Conformance and Interoperability (C&I) for AFR Region; Type Approval Testing for Mobile Terminals, Homologation Procedures & Market Surveillance

(Tunis, 14-18 Dec. 2015)

Type Approval System & Status of Mini Lab Implementation in Ghana

ISAAC BOATENG
National Communications Authority

The New Type Approval Management System

- **What is it?**
  - An electronic or a web-based application for Type Approval Authorisation for an Electronic Communications Equipment (ECE) to be assembled, used or sold in Ghana
  - A search engine for NCA approved ECEs
- **The Type Approval;**
  - The process or a proof by a manufacturer or its Authorised agent of a product that specific essential technical and regulatory requirements have been fulfilled
  - Type Approval Certificate is granted to a product that meets a minimum set of regulatory, technical and safety requirements.

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The minimum essential technical requirements are to meet the objectives of;

- International, Regional and National Standards
- Environmental, Health and Safety requirements
- Proof of Genuineness
- EMC requirements
- Radio Frequency requirements
- Network Compatibility/Interoperability
- Quality of Service
- Consumers value for money of ECE they Buy

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Authority for Action

- The Authority is empowered under Section 3(n) of NCA Act 769 of 2008
  - to certify ECE based on compliance with National and International standards
- Regulations 78 and 79 of the Electronic Communications Regulations L.I.1991
  - Requires the Authority to ensure that ECE for radio transmission are duly type approved

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Regulatory requirements (1/2)

- Manufacturers or their Authorized Agents require Type Approval Certificate to manufacture, assemble or sell any ECE in Ghana.
- Dealers are also required to deal in only Type Approved and Genuine ECE.
- The approved equipment models come with NCA Type Approval Certificate (TAC) with its unique identifier
- Importers must inform the NCA of any ECE importation into the country for checks, TAC and final clearance
- Two levels of clearance
  - Customs Clearance based on the GC Net Process
  - Regulatory Clearance based on Type Approval and dealership Licence

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Regulatory requirements (2/2)

- TAC must always be displayed and visible to the public
- All communication equipment coming into the country must be inspected and passed by NCA
  - Destination Inspectors go to the point of entries for inspection
- Market Surveillance will soon part of the enforcement.
  - Establishment of a Type Approval Lab

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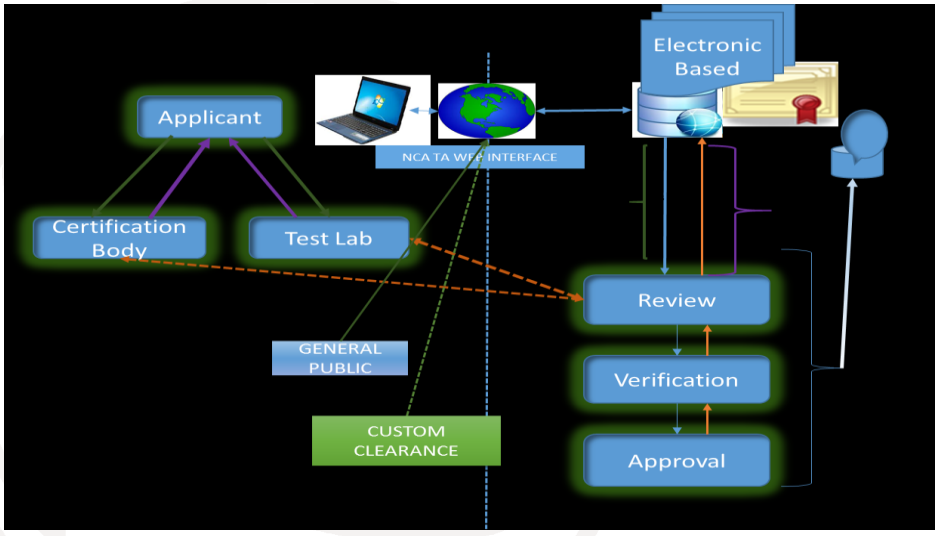
New Type Approval Management System Architecture



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Application requirements

- Application Letter on a Company letter head
- RF, EMC and Safety Test Reports in compliance with adopted Standards
- Technical description of equipment
- Certificate of Compliance by CAB or NRA
- Technical files including schematics, block diagram, component placement and photos
- Power of attorney where applicable
- Sample where required
- Proof of Unique Identifiers (e.g. IMEI, MAC etc..) where applicable
- Proof of payment of Type Approval fees

