



---

1 *Analog Signaling Standard for cdma2000 Spread*  
2 *Spectrum Systems – Addendum 2*

3

4

5

6

7

8

### **COPYRIGHT**

*3GPP2 and its Organizational Partners claim copyright in this document and individual Organizational Partners may copyright and issue documents or standards publications in individual Organizational Partner's name based on this document. Requests for reproduction of this document should be directed to the 3GPP2 Secretariat at [secretariat@3gpp2.org](mailto:secretariat@3gpp2.org). Requests to reproduce individual Organizational Partner's documents should be directed to that Organizational Partner. See [www.3gpp2.org](http://www.3gpp2.org) for more information.*

9

## PREFACE

1 ~~These technical requirements form a compatibility standard for 800 MHz cellular mobile~~  
2 ~~telecommunications systems and 1.8 to 2.0 GHz Code Division Multiple Access (CDMA)~~  
3 ~~systems. They ensure that a mobile station can obtain service in a cellular system~~  
4 ~~manufactured according to this standard. These requirements do not address the quality~~  
5 ~~or reliability of that service, nor do they cover equipment performance or measurement~~  
6 ~~procedures.~~

7 ~~To ensure compatibility (see Note 1), both radio system parameters and call processing~~  
8 ~~procedures must be specified. The sequence of call processing steps that the mobile~~  
9 ~~stations and base stations execute to establish calls has been specified along with the~~  
10 ~~digital control messages and analog signals that are exchanged between the two stations.~~

11 ~~The base station is subject to fewer compatibility requirements than the dual mode mobile~~  
12 ~~station. Radiated power levels, both desired and undesired, are fully specified for dual-~~  
13 ~~mode mobile stations to control the RF interference that one mobile station can cause~~  
14 ~~another. Base stations are fixed in location and their interference is controlled by proper~~  
15 ~~layout and operation of the system in which the station operates. Detailed call processing~~  
16 ~~procedures are specified for mobile stations to ensure a uniform response to all base~~  
17 ~~stations. Base station call procedures are not specified in detail because they are a part of~~  
18 ~~the overall design of the individual land system. However, the base station call processing~~  
19 ~~procedures must be compatible with those specified for the mobile station. This approach~~  
20 ~~to writing the compatibility specification provides the land system designer with sufficient~~  
21 ~~flexibility to respond to local service needs and to account for local topography and~~  
22 ~~propagation conditions.~~

23 ~~This specification includes provisions for future service additions and expansion of system~~  
24 ~~capabilities.~~

25 ~~This standard refers to the “core analog roaming standard”, [26], for specifications and~~  
26 ~~procedures that are mandatory for all analog capable mobile and base stations. Except for~~  
27 ~~the procedures listed in this standard, optional capabilities for IS 2000 mobile stations and~~  
28 ~~base stations beyond [26] are referred to in [7].~~

29 ~~This standard is divided into multiple parts. This part governs analog operation at 800~~  
30 ~~MHz based upon the standard, [26]. This standard provides the differences within [26],~~  
31 ~~which are used by dual mode mobile stations.~~

32

33

1

2 No text.

3

**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 ..... 1-9

6 1.1.2.2. CDMA Numeric Information ..... 1-12

7 1.2. Analog System Tolerances ..... 1-12

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

## CONTENTS

1	2.2.2.1.2. Expander .....	2-3
2	2.2.2.1.3. Receive Audio Level Adjustment .....	2-3
3	2.2.3. Limitations on Emissions .....	2-3
4	2.2.3.1. Conducted Spurious Emissions .....	2-3
5	2.2.3.1.1. Suppression Inside Cellular Band .....	2-3
6	2.2.3.1.2. Suppression Outside Cellular Band .....	2-4
7	2.2.3.2. Radiated Spurious Emissions .....	2-4
8	2.2.4. Other Receiver Parameters .....	2-4
9	2.3. Security and Identification .....	2-4
10	2.3.1. Mobile Identification Number .....	2-4
11	2.3.2. Electronic Serial Number (ESN) .....	2-4
12	2.3.3. Station Class Mark .....	2-4
13	2.3.4. Registration Memory .....	2-4
14	2.3.5. Access Overload Class .....	2-4
15	2.3.6. Extended Address Method .....	2-5
16	2.3.7. First Paging Channel .....	2-5
17	2.3.8. Home System Identification .....	2-5
18	2.3.9. Local Control Option .....	2-5
19	2.3.10. Preferred Operation Selection .....	2-5
20	2.3.11. Discontinuous Transmission .....	2-5
21	2.3.12. Authentication, Encryption of Signaling Information/User Data .....	2-5
22	2.3.12.1. Authentication .....	2-5
23	2.3.12.1.1. Shared Secret Data (SSD) .....	2-5
24	2.3.12.1.2. Random Challenge Memory (RAND) .....	2-5
25	2.3.12.1.3. Call History Parameter (COUNT <sub>S-p</sub> ) .....	2-5
26	2.3.12.1.4. Authentication of Mobile Station Registrations .....	2-6
27	2.3.12.1.5. Unique Challenge-Response Procedure .....	2-6
28	2.3.12.1.6. Authentication of Mobile Station Originations .....	2-6
29	2.3.12.1.7. Authentication of Mobile Station Terminations .....	2-6
30	2.3.12.1.8. Updating the Shared Secret Data (SSD) .....	2-6
31	2.3.12.1.9. Authentication Procedures .....	2-6
32	2.3.12.2. Signaling Message Encryption .....	2-6

## CONTENTS

1	2.3.12.2.1. Signaling Message Encryption Control .....		2-6
2	2.4. Supervision .....		2-7
3	2.5. Malfunction Detection.....		2-7
4	2.6. Call Processing .....		2-7
5	2.6.1. Initialization.....		2-7
6	2.6.1.1. Retrieve System Parameters .....		2-7
7	2.6.1.1.1. Scan Dedicated Control Channels .....		2-8
8	2.6.1.1.2. Update Overhead Information .....		2-8
9	2.6.1.2. Paging Channel Selection .....		2-9
10	2.6.1.2.1. Scan Paging Channels .....		2-9
11	2.6.1.2.2. Verify Overhead Information .....		2-10
12	2.6.2. Idle .....		2-11
13	2.6.2.1. Response to Overhead Information .....		2-11
14	2.6.2.2. Page Match .....		2-16
15	2.6.2.3. Order .....		2-16
16	2.6.2.4. Call Initiation.....		2-16
17	2.6.2.5. Power Down.....		2-17
18	2.6.2.6. Reserved .....		2-17
19	2.6.2.7. PACA Cancellation .....		2-17
20	2.6.3. System Access .....		2-17
21	2.6.3.1. Set Access Parameters.....		2-17
22	2.6.3.2. Scan Access Channels.....		2-18
23	2.6.3.3. Retrieve Access Attempt Parameters .....		2-18
24	2.6.3.4. Update Overhead Information.....		2-18
25	2.6.3.5. Seize Reverse Control Channel .....		2-20
26	2.6.3.6. Delay After Failure .....		2-21
27	2.6.3.7. Service Request.....		2-21
28	2.6.3.8. Await Message .....		2-23
29	2.6.3.9. Await Registration Confirmation .....		2-26
30	2.6.3.10. Action on Registration Failure .....		2-26
31	2.6.3.11. Autonomous Registration Update.....		2-26
32	2.6.3.12. Serving-System Determination .....		2-27

**CONTENTS**

1	2.6.3.13. Alternate Access Channel.....	2-27
2	2.6.3.14. Directed Retry .....	2-27
3	2.6.4. Mobile Station Control on the Analog Voice Channel.....	2-27
4	2.6.4.1. Loss of Radio-Link Continuity .....	2-27
5	2.6.4.2. Confirm Initial Voice Channel .....	2-27
6	2.6.4.3. Alerting .....	2-27
7	2.6.4.3.1. Waiting for Order .....	2-27
8	2.6.4.3.2. Waiting for Answer.....	2-30
9	2.6.4.4. Conversation .....	2-32
10	2.6.4.5. Release.....	2-35
11	2.6.4.6. Power Down .....	2-35
12	2.7. Signaling Formats .....	2-35
13	2.7.1. Reverse Analog Control Channel (RECC).....	2-35
14	2.7.1.1. Reverse Analog Control Channel (RECC) Messages .....	2-35
15	2.7.2. Reverse Analog Voice Channel (RVC) .....	2-36
16	2.7.2.1. Reverse Analog Voice Channel (RVC) Messages .....	2-37
17	2.7.2.1.1. Encrypted Control Messages .....	2-39
18	3. REQUIREMENTS FOR BASE STATION ANALOG OPERATION.....	3-1
19	3.1. Transmitter .....	3-1
20	3.1.1. Frequency Parameters .....	3-1
21	3.1.2. Power Output Characteristics .....	3-1
22	3.1.3. Modulation Characteristics .....	3-1
23	3.1.3.1. Analog Voice Signals.....	3-1
24	3.1.3.1.1. Compressor .....	3-2
25	3.1.3.1.2. Pre-emphasis.....	3-2
26	3.1.3.1.3. Deviation Limiter .....	3-2
27	3.1.3.1.4. Post Deviation-Limiter Filter.....	3-2
28	3.1.3.1.5. Transmit Level Adjustment.....	3-2
29	3.1.3.2. Wideband Data Signals.....	3-2
30	3.1.4. Limitations on Emissions.....	3-2
31	3.1.4.1. Bandwidth Occupied.....	3-2
32	3.1.4.2. Conducted Spurious Emissions.....	3-2

## CONTENTS

1	3.1.4.3. Radiated Spurious Emissions .....	3-2
2	3.1.4.4. Intermodulation .....	3-2
3	3.2. Receiver .....	3-2
4	3.2.1. Frequency Parameters .....	3-3
5	3.2.2. Demodulation Characteristics .....	3-3
6	3.2.2.1. Analog Voice Signals .....	3-3
7	3.2.2.1.1. De-emphasis .....	3-3
8	3.2.2.1.2. Expander .....	3-3
9	3.2.2.1.3. Audio Level Adjustment .....	3-3
10	3.2.3. Limitations on Emissions .....	3-3
11	3.2.4. Other Receiver Parameters .....	3-3
12	3.3. Security and Identification .....	3-3
13	3.3.1. Authentication .....	3-3
14	3.3.2. Encryption .....	3-4
15	3.4. Supervision .....	3-4
16	3.5. Malfunction Detection .....	3-4
17	3.6. Call Processing .....	3-4
18	3.6.1. Overhead Functions for Mobile Station Initiation .....	3-4
19	3.6.2. Mobile Station Control on the Control Channel .....	3-4
20	3.6.2.1. Overhead Information .....	3-4
21	3.6.2.2. Page .....	3-4
22	3.6.2.3. Order .....	3-4
23	3.6.2.4. Local Control .....	3-5
24	3.6.3. Base Station Support of System Access by Mobile Stations .....	3-5
25	3.6.3.1. Overhead Information .....	3-5
26	3.6.3.2. Reverse Control Channel Seizure by Mobile Stations .....	3-5
27	3.6.3.3. Response to Mobile Station Messages .....	3-5
28	3.6.4. Mobile Station Control on Voice Channel .....	3-5
29	3.6.4.1. Loss of Radio-Link Continuity .....	3-5
30	3.6.4.2. Initial Voice Channel Confirmation .....	3-6
31	3.6.4.3. Alerting .....	3-6
32	3.6.4.3.1. Waiting for Order .....	3-6

