CBF-PUB(02)2R2.4

Handset Requirements Specification

October 2006

"Reaching Millions in a Matter of Seconds"

Issued by Cell Broadcast Forum

Cell Broadcast Forum

E-mail: info@cellbroadcastforum.org Internet: http://www.cellbroadcastforum.org/

About Cell Broadcast Forum

The Cell Broadcast Forum (CBF) is a non-profit Industry Association that supports the world standard for cell broadcast wireless information and telephony services on digital mobile phones and other wireless terminals. The primary goal of the Cell Broadcast Forum is to bring together companies from all segments of the wireless industry value chain to ensure product interoperability and growth of wireless market.

The Forum's mission includes

- Promotion of simple and easy-to-use, interoperable Cell Broadcast service solutions,

- Improving the technology and underlying standards

- Maximizing business for the mobile and related industry

Cell Broadcast Forum members represent the global handset market, carriers that together serve more than 100 million customers, leading infrastructure providers, software developers and other organisations providing solutions to the wireless industry.

Content

Foreword

Intensive validation tests of GSM mobile terminals have shown that there is a wide variety of different Cell Broadcast implementations currently in the market.

This variety is the result of a missing GSM/UMTS (3GPP) Technical Specification of the series 02.xx. There are only two specifications available: 3GPP TS 23.041 specifies e.g. how a Cell Broadcast message shall be coded and 3GPP TS 24.012 specifies how it is transferred over the air interface. But there is no specification that tells how a mobile station is to receive, display and store Cell Broadcast messages.

With that background the freedom of Cell Broadcast service creation is strongly limited. Hence the Cell Broadcast Forum intends to reduce the variety of implementations by defining some basic requirements, aiming to a future homogeneous mobile terminal behaviour.

1   Preface

1.1   Scope

This document reflects the Cell Broadcast Forum's vision of a mobile terminal Cell Broadcast implementation.

The Dutch government has conducted a public warning over Cell Broadcast trial during 2005 and 2006. This trial resulted in a number of requirements that have been included in revision 2.4 of this document.

In September 2006, the WARN Act passed through the US Congress. As a result the FCC shall initiate a Commercial Mobile Service Alert Advisory Committee to develop system critical recommendations. These recommendations are not yet part of this document.

1.2   Audience

The reader is expected to be familiar with the specifications of 3GPP TS 23.041 and 3GPP TS 24.012.

This document intends to assist Product Managers of ME manufacturers to establish requirements for behaviour and handling of Cell Broadcast messages, which can be used in the development of MEs.

1.3   References

No normative references today.

1.4   Definitions and Abbreviations

DCS   Data Coding Scheme

GS   Geographical Scope

MC   Message Code

ME   Mobile Entity

MI	Message Identifier
MS	Mobile Station
PLMN	Public Land Mobile Network
TE	Terminal Equipment
UN	Update Number

2 Requirements

2.1 General requirements

2.1.1 Mandatory requirements

1. Factory Settings: The factory setting of Cell Broadcast shall be set to "not active", i.e. no CB message shall be received, neither on MI 0 (Index) nor on MI 50 (District Information), nor on any other Message Identifier, even if the status of the Message Identifier is "selected."
   Refer to section 2.10 for requirements for handling Emergency Warning Messages.

2. MS Off/On: The actual setting of Cell Broadcast ("active" or "not active") should not be affected by turning the MS on / off, or if the battery is depleted or replaced.

3. Single CB menu: There shall be only one single CB (main-) menu within the SMS menu to control Cell Broadcast at the MS. There shall be no separate menus, e.g. within the phone settings, for special Message Identifiers, e.g. MI 50. All handsets shall apply a uniform naming of the Cell Broadcast menu. It shall be possible to (de-)activate Cell Broadcast by a simple and straightforward action. Cell Broadcast activation and de-activation should not interfere with Message Identifier selection and de-selection.

4. Reception tone: Reception of a Cell Broadcast message (with parameters that indicate the message is to be presented on the display with Display Mode "normal") shall be indicated with a tone. The user may have the possibility to choose between different tones, however, the ME must offer the possibility to switch off the reception tone. The reception tone for incoming point-to-point SMS and other acoustical signals must not be affected by the setting of the reception tone for SMS Cell Broadcast. Cell

Broadcast messages with Display Mode "immediate" shall be received and displayed without any tone.

Refer to section 2.10 for requirements for notification of Emergency Warning Messages.

