

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
)	
Second Periodic Review of the)	MB Docket No. 03-15
Commission's Rules and Policies)	
Affecting the Conversion)	RM 9832
To Digital Television)	
)	
Public Interest Obligations of TV)	MM Docket No. 99-360
Broadcast Licensees)	
)	
Children's Television Obligations of)	MM Docket No. 00-167
Digital Television Broadcasters)	
)	
Standardized and Enhanced Disclosure)	MM Docket No. 00-168
Requirements for Television Broadcast)	
Licensee Public Interest Obligations)	

COMMENTS OF THE ADVANCED TELEVISION SYSTEMS COMMITTEE, INC.

The Advanced Television Systems Committee, Inc. (ATSC) hereby submits these comments on the Commission's Notice of Proposed Rule Making in the proceeding noted above dealing with the Commission's review of its rules and policies affecting the conversion to digital television (DTV) in the United States.¹ The ATSC's comments on the Notice are limited to section J, paragraph 105 regarding technical standards for distributed transmission and Section L paragraphs 113-123, in which the Commission seeks comment on issues related to ATSC Standards.

¹ The Advanced Television Systems Committee, Inc. is an international, non-profit organization developing voluntary standards for the entire range of advanced television systems. The ATSC has approximately 140 member organizations representing the broadcast, broadcast equipment, motion picture, consumer electronics, computer, cable, satellite, and semiconductor industries. The ATSC developed the ATSC Digital Television Standard, most of which the Commission adopted as its DTV broadcast standard in 1996.

We applaud the Commission's decision to revise its rules to adopt the August 7, 2001 version of the ATSC DTV Standard A/53B. One of the many benefits of the flexible ATSC digital television standard is the ability to improve and enhance the technology and related standards over time. We appreciate the Commission's willingness to consider changes made by our industry-driven standards process. The ATSC has developed a number of voluntary standards for various applications and, while we believe that compliance with most of these standards should be voluntary, there are some that are critical to the successful implementation of DTV in the United States and should, therefore, be made mandatory by the Commission.

Distributed Transmission Technologies

The ATSC has developed specifications for synchronization of multiple transmitters emitting 8-VSB signals in accordance with A/53B. The Candidate Standard² "Synchronization Standard for Distributed Transmission" (CS/110A), which is available at http://www.atsc.org/standards/cs_documents/cs_110a.pdf, specifies the parameters necessary to synchronize multiple transmitters using transport level mechanisms and without altering the signal format emitted from the transmitters. CS/110A also provides for adjustment of transmitter timing and other characteristics through additional information carried in the transport structure. Because emitted signals from transmitters operated according to this candidate standard comply fully with ATSC A/53B we believe that its use does not require FCC action. However, implementation of Distributed Transmission may require the Commission to adopt rules regarding power levels, interference, and other parameters.

² Advancement of a document to Candidate Standard is an explicit call to those outside of the related ATSC specialist group for implementation and technical feedback.

Other Issues

ATSC Standards

The ATSC DTV Standard (A/53B) has been amended to include the Active Format Descriptor (AFD). Amendment 1 to A/53B (http://www.atsc.org/standards/a_53b_with_amendment_1.pdf) is intended to help avoid the “postage stamp” effect that can result from mismatched aspect ratios. The AFD function provides the ability to communicate to the display device the “active area” of the video signal. For example, it can communicate to a display that a 4x3 video signal contains within it a letterboxed 16x9 video image. The AFD is included in video user data whenever the rectangular picture area containing useful information does not extend to the full height or width of the coded frame. AFD data may also be included in user data when the rectangular picture area containing useful information extends to the full height and width of the coded frame. While use of AFD is optional, we believe that to the extent broadcasters want to implement this functionality, it is important that it be done in a way that is consistent with the Standard.

The ATSC is in the process of finalizing Amendment 2 to A/53B (http://www.atsc.org/standards/T3_580r2.doc), which revises the transport section of the ATSC Digital Television Standard, Annex C, to update normative references to avoid conflicts, and to establish a common methodology for carriage of private data in the ATSC Transport Stream. The amendment defines the ATSC Private Information Descriptor for the carriage of private descriptor-based data, and it also clarifies rules for use of the MPEG-2 Registration Descriptor mechanism for management of private data in the digital multiplex.

To be consistent with the current version of the ATSC A/52 Digital Audio Compression Standard, Amendment 2 revises the way audio language is signaled in the ATSC system and specifies the use of ISO-639 language encoding to identify written and spoken languages. Amendment 2 also

specifies some requirements that had been implemented in transmission and receiving equipment but not properly specified in A/53B. These included the requirement that each service with an audio component must include at least one “complete main” audio service and the requirement that the video Elementary Stream component be identified with MPEG-2 stream_type value 2. Upon final approval of the ATSC membership, we suggest that the Commission incorporate Amendment 2 to A/53B into its rules.