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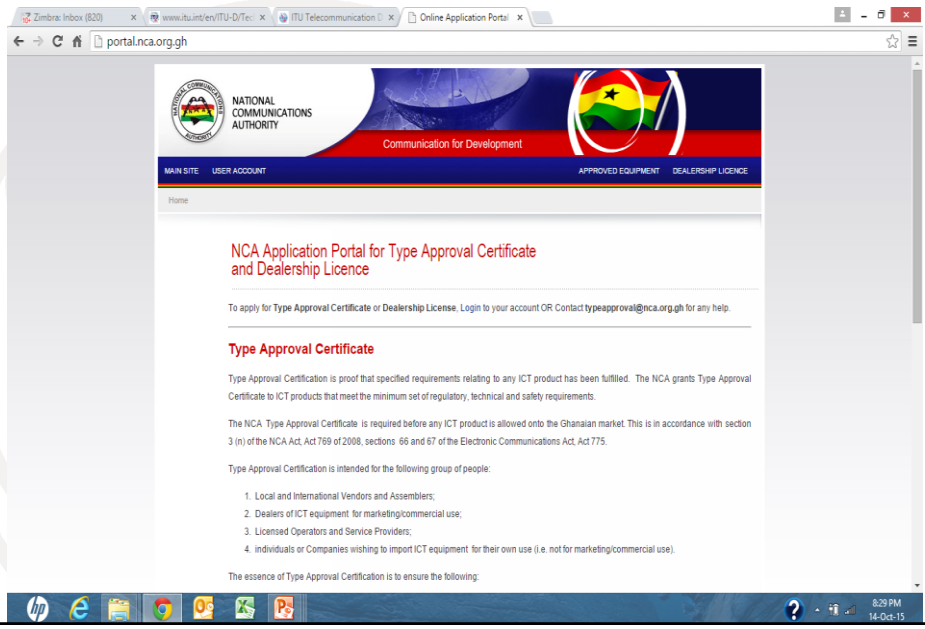
The Application Portal



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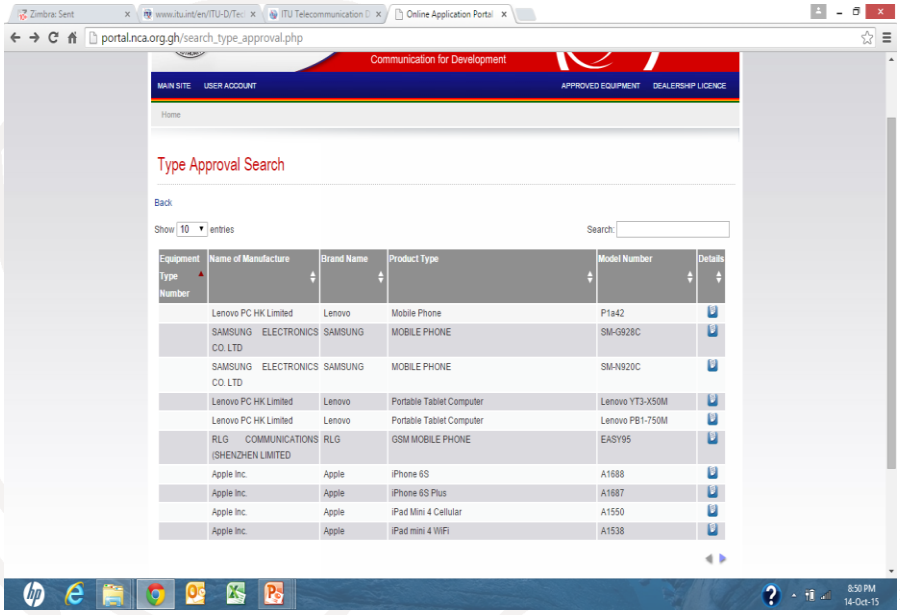
List of Some Approved ECE (1/3)



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Product Details (2/3)

MAIN SITE USER ACCOUNT APPROVED EQUIPMENT DEALERSHIP LICENCE

Home / Application Home

Type Approval:

Back

Product Details

Details of Equipment:

Product Type:	Dongle
Brand Name:	SHARP
Model Number:	SC 112
NCA Equipment No.:	1X0-7M-0E-0C1
Product Name:	Dongle
Intended Use:	Dongle for remote use
Additional Details for Radio Equipment:	
Frequency Range:	2405-2475
RF Output Power Radiation:	Tx: 6.061dBm, Rx: 6.100dBm
RF Output Power Conducted:	
RF Channel Spacing:	71Hz
RF Output Impedance:	
Type Of Modulation:	GFSK
Bandwidth:	2MHz
Software Version:	
Antenna Type:	PCB printed antenna
Antenna Gain:	2dBi
Technical Variants:	NA
Details of Certificate of Compliance:	
Issuing Body:	Top Victory Electronics (Taiwan) Co., LTD Self DoC
Issuing Date:	07/22/2014
Validity:	Indefinite
Standards:	
EMC:	EN 301 489-1 V1.9.2 (2011-09) EN 301 489-3 V1.4.1 (2002-08)
Radio:	EN 300 440-1 V1.6.1 (2010-08) EN 300 440-2 V1.4.1 (2010-08)
Health And Safety:	EN 62479:2010 EN 60950-1:2006+A11:2009+A1:2010+A12:2011
Manufacture's Information:	
Name Of Manufacturer:	Top Victory Electronics (Taiwan) Co., Ltd.
Address Of Manufacturer:	10F., No. 230, Liancheng Rd., Zhonghe Dist., New Taipei City 23553, Taiwan

Product Details (3/3)

Type Approval:

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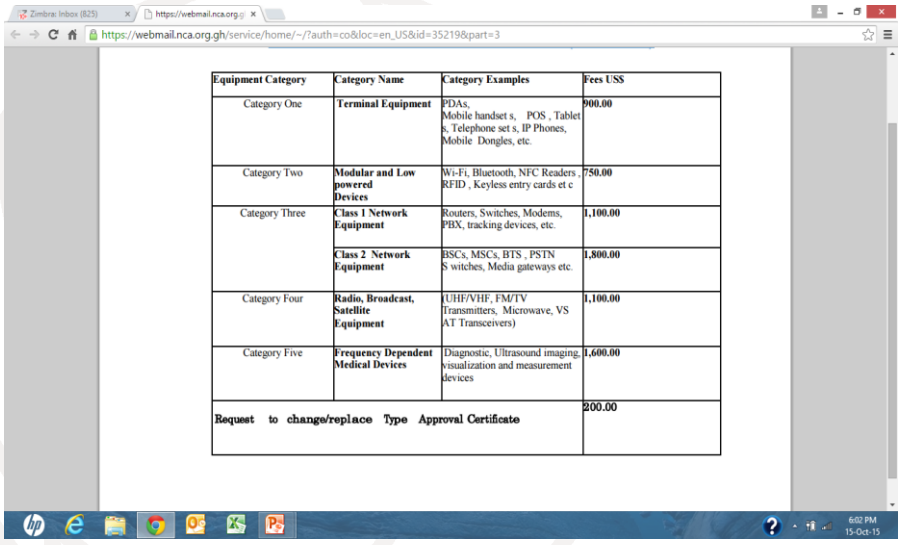
Product Details

Details of Equipment:

Product Type:	Mobile Phone
Brand Name:	Apple
Model Number:	A1507
NCA Equipment No.:	1X0-7H-0D-013
Product Name:	Apple IPhone 5C
Intended Use:	This device is a Mobile Phone with multimedia functions(music,application support and video)
Additional Details for Radio Equipment:	
Frequency Range:	BT:2402-2480 MHz WIFI:2412-247
RF Output Power Radiation:	23dBm(max)
RF Output Power Conducted:	23dBm(max)
RF Channel Spacing:	1/5/20/40 MHz
RF Output Impedance:	
Type Of Modulation:	GFSK, pi/4-DQPSK,8DPSK,GMSK,QP
Bandwidth:	1/5/20/40 MHz
Software Version:	IOS 7.0.1
Antenna Type:	Internal
Antenna Gain:	1.31 dBi
Technical Variants:	NA
Details of Certificate of Compliance:	
Issuing Body:	CETECOM ICT services GmbH
Issuing Date:	09/03/2013
Validity:	Indefinitely
Standards:	
EMC:	EN 301 511 v.9.0.2, EN 301 908-1 v5.2.1 EN 301 908-2 v5.2.1, EN 301 908-13 v5.2.1
Radio:	EN 301 511 v.9.0.2, EN 301 908-1 v5.2.1 EN 301 908-2 v5.2.1, EN 301 908-13 v5.2.1 EN 300 440-2 v1.6.1, EN 300 440-2 v1.4.1 EN 300 328 v1.7.1, EN 301 893 v1.7.1 EN 301 489-7 v1.3.1 EN 301 489-17 v2.2.1, EN 301 489-24 v1.5.1
Health And Safety:	EN 50360:2001 & EN 62311:2008, (IEC 62209-1:2005, IEC 62209-2:2010) EN 60950-1:2005+A1:2010+A11:2009+A12:2011 IEC 60950-1:2005(2nd Ed)+ A1:2009
Manufacture's Information:	
Name Of Manufacturer:	Apple Inc.
Address Of Manufacturer:	1 Infinite Loop,Cupertino,CA 95014, California, USA

