

STATUS REPORT

Organisation:	RTPRC		
Period:	2024.9-2025.8	Date of Report:	2025.08.29

PART A

Technical Developments during the past year:

System upgrades/changes to practices for improved quality/efficiency

Accelerated Expansion of UHD Live Broadcasting

Nine provincial television broadcasters in China are currently establishing dedicated 4K UHD satellite channels. Among these, three channels have already successfully launched. The remaining six are scheduled to commence operations by September 2025. These 4K channels are being distributed across multiple platforms, including cable television, IPTV, and over-the-top (OTT) new media services, significantly enriching the overall viewing experience for audiences.

Technical Research and Validation Testing of Plug-in Set-Top Box

This initiative aims to develop a new generation of user-friendly set-top boxes with a compact form factor, reduced connection complexity, and lower costs. Key technical advancements include optimized electromagnetic compatibility (EMC) design, improved thermal dissipation performance, and comprehensive upgrades to both hardware and software architectures. These innovations collectively simplify installation and daily operation, ultimately leading to a more streamlined and superior viewing experience for the end-user. In addition, RTPRC has developed a tri-mode(infrared, Bluetooth, NearLink) universal remote control , with which users can operate both of the TV and the set-top box.

CBN National Internet Backbone Network (CBNET)

China Broadcast Network (CBN) has successfully implemented a critical national infrastructure project: the CBN National Internet Backbone Network (CBNET). This project was honored with the ABU Engineering Award on SDGs Implementation 2024. CBNET establishes an all-optical, intelligent network foundation, achieving comprehensive optical coverage across 31 provinces, 52 data centers, and over 400 network sites. Its fully intelligent capacity management enables efficient resource sharing among eight super cores, 31 provincial cores, and three National Access Points (NAPs)/direct interconnection points, with backbone traffic capacity reaching 7.2T. During its deployment, CBN pioneered a 400G network upgrade within the Yangtze River Delta Economic Zone. Furthermore, it marks the first large-scale deployment of IPv6+ innovative technologies on a national backbone network. A landmark achievement is the first-ever interconnection of provincial networks within China's broadcasting industry. This backbone is pivotal for integrating cable television and broadcast 5G into a unified, end-to-end national network, signaling its readiness to serve as the foundational National Cultural Network. Consequently, CBNET is capable of providing secure, high-capacity digital connectivity for cultural institutions and consumers at all levels across the nation, facilitating the digital production and online dissemination of spiritual and cultural products.

- New Services/new projects initiated

On-Site Production of 4K/8K UHD Video Using a 5G-A Millimeter Wave Light Compression Solution

CBN proposes leveraging the ultra-large bandwidth and low-latency characteristics of 5G-Advanced (5G-A) millimeter-wave technology to implement ultra-high-definition (UHD) light-compression real-time production and broadcasting. This initiative aims to achieve lightweight and wireless high-quality UHD real-time production from the content source. It will enable more flexible and efficient production of high-quality audiovisual services, such as 4K/8K UHD live broadcasts and multi-angle sports viewing, broadening innovation in production methods and enhancing content novelty. In September 2024 and April 2025, an end-to-end private network test system for 4K and 8K UHD light-compression real-time production was successfully established and tested. Field tests confirmed that the network performance—specifically bandwidth and latency—of this 5G-A millimeter-wave technology meets the requirements for 4K/8K light-compression uplink transmission, achieving stable transmission at ultra-high bitrates. Furthermore, professional evaluations conducted by the Super High-Definition Laboratory of the Academy of Broadcasting Science, NRTA, confirmed that the subjective and objective quality of the 4K/8K UHD videos produced using this 5G-A millimeter-wave light-compression solution is consistent with videos produced using traditional fiber-optic SDI transmission.

A Technical Solution Integrating Emergency Broadcasting with 5G RedCap

CBN has innovatively proposed a technical solution combining emergency broadcasting with 5G RedCap. The solution involves upgrading the modules of existing emergency broadcasting terminals in the broadcasting and television network to domestically produced IoT modules that support 5G RedCap. A testing plan and test cases have been developed, and technical pilot verifications have been completed in multiple provinces and cities across the country. In the pilot deployments across various regions, the new 5G RedCap emergency broadcasting terminals are connected to the emergency broadcasting platform through the broadcasting and television 5G private network, enabling functions such as the broadcast, management, and feedback of emergency information. Furthermore, the network transmission has been further improved in terms of low latency, stability, network security, and low power consumption. Through lightweight technology upgrades, network collaborative optimization, and enhanced security protection, the new 5G RedCap emergency broadcasting terminals address the pain points of traditional emergency broadcasting terminals, such as one-way communication, high costs, and narrow coverage, comprehensively reconstructing the basic capability architecture of emergency broadcasting. Currently, provincial network companies in multiple regions have entered the large-scale implementation and deployment phase.

• Research projects

Research and Development of Key Technologies for Intelligent Generation of 3D Studio Scenes

This research investigated intelligent methods for generating three-dimensional studio scenes and developed a system capable of producing both 2D studio backgrounds and 3D models. The system has been deployed to support applications for eight audiovisual organizations, including Huya Live and Southern New Media.

