



**INTERNATIONAL STANDARD ISO/IEC 13818-4:1998/Amd.1:1999**  
**TECHNICAL CORRIGENDUM 1**

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**Information technology — Generic coding of moving pictures  
and associated audio information —**

**Part 4:  
Conformance testing**

**AMENDMENT 1: Advanced Audio Coding (AAC) conformance  
testing**

**TECHNICAL CORRIGENDUM 1**

*Technologies de l'information — Codage générique des images animées et des informations sonores  
associées —*

*Partie 4: Essais de conformité*

*AMENDEMENT 1: Essai de conformité de codage audio avancé*

*RECTIFICATIF TECHNIQUE 1*

Technical Corrigendum 1 to ISO/IEC 13818-4:1998/Amd.1:1999 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

*Throughout the text, replace*

“

program\_configuration\_element

“

*with*

“

program\_config\_element

“

*In subclause 2.6.4.2 (Decoder Modifications), replace*

“

Bitstream Characteristic	Normative Clause	Variation
sampling rate	3	a decoder may support only a subset of possible sampling rates, decoder manufacturers must specify the rates which are supported
profile	2.1	a decoder may support additional channel elements beyond the minimums listed for its profile
program configuration	3.5	a decoder is only required to decode one program of a multi-program bitstream
data_stream_element	3.6	a decoder is not required to store or present data recovered from data_stream_elements
mono-mixdown element	3.3.8	a decoder is not required to present audio from the mono-mixdown element
stereo-mixdown element	3.3.8	a decoder is not required to present audio from the stereo-mixdown element
matrix-mixdown	3.3.8	a decoder is not required to calculate a matrix-mixdown signal

”

*with*

“

Bitstream Characteristic	Normative Clause	Variation/Restriction
sampling rate	8	a decoder may support only a subset of possible sampling rates, decoder manufacturers must specify the rates which are supported
profile	7.1	a decoder may support additional channel elements beyond the minimums listed for its profile
program configuration	8.5	a decoder is only required to decode one program of a multi-program bitstream  the specified minimum decoder capabilities refer to the channels within a bitstream (not within a program)  if program config elements are used, syntactic elements (other than ID_FILL or ID_END) not referenced by any program config element are not allowed  a decoder conforming to the Main profile, the LC profile, or the SSR profile is not required to support bitstreams containing more than one program (in the sense of what is specified in a program config element)
data_stream_element	8.6	a decoder is not required to store or present data recovered from data_stream_elements
mono-mixdown element	8.3.8	a decoder conforming to the Main profile, the LC profile, or the SSR profile is not required to support bitstreams containing any mono-mixdown element
stereo-mixdown element	8.3.8	a decoder conforming to the Main profile, the LC profile, or the SSR profile is not required to support bitstreams containing any stereo-mixdown element
matrix-mixdown	8.3.8	a decoder is not required to calculate a matrix-mixdown signal

“.

*Add subclause 2.6.5.0 (Profile Specification)*

“

**2.6.5.0 Profile Specification**

The same naming convention as used for decoders is applied to bitstreams (see 2.6.4.1). The channel specification within the naming convention is based on the bitstream, independent of any program specification. There shall be only one program (in the sense of what is specified in a program config element) in an Main, Low Complexity, or SSR profile conformant bitstream.

”.

*In subclause 2.6.5.1 (Parsing an ADIF header), add*

“

**copyright\_id\_present:** no restrictions apply.

**copyright\_id:** cross check with the Registration Authority.

**original\_copy:** no restrictions apply.

**home:** no restrictions apply.

**bitstream\_type:** no restrictions apply.

**bitrate:** no restrictions apply.

**num\_program\_config\_elements:** shall be 0 for the profiles AAC Main, AAC LC and AAC SSR.

**adif\_buffer\_fullness:** shall be in the range of 0 and  $6144 * NCC - \text{mean\_frame\_length}$  (in bits).

“

*In subclause 2.6.5.2.1 (adts\_fixed\_header), add*

“

All data elements of the `adts_fixed_header()` shall not change from frame to frame.

