

**REPORT NUMBER: 111SB-MGA-2007-001**

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

**IC Corporation  
2007 IC BE 200 School Bus  
NHTSA No. C70901**

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



**Final Report Date: October 17, 2006**

**FINAL REPORT**

**PREPARED FOR:  
U.S. DEPARTMENT OF TRANSPORTATION  
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
ENFORCEMENT  
OFFICE OF VEHICLE SAFETY COMPLIANCE  
MAIL CODE: NVS-220  
400 SEVENTH STREET, SW, ROOM 6115  
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: Jeff Koehler Date: October 16, 2006  
Jeff Koehler, Project Engineer

Reviewed by: Michael Janovicz Date: October 16, 2006  
Michael Janovicz, Program Manager

FINAL REPORT ACCEPTED BY:

John Freeman

10/17/06  
Date of Acceptance

**Technical Report Documentation Page**

1. Report No. 111SB-MGA-2007-001		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Final Report of FMVSS 111 Compliance Testing of 2007 IC Corp BE200 School Bus NHTSA No.:C70901				5. Report Date October 17, 2006	
				6. Performing Organization Code MGA	
7. Author(s) Jeff Koehler, Project Engineer Michael Janovicz, Project Manager				8. Performing Organization Report No. 111SB-MGA-2007-001	
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 Enforcement Office of Vehicle Safety Compliance Mail Code: (NVS-220) 400 Seventh Street, S.W. Room 6115 Washington, D.C. 20590				13. Type of Report and Period Covered Final Report 8/17/06 to 10/17/06	
				14. Sponsoring Agency Code NVS-220	
15. Supplementary Notes					
16. Abstract Compliance tests were conducted on the subject 2007 IC Corp BE 200 School Bus, NHTSA No. C70901 in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-111SB-00 for the determination of FMVSS 111 compliance.  Test failures were as follows:           NONE					
17. Key Words  Compliance Testing Safety Engineering FMVSS 111				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	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 42	22. Price

## TABLE OF CONTENTS

<u>Section</u>		<u>Page No</u>
1	Purpose of Compliance Test	1
2	Test Data Summary	2
3	Compliance Test Data	5
	Data Sheet 1 - School Bus Inspection and Identification	6
	Data Sheet 2 - Mirror Location and Field of View	7
	Data Sheet 3 - Field of View Test	10
	Data Sheet 4 - Mounting Adequacy Test	11
	Data Sheet 5 - Reflectance Test	12
	Data Sheet 6 - Unit Magnification/Convex Mirror Test	13
	Data Sheet 7 - Mirror Reflective Surface Area Test	17
4	Instrumentation and Equipment List	18
5	Photographs	19

**SECTION 1**  
**PURPOSE OF COMPLIANCE TEST**

Tests were conducted on a 2007 IC Corporation, Model No. BE 200 School Bus, NHTSA No. C70901, in accordance with the specifications of the Office of Vehicle Safety Compliance (OVSC) Test Procedure TP-111SB-00 to determine compliance to the requirements of Federal Motor Vehicle Safety Standard (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 MY2007 IC Corporation, Model No. BE 200 School Bus, NHTSA No. C70901, appears to meet all of the requirements of FMVSS 111. See Test Summary Data Sheets on the following pages.

**FMVSS 111SB, SCHOOL BUS REARVIEW MIRRORS**  
**TEST SUMMARY DATA SHEET**

Test Vehicle: **2007 IC Corp BE 200 School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C70901**  
 Test Date: **8/17/06**

**System A Mirrors**

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

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

**B. Passenger Side Mirror #4 – Unit Magnification**

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

**C. Driver Side Mirror #5 - Convex**

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

**D. Passenger Side Mirror #6 – Convex**

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

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

Test Vehicle: **2007 IC Corp BE 200 School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C70901**  
 Test Date: **8/17/06**

**System B Mirrors**

**E. Driver Side Front Mirror #1– 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	--
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	--
Arc Separation	PASS	--
Reflectance	PASS	--



