

REPORT NO. 111-KAR-04-003

**SAFETY COMPLIANCE TESTING  
FOR FMVSS 111**

2/3  
HS#  
637212

**REARVIEW MIRRORS  
(Other Than School Buses)**

2004 NISSAN MAXIMA  
4 DOOR SEDAN

NHTSA NO. C45204

PREPARED BY:  
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June 17, 2004

FINAL REPORT

PREPARED FOR:  
U.S. DEPARTMENT OF TRANSPORTATION  
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
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**SECTION 1**

**PURPOSE OF COMPLIANCE TEST**

## **1. PURPOSE OF COMPLIANCE TEST**

Tests were conducted on a 2004 Maxima, manufactured by Nissan Motor Company, to determine compliance with FMVSS 111, "Rearview Mirrors (Other than School Buses)". The purpose of this standard is to reduce the number of deaths and injuries that occur when the driver of a motor vehicle does not have a clear and reasonably unobstructed view to the rear.

All tests were conducted based on the current National Highway Traffic Safety Administration (NHTSA), Office of Vehicle Safety Compliance (OVSC) Laboratory Procedures, TP-111V-00, dated October 28, 1999, and corresponding KARCO Engineering test procedure KTP-111, dated April 18, 2004. Detailed procedures for receiving, inspecting, testing and reporting of test results are described in the test procedures and are not repeated in this report.

This report is organized in sections containing pertinent test information and data tables as follows:

- Section 2 - Test Procedure and Data Summary
- Section 3 - Test Results
- Appendix A - Photographs
- Appendix B - Data Plots
- Appendix C - Test Equipment List and Calibration Information
- Appendix D - Manufacturer Eyelipse Locations

**SECTION 2**

**COMPLIANCE TEST PROCEDURE and DATA SUMMARY**



## **2 TEST PROCEDURE AND DATA SUMMARY**

A 2004 Nissan Maxima 4 Door Sedan was subjected to FMVSS 111 compliance testing. The tests were conducted at KARCO Engineering in Adelanto, California on March 23 through May 25, 2004. Summary data is shown on page 23, Data Sheet No. 8. The following tests were performed:

- Inspection
- Mounting Adequacy Test
- Field-of-View Test, Inside Rearview Mirror
- Field-of-View Test, Driver's Side Outside Mirror
- Reflectance Test
- Breakaway Test
- Unit Magnification and Convex Mirror Tests

The tests were conducted per the FMVSS 111 test procedure. The significant aspects of the test procedure are described in the following paragraphs.

### **A. INSPECTION**

Inspect the installation of the inside and outside rearview mirrors.

### **B. MOUNTING ADEQUACY TEST – ALL REARVIEW MIRRORS**

#### **B.1 INSIDE MIRROR (§5.1.2)**

Determine that the mirror is securely mounted and determine the positive and negative angles of adjustment for both the vertical and horizontal directions.

#### **B.2 OUTSIDE MIRROR(S) (§5.2.2 and §5.3)**

Determine that the mirror(s) is (are) securely mounted. Determine that the driver's side mirror can be tilted in both horizontal and vertical directions from the driver's seated position. Determine that the passenger's side mirror is capable of adjustment by tilting in both the horizontal and vertical directions. Determine the positive and negative angles of adjustment for both horizontal and vertical directions for all outside mirrors. Determine that all outside mirrors are free of sharp points or edges that could contribute to pedestrian injury.

**C. FIELD-OF-VIEW TEST - INSIDE REARVIEW MIRROR**

**C.1 REQUIREMENTS (S5.1.1)**

The mirror shall provide a field of view with an included horizontal angle measured from the projected eye point of at least 20 degrees, and sufficient vertical angle to provide a view of a level road surface extending to the horizon beginning at a point not greater than 61m (200 feet) to the rear of the vehicle when the vehicle is occupied by the driver and four passengers or the designated occupant capacity, if less. The line of sight may be partially obscured by seated occupants or by head restraints.

Each car whose inside mirror does not meet the field of view requirements of S5.1.1 shall have an outside mirror of unit magnification or a convex mirror installed on the passenger's side. (S5.3)

**D. FIELD-OF-VIEW TEST, DRIVER'S SIDE OUTSIDE REARVIEW MIRROR**

**D.1 REQUIREMENTS (S5.2)**

Each passenger car shall have an outside mirror of unit magnification. The mirror shall provide the driver a view of a level road surface extending to the horizon from a line, perpendicular to a longitudinal plane tangent to the driver's side of the vehicle at the widest point, extending 2.4 meters (8 feet) out from the tangent plane 10.7 meters (35 feet) behind the driver's eyes, with the seat in the rearmost position. The line of sight may be partially obscured by rear body or fender contours. (S5.2.1)

Neither the mirror nor the mounting shall protrude farther than the widest part of the vehicle body except to the extent necessary to produce a field of view meeting or exceeding the requirements of S5.2.1. The mirror shall not be obscured by the un-wiped portion of the windshield. (S5.2.2)

**E. REFLECTANCE TEST - ALL MIRRORS**

**E.1 REQUIREMENT (S11)**

All single reflectance mirrors shall have an average reflectance of at least 35 percent. If a mirror is capable of multiple reflectance levels, the minimum reflectance level in the day mode shall be at least 35 percent and the minimum reflectance level in the night mode shall be at least 4 percent. The average reflectance of any mirror required by this standard shall be determined in accordance with SAE Recommended Practice J964, OCT 84.

**F. BREAKAWAY TEST - INSIDE REARVIEW MIRROR**

**F.1 REQUIREMENTS (S5.1.2)**

If the mirror is in the head impact area, the mounting shall deflect, collapse, or break away without leaving sharp edges when the reflective surface of the mirror is subjected to a force of 400 N (90 lb) in any forward direction that is not more than 45 degrees from the longitudinal direction.

## **G. UNIT MAGNIFICATION AND CONVEX MIRROR TESTS**

### **G.1 REQUIREMENTS FOR PASSENGER CARS (S5.3 and S5.4)**

The driver's side rearview mirror and the inside rearview mirror shall be unit magnification. If the field-of-view requirements are not met with the inside rearview mirror then the passenger's side rearview mirror is required. It can be either unit magnification or convex.

If the passenger's side mirror is convex, the average radius of curvature shall be not less than 889 mm (35 inches) and not more than 1651 millimeters (65 inches) and shall not deviate from the average by more than plus or minus 12.5 percent. The convex mirror shall have permanently and indelibly marked at the lower edge of the mirror's reflective surface in letters not less than 4.8 mm (3/16 inch) nor more than 6.4 mm (0.25 inch) high the words, "Objects in Mirror Are Closer Than They Appear."

**SECTION 3**  
**TEST DATA**

### **3. TEST DATA**

The results of FMVSS 111 compliance tests that were conducted on the 2004 Nissan Maxima 4 Door Sedan on March 23 through May 25, 2004 to determine compliance with FMVSS 111, "Rearview Mirrors (other than School Buses)" are presented in this section.

**DATA SHEET NO. 1**

**VEHICLE INSPECTION AND IDENTIFICATION**

<b>TEST VEHICLE INFORMATION</b>			
Manufacturer	NISSAN MOTOR COMPANY	VIN	1N4BA41E44C868150
Manufacturing Date	10/03	Delivery Date	12/31/03
Dealer	EMPIRE NISSAN	NHTSA No.	C45204
Odometer Reading (mi.)	3.6	Fuel Type	GAS
Engine Displacement	3.5	Cylinders	6
Transmission	4-SPEED AUTOMATIC	Final Drive	FRONT
Engine Placement	TRANSVERSE	Color	BLUE
Tire Press./Max. Cap. Front	32	Cold Tire Press. Front	32
Tire Press./Max. Cap. Rear	32	Cold Tire Press. Rear	32
Recommend Tire Size	P245/45 R18 96V	Type of Spare	T145/80 r17
Tire Size on Vehicle	P245/45 R18 96V	Manufacturer	GOODYEAR
GVWR	4546	Cargo Capacity	860
GAWR Front	2469	GAWR Rear	2097
Air Conditioning	YES	Power Steering	YES
Power Brakes	YES	AM/FM/Cassette	YES
Disc Brakes (Front)	YES	Disc Brakes (Rear)	YES
Power Windows	YES	Tilt Steering	YES
Anti-lock Brakes (ABS)	YES	Power Seats	YES
Driver Airbag	YES	Passenger Airbag	YES

**TEST VEHICLE ATTITUDE (mm)**

ATTITUDE	LF	RF	LR	RR
As Delivered	746	753	711	719
As Tested	726	732	671	677
Rear View Mirror	1248			

**DATA SHEET NO. 1... (Continued)**

VEHICLE			
YEAR	2004	MAKE	NISSAN
MODEL	MAXIMA	BODY STYLE	4 DOOR SEDAN
NHTSA NO.	C45204	VIN	1N4BA41E44C868130
TEST DATE:	03/23/04	TEMPERATURE:	84°F

**LEGEND:** LE = Left Eye; RE = Right Eye; P = Neck Pivot Point, SRP = Seating Reference Point

**COORDINATE SYSTEM:**

- X = Longitudinal Dimension
- Y = Lateral Dimension
- Z = Vertical Dimension

Positive Values are as follows:

- X = Forward of Reference Point
- Y = Outboard of Reference Point (to driver's side)
- Z = Above Reference Point

Provide Reference Point or Body Fiducial Point that dimensions below are measured from. (Point should be usable by laboratory personnel, i.e., center of an anchorage bolt, door jam latch, etc.).

COORDINATES	LEFT SIDE MIRROR			INSIDE MIRROR			RIGHT SIDE MIRROR			SRP
	P1	LE1	RE1	P2	LE2	RE2	P3	LE3	RE3	
X		-425.5	-364.5		-383.0	-420.3		-440.6	-434.9	
Y		-130.1	-122.0		-337.1	-290.3		-272.2	-304.7	
Z		806.8	806.8		806.8	806.8		806.8	806.8	
Mirror Mfr., Model And Part No.	Ichikoh Industries 96302 7Y000/2/3/4/5/6/7/8/9/10 96302 7Y100/2/3/4/5/6/7/8/9/10 96302 7Y300/2/3/4/5/6/7/8/9/10			GENTEX 96321 CA100 96321 7Y100			Ichikoh Industries 96301 7Y000/2/3/4/5/6/7/8/9/10 96301 7Y100/2/3/4/5/6/7/8/9/10 96301 7Y300/2/3/4/5/6/7/8/9/10			
SRP Travel and Eye-ellipse	N/A									

Reference Point- Front Outer seat track mounting bolt. Co-ordinates X-1074.0, Y-590.0, Z-63.2





**DATA SHEET NO. 2**

**MOUNTING AND TILTING ADEQUACY TEST**

VEHICLE			
YEAR	2004	MAKE	NISSAN
MODEL	MAXIMA	BODY STYLE	4 DOOR SEDAN
NHTSA NO.	C45204	VIN	1N4BA41E44C868150
TEST DATE:	03/23/04	TEMPERATURE:	84°F

MIRROR MOUNTING PROVIDES A STABLE SUPPORT	PASS	FAIL	CONDITIONAL
INSIDE REARVIEW MIRROR	X		
DRIVER SIDE OUTSIDE MIRROR	X		
PASSENGER SIDE OUTSIDE MIRROR	X		NOT REQUIRED

OUTSIDE MIRRORS FREE OF SHARP POINTS OR EDGES	PASS	FAIL
DRIVER SIDE OUTSIDE MIRROR	X	
PASSENGER SIDE OUTSIDE MIRROR	X	

MIRROR IS ADJUSTABLE VERTICALLY & HORIZONTALLY	PASS	FAIL	CONDITIONAL
INSIDE REARVIEW MIRROR	X		
DRIVER SIDE OUTSIDE MIRROR	X		
PASSENGER SIDE OUTSIDE MIRROR	X		NOT REQUIRED

DRIVER'S OUTSIDE MIRROR ADJUSTABLE FROM THE DRIVER'S SEATED POSITION	PASS	FAIL
DRIVER SIDE OUTSIDE MIRROR	X	

MIRROR ADJUSTMENT ANGLE	V+	V-	H+	H-
INSIDE REARVIEW MIRROR	N/A	90°	N/A	N/A
DRIVER SIDE OUTSIDE MIRROR	18°	5°	9°	26°
PASSENGER SIDE OUTSIDE MIRROR	17°	7°	35°	21°

THIS SECTION IS RESERVED FOR MPVs, TRUCKS AND BUSES, OTHER THAN SCHOOL BUSES, NOT CONFORMING TO PASSENGER CAR REQUIREMENTS

MIRROR PROVIDES A VIEW TO THE REAR ALONG BOTH SIDES OF THE VEHICLE	PASS	FAIL	CONDITIONAL
DRIVER SIDE OUTSIDE MIRROR	N/A		
PASSENGER SIDE OUTSIDE MIRROR	N/A		

TEST STATUS:	PASSED —	X	FAILED —
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RECORDED BY: PABLO VEGA DATE: 03/23/04  
 APPROVED BY: MATTHEW A. IVORY DATE: 03/23/04

**DATA SHEET NO. 3**

**FIELD OF VIEW TEST - INSIDE REARVIEW MIRROR**

VEHICLE			
YEAR	2004	MAKE	NISSAN
MODEL	MAXIMA	BODY STYLE	4 DOOR SEDAN
NHTSA NO.	C45204	VIN	1N4BA41E44C888150
TEST DATE:	03/23/04	TEMPERATURE:	85°F

- E Distance from center of mirror to projected eye point location = 550.0 mm
- A Distance from rear of vehicle to projected eye point location = 3490.0 mm
- X1 Distance from rear of vehicle to field of view grid = 8211.0 mm
- Z1 Vertical distance to lowest point of field of view at distance X1 627.0 mm
- Z2 Height of center of mirror = 1249.0 mm
- X2 Distance from rear of vehicle where the road surface is first visible  
 $X2 = [(Z2 \times X1) + (Z1 \times A)] / (Z2 - Z1) =$   
 (\$111 REQUIREMENT = 61m maximum) 20005.2 mm (20.0 m)

EYE LOCATION	MONOCULAR DATA (ALR & ARL ARE ANGLES)			
	YL (mm)	YR (mm)	ALR (°)	ARL (°)
LEFT EYE POINT	YLL = 2543.0	YRL = 2075.0		12.5
RIGHT EYE POINT	YLR = 2300.0	YRR = 2543.0	12.5	

**CALCULATED HORIZONTAL AMBINOCULAR VIEW ANGLE (AB)**

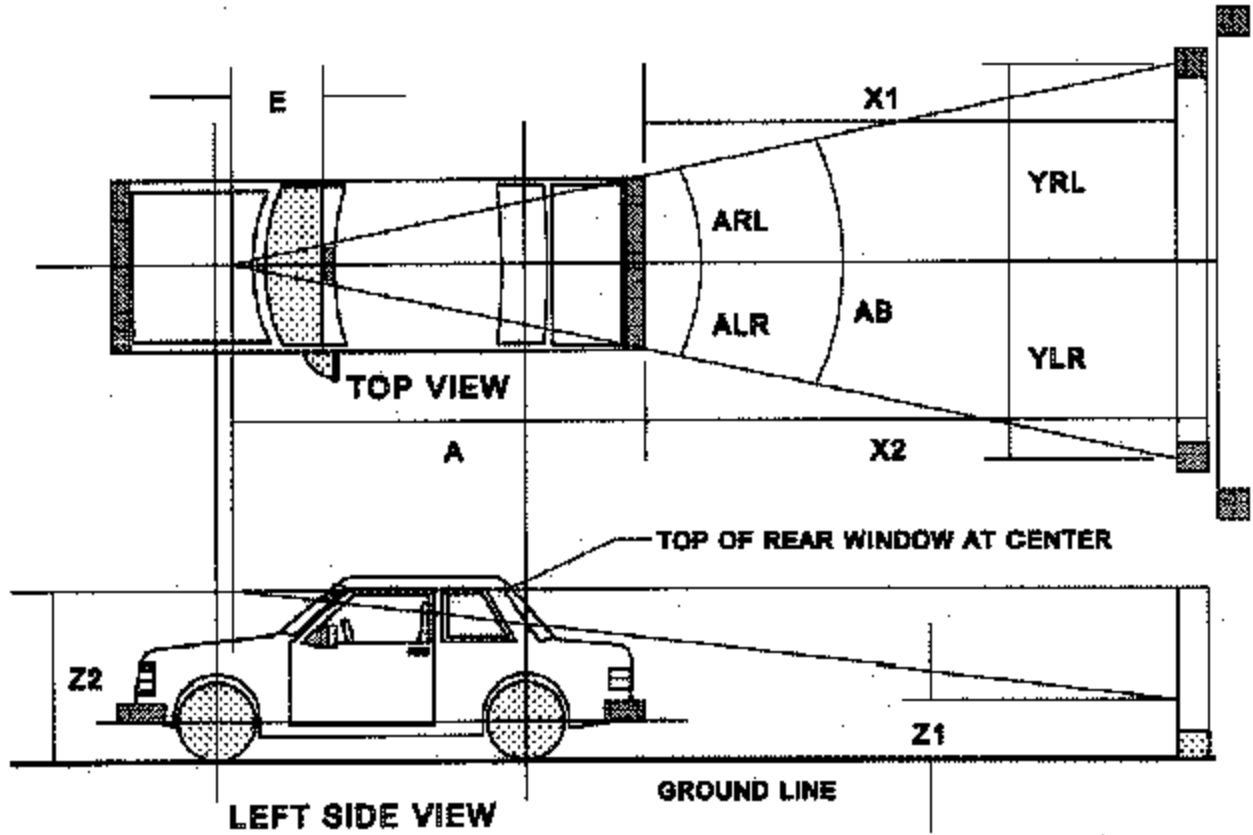
ANGLE AB = ANGLE ALR + ANGLE ARL

$ALR = \tan^{-1} [YLR / (X1 + A)]$        $ARL = \tan^{-1} [YRL / (X1 + A)]$

ANGLE AB = 25.0° (\$111 REQUIREMENT = 20 degrees minimum)

TEST STATUS:	PASSED —	<b>x</b>	FAILED —
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### INSIDE REARVIEW MIRROR FIELD OF VIEW TEST GRID AND MARKER SETUP



**DATA SHEET NO. 3... (Continued)**

**DRIVER SIDE MIRROR (S5.2)**

MIRROR OBSCURED BY UNWIPED PORTION OF WINDSHIELD YES \_\_\_ NO X

HEIGHT OF TARGET DISC ON MIRROR 1045 mm

DISTANCE OF TARGET DISC ON MIRROR FROM VEHICLE TANGENT PLANE 55 mm

TARGET DISC LOCATION RELATIVE TO VEHICLE TANGENT PLANE INBOARD  
(Inboard or Outboard)

