Tanzania Communications Regulatory Authority (TCRA)

Title: Testing Laboratory experience in the EAC Region, Country's experience, Case Studies of Tanzania

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Presentation Profile

1.0 Review on Some Key Standardisation Terminologies

- *Standards & Categories of Communications Equipment*

2.0 C&I Related Regulatory Framework

3.0 Countrywide Survey on Communications Equipment

4.0 The Tanzania TAL Concept and Initiatives

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The Presentation Objectives

The main objectives of this Presentation are two-fold:

Firstly, to appraise the EAC Members on the efforts taken by Tanzania on the setting-up our Type Approval Laboratory; and

Secondly, to call for further collaborations and partnerships to enable speedy and timely establishment of the Tanzania TAL facility that aims at serving the EAC region and beyond.

1.0 Key Standardization Terminologies and Type Approval Procedures

- Technical Standards
- Safety Standards
- Inter-working and Performance
- Type Approval Procedures

1.1 What is a Technical Standard?

Apart from known definitions……

- A Technical Standard is an established norm or requirement. It is usually a formal document that establishes uniform engineering or technical criteria, methods, processes and practices *(Wikipedia);*

Also……

- A technical standard can be a controlled artifact or similar formal means used for calibration.

1.2 What are the Safety Standards?

Safety Standards are set of standards to ensure safety of people, animals and environment when equipment or network is in operation or when idle. These standards deal for example with:

- *Insulation requirements for equipment;*
- *Maximum exposure levels (occupational and general public);*
- *Shielding requirements (domestic / workplace);*
- *Maximum emission limits (e.g. SAR)*

1.3 Interoperability & Performance Standards

These are standards that deal with specifications for connectivity between devices and their performance:-

- *They can define physical layer characteristics of connectors, electrical levels even size of connectors;*
- *They also state the performance requirements of various pieces of* ***Communications Equipment****.*

1.4 Categories of Communications Equipment

(i) Terminal equipment:

- Any communication equipment at user side of the communication network infrastructure is categorized as terminal equipment;

.....for fixed network the boundary is the line jack and for wireless interface the boundary varies depending on the type of technology.

(ii) Network Equipment:

- The network equipment includes switches, Access Points, Base Stations, transmission equipment, etc.

.....this does not include passive equipment (ducts, batteries, towers, etc.)

1.5 The equipment Approval procedures

The equipment APPROVAL procedures include: **VERIFICATION**, **REGISTRATION**, **CERTIFICATION**, **ACCEPTANCE** and **AUTHORIZATION**

- ✓ **VERIFICATION**: is a self-approval process whereby the manufacturer/importer is required to ensure that the measurements necessary to determine compliance with the technical standards are performed.
  - ➢ *A copy of the measurement report showing compliance with the established standards must be retained by the manufacturer and, if requested, submitted to the Authority.*
    - ❖ *Devices subject to this procedure include TV & FM receivers, non-consumer Industrial and scientific & Medical Equipment.*

The equipment Approval procedures/2

- ✓ **REGISTRATION**: is a procedure, which requires submittal of an abbreviated application for equipment Type Approval that does not include a measurement report, to the TCRA.
  - ➢ *A measurement report showing compliance of the product with the established technical standards must be retained by the applicant and must be submitted upon request by the Authority.*
    - ❖ Devices subject to Registration include AM, FM & TV Broadcasting transmitters, point–to-point microwave links and certain microwave auxiliary broadcasting transmitters.

The equipment Approval procedures/3

- ✓ **CERTIFICATION**: Requires submittal of an application that includes a complete technical description of the product and a measurement report showing compliance with the established technical standards.

  - ❖ Devices subject to this procedure include Low power transmitters such as short range cordless telephones and microphone, garage and car door opener controls, radio control toys, security alarm systems, scanning and super regenerative receivers, TV interface devices such as VCRs. Other devices are personal computers and peripherals i.e. Video monitors, modems, etc.

