



ExMC/281/DV
August 2005

**INTERNATIONAL ELECTROTECHNICAL COMMISSION SCHEME
FOR CERTIFICATION TO STANDARDS RELATING TO EQUIPMENT FOR
USE IN EXPLOSIVE ATMOSPHERES
(IECEx SCHEME)**

Ex Management Committee, ExMC

TITLE: IECEx Assessment Report for acceptance of Shanghai Inspection and Testing Institute of Instruments and Automation Systems (SITIIAS) National Supervision and Inspection Centre for Explosion Protection and Safety of Instrumentation (NEPSI) as an IECEx Test Laboratory (ExTL)

INTRODUCTION

This document contains the IECEx Assessment Report for the acceptance of Shanghai Inspection and Testing Institute of Instruments and Automation Systems (SITIIAS) National Supervision and Inspection Centre for Explosion Protection and Safety of Instrumentation (NEPSI) within the IECEx Scheme.

Please consider the assessment report, which is issued for final vote during the coming ExMC Buxton Meeting to be held in October.

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IECEX ASSESSMENT REPORT (TEST LABORATORY – ExTL)

Type of Assessment:

Initial Assessment for Candidate ExTL ☒
Surveillance Assessment for existing ExTL ☐

1. OBJECT AND FIELD OF APPLICATION

- 1.1 **Country:**
Peoples Republic of China
- 1.2 **Name of Candidate TL**
Shanghai Inspection and Testing Institute of Instruments and Automation Systems (SITIIAS). National Supervision and Inspection Centre for Explosion Protection and Safety of Instrumentation (NEPSI)
- 1.3 **Members of the Assessment Team**
On Site
Jim Munro, Lead assessor
Michel Brenon, Assessor

Off Site
Heinz Berger, Assessor
- 1.4 **Place and Date of Assessment**
Shanghai Inspection and Testing Institute of Instruments and Automation Systems (SITIIAS)
National Supervision and Inspection Centre for Explosion Protection and Safety of Instrumentation (NEPSI)
103, Cao Bao Road, Shanghai, 200233, P. R. of China
Tel.: 0086 21 64368180-296/302/306
Fax: No: 0086 21 64844580
Website: <http://www.nepsi.org.cn>

1-2 July 2005
- 1.5 **Assessment References**
Document:
i) IECEx 02 Second Edition 2003-06
ii) IECEx Operational Document OD/003 and OD009
iii) ISO/IEC 17025
iv) IECEx Technical Guidance Documents and Decision Sheets
v) ExTL application documents
- 1.6 **Scope of Application**
- | Product Category | Standard |
|--------------------------|-------------|
| General Requirements | IEC 60079-0 |
| Flameproof enclosure "d" | IEC 60079-1 |



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Pressurized apparatus "p"	IEC 60079-2
Powder filling "q"	IEC 60079-5
Oil immersion "o"	IEC 60079-6
Increased safety "e"	IEC 60079-7
Intrinsic safety "i"	IEC 60079-11
Non sparking "n"	IEC 60079-15
Encapsulation "m"	IEC 60079-18
Combustible dust –General Requirements	IEC 61241-0
Combustible dust - Protection by Enclosures "tD"	IEC 61241-1

All gas standards are for Group II only, where relevant.

1.7 Candidate TL Persons Interviewed

Name	Position
Jianping XU	President of SITIIAS, Director of NEPSI, Professor
Qiao LU	International Business Manager
Zhihong Yao	Senior Engineer, Quality Manager
Plus various other staff	

1.8 Legal Entity of the Candidate TL

SITIIAS is a state owned enterprise. and independently registered organization, providing services of calibration, verification, testing and certification for electrical apparatus, including instruments, luminaries, electrical motors etc.

Their registration number is 31001041022995 and is valid from 2003 to 2008.

National Supervision and Inspection Centre for Explosion Protection and Safety of Instrumentation (Abbr. **NEPSI**) is one part of the **SITIIAS**, especially in the field of explosion protection.

The address at which it carries out its operations is at
103, Cao Bao Road, Shanghai, 200233, P. R. of China

1.9 Associated ExCB

China Certification Centre for Quality Mark (CQM)
12th Floor, Bldg. B of Keyuan Plaza, A-105 Xisanhuan North Road., Haidian District,
Beijing city,
People's Republic of China
Postal code: 100037
Tel: +86 10 88411888
Fax: +86 10 68415026/88414325
E-mail: cqm@cqm.com.cn

CQM have advised that the Certification and Accreditation Administration of the People's Republic of China (CNCA) exercises unified management, supervision and overall coordination of nation-wide certification and accreditation activities in China, and China operates a unified Ex certification system.

