SLOVENSKI STANDARD
oSIST prEN IEC 62942:2018

01-december-2018

Format datoteke za profesionalni prenos in izmenjavo digitalnih avdio podatkov (TA6)

File format for professional transfer and exchange of digital audio data (TA6)

Ta slovenski standard je istoveten z: **prEN IEC 62942:2018**

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SECRETARIAT: Japan	SECRETARY: Mr Koji Tsukada
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

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☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY

☒ SUBMITTED FOR CENELEC PARALLEL VOTING	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

Attention IEC-CENELEC parallel voting

The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.

The CENELEC members are invited to vote through the CENELEC online voting system.

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TITLE:

File format for professional transfer and exchange of digital audio data (TA 6)

PROPOSED STABILITY DATE: 2023

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FILE FORMAT FOR PROFESSIONAL TRANSFER AND EXCHANGE OF DIGITAL AUDIO DATA

FOREWORD

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International Standard IEC 62942 has been prepared by subcommittee TA6: Storage media, storage data structures, storage systems and equipment, of IEC technical committee TC100: Audio, video and multimedia systems and equipment.

The text of this standard is based on the following documents:

FDIS	Report on voting
XX/XX/FDIS	XX/XX/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

The National Committees are requested to note that for this publication the stability date is 2018.

THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE PUBLICATION STAGE.

INTRODUCTION

The broadcast-wave-format file (BWFF) is based on the Microsoft WAVE audio file format, which is a type of file specified in the Microsoft resource interchange file format (RIFF). WAVE files specifically contain audio data. The basic building block of a RIFF file is a chunk which contains specific information, an identification field, and a size field. A RIFF file contains a number of chunks.

The BWFF specifically includes a <Broadcast Audio Extension> chunk to carry certain metadata important for broadcast and professional use. For reliable interchange, some restrictions apply to the format of the audio data.

The Broadcast Wave Format was first developed using ASCII text for all fields. Later, as the format was further developed, it was proposed to use multi-byte characters to internationalize the format. It was understood that to use multi-byte character sets within the existing format would cause compatibility issues when multi-byte metadata was parsed by applications expecting ASCII text. The separate nature of human-readable and machine-readable metadata was established, and a new "universal" chunk was established to carry internationalized human-readable metadata using multi-byte character sets without interoperability issues. This is described in annex K.

This document contains the specification of the broadcast audio extension chunk and its use with PCM-coded audio data. Basic information on the RIFF format and how it can be extended to other types of audio data is given in annex E. Details of the PCM WAVE format are also given in annex A.

FILE FORMAT FOR PROFESSIONAL TRANSFER AND EXCHANGE OF DIGITAL AUDIO DATA

1 Scope

This International Standard specifies a file format for interchanging audio data between compliant equipment. It is primarily intended for audio applications in professional recording, production, post production, and archiving.

It is derived from the EBU Broadcast Wave Format but is also compatible with variant specifications including ITU-R BR.1352-3-2007 and the Japan Post Production Association's BWF-J.

An optional extended format, BWF-E, supports 64-bit addressing to permit file sizes greater than 4 GBytes.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

SMPTE ST 330-2011; *SMPTE standard for television - Unique Material Identifier (UMID)*

ISO/IEC 646:1991; *Information technology - ISO-7-bit coded character set for information exchange*

ISO 8601; *Data elements and interchange formats - Information interchange - Representation of dates and times*

ISO/IEC 10646:2012; *Information technology - Universal Multiple-Octet Coded Character Set (UCS)*

IETF RFC 3629; *UTF-8, a transformation format of ISO 10646*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/

ISO Online browsing platform: available at http://www.iso.org/obp

3.1
resource interchange file format
RIFF
a file representation upon which the WAVE file format is based

3.2
chunk
data package within RIFF files containing related data

3.3
ASCII
7-bit character code compliant with ISO/IEC 646

3.4
waveform audio file format
WAVE
audio file format based on the RIFF file structure

3.5
broadcast wave format file
BWFF
WAVE file containing the bext chunk as described in this standard