The equipment Approval procedures/4

- ✓ **ACCEPTANCE**: is similar to certification, except that it typically applies to radio transmitter equipment that is used in a licensed radio service.

  - ❖ Devices subject to type Acceptance include Land mobile transmitters such as Cellular transmitters; transmitters used in the maritime and aeronautical safety services; and citizen Band (CB) & other transmitters used in the personal radio services.

The equipment Approval procedures/5

- ✓ **AUTHORIZATION**: Applies to both wired and long range cordless telephones, PABXs, switches, interfaces and data terminal equipment intended to be connected to any public switched telephone network. This authorization procedure is designed to protect against harm to the telephone network.

  - ➢ *The **Certification, Authorization** and **Acceptance** procedures require that **tests** be performed on the device to be Type Approved.*

    - ❖ *These tests measure the levels of radio frequency energy that are radiated by the device into the open air or conducted by the device onto the power lines. After these tests are performed, a report must be produced showing the test procedure, the test results and some additional information about the device including design drawings.*

2.0 C&I Related Regulatory Framework

The Electronic and Postal Communications Act No. 3 enacted in 2010:

- *Empowers the Authority to establish Technical Specifications for any Equipment to be Connected to any Public Network;*
- *Makes it Mandatory to Type Approve any Communications Equipment to be connected to any Public Network;*
- *Empowers the Authority to undergo Equipment Certification Process, including **Testing** of such Equipment; and*
- *Participation in standardization activities*

C&I Related Regulatory Framework/2

- There are also Electronic and Postal Communications (**Electronic Communications Equipment Standards**) **Regulations, 2014**:
  - *Cover all Electronic Communications Equipment imported or manufactured for use in Tanzania for connection to any Electronic Communications Network for the purpose of receiving or transmitting Electronic Communication signals;*
  - *Provide procedures of Type Approval of the Electronic Communications Equipment including:*
    - ✓ *Manufacturer's Declaration of Conformity (**MDC**);*
    - ✓ *Type Approval Certification Process;*
    - ✓ *Technical Evaluation;*
    - ✓ *Field Testing;*
    - ✓ *Test for Compliance;*
    - ✓ *Type Approval Fees;*
    - ✓ *Minimum Warranty period of one year*

C&I Related Regulatory Framework/3

- The legal framework on development of equipment technical specifications in Tanzania also covers both ICT/telecom products and services (i.e. network and terminal equipment).

- Counterfeit products are identified by:
  - ✓ *Market Surveillance*
  - ✓ *Inspection of importations at the point of entry*
  - ✓ *Complaint from Customers*

- Partners in fighting counterfeit:
  - ✓ *Tanzania Bureau of Standards (**TBS**)*
  - ✓ *The Fair Competition Commission (**FCC**)*
  - ✓ *The Tanzania Police Force (**TPF**)*
  - ✓ *The Public*

