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Technical Specification

Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 10: CPCM Acquisition, Consumption and Export Mappings

European Broadcasting Union



Union Européenne de Radio-Télévision



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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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Founded in September 1993, the DVB Project is a market-led consortium of public and private sector organizations in the television industry. Its aim is to establish the framework for the introduction of MPEG-2 based digital television services. Now comprising over 200 organizations from more than 25 countries around the world, DVB fosters market-led systems, which meet the real needs, and economic circumstances, of the consumer electronics and the broadcast industry.

The present document is part 10 of a multi-part deliverable. Full details of the entire series can be found in part 1 [i.3].

Introduction

CPCM is a system for Content Protection and Copy Management of commercial digital content delivered to consumer products. CPCM manages content usage from acquisition into the CPCM system until final Consumption, or Export from the CPCM system, in accordance with the particular usage rules of that content. Possible sources for commercial digital content include broadcast (e.g. cable, satellite, and terrestrial), Internet-based services, packaged media, and mobile services, among others. CPCM is intended for use in protecting all types of content - audio, video and associated applications and data. CPCM specifications facilitate interoperability of such content after acquisition into CPCM by networked consumer devices for both home networking and remote access.

TS 102 825-1 [i.3], TS 102 825-4 [i.5], TS 102 825-5 [i.6], TS 102 825-6 [i.7] and TS 102 825-9 [i.8] addresses CPCM for digital Content encoded and transported by linear transport systems in accordance with TS 101 154 [i.1]. A later second phase will address CPCM for Content encoded and transported by systems that are based upon Internet Protocols in accordance with TS 102 005 [i.2].

1 Scope

The present document contains normative mappings between Digital Video Broadcasting (DVB) Free-To-Air Control Signalling and Content Protection and Copy Management (CPCM) Usage State Information (USI) and from CPCM to external content protection systems.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
 - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
 - for informative references.

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For online referenced documents, information sufficient to identify and locate the source shall be provided. Preferably, the primary source of the referenced document should be cited, in order to ensure traceability. Furthermore, the reference should, as far as possible, remain valid for the expected life of the document. The reference shall include the method of access to the referenced document and the full network address, with the same punctuation and use of upper case and lower case letters.

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

2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

- | | |
|-----|---|
| [1] | ETSI EN 300 468: "Digital Video Broadcasting (DVB); Specification for Service Information (SI) in DVB systems". |
| [2] | CEA-608-C (August 2005): "Line 21 Data Service". |
| [3] | CEA-805-B (August 2005): "Data Services on the Component Video Interfaces". |
| [4] | ETSI EN 300 294 (V1.4.1): "Television Systems; 625-line television Wide Screen Signalling (WSS)". |
| [5] | IEC 61880 (1998-01): "Video systems (525/60) - Video and accompanied data using the vertical blanking interval - Analogue interface". |
| [6] | IEC 62375 (2004-02): "Video systems (625/50 progressive) - Video and accompanied data using the vertical blanking interval - Analogue interface". |

2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

- [i.1] ETSI TS 101 154: "Digital Video Broadcasting (DVB); Specification for the use of Video and Audio Coding in Broadcasting Applications based on the MPEG-2 Transport Stream".
- [i.2] ETSI TS 102 005: "Digital Video Broadcasting (DVB); Specification for the use of Video and Audio Coding in DVB services delivered directly over IP protocols".
- [i.3] ETSI TS 102 825-1: "Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 1: CPCM Abbreviations, Definitions and Terms".
- [i.4] ETSI TS 102 825-3: "Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 3: CPCM Usage State Information".
- [i.5] ETSI TS 102 825-4: "Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 4: CPCM System Specification".
- [i.6] ETSI TS 102 825-5: "Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 5: CPCM Security Toolbox".
- [i.7] ETSI TS 102 825-6: "Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 6: CPCM Security Test Vectors".
- [i.8] ETSI TS 102 825-9: "Digital Video Broadcasting (DVB); Content Protection and Copy Management (DVB-CPCM); Part 9: CPCM System Adaptation Layers".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TS 102 825-1 [i.3] apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TS 102 825-1 [i.3] and the following apply:

CGMS-A Copy Generation Management System on Analogue video interface

NOTE: Please see EN 300 294 [4], IEC 61880 [5] and IEC 62375 [6].

