

HSNo 637299

REPORT NUMBER 104-GTL-04-002

**SAFETY COMPLIANCE TESTING FOR
FMVSS NO. 104
WINDSHIELD WIPING AND WASHING SYSTEMS**

**NISSAN MOTOR CO., LTD.
2004 NISSAN MAXIMA, PASSENGER CAR
NHTSA NO. C45207**

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



JULY 30, 2004

FINAL REPORT

PREPARED FOR

**U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW
ROOM 6111 (NVS-220)
WASHINGTON, D.C. 20590**

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Prepared By: Dellie Messick
Approved By: [Signature]
Approval Date: 7/30/04

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: [Signature]
Acceptance Date: 8/19/04

1. Report No. 104-GTL-04-002	2. Government Accession No. N/A	3. Recipient's Catalog No. N/A
4. Title and Subtitle Final Report of FMVSS 104 Compliance Testing of 2004 NISSAN MAXIMA, PASSENGER CAR NHTSA No. C45207	5. Report Date July 30, 2004	6. Performing Organ. Code GTL
	8. Performing Organ. Rep# GTL-DOT-04-104-002	
7. Author(s) Grant Farrand, Project Engineer Debbie Messick, Project Manager	10. Work Unit No. (TRAIS) N/A	
9. Performing Organization Name and Address General Testing Laboratories, Inc. 1623 Leedstown Road Colonial Beach, Va 22443	11. Contract or Grant No. DTNH22-01-C-11025	
	13. Type of Report and Period Covered Final Test Report July 14, 2004	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Admin. Enforcement Office of Vehicle Safety Compliance (NVS-220) 400 7 th Street, S.W., Room 6111 Washington, DC 20590	14. Sponsoring Agency Code NVS-221	
	15. Supplementary Notes	
16. Abstract Compliance tests were conducted on the subject 2004 Nissan Maxima Passenger Car in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-104-08 for the determination of FMVSS 104 compliance. Test failures identified were as follows: NONE		
17. Key Words Compliance Testing Safety Engineering FMVSS 104	18. Distribution Statement Copies of this report are available from NHTSA Technical Information Services (TIS) Room 2336 (NPO-405) 400 Seventh Street S.W. Washington, DC 20590 Telephone No. (202) 366-4947	
19. Security Classif. (of this report) UNCLASSIFIED	21. No. of Pages 32	22. Price
20. Security Classif. (of this page) UNCLASSIFIED		

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SECTION 1

PURPOSE OF COMPLIANCE TEST

1.0 PURPOSE OF COMPLIANCE TEST

A 2004 Nissan Maxima Passenger Car was subjected to Federal Motor Vehicle Safety Standard (FMVSS) No. 104 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-104-08 dated 26 June 1996 and General Testing Laboratories, Inc. (GTL) Test Procedure, TP-104-08A dated 4 April 1997.

1.1 The test vehicle was a 2004 Nissan Maxima Passenger Car. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: 1N4BA41E94C854759

B. NHTSA No.: C45207

C. Manufacturer: NISSAN MOTOR CO., LTD.

D. Manufacture Date: 09/03

1.2 TEST DATE

The test vehicle was subjected to FMVSS No. 104 testing on July 14, 2004.

SECTION 2

COMPLIANCE TEST PROCEDURE AND SUMMARY OF RESULTS

2.0 GENERAL

The 2004 Nissan Maxima 4-door passenger car, NHTSA No. C45207 was subjected to FMVSS No. 104 tests on July 14, 2004. The selected portions of FMVSS No. 104 tests used were as amplified in the following subparagraphs. The test vehicle was positioned in the test system with three water spray nozzles suspended in line with the center of the longitudinal axis of the windshield and horizontal left/right center of the windshield to provide an even distribution of spray to the entire windshield. The height of the nozzles was approximately 22 inches above the glazing surface.

2.1 WIPER FREQUENCY TEST

The wiper frequency test was performed with the engine operating and with a minimum of 50 cubic inches per minute of water from the spray nozzles. The wiper frequency was measured at the low and high wiper speed settings with the engine operating at idle RPM and 2,000 RPM.

2.2 WIPED AREA TEST

The test was conducted with the windshield wiper system operating at the high speed setting, engine at idle RPM and the spray nozzles spraying water at a minimum of 50 cubic inches per minute. The wiper blade wipe pattern was outlined on the glazing surface and then transferred to a windshield pattern. The wiped area was determined for areas A, B and C from the windshield pattern.

2.3 CAPABILITY TEST

The windshield glazing surface was coated with a mixture of water and fine grade test dust. Within 15 seconds following application of the water-dust mixture, the windshield wiper and washing system was activated in the high speed mode for ten complete cycles. The vehicle's engine was operating at idle RPM. The cleared areas of the windshield were marked on the inside windshield surface. After ten complete cycles the system was deactivated and the wiped area transferred to a windshield pattern.

The glazing surface was cleaned and dried. The water dust mixture was re-applied and the test repeated.

The windshield patterns were used subsequently to determine the cleared area percentages.

2.4 SUMMARY OF RESULTS

Based on the test performed, the test vehicle's windshield wiping and washing system appears to meet the requirements of FMVSS 104.

SECTION 3

COMPLIANCE TEST DATA

3.0 TEST RESULTS

The following data sheets document the results of testing on the 2004 Nissan Maxima.

SUMMARY OF DATA
FMVSS 104, WINDSHIELD WIPING AND WASHING SYSTEMS

VEH. MOD YR/MAKE/MODEL/BODY: 2004 NISSAN MAXIMA PASSENGER CAR
 VEH. NHTSA NO: C45207; VIN: 1N4BA41E94C854759
 VEH. BUILD DATE: 09/03 TEST DATE: JULY 14, 2004
 TEST LABORATORY: GENERAL TESTING LABORATORIES
 OBSERVERS: GRANT FARRAND, JIMMY LATANE

WIPER TYPE: 2 SPEED ELECTRIC WITH DELAY

WASHER TYPE: ELECTRIC HIGH PRESSURE PUMP

WINDSHIELD AREAS: A = 1208.1 in² B = 838.8 in² C = 278.7 in²

MANUFACTURER'S WINDSHIELD PATTERN USED: Yes X No

ACCESSIBILITY:

- (1) Washer Control Accessible: Yes X No
 (2) Wiper Control Accessible: Yes X No
 (3) Washer Reservoir Filler Accessible: Yes X No

DESCRIBE UNUSUAL FEATURES OF WIPING AND WASHING SYSTEMS:

PERFORMANCE:

TEST	PASS	FAIL
WIPER FREQUENCY	X	
WIPE AREA	X	
WASHER CAPABILITY	X	

RECORDED BY: 

DATE: 07/14/04

APPROVED BY: 

FREQUENCY TEST DATA
FMVSS 104 – WINDSHIELD WIPER SYSTEM

VEH. MOD YR/MAKE/MODEL/BODY: 2004 NISSAN MAXIMA PASSENGER CAR
 VEH. NHTSA NO: C45207; VIN: 1N4BA41E94C854759
 VEH. BUILD DATE: 09/03; TEST DATE: JULY 14, 2004
 TEST LABORATORY: GENERAL TESTING LABORATORIES
 OBSERVERS: GRANT FARRAND, JIMMY LATANE

Water Hardness: 7.0 grains/gallon (12 max.); Date Certified: 02/23/04

Water Spray Flow Rate: 70.7 in³/min. (specified range = 50 to 100 in³/min.)

Ambient Air Temp.: 84 °F (50-100°F); Water Temp.: 74 °F (100°F max.)

