

# SVENSK STANDARD

## SS-ISO 25113:2010



Fastställt/Approved: 2010-04-16  
Publicerad/Published: 2010-05-19  
Utgåva/Edition: 1  
Språk/Language: engelska/English  
ICS: 03.220.01; 35.240.60

---

### **Intelligent transport systems – Communications access for land mobiles (CALM) – Mobile wireless broadband using HC-SDMA (ISO 25113:2010, IDT)**

This preview is downloaded from [www.sis.se](http://www.sis.se). Buy the entire standard via <https://www.sis.se/std-73878>

# Standarder får världen att fungera

*SIS (Swedish Standards Institute) är en fristående ideell förening med medlemmar från både privat och offentlig sektor. Vi är en del av det europeiska och globala nätverk som utarbetar internationella standarder. Standarder är dokumenterad kunskap utvecklad av framstående aktörer inom industri, näringsliv och samhälle och befrämjar handel över gränser, bidrar till att processer och produkter blir säkrare samt effektiviserar din verksamhet.*

## Delta och påverka

Som medlem i SIS har du möjlighet att påverka framtida standarder inom ditt område på nationell, europeisk och global nivå. Du får samtidigt tillgång till tidig information om utvecklingen inom din bransch.

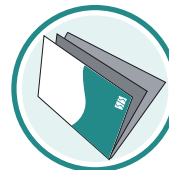
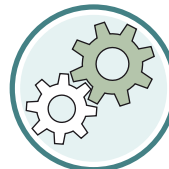
## Ta del av det färdiga arbetet

Vi erbjuder våra kunder allt som rör standarder och deras tillämpning. Hos oss kan du köpa alla publikationer du behöver – allt från enskilda standarder, tekniska rapporter och standardpaket till handböcker och onlinetjänster. Genom vår webbtjänst e-nav får du tillgång till ett lättnavigerat bibliotek där alla standarder som är aktuella för ditt företag finns tillgängliga. Standarder och handböcker är källor till kunskap. Vi säljer dem.

## Utveckla din kompetens och lyckas bättre i ditt arbete

Hos SIS kan du gå öppna eller företagsinterna utbildningar kring innehåll och tillämpning av standarder. Genom vår närhet till den internationella utvecklingen och ISO får du rätt kunskap i rätt tid, direkt från källan. Med vår kunskap om standarders möjligheter hjälper vi våra kunder att skapa verklig nytta och lönsamhet i sina verksamheter.

**Vill du veta mer om SIS eller hur standarder kan effektivisera din verksamhet är du välkommen in på [www.sis.se](http://www.sis.se) eller ta kontakt med oss på tel 08-555 523 00.**



# Standards make the world go round

*SIS (Swedish Standards Institute) is an independent non-profit organisation with members from both the private and public sectors. We are part of the European and global network that draws up international standards. Standards consist of documented knowledge developed by prominent actors within the industry, business world and society. They promote cross-border trade, they help to make processes and products safer and they streamline your organisation.*

## Take part and have influence

As a member of SIS you will have the possibility to participate in standardization activities on national, European and global level. The membership in SIS will give you the opportunity to influence future standards and gain access to early stage information about developments within your field.

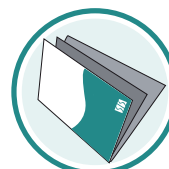
## Get to know the finished work

We offer our customers everything in connection with standards and their application. You can purchase all the publications you need from us - everything from individual standards, technical reports and standard packages through to manuals and online services. Our web service e-nav gives you access to an easy-to-navigate library where all standards that are relevant to your company are available. Standards and manuals are sources of knowledge. We sell them.

## Increase understanding and improve perception

With SIS you can undergo either shared or in-house training in the content and application of standards. Thanks to our proximity to international development and ISO you receive the right knowledge at the right time, direct from the source. With our knowledge about the potential of standards, we assist our customers in creating tangible benefit and profitability in their organisations.

**If you want to know more about SIS, or how standards can streamline your organisation, please visit [www.sis.se](http://www.sis.se) or contact us on phone +46 (0)8-555 523 00**



Den internationella standarden ISO 25113:2010 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av ISO 25113:2010.

The International Standard ISO 25113:2010 has the status of a Swedish Standard. This document contains the official English version of ISO 25113:2010.

© Copyright/Upphovsrätten till denna produkt tillhör SIS, Swedish Standards Institute, Stockholm, Sverige. Användningen av denna produkt regleras av slutanvändarlicensen som återfinns i denna produkt, se standardens sista sidor.

© Copyright SIS, Swedish Standards Institute, Stockholm, Sweden. All rights reserved. The use of this product is governed by the end-user licence for this product. You will find the licence in the end of this document.

