



Training Course Outline

ITU and National Communications Authority (NCA), Ghana

Title	Conformity and interoperability on test reports analysis and regulatory aspect of electromagnetic compatibility testing (EMC)
Modality	Blended (F2F and online)
Level	Intermediate
Dates	25/09/2023 – 29/09/2023
Duration	30h
Language	English and French with interpretation
Region	Africa
Registration type	Application and selection
Registration deadline	20/09/2023
Training fees	Free

Description	<p>The Conformance and Interoperability training courses have proven to enhance capacity of participants from Member States in Africa to effectively test conformance and interoperability of equipment used in networks and digital infrastructure and to establish labs for testing including establishing policy and regulatory frameworks. Capacity acquired through this training will enable facilitation of safe usage of ICT products and services anywhere in the region, regardless of who is the manufacturer or service provider, it is therefore crucial that products and services be developed in accordance with relevant international standards, regulations and other specifications, and that their compliance be tested</p> <p>As widespread Conformity and interoperability of telecommunication/ICT equipment and systems allow increased market opportunities as well as the reliability and integration of world trade which can be achieved through programs, policies and decisions. This course covers understanding of Radio Frequency (RF) test reports of various telecommunication equipment, Theory of Specific Absorption Rate (SAR) and test report interpretation, Electromagnetic Interference (EMI) and Electromagnetic Susceptibility (EMS) test reports. It will cover effects of Radio Frequency (RF), Specific Absorption Rate (SAR), including Electromagnetic Interference (EMI) and Electromagnetic Susceptibility (EMS). It will look at types of equipment used for testing and arrangements of reports. It will also touch on regulatory aspect of Electromagnetic Compatibility (EMC).</p> <p>Participants can either follow the course online by connecting to Zoom sessions or come physically to NCA facilities.</p> <p>The training course hands-on aspect will enhance the practical knowledge for those who will visit the NCA – Ghana Laboratories.</p>
Training topics	<i>Conformance and interoperability</i>
Certification	<i>ITU certificate</i>
Code	<i>To be filled by ITU</i>

1. TARGET POPULATION

The training course is open to experts conducting activities on conformity and Interoperability from Ministries in charge of ICTs and the Regulatory Bodies from the Africa region.

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 Africa. These are technical staff from entities like;

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

2. 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 C&I related issues.

3. TRAINING OBJECTIVES

The objectives of this training are:

- To enhance capacity in reviewing C&I related test reports and interpreting them.
- To enhance capacity focusing on international and regional Electromagnetic Compatibility (EMC).
- To identify and help meet regulatory requirements to improve product performance and reduce the risk of costly non-compliance.

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

- To relate the Radio Frequency (RF) test reports of various telecommunication equipment, Theory of Specific Absorption rate (SAR) and related test report interpretation, Electromagnetic Interference (EMI) and Electromagnetic Susceptibility (EMS) test reports.
- To define practical aspect of tests and test reports.
- To outline the effects of Radio Frequency (RF), Specific Absorption Rate (SAR) including Electromagnetic Interference (EMI) and electromagnetic Susceptibility (EMS)
- To list the types of equipment used for testing and arrangements of reports.
- To describe the components of regulatory aspect of Electromagnetic Compatibility (EMC), Electromagnetic Interference (EMI) and Electromagnetic Susceptibility (EMS)
- To establish regulatory framework of Electromagnetic Compatibility (EMC)

4. METHODOLOGY

This course will be delivered using an instructor-led blended methodology (face-to-face and online). 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

Nb: Participants can either follow the course online by connecting to Zoom sessions or come physically to NCA facilities. Participants coming physically are still required to bring laptops and headsets.

5.ASSESSMENT 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, one per day, will be awarded 15 points in total
- **Assignments** 15 points in total, 1 Assignment per day worth 3 points
- **Participation** in the Chat or Zoom sessions will be awarded 15 points in total
- **Attendance** will be awarded 5 points in total, one point 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 15% of the total score, assignments 15% of the total score, chats/zoom sessions 15% of total score, attendance 5% of total score and the final written exam 50%

Total score of 70% and higher is required is required to obtain the ITU certificate.

