ITU and NCA

Online Training Course delivered by NCA, Ghana on

Conformance and Interoperability (C&I) Virtual Training for Africa Group: Regulatory framework and practical SAR, RF, DTT and EMF tests including Creation of Basic lab facilities

16 – 27 November 2020

COURSE OUTLINE

COURSE DESCRIPTION

Title	**Conformance and Interoperability (C&I) Virtual training for Africa Group: Regulatory framework and practical SAR, RF, DTT and EMF tests including Creation of Basic lab facilities**
Objectives	[Briefly state main objective of the training course] i) To understand the technical and regulatory requirments for ICT equipment authorisation, in the exponential demand in the use of ICTs. ii) To share Ghana's experience in C&I testing as use of ICTs increase during and after Covid-19 pandemic effects and shocks iii) To present the different types of C&I Labs, the process for building C&I Lab and cost estimates including specifications and labs working together through agreement. iv) To present the different types of C&I Labs, the process for building C&I Lab and cost estimates including specifications, operational cost and Labs working together through agreements(MRA) v) To understand the technical and regulatory requirments for ICT equipment authorisation, in the exponential demand in the use of ICTs
Dates	16 – 27 November 2020 (12:00 – 15:00hrs, GMT + 2)
Duration	2 weeks of 3 hours per day

Registration deadline	11 November 2020
Training fees	Free of charge
Course code	20OI24516AFR-E

DESCRIPTION OF THE TRAINING COURSE

The course will cover Introduction to Conformance and Interoperability (C&I) Testing Regimes in Covid-19 response and recovery (as demand of ICTs use increases), specially on Technical and regulatory requirements for ICT equipment authorization including strategy for building labs with discussion priority areas such as EMF, SAR, DTT, RF, IoT as well as estimated costs and requirements for capacity building.

Specifications and testing parameters for specific laboratories will be highlighted instead of practical sessions which would have taken place should the training have been physical. Innovative establishment of testing labs through MRAs will be discussed among other topics

LEARNING OUTCOMES

Upon completion of this course, participants will be able to:

a) Acquire knowledge, understanding and competencies in establishing Conformity and Interoperability frameworks.
b) Participants will acquire knowledge of different types of C&I Labs, processes in building C&I Labs and associated specifications and costs estimates of selected Labs and will be able to establish labs. The cost will also include operational cost as well as the needed requirements for capacity building and this would help participants to initiate the process of setting up C&I lab in their various countries.
c) Know the ITU updated activities on C&I with specific emphasis on Pillars 3 & 4 of the C&I program in the context of workstreams of Thematic Priority
d) At the end of the training, participants would have clear understanding of the process of the administrative, regulatory and technical requirements needed for equipment authorisation (type approval) and ensure that they are in line with national regional and international standards.
e) The training aims at ensuring knowledge understanding and competence in MRA (Mutual Recognition Arrangements/ Agreements) aspects of the administrative, regulatory, and technical requirements for equipment authorisation in line national, regional and international standards.
f) Competently take the final examination at the end of the training.

TARGET POPULATION

The Training course is open to experts conducting activities on conformity and Interoperability including practical testing in Specific Absorption Rate **(SAR),** Radio Frequency and Signalling **(RF),**

Digital Terrestrial Television Receivers **(DTT) and** Electromagnetic Field Strength **(EMF)** from Ministries in charge of ICTs and the Regulatory Bodies.

Target audience for this course are the Ministry and Regulators staff in the ICTs Industry working with ICTs standards including approving and authorizing ICTs equipment and devices in Sub-Sahara Africa. These are technical staff from entities like;

- Ministry of ICTs
- Regulatory Authority
- Operators
- Service Providers
- Manufacturers
- Vendors
- ICT equipment Dealers, etc

ENTRY REQUIREMENTS

Candidates will be selected based on their duties and background knowledge of Conformance and Interoperability issues. Confirmation of admittance to the training course will be sent directly to the selected candidates. Candidates will be expected to give a brief of C&I status in their countries and also to participate in group projects and presentation of SAR, RF, DTT and EMF

TUTORS/INSTRUCTORS

NAME OF TUTOR(S)/INSTRUCTOR(S)	CONTACT DETAILS
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TRAINING COURSE CONTENTS

The topics covered in this module are:

1. Presentation of the C&I Programme – including activities and status of Study group 2 Question 4 including C&I Africa Group and related WSIS Action Lines

2. Introduction to Conformance and Interoperability (C&I) Testing Regimes in Covid-19 response and recovery (as demand of ICTs use increases), Technical and regulatory requirements for ICT equipment authorization.
3. Strategy for building labs with discussion priority areas such as EMF, SAR, DTT, RF, IoT as well as estimated costs and requirements for capacity building.