*Uppllysningar om sakinnehållet i standarden lämnas av SIS, Swedish Standards Institute, telefon 08-555 520 00. Standarder kan beställas hos SIS Förlag AB som även lämnar allmänna uppllysningar om svensk och utländsk standard.*

*Information about the content of the standard is available from the Swedish Standards Institute (SIS), telephone +46 8 555 520 00. Standards may be ordered from SIS Förlag AB, who can also provide general information about Swedish and foreign standards.*

Denna standard är framtagen av kommittén för Vägtrafikinformatik, SIS/TK 255.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på [www.sis.se](http://www.sis.se) - där hittar du mer information.



# Contents

Page

Foreword .....	iv
Introduction.....	v
1 Scope .....	1
2 Conformance .....	1
3 Normative references.....	1
4 Terms and definitions .....	2
5 Symbols and abbreviated terms .....	2
6 Requirements.....	2
6.1 Adoption of other standards and internationally adopted practices .....	2
6.2 CALM Architecture .....	2
6.3 CALM IPv6 Networking for internet connectivity.....	2
6.4 CALM Medium service access points .....	2
6.5 CALM Interface manager .....	2
6.6 CALM using public wireless networks.....	2
6.7 Establishment of a medium specific session.....	3
6.8 Interface medium management .....	3
6.9 Medium access control (MAC).....	3
6.10 CALM ATIS HC-SDMA MMAE service primitives .....	3
6.11 Identification of the HC-SDMA MMAE .....	4
6.12 CALM Session connection .....	5
6.13 CALM session disconnection .....	5
6.14 Change of ATIS HC-SDMA connection state .....	6
6.15 Retrieval of the medium status .....	6
6.16 ATIS HC-SDMA session disconnection .....	6
7 Test and conformance requirements .....	6
8 Marking, labelling and packaging.....	7
9 Declaration of patents and intellectual property.....	7
Bibliography.....	8

## 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 25113 was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

## Introduction

This International Standard is part of a family of International Standards for CALM (Communications Access for Land Mobiles) which specify a common architecture, network protocols and a set of air interface definitions for wireless communications using a number of wireless media, including cellular 2nd generation, cellular 3rd generation, 5 GHz, millimetre, infra-red communications, and mobile wireless broadband (MWB), over packet-based networks. The CALM architecture is also designed to include short range, short duration, low latency communication systems such as European dedicated short-range communications (DSRC) and North American wireless access in vehicular environments (WAVE) based on IEEE 802.11. It is anticipated that other air interfaces will be added in the future. Generally speaking, the CALM architecture is designed to include air interfaces that provide some subset of point-to-point, vehicle-to-vehicle, and vehicle-to-point communications over packet-based networks in the ITS sector. In particular, this International Standard provides additional specifications which wireless devices adhering to the mobile wireless broadband ATIS-0700004-2005 HC-SDMA standard must also meet to be CALM compliant.

The requirements for transmission of information over large distances using wireless technology are functionally very different from the requirements for European DSRC. Large volumes of data are required for purposes such as safety, traffic information and management, video downloads to vehicles for tourist information and entertainment and navigation-system-updates. In order to support such services, mobile units need to be able to communicate over longer ranges with access points or base stations, and the system must be able to hand over sessions from one access point or base station to another. CALM standards are explicitly designed to enable quasi-continuous data communications, as well as data communications of protracted duration between vehicles and service providers, and between vehicles. It is important to note that the CALM architecture is specifically designed to support packet-based communications; support for circuit-switched communications is not included.

The fundamental advantage of the CALM concept over traditional systems is the ability to support media independent handover (MIH), also referred to as heterogeneous handover, between the various media that can be included in a CALM system. Selection policies are supported that include user preferences and media capabilities in making decisions as to which media to use for a particular session, and when to handover 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 International Standard (ISO 21210), the CALM medium service access points International Standard (ISO 21218) and the CALM communication and 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.

ITS applications that can be enhanced or are enabled by the CALM architecture include, among others, car-to-car and point-to-multipoint safety messaging, collision avoidance, update of roadside telemetry and messaging, probe data collection, general internet access, image and video transfer, infotainment, multimedia multicast, traffic management, monitoring and enforcement in mobile situations, and route guidance.

For a general introduction to CALM architecture, refer to ISO 21217.

This International Standard provides definitions and procedures for the establishment and maintenance of an ITS communications session within a CALM system environment using a medium communication in accordance with ATIS HC-SDMA protocol specification.





# Intelligent transport systems — Communications access for land mobiles (CALM) — Mobile wireless broadband using HC-SDMA

## 1 Scope

This International Standard selects the options appropriate for CALM using mobile wireless broadband (MWB) techniques conforming to ATIS 0700004-2005 (HC-SDMA) air interface and protocol specification recommended by ITU-R M.1801 and specifies the management interface requirements.

