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**3RD GENERATION
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Analog Signaling Standard for cdma2000 Spread Spectrum Systems

Release D

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CONTENTS

1	1.	GENERAL	1-1
2	1.1.	Terms and Numeric Information	1-1
3	1.1.1.	Terms.....	1-1
4	1.1.2.	Numeric Information.....	1-8
5	1.1.2.1.	Analog Numeric Information.....	1-8
6	1.1.2.2.	CDMA Numeric Information.....	1-11
7	1.2.	Analog System Tolerances	1-11
8	1.3.	Message Forward Compatibility Rules	1-12
9	2.	REQUIREMENTS FOR MOBILE STATION ANALOG OPERATION.....	2-1
10	2.1.	Transmitter	2-1
11	2.1.1.	Frequency Parameters	2-1
12	2.1.2.	Power Output Characteristics	2-1
13	2.1.3.	Modulation Characteristics	2-1
14	2.1.3.1.	Voice Signals	2-1
15	2.1.3.1.1.	Compressor.....	2-2
16	2.1.3.1.2.	Pre-Emphasis.....	2-2
17	2.1.3.1.3.	Deviation Limiter	2-2
18	2.1.3.1.4.	Post Deviation-Limiter Filter	2-2
19	2.1.3.1.5.	Transmit Audio Level Adjustment.....	2-2
20	2.1.3.2.	Wideband Data Signals.....	2-2
21	2.1.4.	Limitations on Emissions	2-2
22	2.1.4.1.	Bandwidth Occupied.....	2-2
23	2.1.4.2.	Conducted Spurious Emissions	2-2
24	2.1.4.2.1.	Suppression Inside Cellular Band	2-2
25	2.1.4.2.2.	Suppression Outside Cellular Band	2-2
26	2.1.4.3.	Radiated Spurious Emissions	2-2
27	2.2.	Receiver.....	2-3
28	2.2.1.	Frequency Parameters	2-3
29	2.2.2.	Demodulation Characteristics.....	2-3
30	2.2.2.1.	Voice Signals	2-3
31	2.2.2.1.1.	De-Emphasis.....	2-3
32	2.2.2.1.2.	Expandor.....	2-3

- 1 **A. ANNEX A - Reserved.**
- 2 Reserved.
- 3

- 1 No text.

1

Table B.3-1. NAM Indicators

Indicator	Number of Bits	Where Defined	Notes
FIRSTCHP _p	11	2.3.7	
SSD_A _{S-p}	64	2.3.12.1.1	Shared Secret Data A
SSD_B _{S-p}	64	2.3.12.1.1	Shared Secret Data B
COUNT _{S-p}	6	2.3.12.1.3	Call History Parameter
IMSI_M_S _p	34	2.3.1	Includes IMSI_M_S1 _p and IMSI_M_S2 _p .
HOME_SID _p	15	2.3.8	
ACCOLC _p	4	2.3.5	

2

CONTENTS

1 2.2.2.1.3. Receive Audio Level Adjustment.....2-3

2 2.2.3. Limitations on Emissions2-3

3 2.2.3.1. Conducted Spurious Emissions.....2-3

4 2.2.3.1.1. Suppression Inside Cellular Band2-3

5 2.2.3.1.2. Suppression Outside Cellular Band.....2-4

6 2.2.3.2. Radiated Spurious Emissions2-4

7 2.2.4. Other Receiver Parameters2-4

8 2.3. Security and Identification.....2-4

9 2.3.1. Mobile Identification Number2-4

10 2.3.2. Electronic Serial Number (ESN)2-4

11 2.3.3. Station Class Mark.....2-4

12 2.3.4. Registration Memory.....2-4

13 2.3.5. Access Overload Class.....2-4

14 2.3.6. Extended Address Method.....2-5

15 2.3.7. First Paging Channel2-5

16 2.3.8. Home System Identification.....2-5

17 2.3.9. Local Control Option.....2-5

18 2.3.10. Preferred Operation Selection2-5

19 2.3.11. Discontinuous Transmission2-5

20 2.3.12. Authentication, Encryption of Signaling Information/User Data2-5

21 2.3.12.1. Authentication.....2-5

22 2.3.12.1.1. Shared Secret Data (SSD)2-5

23 2.3.12.1.2. Random Challenge Memory (RAND)2-5

24 2.3.12.1.3. Call History Parameter (COUNT_{s-p})2-5

25 2.3.12.1.4. Authentication of Mobile Station Registrations2-6

26 2.3.12.1.5. Unique Challenge-Response Procedure.....2-6

27 2.3.12.1.6. Authentication of Mobile Station Originations.....2-6

28 2.3.12.1.7. Authentication of Mobile Station Terminations2-6

29 2.3.12.1.8. Updating the Shared Secret Data (SSD)2-6

30 2.3.12.1.9. Authentication Procedures2-6

31 2.3.12.2. Signaling Message Encryption.....2-6

32 2.3.12.2.1. Signaling Message Encryption Control.....2-6

CONTENTS

1	2.4.	Supervision.....	2-7
2	2.5.	Malfunction Detection.....	2-7
3	2.6.	Call Processing.....	2-7
4	2.6.1.	Initialization.....	2-7
5	2.6.1.1.	Retrieve System Parameters.....	2-7
6	2.6.1.1.1.	Scan Dedicated Control Channels.....	2-8
7	2.6.1.1.2.	Update Overhead Information.....	2-8
8	2.6.1.2.	Paging Channel Selection.....	2-9
9	2.6.1.2.1.	Scan Paging Channels.....	2-9
10	2.6.1.2.2.	Verify Overhead Information.....	2-9
11	2.6.2.	Idle.....	2-11
12	2.6.2.1.	Response to Overhead Information.....	2-11
13	2.6.2.2.	Page Match.....	2-15
14	2.6.2.3.	Order.....	2-15
15	2.6.2.4.	Call Initiation.....	2-16
16	2.6.2.5.	Power Down.....	2-16
17	2.6.2.6.	Reserved.....	2-16
18	2.6.2.7.	PACA Cancellation.....	2-16
19	2.6.3.	System Access.....	2-16
20	2.6.3.1.	Set Access Parameters.....	2-16
21	2.6.3.2.	Scan Access Channels.....	2-17
22	2.6.3.3.	Retrieve Access Attempt Parameters.....	2-17
23	2.6.3.4.	Update Overhead Information.....	2-18
24	2.6.3.5.	Seize Reverse Control Channel.....	2-20
25	2.6.3.6.	Delay After Failure.....	2-20
26	2.6.3.7.	Service Request.....	2-20
27	2.6.3.8.	Await Message.....	2-22
28	2.6.3.9.	Await Registration Confirmation.....	2-25
29	2.6.3.10.	Action on Registration Failure.....	2-25
30	2.6.3.11.	Autonomous Registration Update.....	2-25
31	2.6.3.12.	Serving-System Determination.....	2-25
32	2.6.3.13.	Alternate Access Channel.....	2-25

CONTENTS

1	2.6.3.14. Directed Retry	2-25
2	2.6.4. Mobile Station Control on the Analog Voice Channel	2-26
3	2.6.4.1. Loss of Radio-Link Continuity	2-26
4	2.6.4.2. Confirm Initial Voice Channel	2-26
5	2.6.4.3. Alerting	2-26
6	2.6.4.3.1. Waiting for Order	2-26
7	2.6.4.3.2. Waiting for Answer	2-28
8	2.6.4.4. Conversation	2-30
9	2.6.4.5. Release	2-32
10	2.6.4.6. Power Down	2-32
11	2.7. Signaling Formats	2-33
12	2.7.1. Reverse Analog Control Channel (RECC)	2-33
13	2.7.1.1. Reverse Analog Control Channel (RECC) Messages	2-33
14	2.7.2. Reverse Analog Voice Channel (RVC)	2-34
15	2.7.2.1. Reverse Analog Voice Channel (RVC) Messages	2-34
16	2.7.2.1.1. Encrypted Control Messages	2-36
17	3. REQUIREMENTS FOR BASE STATION ANALOG OPERATION	3-1
18	3.1. Transmitter	3-1
19	3.1.1. Frequency Parameters	3-1
20	3.1.2. Power Output Characteristics	3-1
21	3.1.3. Modulation Characteristics	3-1
22	3.1.3.1. Analog Voice Signals	3-1
23	3.1.3.1.1. Compressor	3-1
24	3.1.3.1.2. Pre-emphasis	3-2
25	3.1.3.1.3. Deviation Limiter	3-2
26	3.1.3.1.4. Post Deviation-Limiter Filter	3-2
27	3.1.3.1.5. Transmit Level Adjustment	3-2
28	3.1.3.2. Wideband Data Signals	3-2
29	3.1.4. Limitations on Emissions	3-2
30	3.1.4.1. Bandwidth Occupied	3-2
31	3.1.4.2. Conducted Spurious Emissions	3-2
32	3.1.4.3. Radiated Spurious Emissions	3-2

CONTENTS

1	3.1.4.4. Intermodulation	3-2
2	3.2. Receiver.....	3-2
3	3.2.1. Frequency Parameters	3-2
4	3.2.2. Demodulation Characteristics	3-3
5	3.2.2.1. Analog Voice Signals.....	3-3
6	3.2.2.1.1. De-emphasis	3-3
7	3.2.2.1.2. Expander.....	3-3
8	3.2.2.1.3. Audio Level Adjustment.....	3-3
9	3.2.3. Limitations on Emissions	3-3
10	3.2.4. Other Receiver Parameters.....	3-3
11	3.3. Security and Identification.....	3-3
12	3.3.1. Authentication	3-3
13	3.3.2. Encryption.....	3-4
14	3.4. Supervision.....	3-4
15	3.5. Malfunction Detection.....	3-4
16	3.6. Call Processing.....	3-4
17	3.6.1. Overhead Functions for Mobile Station Initiation	3-4
18	3.6.2. Mobile Station Control on the Control Channel	3-4
19	3.6.2.1. Overhead Information	3-4
20	3.6.2.2. Page	3-4
21	3.6.2.3. Order.....	3-4
22	3.6.2.4. Local Control.....	3-5
23	3.6.3. Base Station Support of System Access by Mobile Stations	3-5
24	3.6.3.1. Overhead Information	3-5
25	3.6.3.2. Reverse Control Channel Seizure by Mobile Stations.....	3-5
26	3.6.3.3. Response to Mobile Station Messages	3-5
27	3.6.4. Mobile Station Control on Voice Channel.....	3-5
28	3.6.4.1. Loss of Radio-Link Continuity	3-5
29	3.6.4.2. Initial Voice Channel Confirmation.....	3-6
30	3.6.4.3. Alerting.....	3-6
31	3.6.4.3.1. Waiting for Order	3-6
32	3.6.4.3.2. Waiting for Answer.....	3-6

CONTENTS

1	3.6.4.4. Conversation.....	3-7
2	3.6.5. Delivery of Character Information.....	3-7
3	3.7. Signaling Formats.....	3-8
4	3.7.1. Forward Analog Control Channel.....	3-8
5	3.7.1.1. Mobile Station Control Message	3-8
6	3.7.1.2. Overhead Message	3-11
7	3.7.1.2.1. System Parameter Overhead Message	3-11
8	3.7.1.2.2. Global Action Overhead Message	3-11
9	3.7.1.2.3. Registration ID Message.....	3-12
10	3.7.1.2.4. Control-Filler Message.....	3-12
11	3.7.1.3. Data Restrictions	3-12
12	3.7.2. Forward Analog Voice Channel.....	3-13
13	3.7.2.1. Mobile Station Control Message	3-13
14	3.7.2.1.1. Encrypted Control Messages	3-14
15	3.7.2.1.2. Alert With Info Message	3-14
16	3.7.2.1.3. Flash With Info Message	3-15
17	3.7.2.1.4. Alert With Info SMS Message.....	3-15
18	3.7.2.2. Reserved.....	3-15
19	4. REQUIREMENTS FOR MOBILE STATION ANALOG OPTIONS.....	4-1
20	5. REQUIREMENTS FOR BASE STATION ANALOG OPTIONS.....	5-1
21	A. ANNEX A - Reserved.	A-1
22	B. ANNEX B MOBILE STATION DATABASE.....	B-1
23	B.1 Introduction.....	B-1
24	B.2 Mobile Station Indicators.....	B-1
25	B.2.1 Permanent Mobile Station Indicators.....	B-1
26	B.3 NAM Indicators	B-1

27

TABLES

1 Table 3.7.1.1-1. Order, Order Qualification, and Message Type Codes3-10

2 Table 3.7.1.1-2. PACA PURPOSE Codes.....3-11

3 Table 3.7.1.2.3-1. Global Action Message Types.....3-12

4 Table B.2.2-1. Analog Semi-permanent Mobile Station Indicators B-1

5 Table B.3-1. NAM Indicators..... B-2

6

FOREWORD

- 1 **1. General.** This section defines the terms and numeric indications used in this document.
- 2 **2. Requirements for Mobile Station Analog Operation.** This section describes the requirements
3 for CDMA-analog dual-mode mobile stations operating in the analog mode. A mobile station
4 complying with these requirements will be able to operate with analog base stations complying with
5 this document operating in accordance with this specification and should be able to operate with
6 analog base stations complying with [7], [24], [25], and [26] or the latest version of these standards.
- 7 **3. Requirements for Base Station Analog Operation.** This section describes the requirements for
8 analog base stations. A base station operating in accordance with these requirements will be able to
9 operate in the analog mode with mobile stations operating in accordance with this specification and
10 should be able to operate in the analog mode with mobile stations complying with [7], [24], [25], and
11 [26] or the latest version of these standards.
- 12 **4. Requirements for Mobile Station Analog Options.** This section describes the requirements for
13 CDMA-analog dual-mode mobile stations on the reverse analog control channel. This section
14 describes CDMA-analog dual-mode mobile station requirements for use of the optional extended
15 protocol.
- 16 **5. Requirements for Base Station Analog Options.** This section describes the base station
17 requirements for the reverse analog control channel. This section describes base station
18 requirements for use of the optional extended protocol.
- 19 **Annex A.** Reserved.
- 20 **Annex B. Mobile Station Database.** This informative annex describes a database model that can
21 be used for dual-mode mobile stations complying with this document.

NOTES

1. Compatibility, as used in connection with this standard, is understood to mean: Any cdma2000^{®1} mobile station is able to place and receive calls in cdma2000 or IS-95 systems. Conversely, any cdma2000 system is able to place and receive calls for cdma2000 and IS-95 mobile stations. In a subscriber's home system, all call placement must be automatic. Call placement preferably should be automatic when a mobile station is in roam status.
2. The term "dual-mode mobile station" indicates a mobile station capable of both analog (FM) and spread spectrum (CDMA) operation. The term "spread spectrum dual-mode mobile station" is used when a confusion might arise between a dual-mode mobile station complying with this document and other standards such as [24] or [25].
3. This compatibility specification is based upon the specific spectrum allocations defined by various governmental administrations.
4. Technical details are included for the operation of two cellular systems in a geographic area, System A and System B, each with a separate set of control channels.
5. ANS/TIA/EIA-690-2000 (November 2000) and [28] provide specifications and measurement methods for cellular equipment.
6. Each system is identified by a unique 15-bit digital code, the SID code. The responsibility for assignment of SID rests with the cognizant government authority of the respective country. Applicants, licensees, manufacturers or operators are encouraged to contact the responsible government agency. [31] recommends SID range for countries. Cognizant government authorities should refer to [31] when allowing SID codes.
7. Each mobile station is assigned a single unique 32-bit binary serial number (ESN) which cannot be changed by the subscriber without rendering the mobile station inoperative (see [5]).
8. Those wishing to deploy systems compliant with this standard should also take notice of the requirement to be compliant with the applicable rules and regulations of local administrations.
9. Those wishing to deploy systems compliant with this Standard should also take notice of the electromagnetic exposure criteria for the general public and for radio frequency carriers with low frequency amplitude modulation.
10. For the optional analog extended protocol feature (see 4.1 and 5.1), the assignment of message type codes (MST words) will be made using procedures described in [32]. This will ensure that the feature will be implemented in an orderly manner.
11. "Base station" refers to the functions performed on the land side, which are typically distributed among a cell, a sector of a cell, and a mobile switching center.

¹ *cdma2000[®] is the trademark for the technical nomenclature for certain specifications and standards of the Organizational Partners (OPs) of 3GPP2. Geographically (and as of the date of publication), cdma2000[®] is a registered trademark of the Telecommunications Industry Association (TIA-USA) in the United States.*

NOTES

1 12. This standard uses the following verbal forms: "Shall" and "shall not" identify requirements
2 to be followed strictly to conform to the standard and from which no deviation is permitted.
3 "Should" and "should not" indicate that one of several possibilities is recommended as
4 particularly suitable, without mentioning or excluding others; that a certain course of action is
5 preferred but not necessarily required; or that (in the negative form) a certain possibility or
6 course of action is discouraged but not prohibited. "May" and "need not" indicate a course of
7 action permissible within the limits of the standard. "Can" and "cannot" are used for
8 statements of possibility and capability, whether material, physical, or causal. The use of
9 "must" and "must not" is equivalent to the use of "shall" and "shall not."

10 13. Unless indicated otherwise, this document presents numbers in decimal form. Binary
11 numbers are distinguished in the text by the use of single quotation marks.

12 14. A potential compatibility problem between [26] and this standard exists as a result of
13 differences in access channel boundary determination procedures supported in these two
14 standards. Recommended solutions to this potential compatibility problem are the following:

Preferred Solution

15 [26] (First Paging Channel) specifies the first paging channels (FIRSTCHP_p) which must be
16 stored in a mobile station compliant to this standard and used to identify the first paging
17 channel in paging channel scans when the mobile station is operating in its home system.
18 Defaulting this value to the preferred system's (i.e., A or B band) first dedicated control
19 channel (834.990 MHz/879.990 MHz and 835.020 MHz/880.020 MHz respectively) will
20 prevent paging/access channels from being calculated differently when the mobile station,
21 compliant to this standard, operates on a [26] based home system. This solution is used
22 today and should continue to be used to ensure full interoperability of [26] and mobile
23 stations compliant to this standard on both [26] and cdma2000 type systems. This solution
24 does, however, require that both home and roaming mobile stations, compliant to this
25 standard, use the same paging channel set (i.e., no split home-roam paging channels).
26

Alternate (Non-Preferred) Solution

27 If a second portion of the existing spectrum is allocated for control channel use (over and
28 above the dedicated control channels), then split home-roam paging can still be achieved for
29 both [25] and [26] mobile stations. This second portion of spectrum could be managed as
30 follows:
31

- 32 • Used exclusively by home mobile stations, compliant to this standard, having
33 appropriate NAM programming, for both paging and access functions or,
- 34 • Used by home mobile stations, compliant to this standard, having appropriate NAM
35 programming, that includes both paging and access functions and by home [26] mobile
36 stations, having appropriate NAM programming, for paging functions only. Home [26]
37 mobile stations would continue to use the existing dedicated control channels for access
38 functions.

