Overview of ATSC Standards

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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
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/
  - 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