Manufacturer's Recommended Engine Idle Speed: 710 rpm

RUN 1, MAXIMUM WIPER FREQUENCY TEST:

TIME	ENGINE SPEED	TOTAL CYCLES	AVG. CYCLES/MIN. (45 MINIMUM)
1 st 3 minutes	<u>710</u> (idle ± 50 rpm)	210	70.0
2 nd 3 minutes	<u>2000</u> (2000 rpm ± 50 rpm)	210	70.0

Frequency at least 45 cycles/minute regardless of engine speed: Yes X No

RUN 2, LOWER WIPER FREQUENCY TEST:

TIME	ENGINE SPEED	TOTAL CYCLES	AVG. CYCLES/MIN. (45 MINIMUM)
1 st 3 minutes	<u>710</u> (idle ± 50 rpm)	137	45.6
2 nd 3 minutes	<u>2000</u> (2000 rpm ± 50 rpm)	139	46.3

Highest and lower frequency differ by at least 15 cycles/minute, and lower frequency is at least 20 cycles/minute regardless of engine speed: Yes X No

REMARKS:

RECORDED BY: 

DATE: 07/14/04

APPROVED BY: 

WIPED AREA TEST DATA
FMVSS 104 – WINDSHIELD WIPER SYSTEM

VEH. MOD YR/MAKE/MODEL/BODY: 2004 NISSAN MAXIMA PASSENGER CAR

VEH. NHTSA NO: C45207; VIN: 1N4BA41E94C854759

VEH. BUILD DATE: 09/03; TEST DATE: JULY 14, 2004

TEST LABORATORY: GENERAL TESTING LABORATORIES

OBSERVERS: GRANT FARRAND, JIMMY LATANE

Air Temperature in test area = 84 °F (specified range of 50 to 100°F)

Air Velocity at windshield = .2 mph (specified range of 0 to 1 mph)

Engine speed = 710 rpm (manufacturer's recommended idle ± 50 rpm)

Temperature of water spray = 74 °F (100° F maximum)

Water spray flow rate = 70.7 in³/min. (specified range of 50 to 100 in³/min.)

Windshield wiper frequency = 46 cycles/min. (45 cpm minimum)

TEST RESULTS:

PERCENT WIPED				
WINDSHIELD AREA	ACTUAL	REQUIRED	PASS	FAIL
A	91.2%	80%	X	
B	97.1%	94%	X	
C	100%	99%	X	

REMARKS:

RECORDED BY: *[Signature]*

DATE: 07/15/04

APPROVED BY: *[Signature]*

CAPABILITY TEST DATA
FMVSS 104 – WINDSHIELD WASHER SYSTEM

VEH. MOD YR/MAKE/MODEL/BODY: 2004 NISSAN MAXIMA PASSENGER CAR
 VEH. NHTSA NO: C45207; VIN: 1N4BA41E94C854759
 VEH. BUILD DATE: 09/03; TEST DATE: JULY 14, 2004
 TEST LABORATORY: GENERAL TESTING LABORATORIES
 OBSERVERS: GRANT FARRAND, JIMMY LATANE

Air Temperature In test area = 84 °F (specified range of 70 to 80°F)

Washer reservoir fluid temperature = 75 °F (specified range of 70 to 80°F)

Air Velocity at windshield = .2 mph (specified range of 0 to 1 mph)

Engine speed = 710 rpm (manufacturer's recommended idle ± 50 rpm)

Number of windshield washer nozzles on the vehicle = 2

Windshield washer system activation coordinated with components of the wiper system:
 Yes No

TEST RESULTS:

CLEARED AREA PERCENTAGES						
WINDSHIELD AREA	TEST 1	TEST 2	AVG	REQ'D*	PASS	FAIL
A	91.0	90.9	90.95	75%	X	
B	97.0	97.1	97.05	75%	X	
C	100	100	100	75%	X	

*NOTE FOR REFERENCE ONLY: SAE 942b, revised Jul72, recommends capability to clear 80% of the total wash area and 90% of the wash area included in AREA C.

REMARKS:

RECORDED BY: *[Signature]*

DATE: 07/15/04

APPROVED BY: *[Signature]*

**SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST**

TABLE 1 - INSTRUMENTATION & EQUIPMENT LIST

EQUIPMENT	DESCRIPTION	MODEL/ SERIAL NO.	CAL. DATE	NEXT CAL. DATE
TIMER	ACCU-SPLIT	ACT2	07/04	07/05
TEMPERATURE READOUT	OMEGA	43P	03/04	03/05
TEMPERATURE RECORDER	OMEGA	CT91	03/04	03/05
SPRAY SYSTEM	GTL	N/A	BEFORE USE	BEFORE USE
ANEMOMETER	HASTINGS	RM-1, 48	05/04	05/05
CYCLE COUNTER	GTL	GTL	BEFORE USE	BEFORE USE
SOFT WATER	N/A	N/A	02/04	02/05
TACHOMETER	MONARCH	ACT-3	07/04	07/05
TEST DUST	AC	GM FINE	CALIBRATED DUST	CALIBRATED BY VENDOR*
EVENT RECORDER	COMPUTER	GEO1	BEFORE USE	BEFORE USE

*AC Inspection #503, Batch #1943, Measured with particle size roller analyzer.

SECTION 5
PHOTOGRAPHS



2004 NISSAN MAXIMA
NHTSA NO. C45207
FMVSS NO. 104

FIGURE 5.1
LEFT SIDE VIEW OF VEHICLE



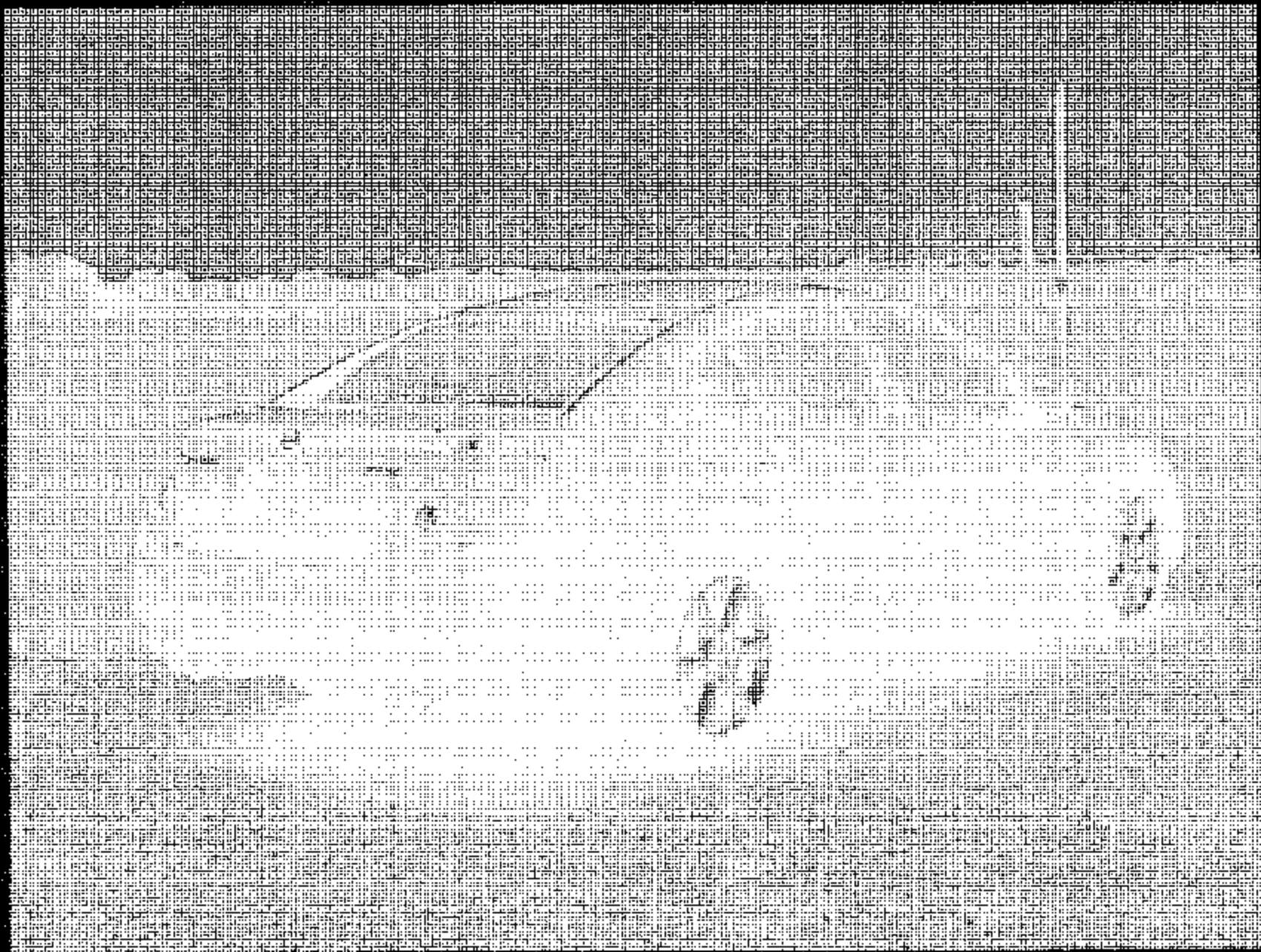
2004 NISSAN MAXIMA
NHTSA NO. C45207
FMVSS NO. 104

