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公司介绍 / About us



- 权威的、第三方检测认证服务机构（ilac、CNAS L3110/L6478/L7754、AQSIO）
Authoritative, third party testing and certification services body.
- 具有向社会出具公正数据的资格（ISO 17025、CMA）
Qualified to issue fair data to the society.
- 国内较早从事电气安全、EMC、化学及性能检测，汽车品检测和国际认证的第三方专业实验室，全面完善的综合检测能力（E-Mark、CCC）
Domestic earlier in the electrical safety, EMC, chemical and performance testing, automotive products testing and international certification of the third party professional laboratory, comprehensive testing ability.
- 众多实验室检测能力的认可和资质，国际权威机构认可及战略合作伙伴（FCC）
Many recognition and qualification of laboratory testing capabilities, international authority recognized and strategic partners.



注：部分汽车整车厂商资质认可及项目合作客户。

沃特检验集团汽车产品检测认证服务平台 是沃特检测集团在华东区重点兴建的大型综合性检测认证实验室，公司及检测实验室位于苏州高新区，是区内服务能力和综合实力极强的专业第三方检测认证机构。

Waltek services testing group automotive & vehicle product testing & certification service platform is a large comprehensive testing laboratory in East China, which is built by Waltek Testing Group. The company and testing laboratory is located in SND. Suzhou, and is the professional third party certification body of testing services and strong comprehensive strength in the East China region.

依托沃特检验集团十多年的产品测试和认证等服务经验，沃特的检测实验室配备了先进的检测设备，拥有专业性极强的测试技术团队和丰富的检测服务人员。

Relying on more than 10 years of product testing and certification service experience of Waltek Testing Group, the testing laboratory equipped with advanced testing equipment, have strong professional testing technical team and experienced testing service commissioner.

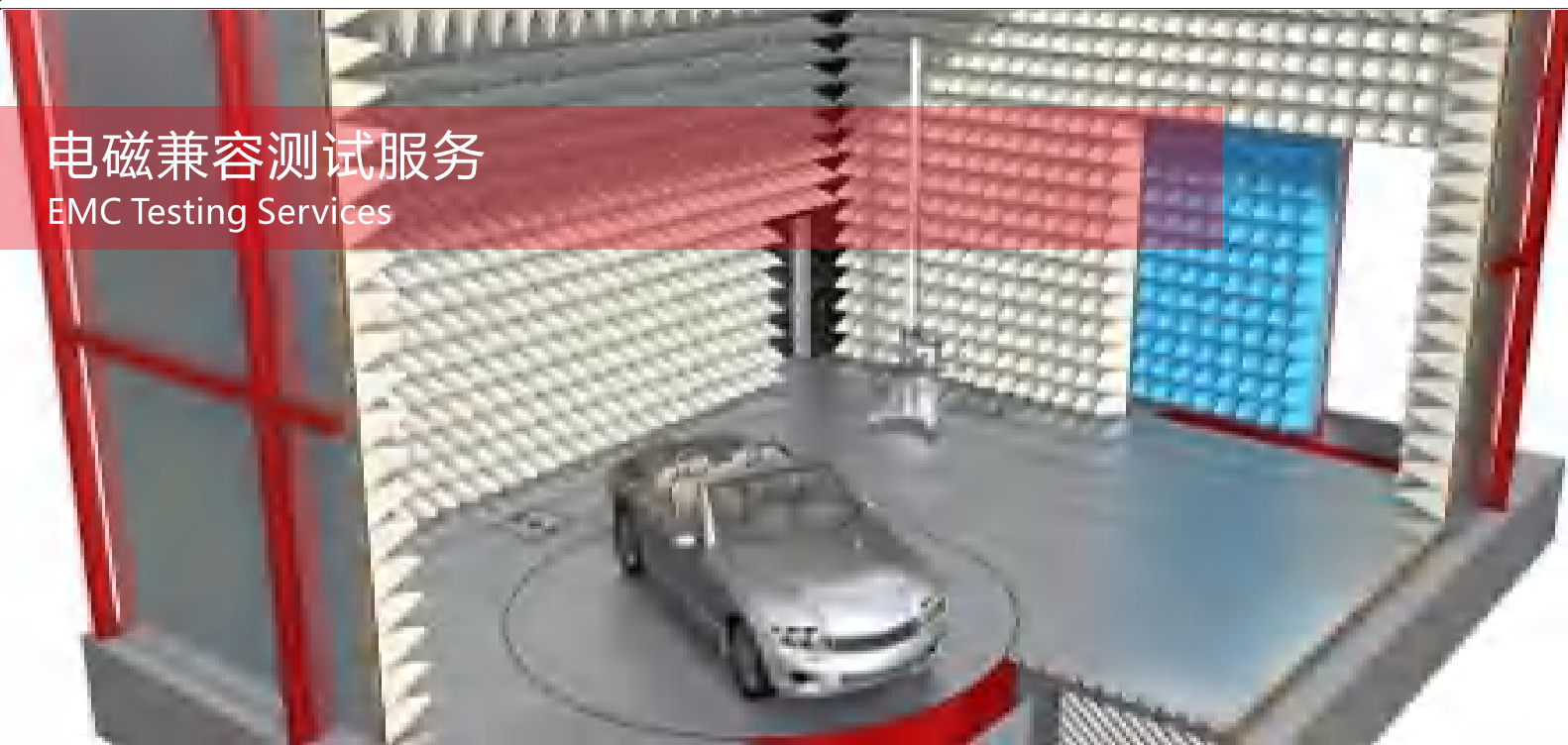
我们检测服务的项目涉及电子产品类EMC 电磁兼容检测、电学性能验证检测、环境模拟及可靠性验证测试、零部件的材料有害物(ELV) 及饰件挥发性有机物(VOC) 检测，以及汽车品的认证（CCC、E-Mark）服务。

Our testing services items involving the electronic products EMC testing, electrical properties testing, environment simulation and reliability test, automotive parts materials ELV and interior parts VOC test, and vehicle products certification (CCC, E-MARK) services.

科技的不断创新在快速地改变着我们的世界，改善着我们的生活。汽车电子化程度已成为衡量现代汽车技术水平的主要标志，是用来开发新车型，改进汽车性能的关键技术措施，是增强汽车工业的核心竞争力重要手段。

Innovation of science and technology are changing the world rapidly, improving our life. Degree of automotive electronics has become the main symbol of modern automobile technology, is used to develop new models, the key technical measures for improving the performance of vehicle, is an important means to enhance the core competitiveness of the automobile industry.





电磁兼容测试服务

EMC Testing Services



沃特EMC电波暗室由TDK公司设计和方案建造，使用TDK 原装高品质铁氧体和新型高性能射频吸波材料，用于测试辐射骚扰、辐射抗扰度等， 完全满足CISPR22、IEC/EN61000-4-3、CISPR25、ISO11452-2等标准对测试场地的要求；测试设备来自德国ROHDE&SCHWARZ、SCHWARZBECK，美国Agilent、Tektronix，瑞士emtest、TESEQ等。

随着现代电子技术在汽车上的大量应用，传统意义机械式汽车被现代电子化汽车所取代各种电子产品已占汽车总成本的30%，甚至更多，而且这种趋势还在不断发展。With the extensive application of modern electronic technology on automotive, the traditional sense of mechanical car was replaced by modern electronic vehicles, a variety of electronic and electrical products have accounted for 30 % of the total cost of the car ,and even more , This trend is still growing .