**protection\_absent:** no restrictions apply, but the data element shall not change from frame to frame.

**private\_bit:** no restrictions apply, but the data element shall not change from frame to frame.

**channel\_configuration:** no restrictions apply, but the data element shall not change from frame to frame.

**original\_copy:** no restrictions apply, but the data element shall not change from frame to frame.

**home:** no restrictions apply, but the data element shall not change from frame to frame.

“

*In subclause 2.6.5.2.2 (adts\_variable\_header), replace*

“

**frame\_length:** shall be encoded with the length of the frame, including headers and error check (if present)

“

*with*

“

**copyright\_identification\_bit:** cross check with the Registration Authority.

**copyright\_identification\_start:** '1' if new copyright\_id starts, otherwise '0'.

**frame\_length:** shall be encoded with the length of the `adts_frame` in bytes.

**adts\_buffer\_fullness:** shall be in the range of 0 and  $\text{INT}((6144 - \text{mean\_frame\_length} / NCC) / 32)$ .

**number\_of\_raw\_data\_blocks\_in\_frame:** no restrictions apply.

“

*Add subclause 2.6.5.2.3 (adts\_error\_check)*

“

#### **2.6.5.2.3 adts\_error\_check**

**crc\_check:** refer to the definition of `adts_error_check()` in ISO/IEC 13818-7.

“

*Add subclause 2.6.5.2.4 (adts\_header\_error\_check)*

“

#### **2.6.5.2.4 adts\_header\_error\_check**

**raw\_data\_block\_position[i]:** shall be encoded with the start position of `raw_data_block(i)` measured as an offset in bytes from start position of `raw_data_block(0)`.

**crc\_check:** refer to the definition of `adts_header_error_check()` in ISO/IEC 13818-7.

“

Add subclause 2.6.5.2.5 (*adts\_raw\_data\_block\_error\_check*)

“

#### 2.6.5.2.5 *adts\_raw\_data\_block\_error\_check*

**crc\_check:** refer to the definition of *adts\_raw\_data\_block\_error\_check()* in ISO/IEC 13818-7.

“

*In subclause 2.6.5.3 (Decoding of raw data blocks), add at the beginning*

“

If a *program\_config\_element()* is used to specify the content of a *raw\_data\_stream()*, any subsequent *raw\_data\_block()* shall contain exactly the specified elements (by means of type, number and *element\_instance\_tag*).

“

*In subclause 2.6.5.9 (Prediction), replace*

“

**predictor\_reset:** shall be encoded with the binary value of 1 for at least one out of every eight consecutive frames for programs in which *predictor\_data\_present* is 1.

**predictor\_reset\_group\_number:** shall not be encoded with the binary values 00000 or 11111; every valid value shall occur once within a consecutive series of 30 occurrences of *pred\_reset\_group\_number*.

“

*with*

“

**predictor\_reset:** marks the presence of **predictor\_reset\_group\_number** for a given frame. **Predictor\_reset** on its own can not be tested for conformance, but conformant use of **predictor\_reset\_group\_number** implies conformant use of **predictor\_reset**.

**predictor\_reset\_group\_number:** shall not be encoded with the binary values 00000 or 11111 (undefined reset group) and shall not violate the following set of rules (maximum period of 240 frames with predictor activity):

- Define a predictor reset group counter ('activity counter') for each predictor group and initialize all counters to zero.
- Increment the counter for a given group, whenever any (or all) of the associated **prediction\_used[sfb]** flags for that particular group are active ('1') during a frame. Note that prediction groups may be active independently of each other and that frames with predictor activity may be interleaved with an arbitrary number of frames without any predictor activity.
- If *window\_sequence* equals **EIGHT\_SHORT\_SEQUENCE**, all predictor reset group counters are reset to zero.
- If **predictor\_reset** has the value '1', the counter indicated by **predictor\_reset\_group\_number** is reset to zero.
- A predictor group reset shall be signaled sufficiently often that the associated predictor reset group counter ("activity counter") never reaches the value of 240 after all possible reset or increment operations have been considered. Note, that a 'predictor group reset' resets only one group at a time so that it takes 30 frames to reset all predictor reset groups.

