

让世界用到安全的中国产品

To make the world use Chinese products safely

校准·检测·认证

GRGT<sup>EST</sup>

GRGT 公司总部

地址: 广州市天河区黄埔大道西平云路163号, 邮编: 510656

电话: 86-20-38699960 38699961

免费客服电话: 400-602-0999

传真: 86-20-38695185

邮箱: grgtest@grgtest.com

网址: www.grgtest.com

环境与可靠性检测中心

电话: 86-2038267901 38699961-3001

传真: 86-20-38698685

邮箱: envircenter@grgtest.com

广州 GUANGZHOU

Tel: 86-20-38699961

Fax: 86-20-38695185

上海 SHANGHAI

Tel: 86-21-60292670

Fax: 86-21-60292673

青岛 QINGDAO

Tel: 86-532-88969858

Fax: 86-532-88969857

深圳 SHENZHEN

Tel: 86-755-86242294

Fax: 86-755-86242264

苏州 SUZHOU

Tel: 86-512-68051160

Fax: 86-512-86860019

大连 DALIAN

Tel: 86-411-39676668

Fax: 86-411-39676669

东莞 DONGGUAN

Tel: 86-769-81555799

Fax: 86-769-82063020

杭州 HANGZHOU

Tel: 86-571-89967085

Fax: 86-571-89967085

长沙 CHANGSHA

Tel: 86-731-82677399

Fax: 86-731-82677105

中山 ZHONGSHAN

Tel: 86-760-88862198

Fax: 86-760-88862111

宁波 NINGBO

Tel: 86-574-87011850

Fax: 86-574-87011853

武汉 WUHAN

Tel: 86-27-87204227

Fax: 86-27-87056299

珠海 ZHUHAI

Tel: 86-756-6281823

Fax: 86-756-8913110

南京 NANJING

Tel: 86-25-52161129

Fax: 86-25-52164920

南昌 NANCHANG

Tel: 86-791-86317130

Fax: 86-791-86317083

福州 FUZHOU

Tel: 86-591-83827283

Fax: 86-591-83827253

合肥 HEFEI

Tel: 86-551-62523661

Fax: 86-551-62523662

重庆 CHONGQING

Tel: 86-23-67769819

Fax: 86-23-67769822

厦门 XIAMEN

Tel: 86-592-5159692

Fax: 86-592-5159693

北京 BEIJING

Tel: 86-10-65527330

Fax: 86-10-65527330

成都 CHENGDU

Tel: 86-28-66259369

Fax: 86-28-66259366

海口 HAIKOU

Tel: 86-898-36355639

Fax: 86-898-36355639

天津 TIANJIN

Tel: 86-22-58226800

Fax: 86-22-58226988

西安 XI'AN

Tel: 86-29-88765096

Fax: 86-29-88765096

无锡 WUXI

Tel: 86-510-68860168

Fax: 86-510-68002628

济南 JINAN

Tel: 86-531-88687781

Fax: 86-531-88687791

郑州 ZHENGZHOU

Tel: 86-371-56535888

Fax: 86-371-56535999

洛阳 LUOYANG

Tel: 86-0379-63936602

Fax: 86-0379-63316369

# GRGT 环境与可靠性检测中心

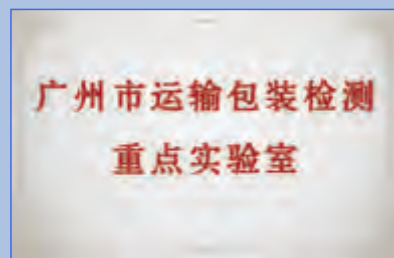
GRGT ENVIRONMENTAL AND RELIABILITY TESTING CENTER (GERTC)



## 广州广电计量检测股份有限公司

GUANGZHOU GRG METROLOGY & TEST CO., LTD.

要了解更详尽信息请登录  
[www.grgtest.com](http://www.grgtest.com)



# 关于GRGT

## GRGT Profile

广州广电计量检测股份有限公司 (GRGT) 定位行业高端, 引领行业先锋, 历经近50年的发展, 目前成为一家技术精湛、服务精心、管理精细的国内一流的计量检测专业机构。

GRGT是原国家信息产业部军工电子602计量测试站, 通过国家实验室 (CNAS)、国防实验室 (DILAC) 和总装军用实验室认可, 并通过中国计量认证 (CMA), 是IECEE CB实验室, 建立企业计量最高标准80多项, 通过CNAS、DILAC认可项目699项。同时, 获得众多国际著名机构和组织的能力认可和授权, 还是国家火炬计划重点高新技术企业、国家中小企业公共服务示范平台、广东省中小企业公共 (技术) 服务示范平台、广东省科技服务业百强企业, 拥有国家级企业技术中心、广东省重点工程技术研究开发中心、广州市企业技术中心、广州市运输包装检测重点实验室、国家质检总局职业技能鉴定实训基地。

GRGT传承军工企业的精工技术, 为各个行业提供仪器计量校准、产品环境与可靠性测试、电磁兼容检测、产品安全检测、化学分析、环境监测、产品认证、高端仪器设备维修和租赁、计量检测技术咨询培训等一站式服务。

GRGT总部位于广州, 已在广州、深圳、珠海、东莞、中山、海南、北京、天津、大连、青岛、西安、郑州、济南、上海、苏州、杭州、南京、厦门、福州、重庆、长沙、武汉、成都、合肥、南昌等城市建有二十多个分公司和合作实验室, 并在广州、天津、长沙、无锡、郑州等地建有实验室基地, 构成了全国性技术服务保障和营销服务网络, 为各类企业提供便捷服务。

GUANGZHOU GRG METROLOGY&TEST CO., LTD. positioning high-end and leading the industry as a pioneer. After nearly 50 years of development, GRGT has now become a domestic first-class professional service institution of metrology and testing of highly skilled, well-services and fine-management.

GRGT is the original Number 602 metrology station of the Ministry of the Military Electronic Information Industry, approved by CNAS, DILAC, Military laboratory and CMA. As the IECEE CB laboratory, GRGT established more than 80 highest standards of enterprises measurement, and has 591 items accredited by CNAS, DILAC. At the same time, GRGT obtains accreditation and authorization of many international famous institutions and organizations. It is also high-tech company, the model body of technological service among all the minor enterprises in China, the model body of technological service among all the minor enterprises in Guangdong, one of the top 100 technology service enterprises in Guangdong, state-level enterprise technology center, key engineering technology research and development center in Guangdong, Guangzhou enterprise technology center, Guangzhou transport package testing key laboratory and raining base for occupational skill testing of quality and technical supervision industry of General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China.

GRGT inherits Seiko technology of military enterprise, and provides one-stop service including metrology & calibration, environment & reliability test, EMC test, chemical analysis, environment monitoring, products certification, high-end instruments repair and lease, technical consultation and training for reach industry.

GRGT is located in Guangzhou, and has established more than 20 branches and collaborating laboratories in Shenzhen, Zhuhai, Dongguan, Zhongshan, Hainan, Beijing, Tianjin, Dalian, Qingdao, Xi'an, Zhengzhou, Jinan, Shanghai, Suzhou, Hangzhou, Nanjing, Xiamen, Fuzhou, Chongqing, Changsha, Wuhan, Chengdu, Hefei, Nanchang and so on, possessing laboratory bases in several areas such as Guangzhou, Tianjin, Changsha, Wuxi, Zhengzhou, so that we can provide with a local services for varied enterprises.



# GRGT环境与可靠性检测中心

## GRGT Environmental and Reliability Testing Center (GERTC)

GRGT环境与可靠性检测中心一直致力于环境可靠性研究和测试, 建有民用及军用环境可靠性试验室, 通过了国家实验室 (CNAS)、国防实验室 (DILAC) 和总装军用实验室认可, 总面积达3800m<sup>2</sup>, 拥有完善的可靠性测试设施和专业的队伍。

本中心于2010年与国防科学技术大学可靠性试验研究与评估中心建立了合作实验室的关系, 能同时满足军用标准和民用标准的测试要求。

本着“科学、公正、准确、快捷、周到”的服务理念, 中心可为客户提供完备的环境可靠性测试和相关技术服务, 现有测试能力涵盖了机械环境试验、气候环境试验的绝大部分项目, 并配有先进的性能测试仪器和分析仪器, 可对试验中的产品及材料进行电学、磁学、表现性能测试与监控。

GRGT Environmental and Reliability Testing Center (GERTC) has been dedicated to environmental reliability research and testing since its foundation. As an accredited laboratory by China National Accreditation Service for Conformity Assessment (CNAS), the Defense Industry Laboratories Accreditation Committee (DILAC), and People's Liberation Army General Equipment Department, GERTC can provide testing service for civilian and military products. GERTC has many advanced reliability testing facilities and professional personnel with total area of 3800 square meters. In 2010, GERTC has been making cooperation in testing service with National University of Defense Technology Reliability Test and Evaluation Center. Now, we can meet the requirements of both military standards and civilian standards by strong-strong union. In line with the spirit of "Scientific, Fair, Swift, Considerate", GERTC can provide reliability testing and related technical services for our customers. Our testing capability covers most of climatic and mechanical environmental tests. We also can monitor the electronic, magnetic, and the apparent performance of specimens under test with advanced monitoring equipments and analytical instruments.