6. TRAINING DETAILS & INSTRUCTIONAL APPROACH

Day	Sessions/Topics covered	Key learning points (detail learning outcomes)	Training activities details
Day 1 25/09/2023 9:00 – 15:30hrs GMT	<p>Session 1: ITU and C&I activities Updates</p> <p>Session 2: Country experiences on test reports interpretation.</p>	<p>Provide updates on Conformity and interoperability including review of challenges and gaps observed in C&I framework establishment.</p> <ul style="list-style-type: none"> - The ITU activities on C&I with focus on Pillars 3 & 4 of the C&I programme and - CITP updates <p>Shared experiences, opportunities and challenges in interpreting various types of C&I reports</p> <ul style="list-style-type: none"> - Challenges and gaps observed in C&I Frameworks establishment 	<p>Welcome Remarks</p> <p>Welcome Speech</p> <p>Welcome Address</p> <ul style="list-style-type: none"> • <i>Director General, NCA</i> • <i>Regional Director for Africa</i> <p>Lecture</p> <p>Forum</p> <p>Assignment</p>
Day 2 26/09/2023 9:00 – 15:30hrs GMT	<p>Session 3: Introduction to RF Test and Test Reports Interpretation.</p> <p>Session 4: Test Report interpretation</p> <ul style="list-style-type: none"> a) Technical Specification Documents and Standards b) Arrangements of reports c) Test Reports Interpretation 	<p>Enhance capacity in reviewing C&I-related test reports and interpretation of reports:</p> <p>Introduction to RF in Cellular Networks</p> <p>Overview of radio Systems Structure</p> <p>Understanding the key Parameters of RF Test reports</p>	<p>Lecture</p> <p>Forum</p> <p>Assignment</p>

<p>Day 3 27/09/2023 9:00 – 15:30hrs GMT</p>	<p>Session 5: Theory on Specific Absorption Rate (SAR) and test report interpretation</p>	<p>Enhance capacity in reviewing related test reports and interpretation of reports</p> <p>Theory on Specific Absorption Rate (SAR)</p> <p>Test report interpretation</p> <p>Research Presentation on SAR</p> <p>Arrangements of reports</p> <p>SAR Test Report Interpretation</p>	<p>Lecture Forum Assignment</p>
<p>Day 4 28/09/2023 9:00 – 15:30hrs GMT</p>	<p>Session 6: Test Report interpretation (cont'd)</p> <p>a) Effects of SAR b) Types of equipment used for testing c) Presentation on SAR Research on GSM Phones</p> <p>Session 7: Regulatory aspects of Electromagnetic Compatibility (EMC)</p> <p>Session 8: Practical Sessions</p>	<p>Introduction to EMC test Reports and Interpretation</p> <p>Electromagnetic Interference (EMI) and Electromagnetic Susceptibility (EMS) test report</p> <p>Types of equipment used for testing</p> <p>Arrangements of reports</p> <p>To enhance capacity focusing on international issues related to EMC including to understand and help meet regulatory requirements to improve product performance and reduce the risk of costly non-compliance.</p> <p>- Hands-on Testing for RF</p>	<p>Lecture Forum Assignment</p> <p>Practical exercise (for physical participants only)</p>

<p>Day 5 29/09/2023 9:00 – 15:30hrs GMT</p>	<p>Session 9: Practical session</p> <p>Final Session</p>	<ul style="list-style-type: none"> - Hands-on testing of wireless devices at the RF and SAR labs. - EMF Field measurement exercise 	<p>Practical exercise (for physical participants only for SAR and other labs via Team Viewer with all participants.)</p> <p><i>Activities will be performed at the ff labs;</i></p> <p><i>RF lab</i></p> <p><i>SAR lab</i></p> <p><i>EMF lab</i></p> <p>Forum</p> <p>Assignment</p> <p>Exam Available Day 5 + 7 Days</p>
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7. TUTORS/INSTRUCTORS

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Mr. Isaac Boateng	Deputy Director, Regulatory Administration	isaac.boateng@nca.org.gh +233244841239
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Mr Isaac Annan Laryea	Senior RF Test Engineer, Regulatory Administration	Isaac.laryea@nca.org.gh +233544112212
Ms. Chali Tumelo	ITU Area Representative for Southern Africa	Chali.tumelo@itu.int
Mr. Vladimir Daigele	Coordination Officer	vladimir.daigele@itu.int
Mr. Jean-Jacques Massima	ITU Area Representative for Central Africa	jean-jacques.massima@itu.int

8. TRAINING COURSE COORDINATION

Course coordinator	ITU coordinators
<p>Name: Dr. Roland Yaw Kudozia</p> <p>Title: Head, Licensing, Regulatory Administration</p> <p>Email address: Roland.kudozia@nca.org.gh</p>	<p>Name: Chali Tumelo (Ms.)</p> <p>Title: ITU Area Representative for Southern Africa</p> <p>Email address: chali.tumelo@itu.int</p> <p>Name: Jean-Jacques Massima</p> <p>Title: ITU Area Representative for Central Africa</p> <p>Email address: jean-jacques.massima@itu.int</p>