

HS# 637884

REPORT NUMBER: 217-MGA-05-004

**SAFETY COMPLIANCE TESTING FOR
FMVSS NO. 217
SCHOOL BUS EMERGENCY EXITS AND WINDOW
RETENTION AND RELEASE**

Girardin Minibus Inc.
2005 Minibus
NHTSA No.: C50902

**PREPARED BY:
MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105**



Final Report Date: June 20, 2005

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW, ROOM 6115 (NVS-224)
WASHINGTON, D.C. 20590**

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared by:  Date: June 20, 2005
James Hansen, Project Engineer

Reviewed by:  Date: June 20, 2005
John Roberts, Program Manager

FINAL REPORT ACCEPTED BY:



6/23/05
Date of Acceptance

Technical Report Documentation Page

| | | | | | |
|--|--|-----------------------------|--|---|--|
| 1. Report No. 217-MGA-05-004 | | 2. Government Accession No. | | 3. Recipient's Catalog No. | |
| 4. Title and Subtitle Final Report of FMVSS 217 Compliance Testing of 2005 Girardin Minibus NHTSA No.:C50902 | | | | 5. Report Date June 20, 2005 | |
| | | | | 6. Performing Organization Code MGA | |
| 7. Author(s) James Hansen, Project Manager John Roberts, Project Engineer | | | | 8. Performing Organization Report No. 217-MGA-05-004 | |
| 9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105 | | | | 10. Work Unit No. | |
| | | | | 11. Contract or Grant No. DTNH22-02-D-01057 | |
| 12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Enforcement Office of Vehicle Safety Compliance (NVS-224) 400 Seventh St., S.W. Room 6115 Washington, D.C. 20590 | | | | 13. Type of Report and Period Covered Final Report 06/08/05 - 06/20/05 | |
| | | | | 14. Sponsoring Agency Code NVS-224 | |
| 15. Supplementary Notes | | | | | |
| 16. Abstract Compliance tests were conducted on the subject 2005 Girardin Minibus School Bus, NHTSA No. C50902 in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-217-06 for the determination of FMVSS 217 compliance. Test failures were as follows: None | | | | | |
| 17. Key Words Compliance Testing Safety Engineering FMVSS 217 | | | | 18. Distribution Statement Copies of this report are available from: NHTSA Technical Information Services (TIS) Room 2336, (NPO-405) 400 Seventh Street, S.W. Washington, D.C. 20590 (202) 366-4946 | |
| | | | | 19. Security Classif. (of this report) Unclassified | |
| | | 21. No. of Pages 41 | | 22. Price | |

TABLE OF CONTENTS

| <u>Section</u> | | <u>Page No</u> |
|----------------|---|----------------|
| 1 | Purpose of Compliance Test | 1 |
| 2 | Test Data Summary | 2 |
| | Data Sheet 1 - Test Summary | 3 |
| 3 | Compliance Test Data | 4 |
| | Data Sheet 2 - Provision of Emergency Exits | 5 |
| | Data Sheet 3 - Emergency Exit Door Operational Requirements | 7 |
| | Data Sheet 4 - Emergency Exit Identification and Labeling | 8 |
| | Data Sheet 5 - Tape Reflectivity Test | 11 |
| | Data Sheet 6 - Force Tests to Unlatch the Emergency Exit | 12 |
| | Data Sheet 7 - Force Tests for Open the Emergency Exit | 14 |
| | Data Sheet 8 - Emergency Exit Extension | 16 |
| | Data Sheet 9 - Window Retention Test | 17 |
| 4 | Instrumentation and Equipment List | 19 |
| 5 | Photographs | 20 |
| 6 | Test Plots | 35 |

SECTION 1
PURPOSE OF COMPLIANCE TEST

Tests were conducted on a MY2005 Girardin Minibus School Bus, NHTSA No. C50902, in accordance with the specifications of the Office of Vehicle Safety Compliance (OVSC) Test Procedures TP-217-06 to determine compliance to the requirements of Federal Motor Vehicle Safety Standards (FMVSS) 217, "School Bus Emergency Exits and Window Retention and Release".

This program is sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-02-D-01057.

SECTION 2
TEST DATA SUMMARY

Based on the tests performed, the MY2005 Girardin Minibus School Bus, NHTSA No. C50902 did appear to meet the requirements of FMVSS 217. See Data Sheet 1 for Test Summary on the following page.

**DATA SHEET 1
TEST SUMMARY**

GENERAL VEHICLE IDENTIFICATION

| | | |
|--|---------------------------|---------------|
| Model Year/Make/Model: | 2005/ Girardin/ Minibus | |
| NHTSA No.: | C50902 | |
| GVWR: | 4,354 kg 9,600 lb | |
| Build Date for Bus Chassis: | 08/04 | |
| VIN: | 1FDSE35L85HA02436 | |
| Chassis VIN: | 1FDSE35L85HA02436 | |
| Seating Capacity: | (18 Passengers, 1 Driver) | |
| Type of Bus: | School Bus | |
| Tire Pressure from tire placard (at capacity): | Front: 380 kPa | Rear: 550 kPa |
| Odometer Reading: | 550.7 miles | |

| | PASS/FAIL |
|--|-------------------|
| S5.1 WINDOW RETENTION | PASS |
| S5.2 PROVISION OF EMERGENCY EXITS | PASS |
| Meets minimum exit provisions | PASS |
| Meets all other exit requirements | PASS |
| Meets requirements for additional exits | PASS |
| S5.2.3.1.A EMERGENCY EXIT DOOR OPERATIONAL REQUIREMENTS | PASS |
| S5.3 EMERGENCY EXIT RELEASE | PASS |
| Forces to unlatch the emergency exits | PASS |
| Forces to open the emergency exits | PASS |
| S6.4 EMERGENCY EXIT OPENING | PASS |
| S6.5 EMERGENCY EXIT LABELING AND IDENTIFICATION | PASS |
| S6.6 TAPE REFLECTIVITY (49CFR 571.131) | NOT TESTED |

COMMENTS: NONE

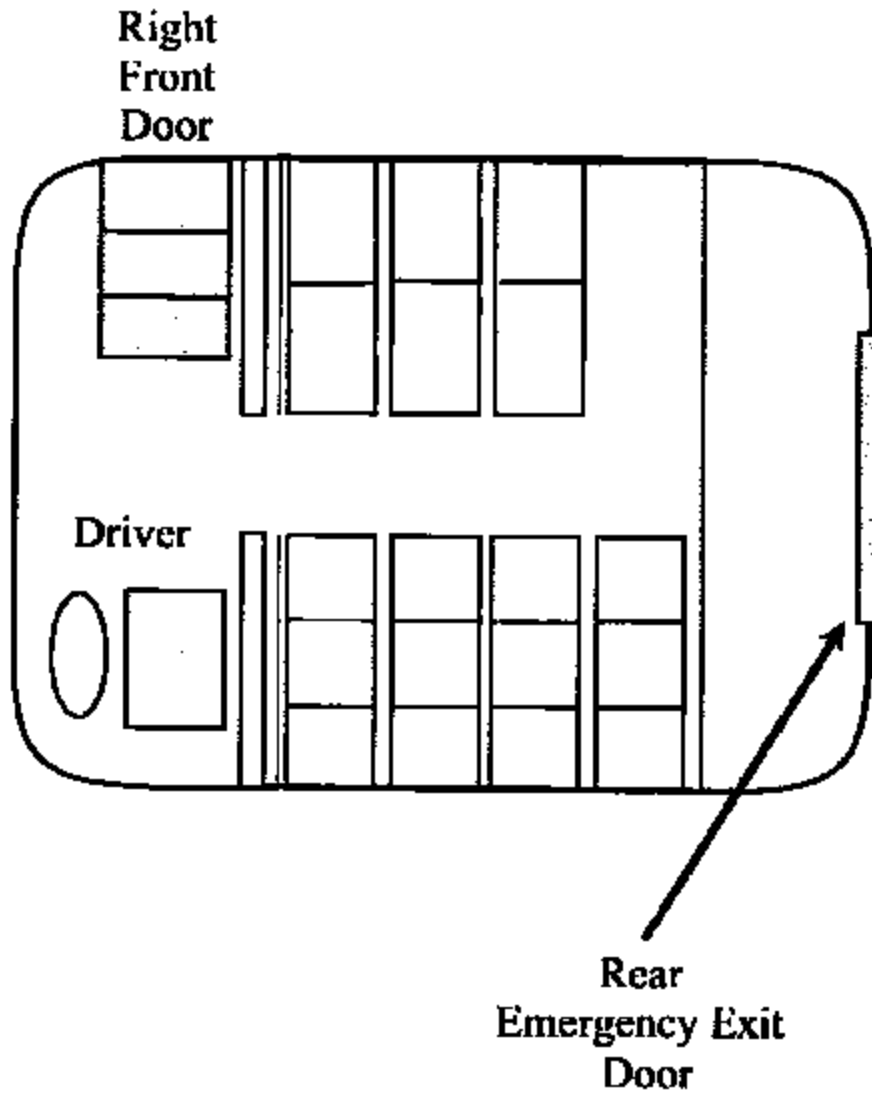
SECTION 3
COMPLIANCE TEST DATA

The following data sheets document the results of testing on the 2005 Girardin Minibus School Bus, NHTSA No. C50902.