**SECTION 3**  
**COMPLIANCE TEST DATA**

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

Test Vehicle: **2007 IC Corp BE 200 School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C70901**  
 Test Date: **8/17/06**

**GENERAL VEHICLE IDENTIFICATION**

Final Stage Manufacturer	IC Corporation	Date of Mfg.	04/2006
Chassis Manufacturer	IC Corporation	Date of Mfg.	04/2006
VIN No.	4DRAPAFK07A407251	GVWR	7,938 kg
Seating Capacity (including driver)	20	GAWR Front	3,175 kg
		GAWR Rear	4,762 kg

**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: Jeff Kaehler

Approved By: [Signature]

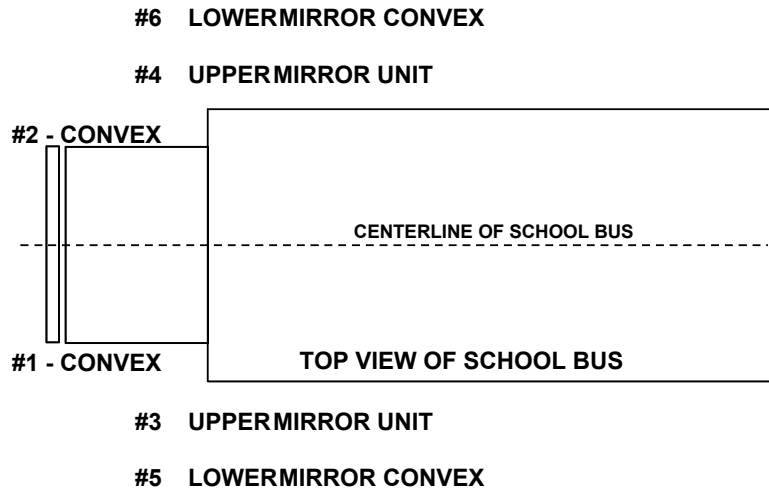
Date: October 16, 2006

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

Test Vehicle: **2007 IC Corp BE 200 School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C70901**  
 Test Date: **8/17/06**

