



**CONSULTATION PAPER ISSUED BY
THE MEDIA DEVELOPMENT AUTHORITY
AND
THE INFO-COMMUNICATIONS DEVELOPMENT AUTHORITY OF SINGAPORE**

**PUBLIC CONSULTATION ON THE REVISION TO THE TECHNICAL
SPECIFICATION FOR THE INTEGRATED RECEIVER DECODER FOR USE WITH
THE SECOND GENERATION DIGITAL TERRESTRIAL TELEVISION
BROADCASTING SYSTEM**

(Draft IDA/MDA TS DVB-T2 IRD Issue 1 Rev 2 March 2014)

31 March 2014

**PROPOSED REVISION TO IDA/MDA DVB-T2 IRD
ISSUE 1 REV 1 MARCH 2013**

1 BACKGROUND

- 1.1 Following the implementation of Revision 1 to Issue 1 of the “Technical Specification Integrated Receiver Decoder for use with the second generation Digital Terrestrial Television Broadcasting System” (“TS DVB-T2 IRD”) for compliance by manufacturers, and the availability of the DVB-T2 test signal in October 2013, further feedback was received from the industry, proposing a few changes to the TS to reflect the market conditions.
- 1.2 This document outlines the proposed changes to the TS DVB-T2 IRD Issue 1 Rev 1 and provides editorial clarifications to the requirements.

2 PROPOSED CHANGES TO THE TECHNICAL SPECIFICATION

Teletext

- 2.1 As Teletext has been discontinued on Free-to-Air TV from 30 September 2013, the requirement to support Teletext in § 1.3, § 7.4 and § 8.7 of Part A of the TS DVB-T2 IRD should be “Optional”.

Lip Sync

- 2.2 A request was received to relax the lip sync requirement, citing that its performance is depending on the System on Chip’s (SOC) specification. IDA/MDA agrees that this is a performance requirement to be ensured by IRDs/receivers manufacturers in order that viewers’ experience will not be impaired, and their products are marketable. It is proposed that this requirement in § 4.3.5 of Part A of the TS DVB-T2 IRD be changed to “Recommended” to give manufacturers flexibility in their implementation.

HE-AAC Bit Stream Pass Through

- 2.3 Further feedback was received commenting that there are currently lack of readily available AV receiver/Home Theatre System that supports HE-AAC¹ decoding and currently, the feature of HE-AAC bit stream pass through via the S/PDIF² and HDMI³ output is not widely implemented in DVB-T2 IRDs. As such, IDA/MDA agrees that the support for HE-AAC bit stream pass through via the S/PDIF and HDMI output in § 4.3.3 of Part A of the TS DVB-T2 IRD and § 5 of Part B of the TS DVB-T2 IRD should be revised as “Optional”. IDA/MDA will review this requirement again should there be sufficient evidence of market development or major technology change that warrants a review.

¹ HE-AAC refers to the High Efficiency Advanced Audio Coding.

² S/PDIF refers to the Sony/Philips Digital Interface.

³ HDMI refers to the High-Definition Multimedia Interface.

- 2.4 The relaxation of this requirement has no impact to consumers of multi-channel receivers as HE-AAC 5.1 will be trans-coded to AC-3⁴ or DTS⁵ for decoding by AV receiver that will be connected to the IRD.

Digital Audio Data Stream Output (S/PDIF)

- 2.5 HDMI Audio Return Channel (ARC) output has been included in § 4.3.3 and § 8.9 of Part A of the TS DVB-T2 IRD and § 5 of Part B of the TS DVB-T2 IRD to give clarity that the requirement for S/PDIF also applies to the HDMI ARC interface.

Audio Prioritising

- 2.6 It is noted that when the user preferred audio language selections do not match any languages that are available, DVB-T2 IRDs may develop their own algorithm and select the audio stream that best fit.
- 2.7 It is also noted that some IRDs/receivers implement Original Language (QAA) and/or Undefined (UND) in higher priority than Chinese (ZHO), Bahasa Melayu (MSA) and Tamil (TAM). For example, the receiver will select Korean as the default audio instead of Chinese when a programme on Channel U is offering a Second Audio stream in Korean signalled as Original Language.
- 2.8 Singapore's FTA broadcaster does not simulcast the stereo audio stream for the HD programmes which carries the main audio in multichannel audio format. IRDs which implement the audio prioritising rules like those of the Nordig requirements will not be able to present the expected audio default stream to the viewers. For example, if the FTA broadcaster transmits main audio in HE-AAC multi-channel stream (English track) and second audio in HE-AAC stereo (Japanese), and there is no matching audio language preferences, the stereo IRD (Nordig implementation) will present stereo stream (Japanese) as the default audio to viewer since it has higher priority over the multi-channel stream (English).
- 2.9 Taking into consideration of the above, the broadcaster proposes to add a new section to describe Audio Prioritising:

§ 4.3.8 of Part A of the TS DVB-T2 IRD

The DVB-T2 IRD shall apply audio prioritising in the following order:

- User preferred audio language selection
- First Audio appeared in the elementary stream loop of the Program Map Table (PMT) or the stream having the lowest PID value

If a service offers both multichannel and stereo audio, the DVB-T2 IRD shall continue to apply the priority as described above.

⁴ AC-3 refers to the Dolby Digital (5.1 Channel).

⁵ DTS refers to the Digital Theatre System.

If the DVB-T2 IRD supports prioritising based on On-Screen Display (OSD) language or country's default language, then the following audio prioritising applies:

- Audio streams signalled as English (ENG), Chinese (ZHO), Bahasa Melayu (MSA) and Tamil (TAM) shall have equal priorities.
- Audio streams signalled as English (ENG), Chinese (ZHO), Bahasa Melayu (MSA) and Tamil (TAM) shall have equal or higher priorities over the other languages defined in § 7.3 Multi-Language Support of Part A of the TS DVB-T2 IRD.

Logical Channel Descriptor (Version 2)

- 2.10 IDA/MDA has included the following text to § 6.6.2 of Part A of the TS DVB-T2 IRD to give clarity on the expected behaviour of the IRD if it does not offer any User Interface (UI) to select the Channel List described in LCNV2⁶.

When several Channel Lists are available from same network (original network id) and same country code for the IRD during first time installation (or complete re-installation), the receiver shall choose the channel list as the default one with following priority:

The IRD shall choose the one with lowest list_id value OR let the viewer choose from a list, (typically using the channel_list_name)

Multi-Language Support for EPG presentation

- 2.11 Broadcasters may offer Electronic Program Guide (EPG) data in multiple languages. IRDs/Receivers may adopt various methods to enable the selection of the EPG language. For example, a receiver may select the EPG language based on the setting of OSD's language, while another receiver may allow the user to toggle the languages when viewing the EPG presentation.

- 2.12 To give clarity on the multi-language support for EPG presentation, the following text is added to § 7.2.3 of Part A of the TS DVB-T2 IRD:

The DVB-T2 IRD shall support EPG presentation signalled with ENG, ZHO and MSA by offering a means to select the EPG language.

It is optional to support EPG presentation signalled with TAM.

When EPG data is offered in multiple languages, it is recommended that the DVB-T2 IRD provides an easy to use option to allow the user to select the language for EPG presentation.

When the user preferred language for EPG presentation does not match any languages that are available, the DVB-T2 IRD is recommended to select the

⁶ LCNV2 refers to the support of the Logical Channel Number (LCN) using descriptor with tag value 0x87 (Version 2).

language of the First EPG data (Short Event Descriptor) appeared in the descriptor loop of the of the Event Information Table (EIT).

It is recommended to allow the user to toggle the languages when viewing the EPG presentation.

Audio Signalling

- 2.13 Some programmes may offer multilingual audio channels, where one of the channels may contain the audio in the original or dubbed language. The existing TS DVB-T2 IRD has included the “Original Audio” language code. However, for some programmes, the second audio channel may contain the audio in a dubbed language. Thus, it is recommended to signal the second audio channel as “Second Audio”, regardless of whether the audio is in the “Original Audio” or “Dubbed Audio” to avoid confusion to viewers when the audio is in dubbed language.
- 2.14 In view of the above, IDA/MDA has revised § 7.3 of Part A of the TS DVB-T2 IRD to indicate the ISO 639 language codes “QAB” and “QAC” to give broadcasters the flexibility in adopting the appropriate signalling for the Second and the Third Audio, respectively.

§ 7.3 of Part A of the TS DVB-T2 IRD

The DVB-T2 IRD shall provide a mechanism for the selection of primary and secondary language options for both subtitles and audio selection. The receiver shall as a minimum, interpret the language codes outlined in the table below.

Language	ISO 639-3 Code
English	ENG
Chinese	ZHO
Bahasa Melayu	MSA
Tamil	TAM
Original Audio	QAA
Second Audio	QAB*
Third Audio	QAC*
Multiple Languages	MUL

Note:

- a) Original, Second and Third Audio are applicable for Audio only
- b) Multiple Languages is only applicable for Subtitle
- c) *Optional for IRDs that are launched before 2015

When the audio streams are not signalled with ISO 639 Language Descriptor, the DVB-T2 IRD shall continue to indicate the presence of the audio streams and provide a mechanism for the user to select such streams.

Addition or removal of service on a multiplex

- 2.15 IDA/MDA has revised § 9.6.2 of Part A of the TS DVB-T2 IRD to remove the description on EIT- present/following (p/f) as the processing of EIT p/f is not required for addition of a service. In addition, IDA/MDA had removed the description on the SDT⁷ (actual) to be transmitted at least every 2 sec as it is a transmission requirement.

Channel Zapping

- 2.16 To give flexibility to manufacturers in their deployment of video decoder chipsets, IDA/MDA has revised the channel zapping time between channels within the same multiplex to between 1.5 and 3 seconds in § 9.10 of Part A of the TS DVB-T2 IRD.

Audio Description (AD)

- 2.17 In view that the broadcaster has no immediate plan to implement audio description in receiver-mix mode, IDA/MDA has revised the requirement to support audio description in receiver-mix mode for multi-channel receiver as “Optional” in § 6 of Part B of the TS DVB-T2 IRD. Nevertheless, AD in Broadcast-mix mode shall be supported by both stereo and multi-channel receivers.
- 2.18 IDA/MDA has included the following text in Part B § 6 to give clarity on the method for transporting of the audio description between HE-AAC and DD+⁸:

The audio description service shall be provided as an associated service in a separate stream encoded with the same audio codec as used for the main program.

In case of the use of E-AC3⁹ as audio codec, the mixing data shall be included as part of the E-AC3 bit stream as defined in ETSI TS 102 366 Annex E [39] and the AD_descriptor defined in ETSI TS 101 154 Annex E.2 [1], if present, shall be ignored.

Classification Code Matrix

- 2.19 IDA/MDA has amended Annex C of the TS DVB-T2 IRD to indicate that “Where the broadcasted rating value is not classified (grey area), the DVB-T2 IRD shall interpret the rating to be the next higher classification. Example: If 0x05 is transmitted, it shall be treated as **0x0A** (PG13).”

⁷ SDT refers to the Service Description Table.

⁸ DD+ refers to the Dolby Digital Plus.

⁹ E-AC3 refers to the Enhanced AC3/Dolby Digital Plus.

3 REQUEST FOR COMMENTS

- 3.1 MDA and IDA hereby invite interested parties to submit comments regarding the proposed revision to the Technical Specification. Respondents must identify the specific areas of the Technical Specification on which they are commenting, and provide an explanation of the reasons for the proposed changes.
- 3.2 A lead time of 6 months is usually given for implementation of a revised Technical Specification for the purpose of equipment compliance. Respondents may wish to provide feedback on the required timeline before this revised Technical Specification should be in force.
- 3.3 MDA and IDA invite the submission of comments regarding the proposed changes for the DVB-T2 basic IRD-T2 in the following format:
- a) A cover page (including information specified below);
 - b) Table of contents;
 - c) Summary of major points;
 - d) Statement of interest;
 - e) Comments and
 - f) Conclusion.
- 3.4 Supporting material may be placed in an annex. All comments should be clearly and concisely written, and should provide a reasoned explanation for any propositions. Where feasible, parties should identify the specific proposal on which they are commenting.
- 3.5 All views and comments should be submitted in writing and sent to MDA and IDA, in soft copy (in Microsoft Word or Adobe Acrobat format). The submissions must reach MDA and IDA by **12 noon, 14 April 2014**. Respondents are required to include personal/company particulars as well as correspondence addresses in their submissions to this Consultation. The submission should be addressed to:

1. Ms Ling Pek Ling
Director (Digital Broadcasting
Deployment Office)
Media Development Authority of
Singapore
3 Fusionopolis Way
16-22 Symbiosis
Singapore 138633

Attention: Ms Agnes Chong
Email: agnes_chong@mda.gov.sg

2. Mr Raymond Lee
Director (Resource Management
and Standards)
Infocomm Development Authority
of Singapore
10 Pasir Panjang Road
#10-01 Mapletree Business City
Singapore 117438

Attention: Ms Woo Yim Leng
Email: eqptregn@ida.gov.sg

MDA and IDA reserve the right to make public all or parts of any written comment and to disclose the identity of the source. Commenting parties may

request confidential treatment for any part of the comment that the commenting party believes to be proprietary, confidential or commercially sensitive. Any such information should be clearly marked and placed in a separate annex. If MDA and IDA grant the request for confidential treatment, it will consider, but it will not publicly disclose, the information. If MDA and IDA reject the request for confidential treatment, it will return the information to the commenting party and will not consider the information as part of its review. As far as possible, commenting parties should limit any request for confidential treatment of information submitted. MDA and IDA will not accept any comment that requests for confidential treatment of all or a substantial part of the comment.

- END-