China National Accreditation for Laboratories (CNAL) is responsible for accreditation and supervision to testing laboratories.

CQM, as a Certification Body, engages in certification activities based on unified Ex certification rules and procedures announced by CNCA.



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There is a contract between CQM and NEPSI that was viewed by the assessment team.

1.10 Financial Support

The terms of the company registration means that it can use its income to fund the operation and pay tax on any profits, but the assets remain the property of the Government. NEPSI pays for the use of the assets. But funding of new assets may partly come from the income generated and the rest from the Government. Sometimes they can get investment from local government for new assets if it is related to providing a service to the public.

Each year some money is set aside into a special fund that could be used in the event of some legal action being taken against SITIIAS.

1.11 History

The mother organisation, SIPAI was founded in 1956. Initially SITIIAS was established for environmental testing, with more than 40 years of history. In the 1980s it was nominated as the testing centre for instruments, calibration and reliability. Testing of Ex equipment was initiated in 1979 and completed in 1985. In 1986 NEPSI as approved and authorised by the former Ministry of Labor. It was accredited to Guide 25 in 1987 and subsequently to ISO/IEC 17025. In 2004 it was accredited to ISO/IEC17020.

1.12 Subcontracting

The test of resistance to light and the minimum comparative tracking index (CTI) are subcontracted. There is a register that shows the laboratories that are currently used which shows that they have been assessed by NEPSI. This includes confirming that they have relevant CNAL accreditation. They do a regular assessment of the facilities of subcontractor. This includes a check the currency of calibration of the equipment. Other tests subcontracted include ageing test for seals.

2. ORGANISATION

2.1 Names, Titles and Experience of the Senior Executives

Jianping XU	President of SITIIAS, Director of NEPSI	21 years
Qiao LU	International Business Manager	7 years
Lizhen DING	Senior Engineer, Vice Administration President	12 years
Zhiyu, XUE	Senior Engineer, Vice Business President	23 years
Zhihong YAO	Senior Engineer, Quality Manager	21 years in Ex and 20 with quality
Qing GE	Senior Engineer, Head of Flameproof Lab.	15 years
Yongwei, H	Senior Engineer, Head of Intrinsic Safety Lab.	14 years

2.2 Name, Title and Experience of the Quality Management Representative

Zhihong YAO	Senior Engineer, Quality Manager	21years in Ex and 20 with quality
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2.3 Name and Title of Nominated Principal Contact

Jianping XU President of SITIIAS, Director of NEPSI
Tel.: 0086 21 64368180-306 / 64516349
Fax: No: 0086 21 64844580
Email: xujianping@nepsi.org.cn

2.4 Employees

The total number of staff in the test laboratory is 57.

The total number of staff in assessment and testing laboratory for which recognition is being sought is 21 with the total number of professionally qualified staff being 13.



2.5 Organisational Structure
See Annex A.

3. RESOURCES

The laboratory is well resourced with experienced staff, good facilities and comprehensive procedures.

The main procedure for training is SITIIAS-G02-019"Procedure for personnel training". This procedure lists the steps for personnel to be trained and judged as competent in activities. They also have procedures for how staff are judged for their competencies, including who can make those decision. There are sheets signing off on those competencies. Finally there is a skills matrix covering the various techniques broken in performing tests, checking design drawings and documents, serving as a project manager, and verifying reports/certificates. These cover each professional/technical member of staff.

Test equipment and environment requirements are covered under SITIIAS-G02-026"Procedure for Equipment Control"

The main test equipment is as follows:
Over pressure and non-transmission testing facilities
Spark ignition test apparatus
Test gas mixing apparatus
Test equipment for resistance to Impact
Testing machine for cable entry
Pressure measurement system
Mechanical Dimension measuring instruments
Temperature measurement system
IP test facilities
Facility for insulation test
Climate Test chambers with temperature and humidity
Facility for purging test

4. TEST METHODS

4.1 Procedures

There are 34 procedures relevant to the laboratory.

Test methods and procedures are generally covered in SITIIAS -G02-023"Control of Test and Calibration Methods"

The requirements for the testing environment is specified in SITIIAS-G02-020"Procedure for the Control of Facilities and Environmental Conditions"

Control of access to the assessment and testing areas is covered in SITIIAS-G02-021"Procedure for Internal Management".

