
Overview

This standard is about microphone setup and operational techniques. It will look at the importance of positioning microphones and the effects that this may have on the sounds of voices and instruments being recorded.

You will carry out practical tests using microphones and DI boxes. You will demonstrate an appreciation of the factors which determine choice between microphone and DI recording.

This standard utilises the multi tasking skills expected of today's recording engineers, editing engineers, mastering engineers, mix engineers and programmers.

Good practice and operation:

You are expected to understand the requirements for finding the 'sweet spot' of an instrument along with demonstrating an awareness of the alteration of tonal colour and room reflections which occur as the microphone is moved in relation to the sound source. You should also be able to identify the differences between the sound signatures of some well known microphone types including reasonable quality dynamic and condenser microphones. The nature of microphone and DI techniques will be explored and evaluated.

You will participate in listening tests in which you evaluate the difference between the sounds of microphones in different positions as well as the sound quality of different types of microphone.

You will also know how to position microphones around a standard drum kit so as to maintain as much separation between different microphone parts as possible.

The use of DI boxes is required in order to maintain an optimum quality of signal from the sound source onto a recorded track. Comparisons will be made between the use of a microphone to record an electrically amplified instrument and the same instrument DI'd straight into the desk/recording device. You will use microphone to monitor sound from amplified electric or acoustic instrument or source. You will also use DI box to monitor sound from a direct source.

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Set up and use microphones and direct inject (DI) boxes

Performance criteria

You must be able to:

- P1 use standard microphone set up techniques
- P2 examine constructional characteristics of common types of microphone
- P3 analyse the sounds produced by types of microphone
- P4 examine the impact of moving microphones relative to sound sources
- P5 examine the difference in sound between direct inject (DI) and microphone usage
- P6 place microphones in set configurations
- P7 assess constructional characteristics of microphones
- P8 interpret frequency response and polar pattern diagrams with respect to different microphones
- P9 carry out practical tests on microphone types
- P10 carry out practical tests relating to changing microphone positions
- P11 carry out comparative tests to measure the difference in sound between microphone and DI boxes
- P12 use microphones to monitor the sound from amplified electric instruments
- P13 use DI boxes to monitor sound directly from electric instruments
- P14 reset and tidy all areas after use

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Knowledge and understanding

You need to know and understand:

- K1 the requirements for separation between microphones when setting up around sound sources
- K2 basic principles of electromagnetic induction with respect to dynamic microphone construction
- K3 basic principles by which condenser microphones work
- K4 the practical implications of the constructional characteristics of types of Microphones
- K5 the quality of sounds from microphone types
- K6 the importance of analysing sounds from different microphone types in the same position
- K7 the differences in quality of sound from microphones in different positions
- K8 the importance of analysing the sounds from microphones in different positions
- K9 the difference between transformer balanced and electronic DI boxes
- K10 the factors which influence choice between microphone and DI recording techniques

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Date approved	April 2012
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Validity	Current
Status	Original
Originating organisation	Creative & Cultural Skills
Original URN	CCSMT37
Relevant occupations	Maintenance engineers; technical support; Live sound Engineers; artists; Recording Engineers; recording Producers; mix engineers; assistant engineers; programmers; Mastering Engineers; editing engineers; OB/post engineers; writers; co writers; tape ops; Studio managers;
Suite	Music Technology
Key words	Drum kit microphone array including bass drum mic; snare mic; toms;, overheads, hi-hat; lead guitar cab (mic up amplifier); bass guitar cab; keyboard cab; vocal mic; ; bandwidth; Polar response charts; scale in dBs and degrees; cardioid; hypercardioid; omni-directional pick-up patterns; transformer balanced; microphone; mic; direct inject DI; sound; music; music technology;