

**REPORT NUMBER: 131SB-MGA-2011-004**

**SAFETY COMPLIANCE TESTING FOR  
FMVSS NO. 131SB  
SCHOOL BUS PEDESTRIAN SAFETY DEVICES**

**2012 IC CORP CE SCHOOL BUS  
NHTSA NO.: CC0900**

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




**TEST DATE: SEPTEMBER 30, 2011**

**FINAL REPORT DATE: OCTOBER 13, 2011**

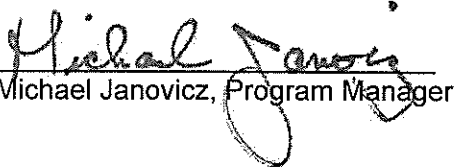
**FINAL REPORT**

**PREPARED FOR:  
U.S. DEPARTMENT OF TRANSPORTATION  
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Date of Acceptance

### Technical Report Documentation Page

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<b>15. Supplementary Notes</b>			
<b>16. Abstract</b> Compliance tests were conducted on the subject, 2012 IC Corp CE School Bus, NHTSA No.: CC0900, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-131SB-01 for the determination of FMVSS 131 compliance.  Test failures identified were as follows: None			
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**SECTION 1**  
**PURPOSE OF COMPLIANCE TEST**

Tests were conducted by MGA Research Corporation-Wisconsin Operations on a 2012 IC Corp CE School Bus, NHTSA No.: CC0900, in accordance with the specifications of the Office of Vehicle Safety Compliance (OVSC) Test Procedures TP-131SB-01 to determine compliance to the requirements of Federal Motor Vehicle Safety Standard (FMVSS) 131, "School Bus Pedestrian Safety Devices."

This program is sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-08-D-00075.

**SECTION 2**  
**TEST DATA SUMMARY**

Based on the tests performed, the 2012 IC Corp CE School Bus, NHTSA No.: CC0900, appears to meet all of the requirements of FMVSS 131SB. See Test Summary Data Sheets on the following pages.

**FMVSS 131SB – SCHOOL BUS PEDESTRIAN SAFETY DEVICES  
VEHICLE INFORMATION AND TEST SUMMARY**

Test Vehicle: **2012 IC Corp CE School Bus**  
Test Lab: **MGA Research Corporation**

NHTSA No.: **CC0900**  
Test Date: **09/30/11**

VIN	4DRBUSKP6CB392585	Chassis Cab	Yes
No. of Stop Signal Arms	1	Rear Engine	No
Pass. Capacity (driver included)	68	Tire Size (on bus)	11R22.5
Stop Signal Arm Manufacturer	Specialty Manufacturing Inc.		

**DATA FROM CERTIFICATION LABEL**

Final Stage Manufacturer	IC Corp.	Date of Mfg.	09/10
Incomplete Vehicle Manufacturer	N/A	Date of Mfg.	N/A
GVWR (kg)	13,517	GAWR Front (kg)	4,536
		GAWR Rear (kg)	9,525

**TEST SUMMARY**

	PASS/FAIL or N/A
Dimensional Requirements (S5.1)	<b>PASS</b>
Surface Content and Labeling (S5.2)	<b>PASS</b>
Conspicuity Requirements (S5.3)	<b>PASS</b>
Location and Position Requirements (S5.4)	<b>PASS</b>
Arm Operation Requirements (S5.5)	<b>PASS</b>

Note: The 2012 IC Corp CE School Bus was only equipped with one stop signal arm.

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



**FMVSS 131SB – DATA SHEET 1**  
**DIMENSIONS OF STOP SIGNAL ARM (S5.1)**

Test Vehicle: **2012 IC Corp CE School Bus**  
 Test Lab: **MGA Research Corporation**

NHTSA No.: **CC0900**  
 Test Date: **09/30/11**


“Regular octagon” with diameter of at least 450 mm (point to point).

