



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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ELECTRICAL

Valid To: August 31, 2020

Certificate Number: 3674.02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on automotive heater systems, heated steering wheels, blower and control modules, and related components:

Test:

Test Method(s):

RF Conducted Emission

CISPR 25 (Sections 6.3 and 6.4);
CISPR 25 Ed3.0 2008-03 (Sections 6.2 and 6.3);
Hyundai ES 96200-00 (Section 5.2.2/6.2.3);
Ford FMC1278 (Sections RE 420, 421);
GMW 3097 (Section 3.3.2);
BMW GS 95002-2 (Sections AN and CP);
Mazda MES PW 67602 (Sections CE 420, 421, 422);
VW TL 81000 (Sections AN and CP);
Toyota TSC7508G (Section 6)

RF Radiated Emission

CISPR 25 (Section 6.5);
CISPR 25 Ed3.0 2008-03 (Section 6.4);
Hyundai ES 96200-00 (Section 6.2.1);
Ford FMC1278 (Section RE310);
GMW 3097 (Section 3.3.1);
BMW GS 95002-2 (Section RE);
Mazda MES PW 67602 (Section RE310);
VW TL 81000 (Sections 3.3.6)

RF Radiated Emission (cont'd)

Toyota TSC7026G;
Toyota TSC7508G (Sections 7.2 and 7.3)

Emission (Capacitive Coupling Clamp)

BMW GS 95002-2 (Section CV);

Magnetic Field Emission (Start from 20Hz)

GMW 3097 (Section 3.3.3);
Toyota TSC7508G (Section 7.1)

Test:

Conducted Transient Emission (CTE)

Test Method(s):

Hyundai ES 96200-00 (Section 6.4.3);
Ford FMC1278 (Section CE410);
GMW 3097 (Section 3.5.1);
BMW GS 95002-2 (Sections CTE and SR);
BMW GS 95024-2-2 (Section E-21);
ISO 7637-2 (Section 4.3);
Mazda MES PW 67602 (Section CE410);
VW TL 81000 (Sections 3.4.4.2);
Toyota TSC7034G (Section 5.1);
VW 80000 (Section E-21)

Radiated Immunity – Absorber-lined Shielded
Enclosure – Non-Radar Pulse

Hyundai ES 96200-00 (Section 5.1.2);
Ford FMC1278 (Section RI114);
GMW 3097 (Section 3.4.2);
BMW GS 95002-2 (Section ALSE);
ISO 11452-2;
ISO 11452-2:2004;
Mazda MES PW 67602 (Section RI114);
VW TL 81000 (Sections 3.2.3);
Toyota TSC7006G (Sections 4.4.4 and 4.5.4)

Radiated Immunity – Absorber-lined Shielded
Enclosure – Radar Pulse Only

Ford FMC1278 (Section RI114);
GMW 3097 (Section 3.4.2);
BMW GS 95002-2 (Section ALSE);
Mazda MES PW 67602 (Section RI114);
VW TL 81000 (Sections 3.2.3)

Withdrawn

Radiated Immunity – Portable Transmitters

Ford FMC1278 (Section RI115);
GMW 3097 (Section 3.4.4);
Hyundai ES 96200-00 (Section 5.1.3);
ISO 11452-9;
Mazda MES PW 67602 (Section RI115);
VW TL 81000 (Section 3.2.5);
Toyota TSC7006G (Sections 4.5.5 and 4.5.6)

Bulk Current Injection

Hyundai ES 96200-00 (Section 5.1.1);
Ford FMC1278 (Section RI112);
GMW 3097 (Section 3.4.1);
BMW GS 95002-2 (Sections BCI and BCICL);
ISO 11452-4 (Section 6.1);
ISO 11452-4:2005;
Mazda MES PW 67602 (Section RI112);
VW TL 81000 (Sections 3.2.2);
Toyota TSC7006G (Sections 4.4.2 and 4.5.2)

Conducted Transient Immunity

Ford FMC1278 (Sections CI 210, 220, 221, 222,
230, 231, 250, 260, 270, RI130, 150);
Hyundai ES 96200-00 (Section 6.4.1 and 6.4.2)



Test:

Conducted Transient Immunity (continued)

Test Method(s):

GMW 3097 (Sections 3.5.2, 3.5.3, 3.5.4, 3.5.5, 3.5.6);
BMW GS 95002-2 (Sections TSUP and TOL);
ISO 7637-2 (Section 4.4);
ISO 7637-3; ISO 7637-3:2007;
Mazda MES PW 67602 (Sections CI 210, 220, 230, 250, 260, 270, RI130, 150);
VW TL 81000 (Sections 3.4);
Toyota TSC7001G (Sections 5.2, 5.3, 5.5, 5.6, 5.8);
Toyota TSC7033G (Sections 3.8.1 and 3.8.2);
Toyota TSC7034G (Sections 5.2 and 5.3)

