

THE NATIONAL COMMUNICATIONS (QUALITY OF SERVICE) REGULATIONS, 2016

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NATIONAL COMMUNICATIONS AUTHORITY (QUALITY OF SERVICE) REGULATIONS, 2016

PART I PRELIMINARY PROVISION

Citation	
Application	<ol style="list-style-type: none">1. These Regulations may be cited as the National Communications Authority (Quality of Service) Regulations, 2016.2. These regulations shall apply in relation to Network Services.3. In these Regulations, unless the context requires otherwise-
Intepretation	<p>“Act” means the National Communications Authority Act 2008, Act 769;</p> <p>“Authority” means the National Communications Authority established by the National Communications Authority Act 2008, Act 769;</p> <p>“Basic Telephone Service” covers collection, carriage, transmission and delivery of voice messages over licensee’s Public Switched Telephone Network in licensed service area and includes provision of all types of services except those requiring a separate licence;</p> <p>“Busy Hour” means the one hour period each day for which the average traffic of the resource group concerned is greatest over the days under consideration;</p> <p>“Call Connection Success Rate” means the number of successfully connected calls to the number of call attempts;</p> <p>“Call Drop Rate” means the percentage of calls which, once they have been correctly established and therefore have an assigned traffic channel, are interrupted prior to their normal completion by the user, the cause of the early termination being within the operator’s network;</p> <p>“Cellular Mobile Services” means services derived from a Public Land Mobile Network;</p> <p>“Downtime” means the sum of all the time during reporting period when the fault exists on the service;</p> <p>“Electronic Communication Services” means transmission and provision of information by wire, radio waves, optical media or other electromagnetic systems, between or among points of the user’s choice;</p> <p>“Electronic Communication Services Provider” means an entity engaged in the provision of Electronic communication services;</p> <p>“Fault” means a state where a network does not meet the service specifications and some repair action is required;</p>

“Force Majeure” means earthquake, epidemic, war, famine, state of emergency or any other event declared as such by the Government;

“Locality” means a cluster within a district, municipal or metropolitan area;

“Mean Opinion Score” means a numerical indication of the perceived quality of received media after compression and/or transmission. The MOS is expressed as a single number in the range 1 to 5, where 1 is lowest perceived quality, and 5 is the highest perceived quality;

“TTR” means Time to Repair;

“NMS” means Network Management System of the Service Provider;

“OSS” means Operations Support Systems of the Service Provider;

“Public Switched Telephone Network” means a network set up and operated by basic service providers for the specified purpose of providing fixed communication services between subscribers using telephone sets or accessories;

“Public Land Mobile Network” means a network set up and operated by a licensed operator, for the purpose of providing land based mobile communication services to the public and which provides communication facilities to subscribers using mobile user equipment;

PART II

ELECTRONIC COMMUNICATIONS PROVIDER OBLIGATIONS

4. These regulations are intended to:
 - i. create conditions for customer satisfaction by making known the quality of service which the service provider is required to provide and the user has a right to expect;
 - ii. measure the quality of service provided by the service providers from time to time and to compare them with the norms so as to assess the level of performance;
 - iii. protect the interests of consumers of Electronic communications services;
 - iv. Making information available to help with informed customer choice of services and Licensees;
 - v. Improving the operation and performance of interconnected networks; and
 - vi. Implement a Quality of Service Framework whereby the quality of service of electronic communications will be measured, reported and published based on definitions and measurement methodology.

5. The measurement of quality of service parameters shall be based on the methodologies as follows:
 - i. The Service Provider shall send to the Authority on hourly basis the raw data from NMS and OSS to use to calculate service performance of parameters as determined by the Authority.
 - ii. Test calls measurement shall be made using drive-tests or other test units as determined by the Authority.
 - iii. The Authority shall conduct audits on all parameters, network interfaces and elements it deems appropriate.

6. The Electronic communication services provider shall ensure the following:

Methodology

- i. performance of Electronic communications services meet or exceed levels of performance as set forth in these regulations; and
- ii. Customers are provided with information to enable them make informed decisions.

Compliance with electronic service provider obligations

7. The Electronic communication services provider shall establish measurement systems consistent with this Regulations.

Services to be provided on payment

8. The Electronic communication services provider shall provide services to a person who applies and is capable of paying the appropriate charges for the provision of the services.

Provision of service

9. The Electronic communication services provider shall not intentionally interrupt the operation of the services in the normal course of business, nor may it in the normal course of business suspend the provision of any type of the service without having first notified the Authority in writing and having provided reasonable advance notice to persons affected by such interruption or suspension.

