TELECOMMUNICATIONS ORDER, 2001

CODE OF PRACTICE AND STANDARDS OF PERFORMANCE RELATING TO QUALITY OF SERVICES FOR TELECOMMUNICATIONS SECTOR IN BRUNEI DARUSSALAM

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CODE OF PRACTICE AND STANDARDS OF PERFORMANCE RELATING TO QUALITY OF SERVICES FOR TELECOMMUNICATIONS SECTOR IN BRUNEI DARUSSALAM – SECOND EDITION (2025)

In pursuance of the functions and duties entrusted to the Authority under AITI Order, 2001, the Authority hereby exercises the power conferred under Section 8 and Section 26 of Telecommunications Order, 2001 as amended to issue the following Code of Practice and Standards of Performance relating to Quality of Services for the telecommunications sector in Brunei Darussalam.

ARRANGEMENT OF SECTIONS

PRELIMINARY

1.1 Citation and Commencement

The Code may be cited as the Code of Practice and Standards of Performance relating to Quality of Services for the telecommunications sector in Brunei Darussalam (the 'Code'). The Code or parts thereof come into effect from 1st March 2014 and shall continue to remain in force until further notification. The amendments shall take further effect as notified.

1.2 Goals of the Code

The Code is intended to:

1.2.1 Promote delivery of telecommunications services at performance standards that reasonably meet the social, industrial and commercial needs of Brunei Darussalam;

1.2.2 Promote efficiency, domestic and international competitiveness in evolving telecommunications, sector by making quality an inherent part of network infrastructure and services delivery;

1.2.3 Promote transparency and self-regulation to pave the way for maintaining the best possible customer interface along with optimal resource utilisation;

1.2.4 Establish a baseline by specifying quality benchmarks for varied nature of telecommunication networks and services that are existing or evolving;

The Authority shall endeavour to achieve these goals by exercising the powers and duties as provided in the Code.

1.3 Definitions

This Sub-section defines terms that are used in more than one Section of the Code. Terms that are used in only one Section of the Code is defined at the start of the relevant Section. As used in the Code unless the context requires otherwise:

(a) **Application** - an application is a set of activities performed to respond to the needs of the users for purposes such as business, education, personal communication or entertainment. It implies software and hardware utilisation could be performed in a fully or partially automatic way and could be accessed locally or remotely. In the last case, it requests use of telecommunication services;

(b) **Authority** - Authority for Info-communications Technology Industry of Brunei Darussalam established under the Authority for Info-communications Technology Industry of Brunei Darussalam Order, 2001;

(c) **Availability** - availability of an item to be in a state to perform a required function at a given instant of time or at any instant of time within a given time interval, assuming that the external resources, if required, are provided;

(d) **Bandwidth** - the range of frequencies within a given waveband used for a particular transmission;

(e) **Billing** - administrative function to prepare bills to service customers, to prompt payments, to obtain revenues and to take care of customer reclaims;

(f) **Broadband** – provision for transmission capacity that is not normally below 1 Mbps at user-end;

(g) **Call set-up time** - the period starting when the address information required for setting up a call is received by the network (recognised on the calling user's access line) and finishing when the called party busy tone, or ringing tone or answer signal is received by the calling party (i.e., recognised on the calling user's access line). Local, national and service calls should be included, but calls to other Licensees should not, as a given operator cannot control the QoS delivered by another network;

(h) **Characteristic** - a property which helps to differentiate between the individuals of a given population. The differentiation may be either quantitative (by variables) or qualitative (by attributes);

(i) **Charging** - the set of functions needed to determine the price assigned to the service utilisation;

(j) **Class of Service** - a group of end-to-end quality performance values (or range) for a service is denoted 'class of service'. A service offering may have different classes of services with specified performance limits for the various parameters. These classes of services are usually provided to accommodate different tariffs to the customer;

(k) **Code of Practice and Standard of Performance** – a code of practice and a standard of practice issued or approved under Section 26 of Telecommunications Order, 2001 as amended;

(l) **Complaint** - a statement by a user or customer expressing dissatisfaction due to a gap between the expected and the delivered benefits from the use of a service. A complaint may be made in various forms, writing, electronic means, or in person;

(m) **Consumer** - a entity or person who expresses interest in requesting and using the various service(s) to be consequently registered as customers;

(n) **Convergence** – characteristics of evolving networks to allow provisioning of range of differentiated services from the common nodes which required the provision of similar services through separate networks;

(o) **Customer (also called 'subscriber')** - a user who is responsible for payment for the services which it subscribes to;

(p) **Customer premises equipment (or CPE)** - telecommunications equipment located at the customer installation on the customer side of the network interface;

(q) **End-to-end quality** - quality related to the performance of a communication system, including all terminal equipment;

(r) **Equipment** – includes any appliance, apparatus or accessory used or intended to be used for telecommunication purposes;

(s) **High-definition voice (HD voice)** – voice service based on wideband audio that allows speech quality better than carrier grade 'toll quality' by virtue of wider frequency range and noise suppression as per ITU G.722 standard;

(t) **High-definition video** – video transmission based on 720 or 1080 scan lines or vertical pixels of picture content, maximum 60 frames per second;

(u) **Infrastructure** – includes infrastructure, systems, networks, facilities and other equipment except for Customer Premises Equipment (CPE);

(v) **Infrastructure licensee** – a licensee that owns infrastructure network and makes it available for the purpose of transporting bearers of telecommunication services;

(w) **Interconnected VoIP services** - the voice service based on Internet Protocol and address translation that enables real-time, two-way voice communications permitting the users to receive calls from and terminate calls to the public switched telephone network (PSTN);

(x) **International Gateway** - system that provides an interface to send and receive electronic communication, voice, data, video traffic as aggregated between a country's domestic network infrastructure and those in another country;

(y) **Item** - Any part, device, subsystem, functional unit, equipment or system that can be individually considered. It may consist of hardware, software or both, and may also include people, e.g., operators in a telephone operator system;

(z) **IPTV** - multimedia services of composite nature such as television, video, audio, text, graphics or data delivered over IP based networks managed to provide the required level of quality of service and experience, security, interactivity and reliability;

(aa) **Licensee** – entity that has been granted the stated rights of relevant category under Section 5 of the Telecommunications Order, 2001 as amended;

(bb) **Market Player** – a non-licensed entity working in participation with a licensee to serve the customers;

(cc) **Mean opinion score (MOS)** - the mean of opinion scores, i.e., of the values on a predefined scale that subjects assign to their opinion of the performance of the telephone transmission system used either for conversation or for listening to spoken material;

(dd) **Metric (also called 'Indicator')** - value calculated from observed attributes of a measure;

(ee) **Multimedia** - the combination of multiple forms of media such as audio, video, text, graphics, fax, and telephony in the communication of information;

(ff) **Multimedia services** - a telecommunications service that supports the simultaneous use of multiple media types (e.g., voice, data, video);

(gg) **Network** - a series of points or nodes interconnected by communication paths. Networks can interconnect with other networks and contain sub-networks;

(hh) **Parameter** - a quantifiable characteristic of a service with specified scope and boundaries;

(ii) **Premises** – the area that is within the boundaries of a property owner

(jj) **Overlay network** - a telecommunications network that runs independently on top of another one, although supported by its infrastructure;

(kk) **Packet data** - a tagged series of packaged data of varying unit size that may travel along multiple network paths from a sender to the receiver side.

