



国家广播电影电视总局广播电视规划院

Academy of Broadcasting Planning, SARFT

AVS related Standards and Testing

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October 19, 2016

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1 ABP Brief

- ❖ **Academy of Broadcasting Planning**
- ❖ **Directly under the State Administration of Press, Publication, Radio, Film and TV(SAPPRFT)**
- ❖ **Specialized in Technical Planning, Standards, Testing, Consulting and Information Service**

ABP brief

❖ Business Department

- Radio and Television Center Institute
- Cable TV Institute
- Wireless Institute
- Standardization Institute
- Information Institute

ABP brief

- ❖ **Metrology and Test Center of Radio &TV**
 - **4 categories, 146 kinds of products, approved by CNAS(China National Accreditation Service for Conformity Assessment, CNAS)**
 - **9 categories, nearly 200 kinds of products, Identification for SAPPRT**

ABP brief



ABP brief

❖ Engineering Consulting Qualification, Class-A



ABP brief

❖ Qualification of Information Security Service Provider

ISCCC

CERTIFICATE FOR QUALIFICATION OF INFORMATION SECURITY SERVICE PROVIDER

No.: ISCCC-2012-ISV-RA-055

This is to certify that

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conforms to the *Second Class* requirements of GB/T 20984-2007 (Information security technology-Risk assessment specification for information security) and YD/T 2252-2011 (Evaluation criteria of service capability for network and information security risk assessment) in providing of *Risk Assessment Service*.

Registered address: No.2, Fuxing Menwai Street, Xicheng District, Beijing, P.R.China

Audited address: No.2, Fuxing Menwai Street, Xicheng District, Beijing, P.R.China

Date of Issue: Sep 24, 2012

Date of Expiry: Sep 23, 2015



魏昊

Signed: Wei Hao



2 AVS related Standards and Testing

- ❖ **GB/T 20090.2-2006 Information Technology-Advanced coding of audio and video-Part2:Video**
- ❖ **A careful test, took several months, primarily on the image quality after its compression, including SD and HD**
- ❖ **Subjective assessment: Double-stimulus continuous quality-scale (DSCQS) method**
- ❖ **Test materials(International and domestic)**

AVS related Standards and Testing

❖ Laboratory environment

- Ratio of luminance of inactive screen to peak luminance: □ 0.02
- Ratio of the luminance of the screen, when displaying only black level in a completely dark room, to that corresponding to peak white: 0.01
- Display brightness and contrast: set up via PLUGE (see Recommendations ITU R BT.814 and ITU R BT.815)
- Maximum observation angle relative to the normal (this number applies to CRT displays): 30°
- Ratio of luminance of background behind picture monitor to peak luminance of picture: □ 0.15
- Chromaticity of background: D_{65}
- Other room illumination: low