FIGURE 5.2
RIGHT SIDE VIEW OF VEHICLE



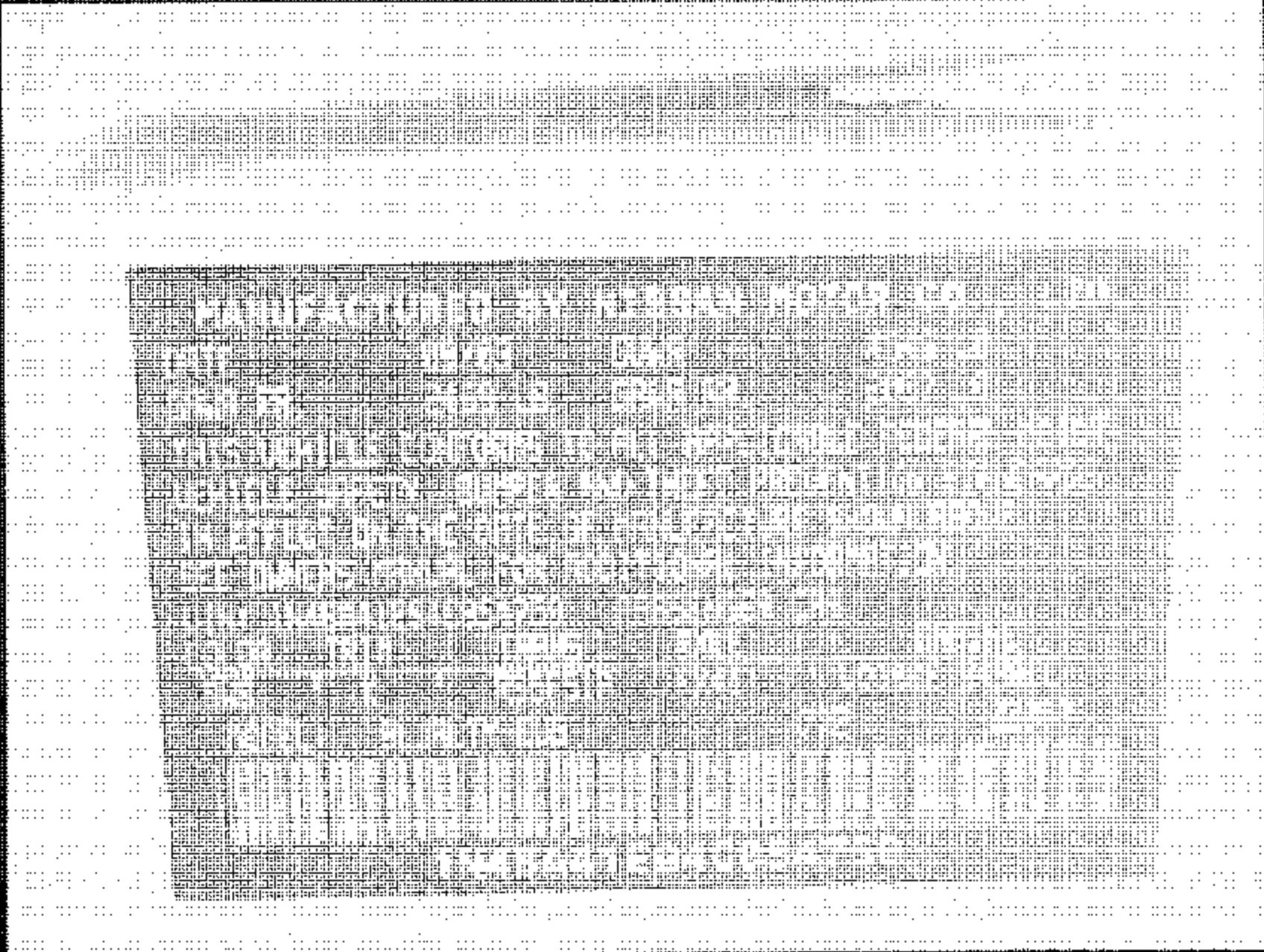
2004 NISSAN MAXIMA
NHTSA NO. C45207
FMVSS NO. 104

FIGURE 5.3
3/4 FRONTAL VIEW FROM LEFT SIDE OF
VEHICLE



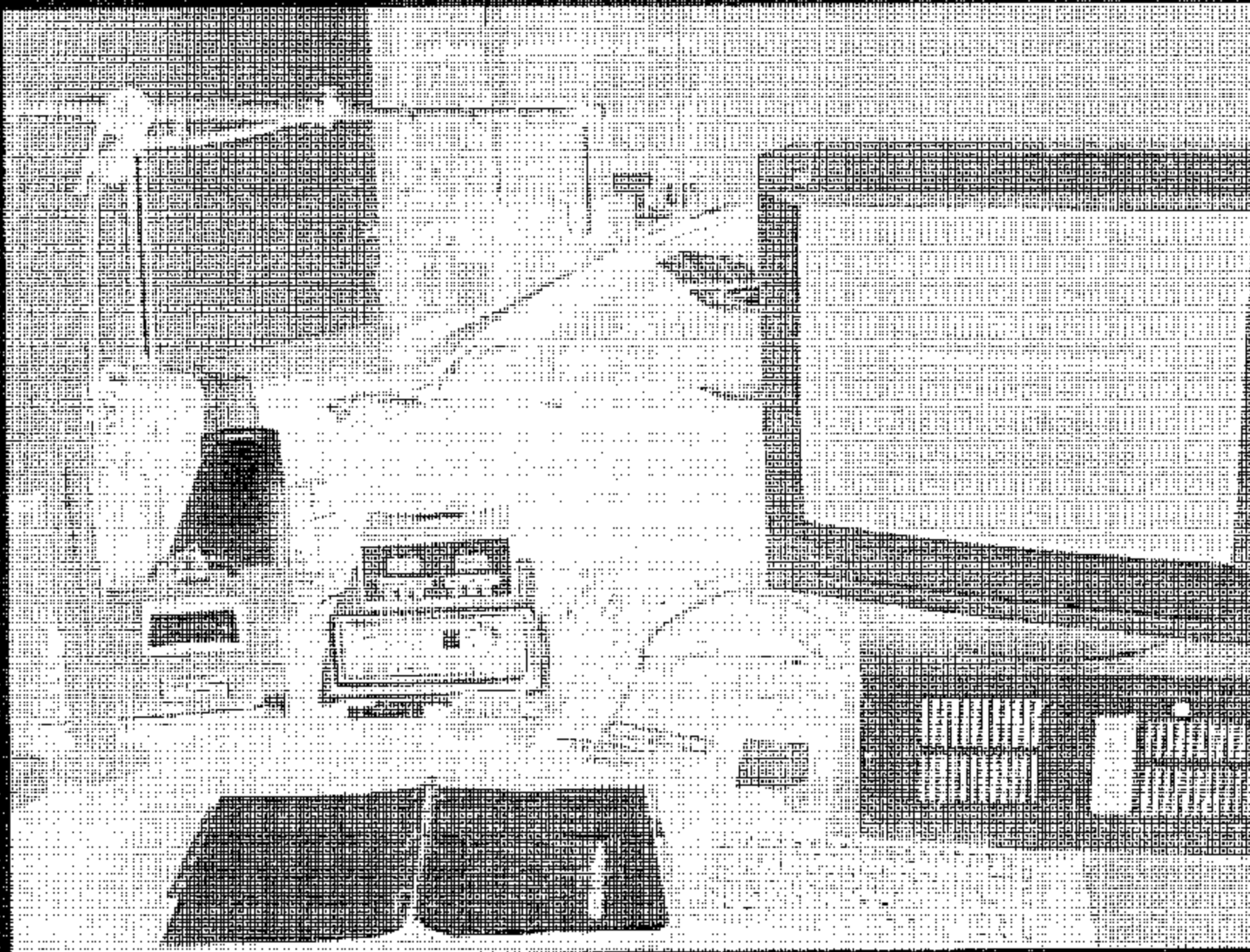
2004 NISSAN MAXIMA
NHTSA NO. C45207
FMVSS NO. 104

