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

**Title: Special Site Assessment visit for LABELO - Laboratórios Especializados em Eletroeletrônica, BR, as Additional Testing Facilities (ATF) to the ExTL UL LLC, US.**

**Circulation to: ExMC – IECEx Management Committee**

**INTRODUCTION**

The IECEx Secretariat has received an application from UL LLC, US, to conduct testing at Laboratórios Especializados em Eletroeletrônica, LABELO, BR, under the IECEx Additional Testing Facilities (ATF) arrangements. The Brazilian laboratory will operate under the control, and direction of, UL LLC, US, ExTL, and will work using UL LLC, US, procedures, or, procedures approved by UL LLC.

In accordance with IECEx 02 Edition 7.0, the IECEx Secretariat arranged for a special site assessment to be performed by an IECEx Lead Assessor. The special site assessment is treated as an extension of scope to include the new ATF location, in Brazil.

***This document is hereby submitted for ExMC approval via correspondence using the IECEx on-line voting system.  ExMC Members are requested to submit their vote via the IECEx On-line*** [***Ballot System***](https://www.iecex.com/ballot) ***by the closing date 2019 05 08***

***Please refer to OD 050 for guidance on the “IECEx On-line voting system.”***

***Chris Agius***

**IECEx Secretariat**

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| --- | --- |
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IEC System for certification to standards relating to equipment for use in Explosive Atmospheres (IECEx System)

IECEx Assessment Report Form

IECEx Assessment Report Form for use by IECEx Assessment Teams to report Assessments conducted according to the IECEx Assessment Procedures of

1. Operational Document IECEx OD 003-2 for the Certified Equipment Scheme
2. Operational Document IECEx OD 016 for the Certified Service Facility Scheme
3. Operational Document IECEx OD 022 for the IECEx Conformity Mark Licensing System

IECEx ExCB/ExTL assessment report for

LABELO - Laboratórios Especializados em Eletroeletrônica

PUCRS/LABELO – Laboratórios Especializados em Eletroeletrônica
Av. Ipiranga, 6681 - Prédio 30 – Bloco A – Sala 210
Bairro Partenon
CEP 90619-900 – Porto Alegre/RS – Brasil

Brazil

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

CONTENTS

[1 Assessment information 5](#_Toc4070672)

[1.1 Type of Body covered by this assessment: 5](#_Toc4070673)

[1.2 Type of assessment: <retain appropriate marks> 5](#_Toc4070674)

[1.3 Details of body 5](#_Toc4070675)

[1.3.1 Country 5](#_Toc4070676)

[1.3.2 Name of body 5](#_Toc4070677)

[1.3.3 Name and title of nominated principal contact 5](#_Toc4070678)

[1.4 Assessment information 5](#_Toc4070679)

[1.4.1 Members of the assessment team 5](#_Toc4070680)

[1.4.2 Place(s) of assessment 5](#_Toc4070681)

[1.4.3 Assessment date(s) 5](#_Toc4070682)

[1.5 Scope 5](#_Toc4070683)

[1.5.1 ExCB and ExTL scope for equipment certification scheme 5](#_Toc4070684)

[1.5.2 ATF scope 6](#_Toc4070685)

[2 Common information 7](#_Toc4070686)

[2.1 Legal entity of body 7](#_Toc4070687)

[2.2 Financial support 7](#_Toc4070688)

[2.3 History 7](#_Toc4070689)

[2.4 Documentation 8](#_Toc4070690)

[2.4.1 Quality manual 8](#_Toc4070691)

[2.4.2 Procedures 8](#_Toc4070692)

[2.4.3 Work instructions 8](#_Toc4070693)

[2.4.4 Records (including test records where relevant) 8](#_Toc4070694)

[2.4.5 Document change control 8](#_Toc4070695)

[2.5 Confidentiality 8](#_Toc4070696)

[2.6 Publications (Hard cover and Electronic) 9](#_Toc4070697)

[2.7 Recognition and agreements 9](#_Toc4070698)

[2.8 Internal audit and periodic management review 9](#_Toc4070699)

[2.9 Contracting, subcontracting, use of other labs and use of other locations 9](#_Toc4070700)

[2.10 Training and competence 9](#_Toc4070701)

[2.11 Complaints and appeals (including appeals to IECEx) 9](#_Toc4070702)