3.6
broadcast extension chunk
bext
an extension chunk to WAVE

3.7
universal broadcast audio extension chunk
ubxt
the human-readable information of the bext chunk in multi-byte languages

3.8
UMID
unique material identifier as defined in SMPTE ST 330

3.9
broadcast wave format, extended
BWF-E
an optional extended format that replaces a RIFF header with an RF64 header to support 64-bit addressing to permit file sizes greater than 4 GBytes

3.10
RF64
a structure equivalent to the RIFF file type supporting 64-bit addressing

3.11
CHAR
8-bit signed integer, representing integer values from –128 to +127. Equivalent C type: “signed char”

3.12
BYTE
8 bit unsigned integer, representing integer values from 0 to 255. Equivalent C type: “unsigned char”

3.13
INT
16-bit signed integer, representing integer values from –32768 to +32767. Equivalent C type: “signed short int”. Multi-byte data types are little-endian

3.14
WORD
16-bit unsigned integer, representing integer values from 0 to +65535. Equivalent C type: “unsigned short int”. Multi-byte data types are little-endian

3.15
LONG
32-bit signed integer, representing integer values from –2,147,483,648 to +2,147,483,647. Equivalent C type: “signed long int”. Multi-byte data types are little-endian

3.16
DWORD
32-bit unsigned integer, representing integer values from 0 to +4,294,967,295. Equivalent C type: “unsigned long int”. Multi-byte data types are little-endian

4 BWF file

4.1 Existing Chunks defined as part of the RIFF Format

This specification uses a number of RIFF chunks which are already defined (See annex A). These are:

```
<fmt-ck>            Format Chunk
<wave-data>         Audio data chunk
```


4.2 Additional chunks

Additional chunks may be present in the file. Some of these may be outside the scope of this standard. Applications may or may not interpret or make use of these chunks, so the integrity of the data contained in such unknown chunks cannot be guaranteed. However, compliant applications should pass on unknown chunks with their contents unchanged.

4.3 Contents of a BWFF

A BWFF shall contain the RIFF “WAVE” header and at least the following chunks:

```
<WAVE-form>
RIFF('WAVE'
     <fmt-ck>                    /* Format of the audio signal: PCM/MPEG */
     <broadcast_audio_extension> /* information on the audio sequence */
     <wave-data> )               /* sound data */
```

4.4 Broadcast audio extension chunk

Extra parameters needed for exchange of material between broadcasters are added in a specific Broadcast Audio Extension, or bext chunk. The structure of the bext chunk shall be defined as follows:

```
typedef struct chunk_header {
     DWORD ckID;                 /* (broadcastextension)ckID=bext */
     DWORD ckSize;               /* size of extension chunk */
     BYTE ckData[ckSize];        /* data of the chunk */
}    CHUNK_HEADER;
typedef struct broadcast_audio_extension {
CHAR Description[256];           /* ASCII : "Description of the sound
                                 sequence" */
CHAR Originator[32];             /* ASCII : "Name of the originator" */
CHAR OriginatorReference[32];    /* ASCII : "Reference of the originator" */
CHAR OriginationDate[10];        /* ASCII : "yyyy-mm-dd" */
```

```
CHAR OriginationTime[8];          /* ASCII : "hh:mm:ss" */
DWORD TimeReferenceLow;           /* First sample count since midnight, low
                                  word */
DWORD TimeReferenceHigh;          /* First sample count since midnight, high
                                  word */
WORD Version;                     /* Version of the BWF; unsigned binary
                                  number. See annex G */
BYTE UMID_0;                      /* Binary byte 0 of SMPTE UMID */
....
BYTE UMID_63;                     /* Binary byte 63 of SMPTE UMID */
INT LoudnessValue;                /* Integrated Loudness Value of the file in
                                  LKFS (multiplied by 100) see annex H */
INT LoudnessRange;                /* Loudness Range of the file in LU
                                  (multiplied by 100) see annex H */
INT MaxTruePeakLevel;             /* Maximum True Peak Level of the file
                                  expressed as dBTP (multiplied by 100) see
                                  annex H */
INT MaxMomentaryLoudness;         /* Highest value of the Momentary Loudness
                                  Level of the file in LKFS (multiplied by
                                  100) see annex H */
INT MaxShortTermLoudness;         /* Highest value of the Short-Term Loudness
                                  Level of the file in LKFS (multiplied by
                                  100) see annex H */
BYTE Reserved[180];               /* 180 bytes, reserved for future use, set
                                  to "NULL" */
CHAR CodingHistory[];             /* ASCII : « History coding » */
} BROADCAST_EXT
```