Duty of Service provider to customers

10. In executing his obligations to customers, the electronic communication services provider shall:-

- i. establish and maintain efficient information services to assist a customer with queries relating to the services, including installation, customer assistance and directory assistance;
- ii. provide to customers in respect of each category of the licensed service, equal access to service in the licensed area at the same quality of service and at the same tariff;
- iii. The licensee shall submit to the Authority for approval a Service Level Agreement containing the minimum quality of service standards to which customers are entitled, and the remedies and compensation available when service fall below such standards.
- iv. Notify all Customers of the terms and conditions of the Service Level Agreement and shall thereafter provide licensed services based upon the agreement.

- v. The Electronic communication services provider may modify the Service Level Agreement and will notify the customer accordingly.

PART III

QUALITY OF SERVICES

Quality of service for network service providers

11. The network licensee shall install, repair and maintain Electronic communications facilities at quality of services parameter as specified in the Schedules of these Regulations.

12. The Electronic communication services provider shall operate Electronic communications network as per the Schedules as specified in the Regulations.

Review of quality of service parameters

13. The Authority may review the quality of services parameters from time to time.

Over-riding Effect

14. Whenever higher quality of service parameter has been stipulated as a condition of license, the quality of service as required by the licence shall override the parameters given herein.

Public Emergencies

15.

i. In the event of force majeure the Authority may require the licensee to provide the necessary services to the Government giving priority to the support activities required to overcome the emergency.

ii. The licensee shall submit to the Authority its plan for the procedures and operations which the licensee shall follow in the event of any such emergency and shall update the emergency plan upon request by the Authority.

iii. In the event that the emergency or crisis is related to matters concerning national security, the licensee shall co-ordinate with the relevant authority indicated by the Authority and shall implement the emergency plan as far as reasonably practicable in accordance with the instructions as may be given by the Authority.

Procedures for rectifying violation of QoS requirement

16. In case of a violation, a formal notice will be sent to the Electronic Communication Service Provider to correct problem within fourteen days. An applicable sanction will be applied if the problem persists after the stipulated period or reoccurs after an initial notification.

Notifications of Service Degradation

and outages

17. The Electronic Communications Service Provider shall notify the Authority and affected Customers in any locality within an hour for service degradation or outages which may extend beyond an hour.

Applying Sanctions

18. Sanctions as per the Schedule VI of these Regulations will be imposed on the Electronic Communication Service Provider if the problem persists after the stipulated period or reoccurs after an initial notification.

Compensations

19. Besides the sanctions as per Schedule VI, affected customers shall be compensated by the Electronic Communication Service Provider as may be prescribed by the Authority except in the cases of force majeure.

Publishing Service
Quality Results

20. The Authority shall publish results of service quality measurements on monthly and district basis.

SCHEDULE I

QUALITY OF SERVICE (QoS) PARAMETERS FOR INTERCONNECTION

Every Service Provider shall meet the following Quality of Service benchmarks for any interconnected service in respect of each specified parameter measured by real calls on any interconnected route and shall submit a monthly report based on daily peak hour conditions.

No	Parameter Name	Target	Measurement Formula
1	Interconnection Route Utilization	Not more than 70% of capacity	$\frac{\text{Amount of carried traffic to another network}}{\text{Total capacity of route to another network}} \times 100$
2	Time To Repair (TTR) Interconnection Route	Not more than One Hour	Time of Total Service Restoration-Time of Notification of Fault

SCHEDULE II

QUALITY OF SERVICE (QoS) PARAMETERS FOR CELLULAR MOBILE SERVICE

Every cellular mobile Service Provider shall meet the following Quality of Service benchmarks for cellular mobile service in respect of each specified parameter measured by test traffic in any locality and shall submit a monthly report based on daily peak hour conditions.

