**REPORT NUMBER: 131-MGA-05-004**

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

**US Bus Corporation**
**2005 US Bus Sturdibus HD**
**NHTSA # C50900**

**PREPARED BY:**
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**Final Report Date: April 19, 2005**

**FINAL REPORT**

**PREPARED FOR:**
**U.S. DEPARTMENT OF TRANSPORTATION**
**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**
**ENFORCEMENT**
**OFFICE OF VEHICLE SAFETY COMPLIANCE**
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**WASHINGTON, D.C. 20590**

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Prepared by:  Date: April 19, 2005

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FINAL REPORT ACCEPTED BY:

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Date of Acceptance

**Technical Report Documentation Page**

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| *15. Supplementary Notes* | | | |
| *16. Abstract*<br>Compliance tests were conducted on the subject, 2005 US Bus Sturdibus HD School Bus NHTSA No. C50900, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-131SB-01 for the determination of FMVSS 131 compliance.<br><br>Test failures identified were as follows: None | | | |
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Form DOT F1700.7 (8-72)

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## SECTION 1
## PURPOSE OF COMPLIANCE TEST

Tests were conducted by the MGA Research Corporation-Wisconsin Operations on a 2005 US Bus Sturdibus HD School Bus, NHTSA No. C50900, in accordance with the specifications of the Office of Vehicle Safety Compliance (OVSC) Test Procedures TP-131SB-01 to determine compliance to the requirements of Federal Motor Vehicle Safety Standard (FMVSS) 131, "School Bus Pedestrian Safety Devices."

This program is sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-02-D-01057.

## SECTION 2
## TEST DATA SUMMARY

Based on the tests performed, the 2005 US Bus Sturdibus HD School Bus, NHTSA No. C50900, appears to meet all of the requirements of FMVSS 131. See Test Summary Data Sheet on the following page.

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

Test Vehicle: **2005 US Bus Sturdibus HD School Bus** NHTSA No.: **C50900**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **03/30/05**

| | | | |
|---|---|---|---|
| VIN | 1GBE5V1255F515430 | Chassis Cab | Yes |
| No. of Stop Signal Arms | 1 | Forward Control | No |
| Pass. Capacity (driver included) | 30 | Rear Engine | No |
| Stop Signal Arm Manufacturer | Transpec Worldwide | Tire Size (on bus) | 225/70R19.5 |

**DATA FROM CERTIFICATION LABEL**

| | | | |
|---|---|---|---|
| Final Stage Manufacturer | US Bus | Date of Mfg. | 03/05 |
| Incomplete Vehicle Manufacturer | General Motors | Date of Mfg. | 12/04 |
| GVWR (kg) | 8845 | GAWR Front (kg) | 3175 |
| | | GAWR Rear (kg) | 6123 |

**TEST SUMMARY**

| | Pass/Fail or N/A |
|---|---|
| Dimensional Requirements (S5.1) | **PASS** |
| Surface Content and Labeling (S5.2) | **PASS** |
| Conspicuity Requirements (S5.3) | **PASS** |
| Location and Position Requirements (S5.4) | **PASS** |
| Arm Operation Requirements (S5.5) | **PASS** |

## SECTION 3
## COMPLIANCE TEST DATA

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

Test Vehicle: **2005 US Bus Sturdibus HD School Bus** NHTSA No.: **C50900**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **03/30/05**

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

| | Forward Signal Arm (mm) | Rearmost Signal Arm (mm) |
|---|---|---|
| Diameter 1 | 491 | --- |
| Diameter 2 | 491 | --- |
| Diameter 3 | 491 | --- |
| Diameter 4 | 491 | --- |
| Range (max. – min.) | 0 | --- |

| REQUIREMENTS | Yes, No, N/A |
|---|---|
| Are all octagon diameter values ≥ 450 mm? | Yes |
| Is range of octagon diameter values ≤ 12 mm? | Yes |
| Are all octagon chord dimensions equal within 6 mm? | Yes |

| Test Results | | Pass/Fail |
|---|---|---|
| S5.1 | Dimensions of Stop Signal Arm | **PASS** |

