**Decision No. 1/28 of the Board of the Public Utilities Commission**

Adopted 22 September 2022

**Regulations Regarding the Quality Requirements for Electronic Communications Services**

*Issued pursuant to*

*Section 40, Paragraph one of the Electronic Communications Law and Section 25, Paragraph one of the law On Regulators of Public Utilities*

**I. General Provisions**

1. The regulations prescribe the quality requirements for electronic communications services (hereinafter – the services).

2. The following terms are used in the regulations:

2.1. **fault repair time**– a parameter which characterises the time in hours from the moment when a fault is reported until the provision of the service is restored;

2.2. **supply time for initial connection**– a parameter which characterises the number of days from the day of receiving the application or the day of conclusion of the installation contract until the day of installation for ensuring the service;

2.3. **short message delivery time**– a parameter which determines the time period in seconds from the moment of sending a short message and number until the time when the short message is delivered to the addressee;

2.4. **average value of the quality parameter**– the average arithmetical value of the quality parameter;

2.5. **latency (round trip delay)**– a parameter which characterises time delay in milliseconds between sending and receipt of packets in the stage from the terminal equipment of the end-user to the Latvian Internet eXchange point in both directions;

2.6. **number of unsuccessful calls**– a parameter which determines the ratio in percentage of the number of unsuccessful calls to the total number of call attempts made;

2.7. **packet loss ratio**– a parameter which determines the ratio in percentage of lost packets to the total number of sent packets;

2.8. **connection speed**– a parameter which characterises uploading and downloading information exchange speed in a data channel in the stage from the terminal equipment of the end-user to the Latvian Internet eXchange point in megabits or gigabits per second;

2.9. **speech transmission quality**– a parameter which determines the evaluation of the speech transmission quality of a voice communications service in points by using PESQ (Perceptual Evaluation of Speech Quality) or POLQA (Perceptual Objective Listening Quality Assessment) algorithm;

2.10. **call set-up time**– a parameter which determines the time period in seconds from the moment when the number to be called is sent until the time when a call control tone, busy tone, or answer is detected, including signalling delays;

2.11. **jitter**– a parameter which determines time delay irregularity in milliseconds between packet sending and receipt.

3. The regulations shall determine the quality requirements for the following services:

3.1. voice communications service:

3.1.1. domestic voice communications service;

3.1.2. international voice communications service;

3.2. short message service:

3.2.1. domestic short message service;

3.2.2. international short message service;

3.2.3. premium rate short message service;

3.2.4. software to people short message service;

3.3. Internet access service;

3.4. data transmission service:

3.4.1. machine-to-machine communications service;

3.4.2. virtual private network service;

3.5. radio programme distribution service;

3.6. television programme distribution service;

3.7. access:

3.7.1. access to the electronic communications backbone network;

3.7.2. access to the electronic communications access network;

3.7.3. access to associated facilities;

3.7.4. bitstream access;

3.8. interconnection;

3.9. leased line service.

4. In accordance with Chapters II and III of these regulations, an electronic communications merchant (hereinafter – the merchant) shall submit a service quality declaration to the Public Utilities Commission (hereinafter – the Regulator), in accordance with the procedures laid down by it, on the quality of the provided service at a termination point of a fixed electronic communications network or in a mobile electronic communications network within a coverage area defined by the operator in respect of the following services specified in Paragraph 3 of these regulations and provided in retail trade, including also in cases when the service is ensured by using an application:

4.1. voice communications service;

4.2. short message service;

4.3. Internet access service;

4.4. television programme distribution service.

5. The merchant shall determine the quality requirements for the services specified in Sub-paragraphs 3.1 and 3.4 of these regulations which are provided in retail trade to legal persons for which special conditions are included in the electronic communications services contract by concluding a service level agreement (SLA).

6. The merchant shall determine the quality requirements for the services specified in Sub-paragraphs 3.1.2, 3.2.2, 3.2.3, 3.2.4, 3.4, 3.5, and 3.9 of these regulations and provided in retail trade, and such requirements shall be included in the electronic communications services contract.

7. The merchant shall determine the quality requirements for the services specified in Paragraph 3 of these regulations and provided in wholesale trade, and such requirements shall be included in the contract mutually entered into by the merchants.

8. The service quality declarations submitted by the merchant to the Regulator shall be publicly available on the website of the Regulator.

9. A merchant submitting a service quality declaration in accordance with Paragraph 4 of these regulations shall ensure that the service complies with the parameter values specified in the quality declaration.