(ll) **PDP Context activation** – the initiation of PDP context which means initiating packet data session between user in one network and external packet switching network

(mm) **Quality** - the totality of characteristics of an entity that bear on its ability to satisfy stated and implied needs. Here, the characteristics are observable and/or measurable in nature. Whenever defined, these become parameters and are expressed by metrics.

(nn) **Quality of Service (QoS**) - totality of characteristics of a telecommunications service that bear on its ability to satisfy stated and implied needs of the user of the service.

(oo) **Real-time** – instantaneous instances requiring transactional time within a fraction of a second; this applies to voice conservation, online gaming etc.

(pp) **Repair** – the corrective maintenance carried out after fault recognition and intended to restore an item to a state in which it can perform a required function.

(qq) **Service** - a set of functions offered to a user by an organisation constitutes a service.

(rr) **Service level agreement (SLA)** - a service level agreement is a formal document listing a set of performance characteristics and target values (or range) to be delivered for a service or portfolio of services by the service licensee. An SLA may include statements about performance, tariffing and billing, service delivery compensations and escalation procedures in cases of disagreement;

(ss) **Service licensee** – a licensee that provides services to users and customers on the basis of telecommunications infrastructure made available by Infrastructure licensee;

(tt) **Service provision** - all activities undertaken by the service licensee from the instant an order for a service is contracted to the instant the service is available for use by the customer/user;

(uu) **Service restoration** - a set of automated or manual methods, invoked after service failure, to enable successful communications to be restored. The activities associated may involve network and/or non-network related issues.

(vv) **Specified time** – transactional instance to happen at a future exactly defined time or during a future period of time; this could apply for instance to some types of near video on-demand, where the user could ask in advance for a film to be sent to him at some future given time, or to a retrieval service where, for a complex request that would take some time for the research or the handling of data, the system would call back later at a given time; it could also apply to messages sent during the night period when the tariff would be lower; similarly, a non-urgent message requiring some human intervention at the receiving end could be sent at any time during office hours.

(ww) **Speech quality** - quality of spoken language as perceived when acoustically displayed. Result of a perception and assessment process, in which the assessing subject establishes a relationship between the perceived characteristics, i.e., the auditory event, and the desired or expected characteristics;

(xx) **Speed** - performance criterion that describes the time interval that is used to perform the function or the rate at which the function is performed.

(yy) **Standard-definition video** – video transmission based on 576 scan lines or vertical pixels of picture content, 25 frames (giving 50 fields) per second

(zz) **Telecommunications** - a transmission, emission or reception of signs, signals, writing, images, sounds or intelligence of any nature by wire, radio, optical or other electro-magnetic systems whether or not such signs, signals, writing, images, sounds or intelligence have been subjected to rearrangement, computation or other processes by any means in the course of their transmission, emission or reception.

(aaa) **Teleconference service** - service that provides the necessary arrangements for a real-time conferencing among single individuals or groups of individuals at two or more locations, by means of telecommunication networks.

(bbb) **User** - user is a person or entity external to the network which utilises connections through the network for communication by making use of customer premises equipment (CPE).

(ccc) **Videoconference service** - an audio-visual conversational teleconference service providing bidirectional real-time transfer of voice and moving colour pictures between groups of users in two or more separate locations;

(ddd) **Videotelephony service** – audio-visual conversational tele-service providing bidirectional symmetric real-time transfer of voice and moving colour pictures between two locations (person-to-person) via the networks involved.

(eee) **Video on demand (VOD)** – provision of service that allow users to select and watch to video content on demand as per terms of offering;

(fff) **Wi-Fi** - wireless local area network (WLAN) based access that adopts Institute of Electrical and Electronics Engineers' (IEEE) 802.11 standards;

(ggg) **Wi- Fi hotspot** - is a site that offers Internet access over a wireless local area network (WLAN) through the use of a router connected to a link to an Internet service licensee

1.4 Scope and Application of the Code

The following sub-section defines the scope and application of the Code in the context of subscribed network Infrastructure and Services:

1.4.1 Unless otherwise stated, the provisions of the Code shall apply to all Licensees under Section 5 of Telecom Order, 2001 as amended.

1.4.2 The Code or any part thereof may apply to the Market Players as determined by the Authority from time to time.

1.4.3 The Code or part thereof may assume the intended effect from different dates as determined by the Authority for the given class of the Licensees. Similarly, the specified sections may be revoked, exempted or modified with prospective effect as per the prevailing legislations. In all cases, the Authority shall release the public notice on the website (http:// www. aiti.gov.bn) after seeking consultation with the stakeholders if necessary.

1.4.4 The Code may be used as a baseline for the Telecommunications Infrastructure, Services or Applications that have not been explicitly mentioned or performance standards have not been mandated in the succeeding sections of the Code. The Authority encourages the Licensees and Customers to use the Code as per the principle of similarity to reduce any uncertainty in the incidental matters.

1.4.5 The Code allows for Service Level Agreements (SLAs) where Customer has a specific set of needs that are different from the general performance standards adopted herein. The agreement may be drawn mutually only with the bonafide Licensees without requiring prior notification or approval from the Authority. The same applies for the instances where Market Players also act as the providers through the bonafide Licensees.

1.4.6 The Code does not apply to the Content or Program as carried through network infrastructure but may apply to terms of carriage of the Content.

1.4.7 The Code does not ensure consumer protection in the event of any direct transactions between Consumer and sole entity that does not possess any valid license.

1.5 Regulatory Principles

The following regulatory principles provide the foundation for the Code, and guide its implementation:

1.5.1 Equitable proportionate regulation for the evolving sector.

1.5.2 Increased transparency for stakeholders especially to help customers to make informed choices and to understand the limitations, if any.

1.5.3 Reliance on self-regulation to enhance resource optimisation.

1.5.4 Harmonious alignment with other regulatory instruments and legislations.

1.5.5 Adherence to technical neutrality in consonance with technical interoperability and feasibility.

1.5.6 Simultaneous regard to public safety, emergency communication and rights of other stakeholders.

2. Generic Practices and Standards of Performance

2.1 Subscription of network Infrastructure and Services

The following sub-section deals with subscription of network Infrastructure and Services and lays out important standards for compliance by the Licensees.

2.1.1 This clause is revoked and absorbed by Sections 10, 11, and 13 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.2 This clause is revoked and absorbed by Sections 10, 11, and 13, 22 and 25 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.3 This clause is revoked and absorbed by Section 11.4 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.4 This clause is revoked and absorbed by Section 11.1 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.5 This clause is revoked and absorbed by Section 11.3 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.6 This clause is revoked as it merely reiterates the prohibition against unlawful operations without the necessary approvals, which in any case already constitutes a breach of the Telecommunications Order, 2001).

2.1.7 This clause is revoked and absorbed by Section 24.3 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.8 This clause is revoked and absorbed by Section 10.2 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.9 This clause is revoked and absorbed by Section 14 and 18 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.10 This clause is revoked and absorbed by Section 12 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.11 This clause is revoked and absorbed by Section 23 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.12 This clause is revoked and absorbed by Section 25.3 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.13 This clause is revoked and absorbed by Section 22 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.14 This clause is revoked and absorbed by Sections 10, 11, and 13 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.15 This clause is revoked and absorbed by Sections 25.3.2 and 25.3.3 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.16 This clause is revoked and absorbed by Sections 19 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.17 This clause is revoked and absorbed by Sections 19 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.18 This clause is revoked and absorbed by Sections 25.3.4 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.19 This clause is revoked and absorbed by Sections 25.3.5 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.20 This clause is revoked and absorbed by Sections 25.3.6 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.21 This clause is revoked and absorbed by Sections 25.1 of the Code of Practice for General Duties Code in the Telecommunications Sector (Second Issue).

