SAFETY COMPLIANCE TESTING FOR
FMVSS NO. 103
WINDSHIELD DEFROSTING AND
DEFOGGING SYSTEMS

NISSAN MOTOR CO., LTD.
2007 NISSAN VERSA, PASSENGER CAR
NHTSA NO. C75201

GENERAL TESTING LABORATORIES, INC.
1623 LEEDSTOWN ROAD
COLONIAL BEACH, VIRGINIA 22443

MARCH 3, 2008
FINAL REPORT
PREPARED FOR
U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
1200 NEW JERSEY AVE. S.E.
WASHINGTON, D.C. 20590
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Compliance tests were conducted on the subject, 2007 Nissan Versa Passenger Car in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-103-13 for the determination of FMVSS 103 compliance. Test failures identified were as follows: None
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<td>5.15 Defrosted Area at 25 minutes Test #2</td>
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<td></td>
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<tr>
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</tbody>
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1.0 PURPOSE OF COMPLIANCE TEST

A 2007 Nissan Versa Passenger Car was subjected to Federal Motor Vehicle Safety Standard (FMVSS) No. 103 testing to determine if the vehicle was in compliance with the requirements of the standard. All tests were conducted in accordance with NHTSA, Office of Vehicle Safety Compliance (OVSC) Laboratory Procedure, TP-103-13 dated 26 June 1996 and General Testing Laboratories, Inc. (GTL) Test Procedure, “Windshield Defrosting and Defogging Systems – Passenger Vehicles, Multipurpose Vehicles, Trucks and Buses”.

1.1 TEST VEHICLE

The test vehicle was a 2007 Nissan Versa Passenger Car. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: 3N1BC11E57L394885

B. NHTSA No.: C75201

C. Manufacturer: NISSAN MOTOR CO., LTD.

D. Manufacture Date: 12/06

1.2 TEST DATE

The test vehicle was subjected to FMVSS No. 103 testing on October 23-24, 2007.
SECTION 2

COMPLIANCE TEST PROCEDURE AND SUMMARY OF RESULTS

2.0 GENERAL

The 2007 Nissan Versa 4-door passenger car, NHTSA No. C75201 was subjected to FMVSS No. 103 tests on October 23-24, 2007. Photographs of the test vehicle are shown in Figures 5.1 through 5.4. The manufacturer’s certification and tire information labels are shown in Figures 5.5 and 5.6. The test instrumentation and instrument panel setups are depicted in Figures 5.7 and 5.8. Figures 5.9 through 5.15 depict the windshield pre and post test defrost conditions.

2.1 TEST PROCEDURE

Prior to test the test vehicle was inspected for completeness, systems operability, and appropriate fuel and liquid levels, i.e., oil and coolant to include antifreeze protection. The vehicle was then photographically documented as required by the DOT/NHTSA test procedure. The windshield patterns for areas A, B, C, and D had been furnished prior to testing and these areas were outlined on the windshield with a marker. The vehicle was then installed in the cold chamber and pre-conditioned for a 14-hour minimum, 0°C ±5°C F temperature soak for the first test run. After the pre-condition, the hood was raised to assure engine coolant and lubricant were stabilized within the test temperature range for a minimum of 2 hours.

At the end of the 2-hour minimum stabilization period, the entire windshield was sprayed evenly with 0.010 ounces of water per square inch of glass area. Refer to Section 3, Compliance Test Data, for test specifics such as total amount of water sprayed, spray gun identification, and air pressure regulation. The vehicle soak continued for an additional 30 minutes minimum but no more than 40 minutes after the windshield was sprayed.

At the conclusion of the additional soak time the vehicle’s engine was started and operated at a target speed of 1500-1600 rpm or at the manufacturer’s specification if different as noted on data sheets. The defroster blower was turned on to the high speed setting with the heater selector in the de-ice (defrost) position, and the temperature control in the maximum temperature position. All doors and windows were closed. The heater air intake was fully open and the vehicle’s hood closed. At no time during the test were the windshield wipers used.
At start of testing and during test, at each 5-minute interval after engine start, cold chamber, engine coolant, heater coolant in and defroster air left/defroster air right temperatures were recorded. Likewise at each 5-minute interval the boundary of the defrosted area was marked on the inside surface of the windshield. The test was run for a maximum of 40 minutes from engine start, or until such time as 100 percent windshield clearance was achieved. Photographs were made of the windshield at the pre-test frosted state and 20-minute and 25-minute intervals. Post test actions included placing a vellum pattern on the windshield and tracing the windshield's 5-minute interval defrosted area boundary lines onto the vellum pattern.

