



# L-Acoustics DJ

## DESIGN GUIDELINES

V1.14 - MAY 2026

### INTRODUCTION

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These guidelines set the key design principles for L-Acoustics DJ spatial systems, ensuring consistency, performance, and integration quality across all projects.

An L-Acoustics DJ system uses the frontal system (including subs) to provide the main impact of the mix and to serve as the default position for separated sources. As such, the frontal system must be designed to deliver the required SPL and impact across the audience for the intended content and application.

While surround sources would ideally match the frontal system in type, tonal balance, and SPL capability for consistency, this approach results in an oversized and inefficient system with impractical physical and budget constraints.

The following sections define the minimum and recommended criteria for an effective surround system.

Overheads add an extra dimension but are optional (See FAQ section).

The L-ISA design qualification tool set provided by Soundvision is used to qualify the designs::

#### **Soundvision settings to be used**

- “Delta from SPL reference” and “Coaxial - Delta From SPL reference” must be set to 6dB
- By using “Multi-signal”, all sources must be set to “360” usage with their own signal

#### **Criteria, from the “QUALITY MAPPING RESULTS” window**

- SPL -> “SPL max average”
- Coverage -> “Covered”
- Shared coverage -> “Shared”
- Distribution -> “SPL Distribution”

### FUNDAMENTAL RULE

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A fundamental rule applies throughout all system designs: the maximum distance between any two loudspeakers in the same system from any audience point, must be less than or equal to 25 meters.

## FRONTAL SYSTEM

### Loudspeaker layout

- **Recommended:** Left / Center / Right with flown subwoofers
- **Minimum:** Left / Right with subwoofers

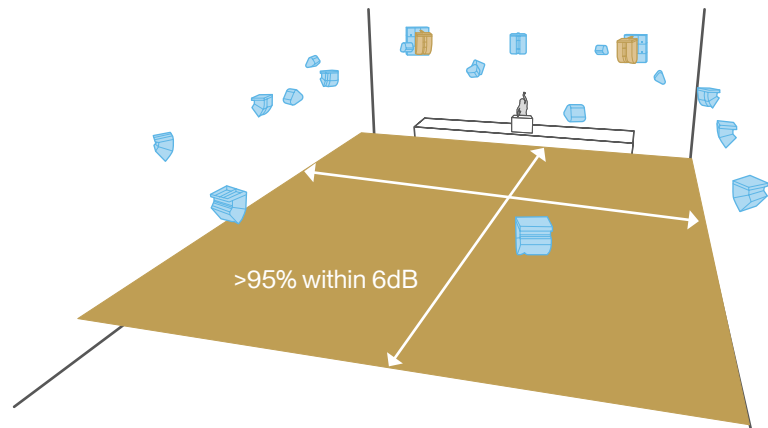
### LR system SPL and LF Contour

The frontal system must deliver sufficient SPL and LF contour to independently cover the audience and match the application and music content.

Refer to the requirements of the project to determine the correct target values.

### LR system coverage

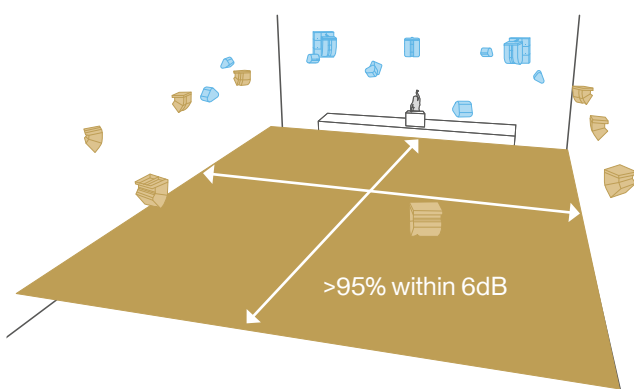
- $\geq 95\%$  of the audience is covered
- Distribution  $\leq 6\text{dB}$



