Office of Utilities Regulation

Quality of Service Standards and Consumer Protection Guidelines for the Telecommunications Sector

Notice of Proposed Rulemaking

Publication Date: November 10, 2014

OFFICE OF UTILITIES REGULATION

Abstract

The Telecommunications Act and the Office of Utilities Regulation Act establish as objectives for the Office of Utilities Regulation ("OUR"), encouraging competition and protecting the interests of consumers. The OUR intends to work towards these objectives by exercising its powers to obtain information from, place requirements on and make recommendations to telecommunications Licensees. These requirements and recommendations relate to quality of service and other aspects of consumer protection.

In a perfectly competitive market in which consumers are fully informed about the characteristics and reliability of all products, no regulation of quality is required as each person is able to make an optimal choice given the range of services and relative prices. However, it is common knowledge that markets often fail to meet these perfectly competitive conditions. Consumers will therefore benefit when quality standards are regulated and Licensees' performances on quality of service indicators are established and published. This is so because the exercise of choice by better-informed consumers leads to increased competition, as Licensees compete to offer better quality services to retain existing customers or attract new ones.

The proposals in this Notice of Proposed Rulemaking ("NPRM") cover quality standards for fixed telephony, mobile telephony and internet access as well as procedures for handling of consumer complaints. It also includes a General Consumer Code of Practice, which sets out consumer protection guidelines for the telecommunications sector.

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Consultation Process

Persons who wish to express opinions on this Notice of Proposed Rulemaking ("NPRM") are invited to submit their comments in writing to the Office of Utilities Regulation ("OUR") by post, delivery, facsimile or email addressed to:

Office of Utilities Regulation
P.O. Box 593
36 Trafalgar Road
Kingston 10

Attention: Evona Channer

Fax: (876) 929-3635

Email: echanner@our.org.jm

Responses are requested by December 5, 2014

Responses which are not confidential pursuant to sections 7(6) and 7A of the Telecommunications Act will be posted to the OUR's website (www.our.org.jm). Respondents are therefore requested where possible to supply their responses in electronic form to facilitate such postings.

COMMENTS ON RESPONSES

There will be a specific period for respondents to view other responses (non-confidential) and to make comments on them. The comments may take the form of either correcting a factual error or putting forward counter arguments. As in the case of the responses, comments which are not confidential, pursuant to the Telecommunications Act, will be posted to the OUR's website.

Comments on responses are requested by December 19, 2014

Arrangement for viewing responses

This NPRM and the responses and comments received by the OUR will also be made available to the public through the OUR's Information Centre ("OURIC"). Persons who wish to view the NPRM, responses and comments should make an appointment by contacting:

Ms. Kishana Munroe
Co-ordinator OURIC/Information Officer
Telephone: (876) 968-6053
Fax: (876) 929-3635
Email: kmunroe@our.org.jm

Individuals with appointments should visit the OUR's offices at:

3rd Floor, PCJ Resource Centre,
36 Trafalgar Road,
Kingston 10

Photocopies of selected responses and comments may be provided on request at a price which reflects the cost to the OUR.

CONSULTATIVE TIMETABLE

The timetable for the consultation on this NPRM is summarized below:

Event	***Date***
Publish NPRM Document	November 10, 2014
Responses to NPRM	By December 8, 2014
Comments on Responses	By December 22, 2014
Issue of Finalised Code of Practice	By February 23, 2015
Issue of OUR responses to comments	By February 23, 2015
Submission of drafting instructions to Chief Parliamentary Counsel	By February 23, 2015

Glossary

In this document, unless the context otherwise requires, the following terms will have the meanings specified below:

1. The “Act” means the Telecommunications Act as amended from time to time.
2. An “active subscriber” is one who has subscribed for a service from a Licensee and has engaged in at least one or more of the following revenue generating actions in the last ninety (90) days since registration or since the last credit top-up/bill payment:
    - Sending/Receiving Voice/Video Calls;
    - Sending Short Messaging Service (SMS) or Multimedia Messaging Service (MMS);
    - Utilizing a Premium Rate Service;
    - Data transfer, including Internet access.
3. “Bouncing Busy Hour (BBH)” is the hour of each day when a telecommunications network carries its greatest volume of traffic. The busy hour "bounces" because the busiest hour usually varies according to the day of the week.
4. “Busy Hour”, is the sliding 60-minute period during which the maximum total traffic load occurs in a telecommunications network in a given 24-hour period.
5. A “call attempt” in a telecommunications network is a demand by a user of the network for a connection to another user. For clarity, this includes all completed, overflowed, abandoned or lost calls.
6. “The Code” means the General Consumer Code of Practice for the Telecommunications Industry included in Annex C of this document.
7. “Consultative Document” refers to the document issued by the OUR entitled “*Quality of Service Standards and Guidelines for the Telecommunications Sector - A Consultative Document*” (Document No. TEL2010012_CON001) and dated 25 October 2010.
8. “Customer complaint” is an expression of dissatisfaction with a telecommunications service and any ancillary services that is conveyed or submitted to the Licensee via a customer service call, at a customer service centre or in writing by or on behalf of a customer. The term does not include an expression of dissatisfaction, which does not explicitly or implicitly call for a resolution.
9. “Customer premises equipment” is any telecommunications device located on a customer’s premises that is used to access services from a Licensee.
10. “Customer service call” is a call to a telephone number of a Licensee that is intended for customer complaints, service orders, fault reports or service enquiries.
11. “Customer service centre” means an office or location where customers can, among other things, apply for telecommunications services and lodge customer complaints.

12. “Drive Test” refers to the method of measuring and assessing the coverage, capacity and quality of service of a mobile radio network while driving.
13. “Disconnection” is a deliberate blocking by a Licensee of calls, messages and data uploads or downloads. It does not necessarily entail removal of physical network access points, even for fixed telephony.
14. “Fault report” is a report of disrupted or degraded service that is submitted via a customer service call, at a customer service centre or in writing by or on behalf of a customer.
15. “ISP Node” refers to the location where the ISP’s Gateway Router is connected with upstream service provider.
16. “Licensee” has the same meaning as in the Act.
17. A “National Emergency Number” is an emergency number so designated by the OUR acting in its capacity as Numbering Administrator pursuant to the Act.
18. “Network Access Point (NAP)” means a major overseas Internet interconnection point that serves to logically link global Internet.
19. “OUR Act” means the Office of Utilities Regulation Act, as amended from time to time.
20. “Point of Interconnection” means a mutually agreed upon point of demarcation where the exchange of traffic between the networks of two Licensees takes place.
21. A “premium rate service” is a value added service, with or without content, provided through a telecommunications network and charged at special rates.
22. A “service order” is a request by a customer to be supplied with a telecommunications service that is conveyed or submitted to a Licensee via a customer service call, at a customer service centre or in writing by or on behalf of a customer.
23. “Service Provider” is as defined in the Act.
24. “Stand Alone Dedicated Control Channel” refers to a channel in a GSM (or CDMA).
25. “Subscriber Lifecycle” refers to the different stages that a subscription goes through starting when a consumer subscribes to a Licensee’s service and ending when that subscription is terminated.
26. “Time-consistent busy hour (TCBH)” is the identical hour each day during which, over a number of days, the highest average traffic is measured.
27. **‘**Traffic Channel (TCH)’ means, a logical channel in a GSM or CDMA network, which carries either encoded speech or user data.
28. An “unsolicited electronic communication” is an electronic communication (such as voice call, voice message, fax, text message or electronic mail) that the recipient has not consented to receiving.

29. The “validity period” is the time during which a customer will have access to available credit after recharging the pre-paid telecommunications service in order to originate calls or messages or upload or download data.

30. A “working day” comprises the hours between 8:00 a.m. and 5:00 p.m. on a Monday, Tuesday, Wednesday, Thursday or Friday that is not a public holiday in Jamaica.

Abbreviations

ADSL	Asymmetric Digital Subscriber Line
BBH	Bouncing Busy Hour
BSC	Base Station Controller
BTS	Base Transceiver Station
CAC	Consumer Affairs Commission
CACU	Consumer Advisory Committee on Utilities
CDMA	Code Division Multiple Access
CPE	Customer Premises Equipment
EDGE	Enhanced Data rates for GSM Evolution
ETSI	European Telecommunications Standards Institute
GSM	Global System for Mobile Communication
HTTP	HyperText Transfer Protocol
ICMP	Internet Control Message Protocol
IP	Internet Protocol
ISP	Internet Service Provider
ITU	International Telecommunications Union
IVR	Interactive Voice Response
IXP	Internet Exchange Point
MB	Megabyte
Mbps	Megabit per second
MMS	Multimedia Messaging Service
MSC	Mobile Switching Centre
NAP	Network Access Point
NPRM	Notice of Proposed Rule Making
OUR	Office of Utilities Regulation
PCH	Paging Channel
PoI	Point of Interconnection
POP	Point of Presence
PRS	Premium Rate Service
SDCCH	Stand Alone Dedicated Control Channel
SIM	Subscriber Identity Module
SMS	Short Messaging Service
SNMP	Simple Network Management Protocol
TCH	Traffic Channel
VoIP	Voice over IP

Chapter 1: Introduction

1.1 Background

The Telecommunications Act (the "Act") and the Office of Utilities Regulation Act (the "OUR Act") under which the Office of Utilities Regulation ("OUR") regulates telecommunications, have among their objectives the encouragement of competition and protection of the interests of consumers. The OUR believes that greater transparency on the performance of telecommunications services will contribute to increased competition and will also promote the interests of all users within the community. In this regard, the OUR intends to work towards these objectives by exercising its powers to obtain information from, place requirements on and make recommendations to Licensees.

These requirements and recommendations relate to quality of service and other aspects of consumer protection. While there is no universally adopted meaning of 'quality of service', the meaning adopted in this Notice of Proposed Rule Making ("NPRM") is taken from the ITU and is widely utilized. 'Quality of service' is defined in the ITU-T Recommendation E.800 as "the collective effect of service performances, which determine the degree of satisfaction of a user of the service". The parameters and measurements in this document relate to the aspects of the various services, which directly impact a user's experience.

In 2007 the OUR published a consultative document entitled "Quality of Service Standards for the Telecommunications Sector" (Document #: Tel. 2007/15) (hereinafter referred to as the "2007 Consultative Document"). This document took account of the then entry of new Licensees (both fixed and mobile) and the introduction of broadband internet access. In 2010, the OUR published a follow-up consultative document entitled "Quality of Service Standards and Guidelines for the Telecommunications Sector – A Consultative Document" (Document #:TEL2010012_CON001) (hereinafter referred to as the "2010 Consultative Document").

The 2010 Consultative Document considered a number of quality of service indicators, and in particular focussed on whether some of these indicators should be set as binding targets. These included (i) targets relating to installation times; (ii) the level of line faults; and (iii) the time needed to repair line faults. In most of these cases, the OUR proposed the setting of binding targets. The Licensees' responses and those of other stakeholders to specific subject matter contained in the 2010 Consultative Document are discussed in the appropriate sections of this NPRM.

Having considered the views expressed by respondents to the 2010 Consultative Document, and in light of subsequent developments in the sector, the OUR has decided

to do a further consultation which takes into account additional quality of service parameters, as set out in this NPRM. The requirements discussed in the 2010 Consultative Document and the additional parameters introduced in Chapter 7 of this NPRM are presented as proposed rules in Annex A. It has also been decided that the recommendations relating to consumer protection issues in the 2010 Consultative Document, would be better addressed in a General Consumer Code of Practice for the Telecommunications Industry (the "Code") which is now included in Annex C of this NPRM. The Code will be published as a separate document once it is finalised.

1.2 Purpose of this NPRM

The purpose of this NPRM is to provide a framework to be drafted in the form of rules issued pursuant to section 44(3) of the Act for Quality of Service obligations. In defining the parameters, the NPRM provides parameter descriptions and the associated measurement methods. The proposed rules will provide the means by which other general and specific objectives for maximizing consumer welfare can be achieved. Such objectives include improving service reliability and Licensee's responsiveness to customer complaints.

In a perfectly competitive market where consumers are fully informed about the characteristics and reliability of all products, no regulation of quality is required as each person is able to make an optimal choice given the range of services, number of Licensees and relative prices. It is common knowledge however, that markets often fail to meet these perfectly competitive conditions. Consumers are therefore disempowered if recent, comparable and relevant quality of service information is unavailable. In instances where information is made available to consumers on service quality, such information might not be easily accessible, and in the absence of independent verification, consumers might be misled by individual Licensee's claims. Where an appropriate quality of service standards regulation is not in place, Licensees might reduce their monitoring activities and responsiveness to consumer complaints resulting in higher costs in terms of inconvenience to consumers from dropped calls and other system failures.

In response to the earlier consultations Licensees argued with regard to the OUR's intentions on quality of service standards regulation, that given the competitive nature of telecommunications markets, consumers should be the final arbiter of quality. However, unlike other markets where competition is well established, the Jamaican telecommunications markets do not (neither in fixed line services nor cellular mobile services) have this level of competition. Additionally, the departure in 2011 of a major operator in the mobile market has lessened the current 'competitive' landscape. Without the pressure to compete with other Licensees on their performance in relation to service quality indicators, and with the absence of regulatory discipline, there might be less incentive for Licensees to provide meaningful information going forward.

As noted by the International Telecommunications Union ("ITU") there are several reasons why regulators monitor quality of service such as:

- Helping customers to make informed choices.
- Checking claims by service providers.
- Understanding the state of the market.
- Maintaining or improving quality in the presence of competition.
- Maintaining or improving quality in the absence of competition.
- Helping service providers to achieve fair competition.
- Ensuring that interconnected networks work well together[1].

Some of these reasons for monitoring quality of service are more important in a market in which there is little or no competition. Other reasons such as understanding the state of the market are important even when competition is strong. For instance, network deployment data may not provide adequate information for the regulator to make a determination of whether or not coverage is adequate. The number of base stations deployed may seem adequate, but a lack of maintenance could result in them operating at sub-optimal levels thus reducing actual coverage. Monitoring the parameters included in this NPRM, such as "handover success rate" and "call set-up success rate" allows the OUR to discover coverage gaps etc. Another reason to monitor quality of service in a competitive environment is that when Licensees compete on price, they may cut quality in order to cut costs and ultimately prices.

It is clear that consumers benefit from information on service quality when quality standards are regulated, and Licensees' performances on quality of service indicators are published. This is so because the exercise of choice by better-informed consumers leads to increased competition as Licensees compete to offer better quality services to retain customers or attract new ones. Recent investigations commissioned by the OUR revealed that at times, one service offering has both higher prices and lower quality than another. It was also established that some contract terms and other information provided to consumers of telecommunications services are not uniformly fair and clear. A primary objective for the OUR is to ensure that the information provided to consumers is current, clear, accurate and consistent with relevant local, and international standards and practice. This, the OUR believes, will improve consumers' awareness and understanding of the options available in the markets and what should be their legitimate expectations from Licensees.

[1] ITU-T (2013) Series E: Overall Network Operation, Telephone Service, Service Operation and Human Factors - Guidelines on Regulatory Aspects of QoS

1.3 Basis of the NPRM

The OUR's proposals on quality of service and consumer protection in this NPRM are influenced by investigations it undertook and consultations held with various stakeholders. Specifically, the proposals are influenced by:

- Discussions with government agencies, consumer organizations and Licensees
- Analyses of complaints to the OUR
- Analyses of surveys results
- Specific information requests from the OUR to Licensees
- Call centre tests
- Drive tests
- International comparisons
- Analyses of existing contracts

1.4 Structure of this NPRM

- ❖ Chapter 2 outlines the Legal Framework that underpins the implementation and enforcement of the quality of service and consumer protection rules.

- ❖ Chapters 3-6 provide a summary of the proposals made in the 2010 Consultative Document, set out the points raised by the Licensees and consumer groups in response, and give OUR's comments on each issue.

- ❖ Chapter 7 introduces additional parameters proposed for the measurement of quality of service standards.

- ❖ Annex A presents the proposed quality of service and consumer protection rules.

- ❖ Annex B presents the OUR's obligations under this quality of service and consumer protection monitoring framework.

- ❖ Annex C contains the General Consumer Code of Practice for the Telecommunications Industry

Chapter 2: Legal Framework

2.1 General Provisions

The OUR was established under the OUR Act with power to regulate "prescribed utility services". Section 2 and the First Schedule of the OUR Act defines "prescribed utility services" to include "*the provision of telecommunication services*".

The power and authority of the OUR to regulate the telecommunications sector is governed by the provisions of the OUR Act and the Act, which was amended by the Telecommunications (Amendment) Act, 2012.

Section 4(3) of the OUR Act in particular empowers the OUR to undertake such measures, as it considers necessary and desirable, to *inter alia*:

"(a) encourage competition in the provision of prescribed utility services;
(b) protect the interests of consumers in relation to the supply of a prescribed utility service;
…
(d) promote and encourage the development of modern and efficient utility services; …"

Section 4(5) of the OUR Act further permits the OUR to prescribe, by order published in the Gazette, *"standards for the measurements of quantity, quality or other conditions relating to prescribed utility services"*.

The Act also grants specific powers to the OUR to provide regulatory oversight on certain areas of focus including, but not limited to, quality of service standards and consumer protection in the provision of telecommunications services. Extracts of some of the relevant provisions of the Act are set out below:

4 – (1) The Office shall regulate telecommunications in accordance with this Act and for that purpose the Office shall –

(a) regulate specified services and facilities;
...
(d) promote the interests of customers, while having due regard to the interests of carriers and service providers;

...

(f) make available to the public, information concerning matters relating to the telecommunications industry;

(g) promote competition among carriers and service providers;

...

(3) In exercise of its functions under this Act, the Office may have regard to the following matters –

(a) the needs of the customers of the specified services;

(b) whether the specified services are provided efficiently and in a manner designed to –

…

(iii) afford economical and reliable service to its customers;

(c) whether the specified services are likely to promote or inhibit competition"

2.2 Power to Make Rules

Express provisions regarding the powers of the OUR to prescribe rules addressing quality of service standards and measurements and the administration of customer complaints and to examine terms and conditions of customer contracts are set out in subsections (3), (4) and (5) of section 44 of the Act viz.:

"(3) The Office may –

(a) after consultation with the Minister, make rules prescribing quality standards for the provision of facilities or specified services in relation to all licensees, and relating to the administration and resolution of customer complaints; and

(b) direct the licensee to conduct all required associated measurements and to report to the Office thereon in such manner and at such intervals as the Office may determine.

(4) Rules made under subsection (3) regarding customer complaints shall be applicable to, and shall be observed by, all licensees.

(5) The Office may –

(a) examine customer contracts in respect of facilities or specified services; and

(b) direct the modification of any term of such a contract which appears to the Office to be unreasonable or unfair."

2.3 Enforcement

The 2012 amendments to the Act expanded the listing of activities considered offences under the Act, and enhanced the enforcement actions that can be taken by the OUR against Licensees who are in breach of the Act. The OUR is now empowered under Section 63(3) to, among other things:

- issue cease and desist orders,
- mandate the payment of compensation to affected persons,
- require remedial steps to be taken,
- order the termination of agreements deemed to be in breach
- seek injunction.

A fixed penalty scheme is also established under section 63B of the Act, pursuant to which Licensees in breach may opt to pay a fine in lieu of criminal court proceedings.

The failure of a Licensee to comply with the Act or regulations thereunder, and in particular, the breach of any quality of service standards established or approved by the OUR, are among the offences established by the 2012 amendment and to which the new enforcement and fixed penalty provisions are applicable. These enforcement provisions will be referenced in the quality of service and consumer protection rules promulgated under the Act.

Chapter 3: General Principles

3.1 Imposition of Quality of Service Recommendations and Requirements

In this chapter, the responses received from Licensees, consumer groups and other interested stakeholders with regard to Chapters 1 – 3 of the 2010 Consultative Document are summarised and discussed. Persons may view the responses to the 2010 Consultative Document on the OUR's website at www.our.org.jm.

3.1.1 OUR's Consultation Proposal

In the 2010 Consultative Document the OUR proposed to introduce requirements and recommendations for quality of service and other aspects of consumer protection that took account of its investigations of quality levels and consumer safeguards.

3.1.2 Responses by Licensees

Responses from Licensees as set out in the ensuing bullet points were many and varied viz.:

- Imposing onerous mandatory quality of service rules might prove harmful to consumer welfare.
- The OUR should not have such high standards that efforts to meet them would be frustrated. Licensees would then be likely to be labelled as "bad", which would damage their brands and the demand for their services. They might even leave the market, so there would be fewer choices and higher prices.
- The low rate of customer complaints to the OUR about mobile telephony in 2008 shows that there is no consumer detriment.
- The appropriateness of the OUR to intervene (and by definition, devote its limited resources) in the mobile markets as opposed to dealing with certain long term regulatory issues is questionable.
- Unnecessary regulation makes Licensees incur additional costs that are likely to be reflected in higher prices, reduced investment and reduced innovation.
- The OUR's proposals have not been subject to a cost benefit analysis and have not included an explanation of how the cost was to be recovered.

3.1.3 OUR's Comments

- The quality of service requirements and recommendations relate to low-cost collection and dissemination of information. The OUR therefore does not consider them to be onerous. Indeed, it is expected that typically, Licensees are already measuring (albeit not reporting) quality of service. The OUR takes the view that reporting such measurements, thereby making information available to consumers, improves the operation of a competitive market and enhances consumer welfare.

- The 2010 Consultative Document included evidence that the requirements and recommendations of the OUR about quality of service and other aspects of consumer protection are not out of line with those elsewhere. Notably, the principles given in Annex B, which the OUR proposes to follow when publishing information for consumers, allow ample scope for Licensees to ensure that they are not unjustly or disproportionately labelled as "bad".

- Customer complaints to the OUR come from limited parts of the population. The complaints typically relate to specific one-off problems, instead of general continuing concerns. While an analysis of the numbers and types of customer complaints is useful, it is no substitute for tests and other measurements to determine the service quality levels that obtain in the market. For this reason, the OUR has performed other investigations, which were summarised in the 2010 Consultative Document. These include making its own measurements (for example of call centre behaviour and mobile telephony performance), and analysing information found in customer contracts as well as information requested from the Licensees.

- The continuing existence of some unresolved problems in regulating telecommunications is due in many instances to the litigious nature of the telecommunications sector and the slow pace of the legal processes in Jamaica. The OUR's allocation of resources to monitor quality of service and other aspects of consumer protection will therefore have no bearing on the rate of resolution of these unresolved problems.

- It is the OUR's intention to make information available about achieved and acceptable quality levels without imposing significant burdens on Licensees. In this regard, some of the quality of service measurements proposed by the OUR are based on measurements that are already being done by Licensees with minor modifications to achieve comparability. It is therefore not anticipated that a requirement by the OUR that the Licensees measure and report on quality of service levels should result in significant additional costs to them.

- No Licensee has supplied cost information that could substantiate suggestions that the costs of implementation would be high. With respect to cost recovery, it

should be noted that in quality of service schemes in other jurisdictions, Licensees normally bear their own costs.

3.2 OUR's Jurisdiction With Regard To Consumer Protection

3.2.1 OUR's Consultation Proposal

The OUR, in exercise of its duties and powers to encourage competition and protect the interests of telecommunications consumers, proposed a number of recommendations in relation to consumer protection.

3.2.2 Responses by Licensees

- There is nothing to be gained by the OUR duplicating existing non-sector-specific consumer protection measures.
- The mandate of the OUR might not extend to setting contract terms, to which contract law applies.

3.2.3 OUR's Comments

- The OUR's recommendations do not seek to duplicate the general consumer protection principles set out in non-sector-specific legislation but instead is intended to provide for specific application to the telecommunications sector, where contracts can be complicated and products can combine goods and services.
- In any event, with the 2012 amendments to the Act the OUR is now expressly empowered to examine customer contracts in respect of facilities and specified services and may direct the modification of any term of such contracts which appears to the OUR to be unreasonable or unfair. This issue will be the subject of consultation with stakeholders in the future.

3.3 Measures to Ensure Compliance with the Quality of Service Standards

3.3.1 OUR's Consultation Proposal

The OUR proposed to introduce various measures to encourage Licensees to maintain quality. These include:

- Publication of deficiencies to consumers.
- Requiring the service provider to supply an improvement plan or to report extra measurements (perhaps with shorter reporting periods or smaller reporting areas).
- Introduction of guaranteed standards, so that individual customers can receive compensation for breaches.
- Application to the court for enforcement against the service provider.
- Recommendation of the suspension or revocation of the licence of a breaching Licensee.

3.3.2 Responses by Licensees

- The ability to suspend or revoke a licence is enough to ensure that Licensees comply with requirements related to quality, as Section 44(1)(c) of the Act requires that providers of retail services must use reasonable endeavours to ensure that those services are "*rendered in accordance with the standards reasonably expected of a competent provider of those services*".
- The contention that regulatory incentives might be needed to maintain quality is nonsense. Competition has driven the Licensees to impose quality of service standards on themselves.
- Publication of independently determined comparative quality levels would lend itself to bias and subjectivity.
- It would be far more constructive to ask a Licensee offering poor quality to provide and implement a development plan that could be monitored, than to publish comparative quality levels.
- Publication of information about compliance with recommendations (as opposed to requirements) would give the impression that the recommendations are important and should be complied with. Those companies that comply with the recommendations would be viewed more favourably than those that do not.

3.3.3 OUR's Comments

- The suspension or revocation of a licence is an extreme measure. In practice therefore, it provides a weak incentive to compliance, especially because it affects consumers as much as Licensees. There is therefore a need to have a graduated scale of sanctions that can be applied without significant disruption of service to consumers.

- Competition can indeed have beneficial effects; in particular, it can both raise quality levels and lower prices. These effects can however be enhanced by giving consumers information that helps them to make informed choices. Consumers can make informed choices if they can compare both quality levels and prices. Accordingly the OUR proposes to monitor and inform consumers about the quality of service levels provided in the market.

- Bias and subjectivity in the publication of independently determined quality levels can be avoided by compliance with the measurement and publication procedures outlined in Annex A and Annex B respectively. Further, it is proposed that Licensees will be given an opportunity to review and comment on any portion of information that names the Licensee prior to publication.

- The OUR is of the view that requiring a Licensee to supply an improvement plan or to report additional quality of service measurements could be particularly useful where the OUR's measurement of quality of service parameters in specific geographic areas indicate the service level to be inadequate. This however would be in addition to the publication of measurement results by the OUR.

- The Proposed Rules set out in this NPRM and the principles outlined in the Code are important and represent global best practices. Publishing unbiased and objective information about compliance with the rules would help consumers and encourage Licensees to improve.

- After further review, it is now proposed that the level of Licensees' adoption of the principles set out in the Code will not be the subject of publication at this stage.

- With the introduction of fixed penalty offences in section 63B of the Act, the imposition of applicable prescribed pecuniary penalties for breach of any quality of service standards would specifically be referenced in the Proposed Rules.

3.4 Applicability of Requirements and Recommendations

3.4.1 OUR's Consultation Proposal

The OUR proposed to:

- Make quality of service requirements and recommendations apply to those separately identified services for which the Licensees had at least 10,000 connected customers.

- Make consumer protection requirements and recommendations apply to all services of Licensees.

3.4.2 Responses by Consumer Groups

- Parts of the quality of service requirements and recommendations should be imposed on Licensees who are small carriers or service providers, as comprehensive standards would provide better guidance to both customers and new Licensees.

3.4.3 OUR's Comments

- The OUR sees the merit in making standards applicable to all Licensees, in particular as it relates to compliance with minimum quality of service standards, and has now included this in the Proposed Rules. The OUR however proposes to reserve the right to not require compliance by some Licensees who are considered small carriers or service providers with any one or more of the quality of service requirements where it determines, after consideration of submissions by such providers, that the costs of compliance could be disproportionate to the benefits. The OUR also proposes to reserve the right to measure and report on quality of service levels being provided by these Licensees.

3.5 Additional Comments

3.5.1 Time for Implementation

The Licensees indicated that a reasonable time should be allowed for incurring any necessary implementation costs and enforcing requirements; in particular, change should be achieved over a reasonable time and not mandated suddenly.

3.5.1.1 OUR's Comments

Licensees already make relevant quality of service measurements. Only minor modifications to their existing measurement systems would be required to implement the measurement and reporting requirements in the Proposed Rules included in this NPRM. The OUR considers that a period of six (6) months may be reasonable for implementation and reporting by Licensees of the required measurements.

However, Licensees will be subject to the targets specified in the quality of service rules as of the effective date of those rules. The OUR may commence its own measurements and enforce compliance with the targets, at any time after the effective date of the rules.

In the case of new entrants to the telecommunications market, however, the OUR proposes that a grace period of nine (9) months should be allowed before the quality of service rules will be applicable to those Licensees.

3.5.2 Rounding Off Principle

Several of the proposals in the 2010 Consultative Document indicated that quality of service measurement requirements should be rounded down to the nearest percentage. The OUR on review proposes that, in keeping with usual statistical convention, the principle to be applied should be to round up or down to the nearest whole number. Note however, that when a measurement results in a fraction equalling 0.5, then the figure should be rounded up to the nearest percentage.

3.5.3 Customer Base for Reporting Periods

Several of the quality of service measurements require that a measurement be made per number of customers for a service at the beginning of a reporting period. Upon further review the OUR considers that the customer base as at the end of the reporting period may provide a more accurate representation of the customer base for the particular reporting period. It is therefore proposed that where a measurement constituent requires the Licensee to make a measurement per number of customers for a particular service, the customer base used should be that as at the end of the reporting period.

Chapter 4: Measurements and Reporting

4.1 Measurement Times

4.1.1 OUR's Consultation Proposal

The OUR proposed that measurements be made over the whole working day, and not be restricted to busy hour or be extended to non-working hours.

4.1.2 Responses by Licensees

No comments on the OUR proposals were received during the consultation.

4.1.3 OUR's Comments

Upon further review, the OUR considers that measurement during the busy hour would be more appropriate for purposes of quality of service measurement. The busy hour is the period that usually has the highest number of blocked or lost calls due to the demand that is placed on network resources. If the dimensioning of the network is correct and blocked calls can be minimised during the busy hour, then all other non-busy hour traffic should be handled satisfactory. However, as the busy hour may vary from day to day the OUR proposes that the measurements be made on a "bouncing busy hour" basis as against the "time consistent busy hour".

4.2 Measurement Targets

4.2.1 OUR's Consultation Proposal

The OUR proposed that targets be formulated as recommendations, not as requirements, so that Licensees could provide, and consumers could use, services that had different mixes of cost and quality.

4.2.2 Responses by Licensees

- Licensees should be required only to report measurements, not to reach targets.
- Licensees should be required to report only missed targets, not all measurements.

4.2.3 OUR's Comments

- Upon further review, the OUR proposes to establish minimum quality standards ("targets") for some parameters as requirements to be embodied in formal regulations issued pursuant to section 44(3) of the Act. In a competitive environment, companies often compete by reducing prices because this can be done faster than improving quality. When reducing prices involves cutting costs, even with competition there could still be reduced quality levels across the sector. These targets represent minimally acceptable levels of service quality, which all Licensees will be required to attain. Note that the establishment of these minimum standards will not stop Licensees from making their own decisions about the trade-off between cost and quality levels above these standards.
- Requiring Licensees to report only missed targets would be less informative for consumers than requiring Licensees to report all measurements.
- In devising and revising the targets the OUR has taken account of what the Licensees regard as realistic for the circumstances of Jamaica.

4.3 Reporting Areas

4.3.1 OUR's Consultation Proposal

- The OUR proposed that the Licensees report measurements for the country as a whole.
- The OUR proposed that measurements made by or on behalf of the OUR would be for the country as a whole or as required for comparing different districts.

4.3.2 Responses by Licensees

As far as possible requirements to make and report measurements should fit with the existing processes of the Licensees.

4.3.3 OUR's Comments

- The OUR has designed the measurement requirements to fit existing processes, to the extent that the Licensees have described them. In particular, reporting areas should be separate only where quality is likely to be very different.
- The OUR now proposes to reserve the right to require Licensees to report measurements separately for specific geographic areas.

4.4 Reporting Periods

4.4.1 OUR's Consultation Proposal

- The OUR proposed that the Licensees report measurements every three (3) months.
- The OUR proposed that measurements made by or on behalf of the OUR would be annual or as required for validating the measurements reported by the Licensees.

4.4.2 Responses by Licensees

- Reporting of measurements should be annual, not quarterly, to avoid costs that are disproportionate to the benefits.
- The optimum reporting period depends on the maturity of the network: annual reporting would be enough for a mature network but inadequate for a network that was still being built out.

4.4.3 OUR's Comments

- The OUR is concerned that annual reporting would not give consumers information in a sufficiently timely manner in a sector that changes rapidly. Notwithstanding the comments of the Licensees, the OUR is of the view that for the initial implementation of the measurement requirements, more frequent reporting would assist in the determination of the current service quality levels being provided by licensees. If it is later determined that quarterly reporting is unnecessary and the burden on Licensees is disproportionate to the overall benefit, then the frequency of reporting may be reviewed.
- The OUR now proposes that measurements made by or on behalf of the OUR would be at such frequencies as it deems fit.

4.5 Reporting Formats

4.5.1 OUR's Consultation Proposal

The OUR proposed that Licensees submit their quality of service reports electronically in a standard tabular format no later than one (1) month after the end of each reporting period.

4.5.2 Responses by Licensees

The reporting formats should avoid placing undue burdens on the Licensees.

4.5.3 Comments of the OUR

The OUR will prescribe reporting formats which should be used by the Licensees and which are designed using basic programs and software that are commonly in use.

4.6 Audit and Validation Techniques

4.6.1 OUR's Consultation Proposals

The OUR proposed to:

- Require a senior manager in each Licensee to take full responsibility for the accuracy of quality of service measurements.
- Audit quality of service measurements independently by making its own spot checks (e.g. call centre behaviour, complaint handling, mobile telephony performance) or requesting information from Licensees.
- Monitor adherence to the consumer protection requirements and recommendations by examining documents, performing mystery shopping or requesting information from Licensees.

4.6.2 Responses by Licensees

The procedures for the audit of the quality of service measurements made and reported by the Licensees should be agreed, fair, objective and transparent.

4.6.3 OUR's Comments

The OUR is of the view that the proposed audit and validation procedures are commonly used within the telecommunications sector and are fair and objective. Additionally, the OUR proposes the auditing of Licensees' testing procedures and reporting as another validation method.

4.7 Publication formats

4.7.1 OUR's Consultation Proposals

The OUR proposed to:

- Publish comparative quality of service measurements (whether reported by the Licensees or done by the OUR) at any time in any manner that might help consumers to make informed choices.
- Publish along with these measurements information that is not confidential and is potentially helpful to consumers (such as any corresponding targets, comparative prices, and any special circumstances beyond the control of the Licensee affecting the measurements).
- Allow Licensees to, request that the OUR publish, along with these measurements, information that would explain, for example, why the measurements were incomplete or did not represent the quality of service normally offered.

4.7.2 Responses by Licensees

- The information currently made available (in marketing literature, web sites and contract terms) is satisfactory for enabling consumers to make informed and objective choices when selecting mobile and internet service providers. It is not clear that further information would be of any intrinsic value to consumers.
- The published reports should have an agreed format based on objectively transparent and quantifiable statements.
- The measurements should not be published without consulting the Licensees.
- The published reports should refer to all matters that Licensees say have affected quality.
- The published reports should include with the measurements only information that is relevant and associated with them.
- The focus should be on requiring the provision of information describing services, not on requiring the same quality, so consumers can make optimal choices given relative prices.

4.7.3 OUR's Comments

- The Licensees currently do not publish quality of service measurements and do not provide objective comparisons between Licensees. The OUR is of the view that the information on quality of service measurements which it will publish, will add to the body of information available to consumers, enabling them to make more informed choices.
- The OUR will disseminate the information on quality of service measurements and consumer protection requirements using varying methods as appropriate. This may include use of media such as, but not limited to, radio broadcasts, television broadcasts, press articles or web pages. Formats will therefore vary. The information will be reported in a fair and objective manner and will be quantifiable where appropriate. Also, the proposed procedures for publication, as outlined in Annex B, make provision for Licensees to review and request changes to information relevant to their operations prior to publication by the OUR.
- The quality of service parameters proposed in this NPRM can be quantified, and have objective measurements.

4.8 Comparative prices

4.8.1 OUR's Consultation Proposals

The OUR proposed to:

- Publish simple comparisons between prices, with explanatory notes where necessary.
- Put these comparisons alongside comparisons of quality of service, to encourage balanced appraisal of pricing and quality together.
- Revise these comparisons when prices change significantly (enough to interchange the cheapest and the most expensive Licensees, for example).
- Monitor advertisements and sales, to check that comparisons were not quoted in misleading ways.

4.8.2 Responses by Licensees

Benchmarks for prices in relation to quality would be difficult to rationalize.

4.8.3 OUR's Comments

The OUR has decided not to publish price comparisons alongside quality of service comparisons at this time. This does not exclude the OUR's right do so in the future or to make references to relative prices and quality in any discussions, presentations or reports other than the periodic QoS reports.

4.9 Exceptions

4.9.1 OUR's Consultation Proposals

The OUR proposed to suspend requirements to make and report quality of service measurements in certain circumstances beyond the control of Licensees.

4.9.2 Responses by Licensees

No comments on the OUR proposals were received during the consultation.

4.10 Additional Comments

4.10.1 Measurement samples

Concern was raised by Licensees that sample sizes in the tests by the OUR might not yield statistically significant results.

4.10.1.1 OUR's Response

The OUR made no proposal regarding sample sizes in the 2010 Consultative Document, however the OUR is aware that caution is needed when designing tests. In general the OUR uses sample sizes in tests which are large enough that important differences between services are shown up by ninety-five percent (95%) confidence intervals around the test results.

Moreover, differences between services that are statistically significant might not be perceptible to most people, and small differences are relatively unimportant if in any case quality is poor. The relative differences between the magnitudes of test results can be more important than the absolute differences, and published reports might need to discuss the importance of these differences based on the parameters under measurement.

4.10.2 Measurement Techniques

The OUR now proposes the utilization of Drive Tests of mobile telephone networks to assess the quality of the service being provided by these Licensees. These Drive Tests will be conducted either by:

- OUR employees;
- A third party contracted by the OUR; or
- Licensees, accompanied by OUR employees.

Where the Drive Tests are to be conducted by Licensees, they will be informed, ahead of time, of the time periods during which the tests will be conducted. However, they will not be informed, ahead of time, about the specific routes that will be tested during a particular time period. Operators are therefore required to schedule their operation and maintenance activities in a manner that will prevent any disturbances on their networks during the testing period, as this could affect the results of the tests. Licensees' personnel that are not involved in the measurement process will not be allowed to accompany or follow the test team.

In addition, in order to get a proper understanding of the performance of the various networks, the OUR will require Licensees to submit, upon its request and in the format defined, system measurement data which has been collected at the Operation and Maintenance Centre (OMC), level. The relevant KPIs will then be extracted from the data submitted.

Chapter 5: Quality of Service Requirements and Recommendations

5.1 Customer Service Call Answer and Satisfaction Ratios

5.1.1 OUR's Consultation Proposals

- The OUR proposed that Licensees will be required to:
  - Report to the OUR the proportion of customer service calls that let callers speak to live call centre agents or otherwise obtain information in twenty (20) seconds.
  - Take note of the minimum value set by the OUR as a target for this proportion, which was eighty percent (80%).
  - Report to the OUR the proportion of customer service calls that were dealt with to the full satisfaction of the caller by the first point of contact.
- The OUR also proposed to conduct, and publish the results of mystery shopping exercises when necessary, to validate the reports of the Licensees. In doing this the OUR would:
  - Measure the proportion of customer service calls that let callers speak to live call centre agents or otherwise obtain information in twenty (20) seconds.
  - Measure the proportion of customer service calls that were dealt with to the full satisfaction of the caller by the first point of contact.

5.1.2 Responses by Licensees

- The twenty (20) seconds in the customer service call answer ratio should start when the customer selects from the final Interactive Voice Response (IVR) menu, not when the customer succeeds in setting up the call: 20 seconds could be needed just to listen to and respond to fairly simple menus.
- The Licensees already strive to compete with each other vigorously in customer contact service levels, so there is no need for targets.

5.1.3 Comments of the OUR

- The OUR has given further consideration to these measurement parameters and has proposed modified versions which are discussed and detailed in Chapter 7 and Annex A.

5.2 Customer Complaint Submission and Resolution Rates

5.2.1 OUR's Consultation Proposals

The OUR proposed to require that Licensees:

- Report to the OUR the number of customer complaints per one hundred (100) connected customers during the reporting period, separated according to a particular classification of customer complaints.
- Take note of the maximum values set by the OUR as targets for these numbers, which were five (5) per one hundred (100) connected customers in total for customer complaints, one (1) per one hundred (100) connected customers for customer complaints about accounts, and one (1) per one hundred (100) connected customers for customer complaints about disconnections, in a reporting period of three (3) months.
- Report to the OUR the proportions of customer complaints that are resolved in fifteen (15) working days and thirty (30) working days, separated according to a particular classification of customer complaints.
- Take note of the minimum values set by the OUR as targets for these proportions, which were eighty percent (80%) and ninety-five percent (95%) respectively for customer complaints in total.

5.2.2 Responses by Licensees

- The targets for the customer complaint submission rate and the customer complaint resolution ratio are overly onerous. Based on the extremely low level (near to zero percent (0%)) of customer complaints received by telecommunications operators, regulatory intervention is not warranted.

5.2.3 OUR's Comments

- The OUR does not find that the targets are "overly onerous". If after implementation, the OUR finds that the burden to the Licensees of measuring and reporting this parameter outweighs the overall benefit to consumers, this will be revisited.

- Upon reviewing the customer complaints resolution ratio, the OUR recognised that the description of the measurement, i.e. that complaints resolution occurs when the "customer complaint has been removed" was vague. Accordingly, the description of this measurement has been changed to reflect the following: "The time taken to resolve a customer complaint is the time beginning when a

customer complaint is received by a Licensee and ending when the Licensee issues its final decision on the matter".

- Also the OUR has recognised that frivolous complaints or simple enquiries may inflate the complaints numbers, potentially resulting in an inaccurate reflection of the Licensee's performance in this area. The OUR therefore instead proposes to use the reports for this parameter for monitoring purposes. Aggregated statistics on this parameter may however, be submitted to and published by the ITU and other relevant national, regional and international bodies to which the OUR submits reports.

5.3 Equipment Installation and Maintenance for Fixed Telephony

5.3.1 OUR's Consultation Proposals

The OUR proposed to require that fixed telephony providers:

- Report to the OUR the proportions of connections installed in five (5) working days and ten (10) working days (service supply ratio).
- Take note of the minimum values proposed by the OUR as targets for the service supply ratio, which were eighty percent (80%) and ninety-five percent (95%) in five (5) working days and ten (10) working days respectively.
- Report to the OUR the number of fault reports per one hundred (100) connected customers during the reporting period (fault report submission rate).
- Take note of the maximum value proposed by the OUR as a target for the number of fault reports per one hundred (100) connected customers, which is five (5).
- Report to the OUR the proportions of faults repaired in twenty-four (24) hours and forty-eight (48) hours (fault repair ratio).
- Take note of the minimum values set by the OUR as targets for the proportion of faults repaired within twenty-four (24) hours and forty-eight (48) hours, which were eighty percent (80%) and ninety-five (95%) respectively.

5.3.2 Responses by Licensees

The standards could be more consistent with those currently adopted in the country.

5.3.3 OUR's Comments

The proposed targets have been applied in comparable jurisdictions where the market is at a similar level of development as Jamaica.

5.4 Service Reception for Mobile Telephony

5.4.1 OUR's Consultation Proposals

The OUR proposed to require that mobile telephony providers:

- Report to the OUR the proportion of time when network signals are usefully accessible.
- Report to the OUR the proportion of national calls set up successfully when network signals are usefully accessible.
- Take note of the minimum value set by the OUR as a target for call set up ratio, which is ninety-six percent (96%) (or at most four percent (4%) for the proportion failing before set up).
- Report to the OUR the proportion of national calls staying up until ended normally by users.
- Take note of the minimum value set by the OUR as a target for call retention ratio, which is ninety-eight percent (98%) (or at most two percent (2%) for the proportion failing before normal termination).

The OUR proposed to:

- Conduct Drive Tests and publish the results for areas where quality was below target. These tests would assess the proportions of on-net and off-net calls that failed for different Licensees and in different areas of the country. They would be conducted when necessary (in particular, as spot checks in response to requests or statements by Licensees or consumers). In doing this the OUR would:
  - Measure the proportions of occasions when network signals were usefully accessible.
  - Measure the proportion of national calls set up successfully when network signals were usefully accessible.
  - Measure the proportion of national calls staying up for two (2) minutes after being set up successfully.
  - Measure the proportions of national calls having "poor", "indifferent" and "good" voice quality while staying up for two (2) minutes.

- The OUR proposed to recommend that mobile telephony providers also conduct Drive Tests and report the results to the OUR.
- The OUR proposed to extend the tests to assess the proportions of on-net and off-net text messages that failed if it received evidence that this was needed.

5.4.2 Responses by Licensees

Competition is sufficient incentive to provide more than adequate quality, so regulatory intervention and, in particular, the introduction of targets is unnecessary.

5.4.3 Responses by Consumer Groups

- The standards should include ways of addressing concerns about messaging services, specifically by ensuring that Licensees report to the OUR on a regular basis, or as required, the number of delivered and "lost" messages.
- The speed of the vehicles in Drive Tests should be noted when calls are being made, to indicate limitations on the accuracy of the tests.
- The vehicles in Drive Tests should be stopped periodically, to make calls, to identify areas with stronger signals.

5.4.4 OUR's Comments

- For quality of service, the case for regulatory intervention in the current mobile telephony market concerns the desirability of making information available to consumers. Also, as stated earlier, competition may potentially result in Licensees cutting costs to reduce prices, which may in turn lead to reduction in quality levels.
- In light of the comments from consumer groups, the OUR has now proposed a quality of service parameter for messaging services.
- While the effectiveness of mobile telephony is influenced by the speed of movement, among other factors, vehicles in Drive Tests move in variable traffic streams. It perhaps would not be practical therefore to note the speed of vehicles when calls are being made in the Drive Tests.
- Given the nature of mobile telephony, it is more practical to measure signal strength as one moves through an area rather than at a particular spot within an area. As it may not be statistically useful to measure signal strength on a national basis, the OUR will measure this parameter in specific geographic areas based on complaints received or on its own initiative. Where signal strength is determined to be below international standards, then the Licensee will be requested to take remedial action.

- Upon further review the OUR recognised that the proposed "voice quality" measurement was too subjective and therefore this has been removed from the proposed rules.
- The "call set up" parameter has also been revised as set out in Annex A.

5.5 Service Speed for Internet Access

5.5.1 OUR's Consultation Proposals

- The OUR proposed to recommend that Internet access providers themselves, along with the OUR, encourage the use of an application (such as Isposure or AT-Tester), that executes automatically and maintains records of results in ways that are independent of the ISP servers and the browsers. The application can be used to:
  - Report the average speed of web downloads from various international servers, to provide an indication of the speed of web browsing.
  - Report the average time taken by "ping" echoes from various international servers, to provide an indication of the potential for game playing (and of conversational voice quality for voice over the Internet).
  - Report the average time taken by IP address look-ups at the servers used by the ISP, to provide an indication of the performance of this component of almost every interaction using the Internet.
- The OUR proposed to recommend that internet access providers also use such an application and report the results to the OUR.

5.5.2 Responses by Consumer Groups

The Drive Tests should be extended to internet access.

5.5.3 OUR's Comments

- Drive Tests could be readily extended to measurements of internet access parameters. The OUR may conduct such Drive Tests from time to time as it may deem fit.
- Based on developments in the sector, such as the increased usage of internet services, the OUR now proposes to require Licensees to measure and report on several internet related parameters as described in Chapter 7.

5.6 Complaint Handling

5.6.1 OUR's Consultation Proposals

The OUR proposed to require that Licensees:

- Publish details of their complaint handling processes, which should include the information needed, the expected duration of the process and the possibility of independent dispute resolution through the OUR and the Consumer Affairs Commission ("CAC").
- Assist customers in lodging complaints if they so request.
- Acknowledge written complaints within three (3) working days after receipt.
- Give customers regular progress reports if complaints are not resolved within one (1) month after they are received by the Licensee.
- Inform customers of the conclusion of the investigation relating to their complaint and the findings, within three (3) working days after the conclusions are reached.
- Inform customers who are dissatisfied with the Licensee's conclusions that they may refer their complaints to the OUR and/or the CAC.
- Record complaints even if they are resolved to the full satisfaction of the customers by the first point of contact.
- Keep complaint records for at least six (6) months after the complaints are resolved.
- Shall not ask customers to pay sums to which the complaints relate while the complaints are being handled by the Licensee, the OUR or the CAC.

5.6.2 Responses by Licensees

- The period of six (6) months during which records of complaints are to be stored should be reduced to no more than one (1) month to cut storage costs.
- The OUR should have further analysis of, and justification for, the complaint handling measures, which ought to be incorporated into an agreed policy framework.
- There might be no need to require Licensees to tell consumers that they could refer complaints to the OUR or the CAC, because consumers already had this right.

5.6.3 Responses by Consumer Groups

- The term “regular progress reports” to be delivered during investigations of complaints by Licensees should be defined more tightly.
- After exhausting the complaints process with a Licensee, a dissatisfied customer should take the case to the CAC. If the case remains unresolved the OUR should be the final arbiter.

5.6.4 OUR’s Comments

- Given developments in storage technology, the OUR’s own experience of storing records and the Licensees’ own admission that they receive very few consumer complaints, the costs for storing records for six (6) months will not be exorbitant.
- The OUR is of the view that these consumer complaints handling requirements represent good practices that are followed widely in many utility sectors throughout the world and would encourage Licensees to adopt them.
- While it is acknowledged that consumers have a statutory right to refer their concerns to the OUR and CAC, there may be many members of the public who are unaware of this right. It is therefore important that Licensees inform consumers that they may refer their matters to the OUR, where they are dissatisfied with the final decision of or general handling of the complaint by the Licensee.
- Upon further review, the OUR agrees that the reference to “regular progress reports” is too vague and therefore has now proposed that Licensees shall submit progress reports to customers every fifteen (15) working days until the investigations into the complaints are concluded.
- The complaints handling procedures reflect the roles and functions of the OUR in relation to customer complaints handling, as prescribed by law. The OUR cannot therefore stipulate the order in which customers may lodge their complaints with either the OUR or the CAC.

5.7 Additional Comments

5.7.1 Connected Customers

- The parameters that originally required measurements per “connected customers” have been changed to reflect a measurement per “active subscribers” defined as follows:

  An active subscriber is one who:

  - Has subscribed for a service from a Licensee; and

- has engaged in at least one or more of the following revenue generating actions in the last ninety (90) days since registration or since the last credit top-up/bill payment:
    - Sending/Receiving Voice/Video Calls;
    - Sending Short Messaging Service (SMS) or Multimedia Messaging Service (MMS);
    - Utilizing a Premium rate service;
    - Data transfer, including Internet access.

- Use of this standardised term will facilitate comparison of these measurement parameters across Licensees.

Chapter 6: Consumer Protection Principles

6.1 Introduction

The OUR made various consumer protection recommendations in the 2010 Consultation for which a few responses were received from Licensees and consumer groups. The OUR's comments on these responses are set out below.

The OUR's revised recommendations for consumer protection principles are detailed in the Code attached in Annex C.

6.2 Accounts/Billing[2]

6.2.1 Responses by Consumer Groups

With regard to billing, consumer groups commented that greater scrutiny should be given to the timely delivery of bills, which should allow for a reasonable period before the payment due date. At least two utilities already use private courier services to deliver bills, thereby indicating that new methods could be used to try to eliminate service breaches.

6.2.2 OUR's Comments

- Currently some Licensees have introduced alternative modes of delivering bills including using electronic communication (e.g. text and IVR recordings). We note however the concerns of the consumer groups. If it is felt that these alternative modes of delivery do not adequately address the concern of delayed receipt of billing information, then the further diversification of bill delivery methods may be discussed with all stakeholders in future consultations.

6.3 Disconnections

6.3.1 Responses by Licensees

Licensees commented that determining what constitutes sufficient use to avoid disconnection should be a commercial matter.

[2] Information regarding this matter appeared under the heading "Accounts" in the Consultation Document.

6.3.2 Responses by Consumer Groups

Consumer Groups commented that a customer should never be disconnected if the account is fully paid up, irrespective of whether the customer used the service.

6.3.3 OUR's Comments

- One of the justifications submitted by Licensees for terminating a customer's account due to inactivity is the wish to conserve numbers by reclaiming numbers to be put back into use. The OUR acknowledges that there is a need for Licensees to be able to reclaim numbers from inactive accounts to ensure that the numbers available are not exhausted. This is in keeping with the OUR's statutory mandate as numbering administrator to promote the efficient use of numbering resources and to ensure that sufficient numbers are available for current and reasonably anticipated future needs of Licensees[3].
- It is however imperative that customers be made aware of a Licensee's subscriber life cycle and the conditions that would render a customer liable for disconnection or termination of service.

6.4 Advertisements

6.4.1 Responses by Licensees

In response to the proposals that Licensees issue detailed explanations of how prices are calculated, Licensees commented that disclosing how prices are determined is likely to compromise their competitive strategies. A recommendation to do this has not been seen elsewhere.

6.4.2 OUR's Comments

The intention behind having an explanation of how prices are calculated is to indicate what the prices cover, such as, how those prices depend on taxes and the extent of service usage. In the case of bundled services, the individual services covered in the package price should be outlined in the advertisement. This information should not compromise any competitive strategy. The OUR has now worded the recommendation in Annex C to reflect this intention.

[3] See section 8 of the Telecommunications Act

6.5 Internet Access

6.5.1 Responses by Licensees

With respect to the OUR proposal, that Licensees should provide advice on the risks associated with internet use, especially for financial transactions, Licensees commented that the OUR had strayed outside the scope of its authority. Providing such advice is outside the core competence of companies.

6.5.2 Responses by Consumer Groups

The OUR should include explicit guidelines for mobile phone internet access which deal with the pricing of the services, information about fluctuations in download and transfer speed and size, and clarifications on the limitations of the services often misunderstood by consumers.

6.5.3 OUR's Comments

- The OUR recognises that the ISP has no direct responsibility for the security of financial transactions conducted via the internet nor for proffering advice on virus checkers, spam filters, spyware removers and firewalls. The OUR however considers that it would be useful for good customer relations if ISPs share whatever knowledge they may possess regarding ways to mitigate risks associated with Internet use. Internet service providers can only benefit by helping consumers to become justifiably confident about Internet use.
- The OUR believes that every Internet service provider that implemented the recommendations about pricing, advertisements and Internet access in Annex C would address the points raised by consumer groups. For instance, the OUR's recommendations in relation to statements on Internet speeds and factors that affect Internet speeds may address some of the consumer groups' concerns. Additionally a new parameter has been proposed which prescribes a minimum standard for data transmission speeds.

Chapter 7: Additional Quality of Service Parameters

7.1 Introduction

The OUR has included several new quality of service parameters in this round of consultation. This is due to complaints received from subscribers around the country regarding call quality, the inability to make inter-network calls and poor network reception, etc. The new parameters will give the OUR some insight into how well a particular network is doing in the provision of high quality telephony service to consumers. The parameters chosen are of direct relevance as they relate to the subscribers' experience. The OUR believes that the monitoring of these parameters can result in the optimization of networks to the benefit of subscribers.

The maturity level of cellular technology and advances in technology have enabled Licensees to address the quality of service issues related to these proposed parameters. As such, Licensees should be able to keep these parameters under control through proper maintenance and periodic optimization of their network. The measurements for the parameters can be made via network counters that register the real traffic of the network or by using test calls.

7.2 Voice Quality of Service Parameters

7.2.1 Dropped Call Rate

The Dropped Call Rate is defined by ETSI EG 202 057-3 v1.1.1 (2005-04) as *"The proportion of incoming and outgoing calls which, once they have been correctly established and therefore have an assigned traffic channel, are dropped or interrupted prior to their normal completion by the user, the cause of the early termination being within the operator's network*"[4]. It indicates the ability of a service provider to maintain a call once it has been successfully set up. The objective for the inclusion of this parameter is to give the consumer an expectation of the likelihood that a mobile network will be able to retain the call signal throughout the entirety of a call. The dropped call rate directly impacts the user's experience.

The OUR is aware that it is possible that a Licensee may meet the benchmark for this network parameter for the island as a whole, when averaged over a quarter, even though its customers are experiencing degraded service quality in certain areas of the island. The OUR

[4] ETSI (2005) ETSI EG 202 057-3 v1.1.1 (2005-04) - Speech Processing, Transmission and Quality Aspects (STQ); User related QoS parameter definitions and measurements; Part 3: QoS parameters specific to Public Land Mobile Networks (PLMN)

is therefore interested in knowing the worst affected cells in a Licensee's network. To capture this, the OUR is proposing that Licensees measure and report on the percentage of "worst affected cells" and the location of these cells. A worst affected cell is one which has a Dropped Call Rate that is lower than the target rate prescribed by the OUR.

The OUR is proposing a Dropped Call Rate target of two percent (2%) of intra network calls. In the case of percentage of worst affected cells, the proposed target shall be three percent (3%).

7.2.2 Point of Interconnection Congestion

The OUR has decided to introduce a parameter on Point of Interconnection (PoI) congestion because of complaints received from consumers regarding their experience when making off-net calls. The point of interconnection is the location in which a network operator sets up the interface equipment enabling interconnection with other network operators. PoI congestion is due to inadequate interconnection capacity commensurate with the outgoing traffic at the PoI between two telecom networks.

The PoI congestion parameter indicates the ease with which a subscriber of one network is able to communicate with a subscriber of another network. It also demonstrates the effectiveness of interconnection between the two networks. The OUR will be monitoring this parameter in order to ensure that there is "effective interconnection" between carriers. Effective interconnection means that there is sufficient interconnection capacity available to avoid congestion, and to ensure the timely provisioning of interconnection services and facilities. It shall be the responsibility of each interconnecting partner to ensure that its side of the interconnection point is operated in such a way that this minimum stipulated quality of service is maintained.

This parameter is applicable for both Fixed and Mobile telephony service.

The OUR is proposing a PoI congestion target rate of ≤ 0.5% for outgoing traffic on individual PoIs.

7.2.3 Traffic Channel Congestion Rate

Traffic Channels (TCHs) are used to transfer voice, data, and control information within the mobile network. If there are no vacant TCH resources to serve a call attempt, calls cannot be established on the GSM network. The TCH congestion rate indicates the existence of congestion in the network that could result in the non-establishment of calls. Congestion refers to the fact that all resources within the cell are fully utilised and hence any further assignment of TCH resources for the establishment of any new calls is impossible. The value of TCH parameters therefore has a direct impact on a user's experience, which makes it a very important network related parameter for the consumers.

The proposed target for the TCH Congestion rate is ≤ 2%.

7.2.4 Stand Alone Dedicated Control Channel and Paging Channel Congestion Rate

The Stand Alone Dedicated Control Channel (SDCCH) is used for call setup, system signalling, transmission of SMS messages in idle mode, and the assignment of traffic channels (TCH) within mobile networks. The SDCCH Congestion rate measures the ability of the network to successfully assign SDCCH resources for each call attempt, and consequently will have a direct bearing on the user's experience when attempting to initiate calls. The rate is defined as the probability of accessing a SDCCH resource during call setup and is calculated by taking the ratio of failed SDCCH seizures to the total requests for SDCCH.

The OUR is proposing a target for the SDCCH Congestion rate of ≤ 1%.

Where the underlying network is a CDMA network, operators shall substitute the SDCCH congestion rate with the paging channel (PCH) congestion rate.. PCH congestion occurs when there is no free PCH to use in alerting the mobile station of an incoming message.

The target for the paging channel congestion rate shall be the same as that of the SDCCH congestion rate.

7.2.5 Handover Success Rate

Mobility is the most important feature of a mobile telecommunications network. The ability of a mobile subscriber to enjoy continuous service is due to the handover (handoff) characteristic of mobile networks. Handover is generally initiated either when the quality of the signal in the current cell channel deteriorates or when a subscriber crosses the boundary of a cell. It is the process of changing the channel (frequency, time slot, spreading code, or combination of them) associated with the current connection while a call is in progress. It allows for a cellular phone to be handed from one cell to the next while maintaining a radio connection with the network thus allowing subscribers to enjoy continuous communication when they move out of range of a particular cell. If a network's handover performance is poor, subscribers will perceive the network as being one of a poor quality.

Handover Success Rate is the ratio of the number of successfully completed handovers to the total number of initiated handovers. This ratio can be expressed as a percentage. A degradation of the Handover Success Rate will result in an increase in the number of dropped calls.

The OUR is proposing a Handover Success Rate of ≥ 98%.

7.2.6 Mobile Network Availability

Mobile Network Availability is defined as the fraction of time that a network is able to provide communication services and is one of the most important performance indicators for networks. The mobile network availability parameter indicates the percentage of time that communication between two points in a mobile network should be possible, i.e. the time that the network resources (including base stations, switching centres etc.) are available to the consumer. The mobile network availability parameter does not give an indication whether the quality of that communication is satisfactory for a particular service, or whether it has been affected by factors such as delay or loss. However, without network access, the parameters that measure the quality of service being provided become irrelevant. If a network cannot be accessed, consumers will be unable to utilize the services provided by that network.

The parameter will be negatively impacted by network faults which cause call quality to deteriorate to a level at which the service is no longer possible, despite the fact that the two points are still connected. Based on the type of network failure that occurs, consumers may experience the lack of network access as no coverage on their handsets, or as an inability to access a particular service.

Mobile Network Availability will be measured by three separate parameters: the "base transceiver stations (BTSs) or Node Bs accumulated downtime" (including transmission links and circuits) over a quarter; the "mobile switching centres (MSCs) accumulated downtime" over a quarter; and the "accumulated sector downtime" over a quarter. This downtime excludes all planned service downtime for any maintenance or software upgrades for which advance notice has been received by consumers and the OUR. The notice to the OUR should detail the nature of the maintenance or upgrading of the network and the projected downtime in hours. The OUR should be notified, where the projected downtime has been exceeded.

The proposed benchmarks for the Mobile Network Availability parameter over a quarter are:

- **"BTSs/Node Bs accumulated downtime" shall be ≤ .01%;**
- **"MSCs accumulated downtime" shall be ≤ .01%; and**
- **"Accumulated Sector downtime" shall be ≤ .01%.**

7.2.7 SMS/MMS Completion Rate

The short messaging service/multimedia messaging service (SMS/MMS) completion rate is a measure of the SMSs/MMSs received by the intended recipients against the total SMSs/MMSs sent by subscribers on a particular network. It is defined in ETSI EG 202 057-2 V1.3.2 (2011-04) *as "the ratio of correctly sent and received SMS between two terminal*

equipment."[5] The parameter gives an indication of how many of the sent messages are successfully delivered to the intended recipients who are valid subscribers on a given network. It is affected by faulty equipment such as BTS, Base Station Controller (BSC), MSC, SMS server etc. When calculating this parameter, Licensees shall deduct corrupted and duplicated messages from the total number of unsuccessful SMSs/MMSs.

The proposed target for the SMS/MMS completion rate is ≥ 99%. That is, at least 99% of all message-sending attempts for each particular message service should be successfully delivered for all enabled handsets within network coverage.

7.3 Broadband Quality of Service Parameters

In keeping with the technology neutrality principle, which underpins the ICT Policy and Telecommunications Act, Licensees can use different technologies in their broadband access network. However, irrespective of the medium used for the access network, the quality of service expected by the consumer or mandated by the regulator must be delivered. The OUR is proposing the following internet access parameters: availability of internet access, packet loss, latency (delay), delay variation (jitter) and data transmission speed. Their relevance to common Internet-related tasks is highlighted in the table below.

Service/Application	Data transmission speed		Delay	Delay variation	Packet loss	Packet error
	Downstream	Upstream				
Browse (text)	++	-	++	-	+++	+++
Browse (media)	+++	-	++	+	+++	+++
Download file	+++	-	+	-	+++	+++
Transactions	-	-	++	-	+++	+++
Streaming media	+++	-	+	-	+	+
VoIP	+	+	+++	+++	+	+
Gaming	+	+	+++	++	+++	+++

- not relevant + slightly relevant ++ relevant +++ strongly relevant

Source: Based on ETSI EG 202 057-4, ITU-T Rec. Y.1541 and ITU-T Rec. G.1010

[5] ETSI (2011) ETSI EG 202 057-2 V1.3.2 (2011-04)- Speech and multimedia Transmission Quality (STQ); User related QoS parameter definitions and measurements; Part 2: Voice telephony, Group 3 fax, modem data services and SMS

7.3.1 Availability of Internet Access

Broadband is referred to as an “always on” connection. However, in many cases although the service is connected the Internet is not available. Therefore the OUR has introduced the “availability of Internet access” parameter to measure the reliability of the broadband service provided by Licensees. This parameter measures the amount of time for which the internet service of a particular Licensee is available to the end user. ETSI ES 202 765-4 defines the availability of internet access parameter as “*the probability for a customer that Internet applications are attainable from his Internet access*”[6]. For reporting purposes, the “availability of Internet access” parameter is further defined as the “percentage of time during which the Access Network, the Core Network and the Local and International Connections are simultaneously available to the subscriber in a given period of time”.

In order to measure the total service downtime the ISP shall take into account:

a) Access Network Unavailability: The period(s) of time during which the Access Network is unable to receive connections from the Customer Premises Equipment (CPE).

b) Core Network Unavailability: The period(s) of time during which the Core Network is not available to route traffic from the Access Network and the International and/or the Local Connections.

c) Local and International Connections Unavailability: The period(s) of time during which the Local and International connections are unavailable and unable to carry traffic. A local connection is considered unavailable when the ISP cannot connect to at least one server that is connected to the Internet via a local ISP. An International connection is considered unavailable when the ISP cannot connect to another server located outside of Jamaica via its international connections.

This parameter can be measured from the user access point, by contacting different web sites (national and/or international) hosted on servers outside and within the ISP’s network. It will be necessary to test the accessibility of the Internet on several servers to avoid an inaccurate measurement due to a web server being unavailable.

The benchmark proposed for the availability of Internet access parameter is 99.95%

7.3.2 Packet Loss

Packet Loss refers to the failure of one or more transmitted packets of data to arrive at their destination. The packet loss experienced in a network could be due to a number of situations, which includes malfunctioning of network equipment, network congestion and how traffic is prioritized by the network operator. The packet loss parameter is important to user

[6] ETSI (2014) ES 202 765-4 V1.2.1 (2014-05) - Speech and multimedia Transmission Quality (STQ); QoS and network performance metrics and measurement methods; Part 4: Indicators for supervision of Multiplay services

experience as even though a connection may enjoy high throughput speeds, it may be rendered useless if the incidence of packet loss in the network is high. High packet loss negatively impacts all internet-based applications. In the case of applications that are not real-time, packet loss may result in slow service. In real time applications, such as video streaming, packet loss may result in the disruption of the application. Therefore, the lower the level of packet loss experienced, the better will be the broadband connection and service.

The packet loss parameter will be calculated by the ratio of the packets of data that did not arrive at their destination to the total number of packets transmitted over a specific time interval. It is also important to have standardized reference points for measurements. The OUR is proposing the following reference points: User reference point (configuration), ISP Node/POP and National IXP/International Gateway nodes. Packet loss shall be measured from user reference points at the ISP node/POP to International Gateway/National IXP and from the user reference points at the ISP node/POP to the nearest network access point abroad.

It is proposed that the packet loss for all types of networks shall not exceed 1% between the broadband user reference point at the ISP node/POP and the International Gateway/National IXP or between the user reference points at the ISP node/POP and the nearest network access point abroad.

7.3.3 Latency

Latency (i.e. the Ping Round Trip Time) refers to the time required for a packet of data to travel from a source (e.g. user's PC) to a destination (third-party server) and back again (see ETSI TS 102 250-2[7]). It is estimated as the time taken for an ICMP Echo request/reply pair between the subscriber's CPE and the ISP's core network. The latency experienced by traffic in a network could be in the local portion of the broadband network as well as in the international portion. Depending on the mobile application being used, latency has a very direct impact on user satisfaction. The quality of service experienced when accessing applications such as video-on-demand services, Voice over IP (VoIP), online gaming and similar applications that require a real time response, is highly dependent on this parameter. The lower the latency figure the better is the performance of these applications.

Latency shall be measured from user reference points at the ISP node/POP to International Gateway/National IXP and from the user reference points at the ISP node/POP to the nearest Network access point abroad.

The proposed targets for network latency from the broadband user reference points to the International Gateway/National IXP for the various technologies are as follows:

[7] ETSI (2011) ETSI TS 102 250-2 V2.2.1 (2011-04) - Speech and multimedia Transmission Quality (STQ); QoS aspects for popular services in mobile networks; Part 2: Definition of Quality of Service parameters and their computation

- **The latency for terrestrial networks shall be no more than 85 milliseconds 95% of the time**.
- **The latency for mobile networks (EDGE and later) shall be no more than 100 milliseconds, 95% of the time.**
- **The proposed network latency for the international segment i.e. from user reference points at the ISP node/POP to the nearest network access point abroad shall be no more than 300 milliseconds for optical fibre based connections**.

7.3.4 Packet Delay Variation (Jitter)

Packets transmitted from a particular source will reach their destination with different delays. A packet's delay varies with its position in the queues of the routers along the path between source and destination and this position can vary unpredictably. This variation in packet delay is commonly referred to as jitter. A network with constant latency has no variation and hence no jitter. Packet jitter is expressed as an average of the deviation from the network's mean latency. The jitter experienced by the packets is more relevant for real-time traffic as it can seriously affect the quality of streaming audio and/or video. Jitter is therefore an important quality of service parameter in the assessment of network performance.

The reference points for measurement are: User reference point (configuration), ISP Node/POP and National IXP/International Gateway nodes. Jitter shall be measured from user reference points at the ISP node/POP to International Gateway/National IXP and from the user reference points at the ISP node/POP to the nearest network access point abroad.

The benchmark proposed for packet delay variation (jitter) parameter is ≤ 50 milliseconds.

7.3.5 Data Transmission Speed

Data Transmission Speed is defined in ETSI (2008) ETSI EG 202 057-4 V1.2.1 (2008-07) as the "*data transmission rate that is achieved separately for downloading and uploading specified test files between a remote web site and a user's computer*"[8]. It is the time taken for a specified amount of data to be transferred successfully from Point A to Point B, both of which are connected to the Internet. This parameter seeks to give an indication of the connection speed achieved by users of data services.

Data download speed refers to the data transmission speed achieved by a broadband connection when data is flowing towards the subscriber's end of the connection (Point A) from a remote source (located at Point B) which is connected to the Internet and acting as a

[8] ETSI (2008) ETSI EG 202 057-4 V1.2.1 (2008-07) - Speech Processing, Transmission and Quality Aspects (STQ); User related QoS parameter definitions and measurements; Part 4: Internet access

data transmitter. The download speed parameter impacts the performance of many residential applications such as web-browsing, downloading content etc.

Data upload speed refers to the data transmission speed achieved by the broadband connection when data is flowing from a subscriber's end of the connection (Point A) in the direction of a remote source (located at point B) which is connected to the Internet and acting as a data receiver. The data upload speed significantly impacts the responsiveness of real time applications and is important to upload-centric businesses such as those involved in software/application development.

The data transmission speed can be measured by test file transmissions. Alternatively, the data transmission speed of a connection can be estimated by making use of network tools such as the polling of Simple Network Management Protocol (SNMP) counters that are normally maintained by routers from specific concentration points within the core network of the ISP. This is possible since concentration points normally have visibility of the packets originating from or terminating to all of the ISP's subscribers. The rate at which packets arrive at and leave from these concentration points, reflects the speed experienced by the end-user.

The OUR is aware that usually the normal broadband operations data rate is lower than the advertised plan data rate. However, the OUR is of the view that the typical data rate attained by subscribers ought to be very close to the advertised rate. **The OUR is therefore proposing that no less than 90% of the advertised speed of a broadband service plan, both download and upload, must be experienced by subscribers at least 95% of the time.**

7.4 Customer Service Parameters

7.4.1 Customer Service Call Answer Ratio

The OUR has considered the views of consumer groups with regard to the importance of accessibility of call centres as well as the time taken to be connected to the IVR or to speak to a customer service agent. Consumers have expressed concerns that at times they are unable to access the call centre, and when access is obtained, the customer is kept on hold for an extended period before being connected to a customer service agent. Additionally, there have been complaints that after being in the queue for long periods, the call is disconnected before the caller is routed to an agent.

In light of this concern, the parameter proposed in the 2010 Consultative Document has been modified to allow the OUR to monitor the Licensees' call centre performance.

The proposed targets for Customer Service Call Answer Ratio are as follows:

- **A minimum of ninety five percent (95%) of calls should be connected successfully and not more than five percent (5%) of calls shall encounter congestion or busy signal or no reply or any other failure.**

- **A minimum of ninety five percent (95%) of all calls reaching the call centre should be answered by either an IVR machine or a live agent within five (5) rings.**

- **Where the customer accesses the IVR and decides to speak to a live agent, a minimum of ninety five percent (95%) of these calls should be in the queue for no more than two (2) minutes.**

ANNEX A: Quality of Service and Consumer Protection Rules

1. Measurements and Reporting Requirements

1.1. These rules set out the required quality of service measurements to be done by Licensees and submitted to the OUR as part of information requirements issued pursuant to section 4(4) of the Telecommunications Act. As of six (6) months after the effective date of these rules, Licensees shall be required to comply with the measurement and reporting requirements set out herein.

1.2. Licensees shall be subject to the targets specified in the quality of service rules as of the effective date of those rules. The OUR may commence its own measurements and enforce compliance with the targets, at any time after the effective date of the rules.

2. Applicability of the Measurement Requirements and Targets

2.1. The quality of service requirements and recommendations in this Annex 1 shall be applicable to all Licensees. The OUR may however, in its discretion, not require compliance by some Licensees who are small carriers or service providers with any one or more of the quality of service measurement and reporting requirements where it determines, after consideration of submissions by such Licensees, that the costs of compliance could be disproportionate. Where a Licensee is not required to comply with any quality of service measurement and reporting requirements, the OUR reserves the right to conduct its own measurements and publish its findings.

2.2. The quality of service rules shall become applicable to Licensees who are new entrants nine (9) months after their entry into the Jamaican telecommunications sector.

3. Exceptions

3.1. The OUR may suspend the requirement to make or report measurements when, despite diligence by the Licensee, the ability to make or report measurements is impaired, or the measurements that could be made or reported would not represent the quality of service normally offered, because of:

(i) Natural disasters.

(ii) Civil unrest.

(iii) Vandalism or theft.

(iv) Industrial disturbances.

(v) Wars.

(vi) Arrest or restraint of the Government of Jamaica.

(vii) Economic embargoes against Jamaica.

(viii) Fires or explosions.

(ix) Breakdown of telecommunications outside Jamaica.

4. Measurement Times

4.1. Licensees shall be required to submit information on the dates and times of day on which the measurements are conducted.

5. Reporting Areas

5.1. Licensees shall make and report on a national basis the measurements required in this Annex A. However, the OUR may require a Licensee to make measurements in a specific geographic area.

6. Reporting Periods

6.1. Licensees shall be required to submit to the OUR the reports required in this Annex A every three (3) months.

7. Reporting Formats

7.1. Licensees are required to make and report to the OUR the measurements required by this Annex A one (1) month after the end of the relevant reporting period in an electronic format to be determined by the OUR from time to time.

8. Validation Techniques

8.1. Every Licensee shall appoint and identify to the OUR a senior manager in its company who shall have responsibility for the accuracy of the measurements and the reports required in this Annex A.

8.2. Where the OUR audits how the measurements of Licensees are designed, made, processed and reported, the Licensee must be prepared to demonstrate that:

(i) the measurements and reporting requirements have been complied with.

(ii) its staff who design, make, process and report the measurements understand the requirements.

(iii) its staff used clear procedures to make, process and report the measurements.

(iv) its staff used systematic procedures for auditing how they design, make, process and report the measurements.

(v) its support systems are involved in making, processing and reporting the measurements do so accurately.

(vi) the operations it performed in making, processing and reporting the measurements can be traced for individual measurements.

9. Publication Formats

9.1. Licensees shall not make publicly available any excerpt from information published by the OUR in connection with quality of service measurements and consumer protection recommendations unless before doing so the Licensee:

(i) provides the OUR with the context in which the excerpt is to be included;

(ii) accepts any revision that the OUR proposes.

10. Customer Service Call Answer Parameters

Measurement summary

10.1. The "customer service call answer" parameter comprises three different measurements:

- Customer Service Call Answer Rate #1 measures the proportion of calls that are connected successfully to the call centre (i.e. without encountering congestion, busy signal, no reply or any other failure);
- Customer Service Call Answer Rate #2 measures the proportion of calls reaching the call centre which are answered by either an IVR machine or a live customer service agent within five (5) rings;
- Customer Service Call Answer Rate #3 measures the proportion of calls where the customer, having accessed the IVR and deciding to speak to a live agent, is not in the queue for more than two (2) minutes.

10.2. This parameter is applicable to all Licensees who provide fixed telephony, mobile telephony and internet access services.

Measurement constituents

10.3. Customer Service Call Answer Rate #1 shall be calculated using the following formula:-

The number of customer service calls that are connected successfully to the call centre shall be divided by the total number of call attempts made to the call centre.

The result, which forms the Customer Service Call Answer Rate #1, shall be reported as a measurement in the form of a percentage rounded up or down to the nearest percentage point. The number of customer service calls that are set up successfully, shall also be provided.

10.4. Customer Service Call Answer Rate #2 shall be calculated by the following formula:

The total number of calls reaching the IVR or a live customer service agent within five (5) rings shall be divided by the total number of customer service calls that are connected successfully.

The result, which forms the Customer Service Call Answer Rate #2, shall be reported as a measurement in the form of a percentage rounded up or down to the nearest percentage point. The number of customer service calls that reach the IVR or live customer service agent within five (5) rings, and the number of customer service calls that are set up successfully, shall also be provided.

10.5. Customer Service Call Answer Rate #3 will be calculated by the following formula:

The number of calls reaching a live customer service agent within two (2) minutes of the caller selecting this option on the IVR, shall be divided by the total number of customer service calls in which the customer has selected to speak to an agent.

The result, which forms the Customer Service Call Answer Rate #3, shall be reported as a measurement in the form of a percentage rounded up or down to the nearest percentage point. The number of customer service calls that reach live customer service agent within two (2) minutes of the caller selecting this

option on the IVR and the total number of customer service calls in which the customer has selected to speak to an agent shall also be provided.

10.6. The time taken for connecting to a live customer service agent shall be calculated from the time the customer has keyed the relevant number in the IVR option menu, if provided, for speaking to the live customer service agent. Further, the option for speaking to the live customer service agent shall not be below the first sub-menu of the first layer, the first layer being the service menu.

Measurement agents

10.7. Licensees shall make and report to the OUR measurements of the Customer Service Call Answer Parameters. They shall make the measurements using techniques appropriate to their own call centres and provide documentation to the OUR which describes how the measurements are calculated from data collected from the call centres.

Measurement targets

10.8. A minimum of ninety five percent (95%) of calls should be connected successfully and not more than five percent (5%) of calls shall encounter congestion or busy signal or no reply or any other failure.

10.9. A minimum of ninety five percent (95%) of all calls reaching the call centre should be answered by either an IVR machine or a live customer service agent within five (5) rings.

10.10. Where the customer accesses the IVR and decides to speak to a live customer service agent, a minimum of ninety five percent (95%) of these calls should be in the queue for no more than two (2) minutes.

11. Customer Complaint Submission Rate

Measurement summary

11.1. “Customer complaint submission rate” refers to the proportion of customer complaints received during a reporting period for a particular telecommunications service to the number of active subscribers for that service at the end of the reporting period.

11.2. This parameter is applicable to all Licensees who provide fixed telephony, mobile telephony and internet access services

11.3. Licensees shall place customer complaints into the following categories:

A. For complaints related to accounts:

(i) Disputed charges or balances.

(ii) Failed attempts to pay charges, change credit balances or determine credit balances.

(iii) Bills received late or not at all.

B. For complaints related to disconnections:

(i) Blocked calls or messages to or from certain numbers.

(ii) Disconnections for incomplete payment or credit balance exhaustion.

(iii) Failed reactivations after complete payment or credit balance renewal

C. For complaints related to networks:

(i) Failed calls or messages

(ii) Low internet access speeds

D. For other complaints:

(i) Faulty handsets

(ii) Missing or late attendance at appointments

(iii) Inadequate or delayed resolution of complaints

(iv) Inadequate or delayed supply of services

(v) Inadequate or delayed repair of faults

(vi) Other complaint subject areas not covered by the categories already mentioned

Measurement constituents

The number of customer complaints received during the reporting period shall be divided by the number of active subscribers for the particular telecommunication service at the end of the reporting period. The result, which forms the customer

complaint submission rate, shall be reported as a measurement in the form of a percentage rounded up or down to the nearest percentage point. The number of active subscribers for the service shall also be provided.

11.4. The measurements shall include all customer complaints received during the reporting period, for the reporting area, regardless of the validity, extent of repetition, and subject of the complaint.

11.5. There shall be separate measurements for each separately identified telecommunications service, for prepaid and post-paid plans, and for each category of customer complaint set out above.

Measurement agents

11.6. Licensees shall make and report to the OUR the measurements of the customer complaint submission rate.

Measurement targets

11.7. There should be at most five (5) customer complaints in total per one hundred (100) active subscribers for the service in a reporting period of three (3) months.

11.8. There should be at most one (1) customer complaint about accounts per one hundred (100) active subscribers for the service in a reporting period of three (3) months.

11.9. There should be at most one (1) customer complaint about disconnections per one hundred (100) active subscribers for the service in a reporting period of three (3) months.

12. Customer Complaint Resolution Rate

Measurement summary

12.1. “Customer complaint resolution rate” refers to the proportions of customer complaints that are resolved in given times.

12.2. The time taken to resolve a customer complaint is the time beginning when a customer complaint is received by a Licensee and ending when the Licensee issues its final decision on the matter.

12.3. This parameter is applicable to all Licensees who provide fixed telephony, mobile telephony and internet access services

Measurement constituents

12.4. The numbers of customer complaints that are resolved during the reporting period in given times of fifteen (15) working days and thirty (30) working days shall be divided by the sum of the number of customer complaints outstanding at the beginning of the reporting period and the number of customer complaints received during the reporting period.

12.5. The results, which form the customer complaint resolution rate, shall be provided as measurements in the form of percentages rounded up or down to the nearest percentage point. The number of customer complaints outstanding at the beginning of the reporting period and received during the reporting period shall also be provided.

12.6. The measurements shall include all customer complaints resolved during the reporting period for the reporting area, regardless of the validity, extent of repetition, and subject of the customer complaint.

12.7. There shall be separate measurements for each separately identified telecommunications service, for prepaid and post-paid plans, and for each class of customer complaint set out in 11.2 above.

Measurement agents

12.8. Licensees shall make and report to the OUR the measurements of the customer complaint resolution rate.

Measurement targets

12.9. At least eighty percent (80%) and ninety-five percent (95%) of the number of customer complaints in total should be resolved in fifteen (15) working days and thirty (30) working days (respectively).

13. Fixed Telephony Service Supply Rate

Measurement summary

13.1. "Fixed Telephony Service supply rate" refers to the proportions of fixed telephony service orders that lead to services in working order within given service supply times, in locations where the services are offered.

13.2. The "service supply time" is the time beginning when a service order is accepted by a Licensee and ending when the service has been supplied in working order.

13.3. This parameter is applicable to all Licensees who provide fixed telephony services

Measurement constituents

13.4. The number of service orders that lead to services in working order during the reporting period in given times of five (5) working days and ten (10) working days shall be divided by the sum of the number of service orders outstanding at the beginning of the reporting period and the number of service orders received during the reporting period. The results, which form the service supply rates, shall be reported as measurements in the form of percentages rounded up or down to the nearest percentage point. The numbers of service orders outstanding at the beginning of the reporting period and received during the reporting period shall also be provided.

13.5. Service orders about the same service and about the same physical network access point shall be counted as the same, regardless of the number of channels or lines affected. In other cases, service orders shall be counted as different from each other.

13.6. There shall be separate measurements for each separately identified fixed telephony service (e.g. voice telephony, ADSL, dial-up or fixed wireless internet, etc.).

Measurement agents

13.7. Licensees of fixed telephony shall make and report to the OUR the measurements of the fixed telephony service supply rate.

Measurement targets

13.8. Licensees of fixed telephony should ensure that at least eighty percent (80%) and ninety-five (95%) of the number of service orders lead to services in working order in five (5) working days and ten (10) working days respectively.

14. Fault Report Submission Rate

Measurement summary

14.1. "Fault report submission rate" refers to the number of fault reports received per one hundred (100) active subscribers for the service per reporting period.

14.2. This parameter is applicable to all Licensees who provide fixed telephony services

Measurement constituents

14.3. The number of fault reports received during the reporting period shall be divided by the number of active subscribers for the service at the end of the reporting period. The result, which forms the fault report submission rate, shall be reported as a measurement in the form of a percentage rounded up or down to the nearest percentage point. The number of active subscribers for the service shall also be provided.

14.4. Fault reports about the same fault and about the same physical network access point shall be counted as the same, regardless of the number of channels or lines affected. In other cases fault reports shall be counted as different from each other.

14.5. There shall be separate measurements for each separately identified fixed telephony service.

Measurement agents

14.6. Licensees of fixed telephony services shall make and report to the OUR the measurements of the fault report submission rate.

Measurement targets

14.7. There should be at most five (5) fault reports per one hundred (100) active subscribers for the service in a reporting period of three (3) months.

15. Fault Repair Rate

Measurement summary

15.1. "Fault repair rate" refers to the proportion of faults that are repaired in the given fault repair time, after receiving fault reports.

15.2. The "fault repair time" is the time beginning when a fault report is received by a Licensee and ending when the service has been restored to working order.

15.3. This parameter is applicable to all Licensees who provide fixed telephony services

Measurement constituents

15.4. The number of fault reports that are cleared during the reporting period in given times of twenty-four (24) hours and forty-eight (48) hours shall be divided by the sum of the number of fault reports outstanding at the beginning of the reporting period and the number of fault reports received during the reporting period. The results, which form the fault repair ratio, shall be provided as measurements in the form of percentages rounded up or down to the nearest percentage point. The numbers of fault reports outstanding at the beginning of the reporting period and received during the reporting period shall also be provided.

15.5. Fault reports shall be taken to be cleared only if the services concerned have been restored to working order or if the fault is proven to be caused by a third party.

15.6. There shall be separate measurements for each separately identified fixed telephony service.

Measurement agents

15.7. Licensees who provide fixed telephony services shall make and report to the OUR the measurements of the fault repair rate.

Measurement targets

15.8. Licensees who provide fixed telephony services should ensure that at least 80% and 95% of the number of faults are repaired in twenty-four (24) hours and forty-eight (48) hours respectively.

16. Call Set-up Success Rate

Measurement summary

16.1. "Call set up success rate" for mobile telephony refers to the proportion of established calls to call attempts i.e. the proportion of call attempts that result in a connection to the dialled number. This parameter shall be measured during the BBH.

16.2. Separate measurements shall be made for on-net and off-net national calls.

16.3. This parameter is applicable to all Licensees who provide fixed telephony and mobile telephony services.

Measurement constituents

16.4. The Call Set-up Success Rate shall be calculated using the following formula:

$$\frac{The\ \#\ of\ successful\ call\ establishments}{The\ \#\ of\ call\ attempts}$$

The result, which forms the call set up success rate, shall be reported as a measurement in the form of a percentage rounded up or down to the nearest percentage point. The number of on-net successful call establishments, and the number of on-net call attempts shall be provided. The number of off-net successful call establishments, and the number of off-net call attempts shall also be provided.

Measurement agents

16.5. Licensees who provide fixed and mobile telephony services shall make and report to the OUR measurements of the on-net and off-net call set up success rates. It shall make the measurements using techniques appropriate to their own network elements and provide documentation to the OUR which describes how the measurements are calculated from data collected from the network elements, clearly stating any counters applicable to the calculation of the metric.

Measurement targets

16.6. Licensees who provide fixed or mobile telephony service shall ensure that at least ninety-eight percent (98%) of the number of on-net national calls and ninety-five percent (95%) of off-net national calls that are attempted are set up successfully.

17. Call Set-up Time Parameter

Measurement summary

17.1. The Call Set-up Time parameter evaluates service availability to set up calls in an acceptable time. It measures the proportion of call set-ups that are set up within the acceptable time. The "call set-up time"[9] refers to the period starting when the address information required for setting up a call is received by the originating network and ending when a connection is established with the destination network (i.e. a busy tone, ringing tone or recorded announcement is received from the called party's network by the calling party. The acceptable delay is five (5) seconds for on-net and ten (10) seconds for off-net calls.

17.2. All on-net and off-net national calls, as the case may be, shall be included in the measurement of this parameter. Additionally, unsuccessful call set-ups are excluded from the measurement of this parameter.

17.3. This parameter is applicable to all Licensees who provide fixed telephony and mobile telephony services.

Measurement constituents

17.4. The Call Set-up Time Parameter shall be calculated using the following formula:

$$\frac{The\ \#\ of\ successful\ call\ establishments\ which\ occur\ within\ the\ acceptable\ delay}{The\ \#\ of\ successful\ call\ set\ ups}$$

17.5. The Call Set-up Time shall be calculated using the following formula:

$$S_t = (t_2 - t_1)$$

t_2 = point of time when a connection is established with the destination network

t_1 = the point of time after the last digit of the address information has been sent by the mobile equipment

[9] ETSI TS 102 250-1 V2.2.1 (2011-04)

The result, which forms the Call Set-Up Time Parameter for on-net and off-net calls respectively, shall be reported as a measurement in the form of a percentage rounded up or down to the nearest percentage point. The number of on-net calls set up within five (5) seconds and the number of on-net calls that are set up successfully shall be provided. The number of off-net calls set up within ten (10) seconds and the number of off-net calls that are set up successfully shall also be provided.

Measurement agents

17.6. Licensees who provide mobile or fixed telephony services shall make and report to the OUR measurements of the on-net and off-net call set up times. It shall make the measurements using techniques appropriate to its own network elements and provide documentation to the OUR which describes how the measurements are calculated from data collected from the network elements, clearly stating any counters applicable to the calculation of the metric.

Measurement targets

17.7. In the case of on-net calls, ninety-eight percent (98%) of the number of national on-net calls shall be set up within five (5) seconds.

17.8. In the case of off-net calls, at least ninety-five percent (95%) of the number of off-net national calls shall be set up within ten (10) seconds.

18. Dropped Call Rate

Measurement summary

18.1. The Dropped Call Rate refers to the proportion of calls that, 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. That is, the proportion of calls that are unintentionally disconnected in the conversation without the user's intervention. This includes calls dropped due to failure of handover, radio loss and network congestion. This parameter shall be measured during the BBH.

18.2. This parameter is applicable to all Licensees who provide mobile telephony services.

Measurements constituents

18.3. The Dropped Call Rate shall be calculated using the following formula:

$$\frac{(\#\ of\ dropped\ calls)}{(the\ total\ \#\ of\ established\ calls\ on\ the\ TCH)}$$

The result, which forms the Dropped Call Rate, shall be reported as a measurement in the form of a percentage rounded up or down to the nearest percentage point. The number of dropped calls and the total number of established calls shall also be provided.

18.4. The percentage of worst affected cells parameter shall be calculated by:

$$\frac{(\#\ of\ worst\ affected\ cells\ having\ drop\ rate\ >\ 2\%\ in\ a\ quarter)}{(Total\ \#\ of\ cells\ in\ the\ reporting\ area)}$$

The number of worst affected cells and their location should also be provided.

Measurement agents

18.5. Licensees which provide mobile telephony shall make and report to the OUR measurements of the dropped call rate and the percentage of worst affected cells parameter. They shall make the measurements using techniques appropriate to their own network elements and provide documentation to the OUR which describes how the measurements are calculated from data collected from the network elements, clearly stating any counters applicable to the calculation of the metric.

Measurement targets

18.6. No more than 2% of intra network calls shall result in dropped calls. In the case of percentage of worst affected cells, the target shall be no more than 3%.

19. Point of Interconnection (PoI) Congestion Rate

Measurement summary

19.1. The Point of Interconnection (PoI) Congestion parameter refers to the percentage congestion of the Interconnect Circuits. PoI congestion is defined as “the ratio of calls failed over the PoI (between two operators/licensees) due to unavailability of free circuits to the total call requests for seizure of PoI circuit”. This parameter denotes congestion at the outgoing traffic between two networks and is

applicable to both Fixed and Mobile networks. This parameter shall be measured during the BBH.

19.2. This parameter is applicable to all Licensees who provide fixed telephony and mobile telephony services.

Measurements constituents

19.3. The Point of Interconnection (PoI) congestion Rate shall be calculated using the following formula:

$$\frac{(total\ \#\ of\ calls\ failed\ due\ to\ unavailable\ PoI\ circuits)}{(total\ \#\ of\ call\ requests\ for\ seizure\ of\ PoI\ circuits)}$$

The result, which forms the PoI congestion Rate, shall be reported as a measurement in the form of a percentage rounded up or down to the nearest percentage point. The number of calls failed due to unavailable PoI circuits (unavailable PoI circuit requests) and the number of call requests for seizure of PoI circuits (available PoI circuits) shall also be provided.

Measurement agents

19.4. Licensees shall measure their outgoing traffic during the BBH to ensure that the PoI congestion is within the specified benchmark. They shall make the measurements using techniques appropriate to their own network elements and provide documentation to the OUR which describes how the measurements are calculated from data collected from the network elements, clearly stating any counters applicable to the calculation of the metric.

Measurement targets

19.5. The target for the parameter on PoI congestion is ≤0.5% for outgoing traffic on individual PoIs.

20. Traffic Channel (TCH) Congestion

Measurement summary

20.1. The Traffic Channel (TCH) Congestion parameter refers to the percentage congestion of traffic channels. This parameter shall be measured at the BBH.

20.2. This parameter is applicable to all Licensees who provide mobile telephony and services.

Measurements constituents

20.3. The TCH Congestion Rate shall be calculated using the following formula:

$$\frac{Total\ \#\ of\ blocked\ TCH\ requests}{Total\ \#\ of\ TCH\ requests}$$

The result, which forms the TCH Congestion Rate, shall be reported as a measurement in the form of a percentage rounded up or down to the nearest percentage point. The number of unavailable (blocked) TCH requests at all stages, and the total number of TCH Requests shall also be provided.

Measurement agents

20.4. Licensees who provide mobile telephony services shall measure their outgoing traffic during the BBH to ensure that the TCH Congestion is within the specified benchmark. The measurements should be taken at the BSC level. They shall make the measurements using techniques appropriate to their own network elements and provide the OUR with documentation which describes how the measurements are calculated from data collected from the network elements, clearly stating any counters applicable to the calculation of the metric.

Measurement targets

20.5. The target for the parameter on TCH Congestion is ≤ 2%.

21. Stand Alone Dedicated Control Channel (SDCCH) Congestion Rate

Measurement summary

21.1. The Stand Alone Dedicated Control Channel (SDCCH) Congestion parameter refers to the percentage congestion of SDCCH resources. This parameter shall be measured during the BBH.

21.2. This parameter is applicable to all Licensees who provide mobile telephony services.

Measurements constituents

21.3. The SDCCH Rate shall be calculated using the following formula:

$$\frac{Total\ \#\ of\ failed\ SDCCH\ requests}{Total\ \#\ of\ SDCCH\ requests}$$

The result, which forms the SDCCH Congestion Rate, shall be reported as a measurement in the form of a percentage rounded up or down to the nearest percentage point. The number of failed (blocked) SDCCH requests at all stages, and the total number of SDCCH Requests shall also be provided.

Measurement agents

21.4. Licensees who provide mobile telephony services shall measure their outgoing traffic at the bouncing BBH to ensure that the SDCCH Congestion is within the specified benchmark. The measurements should be taken at the BSC level. They shall make the measurements using techniques appropriate to their own network elements and provide the OUR with documentation which describes how the measurements are calculated from data collected from the network elements, clearly stating any counters applicable to the calculation of the metric.

Measurement targets

21.5. The target for the parameter on SDCCH Congestion is ≤ 1%.

22. Paging Channel Congestion (PCH) Rate

Measurement Summary

22.1. Where the underlying network is a CDMA network, operators shall report the paging channel (PCH) congestion rate in place of the SDCCH congestion rate. The PCH congestion rate measures the percentage congestion of paging channels.

22.2. This parameter is applicable to all Licensees who provide mobile telephony services.

Measurements constituents

22.3. The PCH Congestion Rate shall be calculated using the following formula:

$$\frac{(Total\ \#\ of\ failed\ PCH\ requests)}{(Total\ \#\ of\ PCH\ requests)}$$

The result, which forms the PCH Congestion Rate, shall be reported as a measurement in the form of a percentage rounded up or down to the nearest percentage point. The number of failed (blocked) PCH requests at all stages, and the total number of PCH requests shall also be provided.

Measurement agents

22.4. Licensees who provide mobile telephony services shall measure their outgoing traffic at the BBH to ensure that the PCH Congestion is within the specified benchmark. The measurements should be taken at the BSC level. They shall make the measurements using techniques appropriate to their own network elements and provide the OUR with documentation which describes how the measurements are calculated from data collected from the network elements, clearly stating any counters applicable to the calculation of the metric.

Measurement targets

22.5. The target for the parameter on PCH Congestion is ≤ 1%.

23. Handover Success Rate

Measurement summary

23.1. Handover Success Rate refers to the proportion of handovers that are successfully completed out of the total handover requests made. A successful handover occurs when a call is handed off from one cell to the next without end-user interruption. This parameter shall be measured during the BBH.

23.2. This parameter is applicable to all Licensees who provide mobile telephony services.

Measurements constituents

23.3. The Handover Success Rate shall be calculated using the following formula:

$$\frac{(The\ \#\ of\ successful\ internal\ and\ external\ outgoing\ handovers)}{(The\ total\ \#\ of\ internal\ and\ external\ outgoing\ handover\ attempts)}$$

The result, which forms the Handover Success Rate, shall be reported as a measurement in the form of a percentage rounded up or down to the nearest percentage point. The number of successful Handovers and the total number of

internal and external outgoing handover attempts at the BBH shall also be provided.

Measurement agents

23.4. Licensees who provide mobile telephony services shall make and report to the OUR measurements of the Handover Success Rate. They shall make the measurements during at the BBH using techniques appropriate to their own network elements and provide the OUR with documentation which describes how the measurements are calculated from data collected from the network elements, clearly stating any counters applicable to the calculation of the metric.

Measurement targets

23.5. The target for the Handover Success Rate parameter is ≥ 98%.

24. Mobile Network Availability

Measurement summary

24.1. The Mobile Network Availability parameter refers to a mobile network's ability to respond to requests made by those accessing the network. This parameter measures the amount of time the network is delivering services relative to the amount of time it is expected to deliver services. It measures the degree to which BTSs/Node Bs and MSCs are operative and not in a state of failure or outage at any given point of time.

24.2. This parameter is applicable to all Licensees who provide mobile telephony services.

Measurements constituents

24.3. Network Availability will be measured by three (3) parameters:

(i) BTSs or Node Bs accumulated downtime (including transmission links and circuits) the reporting period;
(ii) MSC accumulated downtime over the reporting period; and
(iii) accumulated downtime for a sector over the reporting period

24.4. BTSs accumulated downtime for the reporting period will be calculated by the following formula:

$$\frac{total\ BTS\ downtime\ in\ hours}{(total\ \#\ of\ BTS * \#\ of\ hours\ in\ a\ reporting\ period)}$$

24.5. Node Bs accumulated downtime for the reporting period will be calculated by the following formula:

$$\frac{total\ Node\ B\ downtime\ in\ hours}{(total\ \#\ of\ Node\ Bs * \#\ of\ hours\ in\ a\ reporting\ period)}$$

24.6. MSCs accumulated downtime for the reporting period will be calculated by the following formula:

$$\frac{total\ MSC\ downtime\ in\ hours}{(total\ \#\ of\ MSCs * \#\ of\ hours\ in\ a\ reporting\ period)}$$

24.7. For each type of type of network, Licensees shall also disclose the accumulated sector downtimes in hours:

$$\frac{total\ sector\ downtime\ in\ hours}{(total\ \#\ of\ sectors * \#\ of\ hours\ in\ a\ reporting\ period)}$$

The number of BTSs, Node Bs, sectors and MSCs, the total downtime in hours for each in a reporting period, the number of days with > 60 minutes downtime and the worst downtime over a twenty-four (24) hour period in a reporting period must also be reported.

24.8. Any downtime scheduled for routine maintenance or upgrading of the network shall be excluded from the "total downtime in hours" provided that both consumers and the OUR are given advance notice of such downtimes. The notice to the OUR should detail the nature of the maintenance or upgrading of the network and the projected downtime in hours. The OUR should be notified, where the projected downtime has been exceeded.

Measurement agents

24.9. Licensees who provide mobile telephony services shall make and report to the OUR measurements of the BTSs/Node Bs, MSCs and sectors accumulated downtime for a reporting period. They shall make the measurements using techniques appropriate to their own network elements and describe to the OUR how the measurements are calculated from data collected from the network elements, clearly stating any counters applicable to the calculation of the metric.

Measurement targets

24.10. The target for the parameters “BTSs/Node Bs accumulated downtime”,, “Sector accumulated downtime” and “MSCs accumulated downtime” is ≤ 1%.

25. SMS/MMS Completion Rate

Measurement summary

25.1. The SMS/MMS Completion Rate refers to the ratio of correctly sent and received SMS/MMS between two terminal equipment. It is the proportion of SMS/MMS generated between covered and active subscribers and delivered successfully from one party to the other, to the total number of sent SMSs/MMSs generated in the corresponding reporting period.

25.2. A successful SMS/MMS delivery is one in which the message is transmitted completely without errors between the Network Termination Points and within two (2) minutes after it is sent. In the calculation of this metric, corrupted and duplicate messages shall be deducted from the total number of unsuccessful SMS/MMSs. This parameter shall be measured during the BBH.

25.3. This parameter is applicable to all Licensees who provide mobile telephony services and should take into account national SMSs and MMSs sent by their respective active subscribers and terminating both on net and off net.

Measurements constituents

25.4. The SMS Completion Rate shall be calculated using the following formula:

$$\mathbf{1} - \left[\frac{(\boldsymbol{unsuccessful\ sms - duplicate\ sms - corrupted\ sms})}{(\boldsymbol{total\ sms\ sent})}\right]$$

25.5. The MMS Completion Rate shall be calculated using the following formula:

$$\mathbf{1} - \left[\frac{(\boldsymbol{unsuccessful\ mms - duplicate\ mms - corrupted\ mms})}{(\boldsymbol{total\ mms\ sent})}\right]$$

25.6. The results that form the SMS or MMS Completion Rates, shall be reported as a measurement in the form of a percentage rounded up or down to the nearest percentage point. The number of SMS/MMS successfully delivered and the total number of SMS/MMS attempted in the BBH shall also be provided.

Measurement agents

25.7. Licensees who provide mobile telephony services shall make and report to the OUR measurements of the SMS/MMS Completion Rate. They shall make the measurements during the BBH using techniques appropriate to their own network elements and provide the OUR with documentation which describes how the measurements are calculated from data collected from the network elements, clearly stating any counters applicable to the calculation of the metric.

Measurement targets

25.8. At least 99% of the number of SMS/MMS, of the Licensees, that are attempted between two terminal equipment that are active and within network coverage should be completed successfully.

26. Broadband (Internet) Availability Rate

Measurement summary

26.1. The Broadband (Internet) Availability parameter measures the reliability of a Licensee's broadband service, i.e. the probability that the end-user is able to access Broadband services of his provider. The Internet availability of access is a measure of the period during which the service is available during a reporting period.

26.2. This parameter is applicable to all Licensees who provide internet access services.

Measurements constituents

26.3. The Broadband (Internet) Availability parameter shall be calculated using the following formula:

$$\frac{(Total\ Operational\ hours\ -Total\ hours\ of\ service\ downtime)}{(Total\ Operational\ hours)}$$

To determine the metric, it is important to test the whole transmission chain, which allows access to Internet services outside of the ISP's network. The total

service downtime shall consist of the total duration when either or all of the following network elements are unavailable: the Access Network, the Core Network, and the Local and International Connections.

Operational hours = Number of days in the reporting period x 24 hours

Hours of service downtime = Cumulative duration of downtime per circuit in the reporting period

26.4. The result, which forms the Broadband (Internet) Availability Rate, shall be reported as a measurement in the form of a percentage rounded up or down to the nearest percentage point. The total hours of service downtime shall also be provided.

26.5. Any downtime scheduled for routine maintenance or upgrading of the network shall be excluded from the "total operational minutes" provided that both consumers and the OUR are given advance notice of such downtimes. The notice to the OUR should detail the nature of the maintenance or upgrading of the network and the projected downtime in hours. The OUR should be notified, where the projected downtime has been exceeded.

Measurement agents

26.6. Licensees shall make and report to the OUR measurements of the Broadband (Internet) Availability Rate. They shall make the measurements during the BBH using techniques appropriate to their own network elements and provide the OUR with documentation which describes how the measurements are calculated from data collected from the network elements, clearly stating any counters applicable to the calculation of the metric.

26.7. This parameter can be measured by checking the accessibility of different web services both within and outside an ISP's network. The mixture of the chosen web services should include services that are hosted both on local and internationally located servers. The number of web services checked should be such that it is ensured that a false negative is not generated due to a single server being inaccessible.

Measurement targets

26.8. The target for the Broadband (Internet) Availability Rate parameter is 99.95%. This target is applicable to both Circuit Switched and Packet Switched Data Networks.

27. Packet Loss

Measurement summary

27.1. The Packet Loss parameter refers to the percentage of packets lost during transmission over a network between the end user and the relevant international gateway. The probability of Packet Loss is a performance parameter that defines the percentage of the total packets submitted that may be discarded during transmission between two designated points.

27.2. This parameter is applicable to all Licensees who provide internet access services.

Measurements constituents

27.3. The Packet Loss parameter shall be calculated using the following formula:

$$\frac{(The\ total\ \#\ of\ packets\ lost)}{(the\ total\ \#\ of\ packets\ transmitted\ between\ two\ designated\ points\ )}$$

27.4. The result, which forms the packet loss rate, shall be reported as a measurement in the form of a percentage rounded up or down to the nearest percentage point. The number of packets lost and the total number of packets transmitted shall also be provided.

27.5. Packet Loss shall be measured from user reference points at the ISP node/POP to International Gateway/National IXP and from the user reference points at the ISP node/POP to the nearest network access point abroad. The measurements should be obtained from at least one hundred (100) test transmissions of ICMP Echo Request/Reply (Ping) messages or speech samples, separated from each other by at least sixty (60) seconds during the BBH for the Service. An ICMP ping request that does not generate a counter reply is deemed to be lost. The defined packet size for the Ping Test shall be of sixty-four (64) bytes. The results received from the tests shall be arranged in an ascending order and the 95th-percentile reading reported. The transmission locations used in the tests shall also be reported.

Measurement agents

27.6. Licensees shall make and report to the OUR measurements of the packet loss rate. They shall make the measurements during the BBH using techniques

appropriate to their own network elements and provide the OUR with documentation which describes how the measurements are calculated from data collected from the network elements, clearly stating any counters applicable to the calculation of the metric.

Measurement targets

27.7. The packet loss for all types of networks shall not exceed 1% between the broadband user reference point at the ISP node/POP and the International Gateway/national IXP or between the user reference points at the ISP node/POP and the nearest network access point abroad. This target is applicable to both Circuit Switched and Packet Switched Data Networks.

28. Packet Delay Variation (Jitter)

Measurement summary

28.1. The Packet Delay Variation (Jitter) parameter measures the variation in the delay of packet delivery. Jitter will be measured in milliseconds.

28.2. This parameter is applicable to all Licensees who provide internet access services.

Measurement constituents

28.3. The Packet Delay Variation parameter is determined in accordance with the following formula:

$$J = \sqrt{\frac{\sum_{i=1}^{n}\left(L_i - \overline{L}\right)^2}{n-1}}$$

Where:

J = packet delay variation in milliseconds;

$\overline{L}$= average delay in milliseconds at measurement time;

n = the total number of transmitted packets during the measurement time;

L_i = packet delay in milliseconds.

28.4. Jitter shall be measured from user reference points at the ISP node/POP to International Gateway/National IXP and from the user reference points at the ISP node/POP to the nearest network access point abroad.

28.5. The measurements should be obtained from at least 100 test transmissions of ICMP Echo Request/Reply (Ping) messages or speech samples, separated from each other by at least 60 seconds during the BBH for the service. An ICMP ping request that does not generate a counter reply is deemed to be lost. The defined packet size for the Ping Test shall be of 64 bytes. The results received from the tests shall be arranged in an ascending order and the 95th-percentile reading reported. The transmission locations used in the tests shall also be reported.

Measurements agents

28.6. Licensees shall make and report to the OUR measurements of the Packet Delay Variation parameter. They shall make the measurements during the BBH using techniques appropriate to their own network elements and provide the OUR with documentation which describes how the measurements are calculated from data collected from the network elements, clearly stating any counters applicable to the calculation of the metric.

Measurement targets

28.7. The target for the Packet Delay Variation (jitter) parameter is < 50 milliseconds. This target is applicable to both Circuit Switched and Packet Switched Data networks.

29. Latency

Measurement summary

29.1. The Latency parameter refers to the amount of time it takes to transmit data between the source and destination and receiving the expected response. It is estimated as the time taken for an ICMP Echo request/reply pair between the subscriber's customer premises equipment (CPE) and the ISP's core network. Latency shall therefore be measured as the *round-trip* delay.

29.2. This parameter is applicable to all Licensees who provide internet access services.

Measurements constituents

29.3. Latency shall be measured by taking the average time taken for consecutive ICMP Echo request/reply pairs between the user (configuration) reference point and the relevant reference point. The Measurements should be obtained from at least 100 test transmissions of ICMP Echo Request/Reply (Ping) messages or speech samples, separated from each other by at least 60 seconds during the BBH for the service. An ICMP ping request that does not generate a counter reply is deemed to be lost. The defined packet size for the Ping Test shall be of 64 bytes. The measurements shall be reported as times in milliseconds rounded to two numerically significant figures.

29.4. Latency shall be measured from user (configuration) reference points at the ISP node/POP to International Gateway/National IXP and from the user reference points at the ISP node/POP to the nearest network access point abroad. The results received from the tests shall be arranged in an ascending order and the 95th-percentile reading reported. The transmission locations used in the tests shall also be reported.

Measurement agents

29.5. Licensees shall make and report to the OUR measurements of the latency parameter. They shall make the measurements during the BBH using techniques appropriate to their own network elements and provide the OUR with documentation which describes how the measurements are calculated from data collected from the network elements, clearly stating any counters applicable to the calculation of the metric.

Measurement targets

29.6. The targets for network latency from the broadband user reference points to the International Gateway/National IXP for the various technologies during the BBH are as follows:

- The latency for terrestrial networks shall be no more than 85 millisecond 95% of the time.
- The latency for mobile networks (EDGE and later) shall be no more than 100 milliseconds, 95% of the time.
- The network latency for the International segment i.e. from user reference points at the ISP node/POP to the nearest Network access point port abroad shall be no more than 300 milliseconds for optical fibre based connections during the BBH.

30. Data Transmission Speed

Measurement summary

30.1. The Data Transmission Speed parameter is defined as the data transmission rate that is achieved separately for downloading and uploading specified test files between a remote website and a user's computer.

30.2. This parameter is applicable to all Licensees who provide internet access services.

Measurements constituents

30.3. The data download speed shall be calculated by using the following formula:

$$\frac{Size\ of\ the\ test\ file\ (data) in\ ISP\ Server}{Transmission\ time\ required\ for\ error\ free\ transfer\ of\ the\ entire\ data}$$

The data upload speed shall be calculated by using the following formula:

$$\frac{Size\ of\ the\ test\ file\ (data)\ in\ ISP\ Server}{Transmission\ time\ required\ for\ error\ free\ transfer\ of\ the\ entire\ data}$$

30.4. The transmission time is the time period starting when the access network has received the necessary information to start the transmission and ending when the last bit of the test file has been received.

30.5. Where test files are used, the measurements should be obtained from at least 100 test transmissions of incompressible data files, separated from each other by at least 60 seconds. The tests should be conducted within National and International domains (National – server is located in Jamaica; International - server is located at the first point of presence in the United States). For “National” tests, the transmissions should be from traffic-weighted locations to other traffic-weighted locations. For “International” tests the transmission should also be from traffic-weighted locations. In both cases, the tests should be carried out from at least five (5) different locations each of which should account for at least 5% of the traffic for the relevant service.

30.6. For broadband connections up to 10 Mbps the size of the test file shall be 10 MB and for broadband connections above 10 Mbps the size of the test file shall be 35 MB.

30.7. The results received from the tests shall be arranged in an ascending order and the 95th-percentile reading reported. The transmission locations used in the tests shall also be reported.

Measurement agents

30.8. Licensees shall make and report to the OUR measurements of the Data Transmission Speed parameter. They shall make the measurements during the BBH using techniques appropriate to their own network elements and provide the OUR with documentation which describes how the measurements are calculated from data collected from the network elements, clearly stating any counters applicable to the calculation of the metric.

Measurement targets

30.9. The Data Transmission Speed between the user and the nearest serving ISP node during download and upload at busy hour shall not be less than 95% of the subscribed level for 95% of the time.

30.10. This target is applicable to both Circuit Switched and Packet Switched Data Services.

31. Complaint Handling

31.1. Licensees' complaints handling procedures shall cover the following:

(i) A statement of the right of consumers to complain.

(ii) Contact details and opening hours for customer service relating to customer complaints, service orders, fault reports and service enquiries.

(iii) The types of supporting information needed when making complaints.

(iv) The expected duration of each step in the procedures.

(v) The escalation mechanisms, both within the Licensee and to the OUR.

(vi) Assistance to customers by the Licensee in lodging complaints if they so request.

(vii) Acknowledgment of written complaints within five (5) working days after they are received.

(viii) Delivery of progress reports to customers every fifteen (15) working days until the conclusions of their complaints are reached.

(ix) Advising customers of the conclusions of their complaints, and the results of any related investigations, within three (3) working days after the conclusions are reached.

(x) Advice to customers who are dissatisfied with the conclusions of their complaints that they may refer their complaints to the OUR.

(xi) An undertaking from the Licensees that customers will not be asked to pay sums to which the complaints relate while these complaints are being handled by the Licensee or the OUR.

(xii) Recording of complaints, even if they are resolved to the full satisfaction of the customers by the first points of contact. Each complaint record shall include:

1. The name and address of the customer.
2. Any case number.
3. The nature of the complaint.
4. The result of any investigation.
5. The conclusion about the complaint.
6. The date when the complaint was received.
7. The date when the conclusion of the complaint was communicated to the customer.

31.2. Complaint records shall be kept for at least six (6) months after the complaints are resolved.

31.3. Licensees shall publicize information regarding their procedures for handling complaints set out in 30.1(i) – (xi) above.

ANNEX B: Role of The Office Of Utilities Regulation

1. Measurement of Quality of Service Parameters

1.1 The OUR may make its own measurements of the various quality of service parameters required to be measured and reported on by Licensees using the same measurement constituents required of Licensees. The OUR may also do measurements of other quality of service parameters based on internationally recognised methodologies and standards.

2. Measurement Times

2.1. Quality of service measurements made by the OUR may be done at such times as it deems necessary.

3. Reporting Areas

3.1. Quality of service measurements made by the OUR may be made for the entire Island of Jamaica or such parts as the OUR deems appropriate.

4. Reporting Periods

4.1. Quality of service measurements may be made by the OUR at such frequency as the OUR deems appropriate.

5. Validation Techniques

5.1. The OUR may audit how the quality of service measurements are designed, made, processed and reported by Licensees. To do so the OUR may use techniques such as:

(a) Inspecting the equipment of the Licensees;
(b) Analysing information requested from the Licensees;
(c) Mystery shopping;
(d) Conducting or commissioning drive tests;
(e) Accompanying Licensees on their drive tests; and
(f) Commissioning audits of the Licensees' own testing procedures and reports.

6. Publication Formats

6.1. The OUR may publish information about the quality of service measurements that are reported by Licensees or made by or on behalf of the OUR at any time and in any manner that it deems helpful to consumers. In such information the OUR may:

(a) Mention discrepancies between the quality of service measurements, the related targets and other publicly available facts or claims.
(b) Where possible, indicate whether apparent differences between quality of service levels, as represented in the measurements, the targets and other publicly available facts or claims, are likely to be perceptible or imperceptible in the users' experience.
(c) Indicate whether different quality of service measurements relate to services intended for the same markets.
(d) Mention circumstances that the OUR deems to be relevant to the quality of service measurements for a service and outside the control of the Licensee.
(e) Name Licensees that are not complying with the quality of service and consumer protection requirements.
(f) Include comparative prices of calls, messages and data uploads and downloads derived from the pricing plans publicized by Licensees.

6.2. The OUR may publish this information only if before doing so it:

(a) Provides each Licensee with any portion of the information that names that Licensee.

(b) Allows the Licensee an opportunity to review and request changes to information regarding quality of service and consumer protection requirements relevant to its operations.

(c) Accepts, amends or rejects any revision that the Licensee proposes within ten (10) working days of receipt of the proposal.

ANNEX C: General Consumer Code of Practice for the Telecommunications Industry

1. Scope and Objective

1.1. This code of practice represents basic/standard practices that the OUR recommends that Licensees undertake in service provisioning. The code is intended as a guide to Licensees on practices deemed appropriate in their relationship with consumers regarding any service on offer or being provided. The OUR may from time to time, based on complaints received, changes in consumer behaviour and developments in the industry, review and make changes to these recommendations.

2. General Information Provision

2.1. Consumers, when contracting telecommunications services, rely on information provided by Licensees to make informed choices. To assist them in this regard it is the OUR's view that certain general information about a telecommunications service should be provided.

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2.2. The information provided should include:

(a) The contact information of the Licensee.

(b) The details of the procedures for handling complaints.

(c) The details and pricing plans for the service.

(d) The contract terms for the service.

(e) The details of the procedures for disconnecting customers.

(f) The privacy policies for the service.

(g) The acceptable use policies for the service.

(h) The emergency access conditions for the service.

(i) The availability of the service in different areas of the country.

(j) The applicable subscriber life cycle.

(k) The minimum targets for quality of service levels prescribed by the OUR, where applicable.

(l) Locations of any guides to installation or operation.

(m) Any other information specific to the service.

2.3. Information provided by a Licensee should be:

(a) Accurate, up to date and expressed in clear and simple language.

(b) Easy to read, if it is written.

(c) Convenient to find at the retail offices, service outlets and on the website of the Licensee and its dealers.

(d) Publicised widely, if it includes material changes in pricing plans or contracts.

2.4. If a customer requests from a Licensee information about a telecommunications service, then:

(a) the information may be delivered by manual or electronic communications, according to the preference of the customer.

(b) if there is a cost in providing the information, the customer should be advised of this cost at the time of the request and should be charged no more than the cost of providing the information.

(c) the information, or an explanation for delay, should be provided within five (5) working days after the request is received by the Licensee.

3. Licensee Contact

3.1. A Licensee should publicize its contact information. The contact information should cover:

(a). Contact details, opening hours and any charges for customer service relating to customer complaints, service orders, fault reports and service enquiries.

(b). Contact details, opening hours and any charges for operator assistance, directory enquiries and technical help, where available.

3.2. The contact details for customer service relating to customer complaints, service orders, fault reports and service enquiries should include a publicized toll-free number for both on-net and off-net calls. The quality of service offered through that number should be as good as that offered through any other number given in the customer contact details.

3.3. Customer complaints, service orders, fault reports and service enquiries should be resolved, if possible, by the staff providing the initial response. When this does not happen, customers should be assigned case numbers for follow up.

4. Description of Services

4.1. Consumers should be provided with a complete description of the service before a contract for service is established. The service description should include:

(i) The pricing plan in its entirety.

(ii) Any limitations on the time of use, amount of use or geographic availability of the service.

(iii) All contract terms that deal with the contract period, withdrawals from the contract and disconnections.

(iv) Any quality of service requirements specified by the OUR and any other service quality levels otherwise established by the Licensee regarding the specific service on offer.

(v) Information on the compensation mechanism in the event that the established quality levels are breached.

(vi) Any implications of the service and equipment for health and safety.

(vii) Information regarding the ability to make emergency calls.

(viii) Any warranties.

(ix) Billing frequency.

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(x) The methods of delivering bills.

4.2. The consumer should be informed of any additional services that may be required to facilitate the service to be contracted. The customer should also be provided with a description of the additional service including price and how that service can be obtained, if it is to be provided by the Licensee.

5. Service Contracts

5.1. Licensees should publicize available contract terms for services. The contract terms for a service should cover:

(i) The contract period.

(ii) Renewals of the contract.

(iii) Changes to the contract.

(iv) Withdrawals from the contract.

(v) Availability of the service (e.g. service interruption).

(vi) Blocking of calls, messages and data uploads and downloads.

(vii) Disconnections.

(viii) Requirements for, and refunds of, deposits.

(ix) Acceptable use policy.

5.2. Contracts should not prejudice the ability of consumers to take legal action for breach of contract or unfair contract terms using whatever evidence the courts find admissible.

5.3. Customers should be given at least one (1) month's notice in advance about proposed changes to their pricing plans or the terms and conditions of contracts and be told that they can withdraw from their contracts without penalty.

5.4. Customers should be able to withdraw from contracts without penalty if they do not accept proposed changes to their pricing plans or terms and conditions of contracts.

5.5. Customers should be able to withdraw from contracts without impediment or delay if they pay all amounts due under the contract.

5.6. Customers should be charged no more for early termination of the contract than they would otherwise pay if they had continued the contract to its expiration without using the service.

5.7. Customers should not be prohibited from unlocking handsets purchased from the Licensee if they pay all amounts due under the contract.

5.8. Customers should receive refunds of any amounts paid but no longer due under the contract if they withdraw from contracts, the contracts end or they are disconnected.

5.9. Customers should receive rebates at their full rates if their pricing plans require regular payments irrespective of service use and their services are interrupted continuously for at least forty-eight (48) hours after they make fault reports.

5.10. Customers should be able free of charge to ensure the blocking of all chargeable international calls and messages.

5.11. Customers should be able free of charge to ensure the blocking of all calls and messages by reporting the loss, theft or unauthorized use of their equipment containing Subscriber Identity Modules (SIMs).

5.12. The express and informed consent of customers is required for the acceptance of new contracts (including replacements for existing contracts when those end). Informed consent includes the customer expressly opting for automatic renewal.

6. Pricing Plans

6.1. Licensees should publicize details of telecommunications services and their related pricing plans. Such details should include:

(i) The prices without taking into account any discounts (such as those for calls and messages in closed user group plans and volume discounts).

(ii) A breakdown according to what the charges cover and in what circumstances the charges may recur or be changed.

(iii) Any applicable government taxes.

(iv) Any variations in the charges to the customer due to such factors as the time of use, place of use, geographic location, volume of usage of the service or type of applications accessed.

(v) Any additional charges incurred when services are accessed outside of contracted packages.

(vi) A list of all the products and services bundled in the service, with the prices of any of the products and services that the Licensee also sells separately.

(vii) Any charge payable and extent of service usage required for withdrawing from contracts before the contracts would otherwise end.

(viii) Any charge payable and extent of service usage required for unlocking handsets.

(ix) Any charge associated bill delivery options chosen by customers.

(x) The payment options, with any associated charges.

(xi) Any charge payable for late payment.

(xii) Any charge payable for reconnecting the customer after disconnection.

(xiii) Any deposit payable, with the rules for calculating interest.

(xiv) The validity periods and any other conditions associated with different credit increments.

(xv) Any charge payable for the purchase or replacement of SIMs.

(xvi) Any possibilities of, charges for, and limits to, calls in progress continuing after credit balances are exhausted.

(xvii) Any limitations on the telephone numbers to which calls or messages may be originated or from which calls or messages may be received.

6.2. Charges should be simple enough that consumers can calculate the prices of calls to national destinations lasting at least two (2) minutes.

6.3. Customers should be charged only in accordance with the pricing plans and contracts to which they have given their informed consent.

7. Accounts/Billing[10]

7.1. Licensees should issue bills to post-paid customers which include:

(i) The billing name and address of the customer.

(ii) A brief description of the services covered by the bill.

(iii) For fixed telephony and internet access, the address to which service is provided (if it is different from the billing address).

(iv) The current business name of the Licensee.

(v) A customer account reference.

(vi) The billing period.

(vii) The total amount billed, any offsetting sums (such as payments, rebates and discounts), any applicable government taxes (showing how these are calculated) and the net amount payable.

(viii) The date when the bill was issued.

(ix) The date when payment is due.

(x) Contact details, opening hours and any charges for customer service relating to customer complaints, service orders, fault reports and service enquiries.

(xi) A comparison with the previous bill.

7.2. Customers should be provided with itemised details of all charges on bills, but may, if available, have the option to request summarised bills.

7.3. Generally, customers should not be charged for bills. However if a charge is applied, this should only be in respect of requests for copies of bills, or itemisation details for bills more than six (6) months after the bills were issued.

7.4. Bills should be issued no later than one (1) month after the billing period ends.

[10] Information regarding this matter appeared under the heading “Accounts” in the 2010 Consultation Document.

7.5. Payments should be due at least three (3) weeks after the bills are issued.

7.6. Billing records should be kept for at least six (6) months after the corresponding bill is issued. If a complaint about the bill is lodged during that period, the billing records should be kept until the complaint is resolved.

7.7. Licensees should provide to customers a means of checking their available credit balance and corresponding validity period (where applicable) free of charge. For post-paid plans, customers should receive messages alerting them when they have used seventy-five percent (75%) of their available credit.

7.8. Messages about credit balances and validity periods should state this information prior to any other information or announcements.

7.9. The validity period of the credit balance in a pre-paid plan should be at least the longest among the validity periods of the credit added by the customer to his account.

7.10. Customers that have exhausted the credits in pre-paid plans should be able to receive calls and messages and make emergency calls for the duration of the applicable subscriber life cycle publicised by the Licensee.

7.11. Licensees should provide to customers a means of checking the amount of data usage since their last top up or bill payment free of charge. For post-paid plans, customers should receive messages alerting them when they have used seventy-five percent (75%) of their available data allowance, and when they have exhausted the data allowance included in their data plan.

8. Disconnections

8.1. Licensees should make publicly available details of the procedures for disconnecting customers. The steps in the procedures for disconnection should begin only in one of the following circumstances:

(i) The customer has failed to pay a bill in its entirety by the due date and a complaint or enquiry about the bill has not been lodged.

(ii) The customer is no longer an active subscriber based on the applicable subscriber life cycle.

(iii) The customer has breached the acceptable use policy or other relevant contract terms.

(iv) The contract period has ended.

(v) The OUR or any other appropriate authority, in exercise of its powers, requires disconnection.

8.2. It is recommended that procedures for disconnection should involve the following steps before disconnection:

(i) Using voice calls or text messages to warn customers about possible disconnection and the associated reason(s).

(ii) Restricting the services (for example, to only receiving calls or messages and making emergency calls).

9. Customers with Special Needs

9.1. Licensees should liaise with associations or groups for the disabled to ensure that, where possible, the needs of customers with disabilities are accommodated in service development and provisioning.

10. Privacy

10.1. Licensees should publicize their privacy policies. The policies should cover:

(i) The personal information to be collected from consumers.

(ii) The ways in which the personal information could be utilised.

(iii) Any third parties to whom personal information could be disclosed.

(iv) How consumers can limit the collection, use and disclosure of personal information.

(v) How consumers can access, update or modify their personal information.

(vi) The steps taken to ensure that personal information is accurate and up to date.

(vii) The steps taken to protect personal information.

(viii) The redress and remedy mechanisms adopted following any breach of privacy.

10.2. Consumers should be advised of the privacy policy before their personal information is collected.

10.3. Personal information about consumers (including information about the destinations and contents of their calls and messages) should be collected, used or disclosed by Licensees only:

(i) For the purposes for which the information was collected by the Licensee or for a use consistent with that purpose;

(ii) To the OUR or other persons pursuant to applicable law;

(iii) As evidence in legal proceedings involving the Licensee and the consumer; or

(iv) with the informed consent of the consumer.

10.4. Consumers should be permitted to prevent their names and addresses from appearing in telephone directories.

10.5. Consumers should be able, free of charge, to:

(i) access and correct their personal information such as names, addresses and telephone numbers as held by Licensees.

(ii) prevent their calling line identifiers from passing to recipients of calls and messages.

(iii) request the Licensee to block calls or messages to their telephony device from senders of frequent malicious calls and messages (including calls or messages which defraud, abuse, threaten or harass).

11. Acceptable Use

11.1. Licensees should publicize acceptable use policies for services. The acceptable use policy for a service should cover:

(i) Conditions of Usage

(ii) Unlawful Use of the Network and Related Resources

(iii) Unsolicited Electronic Communications

(iv) Responsibilities of the User

(v) Notice and Termination Procedures

(vi) Contravention and Enforcement

(vii) Network Security

12. Advertisements

12.1. Advertisements and other promotional material should not make claims that are false, misleading or likely to mislead.

12.2. Advertisements and other promotional material mentioning prices should contain, clearly and prominently, explanations of how those prices depend on taxes and the extent of service usage, or where this information can be accessed. In the case of bundled services, the individual services covered in the package price should be outlined in the advertisement.

12.3. Advertisements and other promotional material mentioning speeds for internet access should contain, clearly and prominently, realistic estimates of internet speeds, rather than hypothetical or theoretical speeds.

12.4. Advertisements in relation to service availability in a geographical area should make clear any technical limitations that may affect the quality of the performance of that service to all or parts of that particular location.

13. Service Disruptions

13.1. Licensees should give advance warning of anticipated service disruptions or planned outages, including details of the disruption or outage, the services and service areas affected and any applicable compensation or other remedies. Such announcements should be in media that are accessed by a large segment of the population.

14. Emergency Access

14.1. Given their obligations under the Telecommunications Act to provide access to emergency services to their customers, Licensees should publicize emergency access conditions for services. The emergency access conditions for a service should:

(i) Inform whether calls to the emergency call centre automatically indicate the caller's location.

(ii) Warn about any applicable customer equipment that is not usable for emergency calls without external power or functioning batteries.

(iii) Warn about services that do not allow the customer to make emergency calls.

(iv) Warn about any locations or circumstances in which emergency calls are likely to fail.

(v) Confirm that calls to national emergency numbers can be made free of charge.

(vi) Advise of any telephone numbers, other than national emergency numbers, that receive emergency calls or messages at a cost.

15. Disaster Mitigation

15.1. Licensees should actively and co-operatively support the National Emergency Operations Centre and National Disaster Plan activities, through formal mutual aid agreements and shared business continuity plans.

15.2. Licensee's plans to mitigate disasters and actions by Licensees to recover from disasters should give priority to national needs over corporate ones.

16. Points specific to internet access

16.1. Licensees should publicize information specific to internet access services. The information specific to an internet access service should include:

(i) Realistic estimates of internet speeds, such as internet speeds regularly achieved or reasonably expected to be regularly achieved, rather than hypothetical or theoretical speeds.

(ii) Factors that may affect the internet speeds including those which may be beyond the ISP's control.

(iii) Advice on compatibility issues which may arise in using the Licensee's services and equipment.

(iv) Advice on obtaining and using an application for measuring performance

(v) Advice on mitigating risks associated with internet use, especially in the case of financial transactions.

(vi) Advice on obtaining and using virus checkers, spam filters, spyware removers and firewalls.

17. Consumer Obligations

17.1. **Acceptance of Licensee Terms**

Consumers should be deemed to have accepted the Licensee's terms of service on return of a signed service agreement, or by explicitly accepting these terms through any form of telecommunications.

17.2. **Misuse of Public Telecommunications Services**

Consumers should not misuse public telecommunications services, including by:

(i) dishonestly obtaining telecommunications services; or

(ii) possessing or supplying equipment that may be used to obtain such services dishonestly or fraudulently.

17.3. **Access for Maintenance**

Licensees should be granted access to premises by the consumer or an authorized representative as reasonably required, to facilitate the provisioning or maintenance of the services, equipment or facilities.

17.4. **Tampering with Equipment**

Consumers should not modify or otherwise interfere with any equipment or facilities of the Licensee in a manner contrary to any applicable terms and conditions of use. Consumers will be responsible for any loss of or damage to equipment or facilities that results from actions contrary to any applicable terms and conditions of use.

17.5. **Reselling of Telecommunications Services without Authorisation**

Consumers shall not re-sell any telecommunications service provided by the Licensee except as permitted by the service agreement of the Licensee and subject to any applicable licensing pursuant to relevant legislation.

17.6. **Dishonest Churning**

Consumers should settle (valid) arrears with a Licensee before switching to another Licensee. Licensees should be permitted to investigate whether a consumer seeking their services has settled valid bills with his/her previous service provider before having any obligation to provide service to that person.