

REPORT NUMBER: 111-MGA-03-004

**SAFETY COMPLIANCE TESTING FOR
FMVSS NO. 111
SCHOOL BUS REARVIEW MIRRORS**

Liberty Bus Inc.
2003 Liberty Freedom School Bus
NHTSA No.: C30901

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




Final Report Date: August 4, 2003

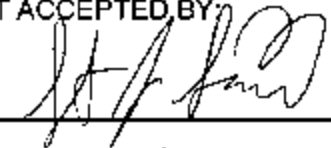
FINAL REPORT

PREPARED FOR:
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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
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Prepared by:  Date: August 4, 2003
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Reviewed by:  Date: August 4, 2003
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8/11/03
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Technical Report Documentation Page

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SECTION 1
PURPOSE OF COMPLIANCE TEST

Tests were conducted on a MY2003 Liberty Freedom School Bus, NHTSA No. C30901, in accordance with the specifications of the Office of Vehicle Safety Compliance (OVSC) Test Procedures TP-111SB-00 to determine compliance to the requirements of Federal Motor Vehicle Safety Standards (FMVSS) 111, "School Bus Rearview Mirrors."

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 MY2003 Liberty Freedom School Bus, NHTSA No. C30901 appears to meet all of the requirements of FMVSS 111 except for missing crossview mirror label per S9.3(c). See Data Sheet 1 for Test Summary on the following page.

**FMVSS 111SB, SCHOOL BUS REARVIEW MIRRORS
TEST SUMMARY...continued**

Test Vehicle: **2003 Liberty Freedom School Bus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
Test Date: **7/02/03**

System A Mirrors

A. Mirror #3 – Outside Driver Side – Unit Magnification

	Pass/Fail	Comments
Mounting	PASS	--
Field of View	PASS	--
Surface Area	PASS	--
Reflectance	PASS	--
Unit Magnification	PASS	--

B. Outside Passenger Side Mirror #4 – Unit Magnification

	Pass/Fail	Comments
Mounting	PASS	--
Field of View	PASS	--
Surface Area	PASS	--
Reflectance	PASS	--
Unit Magnification	PASS	--

C. Outside Driver Side Mirror #5 - Convex

	Pass/Fail	Comments
Mounting	PASS	--
Field of View	PASS	--
Reflectance	PASS	--

D. Outside Passenger Side Mirror #6 – Convex

	Pass/Fail	Comments
Mounting	PASS	--
Field of View	PASS	--
Reflectance	PASS	--

**FMVSS 111SB, SCHOOL BUS REARVIEW MIRRORS
TEST SUMMARY...continued**

Test Vehicle: **2003 Liberty Freedom School Bus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
 Test Date: **7/02/03**

System B Mirrors

E. Mirror #1 – Driver Side Front – Cross View

	Pass/Fail	Comments
Mounting	PASS	--
Field of View	PASS	--
Overlap with System A	PASS	--
Distance to Eye Point	PASS	--
No Surface Discontinuities	PASS	--
Surface Area	PASS	--
If Convex – Radius of Curvature	PASS	--
Radius of Curvature Label	FAIL	--
Arc Separation	PASS	--
Reflectance	PASS	--

F. Passenger Side Front Mirror #2 – Cross View

	Pass/Fail	Comments
Mounting	PASS	--
Field of View	PASS	--
Overlap with System A	PASS	--
Distance to Eye Point	PASS	--
No Surface Discontinuities	PASS	--
Surface Area	PASS	--
If Convex – Radius of Curvature	PASS	--
Radius of Curvature Label	PASS FAIL	--
Arc Separation	PASS	--
Reflectance	PASS	--

**SECTION 3
COMPLIANCE TEST DATA**

**FMVSS 111SB - DATA SHEET 1
SCHOOL BUS INSPECTION AND IDENTIFICATION**

Test Vehicle: **2003 Liberty Freedom School Bus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
Test Date: **7/02/03**

GENERAL VEHICLE IDENTIFICATION

VIN No.	1GBHG39U831110237	Date of Mfg.	02/03
Chassis Manufacturer	General Motor Corporation	Date of Mfg.	10/02
Seating Capacity (including driver)	17	GVWR	4,355 kg
Unloaded Weight	N/A	GAWR Front	1,951 kg
Cargo Weight	N/A	GAWR Rear	2,760 kg
Total Rated Load	N/A		

DESCRIPTION OF MIRRORS

Mirror No.	Type			Description	Manufacturer
	Unit Mag	Convex	Cross View		
1			X	Driver Side	Rosco Mirror
2			X	Passenger Side	
3	X			Driver Side	
4	X			Passenger Side	
5		X		Driver Side	
6		X		Passenger Side	

Recorded By: _____

John Walsh

Approved By: _____

Michael Jones

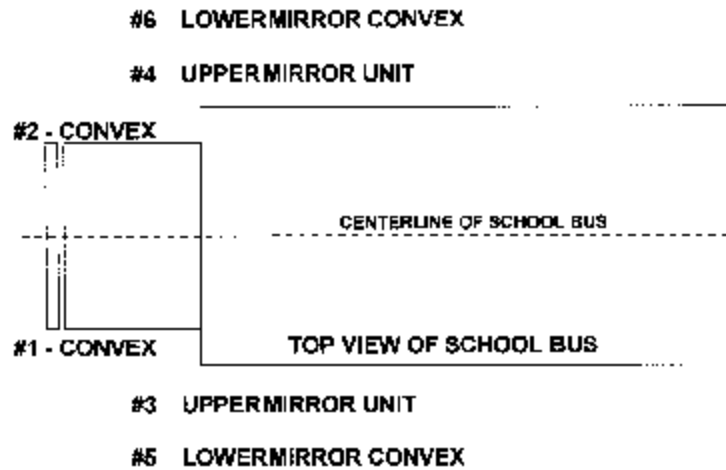
Date: 8/04/03

**FMVSS 111SB – DATA SHEET 2
MIRROR LOCATION AND FIELD OF VIEW**

Test Vehicle: **2003 Liberty Freedom School Bus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
Test Date: **7/02/03**

MIRROR DIAGRAM



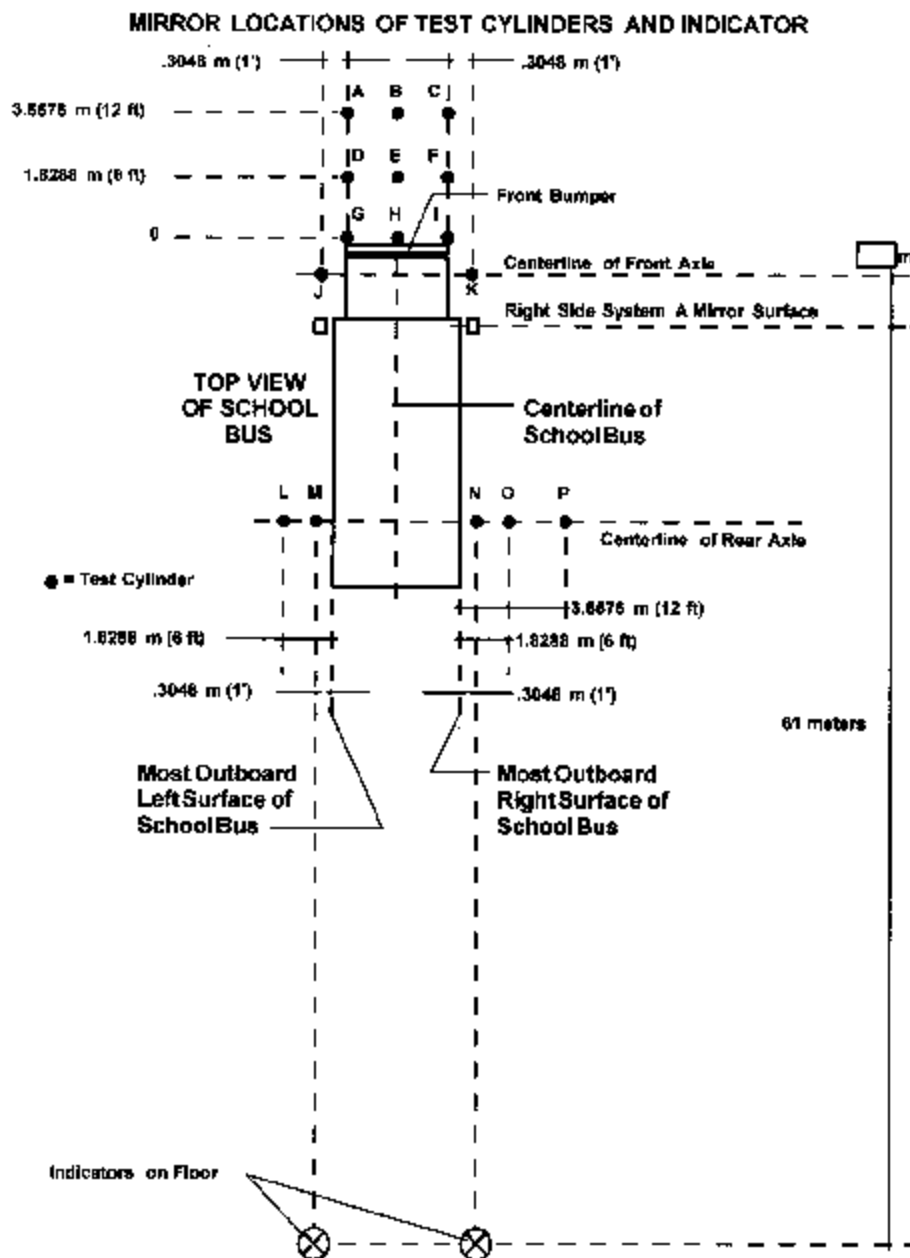
MIRROR NO.	TYPE	MIRROR SYSTEM	CYLINDERS VIEWED (entire top surface)
1	CROSS VIEW/CONVEX	B	B,C,E,F,G,H,I,J,L,M
2	CROSS VIEW/CONVEX	B	A,B,D,E,F,G,H,I,K,N,O,P
3	UNIT MAGNIFICATION	A	61 Meter INDICATOR
4	UNIT MAGNIFICATION	A	61 Meter INDICATOR
5	CONVEX	A	L,M
6	CONVEX	A	N,O

SEE FIGURE ON NEXT PAGE

**FMVSS 111SB – DATA SHEET 2...continued
MIRROR LOCATION AND FIELD OF VIEW**

Test Vehicle: **2003 Liberty Freedom School Bus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
 Test Date: **7/02/03**



- NOTES:**
1. The cylinders shall be a color which provides a high contrast with the surface on which the bus is parked (S13.1).
 2. The cylinders are 0.3048 m high and 0.3048 m in diameter, except for cylinder P which is 0.9144 m high and 0.3048 m in diameter.

