

**TSG-RAN Meeting #24**  
**Seoul, Korea, 02-04 June 2004**

**RP-040203**

**Title:** CRs to 25.331 (R'99 and associated Rel-4/Rel-5/Rel-6)

**Source:** TSG-RAN WG2

**Agenda item:** 7.3.3

Spec	CR	Rev	Phase	Subject	Cat	Version-Current	Version-New	Workitem	Doc-2nd-Level
25.331	2289	-	R99	Empty non-critical extensions	F	3.18.0	3.19.0	TEI	R2-041118
25.331	2290	-	Rel-4	Empty non-critical extensions	A	4.13.0	4.14.0	TEI	R2-041119
25.331	2291	-	Rel-5	Empty non-critical extensions	A	5.8.0	5.9.0	TEI	R2-041120
25.331	2292	-	Rel-6	Empty non-critical extensions	A	6.1.0	6.2.0	TEI	R2-041121
25.331	2299	-	R99	RRC transaction identifier in the Handover from UTRAN message	F	3.18.0	3.19.0	TEI	R2-041105
25.331	2300	-	R99	Correction on System Information in TDD	F	3.18.0	3.19.0	TEI	R2-041106
25.331	2301	-	Rel-4	Correction on System Information in TDD	A	4.13.0	4.14.0	TEI	R2-041107
25.331	2302	-	Rel-5	Correction on System Information in TDD	A	5.8.0	5.9.0	TEI	R2-041108
25.331	2303	-	Rel-6	Correction on System Information in TDD	A	6.1.0	6.2.0	TEI	R2-041109

CR-Form-v7

## CHANGE REQUEST

# 25.331 CR 2289 # rev - # Current version: 3.18.0 #

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the # symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	# Empty non-critical extensions		
<b>Source:</b>	# RAN WG2		
<b>Work item code:</b>	# TEI	<b>Date:</b>	# May /2004
<b>Category:</b>	# <b>F</b>	<b>Release:</b>	# R99
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

<b>Reason for change:</b>	# The specification currently covers the issues of receiving unknown non-critical extensions. However, it does not currently cover the issues of forward compatibility caused by the transmission of empty non-critical extensions – i.e. indicating the presence of “nonCriticalExtension” IEs.
<b>Summary of change:</b>	# It is clarified that empty non-critical extension shall not be transmitted
<b>Consequences if not approved:</b>	# Some UE/UTRAN implementations may transmit empty non-critical extensions and cause a ASN.1 violation decoding error, if the receiver supports a later version of ASN.1 (of the same of later release). Such decoding errors will impair the working of any functionality associated with the message where the error occurs and in the extreme cases camping on a cell or setting up a connection will not be possible.  <b>Isolated Impact analysis:</b> The implementation of this CR is always required at the transmitter side, therefore it impacts UE/UTRAN implementations in the same way. Failure to do so may cause severe problems, as highlighted above. Although it is expected that most implementations already comply to this CR, any implementations that do transmit empty non-critical extensions will require modifications, when those non-critical extension are used in a future version of ASN.1 (same or later release).

<b>Clauses affected:</b>	# 10.1.1.1.1						
<b>Other specs affected:</b>	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">#</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">#</td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications # Test specifications #	Y	N	#	X	#	X
Y	N						
#	X						
#	X						

**Other comments:** ⌘ A related CR was recently approved in T1 and can be found in RP-040073

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
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- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

### 10.1.1.1 Non-critical extensions

#### 10.1.1.1.1 Extension of an information element with additional values or choices

In future versions of this protocol, non-critical values may be added to choices, enumerated and size constrained types.

For choices, enumerated and size constrained types it is possible to indicate how many non-critical spare values need to be reserved for future extension. In this case, the tabular format should indicate the number of spare values that are needed. The value range defined in ASN.1 for the extensible IE should include the number of spares that are needed, since a value outside the range defined for this IE will result in a general ASN.1 violation error.

For downlink messages, spare values may be defined for non-critical information elements for which the need is specified to be MD or OP (or CV case leading to MD or OP). In this case, a receiver not comprehending the received spare value shall consider the information element to have the default value or consider it to be absent respectively.

For uplink messages spare values may be defined for all information elements, including those for which the need is specified to be MP (or CV case leading to MP).

In all cases at most one spare should be defined for choices. In this case, information elements applicable to the spare choices shall be added to the end of the message.

#### 10.1.1.1.2 Extension of a message with additional information elements

In future versions of this protocol, non-critical information elements may be added to RRC messages. These additional information elements shall be normally appended at the end of the message; the transfer syntax specified in this revision of the standard facilitates this. A receiver conformant to this revision of the standard shall accept such extension, and proceed as if it was not included.

A transmitter conformant to this version of the standard shall not include an extension reserved for introducing non critical extensions in later versions of the standard; ie. the corresponding parameter defined in the ASN.1 shall be absent.

Note If an extension, reserved for future non-critical extensions, is included (even if it is empty), this may result in transfer syntax errors when received by an implementation conforming to a later version of the standard.

Extensions to a release that are introduced after the subsequent release is frozen may however be inserted prior to the end of the message. To facilitate this, "variable length extension containers" have been introduced in most messages.

CR-Form-v7

## CHANGE REQUEST

# 25.331 CR 2290 # rev - # Current version: 4.13.0 #

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the # symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	# Empty non-critical extensions		
<b>Source:</b>	# RAN WG2		
<b>Work item code:</b>	# TEI	<b>Date:</b>	# May /2004
<b>Category:</b>	# <b>A</b>	<b>Release:</b>	# Rel-4
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

<b>Reason for change:</b>	# The specification currently covers the issues of receiving unknown non-critical extensions. However, it does not currently cover the issues of forward compatibility caused by the transmission of empty non-critical extensions – i.e. indicating the presence of “nonCriticalExtension” IEs.
<b>Summary of change:</b>	# It is clarified that empty non-critical extension shall not be transmitted
<b>Consequences if not approved:</b>	# Some UE/UTRAN implementations may transmit empty non-critical extensions and cause a ASN.1 violation decoding error, if the receiver supports a later version of ASN.1 (of the same of later release). Such decoding errors will impair the working of any functionality associated with the message where the error occurs and in the extreme cases camping on a cell or setting up a connection will not be possible.  <b>Isolated Impact analysis:</b> The implementation of this CR is always required at the transmitter side, therefore it impacts UE/UTRAN implementations in the same way. Failure to do so may cause severe problems, as highlighted above. Although it is expected that most implementations already comply to this CR, any implementations that do transmit empty non-critical extensions will require modifications, when those non-critical extension are used in a future version of ASN.1 (same or later release).

<b>Clauses affected:</b>	# 10.1.1.1.1						
<b>Other specs affected:</b>	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">#</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">#</td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications # Test specifications #	Y	N	#	X	#	X
Y	N						
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CR-Form-v7

## CHANGE REQUEST

⌘ **25.331** **CR 2291** ⌘ rev **-** ⌘ Current version: **5.8.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	⌘ Empty non-critical extensions		
<b>Source:</b>	⌘ RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ May /2004
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)	R96	(Release 1996)
	<b>B</b> (addition of feature),	R97	(Release 1997)
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	<b>D</b> (editorial modification)	R99	(Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .	Rel-4	(Release 4)
		Rel-5	(Release 5)
		Rel-6	(Release 6)

<b>Reason for change:</b>	⌘ The specification currently covers the issues of receiving unknown non-critical extensions. However, it does not currently cover the issues of forward compatibility caused by the transmission of empty non-critical extensions – i.e. indicating the presence of “nonCriticalExtension” IEs.
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<b>Other specs affected:</b>	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> </table>	Y	N		X		X	Other core specifications	⌘
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	X								
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	X								



**Other comments:** ⌘ A related CR was recently approved in T1 and can be found in RP-040073

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## CHANGE REQUEST

# 25.331 CR 2291 # rev - # Current version: 6.1.0 #

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**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	# Empty non-critical extensions		
<b>Source:</b>	# RAN WG2		
<b>Work item code:</b>	# TEI	<b>Date:</b>	# May /2004
<b>Category:</b>	# <b>A</b>	<b>Release:</b>	# Rel-6
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

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## CHANGE REQUEST

⌘ **25.331** CR **2299** ⌘ rev **1** ⌘ Current version: **3.18.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	⌘ RRC transaction identifier in the Handover from UTRAN message.		
<b>Source:</b>	⌘ RAN WG2		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 28 <sup>th</sup> April 2004
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ R99
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)	2	(GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)	R96	(Release 1996)
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	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .	Rel-4	(Release 4)
		Rel-5	(Release 5)
		Rel-6	(Release 6)

<b>Reason for change:</b>	⌘ [H] This CR corrects an implementation error that happened in subclause 8.6.3.11 while implementing 25.331 CR 2278 (title: "Issues related to Inter-RAT and Inter-frequency handovers").  This was R2-040692 agreed at RAN2#41, included in RP-040097 approved at RAN#22.
<b>Summary of change:</b>	⌘ The part impacted deals with the use of the RRC identifier when received in the Handover from UTRAN message. This is subclause 8.6.3.11. The new text had been inserted too early in the subclause, it should have been inserted just before the first "Else" (with zero indentation) after the two notes. It is now added at the location as in CR 2278.
<b>Consequences if not approved:</b>	⌘ TS 25.331 version 3.19.0 would not be in line with CR 2278 (agreed at RAN2#41) with regards to the use of the RRC identifier when received in the Handover from UTRAN message (subclause 8.6.3.11).

<b>Clauses affected:</b>	⌘ Subclause 8.6.3.11.						
<b>Other specs affected:</b>	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td style="width: 20px;"><input type="checkbox"/></td> <td style="width: 20px;"><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
Y	N						
<input type="checkbox"/>	<input checked="" type="checkbox"/>						
	<input checked="" type="checkbox"/>	Test specifications					
	<input checked="" type="checkbox"/>	O&M Specifications					
<b>Other comments:</b>	⌘ No Rel-4, Rel-5 and Rel-6 CRs are needed as the Rel-4, Rel-5 and Rel-6 versions of TS 25.331 were (correctly) implemented as in CRs 2279, 2280 and 2281, respectively.						

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

### 8.6.3.11 RRC transaction identifier

The IE "RRC transaction identifier" may be used, together with the message type, for identification of an invocation of a downlink procedure (transaction). The UE behaviour for accepting or rejecting transactions based on the message type and the IE "RRC transaction identifier" is specified below.

If the IE "RRC transaction identifier" is included in a received message, the UE shall perform the actions below. The UE shall:

If the received message is any of the messages:

- RADIO BEARER SETUP; or
- RADIO BEARER RECONFIGURATION; or
- RADIO BEARER RELEASE; or
- TRANSPORT CHANNEL RECONFIGURATION; or
- PHYSICAL CHANNEL RECONFIGURATION;

the UE shall:

- 1> if the variable ORDERED\_RECONFIGURATION is set to FALSE; and
- 1> if the variable CELL\_UPDATE\_STARTED is set to FALSE; and
- 1> if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL\_ERROR\_REJECT is set to FALSE; and
- 1> if the table "Accepted transactions" in the variable TRANSACTIONS does not contain an entry with an IE "Message Type" set to ACTIVE SET UPDATE:
  - 2> accept the transaction; and
  - 2> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS.
- 1> else:
  - 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or
  - 2> if the variable CELL\_UPDATE\_STARTED is set to TRUE; or
  - 2> if the table "Accepted transactions" in the variable TRANSACTIONS contains an entry with an IE "Message Type" set to ACTIVE SET UPDATE; or
  - 2> if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE:
    - 3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:
      - 4> ignore the transaction; and
      - 4> continue with any ongoing processes and procedures as the message was not received;
      - 4> and end the procedure.
    - 3> else:
      - 4> reject the transaction; and
      - 4> if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:



5> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

Else:

If the received message is any of the messages:

- RRC CONNECTION SETUP; or
- CELL UPDATE CONFIRM; or
- URA UPDATE CONFIRM; or
- UE CAPABILITY ENQUIRY;

the UE shall:

- 1> if the IE "Message Type" of the received message is not present in the table "Accepted transactions" in the variable TRANSACTIONS:
  - 2> if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL\_ERROR\_REJECT is set to FALSE:
    - 3> accept the transaction; and
    - 3> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS.
  - 2> else:
    - 2> if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE:
      - 3> reject the transaction; and
      - 3> if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:
        - 4> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

~~Else:~~

~~If the received message is any of the messages:~~

~~—HANDOVER FROM UTRAN COMMAND~~

~~the UE should:~~

- ~~1> if the variable ORDERED\_RECONFIGURATION is set to TRUE:
 
  - ~~2> reject the transaction; and~~
  - ~~2> if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:
 
    - ~~3> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.~~~~~~

1> else:

- 1> if the IE "Message Type" of the received message is present in the table "Accepted transactions" in the variable TRANSACTIONS:
  - 2> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:
    - 3> ignore the transaction; and

- 3> continue with any ongoing processes and procedures as the message was not received; and
- 3> end the procedure.

2> else:

2> if the IE "RRC transaction identifier" of the received message is different from the "RRC transaction identifier" stored for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:

3> if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL\_ERROR\_REJECT is set to FALSE:

4> ignore the once accepted transaction and instead accept the new transaction; and

4> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS, replacing the previous entry.

NOTE 1: The UE is expected to process the first RRC CONNECTION SETUP/CELL UPDATE CONFIRM/URA UPDATE CONFIRM message that it receives after transmitting an RRC CONNECTION REQUEST/CELL\_UPDATE/URA\_UPDATE message. If the UE receives further RRC CONNECTION SETUP/CELL UPDATE CONFIRM/URA UPDATE CONFIRM messages without having transmitted another RRC CONNECTION REQUEST/CELL\_UPDATE/URA\_UPDATE message, the UE is not required to process these messages.

NOTE 2: If the previously accepted transaction was a CELL UPDATE CONFIRM/URA UPDATE CONFIRM that included the IE "Dowlink counter synchronisation info", rather than ignore the first accepted transaction the UE may continue with the first transaction in the case where a cell re-selection interrupted the on-going procedure causing a cell update procedure to be triggered. In this case the response message acts as an explicit acknowledgement of both the CELL UPDATE CONFIRM/URA UPDATE CONFIRM message signalling an SRNS relocation and the subsequent CELL UPDATE CONFIRM/URA UPDATE CONFIRM.

3> else:

3> if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE:

4> reject the transaction; and

4> if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:

5> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

Else:

If the received message is any of the messages:

- HANOVER FROM UTRAN COMMAND

the UE should:

1> if the variable ORDERED\_RECONFIGURATION is set to TRUE:

2> reject the transaction; and

2> if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:

3> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

Else:

If the received message is any other message, the UE shall:

- 1> if the IE "Message Type" of the received message is not present in the table "Accepted transactions" in the variable TRANSACTIONS:
  - 2> if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL\_ERROR\_REJECT is set to FALSE:
    - 3> accept the transaction; and
    - 3> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS.
  - 2> else:
    - 2> if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE:
      - 3> reject the transaction; and
      - 3> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.
- 1> else:
  - 1> if the IE "Message Type" of the received message is present in the table "Accepted transactions" in the variable TRANSACTIONS:
    - 2> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored in any entry for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:
      - 3> ignore the transaction; and
      - 3> continue with any ongoing processes and procedures as the message was not received; and
      - 3> end the procedure.
    - 2> else:
      - 2> if the IE "RRC transaction identifier" of the received message is different from the "RRC transaction identifier" stored in all entries for the "Message Type" in the table "Accepted transactions" in the variable TRANSACTIONS:
        - 3> if the received message does not contain a protocol error according to clause 9 and the variable PROTOCOL\_ERROR\_REJECT is set to FALSE:
          - 4> accept the additional transaction; and
          - 4> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Accepted transactions" in the variable TRANSACTIONS, in addition to the already existing entries.
        - 3> else:
          - 3> if the received message contains a protocol error according to clause 9 causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE:
            - 4> reject the transaction; and
            - 4> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

## CHANGE REQUEST

# 25.331 CR 2300 # rev - # Current version: 3.18.0 #

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the # symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	# Correction on System Information in TDD		
<b>Source:</b>	# RAN WG2		
<b>Work item code:</b>	# TEI	<b>Date:</b>	# 10/05/2004
<b>Category:</b>	# <b>F</b>	<b>Release:</b>	# R99
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

<b>Reason for change:</b>	# The need to read system information and to indicate system information changing in CELL_DCH state for TDD UE has already been clearly clarified in the specification, while some oversights remain to be corrected.
<b>Summary of change:</b>	# 1. SYSTEM INFORMATION CHANGE INDICATE was corrected to be available in CELL_DCH state for TDD UE in figure 8.1.1-3 and 10.2.49. 2. Table 8.1.1 was corrected to add availability of MIB, scheduling block 1 or 2 in CELL_DCH state for TDD UE only.
<b>Consequences if not approved:</b>	# For the TDD mode, ambiguities related to the validity and availability of MIB and SYSTEM INFORMATION CHANGE INDICATION in CELL_DCH will remain. The TDD UE might have no access to some system information blocks. The TDD UE could use sytem information different than the one meant by the network. The UE may hence behave in an indeterministic way.  <u>Isolated impact analysis:</u> Since this CR corrects the functionality where the specification was ambiguous or not sufficiently explicit, it would not affect implementations behaving like indicated in this CR, but would affect implementations supporting the corrected functionality otherwise.

<b>Clauses affected:</b>	# 8.1.1, 10.2.49								
<b>Other specs affected:</b>	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">#</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">#</td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	#	X	#	X	Other core specifications	#
Y	N								
#	X								
#	X								
		Test specifications	#						

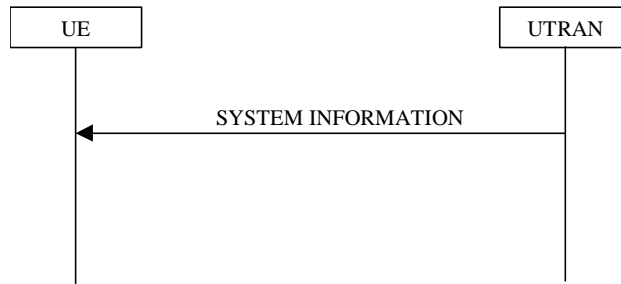
**Other comments:** ☞

**How to create CRs using this form:**

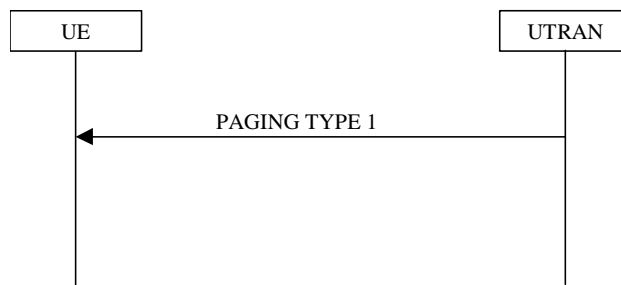
Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

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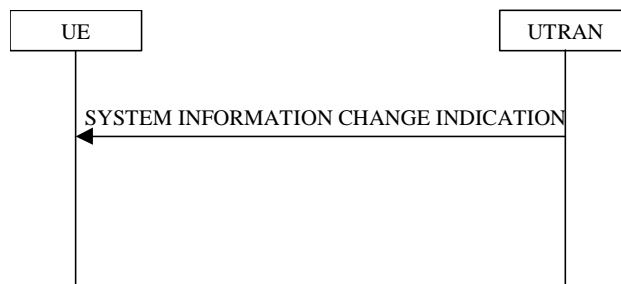
## 8.1.1 Broadcast of system information



**Figure 8.1.1-1: Broadcast of system information**



**Figure 8.1.1-2: Notification of system information modification for UEs in idle mode, CELL\_PCH state and URA\_PCH state**



**Figure 8.1.1-3: Notification of system information modification for UEs in CELL\_FACH [and CELL\\_DCH\(TDD only\)](#) state**

### 8.1.1.1 General

The purpose of this procedure is to broadcast system information from the UTRAN to UEs in a cell.

#### 8.1.1.1.1 System information structure

The system information elements are broadcast in *system information blocks*. A system information block groups together system information elements of the same nature. Different system information blocks may have different characteristics, e.g. regarding their repetition rate and the requirements on UEs to re-read the system information blocks.

The system information is organised as a tree. A *master information block* gives references and scheduling information to a number of system information blocks in a cell. The system information blocks contain the actual system information. The master information block may optionally also contain reference and scheduling information to one or two *scheduling blocks*, which give references and scheduling information for additional system information blocks. Scheduling information for a system information block may only be included in either the master information block or one of the scheduling blocks.

For all system information blocks except System Information Block types 15.2, 15.3 and 16, the content is the same in each occurrence for system information blocks using value tag. System Information Block types 15.2, 15.3 and 16 may

occur more than once with different content. In this case scheduling information is provided for each such occurrence of the system information block. System information blocks that do not use value tag may have different content for each occurrence.

#### 8.1.1.1.2 System information blocks

Table 8.1.1 specifies all system information blocks and their characteristics.

The *area scope column* in table 8.1.1 specifies the area where a system information block's value tag is valid. If the area scope is *cell*, the UE shall consider the system information block to be valid only in the cell in which it was read. If system information blocks have been previously stored for this cell, the UE shall check whether the value tag for the system information block in the entered cell is different compared to the stored value tag. If the area scope is *PLMN* or *Equivalent PLMN*, the UE shall check the value tag for the system information block when a new cell is selected. If the value tag for the system information block in the new cell is different compared to the value tag for the system information block stored in the UE, the UE shall re-read the system information block. If the area scope is *PLMN*, the UE shall consider the system information block to be valid only within the PLMN in which it was read. If the area scope is *Equivalent PLMN*, the UE shall consider the system information block to be valid within the PLMN in which it was received and all PLMNs which are indicated by higher layers to be equivalent.

For System information block types 15.2, 15.3 and 16, which may have multiple occurrences, each occurrence has its own independent value tag. The UE shall re-read a particular occurrence if the value tag of this occurrence has changed compared to that stored in the UE.

The *UE mode/state column when block is valid* in Table 8.1.1 specifies in which UE mode or UE state the IEs in a system information block shall be regarded as valid by the UE. In other words, the indicated system information block becomes invalid upon change to a mode/state that is not included in this column. System Information Block Type 16 remains also valid upon transition to or from GSM/GPRS. In some cases, the states are inserted in brackets to indicate that the validity is dependent on the broadcast of the associated System Information Blocks by the network as explained in the relevant procedure subclause.

The *UE mode/state column when block is read* in Table 8.1.1 specifies in which UE mode or UE state the IEs in a system information block may be read by the UE. The UE shall have the necessary information prior to execution of any procedure requiring information to be obtained from the appropriate system information block. The requirements on the UE in terms of when to read the system information may therefore be derived from the procedure specifications that specify which IEs are required in the different UE modes/states in conjunction with the different performance requirements that are specified. System Information Block type 10 shall only be read by the UE while in CELL\_DCH.

The UE shall:

- 1> if System Information Block type 11 is referenced in the master information block or in the scheduling blocks:
  - 2> if System Information Block type 12 is not referenced in the master information block or in the scheduling blocks, or broadcast of System Information Block type 12 is not indicated in System Information Block type 11:
    - 3> have read and acted upon System Information Block type 11 in a cell when the UE transmits an RRC message on RACH.
  - 2> else:
    - 3> have read and acted upon System Information Block type 11 in a cell before the UE transmits the RRC CONNECTION REQUEST message;
    - 3> have read and acted upon both System Information Block type 11 and System Information Block type 12 in a cell when:
      - 4> the UE transmits an RRC message on RACH in RRC connected mode; or
      - 4> the UE receives a message commanding to enter Cell\_DCH state.

NOTE 1: There are a number of system information blocks that include the same IEs while the UE mode/state in which the information is valid differs. This approach is intended to allow the use of different IE values in different UE mode/states.

NOTE 2: System Information Block Type 16 is also obtained by a UE while in GSM/GPRS. The details of this are not within the scope of this specification.

The *Scheduling information* column in table 8.1.1 specifies the position and repetition period for the SIB.

The *modification of system information* column in table 8.1.1 specifies the update mechanisms applicable for a certain system information block. For system information blocks with a value tag, the UE shall update the information according to subclause 8.1.1.7.1 or 8.1.1.7.2. For system information blocks with an expiration timer, the UE shall, when the timer expires, perform an update of the information according to subclause 8.1.1.7.4.

**Table 8.1.1: Specification of system information block characteristics**

System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
Master information block	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	SIB_POS = 0 SIB_REP = 8 (FDD) SIB_REP = 8, 16, 32 (TDD) SIB_OFF=2	Value tag	
Scheduling block 1	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Specified by the IE "Scheduling information" in MIB	Value tag	
Scheduling block 2	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Specified by the IE "Scheduling information" in MIB	Value tag	
System information block type 1	PLMN	Idle mode CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 2	Cell	URA_PCH	URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 3	Cell	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH)	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH)	Specified by the IE "Scheduling information"	Value tag	
System information block type 4	Cell	CELL_FACH, CELL_PCH, URA_PCH	CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	If System information block type 4 is not broadcast in a cell, the connected mode UE shall apply information in System information block type 3 in connected mode.
System information block type 5	Cell	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only))	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only))	Specified by the IE "Scheduling information"	Value tag	



System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
System information block type 6	Cell	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	Specified by the IE "Scheduling information"	Value tag	<p>If system information block type 6 is not broadcast in a cell, the connected mode UE shall read System information block type 5.</p> <p>If some of the optional IEs are not included in System information block type 6, the UE shall read the corresponding IEs in System information block type 5</p> <p>In TDD mode system information block 6 shall only be read in CELL_DCH if required for open loop power control as specified in subclause 8.5.7 and/or if shared transport channels are assigned to the UE. If in these cases system information block type 6 is not broadcast the UE shall read system information block type 5.</p>
System information block type 7	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	Specified by the IE "Scheduling information"	Expiration timer = MAX(32, SIB_REP * ExpirationTimeFactor)	In TDD mode system information block type 7 shall only be read in CELL_DCH if shared transport channels are assigned to the UE.
System information block type 8	Cell	CELL_FACH, CELL_PCH, URA_PCH	CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 9	Cell	CELL_FACH, CELL_PCH, URA_PCH	CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	
System information block type 10	Cell	CELL_DCH	CELL_DCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	
System information block type 11	Cell	Idle mode (CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH)	Idle mode (CELL_FACH, CELL_PCH, URA_PCH)	Specified by the IE "Scheduling information"	Value tag	

System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
System information block type 12	Cell	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	If system information block type 12 is not broadcast in a cell, the connected mode UE shall read System information block type 11. If some of the optional IEs are not included in System information block type 12, the UE shall read the corresponding IEs in System information block type 11.
System information block type 13	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.1	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.2	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.3	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.4	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 14	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Specified by the IE "Scheduling information"	Expiration timer = MAX(32, SIB_REP * ExpirationTimeFactor)	This system information block is used in TDD mode only. System information block type 14 shall only be read in CELL_DCH if required for open loop power control as specified in subclause 8.5.7.
System information block type 15	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 15.1	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 15.2	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	For this system information block there may be multiple occurrences
System information block type 15.3	PLMN	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	For this system information block there may be multiple occurrences

System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
System information block type 15.4	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 15.5	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 16	Equivalent PLMN	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	For this system information block there may be multiple occurrences. This system information block is also valid while in GSM/GPRS.
System information block type 17	Cell	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	This system information block is used in TDD mode only. System information block type 17 shall only be read if shared transport channels are assigned to the UE.
System Information Block type 18	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	

The UE shall acquire all system information blocks except system information block type 10 on BCH. System Information Block type 10 shall be acquired on the FACH and only by UEs with support for simultaneous reception of one SCCPCH and one DPCH. If System Information Block type 10 is not broadcast in a cell, the DRAC procedures do not apply in this cell. System Information Block type 10 is used in FDD mode only.

#### 8.1.1.1.3 Segmentation and concatenation of system information blocks

A generic SYSTEM INFORMATION message is used to convey the system information blocks on the BCCH. A given BCCH may be mapped onto either a BCH or a FACH transport channel according to subclause 8.1.1.1.2. The size of the SYSTEM INFORMATION message shall fit the size of a BCH or a FACH transport block.

The RRC layer in UTRAN performs segmentation and concatenation of encoded system information blocks. If the encoded system information block is larger than the size of a SYSTEM INFORMATION message, it will be segmented and transmitted in several messages. If the encoded system information block is smaller than a SYSTEM INFORMATION message, UTRAN may concatenate several system information blocks, or the first segment or the last segment into the same message as specified in the remainder of this clause.

Four different segment types are defined:

- First segment;
- Subsequent segment;
- Last segment;
- Complete.

Each of the types - *First*, *Subsequent* and *Last segment* - is used to transfer segments of a master information block, scheduling block or a system information block. The segment type, *Complete*, is used to transfer a complete master information block, complete scheduling block or a complete system information block.

Each segment consists of a header and a data field. The data field carries the encoded system information elements. The header contains the following parameters:

- The number of segments in the system information block (SEG\_COUNT). This parameter is only included in the header if the segment type is "First segment".
- SIB type. The SIB type uniquely identifies the master information block, scheduling block or a system information block.
- Segment index. This parameter is only included in the header if the segment type is "Subsequent segment" or "Last segment".

UTRAN may combine one or several segments of variable length in the same SYSTEM INFORMATION message. The following combinations are allowed:

1. No segment;
2. First segment;
3. Subsequent segment;
4. Last segment;
5. Last segment + First segment;
6. Last segment + one or several Complete;
7. Last segment + one or several Complete + First segment;
8. One or several Complete;
9. One or several Complete + First segment;
10. One Complete of size 215 to 226;
11. Last segment of size 215 to 222.

The "No segment" combination is used when there is no master information block, scheduling block or system information block scheduled for a specific BCH transport block.

UEs are not required to support the reception of multiple occurrences of the same system information block type within one SYSTEM INFORMATION message.

**NOTE:** Since the SIB type is the same for each occurrence of the system information block, the UE does not know the order in which the occurrences, scheduled for this SYSTEM INFORMATION message, appear. Therefore, the UE is unable to determine which scheduling information, e.g., value tag relates to which occurrence of the system information block.

#### 8.1.1.1.4 Re-assembly of segments

The RRC layer in the UE shall perform re-assembly of segments. All segments belonging to the same master information block, scheduling block or system information block shall be assembled in ascending order with respect to the segment index. When all segments of the master information block, scheduling block or a system information block have been received, the UE shall perform decoding of the complete master information block, scheduling block or system information block. For System Information Block types 15.2, 15.3 and 16, which may have multiple occurrences, each occurrence shall be re-assembled independently.

