Communications Regulatory Authority State of Qatar

هيئة تنظيم الاتصالات دولة قطر

CRA/CA/QoS/6189/2019

DRAFT FOR PUBLIC CONSULTATION

QUALITY OF RETAIL COMMUNICATION SERVICES PROVIDED TO THE PUBLIC REGULATION

DEADLINE TO SUBMIT RESPONES: 5 FEBRUARY 2020

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Prepared by Directique

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Part I Instructions for Responding to the Consultation

Consultation Procedures

1. All interested parties are invited to submit responses to the questions specifically identified in this document and to provide their views on any other relevant aspects. The CRA asks that, to the extent possible, submissions are supported by relevant evidence.

2. Responses should include comments with regards to any proposed approach outlined in this CD by the CRA.

3. If a respondent is in disagreement with any proposed approach by the CRA, the respondent is requested to provide, in its response:

3.1 The reasons for disagreement;

3.2 Its alternative proposal in a clear and concise manner;

3.3 All assumptions, relevant justifications and references of all data sources behind its alternative proposal.

4. Any submissions received in response to this CD will be carefully considered by the CRA. Nothing included in this CD is final or binding. However, the CRA is under no obligation to adopt or implement any comments or proposals submitted.

5. Comments should be submitted by email to Q-Consultation@cra.gov.qa, before the date stated on the front cover. The subject reference in the email should be stated as "*Consultation QoS Regulation*".

6. It is not necessary to provide a hard copy in addition to the soft copy sent by email.

7. The deadline for all respondents to submit their comment is indicated on the cover page of this CD.

Publication of Comments

8. In the interests of transparency and public accountability, the CRA intends to publish the submissions to this consultation on its website at www.cra.gov.qa.

9. All submissions will be processed and treated as non-confidential unless confidential treatment of all or parts of a response has been requested.

10. In order to claim confidentiality for information in submissions that stakeholders regard as business secrets or otherwise confidential, stakeholders must provide a non-confidential version of such documents in which the information considered confidential is blacked out. This "blackened out" portion/s should be contained in square brackets. From the non-confidential

version, it has to be clear where information has been deleted. To understand where redactions have been made, stakeholders must add indications such as “business secret”, “confidential” or “confidential information”.

11. A comprehensive justification must be provided for each and every part of the submission required to be treated as confidential. Furthermore, confidentiality cannot be claimed for the entire or whole sections of the document, as it is normally possible to protect confidential information with limited redactions.

12. While the CRA will endeavor to respect the wishes of respondents, in all instances the decision to publish responses in full, in part or not at all remains at the sole discretion of the CRA.

13. By making submissions to the CRA in this consultation, respondents will be deemed to have waived all copyright that may apply to intellectual property contained therein.

14. For more clarification concerning the consultation process, please send your queries by email to Q-Consultation@cra.gov.qa or contact Heba Zaina, Jawahir Abuoyaqoub, Sharifa Al Yafei , on +974 4499 3647.

1. Context

One of the roles of the Communications Regulatory Authority (CRA) is to set criteria for Quality of Service (QoS) and to monitor the compliance of providers of telecommunications services in Qatar (Service Providers) with respect to QoS obligations. QoS regulation is a major aspect of telecommunications regulation.

Since the consultation in 2013, 2014 and 2015 for the QoS regulatory framework (Policy and Regulation) in addition to a consultation in 2016 for the Policy, the Regulatory Authority has been refining its views on how QoS shall be regulated in Qatar by:

- launching a project on QoS which aims at developing a QoS policy, a new comprehensive QoS regulatory framework, a methodology to assess and validate QoS measures and new internal and external processes;
- establishing a comprehensive benchmark on QoS regulation which covers 5 countries (Bahrain, Canada, France, Morocco, and Singapore). This benchmark has enabled the Regulatory Authority to identify best practices and study how regulatory authorities act and react depending on each specific local circumstance. It also enabled the Regulatory Authority to identify a list of KPIs which were commonly used and to observe forward-looking approaches for QoS regulation; and
- reviewing the comments from the 3 stakeholders Ooredoo, Vodafone Qatar and Qnbn to the previous consultations. These comments enabled the Regulatory Authority to better understand the potential difficulties associated with proposed KPIs as well as to acknowledge the need for more precision on KPIs.

Based on these activities, CRA has prepared a final Draft QoS Policy and QoS Regulatory Framework for Qatar. These provide a more precise, improved list of KPIs and are intended to give Service Providers the clarity they requested during the consultation on Draft QoS instructions.

To assess the impact of this final Draft QoS Policy and QoS Regulatory Framework on the telecommunications market in Qatar, CRA is launching hereby a fourth round of consultation on QoS.

All stakeholders are invited to review this consultation document and the annexed QoS Policy and QoS Regulatory Framework documents and submit comments to CRA following the procedures set out in Part 1.

2. Legal Basis

The following legal provisions provide the basis for the QoS Policy and the QoS Regulatory Framework documents, but not exhaustively.

Article 4(8) of the Telecommunications Law of 2006 (“the Law”) empowers CRA to safeguard the interests of customers, including the setting of tariff regulation and criteria for QoS, and monitoring the terms and conditions of telecommunications services provision.

Article 101 of Executive By-Law 1 of 2009 for the Telecommunications Law (“Executive By-Law”) prescribes that CRA shall set the minimum QoS parameters and may have them amended following consultation with the related Service Providers. CRA may include those criteria in the licenses, or issue them by an order from it, which shall include reporting obligations.

The above-mentioned licenses authorize the Service Providers to provide the specified telecommunications networks and services in accordance with the terms and conditions of the licenses, relevant legislation, and any regulations, including instructions issued by CRA before or after the effective date of the licenses. Accordingly, CRA may from time to time issue additional requirements as part of the terms and conditions of the licenses which are binding on the Service Providers.

The considerations listed above justify without any doubt the need for CRA to set policies and a regulatory framework with respect to QoS.

CRA considers that the Telecommunications Law may evolve in the future. In this context, any future amendments to the Telecommunications Law shall apply to the QoS Policy and to the QoS Regulatory Framework.

3. Questions

Question 1: Do you think that CRA's proposed strategy in the short/medium term is the most appropriate one? If not, how should it be changed?

Question 2: What is your opinion on Monitoring objective which can be proposed by the Service Provider?

Question 3: Do you agree with the report publication proposed?

Question 4: What is your opinion on sanctions proposed if some objectives are not achieved?

Question 5: Do you agree with the measurement proposed for Mandatory and Monitoring KPIs?

Question 6: Should any of the KPIs be deleted as not useful or too expensive? If so, please explain your reasoning and propose alternatives.

Question 7: Are any of the targets proposed too demanding to be achieved within one year? If so, please detail the reasons why the proposed targets are too demanding and propose appropriate deadlines to meet the targets?

4. Next Steps

After the publication of this consultation document on Draft QoS Policy and Draft QoS Regulatory Framework:

- A workshop / public hearing will be organized to present the Draft QoS Policy and Draft QoS Regulatory Framework to stakeholders.
- Responses from stakeholders and interested parties must be received by CRA before the 9 January 2020.
- CRA will review the responses from stakeholders and interested parties and will issue the definitive versions of the QoS Policy and QoS Regulatory Framework.

Part II Quality of Retail Communication Services Provided to the Public Regulation

1 General Provisions

Article 1 Definitions and interpretation

1.1 Unless otherwise expressly defined in this Regulation or the context in which they are used requires otherwise, the terms listed below shall have the corresponding meanings:

A Measurements	Means QoS measurements collected from administration systems (such as ordering systems or other information systems).
Access Connection	Means a Connection from a Local Switch to a User Network Interface.
Access Network	Means the elements of a Telecommunications Network that connect a Local Switch to a User Network Interface.
Active Connection	Means a Connection that has registered an activity in the previous three months.
Annual QoS Compliance Report	Means the annual QoS compliance report to be delivered by Licensees to the CRA in accordance with Article 9.
Audit Report	Means a report as described in 15.7Article 15.

Automatic Compensation Scheme	Means the scheme described Article 13 in under which a Licensee must automatically compensate End-Users for failures by the Licensee to comply with its QoS Obligations.
Automatic Compensation System	Means a system that is put in place by a Licensee to implement the Automatic Compensation Scheme in accordance with Article 11Article 13.
Complaint	An expression of dissatisfaction duly made by a Customer and received by a Service Provider related to: (a) the Service Provider's provision of Telecommunications Products or Telecommunications Service to that Customer; or (b) the Service Provider's compliance with its obligations with respect to the Customer and (c) which must be addressed by Service Providers through the Customer Complaint Process of the service provider as an initial requirement.
Connection	Means a fixed or mobile connection made available to the public which is capable of supporting voice and data communications.
Consumer Protection Policy	Means the Telecommunications Consumer Protection Policy dated January 2014.
Day	Means a calendar day.
End-User	Means: (a) a Customer; (b) a person who makes use of a Public Telecommunications Service; or (c) a person who is authorised or permitted by a person falling within paragraph (a) to make use of a Public Telecommunications Service.
Effective Date	Means the effective date as set out in the Decision of the President of the CRA promulgating this Regulation.
Exceptional Event	Means one or more Faults arising from:

	(a) an event of Force Majeure (as defined in a License); (b) a major cyber-attack, "Zero Day" security incident or an attempt at disruption to Telecommunications Networks at a national level; or (c) a major power incident impacting all Telecommunications Networks in the State of Qatar.
Fault	Means: (a) a condition that causes a Telecommunications Network and/or a Telecommunications Service to operate other than intended (e.g. by not meeting its specification) or to cease operating altogether; or (b) a network outage that is not a Planned Network Outage, but does not require any Telecommunications Service to be partially or wholly unavailable.
Fixed Connection	Means a Connection that uses wired technology, including (without limitation) analogue fixed-telephone Connection, VoIP, fixed wireless local loop (WLL), ISDN voice-channel equivalents and fixed public payphones.
Fixed Telecommunications Network	Means a Telecommunications Network that facilitates the conveyance of signals by means of wireline or wireless facilities between points at fixed locations on the Telecommunications Network.
Hours	Means standard clock hours.
Invalid Complaint	Means a Complaint regarding a Licensee that does not relate to matters: (a) that are within the responsibility or control of the Licensee; and (b) for which the Licensee is liable according to its lawful and valid terms and conditions of service.
Invalid Fault	Means a Fault that does not relate to matters: (a) that are within the responsibility or control of the Licensee; and

	(b) for which the Licensee is liable according to its lawful and valid terms and conditions of service.
KPI	Means key performance indicator.
License Terms	Means the terms and conditions of an Individual License.
Local Switch	Means a Switch that is closest to, and provides connectivity to, a User Network Interface, including connectivity via a distribution point or other aggregation device or remote concentrator.
Mean Opinion Score or **MOS**	Means the measure of voice quality of a call that assesses End-Users' opinion of the call quality.
Minimum Performance Requirements	Means the minimum performance requirements for QoS in relation to Public Telecommunication Services, expressed as KPIs and set out in Annex 1 (Minimum Performance Requirements).
Mobile Connection	Means a Connection that uses any cellular technology.
Mobile Service	Means a Communications Service provided by means of radio communications access facilities that is capable of continuous and uninterrupted use while moving between the cell area of one antenna and the cell area of another antennae.
User Network Interface or **UNI**	Means the boundary of a Telecommunications Network, and, in context, usually refers to the specific case of the boundary between a Telecommunications Network and Customer equipment and wiring attached to the Telecommunications Network.
N Measurements	Means QoS measurements collected from network equipment.
Notifiable Fault	Has the meaning given by Article 11.
Performance Monitoring Targets	Or the **Short Term revisable QoS Performance Targets** means Monitoring objectives which will be secondary and revisable on a time period and based on the expectation of the market, expressed as KPIs and set out in Annex 3 (Short Term revisable QoS performance targets).

