REPORT NUMBER: 217-MGA-2011-005

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

2012 IC CORP CE SCHOOL BUS
NHTSA NO.: CC0900

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

TEST DATE: OCTOBER 28, 2011

FINAL REPORT DATE: DECEMBER 27, 2011

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
MAIL CODE: NVS-220
1200 NEW JERSEY AVENUE, S.E.
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Prepared by: _____ Date: November 22, 2011
Eric Peschman, Project Engineer

Reviewed by: _____ Date: November 22, 2011
Michael Janovicz, Program Manager

FINAL REPORT ACCEPTED BY:

Edward E. Chan

Digitally signed by Edward E. Chan
DN: cn=Edward E. Chan, o=National Highway Traffic Safety Administration, ou=Office of Vehicle Safety Compliance, email=ed.chan@dot.gov, c=US
Date: 2011.12.27 14:26:52 -05'00'

_____
Date of Acceptance

Technical Report Documentation Page

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4. Title and Subtitle Final Report of FMVSS 217 Compliance Testing of 2012 IC Corp CE School Bus NHTSA No.: CC0900		*5. Report Date* December 27, 2011 *6. Performing Organization Code* MGA	
7. Author(s) Eric Peschman, Project Engineer Michael Janovicz, Program Manager		*8. Performing Organization Report No.* 217-MGA-2011-005	
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105		*10. Work Unit No.* *11. Contract or Grant No.* DTNH22-08-D-00075	
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15. Supplementary Notes			
16. Abstract 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-217-06 for the determination of FMVSS 217 compliance. Data Sheet 5 omitted as test was not performed.			
17. Key Words Compliance Testing Safety Engineering FMVSS 217		*18. Distribution Statement* Copies of this report are available from: NHTSA Technical Information Services (TIS) Mail Code: NPO-411 1200 New Jersey Avenue, S.E. Washington, D.C. 20590 Fax No.: (202) 493-2833 E-mail: tis@dot.gov	
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Form DOT F1700.7 (8-72)

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SECTION 1
PURPOSE OF COMPLIANCE TEST

Tests were conducted 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-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. DTNH22-08-D-00075.

SECTION 2
TEST DATA SUMMARY

Based on the tests performed, the 2012 IC Corp CE School Bus, NHTSA No.: CC0900, appeared to meet the requirements of FMVSS 217. See Data Sheet 1 for Test Summary.

SECTION 3
COMPLIANCE TEST DATA

The following data sheets document the results of testing on the 2012 IC Corp CE School Bus, NHTSA No.: CC0900.

DATA SHEET 1

TEST SUMMARY

GENERAL VEHICLE IDENTIFICATION

Model Year / Mfr. / Make / Model	2012 / IC Corp / CE	
NHTSA No.	CC0900	
GVWR	13,517 kg / 29,800 lb	
Build Date for Bus Chassis	09/10	
VIN	4DRBUSKP6CB392585	
Seating Capacity	1 Driver, 67 Passengers	
Type of Bus	School Bus	
Tire Pressure from tire placard (at capacity)	Front: 758 kPa	Rear: 689 kPa
Odometer Reading	2,336 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**
S5.4 EMERGENCY EXIT OPENING	**PASS**
S5.5 EMERGENCY EXIT LABELING AND IDENTIFICATION	**PASS**
S5.5 TAPE REFLECTIVITY (**49CFR 571.131)**	**Not Tested**

Comments: None

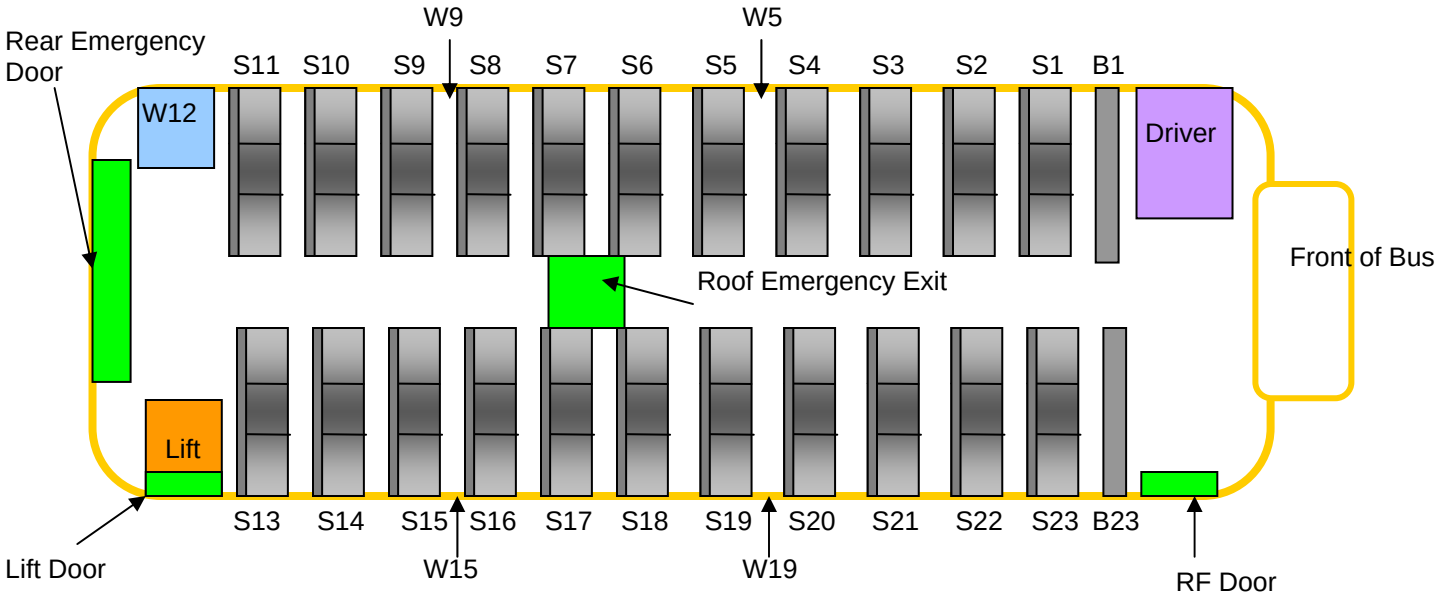
Recorded By: _____

Approved By: _____ Date: 10/28/11

DATA SHEET 2

PROVISION OF EMERGENCY EXITS

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**



		Height (mm)	Width (mm)
1	Rear Emergency Door	1485	910
2	Roof Emergency Exit	570	565
3	Emergency Exit W5	660	585
4	Emergency Exit W9	660	585
5	Emergency Exit W19	660	585
6	Emergency Exit W15	660	585

Seating Capacity: 68 (Including Driver & Passengers)

Requirements	Pass / Fail
Bus meets minimum emergency exit provision, based upon Table 2. Yes – Pass; No – Fail	**PASS**

DATA SHEET 2 (CONTINUED)

PROVISION OF EMERGENCY EXITS

	Requirements	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). Yes – Pass; No – Fail	**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.	**PASS**
5	There is an even number of side emergency exit windows on each side of bus. Yes – Pass; No – Fail	**PASS**
6	The bus is not equipped with both sliding and push-out windows, (except for buses equipped with rear push out emergency exit windows).	**PASS**
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: 10/28/11

DATA SHEET 3

EMERGENCY EXIT DOOR OPERATIONAL REQUIREMENTS

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

	Requirements	Pass / Fail
1	The engine starting system does NOT operate if any Emergency Exit is LOCKED. Yes – Pass; No – Fail	N/A
2	All Emergency Door and Roof Exits can be released by one person (from inside and outside of bus). Yes – Pass; No – Fail	**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. Yes – Pass; No – Fail	**PASS**
4	Emergency exit release mechanism does not use remote controls or central power systems. Yes – Pass; No – Fail	**PASS**

Comments: None

Recorded By: _____

Approved By: _____ Date: 10/28/11

DATA SHEET 4A

EMERGENCY EXIT IDENTIFICATION AND LABELING

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

EMERGENCY EXIT LABELING - INTERIOR

Exit Location	Rear Emergency Door	Roof Emergency Exit	Emergency Exit W5	Emergency Exit W9	Emergency Exit W19	Emergency Exit W15
Exit Description	Door	Roof Hatch	Window	Window	Window	Window
Letter Height (cm)	5.0	5.1	5.0	5.0	5.0	5.0
Background Color	White	White	White	White	White	White
Location Inside	Above Door	On Hatch	Above Window	Above Window	Above Window	Above Window
Pass / Fail	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**

OPERATING INSTRUCTIONS – INTERIOR

Exit Location	Rear Emergency Door	Roof Emergency Exit	Emergency Exit W5	Emergency Exit W9	Emergency Exit W19	Emergency Exit W15
Instructions	To Open Lift Up Red Bar Push Out	Turn Then Push Knob To Open	Pull Handle And Push Out To Open	Pull Handle And Push Out To Open	Pull Handle And Push Out To Open	Pull Handle And Push Out To Open
Letter Height (cm)	1.7	1.2	1.0	1.0	1.0	1.0
Letter Color	Black	Red	Black	Black	Black	Black
Background Color	White	White	Clear	Clear	Clear	Clear
Distance From Release (cm)	7.5	6.0	1.5	1.5	1.5	1.5
Reflective Tape Color	N/A	N/A	N/A	N/A	N/A	N/A
Reflective Tape Width (cm)	N/A	N/A	N/A	N/A	N/A	N/A
Pass / Fail	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**

Comments: None

Recorded By: _____

Approved By: _____ Date: 10/28/11

DATA SHEET 4B

EMERGENCY EXIT IDENTIFICATION AND LABELING

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

EMERGENCY EXIT LABELING - EXTERIOR

Exit Location	Rear Emergency Door	Roof Emergency Exit	Emergency Exit W5	Emergency Exit W9	Emergency Exit W19	Emergency Exit W15
Exit Description	Door	Roof Hatch	Window	Window	Window	Window
Letter Height (cm)	5.0	5.1	5.1	5.1	5.1	5.1
Background Color	Yellow	White	Yellow	Yellow	Yellow	Yellow
Location Outside	Above Door	On Hatch	Above Window	Above Window	Above Window	Above Window
Pass / Fail	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**

OPERATING INSTRUCTIONS - EXTERIOR

Exit Location	Rear Emergency Door	Roof Emergency Exit	Emergency Exit W5	Emergency Exit W9	Emergency Exit W19	Emergency Exit W15
Instructions	None	Turn Then Pull Knob To Open	None	None	None	None
Letter Height (cm)	N/A	1.1	N/A	N/A	N/A	N/A
Letter Color	N/A	Black	N/A	N/A	N/A	N/A
Background Color	N/A	White	N/A	N/A	N/A	N/A
Distance From Release (cm)	N/A	15	N/A	N/A	N/A	N/A
Reflective Tape Color	Yellow	Silver	Yellow	Yellow	Yellow	Yellow
Reflective Tape Width (cm)	2.5	2.5	2.5	2.5	2.5	2.5
Pass / Fail	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**

Comments: None

Recorded By: 

Approved By:  Date: 10/28/11

DATA SHEET 4

EMERGENCY EXIT IDENTIFICATION AND LABELING

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

	Requirements	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. Yes – Pass; No – Fail	**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. Yes – Pass; No – Fail	**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.	**PASS**
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.	**PASS**
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. Yes – Pass; No – Fail	**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. Yes – Pass; No – Fail	**PASS**

Comments: Roof tape is silver, is acceptable and considered a "Pass" per COTR.