**CONTENTS**

1	3.6.4.3.2. Waiting for Answer.....	3-6
2	3.6.4.4. Conversation .....	3-7
3	3.6.5. Delivery of Character Information.....	3-7
4	3.7. Signaling Formats .....	3-8
5	3.7.1. Forward Analog Control Channel.....	3-8
6	3.7.1.1. Mobile Station Control Message .....	3-8
7	3.7.1.2. Overhead Message.....	3-11
8	3.7.1.2.1. System Parameter Overhead Message .....	3-11
9	3.7.1.2.2. Global Action Overhead Message .....	3-11
10	3.7.1.2.3. Registration ID Message .....	3-12
11	3.7.1.2.4. Control-Filler Message.....	3-12
12	3.7.1.3. Data Restrictions.....	3-13
13	3.7.2. Forward Analog Voice Channel.....	3-13
14	3.7.2.1. Mobile Station Control Message .....	3-13
15	3.7.2.1.1. Encrypted Control Messages .....	3-14
16	3.7.2.1.2. Alert With Info Message.....	3-14
17	3.7.2.1.3. Flash With Info Message .....	3-15
18	3.7.2.1.4. Alert With Info SMS Message.....	3-15
19	3.7.2.2. Reserved.....	3-15
20	4. REQUIREMENTS FOR MOBILE STATION ANALOG OPTIONS .....	4-1
21	5. REQUIREMENTS FOR BASE STATION ANALOG OPTIONS .....	5-1
22	A. ANNEX A - Reserved. ....	A-1
23	B. ANNEX B MOBILE STATION DATABASE.....	B-1
24	B.1 Introduction.....	B-1
25	B.2 Mobile Station Indicators.....	B-1
26	B.2.1 Permanent Mobile Station Indicators.....	B-1
27	B.3 NAM Indicators .....	B-1

28

**TABLES**

1 Table 3.7.1.1-1. Order, Order Qualification, and Message Type Codes ..... 3-10  
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  
2 document.

3 **2. Requirements for Mobile Station Analog Operation.** This section describes the  
4 requirements for CDMA-analog dual-mode mobile stations operating in the analog mode. A  
5 mobile station complying with these requirements will be able to operate with analog base  
6 stations complying with this document operating in accordance with this specification and  
7 should be able to operate with analog base stations complying with [26], [25], [7], and [24]  
8 or the latest version of these standards.

9 **3. Requirements for Base Station Analog Operation.** This section describes the  
10 requirements for analog base stations. A base station operating in accordance with these  
11 requirements will be able to operate in the analog mode with mobile stations operating in  
12 accordance with this specification and should be able to operate in the analog mode with  
13 mobile stations complying with [26], ~~[25]TIA/EIA/IS-136~~, [7], and [24] or the latest version  
14 of these standards.

15 **4. Requirements for Mobile Station Analog Options.** This section describes the  
16 requirements for CDMA-analog dual-mode mobile stations on the reverse analog control  
17 channel. This section describes CDMA-analog dual-mode mobile station requirements for  
18 use of the optional extended protocol.

19 **5. Requirements for Base Station Analog Options.** This section describes the base  
20 station requirements for the reverse analog control channel. This section describes  
21 base station requirements for use of the optional extended protocol.

22 **Annex A.** Reserved.

23 **Annex B. Mobile Station Database.** This informative annex describes a database model  
24 that can 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](#) mobile station ~~that~~ is able to place and receive calls in [cdma2000 any 800 MHz cellular or IS-95](#) systems. Conversely, ~~all any cdma2000~~ systems ~~is~~ are able to place and receive calls for [any 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 ~~United States~~ spectrum allocations [for cellular systems 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. EIA/IS-19-B (May 1988) 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, ~~not with the EIA, TIA, or member companies~~. 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 2.3.2 of [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. FCC Parts 15, 22, and 24, along with the referenced version of FCC Office of Engineering and Technology Bulletin 53.](#)
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. RF Emissions. Minimum advisory standards of ANSI and the processing guidelines of FCC are contained in ANSI C95.1 1991 Advisory Standards and FCC Rules and Regulations, respectively. Members should also take notice of the more stringent exposure criteria for the general public and for radio frequency carriers with low frequency amplitude modulation as given in NCRP Report No. 86.](#)

## NOTES

- 1 10. For the optional analog extended protocol feature (see 4.1 and 5.1), the assignment  
2 of message type codes (MST words) will be made using procedures described in [32].  
3 This will ensure that the feature will be implemented in an orderly manner.
- 4 11. "Base station" refers to the functions performed on the land side, which are typically  
5 distributed among a cell, a sector of a cell, and a mobile switching center.
- 6 12. This standard uses the following verbal forms: "Shall" and "shall not" identify  
7 requirements to be followed strictly to conform to the standard and from which no  
8 deviation is permitted. "Should" and "should not" indicate that one of several  
9 possibilities is recommended as particularly suitable, without mentioning or  
10 excluding others; that a certain course of action is preferred but not necessarily  
11 required; or that (in the negative form) a certain possibility or course of action is  
12 discouraged but not prohibited. "May" and "need not" indicate a course of action  
13 permissible within the limits of the standard. "Can" and "cannot" are used for  
14 statements of possibility and capability, whether material, physical, or causal. The  
15 use of "must" and "must not" is equivalent to the use of "shall" and "shall not."
- 16 13. Unless indicated otherwise, this document presents numbers in decimal form.  
17 Binary numbers are distinguished in the text by the use of single quotation marks.
- 18 14. A potential compatibility problem between [26] and this standard exists as a result  
19 of differences in access channel boundary determination procedures supported in  
20 these two standards. Recommended solutions to this potential compatibility  
21 problem are the following:

**Preferred Solution**

22  
23 Section 2.3.7 of [26] (First Paging Channel) specifies the first paging channels  
24 (FIRSTCHP<sub>p</sub>) which must be stored in a mobile station compliant to this standard  
25 and used to identify the first paging channel in paging channel scans when the  
26 mobile station is operating in its home system. Defaulting this value to the  
27 preferred system's (i.e., A or B band) first dedicated control channel (834.990  
28 MHz/879.990 MHz and 835.020 MHz/880.020 MHz respectively) will prevent  
29 paging/access channels from being calculated differently when the mobile station,  
30 compliant to this standard, operates on a [26] based home system. This solution is  
31 used today and should continue to be used to ensure full interoperability of [26] and  
32 mobile stations compliant to this standard on both [26] and cdma2000 type  
33 systems. This solution does, however, require that both home and roaming mobile  
34 stations, compliant to this standard, use the same paging channel set (i.e., no split  
35 home-roam paging channels).

**Alternate (Non-Preferred) Solution**

36  
37 If a second portion of the existing spectrum is allocated for control channel use (over  
38 and above the dedicated control channels), then split home-roam paging can still be  
39 achieved for both [25] and [26] mobile stations. This second portion of spectrum  
40 could be managed as follows:

- 41 • Used exclusively by home mobile stations, compliant to this standard, having  
42 appropriate NAM programming, for both paging and access functions or,

**NOTES**

- 1           • Used by home mobile stations, compliant to this standard, having appropriate  
2           NAM programming, that includes both paging and access functions and by home  
3           [26] mobile stations, having appropriate NAM programming, for paging functions  
4           only. Home [26] mobile stations would continue to use the existing dedicated  
5           control channels for access functions.
- 6       15. Forward control channel mobile station control messages of greater than five words  
7       in length have been shown to yield compatibility problems in some mobile stations.  
8       Implementers of systems are advised that the functions performed by these optional  
9       messages may be achieved on assigned voice channels without causing compatibility  
10      issues. Mobile station manufacturers are advised that the length of forward control  
11      channel messages defined in future standards may be different from that defined in  
12      this standard.
- 13     16. The NOTES section of [26] contains technical recommendations regarding analog  
14     mode operation. These recommendations also apply to mobile station(s) operating in  
15     accordance with this standard while operating in the analog mode. See the NOTES  
16     section of [26], [7], and [24] for further details.

**REFERENCES**

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

- 7 1. Reserved.
- 8 2. Reserved.
- 9 3. Reserved.
- 10 4. ~~C.S0004-ATIA/EIA/IS-2000.4-A~~, *Signaling Link Access Control (LAC) Specification for*  
11 *cdma2000 Spread Spectrum Systems*, April, 2000.
- 12 5. ~~TIA/EIA/IS-2000.5-AC.S0005-A~~, *Upper Layer (Layer 3) Signaling Standard for*  
13 *cdma2000 Spread Spectrum Systems*, April, 2000.
- 14 6. Reserved.
- 15 7. ~~ANSI/ETIA/TEIA-691~~, *Mobile Station-Land Station Compatibility Standard for*  
16 *Enhanced 800MHz Analog Cellular*, November, 1999.
- 17 8. ~~ANSI T1.607-1990~~, *Integrated Services Digital Network (ISDN)–Layer 3 Signaling*  
18 *Specification for Circuit Switched Bearer Service for Digital Subscriber Signaling*  
19 *System Number 1 (DSS1)*, July 1990.
- 20 9. ~~ANSI TI.610-1994~~, *Generic Procedures for the Control of ISDN Supplementary*  
21 *Services*, August, 1994.
- 22 10. ANSI TIA/EIA-690, *Recommended Minimum Standards for 800 MHz Cellular*  
23 *Subscriber Units*, ~~November 2000~~~~date pending~~.
- 24 11. ANSI X3.4-1986, *Coded Character Set - 7-bit American National Standard Code for*  
25 *Information Interchange*, 1992.
- 26 12. ANSI TIA/EIA-97-B, *Recommended Minimum Standards for 800 MHz Cellular Base*  
27 *Stations*, July, 1997.
- 28 13. ANSI TIA/EIA-98-B, *Recommended Minimum Standards for 800 MHz Cellular*  
29 *Mobile Stations*, July, 1997.
- 30 14. *Common Cryptographic Algorithms, Revision C*, 1997. A TIA document subject to  
31 restricted distribution. Contact the Telecommunications Industry Association,  
32 Arlington, VA.
- 33 15. CCITT Recommendation E.163, *Numbering Plan for the International Telephone*  
34 *Service*, 1988. Note: merged with E.164.
- 35 16. CCITT Recommendation E.164 (I.331), *Numbering Plan for the ISDN Era*, 1991.
- 36 17. CCITT Recommendation E.212, *Identification Plan for Land Mobile Stations*, 1988.

