SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

MAGNA MIRRORS ENGINEERING SERVICES
5085 Kraft Avenue
Kentwood, MI 49512
Angela Roeske Phone: 616 656 8538
Angela.Roeske@magnamirrors.com
www.centerofengineering.com

MECHANICAL

Valid To: March 31, 2013 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 Methods as Specified by Customer within the listed parameters including the following:

Test	Test Parameters	Test Method(s)
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	ASTM B117
	Water Spray	
	Automotive Dust Testing:	
	Dust: Coarse	ISO 12103-1, A4
	Fine	ISO 12103-1, A2
	Impact / Pendulum:	PF 8701
	Pendulum Angle: (0 to 90) degrees	
	Ball Material: (Steel)	
	Ball Weight: (5.4 kg)	
	Rod Length: (686 mm) (Ball Center to Pivot Center)	
	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	

5301 Buckeystown Pike, Suite 350 | Frederick, Maryland 21704-8373 | Phone: 301 644 3248 | Fax: 301 662 2974 | www.A2LA.org

Test Methods as Specified by Customer within the listed parameters including the following:

Test	Test Parameters	Test Method(s)
Torque Measurement	Torque: (Up to 67.79 Nm or 50 ft-lbs.)	
Paint / Coatings Measurement	Adhesion / Scribe	GM9071P
	Dime Scrape	GM9506P
	Pencil Hardness: (6B Soft to 8H Hard)	ASTM D3363
	Thumbnail	GM9507P
	Chemical Resistance	GM9501P (A & B)
	Chip Resistance / Gravelometer:	SAE J400; VDA 621427
	Gravel	
	Split Shot	
	Cure	GM9509P
	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	
Exterior Mirror Homologation Testing	Pendulum:	ECE 46 Regulation
	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	
Electrical Measurement	Current DC: 1.0 μA to 10.0 Amps	
	Resistance: 1.0 Ω to 200 MΩ	
	Voltage: DC: 2.0 mV to 1000.0 V	
Vibration with Environmental Control (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)	
Sound Measurement	Enclosure: (Ambient 25 to 38 dB)	
	dB, dBA and Sones	

I. Dimensional Testing[1]

Parameter	Range	CMC[2](±)	Technique	Standards
Angle	(0 to 90) °	0.2 °	Digital protractor	Standards as specified by customer
Length	(up to 12) in (up to 1) in	0.0010 in (0.03 mm) 0.0016 in (0.04 mm)	Calipers Indicators	Standards as specified by customer
Mass	(0 to 1200) g	0.2 g	Digital scale	Standards as specified by customer

[1] This laboratory offers commercial dimensional testing service only. This test is not equivalent to that of a calibration.

[2] 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.

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 9th day of March 2011.

President & CEO
For the Accreditation Council
Certificate Number 2543.01
Valid to March 31, 2013

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