



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

RELIABLE ANALYSIS – SHANGHAI, INC. ¹
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ELECTRICAL

Valid To: May 31, 2025

Certificate Number: 0386.05

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

Test:

Absorber-lined Shielded Enclosure
(ALSE)
(up to 6 GHz)

Absorber-lined Shielded Enclosure
(ALSE) Radar Pulse Only

Test Methods:²

ISO 11452-2 (2004, 2019);
GMW 3097 (2015, 2019, 2022);
TL 81000 (2016, 2018, 2021);
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 67602D;
Hyundai/Kia ES 96200-00 rev k;
SMTC 3 800 006;
Q/FC-CC06-001A;
Q/JLY J7110779E;
BAS 582;
VDR-NOTE-SPEC-31850329;
GWT A D05-02;
CEVT 8888621495-004;
ECE R10

ISO 11452-2 (2004, 2019);
GMW 3097 (2015, 2019, 2022);
REQ-043878;
SMTC 3 800 006;
Q/FC-CC06-001A;
MES PW 67602D;

Test:

Absorber-lined Shielded Enclosure
(ALSE) Radar Pulse Only (cont.)

Bulk Current Injection (BCI)
Closed Loop Method

Bulk Current Injection (BCI)
Substitution Method

Clock signal slew rate

Conducted Transient Emissions

Test Methods:²

Q/JLY J7110779E;
BAS 582;
GWT A D05-02;
CEVT 8888621495-004

ISO 11452-4 (2020,2011);
Hyundai/Kia ES 96200-00 rev k;
Fiat 990110 01;
Fiat 990111 01;
B21 7110-E;
Renault 36-00-808;
Nissan 28401NDS02 [5];
ECE R10

ISO 11452-4 (2011, 2020);
GMW 3097 (2015, 2019, 2022);
TL 81000 (2016, 2018, 2021);
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 67602D;
Hyundai/Kia ES 96200-00 rev k;
BT-LAH-HV Modul-EMV-V4.6;
SMTC 3 800 006;
Q/FC-CC06-001A;
Q/JLY J7110779E;
BAS 582;
VDR-NOTE-SPEC-31850329;
GWT A D05-02;
CEVT 8888621495-004

GWT A D05-02

ISO 7637-2 (2004, 2011);
GMW 3097 (2015, 2019, 2022);
TL 81000 (2016, 2018, 2021);
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;

Test:

Test Methods:²

Conducted Transient Emissions (cont.)

BMW GS95002;
Renault 36-00-808;
Hyundai/Kia ES 96200-00 rev k;
SMTC 3 800 006;
Q/FC-CC06-001A;
Q/JLY J7110779E;
BAS 582;
VDR-NOTE-SPEC-31850329;
GWT A D05-02;
CEVT 8888621495-004;
MES PW 67602D

Conducted Transient Immunity

ISO 7637-2 (2004, 2011);
ISO 7637-3 (2007, 2016);
GMW 3097 (2015, 2019, 2022);
TL 81000 (2016, 2018, 2021);
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 67602D;
Hyundai/Kia ES 96200-00 rev k;
B21 7112-OR;
BT-LAH-HV Modul-EMV-V4.6;
SMTC 3 800 006;
Q/FC-CC06-001A;
Q/JLY J7110779E;
BAS 582;
VDR-NOTE-SPEC 31850329;
GWT A D05-02;
CEVT 8888621495-004;
ECE R10

Coupling or screening attenuation -absorbing clamp method

IEC 62153-4-5;
ECE R10

Electrical characteristics and electrical safety of high voltage components in road vehicles Requirements and tests

LV 123 Section 10.4

Electrical fast transient/burst immunity test (excluding capacitive coupling clamp)

IEC 61000-4-4;
B21 7112-OR;
BT-LAH-HV Modul-EMV-V4.6;
GWT A D05-02;
Q/JLY J7110922C;
MES PW 67602D;
ECE R10

Test:

Electrical specifications and tests for voltage class B systems and components — Part 2: Electrical tests for components

Electrical transient conduction along shielded high voltage supply lines only

Electrostatic Discharge (ESD)
(excluding Vehicle Test Method)

HV-LV coupling test

Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement

Test Methods:²

ISO 21498-2

ISO 7637-4;
MES PW 67602D;
BT-LAH-HV Modul-EMV-V4.6;
CEVT 8888790454-002

ISO 10605;
GMW 3097 (2015, 2019, 2022);
TL 81000 (2016, 2018, 2021);
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;
Honda 7794Z_S3V_ 0000;
Nissan 28401NDS02 [5];
MES PW 67602D;
Hyundai/Kia ES 96200-00 rev k;
B21 7112-OR;
BT-LAH-HV Modul-EMV-V4.6;
SMTC 3 800 006;
Q/FC-CC06-001A;
Q/JLY J7110779E;
BAS-582;
GWTAD05-02;
VDR-NOTE-SPEC-31850329;
CEVT 8888621495-004

B21 7112-OR;
BT-LAH-HV Modul-EMV-V4.6;
CISPR 25(2016,2021);
GWT A D05-02;
MES PW 67602D;
Q/JLY J7110922C

CISPR 22:2008;
IEC 61000-6-3;
ECE R10;
Q/JLY J7110922C;
GWT A D05-02

Test:

Limits–Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection

Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems - Equipment with rated current ≤ 75 A and subject to conditional connection

Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)

Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current >16 A and ≤ 75 A per phase

