

# EBU Technical Recommendation R98-1999

## Format for the <CodingHistory> field in Broadcast Wave Format files, BWF



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**Keywords:** Audio file formats

The EBU has considered that:

- the BWF file is the recommended format for the exchange of audio programme files.[1],
- The quality of an audio signal is influenced by signal processing that the signal has experienced, particularly by the use of non-linear coding and decoding during bit-rate reduction processes.
- A <CodingHistory> field is provided in the BWF format to allow the exchange of information on previous signal processing,
- A standard format for the coding history information would simplify the use of the information after programme exchange.

The EBU therefore recommends:

- That EBU Members use the format given in Appendix 1 to record the coding history of the audio signals in BWF files.

### Bibliography

- [1] EBU Recommendation R85-1997: **Use of the Broadcast Wave Format for the exchange of audio data files**
  - [2] EBU Standard N22-1997: **The Broadcast Wave Format: A format for audio data files in broadcasting**
  - [3] EBU Tech 3285-1997: **Specification of the Broadcast Wave Format: A format for audio files in broadcasting**
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## Appendix 1

### Specification of the Format for <CodingHistory> field in Broadcast Wave Format files, BWF

#### Introduction

The <CodingHistory> field in the <bext> chunk of a Broadcast Wave Format [1][2] file is defined as a collection of strings containing a history of the coding processes. A new row should be added whenever the coding history is changed. Each row should contain a string variable for each parameter of the coding. Each row should be terminated by CR/LF. A format for the coding history stings is given below.

#### Syntax

The syntax of each row should be as follows:

| Parameter          | Variable string <allowed option>                                                                                                                                      | Unit                 |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Coding Algorithm   | A=<ANALOGUE, PCM, MPEG1L1, MPEG1L2, MPEG1L3, MPEG2L1, MPEG2L2, MPEG2L3>                                                                                               |                      |
| Sampling frequency | F=<11000, 22050, 24000, 32000, 44100, 48000>                                                                                                                          | [Hz]                 |
| Bit-rate           | B=<any bit-rate allowed in MPEG 2 (ISO/IEC 13818-3)>                                                                                                                  | [kbit/s per channel] |
| Word Length        | W=<8, 12, 14, 16, 18, 20, 22, 24>                                                                                                                                     | [bits]               |
| Mode               | M=<mono, stereo, dual-mono, joint-stereo>                                                                                                                             |                      |
| Text, free string  | T=<a free ASCII-text string for in house use. This string should contain no commas (ASCII 2C <sub>hex</sub> ). Examples of the contents: ID-No; codec type; A/D type> |                      |

Notes:

The variable strings should be separated by commas (ASCII 2C<sub>hex</sub>). Each row should be terminated by CR/LF

Variable B= is only used for MPEG coding.

Variable W= For MPEG coding, should be used to indicate the word-length of the PCM input to the MPEG coder.

## Examples of coding history fields

### Example 1

A=PCM,F=48000,W=16,M=stereo,T=original,CR/LF

A=MPEG1L2,F=48000,B=192,W=16,M=stereo,T=PCX9,CR/LF

### Interpretation of Example 1

#### Line 1:

The original file is recorded as a linear BWF file with PCM Coding with,

- Sampling frequency 48 kHz
- Coding resolution 16 bits per sample
- Mode stereo
- Status original coding

#### Line2:

The original file has been converted to an MPEG-1 Layer 2 BWF file using the parameters:

- Sampling frequency 48 kHz,
- bits per second per channel 192 kbit/s
- Coding resolution 16 bits
- Mode stereo
- Coder PCX9 (Digigram)

### Example 2 for a digitization process of analogue material:

A=ANALOGUE,M=stereo,T= StuderA816; SN1007; 38; Agfa\_PER528,<CR/LF>

A=PCM,F=48000,W=18,M=stereo,T=NVision; NV1000; A/D,<CR/LF>

A=PCM,F=48000,W=16,M=stereo,T=PCX9;DIO,<CR/LF>

### Interpretation of Example 2

#### Line 1:

The analogue magnetic tape, type Agfa PER528, was played back on a tape recorder, Studer model A816, serial number 1007:

- Tape speed 38 cm/s
- Mode stereo

#### Line 2:

The recording was digitization using an A/D converter type NVision NV1000 with:

- Sampling frequency 48 kHz
- Coding resolution 18 bits per sample
- Mode stereo

#### Line 3:

The recording was stored as a BWF file with linear PCM coding using the digital input of a PCX9 interface card with:

- Sampling frequency 48 kHz
  - Coding resolution 16 bits per sample
  - Mode stereo
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