ENTIRE TRIANGULAR TEST TARGET AREA ON SCREEN VISIBLE YES X NO \_\_\_

MIRROR PROTRUDES BEYOND VEHICLE TANGENT PLANE YES X NO \_\_\_

PROTRUSION REQUIRED TO MEET FIELD OF VIEW REQUIREMENT YES X NO \_\_\_

TEST STATUS:	PASSED <u>---</u>	<u>X</u>	FAILED <u>---</u>	
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**PASSENGER SIDE MIRROR (S5.3 or MFG. OPTION)**

PASSENGER SIDE MIRROR TYPE (convex or unit magnification) CONVEX

**REMARKS:**

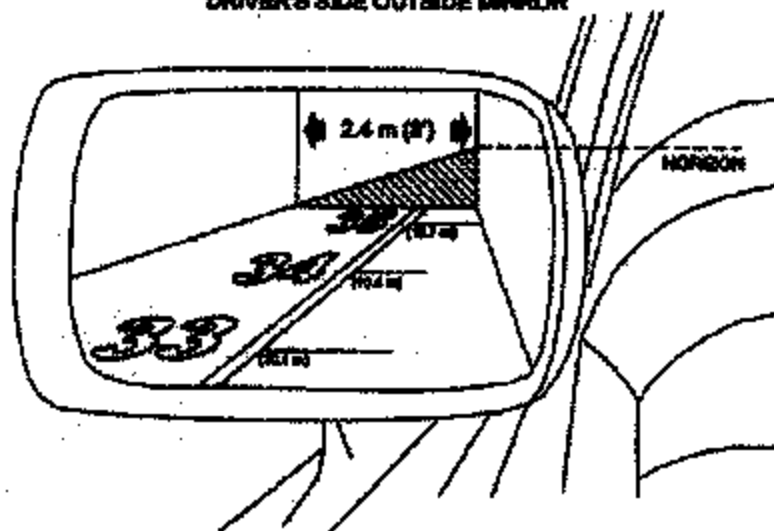
**VEHICLE ATTITUDE AND GROUND LEVEL WERE RAISED 4".**

RECORDED BY: PABLO VEGA DATE: 03/23/04

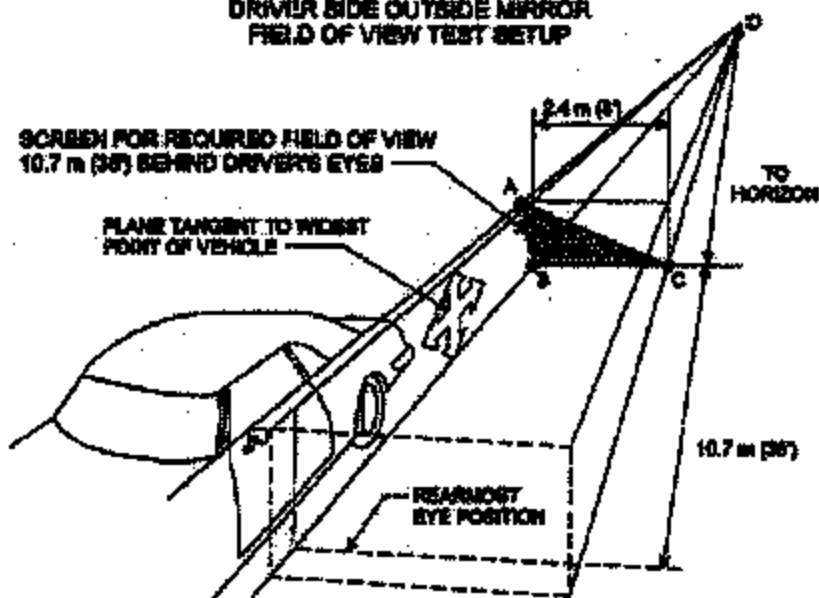
APPROVED BY: MATTHEW A. IVORY DATE: 03/23/04

DATA SHEET NO. 3... (Continued)

REQUIRED FIELD OF VIEW AS SEEN IN  
DRIVER'S SIDE OUTSIDE MIRROR

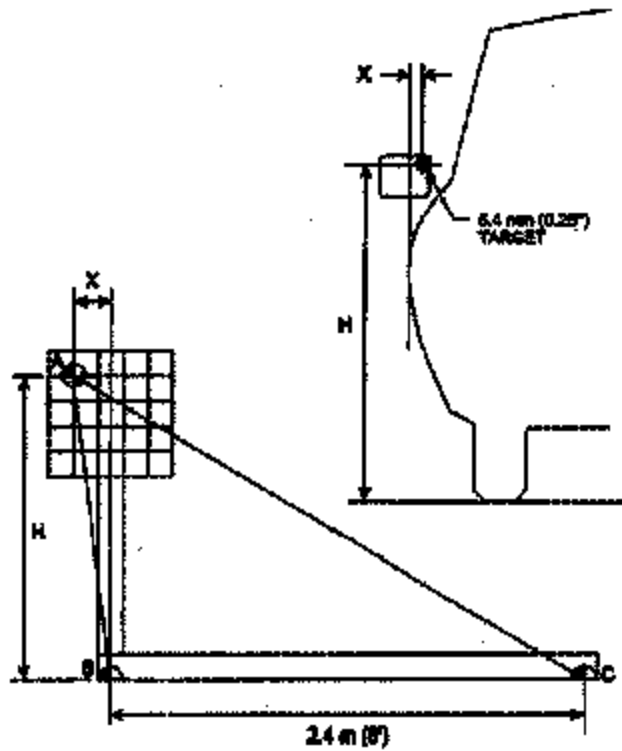


DRIVER SIDE OUTSIDE MIRROR  
FIELD OF VIEW TEST SETUP

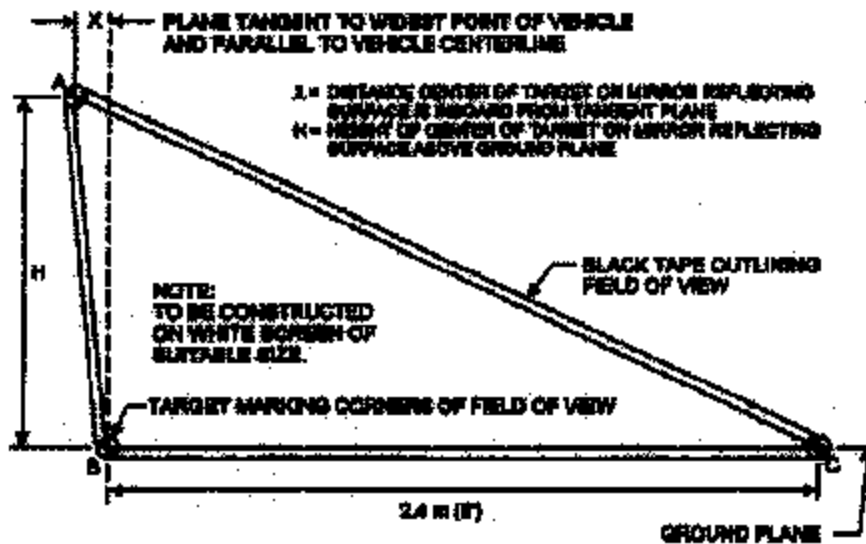


**DATA SHEET NO. 3... (Continued)**

**DRIVER SIDE OUTSIDE MIRROR TARGET DISC LOCATION WITH X AND H DIMENSIONS**



**DRIVER SIDE OUTSIDE MIRROR REQUIRED FIELD OF VIEW TRIANGLE**



DATA SHEET NO. 4

REFLECTANCE TEST

VEHICLE			
YEAR	2004	MAKE	NISSAN
MODEL	MAXIMA	BODY STYLE	4 DOOR SEDAN
NHTSA NO.	C45204	VIN	1N4BA41E44C885150
TEST DATE:	05/20/04	TEMPERATURE:	72°F

DESCRIPTION OF TEST APPARATUS: THE APPARATUS CONSISTS OF AN INCANDESCENT TUNGSTEN FILAMENT LAMP OPERATING AT A NOMINAL COLOR TEMPERATURE OF 2,856 K, COLLIMATING OPTICS, A SAMPLE HOLDER POSITIONED AT 25°, A SILICON PHOTOCELL, AND A FLUKE 45 DUAL DISPLAY MULTIMETER (CALIBRATION DUE DATE 3-21-05). REFLECTANCE TESTS ARE CONDUCTED IN A 4'X6' WOODEN CABINET PAINTED FLAT BLACK.

MIRROR DESCRIPTION: INTERIOR DAY/NIGHT REAR VIEW MIRROR

VOLTAGE READING FROM CALIBRATION (Average Value): 300 mV

VOLTAGE READING FROM LIGHT REFLECTED BY DAY MIRROR (Average Value): 282 mV

REFLECTOMETER VOLTAGE READINGS		
	DAY MIRROR	NIGHT MIRROR
TEST NO. 1	282 mV	119 mV
TEST NO. 2	282 mV	130 mV
TEST NO. 3	282 mV	127 mV
TEST NO. 4	282 mV	137 mV
TEST NO. 5	282 mV	265 mV*

\*Day/night portion of mirror was electronic and required a voltage to keep the night portion active. As the tests progressed, the voltage of our supply battery dropped causing the reflectance level to increase. The mirror still met the reflectance requirements of FMVSS 111.

REFLECTANCE (Day) = Voltage (Ref)/Voltage (Cal) = 0. 940 x 100 = 84.0 percent  
(Min. Required = 35%)

VOLTAGE READING FROM CALIBRATION (Average Value) = 297 mV

VOLTAGE READING FROM LIGHT REFLECTED BY NIGHT MIRROR (Average Value): 156 mV

REFLECTANCE (Night) = Voltage (Ref)/Voltage (Cal) = 0. 525 x 100 = 52.5 percent  
(Min. Required = 4%)

NOTE: If meter reading directly in percent is used, record only percent.

**DATA SHEET NO. 4 (Continued)**

**MIRROR DESCRIPTION: DRIVER SIDE OUTSIDE MIRROR.**

VOLTAGE READING FROM CALIBRATION (Average Value): 300 mV

VOLTAGE READING FROM LIGHT REFLECTED BY DAY MIRROR (Average Value): 288 mV

REFLECTOMETER VOLTAGE READINGS	
TEST NO. 1	287 mV
TEST NO. 2	289 mV
TEST NO. 3	289 mV
TEST NO. 4	289 mV
TEST NO. 5	289 mV

REFLECTANCE (Day) = Voltage (Ref)/Voltage (Cal) = 0. 96.1 x 100 = 96.1 percent  
(Min. Required = 35%)

VOLTAGE READING FROM CALIBRATION (Average Value) = 297 mV

NOTE: If meter reading directly in percent is used, record only percent

TEST STATUS:	PASSED —	<b>X</b>	FAILED —	
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RECORDED BY: PABLO VEGA DATE: 05/20/04

APPROVED BY: MATTHEW A. IVORY DATE: 05/20/04



**DATA SHEET NO. 5**

**BREAKAWAY TEST - INSIDE REARVIEW MIRROR**

VEHICLE			
YEAR	2004	MAKE	NISSAN
MODEL	MAXIMA	BODY STYLE	4 DOOR SEDAN
NHTSA NO.	C45204	VIN	1N4BA41E44C868150
TEST DATE:	5/25/04	TEMPERATURE:	86° F

**MOUNTING OF MIRROR (INSIDE) DESCRIPTION: TAB GLUED TO WINDSHIELD. MIRROR BASE SLIPS OVER BASE AND HELD IN PLACE WITH SET SCREW.**

(Requirement: the mirror shall defect, collapse or break away when it is subjected to a force of 400 N or less)

TEST NO.	LOAD DIRECTION VERTICAL/HORIZONTAL	MAXIMUM FORCE (N)	DISPLACEMENT (MM)	PASS	FAIL
1	0-90 DEGREES	139.1	15.4	X	
2	+45/90 DEGREES	261.3	6.6	X	
3	-45/90 DEGREES	129.7	14.9	X	
4	-45/+45 DEGREES	102.7	32.2	X	
5	+45/+45 DEGREES	221.9	50.7	X	
6	+45/-45 DEGREES	208.8	18.4	X	
7	-45/-45 DEGREES	120.8	38.0	X	

REMARKS:

**DATA SHEET NO. 5 (Continued)**

**BREAKAWAY TEST - INSIDE REARVIEW MIRROR FAILURE TYPE - DESCRIPTION:**

FAILURE TYPE - DESCRIPTION:

**NONE**

TEST STATUS:	PASSED —	<b>X</b>	FAILED —	
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REMARKS:

RECORDED BY: **MICHAEL DUNLAP**

DATE: **05/25/04**

APPROVED BY: **MATTHEW A. IVORY**

DATE: **05/25/04**

**DATA SHEET NO. 6**

**UNIT MAGNIFICATION AND CONVEX MIRROR TESTS**

VEHICLE			
YEAR	2004	MAKE	NISSAN
MODEL	MAXIMA	BODY STYLE	4 DOOR SEDAN
NHTSA NO.	C45204	VIN	1N4BA41E44C888150
TEST DATE:	07/9/02	TEMPERATURE:	82°F

**DESCRIPTION OF TEST APPARATUS: 3-POINT LINEAR SPHEROMETER MANUFACTURED BY AMERICAN OPTICAL CORPORATION, GENEVA LENS MEASURE M667 1.53. SERIAL NUMBER 78622. THE SPHEROMETER USED DID NOT MEET THE ACCURACY REQUIREMENTS OF FMVSS 111. GAGE MEASURED IN DIOPTERS. RADIUS OF CURVATURE WAS CALCULATED USING THE EQUATION :**

$$\text{RADIUS IN INCHES} = (530)(0.03937)/\text{GAGE READING}$$

**DRIVER'S SIDE & INSIDE REARVIEW MIRRORS:**

DRIVER SIDE MIRROR	
TEST POSITION	DIAL READINGS
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0

INSIDE MIRROR	
TEST POSITION	DIAL READINGS
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0

All dial indicator readings for unit magnification mirrors must be zero.

DATA SHEET NO. 8 (Continued)

UNIT MAGNIFICATION AND CONVEX MIRROR TESTS

PASSENGER SIDE REARVIEW MIRROR:

CONVERSION TABLE FROM SPHEROMETER DIAL  
READING TO RADIUS OF CURVATURE

TEST POSITION	DIAL READINGS (DIOPTERS) Passenger	RADIUS OF CURVATURE (mm)	DEVIATION BETWEEN THE AVERAGE RADIUS OF CURVATURE AND THE TEST POSITION RADIUS OF CURVATURE (mm)	PERCENT DEVIATION FROM THE AVERAGE RADIUS OF CURVATURE
1	0.300	1778.0	0	0
2	0.300	1778.0	0	0
3	0.300	1778.0	0	0
4	0.300	1778.0	0	0
5	0.300	1778.0	0	0
6	0.300	1778.0	0	0
7	0.300	1778.0	0	0
8	0.300	1778.0	0	0
9	0.300	1778.0	0	0
10	0.300	1778.0	0	0
Average Radius of Curvature		1778.0	Greatest percent Deviation	0

REMARKS:

MIRROR NOT REQUIRED TO MEET FMVSS 111 REQUIREMENTS.

DATA SHEET NO. 6 (Continued)

UNIT MAGNIFICATION AND CONVEX MIRROR TESTS

PASSENGER'S SIDE REARVIEW MIRROR

- IF CONVEX, ARE THERE ANY DISCONTINUITIES IN THE SLOPE OF THE MIRROR SURFACE  
**X** YES \_\_\_ NO \_\_\_
- IF CONVEX, ARE THE WORDS, "OBJECTS IN THE MIRROR ARE CLOSER THAN THEY APPEAR" PRESENT  
 YES **X** NO \_\_\_
- IF CONVEX, MEASURE LETTER HEIGHT OF WORDS  
 \_\_\_ **5.0** \_\_\_ mm
- IF CONVEX, LETTERS ARE NOT < 4.8 mm OR > 6.4 mm HIGH  
 YES **X** NO \_\_\_
- IF CONVEX, RADIUS OF CURVATURE NOT < 889 mm OR > 1651 mm  
 YES **X** NO \_\_\_
- IF CONVEX, THE GREATEST PERCENT DEVIATION FROM AVERAGE RADIUS OF CURVATURE IS  $\pm 12.5\%$   
 YES **X** NO \_\_\_
- IF UNIT MAGNIFICATION, ALL DIAL READINGS ARE ZERO  $\pm 0$ .  
 YES **N/A** NO \_\_\_

NOTE: PASSENGER SIDE MIRROR NOT REQUIRED TO MEET REQUIREMENTS OF FMVSS 111.