SITIIAS-G02-014"Procedure for the Control of Non-conforming Testing and /or Calibration Work" covers the system for detecting deficiencies in assessment and testing and their causes, and for correcting unfavourable trends.

Handling and storage of test samples is covered in SITIIAS-G02-028"Procedure for Sampling and Handling of Test and Calibration Items".



4.2 Staff Work Instructions

There are 144 work instructions in SITIIAS, many of which are relevant to Ex testing. There 31 technical information sheets: these include the ExTAG decision sheets and some related to specific requirements for China. There are 102 equipment operation instructions.

Relevant documents from the above cover each assessment and testing operation relevant to Ex.

If equipment is too large to test at NEPSI, this is determined at contract review. SITIIAS-G02-022 and the Quality Manual cover the general requirements for testing and states the same requirements are applied off-site as at NEPSI.

A number of practical test methods were examined as part of the assessment process, including temperature rise testing of a luminaire, Ex d pressure determination, Ex d flame transmission, and IP54 testing. Measurement techniques for Ex d were also examined.

5. TEST REPORTS AND RECORDS

5.1 Test Reports Issued

Statistics for the year of 2003 and 2004

Type of Protection	2003	2004
d	399	357
e	54	95
i	316	410
p	21	9
o	0	0
q	0	3
n	3	48
m	37	43
DIP	6	34

5.2 Test Records

There is a prescribed system for recording the method and results of assessment and testing activities in SITIIAS-G02-022"Working Program for Calibration and Testing".

Files viewed indicated that all test records are kept in the appropriate files.

6. CALIBRATION

Documented procedures for calibrating all equipment and reference standards, which include method, periodicity, sealing after calibration are covered in SITIIAS-G02-026"Procedure for Equipment Control" and SITIIAS-G02-027"Procedure for the Traceability of Measurement and Calibration of Measuring and Test Equipment". This last procedure also covers traceability to national or international standards of measurement.

SITIIAS operates a comprehensive and accredited calibration laboratory.

7. DOCUMENTATION

7.1 Quality Manual

SITIIAS/NEPSI has a comprehensive quality manual, SITIIAS-G01-001 which includes reference to IECEx documentation.



7.2 **Document Change Control**

Access to documentation and requirements for updating, implementing and recording changes to these documents, is covered in SITIIAS-G02-008 "Procedure for Document Control". All documentation handed out is recorded and signed for. When there is a new issue the old version is taken back and destroyed and the new version supplied. This is shown in forms that are provided in the above procedure. These records are retained by the Head of General Office. The above procedure applies to internal and external documentation. All documentation used is in hard copy form.

For IECEx Scheme documentation, NEPSI relies on CQM to supply with the latest documentation information, including IEC standards; and IECEx rules, operational documents, TGDs, decision sheets and blank ExTRs. A document showing transmission and receipt of these was seen.

8. **CONFIDENTIALITY**

Confidentiality is covered in SITIIAS-G02-0005 "Procedure for the Protecting of Confidentiality and Proprietary Rights". The record was seen where all staff signed regarding impartiality, honesty and confidentiality of their work.

9. **NATIONAL ACCREDITATION**

The China National Accreditation Board for Testing Laboratories (CNAL), No L0130 to ISO/IEC 17025, valid from 15 June 2004 to 11 December 2005, accredit SITIIAS/NEPSI. See Annex B. The accreditation covers the range of activities covered by this application.

10. **RECOGNITION AND AGREEMENTS**

The laboratory has agreements with the following bodies:

Factory Mutual Global (FMRC)
Physikalisch-Technische Bundesanstalt (PTB)
TestSafe Australia (TestSafe)
Laboratoire Central des Industries Electriques (LCIE)
Korea Testing Laboratory (KTL)
TUV Nord cert gmbh & co. kg (TUV)
Technology institution of industrial safety (TIIS)
Korea occupational safety & health agency (KOSHA)
Laboratorio official J.M. madariaga (LOM)
EXAM bbg pruf- und zertifizier gmbh (EXAM)
SIRA test & certification ltd. (SIRA)
Lloyd's REGISTER, UK

11. **INTERNAL AUDIT AND PERIODIC REVIEW**

Internal audit is covered by SITIIAS-G02-017 "Procedure for Internal Audits of Quality System"

The Quality Manager or other internal auditors do internal audit at least once a year. Normally two people comprise a team to do the audit for each department. These departments are set out in an audit table, together with the planned audit date. Once done the details are recorded about what clauses were covered, who did the audit and when it was done. Examples of these were sighted. All audit records are also retained. The results of the audit may lead to corrective or preventive action, or go to management review. Records were seen of internal auditor training for ISO/IEC 17025 for all auditors used. The system appears to be well executed. The last audits occurred in September 2004.



