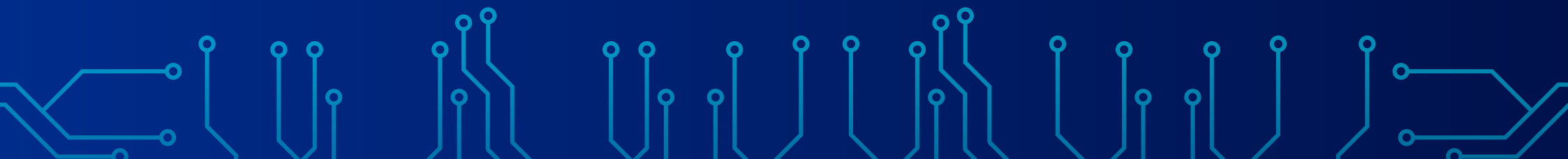




**NATIONAL  
COMMUNICATIONS  
AUTHORITY**



OUR CONTRIBUTIONS  
IN 2018 TOWARDS  
**Ghana's Digital Agenda**



The image features a dark blue background with a network of white lines and dots. On the left, a glowing blue hand points towards a cluster of various business and technology icons, including a lightbulb, target, magnifying glass, smartphone, and dollar signs. A bright orange arc frames the right side of this cluster. The word "Table" is written in large white letters on the right side of the image.

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*H.E. President Nana Addo Dankwa Akufo-Addo,  
cutting the sod to commission the NCA-CERT and the Common Platform  
at the NCA Tower in Accra on 22nd October, 2018*



# Foreword

The Government of Ghana through the Ministry of Communications is playing a pivotal role in the development of a robust framework to support the digitisation of the Ghanaian economy in a manner that captures and benefits every citizen. The Digital Ghana Agenda seeks to digitise Government services, build a biometric National Identity register, deploy a digital property addressing system, mobile money interoperability and institutionalise paperless port operations among others.

Undergirding the implementation of this vision are Information and Communication Technologies (ICTs). The National Communications Authority (NCA), the regulator for the electronic communications sector, has a key role in creating the enabling environment for the ubiquitous deployment of ICTs to facilitate the digitisation of the economy.

In the year 2018, the Authority completed the following projects critical to the attainment of Government objectives in the ICT sector:

**1. NCA Computer Emergency Response Team (NCA-CERT) for the telecommunications sector** – established primarily to coordinate detection, prevention and rapid response to cyber-attacks and network vulnerabilities in collaboration with industry players and CERTs in other industries. The NCA-CERT also monitors and reports incidents on critical communications infrastructure within Ghana for rapid response by appropriate institutions. Inaugurated by His Excellency President Nana Addo Dankwa Akufo-Addo on 22nd October, 2018, the NCA-CERT is one of the first sectoral CERTs in Africa.

**2. Common Platform (CP) for the monitoring of Government revenues in the telecom sector** – established through a collaboration with the Ghana Revenue Authority (GRA) under the auspices of the Ministry of Finance and Ministry of Communications pursuant to Section 7 of the Communications Service (Amendment) Act, 2013, Act 864. The Common Platform was also inaugurated by His Excellency the President on 22nd October, 2018. It provides telecom traffic monitoring, revenue assurance monitoring and mobile money monitoring. It also provides a fraud management system to combat the fraudulent termination of international traffic as local calls (SIM Box fraud) in Ghana.

**3. NCA Conformance and Type Approval Testing Laboratories** – established to provide a means to verify the compliance of telecom and broadcasting consumer products to the approved international and national standards for performance as well as health and safety. The labs, commissioned by the Hon. Ursula Owusu-Ekuful, Minister for Communications and Mr. Brahim Sanou, the Director of the ITU's Telecommunications Development Bureau (BDT) on 18th July 2018, provide test facilities for testing Radio Frequency (RF) and Signaling; Electromagnetic Field (EMF) strength; Specific Absorption Rate (SAR) of wireless devices; and Digital Terrestrial Television (DTT) Receivers.

**4. Broadcast Monitoring Centre** – established to provide a mechanism for the continuous real time monitoring of the compliance of FM Radio and Television transmissions to the technical standards for broadcasting in Ghana. The automatic logging of deviations from the authorised thresholds of the various transmission parameters provides evidence based enforcement capabilities to the Authority whilst providing reliable data for optimisation of Digital Terrestrial Television (DTT) infrastructure.

**5. Communications Monitoring Centre** – a centralised monitoring centre for assessing performance of telecom networks against Quality of Service (QoS) requirements. This complements the field measurements (drive tests) of QoS parameters from the consumer perspective to provide a 360 degree view of telecom network quality issues.

It is our expectation that these projects deployed within the regulatory environment for electronic communications, will enhance protection and security of ICT consumers to facilitate confidence in the increased use of digital products and services in Ghana. This will provide the needed boost to the national agenda to digitise Government services to afford efficiency and convenience to the citizenry.

The NCA is thrilled to be making such contributions towards Ghana's Digital Agenda.

**Joe Anokye**  
**Director General**



***H.E. President Nana Addo Dankwa Akufo-Addo  
speaking at the commissioning of the NCA-CERT and the Common Platform  
at the NCA Tower on 22nd October 2018***



# ***"[These] projects are essential building blocks for the realisation of government's vision of a digitised Ghana"***

***- President Akufo-Addo***

Over the past year or so, we have seen the start of a lot of initiatives that feed into the government's digitisation agenda. The Vice President is leading this drive and he has reported a number of these at various fora. I am delighted that we have not left out what could potentially be one of the most vital components of the digitisation agenda – cyber security.

