# EBU
## OPERATING EUROVISION AND EURORADIO

# TECH 3306

# RF64:
# AN EXTENDED FILE FORMAT
# FOR AUDIO DATA

## A 64-BIT BWF-COMPATIBLE FILE
## FORMAT ENABLING FILE SIZES
## IN EXCESS OF 4 GBYTE

## VERSION 2 (final)

Geneva
June 2018

# RF64: An extended file format
# for audio data

| EBU Committee | First Issued | Revised | Re-issued |
|---|---|---|---|
| TC | 2007 | 2009 | June 2018 |

**Keywords:** 64-bit audio file, Audio Data, Channel-based, Scene-based, Object-based, ADM.

## 1.    Development within the EBU

This 64-bit audio file format was originally developed by the EBU in 2007 to fulfil the longer-term need for multichannel sound in the entire programme chain from capture to editing and play out and for short or long term archiving.

The file format was designed to be a compatible extension to the Microsoft *RIFF/WAVE* format and to the *BWF*. Its 64-bit architecture extended the maximum attainable file size, thus allowing for multichannel sound in broadcasting and audio archiving. RF64 achieved backwards compatibility with 32-bit BWF files by enabling on-the-fly switching from the BWF RIFF size field to the 64-bit riffSize value registered in a <ds64> chunk. This typically happens when a recording application passes the 4 Gbyte file size.

The 2009 version of RF64 added a <r64m> marker chunk to replace the functionality of the <cue> chunk for files larger than 4 Gbyte. This removed an ambiguous interpretation of the cue chunk that was observed by the EBU in some manufacturers' products.

## 2.    Development within the ITU

In February 2015 the EBU RF64 specification was adopted by Working Party 6B of the ITU-R as an input towards a Preliminary Draft New Recommendation ITU-R BS.[BW64].

In October 2015, Recommendation ITU-R BS.2088-0 was published. It contains the <ds64> and <axml> chunks and additionally the <chna> chunk that enables the file to carry large multichannel files and metadata including the Audio Definition Model (ADM) specified in Recommendation ITU-R BS.2076 (whose major input was EBU Tech 3364). The BW64 file format is therefore capable of sustaining NGA (next generation audio) systems comprised of Channel-based, Scene-based and Object-based audio. The ADM defines multiple loudspeaker positions for replay so the original channel mask of 18 loudspeaker positions found in RF64 has been removed in BW64.

To avoid any confusion and duplication of standardisation effort resulting from there being two separate specifications of the 64-bit audio file format the EBU has decided that **Recommendation ITU-R BS.2088** should exclusively be used.

At time of writing this is available for free download from the ITU at:

https://www.itu.int/dms_pubrec/itu-r/rec/bs/R-REC-BS.2088-0-201510-I!!PDF-E.pdf

Implementation Guidelines for broadcasters on the use of BW64 will be published by the EBU.

Previous versions of EBU Tech 3306 are available HERE for information only.