5. Using phone numbers: It shall be possible to dial, and send Short Messages to, telephone numbers that are contained within a Cell Broadcast message directly out of the message. If multiple numbers are present in the message, this function shall be available for each of these numbers.

6. Using URLs: It shall be possible to access URLs (referring to e.g. WAP services) that are contained within a Cell Broadcast message directly out of the message by activating the wap browser on the specified URL. If multiple URLs are present in the message, this function shall be available for each of these URL. (This feature is mandatory only for wap terminals)

7. SIM data download: The MS shall be capable of receiving CB messages in the range of MI 1000 (hex) - 10FF (hex) automatically (SIM Data Download) This mode of operation is controlled by the Elementary File CBMID (EF_{CBMID}) on SIM card. As soon as there is an activated CBMID field on SIM and there are one or more Message Identifiers stored in this field, the MS shall scan the Cell Broadcast channel (CBCH) for CB messages with that Message Identifier and receive them. Received SIM Data Download messages are to be passed directly to the SIM card.

8. DRX Scheduling: The MS shall support DRX mode (Scheduling), i.e. be capable of processing both, scheduled and unscheduled schedule messages. High priority messages (Free message slot, reading advised) shall be supported.

9. Reception by Terminal Equipment: It shall be possible to select any CB message type (MI) by terminal equipment (TE) independently from CB status in ME. This is to prevent deactivating services that are configured through the terminal equipment interface. To save battery power due to the scanning of CB channels when not in use after disconnection of the terminal equipment the handsets might deactivate scanning of the configured cell broadcast chan-

nels but storing the configuration an list of message types. This would imply detection of terminal equipment by handsets.

10. CB and Access Network: Reception of Cell Broadcast messages shall not be affected by the Network Mode of Operations. Reception shall be made possible regardless of the access network the MS is attached to. This includes not only GSM, but also GPRS and UMTS.

2.1.2 Optional requirements

11. CB Active: Despite of this the possibility of delivering terminals with "CB active" upon request of a network operator should be provided.

12. Special Message Identifiers: It should be possible to deliver terminals with at least five preconfigured CB channels with Message Identifiers that are to be defined by that operator at the moment of request. The individual status of each of these five preconfigured Message Identifiers can be "active" or "not active", as defined by the network operator. This pre-configuration of Message Identifiers is independent from any settings on the SIM.

13. Submenu for MI 000: A submenu item for Message Identifier 000 ("Index") within the CB (main-) menu should be provided. It must be possible to activate MIs by selecting items presented in the index.

14. WAP Push: It shall be possible to launch the WAP Browser of the WAP terminal by sending a CB message. The CB message will contain WML content. The WAP Browser will be launched locally, without establishing any connection, will interpret the WML content and displays it. When a user action is taken, and a WAP connection has to be made, the WAP browser initiates a new WAP connection. (This feature is optional only for WAP terminals, and requires standardization by appropriate bodies)

15. Using USSD strings: It shall be possible to open a USSD session directly by selecting a USSD string contained in a Cell

Broadcast message. This feature applies to USSD-enabled phones only.

16. Extended CBCH: The MS shall support the extended Cell Broadcast Channel.

17. EMS Support: The MS shall support EMS content over Cell broadcast in the same way as it supports EMS content over SMS. The handset shall behave the same as for SMS when displaying the EMS content of the Cell Broadcast message.

2.2 Requirements on Display Mode

This section deals with the display of Cell Broadcast messages.

2.2.1 Mandatory requirements

18. Normal Display: For each Message Identifier, the user specifies, through the menu, how Cell Broadcast messages with display mode "normal" are to be handled. Two settings are supported:

- Background: the most recently received Cell Broadcast message for this Message Identifier is stored in the handset, without any audible or visible indication to the user.

- Foreground: Reception of a Cell Broadcast message with Display Mode "normal" ($\rightarrow$ Geographical Scope) shall be indicated to the user by displaying an appropriate screen (e.g. "Message received – show?"). The content of the message shall be shown only after user interaction (e.g. by pressing a soft key "yes"). The user shall have the possibility to reject the display of the message with a designated key (e.g. by pressing a soft key "no", but not by clicking any key). After having read the message the user shall be offered the possibility to store or to delete the message. If the user presses a key that it is neither a 'Yes' for showing the message nor a 'No' for deleting it, the CB message should not be deleted without explicit confirmation by the user (see also handling of the Message Classes).