## SURROUND SYSTEM

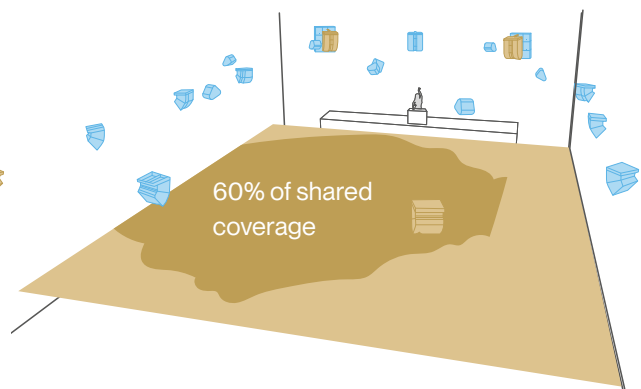
### Loudspeaker layout

- **Recommended:** 6 - 10 sources
- **Minimum:** 4 sources



### Surround system coverage

- $\geq 95\%$  of the audience is covered
- Distribution  $\leq 8\text{dB}$



### Individual surround sources coverage

- $\geq 60\%$  of shared coverage within audience with one surround source and the LR system

### Individual surround sources SPL and LF Contour

- **Recommended:** SPL Max Average within 6dB and LF Contour within 3dB of a single frontal source
- **Minimum:** SPL Max Average within 8dB and LF Contour within 6dB of a single frontal source

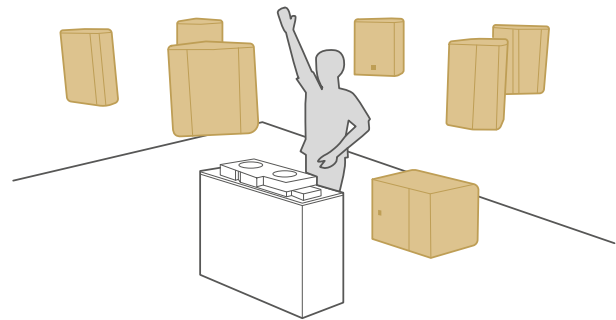
## IMMERSIVE MONITORING SYSTEM

### SPL and LF Contour

The immersive monitoring system must ensure suitable SPL and LF contour for comfortable and accurate DJ monitoring.

### Loudspeaker layout

- **Recommended:** ≥6 sources with subwoofers
- **Minimum:** 4 sources



### Delay

Depending on the DJ's position and preference for synchronization or responsiveness, a delay can be added to the CUE signal compared to the immersive monitoring speaker system via the buses 7 and 8 of the P1.

The P1 headphone or any other headphone amplifier connected to the P1's analog or AES/EBU outputs can be used for that.

It's important to weigh the pros and cons of adding a delay to the CUE signal, as it affects both the DJ's experience and the accuracy of monitoring:

Monitoring System	With Delay	Without Delay
<b>Headphones</b>	<p><b>Pros</b></p> <p>Perfect synchronization between headphones and the immersive monitoring speaker system</p>	<p><b>Pros:</b></p> <p>DJ mixer CUE output is used directly</p> <p>Standard button response latency</p>
	<p><b>Cons</b></p> <p>The latency of responsiveness at the touch of a button is increased</p> <p>The CUE signal must pass through a delay device (e.g. P1)</p> <p>Typical delay is about 31 ms plus acoustic propagation time</p>	<p><b>Cons</b></p> <p>Risk of a wrong A/B synchronization because of the time difference between the headphones and the immersive monitoring speaker system</p>

## FREQUENTLY ASKED QUESTIONS

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### What about the height of surround sources compared to main sources?

The height to the bottom of the Main and Surround loudspeakers from the floor should be as close as possible

### How to accurately choose the position and orientation of surround sources?

Their horizontal position and orientation should provide the best balance for an optimized shared zone (front + surrounds) while maintaining a regular angle between the speakers to preserve fluid spatial effects

### Can we have different loudspeakers among the surround and frontal sources?

Surround sources can be different (different loudspeaker type or different settings for the same loudspeaker type), as long as they all achieve the right coverage/SPL/bandwidth.

This is the same for the center source in an LCR frontal system

### What about the overhead speakers?

Overhead speakers play an important role in spatial systems and must be installed when possible but remain optional for L-Acoustics DJ. As overheads are optional, there is no strict audience coverage requirement. Still you can provide at least 4 speakers and the optional central overhead speaker (aka "Voice of god").

In terms of SPL and the resulting LF Contour, the overhead speakers must follow the same criteria as the individual surround sources.

### What does LF Contour within 3dB of a frontal source mean?

It means that taking the LF contour of a single frontal source as reference, each surround source is tuned to match the same response shape, with an allowed offset of up to -3 dB

