SCHOEPS Mikrofone

1. OCT Front System

OCT=Optimized Cardioid Triangle by Dr. Theile
see AES 19th International Conference
and also www.hauptmikrofon.de

OCT is a method for picking up the three front channels of a surround recording. It can be combined with any of several possible methods for obtaining the rear channels (and thus OCT surround).

The preferred setup for OCT uses a forward-facing cardioid for the center channel. For the front L and R channels two supercardioid microphones are placed at opposite ends of an imaginary line running about 8 cm behind the center microphone. These two microphones should be 40 – 90 cm apart, depending on the required recording angle*, and must face squarely outward, away from center (see diagrams below).

Good separation between the center-to-left sector and the center-to-right sector is obtained with this method. For example, sound originating from half right is picked up only very weakly by the left microphone. Sound from the extreme right will be picked up directly on-axis by the right-facing supercardioid (0 dB) and by the forward-facing cardioid (attenuated by 6 dB due to its directional pattern). Finally it will be picked up, with a delay caused by the increased distance, on the rear lobe of the left-facing supercardioid. The polar pattern attenuation for this will be 10 dB and the polarity will be inverted. These factors prevent the formation of annoying "phantom images" of sound sources in the wrong sector during playback.

A clean center channel is conveyed by this system, since front-incident sound is picked up mainly by the cardioid in the center. Because of their high directivity, the left and right microphones pick up front-incident sound only at a much lower level.

If the cardioid is placed 8 cm forward, the following recording angles* will result, depending on the distance between the supercardioids:

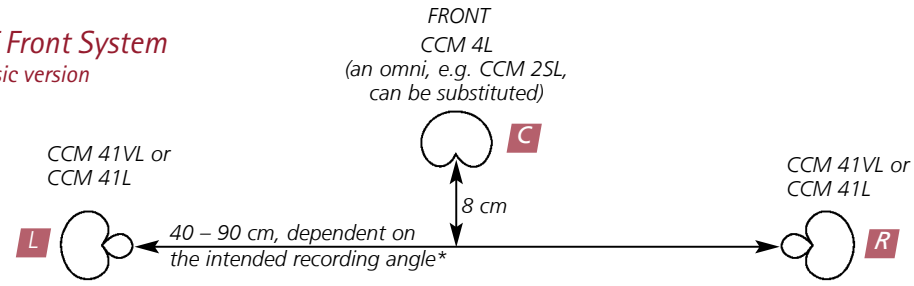
40 cm:	160°	50 cm:	140°
60 cm:	120°	70 cm:	110°
80 cm:	100°	90 cm:	90°

It is better to err in the direction of greater spacing, so that one can be sure to avoid center-heavy images.

The fact that the supercardioids receive so much of their sound from off axis necessitates the use of small-diaphragm condenser microphones, as only this type of microphone has the requisite independence of frequency response from the angle of sound incidence. The CCM 41V and the MK 41V are particularly well suited for this application but the CCM 41 or MK 41 can also be used.

1.1 OCT Front System

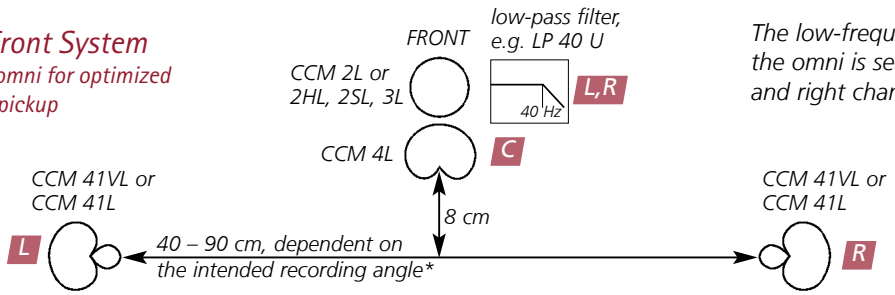
basic version



It is possible to improve the extreme bass response of the supercardioids by adding signals from one (see 1.2) or two (see 1.3) omnis to L and R. Using an LP 40 low-pass filter (cutoff frequency 40 Hz) and **SCHOEPS** omnis, the response curve below 100 Hz becomes substantially flat.