TEST STATUS:	PASSED —	<b>X</b>	FAILED —	
--------------	----------	----------	----------	--

RECORDED BY: PABLO VEGA DATE: 05/25/04

APPROVED BY: MATTHEW A. IVORY DATE: 05/25/04

**DATA SHEET NO. 7  
MIRROR REFLECTIVE SURFACE AREA TEST**

VEHICLE			
YEAR	2004	MAKE	NISSAN
MODEL	MAXIMA	BODY STYLE	4 DOOR SEDAN
NHTSA NO.	C45204	VIN	1N4BA41E44C888150
TEST DATE:	05/25/04	TEMPERATURE:	82°F

**MPVs, TRUCKS & BUSES (OTHER THAN SCHOOL BUSES)**

**DATA TABLE FOR SURFACE AREA**

MIRRORS	AREA (cm <sup>2</sup> )	REQUIREMENT		RESULTS	
		GVWR < 4536 kg	GVWR > 4536 kg	PASS	FAIL
Outside Driver's Side	170.6 cm <sup>2</sup>	126 cm <sup>2</sup>	323cm <sup>2</sup>	N/A	
Outside Passenger Side	164.3 cm <sup>2</sup>	126 cm <sup>2</sup>	323 cm <sup>2</sup>	N/A	

**MIRRORS LOCATED SO AS TO PROVIDE DRIVER A VIEW TO THE REAR:**

LEFT SIDE      YES   X   NO     

RIGHT SIDE     YES   X   NO     

TEST STATUS:	PASSED —	N/A	FAILED —	
--------------	----------	-----	----------	--

**REMARKS: NO SURFACE AREA REQUIREMENTS**

RECORDED BY: PABLO VEGA      DATE: 05/25/04

APPROVED BY: MATTHEW A. IVORY      DATE: 05/25/04

**DATA SHEET NO. 8**

**TEST SUMMARY-FMVSS 111-REARVIEW MIRRORS**

VEHICLE			
YEAR	2004	MAKE	NISSAN
MODEL	MAXIMA	BODY STYLE	4 DOOR SEDAN
NHTSA NO.	C43204	VIN	1N4BA41E44C868150
TEST DATE:	05/25/04	TEMPERATURE:	N/A

**PASSENGER VEHICLE TESTING:**

OUTSIDE DRIVER SIDE MIRROR	PASS	FAIL	COMMENTS
STABLE SUPPORT	X		
DOES NOT PROTRUDE BEYOND VEHICLE BODY	X		
NOT OBSCURED BY UNWIPED PORTION OF WINDSHIELD	X		
ADJUSTABLE BY TILTING	X		
ADJUSTABLE FROM DRIVER SEAT	X		
FREE OF SHARP EDGES	X		
FIELD-OF-VIEW	X		
REFLECTANCE	X		
UNIT MAGNIFICATION	X		

INSIDE REARVIEW MIRROR	PASS	FAIL	COMMENTS
STABLE SUPPORT	X		
ADJUSTABLE BY TILTING	X		
FIELD-OF-VIEW	X		
REFLECTANCE	X		
BREAK AWAY	X		
UNIT MAGNIFICATION	X		

OUTSIDE PASSENGER MIRROR * (IF REQUIRED)	PASS	FAIL	COMMENTS
STABLE SUPPORT	X		
ADJUSTABLE BY TILTING	X		
FREE OF SHARP EDGES	X		
UNIT OR CONVEX			Convex
LABELING	X		
REFLECTANCE	N/A		

\*NOT REQUIRED

APPENDIX A  
PHOTOGRAPHS



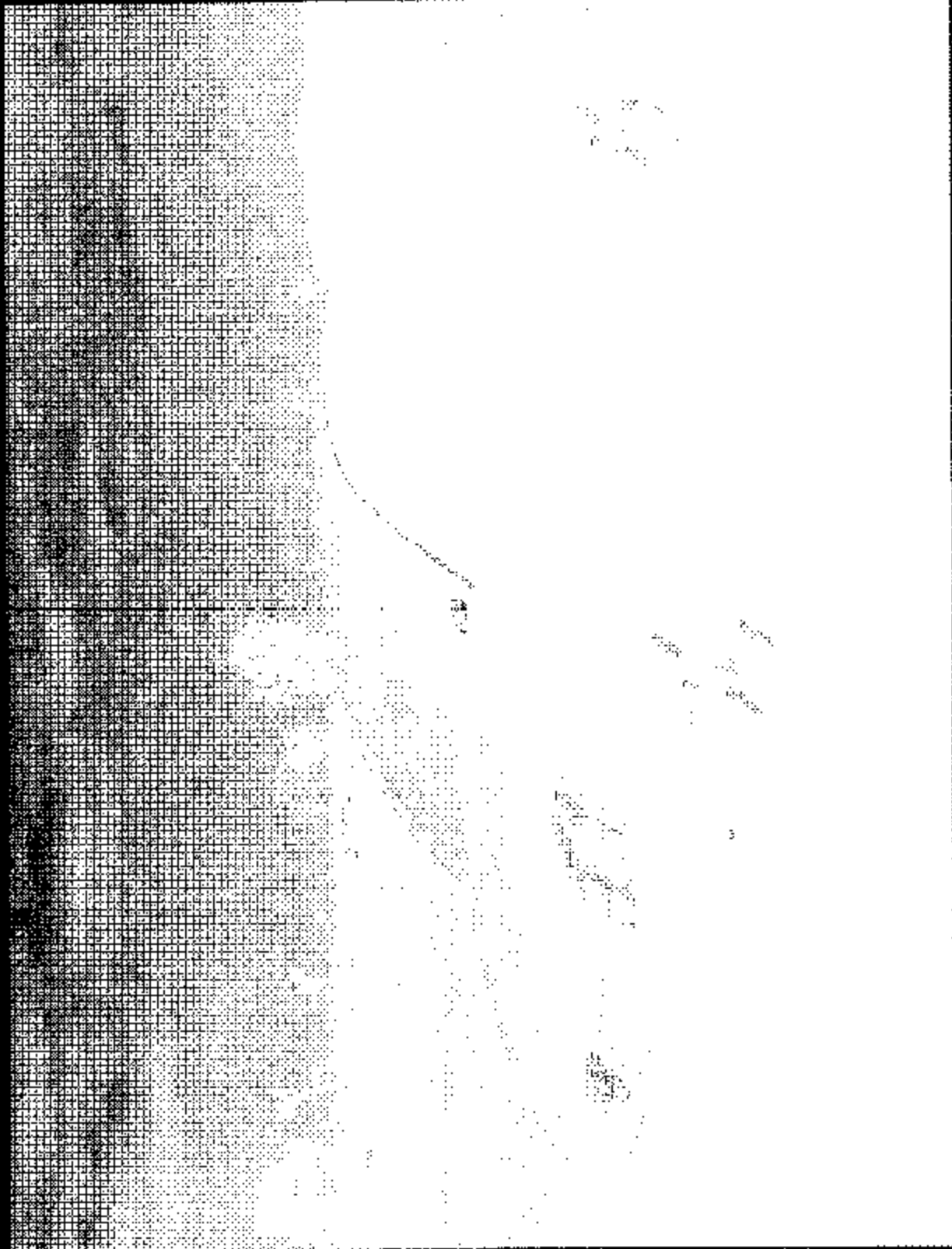


FIGURE 1: LEFT FRONT 3/4 VIEW

2004 NISSAN MAXIMA  
NIHTSA NO. C46204  
FMVSS NO. 111

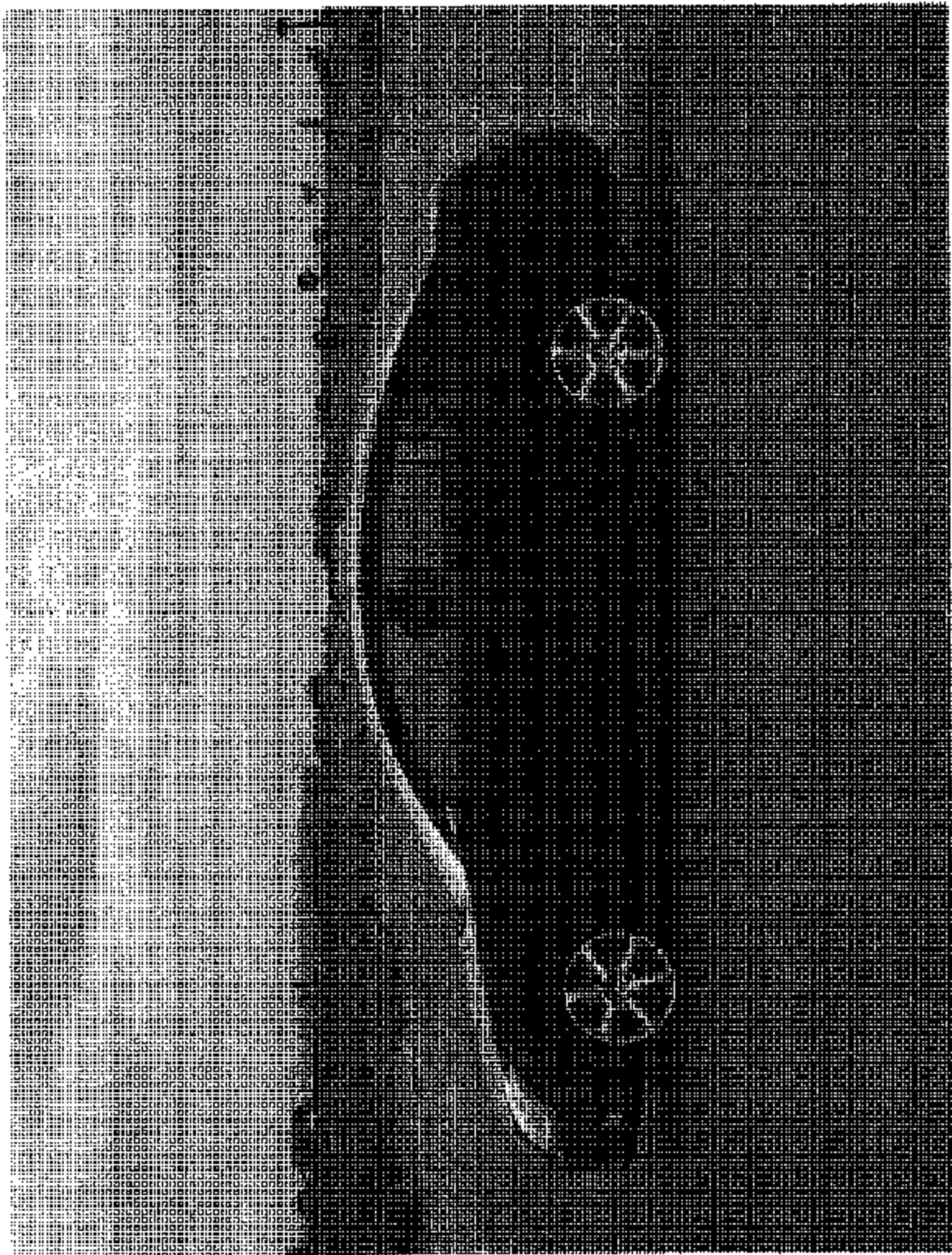


FIGURE 2: LEFT SIDE VIEW

2004 NISSAN MAXIMA  
NHTSA NO. C45204  
FMVSS NO. 111



FIGURE 3: RIGHT REAR 1/4 VIEW

2004 NISSAN MAXIMA  
NHTSA NO. C45204  
FMVSS NO. 111

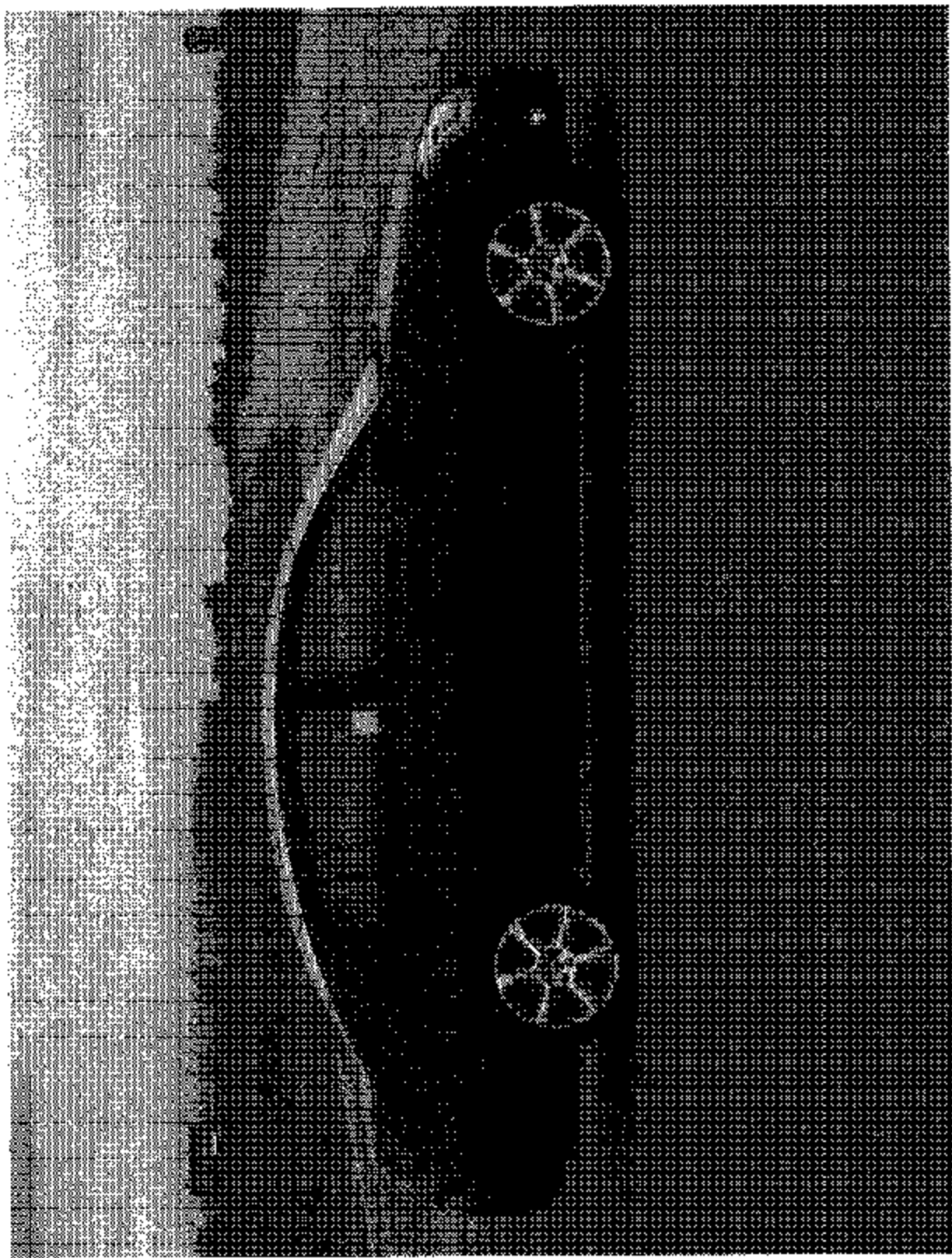


FIGURE 4: RIGHT SIDE VIEW

2004 NISSAN MAXIMA  
NHTSA NO. C45204  
FMVSS NO. 111

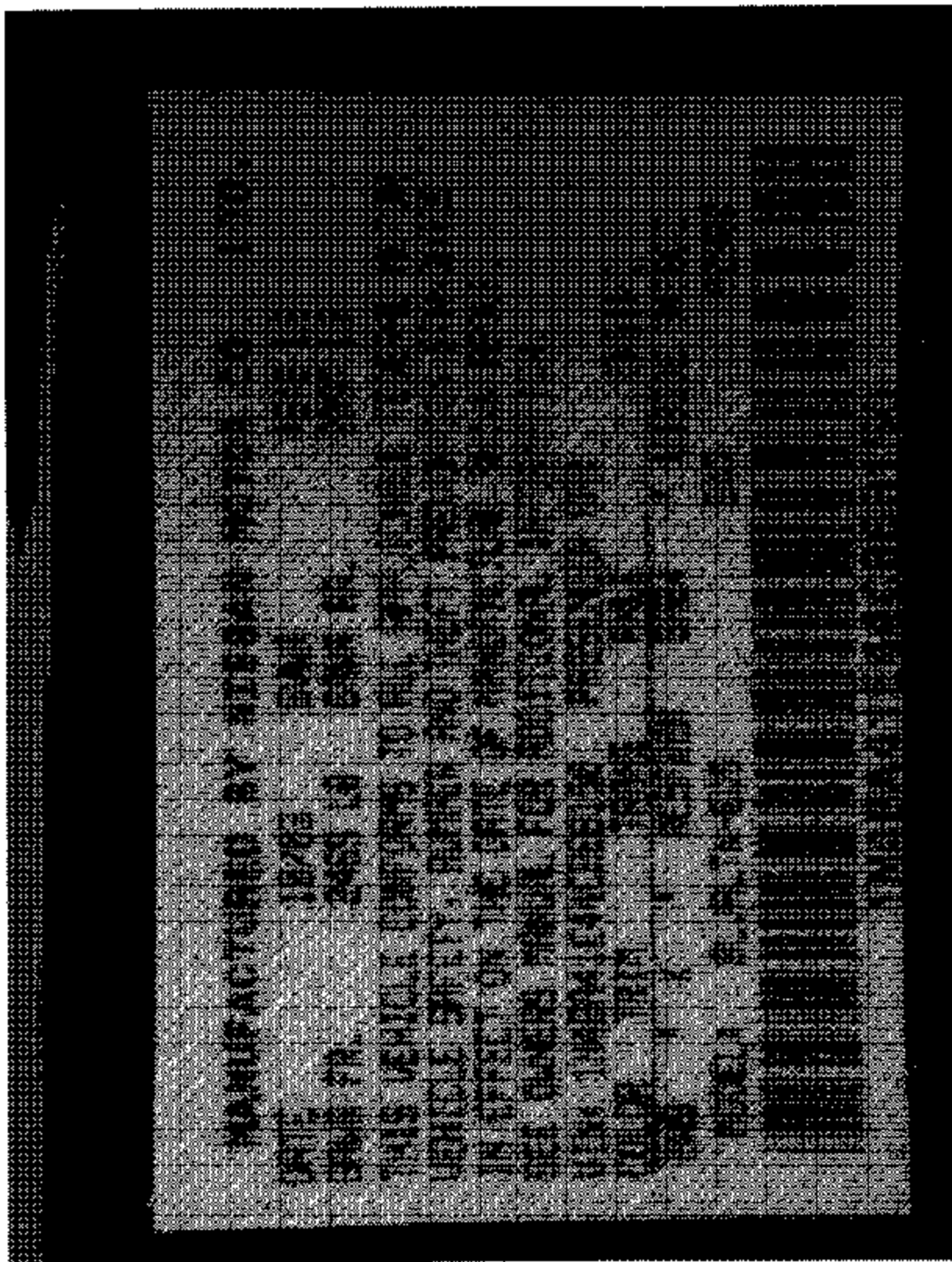


FIGURE 5: MANUFACTURER'S LABEL

2004 NISSAN MAXIMA  
NHTSA NO. C45204  
FMVSS NO. 111

VEHICLE CAPACITY WEIGHT	860 lbs	SEATING CAPACITY	FRONT 2 AVANT 2	TOTAL	SPARE TIRE	87in
PONDS UTILE DU VEHICULE	800 kg	NOMBRE DE PLACES	TOUR 3 ARRIERE 3	TOTAL	BOUE DE USURE	(500)
RECOMMENDED WOLD TIRE INFLATION PRESSURE PRESSION DE BONDAGE NETOMMANUELE DES PNEUS FROIDS						
TIRE SIZE	FRONT 87in	FRONT 220		DO NOT USE IN EXCESS OF 80 MPH. 80 km/h.		
DIMENSIONS	ARRANT (500)	ARRIERE (220)		SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION.		
MP4546218 DRV	220 (32)	220 (22)		MAY 50 MPH. 80 km/h.		
POUR LES DETAILS DE RECHERCHER AU MANUEL DU PROPRIETAIRE						

FIGURE 6: TIRE PLACARD

2004 NISSAN MAXIMA  
 NHTSA NO. C45204  
 FMVSS NO. 111

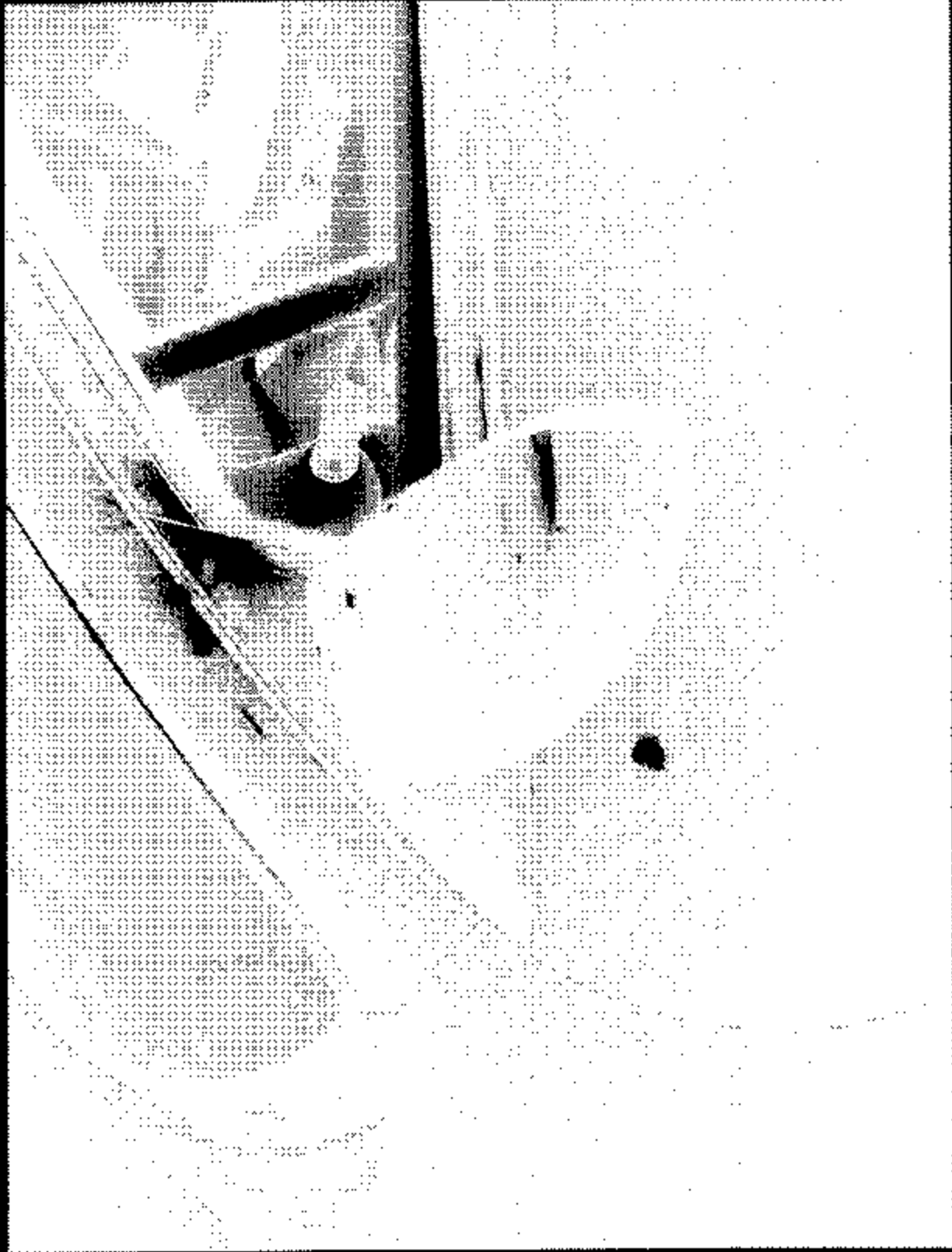


FIGURE 7: DRIVER SIDE REAR VIEW MIRROR AND MOUNTING

2004 NISSAN MAXIMA  
NHTSA NO. C45204  
FMVSS NO. 111



FIGURE B: PASSENGER SIDE REAR VIEW MIRROR AND MOUNTING

2004 NISSAN MAXIMA  
NHTSA NO. C45204  
FMVSS NO. 111





FIGURE 9: INSIDE REAR VIEW MIRROR AND MOUNTING

2004 NISSAN MAXIMA  
NHTSA NO. C45204  
FMVSS NO. 111



FIGURE 10: TEST SET-UP

2004 NISSAN MAXIMA  
NHTSA NO. C45204  
FMVSS NO. 111

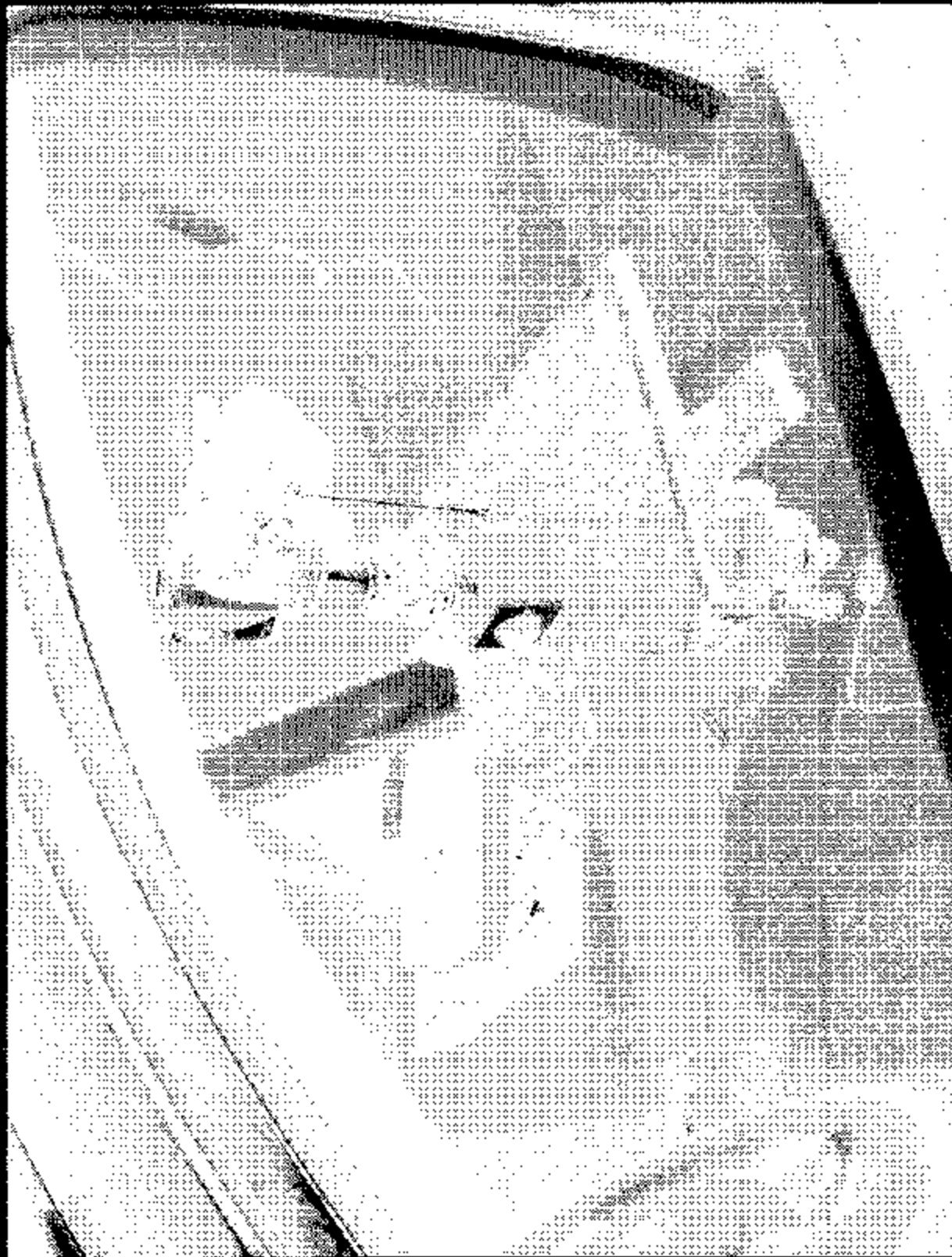


FIGURE 11: CAMERA SET-UP FOR PHOTOGRAPHING REFERENCE BOARD

2004 NISSAN MAXIMA  
NHTSA NO. C45204  
FMVSS NO. 111



FIGURE 12: OVERALL SET-UP FOR MIRROR BREAK AWAY TEST

2004 NISSAN MAXIMA  
NHTSA NO. C45204  
FMVSS NO. 111

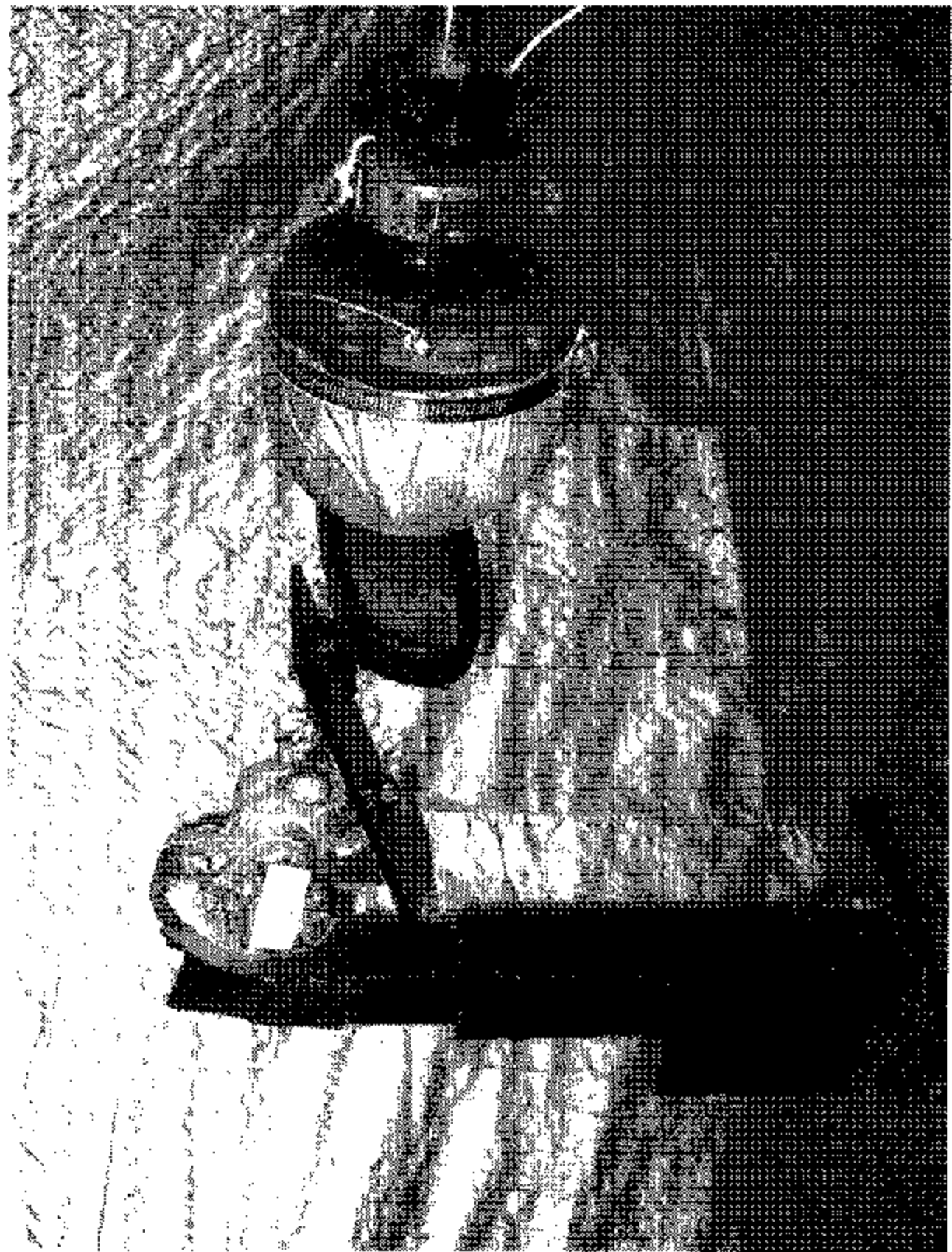


FIGURE 13: CLOSE-UP OF MIRROR BREAK AWAY TEST

2004 NISSAN MAXIMA  
NHTSA NO. C45204  
FMVSS NO. 111

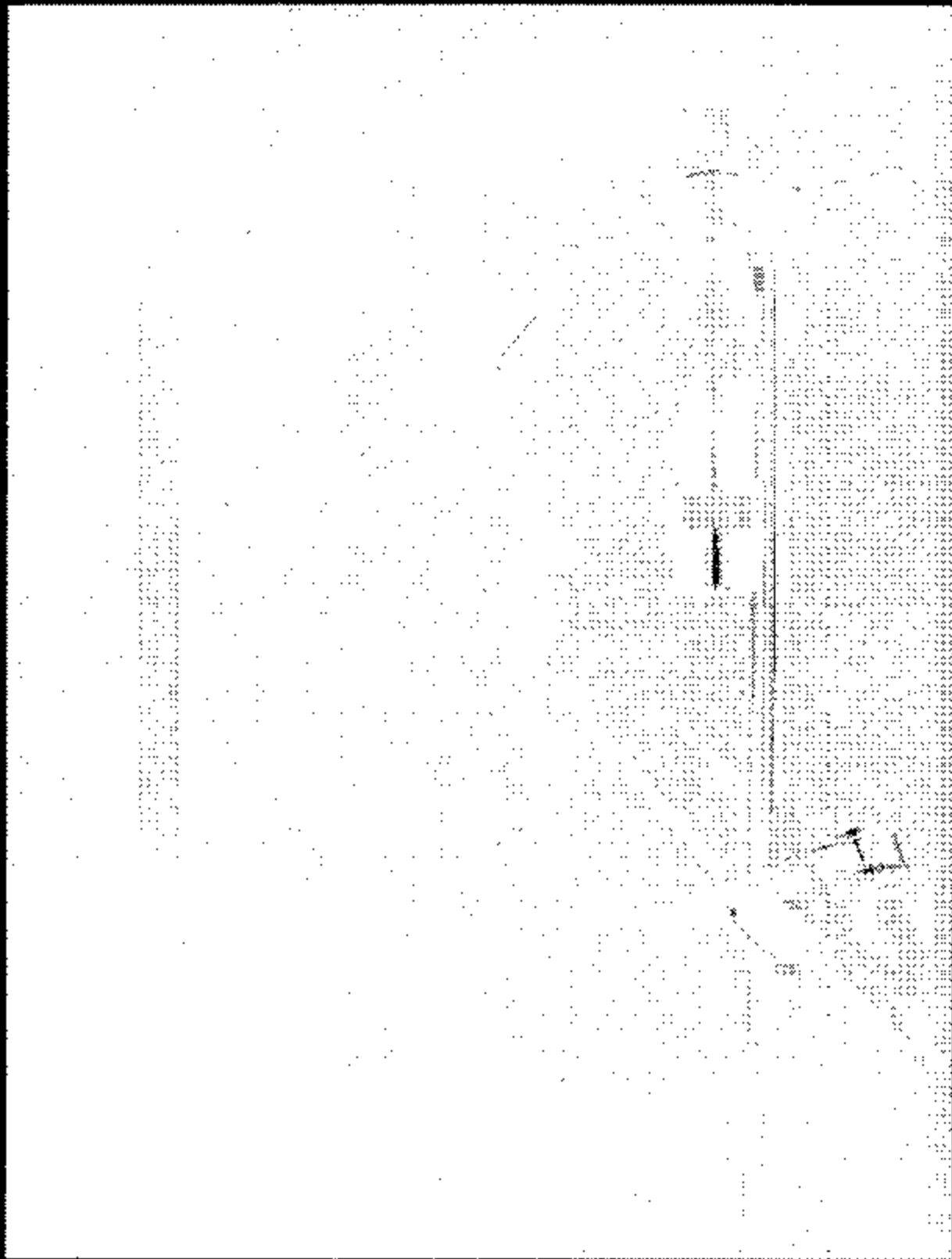


