



## **FREQUENTLY ASKED QUESTIONS (FAQ) – QUALITY OF SERVICE MONITORING**

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### **1. What is Quality of Service (QoS)?**

QoS refers to all the requirements a telecom service needs to meet consumers' implied and stated expectations of a service they are receiving. These include:

- Network elements
- User device (phone, modems, laptops, etc)

### **2. What is QoS monitoring?**

It is the process of assessing service providers to ensure they meet required licence conditions.

### **3. What is the purpose of QoS monitoring?**

- a. To ensure compliance of service providers to their Licence obligations on service quality
- b. To ensure that consumers receive the required quality of service from their providers.
- c. To ensure consumers are able to make informed choices about the mobile services available to them.

### **4. What is the scope of QoS monitoring?**

QoS monitoring covers mobile, fixed and broadband services. Currently, the NCA only monitors mobile network services, which includes Voice, Data and Network coverage from user's perspective in line with licence conditions. The Authority will gradually improve its capacity to monitor other services.

### **5. What are the QoS parameters for Mobile Network services?**

Below are the various QoS parameters and definitions:

Table 1 – Definition of QoS Parameters

<b>Mobile Voice QoS KPI Parameter</b>	<b>Definition</b>
<b>SDCCH Congestion Rate (SCR)</b>	It is a measure of the frequency at which a consumer is unable to access the resource that carries the information needed to set up a call.

<b>TCH Congestion Rate (TCR)</b>	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 TCH Congestion Rate.
<b>Call Setup Time (CST)</b>	Call Setup Time is the length of time it takes from initiating a call to the time the call is established.
<b>Call Drop Rate (CDR)</b>	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.
<b>Call Completion Rate (CCR)</b>	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.
<b>Mobile DATA QoS KPI Parameter</b>	<b>Definition</b>
<b>Data Access Success Rate (DASR)</b>	The probability to successfully access a public data server.
<b>Data Drop Rate (DDR)</b>	The probability to drop or release a data session without consumer or user's intervention.
<b>Data Throughput (DT)</b>	The speed at which data is downloaded.

## 6. What is the legal backing for QoS monitoring?

- The National Communications Authority (NCA) Act 769, Act 2008 Section 3(m) mandates the Authority to establish quality of service indicators and reporting requirements for Operators and Service Providers for the object for which it was established (regulate provision of communications service in the country).
- Electronic Communications Act, 2008 (Act 775), Section 6 subsection (2) The Authority shall specify (a) quality of service indicators for classes of public telecommunications service, and (b) the means to enforce a licensee's compliance with its stated quality of service standards, including measures by which a licensee shall compensate users adversely affected by a failure to provide electronic communications service in accordance with the standards.
- Electronic Communications Act, 2008 (Act 775), Section 6 subsection (1) A network operator or service provider shall (f) satisfy standards of quality in accordance with its licence and the Regulations

## 7. When does NCA conduct this monitoring exercise?

NCA conducts monitoring on daily basis using live traffic measurements and quarterly using automated drive-test benchmarking tools in accordance with the licence conditions of telecom operators.

## **Questions Regarding the Quality of Service Monitoring for Quarter 1, 2018**

### **8. Which Services were monitored in Q1?**

The NCA monitored Voice and Data services in the first quarter of 2018. In addition to this, MNOs were monitored to determine if they have met their coverage obligations.

### **9. Which parameters for Voice and Data were tested in Q1?**

The table below shows the parameters which were tested in the first quarter of 2018.

Table 2 - Voice, Data and Coverage parameters Tested in Q1

<b>Mobile VOICE QoS Parameters</b>	<b>Mobile DATA QoS Parameters</b>	<b>Mobile COVERAGE Parameters</b>
SDCCH Congestion Rate (SCR)	Data Access Success Rate	3G- Received Signal Code Power (RSCP)
TCH Congestion Rate (TCR)	Data Drop Rate	2G- Received Signal Level (RxLev)
Call Setup Time (CST)	Data Throughput	
Call Drop Rate (CDR)		
Call Completion Rate (CCR)		
Voice Quality (Mean Opinion Score)		

### **10. Which areas were covered during the monitoring exercise**

All district capitals in the Greater Accra, Western, Eastern and Northern regions and two districts in the Ashanti Region namely Kumasi and Asokore.

### **11. Why wasn't the whole of the Ashanti Region covered during the monitoring exercise?**

The whole of the Ashanti Region was covered during the exercise for all the parameters listed above.

The results of all these can be found on the NCA's website with the exception of the Voice Quality monitoring where the results for all but two (2) of the districts are presently unavailable. The full Voice Quality monitoring results for the Ashanti Region will be published in due course.

### **12. When is NCA going to monitor the other regions?**

The other regions will be monitored during the months of May and June 2018.

### 13. How was the QoS monitoring done in Q1?

This was done by collecting measurement data on the field for the various mobile services using an automated benchmarking tool (called NEMO) with terminal equipment which simulates a typical user behaviour.