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The last management review took place on 11/1/05. Senior members of the organisation attended the meeting. An agenda was forwarded to members beforehand and minutes were recorded of the meeting. There were some outcomes from the meeting for improving the operation, such as the need to employ new staff to cater for increasing workloads.

12. COMPLAINTS MECHANISM

Customer complaints are in procedure SITIIAS-G02-013. This includes the process that would be used if the complaint resulted in the need for retesting. A register of complaints, which includes details of how the complaint is resolved, is maintained for formal complaints (of which there are very few). A survey is also made of customers each year, seeking their feedback. The form is available to customers on the website. The results are scored and an average calculated to rate the service. From the survey in 2005 the rating was 92.7 out of 100.

13. SPECIAL FACTS TO BE NOTED

There are three people at NEPSI who could be used as authorised personnel by CQM. They are Mr Xu Jianping, Mrs Huang Yongwei and Mr Ge Qing. As the Director of NEPSI, Xu Jianping will only be used in this role for other laboratories.

14. COMMENTS

There were some findings from the assessment that required attention, regarding dust and water testing, review of procedures, and calibration of pressure transducers. These were subsequently resolved. The IECEx Scheme Secretariat, together with other supporting information from the assessment, holds full details.

15. RECOMMENDATION

Based on the initial assessment performed during 1 to 2 July 2005 NEPSI is recommended for acceptance into the IECEx scheme as a Testing Laboratory (ExTL) according to the scope of the standards listed in this document.

