

BROADCASTING ACT (CHAPTER 28)

Code of Practice for Television Broadcast Standards

In exercise of the powers conferred by section 6 of the Broadcasting Act (Cap. 28), the Media Development Authority of Singapore hereby issues the Code of Practice for Television Broadcast Standards:

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PRELIMINARY

1.1 Citation and Commencement

This Code is issued pursuant to section 6 of the Broadcasting Act (Cap. 28). It may be cited as the Code of Practice for Television Broadcast Standards and shall come into force on [Date].

1.2 Purpose of this Code

- (a) The Broadcasting Act and the Media Development Authority of Singapore Act (Cap. 172) (“MDA Act”) makes it the duty of the Media Development Authority of Singapore (“MDA”) to exercise licensing and regulatory functions in respect of television (“TV”) broadcast services and to establish guidelines and standards relating to TV broadcast services.
- (b) The purpose of this Code is to ensure that licensed TV broadcasters in Singapore meet the requirements of high standards of technical quality and reliability of licensable TV broadcast services.

1.3 Legal Effect of this Code

- (a) Pursuant to section 13 of the Broadcasting Act, every TV broadcaster to which MDA grants a broadcasting licence under section 8 of the Broadcasting Act (“Licensee”) must comply with the applicable provisions of this Code.
- (b) The obligations contained in this Code are in addition to those contained in the MDA Act, the Broadcasting Act, as well as other regulations, broadcasting licences or codes of practice issued by MDA. To the extent that any provision of this Code is inconsistent with the terms of MDA Act or the Broadcasting Act or any regulations under the Broadcasting Act, the provisions of the MDA Act or the Broadcasting Act and any regulations under the Broadcasting Act shall prevail. To the extent that this Code is inconsistent with the provisions of any broadcasting licences or codes of practice issued by MDA, the terms of this Code shall prevail. If any provision of this Code is held to be unlawful, all other provisions will remain in full force and effect.
- (c) Where the applicable broadcast standards specified in this Code are not met by any Licensee, MDA will assess each case individually and may, pursuant to section 16 of the Broadcasting Act, issue directions in writing to the Licensee requiring the Licensee to make necessary improvements to achieve the required standards or to take any other action with regard to broadcast standards necessary in order to comply with the provisions of this Code.

- (d) Pursuant to section 12(1) of the Broadcasting Act, the MDA may cancel or suspend a licence for such period as MDA thinks fit and/ or impose fines or financial penalties on a Licensee that contravenes any provision of this Code.

1.4 Application of this Code to Licensees

- (a) Unless otherwise stated, the provisions of this Code shall apply to all Licensees.

1.5 Definitions

- (a) In this Code, unless the context otherwise requires:-

"Analogue cable TV service" means a licensable TV broadcasting service comprising analogue television signals delivered using coaxial cable transmission technology;

"Analogue terrestrial TV service" means a licensable TV broadcasting service comprising analogue TV signals delivered using over-the-air broadcast transmission technology;

"Cable TV service" means a licensable TV broadcasting service comprising analogue or digital TV signals delivered using coaxial cable transmission technology. It comprises analogue cable TV service and digital cable TV service;

"Digital cable TV service" means a licensable TV broadcasting service comprising digital TV signals delivered using coaxial cable transmission technology;

"Digital terrestrial TV service" or "DTV service" means a licensable TV broadcasting service comprising digital TV signals delivered using over-the-air broadcast transmission technology;

"Free-to-air TV service" means an unencrypted terrestrial licensable TV broadcasting service that viewers can receive without having to pay a subscription fee;

"Indoor reception" means reception of over-the-air broadcast TV signals within a building using a portable antenna;

"Internet Protocol TV Service" or "IPTV service" means a licensable TV broadcasting service comprising digital TV signals delivered using internet protocol ("IP") based broadband technology. The service is delivered over a closed network using infrastructure that is specifically configured to receive an IPTV channel, or channels, from a particular broadband network service provider;

"Licence" means a licence granted under Section 8 of the Broadcasting Act, and "licensee" shall be construed accordingly;

