

# CEA Standards Update

## CEA Investigating 3-D Video Standards

CEA's Technology & Standards Council is investigating the need for standards to address delivery and presentation of three dimensional (3D) video in the home. For consideration of new standards areas, CEA uses a process called a Discovery Group to gather experts, share information on the state of the art, determine the need for standards within CEA's domain and ensure volunteers are available to work on projects. There is widespread interest in 3D video across the entire production, delivery and viewing chain. Movies are being produced and shown in 3D in cinemas with advances in digital cinema improving the experience. Pre-packaged content and games have the storage and processing power to deliver 3D video. Televisions are available today that can render 3D content. The industry may be benefited by standards that ensure 3D content is usable to the maximum extent by consumers. CEA will hold the first 3D Video Discovery Group meeting Wednesday, October 22 from 10 am – 12 pm, in conjunction with the CEA Technology & Standards Fall Forum. For more information or to request an opportunity to speak during the meeting, contact Brian Markwalter ([bmarkwalter@CE.org](mailto:bmarkwalter@CE.org)) or Alayne Bell ([abell@CE.org](mailto:abell@CE.org)).

## New Projects

- ✚ CEA-2028-A, *Color Codes for Outdoor TV Receiving Antennas*
- ✚ CEA-2032-A, *Indoor TV Receiving Antenna Performance Standard*
- ✚ CEA-2035, *Emergency Alert Signaling for the Home Network*
- ✚ CEA-CPEB6-A, *Preferred Voltage and Impedance Values for the Interconnection of Audio Products*, five year review
- ✚ DTV Audio Metadata (new recommended practice that would help consumers more easily navigate to secondary audio programs (e.g., alternate language feeds) in DTV signals.
- ✚ DTV receiver audio/video synchronization using MPEG-2 transport stream timestamps

## Publications Nearing ANSI Completion

- ✚ CEA-775-C, *DTV 1394 DTV Interface Specification* (published February 2008, ANSI public review comments due 8/11/08)

- ✚ CEA-775.2-A, *Service Selection Information for Digital Storage Media Interoperability* (published June 2008, ANSI public review comments due 8/4/08)
- ✚ CEA-849-B, *Application Profiles for CEA-775 Compliant DTVs* (published May 2008, ANSI public review closed 7/28/08, awaiting final ANSI approval)
- ✚ CEA-2031, *Testing and Measurement Methods for Mobile Loudspeaker Systems* (published July 2006, erratum approved 1/25/07, ANSI public review comments due 8/18/08)

## Publications Nearing CEA Completion

- ✚ CEA-542-C, *Cable Television Channel Identification Plan* (pre-vote comments due 8/11/08)
- ✚ CEA-708-D, *Digital Television (DTV) Closed Captioning* (approved 5/22/08, in final editorial review)
- ✚ CEA-709.1-C, *Control Network Protocol Specification* (pre-vote comment period closed 2/19/08, comments being addressed)
- ✚ CEA-762-B, *DTV Remodulator Specification* (approved 7/24/08, in final editorial review)
- ✚ CEA-805-D, *Data Services on the Component Video Interfaces* (approved 5/22/08, in final editorial review)
- ✚ CEA-819-A, *Cable Compatibility Requirements for Two-Way Digital Cable TV Systems* (proposed for withdrawal, ballot closes 8/8/08)
- ✚ CEA-852-B, *Tunneling Component Network Protocols Over Internet Protocol Channels* (approved 12/7/06, in final editorial review, awaiting completion of CEA-852.1, *Enhanced Tunneling Device Area Network Protocols Over Internet Protocol Channel*)
- ✚ CEA-2006-B, *Testing and Measurement Methods for Mobile Audio Amplifiers* (pre-vote comment period closed 7/10/08)
- ✚ Errata for CEA-2014-A, *Web-Based Protocol and Framework for Remote User Interface on UPnP™ Networks and the Internet (Web4CE)* (approved 5/21/08, in final editorial review)

## Ongoing Work

- ✚ CEA-9, *Standard Method of Measurement for Phonograph Cartridges Used in Analog Disc Playback Equipment*, five year review
- ✚ CEA-490-A, *Standard Test Methods of Measurement for Audio Amplifiers*, five year review

