**REPORT NUMBER: 120-MGA-2011-005** 

# SAFETY COMPLIANCE TESTING FOR FMVSS NO. 120 TIRE SELECTION AND RIMS FOR MOTOR VEHICLES WITH A GVWR OF MORE THAN 4,536 kg

IC CORPORATION 2012 CE SCHOOL BUS NHTSA NO.: CC0900

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



FINAL REPORT DATE: NOVEMBER 28, 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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Eric Peschman, Project Engineer Date: November 28, 2011

Michael Janovicz, Program Manager

Date: November 28, 2011

FINAL REPORT ACCEPTED BY:

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### 16. Abstract

A compliance test was conducted on the subject 2012 IC Corp. CE School Bus, NHTSA No.: CC0900, in accordance with FMVSS 120, "Tire selection and rims for motor vehicles with a GVWR of more than 4,536 kilograms," and TP-120-03. The vehicle was weighed in the unloaded and fully loaded conditions and its tires, rims, and related information were checked.

Test failures: None

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# SECTION 1 PURPOSE OF COMPLIANCE TEST

The purpose of this test report is to document the results of tests performed on a MY 2012 IC Corp. CE School Bus, NHTSA No.: CC0900, in accordance with the requirements stated in Federal Motor Vehicle Safety Standard (FMVSS) No. 120, "Tire selection and rims for motor vehicles with a GVWR of more than 4,536 kilograms."

This standard establishes requirements to ensure that applicable vehicles are equipped with tires of adequate size and load rating and rims of appropriate size and type designation.

#### TEST PROCEDURE AND DISCUSSION OF RESULTS

Testing of the 2012 IC Corp. CE School Bus, NHTSA No.: CC0900, was conducted at MGA Research Corporation in accordance with NHTSA TP-120-03, dated April 10, 2000 and MGA-TP-120-03 dated November 20, 2002. The vehicle mounted tires and rims were surveyed to ensure that the rims were suitable for the tires and that the tires inflated to the maximum inflation pressure stated on the tire sidewall were appropriate for the vehicle's certified Gross Axle Weight Ratings (GAWR). The vehicle certification and tire information labeling was surveyed to ensure that the vehicle manufacturer's recommended rims were suitable for the recommended tires, and that the recommended tires inflated to the recommended inflation pressures stated on the labeling were appropriate for the vehicle's certified GAWRs. The vehicle was ballasted and weighed in three different loading conditions to determine if axle or tire overloading could occur. The three loading conditions were:

- Condition 1 Unloaded Vehicle Weight (UVW).
- Condition 2 Vehicle in Condition 1 state plus the addition of ballast to simulate sixty-eight passengers (one adult driver and sixty-seven students).
- Condition 3 Vehicle in Condition 2 state plus the addition of ballast to simulate cargo loading. Target vehicle load is the vehicle loaded to the certified gross vehicle weight rating (GVWR).

The vehicle mounted tires inflated to the inflation pressure labeled on the tire sidewall and the vehicle labeled tires inflated to the recommended cold inflation pressures have load ratings appropriate to carry the maximum loads as required by FMVSS No. 120. The vehicle rims are suitable for the vehicle tires and contain the required markings.

# SECTION 2 TEST PROCEDURE AND DISCUSSION OF RESULTS

Model Year / Mfr. / Model	2012 IC Corp. CE	
Incomplete Vehicle Make	N/A	
NHTSA No.	CC0900	
GVWR	13,517 kg / 29,800 lbs	
Build Date for Bus	09/2010	
VIN	4DRBUSKP6CB392585	
Designated Seating Capacity	(1 Driver, 67 Passengers)	
Vehicle Type	School Bus	
Tire Pressure from certification label (at capacity)	Front: 758 KPa	Rear: 689 KPa
Odometer Reading	2,336 miles	
Dealer Installed Optional Accessories	None Noted	

### SUMMARY

Requirements	PASS / FAIL
TIRE AND RIM SELECTION (S5.1)	PASS
Installed tires and rims are suitable for vehicle	1 700
Rim Marking (S5.2)	PASS
Rims contain all required markings of proper dimensions	PASS
LABEL INFORMATION (S5.3)	
Vehicle has proper certification/tire information label. Label tires at	PASS
recommended inflation pressure and rims are suitable for vehicle.	
Weight Distribution (49 CFR 567 Certification)	PASS
Vehicle loaded with occupants and cargo does not exceed GVWR	PASS
Results	PASS
Test data indicates compliance with FMVSS 120	FASS

