

MEDIA DEVELOPMENT AUTHORITY OF SINGAPORE

**CLOSING NOTE TO PUBLIC CONSULTATION ON PROPOSED CODE OF PRACTICE FOR
TELEVISION BROADCAST STANDARDS**

PUBLIC CONSULTATION

16 December 2014

- 1. INTRODUCTION**
- 2. MDA'S RESPONSE TO COMMENTS RECEIVED**
- 3. CONCLUSION AND ISSUANCE OF CODE OF PRACTICE**

1. INTRODUCTION

- 1.1 The Media Development Authority (“MDA”) requires licensees offering television (“TV”) services, whether free-to-air, subscription or niche, to provide their services at reasonable quality that meets public expectations¹. Pursuant to this requirement, the respective licences currently set out certain TV broadcast standards for licensees’ compliance. These standards cover the following performance areas: service coverage, signal strength, picture and audio quality, and service reliability.
- 1.2 In 2012/13, MDA conducted a technical review (the “Review”) of the TV broadcast standards, with the objective of ensuring their continued relevance in an evolving broadcast landscape. For example, the Review considered the transition of the Free-To-Air TV (“FTA TV”) broadcast from analogue to digital transmission.
- 1.3 As part of MDA’s efforts to provide more transparency to the industry and consumers, MDA intends to publish the TV broadcast standards imposed on the different TV services in a new Code of Practice for Television Broadcast Standards (the “Proposed Code”). The existing licence conditions on TV broadcast standards will correspondingly be removed. Apart from stipulating the TV broadcast standards, the Proposed Code would include guidance notes in relation to the compliance requirements and enforcement considerations.
- 1.4 MDA would like to thank all the respondents for their useful feedback and comments.
- 1.5 The comments received and MDA's responses are described in Section 2.

¹ Licence condition pertaining to service quality: *The Licensee shall provide its Service at such reasonable quality that meets public expectations and is satisfactory to the Authority. Notwithstanding, the Authority reserves the right at any time to impose broadcast standards with which the Licensee shall comply at its own costs.*

2. MDA'S RESPONSE TO COMMENTS RECEIVED

2.1 At the close of the Public Consultation on 24 January 2014, including an extension of two weeks, MDA received four submissions from:

- (a) M1 Limited ("M1");
- (b) MediaCorp Pte Ltd ("MediaCorp");
- (c) SingNet Pte Ltd ("SingNet"); and
- (d) StarHub Cable Vision Ltd ("SCV").

2.2 The comments received by the four respondents can be categorised into the following broad areas:

- (a) Application of the Proposed Code;
- (b) Service coverage requirements;
- (c) Signal strength requirements;
- (d) Picture and audio quality requirements;
- (e) Service reliability requirements;
- (f) Loudness requirements;
- (g) Reporting requirements under the Proposed Code; and
- (h) Definition of terms.

2.3 The comments received and MDA's responses within each area are described in detail below:

APPLICATION OF THE PROPOSED CODE

Application of Requirements to Licensees Providing Over-The-Top TV ("OTT TV") Services

2.4 All respondents commented that there are limitations to the extent that they are able to comply with TV broadcast standards for OTT TV Services (i.e. service reliability and loudness requirements). This was because licensees had limited or no control over external access networks, third party devices and third party services used to deliver their OTT services. Specifically, SingNet commented that the loudness requirements under the Proposed Code should exclude OTT TV Services. SCV also commented that paragraph 5.3 on service reliability requirements for OTT TV services should be deleted in its entirety, as the obligation is not necessary given the competitive nature of the market.

MDA's response

2.5 **To minimise the regulatory burden on small and/or new TV service providers, and in consideration of the limited ability of the licensees to control the quality of service**

on third party or external networks and devices, MDA will exclude OTT TV services, as well as Niche TV Service Licensees from the requirements in the Proposed Code. MDA will amend the Proposed Code accordingly to remove all requirements on these services.

SERVICE COVERAGE REQUIREMENTS

Service Coverage Requirements for Cable TV

2.6 SCV commented that the service coverage requirement under the Proposed Code is inconsistent with its Licence conditions given that it had already fulfilled its rollout obligations.

MDA's response

2.7 **MDA clarifies that the service coverage requirement for Cable TV services does not overlap with existing rollout licence condition. The intent of the service coverage requirement is to ensure that Licensees providing nationwide Digital cable TV services offer and provide connection for the reception of the service, where the property on which the service would be provided resides within an area where the Licensee has rolled out its network.**

Service Coverage Requirements for IPTV

2.8 SingNet commented that the rollout and coverage obligations are already contained in the nationwide Subscription Television Licence and it is unnecessary for a separate requirement to be included under the proposed Code. SingNet added that it is dependent on other parties such as Facilities Based Operators ("FBO") and/or Public Telecommunications Licensees ("PTLs") licensed under IDA to rollout their ADSL and/or fibre infrastructure before acquiring the use of the infrastructure to provide its IPTV service, and it may not be technically feasible for an IPTV licensee who is dependent on the FBO and/or PTLs to rollout infrastructure to make available the IPTV service to any person in Singapore. It proposed for MDA to remove the requirement or at least qualify that the requirement is based on the licensee's best endeavours.