车用电子产业迅速发展与车辆实际使用的复杂环境，对车用电子电器零部件性能在各种环境下的可靠性提出了更高的要求。The rapid development of complex environment and actual use of vehicles used in electronics industry ,put forward higher requirements on the reliability performance of automotive electronic parts and components in various environments .

电子技术的应用,在解决汽车的经济性、安全性、舒适性等方面起着非常重要的作用。然而,众多电子产品的开发与应用,也给汽车行业带来了一个不容忽视的重要课题:"汽车电磁兼容的研究"。The application of electronic technology , plays a very important role in the economy , safety , comfort and other aspects of the automobile.However, the development and application of a number of electronic products , but also to the automobile industry has brought an important task : "Research on Automotive & Vehicle Electronic EMC" .

沃特检测集团目前在国内建有的专业"汽车电子EMC测试实验室"平台。该平台均采用行业先进的测试场地和仪器设备,确保检测的标准符合性和数据的准确、精确性。Waltek Services Testing Group is currently building a professional automotive electronics EMC test laboratory platform in China main land . In order to ensure compliance with test standards , accurate and precise data, the platform is used in the industry of advanced testing ground and equipment .

ISO 16750-2 瞬态脉冲电性能测试

如何在实验室里仿真出实际供电系统中出现的电压瞬变现象，以便尽早发现车载电子产品在可靠性方面存在的隐患？这就要依赖于实验室测试。

为方便汽车电子行业相关产品的测试，提供统一测试标准，国际标准化组织(ISO)提供了一系列电压瞬变波形测试模版,用以仿真各种情况下的电压波形。对汽车在各种运行环境下的电压瞬变波形进行预测,工程师可以在实验室里,按照模版所定义的电压波形对待测件进行测试，以判断自己的产品能否达到要求。国际标准ISO 16750-2 脉冲波形是目前汽车电子行业的统一测试标准之一。

ISO 16750-2 Transient pulse performance test

How to simulate the voltage transient phenomenon that will appear in the actual power supply system in laboratory, to detect the hidden peril of the reliability of vehicle-mounted electronic products . This will depend on the transient pulse electrical performance test .

To facilitate the automotive electronics industry – in and provide a unified test standards, International Organization for standardization (ISO) provides a series of voltage transient waveform test templates to simulate voltage waveforms in a variety of situations and make predictions that simulate various operating environments. Base on template of voltage waveform , engineer can test with the product to determine whether the product meets the requirements. International standard ISO 16750 – 2 (impulse waveform) is one of the unified testing criteria of current automotive electronics industry .

测试项目 Test Item	主要执行标准 Standard
传导骚扰测试 CE (Conducted Emission)	CISPR 25, GB18655, VW TL965, GMW3097
辐射骚扰测试 RE (Radiation Emission)	CISPR 25, GB18655, VW TL965, GMW3097
瞬态电压发射测试 VTE (Voltage Transient Emissions)	ISO 7637-2, GB/T 21437.2
瞬态传导抗扰度测试 CI (Transient Conducting Immunity)	ISO 7637-2, ISO 7637-3, GB/T 21437.2
静电放电抗扰度测试 ESD (Electrostatic Discharge Immunity)	ISO 10605, GB/T 19951
射频抗扰度测试 RI (Radiation Immunity)	ISO 11452-2, GB/T 17619
大电流注入测试 BCI (Bulk Current Injection)	ISO 11452-4, GB/T 17619
磁场免疫测试系 IMF (Immunity to Magnetic Fields)	ISO 11452-8
车载电子设备测试(Aftermarket Electronic Equipment in Vehicles)	EN 50498
电性能测试 (Electrical Properties Test)	ISO 16750-2, VW 80000, VW 80101 etc

总体来讲,在具体的测试中, ISO16750 – 2 文档所包含的波形可以用于汽车电气电子设备的抗扰度实验,下面是具体应用方向:
(一) 瞬时电压跌落对汽车电子设备造成的影响;
(二) 不同的电压骤降对带有复位功能的汽车电子设备的影响;
(三) 电子设备在汽车启动时和启动后的特性。

ISO 16750-2标准电气负载 (Electrical loads) (电性能及电气安全测试项目)

直流供电电压
过电压
叠加交流电压
供电电压缓降和缓升
供电电压瞬间下降
反向电压
参考接地和供电补偿
单/多线开路
绝缘耐电压
绝缘电阻

In general , in the actual test , voltage waveform contained in ISO 16750-2 document can be used for automotive electrical and electronic equipment immunity test, The following is the specific application direction:
(一) Effect of Instantaneous Voltage Drop on Automotive Electronic Equipment.
(二) Effect of different voltage dips on automotive electronics with reset function.
(三) Characteristics of electronic equipment that at the start and start of the car.

Standard ISO16750-2 Electrical loads: Electrical and electrical safety test items.

Direct current supply voltage
Overvoltage
Superimposed alternating voltage
Slow decrease & increase of supply voltage
Discontinuities in supply voltage
Reversed voltage
Ground reference and supply offset
Open circuit tests
Short circuit protection
Withstand voltage
Insulation resistance



电性能及电气安全测试服务

Electrical loads Testing

由于汽车供电系统输出复杂，大电流马达、电磁阀等各种元件导致供电电压输出经常发生波动，大电压脉冲或跌落现象频繁发生，这对车内电子产品能否稳定工作造成挑战，尤其是与安全相关的电子产品，如安全气囊控制电路，ABS控制电路等，非正常电压波动将造成这些设备的CPU或其它芯片进入重启、锁死或者未知状态，直接影响到安全问题。

EMC问题分析及整改服务

EMC Debug services

作为专业、权威、公正的第三方检测服务机构，沃特检验不仅为客户提供一流的测试、认证、检验及相关服务，同时运用自身在EMC电磁兼容方面的专业性和强大的EMC问题分析和解决能力，专门针对市场需求打造独具特色的高端技术解决方案——集EMC电磁兼容的研发设计、失效分析与整改、技术培训三大特色服务为一体的一站式服务，最大限度地协助客户解决汽车电子及车载电器产品的EMC问题，缩短产品开发与测试周期，有效地降低开发成本，提高产品质量。

除标准 ISO16750-2 外，国外汽车制造商也制定了相应的企业测试标准，其中以德国大众汽车 VW80000 标准，美国通用汽车GMW 3172 标准最具有代表性。国内的汽车制造商也在不断完善相应测试的标准和要求，供应商的产品要能够符合其企业标准和测试要求，则需要按照其标准的要求及条款进行检测。

EMC技术研发设计

我们提供电子电器产品在设计开发阶段的EMC设计咨询服务，主要包含EMC研发设计与风险评估两大服务板块。

1、研发设计：从产品整体架构、PCB设计规范、产品结构、空间与布局、软件与控制技术、材料与封装工艺等基础上，充分融入我们的EMC技术解决方案，减化高成本和高风险设计，优化产品性能和 EMC性能，最大限度地缩短后期调试工作，保证产品一次试产、一次通过的目的。

2、风险评估：针对研发阶段或设计定型初期的产品，根据检测标准和测试项目，分析电路原理、产品结构、生产工艺、走线布局等，有效地评估在EMC与可靠性方面的潜在风险，合理有效地采取整改措施手段，将失败的风险降至最低，达到通过的目的。

In addition to standard ISO 167950-2, the foreign car manufacturers also set a relevant enterprise testing standards. German Volkswagen VW80000 standard and America General motors GMW3172 standard are the most representative. Domestic car manufacturers will also constantly improve the corresponding test standards and requirements. Suppliers shall conduct testing according to its standard requirements and terms that they can enable products to meet their enterprise standards and test requirements.