DATA SHEET 2
PROVISION OF EMERGENCY EXITS

Test Vehicle: **2005 Girardin Minibus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C60902**
 Test Date: **06/08/05**



| | | Height (mm) | Width (mm) |
|---|--------------------------|-------------|------------|
| 1 | Rear Emergency Exit Door | 1225 | 845 |

Seating Capacity: 19 (Including Driver)

| | PASS/FAIL |
|--|-----------|
| Bus meets minimum emergency exit provision, based upon Table 1 | PASS |

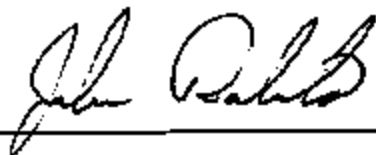
Comments: None

DATA SHEET 2 (CONTINUED)
PROVISION OF EMERGENCY EXITS

| | | PASS/FAIL |
|---|---|-----------|
| 1 | Rear Emergency Door – opens outward and is hinged on the right side (either side, if the bus has a GVWR of 10,000 pounds or less) | PASS |
| 2 | Side Emergency Door – hinged on its forward side. No more than one side emergency exit door is located, in whole or in part, within the same post and roof bow panel space. | N/A |
| 3 | Rear Push Out Window – provides a minimum opening clearance 41 cm high and 122 cm wide (16" x 48") | N/A |
| 4 | Roof Exit – is hinged on its forward side, and operable from both the inside and outside the vehicle | N/A |
| 5 | There is an even number of side emergency exit windows on each side of bus. | N/A |
| 6 | The bus is not equipped with both sliding and push-out windows, (except for buses equipped with rear push out emergency exit windows). | N/A |
| 7 | A right side emergency exit door, if any, is located as near as practicable to the midpoint of the passenger compartment. | N/A |

COMMENTS: NONE

Recorded By: _____



Approved By: _____



Date: 06/08/05

**DATA SHEET 3
EMERGENCY EXIT DOOR OPERATIONAL REQUIREMENTS**

Test Vehicle: **2005 Girardin Minibus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C50902**
 Test Date: **06/08/05**

| | | PASS/FAIL |
|---|--|-----------|
| 1 | The engine starting system does NOT operate if any Emergency Exit is LOCKED | N/A (a) |
| 2 | All Emergency Door and Roof Exits can be released by one person (from inside and outside of bus) | PASS |
| 3 | When the Release Mechanism is NOT in the closed position and the vehicle ignition is in the "ON" position, there is a continuous warning sound audible at the Driver's DSP and in the vicinity of the Emergency Door(s) having the unclosed mechanism. | PASS |
| 4 | Emergency exit release mechanism does not use remote controls or central power systems | PASS |

COMMENTS:

(a) Door does not lock.

Recorded By: 

Approved By: 

Date: 06/08/05

SHEET 4A
EMERGENCY EXIT IDENTIFICATION AND LABELING

Test Vehicle: **2005 Girardin Minibus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C50902**
Test Date: **06/08/05**

EMERGENCY EXIT LABELING - INTERIOR

| Exit Location | Rear Door |
|--------------------|---------------------|
| Exit Description | Emergency Exit Door |
| Letter Height (cm) | 4.94 (a) |
| Background Color | White |
| Location Inside | Above Door |
| Pass/Fail | PASS |

OPERATING INSTRUCTIONS - INTERIOR

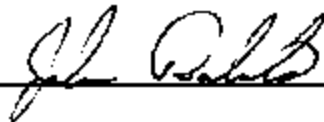
| Exit Location | Rear Door |
|----------------------------|--|
| Instructions | Emergency Only To Open Pull up and Push |
| Letter Height (cm) | 0.92 (b) |
| Letter Color | Black |
| Background Color | White |
| Distance From Release (cm) | 2 |
| Reflective Tape Color | N/A |
| Reflective Tape Width | N/A |
| Pass/Fail | PASS |

COMMENTS:

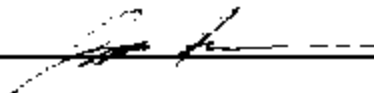
(a) Some letters meet the 5.0 cm requirement. The measurement shown represents the smallest letter height.

(b) Some letters meet the 1.0 cm requirement. The measurement shown represents the smallest letter height.

Recorded By: _____



Approved By: _____



Date: 06/08/05

**DATA SHEET 4B
EMERGENCY EXIT IDENTIFICATION AND LABELING**

Test Vehicle: **2005 Girardin Minibus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C50902**
Test Date: **06/08/05**

EMERGENCY EXIT LABELING - EXTERIOR

| Exit Location | Rear Door |
|--------------------|----------------|
| Exit Description | Emergency Door |
| Letter Height (cm) | 4.9 (a) |
| Background Color | Yellow |
| Location Outside | Above Window |
| Pass/Fail | PASS |

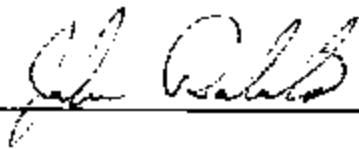
OPERATING INSTRUCTIONS - EXTERIOR

| Exit Location | Rear Door |
|----------------------------|---------------------|
| Instructions | (Arrow Pointing Up) |
| Letter Height (cm) | (b) |
| Letter Color | Black |
| Background Color | Yellow |
| Distance From Release (cm) | 4.5 |
| Reflective Tape Color | Yellow |
| Reflective Tape Width | 2.6 |
| Pass/Fail | PASS |

COMMENTS:

(a) Some letters meet the 5.0 cm requirement. The measurement shown represents the smallest letter height.

(b) Arrow Only

Recorded By: 

Approved By: 

Date: 06/08/05

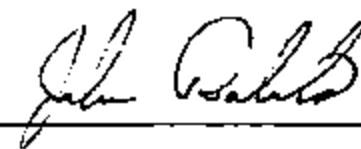
**DATA SHEET 4 (CONTINUED)
EMERGENCY EXIT IDENTIFICATION AND LABELING**

Test Vehicle: **2005 Girardin Minibus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C60902**
Test Date: **06/08/05**

| | | PASS/FAIL |
|---|---|-------------|
| 1 | Each required Emergency Exit is labeled with the words "Emergency Exit" or "Emergency Door" as appropriate in letters at least 5 cm high (2") of a color that contrasts with its background. | PASS |
| 2 | Emergency Doors – The designation "Emergency Exit" or "Emergency Door" is located at the top of, or directly above the exit door on both inside and outside surfaces of the bus. | PASS |
| 3 | Roof Exits – The designation for roof exits is located on an inside surface of the exit, or within 30 cm (11.8") of the roof exit opening. | N/A |
| 4 | Emergency Window Exits – The designation is located at the top of, or directly above, or at the bottom of the emergency window exit on both the inside and outside surfaces of the bus. | N/A |
| 5 | Exit Operating Instructions indicate all motions required to unlatch and open the exit, in letters at least 1 cm (.39") high and of a color that contrast with its background and shall be located within 15 cm (5.9") of the release mechanism on the inside surface of the bus. | PASS |
| 6 | Each required Emergency Exit opening is outlined around its perimeter with a 2.5 cm (1") wide retroreflective tape of red, white, or yellow color. | PASS |

COMMENTS:

Recorded By: 

Approved By: 

Date: 06/08/05

**DATA SHEET 5
TAPE RELECTIVITY TEST**

Test Vehicle: **2005 Girardin Minibus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C50902**
 Test Date:

- _____ Color of retroreflective tape (white, red, or yellow)
 _____ Glass bead retroreflective element material – Fill in Part A
 _____ Prismatic retroreflective element material – Fill in Part B

**SPECIFIC INTENSITY PER UNIT AREA
 (Candela Per Foot Candle Per Square Foot)**

| Observation Angle | Entrance Angle | Min. Reqd. Intensity | Recorded Intensity | Pass/Fail |
|----------------------------|----------------|----------------------|--------------------|-----------|
| Part A – Glass Bead | | | | |
| | | | | |
| | | | | |
| | | | | |
| Part B - Prismatic | | | | |
| | | | | |
| | | | | |
| | | | | |

This section of tape passes the REFLECTIVITY requirement. Yes___ No___

COMMENTS: NOT TESTED

Recorded By: _____

Approved By: _____

Date:

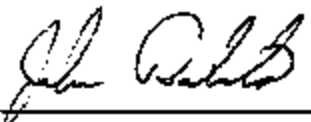
**DATA SHEET 6A
FORCE TESTS TO UNLATCH THE EMERGENCY EXITS - INTERIOR**

Test Vehicle: **2005 GlardIn Minibus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C50902**
 Test Date: **06/08/05**

| Exit Location | Exit Description | High/Low Force Area | Maximum Force Requirement Newtons | Actual Force Measured (N) | Motion(s) required to Release Exit | Actual Motion(s) to Release Exit | PASS/FAIL |
|----------------|---------------------|---------------------|-----------------------------------|---------------------------|------------------------------------|----------------------------------|-----------|
| Rear Exit Door | Emergency Exit Door | High | 178 | 1. 33.9 | Straight | Pull Up | PASS |
| | | | | 2. 34.7 | | | |
| | | | | 3. 30.4 | | | |
| | | | | Average: 33 | | | |

COMMENTS: NONE

Recorded By: 

Approved By: 

Date: 06/08/05

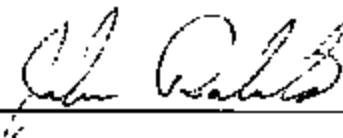
**DATA SHEET 6B
FORCE TESTS TO UNLATCH THE EMERGENCY EXITS - EXTERIOR**

