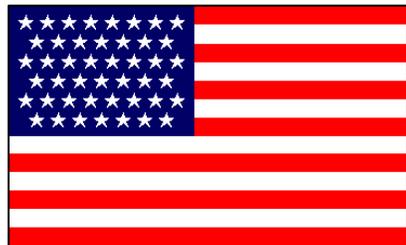




Issue 1 - 101111



The “Analog Sunset” Explained





What is the “Analog Sunset”?

Need to Know!

“Analog Sunset” is a legal term used in the Final Adopter Agreement drafted in June 2009 by the industry-created AACS (Advanced Access Content System). The Agreement intends to protect distribution of HD (High Definition) content by restricting the availability of analog video output as follows:

- (i) By prohibiting Blu-ray Disc players to be manufactured with the HD-capable analog component video output (YPbPr) , and
- (ii) By encouraging content producers to embed ICT (Image Constraint Token) or DOT (Digital Only Token) technology on the Blu-ray Disc itself to limit availability/resolution of the HD content on the component output of a Blu-ray Disc player.

> See slides 4-7 for details on who AACS is and what it does.

The Blu-ray Disc Rules for AACS adopters

- Blu-ray Disc players manufactured after 2010, may continue to be equipped with component video output interface, but the output resolution shall be limited to standard definition (480i or equivalent).
- Blu-ray Disc players manufactured after 2013, shall not be equipped with analog video output of any kind.



What the “Analog Sunset” is **NOT**

Need to Know!

[1] “Analog Sunset” is **NOT sanctioned by FCC** and it does not impact Satellite/Cable-delivered content. **FCC Section 76.1903 explicitly prohibits** the disabling of analog outputs on satellite receivers, cable set-top boxes, and ATSC tuners intended to decode the over-the-air digital ATSC signals broadcast by local television stations.

§ 76.1903 Interfaces A covered entity shall not attach or embed data or information with commercial audiovisual content, or otherwise apply to, associate with, or allow such data to persist in or remain associated with such content, so as to prevent its output through any analog or digital output authorized or permitted under license, law or regulation governing such covered product.

Source: Code of Federal Regulations (CFR), Title 47: Telecommunications, Part 76: Multichannel Video and Cable Television Service

[2] However, in May 2010 , the FCC granted a limited **Waiver of Section 76.1903** to MPA (Motion Picture Association of America) to allow the use of **SOC** (Selectable Output Control) technology to broadcast movies shortly after theatrical release, but prior to home video release – for example, the Video-on-Demand applications.

- > **SOC technology** is primarily applicable to Video-on-Demand services whereby it enables the cable company to disable analog output of a set-top box and restrict availability of HD content to its HDMI interface instead. To allow owners of TV sets not compatible with HDMI to maintain access to HD content, FCC has restricted the use of SOC to 90 days from the first day the cable company has used it on a movie, or until the movie is available on DVD/Blu-ray Discs, whichever comes first. FCC will review the Waiver in 2 years.

The FCC Waiver Summary

Analog component video output available on satellite/cable set-top boxes today will continue to be available to consumers for the foreseeable future. Availability and quality of existing over-the-air broadcasts and video-on-demand services remain the same.



AACCS LA - Who/What

Good to Know

WHO is AACCS?

AACCS LA stands for Advanced Access Content System – Licensing Administrator. It is founded by the following 8 companies:



WHAT does AACCS do?

It intends to provide its “licensed participants” the legal and technology means necessary to restrict access to and copying of the next generation of optical discs and DVDs. It’s first specification, applicable to Blu-ray Disc and HD DVD, was released publicly in April 2006. The specification limits delivery of HD programs by both the Blu-ray disc player and the disc itself as follows:

(i) **Blu-ray Disc Player Rules:** Also known as the “Analog Sunset”, requires the licensed manufacturers (a) to limit analog video outputs of their media players produced after 2010 to SD mode only (composite video, S-video, 480i component video, and 576i video), and (b) to omit any analog video output interface on players produced after 2013.

(ii) **Blu-ray Disc Rules:** Requires the licensed content producer to embed onto Blu-ray Discs, DOT (Digital Only Token) or ICT (Image Constraint Token) “flags” which will limit availability/quality of the HD content on component output of a media player, if present.



AACS Specs for Blu-ray Disc players

Good to Know

The provisions described below apply only to the AACS licensed products – products that are authorized to playback AACS-encrypted content. At this time, it only applies to Blu-ray Disc players, whether physical or software-driven using a computer.

2.2.2.1 Analog Sunset – 2010. With the exception of Existing Models, any Licensed Player manufactured after December 31, 2010 shall limit analog video outputs for Decrypted AACS content to SD Interlace Modes only.... For the purpose of this section, "SD Interlace Modes" shall mean composite video, s-video, 480i component video, and 576i video.