1.2 OCT Front System

plus omni for optimized bass pickup

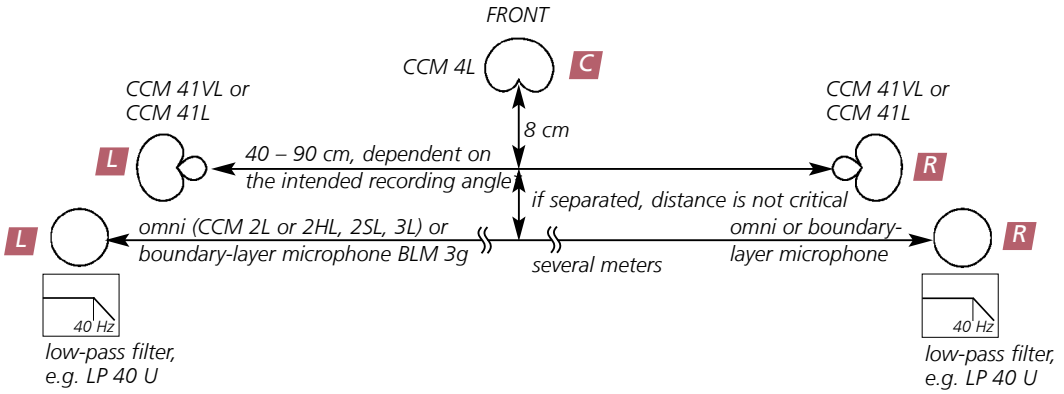


The low-frequency signal from the omni is sent to both the left and right channels.

** the range within which the sound sources should be placed, as "seen" by the microphone*

1.3 OCT Front System

plus 2 omnis for optimized bass pickup

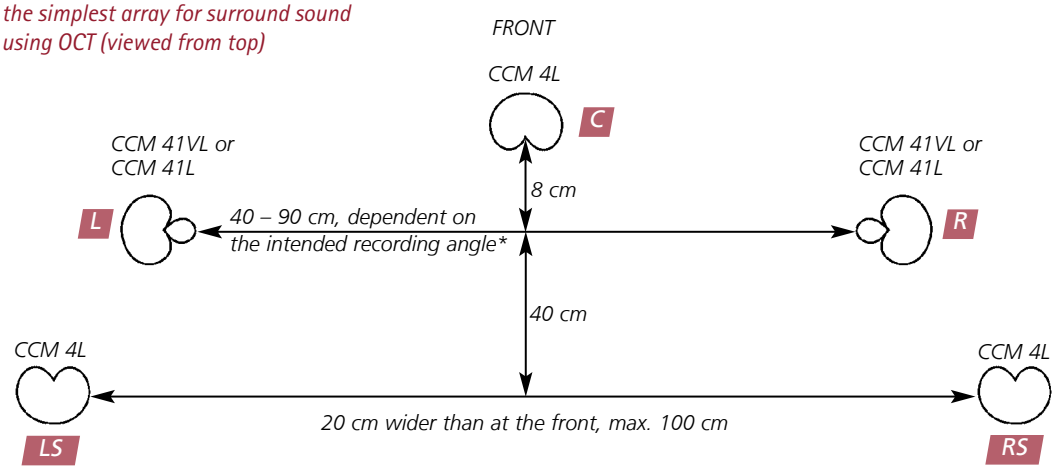


David Griesinger (Lexicon) has proposed that L and R bass signals be decorrelated by using additional widely-spaced pressure transducers. At low frequencies these not only increase the low-frequency pickup but also accentuate the difference between R and L. This results in an increased sense of spaciousness.

Just as there are many possible arrangements for front channels in surround recording, so there are several ways to record the rear channels.

2. OCT Surround

the simplest array for surround sound using OCT (viewed from top)



The surround cardioids face rearward to avoid picking up direct sound. Time-of-arrival and level differences between each side's cardioid and hypercardioid pair produce a stereophonic representation of lateral sounds to match the forward image. Imaging will therefore remain correct for listeners who turn towards the L/LS or R /RS sectors. This produces a convincing spatial perspective.