4. Introduction to Group Project and Presentation
5. Introduction to the whole set of C & I Labs, Mini Labs for market surveillance including specifications and costs estimates.
6. Introduction to establishing Mutual Recognition Agreements (MRAs)
7. The ITU activities on C&I with focus on Pillars 3 & 4 of the C&I Programme and CITP updates

8. Brainstorming, Q&A, Evaluation and Closure

TRAINING COURSE SCHEDULE

Week / Session	Topic	Exercises and interactions
Week 1	**Topics** 1. ***ITU – Presentation of the C&I Programme – including activities and status of Study group 2 Question 4/2 including CITP OM 1 updates and related WSIS Action Lines***	This week, each participant has to: • Read of the PPT slides uploaded in the course page for week 1 • Post an answer to the forum question at the latest by **Wednesday -18:00hrs (GMT + 2)** • Respond to posts made by at least 2 other participants in the forum at the latest by Thursday of each week • Attend Zoom sessions scheduled **everyday 12:00-15;00hrs** • Complete a self-test quiz by **Friday - 18:00hrs** (GMT + 2) **Week 1 Forum Topics**:

	2. ***Introduction to Conformance and Interoperability (C&I) Testing Regimes in Covid-19 response and recovery (as demand of ICTs use increases), Technical and regulatory requirements for ICT equipment authorization.*** 3. ***IS0 17025 standard for conformance laboratories.*** 4. ***Criteria and Specifications for Radio Frequency (RF) and Internet of Things (IoT) labs for market surveillance including specifications and costs estimates.*** ***Case study of conformity certificate/test report*** 5. ***Criteria and Specifications for Specific Absorption Rate (SAR) labs for market***	1.In view of COVID-19 response and recovery (as the use of ICTs increases), what do you think should be the main areas of focus for regulators in your country? What would be the Technical and Regulatory requirements for ICTs equipment authorization? (*your post should be at least 250 words and supported by readings from reference materials provided*) 2. In any of the test labs of priority in your country develop the strategy to use in building it stating clearly the specifications. (*your post should be at least 250 words and supported by readings from reference materials provided*)

	surveillance including specifications and costs estimates. Case study of conformity certificate/test report	
Week 2	**Topics.** 6. ***Criteria and Specifications for Digital Terrestrial Television (DTT) labs for market surveillance including specifications and costs estimates.*** ***Case study of conformity certificate/test report*** 7. ***Introduction to establishing Mutual Recognition Agreements (MRAs)*** 8. ***Criteria and Specifications for Electromagnetic Field (EMF) labs for market surveillance including specifications and costs estimates.***	This week, each participant has to: • Read of the PPT slides uploaded in the course page for week 2 and the PDF document on C and I (Conformity and Interoperability) Laboratories and MRAs (Mutual Recognition Agreements/Arrangements) • Post an answer to the forum question at the latest by **Wednesday -18 :00hrs (GMT + 2)** • Respond to posts made by at least 2 other participants in the forum at the latest by **Thursday** of each week • Participate in the Zoom sessions scheduled daily, **12:00-15:00hrs** (GMT +2) • Complete a self-test quiz by Thursday **18:00hrs** (GMT + 2) • Take the Exam on Friday 12:00 – 13:30hrs (GMT + 2), 25 Multiple choice test. **Week 2 Forum Topic** : Discuss the types of MRAs you would arrange in the country (specifying what your country can offer and what the other party can offer for both parties to benefit from each other, could be more than two MRAs) (*your post should be at least 250 words and supported by readings from reference materials provided*)

	Case study of conformity certificate/test report 9. ***Introduction to Group Project and Presentation*** 10. ***The ITU activities on C&I with focus on Pillars 3 & 4 of the C&I Programme and CITP updates*** 11. ***Brainstorming, Q&A and Evaluation and Closure***	