The UE shall discard system information blocks of which segments were missing, of which segments were received out of sequence and/or for which duplicate segments were received. The only valid sequence is an ascending one with the sequence starting with the First Segment of the associated System Information Block.

If the UE receives a Subsequent segment or Last segment where the index in IE "Segment index" is equal to or larger than the number of segments stated in IE "SEG\_COUNT" in the scheduling information for that scheduling block or system information block:

- 1> the UE may:
  - 2> read all the segments to create a system information block as defined by the scheduling information read by the UE;
  - 2> store the content of the system information block with a value tag set to the value NULL; and
  - 2> consider the content of the scheduling block or system information block as valid:
    - 3> until it receives the same type of scheduling block or system information block in a position according to its scheduling information; or
    - 3> at most for 6 hours after reception.
- 1> and the UE shall:
  - 2> re-read scheduling information for that scheduling block or system information block.

If the UE receives a Subsequent segment or Last segment where the index in IE "Segment index" is equal to or larger than the number of segments stated in IE "SEG\_COUNT" in the First segment, the UE shall

- 1> discard all segments for that master information block, scheduling block or system information block; and
- 1> re-read the scheduling information for that system information block;
- 1> then re-read all segments for that system information block.

#### 8.1.1.1.5 Scheduling of system information

Scheduling of system information blocks is performed by the RRC layer in UTRAN. If segmentation is used, it should be possible to schedule each segment separately.

To allow the mixing of system information blocks with short repetition period and system information blocks with segmentation over many frames, UTRAN may multiplex segments from different system information blocks. Multiplexing and de-multiplexing is performed by the RRC layer.

The scheduling of each system information block broadcast on a BCH transport channel is defined by the following parameters:

- the number of segments (SEG\_COUNT);
- the repetition period (SIB\_REP). The same value applies to all segments;
- the position (phase) of the first segment within one cycle of the Cell System Frame Number (SIB\_POS(0)). Since system information blocks are repeated with period SIB\_REP, the value of SIB\_POS(*i*), *i* = 0, 1, 2, ... SEG\_COUNT-1 must be less than SIB\_REP for all segments;
- the offset of the subsequent segments in ascending index order (SIB\_OFF(*i*), *i* = 1, 2, ... SEG\_COUNT-1). The position of the subsequent segments is calculated using the following: SIB\_POS(*i*) = SIB\_POS(*i*-1) + SIB\_OFF(*i*).

The scheduling is based on the Cell System Frame Number (SFN). The SFN of a frame at which a particular segment, *i*, with *i* = 0, 1, 2, ... SEG\_COUNT-1 of a system information block occurs, fulfils the following relation:

$$\text{SFN mod SIB\_REP} = \text{SIB\_POS}(i)$$

In FDD and TDD the scheduling of the master information block is fixed as defined in table 8.1.1. For TDD, UTRAN may apply one of the values allowed for the master information block's repetition period. The value that UTRAN is using in TDD is not signalled; UEs have to determine it by trial and error.

### 8.1.1.2 Initiation

The system information is continuously broadcast on a regular basis in accordance with the scheduling defined for each system information block.

### 8.1.1.3 Reception of SYSTEM INFORMATION messages by the UE

The UE shall read SYSTEM INFORMATION messages broadcast on a BCH transport channel in idle mode and in the connected mode in states CELL\_FACH, CELL\_PCH, URA\_PCH and CELL\_DCH (TDD only). In addition, UEs in FDD mode which support simultaneous reception of one SCCPCH and one DPCH shall read system information on a FACH transport channel when in CELL\_DCH state.

In idle mode and connected mode different combinations of system information blocks are valid. The UE shall acquire the system information blocks that are needed according to table 8.1.1.

The UE may store system information blocks with *cell*, *PLMN* or *Equivalent PLMN* area scope (including their value tag if applicable) for different cells and different PLMNs, to be used if the UE returns to these cells.

The UE shall consider all stored system information blocks as invalid after it has been switched off. Some information obtained from system information may be stored by the UE or in the USIM for use in a stored information cell selection.

When selecting a new cell within the currently used PLMN, the UE shall consider all current system information blocks with area scope *cell* to be invalid. If the UE has stored valid system information blocks for the newly selected cell, the UE may set those as current system information blocks.

After selecting a new PLMN, the UE shall consider all current system information blocks with area scope *cell* and *PLMN* to be invalid. If the UE has previously stored valid system information blocks for the selected cell of the new PLMN, the UE may set those as current system information blocks. Upon selection of a new PLMN the UE shall store all information elements specified within variable SELECTED\_PLMN for the new PLMN within this variable.

After selecting a new PLMN which is not indicated by higher layers to be equivalent to the identity of the previously selected PLMN, the UE shall consider all system information blocks with area scope *Equivalent PLMN* to be invalid.

### 8.1.1.4 Reception of SYSTEM INFORMATION messages broadcast on a FACH transport channel

System information block type 10 may be broadcast on FACH, as specified in subclause 8.1.1.1.2.

When reading system information blocks on FACH, the UE shall perform the actions as defined in subclause 8.1.1.6.

### 8.1.1.5 Actions upon reception of the Master Information Block and Scheduling Block(s)

When selecting a new cell, the UE shall read the master information block. The UE may use the pre-defined scheduling information to locate the master information block in the cell.

Upon reception of the master information block, the UE shall:

- 1> if the "PLMN type" in the variable SELECTED\_PLMN has the value "GSM-MAP" and the IE "PLMN Type" has the value "GSM-MAP" or "GSM-MAP and ANSI-41":
  - 2> check the IE "PLMN identity" in the master information block and verify that it is the selected PLMN, stored as "PLMN identity" in the variable SELECTED\_PLMN.
- 1> if the "PLMN type" in the variable SELECTED\_PLMN has the value "ANSI-41" and the IE "PLMN Type" has the value "ANSI-41" or "GSM-MAP and ANSI-41":
  - 2> store the ANSI-41 Information elements contained in the master information block and perform initial process for ANSI-41.
- 1> compare the value tag in the master information block with the value tag stored for this cell and this PLMN in the variable VALUE\_TAG;

- 1> if the value tags differ, or if no IEs for the master information block are stored:
  - 2> store the value tag into the variable VALUE\_TAG for the master information block;
  - 2> read and store scheduling information included in the master information block.
- 1> if the value tags are the same the UE may use stored system information blocks and scheduling blocks using value tag that were stored for this cell and this PLMN as valid system information.

For all system information blocks or scheduling blocks that are supported by the UE referenced in the master information block or the scheduling blocks, the UE shall perform the following actions:

- 1> for all system information blocks with area scope "PLMN" or "Equivalent PLMN" that use value tags:
  - 2> compare the value tag read in scheduling information for that system information block with the value stored within the variable VALUE\_TAG for that system information block;
  - 2> if the value tags differ, or if no IEs for the corresponding system information block are stored:
    - 3> store the value tag read in scheduling information for that system information block into the variable VALUE\_TAG;
    - 3> read and store the IEs of that system information block.
  - 2> if the value tags are the same the UE may use stored system information blocks using value tag that were stored in this PLMN as valid system information.
- 1> for all system information blocks or scheduling blocks with area scope cell that use value tags:
  - 2> compare the value tag read in scheduling information for that system information block or scheduling block with the value stored within the variable VALUE\_TAG for that system information block or scheduling block;
  - 2> if the value tags differ, or if no IEs for the corresponding system information block or scheduling block are stored:
    - 3> store the value tag read in scheduling information for that system information block or scheduling block into the variable VALUE\_TAG;
    - 3> read and store the IEs of that system information block or scheduling block.
  - 2> if the value tags are the same the UE may use stored system information blocks using value tags that were stored for this cell and this PLMN as valid system information.
- 1> for system information blocks which may have multiple occurrences:
  - 2> compare the value tag and the configuration or multiple occurrence identity for the occurrence of the system information blocks read in scheduling information with the value tag and configuration or multiple occurrence identity stored within the variable VALUE\_TAG:
    - 3> if the value tags differ, or if no IEs from the occurrence with that configuration or multiple occurrence identity of the system information block are stored:
      - 4> store the value tag read in scheduling information for that system information block and the occurrence with that configuration or multiple occurrence identity into the variable VALUE\_TAG;
      - 4> read and store the IEs of that system information block.
    - 3> if the value tags and the configuration or multiple occurrence identity are identical to those stored, the UE may use stored occurrences of system information blocks that were stored for this cell and this PLMN as valid system information.

For system information blocks, not supported by the UE, but referenced either in the master information block or in the scheduling blocks, the UE may:

- 1> skip reading this system information block;
- 1> skip monitoring changes to this system information block.

If the UE:

- 1> receives a scheduling block at a position different from its position according to the scheduling information for the scheduling block; or
- 1> receives a scheduling block for which scheduling information has not been received:

the UE may:

- 1> store the content of the scheduling block with a value tag set to the value NULL; and
- 1> consider the content of the scheduling block as valid until it receives the same type of scheduling block in a position according to its scheduling information or at most for 6 hours after reception.

If the UE does not find a scheduling block in a position where it should be according to its scheduling information, but a transport block with correct CRC was found at that position, the UE shall:

- 1> read the scheduling information for this scheduling block.

If the UE does not find the master information block in a position fulfilling:

$$\text{SFN mod } 32 = 0$$

but a transport block with correct CRC was found at that position), the UE shall:

- 1> consider the master information block as not found; and
- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

NOTE: This permits a different repetition for the MIB in later versions for FDD. In TDD it allows for a variable SIB\_REP in this and future releases.

If system information block type 1 is not scheduled on BCH, and system information block type 13 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If the UE only supports GSM-MAP but finds a cell that broadcasts System Information Block type 13 but not System Information Block type 1, the UE shall:

- 1> consider the cell barred.

If:

- system information block type 1 is not scheduled on BCH; and
- the "PLMN Type" in the variable SELECTED\_PLMN has the value "GSM-MAP"; and
- the IE "PLMN type" in the Master Information Block has the value "GSM-MAP" or "GSM-MAP and ANSI-41":

the UE shall:

- 1> indicate to upper layers that no CN system information is available.



If in idle mode and System Information Block type 3 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If in connected mode and System Information Block type 3 is not scheduled on BCH, and System Information Block type 4 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If in idle mode and System Information Block type 5 is not scheduled on BCH or System Information Block type 5 is scheduled but IE "AICH info" (FDD) or IE "PICH info" is not present, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If in connected mode and System Information Block type 5 is not scheduled on BCH, and System Information Block type 6 is not scheduled on BCH, or any of System Information Block type 5 or type 6 is scheduled but IE "AICH info" (FDD) or IE "PICH info" is not present, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If System Information Block type 7 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

In TDD, if System Information Block type 14 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

### 8.1.1.6 Actions upon reception of system information blocks

The UE may use the scheduling information included within the master information block and the scheduling blocks to locate each system information block to be acquired.

The UE should only expect one occurrence of the scheduling information for a system information block in the master information block and any of the scheduling blocks except for System Information Block type 16, System Information Block type 15.2 and System Information Block type 15.3, which may have multiple occurrences. However, to enable future introduction of new system information blocks, the UE shall also be able to receive system information blocks other than the ones indicated within the scheduling information. The UE may ignore contents of such system information block.

If the UE:

- 1> receives a system information block in a position according to the scheduling information for the system information block; and
- 1> this system information block uses a value tag; or
- 1> this system information block uses a value tag and configuration or multiple occurrence identity:

the UE shall:

- 1> store the content of the system information block together with the value of its value tag or the values of configuration and multiple occurrence identity and the associated value tag in the scheduling information for the system information block; and
- 1> consider the content of the system information block valid until, if used, the value tag in the scheduling information for the system information block is changed or at most for 6 hours after reception.

If the UE:

- 1> receives a system information block in a position according to the scheduling information for the system information block; and
- 1> this system information block does not use a value tag according to the system information block type:

the UE shall:

- 1> store the content of the system information block; and
- 1> start an expiration timer using a value as defined in Table 8.1.1 for that system information block type; and
- 1> consider the content of the system information block valid until, the expiration timer expires.

If the UE:

- 1> receives a system information block at a position different from its position according to the scheduling information for the system information block; or
- 1> receives a system information block for which scheduling information has not been received; and
- 1> this system information block uses a value tag:

the UE may:

- 1> store the content of the system information block with a value tag set to the value NULL; and
- 1> consider the content of the system information block as valid until it receives the same type of system information block in a position according to its scheduling information or at most for 6 hours after reception.

If the UE:

- 1> receives a system information block with multiple occurrences at a position different from its position according to the scheduling information for the system information block; or
- 1> receives a system information block with multiple occurrences for which scheduling information has not been received; and
- 1> this system information block uses a value tag and configuration or multiple occurrence identity:

the UE shall:

- 1> ignore this information.

If the UE does not find a system information block in a position where it should be according to its scheduling information, but a transport block with correct CRC was found at that position, the UE shall read the scheduling information for this system information block.

The UE shall act upon all received information elements as specified in subclause 8.6 unless specified otherwise in the following subclauses.

### 8.1.1.6.1 System Information Block type 1

The UE should store all relevant IEs included in this system information block if the "PLMN Type" in the variable SELECTED\_PLMN has the value "GSM-MAP" and the IE "PLMN type" in the Master Information Block has the value "GSM-MAP" or "GSM-MAP and ANSI-41". The UE shall also:

- 1> check that the cell, according to information included in IE "CN common GSM-MAP NAS system information", is suitable [4];
- 1> if in connected mode:
  - 2> not forward the content of the IE "CN common GSM-MAP NAS system information" to upper layers.
- 1> if in idle mode:
  - 2> forward the content of the IE "CN common GSM-MAP NAS system information" to upper layers.
- 1> for the IE "CN domain system information list":
  - 2> for each IE "CN domain system information" that is present:
    - 3> check that the cell, according to information included in IE "CN domain specific NAS system information", is suitable [4];
    - 3> if in connected mode:
      - 4> not forward the content of the IE "CN domain specific NAS system information" to upper layers.
    - 3> if in idle mode:
      - 4> forward the content of the IE "CN domain specific NAS system information" and the IE "CN domain identity" to upper layers;
      - 4> use the IE "CN domain specific DRX cycle length coefficient" to calculate frame number for the Paging Occasions as specified in [4];
      - 4> store the value of the IE "CN domain specific DRX cycle length coefficient" for use in connected mode.
  - 2> if an IE "CN domain system information" is not present for a particular CN domain:
    - 3> indicate to upper layers that no CN system information is available for that CN domain.
- 1> if the UE has not yet entered UTRA RRC connected mode:
  - 2> store the values of the IE "UE Timers and constants in connected mode" in the variable TIMERS\_AND\_CONSTANTS.
- 1> use the values stored in the variable TIMERS\_AND\_CONSTANTS for the relevant timers and constants.

### 8.1.1.6.2 System Information Block type 2

If in connected mode the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if in state URA\_PCH, start to perform URA updates using the information in the IE "URA identity".

If in idle mode, the UE shall not use the values of the IEs in this system information block.

### 8.1.1.6.3 System Information Block type 3

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if in connected mode, and System Information Block 4 is indicated as used in the cell:
  - 2> read and act on information sent in that block.

#### 8.1.1.6.4 System Information Block type 4

If in connected mode, the UE should store all relevant IEs included in this system information block.

If in idle mode, the UE shall not use the values of the IEs included in this system information block.

#### 8.1.1.6.5 System Information Block type 5

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if in connected mode, and System Information Block type 6 is indicated as used in the cell:
  - 2> read and act on information sent in System Information Block type 6.
- 1> replace the TFS of the RACH with the one stored in the UE if any;
- 1> let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink for the PRACH if UE is in CELL\_FACH state;
- 1> use the first instance of the list of transport formats as in the IE "RACH TFS" for the used RACH received in the IE "PRACH system information list" when using the CCCH;
- 1> start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" (FDD only) when given allocated PRACH is used;
- 1> replace the TFS of the FACH/PCH with the one stored in the UE if any;
- 1> select a Secondary CCPCH as specified in [4] and in subclause 8.5.19, and start to receive the physical channel of type PICH associated with the PCH carried by the selected Secondary CCPCH using the parameters given by the IE "PICH info" if UE is in Idle mode or in CELL\_PCH or URA\_PCH state;
- 1> start to monitor its paging occasions on the selected PICH if UE is in Idle mode or in CELL\_PCH or URA\_PCH state;
- 1> start to receive the selected physical channel of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info" if UE is in CELL\_FACH state;
- 1> in TDD:
  - 2> use the IE "TDD open loop power control" as defined in subclause 8.5.7 when allocated PRACH is used;
  - 2> if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included:
    - 3> store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. For every configuration, for which the IE "SFN Time info" is included, the information shall be stored for the duration given there.

If a UE is a 12 kbps class UE according to [35] and the UE has a lower capability than required to support all transport channel configurations mapped on a specific Secondary CCPCH, the UE shall at a certain time instant still be able to decode those transport channels mapped on this Secondary CCPCH that do match the capability supported by the UE. The UE shall use the TFCI bits for that Secondary CCPCH, to distinguish a transport channel configuration that is supported by the UE from a transport channel configuration that is not supported by the UE.

In particular if the UE is a 12 kbps class UE according to [35] and it does not support the processing requirement at a given point in time for a Secondary CCPCH, it shall still be able to decode the same Secondary CCPCH when the processing requirement is consistent with the UE capability. Or if the UE does not support the number of TFs or the coding of a certain transport channel on a Secondary CCPCH, it shall still be able to decode other transport channels mapped on the same Secondary CCPCH that is consistent with what is supported by the UE.

#### 8.1.1.6.6 System Information Block type 6

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> replace the TFS of the RACH with the one stored in the UE if any;

- 1> let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink if UE is in CELL\_FACH state. If the IE "PRACH info" is not included, the UE shall read the corresponding IE(s) in System Information Block type 5 and use that information to configure the PRACH;
- 1> start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" when associated PRACH is used. If the IE "AICH info" is not included, the UE shall read the corresponding IE in System Information Block type 5 and use that information (FDD only);
- 1> replace the TFS of the FACH/PCH with the one stored in the UE if any;
- 1> select a Secondary CCPCH as specified in [4] and in subclause 8.5.19, and start to receive the physical channel of type PICH associated with the PCH carried by the selected Secondary CCPCH using the parameters given by the IE "PICH info" if the UE is in CELL\_PCH or URA\_PCH state. If the IE "PICH info" is not included, the UE shall read the corresponding IE in System Information Block type 5 and use that information;
- 1> start to monitor its paging occasions on the selected PICH if the UE is in CELL\_PCH or URA\_PCH state;
- 1> start to receive the selected physical channel of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info" if the UE is in CELL\_FACH state. If the IE "Secondary CCPCH info" is not included, the UE shall read the corresponding IE(s) in System Information Block type 5 and use that information;
- 1> in TDD: use the IE "TDD open loop power control" as defined in subclause 8.5.7;
- 1> in TDD: if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included, store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. For every configuration, for which the IE "SFN Time info" is included, the information shall be stored for the duration given there.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

If a UE is a 12 kbps class UE according to [35] and the UE has a lower capability than required to support all transport channel configurations mapped on a specific Secondary CCPCH, the UE shall at a certain time instant still be able to decode those transport channels mapped on this Secondary CCPCH that do match the capability supported by the UE. The UE shall use the TFCI bits for that Secondary CCPCH, to distinguish a transport channel configuration that is supported by the UE from a transport channel configuration that is not supported by the UE.

In particular if the UE is a 12 kbps class UE according to [35] and it does not support the processing requirement at a given point in time for a Secondary CCPCH, it shall still be able to decode the same Secondary CCPCH when the processing requirement is consistent with the UE capability. Or if the UE does not support the number of TFs or the coding of a certain transport channel on a Secondary CCPCH, it shall still be able to decode other transport channels mapped on the same Secondary CCPCH that is consistent with what is supported by the UE.

#### 8.1.1.6.7 System Information Block type 7

The UE should store all relevant IEs included in this system information block.

#### 8.1.1.6.8 System Information Block type 8

This system information block type is used only in FDD.

If in connected mode, the UE should store all relevant IEs included in this system information block.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

#### 8.1.1.6.9 System Information Block type 9

This system information block type is used only in FDD.

If in connected mode, the UE should store all relevant IEs included in the system information block. The UE shall:

- 1> start a timer set to the value given by the repetition period (SIB\_REP) for that system information block.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

#### 8.1.1.6.10 System Information Block type 10

This system information block type is used only in FDD.

If in state CELL\_DCH, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> start a timer set to the value given by the repetition period (SIB\_REP) for that system information block;
- 1> perform actions defined in subclause 14.8.

If in idle mode, state CELL\_FACH, state CELL\_PCH or state URA\_PCH, the UE shall not use the values of the IEs in this system information block.

#### 8.1.1.6.11 System Information Block type 11

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if in idle mode:
  - 2> clear the variable MEASUREMENT\_IDENTITY.
- 1> if IE "FACH measurement occasion info" is included:
  - 2> act as specified in subclause 8.6.7.
- 1> else:
  - 2> may perform inter-frequency/inter-RAT measurements or inter-frequency/inter-RAT cell re-selection evaluation, if the UE capabilities permit such measurements while simultaneously receiving the S-CCPCH of the serving cell.
- 1> clear the variable CELL\_INFO\_LIST;
- 1> act upon the received IE "Intra-frequency cell info list"/"Inter-frequency cell info list"/"Inter-RAT cell info list" as described in subclause 8.6.7.3;
- 1> if in idle mode; or
- 1> if in connected mode and if System Information Block type 12 is not broadcast in the cell:
  - 2> if no intra-frequency measurement was set up or modified through a MEASUREMENT CONTROL message:
    - 3> if included, store the IE "Intra-frequency reporting quantity" and the IE "Intra-frequency measurement reporting criteria" or "Periodical reporting criteria" in order to activate reporting when state CELL\_DCH is entered in the variable MEASUREMENT\_IDENTITY. The IE "Cells for measurement" is absent for this measurement. The IE "Measurement Validity" is absent for this measurement after a state transition to CELL\_DCH;
- 1> if in connected mode and if System Information Block type 12 is not broadcast in the cell:
  - 2> read the IE "Traffic volume measurement information";
  - 2> if no traffic volume measurement with the measurement identity indicated in the IE "Traffic volume measurement system information" was set up or modified through a MEASUREMENT CONTROL message:
    - 3> update the variable MEASUREMENT\_IDENTITY with the measurement information received in that IE.
- 1> if the IE "Cell selection and reselection info" is not included for a new neighbouring cell in the IE "intra-frequency cell info list", the IE "inter-frequency cell info list" or the IE "inter-RAT cell info list" in System Information Block type 11:
  - 2> use the default values specified for the IE "Cell selection and reselection info" for that cell except for the IE "HCS neighbouring cell information".
- 1> if the IE "Use of HCS" is set to "used", indicating that HCS is used, do the following:

- 2> if IE "HCS neighbouring cell information" is not included for the first new cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 11:
  - 3> use the default values specified for the IE "HCS neighbouring cell information" for that cell.
- 2> if IE "HCS neighbouring cell information" is not included for any other new cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 11:
  - 3> for that cell use the same parameter values as used for the preceding cell in the same cell info list in System Information Block type 11.
- 1> if the value of the IE "Cell selection and reselection quality measure" is different from the value of the IE "Cell selection and reselection quality measure" obtained from System Information Block type 3 or System Information Block type 4:
  - 2> use the value of the IE from this System Information Block and ignore the value obtained from System Information Block type 3 or System Information Block type 4.
- 1> if in connected mode, and System Information Block type 12 is indicated as used in the cell:
  - 2> read and act on information sent in System Information Block type 12 as indicated in subclause 8.1.1.6.12.

#### 8.1.1.6.12 System Information Block type 12

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> after reception of System Information Block type 11:
  - 2> update the variable MEASUREMENT\_IDENTITY with the measurement information in the received IEs unless specified otherwise.
- 1> if IE "FACH measurement occasion info" is included:
  - 2> act as specified in subclause 8.6.7.
- 1> else:
  - 2> may perform inter-frequency/inter-RAT measurements or inter-frequency/inter-RAT cell re-selection evaluation, if the UE capabilities permit such measurements while simultaneously receiving the S-CCPCH of the serving cell.
- 1> act upon the received IE "Intra-frequency cell info list"/"Inter-frequency cell info list"/"Inter-RAT cell info list" as described in subclause 8.6.7.3;
- 1> if any of the IEs "Intra-frequency measurement quantity", "Intra-frequency reporting quantity for RACH reporting", "Maximum number of reported cells on RACH" or "Reporting information for state CELL\_DCH" are not included in the system information block:
  - 2> read the corresponding IE(s) in system information block type 11 and use that information for the intra-frequency measurement.
- 1> if included in this system information block or in System Information Block type 11:
  - 2> if no intra-frequency measurement in the variable MEASUREMENT\_IDENTITY was set up or modified through a MEASUREMENT CONTROL message:
    - 3> store the IE "Intra-frequency reporting quantity" and the IE "Intra-frequency measurement reporting criteria" or "Periodical reporting criteria" in order to activate reporting when state CELL\_DCH is entered in the variable MEASUREMENT\_IDENTITY. The IE "Cells for measurement" is absent for this measurement. The IE "Measurement Validity" is absent for this measurement after a state transition to CELL\_DCH;
- 1> if the IE "Traffic volume measurement system information" is not included in this system information block:

- 2> read the corresponding IE in System Information Block type 11.
- 1> if the IE "Traffic volume measurement system information" was received either in this system information block or in System Information Block type 11:
  - 2> if no traffic volume measurement with the measurement identity indicated in the IE "Traffic volume measurement system information" was set up or modified through a MEASUREMENT CONTROL message:
    - 3> update the variable MEASUREMENT\_IDENTITY with the measurement information received in that IE.
- 1> if in CELL\_FACH state:
  - 2> start or continue the traffic volume measurements stored in the variable MEASUREMENT\_IDENTITY that are valid in CELL\_FACH state.
- 1> if the IE "Cell selection and reselection info" is not included for a new neighbouring cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 12:
  - 2> use the default values specified for the IE "Cell selection and reselection info" for that cell except for the IE "HCS neighbouring cell information".
- 1> if the IE "Use of HCS" is set to "used", indicating that HCS is used, do the following:
  - 2> if IE "HCS neighbouring cell information" is not included for the first new cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 12:
    - 3> use the default values specified for the IE "HCS neighbouring cell information" for that cell.
  - 2> if IE "HCS neighbouring cell information" is not included for any other new cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 12:
    - 3> for that cell use the same parameter values as used for the preceding cell in the same cell info list in System Information Block type 12.
- 1> if the value of the IE "Cell selection and reselection quality measure" is different from the value of the IE "Cell selection and reselection quality measure" obtained from System Information Block type 3 or System Information Block type 4:
  - 2> use the value of the IE from this System Information Block and ignore the value obtained from System Information Block type 3 or System Information Block type 4.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

#### 8.1.1.6.13 System Information Block type 13

If in idle or connected mode, the UE should store all relevant IEs included in this system information block except for the IEs "CN domain specific DRX cycle length coefficient", "UE timers and constants in idle mode" and "Capability update requirement" which shall be stored only in the idle mode case. The UE shall read System Information Block type 13 and the associated System Information Block types 13.1, 13.2, 13.3 and 13.4 only when the "PLMN Type" in the variable SELECTED\_PLMN has the value "ANSI-41" and the IE "PLMN type" in the Master Information Block has the value "ANSI-41" or "GSM-MAP and ANSI-41". The UE shall also:

- 1> forward the content of the IE "CN domain specific NAS system information" to the non-access stratum entity indicated by the IE "CN domain identity";
- 1> use the IE "CN domain specific DRX cycle length coefficient" to calculate frame number for the Paging Occasions and Page indicator as specified in [4].

Refer to TIA/EIA/IS-2000.5-A for actions on information contained in System Information Block types 13.1, 13.2, 13.3 and 13.4.



#### 8.1.1.6.14 System Information Block type 14

This system information block type is used only in TDD.

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> use the IE "UL Timeslot Interference" to calculate PRACH, DPCH and PUSCH transmit power for TDD uplink open loop power control as defined in subclause 8.5.7.

#### 8.1.1.6.15 System Information Block type 15

If the UE is in idle or connected mode, and supports GPS location services it should store all relevant IEs included in this system information block. The UE shall:

- 1> if the IE "GPS Data ciphering info" is included:
  - 1> act as specified in the subclause 8.6.7.19.4.- act upon the received IE "Reference position" as specified in subclause 8.6.7.19.3.8;
  - 1> act upon the received IE "GPS reference time" as specified in subclause 8.6.7.19.3.7;
- 1> if IE "Satellite information" is included:
  - 2> act upon this list of bad satellites as specified in subclause 8.6.7.19.3.6.

NOTE: For efficiency purposes, the UTRAN should broadcast System Information Block type 15 if it is broadcasting System Information Block type 15.2.

#### 8.1.1.6.15.1 System Information Block type 15.1

The UE should store all the relevant IEs included in this system information block in variable UE\_POSITIONING\_GPS\_DATA. The UE shall:

- 1> act on "DGPS information" in the IE "DGPS Corrections" in a similar manner as specified in [13] except that the scale factors for PRC and RRC are different;
- 1> act upon the received IE " UE Positioning GPS DGPS corrections" as specified in subclause 8.6.7.19.3.3.

In this version of the specification, the UE shall:

- 1> ignore the following IEs: "Delta PRC2", "Delta RRC2", "Delta PRC3" and "Delta RRC3".

#### 8.1.1.6.15.2 System Information Block type 15.2

For System Information Block type 15.2 multiple occurrences may be used; one occurrence for one satellite. To identify the different occurrences, the scheduling information for System Information Block type 15.2 includes IE "SIB occurrence identity and value tag". The UE should store all the relevant IEs included in this system information block in variable UE\_POSITIONING\_GPS\_DATA. The UE shall:

- 1> compare for each occurrence the value tag of the stored occurrence, if any, with the occurrence value tag included in the IE "SIB occurrence identity and value tag" for the occurrence of the SIB with the same occurrence identity;
- 1> in case the UE has no SIB occurrence stored with the same identity or in case the occurrence value tag is different:
  - 2> store the occurrence information together with its identity and value tag for later use.
- 1> in case an occurrence with the same identity but different value tag was stored:
  - 2> overwrite this one with the new occurrence read via system information for later use.
- 1> interpret IE "Transmission TOW" as a very coarse estimate of the current time, i.e., the approximate GPS time-of-week when the message is broadcast;
- 1> interpret IE "SatID" as the satellite ID of the data from which this message was obtained;

- 1> act upon the received IEs "Sat ID" and "GPS Ephemeris and Clock Corrections Parameter" as specified in subclause 8.6.7.19.3.4.