	Forward Signal Arm (mm)
Diameter 1	495
Diameter 2	495
Diameter 3	495
Diameter 4	495
Range (max. – min.)	0

Requirements	Yes, No, N/A
Are all octagon diameter values $\geq 450$ mm?	Yes
Is range of octagon diameter values $\leq 12$ mm?	Yes
Are all octagon chord dimensions equal within 6 mm?	Yes

Test Results		PASS/FAIL
S5.1	Dimensions of Stop Signal Arm	<b>PASS</b>

Recorded By: 

Approved By: 

Date: September 30, 2011


**FMVSS 131SB – DATA SHEET 2**  
**SURFACE CONTENT AND LABELING (S5.2)**


Test Vehicle: **2012 IC Corp CE School Bus**  
 Test Lab: **MGA Research Corporation**

NHTSA No.: **CC0900**  
 Test Date: **09/30/11**

Requirements	Forward Signal Arm	
	Front Side	Aft Side
Color RED except for border & legend (Yes/No)	Yes	Yes
Color of border is WHITE (Yes/No)	Yes	Yes
Color of word "STOP" is WHITE (Yes/No)	Yes	Yes
Word "STOP" is in upper case letters (Yes/No)	Yes	Yes
Width of border ( $\geq 12$ mm)	14 mm	15.5 mm
Percent of border obscured by mounting brackets, clips, or bolts, or other components ( $\leq 15\%$ )	0%	12.4%
Height of letters ( $\geq 150$ mm)	156 mm	156 mm
Stroke width of letters ( $\geq 20$ mm)	26 mm	26 mm

Test Results		PASS/FAIL
S5.2	Surface content and labeling	<b>PASS</b>

Recorded By: 

Approved By: 

Date: September 30, 2011

**FMVSS 131SB – DATA SHEET 3**

**CONSPICUITY (S5.3)**

Test Vehicle: **2012 IC Corp CE School Bus**  
Test Lab: **MGA Research Corporation**

NHTSA No.: **CC0900**  
Test Date: **09/30/11**

The Stop Signal Arm shall comply with either S5.3.1 or S5.3.2, or both.

**REFLECTORIZED MATERIAL (S5.3.1)**

Requirements	Forward Signal Arm	
	Front Side	Aft Side
Entire surface of stop signal arm reflectorized except for mounting brackets, clips, bolts, or other necessary components. Front side of rearmost stop signal arm must not be reflectorized. (Yes/No)	Yes	Yes
Percent of entire surface obscured by mounting brackets, clips, bolts or other components necessary for mechanical or electrical operation. (7.5% max. each side)	0%	3.8%

**FMVSS 131SB – DATA SHEET 3**

**CONSPICUITY (S5.3)**

Test Vehicle: **2012 IC Corp CE School Bus**  
 Test Lab: **MGA Research Corporation**

NHTSA No.: **CC0900**  
 Test Date: **09/30/11**

**OPTIONAL ILLUMINATED LETTERING (S5.3.1.1)**

Item	Stop Signal Arm
	Forward
Does the stop sign(s) have illuminated lettering? If optional illuminated lettering is installed, the following requirements apply in addition to reflectorized surface. (Yes/No)	<b>No</b>

Requirements	Forward Signal Arm		
	Front Side	Aft Side	
Only Red lamps used (Yes/No)	N/A	N/A	
Red lamps form the complete shape of each letter of the legend. (Yes/No)	N/A	N/A	
Red lamps centered within stroke of each letter (Yes/No) or Red lamps outline each letter in immediately surrounding area (Yes/No)	N/A	N/A	
The shape of each letter remains constant (Yes/No)	N/A	N/A	
Net stroke width $\geq$ 15 mm (stroke width minus lamp width)	"S"	N/A	N/A
	"T"	N/A	N/A
	"O"	N/A	N/A
	"P"	N/A	N/A
Lamps on each side of the signal arm flash (60-120 flashes/min.)	N/A	N/A	
Lamps current "on" time of 30% to 75% of the total flash cycle	N/A	N/A	
Total current "on" time for the two terminals shall be between 90-110% of the total flash cycle.	N/A	N/A	
If Xenon short-arc lamps – "off" time before each flash of at least 50% of the total flash cycle.	N/A	N/A	

**FMVSS 131SB – DATA SHEET 3**

**CONSPICUITY (S5.3)**

Test Vehicle: **2012 IC Corp CE School Bus**  
 Test Lab: **MGA Research Corporation**