## REFERENCES

- 1 18. CCITT Recommendation F.69, The International Telex Service–Service and  
2 Operational Provisions of Telex Destination Codes and Telex Network Identifications  
3 Codes, 1994.
- 4 19. ITU-T Recommendation G.162, Characteristics of Compandors for Telephony, 1989.
- 5 20. CCITT Recommendation X.121, International Numbering Plan for Public Data  
6 Networks, 1992.
- 7 21. TIA/EIA/IS-~~69098-C~~, Recommended Minimum Performance Standards for Dual-  
8 Mode Spread Spectrum ~~Cellular~~ Mobile Stations, ~~August 1998~~[November 1999](#).
- 9 22. IEEE Standard 661-1979, Method for Determining Objective Loudness Ratings of  
10 Telephone Connections, 1979.
- 11 23. Interface Specification for Common Cryptographic Algorithms, Rev C, 1997. Contact  
12 the Telecommunications Industry Association, Arlington, VA.
- 13 24. TIA/EIA/IS-91-A, Mobile Station-Base Station Compatibility Standard for 800 MHz  
14 Analog Cellular, Auxiliary, and Residential Service, November, 1999.
- 15 25. TIA/EIA/IS-136, TDMA Radio Interface Mobile Station-Base Station Compatibility  
16 Standard.
- 17 26. TIA/EIA-553-A, Mobile Station - Land Station Compatibility Specification,  
18 November, 1999.
- 19 27. ~~TIA/EIA/IS-637-AC.S0015-0~~, Short Message Services for Wideband Spread  
20 Spectrum Cellular Systems, ~~June~~[November](#), 1999.
- 21 28. TIA/EIA-~~71297-C~~, Recommended Minimum Performance Standards for Base  
22 Stations Supporting Dual-Mode Spread Spectrum Cellular Mobile Stations, ~~August~~  
23 [1998](#)[September 1999](#).
- 24 29. ~~TIA/EIA/IS-683-AC.S0016-0~~, Over-the-Air Service Provisioning of Mobile Stations in  
25 Spread Spectrum Systems, ~~June~~[November](#) 1999~~8~~.
- 26 30. TSB16-~~A~~, Assignment of Access Overload Classes in the Cellular  
27 Telecommunications Services, ~~June 2001~~[March 1985](#).
- 28 31. TSB29-C, International Implementation of Wireless Telecommunication Systems  
29 Compliant with TIA/EIA-41, September, 1999.
- 30 32. TSB39-A, Message Type Assignments for the Extended Protocol Facility of  
31 ANSI/EIA/TIA-553, EIA/TIA/IS-54, TIA/EIA/IS-88 and TIA/EIA/IS-95, October  
32 1994.
- 33 33. TSB50, User Interface for Authentication Key Entry, March 1993.
- 34 34. [C.R1001-B](#), Administration of Parameter Value Assignments for TIA/EIA Wideband  
35 Spread Spectrum Standards.
- 36 35. TSB70-A, FSK Air Interface Common Message Protocol Cross-Reference, [September](#)  
37 [1999](#).

**REFERENCES**

1  
2  
3  
4  
5  
6  
7  
8  
9  
10

36. IEEE Standard 269-1992, [Methods for Measuring Transmission Performance of Analog and Digital Telephone Sets, 1992.](#)

37. CCITT Recommendation P.76, [Determination of Loudness Ratings; Fundamental Principles, November 1998.](#)

38. CCITT Recommendation P.79, [Calculation of Loudness Ratings for Telephone Sets, September 1999.](#)

39. ITU-T Recommendation T.50, [International Reference Alphabet \(IRA\) \(Formerly International Alphabet No. 5 or IA5\) – Information Technology – 7-bit coded character set for information interchange, September 1992.](#)

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

- 1 **Discontinuous Transmission (DTX).** A mode of operation in which a mobile station  
2 transmitter autonomously switches between two transmitter power levels while the mobile  
3 station is in the conversation state on an analog voice channel.
- 4 **DTMF.** See Dual-Tone Multifrequency.
- 5 **DTX.** See Discontinuous Transmission.
- 6 **Dual-Tone Multifrequency (DTMF).** Signaling by the simultaneous transmission of two  
7 tones, one from a group of low frequencies and another from a group of high frequencies.  
8 Each group of frequencies consists of four frequencies.
- 9 **Electronic Serial Number (ESN).** A 32-bit number assigned by the mobile station  
10 manufacturer, uniquely identifying the mobile station equipment.
- 11 **ESN.** See Electronic Serial Number.
- 12 **Extended Protocol.** An optional expansion of the signaling messages between the base  
13 station and mobile station to allow for the addition of new system features and operational  
14 capabilities.
- 15 **Fade Timer.** A timer kept by the mobile station as a measure of Forward Traffic Channel  
16 continuity. If the fade timer expires, the mobile station drops the call.
- 17 **Flash.** An indication sent on an analog voice channel or CDMA Traffic Channel indicating  
18 that the user directed the mobile station to invoke special processing.
- 19 **FOCC.** See Forward Analog Control Channel.
- 20 **Forward Analog Control Channel (FOCC).** An analog control channel used from a base  
21 station to a mobile station.
- 22 **Forward Analog Voice Channel (FVC).** An analog voice channel used from a base station  
23 to a mobile station.
- 24 **GHz.** Gigahertz ( $10^9$  Hertz).
- 25 **Handoff.** The act of transferring communication with a mobile station from one base  
26 station to another.
- 27 **HLR.** See Home Location Register.
- 28 **Home Location Register (HLR).** The location register to which a MIN/IMSI is assigned for  
29 record purposes such as subscriber information.
- 30 **Home System.** The [cellular/wireless](#) system in which the mobile station subscribes for  
31 service.
- 32 **IA5IRA.** [International Reference Alphabet. Text character encoding as defined in \[39\]. \(IA5](#)  
33 [form appears on page 3-14, re-alert with info-Need definition\)](#)
- 34 **IMSI.** See International Mobile Station Identity.
- 35 **IMSI\_M.** MIN-based IMSI using the lower 10 digits to store the MIN.
- 36 **IMSI\_O.** Operational value of IMSI used by the mobile station for operation with the base  
37 station.

- 1 **Interleaving.** The process of permuting a sequence of symbols.
- 2 **International Mobile Station Identity (IMSI).** A method of identifying stations in the land  
3 mobile service as specified in [17].
- 4 **kHz.** Kilohertz ( $10^3$  Hertz).
- 5 **Local Control.** The local control order is used by a base station to initial local control  
6 action in the mobile station.
- 7 **Message.** A data structure that conveys control information or application information. A  
8 message consists of a length field (MSG\_LENGTH), a message body (the part conveying the  
9 information), and a CRC.
- 10 **Message CRC.** The CRC check associated with a message. See also Cyclic Redundancy  
11 Code.
- 12 **Message Field.** A basic named element in a message. A message field may consist of zero  
13 or more bits.
- 14 **MHz.** Megahertz ( $10^6$  Hertz).
- 15 **MIN.** See Mobile Identification Number.
- 16 **Mobile Identification Number (MIN).** The 34-bit number that is a digital representation of  
17 the 10-digit number assigned to a mobile station.
- 18 **Mobile Protocol Capability Indicator (MPCI).** A 2-bit field used to indicate the mobile  
19 station's capabilities.
- 20 **Mobile Station.** A station in the Public [CellularWireless](#) Radio Telecommunications Service  
21 intended to be used while in motion or during halts at unspecified points. Mobile stations  
22 include portable units (e.g., hand-held personal units) and units installed in vehicles.
- 23 **Mobile Station Class.** Mobile station classes define mobile station characteristics such as  
24 transmission power. See Table 2.3.3-1 of [26] and Table 2.3.3-1 of [5].
- 25 **Mobile Station Identification Number (MSIN).** A part of the E.212 IMSI identifying the  
26 mobile station within its home network. See [17].
- 27 **Mobile Station Originated Call.** A call originating from a mobile station.
- 28 **Mobile Station Terminated Call.** A call received by a mobile station (not to be confused  
29 with a disconnect or call release).
- 30 **Mobile Switching Center (MSC).** A configuration of equipment that provides  
31 [cellularwireless](#) radiotelephone service. Also called the Mobile Telephone Switching Office  
32 (MTSO).
- 33 **MPCI.** See Mobile Protocol Capability Indicator
- 34 **ms.** Millisecond ( $10^{-3}$  second).
- 35 **MSB.** Most significant bit.
- 36 **MSC.** See Mobile Switching Center.
- 37 **MSIN.** See Mobile Station Identification Number.

- 1 **NAM.** See Number Assignment Module.
- 2 **Narrow Analog.** A type of voice channel that uses 10 kHz channel spacing and uses  
3 subaudible signaling.
- 4 **National Mobile Station Identity (NMSI).** A part of the E.212 IMSI identifying the mobile  
5 station within its home country. The NMSI consists of the NMC and the MSIN. See [17].
- 6 **Network.** A network is a subset of a ~~wireless cellular~~-system, such as an area-wide  
7 ~~cellular~~wireless network, a private group of base stations, or a group of base stations set  
8 up to handle a special requirement. A network can be as small or as large as needed, as  
9 long as it is fully contained within a system. See also System.
- 10 **Network Directed System Selection (NDSS).** A feature that allows the mobile station to  
11 automatically register with a preferred system while roaming, or to be automatically  
12 directed by a service provider, typically the home service provider, to a suggested system,  
13 regardless of the frequency band class, or cellular band.
- 14 **NMSI.** See National Mobile Station Identity.
- 15 **Non-Autonomous Registration.** A registration method in which the base station initiates  
16 registration. See also Autonomous Registration.
- 17 **ns.** Nanosecond ( $10^{-9}$  second).
- 18 **Number Assignment Module (NAM).** A set of MIN/IMSI-related parameters stored in the  
19 mobile station.
- 20 **Numeric Information.** Numeric information consists of parameters that appear as  
21 numeric fields in messages exchanged by the base station and the mobile station and  
22 information used to describe the operation of the mobile station.
- 23 **OLC.** See Overload Control (analog).
- 24 **Optional Field.** A field defined within a message structure that is optionally transmitted to  
25 the message recipient.
- 26 **Order.** A type of message that contains control codes for either the mobile station or the  
27 base station. See Table 3.7.1.1-1.
- 28 **Overhead Message.** A message sent by the base station on the Paging Channel to  
29 communicate base-station-specific, network-wide and system-wide, information to mobile  
30 stations.
- 31 **Overload Control (OLC).** A means to restrict reverse analog control channel accesses by  
32 mobile stations. Mobile stations are assigned one (or more) of sixteen control levels. Access  
33 is selectively restricted by a base station setting one or more OLC bits in *the Overload*  
34 *Control Global Action Message*.
- 35 **PACA.** Priority Access and Channel Assignment. See PACA Call.
- 36 **PACA Call.** A priority mobile station originated call for which no traffic channel or voice  
37 channel was immediately available, and which has been queued for a priority access  
38 channel assignment.