39 15. Forward control channel mobile station control messages of greater than five words in length
40 have been shown to yield compatibility problems in some mobile stations. Implementers of
41 systems are advised that the functions performed by these optional messages may be
42 achieved on assigned voice channels without causing compatibility issues. Mobile station

NOTES

- 1 manufacturers are advised that the length of forward control channel messages defined in
2 future standards may be different from that defined in this standard.
- 3 16. The NOTES section of [26] contains technical recommendations regarding analog mode
4 operation. These recommendations also apply to mobile station(s) operating in accordance
5 with this standard while operating in the analog mode. See the NOTES section of [7], [24],
6 and [26] for further details.

REFERENCES

The following standards and other references contain provisions, which, through reference in this text, constitute provisions of this Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based upon this Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. ANSI and TIA maintain registers of their own currently valid national published standards.

1. Reserved.
2. Reserved.
3. Reserved.
4. C.S0004-D [v2.0](#), *Signaling Link Access Control (LAC) Specification for cdma2000 Spread Spectrum Systems*, ~~February 2004~~[September 2005](#).
5. C.S0005-D [v2.0](#), *Upper Layer (Layer 3) Signaling Standard for cdma2000 Spread Spectrum Systems*, ~~February 2004~~[September 2005](#).
6. Reserved.
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9. ANSI T1.610-1998 (~~R2003~~), Generic Procedures for the Control of ISDN Supplementary Services, ~~1998~~.
10. ANSI TIA/EIA-690, Recommended Minimum Standards for 800 MHz Cellular Subscriber Units, November 2000.
11. ~~ANSI X3.4-1986~~, [ISO/IEC 646:1991 Information Technology-ISO 7-bit Coded Character Set for Information Interchange, 2002](#). ~~–7 bit American National Standard Code for Information Interchange, 1992~~.
12. ~~ANSI TIA/EIA-97-BF~~, Recommended Minimum Standards for [cdma2000 Spread Spectrum Base Stations \(ANSI/TIA-97-F-2005\)](#) ~~800 MHz Cellular Base Stations~~, July 1997.
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- 10 [~~22.21.~~ IEEE Standard 661-1979](#), Method for Determining Objective Loudness Ratings of
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- 14 [~~24.23.~~ TIA/EIA/IS-91-A](#), Mobile Station-Base Station Compatibility Standard for 800 MHz
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- 16 [~~25.24.~~ TIA/EIA/IS-136-A](#), TDMA Radio Interface Mobile Station-Base Station Compatibility
17 Standard, [1999](#).
- 18 [~~26.25.~~ TIA/EIA-553-A](#), Mobile Station - [Land Base](#) Station Compatibility [Standard](#)~~pecification~~,
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- 20 [~~27.26.~~ C.S0015-A0](#), Short Message Services for Wideband Spread Spectrum Cellular Systems,
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- 33 [~~33.32.~~ TSB50](#), User Interface for Authentication Key Entry, March 1993.
- 34 [~~34.33.~~ C.R1001-BD v1.0](#), Administration of Parameter Value Assignments for TIA/EIA
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1. GENERAL

1.1. Terms and Numeric Information

1.1.1. Terms

Access Attempt. The entire process of sending one message and receiving (or failing to receive) an acknowledgment for that message, consisting of one or more access sub-attempts.

AC. See Authentication Center

A-key. A secret, 64-bit pattern stored in the mobile station and HLR/AC. It is used to generate/update the mobile station's Shared Secret Data.

Analog Access Channel. An analog control channel used by a mobile station to access a system to obtain service.

Analog Color Code. An analog signal (see Supervisory Audio Tone) transmitted by a base station on an analog voice channel and used to detect the capture of a mobile station by an interfering base station or the capture of a base station by an interfering mobile station.

Analog Control Channel. An analog channel used for the transmission of digital control information from a base station to a mobile station or from a mobile station to a base station.

Analog Paging Channel. A forward analog control channel that is used to page mobile stations and to send orders.

Analog Voice Channel. An analog channel on which a voice conversation occurs and on which brief digital messages may be sent from a base station to a mobile station or from a mobile station to a base station.

Authentication. A procedure used by a base station to validate a mobile station's identity.

Authentication Center (AC). An entity that manages the authentication information related to the mobile station.

Authentication Response (AUTHR). An 18-bit output of the authentication algorithm. It is used, for example, to validate mobile station registrations, originations and terminations.

AUTHBS. See Base Station Authentication Response

AUTHR. See Authentication Response

Autonomous Registration. A method of registration in which the mobile station registers without an explicit command from the base station.

Band Class. A set of frequency channels and a numbering scheme for these channels.

Base Station. A fixed station used for communicating with mobile stations. Depending upon the context, the term base station may refer to a cell, a sector within a cell, an MSC, or other part of the wireless system. See also MSC.

- 1 **Base Station Authentication Response (AUTHBS).** An 18-bit pattern generated by the
2 authentication algorithm. AUTHBS is used to confirm the validity of base station orders to update
3 the Shared Secret Data.
- 4 **Base Station Random Variable (RANDBS).** A 32-bit random number generated by the mobile
5 station for authenticating base station orders to update the Shared Secret Data.
- 6 **BCH Code.** See Bose-Chaudhuri-Hocquenghem Code.
- 7 **Bose-Chaudhuri-Hocquenghem Code (BCH Code).** A large class of error-correcting cyclic codes.
8 For any positive integers m , $m \geq 3$, and $t < 2^{m-1}$, there is a binary BCH code with a block length n
9 equal to $2^m - 1$ and $n - k \leq mt$ parity check bits, where k is the number of information bits. The BCH
10 code has a minimum distance of at least $2t + 1$.
- 11 **bps.** Bits per second.
- 12 **Call Disconnect.** The process that releases the resources handling a particular call. The disconnect
13 process begins either when the mobile station user indicates the end of the call by generating an on-
14 hook condition or other call release mechanism, or when the base station initiates a release.
- 15 **Calling Number I.D. (CNI)** A display to the called party, indicating unique calling party information
16 **.CDMA.** See Code Division Multiple Access.
- 17 **CDMA Channel.** The set of channels transmitted between the base station and the mobile stations
18 within a given CDMA frequency assignment. See also Forward CDMA Channel and Reverse CDMA
19 Channel.
- 20 **CDMA Channel Number.** An 11-bit number corresponding to the center of the CDMA frequency
21 assignment.
- 22 **CDMA Frequency Assignment.** An assigned 1.23 MHz segment of spectrum. For CDMA cellular
23 systems, the channel is centered on one of the 30 kHz channels of the existing analog cellular
24 system. For PCS band CDMA systems, the channel is centered on one of the 50 kHz channels.
- 25 **Code Division Multiple Access (CDMA).** A technique for spread-spectrum multiple-access digital
26 communications that creates channels through the use of unique code sequences.
- 27 **CRC.** See Cyclic Redundancy Code
- 28 **Cyclic Redundancy Code (CRC).** A class of linear error detecting codes which generate parity
29 check bits by finding the remainder of a polynomial division.
- 30 **dBm.** A measure of power expressed in terms of its ratio (in dB) to one milliwatt.
- 31 **DCC.** See Digital Color Code.
- 32 **Dedicated Control Channel.** An analog control channel used for the transmission of digital control
33 information from either a base station or a mobile station.
- 34 **Digital Color Code (DCC).** A digital signal transmitted by a base station on a forward analog control
35 channel that is used to detect the capture of a base station by an interfering mobile station.
- 36 **Discontinuous Transmission (DTX).** A mode of operation in which a mobile station transmitter
37 autonomously switches between two transmitter power levels while the mobile station is in the
38 conversation state on an analog voice channel.

- 1 **DTMF.** See Dual-Tone Multifrequency.
- 2 **DTX.** See Discontinuous Transmission.
- 3 **Dual-Tone Multifrequency (DTMF).** Signaling by the simultaneous transmission of two tones, one
4 from a group of low frequencies and another from a group of high frequencies. Each group of
5 frequencies consists of four frequencies.
- 6 **Electronic Serial Number (ESN).** A 32-bit number assigned by the mobile station manufacturer,
7 uniquely identifying the mobile station equipment.
- 8 **ESN.** See Electronic Serial Number.
- 9 **Extended Protocol.** An optional expansion of the signaling messages between the base station and
10 mobile station to allow for the addition of new system features and operational capabilities.
- 11 **Fade Timer.** A timer kept by the mobile station as a measure of Forward Traffic Channel continuity.
12 If the fade timer expires, the mobile station drops the call.
- 13 **Flash.** An indication sent on an analog voice channel or CDMA Traffic Channel indicating that the
14 user directed the mobile station to invoke special processing.
- 15 **FOCC.** See Forward Analog Control Channel.
- 16 **Forward Analog Control Channel (FOCC).** An analog control channel used from a base station to
17 a mobile station.
- 18 **Forward Analog Voice Channel (FVC).** An analog voice channel used from a base station to a
19 mobile station.
- 20 **GHz.** Gigahertz (10^9 Hertz).
- 21 **Handoff.** The act of transferring communication with a mobile station from one base station to
22 another.
- 23 **HLR.** See Home Location Register.
- 24 **Home Location Register (HLR).** The location register to which a MIN/IMSI is assigned for record
25 purposes such as subscriber information.
- 26 **Home System.** The wireless system in which the mobile station subscribes for service.
- 27 **IRA.** International Reference Alphabet. Text character encoding as defined in [39].
- 28 **IMSI.** See International Mobile Station Identity.
- 29 **IMSI_M.** MIN-based IMSI using the lower 10 digits to store the MIN.
- 30 **IMSI_O.** Operational value of IMSI used by the mobile station for operation with the base station.
- 31 **Interleaving.** The process of permuting a sequence of symbols.
- 32 **International Mobile Station Identity (IMSI).** A method of identifying stations in the land mobile
33 service as specified in [17].
- 34 **KHz.** Kilohertz (10^3 Hertz).
- 35 **Local Control.** The local control order is used by a base station to initial local control action in the
36 mobile station.

- 1 **Message.** A data structure that conveys control information or application information. A message
2 consists of a length field (MSG_LENGTH), a message body (the part conveying the information),
3 and a CRC.
- 4 **Message CRC.** The CRC check associated with a message. See also Cyclic Redundancy Code.
- 5 **Message Field.** A basic named element in a message. A message field may consist of zero or
6 more bits.
- 7 **MHz.** Megahertz (10^6 Hertz).
- 8 **MIN.** See Mobile Identification Number.
- 9 **Mobile Identification Number (MIN).** The 34-bit number that is a digital representation of the 10-
10 digit number assigned to a mobile station.
- 11 **Mobile Protocol Capability Indicator (MPCI).** A 2-bit field used to indicate the mobile station's
12 capabilities.
- 13 **Mobile Station.** A station in the Public Wireless Radio Telecommunications Service intended to be
14 used while in motion or during halts at unspecified points. Mobile stations include portable units
15 (e.g., hand-held personal units) and units installed in vehicles.
- 16 **Mobile Station Class.** Mobile station classes define mobile station characteristics such as
17 transmission power. See Table 2.3.3-1 of [26] and Table 2.3.3-1 of [5].
- 18 **Mobile Station Identification Number (MSIN).** A part of the E.212 IMSI identifying the mobile
19 station within its home network. See [17].
- 20 **Mobile Station Originated Call.** A call originating from a mobile station.
- 21 **Mobile Station Terminated Call.** A call received by a mobile station (not to be confused with a
22 disconnect or call release).
- 23 **Mobile Switching Center (MSC).** A configuration of equipment that provides wireless
24 radiotelephone service. Also called the Mobile Telephone Switching Office (MTSO).
- 25 **MPCI.** See Mobile Protocol Capability Indicator
- 26 **ms.** Millisecond (10^{-3} second).
- 27 **MSB.** Most significant bit.
- 28 **MSC.** See Mobile Switching Center.
- 29 **MSIN.** See Mobile Station Identification Number.
- 30 **NAM.** See Number Assignment Module.
- 31 **Narrow Analog.** A type of voice channel that uses 10 kHz channel spacing and uses subaudible
32 signaling.
- 33 **National Mobile Station Identity (NMSI).** A part of the E.212 IMSI identifying the mobile station
34 within its home country. The NMSI consists of the NMC and the MSIN. See [17].
- 35 **Network.** A network is a subset of a wireless system, such as an area-wide wireless network, a
36 private group of base stations, or a group of base stations set up to handle a special requirement. A

1 network can be as small or as large as needed, as long as it is fully contained within a system. See
2 also System.

3 **Network Directed System Selection (NDSS).** A feature that allows the mobile station to
4 automatically register with a preferred system while roaming, or to be automatically directed by a
5 service provider, typically the home service provider, to a suggested system, regardless of the
6 frequency band class, or cellular band.

7 **NMSI.** See National Mobile Station Identity.

8 **Non-Autonomous Registration.** A registration method in which the base station initiates
9 registration. See also Autonomous Registration.

10 **ns.** Nanosecond (10^{-9} second).

11 **Number Assignment Module (NAM).** A set of MIN/MSI-related parameters stored in the mobile
12 station.

13 **Numeric Information.** Numeric information consists of parameters that appear as numeric fields in
14 messages exchanged by the base station and the mobile station and information used to describe
15 the operation of the mobile station.

16 **OLC.** See Overload Control (analog).

17 **Optional Field.** A field defined within a message structure that is optionally transmitted to the
18 message recipient.

19 **Order.** A type of message that contains control codes for either the mobile station or the base
20 station. See Table 3.7.1.1-1.

21 **Overhead Message.** A message sent by the base station on the Paging Channel to communicate
22 base-station-specific, network-wide and system-wide, information to mobile stations.

23 **Overload Control (OLC).** A means to restrict reverse analog control channel accesses by mobile
24 stations. Mobile stations are assigned one (or more) of sixteen control levels. Access is selectively
25 restricted by a base station setting one or more OLC bits in *the Overload Control Global Action*
26 *Message*.

27 **PACA.** Priority Access and Channel Assignment. See PACA Call.

28 **PACA Call.** A priority mobile station originated call for which no traffic channel or voice channel was
29 immediately available, and which has been queued for a priority access channel assignment.

30 **Paging.** The act of seeking a mobile station when a call has been placed to that mobile station.

31 **Paging Channel (Analog).** See Analog Paging Channel.

32 **Parity Check Bits.** Bits added to a sequence of information bits to provide error detection,
33 correction, or both.

34 **Power-Down Registration.** An autonomous registration method in which the mobile station registers
35 on power-down.

36 **RECC.** See Reverse Analog Control Channel

37 **RANDBS.** See Base Station Random Variable

1 **Receive Objective Loudness Rating (ROLR).** A perceptually weighted transducer gain of
2 telephone receivers relating electrical excitation from a reference generator to sound pressure at the
3 earphone. The receive objective loudness rating is normally specified in dB relative to one Pascal
4 per millivolt. See [36], [22], [37], and [38].

5 **Registration.** The process by which a mobile station identifies its location and parameters to a base
6 station.

7 **Release.** A process that the mobile station and base station use to inform each other of call
8 disconnect.

9 **Reverse Analog Control Channel (RECC).** The analog control channel used from a mobile station
10 to a base station.

11 **Reverse Analog Voice Channel (RVC).** The analog voice channel used from a mobile station to a
12 base station.

13 **Roamer.** A mobile station operating in a wireless system (or network) other than the one from which
14 service was subscribed.

15 **ROLR.** See Receive Objective Loudness Rating.

16 **SAT.** See Supervisory Audio Tone.

17 **Scan of Channels.** The procedure by which a mobile station examines the signal strength of each
18 forward analog control channel.

19 **SDCC1, SDCC2.** See Supplementary Digital Color Code.

20 **Seizure Precursor.** The initial digital sequence transmitted by a mobile station to a base station on
21 a reverse analog control channel.

22 **Shared Secret Data (SSD).** A 128-bit pattern stored in the mobile station (in semi-permanent
23 memory) and known by the base station. SSD is a concatenation of two 64-bit subsets: SSD_A,
24 which is used to support the authentication procedures, and SSD_B, which serves as one of the
25 inputs to the process generating the encryption mask and private long code.

26 **Short Message Services (SMS).** A suite of services such as SMS Text Delivery, Digital Paging
27 (i.e., Call Back Number - CBN), and Voice Mail Notification (VMN).

28 **SID.** See System Identification.

29 **Signaling Tone.** A 10 kHz tone transmitted by a mobile station on an analog voice channel to: 1)
30 confirm orders, 2) signal flash requests, and 3) signal release requests.

31 **SSD.** See Shared Secret Data.

32 **sps.** Symbols per second.

33 **Station Class Mark (SCM).** An identification of certain characteristics of a mobile station. Classes
34 are defined in Table 2.3.3-1 of [26] and Table 2.3.3-1 of [5].

35 **Status Information.** The following status information is used to describe mobile station operation
36 when using the analog system:

- 37 • **Fade Timing Status.** Indicates whether the mobile station's fade timer has expired.

- 1 • First Idle ID Status. A status variable used by the mobile station in association with its
2 processing of the Idle Task.
- 3 • First Location Area ID Status. A status variable used by the mobile station in association
4 with its processing of received Location Area ID messages.
- 5 • First Registration ID Status. A status variable used by the mobile station in association with
6 its processing of received Registration ID messages.
- 7 • Local Control Status. Indicates whether a mobile station must respond to local control
8 messages.
- 9 • Location Registration ID Status. A status variable used by the mobile station in association
10 with its processing of power-up registrations and location-based registrations.
- 11 • Roam Status. Indicates whether a mobile station is in its home system.
- 12 • Serving-System Status. Indicates whether a mobile station is tuned to channels associated
13 with System A or System B.
- 14 • Termination Status. Indicates whether a mobile station must terminate the call when it is on
15 an analog voice channel.
- 16 • Update Protocol Capability ID Status. Indicates whether the mobile station should report its
17 protocol capability to the serving system.

18 **Supervisory Audio Tone (SAT).** One of three tones in the 6 kHz region that is transmitted on the
19 forward analog voice channel by a base station and transponded on the reverse analog voice
20 channel by a mobile station.

21 **Supplementary Digital Color Code (SDCC1, SDCC2).** Additional bits assigned to increase the
22 number of color codes from four to sixty-four, transmitted on the forward analog control channel.

23 **System.** A system is a wireless communications service that covers a geographic area such as a
24 city, metropolitan region, county, or group of counties. See also Network.

25 **System Identification (SID).** A number uniquely identifying a wireless system.

26 **TOLR.** See Transmit Objective Loudness Rating.

27 **Transmit Objective Loudness Rating (TOLR).** A perceptually weighted transducer gain of
28 telephone transmitters relating sound pressure at the microphone to voltage at a reference electrical
29 termination. It is normally specified in dB relative to one millivolt per Pascal. See [36], [22], [37],
30 and [38].

31 **Unique Challenge Authentication Response (AUTHR).** An 18-bit pattern generated by the
32 authentication algorithm. AUTHU is used to support the Unique Challenge-Response procedure.

33 **Unique Challenge-Response Procedure.** An exchange of information between a mobile station
34 and a base station for the purpose of confirming the mobile station's identity. The procedure is
35 initiated by the base station and is characterized by the use of a challenge- specific random number
36 (i.e., RANDU) instead of the random variable broadcast globally (RAND).

37 **Unique Random Variable (RANDU).** A 24-bit random number generated by the base station in
38 support of the Unique Challenge-Response procedure.