In an ever changing global world where a young boy or girl living in a cottage in some far away country can, with the support of a device as small as a mobile phone, undertake an activity with rippling effects on countries, big and large, economies, humongous and small, it is absolutely important that we deploy the appropriate mechanism to protect our country, its people, their businesses and ways of life.

I commend the National Communications Authority and the Ghana Revenue Authority for taking steps to guarantee the

revenues of government, and also ensure that regulators and telecommunication operators work together to this end. The commissioning of the two projects are essential building blocks for the realisation of Government's vision of a digitised Ghana. They represent key milestones in our nation's journey towards becoming well-resourced, self-reliant, efficient and secure, within the context of cyberspace, telecommunications traffic management, and revenue assurance. In execution of the protocols for the Computer Emergency Response Team Centre and the Revenue Assurance and Traffic Monitoring Centre, we should see the transfer of knowledge to enhance learning and the acquisition of skills by Ghanaians to man these projects.

***(H.E. Nana Addo Dankwa Akufo-Addo, President of the Republic of Ghana speaking at the commissioning of the NCA-CERT and the Common Platform – 22nd October, 2018)***



*(Hon. Ursula Owusu-Ekufu,  
Minister for Communications speaking at the commissioning  
of the NCA-CERT and Common Platform – 22nd October, 2018)*



# ***“I congratulate the Board, Director General, Management and Staff of the NCA for providing another first for telecoms regulation in the sub-region and the continent”***

***Hon. Ursula Owusu-Ekuful (MP)***

I am delighted that this day has dawned on us and the President has graced us with his presence to commission the Common Platform and the Computer Emergency Response Team (CERT) for the Communications Sector.

The Communications Sector has critical national information infrastructure; any cyber-attack on voice, data communications and ICT may significantly impair the proper functioning of government. An additional coordinated layer of protection is vital and necessary. Active support and cooperation are needed to make this a success, as an attack on one Mobile Network Operator (MNO) is an attack on all.

I congratulate the Board, Director General, Management and Staff of the NCA for providing another first for telecoms regulation in the sub-region and the continent.

***(Hon. Ursula Owusu-Ekuful, Minister for Communications speaking at the commissioning of the NCA-CERT and Common Platform – 22nd October, 2018)***

# PROJECT 1: **NCA-CERT** (NCA - Computer Emergency Response Team)



Ghana's Digital Agenda brings increased productivity and efficiency to the country's people, businesses, organisations, and economy. However, there are unavoidable risks as we connect, digitise, and computerise systems. Cyber Security is important in protecting our valuable assets and services. As the Fire Service prevents and deals with fires, a Computer Emergency Response Team (CERT) also known as a Computer Security Incident Response Team (CSIRT) prevents and deals with cyber security incidents. Cyber security incidents may arise from malicious use of ICTs, vulnerabilities in ICTs, human mistakes, and even natural disasters.

A CERT is responsible for receiving reports, analysing information on incidents, coordinating and supporting stakeholders to reduce the number and impact of incidents on computer systems, data, information, and services. H.E. President Akufo-Addo, inaugurated the NCA-CERT on the 22nd of October, 2018. The NCA-CERT works with stakeholders to address incidences that affect the Telecommunications sector to ensure a safer communications space. It is one of the Sectoral CERTs under CERT-GH.

The NCA-CERT uses both proactive and reactive approaches towards ensuring a secure Telecommunications space; with constituents who are the licence and authorisation holders regulated by the NCA. Some of these constituents are Mobile Network Operators (MNOs), Internet Service Providers (ISPs) and Broadband Wireless Access providers (BWAs). On being proactive, the NCA-CERT has discussions and meetings with the various companies or providers to understand their cyber security operations, and provides feedback, guidance, or recommendations on cyber security.

The NCA-CERT also receives reports, from organisations such as CERT-GH, on malicious activity and vulnerabilities relating to the public networks used by organisations, businesses and customers. These reports are analysed to determine the category, impact, services affected and advisories shared with the constituents concerned including information on identifying and resolving the cyber security incidents or issues. The NCA-CERT monitors to progressively reduce the number of potentially malicious actors and vulnerable systems on public telecommunications networks.

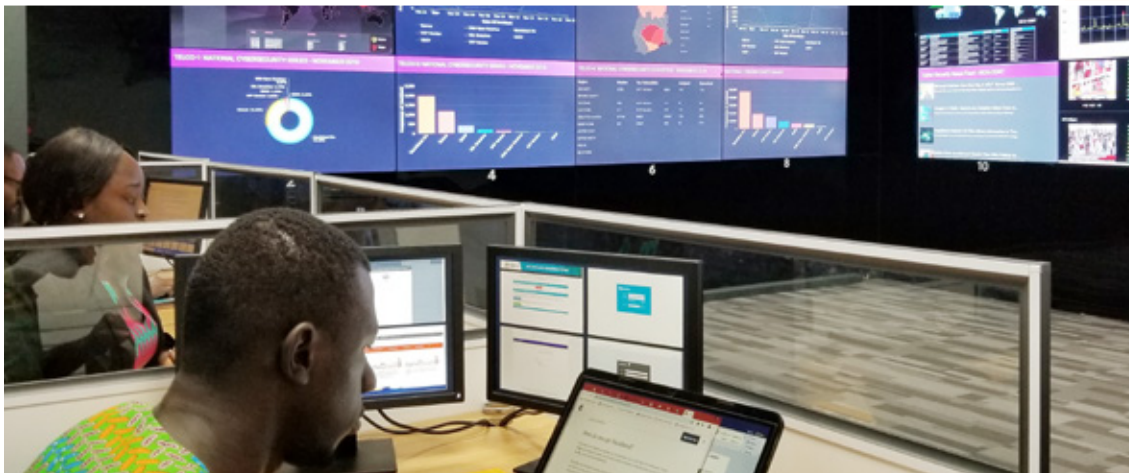


Other activities include monitoring and reporting incidents on critical information infrastructure within Ghana including the aviation band, the Digital Terrestrial Television (DTT) network, network and service availability of selected locations.