Planned Network Outage	Means a planned outage of a Licensee's Telecommunications Network (for example, a planned maintenance process) where the Licensee: (a) knows that the planned outage will occur at least 60 Hours before it occurs; and (b) has notified the CRA and all affected End-Users that the planned outage will occur in accordance with Article 12.
Public Fixed Telecommunications Network	Means a Telecommunications Network over which Public Fixed Telecommunications Services are provided by a person who is Authorized to do so under an appropriate License.
Public Mobile Telecommunications Network	Means a Telecommunications Network over which Public Mobile Telecommunications Services are provided by a person who is Authorized to do so under an appropriate License.
Public Satellite Telecommunications Networks	Means a Telecommunications Network over which Public Satellite Telecommunications Services are provided by a person who is Authorized to do so under an appropriate License.
Public Communications Service or **Service**	Means any Communications Service that is Authorized or required to be provided under a License.
QoS	Means quality of service.
QoS Compliance Report or **QCR**	Means the quarterly or half-yearly QoS compliance reports to be delivered by Licensees to the CRA in accordance with Annex 4 (Reporting and Publication Procedures).
QoS Obligations	Means a Licensee's obligations relating to QoS pursuant to the QoS Regulatory Framework.
QoS Regulatory Framework	Means the applicable regulatory framework concerning QoS, including (without limitation): (a) this Regulation, the QoS Policy and the Consumer Protection Policy; (b) the Telecommunications Law and the By-Law;

	(c) Licenses issued to Licensees; and (d) any other laws, regulations, policies, procedures, statements, directions, circulars, guidance, instructions, rules and other notices that may be issued by the CRA in relation to QoS.
Quality of Retail Communication Services Provided to the Public Policy, or QoS Policy	Means the CRA Policy on the Quality of Retail Communications Services Provided to the Public dated [November 17, 2019].
QoS Results	Means any data and measurements collected by a Licensee and the QoS results achieved by the Licensee (for a specific period) against the Minimum Performance Requirements and the Performance Monitoring Targets, including any calculations of those QoS results.
Regulation	Means this Quality of Service (QoS) Regulation as it is updated, amended, replaced or repealed from time to time.
SMS	Means a text message transmitted via a short message service for sending text messages to a mobile device.
Subscriber	Means a person (who may or may not be an End-User) who enters into a contractual relationship for the provision of Telecommunication Services from a Licensee.
Switch	Means a device in a Telecommunications Network which is used to switch Telecommunications traffic between routes.
T Measurements	Means QoS measurements collected from test campaigns, typically as part of drive or walk around tests (including through test calls and connections).
Very Small Aperture Terminal or **VSAT**	Means a small satellite ground station that receives and transmits real-time Telecommunications via satellite.
VoIP	Means voice over IP.

Working Days	Means a Day other than Friday, Saturday or a Day that is lawfully observed as a national public holiday in the State of Qatar.
Working Hours	Means the Hours between 07:00 and 18:00 on a Working Day.

1.2 Any terms, words and phrases used in this Regulation that are not defined above but are defined in the Telecommunications Law, the By-Law or a Licence, shall have the same meanings ascribed to them in the Telecommunications Law, the By-Law or that Licence.

1.3 The Annexes to this Regulation form part of the Regulation.

Article 2 Legal basis for this Regulation

These Regulations are issued pursuant to:

2.1. Article (4) of the Emiri Decree, which provides that the CRA is given various powers to regulate the sector, including the power to:

2.1.1. develop regulatory frameworks under Article 4(1);

2.1.2. set quality of service standards for various services, and monitor compliance with these standards under Article 4(10); and

2.1.3. monitor Licensee's compliance with regulatory frameworks and to take the necessary measures to ensure compliance under Article 4(14);

2.2. Article (7) of the Emiri Decree, which gives the President of the CRA the power to propose legislation relevant to the CRA's work;

2.3. Article (2) of the Decree to the Telecommunications Law, which states that the Telecommunications Law applies to all government agencies, public authorities and corporations, persons and to all bodies subject to previous laws that determined for them special privileges or provisions regarding the regulation of telecommunications;

2.4. Article (2) of the Telecommunications Law, which states the objectives of the Telecommunications Law that the CRA is responsible for achieving, including (relevantly and without limitation):

2.4.1. promoting the telecommunications sector in order to consolidate national, social and economic development;

2.4.2. enhancing the telecommunications sector's performance in the State of Qatar through encouraging competition and fostering use of Telecommunications Services;

2.4.3. encouraging the introduction of advanced and innovative information and telecommunications technologies to meet the needs of customers and the public;

2.4.4. increasing customers' benefits and safeguarding their interests;

2.4.5. promoting universal service; and

2.4.6. ensuring that the regulation of the telecommunications sector remains in line with international rules;

2.5. Article 4(8) of the Telecommunications Law, which gives the CRA the power and authority to safeguard the interests of customers, including setting rules for criteria for QoS, and monitoring the terms and conditions of the provision of Telecommunications Services;

2.6. Article (6) of the Telecommunications Law, which requires that regulations, decisions, orders, rules, instructions and notices issued pursuant to the Telecommunications Law shall be transparent and non-discriminatory with respect to all Service Providers and other market participants;

2.7. Article 49(2) of the Telecommunications Law, which permits the CRA to determine and develop the applicable QoS standards in implementing the Consumer Protection Policy;

2.8. Article 50(6) of the Telecommunications Law, which permits the CRA to set rules regulating QoS requirements and service quality monitoring and compliance procedures in preparing, developing and implementing the Consumer Protection Policy;

2.9. Schedule 1 to the Telecommunications Law, as inserted by Law No. (17) of 2017 amending the Telecommunications Law, which stipulates the penalties that may be imposed for violations of consumer protection;

2.10. Article (4) of the By-Law, which permits the CRA to issue other regulations, decisions, rules, orders, instructions and notices for the implementation of the provisions of the Telecommunications Law and the By-Law;

2.11. Article (6) of the By-Law, which permits the CRA to take measures, actions and decisions, as it deems appropriate, to ensure that Licensees and Service Providers comply with the provisions of the Telecommunications Law and the By-Law and the provisions of the Licenses, or to remedy their breaches;

2.12. Article (12) of the By-Law, which permits the CRA to issue regulations or instructions containing further requirements for applicants of Licenses and Service Providers in order to provide clarification of services telecommunications and related activities that require a License;

2.13. Article (20) of the By-Law, which permits the CRA to issue regulations, rules or orders containing further procedures related to the amendment revocation, suspension or non-renewal of a License;

2.14. Article (86) of the By-Law, which requires Licensees and Service Providers to (among other things) comply with any regulations, rules, orders or notices issued by CRA regarding the protection of consumers;

2.15. Article (101) of the By-Law, which:

2.15.1. permits the CRA to set the minimum QoS standards (including in Licenses or by an order) and to have them amended by following consultation with the related Service Providers; and

2.15.2. requires Service Providers to deliver to the CRA a QoS Compliance Report in the form and detail prescribed by the CRA and setting out there in the Service Provider's actual results for each QoS standard;

2.16. Article (102) of the By-Law, which provides that if a QoS standard is not fulfilled or achieved pursuant to Article (101), the Service Provider shall provide a clear explanation stating the reasons behind it and the steps it has taken or to be taken by it to implement that standard;

2.17. Article (103) of the By-Law, which requires that a Service Provider shall publish on its website the QoS Compliance Report and any additional material communicated to the CRA, and permits the CRA to (among other things) publish or post any information related thereto, including comparisons between Service Providers;

2.18. Article (105) of the By-Law, which permits the CRA to issue orders relating to Service Provider liability, customer refunds and damages associated with the provision of services;

2.19. Section (4) of the License Terms, which requires that Licensees shall comply with the terms and conditions of its License and with all other aspects of the applicable regulatory framework, including any amendment thereto that may be adopted from time to time;

2.20. Section 14(1) of the License Terms, which provides that compliance with the applicable regulatory framework includes, without limitation, all decisions and regulations issued by the CRA, including those governing:

2.20.1. complaints and dispute resolution; and

2.20.2. consumer protection; and

2.21. Annexure E to the License Terms, which sets the obligations relating to the provision and Quality of Service to retail customers at the date of issuance of the License.

Article 3 Purpose and objectives of the QoS Regulation

3.1. The QoS of Public Telecommunications Services is important to the development of the economy and society of the State of Qatar as a whole. The CRA has formulated this Regulation for the purpose of modernizing the QoS Regulatory Framework and establishing obligations and standards on Licensees regarding the QoS of Public Telecommunications Services.

3.2. The primary objectives of this Regulation are to:

3.2.1. ensure that the QoS of Public Telecommunications Services addresses the needs of all End-Users and provides for the appropriate delivery of the content or services requested by End-Users;

3.2.2. measure and assess QoS, as far as practicable, from the perspective of End-Users (i.e. "Quality of Experience" or "QoE");

3.2.3. establish Minimum Performance Requirements for Public Telecommunications Services, and the methodology for measuring those Minimum Performance Requirements;

3.2.4. establish Monitoring Objectives for Public Telecommunications Services which will be secondary and revisable on a time period and based on the expectation of the market, defined as Performance Monitoring Targets and the methodology for measuring those Performance Monitoring Targets,

3.2.5. specify the Licensees' measurement methods and reporting and publication obligations;

3.2.6. publish or make available clear, meaningful and accurate data on QoS, including Licensees' performance against QoS Obligations;

3.2.7. use the availability or publication of Licensees' performance under Article 3.2.5 against QoS parameters as an incentive to improve QoS well above any minimum acceptable levels;

3.2.8. enable End-Users to take account of QoS when choosing between different Licensees;

3.2.9. establish a scheme for automatic compensation to End-Users where Licensees fail to achieve a Minimum Performance Requirement; and

Article 4 Operating Diagram of the QoS Regulation

The QoS Regulation will establish a set of Key Performance Indicators (the “KPIs”) formulated as far as practicable from a Quality of Experience (“QoE”) perspective (customer vision) following the operating Diagram:

Where Objective set are defined as:

a. Mandatory objectives which will be specific and based on the minimum standards or minimum QoS requirements (or “Minimum Performance Requirements”) for the retail communication services currently provided in Qatar;
b. Monitoring objectives which will be secondary and revisable on a time period and based on the expectation of the market, defined as “Performance Monitoring Targets” for retail communication services which may be upgraded to Minimum Performance Requirements when appropriate.

The Performance Monitoring Targets are defined in direct link with the customers, their expectations and follow the market with the evolution of the technologies.

4.1. The QoS Regulation specify the Objectives of the targets:

a. Mandatory and Monitoring Objectives will be set by CRA
b. On the request of CRA, the Service Providers can propose its own Mandatory and Monitoring Objectives. The aim for CRA is to not create constraints on the Service Providers on these objectives and let the Service Providers define the level of Quality of Service they want to offer with respect to market demand,

competition and international standards.

4.2. After validation by CRA, its role will be to check if the targets are respected. CRA by setting mandatory and monitoring objectives, ensures that the standard minimums will be achieved.

Article 5 Commencement of the QoS Obligations

While this Regulation comes into force on the Effective Date, there will be a periodical transition as the QoS Obligations in this Regulation apply, as described in the table below:

Period	Application of QoS Obligations
From T0 to T1 T0 = Effective date T1 = T0 + six months	During this period: 1. The QoS obligations existing at the Effective Date will continue to apply, including the QoS obligations set out in each Licensee's Licenses; 2. Licensees are required to take all the necessary measures to have their network, and processes ready before T1.
From T1 to T2 T2 = T1 + six months	During this period: 1. The QoS Obligations set in Chapter 2 (QoS Obligations) will apply; 2. The CRA shall not exercise its powers of enforcement under Chapter 3 (Compliance and Enforcement) in respect of failures by Licensees to achieve the Minimum Performance Requirements that were not existing at the Effective Date. The CRA's objective for this period is the smooth transition towards full application of the QoS Obligations in this Regulation, including the measurement, reporting and publication obligations. To achieve this objective, the CRA will meet periodically with the Licensees and other relevant stakeholders, at times and locations set by the CRA, to: 1. Monitor the progress made by Licensees in transitioning towards full compliance with the QoS Obligations in this Regulation; 2. Address any issues incurred in connection with the implementation of this Regulation and any steps that may be taken to overcome those issues.
From T2 onwards	From this date, this Regulation will apply in full.