**MIRROR DIAGRAM**



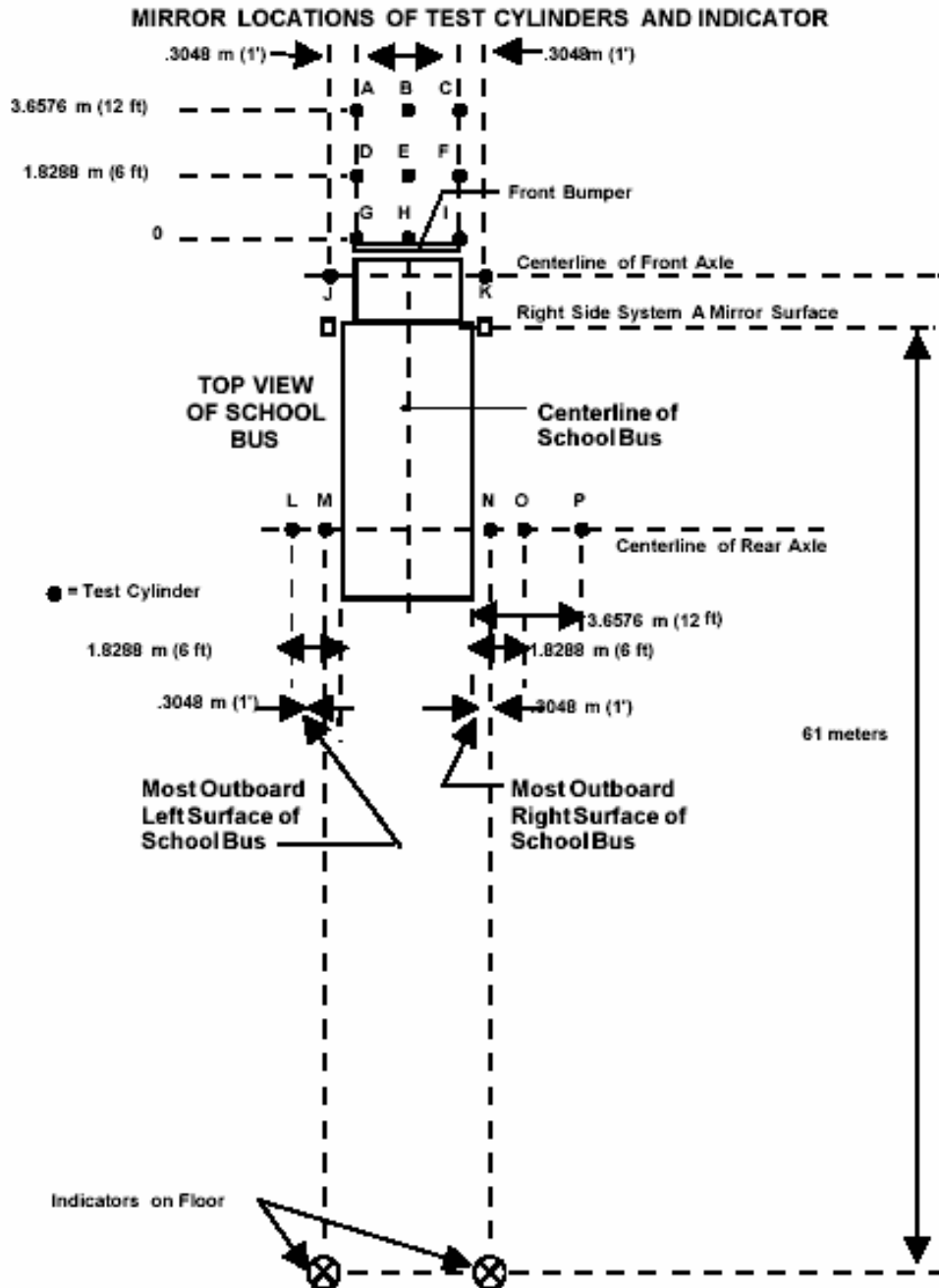
MIRROR NO.	TYPE	MIRROR SYSTEM	CYLINDERS VIEWED (entire top surface)
1	CROSS VIEW/CONVEX	B	B,C,E,F,G,H,I,J,L,M
2	CROSS VIEW/CONVEX	B	A,D,E,F,G,H,K,N,O,P
3	UNIT MAGNIFICATION	A	61 Meter INDICATOR
4	UNIT MAGNIFICATION	A	61 Meter INDICATOR
5	CONVEX	A	L,M
6	CONVEX	A	N,O

SEE FIGURE ON NEXT PAGE

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

Test Vehicle: **2007 IC Corp BE 200 School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C70901**  
 Test Date: **8/17/06**



- 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: **2007 IC Corp BE 200 School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C70901**  
 Test Date: **8/17/06**

**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:	A,B,C,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	253	0.221	--
#2	Right Front	290	0.253	0.760

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 0.002618 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	253 cm	PASS
Distance between center of System B mirror #2 and driver's eye point	290 cm	PASS

Recorded By: Jeff Kaehler

Approved By: [Signature]

Date: October 16, 2006

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

Test Vehicle: **2007 IC Corp BE 200 School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C70901**  
 Test Date: **8/17/06**

		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 from 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 P 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	0.253 cm	
Longest arc length dimension	0.760 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: Jeff Kaehler

Approved By: [Signature]

Date: October 16, 2006

**FMVSS 111SB DATA SHEET 4  
MOUNTING ADEQUACY TEST**

Test Vehicle: **2007 IC Corp BE 200 School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C70901**  
 Test Date: **8/17/06**

**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: Jeff Kaehler

Approved By: [Signature]

Date: October 16, 2006

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

Test Vehicle: **2007 IC Corp BE 200 School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C70901**  
 Test Date: **8/17/06**

Mirror No.	Type	Light meter reading from calibration (Lux)	Light meter reading from light reflected by mirror (Lux)	Pass/Fail	Observations
1	Crossview/Convex	430	325	PASS	
2	Crossview/Convex	446	343	PASS	
3	Unit	453	327	PASS	
4	Unit	449	323	PASS	
5	Convex	442	339	PASS	
6	Convex	440	328	PASS	