After the traces were obtained, the windshield was again thoroughly cleaned and the vehicle engine coolant and lubricant stabilization period at 0º ± 5º F temperature commenced for a repeat of the procedure discussed. The windshield patterns for both tests were used subsequently to determine the cleared area percentages.

2.2 SUMMARY OF RESULTS

Based on the test performed, the test vehicle appears to be in compliance with the requirements of FMVSS 103.
SECTION 3

COMPLIANCE TEST DATA

3.0 TEST RESULTS

The following data sheets document the results of testing on the 2007 Nissan Versa.
SUMMARY DATA SHEET
FMVSS 103, WINDSHIELD DEFROSTING AND DEFOGGING SYSTEMS

VEH. MOD YR/MAKE/MODEL/BODY: 2007 NISSAN VERSA PASSENGER CAR

VEH. NHTSA NO: C75201; VIN: 3N1BC11E57L394885

VEH. BUILD DATE: 12/06
TEST DATE: OCTOBER 23-24, 2007
TEST LABORATORY: GENERAL TESTING LABORATORIES

OBSERVERS: GRANT FARRAND, JIMMY LATANE

WINDSHIELD AREA: 1697 in² AREA C =245.0 in² AREA D =245.0 in² AREA A =1017.0 in²

MANUFACTURER’S WINDSHIELD PATTERN USED: Yes X No____

ENGINE THERMOSTAT NOMINAL REGULATING TEMPERATURE: 180 °F

HEATER-DEFROSTER SYSTEM INCLUDES AIR CONDITIONER: YES ___ NO ____

DESCRIBE UNUSUAL FEATURES OF DEFROSTING SYSTEM: NONE

DESCRIBE UNUSUAL FEATURES OF TEST CAR: NONE

<table>
<thead>
<tr>
<th>DESIGNATION</th>
<th>AREA PERCENT DEFROSTED</th>
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<tbody>
<tr>
<td></td>
<td>TEST 1</td>
</tr>
<tr>
<td>CRITICAL AREA C AT 20 MINUTES</td>
<td>100%</td>
</tr>
<tr>
<td>PASSENGER AREA D AT 25 MINUTES</td>
<td>100%</td>
</tr>
<tr>
<td>TOTAL AREA A AT 40 MINUTES</td>
<td>100%</td>
</tr>
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</table>

REMARKS:

RECORDED BY: G. FARRAND DATE: 10/24/07

APPROVED BY: D. MESSICK
**FMVSS 103 TEST DATA RECORD – TEST RUN NO. 1**

**VEH. MOD YR/MAKE/MODEL/BODY:** 2007 NISSAN VERSA PASSENGER CAR  
**VEH. NHTSA NO:** C75201; **VIN:** 3N1BC11E57L394885  
**VEH. BUILD DATE:** 12/06; **TEST DATE:** OCTOBER 23, 2007  
**TEST LABORATORY:** GENERAL TESTING LABORATORIES  
**OBSERVERS:** GRANT FARRAND, JIMMY LATANE

If 1st Test Run, chamber conditioned __24__ hours @ 0º ±5º F (14 hrs. min.)