FIGURE 14: REFLECTION TEST SET-UP

2004 NISSAN MAXIMA  
NHTSA NO. C45204  
FMVSS NO. 111

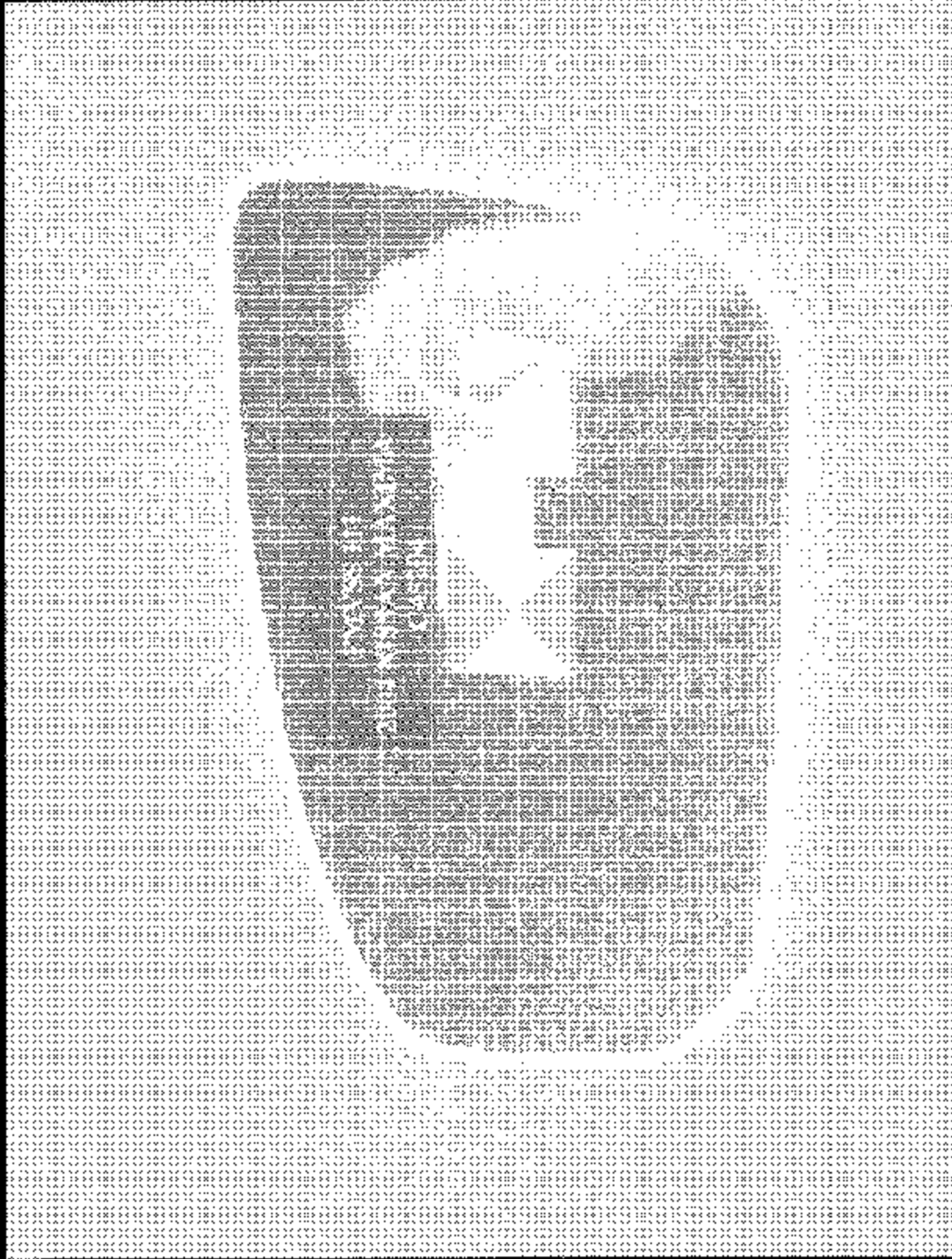


FIGURE 15: MIRROR SET-UP FOR AREA MEASUREMENT

2004 NISSAN MAXIMA  
NHTSA NO. C45204  
FMVSS NO. 111

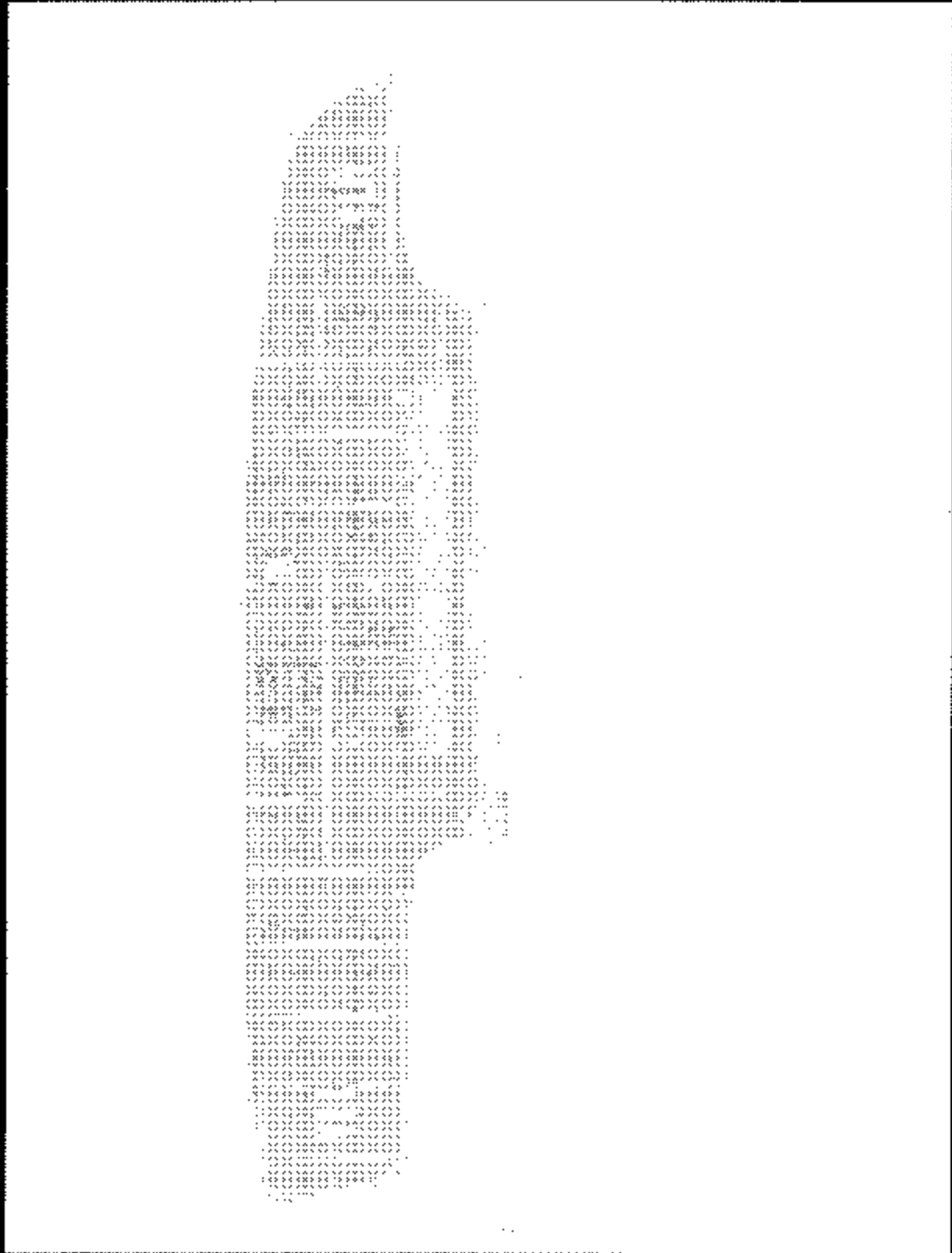


FIGURE 16: LEFT EYE FIELD OF VIEW TEST (INSIDE MIRROR)

2004 NISSAN MAXIMA  
NHTSA NO. C45204  
FMVSS NO. 111



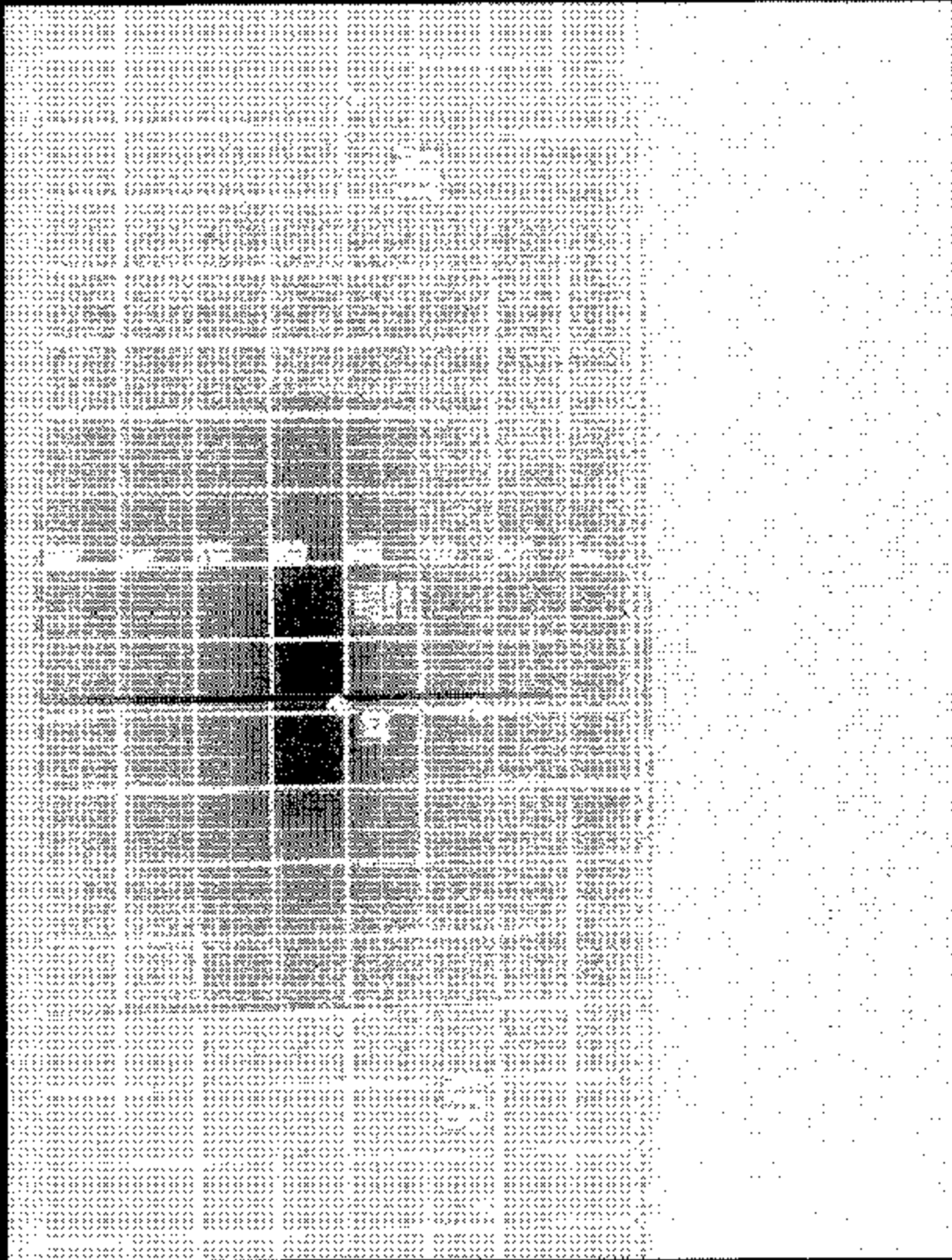


FIGURE 17: REFERENCE BOARD FOR INSIDE MIRROR, LEFT EYE

2004 NISSAN MAXIMA  
NHTSA NO. C45204  
FMVSS NO. 111

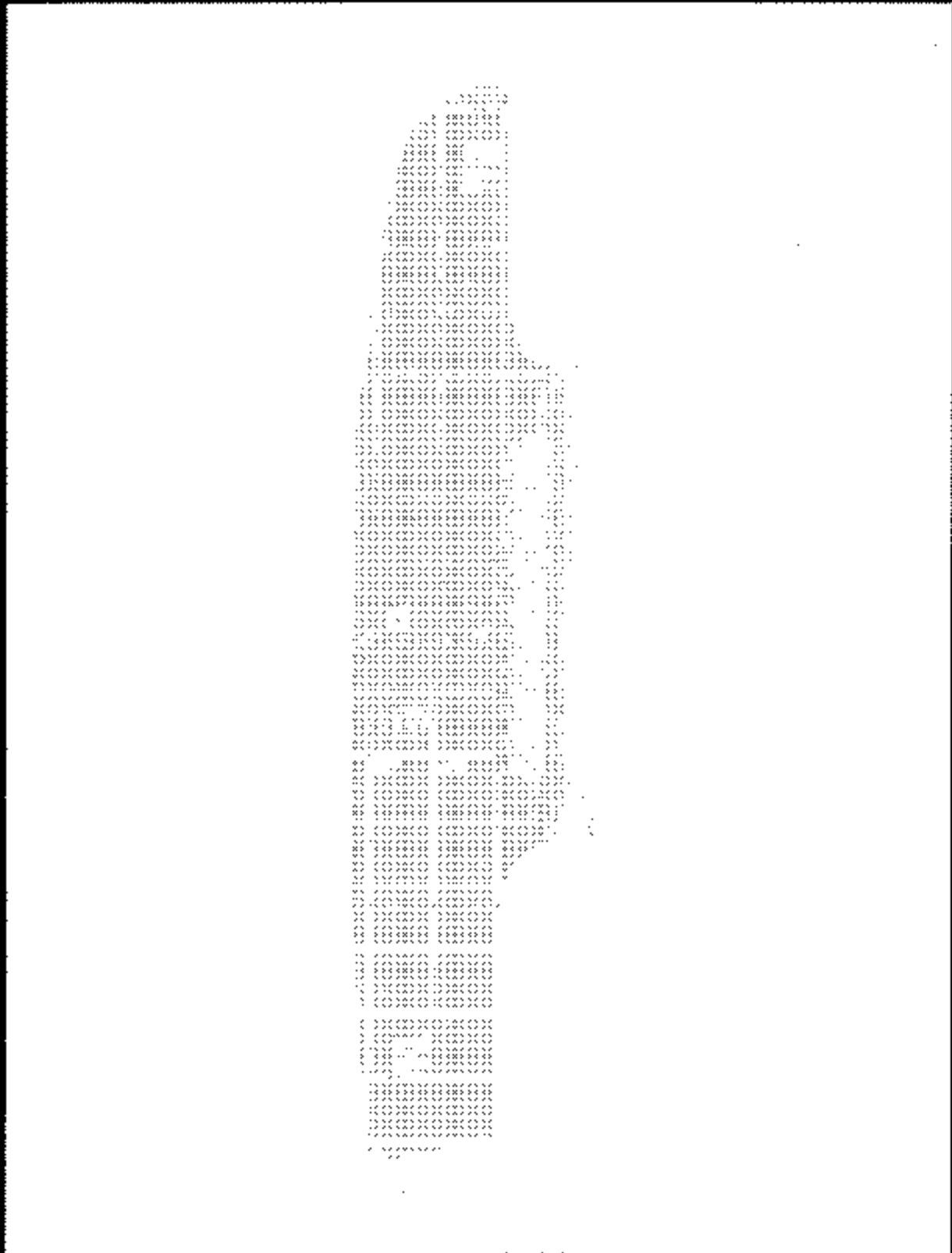


FIGURE 18: RIGHT EYE FIELD OF VIEW TEST (INSIDE MIRROR)

2004 NISSAN MAXIMA  
NHTSA NO. C46204  
FMVSS NO. 111

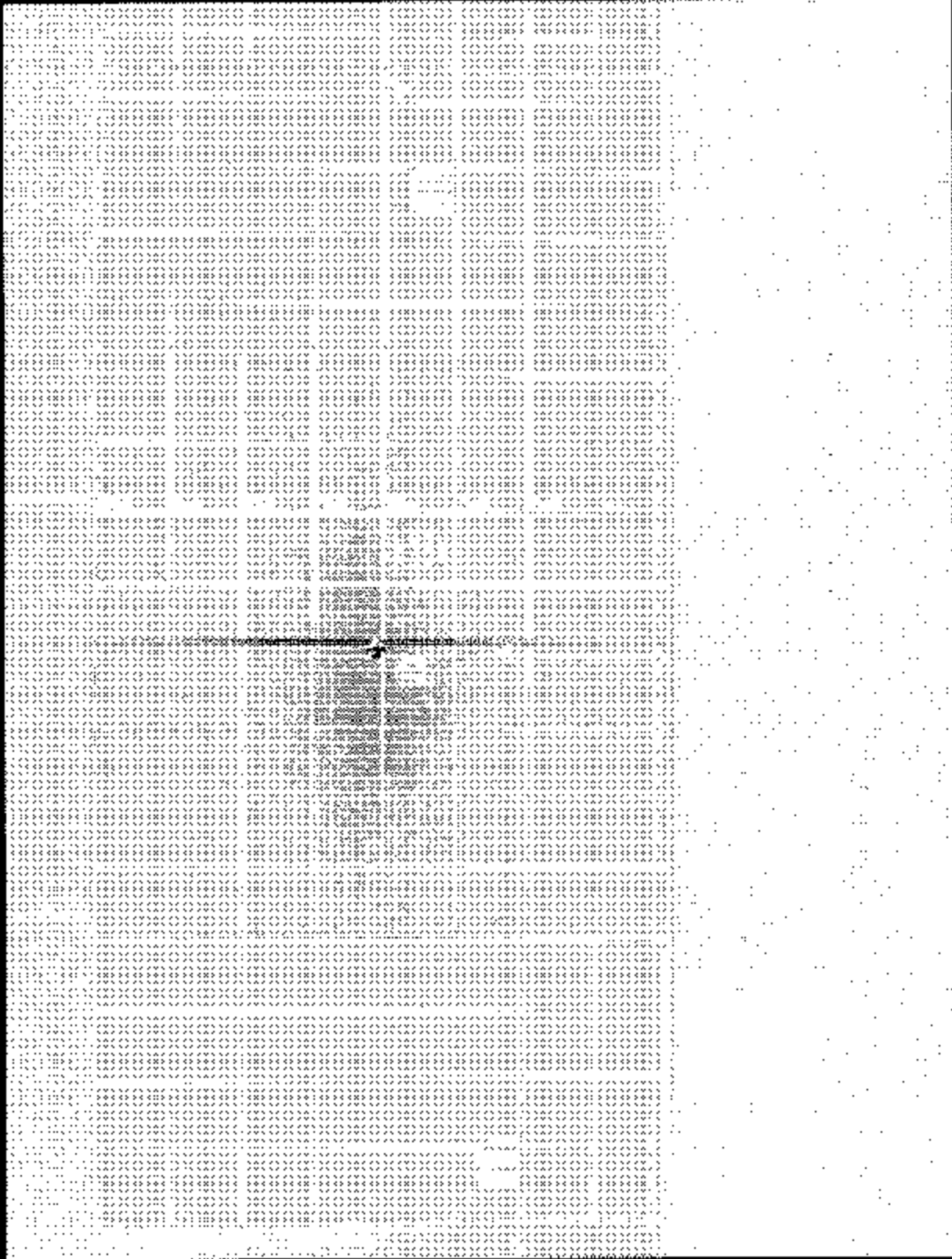


FIGURE 19: REFERENCE BOARD FOR INSIDE MIRROR, RIGHT EYE

2004 NISSAN MAXIMA  
NHTSA NO. C45204  
FMVSS NO. 111

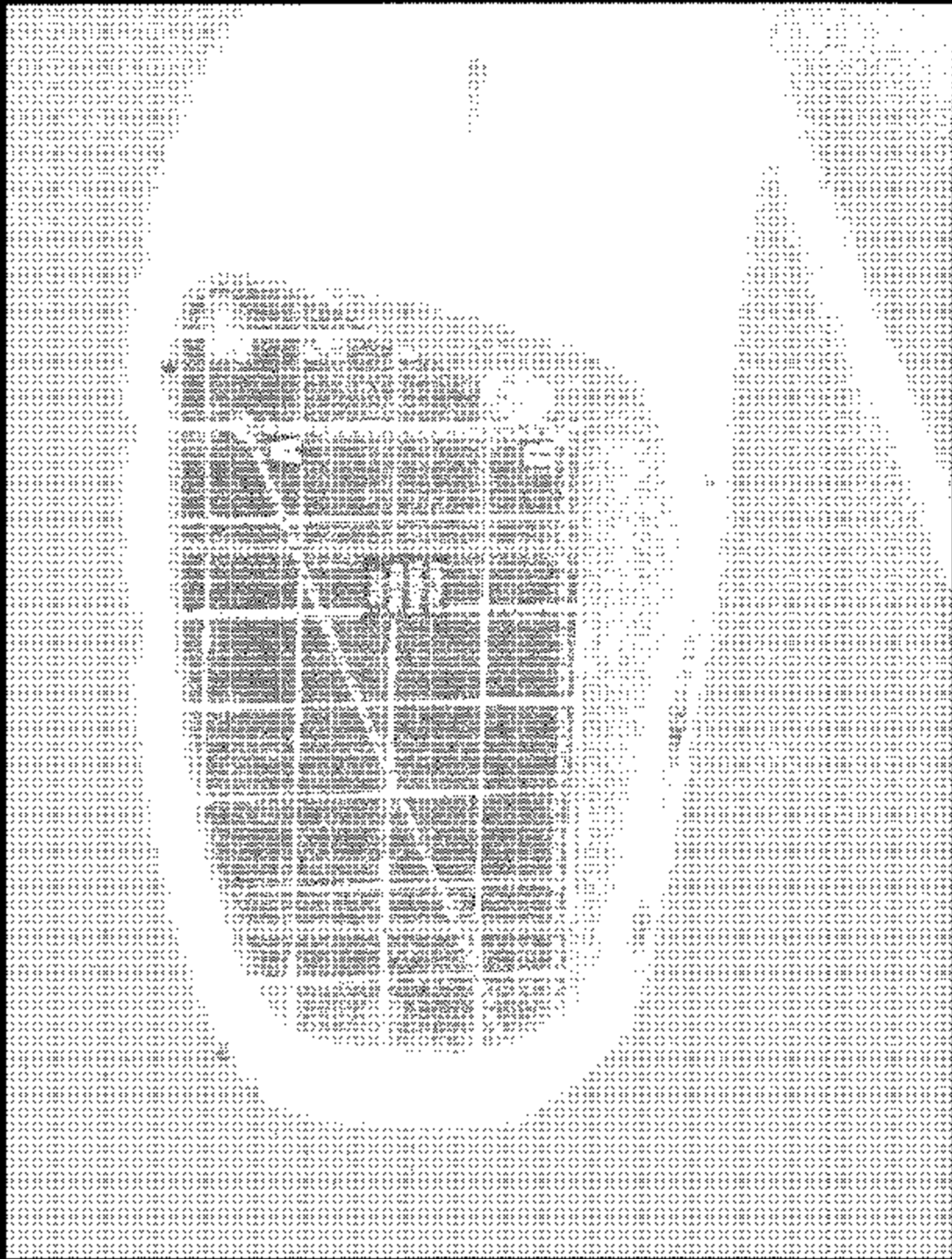


FIGURE 20: LEFT EYE FIELD OF VIEW TEST (DRIVER SIDE MIRROR)

2004 NISSAN MAXIMA  
NHTSA NO. C45204  
FMVSS NO. 111

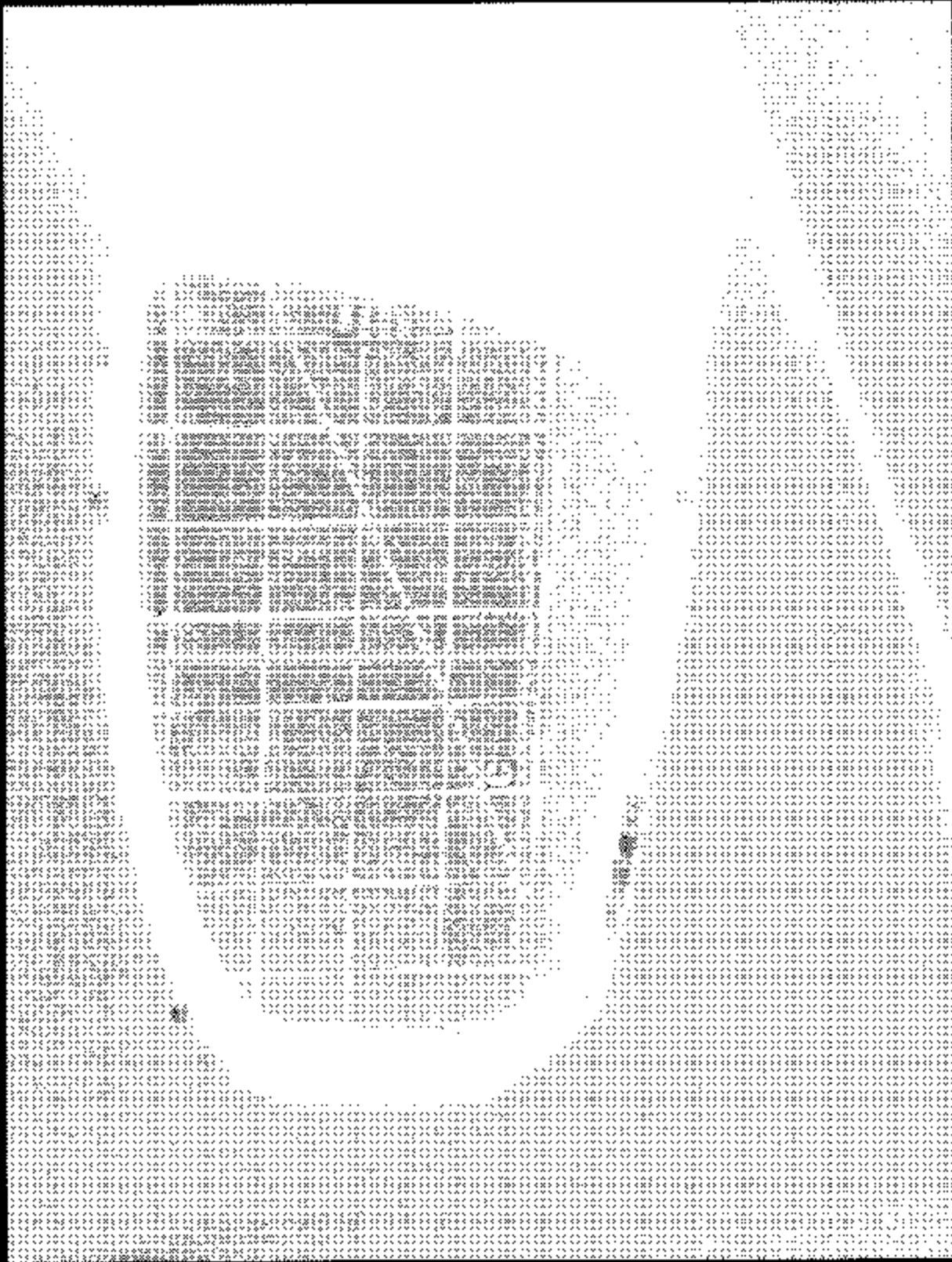


FIGURE 21: RIGHT EYE FIELD OF VIEW TEST (DRIVER SIDE MIRROR)

2004 NISSAN MAXIMA  
NHTSA NO. C45204  
FMVSS NO. 111

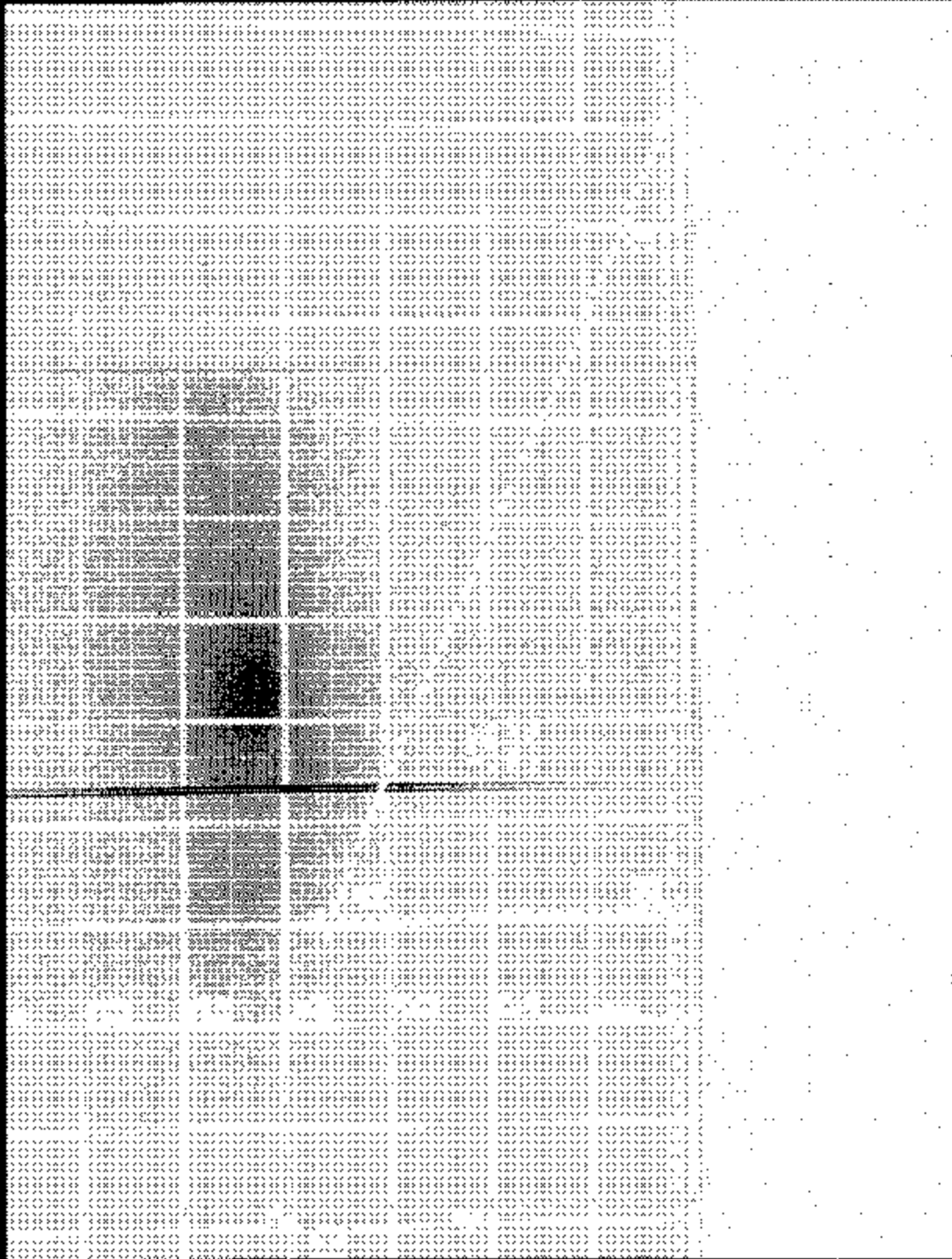
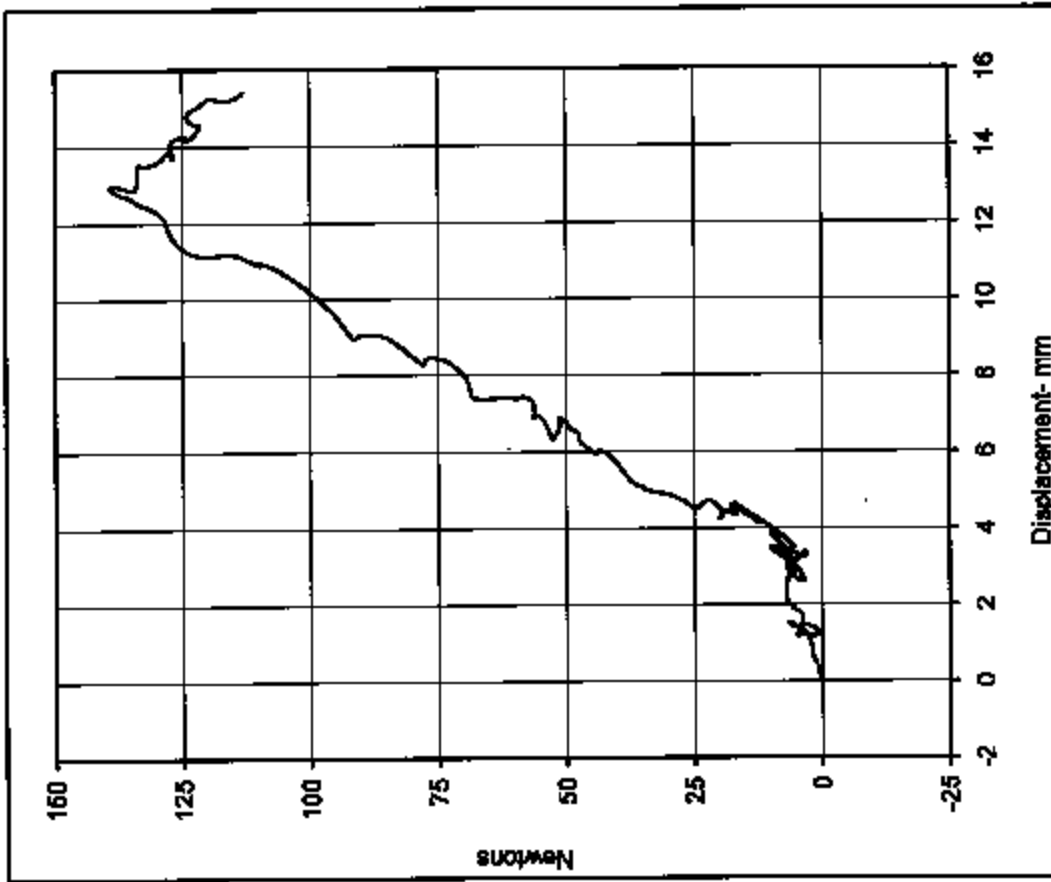


FIGURE 22: REFERENCE BOARD FOR DRIVER SIDE MIRROR

2004 NISSAN MAXIMA  
NHTSA NO. C46204  
FMVSS NO. 111

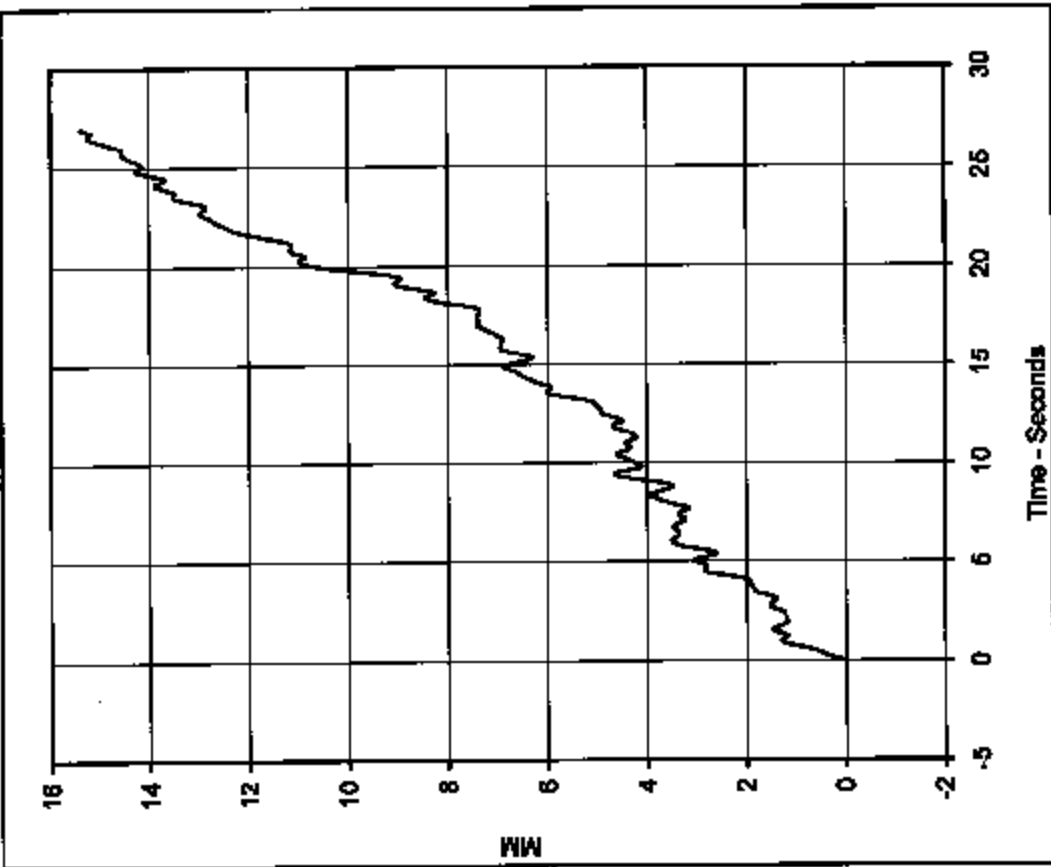
APPENDIX B  
DATA PLOTS



Curve Description		CURNO	Type
Force vs. Displacement		001	FIL

Units	Peak Force	Displacement	Filter (Hz)
Newtons	139.1	12.9	1

Test Program: 2004 FMVSS 111 Rearview Mirrors Test No.: 1  
 Test Vehicle: 2004 Nissan Maxima No.: C45204



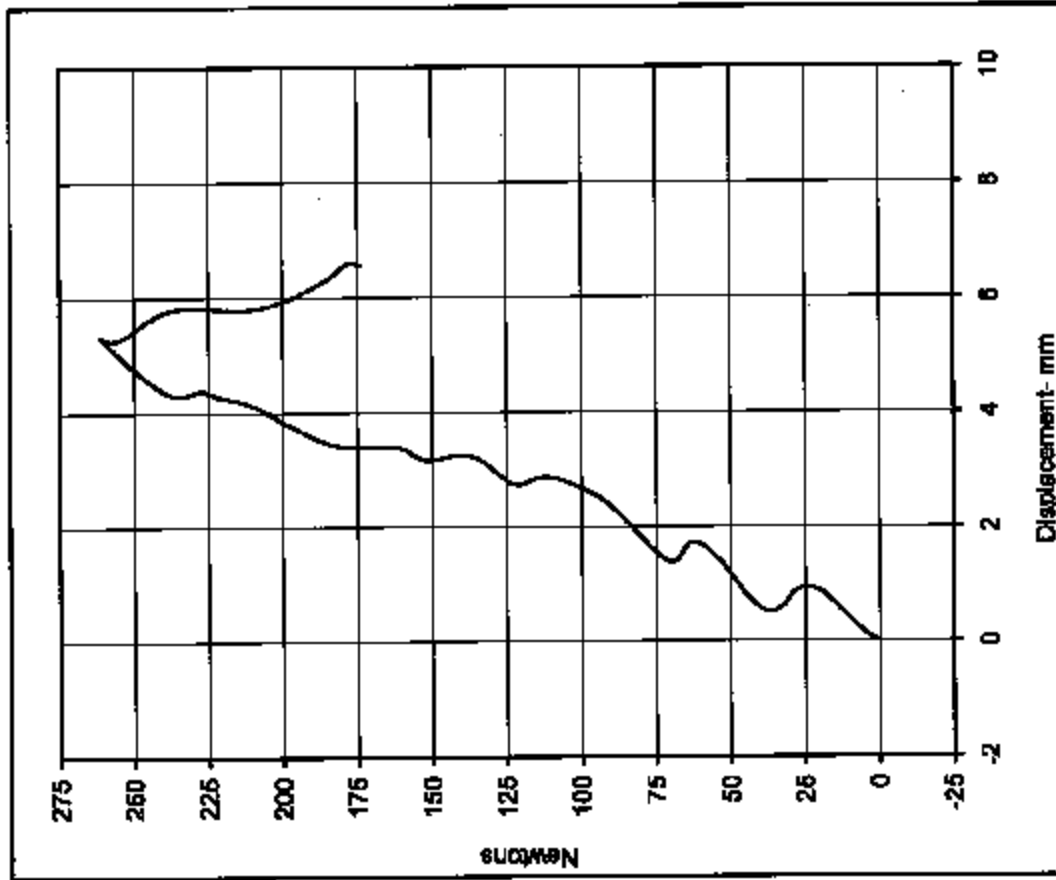
Curve Description		CURNO	Type
Displacement vs. Time		002	FIL

Units	Max	Time	Displ. Rate (mm/min.)	Filter (Hz)
MM	15.4	27.0	34.1	1

Load Direction: 0 / 90  
 Test Date: 5/25/04



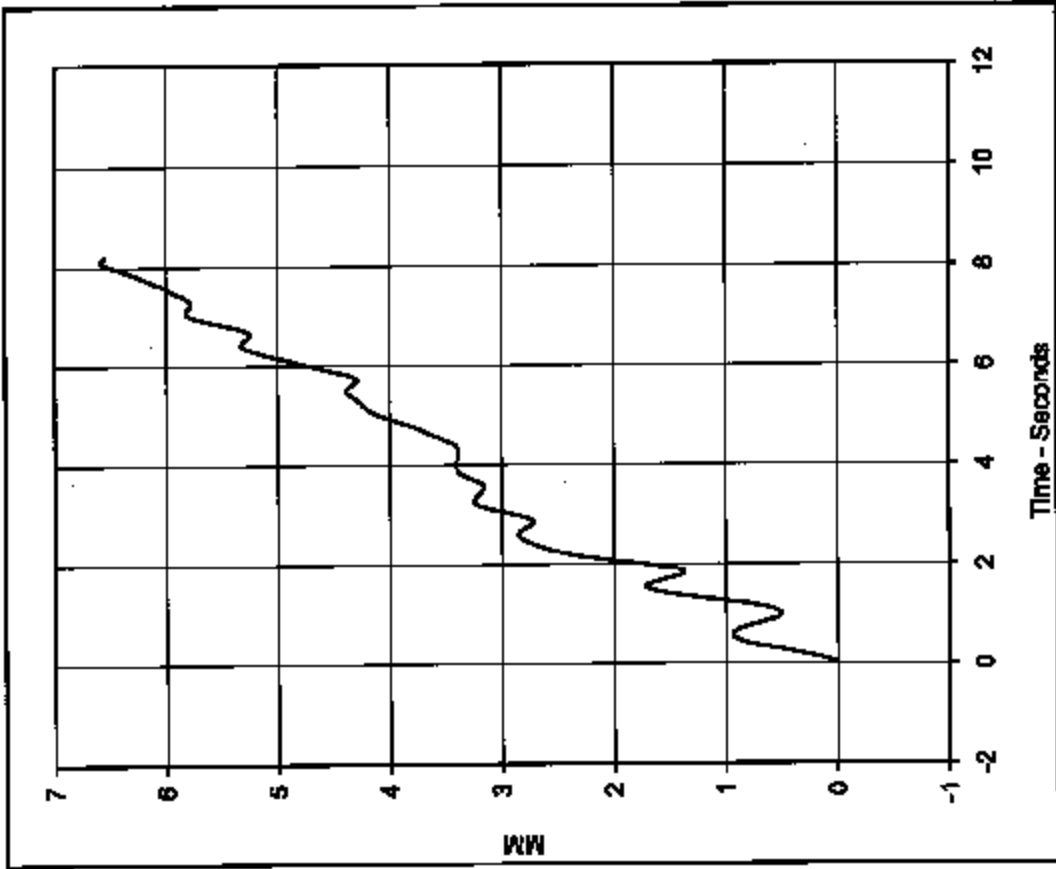




Curve Description	CURNO	Type
Force vs. Displacement	001	FIL

Units	Peak Force	Displacement	Filter (Hz)
Newtons	261.3	5.3	1

Test Program: 2004 FMVSS 111 Rearview Mirrors Test No.: 2  
 Test Vehicle: 2004 Nissan Maxima No.: C45204

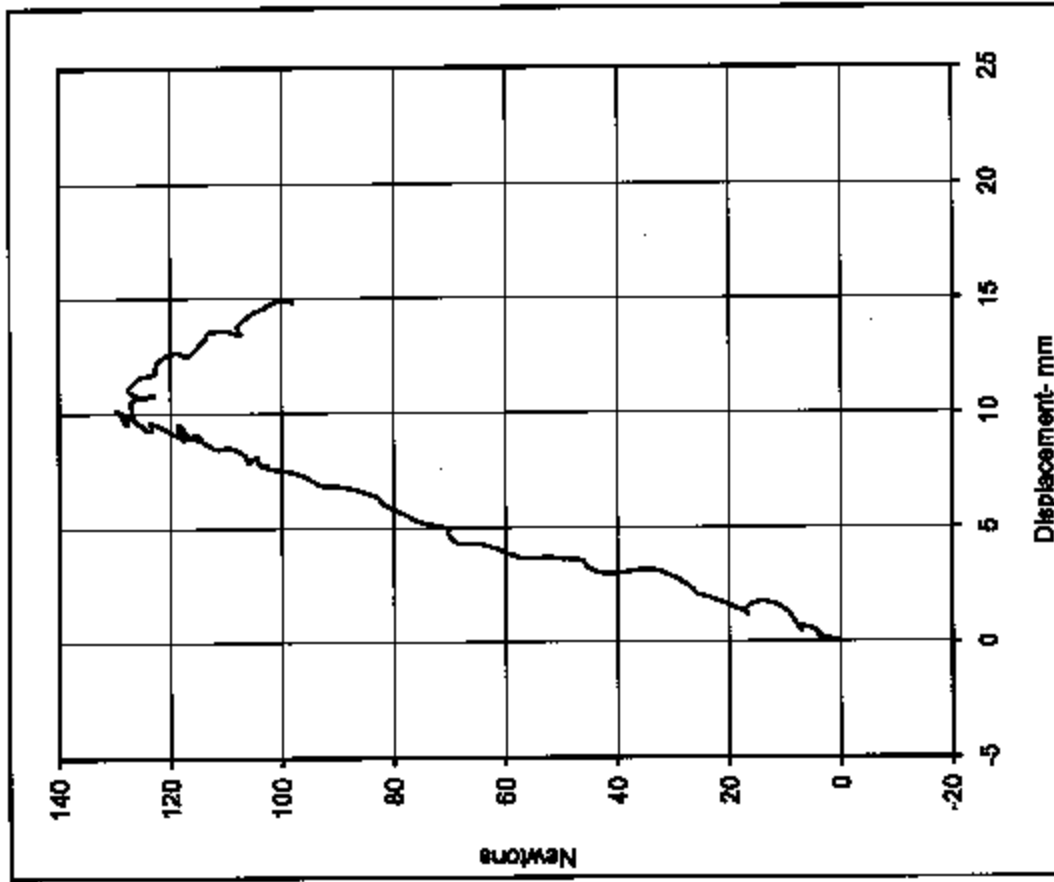


Curve Description	CURNO	Type
Displacement vs. Time	002	FIL

Units	Max	Time	Displ. Rate (mm/min.)	Filter (Hz)
MM	6.6	8.1	47.7	1

Load Direction: +45 / 90  
 Test Date: 5/25/04

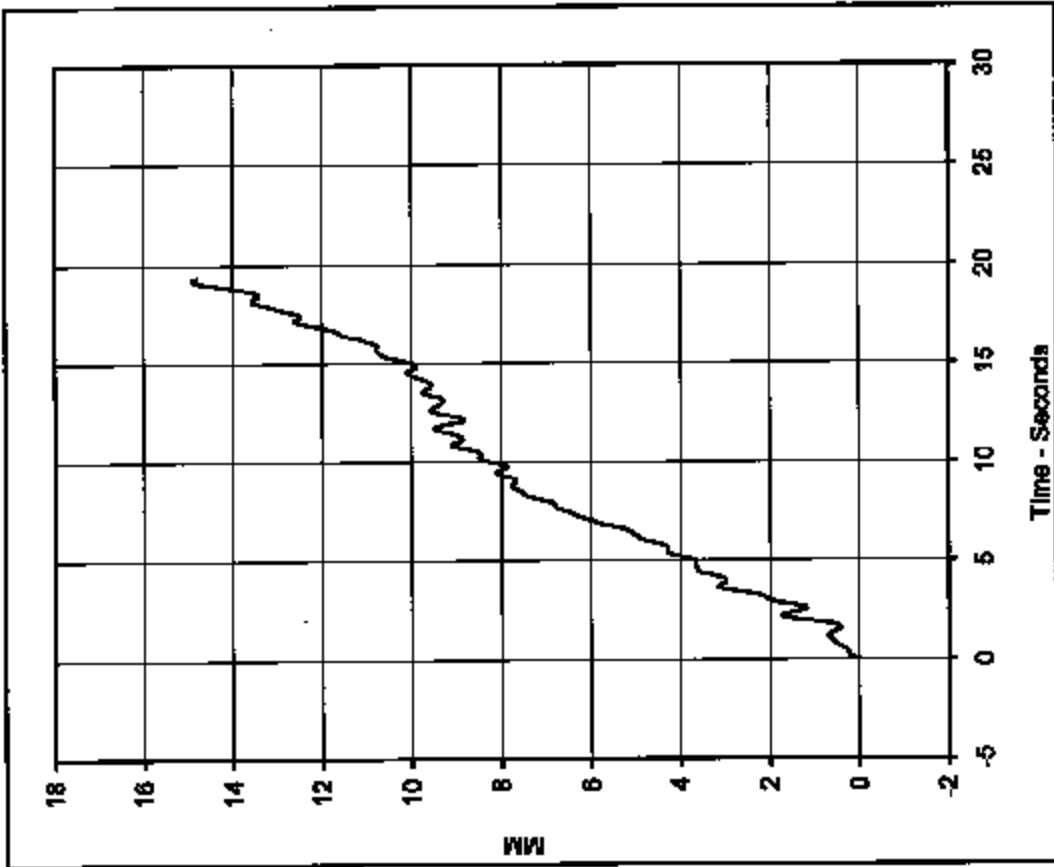




Curve Description	CURNO	Type
Force vs. Displacement	001	FIL

Units	Peak Force	Displacement	Filter (Hz)
Newtons	129.7	10.1	1

Test Program: 2004 FMVSS 111 Rearview Mirrors Test No.: 3  
 Test Vehicle: 2004 Nissan Maxima No.: C45204

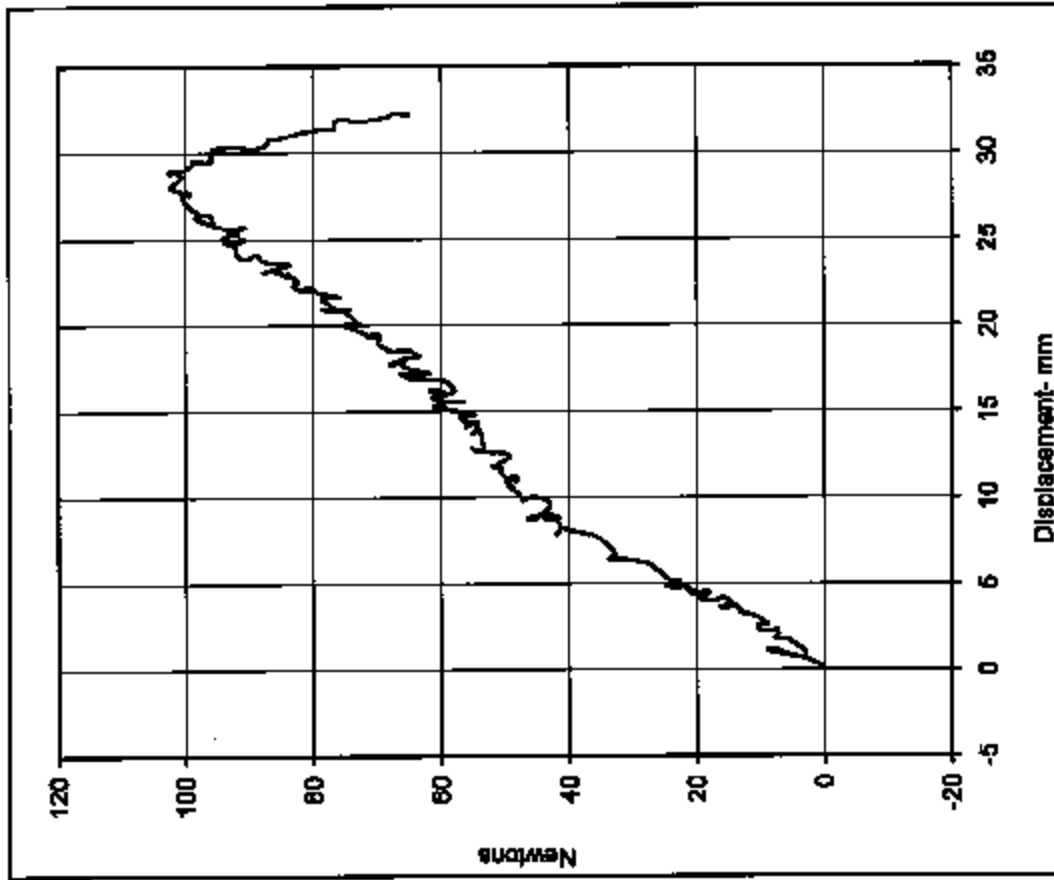


Curve Description	CURNO	Type
Displacement vs. Time	002	FIL

Units	Max	Time	Displ. Rate (mm/min.)	Filter (Hz)
MM	14.9	19.2	44.7	1

Load Direction: -45 / 90  
 Test Date: 5/25/04

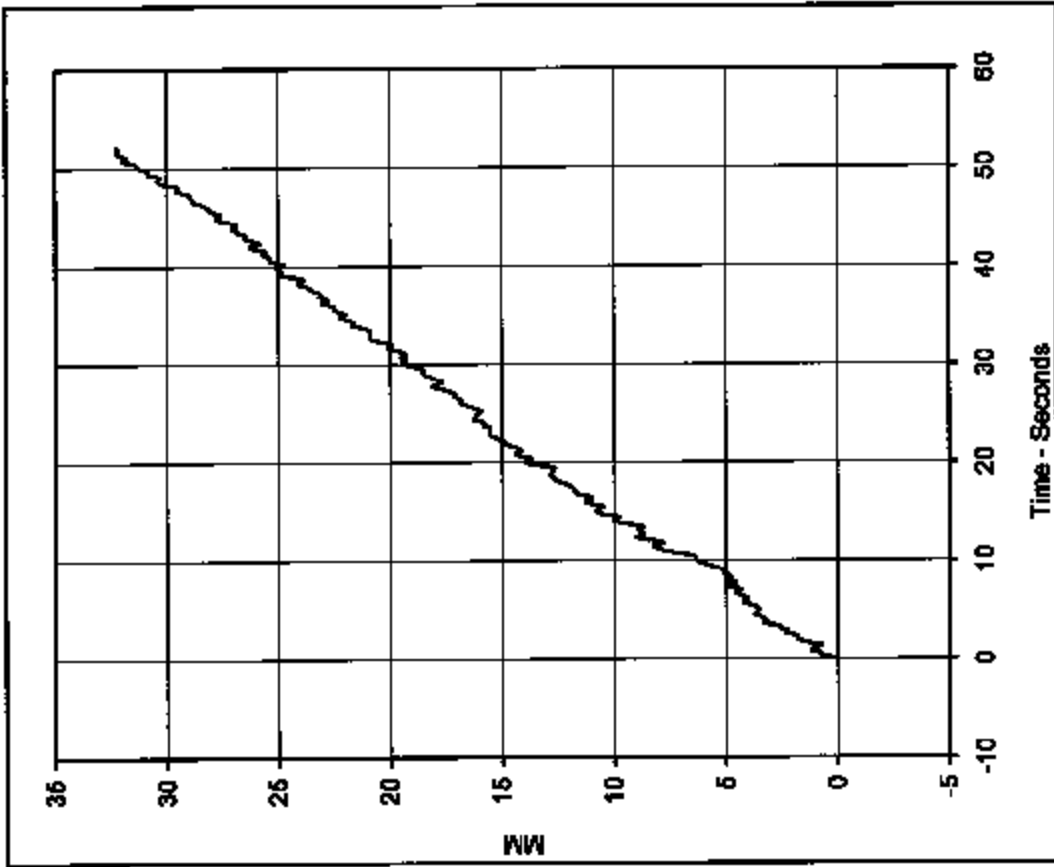




Curve Description		CURNO	Type
Force vs. Displacement		001	FIL

Units	Peak Force	Displacement	Filter (Hz)
Newtons	102.7	28.9	1

Test Program: 2004 FMVSS 111 Rearview Mirrors Test No.: 4  
 Test Vehicle: 2004 Nissan Maxima No.: C46204

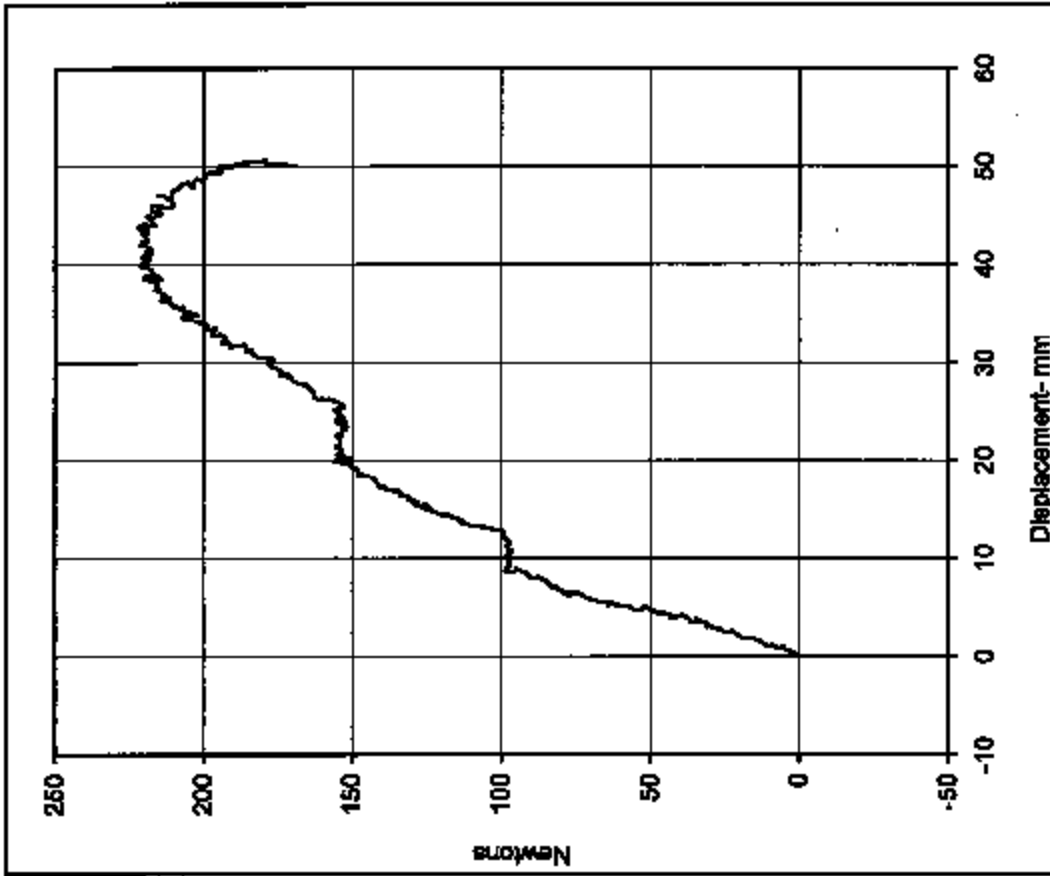


Curve Description		CURNO	Type
Displacement vs. Time		002	FIL

Units	Max	Time	Displ. Rate (mm/min.)	Filter (Hz)
MM	32.2	51.7	37.5	1

Load Direction: -45 / +45  
 Test Date: 5/25/04

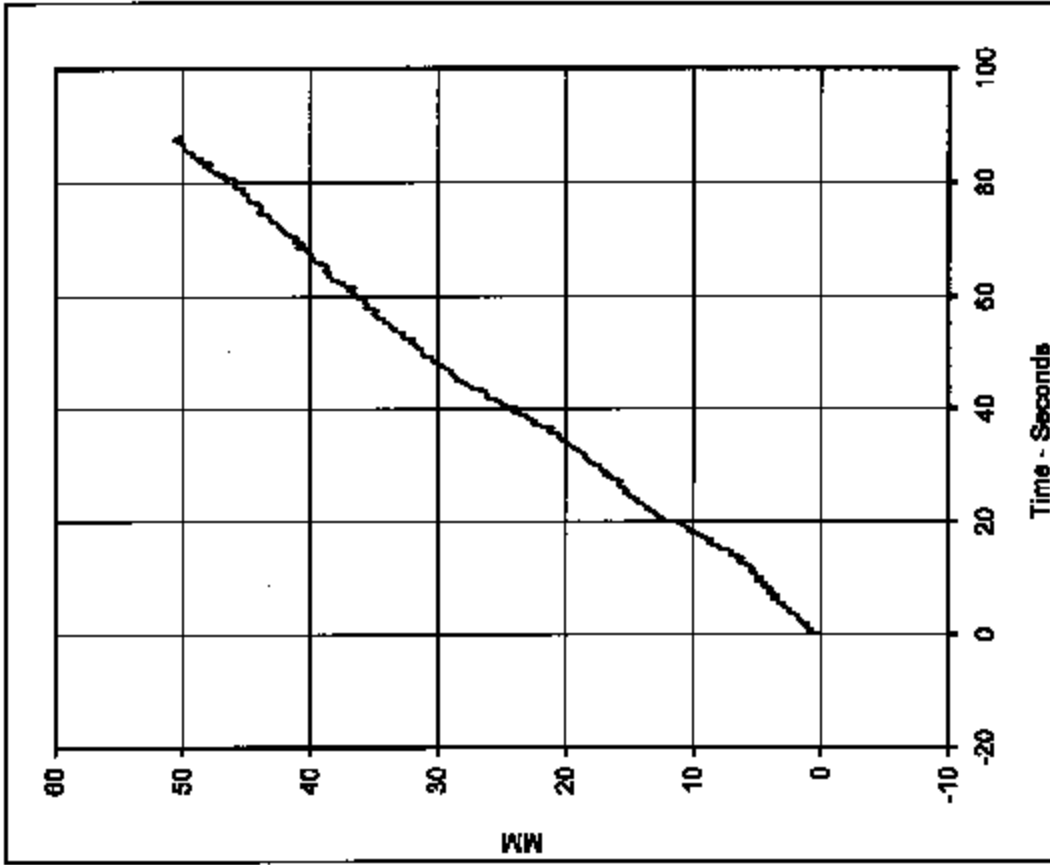




Curve Description	CURNO	Type
Force vs. Displacement	001	FIL

Units	Peak Force	Displacement	Filter (Hz)
Newtons	221.9	43.8	1

Test Program: 2004 FMVSS 111 Rearview Mirrors Test No.: 5  
 Test Vehicle: 2004 Nissan Maxima No.: C45204

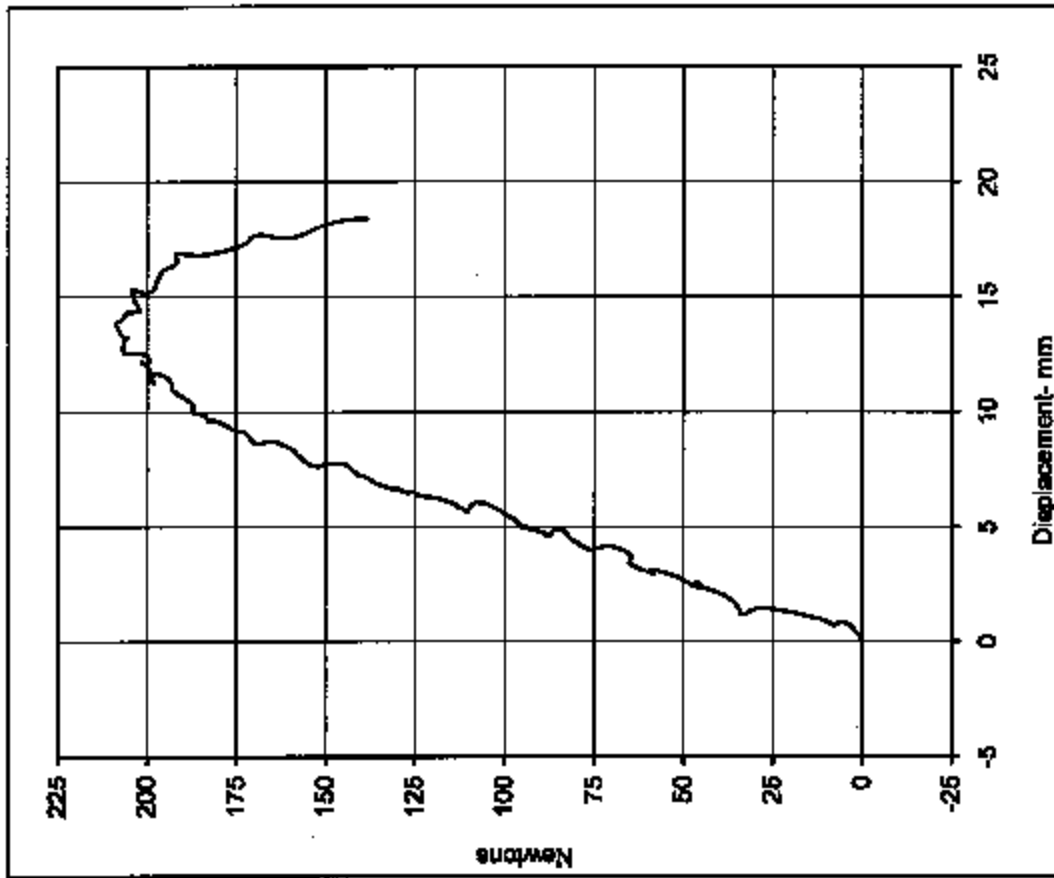


Curve Description	CURNO	Type
Displacement vs. Time	002	FIL

Units	Max	Time	Displ. Rate (mm/min.)	Filter (Hz)
MM	50.7	67.5	34.6	1

Load Direction: +45 / +46  
 Test Date: 5/25/04

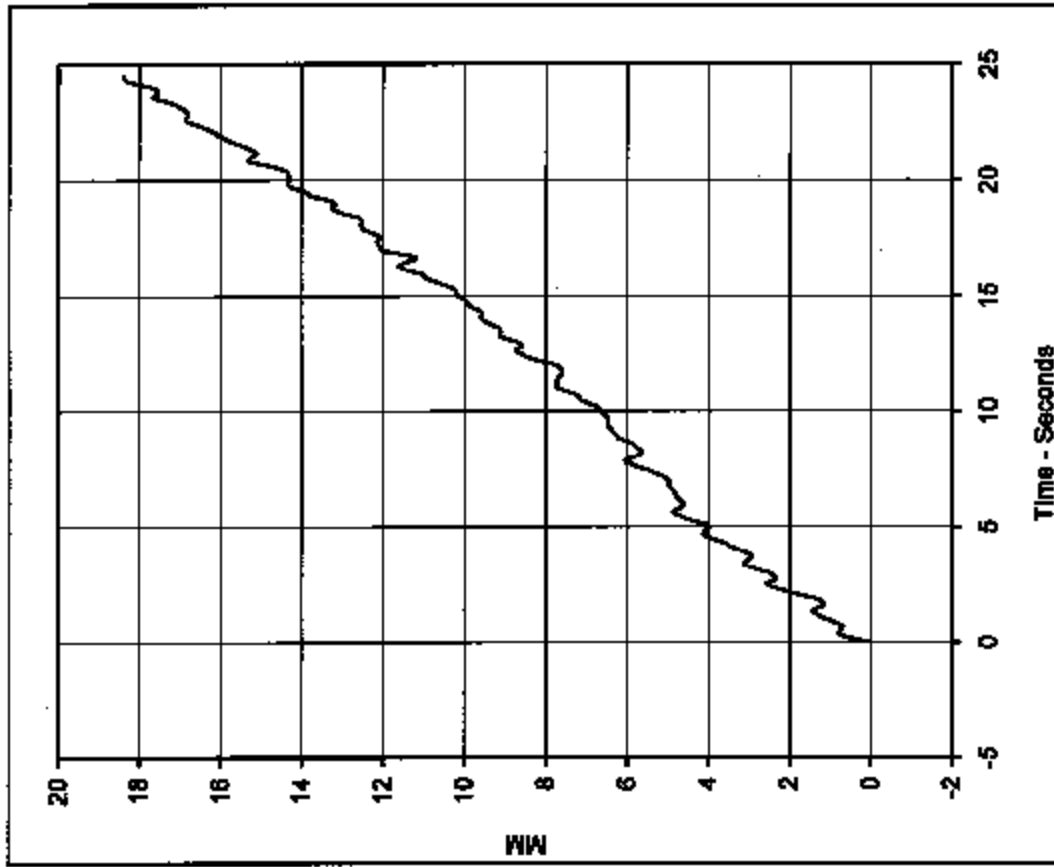




Curve Description	CURNO	Type
Force vs. Displacement	001	FIL

Units	Peak Force	Displacement	Filter (Hz)
Newtons	208.8	13.8	1

Test Program: 2004 FMVSS 111 Rearview Mirrors Test No.: 8  
 Test Vehicle: 2004 Nissan Maxima No.: C45204

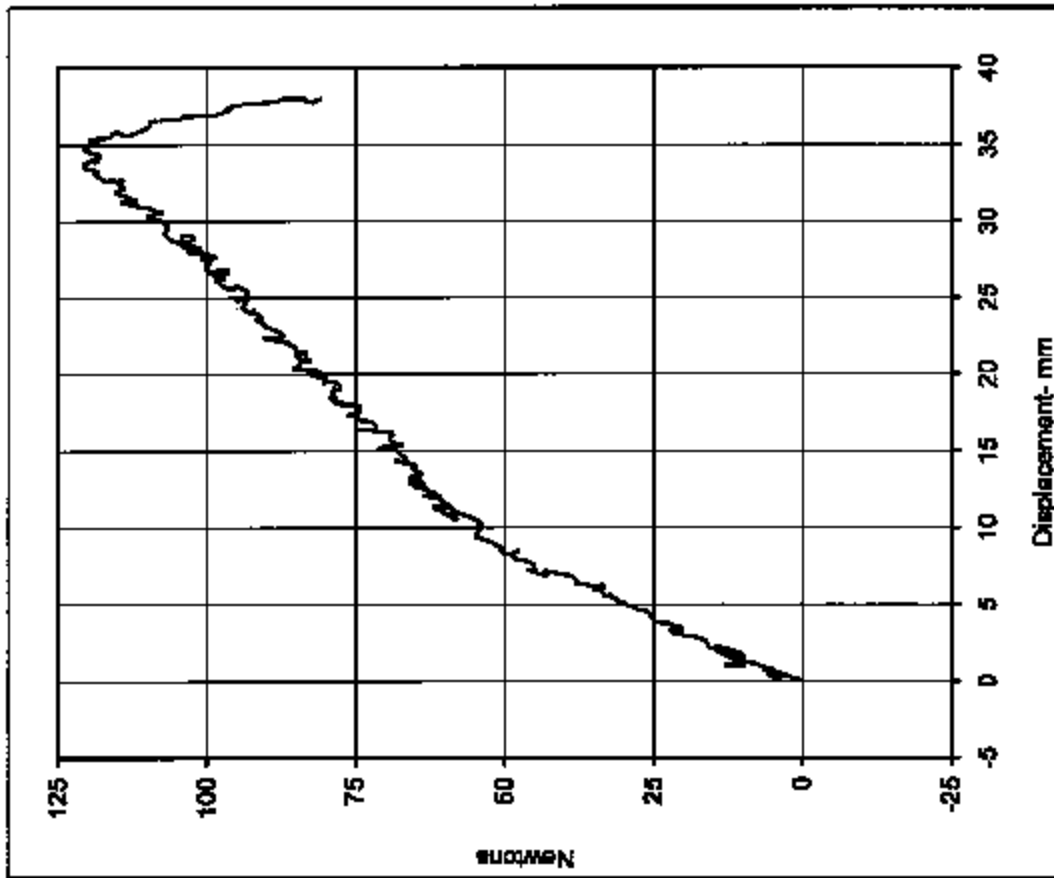


Curve Description	CURNO	Type
Displacement vs. Time	002	FIL

Units	Max	Time	Displ. Rate (mm/min.)	Filter (Hz)
MM	18.4	24.5	44.8	1

Load Direction: +45 / -45  
 Test Date: 5/25/04

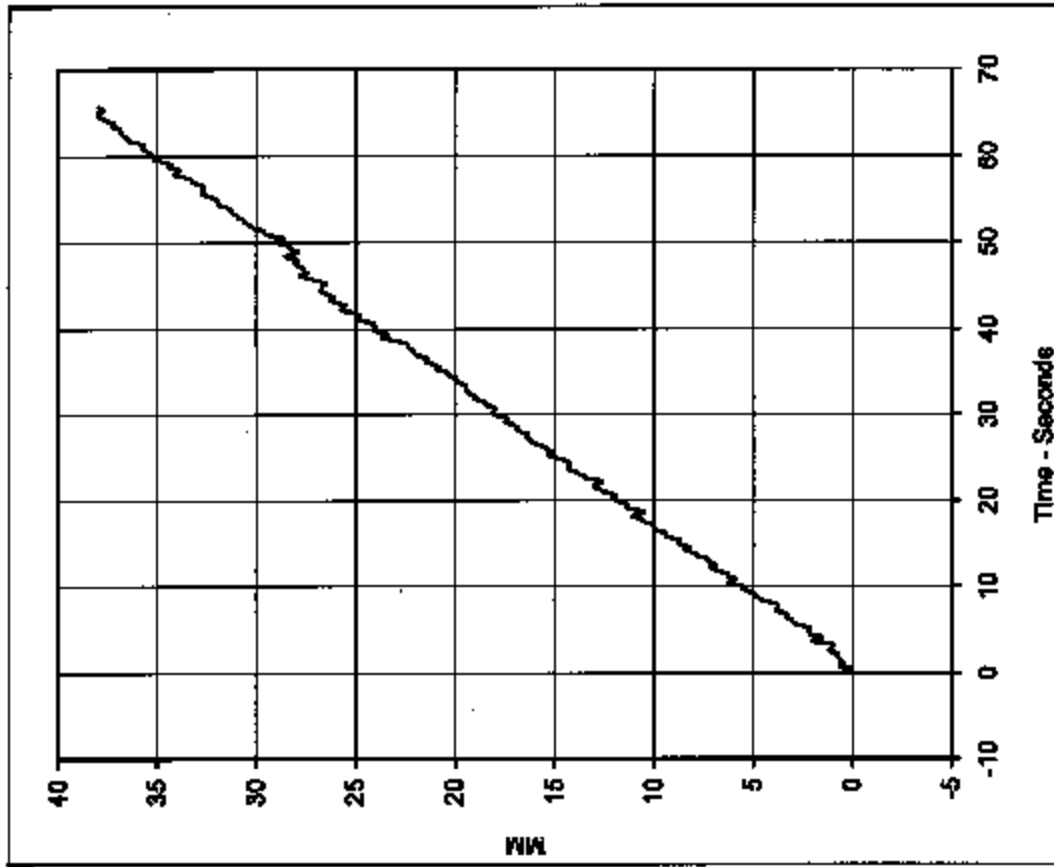




Curve Description	CURNO	Type
Force vs. Displacement	001	FIL

Units	Peak Force	Displacement	Filter (Hz)
Newtons	120.8	33.7	1

Test Program: 2004 FMVSS 111 Rearview Mirrors Test No.: 7  
 Test Vehicle: 2004 Nissan Maxima No.: C45204



Curve Description	CURNO	Type
Displacement vs. Time	002	FIL

Units	Max	Time	Displ. Rate (mm/min.)	Filter (Hz)
MM	38.0	64.9	34.7	1

Load Direction: -45 / -45  
 Test Date: 5/25/04



**APPENDIX C**  
**TEST EQUIPMENT LIST AND CALIBRATION INFORMATION**

2004 FMVSS 111 Rearview Mirrors

Test Equipment List

6/25/04

2004 Nissan Maxima

Description	Manufacturer	Model No.	Serial No.	Limit	Accuracy	Cal. Date	Due Cal.
Hydraulic Pump	Lincoln	T-3825-C	2460952	8 gpm @ 2700 psi	N/A	N/A	N/A
Computer	Panasonic	CF-71	81MAA01852	N/A	N/A	N/A	N/A
TDAS	DTS	TDAS	DM0103	N/A	SAE J211	11/28/03	11/27/04
Load Cell	Lebow	3167	1573	667 N	± 1.0%	6/20/03	6/19/04
Displacement Xdcr.	Celeeco	PTX101-0030	J0654652	76 CM	± 1.0%	7/1/03	6/30/04





**APPENDIX D**  
**EYELIPSE LOCATIONS SUPPLIED BY MANUFACTURER**

**FMVSS 111 EYE POINT LOCATIONS**

Make: Nissan Model: Maxima Year: 2004

Coordinate System:  
 X = Longitudinal Dimension  
 Y = Lateral Dimension  
 Z = Vertical Dimension

Positive Values are as follows:  
 X = Forward of Reference Point  
 Y = Outboard of Reference Point (to driver's side)  
 Z = Above Reference Point

Provide Reference/Body Fiducial Point that dimensions below are measured from. Point must be easily accessible and usable by test laboratory personnel, i.e. seat track mounting bolt, seat belt anchorage bolt, door latch ABs pillar striker. (Provide sketch of reference point if necessary.)

Reference point - Front outer seat track mounting bolt

Coordinates - X = 1074.0, Y = 590.0, Z = 63.2

COORDINATES	LEFT SIDE MIRROR		INSIDE MIRROR		RIGHT SIDE MIRROR	
	LE1 (left eye)	RE1 (right eye)	LE2	RE2	LE3	RE3
X	-425.6	-386.5	-383.0	-420.3	-400.6	-456.9
Y	-130.1	-182.0	-237.1	-290.3	-272.2	-304.7
Z	806.8	806.8	806.8	806.8	806.8	806.8
Mirror Mfr.	Ichikoh Industries		Genex		Ichikoh Industries	
Model	96302		96321 CA100		96301	
Part No.	7Y000/2/3/4/5/6/7/8/9/10		96321 7Y100		7Y000/2/3/4/5/6/7/8/9/10	
	96802				96301	
	7Y100/2/3/4/5/6/7/8/9/10				7Y100/2/3/4/5/6/7/8/9/10	
	96302				96301	
	7Y300/2/3/4/5/6/7/8/9/10				7Y300/2/3/4/5/6/7/8/9/10	