# 测试服务能力

## Testing Service Capabilities



### 气候环境类试验 (Climatic Environmental Tests)

- 高温试验/High Temperature
- 低温试验/Low Temperature
- 温度循环/Temperature Cycle Test
- 温度冲击/Thermal Shock Test
- 快速温变/Temperature Rapid Change Test
- 温湿度循环/Temperature & Humidity Cycle Test
- 高低温低气压/Low Atmospheric Pressure With High/Low Temperature Test
- 氙灯光老化试验/Xenon-arc Ageing Test
- 碳弧灯光老化试验/Carbon-arc Ageing Test
- 紫外光老化试验/UV Ageing Test
- 混合气体腐蚀试验/Mixed Flowing Gas Corrosion Test
- 单一气体腐蚀试验/Gas Corrosion Test
- 盐雾试验/Salt Spray Test
- 砂尘试验/Dust Test
- 淋雨试验/Rain/Spray Test



### 力学环境类试验 (Mechanical Environmental Tests)

- 随机振动/Random Vibration Test
- 正弦振动/Sine-vibration Test
- 碰撞/Bump Test
- 跌落/Drop Test
- 机械冲击/Mechanical Shock Test



### 综合环境试验 (Composite Tests)

- 温度+湿度+振动三综合/Temperature & Humidity & Vibration Test
- 温度+湿度+低气压三综合/Temperature & Humidity & Low Pressure Test



### 高加速试验 (Highly Accelerated Life Test)

- 高加速寿命试验/ (HALT, Highly Accelerated Life Test)
- 高加速应力筛选试验/ (HASS, Highly Accelerated Stress Screen)

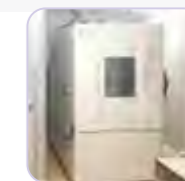


### 包装运输试验 (Transportation Tests)

- 夹持试验/Clamp Test
- 包装压力/Packaging Compression Test
- 堆码振动/Stacked Vibration Test
- 斜面冲击/Horizontal Impact Test
- 跌落/Drop Test
- 倾翻试验/Tip、Tipover test



### (Biological environmental test) 生物环境试验 (Midew) 霉菌试验



### (Other Tests) 其它试验

- Life Test / 寿命试验
- Cross Section. / 切片分析
- Dye & Pry / 染色起拔
- SEM-EDS / 扫描电镜、能谱仪
- C-SAM / 声学显微镜
- X-ray / X射线分析
- Chemical Resistance Test / 耐化学试剂
- Coating Adhesion Test / 涂镀层附着力
- Coating Thickness / 涂镀层厚度
- And More... / 更多



## 我们服务的产品领域

### Testing Service Scope

- Electric And Electronic Products / 电工电子产品
- IT Products / IT产品
- Telecommunications Products / 通讯产品
- Automobile/Motorcycle Parts And Components / 汽车/摩托车零部件
- Transportation Packaging / 运输包装件
- Polymer Materials / 高分子材料
- Hardware / 五金制品
- And More... / 更多



## 我们的测试标准

### Testing Service Standards

- GB、GB/T、GJB
- IEC、ISO、EN
- MIL-STD、ASTM、SAE、AEC
- IPC、JEDEC
- ISTA
- GM、VW、GE、NISSAN...



## 温湿度环境试验 (Temperature And Humidity Test)

本中心拥有二十多台/套温湿度试验箱，覆盖了温度范围-100℃至500℃，湿度范围10%~98%，容积范围从0.1m<sup>3</sup>到270m<sup>3</sup>，温变速率最大可以达到30℃/min，能够为各类电子产品，机电装备，汽车电子，通讯设备以及中型装备开展高低温贮存，高低温工作，温湿度循环，温湿度交变，元器件老化，温度冲击等环境适应性试验，筛选试验，寿命试验等。

GERTC has more than 20 sets of environmental chamber, which cover temperature of -100°C ~ 500°C, relative humidity of 10% ~ 98% and working volume of 0.1m<sup>3</sup> ~ 52m<sup>3</sup>. The maximum temperature change rate can be 30°C/min. With these chambers we can do environmental test, stress screen test and life test for electrical and electronic products, equipments, automotive electronics, communication equipments and medium setups, including high/low temperature storage test, high/low temperature operation test, temperature cycle test, burn-in test, thermal shock test and more.

## 设备

## 技术参数

## Technical Specifications

### 8m<sup>3</sup> 温湿度试验箱

Temperature & humidity chamber (8m<sup>3</sup>)



箱内尺寸(mm): 2000×2000×2000(W×H×D)  
温度范围: -55℃~+120℃  
湿度范围: 20%~98% RH

Inner Dimension(mm): 2000×2100×2000(W×H×D)  
Temperature Range: -55°C ~ +120°C  
Humidity Range: 20% ~ 98% RH

### 45m<sup>3</sup> 温湿度试验箱

Temperature & humidity chamber (45m<sup>3</sup>)

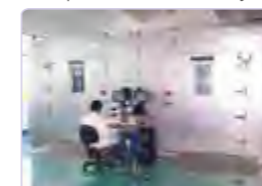


箱内尺寸(mm): 4000×2500×4500(W×H×D)  
温度范围: -40℃~+85℃  
湿度范围: 30%~98% RH

Inner Dimension(mm): 4000×2500×4500(W×H×D)  
Temperature Range: -40°C ~ +85°C  
Humidity Range: 30% ~ 98% RH

### 52m<sup>3</sup> 温湿度试验箱

Temperature & humidity chamber (52m<sup>3</sup>)



箱内尺寸(mm): 4000×3000×4400(W×H×D)  
温度范围: -68℃~+85℃  
湿度范围: 25%~95% RH

Inner Dimension(mm): 4000×3000×4400(W×H×D)  
Temperature Range: -68°C ~ +85°C  
Humidity Range: 25% ~ 95% RH

### 0.125m<sup>3</sup> 快速温变箱

Rapid change of temperature chamber (0.125m<sup>3</sup>)



箱内容积: 0.125m<sup>3</sup>  
温度范围: -70℃~+177℃  
温变速率: ≤6℃/min

Inner Dimension: 0.125m<sup>3</sup>  
Temperature Range: -70°C ~ +177°C  
Temperature Change Rate: ≤6°C/min

### 0.4m<sup>3</sup> 快速温变箱

Rapid change of temperature chamber (0.4m<sup>3</sup>)



箱内尺寸(mm): 700×800×900(W×H×D)  
温度范围: -70℃~+150℃  
温变速率: ≤15℃/min

Inner Dimension(mm): 700×800×900(W×H×D)  
Temperature Range: -70°C ~ +150°C  
Temperature Change Rate: ≤15°C/min

## 设备

## 技术参数

## Technical Specifications

### 0.8m<sup>3</sup> 温湿度试验箱

Temperature & humidity chamber (0.8m<sup>3</sup>)



箱内容积: 0.8m<sup>3</sup>  
温度范围: -70℃~+150℃  
湿度范围: 15%~95% RH  
温变速率: ≤3℃/min

Inner Dimension: 0.8m<sup>3</sup>  
Temperature Range: -70°C ~ +150°C  
Humidity Range: 15% ~ 95% RH  
Temperature Change Rate: ≤3°C/min

### 1m<sup>3</sup> 温湿度试验箱

Temperature & humidity chamber (1m<sup>3</sup>)



箱内尺寸(mm): 1000×1000×1000(W×H×D) Inner Dimension(mm): 1000×1000×1000(W×H×D)  
温度范围: -70℃~+150℃ Temperature Range: -70°C ~ +150°C  
湿度范围: 20%~98% RH Humidity Range: 20% ~ 98% RH

### 2m<sup>3</sup> 温湿度试验箱

Temperature & humidity chamber (2m<sup>3</sup>)



箱内容积: 2m<sup>3</sup>  
温度范围: -70℃~+150℃  
湿度范围: 15%~95% RH  
温变速率: ≤30℃/min

Inner Dimension: 2m<sup>3</sup>  
Temperature Range: -70°C ~ +150°C  
Humidity Range: 15% ~ 95% RH  
Temperature Change Rate: ≤30°C/min

### 4m<sup>3</sup> 温湿度试验箱

Temperature & humidity chamber (4m<sup>3</sup>)



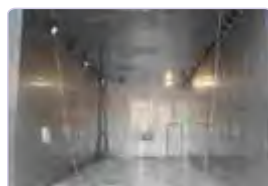
箱内容积: 4m<sup>3</sup>  
温度范围: -70℃~+150℃  
湿度范围: 15%~95% RH  
温变速率: ≤30℃/min

Inner Dimension: 4m<sup>3</sup>  
Temperature Range: -70°C ~ +150°C  
Humidity Range: 15% ~ 95% RH  
Temperature Change Rate: ≤30°C/min

## 设备

## 技术参数

## Technical Specifications

270m<sup>3</sup>步入式高低温湿热实验室  
270m<sup>3</sup> Walk-in chamber

性能指标  
温度范围: -60°C ~ 90°C (实际使用需求)  
湿度范围: 20% ~ 98%RH  
室内尺寸: 12m(L) × 5m(M) × 4.5m(H)

Technical Specification  
Temperature range: -60°C ~ 90°C  
Humidity range: 20%RH ~ 98%RH  
Inner size: 12m(L)\*5m(M)\*4.5m(H)

0.5m<sup>3</sup>快速温变箱  
Rapid change of temperature chamber (0.5m<sup>3</sup>)

性能指标  
内箱尺寸 (mm):  
800 × 870 × 700 (W × H × D)  
温度范围: -70°C ~ 150°C  
湿度范围: 25% ~ 98%RH  
温度变化率: ≤ 15°C/min

Technical Specification  
Inner dimension (mm):  
800 × 870 × 700 (W × H × D)  
Temperature range: -70°C ~ +150°C  
Humidity range: 25% ~ 98% R.H.  
Temperature change rate: ≤ 15°C/min

1m<sup>3</sup>快速温变箱  
Rapid change of temperature chamber (1m<sup>3</sup>)