4 Introduction

The CPCM System provides an interoperability platform and common trusted destination for commercial content in the consumer environment, so it is natural that CPCM should be open to being mapped to, and from, any other suitable content delivery system, content protection system or secure content storage format.

Such mappings may be specified either as an open standard, or as part of a mutual agreement between a CPCM deployment or C&R regime, and the regime for the other system to, or from which CPCM is mapped.

5 Acquisition mappings

5.1 General

As described in TS 102 825-3 [i.4], when Content first enters the DVB CPCM system, at a particular Acquisition Point, the Authorized Usage of that Content shall be determined and then preserved by securely binding it as USI and Auxiliary Data to the Content.

Content that may be Acquired into DVB CPCM should include input usage rights signalling that can be used by a user interface or other controlling function in a consumer product that contains a CPCM Instance to initiate various operations.

5.2 DVB Defined Signalling

The present document includes two sets of input usage rights signalling, defined in EN 300 468 [1], and defines their mappings to CPCM be it for user interface or Usage Rule mapping purposes.

- CPCM Delivery Signalling.
 - This signalling is informative and is not used to determine the CPCM USI during Acquisition unless required by a C&R regime.
- Free-To-Air Control Signalling.
 - This signalling is normative and when present shall always be used to define the CPCM USI during Acquisition.

NOTE 1: Both sets of signalling can be carried in DVB-SI in the clear. In some broadcast networks, the architecture of the network, the regulatory environment and the controls on access to the network may be deemed sufficient to allow the signalling to be trusted for the purpose of Usage Rule mapping.

NOTE 2: The original input usage rights signalling may also remain securely bound to the Acquired CPCM Content as Auxiliary Data for potential use in downstream systems.

The mapping of CPCM Delivery Signalling or Free-To-Air Control Signalling to content protection systems other than CPCM is out of the scope of the present document.

5.3 CPCM Delivery Signalling

The CPCM Delivery Signalling in EN 300 468 [1] provides a set of input usage rights signals that is, with the exception of the temporal Remote Access Rules, a one-to-one match for internal CPCM USI fields. For the avoidance of doubt, the internal CPCM USI may not match this CPCM Delivery Signalling since the CPCM USI is determined upon Acquisition. However, this information is expected to be useful in various operations of products that contain CPCM Instances.

The CPCM Delivery Signalling includes a `remote_access_delay_flag` and a corresponding 16-bit `remote_access_delay` field that is expressed as the number of 15-minute intervals after Acquisition before such Acquired CPCM Content may be remotely accessed.

The internal representation of CPCM USI includes a `remote_access_date_moving_window_flag`.

Both the internal and the CPCM Delivery Signalling representations include a `remote_access_date_immediate_flag` and a 40-bit `remote_access_date` field. In the CPCM Delivery Signalling the `remote_access_date` field is only associated with the `remote_access_date_immediate_flag`. In the internal CPCM USI, the `remote_access_date` field may be associated with either the moving window or the date immediate as described below.

Upon Acquisition, the Acquisition Point is responsible for determining the appropriate internal CPCM USI representation from the CPCM Delivery Signalling, or similar secure normative signalling. There are two possible types of temporally delayed remote access. Either a moving window, e.g. 24 hours after Acquisition on a minute by minute basis, or on a bulk, immediate basis, e.g. 24 hours after Acquisition of the entire Content Item, e.g. a 6 hour cricket match, being available simultaneously. Note that in this case remote access to the beginning of the cricket match would be delayed for 24 hours and the end would only be delayed for 18 hours.

Upon receipt of CPCM Delivery Signalling, if only the `remote_access_date_immediate_flag` is asserted, then the Acquisition Point shall perform a one-to-one mapping between the `remote_access_date_immediate_flag` and the `remote_access_date` to the same fields within DVB CPCM. Likewise, if only the `remote_access_delay_flag` is asserted, then the Acquisition Point should do a one-to-one mapping between the `remote_access_delay_flag` and the `remote_access_delay` to the `remote_access_moving_window_flag` and the `remote_access_date` fields within DVB CPCM.

If both types of temporal delay are asserted in the Remote Access Rule, then the Acquisition Point, based upon incoming CPCM Delivery Signalling, has the ability to know whether the moving window based restriction derived from the `remote_access_delay` or the immediate time based restriction would be more permissive. The more permissive USI shall be used to determine if remote access is allowed.

If the `remote_access_delay` yields a more permissive result, then the `remote_access_moving_window_flag` shall be asserted and the `remote_access_date` field shall be set to the time of Acquisition plus the time value represented by the 16-bit `remote_access_delay` field.

If the `remote_access_date_immediate` yields a more permissive result, then the `remote_access_date_immediate_flag` internal to the CPCM USI shall be asserted and the `remote_access_date` field shall be set to the `remote_access_date` field of the incoming CPCM Delivery Signalling associated with `remote_access_date_immediate_flag`.

If both the `remote_access_date_immediate_flag` and the `remote_access_moving_window_flag` are asserted in the internal CPCM USI then the `remote_access_date` field shall be associated with the `remote_access_date_immediate_flag` since that usage is the most permissive.

It is possible for the most permissive usage rule to transition from 'moving window' to 'date immediate' during the course of a particular Content Item.

EXAMPLE: If the program was broadcast from 12 noon to 2 pm with a moving window delay of 30 minutes and a date immediate remote access time of 1 pm that same day. At 12:30 pm a moving window with a 30 minute delay would be available remotely. Then at 1 pm, the entire program would be available as received, including the 30 minute buffer that had yet to be available. The Acquisition Point in this case would issue the first Content License with the `remote_access_moving_window_flag` asserted and the `remote_access_date` field set to 12:30 that day. At 1 pm the AP could re-issue a new Content License for that Content Item that had the `remote_access_date_immediate_flag` asserted and the `remote_access_date` field set to 1:00 pm that day.

Thus, the Acquisition Point is responsible for determining which mode of remote access is most permissive at each point in time and issuing an appropriate Content License to support that usage.

5.4 Acquisition mapping of DVB Free-To-Air broadcast signalling to CPCM USI

5.4.1 General

The following normative section describes how compliant DVB CPCM implementations shall Acquire incoming Free-To-Air (FTA) broadcast signals that include DVB-defined FTA usage signalling defined in EN 300 468 [1] including the mapping of such signalling to CPCM Usage State Information as defined in TS 102 825-3 [i.4]. Free-To-Air includes both unencrypted and encrypted broadcast signals commonly called Clear-To-Air and Free-To-View, respectively.

5.4.2 DVB FTA receivers/Acquisition Points

DVB CPCM implementations receiving DVB FTA broadcasts shall inspect them for the DVB-defined FTA usage signalling defined in EN 300 468 [1] and, if present, shall Acquire such Content into CPCM using the mapping defined herein.

In the absence of any signalling, DVB FTA broadcast content shall not be Acquired into CPCM, and is therefore not subject to CPCM usage restrictions.

5.4.3 DVB FTA broadcast signalling

The DVB-SI (EN 300 468 [1]) defines a generic signalling mechanism for Free-to-Air broadcasts, which provides generic content protection information. This clause describes the normative interpretation of these generic signals to the specific DVB-CPCM environment, and table 1 precisely defines the specific mapping into CPCM USI.

For DVB-CPCM purposes, the FTA usage signalling defined in EN 300 468 [1] shall be interpreted as follows.

