

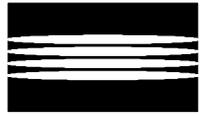
Overview of ATSC Standards

7th Annual Digital Audio & Video Workshop

October 3 - 6, 1995

Robert Hopkins

ATSC

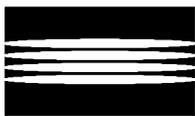


Overview of ATSC Standards

- **What is ATSC**
- **A Bit of History**
- **ATSC Standards**
- **Other Issues**
- **The Future**

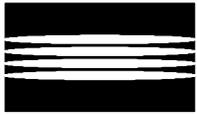


What is ATSC



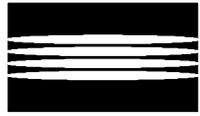
What is ATSC

- **ATSC established in 1982**
- **ATSC Charter Members**
 - **EIA**
 - **IEEE**
 - **NAB**
 - **NCTA**
 - **SMPTE**



ATSC Charter

- **Coordinate and develop voluntary national technical standards for advanced television systems.**
- **Make recommendations to the U.S. Department of State for its use in developing United States positions on various international standards issues.**
- **Where useful and appropriate, submit proposed standards to the FCC.**

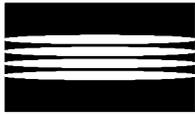


ATSC and the ATV Standard

- **Why is ATSC documenting the ATV Standard?**
 - **In 1992 FCC welcomed proposal that ATSC document the ATV standard**
 - **Documentation began after formation of Grand Alliance**

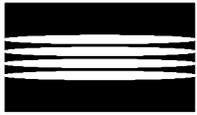


A Bit of History



1983 - 1986

- **1983**
 - **Conventional wisdom**
 - **HDTV will be broadcast only by satellite**
- **1984 - 1986**
 - **Terrestrial broadcasting proposals that used multiple NTSC channels began to appear**
 - **2 proposals for NTSC plus an augmentation channel**
 - **1 proposal for 9 MHz analog simulcast HDTV**



1987 - 1989

- **1987**
 - **FCC issued Notice of Inquiry**

- **1988 - 1989**
 - **Multiple proposals for**
 - **IDTV**
 - **EDTV**
 - **NTSC plus an augmentation channel**
 - **6 MHz analog simulcast HDTV**



1990

DIGITAL



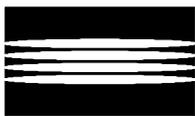
1991-1993

- **Height of Competitive Phase**
 - **Five HDTV simulcast systems**
 - **Round 1 testing**
 - **Special Panel Meeting**

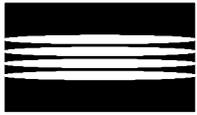


1993-1995

- **Cooperative Phase**
 - **Formation of Grand Alliance**
 - **Construction of prototype**
 - **Development of standards**
 - **Round 2 testing**

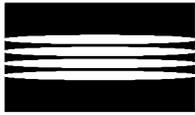


ATSC Standards



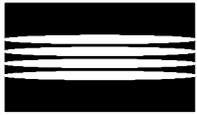
Development of ATV Standard

- **Grand Alliance proposed specifications**
- **Advisory Committee's Technical Subgroup approved specifications**
- **ATSC documented specifications as a standard**



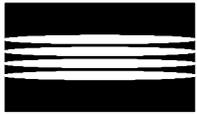
ATSC Documents

- **ATSC Digital Television Standard**
- **Guide to the Use of the ATSC Digital Television Standard**
- **Digital Audio Compression (AC-3) Standard**



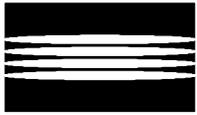
ATSC Digital Television Standard

- **Five annexes**
 - **Video**
 - **Audio**
 - **Transport**
 - **RF**
 - **Receiver**



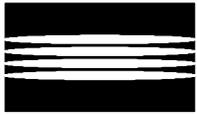
Basic ATV Specifications

- **Video formats:**
 - **1080 x 1920 16:9 60I, 30P, 24P**
 - **720 x 1280 16:9 60P, 30P, 24P**
 - **480 x 704 16:9 & 4:3 60I, 60P, 30P, 24P**
 - **480 x 640 4:3 60I, 60P, 30P, 24P**
 - **Vertical rates also at 59.94, 29.97, and 23.98 Hz**



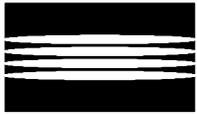
Basic ATV Specifications

- **Video compression:**
 - **MPEG-2 (Main Profile)**
- **Audio compression:**
 - **Dolby AC-3 (48 kHz)**
- **Transport:**
 - **MPEG-2 (Transport Stream)**
- **RF modulation**
 - **8 VSB**



Copy of ATSC Standard

- **ATSC Standard is available on the Internet**
 - anonymous ftp**
 - **[ftp.atsc.org/pub/Standards/](ftp://ftp.atsc.org/pub/Standards/)**
 - World Wide Web**
 - **<http://www.atsc.org>**

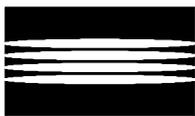


Other ATSC Standards

- **Emmy Award Winners**
 - **Ghost Canceling Reference Signal**
- **Standards under development**
 - **Additional annexes for AC-3**
 - **Program Guide for Digital Television**
 - **System Information for Digital Television**
 - **Compliance with Digital Television Standard**



Other Issues



Other Issues

- **Require “all-format” receiver?**
- **Require HDTV broadcasting?**
- **Auction spectrum?**
- **Flexibility for terrestrial broadcasting**
 - **Multiple SDTV programs or single HDTV program?**
 - **Data transmission?**



Other Issues

- **Standards for DBS, cable, VCR, etc.**
 - **Compatible with ATSC Digital Television Standard?**
 - or**
 - **Multiple standards?**



The Future



The Future

- **November 1995**
 - **Advisory Committee Recommendation**
- **First Half 1996**
 - **FCC Report and Order**
- **Anticipate experimental digital TV transmissions in 1996-1997**
- **Anticipate commercial digital TV on-the-air in 1998**