REPORT NUMBER 111-GTL-06-003

# SAFETY COMPLIANCE TESTING FOR FMVSS NO. 111 REARVIEW MIRRORS

## MITSUBISHI MOTORS NORTH AMERICA, INC.
## 2006 MITSUBISHI ECLIPSE, PASSENGER CAR
## NHTSA NO. C65600

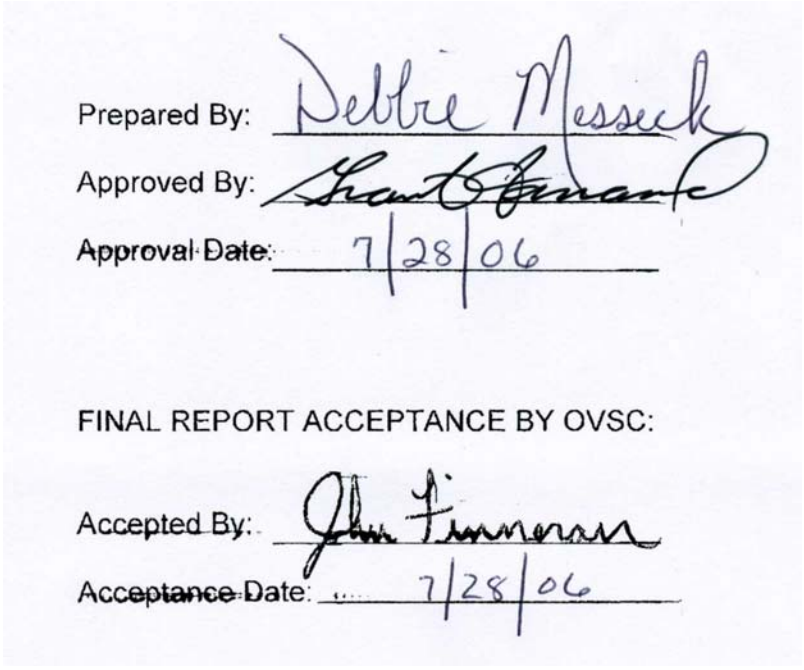
## GENERAL TESTING LABORATORIES, INC.
## 1623 LEEDSTOWN ROAD
## COLONIAL BEACH, VIRGINIA 22443

JULY 28, 2006

**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**



Technical Report Documentation Page

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|---|---|---|
| 1. Report No.<br>111-GTL-06-003 | 2. Government Accession No.<br>N/A | 3. Recipient's Catalog No.<br>N/A |
| 4. Title and Subtitle<br>Final Report of FMVSS 111 Compliance Testing of<br>2006 MITSUBISHI ECLIPSE, PASSENGER CAR<br>NHTSA No. C65600 | | 5. Report Date<br>July 28, 2006<br>6. Performing Organ. Code<br>GTL |
| 7. Author(s)<br>Grant Farrand, Project Engineer<br>Debbie Messick, Project Manager | | 8. Performing Organ. Rep#<br>GTL-DOT-06-111-003 |
| 9. Performing Organization Name and Address<br>General Testing Laboratories, Inc.<br>1623 Leedstown Road<br>Colonial Beach, Va 22443 | | 10. Work Unit No. (TRAIS)<br>N/A<br>11. Contract or Grant No.<br>DTNH22-01-C-11025 |
| 12. Sponsoring Agency Name and Address<br>U.S. Department of Transportation<br>National Highway Traffic Safety Admin.<br>Enforcement<br>Office of Vehicle Safety Compliance (NVS-220)<br>400 7th Street, S.W., Room 6111<br>Washington, DC 20590 | | 13. Type of Report and Period Covered<br>Final Test Report<br>June 7-9, 2006<br>14. Sponsoring Agency Code<br>NVS-220 |
| 15. Supplementary Notes | | |
| 16. Abstract<br>Compliance tests were conducted on the subject, 2006 Mitsubishi Eclipse Passenger Car in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-111V-00 for the determination of FMVSS 111 compliance.<br>Test failures identified were as follows: None | | |
| 17. Key Words<br>Compliance Testing<br>Safety Engineering<br>FMVSS 111 | 18. Distribution Statement<br>Copies of this report are available from NHTSA<br>Technical Information Services (TIS)<br>Room 2336 (NP0-405)<br>400 7th St., S.W.<br>Washington, DC 20590<br>Telephone No. (202) 366-4947 | |
| 19. Security Classif. (of this report)<br>UNCLASSIFIED | 21. No. of Pages<br>52 | 22. Price |
| 20. Security Classif. (of this page)<br>UNCLASSIFIED | | |

Form DOT F 1700.7 (8-72)

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# SECTION 1

# PURPOSE OF COMPLIANCE TEST

## 1.0 PURPOSE OF COMPLIANCE TEST

A 2006 Mitsubishi Eclipse Passenger Car was subjected to Federal Motor Vehicle Safety Standard (FMVSS) No. 111 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-111V-00 dated 28 October 1999 and General Testing Laboratories, Inc. (GTL) Test Procedure, "Rearview Mirrors – Passenger Vehicles, Mulitpurpose Vehicles, Trucks, Buses and Motorcycles".

## 1.1 TEST VEHICLE

The test vehicle was a 2006 Mitsubishi Eclipse Passenger Car. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: 4A3AK24FX6E018863

B. NHTSA No.: C65600

C. Manufacturer: MITSUBISHI MOTORS NORTH AMERICA, INC.

D. Manufacture Date: 08/05

## 1.2 TEST DATE

The test vehicle was subjected to FMVSS No. 111 testing on June 7-9, 2006.

# SECTION 2

# COMPLIANCE TEST PROCEDURE AND SUMMARY OF RESULTS

## 2.0 COMPLIANCE TEST PROCEDURE

The Mitsubishi Eclipse was subjected to FMVSS 111 compliance testing on June 7-9, 2006. The following tests were conducted using the FMVSS 111 test procedure.

## 2.1 INSPECTION

Inspected the installation of the inside and outside rearview mirrors. Made note of mirror types and any evidence of defects or imperfections that could influence test results.

## 2.2 MOUNTING ADEQUACY TEST

### INSIDE MIRROR (S5.1.2)

Determined that the mirror was securely mounted and measured the positive and negative angles of adjustment for both the vertical and horizontal directions.

### OUTSIDE MIRRORS (S5.2.2 and S5.3)

Determined that the mirrors were securely mounted and that the driver's side mirror could be tilted in both horizontal and vertical directions from the driver's seating position. Determined that the passenger's side mirror could be horizontally and vertically adjusted and measured the positive and negative horizontal and vertical angles of adjustment for all outside mirrors. Inspected all outside mirrors to ensure they were free of sharp points or edges that could contribute to pedestrian injury.

## 2.3 FIELD OF VIEW TEST

### INSIDE REARVIEW MIRROR (S5.1.1)

Determined that the mirror provided a field of view with an included horizontal angle measured from the projected eye point of at least 20 degrees, and a 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 was occupied by the driver and four passengers or the designed occupant capacity, if less.

SECTION 2 CONTINUED

OUTSIDE REARVIEW MIRROR - DRIVER'S SIDE (S5.2)

Determined that the mirror provided 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.

Verified that the mirror was not obscured by the un-wiped portion of the windshield.

2.4 REFLECTANCE TEST

The average reflectance of each mirror was determined in accordance with SAE Recommended Practice J954, OCT 84. Reflectance of the inside rear view mirror was determined for both the day and night mode settings.

2.5 BREAKAWAY TEST

INSIDE REARVIEW MIRROR (S5.1.2)

The mirror was subjected to longitudinal forces not exceeding 400 N (90 lb) to verify that the mirror mounting would deflect, collapse, or breakaway without leaving sharp edges.

2.6 UNIT MAGNIFICATION AND CONVEX MIRROR TESTS

PASSENGER CARS (S5.3 AND S5.4)

Utilizing a spherometer, the radius of curvature of all mirrors was measured. The test verified that the driver’s side rearview mirror and inside rearview mirror were flat mirrors of unit magnification.

The passenger’s side mirror was a convex mirror and was properly marked at the lower edge of the mirror’s reflective surface with the words, **“Objects in Mirror Are Closer Than They Appear.”**

2.7 SUMMARY OF RESULTS

Based on the tests performed, the test vehicle appears to be in compliance with the requirements of FMVSS 111.

SECTION 3

COMPLIANCE TEST DATA

## 3.0 TEST RESULTS

The following data sheets document the results of testing on the 2006 Mitsubishi Eclipse.

DATA SUMMARY SHEET
FMVSS 111 – REARVIEW MIRRORS

VEH. MOD YR/MAKE/MODEL/BODY: 2006 MITSUBISHI ECLIPSE PASSENGER CAR
VEH. NHTSA NO: C65600; VIN: 4A3AK24FX6E018863
VEH. BUILD DATE:08/05 TEST DATE: JUNE 7-9, 2006
TEST LABORATORY:GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

OUTSIDE DRIVER SIDE MIRROR

| | PASS | FAIL | COMMENTS |
|---|---|---|---|
| STABLE SUPPORT | X | | |
| DOES NOT PROTRUDE BEYOND VEHICLE BODY | X | | Mirror does protrude farther than the widest part of the vehicle body but the protrusion is required to meet the field of view requirements. |
| 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 | | |
| BREAKAWAY | X | | |
| UNIT MAGNIFICATION | X | | |

OUTSIDE PASSENGER SIDE MIRROR (if required)

| | PASS | FAIL | COMMENTS |
|---|---|---|---|
| STABLE SUPPORT | X | | See Remarks |
| ADJUSTABLE BY TILTING | X | | |
| REFLECTANCE | X | | |
| FREE OF SHARP EDGES | X | | |
| UNIT MAGNIFICATION or | | | |
| CONVEX | X | | |

REMARKS: This vehicle is equipped with an outside passenger side rear view mirror that is not required by FMVSS No. 111. Each passenger car whose inside rear view mirror does not meet the field of view requirements of the standard shall have an outside mirror of unit magnification or a convex mirror installed on the passenger's side.