- ✚ CEA-516, *Joint EIA/CVCC Recommended Practice for Teletext: North American Basic Teletext Specification (NABTS)*, five year review
- ✚ CEA-636, *Recommended Loudspeaker Safety Practices*, five year review
- ✚ CEA-709.2-B, *Control Network Power Line (PL) Channel Specification*
- ✚ CEA-774-B, *TV Receiving Antenna Performance Presentation and Measurement*
- ✚ CEA-851.1, *IP-Based Digital Telephony for the Versatile Home Network*, five year review
- ✚ CEA-851.2, *Security Services for the Versatile Home Network*, five year review
- ✚ CEA-852.1, *Enhanced Tunneling Device Area Network Protocols Over Internet Protocol Channels*
- ✚ CEA-2002, *Test Procedure for Powerline Carrier Technology*, five year review
- ✚ CEA-2014-B, *Web-based Protocol and Framework for Remote User Interface on UPnP™ Networks and the Internet (Web4CE)*
- ✚ CEA-2017-A, *Common Interconnection for Portable Media Players*
- ✚ CEA-2019, *Testing and Measurement Methods for Audio Amplifiers*
- ✚ CEA-2021, *Auto Discovery & Self-configuring Home Control Networks*
- ✚ CEA-2030-A, *Multi-Room Audio Cabling Standard*
- ✚ CEA-2034, *Standard Method of Measurement for In-Home Loudspeakers*
- ✚ CEA-CEB11-A, *NTSC/ATSC Loudness Matching*
- ✚ CEA-CEB12-A, *PSIP Recommended Practice*, five year review
- ✚ Possible consumer guidelines for using indoor TV antennas

## Summary of Projects by CEA Product Division

### Accessories

#### ✚ Smart Antenna Performance

CEA's Antennas Committee is working on CEA-774-B, *TV Receiving Antenna Performance Presentation and Measurement*, CEA-2028-A, *Color Codes for Outdoor TV Receiving Antennas*, and CEA-2032-A, *Indoor TV Receiving Antenna Performance Standard*. This simultaneous work on these three standards is expected to result in performance criteria and test and measurement procedures for "smart" antennas. Smart antennas automatically steer themselves, usually by adjusting the positions of nulls or lobes in their patterns. They enable consumers to enjoy free over-the-air television without having to manually adjust their antennas every time they

change channels. It is hoped that this project will lead to a smart antenna certification program, and then to AntennaWeb.org recommendations for the use of certified smart antennas. AntennaWeb.org, jointly sponsored by CEA and the National Association of Broadcasters, predicts television reception when given an address, and recommends the types of antennas that will provide best reception at that address. Interested? [Join R5](#).

#### ✚ Indoor Antenna Guidelines for Consumers

The Antennas Committee is considering the development of guidelines or recommendations for consumers who are using indoor TV antennas. The computer prediction models that it developed for [www.AntennaWeb.org](http://www.AntennaWeb.org) only apply to outdoor antennas. Interested? [Join R5](#).

## Audio

#### ✚ Standard Audio Levels

The Audio Systems Committee is conducting its five year review of CEA-CPEB6-A, *Preferred Voltage and Impedance Values for the Interconnection of Audio Products*. The bulletin defines preferred voltage and impedance values for inputs and outputs of generally available, mass produced, audio products and accessories. By following these guidelines manufacturers can facilitate the interconnection of products from different manufacturers and permit the addition of other products or accessories to integrated systems. Interested? [Join R3 WG9](#).

#### ✚ Phonograph Cartridges

The Audio Systems Committee is conducting its five year review of CEA-9, *Standard Method of Measurement for Phonograph Cartridges Used in Analog Disc Playback Equipment*. This standard describes standard test conditions and procedures for testing an electromechanical phonograph cartridge transducer. It also defines a method for reporting test results. Interested? [Join R3](#).

#### ✚ Audio Amplifier Measurement

The Audio Systems Committee is conducting its five year review of CEA-490-A, *Standard Test Methods of Measurement for Audio Amplifiers*. This standard describes a measurement procedure for measuring various characteristics of multi-channel audio amplifiers. It has been proposed that this standard be reaffirmed.

#### ✚ Loudspeaker Safety

The Audio Systems Committee is conducting its five year review of CEA-636, *Recommended Loudspeaker Safety*

*Practices*. This standard is proposed for withdrawal because it has been superseded by CEA-CEB19, *Recommended Loudspeaker Safety Practices*. Both documents describe recommended practices for producing loudspeakers that do not pose safety hazards.

