

# EBU Technical Recommendation R85 - 2004

## Use of the Broadcast Wave Format for the exchange of audio data files

<i>EBU Committee</i>	<i>First Issued</i>	<i>Revised</i>	<i>Re-issued</i>
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### Introduction

The increasing use of computer technology and equipment in broadcasting creates a need for seamless exchange of audio material between different broadcast environments and equipment based on different computer platforms.

The EBU has defined a file format which contains the minimum information that is considered necessary for all broadcast applications. The basic information, together with the audio data, is organised as “Broadcast Wave Format”, BWF, files. From the Broadcast Wave Format file, using an object-oriented approach, a higher level descriptor can be used to reference other files containing more complex sets of information which can be assembled for the different specialised kinds of application.

However for the exchange of audio files between EBU Members, certain restrictions are imposed on the audio signals and Metadata in the BWF to simplify the process of exchange.

**The EBU Recommends** that Members who wish to exchange audio material as data files, without prior agreement, use the Broadcast Wave Format specified in EBU Tech 3285<sup>[1]</sup> and restrict the audio signal and Metadata format to one of those specified below:

### Audio signal formats for the exchange of audio data files

- Sampling frequency: 48 kHz
- Resolution: at least 16 bits for linear PCM
- Alignment level: as specified in EBU Recommendation R68<sup>[2]</sup>
- Audio emphasis: None
- Channel formats:
- Mono
  - Two-channel stereo
  - Multichannel
- Signal format:
- Linear PCM

### Broadcast Wave Format

A full specification of the Broadcast Wave Format for PCM audio data is contained in EBU document Tech 3285<sup>[1]</sup> and Supplements.

#### Chunk order

The basic building block of a RIFF file is called a chunk. Since the BWF format is based on the RIFF/WAVE Standard<sup>[3]</sup> the chunk order is as follows:

Programs must expect (and ignore) any unknown chunks encountered, as with all RIFF forms. However, the <fmt> chunk must always occur before the <wave-data> chunk, and both of these chunks are mandatory in a WAVE file.

The basic chunk of the BWF format is the <bext> chunk. This chunk is mandatory in a BWF file. The <bext> chunk may occur in any order with the other BWF chunks within the same file, preferred before the audio data in the <wave-data> chunk.

### **Multichannel audio**

The use of the BWF for multichannel audio is specified in EBU Recommendation R111-2004<sup>[4]</sup>.

### **Metadata format for exchange between archives**

For the exchange of BWF audio files between archives there is an increasing demand on the transfer of Metadata.

**The EBU further recommends** the transfer of core Metadata according to EBU document Tech 3293<sup>[5]</sup>.

### **Bibliography**

- [1] EBU document Tech 3285 (2001): **Specification of the Broadcast Wave Format – A format for audio data files in broadcasting: Version 1.**
  - [2] EBU Recommendation R68-1995: **Alignment level in digital audio production equipment and in digital audio recorders**
  - [3] Microsoft Software Developers Kit, Multimedia Standards Update, rev 3.0, 15 April 1994.
  - [4] EBU Recommendation R111-2004: **Recommendation for the Multichannel use of the BWF audio file format (MBWF)**
  - [5] EBU document Tech 3293 (2001): **EBU core Metadata set for Radio archives.**
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