[2.12 Special facts to be noted 9](#_Toc4070703)

[2.12.1 Supporting documentation 9](#_Toc4070704)

[2.12.2 Witnessed Tests 10](#_Toc4070705)

[2.13 Recommendations 10](#_Toc4070706)

[3 ExTL for IECEx Certified Equipment Scheme 11](#_Toc4070707)

[3.1.Assessment references 11](#_Toc4070708)

[3.1 ATF persons interviewed 11](#_Toc4070709)

[3.2 Associated ExTL(s) 11](#_Toc4070710)

[3.3 Associated ExCB(s) 11](#_Toc4070711)

[3.4 Organisation 11](#_Toc4070712)

[3.4.1 Names, titles and experience of the senior executives 11](#_Toc4070713)

[3.4.2 Name, title and experience of the quality management representative 11](#_Toc4070714)

[3.4.3 Other employees in ExTL activity 12](#_Toc4070715)

[3.5 Organizational structure 12](#_Toc4070716)

[3.6 Resources 12](#_Toc4070717)

[3.7 Test reports issued 12](#_Toc4070718)

[3.8 National accreditation 13](#_Toc4070719)

[3.9 Calibration 13](#_Toc4070720)

[3.10 Proficiency 13](#_Toc4070721)

[3.11 Comments (including issues found during assessment) 13](#_Toc4070722)

[Annex A Accreditation Certificate for ISO/IEC 17025 14](#_Toc4070723)

# Assessment information

## Type of Body covered by this assessment:

|  |  |
| --- | --- |
| ExCB for IECEx Certified Equipment Scheme |  |
| ExTL for IECEx Certified Equipment Scheme |  |
| ATF for IECEx Associated Testing Facilities | ✓ |
| ExCB for IECEx Certified Service Facilities Scheme |  |
| ExCB for IECEx Conformity Mark Licensing System |  |

NOTE 1 ExCB - IECEx Certification Body

NOTE 2 ExTL - IECEx Testing Laboratory

## Type of assessment: <retain appropriate marks>

|  |  |
| --- | --- |
| Pre-assessment for candidate body |  |
| Initial assessment for candidate body | ✓ |
| Surveillance  |  |
| Re-assessment  |  |
| Scope extension |  |

## Details of body

### Country

Brazil

### Name of body

União Brasileira de Educação e Assistência - Pontifícia Universidade Católica do Rio Grande do Sul - PUCRS

Entity:– LABELO - Laboratórios Especializados em Eletroeletrônica as an ATF for UL LLC as ExTL.

### Name and title of nominated principal contact

|  |  |  |
| --- | --- | --- |
| **Name** | **Title** | **E-mail address** |
| Mike Slowinske | ExTL Manager | Michael.Slowinske@ul.com |
| Antonio Cesar Gobbi Manfrin | Special & Industrial Equipment testing area Coordinator | manfrin@pucrs.br |

## Assessment information

### Members of the assessment team

|  |  |
| --- | --- |
| **Name**  | **Role (modify as necessary)** |
| Thierry Houeix (INERIS) | Lead assessor |

### Place(s) of assessment

PUCRS/LABELO – Laboratórios Especializados em Eletroeletrônica
Av. Ipiranga, 6681 - Prédio 30 – Bloco A – Sala 210
Bairro Partenon
CEP 90619-900 – Porto Alegre/RS – Brasil
Brazil

### Assessment date(s)

November 29-30, 2018

## Scope

### ExCB and ExTL scope for equipment certification scheme

It was confirmed in ExMC/1470/DV the organisation of UL that UL LLC, UL DEMKO and UL do Brasil as ExCB and UL LLC ExTL. LABELO is one of the ATF linked to UL LLC.