EMC technology research and development

We provide the EMC design consulting services that electronic and electrical product are in the development phase, including EMC R&D design and risk assessment.

1. EMC R&D design: Base on the overall structure of the product, PCB board design, product structure design, space structure and layout, software and control technology, materials and packaging process. We will provide the EMC technical solution that reduce high cost and high risk design, optimize product performance and EMC performance. That means we can shorten the subsequent debugging work and ensure that the product can produce and pass the test directly.

2. Risk assessment: For the product of the development stage, according to the testing standards and test items, analyze the circuit principle, product structure, production process, routing layout, etc., then we can effectively assess the potential risks in EMC and reliability, take effective measures reasonably and efficiently, reduce the risk of failure to the minimum and achieve the goal.

EMC技术培训

沃特技术团队提供点对点EMC技术服务，我们始终致力于EMC技术研究工作，通过培训、讲座、技术研讨会等形式，推广普及EMC应用技术，将我们的经验、案例、技术成果等进行交流分享，旨在协助客户顺利通过检测和认证，提高对EMC技术的认识，增强技术人员在产品开发中对风险的评估和控制能力，提升产品竞争力。

失效分析与整改

产品在检测认证过程中，我们可针对测试问题提供失效分析与整改调试服务，针对产品特性和测试项，从结构、原理、布局、软件、工艺等，分析排查故障，指出引起测试失效的潜在因素，并且形成正式的失效分析报告。

如需整改服务，我们将在产品现有的结构基础上，通过对电路器件参数的调整、线束与布局的优化、端口处理、屏蔽与接地优化等等一系列的措施手段进行有效地整改调试，以保证测试的通过。测试通过后，将对后期整改方案进行量产可行性评估、成本评估和可靠性评估及生产工艺可行性评估，最终形成正式的整改方案报告。

EMC technical training

Waltek technical teams provide point-to-point EMC technical services, we always engage in technological research works, expand and popularize EMC application technology by training, lecture, technical seminar etc., share and communicate with our experiences, case, technical achievement to help client successfully pass testing and certification, enhance their understanding of EMC technology and improve technician's abilities of risk assessment and control when developing and designing products to strengthen products' competitiveness.

Failure analysis and rectification

When products are in the testing and certification process, based on the problem appearing in the test, we can provide the test problem failure analysis and rectification debugging services. In view of product characteristics and test items, from the structure, principles, layout, software, technology, analysis of troubleshooting, point out the potential factors that causes the test failure, and provide a formal failure analysis report.

If the client need debugging services, on the basis of the existing structure of the product, we will take a series of measures and conduct debug effectively to ensure the adoption of the test. For example, adjust the circuit device parameters, improve the layout and port processing, and optimize the problems of shielding and grounding. After passing the test, the latter part of the rectification program will be mass production feasibility assessment, cost assessment and reliability assessment and production process feasibility assessment, and ultimately the formation of a formal rectification program report.



EN 50498 车载后装电子设备EMC标准

Products Family Std.for Aftermarket Electronic Equipment in Vehicles

【背景】新的欧洲汽车电磁兼容指令2004 / 104 / EC 于 2004年 11月13 日在欧洲官方期刊 OJ (Official Journal of European Union)上发布，取代欧盟关于汽车电磁兼容指令 85 / 54 / EC，并自发布之日起20天后生效，于2006年1月1日开始执行，于2009年1月1日全面执行。

我们的培训包括电路的原理设计、生产工艺的设计、PCB的EMC设计、屏蔽机理、结构设计等,可根据客户的实际需要进行量身定制培训计划和培训内容，真正有效地让受训人员能了解、分析、掌握和设计EMC。

从2011年07月01日起,欧盟开始实施EN50498:2010标准,该标准以 EN协调标准的方式规定了产品测试认证的第一种认证形式(即 CE/DoC),适用范围为 2004/104/EC (汽车EMC指令)附录I 中相关条款定义的产品，如车载充电器、车载冰箱、加热器、车载视听娱乐产品、车用FM发射器等不涉及抗扰相关功能(但在车上可以拆掉或者加装后不影响行车安全)的产品。这类消费汽车电子产品都可以CE认证的方式,通过测试证明产品满足 EN50498:2010标准的要求后销往欧盟各成员国。

该标准评估内容包括以下车载测试项目和相关产品族标准:

- 宽带辐射骚扰
- 窄带辐射骚扰
- 传导瞬态发射测试 (ISO7637-2)
- 传导瞬态抗扰度测试 (ISO 7637-2, ISO 7637-3)

如果是通过特定接口而非直接连接到汽车线束的产品则不包含在此标准内。

当采用本标准时,特定类型的电控系统装置(ESAs)设备有特定产品族标准存在的,其测试条件和工作模式需遵循特定产品族标准。例如:广播接收机(CD 播放器)的干扰测试和抗干扰测试的EUT配置和工作模式需遵循EN 55013和EN 55020。安装在汽车上的信息技术设备(ITE)装置,其在进行干扰测试和抗干扰测试时,EUT配置和工作模式需遵循EN 55022和EN 55024。测试时,EUT配置和工作模式必须记录在报告里

Our trainings contain circuit diagram design, Production Process design, EMC design of PCB, Shielding mechanism, Structure design etc, we can customize training plan and content for clients to make them learn, analyze, grasp and design EMC.

European Union start to carry out EN 50498: 2010 standard on 1st July 2011, which stipulate the first kind of certification method (CE / Doc) for product testing certification under EN coordinating standards, applicable scope is 2004/104/EC (automobile EMC instruction) that relevant clause defined products in appendix, such as car charger, Car refrigerator, heater, car entertainment products.

The standard assessment includes the following in-vehicle test items and related product family standards:

- Broadband Radiated Disturbances (CISPR 25)
- Narrowband Disturbances (CISPR 25)
- Conducted Transient Disturbances (ISO7637-2)
- Conducted Transient Immunity (ISO 7637-2, ISO 7637-3)

These products that connect to specified inlet instead of directly connecting to Automotive wiring harness are not included in this standard.

When adopt this standard, specified type of electric control system device (ESAs) have specified product standards, testing conditions and work mode shall comply with specified product standards. Such as Interference test and anti-jamming test of broadcasting receiver (CD player) and EUT devices shall comply with EN55013 and EN55020. When conduct interference test and anti-jamming test on information technology devices installed in automobile, EUT devices and work mode shall comply with EN55022 and EN55024 and must be recorded in report during testing.

E-Mark 及 CCC 认证服务

E-Mark & CCC Certificate Services

强制性产品认证制度，是各国政府为了保护广大消费者人身和动植物生命安全，保护环境、保护国家安全，依照法律法规实施的一种产品合格评定制度，它要求产品必须符合国家标准和技术法规。

欧洲及其他ECE成员国对于机动车整车及涉及安全的零部件和系统有安全认证的强制要求，具体体现为E标志认证。发证机构是欧盟成员国政府交通部门。

欧洲E-Mark认证

2004年11月13日，根据欧盟新指令2004/104/EC，凡是进入欧盟市场进行销售的汽车电子电器类产品，必须通过E-Mark相关测试认证，标贴E标志，欧盟各国海关才会予以放行，准许进入当地市场。

欧洲E-Mark认证适用于如下产品

- A. 整车:两轮或三轮以上的(电)机动车辆,如客车、货车、摩托车、巴士及道路外车辆;
- B. 车辆零部件:车灯与灯泡、各类视镜、轮胎、轮圈、刹车、喇叭、防盗设备、安全带、汽车玻璃及排气管等;
- C. 车辆附属配件:安全帽、儿童安全座椅、车内附属电气产品等。

沃特可依照各ECE法令及EC指令要求提供以下服务

- A. 产品分析 & 咨询服务: 指导客户按相关法令要求进行认证准备;
- B. 测试服务: 帮助客户通过相关指令要求的各项测试

中国国家认证认可监督管理委员会要求自2006年12月1日起在国内销售的进出口汽车和国产汽车均必须符合CCC认证要求并通过认证,未通过认证的产品不得生产和销售。

Europe and other ECE member countries have mandatory safety requirements for whole motor vehicle, components and system involved in safety. Concretely expressed as E-Mark. License issuing agency is traffic department of EU member states.

