

IECEEx Assessor Training: TCDs

2019-09-23 | Katy Holdredge



Training Topics

- I. Purpose of TCD
- II. Assessor responsibilities
- III. ExCB/ExTL responsibilities
- IV. Completing the TCD



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

TECHNICAL CAPABILITY DOCUMENT No. TCD – IEC 60079 and ISO 80079 Series

Referenced Standards

IEC 60079, ISO 80079-36 and 37, and ISO 16852 – Explosive atmospheres

Parts included: IEC 60079- 0, 1, 2, 5, 6, 7, 11, 13, 15, 16, 18, 26, 28, 29-1, 29-4, 30-1, 31, 32-2, 33, 35-1, 35-2, 40, 46 and ISO 80079-36, 37 and ISO 16852

Name of body:

Members of the assessment team

Name	Role

Place(s) of assessment:

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Assessment date(s):

Purpose of TCD



Purpose

- Documented evidence ExCB/ExTL has capability to assess and test equipment according to their scope at a point in time
- Collaborative process between assessment team and ExCB/ExTL
- Focuses on most important requirements of standards



Assessor Responsibilities



Before the Assessment:

Lead Assessor:

- Provide latest TCD template to ExCB/ExTL:
<https://www.iecex.com/members-area/new-document-library-page/assessors-package/>
- Remove standards not in scope
- Set deadline for ExCB/ExTL completion
- Provide feedback with any issues



Before the Assessment:

Technical Assessor:

- Review completed TCD
 - All standards in scope completed
 - All testing with * **minimum testing equipment** completed
 - Note any references to contracting, subcontracting, borrowed/rented equipment
 - Verify pictures included



After the Assessment:

Technical Assessor:

- All standards in scope completed
- All testing with * **minimum testing equipment** completed
- Verify pictures from ExCB/ExTL included
- Note all witnessed tests
- Include pictures from witnessed tests



After the Assessment:

Lead Assessor:

- Review TCD provided from technical assessor
- Provide to IECEx secretariat



ExCB/ExTL Responsibilities



Before the Assessment:

Complete TCD for all standards in scope

- Section 1, Personnel
- Section 2, Procedures
- Section 3, Equipment & Tests

1. Personnel

Names of personnel deemed competent by the IECEx body being assessed for this standard	Abbreviation (e.g. initials) used below (if needed)	Interviewed (Y/N)

2: Procedures

Relevant procedures (to be listed by body under assessment):

Procedure title	No	Clause(s) covered

3: Equipment and Tests

Standard: IEC 60079-0 General Requirements		
Clause	Requirement – Test	Result – Remark
6.3	Opening time test *	
	Availability and adequacy of equipment	
	Maintenance and calibration	
	Capable of being performed correctly	
	Comments	
Photos		



After the Assessment:

- Provide any missing information requested by Assessor Team.



Completing the TCD



General

- Remove standards not in scope
- Sections within TCD contain duplication of information from previous sections. User may put information in the first section/s and reference the section that has the full details
- Adding photos - Use 'insert' function to automatically fit the width of the cell
- Initial assessments - assessors may require tests using proficiency testing artefacts to be demonstrated as part the assessment
- More info: Guidelines and Information for IECEx Assessments
[IECEX OD 032](#)



Section 1, Personnel

- List competent staff - ExCBs or ExTLs
- Compare with staff competence matrix
- Indicate those interviewed
- Use check of competence as guide
- Verify competence of ExTL staff:
 - Properly use equipment

1. Personnel

Names of personnel deemed competent by the IECEx body being assessed for this standard	Abbreviation (e.g. initials) used below (if needed)	Interviewed (Y/N)

Check of competence (typical topics or questions to cover include):

- What is explosion protection?
- What are the equipment groups?
- What are EPLs?
- What is meant by ambient temperature?
- Temperature Classification
- External heating or cooling
- What is meant by service temperature?
- Can parts exceed the temperature class?
- Mechanical strength - materials and impact strength
- Stored energy and cooling time



Section 2, Procedures

- Initially completed by ExCB/ExTL
- Additional details added during audit
- Procedures used for assessment & testing
- Any contracted or subcontracted tests - procedure for ISO/IEC 17025

2: Procedures

Relevant procedures (to be listed by body under assessment):

