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THE ELECTRONIC AND POSTAL COMMUNICATIONS ACT
(CAP.306)

REGULATIONS

(Made under Section 165)

THE ELECTRONIC AND POSTAL COMMUNICATIONS
(QUALITY OF SERVICE) REGULATIONS, 2018

ARRANGEMENT OF REGULATIONS

Regulation

Title

PART I
PRELIMINARY PROVISIONS

1. Citation.
2. Application.
3. Interpretation.

PART II
POSTAL, CONTENT AND ELECTRONIC COMMUNICATIONS
SERVICE LICENSEE OBLIGATIONS

4. Objective of quality of service.
5. Licensee obligations.

PART III
QUALITY OF SERVICES PARAMETERS

6. Compliance with electronic service provider obligations.
7. Services related to these Regulations.
8. Quality of service for PSTN.

9. Quality of service for Mobile telephone services.
10. Quality of service for International telephone Services.
11. Quality of service for internet services.
12. Quality of service for Postal Services.
13. Quality of services for content service provider.
14. Inspection.
15. Auditing quality of service data.
16. Investigation and audit.
17. Quality of service reporting for PSTN services and mobile telephone services.
18. Quality of service reports publication.
19. Review of targets and parameters on quality of service.
20. Penalties.
21. Revocation.

SCHEDULES

THE ELECTRONIC AND POSTAL COMMUNICATIONS ACT
(CAP.306)

REGULATIONS

(Made under section 165)

THE ELECTRONIC AND POSTAL COMMUNICATIONS
(QUALITY OF SERVICE) REGULATIONS, 2018

PART I
PRELIMINARY PROVISIONS

- Citation 1. These Regulations may be cited as the Electronic and Postal Communications (Quality of Service) Regulations, 2018.
- Application 2. These Regulations shall apply to licensees offering postal, content and electronic communication services in the United Republic.
- Interpretation 3. In these Regulations, unless the context requires otherwise-
- Cap.306 “Act” means the Electronic and Postal Communications Act;
- Cap. 172 “Authority” means the Tanzania Communications Regulatory Authority established under the Tanzania Regulatory Authority Act;
- “agent” means a person who is authorized on behalf of the authority, to undertake quality of service issues;
- “average data rate for packet data” means the average data speed for packet data calculated by dividing the number of transmitted bits by the duration of the transmission;
- “basic telecommunication services” means services derived from a public switched telephone network;
- “call attempts” means number of calls offered for network processing;

- “Call Completion Ratio (CCR)” means the ratio of the number of completed calls to the number of call attempts;
- “Call Setup Time (CST)” means the time between sending of complete address information by the MOC and receipt of call set-up notification or an alerting message;
- “completed call” means a call where an answer signal is received;
- “mobile telephone services” means services derived from a public land mobile network;
- “content service” means service offered for speech or other sound test or images whether still or moving except where transmitted in private communications;
- “data call access failure ratio” means the probability that a subscriber (calling-party) cannot take advantage of a service offering to establish a data call to a called party;
- “data call access time” means the time elapsing from initiating the data call to alerting or a busy signal that a subscriber (calling-party) can take advantage of a service offering to establish a data call to a called-party;
- “outage-time” means the sum of all the time during reporting period when the fault exists on the service;
- “electronic communication service” means any service the purpose or effect of which is to enable or facilitate electronic communication;
- “electronic communication services licensee” means an entity engaged in the provision of electronic communication services;
- “fault” means a state where a network does not meet the service specifications and some repair action is required;
- “fault repair time” means the duration from the time a fault report is made to the time when the service element or service is restored to normal working order;
- “fault rate” means faults reported per access line per year;
- “licensee” means an entity licensed by the Authority to provide communication services;
- “handover” means the action of switching the call in progress from one radio channel to another without disrupting the call;
- “handover success rate” means the ratio of successful handovers to the total number of handover requests or attempts;

- “network availability” means the probability that the mobile services are offered to a user;
- “Packet Data Protocol context or in its acronym PDP” means access to an external packet-switching network that contains information such as the type of packet-switching network, the Mobile Station PDP address (IP address), the reference of Gateway GPRS Support Node and the requested quality of service;
- “PDP context activation failure ratio” means the probability that the PDP context cannot be activated. It is the proportion of unsuccessful PDP context activation attempts and the total number of PDP context activation attempts;
- “PDP context activation time” means the time needed for activating the PDP context;
- “PDP context cut-off ratio” means the probability that a PDP context is deactivated without being initiated intentionally by the user, allowing the network to deactivate the context after user idle time;
- “ping round trip time” means the time required for a packet to travel from a source to a destination and back. It is used to measure the delay on a network at a given time. For this measurement, the service must have already been established;
- “Point of Interconnect (POI) congestion” means the ratio of number of blocked call attempts to another network to the total number of call attempts to another network;
- “postal service” means any service by post;
- “Public Switched Telephone Network” in its abbreviation “PSTN” means a network set up and operated by basic service licensees for the specified purpose of providing fixed communication services between subscribers using telephone sets or accessories;
- “quality of service” means the collective effect of service performances which determine the degree of satisfaction of a user of the service;
- “SMS Access Delay” means the time period between sending a short message to the network and receiving a send confirmation from the network at the originating side;
- “SMS Completion Failure Ratio” means the ratio of unsuccessfully received messages from one mobile device

to another mobile device, excluding duplicate received and corrupted messages;

“SMS end-to-end delivery time” means the time between sending a short message to the network and receiving the same short message at another mobile device;

“SMS Receive confirmation failure ratio” means the probability that the received confirmation for a sent attempt is not received by the originating mobile device although requested;

“SMS Receive Confirmation time” means the time between sending a short message to the network and receiving the confirmation for that message from the network;

“transmission delay” means the amount of time taken by a packet to reach the receiving endpoint after being transmitted from the sending endpoint.

PART II

POSTAL, CONTENT AND ELECTRONIC COMMUNICATIONS SERVICE LICENSEE OBLIGATIONS

Objective
of quality
of service

4. These Regulations are intended to:-

- (a) create conditions for customer satisfaction by making known the quality of service which the service provider is required to provide and the user expecting to receive;
- (b) measure quality of service provided by the service provider from time to time and to compare them with the norms so as to assess the level of performance; and
- (c) protect the interest of consumers of postal, content and electronic communications services.

Licensee
obligations

5. The postal, content and electronic communications services provider shall:-

- (a) ensure performance of postal, content and electronic communications services meet quality of service parameters (levels of performance) as set forth to these Regulations; and
- (b) perform measurements on quality of services on quarterly basis, keep records of the results of the measurements, and report the same to the Authority.

Compliance with electronic service provider obligations

6. In order to comply with regulation 4(a) the electronic communications services provider shall:-

(a) establish measurement systems consistent with the framework proposed by the Authority in consultation with the stakeholders; and

provide quarterly returns of measurement results for all services to the Authority.

PART III
QUALITY OF SERVICES PARAMETERS

Services related to these Regulations

7. The quality of service parameters for the following services are prescribed under these Regulations:-

(a) PSTN Services;

(b) mobile telephone services;

(c) international telephone services;

(d) internet services;

(e) postal services;

(f) content services.

Quality of service for PSTN

8. The licensee providing public switched telephone network services shall be required to meet targets on quality of services parameters as specified in the First Schedule to these Regulations.

Quality of service for Mobile telephone services

9. The licensee providing mobile telephone services shall be required to meet targets on quality of service parameters as specified in the Second Schedule to these Regulations.

Quality of service for International telephone Services

10. The licensee providing international telephone services shall be required to meet targets on quality of service parameters as specified in the Third Schedule to these Regulations.

Quality of service for internet services

11. The licensee providing internet services shall be required to meet targets on quality of service parameters as specified in the Fourth Schedule to these Regulations.

Quality of service for Postal Services	12. The licensee providing postal service shall be required to meet targets on quality of service parameters as specified in the Fifth Schedule to these Regulations.
Quality of service for content service provider	13. The licensee providing content services shall be required to meet targets on quality of service parameters and other conditions as specified in Sixth Schedule to these Regulations.
Investigation	14.-(1) The Authority may investigate at any time the quality of service measurement; reporting and recording procedures of a licensee. (2) The Authority may direct its officers or agents to carry out investigation on quality of service measurements. (3) For the purpose of this regulation recording procedure means the method used by a licensee to process results after measurements and submits the same to the Authority in the required format.
Inspection	15. The Authority or any person authorized in writing by the Authority, may at all reasonable time enter upon the premise of the licensee for the purpose of ascertaining the compliance with these Regulation.
Auditing quality of service data	16. The Authority may audit some or all of the quality of service data of licensees and vary the frequency of the audits, reporting areas and reporting periods that require audits.
Quality of service reporting for PSTN services and mobile telephone services	17. The Authority shall, on quarterly basis, publish:- (a) the quality of service report submitted under regulation 16; (b) results of audit and assessment of the quality of service undertaken in accordance with regulation 14 and 16.
Publication of quality of service report	18. The Authority may publish, the QoS Report in a designated format on quarterly basis or as may be decided by the Authority:-

- (a) the compliance reports of benchmarks of each Quality of Service parameter reported to it by the service providers under Regulation 5;
- (b) the results of the audit and assessment of the Quality of Service undertaken by the Authority or its authorized agent through its website or through press releases or through advertisements in the newspapers, for the information to the general public.

Review of targets and parameters on quality of service

19. The targets and parameters on quality of service under these Regulations may be reviewed from time to time.

Penalties

20.-(1) Any licensee who:-

- (a) fails to comply with the requirements of regulation 5 is liable to a fine of not less than five million shillings;
- (b) fails to meet and maintain targets for each quality of service parameters as specified in the First, Second, Third, Fourth, Fifth and Sixth schedules, shall be liable to a fine of not less than five million shillings for each act of contravention and five million shillings for each day that the contravention continues to occur;
- (c) fails to submit quarterly quality of service reports within ten working days after the end of a given quarter, shall be liable to a fine of not less than five million shillings;
- (d) submits or publishes false or misleading information about quality of service, shall be liable to a fine of not less than thirty million shillings for each act of contravention and five million shillings for each day that the contravention continues to occur;
- (e) obstructs or prevents an investigation or audit being carried out by the Authority or its agents in respect of the quality of service measurements, reporting, data collection and record keeping procedures, shall be liable to a fine of not less than five million shillings for each act of contravention and five million shillings for each day that the contravention continues to occur.

(2) Notwithstanding sub regulation (1), where a person commits an offence under these Regulations, the Director General may, where such person admits in writing compound such offence by collecting from that person a sum of money not exceeding the amount of the fine prescribed for the offence.

Revocation
G.N.No.41
6 of 2011

21. The Electronic and Postal Communications (Quality of Service) Regulations, 2011 are hereby revoked.

FIRST SCHEDULE

(Made under Regulation 8)

QUALITY OF SERVICE PARAMETERS FOR PSTN SERVICES

S/N	Parameter Name	Target	Measurement Method
1.	Network Availability	> 99.9%	Measurement to be made according to ETSI EG 202 057-3
2.	Call Set up Time (s)	< 3 sec (Mean value of local call set-up time) < 5 sec (Mean value of toll call set-up time)	Measurements to be made according to ETSI EG 201 769-1
3.	Call Connection Failure Rate	< 2% The mean value for probability of end-to-end blocking at normal load	Probability of end-to-end blocking (ITU-T Rec. E.721); Percentage of unsuccessful calls. Measurements to be made according to ETSI EG 201 769-1
4.	Point of Interconnection (POI) congestion	≤ 0.5%	$\frac{\text{Number of blocked call attempts to another network}}{\text{Total number of call attempts to another network}} \times 100$
5.	Call Completion Ratio (CCR)	>95% (Local/On-net /Intra office calls) >90% (Transit/Off-net calls including International)	Measurements to be made according to ETSI EG 201 769-1
6.	Transmission Delay (milli-Seconds)	< 150 ms One way transmission time	End-to- End Transmission Time (ITU-T Rec. G.114)

Electronic and Postal Communications (Quality of Service)

GN. No. 21 (contd.)

S/N	Parameter Name	Target	Measurement Method
7.	Supply time for Initial connection	80% (Within 24 hrs); 90% (Within 48hrs); 100% (Within 7 business days).	Measurement to be made according to ETSI EG 201 769-1
8.	Fault Rate	< 0.5% (Number of faults reported per 100DELS)	Fault reported per access line per year Measurements to be made as per ETSI EG 201 769-1
9.	Fault Repair Time	80% (Within 24 hrs); 90% (Within 48 hrs); MTTR: 8 hrs; < 1% (Repeating faults)	Time by which valid faults on access lines are repaired (in hours) Measurements to be made as per ETSI EG 201 769-1

BILLING, CUSTOMER SERVICES & SATISFACTION MEASURES

No	Parameter Name	Target	Measurement method
10.	Percentage of Bills resulting in customer complaints	< 2 %	Measurement to be made as per ETSI EG 201 769-1)
11.	Percentage of Complaints resolved within 5 working days	100 %	Measurements to be made as per ETSI EG 202 057-1
12.	Interactive Voice Response(IVR)/Operator Response	< 30 sec	Time taken for Operator attention
13.	Call centre answer success rate	> 98 %	
14.	Customer satisfaction on overall quality of service	> 95 %	$\frac{\text{Number of Answers as good quality}}{\text{Number of Customers Interviewed}} \times 100$

CUSTOMER SATISFACTION ATTRIBUTES

No	Parameter Name	Target	Measurement Method
15.	Percentage of customers satisfied with the service availability.	> 95%	$\frac{\text{Number of answers satisfied}}{\text{Number of Customers interviewed}} \times 100$
16.	Percentage of customers satisfied with the service accessibility.	> 95%	$\frac{\text{Number of answers satisfied}}{\text{Number of Customers interviewed}} \times 100$
17.	Percentage of customers satisfied with the reliability.	> 95%	$\frac{\text{Number of answers satisfied}}{\text{Number of Customers interviewed}} \times 100$
18.	Percentage of customers satisfied with billing performance.	> 90%	$\frac{\text{Number of answers satisfied}}{\text{Number of Customers interviewed}} \times 100$
19.	Percentage of customers satisfied with the help/ enquiry services.	> 90%	$\frac{\text{Number of answers satisfied}}{\text{Number of Customers interviewed}} \times 100$

SECOND SCHEDULE

(Made under Regulation 9)

QUALITY OF SERVICE PARAMETERS FOR MOBILE TELEPHONE SERVICES

S/N	Parameter Name	Target	Measurement method
1.	Network Availability	> 99 %	$\frac{\text{Probing attempts with mobile services available}}{\text{All probing attempts}} \times 100$ ETSI TS 102-250-2
2.	Point of Interconnect (POI) Congestion	< 0.5 %	$\frac{\text{Number of blocked call attempts to another network}}{\text{Total number of call attempts to another network}} \times 100$
3.	Call Connection Failure Rate	< 2 %	$\frac{\text{Number of failed call attempts}}{\text{Total number of attempts}} \times 100$
4.	Call Drop Rate	< 2 %	$\frac{\text{Number of calls dropped}}{\text{Total number of attempts}} \times 100$
5.	Call Setup Time	< 10 sec	Maximum Time taken for Voice service connection (ETSI TS 102-250-2)
6.	Service Coverage	>=-75 dBm >=-85 dBm >=-95 dBm	Indoor In-vehicle Outdoor
7.	Voice Quality(Mean Opinion Score-MOS)	> 3.5	ITU Recommendation on Voice Quality testing ITU-T P.862/862.1 and ITU-T P.863

Electronic and Postal Communications (Quality of Service)

GN. No. 21 (contd.)

S/N	Parameter Name	Target	Measurement method
8.	Call Success Rate (CSR)	≥ 95 %	$\frac{(\text{Number of attempted} - \text{number of calls blocked} - \text{number of drop calls})}{\text{Total number of attempted calls}} \times 100$
9.	Handover Success Rate	≥ 98 %	$\frac{\text{Successful Handovers}}{\text{Total Handovers Requests}} \times 100$
10.	Average Data rate for packet data	>= 4 Mbps	
11.	Ping round trip time	< 400 ms (data)	T_Packet Received – T_Packet sent ITU-T E.804, 3GPP TS 22.105
12.	Attach failure Ratio	< 2 %	$\frac{\text{Unsuccessful attach attempts}}{\text{All attach attempts}} \times 100$ ITU-T E.804
13.	Attach setup time	≤ 5 sec	T_Attach Complete – T_Attach Request ITU-T E.804
14.	SMS Service Accessibility	≥ 98 %	$\frac{\text{Successful SMS service attempts}}{\text{All SMS service attempts}} \times 100$ ITU-T E.804
15.	SMS Access Delay	≤ 2 sec	T_A_Receive – T_A_Send ITU-T E.804
16.	SMS Completion failure ratio	≤ 2 %	$\frac{\text{Unsuccessful received SMS}}{\text{All SMS service attempts}} \times 100$ ITU-T E.804
17.	SMS End-to-end delivery time	≤ 5 sec	T_B_Receive – T_A_Send ITU-T E.804

**SERVICE QUALITY ATTRIBUTES FOR VOICE OVER LTE (VoLTE)
SERVICES**

S/N	Parameter name	Target	Definition
18.	Registration success rate	>= 99%	Rate of successful registration attempts in the VoLTE service. Equivalent to IMS Registration Success Ratio as defined in ETSI TR 103 219. Attempt (IRA) ratio, as defined in IETF RFC 6076
19.	Service availability	>= 98%	End to end service availability in terms of capacity to establish calls from, and to, a VoLTE customer. Equivalent to 1 - VoLTE Session Setup Failure Ratio as defined in ETSI TR 103 219. Equivalent to 1 - Telephony Service Non-Accessibility as defined in ITU-T E.804 (section 7.3.6.1).
20.	Post Dialing Delay (PDD)	<= 4s	Time interval (in seconds) between the end of dialing by the caller and the reception back by him of the appropriate ringing tone or recorded announcement. Equivalent to Call Setup Time, as defined in ITU-T E.800. Equivalent to Telephony Setup Time as defined in ITU-T E.804 (section 7.3.6.2)
21.	Voice Quality (MOS-LQxSW)	>= 4	Equivalent to Speech Quality as defined in ITU-T P.10/G.100. Models like those defined in ITU-T P.862 and P.863 provide an objective view on the quality of the voice signal as it may be perceived by the customer. Can be seen on a call basis or on a sample basis (see ITU-T E.804 section 7.3.6.3 and 7.3.6.4).
22.	Mouth-to-Ear Delay	<= 400ms	Time it takes for the speech signal to go from the mouth of the speaker to the ear of the listener.

Electronic and Postal Communications (Quality of Service)

GN. No. 21 (contd.)

23.	Call drop rate	<= 2%	Service continuity in terms of capacity to maintain calls to their normal end. Equivalent to Telephony Cut-off Call Ratio as defined in ITU-T E.804 (section 7.3.6.5)
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BILLING, CUSTOMER SERVICE & SATISFACTION MEASURES

No	Parameter Name	Target	Measurement method
24.	Percentage of bills resulting into customer complaints per 100 bills issued	< 0.1 %	$\frac{\text{Number of bills resulting into complaints}}{100 \text{ bills issued}} \times 100$
25.	Percentage of billing complaints resolved within 5 working days;	100 %	$\frac{\text{Billing Complaints resolved}}{\text{Billing complaints reported}} \times 100$
26.	Interactive Voice Response(IVR)/Operator Response	< 30sec	Length of IVR/ Time taken for Operator attention
27.	Call centre answer success rate	> 98 %	
28.	Customer satisfaction on overall quality of service	> 95 %	$\frac{\text{Number of Answers as good quality}}{\text{Number of Customers Interviewed}} \times 100$

CUSTOMER SATISFACTION ATTRIBUTES

Electronic and Postal Communications (Quality of Service)

GN. No. 21 (contd.)

No	Parameter Name	Target	Measurement method
29.	Percentage of customers satisfied with the service availability.	> 95 %	$\frac{\text{Number of answers satisfied}}{\text{Number of Customers interviewed}} \times 100$
30.	Percentage of customers satisfied with the service accessibility.	> 95 %	$\frac{\text{Number of answers satisfied}}{\text{Number of Customers interviewed}} \times 100$
31.	Percentage of customers satisfied with the reliability.	> 95 %	$\frac{\text{Number of answers satisfied}}{\text{Number of Customers interviewed}} \times 100$
32.	Percentage of customers satisfied with billing performance.	> 90 %	$\frac{\text{Number of answers satisfied}}{\text{Number of Customers interviewed}} \times 100$
33.	Percentage of customers satisfied with the help/enquiry services.	> 90 %	$\frac{\text{Number of answers satisfied}}{\text{Number of Customers interviewed}} \times 100$

THIRD SCHEDULE

(Made under Regulation 10)

QUALITY OF SERVICE PARAMETERS FOR INTERNATIONAL
TELEPHONE SERVICES

S/ N	Parameter Name	Target	Definition
1	Answer Seizure Ratio (ASR)	$\geq 80\%$	Percentage of seizures resulting in an answer signal. (ITU-T E. 425)
2	Network Efficiency Ratio (NER)	$\geq 90\%$	Percentage of seizures resulting in answer signal or user failure. (ITU-T E. 425)
3	Call Setup Time	< 8 s	Time interval from the instant the user initiate a connection request until the complete message indicating call disposition is received by the calling party. (ITU-T E. 721, E.771)
4	Call Connection failure Rate	$< 5\%$	Percentage of unsuccessful calls. ITU-T E. 771
5	Voice Quality (MOS)	≥ 4	Mean Opinion Score values. ITU-T P.862.1 and ITU-T P.863

FOURTH SCHEDULE

(Made under Regulation 11)

QUALITY OF SERVICE PARAMETERS FOR INTERNET SERVICES

S/ N	Parameter name	Target	Definition
1.	Successful log – in ratio	$\geq 99\%$ For leased line	Percentage of successful log-ins. (ETSI EG 202 057-4; ETSI TS 102 250-2)
2	Latency (Round Trip Time)	≤ 85 ms National ≤ 300 ms	Time needed for an ICMP echo request/reply to a valid IP address. ETSI EG 202 057 - 4; ITU-T Y.1541

Electronic and Postal Communications (Quality of Service)

GN. No. 21 (contd.)

		International	
3	Loss Ratio	$< 10^{-3}$	Ratio of packets lost to the total packets transmitted between two designated points. ITU-T Y.1541
4	Unsuccessful Data Transmission Ratio	$< 10^{-3}$	The ratio of unsuccessful data transmissions to the total number of data transmission attempts in a specified time period. ETSI EG 202 057 – 4;
5	Average Data Transmission Speed Achieved	≥ 80 % of the speed advertised	Data transmission rate that is achieved separately for downloading and uploading specified test files between a remote website and a user's computer. ETSI EG 202 057 – 4;

FIFTH SCHEDULE

(Made under Regulation 12)

QUALITY OF SERVICE PARAMETERS FOR POSTAL SERVICES

Criteria	Indicator	Standard/Target
Speed of service – the transit time from when a mail piece has been posted and the postage cancelled or recorded at the originating office, to when the piece arrives at the destination office or delivered to the customer.	Intra-Town	D + 0 (75%)
	Inter-Town Zone A	D + 1 (85%)
	Inter-Town Zone B	D+3 (88%)
	Inter-Town- Rural	D + 5 (80%)
<p>NOTE: D represents “Day of posting”. i.e 75% of all intra-Town mail needs to be delivered to the destination office or customer on the same day</p> <p>Dar es salaam to/from Zone A= Towns of -Arusha, Moshi, Tanga, Morogoro, Kibaha, Dodoma, Mbeya, Mwanza, Iringa-and Unguja</p> <p>Dar es salaam to/from Zone B =Towns of Tabora, Shinyanga, Kahama, Bariadi, Geita, Singida, Bukoba, Musoma, Kigoma, Mtwara, Lindi, Songea, Sumbawanga, Songwe, Mpanda, Babati, Njombe, Mkoani and Chakechake</p>		
Customer satisfaction – the proportion of customers’ complaints to the customer base or corresponding values for ordinary mail or transactions for counters.	Mail	0.10%
	Counters	0.20%
Complaint/inquiry	Local registered mail	Response given in 5

Electronic and Postal Communications (Quality of Service)

GN. No. 21 (contd.)

handling – time in which a registered complaint or inquiry is officially responded to customer	International registered mail	working days after its receipt Response given in 3 working days after its receipt

SIXTH SCHEDULE

(Made under Regulations 13)

QUALITY OF SERVICE PARAMETERS FOR CONTENT SERVICES

S/ N	Parameter Description	Target Value
Service Availability/Reliability		
1	Redundancy facility for studio and transmitter	100%
2	Changeover to alternative studio/transmitter	≤ 5 minutes
3	Changeover of presenters for succeeding programs	≤ 30 seconds
4	Colour bar for television or signal tune for radio in case of failure	≤ 3 minutes
Fault repair time		
1	Maximum allowable outage time (service shall be restored with apology)	≤ 5 minutes
2	Maximum allowable time to attend faulty customer premises equipment (including STB, Antenna and smart card).	≤ 24 Hrs
Service Quality		
1	Broadcasting seamless original program of correspondent(s) live or recorded reports	100%
2	Acoustically treated studio	100%
Complaints Resolution		
1	Complaints resolution time effective the date from complaint received by the content service provider	≤ 24 Hrs

Dar es Salaam,
3rd January, 2018

MAKAME M. MBARAWA,
*Minister for Works, Transport and
Communications*