Cold Soak Period: ______________ 24 HOURS ______________

Time engine coolant and lubricant remained stabilized at 0º F: __15__ hrs. __30__ minutes

Water Spray Gun and Nozzle Type: _______ BINKS #66 S _______

Spray Gun Pressure: ______________ 50 ______________ psi (50 psi ± 3 psi)

Water used: __17__ fluid oz. (0.010 ounces per square inch of windshield area)

Soak Period Between Ice Application and Test Start: __35__ minutes (30 to 40 minutes)

Engine Speed: __1500__ rpm (Target engine speed 1500 to 1600 rpm)

Wind at specified location in front of windshield: __1__ mph (0 to 2 mph)

Number of Vehicle Occupants: __1__ (2 maximum)

Describe window openings, if any: __NONE__

<table>
<thead>
<tr>
<th>TIME FROM START (minutes)</th>
<th>MOTOR VOLTAGE (volts)</th>
<th>TEMPERATURE, ºF</th>
<th>DEFROSTED AREA, %</th>
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<tbody>
<tr>
<td></td>
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<td>TEST ROOM</td>
<td>ENGINE WATER</td>
</tr>
<tr>
<td>0</td>
<td>13.5</td>
<td>-1.9</td>
<td>-7</td>
</tr>
<tr>
<td>5</td>
<td>14.8</td>
<td>-1.7</td>
<td>27.8</td>
</tr>
<tr>
<td>10</td>
<td>14.7</td>
<td>-1.4</td>
<td>70.5</td>
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<tr>
<td>15</td>
<td>14.7</td>
<td>0.0</td>
<td>95.0</td>
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<td>20</td>
<td>14.6</td>
<td>-1.1</td>
<td>106.3</td>
</tr>
<tr>
<td>25</td>
<td>14.6</td>
<td>.5</td>
<td>116.8</td>
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</table>

REMARKS:

RECORDED BY: G. FARRAND  
DATE: 10/23/07

APPROVED BY: D. MESSICK
VEH. MOD YR/MAKE/MODEL/BODY: 2007 NISSAN VERSA PASSENGER CAR
VEH. NHTSA NO: C75201; VIN: 3N1BC11E57L394885
VEH. BUILD DATE: 12/06; TEST DATE: OCTOBER 24, 2007
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

If 1st Test Run, chamber conditioned __24__ hours @ 0º ±5º F (14 hrs. min.)

Cold Soak Period: _______________ 24.0 HOURS _______________

Time engine coolant and lubricant remained stabilized at 0º F: __16__ hrs. ____ minutes

Water Spray Gun and Nozzle Type: _______ BINKS #66S _______

Spray Gun Pressure: _______________ 50 __________ psi (50 psi ± 3 psi)

Water used: __17__ fluid oz. (0.010 ounces per square inch of windshield area)

Soak Period Between Ice Application and Test Start: __35__ minutes (30 to 40 minutes)

Engine Speed: __1500__ rpm (Target engine speed 1500 to 1600 rpm)

Wind at specified location in front of windshield: __1__ mph (0 to 2 mph)

Number of Vehicle Occupants: __1____ (2 maximum)

Describe window openings, if any: _______ NONE _______

<table>
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<tr>
<th>TIME FROM START (minutes)</th>
<th>MOTOR VOLTAGE (volts)</th>
<th>TEMPERATURE, ºF</th>
<th>DEFROSTED AREA, %</th>
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</thead>
<tbody>
<tr>
<td>TEST ROOM</td>
<td>ENGINE WATER</td>
<td>HEATER WATER IN</td>
<td>DEFROSTER AIR</td>
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<tr>
<td>WATER IN</td>
<td>A</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>0</td>
<td>13.5</td>
<td>0.0</td>
<td>-1.0</td>
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<td>14.6</td>
<td>.5</td>
<td>117.1</td>
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</tbody>
</table>

REMARKS:

RECORDED BY: __G. FARRAND________   DATE: _______10/24/07_____

APPROVED BY: __D. MESSICK_________
## TABLE 1 - INSTRUMENTATION & EQUIPMENT LIST

<table>
<thead>
<tr>
<th>EQUIPMENT</th>
<th>DESCRIPTION</th>
<th>MODEL/ SERIAL NO.</th>
<th>CAL. DATE</th>
<th>NEXT CAL. DATE</th>
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<tr>
<td>TIMER</td>
<td>ACCU-SPLIT</td>
<td>ACT1</td>
<td>10/07</td>
<td>10/08</td>
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<td>TAC/RECORDER</td>
<td>MONARCH</td>
<td>1446464</td>
<td>08/07</td>
<td>08/08</td>
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<tr>
<td>TEMPERATURE RECORDER</td>
<td>OMEGA</td>
<td>B/55662</td>
<td>06/07</td>
<td>06/08</td>
</tr>
<tr>
<td>SPRAY GUN</td>
<td>BINKS</td>
<td>66S</td>
<td>BEFORE USE</td>
<td>BEFORE USE</td>
</tr>
<tr>
<td>ANEMOMETER</td>
<td>OMEGA</td>
<td>53668</td>
<td>06/07</td>
<td>06/08</td>
</tr>
<tr>
<td>AIR PRESSURE GAGE</td>
<td>BINKS</td>
<td>0-160</td>
<td>10/07</td>
<td>10/08</td>
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<tr>
<td>SCALE</td>
<td>METTLER</td>
<td>H315/445951</td>
<td>BEFORE USE</td>
<td>BEFORE USE</td>
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<tr>
<td>GRADUATED BEAKER</td>
<td>PHOTAX</td>
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<td>N/A</td>
<td>N/A</td>
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<tr>
<td>EVENT RECORDER</td>
<td>COMPUTER</td>
<td>GEO1</td>
<td>BEFORE USE</td>
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SECTION 5

PHOTOGRAPHS
2007 NISSAN VERSA
NHTSA NO. C75201
FMVSS NO. 103

FIGURE 5.1
LEFT SIDE VIEW OF VEHICLE
FIGURE 5.3
\( \frac{3}{4} \) FRONTAL VIEW FROM LEFT SIDE OF VEHICLE

2007 NISSAN VERSA
NHTSA NO. C75201
FMVSS NO. 103
FIGURE 5.5
VEHICLE CERTIFICATION LABEL
### Tire and Loading Information

<table>
<thead>
<tr>
<th>Seating Capacity</th>
<th>Total</th>
<th>Front Avant</th>
<th>Rear Arrière</th>
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<td>5</td>
<td>2</td>
<td>3</td>
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<table>
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<tr>
<th>Tire Pneu</th>
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<th>Cold Tire Pressure</th>
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<tr>
<td>Front Avant</td>
<td>P185/65R15 86H</td>
<td>230 kPa, 33 PSI</td>
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<tr>
<td>Rear Arrière</td>
<td>P185/65R15 86H</td>
<td>230 kPa, 33 PSI</td>
</tr>
<tr>
<td>Spare De Secours</td>
<td>T125/70D15</td>
<td>420 kPa, 60 PSI</td>
</tr>
</tbody>
</table>

The combined weight of occupants and cargo should never exceed 390 kg or 860 lbs.

Le poids combiné d'occupants et de cargaison ne devrait jamais excéder 390 kg ou 860 lbs.
2007 NISSAN VERSA
NHTSA NO. C75201
FMVSS NO. 103

FIGURE 5.7
CLOSE-UP VIEW OF DEFROSTER CONTROL SETTING ON DASH
FIGURE 5.9
WINDSHIELD, PRE-TEST FROSTED STATE TEST #1
2007 NISSAN VERSA
NHTSA NO. C75201
FMVSS NO. 103

FIGURE 5.10
DEFROSTED AREA AT 20 MINUTES TEST #1
FIGURE 5.11
DEFROSTED AREA AT 25 MINUTES TEST #1
FIGURE 5.13
WINDSHIELD PRE-TEST FROSTED STATE TEST #2
2007 NISSAN VERSA
NHTSA NO. C75201
FMVSS NO. 103

FIGURE 5.15
DEFROSTED AREA AT 25 MINUTES TEST #2
HEATER AND AIR CONDITIONER

**WARNING**

- The air conditioner cooling function operates only when the engine is running.
- Do not leave children or adults who would normally require the assistance of others alone in your vehicle. Pets should also not be left alone. They could accidentally injure themselves or others through inadvertent operation of the vehicle. Also, on hot, sunny days, temperatures in a closed vehicle could quickly become high enough to cause severe or possibly fatal injuries to people or animals.
- Do not use the recirculation mode for long periods as it may cause the interior air to become stale and the windows to fog up.

1. Air intake lever (Outside air circulation/Air recirculation)
2. Air flow control dial
3. Fan control dial
4. Air conditioner button
5. Temperature control dial

**CONTROLS**

**Fan control dial**

The fan control dial turns the fan on and off, and controls fan speed.