Note: Reflectance % = [Reflectance Reading / Calibration reading] x 100  
 Minimum Requirement = 35 percent

Mirror No.	Type	Reflectance	Requirement
1	Crossview/Convex	76%	>35%
2	Crossview/Convex	77%	>35%
3	Unit	72%	>35%
4	Unit	72%	>35%
5	Convex	77%	>35%
6	Convex	75%	>35%

Recorded By: Jeff Kaehler

Approved By: [Signature]

Date: October 16, 2006



**FMVSS 111SB DATA SHEET 6**

**UNIT MAGNIFICATION/CONVEX MIRROR TEST – ALL MIRRORS**

Test Vehicle: **2007 IC Corp BE 200 School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C70901**  
 Test Date: **8/17/06**

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

**MIRROR NO. 1 (CONVEX)**

Test Position	Dial Reading (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	0.05280	136.0	45.6	25.1%
2	0.03630	197.3	-15.7	-8.6%
3	0.02715	263.5	-81.9	-45.1%
4	0.04955	144.8	36.8	20.3%
5	0.05050	142.1	39.5	21.7%
6	0.03520	203.4	-21.8	-12.0%
7	0.05325	134.8	46.8	25.8%
8	0.02795	255.9	-74.4	-40.9%
9	0.05375	133.6	48.0	26.4%
10	0.03500	204.6	-23.0	-12.6%
Avg. Radius of Curvature – the Summation of Column 3 divided by 10: 181.6 mm			Greatest Percent Deviation from the Average Radius of Curvature, Column 5: 45.1%	

**MIRROR NO. 2 (CONVEX)**

Test Position	Dial Reading (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	0.05275	136.1	52.9	28.0%
2	0.03535	202.5	-13.6	-7.2%
3	0.02730	262.0	-73.1	-38.7%
4	0.05970	120.4	68.5	36.3%
5	0.05450	131.8	57.2	30.3%
6	0.03510	204.0	-15.0	-7.9%
7	0.02790	256.4	-67.4	-35.7%
8	0.02915	245.4	-56.5	-29.9%
9	0.05350	134.2	54.8	29.0%
10	0.03640	196.7	-7.8	-4.1%
Avg. Radius of Curvature – the Summation of Column 3 divided by 10: 189 mm			Greatest Percent Deviation from the Average Radius of Curvature, Column 5: 38.7%	

**FMVSS 111SB DATA SHEET 6...continued**

**UNIT MAGNIFICATION/CONVEX MIRROR TEST – ALL MIRRORS**

Test Vehicle: **2007 IC Corp BE 200 School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C70901**  
 Test Date: **8/17/06**

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

**MIRROR NO. 3 (UNIT MAGNIFICATION)**

Test Position	Dial Reading (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	

**MIRROR NO. 4 (UNIT MAGNIFICATION)**

Test Position	Dial Reading (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: **2007 IC Corp BE 200 School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C70901**  
 Test Date: **8/17/06**

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

**MIRROR NO. 5 (CONVEX)**

Test Position	Dial Reading (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	0.01375	519.7	-13.7	-2.7%
2	0.01440	496.3	9.7	1.9%
3	0.01405	508.6	-2.6	-0.5%
4	0.01430	499.7	6.3	1.2%
5	0.01365	523.5	-17.5	-3.5%
6	0.01410	506.8	-0.8	-0.2%
7	0.01550	461.1	44.9	8.9%
8	0.01400	510.4	-4.4	-0.9%
9	0.01380	517.8	-11.8	-2.3%
10	0.01385	516.0	-10.0	-2.0%
Avg. Radius of Curvature – the Summation of Column 3 divided by 10: 506 mm			Greatest Percent Deviation from the Average Radius of Curvature, Column 5: 8.9%	

