





ITU-R approved outputs

2023-2027 study period
Radiocommunication Study Groups Department



Recently approved ITU-R outputs

(Brief description available at the end of the table)

Group	Document	Title	Approval date	Possibly relevant for
	Report ITU-R BT.2540-0  Summary	Display energy reduction through image signal processing	15 March 2024	ITU-D Question 6/2 ITU-T SGs 5, 9 and 16
	Report ITU-R BT.2539-0  Summary	Use of cloud computing for programme production	15 March 2024	
	Report ITU-R BT.2538-0  Summary	Use cases of Versatile Video Coding multilayer profiles for broadcasting services	15 March 2024	
	Report ITU-R BT.2506-1 Summary	Requirements for spatial characteristics of an ideal head-mounted display for immersive video	15 March 2024	
	Report ITU-R BT.2467-3 Summary	Methods for the evaluation of the quality of service of second generation digital terrestrial television broadcasting systems	15 March 2024	
	Report ITU-R BT.2420-6 Summary	Collection of usage scenarios of advanced immersive sensory media systems	15 March 2024	
	Report ITU-R BT.2389-1 Summary	Guidelines on measurements for digital terrestrial television broadcasting systems	15 March 2024	
	Report ITU-R BT.2386-5 Summary	Digital terrestrial broadcasting: Design and implementation of single frequency networks (SFN)	15 March 2024	
	Report ITU-R BT.2343-9 Summary	Collection of field trials of ultra high definition television over digital terrestrial television broadcasting networks	15 March 2024	

Recently approved ITU-R outputs

Source: WP 6C

Report [ITU-R BT.2540-0](#) – “Display energy reduction through image signal processing”

Possibly relevant for:
[ITU-D SG 2 ITU-D Question 6/2](#) and [ITU-T SGs 5, 9 and 16](#)

Brief description:
Broadcasting and streaming technologies incur a cost in terms of energy that is distributed over the entire transmission chain, from production to distribution/transmission and final viewing by consumers. Television displays, when considered the whole quantity around the world, consume a relatively large part of this energy.

This energy consumption may be mitigated by content-adaptive image signal processing while minimizing the impact on visual quality. This Report describes such techniques.

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15/03/2024

Recently approved ITU-R outputs

Source: WP 6B

Report [ITU-R BT.2539-0](#) – “Use of cloud computing for programme production”

Brief description:

Cloud computing technologies are continuously evolving to improve the performance and functionality of information communication technologies (ICTs). Applications of cloud computing are now being extended from high-performance computing and the substitution of on-premises infrastructures, such as virtual servers, scalable storage, and databases to more complex media processes to enable efficient workflow of broadcasting operations. Over-the-top (OTT) service operators have been deploying their service infrastructures on cloud platforms that feature multiple media-related capabilities.

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Recently approved ITU-R outputs

Source: WP 6B

Report [ITU-R BT.2538-0](#) – “Use cases of Versatile Video Coding multilayer profiles for broadcasting services”

Brief description:

Versatile Video Coding (VVC) specified in Recommendation ITU-T H.266 | International Standard ISO/IEC 23090-3 specifies a video coding technology with a compression capability that is substantially beyond that of the prior generations of such standards. The coding technology is highly versatile for use in a broadened range of applications. Some key application areas of this standard include ultra-high-definition video and immersive media applications.

Versatile Video Coding also supports multilayer coding, by which different types of scalabilities can be realized such as spatial scalability, quality scalability, and content scalability. These scalabilities can be usefully used to provide new types of broadcasting services including “personalization” and “integration with broadband”.

This Report describes various use cases of the multilayer coding in digital broadcasting based on the multilayer profiles supported by VVC.