“

“

*In subclause 2.6.5.14 (Program Configuration Elements), add*

“

The `raw_data_stream()` of an `adif_sequence()` shall not contain any `program_config_element()`.

**element\_instance\_tag:** see subclause 2.6.5.3.

**profile:** see subclause 2.6.5.2.1.

**sampling\_frequency\_index:** see subclause 2.6.5.2.1.

**num\_front\_channel\_elements:** see restriction regarding the number of channels as stated above.

**num\_side\_channel\_elements:** see restriction regarding the number of channels as stated above.

**num\_back\_channel\_elements:** see restriction regarding the number of channels as stated above.

**num\_lfe\_channel\_elements:** see restriction regarding the number of channels as stated above.

**num\_assoc\_data\_elements:** no restrictions apply.

**num\_valid\_cc\_elements:** see restriction regarding the number of channels as stated above.

**mono\_mixdown\_present:** shall be 0 for the profiles AAC Main, AAC LC and AAC SSR.

**stereo\_mixdown\_present:** shall be 0 for the profiles AAC Main, AAC LC and AAC SSR.

**matrix\_mixdown\_idx:** no restrictions apply.

**pseudo\_surround\_enable:** no restrictions apply.

**front\_element\_is\_cpe[i]:** no restrictions apply.

**side\_element\_is\_cpe[i]:** no restrictions apply.

**back\_element\_is\_cpe[i]:** no restrictions apply.

**comment\_field\_bytes:** no restrictions apply.

**comment\_field\_data[i]:** no restrictions apply.

“

*In subclause 2.6.6 (Procedure to Test Decoder Conformance), replace*

“

To be called an ISO/IEC 13818-7 audio decoder, the decoder shall provide an output such that the rms level of the difference signal between the output of the decoder under test and the supplied reference output is less than  $2^{-15}/\sqrt{12}$ .

In addition, the difference signal shall have a maximum absolute value of at most  $2^{-14}$  relative to full-scale.

“

*with*

“

To fulfill the “RMS/LSB Measurement” test at an accuracy level of “K bit”, an ISO/IEC 13818-7 decoder shall provide an output waveform such that the RMS level of the difference signal between the output of the decoder under test and the supplied reference output is less than  $2^{-(K-1)}/\sqrt{12}$ . In addition, the difference signal shall have a maximum absolute value of at most  $2^{-(K-2)}$  relative to full-scale. The “RMS/LSB Measurement” test shall be carried out for an accuracy level of K=16 bit unless a different accuracy level is explicitly stated.

“

*In subclause 2.6.6.1 (Calculation of RMS), remove*

“

The decoder under test may be called an ISO/IEC 13818-7 audio decoder if the rms is less than  $1/(2^{15} * 12^{0.5})$  and if the maximum absolute value of *diff* is less than or equal to  $1/2^{14}$ .

“

*Add subclause 2.6.6.2 (Test bitstream properties)*

“

### 2.6.6.2 Test bitstream properties

Some conformance test bitstreams have special properties mentioned in Table 2-9, Table 2-10, Table 2-11 and Table 2-12:

**Arithmetic torture:** This field indicates that as many different Huffman codewords from the spectrum Huffman codebooks as possible are used within the bitstream. At least 95 % of the total number of the individual codewords is processed.

**Buffer test:** This field indicates that the bitstream is intended to check the decoder's input buffer size. The number of remaining bits in the bit reservoir are first kept at a high level and then at one or several blocks within the stream all accumulated free bits are used by a single `raw_data_block()`. Thus, the resulting block lengths for these `raw_data_blocks` are similar to the total decoder input buffer size, or, as this might be difficult to achieve, not more than 16 bit below that value.

**Non-meaningful window\_sequence transitions:** This field indicates that the bitstream is intended to check the decoder's behavior in case of a non-meaningful window sequence transitions (see subclause 2.6.5.11 for details).

“.