- a) `control_remote_access_over_internet`: This is a 2-bit field that is used to prevent unauthorized redistribution of the content over the Internet and other similar transmission networks:
 - If `control_remote_access_over_internet` is set to '0' then remote access over the Internet and other similar transmission networks is enabled.
 - If `control_remote_access_over_internet` is set to '1' then remote access from within an Authorized Domain is permitted upon reception, but no other redistribution over the Internet or other similar transmission networks beyond the local environment is allowed.
 - If `control_remote_access_over_internet` is set to '2' then remote access from within an Authorized Domain is permitted once 24 hours have elapsed after reception, but no other redistribution over the Internet or other similar transmission networks beyond the local environment is allowed.
 - If `control_remote_access_over_internet` is set to '3' then remote access from within an Authorized Domain is not permitted, i.e. usage is restricted to the local environment, unless otherwise specified by a C&R regime, and no other redistribution over the Internet or other similar transmission networks beyond the local environment is allowed.
- b) `do_not_scramble`: This is a 1-bit field that indicates whether or not to apply scrambling of the content item for the purposes of content protection after reception:
 - If `do_not_scramble` is set to '1' then scrambling shall not be applied for the purposes of content protection.
 - If `do_not_scramble` is set to '0' then scrambling shall be applied where applicable for content protection.
 - The specification of 'where applicable' is not defined in EN 300 468 [1] but is defined within the CPCM specification by virtue of this mapping.
- c) `do_not_apply_revocation`: This 1-bit field indicates whether or not to apply the content revocation process to the content item. This signal does not map to CPCM USI and instead shall be interpreted at the system level in the following way:
 - If `do_not_apply_revocation` is set to '1' then the content revocation process shall not be applied. The `RL_index` field in the Content Licence shall be set to 0 for each C&R regime.
 - If `do_not_apply_revocation` is set to '0' then the content revocation process shall be applied.
 - The specification of 'content revocation process' is not defined in EN 300 468 [1] but is defined within the CPCM specification by virtue of this mapping.

The detailed expression of the above is contained in table 1 and associated notes.

5.4.4 Mapping to CPCM USI

CPCM Acquisition Points shall use the following mapping for FTA broadcast signalling to CPCM USI.

Column '3' shows default values that may be superseded by a C&R regime.

Table 1: DVB FTA USI mapping

USI field	"control_remote_access_over_internet"				Comment
	'0'	'1'	'2'	'3'	
Copy and Movement Control					
<i>Copy Control Information (CCI)</i>	CCNA				No numeric restriction; copying is always allowed.
Consumption Control					
<i>Viewable (V)</i>	1				Consumption always enabled.
<i>View Window</i>					
<i>View Window Activated (VWA)</i>	0				No absolute time viewing constraints.
<i>View Period</i>					
<i>View Period Activated (VPA)</i>	0				No relative time viewing constraints.
<i>Simultaneous View Count</i>					
<i>Simultaneous_View_Count_Activated (SVCA)</i>	0				No simultaneous view count restrictions.
Propagation Control					
<i>Movement and Copying Propagation Information</i>	MCPCM	MAD	MLAD		No geographic limitation by CPCM but subject to national laws and practices.
<i>Viewing Propagation Information</i>	VCPCM	VAD	VLAD		No geographic limitation by CPCM but subject to national laws and practices.
Transition from "LAD Usage" to "AD Usage"					
<i>remote_access_date_moving_window_flag</i>	N/A		1	0	Transitions from local-only usage to allow remote access 24 hours after Acquisition within AD (i.e. 24 hours after broadcast), labelled "Acquisition + 24 hours".
<i>remote_access_record_flag</i>	N/A	0			This remote access condition is not used.
<i>remote_access_date_immediate_flag</i>	N/A		0	1	Remote access within AD is not permitted i.e. restricted to the local environment, unless otherwise specified by a C&R regime.
<i>remote_access_date</i>	N/A	Tacquisition + 24 hours	FFFF235959		This field signals either the moving window or the date immediate remote access conditions and is set as shown.
Proximity-based Propagation Control					
<i>Local Movement and Copying Enabled (MLocal)</i>	1				Allows local movement and copying.

USI field	"control_remote_access_over_internet"				Comment
	'0'	'1'	'2'	'3'	
Local Viewing Enabled (VLocal)	1				Allows local viewing.
Output Control					
Controlled Export/Output					
Export/Output Control to Controlled CPS	1				Output to Controlled Content Protection system CPS allowed; in addition to the output to Trusted CPSs inherent to CPCM. This, in total, ensures outputs to all CPSs with which CPCM has a trust relationship.
Controlled_CPS_Vector	vector				Vector should include a '1' for each Controlled CPS. Full details will be defined in the C&R regime(s).
Untrusted Export	1	0			If control_remote_access_over_internet is '0', then untrusted Export is allowed.
Disable_Analogue_SD_Export	0				Legacy VCRs,... are supported.
Disable_Analogue_SD_Consumption	0				Legacy displays,... are supported.
Disable_Analogue_HD_Export	0				Legacy HD devices,... are supported.
Disable_Analogue_HD_Consumption	0				Legacy HD displays,... are supported.
Image_Constraint	0				No image constraint, i.e. down resolution processing, will be applied.
Ancillary Control					
Do Not CPCM Scramble (DNCS)	DNS				Maps exactly to FTA signalling "do not scramble" (DNS).

The do_not_apply_revocation (DNAR) field of the FTA signalling maps to the RL_index_list field(s) within the Content License. If the DNAR field is '1', then the RL_index_list field for each applicable C&R regime shall be set to '0'. Otherwise, the RL_index_list field(s) shall be set in accordance with TS 102 825-4 [i.5].

6 Consumption and Export mappings

6.1 General

In general, CPCM USI and Auxiliary Data should be retained, to the extent possible, on all Outputs from the CPCM System, including analogue outputs and digital Consumption and Export Outputs to Trusted CPSs.

6.2 Digital outputs

The mapping of CPCM USI and Auxiliary Data shall be conducted in accordance with rules set forth in the C&R regime. Note that the original signalling used to generate the USI that is retained within the Auxiliary Data may be used in addition to the CPCM USI to ensure the best possible mapping.

All Revocation Lists for CPCM and similar files for other Trusted CPSs shall be passed along to all digital outputs capable of handling the respective formats of such files and lists. Such lists are sometimes referred to as System Renewability Messages and Certificate Revocation Lists by other CPSs. Note that some Consumption Outputs are expected not to be capable of handling the respective formats of such files and lists since they are, in and of themselves, the termination points of the data. Since they are termination points subsequent Export to a different CPS is impossible and revocation for those other CPSs becomes irrelevant.

6.3 Analogue outputs

6.3.1 General

Analogue Outputs shall only be permitted in accordance with rules set forth by the C&R regime and further under control of the CPCM Output Control USI defined in TS 102 825-3 [i.4], which includes:

- `disable_analogue_SD_export.`
- `disable_analogue_SD_consumption.`
- `disable_analogue_HD_export.`
- `disable_analogue_HD_consumption.`
- `image_constraint.`

Output mappings and tools that facilitate the ability to distinguish between Export and Consumption will be defined by the C&R regime. They may include, for example, the use of certain copy protection technologies on analogue outputs that are intended for Consumption only and not general Export.

For the following analogue outputs that may be allowed by the C&R regime and Output Control USI, standardized vertical blanking interval signalling exists to convey copy control information and in some cases redistribution control information. If such analogue outputs are allowed, then the standard as listed and mapped below shall be used.

Mappings for the following standard definition analogue video outputs are specified below: 525i, 525p, 625i and 625p analogue outputs and further, only those variations of those standard definition analogue outputs specifically described below. These outputs may be further constrained by the C&R regime.

Mappings for the following high definition analogue video outputs are specified below: 720p 60 Hz and 1 080i 60 Hz analogue outputs and further only those variations of those standard definition analogue outputs specifically described below. For the purposes of the present document, the reference to 60 Hz includes 59,94 Hz options. Note that there is no standardized vertical blanking interval signalling for 720p 50 Hz and 1 080i 50 Hz analogue outputs. These outputs may be further constrained by the C&R regime.

6.3.2 Mapping for CPCM USI to CGMS-A and RCI/RCD

The mapping for CPCM USI to CGMS-A and RCI/RCD shall be as defined in table 2.

Table 2: Mapping for CPCM USI to CGMS-A and RCI/RCD

CCI State	Notes
Copy Control Not Asserted	The "Copy Control Not Asserted" state of the CPCM USI shall map directly to the same state of CGMS-A.
Copy No More	The "Copy No More" state of the CPCM USI shall map directly to the same state of CGMS-A.
Copy Once	The "Copy Once" state of the CPCM USI shall map directly to the same state of CGMS-A.
Copy Never	The "Copy Never Zero Retention Asserted" state and "Copy Never Zero Retention Not Asserted" state of CCI shall both map to the "Copy Never" state of CGMS-A.
RCI and RCD	The redistribution control information (RCI) and redistribution control descriptor (RCD) vertical blanking interval signals shall be set to the asserted state, '1', when Authorized Domain based redistribution control is asserted in CPCM USI. Specifically, if MCPCM and VCPCM are both asserted then the RCI and RCD signals shall be '0'. If MCPCM and VCPCM are not both asserted, that is, any AD based control is asserted, then RCI and RCD shall be '1'.

6.3.3 Harmonization of Referenced Specifications

For the purposes of the present document, the definitions in following clauses shall apply in the context of the referenced specifications.

6.3.4 IEC 61880 specification

Table 3: Mapping for IEC 61880 [5] specification

CCI State	Notes
Copy Control Not Asserted	The state that is defined in the IEC-61880 [5] by setting CGMS-A bits 7 and 8 to states "0, 0," respectively is called "Copy Control Not Asserted" herein, rather than "Copying is permitted without restriction".
Copy No More	The state that is defined in the IEC-61880 [5] by setting CGMS-A bits 7 and 8 to states "0, 1," respectively is called "Copy No More" herein, rather than "Conditions not to be used".
Copy Once	The state that is defined in the IEC-61880 [5] by setting CGMS-A bits 7 and 8 to states "1, 0," respectively is called "Copy Once" herein, rather than "One generation of copies may be made".
Copy Never	The state that is defined in the IEC-61880 [5] by setting CGMS-A bits 7 and 8 to states "1, 1," respectively is called "Copy Never" herein, rather than "No copying is permitted".

6.3.5 CEA-608-C specification

Table 4: Mapping for CEA-608-C [2] specification

CCI State	Notes
Copy Control Not Asserted	The state that is defined in the CEA-608-C [2] by setting CGMS-A bits to states "0, 0" is called "Copy Control Not Asserted" herein, rather than "Copying is permitted without restriction".
Copy No More	The state that is defined in the CEA-608-C [2] by setting CGMS-A bits to states "0, 1" is called "Copy No More" herein, rather than "Conditions not to be used".
Copy Once	The state that is defined in the CEA-608-C [2] by setting CGMS-A bits to states "1, 0" is called "Copy Once" herein, rather than "One generation of copies may be made".
Copy Never	The state that is defined in the CEA-608-C [2] by setting CGMS-A bits to states "1, 1" is called "Copy Never" herein, rather than "No copying is permitted".
RCD	The redistribution control descriptor (RCD) state that is defined in the CEA-608-C [2] shall indicate that AD-based control is asserted as described herein.

6.3.6 CEA-805-B specification

Table 5: Mapping for CEA-805-B [3] specification

CCI State	Notes
Copy Control Not Asserted	The state that is defined in the CEA-805-B [3] by setting CGMS-A bits to states "0, 0" is called "Copy Control Not Asserted" herein, rather than "Copying is permitted without restriction".
Copy No More	The state that is defined in the CEA-805-B [3] by setting CGMS-A bits to states "0, 1" is called "Copy No More" herein, rather than "No more copies (one generation copy has been made)."
Copy Once	The state that is defined in the CEA-805-B [3] by setting CGMS-A bits to states "1, 0" is called "Copy Once" herein, rather than "One generation of copies may be made".
Copy Never	The state that is defined in the CEA-805-B [3] by setting CGMS-A bits to states "1, 1" is called "Copy Never" herein, rather than "No copying is permitted".
RCI	The Redistribution Control Information (RCI) state that is defined in the CEA-805-B [3] shall indicate that AD-based control is asserted as described herein.

6.3.7 EN 300 294 specification

Table 6: Mapping for EN 300 294 [4] specification

CCI State	Notes
Copy Control Not Asserted	The state that is defined in the EN 300 294 [4] by setting copyright information bits 12 and 13 to states "0, 0," respectively is called "Copy Control Not Asserted" herein, rather than "no copyright asserted or status unknown, copying not restricted".
Copy No More	The state that is defined in the EN 300 294 [4] by setting copyright information bits 12 and 13 to states "0, 1," respectively is called "Copy No More" herein, rather than "no copyright asserted or status unknown, copying restricted".
Copy Once	The state that is defined in the EN 300 294 [4] by setting copyright information bits 12 and 13 to states "1, 0," respectively is called "Copy Once" herein, rather than "copyright asserted, copying not restricted".
Copy Never	The state that is defined in the EN 300 294 [4] by setting copyright information bits 12 and 13 to states "1, 1," respectively is called "Copy Never" herein, rather than "copyright asserted, copying restricted".

6.3.8 IEC 62375 specification

Table 7: Mapping for IEC 62375 [6] specification

CCI State	Notes
Copy Control Not Asserted	The state that is defined in the IEC-62375 [6] by setting CGMS-A bits 12 and 13 to states "0, 0," respectively is called "Copy Control Not Asserted" herein, rather than "no copyright asserted or status unknown, copying not restricted".
Copy No More	The state that is defined in the IEC-62375 [6] by setting CGMS-A bits 12 and 13 to states "0, 1," respectively is called "Copy No More" herein, rather than "no copyright asserted or status unknown, copying restricted".
Copy Once	The state that is defined in the IEC-62375 [6] by setting CGMS-A bits 12 and 13 to states "1, 0," respectively is called "Copy Once" herein, rather than "copyright asserted, copying not restricted".
Copy Never	The state that is defined in the IEC-62375 [6] by setting CGMS-A bits 12 and 13 to states "1, 1," respectively is called "Copy Never" herein, rather than "copyright asserted, copying restricted".

6.3.9 525i composite

For NTSC 525-line interlaced scan analogue composite video outputs (including RF and S-Video outputs), the copy control and redistribution control signalling and waveforms shall be applied as follows:

- CGMS-A vertical blanking interval signalling, as such specifications are contained in both:
 - (a) IEC-61880 [5] (for inclusion on Lines 20 and 283); and
 - (b) in CEA-608-C [2] (for inclusion on Line 21 of field 2, that is Line 284).

The signalling specified in both the IEC-61880 [5] and CEA-608-C [2] shall be applied (exactly as described in the preceding parentheses). Moreover, the repetition rate for the CGMS-A shall be no less than once every 5 seconds for Line 284 signalling using CEA-608-C [2]; and

- RCD vertical blanking interval signalling, as specified in CEA-608-C [2] (i.e. for inclusion on Line 284).

6.3.10 525i component

For 525-line interlace-scan analogue component video outputs (including YUV, Y, Pb, Pr or Y,R-Y,B-Y outputs), the copy control and redistribution control signalling and waveforms shall be applied as follows:

- CGMS-A vertical blanking interval signalling on the analogue video output, as such specifications are contained in both:
 - (a) IEC-61880 [5](for inclusion on Lines 20 and 283); and
 - (b) CEA-608-C [2] (for inclusion on Line 21 of field 2, that is Line 284).

The signalling specified in both the IEC-61880 [5] and CEA-608-C [2] shall be applied (exactly as described in the preceding parentheses). Moreover, the repetition rate for the CGMS-A shall be no less than once every 5 seconds for Line 284 signalling using CEA-608-C [2]; and

- RCD vertical blanking interval signalling, as specified in CEA-608-C [2] (i.e. for inclusion on Line 284).

6.3.11 525p component

For 525-line progressive-scan analogue component video outputs (including YUV, Y,Pb,Pr or Y,R-Y,B-Y outputs), the copy control and redistribution control signalling and waveforms shall be applied as follows:

- CGMS-A vertical blanking interval signalling, as such specifications are contained in CEA-805-B [3] (i.e. on Lines 40 and 41). The signalling specified in the CEA-805-B [3] shall be applied (exactly as described in the preceding parentheses); and
- RCI vertical blanking interval signalling, as specified in CEA-805-B [3] (i.e. for inclusion on Line 40).

6.3.12 625i composite and component

For PAL, SECAM and 625-line interlace-scan analogue composite video outputs (including RF and S-Video) and analogue component video outputs (including YUV, Y,Pb,Pr, or Y,R-Y,B-Y outputs), the copy control and redistribution control signalling and waveforms shall be applied as follows:

- CGMS-A vertical blanking interval signalling, as specified in EN 300 294 [4] (for inclusion in line 23) (referred to as copyright information).

For such devices using a SCART connector, the SCART connector shall be configured so that the RGB signal carried by that connector shall always be accompanied by a composite signal and that composite signal shall provide:

- a) the only synchronization for the RGB signal; and
- b) CGMS-A signalling (as specified above).

RGB analogue video outputs shall only be allowed as permitted herein.

6.3.13 625p component

For 625-line progressive-scan analogue component video outputs (including YUV, Y,Pb,Pr, or Y,R-Y,B-Y outputs), the copy control and redistribution control signalling and waveforms shall be applied as follows:

- CGMS-A vertical blanking interval signalling, as specified in IEC-62375 [6] (for inclusion on line 43).

For such devices using a SCART connector, the SCART connector shall be configured so that the RGB signal carried by that connector shall always be accompanied by a composite signal and that composite signal shall provide:

- a) the only synchronization for the RGB signal; and
- b) CGMS-A signalling (as specified above).

RGB analogue video outputs shall only be allowed as permitted herein.

6.3.14 720p and 1 080i, Hz component

For 60 Hz, high definition 720-line progressive-scan and 1080-line interlace-scan analogue component video (including YUV, Y,Pb,Pr, or Y,R-Y,B-Y outputs), the copy control and redistribution control signalling shall be applied as follows:

- CGMS-A vertical blanking interval signalling according to the specification outlined in CEA-805-B [3] (for inclusion on Lines 23 and 24 of 720p signalling, and Lines 18 and 581 and 19 and 582 of 1 080i signalling). The signalling specified in the CEA-805-B [3] shall be applied (exactly as described in the preceding parenthetical); and
- RCI vertical blanking interval signalling, as specified in CEA-805-B [3] (i.e. for inclusion on Line 23 of 720-line progressive-scan video and for inclusion on Lines 18 and 581 of 1 080-line interlace-scan video).

High definition 720-line progressive-scan and 1 080-line interlace-scan analogue component video analogue outputs shall be processed in accordance with `image_constraint` USI that may be asserted.

6.3.15 720p and 1 080i, Hz component

No standardized vertical blanking interval signalling exists for component 50 Hz high definition analogue outputs. Therefore, if such outputs were to be approved by the C&R regimes, there would be no standardized way to conveying the CGMS-A and redistribution control usage signalling.

6.3.16 Other analogue video formats

Other analogue video outputs do not have standardized vertical blanking interval signalling.

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History

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