3.0 The Countrywide Surveys on Communications Equipment

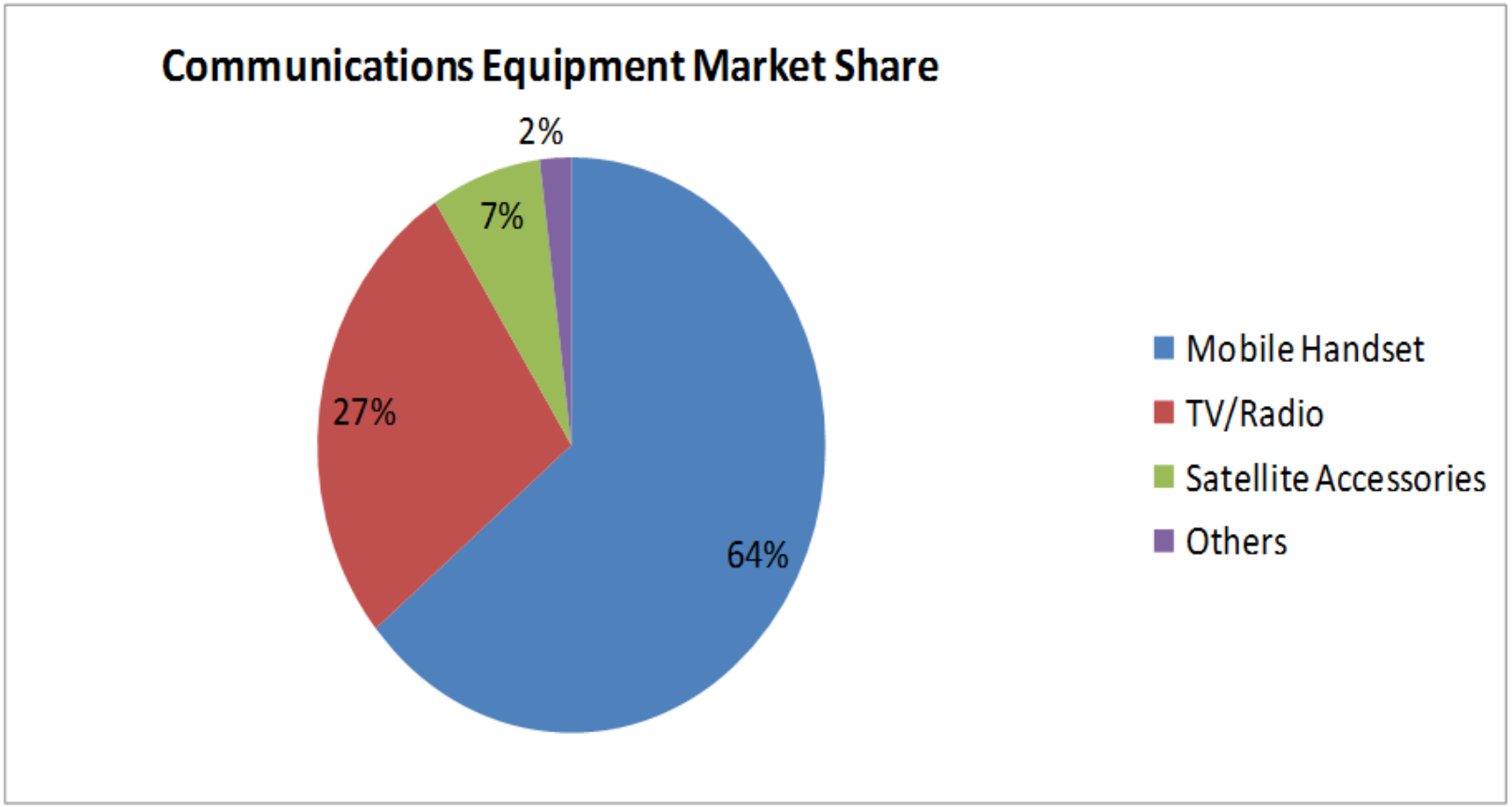
- In the year 2007/8 the Authority conducted a base-line Survey on available Communications Equipment countrywide;

- The Report (not published) showed that:-

  - ✓ *Most of the Equipment in the market were counterfeited Equipment with fabricated labels attached to them (Brand Names, S/N, etc.);*

  - ✓ *The Labels could not guarantee quality and authenticity of the equipment;*

The Countrywide Survey Results/2



4.0 The Tanzania TAL Concept & Initiative

After the 2007/8 Survey, as Enforcement strategies

- *The country through **TCRA** and in consultation with **ITU**, embarked on a plan to establish a Type Approval Laboratory (**TAL**) Project by initiating consultancy procurement processes to conduct the feasibility study for the project;*

- *The Consultant in **February 2011** concluded Feasibility Study on the Establishment of Electronic communications Equipment Type Approval Testing Laboratory in Tanzania.*