Tested By: Brian Roach Approved By: _____

Date: March 30, 2005

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

Test Vehicle: **2005 US Bus Sturdibus HD School Bus** NHTSA No.: **C50900**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **03/30/05**

| REQUIREMENTS | Forward Signal Arm | | Rearmost Signal Arm | |
|---|---|---|---|---|
| | Front Side | Aft Side | Front Side | Aft Side |
| Color RED except for border & legend (Yes/No) | YES | YES | --- | --- |
| Color of border is WHITE (Yes/No) | YES | YES | | --- |
| Color of word "STOP" is WHITE (Yes/No) | YES | YES | | --- |
| Word "STOP" is in upper case letters (Yes/No) | YES | YES | | --- |
| Width of border (≥ 12 mm) | 14 mm | 14 mm | | --- |
| Percent of border obscured by mounting brackets, clips, or bolts, or other components (15% ≤) * | 0% | 0% | | --- |
| Height of letters (≥ 150 mm) | 155 mm | 155 mm | | --- |
| Stroke width of letters (≥ 20 mm) | 27 mm | 27 mm | | --- |

* = In addition to area obscured by 2 optional red lamps, if installed.

NOTE:
1. Front side of rearmost signal arm shall not contain any lettering or border.

| Test Results | | Pass/Fail |
|---|---|---|
| S5.2 | Surface content and labeling | **PASS** |

Tested By: Brian Roach Approved By: _____

Date: March 30, 2005

**FMVSS DATA SHEET 3**
**CONSPICUITY (S5.3)**

Test Vehicle: **2005 US Bus Sturdibus HD School Bus** NHTSA No.: **C50900**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **03/30/05**

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

**REFLECTORIZED MATERIAL (S5.3.1)**

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

**FMVSS 131 DATA SHEET 3…continued**
**CONSPICUITY (S5.3)**

Test Vehicle: **2005 US Bus Sturdibus HD School Bus** NHTSA No.: **C50900**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **03/30/05**

**Optional Illuminated Lettering (S5.3.1.1)**

| | Stop Signal Arm | |
|---|---|---|
| Item | Forward | Rearmost |
| Does the stop sign(s) have illuminated lettering? If optional illuminated lettering is installed, the following requirements apply in addition to reflectorized surface. | YES | --- |

| Requirements | | Forward Signal Arm | | Rearmost Signal Arm | |
|---|---|---|---|---|---|
| | | Front Side | Aft Side | Front Side | Aft Side |
| Only Red lamps used (Yes/No) | | YES | YES | --- | --- |
| Red lamps form the complete shape of each letter of the legend. (Yes/No) | | YES | YES | --- | --- |
| Red lamps centered within stroke of each letter (Yes/No) or Red lamps outline each letter in immediately surrounding area (Yes/No) | | YES | YES | --- | --- |
| The shape of each letter remains constant (Yes/No) | | YES | YES | --- | --- |
| Net stroke width ≥ 15 mm (stroke width minus lamp width) | "S" | 21 mm | 21 mm | --- | --- |
| | "T" | 21 mm | 21 mm | --- | --- |
| | "O" | 21 mm | 21 mm | --- | --- |
| | "P" | 21 mm | 21 mm | --- | --- |
| Lamps on each side of the signal arm flash (60-120 flashes/min.) | | YES | YES | --- | --- |
| Lamps current "on" time of 30% to 75% of the total flash cycle | | YES | YES | --- | --- |
| Total current "on" time for the two terminals shall be between 90-110% of the total flash cycle. | | YES | YES | --- | --- |
| If Xenon short-arc lamps - "off" time before each flash of at least 50% of the total flash cycle. | | N/A | N/A | --- | --- |

| Lamp Type | | |
|---|---|---|
| | | Filament |
| | | Gaseous Discharge |
| | X | Light emitting diode |

**FMVSS 131 DATA SHEET 3…continued**
**CONSPICUITY (S5.3)**

Test Vehicle: **2005 US Bus Sturdibus HD School Bus** NHTSA No.: **C50900**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **03/30/05**

## RED FLASHING LAMPS (S5.3.2)

| Requirements | Forward Signal Arm | | Rearmost Signal Arm | |
|---|---|---|---|---|
| | Front Side | Aft Side | Front Side | Aft Side |
| Red lamps centered on the vertical centerline (At least 2, enter quantity) | N/A | N/A | --- | --- |
| One lamp at extreme top and another at extreme bottom (Yes/No) | N/A | N/A | --- | --- |
| Lamps on each side of the signal arm flash alternately (60-120 flashes/min.) | N/A | N/A | --- | --- |
| Lamps current “on” time of 30% to 75% of the total flash cycle. | N/A | N/A | --- | --- |
| Total current “on” time for two terminals shall be between 90 and 110% of the total flash cycle. | N/A | N/A | --- | --- |
| If Xenon short-arc lamps -“off” time before each flash of at least 50% of total flash cycle. | N/A | N/A | --- | --- |
| Symbol “DOT” on each lamp lens (Yes/No) | N/A | N/A | --- | --- |
| Additional markings on lamp lenses | N/A | N/A | --- | --- |