Europe E-Mark Certification

Nov13 2004, according to the new EU directive 2004/104/EC, all kinds of automotive electronics products entering the EU market must be certified by E-Mark, the EU customs will be released, allowing access to the local market.

European E-Mark approval is applicable for below produces:

- A. whole vehicle: two-wheeled or upon three-wheeled motorized vehicle, such as coach, trucks, motorbike, bus etc.
- B. Auto parts: car lamp, Lamp bulb, all kind of sight glass, tyre, rim, brake, trumpet, burglary-resisting installation, safety belt, auto glasses and exhaust pipe etc.
- C. Auto accessories: helmet, child safety seat, accessories of electrical products in-vehicle etc.

Waltek can provide below services complying with every CE acts and EC instructions

- A. Product analysis & consultation service: guide client to prepare for certification in accordance with relevant acts
- B. Testing service: help client pass every testing items in accordance with relevant instructions.

CNAS declared from 1st Dec, 2006 that all import & export automobiles sold in domestic and domestic automobiles must meet CCC certification requirements and get certification, any uncertified products are not allowed to be manufactured and sold.



新能源汽车测试服务方案(电动汽车) New Energy Vehicle Field (Electric Vehicle)

新能源汽车是指采用非常规的车用燃料作为动力来源（或使用常规的车用燃料、采用新型车载动力装置），综合车辆的动力控制和驱动方面的先进技术，形成的技术原理先进、具有新技术、新结构的汽车。新能源汽车包括纯电动汽车、增程式电动汽车、混合动力汽车、燃料电池电动汽车、氢发动机汽车、其他新能源汽车等。

作为新能源汽车的代表，以特斯拉（Tesla）为行业先驱的纯电动汽车行业领域正在进行着大力地布局和发展，国家也在积极推动电动汽车的产业化和行业布局。

纯电动汽车（Blade Electric Vehicles, BEV）是一种采用单一蓄电池作为储能动力源的汽车，它利用蓄电池作为储能动力源，通过电池向电动机提供电能，驱动电动机运转，从而推动汽车行驶。

中国强制性CCC认证

自2006年12月01日起，凡列入CCC目录内的机动车零部件产品，未获得强制性产品认证证书和为加施中国强制性认证标志的，不得出厂、销售、进口或在其他经营活动中使用。

根据中国《机动车辆类强制性认证实施规则》文件，汽车零部件产品CCC认证产品范围如下：

- 1104 汽车安全带产品
- 1105 摩托车乘员头盔
- 1106 机动车喇叭
- 1107 机动车回复反射器
- 1108 机动车制动软管总成产品
- 1109 前照灯、前雾灯、后雾灯、前位灯、后位灯、示廓灯、制动灯、倒车灯、转向信号灯、驻车灯、侧标志灯、后牌照板照明装置、昼间行驶灯（汽车外部照明及光信号装置产品）
- 1110 汽车后视镜
- 1111 汽车内饰件
- 1112 汽车门锁及车门保持件
- 1113 汽车燃油箱
- 1114 汽车座椅及头枕

As a representative of the new energy vehicles, Tesla as the industry pioneer of the pure electric vehicle industry is being vigorously layout and development, the state is also actively promoting the industrialization of electric vehicles and industry layout.

Blade Electric Vehicles, BE is a vehicle that uses a single battery as an energy storage power source. It utilizes batteries as energy storage power sources to provide power to the motor through the battery to drive the motor to drive the vehicle.

China CCC Certification

Since December 1, 2006, all of the motor automotive products and vehicle parts in the CCC directory are not obtained the CCC certification mark, shall not be manufactured, sold, imported or used in other business activities.

According to Chinese《Implementation Rules for Compulsory Certification of Motor Vehicles》documents, CCC certification scopes for Auto parts as below:

- 1104 Car seat belts products
- 1105 Motorcycle Helmet
- 1106 Motor vehicle horn
- 1107 Motor vehicle retroreflector
- 1108 Motor brake hose assembly products
- 1109 Front lights, front fog lights, rear fog lights, front lights, rear lights, show lights, brake lights, reversing lights, turn signal lights, parking lights, side lights, rear license plate lights, daytime driving lights (Car outside lighting and optical signal device products)
- 1110 Car rearview mirror
- 1111 Car interior decoration
- 1112 Car door locks and door holders
- 1113 Car fuel tank
- 1114 Car seats and head restraints

新能源汽车测试服务方案(电动汽车) New Energy Vehicle Field (Electric Vehicle)

由国家工信部发布的《新能源汽车生产企业及产品准入管理规定》自2017年7月1日起施行，规定通过审查的新能源汽车生产企业及产品，由工信部通过《道路机动车辆生产企业及产品公告》发布。根据准入新规，申请准入的新能源汽车产品，应符合《新能源汽车产品专项检验项目及依据标准》。

电动汽车的关键零部件包括动力电池、驱动电机和电控系统这三个主要部分，简称“三大电”。

【动力电池】动力电池系统有电池电芯和电池管理系统（Battery Management System, BMS）组成，主要为纯电动汽车、混合动力汽车及燃料电池汽车等提供动力支持，是电动汽车的绿色心脏。

【驱动电机】驱动电机是电动汽车动力系统的核心关键部件，电动汽车用电机主要包括直流电机、交流异步电机、交流永磁电机和开关磁阻电机四类。

【电控系统】电控系统是电动汽车的大脑，总体包括能量管理系统、再生制动控制系统、电机驱动控制系统、电动助力转向控制系统以及动力总成控制系统等。电控系统涉及到各子系统功能的协调，对电动汽车安全、稳定的运行至关重要。

【充电桩】充电桩固定在地面，利用专用充电接口，采用传导方式，为具有车载充电机的电动汽车提供交流电能。充电桩可分为交流充电桩和直流充电桩两种。交流充电桩，安装在电动汽车外、与交流电网连接，为电动汽车车载充电机提供交流电源的供电装置。直流充电桩，固定安装在电动汽车外、与交流电网连接，为电动汽车动力电池提供小功率直流电源的供电装置。

The key components of electric vehicles, including power batteries, drive motor and electronic control system, these three main parts.

【Power battery】Power battery system consists of a battery cell and Battery Management System (BMS). Mainly for pure electric vehicles, hybrid cars and fuel cell vehicles to provide power support, is the car's green heart.

【Drive motor】Drive motor is the core key component of the electric vehicle power system. The electric motor is mainly composed of DC motor, AC induction motor, AC permanent magnet motor and switched reluctance motor.

【Electronic control system】Electronic control system is the brain of electric vehicles, including energy management system, regenerative brake control system, motor drive control system, electric power steering control system and powertrain control system. The electronic control system involves the coordination of the functions of each subsystem, which is very important for the safe and stable operation of electric vehicles.

