2011-10-25

Withdrawal of SMPTE RP 173:2002

Loudspeaker Placements for Audio Monitoring in High-Definition Electronic Production

A document should be Withdrawn only if there is a significant possibility of its use causing harm. A Withdrawn document shall still be made available and offered for sale by the Society, but it shall be prefaced by a cover page explaining its current status including a statement that some or all of the content is no longer endorsed by the Society.

This Recommended Practice has been withdrawn and its content is no longer endorsed by the Society. This action has been taken because it is judged that there is a significant possibility that use of the document may cause harm.

The document no longer reflects current practice.

Figure 1 suggests that surround loudspeakers should be further from reference position than screen -- this would lead to bad balance.

Figure 1 suggests a median angle of surrounds as being 90 degrees from center front. 120 degrees is accepted angle today.

Figure 2 should not be a recommended practice, as center channel eq would be uncertain with a phantom source.

Widely adopted documents on loudspeaker placement for broadcast applications are EBU Tech 3276 and Tech 3276-S1.

RP 173-2002

SMPTE RECOMMENDED PRACTICE

Loudspeaker Placements for Audio Monitoring in High-Definition Electronic Production

1 Scope

This practice describes a hierarchy of monitoring loudspeaker arrangements for single- and multi-channel sound systems used in high-definition electronic production.

2 Definition

The reference listening position is defined as that point located on a line bisecting the width of the display screen and at a distance of three picture heights (3H) from the screen. The reference listening position is labelled “3H” in figure 1.

3 Loudspeaker arrangements

3.1 The release format monitoring loudspeaker arrangements include the following categories:

– 1 front loudspeaker: (1/0) monophonic sound;

– 2 front loudspeakers: (2/0) conventional two-channel stereo;

– 3 front loudspeakers: (3/0) three-channel stereo, which includes a hard center channel;

– 3 front loudspeakers, 2 rear loudspeakers: 3/2 surround sound.

3.2 Figure 1 shows loudspeaker arrangements with respect to the display screen for all the above formats. Any of these formats may optionally include a subwoofer for base reinforcement.

4 Center loudspeaker

4.1 When a perforated projection screen is used, the center (C) loudspeaker should be placed behind the screen, centered from left to right. When a nonperforated screen or a CRT or LCD display is used, the center loudspeaker should be placed above or below the screen.

4.2 A variation on the above is illustrated in figure 2. Figure 2 shows two center-channel loudspeakers (C), one loudspeaker being located at the left side and another at the right side of the display screen, with left-channel and right-channel loudspeakers (L and R, respectively) being spaced further out from the screen on the left and right sides, respectively. The two “C” loudspeakers are fed identical center-channel audio signals, and their amplitudes are balanced to produce a phantom center image. Caution: The listening position is critical with this arrangement. It has been demonstrated that a phantom center image delivers less clarity and a frequency response different from that delivered by a hard center loudspeaker. This arrangement is not recommended, but is included here as recognition that it is frequently used when no other alternative exists.