FIGURE 5.4
3/4 REAR VIEW FROM RIGHT SIDE OF VEHICLE



2004 NISSAN MAXIMA
NHTSA NO. C45207
FMVSS NO. 104

FIGURE 5.5
VEHICLE'S CERTIFICATION LABEL



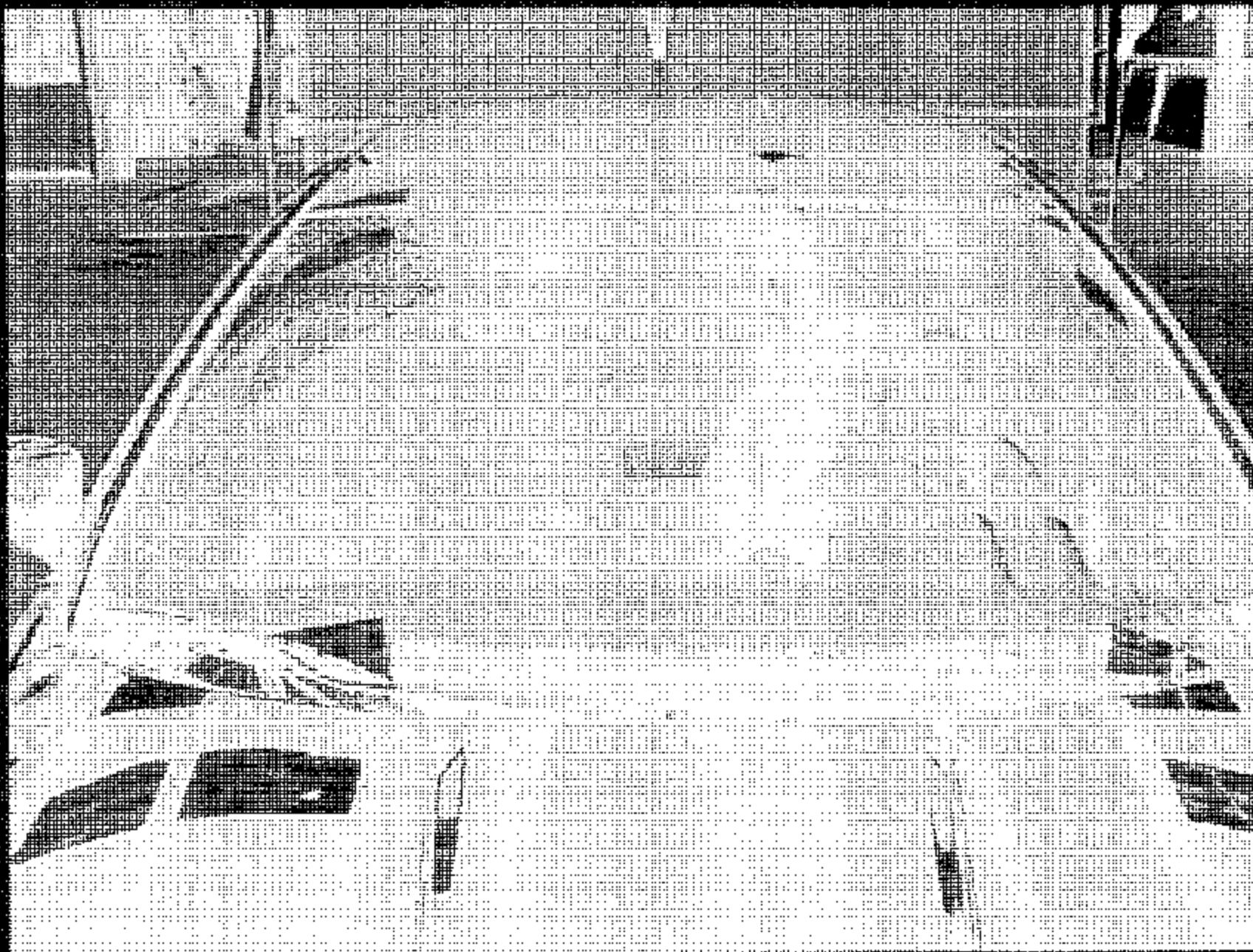
2004 NISSAN MAXIMA
NHTSA NO. C45207
FMVSS NO. 104