"Managed transmission TV service" means a licensable TV broadcasting service (comprising (i) Terrestrial broadcast TV service; (ii) Cable TV service; and (iii) IPTV service) delivered using a transmission network which the Licensee has control over the quality of service delivered to the viewer, either because it owns and operates the network, or by means of a service level agreement with the network service provider;

"Must carry channels" mean the free-to-air nationwide terrestrial TV channels provided on subscription nationwide TV services;

"Nationwide TV service" means a licensable TV broadcasting service provided by a nationwide TV service licensee, and "nationwide Terrestrial broadcast TV service", "nationwide Cable TV service", "nationwide IPTV service" and "nationwide OTT TV service" shall be construed accordingly;

"Niche TV service" means a licensable TV broadcasting service provided by a niche TV service licensee;

"Over-the-top TV service" or "OTT TV service" means a licensable TV broadcasting service delivered over the open Internet;

"Person" refers to any individual, any company, partnership or association, and any body of persons, corporate or unincorporated;

"Subscriber" mean any person who has requested the Licensee for the reception and/or display of any programme carried on the Service and has agreed to pay the fees and charges which may be levied by the Licensee;

"Subscription fee" means any form of consideration;

"Subscription TV service" means a licensable TV broadcasting service made available to viewers only upon the payment of a subscription fee, and "subscription nationwide TV service" shall be construed accordingly;

"Terrestrial broadcast TV service" means a licensable TV broadcasting service comprising analogue or digital TV signals delivered using over-the-air broadcast transmission technology. It comprises Analogue terrestrial TV service and DTV service;

"Unmanaged transmission TV service" means a TV broadcasting service (comprising OTT TV service) delivered using a transmission network for which the TV broadcaster cannot control or guarantee the quality of service delivered to the viewer, either because it does not own or operate the network, or because there is no adequate service level agreement with network service provider; and

"Viewer" means any person who receives any licensable TV broadcasting service provided by a Licensee.

2 SERVICE COVERAGE REQUIREMENTS

2.1 Introduction

- (a) Section 2 “Service Coverage Requirements” sets out the broadcast standards in relation to service coverage performance that all Licensees must comply with where applicable.

2.2 Terrestrial broadcast TV services

2.2.1 Application

- (a) The provisions set out in this sub-section shall apply to all Licensees providing free-to-air nationwide Terrestrial broadcast TV services, unless otherwise stated.

2.2.2 Obligations for Licensees to meet specified requirements

- (a) A Licensee providing free-to-air nationwide Terrestrial broadcast TV service shall ensure that such service is simultaneously receivable in at least 98% of Singapore’s geographical area (including outlying islands).
- (b) A Licensee providing free-to-air nationwide DTV service shall ensure that the indoor reception of such service is enabled for at least 98% of all residential properties in Singapore. In order to meet this standard, the Licensee shall ensure that the outdoor TV signal strength for its free-to-air nationwide DTV service does not fall below the minimum signal strength specified in Clause 3.2.2(b).
- (c) A Licensee shall make best efforts to provide solutions to any residential or non-residential property that is unable to receive such services.

2.2.3 Compliance with obligations

- (a) A Licensee shall provide MDA with a description of its procedures for ensuring that the required service coverage is achieved. It shall also carry out routine assessments of the coverage of its service(s) and undertake appropriate measures to address any viewer complaints or feedback on coverage issues.

- (b) A Licensee shall submit to MDA quarterly reports, in the format set out in the First Schedule, on viewer complaints relating to the coverage of its service(s) that were received over the past three (3) calendar months, 14 days after the end of the quarter. In the event where no complaints were received for the quarter, the Licensee shall still submit the quarterly report and indicate accordingly.¹

2.3 Cable TV and IPTV services

2.3.1 Application

- (a) The provisions set out in this sub-section shall apply to all Licensees providing nationwide Digital cable TV services or nationwide IPTV services, unless otherwise stated.