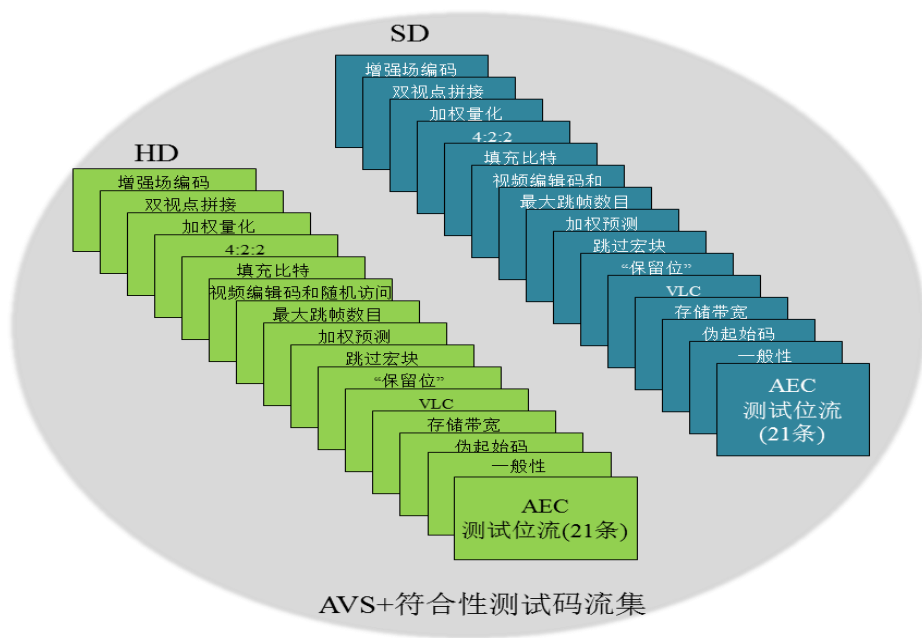
AVS+ Standard

- ❖ **GY/T 257.1-2012 Advanced coding of video and audio for broadcasting- Part1:video(i.e. AVS+)**
- ❖ **A careful test**
 - **primarily on the HD image quality after its compression**
 - **Standard conformance testing with ES and reference software**

AVS+ related standard

- ❖ **GY/T 257.2-2014 Advanced coding of video and audio for broadcasting- Part2: video conformance testing**
 - **How to test Encoder and how to test Decoder**
 - **Define 15 categories, 55 kinds of test bitstreams**
 - **Accordingly, Develop HD and SD test streams, including TS and ES**

AVS+ related standard



专业解码器



卫星接收机



有线机顶盒



地面机顶盒



卫星机顶盒



AVS+芯片

AVS+ related standard

- ❖ **GY/T 271-2013 Technical requirements and measurement methods of AVS+ HDTV encoder**
- ❖ **GY/J 056-2014 Technical requirements and measurement methods of AVS+ SDTV encoder**
- ❖ **GD/J 057-2014 Technical requirements and measurement methods of AVS+ professional satellite integrated receiver decoder**
- ❖ **GD/J 064-2014 Technical requirements and measurement methods for DBS IRD(SD to HD upgradable)**
- ❖ **GD/J 065-2015 Technical requirements and measurement methods for DBS IRD(SD to HD) upgradable and digital terrestrial television broadcasting reception function**

AVS2

- ❖ **GY/T 299.1-2016 High efficiency coding of audio and video - Part1:Video**
- ❖ **A careful test**
 - **primarily on the image quality after its compression, including HD and UHD**
 - **Standard conformance testing with ES and reference software**

AVS2

- ❖ **Meet problems with subjective assessment**
 - **UHD Monitor**
 - **UHD test-used video sequence**

3 AVS Applications for broadcasting

❖ About AVS+

- Issued practice guides
- Applied in HD contribution、SD transmission, including in the field of satellite, terrestrial and cable
- Applied in national important project

❖ About AVS2

- 4K, practical

4 A current study

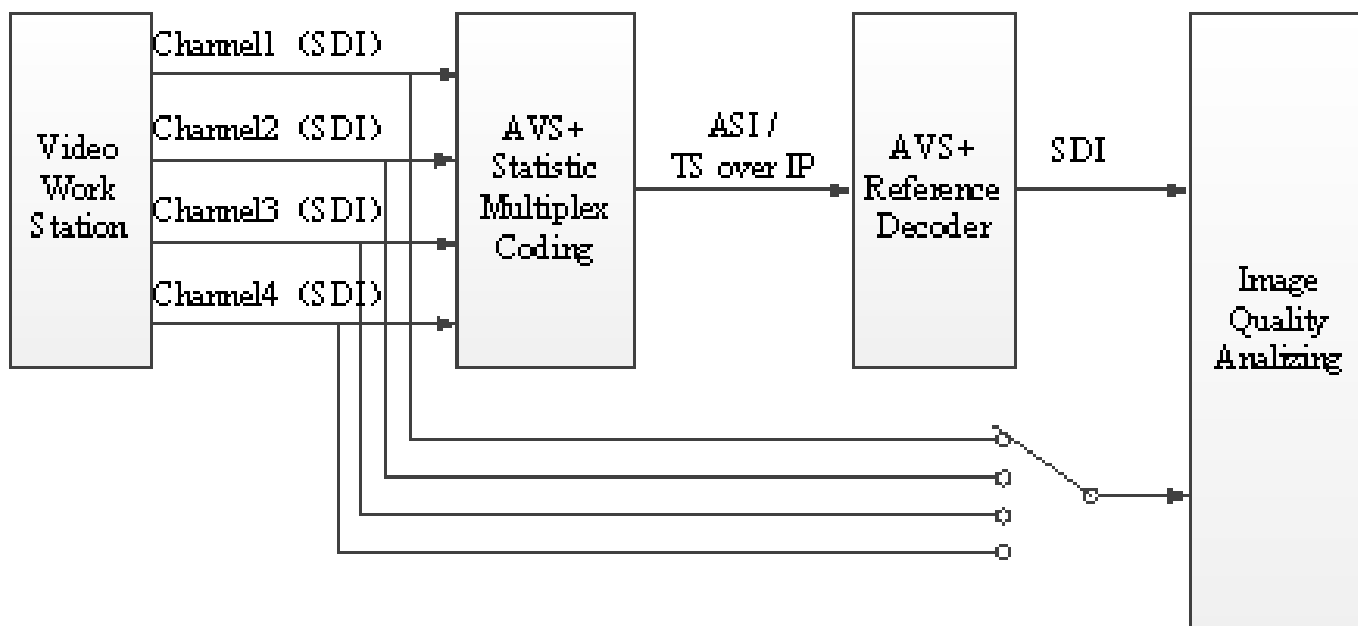
- ❖ **Study on how to test the performance of Statistic Multiplex Coding**
 - Give a definition/description, and analyze how to reflect the performance
 - Do research on the test items and test methods
 - Test two actual devices
 - Study on how to use it well for real TV programs, i.e., CCTV 15 programs