The Tanzania TAL Concept & Initiative/2

- The Study established that the Tanzania **TAL** project is service and market **viable**;
- The estimated Cost to fully roll-out and operationalize the facility was about **27m Euros**;
- Taking into considerations the priorities and the required time to build the Modern Type Approval Laboratory in Tanzania, the Study proposes a **Four Phased approach** and each phase will grow in terms of equipment and human resources requirements

The Tanzania TAL Concept & Initiative/3

Implementation Schedule/Phase	Laboratory Functions & Equipment Covered
PHASE 1:	**Conformance** [DVB-T/T2 & Mobile Terminals; Efficient use of RF spectrum]
PHASE 2:	**EMC** (Emission); Health & safety; **Conformance** (DVB-C, S/S2; Analogue, FM, T-DAB Transmitter; Quality Measurements; IP-based Networks; NGN
PHASE 3:	**EMC** (Immunity), **Conformance** (Base Stations, Network Equipment, Legacy Network equipment)
PHASE 4:	**Expansion of the TAL Services to the entire African region or part of**

The Tanzania TAL Concept & Initiative/4

The Tanzania **TAL** will offer the following Services:

- *Hands-on Training opportunities in the region;*
- *Capability to verify Equipment Specifications;*
- *Collaborative avenue with other Equipment Certifying or Accreditation Bodies in the world;*
- *Means to do spot check for imported communications equipment not only in the country but also in the East African Region and beyond.*
- *Help to reduce counterfeit Communications Equipment in the country and therefore maintain better* ***QoS*** *and* ***QoE***

5.0 The Tanzania TAL Realization Process

The Tanzania TAL Milestones .....

- ✓ ***TCRA*** *noted the space limitation in its current building in order to house the Type Approval Laboratory (**TAL**);*
- ✓ *In **March, 2013:** **TCRA** acquired a plot with a purpose of developing investment property which will also house the Tanzania **TAL**.*
- ✓ *In **February, 2014:** **TCRA** floated a Tender calling for Expression of Interest for the Provision of Consultancy Services for concept and Architectural design for implementation of the Tanzania TAL;*

Tanzania TAL Realization/2

- ✓ *In **March, 2014: TCRA** invited submissions of Technical Proposals for the Provision of Consultancy Services for concept and Architectural design for implementation of Type approval Laboratory;*
- ✓ *In **June 2014**, the Consultant was acquired and concept design work progressed; and*
- ✓ *In **July, 2015: TCRA** received the Technical Proposal for the concept and Architectural designs for implementation of **Tanzania TAL**.*

6.0 The proposed Tanzania TAL Design

- The Tanzania TAL is designed with the following sections:
  - ✓ *Basement area covering about 300m^2*
  - ✓ *Ground Floor covering about 300m^2*
  - ✓ *1st to 3rd Floors each covering about 250m^2*
- Tanzania TAL shall be using conference and meeting rooms from the main TCRA building.

The proposed Tanzania TAL Design/2

- The Tanzania TAL shall constitute Laboratory, small offices and the basement that will be used to store lab equipment and cargo;
- There will be a special elevator which will be used to transfer TAL cargo from "Store" to the Lab. The TAL store will be having 300m^2 which is enough to store equipment and lab cargo;
- There will be a truck access to the TAL Store for loading and offloading cargo;

The proposed Tanzania TAL Design/3

- The separation of TAL Laboratory from the Main TCRA Building follows the Guidelines for developing countries on establishing conformity assessment test labs in different regions by International Telecommunication Union (ITU);

- That is, for ISO/IEC 17025 compliant testing laboratories, various tasks in the planning and development of the laboratory premises need to be considered, including:

  - ✓ *Open Area Test Site (OATS) should be located in an electronic "quiet" area in order to minimize electronic interference;*