**FMVSS 111SB DATA SHEET 2...continued
MIRROR LOCATION AND FIELD OF VIEW**

Test Vehicle: **2003 Liberty Freedom School Bus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
Test Date: **7/02/03**

SYSTEM A AND DIRECT VISION

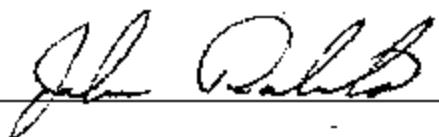
System A Mirrors	Pass/Fail
Entire top surface of cylinder N and the indicator 61 meters (200 feet) rearward of the mirror surface be viewed in the photograph	PASS
Entire top surface of cylinder M and indicator 61 meters (200 feet) rearward of the mirror surface be viewed in the photograph	PASS
Which test cylinders A through P can not be photographed directly from the driver's eye location within the semi-circle viewing area using no mirror system:	D,E,F,G,H, I,J,K,L,M,N,O,P

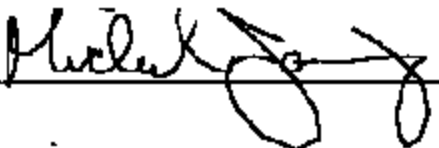
SYSTEM B ARC'S AND DISTANCE

Mirror Number (from data sheet 2)	Mirror Location	Distance from the Driver's Eye Point to the Center of the Mirror (cm)	3 Minutes of Arc (cm)	9 Minutes of Arc (cm)
#1	Left Front	213	0.186	—
#2	Right Front	257	0.224	0.556

Distance determined in column 3 multiplied by 0.000873 yield 3 minutes of arc, for column 4, for that mirror as viewed from the driver's eye point; the distances determined in column 3 multiplied by 0.0021618 yield 9 minutes of arc, for column 5, for that mirror as viewed from the driver's eye point. The minimum distance for any system B mirror between the driver's eye point and the center of the mirror is more than 95 centimeters (37.5 inches):

	Distance	Pass/Fail
Distance between center of System B mirror #1 and driver's eye point	213 cm	PASS
Distance between center of System B mirror #2 and driver's eye point	257 cm	PASS

Recorded By: 

Approved By: 

Date: 8/04/03

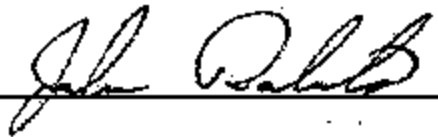
**FMVSS 111SB DATA SHEET 3
FIELD OF VIEW TEST – PHOTOGRAPHS System B**

Test Vehicle: **2003 Liberty Freedom School Bus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
Test Date: **7/02/03**

		Pass/Fail
All test cylinders with entire top surface not directly visible from the driver's semi-circle eye location are able to be viewed with System B mirrors from the driver's semi-circle location:		PASS
All test cylinders with entire top surface not directly visible from the driver's semi-circle eye location but the image can be viewed with System B mirrors. The image is separated for the edge of the effective mirror surface of the mirror providing that image by a distance of not less than 3 minutes of arc:		PASS
If the entire top surface of test cylinder is not directly visible from the driver's semi-circle eye location, the image can be viewed with System B mirrors from the driver's semi-circle eye location, where the angular size of the shortest dimension of that cylinder's image is not less than 3 minutes of arc, and the angular size of the longest dimension of that cylinder's image is not less than 9 minutes of arc:		PASS
Shortest arc length dimension	0.186 cm	
Longest arc length dimension	0.556 cm	
For each of the test cylinders whose entire top surface is not directly visible from the driver's eye location, System B provides a view of the ground that overlaps with the view of the ground provided by System A.		PASS

Recorded By:



Approved By:



Date: 8/04/03

**FMVSS 1115B DATA SHEET 4
MOUNTING ADEQUACY TEST**


Test Vehicle: **2003 Liberty Freedom School Bus**
 Test Lab: **MGA Research-Wisconsin Operations**


NHTSA No.: **C30901**
 Test Date: **7/02/03**

MOUNTING SUPPORT OF ALL MIRRORS

Mirror No. (from data sheet 2)	Type	System	Stable Support
			Yes/No
1	Cross View/Convex	B	Yes
2	Cross View/Convex	B	Yes
3	Unit Magnification	A	Yes
4	Unit Magnification	A	Yes
5	Convex	A	Yes
6	Convex	A	Yes

	Pass/Fail
Outside mirrors free of sharp points or edges that could contribute to pedestrian injury	PASS
System B mirrors have no discontinuities in the slope of the surface of the mirror	PASS

Recorded By: 

Approved By: 

Date: 8/04/03

**FMVSS 111SB DATA SHEET 5
REFLECTANCE TEST - ALL MIRRORS**


Test Vehicle: **2003 Liberty Freedom School Bus**
Test Lab: **MGA Research-Wisconsin Operations**


NHTSA No.: **C30901**
Test Date: **7/02/03**

Mirror No.	Type	Light meter reading from calibration	Light meter reading from light reflected by mirror	Pass/Fail	Observations
1	Crossview/Convex	84	52.3	PASS	--
2	Crossview/Convex	83	52.7	PASS	--
3	Unit	76	43.3	PASS	--
4	Unit	79	42.6	PASS	--
5	Convex	78	44.5	PASS	--
6	Convex	72	45.3	PASS	--

Note: Reflectance (example) = Reading (Ref) / Reading (Cal) = 0.832 x 100 = 83.2 percent
Minimum Requirement = 35 percent

Mirror No.	Type	Reflectance	Requirement
1	Crossview/Convex	62%	>35%
2	Crossview/Convex	63%	>35%
3	Unit	57%	>35%
4	Unit	54%	>35%
5	Convex	57%	>35%
6	Convex	63%	>35%

Recorded By: 

Approved By: 

Date: 8/04/03

**FMVSS 111SB DATA SHEET 6
UNIT MAGNIFICATION/CONVEX MIRROR TEST – ALL MIRRORS**

Test Vehicle: **2003 Liberty Freedom School Bus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
Test Date: **7/02/03**

**CONVERSION DATA TABLE FROM SPHEROMETER DIAL
READING TO RADIUS OF CURVATURE**

MIRROR NO. 1 (CONVEX)

Test Position	Dial Readings (inches)	Radius of Curvature (mm)	Deviation Between the Average Radius of Curvature and the Test Position Radius of Curvature (mm)	Percent Deviation from the Average Radius of Curvature
1	0.05390	133.2	45.8	25.6 %
2	0.03780	189.5	-10.4	5.8 %
3	0.04950	144.9	34.1	19.0 %
4	0.02770	258.2	-79.2	44.3 %
5	0.03660	195.6	-16.6	9.3 %
6	0.05220	137.4	41.5	23.2 %
7	0.02810	254.6	-75.6	42.2 %
8	0.04980	144.1	34.9	19.5 %
9	0.05590	128.5	50.5	28.2 %
10	0.03510	204.0	-25.0	13.9 %
Avg. Radius of Curvature – the Summation of Column 3 divided by 10 <u>179.0 mm</u>			Greatest Percent Deviation from the Average Radius of Curvature, Column 5 <u>52.0%</u>	

MIRROR NO. 2 (CONVEX)

Test Position	Dial Readings (inches)	Radius of Curvature (mm)	Deviation Between the Average Radius of Curvature and the Test Position Radius of Curvature (mm)	Percent Deviation from the Average Radius of Curvature
1	0.02470	289.5	-107.4	59.0 %
2	0.04920	145.8	36.3	19.9 %
3	0.05460	131.5	50.6	27.8 %
4	0.03510	204.0	-21.9	12.0 %
5	0.02950	242.5	-60.4	33.2 %
6	0.05110	140.4	41.7	22.9 %
7	0.03580	200.0	-17.9	9.8 %
8	0.05390	133.2	48.9	26.8 %
9	0.03620	197.8	-15.7	8.6 %
10	0.05270	136.2	45.9	25.2 %
Avg. Radius of Curvature – the Summation of Column 3 divided by 10 <u>182.1 mm</u>			Greatest Percent Deviation from the Average Radius of Curvature, Column 5 <u>45.4%</u>	

**FMVSS 111SB DATA SHEET 6...continued
UNIT MAGNIFICATION/CONVEX MIRROR TEST - ALL MIRRORS**

Test Vehicle: **2003 Liberty Freedom School Bus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
Test Date: **7/02/03**

**CONVERSION DATA TABLE FROM SPHEROMETER DIAL
READING TO RADIUS OF CURVATURE**

MIRROR NO. 3 (UNIT MAGNIFICATION)

Test Position	Dial Readings (inches)	Radius of Curvature (mm)	Deviation Between the Average Radius of Curvature and the Test Position Radius of Curvature (mm)	Percent Deviation from the Average Radius of Curvature
1	0.00000	N/A	N/A	N/A
2	0.00100	N/A	N/A	N/A
3	0.00000	N/A	N/A	N/A
4	0.00000	N/A	N/A	N/A
5	0.00000	N/A	N/A	N/A
6	0.00000	N/A	N/A	N/A
7	0.00000	N/A	N/A	N/A
8	0.00100	N/A	N/A	N/A
9	0.00000	N/A	N/A	N/A
10	0.00000	N/A	N/A	N/A
Avg. Radius of Curvature - the Summation of Column 3 divided by 10 N/A			Greatest Percent Deviation from the Average Radius of Curvature, Column 5 N/A	

MIRROR NO. 4 (UNIT MAGNIFICATION)

Test Position	Dial Readings (inches)	Radius of Curvature (mm)	Deviation Between the Average Radius of Curvature and the Test Position Radius of Curvature (mm)	Percent Deviation from the Average Radius of Curvature
1	0.00000	N/A	N/A	N/A
2	0.00000	N/A	N/A	N/A
3	0.00000	N/A	N/A	N/A
4	0.00000	N/A	N/A	N/A
5	0.00000	N/A	N/A	N/A
6	0.00000	N/A	N/A	N/A
7	0.00000	N/A	N/A	N/A
8	0.00000	N/A	N/A	N/A
9	0.00000	N/A	N/A	N/A
10	0.00000	N/A	N/A	N/A
Avg. Radius of Curvature - the Summation of Column 3 divided by 10 N/A			Greatest Percent Deviation from the Average Radius of Curvature, Column 5 N/A	

**FMVSS 111SB DATA SHEET 6...continued
UNIT MAGNIFICATION/CONVEX MIRROR TEST - ALL MIRRORS**

Test Vehicle: **2003 Liberty Freedom School Bus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
Test Date: **7/02/03**

