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BS ISO 29282:2011



BSI Standards Publication

Intelligent transport systems — Communications access for land mobiles (CALM) — Satellite networks

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 29282 was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

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Introduction

This International Standard is part of a family of International Standards based on the communications access for land mobiles (CALM) concept. These International Standards specify a common architecture, network protocols and communication interface definitions for wireless communications using various access technologies including cellular 2nd generation, cellular 3rd generation, satellite, infra-red, 5 GHz microwave, 60 GHz millimetre-wave and mobile wireless broadband. These and other access technologies that can be incorporated are designed to provide broadcast, unicast and multicast communications between mobile stations, between mobile and fixed stations and between fixed stations in the intelligent transport systems (ITS) sector.

CALM standards are explicitly designed to enable quasi-continuous communications as well as communications of protracted duration between vehicles and service providers, and between vehicles.

The fundamental advantage of the CALM concept over traditional systems is the ability to support media independent handover (MIH), also referred to as heterogeneous or vertical handover, between the various media supported by CALM (e.g. cellular, microwave, mobile wireless broadband, infra-red, DSRC, and satellite). The CALM concept supports selection policies that include user preferences and media capabilities in making decisions as to which medium to use for a particular session, and when to hand over between media or between service providers on the same medium. These handover mechanisms are defined within the CALM architecture International Standard, ISO 21217, the CALM IPv6 networking protocols International Standard, ISO 21210, the CALM medium service access points International Standard, ISO 21218, and the CALM station management International Standard, ISO 24102. Handovers between access points using the same technology and service provider use mechanisms that are defined within the particular medium-specific CALM standard.

Satellite communications provide very broad coverage and are particularly useful in areas where there is no terrestrial wireless communications coverage, or when such systems are overloaded or have poor coverage. As satellite systems evolve, these systems may provide an alternative communication route in many situations. CALM station management will be able to ensure that the most appropriate network, of those available, will be used to improve ITS availability and reliability at the minimum cost. Example applications include urgent emergency messages such as eMessage or eCall, where an eCall over cellular radio may not be possible at the site of an accident, because of lack of cellular coverage.

Satellite communications systems will also be able to provide infill coverage where the deployment of the CALM M5 infrastructure set out in ISO 21215 is incomplete. Furthermore, satellite communications that support IPv6 broadcast mode will also support the geo-networking protocols that are currently being developed and standardized.

Additionally, satellite systems may be installed at ITS stations primarily because of the broadcast and paging services that they can deliver to support applications and the management of connections. The interface for broadcast satellite communications is defined in ISO 13183, using a protocol which is common to all of the broadcast media.

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Intelligent transport systems — Communications access for land mobiles (CALM) — Satellite networks

1 Scope

This International Standard provides definitions and procedures for the establishment, maintenance and termination of an ITS (intelligent transport systems) communications session within a CALM (communication access for land mobiles) system environment using bi-directional satellite communications.

It defines the operation of the medium management adaptation entity (MMAE), which provides the management interface between a proprietary satellite communications medium and the "ITS station management". This enables the "ITS station management" to know the status of the communications medium and control the interface without the need for applications at the ITS station to have any knowledge of the satellite communications interface. The procedures that the "ITS station management" expects to use are also explained.

NOTE 1 CALM links are required for quasi-continuous, prolonged and short-duration communications between vehicles and the roadside, between vehicles, and between mobile equipment and fixed infrastructure points, over medium and long ranges.

This International Standard defines how to connect and disconnect a communication session using satellite communication systems in the context of an application operated within the environment defined in ISO 21217. It supports peer-to-peer modes of communication. Support for broadcast satellite systems is defined in ISO 13183, which provides a common approach for all broadcast media. It supports satellite communications networks that are interconnected with the public network, as well as those which connect via the internet and those which provide a stand-alone capability.

NOTE 2 As there are multiple instantiations of satellite systems, most of which are not interoperable, there is the possibility of several simultaneous satellite sessions, each forming a separate CALM medium (although the differences may only be in software within the on-board equipment).

Wherever practicable, this International Standard has been developed by reference to suitable existing standards, adopted by selection. Application-specific upper layers are not included, but will be driven by application standards (which may not be technology-specific).

2 Conformance

In order to conform with this International Standard, communications using satellite communications protocols shall be established in full compliance with local telecommunications procedures and protocols and shall comply with the requirements of ISO 21210, ISO 21217, ISO 21218, ISO 24102 and ISO 25111. See Clause 3.

NOTE 1 ITU-T standards for satellites mostly relate to traditional telecommunications services such as voice, X21 and X25. In general, satellite services are delivered as closed proprietary solutions with standardized external interfaces, including ITU-T V.24 (EIA-232/RS-232), ITU-T V.11 (EIA-422/RS-422), ITU-T V.35 (EIA-449/RS-449), EIA-530/RS-530, ITU-T X-21 and EIA-423/RS-423. Such systems are not recommended for integration into ITS because of the need to provide adaptation to support IP communications.

NOTE 2 IPv6 systems are now being developed but have not yet been standardized. This interface International Standard has been developed to be consistent with these emerging new services.

3 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.