

International Telecommunication Union

ITU-R
Radiocommunication Sector of ITU

Report ITU-R BS.2217
(05/2011)

**Compliance material for Recommendation
ITU-R BS.1770**

BS Series
Broadcasting service (sound)



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Foreword

The role of the Radiocommunication Sector is to ensure the rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services, including satellite services, and carry out studies without limit of frequency range on the basis of which Recommendations are adopted.

The regulatory and policy functions of the Radiocommunication Sector are performed by World and Regional Radiocommunication Conferences and Radiocommunication Assemblies supported by Study Groups.

Policy on Intellectual Property Right (IPR)

ITU-R policy on IPR is described in the Common Patent Policy for ITU-T/ITU-R/ISO/IEC referenced in Annex 1 of Resolution ITU-R 1. Forms to be used for the submission of patent statements and licensing declarations by patent holders are available from <http://www.itu.int/ITU-R/go/patents/en> where the Guidelines for Implementation of the Common Patent Policy for ITU-T/ITU-R/ISO/IEC and the ITU-R patent information database can also be found.

Series of ITU-R Reports

(Also available online at <http://www.itu.int/publ/R-REP/en>)

Series	Title
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BR	Recording for production, archival and play-out; film for television
BS	Broadcasting service (sound)
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M	Mobile, radiodetermination, amateur and related satellite services
P	Radiowave propagation
RA	Radio astronomy
RS	Remote sensing systems
S	Fixed-satellite service
SA	Space applications and meteorology
SF	Frequency sharing and coordination between fixed-satellite and fixed service systems
SM	Spectrum management

Note: This ITU-R Report was approved in English by the Study Group under the procedure detailed in Resolution ITU-R 1.

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REPORT ITU-R BS.2217

Compliance material for Recommendation ITU-R BS.1770

(Question ITU-R 2/6)

(2011)

Summary

This Report contains a table of compliance test files and related information for verifying a meter complies with Recommendation ITU-R BS.1770.

Each of the provided test signals shall give the result indicated in table below to a tolerance of ± 0.1 LKFS to be considered Recommendation ITU-R BS.1770-2 compliant. The term *file-based measurement* indicates a meter that measures the test file exactly from the beginning of the file. The term *live* indicates a meter that does not necessarily begin at time zero, and thus different time-alignment of blocks used in processing relative to the programme content, could occur in the measure leading to a slightly different result, as indicated. [All the files](#) are 16-bit PCM wav-files at a sampling rate of 48 kHz.

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File	File-based measurement	“live” measurement	Description	No. of channels
1770Comp-2_RelGateTest.wav	-10.0 LKFS	-10.0 to -10.2 LKFS	Relative gate test (Note this item will give a measurement value of approximately -8.0 LKFS if a -8 LU relative gate is used.) 1 kHz tone at levels of ~-90, -20 and -7 dBFS	2 (L/R)
1770Comp-2_AbsGateTest.wav	-69.5 LKFS	-69.4 to -69.8 LKFS	Test for -70 LKFS absolute gate. If no absolute gate is implemented the measurement result will be -73 LKFS 1 kHz tone at levels of ~-90 dBFS and -69 dBFS	2 (L/R)
1770Comp-2_24LKFS_25Hz_2ch.wav	-24.0 LKFS	-24.0 LKFS	25 Hz sine wave @ ~-13 dBFS	2 (L/R)
1770Comp-2_24LKFS_100Hz_2ch.wav	-24.0 LKFS	-24.0 LKFS	100 Hz sine wave @ ~-22 dBFS	2 (L/R)
1770Comp-2_24LKFS_500Hz_2ch.wav	-24.0 LKFS	-24.0 LKFS	500 Hz sine wave @ ~-23 dBFS	2 (L/R)
1770Comp-2_24LKFS_1000Hz_2ch.wav	-24.0 LKFS	-24.0 LKFS	1 kHz sine wave @ ~-24 dBFS	2 (L/R)
1770Comp-2_24LKFS_2000Hz_2ch.wav	-24.0 LKFS	-24.0 LKFS	2 kHz sine wave @ ~-26 dBFS	2 (L/R)