The IE "Transmission TOW" may be different each time a particular SIB occurrence is transmitted. The UTRAN should not increment the value tag of the SIB occurrence if the IE "Transmission TOW" is the only IE that is changed.

The UE may not need to receive all occurrences before it can use the information from any one occurrence.

#### 8.1.1.6.15.3 System Information Block type 15.3

For System Information Block type 15.3 multiple occurrences may be used; one occurrence for each set of satellite data. To identify the different occurrences, the scheduling information for System Information Block type 15.3 includes IE "SIB occurrence identity and value tag". The UE should store all the relevant IEs included in this system information block in variable UE\_POSITIONING\_GPS\_DATA. The UE shall:

- 1> compare for each occurrence the value tag of the stored occurrence, if any, with the occurrence value tag included in the IE "SIB occurrence identity and value tag" for the occurrence of the SIB with the same occurrence identity;
- 1> in case the UE has no SIB occurrence stored with the same identity or in case the occurrence value tag is different:
  - 2> store the occurrence information together with its identity and value tag for later use.
- 1> in case an occurrence with the same identity but different value tag was stored:
  - 2> overwrite this one with the new occurrence read via system information for later use.
- 1> interpret IE "Transmission TOW" as a very coarse estimate of the current time, i.e., the approximate GPS time-of-week when the message is broadcast;
- 1> if the IE "GPS Almanac and Satellite Health" is included:
  - 2> interpret IE "SatMask" as the satellites that contain the pages being broadcast in this message;
  - 2> interpret IE "LSB TOW" as the least significant 8 bits of the TOW ([12]);
  - 2> act upon the received IE "GPS Almanac and Satellite Health" as specified in subclause 8.6.7.19.3.2.
- 1> if the IE "GPS ionospheric model" is included:
  - 2> act upon the received IE "GPS ionospheric model" as specified in subclause 8.6.7.19.3.5.
- 1> if the IE "GPS UTC model" is included:
  - 2> act upon the received IE "GPS UTC model" as specified in subclause 8.6.7.19.3.9.

The IE "Transmission TOW" may be different each time a particular SIB occurrence is transmitted. The UTRAN should not increment the value tag of the SIB occurrence if the IE "Transmission TOW" is the only IE that is changed. One SIB occurrence value tag is assigned to the table of subclause 10.2.48.8.18.3.

The UE may not need to receive all occurrences before it can use the information for any one occurrence.

#### 8.1.1.6.15.4 System Information Block type 15.4

If the UE is in idle mode or connected mode, the UE shall:

- 1> if the IE "OTDOA Data ciphering info" is included:
  - 2> act as specified in subclause 8.6.7.19.4.

If the UE is in connected mode, the UE shall:

- 1> act as specified in subclause 8.6.7.19.2.

#### 8.1.1.6.15.5 System Information Block type 15.5

If the UE is in idle or connected mode, the UE shall:

- 1> if the UE supports UE-based OTDOA positioning:
  - 2> act as specified in subclause 8.6.7.19.2a.

#### 8.1.1.6.16 System Information Block type 16

For System Information Block type 16 multiple occurrences may be used; one occurrence for each predefined configuration. To identify the different predefined configurations, the scheduling information for System Information Block type 16 includes IE "Predefined configuration identity and value tag".

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> compare for each predefined configuration the value tag of the stored predefined configuration with the preconfiguration value tag included in the IE "Predefined configuration identity and value tag" for the occurrence of the SIB with the same predefined configuration identity;
- 1> in case the UE has no predefined configuration stored with the same identity or in case the predefined configuration value tag is different:
  - 2> store the predefined configuration information together with its identity and value tag for later use e.g. during handover to UTRAN.
- 1> in case a predefined configuration with the same identity but different value tag was stored:
  - 2> overwrite this one with the new configuration read via system information for later use e.g. during handover to UTRAN.

The above handling applies regardless of whether the previously stored predefined configuration information has been obtained via UTRA or via another RAT.

The UE is not required to complete reading of all occurrences of System Information Block type 16 before initiating RRC connection establishment.

The UE is not required to store more than maxPredefConfig preconfigurations even in the case of multiple equivalent PLMNs.

#### 8.1.1.6.17 System Information Block type 17

This system information block type is used only for TDD.

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included, store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. This information shall become invalid after the time specified by the repetition period (SIB\_REP) for this system information block.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

#### 8.1.1.6.18 System Information Block type 18

If the System Information Block type 18 is present, a UE may obtain knowledge of the PLMN identity of the neighbour cells to be considered for cell reselection, and may behave as specified in this subclause and in subclause 8.5.14a.

The UE should store all the relevant IEs included in this system information block.

A UE in idle mode shall act according to the following rules:

- 1> any PLMN list of a given type (IEs "PLMNs of intra-frequency cells list", "PLMNs of inter-frequency cells list", "PLMNs of inter-RAT cell lists") included in the IE "Idle mode PLMN identities" is paired with the list of cells of the same type derived from System Information Block type 11;
- 1> the PLMN identity located at a given rank in the PLMN list is that of the cell with the same ranking in the paired list of cells, the cells being considered in the increasing order of their associated identities ("Intra-frequency cell id", "Inter-frequency cell id", "Inter-RAT cell id");
- 1> if the number of identities in a PLMN list exceeds the number of neighbour cells in the paired list (if any), the extra PLMN identities are considered as unnecessary and ignored;
- 1> if the number of identities in a PLMN list (if any) is lower than the number of neighbour cells in the paired list, the missing PLMN identities are replaced by the last PLMN identity in the list if present, otherwise by the identity of the selected PLMN.

A UE in connected mode shall act in the same manner as a UE in idle mode with the following modifications:

- 1> the PLMN lists to be considered are the ones included, when present, in the IE "Connected mode PLMN identities"; otherwise, the UE shall use, in place of any missing list, the corresponding one in the IE "Idle mode PLMN identities";
- 1> the paired lists of cells are the ones derived from System Information Block type 11, and System Information Block type 12 if present.

### 8.1.1.7 Modification of system information

For System Information Block type 15.2, 15.3 and 16 that may have multiple occurrences, the UE shall handle each occurrence independently as specified in the previous; that is each occurrence is handled as a separate system information block.

**NOTE:** It should be noted that for the proper operation of the BCCH Modification Information sent on a PCH, the System Information should not be changed more frequently than can be accommodated by mobile stations operating at the maximum DRX cycle length supported by the UTRAN.

#### 8.1.1.7.1 Modification of system information blocks using a value tag

Upon modifications of system information blocks using value tags, UTRAN should notify the new value tag for the master information block in the IE "BCCH modification info", transmitted in the following way:

- 1> to reach UEs in idle mode, CELL\_PCH state and URA\_PCH state, the IE "BCCH modification info" is contained in a PAGING TYPE 1 message transmitted on the PCCH in all paging occasions in the cell;
- 1> to reach UEs in CELL\_FACH state or TDD UEs in CELL\_DCH with S-CCPCH assigned, the IE "BCCH modification info" is contained in a SYSTEM INFORMATION CHANGE INDICATION message transmitted on the BCCH mapped on at least one FACH on every Secondary CCPCH in the cell.

Upon reception of a PAGING TYPE 1 message or a SYSTEM INFORMATION CHANGE INDICATION message containing the IE "BCCH modification info" containing the IE "MIB value tag" but not containing the IE "BCCH modification time", the UE shall perform actions as specified in subclause 8.1.1.7.3.

If the IE "BCCH modification time" is included the UE shall perform actions as specified in subclause 8.1.1.7.2.

#### 8.1.1.7.2 Synchronised modification of system information blocks

For modification of some system information elements, e.g. reconfiguration of the channels, it is important for the UE to know exactly when a change occurs. In such cases, the UTRAN should notify the SFN when the change will occur as well as the new value tag for the master information block in the IE "BCCH modification info" transmitted in the following way:

- 1> To reach UEs in idle mode, CELL\_PCH state and URA\_PCH state, the IE "BCCH modification info" is contained in a PAGING TYPE 1 message transmitted on the PCCH in all paging occasions in the cell;

- 1> To reach UEs in CELL\_FACH state, the IE "BCCH modification info" is contained in a SYSTEM INFORMATION CHANGE INDICATION message transmitted on the BCCH mapped on at least one FACH on every Secondary CCPCH in the cell.

Upon reception of a PAGING TYPE 1 message or a SYSTEM INFORMATION CHANGE INDICATION message containing the IE "BCCH modification info" containing the IE "MIB value tag" and containing the IE "BCCH modification time", the UE shall:

- 1> perform the actions as specified in subclause 8.1.1.7.3 at the time, indicated in the IE "BCCH Modification Info".

#### 8.1.1.7.3 Actions upon system information change

The UE shall:

- 1> compare the value of IE "MIB value tag" in the IE "BCCH modification info" with the value tag stored for the master information block in variable VALUE\_TAG.
- 1> if the value tags differ:
  - 2> read the master information block on BCH;
  - 2> if the value tag of the master information block in the system information is the same as the value in IE "MIB value tag" in "BCCH modification info" but different from the value tag stored in the variable VALUE\_TAG:
    - 3> perform actions as specified in subclause 8.1.1.5.
  - 2> if the value tag of the master information block in the system information is the same as the value tag stored in the variable VALUE\_TAG:
    - 3> for the next occurrence of the master information block:
      - 4> perform actions as specified in subclause 8.1.1.7.3 again.
  - 2> if the value tag of the master information block in the system information is different from the value tag stored in the variable VALUE\_TAG, and is different from the value in IE "MIB value tag" in "BCCH modification info":
    - 3> perform actions as specified in subclause 8.1.1.5;
    - 3> if  $(VT_{CI} - VT_{MIB}) \bmod 8 < 4$ , where  $VT_{CI}$  is the value tag in the IE "MIB value tag" in "BCCH modification info" and  $VT_{MIB}$  is the value tag of the master information block in the system information:
      - 4> for the next occurrence of the master information block:
        - 5> perform actions as specified in subclause 8.1.1.7.3 again.

#### 8.1.1.7.4 Actions upon expiry of a system information expiry timer

When the expiry timer of a system information block not using a value tag expires

the UE shall:

- 1> consider the content of the system information block invalid;
- 1> re-acquire the system information block again before the content can be used;

In FDD for system information blocks other than System Information Block type 7, or in states other than CELL\_FACH, or in TDD for system information blocks other than System Information Block type 14, or in states other than CELL\_FACH or CELL\_DCH the UE may:

- 1> postpone reading the system information block until the content is needed.

In FDD for System Information Block type 7, while in state CELL\_FACH, and in TDD for System Information Block type 14, while in state CELL\_FACH or CELL\_DCH the UE should always keep an up to date version of the relevant IEs, unless this is not possible because system information can not be received due to bad radio conditions.

## 10.2.49 SYSTEM INFORMATION CHANGE INDICATION

This message is used to send information on FACH to the UEs in state CELL\_FACH [or CELL\\_DCH\(TDD only\)](#) about coming modification of the system information.

RLC-SAP: TM

Logical channel: BCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>Other information elements</b>				
BCCH modification info	MP		BCCH modification info 10.3.8.1	

If the encoded message does not fill a transport block, the RRC layer shall insert padding according to subclause 12.1.

CR-Form-v7

## CHANGE REQUEST

# 25.331 CR 2301 # rev - # Current version: 4.13.0 #

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the # symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	# Correction on System Information in TDD		
<b>Source:</b>	# RAN WG2		
<b>Work item code:</b>	# TEI	<b>Date:</b>	# 10/05/2004
<b>Category:</b>	# <b>A</b>	<b>Release:</b>	# Rel-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

<b>Reason for change:</b>	# The need to read system information and to indicate system information changing in CELL_DCH state for TDD UE has already been clearly clarified in the specification, while some oversights remain to be corrected.
<b>Summary of change:</b>	# 1. SYSTEM INFORMATION CHANGE INDICATE was corrected to be available in CELL_DCH state for TDD UE in figure 8.1.1-3 and 10.2.49. 2. Table 8.1.1 was corrected to add availability of MIB, scheduling block 1 or 2 in CELL_DCH state for TDD UE only.
<b>Consequences if not approved:</b>	# For the TDD mode, ambiguities related to the validity and availability of MIB and SYSTEM INFORMATION CHANGE INDICATION in CELL_DCH will remain. The TDD UE might have no access to some system information blocks. The TDD UE could use sytem information different than the one meant by the network. The UE may hence behave in an indeterministic way.  <u>Isolated impact analysis:</u> Since this CR corrects the functionality where the specification was ambiguous or not sufficiently explicit, it would not affect implementations behaving like indicated in this CR, but would affect implementations supporting the corrected functionality otherwise.

<b>Clauses affected:</b>	# 8.1.1, 10.2.49								
<b>Other specs affected:</b>	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">#</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">#</td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	#	X	#	X	Other core specifications	#
Y	N								
#	X								
#	X								
		Test specifications	#						

**Other comments:** ⌘

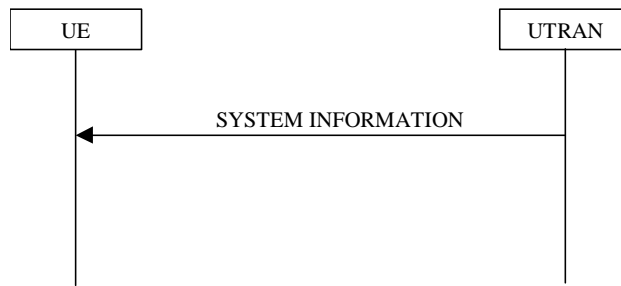
**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

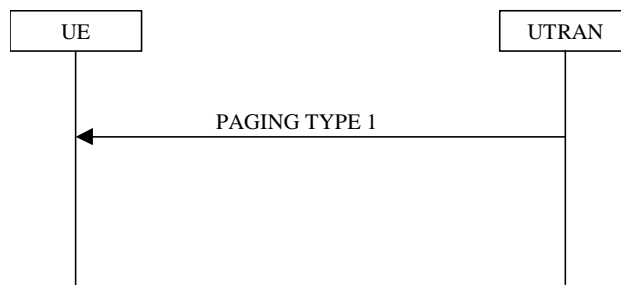
- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.



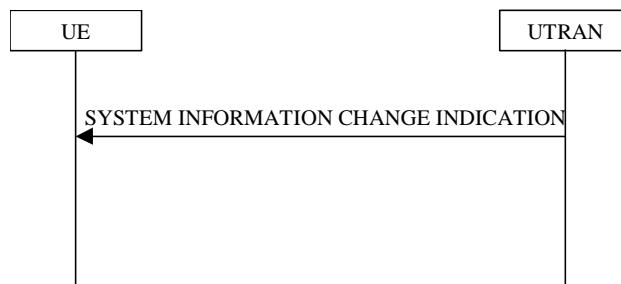
## 8.1.1 Broadcast of system information



**Figure 8.1.1-1: Broadcast of system information**



**Figure 8.1.1-2: Notification of system information modification for UEs in idle mode, CELL\_PCH state and URA\_PCH state**



**Figure 8.1.1-3: Notification of system information modification for UEs in CELL\_FACH [and CELL\\_DCH\(TDD only\)](#) state**

### 8.1.1.1 General

The purpose of this procedure is to broadcast system information from the UTRAN to UEs in a cell.

#### 8.1.1.1.1 System information structure

The system information elements are broadcast in *system information blocks*. A system information block groups together system information elements of the same nature. Different system information blocks may have different characteristics, e.g. regarding their repetition rate and the requirements on UEs to re-read the system information blocks.

The system information is organised as a tree. A *master information block* gives references and scheduling information to a number of system information blocks in a cell. The system information blocks contain the actual system information. The master information block may optionally also contain reference and scheduling information to one or two *scheduling blocks*, which give references and scheduling information for additional system information blocks. Scheduling information for a system information block may only be included in either the master information block or one of the scheduling blocks.

For all system information blocks except System Information Block types 15.2, 15.3 and 16, the content is the same in each occurrence for system information blocks using value tag. System Information Block types 15.2, 15.3 and 16 may

occur more than once with different content. In this case scheduling information is provided for each such occurrence of the system information block. System information blocks that do not use value tag may have different content for each occurrence.

#### 8.1.1.1.2 System information blocks

Table 8.1.1 specifies all system information blocks and their characteristics.

The *area scope column* in table 8.1.1 specifies the area where a system information block's value tag is valid. If the area scope is *cell*, the UE shall consider the system information block to be valid only in the cell in which it was read. If system information blocks have been previously stored for this cell, the UE shall check whether the value tag for the system information block in the entered cell is different compared to the stored value tag. If the area scope is *PLMN* or *Equivalent PLMN*, the UE shall check the value tag for the system information block when a new cell is selected. If the value tag for the system information block in the new cell is different compared to the value tag for the system information block stored in the UE, the UE shall re-read the system information block. If the area scope is *PLMN*, the UE shall consider the system information block to be valid only within the PLMN in which it was read. If the area scope is *Equivalent PLMN*, the UE shall consider the system information block to be valid within the PLMN in which it was received and all PLMNs which are indicated by higher layers to be equivalent.

For System information block types 15.2, 15.3 and 16, which may have multiple occurrences, each occurrence has its own independent value tag. The UE shall re-read a particular occurrence if the value tag of this occurrence has changed compared to that stored in the UE.

The *UE mode/state column when block is valid* in Table 8.1.1 specifies in which UE mode or UE state the IEs in a system information block shall be regarded as valid by the UE. In other words, the indicated system information block becomes invalid upon change to a mode/state that is not included in this column. System Information Block Type 16 remains also valid upon transition to or from GSM/GPRS. In some cases, the states are inserted in brackets to indicate that the validity is dependent on the broadcast of the associated System Information Blocks by the network as explained in the relevant procedure subclause.

The *UE mode/state column when block is read* in Table 8.1.1 specifies in which UE mode or UE state the IEs in a system information block may be read by the UE. The UE shall have the necessary information prior to execution of any procedure requiring information to be obtained from the appropriate system information block. The requirements on the UE in terms of when to read the system information may therefore be derived from the procedure specifications that specify which IEs are required in the different UE modes/states in conjunction with the different performance requirements that are specified. System Information Block type 10 shall only be read by the UE while in CELL\_DCH.

The UE shall:

- 1> if System Information Block type 11 is referenced in the master information block or in the scheduling blocks:
  - 2> if System Information Block type 12 is not referenced in the master information block or in the scheduling blocks, or broadcast of System Information Block type 12 is not indicated in System Information Block type 11:
    - 3> have read and acted upon System Information Block type 11 in a cell when the UE transmits an RRC message on RACH.
  - 2> else:
    - 3> have read and acted upon System Information Block type 11 in a cell before the UE transmits the RRC CONNECTION REQUEST message;
    - 3> have read and acted upon both System Information Block type 11 and System Information Block type 12 in a cell when:
      - 4> the UE transmits an RRC message on RACH in RRC connected mode; or
      - 4> the UE receives a message commanding to enter Cell\_DCH state.

NOTE 1: There are a number of system information blocks that include the same IEs while the UE mode/state in which the information is valid differs. This approach is intended to allow the use of different IE values in different UE mode/states.

NOTE 2: System Information Block Type 16 is also obtained by a UE while in GSM/GPRS. The details of this are not within the scope of this specification.

The *Scheduling information* column in table 8.1.1 specifies the position and repetition period for the SIB.

The *modification of system information* column in table 8.1.1 specifies the update mechanisms applicable for a certain system information block. For system information blocks with a value tag, the UE shall update the information according to subclause 8.1.1.7.1 or 8.1.1.7.2. For system information blocks with an expiration timer, the UE shall, when the timer expires, perform an update of the information according to subclause 8.1.1.7.4.

**Table 8.1.1: Specification of system information block characteristics**

System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
Master information block	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	SIB_POS = 0 SIB_REP = 8 (FDD) SIB_REP = 8, 16, 32 (TDD) SIB_OFF=2	Value tag	
Scheduling block 1	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Specified by the IE "Scheduling information" in MIB	Value tag	
Scheduling block 2	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Specified by the IE "Scheduling information" in MIB	Value tag	
System information block type 1	PLMN	Idle mode CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 2	Cell	URA_PCH	URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 3	Cell	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH)	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH)	Specified by the IE "Scheduling information"	Value tag	
System information block type 4	Cell	CELL_FACH, CELL_PCH, URA_PCH	CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	If System information block type 4 is not broadcast in a cell, the connected mode UE shall apply information in System information block type 3 in connected mode.
System information block type 5	Cell	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only))	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only))	Specified by the IE "Scheduling information"	Value tag	

System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
System information block type 6	Cell	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	Specified by the IE "Scheduling information"	Value tag	<p>If system information block type 6 is not broadcast in a cell, the connected mode UE shall read System information block type 5.</p> <p>If some of the optional IEs are not included in System information block type 6, the UE shall read the corresponding IEs in System information block type 5</p> <p>In TDD mode system information block 6 shall only be read in CELL_DCH if required for open loop power control as specified in subclause 8.5.7 and/or if shared transport channels are assigned to the UE. If in these cases system information block type 6 is not broadcast the UE shall read system information block type 5.</p>
System information block type 7	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	Specified by the IE "Scheduling information"	Expiration timer = MAX(32, SIB_REP * ExpirationTimeFactor)	In TDD mode system information block type 7 shall only be read in CELL_DCH if shared transport channels are assigned to the UE.
System information block type 8	Cell	CELL_FACH, CELL_PCH, URA_PCH	CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 9	Cell	CELL_FACH, CELL_PCH, URA_PCH	CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	
System information block type 10	Cell	CELL_DCH	CELL_DCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	
System information block type 11	Cell	Idle mode (CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH)	Idle mode (CELL_FACH, CELL_PCH, URA_PCH)	Specified by the IE "Scheduling information"	Value tag	

System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
System information block type 12	Cell	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	If system information block type 12 is not broadcast in a cell, the connected mode UE shall read System information block type 11. If some of the optional IEs are not included in System information block type 12, the UE shall read the corresponding IEs in System information block type 11.
System information block type 13	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.1	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.2	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.3	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.4	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 14	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Specified by the IE "Scheduling information"	Expiration timer = MAX(32, SIB_REP * ExpirationTimeFactor)	This system information block is used in TDD mode only. System information block type 14 shall only be read in CELL_DCH if required for open loop power control as specified in subclause 8.5.7.
System information block type 15	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 15.1	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 15.2	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	For this system information block there may be multiple occurrences
System information block type 15.3	PLMN	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	For this system information block there may be multiple occurrences

System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
System information block type 15.4	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 15.5	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 16	Equivalent PLMN	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	For this system information block there may be multiple occurrences. This system information block is also valid while in GSM/GPRS.
System information block type 17	Cell	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	This system information block is used in TDD mode only. System information block type 17 shall only be read if shared transport channels are assigned to the UE.
System Information Block type 18	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	

The UE shall acquire all system information blocks except system information block type 10 on BCH. System Information Block type 10 shall be acquired on the FACH and only by UEs with support for simultaneous reception of one SCCPCH and one DPCH. If System Information Block type 10 is not broadcast in a cell, the DRAC procedures do not apply in this cell. System Information Block type 10 is used in FDD mode only.

#### 8.1.1.1.3 Segmentation and concatenation of system information blocks

A generic SYSTEM INFORMATION message is used to convey the system information blocks on the BCCH. A given BCCH may be mapped onto either a BCH or a FACH transport channel according to subclause 8.1.1.1.2. The size of the SYSTEM INFORMATION message shall fit the size of a BCH or a FACH transport block.

The RRC layer in UTRAN performs segmentation and concatenation of encoded system information blocks. If the encoded system information block is larger than the size of a SYSTEM INFORMATION message, it will be segmented and transmitted in several messages. If the encoded system information block is smaller than a SYSTEM INFORMATION message, UTRAN may concatenate several system information blocks, or the first segment or the last segment into the same message as specified in the remainder of this clause.

Four different segment types are defined:

- First segment;
- Subsequent segment;
- Last segment;
- Complete.

Each of the types - *First*, *Subsequent* and *Last segment* - is used to transfer segments of a master information block, scheduling block or a system information block. The segment type, *Complete*, is used to transfer a complete master information block, complete scheduling block or a complete system information block.

Each segment consists of a header and a data field. The data field carries the encoded system information elements. The header contains the following parameters:

- The number of segments in the system information block (SEG\_COUNT). This parameter is only included in the header if the segment type is "First segment".
- SIB type. The SIB type uniquely identifies the master information block, scheduling block or a system information block.
- Segment index. This parameter is only included in the header if the segment type is "Subsequent segment" or "Last segment".

UTRAN may combine one or several segments of variable length in the same SYSTEM INFORMATION message. The following combinations are allowed:

1. No segment;
2. First segment;
3. Subsequent segment;
4. Last segment;
5. Last segment + First segment;
6. Last segment + one or several Complete;
7. Last segment + one or several Complete + First segment;
8. One or several Complete;
9. One or several Complete + First segment;
10. One Complete of size 215 to 226;
11. Last segment of size 215 to 222.

The "No segment" combination is used when there is no master information block, scheduling block or system information block scheduled for a specific BCH transport block.

UEs are not required to support the reception of multiple occurrences of the same system information block type within one SYSTEM INFORMATION message.

**NOTE:** Since the SIB type is the same for each occurrence of the system information block, the UE does not know the order in which the occurrences, scheduled for this SYSTEM INFORMATION message, appear. Therefore, the UE is unable to determine which scheduling information, e.g., value tag relates to which occurrence of the system information block.

#### 8.1.1.1.4 Re-assembly of segments

The RRC layer in the UE shall perform re-assembly of segments. All segments belonging to the same master information block, scheduling block or system information block shall be assembled in ascending order with respect to the segment index. When all segments of the master information block, scheduling block or a system information block have been received, the UE shall perform decoding of the complete master information block, scheduling block or system information block. For System Information Block types 15.2, 15.3 and 16, which may have multiple occurrences, each occurrence shall be re-assembled independently.

The UE shall discard system information blocks of which segments were missing, of which segments were received out of sequence and/or for which duplicate segments were received. The only valid sequence is an ascending one with the sequence starting with the First Segment of the associated System Information Block.

If the UE receives a Subsequent segment or Last segment where the index in IE "Segment index" is equal to or larger than the number of segments stated in IE "SEG\_COUNT" in the scheduling information for that scheduling block or system information block:

- 1> the UE may:
  - 2> read all the segments to create a system information block as defined by the scheduling information read by the UE;
  - 2> store the content of the system information block with a value tag set to the value NULL; and
  - 2> consider the content of the scheduling block or system information block as valid:
    - 3> until it receives the same type of scheduling block or system information block in a position according to its scheduling information; or
    - 3> at most for 6 hours after reception.
- 1> and the UE shall:
  - 2> re-read scheduling information for that scheduling block or system information block.

If the UE receives a Subsequent segment or Last segment where the index in IE "Segment index" is equal to or larger than the number of segments stated in IE "SEG\_COUNT" in the First segment, the UE shall

- 1> discard all segments for that master information block, scheduling block or system information block; and
- 1> re-read the scheduling information for that system information block;
- 1> then re-read all segments for that system information block.

#### 8.1.1.1.5 Scheduling of system information

Scheduling of system information blocks is performed by the RRC layer in UTRAN. If segmentation is used, it should be possible to schedule each segment separately.

To allow the mixing of system information blocks with short repetition period and system information blocks with segmentation over many frames, UTRAN may multiplex segments from different system information blocks. Multiplexing and de-multiplexing is performed by the RRC layer.

The scheduling of each system information block broadcast on a BCH transport channel is defined by the following parameters:

- the number of segments (SEG\_COUNT);
- the repetition period (SIB\_REP). The same value applies to all segments;
- the position (phase) of the first segment within one cycle of the Cell System Frame Number (SIB\_POS(0)). Since system information blocks are repeated with period SIB\_REP, the value of SIB\_POS(*i*), *i* = 0, 1, 2, ... SEG\_COUNT-1 must be less than SIB\_REP for all segments;
- the offset of the subsequent segments in ascending index order (SIB\_OFF(*i*), *i* = 1, 2, ... SEG\_COUNT-1). The position of the subsequent segments is calculated using the following: SIB\_POS(*i*) = SIB\_POS(*i*-1) + SIB\_OFF(*i*).

The scheduling is based on the Cell System Frame Number (SFN). The SFN of a frame at which a particular segment, *i*, with *i* = 0, 1, 2, ... SEG\_COUNT-1 of a system information block occurs, fulfils the following relation:

$$\text{SFN mod SIB\_REP} = \text{SIB\_POS}(i)$$

In FDD and TDD the scheduling of the master information block is fixed as defined in table 8.1.1. For TDD, UTRAN may apply one of the values allowed for the master information block's repetition period. The value that UTRAN is using in TDD is not signalled; UEs have to determine it by trial and error.



### 8.1.1.2 Initiation

The system information is continuously broadcast on a regular basis in accordance with the scheduling defined for each system information block.

### 8.1.1.3 Reception of SYSTEM INFORMATION messages by the UE

The UE shall read SYSTEM INFORMATION messages broadcast on a BCH transport channel in idle mode and in the connected mode in states CELL\_FACH, CELL\_PCH, URA\_PCH and CELL\_DCH (TDD only). In addition, UEs in FDD mode which support simultaneous reception of one SCCPCH and one DPCH shall read system information on a FACH transport channel when in CELL\_DCH state.

In idle mode and connected mode different combinations of system information blocks are valid. The UE shall acquire the system information blocks that are needed according to table 8.1.1.

The UE may store system information blocks with *cell*, *PLMN* or *Equivalent PLMN* area scope (including their value tag if applicable) for different cells and different PLMNs, to be used if the UE returns to these cells.

The UE shall consider all stored system information blocks as invalid after it has been switched off. Some information obtained from system information may be stored by the UE or in the USIM for use in a stored information cell selection.

When selecting a new cell within the currently used PLMN, the UE shall consider all current system information blocks with area scope *cell* to be invalid. If the UE has stored valid system information blocks for the newly selected cell, the UE may set those as current system information blocks.