	16th November 2019
12:00 - 12:30	***Welcoming, Registration and Opening*** ***Welcoming speech ITU*** ***Welcoming speech NCA*** • NCA Managing Director or Representive • ITU Regional Director for Africa or Representative
12:30 - 14:00	***Session 1: ITU – Presentation of the C&I Programme – including activities and status of Study group 2 Question 4/2 including CITP updates and related WSIS Action Lines*** **Objective:** To understand ITU's work on C&I with contributions to WSIS Action line 1 and Sustainable Development Targets. **Learning Outcome:** At the end of this session, participants would have clear understanding of the importance of C&I in the ICTs industry **Outline:**

	This session will focus ITU work on C&I and demonstrate relationship to WSIS Action Lines and Sustainable Development Goals. ***ITU C&I Programme: Study Group 2 Question 4 and C&I Africa Group Activities*** ➢ **Key activities on Study Group 2 Question 4 /2** ➢ **Structure and details of the question** ➢ **Format and Submission of contributions** ➢ **Africa Group Activities** ➢ **CITP updates** ➢ **Related WSIS Action Lines** • Chali Tumelo (ITU) • Keith Mainwaring – ITU Expert
14:00 – 15:00	***OM 1 – Establishing Conformity and interoperability Regimes.*** ***1.1 Understanding of common minimum requirments fot Type Approval (from FCC and EC)*** ***1.2 Use of Proxies (FCC and EC)*** • ***ITU Expert, Mr. Keith Mainwarring***
	Day 2 17th November 2020
12:00 – 13:00	***Session 2: Introduction to Conformance and Interoperability (C&I) testing regime in COVID-19 response and recovery (as demand of ICTs use increases), Technical and Regulatry requirements for ICT equipment*** **Objective:** To understand the technical and regulatory requirments for ICT equipment authorisation, in the exponential demand in the use of ICTs as well as share Ghana's experience in C&I testing as use of ICTs increase during and after Covid-19 pandemic effects and shocks **Learning Outcome:** At the end of this session, participants would have clear understanding of the process of the administrative, regulatory and technical requirements needed for equipment authorisation (type approval) are in line with national regional and international standards. **Outline:** This session will focus on conformance and interoperability testing. Essentially the session will discuss in detail the following key areas which are the basis for resilient C&I testing regime • Overview of C&I with emphasis on Ghana's C&I testing regime • Processes of national standards settings • The technical requirements - Health and Safety - Electromagnetic Compatibility (EMC) - Radio Frequency(RF)/Interference ➢ **Mr. Kofi Ntim Yeboah-Kordieh** ➢ **Mr. Roland Yaw Kudozia**

	➢ **Mr. Abdul-Razak Salifu**
13:30 – 15:00	***Session 2 Cont'd*** • Regulatory Requirements - Legal framework - Type Approval Management System - Proxy & Administrative approvals • C&I in Corona Virus (COVID-19) response and recovery - Equipment Authorization and testing experience - Market Surveillance activities - Enhanced testing and community engagement • Priority areas for testing ➢ **Mr. Kofi Ntim Yeboah-Kordieh** ➢ **Mr. Roland Yaw Kudozia** ➢ **Mr. Abdul-Razak Salifu**
	Day 3 18th Novemmber 2020
12:00 – 13:30	***Session 3: IS0 17025 standard for conformance laboratories*** ***Objective:*** ***To present the ISO 17025 standard and recommmeded structure for the operations of laboratories, as well as the ISO17025 accreditation process.*** ***Learning Outcome:*** ***At the end of this session, participants would have clear understanding of the structure, management, and operational aspects of a laboratory with reference to ISO 17025.*** ***Outline:*** ***Presentations will focus on the structure, operations, management and accreditation process for laboratories with regards to the ISO 17025 standard.*** • ***Overview of the ISO 17025 Standard*** • ***Structure of the laboratory*** • ***Management of the Laboratory*** • ***Laboratory Operations***