### ATF scope

The tests that are to be performed by LABELO are listed hereafter.

| **IEC Standard**  | **Title** | **Clause** | **Type tests** |
| --- | --- | --- | --- |
| 60079-0 Ed 5Ed 6 | General requirements | 26.4.2  | Resistance to impact  |
| 26.4.3 | Drop Test |
| 26.4.5 | Degree of Protection (IP) by enclosure (IEC60529) |
| 26.5.1 | Temperature measurement |
| 26.5.2 | Thermal shock test |
| 26.6 | Torque test for bushings |
| 26.8 | Thermal endurance to heat |
| 26.9 | Thermal endurance to cold |
| 26.12 | Earth continuity |
| 26.13 | Surface resistance test of parts of parts of enclosures of non-metallic materials |
| 26.14 | Measurement of capacitance |
| 26.16 | Alternative qualification of elastomeric sealing O-rings |
| A.3.1 | Tests of clamping of non-armoured and braided cables |
| A.3.2 | Tests of clamping of armoured cables |
| 60079-1 Ed 6Ed 7 | Flameproof enclosures "d" | 15.2.2 | Determination of explosion pressure (reference pressure) |
| 15.2.3 | Overpressure test |
| 15.4 | Tests of flameproof enclosures with breathing and draining devices |
| 15.5 | Tests for “dc” devices |
| C.3.1 | Cable glands - Sealing test |
| C.3.3.1 | Type tests for Ex blanking elements - Torque test |
| C.3.4.2 | Impact test for thread adapters |
| D.3.6 | Empty flameproof enclosures as Ex components - determination of explosion pressure (reference pressure) |
| D.3.7 | Empty flameproof enclosures as Ex components - over pressure test – first method (static) |
| 60079-5 Ed 4 | Powder filling "q" | 5.1.1 | Pressure type test of enclosure |
| 5.1.2 | Verification of the degree of protection of the enclosure  |
| 5.1.3 | Dielectric strength of the filling material |
| 5.1.4 | Maximum temperatures |
| 60079-6Ed 4 | Oil immersion "o" | 6.1.1 | Overpressure test on sealed enclosures |
| 6.1.2 | Reduced pressure test on sealed enclosures |
| 6.1.3 | Overpressure test on unsealed enclosures |
| 6.1.4 | Maximum temperature |
| 60079-7 Ed 5 | Increased safety "e" | 4.10 | Degree of protection provided by enclosures |
| 6.1 | Dielectric strength |
| 6.3.2 | Luminaires – impact and drop tests |
| 6.3.7 | Tests for wiring of luminaires subject to high-voltage impulses from ignitors |
| 6.3.8 | Tests for electronic starters for tubular fluorescent lamps and for ignitors in level of protection “ec” for discharge lamps |
| 6.3.9 | Test for starter holders for luminaires in Level of Protection “ec” |
| 6.5 | Transformers and other than instrument transformers |
| 6.6.2 | Verification and tests for cells and batteries of Level of Protection “eb” |
| 6.7 | Verification and tests for cells and batteries of Level of Protection “ec” |
| 6.9 | Resistance heating devices (not trace heating) |
| 6.10 | Terminal insulating material tests – thermal conditioning then pull test |
| 60079-11Ed 6 | Intrinsic safety "i" | 10.1 | Spark ignition test |
| 10.2 | Temperature tests |
| 10.3 | Dielectric strength tests |
| 10.5 | Tests for cells and batteries  |
| 10.6 | Mechanical tests  |
| 10.7 | Tests for apparatus containing piezoelectric devices  |
| 10.9 | Cable pull test |
| 10.10 | Transformer tests |
| 60079-15Ed 4 | Type of protection "n" | 5 | Temperatures |
| 6.3 | Minimum degree of protection |
| 6.4.4 | Clearances, creepage distances and separations - Comparative tracking index (CTI) |
| 6.5 | Electric strength |
| 11.3.4.2 | Supplementary requirements for non-sparking luminaires - Thermal test (normal operation) |
| 11.3.4.3 | Supplementary requirements for non-sparking luminaires - Thermal test (abnormal conditions) |
| 11.3.4.4 | Supplementary requirements for non-sparking luminaires - Surface temperatures |
| 11.3.5 | Supplementary requirements for non-sparking luminaires - Resistance to dust and moisture |
| 11.3.6 | Insulation resistance and electric strength  |
| 22.3.1.1 | Thermal endurance to heat |
| 22.4 | Tests for enclosed break devices and non incendive components |
| 22.5 | Tests for sealed devices |
| 22.5.1 | Conditioning |
| 22.5.2 | Voltage test |
| 22.5.3.2 | Leakage test on sealed devices (method 1) |
| 22.5.3.3 | Dielectric withstand test |
| 22.5.4 | Test for sealed devices for luminaries (method A) |
| 22.6 | Type test requirements for restricted-breathing enclosures |
| 22.10 | Test for wiring of luminaires subject to high-voltage impulses from ignitors |
| 60079-18Ed 3Ed 4 | Encapsulation “m” | 8.1.1 | Tests on the compound - Water absorption test |
| 8.1.2 | Tests on the compound - Dielectric strength test |
| 8.2.2 | Tests on the apparatus - Maximum temperature |
| 8.2.3 | Tests on the apparatus - Thermal endurance test |
| 8.2.4 | Tests on the apparatus - Dielectric strength test |
| 8.2.5 | Tests on the apparatus - Cable pull test |
| 8.2.6 | Tests on the apparatus - Pressure test for Group I and Group II electrical equipment |
| 8.2.7 | Tests on the apparatus - Test for resettable thermal protective device |
| 8.2.8 | Tests on the apparatus - Sealing test for built-in protective devices |