VEHICLE INSPECTION AND IDENTIFICATION

VEH. MOD YR/MAKE/MODEL/BODY: 2006 MITSUBISHI ECLIPSE PASSENGER CAR
VEH. NHTSA NO: C65600; VIN: 4A3AK24FX6E018863
VEH. BUILD DATE: 08/05 TEST DATE: JUNE 7-9, 2006
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

TYPES OF REARVIEW MIRRORS:

INSIDE REARVIEW: 55 mm X 230 mm FLAT GLASS MIRROR WITH MANUAL 2-POSITION DAY/NIGHT.

DRIVER'S SIDE OUTSIDE: 95 mm X 170 mm FLAT GLASS MIRROR WITH 4-WAY ELECTRIC ADJUST.

PASSENGER'S SIDE OUTSIDE: 95 mm X 170 mm CONVEX GLASS MIRROR WITH 4-WAY ELECTRIC ADJUST.

OTHER:

DESIGNATED SEATING CAPACITY: 4

LOCATION AND DESCRIPTION OF MANUFACTURER PROVIDED REFERENCE POINT FOR EYE POINT MEASUREMENT: DRIVER SEAT FRONT OUTBOARD SEAT ADJUSTER ANCHORAGE BOLT CENTERLINE.

LOCATION OF DRIVER SEATING REFERENCE POINT (SRP): N/A

REMARKS: No defects or imperfections of the mirrors were noted.

DATA SHEET 1 (2 of 2)

MANUFACTURER EYE POINT LOCATION COORDINATES (SEE SECTION 7)

| | X | Y | Z |
|---|---|---|---|
| LEFT EYE | -471.7 mm | -185.8 mm | 802.5 mm |
| RIGHT EYE | -471.7 mm | -250.8 mm | 802.5 mm |

RESULTS OF RECEIVING INSPECTION:

PASS X
FAIL
CONDITIONAL

CONDITIONS:

GENERAL VEHICLE INFORMATION:

GVWR: 1845 kg
FRONT GAWR: 1020 kg
REAR GAWR: 835 kg
UNLOADED WEIGHT: 1478 kg
CARGO WEIGHT: 27.7 kg
TOTAL RATED LOAD: 300 kg

REMARKS:

RECORDED BY: Grant Farrand DATE: 06/07/06

APPROVED BY: Debbie Messick

DATA SHEET 2 (1 of 2)
FMVSS 111 MOUNTING ADEQUACY TEST

VEH. MOD YR/MAKE/MODEL/BODY: 2006 MITSUBISHI ECLIPSE PASSENGER CAR
VEH. NHTSA NO: C65600; VIN: 4A3AK24FX6E018863
VEH. BUILD DATE:08/05 TEST DATE: JUNE 7, 2006
TEST LABORATORY:GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

MIRROR MOUNTING PROVIDES A STABLE SUPPORT:

| | PASS | FAIL | CONDITIONAL |
|---|---|---|---|
| INSIDE REARVIEW MIRROR | X | | |
| DRIVER'S SIDE OUTSIDE MIRROR | X | | |
| PASSENGER SIDE OUTSIDE MIRROR | X | | |

CONDITIONS:

OUTSIDE MIRRORS FREE OF SHARP POINTS OR EDGES (PASS/FAIL): PASS

MIRRORS ARE ADJUSTABLE IN BOTH THE VERTICAL AND HORIZONTAL DIRECTIONS:

| | PASS | FAIL | CONDITIONAL |
|---|---|---|---|
| INSIDE REARVIEW MIRROR | X | | |
| DRIVER'S SIDE OUTSIDE MIRROR | X | | |
| PASSENGER SIDE OUTSIDE MIRROR | X | | |

CONDITIONS:

DRIVER'S SIDE OUTSIDE MIRROR ADJUSTABLE FROM THE DRIVER'S SEATED POSITION (PASS/FAIL): PASS

DATA SHEET 2 (2 of 2)

| ADJUSTMENT ANGLE | V+ | V- | H+ | H- |
|---|---|---|---|---|
| INSIDE REARVIEW MIRROR | 27° | 80° | 79° | 65° |
| DRIVER'S SIDE OUTSIDE MIRROR | 13° | 5.5° | 7° | 8° |
| PASSENGER SIDE OUTSIDE MIRROR | 10° | 7.5° | 9° | 9° |

CONDITIONS: H+ AND H- ON DRIVER AND PASSENGER OUTSIDE MIRRORS ARE REFERENCED TO THE REAR FACE OF THE MIRROR HOUSING.

TEST RESULTS: PASS X FAIL_____

REMARKS:

RECORDED BY: Grant Farrand DATE: 06/07/06

APPROVED BY: Debbie Messick

DATA SHEET 3 (1 of 2)
FMVSS 111 FIELD-OF-VIEW TEST

VEH. MOD YR/MAKE/MODEL/BODY: 2006 MITSUBISHI ECLIPSE PASSENGER CAR
VEH. NHTSA NO: C65600; VIN: 4A3AK24FX6E018863
VEH. BUILD DATE: 08/05 TEST DATE: JUNE 7, 2006
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

INSIDE REARVIEW MIRROR (S5.1.1)

E = Distance from center of mirror to projected eye point= .710 m

A = Distance from rear of vehicle to projected eye point location= 3.31 m

X1 = Distance from rear of vehicle to field to view grid = 8.78 m

Z1 = Vertical distance to lowest point of field of view at distance X1= . 585 m

Z2 = Height of center of mirror = 1.20 m

X2 = Distance from rear of vehicle where the road surface is first visible

X2 = [(Z2 x X1) + (Z1 x A)]/(Z2 - Z1) = 20.3 m (61 m maximum)

YL,YR = Distance to driver's left or right of vehicle's centerline at the location of the field of view grid or markers

**MONOCULAR DATA (ALR & ARL Are Angles)**

| EYE LOCATION | YL | YR | ALR | ARL |
|---|---|---|---|---|
| LEFT EYE POINT | 1.76 m | 2.11 m | | 9.9° |
| RIGHT EYE POINT | 2.46 m | 1.27 m | 11.5° | |

REMARKS:

DATA SHEET 3 (2 of 2)

CALCULATED HORIZONTAL AMBINOCULAR VIEW ANGLE (AB)

ALR = TAN – [ 1YLR/(X1 + A)] ARL = TAN – [1YRL/(X1 + A)]

ANGLE AB = ANGLE ALR + ANGLE ARL = 21.4° (20 degrees minimum)

TEST RESULTS: PASS X FAIL

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

MIRROR OBSCURED BY UNWIPED PORTION OF WINDSHIELD? (Y/N) NO

HEIGHT OF TARGET DISC ON MIRROR: 1005 mm

DISTANCE OF TARGET DISC ON MIRROR FROM VEHICLE TANGENT PLANE: 80mm

TARGET DISC LOCATION RELATIVE TO VEHICLE TANGENT PLANE: _____ outboard
X Inboard

ENTIRE TRIANGULAR TEST TARGET AREA ON SCREEN VISIBLE? (Y/N) YES

MIRROR PROTRUDES BEYOND VEHICLE TANGENT PLANE? (Y/N) YES

PROTRUSION REQUIRED TO MEET FIELD OF VIEW REQUIREMENTS? (Y/N) YES

TEST RESULTS PASS X FAIL

**PASSENGER SIDE MIRROR (S5.3 OR MFG. OPTION) – MFG. OPTION**

PASSENGER SIDE MIRROR TYPE (convex or unit magnification) CONVEX

REMARKS:

RECORDED BY: Grant Farrand DATE: 06/07/06

APPROVED BY: Debbie Messick

DATA SHEET 4 (1 of 4)
FMVSS 111 REFLECTANCE TEST

VEH. MOD YR/MAKE/MODEL/BODY: 2006 MITSUBISHI ECLIPSE PASSENGER CAR
VEH. NHTSA NO: C65600; VIN: 4A3AK24FX6E018863
VEH. BUILD DATE: 08/05 TEST DATE: JUNE 7, 2006
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

INSIDE MIRROR:

TYPE OF MIRROR:

2 POSITION PRISMATIC X ; ELECTROCHROMATIC ____

ELECTRO/MECHANICAL ____ ; LIQUID CRYSTAL ____

OTHER: (Specify) ____

DESCRIPTION OF TEST APPARATUS: GTL REFLECTOMETER

MIRROR DESCRIPTION: FLAT GLASS 2-POSITION PRISMATIC DAY/NIGHT MIRROR

VOLTAGE READING FROM CALIBRATION (Average Value): 10.000

VOLTAGE READING FROM LIGHT REFLECTED BY DAY MIRROR (Average Value): 8.94

REFLECTANCE (Day) = Voltage (Refl)/Voltage (Cal) = 0. 894 x 100 = 89 percent
(Minimum Requirement = 35 percent)

VOLTAGE READING FROM CALIBRATION (Average Value) = 10.000

VOLTAGE READING FROM LIGHT REFLECTED BY NIGHT MIRROR (Average Value): 3.943

REFLECTANCE (Night) = Voltage (Refl)/Voltage (Cal) = 0. 394 x 100 = 39 percent
(Minimum Requirement = 4 percent)

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

DATA SHEET 4 (2 of 4)

INSIDE MIRROR WITH MULTIPLE REFLECTANCE LEVELS:

Does the mirror have a manual adjustment to achieve day mode operation?