**MIRROR NO. 6 (CONVEX)**

Test Position	Dial Reading (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	0.01105	646.6	-19.4	-3.1%
2	0.01155	618.7	8.6	1.4%
3	0.01140	626.8	0.5	0.1%
4	0.01140	626.8	0.5	0.1%
5	0.01150	621.3	5.9	0.9%
6	0.01170	610.7	16.5	2.6%
7	0.01140	626.8	0.5	0.1%
8	0.01115	640.8	-13.6	-2.2%
9	0.01120	638.0	-10.7	-1.7%
10	0.01160	616.0	11.3	1.8%
Avg. Radius of Curvature – the Summation of Column 3 divided by 10: 627.3 mm			Greatest Percent Deviation from the Average Radius of Curvature, Column 5: 3.1%	

**FMVSS 111SB DATA SHEET 6...continued**

**UNIT MAGNIFICATION/CONVEX MIRROR TEST – ALL MIRRORS**

Test Vehicle: **2007 IC Corp BE 200 School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C70901**  
 Test Date: **8/17/06**

**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 - (0 Radius of Curvature)	<b>PASS</b>

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

Mirror No.	Radius of Curvature	If needed, wording printed properly* Pass/Fail
1	181.6 mm	<b>PASS</b>
2	189.0 mm	<b>PASS</b>

\* 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.”

Recorded By: Jeff Kachler

Approved By: [Signature]

Date: October 16, 2006

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

Test Vehicle: **2007 IC Corp BE 200 School Bus**  
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C70901**  
Test Date: **8/17/06**

**DATA TABLE FOR SURFACE AREA**

System A Mirrors Mirror No.	Area	Requirement Min. 323 cm <sup>2</sup>	Pass/Fail
3	390 cm <sup>2</sup>	323 cm <sup>2</sup>	PASS
4	381 cm <sup>2</sup>	323 cm <sup>2</sup>	PASS
System B Mirrors Mirror No.	Area	Requirement Min. 258 cm <sup>2</sup>	Pass/Fail
1	571 cm <sup>2</sup>	258 cm <sup>2</sup>	PASS
2	556 cm <sup>2</sup>	258 cm <sup>2</sup>	PASS

Recorded By: Jeff Kachler

Approved By: [Signature]

Date: October 16, 2006

**SECTION 4  
INSTRUMENTATION AND EQUIPMENT LIST**

Test Vehicle: **2007 IC Corp BE 200 School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C70901**  
 Test Date: **8/17/06**

	<b>Digital Caliper</b>	<b>Light Meter</b>	<b>Tape Measure</b>	<b>Spherometer</b>
Make	Mitutoyo	AEMC	Stanley	MGA
Model	ID-F150HE	CA813	Powerlock	001
Serial # (s)	001462	04L1017Y	SN101	001
Range	0-50.8 mm	2000fc, 2000lux	0-8 m	$2.25 \times 10^{13}$ (cm * Hz <sup>1/2</sup> ) ÷ W
Accuracy	.001 mm	0.0 fc or 0.01 lux	1 mm	$1.1 \times 10^{-13}$ W/H <sup>1/2</sup>
Cal. Date	7/26/06	4/18/06	8/16/06	Daily when used
Cal. Due Date	7/26/07	4/18/07	2/16/07	N/A

**SECTION 5**  
**PHOTOGRAPHS**

## TABLE OF PHOTOGRAPHS

<u>No.</u>		<u>Page No.</u>
1	Three-Quarter Left Front View of School Bus	21
2	Three-Quarter Left Rear View of School Bus	22
3	Close-up View of Certification and Tire Information Label	23
4	Right Front Cross View Mirror and Mounting	24
5	Passenger Side Rearview Mirror and Mounting	25
6	Inside Rearview Mirror and Mounting	26
7	Left Front Cross View Mirror and Mounting	27
8	Driver Side Rearview Mirror and Mounting	28
9	Field of View Instrument Setup	29
10	Mirror #2 System B Field of View	30
11	Mirror #1 System B Field of View	31
12	Mirror #4 and #6 System A Field of View	32
13	Mirror #3 and #5 System A Field of View	33
14	View of Cylinder Setup from Front	34
15	Three-Quarter Left Front View of Cylinder Setup	35
16	Three-Quarter Right Front View of Cylinder Setup	36
17	Reflectance Test Set-up	37
18	Label for Cross View Mirror Warning	38