2.9 SCV commented that requiring the licensee to roll out its IPTV service to any person who makes a request is onerous and outside of its control. SCV also highlighted that the current draft of paragraph 2.3.2(b) does not specify the requestor of the service to be the property owner, and could effectively require the service to be offered to any minor who requests for it. SCV further added that the provision of IPTV service is

dependent on the provisioning of connectivity by OpenNet, and proposed the following amendments to paragraph 2.3.2(b):

A Licensee shall ensure that the nationwide IPTV services it may provide will be made available to any ~~person~~ property owner in Singapore who makes a written request to the Licensee, on the condition that the property is connected with the NGNBN, in line with their established policies.

MDA's response

2.10 **MDA notes the dependency of IPTV service on the FBOs and PTLs for service rollout, and will amend the Proposed Code to require Licensees providing nationwide IPTV services to offer and provide connection for the reception of the IPTV services where the property on which the service would be provided resides in an area where the Next Generation Nationwide Broadband Network ("NGNBN") has been rolled out.**

2.11 **MDA does not agree with SCV on adopting the terms "property owner" or "written requests" given that that not all customers who make a request to the Licensees for the provision of service would be the property owner, and requests for service provision by customers may take other forms, e.g. over the phone.**

Applicability of paragraphs 2.2.1 and 3.2.1 to "Must Carry" Channels provided on Nationwide Subscription TV Services

2.12 M1 sought clarification if para 2.2.1 and 3.2.1 would apply to "must carry" channels provided on nationwide Subscription TV Services.

MDA's response

2.13 **MDA clarifies that paragraph 2.2 and 3.2 applies to the FTA nationwide Terrestrial broadcast TV service in its entirety (including all channels provided under the service), rather than a specific sub-set of channels. For nationwide Subscription TV services, the relevant service coverage requirements would apply.**

SIGNAL STRENGTH REQUIREMENTS

Signal Strength Requirements for Analogue Terrestrial TV

2.14 MediaCorp commented that according to ITU-R BT.417, in the absence of interference from other TV transmissions and man-made noise, the minimum field strengths at the

receiving antenna that will give a satisfactory grade of picture (taking into consideration receiver noise, cosmic noise, antenna gain and feeder loss) would be 62 dB μ V/m for Band IV and 67 dB μ V/m for Band V, and suggested adopting the said signal strength levels.

MDA's response

2.15 MDA agrees to adopt the ITU-R BT.417 standard. However, MDA disagrees with MediaCorp's suggestion to reduce the signal strength level for Analogue Terrestrial TV as the existing requirement (65 dB μ V/m for Band IV and 70 dB μ V/m for Band V) remains relevant given that they are consistent with ITU-R BT.417. Interference should still be taken into consideration when setting the minimum signal strength level.

Signal Strength requirements for DTV

2.16 MediaCorp commented that the minimum field strength for DTV services should not be a single fixed figure as (a) it is dependent on factors such as the modulation and code rate, pilot pattern, location probability, building penetration loss, receiver noise figure, channel profile, frequency etc., (b) the broadcaster may plan for different type of services (e.g. fixed service, portable indoor and portable outdoor reception, mobile etc.), and (c) the broadcaster may elect to use a more robust mode of transmission to achieve the same level of service with lower field strength.

2.17 MediaCorp also commented that a minimum field strength for DTV in accordance to the relevant ITU recommendation should be adopted, and proposed for MDA to adopt ITU-R BT.2254 given that the planning criteria for DVB-T2 for ITU-R BT.1368 have yet to be included, where the recommended minimum median field strength for portable indoor reception is 67 dB μ V/m at 650MHZ. MediaCorp added that with a more robust transmission mode (FE 3/5), lower operating frequency (up to 570MHZ) and lower building penetration loss (10dB), the required minimum median field strength should be lower than 67 dB μ V/m instead of the proposed 74 dB μ V/m.

2.18 MediaCorp added that a broadcaster may plan its service by adding extra margin to compensate for unforeseen factors and/or limitation in the planning tools and for higher grade of service. The extra margins (over and above the minimum field strength) added by broadcasters for planning purpose would not change the minimum field strength.