After selecting a new PLMN, the UE shall consider all current system information blocks with area scope *cell* and *PLMN* to be invalid. If the UE has previously stored valid system information blocks for the selected cell of the new PLMN, the UE may set those as current system information blocks. Upon selection of a new PLMN the UE shall store all information elements specified within variable SELECTED\_PLMN for the new PLMN within this variable.

After selecting a new PLMN which is not indicated by higher layers to be equivalent to the identity of the previously selected PLMN, the UE shall consider all system information blocks with area scope *Equivalent PLMN* to be invalid.

### 8.1.1.4 Reception of SYSTEM INFORMATION messages broadcast on a FACH transport channel

System information block type 10 may be broadcast on FACH, as specified in subclause 8.1.1.1.2.

When reading system information blocks on FACH, the UE shall perform the actions as defined in subclause 8.1.1.6.

### 8.1.1.5 Actions upon reception of the Master Information Block and Scheduling Block(s)

When selecting a new cell, the UE shall read the master information block. The UE may use the pre-defined scheduling information to locate the master information block in the cell.

Upon reception of the master information block, the UE shall:

- 1> if the "PLMN type" in the variable SELECTED\_PLMN has the value "GSM-MAP" and the IE "PLMN Type" has the value "GSM-MAP" or "GSM-MAP and ANSI-41":
  - 2> check the IE "PLMN identity" in the master information block and verify that it is the selected PLMN, stored as "PLMN identity" in the variable SELECTED\_PLMN.
- 1> if the "PLMN type" in the variable SELECTED\_PLMN has the value "ANSI-41" and the IE "PLMN Type" has the value "ANSI-41" or "GSM-MAP and ANSI-41":
  - 2> store the ANSI-41 Information elements contained in the master information block and perform initial process for ANSI-41.
- 1> compare the value tag in the master information block with the value tag stored for this cell and this PLMN in the variable VALUE\_TAG;

- 1> if the value tags differ, or if no IEs for the master information block are stored:
  - 2> store the value tag into the variable VALUE\_TAG for the master information block;
  - 2> read and store scheduling information included in the master information block.
- 1> if the value tags are the same the UE may use stored system information blocks and scheduling blocks using value tag that were stored for this cell and this PLMN as valid system information.

For all system information blocks or scheduling blocks that are supported by the UE referenced in the master information block or the scheduling blocks, the UE shall perform the following actions:

- 1> for all system information blocks with area scope "PLMN" or "Equivalent PLMN" that use value tags:
  - 2> compare the value tag read in scheduling information for that system information block with the value stored within the variable VALUE\_TAG for that system information block;
  - 2> if the value tags differ, or if no IEs for the corresponding system information block are stored:
    - 3> store the value tag read in scheduling information for that system information block into the variable VALUE\_TAG;
    - 3> read and store the IEs of that system information block.
  - 2> if the value tags are the same the UE may use stored system information blocks using value tag that were stored in this PLMN as valid system information.
- 1> for all system information blocks or scheduling blocks with area scope cell that use value tags:
  - 2> compare the value tag read in scheduling information for that system information block or scheduling block with the value stored within the variable VALUE\_TAG for that system information block or scheduling block;
  - 2> if the value tags differ, or if no IEs for the corresponding system information block or scheduling block are stored:
    - 3> store the value tag read in scheduling information for that system information block or scheduling block into the variable VALUE\_TAG;
    - 3> read and store the IEs of that system information block or scheduling block.
  - 2> if the value tags are the same the UE may use stored system information blocks using value tags that were stored for this cell and this PLMN as valid system information.
- 1> for system information blocks which may have multiple occurrences:
  - 2> compare the value tag and the configuration or multiple occurrence identity for the occurrence of the system information blocks read in scheduling information with the value tag and configuration or multiple occurrence identity stored within the variable VALUE\_TAG:
    - 3> if the value tags differ, or if no IEs from the occurrence with that configuration or multiple occurrence identity of the system information block are stored:
      - 4> store the value tag read in scheduling information for that system information block and the occurrence with that configuration or multiple occurrence identity into the variable VALUE\_TAG;
      - 4> read and store the IEs of that system information block.
    - 3> if the value tags and the configuration or multiple occurrence identity are identical to those stored, the UE may use stored occurrences of system information blocks that were stored for this cell and this PLMN as valid system information.

For system information blocks, not supported by the UE, but referenced either in the master information block or in the scheduling blocks, the UE may:

- 1> skip reading this system information block;
- 1> skip monitoring changes to this system information block.

If the UE:

- 1> receives a scheduling block at a position different from its position according to the scheduling information for the scheduling block; or
- 1> receives a scheduling block for which scheduling information has not been received:

the UE may:

- 1> store the content of the scheduling block with a value tag set to the value NULL; and
- 1> consider the content of the scheduling block as valid until it receives the same type of scheduling block in a position according to its scheduling information or at most for 6 hours after reception.

If the UE does not find a scheduling block in a position where it should be according to its scheduling information, but a transport block with correct CRC was found at that position, the UE shall:

- 1> read the scheduling information for this scheduling block.

If the UE does not find the master information block in a position fulfilling:

$$\text{SFN mod } 32 = 0$$

but a transport block with correct CRC was found at that position), the UE shall:

- 1> consider the master information block as not found; and
- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

NOTE: This permits a different repetition for the MIB in later versions for FDD. In TDD it allows for a variable SIB\_REP in this and future releases.

If system information block type 1 is not scheduled on BCH, and system information block type 13 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If the UE only supports GSM-MAP but finds a cell that broadcasts System Information Block type 13 but not System Information Block type 1, the UE shall:

- 1> consider the cell barred.

If:

- system information block type 1 is not scheduled on BCH; and
- the "PLMN Type" in the variable SELECTED\_PLMN has the value "GSM-MAP"; and
- the IE "PLMN type" in the Master Information Block has the value "GSM-MAP" or "GSM-MAP and ANSI-41":

the UE shall:

- 1> indicate to upper layers that no CN system information is available.

If in idle mode and System Information Block type 3 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If in connected mode and System Information Block type 3 is not scheduled on BCH, and System Information Block type 4 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If in idle mode and System Information Block type 5 is not scheduled on BCH or System Information Block type 5 is scheduled but IE "AICH info" (FDD) or IE "PICH info" is not present, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If in connected mode and System Information Block type 5 is not scheduled on BCH, and System Information Block type 6 is not scheduled on BCH, or any of System Information Block type 5 or type 6 is scheduled but IE "AICH info" (FDD) or IE "PICH info" is not present, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If System Information Block type 7 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

In TDD, if System Information Block type 14 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

### 8.1.1.6 Actions upon reception of system information blocks

The UE may use the scheduling information included within the master information block and the scheduling blocks to locate each system information block to be acquired.

The UE should only expect one occurrence of the scheduling information for a system information block in the master information block and any of the scheduling blocks except for System Information Block type 16, System Information Block type 15.2 and System Information Block type 15.3, which may have multiple occurrences. However, to enable future introduction of new system information blocks, the UE shall also be able to receive system information blocks other than the ones indicated within the scheduling information. The UE may ignore contents of such system information block.

If the UE:

- 1> receives a system information block in a position according to the scheduling information for the system information block; and
- 1> this system information block uses a value tag; or
- 1> this system information block uses a value tag and configuration or multiple occurrence identity:

the UE shall:

- 1> store the content of the system information block together with the value of its value tag or the values of configuration and multiple occurrence identity and the associated value tag in the scheduling information for the system information block; and
- 1> consider the content of the system information block valid until, if used, the value tag in the scheduling information for the system information block is changed or at most for 6 hours after reception.

If the UE:

- 1> receives a system information block in a position according to the scheduling information for the system information block; and
- 1> this system information block does not use a value tag according to the system information block type:

the UE shall:

- 1> store the content of the system information block; and
- 1> start an expiration timer using a value as defined in Table 8.1.1 for that system information block type; and
- 1> consider the content of the system information block valid until, the expiration timer expires.

If the UE:

- 1> receives a system information block at a position different from its position according to the scheduling information for the system information block; or
- 1> receives a system information block for which scheduling information has not been received; and
- 1> this system information block uses a value tag:

the UE may:

- 1> store the content of the system information block with a value tag set to the value NULL; and
- 1> consider the content of the system information block as valid until it receives the same type of system information block in a position according to its scheduling information or at most for 6 hours after reception.

If the UE:

- 1> receives a system information block with multiple occurrences at a position different from its position according to the scheduling information for the system information block; or
- 1> receives a system information block with multiple occurrences for which scheduling information has not been received; and
- 1> this system information block uses a value tag and configuration or multiple occurrence identity:

the UE shall:

- 1> ignore this information.

If the UE does not find a system information block in a position where it should be according to its scheduling information, but a transport block with correct CRC was found at that position, the UE shall read the scheduling information for this system information block.

The UE shall act upon all received information elements as specified in subclause 8.6 unless specified otherwise in the following subclauses.

### 8.1.1.6.1 System Information Block type 1

The UE should store all relevant IEs included in this system information block if the "PLMN Type" in the variable SELECTED\_PLMN has the value "GSM-MAP" and the IE "PLMN type" in the Master Information Block has the value "GSM-MAP" or "GSM-MAP and ANSI-41". The UE shall also:

- 1> check that the cell, according to information included in IE "CN common GSM-MAP NAS system information", is suitable [4];
- 1> if in connected mode:
  - 2> not forward the content of the IE "CN common GSM-MAP NAS system information" to upper layers.
- 1> if in idle mode:
  - 2> forward the content of the IE "CN common GSM-MAP NAS system information" to upper layers.
- 1> for the IE "CN domain system information list":
  - 2> for each IE "CN domain system information" that is present:
    - 3> check that the cell, according to information included in IE "CN domain specific NAS system information", is suitable [4];
    - 3> if in connected mode:
      - 4> not forward the content of the IE "CN domain specific NAS system information" to upper layers.
    - 3> if in idle mode:
      - 4> forward the content of the IE "CN domain specific NAS system information" and the IE "CN domain identity" to upper layers;
      - 4> use the IE "CN domain specific DRX cycle length coefficient" to calculate frame number for the Paging Occasions as specified in [4];
      - 4> store the value of the IE "CN domain specific DRX cycle length coefficient" for use in connected mode.
  - 2> if an IE "CN domain system information" is not present for a particular CN domain:
    - 3> indicate to upper layers that no CN system information is available for that CN domain.
- 1> if the UE has not yet entered UTRA RRC connected mode:
  - 2> store the values of the IE "UE Timers and constants in connected mode" in the variable TIMERS\_AND\_CONSTANTS.
- 1> use the values stored in the variable TIMERS\_AND\_CONSTANTS for the relevant timers and constants.

### 8.1.1.6.2 System Information Block type 2

If in connected mode the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if in state URA\_PCH, start to perform URA updates using the information in the IE "URA identity".

If in idle mode, the UE shall not use the values of the IEs in this system information block.

### 8.1.1.6.3 System Information Block type 3

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if in connected mode, and System Information Block 4 is indicated as used in the cell:
  - 2> read and act on information sent in that block.

#### 8.1.1.6.4 System Information Block type 4

If in connected mode, the UE should store all relevant IEs included in this system information block.

If in idle mode, the UE shall not use the values of the IEs included in this system information block.

#### 8.1.1.6.5 System Information Block type 5

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if in connected mode, and System Information Block type 6 is indicated as used in the cell:
  - 2> read and act on information sent in System Information Block type 6.
- 1> replace the TFS of the RACH with the one stored in the UE if any;
- 1> let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink for the PRACH if UE is in CELL\_FACH state;
- 1> use the first instance of the list of transport formats as in the IE "RACH TFS" for the used RACH received in the IE "PRACH system information list" when using the CCCH;
- 1> start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" (FDD only) when given allocated PRACH is used;
- 1> replace the TFS of the FACH/PCH with the one stored in the UE if any;
- 1> select a Secondary CCPCH as specified in [4] and in subclause 8.5.19, and start to receive the physical channel of type PICH associated with the PCH carried by the selected Secondary CCPCH using the parameters given by the IE "PICH info" if UE is in Idle mode or in CELL\_PCH or URA\_PCH state;
- 1> start to monitor its paging occasions on the selected PICH if UE is in Idle mode or in CELL\_PCH or URA\_PCH state;
- 1> start to receive the selected physical channel of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info" if UE is in CELL\_FACH state;
- 1> in TDD:
  - 2> use the IE "TDD open loop power control" as defined in subclause 8.5.7 when allocated PRACH is used;
  - 2> if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included:
    - 3> store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. For every configuration, for which the IE "SFN Time info" is included, the information shall be stored for the duration given there.

If a UE is a 12 kbps class UE according to [35] and the UE has a lower capability than required to support all transport channel configurations mapped on a specific Secondary CCPCH, the UE shall at a certain time instant still be able to decode those transport channels mapped on this Secondary CCPCH that do match the capability supported by the UE. The UE shall use the TFCI bits for that Secondary CCPCH, to distinguish a transport channel configuration that is supported by the UE from a transport channel configuration that is not supported by the UE.

In particular if the UE is a 12 kbps class UE according to [35] and it does not support the processing requirement at a given point in time for a Secondary CCPCH, it shall still be able to decode the same Secondary CCPCH when the processing requirement is consistent with the UE capability. Or if the UE does not support the number of TFs or the coding of a certain transport channel on a Secondary CCPCH, it shall still be able to decode other transport channels mapped on the same Secondary CCPCH that is consistent with what is supported by the UE.

#### 8.1.1.6.6 System Information Block type 6

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> replace the TFS of the RACH with the one stored in the UE if any;

- 1> let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink if UE is in CELL\_FACH state. If the IE "PRACH info" is not included, the UE shall read the corresponding IE(s) in System Information Block type 5 and use that information to configure the PRACH;
- 1> start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" when associated PRACH is used. If the IE "AICH info" is not included, the UE shall read the corresponding IE in System Information Block type 5 and use that information (FDD only);
- 1> replace the TFS of the FACH/PCH with the one stored in the UE if any;
- 1> select a Secondary CCPCH as specified in [4] and in subclause 8.5.19, and start to receive the physical channel of type PICH associated with the PCH carried by the selected Secondary CCPCH using the parameters given by the IE "PICH info" if the UE is in CELL\_PCH or URA\_PCH state. If the IE "PICH info" is not included, the UE shall read the corresponding IE in System Information Block type 5 and use that information;
- 1> start to monitor its paging occasions on the selected PICH if the UE is in CELL\_PCH or URA\_PCH state;
- 1> start to receive the selected physical channel of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info" if the UE is in CELL\_FACH state. If the IE "Secondary CCPCH info" is not included, the UE shall read the corresponding IE(s) in System Information Block type 5 and use that information;
- 1> in TDD: use the IE "TDD open loop power control" as defined in subclause 8.5.7;
- 1> in TDD: if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included, store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. For every configuration, for which the IE "SFN Time info" is included, the information shall be stored for the duration given there.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

If a UE is a 12 kbps class UE according to [35] and the UE has a lower capability than required to support all transport channel configurations mapped on a specific Secondary CCPCH, the UE shall at a certain time instant still be able to decode those transport channels mapped on this Secondary CCPCH that do match the capability supported by the UE. The UE shall use the TFCI bits for that Secondary CCPCH, to distinguish a transport channel configuration that is supported by the UE from a transport channel configuration that is not supported by the UE.

In particular if the UE is a 12 kbps class UE according to [35] and it does not support the processing requirement at a given point in time for a Secondary CCPCH, it shall still be able to decode the same Secondary CCPCH when the processing requirement is consistent with the UE capability. Or if the UE does not support the number of TFs or the coding of a certain transport channel on a Secondary CCPCH, it shall still be able to decode other transport channels mapped on the same Secondary CCPCH that is consistent with what is supported by the UE.

#### 8.1.1.6.7 System Information Block type 7

The UE should store all relevant IEs included in this system information block.

#### 8.1.1.6.8 System Information Block type 8

This system information block type is used only in FDD.

If in connected mode, the UE should store all relevant IEs included in this system information block.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

#### 8.1.1.6.9 System Information Block type 9

This system information block type is used only in FDD.

If in connected mode, the UE should store all relevant IEs included in the system information block. The UE shall:

- 1> start a timer set to the value given by the repetition period (SIB\_REP) for that system information block.

If in idle mode, the UE shall not use the values of the IEs in this system information block.



#### 8.1.1.6.10 System Information Block type 10

This system information block type is used only in FDD.

If in state CELL\_DCH, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> start a timer set to the value given by the repetition period (SIB\_REP) for that system information block;
- 1> perform actions defined in subclause 14.8.

If in idle mode, state CELL\_FACH, state CELL\_PCH or state URA\_PCH, the UE shall not use the values of the IEs in this system information block.

#### 8.1.1.6.11 System Information Block type 11

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if in idle mode:
  - 2> clear the variable MEASUREMENT\_IDENTITY.
- 1> if IE "FACH measurement occasion info" is included:
  - 2> act as specified in subclause 8.6.7.
- 1> else:
  - 2> may perform inter-frequency/inter-RAT measurements or inter-frequency/inter-RAT cell re-selection evaluation, if the UE capabilities permit such measurements while simultaneously receiving the S-CCPCH of the serving cell.
- 1> clear the variable CELL\_INFO\_LIST;
- 1> act upon the received IE "Intra-frequency cell info list"/"Inter-frequency cell info list"/"Inter-RAT cell info list" as described in subclause 8.6.7.3;
- 1> if in idle mode; or
- 1> if in connected mode and if System Information Block type 12 is not broadcast in the cell:
  - 2> if no intra-frequency measurement was set up or modified through a MEASUREMENT CONTROL message:
    - 3> if included, store the IE "Intra-frequency reporting quantity" and the IE "Intra-frequency measurement reporting criteria" or "Periodical reporting criteria" in order to activate reporting when state CELL\_DCH is entered in the variable MEASUREMENT\_IDENTITY. The IE "Cells for measurement" is absent for this measurement. The IE "Measurement Validity" is absent for this measurement after a state transition to CELL\_DCH;
- 1> if in connected mode and if System Information Block type 12 is not broadcast in the cell:
  - 2> read the IE "Traffic volume measurement information";
  - 2> if no traffic volume measurement with the measurement identity indicated in the IE "Traffic volume measurement system information" was set up or modified through a MEASUREMENT CONTROL message:
    - 3> update the variable MEASUREMENT\_IDENTITY with the measurement information received in that IE.
- 1> if the IE "Cell selection and reselection info" is not included for a new neighbouring cell in the IE "intra-frequency cell info list", the IE "inter-frequency cell info list" or the IE "inter-RAT cell info list" in System Information Block type 11:
  - 2> use the default values specified for the IE "Cell selection and reselection info" for that cell except for the IE "HCS neighbouring cell information".
- 1> if the IE "Use of HCS" is set to "used", indicating that HCS is used, do the following:

- 2> if IE "HCS neighbouring cell information" is not included for the first new cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 11:
  - 3> use the default values specified for the IE "HCS neighbouring cell information" for that cell.
- 2> if IE "HCS neighbouring cell information" is not included for any other new cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 11:
  - 3> for that cell use the same parameter values as used for the preceding cell in the same cell info list in System Information Block type 11.
- 1> if the value of the IE "Cell selection and reselection quality measure" is different from the value of the IE "Cell selection and reselection quality measure" obtained from System Information Block type 3 or System Information Block type 4:
  - 2> use the value of the IE from this System Information Block and ignore the value obtained from System Information Block type 3 or System Information Block type 4.
- 1> if in connected mode, and System Information Block type 12 is indicated as used in the cell:
  - 2> read and act on information sent in System Information Block type 12 as indicated in subclause 8.1.1.6.12.

#### 8.1.1.6.12 System Information Block type 12

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> after reception of System Information Block type 11:
  - 2> update the variable MEASUREMENT\_IDENTITY with the measurement information in the received IEs unless specified otherwise.
- 1> if IE "FACH measurement occasion info" is included:
  - 2> act as specified in subclause 8.6.7.
- 1> else:
  - 2> may perform inter-frequency/inter-RAT measurements or inter-frequency/inter-RAT cell re-selection evaluation, if the UE capabilities permit such measurements while simultaneously receiving the S-CCPCH of the serving cell.
- 1> act upon the received IE "Intra-frequency cell info list"/"Inter-frequency cell info list"/"Inter-RAT cell info list" as described in subclause 8.6.7.3;
- 1> if any of the IEs "Intra-frequency measurement quantity", "Intra-frequency reporting quantity for RACH reporting", "Maximum number of reported cells on RACH" or "Reporting information for state CELL\_DCH" are not included in the system information block:
  - 2> read the corresponding IE(s) in system information block type 11 and use that information for the intra-frequency measurement.
- 1> if included in this system information block or in System Information Block type 11:
  - 2> if no intra-frequency measurement in the variable MEASUREMENT\_IDENTITY was set up or modified through a MEASUREMENT CONTROL message:
    - 3> store the IE "Intra-frequency reporting quantity" and the IE "Intra-frequency measurement reporting criteria" or "Periodical reporting criteria" in order to activate reporting when state CELL\_DCH is entered in the variable MEASUREMENT\_IDENTITY. The IE "Cells for measurement" is absent for this measurement. The IE "Measurement Validity" is absent for this measurement after a state transition to CELL\_DCH;
- 1> if the IE "Traffic volume measurement system information" is not included in this system information block:

- 2> read the corresponding IE in System Information Block type 11.
- 1> if the IE "Traffic volume measurement system information" was received either in this system information block or in System Information Block type 11:
  - 2> if no traffic volume measurement with the measurement identity indicated in the IE "Traffic volume measurement system information" was set up or modified through a MEASUREMENT CONTROL message:
    - 3> update the variable MEASUREMENT\_IDENTITY with the measurement information received in that IE.
- 1> if in CELL\_FACH state:
  - 2> start or continue the traffic volume measurements stored in the variable MEASUREMENT\_IDENTITY that are valid in CELL\_FACH state.
- 1> if the IE "Cell selection and reselection info" is not included for a new neighbouring cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 12:
  - 2> use the default values specified for the IE "Cell selection and reselection info" for that cell except for the IE "HCS neighbouring cell information".
- 1> if the IE "Use of HCS" is set to "used", indicating that HCS is used, do the following:
  - 2> if IE "HCS neighbouring cell information" is not included for the first new cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 12:
    - 3> use the default values specified for the IE "HCS neighbouring cell information" for that cell.
  - 2> if IE "HCS neighbouring cell information" is not included for any other new cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 12:
    - 3> for that cell use the same parameter values as used for the preceding cell in the same cell info list in System Information Block type 12.
- 1> if the value of the IE "Cell selection and reselection quality measure" is different from the value of the IE "Cell selection and reselection quality measure" obtained from System Information Block type 3 or System Information Block type 4:
  - 2> use the value of the IE from this System Information Block and ignore the value obtained from System Information Block type 3 or System Information Block type 4.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

#### 8.1.1.6.13 System Information Block type 13

If in idle or connected mode, the UE should store all relevant IEs included in this system information block except for the IEs "CN domain specific DRX cycle length coefficient", "UE timers and constants in idle mode" and "Capability update requirement" which shall be stored only in the idle mode case. The UE shall read System Information Block type 13 and the associated System Information Block types 13.1, 13.2, 13.3 and 13.4 only when the "PLMN Type" in the variable SELECTED\_PLMN has the value "ANSI-41" and the IE "PLMN type" in the Master Information Block has the value "ANSI-41" or "GSM-MAP and ANSI-41". The UE shall also:

- 1> forward the content of the IE "CN domain specific NAS system information" to the non-access stratum entity indicated by the IE "CN domain identity";
- 1> use the IE "CN domain specific DRX cycle length coefficient" to calculate frame number for the Paging Occasions and Page indicator as specified in [4].

Refer to TIA/EIA/IS-2000.5-A for actions on information contained in System Information Block types 13.1, 13.2, 13.3 and 13.4.

#### 8.1.1.6.14 System Information Block type 14

This system information block type is used only in TDD.

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> use the IE "UL Timeslot Interference" to calculate PRACH, DPCH and PUSCH transmit power for TDD uplink open loop power control as defined in subclause 8.5.7.

#### 8.1.1.6.15 System Information Block type 15

If the UE is in idle or connected mode, and supports GPS location services it should store all relevant IEs included in this system information block. The UE shall:

- 1> if the IE "GPS Data ciphering info" is included:
  - 1> act as specified in the subclause 8.6.7.19.4.- act upon the received IE "Reference position" as specified in subclause 8.6.7.19.3.8;
  - 1> act upon the received IE "GPS reference time" as specified in subclause 8.6.7.19.3.7;
- 1> if IE "Satellite information" is included:
  - 2> act upon this list of bad satellites as specified in subclause 8.6.7.19.3.6.

NOTE: For efficiency purposes, the UTRAN should broadcast System Information Block type 15 if it is broadcasting System Information Block type 15.2.

#### 8.1.1.6.15.1 System Information Block type 15.1

The UE should store all the relevant IEs included in this system information block in variable UE\_POSITIONING\_GPS\_DATA. The UE shall:

- 1> act on "DGPS information" in the IE "DGPS Corrections" in a similar manner as specified in [13] except that the scale factors for PRC and RRC are different;
- 1> act upon the received IE " UE Positioning GPS DGPS corrections" as specified in subclause 8.6.7.19.3.3.

In this version of the specification, the UE shall:

- 1> ignore the following IEs: "Delta PRC2", "Delta RRC2", "Delta PRC3" and "Delta RRC3".

#### 8.1.1.6.15.2 System Information Block type 15.2

For System Information Block type 15.2 multiple occurrences may be used; one occurrence for one satellite. To identify the different occurrences, the scheduling information for System Information Block type 15.2 includes IE "SIB occurrence identity and value tag". The UE should store all the relevant IEs included in this system information block in variable UE\_POSITIONING\_GPS\_DATA. The UE shall:

- 1> compare for each occurrence the value tag of the stored occurrence, if any, with the occurrence value tag included in the IE "SIB occurrence identity and value tag" for the occurrence of the SIB with the same occurrence identity;
- 1> in case the UE has no SIB occurrence stored with the same identity or in case the occurrence value tag is different:
  - 2> store the occurrence information together with its identity and value tag for later use.
- 1> in case an occurrence with the same identity but different value tag was stored:
  - 2> overwrite this one with the new occurrence read via system information for later use.
- 1> interpret IE "Transmission TOW" as a very coarse estimate of the current time, i.e., the approximate GPS time-of-week when the message is broadcast;
- 1> interpret IE "SatID" as the satellite ID of the data from which this message was obtained;

- 1> act upon the received IEs "Sat ID" and "GPS Ephemeris and Clock Corrections Parameter" as specified in subclause 8.6.7.19.3.4.

The IE "Transmission TOW" may be different each time a particular SIB occurrence is transmitted. The UTRAN should not increment the value tag of the SIB occurrence if the IE "Transmission TOW" is the only IE that is changed.

The UE may not need to receive all occurrences before it can use the information from any one occurrence.

#### 8.1.1.6.15.3 System Information Block type 15.3

For System Information Block type 15.3 multiple occurrences may be used; one occurrence for each set of satellite data. To identify the different occurrences, the scheduling information for System Information Block type 15.3 includes IE "SIB occurrence identity and value tag". The UE should store all the relevant IEs included in this system information block in variable UE\_POSITIONING\_GPS\_DATA. The UE shall:

- 1> compare for each occurrence the value tag of the stored occurrence, if any, with the occurrence value tag included in the IE "SIB occurrence identity and value tag" for the occurrence of the SIB with the same occurrence identity;
- 1> in case the UE has no SIB occurrence stored with the same identity or in case the occurrence value tag is different:
  - 2> store the occurrence information together with its identity and value tag for later use.
- 1> in case an occurrence with the same identity but different value tag was stored:
  - 2> overwrite this one with the new occurrence read via system information for later use.
- 1> interpret IE "Transmission TOW" as a very coarse estimate of the current time, i.e., the approximate GPS time-of-week when the message is broadcast;
- 1> if the IE "GPS Almanac and Satellite Health" is included:
  - 2> interpret IE "SatMask" as the satellites that contain the pages being broadcast in this message;
  - 2> interpret IE "LSB TOW" as the least significant 8 bits of the TOW ([12]);
  - 2> act upon the received IE "GPS Almanac and Satellite Health" as specified in subclause 8.6.7.19.3.2.
- 1> if the IE "GPS ionospheric model" is included:
  - 2> act upon the received IE "GPS ionospheric model" as specified in subclause 8.6.7.19.3.5.
- 1> if the IE "GPS UTC model" is included:
  - 2> act upon the received IE "GPS UTC model" as specified in subclause 8.6.7.19.3.9.

The IE "Transmission TOW" may be different each time a particular SIB occurrence is transmitted. The UTRAN should not increment the value tag of the SIB occurrence if the IE "Transmission TOW" is the only IE that is changed. One SIB occurrence value tag is assigned to the table of subclause 10.2.48.8.18.3.

The UE may not need to receive all occurrences before it can use the information for any one occurrence.

#### 8.1.1.6.15.4 System Information Block type 15.4

If the UE is in idle mode or connected mode, the UE shall:

- 1> if the IE "OTDOA Data ciphering info" is included:
  - 2> act as specified in subclause 8.6.7.19.4.

If the UE is in connected mode, the UE shall:

- 1> act as specified in subclause 8.6.7.19.2.

#### 8.1.1.6.15.5 System Information Block type 15.5

If the UE is in idle or connected mode, the UE shall:

- 1> if the UE supports UE-based OTDOA positioning:
  - 2> act as specified in subclause 8.6.7.19.2a.

#### 8.1.1.6.16 System Information Block type 16

For System Information Block type 16 multiple occurrences may be used; one occurrence for each predefined configuration. To identify the different predefined configurations, the scheduling information for System Information Block type 16 includes IE "Predefined configuration identity and value tag".

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> compare for each predefined configuration the value tag of the stored predefined configuration with the preconfiguration value tag included in the IE "Predefined configuration identity and value tag" for the occurrence of the SIB with the same predefined configuration identity;
- 1> in case the UE has no predefined configuration stored with the same identity or in case the predefined configuration value tag is different:
  - 2> store the predefined configuration information together with its identity and value tag for later use e.g. during handover to UTRAN.
- 1> in case a predefined configuration with the same identity but different value tag was stored:
  - 2> overwrite this one with the new configuration read via system information for later use e.g. during handover to UTRAN.

The above handling applies regardless of whether the previously stored predefined configuration information has been obtained via UTRA or via another RAT.

The UE is not required to complete reading of all occurrences of System Information Block type 16 before initiating RRC connection establishment.