# Common information

## Legal entity of body

LABELO is part of União Brasileira de Educação e Assistência – UBEA.

## Financial support

The operations at LABELO regarding the tests are self-financing.

## History

LABELO has been a service provider within the Brazilian market since 1966, having earned accreditation from INMETRO’s General Office of Accreditation (CGCRE) in 1991. In this year, the first calibration laboratories of LABELO joined the Brazilian Calibration Network (RBC). This accreditation covered the Time & Frequency laboratory, with measurement traceability to the National Observatory, and the Electricity laboratory, which started to provide accredited calibration services for basic electrical quantities.

In 1997, due to the increasing demand for conformity assessment of electro-electronic products experimented by the Brazilian market, were created the first testing laboratories of LABELO, encompassing electromedical equipment, stabilizers, no-breaks and ballasts. At that time, with the financial support of the Program for Support of the Scientific and Technological Development (PADCT), conducted by the Brazilian Ministry of Science and Technology (MCT), testing methods and laboratory infrastructure was created that allowed LABELO, through its first testing laboratories accredited by INMETRO, to join the Brazilian Network of Testing Laboratories (RBLE).

In this same year, LABELO received its first international recognition, with the accreditation of its High Frequency laboratory by the Deutscher Kalibrierdienst (DKD) of the German Physikalisch-Technische Bundesanstalt (PTB). This accreditation lasted until 2007, when INMETRO began to operate in this area, at national level, through mutual recognition with ILAC.

## Documentation

### Quality manual

LABELO has a Quality Manual which addresses the main elements of ISO/IEC 17025 and also addresses other relevant requirements. On October 2018, UL LLC conducted their own internal audit.

### Procedures

The IEC standards are incorporated into the LABELO manual and use documented procedures. The documents were checked during the assessment and found to meet the requirements of the IECEx. These documents are under UL LLC’s control.

The main procedures are:

* PQ 6.2 - Personal
* PQ 6.3 - Facilities and environmental conditions
* PQ 6.4 - Equipment and Metrological traceability
* PQ 6.6 - Externally provided products and services
* PQ 7.1 - Review of requests, tenders and contracts
* PQ 7.2 - Selection and verification of methods
* PQ 7.4 - Handling of test or calibration items
* PQ 7.6 - Evaluation of measurement uncertainty
* PQ 7.7 - Ensuring the validity of results
* PQ 7.8 - Reporting of results
* PQ 7.9 - Complaints
* PQ 7.10 - Nonconforming work and corrective action
* PQ 7.11 - Control of data and information management
* PQ 8.3 - Document Control
* PQ 8.4 - Records
* PQ 8.5 - Actions to address risks and opportunities
* PQ 8.6 - Improvement
* PQ 8.8 - Internal audits
* PQ 8.9 - Management reviews

### Work instructions

Work instructions are quoted by the procedure mentioned above which are reviewed and approved by UL LLC. Example which were reviewed during the assessment are:

* IT ATX001 - Non-propagation test
* IT ATX002 - Preparation, extension and measurement and thermocouples

### Records (including test records where relevant)

LABELO has a procedure to keep records of the tests performed. It is defined in the quality system PQ 8.4 – Records. In addition, at the end of the job all main data are sent to UL LLC.

### Document change control

LABELO has a procedure to keep control to the change of the document. It is defined in the quality PQ 8.3 - Document Control. When a document concerns a test which is listed in 1.5.2, UL LLC will be part of the review.