As part of operations, the NCA-CERT builds relationships with other computer emergency response teams, with assistance from CERT-GH, to exchange information and build capability in areas such as communications, incident management and cyber security analysis. The NCA-CERT has systems to receive, visualise, analyse, and communicate with respect to cyber security incidents and issues.

## Key Benefits

- Helps in responding to cyber threats within Ghana's telecommunications space including attacks on our constituents.
- Provides advisory services that assist in the prevention of potential cyber attacks.



*Snapshot of the monitoring screens at the NCA-CERT with some staff at work*

## Quick Facts

### NCA-CERT is:

- Designed by the NCA
- Funded by the NCA
- Installed by the NCA
- Manned by the NCA

### NCA-CERT Operates:

Under the leadership of the Ministry of Communications (MOC) with support from CERT-GH and the National Cyber Security Secretariat

### NCA-CERT Service areas include the following:

- Incident Management
- Cyber Security Analysis
- Communications and Outreach
- Research and Development
- Information Assurance
- Capacity Development
- Situational Awareness



*Director General of the NCA, Joe Anokye,  
demonstrating the functions of the NCA-CERT to H.E. the President  
and other dignitaries at the NCA Tower on 22nd October, 2018*



# ***“Cyber security requires a collaborative and continuous effort involving all stakeholders”***

***- Kwadwo Osafo-Maafa***

The cyberspace and technology continue to change and improve. However, what was secure today may not be secure tomorrow as we learn more about the systems we have and the increasing scope and complexities of vulnerabilities or attacks.

Cyber security requires a collaborative and continuous effort involving all stakeholders. It starts with doing the basics, having cyber security awareness, appreciating the issues, leadership buy-in, communications between all involved, and a continuous effort to value and keep systems secure.

At NCA, we are continuously learning and building cyber security capacity to ensure that we play our role in making a safer Ghana in advancement of Ghana’s Digital Agenda.



***Kwadwo Osafo-Maafa,***  
*Head, Cyber Security Division*

# NCA - the Drive towards a World Class Regulator



# Who are we?

The National Communications Authority is the central body mandated to license and regulate electronic communication activities in Ghana.

## Services Regulated

*The Authority currently regulates 27 services. These include;*

1. Cellular mobile services/2G
2. Radio FM Broadcasting
3. TV Broadcasting License
4. 4G/BWA
5. Mobile Virtual Network Operations
6. Submarine cable
7. Fixed Licence
8. Terrestrial Fibre Optic Infrastructure Licence
9. International Wholesale Carrier Licence
10. Value Added Services Licence
11. Dealership Licence
12. Infrastructure (Masts and Towers)
13. UMTS-900 Authorisation
14. 3G Licence/UMTS
15. Interconnect Clearing House
16. International Inbound Traffic
17. DTT Conformance Certification
18. Internet/Public Data Service Provision
19. VSAT Licences
20. Numbering (SIM, M2M, Short Codes etc.)
21. Type Approval
22. Microwave Authorisation
23. Public Radio Equipment (PRE) or Land Mobile Services
24. Landing Rights Licence
25. Amateur Radio
26. Communications and Managed Support Services Licence
27. Aeronautical Radio Services





## PROJECT 2: Common Platform (CP)

The Communication Service Tax (Amendment) Act, 2013, Act 864, mandated the Minister for Finance to collaborate with the Minister responsible for Communications to use a common platform as a mechanism to verify the actual revenue that accrue to service providers for the purpose of computing taxes due the Government and revenues accruing from levies under the Electronic Communications (Amendment) Act 2009, (Act 786).

In pursuance of this statutory provision, the Ministers directed the National Communications Authority and Ghana Revenue Authority to establish the Common Platform in conjunction with a solution provider, KelniGVG.



*Ing. Edmund Fianko taking H.E. the President and other guests through the operations of the Common Platform at the NCA Tower in Accra (22nd October, 2018)*

**The Common Platform as established has four (4) main sub-systems:**

- **Traffic Monitoring** – for independent monitoring of all voice call traffic volumes to facilitate independent verification of Government revenue on international inbound voice calls and to provide control information to verify the completeness of revenue assurance data.
- **Revenue Assurance** – for independent assessment of all network related revenues of every telco for the purpose of computing Communications Services Tax (CST), Value Added Tax (VAT), National Health Insurance Levy (NHIL) and the 1% of revenue due the NCA and Ghana Investment Fund for Electronic Communications (GIFEC).



*Analysts working at the Common Platform at the NCA Tower (November, 2018)*

- **Fraud Management** – for combatting the fraudulent termination of international traffic as local calls (SIM box fraud) in Ghana. This involves about 5000 daily calls from about 57 countries to monitor how they are terminated in Ghana. When these international calls are terminated as local calls, it confirms the fraudulent use of SIM boxes to bypass the authorised international gateways. The numbers used to perpetrate SIM box fraud are sent to operators to block and to provide data to facilitate the geographical location (geolocation) of SIM boxes.

- **Mobile Money Monitoring** – for monitoring the volumes and values of mobile money transactions to enable GRA to facilitate the independent verification of revenues from mobile money transaction fees.