The content of the fields in the bext chunk shall be defined as shown in table 1. Note that in applications where ASCII text is inappropriate for human-readable information - for example when a character set other than ISO 646 is required - it is necessary to carry it by another means, for example, in a dedicated metadata chunk added to the BWFF. See also Annex K, Universal broadcast audio extension chunk (ubxt).

All the items except Description, Originator, OriginatorReference and CodingHistory should have the same content as that of each corresponding item of the ubxt chunk (see annex K), if present. If machine-readable data in the 'bext' chunk is updated, the corresponding machine-readable data in the 'ubxt' chunk should also be updated identically.

Table 1 – bext field content definitions

Description	Human	ASCII string, 256 characters or less, containing a description of the sequence. If line breaks are used, lines shall be terminated by <CR><LF>. If data is not available or if the length of the string is less than 256 characters, the first unused character shall be a null character (00_{16}). To help applications that only display a short description, a summary of the description should be contained in the first 64 characters. The last 192 characters may be used for details.
Originator	Human	ASCII string, 32 characters or less, containing the name of the originator of the audio file. If data is not available or if the length of the string is less than 32 characters, the first unused character shall be a null character (00_{16}).
OriginatorReference	Human	ASCII string, 32 characters or less, containing a reference allocated by the originating organization. See annex I. If data is not available or if the length of the string is less than 32 characters, the first unused character shall be a null character (00_{16}).

OriginationDate	Human	ASCII string, 10 characters, containing the date of creation of the audio sequence. Format: ***yyyy-mm-dd*** ***yyyy*** = 4 characters for year shall contain a value between 0000 and 9999 **-** = 1 character ***mm*** = 2 characters for month shall contain a value between 01 and 12 **-** = 1 character ***dd*** = 2 characters for day of month shall contain a value between 01 and 31 All components shall be present. Hyphen characters, "**-**", shall be used as separators within the date expression in compliance with ISO 8601. For compatibility with alternative implementations, reproducing equipment should also recognise the following separator characters: "**_**" underscore "**:**" colon " " space "**.**" period.
OriginationTime	Human	ASCII string, 8 characters, containing the time of creation of the audio sequence in hours, minutes and seconds. If data is unavailable, the default value shall be 00:00:00. Format: ***hh:mm:ss*** ***hh*** = 2 characters for hours shall contain a value between 00 and 23 if time given **:** = 1 character ***mm*** = 2 characters for minutes shall contain a value 00 - 59 if time given **:** = 1 character ***ss*** = 2 characters for seconds shall contain a value between 00 and 59 All components shall be present. Colon characters, "**:**", shall be used as separators within the time of day expression in compliance with ISO 8601. For compatibility with alternative implementations, reproducing equipment should also recognise the following characters: "**_**" underscore "**-**" hyphen " " space "**.**" period.
TimeReference	Machine	This field shall contain the sample address count [time code] of the sequence. It is a 64-bit unsigned value which contains the sample count since midnight of the first sample in the audio data. The number of samples per second depends on the sample frequency which is defined in the field **<nSamplesPerSec>** from the **<fmt-ck>**. The default value is zero, corresponding to midnight.
Version	Machine	An unsigned binary number indicating the version of the BWF. For Version 1 it shall be set to 0001_{16} and for Version 2 it shall be set to 0002_{16}. This is set to 0002_{16}. See annex G
UMID	Machine	64 bytes containing an extended UMID to SMPTE ST 330. If a 32-byte basic UMID is used, the last 32 bytes shall be filled with zeros. If no UMID is available, the 64 bytes shall be filled with zeros.