The UE is not required to store more than maxPredefConfig preconfigurations even in the case of multiple equivalent PLMNs.

#### 8.1.1.6.17 System Information Block type 17

This system information block type is used only for TDD.

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included, store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. This information shall become invalid after the time specified by the repetition period (SIB\_REP) for this system information block.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

#### 8.1.1.6.18 System Information Block type 18

If the System Information Block type 18 is present, a UE may obtain knowledge of the PLMN identity of the neighbour cells to be considered for cell reselection, and may behave as specified in this subclause and in subclause 8.5.14a.

The UE should store all the relevant IEs included in this system information block.

A UE in idle mode shall act according to the following rules:

- 1> any PLMN list of a given type (IEs "PLMNs of intra-frequency cells list", "PLMNs of inter-frequency cells list", "PLMNs of inter-RAT cell lists") included in the IE "Idle mode PLMN identities" is paired with the list of cells of the same type derived from System Information Block type 11;
- 1> the PLMN identity located at a given rank in the PLMN list is that of the cell with the same ranking in the paired list of cells, the cells being considered in the increasing order of their associated identities ("Intra-frequency cell id", "Inter-frequency cell id", "Inter-RAT cell id");
- 1> if the number of identities in a PLMN list exceeds the number of neighbour cells in the paired list (if any), the extra PLMN identities are considered as unnecessary and ignored;
- 1> if the number of identities in a PLMN list (if any) is lower than the number of neighbour cells in the paired list, the missing PLMN identities are replaced by the last PLMN identity in the list if present, otherwise by the identity of the selected PLMN.

A UE in connected mode shall act in the same manner as a UE in idle mode with the following modifications:

- 1> the PLMN lists to be considered are the ones included, when present, in the IE "Connected mode PLMN identities"; otherwise, the UE shall use, in place of any missing list, the corresponding one in the IE "Idle mode PLMN identities";
- 1> the paired lists of cells are the ones derived from System Information Block type 11, and System Information Block type 12 if present.

### 8.1.1.7 Modification of system information

For System Information Block type 15.2, 15.3 and 16 that may have multiple occurrences, the UE shall handle each occurrence independently as specified in the previous; that is each occurrence is handled as a separate system information block.

**NOTE:** It should be noted that for the proper operation of the BCCH Modification Information sent on a PCH, the System Information should not be changed more frequently than can be accommodated by mobile stations operating at the maximum DRX cycle length supported by the UTRAN.

#### 8.1.1.7.1 Modification of system information blocks using a value tag

Upon modifications of system information blocks using value tags, UTRAN should notify the new value tag for the master information block in the IE "BCCH modification info", transmitted in the following way:

- 1> to reach UEs in idle mode, CELL\_PCH state and URA\_PCH state, the IE "BCCH modification info" is contained in a PAGING TYPE 1 message transmitted on the PCCH in all paging occasions in the cell;
- 1> to reach UEs in CELL\_FACH state or TDD UEs in CELL\_DCH with S-CCPCH assigned, the IE "BCCH modification info" is contained in a SYSTEM INFORMATION CHANGE INDICATION message transmitted on the BCCH mapped on at least one FACH on every Secondary CCPCH in the cell.

Upon reception of a PAGING TYPE 1 message or a SYSTEM INFORMATION CHANGE INDICATION message containing the IE "BCCH modification info" containing the IE "MIB value tag" but not containing the IE "BCCH modification time", the UE shall perform actions as specified in subclause 8.1.1.7.3.

If the IE "BCCH modification time" is included the UE shall perform actions as specified in subclause 8.1.1.7.2.

#### 8.1.1.7.2 Synchronised modification of system information blocks

For modification of some system information elements, e.g. reconfiguration of the channels, it is important for the UE to know exactly when a change occurs. In such cases, the UTRAN should notify the SFN when the change will occur as well as the new value tag for the master information block in the IE "BCCH modification info" transmitted in the following way:

- 1> To reach UEs in idle mode, CELL\_PCH state and URA\_PCH state, the IE "BCCH modification info" is contained in a PAGING TYPE 1 message transmitted on the PCCH in all paging occasions in the cell;

- 1> To reach UEs in CELL\_FACH state, the IE "BCCH modification info" is contained in a SYSTEM INFORMATION CHANGE INDICATION message transmitted on the BCCH mapped on at least one FACH on every Secondary CCPCH in the cell.

Upon reception of a PAGING TYPE 1 message or a SYSTEM INFORMATION CHANGE INDICATION message containing the IE "BCCH modification info" containing the IE "MIB value tag" and containing the IE "BCCH modification time", the UE shall:

- 1> perform the actions as specified in subclause 8.1.1.7.3 at the time, indicated in the IE "BCCH Modification Info".

#### 8.1.1.7.3 Actions upon system information change

The UE shall:

- 1> compare the value of IE "MIB value tag" in the IE "BCCH modification info" with the value tag stored for the master information block in variable VALUE\_TAG.
- 1> if the value tags differ:
  - 2> read the master information block on BCH;
  - 2> if the value tag of the master information block in the system information is the same as the value in IE "MIB value tag" in "BCCH modification info" but different from the value tag stored in the variable VALUE\_TAG:
    - 3> perform actions as specified in subclause 8.1.1.5.
  - 2> if the value tag of the master information block in the system information is the same as the value tag stored in the variable VALUE\_TAG:
    - 3> for the next occurrence of the master information block:
      - 4> perform actions as specified in subclause 8.1.1.7.3 again.
  - 2> if the value tag of the master information block in the system information is different from the value tag stored in the variable VALUE\_TAG, and is different from the value in IE "MIB value tag" in "BCCH modification info":
    - 3> perform actions as specified in subclause 8.1.1.5;
    - 3> if  $(VT_{CI} - VT_{MIB}) \bmod 8 < 4$ , where  $VT_{CI}$  is the value tag in the IE "MIB value tag" in "BCCH modification info" and  $VT_{MIB}$  is the value tag of the master information block in the system information:
      - 4> for the next occurrence of the master information block:
        - 5> perform actions as specified in subclause 8.1.1.7.3 again.

#### 8.1.1.7.4 Actions upon expiry of a system information expiry timer

When the expiry timer of a system information block not using a value tag expires

the UE shall:

- 1> consider the content of the system information block invalid;
- 1> re-acquire the system information block again before the content can be used;

In FDD for system information blocks other than System Information Block type 7, or in states other than CELL\_FACH, or in TDD for system information blocks other than System Information Block type 14, or in states other than CELL\_FACH or CELL\_DCH the UE may:

- 1> postpone reading the system information block until the content is needed.



In FDD for System Information Block type 7, while in state CELL\_FACH, and in TDD for System Information Block type 14, while in state CELL\_FACH or CELL\_DCH the UE should always keep an up to date version of the relevant IEs, unless this is not possible because system information can not be received due to bad radio conditions.

## 10.2.49 SYSTEM INFORMATION CHANGE INDICATION

This message is used to send information on FACH to the UEs in state CELL\_FACH [or CELL\\_DCH\(TDD only\)](#) about coming modification of the system information.

RLC-SAP: TM

Logical channel: BCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>Other information elements</b>				
BCCH modification info	MP		BCCH modification info 10.3.8.1	

If the encoded message does not fill a transport block, the RRC layer shall insert padding according to subclause 12.1.

CR-Form-v7

## CHANGE REQUEST

# 25.331 CR 2302 # rev - # Current version: 5.8.0 #

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the # symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	# Correction on System Information in TDD		
<b>Source:</b>	# RAN WG2		
<b>Work item code:</b>	# TEI	<b>Date:</b>	# 10/05/2004
<b>Category:</b>	# <b>A</b>	<b>Release:</b>	# Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

<b>Reason for change:</b>	# The need to read system information and to indicate system information changing in CELL_DCH state for TDD UE has already been clearly clarified in the specification, while some oversights remain to be corrected.
<b>Summary of change:</b>	# 1. SYSTEM INFORMATION CHANGE INDICATE was corrected to be available in CELL_DCH state for TDD UE in figure 8.1.1-3 and 10.2.49. 2. Table 8.1.1 was corrected to add availability of MIB, scheduling block 1 or 2 in CELL_DCH state for TDD UE only.
<b>Consequences if not approved:</b>	# For the TDD mode, ambiguities related to the validity and availability of MIB and SYSTEM INFORMATION CHANGE INDICATION in CELL_DCH will remain. The TDD UE might have no access to some system information blocks. The TDD UE could use sytem information different than the one meant by the network. The UE may hence behave in an indeterministic way.  <u>Isolated impact analysis:</u> Since this CR corrects the functionality where the specification was ambiguous or not sufficiently explicit, it would not affect implementations behaving like indicated in this CR, but would affect implementations supporting the corrected functionality otherwise.

<b>Clauses affected:</b>	# 8.1.1, 10.2.49								
<b>Other specs affected:</b>	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">#</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">#</td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	#	X	#	X	Other core specifications	#
Y	N								
#	X								
#	X								
		Test specifications	#						

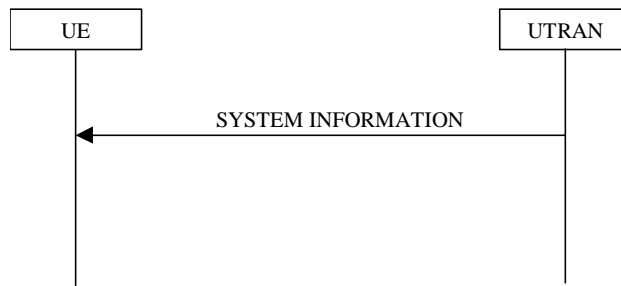
**Other comments:** ⌘

**How to create CRs using this form:**

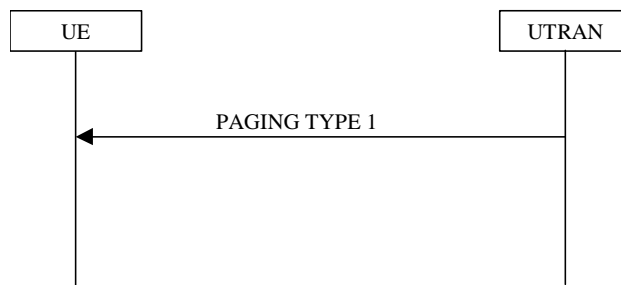
Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

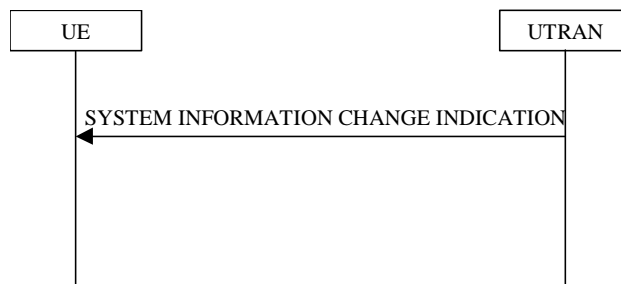
## 8.1.1 Broadcast of system information



**Figure 8.1.1-1: Broadcast of system information**



**Figure 8.1.1-2: Notification of system information modification for UEs in idle mode, CELL\_PCH state and URA\_PCH state**



**Figure 8.1.1-3: Notification of system information modification for UEs in CELL\_FACH [and CELL\\_DCH\(TDD only\)](#) state**

### 8.1.1.1 General

The purpose of this procedure is to broadcast system information from the UTRAN to UEs in a cell.

#### 8.1.1.1.1 System information structure

The system information elements are broadcast in *system information blocks*. A system information block groups together system information elements of the same nature. Different system information blocks may have different characteristics, e.g. regarding their repetition rate and the requirements on UEs to re-read the system information blocks.

The system information is organised as a tree. A *master information block* gives references and scheduling information to a number of system information blocks in a cell. The system information blocks contain the actual system information. The master information block may optionally also contain reference and scheduling information to one or two *scheduling blocks*, which give references and scheduling information for additional system information blocks. Scheduling information for a system information block may only be included in either the master information block or one of the scheduling blocks.

For all system information blocks except System Information Block types 15.2, 15.3 and 16, the content is the same in each occurrence for system information blocks using value tag. System Information Block types 15.2, 15.3 and 16 may

occur more than once with different content. In this case scheduling information is provided for each such occurrence of the system information block. System information blocks that do not use value tag may have different content for each occurrence.

#### 8.1.1.1.2 System information blocks

Table 8.1.1 specifies all system information blocks and their characteristics.

The *area scope column* in table 8.1.1 specifies the area where a system information block's value tag is valid. If the area scope is *cell*, the UE shall consider the system information block to be valid only in the cell in which it was read. If system information blocks have been previously stored for this cell, the UE shall check whether the value tag for the system information block in the entered cell is different compared to the stored value tag. If the area scope is *PLMN* or *Equivalent PLMN*, the UE shall check the value tag for the system information block when a new cell is selected. If the value tag for the system information block in the new cell is different compared to the value tag for the system information block stored in the UE, the UE shall re-read the system information block. If the area scope is *PLMN*, the UE shall consider the system information block to be valid only within the PLMN in which it was read. If the area scope is *Equivalent PLMN*, the UE shall consider the system information block to be valid within the PLMN in which it was received and all PLMNs which are indicated by higher layers to be equivalent.

For System information block types 15.2, 15.3 and 16, which may have multiple occurrences, each occurrence has its own independent value tag. The UE shall re-read a particular occurrence if the value tag of this occurrence has changed compared to that stored in the UE.

The *UE mode/state column when block is valid* in Table 8.1.1 specifies in which UE mode or UE state the IEs in a system information block shall be regarded as valid by the UE. In other words, the indicated system information block becomes invalid upon change to a mode/state that is not included in this column. System Information Block Type 16 remains also valid upon transition to or from GSM/GPRS. In some cases, the states are inserted in brackets to indicate that the validity is dependent on the broadcast of the associated System Information Blocks by the network as explained in the relevant procedure subclause.

The *UE mode/state column when block is read* in Table 8.1.1 specifies in which UE mode or UE state the IEs in a system information block may be read by the UE. The UE shall have the necessary information prior to execution of any procedure requiring information to be obtained from the appropriate system information block. The requirements on the UE in terms of when to read the system information may therefore be derived from the procedure specifications that specify which IEs are required in the different UE modes/states in conjunction with the different performance requirements that are specified. System Information Block type 10 shall only be read by the UE while in CELL\_DCH.

The UE shall:

- 1> if System Information Block type 11 is referenced in the master information block or in the scheduling blocks:
  - 2> if System Information Block type 12 is not referenced in the master information block or in the scheduling blocks, or broadcast of System Information Block type 12 is not indicated in System Information Block type 11:
    - 3> have read and acted upon System Information Block type 11 in a cell when the UE transmits an RRC message on RACH.
  - 2> else:
    - 3> have read and acted upon System Information Block type 11 in a cell before the UE transmits the RRC CONNECTION REQUEST message;
    - 3> have read and acted upon both System Information Block type 11 and System Information Block type 12 in a cell when:
      - 4> the UE transmits an RRC message on RACH in RRC connected mode; or
      - 4> the UE receives a message commanding to enter Cell\_DCH state.

NOTE 1: There are a number of system information blocks that include the same IEs while the UE mode/state in which the information is valid differs. This approach is intended to allow the use of different IE values in different UE mode/states.

NOTE 2: System Information Block Type 16 is also obtained by a UE while in GSM/GPRS. The details of this are not within the scope of this specification.

The *Scheduling information* column in table 8.1.1 specifies the position and repetition period for the SIB.

The *modification of system information* column in table 8.1.1 specifies the update mechanisms applicable for a certain system information block. For system information blocks with a value tag, the UE shall update the information according to subclause 8.1.1.7.1 or 8.1.1.7.2. For system information blocks with an expiration timer, the UE shall, when the timer expires, perform an update of the information according to subclause 8.1.1.7.4.

**Table 8.1.1: Specification of system information block characteristics**

System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
Master information block	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	SIB_POS = 0 SIB_REP = 8 (FDD) SIB_REP = 8, 16, 32 (TDD) SIB_OFF=2	Value tag	
Scheduling block 1	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Specified by the IE "Scheduling information" in MIB	Value tag	
Scheduling block 2	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Specified by the IE "Scheduling information" in MIB	Value tag	
System information block type 1	PLMN	Idle mode CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 2	Cell	URA_PCH	URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 3	Cell	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH)	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH)	Specified by the IE "Scheduling information"	Value tag	
System information block type 4	Cell	CELL_FACH, CELL_PCH, URA_PCH	CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	If System information block type 4 is not broadcast in a cell, the connected mode UE shall apply information in System information block type 3 in connected mode.
System information block type 5	Cell	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only))	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only))	Specified by the IE "Scheduling information"	Value tag	

System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
System information block type 6	Cell	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	Specified by the IE "Scheduling information"	Value tag	<p>If system information block type 6 is not broadcast in a cell, the connected mode UE shall read System information block type 5.</p> <p>If some of the optional IEs are not included in System information block type 6, the UE shall read the corresponding IEs in System information block type 5</p> <p>In TDD mode system information block 6 shall only be read in CELL_DCH if required for open loop power control as specified in subclause 8.5.7 and/or if shared transport channels are assigned to the UE. If in these cases system information block type 6 is not broadcast the UE shall read system information block type 5.</p>
System information block type 7	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	Specified by the IE "Scheduling information"	Expiration timer = MAX(32, SIB_REP * ExpirationTimeFactor)	In TDD mode system information block type 7 shall only be read in CELL_DCH if shared transport channels are assigned to the UE.
System information block type 8	Cell	CELL_FACH, CELL_PCH, URA_PCH	CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 9	Cell	CELL_FACH, CELL_PCH, URA_PCH	CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	
System information block type 10	Cell	CELL_DCH	CELL_DCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	
System information block type 11	Cell	Idle mode (CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH)	Idle mode (CELL_FACH, CELL_PCH, URA_PCH)	Specified by the IE "Scheduling information"	Value tag	

System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
System information block type 12	Cell	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	If system information block type 12 is not broadcast in a cell, the connected mode UE shall read System information block type 11. If some of the optional IEs are not included in System information block type 12, the UE shall read the corresponding IEs in System information block type 11.
System information block type 13	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.1	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.2	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.3	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.4	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 14	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Specified by the IE "Scheduling information"	Expiration timer = MAX(32, SIB_REP * ExpirationTimeFactor)	This system information block is used in TDD mode only. System information block type 14 shall only be read in CELL_DCH if required for open loop power control as specified in subclause 8.5.7.
System information block type 15	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 15.1	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 15.2	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	For this system information block there may be multiple occurrences
System information block type 15.3	PLMN	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	For this system information block there may be multiple occurrences



System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
System information block type 15.4	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 15.5	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 16	Equivalent PLMN	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	For this system information block there may be multiple occurrences. This system information block is also valid while in GSM/GPRS.
System information block type 17	Cell	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	This system information block is used in TDD mode only. System information block type 17 shall only be read if shared transport channels are assigned to the UE.
System Information Block type 18	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	

The UE shall acquire all system information blocks except system information block type 10 on BCH. System Information Block type 10 shall be acquired on the FACH and only by UEs with support for simultaneous reception of one SCCPCH and one DPCH. If System Information Block type 10 is not broadcast in a cell, the DRAC procedures do not apply in this cell. System Information Block type 10 is used in FDD mode only.

#### 8.1.1.1.3 Segmentation and concatenation of system information blocks

A generic SYSTEM INFORMATION message is used to convey the system information blocks on the BCCH. A given BCCH may be mapped onto either a BCH or a FACH transport channel according to subclause 8.1.1.1.2. The size of the SYSTEM INFORMATION message shall fit the size of a BCH or a FACH transport block.

The RRC layer in UTRAN performs segmentation and concatenation of encoded system information blocks. If the encoded system information block is larger than the size of a SYSTEM INFORMATION message, it will be segmented and transmitted in several messages. If the encoded system information block is smaller than a SYSTEM INFORMATION message, UTRAN may concatenate several system information blocks, or the first segment or the last segment into the same message as specified in the remainder of this clause.

Four different segment types are defined:

- First segment;
- Subsequent segment;
- Last segment;
- Complete.

Each of the types - *First*, *Subsequent* and *Last segment* - is used to transfer segments of a master information block, scheduling block or a system information block. The segment type, *Complete*, is used to transfer a complete master information block, complete scheduling block or a complete system information block.

Each segment consists of a header and a data field. The data field carries the encoded system information elements. The header contains the following parameters:

- The number of segments in the system information block (SEG\_COUNT). This parameter is only included in the header if the segment type is "First segment".
- SIB type. The SIB type uniquely identifies the master information block, scheduling block or a system information block.
- Segment index. This parameter is only included in the header if the segment type is "Subsequent segment" or "Last segment".

UTRAN may combine one or several segments of variable length in the same SYSTEM INFORMATION message. The following combinations are allowed:

1. No segment;
2. First segment;
3. Subsequent segment;
4. Last segment;
5. Last segment + First segment;
6. Last segment + one or several Complete;
7. Last segment + one or several Complete + First segment;
8. One or several Complete;
9. One or several Complete + First segment;
10. One Complete of size 215 to 226;
11. Last segment of size 215 to 222.

The "No segment" combination is used when there is no master information block, scheduling block or system information block scheduled for a specific BCH transport block.

UEs are not required to support the reception of multiple occurrences of the same system information block type within one SYSTEM INFORMATION message.

**NOTE:** Since the SIB type is the same for each occurrence of the system information block, the UE does not know the order in which the occurrences, scheduled for this SYSTEM INFORMATION message, appear. Therefore, the UE is unable to determine which scheduling information, e.g., value tag relates to which occurrence of the system information block.

#### 8.1.1.1.4 Re-assembly of segments

The RRC layer in the UE shall perform re-assembly of segments. All segments belonging to the same master information block, scheduling block or system information block shall be assembled in ascending order with respect to the segment index. When all segments of the master information block, scheduling block or a system information block have been received, the UE shall perform decoding of the complete master information block, scheduling block or system information block. For System Information Block types 15.2, 15.3 and 16, which may have multiple occurrences, each occurrence shall be re-assembled independently.

The UE shall discard system information blocks of which segments were missing, of which segments were received out of sequence and/or for which duplicate segments were received. The only valid sequence is an ascending one with the sequence starting with the First Segment of the associated System Information Block.

If the UE receives a Subsequent segment or Last segment where the index in IE "Segment index" is equal to or larger than the number of segments stated in IE "SEG\_COUNT" in the scheduling information for that scheduling block or system information block:

- 1> the UE may:
  - 2> read all the segments to create a system information block as defined by the scheduling information read by the UE;
  - 2> store the content of the system information block with a value tag set to the value NULL; and
  - 2> consider the content of the scheduling block or system information block as valid:
    - 3> until it receives the same type of scheduling block or system information block in a position according to its scheduling information; or
    - 3> at most for 6 hours after reception.
- 1> and the UE shall:
  - 2> re-read scheduling information for that scheduling block or system information block.

If the UE receives a Subsequent segment or Last segment where the index in IE "Segment index" is equal to or larger than the number of segments stated in IE "SEG\_COUNT" in the First segment, the UE shall

- 1> discard all segments for that master information block, scheduling block or system information block; and
- 1> re-read the scheduling information for that system information block;
- 1> then re-read all segments for that system information block.

#### 8.1.1.1.5 Scheduling of system information

Scheduling of system information blocks is performed by the RRC layer in UTRAN. If segmentation is used, it should be possible to schedule each segment separately.

To allow the mixing of system information blocks with short repetition period and system information blocks with segmentation over many frames, UTRAN may multiplex segments from different system information blocks. Multiplexing and de-multiplexing is performed by the RRC layer.

The scheduling of each system information block broadcast on a BCH transport channel is defined by the following parameters:

- the number of segments (SEG\_COUNT);
- the repetition period (SIB\_REP). The same value applies to all segments;
- the position (phase) of the first segment within one cycle of the Cell System Frame Number (SIB\_POS(0)). Since system information blocks are repeated with period SIB\_REP, the value of SIB\_POS(i),  $i = 0, 1, 2, \dots, \text{SEG\_COUNT}-1$  must be less than SIB\_REP for all segments;
- the offset of the subsequent segments in ascending index order (SIB\_OFF(i),  $i = 1, 2, \dots, \text{SEG\_COUNT}-1$ ). The position of the subsequent segments is calculated using the following:  $\text{SIB\_POS}(i) = \text{SIB\_POS}(i-1) + \text{SIB\_OFF}(i)$ .

The scheduling is based on the Cell System Frame Number (SFN). The SFN of a frame at which a particular segment,  $i$ , with  $i = 0, 1, 2, \dots, \text{SEG\_COUNT}-1$  of a system information block occurs, fulfils the following relation:

$$\text{SFN mod SIB\_REP} = \text{SIB\_POS}(i)$$

In FDD and TDD the scheduling of the master information block is fixed as defined in table 8.1.1. For TDD, UTRAN may apply one of the values allowed for the master information block's repetition period. The value that UTRAN is using in TDD is not signalled; UEs have to determine it by trial and error.

### 8.1.1.2 Initiation

The system information is continuously broadcast on a regular basis in accordance with the scheduling defined for each system information block.

### 8.1.1.3 Reception of SYSTEM INFORMATION messages by the UE

The UE shall read SYSTEM INFORMATION messages broadcast on a BCH transport channel in idle mode and in the connected mode in states CELL\_FACH, CELL\_PCH, URA\_PCH and CELL\_DCH (TDD only). In addition, UEs in FDD mode which support simultaneous reception of one SCCPCH and one DPCH shall read system information on a FACH transport channel when in CELL\_DCH state.

In idle mode and connected mode different combinations of system information blocks are valid. The UE shall acquire the system information blocks that are needed according to table 8.1.1.

The UE may store system information blocks with *cell*, *PLMN* or *Equivalent PLMN* area scope (including their value tag if applicable) for different cells and different PLMNs, to be used if the UE returns to these cells.

The UE shall consider all stored system information blocks as invalid after it has been switched off. Some information obtained from system information may be stored by the UE or in the USIM for use in a stored information cell selection.

When selecting a new cell within the currently used PLMN, the UE shall consider all current system information blocks with area scope *cell* to be invalid. If the UE has stored valid system information blocks for the newly selected cell, the UE may set those as current system information blocks.

After selecting a new PLMN, the UE shall consider all current system information blocks with area scope *cell* and *PLMN* to be invalid. If the UE has previously stored valid system information blocks for the selected cell of the new PLMN, the UE may set those as current system information blocks. Upon selection of a new PLMN the UE shall store all information elements specified within variable SELECTED\_PLMN for the new PLMN within this variable.

After selecting a new PLMN which is not indicated by higher layers to be equivalent to the identity of the previously selected PLMN, the UE shall consider all system information blocks with area scope *Equivalent PLMN* to be invalid.

### 8.1.1.4 Reception of SYSTEM INFORMATION messages broadcast on a FACH transport channel

System information block type 10 may be broadcast on FACH, as specified in subclause 8.1.1.1.2.

When reading system information blocks on FACH, the UE shall perform the actions as defined in subclause 8.1.1.6.

### 8.1.1.5 Actions upon reception of the Master Information Block and Scheduling Block(s)

When selecting a new cell, the UE shall read the master information block. The UE may use the pre-defined scheduling information to locate the master information block in the cell.

Upon reception of the master information block, the UE shall:

- 1> if the "PLMN type" in the variable SELECTED\_PLMN has the value "GSM-MAP" and the IE "PLMN Type" has the value "GSM-MAP" or "GSM-MAP and ANSI-41":
  - 2> check the IE "PLMN identity" in the master information block and verify that it is the selected PLMN, stored as "PLMN identity" in the variable SELECTED\_PLMN.
- 1> if the "PLMN type" in the variable SELECTED\_PLMN has the value "ANSI-41" and the IE "PLMN Type" has the value "ANSI-41" or "GSM-MAP and ANSI-41":
  - 2> store the ANSI-41 Information elements contained in the master information block and perform initial process for ANSI-41.
- 1> compare the value tag in the master information block with the value tag stored for this cell and this PLMN in the variable VALUE\_TAG;

- 1> if the value tags differ, or if no IEs for the master information block are stored:
  - 2> store the value tag into the variable VALUE\_TAG for the master information block;
  - 2> read and store scheduling information included in the master information block.
- 1> if the value tags are the same the UE may use stored system information blocks and scheduling blocks using value tag that were stored for this cell and this PLMN as valid system information.

For all system information blocks or scheduling blocks that are supported by the UE referenced in the master information block or the scheduling blocks, the UE shall perform the following actions:

- 1> for all system information blocks with area scope "PLMN" or "Equivalent PLMN" that use value tags:
  - 2> compare the value tag read in scheduling information for that system information block with the value stored within the variable VALUE\_TAG for that system information block;
  - 2> if the value tags differ, or if no IEs for the corresponding system information block are stored:
    - 3> store the value tag read in scheduling information for that system information block into the variable VALUE\_TAG;
    - 3> read and store the IEs of that system information block.
  - 2> if the value tags are the same the UE may use stored system information blocks using value tag that were stored in this PLMN as valid system information.
- 1> for all system information blocks or scheduling blocks with area scope cell that use value tags:
  - 2> compare the value tag read in scheduling information for that system information block or scheduling block with the value stored within the variable VALUE\_TAG for that system information block or scheduling block;
  - 2> if the value tags differ, or if no IEs for the corresponding system information block or scheduling block are stored:
    - 3> store the value tag read in scheduling information for that system information block or scheduling block into the variable VALUE\_TAG;
    - 3> read and store the IEs of that system information block or scheduling block.
  - 2> if the value tags are the same the UE may use stored system information blocks using value tags that were stored for this cell and this PLMN as valid system information.
- 1> for system information blocks which may have multiple occurrences:
  - 2> compare the value tag and the configuration or multiple occurrence identity for the occurrence of the system information blocks read in scheduling information with the value tag and configuration or multiple occurrence identity stored within the variable VALUE\_TAG:
    - 3> if the value tags differ, or if no IEs from the occurrence with that configuration or multiple occurrence identity of the system information block are stored:
      - 4> store the value tag read in scheduling information for that system information block and the occurrence with that configuration or multiple occurrence identity into the variable VALUE\_TAG;
      - 4> read and store the IEs of that system information block.
    - 3> if the value tags and the configuration or multiple occurrence identity are identical to those stored, the UE may use stored occurrences of system information blocks that were stored for this cell and this PLMN as valid system information.

For system information blocks, not supported by the UE, but referenced either in the master information block or in the scheduling blocks, the UE may:

- 1> skip reading this system information block;
- 1> skip monitoring changes to this system information block.