The Common Platform provides the government with an accurate, independent and comprehensive view of revenues in the telecom sector to provide assurance that tax returns and those of other levies are actually what they should be. The fraud management system will help curtail revenue losses for both Government and telecom operators.

## Benefits of the Common Platform (CP)

- Provide Government with timely and reliable information about revenues accruing to it from the telecom sector in a transparent manner.
- Protect revenues for both Government and telcos alike through the mechanism provided by the CP to combat fraudulent international traffic termination.

## Quick Facts

### • **Main functions of the CP are:**

- **Traffic Monitoring** – for independent monitoring of traffic volumes on real-time basis.
- **Revenue Assurance** – for independent verification of revenue from telcos.
- **Mobile Money Monitoring** – for monitoring the volumes and values of mobile money transactions to enable GRA facilitate their independent verification.
- **Fraud Management (SIM BOX Tracking and Geo-location)** – combat SIM Box fraud

• The Common Platform is managed by the National Communications Authority on behalf of the Ministry of Communications, and the Ghana Revenue Authority (GRA) on behalf of the Ministry of Finance.

• The Communication Service Tax (Amendment) Act, 2013, Act 864 (amendment of Section 14 of Act 754) enjoins the Minister of Finance to collaborate with the Minister responsible for Communications to:

- Establish a mechanism to verify the actual revenue that accrue to vendors for the purpose of computing taxes due the Government under this Act;
- Be given physical access to the physical network nodes of the vendors' network at an equivalent point in the network where the network providers' billing systems are connected, and
- Ensure that a common platform is used for the purpose of verifying revenues under the Act as well as revenues accruing from levies under the Electronic Communications (Amendment) Act 2009, (Act 786).

# ***“The Common Platform provides independent verification of Government revenue in the Telecom Sector whilst curtailing fraudulent SIM box activity”***

***– Ing. Edmund Yirenkyi Fianko***

We are happy to have worked with the Ghana Revenue Authority (GRA) to implement the law mandating the establishment of the Common Platform to verify Government revenues. The Common Platform provides independent verification of Government revenue in the Telecom Sector whilst curtailing fraudulent SIM box activity. It provides a lot of insight into the operations of the Mobile Network Operators which will enhance regulatory decision making for the NCA.

The CP also provides a mechanism for the Ghana Revenue Authority to independently verify tax returns from the telecom operators in a reliable way. The data collected by the CP can facilitate any tax audits that may be necessitated in the future.



***Ing. Edmund Yirenkyi Fianko,***  
***Deputy Director, Engineering Division***





*Analysts working at the Common Platform (November, 2018)*



## PROJECT 3: Conformance and Type Approval Labs

The NCA is ensuring that with the Conformance and Type Approval Testing Laboratories, ICT terminal equipment such as mobile phones, laptops and television sets function as per Health and Safety, radio frequency and signalling requirements. They also ensure that electromagnetic emissions from radio frequency radiating sources are within the required limits that will ensure the safety of the public.

Mandated under Sections 66 and 67 of the Electronic Communications (EC) Act of 2008, Act 775 and Regulations 78 and 79 of the Electronic Communications Regulations, 2011 L.I. 1991, the NCA ensures that all Electronic Communications Equipment (ECE) manufactured or imported into Ghana for sale or use are in compliance with Health and Safety, Electromagnetic Compatibility (EMC) and Radio Frequency requirements.

Subsequent to this, the Authority per Act 775 introduced a Type Approval Regime to ensure that all Electronic Communications Equipment used in Ghana comply with our technical and regulatory standards as spelt out in the Type Approval Guidelines.

Type Approval is an official confirmation by a government or a regulatory body that a manufactured product meets its regulatory, technical and safety requirements. These technical and safety standards are normally based on International standards.



*Joe Anokye leads the Minister for Communications, Ursula Owusu-Ekuful and the Director of the Telecommunications Development Bureau (BDT) of the ITU, Brahim Sanou and other guests on a tour of the SAR Lab (July 2018)*





*Roland Kudozia of the Regulatory Administration Division explaining the operations of the RF and Signaling Lab to the Minister for Communications and guests during the launch of the NCA Type Approval labs in July 2018*

## Key Benefits of the Type Approval Laboratory to the Manufacturer, Consumer and NCA

- Regulate entry of standardised Electronic Communications Equipment (ECE) onto the market.
- Maintain quality and safety of Electronic Communications Equipment.
- Promote the development and usage of safe and standardised equipment.
- Reduce the effects of sub-standard ECE on our environment.
- Prevent harmful interference caused to essential services, dangers posed to users, networks and infrastructure and national security.
- Address public health and safety concerns regarding emissions especially from unsafe telecommunications equipment.
- Ensure all communications equipment entering into the country adhere to stipulated safety directives for the benefit of the end user.
- Facilitate the availability of quality devices to the public.

## Quick Facts

The NCA Conformance and Type Approval Testing Laboratories consists of:

1. The Specific Absorption Rate (SAR) Lab for measuring the amount of radiation absorbed by the body tissue when using a wireless Electronic Communications Equipment such as mobile phones, tablets, wireless routers, laptops etc.
2. The Radio Frequency and Signaling (RF Lab) for measuring the technical requirements and protocols used in wireless technologies such as WLAN (also known as wifi), WCDMA (also known as 3G), GSM (also known as 2G), LTE (also known as 4G) and Bluetooth.
3. The Electromagnetic Field Strength (EMF) Lab for measuring the radiations from Telecommunications Base stations, Television and FM transmission sites and compare to international safety limits.
4. The Digital Terrestrial Testing (DTT) Testing lab for testing the requirements of TV sets and set-top boxes for a full DTT rollout in Ghana's migration from analogue to digital television broadcasting.