Recorded By: _____

Approved By: _____ Date: 10/28/11

DATA SHEET 6A

FORCE TESTS TO UNLATCH THE EMERGENCY EXITS - INTERIOR

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

Exit Location	Exit Description	High / Low Force Area	Maximum Force Requirement (N)	Actual Force Measured (N)		Motion(s) Required to Release Exit	Actual Motion(s) to Release Exit	Pass / Fail
Rear Emergency Door	Door	High	178	1.	37.8	Lift Red Bar Then Push Out	Lift Red Bar And Push Out	**PASS**
				2.	35.6			
				3.	35.6			
				Average	36.3			
Roof Emergency Exit	Roof Hatch	High	178	1.	48.9	Turn Then Push Knob	Turn Knob Then Push Knob	**PASS**
				2.	44.5			
				3.	40.0			
				Average	44.5			
Emergency Exit W5	Window	High	178	1.	35.6	Pull Handle And Push Out	Pull Handle And Push Out	**PASS**
				2.	35.6			
				3.	35.6			
				Average	35.6			
Emergency Exit W9	Window	High	178	1.	35.6	Pull Handle And Push Out	Pull Handle And Push Out	**PASS**
				2.	40.0			
				3.	37.8			
				Average	37.8			
Emergency Exit W19	Window	High	178	1.	40.0	Pull Handle And Push Out	Pull Handle And Push Out	**PASS**
				2.	40.0			
				3.	40.0			
				Average	40.0			
Emergency Exit W15	Window	High	178	1.	40.0	Pull Handle And Push Out	Pull Handle And Push Out	**PASS**
				2.	37.8			
				3.	40.0			
				Average	39.3			

Comments: None

Recorded By: 

Approved By:  Date: 10/28/11

DATA SHEET 6B

FORCE TESTS TO UNLATCH THE EMERGENCY EXITS – EXTERIOR

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

Exit Location	Exit Description	High / Low Force Area	Maximum Force Requirement (N)	Actual Force Measured (N)		Motion(s) Required to Release Exit	Actual Motion(s) to Release Exit	Pass / Fail
Rear Emergency Door	Door	High	178	1.	53.4	Rotate Handle	Rotate Handle	**PASS**
				2.	62.3			
				3.	62.3			
				Average	59.3			
Roof Emergency Exit	Roof Hatch	High	178	1.	71.2	Turn Knob	Turn Knob	**PASS**
				2.	71.2			
				3.	68.9			
				Average	70.4			

Comments: None

Recorded By: 

Approved By:  Date: 10/28/11

DATA SHEET 7A

FORCE TESTS TO OPEN THE EMERGENCY EXITS – INTERIOR

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

Exit Location	Exit Description	High / Low Force Area	Maximum Force Requirement (N)	Actual Force Measured (N)		Motion(s) Required to Release Exit	Actual Motion(s) to Release Exit	Passage of Ellipsoid or Parallelepiped	Pass / Fail
Rear Emergency Door	Door	High	178	1.	4.4	Push Out	Push Out	114x61x30 Parallelepiped	**PASS**
				2.	4.4				
				3.	4.4				
				Average	4.4				
Roof Emergency Exit	Roof Hatch	High	178	1.	80.1	Turn Then Push Knob	Turn Knob Then Push Knob	Ellipsoid	**PASS**
				2.	89.0				
				3.	86.7				
				Average	85.3				
Emergency Exit W5	Window	High	178	1.	4.4	Pull Handle Then Push Out	Pull Handle Then Push Out	Ellipsoid	**PASS**
				2.	4.4				
				3.	4.4				
				Average	4.4				
Emergency Exit W9	Window	High	178	1.	4.4	Pull Handle Then Push Out	Pull Handle Then Push Out	Ellipsoid	**PASS**
				2.	4.4				
				3.	4.4				
				Average	4.4				
Emergency Exit W19	Window	High	178	1.	4.4	Pull Handle Then Push Out	Pull Handle Then Push Out	Ellipsoid	**PASS**
				2.	4.4				
				3.	4.4				
				Average	4.4				
Emergency Exit W15	Window	High	178	1.	4.4	Pull Handle Then Push Out	Pull Handle Then Push Out	Ellipsoid	**PASS**
				2.	4.4				
				3.	4.4				
				Average	4.4				

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: 10/28/11

DATA SHEET 7B

FORCE TESTS TO OPEN THE EMERGENCY EXITS – EXTERIOR

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

Exit Location	Exit Description	High / Low Force Area	Maximum Force Requirement (N)	Actual Force Measured (N)		Motion(s) Required to Release Exit	Actual Motion(s) to Release Exit	Passage of Ellipsoid or Parallelepiped	Pass / Fail
Rear Emergency Door	Door	High	178	1.	4.4	Pull Handle	Pull Handle	114x61x30 Parallelepiped	**PASS**
				2.	4.4				
				3.	4.4				
				Average	4.4				
Roof Emergency Exit	Roof Hatch	High	178	1.	97.9	Pull Knob	Pull Knob	Ellipsoid	**PASS**
				2.	102.3				
				3.	102.3				
				Average	100.8				

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: 10/28/11

DATA SHEET 8

EMERGENCY EXIT EXTENSION

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

	Requirements	Pass / Fail
1	Exit(s) can be extended by a single person. Yes – Pass; No – Fail	**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	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
5	There is no seat or barrier which extend past the side door opening	**PASS**
6	There is no obstruction of door latch mechanism for the rear emergency door. Yes – Pass; No – Fail	**PASS**

Comments: None

Recorded By: 

Approved By:  Date: 10/28/11

DATA SHEET 9

WINDOW RETENTION TEST

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

1	Test Window Identification:	Emergency Exit W5 Lower Pane (Driver Side)		
2	Provide a detailed description of the window such as fixed, push out, single or double glazed, horizontal or vertical sliding, etc.	Single Glaze, Vertical Sliding		
3	Provide the horizontal and vertical glazing dimensions for each panel.	Horizontal: 305 mm Vertical: 541 mm		
4	Did the window pass the retention requirements? Describe how the window structure and glazing withstood the force per the force per the PASS / FAIL criteria: Yes – Pass; No – Fail	Glazing Cracked at 44 mm Displacement 60 sec – 2829 N **PASS**		
5	Did the window pass the force tests to unlatch and open the exit after the completion of the retention test? Yes – Pass; No – Fail	Unlatch Force Measured (N)	Open Force Measured (N)	Pass / Fail
		1. 26.7	1. 4.4	**PASS**
		2. 28.9	2. 4.4	**PASS**
		3. 26.7	3. 4.4	**PASS**

Comments: Maximum calculated displacement is 44.0 mm (1.73 in).

Recorded By: 

Approved By:  Date: 10/28/11

DATA SHEET 9

WINDOW RETENTION TEST

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

1	Test Window Identification:	Emergency Exit W19 Upper Pane (Passenger Side)		
2	Provide a detailed description of the window such as fixed, push out, single or double glazed, horizontal or vertical sliding, etc.	Single Glaze, Vertical Sliding		
3	Provide the horizontal and vertical glazing dimensions for each panel.	Horizontal: 541 mm Vertical: 280 mm		
4	Did the window pass the retention requirements? Describe how the window structure and glazing withstood the force per the force per the PASS / FAIL criteria: Yes – Pass; No – Fail	Glazing Cracked at 41 sec – 1513 N **PASS**		
5	Did the window pass the force tests to unlatch and open the exit after the completion of the retention test? Yes – Pass; No – Fail	Unlatch Force Measured (N)	Open Force Measured (N)	Pass / Fail
		1. 42.3	1. 4.4	**PASS**
		2. 35.6	2. 4.4	**PASS**
		3. 40.0	3. 4.4	**PASS**

Comments: Maximum calculated displacement is 42.2 mm (1.66 in).

Recorded By: 

Approved By:  Date: 10/28/11

DATA SHEET 9

WINDOW RETENTION TEST

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

1	Test Window Identification:	Rear Emergency Door Upper Pane		
2	Provide a detailed description of the window such as fixed, push out, single or double glazed, horizontal or vertical sliding, etc.	Single Glaze, Fixed		
3	Provide the horizontal and vertical glazing dimensions for each panel.	Horizontal: 580 mm Vertical: 720 mm		
4	Did the window pass the retention requirements? Describe how the window structure and glazing withstood the force per the force per the PASS / FAIL criteria: Yes – Pass; No – Fail	Glazing Cracked at 49 sec – 2165N **PASS**		
5	Did the window pass the force tests to unlatch and open the exit after the completion of the retention test? Yes – Pass; No – Fail	Unlatch Force Measured (N)	Open Force Measured (N)	Pass / Fail
		1. 35.6	1. 28.9	**PASS**
		2. 35.6	2. 26.7	**PASS**
		3. 35.6	3. 26.7	**PASS**

Comments: Maximum calculated displacement is 60.7 mm (2.38 in).