1 **Universal Coordinated Time (UTC).** An internationally agreed-upon time scale maintained by the
 2 Bureau International de l'Heure (BIH), used as the time reference by nearly all commonly available
 3 time and frequency distribution systems (e.g., WWV, WWVH, LORAN-C, Transit, Omega, and
 4 GPS).

5 **VMAC.** See Voice Mobile Attenuation Code.

6 **Voice Channel.** See Analog Voice Channel.

7 **Voice Mobile Attenuation Code (VMAC).** Indicates the mobile station power level associated with
 8 the designated analog voice channel.

9 **μs.** Microsecond (10^{-6} second).

10 1.1.2. Numeric Information

11 Numeric information is used to describe the operation of the mobile station. The following subscripts
 12 are used to clarify the use of the numeric information:

- 13 • “s” indicates a value stored in a mobile station’s temporary memory.
- 14 • “sv” indicates a stored value that varies as a mobile station processes various tasks.
- 15 • “sl” indicates the stored limits on values that vary.
- 16 • “r” indicates a value received by a mobile station over a forward analog control channel or a
 17 CDMA Forward Channel.
- 18 • “p” indicates a value set in a mobile station’s permanent security and identification memory.
- 19 • “s-p” indicates a value stored in a mobile station’s semi-permanent security and identification
 20 memory.

21 1.1.2.1. Analog Numeric Information

22 **ACCOLC_p** – A four-bit number used to identify which overload class field controls access attempts.

23 **BIS_s** – Identifies whether a mobile station must check for an idle-to-busy transition on a reverse
 24 analog control channel when accessing a system.

25 **BSCAP_s** – The base station core analog roaming protocol received in the Access Type parameters
 26 *Global Action Overhead Message*. Indicates the version of the core analog roaming standard
 27 supported by the system.

28 **BSPC_s** – The base station protocol capability received in the Access Type parameters *Global Action*
 29 *Overhead Message*. Indicates the analog air interface protocol, such as [26], supported by the
 30 system.

31 **CCLIST_s** – The list of analog control channels to be scanned by a mobile station processing the
 32 Directed Retry Task (see 2.6.3.14).

33 **CDMA_MODE_s** – Indicates whether the mobile station entered the analog mode of operation.

34 **CMA_s** – The maximum number of channels to be scanned by a mobile station when accessing a
 35 system.

- 1 **COUNT_{s-p}** – A modulo-64 event counter maintained by the mobile station and Authentication Center
2 that is used for clone detection. COUNT_{s-p} is maintained during power off.
- 3 **CPA_s** – Identifies whether the access functions are combined with the paging functions on the same
4 set of analog control channels.
- 5 **DCC_s** – A DCC value stored in a mobile station's temporary memory.
- 6 **DTX_s** – Identifies in which manner the mobile station is permitted to use the discontinuous
7 transmission mode on the analog voice channel.
- 8 **E_s** – The stored value of the E field sent on the forward analog control channel. E_s identifies
9 whether a home mobile station must send only MIN_{1p} or both MIN_{1p} and MIN_{2p} when accessing the
10 system.
- 11 **FIRSTCHA_s** – The number of the first analog control channel used for accessing a system.
- 12 **FIRSTCHD_s** – The number for the first channel used as a dedicated control channel.
- 13 **FIRSTCHP_p** – The number of the first paging channel used as a paging channel in the mobile
14 station's "home" system.
- 15 **FIRSTCHP_s** – The number of the first analog control channel used for paging mobile stations.
- 16 **HOME_SID_p** – Home System Identification. A 15-bit value that identifies the home system for a
17 MIN supported by the mobile station.
- 18 **IDHO_s** – Idle handoff indicator. Set to enabled to indicate the loss of analog control channel radio
19 coverage during a PACA call.
- 20 **LASTCHA_s** – The number of the last analog control channel used for accessing a system.
- 21 **LASTCHD_s** – The number for the last channel used as a dedicated control channel.
- 22 **LASTCHP_s** – The number of the last analog control channel used for paging mobile stations.
- 23 **LOCAID_s** – The received location area identity.
- 24 **LOCAID_{s-p}** – Identifies the current location area.
- 25 **LRCC_s** – The last registration control channel used by a mobile station.
- 26 **LREG_s** – The stored value of the LREG field received in the most recent *Location Area Global*
27 *Action Message*.
- 28 **LT_s** – Identifies whether the next access attempt is required to be the last try.
- 29 **MAXBUSY_{s1}** – The maximum number of busy occurrences allowed on a reverse analog control
30 channel.
- 31 **MAX_REDIRECT_DELAY_s** – Indicates the maximum delay interval used when a mobile station is
32 redirected from CDMA to analog, in units of 8 seconds.
- 33 **MAXSZTR_{s1}** – The maximum number of seizure attempts allowed on a reverse analog control
34 channel.
- 35 **MIN_{1p}** – The 24 least significant bits of the 34-bit MIN.
- 36 **MIN_{2p}** – The ten most significant bits of the 34-bit MIN.

- 1 **MSCAP_p** – The mobile station core analog roaming protocol specifies the version of the core analog
2 roaming standard supported by the mobile station.
- 3 **MSPC_p** – The mobile station protocol capability identifies the analog air interface protocol, such as
4 [26], supported by the mobile station.
- 5 **N_s** – The number of analog paging channels that a mobile station must scan.
- 6 **NBUSY_{sv}** – The number of times a mobile station attempts to seize a reverse analog control
7 channel and finds the reverse control channel busy.
- 8 **NSZTR_{sv}** – The number of times a mobile station attempts to seize a reverse analog control channel
9 and fails.
- 10 **NXIREG_{s-p}** – Identifies when a mobile station must make its next registration to a system.
- 11 **PACA_s** – PACA call indicator. Set to enabled to indicate that the mobile station is waiting for a
12 priority access channel assignment; otherwise set to disabled. $PACA_s = 0$ is equivalent to setting
13 $PACA_s$ to disabled and $PACA_s = 1$ is equivalent to setting $PACA_s$ to enabled.
- 14 **PACA_CANCEL** – PACA call cancel indicator. Set to '1' when the mobile station is directed by the
15 user to cancel the PACA call; otherwise, set to '0'.
- 16 **PACA_SID_s** – PACA system identifier. Equal to the SID of the system on which the mobile station
17 originated a PACA call.
- 18 **PACA_TIMEOUT_s** – PACA state timer duration. Specifies how long the mobile station should wait
19 for a *PACA Message* from the base station.
- 20 **PCI_HOME_s** – Home mobile protocol capability flag. Indicates to the home mobile station whether it
21 shall report its protocol capability when receiving the *Access Type Parameters Global Action*
22 *Overhead Message*.
- 23 **PCI_ROAM_s** – Roaming mobile protocol capability flag. Indicates to the roaming mobile station
24 whether it shall report its protocol capability when receiving the *Access Type Parameters Global*
25 *Action Overhead Message*.
- 26 **PCSID_s** – The stored value of the most recent SID to which the mobile station transmitted the
27 protocol capability registration message.
- 28 **PDREG_s** – The stored value of the PDREG field received in the most recent *Location Area Global*
29 *Action Message*.
- 30 **PL_s** – The mobile station RF power level.
- 31 **PUREG_s** – The stored value of the PUREG field received in the most recent *Location Area Global*
32 *Action Message*.
- 33 **PUREG_{s-p}** – The semi-permanent value of PUREG_s.
- 34 **R_s** – Indicates whether registration is enabled or not.
- 35 **RAND_s** – The stored value of RAND. See 2.3.12.1.2 of [26].
- 36 **RCF_s** – Identifies whether the mobile station must read a *Control Filler Message* before accessing a
37 system on a reverse analog control channel.

- 1 **REGID_s** – The stored value of the last registration number (REGID_p) received on a forward analog
2 control channel.
- 3 **REGINCR_s** – Identifies increments between registrations by a mobile station.
- 4 **S_s** – Identifies whether the mobile station must send its serial number when accessing a system.
- 5 **SCC_s** – A digital number that is stored and used to identify which SAT frequency a mobile station
6 should be receiving.
- 7 **SDCC1_s** – The SDCC value stored in a mobile station's temporary memory.
- 8 **SDCC2_s** – The SDCC value stored in a mobile station's temporary memory.
- 9 **SID_p** – The home system identification stored in the mobile station's permanent security and
10 identification memory.
- 11 **SID_r** – The system identification received on a paging or access channel.
- 12 **SID_s** – The system identification received on a dedicated control channel.
- 13 **SID_{s-p}** – Identifies the system of current (last successful) registration.
- 14 **UPDATE NEXTREG_s**. Indicates whether the mobile station must update NEXTREG_{s-p} after it
15 successfully registers on a new paging channel.
- 16 **WFOM_s** – Identifies whether a mobile station must wait for an Overhead Message train before
17 accessing a system on a reverse analog control channel.

18 1.1.2.2. CDMA Numeric Information

19 The following are numeric indicators stored by the mobile station in temporary memory. These
20 numeric indicators are primarily used when operating in the CDMA mode; however, they are also
21 used in some manner (e.g., are set) when operating in the analog mode.

- 22 **ANALOG_CHAN_s** – Analog channel number for CDMA to analog handoff.
- 23 **REDIRECT_REC_s** – Holds the service redirection criteria specified in the redirection record of the
24 most recently received *Global Service Redirection Message* or *Service Redirection Message*.
- 25 **REDIRECTION_s** – Service redirection indicator. Set to enabled to indicate that service redirection
26 is currently in effect; otherwise set to disabled.
- 27 **REGISTERED_s** – Mobile station registered indicator.
- 28 **SID_NID_LIST_s** – Registration SID, NID list. The SID, NID pairs in which the mobile station has
29 registered.
- 30 **ZONE_LIST_s** – Registration zone list. List of zones in which the mobile station has registered.

31 1.2. Analog System Tolerances

32 Unless otherwise specified, all call-processing timers and call-processing timing values have a
33 tolerance of $\pm 10\%$. Refer to [21] and [28] for the analog performance standards, definitions,
34 tolerances, and performance measurement methods.

1.3.Message Forward Compatibility Rules

In the message formats used between the mobile stations and the base stations, some bits are marked as reserved (RSVD). Some or all of these reserved bits may be used in the future for additional messages. Therefore, all mobile stations and base stations shall set all bits that they are programmed to treat as reserved bits to '0' (zero) in all messages that they transmit. All mobile stations and base stations shall ignore the state of all bits that they are programmed to treat as reserved bits in all messages that they receive.

If a message body contains additional bits following the bits specified by the formatting requirements of the message, the additional bits shall be ignored.

In the specific case of overhead messages on the Forward Control Channel, if the mobile station receives a BCH-code-correct but unrecognizable overhead message (including Global Action Message types), the mobile station shall count the message as part of the train for NAWC-counting purposes, but shall not attempt to execute the message. All other messages and fields of an overhead message train that carries a message type herein indicated as "Reserved" shall be decoded and used as appropriate.

Implementers of mobile stations are cautioned that many other functions and features are deployed on the FOCC than those described in this standard. These functions frequently employ bits indicated herein as "Reserved". Reference may be made to the current version of [35] for details.

2. REQUIREMENTS FOR MOBILE STATION ANALOG OPERATION

This section references [26] to describe core analog mode operation. Only those analog capabilities that support CDMA dual-mode operation are described in detail within this document. Subsection numbers in Section 2 of this standard correspond to subsection numbers in [26]. A reference in this standard to a particular subsection in [26] applies to that subsection and all subsequent subsections beneath it; however, text in Section 2 of this standard shall take precedence over any corresponding text in [26].

Mobile stations optionally implementing PACA service in analog mode shall support *PACA Message* and PACA Cancel delivery (see 2.6.2, 2.6.3 and 2.7.1) on the control channel.

Mobile stations optionally implementing Short Message Service in the analog mode shall support Alert With Info SMS delivery (see 2.6.4 and 2.7.2.1) on the voice channel. In addition, they shall support extended protocol enhanced services operation as defined in [7], on the control channel and on the voice channel for messages less than or equal to 32 digits or 14 characters.

2.1. Transmitter

In addition to the requirements in this section, see the corresponding section of [26].

2.1.1. Frequency Parameters

See the corresponding section of [26].

2.1.2. Power Output Characteristics

See the corresponding section of [26].

2.1.3. Modulation Characteristics

In addition to the requirements in this section, see the corresponding section of [26].

2.1.3.1. Voice Signals

The modulator is preceded by the following five voice-processing stages (in the order listed):

1. Transmit Audio Level Adjustment

2. Compressor

3. Pre-emphasis

4. Deviation Limiter

5. Post Deviation-Limiter Filter

Pending the generation of a complete speech transmission plan for dual-mode cellular systems, the requirements of 2.1.3.1.1 through 2.1.3.1.5 shall be met to ensure compatibility with the transmission plan for fixed digital speech networks.

1 2.1.3.1.1. Compressor

2 See the corresponding section of [26].

3 2.1.3.1.2. Pre-Emphasis

4 See the corresponding section of [26].

5 2.1.3.1.3. Deviation Limiter

6 See the corresponding section of [26].

7 2.1.3.1.4. Post Deviation-Limiter Filter

8 See the corresponding section of [26].

9 2.1.3.1.5. Transmit Audio Level Adjustment

10 The mobile station shall have a transmit objective loudness rating (TOLR) equal to -46 dB, when
11 transmitting to a reference base station (see 3.2.2.1). The loudness ratings are described in [22].
12 Measurement techniques are described in [21].

13 2.1.3.2. Wideband Data Signals

14 See the corresponding section of [26].

15 2.1.4. Limitations on Emissions

16 In addition to the requirements in this section, see the corresponding section of [26].

17 2.1.4.1. Bandwidth Occupied

18 See the corresponding section of [26]. Measurement techniques are defined in [21].

19 2.1.4.2. Conducted Spurious Emissions

20 2.1.4.2.1. Suppression Inside Cellular Band

21 See the corresponding section of [26].

22 2.1.4.2.2. Suppression Outside Cellular Band

23 Current FCC rules shall apply.

24 2.1.4.3. Radiated Spurious Emissions

25 Refer to [21].

1 **2.2.Receiver**

2 In addition to the requirements in this section, see the corresponding section of [26].

3 2.2.1. Frequency Parameters

4 See the corresponding section of [26].

5 2.2.2. Demodulation Characteristics

6 In addition to the requirements in this section, see the corresponding section of [26].

7 2.2.2.1. Voice Signals

8 The demodulator is followed by the following three voice-signal processing stages:

- 9 • De-emphasis
- 10 • Expander
- 11 • Receive Audio Level Adjustment

12 Pending the generation of a complete speech transmission plan for dual-mode cellular systems, the
13 requirements of 2.2.2.1.1 through 2.2.2.1.3 shall be met to ensure compatibility with the transmission
14 plan for fixed digital speech networks:

15 2.2.2.1.1. De-Emphasis

16 See the corresponding section of [26].

17 2.2.2.1.2. Expander

18 See the corresponding section of [26].

19 2.2.2.1.3. Receive Audio Level Adjustment

20 The mobile station shall have a nominal receive objective loudness rating (ROLR) equal to 51 dB
21 when receiving from a reference base station (see 3.1.3.1). The loudness ratings are described in
22 [22]. Measurement techniques are described in [21].

23 2.2.3. Limitations on Emissions

24 In addition to the requirements in this section, see the corresponding section of [26].

25 2.2.3.1. Conducted Spurious Emissions

26 See the corresponding section of [26].

27 2.2.3.1.1. Suppression Inside Cellular Band

28 See the corresponding section of [26].

1 2.2.3.1.2. Suppression Outside Cellular Band

2 Current FCC rules shall apply.

3 2.2.3.2. Radiated Spurious Emissions

4 Current FCC rules shall apply.

5 2.2.4. Other Receiver Parameters

6 System performance is predicated upon receivers meeting [21].

7 **2.3. Security and Identification**

8 In addition to the requirements in this section, see the corresponding section of [26].

9 2.3.1. Mobile Identification Number

10 Mobile stations operating in the analog mode use the mobile identification number (MIN). Mobile
11 stations operating in the CDMA mode use the International Mobile Station Identity (IMSI). Mobile
12 stations shall have two different identifiers, IMSI_T and IMSI_M (see [5]).

13 The MIN is a 10-digit (34-bit) number. The MIN consists of a 3-digit (10-bit) part called MIN2, and a
14 7-digit (24-bit) part called MIN1. MIN2 corresponds to the most significant three digits of MIN, and
15 MIN1 corresponds to the least significant seven digits of MIN. The MIN shall be equal to IMSI_M_S
16 (see [4]).

17 The mobile station shall have memory to store a MIN. The 10-bit MIN2 shall be equal to
18 IMSI_M_S2_p and the 24-bit MIN1 shall be equal to IMSI_M_S1_p.

19 2.3.2. Electronic Serial Number (ESN)

20 See [5].

21 2.3.3. Station Class Mark

22 See the corresponding section of [26]. See [5] for information regarding SCM when operating in the
23 CDMA mode.

24 2.3.4. Registration Memory

25 In addition to the requirements in this section, see the corresponding section of [26]. See [5] for
26 operation in the CDMA mode.

27 2.3.5. Access Overload Class

28 In addition to the requirements in this section, see the corresponding section of [26]. See [5] for
29 operation in the CDMA mode.

1 2.3.6. Extended Address Method

2 See the corresponding section of [26].

3 2.3.7. First Paging Channel

4 See the corresponding section of [26].

5 2.3.8. Home System Identification

6 In addition to the requirements in this section, see the corresponding section of [26].

7 Note: the indicator HOME_SID_p is used to identify the home system during analog operation, and is
8 equivalent to the indicator SID_p defined in [26]. The requirements in [26] for SID_p apply to
9 HOME_SID_p for operation in the analog mode.

10 2.3.9. Local Control Option

11 See the corresponding section of [26].

12 2.3.10. Preferred Operation Selection

13 See [5].

14 2.3.11. Discontinuous Transmission

15 See the corresponding section of [26].

16 2.3.12. Authentication, Encryption of Signaling Information/User Data

17 In addition to the requirements in this section, see the corresponding section of [26].

18 2.3.12.1. Authentication

19 In addition to the requirements in this section, see the corresponding section of [26].

20 2.3.12.1.1. Shared Secret Data (SSD)

21 See [5].

22 2.3.12.1.2. Random Challenge Memory (RAND)

23 See the corresponding section of [26].

24 2.3.12.1.3. Call History Parameter (COUNT_{S-p})

25 In addition to the requirements in this section, see the corresponding section of [26].

26 See 2.3.12.1.3 for information regarding COUNT_{S-p} when operating in the CDMA mode.

1 2.3.12.1.4. Authentication of Mobile Station Registrations

2 See the corresponding section of [26].

3 2.3.12.1.5. Unique Challenge-Response Procedure

4 See the corresponding section of [26].

5 2.3.12.1.6. Authentication of Mobile Station Originations

6 See the corresponding section of [26].

7 2.3.12.1.7. Authentication of Mobile Station Terminations

8 See the corresponding section of [26].

9 2.3.12.1.8. Updating the Shared Secret Data (SSD)

10 See the corresponding section of [26].

11 2.3.12.1.9. Authentication Procedures

12 See the corresponding section of [26].

13 2.3.12.2. Signaling Message Encryption

14 In an effort to enhance the authentication process, and to protect sensitive subscriber information
15 (e.g., PINs), provisions have been made to allow for the encryption of a select subset of FVC and
16 RVC signaling messages. For messages defined in this standard, see 2.7.2.1 and 3.7.2.1 for the list
17 of messages and fields to be encrypted. For optional enhanced protocol messages and narrow
18 analog mode messages, see Annex A of [7] for the list of messages and fields to be encrypted.