LIST OF ANNEXES

ANNEX A: Organisational chart

ANNEX B: CNAL accreditation certificate

ANNEX C: Accredited scope of facilities

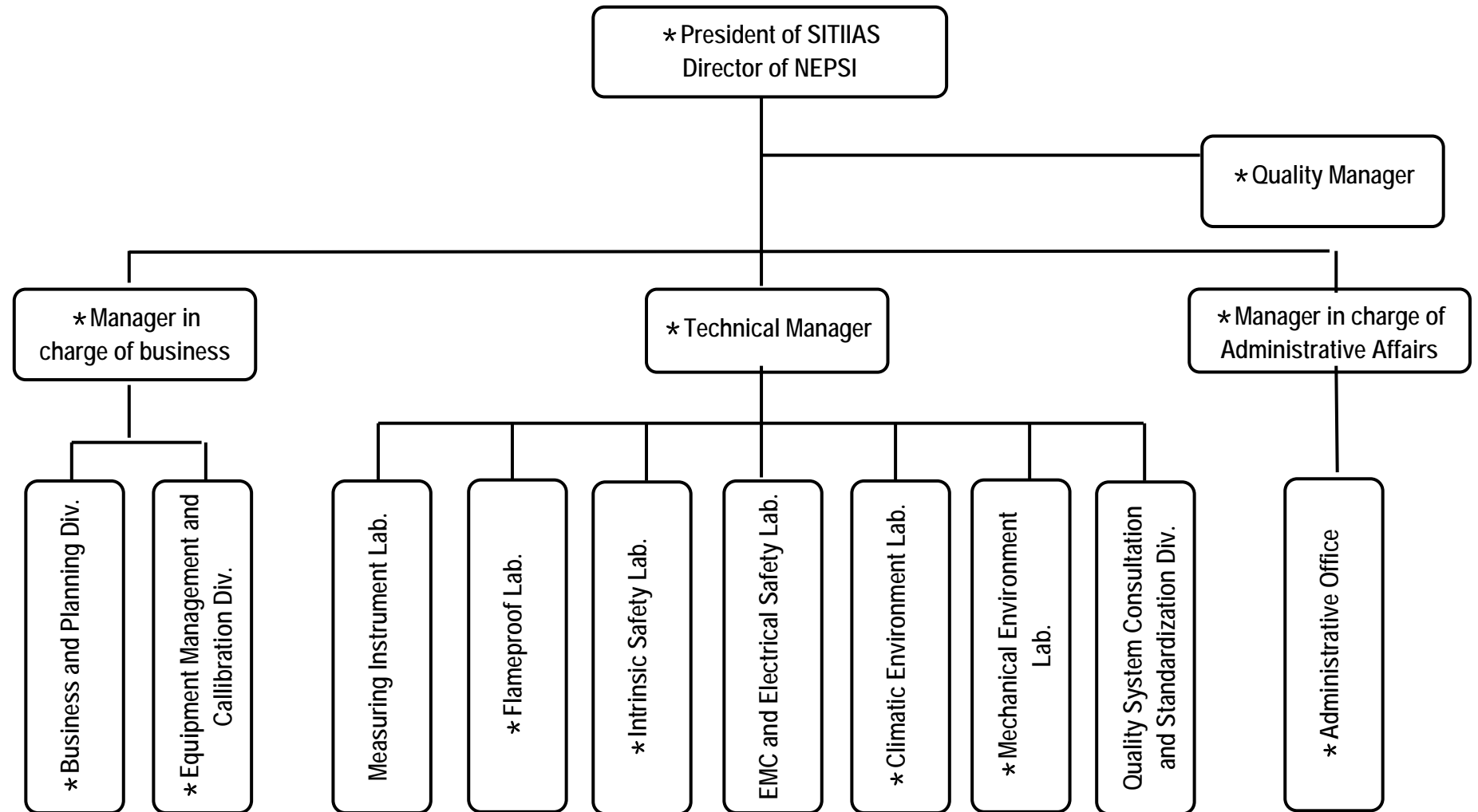
Jim Munro
Lead Assessor

Heinz Berger
Assessor

Michel Brénon
Assessor

30 August 2005

Annex A Organization Chart of SITIIAS/NEPSI



Note: — Subordinate Backup * Parts relative to NEPSI

Annex B



**ACCREDITATION CERTIFICATE
OF CHINA NATIONAL ACCREDITATION BOARD
FOR LABORATORIES
(No.L0130)**

This is to certify that

**Shanghai Institute of Process Automation
Instrumentation Inspection and Testing Institute of Institute
of Instruments and Automatic Systems/Shanghai Inspection
and Testing Institute of Instruments and Automatic Systems**

No.103, CaoBao Road, Shanghai, China

has been assessed and proved to be in compliance with CNAL/AC01:
2003 Accreditation Criteria for Testing and Calibration Laboratories
(identical to ISO/IEC17025: 1999 *General Requirements for the
Competence of Testing and Calibration Laboratories*).

Accreditation scope of the laboratory is listed in the attachment.

Date of Issue: 2004.06.15

Date of Expiry: 2005.12.11

Wei Hao

Secretary General of CNAL

Annex C

Accredited scope of testing capacities of NEPSI

附表 2
L00938-2003-01

任务编号：：

推荐认可的实验室检测能力范围(英文)

№	Products, Materials, Type of activity	Items, Parameter,		Code of field	Name, Code of Specification, Standard or method used	Restriction or limitation and others
		№	Types of tests			
1、Environmental Test						
1	Electric、electronic and mechanical products	1	Low temperature test	0328 0431.01	GB/T 2423.1-2001 Environmental testing for electric and electronic products – Part 2:Test methods – Tests A: Cold GJB 150.4-1986 Environmental test methods for military equipments Low temperature test CB 1146.2-1996 GD01-2000 (Clause 2.9) LR TYPE APPROVAL SYSTEM Test Specification Number 1(Section 16)	
2		2	High temperature test	0328 0431.02	GB/T 2423.2-2001 Environmental testing for electric and electronic products – Part 2: Test methods – tests B: Dry heat GJB 150.3-1986 Environmental test methods for military equipments High temperature test CB 1146.3-1996 GD01-2000 (clause 2.8) LR TYPE APPROVAL SYSTEM Test Specification Number 1 (Section 17))	
3		3	Damp heat test (Steady state)	0328 0431.03	GB/T 2423.3-1993 Basic environmental testing procedures for electric and electronic products Test Ca: Damp heat, steady state CB 1146.4-1996 GD01-2000 (第 2.10 节) LR TYPE APPROVAL SYSTEM Test Specification Number 1 (Section 15)	
4		4	Cyclic damp heat test	0328 0431.03	GB/T 2423.4-1993 Basic environmental testing procedures for electric and electronic products Test Db: Damp heat, cyclic GJB 150.9-1986 Environmental test methods for military equipments Damp heat test GD01-2000 (第 2.10 节) LR TYPE APPROVAL SYSTEM Test Specification Number 1 (Section 14)	

推荐认可的实验室检测能力范围(英文)