19.   <u>Immediate Display</u>: Cell Broadcast messages with Display Mode "immediate" ($\rightarrow$ Geographical Scope = cell wide) shall be displayed immediately within the idle display. It must be ensured that neither the operator name nor the idle display elements (signal level, battery status, and clock) will be overwritten by an "immediate message". "Immediate messages" shall be displayed permanently, i.e. they cannot be deleted by the user. The display is allowed to be changed only when the message changes, i.e. a new "immediate message" is received, or when the MS leaves the Geographical Scope of the message, i.e. reselects another serving cell (immediate display $\leftrightarrow$ cell wide validity). The only way to remove an "immediate message" from the display is to deactivate the belonging Message Identifier or to deactivate CB reception generally.
This requirement is relevant for displaying location information on MI=50.

20.   <u>Display Mode and Message Identifier</u>: Evaluation of the Display Mode parameter shall be independent of the Message Identifier that is coded within the message, i.e. even messages with Message Identifier 50 shall be processed according to the coded Display Mode and not be displayed immediately by default. "Immediate display" shall be possible on every channel between 000-999 and not be restricted to Message Identifier 50. "Normal display" shall also be possible on every channel, even on the channel referenced by Message Identifier 50. It is left to the operator / information provider whether to use "immediate display" or "normal display".

21.   <u>Immediate Display and Message Identifier</u>: Regarding the Display Mode "immediate" full-length messages (even multi-page) should be supported. A message that is short enough may be displayed permanently. A message that is too long to be permanently displayed should be scrollable, either manually or automatically. However the user should have the possibility of manual scrolling (e.g. after automatic scrolling has finished).

22.   <u>No Deactivation by Selecting Default Menu Options</u>: On reception of a Cell Broadcast Message, selecting the default options

under the soft-keys in the Human Machine Interface shall never result in deactivation of Cell Broadcast or any Cell Broadcast Message Identifiers.

2.3   Requirements on Geographical Scope

This section deals with the reception and display of Cell Broadcast messages depending on the Geographical Scope that is coded within the message.

2.3.1 Mandatory requirements

23.   <u>Boundary of Geographical Scope:</u> For immediate display messages the following applies: if the MS crosses the boundary of the Geographical Scope of a message, the message shall be cancelled from or replaced on the display.

24.   <u>New Message:</u> The Geographical Scope is to be considered carefully when deciding if a received message is new or not. E.g. a mobile station receives two absolutely identical messages in two different cells, i.e. the messages have the same parameter coding (Geographical Scope, Message Code, Update Number, Message Identifier), but not necessarily the same content:

- If the Geographical Scope is "cell wide", both messages are absolutely independent and have presumably different contents. It happened by chance that all parameters are the same. After cell reselection the MS shall discard the old message and receive the other message as "new".

- If the Geographical Scope is "Location Area wide" and both cells belong to the same Location Area, it is the same "known" message with the same content as received before. The MS shall discard the second message and not give any reception tone. If the two cells belong to different Location Areas the second message is to be regarded as "new" and to be received with a tone.

- If the Geographical Scope is "PLMN wide" and both cells belong to the same PLMN, it is the same "known" message with the same

content as received before. The MS shall discard the second
message and not give any reception tone.

*Summary: it shall be prevented that the MS receive the same message
multiple times and indicates each reception with a tone!*
*This applies at all times: independently from the operation the user
had done (show, store or delete) when the CB message was received
for the first time and even if the handset has been turned off and
on again after receiving the message for the first time.*

25.   <u>No evaluation of Geo Scope for Class 3 messages:</u> In case of CB
      messages with DCS class 3 (TE specific), the ME should not evalu-
      ate any Geographical Scope, but should pass to TE without excep-
      tion.

26.   <u>Multi-page and Cell Reselection:</u> If cell reselection occurs
      during reception of a multi-page message the ME can decide by
      means of the Geographical Scope (and of course Message Identi-
      fier, Message Code, Update Number, Page Parameter, as described
      above) whether single received message pages belong to the same
      multi-page message or not. It should be possible for the ME to
      concatenate message pages received in different cells to one
      valid multi-page message.

2.4   *Requirements on Message Code*

This section deals with the parameter Message Code coded within a
Cell Broadcast message with Display mode "normal".

2.4.1 *Mandatory requirements*

27.   <u>Number of Message Codes:</u> The MS shall be capable of storing at
      least ten messages with different Message Codes on the same chan-
      nel (MI).