The proposed Tanzania TAL Design/4

- ✓ *Effective separation between neighboring areas where the activities of these areas are incompatible;*
  - ➢ *For example the separation of wire line and wireless test stations or the separation of office and laboratory spaces.*
- ✓ *Access to test and calibration areas shall be strictly controlled and limited to authorized personnel;*
  - ➢ *An example of access control is the use of Biometric ID means.*

The proposed Tanzania TAL Design/5

- ✓ Proper orientation of the windows of the building is necessary to avoid direct sunlight in order to protect sensitive test equipment;
  - ➢ *For example in the northern hemisphere, the windows should be located on the north side of the building.*
- ✓ There should be a long term plan for environmental control;
  - ➢ *For example for the testing of telecommunication equipment, the building temperature should be kept between 15 to 30 degrees Celsius and the relative humidity should be less than 70 per cent.*

The proposed Tanzania TAL Design/6

- ✓ Continuity of electricity supply has to be maintained.
  - ➢ *Uninterrupted power supplies have to be deployed if necessary. Electricity supply variance can affect test equipment and thereby have effects on test results. Voltage stabilizers are required if the voltage variance is greater or less than 5 per cent.*
  - ➢ The identified plot for Tanzania TAL can easily be connected to reliable power from national Grid. Gas which is abundantly available is currently used to generate power so assures excess and stable electricity for the Tanzania TAL.

..The Bird Eye View of the TANZANIA TAL..

The proposed Tanzania TAL Design/7

7.0 Project Justification for Regional Status

TANZANIA

- Population: > 48 million

  >70% Living in Rural areas

  Source NBS website/statistics

- Size: 945,000 Square Kms

- *Phones SIMs >34million; Internet Users (Dec. 2014) ~ 11million*

- *TVs House holds ~ 6million*

- *Computer Family Terminals: >20million;*

- *Share Borders with 8countries*

- *Per Capita Income (2014) ~ $800*

Project Justification for Regional Status/2

- Generally, User Awareness and Low purchasing power in EAC countries, lead to opting for low quality (mostly **counterfeits** which, at the end results in **e-waste** generation) communications equipment;

- Tanzania recognises the common markets in various blocks like East Africa, West, South, etc., so as the services and facilities of **Tanzania TAL** become available, they can be used within the region;

- The efforts that Tanzania has already put in the project.

Project Justification for Regional Status/3

Recall, the Tanzania **TAL** will provide:

- ✓ *Hands-on Training opportunities in the region;*
- ✓ *Capability to verify Equipment Specifications;*
- ✓ *Collaborative avenue with other Equipment Certifying or Accreditation Bodies in the world;*
- ✓ *Means to do spot check for imported communications equipment not only in the country but also in the East African Region and beyond.*
- ✓ *Help to reduce counterfeit Communications Equipment in the country and therefore maintain better **QoS** and **QoE***

8.0 Challenges

- Establishing State of the Art Test Centre(s) is an expensive undertaking but a necessity;
- But raising the required amount of **>20m** Euros remains a challenge for one single country;
- Enforcement exercises to curb counterfeited electronic communications equipment are also costly.

9.0 Call for Partnerships

- Implementation of the Communications Equipment Type Approval Laboratory is one of the strategic decision in Tanzania; the ITU, other UN families and other countries both within EAC and in the world are invited to collaborate in order to share the cost of Tanzania TAL implementation and benefits from the project;

- Considering the common markets in various country groupings (blocks) like East Africa, West, South, etc., the Test Centre(s) like **Tanzania TAL**, should be a regional agenda that needs high level of collaboration.

10.0 Concluding Remarks!

- *Conformance testing measures how accurately a product implements a technical specification. So, equipment standards play an important role towards achieving overall quality of services as perceived subjectively by end users;*

- *Standards are important to ensure not only consistent performance of communications networks, but safe operations of communications equipment and value for money to end users;*

- *Tanzania through TCRA would wish to keep all available equipment in multi-vendor environment interoperable;*

Acknowledgement

I THANK YOU ALL FOR LISTENING