REPORT NUMBER: 217-MGA-2011-004

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

2010 STARTRANS MFSAB SCHOOL BUS
NHTSA NO.: CA0900

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

TEST DATE: OCTOBER 27, 2011

FINAL REPORT DATE: DECEMBER 13, 2011

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
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Prepared by: _____ Date: November 7, 2011
Eric Peschman, Project Engineer

Reviewed by: _____ Date: November 7, 2011
Michael Janovicz, Program Manager

FINAL REPORT ACCEPTED BY:

Edward E. Chan

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_____
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Technical Report Documentation Page

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16. Abstract Compliance tests were conducted on the subject 2010 StarTrans MFSAB School Bus, NHTSA No.: CA0900, 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. Failure: The parallelepiped base did not fit fully inside the rear emergency exit.			
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SECTION 1
PURPOSE OF COMPLIANCE TEST

Tests were conducted on a 2010 StarTrans MFSAB School Bus, NHTSA No.: CA0900, 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 2010 StarTrans MFSAB School Bus, NHTSA No.: CA0900, does not appear 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 2010 StarTrans MFSAB School Bus, NHTSA No.: CA0900.

DATA SHEET 1

TEST SUMMARY

GENERAL VEHICLE IDENTIFICATION

Model Year / Mfr. / Make / Model	2010 / StarTrans / MFSAB	
NHTSA No.	CA0900	
GVWR	6,441 kg / 14,200 lb	
Build Date for Bus Chassis	11/09	
VIN	1GB9G5AG4A1118869	
Seating Capacity	1 Driver, 20 Passengers	
Type of Bus	MFSAB	
Tire Pressure from tire placard (at capacity)	Front: 450 kPa	Rear: 550 kPa
Odometer Reading	1,542 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	**FAIL**
S5.5 EMERGENCY EXIT LABELING AND IDENTIFICATION	**PASS**
S5.5 TAPE REFLECTIVITY (**49CFR 571.131)**	**Not Tested**

Comments: None

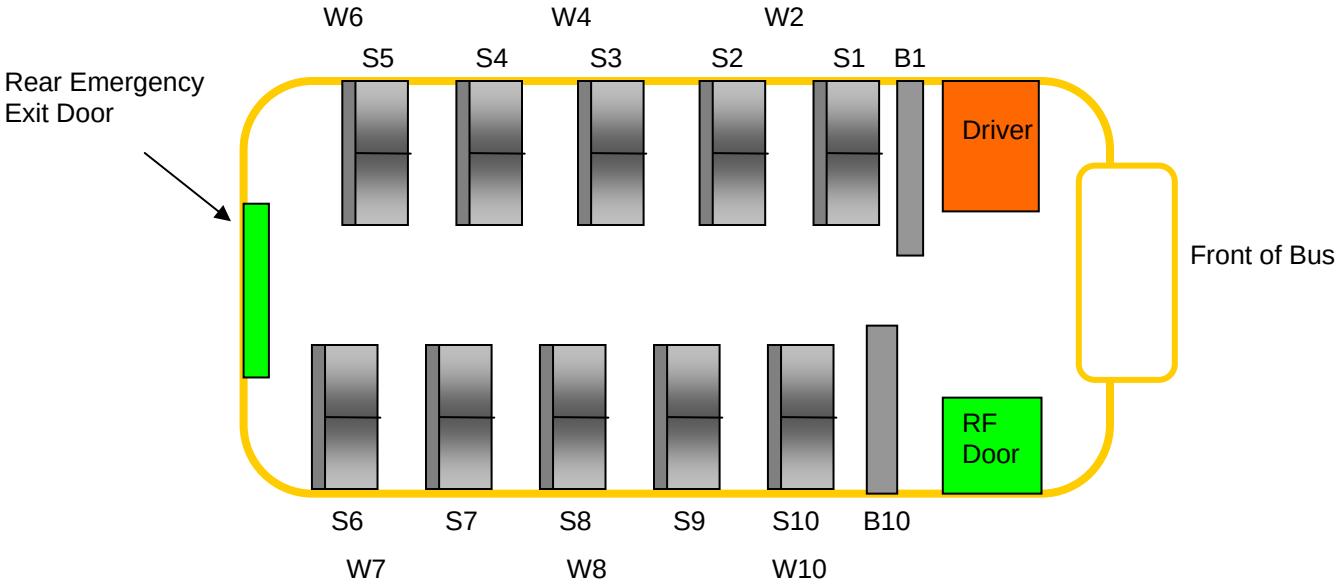
Recorded By: _____

Approved By: _____ Date: 10/27/11

DATA SHEET 2

PROVISION OF EMERGENCY EXITS

Test Vehicle:	**2010 StarTrans MFSAB School Bus**	NHTSA No.:	**CA0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/27/11**



		Height (mm)	Width (mm)
1	Rear Emergency Exit (Door)	1,450	810
2	Emergency Exit (Windows) W2, W4, W6, W7, W8, W10	855	560

Seating Capacity: 21 (Including Driver & Passengers)

Requirements	Pass / Fail
Bus meets minimum emergency exit provision, based upon Table 1. 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.	N/A
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).	N/A
7	A right side emergency exit door, if any, is located as near as practicable to the midpoint of the passenger compartment.	N/A

Comments: None

Recorded By: _____

Approved By: _____ Date: 10/27/11

DATA SHEET 3

EMERGENCY EXIT DOOR OPERATIONAL REQUIREMENTS

Test Vehicle: **2010 StarTrans MFSAB School Bus** NHTSA No.: **CA0900**
Test Lab: **MGA Research Corporation** Test Date: **10/27/11**

	Requirements	Pass / Fail
1	The engine starting system does NOT operate if any Emergency Exit is LOCKED. Yes – Pass; No – Fail	**PASS**
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: 10/27/11

DATA SHEET 4A

EMERGENCY EXIT IDENTIFICATION AND LABELING

Test Vehicle:	**2010 StarTrans MFSAB School Bus**	NHTSA No.:	**CA0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/27/11**

EMERGENCY EXIT LABELING - INTERIOR

Exit Location	Rear Emergency Exit	Left Front Emergency Exit W2	Left Mid Emergency Exit W4	Left Rear Emergency Exit W6	Right Front Emergency Exit W10	Right Mid Emergency Exit W8	Right Rear Emergency Exit W7
Exit Description	Door	Window	Window	Window	Window	Window	Window
Letter Height (cm)	5.2	1.4	1.4	1.4	1.4	1.4	1.4
Background Color	White	White	White	White	White	White	White
Location Inside	Above Door	Above Window	Above Window	Above Window	Above Window	Above Window	Above Window
Pass / Fail	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**

OPERATING INSTRUCTIONS - INTERIOR

Exit Location	Rear Emergency Exit
Instructions	Lift Handle
Letter Height (cm)	1.17
Letter Color	Red
Background Color	White
Distance From Release (cm)	11.5
Reflective Tape Color	N/A
Reflective Tape Width (cm)	N/A
Pass / Fail	**PASS**

