



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

RELIABLE ANALYSIS – SHANGHAI, INC.
No. 10, 12A, 24 Lane 1365
Kang Qiao Road East
Shanghai, People's Republic of China, 201319
Mr. Victor Wen Phone: 86 21 6818 3293

ELECTRICAL

Valid To: May 31, 2019

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 Methods:

Electrostatic Discharge (ESD)

ISO 10605;
GMW 3097 (2012, 2015);
SAEJ1113-13;
TL 81000 (2014, 2016);
CS 00054;
B21 7110-E;
REQ-043878;
FMC 1278;
FordEMC-CS-2009.1;
EMC-CS-2010JLR V1.2;
Fiat 990110 01;
Fiat 990111 01;
MBN 10284-2;
BMW GS95002;
Renault 36-00-808;
Honda 7794Z_S3V_0000;
Nissan 28401NDS02 [5];
MES PW 67602B;
Hyundai/Kia ES 96200-00 rev k;

RF Conducted Emissions

CISPR 25 (2008, 2016);
GMW 3097 (2012, 2015);
SAE J1113-41;
TL 81000 (2014, 2016);
CS 00054;
B21 7110-E;
REQ-043878;
FMC 1278;

Test:

RF Conducted Emissions (cont'd)

RF Radiated Emissions

Bulk Current Injection (BCI)
Substitution Method

Test Methods:

Ford EMC-CS-2009.1;
EMC-CS-2010JLR V1.2;
Fiat 990110 01;
Fiat 990111 01;
MBN 10284-2;
BMW GS95002;
Renault 36-00-808;
Nissan 28401NDS02 [5];
MES PW 67602B;
Hyundai/Kia ES 96200-00 rev k

CISPR 25 (2008, 2016) (*ALSE and Strip-line only*);
GMW 3097 (2012, 2015);
SAE J1113-41;
TL 81000 (2014, 2016);
CS 00054;
B21 7110-E;
REQ-043878;
FMC 1278;
Ford EMC-CS-2009.1;
EMC-CS-2010JLR V1.2;
Fiat 990110 01;
Fiat 990111 01;
MBN 10284-2;
BMW GS95002;
Renault 36-00-808;
Nissan 28401NDS02 [5];
MES PW 67602B;
Hyundai/Kia ES 96200-00 rev k

ISO 11452-4;
GMW 3097 (2012, 2015);
SAE J1113-4;
TL 81000 (2014, 2016);
CS 00054;
B21 7110-E;
REQ-043878;
FMC 1278;
Ford EMC-CS-2009.1;
EMC-CS-2010JLR V1.2;
Fiat 990110 01;
Fiat 990111 01;
MBN 10284-2;
BMW GS95002;
Renault 36-00-808;
Nissan 28401NDS02 [5];
MES PW 67602B;
Hyundai/Kia ES 96200-00 rev k



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

Test Methods:

ISO 11452-4;
SAE J1113-4;
Hyundai/Kia ES 96200-00 rev k;
Fiat 990110 01;
Fiat 990111 01;
B21 7110-E;
Renault 36-00-808;
Nissan 28401NDS02 [5]

ISO 11452-2;
GMW 3097 (2012, 2015);
SAE J1113-21;
TL 81000 (2014, 2016);
CS 00054;
B21 7110-E;
REQ-043878;
FMC 1278;
Ford EMC-CS-2009.1;
EMC-CS-2010JLR V1.2;
Fiat 990110 01;
Fiat 990111 01;
MBN 10284-2;
BMW GS95002;
Renault 36-00-808;
Nissan 28401NDS02 [5];
MES PW 67602B;
Hyundai/Kia ES 96200-00 rev k

ISO 11452-2;
GMW 3097 (2012, 2015);
REQ-043878

ISO 11452-5;
TL 81000 (2014, 2016);
Hyundai/Kia ES 96200-00 rev k

ISO 11452-9;
GMW 3097 (2012, 2015);
TL 81000 (2014, 2016);
B21 7110-E;
REQ-043878;
Ford EMC CS 2009.1;
EMC-CS-2010 JLR V1.2