## MARKINGS ON THE FLASHER

| | | | |
|---|---|---|---|
| Make | In Power | Serial No. | 1537-1020 |
| Model | SBF-94 | Date of Mfg. | Unknown |

Test Notes:

| TEST RESULTS | | Pass/Fail or N/A |
|---|---|---|
| S5.3.1 | Reflectorized Material | **PASS** |
| S5.3.1.1 | Optional Illuminated Lettering | **PASS** |
| S5.3.2 | Red Flashing Lamps | N/A |

Tested By: Brian Roach Approved By: _____

Date: March 30, 2005

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

Test Vehicle: **2005 US Bus Sturdibus HD School Bus** NHTSA No.: **C50900**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **03/30/05**

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

| Requirements | Stop Signal Arm | |
|---|---|---|
| | Forward | Rearmost |
| Signal arm perpendicular to side of bus (Measure angle between vertical plane of side of bus and vertical plane of the signal arm.) 90 ± 5° | YES 87.1° | --- |
| Top edge of signal arm parallel to horizontal plane (Measure angle between vertical plane of side of bus and the top edge of the signal arm.) 90 ± 5° | YES 89.4° | --- |
| Top edge of signal arm not more than 152.4 mm from a horizontal plane tangent to lower edge of frame of passenger window immediately behind the driver's window: | | |
| Measure top corner closest to the school bus | 7 mm | --- |
| Measure top corner furthest from school bus | 7 mm | --- |
| Vertical centerline of signal arm not less than 228.6 mm away from side of bus | 382 mm | --- |
| Stop signal arm(s) installed on left side of bus (Yes, No, or Not Applicable) | YES | --- |

| TEST RESULTS | | Pass/Fail or N/A |
|---|---|---|
| S5.4 | Stop Signal Arm Installation | **PASS** |

Tested By: Brian Roach Approved By: _____

Date: March 30, 2005

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

Test Vehicle: **2005 US Bus Sturdibus HD School Bus** NHTSA No.: **C50900**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **03/30/05**

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

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

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

**No manual override device was installed on this vehicle which allowed overhead lights to flash and stop signal arm NOT to extend.**

| TEST RESULTS | | Pass/Fail or N/A |
|---|---|---|
| S5.5 | Stop Signal Arm Operation | **PASS** |

Tested By: Brian Roach Approved By: _____

Date: March 30, 2005

## SECTION 4

## INSTRUMENTATION AND EQUIPMENT LIST

Test Vehicle: **2005 US Bus Sturdibus HD School Bus** NHTSA No.: **C50900**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **03/30/05**