# SECTION 3 COMPLIANCE TEST DATA

### **DATA SHEET 1**

### **GENERAL TIRE AND RIM DATA**

Test Vehicle: 2012 IC Corp. CE School Bus NHTSA No.: CC0900

Test Lab: MGA Research Corporation Test Dates: 8/3/11 – 8/4/11

### **GENERAL DATA**

Tire Type: (Passenger car or other)	Truck/Bus
Are the tire and rim sizes the same for all axles, including the spare?	Yes
Does the tire size fitted to the axles appear on the Certification or Tire label? (If NO, describe)	No*
Number of axles	2
Dual tires on rear axle(s)	Yes

<sup>\*</sup> Vehicle fitted with 11R22.5 size tires. Certification label recommends 265/75R22.5G for the front axle and 295/75R22.5G for the rear axle.

### TIRE DATA FROM SIDEWALL

Right Front		
Manufacturer	Continental	
Brand	HSR2	
Tire Size	11R22.5	
Maximum Tire Load Rating (kg)	Single: 2,800 kg / Dual: 2,650 kg	
De-rated Tire Load Rating (kg)	N/A	
Maximum Inflation Pressure (KPa)	720	
Tire has DOT symbol (Yes/No)	Yes	
DOT serial number	DOT A33T 2A5 1610	

# MOUNTED TIRE VS. AXLE RATING COMPARISON

(AT SIDEWALL MAXIMUM INFLATION PRESSURE)

	Front Axle	Rear Axle
A. GAWR (kg) from certification label	4,536	9,525
B. (No. of tires) x (tire load rating (kg) from above table)	5,600	10,600
C. Is "B" equal to or greater than "A"? (Yes/No)	Yes	Yes

# DATA SHEET 1 GENERAL TIRE AND RIM DATA

Test Vehicle: 2012 IC Corp. CE School Bus NHTSA No.: CC0900

Test Lab: MGA Research Corporation Test Dates: 8/3/11 – 8/4/11

### **RIM MARKINGS**

	Right Front
A. Source of published dimensions (letter designation)	Т
B. Rim Size	22.5 x 8.25
C. Does rim contain DOT symbol? (Yes/No)	Yes
D. Manufacturer's name, symbol or trademark (copy format)	Accuride
E. Date of manufacture or symbol	08 19 10
Do items A-C appear on weather side of rim? (Yes/No)	Yes
Letter height (not less than 3 mm)	Yes – 5 mm
Lettering (impressed or embossed)	Impressed
Are all rim markings legible? (Yes/No)	Yes
Do all markings comply with requirements? (Yes/No)	Yes
Rims are suitable for tires on vehicles? (Yes/No)	Yes

### **RIM MEASUREMENTS**

	Right Front
Rim width	216 mm
Rim diameter	572 mm
Rim measurements same as rim markings? (Yes/No)	Yes

Requirements	PASS / FAIL
TIRE AND RIM SELECTION (S5.1) Installed tires and rims are suitable for vehicle	PASS
Rim Marking (S5.2) Rims contain all required markings of proper dimensions	PASS

Remarks: None

Tested By: Est / so - )

Approved By: Halal Janous

Date: August 3, 2011

# DATA SHEET 2

### **CERTIFICATION AND TIRE LABEL INFORMATION**

Test Vehicle: 2012 IC Corp. CE School Bus NHTSA No.: CC0900

Test Lab: MGA Research Corporation Test Dates: 8/3/11 – 8/4/11

### LABEL INFORMATION

Label Design (Combined Certification and Tire Label)	Combined
Label Design (Separate Tire Information Label)	-
Label in English? (Yes/No)	Yes
Block capital letter and numbers are not less than 2.4 mm in height (yes/no)	Yes – 2.4
Label is permanently affixed; describe method of affixing (rivets, glue, etc.)	Yes / Glue
Does label text color contrast with background? (yes/no)	Yes
Location of Label(s) on the vehicle	Interior Bulkhead Above Driver

TIRE AND RIM DATA FROM LABEL (FOR EACH GAWR/GVWR)