## Confidentiality

Confidentiality between UL LLC and LABELO is covered in the agreement signed between the two parties. A clear policy on confidentiality and conflicts of interest is also included in the following documents

* PQ 6.2 – Personal
* PQ 6.3 - Facilities and environmental conditions
* PQ 8.4 - Records
* PQ 8.5 - Actions to address risks and opportunities.

## Publications (Hard cover and Electronic)

LABELO publishes a brochure of services in Portuguese and English.

## Recognition and agreements

There is a signed agreement between UL LLC and LABELO that was reviewed during the assessment visit and found to be appropriate. It ensures that the control of projects resides with UL LLC, UL DEMKO and UL do Brasil in its role of ExCB and that the operations at LABELO operate as an extension of the UL LLC ExTL.

LABELO is accredited by the General Accreditation Coordination of Inmetro, the National Institute of Metrology, Quality and Technology of Brazil, according to the requirements established in ABNT NBR ISO / IEC 17025, by National Accreditation Body (ONA) do Paraguay, recognition by the Rede Metrológica do Rio Grande do Sul, by the National Telecommunications Agency (ANATEL) and by the Brazilian Network of Analytical Laboratories for Health (REBLAS).

The complete scope of accreditation can be downloaded on

* <http://www.inmetro.gov.br/laboratorios/rble/docs/CRL0075.pdf>

## Internal audit and periodic management review

While LABELO is under surveillance and control of UL LLC who perform annual audit for checking compliance with IECEx requirements, it was also noted that LABELO perform internal audits according ISO / IEC 17025. The procedure are:

* PQ 8.8 - Internal audits
* PQ 8.9 - Management reviews

## Contracting, subcontracting, use of other labs and use of other locations

Not Applicable for an ATF.

## Training and competence

There is a competency matrix for the IECEx Scheme. Interviews were undertaken with staff to ensure that they had the required level of understanding.

## Complaints and appeals (including appeals to IECEx)

IECEx appeals will be handled according to the UL LLC procedures previously accepted by IECEx.

## Special facts to be noted

### Supporting documentation

Copies of additional supporting information for this assessment have been provided to the applicant and the IECEx Secretariat. These are included in a site assessment report and include:

* Details of issues raised and how these have been resolved
* Checklist for ISO/IEC 17025
* Completed Technical Capability Document (TCD)
* Photos of the facilities/tests witnessed are included in the above TCD
* Assessors’ notes

### Witnessed Tests

The following tests were witnessed during the assessment visit:

* IEC 60079-0, clause 26.5.1, Temperature rise on a luminaire
* IEC 60079-1, clause 15.2.2, Determination of reference pressure for IIC hydrogen,
* IEC 60079-1, clause 15.3.3, Flame transmission test,
* IEC 60079-11, clause 6.1.1.3, Short-circuit testing on high capacity batteries
* IEC 60079-31, clause 6.1.1.3, IP6X Dust Ingress on an enclosure

## Recommendations

Based on the assessment performed on November 29-30, 2018, LABELO - Laboratórios Especializados em Eletroeletrônica is recommended for acceptance in the IECEx scheme as ATF for the tests listed in the scope.

|  |  |
| --- | --- |
| Thierry Houeix |  |
| Lead Assessor |  |

Date: 20 March 2019

#  ExTL for IECEx Certified Equipment Scheme

## 3.1. Assessment references

1. IECEx02 IECEx Certified Equipment Scheme covering equipment for use in explosive atmospheres – Rules of Procedure
2. IECEx OD003-2 Assessment, surveillance assessment and re-assessment of ExCBs and ExTLs operating in the IECEx 02, IECEx Certified Equipment Scheme
3. IECEx OD009 Issuing of CoCs, ExTRs and QARs
4. ISO/IEC 17025:2005 Edition 2,General requirements for the competence of testing and calibration laboratories
5. IECEx Document OD17 Drawing and documentation guidance
6. IECEx Technical Capability Documents (TCD)
7. ExTAG decision sheets (DSs)

NOTE The latest editions of the above documents were applied.

## ATF persons interviewed

|  |  |
| --- | --- |
| **Name** | **Position** |
| Antonio Cesar Gobbi Manfrin | Special & Industrial Equipment testing area Coordinator |
| Carlos Bindé | Quality Coodinator |
| Pedro Polidori Colombo | Technician of the laboratory |
| Juliana Nichele Kick | Analista da Qualidade |

## Associated ExTL(s)

The ATF is associated [with](https://www.iecex.com/dmsdocument/2480?web=1) UL LLC, according to ExMC/1470/DV

## Associated ExCB(s)

The ATF is associated [with](https://www.iecex.com/dmsdocument/2480?web=1) UL LLC, UL DEMKO and UL do Brasil.