Recorded By: _____

Approved By: _____ Date: 10/28/11

SECTION 4

INSTRUMENTATION AND EQUIPMENT LIST

Equipment	Description	Model / Serial No.	Cal. Date	Next Cal. Date
Head Form	MGA	217	When Used	When Used
Sphere	MGA	Sphere – 1A	When Used	When Used
Load Cell	Interface	1010AF-5K-B / 258576	10/07/11	04/07/12
String Pot.	Ametek	P-25A / 1102-19183	09/02/11	03/02/12
Inclinometer	Digital Protractor	Pro 360 / 006	When Used	When Used
Digital Calipers	Mitutoyo	CD 6”CSX / 07416506	12/28/10	12/28/11
Steel Tape	Stanley	Powerlock / 604	08/04/11	02/04/12
Ellipsoid	MGA	ELLIP – 1A	When Used	When Used
Parallelepiped	MGA	PARA – 1A	When Used	When Used
Force Gauge	Wagner	FDK-60 / 18109	09/08/11	03/08/12

SECTION 5
PHOTOGRAPHS

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SECTION 6
TEST PLOTS

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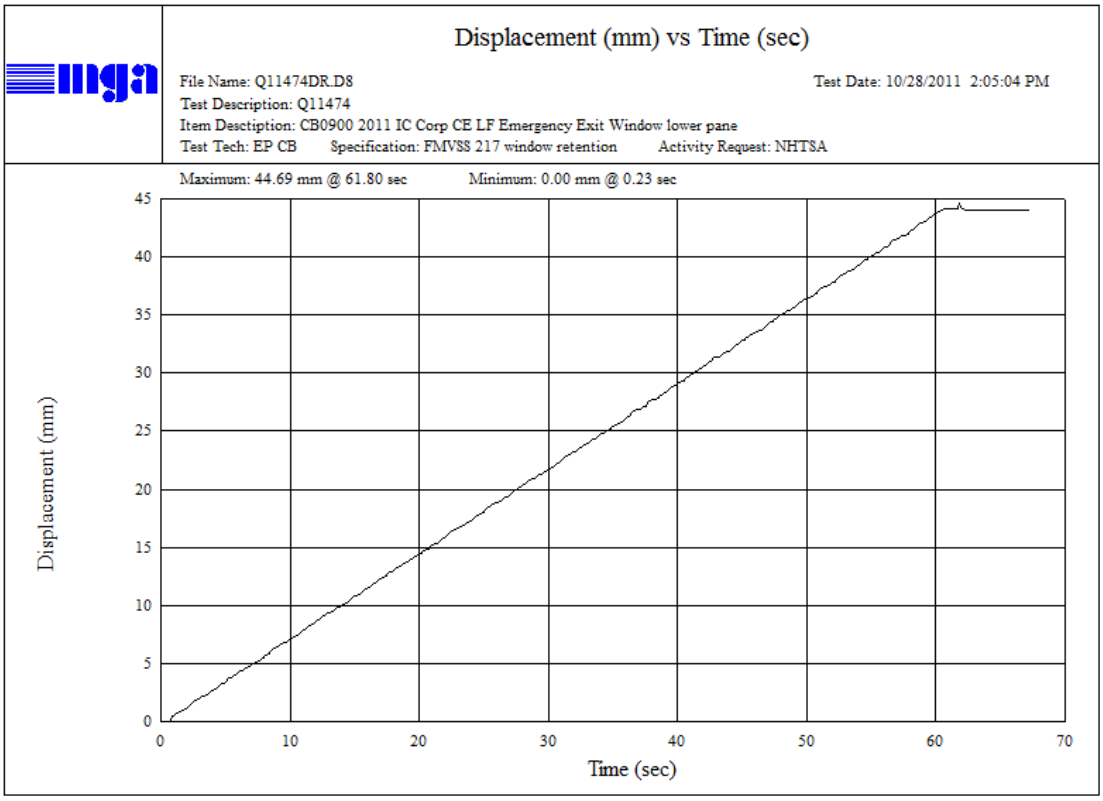
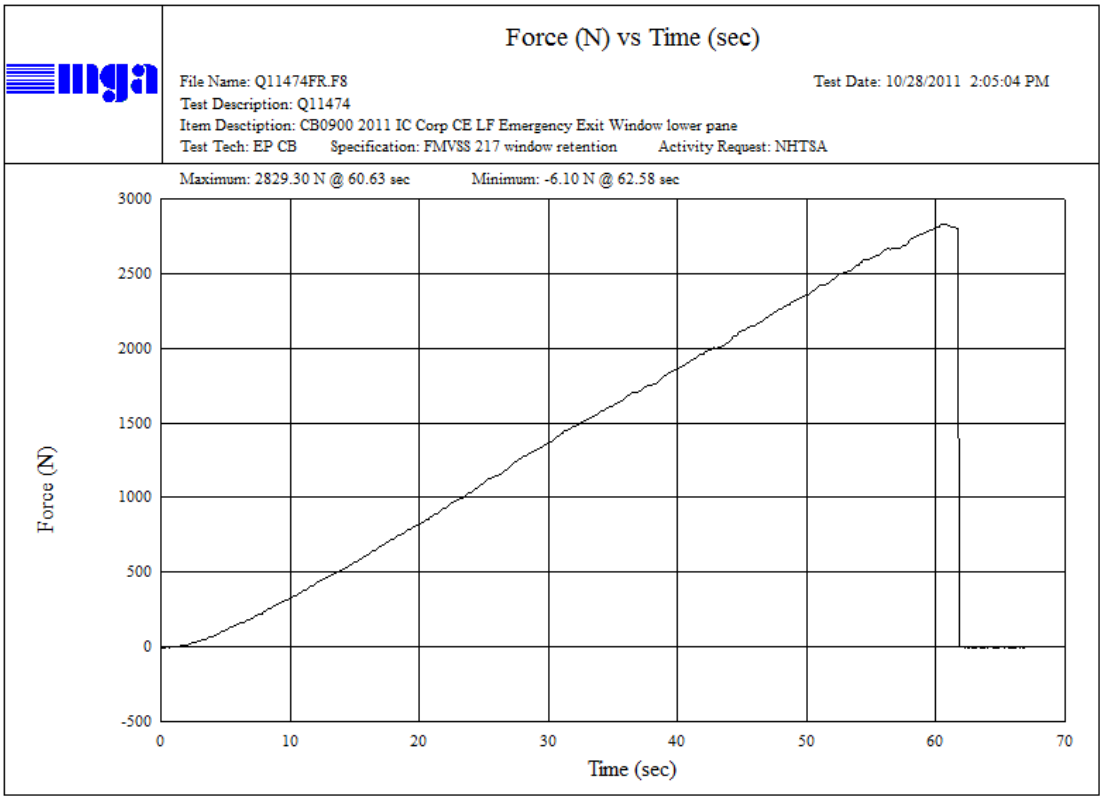
SECTION 6

TEST PLOTS



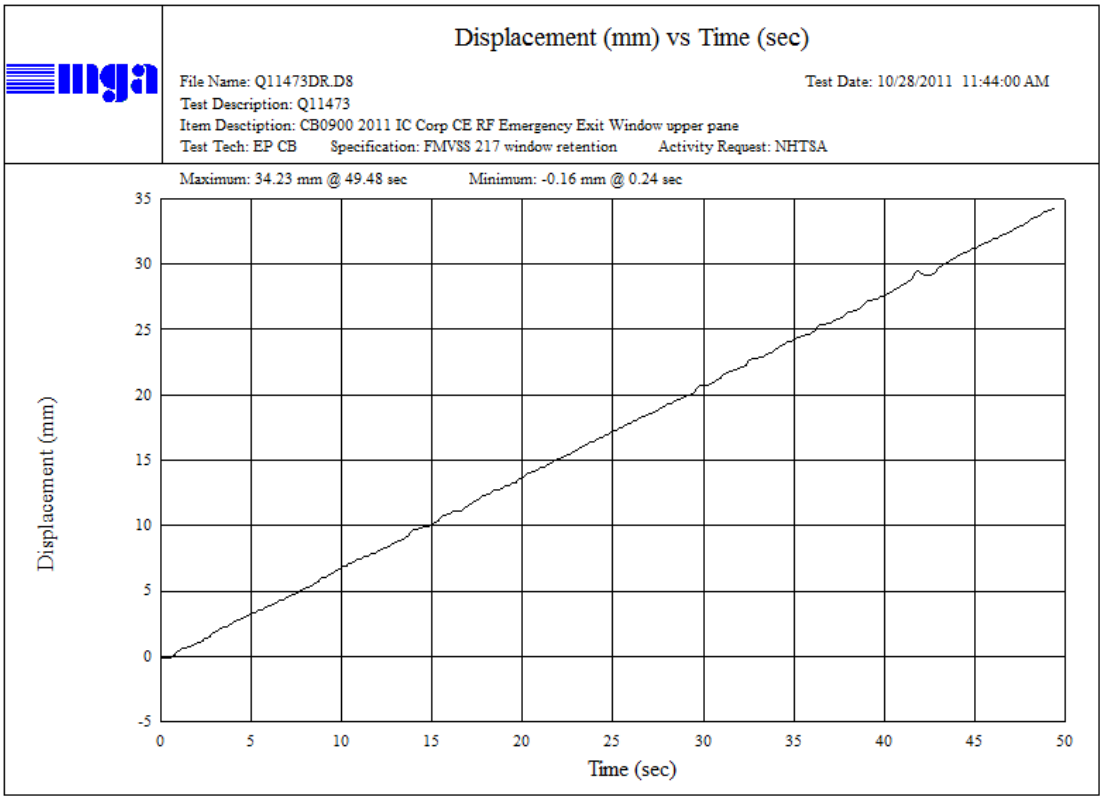
W5 Emergency Exit Window (Driver Side) Lower Pane Displacement vs. Time



