

SMPTE PUBLISHES AFD AND BAR DATA STANDARD FOR REVIEW



As reported in last week's *TV TechCheck*, SMPTE has recently posted two draft standards for Trial Publication:

SMPTE 2016-1 Format for Active Format Description and Bar Data
SMPTE 2016-3 Vertical Ancillary Data Mapping of Active Format Description and Bar Data

The two documents complement standards for carriage of Active Format Description (AFD) and Bar Data as now defined for DTV transmission in ATSC standard A/53E and for use by consumer receivers in CEA-CEB-16.

AFD and Bar Data carried with a DTV signal will enable DTV receivers and displays to intelligently adjust the displayed image to reduce or eliminate the black bars that currently occur when program source and displayed aspect ratio do not match. Although the ATSC standard for this has been in place since 2004, it is only this summer that the CEA standard was finalized. The SMPTE standard, for the studio part of the chain, will now allow equipment manufacturers to produce equipment that places AFD and Bar Data in the VANC space for carriage and recording with SDI and HD-SDI digital video signals. This completes the chain from production, through encoding and emission to the receiver.

The four-bit AFD code defines various shapes for active video in either a 4:3 or 16:9 coded frame. The illustration shows it in a 16:9 frame.

The code informs the receiver which parts of the image may safely be discarded, either because it comprises black bars or because the producer placed all critical action in a central area, say 4:3 or 14:9. In that case, a receiver can, if necessary, discard picture area, without significant loss to the viewer.

Active Format	Illustration in a 16:9 coded frame	Description
AFD = '0100' Box >16:9 (center)		Image with aspect ratio greater than 16:9 as a vertically centered letterbox in a 16:9 coded frame.
AFD = '1000' Full frame		Image is full frame, with an aspect ratio that is the same as the 16:9 coded frame.
AFD = '1001' 4:3 (center)		Image with a 4:3 aspect ratio as a horizontally centered pillarbox image in a 16:9 coded frame.
AFD = '1010' 16:9 (with complete 16:9 image protected)		Image is full frame, with a 16:9 aspect ratio and with all image areas protected.
AFD = '1011' 14:9 (center)		Image with a 14:9 aspect ratio as a horizontally centered pillarbox image in a 16:9 coded frame.
AFD = '1101' 4:3 (with alternative 14:9 center)		Image with a 4:3 aspect ratio and with an alternative 14:9 center as a horizontally centered pillarbox image in a 16:9 coded frame.
AFD = '1110' 16:9 (with alternative 14:9 center)		Image with a 16:9 aspect ratio and with an alternative 14:9 center in a 16:9 coded frame.
AFD = '1111' 16:9 (with alternative 4:3 center)		Image with a 16:9 aspect ratio and with an alternative 4:3 center in a 16:9 coded frame.

AFD Diagrammatic Representations for Images in a 16:9 Coded Frame
(Reproduced with Permission from SMPTE)

For active images that are not exactly 4:3, 14:9 or 16:9, the standard allows certain special AFD codes to be sent with Bar Data which defines the width of the letterbox (top and bottom) or pillarbox (side) bars. In particular, this allows widescreen "scope" movies to be accurately described.

At least two manufacturers of video equipment have already designed products that can generate the new metadata and also process video based on incoming codes. A further application of the standard is in fact for format conversion signaling and control in the professional domain.

The standards are available on the SMPTE Web site:

http://www.smpte.org/smpte_store/standards/trialpub.cfm

Interested parties are urged to review these draft standards and provide comments to SMPTE Director of Engineering Carl Girod at cgirod@smpte.org or to Graham Jones at gjone@nab.org. The closing date for comments is 12/6/06.



**Call for Proposals for
NAB2007 Extended
Until November 8**

If you have a suggestion for a presentation for the 2007 NAB Broadcast Engineering Conference you still have time to submit it. For additional information on how to submit your suggestions just go to the NAB Call for Proposals Web site at: <http://www.nabshow.com/nab2007/callForProposals.asp>.

VSB Seminar Offerings

ATSC Digital Television 8-VSB Transmission System Fundamentals & Measurement Seminar

Wednesday, November 8 from 1:00 –6:00 pm

Thursday, November 9 from 8:30 am-5:45 pm

Tutwiler Hotel, Birmingham, AL

This seminar will help you develop an understanding of the 8-VSB transmission system basics as well measurement techniques that are desired in the laboratory, at transmitter sites and at remote field sites. Both seminars will be presented by Gary Sgrignoli of Meintel, Sgrignoli & Wallace. For more information on either of these seminars contact Gary Sgrignoli at (847) 259-3352, gary.sgrignoli@ieee.org or check out the Meintel, Sgrignoli and Wallace Website at www.mswdtv.com.