Article 6 Revision of this Regulation

6.1. This Regulation may be revised from time to time by the CRA.

6.2. Revisions will be notified to the Licensees and will be published on the CRA website. Major or comprehensive revisions may be the subject of consultations at the CRA's discretion.

2 QoS Obligations

Article 7 Minimum Performance Requirements and Performance Monitoring Targets

7.1. In providing Public Telecommunications Services, each Licensee will:

7.1.1. achieve (at a minimum) the Minimum Performance Requirements set out in Annex 1 (Minimum Performance Requirements), provided that nothing in this Regulation prevents a Licensee from achieving a higher QoS;

7.1.2. measure and assess the performance of the services provided by the Licensee against the Performance Monitoring Targets set out in Annex 2 (Performance Monitoring Targets); and

7.1.3. otherwise comply with any other QoS Obligations set out in or promulgated under this Regulation.

7.2. The CRA will set Mandatory and Monitoring Objectives.

7.3. The CRA may convert a Performance Monitoring Targets into a Minimum Performance Requirement, or vary any Minimum Performance Requirement or Performance Target, in accordance with Article 6.

Article 8 Collection of QoS measurements

8.1. Each Licensee must collect all QoS measurements, in any format necessary, as is required to measure its QoS Results, including:

8.1.1. A Measurements;

8.1.2. N Measurements; and

8.1.3. T Measurements.

8.2. The CRA can collect data from different sources and network level:

8.2.1. Licensee will provide according a process defined by the CRA, network OSS Raw Data and others

8.2.2. Licensee will provide its map coverage, QoS performance proposed to customers and others

8.2.3. The CRA will collect data from field as Drive Test, Walk Test and others

8.2.4. The CRA will collect data from customers through crowdsourcing, complaints and others

8.3. Annex 3 (QoS Measurement Requirements) sets out additional requirements that Licensees must follow when collecting QoS measurements and measuring and reporting QoS Results.

8.4. Licensees are responsible for having in place all technical and organisational measures and systems as are necessary to comply with this Article 8.

8.5. The CRA may perform cross-referencing of all collected data to have the most accurate view of QoS and most representative to the customer.

8.6. The CRA or any Authorized representatives can inspect all data provided by the Licensee and get reports at any time it is needed or required.

Article 9 QoS Compliance Reports

9.1. For each reporting period described in Article 9.3, each Licensee will prepare a QoS Compliance Report that includes (at a minimum):

9.1.1. a detailed description of the measurement systems used to collect QoS measurements, including any certificates obtained from independent bodies against measurement standards such as ITU-T Ref P863 Mean Opinion Score for Voice quality (provided that, if the measurement systems do not change from the previous reporting period, a repeated description is not required);

9.1.2. the QoS Results for the reporting period with comments to assist the CRA to understand the QoS Results;

9.1.3. A history of previous results with comparison in time to follow the QoS evolution and to clearly state improvements made

9.1.4. comments on failures by the Licensee to comply with the QoS Obligations during the reporting period, with any reasons for such failures, including if the failure arises from:

(a) the occurrence of an Exceptional Event (where otherwise the Licensee would have complied with the QoS Obligation); or

(b) an insufficient number of test samples to accurately calculate the QoS Results;

9.1.5. a summary of any reports and notifications issued by the Licensee during the reporting period (including the status of any follow-up action);

9.1.6. details of the actions that the Licensee has taken during the reporting period or will take to improve QoS where it has failed to comply with any QoS Obligation (to the level required to comply with a QoS Obligation); and

9.1.7. the number of End-Users who have been compensated during the reporting period, and the total amount of compensation paid during the reporting period.

9.2. QoS Compliance Reports must be submitted to the CRA in the form specified in Annex 4 (Form of QoS Compliance Reports). The CRA may issue amended or alternative forms for QoS Compliance Reports to Licensees to replace the form at Annex 4 (Form of QoS Compliance Reports).

9.3. Licensees must submit QoS Compliance Reports to the CRA in quarterly basis by e-mail (with the QoS Results required for those reports) in accordance with the table below.

Reporting period	Latest date for submission of the QoS Compliance Report	A Measurements provided	N Measurements provided	T Measurements provided
1st January to 31st March	30th April of the same year	Yes	Yes	Yes
1st April to 30th June	31st July of the same year	Yes	Yes	Yes
1st July to 30th September	31st October of the same year	Yes	Yes	Yes
1st October to 31st December	31st January of the next year	Yes	Yes	Yes

9.4. On the request of CRA and only, licensees must submit bi-annual QoS Compliance Reports instead of quarterly basis

9.5. The CRA will review QoS Compliance Reports submitted to it by Licensees. When reviewing QoS Compliance Reports, the CRA will take into consideration any comments submitted by the Licensees in relation to failures to achieve the QoS Obligations. The CRA may accept (in its sole and absolute discretion) reasons submitted under Articles 9.1.4 and 9.1.44(b) as justifying a failure to achieve the QoS Obligations.

9.6. Within 15 Working Days of SP submission of a new or updated QoS Compliance Report (or by an alternative date nominated by the CRA), the CRA may:

9.6.1. notify the Licensee that the CRA accepts the QoS Compliance Report or not respond to the QoS Compliance Report;

9.6.2. notify the Licensee that the CRA rejects the QoS Compliance Report, including any QoS Results, any reasons provided in the QoS Compliance Report for failures to achieve the QoS Obligations and/or any other matter in the QoS Compliance Report; or

9.6.3. notify the Licensee that the CRA will respond on an alternative date (nominating that date in the notice).

9.7. If the CRA provides a notice to a Licensee under Article 9.6.2, the Licensee must, to the extent requested by the CRA in the notice:

9.7.1. re-submit an updated QoS Compliance Report to the CRA within 10 Working Days in which case the process in Article 9.6 will repeat; and

9.7.2. comply with Article 16 in respect of any rectification or other tasks required in the notice.

9.8. If the CRA provides a notice to a Licensee under Article 9.5.1, or does not respond to a QoS Compliance Report within 15 Working Days (or an alternative date nominated by the CRA), the QoS Results in the QoS Compliance Report are deemed to be ready for publication in accordance with Article 1010.

Article 10 Publication of QoS Results

10.1. Within 10 Working Days of any QoS Results in a QoS Compliance Report being ready for publication under Article 9.8, Licensees must publish the QoS Results in a prominent and easily accessible location on the Licensee's main website, with a clearly identifiable link to the information from the home page (or front page or splash page) of the website.

A link on website should lead the customers to all old reports which must remain accessible with no time limit.

10.2. If directed by the CRA in a written notice, a Licensee must promptly change the prominence and/or location of publication of the QoS Results in accordance with the direction within 10 Working Days from receipt of the CRA's notice.

10.3. Without limiting the CRA's powers to publish material regarding QoS, the CRA may publish:

10.3.1. any QoS Results of Licensees;

10.3.2. comments on the QoS Results of Licensees which the CRA considers (in its sole and absolute discretion) are necessary to explain anomalies or exceptions regarding those QoS Results, to assist End-Users to understand the QoS Results or to put the QoS Results into context, having regard to notes included by Licensees in a submitted in a QoS Compliance Report under Article 9.1.44;

10.3.3. comparisons between the QoS Results of Licensees to allow public access to the QoS Results, free of charge; and/or

10.3.4. international QoS benchmarks.

10.4. Publication of QoS Results can be at several level:

10.4.1. on CRA website and press.

10.5. Before the 30th of April of each year, the CRA may publish a report on QoS in the State of Qatar, aimed at End-Users, including a summary of QoS Results for the previous year. This annual report will be developed by the CRA based on QoS Results submitted by Licensees and also QoS Results as measured, audited or otherwise determined by the CRA. The CRA will have sole and absolute discretion in determining the content and data in annual reports.

Article 11 Faults

11.1. For the purposes of this Regulation, Faults are classified as Notifiable Faults and non-notifiable Faults in accordance with the table below:

Category	Fault Description	Affected Traffic
Notifiable Fault (Red)	Faults which affect 10% or more of the: ▪ End-Users of Public Fixed Telecommunications Networks and Services; and/or ▪ traffic for Public Mobile Telecommunications Networks and Services, Public Satellite Telecommunications Networks and Services and VSAT Networks and Services.	The affected traffic is assessed by comparing the traffic in the network observed during the Fault (being the traffic in the part of the network not affected by the Fault) with the traffic in the network observed at the same moment in the same day of the previous week (except if it is a week with a special event, in which case the week before can be used). Traffic should be measured using the adequate metrics for the affected traffic, such as the number of calls for voice, the number of SMS for SMS, and the number of Mbytes for data.
Non-notifiable Fault	Faults which affect less than 10%: ▪ End-Users of Public Fixed Telecommunications Networks and Services; and/or ▪ traffic for Public Mobile Telecommunications Networks and Services, Public Satellite Telecommunications Networks and Services and VSAT Networks and Services.	

11.2. Licensees must notify the CRA and End-Users by all means of communication available. These means may depend on the nature of the Fault, and the Public Telecommunications Services that are affected, but may include e-mail, SMS, publication on the Licensee's websites, and publication though social media platforms). The notification shall be completed within 2 Hours after any Notifiable Fault occurs. The Notification shall set out:

11.2.1. the expected duration of the Fault;

11.2.2. any Public Telecommunications Services affected by the Fault; and

11.2.3. the geographic locations affected by the Fault (if relevant).

11.3. The licensee shall update CRA on a regular basis and no less than every four Hours on the measure taken to remedy and/or mitigate the Notifiable Fault. The CRA may request

any additional information deemed necessary, in order to follow-up the evolution of the situation.

11.4. Licensees must submit a report to the CRA by e-mail within five (5) Working Days of a Notifiable Fault occurring, setting out:

11.4.1. a qualitative description of the Fault, including the initial causes of the Fault, affected network elements and nodes, affected transmission links, and consequences for voice, data, video and internet traffic;

11.4.2. a quantitative evaluation of the number affected End-Users (for Public Fixed Telecommunications Networks and Services) or the affected traffic (for Public Mobile Telecommunications Networks and Services, Public Satellite Telecommunications Networks and Services and VSAT Networks and Services) for each Public Telecommunications Service or retail product sold by the Licensee and the duration of the Fault (including if on-going); and

11.4.3. a description of the long-term action plan to improve network resilience to prevent against a repeat of the Fault, including internal or external causes of the Fault.

Article 12 Planned Network Outages

12.1. For the purposes of this Regulation, Planned Network Outage are classified as Notifiable Planned Network Outage and Non-notifiable Planned Network Outage in accordance with the table below:

Category	Fault Description	Affected Traffic
Notifiable Network Outage (Red)	Planned Network Outage which affect 10% or more of the: ▪ End-Users of Public Fixed Telecommunications Networks and Services; and/or ▪ traffic for Public Mobile Telecommunications Networks and Services, Public Satellite Telecommunications Networks and Services and VSAT Networks and Services.	The affected traffic is assessed by comparing the traffic in the network observed during the Fault (being the traffic in the part of the network not affected by the Fault) with the traffic in the network observed at the same moment in the same day of the previous week (except if it is a week with a special event, in which case the week before can be used). The traffic should be measured using the adequate metrics for the affected traffic, such as the number of calls for voice, the number of SMS for SMS, and the number of Mbytes for data.
Non-notifiable Planned Outage	Planned Network Outage which affect less than 10% of the: ▪ End-Users of Public Fixed Telecommunications Networks and Services; and/or ▪ traffic for Public Mobile Telecommunications Networks and Services, Public Satellite Telecommunications Networks and Services and VSAT Networks and Services.	

12.2. Licensees must notify the CRA (by e-mail) and End-Users (by relevant modes of communication, which may include e-mail, SMS, publication on the Licensee's websites, and publication though social media platforms) at least 48 Hours before a Notifiable Planned Network Outage, setting out:

12.2.1. the planned duration of the Planned Network Outage;

12.2.2. any Public Telecommunications Services affected by the Planned Network Outage; and

12.2.3. the geographic locations affected by the Planned Network Outage (if relevant).