28.   <u>Handling of Message Codes:</u> If there are further messages to be
      received (except class 2 or 3 messages) before the user has quit
      the currently displayed message, these further messages shall be
      received and stored in the background. After the user has quit
      the currently displayed message the next one shall be displayed.
      It must not happen that messages with the same MI and different

Message Codes overwrite themselves mutually and are therefore not readable for the user.

29. No evaluation of Message Code For Class 3 Messages: In case of CB messages with DCS class 3 (TE specific), the ME should not evaluate any Message Code, but should pass to TE without exception.

2.5 Requirements on Update Number

This section deals with the Update Number coded within a Cell Broadcast message.

2.5.1 Mandatory requirements

30. Update Number: An update of a Cell Broadcast message is indicated by a changed Update Number. If the MS receives two Cell Broadcast messages A and B within the Geographical Scope of the messages and with exactly identical parameters GS(A)=GS(B), Message_Code(A)=Message_Code(B), MI(A)=MI(B) except the Update Number Update_Number(A)≠Update_Number(B), the MS shall interpret message B as an update of message A, indicate reception and display the message as intended by the Display Mode if Update_Number(A)< Update_Number(B) (mod 16)

31. Missed Messages : With respect to missed messages a message B with Update_Number(B) < Update_Number(A) shall be regarded as a valid update of message A if the difference is more than 7, just as a message B with Update_Number(B) > Update_Number(A) if the difference is less then 8. That is because of the cyclic assignment of the 4 bit Update Number 0-15.

32. Equal Update Number: Messages with the same Update Number shall not be received repeatedly because it is presumably the same message, provided that the parameter conditions mentioned above are valid. In that case, if the 15 updates in between have been missed, the 16th update of an older message will not be received (but the 17th will).

33. No Evaluation of Update Number for Class 3 messages: In case of CB messages with DCS class 3 (TE specific), the ME should not

evaluate any Update Number, but should pass to TE without exception.

2.6 Requirements on Message Identifier

This section deals with configuration, activation/deactivation and reception of Message Identifiers.

2.6.1 Mandatory requirements

34.   Reading Access to CBMI: The ME shall read Message Identifiers stored in the CBMI field on SIM and present them to the user in the list of active Message Identifiers, i.e. Message Identifiers read from SIM are by default to be set to status "active" in the MS. When CB reception is switched on at the MS, CB messages with Message Identifiers that match the entries in the CBMI field on SIM shall be received without further action.

35.   Writing Access to CBMI: Message Identifiers that are entered to the ME via the keypad shall be stored in a "MI configuration list" in the ME. If a configured Message Identifier is set to "active", it shall also be stored in CBMI field on SIM, i.e. the CBMI field on SIM represents a "MI activation list". The ME will refrain from erasing from the SIM card any Message Identifier that were not written previously by the ME itself, i.e. the ME will not remove any Message Identifier the SIM card was preloaded with, or that was added later by means of an OTA procedure.

36.   Number of Configuration Message Identifiers: It shall be possible to configure at least 10 different Message Identifiers.

37.   Number of Active Message Identifiers: The ME shall be capable of handling at least 5 active Message Identifiers in parallel, so that reception of 5 different channels must be guaranteed.

38.   Textual Description: It shall be possible to assign and modify a textual description to Message Identifiers. The applicable textual description shall be displayed whenever a Cell Broadcast message is brought to the display. Message identifier numbers above 999 that are present in the SIM card files shall not be re-

vealed to the user. Instead, an entry indicating a reserved chan-
nel is activated will be displayed in the channel list.

39. <u>Activation Status:</u> It shall be possible to activate/deactivate
Message Identifiers that are stored in the list of config-
ured/activated Message Identifiers. The status of activa-
tion/deactivation should be graphically indicated to the user.

40. <u>MI Range:</u> The range of configurable Message Identifiers should
be limited to 000 – 999. Message Identifiers in the range of >=
1000 shall not be configurable through the handset Human Machine
Interface. The handset shall not offer the user an option "re-
ceive all topics" allowing the reception of all SMS-CB messages
on air regardless of the MI they are broadcast on. This is par-
ticularly unacceptable if such option implies that the handset
will display even message identifiers above 999.

41. <u>OTA:</u> It shall be possible to configure Message Identifiers us-
ing an OTA procedure, and messages that are received with these
Message Identifiers shall be received and processed immediately.