*Peter Onyekwure of the Regulatory Administration Division explaining some aspects of the SAR lab to a guest during the launch of the Type Approval Lab in July, 2018*





*Members of the Parliamentary Select Committee on Communications visited the NCA on December 6, 2018. The team included its Chairman, Hon. Kennedy Agyapong, and Vice Chairman Hon. Bintin Charles Binipom.*

***“The aim here is to ensure that Electronic Communications Equipment entering our market meet set standards to protect consumers”***

***– Isaac Boateng***

The Type Approval Labs are to ensure that the Electronic Communications Equipment conform to the standards set or adopted by the Authority. This is done by running the devices through series of tests and comparing results to the standards set in collaboration with the Ghana Standards Authority (GSA).

The aim here is to ensure that Electronic Communications Equipment entering our market meet set standards to protect consumers.

We have done a good job so far. It is important that consumers have faith in the work we do, including our resolve to address the concerns about emissions from base stations and transmitter sites.



***Isaac Boateng,  
Deputy Director, Regulatory Administration***





*The Honourable Minister for Communications assisted by Director of the Telecommunications Development Bureau (BDT) of the ITU, Brahim Sanou and the Director General of the NCA to commission the labs (July 2018)*





*H.E. President Akufo-Addo with some management staff of the NCA shortly after commissioning the NCA-CERT and CP. Also present are Minister for Communications, Ursula Owusu-Ekuful, Board Chairman of the NCA, Kwaku Sakyi-Addo, the Executive Chair of the State Enterprises Commission, Stephen Asamoah-Boateng and the GRA Commissioner General, Emmanuel Kofi Nti*



## PROJECT 4:

# Broadcast Monitoring Centre

The Broadcast Monitoring Centre is set up to monitor the technical requirements of FM and TV authorisation holders. The Centre enables the NCA to see at first hand the technical operations of authorisation holders and to respond promptly to infractions.

NCA Engineers are able to obtain real-time measurements of FM bandwidth deviations, radio data signals (RDS) metrics, digital terrestrial television (DTT) signal quality, and satellite television service quality.



*The Broadcast Monitoring Centre*



Engineers at work at the Broadcast Monitoring Centre

# Key Benefits

- Provides mechanism for continuous monitoring of both sound and television broadcasting services.
- Provides evidence of non-compliance incidents for enforcements.
- Provides reliable data for optimisation of the National DTT transmission network.
- Enables the detection of unauthorised broadcasting services.
- Helps ensure better broadcast service quality for consumers.

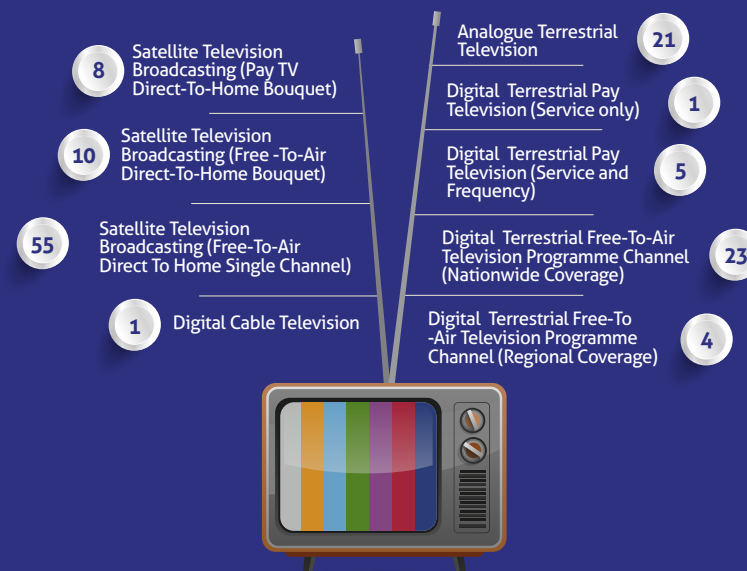
## Quick Facts

### Summary of Statistics of FM Stations November 2018



TOTAL IN OPERATION 367 • TOTAL NUMBER OF AUTHORISATIONS 471

### Summary of Statistics of TV Broadcasting Stations November 2018



• TOTAL NO. OF AUTHORISED TV STATIONS 128 • TOTAL NO. OF STATIONS ON AIR 53

• TOTAL NO. OF STATIONS NOT ON AIR 75



***“Beyond giving out authorisations for broadcasting services, we care about adherence to technical requirements which eventually enhances the consumer’s experience”***

***– Naa Amorkor Asihene (Mrs.)***

The engineers here at NCA have put in a lot of hard work to ensure the Broadcast Monitoring Centre is up and operational. Beyond giving out authorisations for broadcasting services, we care about adherence to technical requirements which eventually enhances the consumer’s experience; that is what excites us most about our broadcast monitoring capabilities.

It is important as the regulator to be able to independently verify the technical output of authorisation holders and we are able to now do so.

Other regulators who have paid working visits here have given us the thumbs up and that recognition means a lot to us.