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

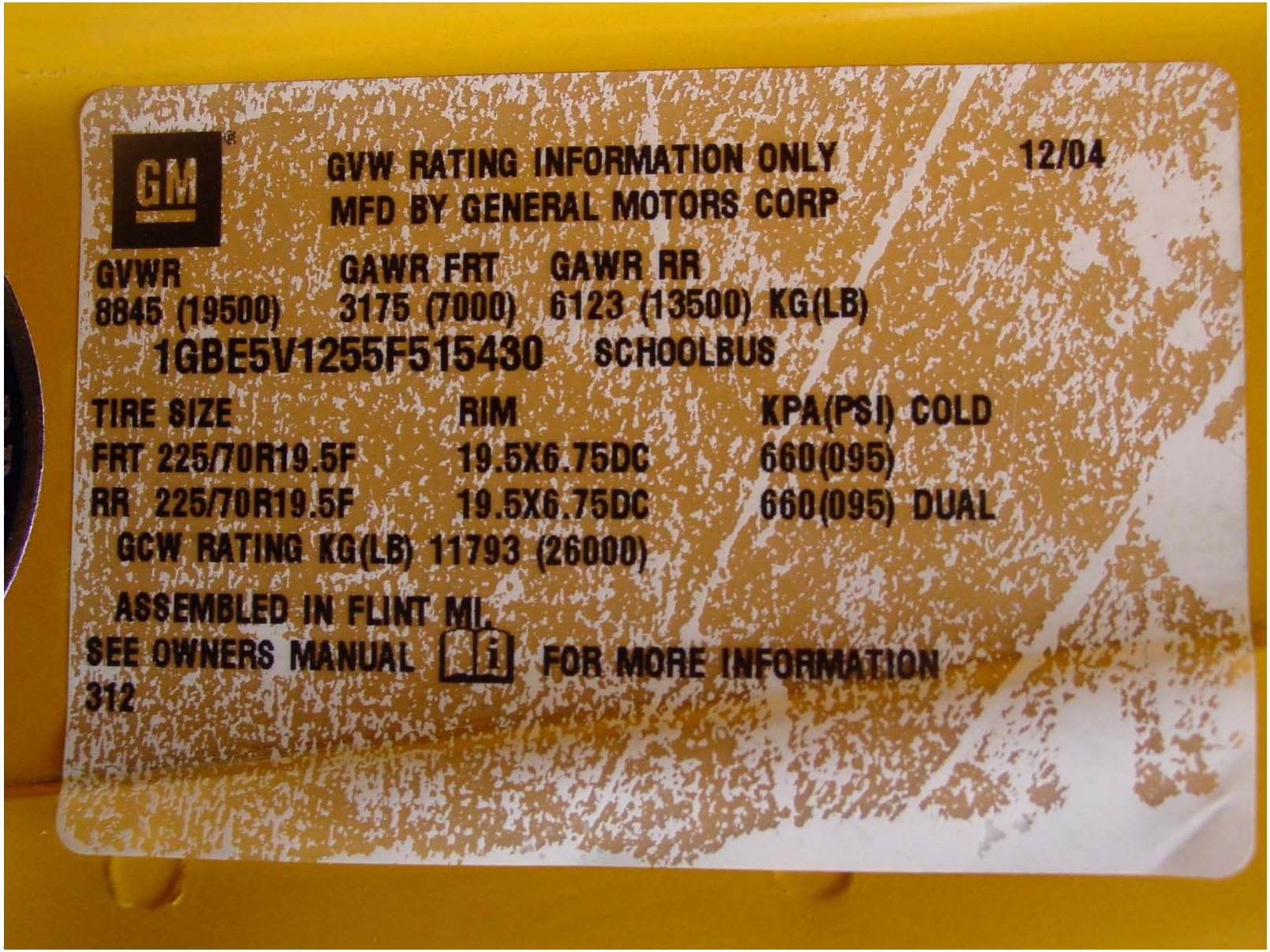
| | Digital Caliper | Inclinometer | Tape Measure |
|---|---|---|---|
| Make | Starrett | Digital Protractor | Stanley |
| Model | 721 | Pro 360 | Powerlock |
| Serial # (s) | 00410129 | Complab | 228 |
| Range | 0 to 150 mm | 0 to 360 degrees | 0 to 5 m |
| Accuracy | 0.01 mm | 0.1 degree | 1 mm |
| Cal. Date | 01/31/05 | 02/16/05 | 02/03/05 |
| Cal. Due | 06/31/05 | 08/16/05 | 08/03/05 |

## SECTION 5
## PHOTOGRAPHS

## TABLE OF PHOTOGRAPHS

Test Vehicle: **2005 US Bus Sturdibus HD School Bus**
Procedure: **FMVSS 131** NHTSA No.: **C50900**


3/4 Frontal View from Left Side of Vehicle with Stop Signal Arm(s) Extended




Incomplete Vehicle Manufacturer's Certification Label


Vehicle Certification Label and Tire Placard

Test Vehicle: **2005 US Bus Sturdibus HD School Bus**
Procedure: **FMVSS 131** NHTSA No.: **C50900**


Front Close Up View of Stop Signal Arm

Test Vehicle: **2005 US Bus Sturdibus HD School Bus**
Procedure: **FMVSS 131** NHTSA No.: **C50900**


Back Close Up View of Stop Signal Arm

Test Vehicle: **2005 US Bus Sturdibus HD School Bus**
Procedure: **FMVSS 131** NHTSA No.: **C50900**


Close Up View of the Switches That Allow Extension of the Stop Signal Arm(s)

Test Vehicle: **2005 US Bus Sturdibus HD School Bus**
Procedure: **FMVSS 131** NHTSA No.: **C50900**

Switch Console Relative to the Driver Seating Position