2.3.2 Obligations for Licensees to meet specified requirements

- (a) A Licensee shall ensure that the nationwide Digital cable TV services it may provide will be rolled out to any person in Singapore who makes a request to the Licensee for the connection to the Licensee's telecommunication system for the reception of such services where the Licensee has rolled out its network. For the purposes of this sub-section, "roll out" means the installation of the Licensee's telecommunication system, whether in, on, under or otherwise through any existing or future public road, lane or street.
- (b) A Licensee shall ensure that the nationwide IPTV services it may provide will be made available to any person in Singapore who makes a request to the Licensee.

2.3.3 Compliance with obligations

- (a) A Licensee shall provide MDA with a written description of its procedures for ensuring the provision of its services to any person in Singapore who makes a request to the Licensee for such services. This would include roll out timetables to be prepared by the Licensees as and when required by MDA from time to time.
- (b) A Licensee shall submit to MDA quarterly reports, in the format set out in the First Schedule, on viewer complaints relating to service coverage that were received over the past three (3) calendar months, 14 days after the end of the quarter. In the event where no complaints were received for the quarter, the Licensee shall still submit the quarterly report and indicate accordingly.²

¹ Complaints which arise from issues related to viewer premise equipment may be excluded from this report.

² Complaints which arise from issues related to viewer premise equipment may be excluded from this report.

3 TV SIGNAL STRENGTH REQUIREMENTS

3.1 Introduction

- (a) Section 3 “TV Signal Strength Requirements” sets out the broadcast standards in relation to the transmission requirements for TV signal strength that Licensees must comply with where applicable.

3.2 Terrestrial broadcast TV services

3.2.1 Application

- (a) The provisions set out in this sub-section shall apply to all Licensees providing free-to-air nationwide Terrestrial broadcast TV services, unless otherwise stated.

3.2.2 Obligations for Licensees to meet specified requirements

- (a) A Licensee providing free-to-air nationwide Analogue terrestrial broadcast TV services shall ensure that the outdoor TV signal strength within the required coverage area for such services shall not fall below the minimum signal strength of 65 dB μ V/m for Band IV and 70 dB μ V/m for Band V, as specified in Recommendation ITU-R BT.470³. These requirements apply to the median field strength at a height of 10m above ground level.
- (b) A Licensee providing free-to-air nationwide DTV services shall ensure that the outdoor TV signal strength within the required coverage area for such services shall not fall below the minimum signal strength of 74 dB μ V/m⁴ at a height of 1.5m above ground level.

3.2.3 Compliance with obligations

- (a) A Licensee shall provide MDA with a written description of its procedures for ensuring that the required standards of TV signal strength is achieved within the required coverage area.
- (b) A Licensee shall also carry out and report annual field measurements at sample locations in the areas between transmitter locations as directed by MDA and provide such measurement reports to MDA as and when required by MDA.

³ ITU-R Recommendation BT.470: Conventional television systems.

⁴ The minimum TV signal strength is set at a level of 74 dB μ V/m to ensure that the Licensee’s DTV service coverage achieves the standard of indoor coverage as set out in Paragraph 2.2.2(b).

- (c) A Licensee shall submit to MDA quarterly reports, in the format set out in the First Schedule, on viewer complaints relating to TV signal strength that were received over the past three (3) calendar months, 14 days after the end of the quarter. In the event where no complaints were received for the quarter, the Licensee shall still submit the quarterly report and indicate accordingly.⁵

3.3 Cable TV services

3.3.1 Application

- (a) The provisions set out in this sub-section shall apply to all Licensees providing nationwide Cable TV services, unless otherwise stated.

3.3.2 Obligations for Licensees to meet specified requirements

- (a) A Licensee providing nationwide Digital cable TV services shall ensure that the TV signal strength for such service(s) shall not fall below the minimum of 47 dB μ V, as specified in the European Standard EN 50083-7⁶.
- (b) A Licensee providing nationwide Analogue cable TV services shall ensure that:
- (i) where the frequency range and service are 54-824 MHz TV, the signal strength shall not fall below the minimum of 60 dB μ V (as specified in the European Standard EN 50083-7⁷); and
 - (ii) where the frequency range and service are 88-108 MHz FM sound VHF Band, the signal strength shall not fall below the minimum of 40 dB μ V for mono and 50 dB μ V for stereo.
- (c) For the purpose of this section, the TV signal strength for nationwide Cable TV services refers to the minimum voltage level that must be present at each viewer premise's cable outlet.