Statistic Multiplex Coding performance

- ❖ **How to reflect the performance?**
 - Whole image quality of all channels is improved
 - Image quality of each channel is more balanced, i.e., the variance value is smaller
- ❖ **We present test items and corresponding test methods**
 - Image quality
 - Bitrate
 - Time delay including encoder and decoder
 - Relative time delay of audio and video
 - Functions
 -

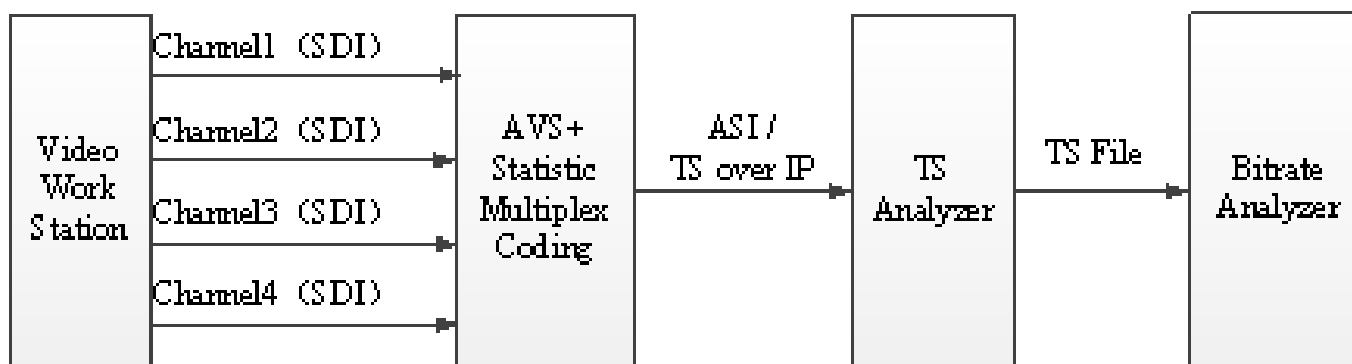
Statistic Multiplex Coding performance

❖ Image quality(PQR or SSIM)



