

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

RELIABLE ANALYSIS – SHANGHAI, INC.
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ELECTRICAL

Valid To: June 30, 2017

Certificate Number: 0386.05

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following automotive electrical and electromagnetic compatibility tests:

Test:**Test Method:*****Electrostatic Discharge (ESD)***

ISO 10605 (2001) Section 5, 7;
ISO 10605 (2008) Sections 8.3, 8.4, 9;
GMW3097 (2006) Section 3.6;
GMW 3097 (2012) Section 3.6;
SAE J1113-13 (2011);
VW TL 824 66 (2009) Sections 6, 7.2, 7.3;
TL 81000 (2013) Sections 3.1.1, 3.1.2, 3.1.3

RF Conducted Emissions

CISPR 25(2002) Sections 6.2, 6.3;
CISPR 25(2008) Sections 6.2, 6.3;
GMW 3097 (2006) Section 3.3.2;
GMW 3097 (2012) Section 3.3.2;
SAE J1113-41 (2006);
VW TL 965 (2009) Sections 5.1, 5.4;
TL 81000 (2013) Sections 3.3.5, 3.3.9

RF Radiated Emissions

CISPR 25(2002) Section 6.4;
CISPR 25(2008) Section 6.4;
GMW 3097 (2006) Section 3.3.1;
GMW 3097 (2012) Section 3.3.1;
SAE J1113-41 (2006);
VW TL 965 (2009) Section 5.3;
TL 81000 (2013) Section 3.3.6

Bulk Current Injection (BCI)
Substitution Method

ISO 11452-4 (2011);
GMW3097 (2006) Section 3.4.1;
GMW 3097 (2012) Section 3.4.1;
SAE J1113-4 (2004);
VW TL 821 66 (2011) Section 6.1;
TL 81000 (2013) Section 3.2.2

Test:

Bulk Current Injection (BCI)
Closed Loop Method

Absorber-lined Shielded Enclosure (ALSE)

Absorber-lined Shielded Enclosure (ALSE)
Radar Pulse Only

Stripline

Portable transmitters

Conducted Transient Immunity

Conducted Transient Emission

Magnetic Field Immunity

Magnetic Field Emissions

Test Method:

ISO 11452-4 (2011);
SAE J1113-4 (2004)

ISO 11452-2 (2004);
GMW3097 (2006) Section 3.4.2;
GMW 3097 (2012) Section 3.4.2;
SAE J1113-21 (2005);
VW TL 821 66 (2011) Section 6.2;
TL 81000 (2013) Section 3.2.3

ISO 11452-2 (2004);
GMW 3097 (2006) Section 3.4.2;
GMW 3097 (2012) Section 3.4.2

ISO 11452-5 (2002);
TL 81000 (2013) Section 3.2.4

ISO 11452-9 (2012)

ISO 7637-2 (2004);
ISO 7637-3 (2007);
SAE J1113-11 (2012);
SAE J1113-12 (2006);
GMW 3097 (2006)
Sections 3.5.2, 3.5.3, 3.5.4, 3.5.5;
GMW 3097 (2012)
Sections 3.5.2, 3.5.3, 3.5.4, 3.5.5, 3.5.6;
VW TL 82066 (2006);
TL 81000 (2013)
Sections 3.4.4.1, 3.4.5.1, 3.4.5.2

ISO 7637-2 (2004);
SAE J1113-42 (2010);
GMW 3097 (2006) Section 3.5.1;
GMW 3097 (2012) Section 3.5.1;
VW TL 82066 (2006);
TL 81000 (2013) Section 3.4.4.2

ISO 11452-8 (2007);
SAE J1113-22 (2010);
GMW 3097 (2006) Section 3.4.4;
GMW 3097 (2012) Section 3.4.4;
MIL-STD-461E RS101;
TL 81000 (2013) Section 3.2.5

GMW 3097 (2012) Section 3.3.3



Test:

Test Method:

*Power Supply Interruptions
Voltage Drop Test*

ISO 16750-2 (2010);
GMW 3172 (2012) Section 9.2.2

Battery Voltage Dropout Test

ISO 16750-2 (2010);
GMW 3172 (2012) Section 9.2.3

*Sinusoidal Superimposed Voltage
Superimposed Alternating Voltage*

ISO 16750-2 (2010);
GMW 3172 (2012) Section 9.2.4

Pulse Superimposed Voltage

GMW 3172 (2012) Section 9.2.5

Supply Voltage Offset Power Offset Test

GMW 3172 (2012) Section 9.2.12

*Ground Reference Offset Test
Ground Offset Test*

GMW 3172 (2012) Section 9.2.11

Ground Interconnect Short to Battery

GMW 3172 (2010) Section 9.2.8

*Short Circuit Protection – Short to Battery/Ground
Test for Signal Lines*

ISO 16750-2 (2010)

Intermittent Short Circuit to Battery and to Ground

GMW 3172 (2012) Section 9.2.6

Continuous Short Circuit to Battery and to Ground

GMW 3172 (2012) Section 9.2.7

Open Circuit - Single Line Interruption

GMW 3172 (2012) Section 9.2.9

Parasitic Current

GMW 3172 (2012) Section 9.2.1

Open Circuit - Multiple Line Interruption

GMW 3172 (2012) Section 9.2.10

Over Load - All Circuits

GMW 3172 (2012) Section 9.2.14

Over Load - Fused Protected Circuits

GMW 3172 (2012) Section 9.2.15

D.C. Supply Voltage

ISO 16750-2 (2010) Section 4.2

State Change Waveform Characterization

GMW 3172 (2012) Section 8.2.4

Ground Path Inductance Sensitivity

GMW 3172 (2012) Section 8.2.5

Overvoltage

ISO 16750-2 (2010) Section 4.3;
GMW 3172 (2012) Section 8.2.3

Reversed Voltage

ISO 16750-2 (2010) Section 4.7;
GMW 3172 (2012) Section 8.2.2

Jump Start

GMW 3172 (2012) Section 8.2.1



Test:

Withstand Voltage

Insulation Resistance

Crank Pulse Capability and Durability

Test Method:

ISO 16750-2 (2010) Section 4.11

ISO 16750-2 (2010) Section 4.12;
GMW 3172 (2012) Section 9.2.16

GMW 3172 (2012) Section 9.2.17





Accredited Laboratory

A2LA has accredited

RELIABLE ANALYSIS - SHANGHAI, INC.

Shanghai, China

for technical competence in the field of

Electrical 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 26th day of May 2015.

A handwritten signature in black ink, written over a horizontal line.

President and CEO
For the Accreditation Council
Certificate Number 0386.04
Valid to June 30, 2017
Revised May 15, 2017

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