



Hybrid Broadcast Broadband TV; Targeted Advertising; Part 2: Non-functional requirements

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Contents

Intellectual Property Rights	4
Foreword.....	4
Modal verbs terminology.....	4
Introduction	5
1 Scope	6
2 References	6
2.1 Normative references	6
2.2 Informative references.....	6
3 Definition of terms, symbols and abbreviations.....	6
3.1 Terms.....	6
3.2 Symbols.....	6
3.3 Abbreviations	6
4 Minimum support for preloading an advert into RAM	7
5 Switch durations and accuracies.....	7
5.1 General	7
5.2 Limitations and restrictions	7
5.2.1 Testing considerations	7
5.2.2 Exclusions.....	7
5.3 Switch duration and accuracy performance profiles.....	8
5.3.1 Introduction.....	8
5.3.2 Profile 1 - Supporting replacing only the last advert(s) in a break.....	8
5.3.3 Profile 2 - Supporting replacing ads in the middle of a break.....	9
History	10

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Foreword

This Technical Specification (TS) has been produced by Joint Technical Committee (JTC) Broadcast of the European Broadcasting Union (EBU), Comité Européen de Normalisation ELECTrotechnique (CENELEC) and the European Telecommunications Standards Institute (ETSI).

NOTE: The EBU/ETSI JTC Broadcast was established in 1990 to co-ordinate the drafting of standards in the specific field of broadcasting and related fields. Since 1995 the JTC Broadcast became a tripartite body by including in the Memorandum of Understanding also CENELEC, which is responsible for the standardization of radio and television receivers. The EBU is a professional association of broadcasting organizations whose work includes the co-ordination of its members' activities in the technical, legal, programme-making and programme-exchange domains. The EBU has active members in about 60 countries in the European broadcasting area; its headquarters is in Geneva.

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The present document is part 2 of a multi-part deliverable. Full details of the entire series can be found in part 1 [1].

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

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Introduction

HbbTV[®] targeted advertising enables the delivery of digital video adverts over broadband that replace part of a linear TV service received by terminals via DVB-T(2)/C(2)/S(2) and perhaps IPTV when using MPEG-2 transport streams. Thereby, digital video adverts are shown on targeted terminals instead of the original broadcast adverts which will be seen by viewers on all non-targeted terminals. Non-commercial use cases are possible using HbbTV[®] targeted advertising (e.g. long form non-commercial substitution content can be presented to viewers).

The HbbTV[®] specification for targeted advertising is split in two parts. ETSI TS 103 736-1 [1] contains the functional requirements. The present document, ETSI TS 103 736-2, contains the non-functional requirements including ones relating to memory sizes and performance.

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1 Scope

The present document contains non-functional requirements for the replacement of advertisements in the broadcast with ones targeted at the consumer that accompany the functional requirements in ETSI TS 103 736-1[1]. The requirements in the present document apply to terminals.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <https://docbox.etsi.org/Reference>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

- [1] ETSI TS 103 736-1: "Hybrid Broadcast Broadband TV; Targeted Advertising; Part 1: Functional requirements".
- [2] ETSI TS 102 796: "Hybrid Broadcast Broadband TV".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

Not applicable.

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ETSI TS 103 736-1 [1] apply.

3.2 Symbols

For the purposes of the present document, the symbols given in ETSI TS 103 736-1 [1] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI TS 103 736-1 [1] apply.

4 Minimum support for preloading an advert into RAM

The parameters of an advert which a terminal shall be able to preload into RAM (see clause 10.1.3 of ETSI TS 103 736-1 [1]) are as follows:

- Duration 30 s
- HD AVC video at 8 MBit/s
- HE-AAC audio at 128 kBit/s

5 Switch durations and accuracies

5.1 General

The present document defines minimum performance requirements for duration and accuracy when switching from broadcast content to broadband content and vice-versa (see clause 4 of ETSI TS 103 736-1 [1]). Two different performance profiles are distinguished and corresponding profile attributes are defined in order to enable a DAS app to determine which profile (i.e. which performance requirements) is implemented by a terminal.

The performance requirements in the present document are intended to offer a better user experience than can be achieved by applications using the standard features of ETSI TS 102 796 [2] - e.g. for a broadcast to broadband switch, calling the `stop` method on a video/broadcast object, waiting for the state change to complete and then calling `play` on an HTML5 video element. Effort implementing the fast media switch API without offering such a better user experience is likely wasted.

5.2 Limitations and restrictions

5.2.1 Testing considerations

Testing of the requirements in the present document shall be done in accordance with the testing consideration requirements defined in clause 9.3.5 of ETSI TS 103 736-1 [1].

5.2.2 Exclusions

The performance requirements in the present document do not apply under the following circumstances:

- When switching to or from UHD broadcast video or UHD adverts. Terminals that support UHD broadcasts (see clause 7.3.1.3 of ETSI TS 102 796 [2]), shall support switching to and from UHD broadcast video (see clause 10.2.2 of ETSI TS 103 736-1 [1]) but the switch duration and accuracy are outside the scope of the present document. The video and audio decoder used for `originalMediaObject` may be re-used for `newMediaObject` which may result in a transition taking more than 0,5 s.

NOTE: Some terminals have hardware that is capable of decoding two full HD video streams but which is not capable of decoding two UHD video streams. Omitting UHD video from the requirements in the present document removes a barrier to such hardware being used as the basis of an implementation of profile 2 (see clause 5.3.3).

- When switching to an advert protected by a DRM system.
- When switching between an HDR broadcast and an SDR advert and back again. Terminals that support HDR broadcasts (see clause 7.3.1.3 of ETSI TS 102 796 [2]), shall support switching from HDR broadcast video (see clause 10.2.2 of ETSI TS 103 736-1 [1]) to SDR adverts and back but the switch duration and accuracy are outside the scope of the present document.

5.3 Switch duration and accuracy performance profiles

5.3.1 Introduction

Based on the considerations in clause 5.2 of ETSI TS 103 736-1 [1], the present document defines two profiles for switch duration and accuracy performance:

- Profile 2 is defined for terminals that can switch fast enough to replace one or more consecutive adverts in the middle of an ad break. Such terminals are also able to switch fast enough to replace one or more adverts at the end of a break.

NOTE 1: It is expected that terminals supporting decoding of more than one full HD video stream and more than one audio stream simultaneously will be capable of meeting the requirements of profile 2.

- Profile 1 is defined for terminals that can switch fast enough to replace one or more consecutive adverts at the end of a break but cannot switch fast enough to replace an advert in the middle of a break.

NOTE 2: While different broadcasters have different constraints, a longer gap (landing period) is believed to be more acceptable at the end of an advert break than in the middle of one. This makes switching back to the broadcast content easier, as the switch can be less precise and take longer.

NOTE 3: It is expected that some terminals that support decoding only one video and one audio stream at one time may be able to meet the requirements of profile 1 but only with significant optimization by the silicon provider.

NOTE 4: Consecutive adverts above means ones that are concatenated before being passed to the terminal implementation. This concatenation could be in the network so that the terminal just receives a single media file. Alternatively, this concatenation could be in the terminal by an application that appends the video and audio data of each advert to the corresponding MSE SourceBuffer after the end of the data of the previous advert.

5.3.2 Profile 1 - Supporting replacing only the last advert(s) in a break

Terminals supporting profile 1 (and not profile 2) shall meet the following requirements:

- broadcast-to-broadband accuracy limit (see clause 4.2.3 of ETSI TS 103 736-1 [1]) of:
 - $A1 \leq 40$ ms
- broadcast-to-broadband duration (see clause 4.2.4 of ETSI TS 103 736-1 [1]) where:
 - $D1_{min} = 0$
 - $D1_{max} = 240$ ms
- broadband-to-broadcast accuracy limit (see clause 4.2.5 of ETSI TS 103 736-1 [1]) of:
 - $A2 \leq 40$ ms
- broadband-to-broadcast duration (see clause 4.2.6 of ETSI TS 103 736-1 [1]) where:
 - $D2_{min} = 0$
 - $D2_{max} = 240$ ms

NOTE: These requirements are based on a landing period of 0,5 s to 0,6 s in addition to a GOP length of 1,5 s. Such a landing period is believed to be more acceptable at the end of an advert break than in the middle of one.

The requirements for "terminals with only a single video decoder and a single audio decoder" in clause 10.4 of ETSI TS 103 736-1 [1] shall apply.

Terminals meeting the requirements of profile 1 (including those also meeting the requirements of profile 2) shall include a `profile` element containing the URN "urn:hbbtv:ta:profile:2019:1" as a child of the `ta` element in the XML capabilities (see clause 10.4.1 of ETSI TS 103 736-1 [1]). Terminals not meeting the requirements of profile 1 shall not include such a `profile` element in the XML capabilities. The same URN shall be used for references to this profile in the `minimumSwitchPerformanceRequired` argument to the `switchMediaPresentation` method.

5.3.3 Profile 2 - Supporting replacing ads in the middle of a break

Terminals supporting profile 2 shall meet the following requirements:

- broadcast-to-broadband accuracy limit (see clause 4.2.3 of ETSI TS 103 736-1 [1]) of:
 - $A1 \leq 40$ ms
- broadcast-to-broadband duration (see clause 4.2.4 of ETSI TS 103 736-1 [1]) where:
 - $D1_{min} = 0$
 - $D1_{max} = 120$ ms
- broadband-to-broadcast accuracy limit (see clause 4.2.5 of ETSI TS 103 736-1 [1]) of:
 - $A2 \leq 40$ ms
- broadband-to-broadcast duration (see clause 4.2.6 of ETSI TS 103 736-1 [1]) where:
 - $D2_{min} = 0$
 - $D2_{max} = 120$ ms

NOTE 1: These requirements are based on a landing period of 4 frames (at 25 Hz) between each ad. This may be because a broadcaster inserts some black frames between individual ads. Alternatively it may be technically and commercially possible to omit the first and last frames of some adverts.

The requirements for "terminals with more than one video decoder and more than one audio decoder" in clause 10.4 of ETSI TS 103 736-1 [1] shall apply.

Terminals meeting the requirements of profile 2 shall include a `profile` element containing the URN "urn:hbbtv:ta:profile:2019:2" as a child of the `ta` element in the XML capabilities (see clause 10.4.1 of ETSI TS 103 736-1 [1]). Terminals not meeting the requirements of profile 2 shall not include such a `profile` element in the XML capabilities. The same URN shall be used for references to this profile in the `minimumSwitchPerformanceRequired` argument to the `switchMediaPresentation` method.

NOTE 2: Other requirements for profile 2 mean that the `broadcastTimelineMonitoring` and `maintainBroadcasttStateWhilePlayingBroadband` attributes in the `ta` element are required to be true.