19 Consult [23] for a description of how the algorithm is initialized and applied.

20 2.3.12.2.1. Signaling Message Encryption Control

21 Signaling message encryption is controlled on a per-call basis. The default value is "off." Signaling
22 message encryption is deactivated at the beginning of each call. The mobile station support for a
23 signaling message encryption algorithm is reported to the base station in the
24 ENCRYPTION_SUPPORTED field of the PCI Report Word of the Reverse Analog Control Channel
25 message (See 2.7.1.1). To activate signaling message encryption for a mobile station assigned to
26 an analog voice channel, the base station must send a *Message Encryption Mode Order* with the
27 Order Qualifier field set to '001' for the basic encryption or to '010' for the enhanced encryption.
28 Signaling message encryption can also be activated during CDMA-to-analog handoff by the base
29 station sending an *Analog Handoff Direction Message* with the MEM field set equal to '1', if the
30 encryption algorithm to be used on the Analog Voice Channel is the same as was used on the CDMA
31 Traffic Channel. Alternatively, if a different algorithm is to be used after the CDMA-to-analog
32 handoff, signaling message encryption shall be deactivated by the base station prior to the handoff,
33 and activated again on the Analog Voice Channel by sending *the Message Encryption Mode Order*.

1 The data used to initialize the algorithm is computed based upon parameters in effect at the time the
 2 AUTHR appended to the origination/page response message was computed (see [26]). For a call
 3 initiated via the CDMA Access Channel, the data used to initialize the algorithm is computed based
 4 upon parameters in effect at the time the AUTHR was computed for the *Origination Message* or
 5 *Page Response Message* (see [4]).

6 Once activated, signaling message encryption can be deactivated by the base station by sending a
 7 *Message Encryption Mode Order* with the Order Qualifier field set to '000'.

8 In all cases both the base station and mobile station shall continue to operate in their present mode
 9 until the message sent to the mobile station has been properly acknowledged.

10 **2.4. Supervision**

11 See the corresponding section of [26].

12 **2.5. Malfunction Detection**

13 See the corresponding section of [26].

14 **2.6. Call Processing**

15 In addition to the requirements in this section, see the corresponding section of [26].

16 The following sections describe mobile station operation as controlled by a base station. Frequent
 17 references are made to the corresponding sections in the base station section and to the messages
 18 that flow between a base station and a mobile station. It is helpful to read 2.6 and 3.6 in parallel and
 19 examine the message formats in 2.7 and 3.7 at the same time.

20 When power is applied to a mobile station, it shall enter the *System Determination Substate* of the
 21 *Mobile Station Initialization State* with a power-up indication (see [5]).

22 2.6.1. Initialization

23 2.6.1.1. Retrieve System Parameters

24 If the First-Idle ID status is enabled (see [5]), the mobile station must:

- 25 • Set the Location-Registration ID status to enabled.
- 26 • Set the first-registration ID status to enabled.
- 27 • Set the first-location-area ID status to enabled.
- 28 • Set the Update Protocol Capability ID status to disabled.
- 29 • Set PUREG_S = 0, PDREG_S = 0, LREG_S = 0, LRCC_S = 0, RAND_S = 0, IDHO_S = 0, PACA_S =
 30 disabled, PCSID_S = 0, BSPC_S = 0, BSCAP_S = 0, PCI_HOME_S = 0, PCI_ROAM_S = 0, SID_S =
 31 0, and SID_T = 0.

1 If the First-Idle ID status is disabled (see [5]), $PACA_S = \text{enabled}$, and this task is entered as a result
 2 of loss of Control Channel Radio Link or as a result of the mobile station selecting a different Control
 3 Channel, the mobile station must set $IDHO_S = 1$.

4 The mobile station must then set the serving-system status according to the following algorithm:

- 5 • If $SERVSYS_S = \text{SYS_A}$, set the serving-system status to enabled.
- 6 • If $SERVSYS_S = \text{SYS_B}$, set the serving-system status to disabled.

7 The mobile station must then enter the Scan Dedicated Control Channels Task (see 2.6.1.1.1).

8 2.6.1.1.1. Scan Dedicated Control Channels

9 If SID_T is not equal to SID_S , the mobile station shall set registration increment ($REGINCR_S$) to its
 10 default value of 450, set the first-location-area ID status to enabled, set $LRCC_S = 0$ and set $RAND_S =$
 11 0.

12 If the serving-system status is enabled, a mobile station must:

- 13 • Set $FIRSTCHD_S$ to the first dedicated control channel for System A (834.990 MHz/879.990
 14 MHz).
- 15 • Set $LASTCHD_S = FIRSTCHD_S - 21 + 1$.

16 If the serving-system status is disabled, a mobile station must:

- 17 • Set $FIRSTCHD_S$ to the first dedicated control channel for System B
 18 (835.020 MHz/880.020 MHz).
- 19 • Set $LASTCHD_S = FIRSTCHD_S + 21 - 1$.

20 The mobile station must examine the signal strength on each of the channels $FIRSTCHD_S$ to
 21 $LASTCHD_S$.

22 The mobile station must then enter the Update Overhead Information Task (see 2.6.1.1.2).

23 2.6.1.1.2. Update Overhead Information

24 Overhead messages are sent in a group called an overhead message train (see 3.7.1.2). The
 25 mobile station must use the value given in the number of additional words coming (NAWC) field of
 26 the *System Parameter Overhead Message* in the train to determine that all messages of the train
 27 have been received. The END field must be used as a cross-check. For NAWC counting purposes,
 28 inserted control filler messages (see 3.7.1) must not be counted as part of the overhead message
 29 train.

30 If the mobile station receives a BCH-code-correct but unrecognizable *System Parameter Overhead*
 31 *Message*, the mobile station must count that message as part of the train for NAWC counting
 32 purposes, but must not attempt to execute the message.

33 The mobile station must tune to the strongest dedicated control channel and, within 3 seconds,
 34 receive a *System Parameter Overhead Message* (see 3.7.1.2) and update the following numeric
 35 information:

- 1 • System identification (SID_S). Set the 14 most significant bits of SID_S to the value of the SID
2 1 field. Set the least significant bit of SID_S to '1', if the serving-system status is enabled;
3 otherwise, set the bit to '0'.
- 4 • Number of paging channels (N_S). Set N_S to 1 plus the value of the N - 1 field.
- 5 • First paging channel ($FIRSTCHP_S$). Set $FIRSTCHP_S$ according to the following algorithm:
6 – If $SID_S = HOME_SID_P$, $FIRSTCHP_S = FIRSTCHP_P$
7 – If SID_S is not equal to $HOME_SID_P$, $FIRSTCHP_S = FIRSTCHD_S$
- 8 • Last paging channel ($LASTCHP_S$). Set $LASTCHP_S$ according to the following algorithm:
9 – If the serving-system status is enabled, $LASTCHP_S = FIRSTCHP_S - N_S + 1$.
10 – If the serving-system status is disabled, $LASTCHP_S = FIRSTCHP_S + N_S - 1$.

11 If $REDIRECTION_S = \text{enabled}$, and if the $EXPECTED_SID$ field of $REDIRECT_REC_S$ is not equal to
12 0, and if SID_S is not equal to $EXPECTED_SID$, the mobile station must enter the *System*
13 *Determination Substate* of the *Mobile Station Initialization State* with a wrong system indication (see
14 [5]). Otherwise, if SID_T is not equal to SID_S , the mobile station shall set registration increment
15 ($REGINCR_S$) to its default value of 450, set the first-registration ID status to enabled, set the first-
16 location-area ID status to enabled, set $LRCC_S = 0$, set $PACA_S = \text{disabled}$, and set $RAND_S = 0$. If
17 SID_T is not equal to SID_S and $PACA_S = \text{enabled}$, the mobile station must set $PACA_S = \text{disabled}$, and
18 must indicate to the user that the PACA call has been canceled.

19 The mobile station must then enter the Paging Channel Selection Task (see 2.6.1.2).

20 If the mobile station cannot complete this task on the strongest dedicated control channel, it shall
21 tune to the second strongest dedicated control channel and attempt to complete this task within a
22 second 3-second interval. If it cannot complete this task on either of the two strongest control
23 channels, the mobile station must enter the *System Determination Substate* of the *Mobile Station*
24 *Initialization State* with an acquisition failure indication (see [5]).

25 2.6.1.2. Paging Channel Selection

26 2.6.1.2.1. Scan Paging Channels

27 See the corresponding section of [26].

28 2.6.1.2.2. Verify Overhead Information

29 The mobile station must set the Wait-for-Overhead-Message bit ($WFOM_S$) to '0'; the mobile station
30 must then tune to the strongest paging channel and, within 3 seconds, receive an overhead message
31 train (see 3.7.1.2) and update the following:

- 32 • System identification: Set the 14 most significant bits of SID_T to the value of the SID1 field.
33 Set the least significant bit of SID_T to '1', if the serving-system status is enabled; otherwise,
34 set the bit to '0'.

- 1 • ROAM status: The mobile station must compare the received system identification (SID_R)
2 with the stored system identification (SID_S). If $SID_R = SID_S$, the mobile station must compare
3 SID_S with $HOME_SID_P$. If $HOME_SID_P = SID_S$, the mobile station must set the ROAM
4 status to disabled. If $HOME_SID_P$ is not equal to SID_S , the mobile station must set the
5 ROAM status to enabled. If SID_R is not equal to SID_S and $PACA_S = enabled$, the mobile
6 station must set $PACA_S = disabled$, and must indicate to the user that the PACA call has
7 been canceled. If SID_R is not equal to SID_S , the mobile station must enter the *System*
8 *Determination Substate* of the *Mobile Station Initialization State* with a new system indication
9 (see 2.6.1.1 of [5]).
- 10 • Local control status: If the local control option is enabled within the mobile station (see
11 2.3.9) and the bits of the home system identification ($HOME_SID_P$) that comprise the group
12 identification match the corresponding bits of SID_S , then the local control status must be
13 enabled; otherwise, the local control status must be disabled.
- 14 • Power-Up Registration: If $SID_R \neq SID_{S-P}$ the mobile station shall set $PUREG_{S-P}$ to '0'.

15 If the Initialization Task was entered with an origination or page response indication, the mobile
16 station must also update the following numeric values:

- 17 • Serial number bit (S_S): Set S_S to the value in the S field.
- 18 • Registration bit (R_S): If the roam status is disabled, set R_S to the value of the REGH field; if
19 the roam status is enabled, set R_S to the value of the REGR field.
- 20 • Extended address bit (E_S): Set E_S to the value in the E field.
- 21 • Authentication bit ($AUTH_S$): Set $AUTH_S$ to the value in the AUTH field.
- 22 • Discontinuous transmission bit (DTX_S): Set DTX_S to the value of the DTX field.
- 23 • Number of paging channels (N_S): Set N_S to 1 plus the value of the N-1 field.
- 24 • Read-control-filler bit (RCF_S): Set RCF_S to the value of the RCF field.
- 25 • Combined paging/access bit (CPA_S): Set CPA_S to the value of the CPA field.
- 26 • Number of access channels ($CMAx_S$): Set $CMAx_S$ to 1 plus the value of the CMAX-1 field.
- 27 • Determine control channel boundaries for accessing the system ($FIRSTCHA_S$ and
28 $LASTCHA_S$) by using the following algorithm:
 - 29 – If the serving-system status is enabled,
 - 30 + If $CPA_S = 1$, set $FIRSTCHA_S$ to $FIRSTCHP_S$ for System A.
 - 31 + If $CPA_S = 0$, set $FIRSTCHA_S$ to $FIRSTCHP_S$ for System A minus N_S .
 - 32 + $LASTCHA_S = FIRSTCHA_S - CMAx_S + 1$.
 - 33 – If the serving-system status is disabled,
 - 34 + If $CPA_S = 1$, set $FIRSTCHA_S$ to $FIRSTCHP_S$ for System B.
 - 35 + If $CPA_S = 0$, set $FIRSTCHA_S$ to $FIRSTCHP_S$ for System B plus N_S .
 - 36 + $LASTCHA_S = FIRSTCHA_S + CMAx_S - 1$.

1 If the Initialization Task was entered with an origination indication, the mobile station must enter the
2 System Access Task with an origination indication (see 2.6.3).

3 If the Initialization Task was entered with a page response indication, the mobile station must enter
4 the System Access Task with a page response indication (see 2.6.3).

5 If the Initialization Task was entered with a wait-for-page indication, the mobile station must enter the
6 Idle Task with a wait-for-page indication (see 2.6.2).

7 Otherwise, the mobile station must enter Idle at the Response to Overhead Information Task (see
8 2.6.2.1).

9 If the mobile station cannot complete this task on the strongest paging channel, it may tune to the
10 second strongest paging channel and attempt to complete this task within a second 3-second
11 interval. If it cannot complete this task on either of the two strongest control channels, the mobile
12 station must enter the *System Determination Substate* of the *Mobile Station Initialization State* with
13 an acquisition failure indication (see [5]).

14 2.6.2. Idle

15 During the Idle Task, a mobile station must execute each of the following (sub)tasks (see 2.6.2.1,
16 2.6.2.2, 2.6.2.3, 2.6.2.4, 2.6.2.5, and 2.6.2.5) at least every 46.3 ms, the periodicity of word blocks
17 on the forward control channel. If the Idle Task was entered with a wait-for-page indication, the
18 mobile station must not enter the *System Determination Substate* of the *Mobile Station Initialization*
19 *State* (see [5]) for at least 6 seconds after entering the Idle Task. If at any time during the Idle Task
20 the redirect delay timer expires, the mobile station must exit this task and enter the System Access
21 Task with a registration indication (see 2.6.3). Otherwise, if the mobile station is not listening to a
22 control channel of the preferred system and REDIRECTION_S = disabled and PACA_S = disabled, it
23 may exit this task and enter the *System Determination Substate* of the *Mobile Station Initialization*
24 *State* with a reselection indication (see [5]).

25 2.6.2.1. Response to Overhead Information

26 Whenever a mobile station receives an overhead message train (see 3.7.1.2), the mobile station
27 compare SID_S with SID_T. If SID_T is not equal to SID_S and PACA_S = enabled, the mobile station must
28 set PACA_S = disabled, and must indicate to the user that the PACA call has been canceled. If SID_S
29 is not equal to SID_T, the mobile station must exit the Idle Task and enter the *System Determination*
30 *Substate* of the *Mobile Station Initialization State* with a new system indication (see [5]).

31 If SID_S = SID_T, the mobile station shall update the following numeric values using information
32 contained in the *System Parameter Overhead Message*:

- 33 • Extended Protocol Indicator: If the mobile station is equipped for the optional Extended
34 Protocol, set EP_S to the value of the EP field.
- 35 • Serial number bit (S_S): Set S_S to the value in the S field.
- 36 • Registration bit (R_S): If the roam status is disabled, set R_S to the value of the REGH field; if
37 the roam status is enabled, set R_S to the value of the REGR field.
- 38 • Extended address bit (E_S): Set E_S to the value in the E field.

- 1 • Authentication bit ($AUTH_S$): Set $AUTH_S$ to the value in the AUTH field.
- 2 • Discontinuous transmission bit (DTX_S): Set DTX_S to the value of the DTX field.
- 3 • Number of paging channels (N_S): Set N_S to 1 plus the value of the N - 1 field.
- 4 • Read-control-filler bit (RCF_S): Set RCF_S to the value of the RCF field.
- 5 • Combined paging/access bit (CPA_S): Set CPA_S to the value of the CPA field.
- 6 • Number of access channels ($CMAX_S$): Set $CMAX_S$ to 1 plus the value of the CMAX - 1 field.
- 7 • Determine control channel boundaries for accessing the system ($FIRSTCHA_S$ and
- 8 $LASTCHA_S$) by using the following algorithm:
 - 9 – If the serving-system status is enabled,
 - 10 + If $CPA_S = 1$, set $FIRSTCHA_S$ to $FIRSTCHP_S$ for System A.
 - 11 + If $CPA_S = 0$, set $FIRSTCHA_S$ to $FIRSTCHP_S$ for System A minus N_S .
 - 12 + $LASTCHA_S = FIRSTCHA_S - CMAX_S + 1$.
 - 13 – If the serving-system status is disabled,
 - 14 + If $CPA_S = 1$, set $FIRSTCHA_S$ to $FIRSTCHP_S$ for System B.
 - 15 + If $CPA_S = 0$, set $FIRSTCHA_S$ to $FIRSTCHP_S$ for System B plus N_S .
 - 16 + $LASTCHA_S = FIRSTCHA_S + CMAX_S - 1$.

17 If $SID_S = SID_{S-p}$, $PUREG_{S-p} = 1$, and if the First-Idle ID status is enabled, the mobile station shall
 18 initiate an autonomous registration by entering the System Access Task (see 2.6.3) with a
 19 registration indication.

20 If $SID_S = SID_{S-p}$, $PACA_S = \text{enabled}$, and if $IDHO_S = 1$, the mobile station must enter the System
 21 Access Task (see 2.6.3) with a PACA response indication to re-originate the PACA call.

22 If the Update Protocol Capability ID status is enabled, and if $PCSID_S = SID_S$, the mobile station shall
 23 initiate protocol capability registration by entering the System Access Task (see 2.6.3) with a
 24 capability registration indication.

