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| **MINISTRY OF INFORMATION**  **AND COMMUNICATIONS** | **SOCIALIST REPUBLIC OF VIETNAM** Independence - Freedom - Happiness |
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No. 20/2022/TT-BTTTT *Hanoi, November, 29th, 2022*

**CIRCULAR**

## Issue "National technical regulation on quality of fixed land broadband Internet Access Service"

*Pursuant to the Law on Standards and Technical Regulations dated June 29th, 2006;*

*Pursuant to the Telecommunications Law dated November 23rd, 2009;*

*Pursuant to the Law on Radio Frequency dated November 23rd, 2009;*

*Pursuant to Decree No. 127/2007/ND-CP dated August 1st, 2007 of the Government detailing and guiding the implementation of a number of articles of the Law on Standards and Technical Regulations;*

*Pursuant to Decree No. 78/2018/ND-CP dated May 16th, 2018 of the Government amending and supplementing a number of articles of Decree No. 127/2007/ND-CP dated August 1st, 2007* [*of*](https://thuvienphapluat.vn/van-ban/linh-vuc-khac/nghi-dinh-127-2007-nd-cp-huong-dan-luat-tieu-chuan-va-quy-chuan-ky-thuat-54148.aspx) *the Government detailing the implementation of a number of articles of the Law on Standards and Technical Regulations;*

*Pursuant to Decree No. 48/2022/ND-CP dated July 26th, 2022 of the Government regulating the functions, tasks, powers and organizational structure of the Ministry of Information and Communications;*

*At the request of the Director of the Department of Science and Technology,*

## *The Minister of Information and Communications promulgates a Circular regulating* *national technical regulation on the quality of fixed land broadband Internet Access Service.*

## 

## Article 1. Issued together with this Circular is the National Technical Regulation on the quality of fixed land broadband Internet Access Service (QCVN 34:2022/BTTTT).

**Article 2.** Enforcement

1. This Circular takes effect from July 1st, 2023.

2. Circular No. 08/2019/TT-BTTTT dated August 16th, 2019 of the Minister of Information and Communications promulgating "National technical regulations on quality of terrestrial fixed broadband Internet access services" ends takes effect from July 1st, 2023.

**Article 3.** Chief of Office, Director of the Department of Science and Technology, Heads of agencies and units under the Ministry of Information and Communications, Directors of Departments of Information and Communications of provinces and central cities and organizations, relevant individuals are responsible for implementing this Circular./ .

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| ***Recipients:***  - Prime Minister, Deputy Prime Ministers (to report);  - Ministries, ministerial-level agencies, and agencies under the Government;  - People's Committees of provinces and central cities;  - Department of Information and Information of provinces and central cities;  - Department of Legal Document Inspection (Ministry of Justice);  - Official Gazette, Government Electronic Information Portal;  - Ministry of Information and Communications: Minister and Deputy Ministers, agencies and units under the Ministry, the Ministry's Electronic Information Portal;  - Stored: VT, KHCN (250). | **MINISTER**  (signed)  **Nguyen Manh Hung** |



SOCIALIST REPUBLIC OF VIETNAM

**QCVN 34:2022/BTTTT**

**NATIONAL TECHNICAL REGULATIONS**

**ON QUALITY OF FIXED LAND BROADBAND INTERNET ACCESS SERVICE**

**HANOI - 2022**



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**Preface**

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| QCVN 34:2022/BTTTT replaces QCVN 34:2019/BTTTT.  QCVN 34:2022BTTTT was compiled by the Authority of Telecommunications, approved by the Department of Science and Technology, appraised by the Ministry of Science and Technology, and issued by the Ministry of Information and Communications together with Circular No. 20/2022/ TT-BTTTT dated November, 29th, 2022. |

**NATIONAL TECHNICAL REGULATION**

**ON QUALITY OF FIXED LAND BROADBAND**

**INTERNET ACCESS SERVICE**

# GENERAL RULES

## 1.1. Scope

This regulation stipulates the limits of quality criteria for broadband Internet access services, belonging to the group of fixed land telecommunications services (hereinafter referred to as fixed land broadband Internet access services), include:

* Fixed land broadband Internet access service using FTTH/xPON technology (referred to as fiber optic Internet access service);
* Fixed land broadband Internet access service using cable TV Modem technology (referred to as cable TV Internet access service).