GVWR: <u>13,517</u> kg	Front Axle	Rear Axle
Tire Size	265/75R22.5G	295/75R22.5G
Rim Size (in)	22.5 x 7.5	22.5 x 8.25
Recommended inflation pressure (KPa)	758	689
Are labeled rims suitable for labeled tires (Yes/No) <sup>1</sup>	Yes	Yes
Referenced load rating at label recommended inflation pressure (kg) <sup>1</sup>	2,360	2,390

<sup>&</sup>lt;sup>1</sup> Referenced source for tire/rim match and load rating data: <u>2011 Tire and Rim Association Yearbook</u>

### CERTIFICATION/TIRE LABEL MAXIMUM CAPACITY COMPARISON

GVWR: <u>13,517</u> kg	Front axle	Rear Axle
A.GAWR (kg) FROM CERTIFICATION LABEL	(C) 4,536	(D) 9,525
B.(No. of tires) x (Tire load rating (kg))	4,720	9,560
Is "B" equal or greater than "A"? (Yes/No)	Yes	Yes
Is (C) plus (D) equal to or greater than GVWR? (Yes/No)	Yes – 1	4,061

# DATA SHEET 2 CERTIFICATION AND TIRE LABEL INFORMATION

Test Vehicle: 2012 IC Corp. CE School Bus NHTSA No.: CC0900

Test Lab: MGA Research Corporation Test Dates: 8/3/11 – 8/4/11

Requirements	PASS / FAIL
Vehicle has proper certification/tire information label. Label tires at recommended inflation pressure and rims are suitable for vehicle.	PASS

Tested By:

Approved By:

Date: <u>August 3, 2011</u>

## **DATA SHEET 3**

### **WEIGHT DISTRIBUTION**

Test Vehicle: 2012 IC Corp. CE School Bus NHTSA No.: CC0900

Test Lab: MGA Research Corporation Test Dates: 8/3/11 – 8/4/11

### **FLUID LEVELS**

Fuel	FULL
Coolant	FULL
Other Fluids: Washer fluid, brake fluid, etc.	FULL

### **TIRE PRESSURES**

Tire	Left Front	Right Front	Left Rear	Right Rear
Tire Pressure (kPa)	758	758	689	689

<sup>\*</sup>Tires were inflated to recommended inflation pressure on tire label. Mounted tires did not match tires listed on label. Mounted tires have a maximum sidewall pressure of 720 kPa.

### **OCCUPANT AND CARGO LOADS**

Total Occupant Load (kg) [# of designated seating position 54 kg per student]	3,686 (1 driver, 67 students)					
Manufacturer's Rated Cargo Loa [If not stated on vehicle or provid leave blank]						
	ccupant = Rated Cargo Load 1 kg (must be positive)					
Describe Placement of Cargo	Cargo Placed on Floor Down Center Aisle of Bus					

# DATA SHEET 3 WEIGHT DISTRIBUTION

Test Vehicle: 2012 IC Corp. CE School Bus NHTSA No.: CC0900

Test Lab: MGA Research Corporation Test Dates: 8/3/11 – 8/4/11

### **WEIGHT DISTRIBUTION**

	Tire or	CONDI	TION 1	CONDI	TION 2	CONDI	TION 3				
ITEM	Vehicle	U١	/W	Cond. 1 +	occupants	Cond. 2 + cargo					
I I EIVI	Rating*	(k	g)	(kṛ	g) .	(kṛ	g)				
	(kg)	Measured	Overload	Measured	Overload	Measured	Overload				
Left Front Tire	2,800 / 2,360	1,604	No	1,972	No	2,242	No				
Right Front Tire	2,800 / 2,360	1,604	No	1,990 No		2,214	No				
Front Axle	4,536	3,208 No		3,962	No	4,456	No				
Left Rear Tire	5,300 / 4,780	2,280	No	3,718	No	4,268	No				
Right Rear Tire	5,300 / 4,780	2,692	No	4,180	No	4,792	Yes**				
Rear Axle	9,525	4,972	No	7,898	No	9,060	No				
Total Vehicle	13,517	8,180	No	11,860	No	13,516	No				

<sup>\*</sup> Vehicle and axle weight ratings (GVWR & GAWR) are located on the vehicle certification label plate. Vehicle tire load ratings are based on both the installed tires at the max sidewall inflation pressure and the labeled tires at the recommended inflation pressure for each respective axle, as determined from the appropriate tire manufacturer's specification table.

<sup>\*\*</sup> Under this simulated load condition, the actual load on the right rear tire was 12 kg above the load rating of the labeled tire size at the labeled recommended inflation pressure. This condition does not represent a test failure.