2.1.22 The Licensee shall arrange for notice to the affected Customers during any outage or severe degradation that may have an effect on subscribed Infrastructure or Services. In the event of scheduled outage, the notice shall be released at least seven (07) days prior to the event. In the event of any un-scheduled outage which may prolong beyond two (02) hours, the notice shall be released to affected Customers on immediate basis. In all such cases, the Licensee shall state the likely date of full restoration with subsequent updates, if any.

2.1.23 In event of any outage or severe degradation affecting Service for the Customers beyond a particular locality due to any reason, the Licensee shall arrange for the earliest release of public notice to such an effect with concurrent intimation to the Authority by electronic means or otherwise.

2.2 Public Health and Safety

The following sub-section deals with provisions related to public health and safety in the context of subscribed network Infrastructure and Services:

2.2.1 The Licensees shall continue to follow the prescribed national standards and, endorsed international guidelines to ensure public health and safety during any installation exercise, operations and usage of network infrastructure and services.

2.2.2 The Customers shall follow the safety precautions and operating conditions as advised by the Licensees or other agencies. As a matter of precaution, Customers affected by fire outbreak, severe lightning, landslides and heavy flooding are advised to switch- off all fixed telecommunications equipment on temporary basis.

2.2.3 The Licensees providing radio-communications apparatus shall maintain the adequate signage in the vicinity of telecommunications equipment's, for instance, radiating base station sites.

2.2.4 The Licensee shall refer to the following table where operational limits for electromagnetic field arising out of use of radio communications equipment have been prescribed:

For general public exposure:

Frequency Range	Time varying Electric field (in V/m)	Equivalent Power density (W/m2)	Remarks
1-25 Hz	10,000	-	Measurement Notes as per ICNIRP shall remain applicable.
250- 3000 Hz	250/f	-	
3 kHz – 1	87	-	
MHz			
1 – 10 MHz	87/f1/2	-	
10-400 MHz	28	2	
400-2000	1.375 f1/2	f/200	
MHz			
2-300 GHz	61	10	

For Specific Absorption Rate (SAR):

	Frequency range	Occupational exposure	General public exposure
Field power density (as per frequency range in Hz)	Up to 1 Hz	40	8
	1-4 Hz	40/f	8/f
	4 Hz -1 kHz	10	2
	1-100 kHz	f/100	f/500
	100 kHz- 10	f/100	f/500
	MHz		
	10 MHz – 10	-	-
	GHz		

Specific Absorption Rate (Measured over minimum of 6 minutes for averaging purpose) Frequency range: 100 KHz to 10 GHz	Whole-body	0.4 watt/kilogram (Occupational)
		0.08 watt/kilogram (general)
	Localised (head and trunk)	10 watt/kilogram (occupational)
		2 watt/kilogram (general)
	Headphones	Not exceeding 0.94 watt/kilogram (ICNIRP)

Source: GUIDELINES FOR LIMITING EXPOSURE TO TIME-VARYING ELECTRIC, MAGNETIC, AND ELECTROMAGNETIC FIELDS (UP TO 300 GHz) by International Commission on Non-Ionizing Radiation Protection.

2.2.5 The Licensee operating radio-communication Equipment shall submit an annual self-certification stating that the emissions levels measured at least once for all the radio transmitting sites at any time during the last twelve months have been found to be operating within the respective prescribed limits. Any corrective action taken on voluntary basis may also be stated separately.

2.2.6 In case of any related reports, observation or complaints, the Licensee shall arrange for the site-inspection for ascertaining the actual prevailing level of radio emissions. The necessary corrective actions and subsequent preventive actions shall be taken within fifteen (15) days and three months respectively. The intimation shall be made available to related parties including the Authority.

2.3 Emergency Voice Communications

The following sub-section deals with provisions related to Emergency Voice Communications in the context of subscribed network Infrastructure and Services:

2.3.1 For all voice related subscriptions except in the case of non-interconnected Vo-IP services and equivalent, the Licensee shall continue to provide for priority routing of voice calls originate from any connected location to the designated telephone numbers without any incidental charges for making such calls.

Provided toll free access to listed emergency numbers shall also be permitted for a cellular mobile subscription unless the suspension period as applicable has expired.

2.3.2 As per the National Numbering Plan, the numbers in operation for round the clock toll free emergency communications are given as under:

(i) Ambulance - 991

(ii) Police - 993

(iii) Fire & Rescue - 995

(iv) Search & Rescue - 998

(v) Any other such number designated by Government as per the prevailing Numbering Plan

The numbers in operation with round the clock efficient routing support for Important Services are given as under:

(i) Public Works Department - 140

(ii) Electricity - 144

(iii) Welfare/ Children - 141

(iv) Anti-corruption Bureau - 143

(v) Any other such number designated by Government as per the prevailing Numbering Plan

2.3.3 In circumstances where rapid dissemination of information, caution and warning signals is necessary for communication to general public or large section thereof, the Licensee shall actively assist the authorities to spread the message without any incidental cost.

3. Specific Practices and Standards of Performance

The following section deals with the range of telecommunication network Infrastructure and Services that may be available for public use on subscription basis. Each succeeding sub-section deals with voice, broadband, messaging and multimedia respectively.

3.1 Public Voice Communications service

3.1.1 **Public Fixed line telephone Infrastructure and Services:**

It represents one of the most conventional means for real-time two-way voice communications where distant users, at one or both the ends, are connected to each other through fixed line infrastructure such as copper lines, optic fiber and compatible devices. In this context, “Wireless in Local Loop (WLL)” shall be regarded as fixed line telephony. The variations include one-to-one and conference calls session when it may involve public networks such as public fixed line or cellular mobile or interconnected Vo-IP on the other end.

3.1.2 **Public Cellular Mobile Phone Infrastructure and Services:**

It represents another conventional means for real-time two–way voice communications where distant users, at one or both the ends, are connected to each other primarily through cellular mobile radio network and compatible devices. The variations include one-to-one and conference call session when it may involve public cellular mobile networks or another public telecommunications network. This set of infrastructure and services has gradually evolved as “3G”and “4G” compliant networks which may be operating in independent or Overlay mode. Here, the quoted expressions identify different generations of technology standardised under various IMT or IMT-Advanced standards. While “3G” and “4G” compliant networks may support converged services including wideband audio generally termed as “HD-voice” and Video-call features.

3.1.3 **Voice call using Managed-IP Infrastructure and Services:**

In the context of institutional or corporate communication Infrastructure and Services based on Internet Protocol (IP) networks, the real-time two-way voice calls can connect distant users with the help of compatible IP-devices on both the sides. This service usually appears as one of the bundled services along with data connectivity between various nodes using the same public infrastructure such as MPLS/VPN, Metro Area Network, the variations may involve one-to-one or conference calls within the same network or between the given network and any other public network.

HD-voice and Video-call services may also be supported.

Voice call using leased line Infrastructure and Services: In the context of institutional or corporate communication Infrastructure and Services, the real-time two-way voice calls can also be made using dedicated leased lines connecting any two or more nodes on exclusive basis. The variations may involve local, national or international leased lines.

3.1.4 **Voice over Internet Protocol (Vo-IP) services:**

It is one of the evolving means of voice communications where distant users can use the public IP-network infrastructure and services for making real-time two-way voice calls. It has three basic variations: (i) Vo-IP based on fixed broadband access, (ii) Vo-IP based on wireless broadband access and (iii) Vo-IP based on Managed-IP access. In all cases, it involves non-exclusive use of public network infrastructure that may interconnect with compatible networks. This evolution has reached a stage where Vo-IP has become the only mode of handling voice calls in “3G” and “4G” compliant networks. In other words, voice service becomes essential sub-set of IP-compatible data services. It may again involve one-to-one or conferencing calls within the same network or across other compatible networks.

3.1.5 **Voice call using Wi-Fi Hot-spots:**

It is rapidly evolving as a distinct variation of wireless-based Vo-IP services which enable distant users to connect to each other through Wi-Fi Hot-spots and compatible devices. In this context, the supporting Wi-Fi hot-spot may be localised either as private or community or commercial network. Wi-Fi hot-spot may interconnect with each other and other compatible IP-networks to appear as a complementary or Overlay network on temporary or permanent basis.

3.1.6 **Voice call using satellite infrastructure and services:**

In the given context, satellite while orbiting in low, medium or geostationary Earth-orbit also provide another means of making voice calls between two or more distant users.

3.2 Public Broadband Infrastructure and Services

For public broadband Infrastructure and Services, the different modes of access that may be available for use are listed below:

3.2.1 **Broadband fixed access (copper-based):**

It represents one of the most conventional means of broadband access at respective fixed locations where a customer could presently subscribe to broadband access in the given speed range of 1 to 5 Mbps. These locations generally lie within a radial distance of 5 kilometres from a serving telephone exchange or equivalent facility. The intermediate transmission and local access are primarily based on copper lines.

3.2.2 **Broadband fixed access (fiber-based):**

It represents the evolving means of providing the broadband access up to several hundred Mbps per subscription at respective fixed locations that lie within a general radial distance of 20 kilometres from a serving telephone exchange or equivalent. The reach can be extended for another 20 kilometres by means of an optical repeater. The transmission may be solely based on end-to-end optic fiber connectivity (that is, fiber-to-the-home). In another variation, the optic transmission may terminate at last mile copper lines (that is, fiber-to-the-cabinet).

3.2.3 **Broadband fixed access (Managed-IP and leased lines):**

It is for more exclusive use within the institutional or corporate network by using the allocated capacity through same public communication infrastructure based on copper and fiber. Thus, the level of sharing for telecommunication resources is lower as compared to the earlier instances in 3.2.1 and 3.2.2.

3.2.4 **Broadband Wireless Access (Cellular Mobile-based):**

It is one of the evolving means of providing mobile broadband access where typical access may vary from a few hundred kilobits per second (kbps) to several megabits per second (Mbps) per user for "3G" and "4G" compliant networks. Apart from the state of shared international bandwidth, the local experience at a given cell-site also depends upon factors such as the maximum capacity, number of active concurrent users, category of user devices used, and user location - stationary or varying. In this context, the new Infrastructure such as "4G" compliant networks may maintain backward compatibility with the corresponding older network Infrastructure such as at UMTS or "3G". Thus, Overlay Network Infrastructure and Service may co-exist to supplement or complement resources under different conditions. For illustration, "3G" and "4G" compliant networks belonging to the same licensee may beneficially co-exist even in a given service coverage area.

3.2.5 **Broadband Wireless Access (Wi-Fi Hotspot–based):**

It is another evolving means of providing the indoor broadband access in the range of several Mbps at given spot locations. The modes of shared usage may include private-use at household level, community-use at group level and corporate-use at institutional or enterprise level. For each hotspot, the usual user mobility remains restricted to 35 meters and 100 meters at indoor and outdoor locations respectively. This may be extended to few hundred meters by using appropriate antennae.

The operational variations may include (i) stand-alone private or shared access, (ii) daisy-chaining of overlapping hot-spots for higher mobility for shared access, and (ii) integrating hotspots with public cellular mobile network for shared access. Thus, it provides for either complementary or supplementary means for broadband access at localised positions in indoor and outdoor environments with limited mobility. Illustrative cases include café, airport, convention halls, stadium, office, schools etc.

3.2.6 **Broadband Wireless Access (Satellite-based):**

The broadband access may be alternatively provided by means of satellite deployed in space and corresponding terminals at the Earth's surface. It may support both fixed and wireless broadband access by means of fixed and portable terminals.

3.3 Public Messaging Infrastructure and Services

For public messaging Infrastructure and Services, the different modes of access that may be available for use are listed below:

3.3.1 **Short Message Service (SMS):**

In the context of cellular mobile services, these services are used for one-to-one or one-to-many communications where a limited string of text characters is transmitted or received. In the context of internet-based applications, the variations available for one-to-one or one-to-many communications include web to web interface and web-mobile interface.

3.3.2 **Multimedia Message Service (MMS):**

It is the extended version of SMS services where the same modes of access may be operated with only distinction that the information transmitted or received is not limited to text alone. It may include a range of content such as images, video clips, audio files meant solely for private communications.

Provided one MMS shall compose of minimum size 100 kilobits or part thereof unless and otherwise disclosed by the Licensee.

3.3.3 **Unstructured Supplementary Data Service (USSD):**

In the context of cellular mobile services, USSD offering allow the respective Customers to communicate directly with the computers or equivalent equipment provided by the Licensee. It is primarily useful for real-time interactions in relation to WAP browsing, prepaid call-back service, prepaid balance enquiry, mobile-money services, location-based content services, cross-border coordination, menu-based information services, and as part of configuring the phone on the network. Some of the supplementary services such as call forwarding, international roaming, IDD calling may be instantly activated or deactivated by Customers at their own discretion.

3.4 Public Multimedia Infrastructure and Services

3.4.1 The various kind of evolving Multimedia Services may be classified as streaming, transactional, interactive, or command and control in nature. The essential characteristics for satisfactory performance remain different for each Class. Of these, Internet Protocol television (IPTV) has most stringent quality requirements. For illustration, the IPTV service performance shall require linear presentation of information in 'streaming' mode, video on-demand feature in 'transactional' mode and time-shift feature in 'interactive' mode.

4. Performance Parameters

This section deals with the mandatory performance Parameters in the context of respective Infrastructure and Services as mentioned above.

4.1 Tabulation of the specified parameters

These critical performance parameters as identified in the succeeding sub-sections have been grouped in the form of different tables to establish scope, benchmarks and significance in respective cases. It may not only help in maintain reasonable uniformity across the technologies but also impart necessary flexibility to manage any modifications without any structural alteration in this section

4.2 Public Voice Infrastructure and Services

The following shall apply to subscription-based voice Infrastructure and Services notwithstanding force majeure exemptions. The time period for averaging of measured performance results shall not exceed one quarter of three complete months unless specified otherwise.