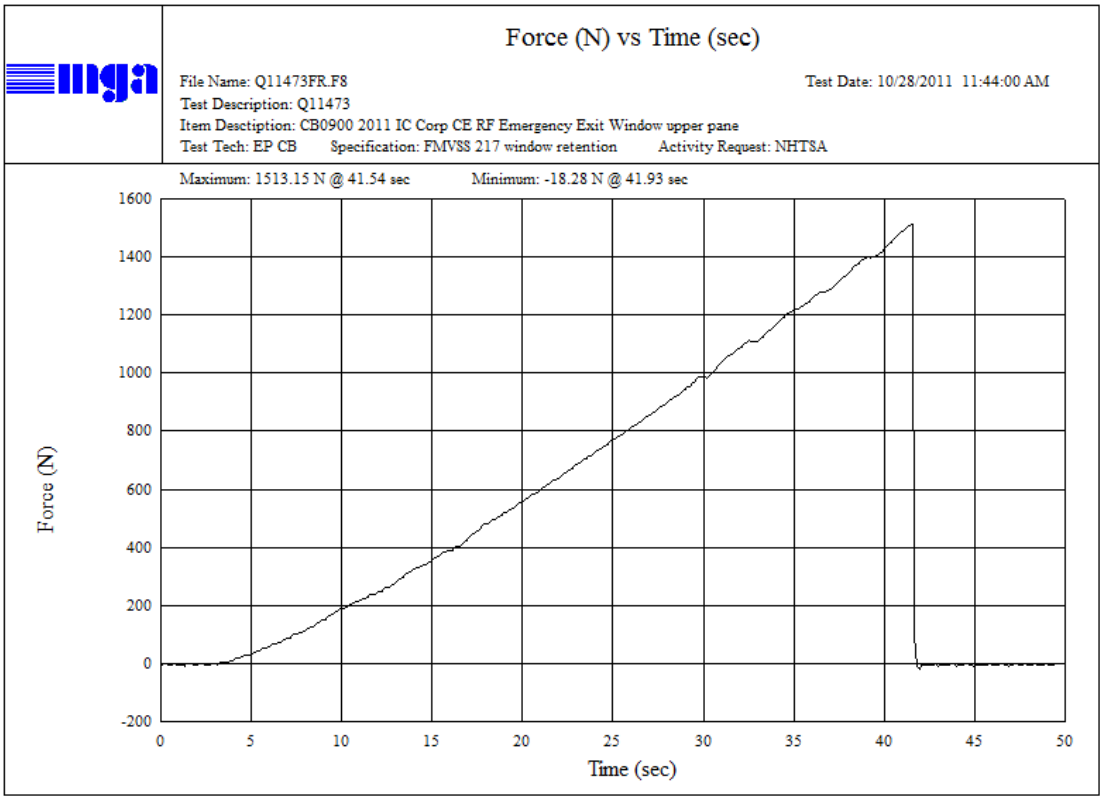
W5 Emergency Exit Window (Driver Side) Lower Pane Force vs. Time

SECTION 6

TEST PLOTS



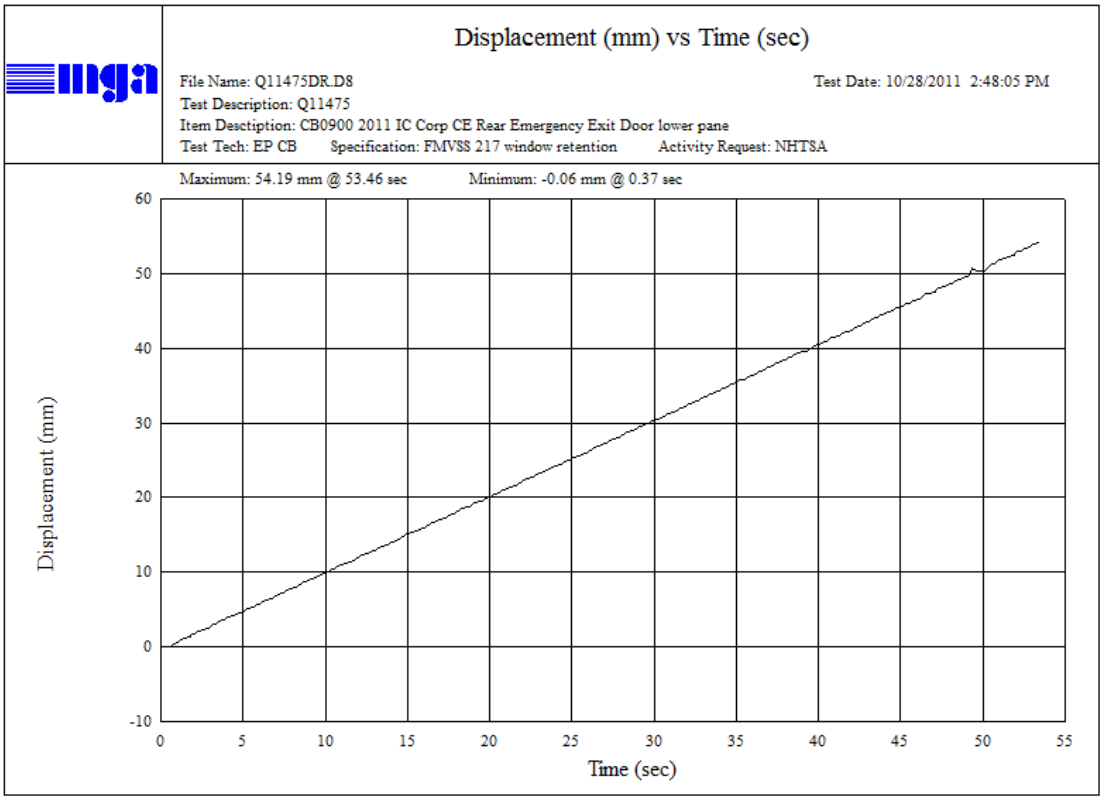
W19 Emergency Exit Window (Passenger Side) Upper Pane Displacement vs. Time



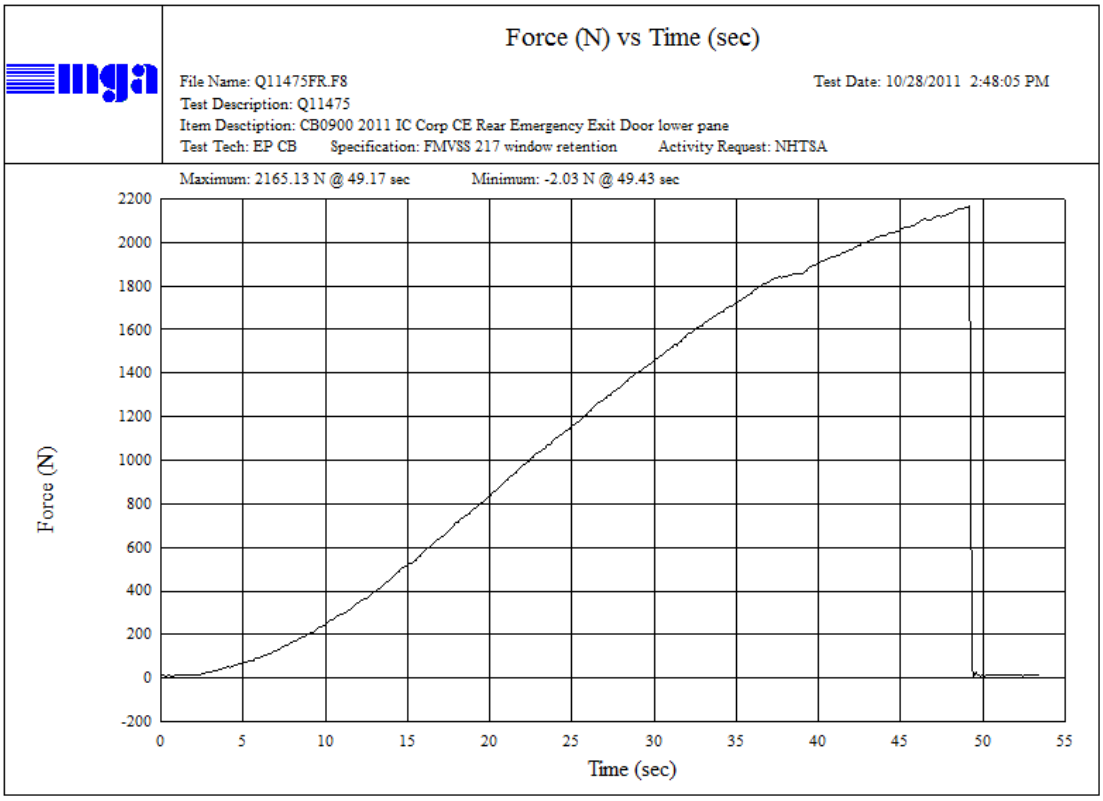
W19 Emergency Exit Window (Passenger Side) Upper Pane Force vs. Time

SECTION 6

TEST PLOTS



Rear Emergency Door Upper Window Displacement vs. Time



Rear Emergency Door Upper Window Force vs. Time

TABLE OF CONTENTS

SECTION 1
PURPOSE OF COMPLIANCE TEST

Tests were conducted 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-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. DTNH22-08-D-00075.

SECTION 2
TEST DATA SUMMARY

Based on the tests performed, the 2012 IC Corp CE School Bus, NHTSA No.: CC0900, appeared to meet the requirements of FMVSS 217. See Data Sheet 1 for Test Summary.

SECTION 3
COMPLIANCE TEST DATA

The following data sheets document the results of testing on the 2012 IC Corp CE School Bus, NHTSA No.: CC0900.

DATA SHEET 1

TEST SUMMARY

GENERAL VEHICLE IDENTIFICATION

Model Year / Mfr. / Make / Model	2012 / IC Corp / CE	
NHTSA No.	CC0900	
GVWR	13,517 kg / 29,800 lb	
Build Date for Bus Chassis	09/10	
VIN	4DRBUSKP6CB392585	
Seating Capacity	1 Driver, 67 Passengers	
Type of Bus	School Bus	
Tire Pressure from tire placard (at capacity)	Front: 758 kPa	Rear: 689 kPa
Odometer Reading	2,336 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**
S5.4 EMERGENCY EXIT OPENING	**PASS**
S5.5 EMERGENCY EXIT LABELING AND IDENTIFICATION	**PASS**
S5.5 TAPE REFLECTIVITY (**49CFR 571.131)**	**Not Tested**

Comments: None

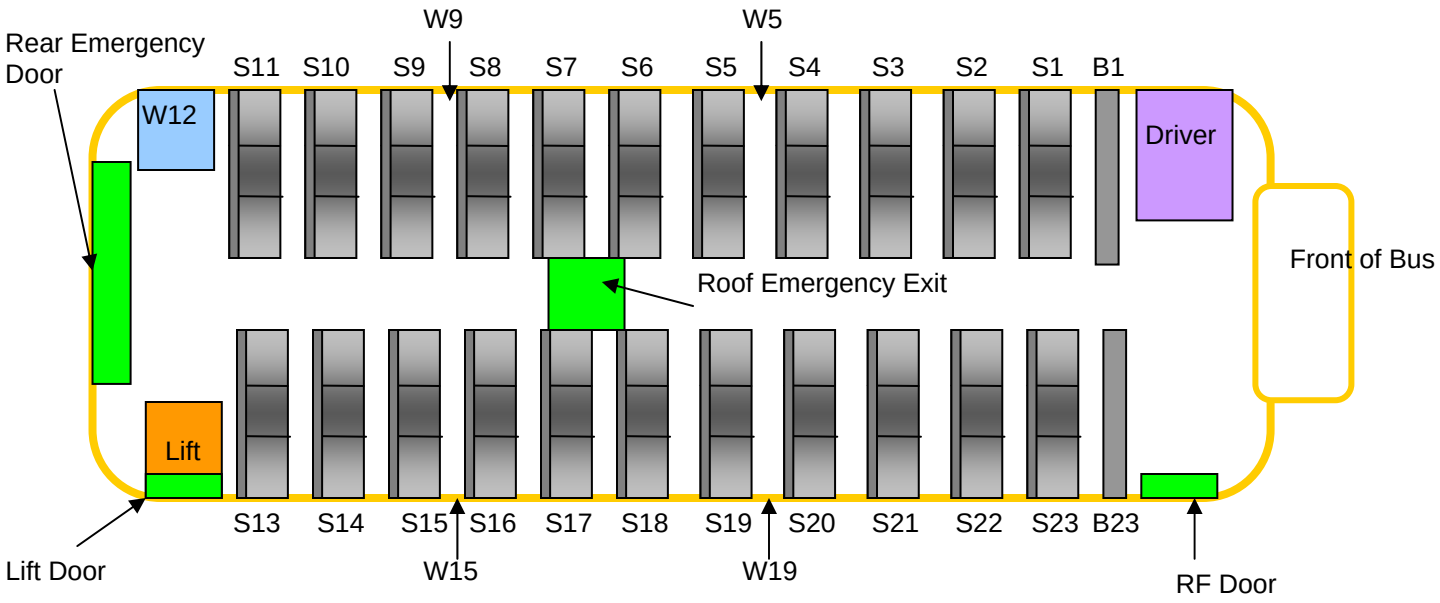
Recorded By: _____

Approved By: _____ Date: 10/28/11

DATA SHEET 2

PROVISION OF EMERGENCY EXITS

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**



		Height (mm)	Width (mm)
1	Rear Emergency Door	1485	910
2	Roof Emergency Exit	570	565
3	Emergency Exit W5	660	585
4	Emergency Exit W9	660	585
5	Emergency Exit W19	660	585
6	Emergency Exit W15	660	585

Seating Capacity: 68 (Including Driver & Passengers)

Requirements	Pass / Fail
Bus meets minimum emergency exit provision, based upon Table 2. Yes – Pass; No – Fail	**PASS**

DATA SHEET 2 (CONTINUED)

PROVISION OF EMERGENCY EXITS

	Requirements	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). Yes – Pass; No – Fail	**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.	**PASS**
5	There is an even number of side emergency exit windows on each side of bus. Yes – Pass; No – Fail	**PASS**
6	The bus is not equipped with both sliding and push-out windows, (except for buses equipped with rear push out emergency exit windows).	**PASS**
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: 10/28/11

DATA SHEET 3

EMERGENCY EXIT DOOR OPERATIONAL REQUIREMENTS

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

	Requirements	Pass / Fail
1	The engine starting system does NOT operate if any Emergency Exit is LOCKED. Yes – Pass; No – Fail	N/A
2	All Emergency Door and Roof Exits can be released by one person (from inside and outside of bus). Yes – Pass; No – Fail	**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. Yes – Pass; No – Fail	**PASS**
4	Emergency exit release mechanism does not use remote controls or central power systems. Yes – Pass; No – Fail	**PASS**

Comments: None

Recorded By: _____

Approved By: _____ Date: 10/28/11

DATA SHEET 4A

EMERGENCY EXIT IDENTIFICATION AND LABELING

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

EMERGENCY EXIT LABELING - INTERIOR

Exit Location	Rear Emergency Door	Roof Emergency Exit	Emergency Exit W5	Emergency Exit W9	Emergency Exit W19	Emergency Exit W15
Exit Description	Door	Roof Hatch	Window	Window	Window	Window
Letter Height (cm)	5.0	5.1	5.0	5.0	5.0	5.0
Background Color	White	White	White	White	White	White
Location Inside	Above Door	On Hatch	Above Window	Above Window	Above Window	Above Window
Pass / Fail	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**

OPERATING INSTRUCTIONS – INTERIOR

Exit Location	Rear Emergency Door	Roof Emergency Exit	Emergency Exit W5	Emergency Exit W9	Emergency Exit W19	Emergency Exit W15
Instructions	To Open Lift Up Red Bar Push Out	Turn Then Push Knob To Open	Pull Handle And Push Out To Open	Pull Handle And Push Out To Open	Pull Handle And Push Out To Open	Pull Handle And Push Out To Open
Letter Height (cm)	1.7	1.2	1.0	1.0	1.0	1.0
Letter Color	Black	Red	Black	Black	Black	Black
Background Color	White	White	Clear	Clear	Clear	Clear
Distance From Release (cm)	7.5	6.0	1.5	1.5	1.5	1.5
Reflective Tape Color	N/A	N/A	N/A	N/A	N/A	N/A
Reflective Tape Width (cm)	N/A	N/A	N/A	N/A	N/A	N/A
Pass / Fail	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**

Comments: None

Recorded By: _____

Approved By: _____ Date: 10/28/11

DATA SHEET 4B

EMERGENCY EXIT IDENTIFICATION AND LABELING

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

EMERGENCY EXIT LABELING - EXTERIOR

Exit Location	Rear Emergency Door	Roof Emergency Exit	Emergency Exit W5	Emergency Exit W9	Emergency Exit W19	Emergency Exit W15
Exit Description	Door	Roof Hatch	Window	Window	Window	Window
Letter Height (cm)	5.0	5.1	5.1	5.1	5.1	5.1
Background Color	Yellow	White	Yellow	Yellow	Yellow	Yellow
Location Outside	Above Door	On Hatch	Above Window	Above Window	Above Window	Above Window
Pass / Fail	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**

OPERATING INSTRUCTIONS - EXTERIOR

Exit Location	Rear Emergency Door	Roof Emergency Exit	Emergency Exit W5	Emergency Exit W9	Emergency Exit W19	Emergency Exit W15
Instructions	None	Turn Then Pull Knob To Open	None	None	None	None
Letter Height (cm)	N/A	1.1	N/A	N/A	N/A	N/A
Letter Color	N/A	Black	N/A	N/A	N/A	N/A
Background Color	N/A	White	N/A	N/A	N/A	N/A
Distance From Release (cm)	N/A	15	N/A	N/A	N/A	N/A
Reflective Tape Color	Yellow	Silver	Yellow	Yellow	Yellow	Yellow
Reflective Tape Width (cm)	2.5	2.5	2.5	2.5	2.5	2.5
Pass / Fail	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**

Comments: None

Recorded By: 

Approved By:  Date: 10/28/11

DATA SHEET 4

EMERGENCY EXIT IDENTIFICATION AND LABELING

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

	Requirements	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. Yes – Pass; No – Fail	**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. Yes – Pass; No – Fail	**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.	**PASS**
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.	**PASS**
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. Yes – Pass; No – Fail	**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. Yes – Pass; No – Fail	**PASS**

Comments: Roof tape is silver, is acceptable and considered a "Pass" per COTR.

Recorded By: 

Approved By:  Date: 10/28/11

DATA SHEET 6A

FORCE TESTS TO UNLATCH THE EMERGENCY EXITS - INTERIOR

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

Exit Location	Exit Description	High / Low Force Area	Maximum Force Requirement (N)	Actual Force Measured (N)		Motion(s) Required to Release Exit	Actual Motion(s) to Release Exit	Pass / Fail
Rear Emergency Door	Door	High	178	1.	37.8	Lift Red Bar Then Push Out	Lift Red Bar And Push Out	**PASS**
				2.	35.6			
				3.	35.6			
				Average	36.3			
Roof Emergency Exit	Roof Hatch	High	178	1.	48.9	Turn Then Push Knob	Turn Knob Then Push Knob	**PASS**
				2.	44.5			
				3.	40.0			
				Average	44.5			
Emergency Exit W5	Window	High	178	1.	35.6	Pull Handle And Push Out	Pull Handle And Push Out	**PASS**
				2.	35.6			
				3.	35.6			
				Average	35.6			
Emergency Exit W9	Window	High	178	1.	35.6	Pull Handle And Push Out	Pull Handle And Push Out	**PASS**
				2.	40.0			
				3.	37.8			
				Average	37.8			
Emergency Exit W19	Window	High	178	1.	40.0	Pull Handle And Push Out	Pull Handle And Push Out	**PASS**
				2.	40.0			
				3.	40.0			
				Average	40.0			
Emergency Exit W15	Window	High	178	1.	40.0	Pull Handle And Push Out	Pull Handle And Push Out	**PASS**
				2.	37.8			
				3.	40.0			
				Average	39.3			

Comments: None

Recorded By: 

Approved By:  Date: 10/28/11

DATA SHEET 6B

FORCE TESTS TO UNLATCH THE EMERGENCY EXITS – EXTERIOR

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

Exit Location	Exit Description	High / Low Force Area	Maximum Force Requirement (N)	Actual Force Measured (N)		Motion(s) Required to Release Exit	Actual Motion(s) to Release Exit	Pass / Fail
Rear Emergency Door	Door	High	178	1.	53.4	Rotate Handle	Rotate Handle	**PASS**
				2.	62.3			
				3.	62.3			
				Average	59.3			
Roof Emergency Exit	Roof Hatch	High	178	1.	71.2	Turn Knob	Turn Knob	**PASS**
				2.	71.2			
				3.	68.9			
				Average	70.4			

Comments: None

Recorded By: 

Approved By:  Date: 10/28/11

DATA SHEET 7A

FORCE TESTS TO OPEN THE EMERGENCY EXITS – INTERIOR

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

Exit Location	Exit Description	High / Low Force Area	Maximum Force Requirement (N)	Actual Force Measured (N)		Motion(s) Required to Release Exit	Actual Motion(s) to Release Exit	Passage of Ellipsoid or Parallelepiped	Pass / Fail
Rear Emergency Door	Door	High	178	1.	4.4	Push Out	Push Out	114x61x30 Parallelepiped	**PASS**
				2.	4.4				
				3.	4.4				
				Average	4.4				
Roof Emergency Exit	Roof Hatch	High	178	1.	80.1	Turn Then Push Knob	Turn Knob Then Push Knob	Ellipsoid	**PASS**
				2.	89.0				
				3.	86.7				
				Average	85.3				
Emergency Exit W5	Window	High	178	1.	4.4	Pull Handle Then Push Out	Pull Handle Then Push Out	Ellipsoid	**PASS**
				2.	4.4				
				3.	4.4				
				Average	4.4				
Emergency Exit W9	Window	High	178	1.	4.4	Pull Handle Then Push Out	Pull Handle Then Push Out	Ellipsoid	**PASS**
				2.	4.4				
				3.	4.4				
				Average	4.4				
Emergency Exit W19	Window	High	178	1.	4.4	Pull Handle Then Push Out	Pull Handle Then Push Out	Ellipsoid	**PASS**
				2.	4.4				
				3.	4.4				
				Average	4.4				
Emergency Exit W15	Window	High	178	1.	4.4	Pull Handle Then Push Out	Pull Handle Then Push Out	Ellipsoid	**PASS**
				2.	4.4				
				3.	4.4				
				Average	4.4				

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: 10/28/11

DATA SHEET 7B

FORCE TESTS TO OPEN THE EMERGENCY EXITS – EXTERIOR

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

Exit Location	Exit Description	High / Low Force Area	Maximum Force Requirement (N)	Actual Force Measured (N)		Motion(s) Required to Release Exit	Actual Motion(s) to Release Exit	Passage of Ellipsoid or Parallelepiped	Pass / Fail
Rear Emergency Door	Door	High	178	1.	4.4	Pull Handle	Pull Handle	114x61x30 Parallelepiped	**PASS**
				2.	4.4				
				3.	4.4				
				Average	4.4				
Roof Emergency Exit	Roof Hatch	High	178	1.	97.9	Pull Knob	Pull Knob	Ellipsoid	**PASS**
				2.	102.3				
				3.	102.3				
				Average	100.8				

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: 10/28/11

DATA SHEET 8

EMERGENCY EXIT EXTENSION

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

	Requirements	Pass / Fail
1	Exit(s) can be extended by a single person. Yes – Pass; No – Fail	**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	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
5	There is no seat or barrier which extend past the side door opening	**PASS**
6	There is no obstruction of door latch mechanism for the rear emergency door. Yes – Pass; No – Fail	**PASS**

Comments: None

Recorded By: 

Approved By:  Date: 10/28/11

DATA SHEET 9

WINDOW RETENTION TEST

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

1	Test Window Identification:	Emergency Exit W5 Lower Pane (Driver Side)		
2	Provide a detailed description of the window such as fixed, push out, single or double glazed, horizontal or vertical sliding, etc.	Single Glaze, Vertical Sliding		
3	Provide the horizontal and vertical glazing dimensions for each panel.	Horizontal: 305 mm Vertical: 541 mm		
4	Did the window pass the retention requirements? Describe how the window structure and glazing withstood the force per the force per the PASS / FAIL criteria: Yes – Pass; No – Fail	Glazing Cracked at 44 mm Displacement 60 sec – 2829 N **PASS**		
5	Did the window pass the force tests to unlatch and open the exit after the completion of the retention test? Yes – Pass; No – Fail	Unlatch Force Measured (N)	Open Force Measured (N)	Pass / Fail
		1. 26.7	1. 4.4	**PASS**
		2. 28.9	2. 4.4	**PASS**
		3. 26.7	3. 4.4	**PASS**

Comments: Maximum calculated displacement is 44.0 mm (1.73 in).

Recorded By: _____

Approved By: _____ Date: 10/28/11

DATA SHEET 9

WINDOW RETENTION TEST

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

1	Test Window Identification:	Emergency Exit W19 Upper Pane (Passenger Side)		
2	Provide a detailed description of the window such as fixed, push out, single or double glazed, horizontal or vertical sliding, etc.	Single Glaze, Vertical Sliding		
3	Provide the horizontal and vertical glazing dimensions for each panel.	Horizontal: 541 mm Vertical: 280 mm		
4	Did the window pass the retention requirements? Describe how the window structure and glazing withstood the force per the force per the PASS / FAIL criteria: Yes – Pass; No – Fail	Glazing Cracked at 41 sec – 1513 N **PASS**		
5	Did the window pass the force tests to unlatch and open the exit after the completion of the retention test? Yes – Pass; No – Fail	Unlatch Force Measured (N)	Open Force Measured (N)	Pass / Fail
		1. 42.3	1. 4.4	**PASS**
		2. 35.6	2. 4.4	**PASS**
		3. 40.0	3. 4.4	**PASS**

Comments: Maximum calculated displacement is 42.2 mm (1.66 in).

Recorded By: _____

Approved By: _____ Date: 10/28/11

DATA SHEET 9

WINDOW RETENTION TEST

Test Vehicle: **2012 IC Corp CE School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

1	Test Window Identification:	Rear Emergency Door Upper Pane		
2	Provide a detailed description of the window such as fixed, push out, single or double glazed, horizontal or vertical sliding, etc.	Single Glaze, Fixed		
3	Provide the horizontal and vertical glazing dimensions for each panel.	Horizontal: 580 mm Vertical: 720 mm		
4	Did the window pass the retention requirements? Describe how the window structure and glazing withstood the force per the force per the PASS / FAIL criteria: Yes – Pass; No – Fail	Glazing Cracked at 49 sec – 2165N **PASS**		
5	Did the window pass the force tests to unlatch and open the exit after the completion of the retention test? Yes – Pass; No – Fail	Unlatch Force Measured (N)	Open Force Measured (N)	Pass / Fail
		1. 35.6	1. 28.9	**PASS**
		2. 35.6	2. 26.7	**PASS**
		3. 35.6	3. 26.7	**PASS**

Comments: Maximum calculated displacement is 60.7 mm (2.38 in).

Recorded By: _____

Approved By: _____ Date: 10/28/11

SECTION 4

INSTRUMENTATION AND EQUIPMENT LIST

Equipment	Description	Model / Serial No.	Cal. Date	Next Cal. Date
Head Form	MGA	217	When Used	When Used
Sphere	MGA	Sphere – 1A	When Used	When Used
Load Cell	Interface	1010AF-5K-B / 258576	10/07/11	04/07/12
String Pot.	Ametek	P-25A / 1102-19183	09/02/11	03/02/12
Inclinometer	Digital Protractor	Pro 360 / 006	When Used	When Used
Digital Calipers	Mitutoyo	CD 6”CSX / 07416506	12/28/10	12/28/11
Steel Tape	Stanley	Powerlock / 604	08/04/11	02/04/12
Ellipsoid	MGA	ELLIP – 1A	When Used	When Used
Parallelepiped	MGA	PARA – 1A	When Used	When Used
Force Gauge	Wagner	FDK-60 / 18109	09/08/11	03/08/12

SECTION 5
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Exterior Left Side View of School Bus

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Exterior Right Side View of School Bus

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Exterior Left Front ¾ View of School Bus

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Exterior Right Front ¾ View of School Bus

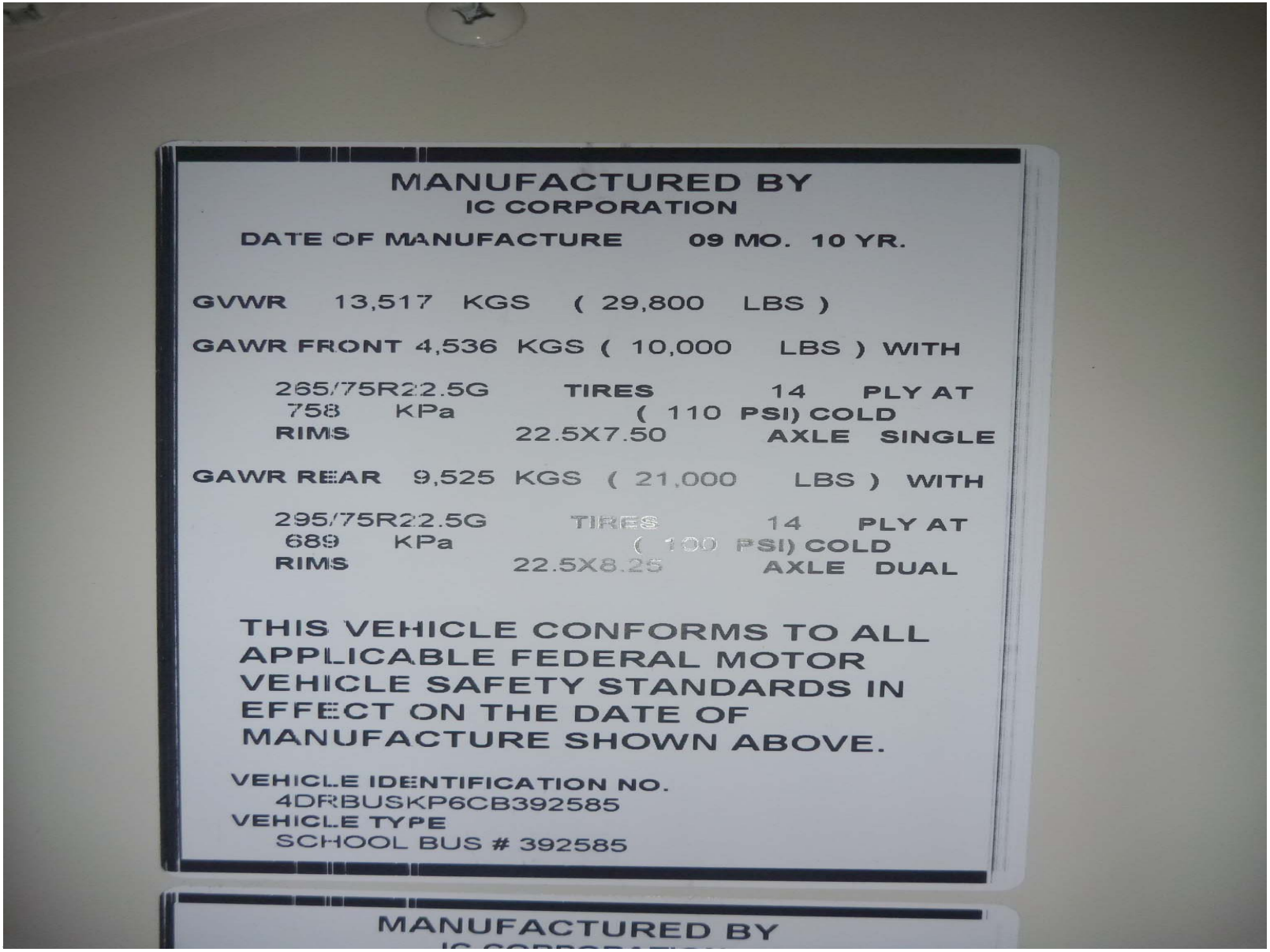
Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Exterior Left Rear ¾ View of School Bus

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Exterior Right Rear ¾ View of School Bus

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**



Certification Label

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Interior Front to Rear View Depicting Seating Arrangement

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Interior Rear to Front View Depicting Seating Arrangement

Test Vehicle: **2012 IC Corp CE Bird School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

Rear Emergency Exit Identification (Outside View)

Test Vehicle: **2012 IC Corp CE Bird School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

Rear Emergency Exit Identification (Inside View)

Rear Emergency Exit Identification Close-Up (Inside View)

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Rear Emergency Exit Parallelepiped Clearance

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Window Emergency Exit Identification (Outside View)

Test Vehicle: **2012 IC Corp CE Bird School Bus** NHTSA No.: **CC0900**
Test Lab: **MGA Research Corporation** Test Date: **10/28/11**

Window Emergency Exit Identification Close-Up 1 (Inside View)

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Window Emergency Exit Identification Close-Up 2 (Inside View)

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Emergency Exit Window Ellipsoid Clearance

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Roof Emergency Exit Identification (Inside View) / Ellipsoid Clearance

Loading Fixture

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Window Retention Test of W5 Emergency Exit Lower Pane Pre-Test (Driver Side)

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Window Retention Test of W5 Emergency Exit Lower Pane Post-Test (Driver Side)

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Window Retention Test of W19 Emergency Exit Upper Pane Pre-Test (Passenger Side)

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Window Retention Test of W19 Emergency Exit Upper Pane Post-Test (Passenger Side)

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Window Retention Test of Rear Emergency Door Upper Pane Pre-Test

Test Vehicle:	**2012 IC Corp CE Bird School Bus**	NHTSA No.:	**CC0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/28/11**

Window Retention Test of Rear Emergency Door Upper Pane Post-Test

SECTION 6
TEST PLOTS

TABLE OF TEST PLOTS

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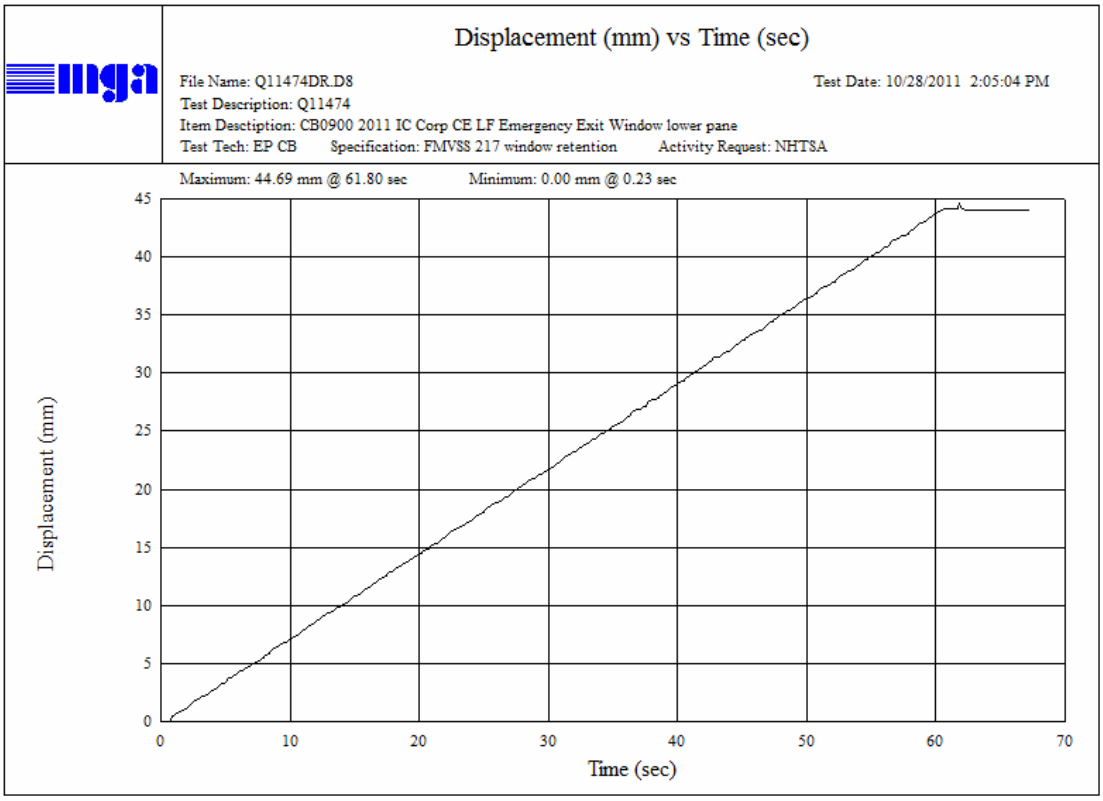
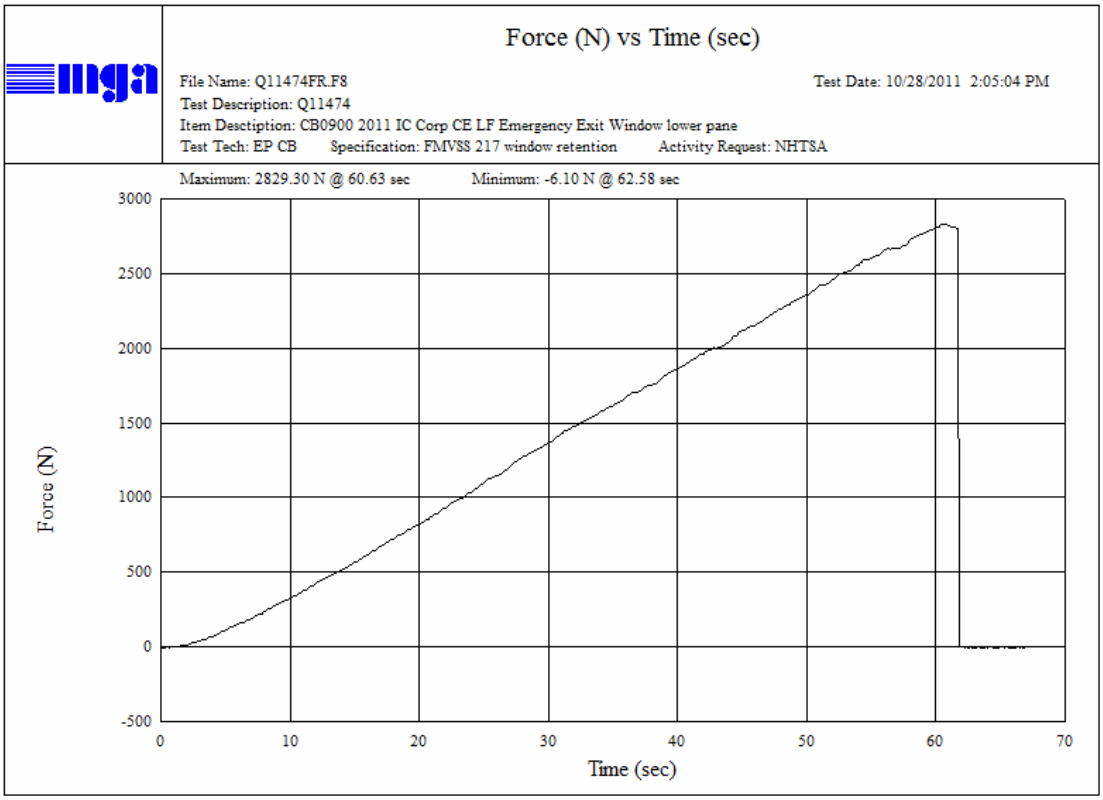
TEST PLOTS