12.3. The CRA may inspect, at any time by providing notice to a Licensee, the Licensee's records and equipment to verify that an outage of the Licensee's Telecommunications Network was a Planned Network Outage. Licensees must provide the CRA or its nominee with prompt and unrestricted access to any records and equipment to conduct such an inspection.

Article 13 Automatic Compensation Scheme

13.1. An Automatic Compensation Scheme will be established to ensure that End-Users are automatically compensated by Licensees (without any requirement for action by the End-Users) for any failure by the Licensees to comply with the QoS Obligations.

13.2. Within 30 Working Days of the Effective Date, each Licensee must submit a plan to the CRA setting out its plan to implement an Automatic Compensation System that (at a minimum):

13.2.1. compensates End-Users for any failure by the Licensee to comply with its QoS Obligations within two (2) months of the failure;

13.2.2. provides fair and reasonable compensation either to all End-Users or to affected End-Users, as applicable having regard to the nature of the failure;

13.2.3. notifies End-Users of the cause of the failure and why compensation is being provided;

13.2.4. automatically compensates End-Users in full, without any act or request by the End-User in connection with the compensation; and

13.2.5. compensates End-Users either through a fair and reasonable mechanism having regard to the circumstances of the failure, which might include a charge reduction on the End-Users' invoice, the provision of additional services to the End-Users that are accepted by the End-Users without charge, the payment of a refund, or other appropriate compensation.

13.3. The CRA may publish additional requirements for the Automatic Compensation Scheme which Licensees must take into account when developing and submitting plans under Article 2813.2.

13.4. Within 15 Working Days of submission of a plan under Article 13.213.2 (or by an alternative date nominated by the CRA), the CRA may:

13.4.1. notify the Licensee that the CRA accepts the plan;

13.4.2. notify the Licensee that the CRA rejects the plan; or

13.4.3. notify the Licensee that the CRA will respond on an alternative date (nominating that date in the notice).

13.5. If the CRA provides a notice to a Licensee under Article 13.4.2, the Licensee must, to the extent requested by the CRA in the notice re-submit an updated plan to the CRA within 10 Working Days in which case the process in Article 13.2 will repeat.

13.6. Licensees must put in place and implement an Automatic Compensation System that is approved by the CRA under Article 13.4.1 by the date specified in Article 55.

13.7. Licensee must submit any proposed variations to a plan approved by the CRA under Article 13.4.1 before implementing the varied plan, in which case the process in Articles 13.3 and 13.5 will apply to the varied plan.

13.8. Terms and conditions relating to the Automatic Compensation System will be clearly set in the Licensee's Terms of Service on and from the date of implementation of the Automatic Compensation System.

13.9. Licensees must notify the CRA (by e-mail) before compensating End-Users under the Licensee's Automatic Compensation System following an Exceptional Event setting out in sufficient detail:

13.9.1. the nature and extent of the Exceptional Event;

13.9.2. a list of End-Users who are affected by the Exception Event and who are being compensated;

13.9.3. the amount of compensation being provided to End-Users;

13.9.4. the form of compensation (having regard to the matters in Article 13.2.5); and

13.9.5. the methodology proposed to allocate this compensation between the End-Users.

3 Compliance and Enforcement

Article 14 General rectification requirement

If a Licensee fails to comply with any QoS Obligation, the Licensee must rectify the failure as soon as reasonably practicable (having regard to the nature and extent of the failure and in any case within 30 Working Days of the failure occurring) such that the Licensee is in full compliance with the QoS Obligation.

Article 15 Audits and compliance controls

15.1. Without limiting its powers of audit under the QoS Regulatory Framework, the CRA may conduct audits (either itself or through a third party) of any Licensee's compliance with this Regulation in accordance with Articles 15.2 and 15.3.

15.2. The CRA may conduct validity controls in respect of a Licensee to:

15.2.1. verify the accuracy and sufficiency of QoS Results reported by the Licensee;

15.2.2. review the internal procedures used by the Licensee to collect QoS measurements, including checks with its administrative or technical staff to verify that the internal procedures have been correctly followed; and

15.2.3. launch queries on the Licensee's systems

15.3. The CRA may conduct performance controls in respect of a Licensee to compare the QoS Results reported by the Licensee against the Licensee's own QoS measurements to verify that the accuracy and sufficiency of the Licensee's QoS measurements. For Minimum Performance Requirements that are designated in Annex 1 (Minimum Performance Requirements) as being measured using:

15.3.1. T Measurements, the CRA's performance control measurements will determine whether the Licensee has achieved the Minimum Performance Requirement; and

15.3.2. A Measurements or N Measurements, the CRA's performance control measurements will be compared to the Licensee's measurements (and if the comparison shows material differences (being greater than 10% of the measurement) then the CRA may launch an investigation or enforcement action under Article 18).

15.4. The purpose of an audit conducted under Articles 15.2 or 15.3 is to allow the CRA to:

15.4.1. verify if the Licensee has accurately and sufficiently measured and reported QoS Results;

15.4.2. verify if the Licensee has achieved any Minimum Performance Requirement; and

15.4.3. determine if any rectification or other tasks are required under Article 16 or if investigation or enforcement action will be required under Article 18

15.4.4. Verify the promises made on QoS when objectives are set by the Licensee.

15.5. A Licensee will bear the costs of any audit conducted on behalf of the CRA in respect of the Licensee under Articles 15.2 or 15.3 if the audit reveals that:

15.5.1. any QoS Result has not been accurately and sufficiently measured and reported by the Licensee; and/or

15.5.2. the Licensee has failed to achieve any Minimum Performance Requirement that it had reported as having achieved.

15.6. Licensees will submit to any audit conducted by or on behalf of the CRA under Articles 15.2 or 15.3 and will provide the CRA with any information and documents relating to their Communications Services and Communications Networks upon request by the CRA for that purpose. The CRA may also request, and Licensees will provide the CRA and its authorized representatives with access to systems, facilities, premises and personnel to inspect and facilitate any audit conducted by or on behalf of the CRA under Articles 15.2 or 15.3.

15.7. The CRA may provide a Licensee who has been subjected to an audit under Article 15.1 with an Audit Report containing:

15.7.1. the results of the audit;

15.7.2. the CRA's determinations and conclusions from the audit;

15.7.3. requests for the Licensee to submit to the CRA written explanations regarding any issues identified during an audit, including the reasons for any failure to accurately or sufficiently measure and report any QoS Results; and

15.7.4. any rectification that the Licensee is required to perform, including:

(c) the adoption of accurate and sufficient measurement methodology for any QoS measurements for the next quarter; and

(d) rectification of failures to achieve the Minimum Performance Requirements.

15.8. A Licensee must respond to any determinations, conclusions and request for explanation in an Audit Report within 30 Working Days of receipt of an Audit Report. If a Licensee does not respond within that timescale, any determinations and conclusions from the audit by the CRA will be deemed to be correct.

15.9. If an Audit Report requires a Licensee to conduct any rectification or to complete any other tasks, then it will constitute a notice to the Licensee under Article 16.

15.10. For the purpose of these auditing and compliance obligations, records must be retained a minimum of 5 years.

15.11. comply with Article 77 in relation to the achievement of Minimum Performance Requirements and Performance Monitoring Requirements:

15.11.1. comply with Article 88 in relation to the collection of QoS measurements;

15.11.2. prepare, submit or re-submit any QoS Compliance Report in accordance with Article 9

15.11.3. notify or report to the CRA and/or notify any End-Users of a Notifiable Fault in accordance with Article 11;

15.11.4. notify the CRA and/or any End-Users of any Planned Network Outage, or submit to an inspection, in accordance with Article 12;

15.11.5. comply with Article 13 in connection with the establishment, implementation and variation of any Automatic Compensation System;

15.11.6. rectify a failure to achieve a QoS Obligation in accordance with Article 14;

15.11.7. comply with Article 15 in connection with an audit or compliance control process conducted by or on behalf of the CRA; and/or

15.11.8. complete any rectification or other tasks required in a notice issued by the CRA under Article 16 or comply with any other notice from the CRA in relation to QoS.

Article 16 Rectification required by the CRA

Within 30 Working Days of a Licensee's receipt of a notice from the CRA requiring rectification and/or completion of other tasks, including in connection with:

16.1. the CRA's review of a QoS Compliance Report, an Annual QoS Compliance Report or any other report or notification submitted to the CRA;

16.2. an Audit Report or other results of an audit or compliance exercise by or on behalf of the CRA; or

16.3. a Complaint or series of Complaints,

the Licensee must complete the rectification and other tasks as required by the notice.

Article 17 Extensions of time

17.1. If a Licensee wishes to request an extension of time for a task under this Chapter 3 (Compliance and Enforcement), the Licensee must notify the CRA in writing of this request within three Working Days of the failure or notice requiring rectification, setting out in that notice:

17.1.1. the reasons for the requested extension;

17.1.2. a suggested period of time for the extension; and

17.1.3. supporting documentation to justify the extension of time.

17.2. The CRA may accept or reject a request for an extension under Article 17.1 in its sole and absolute discretion in a written response. Acceptance of a request for an extension by the CRA may be subject to any conditions (including timescales) that are imposed by the CRA. If a request for an extension submitted under Article 17.1 has not been accepted by the

CRA in a written response within five Working Days, the request shall be considered to be rejected by the CRA.

17.3. If the CRA accepts a Licensee's request for an extension under Article 17.1, the Licensee must complete the rectification or task within the period stated in the CRA's response.

Article 18 Enforcement actions

18.1. Any enforcement action shall be conducted in accordance with the laws of the State of Qatar, including the QoS Regulatory Framework.

18.2. In case of failure as defined in 18.1 to achieve objectives, the CRA may:

18.2.1. Share results of Audits and Compliance Controls with the Service Providers

18.2.2. Publish results on a base of Name & Shame

18.2.3. Apply penalties and sanctions as defined by Law No 17 – Amendment of telecoms Law, promulgated by the Decree Law No 34 of 2006

Annex 1 Minimum Performance Requirements

Part 1 – Definitions and Interpretation

Minimum Performance Requirements are Mandatory Objectives which will be fixed and based on the minimum international standards (ITU, ETSI).
Minimum Performance Requirements can be set by the CRA or the licensee as defined in Article 7.

In this Annex 1 (Minimum Performance Requirements), the definitions and rules of interpretation in 0 of the Regulation apply further to the terms that are defined within Part 2 (List of Minimum Performance Requirements). In addition, the following terms and acronyms have their ascribed meanings:

dBm	Means the power ratio in decibels (dB) of the measured power referenced to one milliwatt (mW).
ETSI	Means the European Telecommunications Standards Institute.
FTTH	Means fibre to the home.
FTP	Means file transfer protocol.
HTTP	Means hypertext transfer protocol.
IMS	Means IP multimedia subsystem.
IP	Means internet protocol
ISP	Means internet service provider.
ITU	Means the International Telecommunication Union, which is an agency of the United Nations (UN) whose purpose is to coordinate telecommunication operations and services throughout the world.
Kbps	Means kilobits per second.
Mbps	Means megabits per second.
MMS	Means a multimedia messaging service (e.g. images, audio or video clips) used to transmit multimedia messages to a mobile device.
Ping	Standing for packet internet groper, means the process of checking for an active connection by sending an information packet to an IP address and waiting for a reply.

Point of Presence or PoP	Means a Telecommunications Network gateway for fixed or mobile Telecommunications.
STQ	Means speech and multimedia transmission quality.

Please refer to Annex 3 (QoS Measurement Requirements) for detailed requirements related to the measurement of Minimum Performance Requirements. In addition, the following guidance is provided to interpret the content of the table in Part 2 (List of Minimum Performance Requirements):

Measurement column	A = A Measurements. N = N Measurements. T = T Measurements.
Standard column	Whenever an ITU or ETSI recommendation/standard is referred to, this recommendation/standard fully applies and is incorporated to the Regulation. The texts provided in the table are extracts and/or summaries which shall not be interpreted as superseding the relevant ITU or ETSI recommendation/standard. References to ITU or ETSI recommendation/standard are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies. The following standards are used: • ETSI EG 202 057-1 (2013-01) "Speech Processing, Transmission and Quality Aspects (STQ); User related QoS parameter definitions and measurements; Part 1: General" • ETSI EG 202 057-2 (2005-10) "Speech Processing, Transmission and Quality Aspects (STQ); User related QoS parameter definitions and measurements; Part 2: Voice telephony, Group3 fax, modem data services and SMS" • Recommendation ITU-T E.804 "QoS Aspects for Popular Services in Mobile Networks" • Recommendation ITU-T P.863 "Perceptual objective listening quality assessment" This standard needs to be considered in conjunction with its application guide P.863.1 For licensed vendors, see: http://www.polqa.de/licensees.html • Recommendation ITU-T P.863.1 "Application Guide for Recommendation ITU-T P.863" • Recommendation ITU-T J.247

	"Objective perceptual multimedia video quality measurement in the presence of a full reference" For licensed vendors, see: http://www.pevq.org/ • Recommendation ITU-T Y.1543 "Measurements in IP networks for inter-domain performance assessment"
KPIs column	The values stated are the minimum KPIs to achieve a Minimum Performance Requirement.
Status column	New = Means new KPI added since the last consultation. Updated = Means KPI updated since the last consultation. Old QCR = Means KPI existing before the last consultation.
Layer column	This column will state in which layer the KPI is, according to the following table: Telecom Layer representing all the aspects of the Quality of Service and defined as below: - **Layer 1:** Network Availability and Accessibility - **Layer 2**: Broadband Infrastructure performance - **Layer 3**: Basic Services Quality: • accessibility, retainability, integrity on voice calls, messaging and all on-net services • Interconnection between operators for these services - **Layer 4:** Internet service: • email, file transfer, TV, streaming, web browsing, OTT apps, online games, VPNs • other professional use - **Layer 5:** Quality of the other interactions the end user can have with the SPs: • customer journey quality on billing • initiation/ termination of subscription • number portability, customer care, etc • porting and publication obligations;

Part 2 – List of Minimum Performance Requirements

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
Customer relation and billing (all services) *The categories of service considered under this section shall be:* • *Residential fixed line based services (including ancillary services related to residential fixed customers)* • *Business fixed line based services (including ancillary services related to business fixed customers.)* • *Pre-pay mobile based services (including ancillary services related to pre-pay mobile customers)* • *Post-pay mobile based services (including ancillary services related to post-pay mobile customers)*								
R1	Complaints rate	Fixed, Mobile and Satellite	This parameter assesses the average number of complaints (excluding Invalid Complaints) per total number of Active Lines for each category of service. Complaints rate = total number of complaints related to a category of service each month ---------- x 100 Total number of Active Lines for a service during the month For each service type, the Service Provider shall report: 1. The quarterly complaint rate for the service performance by summing the 3 monthly complaints rates (i.e. =month 1 + month 2 + month 3); 2. The quarterly complaint rate relating to billing matters by summing the 3 monthly complaints rates (i.e. =month 1 + month 2 + month 3); 3. The total complaints rate, calculated by summing the values determined in points 1 and 2 above. The target will be met if the total complaints rates (point 3 of the above) for each of the four types of service listed above are below the value stated in the “Target” column.	A	ETSI EG 202 057 – 1 § 5.9	< 0.15 %	NEW	Layer 5
R2	Time to resolve complaints (TTRC)	Fixed, Mobile and Satellite	This parameter assesses the period between the instant when a complaint is notified to the Service Provider and the instant the complaint has been resolved. time to resolve complaints	A	ETSI EG 202 057 - 1 § 5.10	90% in <5	NEW	Layer 5

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
			= t (complaint resolved) - t (notification of complaint) where t (complaint resolved) is the instant when the complaint has been resolved t (notification of complaint) is the instant when the complaint has been notified to the Service Provider's customer support centre either by phone or by email or other electronic means. Complaints that are found to be Invalid shall be excluded. The KPI calculation process shall be the following: 1) Record the complaint times; 2) Make a numbered list of the times with the shortest time being #1, the second shortest being #2, etc., … with the longest being #N; Note: create one list for the time to resolve billing complaints, another list for the time to resolve service-related complaints and a third list combining the times associated with the resolution times of billing and service complaints. 3) Record and report the time of the entry closest to 75% of #N (T75) and of the entry closest to 95% of #N (T95). For each service type the Service Provider shall report: 1. T75-service and T95-service associated with the performance of the service; 2. T75-billing and T95-billing associated with the billing of the service; 3. T75-combined and T95-combined associated with the total list of all complaint resolution times.			working days 99% in <15 working days		

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
			The target will be met if T75-combined and T95-combined (point 3 of the above) for each of the four categories of service listed above are below the value stated in the "Target" column.					
R3	Time to resolve complaints on Coverage (TTRCC)	M	This parameter assesses the period between the instant when a complaint on Coverage is notified to the Service Provider and the instant the complaint has been taken into consideration with a plan to solve it and a delay. time to resolve complaints on coverage = t (complaint taken into consideration) - t (notification of complaint) where t (complaint taken into consideration) is the instant when the complaint has been taken into consideration by the Service Provider including survey if necessary, cause of the coverage issue, solution which will be applied and delay to implement the solution. t (notification of complaint) is the instant when the complaint on coverage has been notified to the Service Provider's customer support centre either by phone or by email or other electronic means. Complaints that are found to be Invalid shall be excluded.	A	n/a	99% in <15 working days		
R6	Response time by customer support centre – phone call	Fixed, Mobile and Satellite	This KPI assesses how quickly the customer support centre answers incoming calls. The response time by customer support centre is the period of time between the end of dialling by the user and the instant when the call reaches a human operator. response time by customer support centre = t (call answered by a member of the customer support team) - t (end of dialling) where	A	ETSI EG 202 057 – 1 § 5.6	75% in < 15s	NEW	Layer 5

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
			t (end of dialling) is the instant when the user finishes dialling (including the selection of the required department when prompted by an automated answering service) t (call answered by a member of the customer support team) is the instant when the call actually reaches a member of the customer support team The KPI calculation process shall be the following: 1) Record the response times for all incoming calls; 2) Make a numbered list of the times with the shortest time being #1, the second shortest being #2, etc., … with the longest being #N; 3) Record and report the time of the entry closest to 75% of #N and of the entry closest to 95% of #N.			95% in <30s 100% in < 1 minute		
SERVICES – Fixed								
R7	Supply time	F	This parameter assesses the time needed for the subscriber to have access to the service following the submission of a complete and valid order by the customer. The supply time is the period of time between the instant when the supply event is ordered and the instant when the supply is completed and the user has access to the service. Supply time = t (supply completed) - t (valid order) where t (valid order) is the instant when the customer submits a complete and valid order t (supply completed) is the instant when the supply is completed and the user has access to the service	A	n/a	99% in 3 working days when there is a connection at the	NEW	Layer 5

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
			The KPI calculation process shall be the following: 1) Record the initial supply times; 2) Make a numbered list of the times with the shortest time being #1, the second shortest being #2, etc., … with the longest being #N; 3) Record and report the time of the entry closest to 95% of #N and of the entry closest to 99% of #N. The supply time shall be reported separately for telephone lines and broadband connections with separate figures for business and residential and for FTTH lines. The targets will be met if the supply time is below the values stated in the “Target” column regardless of the type of lines involved. Note: This KPI only applies to fixed lines: targets for leased lines are set in R28, R29, R30 and R31.			user premise 95% in < 10 working days when infrastructure is not available at the user premise but are available in the range of 100 meters from it		

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
R8	Faults report rate	F	The Fault report rate assesses the rate of faults reported that are not found to be Invalid. Fault report rate = faults reported during the quarter ---------- x 100 Total number of Access Lines Separate figures shall be reported for business and residential and for FTTH lines. The target is met when the fault report rate, for all faults reported, is below the value stated in the “Target” column, regardless of the type of lines involved. Note: This KPI only applies to fixed lines: targets for leased lines are set in R28, R29, R30 and R31.	A	ETSI EG 202 057 – 1 § 5.4	< 0.25 %	NEW	Layer 5
R9	Fault repair time	F	This parameter assesses the time needed for a fault to be repaired rendering to the subscriber a fully functional service. The fault repair time is the period of time between the instant when the fault is reported and the instant when the fault repair is completed and the service is fully functional. fault repair time = t (fault repair completed) - t (fault reported) where t (fault reported) is the instant when the Service Provider first becomes aware of its existence, whether or not the user is aware of the fault. t (fault repair completed) is the instant when the fault repair is completed and the service is fully functional. The KPI calculation process shall be the following: 1) Record the fault repair times; 2) Make a numbered list of the times with the shortest time being #1, the second	A	ETSI EG 202 057 - 1 § 5.5	90% in < 8 working hours 99% in < 16 working hours	NEW	Layer 5

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
			shortest being #2, etc., … with the longest being #N; 3) Record and report the time of the entry closest to 90% of #N and of the entry closest to 95% of #N. Separate figures shall be reported for business and residential and FTTH lines. The target is met when the fault repair time, for all faults reported, is below the value stated in the "Target" column, regardless of the type of lines involved. The present KPI only applies to fixed lines: targets for leased lines are set in R28, R29, R30 and R31.					
SERVICES – Voice								
R13	Unsuccessful call attempt	F	The unsuccessful call attempt assesses the probability that the call cannot be completed despite the fact that the network is available/operational. Completed calls are defined as calls resulting in subscriber busy tone, ringing tone or answer signal within 30 seconds. Probability of unsuccessful call attempt = Total number of unsuccessful telephony service attempts ---------- x 100 Total number of telephony service attempts	N	n/a	< 0.2% for national calls	NEW	Layer 3
R14	Unsuccessful call attempt	M	The unsuccessful call attempt assesses the probability that the user cannot access the telephony service when requested despite the display on the handset indicating that the service is available $\text{Probability of unsuccessful call attempt} = \frac{\text{Number of unsuccessful telephony service attempts by all users of the service when service shown as available}}{\text{Number of all telephony service attempts by all users}} \times 100$	T	ITU-T E.804 § 7.3.6.1	<0.5%	NEW.	

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
			Measurements shall be performed within the declared coverage area coherently with the measurement methodologies mentioned in Annex X section a.					
R15	Dropped Call Ratio	F	The Dropped Call Ratio is the probability that a successful call is ended by a cause other than the intentional termination of the calling party or of the called party. Cut-off call ratio = $\frac{\text{Number of unintentionally dropped telephony calls}}{\text{Number of all successful telephony call attempts}} \times 100$	N	n/a	<1.5%	NEW	Layer 3
R16	Call completion ratio	M	The Call Completion Ratio is the ratio that a successful call is ended by a cause other than the intentional termination by the calling party or by the called party. $\text{Call Completion Ratio} = 1 - \frac{\text{Number of dropped telephony calls}}{\text{Number of all successful telephony call attempts}} \times 100$ Calls shall be held for a period of 60s. Results shall be reported and assessed according to the methodology stated in Annex.3	T	ITU-T E.804 § 7.3.6.5	> 99% until 31st December 2020 >99.5% from 1st January 2021	Updated.	Layer 3
R17	Voice Quality	F	This parameter measures voice quality over fixed networks. Voice quality in residential and SOHO fixed networks should be measured using special network equipment based on the P.563 algorithm. The P.563 algorithm provides speech quality predictions without a separate reference signal. For this reason, this method is recommended for non-intrusive speech quality	N	ITU-T P.563	> 3.5 for 90% of all results	NEW	

