

Technical Guide – Microphone Pickup Patterns

Omnidirectional

An omnidirectional microphone picks up sound equally from all around it. This is ideal for studio recordings for a natural sound, or for larger group performances such as a choir or orchestra.

Many tie-clip lavalier mics are also omnidirectional – this ensures that the speakers voice is picked up clearly regardless of the direction they are facing.

However, this makes an omnidirectional mic unsuitable for live performances where they may also pick up unwanted extraneous sound from the audience or amplified instruments. This can also cause problems with feedback.

Cardioid

A cardioid microphone probably has the most useful pickup pattern of all and is widely used for professional microphones, both for vocals and instruments.

The greatest sensitivity is directly in front of the microphone, dropping off around the sides before reaching a minimum at the base.

This pattern ensures that the singers voice or whatever instrument is in front of the mic is clearly heard, without interference from adjacent instruments / voices or feedback from nearby speakers.

Supercardioid

The pickup pattern of a supercardioid mic is similar to a cardioid one with an even tighter pickup area at the head of the mic, rejecting even more sound from the sides but with a small area of sensitivity near the rear of the mic. This provides an even narrower focus and is ideal for isolating a singer's voice or particular instrument reducing competing sound from nearby and further reducing the risk of feedback.

However, the 'tight' pickup pattern makes this type of microphone unsuitable for inexperienced or guest users who have a tendency to move 'off axis'

Additionally, the small area of sensitivity at the rear means that stage monitors cannot be placed directly in front of the performer, but should be off to one side and pointing away from the mic.