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Reports

Recently approved ITU-R outputs

Source: WP 6C

Report [ITU-R BT.2506-1](#) – “Requirements for spatial characteristics of an ideal head-mounted display for immersive video”

Brief description:

Advanced immersive sensory media (AISM) systems enable users to enjoy immersive experiences with an unprecedented degree of presence. An ideal immersive video system should provide the user with an experience similar to that induced by the observation of natural scenes in the real world. One of the most promising approaches for displaying immersive video is the use of a head-mounted display (HMD). In this context, the requirements for an ideal HMD, including spatial and temporal characteristics, range of luminance, colour gamut, tonal variation, physical weight and comfort of wear, need to be clarified. As a first step, this Report presents ergonomic findings related to the spatial characteristics required for an ideal HMD.

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Recently approved ITU-R outputs

Source: WP 6A

Report [ITU-R BT.2467-3](#) – “Methods for the evaluation of the quality of service of second generation digital terrestrial television broadcasting systems”

Brief description:

The objective of this Report is to introduce methods that have been used for evaluating the quality of service of 2nd generation digital television broadcasting systems using the VHF and UHF bands.

Recommendation [ITU-R BT.1735](#) provides two methods for digital objective reception quality assessment for digital video broadcasting - terrestrial (DVB-T), one for multi-frequency networks (MFN) and one for single frequency networks (SFN).

This Report gives some details about the relevant parameters for digital video broadcasting – second generation terrestrial (DVB-T2) and the results of some measurements, in order to identify a possible method for objective reception quality assessment for this DTTB system.

The final goal would be to obtain criteria that, even without knowing exactly all the useful signals and the interferences but looking only at a limited number of parameters, could indicate if a requested level of C/I is satisfied and quantify the available ‘margin’ with respect to the quasi error free (QEF) threshold.

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Recently approved ITU-R outputs

Source: WP 6C

Report [ITU-R BT.2420-6](#) – “Collection of usage scenarios of advanced immersive sensory media systems”

Brief description:

This Report is intended to describe a brief technical background and important definitions used for advanced immersive sensory media (AISM) systems, use cases for broadcasting of AISM programme material, and other challenges that have emerged through those production trials.

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Source: WP 6A

Report [ITU-R BT.2389-1](#) – “Guidelines on measurements for digital terrestrial television broadcasting systems”

Brief description:
This Report addresses the requirements and methods necessary to maintain the quality of technical operations during the deployment and running of digital terrestrial television broadcasting (DTTB) networks.

