

EBU Technical Recommendation R84-1996

Word length, sampling rates and auxiliary information in digital systems used for high-quality audio production

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The EBU has studied the needs of digital sound production equipment used by broadcasters, particularly for new emission standards such as DAB and the digital sound channels for television systems, taking into account the following considerations:

- Listeners can enjoy a higher dynamic range in digital receivers, compared to current FM systems,
- Production tools such as digital recorders or workstations and mixing consoles can now have options for handling signals with a resolution of more than 16 bits,
- New versions of CD and other media will be able to carry signals with a higher resolution than 16 bits,
- Audio sampling rates for high quality DAB transmission systems will be based on 48 kHz,
- Auxiliary data will be an important feature for DAB transmissions: DAB will carry higher data-rates than the current RDS used with FM broadcasting.

The EBU *recommends*:

That members wishing to produce programmes of the highest quality, intended for DAB and other digital services, as well as for co-production for other media, should:

- Use, if possible, word lengths of more than 16 bits in analogue-to-digital converters, recorders, audio workstations, mixing consoles and other production equipment: alignment levels for these resolutions are specified in EBU Recommendation R68 [1];
- Use 48 kHz sampling frequency, as specified by the ITU-R [2] and agreed by the EBU [3]: sampling rate converters should be used with caution because some older types may introduce audible artefacts;
- Generate and preserve auxiliary data in all parts of the broadcasting chain as specified in EBU Technical Statement D45 [4]: the EBU/AES digital audio interface has a mechanism for transferring data in the user-bit which is specified by the EBU [5] and IT(U-R [6];
- Avoid any form of bit rate reduction prior to coding for final transmission, in order to avoid the effects of cascading low bit rate audio codecs.

Bibliography

- [1] EBU Technical Recommendation R86: **Alignment level in digital audio production equipment and in digital audio recorders**
 - [2] ITU-R Recommendation BS.646-1: **Source encoding for digital sound signals in broadcasting studios**
 - [3] EBU Technical Recommendation R83: **Synchronization of digital audio signals in a television environment**
 - [4] EBU Technical Statement D45: **Preservation of auxiliary information in digital audio systems**
 - [5] EBU document Tech. 3250, Supplement 1 (1992): **Format for the user data channel**
 - [6] ITU-R Recommendation BS.776: **Format for user data channel of the digital audio interface**
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