Performance Parameter	Scope	Benchmarks	Significance
Time Consistent Busy Hour ("Busy-Hour")	(i) Public Fixed Line (ii) Public Cellular Mobile (iii) Interconnected Vo-IP	To be continuously recorded on daily basis *for a* ***minimum period of 90 days*** to generate the valid average.	It determines the busiest hour during each day when the voice related traffic through the network is recorded to be the highest with respect to the installed capacity. During the day, there may be more than one peak at different times.
Grade of Service	(i) Public Fixed Line (ii) Public Cellular Mobile	*Not to exceed 1% for fixed line and 2% for cellular mobile* on *during busy hour* when point-of interconnect interfaces are also included.	It determines the Level of possible congestion that may be experienced by user during busy hour. The higher degree of congestion would require repeated call-attempts by a user.
Network Effectiveness Ratio	(i) Public Fixed Line (ii) Public Cellular Mobile (iii) Interconnected Vo-IP	*Not below 95% on average basis*	It determines the success ratio per 100 attempts at the user-level to digitally connect a calling party to the called party.
Network Availability	For all related public network infrastructure in each respective case	Round the clock availability with the following notes: (i) Scheduled outage for maximum of 1 day on aggregated basis per year in case of core network part (ii) Scheduled outage for maximum of 2 days on aggregated basis per year in case of a local access part (iii) Standard power back-up arrangements for minimum 08 continuous hours	"Core" here refers to all essential centralised parts of the network without which the services may be affected for good number of customers beyond a particular location. "Access" here refers to essential parts of the network which serve a particular location. Each instance of scheduled outage shall be aggregated and recorded per month. Advance notice to respective customers shall be provided whenever outage may exceed 2 hours in continuity.

Service Availability	All interconnected voice services – fixed, cellular mobile and Vo-IP that can support access to emergency numbers	Round the clock availability with the following notes: Intermittent aberrations and transient degradations not to exceed 01 hour per month on aggregate basis	Based on the state of the serving networks, it further determines the state of the service Availability when network infrastructure remains available.
Call-Drop Rate	All interconnected voice services through wireless networks - cellular mobile and Vo-IP that can support access to emergency numbers	Not to exceed 2% on average basis for a fixed base station cell-site serving "urban" locations as identified. Not to normally exceed 3% on average basis for a fixed base station cell-site serving "island" location as identified. The values remain same for independent networks as well as combination of overlay networks. Exemptions related to scheduled outage remain applicable and such reported periods may be excluded.	In case of wireless networks, it determines the tolerable level of un-intentional call drop events when measured at each respective network-end. The Authority shall maintain an updated indicative classification of "urban" and "island" locations in the context of public communication through wireless networks. The service licensee shall continue to list out the base station cell-sites where recorded call drop rate exceeds the given limits on month
Service Coverage Area	For public cellular mobile identified as "3G" compliant services.	Not below 80% of populated areas under "urban" locations on aggregate basis; Not below 60% of the populated areas under "island" locations on aggregate basis; The values remain the same for independent networks as well as combination of overlay networks. Provided the received radio-signal level remains better than -95 dBm when measurement is carried out using a test –device mounted in a vehicle	It determines the availability of adequate signal strength for a voice call in stationary as well as non-stationary mode. For any interpretations, official Census Report and Maps may be used.

		moving with speed not exceeding 60 kilometres per hour. Further provided that carrier to noise ratio as measured below -12 dBm and -15 dBm shall continue to be classified as fair and weak respectively.	
	Public fixed line	As reported by the licensee in terms of area-based listing.	
	"4G" and equivalent	Service Coverage Area to be declared on the basis of receive radio-signal level not below -110 dBm and signal noise ratio as no less than zero dB in outdoor conditions with test-antenna inside a moving vehicle having speed limited to 60 kmph.	
Speech Quality	All interconnected voice services – fixed, cellular mobile and Vo-IP that can support access to emergency numbers	Mean Opinion Score ~ not below 3.0 as average for public fixed and mobile cellular on the scale 1 to 5 Or R-factor ~ not below 70 as average for Vo-IP on the scale of 0 to 120 For fixed and cellular mobile telephone PESQ/POLQA may be used. For R-factor, ITU E-model may be referred.	Mean Opinion Score (MOS) and R-factor determines the composite level of perceived speech quality in different types of networks. In current context, the score may be generated automatically using test devices as per standardised techniques.
Call set-up time	All interconnected voice services – fixed, cellular mobile and Vo-IP that can support access to emergency numbers	Not to exceed 07 seconds when dialling information has been completely keyed-in for all domestic calls.	It determines the maximum time to establish the voice call on end-to-end basis by means of interconnected networks within the country

4.3 Public Broadband Infrastructure and Services

The following shall apply to subscription-based Broadband Infrastructure and Services notwithstanding force majeure exemptions. The time period for averaging of measured performance results shall not exceed one quarter of three complete months unless specified otherwise.

Performance Parameter	Scope	Benchmarks	Significance
Busy Hour	All related public network infrastructure	To be continuously recorded on daily basis for a minimum period of 90 days to generate the valid average. Provided any voice access that is carried as IP-data is included.	It determines the busiest hour during each day when the Broadband traffic through the network is recorded to be the highest with respect to the installed capacity. During the day, there may more than one peak at different times. For any network, busy-hour registered for voice and broadband access may differ in respective cases.
International Bandwidth capacity and peak-utilisation value	At International Gateway that deals with packet data traffic (Autonomous System) or its downstream equivalent	Aggregate installed capacity in terms of international bandwidth. And Registered peak utilisation of above capacity not to exceed 75% during busy- hour.	It determines the current availability of aggregate international bandwidth and its peak utilisation level in relative terms.
Contention Ratio (Concentration Ratio)	Public Fixed broadband	Not to exceed 10:1	It determines the maximum estimated number of concurrent users that may be sharing one unit of the international bandwidth at any time.
Network Availability	All related public network infrastructure	Round the clock availability with the following notes: (i) Scheduled outage for maximum of 1 day on aggregated basis per year in case of core network part	It determines the state of Availability of respective network infrastructure to extend services to users. "Core" refers to any essential centralised parts of the network without which the services may be

		(ii) Scheduled outage for maximum of 2 days on aggregated basis per year in case of a local access part (iii) Standard power back-up arrangements for minimum 08 continuous hours	affected for good number of customers beyond a particular location. "Access" refers to essential part of the network which serves a particular location. Each instance of scheduled outage shall be aggregated and recorded per month. Advance notice to respective customers shall be provided whenever outage may exceed 2 hours in continuity.
Service Availability	For all identified services that require broadband access support	Round the clock availability with the following notes: Intermittent aberrations and transient degradations not to exceed 01 hour per month on aggregate basis	Based on the state of the serving networks, it further determines the state of the service Availability when network infrastructure remains available.
Service Coverage Area	For all type of public broadband access including: (i) fixed and, (ii) cellular mobile "3G" (ii) cellular mobile "4G"	-Graphical depictions or area-wise listing of mukim/kampongs where fixed broadband access is available for (i) xDSL and; (i) FTTx Same as in case of voice services for "3G" level cellular mobile services on independent basis. Same as declared or estimated with respect to "3G" level for voice according to the given criteria. For clarity, it may be shown separately in each case.	For each type or class of broadband access, this provides the current status of Availability and reach across all populated and developing areas. Any modifications during the course of time may be incrementally reflected at the end of each quarter.

Average Download Speed (user-level)	For all type of broadband access including fixed, fixed-wireless and cellular mobile.	Under normal conditions, the download speed as measured for the domestic section between CPE and serving network by using the local speed measurement server shall be as follows: For copper-line based broadband access: At least 80% of the subscribed value For fiber-based broadband access: At least 90% of the subscribed value. For wireless broadband access: No less than 100 kbps for non-stationery user during at least 80% of the measuring instances in the declared or estimated Service Coverage Area and depiction of slab-wise distribution of measured application level (i.e., FTP) throughput samples during Service Drive test as appropriate: % samples <100 kbps % samples <500 kbps % samples <1Mbps % samples <5 Mbps % samples <10 Mbps % samples < 20 Mbps	It determines the extent to which any promise made during the subscription is fulfilled by the service licensee at typical user-level. Even under dynamic conditions, the services should retain the advertised character and remain close to the promises made during subscription. All values given here apply to domestic traffic only.
Average Upload Speed	For all type of public broadband access including fixed and cellular mobile.	In continuation from above: For fixed broadband access through copper and fiber lines: At least 30% of the subscribed or download speed value.	It determines the bandwidth support for different services or applications may require adequate value in the upload direction. Even under dynamic conditions, the services should retain the advertised character and

		For “3G” based broadband access: At least 10% of the subscribed or download speed value on shared basis. For “4G” based broadband access: - at least 30% of the subscribed or download speed value on shared basis. The supported upload values must be disclosed to the customers at least slab-wise: - less than 100 kbps - between 100 kbps to 500 kbps - between 500 kbps to 1.5 Mbps - over 1.5 Mbps - beyond 5 Mbps	remain close to the promises made during the subscription. All values given here apply to domestic traffic only. The licensee may voluntarily provide the information about kind of services or applications that can be supported at given data rates in download and upload directions.
Latency **(For Round trip delay)**	For all type of public broadband access including fixed and cellular mobile.	Under normal conditions, the latency as measured for the domestic section between CPE and serving network by using the local speed measurement server shall be as follows: For terrestrial broadband access, latency at any time on end-to-end basis shall not normally exceed: 50 milliseconds for any reachable domestic location for best-effort class of broadband traffic 400 milliseconds for any reachable location for best effort class of broadband traffic	It determines the maximum time delay for the completed round-trip transmission for an IP packet under dynamic conditions. Each Service or Application may different user requirements and thus, technical values need to be differentiated.

		300 milliseconds for any reachable location for end-to-end real-time voice call, video call, telemetry, e-transactions and online gaming 200 milliseconds for IP-TV services with Delay Factor (i.e., jitter) less than 50 milliseconds For non-terrestrial access, it shall not normally exceed: 800 milliseconds in case of a Geostationary orbit satellite 300 milliseconds in case of a Medium or Low Earth-orbit satellite	
PDP context activation success ratio	For all type of public broadband access including fixed and cellular mobile	Not below 95% on average basis for the total attach requests registered	It determines the success ratio of activated packet data calls per 100 activation requests.
Packet loss (For Media Loss Rate for multimedia video)	For all type of public broadband access including fixed and cellular mobile	Average packet loss for a session not to exceed: – 1% for all class of broadband access, domestic – 3% for best effort class, any location – 3% for voice call, any location – 1% for video call, any location For multimedia video, Media Loss Rate shall not exceed the following averages: – 0.4% for Standard Definition video and video on-demand or equivalent; – 0.05% for High-Definition videos or equivalent.	It is a measure of acceptable level of loss of information packets before receiving them at given destination. Different Services or Applications have different values of loss tolerance. In case of multimedia videos, the Media Loss Rate is the number of media packets lost over a certain time interval (typically one second).

4.4 Public Messaging Infrastructure and Services

The following shall apply to subscription-based messaging Infrastructure and Services notwithstanding force majeure exemptions. The time period for averaging of measured performance results shall not exceed one quarter of three complete months unless specified otherwise.

Performance Parameter	Scope	Benchmarks	Significance
Network Availability	All related network infrastructure	Same as in the case of voice services including specialised network elements to handle messaging.	It determines the Availability of the network infrastructure to support all types of messaging: SMS, MMS and USSD based communications.
Service Availability All type of messaging	All type of messaging Services as listed or equivalent Applications	Same as in the case of voice services including specialised network elements to handle messaging.	Based on the state of the serving networks, it further determines the state of the service Availability when network infrastructure remains available.
Delivery Failure Rate	All type of messaging Services as listed or equivalent Applications	Not to exceed 1% on daily average basis for USSD support. Not to exceed 2% on daily average basis for SMS and MMS support. Any valid messages remaining undelivered for over a period of 24-hours shall be included for delivery in the next 24-hours period and so on.	It determines the average rate of failure of delivery of messages when measured at the source network end in a 24-hours period. USSD support features are inherently essential for customer servicing and thus shall be provided higher priority. The licensee may declare their own respective policies towards maximum number of attempts or numbers of days before the undelivered messages are wiped off.

4.5 Public Leased Line Infrastructure and Services

The following shall apply to subscription-based leased line Infrastructure and Services notwithstanding force majeure exemptions. The time period for averaging of measured performance results shall not exceed one quarter of three complete months unless specified otherwise.

Performance Parameter	Scope	Benchmarks	Significance
Network Availability	All related network infrastructure	Same as in the case of voice services including specialised network elements to handle messaging.	It determines the Availability of the network infrastructure to support all types of messaging: SMS, MMS and USSD based communications.

5. Exemptions, Exceptions and Suspensions

5.1 Instances for Exemptions

5.1.1 The domestic niche players, start-ups, small business entities, Government Agencies and overseas collaborating agencies as identified by the Authority may be exempted from all obligations under the Code.

5.1.2 Any Infrastructure or Services provided on non-commercial or social basis shall remain automatically exempted from all obligations under the Code *provided* it does not influence or make a material effect on the Infrastructure and Services within the scope of this Code.

5.2 Instances for Exceptions

5.2.1 Any instance of commercial nature such as technical or product trials, temporary installations and services, research and development tasks, private networks bounded in a single premise need not adhere to any performance parameters as outlined in Section 4.

5.2.2 For any designated areas attributed to particular classification, the Authority reserves the right to determine the manner when any or all of the outlined parameters shall be operative.

5.2.3 The validity of any outlined performance measures shall be considered as *suspended in time* for a Licensee who submits timely information to the Authority during experience of force majeure conditions. To qualify for suspension, intimation in writing shall be provided within two (02) days of initial observation of such an instance.

5.2.4 The validity of any outlined performance measures shall be considered as *suspended in performance* for a Licensee in a case where it is clearly demonstrated that expected performance cannot be materialised towards customers solely due to external factors. Here, 'external' shall refer to factors beyond the control or influence of such a licensee and does not necessarily include force majeure conditions. To qualify for suspension, intimation in writing shall be provided within seven (07) days of initial observation of such an instance.

5.2.5 The validity of any outlined performance measures shall be considered as *modified in performance* to the extent as declared in advance by the Authority due to administrative or technical arrangements coming into force for coordination of radio communication signals across the international borders and immigration posts.

5.3 Requests for exemption and exceptions

5.3.1 Any concerned Licensee may submit original or review request related to exemption and exceptions by producing the justified grounds in writing to the Authority. The status of such request the Authority shall be determined within sixty (60) days of receiving consolidated information.

6. Measurement and testing methods

The following section specifies the manner in which the identified performance parameters shall be tested, measured and recorded in appropriate ways for the purpose of reporting and compliances thereof.

6.1 The reference list is as follows:

Performance Parameter	Unit of Measurement	Measurement & Recording	Remarks
Time Consistent Busy Hour (or Busy Hour)	Time interval in hours: minutes/ quarter of 90 days ("quarter") when Busy Hour is recorded daily.	Average of daily busy-hour report for minimum 90 days in continuity.	Measurement at network point that deals with heaviest traffic during 24-hour interval. e.g., Gateway Switch, Packet Core Network, Access Point
Grade of Service	In percentage averaged for one quarter when measurements are recorded daily.	Ratio of total calls failures due to congestion during Busy Hour of the day to that of total call attempts registered in the network for the corresponding period.	Measurement at network point that deals with heaviest traffic during Busy Hour e.g., Gateway Switch, Access Point
Network Effectiveness Ratio	In percentage averaged for one quarter	Ratio of total calls successfully connected through switching system to total call attempts registered in the network for the corresponding period.	Measurement at network point that deals with heaviest traffic during 24-hour interval. e.g., Gateway Switch, Access Point
Network Availability	In number of hours; minutes in one quarter	Total period of outage for Core and Access network parts respectively. Provided nature of incidental outages – scheduled, unscheduled and due to force majeure shall be clearly specified.	Measurement for 'Core' is at network point that deals with the heaviest traffic during 24-hour interval. Measurement for 'Access' part is at each Access Point. e.g., Cabinet, Cell-site.
Service Availability	In number of hours: minutes in one quarter	Total period of degraded provisioning for each subscribed service while network facility remains available. Provided nature of incidental degradations – scheduled, un-scheduled and due to force majeure shall be clearly specified.	At any suitable point(s) according to the nature of service under broad classification - voice, broadband, messaging, multimedia.

Service Coverage Area	In percentage when averaged results are drawn from sampled data collected during Service Drive Test or equivalent. It may also be an incremental exercise each quarter of 90 days.	Using standardised test set-up mounted inside a moving motorised vehicle to take samples as per standard procedure in the outdoor environment. or equivalent.	The sample collected shall be analysed using standardised tool. Information about test set-up, procedure, tool and duration of tests shall be made available.
Call Drop Rate	In percentage averaged for one month per cell site	Ratio of total live calls lost on pre-mature basis to total calls set up successfully for each operating site.	Per Access Point e.g., cell-site(s) for each respective network such as 3G and 4G.
Call Set-up Time	In seconds averaged for one quarter	Measurement of time delay during each call after completed dialling till the call is finally connected in at least total of 1000 events spread uniformly over a quarter.	During busy-hour for the corresponding network or high intensity time for voice services in case of domestic calls.
Speech Quality	Mean Opinion Score averaged over a scale of 1 to 5 during one quarter using PESQ or POLQA (at least for HD-voice) Or R-factor averaged over a scale of 0-120	As per standard measurement tools for a minimum of 1000 domestic call connects in each case: MOS based on PESQ/POLQA/R-factor. For Vo-IP, the number of simultaneous VoIP calls with a minimum acceptable speech quality may vary due to the choice of codecs by the endpoints and the particular 802.11 standard used in the equipment. Illustration: For an 802.11g WLAN and G.729 as the VoIP codec, a maximum of 98 concurrent calls can be supported with the anticipated MOS of 3.2. Using 802.11b instead of 802.11g decreases the number of simultaneous calls by approximately five times.	

		Using a wideband G.711 codec with an 802.11g access point, a maximum of 53 concurrent VoIP calls can be supported with the anticipated MOS of 3.4.	
International Bandwidth capacity and peak-utilisation value	In Mbps or Gbps averaged for one quarter	Using MRTG (Multi Router Traffic Grapher) or any standard technical method	At Gateway-end for networks having Autonomous System identity and at suitable-end for downstream networks.
Average Download and Upload speed	In Kbps or Mbps	Average on sampling basis during Service Drive test or using locally hosted speedtest.net server with appropriate links	At suitable point such as CPE or user-device
PDP context activation success ratio	In percentage averaged for one quarter	Ratio of total successful PDP context activations to total PDP context activation attempts	At terminal point in the Packet Core Network or equivalent.
Packet Loss Ratio	In percentage averaged for one quarter for each relevant class of traffic	For a network or service or application, it is ratio of total packets lost before successful delivery (To a destination) to that of total number of packets transmitted (towards that destination) in successive attempts.	Between any suitable domestic section as per the case e.g., CPE or user-device/ serving network.
Delivery Failure Rate	In percentage averaged for one quarter	For messaging services and applications, it is ratio of messages transmitted successfully in intra- and inter-network mode to total messages meant for transmission during each interval of 24 hours.	The measurement shall apply separately to the following: (i) SMS (one-to-one, bulk delivery) (ii) MMS (one-to-one, bulk delivery) (iii) USSD (iv) Web – device interface

6.2 Any procedural variations adopted shall be described along with the test results for the correct interpretations.

7. Service timelines for customer management

7.1 This section specifies the timelines to be managed in relation to Consumer servicing and related transactions.

Nature of task	Scope	Benchmarks	Significance
Installation, re-installation and activation of subscribed infrastructure, services	All related Network Infrastructure and Services	For a given Service Coverage Area subject to the completion of formalities and the following: - Cellular Mobile and Wireless Broadband – not to exceed 1 working day - Fixed Phone, Broadband, local Leased Lines and Managed IP connectivity – not to exceed 30 working days. This is not applied when Customer has requested the exercise at Specified Time or subscriber remains absent.	It determines the maximum time permissible for new installation, re-installations, placement of configured CPE, equipment and activation of subscribed Infrastructure and Services. Subject to planned expansion of infrastructure and Service Coverage Area, Consumers may be intimated accordingly provided the feasibility of marginal expansion has been considered on permanent or temporary basis.
Curative Maintenance (faults, repair, restoration; recharge failures etc.)	For Access part of all related network infrastructure and services (as above)	Not to exceed 03 working days for 70% of all cases already reported. Not to exceed 07 working days for 100% of all cases already reported. Not to exceed 01 working day for all reported cases of leased lines, Managed-IP and core network connectivity. This is not applied when Customer has requested the exercise at Specified Time or subscriber remains absent or any other valid factor.	It determines the maximum response time for restoration of subscribed Infrastructure and Services since it has been brought to the attention of the Licensee through respective service channels as specified during subscription e.g., customer care, fault booking service.

Service requests during subscription	All related Services as subscribed	Not to exceed 02 working day for 90% of already reported cases Not to exceed 03 working days for 100% of already reported cases Provided the request is deemed as accepted during reporting at respective service channels and subscriber undertakes to bear necessary charges etc.	It determines the response time for handling the various type of requests by the customers. This may include request for: - Change of tariff plan - Change of tenure - Change of value-added services including de-activation - Replacement of CPE or related facility - Re-installation at new/shifted location - Itemised billing - Billing adjustments, refunds or rebates - Credit facility, safe-custody, re-activation of suspended services - On-demand services - Acknowledgement of Complaints
Specified Service channels	All related Services as offered or subscribed by respective Customers	Minimum one telephone number for intra-network access for at least 6 am to 10 pm on each working day provided the response is available as below: Minimum 90% of calls are handled in first 50 seconds and 100% of calls are handled within first 90 seconds with less than 1% channel congestion	It determines the minimum provisions required for handling Customer requests, enquiry, feedback and Complaints. The Service Licensee may require the presence of Customer or authorised signatory on objective basis even while the online service features remain available.

		Publication of updated address of Customer Service Counters or authorised outlets with at least one full-time support person during open-hours. Publication of updated postal address, fax number or e-mail_ID for handling such requests provided this facility is maintained in operative condition. Online customer account, self-help kiosks, publication of online service forms and access through social networking tools remains voluntary.	
Customer Complaints	Direct Complaints to the Licensee regarding all subscribed Services	All submitted Complaints through the specified Service channel shall be respectively taken into account within first 02 working days. All such written complaints of actionable nature shall be duly acknowledged with suitable response towards the complainant or authorised signatory within 10 working days.	It determines the maximum time period available for appropriate handling all type of complaints originating from Customers. The provision of online submission through online complaint form as provided remains voluntary.

		The resolution to all actionable Complaints shall be provided within 10 working days wherever such grounds or contest has been originally suggested in the complaint.	Exceptions: (i) In the event where Service provisioning may require augmentation of resources, the Licensee may suitably inform the Customers. e.g., base station otherwise

		The re-consideration request if any shall be responded with in next 10 working days.	marginal adjustments may be carried out within 30 days. (ii) In the event where specific information may not be readily available e.g., international roaming, the extended timeline is 30 working days.
	Direct Complaints to the Authority regarding all subscribed Services	In all such cases, the Authority shall advise the complaining Customer to submit their original grievances to the respective Licensee. Such advice shall be issued within 03 working days while retaining the copy of the same, if available.	It determines the standard procedure to save time and resources without unnecessary intervention by the Authority.
	Complaints escalated to the Authority	Any such written Complaint in the prescribed format and manner shall be taken-up by the Authority where the Complainant does not find the response or resolution provided by the Licensee as satisfactory. The Authority shall take-up such a Complaint directly with concerned Licensee by giving them a notice to submit appropriate response within 10 working days.	

		Such a notice shall be released in relevant cases within 03 working days of receipt of the Complaint; In other cases, the Authority shall intimate the complaining Customer on the resulting position within next 10 working days of the receipt.	
	Anonymous or equivalent complaints	Any anonymous Complaint where the details such as identity of complaining Customer(s), concerned Licensee (s), Service(s) etc. remains unavailable in any written representation; the Authority reserves the right to take-up the case with any or all Licensees in overall consumer interest.	

8. Reporting standards

8.1 In pursuance of the performance parameters referred in the Sections 4 to 7, the Licensees shall be required to submit the periodic reports to the Authority in accordance with their respective area of operations such as offering network Infrastructure, Services or applications on subscription basis.

8.1.1 The period for reporting shall be divided into successive quarters of three complete months in each instance or as specified otherwise.

8.1.2 The proforma for reporting as specified shall be followed. In order to substantiate, the Licensee may indicate additional information as addendum to the same report.

8.1.3 The report shall be drawn on 'as and when basis' and all consolidated information shall be representative of concurrent set of network Infrastructure, Services and Applications under the licensed operations.

8.1.4 Each respective submission shall be only through the authorised signatory on behalf of the Licensee, and be made available to the Authority before the completion of the fourth successive month for a corresponding quarter.

8.1.5 The report shall be made available on consolidated basis in both physical and electronic formats. In case of any discrepancy or request for modifications, information contained in the physical set shall prevail over electronic format.

8.1.6 The Licensee as well as the Authority shall co-operate to provide required interpretations and clarifications whenever referred to on respective basis.

8.1.7 Any written request to suggest modifications in the original report for the last term shall be made available to the Authority within thirty (30) days of the original submission through the same authorised signatory. Since final version of the report shall be taken in record after effecting accepted modifications, further time-extension shall not be ordinarily granted by the Authority.

8.1.8 The Authority shall reserve the right to seek additional information and may organise inspection, audit and survey exercise on independent or joint basis as appropriate. It shall be inclusive of required interfacing for appropriate test and data logging equipment as specified by the Authority.

9. Use of Information by the Authority:

9.1 Purpose, Audit and Disclosures

9.1.1 All contextual information including reports etc. as provided to the Authority shall ordinarily be used for securing consumer interest, regulatory administration, improved consumer awareness, and enabling policy related inputs for development of ICT industry at national, regional or international levels.

9.1.2 The Authority reserves to right to undertake independent or joint technical audit, sampling surveys and use of standard measurement techniques for verification, compliance assessment and other related purposes.

9.1.3 The information made available to the Authority shall not be entirely disclosed to any other party without a valid reason. Notwithstanding this position, it shall not bind the Authority from undertaking disclosure of quality-related information in consumer or national interests.

9.2 Advisory Guidelines

9.2.1 The Authority may publish Advisory Guidelines on specific matters as related to this Code in accordance with Section 28 of Telecommunications Order, 2001 as amended.

10. Compliance Requirements

10.1 Related to Reporting

10.1.1 The compliance towards submission of periodic reports as referred in Section 8 shall be in accordance with Schedule D of the licensing terms and conditions.

10.1.2 Any partial submission or non-submission shall be considered as non-compliance against reporting requirements. The Authority reserves the right to issue notice to the concerned Licensee to submit the details or explanation within 21 days from the last date of submission due.

10.1.3 The Authority further reserves the right to issue the notice proposing the penalty after expiry of the first notice period of 21 days after taking into account all available information or explanations in writing.

10.1.4 The penalty for non-compliance shall be levied at rate of BND 2,000 per week or part thereof after the end of the notice-period. In case of continued non-compliance or lack of satisfactory response, the Authority reserves the right to proceed in due accordance with Section 27 and Section 8 of Telecommunications Order, 2001 as amended.

10.2 Related to Performance Parameters

10.2.1 The contextual information contained in the report as submitted to the Authority shall be regarded as statement of compliances for a specific period.

10.2.2 The statement of compliance towards respective performance parameters and standards of practice shall be read together and be construed as composite performance.

10.2.3 In the event of non-compliance or partial compliance against specific performance parameters, the Authority shall take into accounts all material facts made available before observing it as an act of non-compliance. The explanations may include reasons identified and proposed action-plans for the improvement or mitigation. The operational lapses shall be not construed as force majeure conditions unless justified.

10.2.4 In the event of continued non-compliance or partial compliance beyond two successive quarters, the Authority may issue notice to concerned licensee seeking an explanation within 21 days before proposing the penalty**.**

10.2.5 The penalty levied shall be BND 10,000 per month or part thereof against a specific performance parameter. In case of continued non-satisfactory performance or lack of efforts within the control of the licensee, the Authority reserves the right to proceed in due accordance with Section 27 and Section 8 of Telecommunications Order, 2001 as amended.

10.2.6 The exercise related to these provisions remains apart from any possible private actions proceeded before Small Claims Tribunal in accordance with Consumer Protection (Fair Trading) Order, 2011 and related Regulations.

10.2.7 The Authority shall reserve the right to take appropriate action in any event related to non-disclosure of essential information in consumer interest after a due notice period of 21 days.

10.3 Enforcement Provisions

The Authority reserves the right to invoke enforcement powers and procedures as provided in Section 62 of Telecommunications Order, 2001 as amended.

11. Review of the Code

The Authority by its own determination or on request made by primary stakeholders i.e., consumers, Licensees, and Government bodies may undertake the review of the Code to retain its instrumentality and significance.

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