ISO 7637-2 (2004, 2011);
ISO 7637-3 (2007, 2016);
SAE J1113-11;
SAE J1113-12;



Test:

Conducted Transient Immunity (cont'd)

Test Methods:

GMW 3097 (2012, 2015);
TL 81000 (2014, 2016);
CS 00054;
B21 7110-E;
REQ-043878;
Fiat 990110 01;
Fiat 990111 01;
MBN 10284-2;
BMW GS95002;
Renault 36-00-808;
Honda 7794Z_S3V_0000;
Nissan 28401NDS02 [5];
MES PW 67602B;
Hyundai/Kia ES 96200-00 rev k

Conducted Transient Emissions

ISO 7637-2 (2004, 2011);
SAE J1113-42;
GMW 3097 (2012, 2015);
TL 81000 (2014, 2016);
CS 00054;
B21 7110-E;
REQ-043878;
FMC 1278;
Ford EMC-CS-2009.1;
EMC-CS-2010JLR V1.2;
Fiat 990110 01;
Fiat 990111 01;
MBN 10284-2;
BMW GS95002;
Renault 36-00-808;
Hyundai/Kia ES 96200-00 rev k

Magnetic Field Immunity

ISO 11452-8;
SAE J1113-22;
GMW 3097 (2012, 2015);
MIL-STD-461E;
TL 81000 (2014, 2016);
CS 00054;
B21 7110-E;
REQ-043878;
Ford EMC-CS-2009.1;
EMC-CS-2010JLR V1.2;
MES PW 67602B

Magnetic Field Emissions

GMW 3097 (2012, 2015);
TL 81000 (2014, 2016);
B21 7110-E;
REQ-043878



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Test:

Test Method:

Road Vehicles — Environmental conditions and testing for electrical and electronic equipment —Part 2: Electrical loads

ISO 16750-2

Jump Start

GMW 3172 Section 8.2.1

Reverse Polarity

GMW 3172 Section 8.2.2

Over Voltage

GMW 3172 Section 8.2.3

State Change Waveform Characterization

GMW 3172 Section 8.2.4

Ground Path Inductance Sensitivity

GMW 3172 Section 8.2.5

Parasitic Current

GMW 3172 Section 9.2.1

Power Supply Interruptions

GMW 3172 Section 9.2.2

Battery Voltage Dropout

GMW 3172 Section 9.2.3

Sinusoidal Superimposed Voltage

GMW 3172 Section 9.2.4

Pulse Superimposed Voltage

GMW 3172 Section 9.2.5

Intermittent Short Circuit to Battery and to Ground for Input/Output

GMW 3172 Section 9.2.6

Continuous Short Circuit to Battery and to Ground for Input/Output

GMW 3172 Section 9.2.7

Multiple Power and Multiple Ground Short Circuits Including Pass Through

GMW 3172 Section 9.2.8

Open Circuit – Single Line Interruption

GMW 3172 Section 9.2.9

Open Circuit – Multiple Line Interruption

GMW 3172 Section 9.2.10

Ground Offset

GMW 3172 Section 9.2.11



Test:

Power Offset

Discrete Digital Input Threshold Voltage

Over Load – All Circuits

Over Load – Fuse Protected Circuits

Insulation Resistance

Crank Pulse Capability and Durability

Switched Battery Lines

Test Method:

GMW 3172 Section 9.2.12

GMW 3172 Section 9.2.13

GMW 3172 Section 9.2.14

GMW 3172 Section 9.2.15

GMW 3172 Section 9.2.16

GMW 3172 Section 9.2.17

GMW 3172 Section 9.2.18

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Accredited Laboratory

A2LA has accredited

RELIABLE ANALYSIS - SHANGHAI, INC.

Shanghai, People's Republic of 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 3rd day of October 2017.

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

President and CEO
For the Accreditation Council
Certificate Number 0386.05
Valid to May 31, 2019

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