 813146016060. Lap and shoulder belts are routed through restraint straps. No post-test issues.																		



Kurgo KU06-18-003
Bench B

Test Date:
6/19/2018

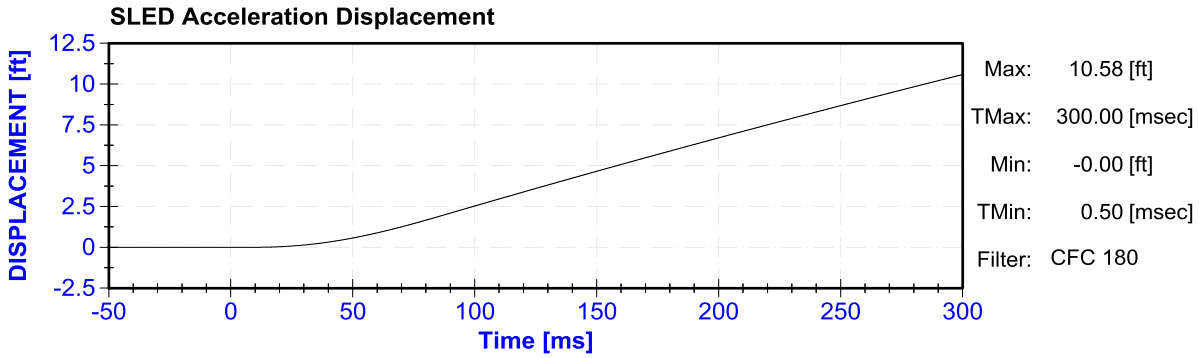
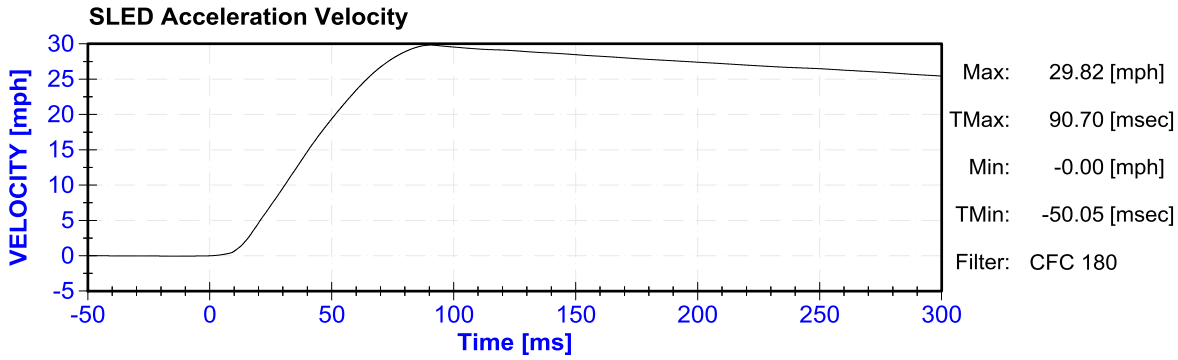
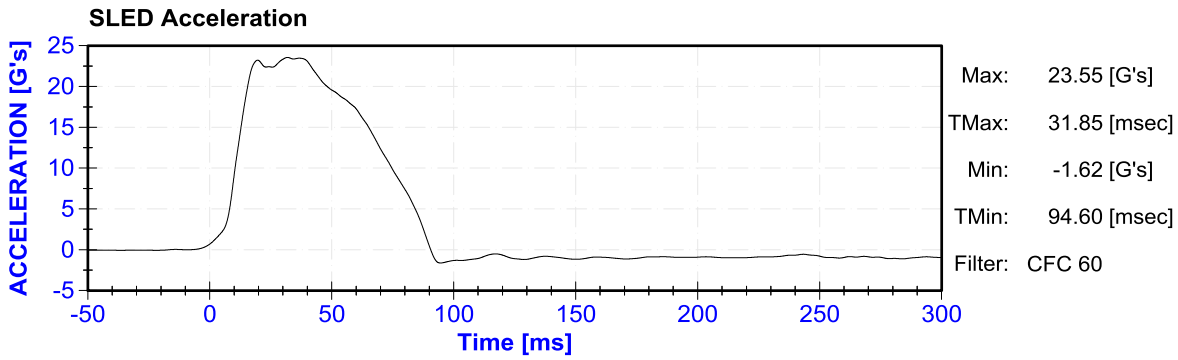
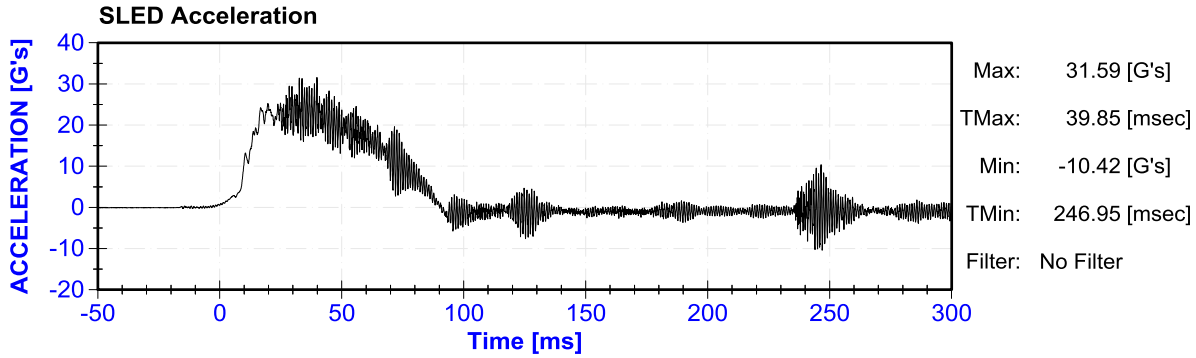
Maximum / Minimum Values

Channel	Unit	Max	Max Time msec	Min	Min Time msec	Filter
SLED Acceleration	G's	23.6	31.9	-1.6	94.6	CFC 60
SLED Acceleration Velocity	mph	29.8	90.7	-0.0	-50.1	CFC 180
SLED Acceleration Displacement	ft	10.6	300.0	-0.0	0.5	CFC 180



Kurgo KU06-18-003

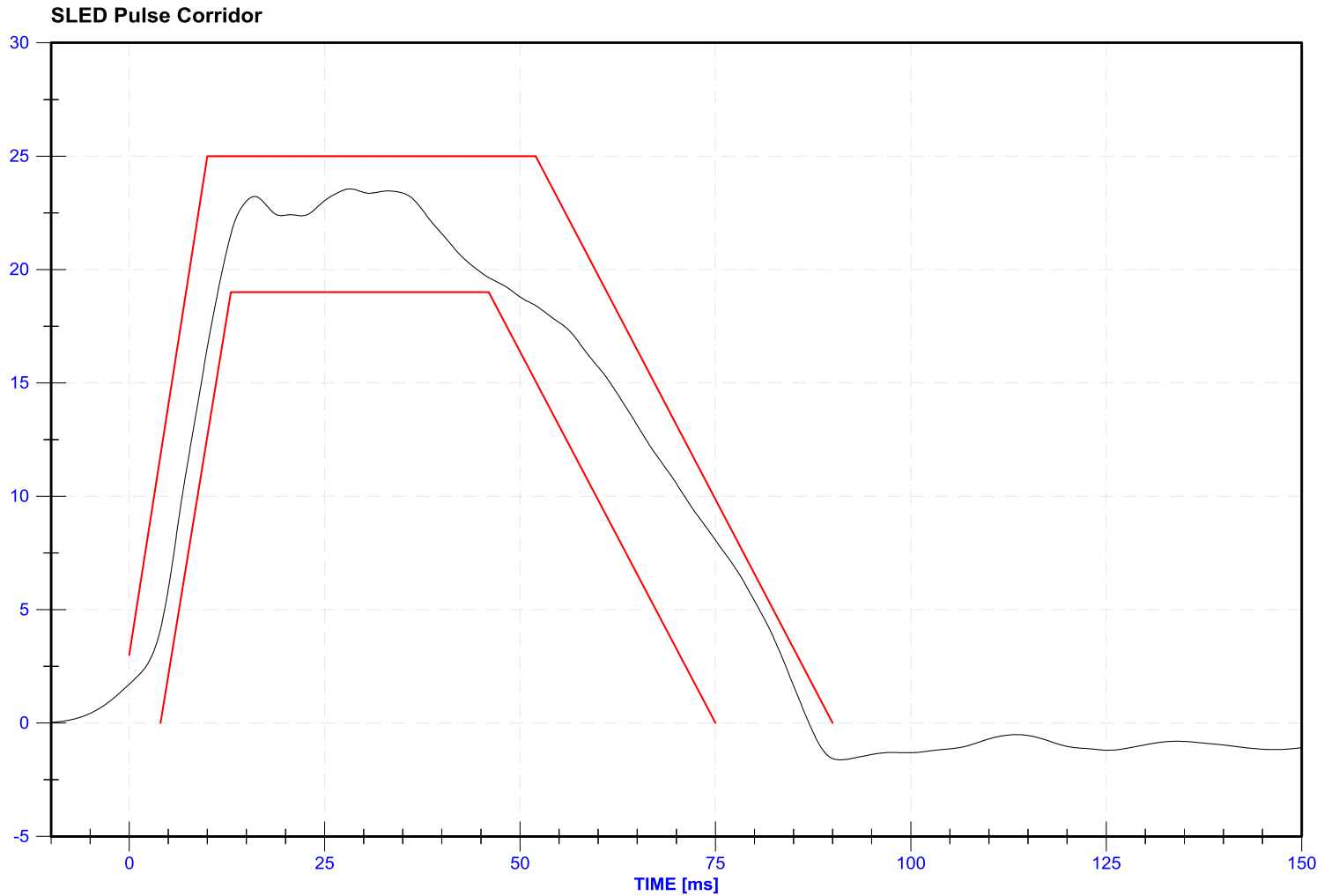
Test Date:
June 19, 2018





Kurgo KU06-18-003

Test Date:
June 19,2018

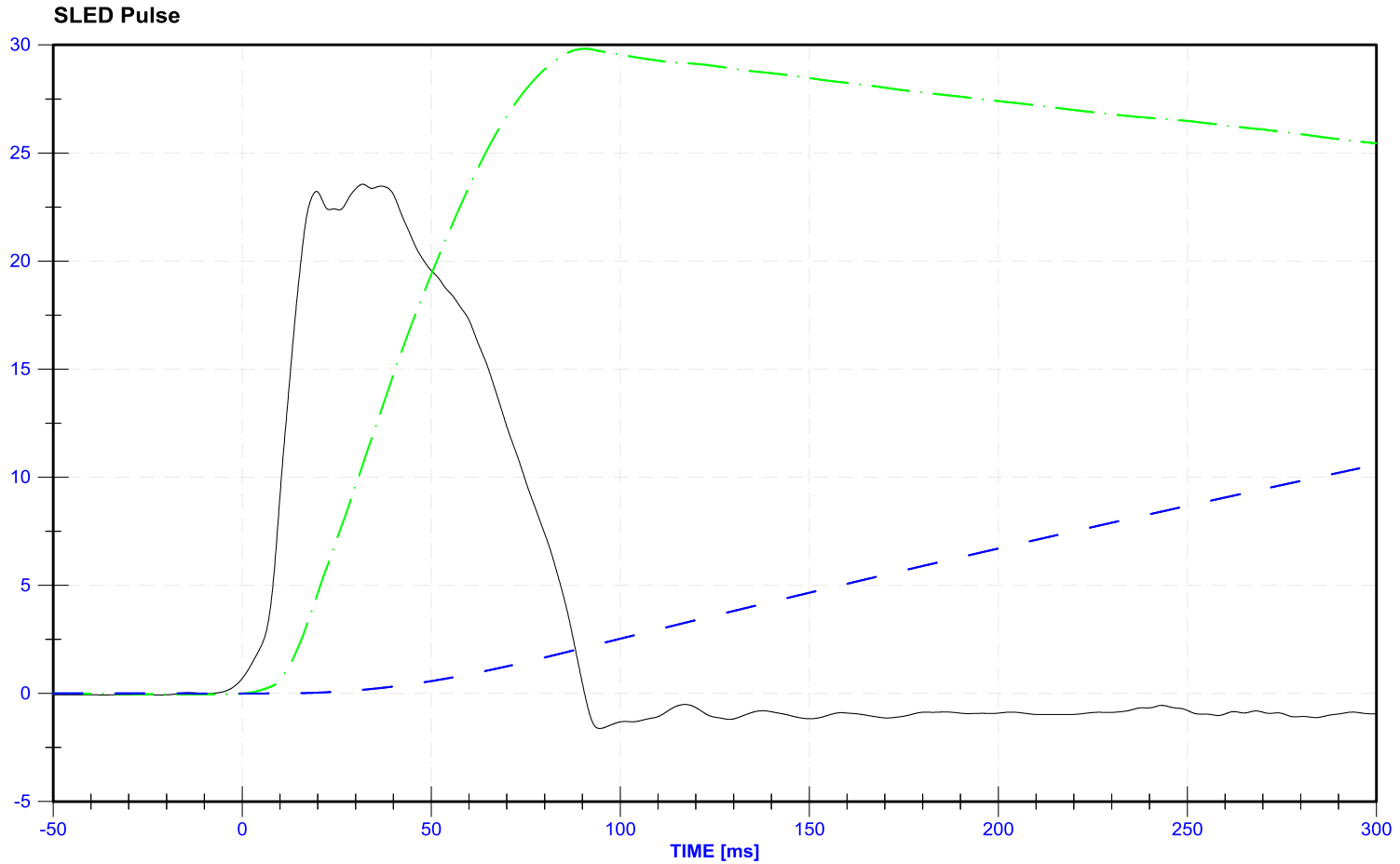


	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	23.55	31.9	CFC 60	S0SLED00OR00ACXD



Kurgo KU06-18-003

Test Date:
June 19,2018



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	23.55	94.6	CFC 60	— S0SLED000000ACXD
SLED Velocity (mph)	29.82	-16.5	CFC 180	— S0SLED000000VAXC
SLED Displacement (ft)	10.58	0.5	CFC 180	— S0SLED000000DVXC

SLED TEST RUN: KU06-18-004

Kurgo - FRONTAL IMPACT SLED TEST - DATA SUMMARY																		
<i>Sled Test # Date</i>	<i>FMVSS / CMVSS</i>	<i>Veh. Seat Position</i>	<i>Dog Restraint</i>	<i>Harness Position</i>	<i>Crotch Position</i>	<i>Recline Position</i>	<i>Seat Direction / Mode</i>	<i>Restraint System</i>	<i>Tether (Y/N)</i>	<i>ATD</i>	<i>Canadian Head Clip 3ms (g's)</i>	<i>HIC 36ms (g's)</i>	<i>Chest 3ms (g's)</i>	<i>Head Ex (in)</i>	<i>Knee Ex (in)</i>	<i>Vertical Head CG Exceeded (Y/N)</i>	<i>Test G's (g's)</i>	<i>Velocity (mph)</i>
KU06-18-004B 06/19/2018	-	P5	Tru-Fit Smart Harness Enhanced Strength v.3	-	-	-	FF	Type 2	N	Large Dog	--	--	--	32.9	--	--	23.6	29.8
Comments: - Large Dog. Model: TFSH-Black-L. Part # 01258. PO # 4904. 81314601258. Lap and shoulder belts are routed through the carabiner. Slight bend in connector where harness joins on back.																		



Kurgo KU06-18-004
Bench B

Test Date:
6/19/2018

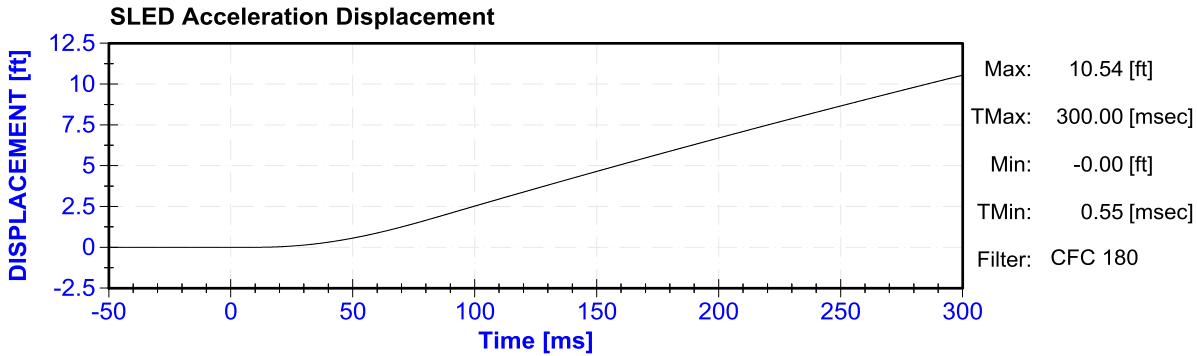
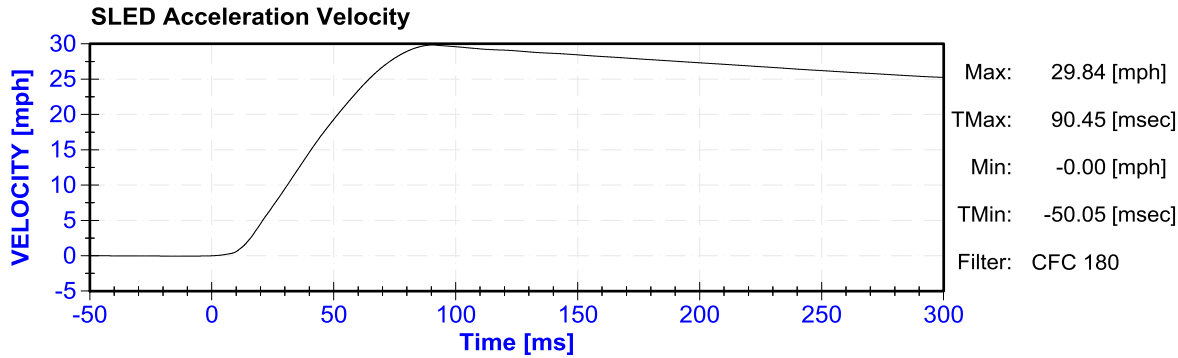
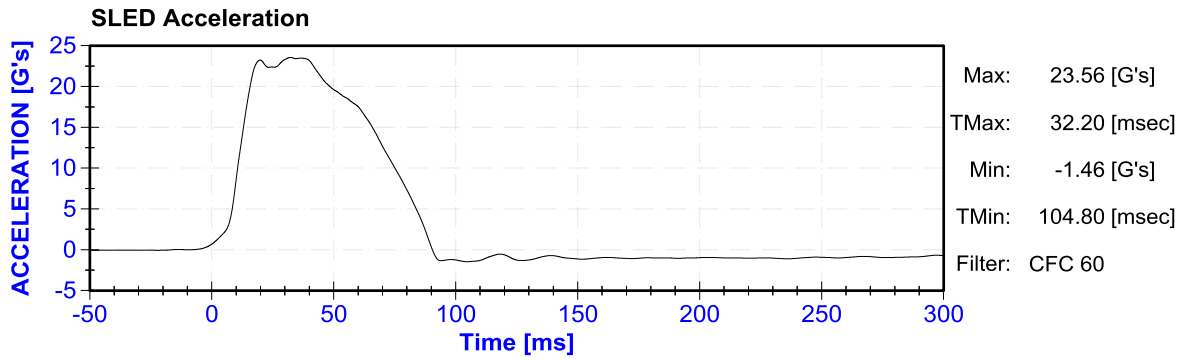
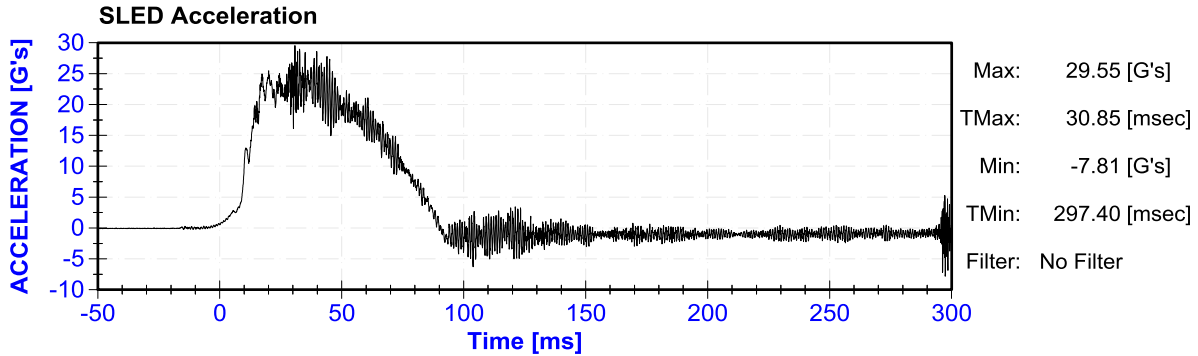
Maximum / Minimum Values

Channel	Unit	Max	Max Time msec	Min	Min Time msec	Filter
SLED Acceleration	G's	23.6	32.2	-1.5	104.8	CFC 60
SLED Acceleration Velocity	mph	29.8	90.5	-0.0	-50.1	CFC 180
SLED Acceleration Displacement	ft	10.5	300.0	-0.0	0.6	CFC 180



Kurgo KU06-18-004

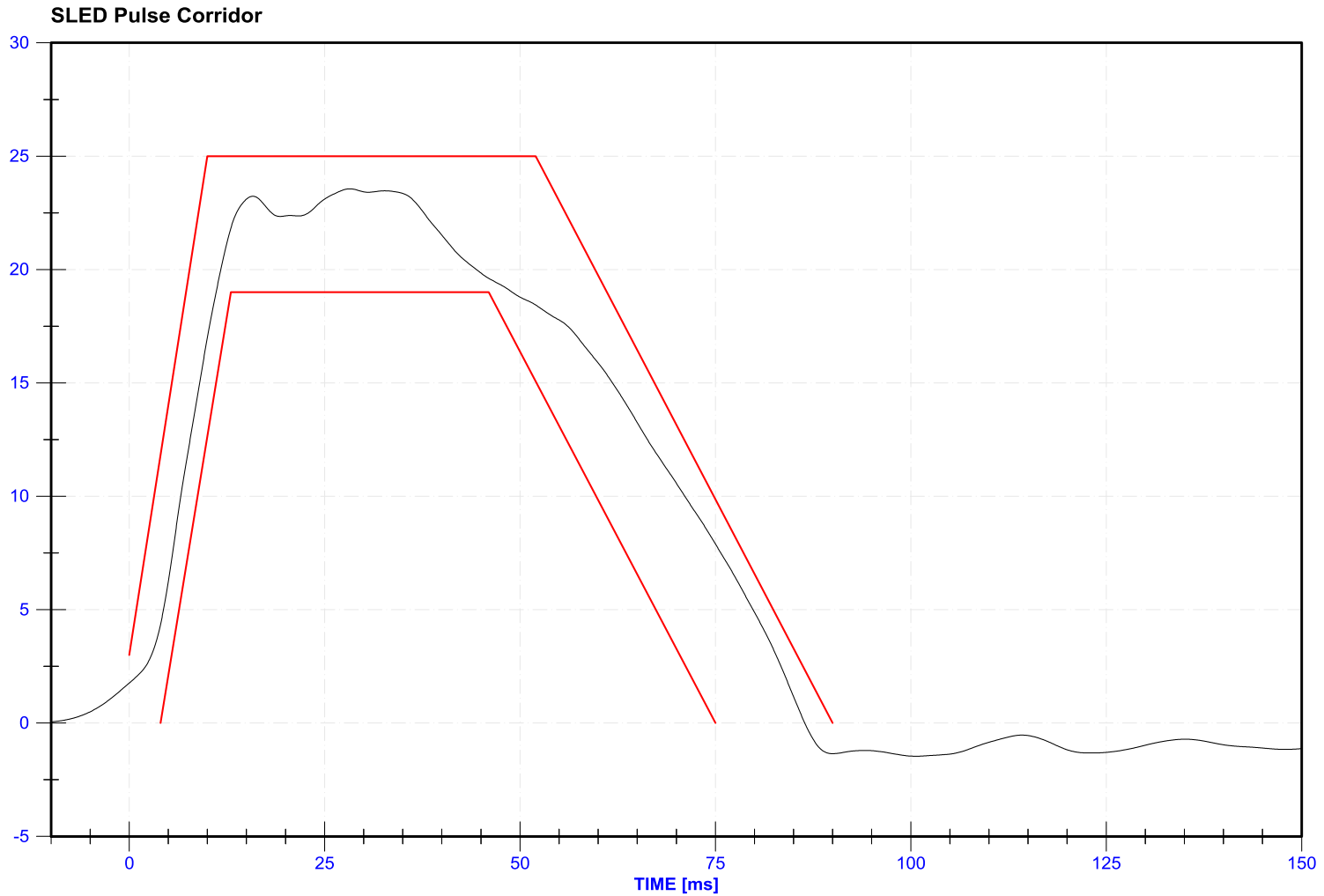
Test Date:
June 19, 2018





Kurgo KU06-18-004

Test Date:
June 19,2018

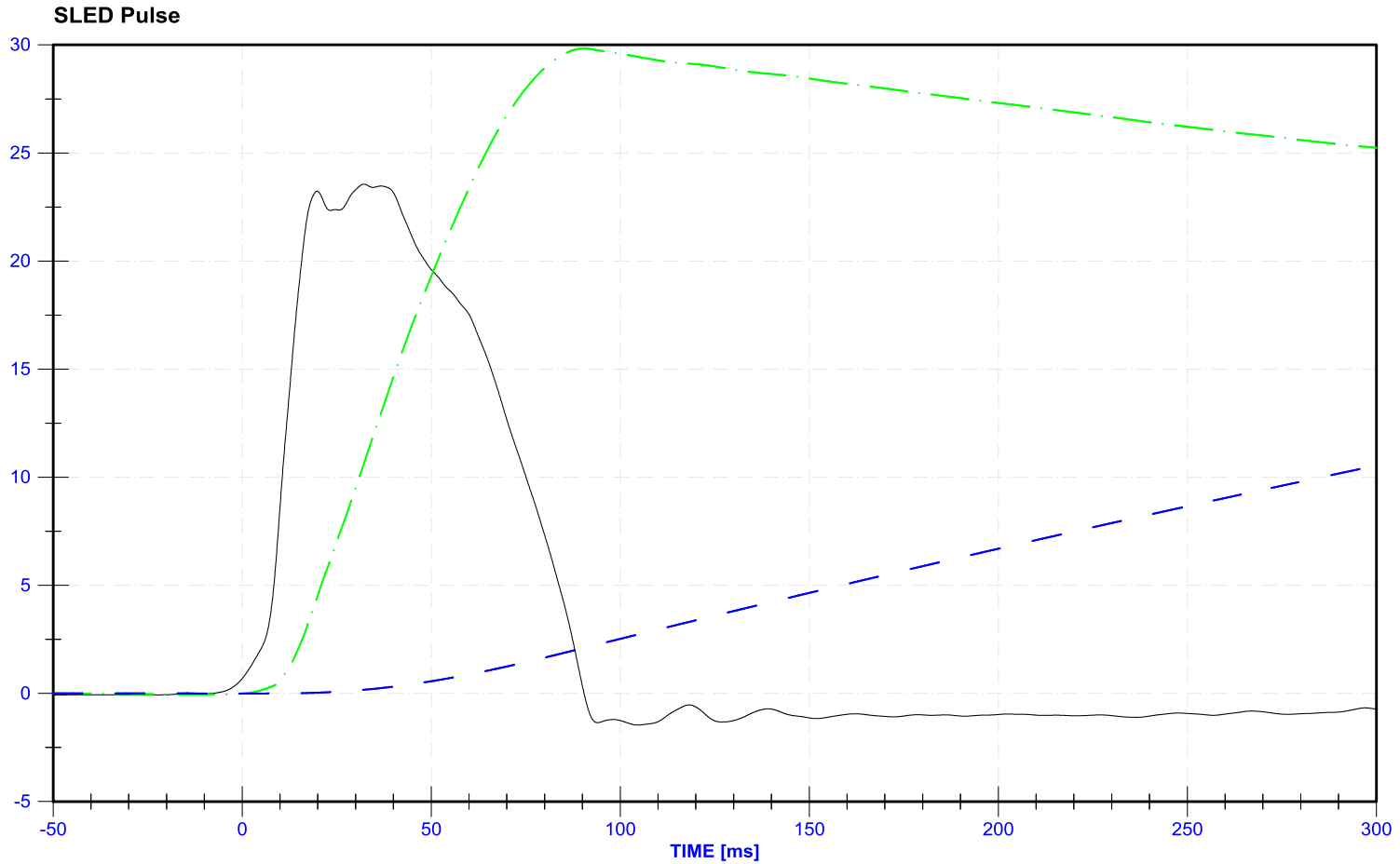


	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	23.55	32.2	CFC 60	— S0SLED00OR00ACXD



Kurgo KU06-18-004

Test Date:
June 19,2018



	Maximum	Time (ms)	Filter Class	Legend
SLED Acceleration (G's)	23.55	104.8	CFC 60	— S0SLED000000ACXD
SLED Velocity (mph)	29.83	-16.3	CFC 180	— S0SLED000000VAXC
SLED Displacement (ft)	10.54	0.6	CFC 180	— S0SLED000000DVXC