W5 Emergency Exit Window (Driver Side) Lower Pane Displacement vs. Time



W5 Emergency Exit Window (Driver Side) Lower Pane Force vs. Time

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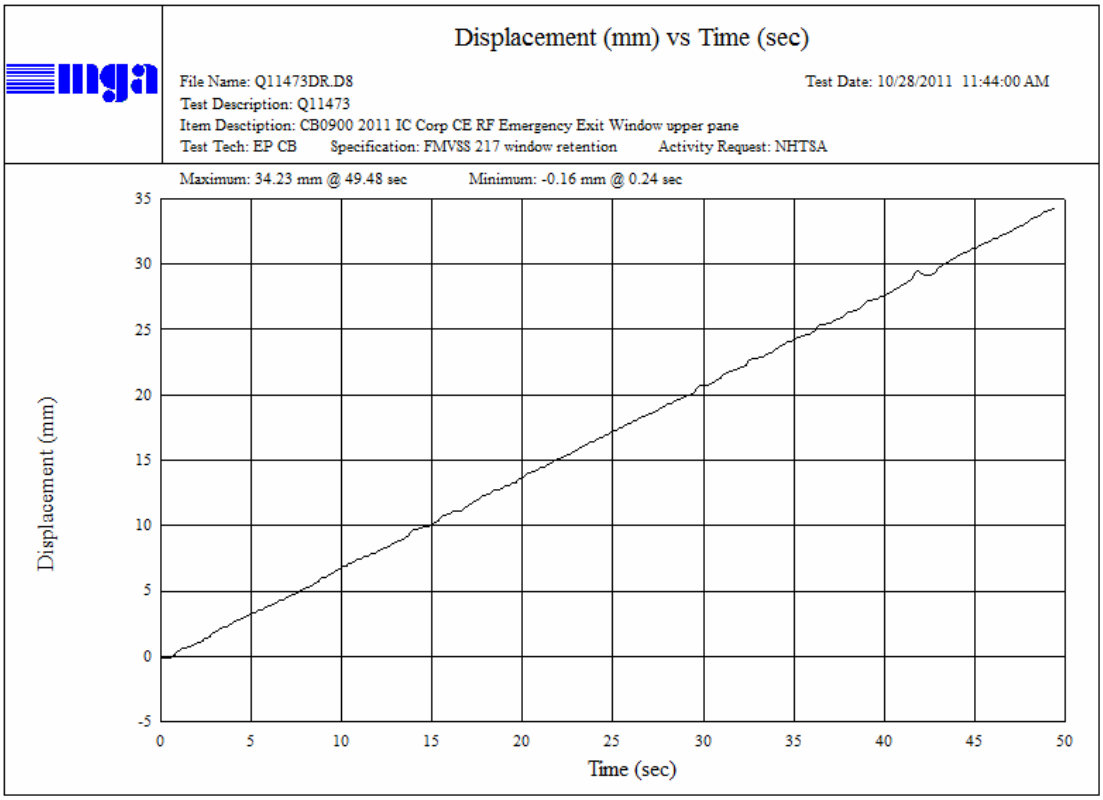
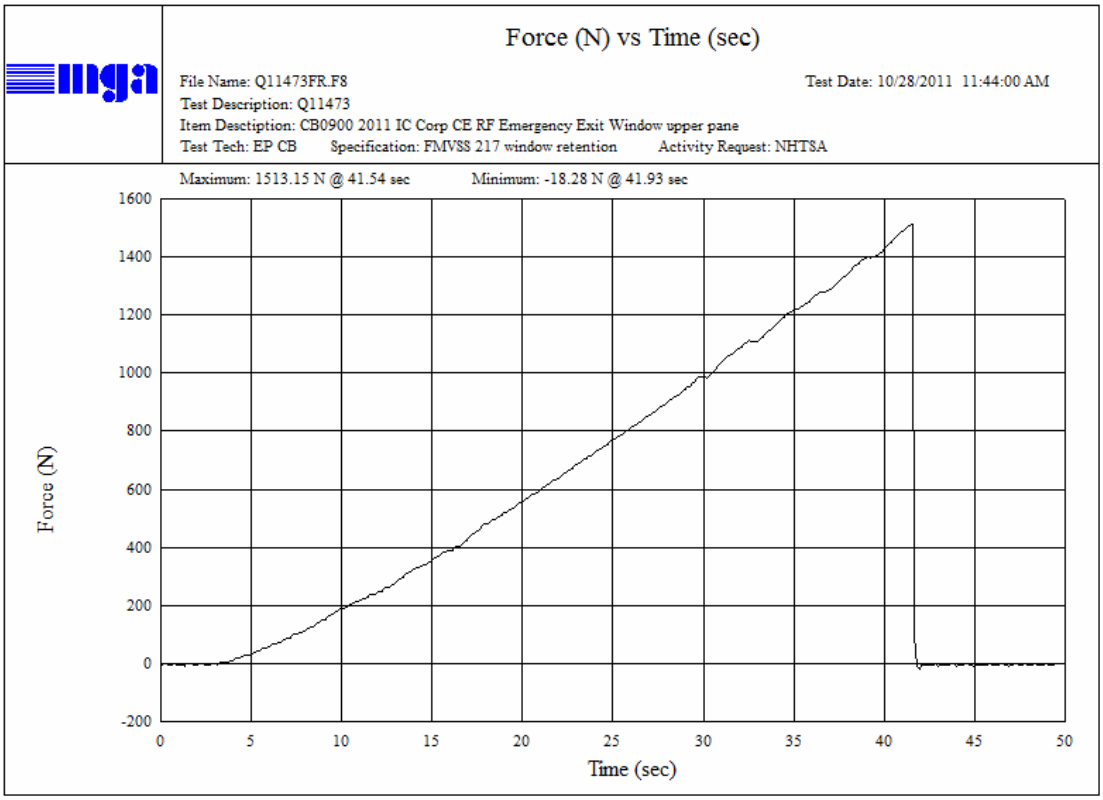
TEST PLOTS



W19 Emergency Exit Window (Passenger Side) Upper Pane Displacement vs. Time



W19 Emergency Exit Window (Passenger Side) Upper Pane Force vs. Time

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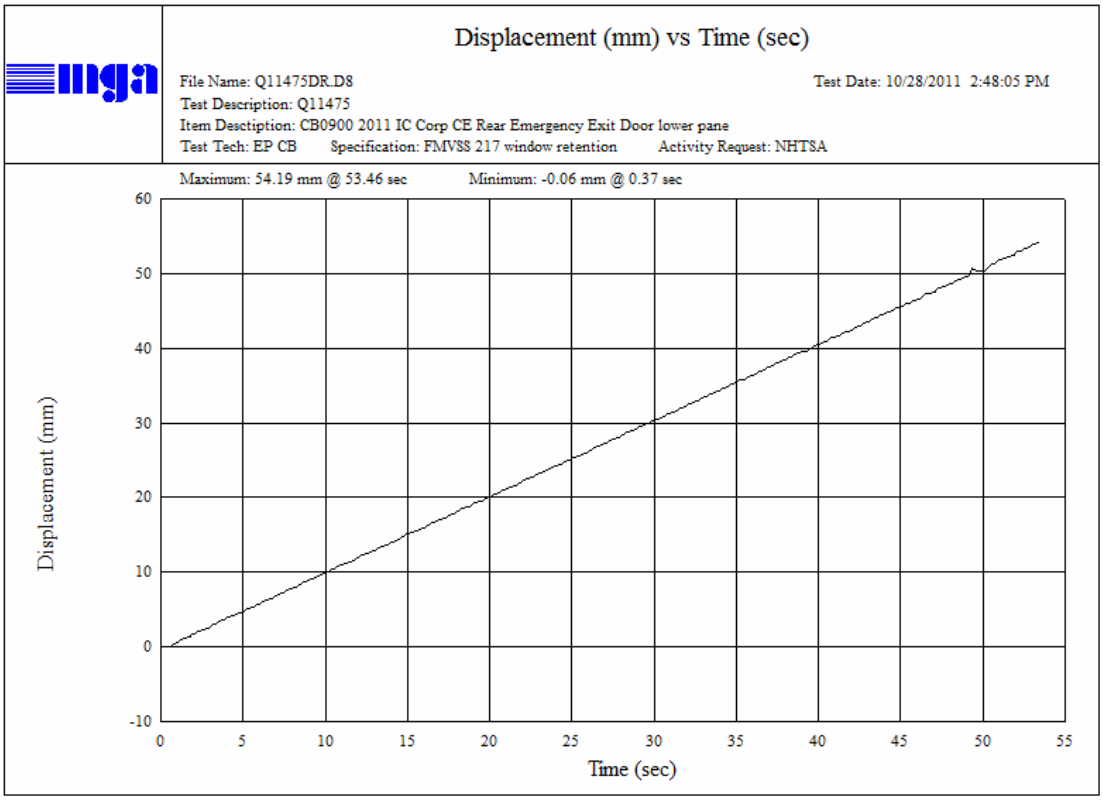
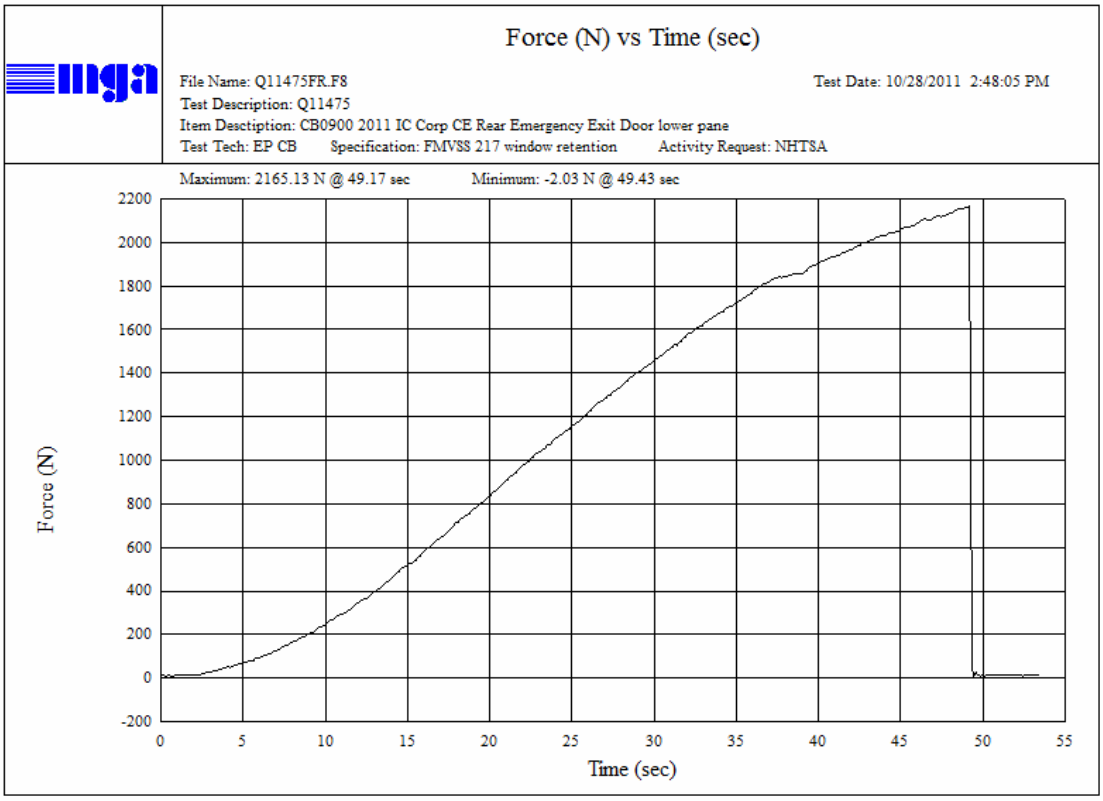
TEST PLOTS



Rear Emergency Door Upper Window Displacement vs. Time



Rear Emergency Door Upper Window Force vs. Time