

TECHNICAL CODE

MIDDLEWARE PROFILE FOR DIGITAL TERRESTRIAL TELEVISION BROADCAST SERVICE

Developed by



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DEVELOPMENT OF TECHNICAL CODES

The Communications and Multimedia Act 1998 ('the Act') provides for Technical Standards Forum designated under section 184 of the Act or the Malaysian Communications and Multimedia Commission ('the Commission') to prepare a technical code. The technical code prepared pursuant to section 185 of the Act shall consist of, at least, the requirement for network interoperability and the promotion of safety of network facilities.

Section 96 of the Act also provides for the Commission to determine a technical code in accordance with section 55 of the Act if the technical code is not developed under an applicable provision of the Act and it is unlikely to be developed by the Technical Standards Forum within a reasonable time.

In exercise of the power conferred by section 184 of the Act, the Commission has designated the Malaysian Technical Standards Forum Bhd ('MTSFB') as a Technical Standards Forum which is obligated, among others, to prepare the technical code under section 185 of the Act.

A technical code prepared in accordance with section 185 shall not be effective until it is registered by the Commission pursuant to section 95 of the Act.

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Committee Representation

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FOREWORD

This technical code for the Middleware Profile for Digital Terrestrial Television Broadcast Service ('this Technical Code') was developed pursuant to section 185 of the Act 588 by the Malaysian Technical Standard Forum Berhad ('MTSFB') via its Multimedia Terminal Working Group.

This Technical Code shall continue to be valid and effective until reviewed or cancelled.

**MIDDLEWARE PROFILE FOR DIGITAL TERRESTRIAL TELEVISION
BROADCAST SERVICE**

Introduction

This profile outlines the minimum Broadcast Middleware requirements for Malaysia. The middleware outlined here is based on Hybrid Broadcast Broadband TV (HbbTV) consortiums hybrid platform based on open internet standards.

The purpose of this document is to profile the minimum requirements needed for a compliant receiver for Malaysian Digital Broadcast.

1. Scope

This document outlines the HbbTV profile for any Malaysian Digital Broadcast including and not limited to Terrestrial free to Air Set Top Box receivers, Integrated Digital Television or Personal Video Recorders.

1.1 Glossary

DTT	Digital Terrestrial Television
DVB	Digital Video Broadcast organization
DVB-CI	DVB-Common Interface
DVB-T	DVB-Terrestrial
DVB-T2	DVB-Terrestrial T2
EPG	Electronic Programme Guide
EIT	Event Information Table
FTA	Free to Air
HDCP	High-Bandwidth Digital Content Protection
HDMI	High-Definition Multimedia Interface
HDTV	High Definition Television
IRD	Integrated Receiver Decoder
IDTVs	Integrated Digital Televisions
May	Indicates an event or provision which is permitted, but not mandatory
MPEG	Moving Pictures Expert Group
Must	Indicates that a third party must comply to ensure correct operation (present tense) Indicates an existing provision
OSD	Onscreen Display
(Opt)	Optional
(Req)	Requirement
RF	Radio Frequency
SD	Standard Definition
SDTV	Standard Definition Television
SI	Service Information
S/PDIF	Sony/Philips Digital Interface

STB	Set-Top-Box, which is equivalent to a digital Terrestrial receiver
Shall	Indicates a mandatory provision
Should	Indicates a desirable, but not mandatory, provision
(TS)	Transport Stream: A data structure defined in ISO/IEC 13818-1
UHF	Ultra-High Frequency
Will	Indicates an assumption about existing states or future events

2. References

- [1] ETSI TS 102 796 V1.1.1 (2010-06) Hybrid Broadcast Broadband TV
- [2] HbbTV Specification 1.5 (Dated: 2012-3-16)
- [3] ISO/IEC 23009-1: Information Technology – Dynamic Adaptive Streaming over HTTP (DASH) – Part 1: Media Presentation Description and Segment Formats.
- [4] ISO/IEC 23009-2: Conformance and reference software for DASH
- [5] ISO/IEC 23009-3: Implementation Guidelines for DASH
- [6] ISO/IEC 23001-7 Information Technology – MPEG System Technologies – Part 7 : Common Encryption in ISO Base media file format files. (Previously was annex I of [7])
- [7] ISO/IEC 14496-12 ISO Base Media File Format.
- [8] Marlin Developer Community, Marlin – Simple Secure Streaming Specification, Version 1.0

3. Overview

This document states the Malaysian HbbTV requirements for a compliant receiver for the Malaysian Digital Broadcast market.

4. Requirement

4.1 Baseline Requirement

The receiver shall fully implement all the mandatory requirements outlined in [1] and [2].

4.2 Optional Requirements

The following features outlined in [1] shall be optional for the Malaysian Profile.

1. PVR Extensions
2. CI+ Extensions
3. Download Extensions
4. RTSP Extensions

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4.3 Extensions

The receiver shall support the features listed in this section as outlined in [2].

4.3.1 Adaptive Streaming

The receiver shall support MPEG DASH [3] as profiled in Annex B of [2].

4.3.2 Media Encryption and File Format

The receiver shall support Common Encryption [6] for ISO BMFF [7] with the requirements outlined by Annex C of [2].

4.3.3 OIPF DAE Profile

The receiver shall support all items profiled in Annex A of [2].

4.4 Recording

The following rules shall be followed when a recording is made.

1. Broadcast application shall not be recorded.
2. Background application (Live Application) shall be closed and exited before playback is started.
3. HbbTV Broadband content shall not be recorded.

4.5 Digital Rights Management

The receiver shall implement Marlin Simple Secure Streaming (MS3) as outlined in [8]. This includes the requirement to comply with the robustness rules set out by the vendor of the DRM.

DRM protected content shall use ISO BMFF [7] and Common Encryption [6].

Acknowledgements

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