2.7 Requirements on Data Coding Scheme

This section deals with the Data Coding Scheme coded within a Cell
Broadcast message.

2.7.1 Mandatory requirements

42. <u>Behaviour without Language Filter:</u> If there is no user-
configurable language filter, the MS should display all Cell
Broadcast messages with Data Coding Scheme "Default Alphabet" re-
gardless of the coded language. (Preferred languages on SIM or
actual MMI language do not need to be handled preferentially).

43. <u>Behaviour with Language Filter:</u> If there is a user-
configurable language filter, the MS should display only Cell
Broadcast messages with Data Coding Scheme "Default Alphabet" and
the desired language and messages with language unspecified.

2.7.2 *Optional requirements*

44. <u>All Languages:</u> If there is a user-configurable language fil-
     ter, the MS should offer the possibility to configure the filter
     to "all languages".

45. <u>Class 0 Messages:</u> Cell Broadcast messages with Data Coding
     Scheme "class0" shall be treated as if the message is a class 0
     SMS message. For example, the message can be completely shown in
     the whole display without user interaction and then the user is
     offered to show, store or delete it. This allows a useful third
     Display Mode, specially taking into account that Display Mode
     "immediate" use is restrictive

46. <u>Class 1 Messages:</u> Cell Broadcast messages with Data Coding
     Scheme "class1" (0101 0101) shall be handled by the ME as speci-
     fied in section 4.2.

47. <u>UCS-2:</u> The handset shall correctly display a Cell Broadcast
     message in UCS-2 format, if the Data Coding Scheme indicates UCS-
     2 format and the language indicated in the first two bytes of the
     UCS-2 message body is enabled in the handset.

2.8 *Requirements on Page Parameter*

This section deals with the Page Parameter coded within a Cell
Broadcast message.

2.8.1 *Mandatory requirements*

48. <u>Multi-page Messages:</u> The MS shall be capable of receiving
     multi-page messages. Up to 15 message pages can be received and,
     after final reception of the last page, be displayed as one en-
     tire multi-page message with a single notification to the user.

49. <u>Multi-page and Cell Reselection:</u> It should be possible for the
     ME to concatenate message pages received in different cells to
     one valid multi-page message.

50. <u>Combination of Different Multi-page Messages:</u> It must not hap-
     pen that pages of equally coded multi-page messages received in

different cells are combined, if the Geographical Scope indicates only cell wide validity.

51. Interrupted Multi-page Messages: The MS shall receive multi-page messages even though the transmission order is interrupted by other messages, e.g. transmission order:

message 1 page 1/3;

message 1 page 2/3;

message 2 page 1/2;

message 2 page 2/2;

message 1 page 3/3;

2.9 Requirements on Storage of Cell Broadcast Messages

This section deals with the storage of Cell Broadcast messages within the ME.

2.9.1 Mandatory Requirements

52. Number of Pages to Store: The ME shall be able to store at least 20 Cell Broadcast message pages in volatile memory and at least 10 Cell Broadcast message pages in permanent memory.

53. Memory Allocation: The volatile and permanent memory space shall be dynamically allocated to the received messages independently of any Message Identifiers and Message Codes (MC).
There shall be no restrictions to the Message Identifier, i.e. it shall be possible to store messages with different Message Codes received on any active channel (at least 5 different MIs) in volatile as well as in permanent memory.
There shall be no restrictions to the Message Code, i.e. it shall be possible to store at least as many messages with as many different Message Codes received on the same channel as allowed by volatile (permanent) memory availability.
Below an example for volatile memory:

100 pages = 5 MIs x 10 MCs x 2 pages
100 pages = 2 MIs x 5 MCs x 10 pages

```
100 pages = 2 MIs x 3 MCs x 5 pages   +    1 MI x 10 MCs x 3
page   +
          2 MIs x 5 MCs x 4 pages
```

54. Overwriting Volatile Memory Case: Messages stored in the volatile memory shall automatically be overwritten by newly received messages, if the received message is an update of a message stored in volatile memory. Otherwise a newly received Cell Broadcast message shall not overwrite the volatile memory. A notification shall be displayed to the user; if not enough volatile memory space is available.

55. Permanent Storage While MS off/on: Messages stored in memory shall not be deleted when power on/off the MS.

56. Handling of Stored Messages in Permanent Memory: Messages stored in the permanent memory shall not be overwritten by newly received messages. It shall be left to the user to organise the permanent memory. As described above, a notification shall be displayed to the user; if not enough permanent memory space is available.