The ATSC is developing additional enhancements to the A/53B DTV Standard. These enhancements will provide broadcasters with new optional modes of operation which will provide greater flexibility in offering new services to the public. The optional enhancements add additional forward error correction coding layers before sending the data via a version of 8-VSB called Enhanced 8-VSB (E8-VSB). This allows creation of a second “robust” data stream with characteristics that allow reception at lower signal-to-noise ratios than the main data without altering the RF characteristics. Broadcasters may choose from various coding rate options and the payload assignment between the Enhanced 8-VSB and the main. The optional modes are designed to avoid impact on the payload in the Main Service so that receivers that are not designed to accommodate the enhanced modes will continue to receive that Main Service. Industry tests have confirmed this backward compatibility with existing receivers. The robust mode may be used to carry video, audio, or data that may be independent of or related to, the programs in the main service. One application of Robust Mode could be to provide a "fallback" service in the event that reception fails in the Normal channel. This fallback service could be audio only or audio and low resolution video. The robust mode could also be used for new services. One example would be to provide a 24-hour news, weather and traffic service using the robust mode while simultaneously transmitting HDTV in the normal mode. The ATSC is also considering efficient video and audio compression technologies to support these new services. The ATSC’s Specialist Group

on RF Transmission has approved the E8-VSB modulation system, and the ATSC will update the Commission as this work progresses.

PSIP

As indicated in earlier comments³, the ATSC believes that the FCC should mandate use of the ATSC Program and System Information Protocol (PSIP) Standard. PSIP facilitates easy access by viewers to DTV services offered by broadcasters and is a necessary element for reliable, real-world operation. PSIP is an important element of the DTV System and is essential to the success of the DTV transition. The current version of PSIP (A/65B, March 18, 2003) is available at http://www.atsc.org/standards/a_65b.pdf. Consistent broadcaster implementation of PSIP will allow consumer electronics manufacturers to design receivers that can easily acquire DTV services to provide viewers with a good user experience. Acquisition of a DTV channel not transmitting PSIP is often significantly slower than acquisition of a channel with PSIP. This effect is not only a detriment to the particular broadcast service without PSIP but has a negative effect on all DTV stations in the market. As viewers “surf” DTV channels by using the up and down controls, slow acquisition of any channel will negatively affect the viewer’s overall experience. It is important that viewers be provided with a uniform approach to the selection of DTV services. This will only be possible if broadcasters fully implement PSIP as specified in A/65B. The Commission should note that the ATSC has developed the “Recommended Practice PSIP Implementation Guidelines for Broadcasters” (A/69) and the Consumer Electronics Association (CEA) has developed a complementary recommended practice (CEB-12) for consumer receiver manufacturers.

³ Comments of the Advanced Television Systems Committee, “MM Docket No. 00-29

The PSIP Standard defines specific requirements for use of “major channel numbers” to provide viewers with a uniform methodology to access DTV services and to avoid conflict with duplicative numbers in a market. The major channel number also allows broadcasters to maintain their local brand identification. Regardless of the actual RF channel used for DTV transmission, PSIP states that a broadcaster’s major channel number will be the same as its NTSC RF channel number. For example, a broadcaster who operates an NTSC service on channel 4 and a DTV service on channel 27 would use the major channel 4. The PSIP “minor channel number” is used to identify programs and other services, which are a part of the DTV service. For example, channel 4.1 may be an HDTV program service and it may be multiplexed with an SDTV service, which is channel 4.2. The viewer can now easily “surf” from 4.0 (NTSC) to 4.1 (HDTV) to 4.2 (SDTV). During the development of PSIP, it was recognized that in some situations broadcasters would need to deviate from the rule that the major channel number is the same as the broadcaster’s NTSC channel number. These exceptions are as follows:

- If a broadcaster without an NTSC broadcast license applies and receives a license for a digital broadcast channel, the major channel number should be the same as the DTV RF channel.
- If a broadcaster owns or controls broadcast licenses for two or more different RF channels having overlapping service areas, a common major channel number for all services on all channels may be used.
- A broadcaster may use major channel numbers in the 70–99 range as long as assignment of these major channel numbers is coordinated so that they are unique within a region.

- If a broadcaster includes in its DTV service programming originating from a different licensed broadcaster, the major channel number of the original broadcast may be used as long as it is coordinated to avoid conflicts.
- For a translated signal, the major/minor channel numbers shall remain the same as the original broadcast station unless the major channel conflicts with a broadcaster operating in the service area of the translator. In that case, the translator changes the major number to a non-conflicting number.

We believe that these exceptions provide broadcasters with the necessary flexibility to address most circumstances. To the extent broadcasters have a unique situation that is not provided for in PSIP, the Commission should grant exceptions on a case-by-case basis.