Magnetic Field Emissions

Magnetic Field Immunity

Test Methods:²

IEC 61000-3-3;
B21 7112-OR;
BT-LAH-HV Modul-EMV-V4.6;
Q/JLY J7110922C;
MES PW 67602D;
ECE R10

IEC61000-3-11;
B21 7112-OR;
BT-LAH-HV Modul-EMV-V4.6;
Q/JLY J7110922C;
MES PW 67602D;
ECE R10

IEC 61000-3-2;
B21 7112-OR;
BT-LAH-HV Modul-EMV-V4.6;
GWT A D05-02;
Q/JLY J7110922C;
MES PW 67602D;
ECE R10

IEC 61000-3-12;
B21 7112-OR;
BT-LAH-HV Modul-EMV-V4.6;
GWT A D05-02;
Q/JLY J7110922C;
MES PW 67602D;
ECE R10

GMW 3097 (2015, 2019, 2022);
TL 81000 (2016, 2018, 2021);
B21 7110-E;
REQ-043878;
SMTC 3 800 006;
BAS 582;
VDR-NOTE-SPEC-31850329;
GWT A D05-02;
Q/JLY J7110922C;
MES PW 67602D

ISO 11452-8 (2007, 2015);
GMW 3097 (2015, 2019, 2022);
MIL-STD-461G;
TL 81000 (2016, 2018, 2021);
CS 00054;
B21 7110-E;
REQ-043878;
Ford EMC-CS-2009.1;
EMC-CS-2010JLR V1.2;
MES PW 67602D;
SMTC 3 800 006;
Q/FC-CC06-001A;
Q/JLY J7110779E;



Test:

Magnetic Field Immunity (cont.)

Method(s) of testing for emission of radio frequency conducted disturbances on AC or DC power lines from an ESA

Portable Transmitters

RF Conducted Emissions

Test Methods:²

BAS 582;
VDR-NOTE-SPEC-31850329;
GWT A D05-02;
CEVT 8888621495-004

ECE R10;
CISPR 16-2-1

ISO 11452-9 (2012, 2021);
GMW 3097 (2015, 2019, 2022);
TL 81000 (2016, 2018, 2021);
B21 7110-E;
REQ-043878;
Ford EMC CS 2009.1;
EMC-CS-2010 JLR V1.2;
Q/FC-CC06-001A;
Q/JLY J7110779E;
BAS 582;
GWT A D05-02;
CEVT 8888621495-004;
MES PW 67602D

CISPR 25 (2008, 2016, 2021);
GMW 3097 (2015, 2019, 2022);
TL 81000 (2016, 2018, 2021);
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 67602D;
Hyundai/Kia ES 96200-00 rev k;
B21 7112-OR;
BT-LAH-HV Modul-EMV-V4.6;
SMTC 3 800 006;
Q/FC-CC06-001A;
Q/JLY J7110779E;
BAS 582;
GWTAD05-02;
VDR-NOTE_SPEC-31850329;
CEVT 8888621495-004;
Q/JLY J7110922C

Test:

RF Radiated Emissions

Road vehicles — Component test methods for electrical disturbances from narrowband radiated electromagnetic energy — Part 11: Reverberation chamber

Stripline

Surface transfer impedance – Line injection method

Surge immunity test
(*power line only*)

Test Methods:²

CISPR 25 (2008, 2016, 2021) (*ALSE and Strip-line only*);
GMW 3097(2015, 2019, 2022);
TL 81000 (2016, 2018, 2021);
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 67602D;
Hyundai/Kia ES 96200-00 rev k;
B21 7112-OR;
BT-LAH-HV Modul-EMV-V4.6;
SMTC 3 800 006;
Q/FC-CC06-001A;
Q/JLY J7110779E;
BAS 582;
GWT A D05-02;
VDR-NOTE-SPEC-31850329;
CEVT 8888621495-004;
ECE R10

ISO 11452-11;
IEC 61000-4-21;
B21 7110;
GMW 3097 (2015, 2019, 2022)

ISO 11452-5 (2002);
TL 81000 (2016, 2018, 2021);
Hyundai/Kia ES 96200-00 Rev. K

IEC 62153-4-6

IEC 61000-4-5;
B21 7112-OR;
BT-LAH-HV Modul-EMV-V4.6;
GWT A D05-02;
Q/JLY J7110922C;
MES PW 67602D

<u>Test:</u>	<u>Test Methods:</u> ²
Testing and measurement techniques-Harmonics and interharmonics including mains signalling at ac. power port, low frequency immunity tests, IDT	IEC 61000-4-13
Testing and measurement techniques – Power frequency magnetic field immunity test	IEC 61000-4-8; Q/JLY J7110922C
Testing and measurement techniques – Variation of power frequency, immunity test for equipment with input current not exceeding 16 A per phase	IEC 61000-4-28
Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests	IEC61000-4-11; B21 7112-OR
Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests for equipment with mains current more than 16 A per phase	IEC 61000-4-34
Testing and measurement techniques – Voltage fluctuation immunity test for equipment with input current not exceeding 16 A per phase	IEC 61000-4-14

¹ This accreditation covers testing performed at the main laboratory listed above as well as the satellite laboratory listed below.

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No. 10, 24 Lane 1365
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Mr. Victor Wen Phone: 86 21 6818 3293

Test:

Test Method:²

General Specification for Electrical/Electronic
Components – Environmental/Durability
Road Vehicles — Environmental
conditions and testing for electrical
and electronic equipment —Part 2:
Electrical loads

GMW 3172 Section 8.2, Section 9.2.1~9.2.18
ISO 16750-2

² When the date, edition, version, etc. is not identified in the scope of accreditation, laboratories may use the version that immediately precedes the current version for a period of one year from the date of publication of the standard measurement method, per part C., Section 1 of A2LA R101 - *General Requirements - Accreditation of ISO-IEC 17025 Laboratories*.



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 17025:2017 *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 April 2017).



Presented this 6th day of July 2023.

A blue ink signature of Mr. Trace McInturff, written in a cursive style.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 0386.05
Valid to May 31, 2025

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