***Naa Amorkor Asihene (Mrs.),  
Principal Manager, Engineering Division***

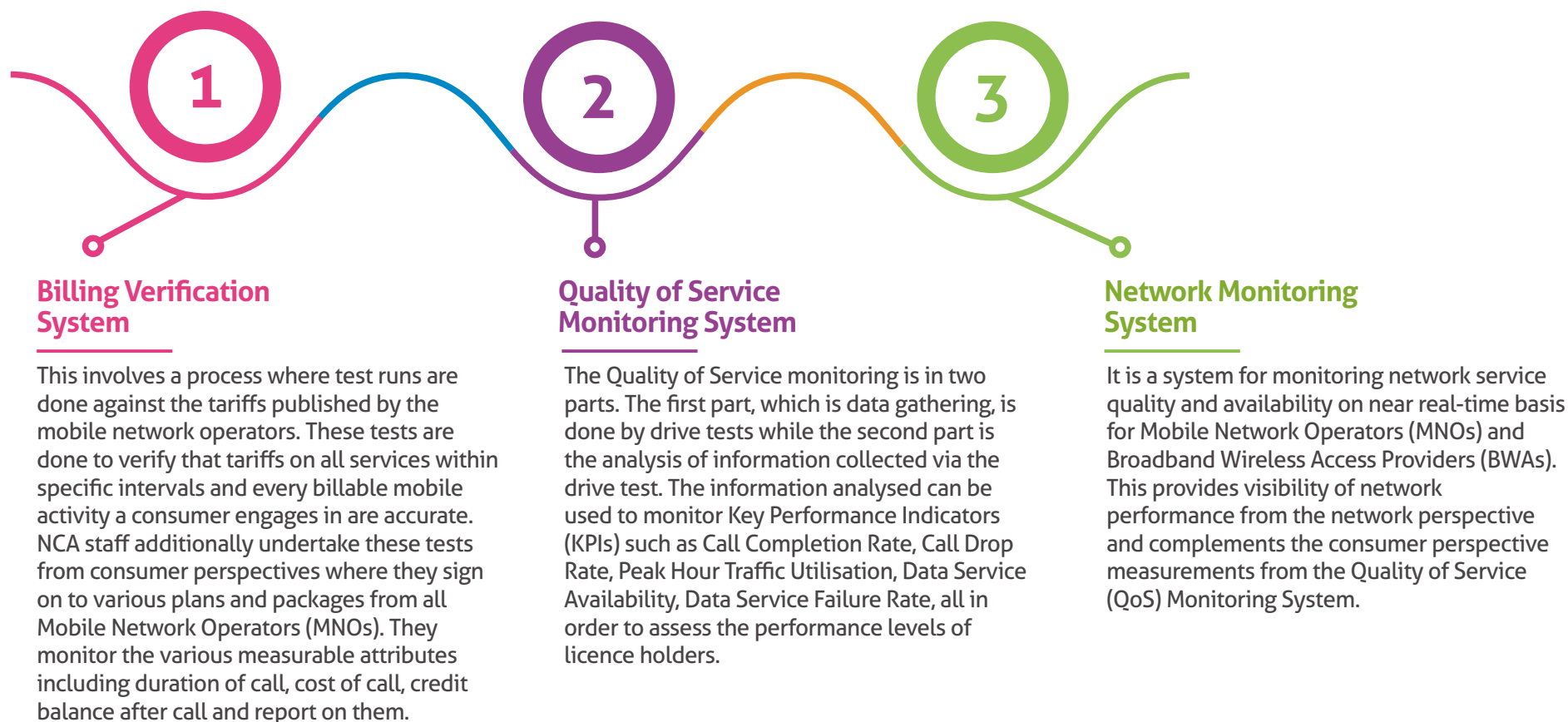


*Delegates at the Regional Development Forum for Africa of the International Telecommunications Union paid a visit to the NCA in July 2018 where they visited various facilities including the Broadcast Monitoring Centre*

# PROJECT 5:

# Communications Monitoring Centre

The National Communications Authority (NCA) is mandated to ensure that Telecommunications Operators deliver the required Quality of Service to enhance the Quality of Experience of users. To do this, NCA's Communications Monitoring Centre has the following three separate installations set up to monitor regulatory adherence by service providers.

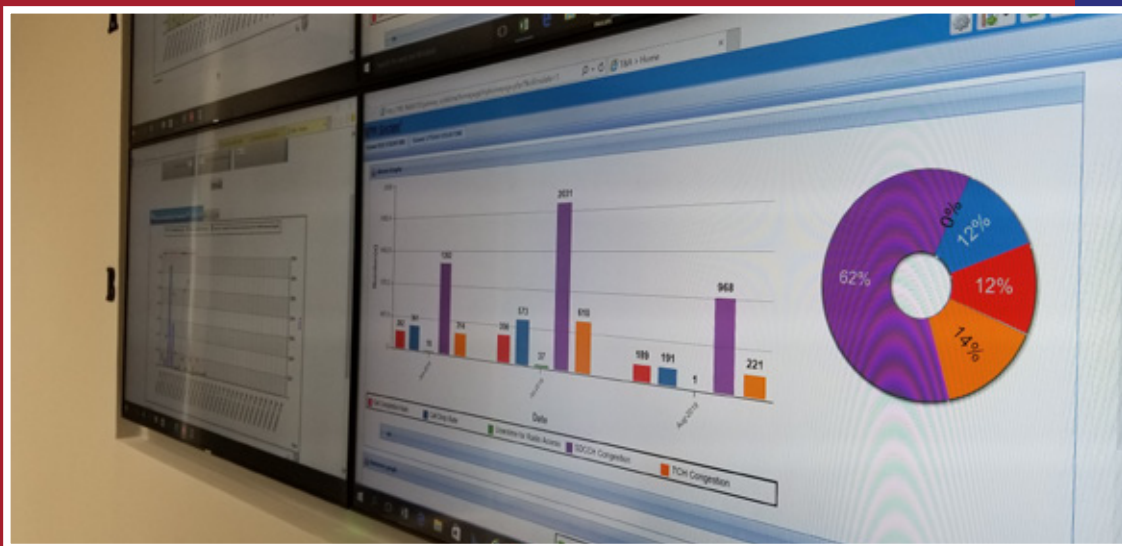




# Key Benefits

## of the Communications Monitoring Centre

- Ensures that mobile phone and Internet consumers receive a good quality of service and experience when they use voice and data services.
- NCA is able to enforce its regulatory duties.
- Consumer protection is enhanced as drops in Quality of Service are quickly detected and service providers prompted for resolution.
- To ensure value for money when they sign up for plans and packages.
- The consumer is able to make well informed choices.



