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**Digital cellular telecommunications system (Phase 2+);  
Short Message Service Cell Broadcast (SMSCB)  
support on the mobile radio interface  
(3GPP TS 44.012 version 13.0.0 Release 13)**

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**ETSI**

650 Route des Lucioles  
F-06921 Sophia Antipolis Cedex - FRANCE

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Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° 7803/88

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## Foreword

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# 1 Scope

## 1.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] Void.
- [3] 3GPP TS 23.041: "Technical realization of Cell Broadcast Service (CBS)".
- [4] 3GPP TS 44.004: "Layer 1; General requirements".
- [5] 3GPP TS 44.006: "Mobile Station - Base Station System (MS - BSS) interface Data Link (DL) layer specification".
- [6] 3GPP TS 45.002: "Multiplexing and multiple access on the radio path".

## 1.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 apply.

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# 2 General description

SMSCB is a service in which short messages may be broadcast from a PLMN to Mobile Stations (MS)s. SMSCB messages come from different sources (e.g. traffic reports, weather reports). The source and subject of the SMSCB message is identified by a message identifier in the SMSCB message header. A sequence number in the SMSCB message header enables the MS to determine when a new message from a given source is available.

SMSCB messages are not acknowledged by the MS. Reception of SMSCB messages by the MS is only possible in idle mode. The geographical area over which each SMSCB message is transmitted is selected by the PLMN operator, by agreement with the provider of the information.

A SMSCB message is an end-to-end message that is formatted by/for the SMSCB application, and which is intended for customer viewing. Its format is described in detail in 3GPP TS 23.041. A CB message is any message sent on the basic or extended CBCH (see 3GPP TS 45.002). It can be an occurrence of a SMSCB message, or a schedule message.

The SMS Cell Broadcast service is designed to minimize the battery usage requirements for a MS. A MS can read the first part of a CB message and then decide whether or not to read the rest of the message. In addition, the network may broadcast Schedule Messages, providing information in advance about the CB messages that will be sent immediately afterwards. The MS may use this scheduling information to restrict reception to those messages the customer is interested in receiving. This SMSCB DRX feature is optional in the network and the MS.

## 2.1 Scheduling Information

The network supporting the SMSCB DRX feature transmits Schedule Messages. A Schedule Message includes information about a number of immediately following consecutive CB messages, planned for that cell. The length of time covered by the CB messages referred to in a Schedule Message is called the Schedule Period of that message. For optimum DRX, a new Schedule Message should follow the last message of a Schedule Period. When no information is known about a CB message, e.g. because no Schedule Message has been received referring to that CB message, a MS shall read (at least) the first part of the CB message. Schedule Messages shall be sent on the basic and extended CBCH independently.

The network may override the published schedule to transmit new high-priority SMSCB messages. However, after any schedule deviation, the network shall resume the schedule, by transmitting the scheduled CB messages at the scheduled times listed in the Schedule Message.

The Schedule Message contains a Message Description for each CB message to be broadcast during the scheduling period, in order of transmission. The position of a CB message is called the "message slot number" of the CB message, and it indicates the position of the CB message within the schedule period. Each Message Description includes various information, including for SMSCB messages directly or indirectly all or part of their message identifier, and whether an occurrence is a repetition or not.

Each Schedule Message includes a Begin Slot Number field and an End Slot Number field. The End Slot Number field indicates the length of the schedule period (i.e. specifically the number of CB message slots about which information is provided). In the case where the network uses Schedule Messages to describe all message slots in advance, the first Schedule Message of the next schedule period will be transmitted in the message slot pointed by End Slot Number plus 1. The Begin Slot Number is defined to allow the network to broadcast several Schedule Messages referring to the same schedule period. The Begin Slot Number field indicates the message slot number of the CB message following the received Schedule Message.

The networks may send unscheduled Schedule Messages during empty message slots. The network need only update the Begin Slot Number in an unscheduled Schedule Message to reflect the current offset within the Schedule Message of the next message to be transmitted.

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## 3 Message format on BTS-MS Interface

### 3.1 General

A CB message consists of a 88 octets of information. The 88 octet block is segmented into four 22 octet blocks. A 1 octet Block type is added as a header to each 22 octet block. The overall blocks are thus 23 octets in length.

The message blocks are sent on the channel allocated as CBCH by 3GPP TS 45.002. The timing of the messages is defined in 3GPP TS 45.002. If the network has no cell broadcast information to transmit, then it may choose to transmit a null message.

## 3.2 Format convention

### 3.2.1 Numbering convention

The basic convention used in this technical specification is illustrated in figure 1. The bits are grouped into octets. The bits of an octet are shown horizontally and are numbered from 1 to 8. Multiple octets are shown vertically and are numbered from 1 to 23.