	NCA ➢ ***Mr. Roland Yaw Kudozia*** ➢ ***Mr. Kofi Ntim Yeboah-Kordieh***
13:30 – 15:00	***Session 3: Cont'd*** • ***Accreditation Process*** • ***Training and Capapcity building*** • ***Cost Areas (estimates)*** ➢ ***Mr. Roland Yaw Kudozia*** ➢ ***Mr. Kofi Ntim Yeboah-Kordieh***
	Day 4 19th November 2020
12:00 – 13:30	***Session 4: Criteria and Specifications for Radio Frequency (RF) and Internet of Things (IoT) labs for market surveillance including specifications and costs estimates.*** ***Case study of conformity certificate/test report*** ***Objective:*** ***To ensure participants know about the Standard, technical specications, cost estimates and accreditation process.*** ***Outcome:*** ***Participants will understand RF, IoT test processes, lab specifications, technical standards and process of accreditation. Partipants will also understand and interpret parameters inRF test reports*** ***Outline:*** ***In this session participants will learn about practical work focusing on parameters of testing in RF and IoT labs.*** • ***Overview of Laboratory*** • ***Objective of the Laboratory*** • ***Scope of the lab (test areas required).*** • ***Specific standards / technical specification document for a particular testing area in a lab*** • ***Laboratory equipment capability (determined by licenses available in the equipment)*** • ***Requirement for setting up the lab – understanding the need for the lab***

	➢ **Mr. Roland Yaw Kudozia** ➢ **Mr. Isaac Laryea** ➢ **Mourad Belmrissi**
13:30 – 15:00	***Session 4 Cont'd: Criteria and Specifications for Radio Frequency (RF) and Internet of Things (IoT) labs for market surveillance including specifications and costs estimates.*** • ***Sample test report analysis (meaning of key parameters, where they can be referenced in technical specifications)*** • ***Cost Component*** ➢ *Cost of Training* ➢ *Purchase of hardware (equipment) – cost influenced by scope-Technology areas and Licences* ➢ *Site preparation cost* ➢ *Operational cost (calibration, maintenance, utility, training, disposables, Facility cost where applicable)* ➢ *Importation cost (hardware)* ➢ *national taxes cost* ➢ *Accreditation* ➢ **Mr. Roland Yaw Kudozia** ➢ **Mr. Isaac Laryea**
Day 5 20th November 2020	
12:00 – 13:30	***Session 5: Criteria and Specifications for Specific Absorption Rate (SAR) labs for market surveillance including specifications and costs estimates.*** ***Case study of conformity certificate/test report*** ***Objective:*** ***To ensure participants know about the Standard, technical specications, cost estimates and accreditation process.*** ***Outcome:*** ***Participants will understand SAR test processes, lab specifications, technical standards and process of accreditation. Partipants will also understand and interpret parameters in SAR test reports*** ***Outline:*** ***In this session participants will learn about practical work focusing on parameters of testing in SAR labs.*** • ***Overview of Laboratory*** • ***Objective of the Laboratory*** • ***Scope of the lab (test areas required).*** • ***Specific standards / technical specification document for a particular testing area in a lab***

	• ***Laboratory equipment capability (determined by licenses available in the equipment)*** • ***Requirement for setting up the lab – understanding the need for the lab*** ➢ ***Mr. Peter Onyekwere*** ➢ ***Mr. Romeo Toffik***
13:30 – 15:00	***Session 5 Cont'd: Criteria and Specifications for SAR labs for market surveillance including specifications and costs estimates.*** • ***Sample test report analysis (meaning of key parameters, where they can be referenced in technical specifications)*** • ***Cost Component*** ➢ *Cost of Training* ➢ *Purchase of hardware (equipment) – cost influenced by scope-Technology areas and Licences* ➢ *Site preparation cost* ➢ *Operational cost (calibration, maintenance, utility, training, disposables, Facility cost where applicable)* ➢ *Importation cost (hardware)* ➢ *national taxes cost* ➢ *Accreditation* ➢ ***Mr. Peter Onyekwere*** ➢ ***Mr. Romeo Toffik***
	Day 6 23rd November 2020
12h:00 – 13:30	***Session 6: Criteria and Specifications for Digital Terrestrial Television (DTT) labs for market surveillance including specifications and costs estimates.*** ***Case study of conformity certificate/test report*** ***Objective:*** ***To ensure participants know about the Standard, technical specications, cost estimates and accreditation process.*** ***Outcome:*** ***Participants will understand DTT test processes, lab specifications, technical standards and process of accreditation. Partipants will also understand and interpret parameters in DTT test reports*** ***Outline:*** ***In this session participants will learn about practical work focusing on parameters of testing in DTT lab.***