Displayed Output from the Network Monitoring System

## Quick Facts

### Simplified Definitions

#### • Mobile Voice QoS KPI

**SDCCH Congestion Rate (SCR)** - It is the frequency of a consumer's inability to access the resource that carries the information needed to set up a call.

**TCH Congestion Rate (TCR)** - It is the ease or difficulty with which a consumer is able to get a call through their service provider's network system. The measurement of the frequency of Call Congestion is termed as Call/TCH Congestion Rate.

**Call Setup Time (CST)** - Call Setup Time is the length of time it takes from initiating a call to the time the call is established.

**Call Drop Rate (CDR)** - It is the frequency with which a consumer's on-going call is cut off or disconnected without their permission or knowledge. The measurement of the frequency of call drops is termed as Call Drop Rate.

**Call Completion Rate (CCR)** - It is defined as the probability that a call, after being successfully set up, has been maintained during a period of time and ended normally.

#### • Mobile Data QoS KPI Parameter

**Data Access Success Rate (DASR)** - The probability to successfully access a public data server.

**Data Drop Rate (DDR)** - The probability to drop or release a data session without consumer or user's intervention.

**Data Throughput (DT)** - The speed at which data is downloaded.

#### • Billing Feedback Message (BFM)

Features of the BFM include the following:

- **Rate of the transaction** – how much is charged per second of a call or cost of SMS.
- **Duration or volume of the transaction** – how long the call lasted or volume of data used.
- **Cost the transaction** - how much it cost for the call or data session.
- **Balance after transaction** – how much credit is left after the call or transaction.

***“The Communications Monitoring Centre we have here is comparable to what you will find anywhere in the world and it is personally gratifying to me to know that the work we put in has produced these results”***

***- Ing. Kwame Baah-Acheamfuor***

It is important for the NCA to conduct regular QoS monitoring and have oversight of the network performance. In addition, our Billing Verification System ensures fairness for both consumers and operators.

The Communications Monitoring Centre we have here is comparable to what you will find anywhere in the world and it is personally gratifying to me to know that the work we put in has produced these results.

Furthermore, the NCA has seen a number of peer visits from across the continent and they all want to learn from us.



***Ing. Kwame Baah-Acheamfuor,***  
*Deputy Director, Regulatory Administration*

# Forging Ahead

This year (2018) has been a lot of hard work and seen a lot of drive aimed at establishing the National Communications Authority (NCA) as a world class regulator which is up to the task of regulating over twenty-six different services under its mandate.

All our activities this year have been geared towards strengthening the framework for Ghana's Digital Agenda, and helping carve out a practical understanding of the government's Ghana Beyond Aid mantra. We have proved that the Authority has indeed what it takes to be a world class regulator which lives the mantra of 'Ghana Beyond Aid'.

While showcasing this for the world to see, we assure you that the NCA will not be resting on its oars. Indeed, we believe that with internet and technology continuing to develop at such a quick rate, the Authority also has to evolve to enable it play its role as a regulator. Our regulatory interventions will have to also befit the environment at any point in time.

To this end, it is our objective to have a clear strategic direction that takes into account a rapidly changing environment and have a 360° oversight where all the different facets of the industry are regulated to achieve the expectations of the three (3) groups of stakeholders; Government, Service Providers and Consumers; especially in a digital world where services and processes are being intertwined and converged with no clear boundaries.

It is a challenge to look ahead, however, we are prepared and will continue to;

- Engage with other regulators and government agencies to share solutions and deliver service while supporting Government in its Digital Agenda.
- Invest and develop systems and projects which will equip us to deliver outstanding regulatory service and value for money for all our stakeholders.

In addition to these projects which we have showcased in this publication and which our investments have provided, we will also continue to invest into building the capacity of our human resource to develop the needed solutions. The NCA also looks forward to sharing its experiences and installations with other sister regulatory authorities; we believe that by sharing, we contribute to the development of ICTs and ICT regulations globally and foster excellence and innovation as well.

Our outlook will also involve engaging with academia, for we know that it is only when academia is exposed to these issues that we forge a true learning environment challenging the minds of students and encouraging them to develop solutions which will in the end, augur well for Ghana.

Lastly, the NCA will also embark on a course of direction to showcase its achievements to the public and by so doing, endeavour to re-inforce confidence into the communications sector as Ghana joins the world through its Digital Ghana Agenda.

We look forward to the next chapter as we continue to execute our mandate professionally as possible for the growth of the industry, Ghana and the rest of the continent.