Test Vehicle: **2007 IC BE 200 School Bus**  
Procedure: **FMVSS 111**

NHTSA No.: **C70901**  
Test Date: **8/17/06**



Photo 1 -Three-Quarter Left Front View of School Bus

Test Vehicle: 2007 IC BE 200 School Bus  
Procedure: FMVSS 111

NHTSA No.: C70901  
Test Date: 8/17/06



Photo 2 -Three-Quarter Left Rear View of School Bus



Test Vehicle: 2007 IC BE 200 School Bus  
Procedure: FMVSS 111

NHTSA No.: C70901  
Test Date: 8/17/06

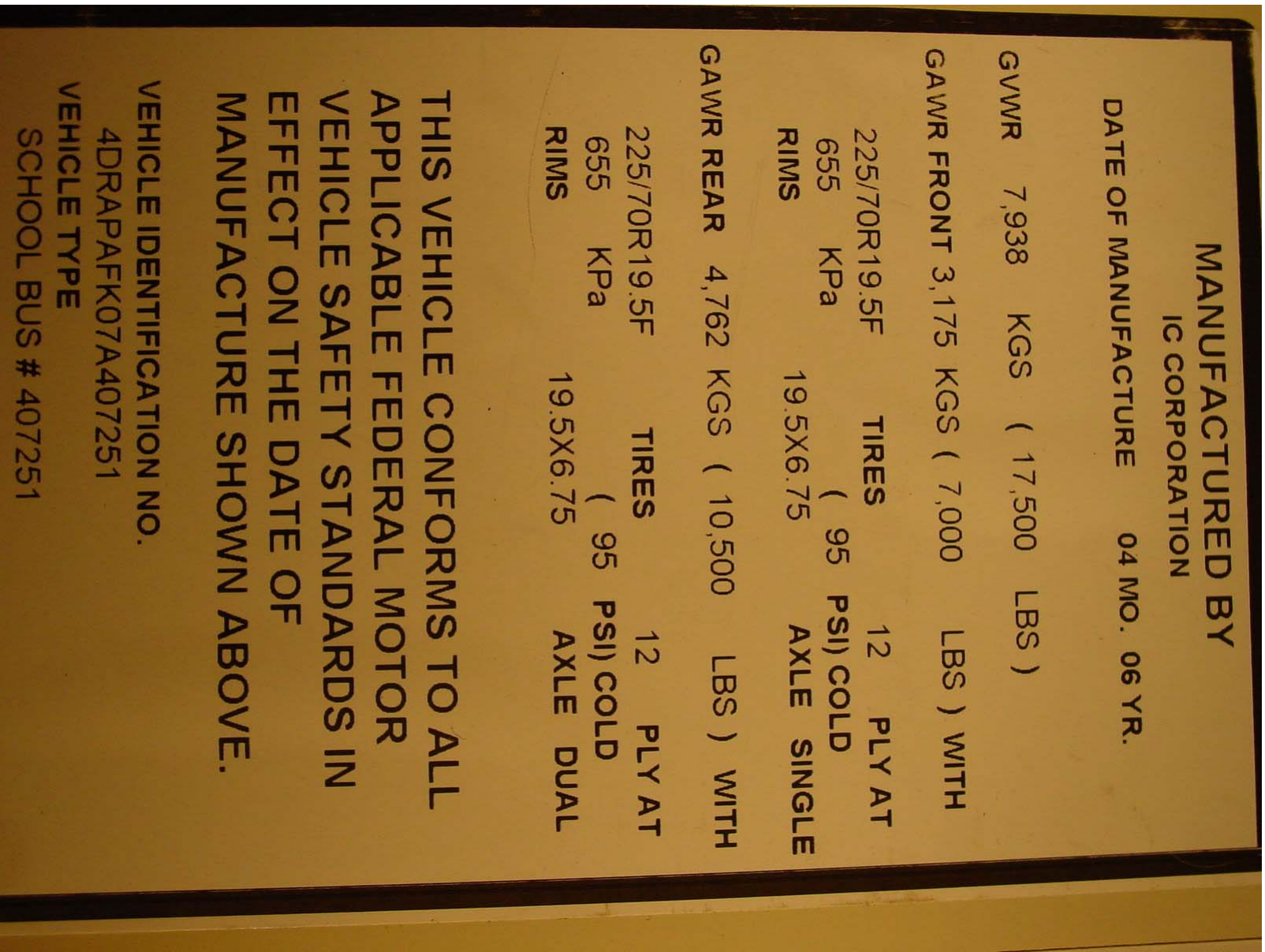


Photo 3 -Close-up View of Certification and Tire Information Label

Test Vehicle: 2007 IC BE 200 School Bus  
Procedure: FMVSS 111

NHTSA No.: C70901  
Test Date: 8/17/06



Photo 4 -Right Front Cross View Mirror and Mounting



Test Vehicle: 2007 IC BE 200 School Bus  
Procedure: FMVSS 111

NHTSA No.: C70901  
Test Date: 8/17/06

25



Photo 5 -Passenger Side Rearview Mirror and Mounting

Test Vehicle: **2007 IC BE 200 School Bus**  
Procedure: **FMVSS 111**

NHTSA No.: **C70901**  
Test Date: **8/17/06**



Photo 6 -Inside Rearview Mirror and Mounting