If the UE:

- 1> receives a scheduling block at a position different from its position according to the scheduling information for the scheduling block; or
- 1> receives a scheduling block for which scheduling information has not been received:

the UE may:

- 1> store the content of the scheduling block with a value tag set to the value NULL; and
- 1> consider the content of the scheduling block as valid until it receives the same type of scheduling block in a position according to its scheduling information or at most for 6 hours after reception.

If the UE does not find a scheduling block in a position where it should be according to its scheduling information, but a transport block with correct CRC was found at that position, the UE shall:

- 1> read the scheduling information for this scheduling block.

If the UE does not find the master information block in a position fulfilling:

$$\text{SFN mod } 32 = 0$$

but a transport block with correct CRC was found at that position), the UE shall:

- 1> consider the master information block as not found; and
- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

NOTE: This permits a different repetition for the MIB in later versions for FDD. In TDD it allows for a variable SIB\_REP in this and future releases.

If system information block type 1 is not scheduled on BCH, and system information block type 13 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If the UE only supports GSM-MAP but finds a cell that broadcasts System Information Block type 13 but not System Information Block type 1, the UE shall:

- 1> consider the cell barred.

If:

- system information block type 1 is not scheduled on BCH; and
- the "PLMN Type" in the variable SELECTED\_PLMN has the value "GSM-MAP"; and
- the IE "PLMN type" in the Master Information Block has the value "GSM-MAP" or "GSM-MAP and ANSI-41":

the UE shall:

- 1> indicate to upper layers that no CN system information is available.

If in idle mode and System Information Block type 3 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If in connected mode and System Information Block type 3 is not scheduled on BCH, and System Information Block type 4 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If in idle mode and System Information Block type 5 is not scheduled on BCH or System Information Block type 5 is scheduled but IE "AICH info" (FDD) or IE "PICH info" is not present, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If in connected mode and System Information Block type 5 is not scheduled on BCH, and System Information Block type 6 is not scheduled on BCH, or any of System Information Block type 5 or type 6 is scheduled but IE "AICH info" (FDD) or IE "PICH info" is not present, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If System Information Block type 7 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

In TDD, if System Information Block type 14 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

### 8.1.1.6 Actions upon reception of system information blocks

The UE may use the scheduling information included within the master information block and the scheduling blocks to locate each system information block to be acquired.

The UE should only expect one occurrence of the scheduling information for a system information block in the master information block and any of the scheduling blocks except for System Information Block type 16, System Information Block type 15.2 and System Information Block type 15.3, which may have multiple occurrences. However, to enable future introduction of new system information blocks, the UE shall also be able to receive system information blocks other than the ones indicated within the scheduling information. The UE may ignore contents of such system information block.

If the UE:

- 1> receives a system information block in a position according to the scheduling information for the system information block; and
- 1> this system information block uses a value tag; or
- 1> this system information block uses a value tag and configuration or multiple occurrence identity:

the UE shall:

- 1> store the content of the system information block together with the value of its value tag or the values of configuration and multiple occurrence identity and the associated value tag in the scheduling information for the system information block; and
- 1> consider the content of the system information block valid until, if used, the value tag in the scheduling information for the system information block is changed or at most for 6 hours after reception.

If the UE:

- 1> receives a system information block in a position according to the scheduling information for the system information block; and
- 1> this system information block does not use a value tag according to the system information block type:

the UE shall:

- 1> store the content of the system information block; and
- 1> start an expiration timer using a value as defined in Table 8.1.1 for that system information block type; and
- 1> consider the content of the system information block valid until, the expiration timer expires.

If the UE:

- 1> receives a system information block at a position different from its position according to the scheduling information for the system information block; or
- 1> receives a system information block for which scheduling information has not been received; and
- 1> this system information block uses a value tag:

the UE may:

- 1> store the content of the system information block with a value tag set to the value NULL; and
- 1> consider the content of the system information block as valid until it receives the same type of system information block in a position according to its scheduling information or at most for 6 hours after reception.

If the UE:

- 1> receives a system information block with multiple occurrences at a position different from its position according to the scheduling information for the system information block; or
- 1> receives a system information block with multiple occurrences for which scheduling information has not been received; and
- 1> this system information block uses a value tag and configuration or multiple occurrence identity:

the UE shall:

- 1> ignore this information.

If the UE does not find a system information block in a position where it should be according to its scheduling information, but a transport block with correct CRC was found at that position, the UE shall read the scheduling information for this system information block.

The UE shall act upon all received information elements as specified in subclause 8.6 unless specified otherwise in the following subclauses.



### 8.1.1.6.1 System Information Block type 1

The UE should store all relevant IEs included in this system information block if the "PLMN Type" in the variable SELECTED\_PLMN has the value "GSM-MAP" and the IE "PLMN type" in the Master Information Block has the value "GSM-MAP" or "GSM-MAP and ANSI-41". The UE shall also:

- 1> check that the cell, according to information included in IE "CN common GSM-MAP NAS system information", is suitable [4];
- 1> if in connected mode:
  - 2> not forward the content of the IE "CN common GSM-MAP NAS system information" to upper layers.
- 1> if in idle mode:
  - 2> forward the content of the IE "CN common GSM-MAP NAS system information" to upper layers.
- 1> for the IE "CN domain system information list":
  - 2> for each IE "CN domain system information" that is present:
    - 3> check that the cell, according to information included in IE "CN domain specific NAS system information", is suitable [4];
    - 3> if in connected mode:
      - 4> not forward the content of the IE "CN domain specific NAS system information" to upper layers.
    - 3> if in idle mode:
      - 4> forward the content of the IE "CN domain specific NAS system information" and the IE "CN domain identity" to upper layers;
      - 4> use the IE "CN domain specific DRX cycle length coefficient" to calculate frame number for the Paging Occasions as specified in [4];
      - 4> store the value of the IE "CN domain specific DRX cycle length coefficient" for use in connected mode.
  - 2> if an IE "CN domain system information" is not present for a particular CN domain:
    - 3> indicate to upper layers that no CN system information is available for that CN domain.
- 1> if the UE has not yet entered UTRA RRC connected mode:
  - 2> store the values of the IE "UE Timers and constants in connected mode" in the variable TIMERS\_AND\_CONSTANTS.
- 1> use the values stored in the variable TIMERS\_AND\_CONSTANTS for the relevant timers and constants.

### 8.1.1.6.2 System Information Block type 2

If in connected mode the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if in state URA\_PCH, start to perform URA updates using the information in the IE "URA identity".

If in idle mode, the UE shall not use the values of the IEs in this system information block.

### 8.1.1.6.3 System Information Block type 3

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if in connected mode, and System Information Block 4 is indicated as used in the cell:
  - 2> read and act on information sent in that block.

#### 8.1.1.6.4 System Information Block type 4

If in connected mode, the UE should store all relevant IEs included in this system information block.

If in idle mode, the UE shall not use the values of the IEs included in this system information block.

#### 8.1.1.6.5 System Information Block type 5

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if in connected mode, and System Information Block type 6 is indicated as used in the cell:
  - 2> read and act on information sent in System Information Block type 6.
- 1> replace the TFS of the RACH with the one stored in the UE if any;
- 1> let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink for the PRACH if UE is in CELL\_FACH state;
- 1> use the first instance of the list of transport formats as in the IE "RACH TFS" for the used RACH received in the IE "PRACH system information list" when using the CCCH;
- 1> start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" (FDD only) when given allocated PRACH is used;
- 1> replace the TFS of the FACH/PCH with the one stored in the UE if any;
- 1> select a Secondary CCPCH as specified in [4] and in subclause 8.5.19, and start to receive the physical channel of type PICH associated with the PCH carried by the selected Secondary CCPCH using the parameters given by the IE "PICH info" if UE is in Idle mode or in CELL\_PCH or URA\_PCH state;
- 1> start to monitor its paging occasions on the selected PICH if UE is in Idle mode or in CELL\_PCH or URA\_PCH state;
- 1> start to receive the selected physical channel of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info" if UE is in CELL\_FACH state;
- 1> in TDD:
  - 2> use the IE "TDD open loop power control" as defined in subclause 8.5.7 when allocated PRACH is used;
  - 2> if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included:
    - 3> store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. For every configuration, for which the IE "SFN Time info" is included, the information shall be stored for the duration given there.

If a UE is a 12 kbps class UE according to [35] and the UE has a lower capability than required to support all transport channel configurations mapped on a specific Secondary CCPCH, the UE shall at a certain time instant still be able to decode those transport channels mapped on this Secondary CCPCH that do match the capability supported by the UE. The UE shall use the TFCI bits for that Secondary CCPCH, to distinguish a transport channel configuration that is supported by the UE from a transport channel configuration that is not supported by the UE.

In particular if the UE is a 12 kbps class UE according to [35] and it does not support the processing requirement at a given point in time for a Secondary CCPCH, it shall still be able to decode the same Secondary CCPCH when the processing requirement is consistent with the UE capability. Or if the UE does not support the number of TFs or the coding of a certain transport channel on a Secondary CCPCH, it shall still be able to decode other transport channels mapped on the same Secondary CCPCH that is consistent with what is supported by the UE.

#### 8.1.1.6.6 System Information Block type 6

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> replace the TFS of the RACH with the one stored in the UE if any;

- 1> let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink if UE is in CELL\_FACH state. If the IE "PRACH info" is not included, the UE shall read the corresponding IE(s) in System Information Block type 5 and use that information to configure the PRACH;
- 1> start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" when associated PRACH is used. If the IE "AICH info" is not included, the UE shall read the corresponding IE in System Information Block type 5 and use that information (FDD only);
- 1> replace the TFS of the FACH/PCH with the one stored in the UE if any;
- 1> select a Secondary CCPCH as specified in [4] and in subclause 8.5.19, and start to receive the physical channel of type PICH associated with the PCH carried by the selected Secondary CCPCH using the parameters given by the IE "PICH info" if the UE is in CELL\_PCH or URA\_PCH state. If the IE "PICH info" is not included, the UE shall read the corresponding IE in System Information Block type 5 and use that information;
- 1> start to monitor its paging occasions on the selected PICH if the UE is in CELL\_PCH or URA\_PCH state;
- 1> start to receive the selected physical channel of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info" if the UE is in CELL\_FACH state. If the IE "Secondary CCPCH info" is not included, the UE shall read the corresponding IE(s) in System Information Block type 5 and use that information;
- 1> in TDD: use the IE "TDD open loop power control" as defined in subclause 8.5.7;
- 1> in TDD: if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included, store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. For every configuration, for which the IE "SFN Time info" is included, the information shall be stored for the duration given there.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

If a UE is a 12 kbps class UE according to [35] and the UE has a lower capability than required to support all transport channel configurations mapped on a specific Secondary CCPCH, the UE shall at a certain time instant still be able to decode those transport channels mapped on this Secondary CCPCH that do match the capability supported by the UE. The UE shall use the TFCI bits for that Secondary CCPCH, to distinguish a transport channel configuration that is supported by the UE from a transport channel configuration that is not supported by the UE.

In particular if the UE is a 12 kbps class UE according to [35] and it does not support the processing requirement at a given point in time for a Secondary CCPCH, it shall still be able to decode the same Secondary CCPCH when the processing requirement is consistent with the UE capability. Or if the UE does not support the number of TFs or the coding of a certain transport channel on a Secondary CCPCH, it shall still be able to decode other transport channels mapped on the same Secondary CCPCH that is consistent with what is supported by the UE.

#### 8.1.1.6.7 System Information Block type 7

The UE should store all relevant IEs included in this system information block.

#### 8.1.1.6.8 System Information Block type 8

This system information block type is used only in FDD.

If in connected mode, the UE should store all relevant IEs included in this system information block.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

#### 8.1.1.6.9 System Information Block type 9

This system information block type is used only in FDD.

If in connected mode, the UE should store all relevant IEs included in the system information block. The UE shall:

- 1> start a timer set to the value given by the repetition period (SIB\_REP) for that system information block.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

### 8.1.1.6.10 System Information Block type 10

This system information block type is used only in FDD.

If in state CELL\_DCH, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> start a timer set to the value given by the repetition period (SIB\_REP) for that system information block;
- 1> perform actions defined in subclause 14.8.

If in idle mode, state CELL\_FACH, state CELL\_PCH or state URA\_PCH, the UE shall not use the values of the IEs in this system information block.

### 8.1.1.6.11 System Information Block type 11

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if in idle mode:
  - 2> clear the variable MEASUREMENT\_IDENTITY.
- 1> if IE "FACH measurement occasion info" is included:
  - 2> act as specified in subclause 8.6.7.
- 1> else:
  - 2> may perform inter-frequency/inter-RAT measurements or inter-frequency/inter-RAT cell re-selection evaluation, if the UE capabilities permit such measurements while simultaneously receiving the S-CCPCH of the serving cell.
- 1> clear the variable CELL\_INFO\_LIST;
- 1> act upon the received IE "Intra-frequency cell info list"/"Inter-frequency cell info list"/"Inter-RAT cell info list" as described in subclause 8.6.7.3;
- 1> if in idle mode; or
- 1> if in connected mode and if System Information Block type 12 is not broadcast in the cell:
  - 2> if no intra-frequency measurement was set up or modified through a MEASUREMENT CONTROL message:
    - 3> if included, store the IE "Intra-frequency reporting quantity" and the IE "Intra-frequency measurement reporting criteria" or "Periodical reporting criteria" in order to activate reporting when state CELL\_DCH is entered in the variable MEASUREMENT\_IDENTITY. The IE "Cells for measurement" is absent for this measurement. The IE "Measurement Validity" is absent for this measurement after a state transition to CELL\_DCH;
- 1> if in connected mode and if System Information Block type 12 is not broadcast in the cell:
  - 2> read the IE "Traffic volume measurement information";
  - 2> if no traffic volume measurement with the measurement identity indicated in the IE "Traffic volume measurement system information" was set up or modified through a MEASUREMENT CONTROL message:
    - 3> update the variable MEASUREMENT\_IDENTITY with the measurement information received in that IE.
- 1> if the IE "Cell selection and reselection info" is not included for a new neighbouring cell in the IE "intra-frequency cell info list", the IE "inter-frequency cell info list" or the IE "inter-RAT cell info list" in System Information Block type 11:
  - 2> use the default values specified for the IE "Cell selection and reselection info" for that cell except for the IE "HCS neighbouring cell information".
- 1> if the IE "Use of HCS" is set to "used", indicating that HCS is used, do the following:

- 2> if IE "HCS neighbouring cell information" is not included for the first new cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 11:
  - 3> use the default values specified for the IE "HCS neighbouring cell information" for that cell.
- 2> if IE "HCS neighbouring cell information" is not included for any other new cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 11:
  - 3> for that cell use the same parameter values as used for the preceding cell in the same cell info list in System Information Block type 11.
- 1> if the value of the IE "Cell selection and reselection quality measure" is different from the value of the IE "Cell selection and reselection quality measure" obtained from System Information Block type 3 or System Information Block type 4:
  - 2> use the value of the IE from this System Information Block and ignore the value obtained from System Information Block type 3 or System Information Block type 4.
- 1> if in connected mode, and System Information Block type 12 is indicated as used in the cell:
  - 2> read and act on information sent in System Information Block type 12 as indicated in subclause 8.1.1.6.12.

#### 8.1.1.6.12 System Information Block type 12

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> after reception of System Information Block type 11:
  - 2> update the variable MEASUREMENT\_IDENTITY with the measurement information in the received IEs unless specified otherwise.
- 1> if IE "FACH measurement occasion info" is included:
  - 2> act as specified in subclause 8.6.7.
- 1> else:
  - 2> may perform inter-frequency/inter-RAT measurements or inter-frequency/inter-RAT cell re-selection evaluation, if the UE capabilities permit such measurements while simultaneously receiving the S-CCPCH of the serving cell.
- 1> act upon the received IE "Intra-frequency cell info list"/"Inter-frequency cell info list"/"Inter-RAT cell info list" as described in subclause 8.6.7.3;
- 1> if any of the IEs "Intra-frequency measurement quantity", "Intra-frequency reporting quantity for RACH reporting", "Maximum number of reported cells on RACH" or "Reporting information for state CELL\_DCH" are not included in the system information block:
  - 2> read the corresponding IE(s) in system information block type 11 and use that information for the intra-frequency measurement.
- 1> if included in this system information block or in System Information Block type 11:
  - 2> if no intra-frequency measurement in the variable MEASUREMENT\_IDENTITY was set up or modified through a MEASUREMENT CONTROL message:
    - 3> store the IE "Intra-frequency reporting quantity" and the IE "Intra-frequency measurement reporting criteria" or "Periodical reporting criteria" in order to activate reporting when state CELL\_DCH is entered in the variable MEASUREMENT\_IDENTITY. The IE "Cells for measurement" is absent for this measurement. The IE "Measurement Validity" is absent for this measurement after a state transition to CELL\_DCH;
- 1> if the IE "Traffic volume measurement system information" is not included in this system information block:

- 2> read the corresponding IE in System Information Block type 11.
- 1> if the IE "Traffic volume measurement system information" was received either in this system information block or in System Information Block type 11:
  - 2> if no traffic volume measurement with the measurement identity indicated in the IE "Traffic volume measurement system information" was set up or modified through a MEASUREMENT CONTROL message:
    - 3> update the variable MEASUREMENT\_IDENTITY with the measurement information received in that IE.
- 1> if in CELL\_FACH state:
  - 2> start or continue the traffic volume measurements stored in the variable MEASUREMENT\_IDENTITY that are valid in CELL\_FACH state.
- 1> if the IE "Cell selection and reselection info" is not included for a new neighbouring cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 12:
  - 2> use the default values specified for the IE "Cell selection and reselection info" for that cell except for the IE "HCS neighbouring cell information".
- 1> if the IE "Use of HCS" is set to "used", indicating that HCS is used, do the following:
  - 2> if IE "HCS neighbouring cell information" is not included for the first new cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 12:
    - 3> use the default values specified for the IE "HCS neighbouring cell information" for that cell.
  - 2> if IE "HCS neighbouring cell information" is not included for any other new cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 12:
    - 3> for that cell use the same parameter values as used for the preceding cell in the same cell info list in System Information Block type 12.
- 1> if the value of the IE "Cell selection and reselection quality measure" is different from the value of the IE "Cell selection and reselection quality measure" obtained from System Information Block type 3 or System Information Block type 4:
  - 2> use the value of the IE from this System Information Block and ignore the value obtained from System Information Block type 3 or System Information Block type 4.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

#### 8.1.1.6.13 System Information Block type 13

If in idle or connected mode, the UE should store all relevant IEs included in this system information block except for the IEs "CN domain specific DRX cycle length coefficient", "UE timers and constants in idle mode" and "Capability update requirement" which shall be stored only in the idle mode case. The UE shall read System Information Block type 13 and the associated System Information Block types 13.1, 13.2, 13.3 and 13.4 only when the "PLMN Type" in the variable SELECTED\_PLMN has the value "ANSI-41" and the IE "PLMN type" in the Master Information Block has the value "ANSI-41" or "GSM-MAP and ANSI-41". The UE shall also:

- 1> forward the content of the IE "CN domain specific NAS system information" to the non-access stratum entity indicated by the IE "CN domain identity";
- 1> use the IE "CN domain specific DRX cycle length coefficient" to calculate frame number for the Paging Occasions and Page indicator as specified in [4].

Refer to TIA/EIA/IS-2000.5-A for actions on information contained in System Information Block types 13.1, 13.2, 13.3 and 13.4.

#### 8.1.1.6.14 System Information Block type 14

This system information block type is used only in TDD.

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> use the IE "UL Timeslot Interference" to calculate PRACH, DPCH and PUSCH transmit power for TDD uplink open loop power control as defined in subclause 8.5.7.

#### 8.1.1.6.15 System Information Block type 15

If the UE is in idle or connected mode, and supports GPS location services it should store all relevant IEs included in this system information block. The UE shall:

- 1> if the IE "GPS Data ciphering info" is included:
  - 1> act as specified in the subclause 8.6.7.19.4.- act upon the received IE "Reference position" as specified in subclause 8.6.7.19.3.8;
  - 1> act upon the received IE "GPS reference time" as specified in subclause 8.6.7.19.3.7;
- 1> if IE "Satellite information" is included:
  - 2> act upon this list of bad satellites as specified in subclause 8.6.7.19.3.6.

NOTE: For efficiency purposes, the UTRAN should broadcast System Information Block type 15 if it is broadcasting System Information Block type 15.2.

#### 8.1.1.6.15.1 System Information Block type 15.1

The UE should store all the relevant IEs included in this system information block in variable UE\_POSITIONING\_GPS\_DATA. The UE shall:

- 1> act on "DGPS information" in the IE "DGPS Corrections" in a similar manner as specified in [13] except that the scale factors for PRC and RRC are different;
- 1> act upon the received IE " UE Positioning GPS DGPS corrections" as specified in subclause 8.6.7.19.3.3.

In this version of the specification, the UE shall:

- 1> ignore the following IEs: "Delta PRC2", "Delta RRC2", "Delta PRC3" and "Delta RRC3".

#### 8.1.1.6.15.2 System Information Block type 15.2

For System Information Block type 15.2 multiple occurrences may be used; one occurrence for one satellite. To identify the different occurrences, the scheduling information for System Information Block type 15.2 includes IE "SIB occurrence identity and value tag". The UE should store all the relevant IEs included in this system information block in variable UE\_POSITIONING\_GPS\_DATA. The UE shall:

- 1> compare for each occurrence the value tag of the stored occurrence, if any, with the occurrence value tag included in the IE "SIB occurrence identity and value tag" for the occurrence of the SIB with the same occurrence identity;
- 1> in case the UE has no SIB occurrence stored with the same identity or in case the occurrence value tag is different:
  - 2> store the occurrence information together with its identity and value tag for later use.
- 1> in case an occurrence with the same identity but different value tag was stored:
  - 2> overwrite this one with the new occurrence read via system information for later use.
- 1> interpret IE "Transmission TOW" as a very coarse estimate of the current time, i.e., the approximate GPS time-of-week when the message is broadcast;
- 1> interpret IE "SatID" as the satellite ID of the data from which this message was obtained;

- 1> act upon the received IEs "Sat ID" and "GPS Ephemeris and Clock Corrections Parameter" as specified in subclause 8.6.7.19.3.4.

The IE "Transmission TOW" may be different each time a particular SIB occurrence is transmitted. The UTRAN should not increment the value tag of the SIB occurrence if the IE "Transmission TOW" is the only IE that is changed.

The UE may not need to receive all occurrences before it can use the information from any one occurrence.

#### 8.1.1.6.15.3 System Information Block type 15.3

For System Information Block type 15.3 multiple occurrences may be used; one occurrence for each set of satellite data. To identify the different occurrences, the scheduling information for System Information Block type 15.3 includes IE "SIB occurrence identity and value tag". The UE should store all the relevant IEs included in this system information block in variable UE\_POSITIONING\_GPS\_DATA. The UE shall:

- 1> compare for each occurrence the value tag of the stored occurrence, if any, with the occurrence value tag included in the IE "SIB occurrence identity and value tag" for the occurrence of the SIB with the same occurrence identity;
- 1> in case the UE has no SIB occurrence stored with the same identity or in case the occurrence value tag is different:
  - 2> store the occurrence information together with its identity and value tag for later use.
- 1> in case an occurrence with the same identity but different value tag was stored:
  - 2> overwrite this one with the new occurrence read via system information for later use.
- 1> interpret IE "Transmission TOW" as a very coarse estimate of the current time, i.e., the approximate GPS time-of-week when the message is broadcast;
- 1> if the IE "GPS Almanac and Satellite Health" is included:
  - 2> interpret IE "SatMask" as the satellites that contain the pages being broadcast in this message;
  - 2> interpret IE "LSB TOW" as the least significant 8 bits of the TOW ([12]);
  - 2> act upon the received IE "GPS Almanac and Satellite Health" as specified in subclause 8.6.7.19.3.2.
- 1> if the IE "GPS ionospheric model" is included:
  - 2> act upon the received IE "GPS ionospheric model" as specified in subclause 8.6.7.19.3.5.
- 1> if the IE "GPS UTC model" is included:
  - 2> act upon the received IE "GPS UTC model" as specified in subclause 8.6.7.19.3.9.

The IE "Transmission TOW" may be different each time a particular SIB occurrence is transmitted. The UTRAN should not increment the value tag of the SIB occurrence if the IE "Transmission TOW" is the only IE that is changed. One SIB occurrence value tag is assigned to the table of subclause 10.2.48.8.18.3.

The UE may not need to receive all occurrences before it can use the information for any one occurrence.

#### 8.1.1.6.15.4 System Information Block type 15.4

If the UE is in idle mode or connected mode, the UE shall:

- 1> if the IE "OTDOA Data ciphering info" is included:
  - 2> act as specified in subclause 8.6.7.19.4.

If the UE is in connected mode, the UE shall:

- 1> act as specified in subclause 8.6.7.19.2.



#### 8.1.1.6.15.5 System Information Block type 15.5

If the UE is in idle or connected mode, the UE shall:

- 1> if the UE supports UE-based OTDOA positioning:
  - 2> act as specified in subclause 8.6.7.19.2a.

#### 8.1.1.6.16 System Information Block type 16

For System Information Block type 16 multiple occurrences may be used; one occurrence for each predefined configuration. To identify the different predefined configurations, the scheduling information for System Information Block type 16 includes IE "Predefined configuration identity and value tag".

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> compare for each predefined configuration the value tag of the stored predefined configuration with the preconfiguration value tag included in the IE "Predefined configuration identity and value tag" for the occurrence of the SIB with the same predefined configuration identity;
- 1> in case the UE has no predefined configuration stored with the same identity or in case the predefined configuration value tag is different:
  - 2> store the predefined configuration information together with its identity and value tag for later use e.g. during handover to UTRAN.
- 1> in case a predefined configuration with the same identity but different value tag was stored:
  - 2> overwrite this one with the new configuration read via system information for later use e.g. during handover to UTRAN.

The above handling applies regardless of whether the previously stored predefined configuration information has been obtained via UTRA or via another RAT.

The UE is not required to complete reading of all occurrences of System Information Block type 16 before initiating RRC connection establishment.

The UE is not required to store more than maxPredefConfig preconfigurations even in the case of multiple equivalent PLMNs.

#### 8.1.1.6.17 System Information Block type 17

This system information block type is used only for TDD.

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included, store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. This information shall become invalid after the time specified by the repetition period (SIB\_REP) for this system information block.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

#### 8.1.1.6.18 System Information Block type 18

If the System Information Block type 18 is present, a UE may obtain knowledge of the PLMN identity of the neighbour cells to be considered for cell reselection, and may behave as specified in this subclause and in subclause 8.5.14a.

The UE should store all the relevant IEs included in this system information block.

A UE in idle mode shall act according to the following rules:

- 1> any PLMN list of a given type (IEs "PLMNs of intra-frequency cells list", "PLMNs of inter-frequency cells list", "PLMNs of inter-RAT cell lists") included in the IE "Idle mode PLMN identities" is paired with the list of cells of the same type derived from System Information Block type 11;
- 1> the PLMN identity located at a given rank in the PLMN list is that of the cell with the same ranking in the paired list of cells, the cells being considered in the increasing order of their associated identities ("Intra-frequency cell id", "Inter-frequency cell id", "Inter-RAT cell id");
- 1> if the number of identities in a PLMN list exceeds the number of neighbour cells in the paired list (if any), the extra PLMN identities are considered as unnecessary and ignored;
- 1> if the number of identities in a PLMN list (if any) is lower than the number of neighbour cells in the paired list, the missing PLMN identities are replaced by the last PLMN identity in the list if present, otherwise by the identity of the selected PLMN.

A UE in connected mode shall act in the same manner as a UE in idle mode with the following modifications:

- 1> the PLMN lists to be considered are the ones included, when present, in the IE "Connected mode PLMN identities"; otherwise, the UE shall use, in place of any missing list, the corresponding one in the IE "Idle mode PLMN identities";
- 1> the paired lists of cells are the ones derived from System Information Block type 11, and System Information Block type 12 if present.

### 8.1.1.7 Modification of system information

For System Information Block type 15.2, 15.3 and 16 that may have multiple occurrences, the UE shall handle each occurrence independently as specified in the previous; that is each occurrence is handled as a separate system information block.

**NOTE:** It should be noted that for the proper operation of the BCCH Modification Information sent on a PCH, the System Information should not be changed more frequently than can be accommodated by mobile stations operating at the maximum DRX cycle length supported by the UTRAN.

#### 8.1.1.7.1 Modification of system information blocks using a value tag

Upon modifications of system information blocks using value tags, UTRAN should notify the new value tag for the master information block in the IE "BCCH modification info", transmitted in the following way:

- 1> to reach UEs in idle mode, CELL\_PCH state and URA\_PCH state, the IE "BCCH modification info" is contained in a PAGING TYPE 1 message transmitted on the PCCH in all paging occasions in the cell;
- 1> to reach UEs in CELL\_FACH state or TDD UEs in CELL\_DCH with S-CCPCH assigned, the IE "BCCH modification info" is contained in a SYSTEM INFORMATION CHANGE INDICATION message transmitted on the BCCH mapped on at least one FACH on every Secondary CCPCH in the cell.

Upon reception of a PAGING TYPE 1 message or a SYSTEM INFORMATION CHANGE INDICATION message containing the IE "BCCH modification info" containing the IE "MIB value tag" but not containing the IE "BCCH modification time", the UE shall perform actions as specified in subclause 8.1.1.7.3.

If the IE "BCCH modification time" is included the UE shall perform actions as specified in subclause 8.1.1.7.2.

#### 8.1.1.7.2 Synchronised modification of system information blocks

For modification of some system information elements, e.g. reconfiguration of the channels, it is important for the UE to know exactly when a change occurs. In such cases, the UTRAN should notify the SFN when the change will occur as well as the new value tag for the master information block in the IE "BCCH modification info" transmitted in the following way:

- 1> To reach UEs in idle mode, CELL\_PCH state and URA\_PCH state, the IE "BCCH modification info" is contained in a PAGING TYPE 1 message transmitted on the PCCH in all paging occasions in the cell;

- 1> To reach UEs in CELL\_FACH state, the IE "BCCH modification info" is contained in a SYSTEM INFORMATION CHANGE INDICATION message transmitted on the BCCH mapped on at least one FACH on every Secondary CCPCH in the cell.