DATA SHEET 4A (CONTINUED)

EMERGENCY EXIT IDENTIFICATION AND LABELING

Test Vehicle:	**2010 StarTrans MFSAB School Bus**	NHTSA No.:	**CA0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/27/11**

OPERATING INSTRUCTIONS – INTERIOR (ON WINDOW)

Exit Location	Left Front Emergency Exit W2	Left Mid Emergency Exit W4	Left Rear Emergency Exit W6	Right Front Emergency Exit W10	Right Mid Emergency Exit W8	Right Rear Emergency Exit W7
Instructions	Pull Handles Push Window to Open	Pull Handles Push Window to Open	Pull Handles Push Window to Open	Pull Handles Push Window to Open	Pull Handles Push Window to Open	Pull Handles Push Window to Open
Letter Height (cm)	.47	.47	.47	.47	.47	.47
Letter Color	Red	Red	Red	Red	Red	Red
Background Color	Clear	Clear	Clear	Clear	Clear	Clear
Distance From Release (cm)	6	6	6	6	6	6
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**

DATA SHEET 4A (CONTINUED)

EMERGENCY EXIT IDENTIFICATION AND LABELING

Test Vehicle: **2010 StarTrans MFSAB School Bus** NHTSA No.: **CA0900**
Test Lab: **MGA Research Corporation** Test Date: **10/27/11**

OPERATING INSTRUCTIONS – INTERIOR (ABOVE WINDOW)

Exit Location	Left Front Emergency Exit W2	Left Mid Emergency Exit W4	Left Rear Emergency Exit W6	Right Front Emergency Exit W10	Right Mid Emergency Exit W8	Right Rear Emergency Exit W7
Instructions	Pull Latch Push Window to Open	Pull Latch Push Window to Open	Pull Latch Push Window to Open	Pull Latch Push Window to Open	Pull Latch Push Window to Open	Pull Latch Push Window to Open
Letter Height (cm)	.1	.1	.1	.1	.1	.1
Letter Color	Red	Red	Red	Red	Red	Red
Background Color	White	White	White	White	White	White
Distance From Release (cm)	70	70	70	70	70	70
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: 10/27/11

DATA SHEET 4B

EMERGENCY EXIT IDENTIFICATION AND LABELING

Test Vehicle: **2010 StarTrans MFSAB School Bus** NHTSA No.: **CA0900**
Test Lab: **MGA Research Corporation** Test Date: **10/27/11**

EMERGENCY EXIT LABELING - EXTERIOR

Exit Location	Rear Emergency Exit	Left Front Emergency Exit W2	Left Mid Emergency Exit W4	Left Rear Emergency Exit W6	Right Front Emergency Exit W10	Right Mid Emergency Exit W8	Right Rear Emergency Exit W7
Exit Description	Door	Window	Window	Window	Window	Window	Window
Letter Height (cm)	5.2	5.2	5.2	5.2	5.2	5.2	5.2
Background Color	White	White	White	White	White	White	White
Location Inside	Above Exit Door	Above Window	Above Window	Above Window	Above Window	Above Window	Above Window
Pass / Fail	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**

OPERATING INSTRUCTIONS – EXTERIOR

Exit Location	Rear Emergency Exit	Left Front Emergency Exit W2	Left Mid Emergency Exit W4	Left Rear Emergency Exit W6	Right Front Emergency Exit W10	Right Mid Emergency Exit W8	Right Rear Emergency Exit W7
Instructions	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Letter Height (cm)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Letter Color	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Background Color	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Distance From Release (cm)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Reflective Tape Color	N/A	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	N/A
Pass / Fail	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**	**PASS**

Comments: There are no operating instructions on the exterior of the vehicle.

Recorded By: 

Approved By:  Date: 10/27/11

DATA SHEET 4

EMERGENCY EXIT IDENTIFICATION AND LABELING

Test Vehicle: **2010 StarTrans MFSAB School Bus** NHTSA No.: **CA0900**
Test Lab: **MGA Research Corporation** Test Date: **10/27/11**

	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.	N/A
4	Emergency Window Exits – The designation is located at the top of, or directly above, or at the bottom of the emergency window exit on both the inside and outside surfaces of the bus.	**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: None

Recorded By: 

Approved By:  Date: 10/27/11

DATA SHEET 6A

FORCE TESTS TO UNLATCH THE EMERGENCY EXITS - INTERIOR

Test Vehicle: **2010 StarTrans MFSAB School Bus** NHTSA No.: **CA0900**
Test Lab: **MGA Research Corporation** Test Date: **10/27/11**

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 Exit	Door	High	178	1.	71.2		Straight	Lift Handle Upward	**PASS**
				2.	73.4				
				3.	80.1				
				Average	74.9				
					L	R			
Left Front Emergency Exit W2	Window	High	178	1.	26.7	66.7	Straight	Lift Handles Upward & Push Window Outward	**PASS**
				2.	31.1	53.4			
				3.	26.7	62.3			
				Average	28.2	60.8			
Left Mid Emergency Exit W4	Window	High	178	1.	35.6	35.6	Straight	Lift Handles Upward & Push Window Outward	**PASS**
				2.	35.6	35.6			
				3.	35.6	40.0			
				Average	35.6	37.1			
Left Rear Emergency Exit W6	Window	High	178	1.	40.0	44.5	Straight	Lift Handles Upward & Push Window Outward	**PASS**
				2.	44.5	44.5			
				3.	44.5	53.4			
				Average	43.0	47.5			
Right Front Emergency Exit W10	Window	High	178	1.	35.6	93.4	Straight	Lift Handles Upward & Push Window Outward	**PASS**
				2.	35.6	102.3			
				3.	40.0	97.9			
				Average	37.1	97.9			
Right Mid Emergency Exit W8	Window	High	178	1.	31.1	26.7	Straight	Lift Handles Upward & Push Window Outward	**PASS**
				2.	31.1	26.7			
				3.	31.1	26.7			
				Average	31.1	26.7			
Right Rear Emergency Exit W7	Window	High	178	1.	26.7	89.0	Straight	Lift Handles Upward & Push Window Outward	**PASS**
				2.	26.7	93.4			
				3.	26.7	89.0			
				Average	26.7	90.5			

Comments: None

Recorded By: Eric Lundberg

Approved By: Michael Janosz Date: 10/27/11

DATA SHEET 6B

FORCE TESTS TO UNLATCH THE EMERGENCY EXITS – EXTERIOR

Test Vehicle: **2010 StarTrans MFSAB School Bus** NHTSA No.: **CA0900**
Test Lab: **MGA Research Corporation** Test Date: **10/27/11**

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 Exit	Door	High	178	1.	113.4	Straight	Lift Handle Upward	**PASS**
				2.	115.6			
				3.	111.2			
				Average	113.4			

Comments: None

Recorded By: _____

Approved By: _____ Date: 10/27/11

DATA SHEET 7A

FORCE TESTS TO OPEN THE EMERGENCY EXITS – INTERIOR

Test Vehicle: **2010 StarTrans MFSAB School Bus** NHTSA No.: **CA0900**
Test Lab: **MGA Research Corporation** Test Date: **10/27/11**

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 Exit	Door	High	178	1.	31.1	Straight	Push Outward	114x61x30 Parallelepiped Lower Surface Was Not in Contact With the Bus Floor at all Times During Testing	**FAIL**
				2.	31.1				
				3.	33.4				
				Average	31.9				
Left Front Emergency Exit W2	Window	High	178	1.	4.4	Straight	Push Outward	Ellipsoid	**PASS**
				2.	4.4				
				3.	4.4				
				Average	4.4				
Left Mid Emergency Exit W4	Window	High	178	1.	4.4	Straight	Push Outward	Ellipsoid	**PASS**
				2.	4.4				
				3.	4.4				
				Average	4.4				
Left Rear Emergency Exit W6	Window	High	178	1.	4.4	Straight	Push Outward	Ellipsoid	**PASS**
				2.	4.4				
				3.	4.4				
				Average	4.4				
Right Front Emergency Exit W10	Window	High	178	1.	4.4	Straight	Push Outward	Ellipsoid	**PASS**
				2.	4.4				
				3.	4.4				
				Average	4.4				
Right Mid Emergency Exit W8	Window	High	178	1.	4.4	Straight	Push Outward	Ellipsoid	**PASS**
				2.	4.4				
				3.	4.4				
				Average	4.4				
Right Rear Emergency Exit W7	Window	High	178	1.	4.4	Straight	Push Outward	Ellipsoid	**PASS**
				2.	4.4				
				3.	4.4				
				Average	4.4				

DATA SHEET 7A (CONTINUED)

FORCE TESTS TO OPEN THE EMERGENCY EXITS – INTERIOR

Test Vehicle:	**2010 StarTrans MFSAB School Bus**	NHTSA No.:	**CA0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/27/11**

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: 10/27/11

DATA SHEET 7B

FORCE TESTS TO OPEN THE EMERGENCY EXITS – EXTERIOR

Test Vehicle: **2010 StarTrans MFSAB School Bus** NHTSA No.: **CA0900**
Test Lab: **MGA Research Corporation** Test Date: **10/27/11**

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 Exit	Door	High	178	1.	26.7	Straight	Pull Outward	114x61x30 Parallelepiped	**PASS**
				2.	26.7				
				3.	26.7				
				Average	26.7				

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

Comments: None

Recorded By: 

Approved By:  Date: 10/27/11

DATA SHEET 8

EMERGENCY EXIT EXTENSION

Test Vehicle: **2010 StarTrans MFSAB School Bus** NHTSA No.: **CA0900**
Test Lab: **MGA Research Corporation** Test Date: **10/27/11**

	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: 10/27/11

DATA SHEET 9

WINDOW RETENTION TEST

Test Vehicle: **2010 StarTrans MFSAB School Bus** NHTSA No.: **CA0900**
Test Lab: **MGA Research Corporation** Test Date: **10/27/11**

1	Test Window Identification:	Rear Emergency Exit Upper Pane		
2	Provide a detailed description of the window such as fixed, push out, single or double glazed, horizontal or vertical sliding, etc.	Fixed, Single Glaze		
3	Provide the horizontal and vertical glazing dimensions for each panel.	Horizontal: 475 mm Vertical: 555 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 24 sec, 1,911 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. 80.1	1. 4.4	**PASS**
		2. 75.6	2. 4.4	**PASS**
		3. 75.6	3. 4.4	**PASS**

Comments: Maximum calculated displacement is 54.9 mm (2.16 in).

Recorded By: _____

Approved By: _____ Date: 10/27/11

DATA SHEET 9

WINDOW RETENTION TEST

Test Vehicle: **2010 StarTrans MFSAB School Bus** NHTSA No.: **CA0900**
Test Lab: **MGA Research Corporation** Test Date: **10/27/11**

1	Test Window Identification:	Emergency Exit (Window W6) Side Exit Window Lower Pane			
2	Provide a detailed description of the window such as fixed, push out, single or double glazed, horizontal or vertical sliding, etc.	Fixed, Single Pane			
3	Provide the horizontal and vertical glazing dimensions for each panel.	Horizontal: 490 mm Vertical: 450 mm			
4	Did the window pass the retention requirements? Describe how the window structure and glazing withstood the force per the PASS / FAIL criteria: Yes – Pass; No – Fail	Reached Maximum Displacement of 53.5 mm And Then Glazing Cracked at 39.66 sec, 2,165 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
		L	R		
		40.0	40.0	4.4	**PASS**
		62.3	40.0	4.4	**PASS**
		48.9	40.0	4.4	**PASS**

Comments: Maximum calculated displacement is 53.5 mm (2.10 in).

Recorded By: 

Approved By:  Date: 10/27/11

DATA SHEET 9

WINDOW RETENTION TEST

Test Vehicle: **2010 StarTrans MFSAB School Bus** NHTSA No.: **CA0900**
Test Lab: **MGA Research Corporation** Test Date: **10/27/11**

1	Test Window Identification:	Emergency Exit (Window W7) Side Exit Window Upper Pane			
2	Provide a detailed description of the window such as fixed, push out, single or double glazed, horizontal or vertical sliding, etc.	Vertical Sliding – Single Glazing			
3	Provide the horizontal and vertical glazing dimensions for each panel.	Horizontal: 490 mm Vertical: 330 mm			
4	Did the window pass the retention requirements? Describe how the window structure and glazing withstood the force per the PASS / FAIL criteria: Yes – Pass; No – Fail	Reached Maximum Displacement of 45.8 mm **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
		L	R		
		22.2	80.1	4.4	**PASS**
		22.2	71.2	4.4	**PASS**
		22.2	93.4	4.4	**PASS**

Comments: Maximum calculated displacement is 45.8 mm (1.80 in).

Recorded By: 

Approved By:  Date: 10/27/11

SECTION 4

INSTRUMENTATION AND EQUIPMENT LIST

Test Vehicle: **2010 StarTrans MFSAB School Bus** NHTSA No.: **CA0900**
Test Lab: **MGA Research Corporation** Test Date: **10/27/11**

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:	**2010 StarTrans MFSAB School Bus**	NHTSA No.:	**CA0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/27/11**

Exterior Left Side View of School Bus

Test Vehicle:	**2010 StarTrans MFSAB School Bus**	NHTSA No.:	**CA0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/27/11**

Exterior Right Side View of School Bus

Test Vehicle:	**2010 StarTrans MFSAB School Bus**	NHTSA No.:	**CA0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/27/11**

Exterior Left Front ¾ View of School Bus

Test Vehicle:	**2010 StarTrans MFSAB School Bus**	NHTSA No.:	**CA0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/27/11**

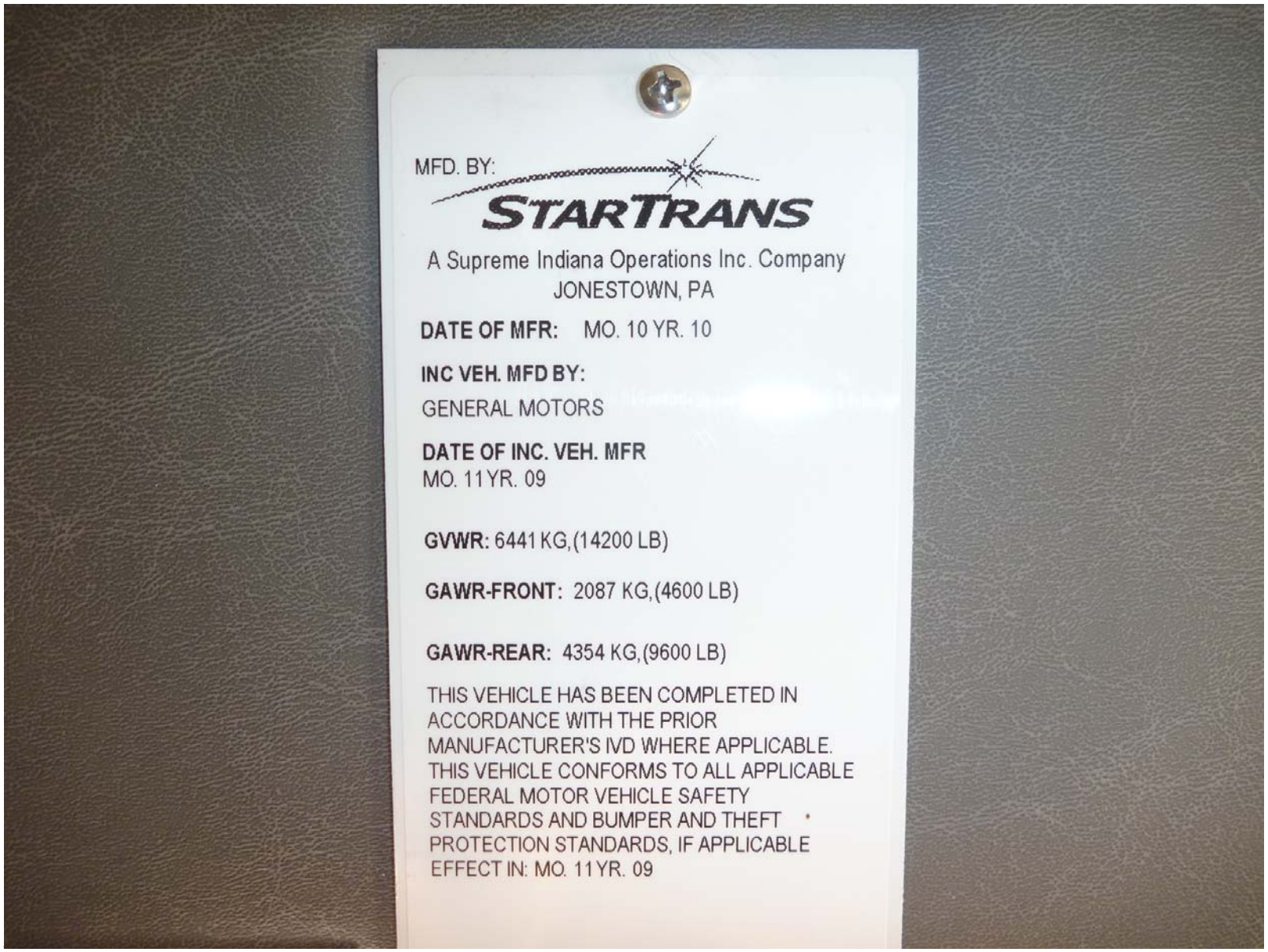
Exterior Right Front ¾ View of School Bus

Test Vehicle:	**2010 StarTrans MFSAB School Bus**	NHTSA No.:	**CA0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/27/11**