2.2.2.2 Analog Sunset – 2013. No Licensed Player that passes Decrypted AACS Content to analog video outputs may be manufactured or sold by Adopter after December 31, 2013.

Source: AACS Final Adopter Agreement, June 19, 2009, Exhibit E – Compliance Rules, Part 1

The Blu-ray Disc Player Specifications

- Blu-ray Disc players manufactured now may include HD-capable component video outputs.
- Blu-ray Disc players manufactured after 2010 may only have SD analog video output.
- Blu-ray Disc players manufactured after 2013 may not have any analog video output.
- A computer equipped with licensed Blu-ray Disc playback software released after 2010, would have its VGA output restricted to SD when playing a Blu-ray Disc – but the VGA output may provide its maximum resolution when not used for displaying the content of a Blu-ray Disc.



AACS Specs for Blu-ray Discs

Good to Know

The provisions described below apply only to the AACS licensed “Content Participants” and “Content Providers”.

2.23 **“Digital Only Token”** shall mean the field, as described in the Specifications, used to trigger the limitation of output of Decrypted AACS Content to only-digital outputs.

2.26 **“Image Constraint Token”** shall mean the field, as described in the Specifications, used to trigger a Constrained Image as set forth in these Compliance Rules.

2.17 **“Constrained Image”** shall mean an image having the visual equivalent of no more than 520,000 pixels per frame (e.g., an image with resolution of 960 pixels by 540 pixels for a 16:9 aspect ratio). A Constrained Image may be attained by reducing resolution, for example, by discarding, dithering, or averaging pixels to obtain the specified value. A Constrained Image can be displayed using video processing techniques such as line doubling or sharpening to improve the perceived quality of the image. By way of example, a Constrained Image may be stretched or doubled, and displayed full-screen, on a 1000-line monitor.

Source: AACS Final Adopter Agreement, June 19, 2009, Exhibit E – Compliance Rules, Part 1

The rules under which the DOT and ICT are to be used are described below.

1.2.1 **Digital Only Token (“DOT”)** Content Participant/Provider may assert the Digital Only Token only with respect to (a) Non-Consumer Products and/or (b) LCP Units Released in a given country with the first six (6) weeks after the first Theatrical Release do substantially similar Digital Entertainment Content in such country, provided that in the event of the circumstances set forth in this part (b), within six (6) months after such first theatrical Release, Content Participant/Provider shall Release in such country LCP Units containing a version of such Licensed Content Product that does not assert the Digital Only Token.

1.3.2 **Image Constraint Token (“ICT”)** Content Participant/Provider shall not, prior to December 31, 2010, direct Licensed Content Procedures to embed the Image Constraint Token in Licensed Content Products offered for sale or other distribution in a country in which there was a government or quasi-government regulation or equivalent prohibiting the use of an Image Constraint Token, or equivalent, for scrambled or encrypted content as of November 30, 2005.

1.4 **Image Constraint Token and Digital Only Token Disclosure.** If Content Participant/Provider has directed that the Image Constraint Token and/or Digital Only Token be set with respect to a particular LCP Unit, then the fact that such Image Constraint Token and/or Digital Only Token (as applicable) is set shall be disclosed by the Content Participant/Provider to the consumer either (i) on such LCP Unit's product packaging; or (ii) only in the case of a consumer product, by other reasonable means that allows the consumer to be aware at the point of initial purchase that the Image Constraint Token and/or Digital Only Token (as applicable) is set with respect to such LCP Unit.

Source: AACS Final Adopter Agreement, June 19, 2009, Exhibit E – Compliance Rules, Part 3



AACS Specs for Blu-ray Discs - *Continued*

Good to Know

The Blu-ray Disc Specifications

- ICT and DOT are two digital “flags” that can be embedded onto a compact disc to limit availability/quality of the HD content at the component output of a player.
- All discs with ICT or DOT flag must be marked as such - consumer will be aware of it before purchasing the disc.
- ICT restricts the resolution for analog outputs to 960x540 (SD-equivalent). Full 1920x1080 resolution is restricted to HDMI or DVI outputs that support HDCP encryption. For example, when a Blu-ray Disc with ICT flag is played on an older Blu-ray player, the resolution at the component output of the player will be limited to 960x540. ICT flag can be implemented on HD DVD/Blu-ray Discs made after 2010.
- DOT restricts access of HD content at a digital output only. The content of a HD DVD/Blu-ray flagged with DOT will not be available at the component output of a player (if present). DOT can only be used for non-consumer content, or for copy-righted content (such as movies) released on Blu-ray Disc within 6 weeks of the theatrical release, with the exception that non-DOT versions of the disc must be released within 6 months. DOT pose no restrictions to a consumer who waits to purchase a Blu-ray Disc movie 6 months after the movie was released to theaters.



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