## 1.2. Applicable subjects

This regulation applies to telecommunications businesses providing fixed land broadband Internet access services (hereinafter referred to as service provider) to manage the quality of fixed land broadband Internet access services according to the regulations of the State and the Ministry of Information and Communications.

This standard is also the basis for users to monitor the quality of fixed land broadband Internet access services of providers.

## 1.3. Explanation of words

### 1.3.1. Customers (service users)

Vietnamese or foreign individuals and organizations using fixed land broadband Internet access services in Vietnam.

### 1.3.2. Service quality

The combined results of the indicators show the level of satisfaction of service users with that service.

### 1.3.3. Internet access service

The service provides Internet users with access to the Internet.

### 1.3.4. Fixed land broadband Internet access service

The Internet access service is provided through a fixed land broadband network based on different technologies with a minimum download speed of 50 Mbit/s.

### 1.3.5. Fiber optic Internet access service

The fixed land broadband Internet access service based on the FTTH/xPON family of technologies, allowing high-speed information access on optical subscriber lines, distributing download bandwidth and upload bandwidth equally.

### 1.3.6. Cable TV Internet access service

The fixed land broadband Internet access service through cable television network based on cable Modem technology, allowing high-speed information access on cable television subscription lines, distributing download bandwidth that can be larger than the upload bandwidth.

### 1.3.7. Delay time

The time between the source sends the packet to the destination and receives the confirmation message.

### 1.3.8. Upload

The load data from the customer's device to the equipment system of the service provider.

### 1.3.9. Download

The load data from the equipment system of the service provider to the customer's device.

### 1.3.10. Download speed Vd

The download speed of the service package is stated in the service contract between the service provider and the customer.

### 1.3.11. Upload speed Vu

The upload speed of the service package is stated in the service contract between the service provider and the customer.

### 1.3.12. Problem

Damages to one or more network elements of a service provider leads to interruption of service provision.

### 1.3.13. Connection direction

The Internet connection direction from the service company to the international Internet, to the Internet exchange station (IX), to the national Internet transfer station (VNIX), to other service enterprises, including both outgoing and incoming directions.

### 1.3.14. Highest exchange traffic in group 95%

Drop 5% peak traffic sampling and take peak traffic sampling of 95% of remaining traffic samples.

### 1.3.15. Determining methods

Determination methods are methods of assessing service quality with a minimum sampling level prescribed for state management agencies and service providers to apply in measuring service quality. Each quality indicator is prescribed one or more different determination methods. If service quality indicators are determined by many different methods specified in this Regulation, the quality indicators are considered appropriate if the evaluation results by each method are consistent with the prescribed indicator.

### 1.3.16. Subscriber line available

Having an available subscription line is a case when a service provider can provide fixed land broadband Internet access service on an existing subscription line within its infrastructure at the address where the customer needs to set up the service, informed in the contract signed with the service provider.

## Abbreviation

|  |  |
| --- | --- |
| ACK | Acknowledgment |
| FTTH | Fiber to the Home |
| IX | Internet eXchange |
| SACK | Selective Acknowledgment |
| VNIX | Vietnam National Internet eXchange |
| xPON  MB | x - Passive Optical Network  MegaByte |

# TECHNICAL REGULATIONS

## 2.1. Technical quality indicators

### Average delay time

#### 2.1.1.1. Definition

The average delay time is the average of the delay times.

#### 2.1.1.2. Targets

Average delay time: ≤ 50 ms (applied to domestic connections).

#### 2.1.1.3. Determining methods

Simulation method. Use the Ping command to the server for testing. The minimum number of measurement samples is 1,000 samples. Sample packet capacity is 32 bytes. General requirements for testing are specified in Appendix A.

### Average data download speed

#### Definition

Average data download speed includes: average download speed (Pd ) and average upload speed (Pu ):

- The average download speed (Pd) is the ratio of total download speed to total download sample.

- The average upload speed (Pu) is the ratio of total upload speed to total upload sample.

In which:

- The download speed of each measurement sample is the ratio of the total downloaded data file size to the total download time of that sample.

- The upload speed of each measurement sample is the ratio of the total uploaded data file capacity to the total upload time of that sample.

#### Targets

* P d ≥ 0.8 Vd .
* P u ≥ 0.8 Vu .

#### Determining methods

Simulation method. The minimum number of measurement samples is 1000 measurement samples, downloading data files at different hours of the day for each type of upload and download to the server for testing. The capacity of the data file (MB) used to perform the measurement sample is at least twice the maximum download speed value (Mbit/s) of the service package being tested. The interval between two consecutive measurement samples originating from one terminal is at least 30s. This determination method applies to each service package of the service provider. General requirements for measurement and testing are specified in Appendix A of this regulation.

### Bandwidth occupancy level

#### Definition

Bandwidth occupancy is the ratio (%) between the highest amount of data exchanged in the 95% group on the transmission line in a unit of time and the maximum speed of the transmission line (in Mbit/s). Bandwidth occupancy is determined for each connection direction. The bandwidth occupancy level of a connection direction is determined on the basis of the highest total exchange capacity in the group of 95% of all transmission lines in the same connection direction.

#### 2.1.3.2. Targets

Bandwidth occupancy level of connection direction from service providers to international Internet: ≤ 95%.

Bandwidth occupancy of other connection directions: ≤ 90% .

#### 2.1.3.3. Determining methods

Monitoring method. Monitor traffic in all connection directions from 00:00 to 24:00 every day for a minimum period of 3 continuos months, each monitoring sample time is 5 min.

## 2.2. Service quality indicators

### 2.2.1. Service availability

#### 2.2.1.1. Definition

The service availability (D) is the proportion of time during which the service provider is available to provide services to customers:



In which:

**: Time to determine service availability.

**: The incident time under the responsibility of the service provider is calculated according to the formula:



: Total number of failures during the availability determination period

: Total number of fixed broadband Internet subscribers at the time of the incidentth

: Number of Internet subscribers affected in the incidentth

: Incident time *i*th

#### 2.2.1.2. Targets

Service availability ≥99.5 %.

#### 2.2.1.3. Determining methods

Statistical methods. Statistics of all incidents during the availability determination period. The minimum availability determination period is 3 continuos months.

### 2.2.2. Service setup time

#### 2.2.2.1. Definition

The service setup time (E) is the period of time calculated from the time the service provider signs a contract to provide fixed land broadband Internet access services with the customer and agrees with the customer on the time for installation and setup the service until the customer can use the service.

If the service provider cannot sign a service provision contract, within 3 days from the time of receiving the customer's request for service provision, the service provider must notify the customer in writing of the refusal to sign the contract and clearly state the reason for refusal.

#### 2.2.2.2. Targets

In case there is an existing subscription line: ≥ 90% of service contracts having E≤ 4 days.

In case there is no subscriber line available:

- Cities and towns: ≥ 90% of service contracts having E ≤ 7 days.

- Towns and communes: ≥ 90% of service contracts having E ≤ 9 days.

#### 2.2.2.3. Determining methods

Statistical methods. Statistics on all requests to establish fixed land broadband Internet access services of service providers in a minimum period of 3 continuos months.

### 2.2.3. Time to fix connection loss

#### 2.2.3.1. Definition

The time to restore connection loss (R) is calculated from the time the enterprise receives notice of loss of Internet connection from the customer or from the enterprise's equipment system until the connection is restored.

#### 2.2.3.2. Targets

- Inner cities and towns: ≥ 95% of connection loss times having R ≤ 36 h.

- Towns and communes: ≥ 95% of connection loss times having R ≤ 72 h.

#### 2.2.3.3. Determining methods

Statistical methods. Complete statistics on overcoming connection loss in a minimum period of 3 continuos months.

### 2.2.4. Customer complaints about service quality

#### 2.2.4.1. Definition

Customer complaints about service quality are customer dissatisfaction with service quality reported to the service provider in written forms.

#### 2.2.4.2. Targets

Number of customer complaints about service quality (K): ≤ 0.25 complaints/100 subscribers/3 months.

#### 2.2.4.3. Determining methods

Statistical methods. Statistics on all customer complaints about service quality in a period of 3 continuos months.

### 2.2.5. Respond to customer complaints

#### 2.2.5.1. Definition

A response to a customer's complaint is the written documnent from the service provider notifying the customer with a complaint or letter about the receipt and consideration of complaint resolution.

#### 2.2.5.2. Targets

Service providers must have a written response to 100% of customer complaints within 2 working days from the time of receipt of the complaint.

#### 2.2.5.3. Determining methods

Statistical methods. Statistics on all written responses to customer complaints about service quality for a minimum period of 3 continuos months.

### 2.2.6. Customer service

#### 2.2.6.1. Definition

The customer support service is a service that answers questions, gives advices, guidences, receives requests, and provides information to customers about fixed land broadband Internet access services.

#### 2.2.6.2. Targets

- Time to provide customer services by phone staff is 24 hours a day.

- Percentage (%) of calls to the customer service successfully accessing the circuit, sending a connection request to the operator and receiving a response from the operator within 60s ≥ 80%.

#### 2.2.6.3. Determining methods

- Simulation method or calling staff. Perform a simulation or call to customer service. The minimum number of test calls is 250 calls at different hours of the day.

- Monitoring methods. Monitor all calls to customer service by devices or availble network functions. The minimum number of sampled calls is all calls in 7 continuos days.

# 3. MANAGEMENT REGULATIONS

**3.1** . Fixed land broadband Internet access services within the scope specified in 1.1 must comply with the provisions of this Regulation.

**3.2.** Measuring devices and equipment: comply with the provisions of measurement laws.

# 4. RESPONSIBILITIES OF SERVICE PROVIDERS

**4.1.** Service providers must ensure the quality of fixed land broadband Internet access services in accordance with this Regulation, declare service quality and submit to inspection by state management authorities according to current regulations.

**4.2.** Service providers must clearly state the Vd and Vu valuesfor each specific service package in the service provision contract between the service provider and the customer.

**4.3**. Service providers are responsible for building servers to ensure inspection and monitoring of service quality according to this Regulation.

**4.4**. The specific responsibilities of service providers are specified in legal documents on telecommunications service quality management of the Ministry of Information and Communications.

# 5. IMPLEMENTATION ORGANIZATION

**5.1.** The Authority of Telecommunications and the Departments of Information and Communications are responsible for guiding and organizing the implementation of quality management of fixed land broadband Internet access services according to this Regulation.

**5.2.** This regulation is applied to replace National Technical Regulation QCVN 34:2019/BTTTT, National Technical Regulation on quality of terrestrial fixed broadband Internet access services.

**5.3.** In case the regulations stated in this Regulation are changed, supplemented or replaced, the provisions in the new document shall be complied./.

##### Appendix A

**(Regulation)**

General requirements for testing

**A.1. Servers used for testing**

* The server used for testing must be a dedicated one, not be for commercial purposes.
* The server used for testing is identified by its IP address, not by its full domain address.
* The server used for testing is connected to the Internet by a transmission line which bandwidth must be greater than or equal to the total traffic flow of the testing directions.
* Setting up the transmission control protocol (TCP) of the server for testing must meet at least the following requirements:
  + Maximum Segment Size between 1 380 Bytes and 1 460 Bytes;

+ TCP RX Window Size > 4 096 Bytes;

* + SACK enabled;
  + TCP Fast Retransmit;
  + TCP Fast Recovery enabled;
  + Delayed ACK enabled (200 ms).

**A.2. Requirements for number of testing**

* In areas with less than 50,000 subscribers, the number of testing points to be performed: at least 01 point;
* In an area with 50,000 to 100,000 subscribers, the number of testing points to be performed: at least 02 points;
* In an area with 100,000 to 200,000 subscribers, the number of testing points to be performed: at least 03 points;
* In an area with 200,000 to 400,000 subscribers, the number of testing points to be performed: at least 04 points;
* In an area with more than 400,000 subscribers, the number of testing points to be performed: at least 05 points.

**A.3. Sample data file**

The data file (MB) used to perform the testing sample must be in compressed form.

# References

[ 1 ] QCVN34:2019/BTTTT, National technical regulations on quality of fixed land broadband Internet access services.

[ 2 ] ITU-T Recommendation G.1000 (2001) , Communications quality of service: A framework and definitions .

[3] ITU-T Recommendation G.1010 (2001), End – User multimedia QoS categories .

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

[5] ITU-T Y.1545.1 (2017) “Framework for monitoring the quality of service of IP network services”.

[6] ITU-T Q.3960 (2016) “Framework of Internet related performance measurements”.