NHTSA No.: **CC0900**  
 Test Date: **09/30/11**

**RED FLASHING LAMPS (S5.3.2)**

Requirements	Forward Signal Arm	
	Front Side	Aft Side
Are the Red Lamps centered on the vertical centerline? (At least 2, enter quantity)	Yes – 2	Yes – 2
Is one lamp at extreme top and another at extreme bottom? (Yes/No)	Yes	Yes
Do the lamps on each side of the signal arm flash alternately? (60-120 flashes/min.) (Yes/No)	Yes – 75	Yes – 75
Lamps current “on” time of 30% to 75% of the total flash cycle. (Yes/No)	Yes – 50%	Yes – 50%
Total current “on” time for two terminals shall be between 90 and 110% of the total flash cycle. (Yes/No)	Yes*	Yes*
If Xenon short-arc lamps-“off” time before each flash of at least 50% of total flash cycle. (Yes/No)	N/A	N/A
Is there a symbol “DOT” on each lamp lens? (Yes/No) (Not Required)	No	No
Additional markings on lamp lenses	SAE J1133 Top FMVSS 131	SAE J1133 Top FMVSS 131

**COMMENTS:**

\*Complete Duty Cycle = 845 msec.  
 Lower lamp illuminated for 217 msec of each duty cycle.  
 Upper lamp illuminated for 206 msec of each duty cycle.  
 Percent “on time” of either lamp in one duty cycle = (217+206)/845 or 50%

**NOTE:**

Each lamp flashes 4 times which equates to one continuous flash prior to alternating.

FMVSS 131SB – DATA SHEET 3

CONSPICUITY (S5.3)

Test Vehicle: **2012 IC Corp CE School Bus**  
Test Lab: **MGA Research Corporation**


NHTSA No.: **CC0900**  
Test Date: **09/30/11**

**MARKINGS ON THE FLASHER**

Flasher Harness Number	392585
------------------------	--------

Test Results		PASS/FAIL or N/A
S5.3.1	Reflectorized Material	<b>PASS</b>
S5.3.1.1	Optional Illuminated Lettering	N/A
S5.3.2	Red Flashing Lamps	<b>PASS</b>

Recorded By: 

Approved By: 

Date: September 30, 2011

**FMVSS 131SB – DATA SHEET 4**  
**STOP SIGNAL ARM INSTALLATION (S5.4)**

Test Vehicle: **2012 IC Corp CE School Bus**  
 Test Lab: **MGA Research Corporation**

NHTSA No.: **CC0900**  
 Test Date: **09/30/11**

Dimensions and angles measured with Signal Arm in the extended position.

Requirements	Stop Signal Arm
	Forward
Signal arm perpendicular to side of bus (Measure angle between vertical plane of side of bus and vertical plane of the signal arm.) $90 \pm 5^\circ$	90.1°
Top edge of signal arm parallel to horizontal plane (Measure angle between vertical plane of side of bus and the top edge of the signal arm.) $90 \pm 5^\circ$	89.6°
Top edge of signal arm not more than 152.4 mm from a horizontal plane tangent to lower edge of frame of passenger window immediately behind the driver's window:	
Measure top corner closest to the school bus to the bottom edge of the window.	2 mm
Measure top corner furthest from school bus to the bottom edge of the window.	2 mm
Vertical centerline of signal arm not less than 228.6 mm away from side of bus	300 mm
Stop signal arm(s) installed on left side of bus (Yes, No, or Not Applicable)	Yes

Test Results		PASS/FAIL or N/A
S5.4	Stop Signal Arm Installation	<b>PASS</b>

Recorded By: 

Approved By: 

Date: September 30, 2011

**FMVSS 131SB – DATA SHEET 5**  
**STOP SIGNAL ARM OPERATION (S5.5)**

Test Vehicle: **2012 IC Corp CE School Bus**  
 Test Lab: **MGA Research Corporation**

NHTSA No.: **CC0900**  
 Test Date: **09/30/11**


Stop Signal Arm(s) shall be automatically extended, at a minimum, whenever the red signal lamps on the bus required by FMVSS 108 are activated; except that a manual override device may be installed that prevents automatic extension.