	• *Overview of Laboratory* • *Objective of the Laboratory* • *Scope of the lab (test areas required).* • *Specific standards / technical specification document for a particular testing area in a lab* • *Laboratory equipment capability (determined by licenses available in the equipment)* • *Requirement for setting up the lab – understanding the need for the lab* • *Cost components* ➢ ***Mr. Edmund Y. Fianko*** ➢ ***Mr. Peter Djakwah***
13:30 – 15:00	***Session 7: Introduction to establishing innovative way of testing through Mutual Rcogniton Agreements (MRAs)*** ***Learning Outcome:*** ***The training aims at ensuring knowledge understanding and competence in MRA aspects of the administrative, regulatory, and technical requirements for equipment authorisation in line national, regional and international standards.*** ***Outline:*** ***The session will focus on understanding MRA's and how to leverage MRA's for C&I testing.*** • *Standards & Technical requirements* • *Processes of standards setting* • *Mutual Recognition Agreements/Arrangements (MRA)* • *Why MRA's* • *Interoperability issues* • *Contribution of Testing Laboratories to C&I* • *framework for one stop shop Type Approval and harmonization of standards* • *MRA's and Conformity Assessment Bodies (CAB's)* • *Types and Benefits of MRA's* • *MRA framework and operation including key attributes* • *Procedures for designation of CAB's under an MRA* • *MRA Case Study* • *ITU program to promote establishment of MRAs* ➢ **Mr. Romeo Toffik Rockson** ➢ **Mr. Roland Yaw Kudozia** ➢ **Mr. Abdul-Razak Salifu**

	Day 7 24th November
12:00 – 13:30	***Session 8: Criteria and Specifications for Electromagnetic Field (EMF) labs for market surveillance including specifications and costs estimates.*** ***Case study of conformity certificate/test report*** ***Objective:*** ***To ensure participants know about the Standard, technical specications, cost estimates and accreditation process.*** ***Outcome:*** ***Participants will understand EMF test processes, lab specifications, technical standards and process of accreditation. Partipants will also understand and interpret parameters in EMF test reports*** ***Outline:*** ***In this session participants will learn about practical work focusing on parameters of testing in EMF lab.*** • ***Overview of Laboratory*** • ***Objective of the Laboratory*** • ***Scope of the lab (test areas required).*** • ***Specific standards / technical specification document for a particular testing area in a lab*** • ***Laboratory equipment capability (determined by licenses available in the equipment)*** • ***Requirement for setting up the lab – understanding the need for the lab*** ➢ ***Mr. Peter Onyekwere*** ➢ ***Mr. Romeo Toffik Rockson***
13:30 – 15:00	***Session 8 Cont'd: Criteria and Specifications for EMF labs for market surveillance including specifications and costs estimates.*** • ***Sample test report analysis (meaning of key parameters, where they can be referenced in technical specifications)*** • ***Cost Component*** ➢ *Cost of Training* ➢ *Purchase of hardware (equipment) – cost influenced by scope-Technology areas and Licences* ➢ *Site preparation cost* ➢ *Operational cost (calibration, maintenance, utility, training, disposables, Facility cost where applicable)* ➢ *Importation cost (hardware)* ➢ *national taxes cost*

	➢ *Accreditation* ➢ ***Mr. Peter Onyekwere*** ➢ ***Mr. Romeo Toffik Rockson***
	Day 8 25th November 2020
12:00 – 13:30	***Session 9 : Introduction to Group Project and Presentation*** ***Objective:*** ***To avail participants an opportunity to use acquired knowledge to solve given challenges indicated in case studies. Participants will be required to submit presentations after deliberations among group members.*** ***Outcome:*** ***Participants will present solutions to case studies in groups.*** ***Outline:*** ***In this session participants will undertake group project exercises (case studies) presented and share solutions with colleagues.*** ***Case study 1. In country A, citizens complaints of headache led to resistance to Mobile Network Operators from setting up sites to improve QoS. The Government has hired you as a consultant to conduct a need assessment and advise on which lab to setup. Present findings and recommendations to the Government. Show technical specifications and standards and how you will offset the operational cost of the lab.*** ***Case Study 2. Citizens in country B complain of call drops, over heating of phones and difficulty in connecting to networks. Checks with the Mobile Network Operattors show that there are no QoS issues on the part of service providers. The regulator Communication Regulatory Authority (CRA) did coverage prediction analysis and concluded that network coverage was substantial, however the problem still persisted. As a consultant, conduct analysis and advise the governmen on measures to curb the challenge.*** ***Case Study 3. Citizens in Country C complain about headache and heat from mobile devices anytime they make calls. Health authorities and consumer agencies comfirm the complaints via nationwide surveys. The government intends to take a policy decision. As a consultant, you are to advise the gov. on which particular direction the goverment should take to help address the concerns of citizens.*** ➢ ***Mr. Roland Yaw Kudozia*** ➢ ***Mr. Peter Onyekwere*** ➢ ***Mr. Abdul-Razak Salifu***