Classification of ECE



Equipment Category	Category Name	Category Examples	Fees US$
Category One	**Terminal Equipment**	PDAs, Mobile handset s, POS , Tablet s, Telephone set s, IP Phones, Mobile Dongles, etc.	**900.00**
Category Two	**Modular and Low powered Devices**	Wi-Fi, Bluetooth, NFC Readers , RFID , Keyless entry cards et c	**750.00**
Category Three	**Class 1 Network Equipment**	Routers, Switches, Modems, PBX, tracking devices, etc.	**1,100.00**
	Class 2 Network Equipment	BSCs, MSCs, BTS , PSTN S witches, Media gateways etc.	**1,800.00**
Category Four	**Radio, Broadcast, Satellite Equipment**	(UHF/VHF, FM/TV Transmitters, Microwave, VS AT Transceivers)	**1,100.00**
Category Five	**Frequency Dependent Medical Devices**	Diagnostic, Ultrasound imaging, visualization and measurement devices	**1,600.00**
Request to change/replace Type Approval Certificate			**200.00**

A View of the TAC

NCA PRODUCT IDENTIFIER: 7T2-SH-0E-09C

TYPE APPROVAL CERTIFICATE

ISSUED BY

NATIONAL COMMUNICATIONS AUTHORITY

UNDER THE ELECTRONIC COMMUNICATIONS ACT 2008, ACT 775 AND THE ELECTRONIC COMMUNICATIONS REGULATIONS 2011, L.I. 1991

Attention *(Where Available)*: Peter Grimsen **Date of Issue**: June 13, 2014

The National Communications Authority hereby grants this Certificate to

Roland Communications Inc.,
(Hereinafter called the Certificate Holder)

Of

No. 45A Building, 179 Thorpe Road, Cnr. Park Accra, Ghana

Based on the favourable assessment of the Test Reports and other relevant Documents submitted to the Authority.

This Certificate is ***VALID ONLY*** for the under-mentioned product:

APPROVED PRODUCT TYPE	:	TABLET COMPUTER
MODEL NUMBER	:	L66700-XH
BRAND/TRADE NAME	:	ROLAND
PRODUCT NAME	:	ROLAND L66700-XH PORTABLE TABLET COMPUTER
FREQUENCY RANGE (WHERE NECESSARY)	:	GSM900 /DCS 1800 / WCDMA 2100/ GPS 1575/WLAN & BT 2400
EFFECTIVE RADIATED POWER (WHERE NECESSARY)	:	Band I: 22.71dBm/Band VIII: 23.11dBm /802.11b:16.16dBm/ 802.11g: 14.90dBm /802.11n HT20 (2.4GHz):14.80dBm/ BT: 6.01dBm

INTENDED USE OF PRODUCT

The product, ROLAND L66700-XH, is a Portable tablet computer with Wi-Fi, BT, GSM, WCDMA, and GPS and is to be used for data processing and network communication within the stated frequencies and the power levels provided.

The Certificate Holder is hereby authorized to use or sell the above-mentioned product in the Ghanaian Market directly or through its Licensed dealers or agents. The Certificate Holder must at all times abide by the provisions in the Type Approval Guidelines and other relevant regulations. The same is null and void when the equipment is altered in function and no longer falls within the parameters verified from the accredited Test Lab.