**Air flow control dial**

The air flow control dial allows you to select the air flow outlets.

- Air flows from center and side ventilators.
- Air flows mainly from foot outlets.
- Air flows mainly from defroster outlets and foot outlets.
- Air flows from defroster outlets.
Temperature control dial

The temperature control dial allows you to adjust the temperature of the outlet air. To lower the temperature, turn the dial to the left. To increase the temperature, turn the dial to the right.

Fresh air

Move the air intake lever to the position. The air flow is drawn from outside the vehicle.

Air recirculation

Move the air intake lever to the position to recirculate air inside the vehicle.

Use the selection:

- when driving on a dusty road.
- to prevent traffic fumes from entering passenger compartment.
- for maximum cooling when using the air conditioner.

Air conditioner button

Start the engine, turn the fan control dial to the desired position and push the A/C button to turn on the air conditioner. The indicator light comes on when the air conditioner is operating. To turn off the air conditioner, push the A/C button again.

The air conditioner cooling function operates only when the engine is running.

Rear window defroster switch

For more information about the rear window defroster switch, see “Rear window defroster switch” in the “Instruments and controls” section of this manual.

HEATER OPERATION

Heating

This mode is used to direct heated air to the foot outlets. Some air also flows from the defrost outlets.

1. Move the air intake lever to the position for normal heating.
2. Turn the air flow control dial to the position.
3. Turn the fan control dial to the desired position.
4. Turn the temperature control dial to the desired position between the middle and the hot position.

Ventilation

This mode directs outside air to the side and center ventilators.

1. Move the air intake lever to the position.
2. Turn the air flow control dial to the position.
3. Turn the fan control dial to the desired position.
4. Turn the temperature control dial to the desired position between the middle and the hot position.

- To quickly remove ice or fog from the windows, turn the fan control dial to the maximum position and the temperature control dial to the full HOT position.

Defrosting or defogging

This mode directs the air to the defrost outlets to defrost/defog the windows.

1. Move the air intake lever to the position.
2. Turn the air flow control dial to the position.
3. Turn the fan control dial to the desired position.
4. Turn the temperature control dial to the desired position between the middle and the hot position.

4-4 Heater, air conditioner, audio and phone systems
When the ⬆️ position is selected, A/C will be automatically turned on (but the indicator light will remain off). This will dehumidify the air and help to defog the windows. When the air flow control dial is changed to a different position, the A/C will be turned off.

**Bi-level heating**

This mode directs cooler air from the side and center vents and warmer air from the floor outlets. When the temperature control dial is moved to the full hot or full cool position, the air between the vents and the floor outlets is the same temperature.

1. Move the air intake lever to ⬆️ position.
2. Turn the air flow control dial to the ⬆️ position.
3. Turn the fan control dial to the desired position.
4. Turn the temperature control dial to the desired position between the middle and the hot position.

When the ⬆️ position is selected, A/C will be automatically turned on (but the indicator light will remain off). This will dehumidify the air and help to defog the windows. When the air flow control dial is changed to a different position, the A/C will be turned off.

**Operating tips**

- Clear snow and ice from the wiper blades and air inlet in front of the windshield. This improves heater operation.

**AIR CONDITIONER OPERATION**

Start the engine, turn the fan control dial to the desired position, and push the A/C button to activate the air conditioner. When the air conditioner is on, cooling and dehumidifying functions are added to the heater operation.

**Cooling**

This mode is used to cool and dehumidify the air.

1. Move the air intake lever to the ⬆️ position.
2. Turn the air flow control dial to the ⬆️ position.
3. Turn the fan control dial to the desired position.
4. Push the A/C button. The indicator light comes on.
5. Turn the temperature control dial to the desired position.

- For quick cooling when the outside temperature is high, move air intake lever to the ⬆️ position. Be sure to return to the ⬇️ position for normal cooling.

**Dehumidified heating**

This mode is used to heat and dehumidify the air.

1. Move the air intake lever to the ⬇️ position.
2. Turn the air flow control dial to the ⬇️ position.
3. Turn the fan control dial to the desired position.

Heater, air conditioner, audio and phone systems 4-5