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| *Title:* | **Proposed correction to the indication of the high throughput screen content coding extensions profiles** | | |
| *Status:* | Input document to JCT-VC | | |
| *Purpose:* | Proposal | | |
| *Author(s) or Contact(s):* | Jill Boyce  Iole Moccagatta  Ye-Kui Wang  Alexis Tourapis  Rajan Joshi  Gary Sullivan | Email: | jill.boyce@intel.com  iole.moccagatta@intel.com  yekui.wang@huawei.com  atourapis@apple.com  r.joshi@samsung.com  garysull@microsoft.com |
| *Source:* | Intel, Huawei, Apple, Samsung, Microsoft | | |

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# Abstract

It is asserted that an error has been identified in the definition and signalling of the high throughput screen content coding (SCC) profiles, which is that in the current design, it is not possible to distinguish between the high throughput SCC profiles and the corresponding SCC profiles that do not have the high throughput feature. This contribution proposes a change to the HEVC specification to address this problem, by using a different value of general\_profile\_idc for the high throughput SCC profiles than for the other SCC profiles.

Another asserted error, which is minor, is that the high throughput SCC profiles are not mentioned in the expression of the requirement for fulfillment of the tier and level constraints. It is asserted that this error is also fixed in the proposed specification text changes.

It is suggested that although the error is significant, it is the understanding of the contributors that affected profiles have generally not yet been widely implemented, so the proposed correction is unlikely to impose a serious problem for the community. Indeed, if these profiles had already been implemented sooner, the problem surely would have been identified sooner.

# Introduction

## Problem statement

There is an error in the specification of the screen-extended high throughput profiles, as the profile and constraint flag indications are not sufficient to distinguish between some of these profiles and other screen-extended profiles that do not have the high throughput feature.

The seven screen content coding extensions profiles specified in clause A.3.7 are identified by general\_profile\_idc being equal to 9 with the additional constraint flag indications specified in Table A.5.

However, the Screen-Extended Main 4:4:4 and Screen-Extended High Throughput 4:4:4 profiles have the same constraint flag values in Table A.5 – as highlighted in yellow in the table below. Therefore, a decoder cannot distinguish between bitstreams that conform to these two profiles.

Similarly, the Screen-Extended Main 4:4:4 10 and Screen-Extended High Throughput 4:4:4 10 profiles have the same constraint flag values in Table A.5 – as highlighted in orange in the table below. Therefore, a decoder cannot distinguish between bitstreams that conform to these two profiles.

**Table A.5 – Bitstream indications for conformance to screen content coding extensions profiles**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Profile for which the bitstream indicates conformance** | **general\_max\_14bit\_constraint\_flag** | **general\_max\_12bit\_constraint\_flag** | **general\_max\_10bit\_constraint\_flag** | **general\_max\_8bit\_constraint\_flag** | **general\_max\_422chroma\_constraint\_flag** | **general\_max\_420chroma\_constraint\_flag** | **general\_max\_monochrome\_constraint\_flag** | **general\_intra\_constraint\_flag** | **general\_one\_picture\_only\_constraint\_flag** | **general\_lower\_bit\_rate\_constraint\_flag** |
| Screen-Extended Main | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 |
| Screen-Extended Main 10 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| Screen-Extended Main 4:4:4 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Screen-Extended Main 4:4:4 10 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Screen-Extended High Throughput 4:4:4 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Screen-Extended High Throughput 4:4:4 10 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Screen-Extended High Throughput 4:4:4 14 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

Another error that was observed is that the high throughput SCC profiles are not mentioned in the expression of the requirement for fulfillment of the tier and level constraints.

## Proposed solution

This document proposes to distinguish between the screen-extended high throughput profiles and other screen-extended profiles that do not have the high throughput feature by using a different general\_profile\_idc value for the screen-extended high throughput profiles than the one used for the screen-extended profiles that do not have the high throughput feature.

More specifically, the proposal is that the conformance of a bitstream to the screen content coding extensions profiles that have the high throughput feature, namely the Screen-Extended High Throughput 4:4:4, Screen-Extended High Throughput 4:4:4 10, and Screen-Extended High Throughput 4:4:4 14 profiles, should be indicated by general\_profile\_idc being equal to 11 or general\_profile\_compatibility\_flag[ 11 ] being equal to 1 with the additional indications currently specified in Table A.5.

The proposed draft text is in an attachment. Further editorial improvement may be required.

# Patent rights declaration(s)

**Intel, Huawei, Apple, Samsung, and Microsoft do not have any current or pending patent rights relating to the technology described in this contribution (to the extent of the personal awareness of the contributors).**