- 1 **Paging.** The act of seeking a mobile station when a call has been placed to that mobile  
2 station.
- 3 **Paging Channel (Analog).** See Analog Paging Channel.
- 4 **Parity Check Bits.** Bits added to a sequence of information bits to provide error detection,  
5 correction, or both.
- 6 **Power-Down Registration.** An autonomous registration method in which the mobile  
7 station registers on power-down.
- 8 **RECC.** See Reverse Analog Control Channel
- 9 **RANDBS.** See Base Station Random Variable
- 10 **Receive Objective Loudness Rating (ROLR).** A perceptually weighted transducer gain of  
11 telephone receivers relating electrical excitation from a reference generator to sound  
12 pressure at the earphone. The receive objective loudness rating is normally specified in dB  
13 relative to one Pascal per millivolt. See [36], [22], [37], and [38].
- 14 **Registration.** The process by which a mobile station identifies its location and parameters  
15 to a base station.
- 16 **Release.** A process that the mobile station and base station use to inform each other of call  
17 disconnect.
- 18 **Reverse Analog Control Channel (RECC).** The analog control channel used from a mobile  
19 station to a base station.
- 20 **Reverse Analog Voice Channel (RVC).** The analog voice channel used from a mobile  
21 station to a base station.
- 22 **Roamer.** A mobile station operating in a [cellular/wireless](#) system (or network) other than  
23 the one from which service was subscribed.
- 24 **ROLR.** See Receive Objective Loudness Rating.
- 25 **SAT.** See Supervisory Audio Tone.
- 26 **Scan of Channels.** The procedure by which a mobile station examines the signal strength  
27 of each forward analog control channel.
- 28 **SDCC1, SDCC2.** See Supplementary Digital Color Code.
- 29 **Seizure Precursor.** The initial digital sequence transmitted by a mobile station to a base  
30 station on a reverse analog control channel.
- 31 **Shared Secret Data (SSD).** A 128-bit pattern stored in the mobile station (in semi-  
32 permanent memory) and known by the base station. SSD is a concatenation of two 64-bit  
33 subsets: SSD\_A, which is used to support the authentication procedures, and SSD\_B,  
34 which serves as one of the inputs to the process generating the encryption mask and  
35 private long code.
- 36 **Short Message Services (SMS).** A suite of services such as SMS Text Delivery, Digital  
37 Paging (i.e., Call Back Number - CBN), and Voice Mail Notification (VMN).
- 38 **SID.** See System Identification.

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

3 **SSD.** See Shared Secret Data.

4 **sps.** Symbols per second.

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

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

- 9 • **Fade Timing Status.** Indicates whether the mobile station's fade timer has expired.
- 10 • **First Idle ID Status.** A status variable used by the mobile station in association with  
11 its processing of the Idle Task.
- 12 • **First Location Area ID Status.** A status variable used by the mobile station in  
13 association with its processing of received Location Area ID messages.
- 14 • **First Registration ID Status.** A status variable used by the mobile station in  
15 association with its processing of received Registration ID messages.
- 16 • **Local Control Status.** Indicates whether a mobile station must respond to local  
17 control messages.
- 18 • **Location Registration ID Status.** A status variable used by the mobile station in  
19 association with its processing of power-up registrations and location-based  
20 registrations.
- 21 • **Roam Status.** Indicates whether a mobile station is in its home system.
- 22 • **Serving-System Status.** Indicates whether a mobile station is tuned to channels  
23 associated with System A or System B.
- 24 • **Termination Status.** Indicates whether a mobile station must terminate the call  
25 when it is on an analog voice channel.
- 26 • **Update Protocol Capability ID Status.** Indicates whether the mobile station should  
27 report its protocol capability to the serving system.

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

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

34 **System.** A system is a ~~wireless cellular telephone service or personal~~ communications  
35 service that covers a geographic area such as a city, metropolitan region, county, or group  
36 of counties. See also Network.

37 **System Identification (SID).** A number uniquely identifying a ~~cellular~~wireless system.

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

1 **Transmit Objective Loudness Rating (TOLR).** A perceptually weighted transducer gain of  
2 telephone transmitters relating sound pressure at the microphone to voltage at a reference  
3 electrical termination. It is normally specified in dB relative to one millivolt per Pascal. See  
4 [36], [22], [37], and [38].

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

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

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

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

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

20 **Voice Channel.** See Analog Voice Channel.

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

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

#### 24 1.1.2. Numeric Information

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

- 27 • "s" indicates a value stored in a mobile station's temporary memory.
- 28 • "sv" indicates a stored value that varies as a mobile station processes various tasks.
- 29 • "sl" indicates the stored limits on values that vary.
- 30 • "r" indicates a value received by a mobile station over a forward analog control  
31 channel or a CDMA Forward Channel.
- 32 • "p" indicates a value set in a mobile station's permanent security and identification  
33 memory.
- 34 • "s-p" indicates a value stored in a mobile station's semi-permanent security and  
35 identification memory.

1 1.1.2.1. Analog Numeric Information

2 **ACCOLC<sub>p</sub>** – A four-bit number used to identify which overload class field controls access  
3 attempts.

4 **BIS<sub>s</sub>** – Identifies whether a mobile station must check for an idle-to-busy transition on a  
5 reverse analog control channel when accessing a system.

6 **BSCAP<sub>s</sub>** – The base station core analog roaming protocol received in the Access Type  
7 parameters *Global Action Overhead Message*. Indicates the version of the core analog  
8 roaming standard supported by the system.

9 **BSPC<sub>s</sub>** – The base station protocol capability received in the Access Type parameters *Global*  
10 *Action Overhead Message*. Indicates the analog air interface protocol, such as [26],  
11 supported by the system.

12 **CCLIST<sub>s</sub>** – The list of analog control channels to be scanned by a mobile station processing  
13 the Directed Retry Task (see 2.6.3.14).

14 **CDMA\_MODE<sub>s</sub>** – Indicates whether the mobile station entered the analog mode of  
15 operation.

16 **CMAX<sub>s</sub>** – The maximum number of channels to be scanned by a mobile station when  
17 accessing a system.

18 **COUNT<sub>s-p</sub>** – A modulo-64 event counter maintained by the mobile station and  
19 Authentication Center that is used for clone detection. COUNT<sub>s-p</sub> is maintained during  
20 power off.

21 **CPA<sub>s</sub>** – Identifies whether the access functions are combined with the paging functions on  
22 the same set of analog control channels.

23 **DCC<sub>s</sub>** – A DCC value stored in a mobile station's temporary memory.

24 **DTX<sub>s</sub>** – Identifies in which manner the mobile station is permitted to use the discontinuous  
25 transmission mode on the analog voice channel.

26 **E<sub>s</sub>** – The stored value of the E field sent on the forward analog control channel. E<sub>s</sub>  
27 identifies whether a home mobile station must send only MIN1<sub>p</sub> or both MIN1<sub>p</sub> and MIN2<sub>p</sub>  
28 when accessing the system.

29 **FIRSTCHA<sub>s</sub>** – The number of the first analog control channel used for accessing a system.

30 **FIRSTCHD<sub>s</sub>** – The number for the first channel used as a dedicated control channel.

31 **FIRSTCHP<sub>p</sub>** – The number of the first paging channel used as a paging channel in the  
32 mobile station's "home" system.

33 **FIRSTCHP<sub>s</sub>** – The number of the first analog control channel used for paging mobile  
34 stations.

35 **HOME\_SID<sub>p</sub>** – Home System Identification. A 15-bit value that identifies the home system  
36 for a MIN supported by the mobile station.

37 **IDHO<sub>s</sub>** – Idle handoff indicator. Set to enabled to indicate the loss of analog control channel  
38 radio coverage during a PACA call.

- 1 **LASTCHA<sub>S</sub>** – The number of the last analog control channel used for accessing a system.
- 2 **LASTCHD<sub>S</sub>** – The number for the last channel used as a dedicated control channel.
- 3 **LASTCHP<sub>S</sub>**– The number of the last analog control channel used for paging mobile stations.
- 4 **LOCAID<sub>S</sub>** – The received location area identity.
- 5 **LOCAID<sub>S-p</sub>** – Identifies the current location area.
- 6 **LRCC<sub>S</sub>** – The last registration control channel used by a mobile station.
- 7 **LREG<sub>S</sub>** – The stored value of the LREG field received in the most recent *Location Area Global*
- 8 *Action Message*.
- 9 **LT<sub>S</sub>** – Identifies whether the next access attempt is required to be the last try.
- 10 **MAXBUSY<sub>S1</sub>** – The maximum number of busy occurrences allowed on a reverse analog
- 11 control channel.
- 12 **MAX\_REDIRECT\_DELAY<sub>S</sub>** – Indicates the maximum delay interval used when a mobile
- 13 station is redirected from CDMA to analog, in units of 8 seconds.
- 14 **MAXSZTR<sub>S1</sub>** – The maximum number of seizure attempts allowed on a reverse analog
- 15 control channel.
- 16 **MIN1<sub>p</sub>** – The 24 least significant bits of the 34-bit MIN.
- 17 **MIN2<sub>p</sub>** – The ten most significant bits of the 34-bit MIN.
- 18 **MSCAP<sub>p</sub>** – The mobile station core analog roaming protocol specifies the version of the core
- 19 analog roaming standard supported by the mobile station.
- 20 **MSPC<sub>p</sub>** – The mobile station protocol capability identifies the analog air interface protocol,
- 21 such as [26], supported by the mobile station.
- 22 **N<sub>S</sub>** – The number of analog paging channels that a mobile station must scan.
- 23 **NBUSY<sub>Sv</sub>** – The number of times a mobile station attempts to seize a reverse analog control
- 24 channel and finds the reverse control channel busy.
- 25 **NSZTR<sub>Sv</sub>** – The number of times a mobile station attempts to seize a reverse analog control
- 26 channel and fails.
- 27 **NXTREG<sub>S-p</sub>** – Identifies when a mobile station must make its next registration to a system.
- 28 **PACA<sub>S</sub>** – PACA call indicator. Set to enabled to indicate that the mobile station is waiting
- 29 for a priority access channel assignment; otherwise set to disabled.  $PACA_S = 0$  is
- 30 equivalent to setting  $PACA_S$  to disabled and  $PACA_S = 1$  is equivalent to setting  $PACA_S$  to
- 31 enabled.
- 32 **PACA\_CANCEL** – PACA call cancel indicator. Set to '1' when the mobile station is directed
- 33 by the user to cancel the PACA call; otherwise, set to '0'.
- 34 **PACA\_SID<sub>S</sub>** – PACA system identifier. Equal to the SID of the system on which the mobile
- 35 station originated a PACA call.