YES__X__ NO_____

If “NO” above, test for reflectance in the event of electrical failure:

VOLTAGE READING FROM CALIBRATION (Average Value)=_____N/A_____

VOLTAGE READING FROM LIGHT REFLECTED BY ELECTRICALLY FAILED MIRROR (Average Value):
_____N/A_____

REFLECTANCE (Failed electrical, manually adjusted)
= Voltage (Refl)/Voltage (Cal) = 0._____ x 100 = _____ percent
(Minimum Requirement = 35 percent)

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

OBSERVATIONS:_____

TEST RESULTS FOR INSIDE MIRROR:

PASS__X__ FAIL_____

DATA SHEET 4 (3 of 4)

DRIVER'S SIDE MIRROR:

TYPE OF MIRROR: UNIT MAGNIFICATION X

OTHER (Specify):

MIRROR DESCRIPTION: FLAT GLASS WITH 4-WAY POWER ADJUST

VOLTAGE READING FROM CALIBRATION (Average Value): 10.000

VOLTAGE READING FROM LIGHT REFLECTED BY MIRROR (Average Value): 7.860

REFLECTANCE = Voltage (Refl)/Voltage (Cal) = 0. 786 x 100 = 79 percent
(Minimum Requirement = 35 percent)

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

OBSERVATIONS:

TEST RESULTS FOR DRIVER SIDE MIRROR:

PASS X FAIL

DATA SHEET 4 (4 of 4)

PASSENGER'S SIDE MIRROR:

TYPE OF MIRROR: UNIT MAGNIFICATION_____ CONVEX___X____

OTHER (Specify):_____

DESCRIPTION OF TEST APPARATUS:_____GTL REFLECTOMETER_____

MIRROR DESCRIPTION:_CONVEX GLASS MIRROR WITH 4-WAY POWER ADJUST_____

VOLTAGE READING FROM CALIBRATION (Average Value):_____10.000_____

VOLTAGE READING FROM LIGHT REFLECTED BY MIRROR (Average Value):_____
7.406

REFLECTANCE (Day) = Voltage (Refl)/Voltage (Cal) = 0._740_ x 100 =_74_ percent
(Minimum Requirement = 35 percent)

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

OBSERVATIONS:_____

TEST RESULTS FOR PASSENGER SIDE MIRROR:

PASS__X___ FAIL_____

REMARKS:

RECORDED BY:___Grant Farrand_____ DATE:__06/07/06___

APPROVED BY:___Debbie Messick____

DATA SHEET 5
FMVSS 111 BREAKAWAY TEST

VEH. MOD YR/MAKE/MODEL/BODY: 2006 MITSUBISHI ECLIPSE PASSENGER CAR
VEH. NHTSA NO: C65600; VIN: 4A3AK24FX6E018863
VEH. BUILD DATE: 08/05 TEST DATE: JUNE 7, 2006
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

MOUNTING OF MIRROR (INSIDE) DESCRIPTION:
MIRROR MOUNTED THROUGH DUAL BALL LINK JOINT TO WINDSHIELD MOUNT WHICH IS ATTACHED TO GLASS WITH ADHESIVE.

Requirement: the mirror shall deflect, 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) | PASS | FAIL |
|---|---|---|---|---|
| 1 (GTL 5552) | 0°/90° | 396 | X | |
| 2 (GTL 5553) | +45°/90° | 67 | X | |
| 3 (GTL 5554) | +45°/+45° | 89 | X | |
| 4 (GTL 5555) | +45°/-45° | 85 | X | |
| 5 (GTL 5556) | -45°/-45° | 43 | X | |
| 6 (GTL 5557) | -45°/90° | 45 | X | |
| 7 (GTL 5558) | -45°/+45° | 22 | X | |

REMARKS: WINDSHIELD RAKE 22°.

DESCRIPTION OF MIRROR MOVEMENT (DEFLECT, COLLAPSE, OR BREAKAWAY)
FIRST MOVEMENT OF MIRROR WITHOUT INCREASE IN LOAD IS DUE TO MOVEMENT OF BALL LINKS AND CONNECTOR SHAFT.

X-Y PLOTTER DATA I.D. NUMBER GTL TEST #5552 THROUGH 5558

TEST RESULTS: PASS X FAIL

RECORDED BY: Grant Farrand DATE: 06/09/06

APPROVED BY: Debbie Messick

DATA SHEET 6 (1 of 3)
FMVSS 111 UNIT MAGNIFICATION AND CONVEX MIRROR TESTS

VEH. MOD YR/MAKE/MODEL/BODY: 2006 MITSUBISHI ECLIPSE PASSENGER CAR
VEH. NHTSA NO: C65600; VIN: 4A3AK24FX6E018863
VEH. BUILD DATE: 08/05 TEST DATE: JUNE 7, 2006
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

DESCRIPTION OF TEST APPARATUS: GTL SPHEROMETER

DRIVER'S SIDE and INSIDE REARVIEW MIRRORS:

DRIVER SIDE MIRROR:

| TEST POSITION | DIAL READINGS |
|---|---|
| 1 | .0000 |
| 2 | .0000 |
| 3 | .0000 |
| 4 | .0000 |
| 5 | .0000 |
| 6 | .0000 |
| 7 | .0000 |
| 8 | .0000 |
| 9 | .0000 |
| 10 | .0000 |

INSIDE MIRROR:

| TEST POSITION | DIAL READINGS |
|---|---|
| 1 | .0000 |
| 2 | .0000 |
| 3 | .0000 |
| 4 | .0000 |
| 5 | .0000 |
| 6 | .0000 |
| 7 | .0000 |
| 8 | .0000 |
| 9 | .0000 |
| 10 | .0000 |

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

TEST RESULTS: PASS X FAIL

DATA SHEET 6 (2 of 3)

PASSENGER'S SIDE REARVIEW MIRROR:

CONVERSION DATA TABLE FROM SPHEROMETER DIAL READING TO RADIUS OF CURVATURE

| TEST POSITION | DIAL READINGS (Inches) | 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 | .0052 | 1369 | | |
| 2 | .0050 | 1422 | +75 | 5.6% |
| 3 | .0052 | 1369 | | |
| 4 | .0052 | 1369 | | |
| 5 | .0052 | 1369 | | |
| 6 | .0052 | 1369 | | |
| 7 | .0054 | 1313 | | |
| 8 | .0059 | 1211 | -136 | 10.1% |
| 9 | .0054 | 1313 | | |
| 10 | .0052 | 1369 | | |
| Average Radius of Curvature – A summation of Column 3 divided by 10: 1347 (mm) | | | Greatest percent Deviation From the Average Radius Of Curvature – From Column 5: 10.1 % | |

IF CONVEX, ARE THERE ANY DISCONTINUITIES IN THE SLOPE OF THE SURFACE OF THE MIRROR:

YES_____ NO___X___

IF CONVEX, ARE THE WORDS, "**OBJECTS IN THE MIRROR ARE CLOSER THAN THEY APPEAR"** PRESENT?

YES___X___ NO_____

IF CONVEX, MEASURE LETTER HEIGHT OF ABOVE WORDS: 5.0 mm

IF CONVEX, LETTERS ARE NOT LESS THAN 4.8 mm OR MORE THAN 6.4 mm HIGH

YES___X___ NO_____

IF CONVEX, THE AVERAGE RADIUS OF CURVATURE IS NOT LESS THAN 889 mm AND NOT MORE THAN 1651 mm:

YES___X___ NO_____

DATA SHEET 6 (3 of 3)

IF CONVEX, THE GREATEST PERCENT DEVIATION FROM THE AVERAGE RADIUS OF CURVATURE IS ± 12.5 PERCENT:

YES___X___ NO_____

IF UNIT MAGNIFICATION, ALL DIAL READINGS ARE ZERO +/_0.

YES_____ NO_____ N/A___X___

TEST RESULTS:

PASS__X___ FAIL_____

RECORDED BY:__Grant Farrand_____ DATE:__06/07/06__

APPROVED BY:__Debbie Messick___

DATA SHEET 7
FMVSS 111 MIRROR REFLECTIVE SURFACE AREA TEST

VEH. MOD YR/MAKE/MODEL/BODY: 2006 MITSUBISHI ECLIPSE PASSENGER CAR
VEH. NHTSA NO: C65600; VIN: 4A3AK24FX6E018863
VEH. BUILD DATE: 08/05 TEST DATE: JUNE 7, 2006
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

DATA TABLE FOR SURFACE AREA

| MIRRORS | AREA | REQUIREMENT MPVs, TRUCKS, BUSES (OTHER THAN SCHOOL), GVWR ≤ 4536 kg | REQUIREMENT MPVs, TRUCKS, BUSES (OTHER THAN SCHOOL), GVWR 4536 kg | PASS/FAIL |
|---|---|---|---|---|
| Driver Outside | 135 $cm^2$ | 126 $cm^2$ | 323 $cm^2$ | PASS |
| Passenger Outside | 135 $cm^2$ | 126 $cm^2$ | 323 $cm^2$ | PASS |

MIRRORS LOCATED SO AS TO PROVIDE DRIVER A VIEW TO THE REAR:
LEFT SIDE (Y/N) YES
RIGHT SIDE (Y/N) YES

TEST RESULTS: PASS X FAIL

REMARKS:

RECORDED BY: Grant Farrand DATE: 06/07/06

APPROVED BY: Debbie Messick

SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST

TABLE 1 - INSTRUMENTATION & EQUIPMENT LIST

| EQUIPMENT | DESCRIPTION | MODEL/ SERIAL NO. | CAL. DATE | NEXT CAL. DATE |
|---|---|---|---|---|
| COMPUTER | AT&T | U86D66 | BEFORE USE | BEFORE USE |
| CAMERA MOUNT TEST FIXTURE | GTL | N/A | BEFORE USE | BEFORE USE |
| A/D INTERFACE | METRABYTE | CT91 | BEFORE USE | BEFORE USE |
| SIGNAL CONDITIONER | METRYBYTE | EXP-RES | BEFORE USE | BEFORE USE |
| LOAD CELL | SENSOTEC | 41/571-07 257818 | 01/06 | 01/07 |
| INCLINOMETER | MITUTOYO | PRO360 | BEFORE USE | BEFORE USE |
| LINEAR POTENTIOMETER | CELESCO | 15/369 | BEFORE USE | BEFORE USE |
| PRECISION STEEL SCALE | STARRETT | C416R | 05/06 | 05/07 |
| CAMERA | NIKON | N/A | N/A | N/A |
| REFLECTOMETER | GTL | N/A | BEFORE USE | BEFORE USE |
| SPHEROMETER | GTL | N/A | BEFORE USE | BEFORE USE |