DIRECTOR GENERAL

This Certificate is issued in Pursuant of Section 3(a) of the National Communications Authority Act 2008, Act 769, Section 66 of the Electronic Communications Act 2008, Act 775, Regulations 78-89 of the Electronic Communications Regulations 2011, L.I.1991

PLEASE NOTE: THE MARK "***NCA APPROVED: 7T2-SH-0E-09C***" MUST BE VISIBLE ON THE PRODUCT PER THE TYPE APPROVAL GUIDELINES

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TAC Unique Identifier

- Type Approved Equipment models are now given unique identity marks on the Certificate

	ECE CC	TAT	IY	SN
NCA APPROVED:	XXX -	XX-	XX-	XXX

ECE CC	:	ECE COLOUR CODE
TAT	:	TYPE APPROVAL TYPE (modular or host)
IY	:	ISSUE YEAR
SN	:	SEQUENCE NUMBER

Why the TAC Unique Identity?

- To show that the Certificate is for specific equipment model/category/type
- ECE meets essential minimum requirements of the Authority
- Provides public confidence in the Regulator
- Manufacturer's/Dealer's own declaration that ECE is genuine
- Manufacture/Dealer bears responsibility for any breach under which TAC was issued.
  - If equipment is found to be Fake/Counterfeit
  - If certain key functions (both software and hardware) of the ECE is altered

Awareness

- Stakeholder forums on the importance of Type Approval
  - Include GSA, Telcos, Customs, Vendors, Dealers, Freight Forwarders, Consumer Groups etc…
- Online search for NCA approved ECEs
- Planned news paper, radio and TV announcements of NCA approved ECE.
- Planned name and shame

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And now Sanctions!

- The sanctions specified in the NCA Schedule of Penalties Gazette on 20th April 2015 states that;

"Importation, distribution and sale of ECE which are not certified by the Authority shall attract a penalty ranging from GhC20,000.00 to GhC 50, 000.00".

What Next?

- Establishment of a mini type approval labs to aid in market surveillance activities to cover telecom & broadcast devices

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Objectives

- International best practices
- Pre & Post market surveillance support
- Support for Research & Development
- Public Health and Safety issues
- Proof of Genuineness of devices
- Radio Frequency requirements
- Quality of Service delivery support
- Value for money of devices in market

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Challenges

- Lack of testing facilities, access to databases market surveillance & enforcement issues.
- Porous port of entries and un-approved routes
- Less effective Type Approval process
- Less consumer confidence in the Regulator
- Health, Safety and Environment issues

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Authority for Action

- The Authority is empowered under Section 3(n) of NCA Act 769 of 2008
  - to test & certify ECE based on compliance with International & National standards
- Regulations 78 and 79 of the Electronic Communications Regulations L.I.1991
  - Requires the Authority to ensure that ECE for radio transmission are duly tested & type approved

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Scope of testing

- SAR and EMF testing
  - Health & Safety
- RF and Signaling testing for mobile & low power devices
  - to resolve interference issues
  - to facilitate quality & complaint devices to network
  - to facilitate QoS delivery
- Compliance with NCA adopted DVB-T2 standards
  - Set top boxes and IDTVs

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SAR testing equipment 1/2

Shield Room 1

Shield Room 2

Shield Room 3

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SAR testing 2/2

- Compliance with SAR restrictions given in International Standards
- Perform SAR measurement on handheld or wireless RF devices used in close proximity to the ear or the human body.
- The measurement system consists of two robots:
  - 1) for moving an electric field probe inside an anthropomorphic mannequin filled with a liquid, whose electromagnetic characteristics are similar to those of the brain.
  - 2) for automatically aligning the handset with respect to the mannequin.
- SAR measurement for systems (GSM, UMTS/WCDM, LTE) + IEEE 802.11b/g based wireless devices

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EMF measurement 1/2

- To record electromagnetic field level from BS and terminals and alerts users to potential exposures
- To monitor actual levels and compare with regulatory limits
- To address public concerns on EMF exposures
- To populate in Type Approval database

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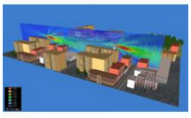
EMF measuring Equipment 2/2

EME Guard XS

80.0 to 6 000.0 MHz

The EME Guard XS is an EMF measuring device to alert workers near antennas. It continously scans for electromagnetic...

More details



EMF Visual

EMF Visual simulates in 3D levels of human exposure to electromagnetic fields, taking into account the realistic...