- 1 **PACA\_TIMEOUT<sub>s</sub>** – PACA state timer duration. Specifies how long the mobile station  
2 should wait for a *PACA Message* from the base station.
- 3 **PCI\_HOME<sub>s</sub>** – Home mobile protocol capability flag. Indicates to the home mobile station  
4 whether it shall report its protocol capability when receiving the *Access Type Parameters*  
5 *Global Action Overhead Message*.
- 6 **PCI\_ROAM<sub>s</sub>** – Roaming mobile protocol capability flag. Indicates to the roaming mobile  
7 station whether it shall report its protocol capability when receiving the *Access Type*  
8 *Parameters Global Action Overhead Message*.
- 9 **PCSID<sub>s</sub>** – The stored value of the most recent SID to which the mobile station transmitted  
10 the protocol capability registration message.
- 11 **PDREG<sub>s</sub>** – The stored value of the PDREG field received in the most recent *Location Area*  
12 *Global Action Message*.
- 13 **PL<sub>s</sub>** – The mobile station RF power level.
- 14 **PUREG<sub>s</sub>** – The stored value of the PUREG field received in the most recent *Location Area*  
15 *Global Action Message*.
- 16 **PUREG<sub>s-p</sub>** – The semi-permanent value of PUREG<sub>s</sub>.
- 17 **R<sub>s</sub>** – Indicates whether registration is enabled or not.
- 18 **RAND<sub>s</sub>** – The stored value of RAND. See 2.3.12.1.2 of [26].
- 19 **RCF<sub>s</sub>** – Identifies whether the mobile station must read a *Control Filler Message* before  
20 accessing a system on a reverse analog control channel.
- 21 **REGID<sub>s</sub>** – The stored value of the last registration number (REGID<sub>r</sub>) received on a forward  
22 analog control channel.
- 23 **REGINCR<sub>s</sub>** – Identifies increments between registrations by a mobile station.
- 24 **S<sub>s</sub>** – Identifies whether the mobile station must send its serial number when accessing a  
25 system.
- 26 **SCC<sub>s</sub>** – A digital number that is stored and used to identify which SAT frequency a mobile  
27 station should be receiving.
- 28 **SDCC1<sub>s</sub>** – The SDCC value stored in a mobile station's temporary memory.
- 29 **SDCC2<sub>s</sub>** – The SDCC value stored in a mobile station's temporary memory.
- 30 **SID<sub>p</sub>** – The home system identification stored in the mobile station's permanent security  
31 and identification memory.
- 32 **SID<sub>r</sub>** – The system identification received on a paging or access channel.
- 33 **SID<sub>s</sub>** – The system identification received on a dedicated control channel.
- 34 **SID<sub>s-p</sub>** – Identifies the system of current (last successful) registration.
- 35 **UPDATE NEXTREG<sub>s</sub>**. Indicates whether the mobile station must update NEXTREG<sub>s-p</sub> after  
36 it successfully registers on a new paging channel.

1 **WFOM<sub>s</sub>** – Identifies whether a mobile station must wait for an Overhead Message train  
2 before accessing a system on a reverse analog control channel.

### 3 1.1.2.2. CDMA Numeric Information

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

7 **ANALOG\_CHAN<sub>s</sub>** – Analog channel number for CDMA to analog handoff.

8 **REDIRECT\_REC<sub>s</sub>** – Holds the service redirection criteria specified in the redirection record  
9 of the most recently received *Global Service Redirection Message* or *Service Redirection*  
10 *Message*.

11 **REDIRECTION<sub>s</sub>** – Service redirection indicator. Set to enabled to indicate that service  
12 redirection is currently in effect; otherwise set to disabled.

13 **REGISTERED<sub>s</sub>** – Mobile station registered indicator.

14 **SID\_NID\_LIST<sub>s</sub>** – Registration SID, NID list. The SID, NID pairs in which the mobile station  
15 has registered.

16 **ZONE\_LIST<sub>s</sub>** – Registration zone list. List of zones in which the mobile station has  
17 registered.

## 18 1.2. Analog System Tolerances

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

## 22 1.3. Message Forward Compatibility Rules

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

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

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

1 Implementers of mobile stations are cautioned that many other functions and features are  
2 deployed on the FOCC than those described in this standard. These functions frequently  
3 employ bits indicated herein as “Reserved”. Reference may be made to the current version  
4 of [35] for details.  
5

1 No Text.

## 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 Sections 2 and 3 of [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,  
11 when transmitting to a reference base station (see 3.2.2.1). The loudness ratings are  
12 described in [22]. 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].

## 2.2. Receiver

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

### 2.2.1. Frequency Parameters

See the corresponding section of [26].

### 2.2.2. Demodulation Characteristics

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

#### 2.2.2.1. 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 requirements of 2.2.2.1.1 through 2.2.2.1.3 shall be met to ensure compatibility with the transmission plan for fixed digital speech networks:

##### 2.2.2.1.1. De-Emphasis

See the corresponding section of [26].

##### 2.2.2.1.2. Expander

See the corresponding section of [26].

##### 2.2.2.1.3. Receive Audio Level Adjustment

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

### 2.2.3. Limitations on Emissions

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

#### 2.2.3.1. Conducted Spurious Emissions

See the corresponding section of [26].

##### 2.2.3.1.1. Suppression Inside Cellular Band

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).  
11 Mobile stations operating in the CDMA mode use the International Mobile Station Identity  
12 (IMSI). Mobile stations shall have two different identifiers, IMSI\_T and IMSI\_M (see 2.3.1 of  
13 [5]).

14 The MIN is a 10-digit (34-bit) number. The MIN consists of a 3-digit (10-bit) part called  
15 MIN2, and a 7-digit (24-bit) part called MIN1. MIN2 corresponds to the most significant  
16 three digits of MIN, and MIN1 corresponds to the least significant seven digits of MIN. The  
17 MIN shall be equal to IMSI\_M\_S (see 2.1.1.3 of [4]).

18 The mobile station shall have memory to store a MIN. The 10-bit MIN2 shall be equal to  
19 IMSI\_M\_S<sub>2p</sub> and the 24-bit MIN1 shall be equal to IMSI\_M\_S<sub>1p</sub>.

20 2.3.2. Electronic Serial Number (ESN)

21 See 2.3.2 of [5].

22 2.3.3. Station Class Mark

23 See the corresponding section of [26]. See 2.3.3 of [5] for information regarding SCM when  
24 operating in the CDMA mode.

25 2.3.4. Registration Memory

26 In addition to the requirements in this section, see the corresponding section of [26]. See  
27 2.3.4 of [5] for operation in the CDMA mode.

28 2.3.5. Access Overload Class

29 In addition to the requirements in this section, see the corresponding section of [26]. See  
30 2.3.5 of [5] for 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<sub>p</sub> is used to identify the home system during analog  
8 operation, and is equivalent to the indicator SID<sub>p</sub> defined in [26]. The requirements in [26]  
9 for SID<sub>p</sub> apply to HOME\_SID<sub>p</sub> 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 2.3.10 of [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 2.3.12.1.1 of [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<sub>S-P</sub>)

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<sub>S-P</sub> 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  
15 information (e.g., PINs), provisions have been made to allow for the encryption of a select  
16 subset of FVC and RVC signaling messages. For messages defined in this standard, see  
17 2.7.2.1 and 3.7.2.1 for the list of messages and fields to be encrypted. For optional  
18 enhanced protocol messages and narrow analog mode messages, see Annex A of [7] for the  
19 list of messages and fields to be encrypted.

20 Consult [23] section 2.5 for a description of how the algorithm is initialized and applied.

21 2.3.12.2.1. Signaling Message Encryption Control

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

1 encryption shall be deactivated by the base station prior to the handoff, and activated again  
2 on the Analog Voice Channel by sending *the Message Encryption Mode Order*.

3 The data used to initialize the algorithm is computed based upon parameters in effect at the  
4 time the AUTHR appended to the origination/page response message was computed (see  
5 2.3.12.1.6 and 2.3.12.1.7 of [26]). For a call initiated via the CDMA Access Channel, the  
6 data used to initialize the algorithm is computed based upon parameters in effect at the  
7 time the AUTHR was computed for the *Origination Message* or *Page Response Message* (see  
8 2.1.1.1.2.2 of [4]).

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

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

## 13 **2.4. Supervision**

14 See the corresponding section of [26].

## 15 **2.5. Malfunction Detection**

16 See the corresponding section of [26].

## 17 **2.6. Call Processing**

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

19 The following sections describe mobile station operation as controlled by a base station.  
20 Frequent references are made to the corresponding sections in the base station section and  
21 to the messages that flow between a base station and a mobile station. It is helpful to read  
22 2.6 and 3.6 in parallel and examine the message formats in 2.7 and 3.7 at the same time.

23 When power is applied to a mobile station, it shall enter the *System Determination Substate*  
24 of the *Mobile Station Initialization State* with a power-up indication (see 2.6.1.1 of [5]).

### 25 **2.6.1. Initialization**

#### 26 **2.6.1.1. Retrieve System Parameters**

27 If the First-Idle ID status is enabled (see 2.6.1.1 of [5]), the mobile station must:

- 28 • Set the Location-Registration ID status to enabled.
- 29 • Set the first-registration ID status to enabled.
- 30 • Set the first-location-area ID status to enabled.
- 31 • Set the Update Protocol Capability ID status to disabled.