Upon reception of a PAGING TYPE 1 message or a SYSTEM INFORMATION CHANGE INDICATION message containing the IE "BCCH modification info" containing the IE "MIB value tag" and containing the IE "BCCH modification time", the UE shall:

- 1> perform the actions as specified in subclause 8.1.1.7.3 at the time, indicated in the IE "BCCH Modification Info".

#### 8.1.1.7.3 Actions upon system information change

The UE shall:

- 1> compare the value of IE "MIB value tag" in the IE "BCCH modification info" with the value tag stored for the master information block in variable VALUE\_TAG.
- 1> if the value tags differ:
  - 2> read the master information block on BCH;
  - 2> if the value tag of the master information block in the system information is the same as the value in IE "MIB value tag" in "BCCH modification info" but different from the value tag stored in the variable VALUE\_TAG:
    - 3> perform actions as specified in subclause 8.1.1.5.
  - 2> if the value tag of the master information block in the system information is the same as the value tag stored in the variable VALUE\_TAG:
    - 3> for the next occurrence of the master information block:
      - 4> perform actions as specified in subclause 8.1.1.7.3 again.
  - 2> if the value tag of the master information block in the system information is different from the value tag stored in the variable VALUE\_TAG, and is different from the value in IE "MIB value tag" in "BCCH modification info":
    - 3> perform actions as specified in subclause 8.1.1.5;
    - 3> if  $(VT_{CI} - VT_{MIB}) \bmod 8 < 4$ , where  $VT_{CI}$  is the value tag in the IE "MIB value tag" in "BCCH modification info" and  $VT_{MIB}$  is the value tag of the master information block in the system information:
      - 4> for the next occurrence of the master information block:
        - 5> perform actions as specified in subclause 8.1.1.7.3 again.

#### 8.1.1.7.4 Actions upon expiry of a system information expiry timer

When the expiry timer of a system information block not using a value tag expires

the UE shall:

- 1> consider the content of the system information block invalid;
- 1> re-acquire the system information block again before the content can be used;

In FDD for system information blocks other than System Information Block type 7, or in states other than CELL\_FACH, or in TDD for system information blocks other than System Information Block type 14, or in states other than CELL\_FACH or CELL\_DCH the UE may:

- 1> postpone reading the system information block until the content is needed.

In FDD for System Information Block type 7, while in state CELL\_FACH, and in TDD for System Information Block type 14, while in state CELL\_FACH or CELL\_DCH the UE should always keep an up to date version of the relevant IEs, unless this is not possible because system information can not be received due to bad radio conditions.

## 10.2.49 SYSTEM INFORMATION CHANGE INDICATION

This message is used to send information on FACH to the UEs in state CELL\_FACH [or CELL\\_DCH\(TDD only\)](#) about coming modification of the system information.

RLC-SAP: TM

Logical channel: BCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>Other information elements</b>				
BCCH modification info	MP		BCCH modification info 10.3.8.1	

If the encoded message does not fill a transport block, the RRC layer shall insert padding according to subclause 12.1.

## CHANGE REQUEST

# 25.331 CR 2303 # rev - # Current version: 6.1.0 #

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the # symbols.

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	# Correction on System Information in TDD		
<b>Source:</b>	# RAN WG2		
<b>Work item code:</b>	# TEI	<b>Date:</b>	# 10/05/2004
<b>Category:</b>	# <b>A</b>	<b>Release:</b>	# Rel-6
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

<b>Reason for change:</b>	# The need to read system information and to indicate system information changing in CELL_DCH state for TDD UE has already been clearly clarified in the specification, while some oversights remain to be corrected.
<b>Summary of change:</b>	# 1. SYSTEM INFORMATION CHANGE INDICATE was corrected to be available in CELL_DCH state for TDD UE in figure 8.1.1-3 and 10.2.49. 2. Table 8.1.1 was corrected to add availability of MIB, scheduling block 1 or 2 in CELL_DCH state for TDD UE only.
<b>Consequences if not approved:</b>	# For the TDD mode, ambiguities related to the validity and availability of MIB and SYSTEM INFORMATION CHANGE INDICATION in CELL_DCH will remain. The TDD UE might have no access to some system information blocks. The TDD UE could use sytem information different than the one meant by the network. The UE may hence behave in an indeterministic way.  <u>Isolated impact analysis:</u> Since this CR corrects the functionality where the specification was ambiguous or not sufficiently explicit, it would not affect implementations behaving like indicated in this CR, but would affect implementations supporting the corrected functionality otherwise.

<b>Clauses affected:</b>	# 8.1.1, 10.2.49						
<b>Other specs affected:</b>	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="text-align: center;">Y</td> <td style="text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	#
Y	N						
<input type="checkbox"/>	<input checked="" type="checkbox"/>						
	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Test specifications	#		
<input type="checkbox"/>	<input checked="" type="checkbox"/>						

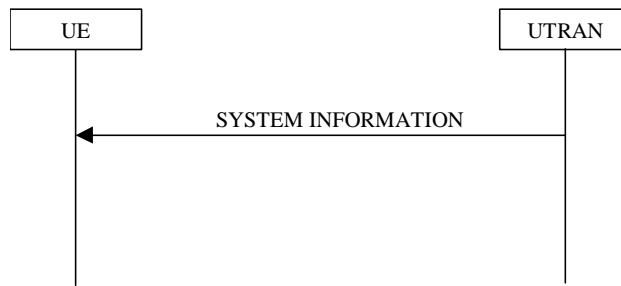
**Other comments:** ⌘

**How to create CRs using this form:**

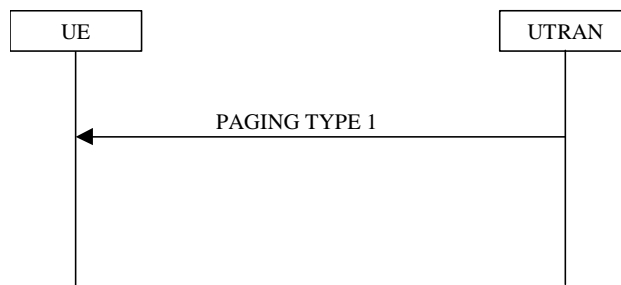
Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

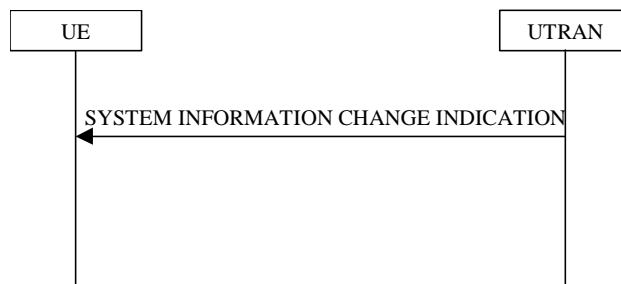
## 8.1.1 Broadcast of system information



**Figure 8.1.1-1: Broadcast of system information**



**Figure 8.1.1-2: Notification of system information modification for UEs in idle mode, CELL\_PCH state and URA\_PCH state**



**Figure 8.1.1-3: Notification of system information modification for UEs in CELL\_FACH [and CELL\\_DCH\(TDD only\)](#) state**

### 8.1.1.1 General

The purpose of this procedure is to broadcast system information from the UTRAN to UEs in a cell.

#### 8.1.1.1.1 System information structure

The system information elements are broadcast in *system information blocks*. A system information block groups together system information elements of the same nature. Different system information blocks may have different characteristics, e.g. regarding their repetition rate and the requirements on UEs to re-read the system information blocks.

The system information is organised as a tree. A *master information block* gives references and scheduling information to a number of system information blocks in a cell. The system information blocks contain the actual system information. The master information block may optionally also contain reference and scheduling information to one or two *scheduling blocks*, which give references and scheduling information for additional system information blocks. Scheduling information for a system information block may only be included in either the master information block or one of the scheduling blocks.

For all system information blocks except System Information Block types 15.2, 15.3 and 16, the content is the same in each occurrence for system information blocks using value tag. System Information Block types 15.2, 15.3 and 16 may

occur more than once with different content. In this case scheduling information is provided for each such occurrence of the system information block. System information blocks that do not use value tag may have different content for each occurrence.

#### 8.1.1.1.2 System information blocks

Table 8.1.1 specifies all system information blocks and their characteristics.

The *area scope column* in table 8.1.1 specifies the area where a system information block's value tag is valid. If the area scope is *cell*, the UE shall consider the system information block to be valid only in the cell in which it was read. If system information blocks have been previously stored for this cell, the UE shall check whether the value tag for the system information block in the entered cell is different compared to the stored value tag. If the area scope is *PLMN* or *Equivalent PLMN*, the UE shall check the value tag for the system information block when a new cell is selected. If the value tag for the system information block in the new cell is different compared to the value tag for the system information block stored in the UE, the UE shall re-read the system information block. If the area scope is *PLMN*, the UE shall consider the system information block to be valid only within the PLMN in which it was read. If the area scope is *Equivalent PLMN*, the UE shall consider the system information block to be valid within the PLMN in which it was received and all PLMNs which are indicated by higher layers to be equivalent.

For System information block types 15.2, 15.3 and 16, which may have multiple occurrences, each occurrence has its own independent value tag. The UE shall re-read a particular occurrence if the value tag of this occurrence has changed compared to that stored in the UE.

The *UE mode/state column when block is valid* in Table 8.1.1 specifies in which UE mode or UE state the IEs in a system information block shall be regarded as valid by the UE. In other words, the indicated system information block becomes invalid upon change to a mode/state that is not included in this column. System Information Block Type 16 remains also valid upon transition to or from GSM/GPRS. In some cases, the states are inserted in brackets to indicate that the validity is dependent on the broadcast of the associated System Information Blocks by the network as explained in the relevant procedure subclause.

The *UE mode/state column when block is read* in Table 8.1.1 specifies in which UE mode or UE state the IEs in a system information block may be read by the UE. The UE shall have the necessary information prior to execution of any procedure requiring information to be obtained from the appropriate system information block. The requirements on the UE in terms of when to read the system information may therefore be derived from the procedure specifications that specify which IEs are required in the different UE modes/states in conjunction with the different performance requirements that are specified. System Information Block type 10 shall only be read by the UE while in CELL\_DCH.

The UE shall:

- 1> if System Information Block type 11 is referenced in the master information block or in the scheduling blocks:
  - 2> if System Information Block type 12 is not referenced in the master information block or in the scheduling blocks, or broadcast of System Information Block type 12 is not indicated in System Information Block type 11:
    - 3> have read and acted upon System Information Block type 11 in a cell when the UE transmits an RRC message on RACH.
  - 2> else:
    - 3> have read and acted upon System Information Block type 11 in a cell before the UE transmits the RRC CONNECTION REQUEST message;
    - 3> have read and acted upon both System Information Block type 11 and System Information Block type 12 in a cell when:
      - 4> the UE transmits an RRC message on RACH in RRC connected mode; or
      - 4> the UE receives a message commanding to enter Cell\_DCH state.

NOTE 1: There are a number of system information blocks that include the same IEs while the UE mode/state in which the information is valid differs. This approach is intended to allow the use of different IE values in different UE mode/states.



NOTE 2: System Information Block Type 16 is also obtained by a UE while in GSM/GPRS. The details of this are not within the scope of this specification.

The *Scheduling information* column in table 8.1.1 specifies the position and repetition period for the SIB.

The *modification of system information* column in table 8.1.1 specifies the update mechanisms applicable for a certain system information block. For system information blocks with a value tag, the UE shall update the information according to subclause 8.1.1.7.1 or 8.1.1.7.2. For system information blocks with an expiration timer, the UE shall, when the timer expires, perform an update of the information according to subclause 8.1.1.7.4.

**Table 8.1.1: Specification of system information block characteristics**

System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
Master information block	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	SIB_POS = 0 SIB_REP = 8 (FDD) SIB_REP = 8, 16, 32 (TDD) SIB_OFF=2	Value tag	
Scheduling block 1	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Specified by the IE "Scheduling information" in MIB	Value tag	
Scheduling block 2	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, <a href="#">CELL_DCH (TDD only)</a>	Specified by the IE "Scheduling information" in MIB	Value tag	
System information block type 1	PLMN	Idle mode CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 2	Cell	URA_PCH	URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 3	Cell	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH)	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH)	Specified by the IE "Scheduling information"	Value tag	
System information block type 4	Cell	CELL_FACH, CELL_PCH, URA_PCH	CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	If System information block type 4 is not broadcast in a cell, the connected mode UE shall apply information in System information block type 3 in connected mode.
System information block type 5	Cell	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only))	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only))	Specified by the IE "Scheduling information"	Value tag	

System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
System information block type 6	Cell	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	Specified by the IE "Scheduling information"	Value tag	<p>If system information block type 6 is not broadcast in a cell, the connected mode UE shall read System information block type 5.</p> <p>If some of the optional IEs are not included in System information block type 6, the UE shall read the corresponding IEs in System information block type 5</p> <p>In TDD mode system information block 6 shall only be read in CELL_DCH if required for open loop power control as specified in subclause 8.5.7 and/or if shared transport channels are assigned to the UE. If in these cases system information block type 6 is not broadcast the UE shall read system information block type 5.</p>
System information block type 7	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only)	Specified by the IE "Scheduling information"	Expiration timer = MAX(32, SIB_REP * ExpirationTimeFactor)	In TDD mode system information block type 7 shall only be read in CELL_DCH if shared transport channels are assigned to the UE.
System information block type 8	Cell	CELL_FACH, CELL_PCH, URA_PCH	CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 9	Cell	CELL_FACH, CELL_PCH, URA_PCH	CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	
System information block type 10	Cell	CELL_DCH	CELL_DCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	
System information block type 11	Cell	Idle mode (CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH)	Idle mode (CELL_FACH, CELL_PCH, URA_PCH)	Specified by the IE "Scheduling information"	Value tag	

System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
System information block type 12	Cell	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	If system information block type 12 is not broadcast in a cell, the connected mode UE shall read System information block type 11. If some of the optional IEs are not included in System information block type 12, the UE shall read the corresponding IEs in System information block type 11.
System information block type 13	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.1	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.2	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.3	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 13.4	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 14	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Specified by the IE "Scheduling information"	Expiration timer = MAX(32, SIB_REP * ExpirationTimeFactor)	This system information block is used in TDD mode only. System information block type 14 shall only be read in CELL_DCH if required for open loop power control as specified in subclause 8.5.7.
System information block type 15	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 15.1	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 15.2	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	For this system information block there may be multiple occurrences
System information block type 15.3	PLMN	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	For this system information block there may be multiple occurrences

System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
System information block type 15.4	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 15.5	Cell	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	
System information block type 16	Equivalent PLMN	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle Mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	For this system information block there may be multiple occurrences. This system information block is also valid while in GSM/GPRS.
System information block type 17	Cell	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Specified by the IE "Scheduling information"	Expiration timer = SIB_REP	This system information block is used in TDD mode only. System information block type 17 shall only be read if shared transport channels are assigned to the UE.
System Information Block type 18	Cell	Idle mode, CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH	Idle mode, CELL_FACH, CELL_PCH, URA_PCH	Specified by the IE "Scheduling information"	Value tag	

The UE shall acquire all system information blocks except system information block type 10 on BCH. System Information Block type 10 shall be acquired on the FACH and only by UEs with support for simultaneous reception of one SCCPCH and one DPCH. If System Information Block type 10 is not broadcast in a cell, the DRAC procedures do not apply in this cell. System Information Block type 10 is used in FDD mode only.

#### 8.1.1.1.3 Segmentation and concatenation of system information blocks

A generic SYSTEM INFORMATION message is used to convey the system information blocks on the BCCH. A given BCCH may be mapped onto either a BCH or a FACH transport channel according to subclause 8.1.1.1.2. The size of the SYSTEM INFORMATION message shall fit the size of a BCH or a FACH transport block.

The RRC layer in UTRAN performs segmentation and concatenation of encoded system information blocks. If the encoded system information block is larger than the size of a SYSTEM INFORMATION message, it will be segmented and transmitted in several messages. If the encoded system information block is smaller than a SYSTEM INFORMATION message, UTRAN may concatenate several system information blocks, or the first segment or the last segment into the same message as specified in the remainder of this clause.

Four different segment types are defined:

- First segment;
- Subsequent segment;
- Last segment;
- Complete.

Each of the types - *First*, *Subsequent* and *Last segment* - is used to transfer segments of a master information block, scheduling block or a system information block. The segment type, *Complete*, is used to transfer a complete master information block, complete scheduling block or a complete system information block.

Each segment consists of a header and a data field. The data field carries the encoded system information elements. The header contains the following parameters:

- The number of segments in the system information block (SEG\_COUNT). This parameter is only included in the header if the segment type is "First segment".
- SIB type. The SIB type uniquely identifies the master information block, scheduling block or a system information block.
- Segment index. This parameter is only included in the header if the segment type is "Subsequent segment" or "Last segment".

UTRAN may combine one or several segments of variable length in the same SYSTEM INFORMATION message. The following combinations are allowed:

1. No segment;
2. First segment;
3. Subsequent segment;
4. Last segment;
5. Last segment + First segment;
6. Last segment + one or several Complete;
7. Last segment + one or several Complete + First segment;
8. One or several Complete;
9. One or several Complete + First segment;
10. One Complete of size 215 to 226;
11. Last segment of size 215 to 222.

The "No segment" combination is used when there is no master information block, scheduling block or system information block scheduled for a specific BCH transport block.

UEs are not required to support the reception of multiple occurrences of the same system information block type within one SYSTEM INFORMATION message.

**NOTE:** Since the SIB type is the same for each occurrence of the system information block, the UE does not know the order in which the occurrences, scheduled for this SYSTEM INFORMATION message, appear. Therefore, the UE is unable to determine which scheduling information, e.g., value tag relates to which occurrence of the system information block.

#### 8.1.1.1.4 Re-assembly of segments

The RRC layer in the UE shall perform re-assembly of segments. All segments belonging to the same master information block, scheduling block or system information block shall be assembled in ascending order with respect to the segment index. When all segments of the master information block, scheduling block or a system information block have been received, the UE shall perform decoding of the complete master information block, scheduling block or system information block. For System Information Block types 15.2, 15.3 and 16, which may have multiple occurrences, each occurrence shall be re-assembled independently.

The UE shall discard system information blocks of which segments were missing, of which segments were received out of sequence and/or for which duplicate segments were received. The only valid sequence is an ascending one with the sequence starting with the First Segment of the associated System Information Block.

If the UE receives a Subsequent segment or Last segment where the index in IE "Segment index" is equal to or larger than the number of segments stated in IE "SEG\_COUNT" in the scheduling information for that scheduling block or system information block:

- 1> the UE may:
  - 2> read all the segments to create a system information block as defined by the scheduling information read by the UE;
  - 2> store the content of the system information block with a value tag set to the value NULL; and
  - 2> consider the content of the scheduling block or system information block as valid:
    - 3> until it receives the same type of scheduling block or system information block in a position according to its scheduling information; or
    - 3> at most for 6 hours after reception.
- 1> and the UE shall:
  - 2> re-read scheduling information for that scheduling block or system information block.

If the UE receives a Subsequent segment or Last segment where the index in IE "Segment index" is equal to or larger than the number of segments stated in IE "SEG\_COUNT" in the First segment, the UE shall

- 1> discard all segments for that master information block, scheduling block or system information block; and
- 1> re-read the scheduling information for that system information block;
- 1> then re-read all segments for that system information block.

#### 8.1.1.1.5 Scheduling of system information

Scheduling of system information blocks is performed by the RRC layer in UTRAN. If segmentation is used, it should be possible to schedule each segment separately.

To allow the mixing of system information blocks with short repetition period and system information blocks with segmentation over many frames, UTRAN may multiplex segments from different system information blocks. Multiplexing and de-multiplexing is performed by the RRC layer.

The scheduling of each system information block broadcast on a BCH transport channel is defined by the following parameters:

- the number of segments (SEG\_COUNT);
- the repetition period (SIB\_REP). The same value applies to all segments;
- the position (phase) of the first segment within one cycle of the Cell System Frame Number (SIB\_POS(0)). Since system information blocks are repeated with period SIB\_REP, the value of SIB\_POS(*i*), *i* = 0, 1, 2, ... SEG\_COUNT-1 must be less than SIB\_REP for all segments;
- the offset of the subsequent segments in ascending index order (SIB\_OFF(*i*), *i* = 1, 2, ... SEG\_COUNT-1). The position of the subsequent segments is calculated using the following: SIB\_POS(*i*) = SIB\_POS(*i*-1) + SIB\_OFF(*i*).

The scheduling is based on the Cell System Frame Number (SFN). The SFN of a frame at which a particular segment, *i*, with *i* = 0, 1, 2, ... SEG\_COUNT-1 of a system information block occurs, fulfils the following relation:

$$\text{SFN mod SIB\_REP} = \text{SIB\_POS}(i)$$

In FDD and TDD the scheduling of the master information block is fixed as defined in table 8.1.1. For TDD, UTRAN may apply one of the values allowed for the master information block's repetition period. The value that UTRAN is using in TDD is not signalled; UEs have to determine it by trial and error.

### 8.1.1.2 Initiation

The system information is continuously broadcast on a regular basis in accordance with the scheduling defined for each system information block.

### 8.1.1.3 Reception of SYSTEM INFORMATION messages by the UE

The UE shall read SYSTEM INFORMATION messages broadcast on a BCH transport channel in idle mode and in the connected mode in states CELL\_FACH, CELL\_PCH, URA\_PCH and CELL\_DCH (TDD only). In addition, UEs in FDD mode which support simultaneous reception of one SCCPCH and one DPCH shall read system information on a FACH transport channel when in CELL\_DCH state.

In idle mode and connected mode different combinations of system information blocks are valid. The UE shall acquire the system information blocks that are needed according to table 8.1.1.

The UE may store system information blocks with *cell*, *PLMN* or *Equivalent PLMN* area scope (including their value tag if applicable) for different cells and different PLMNs, to be used if the UE returns to these cells.

The UE shall consider all stored system information blocks as invalid after it has been switched off. Some information obtained from system information may be stored by the UE or in the USIM for use in a stored information cell selection.

When selecting a new cell within the currently used PLMN, the UE shall consider all current system information blocks with area scope *cell* to be invalid. If the UE has stored valid system information blocks for the newly selected cell, the UE may set those as current system information blocks.

After selecting a new PLMN, the UE shall consider all current system information blocks with area scope *cell* and *PLMN* to be invalid. If the UE has previously stored valid system information blocks for the selected cell of the new PLMN, the UE may set those as current system information blocks. Upon selection of a new PLMN the UE shall store all information elements specified within variable SELECTED\_PLMN for the new PLMN within this variable.

After selecting a new PLMN which is not indicated by higher layers to be equivalent to the identity of the previously selected PLMN, the UE shall consider all system information blocks with area scope *Equivalent PLMN* to be invalid.

### 8.1.1.4 Reception of SYSTEM INFORMATION messages broadcast on a FACH transport channel

System information block type 10 may be broadcast on FACH, as specified in subclause 8.1.1.1.2.

When reading system information blocks on FACH, the UE shall perform the actions as defined in subclause 8.1.1.6.

### 8.1.1.5 Actions upon reception of the Master Information Block and Scheduling Block(s)

When selecting a new cell, the UE shall read the master information block. The UE may use the pre-defined scheduling information to locate the master information block in the cell.

Upon reception of the master information block, the UE shall:

- 1> if the "PLMN type" in the variable SELECTED\_PLMN has the value "GSM-MAP" and the IE "PLMN Type" has the value "GSM-MAP" or "GSM-MAP and ANSI-41":
  - 2> check the IE "PLMN identity" in the master information block and verify that it is the selected PLMN, stored as "PLMN identity" in the variable SELECTED\_PLMN.
- 1> if the "PLMN type" in the variable SELECTED\_PLMN has the value "ANSI-41" and the IE "PLMN Type" has the value "ANSI-41" or "GSM-MAP and ANSI-41":
  - 2> store the ANSI-41 Information elements contained in the master information block and perform initial process for ANSI-41.
- 1> compare the value tag in the master information block with the value tag stored for this cell and this PLMN in the variable VALUE\_TAG;

- 1> if the value tags differ, or if no IEs for the master information block are stored:
  - 2> store the value tag into the variable VALUE\_TAG for the master information block;
  - 2> read and store scheduling information included in the master information block.
- 1> if the value tags are the same the UE may use stored system information blocks and scheduling blocks using value tag that were stored for this cell and this PLMN as valid system information.

For all system information blocks or scheduling blocks that are supported by the UE referenced in the master information block or the scheduling blocks, the UE shall perform the following actions:

- 1> for all system information blocks with area scope "PLMN" or "Equivalent PLMN" that use value tags:
  - 2> compare the value tag read in scheduling information for that system information block with the value stored within the variable VALUE\_TAG for that system information block;
  - 2> if the value tags differ, or if no IEs for the corresponding system information block are stored:
    - 3> store the value tag read in scheduling information for that system information block into the variable VALUE\_TAG;
    - 3> read and store the IEs of that system information block.
  - 2> if the value tags are the same the UE may use stored system information blocks using value tag that were stored in this PLMN as valid system information.
- 1> for all system information blocks or scheduling blocks with area scope cell that use value tags:
  - 2> compare the value tag read in scheduling information for that system information block or scheduling block with the value stored within the variable VALUE\_TAG for that system information block or scheduling block;
  - 2> if the value tags differ, or if no IEs for the corresponding system information block or scheduling block are stored:
    - 3> store the value tag read in scheduling information for that system information block or scheduling block into the variable VALUE\_TAG;
    - 3> read and store the IEs of that system information block or scheduling block.
  - 2> if the value tags are the same the UE may use stored system information blocks using value tags that were stored for this cell and this PLMN as valid system information.
- 1> for system information blocks which may have multiple occurrences:
  - 2> compare the value tag and the configuration or multiple occurrence identity for the occurrence of the system information blocks read in scheduling information with the value tag and configuration or multiple occurrence identity stored within the variable VALUE\_TAG:
    - 3> if the value tags differ, or if no IEs from the occurrence with that configuration or multiple occurrence identity of the system information block are stored:
      - 4> store the value tag read in scheduling information for that system information block and the occurrence with that configuration or multiple occurrence identity into the variable VALUE\_TAG;
      - 4> read and store the IEs of that system information block.
    - 3> if the value tags and the configuration or multiple occurrence identity are identical to those stored, the UE may use stored occurrences of system information blocks that were stored for this cell and this PLMN as valid system information.



For system information blocks, not supported by the UE, but referenced either in the master information block or in the scheduling blocks, the UE may:

- 1> skip reading this system information block;
- 1> skip monitoring changes to this system information block.

If the UE:

- 1> receives a scheduling block at a position different from its position according to the scheduling information for the scheduling block; or
- 1> receives a scheduling block for which scheduling information has not been received:

the UE may:

- 1> store the content of the scheduling block with a value tag set to the value NULL; and
- 1> consider the content of the scheduling block as valid until it receives the same type of scheduling block in a position according to its scheduling information or at most for 6 hours after reception.

If the UE does not find a scheduling block in a position where it should be according to its scheduling information, but a transport block with correct CRC was found at that position, the UE shall:

- 1> read the scheduling information for this scheduling block.

If the UE does not find the master information block in a position fulfilling:

$$\text{SFN mod } 32 = 0$$

but a transport block with correct CRC was found at that position), the UE shall:

- 1> consider the master information block as not found; and
- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

NOTE: This permits a different repetition for the MIB in later versions for FDD. In TDD it allows for a variable SIB\_REP in this and future releases.

If system information block type 1 is not scheduled on BCH, and system information block type 13 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If the UE only supports GSM-MAP but finds a cell that broadcasts System Information Block type 13 but not System Information Block type 1, the UE shall:

- 1> consider the cell barred.

If:

- system information block type 1 is not scheduled on BCH; and
- the "PLMN Type" in the variable SELECTED\_PLMN has the value "GSM-MAP"; and
- the IE "PLMN type" in the Master Information Block has the value "GSM-MAP" or "GSM-MAP and ANSI-41":

the UE shall:

- 1> indicate to upper layers that no CN system information is available.

If in idle mode and System Information Block type 3 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If in connected mode and System Information Block type 3 is not scheduled on BCH, and System Information Block type 4 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If in idle mode and System Information Block type 5 is not scheduled on BCH or System Information Block type 5 is scheduled but IE "AICH info" (FDD) or IE "PICH info" is not present, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If in connected mode and System Information Block type 5 is not scheduled on BCH, and System Information Block type 6 is not scheduled on BCH, or any of System Information Block type 5 or type 6 is scheduled but IE "AICH info" (FDD) or IE "PICH info" is not present, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

If System Information Block type 7 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

In TDD, if System Information Block type 14 is not scheduled on BCH, the UE shall:

- 1> consider the cell to be barred according to [4]; and
- 1> consider the barred cell as using the value "allowed" in the IE "Intra-frequency cell re-selection indicator", and the maximum value in the IE " $T_{\text{barred}}$ ".

### 8.1.1.6 Actions upon reception of system information blocks

The UE may use the scheduling information included within the master information block and the scheduling blocks to locate each system information block to be acquired.

The UE should only expect one occurrence of the scheduling information for a system information block in the master information block and any of the scheduling blocks except for System Information Block type 16, System Information Block type 15.2 and System Information Block type 15.3, which may have multiple occurrences. However, to enable future introduction of new system information blocks, the UE shall also be able to receive system information blocks other than the ones indicated within the scheduling information. The UE may ignore contents of such system information block.

If the UE:

- 1> receives a system information block in a position according to the scheduling information for the system information block; and
- 1> this system information block uses a value tag; or
- 1> this system information block uses a value tag and configuration or multiple occurrence identity:

the UE shall:

- 1> store the content of the system information block together with the value of its value tag or the values of configuration and multiple occurrence identity and the associated value tag in the scheduling information for the system information block; and
- 1> consider the content of the system information block valid until, if used, the value tag in the scheduling information for the system information block is changed or at most for 6 hours after reception.

If the UE:

- 1> receives a system information block in a position according to the scheduling information for the system information block; and
- 1> this system information block does not use a value tag according to the system information block type:

the UE shall:

- 1> store the content of the system information block; and
- 1> start an expiration timer using a value as defined in Table 8.1.1 for that system information block type; and
- 1> consider the content of the system information block valid until, the expiration timer expires.

If the UE:

- 1> receives a system information block at a position different from its position according to the scheduling information for the system information block; or
- 1> receives a system information block for which scheduling information has not been received; and
- 1> this system information block uses a value tag:

the UE may:

- 1> store the content of the system information block with a value tag set to the value NULL; and
- 1> consider the content of the system information block as valid until it receives the same type of system information block in a position according to its scheduling information or at most for 6 hours after reception.

