CCSMT3

Set up, configure and maintain studio equipment, software,hardware and instruments

Overview

This Standard is about setting up, configuring and maintaining studio equipment, software and hardware. Equipment, software and hardware might be for recording, mastering, editing or mixing and can also include mics, headphones, speakers and instruments. It includes selecting equipment, positioning, connecting and routing equipment, checking and resolving issues with signal paths and functionality, locking together and synchronising equipment and carrying out routine maintenance checks and minor repairs.

This standard is for studio engineers, recording engineers, editing engineers, mastering engineers, mix engineers, programmers, music technology practitioners and members of technical support maintenance teams who set up, configure and maintain studio equipment.

Performance criteria

You must be able to:

1. select equipment, hardware, software and instruments to meet creative requirements
2. follow studio wiring and routing conventions
3. position equipment in correct locations
4. use connectors that are appropriate for both equipment and signal path
5. use patchbay systems to route audio signals between pieces of equipment when they can provide rationalisation to studio systems
6. measure signal presence at key points to ensure a clear signal flow along analogue and digital audio chains
7. lock and synchronise equipment together to meet requirements
8. 8test equipment to make sure it is configured and working as required
9. identify any faulty components or connectivity and wiring problems
10. replace components and connectors and carry out repairs that are within your area of expertise
11. report faults that you cannot resolve to appropriate people
12. produce patchbay sheets and recall sheets in the correct format
13. comply within health and safety requirements at all times
14. check condition of instruments and equipment on a regular basis to ensure continuous safe and effective use
15. identify faults in equipment and appropriate sources of repair and maintenance
16. make effective use of available technical support systems and equipment
17. report details of any instrument or equipment that is suspected of being in unsafe condition or is damaged in use, without delay

Knowledge and understanding

You need to know and understand:

1. health and safety requirements including those related to safe listening, safeguards against hearing loss and working with electrical equipment
2. the range, selection and positioning of equipment, software and hardware to meet creative requirements including mics, headphones, speakers, instruments, and equipment for recording, mastering, editing and mixing
3. typical control wiring and audio routing options
4. signal monitoring and foldback relationships
5. the difference in level between mic, line, headphone and speaker signals
6. how to calculate and measure audio signals and audio equipment parameters
7. basic sources of energy and power and the dangers of voltages and current
8. electrical characteristics for mono, stereo and other multi-channel formats
9. digital communication protocols including MIDI, FIREWIRE, LAN, S/PDIF and the requirements for separate conductors for digital and analogue signal paths
10. types of interconnection protocols needed to maintain clean analogue and digital signal paths
11. requirements for strength and durability of connectors, common types of analogue and digital connectors between different types of equipment and how to identify them
12. types of adaptors
13. types of electronic components, their values, how to test for and locate faulty components and identify replacement components of appropriate values
14. who to report faults to and when it is appropriate to do so
15. types of patchbay leads, correct uses of patchbay configurations and the advantages and disadvantages for using patchbay wiring
16. continuity testing of a signal between two points and how to carry out continuity tests between electrical conductors including use of a multimeter
17. common methods used to verify a signal has arrived at its destination within the audio signal chain
18. how to prepare, strip and solder cables and wires
19. how to identify and isolate common electrical problems
20. how to test leads and cables and the causes of typical faults including damage from movement and dry joints

21. basic principles of transmission, limitations, latency (processing time) and typical network, IT, device performance
22. relevant terminology and definitions for digital systems and network control and the principles of analogue forms of control and switching versus digital control and networks
23. data communications, error corrections, data interfacing, and how to interface audio devices with computer operating systems
24. operational and technical limitations of recording and signal
25. recording formats and related technical standards

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Originating Organisation	Creative & Cultural Skills
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Relevant Occupations	Recording Engineers, Recording Producers, Mix Engineers, Assistant Engineers, Composers, Tape Ops, Writers, Artists, OB/Post Engineers, Maintenance Engineers, Technical support roles for Sound Recording and Music Technology, Live Sound Engineers, Mastering Engineers, Co-writers, Studio Manager, Acoustic Designers, Acoustic Building Designers, Facility Managers, Film Scorers, Pre and Post Production, Producer
Suite	Sound Recording and Music Technology
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