FIGURE 5.7
INSTRUMENTATION SET-UP



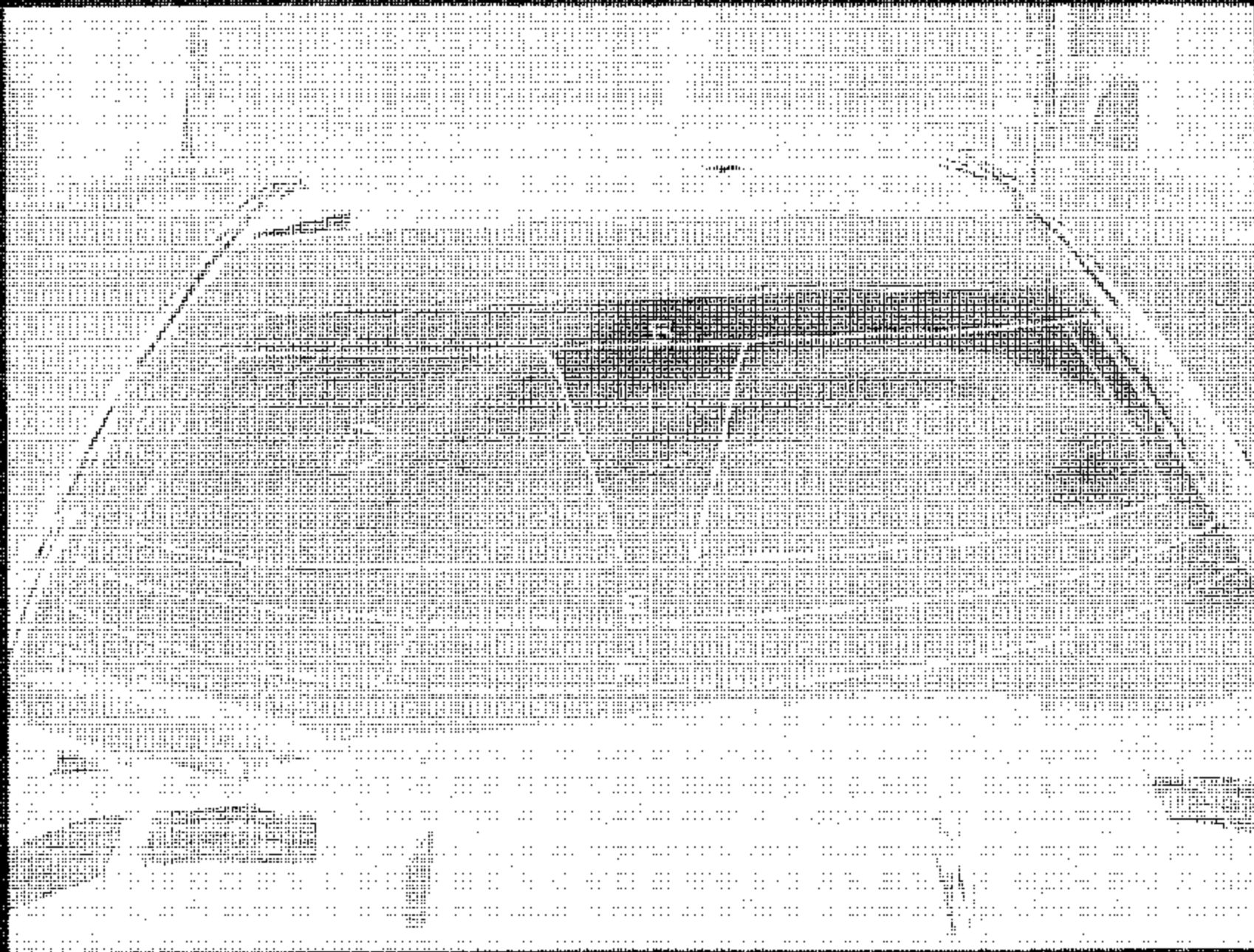
2004 NISSAN MAXIMA
NHTSA NO. C45207
FMVSS NO. 104

FIGURE 5.8
EQUIPMENT SET-UP



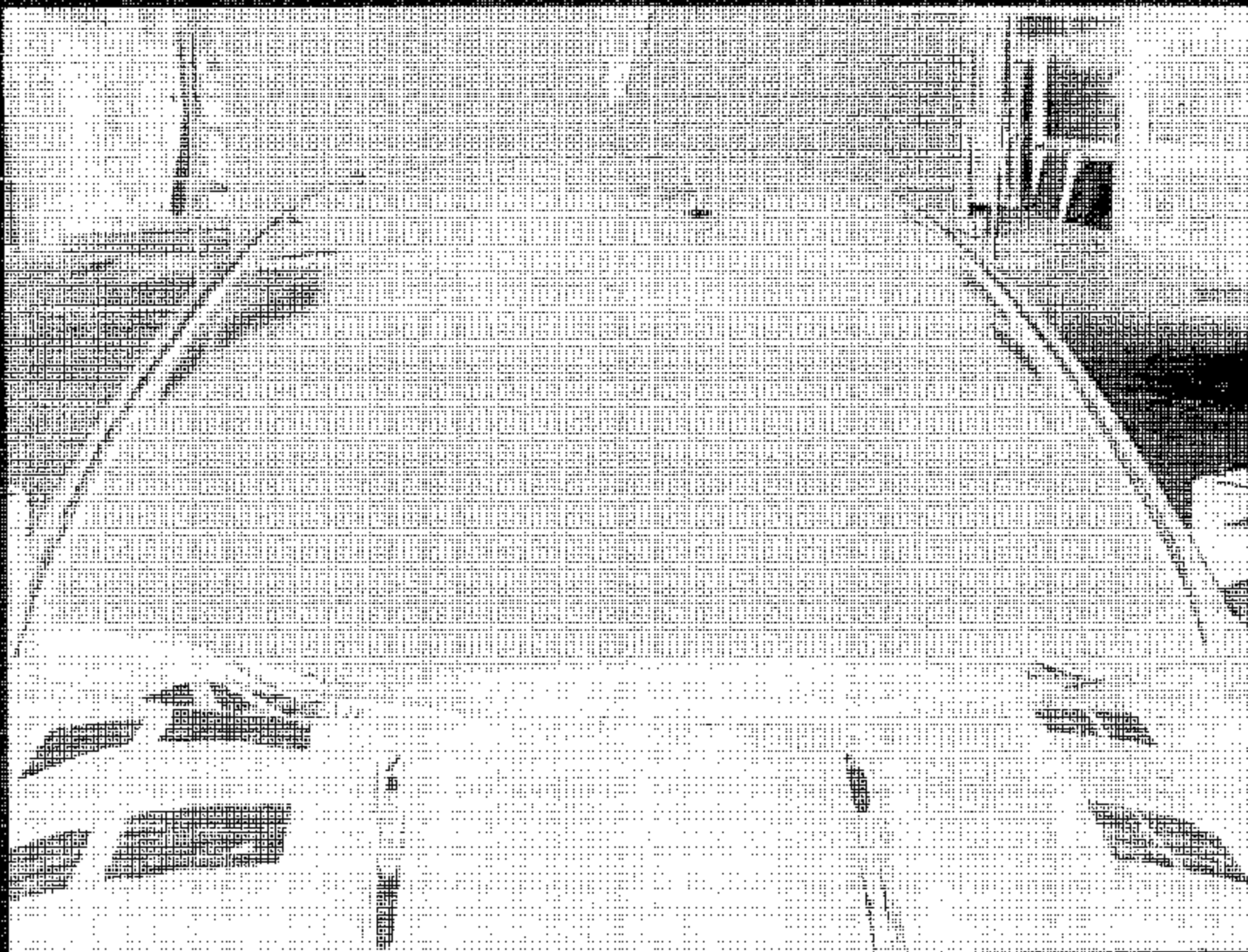
2004 NISSAN MAXIMA
NHTSA NO. C45207
FMVSS NO. 104