Test Vehicle: 2007 IC BE 200 School Bus  
Procedure: FMVSS 111

NHTSA No.: C70901  
Test Date: 8/17/06



Photo 7 -Left Front Cross View Mirror and Mounting

Test Vehicle: **2007 IC BE 200 School Bus**  
Procedure: **FMVSS 111**

NHTSA No.: **C70901**  
Test Date: **8/17/06**



Photo 8 -Driver Side Rearview Mirror and Mounting



Test Vehicle: **2007 IC BE 200 School Bus**  
Procedure: **FMVSS 111**

NHTSA No.: **C70901**  
Test Date: **8/17/06**



Photo 9 -Field of View Instrument Setup

Test Vehicle: 2007 IC BE 200 School Bus  
Procedure: FMVSS 111

NHTSA No.: C70901  
Test Date: 8/17/06

30



Photo 10 -Mirror #2 System B Field of View



Test Vehicle: 2007 IC BE 200 School Bus  
Procedure: FMVSS 111

NHTSA No.: C70901  
Test Date: 8/17/06



Photo 11 -Mirror #1 System B Field of View

Test Vehicle: **2007 IC BE 200 School Bus**  
Procedure: **FMVSS 111**

NHTSA No.: **C70901**  
Test Date: **8/17/06**



Photo 12 -Mirror #4 and #6 System A Field of View



Test Vehicle: **2007 IC BE 200 School Bus**  
Procedure: **FMVSS 111**

NHTSA No.: **C70901**  