Magnetic Field Immunity

Ford FMC1278 (Section RI140);
Hyundai ES96200-00 (Section 5.3.1);
GMW 3097 (Section 3.4.5);
BMW GS 95002-2 (Section LFM);
ISO 11452-8; ISO 11452-8:2007;
Mazda MES PW 67602 (Section RI140)

Electrostatic Discharge (ESD)

Hyundai ES 96200-00 (Section 6.5);
Ford FMC1278 (Section CI280);
GMW 3097 (Section 3.6);
BMW GS 95002-2 (Sections ESDH, ESDD, ESDD);
ISO 10105;
Mazda MES PW 67602 (Section CI280);
VW TL 81000 (Sections 3.1);
Toyota TSC7018G

Withdrawn

Operation Voltage

Hyundai ES-95400-10 (Sections 6.1.1 and 6.5.2);
GMW 3172 (Section 8.2.1);
ISO 16750-2 (Section 4.2);
Mazda MES PW 67560F (Section 7.2.1, 7.2.2, 7.2.4);
Toyota TSC7001G (Section 5.1);
Toyota TSC7306G (Section 4.24)

Over Voltage

Hyundai ES-95400-10 (Section 6.1.4);
GMW 3172 (Section 8.2.3);
BMW GS 95024-2-1 (Sections E-01 and E-02);
ISO 16750-2 (Section 4.3);
Toyota TSC7001G (Section 5.7);
VW 80000 (Sections E-01 and E-02)

Reverse Polarity

Hyundai ES-95400-10 (Section 6.1.3);
GMW 3172 (Section 8.2.2);
BMW GS 95024-2-1 (Section E-15);
ISO 16750-2 (Section 4.7)



Test:

Reverse Polarity (continued)

Power Voltage Change

Short Circuit

Open Circuit

Over Current

Dark Current

Resistance Test

FMEA

Power Offset

Ground Offset

Interruption

Insulation Resistance

Test Method(s):

Toyota TSC7001G (Section 5.9);
VW 80000 (Section E-15)

Hyundai ES-95400-10 (Sections 6.1.5-6.1.7,
6.1.9-6.1.10);
GMW 3172 (Sections 8.2.1, 8.2.4, 9.2.2-9.2.5,
9.2.13-9.2.15, 9.2.17);
BMW GS 95024-2-1 (Sections E-06, E-07, E-08,
E-09, E-11, E-12);
ISO 16750-2 (Sections 4.4, 4.5, 4.6);
Toyota TSC7021G;
VW 80000 (Sections E-03, E-04, E-05, E-06,
E-07, E-08, E-09, E-11, E-12)

Hyundai ES-95400-10 (Section 6.1.8);
GMW 3172 (Sections 9.2.6, 9.2.7, 9.2.8);
BMW GS 95024-2-1 (Section E-17);
ISO 16750-2 (Section 4.10);
VW 80000 (Section E-17)

GMW 3172 (Sections 9.2.9 and 9.2.10);
ISO 16750-2 (Section 4.9)

BMW GS 95024-2-1 (Section E-22);
Toyota TSC 7500G (Section 3.1);
VW 80000 (Section E-22)

Hyundai ES-95400-10 (Section 6.1.2);
GMW 3172 (Section 9.2.1);
BMW GS 95024-2-1 (Section E-19);
VW 80000 (Section E-19)

Toyota TSC7306G (Section 4.25)

Toyota TSC7306G (Section 4.26)

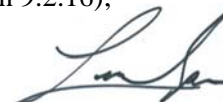
GMW 3172 (Section 9.2.12);
ISO 16750-2 (Section 4.8)

GMW 3172 (Sections 8.2.5 and 9.2.11);
BMW GS 95024-2-1 (Section E-16);
ISO 16750-2 (Section 4.8);
Toyota TSC7001G (Section 5.4);
VW 80000 (Section E-16)

BMW GS 95024-2-1 (Section E-14);
VW 80000 (Section E-14)

GMW 3172 (Section 9.2.16);

Withdrawn



Test:

Insulation Resistance (continued)

Dielectric Strength

Test Method(s):

BMW GS 95024-2-1 (Section E-18);
ISO 16750-2 (Section 4.12);
VW 80000 (Section E-18)

BMW GS 95024-2-1 (Section E-20);
ISO 16750-2 (Section 4.11);
VW 80000 (Section E-20)

Withdrawn



Accredited Laboratory

A2LA has accredited

GENTHERM ELECTRONICS (SHENZHEN) CO., LTD.

Shenzhen, People's Republic of China

for technical competence in the field of

Electrical Testing

Withdrawn

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 April 2017).



Presented this 20th day of August 2018.

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

President and CEO
For the Accreditation Council
Certificate Number 3674.02
Valid to August 31, 2020

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