FIGURE 5.9
WIPED AREA TEST



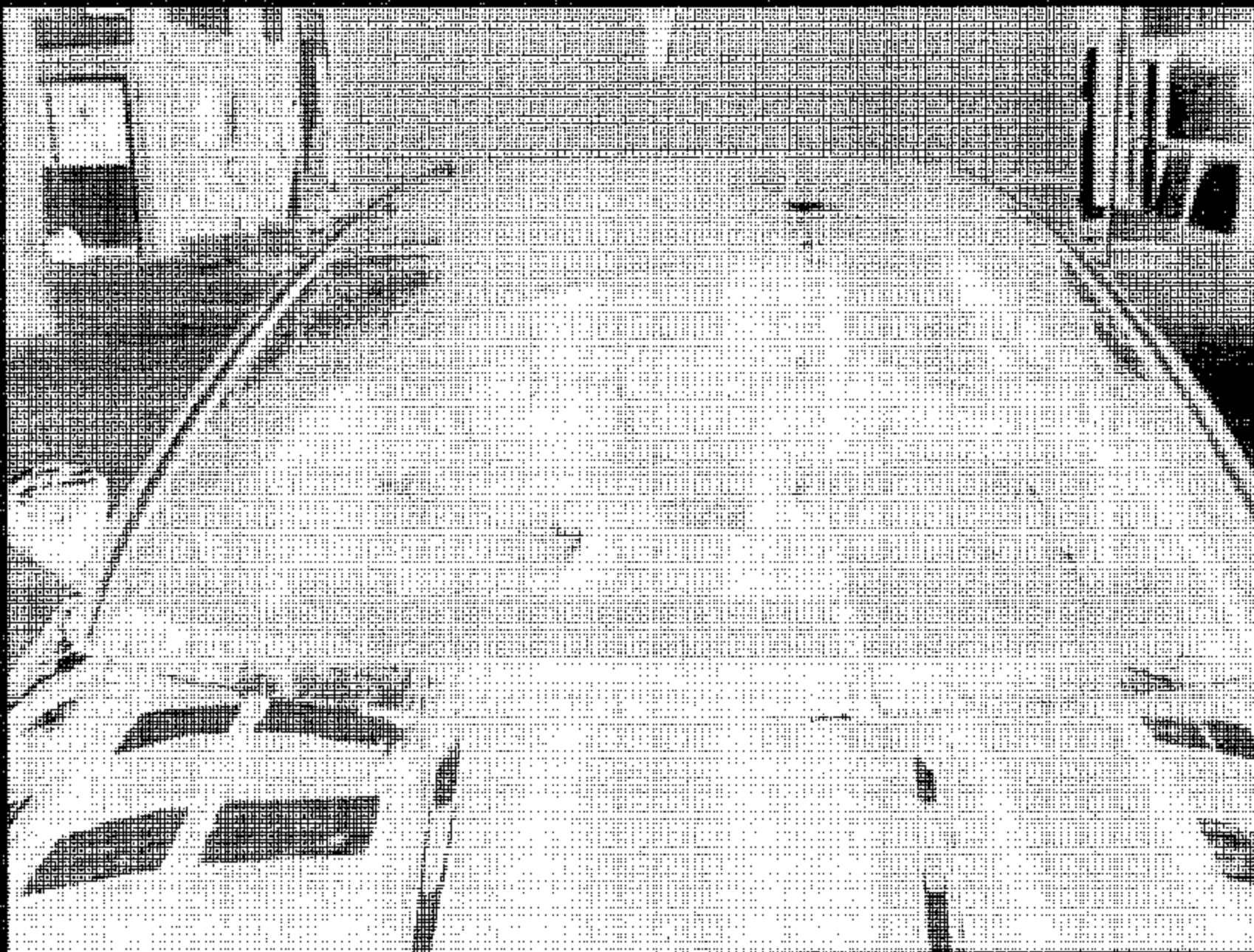
2004 NISSAN MAXIMA
NHTSA NO. C45207
FMVSS NO. 104

FIGURE 5.10
WIPED AREA TEST PATTERN



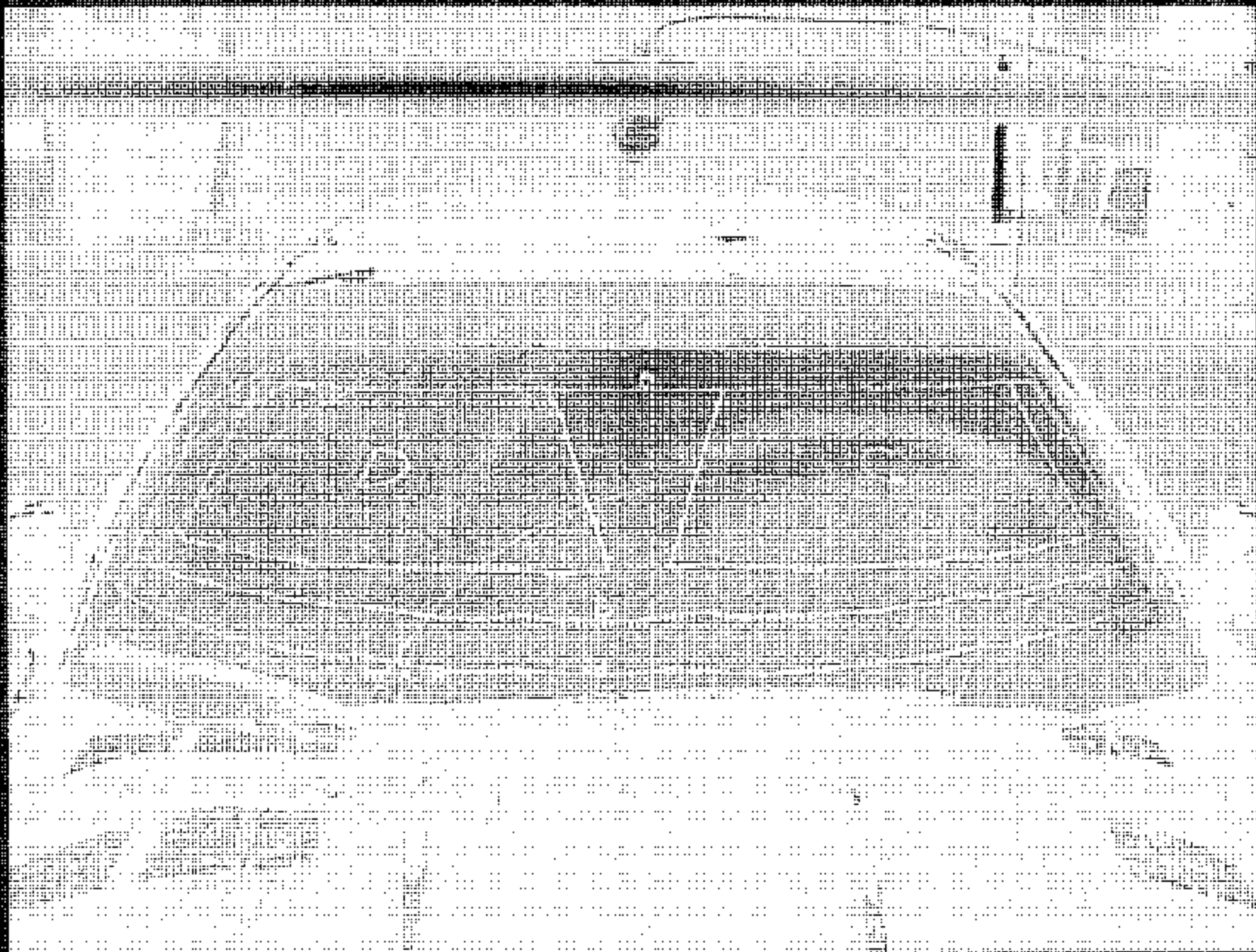
2004 NISSAN MAXIMA
NHTSA NO. C45207
FMVSS NO. 104