Test Date: **8/17/06**



Photo 13 -Mirror #3 and #5 System A Field of View

Test Vehicle: **2007 IC BE 200 School Bus**  
Procedure: **FMVSS 111**

NHTSA No.: **C70901**  
Test Date: **8/17/06**



Photo 14 -View of Cylinder Setup from Front



Test Vehicle: **2007 IC BE 200 School Bus**  
Procedure: **FMVSS 111**

NHTSA No.: **C70901**  
Test Date: **8/17/06**

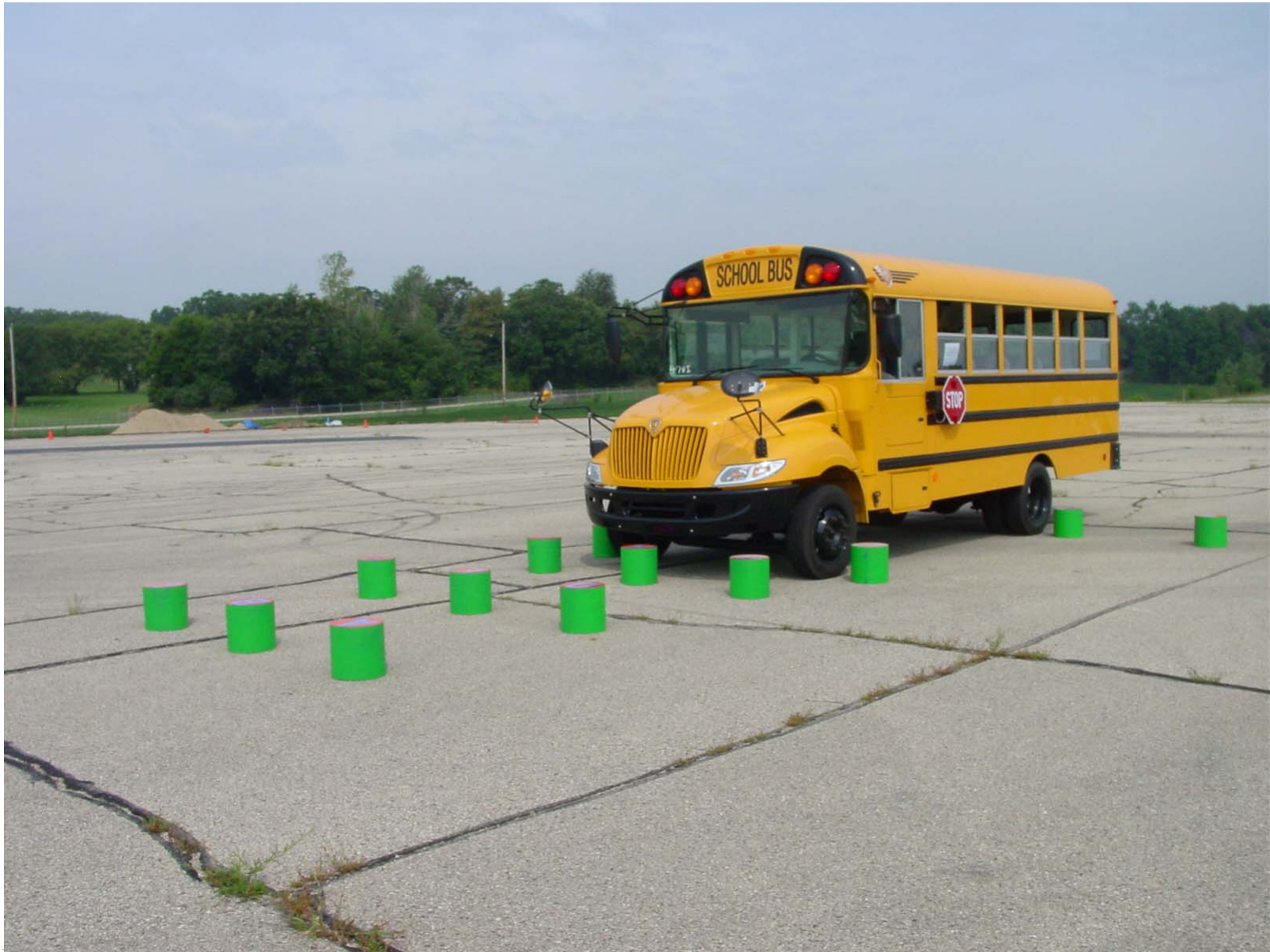


Photo 15 -Three-Quarter Left Front View of Cylinder Setup

Test Vehicle: **2007 IC BE 200 School Bus**  
Procedure: **FMVSS 111**

NHTSA No.: **C70901**  
Test Date: **8/17/06**



Photo 16 -Three-Quarter Right Front View of Cylinder Setup



Test Vehicle: 2007 IC BE 200 School Bus  
Procedure: FMVSS 111

NHTSA No.: C70901  
Test Date: 8/17/06



Photo 17 -Reflectance Test Set-up

Test Vehicle: 2007 IC BE 200 School Bus  
Procedure: FMVSS 111

NHTSA No.: C70901  
Test Date: 8/17/06

***ATTENTION 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.

THE *HAWK-EYE™* CROSS VIEW MIRROR SYSTEM BY  
ROSCO INC. JAMAICA, NY 11435 TEL: (718) 526-2601