Requirements	PASS / FAIL
Weight Distribution (49 CFR 567 Certification)  Vehicle loaded with occupants and cargo does not exceed GVWR	PASS

Remarks: None

Tested By:

Approved By: Hickal Janois

Date: August 4, 2011

### **INSTRUMENTATION AND EQUIPMENT LIST**

NHTSA No.: CC0900

Test Vehicle: 2012 IC Corp. CE School Bus
Test Lab: MGA Research Corporation Test Dates: 8/3/11 - 8/4/11

	Digital Caliper	Vehicle Scale	Vehicle Scale	Tape Measure	Pressure Gauge
Make	Mitutoyo	GSE	GSE	Stanley	Measurement Ltd, Inc.
Model	6" 500-171-20	465	465	Powerlock 3M	MS-5520
Serial No.	05389443	004804&212091R	004804&212092R	588	R012007
Range	0 to 150 mm	0 to 20,000 lb	0 to 20,000 lb	0 to 8 m	0 to 150 psi
Accuracy	0.01 mm	0.25% static	0.25% static	1 mm	0.1 psi
Cal. Date	03/05/11	10/01/10	10/01/10	03/24/11	02/25/11
Cal. Due Date	09/05/11	09/29/11	09/29/11	09/24/11	08/28/11

### **INSTRUMENTATION AND EQUIPMENT LIST**

Test Vehicle: 2012 IC Corp. CE School Bus NHTSA No.: CC0900

Test Lab: MGA Research Corporation Test Dates: 8/3/11 – 8/4/11

### **SCALE CALIBRATION SHEET**

COLE MANTENINCE AND CALIBRATION PROCEDURE MANUAL; SERVAL # MGA-MANUAL   S00# NUMBER(S)   DI	TYPE	Menomonee	FLOOR	SERIAL#	T	_	04804	ID#			ASS	IIIL
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**************************************	MODEL	4	65	MIN. DIV.			5	LOCATION		BUS AND TRUCK	BAY 1	
Color Number (S)   Color Numbe	TEST AND UNCERT	AINTY PROCE	DURE JUSTIF	ICATION		1	NIST TRACEA	BLE TEST ST	ANDARD	S USED THIS CALIE	BRATION	
THERE WAS NO DEVIATION IN PROCEDURE AS WRITTEN   1000/F NUMBER(S)   NSI-A\O   NSI-A\	LEASE REFER TO TEST STANDAR	D TRACEABILITY DOC	UMENTS MADE PART	OF	50	# NUI	MBER(S)	Color	C600	0-619		
TEST WEIGHT CERTIFICATION  TO Hundidly	SCALE MAINTENANCE AND CALIBRA	ATION PROCEDURE M	ANUAL; SERIAL#	MGA-804-L1	50	0# NL	JMBER(S)					
TEST WEIGHT CERTIFICATION  ESTIMATE OF ENVIRONMENTAL CONDITIONS  Temperature	THERE WAS NO DEVI	ATION IN PROCE	DURE AS WRI	TTEN	10	00# N	IUMBER(S)	NS1-1	1100	- NSI-A	115	
Temperature    Temperature   O   Humidity   Mark Movement   Movembral   M				N								
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Technician's Comments/Observations/Opinions:  APPROVED  "THIS REPORT IS APPLICABLE ONLY TO THE DEVICE IDENTIFIED IN THE LOCATION SPECIFIED AS PART OF THIS REPORT." M. W. D.  The serial number of this report is 1010 MGAO  This report, page (1) of was completed on 1010 DO 100 by	ESTIMATED UNCERTAI	NTY OF THIS CAL	IBRATION IS _		BY CS	TYPE	EVALUATION I	DEFAULT; WITH	A CONFIDE	NCE LEVEL OF 95%.		
THIS REPORT IS APPLICABLE ONLY TO THE DEVICE IDENTIFIED IN THE LOCATION SPECIFIED AS PART OF THIS REPORT. ** M. W. D.  The serial number of this report is 10010 MGAO "The report may not be duplicated without written consent of Certified Scale Inc.  This report, page (1) of Was completed on 101, 2010 by	WUNCERTAINTY OF THIS	CALIBRATION IS	S UNKNOWN BY	STATISTICAL O	CALCU	LATIO	N; ASSUMED EC	QUAL TO ± 50%	OF THE MI	NIMUM VALID DIVISION		
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	This report, page (	) of Was	completed on	10/130	010	by '	Br	W Certi	Sied Scale I	nc. Representative		
Next scheduled Full Calibration is due Next Preventive Maintenance visit is due Date	Next scheduled Full C	Calibration is du	6 9/20	11		Ne	ext Preventive			NIA		

The calibration interval for this instrument is 12 months. The next scheduled full calibration is due September 30, 2011.