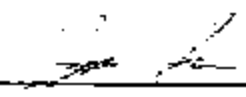
Test Vehicle: **2005 Girardin Minibus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C50902**
 Test Date: **06/08/05**

| Exit Location | Exit Description | High/Low Force Area | Maximum Force Requirement Newtons | Actual Force Measured (N) | Motion(s) required to Release Exit | Actual Motion(s) to Release Exit | PASS/FAIL |
|----------------|---------------------|---------------------|-----------------------------------|---------------------------|------------------------------------|----------------------------------|-----------|
| Rear Exit Door | Emergency Exit Door | High | 178 | 1. 101.3 | Rotary | Counter Clockwise 90° Turn | PASS |
| | | | | 2. 102.5 | | | |
| | | | | 3. 103.2 | | | |
| | | | | Average: 102.3 | | | |

COMMENTS: NONE

Recorded By: 

Approved By: 

Date: 06/08/05

**DATA SHEET 7A
FORCE TESTS TO OPEN THE EMERGENCY EXITS - INTERIOR**

Test Vehicle: **2005 Girardin Minibus**
 Test Lab: **MGA Research-Wisconsin Operations**

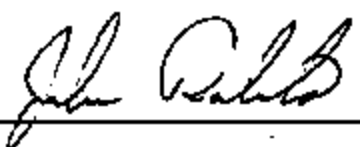
NHTSA No.: **C50902**
 Test Date: **06/08/06**

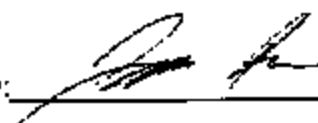
| Exit Location | Exit Description | High/Low Force Area | Maximum Force Requirement Newtons | Actual Force Measured (N) | Motion(s) required to Open Exit | Actual Motion(s) to Open Exit | Passage of Ellipsoid or Parallelepiped | PASS/FAIL |
|---------------|---------------------|---------------------|-----------------------------------|---------------------------|---------------------------------|-------------------------------|--|-----------|
| Rear Door | Emergency Exit Door | High | 178 | 1. 5.4 | Push | Push Outward | 114x56x15 Parallelepiped | PASS |
| | | | | 2. 6.1 | | | | |
| | | | | 3. 5.9 | | | | |
| | | | | Average: 5.8 | | | | |

14

Describe in the comments section if more than one force and motion are required to unlatch the exit.

COMMENTS: NONE

Recorded By: 

Approved By: 

Date: 06/08/06

**DATA SHEET 7B
FORCE TESTS TO OPEN THE EMERGENCY EXITS - EXTERIOR**

Test Vehicle: 2005 Girardin Minibus
Test Lab: MGA Research-Wisconsin Operations

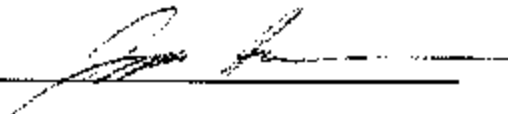
NHTSA No.: C50902
Test Date: 06/08/05

| Exit Location | Exit Description | High/Low Force Area | Maximum Force Requirement Newtons | Actual Force Measured (N) | Motion(s) required to Open Exit | Actual Motion(s) to Open Exit | Passage of Ellipsoid or Parallelepiped | PASS/FAIL |
|----------------|---------------------|---------------------|-----------------------------------|---------------------------|---------------------------------|-------------------------------|--|-----------|
| Rear Exit Door | Emergency Exit Door | High | 178 | 1. 7.2 | Straight I | Pull Out | 114x56x15 Parallelepiped | PASS |
| | | | | 2. 6.6 | | | | |
| | | | | 3. 6.2 | | | | |
| | | | | Average: 6.7 | | | | |

Describe in the comments section if more than one force and motion are required to unlatch the exit.

COMMENTS: NONE

Recorded By: 

Approved By: 

Date: 06/08/05


**DATA SHEET 8
EMERGENCY EXIT EXTENSION**

Test Vehicle: **2005 Girardin Minibus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C50902**
 Test Date: **06/08/05**

| | | PASS/FAIL |
|---|---|-----------|
| 1 | Exit(s) can be extended by a single person. | PASS |
| 2 | Each emergency exit door is equipped with a positive door opening device that meets the requirements (outlined in Section S5.4.1 (3) of FMVSS 217). | PASS |
| 3 | There is a 30 cm (11.81") wide clear aisle space for each side emergency door exit. | N/A |
| 4 | There is no seat or barrier which extend past the side door opening | N/A |
| 5 | For flip-up seat adjacent to the side emergency door exit it automatically assumes and retain a vertical position when not in use, so that no portion of the seat bottom is within the 30 cm (11.81") aisle clearance space | N/A |
| 6 | There is no obstruction of door latch mechanism for the rear emergency door. | PASS |

COMMENTS: NONE

Recorded By: 

Approved By: 

Date: 06/08/05

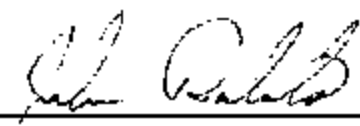
**DATA SHEET 9
WINDOW RETENTION TEST**

Test Vehicle: **2005 Girardin Minibus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C50902**
 Test Date: **06/08/05**

| | | |
|---|---|----------------------------------|
| 1 | Test Window Identification: | Left Side Window #2 |
| 2 | Provide a detailed description of the window such as fixed, push out, single or double glazed, horizontal or vertical sliding, etc. | Single Vertical Sliding |
| 3 | Provide the horizontal and vertical glazing dimensions for each panel. | 11.25" H x 22.38" W |
| 4 | Did the window pass the retention requirements? Describe how the window structure and glazing withstood the force per the PASS/FAIL criteria: | PASS Max Displacement of 43mm |
| 5 | Did the window pass the force tests to unlatch and open the exit after the completion of the retention test? | N/A |

COMMENTS:

Recorded By: 

Approved By: 

Date: 06/08/05

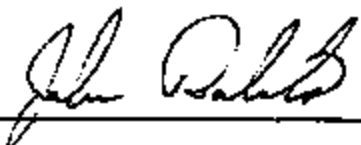
**DATA SHEET 9 (CONTINUED)
WINDOW RETENTION TEST**


Test Vehicle: **2005 Girardin Minibus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C60902**
Test Date: **06/08/05**

| | | |
|---|---|---|
| 1 | Test Window Identification: | Right Side Window #1 |
| 2 | Provide a detailed description of the window such as fixed, push out, single or double glazed, horizontal or vertical sliding, etc. | Single, Vertical Sliding |
| 3 | Provide the horizontal and vertical glazing dimensions for each panel. | 11.25" H x 29" W |
| 4 | Did the window pass the retention requirements? Describe how the window structure and glazing withstood the force per the PASS/FAIL criteria: | PASS Max Displacement of 43mm |
| 5 | Did the window pass the force tests to unlatch and open the exit after the completion of the retention test? | N/A |

COMMENTS:

Recorded By: 

Approved By: 

Date: 06/08/05

**SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST**

Test Vehicle: **2005 Girardin Minibus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C60902**
 Test Date: **06/08/05**

| Equipment | Description | Model/Serial No. | Cal. Date | Next Cal. Date |
|----------------------|--------------------|----------------------|-----------|----------------|
| Head Form | MGA | 217 | When Used | When Used |
| A/D Interface | Metabyte | DAS-1802 | -- | -- |
| Sphere | MGA | Sphere - 1A | When Used | When Used |
| Load Cell | Interface | 1210Af-137751 | 03/09/05 | 09/09/05 |
| Inclinometer | Digital Protractor | Pro 360 / Comp Lab | 02/16/05 | 08/16/05 |
| Linear Potentiometer | Ametek | P40A/0504-21782 | 05/23/05 | 11/23/05 |
| Digital Calipers | Mitutoyd | CD-6" cs/ 0441288 | 04/01/05 | 10/01/05 |
| Steel Tape | Stanley | Powerlock / 232 | 02/03/05 | 08/03/05 |
| Camera | Sony | DSC-S75 | -- | -- |
| Ellipsoid | MGA | ELLIP - 1A | When Used | When Used |
| Parallelepiped | MGA | PARA - 2A | When Used | When Used |
| Force Gauge | Dillon | AFG/DMLC | 05/19/05 | 11/19/05 |

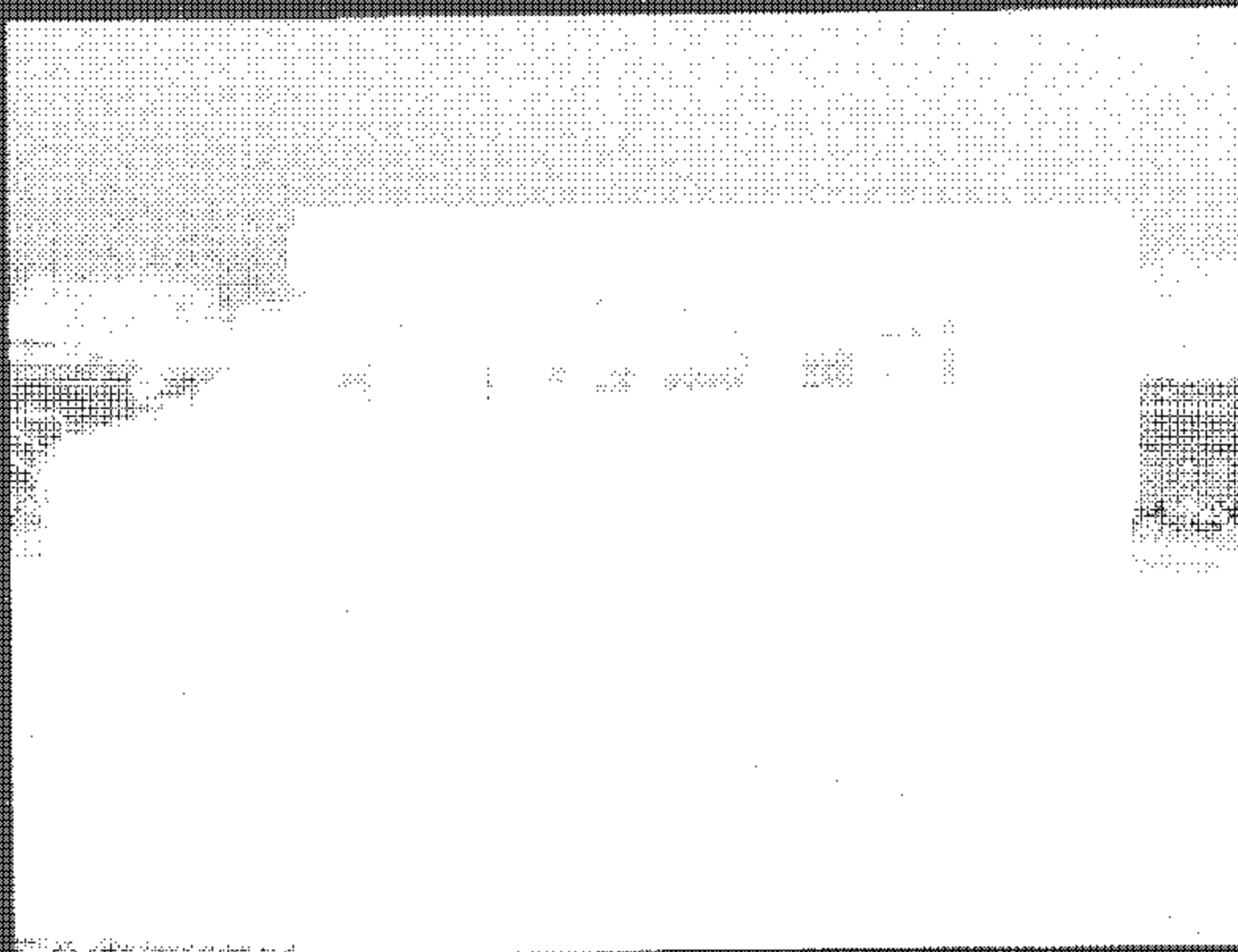
**SECTION 5
PHOTOGRAPHS**

TABLE OF PHOTOGRAPHS

| <u>No.</u> | | <u>Page No.</u> |
|------------|---|-----------------|
| 1 | Exterior Left Side View of School Bus | 21 |
| 2 | Exterior Right Front ¼ View of School Bus | 22 |
| 3 | Exterior Left Rear ¼ View of School Bus | 23 |
| 4 | Vehicle Certification | 24 |
| 5 | Interior Front to Rear View Depicting Seating Arrangement | 25 |
| 6 | Interior Rear to Front View Depicting Seating Arrangement | 26 |
| 7 | Rear Exit Door Identification (Outside View) | 27 |
| 8 | Rear Exit Door Identification (Inside View) | 28 |
| 9 | Rear Door Emergency Exit Parallelepiped Clearance | 29 |
| 10 | Loading Fixture | 30 |
| 11 | Retention Test of Left Side Window (Pre-Test) | 31 |
| 12 | Retention Test of Left Side Window (Post-Test) | 32 |
| 13 | Retention Test of Right Side Window (Pre-Test) | 33 |
| 14 | Retention Test of Right Side Window (Post-Test) | 34 |

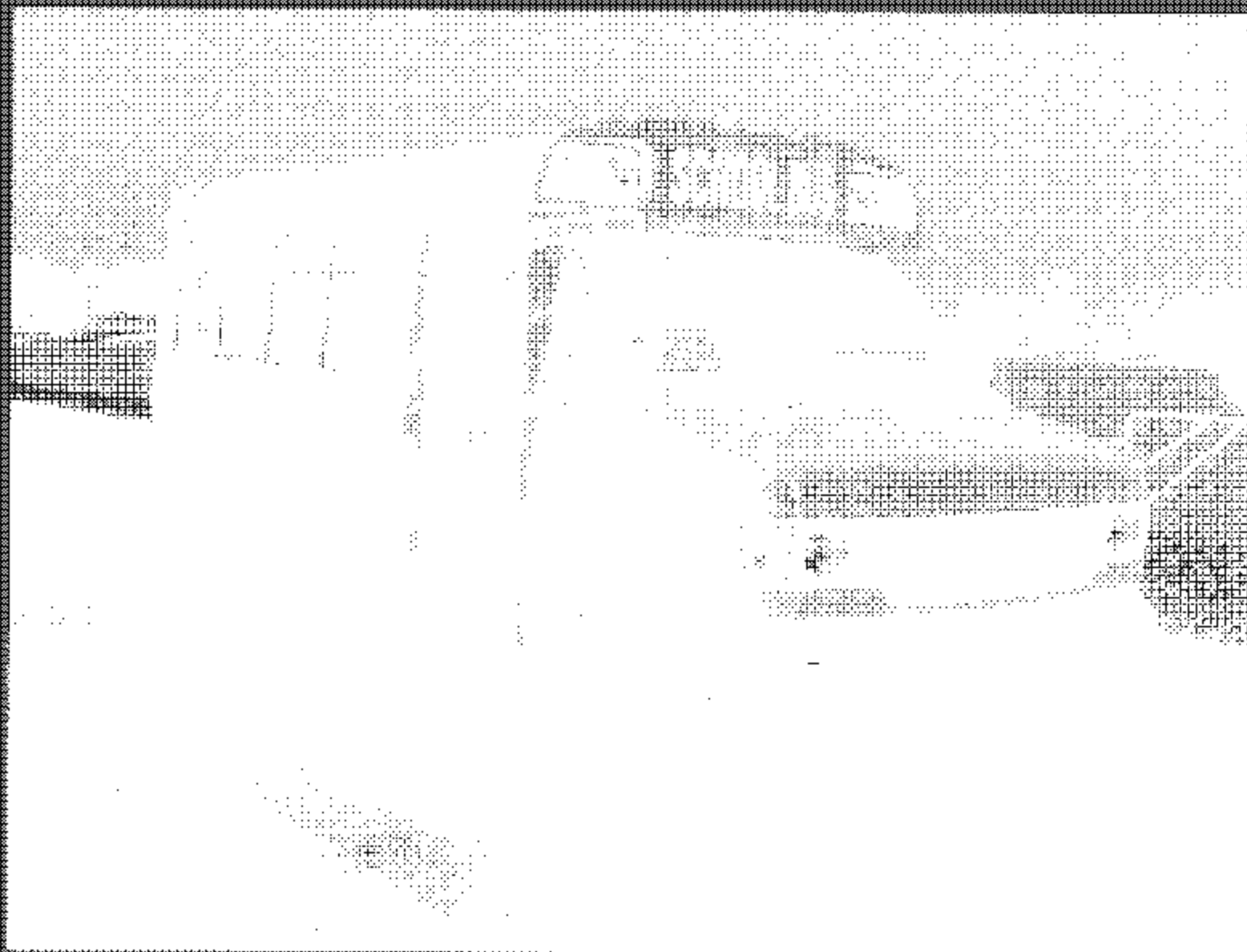
Test Vehicle: 2005 Starline Minibus
Procedure: FMVSS 217

NHTSA No.: C50902



Test Vehicle: 2006 Girardin Minibus
Procedure: FMVSS 217

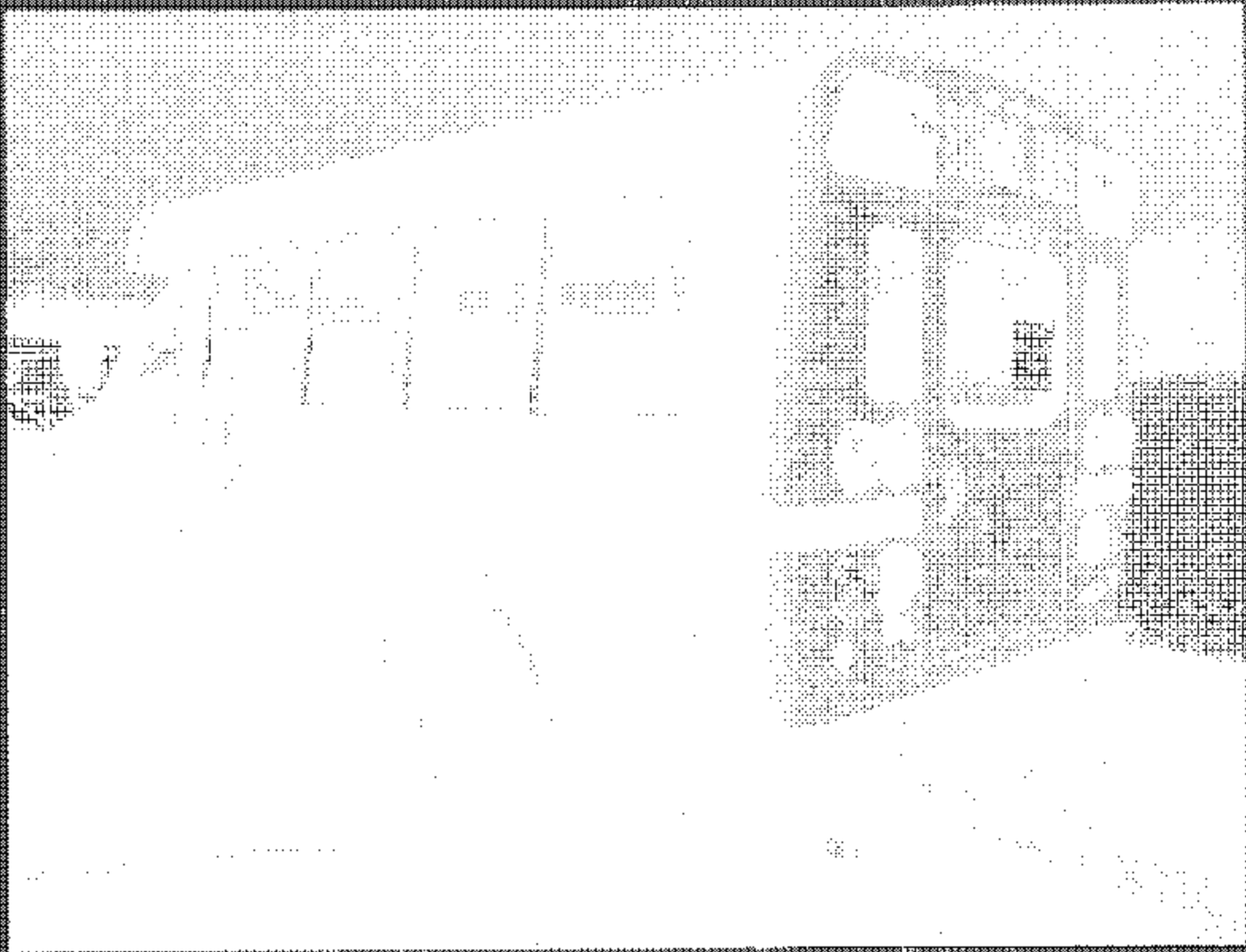
NHTSA No.: C60002



Exterior Right Front 3/4 View of School Bus

Test Vehicle: 2008 Girardin Minibus
Procedure: FMVSS 217

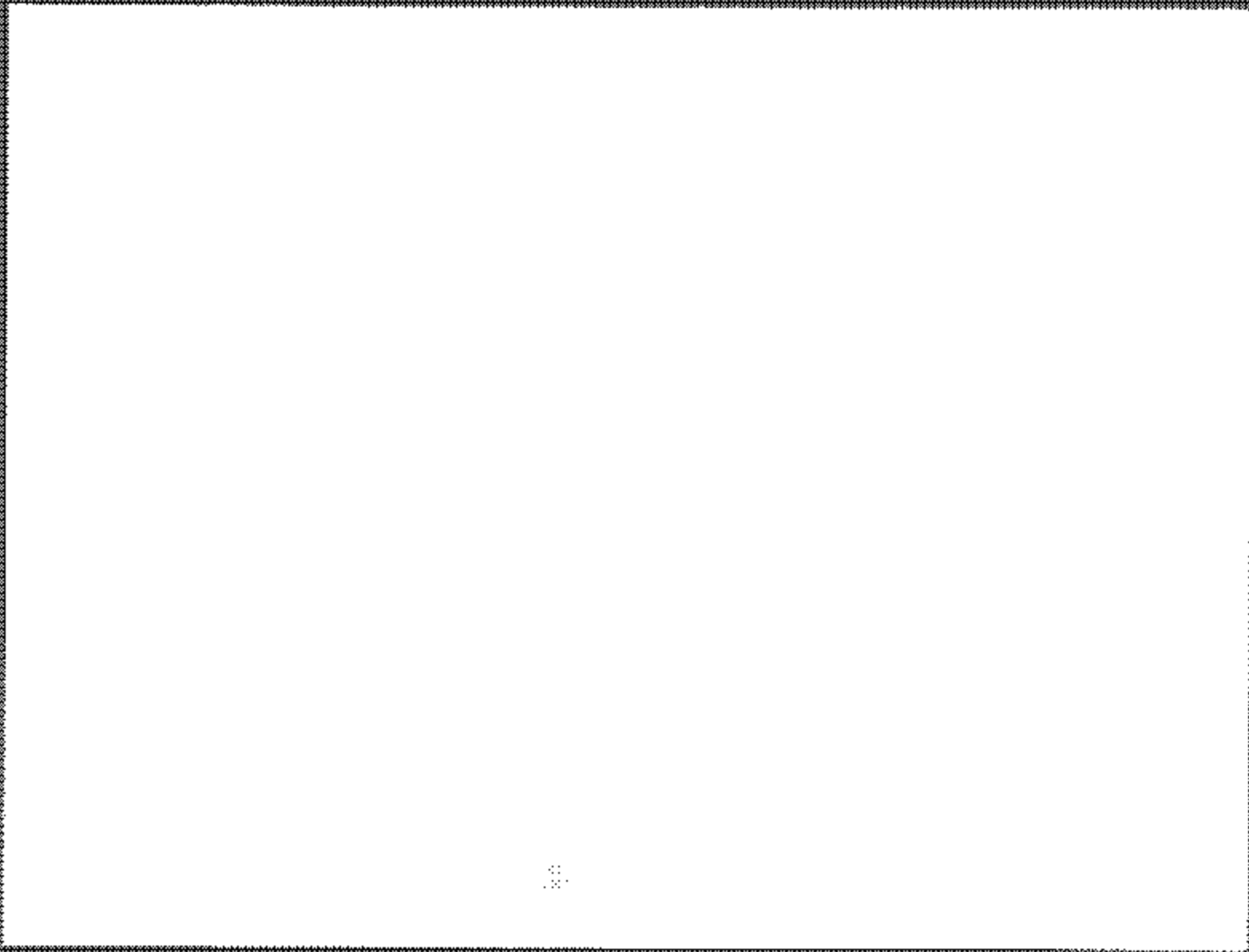
NHTSA No.: C60902



Exterior Left Rear 3/4 View of School Bus

Test Vehicle: 2005 Girardia Minibus
Procedure: FMVSS 217

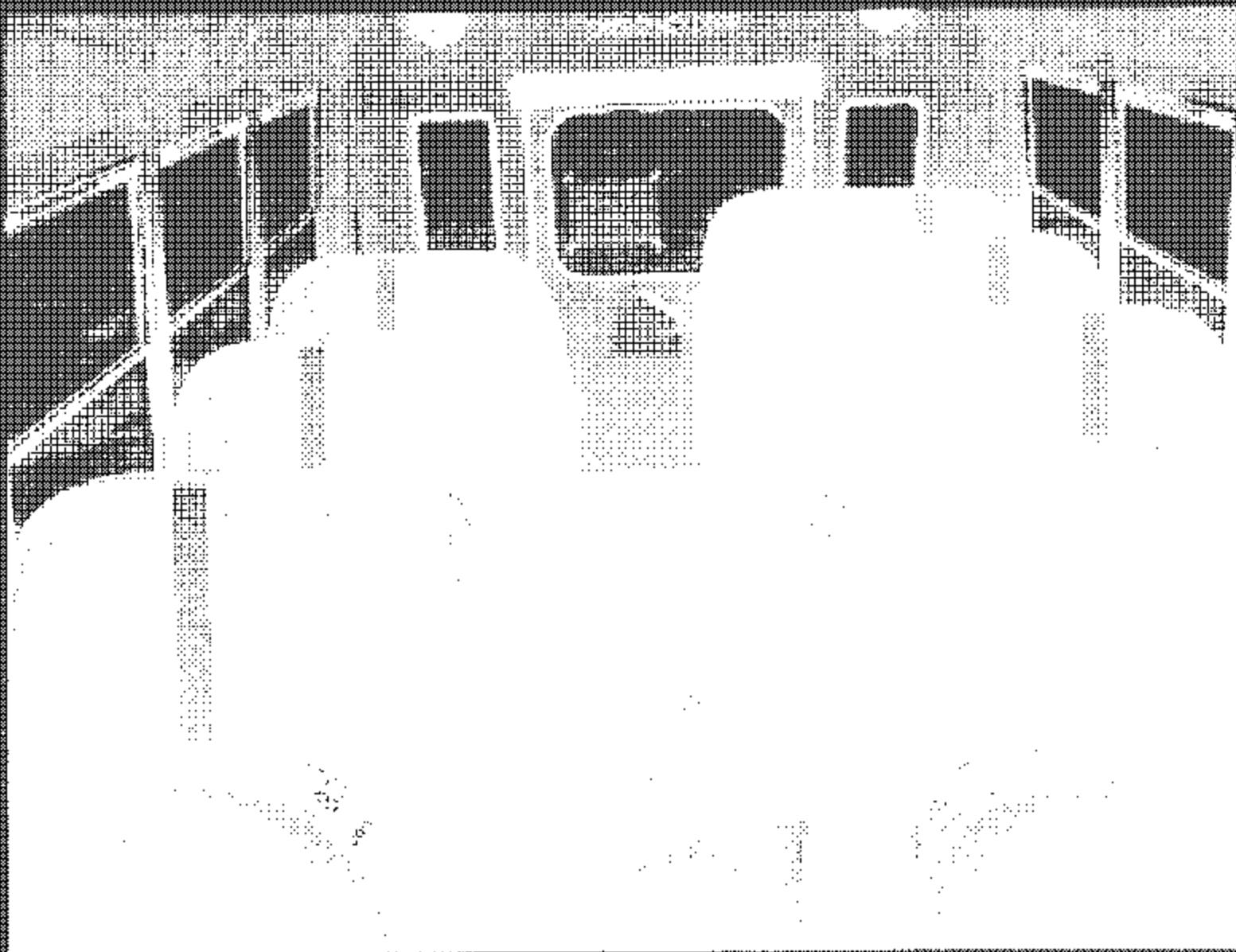
NHTSA No.: C89902



Vehicle Certification

Test Vehicle: 2008 Girardin Minibus
Procedure: FMVSS 217

NHTSA No.: C60992



Interior Front to Rear View Depicting Seating Arrangement

Test Vehicle: 2008 Gironda Minibus
Procedura: FMVSS 217

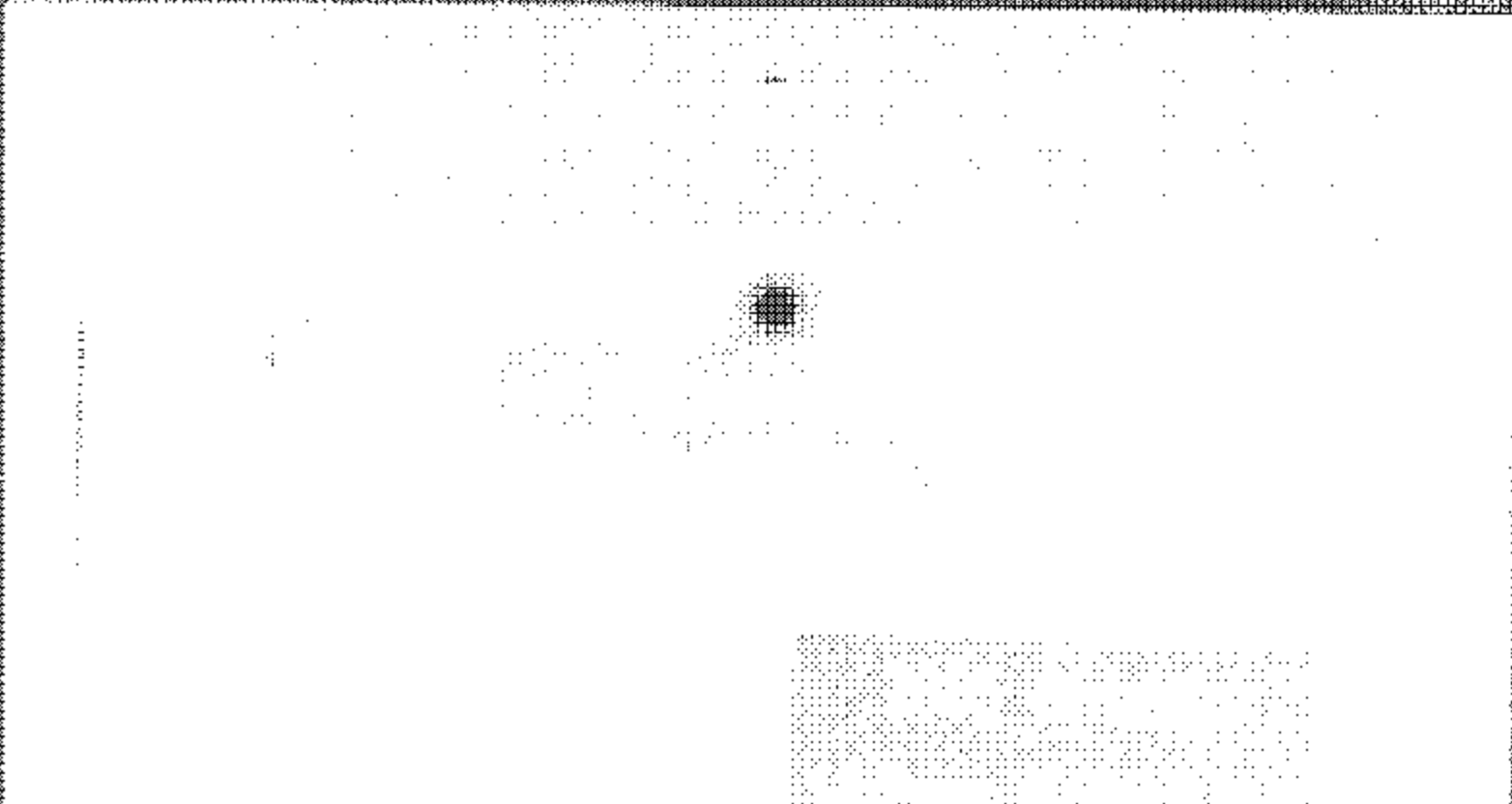
NHTSA No.: C6890Z



Interior Rear to Front View Depicting Seating Arrangement

Test Vehicle: 2005 Girardin Minibus
Procedure: FMVSS 217

NHTSA No.: C50862



27

Rear Exit Door Identification (Outside View)

Test Vehicle: 2005 Girardin Minibus
Procedure: FMVSS 217

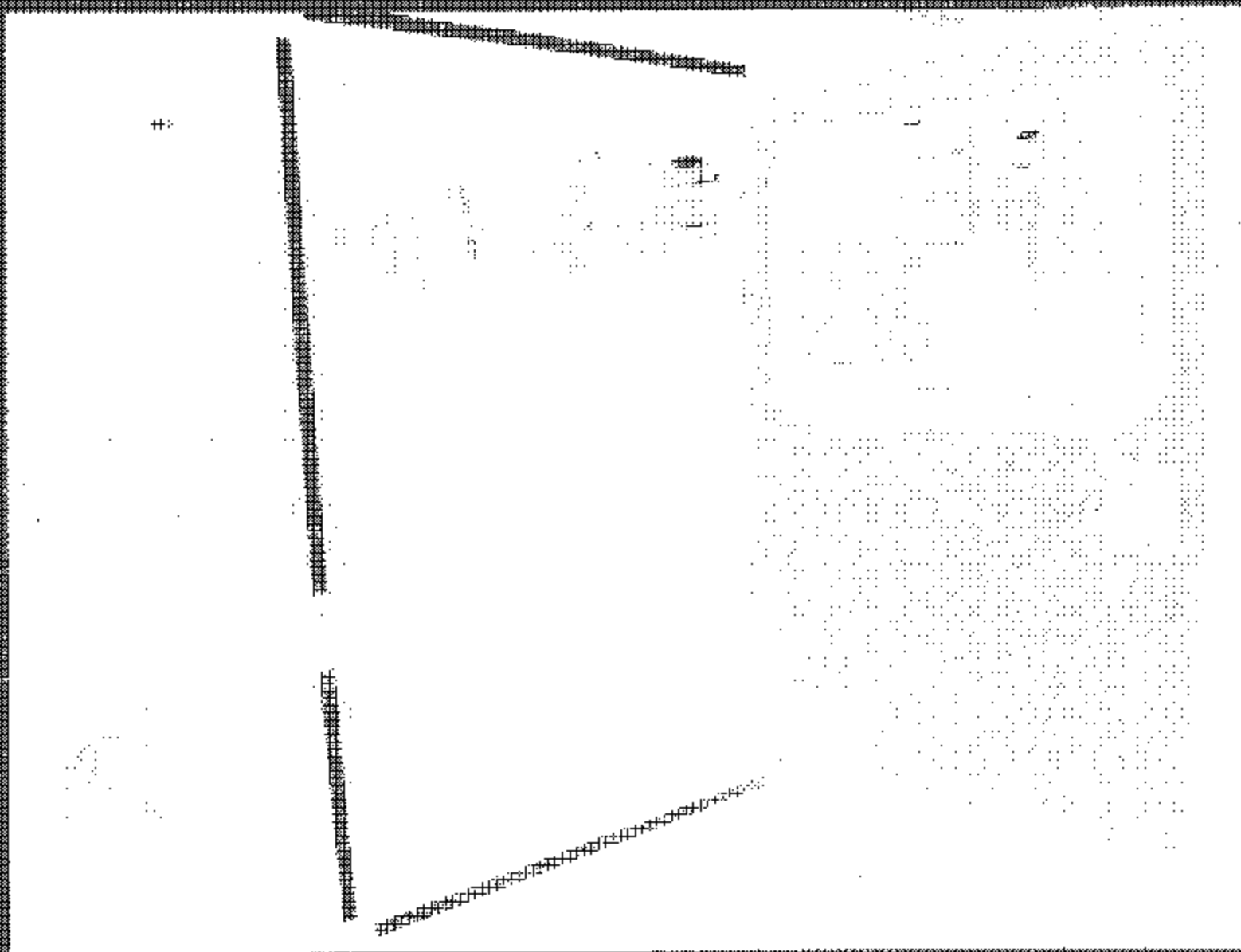
NHTSA No: G20002



Rear Exit Door Identification (Inside View)

