

**ISO/IEC JTC 1/SC 29/WG 11 N 18912**

**ISO/IEC JTC 1/SC 29/WG 11**

**Coding of moving pictures and audio**

**Convenorship: UNI (Italy)**

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| Email of convenor: | leonardo@chiariglione.org |
|  |  |
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# General aspects and issues affecting multiple standards

## General and minor matters

Please note that the alignment between the text published by ITU-T and that published by ISO/IEC should also be checked. Minor editorial issues and aspects that are highlighted for potential further checking include the following:

* Updating the reference to Rec. ITU-R BT.2100 (the current version being BT.2100-2) and the associated equations for the ICTCP matrix coefficients interpretation for HLG (esp. check Video CICP; this is correct in Rec. ITU-T H.265 2019-06).
* (for Video CICP only, in the ISO/IEC version only) Logical indentation nesting in the ISO/IEC version of the Video CICP colour interpretation was inadvertently removed in the publication process.
* (for Video CICP only) The range of values for the extended aspect ratio indicator in Video CICP is not clearly specified and may implicitly be interpreted as inadequate to cover the range of values expressed in the video coding standards.

## sYCC colour indicator interpretation

### Status

This item has been confirmed by the JCT-VC and resolved for the ITU-T text, but has not yet been resolved for the ISO/IEC text. It affects multiple standards: HEVC, AVC, and Video CICP (and JPEG XR). For background, see [JCTVC-AJ0023](http://phenix.it-sudparis.eu/jct/doc_end_user/current_document.php?id=10941).

### Description of the issue

This issue relates to the transfer characteristics and matrix coefficients indicators for the sYCC colour representation specified in IEC 61966-2-1. The the semantics of transfer characteristics (Table E.4 of HEVC), and matrix coefficients (Table E.5 of HEVC) need correction to address the issue.

The issue is a bit complicated because the same transfer characteristics indicator value is used for both sRGB and sYCC, but IEC 61966-2-1 actually indicates that the transfer characteristics function should be somewhat different for the two cases. In the sRGB case, the range of the input value is constrained to be from 0 to 1, but in the sYCC case, this constraint should not apply.

The agreed correction for this aspect is to condition the interpretation of the transfer\_characteristics syntax element for the value 13 on the value of the matrix\_coeffs syntax element (since that value would differ between sYCC and sRGB).

Additionally, the the informative remark relating to the matrix coefficients indicator value for IEC 61966-2-1 sYCC should be changed to indicate that sYCC should be indicated with the matrix coefficients indicator equal to 5 (as for Rec. ITU R BT.601) rather than 1 (as for Rec. ITU-R BT.709).

### Description of the proposed fix

*In E.3.1 (VUI semantics), in Table E.4 (Transfer characteristics interpretation using the transfer\_characteristics syntax element) replace the row for the value 13 with:*

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| --- | --- | --- |
| 13 | – If matrix\_coeffs is equal to 0           V = *α* \* Lc( 1 ÷ 2.4 ) − ( *α* − 1 ) for 1 >= Lc >= *β*           V = 12.92 \* Lc for *β* > Lc >= 0  – Otherwise           V = *α* \* Lc( 1 ÷ 2.4 ) − ( *α* − 1 ) for Lc >= *β*           V = 12.92 \* Lc for *β* > Lc > −*β*           V = − *α* \* ( −Lc )( 1 ÷ 2.4 ) + ( *α* − 1 ) for −*β* >= Lc | IEC 61966-2-1 sRGB (with matrix\_coeffs equal to 0)  IEC 61966-2-1 sYCC (with matrix\_coeffs equal to 5) |

*In E.3.1 (VUI semantics), after Equation E-3, replace the next paragraph and associated bullet points with:*

In this case, the range of E′R, E′G, and E′B is specified as follows:

– If transfer\_characteristics is equal to 11 or 12, or transfer\_characteristics is equal to 13 and matrix\_coeffs is not equal to 0, E′R, E′G, and E′B are real numbers with values that have a larger range than the range of 0 to 1, inclusive, and their range is not specified in this Specification.

– Otherwise, E′R, E′G and E′B are real numbers in the range of 0 to 1.

*In E.3.1 (VUI semantics), in Table E.5 (Matrix coefficients interpretation using the matrix\_coeffs syntax element), move “*IEC 61966-2-1 sYCC*” from the row for the value 1 to the row for the value 5.*

# Publication status background

Rec. ITU-T H.273

* (02/16, Edition 1) Approved 2016-12-22, published 2017-04-27

ISO/IEC 23091-2 (previously part of ISO/IEC 23001-8)

* ISO/IEC 23091-2:2019, published 2019-07