№	Products, Materials, Type of activity	Items, Parameter,		Code of field	Name, Code of Specification, Standard or method used	Restriction or limitation and others
		№	Types of tests			
5		5	Change of temperature	0328 0431. 11	GB/T 2423.22-2002 Basic environmental testing procedures for electronic products Test N: change of temperature	
6		6	Thermal shock test	0328 0431. 11	GJB 150.5-1986 Environmental test methods for military equipments Temperature shock test GB/T 2423.22-2002 Basic environmental testing procedures for electronic products Test N: change of temperature	
7		7	Mould growth test	0328 0431. 08	GB/T 2423.16-1999 Environmental testing for electric and electronic products – Part 2: Test methods – Test J and guidance: Mould growth GJB 150.10-1986 Environmental test methods for military equipments Fungus test GJB 4.10-1983 CB 1146.11-1996	
8		8	Dust-proof test	0328 0431. 17	GB 4208 –1993(IP code) Degrees of protection provided by enclosure (IP code) CB 1146.14-1996 GJB 150.12-1986 Environmental test methods for military equipments Sand and dust test	
9		9	Water-proof test	0328 0431. 17	GB 4208 –1993(IP CODE)DEGREES OF PROTECTION PROVIDED BY ENCLOSURE (IP CODE)	
10		10	Solar radiation test	0328 0431. 13	GB/T 2423.24-1995 Environmental testing for electric and electronic products Part2 : Test methods Test sa: Simulated solar radiation at ground level	

推荐认可的实验室检测能力范围(英文)

№	Products, Materials, Type of activity	Items, Parameter,		Code of field	Name, Code of Specification, Standard or method used	Restriction or limitation and others
		№	Types of tests			
11		11	Salt mist test	0328 0431. 09	GB/T 2423.17-1993 Basic environmental testing procedures for electric and electronic products Test Ka: Salt mist GB/T 2423.18-2000 Environmental testing - Test Kb: Salt mist, cyclic (sodium chloride solution) CB 1146.12-1996 GJB 150.11-1986 Environmental test methods for military equipments Salt fog test GD01-2000 (第 2.11 节) LR TYPE APPROVAL SYSTEM Test Specification Number 1 (Section 16)	
12		12	Sulphur dioxide corrosion test	0328 0431. 09	GB/T 2423.19-1981 GB/T 2423.33-1989 basic environmental testing procedures for electric and electronic products Test Kca:High consistence sulphur dioxide test	
13		13	Insulation resistance	0403. 02	GB/T 15479-1995 Technical requirements and test methods of insulation resistance and insulating strength for use in industrial process measurement an control instruments	
14		14	Insulation strength	0403. 01	GB/T 15479-1995 Technical requirements and test methods of insulation resistance and insulating strength for use in industrial process measurement an control instruments	

推荐认可的实验室检测能力范围(英文)

№	Products, Materials, Type of activity	Items, Parameter,		Code of field	Name, Code of Specification, Standard or method used	Restriction or limitation and others
		№	Types of tests			
2、Mechanical Test						
1	Electric、 electronic and mechanical products	15	Vibration test (sine mode)	0431.05	GB/T 2423.10-1995 Environmental testing for electric and electronic products Part 2 : Test methods Test Fc and guidance: Vibration (Sinusoidal) GJB 150.16-1986 Environmental test methods for military equipments vibration tes CB 1146.9-1996 GJB 367A-2001 general specifications for military communication equipment GJB 360A-1996 Test methods for electronic and electrical component parts GD01-2000 (第 2.7 节) LR TYPE APPROVAL SYSTEM Test Specification Number 1 (Section 12 and 13)	
2		16	Vibration test	0431.05	GB/T 2423.10-1995 Environmental testing for electric and electronic products Part 2: Test methods Test Fc and guidance: Vibration (sinusoidal) GJB 150.16-1986 Environmental test methods for military equipments vibration test CB 1146.9-1996 LR TYPE APPROVAL SYSTEM Test Specification Number 1 (Section 12 and 13)	
3		17	Bump test	0431.07	GB/T 2423.6-1995 Environmental testing for electric and electronic products Part 2: Test methods Test Eb and guidance: Bump CB 1146.7-1996 GJB 367A-2001 general specifications for military communication equipment	