25 The mobile station must then respond as indicated to each of the following messages, if received in
 26 the overhead message train. The order in which the mobile station must respond to the messages, if
 27 two or more are received, is given by their order in the following list:

- 28 1. *Local Control Messages*: See the corresponding section of [26].
- 29 2. *Access Type Parameters Message*: See the corresponding section of [26].
- 30 3. *New Access Channel Set Message*: See the corresponding section of [26].
- 31 4. *Registration Increment Message*: See the corresponding section of [26].
- 32 5. *Location Area Message*: See the corresponding section of [26].
- 33 6. *Random Challenge A Message*: See the corresponding section of [26].
- 34 7. *Random Challenge B Message*: See the corresponding section of [26].
- 35 8. *Registration ID Message*: If $R_S = 1$, the mobile station must perform the following:

- 1 • If this message is received while first-idle ID status is disabled, and if location-
2 registration ID status is disabled, and if first-registration ID status is enabled, and if first-
3 location-area ID status is enabled, and if the mobile station is tuned to a control channel
4 different from LRCC_S, then the mobile station shall set first-registration ID status to
5 disabled.
- 6 • The mobile station must set REGID_S to the value of the REGID field of the received
7 message. If the first-registration ID status is enabled, and if the location-registration ID
8 status is disabled, SID_S = SID_{S-p}, DIGITAL_REG_{S-p} = '00000000', and CDMA_MODE_p =
9 '0', the mobile station must perform the following:
- 10 – Set the first-registration ID status to disabled (see 2.6.1.1.2).
- 11 – If autonomous registration is enabled, the mobile station must enter the Autonomous
12 Registration Update Task (see 2.6.3.11), supplying a success indication.
- 13 – The mobile station shall continue to process information in the overhead message
14 stream.
- 15 Otherwise, the mobile station shall set the first-registration ID status to disabled (see
16 2.6.1.1.2) and proceed as follows:
- 17 • If DIGITAL_REG_{S-p} = '00000001', the mobile station must perform the following:
- 18 – Set DIGITAL_REG_{S-p} = '00000000'
- 19 – If autonomous registration is enabled, the mobile station shall set the first-
20 registration ID status to disabled (see 2.6.1.1.2) and then enter the System Access
21 Task with a registration indication (see 2.6.3)
- 22 • If SID_S equals the SID_{S-p} value stored in the registration memory or if CDMA_MODE_S =
23 1, the mobile station must perform the following:
- 24 – If CDMA_MODE_S = 1, the mobile station must perform the following:
- 25 + Set CDMA_MODE_S = 0.
- 26 + Generate a random number distributed uniformly in the interval 0 to
27 $8 \times \text{MAX_REDIRECT_DELAY}_S$ seconds, and if quantized, with granularity no
28 greater than 1 ms. The mobile station must set its redirect delay timer to this
29 random number and must continue to process messages in the overhead
30 message train.
- 31 – Otherwise, if the redirect delay timer is inactive, the mobile station must perform the
32 following:
- 33 – The mobile station must use the following (or an equivalent) algorithm to review the
34 NXTREG_{S-p} associated with the SID_{S-p} to determine if REGID_S has cycled through
35 zero:
- 36 + If UPDATE_NEXTREG_S = 1, set NXTREG_{S-p} to REGID_S + REGINCR_S and reset
37 UPDATE_NEXTREG_S to 0.
- 38 + If NXTREG_{S-p} is greater than or equal to REGID_S + REGINCR_S + 5, then
39 NXTREG_{S-p} must be replaced by the greater of 0 or $\text{NXTREG}_{S-p} - 2^{20}$.

- 1 + Otherwise do not change $NXTREG_{S-p}$.
- 2 – The mobile station must then compare $REGID_S$ with the $NXTREG_{S-p}$ associated with
- 3 the SID_{S-p} .
- 4 + If $REGID_S$ is greater than or equal to $NXTREG_{S-p}$ and if autonomous registration
- 5 is enabled, the mobile station must set the first-registration ID status to disabled
- 6 (see 2.6.1.1.2) and then enter the System Access Task with a registration
- 7 indication (see 2.6.3).
- 8 + If $REGID_S$ is greater than or equal to $NXTREG_{S-p}$ and if autonomous registration
- 9 is not enabled, then set $NXTREG_{S-p}$ equal to $REGID_S$.
- 10 + Otherwise, the mobile station must ignore the message and continue to process
- 11 messages in the overhead message train.
- 12 • If SID_S is not equal to the SID_{S-p} value stored in the registration memory, the mobile
- 13 station must perform the following:
- 14 – If autonomous registration is enabled, the mobile station shall set the first-
- 15 registration ID status to disabled (see 2.6.1.1.2). The mobile station shall then enter
- 16 the System Access Task with a registration indication supplied (see 2.6.3).
- 17 – Otherwise, the mobile station must ignore the message and continue to process
- 18 messages in the overhead message train.
- 19 9. *CDMA Capability Message*: The mobile station must perform the following:
- 20 • If $PACA_S$ = enabled or the mobile station entered this task with a wait-for-page
- 21 indication, the mobile station should ignore the *CDMA Capability Message* and continue
- 22 to process messages in the overhead message train.
- 23 • If $CDMA_AVAIL$ equals '1', and if $REDIRECTION_S$ equals disabled, and if the preferred
- 24 mode of operation is CDMA, the mobile station may exit this task and enter the *System*
- 25 *Determination Substate* of the *Mobile Station Initialization State* with a CDMA available
- 26 indication (see [5]).
- 27 • If $CDMA_AVAIL$ equals '1', and if $REDIRECTION_S$ equals enabled, and if the
- 28 $IGNORE_CDMA$ field of $REDIRECT_REC_S$ equals '0', and if the preferred mode of
- 29 operation is CDMA, the mobile station may exit this task and enter the *System*
- 30 *Determination Substate* of the *Mobile Station Initialization State* with a CDMA available
- 31 indication (see [5]).
- 32 • If ADD_CDMA_AVAIL equals '1', and if $REDIRECTION_S$ equals disabled, and if the
- 33 preferred mode of operation is CDMA, the mobile station may exit this task and enter the
- 34 System Access Task with a CDMA query indication (see 2.6.3).
- 35 • If ADD_CDMA_AVAIL equals '1', and if $REDIRECTION_S$ equals enabled, the
- 36 $IGNORE_CDMA$ field of $REDIRECT_REC_S$ equals '0', and if the preferred mode of
- 37 operation is CDMA, the mobile station may exit this task and enter the System Access
- 38 Task with a CDMA query indication (see 2.6.3).

- 1 • If the mobile station has previously attempted and failed to acquire a CDMA system five
2 consecutive times as a result of receiving a *CDMA Capability Message*, the mobile
3 station shall ignore the *CDMA Capability Message* until immediately before the next
4 autonomous registration attempt or until the next mobile station power-up.
- 5 • If REDIRECTION_S equals enabled, and if the IGNORE_CDMA field of
6 REDIRECT_REC_S equals '1', the mobile station shall ignore the *CDMA Capability*
7 *Message*.

8 10. *Rescan Message*: See the corresponding section of [26].

9 11. Any Other Message (including messages and global action types herein defined as
10 "Reserved"): Use the message for NAWC-counting, but do not attempt to execute the
11 message.

12 2.6.2.2. Page Match

13 The mobile station must monitor mobile station control messages for page messages (see 3.7.1.1).

- 14 • If the ROAM status is disabled, the mobile station must attempt to match MIN1_p to MIN1_r for
15 one-word messages and both MIN1_p and MIN2_p to MIN1_r and MIN2_r, respectively, for two-
16 word messages. All decoded MIN bits must match to cause the mobile station to respond to
17 the message.
- 18 • If the ROAM status is enabled, the mobile station must attempt to match both MIN1_p and
19 MIN2_p to MIN1_r and MIN2_r, respectively. All decoded MIN bits must match to cause the
20 mobile station to respond to the order.

21 When a match occurs,

- 22 • If PACA_S = enabled, the mobile station must set PACA_S = disabled and must indicate to the
23 user that the PACA call has been canceled.
- 24 • The mobile station must enter the System Access Task with a page response indication (see
25 2.6.3).

26 2.6.2.3. Order

27 In addition to the requirements described in the corresponding section of [26], the mobile station
28 must respond to the following order as described below:

- 29 • *PACA Message*: If PACA_S = disabled, the mobile station must ignore the message.
30 If PACA_S = enabled, the mobile station must perform the following:
 - 31 – If the message is a response to an *Origination Order* (PURPOSE_r = '0000'), the mobile
32 station must ignore the message.
 - 33 – If the message is to provide the queue position of the PACA call (PURPOSE_r = '0001'),
34 the mobile station must indicate to the user that the PACA call is still queued, and must
35 indicate the current queue position (Q_POS_p) of the call. The mobile station shall
36 remain in the current task.

- 1 – If the message is to instruct the mobile station to re-originate the PACA call ($PURPOSE_T = '0010'$), the mobile station must enter the System Access Task (see 2.6.3) with a
2 PACA response indication and re-originate the PACA call.
- 4 – If the message is to cancel the PACA call ($PURPOSE_T = '0011'$), the mobile station must
5 set $PACA_S = \text{disabled}$, indicate to the user that the PACA call has been canceled, and
6 enter the Serving System Determination Task (see 2.6.3.12).

7 2.6.2.4. Call Initiation

8 When the user initiates a call, the mobile station must perform the following:

- 9 • If $PACA_S = \text{enabled}$, the mobile station must set $PACA_S = \text{disabled}$ and must indicate to the
10 user that the PACA call has been canceled.
- 11 • The System Access Task (see 2.6.3) must be entered with an origination indication.

12 2.6.2.5. Power Down

13 See the corresponding section of [26].

14 2.6.2.6. Reserved

15 2.6.2.7. PACA Cancellation

16 The mobile station PACA Cancel Operation is performed when the user directs the mobile station to
17 cancel the PACA call.

18 If $PACA_S = \text{enabled}$, the mobile station must perform the following:

- 19 • Set $PACA_S = \text{disabled}$,
- 20 • Indicate to the user that the PACA call has been canceled,
- 21 • Enter the System Access Task (see 2.6.3) with a PACA cancel indication.

22 2.6.3. System Access

23 2.6.3.1. Set Access Parameters

24 If a mobile station powers down occurs during a system access, and if $PDREG_S = 1$, the mobile
25 station must terminate its access procedures and initiate an autonomous registration by continuing
26 this task (see 2.6.3) with a power down registration indication.

27 When the System Access Task is started, a timer, called the access timer, must be set as follows:

- 28 • If this is an origination or PACA response, set to a maximum of 12 seconds.
- 29 • If this is a page response or PACA cancel, set to a maximum of 6 seconds.
- 30 • If this is an order response, set to a maximum of 6 seconds.
- 31 • If this is a registration other than power down registration, set to a maximum of 6 seconds.

- 1 • If this is a power down registration, set to a maximum of 3 seconds.
- 2 • If this is a Base Station Challenge, set to a maximum of 12 seconds.
- 3 • If this is a CDMA query, set to a maximum of 6 seconds.

4 The mobile station must set $IDHO_S = 0$, and set the last-try code (LT_S) to '0', set
5 $UPDATE_NEXTREG_S$ to '0', and then enter the Scan Access Channels Task (see 2.6.3.2).

6 2.6.3.2. Scan Access Channels

7 See the corresponding section of [26].

8 2.6.3.3. Retrieve Access Attempt Parameters

9 The mobile station must set the maximum number of seizure attempts allowed ($MAXSZTR_S$) to a
10 maximum of 10, and the maximum number of busy occurrences ($MAXBUSY_S$) to a maximum of 10.

11 The mobile station must then initialize the following variables to zero:

- 12 • Number of busy occurrences ($NBUSY_{SV}$)
- 13 • Number of unsuccessful seizure attempts ($NSZTR_{SV}$)

14 The mobile station must then examine the read control-filler bit (RCF_S).

- 15 • If $RCF_S = 0$, the mobile station must then within 400 ms (+100 ms, -0 ms) set DCC_S to the
16 value in the DCC field of a received message, set $SDCC1_S$ and $SDCC2_S$ to 0, and set the
17 power level (PL_S) to 0.
- 18 • If $RCF_S = 1$, the mobile station must then, within 1000 ms (+100 ms, -0 ms), read a *Control-*
19 *Filler Message*, set DCC_S , $WFOM_S$, $SDCC1_S$ and $SDCC2_S$ to the values in the DCC,
20 WFOM, SDCC1 and SDCC2 fields of the message, respectively, and set PL_S to the power
21 level given in [26] for the value of the CMAC field of the message and the mobile station
22 power class (see [5]).

23 If the DCC field or the *Control-Filler Message* is not received within the time allowed, then the mobile
24 station must examine the access timer. If the access timer has expired, the mobile station must
25 enter the Serving-System Determination Task (see 2.6.3.12). If the access timer has not expired,
26 the mobile station must enter the Alternate Access Channel Task (see 2.6.3.13).

27 The mobile station must then set BIS_S to '1' and examine the $WFOM_S$ bit.

- 28 • If $PACA_S = \text{enabled}$ or if $WFOM_S = 1$, the mobile station must enter the Update Overhead
29 Information Task (see 2.6.3.4).
- 30 • If $WFOM_S = 0$, the mobile station must wait for a random delay. Each time it waits for a
31 random delay, a random delay must be generated with the time uniformly distributed in the
32 interval 0 to 92 ± 1 ms and, if quantized, with granularity no more than 1 ms. The mobile
33 station must then enter the Seize Reverse Control Channel Task (see 2.6.3.5).

2.6.3.4. Update Overhead Information

If this task is not completed within 1.5 seconds, the mobile station must exit this task and enter the Serving-System Determination Task (see 2.6.3.12). If the Update Overhead Information Task is completed, the mobile station must enter the Seize Reverse Control Channel Task (see 2.6.3.5).

The mobile station must receive an overhead message train (see 3.7.1.2).

- Authentication bit ($AUTH_S$): Set $AUTH_S$ to the value in the AUTH field.
- Extended Protocol bit (EP_S): If the mobile station is capable of supporting Extended Protocol, set EP_S to the value in the EP field.

If the access is a registration, an origination, a PACA response, or a page response, the mobile station shall perform the following:

- Update System Identification (SID_T). Set the 14 most significant bits of SID_T to the value of the $SID1$ field. Set the least significant bit of SID_T to '1' if the serving-system status is enabled; otherwise, set the bit to '0'.
- If the access is a registration, the mobile station must compare SID_T with SID_S . If SID_T is not equal to SID_S , the mobile station must exit the Update Overhead Information Task and enter the Serving System Determination Task (see 2.6.3.12). Otherwise, the mobile station shall continue to process this task.
- If this access is an origination or a page response, the mobile station must compare SID_T with SID_{S-P} . If SID_T does not equal SID_{S-P} , the mobile station must set $RAND_S$ equal to zero.
- If the access is a PACA response and if SID_T is not equal to SID_S and if $PACA_S = \text{enabled}$, the mobile station must set $PACA_S = \text{disabled}$ and must indicate to the user that the PACA call has been canceled. The mobile station must enter the Serving System Determination Task (see 2.6.3.12).

The mobile station must act as indicated below in response to the following global action messages, if received in the message train:

- *Overload Control Message:*
 - If this access is an origination, the mobile station must examine the value of the overload class field (OLC) identified by $ACCOLC_P$. If the identified OLC field is set to '0', the mobile station must exit this task and enter the Serving-System Determination Task (see 2.6.3.12); if the identified OLC field is set to '1', the mobile station must continue to respond to messages in the overhead message train.
 - Otherwise, the mobile station must continue to respond to messages in the overhead message train.
- *Access Type Parameters Message:*
 - The mobile station must set the busy-idle status bit (BIS_S) to the value of the BIS field of the received message.
 - The mobile station must set PCI_HOME_S to the value of the PCI_HOME field of the received message.

- 1 – The mobile station must set PCI_ROAM_S to the value of the PCI_ROAM field of the
2 received message.
- 3 – The mobile station must set $BSPC_S$ to the value of the $BSPC$ field of the received
4 message.
- 5 – The mobile station must set $BSCAP_S$ to the value of the $BSCAP$ field of the received
6 message.
- 7 – If $BSCAP_S$ indicates that the system supports [26] or later revisions of the core analog
8 air interface standard, then:
- 9 + If $PCSID \neq SID_S$, then:
- 10 o If Roam status is enabled, and if $PCI_ROAM_S = 1$, or
11 o If Roam status is disabled, and if $PCI_HOME_S = 1$,
- 12 + then, the mobile station shall Update Protocol Capability ID status to enabled and set
13 $PCSID_S = SID_S$.
- 14 • *Random Challenge A Message:* The mobile station must set the corresponding portion of its
15 internal $RAND1_S$ to the value of the $RAND1_A$ field in the *Global Action Message* (see
16 2.3.12.1.2 for updating of $RAND$).
- 17 • *Random Challenge B Message:* The mobile station must set the corresponding portion of its
18 internal $RAND1_S$ to the value of the $RAND1_B$ field in the *Global Action Message* (see
19 2.3.12.1.2 for updating of $RAND$).
- 20 • *Access Attempt Parameters Message:* The mobile station must update the following
21 parameters:
- 22 – If this access is a page response,
- 23 + Maximum number of seizure tries allowed ($MAXSZTR_{S1}$) must be set to the value of
24 the $MAXSZTR-PGR$ field of the received message.
- 25 + Maximum number of busy occurrences allowed ($MAXBUSY_{S1}$) must be set to the
26 value of the $MAXBUSY-PGR$ field of the received message.
- 27 – Otherwise,
- 28 + Maximum number of seizure tries allowed ($MAXSZTR_{S1}$) must be set to the value of
29 the $MAXSZTR-OTHER$ field of the received message.
- 30 + Maximum number of busy occurrences allowed ($MAXBUSY_{S1}$) must be set to the
31 value of the $MAXBUSY-OTHER$ field of the received message.

32 If the access is a registration access, the mobile station must respond as indicated to the registration
33 identification message, if received in the overhead message train:

34 The mobile station must set $REGID_S$ to the value of the $REGID$ field in the message.

35 After the overhead message train is received and processed as required above, the mobile station
36 must wait a random time. Each time this task is executed, a different random delay must be
37 generated, distributed uniformly in the interval 0 to 750 ms, and if quantized, with granularity no

1 greater than 1 ms. At the end of the delay, the mobile station must enter the Seize Reverse Control
2 Channel Task (see 2.6.3.5).

3 2.6.3.5. Seize Reverse Control Channel

4 See the corresponding section of [26].

5 2.6.3.6. Delay After Failure

6 See the corresponding section of [26].

7 2.6.3.7. Service Request

8 The mobile station must continue to send its message to the base station. The information that must
9 be sent is as follows (with the formats given in 2.7.1):

- 10 • Word A must always be sent.
- 11 • Word B must be sent if any of the following conditions hold.
 - 12 – $E_S = 1$
 - 13 – $LT_S = 1$
 - 14 – $AUTH_S = 1$
 - 15 – the ROAM status is enabled
 - 16 – the ROAM status is disabled and $Exp = 1$
 - 17 – the access is an order confirmation
 - 18 – the access is an autonomous registration
 - 19 – the access is a capability registration
 - 20 – the access is a power down registration
 - 21 – the access is a CDMA query
 - 22 – the access is a base station challenge
 - 23 – the mobile station was paged with a two-word *Mobile Station Control Message*
 - 24 – $RCF = 1$

- Word C must be sent as shown in the following table:

S_s Bit	Type of System Access			
	Registration, Origination, PACA Cancel, PACA Response, or Page Response where AUTH_s = 0, Order Confirmation*	Registration, Origination, PACA Cancel, PACA Response, or Page Response where AUTH_s = 1	Unique Challenge Order Confirmation	Base Station Challenge
0	Do Not Send Word C	Send Authentication Word C	Send Unique Challenge Order Confirmation Word C	Send Base Station Challenge Word C
1	Send Serial Number Word C	Send Serial Number Word C and Authentication Word C	Send Serial Number Word C and Unique Challenge Order Confirmation Word C	Send Serial Number Word C and Base Station Challenge Word C

* Order Confirmation other than Unique Challenge

- If the access is a capability registration and if update-protocol-capability ID status is enabled, Protocol Capability Indicator Word C must be sent.
- If the access is a registration and if Update Protocol Capability ID status is enabled, Protocol Capability Indicator Word C must be sent.
- If the access is a protocol capability indicator order confirmation, then Protocol Capability Indicator Word C shall be sent.
- If the access is an origination or PACA response, word D must be sent.
- If the access is an origination or a PACA response, and if 9 or more digits were dialed, word E must be sent.
- If the access is an origination or a PACA response, and if 17 or more digits were dialed, word F must be sent.
- If the access is an origination or PACA response, and if 25 to 32 digits were dialed, then word G must be sent.