3.3.3 Compliance with obligations

- (a) A Licensee shall provide MDA with a written description of its procedures for ensuring that the required standards of TV signal strength is achieved.

⁵ Complaints which arise from issues related to viewer premise equipment may be excluded from this report.

⁶ European Standard Series EN 50083-7. Cable networks for television signals, sound signals and interactive services. Part 7: System performance.

⁷ European Standard Series EN 50083-7. Cable networks for television signals, sound signals and interactive services. Part 7: System performance.

- (b) A Licensee shall submit to MDA quarterly reports, in the format set out in the First Schedule, on viewer complaints relating to TV signal strength that were received over the past three (3) calendar months, 14 days after the end of the quarter. In the event where no complaints were received for the quarter, the Licensee shall still submit the quarterly report and indicate accordingly.

4 PICTURE AND AUDIO QUALITY REQUIREMENTS

4.1 Introduction

- (a) Section 4 “Picture and Audio Quality Requirements” sets out the broadcast standards in relation to picture and audio quality that Licensees must comply with where applicable.⁸

4.2 Terrestrial broadcast TV, Cable TV, IPTV services

4.2.1 Application

- (a) The provisions set out in this sub-section shall apply to all Licensees providing Terrestrial broadcast TV services, Cable TV services or IPTV services, unless otherwise stated.

4.2.2 Obligations for Licensees to meet specified requirements

- (a) A Licensee shall ensure that the programmes on the Terrestrial broadcast TV services, Cable TV services or IPTV services that it may provide shall achieve a picture and audio grade of 5 on the ITU-R 5-Point Quality Grading Scale as described in ITU-R BT.500⁹.
- (b) A Licensee shall ensure that the picture and audio of the transmitted programmes are accurately synchronised.

4.2.3 Compliance with obligations

- (a) A Licensee shall provide MDA with a written description of its procedures for ensuring that the programmes on its services achieve the required standards of picture and audio quality.
- (b) A Licensee shall also carry out routine assessments of the technical quality of its TV services.
- (c) A Licensee shall, without any undue delay and within such period of time as may be specified by MDA, attend to and handle, as well as provide proper avenues for the speedy resolution of viewer complaints or feedback relating to picture and audio quality.

⁸ OTT services are exempt from these requirements as Licensees providing OTT services cannot guarantee end-to-end picture and audio quality, due to the service’s reliance on the quality of the broadband connection and the use of adaptive bitrate streaming technology.

⁹ ITU-R Recommendation BT.500: Methodology for the subjective assessment of the quality of television pictures.

- (d) A Licensee shall submit to MDA quarterly reports, in the format set out in the First Schedule, on viewer complaints relating to picture and audio quality that were received over the past three (3) calendar months, 14 days after the end of the quarter. In the event where no complaints were received for the quarter, the Licensee shall still submit the quarterly report and indicate accordingly.¹⁰
- (e) In the event of a pattern or trend of viewer complaints related to picture and audio quality, MDA may, in its discretion, launch an investigation into the service(s) provided by the Licensee. Where an investigation is undertaken in this regard, the Licensee shall provide at MDA's request and without charge, recordings of the programme(s) or channel(s) in question. Such recordings are to be made of the MPEG transport stream after all encoding and multiplexing have taken place.¹¹

4.2.4 Guidance notes

- (a) A lower picture and audio quality grade may be justified for news inserts, actuality or historical material where it is not practicable to improve further the technical quality, or where low quality clearly forms part of the editorial intent of the programme.

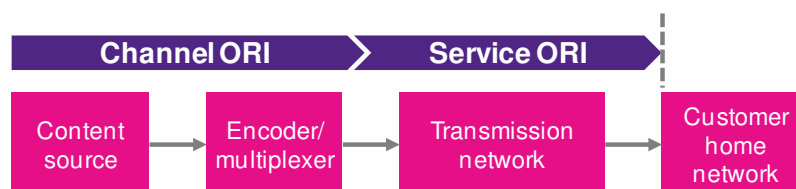
¹⁰ Complaints which arise from issues related to viewer premise equipment may be excluded from this report.

¹¹ The purpose of this requirement is to address cases where Licensees persistently fail to meet the picture and audio quality standards, rather than short term failures due to outages. In general, short term impairment or degradation of picture and audio quality will be considered an outage rather than a breach of the picture and audio quality standards.

5 RELIABILITY REQUIREMENTS

5.1 Introduction

- (a) Section 5 “Reliability Requirements” sets out the broadcast standards in relation to the reliability of services (measured in terms of channel and service availability to viewers) that all Licensees shall comply with where applicable.
- (b) For unmanaged transmission TV services, the standards of reliability are applicable up to the point in the broadcast chain where the Licensee has control over service availability, which is typically at the webhosting server level.¹²
- (c) For the purposes of Outage Reliability Index (“ORI”) reporting, a distinction is made between Channel Availability and Service Availability:
 - (i) “Channel Availability” refers to the time during which an individual programme channel is available as measured at the point of delivery into the transmission network/webhosting server.
 - (ii) “Service Availability” refers to the time during which the transmission network/webhosting server is operable and not in a state of failure or outage.
- (d) An outage is considered to have occurred when (i) there is an absence of channel or service, or (ii) the subjective quality of a channel or service is annoying to viewers. This would include instances where there is an intermittent or persistent loss of audio or video for one or more channels, or when the broadcaster is incapable of maintaining the subjective quality of a channel or service at Grade 3 or more on the ITU-R 5-Point Scale.
- (e) Channel and service availabilities for managed transmission TV services are measured by separate Channel ORI and Service ORI as shown in the diagram below:



¹² Licensees offering unmanaged transmission TV services have less control over quality of service at the viewers' end because such service is delivered using the broadband connection of the broadband access provider. Therefore, all Licensees offering unmanaged transmission TV services are only required to maintain technical performance standards up to the point of delivery into the open Internet. In contrast, Licensees offering managed transmission TV services are required to maintain end-to-end technical performance standards to viewers.

- (f) The Channel ORI is a measure of the reliability of a Licensee's playout system from the headend to the point at which the content is encoded and multiplexed into a transport stream for delivery over the transmission network.
- (g) The Service ORI is a measure of the reliability of the transmission network or the webhosting server deployed by the Licensee to deliver its service. The computation of Service ORI depends on transmission technology and network architecture deployed by the Licensee (See Guidance Notes in sub-section 5.2.4).

5.2 Terrestrial broadcast TV, Cable TV, IPTV services

5.2.1 Application

- (a) The provisions set out in this sub-section shall apply to all Licensees providing Terrestrial broadcast TV services, Cable TV services or IPTV services, unless otherwise stated.

5.2.2 Obligations for Licensees to meet specified requirements

- (a) A Licensee shall maintain a minimum monthly Channel ORI of 99.80% for each individual channel on any Terrestrial broadcast TV services, Cable TV services or IPTV services that it may provide.
- (b) A Licensee shall maintain a minimum monthly Channel ORI of 99.90% for each individual channel on free-to-air nationwide TV services or each individual "must carry" channel¹³ on subscription nationwide TV services that it may provide.
- (c) A Licensee providing Analogue terrestrial TV services shall ensure that the minimum monthly Service ORI for the analogue transmitter is maintained at 99.80%.
- (d) A Licensee providing DTV services shall ensure that the minimum monthly Service ORI for the main transmitter is maintained at 99.90% and the minimum monthly Service ORI for each repeater in its DTV network is maintained at 99.50%.
- (e) A Licensee providing Digital cable TV services shall ensure that the minimum monthly Service ORI for such services is maintained at 99.80%.¹⁴
- (f) A Licensee providing Analogue cable TV services shall ensure that the minimum monthly Service ORI for such services is maintained at 99.80%.¹⁵

¹³ The "must-carry" channels are Channel 5, Channel 8, Suria, Vasantham, okto, Channel U and Channel NewsAsia.

¹⁴ For the purposes of normalisation, "total connected homes" refers to the total number of subscribers to the Licensee's digital cable TV services.

¹⁵ For the purposes of normalisation, "total connected homes" refers to the total number of homes connected to the Licensee's cable TV network which do not subscribe to the Licensee's digital cable TV services.

- (g) A Licensee providing IPTV services shall ensure that the minimum monthly Service ORI for such services is maintained at 99.80%.

5.2.3 Compliance with obligations

- (a) A Licensee providing nationwide TV services shall monitor and submit to MDA monthly ORI reports on the Channel ORI and Service ORI results.

- (b) The formula for computing Channel ORI and Service ORI is:

$$\text{Outage Reliability Index (ORI)} = (1 - R) \times 100\% ,$$

$$\text{where } R = \frac{\text{Total lost time for all outages in a calendar month}}{\text{Total number of broadcast hours in a calendar month}} .$$

- (c) In computing the Service ORI, for outages that affect a localised area or a subset of viewers, the effective lost time shall be calculated using a normalisation factor (N) based on the proportion of homes or viewers affected by the outage. The formula is:

$$\text{Effective lost time for outage} = \text{Normalisation factor (N)} * \text{Time lost due to outage} ,$$

$$\text{where } N = \frac{\text{Homes affected by outage}}{\text{Total connected homes}} , \text{ and}$$

Total connected homes refer to number of homes receiving the TV service.

For outages which affect the entire service, $N = 1$. If an outage affects only certain homes or viewers, then $N < 1$. For cases where $N < 1$, broadcasters shall provide description of how the number of homes affected is determined in the monthly ORI reports.

- (d) A Licensee shall also record and report all outage incidents in the monthly ORI reports. The basic details required are date and time of outage incidents; description of incidents in terms of the network elements affected, the number of viewers or subscribers affected, the affected programmes or services and time taken to restore the service. The report on outage incidents shall be in the format set out in the Second Schedule.
- (e) The Channel ORI and Service ORI results should take into account loss of video or sound or control data essential to view the services due to any cause under the control, either directly or through contract arrangements, of the Licensee. Outages that occur due to factors not under the control of the Licensee may be exempted from the computation of ORI results, although they should be recorded in the monthly ORI reports as stipulated in clause 5.2.3(d).¹⁶
- (f) The loss of ancillary data and services such as subtitles is exempted from the computation of ORI results. For such cases, Licensees shall display an apology message on the affected programme(s) as soon as possible when the fault occurs.
- (g) A Licensee shall submit to MDA quarterly reports, in the format set out in the First Schedule, on viewer complaints relating to outages and poor reception quality that were received over the past three (3) calendar months, 14 days after the end of the quarter. In the event where no complaints were received for the quarter, the Licensee shall still submit the quarterly report and indicate accordingly.¹⁷

5.2.4 Guidance notes

- (a) Licensees providing free-to-air nationwide Terrestrial broadcast TV services shall submit to MDA monthly Channel ORI results for each free-to-air TV channel. Licensees providing other types of TV services are not required to report the Channel ORI result for an individual channel if no outage is suffered in a calendar month. Outage incidents, if they occur, shall be reported to the MDA on a calendar month basis.
- (b) The Service ORI for Terrestrial broadcast TV services shall be measured at the transmitter level.
- (c) The Service ORI for Cable TV services shall be measured at the network nodes connected to the premises receiving cable TV services. In the case where a nationwide outage had occurred for the entire service or channel(s) within the service, the total number of connected homes or subscribers of the service or channel(s) within the service shall be deemed to have experienced an outage.

¹⁶ Exemptions may include impairment due to equipment managed by viewers, planned maintenance, unscheduled interruptions to power supply, and extreme or unforeseen weather conditions.

¹⁷ Complaints which arise from issues related to viewer premise equipment may be excluded from this report.

- (d) The Service ORI for IPTV services shall be measured at the access network level. For purposes of normalisation, Licensees providing IPTV services should provide details on how the number of homes affected is determined in the monthly ORI reports. In cases where the number of homes affected by an outage cannot be accurately determined, Licensees providing IPTV services should provide an explanatory note in the monthly ORI reports with details on the nature of the outage and the difficulties in determining affected homes. MDA will consider these outages on a case-by-case basis. In the case where a nationwide outage had occurred for the entire service or channel(s) within the service, the total number of subscribers of the service or channel(s) within the service shall be deemed to have experienced an outage.

5.3 OTT TV services

5.3.1 Application

- (a) The provisions set out in this sub-section shall apply to all Licensees providing OTT TV services, unless otherwise stated.

5.3.2 Obligations for Licensees to meet specified requirements

- (a) A Licensee shall maintain a minimum monthly Service ORI standard of 99.80% for OTT TV services that it may provide. The Service ORI shall be measured at the webhosting server level.

5.3.3 Compliance with obligations

- (a) A Licensee providing nationwide OTT TV services shall monitor and submit to MDA monthly ORI reports on the Service ORI results.
- (b) A Licensee providing niche OTT TV services shall monitor and record Service ORI results. They are not required to submit any ORI reports to MDA.
- (c) The formula for computing Service ORI is:

$$\text{Outage Reliability Index (ORI)} = (1 - R) \times 100\% ,$$

$$\text{where } R = \frac{\text{Total lost time for all outages in a calendar month}}{\text{Total number of broadcast hours in a calendar month}} .$$

- (d) A Licensee shall also record and report all outage incidents in the monthly ORI reports. The basic details required are date and time of outage incidents; description of incidents in terms of the network elements affected, the number of viewers or subscribers affected, the affected programmes or services and time taken to restore the service. The report on outage incidents shall be in the format set out in the Second Schedule.
- (e) The Service ORI results should take into account loss of video or sound or control data essential to view the services due to any cause under the control, either directly or through contract arrangements, of the Licensee. Outages that occur due to factors not under the control of the Licensee may be exempted from the computation of ORI results, although they should be recorded in the monthly ORI reports to MDA as stipulated in clause 5.3.3(d).¹⁸
- (f) A Licensee shall submit to MDA quarterly reports, in the format set out in the First Schedule, on viewer complaints relating to outages and poor reception quality that were received over the past three (3) calendar months, 14 days after the end of the quarter. In the event where no complaints were received for the quarter, the Licensee shall still submit the quarterly report and indicate accordingly.¹⁹

¹⁸ Exemptions may include impairment due to equipment managed by customers, planned maintenance, unscheduled interruptions to power supply, and extreme or unforeseen weather conditions.

¹⁹ Complaints which arise from issues related to viewer premise equipment may be excluded from this report.

6 LOUDNESS REQUIREMENTS

6.1 Introduction

- (a) Section 6 “Loudness Requirements” sets out the broadcast standards relating to loudness and must be complied with by Licensees where applicable. The loudness standards must be maintained at the viewers’ premises. Compliance with the required standards will minimise large variations in loudness during transitions between different types of content and between channels.

6.2 Terrestrial broadcast TV, Cable TV, IPTV, OTT TV services

6.2.1 Application

- (a) The provisions set out in this sub-section shall apply to all Licensees providing Terrestrial broadcast TV services, Cable TV services, IPTV services or OTT TV services, unless otherwise stated.

6.2.2 Obligations for Licensees to meet specified requirements

- (a) A Licensee shall maintain consistency in the loudness of all digital audio broadcasts on its Terrestrial broadcast TV services, Cable TV services, IPTV services or OTT TV services and shall comply with either the Advanced Television Systems Committee (“ATSC”) or European Broadcasting Union (“EBU”) standards.
- (b) Under the ATSC standards, a Licensee shall ensure that all programmes, including commercials, shall comply with a loudness level of -24 LKFS \pm 2 LU as specified in ATSC RP A/85.²⁰
- (c) Under the EBU standards, a Licensee shall ensure that all programmes, including commercials, shall comply with a loudness level of -23 LUFS \pm 1 LU as specified in EBU R128²¹.

6.2.3 Compliance with obligations

- (a) A Licensee shall provide MDA with a written description of their procedures for ensuring that the required loudness standards are achieved.

²⁰ ATSC Recommended Practice: Techniques for Establishing and Maintaining Audio Loudness for Digital Television. LKFS is defined as loudness, K-weighted and measured relative to full scale. LU is defined as a loudness unit equivalent to a decibel.

²¹ EBU Recommendation R 128: Loudness normalisation and permitted maximum level of audio signals. LUFS is defined as loudness unit measured relative to full scale and LU is defined as a loudness unit equivalent to a decibel.

- (b) A Licensee shall carry out internal assessment and monitoring using loudness measurement equipment to verify that loudness levels are in line with the required standards. Both the ATSC RP A/85 and EBU R128 standards refer to a standard ITU measurement algorithm for loudness (ITU-R BS.1770).
- (c) A Licensee providing nationwide TV services shall conduct annual loudness spot checks on programme transmissions. This will involve assessment of loudness performance of broadcast material on each channel over a 24-hour period. The Licensee shall also prepare and submit to MDA a loudness report for each annual loudness spot check conducted 14 days after the spot check.
- (d) MDA may also direct any Licensee to conduct spot check(s) as and when required by MDA, usually in response to viewer complaints.
- (e) A Licensee shall submit to MDA quarterly reports, in the format set out in the First Schedule, on viewer complaints relating to loudness that were received over the past three (3) calendar months, 14 days after the end of the quarter. In the event where no complaints were received for the quarter, the Licensee shall still submit the quarterly report and indicate accordingly.²²

²² Complaints which arise from issues related to viewer premise equipment may be excluded from this report.

FIRST SCHEDULE

Licensees shall submit to MDA quarterly reports on viewer complaints in the format set out as follows:-

Field	Information to be provided
Category of complaints	Coverage, signal strength, picture and audio quality, reliability, loudness
Number of complaints Period over which the complaints relate to	
Description	Details on cause of complaints, remedial action taken

SECOND SCHEDULE

Licensees shall record and report all outage incidents in their monthly ORI reports in the format set out as follows:-

Field	Information to be provided
1. Broadcaster	Name of the broadcaster submitting the report
2. Date and time of occurrence/detection	Date and time of occurrence of the outage incident or, where not available, the date and time of detection
3. Brief description of incident	Short summary of the outage incident, including any relevant information not captured elsewhere on the template.
4. Impacts:	
i. Network types and elements affected	E.g. headend, transmitter, cable network node, access network, core network, exchange
ii. Services affected	E.g. channel, programme, video-on-demand
iii. Number/proportion of viewers affected	<p>Number of viewers affected by outage incident, where available.</p> <p>Where an outage occurs at a network element with a known number of customers, please give the number.</p> <p>If it is not possible to provide an absolute number, you may indicate any of the following:</p> <ul style="list-style-type: none"> • the scale of outage (e.g. thousands or millions of viewers affected), • the proportion of your viewers likely to be affected (to the nearest 10 percent), or • a network-centric view of the scale (e.g. number of nodes/links without service)
iv. Time to restore (if known)	Where available, information about the time taken, or an estimate of the time expected to be taken, to restore the network or service
v. Affected region (if known)	Any available information on the region affected by the incident (in the format that you use in your own management systems)
5. Complaints received	Number of complaints relating to outage incident received
6. Brief summary of action(s) taken so far	Short summary of the action(s) taken to address the issue(s)
7. Name and contact details for follow up	Details of relevant person for MDA to contact for follow up enquiries