### **INSTRUMENTATION AND EQUIPMENT LIST**

Test Vehicle: 2012 IC Corp. CE School Bus NHTSA No.: CC0900

MGA Research Corporation Test Lab: 8/3/11 - 8/4/11 Test Dates:

### **SCALE CALIBRATION SHEET**

TYPE	-	FLOOR	SERIAL#			MGA RESE	ID#			LASS IIIL
MANUFACTURER	G	SE	CAPACITY		20	0,000	MAX. LOAD		15,000 U	NITS LBS
MODEL	4	65	MIN. DIV.			5	LOCATION		BUS AND TRUC	K BAY 1
TEST AND UNCERT	AINTY PROCE	DURE JUSTIF	ICATION		N	IIST TRACEA	BLE TEST ST	ANDARD	S USED THIS CAL	IBRATION
LEASE REFER TO TEST STANDARD	TRACEABILITY DOC	UMENTS MADE PART	OF	50#	NUN	MBER(S)	C600	-101°		
CALE MAINTENANCE AND CALIBRA	ATION PROCEDURE M	ANUAL; SERIAL #	MGA-804-L1	500	O# NU	IMBER(S)	B01-	BOL		
THERE WAS NO DEVI	ATION IN PROCE	EDURE AS WRI	TTEN	100	00# N	UMBER(S)	NSI-A	4001	hru NSI-f	HIS
DEVIATION FROM PRO	OCEDURE IS NO	TED HEREUPO	N							
	EIGHT CERTI							-700	NTAL CONDITION	
LEASE REFER TO TEST STANDARD				_	mpera		o Humid			ment Minimal
SCALE MAINTENANCE AND CALIBRA			MGA-804-L1	Vib	ration				No~	TOP.
VISUAL INSPEC	CTION	ACCEPT	REJECT						F SUB-CONTRAC	
FUNCTIONALITY; as left	V/ITV: 00 1-4	-		-	_				c. facility, Menomor	ee Falls, WI.
PHYSICAL CONDITION; a		1			nis te				facility; located at: RLINGTON, WI 531	05
SUITABILITY FOR INTEN		V		П	Subse	ntracted to:	INCENTIOND	, 501		-
GOTTABILITY FOR INTEN	JED OUE		*** FII	-	_	RESULTS ***				
	T	AS FO					AS LEFT		TOLE	RANCES
TEST POINT	EXPECTED	MEASURED		ğ	Æ	MEASURED		à R	LOW LIMIT	HIGHLIANT
	VALUE	VALUE	ERROR	ACCEPT	REJECT	VALUE	ERROR	ACCEPT	LOW LIMIT	HIGH LIMIT
				S	CALE					
DISTRIBUTION	1000	1000	0	-		1000	0	/	995	1005
DISTRIBUTION	2000	1995	457	1		4000	0	1	1995	2005
DISTRIBUTION	3000	2985	<157		-	3000	0	1	2990	3010
DISTRIBUTION	4000	3980	5207		~	4000	0	1	3990	4010
DISTRIBUTION	5000	4980	1207		v	5000	0	1	4990	5010
DISTRIBUTION	10,000	9965	357		-	10,000	0	1	9980	10,020
DISTRIBUTION	15,000	14960	(40)		-	15000	0	1	14,970	15,030
DISTRIBUTION	18,000	17955	(45)		V	18000	A	1	17,960	18,040
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Next scheduled Full C	Calibration is du	e 9120	11		Ne	xt Preventive	Maintenance v		NVA	
			Date		-1773					Date

The calibration interval for this instrument is 12 months. The next scheduled full calibration is due September 30, 2011.

### **PHOTOGRAPHS**

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



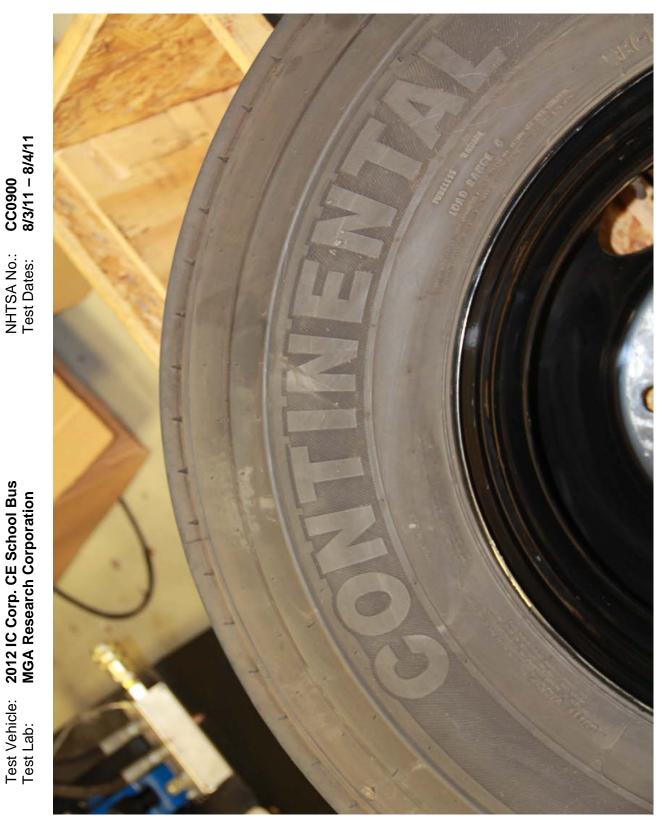
2012 IC Corp. CE School Bus MGA Research Corporation Test Vehicle: Test Lab:

8/3/11 - 8/4/11

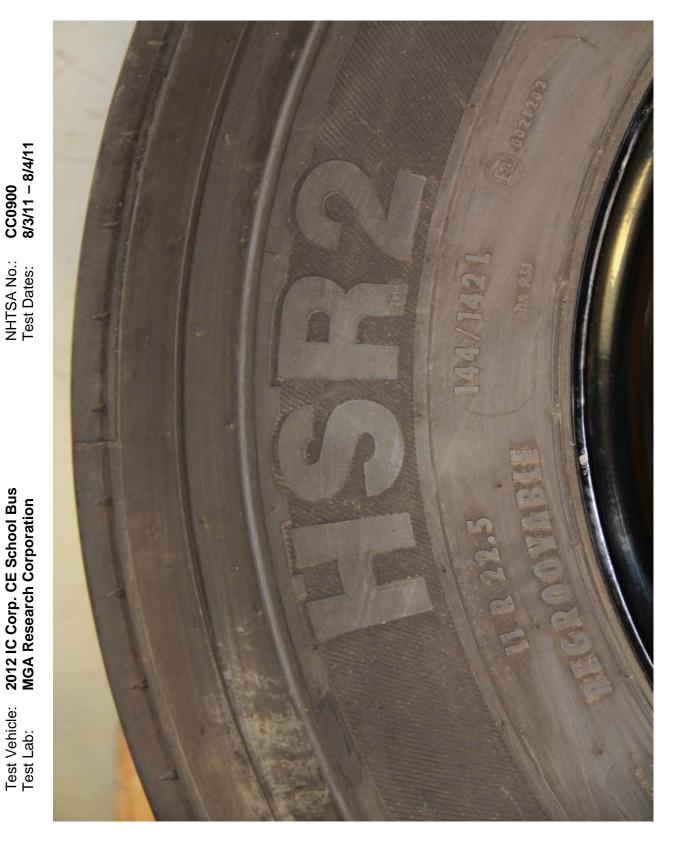
006000

NHTSA No.: Test Dates:

265/75R22.5G TIRES 14 PLY AT 758 KPa (110 PSI) COLD RIMS 22.5X7.50 ANLE SINGLE GAWR REAR 9,525 KGS (21,000 LBS) WITH 14 PLY AT GAWR FRONT 4,536 KGS ( 10,000 LBS ) WITH AXLE DUAL THIS VEHICLE CONFORMS TO ALL ( 100 PSI) COLD 22.5X8.25 AXLE DII VEHICLE SAFETY STANDARDS IN DATE OF MANUFACTURE 09 MO. 10 YR. MANUFACTURE SHOWN ABOVE. APPLICABLE FEDERAL MOTOR GVWR 13,517 KGS (29,800 LBS) MANUFACTURED BY **EFFECT ON THE DATE OF** IC CORPORATION 22.5X7.50 TIRES VEHICLE IDENTIFICATION NO. 4DRBUSKP6CB392585 SCHOOL BUS # 392585 295/75R22.5G VEHICLE TYPE RIMS



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



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



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

Tire Load Ratings and Tire Size Designation



Rim Manufacturer, Size, and DOT Symbol



CC0900 8/3/11 - 8/4/11

NHTSA No.: Test Dates:



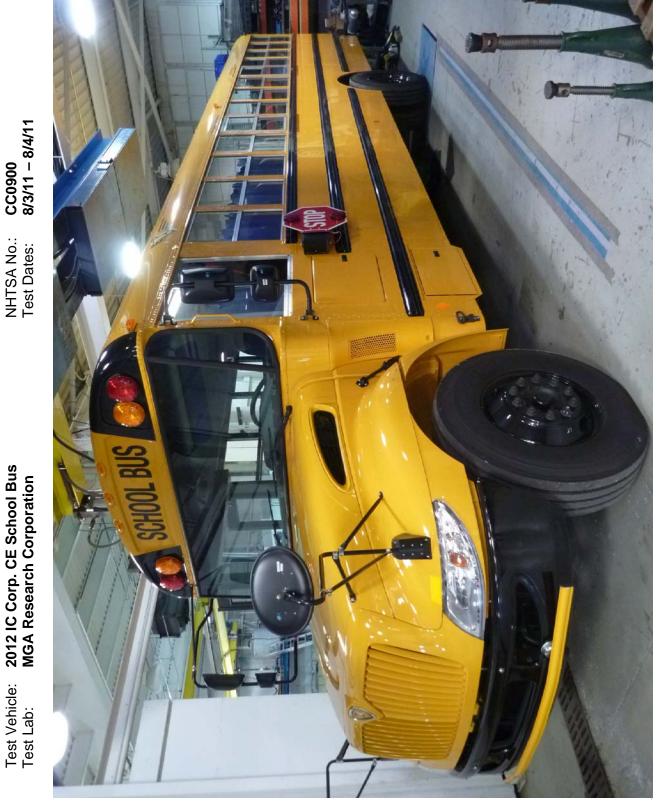
Vehicle on Scales Doing Measurement of Front Axle Loads



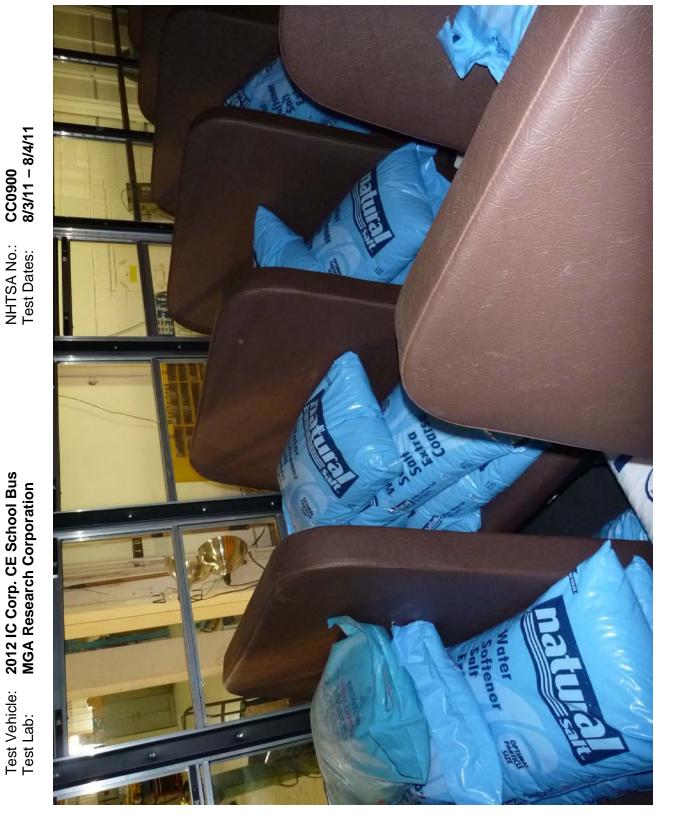
CC0900 8/3/11 - 8/4/11

NHTSA No.: Test Dates:

Vehicle on Scales Doing Measurement of Rear Axle Loads



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



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