Evolution of the National Emergency Broadcasting System

This work involves ongoing support for the development of the National Emergency Broadcasting System. It focuses on developing capabilities for project planning and solution formulation at the NRTA and provincial radio/television administration levels. Additionally, research on municipal-level emergency broadcasting systems is being conducted, building upon the experience gained from pilot projects in cities like Beijing and Shanghai.

Research on Technical Solutions for Converged Cloud-Network Infrastructure in Radio and Television

This project explores the current development status, technical architecture, key technologies, and industrial practices of the computing power network. It clarifies the key role of the computing power network in promoting digital transformation. By combining the resource advantages of the broadcasting and television network with the technical advantages of the computing power network, it proposes development suggestions for the cloud-network fusion infrastructure to promote the digital upgrade of the broadcasting and television industry.

Vehicle-mounted Audio Service and Public Display System

The project includes advancing the development of an information management system for vehicle-mounted audio services. Concurrently, it involves developing National Standards specifying security requirements for backend management systems that govern public display systems broadcasting audiovisual programs. Research on Technologies for Sharing and Protecting Training Corpora for Multimodal Large Models in Radio and Television This project addresses the current industry challenge where audiovisual data and computing resources are managed by separate institutional platforms. It investigates mechanisms for sharing and applying audiovisual data, as well as technologies for data security protection. The project aims to establish comprehensive data sharing and management strategies covering pre-event, in-process, and post-event phases. This ensures that external computing centers can utilize industry data resources effectively while rigorously safeguarding data security and protecting the rights and interests of data owners. The ultimate goal is to formulate practical implementation guidelines for data sharing and protection in training large-scale models for the broadcasting industry. Research on the Development and Countermeasures for Multimodal Generative AI in the Radio and Television Industry This project analyzes application scenarios and deployment methods within the radio and television industry to propose suggestions for developing industry-specific applications. It further focuses on analyzing potential risks introduced by generative artificial intelligence, such as deepfake, data leakage, content homogenization, and information cocoons, particularly in the three critical links of content creation, recommendation, and presentation. Based on this analysis, the research proposes multi-dimensional risk mitigation strategies. Research on Digital Watermarking Technology for Short Video Copyright Protection Addressing the copyright protection and provenance tracking needs of short-form videos, this project tackles the vulnerability of watermark-based identification to tampering and various distortions. It delves into digital-watermarking techniques tailored for short-form video, proposing an edge-aware dual-task approach coupled with video-frame denoising for watermark embedding and extraction. The method delivers accurate ownership verification and provenance tracking when infringement occurs, thereby providing robust technical support for safeguarding short-form video copyrights.				
Internet and Mobile Broadcasting Services UHD Quality Monitoring for Internet Audiovisual Programs In accordance with regulatory requirements, internet audiovisual platforms are mandated to raise the percentage of ultra-high-definition (UHD) programs among their newly added content. Furthermore, in compliance with the industry standard GY/T 405-2024 "Video Quality Requirements and Subjective Assessment Methods for Network Audiovisual Programme", testing institutions are tasked with conducting ongoing supervision and evaluation of program quality. The findings from these evaluations are summarized on a quarterly basis. This initiative is designed to drive continuous improvement in the technical quality of online audiovisual content, ensuring a superior viewing experience.				

			Radio	Television
Coverage %			99.74%	99.82%
Programme Channels			2967	3152
Studios (Production)	File-based Set-up	R/N/D		
	SDTV	R/N/D		
	HDTV	R/N/D		
	UHDTV			China has added three provincial-level UHDTV channels in 2025, bringing the current

				national total of UHDTV channels to twelve.
	IP Based Set-up	R/N/D		
Transmission & Delivery	HF	R/N/D		
	MF	R/N/D		
	FM	R/N/D		
	TV	R/N/D		
	OTT/IBB/Internet Services	R/N/D		
	Mobile Services	R/N/D		

R = Replacement/upgrade

N = New

D = Discontinued

PART B
CURRENT ACTIVITIES

	Activities	Area	Brief Details: 1. Objectives 2. Progress to date	Challenges/Problems Faced: 1. Lack of resources 2. Lack of know-how 3. Others (e.g. up-skilling)	Solutions Implemented / Type of assistance requirement from ABU
1.	Development projects / Upgrading facilities / Training				
2.	Participation in ABU Activities	Area	Level of Participation	Reasons for not participating (though interested)	
		ABU Technical Bureau Mid-Year Meeting	The expert from Academy of Broadcasting Planning (NRTA) submitted the Chairman's Report in his capacity as Chairman of the Spectrum Topic Area.		
		ABU AI Forum (Beijing, China)	The ABU AI Forum is organized by ABU and the National Radio and Television Administration, and undertaken by China Radio and Television International Economic & Technical Co., Ltd.		
		CCBN-ABU NEXUS Event-AI Workshop (Beijing, China)	The AI Workshop is jointly organized by the Academy of Broadcasting Science (NRTA) and the Technical Bureau of ABU, under the guidance of the International Cooperation Department of the National Radio and Television Administration.		
3.		Activity 1			

	Activities	Area	Brief Details: 1. Objectives 2. Progress to date	Challenges / Problems Faced: 1. Lack of resources 2. Lack of know-how 3. Others (e.g. up-skilling)	Solutions Implemented / Type of assistance requirement from ABU
	Suggestions for New ABU Activities e.g. study topic projects, webinars, workshops, symposiums etc, spectrum activities, information exchange platform				
		Activity 2			
		Activity 3			