**Joe Anokye,**  
*Director General*

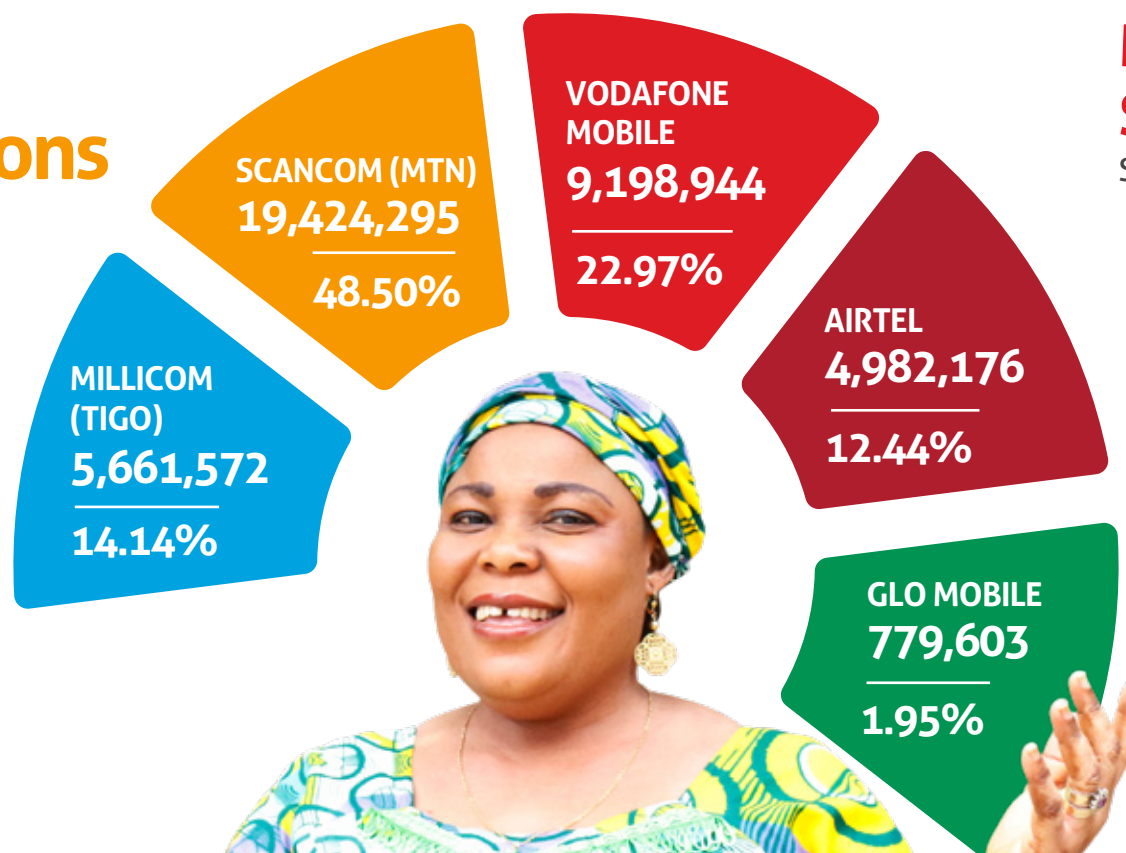




# Industry Subscriptions

## Mobile Voice Subscriptions

September 2018



Total Mobile  
**40,046,590**

Month Over  
Month Growth  
**0.30%**

# Appreciations

My team, the management and staff of the National Communications Authority, has done a great job to achieve this much. On their behalf, I wish to express our appreciation to the following for their varied contributions towards our continuous success and growth as a telecommunications regulator:

- His Excellency the President, Nana Addo Dankwa Akufo-Addo,
- His Excellency the Vice President, Dr. Mahamadu Bawumia,
- The Chief of Staff, Madam Frema Osei-Opere,
- The Minister for Communications, Hon. Ursula Owusu-Ekuful and the Ministry of Communications,
- The Minister for Finance, Hon. Ken Ofori-Atta, and the Ministry of Finance,
- The Minister for Information, Hon. Kojo Oppong-Nkrumah, and the Ministry of Information,
- Minister for National Security, Hon. Albert Kan-Dapaah,
- The Chairman of the Parliamentary Select Committee on Communications, Hon. Kennedy Agyapong and Members of the Committee,
- Board Chairman of the NCA Board of Directors, Kwaku Sakyi-Addo, and Members of the Board,
- The Commissioner General of the Ghana Revenue Authority, Emmanuel Kofi Nti, and the GRA,
- The Inspector General of Police, David Asante-Appeatu,
- Chief of Defense Staff, Lt. Gen. Obed Akwa,
- The National Cyber Security Advisor, Albert Antwi-Boasiako,
- Mobile Network Operators and other Service Providers,
- And Consumers of various telecommunications services.

There is no way the NCA would have succeeded in these achievements without your various support.

On the international front, I would also like to express my appreciation to:

- The Secretary-General of the International Telecommunications Union (ITU), Mr. Houlin Zhao,
- Deputy Secretary-General of the ITU, Malcolm Johnson,
- Director of the Telecommunications Development Bureau (BDT) of the ITU, Brahima Sanou,
- ITU Regional Director for Africa, Andrew Rugege and the ITU fraternity,
- The African Telecommunications Union (ATU)
- And the West African Telecommunications Regulators Association (WATRA).

We have benefitted from the sharing of experiences and will continue to contribute to the global discussions and developments on communications.

The National Communications Authority will continue to execute its mandate as professionally as possible for the growth of the industry, Ghana and the rest of the continent.

*Joe Anokye, Director General*

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The background of the image is a dark blue field filled with a complex, repeating pattern of light blue lines. These lines form a stylized representation of a circuit board, with numerous vertical and horizontal segments, sharp 90-degree turns, and small circular nodes at various points of intersection and termination. The pattern is dense and covers the entire area, creating a sense of digital connectivity and technology.

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