**CONVERSION DATA TABLE FROM SPHEROMETER DIAL
READING TO RADIUS OF CURVATURE**

MIRROR NO. 5 (CONVEX)

Test Position	Dial Readings (inches)	Radius of Curvature (mm)	Deviation Between the Average Radius of Curvature and the Test Position Radius of Curvature (mm)	Percent Deviation from the Average Radius of Curvature
1	0.01435	498.0	-11.0	2.3 %
2	0.01505	474.9	12.1	2.5 %
3	0.01470	486.2	0.8	0.2 %
4	0.01505	474.9	12.1	2.5 %
5	0.01495	478.0	9.0	1.8 %
6	0.01505	474.9	12.1	2.5 %
7	0.01460	489.5	-2.5	0.5 %
8	0.01350	529.3	-42.4	8.7 %
9	0.01465	487.8	-0.8	0.2 %
10	0.01500	476.4	10.5	2.2 %
Avg. Radius of Curvature – the Summation of Column 3 divided by 10 487.0 mm			Greatest Percent Deviation from the Average Radius of Curvature, Column 5 4.6%	

MIRROR NO. 6 (CONVEX)

Test Position	Dial Readings (inches)	Radius of Curvature (mm)	Deviation Between the Average Radius of Curvature and the Test Position Radius of Curvature (mm)	Percent Deviation from the Average Radius of Curvature
1	0.01470	486.2	-12.1	2.6 %
2	0.01550	461.1	13.0	2.7 %
3	0.01470	486.2	-12.1	2.6 %
4	0.01600	446.7	27.4	5.8 %
5	0.01600	446.7	27.4	5.8 %
6	0.01490	479.6	-5.6	1.2 %
7	0.01470	486.2	-12.1	2.6 %
8	0.01445	494.6	-20.5	4.3 %
9	0.01470	486.2	-12.1	2.6 %
10	0.01530	467.1	6.9	1.5 %
Avg. Radius of Curvature – the Summation of Column 3 divided by 10 474.0 mm			Greatest Percent Deviation from the Average Radius of Curvature, Column 5 4.1%	

**FMVSS 111SB DATA SHEET 8...continued
UNIT MAGNIFICATION/CONVEX MIRROR TEST - ALL MIRRORS**

Test Vehicle: **2003 Liberty Freedom School Bus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
Test Date: **7/02/03**

UNIT MAGNIFICATION IN SYSTEM A

	Pass/Fail
At least one System A Mirror on the left and right sides of the bus is unit magnification Zero Radius of Curvature	PASS


**AVERAGE RADIUS OF CURVATURE
OF CONVEX MIRRORS USED IN SYSTEM B**

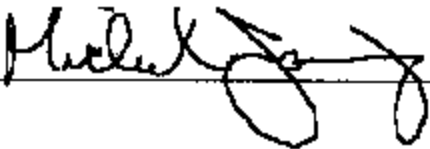
Mirror No.	Radius of Curvature	If needed, wording printed properly* Pass/Fail
1	179.0 mm	FAIL (1)
2	182.1 mm	FAIL (1)

* If any of the Convex Mirrors in System B have an average radius of curvature less than 889 mm, then the following words must be printed on a label in type face and color that are clear and conspicuous to the driver:

"Use cross view mirrors to view pedestrians while bus is stopped. Do not use these mirrors to view traffic while bus is moving. Images in such mirrors do not accurately show another vehicle's location."

Note: (1) Crossview Mirror Label is missing.

Recorded By: 

Approved By: 

Date: 8/04/03

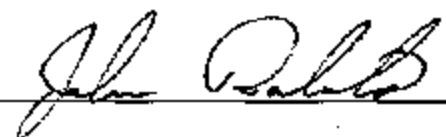
**FMVSS 111SB DATA SHEET 7
MIRROR REFLECTIVE SURFACE AREA TEST
SYSTEM A & B**


Test Vehicle: **2003 Liberty Freedom School Bus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
Test Date: **7/02/03**

DATA TABLE FOR SURFACE AREA

System A Mirrors Mirror No.	Area	Requirement Min. 323 cm ²	Pass/Fail
3	384 cm ²	323 cm ²	PASS
4	384 cm ²	323 cm ²	PASS
System B Mirrors Mirror No.	Area	Requirement Min. 258 cm ²	Pass/Fail
1	543 cm ²	258 cm ²	PASS
2	543 cm ²	258 cm ²	PASS

Recorded By: 

Approved By: 

Date: 8/04/03

**SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST**

**SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST**

Test Vehicle: **2003 Liberty Freedom School Bus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
 Test Date: **7/02/03**

	Digital Caliper	Light Meter	Tape Measure	Spherometer
Make	Mitutoyo	AEMC	Stanley	MGA
Model	721	CA813	Powerlock	001
Serial # (s)	0004174	04L1017Y	SN118	001
Range	0-150 mm	2000fc, 2000lux	0-6 m	2.25×10^{13} ($\text{cm} \cdot \text{Hz}^{1/2}$) + W
Accuracy	.01 mm	0.0 fc or 0.01 lux	1 mm	1.1×10^{13} W/H ^{1/2}
Cal. Date	10/8/02	10/11/02	4/09/03	Daily when used
Cal. Due Date	10/8/03	10/11/03	10/9/03	N/A

**SECTION 5
PHOTOGRAPHS**

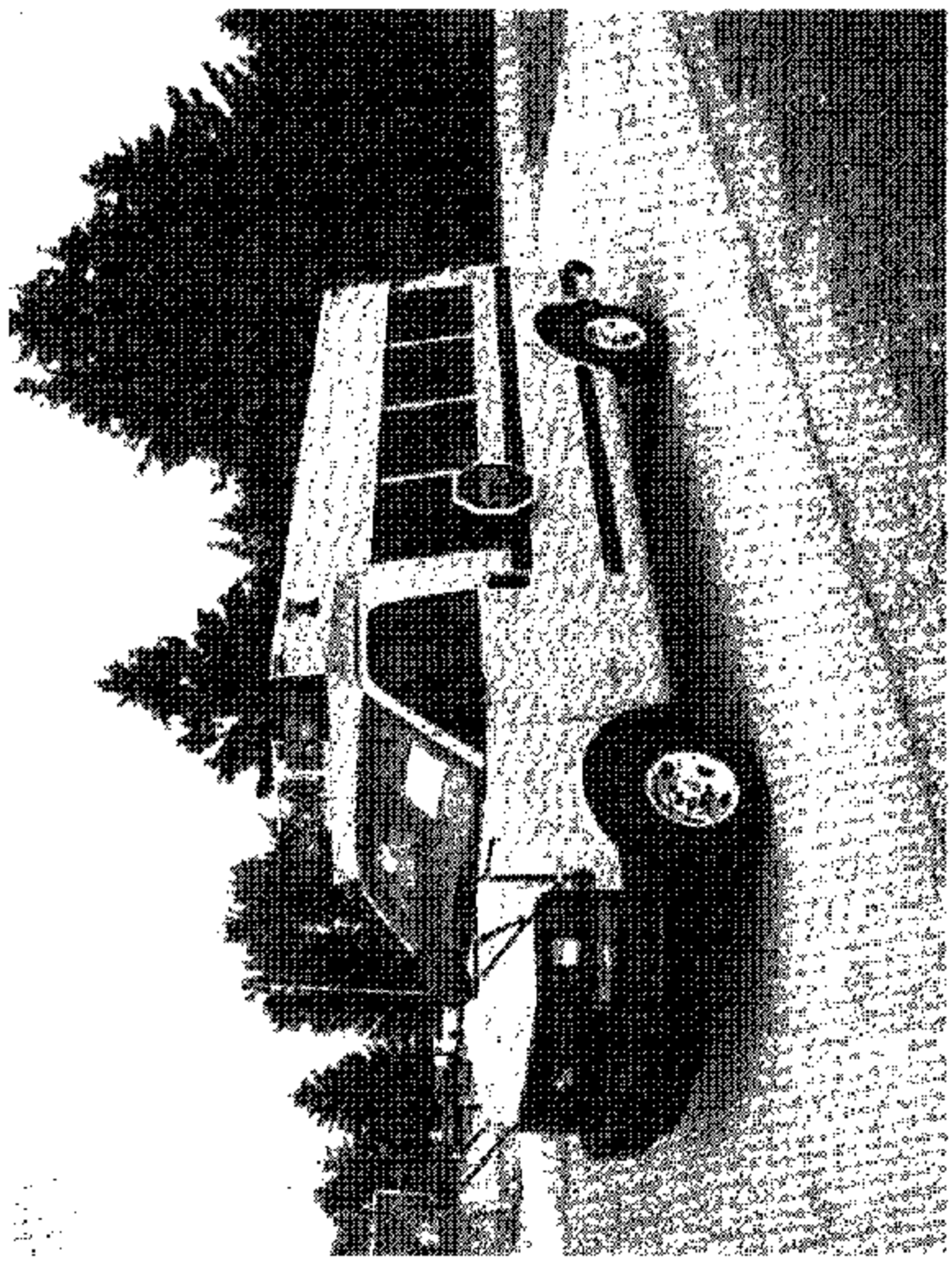
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Note: Photographs may not accurately represent view used for compliance verification.

Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

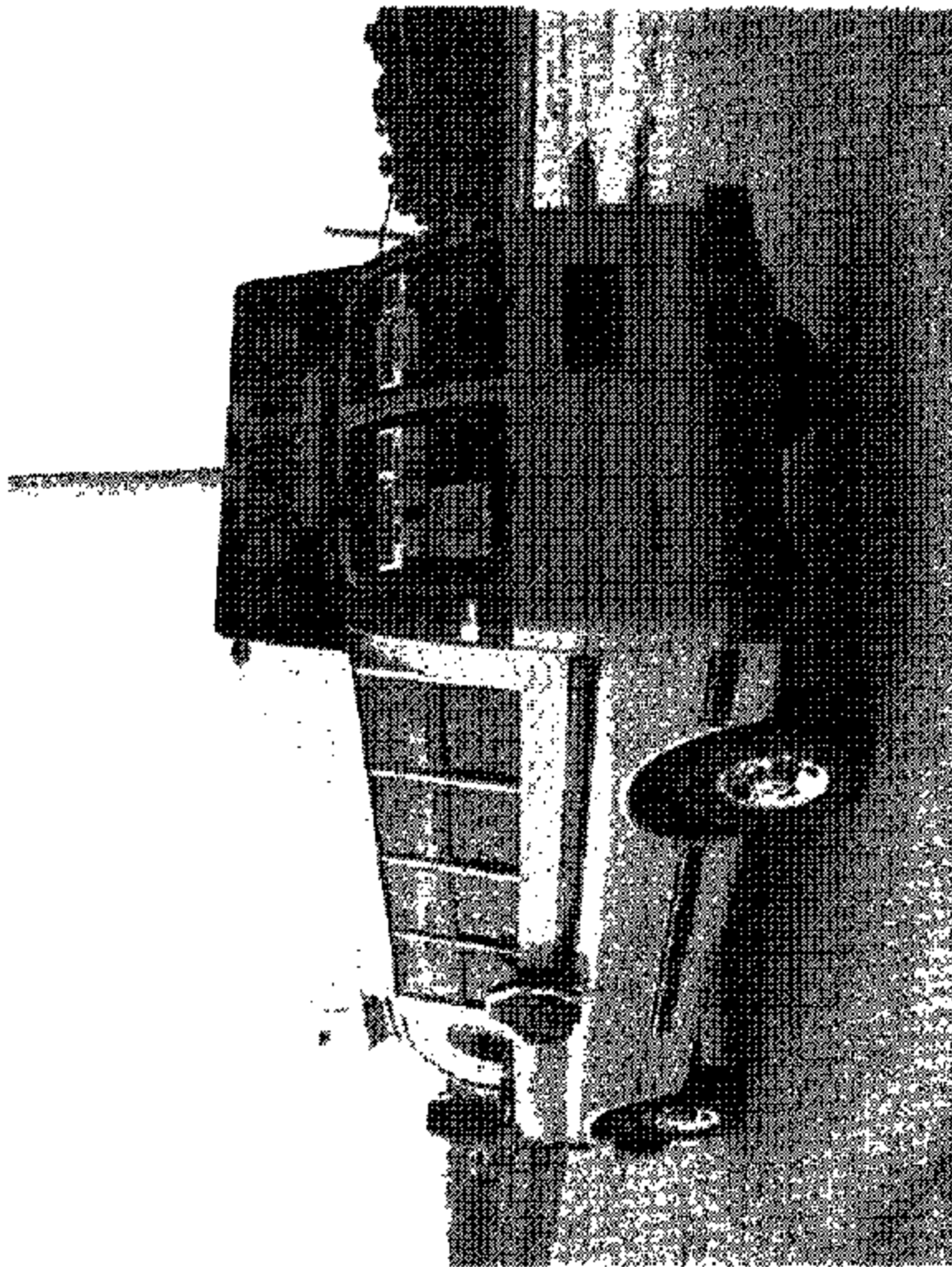
NHTSA No.: C30901



Three Quarter Left Front View of School Bus

Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

NHTSA No.: C30901



Three-Quarter Left Rear View of School Bus

Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

NHTSA No.: C30901

MFD BY: Liberty Bus, Inc.
Lima, OH 45804

DATE OF MFR. MD. 02 YR. 2003

INC. VEH. MFD. BY: General Motors

Corp. Detroit, MI 48243

DATE OF INC. VEH. MFR. _____

MO. 10 YR. 2002

GAWR: _____

4356 KG (9600 LB)

GAWR-FRONT: _____

1951 KG (4300 LB)

GAWR-INTERMEDIATE (1): _____

N/A KG (N/A LB)

GAWR-INTERMEDIATE (2): _____

N/A KG (N/A LB)

GAWR-REAR: _____

2750 KG (6050 LB)

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S.A. FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT IN: _____

MD. 02 YR. 2003

VEHICLE IDENTIFICATION NUMBER: _____

VEHICLE TYPE: _____

Close-up View of Certification

Test Vehicle:
Procedure:

2003 Liberty Freedom School Bus
FMVSS 111

NHTSA No.: C30901

SUITABLE TIRE-RIM CHOICE

FRONT: LT245/75R16 _____ TIRES,

16.5 K _____ RIMS, @ 340 KPA,

(50 PSI) COLD Tire Pressure

INTERMEDIATE (1):

N/A _____ TIRES,

_____ RIMS, @ _____ KPA,

(_____ PSI) COLD _____

INTERMEDIATE (2):

