

**Workshop for SADC countries to promote the
development and implementation of Conformity
Assessment programmes
Livingstone (Zambia)
13-15 October 2014**

**Basic Steps to Establish ISO/IEC
17025 Compliant Testing Laboratories**

**Presented by
Andrew Kwan
ITU Consultant**



¹ Livingstone, Zambia, 13-15 October 2014

PRESENTATION OVERVIEW

- Requirements
 - Testing scope
 - ISO/IEC 17025 requirements
- Components of a ISO/IEC 17025 compliant testing laboratory
- Criteria for selecting countries for establishing Regional Test Centres



Livingstone, Zambia, 13-15 October 2014

2

Requirements

- Testing scope
 - Need to determine the testing scope, e.g. telecom equipment, IT equipment
 - It could be derived from the business plan

- ISO/IEC 17025 requirements include:
 - Management requirements
 - Technical requirements



3

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

- ❖ Legal status/ Legal entity

- The laboratory has to be established as an entity that can be held legally responsible



4

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Financial policy

- Secure medium and long term funding
- It is difficult in some countries to cover cost from earned income
- Government has to commit to provide long term financial support

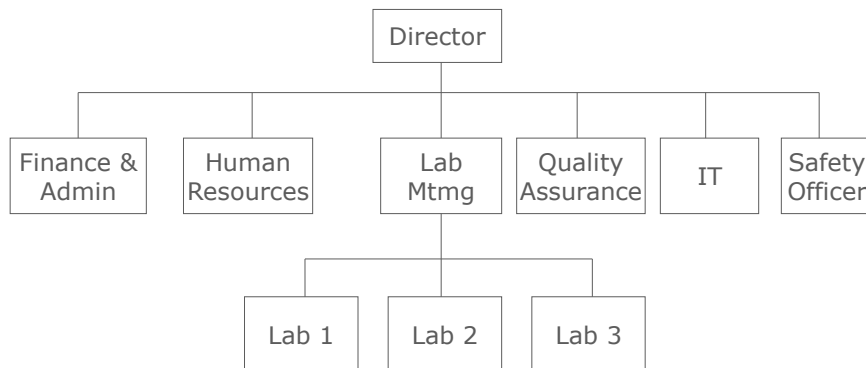


5

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Management structure



A typical Management structure



6

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Management structure

- Departments with conflicting interests do not adversely influence compliance with ISO/IEC 17025
- In example shown, Finance, Administration, Quality assurance and Human resources do not report to Lab. Management.
- If laboratory is part of a larger organization, responsibilities of key personnel have to be well defined in order to identify potential conflict of interest



7

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Personnel

- Recruit staff who have both theoretical training and adequate practical experience
- Deploy staff for an extended period of time in a working laboratory



8

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Personnel (cont'd)

- Remuneration of staff is an important issue
- If possible ensure fully trained staff are paid well enough to keep them in the organization



9

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Premises

- Effective separation between neighbouring areas when the activities are incompatible e.g. wireline and wireless test stations
- Access to test and calibration areas limited to authorized personnel e.g. by ID cards



10

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Premises (cont'd)

- Separation of laboratory and office spaces
- Proper orientation of windows to avoid direct sunlight to protect sensitive test equipment
- Appropriate long term environmental control



11

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Environmental control

- For testing of telecom equipment, temperature between 15–30 degrees C
- Relative humidity < 70%
- Continuity of electricity supply



12

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Environmental control (cont'd)

- Uninterrupted Power Supply deployed if necessary
- Voltage stabilizer required if variance is $> +$ or $- 5\%$



13

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Equipment

- Purchase equipment which confirm to specifications relevant to the tests
- Availability of maintenance and technical support is an important issue
- Better to buy a slightly a more expensive equipment for which maintenance is available than a less expensive option for which there is no technical support, in the country or in neighbouring countries



14

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Equipment

- Selecting a vendor, criteria include:
 - Vendor's equipment meets the required specifications
 - Vendor has leading position in the market place
 - Equipment design, development, and manufacturing take place in a quality system environment such as ISO 9001



15

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Equipment

- Selecting a vendor, criteria include:
 - Vendor provides installation, familiarization and training services
 - Vendor provides phone and onsite support in local language



16

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Equipment

- Installation and Documentation, steps include:
 - Verify the location meets the environmental specifications as defined by the vendor
 - Install equipment hardware according to vendor specification



17

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Equipment

- Installation and Documentation, steps include:
 - Install software and start-up according to vendor specifications
 - Create documentation of hardware and software such as vendor, model number, serial number and location



18

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Equipment

- Initial testing for calibration and performance verification, steps include:
 - Develop test procedures and test protocols
 - Define acceptance criteria based on documented specifications
 - Make sure test engineers have appropriate qualifications



19

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Equipment

- Initial testing for calibration and performance verification, steps include:
 - Perform tests and document test results
 - Label equipment with status, dates of last and next calibration
 - Maintain records of calibration and checks



20

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Training system

- Develop training program to train new staff and to upgrade staff



21

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Steps towards ISO/IEC 17025 accreditation

- Selection of accreditation body, criteria include:
 - Language
 - Proximity to the country if in country accreditation body is not available
 - Accreditation cost
 - Accreditation body is a signatory to ILAC MRA



22

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Steps towards ISO/IEC 17025 accreditation

■ Investigation

- Create team with a team leader
- Define scope of accreditation
- Learn ISO/IEC 17025 requirements



23

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Steps towards ISO/IEC 17025 accreditation

■ Investigation (cont'd)

- Conduct gap analysis and prepare task list
- Estimate costs
- Management decision



24

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Steps towards ISO/IEC 17025 accreditation

■ Implementation

- Create implementation team
- Select accreditation body
- Develop document
- Training



25

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Steps towards ISO/IEC 17025 accreditation

■ Implementation (cont'd)

- Internal audit and corrections
- Pre-assessment and corrections
- Accreditation audit



26

Livingstone, Zambia, 13-15 October 2014

Components of a ISO/IEC 17025 compliant testing laboratory

❖ Steps towards ISO/IEC 17025 accreditation

- Accreditation support
 - Ensure that there is long term financial and managerial support to maintain accreditation



27

Livingstone, Zambia, 13-15 October 2014

Criteria for selecting countries for establishing Regional Test Centres

- Countries belonging to a geographic region
- Countries sharing technical and/or economic interests
- Countries which have established Accreditation Bodies which are signatories to ILAC MRA



28

Livingstone, Zambia, 13-15 October 2014

Criteria for selecting countries for establishing Regional Test Centres (cont'd)

- Countries which have metrology institutes to provide calibration services
- Synergism between the stakeholders - equipment vendors/standards development organizations/network operators/test centres
- Funding support from both public and private sectors



29

Livingstone, Zambia, 13-15 October 2014

Basic Steps to Establish ISO/IEC 17025 Compliant Testing Laboratories

Thank you

Andrew Kwan
akwan68@gmail.com



30

Livingstone, Zambia, 13-15 October 2014