

RECOMMENDATION ITU-R BR.1531

Exchange of sound programmes for broadcast use recorded as broadcast wave format files on compact and digital versatile recordable data disks

(Question ITU-R 215/10)

(2001)

The ITU Radiocommunication Assembly,

considering

- a) that Recommendation ITU-R BR.1385 – Exchange of sound programmes on recordable compact disks (CD-R), provides specifications for the digital exchange of sound programmes in the form of CD-R;
- b) that Recommendation ITU-R BR.1352 – File format for the exchange of audio programme materials on information technology media, provides specifications for the broadcast wave format (BWF) file to be used for the exchange of sound programmes on information technology media;
- c) that recordable optical data disks such as CD-R and recordable digital versatile disk (DVD-R) have many attractive features for the exchange of sound programmes encoded in the form of information technology files;
- d) that several different recording formats already exist for information technology media, but not all are readable on all computer platforms, and therefore, for the time being, sound programmes may be exchanged in this form, only with the prior agreement of the recipient organization;
- e) that the Optical Storage Technology Association (OSTA) has proposed a universal disk format (UDF) [OSTA – Universal Disk Format Specification versions 1.02 and 2.00. See <http://www.osta.org/>], which is now the standard format used for DVD-R and other types of optical disk storage, as well as for CD-R;
- f) that in the past, the old ISO 9660 disk format has been used for CD-ROMs and many older CD-ROM players are not able to read the UDF format; therefore, although use of the UDF should be encouraged, it is too early to recommend its universal use for programme exchange,

recommends

- 1 that the prior agreement of the recipient organization should be sought when data disks are used as the support for audio programmes exchanged in the form of audio files¹;
- 2 that recordings on CD-R and DVD-R data disks should conform to the specifications detailed in Annex 1.

¹ The application of this *recommends* is not limited to CD-R and DVD-R recordable data disks.

ANNEX 1

Specifications for the exchange (by prior agreement) of audio programmes for broadcast use recorded as BWF files on CD-R and DVD-R data disks**1 Characteristics of disks****1.1 CD-R disks**

A data CD-R disk should be recorded according to ISO/IEC 10149:1993 [“Information technology – Data Interchange on read-only 120 mm optical data discs” (CD-ROM: based on the Philips/Sony “Yellow Book”)].

The disk format should be:

- ISO 9660, if it is not certain that the receiving organization can accept UDF,
- UDF 2.00 (for future applications but by prior agreement at the moment).

1.2 DVD-R disks

A data DVD-R disk should be recorded according to the DVD-R consortium Red-Book.

The disk format should be UDF 1.02.

2 Quality of disks

Blank disks should be of good quality and they must show no obvious surface defects before or after recording.

Any recorded disk sample should meet or exceed Grade B specifications according to the compact disk Red Book.

3 Presentation of disks

Disks should be supplied in an undamaged “jewel case”.

All disks and their cases should be clearly labelled, indicating programme details and the recorded format. To avoid possible damage, disks should only be labelled using methods in accordance with the manufacturer's instructions.

4 Recorded files

Recorded files should conform to the specification of the BWF provided in Recommendation ITU-R BR.1352.

The files may be of any form and contain any number of channels conforming to the BWF specification, for instance:

- linear, two channel pulse-code modulation (PCM) audio;

- Moving Picture Experts Group (MPEG) coded audio files;
- linear, multichannel PCM audio files.

Recorded files should contain audio signals sampled at a frequency of 48 kHz, as per Recommendation ITU-R BR.648 – Digital recording of audio signals. Other sample frequencies may only be used by prior agreement.

5 Characteristics of recorded programmes

The recording level should conform to Recommendation ITU-R BR.1385, as detailed in Table 1. Other recording levels may only be used by prior agreement.

No pre-emphasis shall be used.

If an alignment tone is incorporated in any files on the disk, it should be 9 dB below permitted maximum level, at –18 dBFS (actually –18.06 dBFS, corresponding to a ratio of 1:8), and it should also conform to Recommendation ITU-R BR.1385, as detailed in Table 1:

TABLE 1

Digital codes for maximum levels and alignment levels for 16- and 20-bit coding

Bit/sample	Maximum coding level (0 dBFS)		Audio alignment level	
	Negative peaks	Positive peaks	Negative peaks	Positive peaks
16	8 000	7FFF	F000	0FFF
20	80 000	7FFFF	F0000	0FFFF

The left and right channels of a stereo programme recorded on the disk may be differentiated by using an interrupted alignment tone on the left channel, as per Recommendation ITU-R BR.1385.