

CEA Standard

Data Services on the Component Video Interfaces

CEA-805-E

June 2013



CEA[®]
Consumer Electronics Association

www.CE.org

NOTICE

Consumer Electronics Association (CEA[®]) Standards, Bulletins and other technical publications are designed to serve the public interest through eliminating misunderstandings between manufacturers and purchasers, facilitating interchangeability and improvement of products, and assisting the purchaser in selecting and obtaining with minimum delay the proper product for his particular need. Existence of such Standards, Bulletins and other technical publications shall not in any respect preclude any member or nonmember of CEA from manufacturing or selling products not conforming to such Standards, Bulletins or other technical publications, nor shall the existence of such Standards, Bulletins and other technical publications preclude their voluntary use by those other than CEA members, whether the standard is to be used either domestically or internationally.

Standards, Bulletins and other technical publications are adopted by CEA in accordance with the American National Standards Institute (ANSI) patent policy. By such action, CEA does not assume any liability to any patent owner, nor does it assume any obligation whatever to parties adopting the Standard, Bulletin or other technical publication.

This document does not purport to address all safety problems associated with its use or all applicable regulatory requirements. It is the responsibility of the user of this document to establish appropriate safety and health practices and to determine the applicability of regulatory limitations before its use.

This document is copyrighted by the Consumer Electronics Association (CEA[®]) and may not be reproduced, in whole or part, without written permission. Federal copyright law prohibits unauthorized reproduction of this document by any means. Organizations may obtain permission to reproduce a limited number of copies by entering into a license agreement. Requests to reproduce text, data, charts, figures or other material should be made to CEA.

(Formulated under the cognizance of the CEA **R4.8 DTV Interface Subcommittee**.)

Published by
©CONSUMER ELECTRONICS ASSOCIATION 2013
Technology & Standards Department
www.CE.org

All rights reserved

CONTENTS

1	Scope	1
2	References.....	1
2.1	Normative References.....	1
2.1.1	Normative Reference List	1
2.1.2	Normative Reference Acquisition.....	1
2.2	Informative References.....	1
2.2.1	Informative Reference Acquisition	2
3	Definitions	2
3.1	Acronyms and Abbreviations.....	2
3.2	Reserved Fields	3
3.3	Bit Order	3
4	Data Waveform Descriptions.....	3
4.1	Waveform for Standard Definition Interlaced Signals	3
4.1.1	Aspect Ratio Signaling for Standard Definition Interlaced Signals	3
4.2	Waveform for Standard Definition Progressive Signals.....	4
4.3	Waveform for High Definition Signals	6
4.4	General Use of Header Byte	8
4.5	Data Payload Descriptions	8
4.5.1	Payload Waveforms	9
4.5.2	Type A Packet Payload Data	9
4.5.3	Type B Packet Payload Data	10
4.5.3.1	Version Number Byte.....	12
4.5.3.2	Aspect Ratio Data	12
4.5.3.3	Video Bar Data.....	12
4.5.3.4	Scan Data	13
4.5.3.5	Active Format Description Data.....	13
4.5.3.6	Active Format Description	14
4.5.3.7	Colorimetry	15
4.5.3.8	Redistribution Control	15
4.5.3.9	Type B Packet CGMS-A and APS Data	15
4.5.4	Cyclic Redundancy Check (CRC)	16
4.5.4.1	CRC Calculation-Method 1	16
4.5.4.2	CRC Calculation-Method 2	17
4.6	Transmission Rules for Type A and Type B Data	17
4.7	Extended Copy Control Information (ECCI) Data.....	18
Annex A Data Integrity During Signal Format Conversions between YP_BP_R and RGB Formats (Informative)		19

Figures

Figure 1	Data Services Waveform (Standard Definition Progressive)	4
Figure 2	Data Services Waveform (High Definition Progressive)	6
Figure 3	CRC Generator	16

Tables

Table 1 Key Type A Packet Waveform Characteristics (Standard Definition Progressive)	5
Table 2 Key Type B Packet Waveform Characteristics (Standard Definition Progressive)	5
Table 3 Key Type A Packet Waveform Characteristics (High Definition).....	7
Table 4 Key Type B Packet Waveform Characteristics (High Definition).....	7
Table 5 Legacy Data Header Bits	8
Table 6 Packet Type B and Reserved Data Header Bits	8
Table 7 Type A Payload Waveform Characteristics	9
Table 8 Type B Payload Waveform Characteristics	9
Table 9 Payload Data for Type A Packets.....	9
Table 10 CGMS-A Definitions	10
Table 11 APS Bit Definitions	10
Table 12 Type B Packet Payload Data	11
Table 13 Intended Display Aspect Ratio.....	12
Table 14 Video Bar Information	12
Table 15 Scan Information	13
Table 16 Active Format Description (AFD) Information	13
Table 17 Defined Active Format Definitions.....	14
Table 18 Colorimetry.....	15
Table 19 CGMS-A Definitions	15
Table 20 APS Bit Definitions	16
Table 21 CRC Examples	17

FOREWORD

This standard, CEA-805-E, describes a method for carrying data services on analog Component Video Interfaces (CVI).

Methods for carrying Copy Generation Management System-Analog (CGMS-A), Analog Protection System (APS) and Redistribution Control Information (RCI), among other items, on analog Component Video Interface (CVI) are described. These portions of this standard do not describe a complete content protection system; however, it is envisioned that such information as described in this standard could serve as a building block for such a system.

This standard was developed under the auspices of the Consumer Electronics Association (CEA) Technology & Standards R4.8 DTV Interface Subcommittee.

CEA-805-E supersedes CEA-805-D.

(This page intentionally left blank.)

Data Services on the Component Video Interfaces

1 Scope

This standard specifies how data services are carried on analog Component Video Interface CVI, as described in CEA-770.2 and CEA-770.3. This standard applies to all CE devices carrying data on the CVI vertical blanking interval (VBI). All references within this standard to component video and/or component video interfaces are analog only, and no reference to digital is implied.

This standard addresses the signal format and data structure of information when carried by means of the VBI of standard definition progressive and high definition YP_BP_R-type component video signals. It is also intended to be usable when the YP_BP_R signal is converted into other component video interfaces including RGB and VGA.

This standard is designed to be extensible to future data, and even future higher bandwidth data.

Although this standard specifies only how data is carried on component video interfaces, in practice, the same signals are typically present on composite video outputs. In addition, see Annex A (Informative) for information concerning data integrity during signal format conversions.

2 References

2.1 Normative References

The following standards contain provisions that, through reference in this text, constitute normative provisions of this standard. At the time of publication, the editions indicated were valid.

2.1.1 Normative Reference List

CEA-608-E, Line 21 Data Service (April, 2008)

CEA-770.2-D, Standard Definition TV Analog Component Video Interface (April, 2007)

CEA-770.3-D, High Definition Component Video Interface (February, 2008)

IEC 61880: (1998-01), Video System (525/60) Video and Accompanied Data Using the Vertical Blanking Interval—Analogue Interface

2.1.2 Normative Reference Acquisition

CEA Standards:

- Global Engineering Documents, World Headquarters, 15 Inverness Way East, Englewood, CO USA 80112-5776; Phone 800-854-7179; Fax 303-397-2740; Internet <http://global.ihs.com> ; Email global@ihs.com

IEC Standards:

- Global Engineering Documents, World Headquarters, 15 Inverness Way East, Englewood, CO USA 80112-5776; Phone 800-854-7179; Fax 303-397-2740; Internet <http://global.ihs.com>; Email global@ihs.com
- IEC Central Office, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland; Phone +41 22 919 02 11; Fax +41 22 919 03 00; Internet <http://www.iec.ch> ; Email pubinfor@iec.ch

2.2 Informative References

The following standards contain provisions that, through reference in this text, constitute informative provisions of this standard. At the time of publication, the editions indicated were valid.

CEA-2020, Other VBI Waveforms, August 2006

IEC 61880-2: (2002-09) Video System (525/60) Video and Accompanied Data Using the Vertical Blanking Interval -- Part 2 525 Progressive Scan System