CALM links are required for quasi-continuous, prolonged and short communications between vehicles and the roadside, between vehicles, and between mobile equipment and fixed infrastructure points.

Wherever practicable, this International Standard has been developed by reference to suitable extant standards, adopted by selection. Required regional variations are provided.

Application specific upper layers will not be included in this International Standard, but will be driven by application standards (which might not be technology specific).

## 2 Conformance

In order to claim conformance with this International Standard, mobile wireless broadband techniques standardized using ATIS 0700004-2005 (HC-SDMA) shall be established in full compliance with local telecommunications procedures and protocols for ATIS 0700004-2005 (HC-SDMA) in accordance with ATIS published standards, and shall comply with the requirements of ISO 21217 (CALM System architecture), ISO 21210 (CALM IPv6 Networking), ISO 21218 (CALM medium service access points), and ISO 24102 (CALM management).

## 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.

ISO 21210, *Intelligent transport systems — Communications access for land mobiles (CALM) — IPv6 Networking*

ISO 21217, *Intelligent transport systems — Communications access for land mobiles (CALM) — Architecture*

ISO 21218, *Intelligent transport systems — Communications access for land mobiles (CALM) — Medium service access points*

ISO 24102, *Intelligent transport systems — Communications access for land mobiles (CALM) — CALM Management*

ISO 25111:2009, *Intelligent transport systems — Communications access for land mobiles (CALM) — General requirements for using public networks*

ATIS 0700004-2005, *High Capacity — Spatial Division Multiple Access(HC-SDMA) radio interface*

ITU-R Recommendation M.1801, *Radio interface standards for broadband wireless access systems, including mobile and nomadic applications, in the mobile service operating below 6 GHz*

## 4 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21217 and ISO 25111 apply.

## 5 Symbols and abbreviated terms

For the purposes of this document, the symbols and abbreviated terms given in ISO 21217 and the following apply.

ATIS	Alliance for Telecommunications Industry Solutions
CALM	communications access for land mobiles
DSRC	dedicated short range communication
HC-SDMA	high capacity, spatial division multiple access
ITU-R	International Telecommunication Union, Radiocommunication Sector
MMAE	medium management adaptation entity
MS	mobile station

## 6 Requirements

### 6.1 Adoption of other standards and internationally adopted practices

For conformance requirements, see Clause 2.

### 6.2 CALM Architecture

Equipment and systems conforming to this International Standard shall operate in the ITS domain of, and to the parameters defined in, ISO 21217.

### 6.3 CALM IPv6 Networking for internet connectivity

Equipment and systems conforming to this International Standard shall operate in the environment of, and to the parameters defined in, ISO 21210.

### 6.4 CALM Medium service access points

Equipment and systems conforming to this International Standard shall operate in the environment of, and to the parameters defined in, ISO 21218.

### 6.5 CALM Interface manager

Equipment and systems conforming to this International Standard shall operate in the environment of, and to the parameters defined in, ISO 24102.

### 6.6 CALM using public wireless networks

Equipment and systems conforming to this International Standard shall operate in the environment of, and to the parameters in, ISO 25111.

## **6.7 Establishment of a medium specific session**

### **6.7.1 “User Controlled” sessions**

#### **6.7.1.1 General**

Equipment and systems conforming to this International Standard shall utilize the procedures specified in ISO 25111:2009, 6.1.3.

#### **6.7.1.2 Establishment and termination of a “User Controlled” session**

Equipment and systems conforming to this International Standard shall utilize the procedures specified in ISO 25111:2009, 6.1.6.

#### **6.7.2 Establishment and termination of a “Continuous” session**

Equipment and systems conforming to this International Standard shall utilize the procedures specified in ISO 25111:2009, 6.1.4.

#### **6.7.3 Establishment and termination of a “Time Controlled” session**

Equipment and systems conforming to this International Standard shall utilize the procedures specified in ISO 25111:2009, 6.1.5.

## **6.8 Interface medium management**

Shall be conducted in accordance with the specifications given in ISO 25111:2009, 6.5 to 6.7.

## **6.9 Medium access control (MAC)**

Shall be conducted in accordance within the specifications given in ISO 25111:2009, Clause 7.

## **6.10 CALM ATIS HC-SDMA MMAE service primitives**

### **6.10.1 General**

The HC-SDMA MMAE shall support the service primitives specified in 6.10.2 to 6.10.6:

#### **6.10.2 MMAE SetParam.request**

- MMAE-SetParam.request  
int interfaced,  
uchar paramNumber, // 128  
uchar paramValue; // 1: connect, 2: disconnect

#### **6.10.3 MMAE SetParam.confirm**

- MMAE-SetParam.confirm  
int interfaced, uchar paramNumber, uchar paramValue, uchar result

#### **6.10.4 MMAE GetParam.request**

- MMAE-GetParam.request  
int interfaced, uchar paramNumber