有效容积: 1m<sup>3</sup>  
温度范围: -70°C ~ +150°C  
湿度范围: 15% ~ 95% RH  
升温速率: ≤ 15°C/min

Inner Dimension: 1m<sup>3</sup>  
Temperature Range: -70°C ~ +150°C  
Humidity Range: 15% ~ 95% RH  
Temperature Change Rate: ≤ 15°C/min

1m<sup>3</sup>快速温变箱  
Rapid change of temperature chamber (1m<sup>3</sup>)

性能指标  
内箱尺寸 (mm):  
1000 × 1000 × 1000 (W × H × D)  
温度范围: -70°C ~ 150°C  
湿度范围: 10% ~ 98%RH  
温度变化率: ≤ 18°C/min

Technical Specification  
Inner dimension (mm):  
1000 × 1000 × 1000 (W × H × D)  
Temperature range: -70°C ~ +150°C  
Humidity range: 10% ~ 98% R.H.  
Temperature change rate: ≤ 18°C/min

3m<sup>3</sup>快速温变箱  
Rapid change of temperature chamber (3m<sup>3</sup>)

性能指标  
内箱尺寸 (mm):  
1500 × 1300 × 1500 (W × H × D)  
温度范围: -70°C ~ 150°C  
湿度范围: 20% ~ 98%RH  
温度变化率: ≤ 15°C/min

Technical Specification  
Inner dimension (mm):  
1500 × 1300 × 1500 (W × H × D)  
Temperature range: -70°C ~ +150°C  
Humidity range: 20% ~ 98% R.H.  
Temperature change rate: ≤ 15°C/min

## 设备

## 技术参数

## Technical Specifications

1m<sup>3</sup>高温试验箱  
High Temperature chamber (1m<sup>3</sup>)

性能指标  
箱内尺寸 (mm):  
1000 × 979 × 900 (W × H × D)  
温度范围: 室温 ~ 300°C  
温度变化率: ≤ 2°C/min

Technical Specification  
Inner dimension (mm):  
1000 × 979 × 900 (W × H × D)  
Temperature range: RT ~ 300°C  
Temperature change rate: ≤ 2°C/min

0.2m<sup>3</sup>温度冲击试验箱  
Thermal shock chamber (200L)

性能指标  
内箱尺寸 (mm): 600 × 600 × 550 (W × H × D)  
温冲范围: -55°C ~ +150°C  
转换时间: ≤ 10s

Technical Specification  
Inner dimension (mm): 600 × 600 × 550 (W × H × D)  
Thermal shock range: -55°C ~ +150°C  
Transfer time: ≤ 10s

0.3m<sup>3</sup>温度冲击试验箱  
Thermal shock chamber (0.3m<sup>3</sup>)

箱内尺寸 (mm): 970 × 460 × 670 (W × H × D)  
温冲范围: -65°C ~ +150°C  
转换时间: ≤ 5min

Inner Dimension (mm): 970 × 460 × 670 (W × H × D)  
Thermal Shock Range: -65°C ~ +150°C  
Transfer Time: ≤ 5min

## 低气压试验 (Low Pressure Test)

本中心的低气压试验箱，温度范围覆盖 -70℃至177℃，气压范围覆盖0.2kPa至101kPa要用于考核航空航天装备、电子元器件或者其他产品在低气压、温湿度综合作用下的可靠性，可开展低气压试验、高温低气压、低温低气压、快速减压试验等试验项目。

GERTC has low pressure chambers, which cover temperature of -70℃~177℃ and pressure of 0.2kPa~101kPa. With these chambers we can do low pressure with high/low temperature test for aviation components, electric and electronic products and other equipments to check their adaptability to low pressure, temperature and humidity conditions.

### 设备

### 技术参数

### Technical Specifications

#### 1m<sup>3</sup> 高低温低气压试验箱

Temperature and low pressure chamber (1m<sup>3</sup>)



箱内尺寸(mm): 1000×1000×1000(W×H×D)  
温度范围: -70℃~+150℃  
气压范围: 0.2kPa~常压  
降压速率: ≤15s(75.2kPa~18.8kPa)

Inner Dimension(mm): 1000×1000×1000(W×H×D)  
Temperature range: -70℃~+150℃  
Pressure Range: 0.2kPa~ ambient  
Pressure Decrease Rate: ≤15s(75.2kPa~18.8kPa)

#### 2.5 m<sup>3</sup> 高低温低气压试验箱

Temperature and low pressure chamber (2.5m<sup>3</sup>)



有效容积: 2.5m<sup>3</sup>  
温度范围: -70℃~+150℃  
气压范围: 0.2kPa~常压  
降压速率: ≤15s(75.2kPa~18.8kPa)  
温变速率: ≤30℃/min

Working volume: 2.5m<sup>3</sup>  
Temperature range: -70℃~+150℃  
Pressure Range: 0.2kPa~ ambient  
Pressure Decrease Rate: ≤15s(75.2kPa~18.8kPa)  
Temperature Change Rate: ≤30℃/min

#### 热真空环境试验系统

Thermal Vacuum System



有效容积: 2m<sup>3</sup>  
气压范围: 0.7kPa~1kPa  
温度范围: -180℃~+180℃

Working volume: 2m<sup>3</sup>  
Pressure range: 0.7kPa~1kPa  
Temperature range: -180℃~+180℃

#### 热真空环境试验系统

Thermal Vacuum System



有效容积: 2m<sup>3</sup>  
气压范围: 10<sup>-3</sup>Pa~常压  
温度范围: -150℃~+150℃

Working volume: 2m<sup>3</sup>  
Pressure range: 10<sup>-3</sup>Pa~ ambient  
Temperature range: -150℃~+150℃

## 光老化试验 (Light Aging Test)

本中心拥有紫外试验箱、碳弧灯试验箱、氙弧灯试验箱等光老化试验箱，可为汽车、航空航天设备、仪器仪表等塑料、橡胶、纺织品等部件开展光老化试验，考核材料的耐光老化性能，能够满足国标、国军标、ASTM、ISO等标准的要求。

GERT C has UV chamber, carbon arc chamber, xenon arc chamber and other aging test chambers, with which we can carry out light aging test for plastic, rubber, textiles and other components of automotive, aerospace equipments, instruments and so on, to examination aging properties of materials. These chambers meet the requirements of national standard, military standard, ASTM, ISO and other standards.

### 设备

### 技术参数

### Technical Specifications

#### 荧光紫外老化试验箱

UV Chamber



光源: UVA-351 UVA-340 UVB-313  
标准试片(mm): 200×75×1.5  
容积: 16片

Light Source: UVA-351 UVA-340 UVB-313  
Standard Panel(mm): 200×75×1.5  
Working Volume: 16 Panels

#### 碳弧灯老化试验箱

Carbon-arc Chamber



阳光型碳弧灯  
温度范围: +38℃~+85℃  
黑板温度(BPT): +40℃~+110℃  
黑板标准温度(BST): +40℃~+120℃  
容积: 76块样架(75mm×150mm)

Sunshine Carbon Arc Chamber  
Temperature range: +38℃~+85℃  
BPT: +40℃~+110℃  
BST: +40℃~+120℃  
Working Volume: 76 Panels

#### 太阳辐射试验箱

Solar Radiation Chamber



设备容积: 1m<sup>3</sup>,  
光照强度: 1120W/m<sup>2</sup>  
温度范围: -10℃~+120℃  
湿度范围: 25%~90% RH

Working Volume: 1m<sup>3</sup>,  
Irradiation Intensity: 1120W/m<sup>2</sup>  
Temperature range: -10℃~+120℃  
Relative Humidity: 25%~90% RH

#### 太阳辐射试验箱

Solar Radiation Chamber



性能指标:  
箱内尺寸(mm): 1100×950×1100(W×H×D)  
波长: 280nm~3000nm  
光照强度: (800~1200)/m<sup>2</sup>  
温度范围: -40℃~+120℃  
湿度范围: 20%~95% RH

Inner dimension(mm):  
1100×950×1100(W×H×D)  
Wave length: 280nm~3000nm  
Irradiation Intensity: (800~1200)/m<sup>2</sup>  
Temperature range: -40℃~+120℃  
Humidity range: 20%~95% RH

## 设备

## 技术参数

## Technical Specifications

## 紫外老化试验箱

UV test chamber



## 性能指标

波长:280 nm~400nm  
 温度范围:  
 (45~80)°C(光照),(40~60)°C(冷凝)  
 辐照强度:  
 (0.35~1.55)W/m<sup>2</sup>/nm(UVA-340,UVA-351)  
 (0.35~1.23)W/m<sup>2</sup>/nm(UVB-313)

## Technical Specification

Wavelength: 280 nm~400nm  
 temperature range: (45~80)°C(light)  
 (40~60)°C(dark)  
 Radiation intensity:  
 (0.35~1.55)W/m<sup>2</sup>/nm(UVA-340,UVA-351)  
 (0.35~1.23)W/m<sup>2</sup>/nm(UVB-313)

## 氙灯老化试验箱

Xenon-arc Chamber



## 温度范围

工作室箱体温度: 35°C ~ 85°C  
 黑板温度(BTP): 40°C ~ 110°C  
 黑标准温度(BST): 40°C ~ 120°C  
 相对湿度范围  
 光照: 10% ~ 75%RH  
 黑暗: 10% ~ 100%RH  
 辐照度控制方式: 340nm;  
 (300 ~ 400)nm

## Temperature range

Chamber Temperature: 35°C ~ 85°C  
 BPT: 40°C ~ 110°C  
 BST: 40°C ~ 120°C  
 Relative Humidity  
 Light: 10% ~ 75%RH  
 Dark: 10% ~ 100%RH  
 Irradiation intensity control mode : 340nm; (300 ~ 400)nm