N/A _____ TIRES,

_____ RIMS, @ _____ KPA,

(_____ PSI) COLD _____

REAR: LT245/75R16 _____ TIRES,

16.5K _____ RIMS, @ 350 KPA,

(50 PSI) COLD _____ Tire Pressure

Tire Information Label

Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

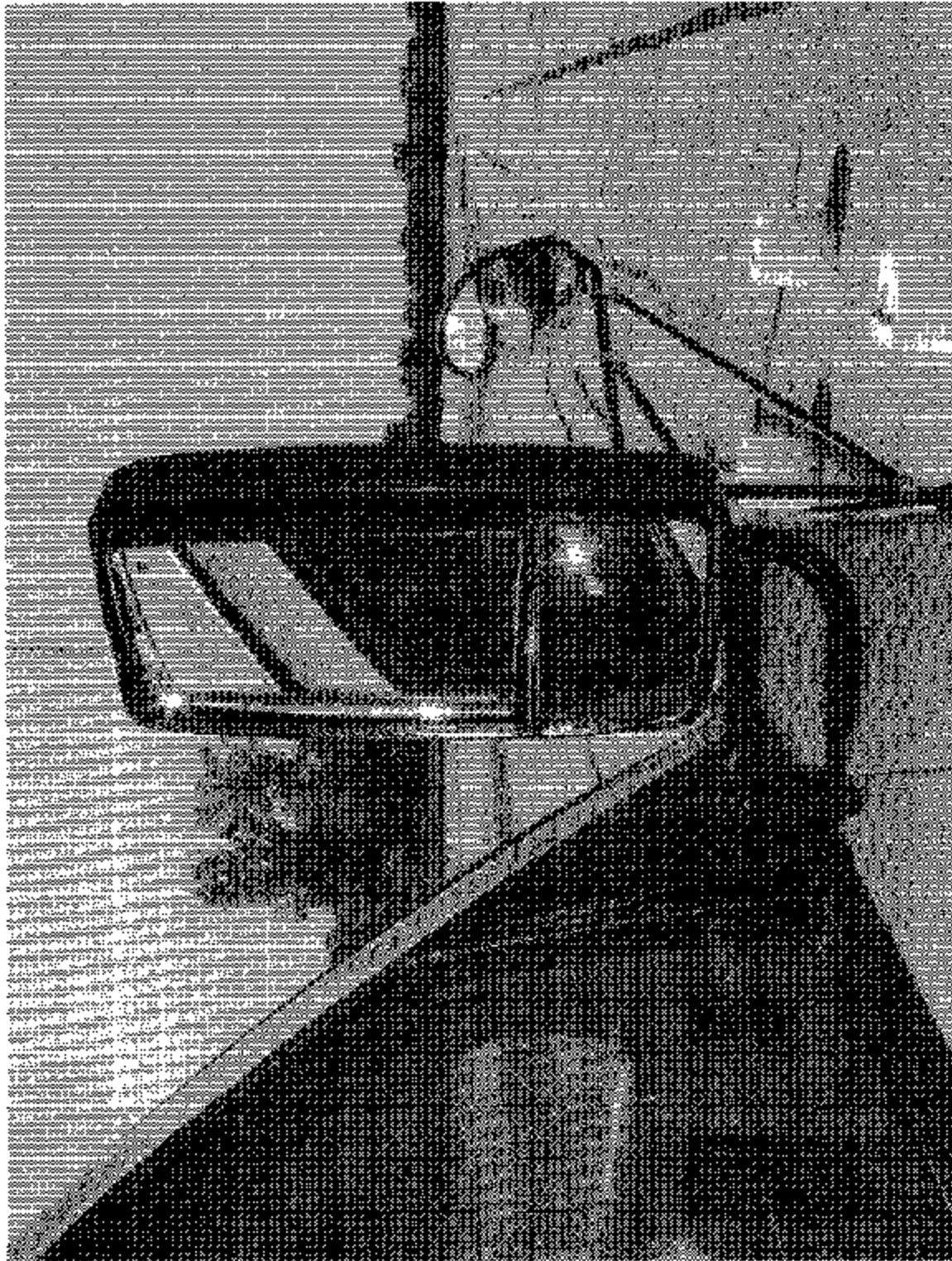
NHTSA No.: C30901



Right Front Cross View Mirror and Mounting

Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

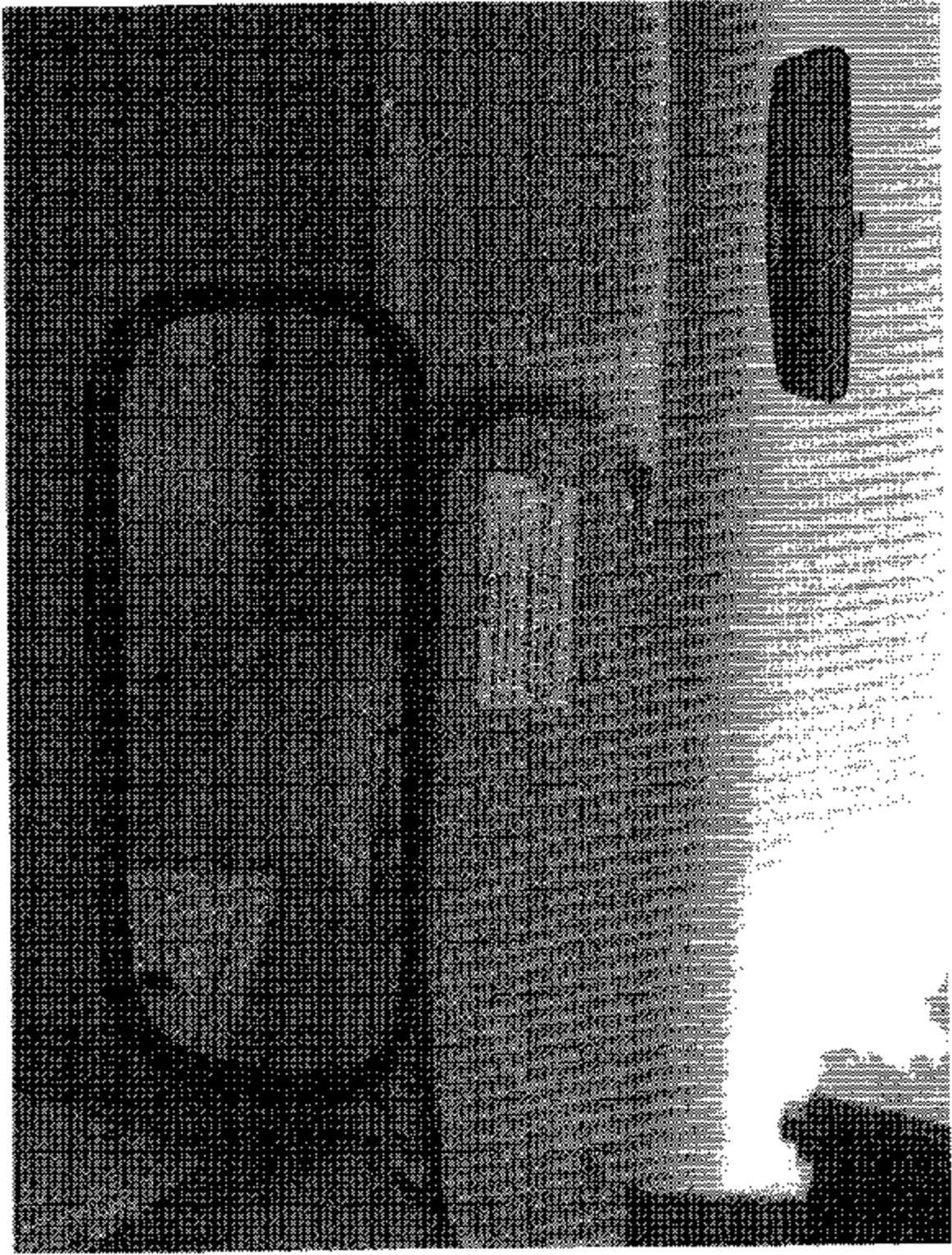
NHTSA No.: C30901



Passenger Side Rearview Mirror and Mounting

Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

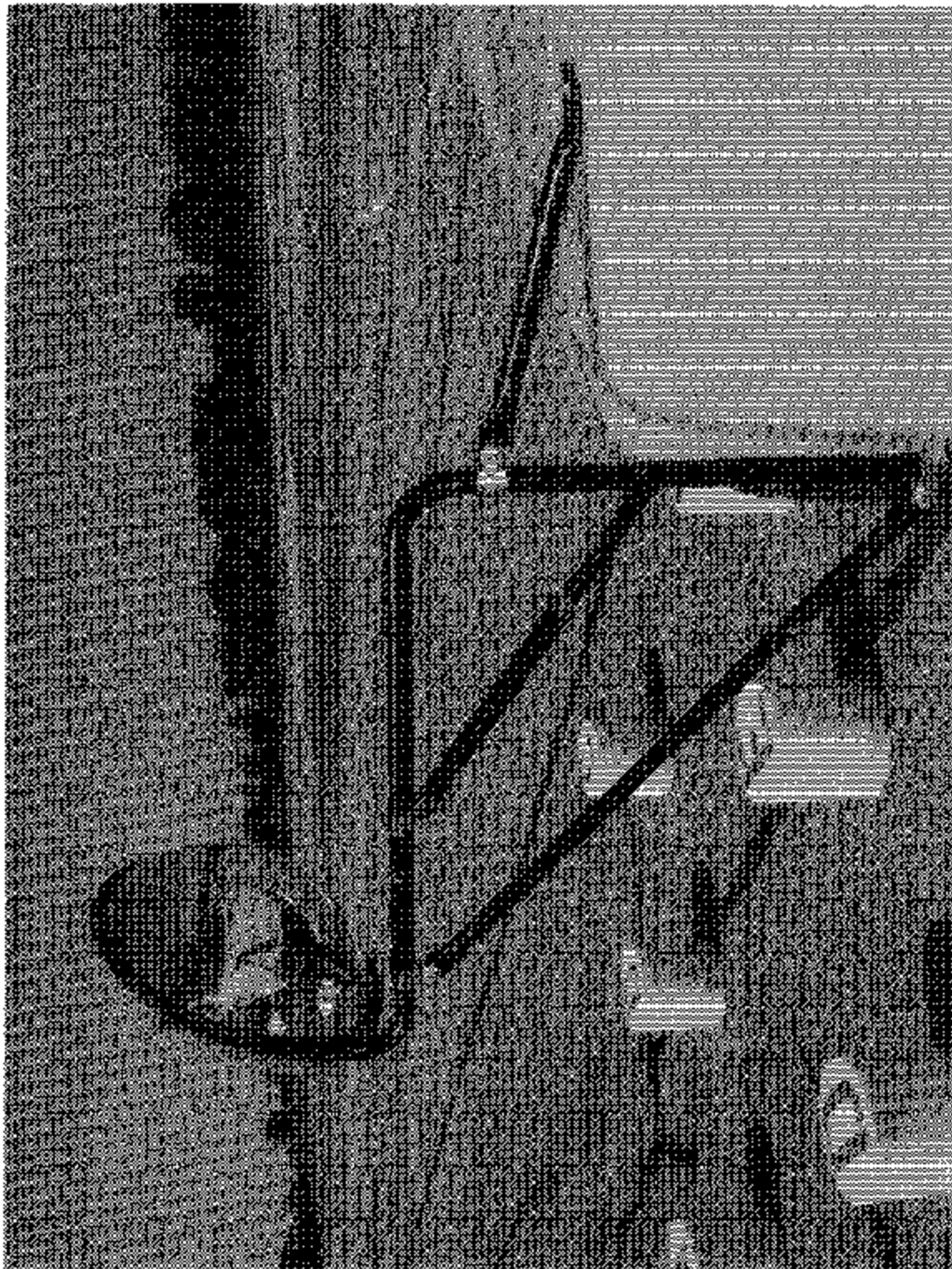
NHTSA No.: C30901



Inside Rearview Mirror and Mounting

Test Vehicle: 2002 Liberty Freedom School Bus
Procedure: FMVSS 111

NHTSA No.: C30901



Left Front Cross View Mirror and Mounting

Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

NHTSA No.: C30901



Driver Side Rearview Mirror and Mounting

Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

