NIGERIAN COMMUNICATIONS ACT 2003

QUALITY OF SERVICE REGULATIONS 2009

ARRANGEMENT OF REGULATIONS

Commencement: [insert date for the regulations taking effect]

In exercise of the powers conferred upon it by Sections 70 and 104(a) of the Nigerian Communications Act 2003 (the "Act"), and of all other powers enabling it in that behalf, the Nigerian Communications Commission (the "Commission") hereby makes the following Regulations:

Part I – Scope and Operation

Scope of the Regulations

1. These Regulations identify minimum quality of service standards, and associated measurement, reporting and record keeping tasks, pursuant to Section 104(a) of the Act.

Objectives of the Regulations

2. These Regulations have the following objectives:

   (a) Improving service quality, by identifying service deficiencies and by encouraging or requiring appropriate changes;

   (b) Maintaining service quality, while recognising environmental and operating conditions;

   (c) Making information available to help with informed Customer choice of Services and Licensees;

   (d) Improving the operation and performance of interconnected networks; and

   (e) Assisting the development of related telecommunications markets.

Structure of the Parameters

3. These Regulations define quality of service standards as follows:

   (a) Parameters, defining the applicable quality of service measures for specific Services, are identified in Parts A and B of Schedule 1;

   (b) The methods of taking Measurements that measure service performance against Parameters are described as "Measurement Methods" in Part B of Schedule 1;

   (c) The measurable service characteristics of Parameters that are to be published are described as "Published Measurements" in Part A of Schedule 1; and

   (d) Any applicable Targets for Parameters are identified in

Part A of Schedule 1.

4. The quality of service standards defined by these Regulations have been developed in accordance with the following principles: Principles of the Parameters

(a) Measurements should be required only for features of Services that are significant, with an emphasis on Services that are subject to limited competition;

(b) The Measurement Methods, and related reporting of information, should let Customers compare the service quality of Licensees fairly, but should not unnecessarily restrict the measurement or other quality of service monitoring practices of Licensees;

(c) The Published Measurements should be related to aspects of service quality that can be directly perceived or experienced by End Users; and

(d) Any applicable Targets, and the other characteristics of the identified quality of service standards, should be appropriate to the Federal Republic of Nigeria.

Part II – Measurement, Reporting and Record Keeping

5. Unless otherwise stated in this Regulations, the Reporting Periods, which are the periods of time over which Measurements are taken and recorded, shall be one (1) month starting on 1 January of the applicable calendar year or as the Commission may from time to time direct or stipulate. Reporting Periods

6. The Commission shall in carrying out Measurement and Data Acquisition functions use such methods, data and/or documents including but not limited to Drive test, Consumer survey, Data acquired or obtained from Network Operating Centers (NOCs)/ Network Management Centers (NMCs) etc and data submitted by Licensees. Reportable Parameters

7. A Parameter shall be Reportable for a Service, with the effect that Measurements and related reporting of the Parameter are required, if it is one of those stated in this Regulations and/or listed in the Schedule of this Regulations.

8. The Reporting Areas, which are the geographic areas for which Measurements are taken and recorded, shall be the Reporting

Federal Republic of Nigeria, the States of the Federal Republic of Nigeria, and the Federal Capital Territory taken separately unless the Commission permits in writing two or more Reporting Areas to be combined into one Reporting Area for particular Licensees, Parameters, Services and Reporting Periods. Areas

9. In considering whether to permit two or more Reporting Areas to be combined into one Reporting Area under Regulation 8 the Commission shall take into account factors including but not limited to: Factors in permitting combined Reporting Areas

(a) The value of information about variations in quality of service between separate Reporting Areas;

(b) The relationship between the network structure and corporate organisation of the relevant Licensees and the physical boundaries of the Reporting Areas; and

(c) The numbers of Customers using the relevant Services in the Reporting Areas; and

(d) The difference in costs between taking Measurements for separate Reporting Areas and taking Measurements for combined Reporting Areas.

10. For each Parameter that is Reportable for a Service, for each Reporting Area and for each Reporting Period, a Licensee shall perform the following measurement, reporting and record keeping tasks: Measurement, reporting and record keeping tasks

(a) Taking the Measurements according to the Measurement Method defined for the Parameter;

(b) Submitting the Measurements to the Commission within one (1) week after the end of the Reporting Period;

(c) Submitting any additional information requested by the Commission, including details of the times, places and other particulars of the Measurements, within one (1) month after the end of the Reporting Period or as may be otherwise directed by the Commission;

(d) Publishing the Measurements within one (1) month after the end of the Reporting Period, with the content and format described in Regulation 12 or as

may be otherwise directed by the Commission; and

(e) Retaining quality of service data, including all Measurements and related records, for a minimum of twelve (12) months after the end of the Reporting Period or as may be otherwise directed by the Commission.

Part III – Publication

Timing of publication

11. The Commission may after due analysis, mandate or request Licensees to make necessary amendments or corrections to the Measurements submitted by Licensees under Regulation 10. The Commission shall thereafter, publish the Measurements within two (2) months after relevant end of the Reporting Period to which the Measurements apply with or without additional notes or comments.

Content and format of publication

12. For each Parameter that is Reportable for a Service, for each Reporting Area and for each Reporting Period, Measurements as published by the Commission under Regulation 11 shall be set out in tables that contain, for each Licensee:

(a) The name for the Service used by the Licensee;

(b) An identification of the Reporting Area for which the Measurements were taken;

(c) The Published Measurement submitted by the Licensee;

(d) An indication of any Target for the Parameter and the Service that has not been reached by the Licensee;

(e) Any explanatory remarks by the Licensee, accepted by the Commission, including but not limited to remarks about changes in environmental or operating conditions that could not have been reasonably foreseen by the Licensee; and

(f) Any other information or comparison of service quality that the Commission determines to be appropriate, possibly including information to help Customers to assess the performance of competing Licensees.

Factors in approving explanatory

13. In considering whether to approve explanatory remarks by a Licensee under Regulation 12 the Commission may take into

account factors including but not limited to: remarks

(a) Any service deficiencies that arise partly or wholly from the Services of another Licensee;

(b) Any changes in environmental or operating conditions that could not have been reasonably foreseen by the Licensee; and

(c) Any expectations about quality of service that are appropriate to the tariffs and other commercial terms for the Services of the Licensee.

Part IV – Investigation

14. The Commission may audit some or all of the quality of service data retained by Licensees under Regulation 10(e). In doing so the Commission may vary the regularity and frequency of the audits, as well as the Licensees, Services, Parameters, Reporting Areas and Reporting Periods that require audits. Auditing of quality of service data

15. The Commission may investigate the quality of service measurement, reporting and record keeping procedures of a Licensee pursuant to Section 61 of the Act. In doing so the Commission may exercise its powers of information gathering pursuant to Section 64 of the Act. Investigation of measurement, reporting and record keeping procedures

Part V – Contravention and Enforcement

16. For each Parameter that is Reportable for a Service, for each Reporting Area and for each Reporting Period, a Licensee providing the Service shall have committed a Contravention if: Contraventions

(a) The Licensee fails to perform the measurement, reporting and record keeping tasks set out in Regulation 10.

(b) The Licensee fails to reach a Target for the Parameter and the Service:

(i) after the Commencement Date of these Regulations; or

(ii) The date when the Target was most recently specified; or

(iii) The date when the Target was most recently changed to require a higher standard of quality than was required immediately before;

(c) The Licensee fails to submit, during a time period specified by the Commission, information requested by the Commission pursuant to Regulation 10(c) or Regulation 15;

(d) The Licensee submits or publishes false or misleading information about quality of service; or

(e) The Licensee obstructs or prevents an investigation by the Commission of the quality of service measurement, reporting and record keeping procedures.

Enforcement measures

17. If a Licensee commits a Contravention, the Commission may take one or more of the following enforcement measures:

(a) Requiring the Licensee to publish additional information about the quality of the relevant Services, possibly including its implementation of a remedial plan;

(b) Issuing one or more directions pursuant to Section 53 of the Act including but not limited to directing operators or licensees to compensate subscribers/consumers for poor quality of service.

(c) Asking the Licensee to pay fine as determined under Schedule 2 as amended from time-to-time.

Factors in applying enforcement measures

18. In considering the application of enforcement measures under Regulation 17 the Commission may take into account factors including but not limited to:

(a) The factors and considerations set out in Regulation 15 of the Enforcement Processes Regulations or any applicable section of an amendment of the said Regulation;

(b) The time elapsed between a failure to perform the

measurement, reporting and record keeping tasks pursuant to Regulation 16(a);

(c) The time elapsed between a failure to reach a Target pursuant to Regulation 16(b);

(d) The numbers and natures of the Services, Parameters, Reporting Areas, Reporting Periods and Targets for which the Licensee has committed Contraventions;

(e) Any service credits or rebates that have been provided by the Licensee to Customers who may have been inconvenienced or otherwise affected by the committed Contraventions; and

(f) The factors set out in Regulation 13 .

Part VI – Miscellaneous

19 In these regulations, particularly, for the purpose of measuring standards indicated or specified herein, whenever there is a difference between the definitions expressed in words and those alternative definitions expressed in mathematical terms, the meanings attributed to the latter definitions shall supercede and prevail. The Commission shall therefore adopt and use the mathematical definitions in precedence to the definitions expressed in words. Definitions

20 In these Regulations and the Schedules thereto terms used shall have the same meanings as in the Act, and also:

"Access Service" means a Service that is provided for communications to or from Network Termination Points that serve End Users without making the communications pass through more than one public network;

"Act" means the Nigerian Communications Act, 2003;

"Average" or "Mean" means the result of dividing the sum of the numerical values in a set by the number of values in the set;

"Broadband Internet Access Service" means an Internet Access Service that is not a Voiceband Internet Access Service;

"Busy Time" means the set of the same six (6) hours in each of the same four (4) days in each of twelve (12) weeks of a Reporting Period during which the highest average traffic for a service is

measured or expected on the basis of observations conducted in the preceding Reporting Period;

"Call Attempt" means an attempt to achieve a connection to one or more devices attached to a telecommunication network.

"Commercial Launch Date" means the date when a Licensee commences commercial provision of a Service in a Reporting Area;

"Contravention" means any failure to comply with the requirements identified in Regulation;

"End User" means a Customer that is not an Interconnecting Licensee or a provider of an international route to or from the Federal Republic of Nigeria;

"Enforcement Processes Regulations" means the Nigerian Communications (Enforcement Processes, etc.) Regulations 2005, as those regulations may be amended from time to time;

"Fixed Telephony Service" means a Telephony Service that is not a Mobile Telephony Service;

"Fixed Wireless Telephony Service" means a Fixed Telephony Service that requires the use of radio frequencies assigned under individual Licences to achieve communications at the Network Termination Points of the End Users;

"Fixed Wireline Telephony Service" means a Fixed Telephony Service that is not a Fixed Wireless Telephony Service;

"Interconnecting Licensee" means a Licensee that has an Interconnection with another Licensee at a Network Termination Point;

"Internet Access Service" means an Access Service that is an Internet Service;

"Internet Service" means a Service that is provided substantially for data communications to or from Network Termination Points that have IP addresses that are assigned through delegation from the Internet Assigned Numbers Authority;

"IP" means the Internetwork Protocol that is defined by the Internet Engineering Task Force and that is often known as the Internet Protocol;

"Leased Line Service" for the purposes of these Regulations means a

Service that is not an Internet Service or a Telephony Service;

"Measurement" means a numerical value that is obtained by measuring using a Measurement Method;

"Measurement Method" means a method of measuring a Parameter that is identified in Part A of the Schedule;

"Mobile Telephony Service" means a Telephony Service that require the use of radio frequencies assigned under individual Licences to achieve communications at the Network Termination Points of the End Users and that permits the End Users to move between different geographic locations without appearing to lose communications;

"Network Termination Point" means a point at which a Customer has physical access through customer equipment to a network of a Licensee;

"Parameter" means a measurable characterisation of the quality of an aspect of a Service;

"Published Measurement" means a Measurement that is intended for publication with a content and format that are identified in Part A of the Schedule;

"Reporting Area" means a geographic area for which Measurements are taken and recorded, determined in accordance with Regulation 0;

"Reporting Period" means the period of time over which Measurements are taken and recorded when a Licensee performs quality of service measurement, reporting and record keeping tasks once for each Reporting Area, Parameter and Service, determined in accordance with Regulation 5 or as may be specified in other parts of this Regulations or directed by the Commission from time to time;

Change of the Regulation

"Service" means any applications, content, network or facilities service, or any combination of these services, that is provided substantially for communications between Network Termination Points;

Further Directions

"Target" means a numerical value that is reached by a Published Measurement if the relevant Service identified in this Regulations or the Schedule is satisfactory;

Short Title

"Telephony Service" means a Service that is provided substantially for voice communications to or from Network Termination Points that

have telephone numbers that are allocated according to the Numbering and electronic addressing plan; and

"Voiceband Internet Service" means any Internet Access Service that provides communications from Network Termination Points and that requires the use of a Telephony Access Service to achieve communications.

21. The Commission may from time to time review and modify these Regulations, including the Schedule, pursuant to the review processes of Section 72 of the Act. In doing so the Commission may request and receive advice from external advisory groups but shall not be bound by any such advice.

22. The Commission may from time to time issue additional rules, directions or guidelines on any aspect of these Regulations, and either of general application or specific to a Licensee.

23. These Regulations may be cited as the Quality of Service Regulations 2009.

Made at Abuja this _____ day of _____ 2009.

Part A – Targets/Key Performance Indicators

Table 1 – Fixed Wireline Telephony Services for End Users

Parameter Name	Target
Account complaint rate	=3% of customers in the Reporting Period
Account complaint resolution time	=15 working days for the mean
Disconnection complaint rate	=2% of customers in the Reporting Period
Disconnection complaint resolution time	=1 working day for the mean
Miscellaneous complaint rate	=2% of customers in the Reporting Period
Miscellaneous complaint resolution time	=3 working days for the mean
Fault report rate	=4% of customers in the Reporting Period
Fault repair time	=2 working days for the mean
Service supply time	=5 working days for the mean
Call centre answer success ratio	=98% of successful call centre call setups
Call centre answer time	=30 seconds for the mean
Call setup success ratio	=90% of attempted calls
Listening voice quality	
Speech sample transmission time	

Table 2 – Fixed Wireless Telephony Services for End Users

Parameter Name	Target
Account complaint rate	=3% of customers in the Reporting Period
Account complaint resolution time	=15 working days for the mean
Disconnection complaint rate	=2% of customers in the Reporting Period
Disconnection complaint resolution time	=1 working day for the mean
Miscellaneous complaint rate	=2% of customers in the Reporting Period
Miscellaneous complaint resolution time	=3 working days for the mean
Fault report rate	=4% of customers in the Reporting Period
Fault repair time	=2 working days for the mean
Service supply time	=5 working days for the mean
Call centre answer success ratio	=98% of successful call centre call setups
Call centre answer time	=30 seconds for the mean
Call setup success ratio	=90% of attempted calls
Listening voice quality	
Speech sample transmission time	

Table 3 – Mobile Telephony Services for End Users

	Parameter Name	Target
A	**Account Complaint**	
	1 **Account complaint rate**	**Ten complaints to every one million bills/accounts**
	== The Complaint ==	*== Target Resolution time ==*
	a. Charging for line rental at incorrect rate.	= 5 days
	b. Charging for calls/SMS messages at incorrect Rates or more than once.	= 1 Hour
	c. Charging for services not rendered.	= 24 Hours
	d. Charging for uncompleted/unsuccessful calls/SMS	= 1 Hour
	e. Charging for calls beyond their durations.	= 24 Hours
	g. Failed attempts to load recharge payments.	a. = 3 Hours for network related faults (NB. Except for exceptional circumstances that have been made public each time within 1 hour of occurrence of the failure in the affected area. Each failure in this category that has taken greater than 48 hours to resolve must formally and specifically be communicated to the Commission) b. = 30 Minutes for software related faults (anything beyond 1 hour will attract penalty)
	h. System failure at Contact Centers inhibiting bill payments.	= 30 Minutes
	i. Failed attempts to check/determine the account balance.	= 30 Minutes
	j. Losing credited amounts from the account.	= 1 Hour
	k. Miscellaneous complaint resolution time	= 48 Hours
	Time for recharge/bill payments to reflect on the account.	= 1 Hour

	Parameter Name	Target
	i. Number of complaints per day related to: i. wrongly cleared balance ii. wrong IVR message iii. failed attempts to determine the account balance iv. failure to provide agreed content	= 10 *Complaints*
	j. Number of complaints per month related to incorrect settings by local operator leading to inhibition of two-way communication while roaming internationally.	= 10
	Time for recharge/bill payments to reflect on the account.	= 1 Hour
B	**Disconnection**	
	1 Disconnection complaint resolution time **I. Post-paid**	(a) There should be (i) a text notice after reaching 75% of credit limit, (ii) On reaching 100% of credit limit a constant IVR notice of credit expiry remains ON for the next 1 week, after which the Operator is at liberty to allow/disallow outgoing calls until debt is settled. (b) If there is dispute, resolution time = 24 Hours • 1/30th of average monthly spending should be allowed for out-going calls to be used by the customer within the dispute resolution time
	II. Pre-paid	• A Subscriber line may be deactivated if within six (6) months it has not been used for a Revenue Generating Event (RGE). If the situation persists for another 6 months the subscriber may lose his/her number. • Monies left in accounts on deactivation can be claimed by subscribers once proof of ownership can be established at any given time.

	Parameter Name	Target
		• Deduction of Line rental-charge (if any) is regarded as an RGE. • A Subscriber with a proof of good reason for absence is at liberty to request for line-Parking
	I Number of complaints received by I the Operator/NCC's Consumer Affairs I Bureau with respect to the Operator's inability to meet I and II	= 10/1 million subscribers
C	**Customer Help Lines**	
	1 **Call centre**	• Maximum number of call-attempts before connecting to Customer Care Lines should not be more than three (3) times; • Maximum number of rings before a call is answered by either an IVR machine or a live agent should not be more than five (5); and • Where a customer decides to speak to a live agent, the maximum duration allowable on the queue should be 5 minutes before answer. • In exceptional cases where live agent may be unavailable within 5 minutes to answer the call, a customer should be given an option of hanging up to be called back within a maximum time of 30 minutes.
	2 Customer care lines that can be accessible through other networks	= 1 free access number
D	**Interface center**	
	1 Waiting time to be physically attended to by relevant staff at customer care centers	= 10 minutes
E	**Network Performance**	
	1 BH Call setup success rate	= 98% of attempted calls
	2 BH Call Completion rate	= 98% of attempted calls
	3 BH Call setup time	= 4 Seconds national = 6 seconds international
	3 BH Location update success rate	= 98% of attempts
	4 BH Paging success rate	= 95% of attempts
	5 BH Dropped Calls Rate	= 2%
	Parameter Name	**Target**

	6 BH Traffic Channel (TCH) Congestion (to be measured at BSC level)	= 2%
	7 BH SDCCH Congestion (to be measured at BSC and cell levels)	= 0.2%
	8 BH Hand Over Success Rate at all levels	= 99%
	9 BH Interconnect Circuit (PoI) Congestion	= 1%
	10 a. BH HLR, VLR, BSC, MSC capacity utilization b. BH Processor Loading c. BH Erlang Utilization/cell	= 60%
	12 No. of Interconnect points per Licensing Region (Standalone or Shared)	= 1
	13 Interference protection ratio	Co-channel C/I =9dB Adjacent channel C/I =-9dB
	14 Resolution time of any CIC mismatch or life-time of any CIC mismatch	= 1 Hour
	15 Resolution time of BTS faults impacting on traffic	= 2.5hrs Rural = 1.5hrs Urban Exceptional circumstances such as late night failures in difficult locations must be announced via electronic media covering such location, within 2hrs
	16 Resolution time of BSC faults impacting on traffic	= 1 Hour
	17 MSC-in-pool redundancy	30%
	19 Resolution time of MSC faults impacting on traffic	= 10 Min
	20 Time to repair other failures that affects traffic	= 3 hours
	21 Maximum time for transmission/physical link outage	= 2 Hours
	22 Service coverage in cities/towns	Out-door = -75 dBM In-door = -85 dBM In-vehicle = -95 dBM

	23 Percentage of radio links with space as well as Frequency diversity	= 60%
	24 BH Congestion on trunks	= 0.2%
	Parameter Name	**Target**
	Redundancy on transmission links	Must conveniently handled 100% of the primary link Capacity
	Compression ratio	=1:4
	25 Conversational voice quality on ON-NET Calls	MOS = 3.8 on the MOS scale
		SQI = 26
	27 Speech encoding	Full-Rate (FR), Enhanced FR, or AMR
	29 BH SMS delivery success rate for handsets that are ON and in the service area	= 99% of attempts
	30 SMS end-to-end delivery time	5 seconds for number "A" and number "B" switched ON and within the service area
	31 Number of complaints per day related to any of the following d. One-way/two-way loss of audio e. Cross-talk f. Call misdirection to un-intended number g. Voice quality	= 50 per day
	32 Number of complaints per day in respect of Network-related blocking of incoming calls	= 5
	33 Number of complaints per day related to inability to meet SMS/MMS end-to-end delivery time threshold	= 10
	34 Voice-mail related complaints per day	= 2
	35 Acknowledgement of delivery of all SMS/MMS/IMS messages sent	= 100% unless deactivated by subscriber
	36 Cost information for all completed calls or RGE via text to the consumer	= 100% within 5 minutes of hang-up unless deactivated by subscriber
	37 Circuit Switched Data Services (CDS)	*Upstream data rate* = 95% of the data rate agreed with consumer, at BH *Downstream data rate* = 95% of the data rate agreed with consumer, at BH
	3 Packet Switched Data Services (PDS)	Upstream *data rate* = 95% of the data

	8		rate agreed with consumer, at BH Downstream *data rate* = 95% of the data rate agreed with consumer, at BH
	Parameter Name		**Target**
	39 Circuit Switched Data Services (CDS)		Upstream data rate = 95% of the data rate agreed with consumer, at BH Downstream data rate = 95% of the data rate agreed with consumer, at BH
	40 Packet Switched Data Services (PDS)		Upstream data rate = 95% of the data rate agreed with consumer, at BH Downstream data rate = 95% of the data rate agreed with consumer, at BH
	41 Compensation for hours of data services not rendered		At least 100% of loss in supply time
	42 Contention Ration	Committed Rate	(Must be specified) in the contract
		Maximum Date Rate	(Must be specified) in the contract
	43 End-to-End Throughput		Must be specified) in the contract
	44 Data rate of each link from end-to-end		Must be specified) in the contract
	45 Data rate of slowest link (bottleneck)		Must be specified) in the contract
	46 Permissible Download data-size per billing period without additional charge on the plan		Must be specified) in the contract

Table 4 –Voice band Internet Services for End Users

Parameter Name	**Target**
Account complaint rate	=3% of customers in the Reporting Period
Account complaint resolution time	=15 working days for the mean
Disconnection complaint rate	=2% of customers in the Reporting Period
Disconnection complaint resolution time	=1 working day for the mean
Miscellaneous complaint rate	=2% of customers in the Reporting Period
Miscellaneous complaint resolution time	=3 working days for the mean
Fault report rate	=4% of customers in the Reporting Period
Fault repair time	=2 working days for the mean
Service supply time	=3 working days for the mean

Internet session login success ratio	=75% of attempted sessions
Internet session retention ratio	=95% of successful logins
Internet data transmission success ratio	
Internet data transmission time	
Internet data transmission capacity	

Table 5 – Broadband Internet Services for End Users

Parameter Name	**Target**
Account complaint rate	=3% of customers in the Reporting Period
Account complaint resolution time	=15 working days for the mean
Disconnection complaint rate	=2% of customers in the Reporting Period
Disconnection complaint resolution time	=1 working day for the mean
Miscellaneous complaint rate	=2% of customers in the Reporting Period
Miscellaneous complaint resolution time	=3 working days for the mean
Fault report rate	=4% of customers in the Reporting Period
Fault repair time	=2 working days for the mean
Service supply time	=3 working days for the mean
Internet data transmission success ratio	
Internet data transmission time	
Internet data transmission capacity	

Table 6 – Leased Line Services for End Users

Parameter Name	Target
Account complaint rate	=3% of customers in the Reporting Period
Account complaint resolution time	=15 working days for the mean
Disconnection complaint rate	=2% of customers in the Reporting Period
Disconnection complaint resolution time	=1 working day for the mean
Miscellaneous complaint rate	=2% of customers in the Reporting Period
Miscellaneous complaint resolution time	=3 working days for the mean
Fault report rate	=4% of customers in the Reporting Period
Fault repair time	=2 working days for the mean
Service supply time	=5 working days for the mean

Table 7 – Fixed Wireline Telephony Services for Interconnecting Licensees

Parameter Name	Target
Account complaint rate	≤30% of customers in the Reporting period
Account complaint resolution time	≤15% working days for the mean
Disconnection complaint rate	≤2% of customers in the Reporting Period
Disconnection complaint resolution time	≤1 working day for the mean
Miscellaneous complaint rate	≤2%of customers in the Reporting Period
Miscellaneous complaint resolution time	≤3% working days for the mean
Fault report rate	≤4% of customers in the Reporting Period
Fault repair time	≤2 working days for the mean
Service supply time	≤5 working days for the mean
Call setup success ratio	=96% of attempted calls
Listening voice quality	
Speech sample transmission time	

Table 8 – Fixed Wireless Telephony Services for Interconnecting Licensees

Parameter Name	Target
Account complaint rate	≤3% of customers in the Reporting period
Account complaint resolution time	≤15 working days for the mean
Disconnection complaint rate	≤2% of customers in the Reporting period
Disconnection complaint resolution time	≤1 working days for the mean
Miscellaneous complaint rate	≤2% of customers in the Reporting period
Miscellaneous complaint resolution time	≤3 working days for the mean
Fault report rate	≤4% of customers in the Reporting period
Fault repair time	≤2 working days for the mean
Service supply time	≤5 working days for the mean
Call setup success ratio	=96% of attempted calls
Listening voice quality	
Speech sample transmission time	

Table 9 – Mobile Telephony Services for Interconnecting Licensees

Parameter Name	Target
Account complaint rate	≤3% of customers in the Reporting period
Account complaint resolution time	≤15 working days for the mean
Disconnection complaint rate	≤2% of customers in the Reporting period
Disconnection complaint resolution time	≤1 working days for the mean
Miscellaneous complaint rate	≤2% of customers in the Reporting period
Miscellaneous complaint resolution time	≤3 working days for the mean
Fault report rate	≤4% of customers in the Reporting period
Fault repair time	≤2 working days for the mean
Service supply time	≤5 working days for the mean
Call setup success ratio	=96% of attempted calls
Call retention ratio	=98% of successful setups
SMS message transmission success ratio	=96% of attempted transmissions
Listening voice quality	
Speech sample transmission time	

Table 10 – Voiceband Internet Services for Interconnecting Licensees

Parameter Name	Target
Account complaint rate	≤3% of customers in the Reporting period
Account complaint resolution time	≤15 working days for the mean
Disconnection complaint rate	≤2% of customers in the Reporting period
Disconnection complaint resolution time	≤1 working days for the mean
Miscellaneous complaint rate	≤2% of customers in the Reporting period
Miscellaneous complaint resolution time	≤3 working days for the mean
Fault report rate	≤4% of customers in the Reporting period
Fault repair time	≤2 working days for the mean
Service supply time	≤5 working days for the mean
Internet data transmission success ratio	
Internet data transmission time	
Internet data transmission capacity	

Table 11 – Broadband Internet Services for Interconnecting Licensees

Parameter Name	Target
Account complaint rate	≤3% of customers in the Reporting period
Account complaint resolution time	≤15 working days for the mean
Disconnection complaint rate	≤2% of customers in the Reporting period
Disconnection complaint resolution time	≤1 working days for the mean
Miscellaneous complaint rate	≤2% of customers in the Reporting period
Miscellaneous complaint resolution time	≤3 working days for the mean
Fault report rate	≤4% of customers in the Reporting period
Fault repair time	≤2 working days for the mean
Service supply time	≤5 working days for the mean
Internet data transmission success ratio	
Internet data transmission time	
Internet data transmission capacity	

Table 12 – Leased Line Services for Interconnecting Licensees

Parameter Name	Target
Account complaint rate	≤3% of customers in the Reporting period
Account complaint resolution time	≤15 working days for the mean
Disconnection complaint rate	≤2% of customers in the Reporting period
Disconnection complaint resolution time	≤1 working days for the mean
Miscellaneous complaint rate	≤2% of customers in the Reporting period
Miscellaneous complaint resolution time	≤3 working days for the mean
Fault report rate	≤4% of customers in the Reporting period
Fault repair time	≤2 working days for the mean
Service supply time	≤5 working days for the mean

SCHEDULE 1 – Quality of Service Parameters

Part B – Measurement Methods

Parameter Name	Measurement Method	
Account complaint rate	An account is a statement of money owed or paid that is read or otherwise accessed by a customer; the services provided to the customer may be prepaid or postpaid. An account complaint is a complaint that an account is inaccurate. This occurs when, for instance, incorrect call data are used, calls are charged at an incorrect rate, services are billed incorrectly, call discounts, credits or debits are handled incorrectly, or the total charge including tax is calculated incorrectly. An account complaint should not be confused with a request for information about accounts or tariffs, or with a service fault report. An account complaint made by an End User may be submitted by telephone, by personal contact at a customer service centre or in written form. An account complaint made by an Interconnected Licensee shall be submitted in written form. The Measurements should include all account complaints received during the Reporting Period for the Reporting Area, regardless of the validity of the complaint, the extent to which the complaint repeats an earlier one, and the dates of calls or any other occurrences that are the subject of the complaint.	
Account complaint resolution time	The time to resolve an account complaint is the elapsed time (not the working time) from when the complaint is received by a Licensee to when the cause for the complaint has been removed. The mean, standard deviation and 95th percentile of the distribution of times to resolve account complaints, and the number of account complaints resolved, should be provided as Measurements. The Measurements should include all account complaints resolved during the Reporting Period for the Reporting Area, regardless of the validity of the complaint, the extent to which the complaint repeats an earlier one, and the dates of calls or any other occurrences that are the subject of the complaint.	

Parameter Name	Measurement Method	
Disconnection complaint rate	A disconnection is any way of preventing a customer from using a service; it may not require physical unplugging of connections. A disconnection complaint is a complaint that a disconnection is unjustified. This occurs when, for instance, calls to or from the telephone number of a customer are made unsuccessful by deliberate acts of the Licensee. A disconnection complaint should not be confused with a request for disconnection or transfer or with a fault report. A disconnection complaint made by an End User may be submitted by telephone, by personal contact at a customer service centre or in written form. A disconnection complaint made by an Interconnected Licensee shall be submitted in written form. The number of disconnection complaints received during the Reporting Period should be divided by the average number of customers for the Licensee during the same period. The result should be provided as a Measurement. Also, separate numbers of disconnection complaints received during the Reporting Period should be provided as Measurements for at least the following classes of disconnection complaint: • Blocking calls to or from certain numbers or networks. • Blocking SMS messages to or from certain numbers or networks. • Stopping services for alleged non-payment. • Stopping services after credit expiry. The Measurements should include all disconnection complaints received during the Reporting Period for the Reporting Area, regardless of the validity of the complaint, the extent to which the complaint repeats an earlier one, and the dates of disconnections or any other occurrences that are the subject of the complaint.	
Disconnection complaint resolution time	The time to resolve a disconnection complaint is the elapsed time (not the working time) from when the complaint is received by a Licensee to when the cause for the complaint has been removed. The mean, standard deviation and 95th percentile of the distribution of times to resolve disconnection complaints, and the number of disconnection complaints resolved, should be provided as Measurements. The Measurements should include all disconnection complaints resolved during the Reporting Period for the Reporting Area, regardless of the validity of the complaint, the extent to which the complaint repeats an earlier one, and the dates of disconnections or any other occurrences that are the subject of the complaint.	

Parameter Name	Measurement Method	
Miscellaneous complaint rate	A miscellaneous complaint is a complaint other than a disconnection complaint, an account complaint or a fault report. A miscellaneous complaint made by an End User may be submitted by telephone, by personal contact at a customer service centre or in written form. A miscellaneous complaint made by an Interconnected Licensee shall be submitted in written form. The number of miscellaneous complaints received during the Reporting Period should be divided by the average number of customers for the Licensee during the same period. The result should be provided as a Measurement. Also, separate numbers of miscellaneous complaints received during the Reporting Period should be provided as Measurements for classes of miscellaneous complaint separated according to the classification scheme developed and used by the Licensee or as otherwise directed by the Commission. The Measurements should include all miscellaneous complaints received during the Reporting Period for the Reporting Area, regardless of the validity, extent of repetition, and subject of the complaint.	
Miscellaneous complaint resolution time	The time to resolve a miscellaneous complaint is the elapsed time (not the working time) from when the complaint is received by a Licensee to when the cause for the complaint has been removed. The mean, standard deviation and 95th percentile of the distribution of times to resolve miscellaneous complaints, and the number of miscellaneous complaints resolved, should be provided as Measurements. The Measurements should include all miscellaneous complaints resolved during the Reporting Period for the Reporting Area, regardless of the validity, extent of repetition, and subject of the complaint.	

Parameter Name	Measurement Method	
Fault report rate	A fault report is a report of disrupted or degraded service that is notified by the customer to the identified point of contact of the Licensee. A fault report made by an End User may be submitted by telephone, by personal contact at a customer service centre or in written form. A fault report made by an Interconnected Licensee shall be submitted in written form. Faults that are due to other networks or to customer equipment behind Network Termination Points, and fault reports that are not valid, are excluded. Faults reported for single physical connections should be counted as a single fault, regardless of the number of channels activated or affected; multiple analogue lines sharing the same physical path to a customer should be regarded as a single physical connection. The number of valid fault reports received during the Reporting Period should be divided by the average number of customers for the service during the same period. The result should be provided as a Measurement. Also, separate numbers of fault reports received during the Reporting Period should be provided as Measurements for classes of fault report, separated according to the classification scheme developed and used by the Licensee or as otherwise directed by the Commission. Fault reports should be assumed to be valid unless there is a specific reason to consider that they are not valid. Fault reports for which the faults are found to be cleared when tested should be counted as valid unless the Licensee has reason to believe that the faults did not occur. Multiple customer reports about the same fault should be regarded as separate fault reports.	
Fault repair time	The fault repair time is the elapsed time (not the working time) from when a valid fault report is received by a Licensee to when the service has been restored to normal working order. The mean, standard deviation and 95th percentile of the distribution of fault repair times, and the number of fault repair times, should be provided as Measurements. The Measurements should include all faults cleared during the Reporting Period for the Reporting Area, but exclude those traced to other networks or to customer equipment behind Network Termination Points where the Licensee has not been told that the faults have been cleared.	

Parameter Name	Measurement Method	
Service supply time	The service supply time is the elapsed time (not the working time) from when a service request is accepted by a Licensee to when a working service is made available for use. A service request made by an End User may be submitted by telephone, by personal contact at a customer service centre or in written form. A service request made by an Interconnected Licensee shall be submitted in written form. Service requests that are unable to be fulfilled because the Licensee does not offer that particular Service in the requested location are excluded. If the Licensee and the customer agree that more than one Service will be provided at a location or that a Service will be provided at more than one location, the provision of each Service at each location should be counted as a separate service request. Otherwise, service requests concerning single physical connections should be counted as a single service request, regardless of the number of channels activated or affected; multiple analogue lines sharing the same physical path to a customer should be regarded as a single physical connection. The mean, standard deviation and 95th percentile of the distribution of service supply times, and the number of service supply times, should be provided as Measurements. The Measurements should include all service requests fulfilled during the Reporting Period for the Reporting Area.	
Call centre answer success ratio	A successful call centre call is a call to a call centre that, following a successful call setup, is answered by a person within 40 seconds. The call centre services covered are those for operator assistance calls, directory assistance calls and emergency calls. Any calls answered wholly automatically (by key pad systems with recordings, for instance) are excluded. The number of successful call centre calls should be divided by the number of call centre calls. The result, and the number of call centre calls, should be provided as Measurements. The Measurements should be obtained from at least 1000 test calls to call centres, separated from each other by at least 60 seconds. The calls should be from traffic-weighted locations inside the Reporting Area to traffic-weighted call centres of the Licensee inside or outside the Reporting Area during the Busy Time for the Service. The weighting of the traffic should be based on figures specific to the Service and should ensure the representation of every location that is responsible for at least 5% of the traffic for the Service. The traffic-weighted locations of the calling equipment should be points where there could be customer premises equipment connected to the network of the Licensee.	

Parameter Name	Measurement Method	
Call centre answer time	The call centre answer time is the time from when a call setup has been successful to when the call is answered by a person. The call centre services covered are those for operator assistance calls, directory assistance calls and emergency calls. Any calls answered wholly automatically (by key pad systems with recordings, for instance) are excluded. Unsuccessful call centre calls are excluded. The mean, standard deviation and 95th percentile of the distribution of call centre answer times, and the number of call centre answer times, should be provided as Measurements. The Measurements should be obtained from at least 1000 test calls to call centres, separated from each other by at least 60 seconds. The calls should be from traffic-weighted locations inside the Reporting Area to traffic-weighted call centres of the Licensee inside or outside the Reporting Area during the Busy Time for the Service. The weighting of the traffic should be based on figures specific to the Service and should represent every location that is responsible for at least 5% of the traffic for the Service. The traffic-weighted locations of the calling equipment should be points where there could be customer premises equipment connected to the network of the Licensee.	

Parameter Name	Measurement Method	
Listening voice quality	Perceptual Evaluation of Speech Quality (PESQ) assesses listening (one-way) voice quality objectively by comparing the signal received with the signal sent, especially by examining distortion and noise. It is to be used in intrusive tests that put known inputs into the network and analyse the outputs. PESQ is known not to provide accurate predictions or is not known to provide accurate predictions in various situations. Among them are conversational (two-way) voice quality, delay, echo, room noise, sidetone, clipping of various sorts and packet loss for Pulse Code Modulation (PCM) codecs. Thus PESQ has limitations that are particularly relevant to voice over IP. It does not assess transmission quality fully: it only measures the effects of one-way speech distortion and noise. Calls could have high PESQ scores but poor quality. PESQ scores lie between –1.0 and 4.5. There is a mapping from PESQ scores to Mean Opinion Score (MOS) Listening Quality Objective (LQO) based on data from tests in several languages; it could be used to re-express PESQ scores on the MOS scale (which lies between 0.0 and 5.0) , but it would not necessarily represent subjective experience in Nigeria. The mean, standard deviation and 95th percentile of the distribution of PESQ scores, and the number of PESQ scores, should be provided as Measurements. The Measurements should be obtained from at least 1000 test transmissions of speech samples, separated from each other by at least 60 seconds. The transmissions should be from traffic-weighted locations inside the Reporting Area to traffic-weighted locations inside or outside the Reporting Area (but inside the Federal Republic of Nigeria) during the Busy Time for the Service. The weighting of the traffic should be based on figures specific to the Service and should ensure the representation of every location that is responsible for at least 5% of the traffic for the Service. For Services for End Users, the traffic-weighted locations of the calling equipment should be points where there could be customer premises equipment connected to the network of the Licensee. For Services for Interconnected Licensees, the traffic-weighted locations of the calling equipment should be points of interconnection on the network of the Licensee. For both Services for End Users and Services for Interconnected Licensees, the traffic-weighted locations of the called equipment should be points where there could be customer premises equipment or points where there are international routes; also, the first network that the test calls traverse should be the network of the Licensee. This quality of service parameter should be accompanied by measurements of voice delay (speech sample transmission time), to counteract its limitations in assessing conversational (two-way) voice quality.	

Parameter Name	Measurement Method	
Speech sample transmission time	The speech sample transmission time is the time from when the speech sample is sent to the network to when the speech sample is received by the receiving equipment. Unsuccessful speech sample transmissions are excluded. The mean, standard deviation and 95th percentile of the distribution of speech sample transmission times, and the number of speech sample transmission times, should be provided as Measurements. The Measurements should be obtained from at least 1000 test transmissions of speech samples, separated from each other by at least 60 seconds. The transmissions should be from traffic-weighted locations inside the Reporting Area to traffic-weighted locations inside or outside the Reporting Area (but inside the Federal Republic of Nigeria) during the Busy Time for the Service. The weighting of the traffic should be based on figures specific to the Service and should ensure the representation of every location that is responsible for at least 5% of the traffic for the Service. For Services for End Users, the traffic-weighted locations of the calling equipment should be points where there could be customer premises equipment connected to the network of the Licensee. For Services for Interconnected Licensees, the traffic-weighted locations of the calling equipment should be points of interconnection on the network of the Licensee. For both Services for End Users and Services for Interconnected Licensees, the traffic-weighted locations of the called equipment should be points where there could be customer premises equipment or points where there are international routes; also, the first network that the test calls traverse should be the network of the Licensee.	

Parameter Name	Measurement Method	
Call retention ratio	A retained call is a call that, following a successful call setup, continues until it is ended normally by a user. The number of retained calls should be divided by the number of successful call setups. The result, and the number of successful call setups, should be provided as Measurements. The Measurements should be obtained from at least 1000 test calls, separated from each other by at least 60 seconds. The calls should be from traffic-weighted locations inside the Reporting Area to traffic-weighted locations inside or outside the Reporting Area (but inside the Federal Republic of Nigeria) during the Busy Time for the Service. The weighting of the traffic should be based on figures specific to the Service and should ensure the representation of every location that is responsible for at least 5% of the traffic for the Service. For Services for End Users, the traffic-weighted locations of the calling equipment should be points where there could be customer premises equipment connected to the network of the Licensee. For Services for Interconnected Licensees, the traffic-weighted locations of the calling equipment should be points of interconnection on the network of the Licensee. For both Services for End Users and Services for Interconnected Licensees, the traffic-weighted locations of the called equipment should be points where there could be customer premises equipment or points where there are international routes; also, the first network that the test calls traverse should be the network of the Licensee. If a test call is to be regarded as retained it must be kept up for 120 seconds after successful setup. This quality of service parameter assesses network congestion and network failures as well as, for wireless networks, failures in coverage and problems with signal quality.	

Parameter Name	Measurement Method	
SMS message transmission success ratio	A successful SMS message transmission is an SMS message transmission to a valid telephone number, properly dialled from a location where the sending equipment is connected to the network of the Licensee to a location where the receiving equipment is connected to a network that supports the Service, in which the message is transmitted completely without errors between the Network Termination Points. The number of successful SMS message transmissions should be divided by the number of SMS message transmissions. The result, and the number of SMS message transmissions, should be provided as Measurements. The Measurements should be obtained from at least 1000 test transmissions of 120-character SMS messages, separated from each other by at least 60 seconds. The transmissions should be from traffic-weighted locations inside the Reporting Area to traffic-weighted locations inside or outside the Reporting Area (but inside the Federal Republic of Nigeria) during the BusyTime for the Service. The weighting of the traffic should be based on figures specific to the Service and should ensure the representation of every location that is responsible for at least 5% of the traffic for the Service. For Services for End Users, the traffic-weighted locations of the sending equipment should be points where there could be customer premises equipment connected to the network of the Licensee. For Services for Interconnected Licensees, the traffic-weighted locations of the sending equipment should be points of interconnection on the network of the Licensee. For both Services for End Users and Services for Interconnected Licensees, the traffic-weighted locations of the receiving equipment should be points where there could be customer premises equipment or points where there are international routes; also, the first network that the test transmissions traverse should be the network of the Licensee. If a test transmission is to be regarded as successful it must be completed even when the receiving Network Termination Point is unavailable during transmission.	

Parameter Name	Measurement Method	
Internet session login success ratio	A successful internet session login is a call to an internet point of presence that, following a successful call setup, establishes an internet session within 40 seconds from when the call is answered. The number of successful internet session logins should be divided by the number of internet session logins. The result, and the number of internet session logins, should be provided as Measurements. The Measurements should be obtained from at least 1000 test sessions, separated from each other by at least 60 seconds. The sessions should be from traffic-weighted locations inside the Reporting Area to traffic-weighted points of presence of the Licensee inside or outside the Reporting Area during the Busy Time for the Service. The weighting of the traffic should be based on figures specific to the Service and should ensure the representation of every location that is responsible for at least 5% of the traffic for the Service. The traffic-weighted locations of the calling equipment should be points where there could be customer premises equipment connected to the network of the Licensee.	
Internet session retention ratio	A retained internet session is an internet session that, following a successful internet session login, continues until it is ended normally by a user. The number of retained internet sessions should be divided by the number of successful internet session logins. The result, and the number of successful internet session logins, should be provided as Measurements. The Measurements should be obtained from at least 1000 test sessions, separated from each other by at least 60 seconds. The sessions should be from traffic-weighted locations inside the Reporting Area to traffic-weighted points of presence of the Licensee inside or outside the Reporting Area during the Busy Time for the Service. The weighting of the traffic should be based on figures specific to the Service and should ensure the representation of every location that is responsible for at least 5% of the traffic for the Service. The traffic-weighted locations of the calling equipment should be points where there could be customer premises equipment connected to the network of the Licensee. If a test session is to be regarded as retained it must be kept up for 120 seconds after successful internet session login.	

Parameter Name	Measurement Method	
Internet data transmission time	The internet data transmission time is the time from when the internet data is sent to the network to when the internet data is received by the receiving equipment. Unsuccessful internet data transmissions are excluded. The mean, standard deviation and 95th percentile of the distribution of internet data transmission times, and the number of internet data transmission times, should be provided as Measurements. The Measurements should be obtained from at least 1000 test transmissions of ICMP Echo Request/Reply (Ping) messages or speech samples, separated from each other by at least 60 seconds. The transmissions should be from traffic-weighted locations inside the Reporting Area to traffic-weighted locations inside or outside the Reporting Area (but inside the Federal Republic of Nigeria) during the Busy Time for the Service. The weighting of the traffic should be based on figures specific to the Service and should ensure the representation of every location that is responsible for at least 5% of the traffic for the Service. For Services for End Users, the traffic-weighted locations of the sending equipment should be points where there could be customer premises equipment connected to the network of the Licensee. For Services for Interconnected Licensees, the traffic-weighted locations of the sending equipment should be points of interconnection on the network of the Licensee. For both Services for End Users and Services for Interconnected Licensees, the traffic-weighted locations of the receiving equipment should be points where there could be customer premises equipment or points where there are international routes; also, the first network that the test transmissions traverse should be the network of the Licensee. This quality of service parameter assesses network packet delay, through the mean, and network packet jitter, through the standard deviation.	

Parameter Name	Measurement Method	
Internet data transmission success ratio	A successful internet data transmission is an internet data transmission in which the data is transmitted completely without errors between the Network Termination Points. The number of successful internet data transmissions should be divided by the number of internet data transmissions. The result, and the number of internet data transmissions, should be provided as Measurements. The Measurements should be obtained from at least 1000 test transmissions of ICMP Echo Request/Reply (Ping) messages or speech samples, separated from each other by at least 60 seconds. The transmissions should be from traffic-weighted locations inside the Reporting Area to traffic-weighted locations inside or outside the Reporting Area (but inside the Federal Republic of Nigeria) during the Busy Time for the Service. The weighting of the traffic should be based on figures specific to the Service and should ensure the representation of every location that is responsible for at least 5% of the traffic for the Service. For Services for End Users, the traffic-weighted locations of the sending equipment should be points where there could be customer premises equipment connected to the network of the Licensee. For Services for Interconnected Licensees, the traffic-weighted locations of the sending equipment should be points of interconnection on the network of the Licensee. For both Services for End Users and Services for Interconnected Licensees, the traffic-weighted locations of the receiving equipment should be points where there could be customer premises equipment or points where there are international routes; also, the first network that the test transmissions traverse should be the network of the Licensee. This quality of service parameter assesses network packet loss. The internet data transmission capacity is the percentage of the internet data transmission rate advertised for the service that is obtained by continuous transmission. The internet data transmission rate obtained for the service and the internet data transmission rate advertised for the service are averaged over traffic-weighted locations for sending and receiving internet data. They are rates at the IP level in the stack, not at any lower level in the protocol stack. For each test transmission the internet data transmission time should be measured. The sum over all test transmissions of the lengths of the transmitted data should be divided by the sum over all test transmissions of the products of the internet data transmission time and the corresponding internet data transmission rates advertised for the service at the location from which the internet data is sent. The result should be provided as a Measurement that can be regarded as the internet data transmission capacity for the service.	

Parameter Name	Measurement Method	
Internet data transmission capacity	The Measurements should be obtained from at least 1000 test transmissions of incompressible data files, separated from each other by at least 60 seconds. The transmissions should be from traffic-weighted locations inside the Reporting Area to traffic-weighted locations inside or outside the Reporting Area (but inside the Federal Republic of Nigeria) during the Busy Time for the Service. The weighting of the traffic should be based on figures specific to the Service and should ensure the representation of every location that is responsible for at least 5% of the traffic for the Service. For Services for End Users, the traffic-weighted locations of the sending equipment should be points where there could be customer premises equipment connected to the network of the Licensee. For Services for Interconnected Licensees, the traffic-weighted locations of the sending equipment should be points of interconnection on the network of the Licensee. For both Services for End Users and Services for Interconnected Licensees, the traffic-weighted locations of the receiving equipment should be points where there could be customer premises equipment or points where there are international routes; also, the first network that the test transmissions traverse should be the network of the Licensee. The incompressible data files may be obtained by generating random numbers, taking the digits of transcendental numbers, or using data values that are already compressed. Each should be large enough that it would take at least 2 seconds to be transmitted over a link performing at the advertised internet data transmission rate. Differences between downstream and upstream internet data transmission rates are accommodated by ensuring that the transmissions are from traffic-weighted locations. This quality of service parameter is not ideal. Averaging over the internet data transmission rates at many locations could be inappropriate if the service is advertised as offering many different bandwidths. Moreover, the numerical value is influenced by the performance of the protocols for reliable data transmission implemented in the end points (and any intermediate caches), not just network performance. These protocols are not the ones used for voice over IP applications, which can be assessed using the internet data transmission success ratio and the internet data transmission time.	
Acknowledgement of delivery of SMS/MMS/IMS **messages sent**	Successful delivery acknowledgement of SMS/MMS/IMS messages sent must be received by the sender for all messages delivered.	

Parameter Name	Measurement Method	
Call Completion Rate (CCR)	The ratio of successfully completed calls to the total number of attempted calls. That is, the ratio of the number of completed call attempts to the total number of call attempts, at busy hour expressed as a percentage. Number of Completed Calls x 100 Total Number of Call Attempts Alternatively, CCR = CSSR * (1 – TCH Drop Rate) Where TCH Drop Rate = (TFNDROP + TTFNDROP +THNDROP +THNDROPSUB)/ (TFCASSALL+TFCASSALLSUB+THCASSALL+THCASSALLSUB+(SUMIHOSUCC-SUMIAWSUCC-SUMIABSUCC)-(SUMOHOSUCC-SUMOAWSUCC-SUMOABSUCC)) * 100 [%]	
Call Setup Success Rate (CSSR)	The ratio of the number of the failed Call Setup attempts divided by the total number of call attempts at busy hour expressed as a percentage. Number of successful Call Attempts x 100 Total Number of Call Attempts Alternatively, CSSR = ((1 - (SDCCH Congestion)) * (1 - (SDCCH Drop Rate) * (TCH Assignment Success Rate)) OR 100*((1 - ((CCONGS+CCONGSSUB)/ (CCALLS+CCALLSSUB))) * (1 - ((CNDROP – (CNRELCONG+ CNRELCONGSUB)) / CMSESTAB)) * ((TFCASSALL + TFCASSALLSUB + THCASSALL + THCASSALLSUB) / TASSALL)) [%]	
Call Setup Time (Post Dialling Delay)	The time interval between the end of dialling by the user and the reception by him of the appropriate tone or recorded announcement, or the abandon of the call without a tone.	
Compression Ratio	The compression ratio on the transmission network.	
Conversational Voice Quality	The Mean Opinion Score (MOS) of the speech quality perceived by Caller or Called party in accordance with **ITU-T P.862**.	

Parameter Name	Measurement Method	
Cost information for all completed calls or Revenue Generative Events (RGE) via text to consumer	Charging information must be communicated to the consumer for all calls and RGEs on the network.	
Circuit Switched Data Services (CDS)	Upstream/Downstream throughput of Circuit Switched Data Services. Greater or equal to 95% of the agreed data rate must be delivered to customer at busy hour.	
Dropped Call Rate	The Call Drop Rate is the number of dropped calls divided by the total number of call attempts at busy hour expressed as a %. OR $\frac{\text{Number of dropped calls}}{\text{Number of Successfully Completed Call Setups}} \times 100$	
Handover	In a mobile systems, a system-driven change of the current association between an established connection and a channel (mobile to base station and/or base station to mobile channel) in the radio segment spanned by one cell. The change may result in an association between the connection and a new channel either in the same cell or in a different cell. The handover request may be issued due to deteriorated transmission quality of the channel as determined o the basis of a quality criterion (signal strength, carrier to interference ratio, etc).	
Handover Success Rate (HOSR)	Successful internal and External Outgoing Handovers of Total Number of Internal and External Handover Attempts OR (SUMOHOSUCC + SUMEOHOSUCC)/(SUMOHOATT+SUMEOHATT) *100 [%]	
Interconnect Circuit (PoI) Congestion	The percentage congestion of the Interconnect Circuits measured at busy hour. $\frac{\text{Total Number of unavailable PoI circuit requests}}{\text{Total Number of available PoI circuits}} \times 100$	

Parameter Name	Measurement Method	
Interference Protection Ratio" means	The interference protection due to Co-Channel and Adjacent Channels.	
Location Update Success Rate, LUSR (Registered and non-registered subscribers)	The ratio of the completed Location Updates attempts to the total number of Location Update attempts at busy hour expressed as a percentage. Completed Location Update x 100 Total Number of Location Update Attempts Alternatively, LUSR is defined as (NLOCNRGSUCC + NLOCOLDSUCC + NLOCNRG2SUCC + NLOCOLD2SUCC) / (NLOCNRGTOT + NLOCOLDTOT + NLOCNRG2TOT + NLOCOLD2TOT)* 100 [%]	
Maximum time for Transmission/Physical link outages	The Mean Time To Repair (MTTR) Transmission/Physical link outages. Number of Complaints per day related to: I. One way or both way loss of audio: A situation whereby either caller or called party can not hear the audio message or both could not hear each other. II. Cross-Talk A situation whereby unintended conversation interfere with that of caller or called party or both. III. Call Misdirection to unintended number. A situation whereby a call is terminated at unintended destination. IV. Voice Quantity (Taken cared by Item 25): Conversation with bad speech quality.	
Number of complaints per day in respect of Network blocking of incoming calls	Number of complaints received per day in respect of blocking of incoming calls in the network.	

Parameter Name	Measurement Method	
Number of complaints per day related to inability to meet SMS/MMS End-to-End Delivery Time Threshold	Complaints per day receive on the network related to inability to meet SMS/MMS delivery time.	
Number of Interconnect points per zone	The existence of at least one interconnection point per zone.	
Packet Switched Data Services (PDS)	Upstream/Downstream throughput of Packet Switched Data Services. Greater or equal to 95% of the agreed data rate must be delivered to customer at busy hour.	
Paging Success Rate" is defined	The ratio of failed Paging Attempts to the successfully completed Paging attempts at busy hour expressed as a percentage. $\frac{\text{Number of completed paging attempts}}{\text{Total Number of Paging Attempts}} \times 100$ Alternatively, Paging Success Rate =(NPAG1RESUC + NPAG2RESUC)/(NPAG1LATOT + NPAG1GLTOT) *100 [%]	
Percentage of Radio Links with Space and Frequency Diversity	The percentage of Microwave Transmission Links employing Space and Frequency diversity in the entire transmission network.	
Processor Load" means	The percentage of MSC Processor Workload measured at busy hour. I. **BH HLR, VLR, MSC Utilization:** % Capacity Utilization of HLR, VLR and MSC at busy hour. **II. Tranceiver Unit (TRX) Utilization:** % Capacity Utilization of TRX at busy hour.	
Resolution Time of CIC Mismatch	The time taken to resolve a CIC mismatch.	

Parameter Name	Measurement Method	
Resolution time of BTS faults impacting on traffic	The time taken to resolve faults that hinders traffic flow in the BTS.	
Resolution time of BSC faults impacting on traffic	The time taken to resolve faults that hinders traffic flow in the BSC.	
Resolution time of MSC faults impacting on traffic	The time taken to resolve faults that hinders traffic flow in the MSC.	
Service Coverage in cities/towns	Is the measured mean Radio Signal Level in urban and sub-urban areas, in and out-door and in moving vehicles in (dBm). **"SDCCH Congestion (SDCCH Cong)" is defined as** the percentage congestion of the Stand Alone Dedicated Control Channel measured at busy hour. Number of unavailable (blocked) SDCCH requests x 100 Total Number of SDCCH Requests Alternatively, **SDCCH Congestion** = SDCCH Congestion of Total Number of SDCCH Seizure Attempts OR (CCONGS+CCONGSSUB)/ (CCALLS+CCALLSSUB) *100 [%]	
SDCCH Drop Rate	Dropped SDCCH Connections of the Total Number of SDCCH Connections without TCH Congestion OR (CNDROP – (CNRELCONG+ CNRELCONGSUB)/ CMSESTAB) *100 [%]	

Parameter Name	Measurement Method	
SMS Delivery Success Rate	The ratio of the failed SMS to the total number of delivered SMS at busy hour if the recipient is active and in coverage area. Number of SMS received by recipient x 100 Total Number of SMS sent to the recipient	
SMS Delivery Failure Rate	The ratio of SMS undelivered recipient to the total number of SMS received at the Service Center for the recipient. Number of SMS to recipient undelivered x 100 Total Number of SMS received at Service Center	
SMS End-to-End Delivery Time	The mean End-to-End delivery time of SMS if the recipient is active and in the coverage area.	
Successful Call	Call that has reached the desired number and allows the conversation to proceed.	
TCH Assignment Success Rate	Successful TCH Assignments of Total Number of Assignment Attempts OR ((TFCASSALL + TFCASSALLSUB + THCASSALL + THCASSALLSUB) / TASSALL)*100 [%]	
Traffic Channel Congestion (TCH Cong)	The percentage congestion of the traffic channel measured at busy hour. Number of unavailable (blocked) TCH requests x 100 Total Number of TCH Requests	
Voice Encoding	The type of voice encoding that is used on the radio network.	
Voice Mail related complaints per day	The complaints related to voice-mail received per day.	

FULL MEANING OF ABREVIATIONS

CCONGS - Congestion counter for underlaid subcell. Stepped per congested allocation attempt. The counter for overlaid subcell is **CCONGSSUB**

CCALLS - Channel allocation attempt counter (on SDCCH). The Counter for overlaid subcell is **CCALLSSUB**

CNDROP - The total number of dropped SDCCH channels in a cell

CNRELCONG - Number of released connection on SDCCH due to TCH- and transcoder congestion in underlaid and overlaid subcell. The subset for overlaid subcells is **CNRELCONGSUB**. Note That CNDROP is stepped at the same time.

CMSESTAB - Successful MS channel establishments on SDCCH. This counter is a sum of both overlaid and underlaid subcells.

TFNDROP - The total number of dropped full-rate TCH in underlaid subcell. The identical counter for overlaid subcells, **TFNDROPSUB.** The corresponding counters for half-rate, **THNDROP** and **THNDROPSUB**, respectively.

TFCASSALL - Number of assignment complete messages for all MS power classes in underlaid subcell, full-rate. The identical counter for overlaid subcells, **TFCASSALLSUB**. The corresponding counters for half-rate, **THCASSALL** and **THCASSALLSUB**, respectively.

SUMOHOSUCC - Sum of Successful Internal Handovers (Outgoing Handover)

SUMOABSUCC - Sum of Successful Internal Assignment Handovers to Better Cell (Outgoing Handover)

SUMOAWSUCC - Sum of Successful Internal Assignment Handovers to Worse Cell (Outgoing Handover)

SUMIHOSUCC - Sum of Successful Internal Handovers (Incoming Handover)

SUMIABSUCC - Sum of Successful Internal Assignment Handovers to Better Cell (Incoming Handover)

SUMIAWSUCC - Sum of Successful Internal Assignment Handovers to Worse Cell (Incoming Handover)

SUMOHOATT - Sum of Internal Handover Attempts (Outgoing Handover)

SUMEOHOATT - Sum of External handover Attempts (Outgoing Handover)

NPAG1LOTOT - Number of first global page attempts over A-Interface

NLOCOLDSUCC - Number of successful location updating for already registered subscribers over A-interface and Iu-interface

NLOCNRGSUCC - Number of successful location updating for non-registered subscribers over A-interface and Iu-interface

NLOCNRG2TOT - Number of location updating attempts from non-registered subscribers (IMSI attach, normal location updating, or periodic updating) over Gs-Interface

NLOCNRG2SUC - Number of successful location updates for non-registered subscribers over Gs-Interface

NPAG2LOTOT - Number of repeated page attempts to a location area over A-Interface

NPAG2GLTOT - Number of repeated global page attempts over A-Interface

NPAG1RESUCC - Number of page responses to first page over A- interface

NPAG2RESUCC - Number of page responses to repeated page over A- interface

NLOCOLDTOT - Total Number of location updating attempts for already registered subscribers over A-interface and Iu-interface

NLOCNRGTOT - Total Number of location updating attempts from non-registered subscribers (IMSI attach, normal LU or periodic LU) over A-interface and Iu-interface

Busy Hour (BH)- The continuous 1-hour period lying wholly in the time interval concerned For which the traffic or number of call attempts is greatest.

Call Attempt - An attempt to achieve a connection to one or more devices attached to a telecommunication network.

SCHEDULE 2 (Fines for acts of Contravention)

Fines will be calculated more particularly on the basis of the provisions of Regulation 16 hereof for each Parameter that is Reportable for a service, for each Reporting Area and for each Reporting Period a Licensee shall have committed a contravention as follows:

	Maximum fine per
1) Failure by a Licensee to perform the measurement, reporting and record keeping tasks set out in regulation 10. →	₦10, 000,000 for each act of contravention.
2) Failure by a Licensee to reach a Target for the Parameter and the Service. →	₦30,000,000 for each act of contravention.
3) Failure by a Licensee to submit, during a time period specified by the Commission, information requested by the Commission pursuant to regulation 10 (c) or Regulation 15. →	₦10,000,000 for each act of contravention.
4) Submission or publication of false or misleading information about quality of service by Licensee. →	₦20,000,000 for each act of contravention.
5) Obstructing or preventing an investigation by the Commission of the quality of service measurement, reporting and record keeping procedures by a Licensee, its officers, agents, servants, privies etc. →	₦20,000,000 for each act of contravention.
	₦1.000.000 for each dav that

Imposing a fine, for each such Contravention, pursuant to the applicable provisions of the Enforcement Processes Regulations 2005 or any amendment thereof or in accordance with the provisions of Schedule 2 of these Regulations and where there is any difference or conflict between the fines specified in the Enforcement Regulations and those specified in these Regulations, the fines specified in the more recent of the two Regulations shall prevail and supersede.