## Organisation

### Names, titles and experience of the senior executives

| **Name** | **Title** | **Experience** |
| --- | --- | --- |
| Antonio Cesar Gobbi Manfrin | Head of the Ex Laboratory | 13 years in Ex |
| Israel Teixeira | Director of LABELO | Business AdministrationPost - Graduation in Telecommunications, PUCPR;Post - Graduation in Business Marketing, UFPR;Post - Graduation in Business Administration, UFPR;Higher Education in Business Administration;Intermediary English |

### Name, title and experience of the quality management representative

|  |  |  |
| --- | --- | --- |
| **Name** | **Title** | **Experience**  |
| Carlos Bindé | Quality Coodinator | 8 years  |

### Other employees in ExTL activity

| **Name** | **Title/responsibility** | **Experience in Ex**  |
| --- | --- | --- |
| Pedro Polidori Colombo | Technician of the Ex Laboratory | 2 years in Ex |

## Organizational structure

PUCRS/LABELO related organizational charts

**Pro-Rector**

Secretary

Advisors

Financial

administrative director

Institutional development

administrative director

Quality of services & operations

administrative director

Operations coordinator

Finances

LABELO

Accounting & Estate

Purchases

GTIT

Projects office

Human resources

Fund-raising

Infrastructure & Logistics

Engineering

&

Architecture

Additional units

Maintenance

## Resources

LABELO was found to have appropriate competent staff, procedures and test apparatus for the scope of testing sought. This is defined in PQ 6.6 - Externally provided products and services.

## Test reports issued

LABELO has issued some report relating to Ex equipment. This is reported in the table below.

| **Standard numbers** | **Type of protection or other identifying information** | **Number of issued reports (ExTRs) (for last 4 years)** | **Total** |
| --- | --- | --- | --- |
|  |  | 2015 | 2016 | 2017 | 2018 |  |
| ABNT NBR IEC 60079-0:2008 | General standard | 3 | - | - | - | 3 |
| ABNT NBR IEC 60079-0:2013 | General standard | 9 | 27 | 15 | 6 | 57 |
| ABNT NBR IEC 60079-1:2009 | Ex-d | 6 | 8 | 5 | 4 | 23 |
| ABNT NBR IEC 60079-1:2016 | Ex-d | - | - | - | 1 | 1 |
| IEC 60079-1:2014 | Ex-d | - | - | - | 1 | 1 |
| ABNT NBR IEC 60079-7:2008 | Ex-e | 1 | - | - | - | 1 |
| ABNT NBR IEC 60079-11:2013 | Ex-i | 7 | 20 | - | 2 | 29 |
| ABNT NBR IEC 60079-15:2012 | Ex-n | 5 | - | 1 | - | 6 |
| ABNT NBR IEC 60079-18:2010 | Ex-m | 10 | 17 | - | - | 27 |
| ABNT NBR IEC 60529:2005 | IP standard (in support of IEC 60079-31) | 2 | 14 | 26 | 12 | 54 |

## National accreditation

LABELO is accredited by General Coordination of Accreditation (Cgcre) do INMETRO. See Annex A

The accreditation covers the scope listed in 1.5.2 and is due for renewal in Sept 2019

## Calibration

The equipment used for the tests are calibrated.

## Proficiency

LABELO partakes in the Proficiency testing organised by PTB.

|  |  |
| --- | --- |
| **Year(s) of participation** | **IECEx Proficiency Testing program** |
| 2010 | Round 1 – explosion pressure |
| 2010 | Round 2 – spark ignition |
| 2013 | Round 3 – flame transmission |
| 2013 | Round 4 - Temperature |

## Comments (including issues found during assessment)

Minor issues were found which were cleared to the satisfaction of the assessment team during the visit.

These included:

* The Test Sheet filled by LABELO and prepared by UL LLC
* Realization of Surface Resistance Test and Short Circuit Test on battery

No issue requiring action remained after the visit

1. Accreditation Certificate for ISO/IEC 17025