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Reports

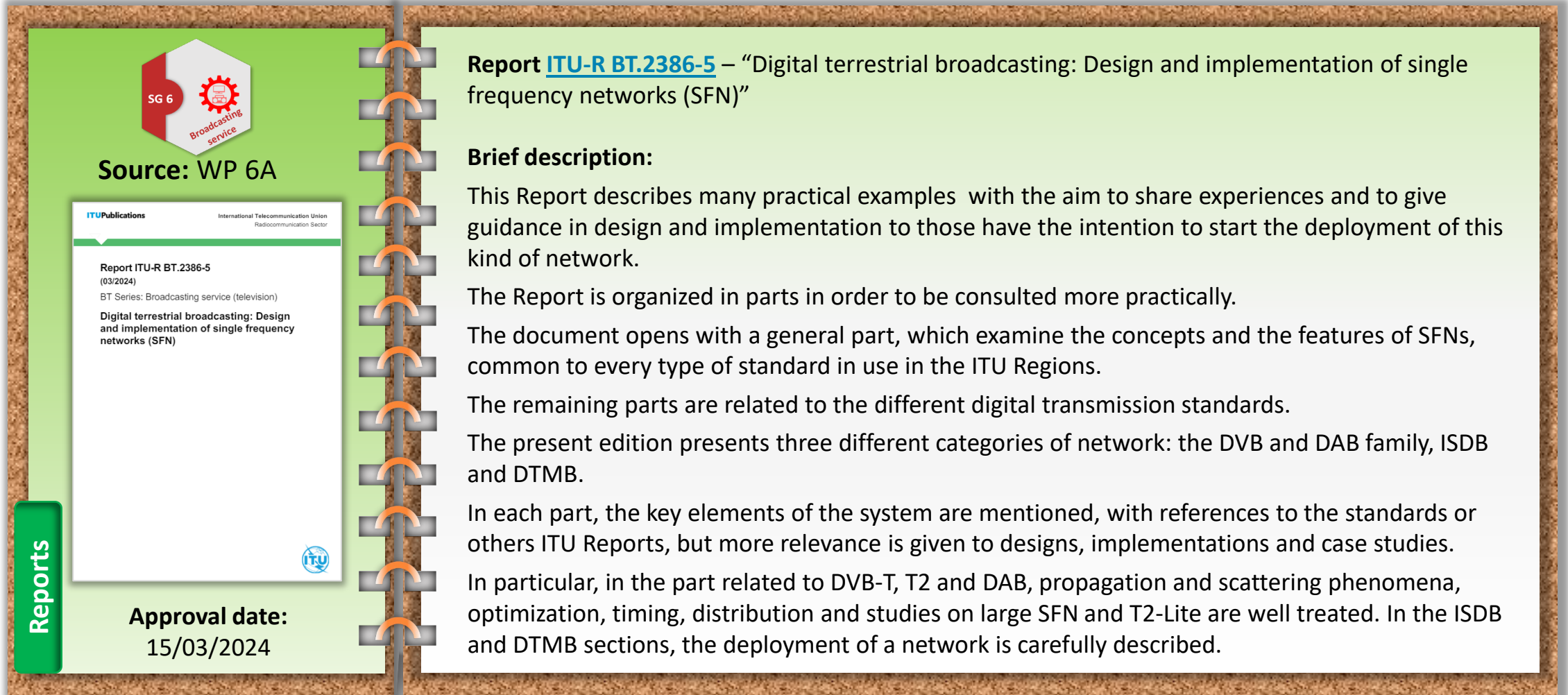
Report ITU-R BT.2389-1
(03/2024)
BT Series: Broadcasting service (television)
Guidelines on measurements for digital terrestrial television, broadcasting systems

ITU Publications
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Radiocommunication Sector

SG 6
Broadcasting service

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Source: WP 6A

Report [ITU-R BT.2386-5](#) – “Digital terrestrial broadcasting: Design and implementation of single frequency networks (SFN)”

Brief description:

This Report describes many practical examples with the aim to share experiences and to give guidance in design and implementation to those who have the intention to start the deployment of this kind of network.

The Report is organized in parts in order to be consulted more practically.

The document opens with a general part, which examines the concepts and the features of SFNs, common to every type of standard in use in the ITU Regions.

The remaining parts are related to the different digital transmission standards.

The present edition presents three different categories of network: the DVB and DAB family, ISDB and DTMB.

In each part, the key elements of the system are mentioned, with references to the standards or other ITU Reports, but more relevance is given to designs, implementations and case studies.

In particular, in the part related to DVB-T, T2 and DAB, propagation and scattering phenomena, optimization, timing, distribution and studies on large SFN and T2-Lite are well treated. In the ISDB and DTMB sections, the deployment of a network is carefully described.

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Reports

ITUPublications International Telecommunication Union
Radio-communication Sector

Report ITU-R BT.2386-5
(03/2024)
BT Series: Broadcasting service (television)
Digital terrestrial broadcasting: Design and implementation of single frequency networks (SFN)

SG 6 Broadcasting service

ITU

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Source: WP 6A

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15/03/2024

Report [ITU-R BT.2343-9](#) – “Collection of field trials of ultra high definition television over digital terrestrial television broadcasting networks ”

Brief description:
The intent of this Report is to provide evidence about the suitability of terrestrial television networks to deliver UHDTV services to consumers on a large scale.
In the Annex, the Report presents an overview of the experiments, key technologies, and the results conducted in various countries.

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