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TECHNICAL CORRIGENDUM 1

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Information technology — Multimedia application format (MPEG-A) —

Part 9:
Digital Multimedia Broadcasting application format

TECHNICAL CORRIGENDUM 1

Technologies de l'information — Format pour application multimédia (MPEG-A) —

Partie 9: Format pour application de diffusion générale multimédia numérique

RECTIFICATIF TECHNIQUE 1

Technical Corrigendum 1 to ISO/IEC 23000-9:2008 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information.*

Page 26, in 6.5.3, replace (Syntax):

```
class M2TSSampleEntry() extends HintSampleEntry ('m2ts') {
    unsigned int(64) transporttime_offset;
```

with:

```
class M2TSSampleEntry() extends HintSampleEntry ('m2ts') {
    unsigned int(32) transporttime_offset;
```

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and replace (Semantics, first paragraph)

> `transporttime_offset` is an integer that specifies time offset (in the timescale indicated in the 'mdhd' box) between the transport timing and media playback timing for the stored TS. It shall be specified and shall take the PCR value corresponding to the firstly stored TS packet for this sample entry. The value 0 means 'unspecified'.

with:

> `transporttime_offset` is an integer that specifies time offset between the transport timing and media playback timing for the stored TS. It can be calculated as follows;
>
> `transporttime_offset` = *MSB32*(*PCR_base*(1)),
>
> where:
> *PCR_base*(n) stands for the 'program_clock_reference_base (33 bits)' of the first TS packet in the sample n,
> *MSB32*(x) stands for 'most significant 32-bit' of x.
>
> The value 0 means 'unspecified'.

Page 27, in 6.5.3, replace (Semantics)

To randomly access and playback an '`m2ts`' sample, the PCR (Program Clock Reference) value corresponding to the first TS packet in the sample is needed to initialize the STC (System Time Clock) of the player. The PCR value for each sample is stored in the '`stts`' box, with the value of `transporttime_offset` in the corresponding M2TSSampleEntry is subtracted from the original PCR value. Accordingly, the time scale field in '`mdhd`' shall take the value equal to the time scale of PCR, making sample times in '`stts`' box expressed in this time scale. Note that for this TS hint track, '`stts`' maps transport times (with an offset) to sample numbers rather than media decoding times to sample numbers. It is much like the DMB receivers turns on and randomly access to the TS on air.

with:

To randomly access and playback an '`m2ts`' sample, the PCR (Program Clock Reference) value corresponding to the first TS packet in the sample is needed to initialize the STC (System Time Clock) of the player. The PCR value for each sample is stored in the '`stts`' box with the following conversion rule:

DT(n) = *UINT32*(*MSB32*(*PCR_base*(n)) – *MSB32*(*PCR_base*(1))),

where:
DT(n) stands for 'decoding time' for sample n as defined in ISO/IEC 14496-12,
UINT32(x) stands for '32-bit unsigned integer interpretation' of x.

Note that, due to the wrap-around (i.e., $\%2^{33}$), *PCR_base*(n) can be less than *PCR_base*(m), where n>m. To handle this, *DT*(n) shall always be interpreted as non-negative integer value whether the subtraction result is positive or not.

Due to the *MSB32*() operation, the time scale field in '`mdhd`' shall take the value equal to 45,000, which is a half of the time scale of *PCR_base*(n). Note that for this TS hint track, '`stts`' maps transport times (with an offset) to sample numbers rather than media decoding times to sample numbers. It is much like the DMB receivers turns on and randomly access to the TS on air.

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Page 28, in 6.5.5, replace:

Use case 2: `sample_type=1`
In this case, the `pmt_type=1` and random access to the samples can be achieved as follows:

a. First, find out the sample number corresponding to the wanted time point *T* by using '`stts`' box. (In this case, time scale conversion between T and the PCR time scale shall be done.)

with:

Use case 2: `sample_type=1`
In this case, the `pmt_type=1` and random access to the samples can be achieved as follows:

a. First, find out the sample number corresponding to the wanted time point *T* (in time scale of 45,000) by using '`stts`' box.

Page 35, in A.1, Case 2, replace :

```
<?xml version="1.0" encoding="UTF-8"?>
<DIDL xmlns="urn:mpeg:mpeg21:2006:07-DIDL-NS" xmlns:dii="urn:mpeg:mpeg21:2002:01-DII-NS"
xmlns:ipmpdidl="urn:mpeg:mpeg21:2004:01-IPMPDIDL-NS" xmlns:ipmpinfo="urn:mpeg:mpeg21:2004:01-
IPMPINFO-NS" xmlns:ipmpinfo-msx="urn:mpeg:mpeg21:2006:07-IPMPINFOMSX-NS"
```

with:

```
<?xml version="1.0" encoding="UTF-8"?>
<DIDL xmlns="urn:mpeg:mpeg21:2006:07-DIDL-NS" xmlns:dii="urn:mpeg:mpeg21:2002:01-DII-NS"
xmlns:ipmpdidl="urn:mpeg:mpeg21:2004:01-IPMPDIDL-NS" xmlns:ipmpinfo="urn:mpeg:mpeg21:2004:01-
IPMPINFO-NS" xmlns:ipmpinfo-msx="urn:mpeg:maf:Schema:mediastreaming:IPMPINFOextensions:2007"
```

Page 36, in A.1, Case 3, replace:

```
<?xml version="1.0" encoding="UTF-8"?>
<DIDL xmlns="urn:mpeg:mpeg21:2006:07-DIDL-NS" xmlns:dii="urn:mpeg:mpeg21:2002:01-DII-NS"
xmlns:ipmpdidl="urn:mpeg:mpeg21:2004:01-IPMPDIDL-NS" xmlns:ipmpinfo="urn:mpeg:mpeg21:2004:01-
IPMPINFO-NS" xmlns:ipmpinfo-msx="urn:mpeg:mpeg21:2006:07-IPMPINFOMSX-NS"
```

with:

```
<?xml version="1.0" encoding="UTF-8"?>
<DIDL xmlns="urn:mpeg:mpeg21:2006:07-DIDL-NS" xmlns:dii="urn:mpeg:mpeg21:2002:01-DII-NS"
xmlns:ipmpdidl="urn:mpeg:mpeg21:2004:01-IPMPDIDL-NS" xmlns:ipmpinfo="urn:mpeg:mpeg21:2004:01-
IPMPINFO-NS" xmlns:ipmpinfo-msx="urn:mpeg:maf:Schema:mediastreaming:IPMPINFOextensions:2007"
```

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