Procedure title	No	Clause(s) covered
Datasheet package	ULS-01604-AAIZ-TestRecordDataSheet-2004	All testing
Air Temperature Test for Hazardous Locations Electrical Luminaires LPG	00-LO-L0890	26.5.1
Method for Verifying Degrees of Protection against Ingress of Dust (IP Codes 5X And 6X) For Enclosures of Electrical Equipment Test LPG	01-LO-L0855	26.4.5
LPG for HazLocLoadPanel 1.0 Software	01-LO-W0866	26.5.1



Section 3, Equipment & Tests – General

- Contains relevant tests for standard
- Document
 - Availability and adequacy of equipment
 - Maintenance & calibration info
 - Comments
 - Photos



Section 3, Equipment – In-House

- **ALL** equipment marked with an asterisk shall be available **in-house** for ExTL

Effective 2016-09-18

- Definition of **in-house**

Being within ExTL and associated laboratories (generally under the broader organisation) to which the ExTL has access both in terms of priority, i.e., can get tests done when needed, and geography, i.e., nearby



Section 3, Equipment – Borrowed or Rented

- Equipment may be borrowed or rented for
 - Tests without an asterisk
 - Tests with an asterisk if they also have the equipment in-house
- ExTL shall not borrow or rent test equipment for every test in a particular standard.
- View agreements/contracts for borrowed/rented equipment - responsibilities for calibration, use maintenance
- Review provisions for transportation of borrowed/rented test equipment - will not affect correct functioning of equipment
- Compliance of testing/measurement equipment with applicable standard requirements



Section 3, Equipment – Non Integral ExTL

- When ExTL is not integral with the ExCB, comment indicating the associated ExTL(s)





Examples:

26.8	Thermal endurance to heat *	
	Availability and adequacy of equipment	Environment chamber and temperature probe
	Maintenance and calibration	Chambers are calibrated and usage logged.
	Capable of being performed correctly	
	Comments	
Photos		



Examples:


28.4.2	Resistance to Impact *		
	Availability and adequacy of equipment	WEIGHT 1 kg	NBK30938
		TAPE	TCO-0905
		CLOCK	NBK84991
		BLUE FREEZER	NBK54422
		STEEL PLATE 20KG	NBK84292
		AMBIENT CONDITION	NBK38086
	Maintenance and calibration		
	Capable of being performed correctly		
	Comments		
Photos	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p data-bbox="672 977 807 999">Impact weight</p> </div> <div style="text-align: center;">  <p data-bbox="1159 999 1207 1021">Plate</p> </div> </div>		

Examples:

Standard: IEC 60079-11 Intrinsic safety "I"		
Clause	Requirement – Test	Result – Remark
10.1	Spark ignition test *	
	Availability and adequacy of equipment	<p>Equipment:</p> <ul style="list-style-type: none"> - Spark ignition apparatus, BKI, Id. No.: [REDACTED] 103011. - LCR meter HEWLETT PACKARD type 4284A, Id. No.: [REDACTED] 100654. - Capacitors, inductors, resistors. - Oscilloscope Yokogawa, type DLM2022, Id. No.: [REDACTED] 106805. - Current clamp Pico Technology, type TA167, [REDACTED] 108127. - Power source and/or load (selected depending on tested sample). <p>Equipment for preparation of the gas mixture:</p> <ul style="list-style-type: none"> - Data acquisition unit Agilent, type 34970A, Id. No.: [REDACTED] 105097 - Oxygen analyser Servomex, type 02223 - Temperature and humidity meter Vaisala, type HMT/HMP 368 - Pressure sensor Wika, type IS10 <p>Note: Test with gas mixture H₂ + O₂ + air, group IIC for Ga, is performed in [REDACTED]. See Agreement between [REDACTED] and [REDACTED]. Annex to document [REDACTED].</p>
	Maintenance and calibration	<p>Calibration certificates.</p> <p>See TDEx01 (Equipment – Ex department)</p> <p>See TD035 (Equipment – Safety and Electromagnetics department)</p>
	Capable of being performed correctly	
	Comments	
Photos		



Examples:

15.2.2	Determination of Reference Pressure * WITNESSED TEST	
	Availability and adequacy of equipment	2 test chambers, measuring set of pressure – charge pressure sensors, charge amplifiers, PC with A/D card, Yes, calibrated gases, chromatograph, mixing machine
	Maintenance and calibration	Yes, calibrated pressure sensors
	Capable of being performed correctly	Test conducted by [REDACTED]. [REDACTED]
	Comments	ExCB decides whether to test with electronics or not. Fully aware of requirements for installing and removing o-ring/gaskets. Have capability of conducting test at low ambient in chamber.
Photos		

Questions?

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