More details

EME SPY 200

88.0 to 5 850.0 MHz

EME Spy is a light and portable rf safety personal monitoring device that performs continuous measurements of the human...

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Signaling Testing 1/3

Signaling testing aims to check the correct interworking between the UE and the Network.

Protocol Simulators are usually used in order to avoid dependency on specific vendor implementation.

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What can be tested? 2/3

- Cell Selection and Reselection
- Location updating and Registration
- Periodic Location Updates, coverage & handover issues
- Network Selection

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RF Testing

Radio testing aims to check the correct behaviour of the UE (User Equipment) from electromagnetical point of view

Two tests typologies are defined: Conducted and OTA (Over the Air)

UE Maximum Output Power: *"To verify that the error of the UE maximum output power does not exceed the range prescribed by the specified nominal maximum output power and tolerance" (TS 36.512)*

Reference Sensitivity Level: *"To verify the UE's ability to receive data with a given average throughput for a specified reference measurement channel, under conditions of low signal level, ideal propagation and no added noise" (TS 36.512)*

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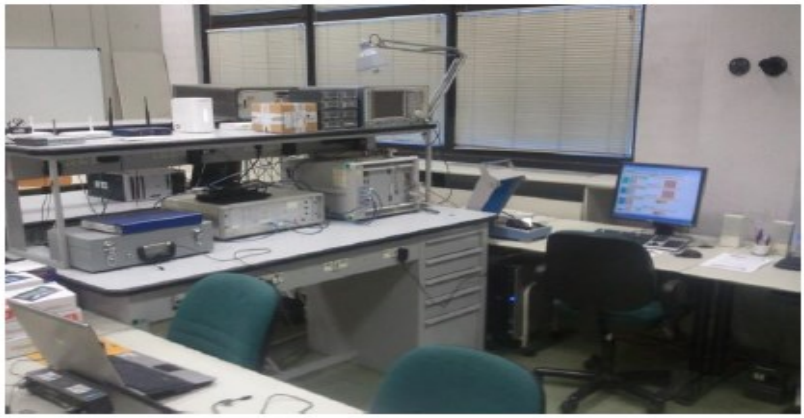
RF & Signaling test environment



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Consultations

On July 22, RA contacted eight (8) vendors based on track record for supply, installation & testing .

- SGS (Asia)
- Anritsu (USA)
- Rohde & Schwarz (Europe)
- Agilent Technologies (USA)
- Planet Network International (PNI) (Europe)
- RDT Equipment and Systems (Israel)
- Microwave Vision Group (MVG) Europe)
- Tilabs (Europe)

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Pre-selected applicants

- By Oct 30, four vendors submitted profiles
  - RDT Systems
  - Rohde & Schwarz
  - PNI/MVG
  - SGS

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Milestones

- Business plan/feasibility study and proposals conducted - **Sept. 2014**
- Secured Board Approvals – **Jan. 2015**
- Budget in Euros for equipment approved - **March 2015**
- (60x60)m office space in NCA new building– **July 2015**
- Technical, specifications for procuring equipment prepared – **Aug. 2015**

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Milestones

- Contacted known vendors for submission of profile – **Sept. 2015**
- Vendors have submitted business profiles – **Oct 2015**

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What next

- Submitted request to Management & Board to engage pre-selected vendors only– **Nov, pending approval**
- Submission of pre-selected vendors profiles to PPAG for consideration – **Dec 2015 – pending**
- Administrative & Commercial specifications to be included in the technical specifications – **Jan 2016**
- Formal request for expression of interest – Jan 2016
  - Two stage process envisaged
    - **Stage1 – Administrative & Technical evaluation of applicants (May need ITU technical support)**
    - **Stage 2- Financial evaluation**
- Purchases & supply of equipment – **March 2016 – pending**
- Installation & Testing – **May 2016 – pending**
- Commissioning & full implementation of Labs- **end of 2Q16 – pending**

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The New NCA Ultra Modern Building – Head Office

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The New NCA Ultra Modern Building – Head Office

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NCA web sources related to Type Approvals

- portal.nca.org.gh
- www.nca.org.gh
- Type Approval Guidelines

Contact

- Typeapproval@nca.org.gh

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Thank you!

isaac.boateng@nca.org.gh

National Communications Authority, Ghana

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