** the range within which the sound sources should be placed, as "seen" by the microphone*

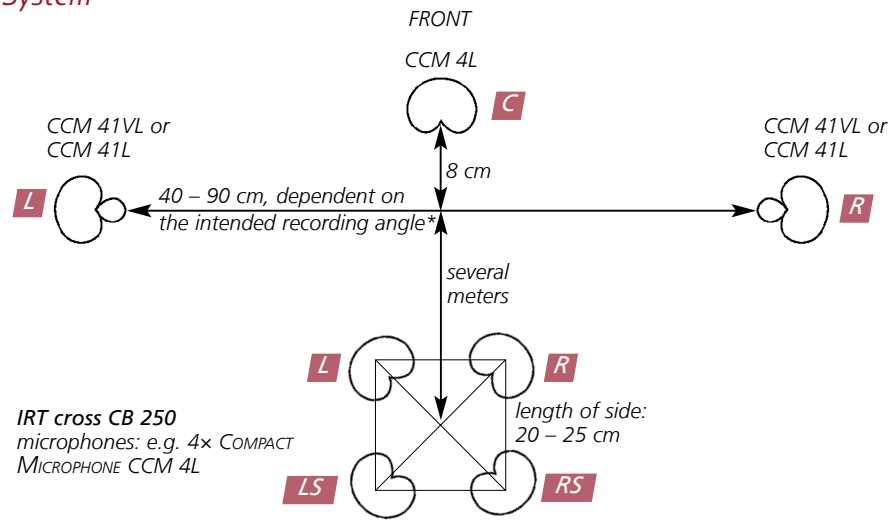
3. OCT Front System

plus 4-channel ambience array

In the following two microphone arrangements, a group of four additional directional microphones is placed several meters behind the front OCT system. In each case, signals from the front two microphones of the additional group are blended into the main L and R front signals without further processing. This helps to prevent dissociation between the front and rear images, while the separation between the arrays allows optimal placement of each, for direct and for ambient pickup respectively.

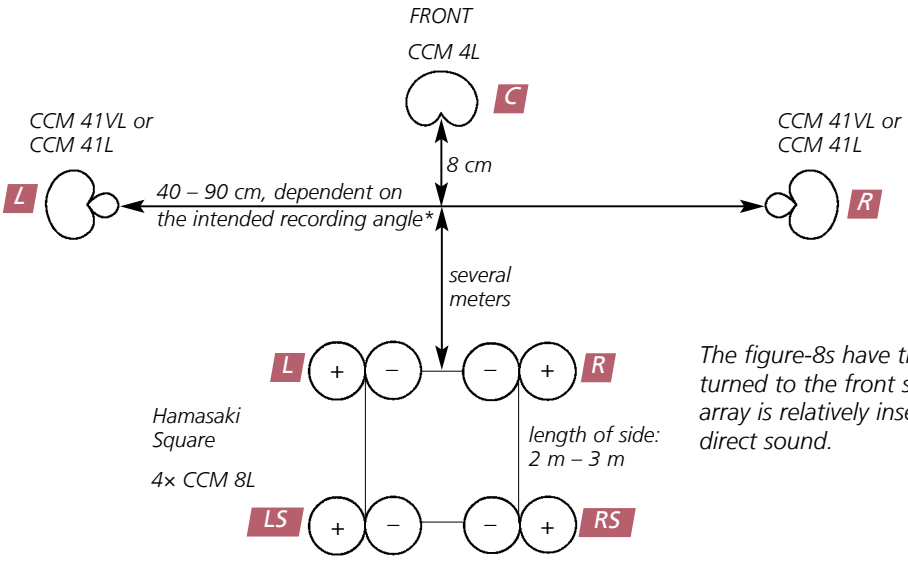
3.1 OCT Front System

+ IRT cross



3.2 OCT Front System

+ Hamasaki Square



The figure-8s have their nulls turned to the front so that this array is relatively insensitive to direct sound.

** the range within which the sound sources should be placed, as "seen" by the microphone*