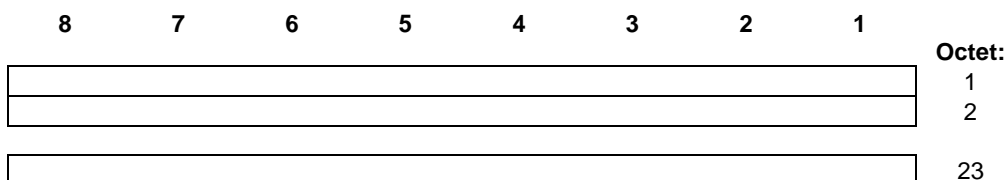


Figure 1: Format convention

### 3.2.2 Order of bit transmission

The message blocks are sent on the CBCH as defined in 3GPP TS 45.002 using the coding defined for that channel.

The order of bit transmission is defined in 3GPP TS 44.004.

## 3.3 Block content

The 23 octet blocks are coded as follows.

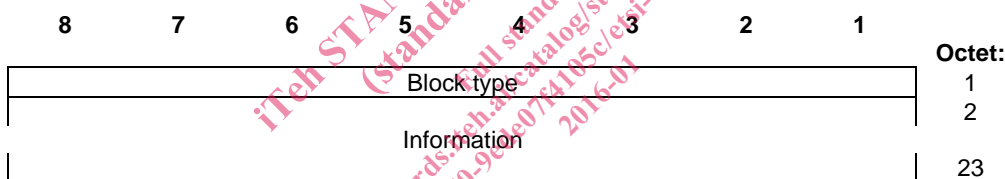


Figure 2: Block content

### 3.3.1 Block Type

The purpose of the Block Type is to identify the function of the block and message being sent. The block type is coded as shown in figure 3.

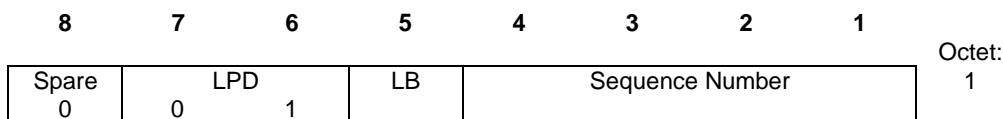


Figure 3: Block type content

Bits 8 is spare and set to zero by the sender. In order to allow compatibility with future modifications to this protocol, bits 8 shall be ignored by the receiver and messages shall not be rejected because it is set to one.

The Link Protocol Discriminator (LPD) takes the value "0 1". Other values of LPD indicate other protocols which are outside the scope of the present document, and shall cause the message to be ignored when the Cell Broadcast LPD is expected instead.

NOTE: LPD = "0 0" corresponds to the data link protocol used by LAPDm (see 3GPP TS 44.006).

In an SMSCB message the last block containing SMSCB information is signalled by the Last Block (LB) bit. When the LB bit is set to "0", the next block may contain SMSCB information. When the LB bit is set to "1", the remaining block(s) do(es) not contain SMSCB information.



**Table 1: Sequence number coding**

| Bit No | 4 | 3 | 2 | 1 |   |
|--------|---|---|---|---|---|
|        | 0 | 0 | 0 | 0 | First block   |
|        | 0 | 0 | 0 | 1 | Second block  |
|        | 0 | 0 | 1 | 0 | Third block   |
|        | 0 | 0 | 1 | 1 | Fourth block  |
|        | 1 | 0 | 0 | 0 | First schedule block:<br>Message contains SMSCB<br>scheduling information |
|        | 1 | 1 | 1 | 1 | Null message (does not contain<br>valid SMSCB information)                |

All other values of bits 4 to 1 are reserved for future use.

The use of a reserved code point shall cause the message to be ignored.

### 3.4 SMSCB Message

The SMSCB message is a message with four consecutive blocks, with Block Types "first block", "second block", "third block" and "fourth block".

A null message (which is indicated by the Sequence Number 1111 (binary)) shall have octets 2 to 23, inclusive, filled with the value 2B (hex).

The SMSCB message coding is defined in 3GPP TS 23.041.

### 3.5 Schedule Message

The text of the Schedule Message provides information pertaining to the CB messages sent afterward.

A Schedule Message consists of 4 consecutive blocks with Block Types "first schedule block", "second block", "third block" and "fourth block".

A Schedule Message containing scheduling data which does not fill the 88 octets shall be padded with the hexadecimal value "2B" after the end of the used part of the message.

The Schedule Message comprises a 2-octet header followed by three parts, the first of them of 6 octets, and the two others of variable length, as indicated in figure 4.

| 8                             | 7          | 6                 | 5 | 4 | 3 | 2 | 1 | Octet:  |
|-------------------------------|------------|-------------------|---|---|---|---|---|---------|
| Type<br>0 0                   |            | Begin Slot Number |   |   |   |   |   | 1       |
| Spare<br>0                    | Spare<br>0 | End Slot Number   |   |   |   |   |   | 2       |
| New CBSMS Message Bitmap      |            |                   |   |   |   |   |   | 3 - 8   |
| New CBSMS Message Description |            |                   |   |   |   |   |   | 9 - 2m  |
| Other Message Descriptions    |            |                   |   |   |   |   |   | (m+1)-n |

**Figure 4: Schedule Message coding**

Octets following the last part (n+1 to 88 inclusive), if any, shall be ignored.

In the following subclauses, when bits are indicated as spare, they shall be set to the indicated value (0 or 1) by the network, and their value shall be ignored by the MS.