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
			assessment, live network monitoring and assessment by using unknown speech sources at the far-end side of a telephone connection. Real systems may include background noise, filtering and variable delay, as well as distortions due to channel errors and speech codecs. The P.563 approach is the first recommended method for single-ended non-intrusive measurement applications that takes into account the full range of distortions occurring in public switched telephone networks and that is able to predict the speech quality on a perception-based scale MOS LQO. This Recommendation is not restricted to end-to-end measurements; it can be used at any arbitrary location in the transmission chain. The calculated score is then comparable to the quality perceived by a human listener, who is listening with a conventional shaped handset at this point. This method is based on the assessment of the received voice sequences only (non-reference model), i.e. the voice quality is assessed based on the received real-time traffic by using the standardized mathematical algorithm. This KPI is based on standardized and IPR protected algorithms. For conducting the tests, a licensed implementation of the mathematical algorithms which have been standardized by the ITU-T is required. The processing of the sequence requires in-depth understanding of the application. Typically, this should be handled by well-trained personnel or third parties. The KPI calculation process shall be the following: 1) Record the voice quality; 2) Make a numbered list of the voice quality with the highest being #1, the second highest being #2, etc., … with the shortest being #N; 3) Record and report the voice quality of the entries closest to 90% of #N.					
R18	Voice Quality	M	This parameter measures voice quality over mobile networks.	T	ITU-T P.863,	> 3.3 for 90% of	Updated	

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
			Voice quality in mobile networks should be measured using special network equipment based on the P.863 algorithm. POLQA, ITU-T P.863 is the next-generation voice quality testing technology for fixed, mobile and IP-based networks. ITU-T P.863 has been selected to form the new ITU T voice quality-testing standard. Results shall be reported and assessed according to the methodology stated in Annex 3 page 52. The measurements are carried out in super wideband (SWB) mode based on four pairs of sentences (two male and two female voices, two sentences each) per call. For example, the English samples from the test sentences provided in Recommendation ITU-T P.501, Annex C, can be used. If all 8 sentences (4 samples) are sent within one file, the score calculation according to Recommendation ITU-T P.863 shall be performed separately for each sample (2 sentences per sample). After each call a protection time (pause) of 30 s has to be observed. This KPI is based on standardized and IPR protected algorithms. For conducting the tests, a licensed implementation of the mathematical algorithms which have been standardized by the ITU-T is required. The processing of the sequence requires in-depth understanding of the application. Typically, this should be handled by well-trained personnel or third parties. The KPI calculation process shall be the following: 1) Record the voice quality; 2) Make a numbered list of the voice quality with the highest being #1, the second highest being #2, etc., … with the shortest being #N; 3) Record and report the voice quality of the entries closest to 90% of #N.		ITU-T P.863.1	all results NB: CRA expects operators who use VoLTE to achieve levels greater than 4.0		

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
R19	Call Setup Success Rate	M	This measures the call set up success rate over the busiest part of the network. The 10% of cells which have the highest levels of carried traffic during their busy hour during the measurement period are identified. The call set up success rate is calculated for each cell during the identified busy hour. The network call set up success rate is the average across the individual success rates for each cell as follows. Call Setup Success Rate $= 1 - \frac{\text{Number of call attempts that could not be completed due to technical problems for which the Service Provider is responsible}}{\text{No of calls during the busy hour}} \times 100$	N	n/a	99%	Old QCR	Layer 3
R20	Network Availability	M	This provides a measure of the proportion of time that the network is available to its subscribers. It is defined as the proportion of time during which at least 80% of the installed radio capacity at each base station is operational, meaning that the network can perform its required functions. For each base station site, the number of hours during which at least 80% of the installed capacity is operational during the month is determined and divided by the total number of hours in the month. Network availability is the average of the availability of each base station site. It measures the downtime of any of the network elements over a month but excludes all planned service downtime for any maintenance or software upgrades.	N	n/a	99.95%	Old QCR	Layer 3
R21	Network Accessibility	M	Network accessibility is defined for Voice service.	T	n/a	98%	New	Layer 1

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
			Network accessibility indicator will provide the Service Provider network coverage from the customer point of view by testing the accessibility to the Voice network from the Service Provider. The test consists to make a call automatically by software initiates test from a mobile phone to an auto answer test number defined in the network following a pre-defined test cycle. The accessibility rate is computed using the number of successful accessibility tests divided by the number of test attempts, after removal of congestion attempts, if any. Call failed due to genuine network problem as identified by mobile protocol and not related to network coverage, such as network congestion will be extracted and not taken into consideration as failure in coverage accessibility See Annexure 3, table 3 page 54 for sampling size. $= \frac{\text{number of successful accessibilty test}}{\text{Total Number of Call attempts}} \times 100$					
R22	Network retainability	M	Network retainability indicator will provide the Service Provider network data coverage from the customer point of view by testing the accessibility and retainability of the Data Network during a short test. The test consists to be able to download from a mobile phone a small file on the network of the Service Provider. The data server used for the test should be located in the network of the Service Provider. ETSI reference web page based on the ETSI Kepler reference page will be used	T	n/a	98%	New	Layer 1

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
			If the web page is well downloaded, the test is successful. See Annexure 3, table 3 page 54 for sampling size. $= \frac{\text{Number of files downloaded successfully}}{\text{Total Number of download attempts}} \times 100$					
SERVICES – Mobile Broadband								
R24	Mobile throughput when coverage is available	M	The parameter assesses mobile throughput by setting the minimum average data rate requirements. The minimum average data rate requirement shall be assessed in the declared coverage areas and for each municipality by conducting the following test: • Downloading a 100MB file via http. The time taken to download the entire file shall be recorded. The downloaded file shall be tested for integrity; and • Uploading a 50MB file via http. The time taken to upload the entire file shall be recorded. The file downloaded shall be located on a server in the core of the Licensee's own network $Average\ Data\ Rate = \frac{\text{data transferred}}{\text{t (data transfer complete)} - \text{t (data transfer start)}}$ where t (data transfer complete) is the instant when the data transfer is successfully terminated	T	n/a	More than 10 Mbps for DL and UL 90% of all results per municipality starting from 1st January 2019	Updated.	

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
			t (data transfer start) is the instant when the data transfer starts Compliance shall be assessed on the basis of sample testing conducted in each municipality as specified in Annex 2 – B. The KPI calculation process shall be the following: 1) Record the average data rates as calculated above; 2) Make a numbered list with the highest being #1, the second highest being #2, etc., … with the shortest being #N; 3) Record and report the entries closest to 90% of #N. Notwithstanding the requirement to report data separately, the target will be met if the results obtained for each municipality fulfil the requirement stated in the Minimum Acceptable Quality "Target" column. Further details are on measurement methodologies are Annex 3 page 52.					
SERVICES – Leased Lines								
R28	Leased Line (LL) Supply time where there are no existing access network facilities at one or both ends	F	This parameter assesses the time needed to have access to the LL service following an order when there are no existing access network facilities at one end. The LL supply time is the period of time between the instant when a complete and valid order for LL is submitted and the instant when the supply is completed and accepted by the subscriber. LL supply time = t (supply completed) - t (supply validly ordered) where t (supply validly ordered) is the instant when a complete order is validly submitted t (supply completed) is the instant when the supply is completed and accepted by subscriber	A	n/a	2 (two) months provided that SP survey verifies that LL can be satisfact	NEW	Layer 5

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
			For each order, the supply time shall be recorded and the average supply times for all orders during the observation period shall be reported and meet the target set.			ory supplied		
R29	Leased Line (LL) Supply time where there are existing access network facilities at both ends	F	This parameter assesses the time needed to have access to the LL service following an order when there are existing access network facilities at one end. The LL supply time is the period of time between the instant when a complete and valid order for LL is submitted and the instant when the supply is completed and accepted by the subscriber. LL supply time = t (supply completed) - t (supply validly ordered) where t (supply validly ordered) is the instant when a complete order is validly submitted and the customer has completed its commitments to making the site(s) ready for the supply of the leased line. t (supply completed) is the instant when the supply is completed and accepted by subscriber For each order, the supply time shall be recorded and the average supply times for all orders during the observation period shall be reported and meet the target set.	A	n/a	20 working days	NEW	Layer 5
R30	Leased Line (LL) Fault rate	F	The LL Fault rate assesses the faults reported which are not found to be Invalid (i.e. the fault report has been accepted as valid and complete by the network provider) related to parts of leased lines within Qatar. The rate is expressed as: LL Fault rate = Number of valid faults reported during the observation period	A	n/a	< 0.5 %	NEW	Layer 5

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
			---------- x 100 Number of LL circuits					
R31	LL Fault repair time	F	This parameter assesses the time needed for a fault to be repaired granting to the user a fully functional service for faults related to parts of leased lines within Qatar. The LL fault repair time is the period of time between the instant when a fault is reported and the instant when the fault repair is completed and accepted by the affected party. Faults occurring to leased lines parts located outside Qatar shall be excluded. LL fault repair time = t (fault repair completed) - t (fault reported) where t (fault reported) is the instant when the Service Provider first becomes aware of its existence, whether or not the user is aware of the fault. t (fault repair completed) is the instant when the fault repair is completed and accepted by the affected party The KPI calculation process shall be the following: 1) Record the LL fault repair times; 2) Make a numbered list of the times with the shortest time being #1, the second shortest being #2, etc., … with the longest being #N; 3) Record and report the time of the entry closest to 95% of #N and of the entry closest to 99% of #N .	A	n/a	95% in <6 hours 99% in <24 hours	NEW	Layer 5
SERVICES – SMS								

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
R32	SMS Completion Failure Ratio	M	The SMS Completion Failure Ratio assesses the ratio of SMS sent by the A side which are not received by the B side at all or not received in full without errors in the contents. SMS which have been sent successfully and which have not arrived after a grace period of 2 minutes are counted as "not received". $\text{SMS Completion Failure Ratio} = \frac{\text{Number of unsuccessfully received SMS}}{\text{Number of all SMS sent}} \times 100$ Measurements shall be performed within the declared coverage area. Results shall be reported and assessed according to the methodology stated in Annex 2 section a. The tests should include 50% of on-net SMS and 50% of off-net national SMS.	T	ITU-T E.804 § 7.4.4.4	< 0.01 % local to local	New	Layer 3
SERVICES – VSAT								
R34	Latency	S	Latency is the average round trip. The Latency times of a packet of data will be less than 800ms average within the calendar month to the nearest Service Providers monitoring point.	T	ETSI EG 202 765-3 V1.1.2 (2010-07) chapter 4.2 Round Trip Delay	<800ms	New	Layer 2

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
					ETSI TS 102 250-2 V2.5.1 (2016-06) chapter 6.3 PING Round Trip Delay			
R35	Time to respond to network issues	S	Time to respond to network issues: Response time is defined as amount of time in which the Service Providers acknowledges the network issues. It does not mean the actual time to resolve the network issue. The response will include an acknowledgement of the incident, assigned trouble ticket number, general overview of the outage and contact information for the incident.	A	ETSI EG 201 769 V1.1.2 (2000-10) in paragraph 5.6	<4 hours <1 hour for outage Service	New	Layer 2
R36	Offered Throughput Non-Compliance Indicator	S	This indicator measures whether the customer's available throughput corresponds to the offered throughput of the Service Provider. Number of Client with throughput lower than offered by Service Provider ---------- x100 Total Number of Client	A / N / T	n/a	<2%	New	Layer 2

#	Name	Fixed / Mobile / Satellite	Description / Definition	A / N / T	Standard	Target	Status	Layer
			Minimum number of clients which will have to be measured is 500. This indicator can be provided by the Service Provider or by 3 ways from the regulator: - Punctual Audit to measure this indicator: measurement done at client office or home - With the crowdsourcing application - With implementation of an automatic throughput measurement tool for clients *Note about Objective:* Objective of such indicator should be 0%, but as measurement cannot be perfect the objective is set to the uncertainty of measurement. The uncertainty of measurement is link to the number of clients which will be measured and the standard deviation of the measurement done. By assuming a sample of 200 clients measured and a standard deviation of 5, the uncertainty of measurement is 3%. By increasing the number of samples to 1000, the uncertainty of measurement becomes 1%. 2% is then chosen, with a minimum of sample of 500 which will have to be measured.					

Annex 2 Performance Monitoring Targets

Part 1 – Definitions and Interpretation

Performance Monitoring Targets are Monitoring Objectives which will be optional and revisable on a time period and based on the expectation of the market.
Performance Monitoring Targets can be set by the CRA or the licensee as defined in Article 7.
The Performance Monitoring Targets will reflect customer's expectations. Performance Monitoring Targets follow the market with the evolution of the technologies and short-term needs of users.

In this Annex 2 (Performance Monitoring Targets or Performance Monitoring Targets), the definitions and rules of interpretation in 0 of the Regulation apply further to the terms that are defined within Part 2 (List of Performance Monitoring Targets). In addition, the following terms and acronyms have their ascribed meanings:

Core Network	Means data or information coming from the upper part of the network. Core network contains all systems that carries out call and mobility management, user's information and billing centre.
Packet	Means information transmitted on network which is a formatted unit of data carried by a packet-switched network. A packet consists of control information and user data. Control information provides data for delivering the user information.
TCP	Means transmission control protocol.

Please refer to Annex 3 (QoS Measurement Requirements) for detailed requirements related to the measurement of Performance Monitoring Targets. In addition, the following guidance is provided to interpret the content of the table in Part 2 (List of Performance Monitoring Targets):

Measurement column	A = A Measurements. N = N Measurements. T = T Measurements.
Standard column	Whenever an ITU or ETSI recommendation/standard is referred to, this recommendation/standard fully applies and is incorporated to the Regulation. The texts provided in the table are extracts and/or summaries which shall not be interpreted as superseding the relevant ITU or ETSI recommendation/standard. References to ITU or ETSI recommendation/standard are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies. The following standards are used: • ETSI EG 202 057-1 (2013-01) "Speech Processing, Transmission and Quality Aspects (STQ); User related QoS parameter definitions and measurements; Part 1: General" • ETSI EG 202 057-2 (2005-10)

	"Speech Processing, Transmission and Quality Aspects (STQ); User related QoS parameter definitions and measurements; Part 2: Voice telephony, Group3 fax, modem data services and SMS" • Recommendation ITU-T E.804 "QoS Aspects for Popular Services in Mobile Networks" • Recommendation ITU-T P.863 "Perceptual objective listening quality assessment" This standard needs to be considered in conjunction with its application guide P.863.1 For licensed vendors, see: http://www.polqa.de/licensees.html • Recommandation ITU-T P.863.1 "Application Guide for Recommandation ITU-T P.863" • Recommendation ITU-T J.247 "Objective perceptual multimedia video quality measurement in the presence of a full reference" For licensed vendors, see: http://www.pevq.org/ • Recommendation ITU-T Y.1543 “Measurements in IP networks for inter-domain performance assessment”
KPIs column	The values stated are the minimum KPIs to achieve a Performance Target.
Status column	New = Means new KPI added since the last consultation. Updated = Means KPI updated since the last consultation. Old QCR = Means KPI existing before the last consultation.
Layer column	This column will state in which layer the KPI is, according to the following table: Telecom Layer representing all the aspects of the Quality of Service and defined as below: - **Layer 1:** Network Availability and Accessibility - **Layer 2**: Broadband Infrastructure performance - **Layer 3**: Basic Services Quality: • accessibility, retainability, integrity on voice calls, messaging and all on-net services • Interconnection between operators for these services - **Layer 4:** Internet service: • email, file transfer, TV, streaming, web browsing, OTT apps, online games,

VPNs
    - other professional use
- **Layer 5:** Quality of the other interactions the end user can have with the SPs:
    - customer journey quality on billing
    - initiation/ termination of subscription
    - number portability, customer care, etc
    - porting and publication obligations;

Part 2 – List of Performance Monitoring Targets

#	Name	Fixed / Mobile	Description / Definition	A / N / T	Standard	Target	Status	Layer
Customer relation and billing (all services) *The categories of service considered under this section shall be:* • *Residential fixed line based services (including ancillary services related to residential fixed customers)* • *Business fixed line based services (including ancillary services related to business fixed customers.)* • *Pre-pay mobile based services (including ancillary services related to pre-pay mobile customers)* • *Post-pay mobile based services (including ancillary services related to post-pay mobile customers)*								
R4	Rate of complaints related to number portability	Fixed and Mobile	This parameter measures the average number of complaints per porting request. Rate of complaints related to number portability = Number of complaints related to number portability ---------- x 100 Number of porting requests Complaints that are found to be Invalid shall be excluded. Each operator, whether Donor or Recipient shall report the rate related to the complaints filed with them. Service Providers shall record and report the rate of complaints related to number portability separately for fixed and mobile services. The target will be met if the rate of complaints related to number portability for fixed and mobile services are both below the value stated in the “Target” column.	A	n/a	=<1%	NEW	Layer 5
R5	Time to Reconnection and Activation of Service after resolution of cause of suspension	Fixed, Mobile & Satellite	This parameter measures the period from the instant when a cause of suspension is removed to the time when the user can access the service. Where the cause of the suspension is an unpaid bill the time counts from the start of the working day following the day on which the payment is credited to the bank account of the Service Provider. reconnection time = t (service reactivated) - t (cause of suspension removed) where	A	n/a	>=95% in <2 working hours.	NEW	Layer 5

#	Name	Fixed / Mobile	Description / Definition	A / N / T	Standard	Target	Status	Layer
			t (cause of suspension removed) is the instant when the cause of suspension is removed t (service reactivated) is the instant when the user can access the service The KPI calculation process shall be the following: 1) Record the times for reconnection and activation separately for each type of service; 2) Make a numbered list of the times with the shortest time being #1, the second shortest being #2, etc., … with the longest being #N; 3) Record and report the time of the entry closest to 95% of #N. The target will be met if reconnection time for each of the four types of service listed above is below the value stated in the "Target" column (i.e. the reconnection time for all four types of service must meet the target separately).					
SERVICES – Fixed								
R10	Call Set-up Time	F	The call set-up time measures the time period between sending of complete address information and receipt of call set up notification. Telephony set-up time = t (connect established) - t (calling party pressed button on terminal) where t (calling party pressed button on terminal) is the instant when the call button is pushed at the terminal on the A side (en bloc sending), or the last digit is dialled (overlap sending) t (connect established) is the instant when the connection is established on the signalling level (caller receives ring back tone and called party rings) The KPI calculation process shall be the following: 1) Record the set-up times; 2) Make a numbered list of the times with the shortest time being #1, the second shortest being	T	ETSI EG 202 057 - 2 § 5.2	95%< 10 secs 99% < 15 secs	NEW	Layer 3

#	Name	Fixed / Mobile	Description / Definition	A / N / T	Standard	Target	Status	Layer
			#2, etc., … with the longest being #N; 3) Record and report the time of the entry closest to 95% of #N and of the entry closest to 99% of #N.					
R12	Voice Quality	F	This parameter measures voice quality over fixed networks. Voice quality in residential and SOHO fixed networks should be measured using special network equipment based on the P.563 algorithm. The P.563 algorithm provides speech quality predictions without a separate reference signal. For this reason, this method is recommended for non-intrusive speech quality assessment, live network monitoring and assessment by using unknown speech sources at the far-end side of a telephone connection. Real systems may include background noise, filtering and variable delay, as well as distortions due to channel errors and speech codecs. The P.563 approach is the first recommended method for single-ended non-intrusive measurement applications that takes into account the full range of distortions occurring in public switched telephone networks and that is able to predict the speech quality on a perception-based scale MOS LQO. This Recommendation is not restricted to end-to-end measurements; it can be used at any arbitrary location in the transmission chain. The calculated score is then comparable to the quality perceived by a human listener, who is listening with a conventional shaped handset at this point. This method is based on the assessment of the received voice sequences only (non-reference model), i.e. the voice quality is assessed based on the received real-time traffic by using the standardized mathematical algorithm. This KPI is based on standardized and IPR protected algorithms. For conducting the tests, a licensed implementation of the mathematical algorithms which have been standardized by the ITU-T is required. The processing of the sequence requires in-	N	ITU-T P.563	> 3.5 for 90% of all results	NEW Proposal to move it to Monitoring KPIs with revisable targets.	Layer 3

#	Name	Fixed / Mobile	Description / Definition	A / N / T	Standard	Target	Status	Layer
			depth understanding of the application. Typically, this should be handled by well-trained personnel or third parties. The KPI calculation process shall be the following: 1) Record the voice quality; 2) Make a numbered list of the voice quality with the highest being #1, the second highest being #2, etc., … with the shortest being #N; 3) Record and report the voice quality of the entries closest to 90% of #N.					
SERVICES – Mobile								
R23	Call Set-up Time	M	The call set-up time measures the time period between sending of complete address information and receipt of call set up notification. Telephony set-up time = t (connect established) - t (calling party pressed button on terminal) where t (calling party pressed button on terminal) is the instant when the call button is pushed at the terminal on the A side (en bloc sending), or the last digit is dialled (overlap sending) t (connect established) is the instant when the connection is established on the signalling level (caller receives ring back tone and called party rings) The KPI calculation process shall be the following: 1) Record the set-up times; 2) Make a numbered list of the times with the shortest time being #1, the second shortest being #2, etc., … with the longest being #N; 3) Record and report the time of the entry closest to 95%of #N and of the entry closest to 99% of #N. Results shall be reported and assessed according to the methodology stated in Annex 3 page 52.	T	ITU-T E.804 § 7.3.6.2	95%< 10 secs 99% < 15 secs	NEW. Proposal to move it to Monitoring KPIs with revisable targets	Layer 3

#	Name	Fixed / Mobile	Description / Definition	A / N / T	Standard	Target	Status	Layer
SERVICES – Fixed and Mobile Broadband								
R25	Network latency	F	The latency (round trip time) assesses the time required for a packet to travel from the source to the destination and back. It is measured using PING. round trip time = t (packet received) - t (packet sent) where t (packet sent) is the instant when packet is sent t (packet received) is the instant when packet is received PING tests should be made from terminal equipment to ensure that the user experience is captured. The data shall be reported separately for each access technology used (i.e. FTTH and xDSL). However, the target is calculated for the total of all measurements conducted. As an alternative the measurement of the round-trip time can made by evaluating the TCP handshake: • Start: Point of time when the [SYN] is sent. • Stop: Point of time when the [SYN, ACK] is received. This applies to all services that are TCP based, e.g. file transfer (FTP), web browsing (HTTP) and E Mail (POP3, SMTP). Whatever the selected test method, tests shall made at evenly distributed locations throughout Qatar and at regular intervals in time (including during the day, night and busy period). At least 5000 measurements shall be taken in each reporting period. The average round trip delay of all measurements shall be calculated and reported. The KPI shall be measured separately to destinations inside and outside Qatar.	T	n/a	< 60 ms to destinations within Qatar To be monitored and reported for destinations outside Qatar	NEW	Layer 2
R26	Network latency	M	The latency (round trip time) assesses the time required for a packet to travel from the source to the destination and back. It is measured using PING.	T	ITU-T E.804	< 40 ms for 90% of	Updated	Layer 2

#	Name	Fixed / Mobile	Description / Definition	A / N / T	Standard	Target	Status	Layer
			round trip time = t (packet received) - t (packet sent) where t (packet sent) is the instant when packet is sent t (packet received) is the instant when packet is received PING tests should be made from terminal equipment to ensure that the user experience is captured. Measurements shall be performed within the declared coverage area coherently with the measurement methodologies mentioned in Annex 3 page 52. The data shall be reported separately for 3G, 4G, and following technologies and the measurement shall be conducted for each technology separately. The 90% values shall be reported for each technology separately. However, the target is assessed based on the latest technology available. As an alternative the measurement of the round trip time can made by evaluating the TCP handshake: • Start: Point of time when the [SYN] is sent. • Stop: Point of time when the [SYN, ACK] is received. This applies to all services that are TCP based, e.g. file transfer (FTP), web browsing (HTTP) and E Mail (POP3, SMTP). The KPI shall be measured separately to destinations inside and outside Qatar.		§ 7.3.3	tests to a destination within Qatar To be monitored and reported for destinations outside Qatar		
R27	Average HTTP Mean Data Rate and Ratio	F	The Average HTTP Mean Data Rate is calculated in stages - HTTP Mean Data Rate being the basis. The HTTP Mean Data Rate is the mean of the data transfer rate measured during the entire connection time to the service. The data transfer shall be completed without failure. The prerequisite for this parameter is network and service access. Measurement starts only, after a data link has been successfully established.	T	ITU-T E.804 § 7.3.8.7	If a minimum speed is quoted in the service description	NEW	Layer 4

#	Name	Fixed / Mobile	Description / Definition	A / N / T	Standard	Target	Status	Layer
			HTTP Mean Data Rate = data transferred ---------- t (data transfer complete) - t (data transfer start) where t (data transfer complete) is the instant when the data transfer is successfully terminated t (data transfer start) is the instant when the data transfer starts For each connection, the HTTP Mean Data Rate (as calculated above and measured separately for download and upload) shall be recorded. The Average HTTP Mean Data Rate is the average of all HTTP Mean Data Rates (upload and download separately) for all connections during the observation period; it shall be calculated and reported. The values (upload and download) shall be reported separately for all contracted speed options offered by the Service Provider. The HTTP Mean Data Rate Ratio measures the deviation between the rate offered to/contracted with the subscriber and the actual rate delivered. It is defined as follows: Average HTTP Mean Data Rate Ratio = Average HTTP Mean Data Rate ---------- x 100 HTTP Data Rate offered / contracted The HTTP Mean Data Rate Ratio is measured separately for download and upload for each different speed offer. This KPI shall be measured for residential and SOHO only.			the Average HTTP Mean Data Rate Ratio with respect to the minimum speed shall exceed 95% for all results. If a indicative speed is quoted in the service description the Average HTTP Mean Data Rate Ratio		

#	Name	Fixed / Mobile	Description / Definition	A / N / T	Standard	Target	Status	Layer
			The above KPIs shall be calculated separately for downloads from servers located inside and outside Qatar. For downloads from and uploads to, servers located outside Qatar, the top ten websites reported on Alexa shall be used, see http://www.alexa.com/topsites/countries/QA.			with respect to the indicative speed shall exceed 75% for all results. In all other cases the Average HTTP Mean Data Rate shall exceed 9 Mbps for 75% of all results per municipality starting from 1st January 2016, and 10 Mbps for		

#	Name	Fixed / Mobile	Description / Definition	A / N / T	Standard	Target	Status	Layer
						90% of all results per municipality starting from 1st January 2018		
SERVICES – SMS								
R33	SMS End to End Delivery Time	M	The SMS end-to-end delivery time measures the period of time between sending a short message to the network and the message being received at the distant terminal (user device). $$\text{SMS end} - \text{to} - \text{end delivery time} = \text{t (B, received)} - \text{t (A, sent)}$$ where t (A, sent) is the instant when the send button is pushed at the terminal (user device) on the A side t (B, received) is the instant when the SMS is received completely at the terminal (user device) on the B side The KPI calculation process shall be the following: 1) Record the SMS delivery time; 2) Make a numbered list of the times with the shortest time being #1, the second shortest being #2, etc., … with the longest being #N; 3) Record and report the time of the entry closest to 95% of and of the entry closest to 99% of #N.	T	ITU-T E.804 § 7.4.4.5	Local to local: 95% in <10 s 99% in <20 s Local to International to be monitored and reported	Updated	Layer 3

#	Name	Fixed / Mobile	Description / Definition	A / N / T	Standard	Target	Status	Layer
			Results shall be reported and assessed according to the methodology stated in Annex 3 section a page 52. For local to local, tests should include 50% of on-net SMS and 50% of off-net national SMS.					
SERVICES – VSAT								
R37	Service Availability	S	Service Availability guarantees a 99.5% uptime of Services within the calendar month in which the Services are delivered, with the exception of the following Exclusions: • Scheduled Maintenance • Planned site move • Atmospheric Attenuation • Obstructed blockage to satellite • Customer responsible outage (radio silence, loss of site power, internal network change, etc.)			>99.5% over a calendar month		Layer 1

Annex 3 QoS Measurement Requirements

Part 1 – QoS data collected from A and N Measurements

For KPIs that are calculated from the collection of A and N Measurements, Licensees must ensure that all events are used in the compilation of the QoS Results.

N Measurements include OSS Raw Data.

A Measurements include service map coverage, QoS performance proposed to customers and others.

Part 2 – QoS data collected from T Measurements

Fixed KPIs

For fixed network KPIs that are calculated from the collection of T Measurements, Licensees must ensure that a representative sample of events is used in the compilation of the QoS Results, based on include UNIs that are equally spaced around the Licensee's Telecommunications Networks.

Mobile KPIs generally

For mobile network KPIs that are calculated from the collection of T Measurements, Licensees must ensure that a representative sample of events is used in the compilation of the QoS Results, based on locations that are equally spaced around the coverage area for the Licensee's Telecommunications Networks using drive or walk around tests. For drive and walk around testing, Licensees must ensure its test equipment complies with section 9 of ITU-T E.804.

All tests are to be based on emulation of a typical End-User using Public Mobile Telecommunications Services using mobile QoS test equipment that is:

- installed in a vehicle;
- carried around by a pedestrian; or
- installed for semi-stationary use (e.g. in an office environment).

Measurement profiles must be defined as described in section 10 of ITU-T E.804.

Measurement profiles are required to enable benchmarking of different networks both within and outside national boundaries. It is necessary to have these profiles so that when a specific set of tests is carried out, End-Users are comparing "like for like" performance. For interpretation and comparability of test results it is important to know in which measurement environment the tests were performed.

Licensees must use the environment classifications described in the table below for all tests:

Table 1 – Stationary Tests		
Category	**Location Type**	**Additional information**
S1O	Airports, railway stations, shopping centres and malls business districts and exhibition areas.	Outdoor measurement
S1I	Airports, railway stations, shopping centres and malls business districts and exhibition areas.	Indoor measurements
S2O	Other locations	Outdoor measurement
S2I	Other locations	Indoor measurements

Table 2 – Drive tests/Walk tests (pedestrian in motion or in-car)		
Category	**Location Type**	**Additional information**
D1:	All administrative zones as detailed in the web page https://www.mdps.gov.qa/en/statistics1/GIS/Pages/atlas.aspx.	Indoor and outdoor measurement
D2:	All zones with population density greater than 10 (except for Zones in Doha Municipality). https://psaqatar.maps.arcgis.com/apps/webappviewer/index.html?appid=176f9078489a4e1581ff1196c308682f	Indoor and outdoor measurement
D3:	Highways	Outdoor measurement

In each report of QoS Results (including QoS Compliance Reports), Licensees must provide reasons for determining that a particular location type for a QoS measurement falls within a category in the tables above.

The CRA may, by providing written notice to Licensees, vary the location types in Tables 1 and 2 above. Varying a location type does not amount to setting new or alternative KPIs (or QoS measurements for KPIs), but instead will only impact the way in which QoS Results are aggregated together to calculate KPIs.

A benchmark of network performance for KPIs is required. To determine this benchmark, Licensees must (within two months of the Effective Date) either agree to:

- adopt the figures for network performance as are set out in the CRA's Annual Network Audit Report of 2017; or

- appoint and jointly pay for a single auditor to conduct test campaigns of Mobile Services for all Licensees, to be conducted at the same time for all Licensees prior, to be completed by the deadline of two months of the Effective Date.

If the Licensees agree to appoint an auditor as described above, the Licensees must ensure that the specification of the test campaigns (including frequency and locations of tests) is submitted to the CRA by e-mail at least one month before the test campaigns are run. Within 10 Working Days of receiving the specification, the CRA may provide notify the Licensees via e-mail of its required modifications to the specification, and those modifications must be made to the specification.

If the Licensees fail to agree on either of the options above, the CRA will adopt the figures for network performance as are set out in the CRA's Annual Network Audit Report of 2017 as the benchmark.

The following distribution is designed to be representative of typical usage:

- 70% of the samples will be taken in the populated areas and 30% in the other areas in regard to measurement of all parameters.
- 50% of samples will be outdoor pedestrian, of which one-third of measurements will be whilst in motion and two-thirds whilst stationary. Tests will be performed for each location and will ensure the best distribution over the tested zone.
- 20% of samples will be indoor pedestrian of which one-third of measurements will be whilst in motion and two-thirds whilst stationary. Tests will include measurements less than three meters from a window and measurements deep indoor. Any floor in a particular building may be tested, except the basement and above the 12th floor. Measurements will be distributed as follows according to building type:

  - 50% in the public buildings;
  - 25% in offices;
  - 25% in residential buildings; and
  - In buildings higher than 10 floors, 3 to 4 measurements shall be performed.

- 30% of samples will be measured in-car. Measurements will be performed along a route that includes major roads and constructed zones (Downtown, around malls, stations, places of touristic interest and business centers).

Starting from 1st of October 2020 the following distribution will apply:

- 50% of samples will be outdoor pedestrian, of which one-third of measurements will be whilst in motion and two-thirds whilst stationary.
- 30% of samples will be indoor pedestrian of which one-third of measurements will be whilst in motion and two-thirds whilst stationary.
- 20% of samples will be measured in-car.

Tests will be repeated with any two smartphones most sold top five handset types in the State of Qatar according to certified statistics provided by the Licensees.

Tests will be conducted between 07:00 and 21:00 on any day of the week, whilst ensuring that 40% of the tests are conducted during the busy hours (i.e. between 08:00-12:00 and 17:00-22:00 on Sunday to Thursday).

Test samples will be conducted in accordance with the number of samples, and using the distribution of samples, listed in the table below:

Table 3 – Municipalities and test samples

#	Municipality	Type of Land use Clutter	Total Samples
1	Doha	Low Urban, Urban and Dense Urban	4100
2	Al Rayyan	Urban, Sub Urban and Dense Urban	2500
3	Al Wakra	Urban and Sub Urban	900
4	Al Khor	Sub Urban	700
5	Al Shamal	Low Urban	250
6	Al Dayeen	Low Urban	250
7	Um Slal	Low Urban	250
8	Al Sheehaniya	Sub Urban, Low Urban	750
TOTAL			9700

In order to have a distribution of the samples based on the population in the different urban density for each municipality, the distribution of the samples in each Clutter should be:

#	Municipality	Type of Land use Clutter	% of Samples	Number of Samples
1	Doha	Dense Urban	40%	1640
		Urban	35%	1435
		Low Urban	25%	1025
2	Al Rayyan	Dense Urban	40%	1000
		Urban	35%	875
		Low Urban	25%	625
3	Al Wakra	Urban	70%	630
		Sub Urban	30%	270
4	Al Khor	Sub Urban	100%	700
5	Al Shamal	Low Urban	100%	250
6	Al Dayeen	Low Urban	100%	250
7	Um Slal	Low Urban	100%	250
8	Al Sheehaniya	Sub Urban	70%	525
		Low Urban	30%	225
TOTAL				9700

Once test samples have been collected for each KPI requiring a T Measurement, Licensees must aggregate the results for each location type described in Tables 1 and Table 2 above. The exception will be for R13 and R24 in Annex 1 (Minimum Performance Requirements), which have different requirements. Licensees must report the results of test samples for:

- R13 separately reported for the-populated areas and
- R24 per municipality.

Raw data collected as a result of each test sample must be stored but is not required to be reported to the CRA unless requested by the CRA.

The CRA may, by providing written notice to Licensees, vary Table 3 above due to changes in the municipalities.

Mobile KPIs – R24 in Annex 1 (Minimum Performance Requirements)

For R24 (Mobile Throughput When Coverage is Available) in Annex 1 (Minimum Performance Requirements), measurement profiles are required to enable benchmarking of different networks, both within and outside national boundaries. It is necessary to have these profiles so that when a specific set of tests is carried out then End-Users are comparing "like for like" performance. For ease of interpretation and to compare the test results, it is important to know in which measurement environment the tests were performed.

The same distribution of usage described in the 'Mobile KPIs generally' section above should be followed except that tests must be repeated with any two smartphones within the top 5 most sold handset types in Qatar provided by the Licensees.

Annex 4

Consultation Response Templet

Respondent	Consultation document reference (question/paragraph)	Response
(company/organization name)	*(specify question or paragraph number that response refers to)*	*(provide comments)*

Annex 5

- Annex 5: Quality of Service Benchmark Report