



BSI Standards Publication

Designing, specifying, maintaining and operating emergency sound systems for sports grounds, large public buildings, and venues — Code of Practice

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Summary of pages

This document comprises a front cover, and inside front cover, pages i to iv, pages 1 to 66, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 October 2019. It was prepared by Technical Committee EPL/100, *Audio, video and multimedia systems and equipment*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This British Standard supersedes BS 7827:2011, which is withdrawn.

Relationship with other publications

This British Standard has been drafted to complement and avoid conflict with other standards with similar scopes, but which are of a more generic nature, i.e. not specifically giving recommendations for large public buildings, venues and sports grounds, notably BS 5839-8, BS 5839-9, BS EN 50849 and PD CEN/TS 54-32.

These standards allow for variations from their normal provisions. BS 7827 provides guidance when some of those variations are necessary. BS 7827 indicates where its recommendations can be followed in combination with the provisions of the other standards.

This code of practice is applicable to a wide range of buildings including airports, rail and metro/underground stations and transportation terminals which may have their own specific standards and guidance. Whilst the standards listed above take precedence, this code of practice provides additional information where no specific standard or codes of practice exists.

See the introduction and [Clause 4](#) where references to related standards are addressed in more detail.

Information about this document

This is a full revision of the standard, and introduces the following principal changes:

- references to speech intelligibility have been updated to reflect advances in technology and practical experience;
- information has been provided to help the purchaser understand the need to allow sufficient funding to enable a properly functioning system to be engineered; and
- cross references to other standards have been updated.

This publication can be withdrawn, revised, partially superseded or superseded. Information regarding the status of this publication can be found in the Standards Catalogue on the BSI website at bsigroup.com/standards, or by contacting the Customer Services team.

Where websites and webpages have been cited, they are provided for ease of reference and are correct at the time of publication. The location of a webpage or website, or its contents, cannot be guaranteed.

Use of this document

As a code of practice, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

Any user claiming compliance with this British Standard is expected to be able to justify any course of action that deviates from its recommendations.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is “should”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

The word “should” is used to express recommendations of this standard. The word “may” is used in the text to express permissibility, e.g. as an alternative to the primary recommendation of the clause. The word “can” is used to express possibility, e.g. a consequence of an action or an event.

Notes and commentaries are provided throughout the text of this standard. Notes give references and additional information that are important but do not form part of the recommendation. Commentaries give background information.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Section 1: General

Introduction

This Code of Practice for designing, specifying, maintaining and operating emergency sound systems can be applied to sports grounds, as well as venues and other large, complex sites that have similar electroacoustic systems, occupancy and occupant-generated sound levels. These can include rail termini, airports, convention and exhibition centres, shopping centres and entertainment complexes. Large venues can consist of enclosed, covered and open spaces within the same complex.

This standard does not categorize the type of building, as it is increasingly difficult to define what some buildings are. For example, stadiums also hold concerts, arenas also stage sports events, and shopping malls host live acts. Instead, use of this standard is based on the requirements of the building.

Contained within many, but not all, large venues are buildings and spaces that warrant special attention with regard to the most effective way to inform and manage spectators and other members of the public through the safe and clear use of the emergency sound system. Important factors and characteristics include the following.

- Large venues often contain spaces designed to hold members of the public who do not know any pre-planned evacuation procedures.
- Large venues often contain spaces designed to hold spectators and visitors in high numbers and densities, which introduces the requirement for effective general crowd control as well as control during dangerous situations, such as terrorism, civil commotion and fire.
- Large venues often contain large open-air areas, such as the external piazza of a shopping mall or exhibition centre, pitch of a cricket ground or the track-side of a racetrack. Although these spaces do not pose a high fire risk, this does not preclude them from crowd-related risks such as that of people returning to a building which is in an evacuation status; a reliable and effective means of communicating with occupants is still essential for such areas.
- Effective and intelligible emergency sound systems can be used, not only to provide clear and useful commentary to spectators and information to visitors/customers, but also to provide entertainment of all kinds, music, audio for video replay, advertising, etc. It is these non-emergency enhancements which can be usefully integrated with the emergency requirements and thus give added value to the system.
- Large venues may be put to a range of uses beyond the primary use, in some cases outnumbering the occasions of primary usage in the annual event schedule; the emergency sound system may therefore have multiple modes of operation, including that of a voice alarm or sound system for emergency purposes.

This British Standard also introduces parameters and requirements which are not usually found in smaller built spaces and thus where other generic standards might not offer sufficient guidance.

For sports projects, useful guidance can also be found in the *Guide to Safety at Sports Grounds* published by The Sports Ground Safety Authority on behalf of the Department for Digital, Culture, Media and Sport (commonly referred to as the “Green Guide”) [1], and, for music concerts, *The Purple Guide to Health, Safety and Welfare at Music and Other Events* [2].

1 Scope

This British Standard gives recommendations and guidance for the design, specification, maintenance and operation of permanently installed sound systems used for emergency purposes at sports grounds, venues and other large buildings/sites that have similar electroacoustic systems, occupancy and occupant-generated sound levels, to convey specific instructions to the public to manage their behaviour in a variety of situations.

The standard is applicable to emergencies that require full or partial evacuation and those for which there is a need to keep people inside a building, safe from danger outside.

Emergency sound systems in large public buildings, venues and sports grounds are covered by this British Standard as a specific case because these form a class of building or complex which has certain parameters which define a particular need in terms of life safety.

These include, but are not restricted to:

- a) one centralized or several focused performance spaces or activity areas;
- b) "back of house" areas for operational and administrative purposes;
- c) large areas of internal circulation;
- d) large external areas of collection and dispersal, e.g. car and coach parks, railway stations;
- e) occasional high crowd density; or
- f) a fully engineered V5 system as defined in BS 5839-8:2013.

In addition to the different types of area, a project is likely to fall under the scope of this British Standard when the venue has the following characteristics:

- 1) has higher sound pressure level (SPL) requirements than a conventional public address or voice alarm system, typically above 90 dB(A);
- 2) has several distributed equipment locations and/or multiple call/paging points;
- 3) has complex operational requirements, such as the ability to run simultaneous activities;
- 4) is a sports stadium or arena;
- 5) is frequented by large numbers of the public unfamiliar with the building;
- 6) has varying operational requirements depending on use, typically event and non-event mode or public and non-public days;
- 7) has a combination of large open spaces and smaller enclosed areas; or
- 8) has substantial periods of minimal or partial use.

This British Standard aims to ensure that, in an emergency, voiced messages are intelligible in all parts of the venue to which the public have access, no matter what type of event is taking place, as well as those areas outside the venue that the system is intended to serve. Emergency messages to cover staff areas are also covered.

This British Standard applies irrespective of whether a special sound system is installed for an event.