MDA's response

2.19 **MDA agrees to adopt the ITU-R BT.2254 standard. Licensees shall ensure that the minimum signal strength for FTA nationwide DTV services within the coverage area is in accordance with the said standard. Licensees should plan their services with extra margins over and above the minimum signal strength requirement to compensate for unforeseen factors and/or limitation in the planning tools, and to achieve a higher grade of service. Accordingly, MDA will amend the Proposed Code.**

Signal Strength Requirements for Cable TV

2.20 SCV highlighted that the signal strength requirement for nationwide Digital cable TV services should only be applicable to the original cable points provided by the Licensee and the Licensee should not be held responsible for modification of the cable points or for additional cable points established by the property owner.

MDA's response

2.21 **MDA notes that modifications or additions of the cable points by unauthorised third parties would be outside the purview of the Licensee and will generally not hold the Licensee accountable for failure to comply with the Proposed Code for such circumstances.**

Applicability of Signal Strength Requirements for FM Sound VHF Band

2.22 SCV commented that it receives FM channels over-the-air rather than via a dedicated transmission link from source, and would be subject to off-air interferences, and proposed for para 3.3.2(b)(ii) to be excluded from the Proposed Code.

MDA's response

2.23 **MDA agrees to delete paragraph 3.3.2(b)(ii) pertaining to signal strength requirements for FM Sound VHF Band in view that radio services are excluded from the proposed Code.**

PICTURE AND AUDIO QUALITY REQUIREMENTS

Picture and Audio Quality Requirements

2.24 SingNet submitted that it is not technically possible to achieve a picture and audio grade of 5 on the ITU-R-5 Point Quality Grading Scale as described in ITU-R BT.500 due to the lack of objective quality assessment for video quality, and dependency of

programmes on the source quality and transmission loss (e.g. bit error rate from satellite loss in the case of IP-based services, encoding/compression and conversion of video).

2.25 SCV commented that the obligation is inconsistent with the existing licence condition, and added that it is impractical to achieve grade 5 on the ITU-R-5-Point Quality Grading Scale for recorded programmes as such programmes undergo a compression and de-compression process. SCV further proposed to amend the Proposed Code to align with existing licence conditions.

2.26 M1 commented that the standards and specifications are taken into consideration during the design stage to guarantee system/network delivery to meet the current broadcast standard, i.e. picture and audio quality of at least grade 4, for recorded programmes. M1 requested that the revised standards not be applied retrospectively for systems/services that are already deployed and to comply with the revised standards during future system/network upgrades at the earliest times.

MDA's response

2.27 MDA notes the involvement of encoding and compression for recorded programmes as well as the technical constraints, and will maintain the existing requirement for picture and audio quality requirements, at grade 5 for “live” and grade 4 for recorded programmes in the proposed Code.

Applicability of Picture and Audio Quality Requirements to VOD Content

2.28 SingNet commented that "programmes" in paragraph 4.2.2(a) and (b) is not defined, and sought clarification if "programmes" would refer to linear channels only, and not video-on-demand ("VOD") content.

MDA's response

2.29 MDA clarifies that “programmes” in paragraph 4.2.2(a) and (b) would refer to both linear channels and VOD content. “Programmes” would be as defined in the Broadcasting Act.

Synchronisation of Picture and Audio of Transmitted Programmes

2.30 SingNet commented that Licensees may not be able to ensure that the picture and audio of the transmitted programmes are accurately synchronised if the issue lies with

the source feed from the content provider(s), and proposed for MDA to exclude such instances.

MDA's response

- 2.31 MDA clarifies that Licensees will not be deemed to have failed to comply with the requirement for synchronization issues that occur at the content source which is outside of the Licensees' control.**

Routine Assessments of the Technical Quality of TV Services

- 2.32 SCV sought clarification on the frequency of the routine assessments.

MDA's response

- 2.33 MDA will leave the frequency of the routine assessments to the licensees' discretion, based on what they deem sufficient to ensure satisfactory quality of service.**

Handling of Complaints Related to Picture and Audio Quality

- 2.34 SCV commented that the requirement for Licensees to attend to, handle and provide proper avenues to resolve viewer complaints in a speedy manner and within a period specified by MDA is impractical, as some complaints are complex in nature and may involve external parties which will complicate its resolution. SCV added that 4.2.3(c) should refer to resolution in a "reasonable time period" and that it does not have control over picture and audio quality of programmes in turnaround Subscription TV channels as they originate from source and would be unable to resolve the issue within a timeframe specified by MDA. It further proposed to revise 4.2.3(c) to:

A Licensee shall, within a reasonable time duration, attend to and handle, as well as provide proper avenues for the resolution of viewer complaints or feedback relating to picture and audio quality within its control of its network.

- 2.35 SingNet also submitted that the time period for the resolution of the complaint should not remain open-ended, as it is dependent on the issue(s) that a viewer encounters and the Licensee may not be able to address the issue(s) within the time period as specified by MDA. SingNet further submitted that the reference to speedy resolution is not defined and it is not ideal to leave such obligations undefined as it does not provide regulatory certainty to both Licensees and MDA.

2.36 M1 sought guidance on MDA's assessment of viewer complaints, in particular, under what circumstances will an investigation be launched.

MDA's response

2.37 **In view of potential complexities for certain complaints which may result in protracted resolution, MDA will not be prescribing the time period for the resolution of complaints to provide licensees with flexibility on the timeline to resolve the complaints. However, MDA wishes to clarify that the intent is for Licensees to attend to and handle viewer complaints without undue delay to their best endeavours.**

2.38 **MDA wishes to clarify that it will initiate investigations where there is a persistent trend of complaints to MDA in relation to picture and audio quality for service(s) provided by Licensees.**

Timeline for Retention of Recordings

2.39 SingNet commented that due to system limitation, it may not be feasible for licensees to retain recordings of all programmes broadcasted for an extended period of time.

2.40 SCV commented that the requirement for submission of recordings must be aligned with similar conditions that MDA imposes through the nationwide Subscription Television Licence.

MDA's response

2.41 **MDA agrees to align the timeline for retention of recordings to similar conditions in the licences, and will amend the Proposed Code accordingly to require retention of the recordings to the last four (4) weeks from the date on which the programmes were broadcast.**

SERVICE RELIABILITY REQUIREMENTS

Inclusion of Outages Outside of Licensees' Control for ORI Computation

2.42 Respondents generally commented that for the purpose of ORI computation, Licensees should only be responsible for outages that occur within their control or their own networks, and that MDA should exclude outages due to factors outside of a Licensee's control in the ORI computation.

MDA's response

- 2.43 **MDA wishes to clarify that outages due to factors outside of a Licensee's control as specified by MDA, e.g. outages at content source, would generally not be required to be included for ORI computation.**

Point of Measurement for Channel Availability

- 2.44 MediaCorp suggested that the measurement of Channel Availability to be at the Point of Interconnect to the transmission network/webhosting server.

MDA's response

- 2.45 **MDA wishes to clarify that Channel Availability is intended to be measured at the point prior to distribution via the transmission network.**

Definition of Outage

- 2.46 MediaCorp commented that "an absence of channel or service" is too wide and does not account for situations where there is a deliberate absence on the screen. The respondent submitted that it would be clearer to define the duration of the specific disruptions in order to avoid any ambiguity, and proposed the following scenarios to consider an outage to have occurred:

- (i) there is black on-air for 3 seconds or more
- (ii) there is freeze frame for 6 seconds or more
- (iii) there is audio loss of 6 seconds or more

MediaCorp added that the above definition takes into consideration intentional black, freeze frame and silence in programmes, and configuring of the system alarm to trigger at every instance of black, freeze frame or silence can create a lot of false alarms.

- 2.47 MediaCorp further commented that it does not agree that an outage is considered to have occurred when "the subjective quality of a channel or service is annoying to viewers", and that this should be classified as a degradation of service quality under the picture and audio quality requirement instead of treating them as outages. MediaCorp added that it is difficult to define what is annoying to viewers given the use of subjective quality as a reliability measurement.

2.48 SingNet sought clarification on whether the specific obligation for reliability requirements are as contained in paragraph 5.1 (d) or as contained in the actual Channel ORI and the Service ORI requirements set out in paragraph 5.2.3. SingNet also sought clarification on how MDA will assess whether the subjective quality of a channel or service is annoying to viewers, and how to objectively measure if a Licensee is incapable of maintaining the subjective quality of a channel or service at Grade 3 on the ITU-R-5-Point Scale. SingNet further added that a subjective measurement cannot be used as criteria to determine a Licensee's compliance with the proposed Code as it will not provide Licensees with regulatory certainty, and requested for MDA to set a threshold for defining an outage.

2.49 SCV submitted that it is necessary to clarify in the definition that (a) planned routing maintenance, (b) natural phenomenon (e.g. sun outages), and (c) outages of the signal at sources should not be considered outages. SCV also proposed for the outage definition to include a minimum duration of continuous breakdown in transmission to consider that an outage has occurred, and proposed for MDA to adopt following definition:

An unplanned ad-hoc transmission disruption that affects the whole channel(s), which is under the control of the Licensee, over a period of more than 2 hours, involving 100,000 viewers in Singapore.

2.50 SCV further added that the current clause fails to specify the scale and duration of an outage, and found that the definition is too subjective as different viewers will have different views on what constitutes annoying viewing. It proposed to refine the section to:

An outage is considered to have occurred when there is a complete absence of channel or service for at least 2 hours and when it affects more than 100,000 viewers in Singapore. This would include instances where there is a continuous intermittent or persistent loss of audio or video for more than 2 hours for one or more channels.

MDA's response

2.51 **All occurrences of outages would need to be included for ORI computation, except where the outage is outside of the Licensees' control as specified by MDA. MDA wishes to clarify that (a) planned routing maintenance, (b) natural phenomenon (e.g. sun outages), and (c) outages of the signal at external content source will not be required to be included for monthly ORI computation.**

2.52 MDA wishes to clarify that paragraph 5.1(d) applies to both Channel ORI and Service ORI.

2.53 On the subjective aspect of the outage definition, MDA notes that the ITU-R 5-Point Scale which constitutes a measure of quality and impairment based on the level of annoyance has been adopted in other jurisdictions. Notwithstanding, MDA is agreeable to remove references of ITU-R 5-Point Scale and annoyance from the outage definition. MDA has thus amended the outage definition to cover (i) an absence of channel or service; (ii) an intermittent or persistent loss of audio or video for one or more channels, or (iii) degradation of service to below a normal or acceptable level of quality. MDA would emphasise that service degradation resulting in significant on-screen impact (e.g. onscreen artifacts, pixilation, jerkiness due to frame freeze and reduced frame rate, loss of colour, loss of sound) can significantly impact the viewing experience of viewers which can be akin to an outage. While the assessment of quality can be subjective in nature, it is necessary for Licensees to exercise reasonable judgement as to whether the quality expectations of the intended audience are fulfilled.

2.54 To raise the intuitiveness of the terms, MDA will amend the term "Service ORI" to "Network ORI".

Channel ORI and Service ORI (henceforth referred to as Network ORI in the Proposed Code)

2.55 SCV commented that calculating Channel ORI from content source onwards as stated in paragraph 5.1(e) is impractical and operationally impossible, as most subscription TV content originates from overseas and it would be impractical to calculate Channel ORI from an overseas point. The respondent submitted that the Channel ORI must be calculated from the point at which the Licensee receives the content at its video headend in Singapore.

2.56 SingNet proposed to amend the term "Content Source" under Channel ORI to "Headend Content Received" and for the demarcation point for Service ORI to be the terminating access equipment, which is either the ADSL or optical line terminal ("OLT) equipment. SingNet further submitted that paragraph 5.2.3(e) "*the Channel ORI and the Service ORI results should take into account the 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*" is unclear and that contract arrangements of the Licensee does not provide any control (direct or indirect) over the video, sound or any availability of the service.

2.57 MediaCorp proposed for the encoder and multiplexer equipment to be part of Service ORI, and shared that its TV services are delivered to Subscription TV operators like SCV and SingNet at the Point of Interconnect (“POI”) to their transmission network or headend². MediaCorp further suggested that the Service ORI for the Subscription TV operators for the FTA TV channels should cover the contribution link, as well as their multiplex while MediaCorp will meet its Channel ORI requirements up to the POI. Likewise, if there is a third party FTA service provider operating a separate PLP on the same DVB-T2 frequency, the POI of the service provider can be located at their playout center provided that they agree with the transmission operator (e.g. MediaCorp) to take the baseband signals.

MDA's response

2.58 MDA wishes to clarify that Channel ORI is intended to be calculated from the point at which the Licensee receives the content, i.e. the Licensees’ video headend in Singapore, rather than from source.

2.59 MDA wishes to clarify that paragraph 5.2.3(e) is meant to cover outages that occur at points in the end-to-end infrastructure used for the provision and delivery of the service to the end users that are maintained and/or operated by the Licensee itself or by third parties hired/contracted by the Licensee.

2.60 MDA wishes to clarify that Channel ORI of FTA TV services delivered to Subscription TV operators will be measured up to the Point of Interconnect. However, MDA does not agree with including encoder/multiplexer as part of Service ORI (now referred to as Network ORI) for Terrestrial TV services, as the intent is for Network ORI to apply to the transmitters.

ORI Requirements

2.61 SCV submitted that the requirement to maintain a minimum monthly Channel ORI of 99.80% and 99.90% respectively for each individual channel is in contradiction with its current Licence obligations and is an onerous extension of its regulatory obligations. SCV further proposed to remove the obligation for Licensees to submit channel ORI given that the current Licence condition only requires it to submit monthly Service ORI, and that it would have to submit over 200 separate monthly ORI reports as its service carries over 200 channels.

² The POI is defined as the signal delivery point where the FTA TV operator hands over the TV signal to the Subscription TV operator.

2.62 SCV added that it is not able to accept the obligation under paragraph 5.2.2(b) to have a minimum ORI of 99.90% for the carriage of FTA TV channels as it simply re-transmits the channels and does not control the source of the channels or their reliability.

MDA's response

2.63 **MDA would clarify that when the Code takes effect, the Licence conditions relating to ORI would correspondingly be removed. MDA would add that the minimum monthly Channel ORI requirements are not onerous. Instead, they reflect the criticality of the headend equipment in the broadcast transmission chain, where an outage at the headend can potentially result in nationwide outage. The higher Channel ORI requirement for must-carry channels emphasises the importance of these channels, which transmit content of significant public interest. MDA thus expects licensees to have close sight over the reliability of their headend equipment. On Channel ORI reporting, MDA wishes to clarify that Licensees providing TV services other than FTA terrestrial broadcast TV services are not required to report the Channel ORI for an individual channel if no outage has occurred in the month for that channel.**

2.64 **For the re-transmitted FTA TV channels by Subscription TV service Licensees on their platforms, MDA wishes to clarify that Subscription TV service Licensees will generally not be held responsible if the outages occur at the content source.**

ORI Computation Methodology

2.65 MediaCorp submitted that computation of ORI based on an average of past 12 months was consistent with international practices, and added that transmission facilities are typically more complex and a longer time may be required to isolate and fix broadcasting problems.

2.66 MediaCorp added that for purpose of determining the normalization factor (N), the transmission coverage prediction can be used as basis, and added that depending on the scale of the outage, N can be determined by the percentage coverage loss of the whole network by removing one or more respective transmitters. MediaCorp commented that it is not clear whether Service ORI applies to individual channel, and proposed for Service ORI to be computed on an individual channel basis.

2.67 In addition, MediaCorp proposed that periods of outages that are beyond its control should not be used in computing service downtime, and provided a list of various scenarios for exemption from ORI computation caused by the scenarios within the list.

MDA's response

2.68 **MDA disagrees with adopting a 12 month averaging approach for ORI computation, as this provides leeway for lengthy outages and notes that the existing approach is already based on monthly ORI computation. Further, for free-to-air channels, given the role they play in transmitting content of significant public interest, it is essential to maintain a high standard of service reliability. In particular, for the main transmitter, MDA notes that it provides the widest service coverage and any outage at the main transmitter would have significant impact. MDA will therefore retain the requirement for the Network ORI of the main transmitter to be computed on a monthly basis. However, in view of the similarities between the main transmitters delivering FTA DTV and FTA Analogue TV services, MDA will align the Network ORI requirement for the main transmitter delivering FTA DTV service to that of FTA Analogue TV service, i.e. at 99.80%. For each repeater in the DTV network, MDA notes that the impact of an outage is significantly smaller and there could be some overlaps in coverage from transposers. Hence, while MDA would maintain the Network ORI requirement for each repeater at 99.50%, the computation would be based on the preceding six months.**

2.69 **MDA wishes to clarify that Network ORI for terrestrial TV services is not intended to be computed on an individual channel basis, but to cover the entire DTV transmission network. MDA will introduce a Network ORI requirement for the entire DTV network to account for all transmitters, transposers and gap fillers. On the determination of the normalization factor for the Network ORI of the entire DTV network, MDA will use the Effective Radiated Power ("ERP") of the transmitters in the DTV network as the basis. However, the normalization factor should be based on the ERP of affected transmitter(s) as a proportion of the total ERP of all the transmitters. MDA has also separated out the requirements for Terrestrial TV and Cable TV and IPTV Services for easier reference.**

2.70 **For the proposed list of scenarios provided by MediaCorp to be exempted from ORI computation, MDA wishes to clarify that as a general principle, factors that are reasonably outside of Licensees' control would not need to be included for ORI computation. For example, outages due to force majeure would not be included for ORI computation, although Licensees will be expected to establish this to the Authority's satisfaction. However, should the outage be due to faults on the part of**

third party vendors or facility operators hired/ contracted by the Licensee for the transmission and broadcast of its service, the outage will need to be accounted for as part of the monthly ORI computation. MDA will assess each case based on its specific circumstances.

LOUDNESS REQUIREMENTS

Applicability of Loudness Requirements

2.71 SCV submitted that while it can comply with the loudness requirements for self-packaged channels, it is not able to directly control the audio level for its turnaround channels which are under the direct control of an overseas content provider. SCV further added that it is contractually prevented from modifying any parts of the content (including its volume) and any to modify the content would put it in breach of the contract and liable to litigation, and that there is insufficient downtime/delay for modifying the content given the nature of turnaround channels where the signals are downlinked via the satellite and immediately retransmitted over its network to its customers.

MDA's response

2.72 **MDA disagrees with excluding turnaround channels from the loudness requirements as viewers should not experience significant variations in loudness regardless of the channels. MDA is of the view that Licensees who are nationwide managed network broadcasters should have the capability to implement loudness control. MDA also understands that the loudness standards have been adopted internationally.**

2.73 **MDA wishes to share that where the contract specifically disallows change of loudness for the channels or that such changes constitute a breach of contract, MDA will make the assessment on a case-by-case basis. Notwithstanding, MDA will expect Licensees to ensure that their contracts do not prevent them from complying with MDA's regulations.**

Annual Loudness Spot Check Methodology

2.74 SingNet proposed for loudness measurement audit to be conducted at the last point of the baseband signal before encoding and shared that this approach is consistent with industry practices where professional loudness meters are deployed for accurate loudness measurement. SingNet further requested for MDA to define the duration for

audio loudness measurement, and added that typically, the options are 10, 20 and 30 second intervals.

- 2.75 MediaCorp proposed for MDA to take the average loudness of each TV channel at prescribed intervals over a 24 hour period, and suggested that the prescribed interval could be every 15 minutes. MediaCorp added that by adopting the suggested method, it could automate the measurement instead of conducting laborious measurements using a manual method.

MDA's response

- 2.76 **MDA notes the respondent's request for clarity regarding the loudness spot check measurement methodology. While MDA does not intend to prescribe the spot check measurement methodology in the Code, a possible approach based on recommendations from the Society of Cable Telecommunications Engineers (SCTE 197 2013) is to conduct the loudness measurement after the signal has passed through the licensee's processing equipment, with the monitoring point after any equipment in the distribution path that is designed to alter the loudness of the audio stream, and at 1-second intervals over an uninterrupted 24-hour period for 24-hour channel(s), or continue logging measurements where programme is available until 24 hours of programme measurements are recorded for non-24-hour channel(s).**

Timeline to Submit Spot Check Loudness Measurement Annual Report

- 2.77 SingNet sought clarification on the requirement to conduct the annual loudness spot checks and asked if MDA will consider results of a loudness report to be valid if its submission was delayed. SingNet explained that the delay is due to the fact that a licensee may operate over a hundred channels, and it will require substantial amount of time and resources to undertake loudness spot check, given that each channel will need to be assessed over a 24 hour period.

MDA's response

- 2.78 **MDA will consider allowing additional time for submission of loudness report upon licensees' request on a case-by-case basis. Notwithstanding, MDA wishes to clarify that the intent is for nationwide Subscription TV Licensees to conduct spot checks for selected channels, rather than across all channels.**

REPORTING REQUIREMENTS UNDER THE PROPOSED CODE

Quarterly Complaint Reporting

- 2.79 MediaCorp suggested that Licensees should not be required to report on viewers' comments regarding general comments (e.g. regarding improvement of customer service or quality of programmes etc.) unless the complaints are explicitly expressed as written complaint about bad reception or service quality due to transmission or picture or sound degradation which impacts the enjoyment of programmes. MediaCorp further proposed that comments made from social media sources, e.g. discussion forms, should be exempted from reporting as they may not be factual and the individuals who write the comments may not be identifiable or contactable.
- 2.80 SCV submitted that the reporting requirements set out in the Proposed Code are unnecessary and should be removed. SCV commented that it should not be held accountable for complaints that are related to the actions of a third party or that which is outside of its control, and that it is time consuming and unnecessarily burdensome to submit reports even when no complaints have been received.
- 2.81 M1 commented that end-user complaints and feedback are multifaceted and it may be operationally challenging to report in accordance to the extent proposed by MDA, and proposed to remove the requirement to provide a detailed breakdown of complaints by categories.
- 2.82 SingNet proposed for the complaints quarterly report to be submitted one (1) month after the end of the quarter instead of fourteen (14) days after the end of the quarter.
- 2.83 SingNet also sought MDA's clarification on whether "viewer premise equipment" includes residential gateway ("RG"), set-top box ("STB"), and any home networking equipment provided by the Licensee as part of the IPTV service.

MDA's response

- 2.84 **MDA wishes to clarify that only expression of dissatisfaction by viewers pertaining to the broadcast standards which require some action on the part of Licensees beyond the initial contact ought to be included in the report.**
- 2.85 **MDA disagrees with SCV's comment that the reporting requirements set out in the Proposed Code are unnecessary. The reporting requirements are necessary for the monitoring of the quality of service standards for the services provided by Licensees.**

- 2.86 **MDA agrees that the required information to be included in the quarterly complaints reports could be reduced, although the categorisation of complaints by each broadcast standard is still necessary to have sight over the Licensees' performance in the different technical aspects. In this regard, MDA will not prescribe the report format in the Code itself, but instead obtain further inputs from the Licensees before notifying them of the format. MDA also wishes to clarify that complaints on social media sources will be excluded, except for the Licensees' own social media page. MDA would also clarify that the reporting requirements for purpose of the Proposed Code pertain only to feedback related to the service performance covered by the broadcast standards.**
- 2.87 **MDA agrees to extend the submission timeline after the end of the quarter from fourteen (14) days to one (1) month.**
- 2.88 **MDA wishes to clarify that “viewer premise equipment” will include the RG, STB and any home networking equipment provided by the Licensee as part of the IPTV service.**

Monthly ORI Reporting

- 2.89 SCV commented that computing monthly ORI based on individual channels and service levels are labour intensive and operationally cumbersome, and that the current computation of monthly overall service ORI is sufficient. SCV added that due to the nature of Subscription TV, it means that customers usually subscribe to a group of channels rather than just a particular channel. A transmission disruption hence does not signify that the customer has been deprived of complete TV viewing. SCV further added that on the broadband front, the Infocomm Development Authority of Singapore (IDA) only requires that the operator report monthly overall network availability rather than drilling down to specific website outages. Attention also needs to be given to reduce the burden of the reports and that the reports required are unduly burdensome and unnecessarily increase the Licensees' compliance cost.
- 2.90 MediaCorp suggested for MDA to adopt a pragmatic approach where short outages should be exempted from submitting individual outage reports as specified in the Second Schedule of the Proposed Code, as short disruptions are basically immaterial to the viewers and will not affect the overall enjoyment of the content.

MDA's response

- 2.91 **MDA disagrees with SCV's comments. The monthly ORI reporting requirement is necessary for the monitoring of the quality of service standards of the services**

provided by Licensees. Licensees should have in place processes to monitor their services to ensure that meet the service reliability requirements under the Proposed Code, in particular, for points in the broadcast chain with potential for nationwide level outage. MDA wishes to clarify that monthly ORI for individual channels are only required to be reported should the specific channel experiences an outage at the points prior to the point of delivery into the transmission network.

2.92 Notwithstanding, MDA will not prescribe the report format in the Code itself, but instead obtain further inputs from the Licensees before notifying them of the format.

Submission of Written Description of Licensees' Procedures for Ensuring Compliance

2.93 SingNet sought clarification if the requirements for submission of written description of the procedures for ensuring compliance were intended to be one-off.

MDA's response

2.94 MDA wishes to clarify that the submission is intended to be one-off. Notwithstanding, Licensees are expected to provide subsequent submissions as and when there are major changes to the procedures. Submission for minor or routine upgrades/updates is not required. MDA proposes for the one-off written description to be submitted six (6) months after the Code is issued, or in the case of new licensees, six (6) months after the commencement of the service.

DEFINITION OF TERMS

2.95 SCV commented that terms in several areas of the Proposed Code are not fully defined which would lead to difficulties for Licensees to comply with the requirements. While definitions of managed and unmanaged transmission TV services are based on the concept of service level agreements ("SLAs"), it does not provide clarity on what level of SLA would be considered as adequate.

2.96 SCV proposed for MDA to delete the references to SLAs in the definitions. SCV further submitted that not all FTA nationwide terrestrial TV channels are designated as must-carry channels, and proposed to revise the definition to:

"Must carry channels" mean the free-to-air nationwide terrestrial TV channels provided on subscription nationwide TV service, as directed by the Authority.

2.97 SCV also proposed to include a definition for viewer complaints to provide greater clarity:

Viewer complaints mean a formal written expression of dissatisfaction or resentment of the service offerings provided by the Licensee, which the Licensee has not been able to adequately address.

MDA's response

2.98 In view of industry comments, MDA has made changes to the following definitions:

(a) **Managed and unmanaged transmission TV services.** MDA agrees to remove references to SLAs from the definition in view that QoS established under the SLA may be varied. Notwithstanding, Licensees providing a managed transmission TV service are expected to have control over the end-to-end QoS for its service. In view that unmanaged transmission TV services such as OTT TV Service are excluded from the requirements in the Proposed Code, MDA will amend the Proposed Code accordingly to exclude the definition of unmanaged transmission TV services.

(b) **Must carry channels.** MDA agrees to adopt SCV's suggested definition.

Please refer to paragraph 1.5 of the Proposed Code for the amended definitions.

2.99 MDA also clarifies that "viewer complaints" refers to an expression of dissatisfaction with the service providers' service in relation to broadcast standards via oral or written communication that requires some action by the service provider beyond the initial contact.

3. CONCLUSION AND ISSUANCE OF CODE OF PRACTICE

- 3.1 MDA has studied all the comments submitted by the respondents and has amended the Proposed Code in accordance to MDA's response in Section 2 of this paper.
- 3.2 Pursuant to Section 6 of the Broadcasting Act (Cap. 172), MDA hereby issues the Code of Practice for TV Broadcast Standards.
- 3.3 The Proposed Code will come into effect on such date that shall be specified by MDA.