10. A merchant providing the broadband Internet access service shall ensure a connection speed sufficient for the end-user to access the minimum amount of services specified in the Electronic Communications Law in conformity with the following conditions:

10.1. the minimum connection speed of the broadband Internet access service at a termination point of a fixed electronic communications network shall be at least 6 megabits per second for download speed and at least 2 megabits per second for upload speed;

10.2. the minimum download and upload connection speed of a broadband Internet access service in a mobile electronic communications network at a fixed point of receipt of the service within a coverage area defined by the merchant at the premises or in the household of the end-user using a modem-router shall be at least 2 megabits per second;

10.3. a merchant providing the Internet access service in a mobile electronic communications network shall determine the minimum guaranteed connection speed if it ensures the Internet access service to the end-user in another manner not referred to in Sub-paragraph 10.2 of these regulations.

**II. Procedures for Determining Quality of Service Parameters and Values Thereof**

11. The merchant shall carry out the quality measurements of services provided in retail trade (hereinafter – the measurements), determine and declare the average service quality parameter values which can be actually available to end-users and which can be ensured for them in a service quality declaration for the service quality parameters laid down by the Regulator, taking into account the amount of information, structure and conditions indicated in a form of the service quality declaration.

12. If the merchant provides the service, using the electronic communications network of another operator, and cannot ensure determination of the service quality parameter values, the merchant has an obligation to obtain information on the service quality parameter values from the operator which ensures electronic communications network and to submit it to the Regulator.

13. The Merchant and the Regulator shall carry out the measurements in accordance with the parameters and conditions laid down in these regulations.

14. For the voice communications service, the measurements shall be carried out for the following parameters:

14.1. the supply time for initial connection;

14.2. the fault repair time;

14.3. the number of unsuccessful calls;

14.4. the call set-up time in seconds;

14.5. the speech transmission quality.

15. The merchant providing the domestic voice communications service shall carry out the measurements for the parameters specified in Paragraph 14 of these regulations.

16. The Regulator shall carry out the measurements for the parameters specified in Sub-paragraphs 14.3, 14.4, 14.5 of these regulations if the operator providing the domestic voice communications service has not less than 20 000 end-users at the end of the first half of the preceding calendar year.

17. For the short message service, the measurements shall be carried out for the following parameters:

17.1. the supply time for initial connection;

17.2. the fault repair time;

17.3. the short message delivery time.

18. The merchant providing the domestic short message service shall carry out the measurements for the parameters specified in Paragraph 17 of these regulations.

19. For the Internet access service, the measurements shall be carried out for the following parameters:

19.1. the supply time for initial connection;

19.2. the fault repair time;

19.3. the upload and download broadband connection speed;

19.4. the latency;

19.5. the jitter;

19.6. the packet loss ratio.

20. The merchant providing the Internet access service shall carry out the measurements for the parameters specified in Paragraph 19 of these regulations.

21. The Regulator shall carry out the measurements for the parameters specified in Sub-paragraphs 19.3, 19.4, 19.5, 19.6 of these regulations if the operator providing the Internet access service in a mobile electronic communications network has not less than 20 000 end-users at the end of the first half of the preceding calendar year.

22. For the television programme distribution service, the measurements shall be carried out for the following parameters:

22.1. the supply time for initial connection;

22.2. the fault repair time;

22.3. the subjective visual assessment of the image quality.

23. The merchant providing the television programme distribution service shall carry out the measurements for the parameters specified in Paragraph 22 of these regulations.

24. The Regulator and the merchant shall ensure for the measurements a confidence level of the results of the measurements of not less than 95 per cent and the relative accuracy of the measurements of not less than 10 per cent.

25. The Regulator shall, upon its own initiative or in the case of a justified reason, randomly carry out the measurements of the service quality parameters specified in these regulations and inform the merchant thereof in writing not later than 30 days before commencement of the measurements.

**III. Procedures for Submission of Quality Declarations of the Services Provided in Retail Trade**

26. A merchant providing the domestic voice communications service shall, once a year by 1 February, submit to the Regulator the service quality declaration regarding the current calendar year (Annex 1). If the merchant commences the provision of the service after 1 February of the current calendar year, then the merchant shall submit the service quality declaration to the Regulator not later than one working day after the provision of the service is commenced.

27. A merchant providing the domestic short message service shall, once a year by 1 February, submit to the Regulator the service quality declaration regarding the current calendar year (Annex 2). If the merchant commences the provision of the service after 1 February of the current calendar year, then the merchant shall submit the service quality declaration to the Regulator not later than one working day after the provision of the service is commenced.

28. A merchant providing the Internet access service shall, once a year by 1 February, submit to the Regulator the service quality declaration regarding the current calendar year (Annex 3). If the merchant commences the provision of the service after 1 February of the current calendar year, then the merchant shall submit the service quality declaration to the Regulator not later than one working day after the provision of the service is commenced.