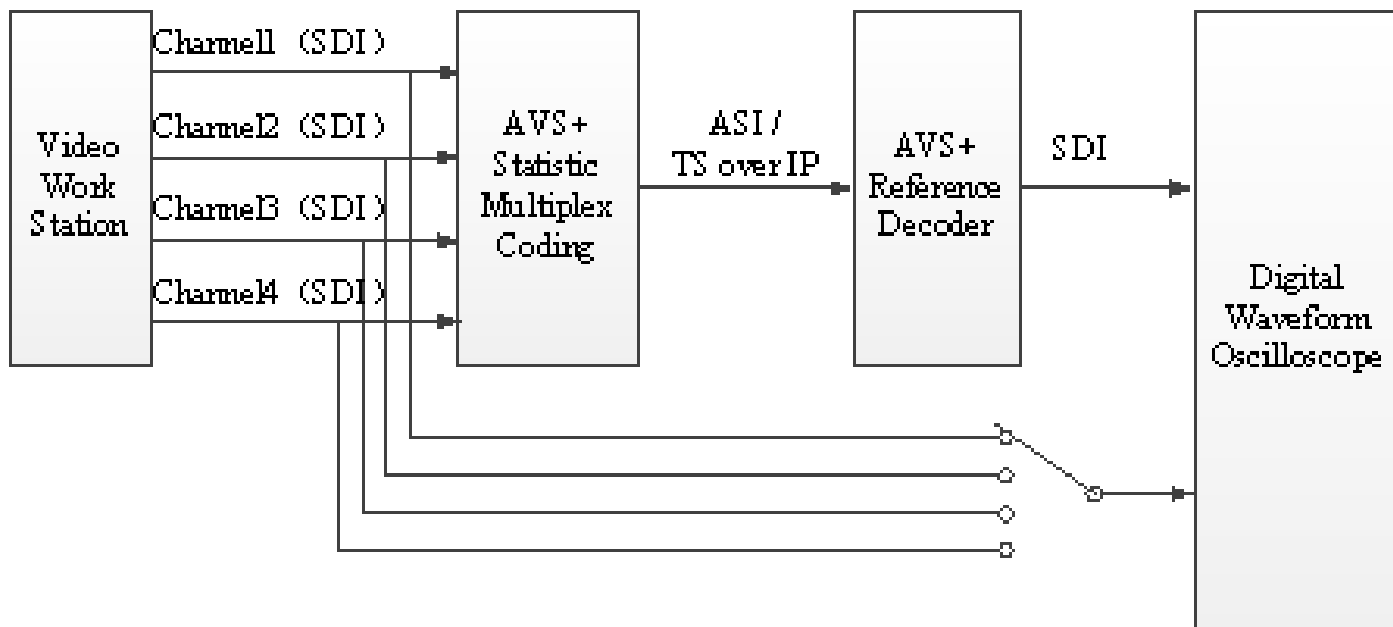
Statistic Multiplex Coding performance

❖ Bitrate



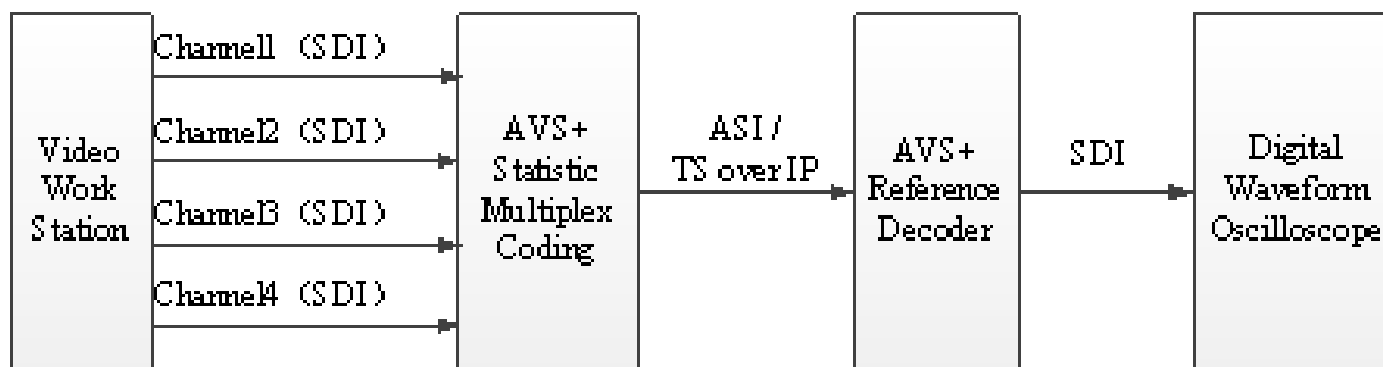
Statistic Multiplex Coding performance

❖ Time delay including encoder and decoder



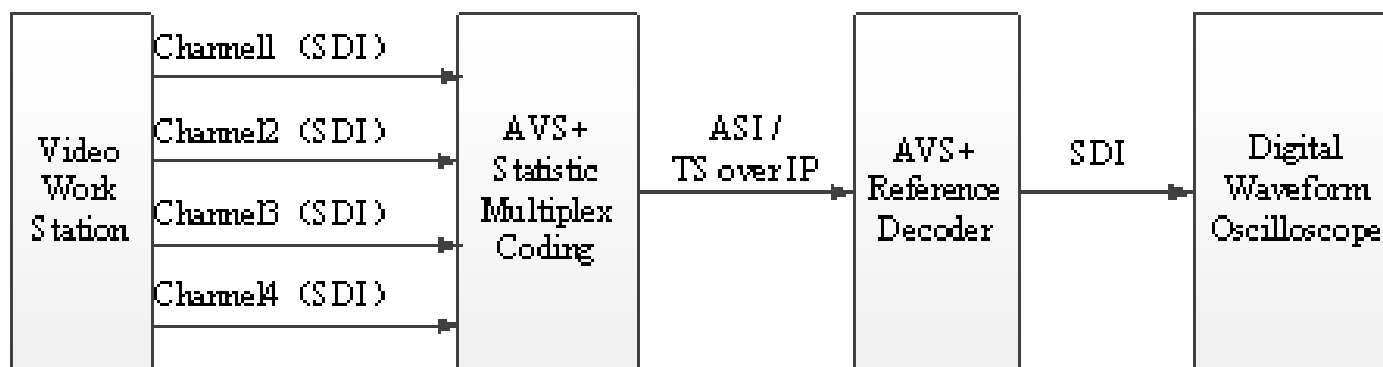
Statistic Multiplex Coding performance

❖ Relative time delay of audio and video



Statistic Multiplex Coding performance

❖ Relative time delay of audio and video



Example-Actual device