FIGURE 5.11
CAPABILITY TEST #1 - PRE-COATED WINDSHIELD



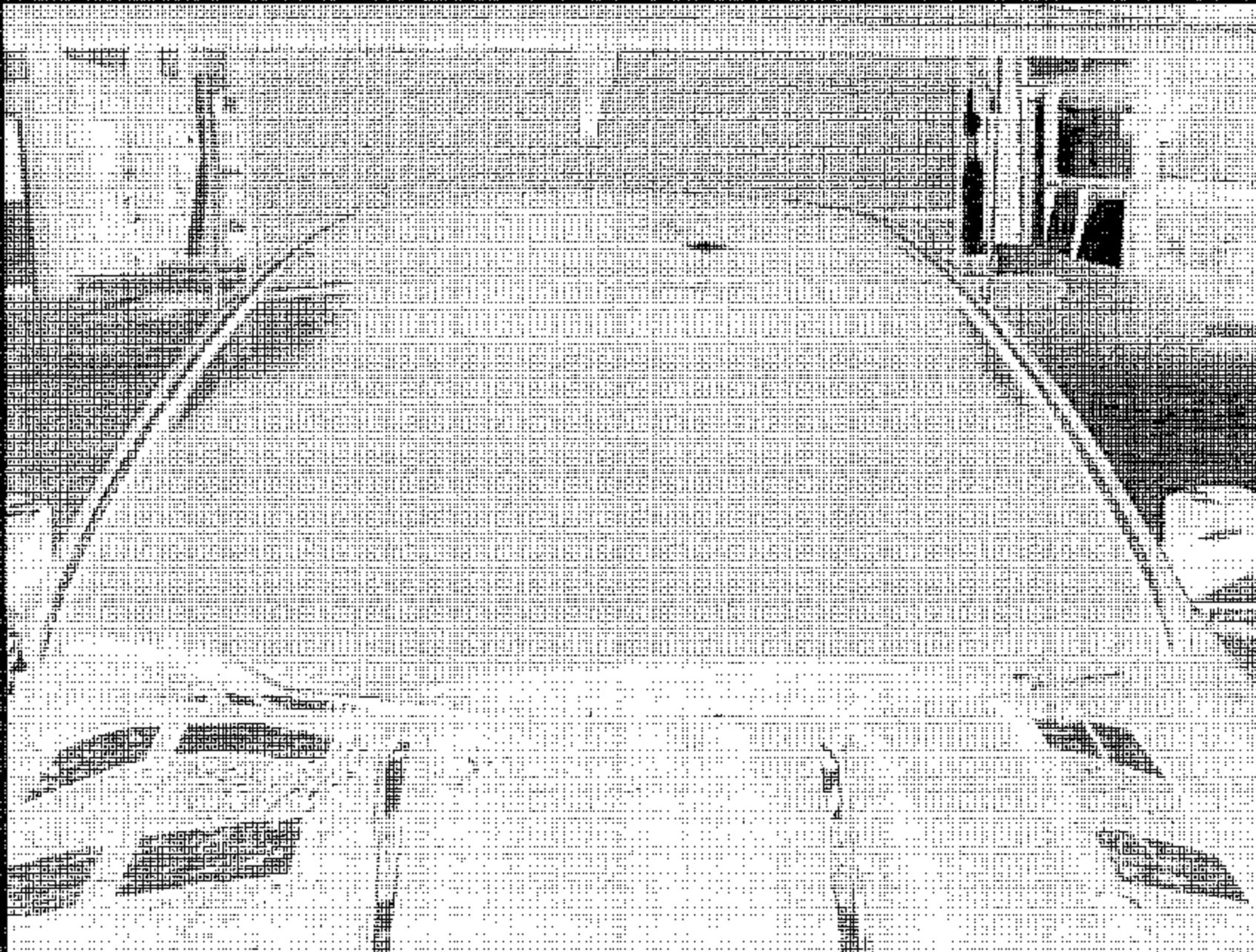
2004 NISSAN MAXIMA
NHTSA NO. C45207
FMVSS NO. 104

FIGURE 5.12
CAPABILITY TEST #1 - IN PROGRESS



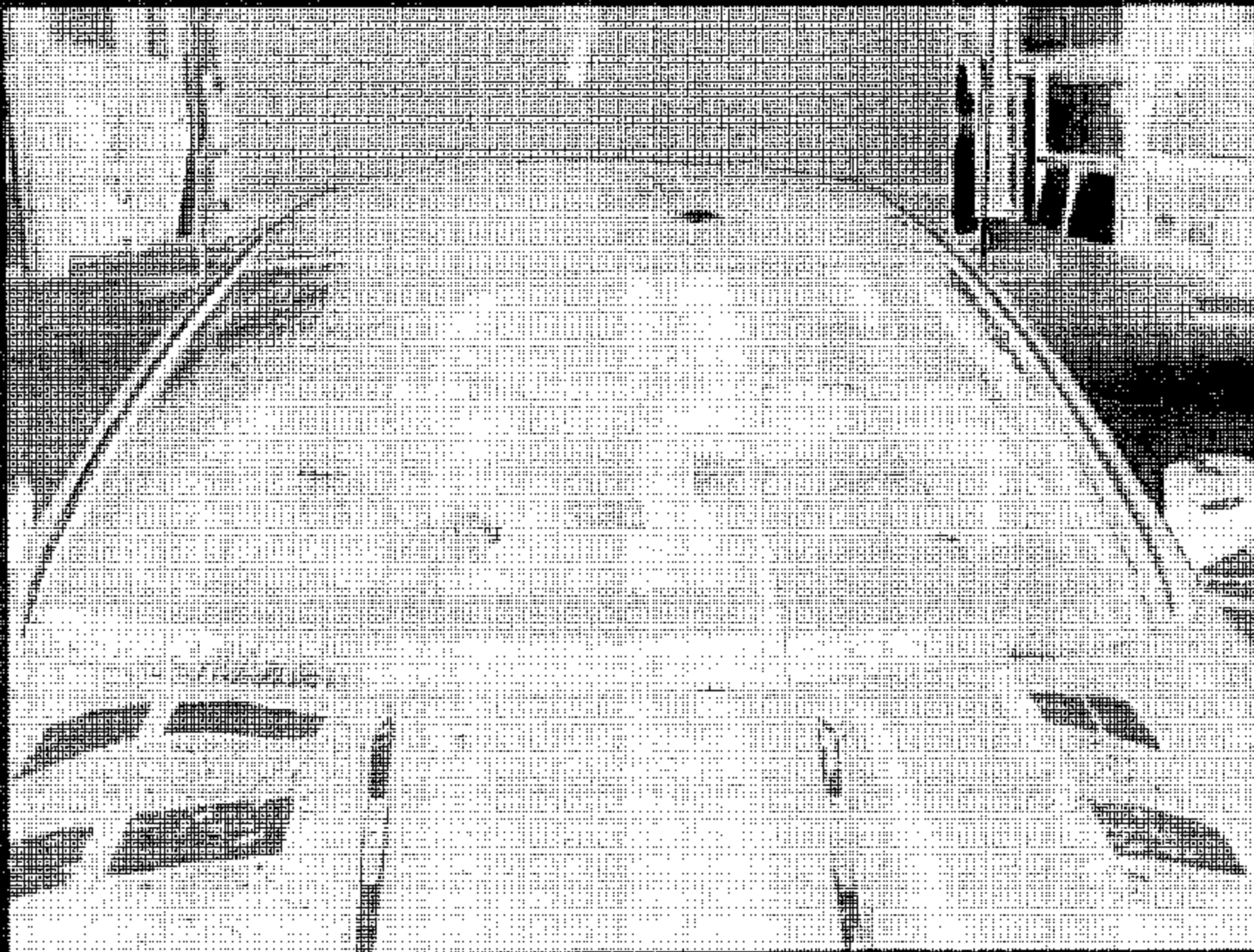
2004 NISSAN MAXIMA
NHTSA NO. C45207
FMVSS NO. 104