【Charging pile】Charging pile fixed on the ground, using special charging interface, using conduction, for the car charger with electric vehicles to provide AC power. Charging pile can be divided into two kinds of AC charging pile and DC charging pile. AC charging pile, installed in the electric car, and the AC power grid connection for the electric car charger to provide AC power supply device. DC charging pile, fixed installed in the electric car, and AC power grid connection for the electric vehicle power battery to provide low-power DC power supply device.





车联网之无线通信网络技术服务

Wireless Communication Network Services for IoV

车联网（Internet of Vehicles）引申自物联网，通过GPS、RFID、传感器、摄像头图像处理等装置，车辆可以完成自身环境和状态信息的采集；通过互联网技术，所有的车辆可以将自身的各种信息传输汇聚到中央处理器；通过计算机技术，这些大量车辆的信息可以被分析和处理，从而计算出不同车辆的最佳路线、及时汇报路况和安排信号灯周期。



车联网之无线通信网络技术服务

Wireless Communication Network Services for IoV

由国家工信部发布的《新能源汽车生产企业及产品准入管理规定》自2017年7月1日起施行，规定通过审查的新能源汽车生产企业及产品，由工信部通过《道路机动车辆生产企业及产品公告》发布。根据准入新规，申请准入的新能源汽车产品，应符合《新能源汽车产品专项检验项目及依据标准》。

无论是传统的汽油/柴油汽车，还是新能源汽车，为了确保整车及各零部件的使用安全性和寿命耐久性，相关的各类检测和验证都是必须的。

Waltek 沃特测试运用自身地区区位和网络化服务优势，通过检测平台的不断完善和行业资源的快速整合，以服务新能源汽车产业的发展为方向和目标，最大限度地协助汽车整车企业零部件厂商快速提升零部件性能，满足客户对产品品质和安全的高要求，服务领域涵盖汽车及零部件的环境可靠性测试、电学性能测试、功能验证测试、EMC测试、材料测试、绿色环保测试及化学法规符合性等，出具专业资质的检测报告，提供针对法规标准的专业技术培训和讲座，参与检测类新方法新标准的研究和探讨，为新能源汽车行业的发展提供综合性的解决和服务方案。

Whether it is a traditional gasoline/diesel car, or new energy vehicles, in order to ensure the use of vehicle and parts of the safety and durability of life, all types of relevant testing and verification are necessary.

Waltek Service Co., Ltd. using its own favorable location and good network services, through the continuous improvement of the detection platform and the rapid integration of industry resources. To serve the development of new energy automotive industry as the direction and objectives, to maximize help the vehicle manufacturers and parts manufacturers to quickly upgrade. To meet customer high demand of product quality and safety. Our services scope is cover Cars and spare parts performance testing, environmental performance testing, electrical performance testing, functional verification testing, EMC testing, material testing, green environmental testing and chemical regulatory compliance test, issue professional qualification test report, to provide technical training and seminars on regulations and standards, new methods to the detection of new standards of research and discussion, participate in researching and discussing the new testing methods of new standards. For the development of new energy automotive industry to provide a comprehensive solution and service programs.

新能源汽车产品专项检验中对于动力电池的检验项目及依据标准/New energy vehicle product typical testing or power battery test items and evaluation reference.

检验项目 Test items	标准名称 Standard Name	标准号 Standard
储能装置 (单体、模块) Energy storage device (unit, module)	电动汽车用锌空气电池 Zinc air battery for electric vehicles	GB/T 18333.2-2015
	车用超级电容器 Car super capacitor	QC/T 741-2014
	电动汽车用动力电池循环寿命要求及试验方法 Requirements and Test Method for Cycle Life of Power Batteries for Electric Vehicles	GB/T 31484-2015
	电动汽车用动力电池安全要求及试验方法 Safety requirements and test methods for electric vehicle permanent power battery	GB/T 31485-2015
储能装置 (电池包) Energy storage device (battery pack)	电动汽车用锂离子动力电池包和系统 Lithium ion powered battery pack and system for electric vehicle	GB/T 31467.1-2015
	第1部分：高功率应用测试规程 Part 1: High power application test procedures	GB/T 31467.2-2015
	第2部分：高能量应用测试规程 Part 2: High energy application test procedures	GB/T 31467.3-2015
	第3部分：安全性要求与测试方法 Part 3: Safety requirements and test methods	

动力锂离子电池标准（部分）/Power lithium-ion battery standard (part)

检测标准 Test Standard	适用范围 Scope
QC/T 7423	电动汽车用锂离子电池 Lithium ion batteries for electric vehicles
GB/Z 18333.1	电动道路车辆用锂离子电池 Lithium ion batteries for electric road vehicles
GB 8897.4	原电池 第4部分：锂电池的安全要求 Batteries - Part 4 (Original): Safety requirements for lithium batteries
JBT 11137-2011	锂离子电池总成通用要求 General requirements for Lithium ion battery assembly
BT 11142-2011	锂离子电池充电设备通用要求 General requirements for Lithium-ion battery charging equipment
UI2580	电动汽车用电池 Electric vehicle batteries
IEC 62660	电气公路用车的驱动用辅助锂电池 Auxiliary Lithium Battery Driven by Electric Road Car

电池产品测试

范围：可充电电池、动力电池、储能电池、原电池等。
电池检测主要项目

- 电气测试：额定容量、多倍率放电、荷电保持能力、循环寿命、内阻、过压充电、过流充电、欠压放电、恒功率放电、静电放电、方向充电等。
- 安全性能测试：高温/常温外部短路、过充电、强制放电、强制内部短路、防爆能力、开闭阀压力等。
- 机械测试：振动、机械冲击、跌落、挤压、重物撞击、针刺、250N静压力、抗接触压力等。
- 环境可靠性测试：高空低压模拟、温度循环、热滥用、温度存储、盐雾、燃烧喷射、洗涤等。

Main test items:

- Electrical test: rated capacity, multi-rate discharge, charge retention, cycle life, internal impedance, overvoltage charging, overcurrent charging, undervoltage discharge, constant power discharge, electrostatic discharge, directional charging ect.
- Safety performance test: High temperature / room temperature external short circuit, over-charging, forced discharge, forced internal short circuit, Explosion-proof capacity, opening and closing valve pressure ect.
- Mechanical test: vibration, impact, drop, squeeze, Weight impact, acupuncture, 250N static pressure, anti-contact pressure ect.
- Environmental reliability test: high-altitude low-voltage simulation, temperature cycling, hot abuse temperature storage, salt spray, combustion spray, washing and so on.

认证项目	检测标准	适用产品
CB / EAC / CE	IEC/EN 62133	二次电池、电芯 Secondary batteries, cell
Transportation	UN 38.3	锂离子电池 Lithium Ion Battery
CQC	GB 31241	锂离子电池 Lithium Ion Battery
CTIA	IEEE 1725 / 1625	通信设备电池 Communication equipment battery
KC	K 62133	电池、电芯 Batteries, cell
PSE	JIS C 8712 / 8714	锂离子电池 Lithium Ion Battery
UL	UL 1642	锂离子电池 Lithium Ion Battery

电动机产品测试

电动汽车电机的主要测试项目（GB/T 18488.2-2015）：

- 电机功率测试需求：模拟负载、冲击负载、起动性能、四象限运行、再生能量回馈效率。
- 可靠性试验：温升试验、最高转速、超速试验、转矩给定动态响应时间测试、耐久性试验。
- 电机参数：电机转矩特性及效率测试、堵转转矩和堵转电流试验。

联网是以车内网、车际网和车载移动互联网为基础,按照约定的通信协议和数据交互标准,在车与车、路、行人及互联网等之间,进行无线通讯和信息交换,以实现智能化交通管理、智能动态信息服务和车辆智能化控制的一体化网络。

Dynamic motor product testing

Electric car motor main test items (GB/T 18488.2-2015):

- Motor power test requirements: simulated load, impact load, starting performance, four quadrant operation, regenerative energy feedback efficiency.
- Reliability test: temperature rise test, the maximum speed, speeding test, torque given dynamic response time test, durability test.
- Motor parameters: motor torque characteristics and efficiency test, stall torque and stall current test.

The network is based on the car network, the inter-network and the mobile Internet as the basis, in accordance with the agreed communication protocol and data exchange standards, in the car and car, road, pedestrian and Internet, etc., between the wireless communication and information exchange to achieve Intelligent traffic management, intelligent dynamic information services and vehicle intelligent control of the integrated network.





汽车安全检测
Vehicle Safety Testing



汽车安全检测
Vehicle Safety Testing



车载信息终端：采集CAN网络数据及GPS数据等信息，经处理打包，通过无线通信网络传送给后台信息服务平台。

无线通信网络：应用4G/5G、Wi-Fi等现代网络通信的技术与手段，实现车载终端与后台服务平台的信息传输。

后台信息服务平台：借助互联网技术整合第三方内容和数据并对海量信息进行融合处理，以实现车辆检测、道路救援、实时交通、网上预约等服务与应用。

WALTEK 沃特无线通讯产品测试平台可就手机、无线网络产品的全球市场准入提供行业整体解决方案，涵盖国内市场入网、型号核准、欧美市场等法规强制性认证检测要求，以及 GCF、PTCRB、CTIA、Wi-Fi、Bluetooth、CCC 和 NFC 等技术联盟要求。

沃特无线产品检测实验室为满足汽车企业对于车联网相关设备的测试需求，引进基于 R&S 和 Agilent 设备基础上集成的自动化测试系统，搭载高低温试验箱和程控电源，可实现全自动化的CE(RED指令)认证及FCC认证测试，以及 2.4 G(Bluetooth和Wi-Fi)产品、5G Wi-Fi(含DFS部分)的全自动化测试

Car information terminal: collecting CAN network data and GPS data and other information, processed and packaged,through the wireless communication network to the background information service platform .

Wireless communication network: the application of 4G / 5G , Wi - Fi and other modern network communication technology and means to achieve vehicle terminal and back - office platform for information transmission.

Background information service platform: through the Internet technology to integrate third - party content and data and mass information fusion to achieve vehicle detection, road rescue , real - time traffic , online booking and other services and applications .

WALTEK Wireless communication product testing platform for mobile phones, wireless network products to provide global market access to the overall industry solutions , covering the domestic market network, model approval, European and American markets and other mandatory mandatory testing requirements, and GCF, PTCRB , CTIA, Wi- Fi , Bluetooth, CCC and NFC .

WALTEK Wireless product testing laboratory to meet the car companies for the car network - related equipment testing needs , based on R&S and Agilent equipment based on the integration of automated test system, equipped with high and low temperature test chamber and program-controlled power supply , can achieve fully automated CE(RED Directive)Certification and FCC certification testing,as well as 2.4G(Bluetooth and Wi-Fi)products , 5G Wi - Fi (including DFS part) of the fully automated test.

产品范围	Product Scopes
2G~5G移动终端设备	2G to 5G mobile teminal devices
4G LTE数据卡，4G LTE模块（通常大部分4G LTE产品都会同时带有2G和3G、Wi-Fi、蓝牙等通讯技术，同时带有GPS功能）	4G LTE data card, 4G LTE module (Generally, most 4G products have communication technologies 2G 3G and Wi-Fi, Bluetooth, as well as GPS function.)
超宽带产品	Ultra broadband products
ZigBee, Z-Wave产品	ZigBee, Z-Wave products
宽带电力线网络系统	Broadband powerline network system
Wi-Fi产品（IEEE 802.11 a/b/g/n/ac无线局域网）	Wi-Fi products (IEEE 802.11 a/b/g/n/ac WLAN)
蓝牙产品	Bluetooth (BT) products
无线射频识别（RFID）系统	Radio Frequency Identification (RFID) systems
近场无线通信（NFC）产品	Near Field Communication (NFC) products
短距离装置	Short-range wireless devices

近年来，我国汽车保有量急剧增加，汽车安全运行的问题也越来越突出，汽车安全检测也越来越被汽车制造商和用户的重视。加强汽车在研发阶段的安全性验证，重视汽车的安全技术检测，成为整个社会，特别是汽车检测单位不断研究解决的重要课题，也为我国机动车安全技术检测的发展提供一个良好的契机。

沃特汽车检测服务平台联合实验室配备了如从国外进口的加速度模拟碰撞台车系统等多套先进的仪器设备，可针对汽车座椅、汽车安全带、汽车安全带固定点、安全气囊、儿童乘员用约束系统等产品进行安全检测，可根据国内外汽车检测标准及国内外汽车及零部件企业的要求提供相关的验证、测试和咨询等服务。

In recent years , China's car ownership increased dramatically , the problem of car safety running more and more prominent , car safety testing is also more and more attention by car manufacturers and users. It is an important task to continuously study and solve the whole society, especially the automobile testing unit , and provide a good opportunity for the development of China's motor vehicle safety technology inspection.

WALTEK the automotive testing service platform is equipped with advanced equipment such as acceleration and simulation of the impact of trolley system imported from abroad . It can be used for car seats, car seat belts, car seat belts,airbags,Restraint systems and other products for safety monitoring , according to domestic and foreign automotive testing standards and domestic and foreign automotivend parts enterprises to provide the relevant verification , testing and consulting services.





环境及可靠性测试服务

Environment & Reliability Testing

环境可靠性是指产品在规定条件下、规定时间内完成规定的功能的能力。产品在设计、应用过程中，不断经受自身及外界气候环境及机械环境的影响，而仍需要能够正常工作，这就需要以试验设备对其进行验证。环境可靠性试验可以在产品的研发阶段、试产阶段和量产抽检阶段对产品的可靠性进行验证，有利于企业节省研发和生产成本、提高产品质量。



环境及可靠性测试服务

Environment & Reliability Testing

服务领域 / Service scope

- ✓儿童乘员用约束系统 / Constraint system for children 's occupants
- ✓汽车座椅 / car seat
- ✓安全气囊 / Airbag
- ✓汽车安全带 / Car seat belt fixing
- ✓汽车安全带固定点 / Car seat belt fixing point

汽车座椅/Car seat

检测项目/Test items
(GB 15083、GB 11550、ECE R17、ECE R25等系列标准)
头枕位置 / Headrest position
头枕吸能 / Headrest energy absorption
行李箱冲击试验 / Impact test of suitcase
座椅动态试验 / Seat dynamic test
头枕性能试验 / Headrest performance test
座椅靠背及其调节装置强度试验 / Seat backrest and its adjustment device strength test

儿童乘员用约束系统/Constraint system for children 's occupants

结构检查/Construction check	卷收器卷收力/Retractor volume
ISOFIX约束系统规范 ISOFIX Constraint System Specification	卷收器耐久试验/Retractor durability test
标识检查/Label check	卷收器锁止试验/Retractor lock test
安装/使用说明书检查 Installation / instruction manual inspection	卷收器粉尘试验/Retractor dust test
吸能测试/Energy absorption test	织带强度试验—标准 Ribbon strength test— Standard state
带扣耐久/Buckle durable	织带强度试验—光照 Ribbon strength test— light
ISOFIX连接装置耐久试验 link device durability test	织带强度试验—低温 Ribbon strength test ---- low temperature
抗腐蚀试验/Anti-corrosion test	织带强度试验—高温 Ribbon strength test—high temperature
翻转试验/Rollover test	织带强度试验—浸水 Ribbon strength test—soaking
动态试验/Dynamic test	织带强度试验—磨擦 Ribbon strength test—abrasion
带扣开启力/Buckle opening force	锁止装置微滑移试验 locking device micro – slip test
带扣强度试验/Buckle strength test	调节装置耐久性 Adjust the device durability
带扣装置拉力试验Buckle device tensile test	温度试验/temperature test
调节装置微滑移试验/Adjustment device micro – slip test	

□□□□□/Safety belt fixed station

检测项目Test item(GB 14167、ECE R14等系列标准)
环境可靠性试验是通过使各种环境试验设备模拟气候条件、机械条件、辐射条件及综合应力条件，观察产品的储存、使用和性能变化，来验证产品是否达到研发、设计和制造的预期质量目标，从而对产品的整体进行评估，以确定产品的可靠性水平。
The environment reliability test utilizes all kinds of environment tests to simulate the climate conditions, mechanical conditions , radiation conditions and various situations under the comprehensive stresses, accelerate the conditions of the reaction products in the operational environment and verify if it has achieved the expected quality goal of R&D, design and manufacturing , thus the reliability lifetime of the product can be determined by means of the evaluation of the whole product .

服务领域/Service area

电子电器、车辆及零部件、轨道交通、航天、船舶等应用领域的元器件、部件及整机产品。
Electronic appliance , motor vehicles and parts , rail transportation , aerospace , ships , components and machine products that belong to this area.

通常环境可靠性试验分为以下几类：力学环境试验、气候环境试验和综合环境试验。
Normally environment reliability test can be classified as:mechanical environment test,climatic environment test and integrated environment test.

力学环境试验主要包括机械振动、机械冲击、跌落、碰撞、稳态加速度试验等。
Mechanical environment test mainly includes mechanical vibration , impact , drop, collision , steady state acceleration test etc.

气候环境试验主要包括温度试验、温湿度试验、气压试验、水试验、盐雾试验、砂尘试验、气体腐蚀试验等。
Climatic environment test mainly includes temperature test, temperature and humidity test, air pressure test, water test, salt spray test, dust test, gas corrosion test etc.

综合环境试验主要包括温度气压试验、温度振动综合试验、温度湿度振动综合试验、温度气压湿度综合试验等。
Integrated environment test mainly includes temperature pressure test,temperature fluctuation integrated test , temperature , air pressure and humidity integrated test.

为更好地匹配和服务各合作厂商，满足不断提升的产品品质和质量需求，沃特环境及可靠性检测服务平台搭建专业的标准化测试场地设施,引进行业高端的测试仪器和设备，整合行业优质平台资源，通过完善的试验方案设计,柔性灵活的试验应用技术，可以满足不同零部件产品客户的各种个性化试验需求。
To better match and provide service to our partners, and satisfy the continuously raisingproduct quality, Waltek Environment and reliability test service can offer you a professional standardizing testing site, high-end testing equipment and excellent platform resources .Through our perfect testing scheme and flexible test application technique , Waltek can meet every client's individual test requirements .

速度模拟碰撞台车系统 / Speed simulation collision trolley system

加速度模拟碰撞台车系统全套从美国进口，主要功能是用模拟汽车真实碰撞的环境。设备主要由试验台面、动力系统和制动系统构成。
Acceleration Simulated Collision Trolley System is fully imported from the United States , The main function is to simulate the real impact of the car environment. The equipment is mainly composed of test table , power system and brake system .

该设备最大推力为 2 MN，最大配载为 3000 Kg，最大速度为90 Km/h，最大加速度大于100 g，能够模拟多种碰撞工况，具有准备时间端，成本低、精度高等优点，被广泛运用在汽车安全气囊、安全带、座椅等汽车零部件的研发和认证测试中。

□□□□/Airbags

正面气囊匹配试验 Front airbag matching test	粉尘试验 dust test
侧面气囊匹配试验 Side airbag matching test	温度振动循环试验 temperature vibration cycle test
静态点爆 Static point explosion	盐雾试验 salt spray test
环境及振动试验 Environment and vibration test	日照模拟试验 sunshine simulation test
坠落试验 Falling test	温度冲击试验 temperature impact test
机械振动试验 Mechanical vibration test	

汽车安全带/Car seat belts

织带或卷收器检验 Ribbon or retractor inspection	耐久性 Durability
带扣检验 Buckle inspection	腐蚀 corrosion
带扣载荷试验 Buckle loading test	粉尘 dust
调节件（卷收器）载荷试验 Regulating part(Retractosar) load test	织带宽度/织带载荷 Belt width, belt load
连接件（卷收器）载荷试验 Connector (Retractor) load test	室内处理 Indoor handling
带扣低温试验 Buckle low-temperature test	光照处理 Solar radiation simulation
硬件的低温冲击试验 Hardware low-temperature impact test	低温处理 ow-temperature handling
调节方便性 Regulating convenience	高温处理 High-temperature test
动态实验前织带或卷收器处理 elt or retractor conducting before dynamic test	浸水处理 Soaking in water
带扣耐久性 Buckle durability	微滑移试验 Microslip test
硬件的腐蚀性卷收器的处理 Hardware corrosive retractor handling	磨损试验 Abrasion test
锁止极限值 Lock-up limit value	动态试验 Dynamic test
卷收力 Retracting force	带扣开肩试验 Buckle machining test

The maximum thrust of the device is 2MN, the maximum load is 3000kg , the maximum speed is 90km/h, the maximum acceleration is greater than 100g,able to simulate a variety of collision conditions, with the advantages of preparation time is short, low cost, high precision ect., is widely used in automotive airbags , seat belts , seats and other auto parts R & D and certification testing.





化学类测试服务

Chemical Testing Services

ELV（End-of-Life Vehicle）即报废车辆指令。ELV是欧盟委员会和欧洲议会为保护环境，减少车辆报废产生的废弃物制定的报废车辆回收指令。ELV 指令包含2个内容，一个是2003年7月以后生产的汽车禁用铅、镉、汞和六价铬四种有害物质，第二个是提高报废汽车回收利用率，回收费用成本的全部或大部分由制造厂承担。



汽车内饰件 VOC 检测

VOC Testing Of Automotive Interior Parts

汽车在应用过程中，除汽车尾气的排放和噪声会对周围环境产生污染外，车体的材料及内外饰件在应用过程中向空气释放的有害物质也是不容忽视的重要污染源。随着汽车使用数量的不断增多和人们环境保护意识的不断提升，车体材料及汽车饰件的有害物质，特别是挥发性有机物（VOC）释放所造成的环境污染越来越受到关注。

项目类别 / Project Category	检测项目及标准 / Test Items and Standards
温湿度老化试验 Temperature & Humidity Aging Test	高低温交变湿热 / 快速温度变化 / 高加速寿命 / 冷热冲击 / 高低温低气压 H/L temperature & humidity / Rapid temperature changes / HALT & HASS / Thermal shock / H/L temperature altitude test【 GB/T 2423 . 1/2/3/4/22 , ISO 16750 – 4 】
物理力学性能测试 Physical Mechanics Performance Test	振动试验 / 三综合试验(温度、湿度、振动) / 拉伸、冲击、跌落 / 模拟汽车运输振动 Vibration test / Three combined test (temperature & humidity & vibration) / Tensile, Impact, Drop / Simulate transport vibration test【 GB/T 2423.8/10/56, ASTM D4169, ISTA 1A 】
耐候老化试验 Weathering and Aging Test	氙弧灯老化 / 碳弧灯老化 / 模拟紫外光老化 / 臭氧老化 / 太阳辐射试验 Xenon – light ageing / Carbon – light ageing / Simulated UV – ageing / Ozone aging / Solar radiation test【 ASTM G –23 /53 /152 /154 D–529/750 / 822 /2263 , JIS A 1415 D0205 K5400 H86885 , ISO 4892 – 3/4 】
户外模拟及防护试验 Outdoor Simulation and Protection Test	酸性盐雾 / 铜离子加速盐雾 / 温度循环盐雾 / 混合气体腐蚀 / 外壳防护等级（IP代码） / 沙尘试验 / 噪音测试 / 水压力测试 Acetic acid – salt spray / Copper – ion accelerated acid–salt spray (CASS) / Constant humidity salt–spray / Mixed gas / Degrees of protection provided by enclosures (IP code) / Sand and dust test / Noise test / Water pressure test【 DIN 40050 , ISO 20653 , JIS D0207 , GB/T 28046 .4 , IEC 60529 , GB/T 4208 】

中国ELV基本政策：《汽车产品回收利用技术政策》
国家发改委、科技部和环保总局联合制定，于2006年2月6日发布，2008自行申报，2010强制执行
主要方式：3R + 有毒物质
涉及范围：设计 + 生产 + 维修 + 报废拆解 + 再利用

ELV相关指令/ELV related directives

主指令:2000年,2000/53/EC(提出对回收利用率(RRR)和有毒物质的要求)
Main directive: In 2000, 2000/53/EC has present the requirements of RRR and toxic substance.
RRR指令:2005年,2005/64/EC(RRR Reuse/Recycle/Recovery,简称3R)
RRR directive: In 2005, 2005/64/EC（RRR Reuse/Recycle/Recovery, or 3R）
豁免指令:2005年:2005/673/EC
Exemption directive: In 2005, 2005/673/EC

China ELV fundamental policy “ Automobile product recycling technology policy”
National Development and Reform Commission, Ministry of Science and Technology and the State Environmental Protection Administration jointly developed in Feb.6.2006 release, 2008 self declaration, 2010 enforcement
The main way: 3R + toxic substances
Covering the scope of: design + production + maintenance + scrap dismantling + reuse

中国禁限用物质相关标准

限值标准 Threshold standard	GB/T 30512-2014 汽车禁用物质要求 Automobile prohibited substances requirement
检测标准 Test standard	QC/T 941–2013 汽车材料（汞） Automobile material (Hg)
	QC/T 942–2013 汽车材料（六价铬） Automobile material (Cr)
	QC/T 943–2013 汽车材料（铅、镉） Automobile material (Pb, Cd)
	QC/T 944–2013 汽车材料（多溴联苯醚和多溴二苯醚） Automobile material (PBBs)
其他关注 Other substance of very high concern	石棉（Asbestos）、多环芳烃（PAHs）

中国 3R 回收相关标准

基础标准 Specifications	GB/T 26989–2011 汽车回收利用 术语 GB/T 26989–2011 Automobile recycling term
	GB/T 26988–2011 汽车部件可回收利用性标识 GB/T 26988–2011 Automobile components recycling symbol
	GB/T 33460–2016 报废汽车拆解手册指导编制规范 GB/T 33460–2016 Waste automobiles dissemble manual drawing
计算标准 Calculation standard	GB/T 19515–2015 道路车辆可再利用性和可回收利用性计算方法 GB/T 19515–2015 Vehicle recyclability and calculation of recyclability.

汽车 VOC（Volatile Organic Compounds），即车内空气及车内饰件材料的挥发性有机物。汽车饰件材料散发的挥发性有机物对人的危害很大，当车中的 VOC 浓度达到一定浓度时，短时间内人们会感到头痛、恶心等。

汽车工业的蓬勃发展也带来了新的环境和健康问题，车内空气质量问题已经成为消费者投诉最为集中的问题之一。为进一步加强乘用车内空气质量控制，应对日趋严峻的车内空气质量问题，2016年1月22日，国家环保部公布《乘用车内空气质量评价指南（征求意见稿）》，新标准替代 GB/T 27630–2011《乘用车内空气质量评价指南》，由推荐性标准变为强制性标准。

Automobile VOC, also means air inside automobile or Volatile Organic Compounds of hanging materials. The hanging materials inside will emit VOC which are harmful to human body. When the VOC concentration up to certain level, people will feel headache and sick in a short time.

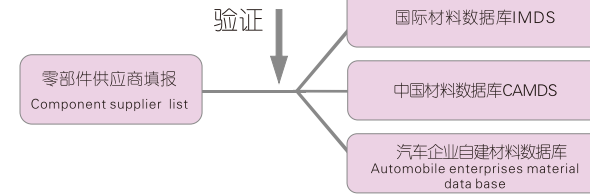
The prosperity of automobile industry bring new environment and healthy problems, the air quality inside automobile has become one of the most concentrated complaints from customers. In order to control the air quality and face the Increasing risk of air problems inside automobile, the Ministry of Environmental Protection has announced on Jan, 22th, 2016 "Guideline for air quality assessment of passenger car (Exposure draft)", new standard replace GBT 27630–2011 "Guideline for air quality assessment of passenger car", the recommended standard turns to compulsory standard.

中国3R回收相关标准/China 3R recycling related standards

■ 逆向拆解检测分析/Reverse dissemble test analysis



■ 正向收集/Forward collecting



汽车挥发成分检测项目

项目类别 Item	测试服务 Testing Services
车内零部件及材料挥发性有机化合物检测 VOC Test of Vehicle Parts and Materials	气味、甲醛释放、总碳挥发、挥发性有机物、雾化 Oder, Formaldehyde Release, Overall volatilization of carbon, VOC, Fogging
车内空气VOC检测 VOC Test in Vehicle Air	苯类化合物、醛酮类化合物、半挥发性有机化合物 Benzene hydrocarbon, Aldehydes and ketone, Semivolatile Organic Compounds

汽车挥发成分检测项目

检测项目 Test Item	检测标准 Test Standard
气味测试 Odor test	VDA 270, PV 3900
甲醛释放(烧瓶法) Formaldehyde release(Flask method)	VDA 275, PV 3925
有机挥发物 VOC(实验舱–VOC检测仪法) Volatile organic compound VOC(Experiment module–VOC HVI method)	VDA 276
有机挥发物 TVOC(顶空进样 GC) Volatile organic compound TVOC(Headspace injection GC)	VDA 277, PV 3341
有机挥发物 VOC, SVOC(热脱附 GC–MS法) Volatile organic compound VOC, SVOC Thermal desorption method	VDA 278
雾化测试(重量分析法) Atomization measure (Gravimetric Analysis)	DIN 75201 A, PV 3920, ISO 6452 A
有机挥发物 VOC(Tedlar 袋子法) Volatile organic compound VOC(Tedlar Bag–TD–GC/MS)	DIN 75201 B, PV 3015, ISO 6452 B