Requirements	Stop Signal Arm
	Forward
Signal Arm(s) automatically extended when red lights are activated and override device is not activated. (Yes, No, or Not Applicable)	Yes
If a MANUAL OVERRIDE DEVICE is installed, enter applicable data below:	
Mechanism for activating the override device is within reach of the school bus driver (Yes/No)	N/A
While the override device is activated; there is a continuous or intermittent signal audible to the driver unless equipped with optional cut-off timing device (Measure duration $\geq$ 10 min.) (Yes/No)	N/A
If audible signal is equipped with optional cut-off timing device, it sounds for at least 60 seconds while the manual override is activated. (Measure 3 times, duration $\geq$ 60 sec.)	N/A
If audible signal is equipped with optional cut-off timing device, it automatically recycles every time the service entry door is opened while the engine is running and the manual override is engaged. (Recycle 3 times, Yes/No each cycle)	N/A

Describe location and mode of operation of the manual override control, if installed:

Test Results		PASS/FAIL or N/A
S5.5	Stop Signal Arm Operation	N/A

Recorded By: 

Approved By: 

Date: September 30, 2011



**SECTION 4**  
**INSTRUMENTATION AND EQUIPMENT LIST**

Test Vehicle: **2012 IC Corp CE School Bus**  
Test Lab: **MGA Research Corporation**

NHTSA No.: **CC0900**  
Test Date: **09/30/11**

Identify the instruments used during this test and record their make, model, serial number, range, accuracy, and calibration date.

	Digital Caliper	Inclinometer	Tape Measure
Make	Mitutoyo	Digital Protractor	Stanley
Model	6" 500-171-20	Pro 360	Powerlock 3M
Serial No.	05389443	002	573
Range	0 to 150 mm	0 to 360 degrees	0 to 8 m
Accuracy	0.01 mm	0.1 degree	1 mm
Cal. Date	09/08/11	Daily	06/06/11
Cal. Due	03/08/12	N/A	12/06/11

**SECTION 5  
PHOTOGRAPHS**

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Test Vehicle: 2012 IC Corp CE School Bus  
Test Lab: MGA Research Corporation

NHTSA No.: CC0900  
Test Date: 09/30/11



3/4 Frontal View from Left Side of Vehicle with Stop Signal Arm

Test Vehicle: 2012 IC Corp CE School Bus  
Test Lab: MGA Research Corporation

NHTSA No.: CC0900  
Test Date: 09/30/11

**MANUFACTURED BY**  
IC CORPORATION

**DATE OF MANUFACTURE** 09 MO. 10 YR.

**GVWR** 13,517 KGS ( 29,800 LBS )

**GAWR FRONT** 4,536 KGS ( 10,000 LBS ) WITH

265/75R22.5G TIRES 14 PLY AT  
758 KPa ( 110 PSI) COLD

**RIMS** 22.5X7.50 AXLE SINGLE

**GAWR REAR** 9,525 KGS ( 21,000 LBS ) WITH

295/75R22.5G TIRES 14 PLY AT  
689 KPa ( 100 PSI) COLD

**RIMS** 22.5X8.25 AXLE DUAL

**THIS VEHICLE CONFORMS TO ALL  
APPLICABLE FEDERAL MOTOR  
VEHICLE SAFETY STANDARDS IN  
EFFECT ON THE DATE OF  
MANUFACTURE SHOWN ABOVE.**

**VEHICLE IDENTIFICATION NO.**  
4DRBUSKP6CB392585  
**VEHICLE TYPE**  
SCHOOL BUS # 392585

Vehicle Certification Label

Test Vehicle: 2012 IC Corp CE School Bus  
Test Lab: MGA Research Corporation

NHTSA No.: CC0900  
Test Date: 09/30/11

VEHICLE # 392585  
SCHOOL BUS # 392585

**MANUFACTURED BY  
IC CORPORATION**

**THIS BUS CONFORMS TO ALL APPLICABLE  
PROVISIONS OF ILLINOIS MINIMUM SAFETY  
STANDARDS FOR TYPE I SCHOOL BUSES IN  
EFFECT ON THE FIRST DAY OF  
09 MO. 10 YR.**

**VIN: 4DRBUSKP6CB392585**

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Test Vehicle: 2012 IC Corp CE School Bus  
Test Lab: MGA Research Corporation