## 氙灯老化试验箱

Xenon lamp test chamber



## 性能指标:

波长:280nm~800nm  
 箱体温度:35°C~89°C;  
 湿度范围:光照:10%~75%RH 黑暗:10%~95%RH  
 黑板温度(BPT):40°C~110°C;  
 黑标准温度(BST):40°C~120°C  
 光辐照度:300nm~400nm一个控制点。  
 辐照度:(40W~120)W/m<sup>2</sup>@300nm~400nm

## Technical Specification

Wavelength: 280 nm~800nm  
 Temperature range:35°C~89°C;  
 Humidity range:10%~75%RH( light) 10%~95%RH(dark)  
 BPT: 40°C~110°C;BST: 40°C~120°C  
 Light irradiance:300nm~400nm one control point.  
 Irradiance:(40~120)W/m<sup>2</sup>@300nm~400nm

## 氙灯老化试验箱

Xenon lamp test chamber



## 性能指标:

波长:280 nm~800nm  
 湿度范围:光照:10%~75%RH 黑暗:10%~100%RH  
 黑板温度(BPT):36°C~110°C  
 黑标准温度(BST):35°C~120°C  
 曝晒测试面积:3238cm<sup>2</sup>

## Technical Specification

Wavelength: 280 nm~800nm  
 Humidity range:10%~75%RH( light) 10%~100% RH(dark)  
 BPT: 36°C~110°C  
 BST: 35°C~120°C  
 Exposure test area: 3238cm<sup>2</sup>

## 沙尘试验 (Dust Tests)

本中心拥有粉尘/沙尘试验箱, 可为电子元器件、仪器仪表、结构件以及组件开展IP5X、IP6X的防尘试验。

GERTC has dust chambers, with which we can carry out dust test for electronic components, instruments, structures and components, including IP5X and IP6X tests.

## 设备

## 技术参数

## Technical Specifications

## 粉尘试验箱

Dust Chamber

容积: 0.5m<sup>3</sup>

沙尘种类: 滑石粉、ISO粉尘

Working Volume:0.5m<sup>3</sup>

Dust type:Talc Powder ISO Fine Dust

## 粉尘试验箱

Dust chamber



## 性能指标

箱内尺寸(mm):1000×1000×1000(W×H×D)  
 沙尘浓度:2kg/m<sup>3</sup>~4kg/m<sup>3</sup>  
 抽气流量:(0~6)L/min  
 压差(负压):(0~2)kpa  
 温度范围:RT+10°C~60°C

## Technical Specification

Inner dimension (mm): 1000 × 1000 × 1000 (W × H × D)  
 Dust Concentration:2kg/m<sup>3</sup>~4kg/m<sup>3</sup>  
 Pumping gas flow: (0 ~ 6) L/min  
 Differential pressure (negative pressure): (0 ~ 2) kPa  
 Temperature range : RT+10 °C~60 °C

## 沙尘试验箱

Dust Chamber



可以模拟火山爆发环境、沙漠环境等

内部尺寸(mm):

1829 × 1524 × 610

Working Volume(mm):

1829 × 1524 × 610

## 沙尘试验箱

Sand and dust test chamber



## 性能指标:

箱内尺寸(mm):1300×1300×1300(W×H×D)  
 吹尘浓度:(10.3±7)g/m<sup>3</sup>  
 吹砂浓度:(2.2±0.5)g/m<sup>3</sup>;  
 风速:(1~30)m/s  
 温度范围:常温~80°C  
 试验标准:GJB 150.12A-2009  
 MIL-STD-810F  
 MIL-STD-810G

## Technical Specification

Inner dimension (mm):1300 × 1300 × 1300(W × H × D)  
 Dust concentration:(10.3 ± 7)g/m<sup>3</sup>  
 Sand concentration:(2.2 ± 0.5)g/m<sup>3</sup>;  
 wind speed:(1 ~ 30)m/s  
 Temperature range: RT ~80°C  
 Testing standard: GJB 150.12A-2009  
 MIL-STD-810F  
 MIL-STD-810G

## 淋雨试验 (Water Tests)

本中心拥有完备的防水实验室，可为电子元器件、仪器仪表、结构件以及组件开展滴雨、摆管淋雨、喷淋、浸水等水试验，IPX1~IPX8的防水试验。

GERTC has an integrated water laboratory for electronic components, instruments, structures and components to carry out rain test, immersion test and other water tests including IPX1 ~ IPX8 waterproof tests.

设备	技术参数	Technical Specifications
<b>垂直滴水试验设备</b> Drop Tester 	滴水面积: $0.8\text{m}^2 \sim 1\text{m}^2$ 试件最大尺寸(m): $0.9 \times 0.7 \times 1.6$ (长×宽×高)	Drop Area: $0.8\text{m}^2 \sim 1\text{m}^2$ Maximum Dimension Of Specimen(m): $900 \times 700 \times 1600(\text{W} \times \text{H} \times \text{D})$
<b>摆管淋雨试验</b> Oscillating Tube 	摆管半径(mm): 600、1000 摆管中心高度(mm): 600 ~ 1200	Diameter(mm): 600、1000 Central Height(mm): 600 ~ 1200
<b>防喷水试验</b> Spray Nozzles 	水流量: (12.5 ~ 100)L/min 水压: 80kPa ~ 100kPa	Water Flow Volume: (12.5 ~ 100)L/min Water Pressure: 80 kPa ~ 100kPa
<b>JIS &amp; VW 防水试验箱</b> JIS & VW Water test chamber 	性能指标 箱内尺寸(mm): $1000 \times 1000 \times 1000(\text{W} \times \text{H} \times \text{D})$ 水流量: 0L/min ~ 39 L/min 试验条件: JIS D0203 -S1/S2/R1/R2, SAE J575e, VW 80101	Technical Specification Inner dimension (mm): $1000 \times 1000 \times 1000(\text{W} \times \text{H} \times \text{D})$ Water flow rate: 0 L/min ~ 39 L/min Test condition: JIS D0203 -S1/S2/R1/R2, SAE J575e, VW 80101

## 设备

## 技术参数

## Technical Specifications

## 淋雨试验箱

Rain test chamber



性能指标:

箱内尺寸(mm):  $1500 \times 1500 \times 1600(\text{W} \times \text{H} \times \text{D})$ 吹雨试验:雨量(0~800)L/( $\text{m}^2 \cdot \text{h}$ )

强化试验:水压(0~300)kPa

滴水试验:雨量(0~400)L/( $\text{m}^2 \cdot \text{h}$ )

风速范围:(1~30)m/s(可调整式)

温度范围:常温~60°C

试验标准:

GJB150.8A-2009 MIL-STD-810G

MIL-STD-810F

Technical Specification:

Inner dimension (mm):  $1500 \times 1500 \times 1600(\text{W} \times \text{H} \times \text{D})$ Rain test:(0~800)L/( $\text{m}^2 \cdot \text{h}$ )

Spray test:(0~300)kPa

Drip test:(0~400)L/( $\text{m}^2 \cdot \text{h}$ )

wind speed:(1~30)m/s

Temperature range: RT ~60°C

Testing standard:

GJB150.8A-2009 MIL-STD-810G

MIL-STD-810F

## 淋雨试验箱

Rain test chamber



性能指标:

A: IPX1~IPX2滴水装置

滴水高度:(200~450)mm

滴水流量:(25~250)L/h

试架角度:0°~45°可调

试架旋转速度:(1~12)次/分钟可调

B: IPX3~IPX4摆管淋雨装置

摆管角度:0°~300°可调;

淋雨流量:(16~160)L/h可调;

C: IPX5~IPX6冲水装置

强冲水淋雨试验装置满足标准:

EN60598, GB4208(IPX5, IPX6), IEC60529

强冲水淋雨试验装置主要参数:

喷头孔径:6.3mm, 12.5mm各一个;

水流量:IPX5为600L/h, IPX6为6000L/h

Technical Specification:

A: IPX1~IPX2 dripping device

Drop height:(200~450)mm

Water flow:(25~250)L/h

angle: 0°~45°

rotating speed: 1~12 times/minutes.

B: IPX3~IPX4 pipe rain device

The pendulum angle: 0°~300°

The rain flow:(16~160)L/h

C: IPX5~IPX6 flushing device

meet the standards:

EN60598, GB4208 (IPX5, IPX6), IEC60529

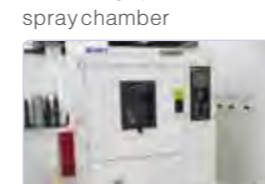
The nozzle aperture:

6.3mm, 12.5mm each one;

Water flow: IPX5 for 600L/h, IPX6 for 6000L/h

## IPX9K 高压喷水试验箱

IPX9K High pressure water



性能指标:

喷水角度:0°、30°、60°、90°

喷水距离:(100~150)mm(可调节)

流量:(14~16)L/min

水压:(8000~10000)kPa

水温:常温~(80±5)°C

试验台尺寸:Φ400mm高度可调

转速:(5±1)r/min可调

试验台承重:≤20kg

试验标准:DIN 40050-9, ISO 20653、

JASOD616、QC/T417.1

Technical Specification:

spray angle: 0°, 30°, 60°, 90°

spray distance (100~150)mm

Water flow rate: (14~16)L/min

Water pressure: (8000~10000)kPa

Water Temperature range: RT ~ (80±5)°C

Table size: Φ400mm

Rotation Speed: (5±1)r/min

Table Bearing: ≤20kg

Testing standard: DIN 40050-9

ISO 20653 JASOD616, QC/T417.1



## 振动试验 (Vibration Test)

本中心拥有完善的电磁振动系统，主要用于模拟相关产品在使用和运输过程中承受的各种振动环境，能够满足推力150kgf至10000kgf的各类环境与可靠性要求，可以做正弦振动、随机振动、随机振动+正弦振动，冲击试验（半正弦波、矩形波、三角波、锯齿波），主要用于电工电子产品、零部件以及组件的抗振性能检测、环境适应性、筛选试验等可靠性试验。

GERTC has several electromagnetic vibration systems, which are mainly used to simulate the vibration condition encountered in application and transportation. Stimulating force ranges from 150kgf to 10000kgf, which can meet various environmental and reliability requirements. We can carry out sine vibration, random vibration, random vibration + sine vibration, shock test (half sine wave, rectangular wave, triangle wave, saw tooth wave) etc., for electric and electronic products, parts and components to check their performance, environmental adaptability, and reliability.

设备	技术参数	Technical Specifications
<b>0.3吨振动台</b> Vibrator 	额定推力：正弦 $\geq 0.3\text{kN}$ (300kgf) 最大负载：120kg 加速度： $\leq 980\text{m/s}^2$ (100g) 最大位移：25mm P-P 频度范围：(5~2000)Hz 台面尺寸： $\Phi 500\text{mm}$	Force： $\leq 0.3\text{kN}$ Load： $\leq 120\text{kg}$ Acceleration： $\leq 980\text{m/s}^2$ Displacement (p-p)： $\leq 25\text{mm}$ Frequency:(5~2000)Hz Working Table Dimension: $\Phi 500\text{mm}$
<b>2吨电磁振动台</b> Vibrator 	额定推力： $\leq 20\text{kN}$ 负载： $\leq 400\text{kg}$ 加速度： $\leq 980\text{m/s}^2$ (100g) 最大位移 (p-p)： $\leq 51\text{mm}$ 速度： $\leq 2\text{m/s}$ 频率：(2~3300)Hz 垂直拓展台尺寸： $1000 \times 1000\text{mm}^2$ 水平滑台面尺寸： $1000 \times 1000\text{mm}^2$	Force： $\leq 20\text{kN}$ Load： $\leq 400\text{kg}$ Acceleration： $\leq 980\text{m/s}^2$ (100g) Displacement (p-p)： $\leq 51\text{mm}$ Velocity： $\leq 2\text{m/s}$ Frequency: (2~3300)Hz Horizontal Working Table Dimension: $1000 \times 1000\text{mm}^2$ Vertical Working Table Dimension: $1000 \times 1000\text{mm}^2$
<b>3吨电磁振动台</b> Vibrator 	性能指标 额定推力： $\leq 30\text{kN}$ 负载： $\leq 500\text{kg}$ 加速度： $\leq 1000\text{m/s}^2$ 位移(p-p)： $\leq 76\text{mm}$ 速度： $\leq 2\text{m/s}$ 频率：(2~2700)Hz 垂直拓展台尺寸： $1000\text{mm} \times 1000\text{mm}$ 水平滑台面尺寸： $1000\text{mm} \times 1000\text{mm}$	Technical Specification Force： $\leq 30\text{kN}$ Load： $\leq 500\text{kg}$ Acceleration： $\leq 1000\text{m/s}^2$ Displacement (p-p)： $\leq 76\text{mm}$ Velocity： $\leq 2\text{m/s}$ Frequency: (2~2700)Hz Horizontal working table dimension: $1000\text{mm} \times 1000\text{mm}$ Vertical working table dimension: $1000\text{mm} \times 1000\text{mm}$
<b>5吨电磁振动台</b> Vibrator 	额定推力： $\leq 50\text{kN}$ 负载： $\leq 800\text{kg}$ 最大加速度： $\geq 980\text{m/s}^2$ (100g) 最大位移：51mm P-P 速度： $\leq 2\text{m/s}$ 频率：(2~2700)Hz 垂直拓展台尺寸： $1200 \times 1200\text{mm}^2$ 水平滑台面尺寸： $1200 \times 1200\text{mm}^2$	Force： $\leq 50\text{kN}$ Load： $\leq 800\text{kg}$ Acceleration： $\geq 980\text{m/s}^2$ Displacement (p-p)： $\leq 51\text{mm}$ Velocity： $\leq 2\text{m/s}$ Frequency: (2~2700)Hz Horizontal working table dimension: $1200 \times 1200\text{mm}^2$ Vertical working table dimension: $1200 \times 1200\text{mm}^2$

## 设备

## 技术参数

## Technical Specifications

### 10吨电磁振动台

Vibrator

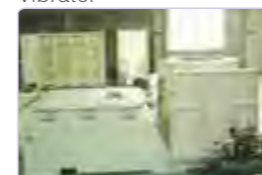


额定推力： $\leq 100\text{kN}$   
 负载： $\leq 1500\text{kg}$   
 加速度： $\leq 980\text{m/s}^2$  (100g)  
 最大位移 (p-p)： $\leq 51\text{mm}$   
 速度： $\leq 2\text{m/s}$   
 频率：(5~2500)Hz  
 垂直拓展台尺寸： $1000 \times 1000\text{mm}^2$   
 水平滑台面尺寸： $1000 \times 1000\text{mm}^2$

Force： $\leq 100\text{kN}$   
 Load： $\leq 1500\text{kg}$   
 Acceleration： $\leq 980\text{m/s}^2$  (100g)  
 Displacement (p-p)： $\leq 51\text{mm}$   
 Velocity： $\leq 2\text{m/s}$   
 Frequency:(5~2500)Hz  
 Horizontal Working Table Dimension:  $1000 \times 1000\text{mm}^2$   
 Vertical Working Table Dimension:  $1000 \times 1000\text{mm}^2$

### 16吨电磁振动台

Vibrator



额定推力： $\leq 16000\text{kgf}$   
 负载： $\leq 2000\text{kg}$   
 加速度： $\leq 980\text{m/s}^2$  (100g)  
 最大位移 (p-p)： $\leq 51\text{mm}$   
 速度： $\leq 2\text{m/s}$   
 频率：2Hz~2200Hz  
 垂直拓展台尺寸： $\Phi 600\text{mm}$   
 水平滑台面尺寸： $1500 \times 1500\text{mm}^2$

Force： $\leq 16000\text{kgf}$   
 load： $\leq 2000\text{kg}$   
 Acceleration： $\leq 980\text{m/s}^2$  (100g)  
 Displacement (p-p)： $\leq 51\text{mm}$   
 Velocity： $\leq 2\text{m/s}$   
 Frequency: 2Hz~2200Hz  
 Horizontal working table dimension:  $\Phi 600\text{mm}$   
 Vertical working table dimension:  $1500 \times 1500\text{mm}^2$

### 20吨电磁振动台

Vibrator



性能指标  
 额定推力： $\leq 200\text{kN}$   
 负载： $\leq 2000\text{kg}$   
 加速度： $\leq 1000\text{m/s}^2$   
 位移(p-p)： $\leq 76\text{mm}$   
 速度： $\leq 2\text{m/s}$   
 频率：(2~2000)Hz  
 垂直拓展台尺寸1： $1500\text{mm} \times 1500\text{mm}$   
 垂直拓展台尺寸2： $800\text{mm} \times 800\text{mm}$   
 水平滑台面尺寸1： $1500\text{mm} \times 1500\text{mm}$   
 水平滑台面尺寸2： $800\text{mm} \times 800\text{mm}$

Technical Specification  
 Force： $\leq 200\text{kN}$   
 Load： $\leq 2000\text{kg}$   
 Acceleration： $\leq 1000\text{m/s}^2$   
 Displacement (p-p)： $\leq 76\text{mm}$   
 Velocity： $\leq 2\text{m/s}$   
 Frequency: (2~2000)Hz  
 Horizontal working table dimension:  
 (1)  $1500\text{mm} \times 1500\text{mm}$  (2)  $800\text{mm} \times 800\text{mm}$   
 Vertical working table dimension:  
 (1)  $1500\text{mm} \times 1500\text{mm}$  (2)  $800\text{mm} \times 800\text{mm}$

## 高加速测试 (HALT & HASS Testing System)

本中心拥有性能优良的HALT & HASS试验箱，能够根据客户的要求，开展HALT试验，利用高环境应力激发产品设计缺陷，了解产品的设计能力及失效模式，从而消除设计缺陷，找出产品的工作极限和破坏极限，为其制定HASS方案，确定HASS的应力量级提供依据，大大提高产品可靠性。

GERTC has HALT & HASS chambers, can carry out HALT test according to customer requirements, stimulate design defects of products by using high environmental stresses; help our customer find design limits and failure modes of products, thereby increase operation limit and damage limit of products by eliminating design defects. Also we can develop HASS program and determine the stress level of HASS on basis of testing result of HALT to enhance products reliability.

## 设备

## 技术参数

## Technical Specifications

### 高加速试验箱

Typhoon3.0



温度范围： $-100^{\circ}\text{C} \sim +200^{\circ}\text{C}$   
 温变速率： $\leq 100^{\circ}\text{C}/\text{min}$   
 频率范围：10Hz~5kHz  
 振动方向：3轴向6自由度  
 载荷： $\leq 408.23\text{kg}$   
 加速度： $\leq 70\text{Grms}$

Temperature： $-100^{\circ}\text{C} \sim +200^{\circ}\text{C}$   
 Temperature Change Rate： $\leq 100^{\circ}\text{C}/\text{min}$   
 Frequency：10kHz~5kHz  
 Direction：3 Axes, 6 Degree Of Freedom  
 Load： $\leq 408.23\text{kg}$   
 Grms： $\leq 70\text{Grms}$

## 机械冲击试验 (Mechanical Shock Test)

本中心拥有跌落式冲击试验台、碰撞试验台、跌落试验机、水平冲击试验台，主要用于模拟产品在使用、装卸以及运输过程中承受的机械冲击条件，以确定产品的适应性和完好性。

GERTC has mechanical shock tester, drop tester, bump tester and horizontal impact tester to simulate the shock stress for products encountered in application, handling and transportation process, to determine the product's environmental adaptability and integrity.

设备	技术参数	Technical Specifications
CL-200冲击试验台 J Mechanical shock tester	性能指标: 载荷: ≤200kg 台面尺寸: 800mm × 650mm 半正弦波: (50~300000)m/s <sup>2</sup> 后峰锯齿波: (150~1000)m/s <sup>2</sup> ; 梯形波: (150~1000)m/s <sup>2</sup> ; 脉冲持续时间: 0.05ms~30ms	Technical Specification: Load: ≤200kg Working table dimension: 800mm × 650mm Half sine wave Acceleration: (50~300000)m/s <sup>2</sup> Sawtooth Acceleration: (150~1000)m/s <sup>2</sup> Trapezoidal wave: (150~1000)m/s <sup>2</sup> Pulse duration: 0.05ms~30ms
冲击机 Mechanical shock tester	载荷: ≤200Kg 台面尺寸(mm): 400 × 400 峰值加速度: ≤30000g 脉宽: ≤18ms	Load : ≤200kg Working table dimension(mm): 400 × 400 Peak acceleration : ≤30000g Duration : ≤18 ms
冲击台 Mechanical shock tester	最大载荷: 200kg 台面尺寸(mm): 800 × 650 峰值加速度: ≤600g	Load : ≤200kg Working Table Dimension(mm): 800 × 650 Acceleration: ≤600g
斜面冲击 Inclination impact tester	最大载荷: 200kg 倾斜角度: 10° ± 1° 台面尺寸(mm): 1100 × 1100 冲击面板尺寸(mm): 1300 × 1300 冲击速度范围: ≤3.87m/s	Load: ≤200kg Inclination Angle: 10° ± 1° Carriage Table(mm): 1100 × 1100 Working Table Dimension(mm): 1300 × 1300 Impact velocity: ≤3.87m/s
碰撞台 Bump tester	性能指标 最大载荷: 100kg 峰值加速度: (5~1000)m/s <sup>2</sup> 脉冲波形: 半正弦波 脉冲持续时间: 18ms~6ms 脉冲重复频率: (20~80)次/分 脉冲形式: 自由跌落 工作台面尺寸: 500mm × 700mm	Technical Specification Load: ≤100kg Acceleration: (5~1000)m/s <sup>2</sup> Pulse shape: Half-sine Pulse duration: 18ms~6ms Shock frequency: (20~80) times per minute Shock type: Free fall Working table dimension: 500mm × 700mm
碰撞台 Bump tester	性能指标 最大载荷: 250kg 峰值加速度: 500m/s <sup>2</sup> 脉冲波形: 半正弦波 脉冲持续时间: 20ms~1.5ms 脉冲重复频率: (20~80)次/分 脉冲形式: 自由跌落 工作台面尺寸: 800mm × 1000mm	Technical Specification Load: ≤250kg Acceleration: 500m/s <sup>2</sup> Pulse shape: Half-sine Pulse duration: 20ms~1.5ms Shock frequency: (20~80) times per minute Shock type: Free fall Working table dimension: 800mm × 1000mm
碰撞台 Bumper	最大载荷: 500kg 峰值加速度: ≤3920m/s <sup>2</sup> 脉冲波形: 半正弦波 脉冲持续时间: ≤18ms 脉冲形式: 自由跌落 工作台面尺寸: 1000mm × 800mm	Load: ≤500kg Acceleration: ≤3920m/s <sup>2</sup> Pulse Shape: Half-sine Duration: ≤18ms Shock Type: Free Drop Working Table Dimension: 1000mm × 800mm
跌落台 Freefall tester	跌落方式: 自由跌落 最大载荷: 100kg 跌落高度: (300~1200)mm	Drop Type: Free Fall Max Load: 100kg Drop Height: (300~1200)mm
跌落台 Drop tester	性能指标 跌落方式: 自由跌落 跌落高度: (300~1200)mm 最大载重: 80kg 试件最大尺寸mm: 1000*1000*800	Technical Specification Drop type: Free fall Drop height: (300~1200) mm Load: ≤80kg Samples dimension(mm): 1000*1000*800
跌落台 Drop tester	性能指标 跌落方式: 自由跌落 跌落高度: (300~1500)mm 最大载重: 80kg 试件最大尺寸mm: 1000*1000*800	Technical Specification Drop type: Free fall Drop height: (300~1500) mm Load: ≤80kg Samples dimension(mm): 1000*1000*800
跌落台 Drop tester	性能指标 跌落方式: 自由跌落 跌落高度: (300~1200)mm 最大载重: 200kg 试件最大尺寸mm: 1500*1200*1200	Technical Specification Drop type: Free fall Drop height: (300~1200) mm Load: ≤200kg Samples dimension(mm): 1500*1200*1200

## 综合环境可靠性试验 (Composite Environmental Tests)

本中心拥有温度+湿度+振动 以及 温度+湿度+低气压 三综合测试系统，能够为电工电子产品、汽车电子、航空航天电子提供综合环境测试。

GERTC has composite testing systems, with which we can carry out Vibration + Temperature + Humidity and Temperature + Humidity + Low pressure composite tests for electric and electronic products, automotive electronics, aerospace and electronics etc.

设备	技术参数	Technical Specifications
<b>三综合测试系统</b> Vibration + Temperature + Humidity composite test chamber 	性能指标: 额定推力: ≤40kN 负载: ≤500kg 加速度: ≤1000m/s <sup>2</sup> 位移(p-p): ≤51mm 速度: ≤2m/s 频率: 2Hz ~ 2800Hz 垂直拓展台尺寸: 800mm × 800 mm 水平滑台面尺寸: 800mm × 800 mm 温度范围: -70 °C ~ +150 °C 湿度范围: 10%~98% R.H. 温度变化率: ≤15°C/min	Technical Specification Force: ≤40kN Load: ≤500kg Acceleration: ≤1000m/s <sup>2</sup> Displacement (p-p): ≤51mm Velocity: ≤2m/s Frequency: 2Hz~2800Hz Horizontal working table dimension: 800mm × 800 mm Vertical working table dimension: 800mm × 800 mm Temperature range: -70°C~+150°C Humidity range: 10%~98% R.H. Temperature change rate: ≤15°C/min
<b>三综合测试系统</b> Vibration + Temperature + Humidity composite test chamber 	性能指标: 额定推力: ≤49kN 负载: ≤1000kg 加速度: ≤1000m/s <sup>2</sup> 位移 (p-p) : ≤76mm 速度: ≤2m/s 频率: 2Hz ~ 2700Hz 垂直拓展台尺寸: 1200mm × 1200 mm 水平滑台面尺寸: 1200mm × 1200 mm 箱内尺寸 (mm) : 1500 × 1300 × 1500 ( W × H × D ) 温度范围: -70 °C ~ +150 °C 湿度范围: 20% ~ 98% R.H. 温度变化率: ≤15°C/min	Technical Specification Force: ≤49kN Load: ≤1000kg Acceleration: ≤1000m/s <sup>2</sup> Displacement ( p-p ) : ≤76mm Velocity: ≤2m/s Frequency: 2Hz~2700Hz Horizontal working table dimension: 1200mm × 1200 mm Vertical working table dimension: 1200mm × 1200 mm Inner dimension (mm): 1500 × 1300 × 1500 ( W × H × D ) Temperature range: -70°C ~ +150°C Humidity range: 20% ~ 98% R.H. Temperature change rate: ≤15°C/min
<b>三综合测试系统</b> Vibration + Temperature + Humidity composite test chamber 	性能指标: 额定推力: ≤200kN 负载: ≤1600kg 加速度: ≤1000m/s <sup>2</sup> 位移(p-p): ≤76mm 速度: ≤2m/s 频率: 2Hz ~ 2100Hz 垂直拓展台尺寸: 1500mm × 1500 mm 水平滑台面尺寸: 1500mm × 1500 mm 箱内尺寸(mm): 2000 × 2000 × 2000(W × H × D) 温度范围: -70 °C ~ +150 °C 湿度范围: 10%~98% R.H. 温度变化率: ≤10°C/min	Technical Specification Force: ≤200kN Load: ≤1600kg Acceleration: ≤1000m/s <sup>2</sup> Displacement (p-p): ≤76mm Velocity: ≤2m/s Frequency: 2Hz~2100Hz Horizontal working table dimension: 1500mm × 1500 mm Vertical working table dimension: 1500mm × 1500 mm Inner dimension (mm): 2000 × 2000 × 2000(W × H × D) Temperature range: -70°C~+150°C Humidity range: 10%~98% R.H. Temperature change rate: ≤10°C/min

## 包装运输试验 (Package Transportation Test)

本中心拥有完善的包装运输测试设备，包括压力试验机、叉车、振动台、跌落台、水平冲击台，用于模拟产品在仓储、运输过程中承受的堆码压力、装卸、车辆振动等环境条件、考核产品及包装是否达到了运输标准的要求。

GERTC has integrated shipping test equipments, including compressor, forklift, vibration table, drop tester, horizontal impact tester. These equipments are used to simulate the stacking, loading and unloading, handling and vehicle vibration etc condition occurred in the warehouse and transportation to check if the performance of products and packaging meet the requirements of transportation standards.