When the mobile station has sent its complete message, it must continue to send unmodulated carrier signal for a nominal duration of 25 ms and must then turn off the transmitter.

The next task to be entered depends upon the type of access by the mobile station:

- If the access is an order confirmation or a PACA cancel, the mobile station must enter the Serving-System Determination Task (see 2.6.3.12).
- If the access is an origination, the mobile station must enter the Await Message Task (see 2.6.3.8).

- 1 • If the access is a page response, the mobile station must enter the Await Message Task (see
2 2.6.3.8).
- 3 • If the access is a registration request (including capability information) other than a power
4 down registration, the mobile station must enter the Await Registration Confirmation Task
5 (see 2.6.3.9). If the registration is a power down registration, the mobile station shall power
6 down.
- 7 • If the access is a base station challenge, the mobile station must enter the Await Message
8 Task (see 2.6.3.8).
- 9 • If the access is a PACA response or a PCI order confirmation, the mobile station must enter
10 the Await Message Task (see 2.6.3.8).
- 11 • If the access is a CDMA query, the mobile station must enter the Await Message Task (see
12 2.6.3.8).

13 2.6.3.8. Await Message

14 If this task is not completed within 10 seconds for a Base Station Challenge, or if it is not completed
15 within 5 seconds for all other messages and orders, the mobile station must exit this task and enter
16 the Serving System Determination Task (see 2.6.3.12).

17 The mobile station must monitor mobile station control messages (see 3.7.1.1). If the mobile station
18 sent Word B as part of the Service Request (see 2.6.3.7), then the mobile station must attempt to
19 match $MIN1_p$ and $MIN2_p$ to $MIN1_r$ and $MIN2_r$, respectively; otherwise, the mobile station must
20 attempt to match $MIN1_p$ to $MIN1_r$ only.

21 The mobile station must respond as indicated to any of the following messages if all decoded MIN
22 bits match.

23 If the access is an origination, PACA response, or page response:

- 24 • *Initial Voice Channel Designation Message* (see 3.7.1.1): The mobile station must update
25 the parameters as set in the message, delete all entries from $SID_NID_LIST_s$, $ZONE_LIST_s$,
26 $SID_NID_LIST_{s-p}$, and $ZONE_LIST_{s-p}$, and set $REGISTERED_s$ to NO. If $R_s = 1$, the mobile
27 station must enter the Autonomous Registration Update Task (see 2.6.3.11), supplying a
28 success indication. If $R_s = 0$, the mobile station shall enter the Confirm Initial Voice Channel
29 Task (see 2.6.4.2). If $PACA_s = \text{enabled}$, the mobile station must set $PACA_s = \text{disabled}$ and
30 must indicate to the user that the PACA call is in process.
- 31 • *PACA Message* (see 3.7.1.1): If $PACA_s = \text{disabled}$, the mobile station must perform the
32 following:
 - 33 – If the message is in response to an origination ($PURPOSE_r = '0000'$), the mobile station
34 must set $PACA_s$ to enabled and indicate to the user that the call has been queued as a
35 PACA call. Also, the mobile station must indicate to the user the current queue position
36 (Q_POS_p) of the PACA call, and must then enter the Idle Task (see 2.6.2).
 - 37 – If the message is not in response to an origination, the mobile station must ignore the
38 message. If $PACA_s = \text{enabled}$, the mobile station must perform the following:

- 1 – If the message is in response to an origination ($PURPOSE_T = '0000'$), the mobile station
2 must ignore the message.
- 3 – If the message is to provide the queue position of the PACA call ($PURPOSE_T = '0001'$),
4 the mobile station must indicate to the user that the PACA call is still queued, indicate
5 the current queue position (Q_POS_T) of the call, and remain in the current task.
- 6 – If the message is to instruct the mobile station to re-originate the PACA call ($PURPOSE_T$
7 = $'0010'$), the mobile station must enter the System Access Task (see 2.6.3) with a
8 PACA response indication and re-originate the PACA call.
- 9 – If the message is to cancel the PACA call ($PURPOSE_T = '0011'$), the mobile station must
10 set $PACA_S = \text{disabled}$, indicate to the user that the PACA call has been canceled, and
11 enter the Serving-System Determination Task (see 2.6.3.12).

- 12 • *Directed-Retry Message* (see 3.7.1.1): If the mobile station is equipped for directed retry, it
13 must respond to the *Directed-Retry Message* as follows:

14 If the mobile station encounters the start of a new message before it receives all four words
15 of the *Directed-Retry Message*, it must exit this task and enter the Serving-System
16 Determination Task (see 2.6.3.12).

17 The mobile station must set the last-try code (LT_S) according to the $ORDQ$ field of the
18 message:

- 19 – If $ORDQ = '000'$, set LT_S to '0'.
20 – If $ORDQ = '001'$, set LT_S to '1'.

21 The mobile station must then clear $CCLIST_S$ and must examine each $CHANPOS$ field in
22 Words 3 and 4 of the message. For each nonzero $CHANPOS$ field, the mobile station must
23 calculate a corresponding channel number according to the following algorithm:

- 24 – If $LOCAL_MSG_TYPE = '00000'$, and if the serving-system status is enabled, subtract
25 $CHANPOS$ from $FIRSTCHA_S + 1$.
- 26 – If $LOCAL_MSG_TYPE = '00000'$ and, if the serving-system status is disabled, add
27 $CHANPOS$ to $FIRSTCHA_S - 1$.
- 28 – If $LOCAL_MSG_TYPE = '00001'$, and if the serving-system status is enabled, set
29 $FIRSTCHA_S$ to the first dedicated control channel for System A (834.990 MHz/879.990
30 MHz) and subtract $CHANPOS$ from $FIRSTCHA_S + 1$. The mobile must also set $AUTH_S$
31 to '0'.
- 32 – If $LOCAL_MSG_TYPE = '00001'$, and if the serving-system status is disabled, set
33 $FIRSTCHA_S$ to the first dedicated control channel for System B (835.020 MHz/880.020
34 MHz) and add $CHANPOS$ to $FIRSTCHA_S - 1$. The mobile must also set $AUTH_S$ to '0'.
- 35 – If $LOCAL_MSG_TYPE = '00010'$, and if the serving-system status is enabled, set
36 $FIRSTCHA_S$ to the first dedicated control channel for System A (834.990 MHz/879.990
37 MHz) and subtract $CHANPOS$ from $FIRSTCHA_S + 1$. The mobile must also set $AUTH_S$
38 to '1'.

- 1 – If LOCALMSG_TYPE = '00010', and if the serving-system status is disabled, set
2 FIRSTCHA_S to the first dedicated control channel for System B (835.020 MHz/880.020
3 MHz) and add CHANPOS to FIRSTCHA_S - 1. The mobile must also set AUTH_S to '1'.

4 The mobile station must then determine whether each channel number is within the set
5 allocated to cellular systems; and, if so, must list the channel number in CCLIST_S.

6 After completing its response to the *Directed-Retry Message*, the mobile station must
7 examine the access timer. If the access timer has expired, the mobile station must enter the
8 Serving-System Determination Task (see 2.6.3.12). If the access timer has not expired, the
9 mobile station must enter the Directed-Retry Task (see 2.6.3.14).

10 If the access is an origination or PACA response:

- 11 • *Intercept*: If PACA_S = enabled, the mobile station must set PACA_S = disabled, must indicate
12 to the user that the PACA call has been canceled, and must enter the Serving-System
13 Determination Task (see 2.6.3.12; otherwise, the mobile station must enter the Serving-
14 System Determination Task (see 2.6.3.12).
- 15 • *Reorder*: If PACA_S = enabled, the mobile station must set PACA_S = disabled, must indicate
16 to the user that the PACA call has been canceled, and must enter the Serving-System
17 Determination Task (see 2.6.3.12). Otherwise, the mobile station must enter the Serving-
18 System Determination Task (see 2.6.3.12).

19 If the access is a page response:

- 20 • *Release*: The mobile station must enter the Serving-System Determination Task (see
21 2.6.3.12).

22 If the access is a PCI order confirmation:

- 23 • *Release*: The mobile station must enter the Serving-System Determination Task (see
24 2.6.3.12).
- 25 • *Message Waiting Order*: If the mobile station is capable of performing Message Waiting
26 Notification, the mobile station shall indicate the presence of messages waiting based upon
27 the information contained in the message type field of the Message Waiting order (*i.e.*, 0 for
28 clear or no messages, other non-zero values indicate the number of messages waiting). The
29 mobile station then enters the System Access Task (see 2.6.3) with an order confirmation
30 indication.

31 If the access is a CDMA Query:

- 32 • *CDMA Info Order*: The mobile station should exit this task and enter the *System*
33 *Determination Substate* of the *Mobile Station Initialization State* with an additional CDMA
34 available indication (see [5]).

35 If the access is a Base Station Challenge:

- 36 • *Base Station Challenge Order Confirmation*: The mobile station compares the AUTHBS
37 received in the *Base Station Challenge Order Confirmation Message* to that computed
38 internally. The mobile station must then acknowledge receipt of the *SSD Update Order* by
39 the *SSD Update Order Confirmation Message* with a success or failure indication as
40 described in 2.3.12.1.8 by entering the System Access Task (see 2.6.3) with an order

1 response indication (see 2.6.3.1). If the mobile station fails to receive the *Base Station*
 2 *Challenge Order Confirmation* within 10 seconds of the time when the *Base Station*
 3 *Challenge Order* was transmitted, terminate the SSD update process.

4 If the access is an origination, and if the user terminates a call during this task, the termination status
 5 must be enabled so that the call can be released on a voice channel (see 2.6.4.4) instead of on a
 6 control channel.

7 2.6.3.9. Await Registration Confirmation

8 If the mobile station receives an *Order Confirmation Message* (see 3.7.1.1), it shall delete all entries
 9 from $SID_NID_LIST_S$, $ZONE_LIST_S$, $SID_NID_LIST_{S-p}$, and $ZONE_LIST_{S-p}$ and shall set
 10 $REGISTERED_S$ to NO as the first action it takes.

11 In addition to the requirements in this section, see the corresponding section of [26].

12 2.6.3.10. Action on Registration Failure

13 The mobile station shall delete all entries from $SID_NID_LIST_S$, $ZONE_LIST_S$, $SID_NID_LIST_{S-p}$,
 14 and $ZONE_LIST_{S-p}$, and shall set $REGISTERED_S$ to NO as the first action it takes.

15 In addition to the requirements in this section, see the corresponding section of [26].

16 2.6.3.11. Autonomous Registration Update

17 The mobile station shall set $CDMA_MODE_S = 0$ and $DIGITAL_REG_{S-p} = '00000000'$ as the first
 18 action it takes.

19 In addition to the requirements in this section, see the corresponding section of [26].

20 2.6.3.12. Serving-System Determination

21 If this task is entered as a result of a power down registration attempt, the mobile station must
 22 immediately power down. Otherwise, the mobile station shall proceed as follows:

- 23 • If $REDIRECTION_S$ equals disabled, and if either the preferred mode of operation is CDMA or
 24 the serving-system status does not correspond to the preferred system, the mobile station
 25 may enter the *System Determination Substate* of the *Mobile Station Initialization State* with a
 26 reselection indication (see [5]); otherwise, it must enter the Paging Channel Selection Task
 27 (see 2.6.1.2).

28 2.6.3.13. Alternate Access Channel

29 See the corresponding section of [26].

30 2.6.3.14. Directed Retry

31 See the corresponding section of [26].

1 2.6.4. Mobile Station Control on the Analog Voice Channel

2 In addition to the requirements in this section, see the corresponding section of [26].

3 2.6.4.1. Loss of Radio-Link Continuity

4 See the corresponding section of [26].

5 2.6.4.2. Confirm Initial Voice Channel

6 In addition to the requirements in this section, see the corresponding section of [26].

7 Within 100 ms of the receipt of a *Channel Assignment Message* (see [5]) containing ASSIGN_MODE
8 = '011' and AN_CHAN_TYPE = '00', or an *Extended Channel Assignment Message* (see [5])
9 containing ASSIGN_MODE = '011' and AN_CHAN_TYPE = '00', the mobile station must execute the
10 procedures in the corresponding section of [26].

11 2.6.4.3. Alerting

12 In addition to the requirements in this section, see the corresponding section of [26].

13 2.6.4.3.1. Waiting for Order

14 In addition to the requirements in this section, see the corresponding section of [26].

15 When this task is entered, in addition to the actions described in the corresponding section of [26],
16 the following may occur:

- 17 • If this task is entered as a result of receiving an *Analog Handoff Direction Message* (see [5]),
18 the mobile station must use the VMAC, ANALOG_CHAN, and SCC values obtained from the
19 *Analog Handoff Direction Message* to perform the following operations: Adjust power level,
20 tune to new channel, adjust to new SAT, and set SCC_s to the value of the SCC field of the
21 message (see [26]). The mobile station must then turn on the transmitter, and reset the fade
22 timer. The mobile station must set the message encryption mode to that indicated by the
23 MEM value obtained from the *Analog Handoff Direction Message*. The mobile station may
24 compare the SID value obtained from the *Analog Handoff Direction Message* with
25 HOME_SID_p. If SID_r = HOME_SID_p, the mobile station may set the ROAM status to
26 disabled. If SID_r is not equal to HOME_SID_p, the mobile station may set the ROAM status
27 to enabled. The mobile station must remain in the Waiting for Order Task.
- 28 • Within 100 ms of the receipt of any of the orders listed either below (see 3.7.2) or in the
29 corresponding section of [26], the mobile station must compare SCC_s to the present SAT
30 color code (PSCC) field in the received message. If SCC_s is not equal to PSCC, the order
31 must be ignored. If SCC_s = PSCC, the action to be taken for each order is as follows:
 - 32 – *Alert With Info SMS*: Within 750 ms, the mobile station must send an *Alert With Info*
33 *SMS Order Confirmation Message*, and remain in the Waiting for Order Task. If the
34 value of the TASK_TM field of the received message is '0', reset the order timer to 10
35 seconds; otherwise reset the order timer to 600 ms.

36 Process the *Alert With Info SMS Message* as follows:

- 1 + If the value of the B/F field of the received message is '11', and if the INFO_DATA
2 field of the received message contains an unsegmented SMS teleservice message,
3 the mobile station may discard any incomplete SMS teleservice message being
4 reassembled and should pass the INFO_DATA field of the received message to the
5 SMS teleservice. Set the B/F field of the *Alert With Info SMS Order Confirmation*
6 *Message* to '1'. If the teleservice reports an error, set the ERROR_CLASS and
7 CAUSE_CODE fields of the *Alert With Info SMS Order Confirmation Message* to
8 report the teleservice error.
- 9 + If the value of the B/F field of the received message is '10', the mobile station may
10 discard any incomplete SMS teleservice message being reassembled, and must
11 store the INFO_DATA field of the received message as the first segment of an SMS
12 teleservice message being reassembled. Set SEQ_NO_S to SEQ_NO_R. Set the B/F
13 field of the *Alert With Info SMS Order Confirmation Message* to '0'.
- 14 + If the value of the B/F field of the received message is '00', and if a segmented SMS
15 teleservice message is being reassembled, compare the value of the SEQ_NO field
16 of the received message to SEQ_NO_S. Set the B/F field of the *Alert With Info SMS*
17 *Order Confirmation Message* to '0'. The mobile station shall perform the following
18 actions:
- 19 o If (SEQ_NO_S + 1) modulo 8 is equal to the value of the SEQ_NO field of the
20 received message, store the INFO_DATA field of the received message as the
21 next segment of the SMS teleservice message being reassembled, and
22 increment SEQ_NO_S, modulo 8.
- 23 o If SEQ_NO_S is equal to the value of the SEQ_NO field of the received message,
24 the mobile station may discard the INFO_DATA field of the received message.
- 25 o If neither SEQ_NO_S nor (SEQ_NO_S + 1) modulo 8 is equal to the value of the
26 SEQ_NO field of the received message, the mobile station may discard the
27 INFO_DATA field of the received message and may discard the incomplete
28 SMS teleservice message being reassembled.
- 29 + If the value of the B/F field of the received message is '00', and if no segmented
30 SMS teleservice message is being reassembled, the mobile station may discard the
31 INFO_DATA field of the received message. Set the B/F field of the *Alert With Info*
32 *SMS Order Confirmation Message* to '0'.
- 33 + If the value of the B/F field of the received message is '01', and if a segmented SMS
34 teleservice message is being reassembled, store the INFO_DATA field of the
35 received message as the last segment of the SMS teleservice message and pass
36 the complete SMS teleservice message to the SMS teleservice. Set the B/F field of
37 the *Alert With Info SMS Order Confirmation Message* to '1'. If the teleservice
38 reports an error, set the ERROR_CLASS and CAUSE_CODE fields of the *Alert With*
39 *Info SMS Order Confirmation Message* to report the teleservice error.

- 1 + If the value of the B/F field of the received message is '01', and if no segmented
2 SMS teleservice message is being reassembled, the mobile station may discard the
3 INFO_DATA field of the received message. Set the ERROR_CLASS and
4 CAUSE_CODE fields of the *Alert With Info SMS Order Confirmation Message* to
5 report an error due to reception of an incomplete message. Set the B/F field of the
6 *Alert With Info SMS Order Confirmation Message* to '0'.
- 7 – *Message Encryption Mode Order*: The base station is activating/deactivating
8 signaling message encryption. If the order qualifier field in the received message is
9 set to '001', activate basic signaling message encryption. If the order qualifier field in
10 the received message is set to '010', activate enhanced signaling message
11 encryption. If the order qualifier field in the received message is set to '000',
12 deactivate signaling message encryption. In any case, send an "order confirmation"
13 message to the base station (see 2.7.2), remain in the Waiting for Order Task and
14 reset the order timer to 10 seconds if the mobile station is waiting for a response to a
15 Base Station Challenge order, or to 5 seconds if waiting for any other response.