- 1 • Set  $PUREG_S = 0$ ,  $PDREG_S = 0$ ,  $LREG_S = 0$ ,  $LRCC_S = 0$ ,  $RAND_S = 0$ ,  $IDHO_S = 0$ ,  
2  $PACA_S = \text{disabled}$ ,  $PCSID_S = 0$ ,  $BSPC_S = 0$ ,  $BSCAP_S = 0$ ,  $PCI\_HOME_S = 0$ ,  
3  $PCI\_ROAM_S = 0$ ,  $SID_S = 0$ , and  $SID_T = 0$ .

4 If the First-Idle ID status is disabled (see 2.6.1.1 of [5]),  $PACA_S = \text{enabled}$ , and this task is  
5 entered as a result of loss of Control Channel Radio Link or as a result of the mobile station  
6 selecting a different Control Channel, the mobile station must set  $IDHO_S = 1$ .

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

- 9 • If  $SERVSYS_S = SYS\_A$ , set the serving-system status to enabled.
- 10 • If  $SERVSYS_S = SYS\_B$ , set the serving-system status to disabled.

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

#### 13 2.6.1.1.1. Scan Dedicated Control Channels

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

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

- 18 • Set  $FIRSTCHD_S$  to the first dedicated control channel for System A  
19 (834.990 MHz/879.990 MHz).
- 20 • Set  $LASTCHD_S = FIRSTCHD_S - 21 + 1$ .

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

- 22 • Set  $FIRSTCHD_S$  to the first dedicated control channel for System B  
23 (835.020 MHz/880.020 MHz).
- 24 • Set  $LASTCHD_S = FIRSTCHD_S + 21 - 1$ .

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

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

#### 28 2.6.1.1.2. Update Overhead Information

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

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

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

- 7 • System identification ( $SID_S$ ). Set the 14 most significant bits of  $SID_S$  to the value of  
 8 the SID 1 field. Set the least significant bit of  $SID_S$  to '1', if the serving-system  
 9 status is enabled; otherwise, set the bit to '0'.
- 10 • Number of paging channels ( $N_S$ ). Set  $N_S$  to 1 plus the value of the N - 1 field.
- 11 • First paging channel ( $FIRSTCHP_S$ ). Set  $FIRSTCHP_S$  according to the following  
 12 algorithm:
  - 13 – If  $SID_S = HOME\_SID_P$ ,  $FIRSTCHP_S = FIRSTCHP_P$
  - 14 – If  $SID_S$  is not equal to  $HOME\_SID_P$ ,  $FIRSTCHP_S = FIRSTCHD_S$
- 15 • Last paging channel ( $LASTCHP_S$ ). Set  $LASTCHP_S$  according to the following  
 16 algorithm:
  - 17 – If the serving-system status is enabled,  $LASTCHP_S = FIRSTCHP_S - N_S + 1$ .
  - 18 – If the serving-system status is disabled,  $LASTCHP_S = FIRSTCHP_S + N_S - 1$ .

19 If  $REDIRECTION_S = enabled$ , and if the  $EXPECTED\_SID$  field of  $REDIRECT\_REC_S$  is not  
 20 equal to 0, and if  $SID_S$  is not equal to  $EXPECTED\_SID$ , the mobile station must enter the  
 21 *System Determination Substate of the Mobile Station Initialization State* with a wrong system  
 22 indication (see 2.6.1.1 of [5]). Otherwise, if  $SID_R$  is not equal to  $SID_S$ , the mobile station  
 23 shall set registration increment ( $REGINCR_S$ ) to its default value of 450, set the first-  
 24 registration ID status to enabled, set the first-location-area ID status to enabled, set  $LRCC_S$   
 25 = 0, set  $PACA_S = disabled$ , and set  $RAND_S = 0$ . If  $SID_R$  is not equal to  $SID_S$  and  $PACA_S =$   
 26 enabled, the mobile station must set  $PACA_S = disabled$ , and must indicate to the user that  
 27 the PACA call has been canceled.

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

29 If the mobile station cannot complete this task on the strongest dedicated control channel,  
 30 it shall tune to the second strongest dedicated control channel and attempt to complete this  
 31 task within a second 3-second interval. If it cannot complete this task on either of the two  
 32 strongest control channels, the mobile station must enter the *System Determination*  
 33 *Substate of the Mobile Station Initialization State* with an acquisition failure indication (see  
 34 2.6.1.1 of [5]).

## 35 2.6.1.2. Paging Channel Selection

### 36 2.6.1.2.1. Scan Paging Channels

37 See the corresponding section of [26].

1 2.6.1.2.2. Verify Overhead Information

2 The mobile station must set the Wait-for-Overhead-Message bit (WFOM<sub>S</sub>) to '0'; the mobile  
3 station must then tune to the strongest paging channel and, within 3 seconds, receive an  
4 overhead message train (see 3.7.1.2) and update the following:

- 5 • System identification: Set the 14 most significant bits of SID<sub>R</sub> to the value of the  
6 SID1 field. Set the least significant bit of SID<sub>R</sub> to '1', if the serving-system status is  
7 enabled; otherwise, set the bit to '0'.
- 8 • ROAM status: The mobile station must compare the received system identification  
9 (SID<sub>R</sub>) with the stored system identification (SID<sub>S</sub>). If SID<sub>R</sub> = SID<sub>S</sub>, the mobile station  
10 must compare SID<sub>S</sub> with HOME\_SID<sub>P</sub>. If HOME\_SID<sub>P</sub> = SID<sub>S</sub>, the mobile station  
11 must set the ROAM status to disabled. If HOME\_SID<sub>P</sub> is not equal to SID<sub>S</sub>, the  
12 mobile station must set the ROAM status to enabled. If SID<sub>R</sub> is not equal to SID<sub>S</sub>  
13 and PACA<sub>S</sub> = enabled, the mobile station must set PACA<sub>S</sub> = disabled, and must  
14 indicate to the user that the PACA call has been canceled. If SID<sub>R</sub> is not equal to  
15 SID<sub>S</sub>, the mobile station must enter the *System Determination Substate* of the *Mobile*  
16 *Station Initialization State* with a new system indication (see 2.6.1.1 of [5]).
- 17 • Local control status: If the local control option is enabled within the mobile station  
18 (see 2.3.9) and the bits of the home system identification (HOME\_SID<sub>P</sub>) that  
19 comprise the group identification match the corresponding bits of SID<sub>S</sub>, then the  
20 local control status must be enabled; otherwise, the local control status must be  
21 disabled.
- 22 • Power-Up Registration: If SID<sub>R</sub> ≠ SID<sub>S-p</sub> the mobile station shall set PUREG<sub>S-p</sub> to '0'.

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

- 25 • Serial number bit (S<sub>S</sub>): Set S<sub>S</sub> to the value in the S field.
- 26 • Registration bit (R<sub>S</sub>): If the roam status is disabled, set R<sub>S</sub> to the value of the REGH  
27 field; if the roam status is enabled, set R<sub>S</sub> to the value of the REGR field.
- 28 • Extended address bit (E<sub>S</sub>): Set E<sub>S</sub> to the value in the E field.
- 29 • Authentication bit (AUTH<sub>S</sub>): Set AUTH<sub>S</sub> to the value in the AUTH field.
- 30 • Discontinuous transmission bit (DTX<sub>S</sub>): Set DTX<sub>S</sub> to the value of the DTX field.
- 31 • Number of paging channels (N<sub>S</sub>): Set N<sub>S</sub> to 1 plus the value of the N-1 field.
- 32 • Read-control-filler bit (RCF<sub>S</sub>): Set RCF<sub>S</sub> to the value of the RCF field.
- 33 • Combined paging/access bit (CPA<sub>S</sub>): Set CPA<sub>S</sub> to the value of the CPA field.
- 34 • Number of access channels (CMAX<sub>S</sub>): Set CMAX<sub>S</sub> to 1 plus the value of the CMAX-1  
35 field.
- 36 • Determine control channel boundaries for accessing the system (FIRSTCHA<sub>S</sub> and  
37 LASTCHA<sub>S</sub>) by using the following algorithm:
  - 38 – If the serving-system status is enabled,

- 1           + If  $CPA_S = 1$ , set  $FIRSTCHA_S$  to  $FIRSTCHP_S$  for System A.
- 2           + If  $CPA_S = 0$ , set  $FIRSTCHA_S$  to  $FIRSTCHP_S$  for System A minus  $N_S$ .
- 3           +  $LASTCHA_S = FIRSTCHA_S - CMAX_S + 1$ .
- 4        – If the serving-system status is disabled,
  - 5           + If  $CPA_S = 1$ , set  $FIRSTCHA_S$  to  $FIRSTCHP_S$  for System B.
  - 6           + If  $CPA_S = 0$ , set  $FIRSTCHA_S$  to  $FIRSTCHP_S$  for System B plus  $N_S$ .
  - 7           +  $LASTCHA_S = FIRSTCHA_S + CMAX_S - 1$ .

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

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

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

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

16 If the mobile station cannot complete this task on the strongest paging channel, it may tune  
17 to the second strongest paging channel and attempt to complete this task within a second  
18 3-second interval. If it cannot complete this task on either of the two strongest control  
19 channels, the mobile station must enter the *System Determination Substate* of the *Mobile*  
20 *Station Initialization State* with an acquisition failure indication (see 2.6.1.1 [5]).

## 21 2.6.2. Idle

22 During the Idle Task, a mobile station must execute each of the following (sub)tasks (see  
23 2.6.2.1, 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  
24 of word blocks on the forward control channel. If the Idle Task was entered with a wait-for-  
25 page indication, the mobile station must not enter the *System Determination Substate* of the  
26 *Mobile Station Initialization State* (see 2.6.1.1 of [5]) for at least 6 seconds after entering the  
27 Idle Task. If at any time during the Idle Task the redirect delay timer expires, the mobile  
28 station must exit this task and enter the System Access Task with a registration indication  
29 (see 2.6.3). Otherwise, if the mobile station is not listening to a control channel of the  
30 preferred system and  $REDIRECTION_S = \text{disabled}$  and  $PACA_S = \text{disabled}$ , it may exit this task  
31 and enter the *System Determination Substate* of the *Mobile Station Initialization State* with a  
32 reselection indication (see 2.6.1.1 of [5]).

