FRAMEWORK FOR QUALITY OF SERVICE (QOS) FOR TELEVISION BROADCASTING SERVICES IN UGANDA
1. INTRODUCTION

This framework is put forth in fulfilment of the mandate of Uganda Communications Commission (UCC) under Section 5(i) and 5(k) of the Uganda Communications Act 2016, to “set national communication standards and ensure compliance with national and international standards”; and “safeguard the interests of consumers and operators as regards the quality of communications services and equipment”.

The framework seeks therefore to:-
(i) Empower consumers to drive the provision of quality services by making informed choices, and;
(ii) Facilitate good performance by the broadcast operators in a competitive environment by highlighting their performance and by use of approved regulatory measures.

This framework shall apply to the following Television (TV) Broadcasting Services:-
(1) Public and pay TV infrastructure providers on the terrestrial, satellite and cable platforms.
(2) Pay TV content service providers on the terrestrial, satellite and cable platforms.

1.1 DEFINITIONS

In this document, unless the context otherwise requires, the following terms shall have the meanings ascribed to them under this section. In the event of conflict or ambiguity between the terms defined herein and the terms defined in a license or in the Communication Act, the following order of precedence shall apply:

a) Communication Act
b) Regulations
c) Technical Guidelines
d) License Terms and Conditions

In this document, the following terms shall have the corresponding meanings.

Billing: Administrative function of preparing bills and submitting the bills to customers

Complaint: A statement by a customer expressing dissatisfaction due to a difference between the expected and the delivered benefits from the use of the service. The complaint may be made in various forms such as, writing, electronic means, or in person.

Customer: A user of a service who is responsible for payment for the services.

Customer Premise Equipment (CPE): Equipment that is placed at the customer’s premises and that enables the customer to access the service
providers’ services. Set top boxes, satellite dishes and decoders are examples of CPEs.

**Force majeure:** An inevitable, unpredictable act of nature, not dependent on an act of man.

**Preventive maintenance:** This is maintenance that is regularly performed on equipment to lower the likelihood of the equipment failing.

**Quality of Service (QoS):** Totality of characteristics of a communications service that bear on its ability to satisfy stated and implied needs of the user of the service.

**Service provider:** A licensed company that provides its customers access to broadcasting services.

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**2. RESPONSIBILITIES OF UCC & LICENSEES UNDER THIS FRAMEWORK**

**2.1 Responsibilities of UCC**

1. Set the Quality of Service standards, specifying the QoS parameters against which performance shall be evaluated and the associated target levels. UCC may amend these parameters or the targets from time to time to accommodate developments in the sector.

2. To specify the methodology to measure performance against each QoS parameter.

3. To apply for appropriate sanctions in cases of noncompliance by the licensee.

4. To carry out audit of the QoS reports submitted by Licensees.

5. To carry out measurements against some or all the QoS parameters.

6. To carry out comparative publishing of QoS performance of the licensees.

**2.2 Responsibilities of Licensees**

1. To have their technical operation in line with the standards set by UCC.

2. To cooperate in providing access to facilities and information to UCC and UCC authorised persons for inspections, audits and investigations.

3. Carry out measurements as specified by UCC and submit periodic reporting on the respective QoS indicators and critical outage reports as outlined by UCC.

4. Provision of explanations in cases where the QoS performance is below the standard as well as associated remedial plans;

5. Comply with the reporting requirements set by UCC on the QoS performance of the licensee.
3. **QoS MEASUREMENTS BY LICENSEES**

Measurement methods, formulas and calculation shall be in accordance with those specified for the associated QoS parameters by UCC. All supported data used to produce the Quarterly reports shall be kept by the licensee for a minimum of Twelve (12) months and shall be availed to representatives of the UCC on request.

For each quality of service parameter that the licensee is required to report against, the licensee shall prepare periodic reports at intervals as provided in the license or as requested by UCC.

4. **QoS MEASUREMENTS & AUDITING BY UCC**

UCC shall conduct inspections, surveys or performance audits of the quality of service of the licensees from time to time to establish the performance of the licensees and adherence to the UCC quality of service standards.

Measurements for this shall be done using modes of collection of data that may include but are not limited to:

i. Impromptu and routine drive tests,
ii. Consumer survey, and
iii. Statistical data and documents received from operators

UCC reserves the right to use its own personnel, employ the services of specialist personnel and/or an independent third party to conduct any QoS audits deemed necessary. In cases of impromptu onsite audits/visits, the licensee shall arrange for UCC personnel/representatives to be granted access to their network installations/records as and when this access is required.

The licensee shall fully co-operate with and provide all assistance to such inspectors as well as with all UCC requests for information and all UCC verification and audit activities.

5. **QoS PARAMETERS**

The following categories of QoS parameters are proposed as follows:-

(1) Network related QoS parameters that apply to some or all licensed TV signal distribution platforms i.e. satellite, terrestrial and cable.

(2) Service related QoS parameters that apply to two groups of licensees:
   - Pay TV service providers on all platforms i.e. satellite, terrestrial and cable.
   - Public signal distributor on terrestrial platform.
5.1. Network related QoS Parameters for Signal Distribution Platforms

The following parameters relate to the expected quality output of the licensee’s network.

(1) **Service availability** *(Terrestrial, Cable, Satellite platforms)*

The parameter measures the proportion of time for which each broadcasting service is available on the signal distribution platform. It is applicable to areas that are within the service area of the network.

The formula for calculating the service availability is provided below and the target for service availability is 99%. This is averaged out over the period in question.

\[
\frac{Service\ Uptime}{24\ hours} \times 100
\]

In the computation for determining service availability, the service unavailability due to planned maintenance and force majeure are not considered.

In order to check for compliance, UCC will review the operator’s submitted quarterly statistical reports on service availability.

(2) **Picture Quality** *(Terrestrial, Cable, Satellite platforms)*

This is the parameter that assesses the television picture quality of the output of the signal distribution platform that is received by the viewers.

The ITU-R BT.500\(^1\) quality and impairment scales are to be used for assessment of the picture quality and picture impairment. The quality and impairment scales are defined as follows:

<table>
<thead>
<tr>
<th>Quality scale</th>
<th>Five-grade scale</th>
<th>Impairment</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 =Excellent</td>
<td>5 =Imperceptible</td>
<td></td>
</tr>
<tr>
<td>4 =Good</td>
<td>4 =Perceptible, but not annoying</td>
<td></td>
</tr>
<tr>
<td>3 =Fair</td>
<td>3 =Slightly annoying</td>
<td></td>
</tr>
<tr>
<td>2 =Poor</td>
<td>2 =Annoying</td>
<td></td>
</tr>
<tr>
<td>1 =Bad</td>
<td>1 =Very annoying</td>
<td></td>
</tr>
</tbody>
</table>

The target for audio and video quality is Grade 4 and above as per ITU-R BT.500 Quality and impairment grading Scale.

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\(^1\) ITU-R BT.500-13 (01/2012) - Methodology or the subjective assessment of the quality of television pictures
In order to check for compliance, UCC will review the operator’s quarterly statistical reports on picture quality.

(3) **Bit rate per Program Stream** *(Terrestrial platform)*

Bit rate is the measure of the rate of information content of the digital video stream. It is an important parameter that controls the quality of the video in a program stream.

With MPEG-4, the terrestrial signal distributor can allow an encoded video stream to have a variable or a constant bit rate. The optimal selection depends on the application and network infrastructure.

Irrespective of the method that is used to determine the bitrate, the threshold of the bit rate per program stream is a bit rate that is not less than 1.5Mbit/s. In order to check for compliance, UCC will review the operator’s quarterly statistical reports on bit rate per program stream.

(4) **Modulation Error Ratio (MER)** *(Terrestrial platform)*

MER is a measure used to quantify the performance of a digital broadcast transmitter using digital modulation and is expressed in dB. The target is MER that is greater than 32dB ($MER > 32$dB).

In order to check for compliance, drive tests will be carried out by UCC.

(5) **BER for Signal from DVB-T2 Transmitter** *(Terrestrial platform)*

Bit Error Ratio (BER) is the primary parameter that describes the quality of a digital transmission link.

It is defined as the ratio of the number of bits with errors to the total number of bits transmitted and is usually expressed as a negative power of 10.

The target is a BER that is less than $10^{-9}$ ($BER < 10^{-9}$)

In order to check for compliance, drive tests will be carried out by UCC.

(6) **Carrier Power to Noise Ratio ,C/N** *(Terrestrial platform)*

This refers to the signal power to noise ratio at the receiver and is expressed in decibels (dB). It is an important parameter that evaluates the signal quality. The higher the C/N ratio, the better the signal quality received.
The target is a C/N that is greater than or equal to 10dB \( (\frac{C}{N} \geq 10dB) \).

In order to check for compliance, drive tests will be carried out by UCC.

(7) **Signal Strength (Terrestrial platform)**

The parameter is the magnitude of the electric field at a reference point that is at a significant distance from the broadcast transmitter.

The target is signal strength that is greater than 32dbm/µV.

In order to check for compliance, drive tests will be carried out by UCC.

5.2. **Customer Service Related QoS Parameters for the Licensees**

The service related QoS parameters focus on the integrity of services (activation, billing, and usability) and customer service.

5.2.1. **Pay TV service providers**

(1) **Service activation time**

a. **First time service activation:** This is the proportion of time taken to provide a pay TV service to the customer from the instant the licensee acknowledges receipt of the payment from the customer. This time is inclusive of the time taken to install the Customer Premise Equipment (CPE).

The target for first time service activation time should be less than 36 hours.

At least 95% of the first time activation requests should be completed within 36 hours after request and 100% of the requests should be concluded within 48 hours. The formula for computation is provided below.

\[
\frac{\text{No. of first time service activations concluded within 36 hours}}{\text{Total No. of first time service activations concluded in a month}} \times 100
\]

Public holidays and Sundays are not included in the computation. The target will be averaged out over the period of reporting.

In order to check for compliance, the service operator’s quarterly reports on first time service activation will be reviewed by UCC.

b. **Subsequent service reactivation after payment:** The proportion of requests for reactivation that are concluded within the agreed
timeframe after acknowledgement of the customer’s payment by the licensee. The targets for this parameter are;

- 95% of service reactivation requests should be done within 24 hours.
- 100% of service reactivation requests should be done within 36 hours.

\[
\frac{\text{No. of service reactivations done within 24 hours}}{\text{Total No. of service reactivations done in a month}} \times 100
\]

For compliance check, the operator’s quarterly reports on service reactivation will be reviewed by UCC.

(2) Customer Support Performance

This parameter seeks to assess the quality of support services offered to customers by the licensee through service centres.

In case of complaints relating to non-reception of pay TV services by its customers, at least 99% of all such complaints shall be resolved and broadcast services restored within a period of 24 hours of the receipt of the complaint while 100% of the complaints shall be resolved and broadcast services restored within a period of 36 hours after receipt of the complaint.

The formula is provided below.

\[
\frac{\text{No. of complaints on nonreception of pay TV services resolved within 24hours}}{\text{Total No. of complaints on nonreception handled in a month}} \times 100
\]

For the rest of the complaint types, at least 95% of them shall be resolved within a period of 24 hours of receipt of the complaint while 99% shall be resolved within 36 hours of the complaint.

The formula is provided below.

\[
\frac{\text{No. of other complaints resolved within 24hours}}{\text{Total No. of other complaints received in a month}} \times 100
\]

In order to check for compliance, the operator’s quarterly reports on customer performance statistics will be reviewed by UCC.

(3) Notification Time on Service Maintenance

This is the time given to the customers to receive notification about preventive maintenance work on the licensee’s network.
**Time of providing notice to the public – Time of the preventive maintenance work on the licensee’s network.**

The Customer shall be given a clear notice of at least 3 days in advance of any disruptive works.

For compliance check, UCC will check for formal communication about the notification received from the Licensee. The licensee shall copy UCC in all communications to this effect.

**4) Billing Performance**

This parameter focuses on the accuracy of the bill and billing options (Prepaid and Post-paid) and billing currency.

The percentage of bills that are inaccurate should be less than 2%.

The formula is provided below.

\[
\frac{\text{No. of inaccurate bills in one month} \times 100}{\text{Total No. of bills sent in one month}}
\]

In order to check for compliance, the operator’s quarterly reports on billing performance will be reviewed by UCC.

**5.2.2. Public Signal Distributor**

**1) Customer Support Performance**

This parameter seeks to assess the quality of support services offered to customers by the public signal distributor through service centres.

In case of complaints relating to non-reception of the TV services by the public, at least 99% of all such complaints shall be resolved and broadcast services restored within a period of 24 hours of the receipt of the complaint while 100% of the complaints shall be resolved and broadcast services restored within a period of 36 hours after receipt of the complaint.

The formula is provided below.

\[
\frac{\text{No. of complaints on non reception of TV services resolved within 24 hours}}{\text{Total No. of complaints on non reception of TV services received in a month}} \times 100
\]

For the rest of the complaint types, at least 95% of them shall be resolved within a period of 24 hours of receipt of the complaint while 99% shall be resolved within 36 hours of the complaint.
In order to check for compliance, the public signal distributor’s quarterly reports on customer performance statistics will be reviewed by UCC.

(2) Notification Time on Service Maintenance

This is the time given to the customers (Content service providers and public) to receive notification about preventive maintenance work on the public signal distributor’s network. The formula is provided below.

\[
\text{Time of providing notice to the public and CSPs} - \text{Time of the preventive maintenance work on the public distributor’s network.}
\]

The Customer shall be given a clear notice of at least 3 days in advance of any disruptive works.

For compliance check, UCC will check for formal communication about the notification received from the public signal distributor. The licensee shall copy UCC in all communications to this effect.

A summary of the proposed parameters and related information is provided in Annex 1.

6. REPORTING BY LICENSEES

The licensee shall, every quarter, provide UCC with reports on the results of measurements done against some of the QoS parameters.

This reporting shall be done using only the standard reporting templates provided by UCC for this purpose. These shall, in all cases, be accompanied with a declaration letter signed by a duly authorized officer of the licensee, stating that the report is true and accurate in all respects.

The reports so submitted shall contain results for the respective quarter aggregated on a monthly basis starting on 1st January of the respective calendar year. Such report shall be submitted to UCC by the 25th day of the following quarter.
6.1. Network Outage Reports

The Licensee shall inform UCC about all outages affecting its transmission and distribution network. This shall be done using the standard template provided in Annex 2 and shall be sent either electronically to the email address ucc@ucc.co.ug or via hard copies submitted to the UCC at any of its branch offices. Such reporting shall be done at least 48 hours before outage for scheduled maintenance, 12 hours before outage for unscheduled maintenance and within 24 hours of the occurrence of the unplanned outages.

7. PUBLICATION OF QoS RESULTS

UCC may publish the evaluation results of the QoS performance of licensees for consumption by the general public in any form or manner as may be deemed appropriate by UCC.

8. COMPLIANCE AND ENFORCEMENT

8.1. Contravention

A licensee shall have committed a contravention:

a) It fails to perform the measurement, reporting and record keeping tasks set out in this framework document;

b) It fails to achieve a target for a UCC QoS parameter for a reporting period at a given reporting region;

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2 Transmission network is the infrastructure between the multiplex and the distribution network.

3 Distribution network is the infrastructures that the end users are connected to. The distribution networks include terrestrial, cable and satellite networks.

4 An outage is unavailability of service due to unexpected behavior of that particular service, or an incident impacting consumers that results in a service not being delivered at a level they reasonably expected.

5 Scheduled maintenance will constitute planned network changes, carried out to optimize network resources, install new services/infrastructure or expand network coverage and are included on a company annual business plan as a scheduled activity for the financial period. Unscheduled maintenance will constitute planned network changes or enhancements carried out to remedy a fault, optimize network services or any other activity associated with the daily operations of the network. These activities are not scheduled activities on annual business plan.

6 Unplanned outages defined as network service degradation or interruptions caused by unforeseen or unpredictable events on the network.
c) It does not comply with a directive issued by the Commission to remedy a contravention
d) It publishes false or misleading information about its quality of service;
e) It obstructs or prevents UCC conducting a QoS investigation, inspection, audit or measurement.

The consequence of committing a contravention is a fine or penalty or other appropriate sanctions by UCC.

8.2. Exemption from compliance

A service operator shall be exempted from compliance with the QoS standard or provisions of this document to the extent it is unable to comply due to Force Majeure on condition that the event is reported in time (as detailed in section 4.1).

Low Voltage grid power, lack of grid power, load shedding or any other such event(s) shall not be considered as grounds for exemption.
ANNEX 1  QoS STANDARD FOR TELEVISION BROADCASTING SERVICES

1. Network Related QoS Parameters

The parameters apply to some or all TV signal distribution platforms i.e. satellite, terrestrial and cable.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Definition</th>
<th>Purpose</th>
<th>Computation</th>
<th>Target</th>
<th>Test method / Data to be used to evaluate fulfilment of target</th>
<th>Reporting Areas</th>
</tr>
</thead>
</table>
| Service Availability| This is the ability of a service provider to perform its required function at a stated instant or over a stated period of time assuming that the external resources, if required, are provided. | It measures the proportion of time for which each broadcasting service is available on the satellite/cable/terrestrial signal distribution platform. | \[
\frac{\text{Service Uptime}}{24 \text{ hours}} \times 100
\] | >99% availability | Quarterly reports on daily systems measurements of service availability submitted by the licensee | Areas that are within the service area of each broadcast transmitter/satellite/cable network |
<p>| Picture Quality    | It is a term used by a TV viewer to rate the inherent quality of the picture. | It assesses the television picture quality of the output of the satellite/cable/terrestrial signal distribution platform that is | ITU-R BT.500 discrete quality and impairment scale | ≥4 | Quarterly reports on daily system measurements of audio and video quality submitted by the licensee | Areas that are within the service area of each broadcast transmitter/satellite/cable network |</p>
<table>
<thead>
<tr>
<th><strong>Parameter</strong></th>
<th><strong>Description</strong></th>
<th><strong>Formula</strong></th>
<th><strong>Threshold</strong></th>
<th><strong>Testing Frequency</strong></th>
<th><strong>Location</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bitrate per program stream</strong></td>
<td>It is a measure of the rate of information content of the digital video stream.</td>
<td>It is used to know the speed that digital audio and video files are encoded or compressed.</td>
<td>Number of bits per second</td>
<td>Bitrate $\geq$ 1.5Mbit/s</td>
<td>Quarterly reports on daily systems measurement of bitrate per program stream submitted by the licensee</td>
</tr>
<tr>
<td><strong>Modulation Error Ratio</strong></td>
<td>It a measure of the signal-to-noise ratio (SNR) in a digitally modulated signal.</td>
<td>It is used to quantify the performance of a digital broadcast transmitter using digital modulation.</td>
<td>$10 \log (\text{average symbol power/ average error power})$</td>
<td>MER $&gt; 32$dB</td>
<td>Drive tests by UCC on a monthly basis</td>
</tr>
<tr>
<td><strong>Bit Error Rate</strong></td>
<td>The ratio of the number of bits with errors to the total number of bits transmitted.</td>
<td>It is used to quantify the quality of a digital transmission from broadcast transmitter.</td>
<td>$\frac{\text{No. of bits with errors}}{\text{No. of bits transmitted}}$</td>
<td>Bit error rate $\leq$ 1.5Mbit/s</td>
<td>Drive tests by UCC on a monthly basis</td>
</tr>
<tr>
<td><strong>Carrier Power to Noise Ratio</strong></td>
<td>The ratio of the received signal strength relative to the strength of the received noise.</td>
<td>It evaluates the quality of the received signal from a broadcast transmitter.</td>
<td>$\frac{\text{Carrier Power}}{\text{Noise}}$</td>
<td>C/N $\geq$ 10dB</td>
<td>Drive tests by UCC on a monthly basis</td>
</tr>
<tr>
<td><strong>Signal strength</strong></td>
<td>It is the magnitude of an electric field</td>
<td>It measures the transmitter power output as received</td>
<td>Signal strength</td>
<td>Signal strength $&gt; 32$dbm/$\mu$V</td>
<td>Drive tests by UCC on a monthly basis</td>
</tr>
<tr>
<td>at a reference point, which is located at a significant distance from the transmitting antenna.</td>
<td>by a TV receiver antenna at a distance from the broadcast transmitter evaluates the transmitting antenna.</td>
<td></td>
<td></td>
<td>each broadcast transmitter</td>
<td></td>
</tr>
</tbody>
</table>

**NB:** System measurements are measurements carried out using dedicated measuring equipment for particular parameters.
## 2. Customer Service Related QoS parameters

The parameters apply to the following groups of licensees:

- Pay TV service providers on all platforms i.e. satellite, terrestrial and cable.
- Public signal distributor on terrestrial platform.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Purpose</th>
<th>Computation</th>
<th>Target</th>
<th>Test method / Data to be used to evaluate fulfilment of target</th>
<th>Reporting Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>First time service activation</td>
<td>It assesses the proportion of time taken to provide a pay TV service to the customer from the instant the licensee acknowledges receipt of the payment from the customer</td>
<td>[ \frac{\text{No. of first time service activation done within 36 hours}}{\text{No. of first time service activation done within a month}} \times 100 ]</td>
<td>&gt;95%</td>
<td>Quarterly reports on first time service activation report submitted by the licensee</td>
<td>Customer care Service</td>
</tr>
<tr>
<td>Subsequent service reactivation after payment</td>
<td>The proportion of requests for reactivation that are concluded within the agreed timeframe after acknowledgement of the customer’s payment by the licensee</td>
<td>[ \frac{\text{No. of service reactivations done within 24 hours}}{\text{No. of service reactivations done within a month}} \times 100 ]</td>
<td>&gt;98%</td>
<td>Quarterly reports on service reactivation report submitted by the Licensee</td>
<td>Customer care Service</td>
</tr>
<tr>
<td>Customer support performance in complaints handling</td>
<td>It assesses the quality of support services offered to customers by the licensee through service centres.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of complaints on nonreception of public TV services or pay TV services resolved with 24 hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total No. of complaints on nonreception of public TV services or pay TV services received in a month</td>
<td>100% within 36 hrs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;99% of the complaints are redressed within 24 hrs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quarterly reports on customer support performance submitted by the licensee</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer care Service</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Notification time on service maintenance | It measures the time given to the customers (Content service providers /and public) to receive notification about preventive maintenance work on the signal distributor’s network |
| Time of providing notice to the public – Time of the preventive maintenance work on the licensee’s network (pay TV service operators & public signal distributor) |
| Notice should be at least 3 days in advance |
| Formal communication received from the licensee informing UCC about the notification |
| Customer care Service |

| Billing performance | It assesses the accuracy of the bill and billing options (Prepaid and Post-paid) and billing currency. |
| No. of billing complaints resolved within 24 hours |
| Total No. of billing complaints handled within 24 hours | >99% are accurate |
| Quarterly reports on billing performance submitted by the licensee |
| Customer care Service |
## ANNEX 2

**TRANSMISSION & DISTRIBUTION NETWORK OUTAGE REPORT FORMAT**

### CONTACT INFORMATION

<table>
<thead>
<tr>
<th>Name of the Licensee:</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Name of the Technical Contact Person</th>
<th>Email:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mobile No:</td>
</tr>
</tbody>
</table>

### OUTAGE INFORMATION

<table>
<thead>
<tr>
<th>Type of critical outage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unplanned</td>
</tr>
<tr>
<td>Scheduled</td>
</tr>
<tr>
<td>Unscheduled</td>
</tr>
</tbody>
</table>

| Date of Incident (dd/mm/yyyy): | …………………………………………… |
| Local Time Outage Began (24-hr hh:mm): | …………………………… |
| Outage Duration: | ……………..hrs | …………………. Mins |
| Outage status when filling this report: | ……………………………………………………………………… |
| Local Time Outage was resolved: | ………………………………………… |
## Cause of the outage:

- 
- 

## EFFECTS OF THE OUTAGE

### Network Element(s) affected:

- 
- 

### Affected Areas:

- 
- 
- 
- 

### Description of Outage:

- 
- 
- 
- 

### Explanation of Outage Duration:

- 
- 
- 
- 

### Actions taken and to be taken:

- 
- 

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DECLARATION

I am authorized by the .... to legally bind the provider to the truth, completeness, and accuracy of the information contained in this report. I on oath depose and state that the information contained herein is true, correct, and accurate to the best of my knowledge and belief, and that the Licensee on oath deposes and states that this information is true, complete, and accurate.

Name: ...........................................................................

Date:........................................Time:.................................