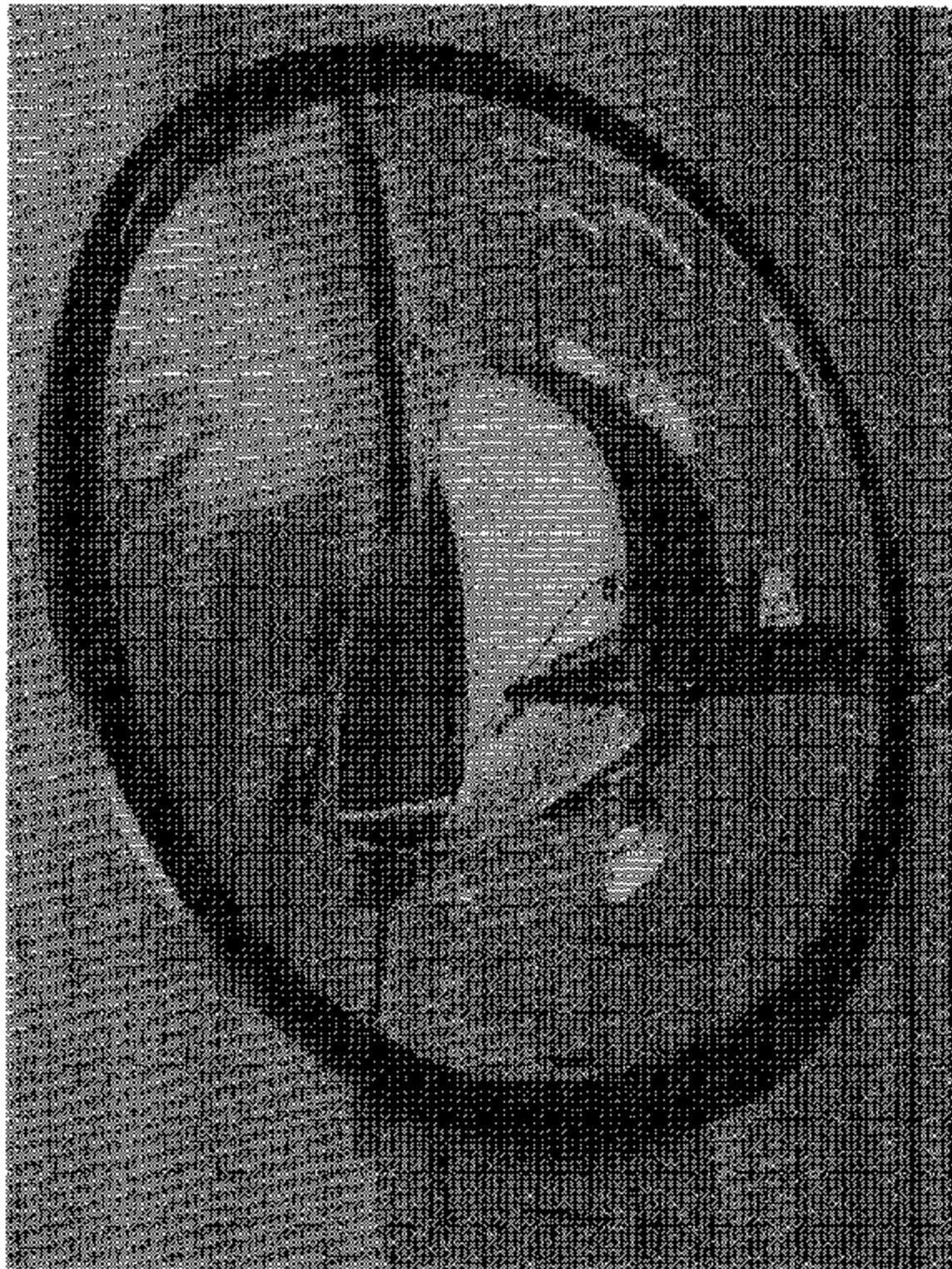
NHTSA No.: C30801



Field of View Instrument Setup

Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

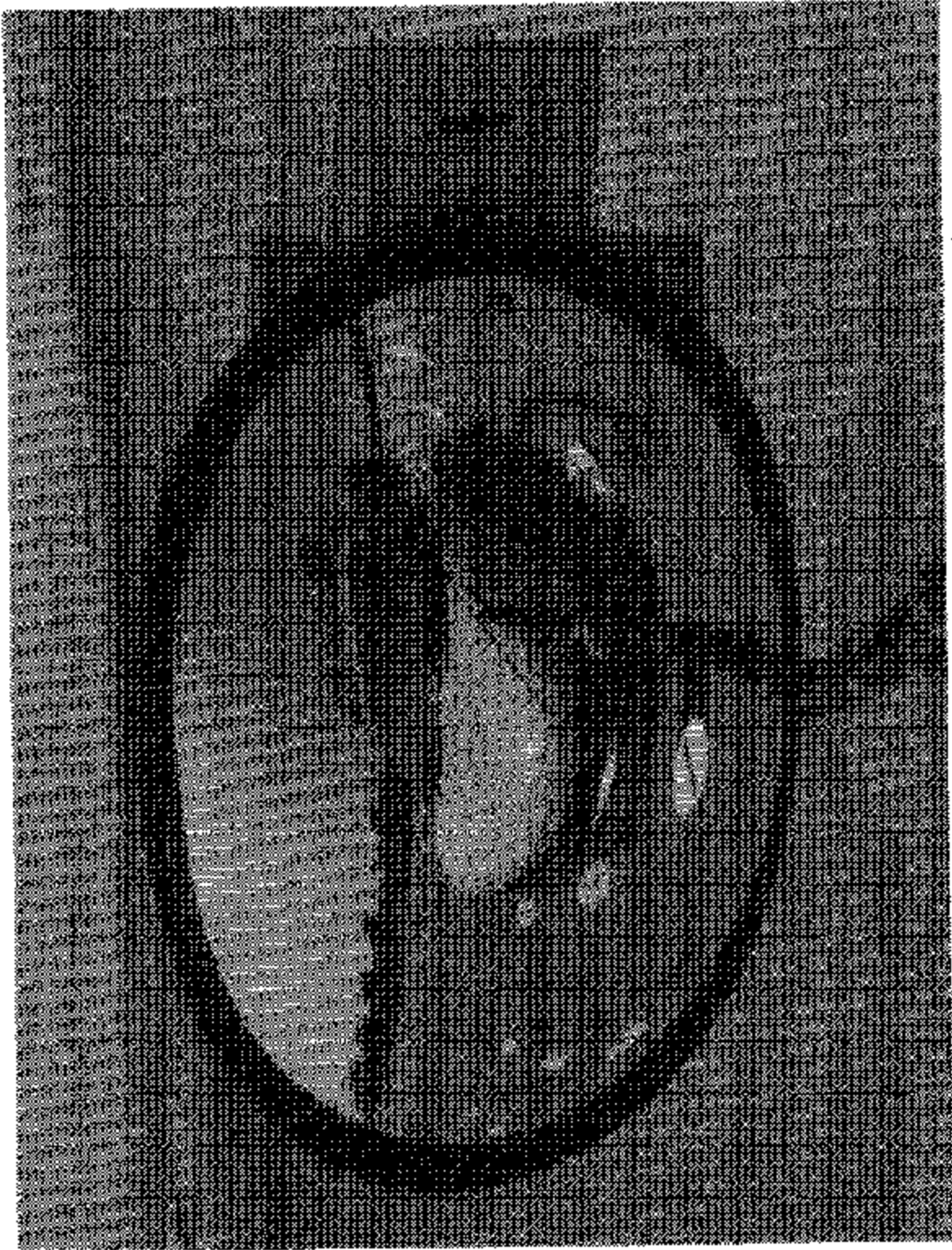
NHTSA No.: C30901



Mirror #1 System B Field of View

Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

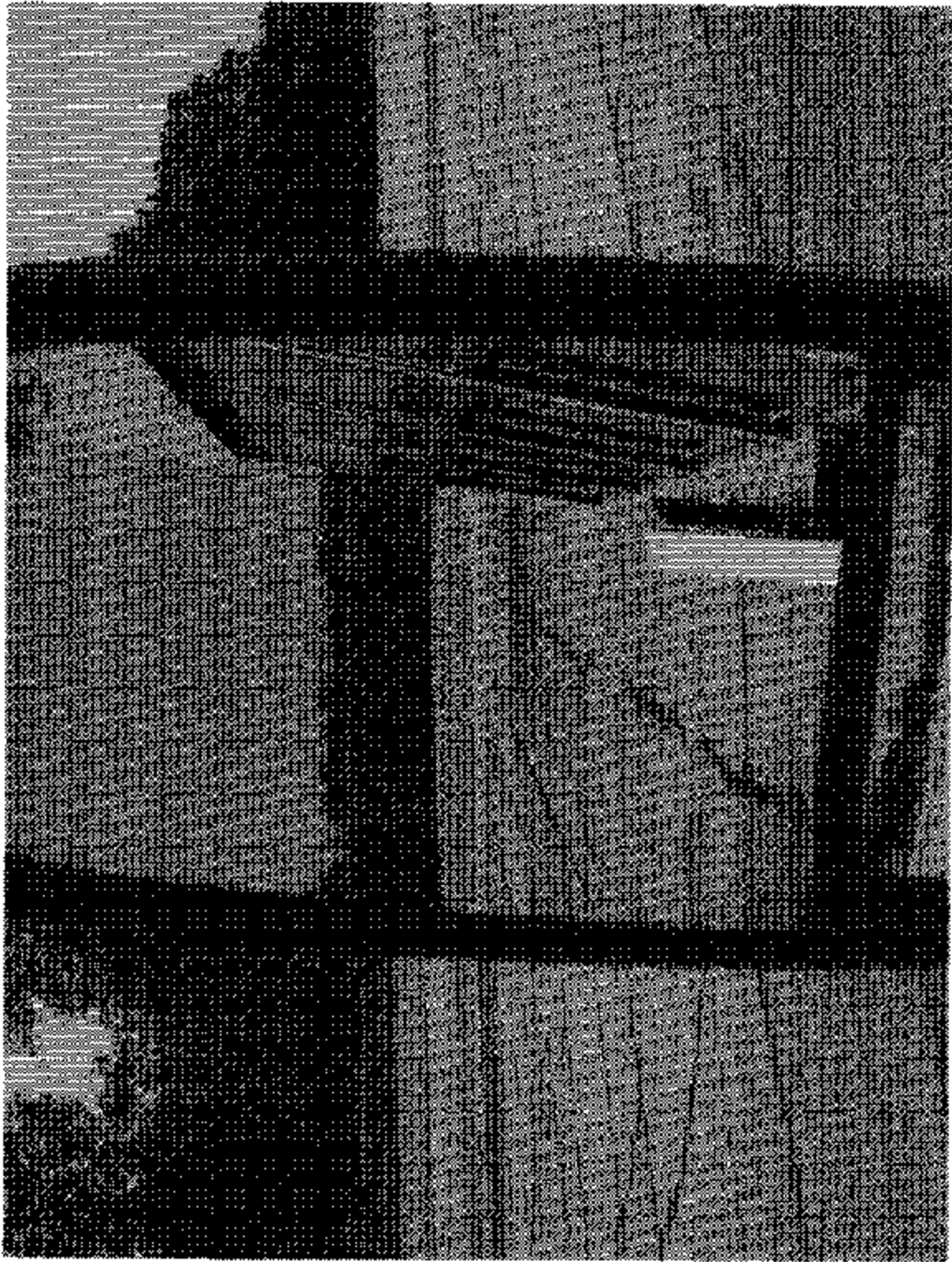
NHTSA No.: C36901



Mirror #2 System B Field of View

Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

NHTSA No: C30901



Mirror #3 System A Field of View

Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

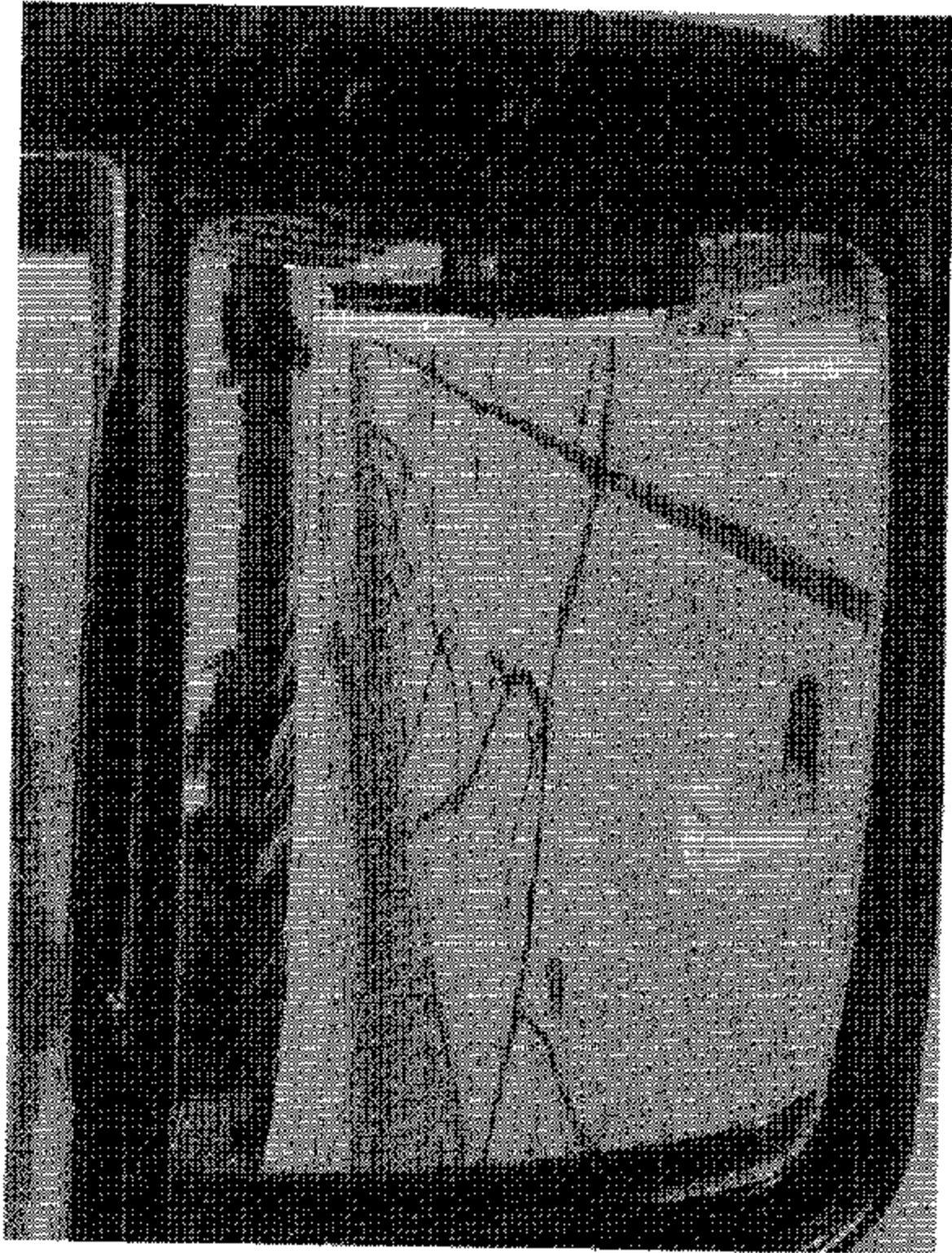
NHTSA No.: C30901



Mirror #4 System A Field of View

Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

NHTSA No.: C30901



Mirror #5 System A Field of View

Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

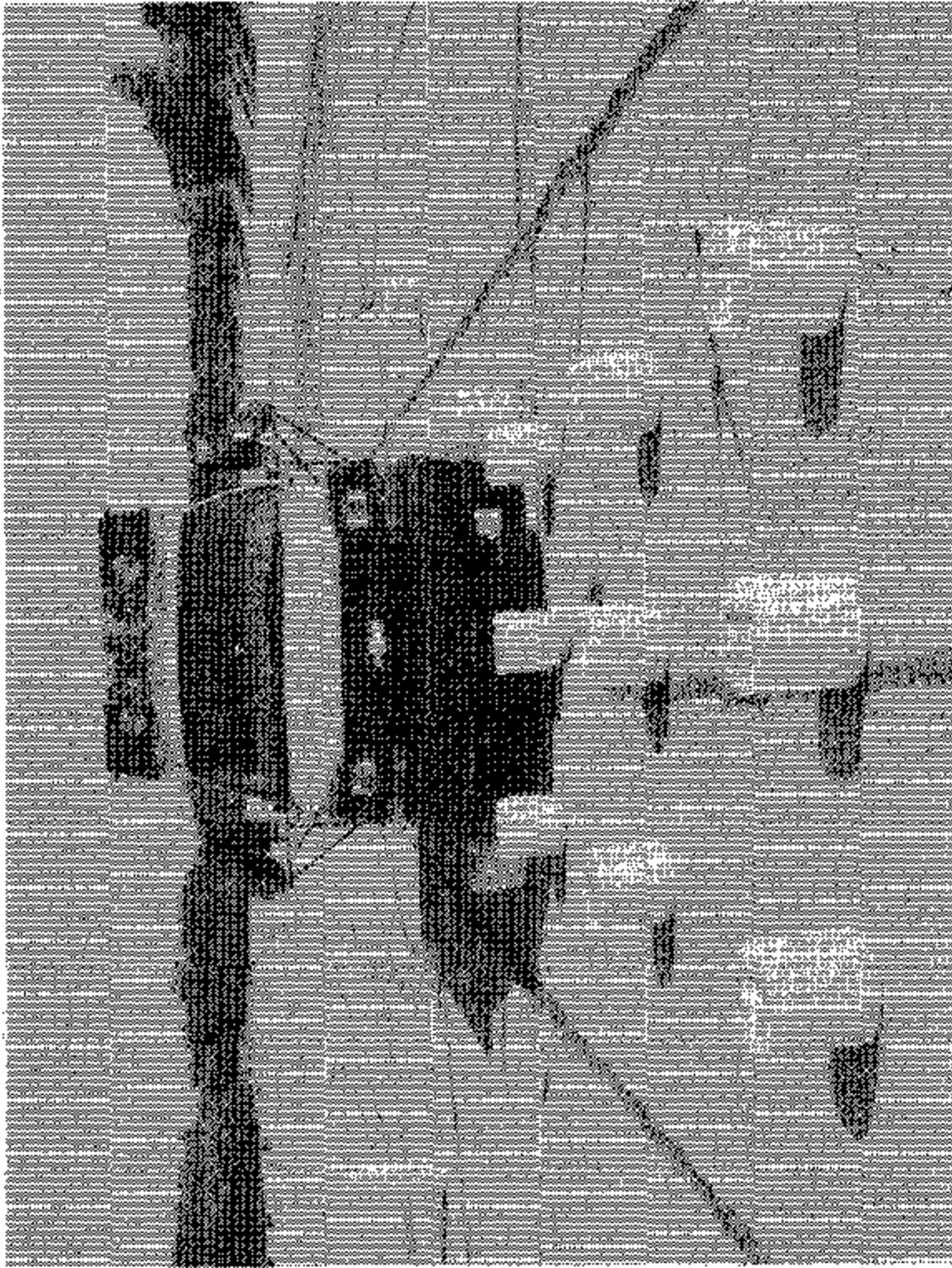
NHTSA No.: C30901



Mirror #6 System A Field of View

Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

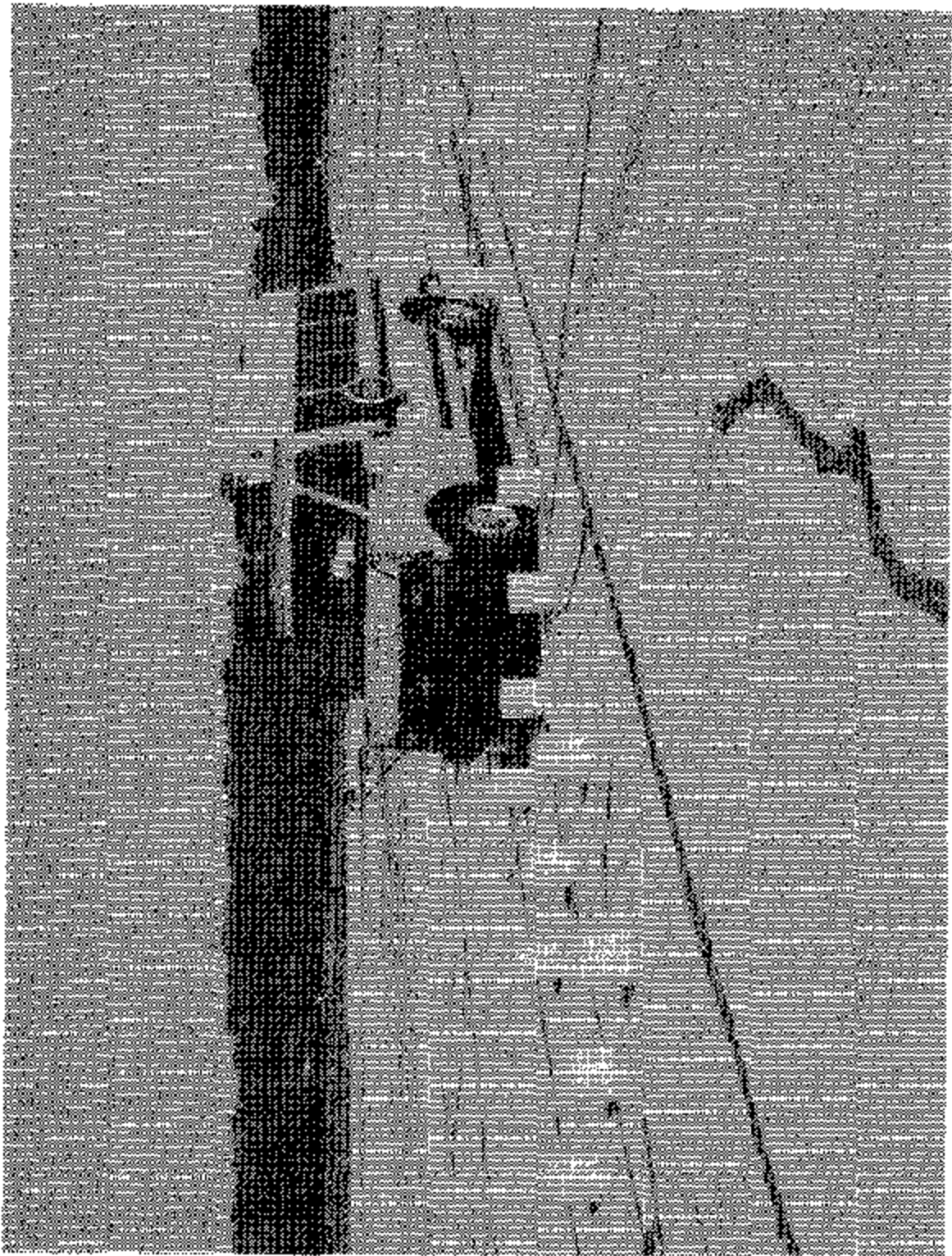
NHTSA No.: C30901



View of Cone Setup from Front

Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

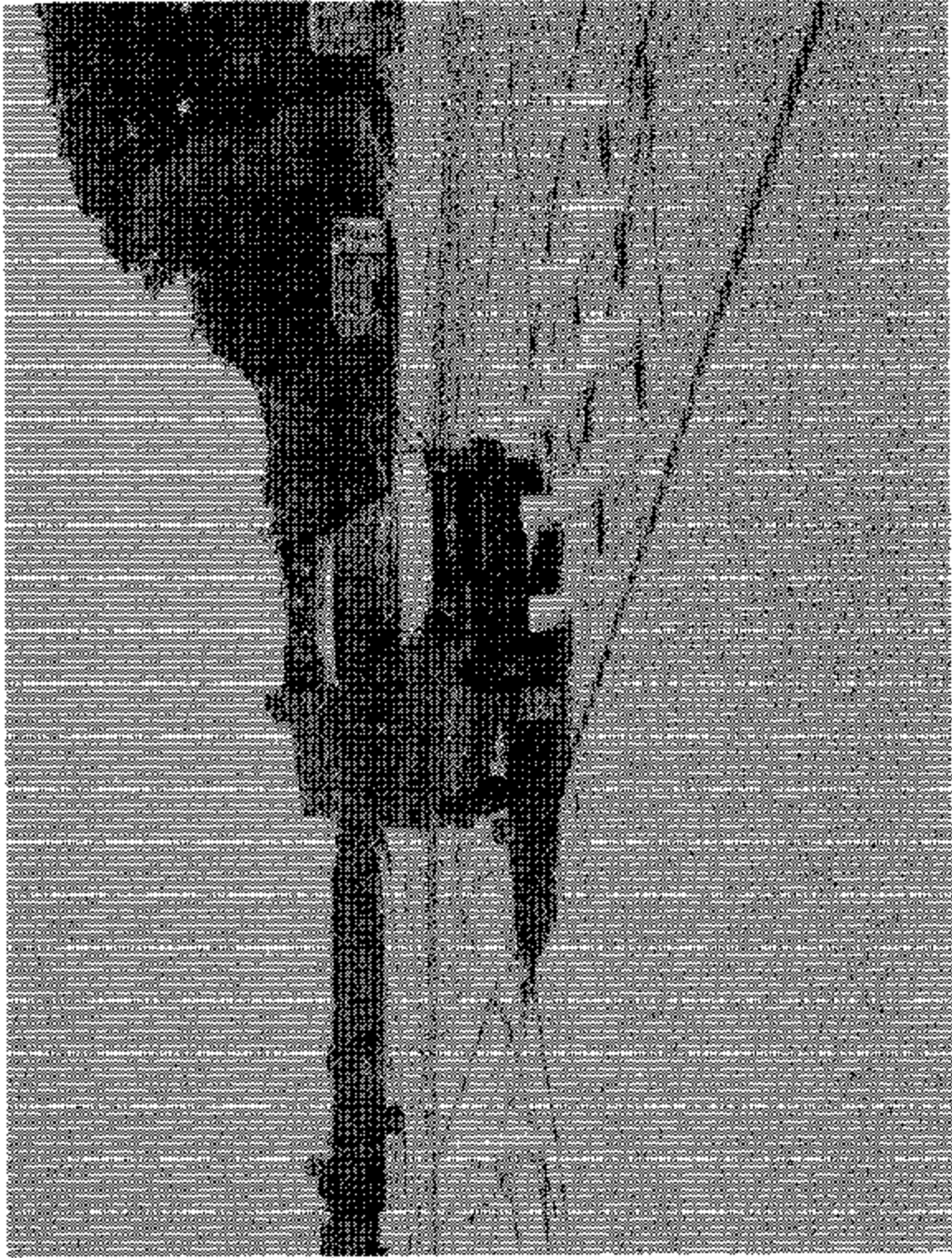
NHTSA No.: C30901



Three-Quarter Left Front View of Cone Setup

Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

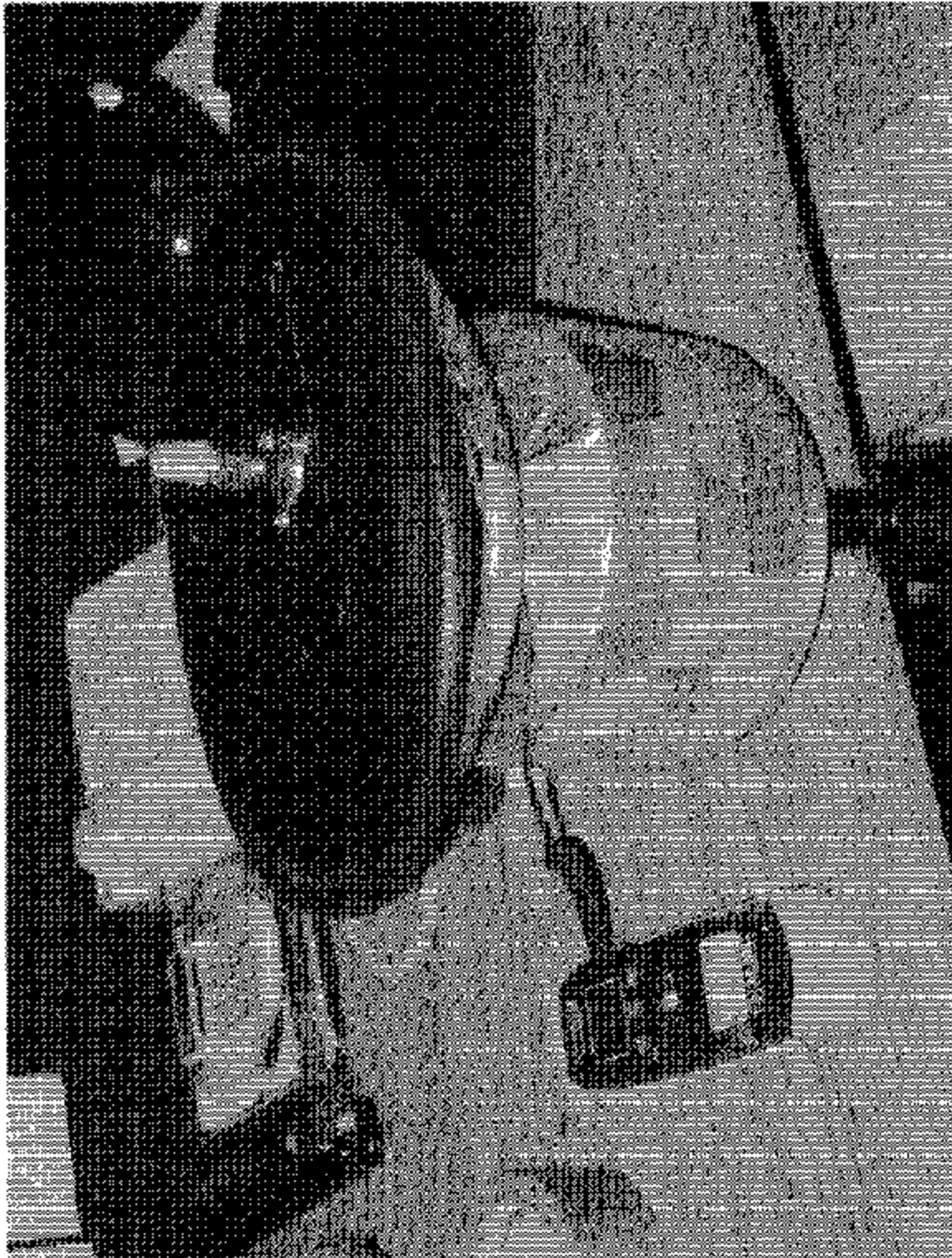
NHTSA No.: C30901



Three-Quarter Right Front View of Cone Setup

Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

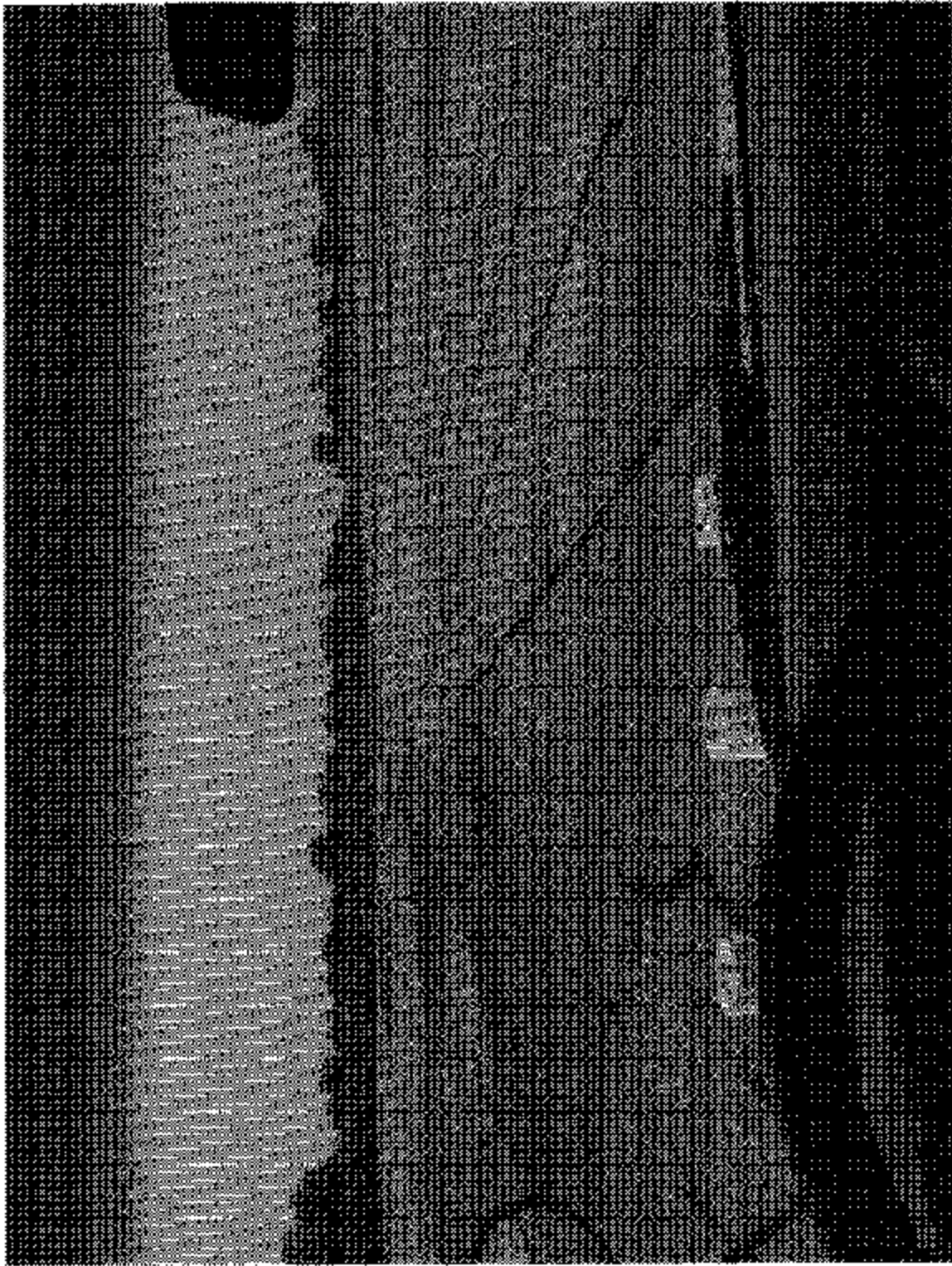
NHTSA No.: C30901



Reflectance Test Set-up

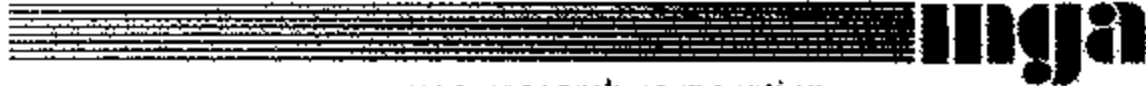
Test Vehicle: 2003 Liberty Freedom School Bus
Procedure: FMVSS 111

NHTSA No.: C30901



Field of View Through Windshield

**SECTION 6
LABORATORY NOTICE OF TEST FAILURE**



mga research corporation

LABORATORY NOTICE OF TEST FAILURE TO OVSC

Test Procedure:	FMVSS 111	Test Date:	July 2, 2003
Test Vehicle:	2003 Liberty Bus	Test Lab:	MGA Research Corp.
NHTSA No.:	C30901	Project Engineer:	Michael Janovicz
Contract No.:	DTNH22-02-D-01057	Delivery Order No.:	1
MFR.:	Liberty Bus	VIN:	1GBHG39U831110237
Build Date:	10/02		

TEST FAILURE DESCRIPTION

Cross view mirror label not found.

FMVSS REQUIREMENTS DESCRIPTION

(S9.3(c) Each school bus which has a mirror installed in compliance with (2) that has an average radius of curvature less than 889 mm, (35 inches), as determined under S12, shall have a label visible to the seated driver.

The label shall be printed in a type face and color that are clear and conspicuous, and state the following:

"USE CROSS VIEW MIRRORS TO VIEW PEDESTRIANS WHILE BUS IS STOPPED. DO NOT USE THESE MIRRORS TO VIEW TRAFFIC WHILE BUS IS MOVING. IMAGES IN SUCH MIRRORS DO NOT ACCURATELY SHOW ANOTHER VEHICLE'S LOCATION."

Remarks: No remarks.

Notification to NHTSA (COTR): Stu Seigel

Date: July 26, 2003

By: