REPORT NUMBER: 213-CAL-19-026

### SAFETY COMPLIANCE TESTING FOR FMVSS 213 CHILD RESTRAINT SYSTEMS

Clek Liing, Model LG19U1

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



Report Date: June 2019

**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
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| Prepared by: | Adam Hardbattle, SLED Engineer | Date: _    | June 28, 2019 |
|--------------|--------------------------------|------------|---------------|
| Approved by: | William Horn, SLED Director    | Date: _    | June 28, 2019 |
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213-CAL-19-026

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| Name: Liing                                     |                                | 6. Performing Organ              | nization Code  |  |  |
| Model: LG19U1                                   |                                | CAL                              |  |  |  |
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| with the specifications of the                  |                                | oliance Test Procedur            | e No. TP-213-10.   |  |  |
| Test failures identified as follo               | ows:                           |                                  |  |  |  |
| Mana  |                                |                                  |  |  |  |
| None  |                                |                                  |  |  |  |
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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.

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# SECTION 2 INTRODUCTION AND SUMMARY

This report presents all of the FMVSS 213 compliance inspection and test data obtained on the Clek, Liing, Model LG19U1 child restraint system. The restraint was dynamically tested in the following configurations:

- 12 month old CRABI, rear facing, optional base, lower anchor, tether free and reclined
- Newborn, rear facing, optional base, lower anchor, tether free and reclined

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, rear facing, other configuration, lap belt, tether free and reclined

The inspection and testing of the Clek, Liing, Model LG19U1 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.

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## **SECTION 3**

# DATA SHEET 1 CHILD RESTRAINT SYSTEM IDENTIFICATION

Report No. 213-CAL-19-026

| Manufacturer:                       | Clek                |
|-------------------------------------|---------------------|
| Place of Manufacture per S5.5.2(d): | Canada              |
| Model No.                           | Liing, Model LG19U1 |
| Group No.                           | 026                 |

|   | Item Code           | 026-LG19U1-01-12CRBLFR |
|---|---------------------|------------------------|
| 1 | Date of Manufacture | 2019/05/01             |
|   | Sled Test No.       | FM06-19-97A            |
|   | Olcu Test No.       | 1 W00-19-37A           |
|   | Item Code           | 026-LG19U1-02-NINRBLFR |
| 2 | Date of Manufacture | 2019/05/01             |
| _ |                     |                        |
|   | Sled Test No.       | FM06-19-97B            |
|   | Tu -                |                        |
|   | Item Code           |                        |
| 3 | Date of Manufacture |                        |
|   | Sled Test No.       |                        |
|   |                     |                        |
|   | Item Code           |                        |
| 4 | Date of Manufacture |                        |
|   | Sled Test No.       |                        |
|   | •                   |                        |
|   | Item Code           |                        |
| 5 | Date of Manufacture |                        |
|   | Sled Test No.       |                        |
|   | •                   |                        |
|   | Item Code           |                        |
| 6 | Date of Manufacture |                        |
|   | Sled Test No.       |                        |

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# SECTION 4 DYNAMIC TEST RESULTS DATA SUMMARY

| Child Restraint System – Clek / Liing / LG19U1 |                  |  |                                 |                       |                      |                                  |  |                                      |   |               |
|--|------------------|--|---------------------------------|-----------------------|----------------------|----------------------------------|--|--------------------------------------|---|---------------|
| Item Code                                      | Sled Test<br>No. | Dummy<br>Selection<br>and Test<br>Mode<br>(see<br>legend<br>below) | Lower<br>Anchors<br>Used<br>Y/N | Tether<br>Used<br>Y/N | HIC<br>(1000<br>max) | Chest<br>g clip<br>(60 g<br>max) | Head<br>Excursion<br>(720 mm<br>max, 813<br>mm max<br>w/o<br>tether) | Knee<br>Excursion<br>(915 mm<br>max) | Seat<br>Back<br>Angle<br>(70<br>deg<br>max) | Pass/<br>Fail |
| 026-LG19U1-<br>01-12CRBLFR                     | 06-19-97A        | 12C<br>RFR   | Y                               | N                     | 736                  | 57                               | N/A  | N/A                                  | 64  | Pass          |
| 026-LG19U1-<br>02-NINRBLFR                     | 06-19-97B        | NIN<br>RFR   | Y                               | N                     | N/A                  | N/A                              | N/A  | N/A                                  | 66  | 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

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

| Report No.: | 213-CAL-19-026 | Model No:: | Liing, LG19U1 |
|-------------|----------------|------------|---------------|
| Test Date:  | 20 June 2019   |            |               |

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

| The following | failures | were | identified: |
|---------------|----------|------|-------------|
| No failures   |          |      |             |

Remarks:

\$5.5.2(g)(1)(ii): Added wording

Photographs of the labels are included in section 9.

Recorded by: Date: June 20, 2019

Adam Hardbattle, SLED Engineer

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

| Report No.: | 213-CAL-19-026 | Model No:: | Liing, LG19U1 |
|-------------|----------------|------------|---------------|
| Test Date:  | 21 June 2019   |            |               |

| 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: June 21, 2019 Date:

Adam Hardbattle, SLED

Engineer

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

| Report No.: | 213-CAL-19-026 | Model No:: | Liing, LG19U1 |
|-------------|----------------|------------|---------------|
| Test Date:  | 21 June 2019   |            |               |

| 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:

Photographs of the registration are included in section 9.

Recorded by: \_\_\_\_\_ Date: \_\_\_\_ June 21, 2019

Adam Hardbattle, SLED

Engineer

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

| Report No.: | 213-CAL-19-026 | Model No:: | Liing, LG19U1 |
|-------------|----------------|------------|---------------|
| Test Date:  | 21 June 2019   |            |               |

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

|                | or orma roomanic manadarca on or area roomaary 11, 10 ror |                      |                                      |  |  |
|----------------|---|----------------------|--------------------------------------|--|--|
| Installation   | A Max Child   | Installation Diagram | Max Child Weight                     |  |  |
| Mode           | weight is Required for this installation                  | Shown (Y or N)       | Indicated on<br>Installation Diagram |  |  |
|                | mode (Y or N)   |                      | (lb)                                 |  |  |
| Rear Facing    | N   | N/A                  | N/A                                  |  |  |
| Forward Facing | N/A   | N/A                  | N/A                                  |  |  |

| CRS<br>Weight (lb) | Child Weight<br>(CW)<br>Calculation (lb) | Rounded CW Limit<br>permitted under<br>S5.5.2(I)(3)(A) | Calculated<br>CW  | Rounded<br>CW              |
|--------------------|--|--|---|----------------------------|
| 28 lbs             | Rear Facing<br>60-CRS Weight =<br>32 lbs | 35 lbs   | $     \begin{array}{r}       15 < CW \le 20 \\       20 < CW \le 25 \\       25 < CW \le 30 \\       30 < CW \le 35 \\       35 < CW \le 40     \end{array} $ | 20<br>25<br>30<br>35<br>40 |
| 20 105             | Forward Facing<br>65-CRS Weight =<br>N/A | N/A  | $   \begin{array}{c}     35 < CW \le 40 \\     40 < CW \le 45 \\     45 < CW \le 50 \\     50 < CW \le 55 \\     55 < CW \le 60   \end{array} $               | 45<br>50<br>55<br>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) | NA          |
| 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     | NA          |

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| The following failund failunes  | ures were identified: |       |               |
|---------------------------------|-----------------------|-------|---------------|
| Remarks:<br>Seat is rated for 3 | 35lbs. maximum        |       |               |
| Recorded by:                    | Adam Hardbattle, SLED | Date: | June 21, 2019 |
|                                 | Engineer              |       |               |

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

| Report No.: | 213-CAL-19-026 |   | Mode |
|-------------|----------------|---|------|
| Test Date:  | 21 June 2019   | • |      |

| Model No:: | Liing, LG19U1 |
|------------|---------------|
|            |               |

| Section | Requirement   | Pass / Fail |
|---------|---|-------------|
|         | 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        |
| S5.9(a) | 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.  | N/A         |
| 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        |

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| The following failt<br>No failures | ures were identified:               |         |               |   |
|------------------------------------|-------------------------------------|---------|---------------|---|
| Remarks:<br>Rigid lower ancho      | or connectors and optional load leg |         |               |   |
| Recorded by:                       | Adam Hardbattle, SLED<br>Engineer   | Date: _ | June 21, 2019 | _ |

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

| Report No.: | 213-CAL-19-026 | Ī |
|-------------|----------------|---|
| Test Date:  | 21 June 2019   |   |

| Model No:: | Liing, LG19U1 |
|------------|---------------|
|            |               |

| 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                       |                       |      |
|           | 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<br>Belt | Lap belt &<br>Tether (if<br>needed) | Lower<br>Anchors | Lap &<br>Shoulder<br>belt | Seat<br>back<br>Mount |      |
| S5.3.2    | Harnesses per<br>S5.3.1(b)(1)-(3)<br>& Figure 12  |             |                                     |                  |                           |                       | N/A  |
| 00.0.2    | Other<br>Harnesses  |             |                                     |                  |                           |                       | N/A  |
|           | Car Beds  |             |                                     |                  |                           |                       | N/A  |
|           | Rear-Facing<br>Restraints   | Х           |                                     | Х                | Х                         |                       | Pass |
|           | Belt-Positioning<br>Seats   |             |                                     |                  |                           |                       | N/A  |
|           | All other child restraints  |             |                                     |                  |                           |                       | N/A  |
| S5.3.3    | If a car bed, this child restraint system is designed to be installed laterally.  |             |                                     |                  |                           | be                    | N/A  |

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| The following failu<br>No failures | ires were identified:          |       |               |
|------------------------------------|--------------------------------|-------|---------------|
| Remarks:<br>None                   |                                |       |               |
| Recorded by:                       | Adam Hardbattle, SLED Engineer | Date: | June 21, 2019 |

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

| Report No.: | 213-CAL-19-026 |
|-------------|----------------|
| Test Date:  | 21 June 2019   |

| Model No:: | Liing, LG19U1 |
|------------|---------------|
|            |               |

| 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 |                            |  |  |  |
|             | Maximum Recommended Child  | Minimum Seat Back Height   |  |  |  |
| S5.2.1.1(a) | Weight   | Required                   |  |  |  |
| , ,         | ≤ 18 kg (39.7 lb)  | 50 cm (19.7 in.)           |  |  |  |
|             | > 18 kg (39,7 lb)  | 56 cm (22 in.)             |  |  |  |
|             | Side Wing Depth  | Minimum Back Support Width |  |  |  |
| S5.2.1.1(b) | < 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<br>mm (in) | Pass / Fail |
|---|----------------------------|-------------|
| 15.9 (35)   | 500 (19.7)                 | Pass        |

## **Back Support Width**

| Measured Side Wing Depth mm (in) | Measured Width<br>mm (in) | Pass / Fail |
|----------------------------------|---------------------------|-------------|
| 38 (1.5)                         | 230 (9)                   | Pass        |

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| The following fail No failures | ures were identified:          |         |               |  |
|--------------------------------|--------------------------------|---------|---------------|--|
| Remarks:<br>None               |                                |         |               |  |
| Recorded by:                   | Adam Hardbattle, SLED Engineer | Date: _ | June 21, 2019 |  |

213-CAL-19-026 Page **20** of **84** 

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

| Report No.: | 213-CAL-19-026 |               | Model No:: | Liing, LG19U1 |
|-------------|----------------|---------------|------------|---------------|
| Test Date:  | 21 June 2019   | 220<br>(9.44) |            |               |

| Section     | Surface Requirement   | Contour<br>Requirement | Other Requirement   |
|-------------|---|------------------------|---|
| S5.2.2.1(a) | Back Support Surface  | Flat or concave        | Continuous surface area of <u>&gt;</u> 85 in <sup>2</sup>                                       |
|             |   | Flat or concave        | Continuous surface area of ≥ 24 in² for restraints having a recommended child weight of ≥ 20 lb |
| S5.2.2.1(b) | Side Support Surface  | Flat or concave        | Continuous surface area of ≥ 48 in² for restraints having a recommended child weight of < 20 lb |
|             | Horizontal Cross Sections of Surfaces Restraining Torso Forward Movement                        | Flat or<br>concave     |   |
| S5.2.2.1(c) | Vertical Longitudinal<br>Cross Sections of<br>Surfaces Restraining<br>Torso Forward<br>Movement | Flat or concave        | Radius of Curvature ≥ 2 in  |
| S5.2.2.2    | Fixed or Moveable<br>Surface Forward of<br>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         |

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# **Fixed or Movable Surfaces Forward of Dummy Results**

| Yes/No | Pass / Fail |
|--------|-------------|
| No     | Pass        |

| The following failu<br>No failures | res were identified:           |           |               |
|------------------------------------|--------------------------------|-----------|---------------|
| Remarks:<br>None                   |                                |           |               |
| Recorded by:                       |                                | _ Date: _ | June 21, 2019 |
|                                    | Adam Hardbattle, SLED Engineer |           |               |

213-CAL-19-026 Page **22** of **84** 

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

| Report No.: | 213-CAL-19-026 | Model No:: | Liing, LG19U1 |
|-------------|----------------|------------|---------------|
| Test Date:  | 19 June 2019   |            |               |

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<br>Requirement |                     | Test<br>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 fail<br>No failures | ures were identified:          |         |               |
|-----------------------------------|--------------------------------|---------|---------------|
| Remarks:<br>None                  |                                |         |               |
| Recorded by:                      | Adam Hardbattle, SLED Engineer | Date: _ | June 21, 2019 |

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### **DATA SHEET 11 DYNAMIC IMPACT TEST CONDITIONS - TEST 1** (FMVSS 213, S6.1)

| Report No.: | 213-CAL-19-026 |
|-------------|----------------|
| Test Date:  | 19 June 2019   |

| Sled Test No. | FM06-19-97A            |
|---------------|------------------------|
| Item Code     | 026-LG19U1-01-12CRBLFR |

**Laboratory Ambient Conditions During Testing:** 

| Temperature Degrees C (F) | 21.4C (70.5F) |
|---------------------------|---------------|
| Relative Humidity %       | 58.9%         |

### Pulse:

| Test Configuration (I or II): | I .                  |  |
|-------------------------------|----------------------|--|
| Velocity (km/h (mph)):        | 47.0 km/h (29.2 mph) |  |

### **Dummy:**

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

#### **Restraint Installation:**

| 100ti anit inotanation.             |                                |
|-------------------------------------|--------------------------------|
| Installed Direction:                | Rear Facing                    |
| Base Usage:                         | Optional Base Used             |
| Attachment Method:                  | Lower Anchor                   |
| Tether Usage:                       | No, Tether Free                |
| Seat Back Position:                 | Bubble Level / R5              |
| Internal Shoulder Harness Position: | Slot 3, Counted from bottom up |
| Buckle Harness Position:            | NA                             |

#### Remarks:

Pre and Post Test Photos are presented in Section 9.

Recorded by: Date: June 21, 2019

Adam Hardbattle, SLED Engineer

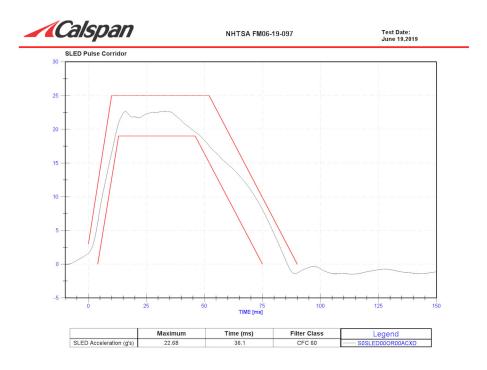
213-CAL-19-026 Page **24** of **84** 

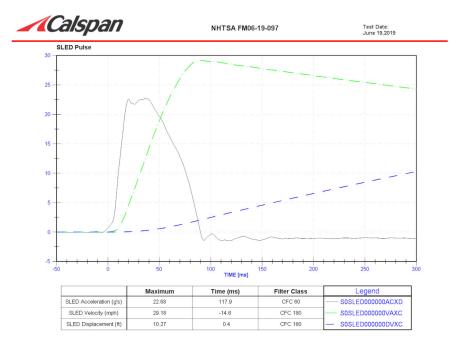
# DYNAMIC IMPACT SLED PULSE – TEST 1 (FMVSS 213, S6.1)

 Report No.:
 213-CAL-19-026

 Test Date:
 19 June 2019

| Sled Test No. | FM06-19-97A            |
|---------------|------------------------|
| Item Code     | 026-LG19U1-01-12CRBLFR |





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

| Report No.: | 213-CAL-19-026 |
|-------------|----------------|
| Test Date:  | 19 June 2019   |

| Sled Test No. | FM06-19-97A            |
|---------------|------------------------|
| Item Code     | 026-LG19U1-01-12CRBLFR |

| 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                 |
|----------|--|----------|-----------------------------|
|          | <b>Direct Restraint.</b> Belts impose no loads on the child resulting from mass of the system or the test seat |          | Pass                        |
| S5.4.3.2 | The restraint has one or more belts that contact the dummy for restraint                                       | Yes      | If all are<br>"Yes"         |
|          | The restraint has a rigid structure behind the dummy   | Yes      | Restraint fails<br>S5.4.3.2 |
|          | The restraint could move relative to the belt  | No       | 33.4.3.2                    |

| Section     | Requirement   | Pass / Fail |
|-------------|---|-------------|
| S5.4.3.3    | <b>Seating Systems.</b> 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: | June 21, 2019 |  |
|--------------|--------------------------------|-------|---------------|--|
|              | Adam Hardbattle, SLED Engineer |       |               |  |

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

| Report No.: | 213-CAL-19-026 |
|-------------|----------------|
| Test Date:  | 19 June 2019   |

Engineer

| Sled Test No. | FM06-19-97A            |
|---------------|------------------------|
| Item Code     | 026-LG19U1-01-12CRBLFR |

| Section     | Requirement   | Measurement       | Pass / Fail |
|-------------|---|-------------------|-------------|
| S5.4.3.5(a) | Pre-Impact Release Force<br>Releases under 40-60 N    | 44 N              | Pass        |
| S5.4.3.5(a) | Post-Impact Release Force*<br>Releases ≤ 71 N         | 48 N              | Pass        |
| S5.4.3.5(a) | Minimum Surface Area of Buckle<br>≥ 3.9 cm² (0.6 in²) | 4 cm <sup>2</sup> | Pass        |
| S5.4.3.5(a) | Buckle Integrity Shall not release during testing     | No Release        | Pass        |

<sup>\*</sup>Not applicable unless determined using the largest test dummy specified in S7 for use in testing the seat.

### Remarks

None

| Recorded by: |                       | Date: | June 21, 2019 |  |
|--------------|-----------------------|-------|---------------|--|
|              | Adam Hardbattle, SLED |       |               |  |

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

| Report No.: | 213-CAL-19-026 |
|-------------|----------------|
| Test Date:  | 19 June 2019   |

| Sled Test No. | FM06-19-97A            |
|---------------|------------------------|
| Item Code     | 026-LG19U1-01-12CRBLFR |

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

| Section          | Requirement  | Pass / Fail |
|------------------|--|-------------|
|                  | <b>Structural Integrity</b> – Exhibit no complete separation of any load bearing structural element  | Pass        |
| S5.1.1(a)        | 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) | <b>Exposed Openings</b> – 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                | None        |

| 10 |  |
|----|--|

Recorded by: \_\_\_\_\_ Date: \_\_\_\_ June 21, 2019 Adam Hardbattle, SLED

Engineer

**Remarks** None 213-CAL-19-026 Page **28** of **84** 

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

| Report No.: | 213-CAL-19-026 |
|-------------|----------------|
| Test Date:  | 19 June 2019   |

| Sled Test No. | FM06-19-97A            |
|---------------|------------------------|
| Item Code     | 026-LG19U1-01-12CRBLFR |

| Section     | Requirement   |
|-------------|---|
| S5.1.2.1(a) | <b>Head Injury Criterion</b> 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) | <b>Chest Injury Criterion</b> 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 |
|------------------|-------------|
| 736              | Pass        |

## **Chest Injury Criterion Results**

| Max Acceleration lasting 3ms (g) | Pass / Fail |
|----------------------------------|-------------|
| 57                               | Pass        |

### Remarks

Recorded by: \_\_\_\_\_ Date: \_\_\_\_ June 21, 2019 Adam Hardbattle, SLED

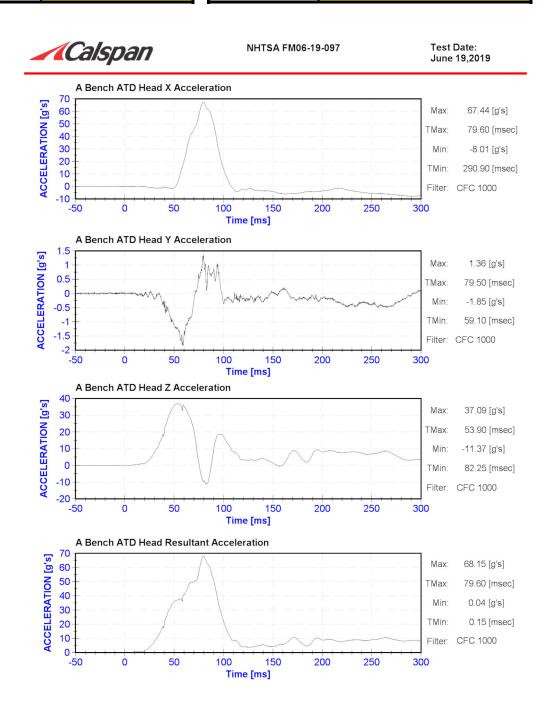
Engineer

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

| Report No.: | 213-CAL-19-026 |
|-------------|----------------|
| Test Date:  | 19 June 2019   |
| HIC 36ms    | 736            |

| Sled Test No. | FM06-19-97A            |
|---------------|------------------------|
| Item Code     | 026-LG19U1-01-12CRBLFR |
| Resultant     | 68 g's                 |

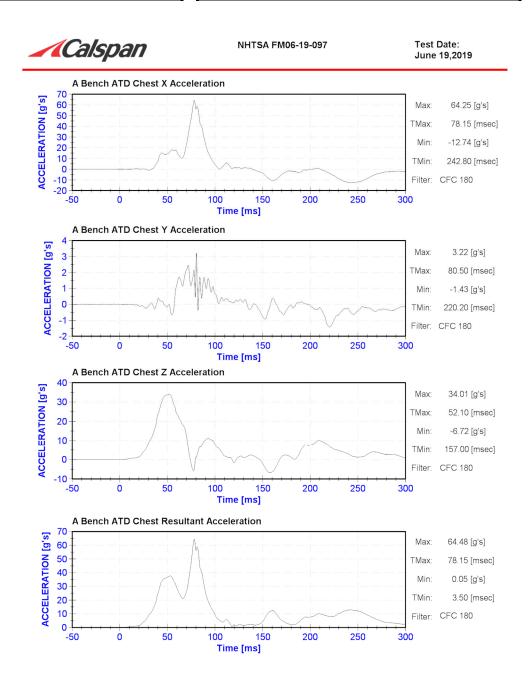


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# INJURY CRITERIA – CHEST ACCELERATION PLOTS – TEST 1 (FMVSS 213, S5.1.2)

| Report No.: | 213-CAL-19-026 |
|-------------|----------------|
| Test Date:  | 19 June 2019   |
| 3ms Clip    | 57 g's         |

| Sled Test No. | FM06-19-97A            |
|---------------|------------------------|
| Item Code     | 026-LG19U1-01-12CRBLFR |
| Resultant     | 64 g's                 |



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

| Report No.: | 213-CAL-19-026 |
|-------------|----------------|
| Test Date:  | 19 June 2019   |

| Sled Test No. | FM06-19-97A            |
|---------------|------------------------|
| Item Code     | 026-LG19U1-01-12CRBLFR |

### FORWARD-FACING RESTRAINTS

| Section        | Requirement  | Measurement | Pass / Fail |
|----------------|--|-------------|-------------|
| S5.1.3.1       | <b>Torso Retention</b> – 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 -<br>≤ 91.5 cm (36 in.)                                       | N/A         | N/A         |
| S5.2.1.1(c)    | <b>Head-Torso Angle -</b> Rearward change <u>&lt;</u> 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    | <b>Head Target Excursion –</b> 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 | 64          | Pass        |
| S5.2.1.1(c) | <b>Head-Torso Angle -</b> 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: | PA                             | Date: | June 21, 2019 |
|--------------|--------------------------------|-------|---------------|
|              | Adam Hardbattle, SLED Engineer | _     |               |

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

### **CAR BED RESTRAINTS**

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

### Remarks

| Recorded by: | 12                             | Date: | June 21, 2019 |  |
|--------------|--------------------------------|-------|---------------|--|
|              | Adam Hardbattle, SLED Engineer | _     |               |  |

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

| Report No.: | 213-CAL-19-026 |
|-------------|----------------|
| Test Date:  | 19 June 2019   |

| Sled Test No. | FM06-19-97B            |
|---------------|------------------------|
| Item Code     | 026-LG19U1-02-NINRBLFR |

**Laboratory Ambient Conditions During Testing:** 

| Temperature Degrees C (F) | 21.4C (70.5F) |
|---------------------------|---------------|
| Relative Humidity %       | 58.9%         |

#### Pulse:

| Test Configuration (I or II): | I                    |
|-------------------------------|----------------------|
| Velocity (km/h (mph)):        | 47.0 km/h (29.2 mph) |

### **Dummy:**

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

### **Restraint Installation:**

| Installed Direction:                | Rear Facing                    |
|-------------------------------------|--------------------------------|
| Base Usage:                         | Optional Base Used             |
| Attachment Method:                  | Lower Anchors                  |
| Tether Usage:                       | No, Tether Free                |
| Seat Back Position:                 | Bubble level / Recline 1       |
| Internal Shoulder Harness Position: | Slot 2, Counted from bottom up |
| Buckle Harness Position:            | NA                             |

### Remarks:

Pre and Post Test Photos are presented in Section 9.

Recorded by: \_\_\_\_\_ Date: \_\_\_\_ June 21, 2019 \_\_\_\_

Engineer

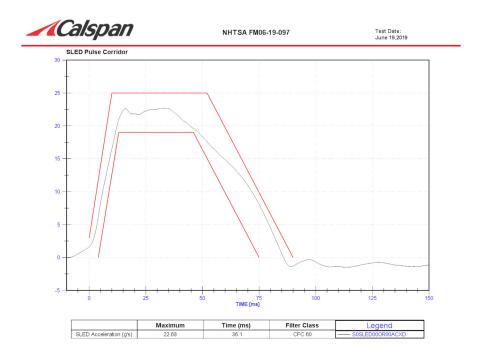
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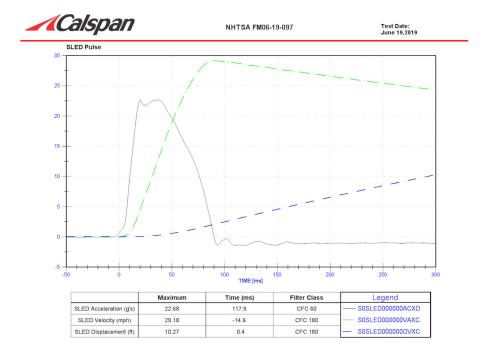
# DYNAMIC IMPACT SLED PULSE – TEST 2 (FMVSS 213, S6.1)

 Report No.:
 213-CAL-19-026

 Test Date:
 19 June 2019

| Sled Test No. |                        |
|---------------|------------------------|
| Item Code     | 026-LG19U1-02-NINRBLFR |





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

| Report No.: | 213-CAL-19-026 |
|-------------|----------------|
| Test Date:  | 19 June 2019   |

| Sled Test No. | FM06-19-97B            |
|---------------|------------------------|
| Item Code     | 026-LG19U1-02-NINRBLFR |

| Section  | Requirement  | Pass / Fail |
|----------|--|-------------|
| S5.4.3.1 | <b>Snug Fit of Belts.</b> 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                 |
|----------|--|----------|-----------------------------|
|          | <b>Direct Restraint.</b> Belts impose no loads on the child resulting from mass of the system or the test seat |          | Pass                        |
| S5.4.3.2 | The restraint has one or more belts that contact the dummy for restraint                                       | Yes      | If all are<br>"Yes"         |
|          | The restraint has a rigid structure behind the dummy   | Yes      | Restraint fails<br>S5.4.3.2 |
|          | The restraint could move relative to the belt  | No       | 00.4.0.2                    |

| Section     | Requirement   | Pass / Fail |
|-------------|---|-------------|
| S5.4.3.3    | <b>Seating Systems.</b> 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)                    |             |
| 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: | PA                             | Date:  | June 21, 2019 |
|--------------|--------------------------------|--------|---------------|
| •            | Adam Hardbattle, SLED Engineer | -<br>- |               |

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

| Report No.: | 213-CAL-19-026 |
|-------------|----------------|
| Test Date:  | 19 June 2019   |

| Sled Test No. | FM06-19-97B            |
|---------------|------------------------|
| Item Code     | 026-LG19U1-02-NINRBLFR |

| Section     | Requirement   | Measurement       | Pass / Fail |
|-------------|---|-------------------|-------------|
| S5.4.3.5(a) | Pre-Impact Release Force<br>Releases under 40-60 N    | 45 N              | Pass        |
| S5.4.3.5(a) | Post-Impact Release Force*<br>Releases ≤ 71 N         | 45 N              | Pass        |
| S5.4.3.5(a) | Minimum Surface Area of Buckle<br>≥ 3.9 cm² (0.6 in²) | 4 cm <sup>2</sup> | Pass        |
| S5.4.3.5(a) | Buckle Integrity Shall not release during testing     | No Release        | Pass        |

<sup>\*</sup>Not applicable unless determined using the largest test dummy specified in S7 for use in testing the seat.

#### Remarks

None

| Recorded by: |                       | Date: | June 21, 2019 |  |
|--------------|-----------------------|-------|---------------|--|
|              | Adam Hardbattle, SLED |       |               |  |

Engineer

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

| Report No.: | 213-CAL-19-026 |
|-------------|----------------|
| Test Date:  | 19 June 2019   |

| Sled Test No. | FM06-19-97B            |
|---------------|------------------------|
| Item Code     | 026-LG19U1-02-NINRBLFR |

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

| Section          | Requirement  | Pass / Fail |
|------------------|--|-------------|
|                  | <b>Structural Integrity</b> – Exhibit no complete separation of any load bearing structural element  | Pass        |
| S5.1.1(a)        | 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) | <b>Exposed Openings –</b> 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)        | <b>Seating Surface Angle –</b> 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         | None        |

| None |  |  |  |
|------|--|--|--|
|      |  |  |  |

Remarks

| Recorded by: | 12                             | Date: _ | June 21, 2019 |
|--------------|--------------------------------|---------|---------------|
|              | Adam Hardbattle, SLED Engineer |         |               |

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

| Report No.: | 213-CAL-19-026 |
|-------------|----------------|
| Test Date:  | 19 June 2019   |

| Sled Test No. | FM06-19-97B            |
|---------------|------------------------|
| Item Code     | 026-LG19U1-02-NINRBLFR |

| Section     | Requirement   |
|-------------|---|
| S5.1.2.1(a) | <b>Head Injury Criterion</b> 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) | <b>Chest Injury Criterion</b> 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

Newborn ATD has no injury criteria or instrumentation

| Recorded by: | 12                             | Date: | June 21, 2019 |
|--------------|--------------------------------|-------|---------------|
| •            | Adam Hardbattle, SLED Engineer |       |               |

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

| Report No.: | 213-CAL-19-026 |
|-------------|----------------|
| Test Date:  | 19 June 2019   |

| Sled Test No. | FM06-19-97B            |
|---------------|------------------------|
| Item Code     | 026-LG19U1-02-NINRBLFR |

#### FORWARD-FACING RESTRAINTS

| Section        | Requirement  | Measurement | Pass / Fail |
|----------------|--|-------------|-------------|
| S5.1.3.1       | <b>Torso Retention –</b> 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 -<br>≤ 91.5 cm (36 in.)                                       | N/A         | N/A         |
| S5.2.1.1(c)    | <b>Head-Torso Angle -</b> Rearward change <u>&lt;</u> 45 degrees             | N/A         | N/A         |

#### **REAR-FACING RESTRAINTS**

| Section     | Requirement   | Measurement | Pass / Fail |
|-------------|---|-------------|-------------|
| S5.1.3.2    | <b>Torso Retention –</b> CRS shall retain the torso within system                     |             | Pass        |
| S5.1.3.2    | <b>Head Target Excursion –</b> 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 | 66          | Pass        |
| S5.2.1.1(c) | <b>Head-Torso Angle -</b> 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: | 12                             | Date:       | June 21, 2019 |
|--------------|--------------------------------|-------------|---------------|
| _            | Adam Hardbattle, SLED Engineer | <del></del> |               |

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

#### **CAR BED RESTRAINTS**

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

#### Remarks

| Recorded by: | Date: | June 21, 2019 |  |
|--------------|-------|---------------|--|
|              |       |               |  |

Adam Hardbattle, SLED

Engineer

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# DATA SHEET 25 AIRCRAFT PASSENGER SEAT INVERSION – TEST A (FMVSS 213, S8.2, S8.2.5, S8.2.6)

| Report No.: | 213-CAL-19-026 |
|-------------|----------------|
| Test Date:  | 24 June 2019   |

| Test No.  | FM06-19-101               |
|-----------|---------------------------|
| Item Code | 026-LG19U1-Inv01-NINRN2FN |

Laboratory Ambient Conditions During Testing:

| Temperature Degrees C (F) | 21.4 C (70.6F) |
|---------------------------|----------------|
| Relative Humidity %       | 21.5%          |

#### Dummy:

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

#### **Restraint Installation:**

| r tootraint iniotaliation.                |                                |
|---|--------------------------------|
| Installed Direction:                      | Rearward Facing                |
| Base Usage:                               | No Other Configuration         |
| Attachment Method                         | Lap belt                       |
| Tether Usage                              | No                             |
| Seat Back Position:                       | Level Line                     |
| Internal Harness Shoulder Strap Position: | Slot 2, Counted from bottom up |
| Internal Harness Crotch Strap Position:   | N/A                            |

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      |

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| Re | m | ar | 'KS | <b>;</b> : |
|----|---|----|-----|------------|
|    |   |    |     |            |

None

Recorded by: Date: June 27, 2019

Adam Hardbattle, SLED Engineer

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# DATA SHEET 26 AIRCRAFT PASSENGER SEAT INVERSION - TEST B (FMVSS 213, S8.2, S8.2.5, S8.2.6)

| Report No.: | 213-CAL-19-026 |
|-------------|----------------|
| Test Date:  | 24 June 2019   |

| Test No.  | FM06-19-102               |
|-----------|---------------------------|
| Item Code | 026-LG19U1-Inv02-12CRN2FN |

Laboratory Ambient Conditions During Testing:

| Temperature Degrees C (F) | 21.5 C (70.7F) |  |  |
|---------------------------|----------------|--|--|
| Relative Humidity %       | 21.4%          |  |  |

#### Dummy:

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

#### **Restraint Installation:**

| Installed Direction:                      | Rearward Facing                |  |
|---|--------------------------------|--|
| Base Usage:                               | No Other Configuration         |  |
| Attachment Method                         | Lap belt                       |  |
| Tether Usage                              | No                             |  |
| Seat Back Position:                       | Level Line                     |  |
| Internal Harness Shoulder Strap Position: | Slot 3, Counted from bottom up |  |
| Internal Harness Crotch Strap Position:   | N/A                            |  |

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      |

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| Re | ma | ark | S | • |
|----|----|-----|---|---|
|    |    |     |   | • |

None

Recorded by: Date: June 27, 2019

Adam Hardbattle, SLED Engineer

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#### **SECTION 6**

### **INTERPRETATION AND/OR DEVIATIONS FROM FMVSS 213**

There were no deviations from FMVSS 213

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# 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.

|                        | NIN – Newborn Infant                   |  |  |
|------------------------|--|--|--|
|                        | 3H3 – 3 YO, Hybrid III                 |  |  |
|                        | 12C -12 MO, CRABI                      |  |  |
| Dummy<br>Description   | 6H2 – 6YO Hybrid II                    |  |  |
| ·                      | 6H3 – 6YO, Hybrid III                  |  |  |
|                        | 6W3 – 6 YO, Weighted Hybrid III        |  |  |
|                        | TH3 – 10YO, Hybrid III                 |  |  |
|                        | R – Rear Facing                        |  |  |
| Installed<br>Direction | F – Forward Facing                     |  |  |
|                        | S- Faces Sideways (applies to carbeds) |  |  |
| Pass                   | B – Optional base used with CRS        |  |  |
| Base —<br>Usage        | N – All other configurations           |  |  |
|                        | L – Lower anchors                      |  |  |
| Attachment             | 2 – Lap belt                           |  |  |
| Method                 | 3 – Lap & shoulder belt                |  |  |
|                        | M – Seat back mount                    |  |  |
| Tether                 | T – Tether                             |  |  |
| Usage                  | F – Tether Free                        |  |  |
|                        | U – Upright                            |  |  |
| Seat Back              | R – Reclined                           |  |  |
| Position               | B – HB Booster                         |  |  |
|                        | N – No Back Booster                    |  |  |
|                        |  |  |  |

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# SECTION 8 INSTRUMENTATION CALIBRATION

**Sled and Facility Calibrations** 

| Instrument  | Serial<br>Number | Certification<br>Test | Calibration<br>Date | Due Date   |
|---|------------------|-----------------------|---------------------|------------|
| DTS<br>Unit #736                                    | ESL 400704       | All                   | 12/10/2018          | 12/10/2019 |
| DTS<br>Unit #737                                    | ESL 400705       | All                   | 12/10/2018          | 12/10/2019 |
| Temp and Humidity Recorder<br>Onset HOBO            | ESL 400632       | All                   | 11/08/2018          | 11/08/2019 |
| Digital Angle Gauge<br>Digi-Pas                     | ESL 400482       | All                   | 9/24/2018           | 9/24/2019  |
| Bosch/Kent Moore<br>Belt Tension Gauge<br>+/- 1 lb. | ESL 400415       | All                   | 3/25/2019           | 9/25/2019  |
| Bosch/Kent Moore<br>Belt Tension Gauge<br>+/- 1 lb. | ESL 400943       | All                   | 3/25/2019           | 9/25/2019  |
| Imada Force Gauge<br>Model DPSH-440R                | ESL 400931       | All                   | 3/12/2019           | 3/12/2020  |
| Imada Force Gauge<br>Model DS2-110                  | ESL 400368       | All                   | 8/10/2018           | 8/10/2019  |
| Imada Force Gauge<br>Model ZTS-550                  | ESL 400474       | All                   | 7/28/2018           | 7/28/2019  |
| Proto Torque Wrench                                 | ESL 400978       | All                   | 7/19/2018           | 7/19/2019  |
| Sled Primary x Accelerometer<br>Endevco 7292A       | 10302            | All                   | 5/6/2019            | 5/6/2020   |
| Sled Secondary X<br>Endevco 7264                    | P69794           | All                   | 5/6/2019            | 5/6/2020   |
| Sled Secondary Y<br>Endevco 7264                    | P71301           | All                   | 5/6/2019            | 5/6/2020   |
| Sled Secondary Z<br>MS 64CM30                       | MS26652          | All                   | 5/6/2019            | 5/6/2020   |
|   | _                |                       |                     |            |

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#### **ATD Calibrations**

| Instrument | Serial<br>Number | Certification<br>Test | Calibration<br>Date | Due Date |
|------------|------------------|-----------------------|---------------------|----------|
| NewBorn    | 032              | ATD                   | NA                  | NA       |

| Instrument                            | Serial<br>Number | Certification<br>Test | Calibration<br>Date | Due Date   |
|---------------------------------------|------------------|-----------------------|---------------------|------------|
| 12 Month CRABI                        | 85               | ATD                   | 2/11/2019           | 7/07/2019  |
| Instrument                            | Serial<br>Number | Certification<br>Test | Calibration<br>Date | Due Date   |
| Head X Accelerometer<br>Endevco 7264  | AC-P83422        | ATD                   | 6/14/2019           | 12/14/2019 |
| Head Y Accelerometer<br>Endevco 7264  | AC-P84349        | ATD                   | 6/14/2019           | 12/14/2019 |
| Head Z Accelerometer<br>Endevco 7264  | AC-P82321        | ATD                   | 6/14/2019           | 12/14/2019 |
| Chest X Accelerometer<br>Endevco 7264 | AC-P74971        | ATD                   | 6/14/2019           | 12/14/2019 |
| Chest Y Accelerometer<br>Endevco 7264 | AC-P74780        | ATD                   | 6/14/2019           | 12/14/2019 |
| Chest Z Accelerometer<br>Endevco 7264 | AC-P52158        | ATD                   | 6/14/2019           | 12/14/2019 |

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### **Bench Foam Calibrations**

| Test #      | Calibration | Bottom 2" | Bottom 4" | Back 2"   | Back 4"  |
|-------------|-------------|-----------|-----------|-----------|----------|
| FM06-19-97A | Pre         | C274-2x20 | T61-4x20  | H134-2x24 | S36-4x24 |
|             |             | 51.3 lbs  | 22.6 lbs  | 52.7 lbs  | 26.4 lbs |
|             | Post        | C274-2x20 | T61-4x20  | H134-2x24 | S36-4x24 |
|             |             | 51.6 lbs  | 22.8 lbs  | 53.6 lbs  | 26.9 lbs |
|             |             |           |           |           |          |
| FM06-19-97B | Pre         | C273-2x20 | T70-4x20  | H141-2x24 | S21-4x24 |
|             |             | 48.3 lbs  | 21.2 lbs  | 53.5 lbs  | 25.4 lbs |
|             | Post        | C273-2x20 | T70-4x20  | H141-2x24 | S21-4x24 |
|             |             | 49.9 lbs  | 21.4 lbs  | 52.9 lbs  | 24.8 lbs |
|             | •           | •         |           |           |          |
|             | Pre         |           |           |           |          |
|             | Post        |           |           |           |          |
|             | -           |           | 1         | 1         | 1        |
|             | Pre         |           |           |           |          |
|             | Post        |           |           |           |          |
|             | _1          | _1        |           |           | l .      |
|             | Pre         |           |           |           |          |
|             | Post        |           |           |           |          |
|             | _1          | _1        |           |           | l .      |
|             | Pre         |           |           |           |          |
|             | Post        |           |           |           |          |
|             |             | 1         | 1         | 1         | 1        |

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#### Section 9 PHOTOGRAPHS

#### **Sled Photos**

Sled Buck – Standard Bench Seat and Configuration 213-CAL-19-026

026-LG19U1-01-12CRBLFR

026-LG19U1-02-NINRBLFR

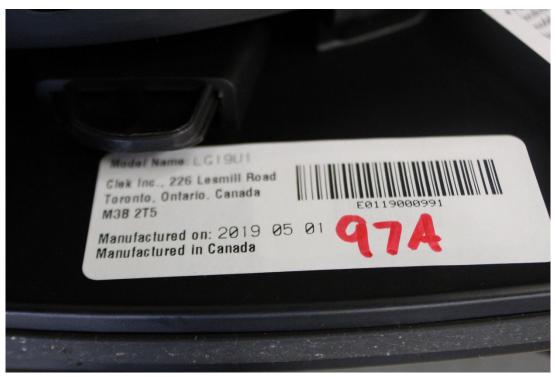


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### **Dynamic Test Photos**

026-LG19U1-01-12CRBLFR 213-CAL-19-026 Pre Test FM06-19-97A





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026-LG19U1-01-12CRBLFR Pre Test





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026-LG19U1-01-12CRBLFR Pre Test





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026-LG19U1-01-12CRBLFR Pre Test





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026-LG19U1-01-12CRBLFR Post Test





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026-LG19U1-01-12CRBLFR Post Test





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026-LG19U1-01-12CRBLFR Post Test





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# **Dynamic Test Photos**

026-LG19U1-02-NINRBLFR 213-CAL-19-026 Pre Test FM06-19-97B





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026-LG19U1-02-NINRBLFR Pre Test





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026-LG19U1-02-NINRBLFR Pre Test





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026-LG19U1-02-NINRBLFR Pre Test





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026-LG19U1-02-NINRBLFR Post Test





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026-LG19U1-02-NINRBLFR Post Test





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026-LG19U1-01-NINRBLFR Post Test

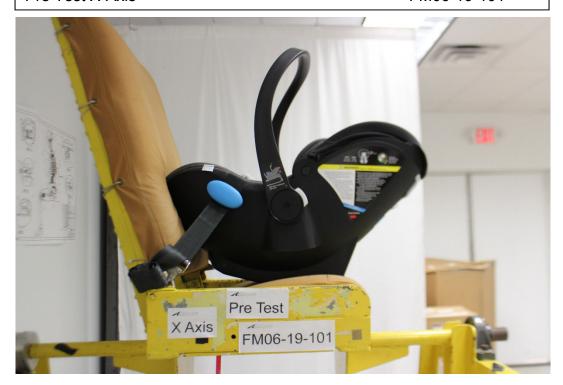




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#### **Inversion Test Photos**

026-LG19U1-INV01- NINRN2FN Pre Test X-Axis

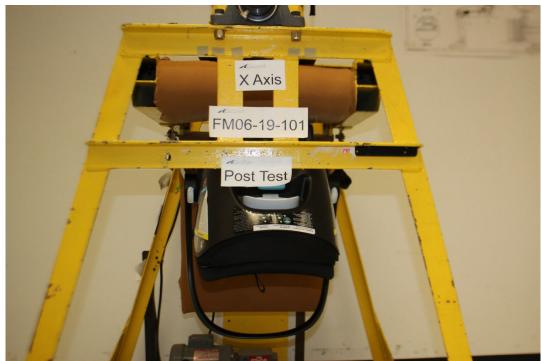




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026-LG19U1-INV01- NINRN2FN Post Test X-Axis





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#### **Inversion Test Photos**

026-LG19U1-INV01- NINRN2FN Pre Test Y-Axis





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026-LG19U1-INV01- NINRN2FN Post Test Y-Axis

213-CAL-19-026 FM06-19-101Post





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#### **Inversion Test Photos**

026-LG19U1-INV02-12CRN2FN Pre Test X-Axis





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026-LG19U1-INV02-12CRN2FN Post Test X-Axis





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#### **Inversion Test Photos**

026-LG19U1-INV02-12CRN2FN Pre Test X-Axis

213-CAL-19-026 FM06-19-102





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026-LG19U1-INV02-12CRN2FN Post Test Y-Axis 213-CAL-19-026 FM06-19-102





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### **Inspection Photos**

# Registration 213-CAL-19-026

026-LG19U1-01-12CRBLFR

| FOR YOUR CHILD'S CONTINUED SAFETY  Please take a few moments to prompily fill out and return the attached co or register online using the direct link to the manufacturer's registrativebsite provided.  Although child restraint systems undergo testing and evaluation, it is possit that a child restraint could be recalled.  In case of a recall, we can reach you only if we have your name and address, please send in the card or register online to be on our recall list.  Please fill this card out and mail it NOW, or register online at www.clakinc.com/register while you are thinking about it.  This card is already addressed and we've paid the postage. | IMPORTANT In case of a recall, we can reach you only if we have  |
|---|--|
| Consumer: Just fill in your name and address.  YOUR MAME  YOUR SHEET ADDRESS  OFF COME  CHILD RESTRAINT REGISTRATION CARD  Madel Name: LG19U1  Clek Inc., 226 Learnill Road Torrorto, Onlario, Canade M38 275  Manufactured on: 2219 85 81  Manufactured in Canada  | BUSINESS REPLY MAIL FRISTCASS MAIL PERMIT NO. 271 DETROIT MI POSTAGE WILL BE PAID BY ACORESSEE  CLEK INC 400 GRAND RIVER AVE STE 200 DETROIT MI 48226-9983   |
| https://dekinc.com/product-registration/  |  |
|   | clek   |
| E<br>A<br>b<br>b  | Product Registration  **Control Order Scheduler Schedule |
| P   | Please Complete the Following Form to Register Your Clek Product.  |
| c   | Continues Information  First Name (Namehol) *  Address   December   1 *  Address   December   2 *  Address   December   3 *  Address   December   3 *  Address   December   4 *  Address   4 *  Addr |
| , n   | Product Information  Solid Heading Product of Medicine (* One of Headings (*) (*) (*) (*) (*) (*) (*) (*) (*) (*)  |
|   | Stay and an an analysis for more young of the last any private or or or workship. No many Publicy OC   |

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#### **Label Photos**

Labels 213-CAL-19-026

026-LG19U1-01-12CRBLFR





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Labels 213-CAL-19-026

026-LG19U1-01-12CRBLFR

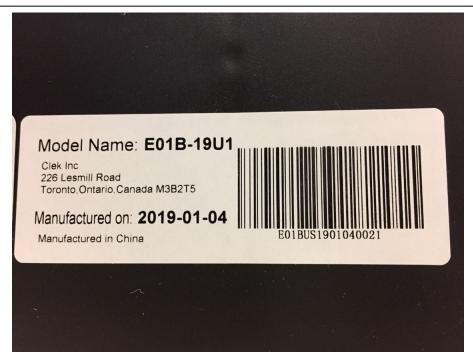




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Labels 213-CAL-19-026

026-LG19U1-01-12CRBLFR





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#### Labels 213-CAL-19-026

026-LG19U1-01-12CRBLFR

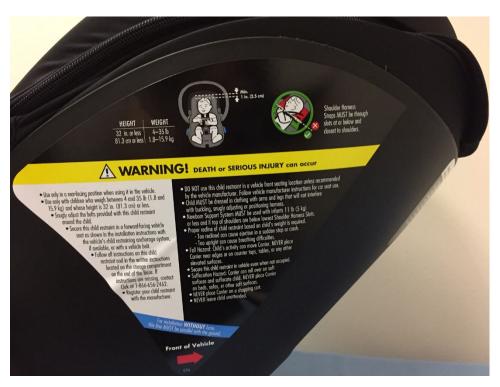


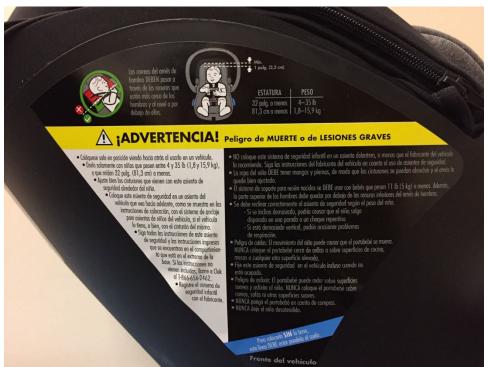


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#### Labels 213-CAL-19-026

026-LG19U1-01-12CRBLFR



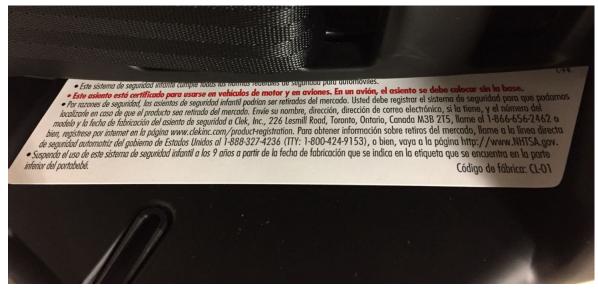


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#### Labels 213-CAL-19-026

026-LG19U1-01-12CRBLFR





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## Labels 213-CAL-19-026

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#### Labels 213-CAL-19-026

026-LG19U1-01-12CRBLFR





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#### Labels 213-CAL-19-026

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