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| **ITU - Telecommunications Standardization Sector**  STUDY GROUP 16 Question 6  **Video Coding Experts Group (VCEG)**  43th Meeting: Torino, IT, 17-22 July, 2011 | Document VCEG-AQ10  Filename: VCEG-AQ10.doc  (WG11 M20392) |

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| Title: | **Comment on ITU-T Rec. H.264 | ISO/IEC 14496-10, A.3.3(k), High 10, High 4:2:2** | | |
| Purpose: | Proposal | | |

# Abstract

The Canadian National Body of WG11 is pleased to submit its comments on ISO/IEC 14496-10:2010 (twin text with Rec. ITU-T H.264 03/2010). Canadian National body submits that the application of limit A.3.3 (k) to the pre-existing High 10, and High 4:2:2 Profiles of ISO/IEC 14496-10:2005 (twin text with Rec. ITU-T H.264 03/2005) was performed in error, and requests that this new constraint be removed from these Profiles in the next corrigenda or amendment, and future revisions/versions of the standard.

# Comment on Limit A.3.3(k), the High 10, and the High 4:2:2 Profiles

## General Comments

## High 10 and High 4:2:2 Profiles

**Context**

Profile Specific Level Limits

**Comment**

High 10 and High 4:2:2 Profiles are now being deployed in the broadcast industry[[1]](#footnote-1). Single-slice encoding is also widely deployed – in effect currently a de-facto use of the standard for MPEG-4 AVC/H.264 in broadcast and several other industries. Limit A.3.3 (k) prohibits single-slice encoding for scenarios of significant current industrial interest. 4:2:2 Profile is of high interest for broadcast contribution and distribution (C&D) applications (esp. studio contribution links) due to severe degradations experienced with multi-generations of 4:2:0 to/from 4:2:2 conversion. A standard compliant 4:2:2 Profile option that is not handicapped by lack of single-slice support in its ability to compete effectively with currently deployed non-standard compliant devices at the typical operating points used for broadcast applications (esp. the operating points of studio contribution links) would be of benefit to the interoperability of the industry. Additionally, broadcast C&D markets desire 10-bit video through the entire chain. High 10 Profile is of increasing interest for the broader industry due to anticipated advances in availability of increased display bit-depths.

It is anticipated that High 10 Profile’s adoption may be significantly hampered, in particular for adoption by Direct-to-Home broadcasters, or for adoption by equipments that could connect to Home Network & high quality home display, by lack of support for single-slice operation for HD, FHD/1080p60 (and looking forward 4k) formats.

**Proposal**

Remove constraint A.3.3 (k) in 14496-10 | Rec. ITU-T H.264 for the High 10 and High 4:2:2 Profiles. Alternatively, raise the Level constraint on A.3.3 (k) for High 10 and High 4:2:2 such that it does not apply for Level 4.2 and below (or to be forward looking Level 5.1). Alternatively, modify the specific A.3.3 (k) constraint for High 10 & High 4:2:2 such that it does not apply unless PicSizeInMBs is greater than 8160 (or to be forward looking 36864). Alternatively, modify A.3.3 (k) such that it does not apply unless Level is either greater than 4.2 or PicSizeInMBs is greater than 8160 (or to be forward looking 5.1 & 36864, respectively). For example, “For High 10 and High 4:2:2 profiles, the number of macroblocks in a coded slice shall not exceed max(8160, MaxFS / 4), where MaxFS is specified in Table A.1. Otherwise, the number of macroblocks in a coded slice shall not exceed MaxFS / 4.”

1. http://www.magnumsemi.com/news.php?Magnum-Semiconductor-Announces-Industry-s-First-Platform-that-fully-addresses-Today-s-and-Tomorrow-s-Contribution-and-Distribution-Market-Requirements-47 [↑](#footnote-ref-1)