

An Update from the Consumer Electronics Association

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AN UPDATE FROM THE CEA

The year 2008 may prove more transitional and important in some ways than 2009 when full-power analog broadcasting ceases in the U.S. We will have elected a new president, weathered a difficult economic year, watched Wilmington, N.C., carry out its DTV transition and hopefully sold many flat panel TVs. This report summarizes activities from Consumer Electronics Association's (CEA's) perspective, with particular emphasis on technology, standards, and policies affecting television receivers.

The CE Market

Despite a challenging economic picture, CEA forecasts total industry revenues to hit a new high of \$173 billion in 2008, representing 7.3% growth over 2007's volume of more than \$161 billion. One might consider this growth estimate optimistic, but the consumer electronics market remains strong in several critical segments, including digital displays, gaming content, and smart phones.

Looking ahead to 2009, growth is still expected, just not at the rate we have seen in the recent past. CEA forecasts total industry revenue in 2009 to be \$183 billion, representing a 5.8% gain over 2008's expected \$173 billion. Digital displays will remain a critical piece of this growth, as will portable devices and content. Reminding us of the fact that 2008 and 2009 are pivotal years, while digital displays and some converged devices have hit their stride, a few of the early digital product categories are mature and entering a replacement phase, including MP3 players and digital cameras.

The Converter Box Market

CEA has worked closely with the National Telecommunications and Information Administration (NTIA) on the well-publicized TV Converter Box Coupon Program. Acting Deputy Assistant Secretary for NTIA Meredith Baker used the International Consumer Electronics Show as the backdrop to announce that in the first week the program was open, more than one million households requested two million coupons. At the time, more than 250 retailers, representing more than 15,000 outlets nationwide, were certified to participate in the program, and 19 converter boxes were on the eligible list.

Less than eight months later, U.S. Commerce Secretary Carlos M. Gutierrez released national coupon redemption data for the TV Converter Box Coupon Program. The number of coupon-eligible converter box models had grown to more than 150 models, with 63 of those models including the analog passthrough feature that allows analog signals from low-power TV and translator stations to bypass the converter box to be tuned by the connected analog TV. Further, 46 of the eligible models were available in stores, as listed on the NTIA website, indicating that there were more supplier offerings than retail channels to accommodate them. Nevertheless, there were plenty of outlets for consumers to find converter boxes as the number of participating local, online, and phone retailers had risen to 26,000.

Policymakers, retailers, manufacturers, and broadcasters are all interested in the status of the coupon program and whether coupons are getting to the right households and being redeemed. The statistics for late July indicate that more than 21.3 million coupons have been requested and more than 6.6 million coupons

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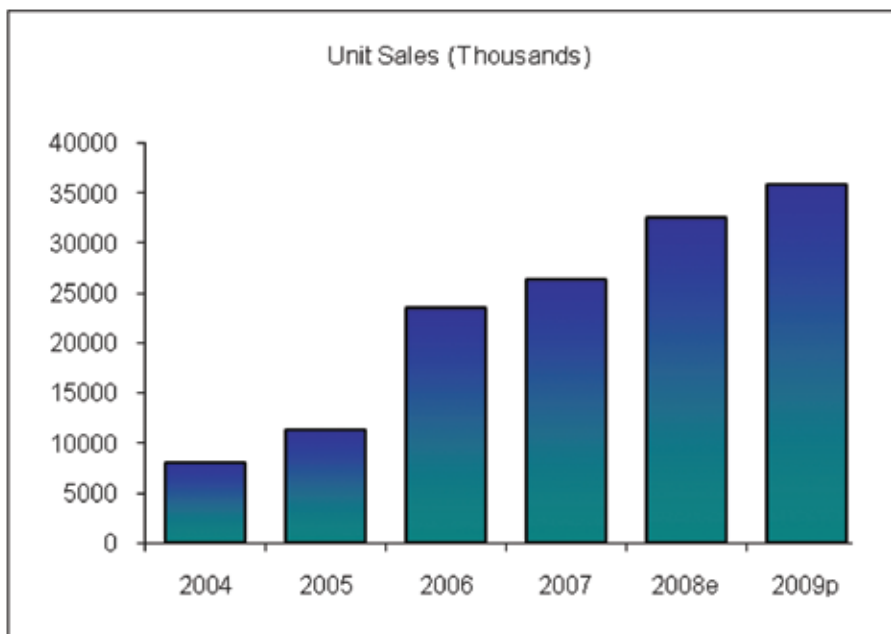


Figure 1. Total digital TV sales.

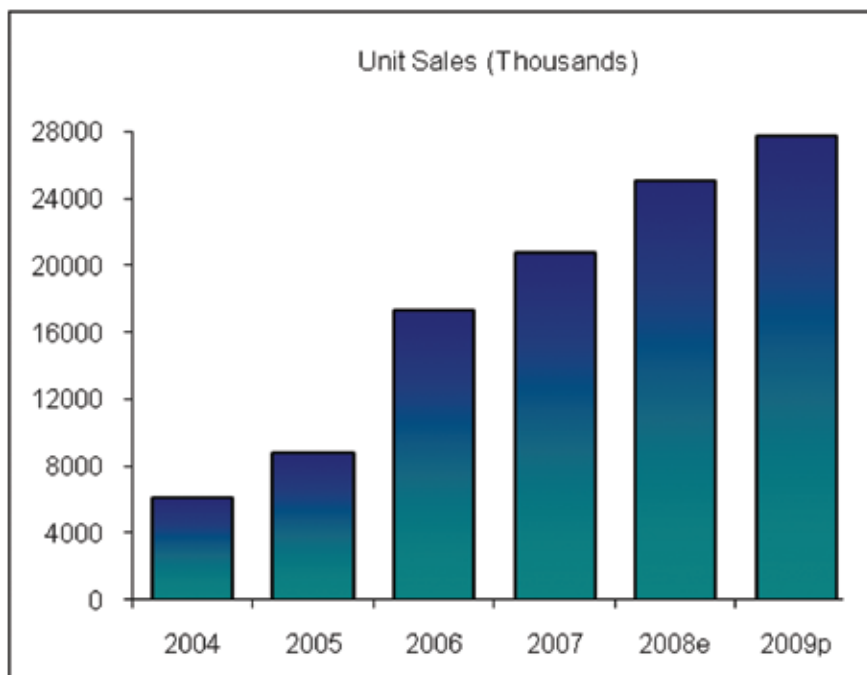


Figure 2. HDTV unit sales.

have been redeemed. The redemption rate for households that rely on an antenna is 54.6% and for all households is 45.8%. The program is operating robustly, and despite some doomsayers the anecdotal evidence is that consumers have been having few problems acquiring and installing converters.

The DTV Market

With the finish line of the DTV transition in sight, shipment growth in the digital display category is heating up. Fueled by an 11% drop in average wholesale prices, overall DTV shipments are expected to climb 24% this year. LCD TV shipments are pulling away from the pack, with unit volumes accelerating 41% in 2008 and, as a

result, accounting for 73% of total DTV units. Plasma displays will also see unit growth in 2008, but only in single digits.

A side-effect of such robust flat-panel growth is a more rapid departure of rear-projection displays from retail shelves than previously expected. On the revenue side, the digital displays category should see an 11% gain as

higher unit volumes offset falling prices. DTV remains the primary revenue driver for the industry with dollar shipments representing almost 19% of total industry sales. TVs are still big business (Figs. 1 and 2).

CEA Technology and Standards Activities

Work continues in several CEA standards committees and subcommittees related to television reception, interfaces, audio processing and synchronization, emergency alerts and closed captioning. The work primarily falls to the Video Systems standards committee (R4), its subcommittees R4.3 and R4.8, covering Television Data Systems and DTV Interface standards respectively, and the Antennas Committee known as R5.

CEA's Antennas Committee has active work 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. 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.

The Cable Compatibility Committee wrapped up a five-year review of CEA-542-C, *Cable Television Channel Identification Plan*. This standard, referenced in FCC rules, defines 6 MHz channel allocations for 158 channels up to 1002 MHz, and includes a method for specifying higher channels. The review updated references and made editorial changes to this standard

that has been stable in the industry for several years. 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). The work is being done jointly with the Society of Cable Television Engineers (SCTE).

Digital television has always promised and delivered better audio to consumers. We have entered a period in the DTV transition in which a number of groups are refining standards or writing new recommendations to improve the audio experience of DTV for consumers. CEA is included among them, with three projects in various stages of completion. The Video Systems Committee has been 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. The group has conducted its update with real-world experience drawn from participating broadcasters and equipment makers, resulting in the following changes to the bulletin:

- New diagrams to indicate proper signal levels, including BTSC.
- Verified NTSC reference level of -17dB.
- ITU BS1770 standards references replaced previous measurement method references.
- AC-3 decoder operating mode information added to document with recommendations for default/deployment modes.

The Television Data Systems Subcommittee has begun work on a new recommended practice that will give

guidance to receiver manufacturers on how to parse the relevant portions of an ATSC audio stream, particularly in situations in which the broadcaster is sending audio in multiple languages. The group is considering what practices might be followed to help consumers most easily select a desired audio stream when multiple audio streams are available. Also related to audio, the Video Systems Committee formed a working group empowered to create a Consumer Electronics Bulletin describing recommendations for A/V Synchronization using MPEG-2 Transport Stream timestamps. The project stems from widespread industry efforts to improve A/V synchronization and capitalizes on work throughout the broadcast chain to improve the alignment and quality of transport streams as delivered to receivers.

The DTV Interface Subcommittee, R4.8, establishes standards and guidelines for RF, analog, and digital interfaces for the purpose of defining connectivity and interoperability among analog/digital TV receivers and other consumer devices that deliver analog and digital A/V and other digital data services. In 2008 the DTV Interface Subcommittee approved CEA-762-B, *DTV Remodulator Specification*. This standard defines minimum specifications for a one-way data path using an 8-VSB trellis remodulator that complies with ATSC Standard A/53B, Annex D. CEA-762-B provides the equivalent of an RF output for the DTV world.

The DTV Interface Subcommittee published two standards related to IEEE 1394. CEA-775.2-A, *Service Selection Information for Digital Storage Media Interoperability*, was published in June 2008. 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. The Subcom-

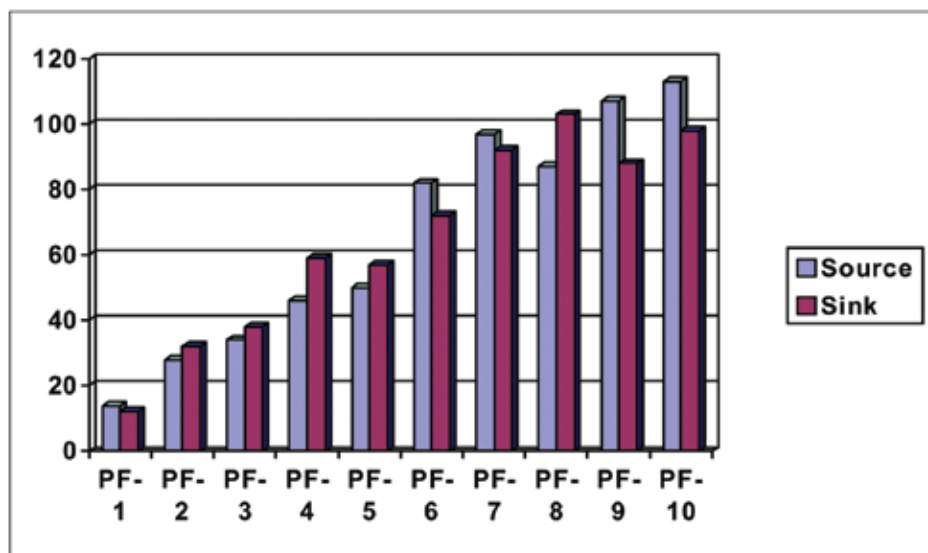


Figure 3. Number of devices participating in CEA Plugfest events.

mittee also 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 DTV streams, direct broadcast satellite digital streams, U.S. cable digital streams and SD digital video camcorder digital streams.

Finally, the DTV Interface Subcommittee approved CEA-805-D, *Data Services on the Component Video Interfaces* in May 2008. 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).

Information on all of CEA's standards activities, including how to get involved is available at www.ce.org/standards.

Improving Interoperability

CEA has partnered with the DCP LLC to host two interoperability "Plugfests" each year since 2003. These events allow manufacturers to come together and test interfaces in a semi-private, round robin fashion. The most recent Plugfests have dropped testing of CEA-775 (IEEE 1394 DTV) to focus on products with CEA-861 (HDMI/HDCEP) interfaces. The growth in participation

demonstrated in **Fig. 3** indicates why the event has migrated to a single interface. A full week of interoperability testing is needed to accommodate the 200 or so sources and sinks and engage as many test combinations as possible. The working group that guides these events constantly updates its procedures and the data collected to give participants as much useful information as possible. For 2008, the group expects to begin including some level of HDMI Consumer Electronics Control channel (CEC) testing in addition to continuing various specialized test suites and educational events in the evenings.

Energy Efficiency

Environmental considerations of all kinds are having an impact on the consumer electronics industry, and energy efficiency is one of the leading considerations. Although consumer electronics account for less than 15% of household electricity use, TVs are the largest in the category and therefore the target of interest for regulators. The voluntary, flexible, and international approach of the Environmental Protection Agency's ENERGY STAR program is one of the most effective and flexible ways to support and sustain energy efficiency and conservation in the consumer electronics sector. Accordingly, the consumer electronics industry had been very active in working with the ENERGY STAR program to up-

date existing programs and create new ones for set-top boxes, TVs, computer monitors, external power supplies, and other consumer electronics.

For TVs, the ENERGY STAR program has evolved to address total energy consumption, including active or on-mode power draw in addition to standby mode. This is a major and important change in focus for the ENERGY STAR program. The successful publication of the new ENERGY STAR Version 3.0 TV products specification in February 2008 was the result of collaboration among representatives of industry, government, and other energy efficiency stakeholders.

Particularly important to the new ENERGY STAR specification and to understanding DTV energy use in general, was the development of the new international standard test procedure for measuring power draw in digital televisions, known as IEC 62087:2008. The IEC standard has the full support of all participants, including industry, environmental groups, and governmental agencies. It is appropriate for all television technologies, including LCD, plasma, rear projection and CRT. In addition to its adoption by the EPA's ENERGY STAR program in the U.S., it is being adopted by Australia, New Zealand, and the European Union, with further international adoption expected in the future. Final publication of the standard is expected in October 2008.