# SECTION 5

# PHOTOGRAPHS

2006 MITSUBISHI ECLIPSE
NHTSA NO. C65600
FMVSS NO. 111

FIGURE 5.1
FRONT VIEW OF VEHICLE

2006 MITSUBISHI ECLIPSE
NHTSA NO. C65600
FMVSS NO. 111

FIGURE 5.2
RIGHT SIDE VIEW OF VEHICLE

2006 MITSUBISHI ECLIPSE
NHTSA NO. C65600
FMVSS NO. 111

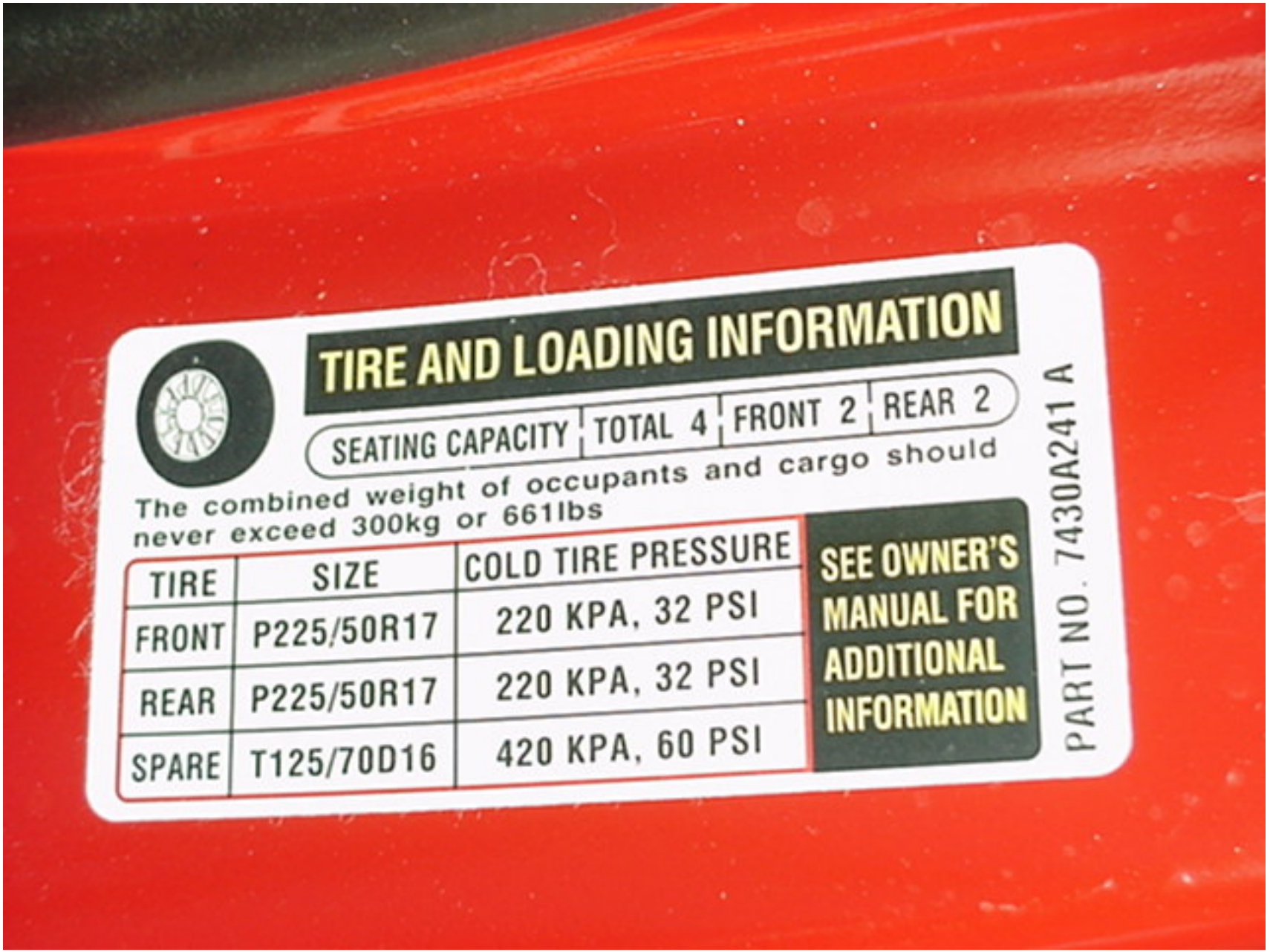
FIGURE 5.3
¾ FRONTAL VIEW FROM LEFT SIDE OF VEHICLE


2006 MITSUBISHI ECLIPSE
NHTSA NO. C65600
FMVSS NO. 111

FIGURE 5.4
¾ REAR VIEW FROM RIGHT SIDE OF VEHICLE


2006 MITSUBISHI ECLIPSE
NHTSA NO. C65600
FMVSS NO. 111

FIGURE 5.5
VEHICLE CERTIFICATION LABEL

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NHTSA NO. C65600
FMVSS NO. 111

FIGURE 5.6
VEHICLE TIRE INFORMATION LABEL

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NHTSA NO. C65600
FMVSS NO. 111

FIGURE 5.7
DRIVER SIDE REARVIEW MIRROR & MOUNTING

2006 MITSUBISHI ECLIPSE
NHTSA NO. C65600
FMVSS NO. 111

FIGURE 5.8
PASSENGER SIDE REARVIEW MIRROR AND MOUNTING

2006 MITSUBISHI ECLIPSE
NHTSA NO. C65600
FMVSS NO. 111

FIGURE 5.9
INSIDE REARVIEW MIRROR AND MOUNTING

2006 MITSUBISHI ECLIPSE
NHTSA NO. C65600
FMVSS NO. 111

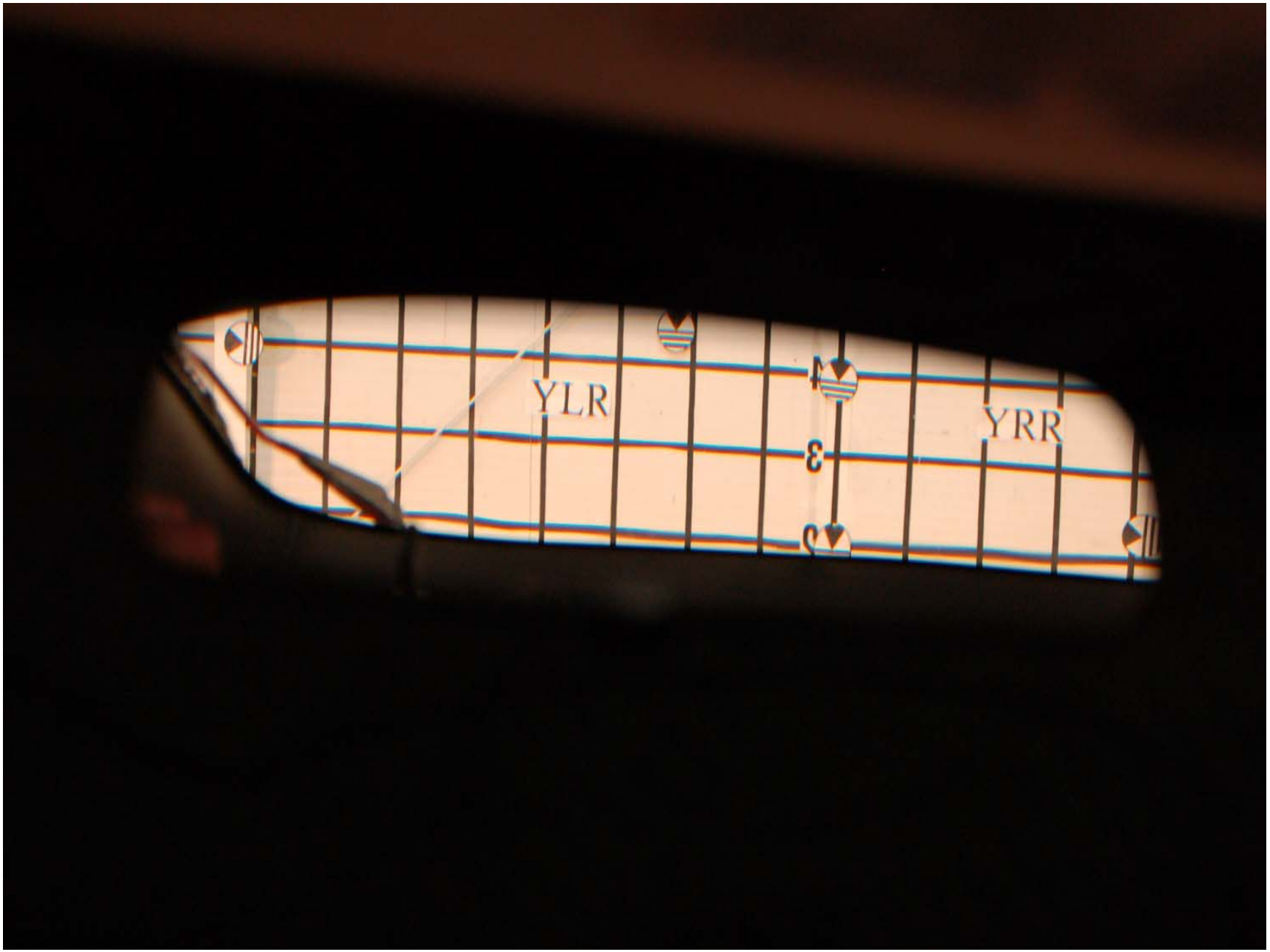
FIGURE 5.10
PHOTO OF VEHICLE IN TEST SET-UP WITH
VIEWING INSTRUMENT