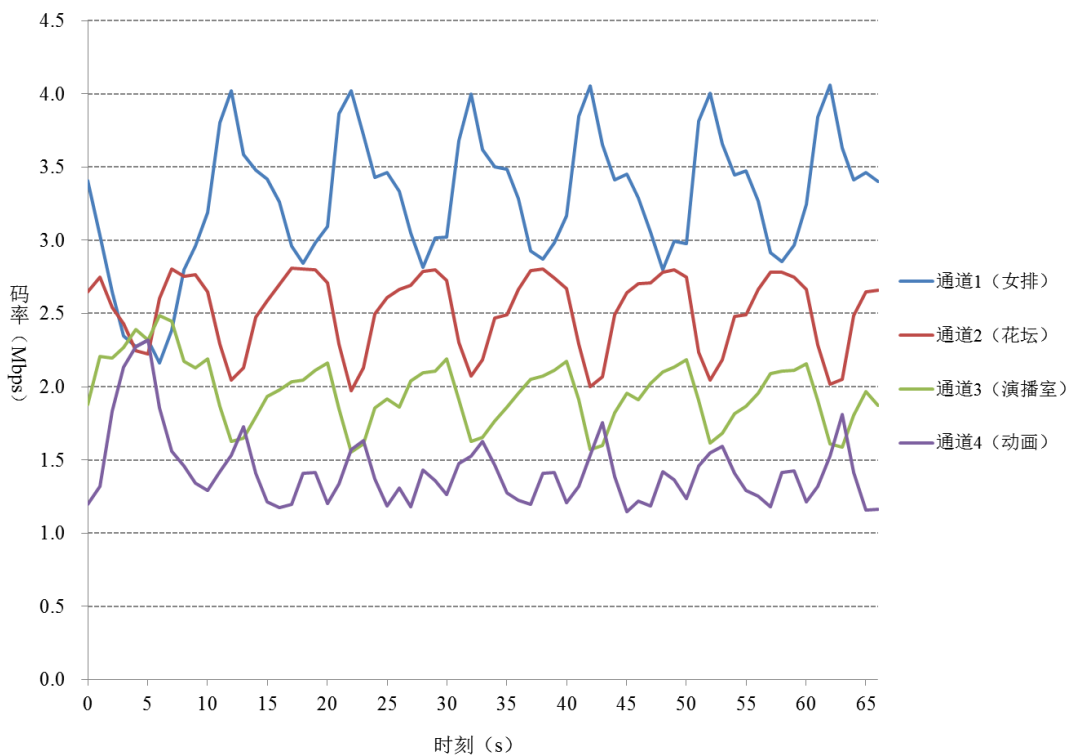
❖ Image quality

No.	Test video sequence	Statistic			CBR		
		PQR	DMOS	PSNR	PQR	DMOS	PSNR
1	女排	8.8	31.6	29.5	11.3	47.2	27.5
2	花坛	5.2	10.8	32.3	5.5	12.3	31.8
3	演播室	5.0	9.8	34.1	4.6	8.2	34.6
4	动画	5.5	12.4	37.9	3.9	6.0	40.6
Mean		6.1	16.2	33.5	6.3	18.4	33.6
Mean square deviation		3.1	17.9	6.1	5.9	33.5	9.5

No.	Test video sequence	SSIM	
		Statistic	CBR
1	女排	0.9036	0.8630
2	花坛	0.9418	0.9353
3	演播室	0.9457	0.9508
4	动画	0.9624	0.9767
Mean		0.9384	0.9315
Mean square deviation		0.0430	0.0844

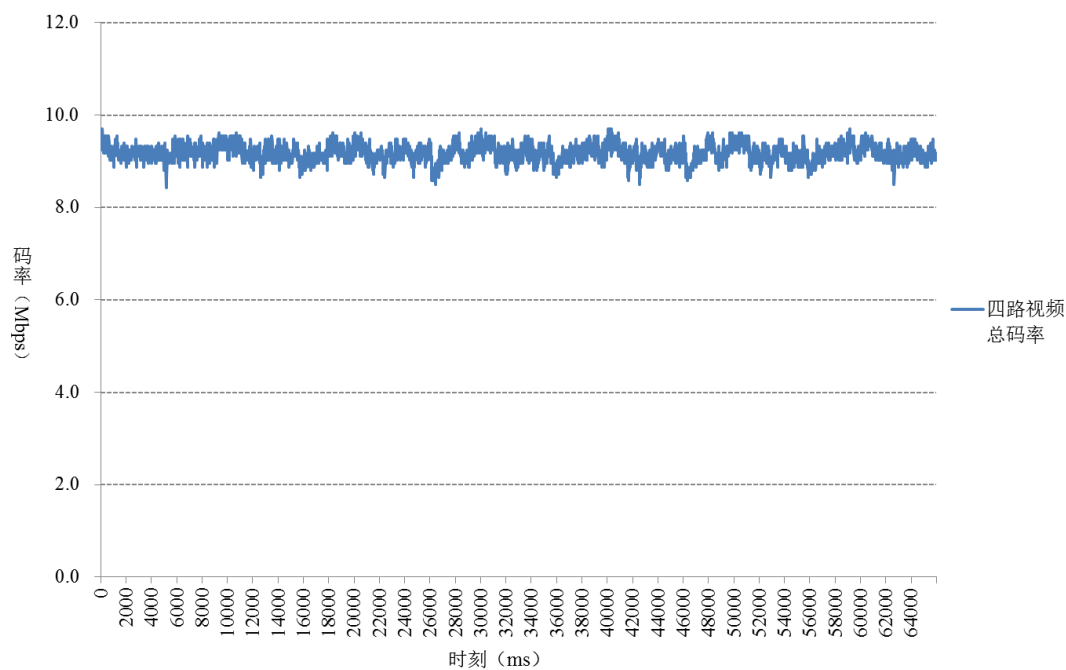
Example-Actual device

❖ Bitrate-Statistic each channel



Example-Actual device

❖ Bitrate-Statistic Whole



Example-Actual device

❖ Time delay including encoder and decoder

No.	Channel	Unit	Technical Requirement	Test results	Judgement
1	No.1 (女排)	s	≤ 5	3.12	eligibility
2	No.2 (花坛)	s	≤ 5	3.08	eligibility
3	No.3 (演播室)	s	≤ 5	2.92	eligibility
4	No.4 (动画)	s	≤ 5	3.20	eligibility

Thank you!