57. Stored Messages Grouped by MI: Stored Messages shall be grouped by Message Identifier.

2.10 Requirements on Handling of Emergency Messages

This section deals with the handling by the ME when an emergency warning message is received. This section does not so much provide the Cell Broadcast forum's view on handling of Emergency Warning Messages, but the requirements of the Dutch government, that may become applicable throughout the EU in due time.

2.10.1 Mandatory Requirements

58. Factory setting: In a country where a public warning service over Cell Broadcast is operational, the government, or the operators may require that the default Factory Setting be set to active, i.e. CB messages can be received and the Message Identifier that has been assigned to the public warning service be selected.

59. Reception tone: The ME shall indicate the reception of an emergency message by playing a ring tone that is specific for emergency messages and cannot be allocated to other services on the ME. This ringtone shall be activated even if the ME setting is set to silent mode, meeting mode, buzzing mode, etc., and also regardless of the Display Mode (Normal or Direct).

60. Storage: Emergency messages shall always be stored, unless or until the user decides to delete the message.

2.10.2 Other Requirements

61. The WARN Act that was effectuated in the US in October 2006 states that it shall be impossible to opt-out of a presidential level message. Further recommendations or legislation were not available at the time of writing of this section and will be included at a later stage (2007).

Annex A: Message Handling for Message Class 0 and 1

All possible combinations of Geographical Scope (GS), "Type" of message (foreground and background) and Data Coding Scheme (DCS) are shown, e.g. first half of the table shows GS immediate display. This section is divided into two parts which are "type" foreground (first half of section immediate display) and "type" background (second half of section immediate display). Each type is divided again into the different DCS (language, class 0-3)!

One example:

A message which is sent with GS=immediate display and DCS=Spanish (language, no message class) and where the user sets the "type" of this message id to background the handling in the handset shall be as described in row 7: The message shall be permanently displayed (GS immediate display overrules the user setting background). Furthermore the storage is only volatile, because the message is displayed all the time anyway, that means after the mobile is switched off/on and the message has been received again it will immediately be displayed again.

Explanations:

Volatile memory means the message is lost after power off/on!

Permanent memory means the message is still available after power off/on!

			Storage:	Comments:
GS imme-diate display	"Type": fore-ground (default setting)	DCS: lan-guage	permanent in dis-play; storage: volatile	
		DCS: class 0 (shown with-out user interaction, option store and delete)	permanent in dis-play; storage: volatile	This combination shall be avoided by operator, if combination occurs GS immediate display shall overrule DCS class 0; no option store or delete shall be presented to the user!
		DCS: class 1	permanent in dis-play; storage: volatile	
		DCS: class 2 (SIM)	storage: volatile	Volatile storage needed for evalua-tion of header information (to avoid permanent reception of same message).
		DCS: class 3 (TE)	storage: non	All messages of activated MIs with DCS class 3 shall be sent to TE. The TE is responsible for the evaluation of the header informa-tion.
	"Type": back-ground	DCS: lan-guage	permanent in dis-play; storage: volatile	Immediate display overrules "type" background!
		DCS: class 0 (shown with-out user interaction, option store and delete)	permanent in dis-play; storage: volatile	Immediate display overrules "type" background! The combination GS immediate dis-play with DCS class 0 shall be avoided by operator, if combination occurs GS immediate display shall overrule DCS class 0; no option store or delete shall be presented to the user!
		DCS: class 1	permanent in dis-play; storage: volatile	Immediate display overrules "type" background!
		DCS: class 2 (SIM)	storage: volatile	Immediate display overrules "type" background! Volatile storage needed for evalua-tion of header information (to avoid permanent reception of same message).
		DCS: class 3 (TE)	storage: non	Immediate display overrules "type" background! All messages of acti-vated MIs with DCS class 3 shall be sent to TE. The TE is responsible for the evaluation of the header information!