2006 MITSUBISHI ECLIPSE
NHTSA NO. C65600
FMVSS NO. 111

FIGURE 5.11
REFLECTANCE TEST SET-UP

2006 MITSUBISHI ECLIPSE
NHTSA NO. C65600
FMVSS NO. 111

FIGURE 5.12
BREAK AWAY TEST SET-UP

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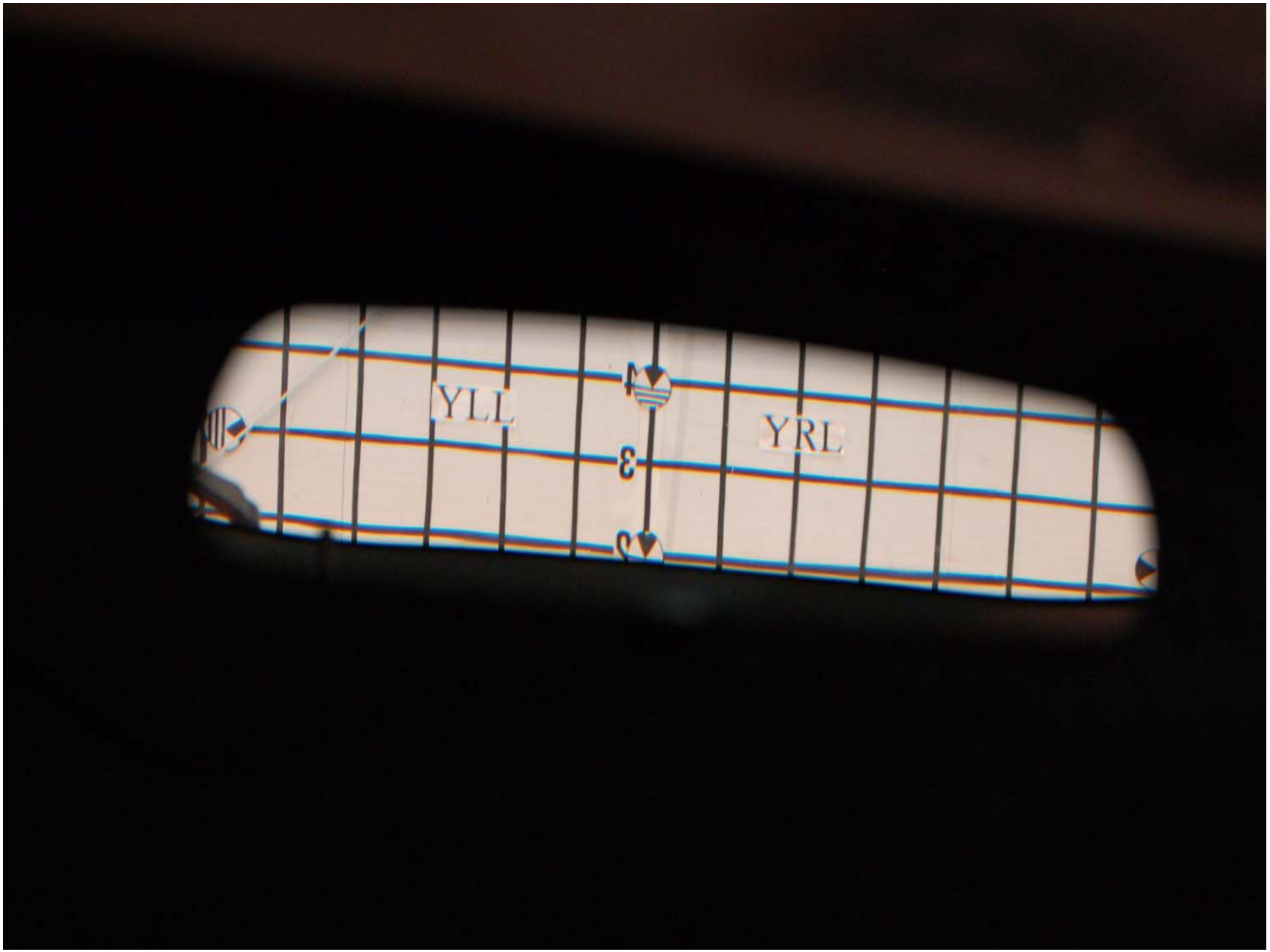
NHTSA NO. C65600
FMVSS NO. 111

FIGURE 5.13
INSIDE MIRROR RIGHT EYE FIELD OF VIEW

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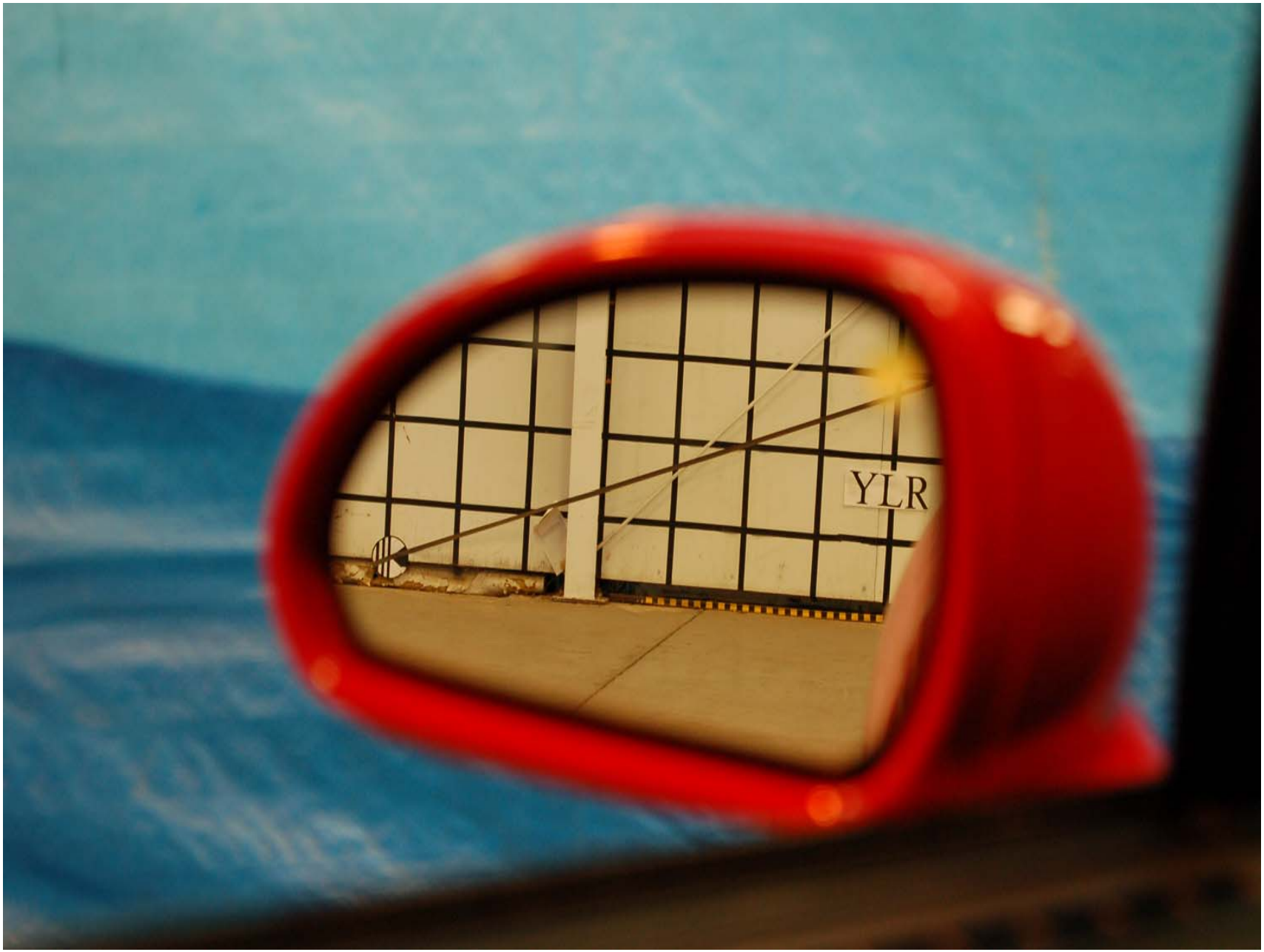
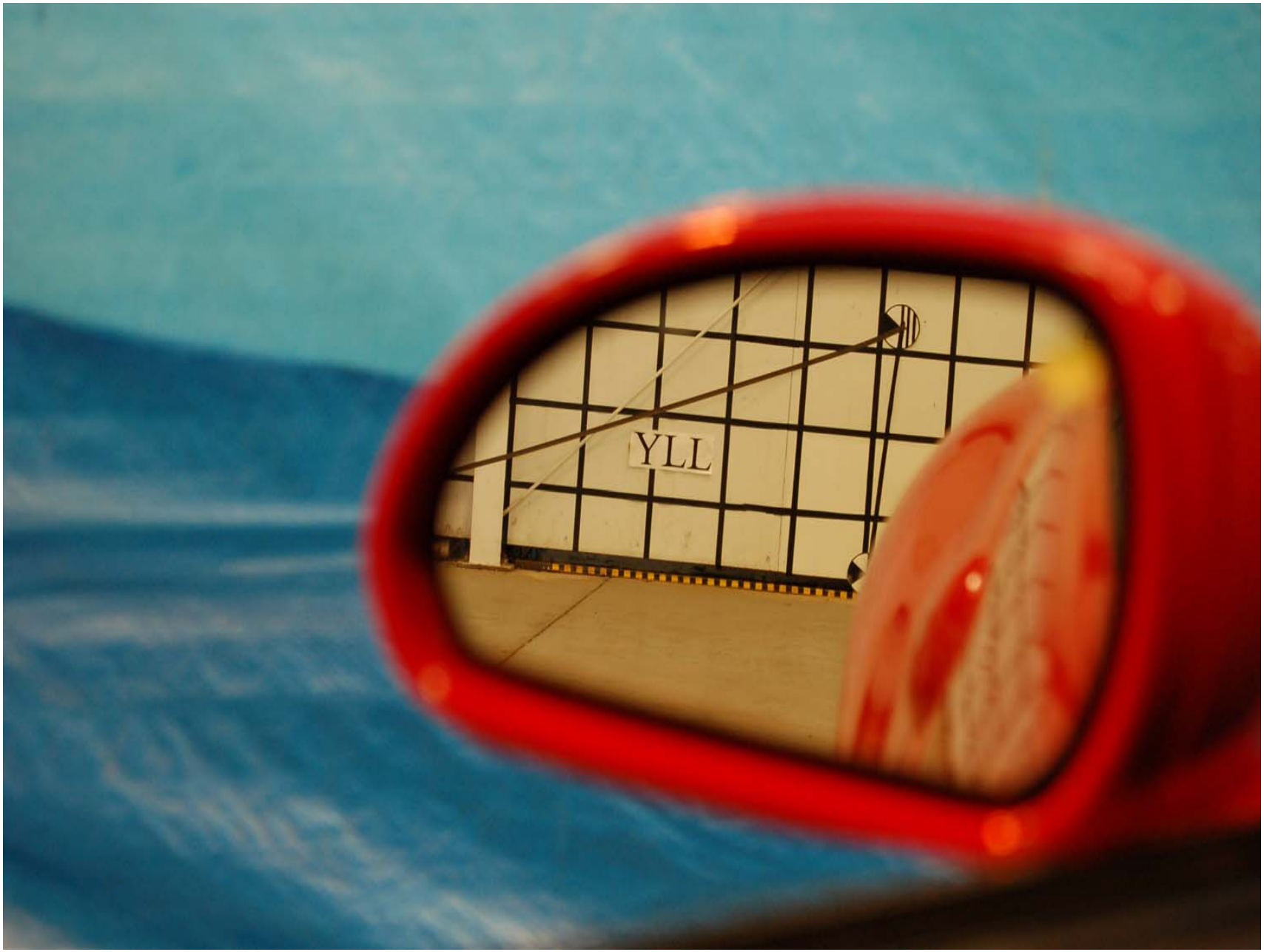
NHTSA NO. C65600
FMVSS NO. 111

