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ISO/IEC JTC 1/SC 29/WG 03 MPEG SYSTEMS

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# Abstract

This document captures defects in the ISO/IEC 13818-1 specification. A corrigendum should be started at the next convenient occasion or these fixes can be merged into an amendment, if such is started for other reasons anyway.

# Problem description(s)

## Summary

ISO/IEC 13818-1 specification[2] includes the registration information for the MIME type for MPEG-2 transport streams in Annex T. There are several issues with the text of the Annex T that are described in more detail in the following subsections.

Contribution **m62551**[1][1] clarifies the signaling of the audio layer by the codec parameter in the mime type definition. Furthermore, it corrects several examples from Annex T.4.2 and fixes editorial issues.

### Codecs parameter layer signaling

The optional 'codecs' parameter as documented in Annex T.4.2 can be used to indicate one or more codecs which are used for the elementary streams in the MPEG-2 TS. Each codec parameter follows a clearly defined pattern where different elements are separated with a dot symbol. The third element separated with the dot symbol can be used to represent the signalling of the 2 bit audio layer and the specification refers to the section 2.6.4 for its definition.

“When the first element of a value is 'mp1a.6B' (ISO/IEC 11172-3), or 'mp2a.069' (i.e., ISO/IEC 13818-3), the third element of the codecs parameter value is the hexadecimal representation of the 2-bit layer, as defined in 2.6.4.”

The section 2.6.4 specifies the audio\_stream\_descriptor including the 2 bit layer field which is pointing to the definition in ISO/IEC 11172-3 where the layer is signalled as follows:

Table

Description automatically generated

Figure 1: Layer definition from ISO/IEC 11172-3 § 2.4.2.3. The value 3 (‘11’) is used to signal Layer I while the value 1 (‘01’) is used to signal Layer III.

As can be seen from the Figure 1 the binary representation of the layer is inverted. The problem with this is that this inversion makes the interpretation very ambiguous. Especially given the fact that the provided example in Annex T.4.2 also interprets it wrong.

ISO/IEC 11172-3 layer 3 is represented

video/mp2ts;codecs="mp2a.6B.03"

In addition to that, the [RFC3555](https://www.rfc-editor.org/rfc/rfc3555.html) which is referred by IANA for the ([video/mp2t](https://www.iana.org/assignments/media-types/media-types.xhtml)) mime type registration also refers to MPEG audio layers as 1, 2, 3 without any further clarifications on the inversion aspect. Therefore, it is very unlikely that implementers will interpret the signaling correctly as we cannot expect everyone to follow the layer definition up to the ISO/IEC 11172-3.

Therefore, it would be highly desirable to clarify the Annex T 4.2 to make it clear that the level element in the codec parameter is not inverted and that the signaling of .01 represents Layer I and .03 represents Layer III.

### Further bugfixes

Optional parameters:

The 'profiles' parameter as documented in T.4.1

The 'codecs' parameter as documented in T.4.2

…

### Examples:

ISO/IEC 13818-2 Main Profile

video/mp2t;codecs="mp2v.61"

ISO/IEC 11172-3 layer 3 is represented

video/mp2t;codecs="mp1a.6B.03"

ISO/IEC 13818-3 layer 2 is represented

video/mp2t;codecs="mp2a.69.02"

ISO/IEC 13818-7 Low Complexity Profile

video/mp2t;codecs="mp2a.67"

Dolby AC-3 audio (per ATSC A/52, AC-3 audio has stream\_type 0x81 and format\_identifier "AC-3" in the registration\_descriptor )

video/mp2t;codecs="ac-3"

ISO/IEC 13818-2 Main Profile Video together with ISO/IEC 13818-7 audio

video/mp2t;codecs="mp2v.61,mp2a.67"

# References

1. ISO/IEC JTC 1/SC 29/WG 3 **m62551**, *MPEG2TS codec parameter clarifications and Annex T bugfixes* by Dimitri Podborski, Kevin Calhoun (Apple Inc.)
2. ISO/IEC 13818-1:2022 Information technology – Generic coding of moving pictures and associated audio information: Systems