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| **Recommendation ITU-R BT.1680-1**  **(06/2014)** |
| **Baseband imaging format for distribution of large screen digital imagery applications intended for presentation in a theatrical environment** |
| **BT Series**  **Broadcasting service**  **(television)** |

Foreword

The role of the Radiocommunication Sector is to ensure the rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services, including satellite services, and carry out studies without limit of frequency range on the basis of which Recommendations are adopted.

The regulatory and policy functions of the Radiocommunication Sector are performed by World and Regional Radiocommunication Conferences and Radiocommunication Assemblies supported by Study Groups.

# Policy on Intellectual Property Right (IPR)

ITU-R policy on IPR is described in the Common Patent Policy for ITU-T/ITU-R/ISO/IEC referenced in Annex 1 of Resolution ITU-R 1. Forms to be used for the submission of patent statements and licensing declarations by patent holders are available from <http://www.itu.int/ITU-R/go/patents/en> where the Guidelines for Implementation of the Common Patent Policy for ITU‑T/ITU‑R/ISO/IEC and the ITU-R patent information database can also be found.

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| Series of ITU-R Recommendations  (Also available online at <http://www.itu.int/publ/R-REC/en>) | |
| **Series** | Title |
| **BO** | Satellite delivery |
| **BR** | Recording for production, archival and play-out; film for television |
| **BS** | Broadcasting service (sound) |
| BT | Broadcasting service (television) |
| **F** | Fixed service |
| **M** | Mobile, radiodetermination, amateur and related satellite services |
| **P** | Radiowave propagation |
| **RA** | Radio astronomy |
| **RS** | Remote sensing systems |
| **S** | Fixed-satellite service |
| **SA** | Space applications and meteorology |
| **SF** | Frequency sharing and coordination between fixed-satellite and fixed service systems |
| **SM** | Spectrum management |
| **SNG** | Satellite news gathering |
| **TF** | Time signals and frequency standards emissions |
| **V** | Vocabulary and related subjects |

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| ***Note***: *This ITU-R Recommendation was approved in English under the procedure detailed in Resolution ITU-R 1.* |

*Electronic Publication*

Geneva, 2014

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RECOMMENDATION ITU-R BT.1680-1

Baseband imaging format for distribution of large screen digital imagery applications intended for presentation in a theatrical environment

(Question ITU-R 15/6)

(2004-2014)

Scope

This Recommendation specifies baseband imaging formats for distribution of large screen digital imagery (LSDI[[1]](#footnote-1)1) applications intended for presentation in a theatrical environment.

Keywords

LSDI, Large Screen Digital Imagery, UHDTV, HDTV, theatrical environment

The ITU Radiocommunication Assembly,

considering

*a)* that Question ITU-R 15/6 underlines the benefits to be accrued in developing technical approaches to distribution of large screen digital imagery programmes, harmonized with those established for the distribution of programmes for other applications;

*b)* that such benefits could best be accrued if uniform baseband digital imaging formats were used for LSDI distribution and for other applications;

*c)* that the resolution of the 1 920  1 080 and 1 280  720 digital pixels maps meets the requirements of LSDI applications intended for presentation in a theatrical environment;

*d)* that it is best to maintain a consistent format throughout the production, distribution, and exhibition chain, with minimal format conversion to ensure the best quality imagery;

*e)* that the need for prompt ITU-R action on LSDI, recognized by the urgency of Question  ITU‑R  15/6 could be met by the approval of new recommendations for a technical solution for those LSDI applications, and these recommendations should be extended to reflect further solutions as required, when the necessary technology is developed, implemented and validated in the future,

recommends

that, as members of a hierarchy of LSDI formats, those specified below should be used as baseband formats for distribution of programmes for LSDI applications intended for presentation in a theatrical environment:

– Recommendation ITU-R BT.709 – Parameter values for the HDTV standards for production and international programme exchange;

– Recommendation ITU-R BT.1543 – 1 280  720, 16  9 progressively-captured image format for production and international programme exchange in the 60 Hz environment;

– Recommendation ITU-R BT.2020 – Parameter values for ultra-high definition television systems for production and international programme exchange.

NOTE 1 – In a projector that does not use the input image format as its display format, care should be taken during the processing to minimize artefacts.

NOTE 2 – Recommendation ITU-R BT.709 specifies the 2 mega-pixels resolution (1 920  1 080) systems with the following frame rates: 60 Hz, 59.94 Hz, 50 Hz, 30 Hz, 29.97 Hz, 25 Hz, 24 Hz and 23.98 Hz.

NOTE 3 – Recommendation ITU-R BT.1543 specifies the 1 mega-pixels resolution (1 280  720) systems with the following frame rates: 60 Hz, 59.94 Hz, 30 Hz, and 29.97 Hz.

NOTE 4 – Recommendation ITU-R BT.2020 specifies the 8 mega-pixels resolution (3 840 × 2 160) and the 33 mega-pixels resolution (7 680 × 4 320).

1. 1 LSDI (large screen digital imagery) is a family of digital imagery systems applicable to programmes such as dramas, plays, sporting events, concerts, cultural events, etc., from capture to large screen presentation in high‑resolution quality in appropriately equipped theatres, halls and other venues. [↑](#footnote-ref-1)