



National Telecommunications Commission
NATCOM



13 Regent Road, Hill Station, P.O. Box 121, Freetown, Sierra Leone.

Tel +232 76 526475 / +232 88 216221 / +232 76 630640

info@natcom.gov.sl | www.natcom.gov.sl

FINAL DRAFT

**TELECOMMUNICATIONS QUALITY OF SERVICE
REGULATIONS 2019**

**NATIONAL TELECOMMUNICATIONS COMMISSION
(NATCOM)**

OCTOBER 2019

Table of Contents

PART 1: PRELIMINARY PROVISIONS	3
Title	3
Definitions.....	3
Scope of Application	4
Objectives of Quality of Service Regulations	4
PART 2: DUTIES AND OBLIGATIONS OF LICENSED SERVICE PROVIDERS	5
Duties and Obligations of Service Providers	5
Obligations of Licensees.....	5
Performance Measurement and Compliance.....	5
Provision of Services to Paying Customers	6
Provision of Uninterrupted Services to Customers	6
PART 3: QUALITY OF SERVICE	6
Quality of Service Network Compliance	6
Review of Quality of Service Parameters	6
Performance Management Data Submission	6
Public Emergencies and National Security	7
Notifications of Service Outage	7
Procedures for Rectifying Quality of Service Failures	7
Applicable Sanctions	7
Customer Compensation.....	7
Publication of Quality of Service Results	8
PART 4: MISCELLANEOUS.....	8
Reviews and Amendments.....	8
SCHEDULES	9
Schedule 1: Quality of Service Parameters for Interconnection Services.....	9
Schedule 2: Quality of Service Parameters for Mobile Telephony Service.....	9
Schedule 3: Quality of Service Parameters for Wireless Broadband Services.....	14
Schedule 4: Quality of Service Parameters for Cabled Communications Services	16
Schedule 5: Sanctions on Default on Quality of Service Compliance.....	18

In exercise of the powers conferred upon it by Section 82 of the Telecommunications Act 2006 (as amended) of the Republic of Sierra Leone, the National Telecommunications Commission (NATCOM) hereby makes the following Regulations as statutory instrument:

PART 1: PRELIMINARY PROVISIONS

Title

1. These Regulations may be cited as the **Telecommunications Quality of Service Regulations of 2019**.

Definitions

2. The terms and expressions used in these Regulations, which are defined in the Act, shall have the same meaning unless the context requires otherwise.

“Act”	means the National Telecommunications Act of 2006 as amended;
“Call Connection Success Rate”	means the number of successfully connected calls to the number of call attempts;
“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
“Commission”	means the National Telecommunications Commission established under the Act
“Customer”	means a person or legal entity subscribing to services provided by a service provider
“Downtime”	means the sum of all the time during reporting period when the fault exists on the service;
“Electronic Communications 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;
“Fault”	means a state where a network does not meet the service specifications and some repair action is required;
“Mean Opinion	means a numerical indication of the perceived quality of received

Score”	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
“Network Effectiveness Ratio”	means the ability of a network to deliver a call to the called terminal
“Service Provider”	means an entity engaged in the provision of Electronic communication services;
“Telephone Service”	covers collection, carriage, transmission and delivery of voice messages over licensee’s Public Switched Mobile or Fixed Telephone Network
“Time to Repair”	means the duration from a reported interconnection fault to service restoration

Scope of Application

3. These Regulations shall apply to all providers of licensed communications services in Sierra Leone, including but not limited to Mobile Telephony Network Operators, Broadband Internet Service Providers and Cabled (copper & fibre optic) Network Services.

Objectives of Quality of Service Regulations

4. The Telecommunications Quality of Service Regulations are intended to:
 - a) implement a transparent Quality of Service Framework whereby the quality of service of electronic communications shall be objectively measured, reported and published based on definitions and measurement methodologies;
 - b) create conditions for improvement in the Quality of Experience (QoE) of customer by making known the quality of services which the service provider is required to provide, and the user should expect;
 - c) objectively assess the quality of service provided by the service providers from time to time, by measuring and comparing them with established benchmarks and norms;
 - d) protect the interests of consumers of electronic communications services;
 - e) make information readily and publicly available to help with informed customer choice of services and comparative performance of Licensees; and
 - f) improve the operation and performance of interconnected networks

PART 2: DUTIES AND OBLIGATIONS OF LICENSED SERVICE PROVIDERS

Duties and Obligations of Service Providers

5. All licensed communications service providers shall have the duty to:
 - a. establish and maintain information or data to assist customers with queries relating to the services offered, installation and access requirements, processes, and customer support facilities;
 - b. provide to customers equal access to services within the licensed area at the same quality of service and at the same tariff;
 - c. notify all its customers of the terms and conditions of the Service Level Agreement of its licensed services and thereafter provide services based upon the Agreement;
 - d. submit to the Commission, samples of its Service Level Agreement containing the minimum quality of service standards to which customers are entitled to, and the remedies and compensation available when the quality of service is below such standards.
 - e. notify the customer of any modification to an existing Service Level Agreement.

Obligations of Licensees

6. Pursuant to Section 5 of these Regulations, each Licensee shall be obliged to perform the following:
 - a. deliver services at a performance level that meets or exceeds levels of performance as set forth in these regulations; and
 - b. provide information on such performance levels to the Commission to ensure that customers are allowed to make informed decisions on the choices of services.

Performance Measurement and Compliance

7. The electronic communication services provider shall establish measurement systems consistent with those defined in these Regulations.

Provision of Services to Paying Customers

8. The electronic communication services provider shall be required to provide services to a person who applies and is capable of paying the appropriate charges for the provision of any of its licensed services.

Provision of Uninterrupted Services to Customers

9. In the course of providing such services, except where provided for in the Terms and Conditions of Service, the electronic communication services provider shall not intentionally interrupt or hinder 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 services without having first notifying the Commission in writing and having provided reasonable advance notice to persons affected by such interruption or suspension
10. The electronic communications service provider shall duly inform or notify all customers that are expected to be affected by interruptions or suspensions in service.

PART 3: QUALITY OF SERVICE

Quality of Service Network Compliance

11. The network licensee shall install, repair and maintain electronic communications facilities to deliver quality services at performance levels that meet the parameters specified in the accompanying Schedules of these Regulations.
12. The electronic communication services provider shall operate electronic communications network and deliver services as per the accompanying Schedules specified in these Regulations.

Review of Quality of Service Parameters

13. The Commission may review the quality of service parameters from time to time.
14. Whenever a higher quality of service parameter is stipulated as a condition of license to be issued after these Regulations, the quality of service as required by that licence shall override the parameters given herein.

Performance Management Data Submission

15. Licensed service providers shall provide performance data in the formats that are consistent with ITU file transfer standards (e.g. CSV, XML, ASNI-1, ASNI-2, etc.).
16. Licensed service providers shall provide QoS performance data on daily basis, with performance data for the preceding twenty-four (24) hours.

Public Emergencies and National Security

17. In the event of force majeure or national emergency, the Commission may require the licensee to provide certain types of services to the Government on a priority basis, including communications to emergency operations necessary to handle the emergency.
18. The licensee shall submit to the Commission its plan for the operating procedures, which the licensee shall follow, and, upon request by the Commission, shall update the emergency plan to make it more effective.
19. In the event that the emergency or crisis is related to matters concerning national security, the licensee shall coordinate with the relevant authorities indicated by the Commission and shall implement the emergency plan as far as reasonably practicable in accordance with the instructions as may be given by the Commission.

Notifications of Service Outage

20. The Electronic Communications Service Provider shall notify the Commission and the affected customers in any locality within a period of one (1) hour for service outages, which may extend beyond four (4) hours for Urban and Peri-Urban areas and six (6) hours for Rural areas.

Procedures for Rectifying Quality of Service Failures

21. Where there are cases of Quality of Service failures, a formal notice will be sent by the Commission to the Electronic Communications Service Provider to correct the problem within a maximum of seven (7) days. Where the problem persists beyond a period of ninety (90) days, or where the same problem re-occurs at least four (4) times within the same license period after the initial incident and notification, **an applicable sanction will be applied.**
22. The application of Sections 19 and 20 shall consider the effect of extreme climatic changes and seasonality on the quality of services.

Applicable Sanctions

23. The applicable sanctions on Electronic Communications Service Providers are described in Schedule VI accompanying these Regulations if the problem persists after the stipulated period or reoccurs in a manner described in Section 21.

Customer Compensation

24. Besides the sanctions defined in Schedule VI, affected customers shall be compensated by the Electronic Communication Service Provider in a manner that shall be prescribed by the Commission, except in the cases of force majeure.

Publication of Quality of Service Results

25. The Commission shall publish results of service quality measurements for all licensed Electronic Communications Service Providers on monthly basis, disaggregated into geographical or service categories.

PART 4: MISCELLANEOUS

Reviews and Amendments

26. (1) The Commission shall amend and modify these Regulations or any part thereof, at any time, if the Commission deems it necessary.
- (2) Amendments to these Regulations shall be made in accordance with:
- a. the needs and changes in national priorities and Government policies including international treaties, commitments, standards or laws;
 - b. emerging issues of national security;
 - c. changes and advancement in technology; and

SCHEDULES

Schedule1: Quality of Service Parameters for Interconnection Services

It is required of every licensed electronic communications service provider to meet the following Quality of Service benchmarks for interconnected services in respect of each specified parameter measured by real calls on any interconnected route. All service providers shall submit a monthly report based on daily peak hour conditions.

No.	Parameter Name	Definition	Measurement Formula	Measurement tool	Target
1	Interconnection Route Utilisation	The percentage of provisioned route/links that is carrying traffic	(Capacity in use/Capacity agreed) *100	Performance Management System	< 75% of agreed capacity
2	Time To Repair Interconnection Route	The duration from a reported interconnection fault to service restoration	Time of reported service restoration – Time of reported fault	Performance Management System	< 1 Hour
3	Network Effectiveness Ratio (NER)	The ability of a network to deliver a call to the called terminal. (Reference: ITU-T E.425 Rec.)	100 * (Answered Calls + Ring no answer + User busy + Terminal Reject) / Seizures	Performance Management System	>95%

Schedule 2: Quality of Service Parameters for Mobile Telephony Service

Every mobile telephony Service Provider shall meet the following Quality of Service benchmarks for cellular mobile service in respect of each specified parameter measured by test traffic. Service providers shall be required to submit a monthly report based on daily peak hour conditions for various localities under the above-mentioned categories.

(i) Technical Performance Measures

No.	Parameter Name	Definition	Measurement Formula	Measurement Tools	Target
1	Call Connection Success Rate	The percentage of initiated MS calls that are	100* (Number of calls connected to the intended recipient /Number	Performance Monitoring system /	>95% (90% of cells should record measurement values >95% of real

No.	Parameter Name	Definition	Measurement Formula	Measurement Tools	Target
		connected to the intended recipient	of MS calls initiated)	Test stations / Drive test system	traffic)
2	Call Drop Rate	The percentage of connected calls to intended recipients that terminate without Calling or called party's will	$100 * (\text{Number of calls terminated without calling or called parties' will} / \text{The number of connected calls to intended recipients})$	Performance Monitoring system / Test stations / Drive test system	< 2% (90% of cells should record measurement values < 2% for real traffic)
3	Standalone Dedicated Control Channel (SDCCH) Congestion	The probability of failure of accessing a stand-alone dedicated control channel during call set up	$[(\text{SDCCH congestion of the total number of SDCCH seizures attempts} / (\text{channel allocation attempt counter on SDCCH+ channel allocation attempt counter on sub cell})) * 100]$	Monitoring system / Test stations / Drive test system	$\leq 0.2\%$
4	Handover success Rate	The ratio of the number of successful handovers of the number of handover requests	$(\text{Successful handovers} / \text{total handovers requests}) * 100$	Monitoring system / Test stations / Drive test system	$\geq 98\%$
5	Coverage Signal Strength	Signal strength / transmitter output power (measured in dBm) received by a mobile phone / antenna from a Mobile network (on the downlink).	Field Strength Measurement	Test Station / Drive Test System	Indoor: > -75dBm Outdoor (Urban): -95dBm Outdoor (Rural): -100dBm In-Vehicle: > -85dBm
6	Voice Service Access Delay	Time duration between an initial bid by	Maximum time taken for voice service connection	Test Station or Drive Test System	< 10 Seconds

No.	Parameter Name	Definition	Measurement Formula	Measurement Tools	Target
		the user for a voice service and the instant the user has access to the voice service	in all cases		
7	Voice Quality (Mean Opinion Score{MOS})	Numeric indication perceptibility of the conversation during a call expressed as numeric indication	Mean Opinion Score (MOS) (Reference – ITU – T P.863)	Test Station or Drive Test System	>3.5 for 95% of all cases
8	Downtime for Cell (Site)	The Cell (Site) Un-availability duration recorded downtime to site restoration time	Time of reported Site restoration – System Time of site outage	Performance Monitoring System	Urban < 2 Hours Rural < 4 Hours Peri Rural < 6 Hours
9	Downtime for Interconnect Route	The Interconnect Un-availability duration recorded downtime to interconnect route restoration time	Time of reported interconnect route restoration – System Time of interconnect route outage	Performance Monitoring System	< 15 minutes
10	Minimum Data Speed Rate	The amount of user information transferred (download or upload) in a period of time	Throughput	Test Station or Drive Test System	2G: 20 Kbits/s 3G: >64Kbits/s (shared) 4G: >1001Kbits/s CDMA:
11	Data Service Availability	Availability of the data service to be in a state to perform a data request	As measured in data networks	Performance Monitoring system / Test stations /	≥ 99.9%

No.	Parameter Name	Definition	Measurement Formula	Measurement Tools	Target
		function at a given instant of time or at any instant of time within a given time interval		Drive test system	
12	Data Service Utilization	The percentage of provisioned data capacity bandwidth that is carrying traffic	As measured in data networks	Performance Monitoring system / Test stations / Drive test system	$\leq 80\%$
13	Data Service Access Time	Maximum time taken for data service connection in all cases	(Moment PDP Request message is sent-Moment PDP Accept message is received)* 100	Performance Monitoring system / Test stations / Drive test system	< 5 seconds in 100% of the time
14	Data Service Drop Rate	The percentage of incomplete data transfers that were started successfully	$100 * (\text{Number of data service connections lost} / \text{Total Number connections made})$	Performance Monitoring system / Test stations / Drive test system	$\leq 1\%$
15	Data Access Success Rate	The percentage of initiated data service that are connected	$100 * (\text{Number of data service connections made} / \text{Total number of data service connections requested})$	Performance Monitoring system / Test stations / Drive test system	$\geq 99.9\%$
16	Latency	The total round trip time for a data packet to be transmitted and return to the source	Average round trip time	Test Station or Drive Test System / ping test	$\leq 80\%$ for broadband wireless service and < 100ms for Mobile cellular service
17	SMS delivery success	The percentage of	$100 * (\text{Number of SMS received by})$	Test Station or Drive	>99.9%

No.	Parameter Name	Definition	Measurement Formula	Measurement Tools	Target
		sent messages that are delivered to the intended recipients	intended recipients / Number of SMS sent)	Test System	
18	SMS/MMS delivery time	Duration between the SMS/MMS sent time and SMS/MMS receiving time by the intended recipient	Time SMS/MMS received – Time SMS/MMS sent	Test Station or Drive Test System	< 5 seconds in 100% of the time

(ii) **Billing and Customer Service Measures**

No.	Parameter Name	Definition	Measurement Formula	Measurement Tool	Target
1	Voice Call Billing Accuracy	Same duration use for a call should be recorded for charging	Per second charging provided by operator	Billing Assurance System	Accurate charging
2	Messaging Billing Accuracy		Message length of 160 characters	Billing Assurance System	Accurate charging
3	Interactive Voice Response (IVR) waiting Time	Total duration of IVR announcement option before a customer can make a choice	Time of IVR option to response from an agent – time IVR started	Test Stations	<15 Seconds
4	Call Centre Operator Response Time	Waiting duration after the option to an operator has been selected	Time operator assistance pick up – time caller making operator request	Test Station	< 30 Seconds
5	Customer satisfaction on overall quality of service		100* (Number of answers rated as “Good Quality” / Number of customers interviewed)	Trouble Ticket	>95%

(iii) **Customer Satisfaction Measures**

The performance of the Mobile Telephony Service Providers in respect of the following Quality of Service benchmarks shall be subject to periodic assessment by the Commission through customer satisfaction surveys, which may be conducted by the Commission either through its own officers or employees or through its Consultants

No.	Parameter Name	Target
1	% of customers satisfied with the service availability	>90%
2	% of customers satisfied with the service accessibility.	>90%
3	% of customers satisfied with the reliability.	>90%
4	% of customers satisfied with billing performance.	>90%
5	% of customers satisfied with the help/ enquiry services	>90%

Schedule 3: Quality of Service Parameters for Wireless Broadband Services

Licensed Internet Service Providers shall meet the following Quality of Service benchmarks for broadband services delivered via wireless network services in respect of each specified parameter measured by tests in any locality and shall submit a monthly report based on peak hour conditions.

(iv) Technical Performance Measures

No.	Parameter Name	Definition	Measurement Formula	Measurement Tool	Target
1	Waiting time for service activation	Duration from service request to service operations	Time of Service provisioning – Time of service request	Trouble Ticketing	< 5 days
2	Service Delivery	The availability of service at customer's premise. Defined also in ITU-T E.804 and ETSI TR 103 219	No. of hours of service uptime out of 24hr period	Web based service monitoring tool	≥98%
3	Signal strength /wireless router	output power received by a device connected to the service equipment	Test Drive	Indoor: > -75dBm	< 5 days
4	Peak Hour Traffic Utilisation	The percentage of provisioned transmission links	(Capacity in use/Rated Capacity)	Performance Management System	< 85% of maximum capacity

		that is carrying traffic	*100		
5	Latency	The total round trip time for a data packet to be transmitted and return to the source	Average round trip time	Test Station or Drive Test System / ping test	≤ 80% for broadband wireless service and < 100ms for Mobile cellular service
6	Service Availability	End to end service availability to establish calls from, and to a customer. Defined also in ITU-T E.804 and ETSI TR 103 219	Session setup failure and telephony service non-accessibility	Test Station or Drive Test System	≥ 98%
7	Minimum Data Download Speed	The amount of user information transferred download in a period of time	Throughput	Test Station or Drive Test System	Upload – download ratio 1:4 for each subscriber at all times
8	Minimum Data Upload Speed	The amount of user information transferred upload in a period of time	Throughput	Test Station or Drive Test System	Upload – download ratio 1:4 for each subscriber at all times
9	Downtime for Interconnect Route	The Interconnect Un-availability duration recorded downtime to interconnect route restoration time	Time of reported interconnect route restoration – System Time of interconnect route outage	Performance Monitoring System	< 15 minutes
10	Downtime for Radio Access & Core equipment	Controllers, Routers & Base Station unavailability duration within a 24 hr period	Time of reported Site restoration – System Time of site outage	Network uptime performance Monitoring System	Core Controllers < 1 hour, Urban < 2 hours, Rural < 4 hours, Peri Rural < 6 hours, in a 24 hour period
11	Mean Time To Repair	The duration from reported fault to service restoration	Time of reported Site restoration – System Time	Network uptime performance Monitoring	< 4 hours in a 24 hour period

			of site outage	System	
--	--	--	----------------	--------	--

(v) **Billing and Customer Service Measures**

No.	Parameter Name	Measurement Formula	Target
1	Internet Service Billing Accuracy	Prorated application of service bills based on service uptime and availability	99% Accuracy of Bills
2	Call Centre Operator Response Time	Time Operator Assistant pickup-Time making Operator request	< 30 seconds
4	Customer satisfaction on overall quality of service	100* (Number of answers rated as “Good Quality” / Number of customers interviewed)	90%

(vi) **Customer Satisfaction Measures**

The performance of the Broadband Internet Service Providers in respect of the following Quality of Service benchmarks shall be subject to periodic assessment by the Commission through customer satisfaction surveys, which may be conducted by the Commission either through its own officers or employees or through its Consultants

No.	Parameter Name	Target
1	% of customers satisfied with the service availability	>90%
2	% of customers satisfied with the service accessibility.	>90%
3	% of customers satisfied with the reliability.	>90%
4	% of customers satisfied with billing performance.	>90%
5	% of customers satisfied with the help/ enquiry services	>90%

Schedule 4: Quality of Service Parameters for Cabled Communications Services

Licensed Internet Service Providers shall meet the following Quality of Service benchmarks for activated electronic communications services delivered through cabled networks in respect of each specified parameter measured by tests in any locality and shall submit a monthly report based on peak hour conditions.

(vii) **Technical Performance Measures**

No.	Parameter Name	Measurement Formula	Target
1	Service Connection Success Rate	(Number of successfully connected service attempts/Total number of attempts)* 100	>98%
2	Service Connection Drop Rate	(Number of incomplete service transfer/number of service transfers started successfully)* 100	< 2%
6	Downtime for ADM (Site)	Time of reported ADM Site restoration – System Time of ADM site outage	Urban < 4 Hours Rural < 6 Hours Peri Rural < 8 Hours
7	Downtime for Interconnect Route	Time of reported interconnect route restoration – System Time of interconnect route outage	< 15 minutes
8	Minimum Data Speed Rate	Throughput	2G: 20 Kbits/s 3G: >64Kbits/s (shared) 4G: >1001Kbits/s CDMA:
9	Data Service Availability	As measured in data networks	≥ 99.9%
11	Service Access Time	(Moment PDP Request message is sent-Moment PDP Accept message is received)* 100	< 5 seconds in 100% of the time
12	Latency	Average round trip time	≤85ms national ≤300ms international
13	Uptime (towers)		
14	Mean Time to Restore	Average time to troubleshoot and repair failure	< 4 hours in a 24 hour period

(viii) **Billing and Customer Service Measures**

No.	Parameter Name	Measurement Formula	Target
1	Service Billing Accuracy	-Per second charging, -Message length of 160 characters, -Volume charging -Time charging	Accurate charging
2	IVR Waiting Time	Time IVR option to Operator to speak to an agent-Time IVR started	< 15 seconds
3	Call Centre Operator Response Time	Time Operator Assistant pickup-Time making Operator request	< 30 seconds
4	Customer satisfaction on overall quality of service	(Number of answers as Good Quality/ Number of customers interviewed)* 100	>95%

(ix) **Billing and Customer Service Measures**

The performance of the activated cabled communications services Service Providers in respect of the following Quality of Service benchmarks shall be subject to periodic assessment by the Commission through customer satisfaction surveys, which may be conducted by the Commission either through its own officers or employees or through its Consultants

No.	Parameter Name	Target
1	% of customers satisfied with the service availability	>90%
2	% of customers satisfied with the service accessibility.	>90%
3	% of customers satisfied with the reliability.	>90%
4	% of customers satisfied with billing performance.	>90%
5	% of customers satisfied with the help/ enquiry services	>90%

Schedule 5: Sanctions on Default on Quality of Service Compliance

No.	Parameter Name	Sanction	Amount (Le)
Mobile Telecommunications Services			
1	Call Connection Success Rate	Fine to be paid by defaulting Operator to the Commission	1,000,000.00/site/day
2	Call Drop Rate	Fine to be paid by defaulting Operator to the Commission	1,000,000.00/site/day
3	Coverage Signal Strength	Fine to be paid by defaulting Operator to the Commission	500,000.00/sector/day
4	Voice Service Access Delay	Fine to be paid by defaulting Operator to the Commission	300,000.00/call/day
5	Voice Quality (Mean Opinion Score {MOS})	Fine to be paid by defaulting Operator to the Commission	500,000.00/sector/day
6	Downtime for Cell (Sector)	Fine to be paid by defaulting Operator to the Commission	200,000.00/sector/hour/technology
7	Downtime for Interconnect Route	Compensation to Routing Partner, and fines to be paid by defaulting Operator to the Commission	2,000,000.00/route/hour
8	Minimum Data Speed Rate	Fines to be paid by defaulting Operator to the Commission and Compensation to customers determined by	250,000.00/sector/day

No.	Parameter Name	Sanction	Amount (Le)
		the Commission	
9	Data Service Availability	Fines to be paid by defaulting Operator to the Commission	1,000,000.00/sector/hour
10	Data Service Utilization	Fines to be paid by defaulting Operator to the Commission	750,000.00/sector/hour
11	Data Service Access Time	Fines to be paid by defaulting Operator to the Commission	500,000.00/sector/hour
12	Data Service Drop Rate	Fines to be paid by defaulting Operator to the Commission	1,000,000.00/site/day
13	Data Access Success Rate	Fines to be paid by defaulting Operator to the Commission	1,000,000.00/site/day
14	Latency	Fines to be paid by defaulting Operator to the Commission	500,000.00/route/hour
15	SMS delivery success	Fines to be paid by defaulting Operator to the Commission	1,000.00/message for more than 5% failure
16	SMS/MMS delivery time	Fines to be paid by defaulting Operator to the Commission	1,000.00/message for more than 6 seconds
17	Interconnection Route Utilisation	Directives to expand, and fines to be paid by Router Owner to the Commission	2,000,000.00/route/day for more than 80%
18	Time To Repair Interconnection Route	Fines to be paid by defaulting Operator to the Commission and Compensation to Routing Partner to be determined by the Commission	2,500,000.00/route more than 1 hour per failure
19	Network Effectiveness Ratio (NER)	Fines to be paid by defaulting Operator to the Commission	2,000,000.00/route less than 90%
20	Internet Service Billing Accuracy	Fines to be paid by defaulting Operator to the Commission and Compensation to customers to be determined by the Commission	1,000,000.00/service/1% failure
21	Call Centre Operator Response Time	Fines to be paid by defaulting Operator to the Commission	250,000.00/response for more than 40 seconds
22	Customer satisfaction on	Fines to be paid by	500,000.00/ overall

No.	Parameter Name	Sanction	Amount (Le)
	overall quality of service	defaulting Operator to the Commission and customer compensation to be determined by the Commission	QoS for less than 90%
Fixed Wireless Broadband Services			
1	Waiting time for service activation	Compensation to customers	Cost of service refunded to customer after 5 days
2	Service Delivery	Fines to be paid by defaulting Operator to the Commission	300,000.00/service for less than 95%
3	Signal strength /wireless router	Compensation to customers	Cost of service charge halved after 5 days
4	Peak Hour Traffic Utilisation	Fines to be paid by defaulting Operator to the Commission	750,000.00/hour for less than 80%
5	Latency	Fines to be paid by defaulting Operator to the Commission	500,000.00/route/hour
6	Service Availability	Fines to be paid by defaulting Operator to the Commission	1,000,000.00/service/day
7	Minimum Data Download Speed	Fines to be paid by defaulting Operator to the Commission	500,000.00/hour for 1:20 and below
8	Minimum Data Upload Speed	Fines to be paid by defaulting Operator to the Commission	500,000.00/hour for 1:20 and below
9	Downtime for Interconnect Route	Compensation to Routing Partner, and fines to be paid by defaulting Operator to the Commission	2,000,000.00/route/hour
10	Downtime for Radio Access and core controllers	Fines to be paid by defaulting Operator to the Commission	- 20,000,000.00/controller/hour after 1 hour - 2,000,000.00/BTS/hour -200,000.00/sector/for 4 hours in Urban Areas -200,000.00/sector/for 6 hours in Peri-Urban Areas -200,000.00/sector/for 8 hours in Rural Areas
11	Mean Time To Repair	Fines to be paid by	2,000,000.00/

No.	Parameter Name	Sanction	Amount (Le)
		defaulting Operator to the Commission	equipment for more than 4 hours
12	Internet Service Billing Accuracy	Fines to be paid by defaulting Operator to the Commission and Compensation to customers to be determined by the Commission	1,000,000.00/service/1 % failure
13	Call Centre Operator Response Time	Fines to be paid by defaulting Operator to the Commission	250,000.00/response for more than 40 seconds
14	Customer satisfaction on overall quality of service	Fines to be paid by defaulting Operator to the Commission and customer compensation to be determined by the Commission	500,000.00/ overall QoS for less than 90%
Submission of QoS Performance Data			
15	Failure to Submit Data and documents on time	Fines to be paid by defaulting Operator to the Commission	10,000,000.00/day for infraction
16	Failure to Submit Data in Approved Format	Fines to be paid by defaulting Operator to the Commission	2,000,000.00/day for infraction