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№	Products, Materials, Type of activity	Items, Parameter,		Code of field	Name, Code of Specification, Standard or method used	Restriction or limitation and others
		№	Types of tests			
4		18	Shock test	0431. 04	GB/T 2423.5-1995 Environmental testing for electric and electronic products Part 2: Test methods Test Ea and guidance: Shock GJB 150.18-1986 Environmental test methods for military equipments Shock test CB 1146.6-1996 GJB 367A-2001 general specifications for military communication equipment GJB 360A-1996 Test methods for electronic and electrical component parts	
5		19	Inclination, drop and topple test	0431. 17	CB 1146.8-1996 GJB 150.23-1991 Environmental test methods for military equipments Motions and inclinations test	
6		20	Vibration test (random mode)	0431. 05	GB/T 2423.11-1997 Environmental testing for electric and electronic products Part 2: test methods Test Fd: Random vibration wide band – general requirements GB/T 2423.12-1997 Environmental testing for electric and electronic products Part 2: Test methods Test Fda: Random vibration wide band – reproducibility high GB/T 2423.13-1997 Environmental testing for electric and electronic products Part 2: Test methods Test Fdb: Random vibration wide band – Reproducibility medium GB/T 2423.14-1997 Environmental testing for electric and electronic products Part 2 : Test methods Test Fdc: Random vibration wide band – Reproducibility low GJB 150.16-1986 Environmental test methods for military equipments vibration test GJB 360A-1996 test methods for electronic and electrical component parts	

推荐认可的实验室检测能力范围(英文)

№	Products, Materials, Type of activity	Items, Parameter,		Code of field	Name, Code of Specification, Standard or method used	Restriction or limitation and others
		№	Types of tests			
7		21	Free fall test	0431. 07	GB/T 2423.8-1995 Environmental testing for electric and electronic products Part 2: Test methods Test Ed: Free fall GJB 150.18-1986 Environmental test methods for military equipments Shock test	
8		22	Temperature and vibration combined test	0431. 01 、 02、 03 、 05、 11	GB/T 2423.35-1986 Basic environmental testing procedures for electric and electronic products Tests Z/Afc: Combined low temperature/vibration (sinusoidal) tests for both heat – dissipating and non – heat-dissipating specimens GB/T 2423.36-1986 Basic environmental testing procedures for electric and electronic products Tests Z/BFc: Combined high temperature/vibration (sinusoida) tests for both heat – dissipating and n0n – heat – dissipating specimens GB/T 2424.22-1986 Basic environmental testing procedures for electric and electronic products Guidance for combined temperature (cold and heat) vibration (sinusoidal) tests	
3、 Test and Evaluation of Reliability						
1	Electric、 electronic and mechanical products	23	Test of reliability		JB/T 6214 –1992 JB/T 50123 –1999 JB/T 50124 –1999 JB/T 50125 –1999 JB/T 6183 –1992 GJB/Z 34-1993 the guidance of quantitative environmental stress screening on electronic product GJB 1032 –1990 environmental stress screening process for electronic products GJB1407 –1992 Reliability growth test GJB 899-1990 Reliability testing for qualification and production acceptance GB/T 5080.1-1986 Equipment reliability testing General requirements GB/T 2689.1-.4-1981 EJ 531 – 1990	

推荐认可的实验室检测能力范围(英文)

№	Products, Materials, Type of activity	Items, Parameter,		Code of field	Name, Code of Specification, Standard or method used	Restriction or limitation and others
		№	Types of tests			
2		24	Evaluation of reliability design		JB/T 6182 –1992 MIL-HDBK-338 MIL-HDBK-217F GJB/Z 299B–1998 Reliability prediction handbook for electronic equipment GJB 1391–1992 Procedure for failure mode, effects and criticality analysis GJB1407–1992 Reliability growth test GJB 899-1990 Reliability testing for qualification and production acceptance GB/T 6992.2-1997 dependability management Part 2: Dependability programme elements and tasks GB/T 7826-1987 Analysis techniques for system reliability – Procedure for failure mode and effects analysis (FMEA) GB/T 7827-1987 Reliability prediction procedure GB/T 7828-1987 Reliability design reviews GB/T 7829-1987 Procedure for fault tree analysis GB/T 19000.4-1995 Quality management and quality assurance standards – Part 4:Guide to dependability programme management GJB 450-1988 General reliability program for materiel development and production	
4、Explosion Protection and Safety						
1	Tests of general requirements for Ex apparatus	25	Partly Items		GB 3836.1-2000 Electrical apparatus for explosive gas atmospheres – Part 1: General requirements IEC 60079-0:2000 Electrical apparatus for explosive gas atmospheres – Part 0: General requirements EN 50014:1998 Electrical apparatus for potentially explosive atmospheres General requirements	Except the test of resistance to light of Group II electrical apparatus in accordance with IEC and EN standard.

