

RECOMMENDATION ITU-R BT.1769

Parameter values for an expanded hierarchy of LSDI* image formats for production and international programme exchange

(Question ITU-R 15/6)

(2006)

Scope

Some LSDI applications require certain resolution and scanning formats that go beyond HDTV in order to give viewers enhanced visual experiences. This Recommendation specifies an expanded hierarchy of LSDI image formats for production and international programme exchange while retaining the tiered relationship with the formats in existing Recommendations.

The ITU Radiocommunication Assembly,

considering

- a) that LSDI (large screen digital imagery) is a family of digital imagery systems which can be used in a wide variety of applications including programme presentations such as dramas, plays, sporting events, concerts, etc.;
- b) that hierarchical image formats for LSDI are required in order to cover the various applications;
- c) that ITU-R Recommendations cover three levels of image formats, namely 0.5 Mega pixels, 1 Mega pixels and 2 Mega pixels and that the 2 Mega pixels systems specified in Recommendation ITU-R BT.709 is the highest picture quality which ITU has ever standardized;
- d) that parameter values for an expanded hierarchy of LSDI image formats should provide conformity with Recommendation ITU-R BT.709;
- e) that Recommendation ITU-R BT.1201 – Extremely high resolution imagery, recommends image resolutions related to $1\,920 \times 1\,080$ based on Recommendation ITU-R BT.709 by simple integer ratios;
- f) that Recommendation ITU-R BT.1680 – Baseband imaging format for distribution of large screen digital imagery (LSDI) applications intended for presentation in a theatrical environment, recommends image formats up to HDTV resolution as members of a hierarchy of LSDI digital image formats;
- g) that some LSDI applications will require resolutions beyond that specified in Recommendation ITU-R BT.1680, since viewing angles determine the required level of image resolution and visual experiences with wider viewing angle give viewers a higher sensation of

* LSDI 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.

reality. For example, some television productions intended for very large venues may require such higher resolutions;

- h) that LSDI image formats are different from motion picture image formats;
- j) that parameters for the network transport of the expanded hierarchy of LSDI image formats are contained in ITU-T Recommendation J.601,

recommends

1 that in order to expand the hierarchy of LSDI image formats for production and international programme exchange, beyond the image formats recalled in *considerings* c) and h) and excluding motion picture image formats, image formats based on Table 1 characteristics should be used when required.

TABLE 1
Picture characteristics

Item	Parameter	Values	
		3 840 × 2 160 LSDI system	7 680 × 4 320 LSDI system
1.1	Picture aspect ratio	16:9	
1.2	Samples per active line	3 840	7 680
1.3	Active lines per picture	2 160	4 320
1.4	Sampling lattice	Orthogonal	
1.5	Order of samples	Left to right, top to bottom	
1.6	Pixel aspect ratio	1:1 (square pixels)	
1.7	Sampling structure	4:2:0, 4:2:2, 4:4:4	
1.8	Frame rate (Hz)	24 ⁽¹⁾ , 25, 30 ⁽¹⁾ , 50, 60 ⁽¹⁾	
1.9	Image structure	Progressive	
1.10	Bit/pixel	10, 12	
1.11	Colorimetry	See Recommendation ITU-R BT.1361	

⁽¹⁾ For the 24, 30 and 60 Hz systems, frame rates having values divided by 1.001 are also included.

NOTE 1 – An example of LSDI system that gives viewers visual experiences of a high-sensation of reality is explained in Appendix 1.

NOTE 2 – Viewing angles for the hierarchy of LSDI image formats are shown in Appendix 2.

NOTE 3 – A study result on psychological effects of wide-screen video system for LSDI applications is shown in Appendix 3.