29. A merchant providing the television programme distribution service shall, once a year by 1 February, submit to the Regulator the service quality declaration regarding the current calendar year (Annex 4). If the merchant commences the provision of the service after 1 February of the current calendar year, then the merchant shall submit the service quality declaration to the Regulator not later than one working day after the provision of the service is commenced.

**IV. Closing Provisions**

30. Decision No. 1/31 of the Public Utilities Commission of 30 November 2017, Regulations Regarding Quality Requirements, Submission and Publication of Quality Reports for Electronic Communications Services (*Latvijas Vēstnesis*, 2017, No. 244), is repealed.

31. The merchant shall, within two months from the day of coming into force of these regulations, ensure compliance with the requirements laid down in Paragraph 6 of these regulations.

32. The regulations shall come into force on 1 October 2022.

Chair of the Board of the Public Utilities Commission A. Ozola

**Annex 1**

Decision No. 1/28 of the Public Utilities Commission

22 September 2022

**Quality Declaration of the Voice Communications Service[[1]](#footnote-1)\***

|  |  |  |  |
| --- | --- | --- | --- |
| **Name of the electronic communications merchant** |  | | |
| **Registration number** |  | | |
| **Year of the declaration** |  | | |
|  |  | | |
| **Quality of service parameter** | **Quality of service parameter value** | | |
| In a fixed electronic communications network | In a mobile electronic communications network | Through the use of an application |
| 1. Supply time for initial connection in days (1) | < | < | < |
| 2. Fault repair time in hours(2) | < | < | < |
| 3. Number of unsuccessful calls in percentage(3) | < | < | < |
| 4. Call set-up time in seconds(4) | < | < | < |
| 5. Speech transmission quality in points(5) | ≥ | ≥ | ≥ |

(1)Number of days in full days from the day of receipt of the application until the day of installation or activation of the service for ensuring the voice communications service.

(2)The parameter value shall be indicated in full hours.

(3)Number of unsuccessful calls – a parameter which determines the ratio in percentage of the number of unsuccessful calls to the total number of call attempts made.

Unsuccessful call:

1) a call attempt with a correctly dialled number granted to the end-user for use, without detecting a call control tone, busy tone or answer within 30 seconds;

2) a call attempt with a correctly dialled number granted to the end-user for use, detecting a call control tone in the case of a wrong call;

3) a call attempt with a correctly dialled number granted to the end-user for use, detecting a busy tone if this number is not used for other call;

4) a call attempt with a correctly dialled number granted to the end-user for use, detecting an answer in the case of a wrong call;

5) a call attempt from a fixed electronic communications network with a correctly dialled number granted to the end-user for use, detecting dial tone;

6) a call attempt with a correctly dialled number granted to the end-user for use, detecting a notification that the terminal equipment is switched off or is out of the coverage area when the terminal equipment is switched on and is within the coverage area;

7) a call attempt from a mobile electronic communications network with a correctly dialled number granted to the end-user for use when the call is failed;

8) a call attempt with a correctly dialled number granted to the end-user for use, the call terminating during the calling.

(4)Call set-up time – a parameter which determines the time period from the moment of sending the number to be called until the time when a call control tone, busy tone, or answer is detected in seconds.

(5)Speech transmission quality is determined by using PESQ[[2]](#footnote-2) or POLQA[[3]](#footnote-3) algorithm.

**Speech transmission quality assessment**

Table 1

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Assessment** | **Explanation of the assessment** | **Value in points** |
| 1 | 2 | 3 | 4 |
| 1. | Excellent quality | Speech is clearly understandable. | ≥ 4 |
| 2. | Good quality | During speech transmission, there is slight background noise. | ≥ 3 to < 4 |
| 3. | Fair quality | Speech is difficult to understand. Insufficient audibility or temporary speech interruptions may occur. | ≥ 2 to < 3 |
| 4. | Poor quality | Speech is very difficult to understand. Noticeable background noise or speech interruptions. | ≥ 1 to < 2 |
| 5. | Bad quality | Communication is not possible. | < 1 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Date | . | . | . |  |  |
|  | | | | |  |
| Person entitled to represent the merchant | | | | |  |
|  | | | | | /signature and full name thereof/ |
|  | | | | |  |
|  | | | | |  |
| /given name, surname of the person who prepared the document/ | | | | |  |
| telephone |  | | | |  |
|  |  | | | |  |
| e-mail |  | | | |  |

Note. The details of the document “date” and “signature” need not be completed if the document has been prepared in accordance with the laws and regulations regarding drawing up of electronic documents.

**Annex 2**

Decision No. 1/28 of the Public Utilities Commission

22 September 2022

**Quality Declaration of the Short Message Service[[4]](#footnote-4)1**

|  |  |
| --- | --- |
| **Name of the electronic communications merchant** |  |
| **Registration number** |  |
| **Year of the declaration** |  |

|  |  |  |
| --- | --- | --- |
| **Quality of service parameter** | **Quality of service parameter value** | |
| In a mobile electronic communications network | Through the use of an application |
| 1. Supply time for initial connection in days (1) |  |  |
| 2. Fault repair time in hours(2) |  |  |
| 3. Short message delivery time in seconds(3) |  |  |

(1)Number of days in full days from the day of receipt of the application until the day of installation or activation of the service for ensuring the short message service.

(2)The parameter value shall be indicated in full hours.

(3) A short message delivery time – a parameter which determines a time period from the moment of sending of the short message and number until the time when the short message is delivered to the addressee in seconds.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Date | . | . | . |  |  |
|  | | | | |  |
| Person entitled to represent the merchant | | | | |  |
|  | | | | | /signature and full name thereof/ |
|  | | | | |  |
|  | | | | |  |
| /given name, surname of the person who prepared the document/ | | | | |  |
| telephone |  | | | |  |
|  |  | | | |  |
| e-mail |  | | | |  |

Note. The details of the document “date” and “signature” need not be completed if the document has been prepared in accordance with the laws and regulations regarding drawing up of electronic documents.

**Annex 3**

Decision No. 1/28 of the Public Utilities Commission

22 September 2022

**Quality Declaration of the Internet Access Service\***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name of the electronic communications merchant** |  | | | | |
| **Registration number** |  | | | | |
| **Year of the declaration** |  | | | | |
| **Type of the electronic communications network** |  | Fixed |  | Mobile |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Maximum download speed range(1)\*\* | | Maximum upload speed range(1)\*\* | | Supply time for initial connection in days (2) | Fault repair time in hours(3) | Packet loss ratio in percentage(4)\*\* | Latency in milliseconds(5)\*\* | Jitter in milliseconds(6)\*\* |
| >2Mbps up to <10Mbps |  | >2Mbps up to <10Mbps |  | **<** | **<** | < | < | < |
| >10Mbps up to <30Mbps |  | >10Mbps up to <30Mbps |  |
| >30Mbps up to <100Mbps |  | >30Mbps up to <100Mbps |  |
| >100Mbps up to <300Mps |  | >100Mbps up to <300Mps |  |
| >300Mbps up to <1 Gbps |  | >300Mbps up to < 1 Gbps |  |
| >1 Gbps |  | >1 Gbps |  |

\*The quality declaration shall be submitted for the broadband Internet access service.

\*\*The parameter value shall be determined in the stage between the terminal equipment of the end-user and the Latvian Internet eXchange point, ensuring a confidence level of the results of the measurements of not less than 95 per cent and relative accuracy of the measurements of not less than 10 per cent.

(1)The merchant shall note the range of the connection speed within which the merchant ensures the Internet service regardless of the technologies used for the provision of the service and the tariff plans offered and which shall characterise the following:

1) the maximum (advertised) connection speed in a fixed electronic communications network[[5]](#footnote-5)1;

2) the maximum connection speed actually available to the end-user in the mobile electronic communications network.

(2)Number of days in full days from the day of receipt of the application until the day of installation or activation of the service for ensuring the Internet access service.

(3)The parameter value shall be indicated in full hours.

(4) Packet loss ratio[[6]](#footnote-6)2 – a parameter which determines the ratio in percentage of lost packets to the total number of sent packets.

The packet loss ratio shall be determined in accordance with the following formula:

,

where:

Z – packet loss ratio in per centage;

n – total number of packets sent during the measurement cycle;

D – number of lost packets during measurements.

5Latency[[7]](#footnote-7)3 – a parameter which characterises time delay in milliseconds between sending and receipt of packets in the stage from the terminal equipment of the end-user to the Latvian Internet eXchange point in both directions.

Latency shall be determined in accordance with the formula:

A picture containing text, watching, night sky

Description automatically generated,

where:

 – average latency in milliseconds during the measurement cycle;

t1 – packet receipt time in milliseconds;

t2 – packet sending time in milliseconds;

n – total number of packets sent during the measurement cycle.

(6)Jitter[[8]](#footnote-8)4 – a parameter which determines time delay irregularity in milliseconds between packet sending and receipt.

Jitter shall be calculated in accordance with the formula:

A picture containing text, watching, dark, night sky

Description automatically generated,

where:

J – jitter in milliseconds;

 – average latency in milliseconds during the measurement cycle;

n – total number of packets sent during the measurement cycle;

Li – latency of i-packet in milliseconds.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Date | . | . | . |  |  |
|  | | | | |  |
| Person entitled to represent the merchant | | | | |  |
|  | | | | | /signature and full name thereof/ |
|  | | | | |  |
|  | | | | |  |
| /given name, surname of the person who prepared the document/ | | | | |  |
| telephone |  | | | |  |
|  |  | | | |  |
| e-mail |  | | | |  |

Note. The details of the document “date” and “signature” need not be completed if the document has been prepared in accordance with the laws and regulations regarding drawing up of electronic documents.

**Annex 4**

Decision No. 1/28 of the Public Utilities Commission

22 September 2022

**Quality Declaration of the Television Programme Distribution Service[[9]](#footnote-9)1**

|  |  |
| --- | --- |
| **Name of the electronic communications merchant** |  |
| **Registration number** |  |
| **Year of the declaration** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Quality of service parameter** | **Quality of service parameter value** | | |
| In a fixed electronic communications network | In a mobile electronic communications network | Through the use of an application |
| 1. Supply time for initial connection in days (1) | < | < | < |
| 2. Fault repair time in hours(2) | < | < | < |
| 3. The subjective visual assessment of the image quality in points(3) | ≥ | ≥ | > |

(1)Number of days in full days from the day of receipt of the application until the day of installation or activation of the service for ensuring the television programme distribution service.

(2)The parameter value shall be indicated in full hours.

(3)The image quality shall be determined for each television programme as a quantitative value in points which is obtained by subjective visual assessment of the image in accordance with Table 1:

**Image Quality Assessment**

Table 1

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Assessment** | **Explanation of the assessment** | **Value in points** |
| 1. | Excellent quality | The image is clearly visible and does not contain disturbances or distortions | **5** |
| 2. | Good quality | The image is clearly visible but contains temporary disturbances and distortions which do not interfere with the perceptibility of the image | **4** |
| 3. | Fair quality | The image contains disturbances and distortions which slightly interfere with the perceptibility of the image | **3** |
| 4. | Poor quality | The image has substantial disturbances and distortions which interfere with the perceptibility of the image | **2** |
| 5. | Bad quality | The image has long-lasting substantial disturbances and distortions which significantly interfere with the perceptibility of the image | **1** |

The image quality shall be assessed, taking into account the most characteristic image disturbances and distortions:

1) moving or unmoving bandlike, grainy layering or layering of another type on the image;

2) irregularity of the brightness and colours of the image;

3) multiplication of the image;

4) temporary or complete freezing of the image;

5) individual missing fragments of the image;

6) side effects of the picture near moving details of the image which are not related to the design of the programme image to be transmitted (image artefacts);

7) distortions of vertical lines on the right side of the image;

8) shifting of image and sound in time or side noises unrelated to the acoustic presentation of the programme being broadcast (sound artefacts);

9) other disturbances which significantly affect the perception of the image.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Date | . | . | . |  |  |
|  | | | | |  |
| Person entitled to represent the merchant | | | | |  |
|  | | | | | /signature and full name thereof/ |
|  | | | | |  |
|  | | | | |  |
| /given name, surname of the person who prepared the document/ | | | | |  |
| telephone |  | | | |  |
|  |  | | | |  |
| e-mail |  | | | |  |

Note. The details of the document “date” and “signature” need not be completed if the document has been prepared in accordance with the laws and regulations regarding drawing up of electronic documents.

1. \* Domestic voice communications service in a fixed electronic communications network, domestic voice communications service in a mobile electronic communications network, and voice communications service through the use of an application. [↑](#footnote-ref-1)
2. Perceptual Evaluation of Speech Quality. [↑](#footnote-ref-2)
3. Perceptual Objective Listening Quality Assessment. [↑](#footnote-ref-3)
4. 1 Domestic short message service in a mobile electronic communications network and short message service through the use of an application. [↑](#footnote-ref-4)
5. 1 Maximum (advertised) connection speed – the maximum upload and download speed of the Internet access service according to the tariff plan. [↑](#footnote-ref-5)
6. 2 Packet Loss Ratio. [↑](#footnote-ref-6)
7. 3 Latency (Round Trip Delay). [↑](#footnote-ref-7)
8. 4 Jitter. [↑](#footnote-ref-8)
9. 1 Television programme distribution service in a fixed electronic communications network, a mobile electronic communications network and television programme distribution service through the use of an application. [↑](#footnote-ref-9)