Approved March 12, 2002

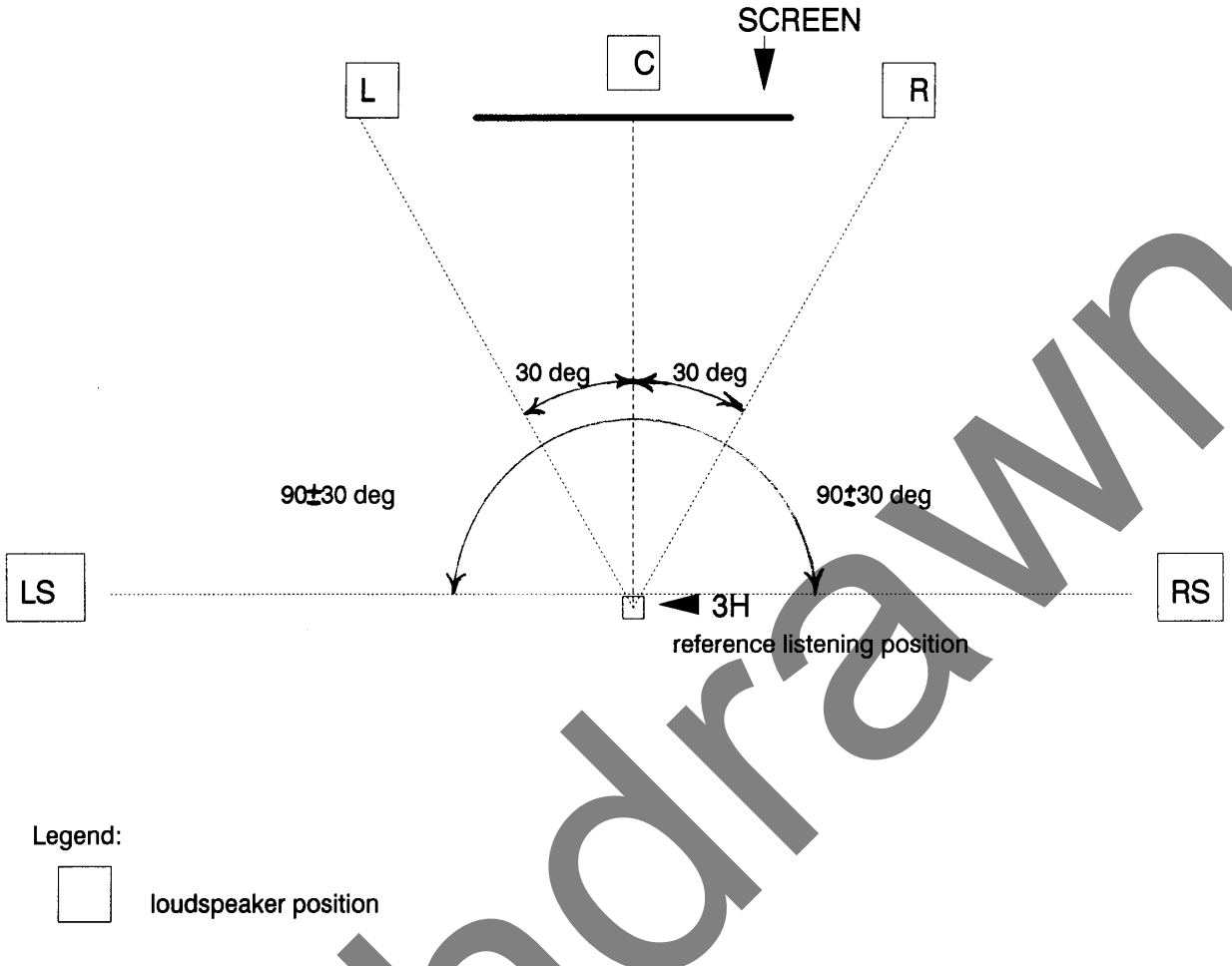

Figure 1 – Monitor loudspeaker arrangements for HDEP

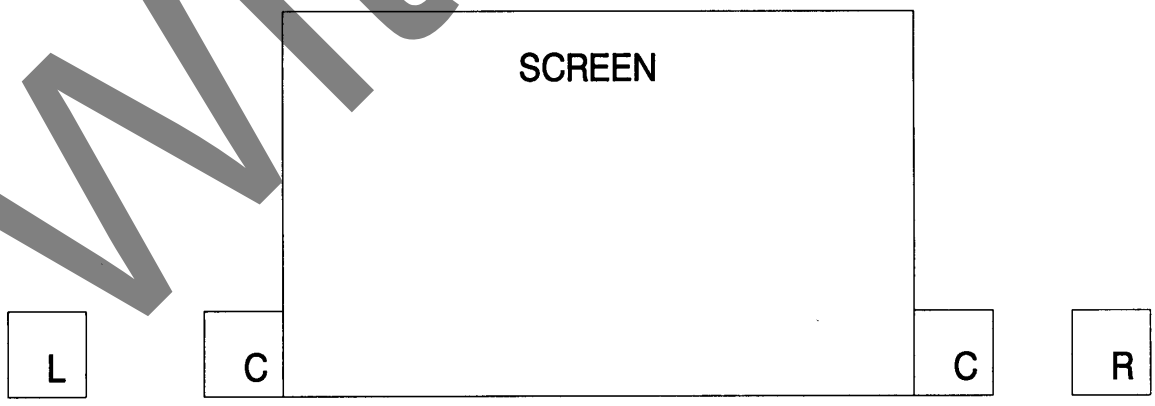

Figure 2 – Center-channel alternate arrangement

4.3 The following loudspeaker arrangements refer to figure 1. The center-channel speaker is located behind, above, or below the display screen as specified above. All speakers in the front listening plane should be at approximately similar heights. In figure 1, *screen* refers to the display screen. Its aspect ratio is 16 × 9.

5 Monophonic sound

The monophonic loudspeaker is represented by the loudspeaker designated “C” in figure 1. It is located behind, above, or below the screen, centered from left to right, as nearly flush to the front of the display screen as practicable.

6 Two-channel stereo

The left-channel and right-channel loudspeakers are located in the positions marked by the boxes “L” and “R” in figure 1. They are located on the left-hand and right-hand sides of the screen, respectively. The “L” loudspeaker is located on a line 30° counterclockwise from a line bisecting the width of the display screen and perpendicular to it, passing through the point designated as “3H.” The “R” loudspeaker is located on a line 30° clockwise from the line bisecting the display screen and passing through “3H.” The L and R loudspeakers are positioned as nearly flush with the front of the display screen as practicable.

7 Three-channel stereo

The left- and right-channel loudspeakers are located as specified above for two-channel stereo; while the center channel loudspeaker is located as specified above for monophonic sound.

8 3/2 surround sound

The front loudspeakers, L, C, and R, are positioned as described above for two-channel stereo. The left- and right-surround loudspeakers are located within the zones designated “LS” and “RS,” respectively, which are 60°–120° counterclockwise and 60°–120° clockwise, respectively, from the line bisecting the screen’s width and passing through 3H. Precise surround loudspeaker placement is noncritical, except that the loudspeakers should be no closer to the listener than the front loudspeakers. This surround loudspeaker positioning applies both when a single surround channel signal is fed to both loudspeakers and when stereo surround channels are used.

9 Subwoofer placement

If a subwoofer is used, its placement is noncritical, except that it should be located in the front listening plane.