			Storage:	Comments:
			until user selection, storage:	
GS normal	"Type": foreground (default setting)	DCS: language	volatile if user selects store, storage: permanent if user selects delete, storage: volatile	After deletion the volatile storage is needed for evaluation of header information (to avoid permanent reception of same message)
		DCS: class 0 (shown without user interaction, option store and delete)	until user selection, storage: volatile if user selects store, storage: permanent if user selects delete, storage: volatile	After deletion the volatile storage is needed for evaluation of header information (to avoid permanent reception of same message)
		DCS: class 1	until user selection, storage: volatile if user selects store, storage: permanent if user selects delete, storage: volatile	After deletion the volatile storage is needed for evaluation of header information (to avoid permanent reception of same message)
		DCS: class 2 (SIM)	storage: volatile	Volatile storage needed for evaluation of header information (to avoid permanent reception of same message)!
		DCS: class 3 (TE)	storage: non	All messages of activated MIs with DCS class 3 shall be sent to TE. The TE is responsible for the evaluation of the header information!
	"Type": background	DCS: language	until user selection, storage: volatile if user selects store, storage: permanent if user selects delete, storage: volatile	After deletion the volatile storage is needed for evaluation of header information (to avoid permanent reception of same message)
		DCS: class 0 (shown without user interaction, option store and delete)	until user selection, storage: volatile if user selects store, storage: permanent if user selects delete, storage: volatile	After deletion the volatile storage is needed for evaluation of header information (to avoid permanent reception of same message)
		DCS: class 1	until user selection, storage: volatile if user selects store, storage: permanent if user selects delete, storage: volatile	After deletion the volatile storage is needed for evaluation of header information (to avoid permanent reception of same message)
		DCS: class 2 (SIM)	storage: volatile	Volatile storage needed for evaluation of header information (to avoid permanent reception of same message)!
		DCS: class 3 (TE)	storage: non	All messages of activated MIs with DCS class 3 shall be sent to TE. The TE is responsible for the evaluation

Revision History

This Document is a joint effort of various individuals active in a Cell Broadcast Forum Working Group. Every Full Member of the Cell Broadcast Forum can delegate participants to the Working Group and is welcome to contribute. See the Cell Broadcast Forum Web Site http://www.cellbroadcastforum.org for details of membership and its benefits.

Revision	Date	Author	Comment
Draft 1.0	21/01/2000	Mathias Burger	First revision
Draft 1.1	08/02/2000	Mathias Burger	Comments from Walter Kokert, Head of CBC project
Version 1.0	08/02/2000	Mathias Burger	Requirements from Reimund Meierl, Head of CBS project; Requirements from Klaus Daffner, Head of Department "Product Marketing Mobile Terminals"
Version 1.1	13/07/2000	Mathias Burger	Time schedule and priorities adapted
Version 1.2	17/07/2000	Mathias Burger	Minor completions made in sections 4.1.6, 4.7.6, 4.7.7, 4.7.8
Version 1.3	21/07/2000	Mathias Burger	Changes made in sections 4.1.9, 4.6
Version 1.4	18/09/2000	Mathias Burger	Editorial changes
Version 1.5	29/12/2000	Tom Veldman	Added comments resulting from discussion in Cell Broadcast Forum Main changes apply to sections: 1, 4.1.3, 4.1.5, 4.1.10, 4.2.1, 4.2.5, 4.3.4, 4.3.5, 4.4.3, 4.5.4, 4.6.5, 4.7.5, 4.7.9 Editorial changes
Version 1.6	20/02/2001	Tom Veldman	Changes based on ad-hoc expert group meeting on 13 February.

Revision	Date	Author	Comment
			Main changes apply to: 4.1.6, 4.1.7, 4.1.8, 4.3.5, 4.4.2
Version 1.7	02/05/2001	Tom Veld-man	Enhanced requirements on handling of messages directed at TE (section 4.1.14) and on storage requirements (section 4.9), dependent on Message Class (Annex A).
Version 1.8	03/10/2001	Chehwan Pierre	Editorial changes and presentation

EMS support (section 4.1.15) |
| Version 1.9 | 03/10/2001 | Chehwan Pierre | Using phone numbers in mandatory requirements (section 4.1)

Using URLs in mandatory requirements (section 4.1)

Replacement of "Time schedule and priorities" by only priorities (Mandatory, Optional) |
Version 2.0	18/12/2001	Heinz Ochsner	Final lay outing and proof reading
Version 2.1	06/02/2002	Heinz Ochsner	Resolving Inconsistencies
Version 2.2	28/05/2002	ISWG	Resolving Inconsistencies in definitions
Version 2.3	27/04/2005	Peter Sanders	Added DCS for emergency use
Version 2.4	16/09/2006	Peter Sanders	Added section on emergency messages