Test Vehicle: 2005 Chevrolet Minibike
Procedure: FMVSS 217

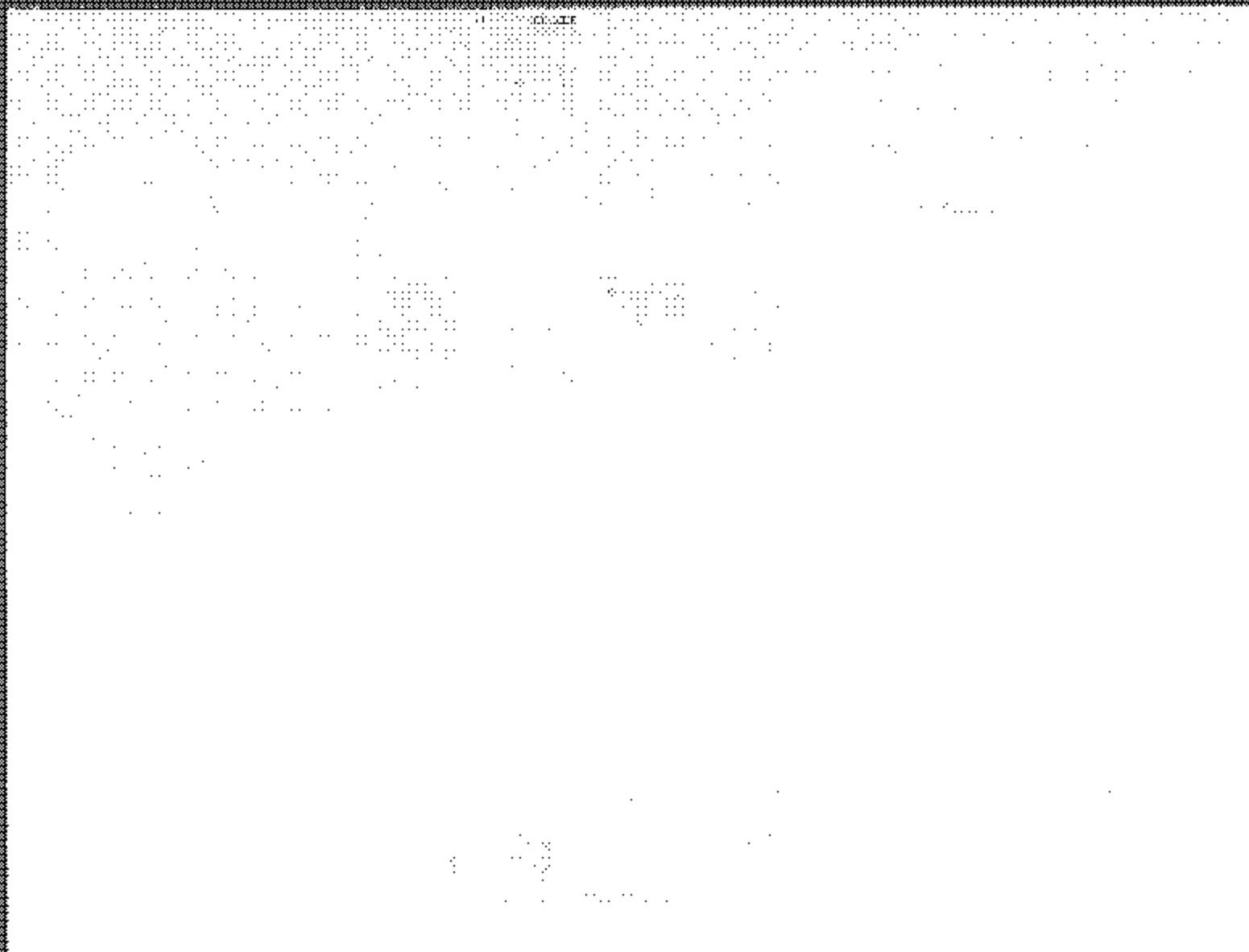
NHTSA No.: C30002



Rear Door Emergency Exit Parallelepiped Clearance

Test Vehicle: 2008 Chevrolet Minibus
Procedure: FMVSS 217

NHTSA No.: D20962

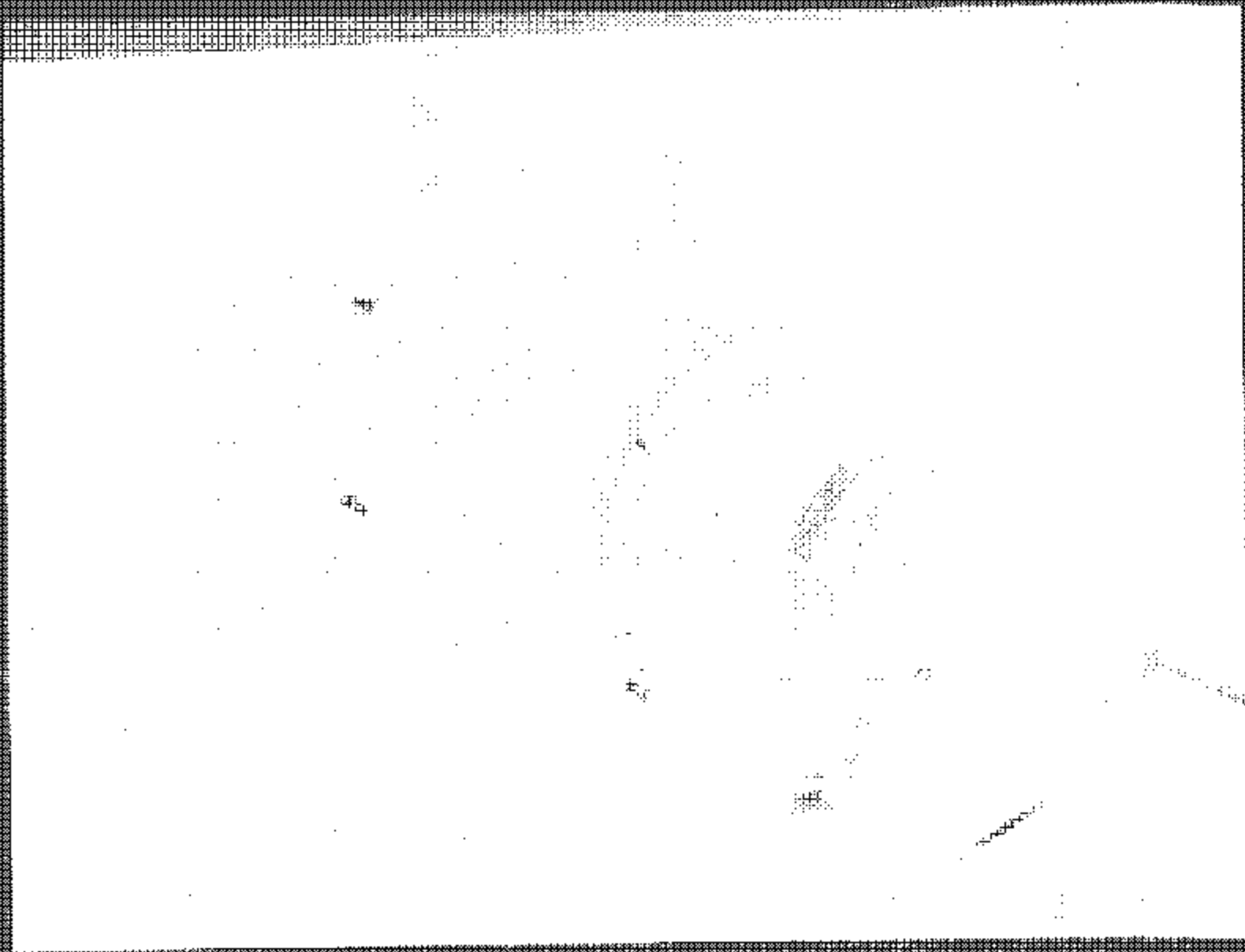


10

Loading Fixture

Test Vehicle: 2004 Girardin Minibus
Procedure: FMVSS 217

NHTSA No. E660002

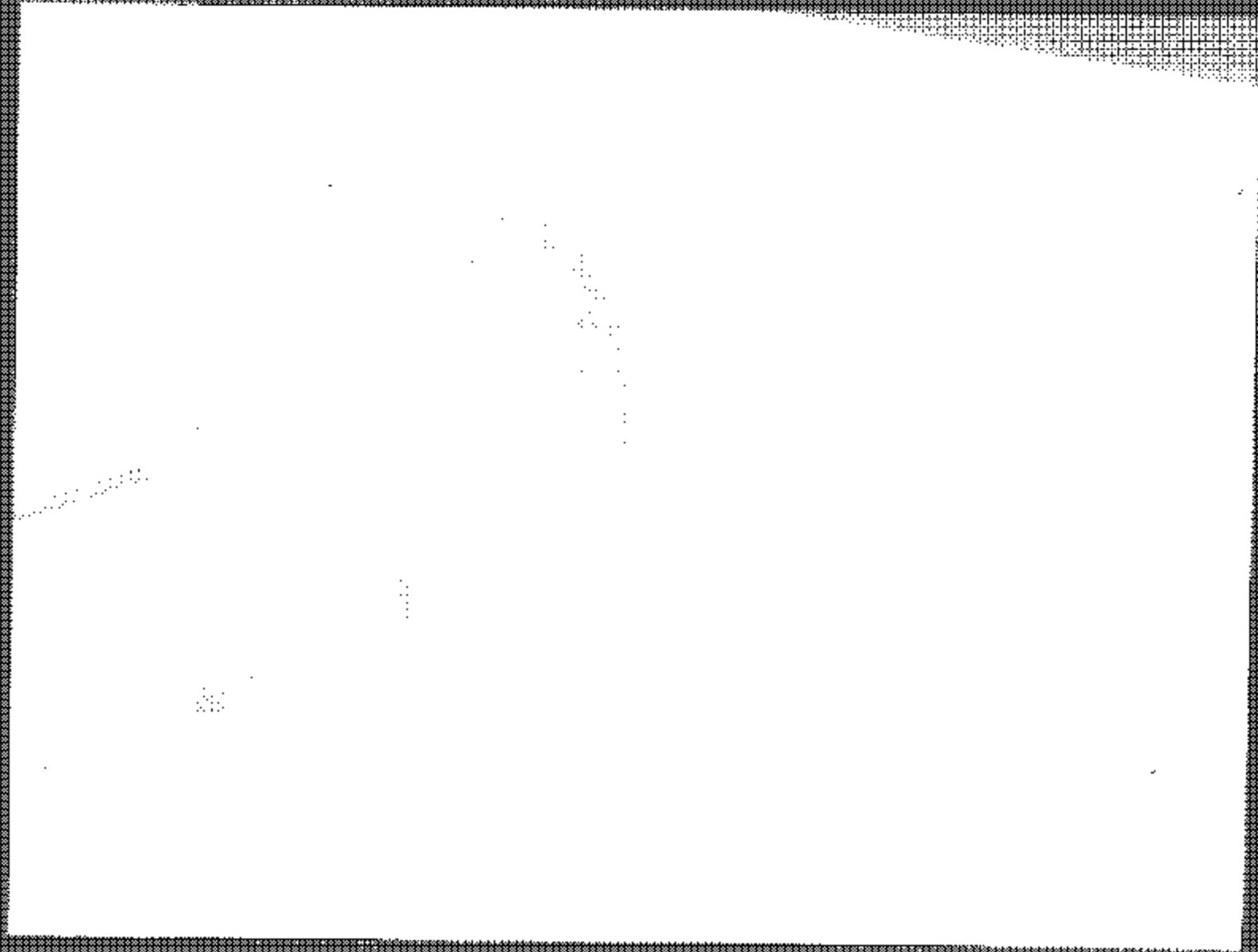


18

Retention Test of Left Side Window (Pre-Test)