During the development of PSIP, the ATSC carefully considered which elements of PSIP should be mandatory and which should be optional. For example, FCC adoption of A/65B would require transmission of the System Time Table (STT), but make transmission of the Extended Text Table (ETT) optional. Although transmission of certain tables and descriptors would be optional, it is important that the Commission adopt the complete PSIP Standard so that, to the extent that optional tables and descriptors are used, there is a uniform approach within the industry.

Closed Captioning

Effective implementation of closed captioning requires implementation of PSIP and proper use of the Captioning Service Descriptor. The Caption Service Descriptor informs the viewer that closed caption services and alternate audio are available and lists the variety of traditional and advanced caption services available in a program stream. The caption data itself, which is carried in an area of the video data, does not carry a description of the type of captioning that it is (such as English or Spanish, Line 21

or DTVCC), so receivers usually rely on the PSIP Caption Service Descriptor to provide the important control information needed to decode and display a particular caption service. For this reason, the A/65B standard specifies carriage of the Caption Service Descriptor within the Event Information Table (EIT) and the Program Map Table (PMT). If this service information is not available, a receiver might not be aware of the presence of captioning even if caption data is present. Broadcasters, therefore, must provide complete and accurate carriage of this PSIP information on a consistent basis.

Multiple Audio Services

PSIP also provides unique service information describing multiple and alternate audio services in an ATSC transport stream. The A/65B AC3 Audio Descriptor is the only source of service information providing full detail of the main and associated audio services that may be present. If broadcasters do not provide this descriptor fully and accurately – or if the receiver does not use this information for tuning, decoding, and display – the viewer may not be aware of the variety of audio services available.

V-Chip

The PSIP Region Rating Table (RRT) is used to define a rating system for a particular region. The actual parental advisory (V-chip information) is carried in the Content Advisory Descriptor. The receiver uses this information to block programs that exceed the ratings selected in a user set-up procedure, and may be used by the receiver to provide on-screen information about a program's rating for objectionable material. For terrestrial broadcast, if parental advisory information is to be provided, the Content Advisory Descriptor is required in the Event Information Table (EIT), which is an element of the PSIP Standard. Inclusion of the Content Advisory Descriptor is optional in the MPEG-2 Program Map Table (PMT) because programs may be acquired and displayed by a terrestrial broadcast receiver without acquiring or processing the PMT. We believe that consumer electronics manufacturers are

designing digital televisions that do or will utilize the Content Advisory Data carried in the EIT as defined by the PSIP standard. The parental guideline system being used in the U.S. is defined by the EIA/CEA-766-A Standard. Use of EIA/CEA-766-A is necessary so that DTV receivers will work in a manner similar to analog receivers. Receiver manufacturers must rely on EIA/CEA-766-A to provide parental advisory support due to the U.S. system's defined interdependencies among the rating parameters. This type of complex system cannot be supported by the PSIP RRT structure because it does not accommodate interdependency between different ratings dimensions. Therefore, consumer receivers must have EIA/CEA 766-A predefined so no additional information is conveyed by transmitting the RRT currently assigned to the U.S. However, the PSIP Standard does provide the ability to extend or replace the content advisory system in the U.S. by assignment of a new, different rating region code⁴. Receivers that are built compliant with CEA standards and recommended practices will support an additional new system with one or more independent categories, each with a series of levels definable by a new RRT.

TV Translators

PSIP addresses use on translators by specifying that the major/minor channel numbers are to remain the same as the original broadcast station unless the major channel conflicts with a broadcaster operating in the service area of the translator. In that case, the translator can utilize a different major number as long as it does not conflict with another broadcaster's DTV service.

Although PSIP provides a mechanism for providing carrier frequency information, its use is strongly discouraged⁵. DTV receivers are expected to recognize the Transport Stream ID (TSID) and make note

⁴ The United States has been assigned rating region "0x01". An additional rating region can be assigned to the US to facilitate a replacement content advisory system.

⁵ Although A/65B currently allows use of the carrier_frequency, its use is deprecated and it will not be allowed after January 1, 2010.

of the associated channel frequency. Use of TSID data in the receiver actually makes it possible for the receiver to correctly display channel data and perform navigation even if the carrier frequency information in PSIP is incorrect. If a broadcast translator shifts the frequency of a transmitted signal without modifying the PSIP data, DTV receivers will find the signal and memorize the frequency at which a particular TSID was found. An analog translator can be paired with a digital translator by associating the analog TSID value carried in the vertical blanking interval (VBI) with the TSID carried in the digital translator PSIP data.

In summary, the ATSC urges the Commission to revise its rules to adopt Amendment 2 of the ATSC DTV Standard (A53B) and to mandate use of the ATSC PSIP Standard (A/65B).

Respectfully submitted,

The Advanced Television Systems Committee



Philip Livingston
Chairman



Mark S. Richer
President

Advanced Television Systems Committee, Inc.
1750 K Street, NW
Suite 1200
Washington, DC 20006
(202) 828-3130
www.atsc.org

April 21, 2003