FIGURE 5.13
CAPABILITY TEST #1 - PATTERN



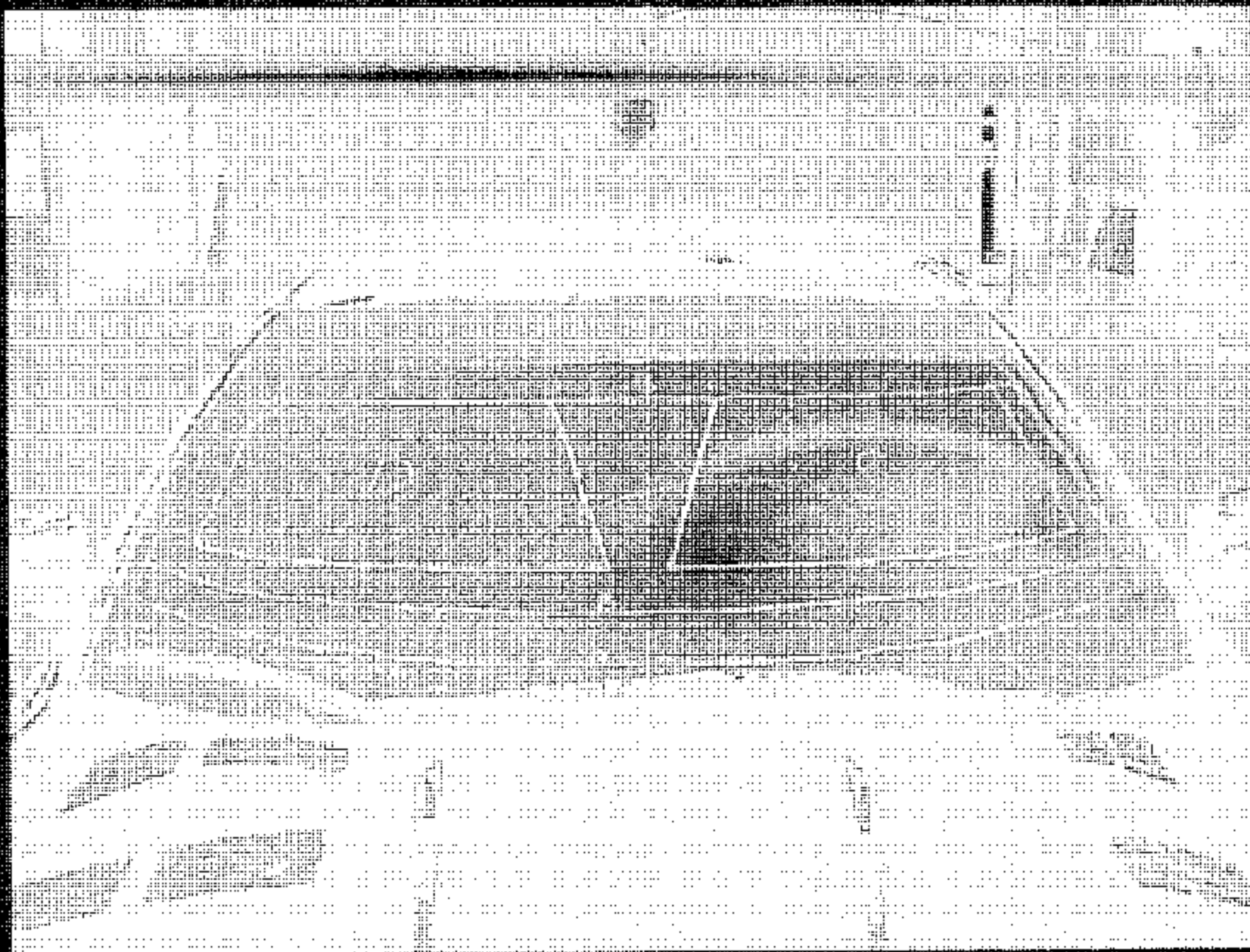
2004 NISSAN MAXIMA
NHTSA NO. C45207
FMVSS NO. 104

FIGURE 5.14
CAPABILITY TEST #2 – PRE-COATED WINDSHIELD



2004 NISSAN MAXIMA
NHTSA NO. C45207
FMVSS NO. 104

FIGURE 5.15
CAPABILITY TEST #2 – IN PROGRESS

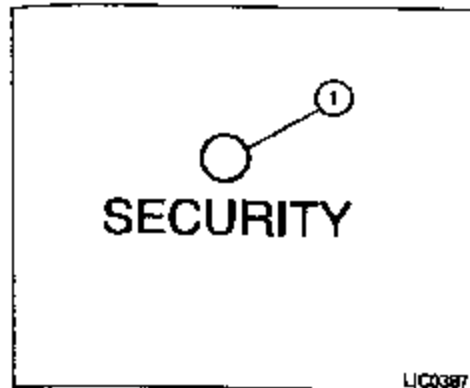


2004 NISSAN MAXIMA
NHTSA NO. C45207
FMVSS NO. 104

FIGURE 5.18
CAPABILITY TEST #2 - PATTERN

SECTION 6

OWNER'S MANUAL INFORMATION



Security indicator light (NISSAN Vehicle Immobilizer System)

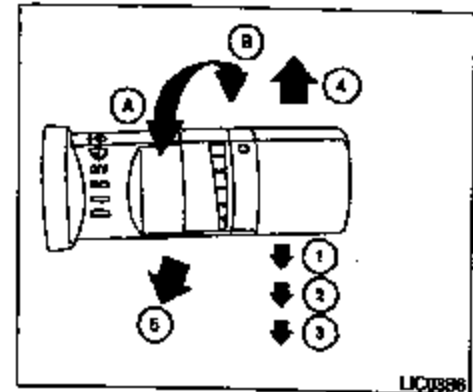
The security indicator light ① is located on the instrument panel near the windshield.

The security indicator light blinks every 3 seconds whenever the ignition switch is in the LOCK, OFF or ACC position. This function indicates the NISSAN Vehicle Immobilizer System (NVIS) is operational.

If the NVIS is malfunctioning, the light will remain on while the ignition key is in the ON position.

If the light still remains on and/or the engine will not start, see a NISSAN dealer for NVIS service as soon as possible. Please bring all NVIS keys that you have when visiting your NISSAN dealer for service.

WINDSHIELD WIPER AND WASHER SWITCH



SWITCH OPERATION

The windshield wiper and washer operates when the ignition switch is in the ON position.

Push the lever down to operate the wiper at the following speed:

- ① Intermittent — Intermittent operation can be adjusted by turning the knob toward Ⓐ (Slower) or Ⓑ (Faster). Also, the intermittent operation speed varies in accordance with the vehicle speed. (For example, when the vehicle speed is high, the intermittent operation speed will be faster.)

NOTE:

You can turn on or turn off the driving speed dependent intermittent wiper function. Refer to "Personalized settings menu" (vehicles without navigation system) or "Vehicle electronic systems" (vehicles with navigation system) in the "Display screen, heater, air conditioner and audio systems" section later in this manual.

- ② Low — continuous low speed operation
- ③ High — continuous high speed operation

Push the lever up ④ to have one sweep operation of the wiper.

Push the lever toward you ⑤ to operate the washer. The wiper will also operate several times.

⚠ WARNING

In freezing temperatures the washer solution may freeze on the windshield and obscure your vision which may lead to an accident. Warm the windshield with the defroster before you wash the windshield.

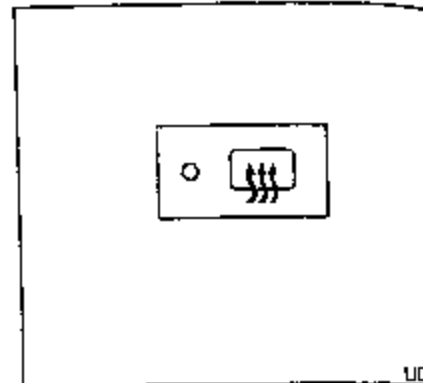
⚠ CAUTION

- Do not operate the washer continuously for more than 30 seconds.

2-18 Instruments and controls

- Do not operate the washer if the reservoir tank is empty.
- Do not fill the window washer reservoir tank with washer fluid concentrates at full strength. Some methyl alcohol based washer fluid concentrates may permanently stain the grille if spilled while filling the window washer reservoir tank.
- Pre-mix washer fluid concentrates with water to the manufacturer's recommended levels before pouring the fluid into the window washer reservoir tank. Do not use the window washer reservoir tank to mix the washer fluid concentrate and water.

REAR WINDOW AND OUTSIDE MIRROR (if so equipped) DEFROSTER SWITCH



To defrost the rear window glass and out mirrors (if so equipped), start the engine, push the rear window defroster switch on. rear window defroster indicator light on switch comes on. Push the switch again to the defroster off.

The rear window defroster automatically turns after approximately 15 minutes.

⚠ CAUTION

When cleaning the inner side of the window, be careful not to scratch or damage the rear window defroster.