### **Distributed Audio**

The Audio Systems Committee is working on an addition to CEA-2030, *Multi-Room Audio Cabling Standard*, which defines how to configure cabling and connectors in order to distribute analog and digital audio throughout a home. The new addition will explain how to document distributed audio systems installed in homes. Interested? [Join R3 WG7](#).

### **Loudspeaker Performance**

An Audio Systems Committee working group is currently developing CEA-2034, *Standard Method of Measurement for In-Home Loudspeakers*, which it hopes will describe a method for measuring and reporting frequency response and perhaps other loudspeaker characteristics in a manner that will be easy for non-technical consumers to understand. Interested? [Join R3 WG1](#).

### **Amplifier Performance**

Another Audio Systems Committee working group is attempting to write an amplifier measurement standard aimed mainly at home theater in-a-box systems, but which would include some other audio amplifiers as well. There is hope that this standard, and perhaps an accompanying CEA logo program, may help ensure consumers' ability to make apples-to-apples comparisons among these types of products. The new standard would be called CEA-2019, *Testing and Measurement Methods for Audio Amplifiers*. Interested? [Join R3 WG8](#).

## **Mobile Electronics**

### **Mobile Audio Amplifiers**

The Mobile Systems Committee is working on CEA-2006-B, *Testing and Measurement Methods for Mobile Audio Amplifiers*. This standard describes a method for testing the performance of mobile audio amplifiers and reporting the results. The pre-vote comment period closed on 7/10/08. Interested? [Join R6 WG10](#).

### **PDMI Connector**

The Mobile Electronics Committee is working on a proposed “digital overlay” for the portable digital media interface (PDMI) connector. It is mapping the pins on the PDMI connector to accommodate additional digital signals.

These digital signals, including USB 3.0 and/or HD video, would be supported in addition to the analog signals that have already been accommodated. However, in order to make this work the “digital version” of the connector would sacrifice some analog functionality. For example, the connector likely would not support serial connectivity or analog audio in/out at the same time as USB v3.0 or HD video. This would not mean that serial connectivity or analog audio in/out would be removed from the connector, only that they would not be supported simultaneously with USB v3.0 or HD video.

PDMI connectors comply with CEA-2017, *Common Interconnection for Portable Media Players*, which was approved as an American National Standard in July 2007. It is hoped that this connector will eventually become a standard feature on vehicle dashboards, making it easy for consumers to plug their portable media devices into their vehicle power supplies and audio/video systems. Interested? Join [R6 WG15](#).

### **Mobile Loudspeakers**

CEA-2031, *Testing and Measurement Methods for Mobile Loudspeaker Systems*, defines a standard method for measuring and reporting the performance of mobile loudspeakers systems. When it was approved there was a typographical error in section 11.2. The reference to IEC 60268 5 (2003), Clause 17.3 should have been a reference to IEC 60268 5 (2003), Clause 17.2. The error affected the way peak power measurements were described. This was fixed with the adoption of an erratum on 1/25/07. The completed document, with the change from the erratum included, has now been sent to ANSI for public review. ANSI public review comments are due by 8/18/08.

## **TechHome**

### **LonTalk®-based Control Network Protocol**

The Home Systems Control Subcommittee is considering revisions to CEA-709.1-C, *Control Network Protocol Specification*. This standard describes a control network protocol that can be used over different physical links. This protocol is suitable for implementing both peer-to-peer and master-slave system strategies. Pre-vote comments were due 2/19/08 and comments are now being addressed.

### **VOIP for Versatile Home Network**

The Home Networks Committee has begun its five year review of CEA-851.1, *IP-Based Digital Telephony for the Versatile Home Network*. This standard defines IP-based telephony for the Versatile Home Network. Interested? [Join R7](#).

## ✚ Security Services for Versatile Home Network

The Home Networks Committee has begun its five year review of CEA-851.2, *Security Services for the Versatile Home Network*. This standard defines security services for the home network defined in ANSI/CEA-851-A, *Versatile Home Network*. It assumes a VHN that is digital and IP-based, and that uses web tools like HTTP for device control. Interested? [Join R7](#).

## ✚ IP Tunneling

The Home Systems Control Subcommittee approved CEA-852-B, *Tunneling Component Network Protocols Over Internet Protocol Channels* on 12/7/06. This standard specifies a communications method that allows networked data acquisition and control devices to communicate with each other over the Internet. It is currently under final editorial review and will be published after CEA-852.1, which it references, is completed.

The subcommittee is also working on CEA-852.1, *Enhanced Tunneling Device Area Network Protocols Over Internet Protocol Channels*. This standard will address limitations in the CEA-852-B protocol and provide improvements in performance, scalability, and robustness. Some of the provisions in CEA-852.1 might not be backward compatible with earlier versions of CEA-852. Interested? [Join R7.1 WG2](#).

## ✚ Powerline Carrier Test Procedure

The Home Networks Committee has begun its five-year review of CEA-2002, *Test Procedure for Powerline Carrier Technology*. This standard defines a test procedure that can be used to validate key aspects of powerline carrier systems. Interested? [Join R7](#).

## ✚ Remote User Interface for UPnP™ Devices

The Home Networks Committee published CEA-2014-A, *Web-Based Protocol and Framework for Remote User Interface on UPnP™ Networks and the Internet (Web4CE)*, in July 2007. Several errors were discovered and an errata was approved on 5/21/08. CEA-2014-A defines how to produce remote user interfaces for UPnP™ devices. Revisions from the previous version clarify several points that some readers thought were unclear. The next revision is expected to extend the functionality of the standard while preserving existing functionality and maintaining backward compatibility. It is expected to add new functionality in the following general areas: remote user interface access to the underlying platform resources, the level of security available within the remote user interface

and protocol framework, and the remote user interface experience. Interested? [Join R7 WG9](#).

## ✚ Power Line Carrier

The Home Control Systems 1 Subcommittee is working on CEA-709.2-B, *Control Network Power Line (PL) Channel Specification*. This standard describes the physical characteristics of a communications network that uses power lines to collect and distribute information. Interested? [Join R7.1](#).

The Home Control Systems 1 Subcommittee is also working on CEA-2021, *Auto Discovery & Self-configuring Home Control Networks*. This standard is expected to define a method for devices on a home control network to automatically discover each other and exchange data. It will facilitate the development of future home automation devices that may be installed by CE installers, electricians, or do-it-yourself homeowners. It will provide a set of standard application-layer services for the ANSI/CEA-709.1 protocol, thus enabling devices and appliances from different manufacturers to work together in a home network. Interested? [Join R7.1](#).

## Video

### ✚ North American Teletext

The Television Data Systems Subcommittee has begun its five-year review of CEA-516, *Joint EIA/CVCC Recommended Practice for Teletext: North American Basic Teletext Specification (NABTS)*. This standard describes the transmission technique, coding language, and user interface for one-way broadcast teletext service applications in North America using NTSC television signals. Interested? [Join R4.3](#).

### ✚ Cable Channel Numbering

The Cable Compatibility Committee is working on CEA-542-C, *Cable Television Channel Identification Plan*. This standard defines 6 MHz channel allocations for 158 channels up to 1002 MHz, and includes a method for specifying higher channels. It does not preclude channel mapping in cable systems. It applies to channels carrying analog or digital signals, though it does not specify a numbering plan for the tuning of digitally multiplexed services within one or more RF channels. Pre-vote comments are due 8/11/08. Interested? [Join R8 WG3](#).

### ✚ DTV Remodulator Specification

The DTV Interface Subcommittee approved CEA-762-B, *DTV Remodulator Specification*, on 7/24/08. This standard

defines minimum specifications for a one-way data path utilizing an 8-VSB trellis remodulator that complies with ATSC Standard A/53B, Annex D. This standard applies to any device used to connect to an ATSC compliant digital television (DTV) receiver. Devices meeting this standard should interoperate with any ATSC compliant receiver that also supports “monitor mode.” The standard is in final editorial review and will be published soon. It will also be sent to ANSI for public review.

#### **IEEE 1394 Service Selection Information**

The DTV Interface Subcommittee published CEA-775.2-A, *Service Selection Information for Digital Storage Media Interoperability*, in June 2008. ANSI public review closes on 8/4/08. This standard defines how to store Service Selection Information when recording a program over the IEEE 1394 high-performance serial bus described in CEA-775-B. Service Selection Information includes information such as the title of the program, the program duration, descriptors related to the program such as content advisories and the name of the source channel from which the program was recorded.

#### **IEEE 1394 Application Profiles**

The DTV Interface Subcommittee published CEA-849-B, *Application Profiles for CEA-775 Compliant DTVs*, in May 2008. This standard defines profiles for various applications of the IEEE 1394 high performance serial bus described in CEA-775-B. The applications covered include ATSC digital television streams, direct broadcast satellite digital streams, US cable digital streams and standard definition digital video camcorder digital streams. ANSI public review closed on 7/28/08 and the standard is now awaiting final ANSI approval.

#### **Data Over Component Video Interface**

The DTV Interface Subcommittee approved CEA-805-D, *Data Services on the Component Video Interfaces* on 5/22/08. This standard describes how to transmit data over the analog component video interfaces (CVI) described in CEA-770.2-C and CEA-770.3-D, and it covers all CE devices carrying data on the CVI vertical blanking interval (VBI). It is now undergoing final editorial review and will be sent to ANSI for public review.

#### **Two-Way Cable Systems**

The Cable Compatibility Committee is considering the withdrawal of CEA-819-A, *Cable Compatibility Requirements for Two-Way Digital Cable TV Systems*. This standard defines minimum requirements for two-way digital cable TV systems and two-way digital TV receivers

whose RF inputs and outputs connect directly to these cable systems. These systems permit the viewing of analog and digital TV programs, as well as additional features such as impulse pay-per-view purchases, interactive shopping and audience opinion polling. The ballot for this standard closes on 8/8/08. Interested? [Join R8](#).

#### **Loudness Matching Between Analog/Digital TV**

The Video Systems Committee is reviewing CEA-CEB11, *NTSC/ATSC Loudness Matching*. This bulletin provides guidance to TV set makers on how to maintain uniform audio loudness between analog NTSC programs and digital ATSC programs. It assumes that NTSC broadcasters follow accepted North American broadcast practices for audio levels, and that ATSC broadcasters have encoded their signals with the correct “dialnorm” value, a number that corresponds to the actual dialog level of the program material. Interested? [Join R4 WG10](#).

#### **DTV Closed Captioning**

The Television Data Systems Subcommittee approved CEA-708-D, *Digital Television (DTV) Closed Captioning*, on 5/22/08. This standard was updated to coordinate with related Advanced Television Systems Committee (ATSC) and Society of Motion Picture and Television Engineers (SMPTE) standards. It is now undergoing final editorial review.

#### **DTV 1394 Interface**

The DTV Interface Subcommittee published CEA-775-C in February 2008 and decided not to begin work on CEA-775-D at its May 2008 meeting. The subcommittee is now awaiting ANSI public review of CEA-775-C, which closes on 8/11/08. CEA-775-C defines a method by which set-top boxes, DVRs and other similar devices may send MPEG video to a DTV set for decoding using a 1394 interface. The DTV Interface Subcommittee works to keep CEA-775 up to date with the latest standards developed by the 1394 Trade Association. Interested? [Join R4.8 WG1](#).

#### **PSIP Recommended Practice**

The Television Data Systems Subcommittee is conducting its five year review of CEA-CEB12-A, *PSIP Recommended Practice*. This bulletin provides guidance for designing DTV receivers, cable TV receivers, video recorders and other consumer products that make use of the Advanced Television Systems Committee’s (ATSC) Program and System Information Protocol (PSIP). It provides recommendations and suggestions for device functionality. Interested? [Join R4.3](#).

## **DTV Audio Metadata**

The Television Data Systems Subcommittee is beginning work on a recommended practice that will give guidance to receiver manufacturers on how to parse the relevant portions of an ATSC audio stream, particularly in situations where the broadcaster is sending audio in multiple languages. It is considering what practices might be followed in order to help consumers most easily find the audio streams that they are looking for. Interested? [Join R4.3 WG12](#).

## **DTV Receiver Audio/Video Synchronization**

The Video Systems Committee is beginning work on a bulletin that will recommend methods for synchronizing audio and video content at the receiver using time stamps in MPEG-2 transport streams. Interested? [Join R4 WG15](#).

## **XML Schema for Emergency Alert Information**

The Cable Compatibility Committee has begun work on CEA-2035, *Emergency Alert Signaling for the Home Network*. This new standard will define an XML Schema to signal emergency alert information from home network servers to home network client devices, in harmony with existing standards (CAP v1.1, ANSI J-042-A, and ATIS 0800012). Interested? [Join R8 WG5](#).