File	File-based measurement	“live” measurement	Description	No. of channels
1770Comp-2_24LKFS_10000Hz_2ch.wav	-24.0 LKFS	-24.0 LKFS	10 kHz sine wave @ ~-7 dBFS	2 (L/R)
1770Comp-2_23LKFS_25Hz_2ch.wav	-23.0 LKFS	-23.0 LKFS	25 Hz sine wave @ ~-12 dBFS	2 (L/R)
1770Comp-2_23LKFS_100Hz_2ch.wav	-23.0 LKFS	-23.0 LKFS	100 Hz sine wave @ ~-21 dBFS	2 (L/R)
1770Comp-2_23LKFS_500Hz_2ch.wav	-23.0 LKFS	-23.0 LKFS	500 Hz sine wave @ ~-24 dBFS	2 (L/R)
1770Comp-2_23LKFS_1000Hz_2ch.wav	-23.0 LKFS	-23.0 LKFS	1 kHz sine wave @ ~-25 dBFS	2 (L/R)
1770Comp-2_23LKFS_2000Hz_2ch.wav	-23.0 LKFS	-23.0 LKFS	2 kHz sine wave @ ~-27 dBFS	2 (L/R)
1770Comp-2_23LKFS_10000Hz_2ch.wav	-23.0 LKFS	-23.0 LKFS	10 kHz sine wave @ ~-28 dBFS	2 (L/R)
1770Comp-2_18LKFS_FrequencySweep.wav	-18 LKFS	-18 LKFS	Loudness level is constant, at -18 LKFS, throughout the file. A gain error in the K weighting filter of 1 dB in a 1/3rd octave band will give approximately 0.5 LU deflection using a 3s integration time live meter	1 (L or R of C)
1770Comp-2_24LKFS_SummingTest.wav	-24.0 LKFS	-24.0 LKFS	Test channel gains and summing ¹	6 channels (L/R/C/LF E/Ls/Rs)
1770Comp-2_23LKFS_SummingTest.wav	-23.0 LKFS	-23.0 LKFS	Test channel gains and summing ¹	6 channels (L/R/C/LF E/Ls/Rs)
1770Comp-2_24LKFS_ChannelCheckLeft.wav	-24.0 LKFS	-24.0 LKFS	Left channel gain check. 1 kHz sine wave @ ~-24 dBFS in left channel	6 channels (L/R/C/LF E/Ls/Rs)
1770Comp-2_24LKFS_ChannelCheckRight.wav	-24.0 LKFS	-24.0 LKFS	Right channel gain check. 1 kHz sine wave @ ~-24 dBFS in right channel	6 channels (L/R/C/LF E/Ls/Rs)
1770Comp-2_24LKFS_ChannelCheckCentre.wav	-24.0 LKFS	-24.0 LKFS	Centre channel gain check. 1 kHz sine wave @ ~-24 dBFS in centre channel	6 channels (L/R/C/LF E/Ls/Rs)

¹ The LFE should not be included in a meter according to Recommendation ITU-R BS.1770-2. The actual reading will depend on the way in which the LFE channel has been incorporated into the measurement.

File	File-based measurement	“live” measurement	Description	No. of channels
1770Comp-2_24LKFS_ChannelCheckLFE.wav	-inf LKFS	-inf LKFS	Left channel gain check. 100 Hz @ \sim -23 and 1 kHz sine wave @ \sim -24 dBFS in LFE channel. If LFE included with full bandwidth with channel weighting of +10 dB measurement result could be \sim -14 LKFS, with 120 Hz bandwidth measurement result could be \sim -19 LKFS	6 channels (L/R/C/LFE/Ls/Rs)
1770Comp-2_24LKFS_ChannelCheckLs.wav	-24.0 LKFS	-24.0 LKFS	Left surround channel gain check. 1 kHz sine wave @ \sim -25.5 dBFS in Ls channel	6 channels (L/R/C/LFE/Ls/Rs)
1770Comp-2_24LKFS_ChannelCheckRs.wav	-24.0 LKFS	-24.0 LKFS	Right surround channel gain check. 1 kHz sine wave @ \sim -25.5 dBFS in Rs channel	6 channels (L/R/C/LFE/Ls/Rs)
1770Comp-2_23LKFS_ChannelCheckLeft.wav	-23.0 LKFS	-23.0 LKFS	Left channel gain check. 1 kHz sine wave @ \sim -23 dBFS in left channel	6 channels (L/R/C/LFE/Ls/Rs)
1770Comp-2_23LKFS_ChannelCheckRight.wav	-23.0 LKFS	-23.0 LKFS	Right channel gain check. 1 kHz sine wave @ \sim -23 dBFS in right channel	6 channels (L/R/C/LFE/Ls/Rs)
1770Comp-2_23LKFS_ChannelCheckCentre.wav	-23.0 LKFS	-23.0 LKFS	Centre channel gain check. 1 kHz sine wave @ \sim -23 dBFS in centre channel	6 channels (L/R/C/LFE/Ls/Rs)
1770Comp-2_23LKFS_ChannelCheckLFE.wav	-inf LKFS	-inf LKFS	Left channel gain check. 100 Hz @ \sim -23 and 1 kHz sine wave @ \sim -23 dBFS in LFE channel. If LFE included with full bandwidth with channel weighting of +10 dB measurement result could be \sim -13 LKFS, with 120 Hz bandwidth measurement result could be \sim -17 LKFS	6 channels (L/R/C/LFE/Ls/Rs)
1770Comp-2_23LKFS_ChannelCheckLs.wav	-23.0 LKFS	-23.0 LKFS	Left surround channel gain check. 1 kHz sine wave @ \sim -24.5 dBFS in Ls channel	6 channels (L/R/C/LFE/Ls/Rs)
1770Comp-2_23LKFS_ChannelCheckRs.wav	-23.0 LKFS	-23.0 LKFS	Right surround channel gain check. 1 kHz sine wave @ \sim -24.5 dBFS in Rs channel	6 channels (L/R/C/LFE/Ls/Rs)