16 2.6.4.3.2. Waiting for Answer

17 In addition to the requirements in this section, see the corresponding section of [26].

18 When this task is entered, in addition to the actions described in the corresponding section of [26],
19 the following may occur:

- 20 • If this task is entered as a result of receiving an *Analog Handoff Direction Message* (see [5]),
21 the mobile station must use the VMAC, ANALOG_CHAN, and SCC values obtained from the
22 *Analog Handoff Direction Message* to perform the following operations: adjust power level,
23 tune to new channel, adjust to new SAT, and set SCC_s to the value of the SCC field of the
24 message (see 2.4.1). The mobile station must then turn on the transmitter, reset the fade
25 timer, and turn on the signaling tone. The mobile station must set the message encryption
26 mode to that indicated by the MEM value obtained from the *Analog Handoff Direction*
27 *Message*. The mobile station may compare the SID value obtained from the *Analog Handoff*
28 *Direction Message* with HOME_SID_p. If SID_r = HOME_SID_p, the mobile station may set the
29 ROAM status to disabled. If SID_r is not equal to HOME_SID_p, the mobile station may set
30 the ROAM status to enabled. The mobile station must remain in the Waiting for Answer
31 Task.
 - 32 • Within 100 ms of the receipt of any of the orders listed, either below or in the corresponding
33 section of [26], the mobile station must compare SCC_s to the PSCC field in the received
34 message. If SCC_s is not equal to PSCC, the order must be ignored. If SCC_s = PSCC, the
35 action to be taken for each order is as follows:
 - 36 – *Alert With Info SMS*: Within 750 ms the mobile station must send an *Alert With Info*
37 *SMS Order Confirmation Message*, and remain in the Waiting for Answer Task
- 38 Process the *Alert With Info SMS Message* as follows:

- 1 + If the value of the B/F field of the received message is '11', and if the INFO_DATA
2 field of the received message contains an unsegmented SMS teleservice message,
3 the mobile station may discard any incomplete SMS teleservice message being
4 reassembled and should pass the INFO_DATA field of the received message to the
5 SMS teleservice. Set the B/F field of the *Alert With Info SMS Order Confirmation*
6 *Message* to '1'. If the teleservice reports an error, set the ERROR_CLASS and
7 CAUSE_CODE fields of the *Alert With Info SMS Order Confirmation Message* to
8 report the teleservice error.
- 9 + If the value of the B/F field of the received message is '10', the mobile station may
10 discard any incomplete SMS teleservice message being reassembled and must
11 store the INFO_DATA field of the received message as the first segment of an SMS
12 teleservice message being reassembled. Set SEQ_NO_S to SEQ_NO_R. Set the B/F
13 field of the *Alert With Info SMS Order Confirmation Message* to '0'.
- 14 + If the value of the B/F field of the received message is '00', and if a segmented SMS
15 teleservice message is being reassembled, compare the value of the SEQ_NO field
16 of the received message to SEQ_NO_S. Set the B/F field of the *Alert With Info SMS*
17 *Order Confirmation Message* to '0'. Take action as follows:
- 18 o If (SEQ_NO_S + 1) modulo 8 is equal to the value of the SEQ_NO field of the
19 received message, store the INFO_DATA field of the received message as the
20 next segment of the SMS teleservice message being reassembled and
21 increment SEQ_NO_S, modulo 8.
- 22 o If SEQ_NO_S is equal to the value of the SEQ_NO field of the received message,
23 the mobile station may discard the INFO_DATA field of the received message.
- 24 o If neither SEQ_NO_S nor (SEQ_NO_S + 1) modulo 8 is equal to the value of the
25 SEQ_NO field of the received message, the mobile station may discard the
26 INFO_DATA field of the received message and may discard the incomplete
27 SMS teleservice message being reassembled.
- 28 + If the value of the B/F field of the received message is '00', and if no segmented
29 SMS teleservice message is being reassembled, the mobile station may discard the
30 INFO_DATA field of the received message. Set the B/F field of the *Alert With Info*
31 *SMS Order Confirmation Message* to '0'.
- 32 + If the value of the B/F field of the received message is '01', and if a segmented SMS
33 teleservice message is being reassembled, store the INFO_DATA field of the
34 received message as the last segment of the SMS teleservice message and pass
35 the complete SMS teleservice message to the SMS teleservice. Set the B/F field of
36 the *Alert With Info SMS Order Confirmation Message* to '1'. If the teleservice
37 reports an error, set the ERROR_CLASS and CAUSE_CODE fields of the *Alert With*
38 *Info SMS Order Confirmation Message* to report the teleservice error.

- 1 + If the value of the B/F field of the received message is '01', and if no segmented
2 SMS teleservice message is being reassembled, the mobile station may discard the
3 INFO_DATA field of the received message. Set the ERROR_CLASS and
4 CAUSE_CODE fields of the *Alert With Info SMS Order Confirmation Message* to
5 report an error due to reception of an incomplete message. Set the B/F field of the
6 *Alert With Info SMS Order Confirmation Message* to '0'.
- 7 – *Message Encryption Mode Order*: The base station is activating/deactivating signaling
8 message encryption. If the order qualifier field in the received message is set to '001',
9 activate basic signaling message encryption. If the order qualifier field in the received
10 message is set to '010', activate enhanced signaling message encryption. If the order
11 qualifier field in the received message is set to '000', deactivate signaling message
12 encryption. In any case, send an "order confirmation" message to the base station (see
13 2.7.2), remain in the Waiting for Order Task and reset the order timer to 10 seconds if
14 the mobile station is waiting for a response to a Base Station Challenge order, or to 5
15 seconds if waiting for any other response.

16 2.6.4.4. Conversation

17 In addition to the requirements in this section, see the corresponding section of [26].

18 When this task is entered, in addition to the actions described in the corresponding section of [26],
19 the following may occur:

- 20 • If this task is entered as a result of receiving an *Analog Handoff Direction Message* (see
21 3.7.3.3.2.6 of [5]), the mobile station must use the VMAC, ANALOG_CHAN, and SCC values
22 obtained from the *Analog Handoff Direction Message* to perform the following operations:
23 Adjust power level, tune to new channel, adjust to new SAT, and set SCC_S to the value of
24 the SCC field of the message (see 2.4.1). The mobile station must then turn on the
25 transmitter and reset the fade timer. The mobile station must set the message encryption
26 mode to that indicated by the MEM value obtained from the *Analog Handoff Direction*
27 *Message*. The mobile station may compare the SID value obtained from the *Analog Handoff*
28 *Direction Message* with HOME_SID_p. If SID_r = HOME_SID_p, the mobile station may set the
29 ROAM status to disabled. If SID_r is not equal to HOME_SID_p, the mobile station may set
30 the ROAM status to enabled. The mobile station must remain in the Conversation Task.
- 31 • Within 100 ms of the receipt of any of the orders listed either below or in the corresponding
32 section of [26], the mobile station must compare SCC_S to the PSCC field in the received
33 message. If SCC_S is not equal to PSCC, the order must be ignored. If SCC_S = PSCC, the
34 mobile station must take the following steps. Except for the audit order, mobile stations
35 capable of discontinuous-transmission operation (see 2.3.11) must inhibit discontinuous
36 transmission for 1.5 seconds; that is, for a period of at least 1.5 seconds, the mobile station
37 must remain in the DTX-high state. Upon receipt of the audit order, mobile stations capable
38 of discontinuous transmission must inhibit discontinuous transmission for at least 5 seconds.
39 Immediately after determining that SCC_S = PSCC, a mobile station that is not capable of
40 discontinuous transmission or a mobile station capable of discontinuous transmission but in
41 the DTX-high state must take the actions specified below for each order.

1 If the mobile station is capable of discontinuous transmission and is in the DTX-low state or
 2 the transition state when the order arrives, the mobile station must enter the DTX-high state
 3 and wait 200 ms. Then it must take the actions specified below for each order.

- 4 – *Send Called-Address:*
- 5 + If received within 10 seconds of the completion of the last valid flash, send the
 6 called-address to the base station (see 2.7.2) and remain in the Conversation Task.
 7 The contents of the called address field may depend on the desired action to be
 8 taken by the network, such as:
- 9 o If the flash was a result of the user indicating User Selective Call Forwarding, the
 10 called-address should indicate either the:
- 11 ◇ feature code for User Selective Call Forwarding to pre-registered number, or
 12 ◇ feature code for User Selective Call Forwarding followed by the desired
 13 forwarding to number, or
 14 ◇ feature code for User Selective Call Forwarding to voice mail.
- 15 o If the flash was a result of the user activation or deactivation of Answer Holding,
 16 the called-address should indicate the feature code for Answer Holding.
- 17 + Otherwise, ignore the order and remain in the Conversation Task.
- 18 – *Alert With Info SMS:* Within 750 ms the mobile station must send *an Alert With Info*
 19 *SMS Order Confirmation Message*, and remain in the Conversation Task.

20 Process the Alert With Info SMS message as follows:

- 21 + If the value of the B/F field of the received message is '11', the INFO_DATA field of
 22 the received message contains an unsegmented SMS teleservice message. The
 23 mobile station may discard any incomplete SMS teleservice message being
 24 reassembled, and should pass the INFO_DATA field of the received message to the
 25 SMS teleservice. Set the B/F field of the *Alert With Info SMS Order Confirmation*
 26 *Message* to '1'. If the teleservice reports an error, set the ERROR_CLASS and
 27 CAUSE_CODE fields of the *Alert With Info SMS Order Confirmation Message* to
 28 report the teleservice error.
- 29 + If the value of the B/F field of the received message is '10', the mobile station may
 30 discard any incomplete SMS teleservice message being reassembled, and must
 31 store the INFO_DATA field of the received message as the first segment of an SMS
 32 teleservice message being reassembled. Store the value of the SEQ_NO field of
 33 the received message in SEQ_NO_S. Set the B/F field of the *Alert With Info SMS*
 34 *Order Confirmation Message* to '0'.
- 35 + If the value of the B/F field of the received message is '00', and if a segmented SMS
 36 teleservice message is being reassembled, compare the value of the SEQ_NO field
 37 of the received message to SEQ_NO_S. Set the B/F field of the *Alert With Info SMS*
 38 *Order Confirmation Message* to '0'. Take action as follows:

- 1 o If $(SEQ_NO_S + 1)$ modulo 8 is equal to the value of the SEQ_NO field of the
2 received message, store the INFO_DATA field of the received message as the
3 next segment of the SMS teleservice message being reassembled, and
4 increment SEQ_NO_S, modulo 8.
- 5 o If SEQ_NO_S is equal to the value of the SEQ_NO field of the received message,
6 the mobile station may discard the INFO_DATA field of the received message.
- 7 o If neither SEQ_NO_S nor $(SEQ_NO_S + 1)$ modulo 8 is equal to the value of the
8 SEQ_NO field of the received message, the mobile station may discard the
9 INFO_DATA field of the received message and may discard the incomplete
10 SMS teleservice message being reassembled.
- 11 + If the value of the B/F field of the received message is '00', and if no segmented
12 SMS teleservice message is being reassembled, the mobile station may discard the
13 INFO_DATA field of the received message. Set the B/F field of the *Alert With Info*
14 *SMS Order Confirmation Message* to '0'.
- 15 + If the value of the B/F field of the received message is '01', and if a segmented SMS
16 teleservice message is being reassembled, store the INFO_DATA field of the
17 received message as the last segment of the SMS teleservice message and pass
18 the complete SMS teleservice message to the SMS teleservice. Set the B/F field of
19 the *Alert With Info SMS Order Confirmation Message* to '1'. If the teleservice
20 reports an error, set the ERROR_CLASS and CAUSE_CODE fields of the *Alert With*
21 *Info SMS Order Confirmation Message* to report the teleservice error.
- 22 + If the value of the B/F field of the received message is '01', and if no segmented
23 SMS teleservice message is being reassembled, the mobile station may discard the
24 INFO_DATA field of the received message. Set the ERROR_CLASS and
25 CAUSE_CODE fields of the *Alert With Info SMS Order Confirmation Message* to
26 report an error due to reception of an incomplete message. Set the B/F field of the
27 *Alert With Info SMS Order Confirmation Message* to '0'.
- 28 – *Message Encryption Mode Order*: The base station is activating/deactivating signaling
29 message encryption. If the order qualifier field in the received message is set to '001',
30 activate basic signaling message encryption. If the order qualifier field in the received
31 message is set to '010', activate enhanced signaling message encryption. If the order
32 qualifier field in the received message is set to '000', deactivate signaling message
33 encryption. In any case, send an "order confirmation" message to the base station (see
34 2.7.2), remain in the Waiting for Order Task and reset the order timer to 10 seconds if
35 the mobile station is waiting for a response to a Base Station Challenge order, or to 5
36 seconds if waiting for any other response.

37 2.6.4.5. Release

38 See the corresponding section of [26].

39 2.6.4.6. Power Down

40 See the corresponding section of [26].

1 **2.7.Signaling Formats**

2 In addition to the requirements in this section, see the corresponding section of [26].

3 2.7.1. Reverse Analog Control Channel (RECC)

4 In addition to the requirements in this section, see the corresponding section of [26].

5 2.7.1.1. Reverse Analog Control Channel (RECC) Messages

6 In addition to the requirements in this section, see the corresponding section of [26].

7 In addition to the message formats shown in the corresponding section of [26], the following word(s)
8 may be transmitted over the reverse control channel:

9 Word C - PCI Report Word

Information Element	Length (bits)
F = 0	1
NAWC	3
MSPC	4
MSCAP	3
CLIC	1
MWNC	1
SMSC	2
PACAC	1
ENCRYPTION_SUPPORTED	4
RSVD = 000...000	16
P	12

10

1 The interpretation of the data fields (not already defined in the corresponding section of [26]) is as
 2 follows:

3 CLIC — Calling Line Identification Capability. Set to '0' to indicate not EP
 4 (Extended Protocol) CLI-capable. Set to '1' to indicate EP-CLI-
 5 capable.

6 MWNC — Message Waiting Notification Capability. Set to '0' to indicate not
 7 EP-Voice Mail capable. Set to '1' to indicate EP-Voice Mail Status-
 8 capable.

9 SMSC — Short Message Service Capability.

10 00 - Not SMS-capable,

11 01 - AWI SMS order-capable,

12 10 - EP-SMS-capable,

13 11 - AWI SMS and EP-SMS-capable.

14 PACAC — PACA Capability. Set to '0' to indicate not PACA-capable. Set to '1'
 15 to indicate PACA capable.

16 ENCRYPTION_-

17 SUPPORTED — Encryption algorithms supported by the mobile station.

18 If AUTH is equal to '0', the mobile station shall set this field to '0000'.
 19 Otherwise, the mobile station shall set this field as specified in [5].

20 2.7.2. Reverse Analog Voice Channel (RVC)

21 In addition to the requirements in this section, see the corresponding section of [26].

22 2.7.2.1. Reverse Analog Voice Channel (RVC) Messages

23 In addition to the requirements in this section, see the corresponding section of [26].

24 Selected Control Messages (see 2.7.2.1.1) are enciphered using the Cellular Message Encryption
 25 Algorithm (see [14]) or the Enhanced Cellular Message Encryption Algorithm (see [14]). For each
 26 message, the enciphered fields are designated. The messages are grouped by channel designation.

27 In addition to the RVC messages listed in the corresponding section of [26], formats are shown for
 28 the following RVC message types:

- 29 • Alert With Info SMS Order Confirmation Message
- 30 • PCI Report Message

31

1 Alert With Info SMS Order Confirmation Message

Information Element	Length (bits)
F = 1	1
NAWC = 00	2
T = 1	1
LOCAL/MSG_TYPE = 00001	5
ORDQ = 000	3
ORDER = 10001	5
B/F	1
ERROR_CLASS	2
CAUSE_CODE	8
SEQ_NO	3
RSVD = 00000	5
P	12

2

3 PCI Report Message

Information Element	Length (bits)
F = 1	1
NAWC = 00	2
T = 1	1
MSG_TYPE	5
ORDQ = 100	3
ORDER = 11010	5
MSPC	4
MSCAP	3
CLIC	1
MWNC	1
SMSC	2
PACAC	1
RSVD = 0000000	7
P	12

4

1 The interpretation of the data fields (not already defined in the corresponding section of [26]) is as
2 follows:

3	BF	—	Begin/Final. This field is used to indicate whether the
4			ERROR_CLASS and CAUSE_CODE fields include the teleservice
5			processing result for an SMS teleservice message. If no teleservice
6			processing result is included, this field shall be set to '0'. If a
7			teleservice processing result is included, this field shall be set to '1'.
8	ERROR_CLASS	—	Error report class.
9			If there is no error, this field shall be set to '00'.
10			If the error is caused by a temporary condition, this field shall be set
11			to '10'. If the error is caused by a permanent condition, this field
12			shall be set to '11'.
13	CAUSE_CODE	—	Cause code. This field provides the delivery status of SMS user
14			data (see [27]).
15	SEQ_NO	—	Sequence number. This field contains the SEQ_NO of the Alert
16			With Info SMS message that is being acknowledged by the mobile
17			station.
18	CLIC	—	Calling Line Identification Capability. Set to '0' to indicate not EP
19			(Extended Protocol) CLI-capable. Set to '1' to indicate EP-CLI-
20			capable.
21	MWNC	—	Message Waiting Notification Capability. Set to '0' to indicate not
22			EP-Voice Mail capable. Set to '1' to indicate EP-Voice Mail Status-
23			capable.
24	SMSC	—	Short Message Service Capability.
25			00 - Not SMS-capable,
26			01 - AWI SMS order-capable,
27			10 - EP-SMS-capable,
28			11 - AWI SMS and EP-SMS-capable.
29	PACAC	—	PACA Capability. Set to '0' to indicate not PACA-capable. Set to '1'
30			to indicate PACA-capable.

31 2.7.2.1.1. Encrypted Control Messages

32 The 32 bits in Word 1 – First Word of the *Called Address Message* which comprise digits 1 – 8 are
33 encrypted. These 32 bits are treated by the encryption procedure as a new single message. No
34 additional fields in Word 1 are encrypted.

35 The 32 bits in each Word 2 (and in Word 3 and in Word 4 when sent for 32-Digit Dialing) of the
36 *Called Address Message* which comprise further dialed digits are encrypted. These 32 bits are
37 treated by the encryption procedure as a new single message. No additional fields in these words
38 are encrypted.

39 If the Enhanced Cellular Message Encryption Algorithm (see [14]) is used, the input parameters shall
40 be set as follows:

- 41 • SYNC[0] = 0x01

- 1 • SYNC[1] = 0x00
- 2 • DATA_TYPE= 0

3. REQUIREMENTS FOR BASE STATION ANALOG OPERATION

Section 3 references [26] to describe core analog mode operation. Only those analog capabilities that support the CDMA dual-mode of operation are described in detail in this section. Subsection numbers in Section 3 of this standard correspond to subsection numbers in [26]. A reference in this standard to a particular subsection in [26] applies to that subsection and to all subsequent subsections; however, text in a subsection of Section 3 of this standard shall take precedence over any text in the corresponding subsection text in [26].

Base stations optionally implementing PACA service in the analog mode shall support *PACA Message* and PACA Cancel delivery (see 3.6.2, 3.6.3, 3.6.4 and 3.7.1) on the control channel. Base stations optionally implementing Extended Protocol enhanced features should refer to [7] for additional information.

3.1. Transmitter

In addition to the requirements in this section, see the corresponding section of [26].

3.1.1. Frequency Parameters

See the corresponding section of [26].

3.1.2. Power Output Characteristics

See the corresponding section of [26].

3.1.3. Modulation Characteristics

See the corresponding section of [26].

3.1.3.1. Analog Voice Signals

The (FM) modulator is preceded by the following five voice-processing stages (in the order listed):

1. Transmit Audio Level Adjustment
2. Compressor
3. Pre-Emphasis
4. Deviation Limiter
5. Post Deviation-Limiter Filter

Pending the generation of a complete speech transmission plan for dual-mode cellular systems, the following requirements shall be met to ensure compatibility with the transmission plan for fixed digital speech networks.

3.1.3.1.1. Compressor

See the corresponding section of [26].