### 33 2.6.2.1. Response to Overhead Information

34 Whenever a mobile station receives an overhead message train (see 3.7.1.2), the mobile  
35 station compare  $SID_S$  with  $SID_R$ . If  $SID_R$  is not equal to  $SID_S$  and  $PACA_S = \text{enabled}$ , the  
36 mobile station must set  $PACA_S = \text{disabled}$ , and must indicate to the user that the PACA call  
37 has been canceled. If  $SID_S$  is not equal to  $SID_R$ , the mobile station must exit the Idle Task

1 and enter the *System Determination Substate* of the *Mobile Station Initialization State* with a  
2 new system indication (see 2.6.1.1 of [5]).

3 If  $SID_S = SID_r$ , the mobile station shall update the following numeric values using  
4 information contained in the *System Parameter Overhead Message*:

- 5 • Extended Protocol Indicator: If the mobile station is equipped for the optional  
6 Extended Protocol, set  $EP_S$  to the value of the EP field.
- 7 • Serial number bit ( $S_S$ ): Set  $S_S$  to the value in the S field.
- 8 • Registration bit ( $R_S$ ): If the roam status is disabled, set  $R_S$  to the value of the REGH  
9 field; if the roam status is enabled, set  $R_S$  to the value of the REGR field.
- 10 • Extended address bit ( $E_S$ ): Set  $E_S$  to the value in the E field.
- 11 • Authentication bit ( $AUTH_S$ ): Set  $AUTH_S$  to the value in the AUTH field.
- 12 • Discontinuous transmission bit ( $DTX_S$ ): Set  $DTX_S$  to the value of the DTX field.
- 13 • Number of paging channels ( $N_S$ ): Set  $N_S$  to 1 plus the value of the N - 1 field.
- 14 • Read-control-filler bit ( $RCF_S$ ): Set  $RCF_S$  to the value of the RCF field.
- 15 • Combined paging/access bit ( $CPA_S$ ): Set  $CPA_S$  to the value of the CPA field.
- 16 • Number of access channels ( $CMAx_S$ ): Set  $CMAx_S$  to 1 plus the value of the CMAX -  
17 1 field.
- 18 • Determine control channel boundaries for accessing the system ( $FIRSTCHA_S$  and  
19  $LASTCHA_S$ ) by using the following algorithm:
  - 20 – If the serving-system status is enabled,
    - 21 + If  $CPA_S = 1$ , set  $FIRSTCHA_S$  to  $FIRSTCHP_S$  for System A.
    - 22 + If  $CPA_S = 0$ , set  $FIRSTCHA_S$  to  $FIRSTCHP_S$  for System A minus  $N_S$ .
    - 23 +  $LASTCHA_S = FIRSTCHA_S - CMAx_S + 1$ .
  - 24 – If the serving-system status is disabled,
    - 25 + If  $CPA_S = 1$ , set  $FIRSTCHA_S$  to  $FIRSTCHP_S$  for System B.
    - 26 + If  $CPA_S = 0$ , set  $FIRSTCHA_S$  to  $FIRSTCHP_S$  for System B plus  $N_S$ .
    - 27 +  $LASTCHA_S = FIRSTCHA_S + CMAx_S - 1$ .

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

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

4 If the Update Protocol Capability ID status is enabled, and if  $PCSID_S = SID_S$ , the mobile  
 5 station shall initiate protocol capability registration by entering the System Access Task (see  
 6 2.6.3) with a capability registration indication.

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

- 11 1. *Local Control Messages*: See the corresponding section of [26].
  - 12 2. *Access Type Parameters Message*: See the corresponding section of [26].
  - 13 3. *New Access Channel Set Message*: See the corresponding section of [26].
  - 14 4. *Registration Increment Message*: See the corresponding section of [26].
  - 15 5. *Location Area Message*: See the corresponding section of [26].
  - 16 6. *Random Challenge A Message*: See the corresponding section of [26].
  - 17 7. *Random Challenge B Message*: See the corresponding section of [26].
  - 18 8. *Registration ID Message*: If  $R_S = 1$ , the mobile station must perform the following:
    - 19 • If this message is received while first-idle ID status is disabled, and if location-  
 20 registration ID status is disabled, and if first-registration ID status is enabled,  
 21 and if first-location-area ID status is enabled, and if the mobile station is tuned  
 22 to a control channel different from  $LRCC_S$ , then the mobile station shall set first-  
 23 registration ID status to disabled.
    - 24 • The mobile station must set  $REGID_S$  to the value of the REGID field of the  
 25 received message. If the first-registration ID status is enabled, and if the  
 26 location-registration ID status is disabled,  $SID_S = SID_{S-p}$ ,  $DIGITAL\_REG_{S-p} =$   
 27 '00000000', and  $CDMA\_MODE_p = '0'$ , the mobile station must perform the  
 28 following:
      - 29 – Set the first-registration ID status to disabled (see 2.6.1.1.2).
      - 30 – If autonomous registration is enabled, the mobile station must enter the  
 31 Autonomous Registration Update Task (see 2.6.3.11), supplying a success  
 32 indication.
      - 33 – The mobile station shall continue to process information in the overhead  
 34 message stream.
- 35 Otherwise, the mobile station shall set the first-registration ID status to disabled  
 36 (see 2.6.1.1.2) and proceed as follows:
- 37 • If  $DIGITAL\_REG_{S-p} = '00000001'$ , the mobile station must perform the following:
    - 38 – Set  $DIGITAL\_REG_{S-p} = '00000000'$

- 1           – If autonomous registration is enabled, the mobile station shall set the first-  
2 registration ID status to disabled (see 2.6.1.1.2) and then enter the System  
3 Access Task with a registration indication (see 2.6.3)
- 4           • If  $SID_S$  equals the  $SID_{S-p}$  value stored in the registration memory or if  
5  $CDMA\_MODE_S = 1$ , the mobile station must perform the following:
- 6           – If  $CDMA\_MODE_S = 1$ , the mobile station must perform the following:
- 7           + Set  $CDMA\_MODE_S = 0$ .
- 8           + Generate a random number distributed uniformly in the interval 0 to  
9  $8 \times MAX\_REDIRECT\_DELAY_S$  seconds, and if quantized, with granularity  
10 no greater than 1 ms. The mobile station must set its redirect delay  
11 timer to this random number and must continue to process messages in  
12 the overhead message train.
- 13           – Otherwise, if the redirect delay timer is inactive, the mobile station must  
14 perform the following:
- 15           – The mobile station must use the following (or an equivalent) algorithm to  
16 review the  $NXTREG_{S-p}$  associated with the  $SID_{S-p}$  to determine if  $REGID_S$   
17 has cycled through zero:
- 18           + If  $UPDATE\_NEXTREG_S = 1$ , set  $NXTREG_{S-p}$  to  $REGID_S + REGINCR_S$  and  
19 reset  $UPDATE\_NEXTREG_S$  to 0.
- 20           + If  $NXTREG_{S-p}$  is greater than or equal to  $REGID_S + REGINCR_S + 5$ , then  
21  $NXTREG_{S-p}$  must be replaced by the greater of 0 or  $NXTREG_{S-p} - 2^{20}$ .
- 22           + Otherwise do not change  $NXTREG_{S-p}$ .
- 23           – The mobile station must then compare  $REGID_S$  with the  $NXTREG_{S-p}$   
24 associated with the  $SID_{S-p}$ .
- 25           + If  $REGID_S$  is greater than or equal to  $NXTREG_{S-p}$  and if autonomous  
26 registration is enabled, the mobile station must set the first-registration  
27 ID status to disabled (see 2.6.1.1.2) and then enter the System Access  
28 Task with a registration indication (see 2.6.3).
- 29           + If  $REGID_S$  is greater than or equal to  $NXTREG_{S-p}$  and if autonomous  
30 registration is not enabled, then set  $NXTREG_{S-p}$  equal to  $REGID_S$ .
- 31           + Otherwise, the mobile station must ignore the message and continue to  
32 process messages in the overhead message train.
- 33           • If  $SID_S$  is not equal to the  $SID_{S-p}$  value stored in the registration memory, the  
34 mobile station must perform the following:
- 35           – If autonomous registration is enabled, the mobile station shall set the first-  
36 registration ID status to disabled (see 2.6.1.1.2). The mobile station shall  
37 then enter the System Access Task with a registration indication supplied  
38 (see 2.6.3).

- 1           – Otherwise, the mobile station must ignore the message and continue to  
2           process messages in the overhead message train.

3   9. *CDMA Capability Message*: The mobile station must perform the following:

- 4           • If PACA<sub>S</sub> = enabled or the mobile station entered this task with a wait-for-page  
5           indication, the mobile station should ignore the *CDMA Capability Message* and  
6           continue to process messages in the overhead message train.
- 7           • If CDMA\_AVAIL equals '1', and if REDIRECTION<sub>S</sub> equals disabled, and if the  
8           preferred mode of operation is CDMA, the mobile station may exit this task and  
9           enter the *System Determination Substate* of the *Mobile Station Initialization State*  
10           with a CDMA available indication (see 2.6.1.1 of [5]).
- 11           • If CDMA\_AVAIL equals '1', and if REDIRECTION<sub>S</sub> equals enabled, and if the  
12           IGNORE\_CDMA field of REDIRECT\_REC<sub>S</sub> equals '0', and if the preferred mode of  
13           operation is CDMA, the mobile station may exit this task and enter the *System*  
14           *Determination Substate* of the *Mobile Station Initialization State* with a CDMA  
15           available indication (see 2.6.1.1 of [5]).
- 16           • If ADD\_CDMA\_AVAIL equals '1', and if REDIRECTION<sub>S</sub> equals disabled, and if  
17           the preferred mode of operation is CDMA, the mobile station may exit this task  
18           and enter the System Access Task with a CDMA query indication (see 2.6.3).
- 19           • If ADD\_CDMA\_AVAIL equals '1', and if REDIRECTION<sub>S</sub> equals enabled, the  
20           IGNORE\_CDMA field of REDIRECT\_REC<sub>S</sub> equals '0', and if the preferred mode of  
21           operation is CDMA, the mobile station may exit this task and enter the System  
22           Access Task with a CDMA query indication (see 2.6.3).
- 23           • If the mobile station has previously attempted and failed to acquire a CDMA  
24           system five consecutive times as a result of receiving a *CDMA Capability*  
25           *Message*, the mobile station shall ignore the *CDMA Capability Message* until  
26           immediately before the next autonomous registration attempt or until the next  
27           mobile station power-up.
- 28           • If REDIRECTION<sub>S</sub> equals enabled, and if the IGNORE\_CDMA field of  
29           REDIRECT\_REC<sub>S</sub> equals '1', the mobile station shall ignore the *CDMA Capability*  
30           *Message*.