FIGURE 5.14
INSIDE MIRROR LEFT EYE FIELD OF VIEW




2006 MITSUBISHI ECLIPSE
NHTSA NO. C65600
FMVSS NO. 111

FIGURE 5.15
OUTSIDE MIRROR RIGHT EYE FIELD OF VIEW

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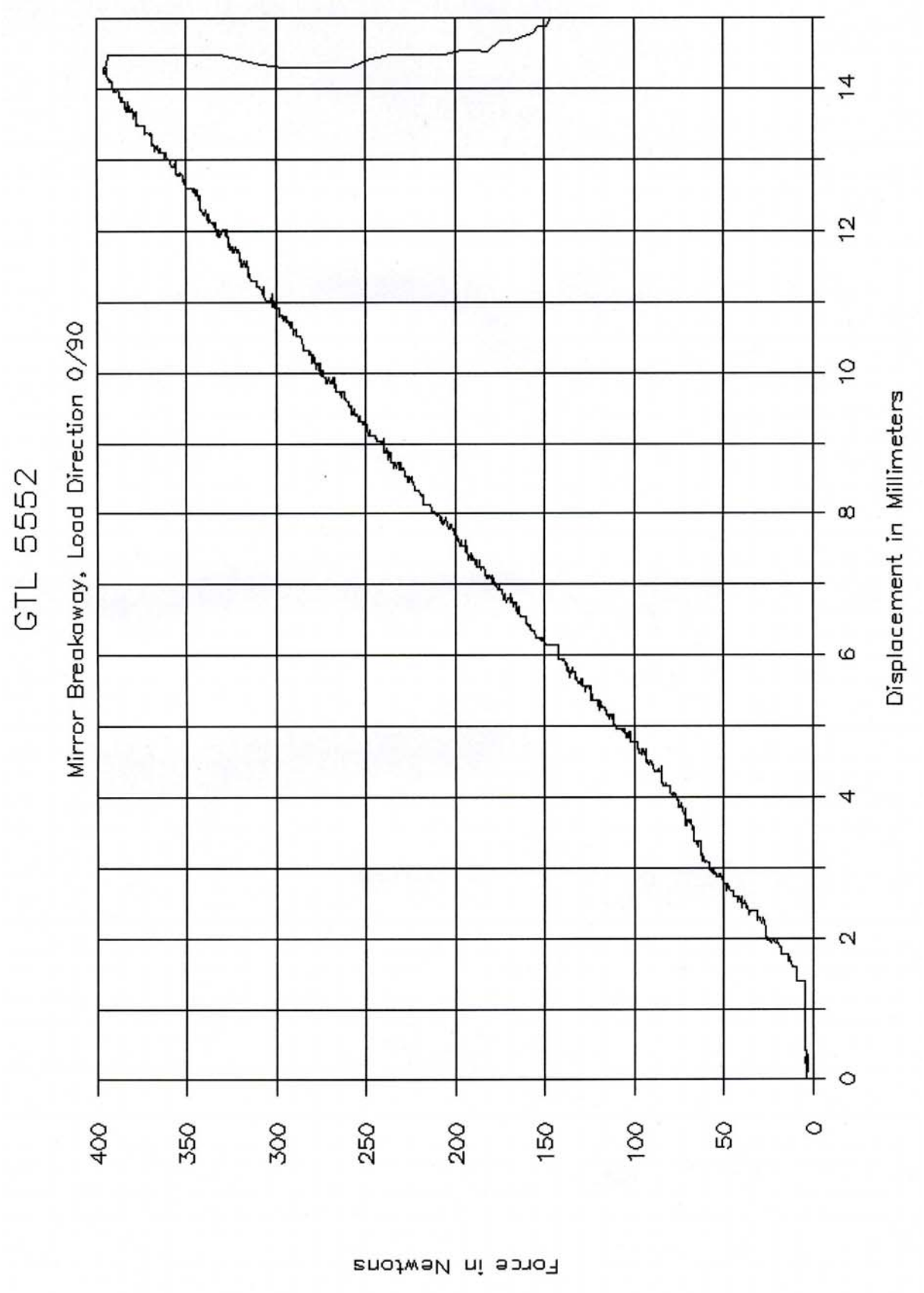
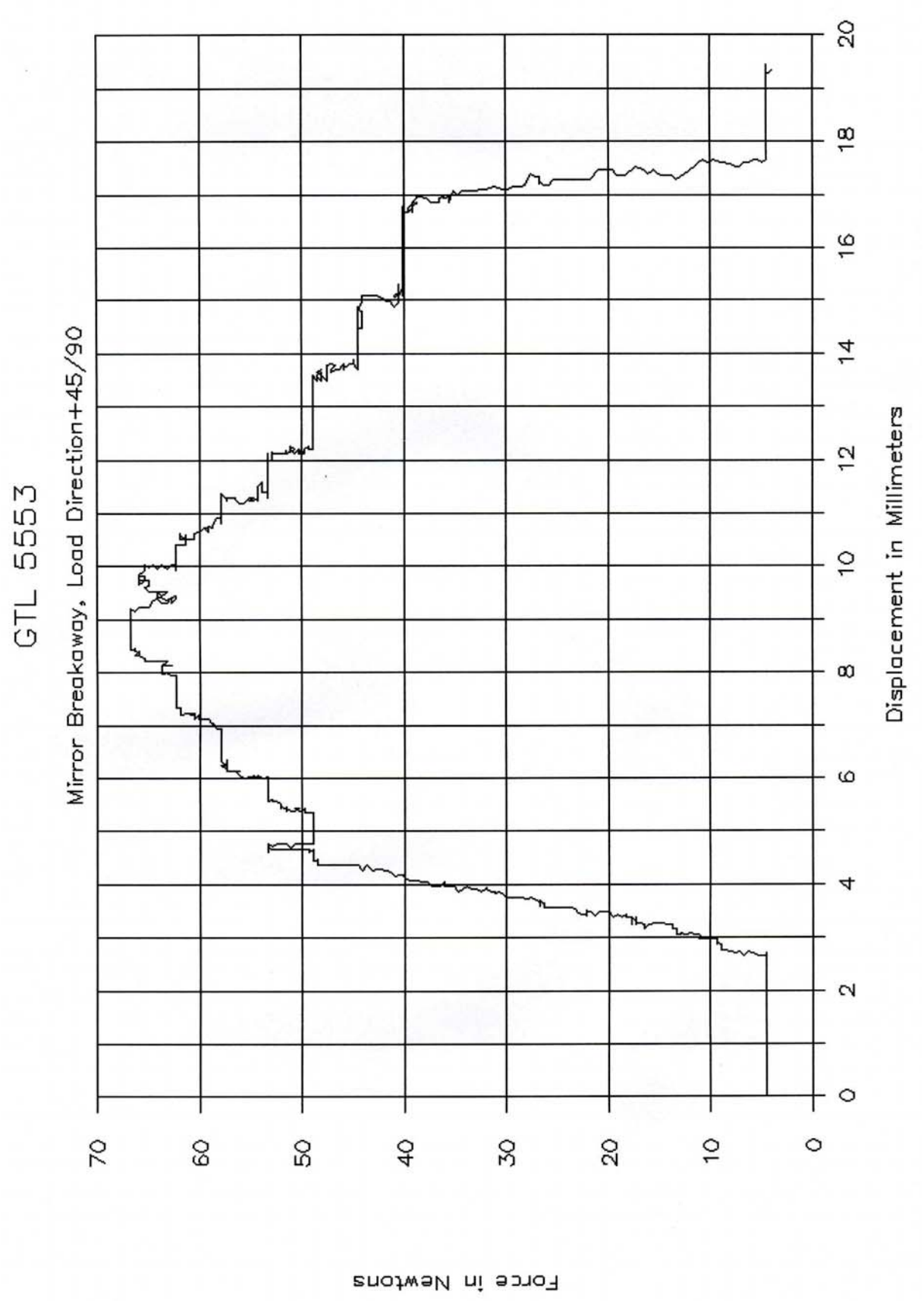
NHTSA NO. C65600
FMVSS NO. 111

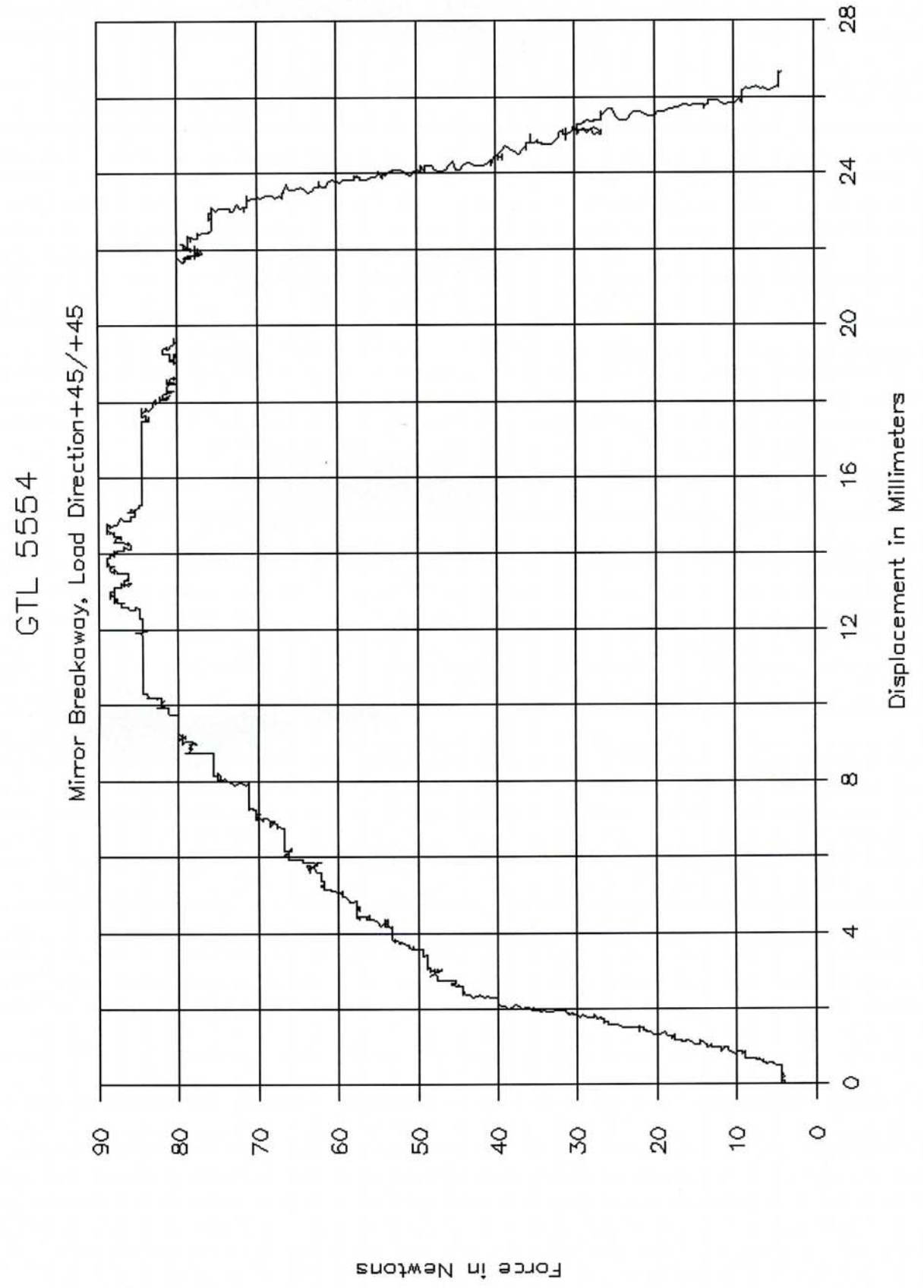
FIGURE 5.16
OUTSIDE MIRROR LEFT EYE FIELD OF VIEW

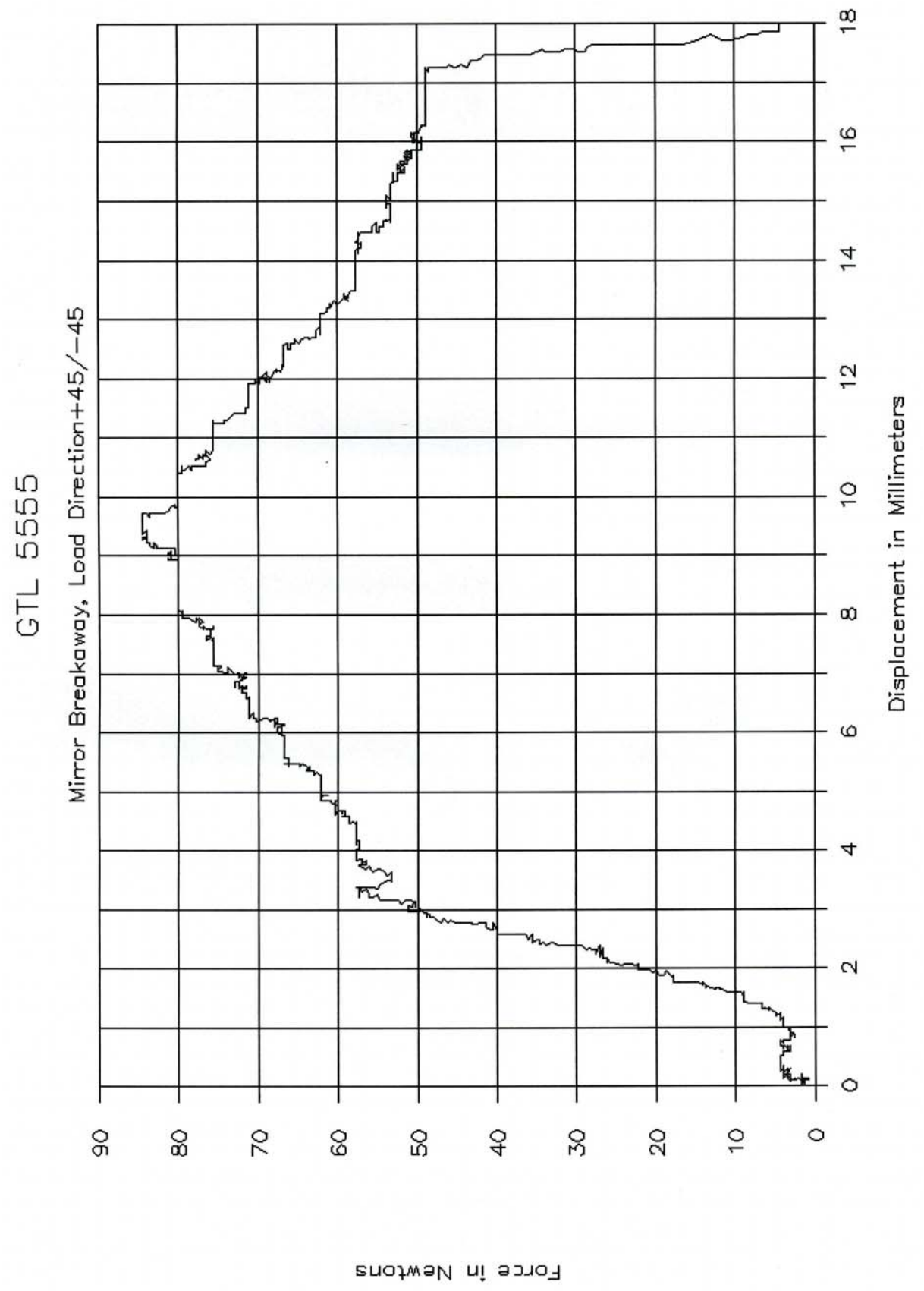
# SECTION 6

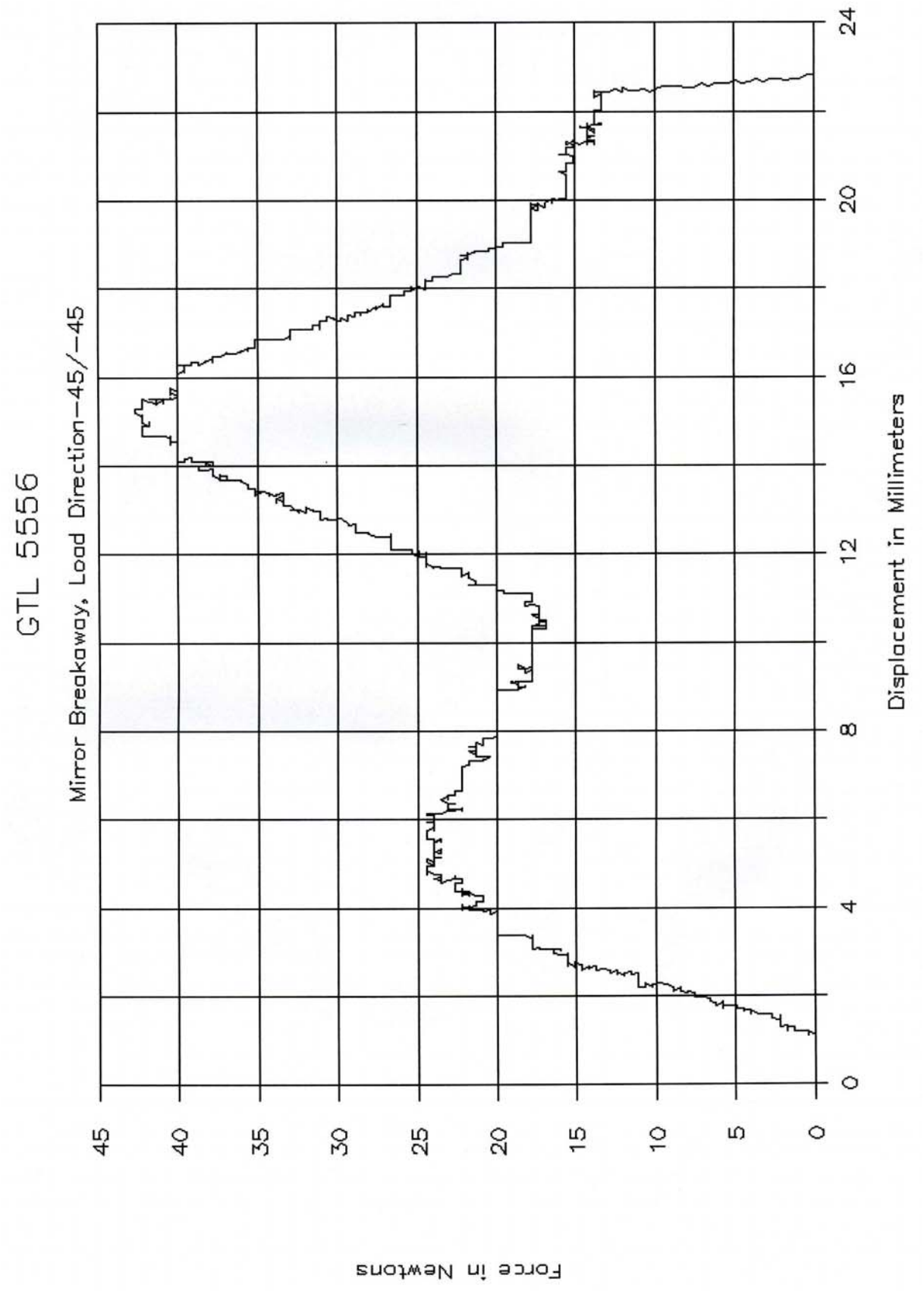
# FORCE VS. DISPLACEMENT PLOTS

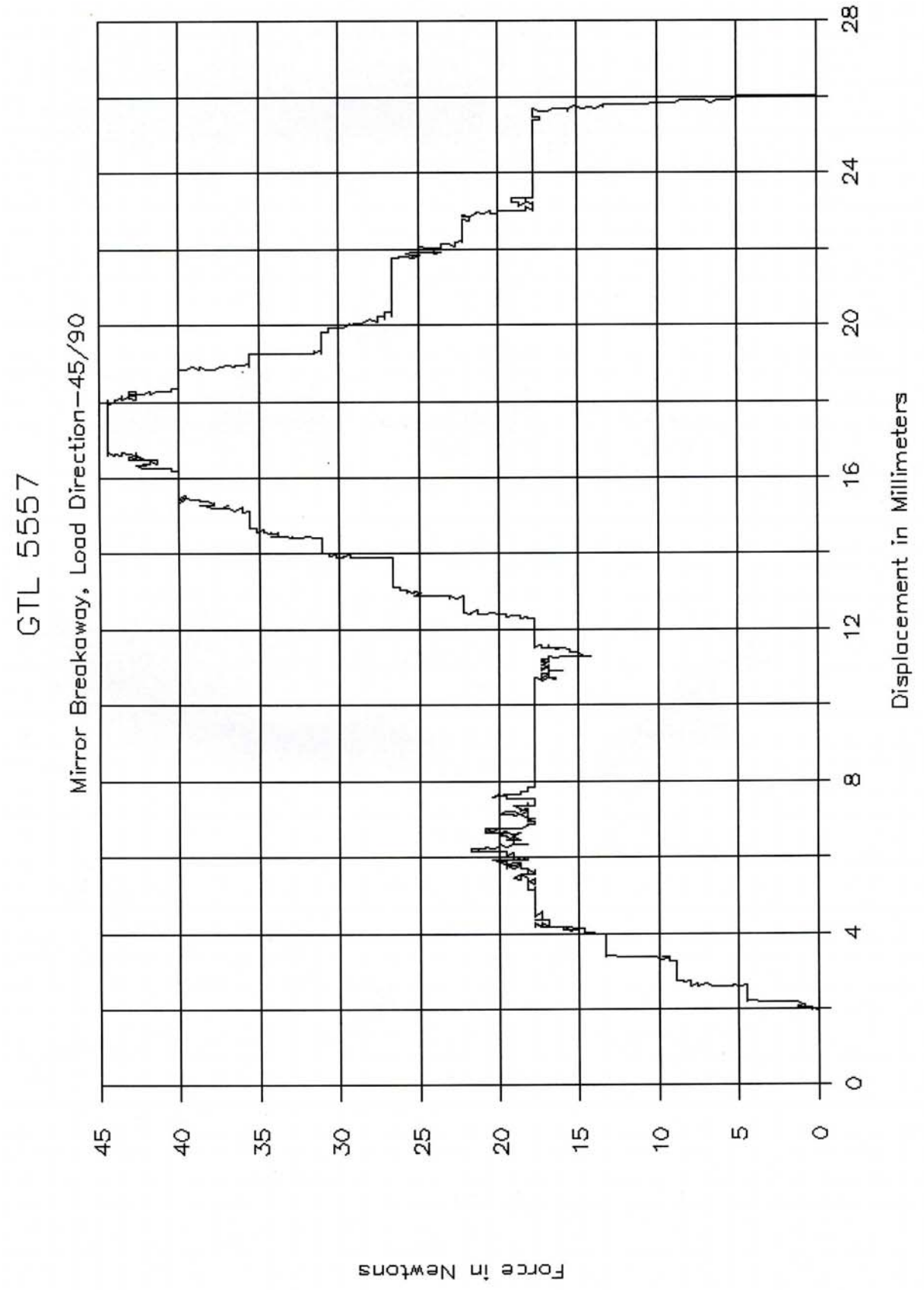

GTL 5552
Mirror Breakaway, Load Direction 0/90
Force in Newtons
Displacement in Millimeters
400
350
300
250
200
150
100
50
0
0
2
4
6
8
10
12
14

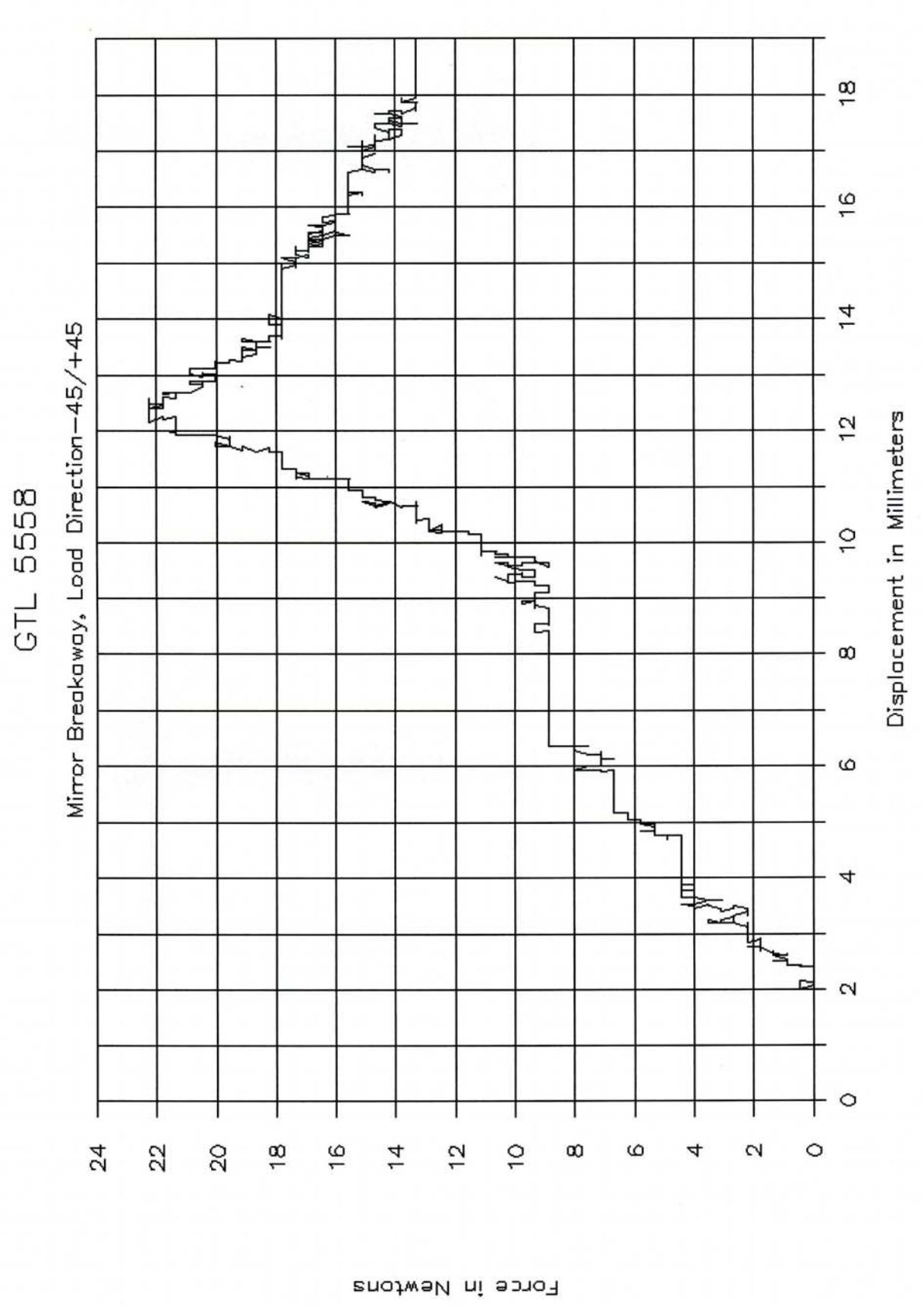

GTL 5553
Mirror Breakaway, Load Direction+45/90
Force in Newtons
Displacement in Millimeters
0
10
20
30
40
50
60
70
0
2
4
6
8
10
12
14
16
18
20


GTL 5554
Mirror Breakaway, Load Direction+45/+45
Force in Newtons
0
10
20
30
40
50
60
70
80
90
0
4
8
12
16
20
24
28
Displacement in Millimeters


GTL 5555
Mirror Breakaway, Load Direction+45/-45
Force in Newtons
Displacement in Millimeters
0
10
20
30
40
50
60
70
80
90
0
2
4
6
8
10
12
14
16
18


GTL 5556
Mirror Breakaway, Load Direction—45/—45
Force in Newtons
Displacement in Millimeters
0
5
10
15
20
25
30
35
40
45
0
4
8
12
16
20
24


GTL 5557
Mirror Breakaway, Load Direction—45/90
Force in Newtons
Displacement in Millimeters
0
5
10
15
20
25
30
35
40
45
0
4
8
12
16
20
24
28


GTL 5558
Mirror Breakaway, Load Direction=45/+45
Force in Newtons
Displacement in Millimeters
0
2
4
6
8
10
12
14
16
18
20
22
24
0
2
4
6
8
10
12
14
16
18

# SECTION 7

## EYE POINT LOCATIONS SUBMITTED BY VEHICLE MANUFACTURER

**FORM 11**
10/11/01

## FMVSS 111 EYE POINT LOCATIONS

Make: Mitsubishi Model: Eclipse Year: 2006

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 "B" pillar striker.** (Provide sketch of reference point if necessary.)
Refer to Attachment 3.

| COORDINATES | LEFT SIDE MIRROR | | INSIDE MIRROR | | RIGHT SIDE MIRROR | |
|---|---|---|---|---|---|---|
| | LE1 (left eye) | RE1 (right eye) | LE2 | RE2 | LE3 | RE3 |
| X | -465.0mm | -465.0mm | -471.7mm | -471.7mm | -465.0mm | -465.0mm |
| Y | -194.5mm | -259.5mm | -185.8mm | -250.8mm | -194.5mm | -259.5mm |
| Z | 799.5mm | 799.5mm | 802.5mm | 802.5mm | 799.5mm | 799.5mm |
| Mirror Mfr., Model Part No. | EAKAS Eclipse MN159639/41 | | Magna Donnelly Eclipse MR975748 MR572815 MR308682 | | EAKAS Eclipse MN159640/42 | |