推荐认可的实验室检测能力范围(英文)

№	Products, Materials, Type of activity	Items, Parameter,		Code of field	Name, Code of Specification, Standard or method used	Restriction or limitation and others
		№	Types of tests			
2	Exd Electrical Apparatus	26	Partly Items		GB 3836.2-2000 Electrical apparatus for explosive gas atmospheres – Part 2: Flameproof enclosure “d” IEC 60079-1:1990 Electrical apparatus for explosive gas atmospheres –Part 1: Flameproof enclosures “d” EN 50018:2000 Electrical apparatus for potentially explosive atmospheres – Flameproof enclosure “d”	1. Except the test of resistance to light of Group II electrical apparatus in accordance with IEC and EN standard. 2. Except the test of non- transmission of an internal ignition for group I apparatus according to IEC/EN.
3	Exe electrical Apparatus	27	All Items		GB 3836.3-2000 Electrical apparatus for explosive gas atmospheres – Part 3: Increased safety “e” IEC 60079-7:2001 Electrical apparatus for explosive gas atmospheres – Part 7 : Increased safety “e” EN 50019: 2000 Electrical apparatus for potentially explosive atmospheres – Increased safety “e”	
4	Exi electrical Apparatus	28	All Items		GB 3836.4-2000 Electrical apparatus for explosive gas atmospheres – Part 4: Intrinsic safety “i” IEC 60079-11:1999 Electrical apparatus for explosive gas atmospheres Part 11: Intrinsic safety “i” EN 50020: 2000 Electrical apparatus for potentially explosive atmospheres – Intrinsic safety “i”	

推荐认可的实验室检测能力范围(英文)

№	Products, Materials, Type of activity	Items, Parameter,		Code of field	Name, Code of Specification, Standard or method used	Restriction or limitation and others
		№	Types of tests			
5	Exp electrical Apparatus	29	All Items		GB 3836.5-1987 Electrical apparatus for explosive atmospheres Pressurized electrical electrical apparatus “p” IEC 60079-2:2001 Electrical apparatus for explosive gas atmospheres Part 2: Electrical apparatus – type of protection “p” IEC 60079-13:1982 Electrical apparatus for explosive gas atmospheres Part 13:Construction and use of rooms for buildings protected by pressurization IEC 60079-16:1990 Electrical apparatus for explosive gas atmospheres Part 16: Artificial ventilation for the protection of analyzer(s) houses	
6	Exo electrical Apparatus	30	All Items		GB 3836.6-1987 Electrical apparatus for explosive atmospheres Oil immersed electrical apparatus “o” IEC 60079-6:1995 Electrical apparatus for explosive gas atmospheres Part 6: Oil – immersion “o” EN 50015:1994 Electrical apparatus for potentially explosive atmospheres Oil immersion “o”	
7	Exq electrical Apparatus	31	All Items		GB 3836.7 – 87 Electrical apparatus for explosive atmospheres Sand filled electrical apparatus “q” IEC 60079-5:1997 electrical apparatus for explosive gas atmospheres Part 5: Powder filling “q” EN 50017:1998 Electrical apparatus for potentially explosive atmospheres – Powder filling “q”	
8	Exn electrical Apparatus	32	All Items		GB 3836.8-2003 Electrical apparatus for explosive gas atmospheres – Part 8: Type of protection “n” IEC 60079-15:2001 Electrical apparatus for explosive gas atmospheres Part 15: type of protection “n”	

推荐认可的实验室检测能力范围(英文)

№	Products, Materials, Type of activity	Items, Parameter,		Code of field	Name, Code of Specification, Standard or method used	Restriction or limitation and others
		№	Types of tests			
9	Exm electrical Apparatus	33	Partly Items		GB 3836.9-1990 Electrical apparatus for explosive atmospheres Encapsulated electrical apparatus "m" IEC 60079-18:1992 electrical apparatus for explosive gas atmospheres Part 18: encapsulation "m" EN 50028:1987 Electrical apparatus for potentially explosive atmospheres. Encapsulation "m"	1. Except the test for group I lighting fixture in accordance with GB standard. 2. Except the test of resistance to light of Group II electrical apparatus in accordance with IEC and EN standard.
10	Exh electrical Apparatus	34			GB 3836.10-1991 Electrical apparatus for explosive atmospheres Hermetically sealed electrical apparatus "h"	
11	Dust-ignition-proof electrical apparatus (DIP DT/DP)	35			GB 12476.1-2000 Electrical apparatus for use in the presence of combustible dust - Part 1- 1: Electrical apparatus protected by enclosures and surface temperature limitation - specification for apparatus IEC61241-1-2:1999 Electrical apparatus for use in the presence of combustible dust - Part 1- 2: Electrical apparatus protected by enclosures and surface temperature limitation - selection, installation and maintenance	