If the UE:

- 1> receives a system information block with multiple occurrences at a position different from its position according to the scheduling information for the system information block; or
- 1> receives a system information block with multiple occurrences for which scheduling information has not been received; and
- 1> this system information block uses a value tag and configuration or multiple occurrence identity:

the UE shall:

- 1> ignore this information.

If the UE does not find a system information block in a position where it should be according to its scheduling information, but a transport block with correct CRC was found at that position, the UE shall read the scheduling information for this system information block.

The UE shall act upon all received information elements as specified in subclause 8.6 unless specified otherwise in the following subclauses.

### 8.1.1.6.1 System Information Block type 1

The UE should store all relevant IEs included in this system information block if the "PLMN Type" in the variable SELECTED\_PLMN has the value "GSM-MAP" and the IE "PLMN type" in the Master Information Block has the value "GSM-MAP" or "GSM-MAP and ANSI-41". The UE shall also:

- 1> check that the cell, according to information included in IE "CN common GSM-MAP NAS system information", is suitable [4];
- 1> if in connected mode:
  - 2> not forward the content of the IE "CN common GSM-MAP NAS system information" to upper layers.
- 1> if in idle mode:
  - 2> forward the content of the IE "CN common GSM-MAP NAS system information" to upper layers.
- 1> for the IE "CN domain system information list":
  - 2> for each IE "CN domain system information" that is present:
    - 3> check that the cell, according to information included in IE "CN domain specific NAS system information", is suitable [4];
    - 3> if in connected mode:
      - 4> not forward the content of the IE "CN domain specific NAS system information" to upper layers.
    - 3> if in idle mode:
      - 4> forward the content of the IE "CN domain specific NAS system information" and the IE "CN domain identity" to upper layers;
      - 4> use the IE "CN domain specific DRX cycle length coefficient" to calculate frame number for the Paging Occasions as specified in [4];
      - 4> store the value of the IE "CN domain specific DRX cycle length coefficient" for use in connected mode.
  - 2> if an IE "CN domain system information" is not present for a particular CN domain:
    - 3> indicate to upper layers that no CN system information is available for that CN domain.
- 1> if the UE has not yet entered UTRA RRC connected mode:
  - 2> store the values of the IE "UE Timers and constants in connected mode" in the variable TIMERS\_AND\_CONSTANTS.
- 1> use the values stored in the variable TIMERS\_AND\_CONSTANTS for the relevant timers and constants.

### 8.1.1.6.2 System Information Block type 2

If in connected mode the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if in state URA\_PCH, start to perform URA updates using the information in the IE "URA identity".

If in idle mode, the UE shall not use the values of the IEs in this system information block.

### 8.1.1.6.3 System Information Block type 3

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if in connected mode, and System Information Block 4 is indicated as used in the cell:
  - 2> read and act on information sent in that block.

#### 8.1.1.6.4 System Information Block type 4

If in connected mode, the UE should store all relevant IEs included in this system information block.

If in idle mode, the UE shall not use the values of the IEs included in this system information block.

#### 8.1.1.6.5 System Information Block type 5

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if in connected mode, and System Information Block type 6 is indicated as used in the cell:
  - 2> read and act on information sent in System Information Block type 6.
- 1> replace the TFS of the RACH with the one stored in the UE if any;
- 1> let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink for the PRACH if UE is in CELL\_FACH state;
- 1> use the first instance of the list of transport formats as in the IE "RACH TFS" for the used RACH received in the IE "PRACH system information list" when using the CCCH;
- 1> start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" (FDD only) when given allocated PRACH is used;
- 1> replace the TFS of the FACH/PCH with the one stored in the UE if any;
- 1> select a Secondary CCPCH as specified in [4] and in subclause 8.5.19, and start to receive the physical channel of type PICH associated with the PCH carried by the selected Secondary CCPCH using the parameters given by the IE "PICH info" if UE is in Idle mode or in CELL\_PCH or URA\_PCH state;
- 1> start to monitor its paging occasions on the selected PICH if UE is in Idle mode or in CELL\_PCH or URA\_PCH state;
- 1> start to receive the selected physical channel of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info" if UE is in CELL\_FACH state;
- 1> in TDD:
  - 2> use the IE "TDD open loop power control" as defined in subclause 8.5.7 when allocated PRACH is used;
  - 2> if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included:
    - 3> store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. For every configuration, for which the IE "SFN Time info" is included, the information shall be stored for the duration given there.

If a UE is a 12 kbps class UE according to [35] and the UE has a lower capability than required to support all transport channel configurations mapped on a specific Secondary CCPCH, the UE shall at a certain time instant still be able to decode those transport channels mapped on this Secondary CCPCH that do match the capability supported by the UE. The UE shall use the TFCI bits for that Secondary CCPCH, to distinguish a transport channel configuration that is supported by the UE from a transport channel configuration that is not supported by the UE.

In particular if the UE is a 12 kbps class UE according to [35] and it does not support the processing requirement at a given point in time for a Secondary CCPCH, it shall still be able to decode the same Secondary CCPCH when the processing requirement is consistent with the UE capability. Or if the UE does not support the number of TFs or the coding of a certain transport channel on a Secondary CCPCH, it shall still be able to decode other transport channels mapped on the same Secondary CCPCH that is consistent with what is supported by the UE.

#### 8.1.1.6.6 System Information Block type 6

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> replace the TFS of the RACH with the one stored in the UE if any;

- 1> let the physical channel(s) of type PRACH given by the IE(s) "PRACH info" be the default in uplink if UE is in CELL\_FACH state. If the IE "PRACH info" is not included, the UE shall read the corresponding IE(s) in System Information Block type 5 and use that information to configure the PRACH;
- 1> start to receive the physical channel of type AICH using the parameters given by the IE "AICH info" when associated PRACH is used. If the IE "AICH info" is not included, the UE shall read the corresponding IE in System Information Block type 5 and use that information (FDD only);
- 1> replace the TFS of the FACH/PCH with the one stored in the UE if any;
- 1> select a Secondary CCPCH as specified in [4] and in subclause 8.5.19, and start to receive the physical channel of type PICH associated with the PCH carried by the selected Secondary CCPCH using the parameters given by the IE "PICH info" if the UE is in CELL\_PCH or URA\_PCH state. If the IE "PICH info" is not included, the UE shall read the corresponding IE in System Information Block type 5 and use that information;
- 1> start to monitor its paging occasions on the selected PICH if the UE is in CELL\_PCH or URA\_PCH state;
- 1> start to receive the selected physical channel of type Secondary CCPCH using the parameters given by the IE(s) "Secondary CCPCH info" if the UE is in CELL\_FACH state. If the IE "Secondary CCPCH info" is not included, the UE shall read the corresponding IE(s) in System Information Block type 5 and use that information;
- 1> in TDD: use the IE "TDD open loop power control" as defined in subclause 8.5.7;
- 1> in TDD: if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included, store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. For every configuration, for which the IE "SFN Time info" is included, the information shall be stored for the duration given there.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

If a UE is a 12 kbps class UE according to [35] and the UE has a lower capability than required to support all transport channel configurations mapped on a specific Secondary CCPCH, the UE shall at a certain time instant still be able to decode those transport channels mapped on this Secondary CCPCH that do match the capability supported by the UE. The UE shall use the TFCI bits for that Secondary CCPCH, to distinguish a transport channel configuration that is supported by the UE from a transport channel configuration that is not supported by the UE.

In particular if the UE is a 12 kbps class UE according to [35] and it does not support the processing requirement at a given point in time for a Secondary CCPCH, it shall still be able to decode the same Secondary CCPCH when the processing requirement is consistent with the UE capability. Or if the UE does not support the number of TFs or the coding of a certain transport channel on a Secondary CCPCH, it shall still be able to decode other transport channels mapped on the same Secondary CCPCH that is consistent with what is supported by the UE.

#### 8.1.1.6.7 System Information Block type 7

The UE should store all relevant IEs included in this system information block.

#### 8.1.1.6.8 System Information Block type 8

This system information block type is used only in FDD.

If in connected mode, the UE should store all relevant IEs included in this system information block.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

#### 8.1.1.6.9 System Information Block type 9

This system information block type is used only in FDD.

If in connected mode, the UE should store all relevant IEs included in the system information block. The UE shall:

- 1> start a timer set to the value given by the repetition period (SIB\_REP) for that system information block.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

### 8.1.1.6.10 System Information Block type 10

This system information block type is used only in FDD.

If in state CELL\_DCH, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> start a timer set to the value given by the repetition period (SIB\_REP) for that system information block;
- 1> perform actions defined in subclause 14.8.

If in idle mode, state CELL\_FACH, state CELL\_PCH or state URA\_PCH, the UE shall not use the values of the IEs in this system information block.

### 8.1.1.6.11 System Information Block type 11

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if in idle mode:
  - 2> clear the variable MEASUREMENT\_IDENTITY.
- 1> if IE "FACH measurement occasion info" is included:
  - 2> act as specified in subclause 8.6.7.
- 1> else:
  - 2> may perform inter-frequency/inter-RAT measurements or inter-frequency/inter-RAT cell re-selection evaluation, if the UE capabilities permit such measurements while simultaneously receiving the S-CCPCH of the serving cell.
- 1> clear the variable CELL\_INFO\_LIST;
- 1> act upon the received IE "Intra-frequency cell info list"/"Inter-frequency cell info list"/"Inter-RAT cell info list" as described in subclause 8.6.7.3;
- 1> if in idle mode; or
- 1> if in connected mode and if System Information Block type 12 is not broadcast in the cell:
  - 2> if no intra-frequency measurement was set up or modified through a MEASUREMENT CONTROL message:
    - 3> if included, store the IE "Intra-frequency reporting quantity" and the IE "Intra-frequency measurement reporting criteria" or "Periodical reporting criteria" in order to activate reporting when state CELL\_DCH is entered in the variable MEASUREMENT\_IDENTITY. The IE "Cells for measurement" is absent for this measurement. The IE "Measurement Validity" is absent for this measurement after a state transition to CELL\_DCH;
- 1> if in connected mode and if System Information Block type 12 is not broadcast in the cell:
  - 2> read the IE "Traffic volume measurement information";
  - 2> if no traffic volume measurement with the measurement identity indicated in the IE "Traffic volume measurement system information" was set up or modified through a MEASUREMENT CONTROL message:
    - 3> update the variable MEASUREMENT\_IDENTITY with the measurement information received in that IE.
- 1> if the IE "Cell selection and reselection info" is not included for a new neighbouring cell in the IE "intra-frequency cell info list", the IE "inter-frequency cell info list" or the IE "inter-RAT cell info list" in System Information Block type 11:
  - 2> use the default values specified for the IE "Cell selection and reselection info" for that cell except for the IE "HCS neighbouring cell information".
- 1> if the IE "Use of HCS" is set to "used", indicating that HCS is used, do the following:

- 2> if IE "HCS neighbouring cell information" is not included for the first new cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 11:
  - 3> use the default values specified for the IE "HCS neighbouring cell information" for that cell.
- 2> if IE "HCS neighbouring cell information" is not included for any other new cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 11:
  - 3> for that cell use the same parameter values as used for the preceding cell in the same cell info list in System Information Block type 11.
- 1> if the value of the IE "Cell selection and reselection quality measure" is different from the value of the IE "Cell selection and reselection quality measure" obtained from System Information Block type 3 or System Information Block type 4:
  - 2> use the value of the IE from this System Information Block and ignore the value obtained from System Information Block type 3 or System Information Block type 4.
- 1> if in connected mode, and System Information Block type 12 is indicated as used in the cell:
  - 2> read and act on information sent in System Information Block type 12 as indicated in subclause 8.1.1.6.12.

#### 8.1.1.6.12 System Information Block type 12

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> after reception of System Information Block type 11:
  - 2> update the variable MEASUREMENT\_IDENTITY with the measurement information in the received IEs unless specified otherwise.
- 1> if IE "FACH measurement occasion info" is included:
  - 2> act as specified in subclause 8.6.7.
- 1> else:
  - 2> may perform inter-frequency/inter-RAT measurements or inter-frequency/inter-RAT cell re-selection evaluation, if the UE capabilities permit such measurements while simultaneously receiving the S-CCPCH of the serving cell.
- 1> act upon the received IE "Intra-frequency cell info list"/"Inter-frequency cell info list"/"Inter-RAT cell info list" as described in subclause 8.6.7.3;
- 1> if any of the IEs "Intra-frequency measurement quantity", "Intra-frequency reporting quantity for RACH reporting", "Maximum number of reported cells on RACH" or "Reporting information for state CELL\_DCH" are not included in the system information block:
  - 2> read the corresponding IE(s) in system information block type 11 and use that information for the intra-frequency measurement.
- 1> if included in this system information block or in System Information Block type 11:
  - 2> if no intra-frequency measurement in the variable MEASUREMENT\_IDENTITY was set up or modified through a MEASUREMENT CONTROL message:
    - 3> store the IE "Intra-frequency reporting quantity" and the IE "Intra-frequency measurement reporting criteria" or "Periodical reporting criteria" in order to activate reporting when state CELL\_DCH is entered in the variable MEASUREMENT\_IDENTITY. The IE "Cells for measurement" is absent for this measurement. The IE "Measurement Validity" is absent for this measurement after a state transition to CELL\_DCH;
- 1> if the IE "Traffic volume measurement system information" is not included in this system information block:



- 2> read the corresponding IE in System Information Block type 11.
- 1> if the IE "Traffic volume measurement system information" was received either in this system information block or in System Information Block type 11:
  - 2> if no traffic volume measurement with the measurement identity indicated in the IE "Traffic volume measurement system information" was set up or modified through a MEASUREMENT CONTROL message:
    - 3> update the variable MEASUREMENT\_IDENTITY with the measurement information received in that IE.
- 1> if in CELL\_FACH state:
  - 2> start or continue the traffic volume measurements stored in the variable MEASUREMENT\_IDENTITY that are valid in CELL\_FACH state.
- 1> if the IE "Cell selection and reselection info" is not included for a new neighbouring cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 12:
  - 2> use the default values specified for the IE "Cell selection and reselection info" for that cell except for the IE "HCS neighbouring cell information".
- 1> if the IE "Use of HCS" is set to "used", indicating that HCS is used, do the following:
  - 2> if IE "HCS neighbouring cell information" is not included for the first new cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 12:
    - 3> use the default values specified for the IE "HCS neighbouring cell information" for that cell.
  - 2> if IE "HCS neighbouring cell information" is not included for any other new cell in the IE "Intra-frequency cell info list", the IE "Inter-frequency cell info list" or the IE "Inter-RAT cell info list" in System Information Block type 12:
    - 3> for that cell use the same parameter values as used for the preceding cell in the same cell info list in System Information Block type 12.
- 1> if the value of the IE "Cell selection and reselection quality measure" is different from the value of the IE "Cell selection and reselection quality measure" obtained from System Information Block type 3 or System Information Block type 4:
  - 2> use the value of the IE from this System Information Block and ignore the value obtained from System Information Block type 3 or System Information Block type 4.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

#### 8.1.1.6.13 System Information Block type 13

If in idle or connected mode, the UE should store all relevant IEs included in this system information block except for the IEs "CN domain specific DRX cycle length coefficient", "UE timers and constants in idle mode" and "Capability update requirement" which shall be stored only in the idle mode case. The UE shall read System Information Block type 13 and the associated System Information Block types 13.1, 13.2, 13.3 and 13.4 only when the "PLMN Type" in the variable SELECTED\_PLMN has the value "ANSI-41" and the IE "PLMN type" in the Master Information Block has the value "ANSI-41" or "GSM-MAP and ANSI-41". The UE shall also:

- 1> forward the content of the IE "CN domain specific NAS system information" to the non-access stratum entity indicated by the IE "CN domain identity";
- 1> use the IE "CN domain specific DRX cycle length coefficient" to calculate frame number for the Paging Occasions and Page indicator as specified in [4].

Refer to TIA/EIA/IS-2000.5-A for actions on information contained in System Information Block types 13.1, 13.2, 13.3 and 13.4.

#### 8.1.1.6.14 System Information Block type 14

This system information block type is used only in TDD.

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> use the IE "UL Timeslot Interference" to calculate PRACH, DPCH and PUSCH transmit power for TDD uplink open loop power control as defined in subclause 8.5.7.

#### 8.1.1.6.15 System Information Block type 15

If the UE is in idle or connected mode, and supports GPS location services it should store all relevant IEs included in this system information block. The UE shall:

- 1> if the IE "GPS Data ciphering info" is included:
  - 1> act as specified in the subclause 8.6.7.19.4.- act upon the received IE "Reference position" as specified in subclause 8.6.7.19.3.8;
  - 1> act upon the received IE "GPS reference time" as specified in subclause 8.6.7.19.3.7;
- 1> if IE "Satellite information" is included:
  - 2> act upon this list of bad satellites as specified in subclause 8.6.7.19.3.6.

NOTE: For efficiency purposes, the UTRAN should broadcast System Information Block type 15 if it is broadcasting System Information Block type 15.2.

#### 8.1.1.6.15.1 System Information Block type 15.1

The UE should store all the relevant IEs included in this system information block in variable UE\_POSITIONING\_GPS\_DATA. The UE shall:

- 1> act on "DGPS information" in the IE "DGPS Corrections" in a similar manner as specified in [13] except that the scale factors for PRC and RRC are different;
- 1> act upon the received IE " UE Positioning GPS DGPS corrections" as specified in subclause 8.6.7.19.3.3.

In this version of the specification, the UE shall:

- 1> ignore the following IEs: "Delta PRC2", "Delta RRC2", "Delta PRC3" and "Delta RRC3".

#### 8.1.1.6.15.2 System Information Block type 15.2

For System Information Block type 15.2 multiple occurrences may be used; one occurrence for one satellite. To identify the different occurrences, the scheduling information for System Information Block type 15.2 includes IE "SIB occurrence identity and value tag". The UE should store all the relevant IEs included in this system information block in variable UE\_POSITIONING\_GPS\_DATA. The UE shall:

- 1> compare for each occurrence the value tag of the stored occurrence, if any, with the occurrence value tag included in the IE "SIB occurrence identity and value tag" for the occurrence of the SIB with the same occurrence identity;
- 1> in case the UE has no SIB occurrence stored with the same identity or in case the occurrence value tag is different:
  - 2> store the occurrence information together with its identity and value tag for later use.
- 1> in case an occurrence with the same identity but different value tag was stored:
  - 2> overwrite this one with the new occurrence read via system information for later use.
- 1> interpret IE "Transmission TOW" as a very coarse estimate of the current time, i.e., the approximate GPS time-of-week when the message is broadcast;
- 1> interpret IE "SatID" as the satellite ID of the data from which this message was obtained;

- 1> act upon the received IEs "Sat ID" and "GPS Ephemeris and Clock Corrections Parameter" as specified in subclause 8.6.7.19.3.4.

The IE "Transmission TOW" may be different each time a particular SIB occurrence is transmitted. The UTRAN should not increment the value tag of the SIB occurrence if the IE "Transmission TOW" is the only IE that is changed.

The UE may not need to receive all occurrences before it can use the information from any one occurrence.

#### 8.1.1.6.15.3 System Information Block type 15.3

For System Information Block type 15.3 multiple occurrences may be used; one occurrence for each set of satellite data. To identify the different occurrences, the scheduling information for System Information Block type 15.3 includes IE "SIB occurrence identity and value tag". The UE should store all the relevant IEs included in this system information block in variable UE\_POSITIONING\_GPS\_DATA. The UE shall:

- 1> compare for each occurrence the value tag of the stored occurrence, if any, with the occurrence value tag included in the IE "SIB occurrence identity and value tag" for the occurrence of the SIB with the same occurrence identity;
- 1> in case the UE has no SIB occurrence stored with the same identity or in case the occurrence value tag is different:
  - 2> store the occurrence information together with its identity and value tag for later use.
- 1> in case an occurrence with the same identity but different value tag was stored:
  - 2> overwrite this one with the new occurrence read via system information for later use.
- 1> interpret IE "Transmission TOW" as a very coarse estimate of the current time, i.e., the approximate GPS time-of-week when the message is broadcast;
- 1> if the IE "GPS Almanac and Satellite Health" is included:
  - 2> interpret IE "SatMask" as the satellites that contain the pages being broadcast in this message;
  - 2> interpret IE "LSB TOW" as the least significant 8 bits of the TOW ([12]);
  - 2> act upon the received IE "GPS Almanac and Satellite Health" as specified in subclause 8.6.7.19.3.2.
- 1> if the IE "GPS ionospheric model" is included:
  - 2> act upon the received IE "GPS ionospheric model" as specified in subclause 8.6.7.19.3.5.
- 1> if the IE "GPS UTC model" is included:
  - 2> act upon the received IE "GPS UTC model" as specified in subclause 8.6.7.19.3.9.

The IE "Transmission TOW" may be different each time a particular SIB occurrence is transmitted. The UTRAN should not increment the value tag of the SIB occurrence if the IE "Transmission TOW" is the only IE that is changed. One SIB occurrence value tag is assigned to the table of subclause 10.2.48.8.18.3.

The UE may not need to receive all occurrences before it can use the information for any one occurrence.

#### 8.1.1.6.15.4 System Information Block type 15.4

If the UE is in idle mode or connected mode, the UE shall:

- 1> if the IE "OTDOA Data ciphering info" is included:
  - 2> act as specified in subclause 8.6.7.19.4.

If the UE is in connected mode, the UE shall:

- 1> act as specified in subclause 8.6.7.19.2.

#### 8.1.1.6.15.5 System Information Block type 15.5

If the UE is in idle or connected mode, the UE shall:

- 1> if the UE supports UE-based OTDOA positioning:
  - 2> act as specified in subclause 8.6.7.19.2a.

#### 8.1.1.6.16 System Information Block type 16

For System Information Block type 16 multiple occurrences may be used; one occurrence for each predefined configuration. To identify the different predefined configurations, the scheduling information for System Information Block type 16 includes IE "Predefined configuration identity and value tag".

The UE should store all relevant IEs included in this system information block. The UE shall:

- 1> compare for each predefined configuration the value tag of the stored predefined configuration with the preconfiguration value tag included in the IE "Predefined configuration identity and value tag" for the occurrence of the SIB with the same predefined configuration identity;
- 1> in case the UE has no predefined configuration stored with the same identity or in case the predefined configuration value tag is different:
  - 2> store the predefined configuration information together with its identity and value tag for later use e.g. during handover to UTRAN.
- 1> in case a predefined configuration with the same identity but different value tag was stored:
  - 2> overwrite this one with the new configuration read via system information for later use e.g. during handover to UTRAN.

The above handling applies regardless of whether the previously stored predefined configuration information has been obtained via UTRA or via another RAT.

The UE is not required to complete reading of all occurrences of System Information Block type 16 before initiating RRC connection establishment.

The UE is not required to store more than maxPredefConfig preconfigurations even in the case of multiple equivalent PLMNs.

#### 8.1.1.6.17 System Information Block type 17

This system information block type is used only for TDD.

If in connected mode, the UE should store all relevant IEs included in this system information block. The UE shall:

- 1> if the IE "PDSCH system information" and/or the IE "PUSCH system information" is included, store each of the configurations given there with the associated identity given in the IE "PDSCH Identity" and/or "PUSCH Identity" respectively. This information shall become invalid after the time specified by the repetition period (SIB\_REP) for this system information block.

If in idle mode, the UE shall not use the values of the IEs in this system information block.

#### 8.1.1.6.18 System Information Block type 18

If the System Information Block type 18 is present, a UE may obtain knowledge of the PLMN identity of the neighbour cells to be considered for cell reselection, and may behave as specified in this subclause and in subclause 8.5.14a.

The UE should store all the relevant IEs included in this system information block.

A UE in idle mode shall act according to the following rules:

- 1> any PLMN list of a given type (IEs "PLMNs of intra-frequency cells list", "PLMNs of inter-frequency cells list", "PLMNs of inter-RAT cell lists") included in the IE "Idle mode PLMN identities" is paired with the list of cells of the same type derived from System Information Block type 11;
- 1> the PLMN identity located at a given rank in the PLMN list is that of the cell with the same ranking in the paired list of cells, the cells being considered in the increasing order of their associated identities ("Intra-frequency cell id", "Inter-frequency cell id", "Inter-RAT cell id");
- 1> if the number of identities in a PLMN list exceeds the number of neighbour cells in the paired list (if any), the extra PLMN identities are considered as unnecessary and ignored;
- 1> if the number of identities in a PLMN list (if any) is lower than the number of neighbour cells in the paired list, the missing PLMN identities are replaced by the last PLMN identity in the list if present, otherwise by the identity of the selected PLMN.

A UE in connected mode shall act in the same manner as a UE in idle mode with the following modifications:

- 1> the PLMN lists to be considered are the ones included, when present, in the IE "Connected mode PLMN identities"; otherwise, the UE shall use, in place of any missing list, the corresponding one in the IE "Idle mode PLMN identities";
- 1> the paired lists of cells are the ones derived from System Information Block type 11, and System Information Block type 12 if present.

### 8.1.1.7 Modification of system information

For System Information Block type 15.2, 15.3 and 16 that may have multiple occurrences, the UE shall handle each occurrence independently as specified in the previous; that is each occurrence is handled as a separate system information block.

**NOTE:** It should be noted that for the proper operation of the BCCH Modification Information sent on a PCH, the System Information should not be changed more frequently than can be accommodated by mobile stations operating at the maximum DRX cycle length supported by the UTRAN.

#### 8.1.1.7.1 Modification of system information blocks using a value tag

Upon modifications of system information blocks using value tags, UTRAN should notify the new value tag for the master information block in the IE "BCCH modification info", transmitted in the following way:

- 1> to reach UEs in idle mode, CELL\_PCH state and URA\_PCH state, the IE "BCCH modification info" is contained in a PAGING TYPE 1 message transmitted on the PCCH in all paging occasions in the cell;
- 1> to reach UEs in CELL\_FACH state or TDD UEs in CELL\_DCH with S-CCPCH assigned, the IE "BCCH modification info" is contained in a SYSTEM INFORMATION CHANGE INDICATION message transmitted on the BCCH mapped on at least one FACH on every Secondary CCPCH in the cell.

Upon reception of a PAGING TYPE 1 message or a SYSTEM INFORMATION CHANGE INDICATION message containing the IE "BCCH modification info" containing the IE "MIB value tag" but not containing the IE "BCCH modification time", the UE shall perform actions as specified in subclause 8.1.1.7.3.

If the IE "BCCH modification time" is included the UE shall perform actions as specified in subclause 8.1.1.7.2.

#### 8.1.1.7.2 Synchronised modification of system information blocks

For modification of some system information elements, e.g. reconfiguration of the channels, it is important for the UE to know exactly when a change occurs. In such cases, the UTRAN should notify the SFN when the change will occur as well as the new value tag for the master information block in the IE "BCCH modification info" transmitted in the following way:

- 1> To reach UEs in idle mode, CELL\_PCH state and URA\_PCH state, the IE "BCCH modification info" is contained in a PAGING TYPE 1 message transmitted on the PCCH in all paging occasions in the cell;

- 1> To reach UEs in CELL\_FACH state, the IE "BCCH modification info" is contained in a SYSTEM INFORMATION CHANGE INDICATION message transmitted on the BCCH mapped on at least one FACH on every Secondary CCPCH in the cell.

Upon reception of a PAGING TYPE 1 message or a SYSTEM INFORMATION CHANGE INDICATION message containing the IE "BCCH modification info" containing the IE "MIB value tag" and containing the IE "BCCH modification time", the UE shall:

- 1> perform the actions as specified in subclause 8.1.1.7.3 at the time, indicated in the IE "BCCH Modification Info".

#### 8.1.1.7.3 Actions upon system information change

The UE shall:

- 1> compare the value of IE "MIB value tag" in the IE "BCCH modification info" with the value tag stored for the master information block in variable VALUE\_TAG.
- 1> if the value tags differ:
  - 2> read the master information block on BCH;
  - 2> if the value tag of the master information block in the system information is the same as the value in IE "MIB value tag" in "BCCH modification info" but different from the value tag stored in the variable VALUE\_TAG:
    - 3> perform actions as specified in subclause 8.1.1.5.
  - 2> if the value tag of the master information block in the system information is the same as the value tag stored in the variable VALUE\_TAG:
    - 3> for the next occurrence of the master information block:
      - 4> perform actions as specified in subclause 8.1.1.7.3 again.
  - 2> if the value tag of the master information block in the system information is different from the value tag stored in the variable VALUE\_TAG, and is different from the value in IE "MIB value tag" in "BCCH modification info":
    - 3> perform actions as specified in subclause 8.1.1.5;
    - 3> if  $(VT_{CI} - VT_{MIB}) \bmod 8 < 4$ , where  $VT_{CI}$  is the value tag in the IE "MIB value tag" in "BCCH modification info" and  $VT_{MIB}$  is the value tag of the master information block in the system information:
      - 4> for the next occurrence of the master information block:
        - 5> perform actions as specified in subclause 8.1.1.7.3 again.

#### 8.1.1.7.4 Actions upon expiry of a system information expiry timer

When the expiry timer of a system information block not using a value tag expires

the UE shall:

- 1> consider the content of the system information block invalid;
- 1> re-acquire the system information block again before the content can be used;

In FDD for system information blocks other than System Information Block type 7, or in states other than CELL\_FACH, or in TDD for system information blocks other than System Information Block type 14, or in states other than CELL\_FACH or CELL\_DCH the UE may:

- 1> postpone reading the system information block until the content is needed.

In FDD for System Information Block type 7, while in state CELL\_FACH, and in TDD for System Information Block type 14, while in state CELL\_FACH or CELL\_DCH the UE should always keep an up to date version of the relevant IEs, unless this is not possible because system information can not be received due to bad radio conditions.

## 10.2.49 SYSTEM INFORMATION CHANGE INDICATION

This message is used to send information on FACH to the UEs in state CELL\_FACH [or CELL\\_DCH\(TDD only\)](#) about coming modification of the system information.

RLC-SAP: TM

Logical channel: BCCH

Direction: UTRAN → UE

Information Element/Group name	Need	Multi	Type and reference	Semantics description
Message Type	MP		Message Type	
<b>Other information elements</b>				
BCCH modification info	MP		BCCH modification info 10.3.8.1	

If the encoded message does not fill a transport block, the RRC layer shall insert padding according to subclause 12.1.