NHTSA No.: CC0900  
Test Date: 09/30/11



Front Close Up View of Stop Signal Arm

Test Vehicle: 2012 IC Corp CE School Bus  
Test Lab: MGA Research Corporation

NHTSA No.: CC0900  
Test Date: 09/30/11



Back Close Up View of Stop Signal Arm

Test Vehicle: 2012 IC Corp CE School Bus  
Test Lab: MGA Research Corporation

NHTSA No.: CC0900  
Test Date: 09/30/11



Close Up View of System Controls



Test Vehicle: 2012 IC Corp CE School Bus  
Test Lab: MGA Research Corporation

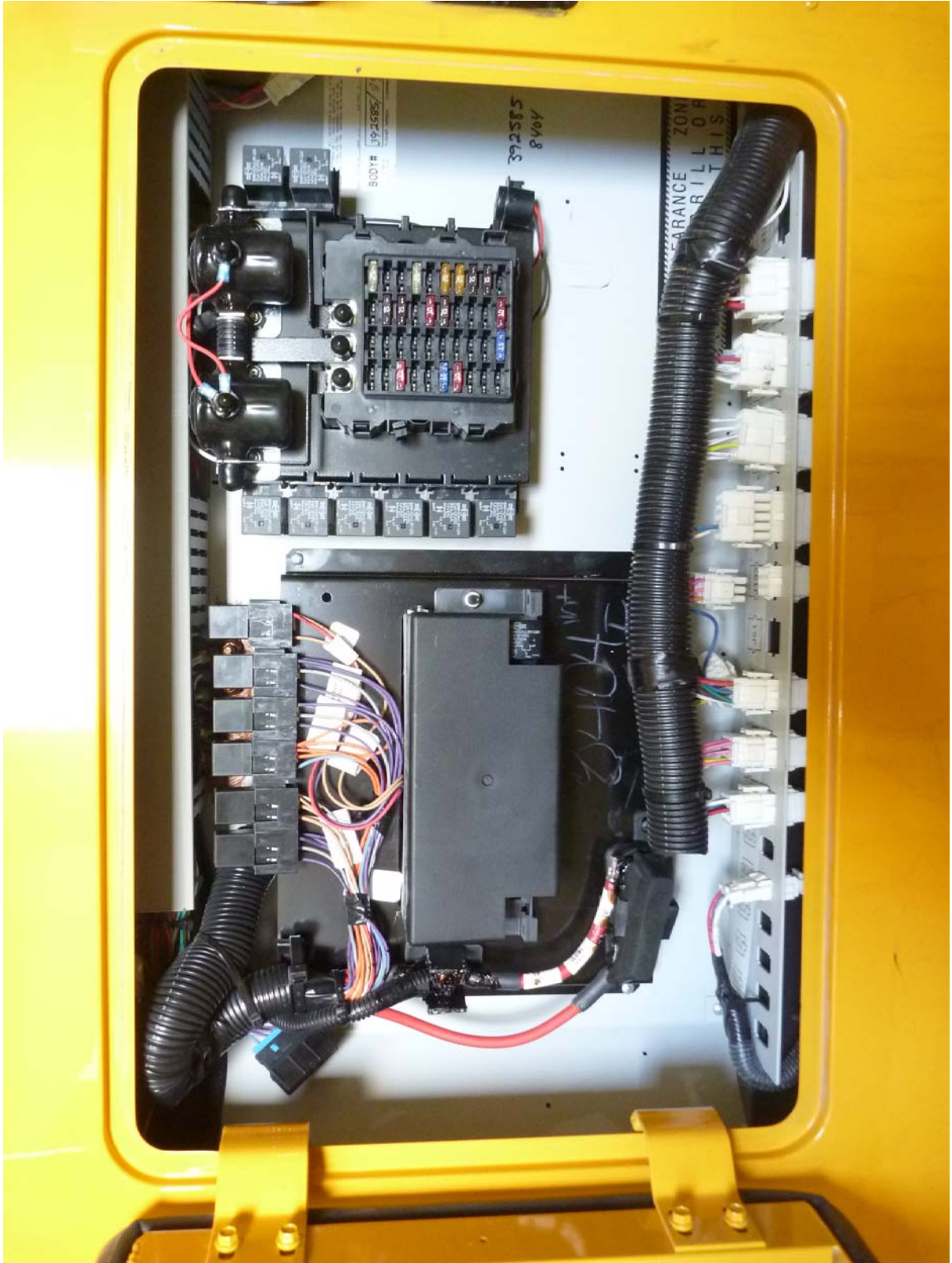
NHTSA No.: CC0900  
Test Date: 09/30/11



Switch Console Relative to the Driver Seating Position

Test Vehicle: 2012 IC Corp CE School Bus  
Test Lab: MGA Research Corporation

NHTSA No.: CC0900  
Test Date: 09/30/11



Integrated Flasher Unit