Test Vehicle: 2006 Glardin Minibus
Procedure: FLEYSS Z17

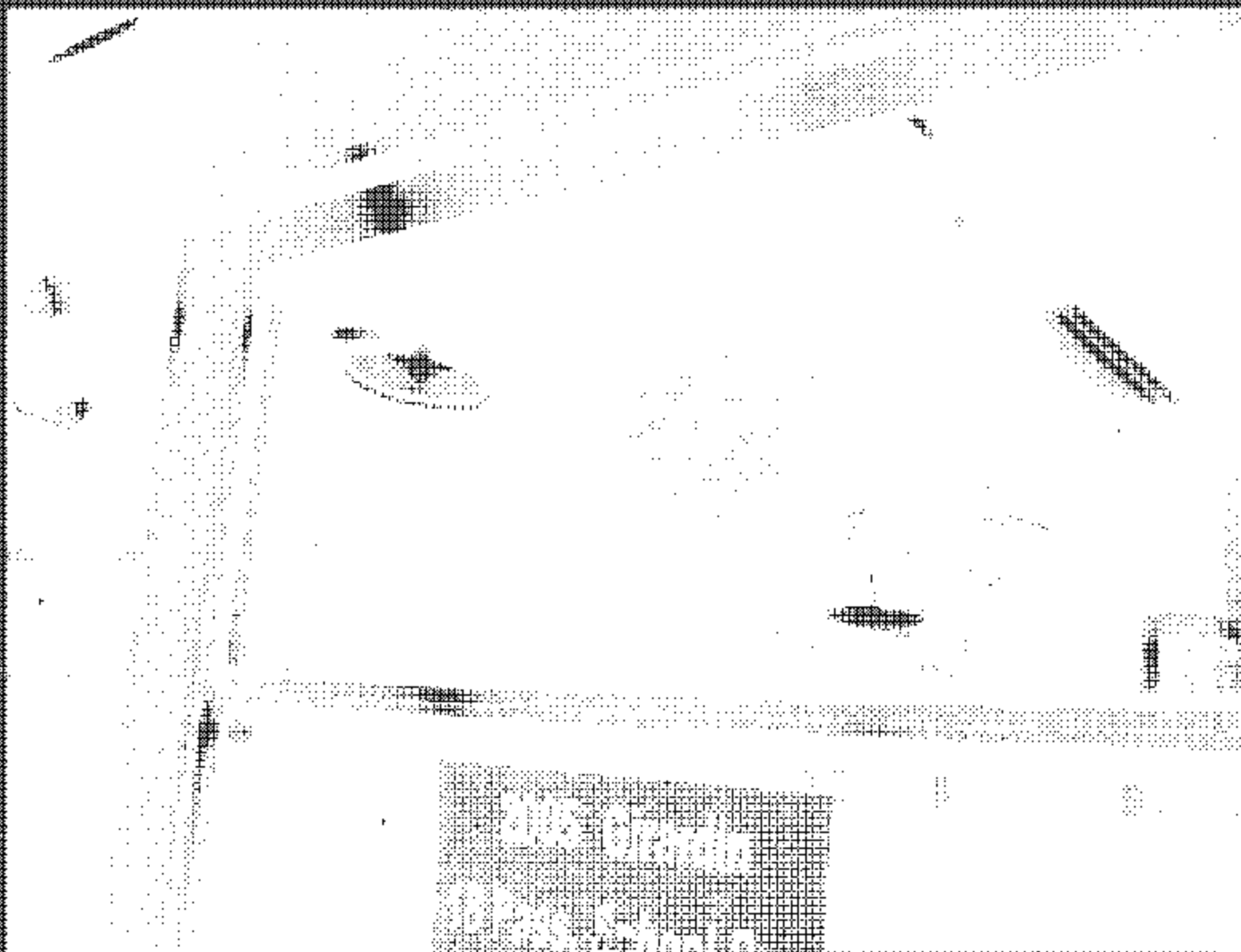
NHTSA No.: C80902



Retention Test of Left Side Window (Post-Test)

Test Vehicle: 2005 Girardin Minibus
Procedure: FMVSS 2017

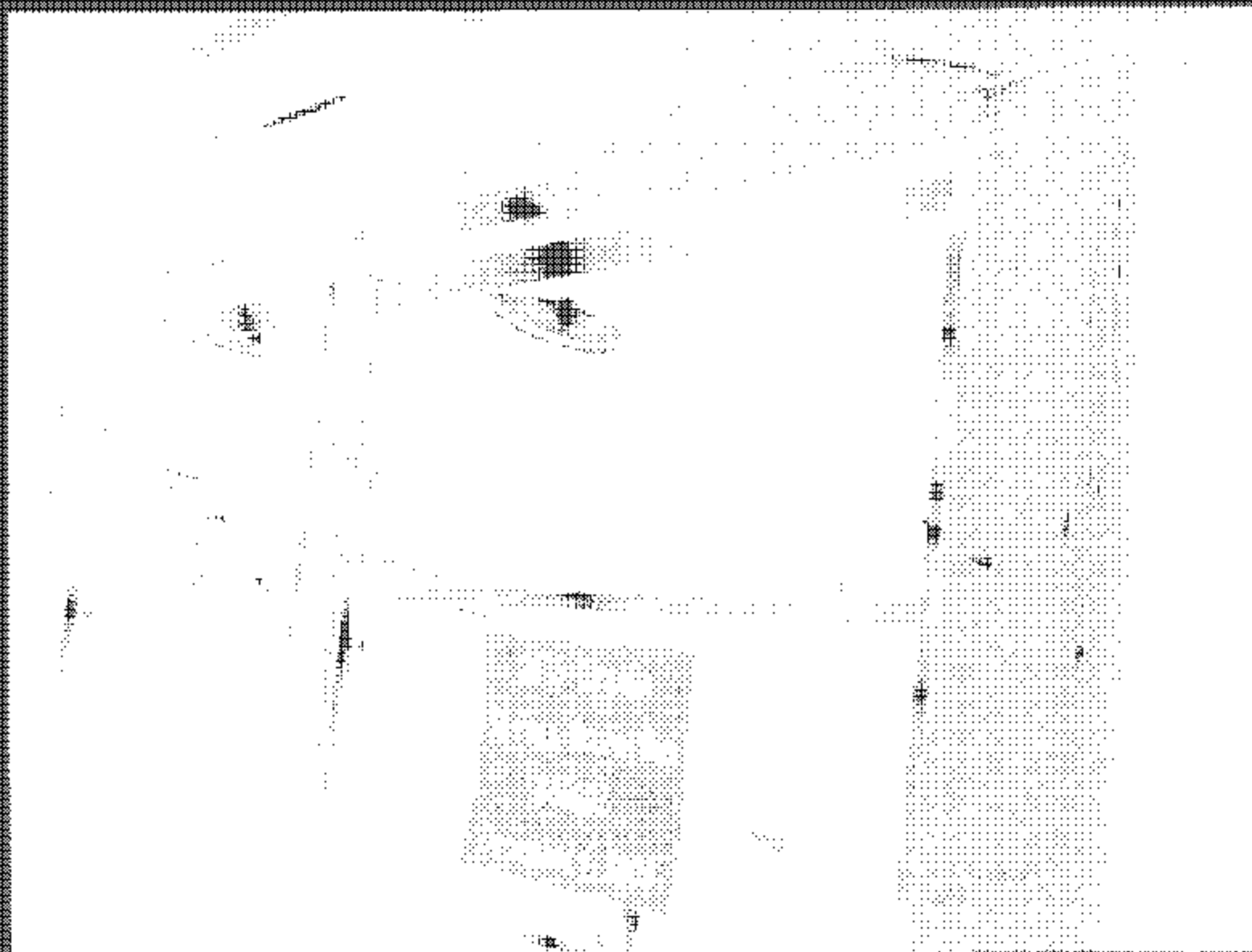
NHTSA No.: C56982



Retention Test of Right Side Window (Pre-Test)

Test Vehicle: 2005 Glendon Minibus
Procedure: FMVSS 217

NRITSA No.: C50902



Retention Test of Right Side Window (Post-Test)

**SECTION 6
TEST PLOTS**