	• ***Member States***
13:30 – 15:00	***Cont'd Session 9 : Introduction to Group Project and Presentation*** ➢ ***Mr. Roland Yaw Kudozia*** ➢ ***Mr. Peter Onyekwere*** ➢ ***Mr. Abdul-Razak Salifu*** • **Presentation by participants**
	Day 9 26th November 2020
12:00 - 13:30	***Session 10: The ITU activities on C&I with focus on Pillars 3 & 4 of the C&I Programme and CITP updates*** ***This session will focus on ITU activities on C&I testing. It will highlight relevant resolutions from the ITU sectors, including the PP resolution. It will introduce the ITU C&I Programme and specifically focus on Pillars 3 and 4, deliverables, including the outcomes of WTDC-17, WTSA-16, ITU-D and ITU-T SGs and Questions relating to C&I*** • *ITU*
13:30 – 15:00	***Session 10 Cont'd:***
	Day 10 27th November 2020
12:00 – 13:30	*Test/Exam*
13:30 – 15:00	***Session 11: Brainstorming, Q&A and Evaluation*** ***Closure*** **Member States/NCA/ITU**

METHODOLOGY (Didactic approach)

This course will be delivered using instructor-led online learning. The course is delivered using power-point slides posted on the course page and selected reference materials that the participants have to study each day, participate in scheduled activities and undertake self-assessments. Students will reinforce their understanding of the topics studied by drawing on their specific environments and are encouraged to consult with experienced colleagues who are working on a relevant topic. The following methods will be used for this course

- Self-study of PPTs and reference materials
- Instructor led presentations made through Zoom
- Interactive chat sessions and forum discussions

EVALUATION AND GRADING

Students performance in this course will be determined using a combination of grades for the forum, participation in chats/zoom sessions, self-assessment quizzes and the final exam. Where:

- Forum posts for 30 hours will be awarded 10 points in total
- Assignments 15 points in total, 1 Assignment per day worth 1.5 points

- Participation in the Chat or Zoom sessions will be awarded 10 points in total
- Self- Assessments quizzes will have 10 questions worth 1 point per question (1 question per day)
- Attendance will be awarded 5 points in total, 0.5 points for per 3 hours per day
- Final Exam will be assessed by % of correct answers from a set of 25 multiple choice questions worth 2 points per question, out of a total of 50 points

The forum will account for 10% of the total score, assignments 15% of total score the chats/zoom sessions 10% of the total score, attendance 5% of total score, Quizzes 10% and the final exam 50%.

Total score higher than 70% is required to obtain the ITU certificate

TRAINING COURSE COORDINATION

Course coordinators:	**ITU coordinator:**
Name: Mr. Isaac Boateng Email address: isaac.boateng@nca.org.gh Name: Roland Yaw Kudozia Email address: roland.kudozia@nca.org.gh	Name: Ms. Chali TUMELO Email address: chali.tumelo@itu.int

REGISTRATION

ITU Academy portal account

Registration should be made online at the ITU Academy portal.
To be able to register for the course you **MUST** first create an account in the ITU Academy portal at the following address:
https://academy.itu.int/index.php/user/register

Training course registration

When you have an existing account or created a new account, you can register for the course online at the following link: [insert the link to the course from the ITU Academy at https://academy.itu.int/training-courses/full-catalogue/conformity-and-interoperability-training-africa-group

You can also register by finding your desired course in our training catalogue https://academy.itu.int/index.php/training-courses/full-catalogue.