设备	技术参数	Technical Specifications
<b>包装压力机</b> Package compressor 	压力: ≤5000kg 导向板尺寸(m): 1.2 × 1.2 × 2.0	Pressure ≤5000kg Compressor Plate Dimension(m): 1.2 × 1.2 × 2.0
<b>叉车</b> Forklift 	负载能力: 1500kg 张臂范围(mm): 560 ~ 1930 最大升高: 3000mm	Load : ≤1500kg Clamp Open Width(mm):560 ~ 1930 Max Lift Distance : 3000mm
<b>模拟汽车运输振动台</b> VTransportation simulation shaking table 	运转速度: 120~300RPM(转/分钟) 速度显示精度: 0.1RPM(转/分钟) 振动方式: 往复式 振幅(P-P): 25.4mm(英寸) 有效台面: 1.0*1.0m(长*宽)	speed (RPM): 120~300RPM 2, speed display: 0.1RPM (RPM) 3, the vibration mode: Reciprocating 4, amplitude (P-P): 25.4mm (inches) 5, effective platform: 1.0*1.0m (length * width)

## 生物环境试验 (Biological environmental test)

本中心拥有霉菌试验室，可检测产品抗霉菌的能力和在有利于霉菌生长的条件下（即高湿温暖的环境中）和有无机盐存在的条件下），设备是否受到霉菌的有害影响。


GERTC has mould test chamber, which is used to test mould resistance capabilities and detect the harmful effects of mould growth under warm and humid environmental conditions for products.

设备	技术参数	Technical Specifications
<b>霉菌试验箱</b> Mould test chamber 	性能指标: 箱内尺寸(mm): 1000 × 1000 × 1000(W × H × D) 温度范围: 0°C ~ 100°C 湿度范围: 40% ~ 98% R.H. 风速: ≤0.2m/s 菌种包含: 黑曲霉AS3.3928, 绳状青霉AS3.3875, 土曲霉 AS 3.3935, 宛氏拟青霉 AS3.4253, 绿色木霉AS 3.2942, 赭色青霉AS3.4302, 出芽短梗霉AS3.3984, 光孢短柄帚霉AS3.3985等	Technical Specification: Inner dimension(mm): 1000 × 1000 × 1000(W × H × D) Temperature range: 0°C ~ 100°C Humidity range: 40% ~ 98% R.H. wind speed : ≤0.2 m/s Mould: (Aspergillus niger)AS3.3928, (Penicillium funiculosum)AS3.3875, (Asp.terreus)AS3.3935, (Paecilomyces varioti)AS3.4253, (Trichoderma viride)AS3.2942, (Penicillium chroochloron)AS3.4302, (Aureobasidium

## 盐雾试验 (Salt Spray Test)

本中心拥有多台盐雾试验箱，可为电子、仪器仪表、汽车以及航天产品的元器件、结构件、组件以及整机等开展盐雾试验，可开展的实验类型包括：中性盐雾试验 - NSS试验、醋酸盐雾试验 - ASS试验、铜加速盐雾试验 - CASS试验、交变盐雾试验等。

GERTC has several salt spray chambers, with which we can do salt spray test for electronics, instrumentation, automotive components, and aerospace products etc. Now we can provide testing service including neutral salt spray test - NSS test, acetic acid salt spray test - ASS test, copper accelerated salt spray test - CASS test, cyclic salt spray tests etc.

设备	技术参数	Technical Specifications
<b>盐雾试验箱</b> Salt Spray Chamber 	温度范围: 室温 ~ +55°C 盐雾沉降量: (1.0-2.0)ml/(h.80cm <sup>2</sup> )	Temperature Range: room temperature ~ +55°C Salt Spray Deposition Rate: (1.0-2.0)ml/(h.80cm <sup>2</sup> )
<b>盐雾试验箱</b> Salt spray chamber 	性能指标 箱内尺寸(mm): 1600 × 1000 × 800(W × H × D) 温度范围: RT+10°C ~ +55°C 盐雾沉降量: (1.0-2.0)ml/(h.80cm <sup>2</sup> )	Technical Specification Inner dimension (mm): 1600 × 1000 × 800(W × H × D) Temperature range: RT+10°C ~ +55°C Salt fog deposition rate: (1.0-2.0)ml/(h.80cm <sup>2</sup> )

## 碎石冲击 (Gravel impact tests)

本中心拥有碎石冲击试验机，特别为汽车材料及其表面涂层的抗砂砾、碎石碰撞试验而设计制造的。该设备满足SAE、ASTM、VDAGM FORD、VW、QC/T、JIS、TOYOTA、CHRYSLER、MAZDA、NISSAN、GM等的测试标准。

GERTC has one set of gravel impact tester, which can do chipping tests for automotive materials and surface coatings. This tester can meet the following testing standards: SAE, ASTM, VDAGM, FORD, VW, QC/T, JIS, TOYOTA, CHRYSLER, MAZDA, NISSAN, and GM.

设备	技术参数	Technical Specifications
<b>碎石冲击试验机</b> Gravelometer 	性能指标: 最大压强: 9Bar; 气源流量: 1.0m <sup>3</sup> /min • SAE 90° 碰撞室 • VDA 90° 碰撞室 • SAE 45° 碰撞室 • VDA 54° 碰撞室 • 3D试件箱	Technical Specification Maximum pressure: 9Bar; Air flow: 1.0m <sup>3</sup> /min • SAE 90° impact chamber • VDA 90° impact chamber • SAE 45° impact chamber • VDA 54° impact chamber • 3D sample chamber

## 气体腐蚀试验 (Mixed Flowing Gas Corrosion Chamber)

本中心拥有混合气体腐蚀试验箱，可开展H<sub>2</sub>S、SO<sub>2</sub>、NO<sub>2</sub>、Cl<sub>2</sub>等混合气体或者单一气体的腐蚀试验，对材料或产品进行加速腐蚀，考核材料或产品的耐腐蚀性能，满足GB/T、IEC、EIA等标准的要求。

GERTC has gas corrosion test chambers, which can be used to carry out H<sub>2</sub>S, SO<sub>2</sub>, NO<sub>2</sub> and Cl<sub>2</sub> mixed gases or single gas corrosion test. We can carry the accelerated corrosion test for materials or products, conduct corrosion resistance assessment on materials or products. These chambers can meet the requirements of GB/T, IEC, EIA and other standards.

设备	技术参数	Technical Specifications
<b>气体腐蚀试验箱</b> Mixed Flowing Gas Corrosion Chamber 	内部尺寸: 393L 气体浓度: 0.5ppb ~ 25ppm 温度范围: (25°C ~ 50°C) (± 0.5°C) 相对湿度: 10% ~ 95% RH	Working Volume : 393L Gas Concentration : 0.5ppb ~ 25ppm Temperature : (25 ~ 50)°C (± 0.5°C) Relative Humidity : 10% ~ 95% RH
<b>气体腐蚀试验箱</b> WK3-600/0-BSB 	内部尺寸(mm): 630 × 630 × 630(W × H × D) 气体浓度: 0.5ppb ~ 25ppm 温度范围: (25 ~ 50)°C (± 0.5°C) 相对湿度: 10% ~ 95% R.H. 腐蚀气体: Cl <sub>2</sub> , SO <sub>2</sub> , H <sub>2</sub> S, NO <sub>2</sub>	Inner dimension (mm): 630 × 630 × 630(W × H × D) Gas concentration: 0.5ppb ~ 25ppm Temperature: (25 ~ 50)°C (± 0.5°C) Relative humidity: 10% ~ 95% R.H. Corrosion gas: Cl <sub>2</sub> , SO <sub>2</sub> , H <sub>2</sub> S, NO <sub>2</sub>
<b>气体腐蚀试验箱</b> WK3-1000/0-BSB 	内部尺寸(mm): 875 × 735 × 605(W × H × D) 气体浓度: 0.5ppb ~ 25ppm 温度范围: (25 ~ 50)°C (± 0.5°C) 相对湿度: 10% ~ 95% R.H. 腐蚀气体: Cl <sub>2</sub> , SO <sub>2</sub> , H <sub>2</sub> S, NO <sub>2</sub>	Inner dimension (mm): 630 × 630 × 630(W × H × D) Gas concentration: 0.5ppb ~ 25ppm Temperature: (25 ~ 50)°C (± 0.5°C) Relative humidity: 10% ~ 95% R.H. Corrosion gas: Cl <sub>2</sub> , SO <sub>2</sub> , H <sub>2</sub> S, NO <sub>2</sub>
<b>0.2m<sup>3</sup>臭氧试验箱</b> Ozone Chamber (0.2m <sup>3</sup> ) 	性能指标 内箱尺寸(mm): 600 × 750 × 500(W × H × D) 臭氧浓度: 0 ppm ~ 15 ppm 温度范围: 25°C ~ 70°C 湿度范围: 65% ~ 98% R.H. 样品拉伸率: 5% ~ 45%	Technical Specification Inner dimension (mm): 600 × 750 × 500(W × H × D) Ozone concentration: 0 ppm ~ 15 ppm Temperature range: 25°C ~ 70°C Humidity range: 65% ~ 98% R.H. Sample elongation: 5% ~ 45%

## 材料试验 (Materials tests)

本中心拥有一批高分子材料试验机，可进行RCA纸带耐磨测试、五指刮擦测试、泰伯尔滚动磨耗测试、酒精橡皮耐磨测试、摩擦色牢度测试、漆膜冲击、杜邦冲击、简悬组合冲击试验、马丁代尔耐磨、LS落砂耐磨试验、涂层杯突试验、雷诺耐摩擦试验等。

GERTC has many material performance test equipments, including RCA Abrasion tester, Five fingers scratch tester, Taber rolling abrasion tester, Alcohol and rubber abrasion tester, Rubbing fastness tester, Film impact tester, DuPont impact tester, Universal material tester, CHARPY and IZOD impact tester, Martindale abrasion tester, LS falling sand abrasion tester, Cupping tester, Renault abrasion tester etc.

设备	技术参数	Technical Specifications
<b>五指刮擦测试仪</b> Five fingers scratch tester 	性能指标 刮擦指: 1.0mm, 7.0 mm(通常用) 每指受力: 1: 7.0N, 2: 6.0N, 3: 4.5N, 4: 3.0N, 5: 2.0N 刮差长度: 100mm 刮差速度: 100mm/s	Technical Specification Finger size: 1.0mm, 7.0 mm (usually) Downward force of each finger: 1: 7.0N, 2: 6.0N, 3: 4.5N, 4: 3.0N, 5: 2.0N Stroke: 100mm Speed: 100mm/s
<b>万能材料试验机</b> Universal material tester 	性能指标: 拉力范围: (0.02~10)kN 拉力分辨率: $\pm 0.05$ N 位移分辨率: 0.001mm 位移速率: (0.05~500) mm/min	Technical Specification Tension range: (0.02~10)kN Tension resolution: $\pm 0.05$ N Displacement resolution: 0.001mm Displacement rate: (0.05~500) mm/min
<b>麂皮旋转耐磨测试仪</b> Universal material tester 	性能指标 摩擦带宽度: 40mm 摩擦带顶端与旋转轴之间的距离: 110mm 转速: $(1400 \pm 50)$ r/min	Technical Specification: The friction belt width: 40mm The distance between the top of friction belt and the rotation axis: 110mm Speed: $(1400 \pm 50)$ r/min

## 质心位置测定系统及车辆性能测试 (MSC Dynamic Finite Element Analysis Software)



满足所有轮式车辆 (30T及以下重量) 的质心位置测定及整车重量、轴荷分配、外形尺寸、几何量尺寸的侧量。

The system can measure the centroid position, vehicle weight, axle load distribution, external dimensions and geometric dimensions for all wheeled vehicles (30T and less weight).

## 车辆道路模拟试验系统 (MSC Dynamic Finite Element Analysis Software)



车辆道路模拟试验系统设备是以国内设备为主的集成系统，保密性强；该系统是华中地区唯一、全国少有的能提供对外检测的用于室内车辆道路模拟试验的系统。

系统功能如下：

- 整车及车厢、车载系统设备、固定装置耐久性试验；
- 动态性能试验；
- 结构件振动试验。

The road simulation testing system is an integrated system based mainly on domestic equipments, which has strong confidentiality. The system is the only indoor road simulation testing system in Central China and rare in whole China, which can provide marketing test service.

The functions of the system are as follows:

- Endurance test for full vehicle and car, automotive equipments and fixtures;
- Dynamic performance test;
- Vibration test for automotive components and structures.

系统通道数：6通道  
 试验最大总重量：12T  
 频率范围：(0.1~50)Hz  
 作动器最大行程：350mm  
 作动器额定推力：160kN  
 最大激振速：2.0m/s  
 路谱最大加速度：20g  
 耦合类别：轮胎耦合式  
 控制方式：加速度、位移  
 振动波形：正弦波、随机波、道路谱  
 迭送精度：时域 $\leq 5\%$  频域 $\leq 15\%$   
 液压源工作压力：28MPa

Number of channels: 6 channels  
 Max testing load: 12T  
 Frequency range: (0.1~50)Hz  
 Max stroke of actuator: 350mm;  
 Rated force of actuator: 160kN;  
 Max vibration velocity: 2.0m/s  
 Max acceleration for road spectrum: 20g;  
 Coupling Category: Tire-coupled  
 Control mode: acceleration, displacement  
 Vibration waveforms: sine, random waves, road spectrum  
 Accuracy: time domain  $\leq 5\%$  frequency domain  $\leq 15\%$   
 Working hydraulic pressure: 28MPa

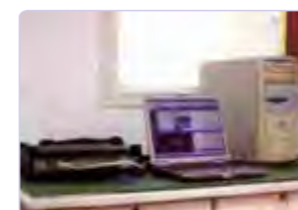
## 可靠性强化试验系统 (Reliability Enhancement Testing System)



可靠性强化试验系统主要用于激励装备研制中存在的可靠性缺陷，提高装备的可靠性研制水平。

Reliability Enhancement Testing system is mainly used to stimulate reliability defects of equipments during research and development, and improves the reliability of equipments.

## 振动测试与模态分析系统 (Vibration Measuring And Modal Analysis Software)



B&K公司的PULSE分析系统，可提供17个信号输入通道，2个输出通道，每个通道的分析带宽可达204.8kHz。模态分析软件MEscopeVES对PLUS系统获得的频响函数进行曲线拟合，求得模态参数。

软件功能包括运行状态下的变形分析 (ODS), 模态分析 (Modal)、结构动态修改 (SDM) 等。主要用于振动、噪声测试和分析，模态测试和分析等。

Our Laboratory is equipped with B & K PULSE Analysis System, which provides 17 input channels, 2 output channels, each channel of bandwidth of up to 204.8kHz. Modal analysis software MEscopeVES conduct curve fitting on frequency response function obtained by the PLUS system, then obtains modal parameters. The software covers function of operation deformation analysis (ODS), modal analysis (Modal), structural dynamic modification (SDM) and so on, can be used for testing and analysis on vibration and noise.

## 可靠性与维修性分析软件 (Reliability And Maintainability Analysis Software)



### ■ Relex通用可靠性、安全性、维修性分析及管理软件 (Relex Software)

Relex软件包括可靠性维修性分析软件包Relex7.7和故障信息闭环管理软件RelexFRACS2.2,是目前唯一提供了可靠性工作平台的可靠性软件,将可靠性分析、可靠性管理纳入了统一的软件平台,同时提供了优秀的管理特性和接口特性。主要用于电子、机械、航空、汽车等领域的可靠性、维修性、保障性、测试性和安全性设计分析和管理工作。

Relex software including Reliability and maintainability analysis software package Relex7.7 and closed-loop fault information management software RelexFRACS2.2, is the only software providing reliable working platform, which integrates reliability analysis and reliability management into a unified software platform, while providing excellent management features and interface characteristics. The software is mainly used in reliability, maintainability, supportability, test and safety design analysis and management for electronics, machinery, aerospace, automotive and other fields.



### ■ ARMS可靠性维修性保障性工程CAD软件 (KEWEI ARMS CAD Software)

可维ARMS可靠性维修性保障性工程CAD软件,其设计分析工具涵盖了可靠性、维修性、测试性、安全性与保障性设计分析中最实用和最常用的工程方法。

Our laboratory is equipped with KEWEI ARMS CAD software. Its design analysis tools include the most practical and most commonly used engineering analysis approach for design and analysis of reliability, maintainability, testability, safety and security.

## MSC有限元仿真分析软件 (MSC Dynamic Finite Element Analysis Software)



MSC动力学有限元仿真分析软件,主要功能模块有NASTRAN(大型通用结构有限元分析模块),PATRAN(框架式前后处理集成和有限元分析模块),DYTRAN(求解高度非线性瞬态动力学问题软件模块),FATIGUE(专业耐久性疲劳寿命预测仿真分析模块),ADAMS(动力学仿真软件)等。

主要用于装备结构环境与可靠性分析中的动力学仿真、疲劳寿命分析。

Our laboratory is equipped with a full set of MSC Dynamic Finite Element Analysis software, which includes NASTRAN, PATRAN, DYTRAN, FATIGUE, ADAMS and so on function modules, and can be used in structural dynamics simulation, fatigue life analysis for equipments.

## 切片分析 (Cross section Analysis)

本中心拥有切片分析试验设备。切片分析主要用于检查PCB内部走线厚度、层数,通孔孔径大小,通孔质量观察,PCBA焊点内部空洞,界面结合状况,润湿质量评价等等。切片分析是进行PCB/PCBA失效分析的重要技术,切片质量将直接影响失效部位确认的准确性。

GERTC has a set of section analysis test equipments. Cross section is mainly used to check the internal thickness of PCB trace, number of layers, the pore size of the through-hole, internal voids of PCBA solder, interfacial bonding, wetting quality assessment and so on. Section analysis is one of important failure analysis technologies for PCB / PCBA, slicing quality will directly affect the analysis accuracy of failure point.

设备	技术参数	Technical Specifications
金相切片 cross-section		
金相显微镜 Metallurgical microscope	性能指标: 放大倍数:50x, 100x, 200x, 500x, 1000x 放大精度:粗聚焦:4mm/转 精聚焦:4 μm/格 目镜:PL 10x/20Br. foc. PL 10x/22Br. foc. 换镜转盘:明场 暗场 视角:(8~38)° 视高:395~603)mm	Technical Specification: Magnification: 50x, 100x, 200X, 500X, 1000x Zoom accuracy: coarse focusing: 4 mm/ Fine focus: 4 μ m/latic eyepiece: PL 10x/20Br. foc. PL 10x/22Br. foc. Nosepiece: bright field, dark field Angle of view: (8~38) degree high of view:(395~603)mm
切割机 Cutting machine	型号: Secotom-15	Model: Secotom-15
真空镶嵌仪 Vacuum inlaying machine	型号: CitoVac	Model: CitoVac
研磨机 Grinder Model	型号: Tegramin-25	Model: Tegramin-25