No	Parameter Name	Target	Measurement Formula
1	Service Coverage	>-75dBm for Indoors >-85dBm for In- vehicles >-95dBm for outdoor in city	Field Strength measurements
2	Call Connection Success Rate	> 99%	$\frac{\text{Number of successfully connected call attempts} \times 100}{\text{Total number of attempts}}$
3	Call Drop Rate	< 2%	$\frac{\text{Number of calls dropped} \times 100}{\text{Total number of attempts}}$
4	Voice Service Access Delay	<10seconds	Maximum time taken for Voice service connection in all cases
5	Voice Quality (Mean Opinion Score {MOS})	> 3.5	ITU Recommendation on Voice Quality testing
6	Downtime for Cell (Site)	< 4 hours	Time Restored -Time of Fault
7	Downtime for Interconnect Route	< 1 hour	Time Restored -Time of Fault
8	Minimum Data Speed Rate	>2Mbps	Throughput
9	Data Service Availability	≥ 99.9%	As measured in data networks
10	Data Service Utilization	≤ 80%	As measured in data networks
11	Data Service Access Time	< Five (5) seconds	Maximum time taken for data service connection in all cases
12	Data Access Success Rate	≥ 99%	$\frac{\text{Number of service connections made} \times 100}{\text{Total number of connections requested}}$
13	Data Service Drop Rate	≤ 1%	$\frac{\text{Number of service connections lost} \times 100}{\text{Total number of service connections made}}$
14	SMS / MMS delivery success	> 99%	$\frac{\text{Number of SMS/MMS to recipients delivered} \times 100}{\text{Total Number of SMS/MMS received at Service Center}}$

15	SMS/MMS delivery time	<Five (5) seconds	Time of Service delivered to destination number- Time of service sent from originating number
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BILLING, CUSTOMER SERVICE & SATISFACTION MEASURES

No	Parameter Name	Target	Measurement Formula
16	Voice calls	Accurate charging	Per second charging
17	Messaging	Accurate charging	Message Length of 160 characters
18	Internet Services	Accurate Charging	QoS charging Volume Charging Time Charging
19	Interactive Voice Response(IVR)	< Fifteen (15) seconds	Duration of announcement of the entire IVR options before a customer can make a choice.
20	Call Centre Operator Response	< Thirty (30) seconds	Duration of waiting after the option to a Customer Care Assistant has been chosen by the Customer.
21	Customer satisfaction on overall quality of service	>95%	$\frac{\text{Number of answers as good quality}}{\text{Number of customers interviewed}}$

CUSTOMER SATISFACTION ATTRIBUTES

The performance of the Cellular Mobile Service Providers in respect of the following Quality of Service benchmarks shall be subject to periodic assessment by the Authority through customer satisfaction surveys, which may be conducted by the Authority either through its own officers or employees or through any agency appointed by it.

No	Parameter Name	Target
22	% of customers satisfied with the service availability.	>90%
23	% of customers satisfied with the service accessibility.	>90%
24	% of customers satisfied with the reliability.	>90%
25	% of customers satisfied with billing performance.	>90%
26	% of customers satisfied with the help/ enquiry services.	>90%

SCHEDULE III

QUALITY OF SERVICE (QoS) PARAMETERS FOR BASIC TELEPHONE SERVICE

Every basic telephone Service Provider shall meet the following Quality of Service benchmarks for basic telephone service in respect of each specified parameter measured by test calls in any locality and shall submit a monthly report based on peak hour conditions.

No	Parameter Name	Target	Measurement Formula
1	Time to Repair (TTR)	≤ 8 hours	sum of duration of each repair time in hours for all the fault incidences in a day
2	Call Connection Success Rate	> 99%	Number of successfully connected call attempts x100 Total number of attempts
3	Call Drop Rate	< 2%	Number of calls dropped x100 Total number of attempts
4	Voice Service Access Delay	<10seconds	Maximum time taken for Voice service connection in all cases
5	Voice Quality(Mean Opinion Score{MOS})	> 3.5	ITU Recommendation on Voice Quality testing

BILLING, CUSTOMER SERVICE & SATISFACTION MEASURES

No	Parameter Name	Target	Measurement Formula
6	Voice calls	Accurate charging	Per second charging
7	Provision and installation of telephone on premise after payment	≤ Five (5) days	Number of days from Service request to Service operations
8	Interactive Voice Response(IVR)	< Fifteen (15) seconds	Duration of announcement of the entire IVR options before a customer can make a choice.
9	Call Centre Operator Response	< Thirty (30) seconds	Duration of waiting after the option to a Customer Care Assistant has been chosen by the Customer.
10	Customer satisfaction on overall quality of service	>95%	$\frac{\text{Number of answers as good quality}}{\text{Number of customers interviewed}}$

CUSTOMER SATISFACTION ATTRIBUTES

The performance of the Basic Telephone Service Providers in respect of the following Quality of Service benchmarks shall be subject to periodic assessment by the Authority through customer satisfaction surveys, which may be conducted by the Authority either through its own officers or

No	Parameter Name	Target
11	% of customers satisfied with the service availability.	>90%
12	% of customers satisfied with the service accessibility.	>90%
13	% of customers satisfied with the reliability.	>90%
14	% of customers satisfied with billing performance.	>90%
15	% of customers satisfied with the help/ enquiry services.	>90%

employees or through any agency appointed by it.

SCHEDULE IV

QUALITY OF SERVICE (QoS) PARAMETERS FOR INTERNET SERVICE

Every Internet Service Provider shall meet the following Quality of Service benchmarks for Internet service in respect of each specified parameter measured by test calls in any locality and shall submit a monthly report based on peak hour conditions.

SERVICE QUALITY ATTRIBUTES

No	Parameter Name	Target	Measurement Formula
1	Call Connection Success Rate	< 99%	$\frac{\text{Number of successfully connected calls} \times 100}{\text{Total number of attempts}}$
2	Call Drop Rate	< 2%	$\frac{\text{Number of calls dropped} \times 100}{\text{Total number of connected calls}}$
3	Voice Service Access Delay	< Ten (10) seconds	Maximum Time taken for Voice service connection
4	Voice Quality (Mean Opinion Score {MOS})	> 3.5	ITU Recommendation on Voice Quality testing
5	Downtime for Cell (Site)	< 4 hours	Time Restored -Time of Fault
6	Downtime for Interconnect Route	< 1 hour	Time Restored -Time of Fault
7	Minimum Data Speed	$\geq 2\text{Mb/s}$	Throughput
8	Data Service Availability	$\geq 99.9\%$	As measured in data networks
9	Data Service Utilization	$\leq 80\%$	As measured in data networks
10	Date Service Access Time	< Five (5) seconds	In all cases
11	Data Access Success Rate	$\geq 99\%$	$\frac{\text{Number of successful connections made} \times 100}{\text{Total number of connections requested}}$
12	Data Service Drop Rate	$\leq 1\%$	$\frac{\text{Number of connections lost} \times 100}{\text{Total number of connections made}}$

BILLING, CUSTOMER SERVICE & SATISFACTION MEASURES

No	Parameter Name	Target	Measurement Formula
13	Provision and installation of Internet equipment (modem and related accessories) on premise after payment	\leq Five (5) days	Number of days from Service request to Service operations
14	Interactive Voice Response(IVR)	< Fifteen (15) seconds	Duration of announcement of the entire IVR options before a customer can make a choice.

15	Call Centre Operator Response	< Thirty (30) seconds	Duration of waiting after the option to a Customer Care Assistant has been chosen by the Customer.
16	Customer satisfaction on overall quality of service	>95%	<u>Number of answers as good quality</u> Number of customers interviewed

CUSTOMER SATISFACTION ATTRIBUTES

The performance of the Internet Service Providers in respect of the following Quality of Service benchmarks shall be subject to periodic assessment by the Authority through customer satisfaction surveys, which may be conducted by the Authority either through its own officers or employees or through any agency appointed by it.

No	Parameter Name	Target
17	% of customers satisfied with the service availability.	>90%
18	% of customers satisfied with the service accessibility.	>90%
19	% of customers satisfied with the reliability.	>90%
20	% of customers satisfied with billing performance.	>90%
21	% of customers satisfied with the help/ enquiry services.	>90%

SCHEDULE V

QUALITY OF SERVICE (QoS) PARAMETERS FOR BROADBAND WIRELESS ACCESS

No.	Parameter	Target	Remarks
1.	<u>Service Delivery</u> Waiting time for service activation	< 2 days	This depends on availability of service coverage within the customer's area of interest.
2.	Service Coverage	>-75dBm for Indoors >-85dBm for In-vehicles >-95dBm for outdoor in city	Field Strength measurements
3.	Point of Interconnection Utilisation	≤70%	
4	Peak Hour Traffic Utilization	≤80%	Ratio of Utilized Capacity in Resource Blocks (RBs) to Configured (RBs) on the radio interface
5.	Latency	≤80milliseconds	
56.	Data Service Availability	≥ 96%	
67.	Data Service Access Time	< five (5) seconds	in 100% of cases
8.	Data Service Access Failure Rate	≤ 1%	
89.	Data Service Drop Rate	≤ 1%	
910.	Minimum Download Data Speed Minimum Upload Data Speed	≥ 10 Megabits per second ≥ 2.5Megabits per second	Upload – Download ratio 1:4 for each subscriber at all times
11.	Downtime for Interconnect Route	< 1 hour	Within 24 hours
12.	Downtime for Radio Access/	< 1 hour	Within 24 hours

	Mean Time To Repair (MTTR)		
13.	Voice Call Setup Time	<Ten (10) seconds	in 100% of cases
14.	Call Connect Failure Rate	≤ 1%	
15.	Voice and /or Video Mean Opinion Score (MOS)	> 3.5	<i>ITU-International Telecommunications Union (ITU-T Recommendation POLQA rating 1 to 5</i>
16.	SMS / MMS delivery success	> 99%	<u>Number of SMS/MMS to recipients delivered x 100</u> Total Number of SMS/MMS received at Service Center
17.	SMS/MMS delivery time	<Five (5) seconds	Time of Service delivered to destination number- Time of service sent from originating number
18.	Voice calls	Accurate charging	Per second charging
19.	Messaging	Accurate charging	Message Length of 160 characters
20.	Internet Services	Accurate Charging	QoS charging Volume Charging Time Charging
21.	Interactive Voice Response(IVR)	< Fifteen (15) seconds	Duration of announcement of the entire IVR options before a customer can make a choice.
22.	Call Centre Operator Response	< Thirty (30) seconds	Duration of waiting after the option to a Customer Care Assistant has been chosen by the Customer.
23.	Calls to Customer Service Call Centre	> 95% of the calls should be successful.	

CUSTOMER SATISFACTION ATTRIBUTES

The performance of the Broadband Wireless Access Providers in respect of the following Quality of Service benchmarks shall be subject to periodic assessment by the Authority through customer satisfaction surveys, which may be conducted by the Authority either through its own officers or employees or through any agency appointed by it.

Functional Attribute	Benchmark
Customer satisfaction on overall quality of service	>90%
Percentage of customers satisfied with the provision of service.	>90%
Percentage of customers satisfied with the network availability.	>90%
Percentage of customers satisfied with reliability	>90%
Percentage of customers satisfied with the billing performance	>90%
Percentage of customers satisfied with help/enquiry services	>90%

SCHEDULE VI

SANCTIONS ON DEFAULT ON QUALITY OF SERVICE COMPLIANCE

No	Parameter Name	Sanction	Amount (Ghana Cedis)
1	Interconnection Route Utilization	Directive to expand capacity within 3 months	Gh50,000 per day after 3 months on default of Operator(s) responsible for delay
2	Time To Repair (TTR) Interconnection Route	Compensation	Gh50,000 per hour to be paid by defaulting Operator to the other interconnect party.
3	SDCCH Congestion	Fine	Gh50,000 per hour per locality to be paid by defaulting Operator to Authority
4	Call Connection Success Rate	Fine	Gh50,000 per hour per locality to be paid by defaulting Operator to Authority
5	Call Drop Rate	Fine	Gh50,000 per hour per locality to be paid by defaulting Operator to Authority
6	Voice Service Access Delay	Fine	Gh50,000 per hour per locality to be paid by defaulting Operator to Authority
7	Downtime for Cell (Site)	Announcements to affected locality after first hour	Gh50,000 per hour after four (4) hours to be paid
8	Data Service Availability	Fine	Gh50,000 per hour per locality to be paid by defaulting Operator to Authority
9	Data Service Utilization	Directive to expand capacity within 3 months	Gh50,000 per day after 3 months on default of Operator(s) responsible for delay
10	Data Service Access Time	Fine	Gh50,000 per hour per locality to be paid by defaulting Operator to Authority

11	Data Access Success Rate	Fine	Gh50,000 per hour per locality to be paid by defaulting Operator to Authority
12	Data Service Drop Rate	Fine	Gh50,000 per hour per locality to be paid by defaulting Operator to Authority
13	% of SMS / MMS delivery success	Fine	Gh50,000 per hour per locality to be paid by defaulting Operator to Authority
14	Time to Repair (TTR) a Fixed Telephone Service	Compensation	Gh500 per hour after eight (8) hours per Customer
15	Provision and installation of telephone on premise after payment	Compensation	Gh3,000 per day after five (5) days per Customer
16	Provision and installation of Internet equipment (modem and related accessories) on premise after payment	Compensation	Gh3,000 per day after five (5) days per Customer
17	Accurate Charging of Services	Fine after notification by Authority to correct in four (4) hours	Gh50,000 per hour per locality to be paid by defaulting Operator to Authority