1 3.1.3.1.2. Pre-emphasis

2 See the corresponding section of [26].

3 3.1.3.1.3. Deviation Limiter

4 See the corresponding section of [26].

5 3.1.3.1.4. Post Deviation-Limiter Filter

6 See the corresponding section of [26].

7 3.1.3.1.5. Transmit Level Adjustment

8 The base station shall set the transmit level so that a 1004 Hz tone at a level of -18 dBm0 at the
9 network interface produces a ± 2.9 kHz peak frequency deviation of the transmitted carrier.
10 Measurement techniques are described in [28].

11 3.1.3.2. Wideband Data Signals

12 See the corresponding section of [26].

13 3.1.4. Limitations on Emissions

14 3.1.4.1. Bandwidth Occupied

15 See the corresponding section of [26]. Measurement techniques are defined in [28].

16 3.1.4.2. Conducted Spurious Emissions

17 Refer to [28].

18 3.1.4.3. Radiated Spurious Emissions

19 Refer to [28].

20 3.1.4.4. Intermodulation

21 Radiated products from co-located transmitters shall not exceed FCC spurious and harmonic level
22 requirements that would apply to any of the transmitters operated singly.

23 **3.2.Receiver**

24 In addition to the requirements in this section, see the corresponding section of [26].

25 3.2.1. Frequency Parameters

26 See the corresponding section of [26].

3.2.2. Demodulation Characteristics

See the corresponding section of [26].

3.2.2.1. Analog Voice Signals

The demodulator is followed by the following three voice-signal processing stages:

- De-emphasis
- Expander
- Receive Audio Level Adjustment

Pending the generation of a complete speech transmission plan for dual-mode cellular systems, the following requirements shall be met to ensure compatibility with the transmission plan for fixed digital speech networks.

3.2.2.1.1. De-emphasis

See the corresponding section of [26].

3.2.2.1.2. Expander

See the corresponding section of [26].

3.2.2.1.3. Audio Level Adjustment

The base station shall set the audio level so that a received 1004 Hz tone with a ± 2.9 kHz peak frequency deviation produces a level of -18 dBm₀ at the network interface. Measurement techniques are described in [28].

3.2.3. Limitations on Emissions

Refer to [28].

3.2.4. Other Receiver Parameters

System performance is predicated upon receivers meeting [28].

3.3. Security and Identification

In addition to the requirements in this section, see the corresponding section of [26].

3.3.1. Authentication

See the corresponding section of [26].

1 3.3.2. Encryption

2 If the base station supports mobile station authentication (see 3.3.1), it may also support message
3 encryption by providing the capability to send encrypted control messages and to perform the
4 operations of encryption and decryption as specified in 2.3.12.2.

5 **3.4. Supervision**

6 See the corresponding section of [26].

7 **3.5. Malfunction Detection**

8 Reserved.

9 **3.6. Call Processing**

10 In addition to the requirements in this section, see the corresponding section of [26].

11 3.6.1. Overhead Functions for Mobile Station Initiation

12 See the corresponding section of [26].

13 3.6.2. Mobile Station Control on the Control Channel

14 3.6.2.1. Overhead Information

15 In addition to the overhead information defined in the corresponding section of [26], the following
16 overhead information is sent as required in messages appended to a *System Parameter Overhead*
17 *Message* (see 3.7.1.2 for message formats):

18 Note: *CDMA Capability*. A system may indicate that it is capable of CDMA operation by sending
19 the *CDMA Capability Global Action Message* with the CDMA_AVAIL field set to '1'. If
20 CDMA_AVAIL is set to '1', the base station must set the CDMA_FREQ field to the channel
21 number of the CDMA frequency assignment that the mobile station is to acquire. A system
22 may also indicate the availability of additional CDMA systems by sending the *CDMA*
23 *Capability Global Action Message* with the ADD_CDMA_AVAIL field set to '1'.
24

25 3.6.2.2. Page

26 See the corresponding section of [26].

27 3.6.2.3. Order

28 In addition to the orders and order confirmations defined in the corresponding section of [26], the
29 following orders and order confirmations may be transmitted:

- 30 • *PACA Message*.

- 1 • *CDMA Info Order*.

2 3.6.2.4. Local Control

3 See the corresponding section of [26].

4 3.6.3. Base Station Support of System Access by Mobile Stations

5 3.6.3.1. Overhead Information

6 See the corresponding section of [26].

7 3.6.3.2. Reverse Control Channel Seizure by Mobile Stations

8 See the corresponding section of [26].

9 3.6.3.3. Response to Mobile Station Messages

10 In addition to the mobile station message responses defined in the corresponding section of [26], the
11 following response to mobile station messages may be sent:

- 12 • *PACA Response*. Send one of the following:

13 – *Initial Voice Channel Designation*,

14 – *PACA Message*

15 – *Directed Retry*,

16 – *Intercept*,

17 – *Reorder*.

- 18 • *Order Message*. When the base station receives a *Base Station Challenge Order* from the
19 mobile station, it should perform the authentication procedure as defined in 2.3.12.1.9. The
20 base station must then send the order confirmation to the mobile station containing the
21 algorithm output. When the base station receives a *CDMA Query Order* from the mobile
22 station, it must send the *CDMA Info Order* to the mobile station. For all other orders, the
23 base station should send one of the following orders:

24 – *Order Confirmation*

25 – *Release*

26 3.6.4. Mobile Station Control on Voice Channel

27 See the corresponding section of [26].

28 3.6.4.1. Loss of Radio-Link Continuity

29 Reserved.

1 3.6.4.2. Initial Voice Channel Confirmation

2 See the corresponding section of [26].

3 3.6.4.3. Alerting

4 3.6.4.3.1. Waiting for Order

5 When the mobile station confirms the initial voice channel designation after having been paged, it
6 enters this task. In addition to the orders listed in the corresponding section of [26], the following
7 orders can be sent to the mobile station, with the resultant confirmation and action to be taken as
8 follows:

- 9 • *Handoff (to Digital Traffic Channel)*. Requires further study.
- 10 • *Alert with Info SMS*. Within 750 ms, the mobile station confirms the order by sending an
11 *Alert With Info SMS Order Confirmation Message*. The SEQ_NO received in the *Alert With*
12 *Info SMS Order Confirmation Message*, SEQ_NO_R, is compared to the SEQ_NO transmitted
13 in the last *Alert With Info SMS Message*, SEQ_NO_S. If the comparison results in a match,
14 the base station may transmit the next pending *Alert With Info SMS Message*. If the
15 comparison results in a mismatch, the base station must not transmit any new Alert With Info
16 SMS messages and may re-transmit the unacknowledged *Alert With Info SMS Message* until
17 the unacknowledged outstanding *Alert With Info SMS Message* is received as indicated by a
18 match of SEQ_NO_R and SEQ_NO_S. Then, if the channel was allocated to deliver SMS
19 messages, the base station should send a *Release Order*. Otherwise the base station must
20 remain in the Waiting for Order Task.

21 3.6.4.3.2. Waiting for Answer

22 When this task is entered, an alert timer may be set. In addition to the orders listed in the
23 corresponding section of [26], the following orders can be sent with the confirmation and action to be
24 taken as follows:

- 25 • *Handoff (to Digital Traffic Channel)*. Requires further study.
- 26 • *Alert with Info SMS*. Within 750 ms, the mobile station confirms the order by sending an
27 *Alert With Info SMS Order Confirmation Message*. The SEQ_NO received in the *Alert With*
28 *Info SMS Order Confirmation Message*, SEQ_NO_R, is compared to the SEQ_NO transmitted
29 in the last *Alert With Info SMS Message*, SEQ_NO_S. If the comparison results in a match,
30 the base station may transmit the next pending *Alert With Info SMS Message*. If the
31 comparison results in a mismatch, the base station must not transmit any new Alert With Info
32 SMS messages and may re-transmit the unacknowledged *Alert With Info SMS Message* until
33 that outstanding *Alert With Info SMS Message* is received as indicated by a match of
34 SEQ_NO_R and SEQ_NO_S. Then, if the channel was allocated to deliver SMS messages, the
35 base station should send a *Release Order*. Otherwise the base station must remain in the
36 Waiting for Answer Task.

3.6.4.4. Conversation

While the base station is in the Conversation Task, in addition to the orders listed in the corresponding section of [26], the following orders can be sent to the mobile station, with confirmation and action to be taken as follows:

- *Alert with Info SMS*. Within 750 ms, the mobile station confirms the order by sending an *Alert With Info SMS Order Confirmation Message*. The SEQ_NO received in the *Alert With Info SMS Order Confirmation Message*, SEQ_NO_r, is compared to the SEQ_NO transmitted in the last *Alert With Info SMS Message*, SEQ_NO_s. If the comparison results in a match, the base station may transmit the next pending Alert With Info SMS message. If the comparison results in a mismatch, the base station must not transmit any new Alert With Info SMS messages and may re-transmit the unacknowledged *Alert With Info SMS Message* until that outstanding *Alert With Info SMS Message* is received as indicated by a match of SEQ_NO_r and SEQ_NO_s. The base station must remain in the Conversation Task.

If the call is mobile station originated, and if the mobile station re-originated the call based on receiving a *PACA Message* (PURPOSE_r = '0010'), the base station should send an *Alert With Information Message*.

3.6.5. Delivery of Character Information

Character information is delivered to a mobile station via the *Mobile Station Control Message* over the forward voice channel. The *Alert With Info* and *Flash With Info* orders are designated in the *Mobile Station Control Message*.

Whenever two sets of character information need to be delivered to a mobile station, the base station shall transmit the second set of character information using the *Flash With Info* order. This allows for PI and SI information to be uniquely specified for each instance of CNI.

1

2 **3.7.Signaling Formats**

3 In addition to the requirements in this section, see the corresponding section of [26] for operation in
4 the analog mode.

5 3.7.1. Forward Analog Control Channel

6 See the corresponding section of [26].

7 3.7.1.1. Mobile Station Control Message

8 In addition to the message formats defined in the corresponding section of [26], the *Mobile Station*
9 *Control Message* may contain the following words:

1 Word 3 - PACA Word

Information Element	Length (bits)
T ₁ T ₂ = 10	2
SCC = 11	2
PURPOSE	4
Q_POS	8
RSVD = 000...000	12
P	12

2 Word 3 – First CDMA Info Word

Information Element	Length (bits)
T ₁ T ₂ = 10	2
SCC = 11	2
BAND_CLASS	5
CDMA_FREQ	11
RSVD = 00000000	8
P	12

3 Word 4 – Second CDMA Info Word

Information Element	Length (bits)
T ₁ T ₂ = 10	2
SCC = 11	2
SID	15
RSVD = 000...000	9
P	12

4 The interpretation of the data fields (not already defined in the corresponding section of [26]) is as
 5 follows:

1

Table 3.7.1.1-2. PACA PURPOSE Codes

PURPOSE Code	Function
0000	Indicates that the purpose of the PACA message is to respond to an <i>Origination Message</i> .
0001	Indicates that the purpose of the PACA message is to provide the queue position of the PACA call.
0010	Indicates that the purpose of the PACA message is to instruct the mobile station to re-originate the PACA call.
0011	Indicates that the purpose of the PACA message is to cancel the PACA call.

2

3 3.7.1.2. Overhead Message

4 See the corresponding section of [26].

5 3.7.1.2.1. System Parameter Overhead Message

6 In addition to the requirements in this section, see the corresponding section of [26] for operation in
7 the analog mode.8 Note: The base station shall set EP = '0' in Word 1 of the *System Parameter Overhead Message*,
9 except when implementing optional extended protocol services (see the corresponding
10 section of [7]).

11 3.7.1.2.2. Global Action Overhead Message

12 In addition to the *Global Action Overhead Messages* listed in this section, see the corresponding
13 section of [26] for operation in the analog mode.

1 CDMA Capability Global Action Message

Information Element	Length (bits)
T ₁ T ₂ = 11	2
DCC	2
ACT = 0100	4
CDMA_FREQ	11
CDMA_AVAIL	1
ADD_CDMA_AVAIL	1
RSVD = 000	3
END	1
OHD = 100	3
P	12

2

3 The interpretation of the data fields (not already defined in the corresponding section of [26]) is as
4 follows:

- 5 CDMA_FREQ — Channel number of the CDMA frequency assignment to acquire.
6 CDMA_AVAIL — Set to '1' if Band Class 0 CDMA is available (see [5]).
7 ADD_CDMA_AVAIL — Set to '1' if additional CDMA systems are available.

8 The *Global Action Message* codes defined in Table 3.7.1.2.3-1 are in addition to the codes defined in
9 Table 3.7.1-4 of [26].

10

Table 3.7.1.2.3-1. Global Action Message Types

Action Code	Type
0100	CDMA Capability

11

12 3.7.1.2.3. Registration ID Message

13 In addition to the definitions in this section, see the corresponding section of [26] for operation in
14 analog mode.

15 3.7.1.2.4. Control-Filler Message

16 See the corresponding section of [26] for operation in the analog mode.

17 3.7.1.3. Data Restrictions

18 See the corresponding section of [26] for operation in the analog mode.

1 3.7.2. Forward Analog Voice Channel

2 See the corresponding section of [26].

3 3.7.2.1. Mobile Station Control Message

4 In addition to the *Mobile Station Control Message* defined in this section, see the corresponding
5 section of [26] for operation in the analog mode.

6 Word 2 - First Alert With Info SMS Word

Information Element	Length (bits)
T ₁ T ₂ = 01	2
RL_W	7
SEQ_NO	3
B \bar{F}	2
TASK_TM	1
RSVD = 00000	5
INFO_DATA	8
P	12

7 Word 3 - Second Alert With Info SMS Word

Information Element	Length (bits)
T ₁ T ₂ = 01	2
RSVD = 00	2
INFO_DATA	24
P	12

8 Word N - (N-1) Alert With Info SMS Word

Information Element	Length (bits)
T ₁ T ₂ = 01	2
RSVD = 00	2
INFO_DATA	24
P	12

9

1 The interpretation of the data fields (not already defined in the corresponding section of [26]) is as
2 follows:

- 3 RL_W — The remaining length, in Words, of the Alert With Info SMS word.
4 SEQ_NO — Sequence number. This field contains the modulo-8 sequence
5 number of the *Alert With Info SMS Message*. This field shall be
6 initialized to '000', and reset to '000' when transmitting a new SMS
7 teleservice message.

8 If an SMS teleservice message spans more than one *Alert With Info*
9 *SMS Message*, the sequence number shall be incremented by 1,
10 modulo 8, for each additional *Alert With Info SMS Message* that is a
11 segment of the SMS teleservice message.

- 12 BF — Begin/Final. This field is used to specify whether the SMS
13 teleservice message has been segmented into multiple *Alert With*
14 *Info SMS Messages*. If the SMS teleservice message is completely
15 contained in a single *Alert With Info SMS Message*, this field shall
16 be set to '11'. For an SMS teleservice message contained in
17 multiple Alert With Info SMS messages, the first segment shall have
18 a value of '10', intermediate segments shall have a value of '00' and
19 the final segment shall have a value of '01'. A mobile station must
20 assemble messages for receipt by the SMS teleservice.

- 21 TASK_TM — Task Timer. This field is included in the *Alert With Info SMS*
22 *Message* to specify the Waiting for Order Task timeout period. A
23 value of '0' indicates a 10 second order timer shall be used by the
24 mobile station, and a value of '1' indicates that a 600 ms order timer
25 shall be used.

- 26 INFO_DATA — Info data. This field contains the SMS teleservice message data
27 (see [27]).

28 Selected Control Messages (see 2.7.2.1.1 and 3.7.2.1.1) are enciphered using the Cellular Message
29 Encryption Algorithm (see [14]) or the Enhanced Cellular Message Encryption Algorithm (see [14]).
30 For each message, the enciphered fields are designated. The messages are grouped by channel
31 designation.

32 3.7.2.1.1. Encrypted Control Messages

33 Word 1 of the Mobile Station Control Message contains the order and order qualifier fields that
34 identify this message as *Alert With Info Message*. No field in Word 1 is encrypted.

35 3.7.2.1.2. Alert With Info Message

36 No field in Word 2 – First Alert With Info Word is encrypted.

37 The subsequent words contain a character representation. Each character transmitted is
38 represented in IA5 form in a field of 8 bits. Each word contains up to three characters. The 24 bits
39 that comprise the three characters in each FVC word are treated by the encryption procedure as a
40 single message. No additional fields are encrypted.

41 If the Enhanced Cellular Encryption Algorithm is used, the input parameters shall be set as follows:

- 42 • SYNC[0] = 0x00

- 1 • SYNC[1] = 0x00
- 2 • DATA_TYPE=0

3 3.7.2.1.3. Flash With Info Message

4 No field in Word 2 - Flash With Info Word is encrypted.

5 The subsequent words contain a character representation. Each character transmitted is represented
6 in IA5 form in a field of 8 bits. Each word contains up to three characters. The 24 bits that comprise
7 the three characters in each FVC word are treated by the encryption procedure as a single message.
8 No additional fields are encrypted.

9 If the Enhanced Cellular Message Encryption Algorithm is used, the input parameters shall be set as
10 follows:

- 11 • SYNC[0] = 0x00
- 12 • SYNC[1] = 0x00
- 13 • DATA_TYPE= 0

14 3.7.2.1.4. Alert With Info SMS Message

15 The Word 2 – First Alert With Info SMS Word contains fields B/F, TASK_TM, RSVD and
16 INFO_DATA that are encrypted by the encryption procedure. No additional fields in Word 2 are
17 encrypted.

18 Subsequent Alert With Info SMS Words contain the INFO_DATA field – representation of message
19 data sent by the SMS teleservice. The INFO_DATA fields of all subsequent Alert With Info SMS
20 Words are encrypted. No additional fields of subsequent Alert With Info SMS Words are encrypted.

21 The encrypted fields of Word 2 – First Alert With SMS Word and all INFO_DATA fields of the same
22 Alert With Info SMS message are treated by the encryption procedure as a single message.

23 If the Enhanced Cellular Message Encryption Algorithm is used, the input parameters shall be set as
24 follows:

- 25 • SYNC[0] = 0x00
- 26 • SYNC[1] = 0x00
- 27 • DATA_TYPE= 1

28 3.7.2.2. Reserved

29

1 No Text.

1 **4. REQUIREMENTS FOR MOBILE STATION ANALOG OPTIONS**

2 See the corresponding section of [7] for optional extended protocol services.

3

1 No Text.

1 **5. REQUIREMENTS FOR BASE STATION ANALOG OPTIONS**

2 See the corresponding section of [7] for optional extended protocol services.

3

- 1
- 2 No Text.
- 3

- 1 **A. ANNEX A - Reserved.**
- 2 Reserved.
- 3

- 1 No text.

1

Table B.3-1. NAM Indicators

Indicator	Number of Bits	Where Defined	Notes
FIRSTCHP _p	11	2.3.7	
SSD_A _{s-p}	64	2.3.12.1.1	Shared Secret Data A
SSD_B _{s-p}	64	2.3.12.1.1	Shared Secret Data B
COUNT _{s-p}	6	2.3.12.1.3	Call History Parameter
IMSI_M_S _p	34	2.3.1	Includes IMSI_M_S1 _p and IMSI_M_S2 _p .
HOME_SID _p	15	2.3.8	
ACCOLC _p	4	2.3.5	

2