### 14. How is Voice Quality measured?

One of the parameters tested to ensure compliance is the Voice Quality which is measured by the Mean Opinion Score (MOS). MOS is a quality measure that has been used as a way to assess the human user's opinion of call quality, testing quality voice transmission, quality issues and measuring voice degradation and performance. MOS, Mean Opinion Score is measure for voice quality assessment from a user's perspective.

### 15. How is MOS assigned?

The standard for measuring MOS is an International Telecommunication Union (ITU) accepted standard which is also stated in the Cellular Mobile Licence. MNOs are required by the Licence to meet a minimum score of 3.5.

MOS is expressed as a single number in the range from 1 to 5, where the value of 1 corresponds to the lowest quality experienced by the end-user and 5 is the highest quality experienced.

### 16. What is the Standard for measuring MOS?

The standard for measuring MOS is an ITU accepted standard (ITU-T P.863) which the NCA adopted.

### 17. Can you help me understand the overall ratings?

The overall rating is simply based on the overall score. The overall score is calculated as the average of all MOS values obtained for the calls made within a District Capital during the field monitoring exercise.

The scores are then mapped to a rating based on the below:

<b>MOS Range</b>	<b>Range</b>	<b>Interpretation</b>
[4.1 to 5]	Excellent	Perfect. Like face-to-face conversation.
[3.5 to 4.1]	Good	Sound is clear but with some imperfections
[2.5 to 3.5]	Fair	Nearly impossible to communicate. User has to make extra effort to communicate
[1 to 2.5]	Poor	Impossible to communicate

### **18. How do I access the ratings for my district?**

Visit the NCA website or click on the link below to access ratings for your district.

- [www.mos.nca.org.gh](http://www.mos.nca.org.gh) or [www.nca.org.gh](http://www.nca.org.gh)

### **19. The scores for my district indicated that quality of speech is good, but my experience is bad, why?**

The experience of bad speech quality in a district which is scored as good could be attributed to many other reasons including the expectations of the user, their location and possibly the standard of the device used by the user.

### **20. Has the NCA discussed these findings with the Mobile Network Operators (MNO)?**

The results of the QoS Monitoring were shared with all the MNOs. The Authority engaged them to determine reasons for their performance in areas where they were unable to meet their KPIs and MNOs were given the opportunity to explain the reasons or why they were unable to meet the required KPIs.

### **21. What reasons did the Mobile Network Operators give for the results of the various findings?**

- **Airtel and Tigo** – The recently merged network informed the NCA that multiple fibre cuts were the main challenges which disrupted service and sometimes hindered them from meeting the stated KPIs.
- **Glo** - Glo indicated that they require new sites to improve coverage especially in new developing areas and will work to address this. They also submitted that some coverage issues were due to site outage and will focus on improving site availability.
- **MTN** – The network operator indicated that their three (3) main challenges had to do with Site Acquisition, Fibre Cuts and Permitting challenges. In a few instances, they reported neighbourhood agitation with regards to the sites under constructions.
- **Vodafone** – They will work closely with the Authority to rectify gaps identified.

### **22. Will the NCA monitor the same areas again?**

After a three month period, the NCA would again conduct another QoS monitoring in these same regions to determine if the situation has been resolved or improved. MNOs who would not have resolved or improved their performance would be sanctioned by the Authority.

### **23. What will the next phase of the monitoring entail?**

Phase 2 of the QoS Monitoring Plan would entail the other five (5) regions, Central, Brong-Ahafo, Volta, Upper East and Upper West. This will cover 96 district capitals and is likely to be completed by July, 2018.

### **24. Can I contact the NCA to monitor my area/house for me?**

No. the NCA will come to your district if it has not done so in Q1. Any complaints from mobile users should first be channelled to the service provider.

**25. What is network coverage?**

The geographical area covered by the network of a service provider.

**26. Why do you measure network coverage?**

- To ensure that MNOs meet their coverage obligations specified in their licence conditions.
- To ensure that consumers have access to telecom services across the country via all the district capitals.

**27. What is the NCA doing to address coverage issues such as black spots?**

NCA has authorised Mobile Network Operators to deploy Universal Mobile Telecommunication System, UMTS, in the 2G band which is ensuring that unserved and under-served areas of the country gain the needed access to data.

**28. How will NCA ensure compliance with targets set for MNOs?**

Stakeholder engagement with MNOs to share findings, stating problematic areas and giving time to remedy. Subsequent to this, sanctions will be meted out to defaulters if problems persist.

**29. Who do I contact for further clarification?**

You can contact us through the following channels to complain

- Send an email – [complaints@nca.org.gh](mailto:complaints@nca.org.gh)
- Call our Hotline – 0307-011-419
- Call our Toll Free – 0800- 110-622
- Fill a form on our Complaints Management System – [www.nca.org.gh/complaints](http://www.nca.org.gh/complaints)
- Walk-ins – 8 Regional Offices (Accra, Kumasi, Koforidua, Takoradi, Ho, Suyani, Tamale, Bolgatanga)
- Letter – NCA. P. O. Box CT 1568, Accra
- Facebook – National Communications Authority Ghana
- LinkedIn – National Communications Authority
- Twitter – @NCAGhana