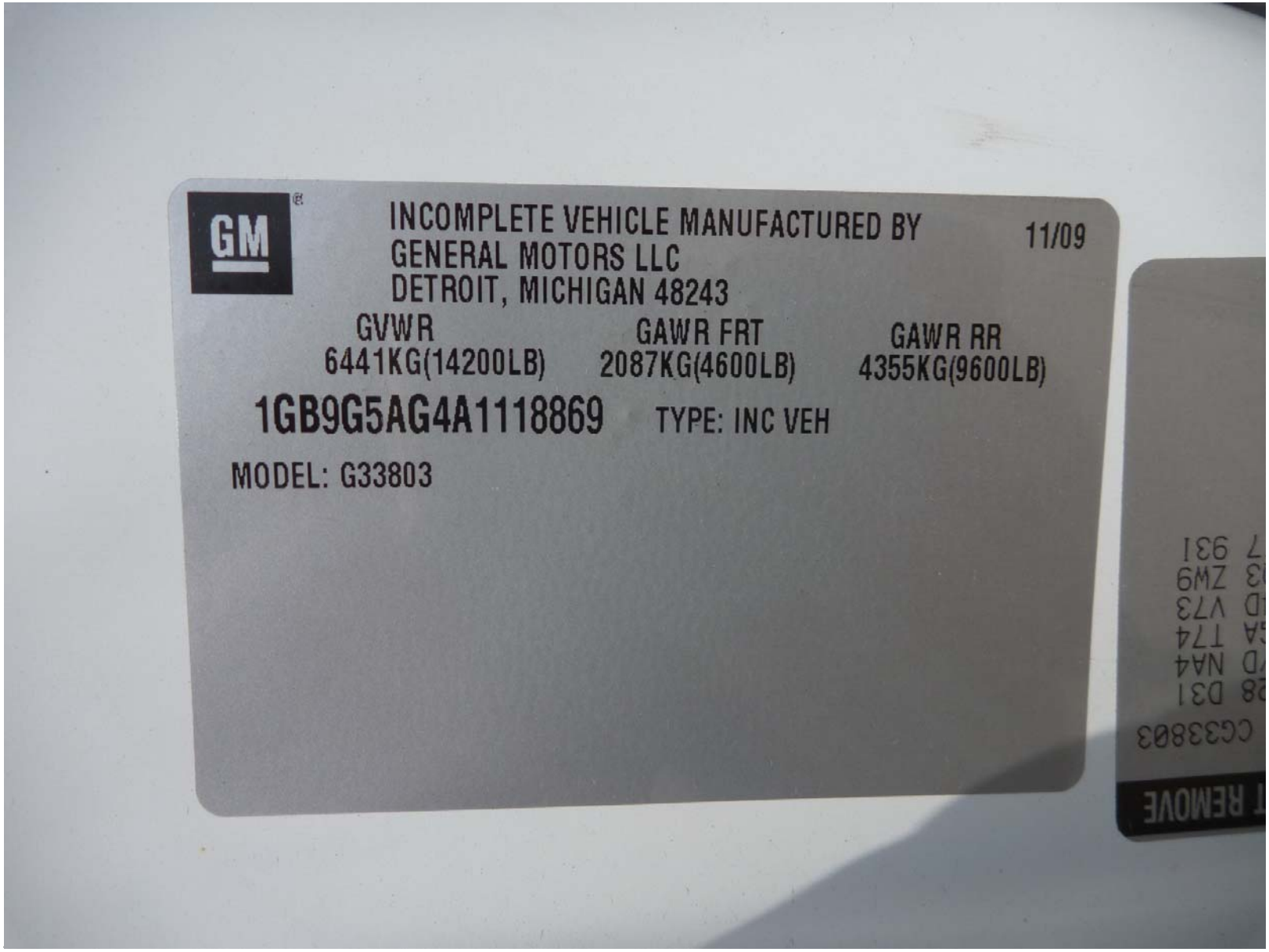
Exterior Left Rear ¾ View of School Bus

Test Vehicle:	**2010 StarTrans MFSAB School Bus**	NHTSA No.:	**CA0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/27/11**

Exterior Right Rear ¾ View of School Bus



Certification Label



Incomplete Vehicle Certification Label

Test Vehicle:	**2010 StarTrans MFSAB School Bus**	NHTSA No.:	**CA0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/27/11**

Interior Front to Rear View Depicting Seating Arrangement

Test Vehicle:	**2010 StarTrans MFSAB School Bus**	NHTSA No.:	**CA0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/27/11**

Interior Rear to Front View Depicting Seating Arrangement

Test Vehicle:	**2010 StarTrans MFSAB School Bus**	NHTSA No.:	**CA0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/27/11**

Rear Emergency Exit Identification (Outside View)

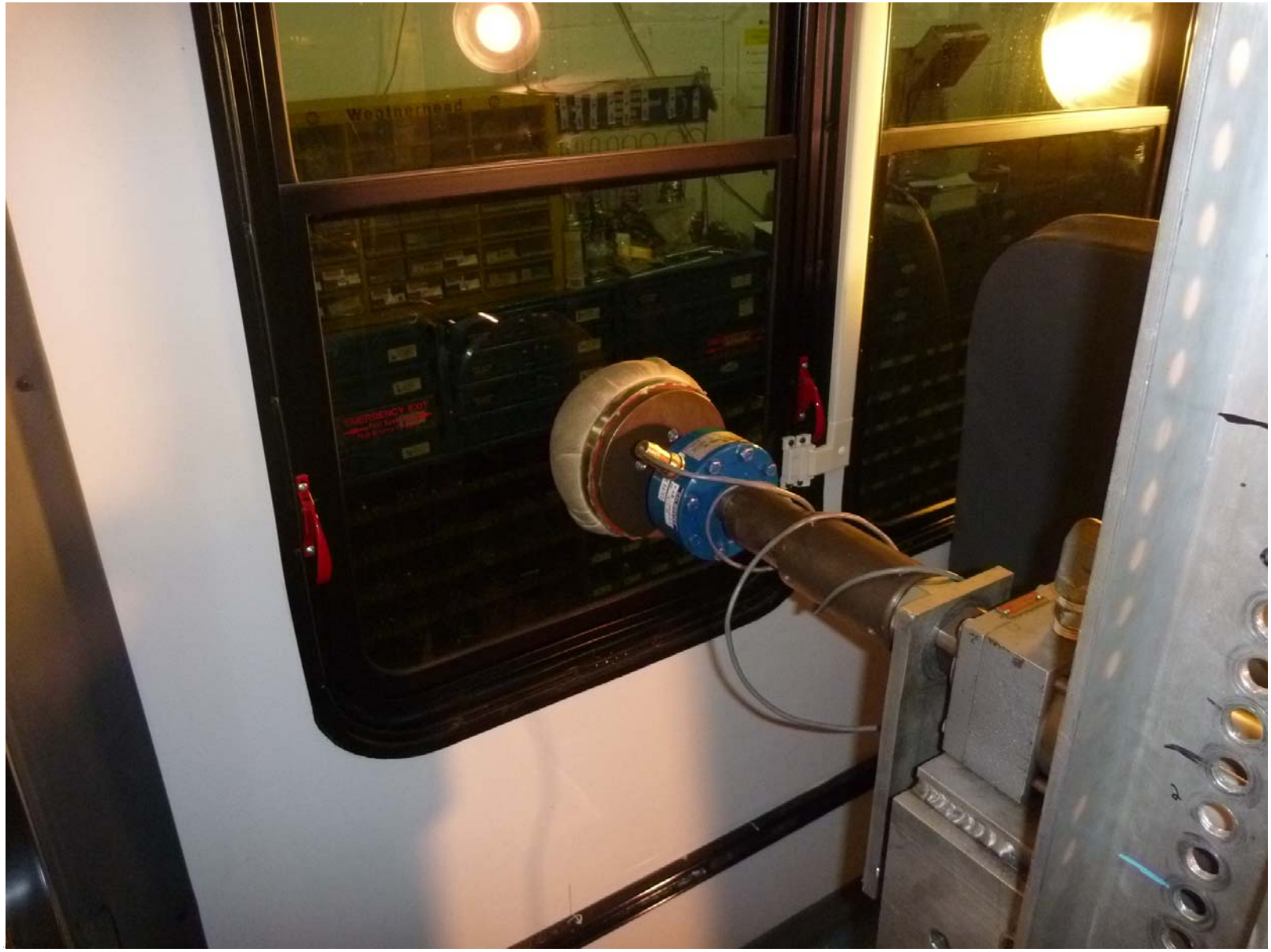
Rear Emergency Exit Identification (Inside View)

Test Vehicle:	**2010 StarTrans MFSAB School Bus**	NHTSA No.:	**CA0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/27/11**

Rear Emergency Exit Parallelepiped Clearance

Test Vehicle:	**2010 StarTrans MFSAB School Bus**	NHTSA No.:	**CA0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/27/11**

Emergency Exit Window Ellipsoid Clearance



Loading Fixture

Window Retention Test of W6 Rearmost Passenger Side Lower Window Pane Pre-Test

Window Retention Test of W6 Rearmost Passenger Side Lower Window Pane Post-Test

Window Retention Test of W6 Rearmost Passenger Side Lower Window Pane Post-Test Damage

Window Retention Test of W6 Rearmost Passenger Side Lower Window Pane Post-Test Damage

Test Vehicle:	**2010 StarTrans MFSAB School Bus**	NHTSA No.:	**CA0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/27/11**

Window Retention Test of W7 Rearmost Driver Side Upper Window Pane Pre-Test

Window Retention Test of W7 Rearmost Driver Side Upper Window Pane Post-Test

Test Vehicle:	**2010 StarTrans MFSAB School Bus**	NHTSA No.:	**CA0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/27/11**

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

Test Vehicle:	**2010 StarTrans MFSAB School Bus**	NHTSA No.:	**CA0900**
Test Lab:	**MGA Research Corporation**	Test Date:	**10/27/11**

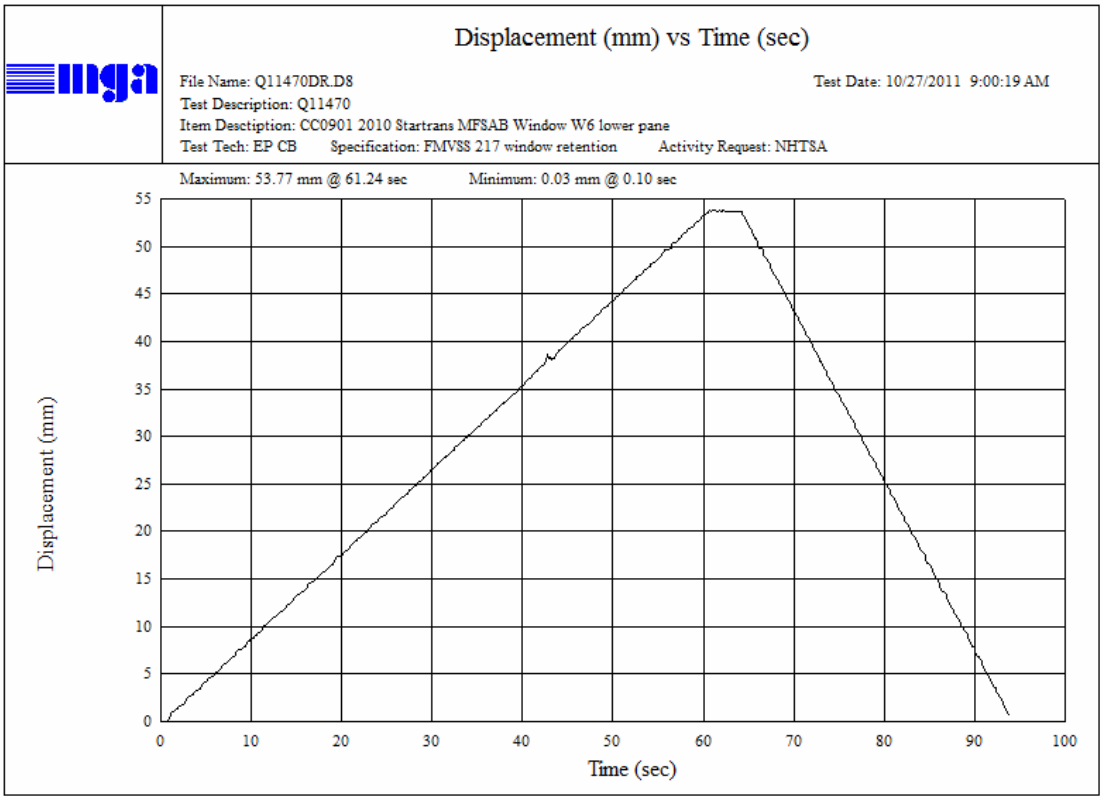
Window Retention Test of Rear Emergency Door Upper Pane Post-Test

SECTION 6
TEST PLOTS

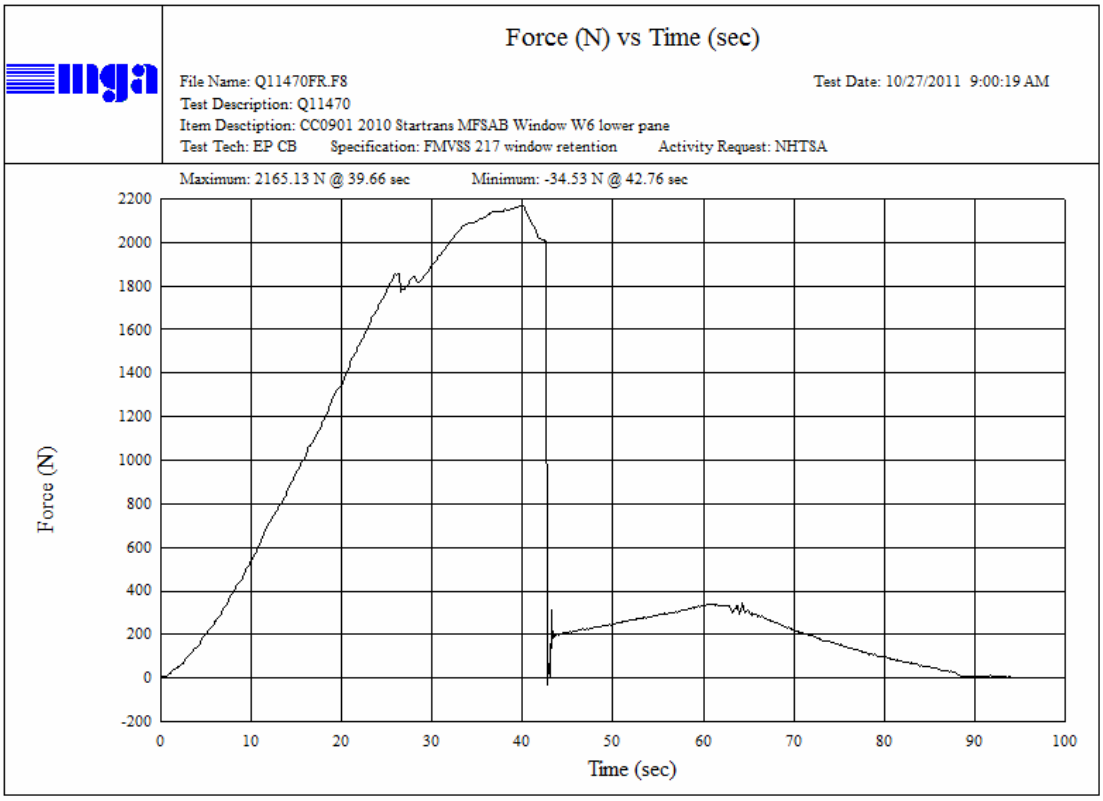
TABLE OF TEST PLOTS

SECTION 6

TEST PLOTS



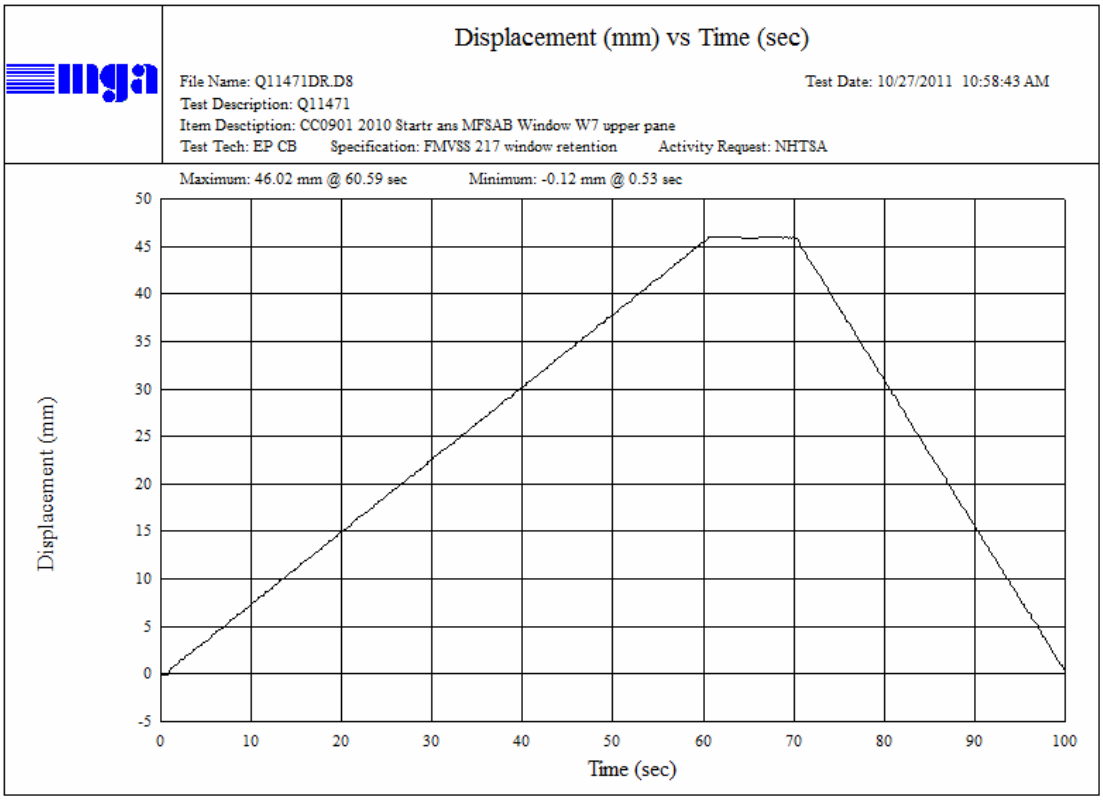
W6 Rearmost Passenger Side Lower Window Pane Displacement vs. Time



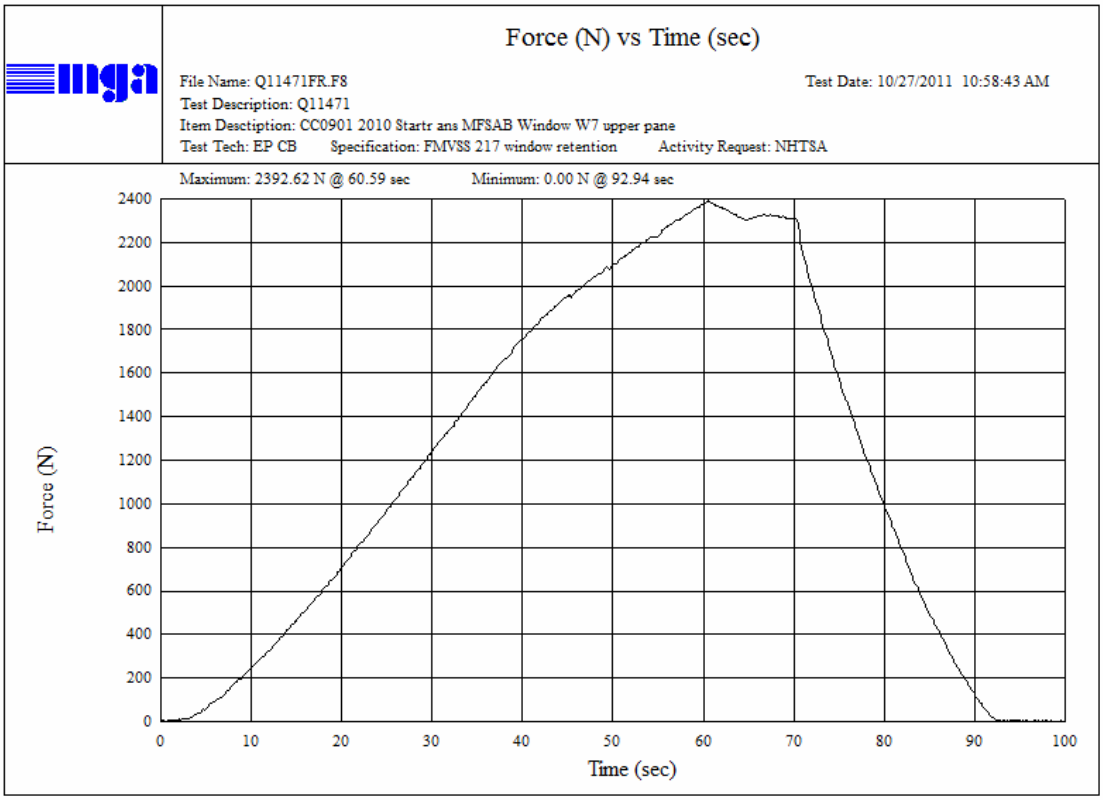
W6 Rearmost Passenger Side Lower Window Pane Force vs. Time

SECTION 6

TEST PLOTS



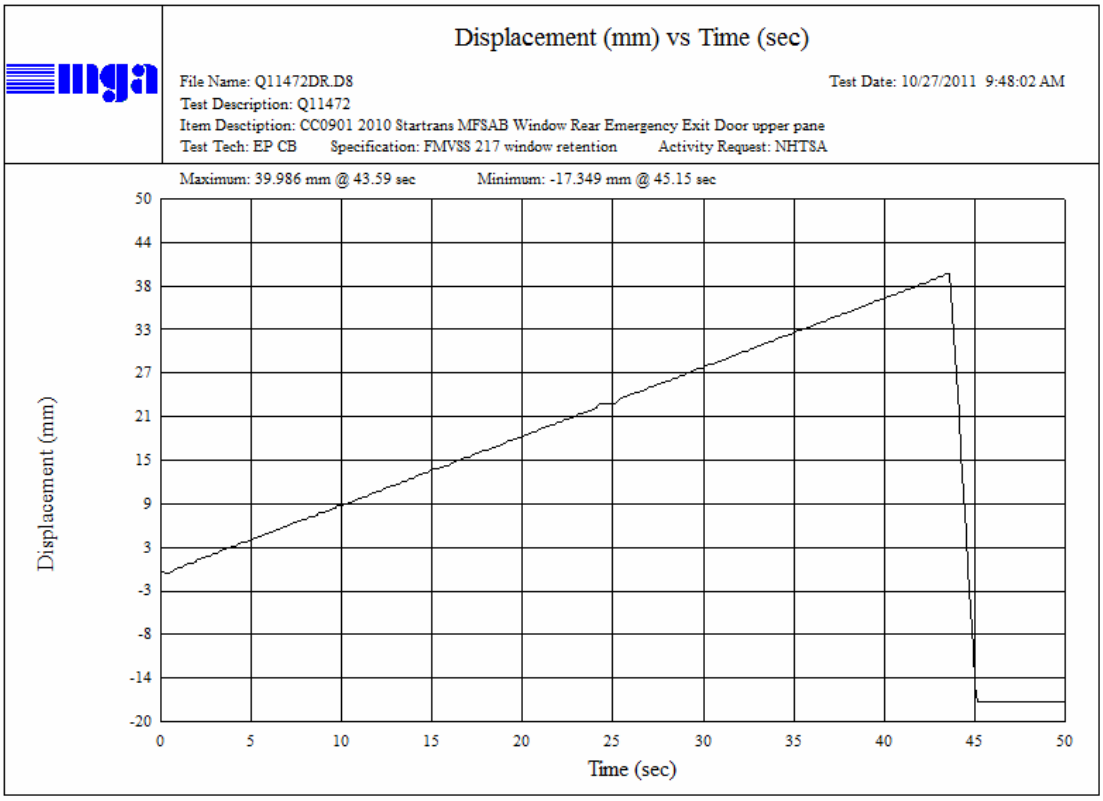
W7 Rearmost Driver Side Upper Window Pane Displacement vs. Time



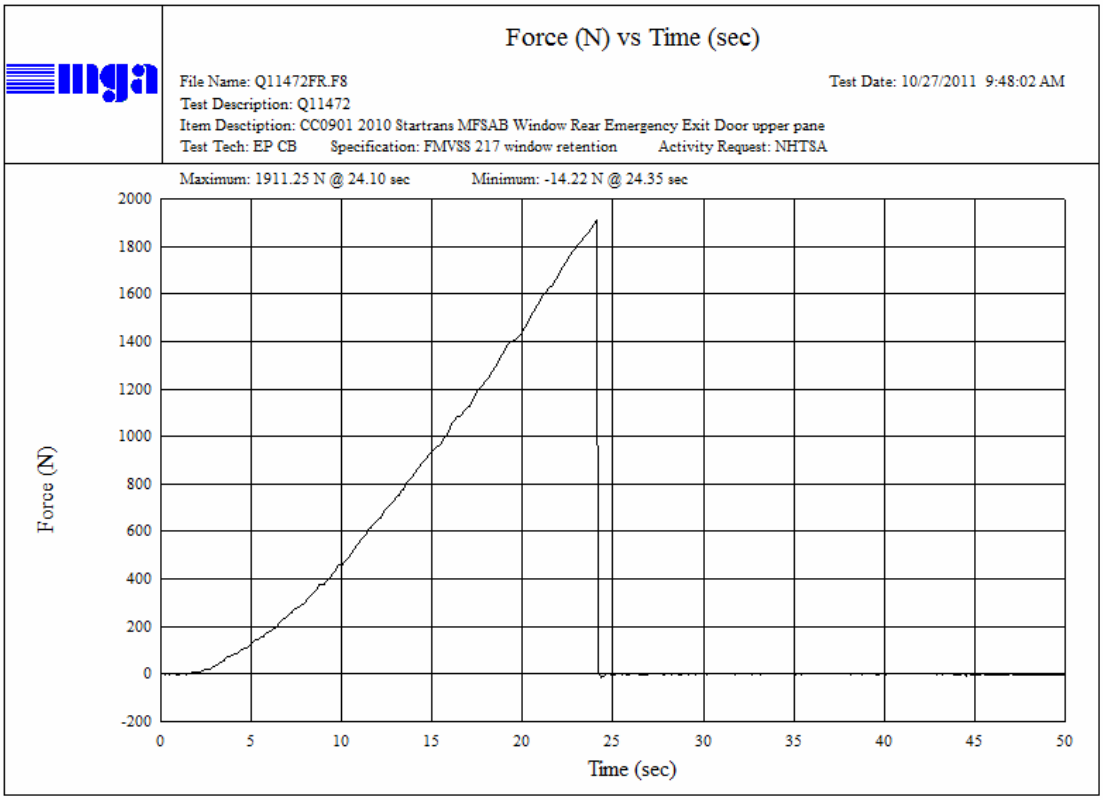
W7 Rearmost Driver Side Upper Window Pane Force vs. Time

SECTION 6

TEST PLOTS



Rear Emergency Door Upper Pane Displacement vs. Time



Rear Emergency Door Upper Pane Force vs. Time

SECTION 7

LABORATORY NOTICE OF TEST FAILURE TO OVSC

mga research corporation

LABORATORY NOTICE OF TEST FAILURE TO OVSC

Test Procedure:	FMVSS 217	Test Date:	10/27/11
Test Vehicle:	2010 StarTrans MFSAB	Test Lab:	MGA Research Corp.
NHTSA No.:	CA0900	Project Engineer:	Eric Peschman
Contract No.:	DTNH22-08-D-00075	Delivery Order No.:	3
MFR.:	StarTrans	VIN:	1GB9G5AG4A1118869
Build Date:	10-2010		

TEST FAILURE DESCRIPTION

The parallelepiped base did not fit fully inside the rear emergency exit.

FMVSS REQUIREMENTS DESCRIPTION

S5.4.2.1 *School buses with a GVWR of more than 10,000 pounds.*

(a) *Emergency exit doors.* After the release mechanism has been operated, each emergency exit door of a school bus shall, under the conditions of S6., before and after the window retention test required by S5.1, using the force levels specified in S5.3.3, be manually extendable by a single person to a position that permits:

(1) In the case of a rear emergency exit door, an opening large enough to permit unobstructed passage into the bus of a rectangular parallelepiped 1,145 millimeters (45 inches) high, 610 millimeters (24 inches) wide, and 305 millimeters (12 inches) deep, keeping the 1,145 millimeter (45 inch) dimension vertical, the 610 (24 inch) millimeter dimension parallel to the opening, and the lower surface in contact with the floor of the bus at all times, until the bottom edge of the rearmost surface of the parallelepiped is tangent to the plane of the door opening;

Remarks: No remarks.

Notification to NHTSA (COTR): Lawrence Valvo

Date: 10/28/11

By: