



The American Association for Laboratory Accreditation

World Class Accreditation

Accredited Laboratory

A2LA has accredited

MAGNA MIRRORS ENGINEERING SERVICES

Kentwood, MI

for technical competence in the field of

Mechanical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General Requirements for the Competence of Testing and Calibration Laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 19th day of February 2009.



A handwritten signature in black ink, appearing to read "Peter Abney", written over a horizontal line.

President & CEO
For the Accreditation Council
Certificate Number 2543.01
Valid to March 31, 2011

For the tests or types of tests to which this accreditation applies, please refer to the laboratory's Mechanical Scope of Accreditation.



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

MAGNA MIRRORS ENGINEERING SERVICES

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MECHANICAL

Valid To: March 31, 2011

Certificate Number: 2543.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on automotive and non-automotive components and assemblies:

Test Parameter

Test Methods/Ranges

Environmental Simulation Testing

Assembly, Sub-Assembly &
Component Durability

High/Low Temperature Exposure (-40 to 180) °C

Thermal Cycling (-40 to 180) °C

Humidity (20 to 95) RH%

Salt Spray (Ambient to 70) °C

Water Spray

CASS (ASTM B368)

Automotive Dust Testing:

Dust: Coarse (ISO 12103-1, A4)

Fine (ISO 12103-1, A2)

Impact/Pendulum:

Pendulum Angle – (0 to 90) degrees

Ball Material – (Steel)

Ball Weight – (5.4 kg)

Rod Length – (686 mm)

(Ball Center to Pivot Center)

Cyclic Corrosion Test

(Ambient to 70°C) and (0 to 100) %RH

Mechanical Cycling

Tensile/Compression Testing

Force (0 to 500) N

Instron:

Force/Strain – (0 to 3000) kgf / 6,750 lbf / 30 kN

Speed – (5 to 500) mm/min or (2 to 20) in/min

<u>Test Parameter</u>	<u>Test Methods/Ranges</u>
<u>Torque Measurement</u>	Torque (Up to 67.79 Nm or 50 ft-lbs.)
<u>Paint/Coatings Measurement</u>	Adhesion/Scribe Impact Resistance (0 to 111 cm / 2 lbs.) Gloss Salt Spray Corrosion Resistance (Ambient to 70) °C (ASTM B117) Water Immersion (Ambient up to 80) °C Dime Scrape Pencil Hardness (6B Soft to 8H Hard) Thumbnail Cure Chemical Resistance Chip Resistance/Gravelometer: Gravel Split Shot (SAE J400)
<u>Exterior Mirror Homologation Testing</u>	Pendulum: Pendulum Angle – (0 to 90) degrees Rod Length – (1000 mm) (Ball Center to Pivot Center) Diameter of Ball – (165 +/- 1 mm) Ball Mass – (6.8 kg +/- 0.5 kg) 5 mm Rubber Covering of Shore A 50 Hardness
<u>Electrical Measurement</u>	Current DC: 1.0 µA to 10.0 Amps Resistance: 1.0 Ω to 2,000 MΩ Voltage: DC: 2.0 mV to 1000.0 V
<u>Vibration with Environmental Control</u> (Single Axis – Horizontal or Vertical Axis Input)	Sine (2200 lbs. force peak) Random (2200 lbs. force RMS) Sine (10 to 3000) Hz Random (10 to 3000) Hz Velocity (100 inches per second) Acceleration (.02 to 110) g peak Displacement (2 inches peak to peak) Shock: 4 ms, half sine, 100 g @ 20 lbs 11 ms, half sine, 50 g @ 60 lbs Payload Capacity 700 lbs Temperature (-40 to 180) °C Humidity (20 to 95) RH% Table Top Surface (28 in x 28 in)
<u>Sound Measurement</u>	Enclosure (Ambient 25 to 38 dB) dB, dBA and Sones

NOTE: Using customer-specified methods based on the parameters listed above.

I. Dimensional Testing

<u>Parameter</u>	<u>Range</u>	<u>CMC*(±)</u>	<u>Technique</u>
Angle	0° to 90°	0.2°	Digital protractor
Length	(up to 12) in (up to 3) in (up to 1) in (up to 18) in	0.0010 in (0.03 mm) 0.00009 in (0.002 mm) 0.0016 in (0.04 mm) 0.0018 in (0.05 mm)	Calipers Micrometers Indicators Height gage
Weight	(0 to 1200) g (1200 to 6000) g	0.2 g 5.8 g	Digital scale

* Calibration and Measurement Capability (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine measurements of nearly ideal measurement standards or nearly ideal measuring equipment. Calibration and Measurement Capabilities represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific measurement performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific measurement.