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

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

#### 1 2.6.2.2. Page Match

2 The mobile station must monitor mobile station control messages for page messages (see  
3 3.7.1.1).

- 4 • If the ROAM status is disabled, the mobile station must attempt to match  $MIN1_p$  to  
5  $MIN1_r$  for one-word messages and both  $MIN1_p$  and  $MIN2_p$  to  $MIN1_r$  and  $MIN2_r$ ,  
6 respectively, for two-word messages. All decoded MIN bits must match to cause the  
7 mobile station to respond to the message.
- 8 • If the ROAM status is enabled, the mobile station must attempt to match both  
9  $MIN1_p$  and  $MIN2_p$  to  $MIN1_r$  and  $MIN2_r$ , respectively. All decoded MIN bits must  
10 match to cause the mobile station to respond to the order.

11 When a match occurs,

- 12 • If  $PACA_S = \text{enabled}$ , the mobile station must set  $PACA_S = \text{disabled}$  and must indicate  
13 to the user that the PACA call has been canceled.
- 14 • The mobile station must enter the System Access Task with a page response  
15 indication (see 2.6.3).

#### 16 2.6.2.3. Order

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

- 19 • *PACA Message*: If  $PACA_S = \text{disabled}$ , the mobile station must ignore the message.  
20 If  $PACA_S = \text{enabled}$ , the mobile station must perform the following:
  - 21 – If the message is a response to an *Origination Order* ( $PURPOSE_r = \text{'0000'}$ ), the  
22 mobile station must ignore the message.
  - 23 – If the message is to provide the queue position of the PACA call ( $PURPOSE_r =$   
24  $\text{'0001'}$ ), the mobile station must indicate to the user that the PACA call is still  
25 queued, and must indicate the current queue position ( $Q\_POS_r$ ) of the call. The  
26 mobile station shall remain in the current task.
  - 27 – If the message is to instruct the mobile station to re-originate the PACA call  
28 ( $PURPOSE_r = \text{'0010'}$ ), the mobile station must enter the System Access Task (see  
29 2.6.3) with a PACA response indication and re-originate the PACA call.
  - 30 – If the message is to cancel the PACA call ( $PURPOSE_r = \text{'0011'}$ ), the mobile station  
31 must set  $PACA_S = \text{disabled}$ , indicate to the user that the PACA call has been  
32 canceled, and enter the Serving System Determination Task (see 2.6.3.12).

#### 33 2.6.2.4. Call Initiation

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

- 35 • If  $PACA_S = \text{enabled}$ , the mobile station must set  $PACA_S = \text{disabled}$  and must indicate  
36 to the user that the PACA call has been canceled.

- The System Access Task (see 2.6.3) must be entered with an origination indication.

#### 2.6.2.5. Power Down

[See the corresponding section of \[26\].](#)

#### 2.6.2.6. Reserved

~~[See the corresponding section of \[26\].](#)~~

#### 2.6.2.7. PACA Cancellation

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

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

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

### 2.6.3. System Access

#### 2.6.3.1. Set Access Parameters

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

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

- If this is an origination or PACA response, set to a maximum of 12 seconds.
- If this is a page response or PACA cancel, set to a maximum of 6 seconds.
- If this is an order response, set to a maximum of 6 seconds.
- If this is a registration other than power down registration, set to a maximum of 6 seconds.
- If this is a power down registration, set to a maximum of 3 seconds.
- If this is a Base Station Challenge, set to a maximum of 12 seconds.
- If this is a CDMA query, set to a maximum of 6 seconds.

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

1 2.6.3.2. Scan Access Channels

2 See the corresponding section of [26].

3 2.6.3.3. Retrieve Access Attempt Parameters

4 The mobile station must set the maximum number of seizure attempts allowed  
5 (MAXSZTR<sub>S</sub>) to a maximum of 10, and the maximum number of busy occurrences  
6 (MAXBUSY<sub>S</sub>) to a maximum of 10.

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

- 8 • Number of busy occurrences (NBUSY<sub>SV</sub>)
- 9 • Number of unsuccessful seizure attempts (NSZTR<sub>SV</sub>)

10 The mobile station must then examine the read control-filler bit (RCF<sub>S</sub>).

- 11 • If RCF<sub>S</sub> = 0, the mobile station must then within 400 ms (+100 ms, -0 ms) set DCC<sub>S</sub>  
12 to the value in the DCC field of a received message, set SDCC1<sub>S</sub> and SDCC2<sub>S</sub> to 0,  
13 and set the power level (PL<sub>S</sub>) to 0.
- 14 • If RCF<sub>S</sub> = 1, the mobile station must then, within 1000 ms (+100 ms, -0 ms), read a  
15 *Control-Filler Message*, set DCC<sub>S</sub>, WFOM<sub>S</sub>, SDCC1<sub>S</sub> and SDCC2<sub>S</sub> to the values in the  
16 DCC, WFOM, SDCC1 and SDCC2 fields of the message, respectively, and set PL<sub>S</sub> to  
17 the power level given by Table 2.1.2-1 of [26] for the value of the CMAC field of the  
18 message and the mobile station power class (see 2.3.3 of [5]).

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

24 The mobile station must then set BIS<sub>S</sub> to '1' and examine the WFOM<sub>S</sub> bit.

- 25 • If PACA<sub>S</sub> = enabled or if WFOM<sub>S</sub> = 1, the mobile station must enter the Update  
26 Overhead Information Task (see 2.6.3.4).
- 27 • If WFOM<sub>S</sub> = 0, the mobile station must wait for a random delay. Each time it waits  
28 for a random delay, a random delay must be generated with the time uniformly  
29 distributed in the interval 0 to 92 ± 1 ms and, if quantized, with granularity no more  
30 than 1 ms. The mobile station must then enter the Seize Reverse Control Channel  
31 Task (see 2.6.3.5).

32 2.6.3.4. Update Overhead Information

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

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

- 1 • Authentication bit (AUTH<sub>S</sub>): Set AUTH<sub>S</sub> to the value in the AUTH field.
- 2 • Extended Protocol bit (EP<sub>S</sub>): If the mobile station is capable of supporting Extended
- 3 Protocol, set EP<sub>S</sub> to the value in the EP field.

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

- 6 • Update System Identification (SID<sub>R</sub>). Set the 14 most significant bits of SID<sub>R</sub> to the  
7 value of the SID1 field. Set the least significant bit of SID<sub>R</sub> to '1' if the serving-  
8 system status is enabled; otherwise, set the bit to '0'.
- 9 • If the access is a registration, the mobile station must compare SID<sub>R</sub> with SID<sub>S</sub>. If  
10 SID<sub>R</sub> is not equal to SID<sub>S</sub>, the mobile station must exit the Update Overhead  
11 Information Task and enter the Serving System Determination Task (see 2.6.3.12).  
12 Otherwise, the mobile station shall continue to process this task.
- 13 • If this access is an origination or a page response, the mobile station must compare  
14 SID<sub>R</sub> with SID<sub>S-p</sub>. If SID<sub>R</sub> does not equal SID<sub>S-p</sub>, the mobile station must set RAND<sub>S</sub>  
15 equal to zero.
- 16 • If the access is a PACA response and if SID<sub>R</sub> is not equal to SID<sub>S</sub> and if PACA<sub>S</sub> =  
17 enabled, the mobile station must set PACA<sub>S</sub> = disabled and must indicate to the user  
18 that the PACA call has been canceled. The mobile station must enter the Serving  
19 System Determination Task (see 2.6.3.12).

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

- 22 • *Overload Control Message:*
  - 23 – If this access is an origination, the mobile station must examine the value of the
  - 24 overload class field (OLC) identified by ACCOLC<sub>P</sub>. If the identified OLC field is
  - 25 set to '0', the mobile station must exit this task and enter the Serving-System
  - 26 Determination Task (see 2.6.3.12); if the identified OLC field is set to '1', the
  - 27 mobile station must continue to respond to messages in the overhead message
  - 28 train.
  - 29 – Otherwise, the mobile station must continue to respond to messages in the
  - 30 overhead message train.
- 31 • *Access Type Parameters Message:*
  - 32 – The mobile station must set the busy-idle status bit (BIS<sub>S</sub>) to the value of the BIS
  - 33 field of the received message.
  - 34 – The mobile station must set PCI\_HOME<sub>S</sub> to the value of the PCI\_HOME field of
  - 35 the received message.
  - 36 – The mobile station must set PCI\_ROAM<sub>S</sub> to the value of the PCI\_ROAM field of
  - 37 the received message.
  - 38 – The mobile station must set BSPC<sub>S</sub> to the value of the BSPC field of the received
  - 39 message.

- 1           – The mobile station must set BSCAP<sub>S</sub> to the value of the BSCAP field of the  
2 received message.
- 3           – If BSCAP<sub>S</sub> indicates that the system supports [26] or later revisions of the core  
4 analog air interface standard, then:
- 5           + If PCSID ≠ SID<sub>S</sub>, then:
- 6               o If Roam status is enabled, and if PCI\_ROAM<sub>S</sub> = 1, or  
7               o If Roam status is disabled, and if PCI\_HOME<sub>S</sub> = 1,
- 8           + then, the mobile station shall Update Protocol Capability ID status to  
9 enabled and set PCSID<sub>S</sub> = SID<sub>S</sub>.
- 10          • *Random Challenge A Message*: The mobile station must set the corresponding  
11 portion of its internal RAND1<sub>S</sub> to the value of the RAND1\_A field in the *Global Action*  
12 *Message* (see 2.3.12.1.2 for updating of RAND).
- 13          • *Random Challenge B Message*: The mobile station must set the corresponding  
14 portion of its internal RAND1<sub>S</sub> to the value of the RAND1\_B field in the *Global Action*  
15 *Message* (see 2.3.12.1.2 for updating of RAND).
- 16          • *Access Attempt Parameters Message*: The mobile station must update the following  
17 parameters:
- 18           – If this access is a page response,
- 19               + Maximum number of seizure tries allowed (MAXSZTR<sub>S</sub>) must be set to the  
20 value of the MAXSZTR-PGR field of the received message.
- 21               + Maximum number of busy occurrences allowed (MAXBUSY<sub>S</sub>) must be set to  
22 the value of the MAXBUSY-PGR field of the received message.
- 23           – Otherwise,
- 24               + Maximum number of seizure tries allowed (MAXSZTR<sub>S</sub>) must be set to the  
25 value of the MAXSZTR-OTHER field of the received message.
- 26               + Maximum number of busy occurrences allowed (MAXBUSY<sub>S</sub>) must be set to  
27 the value of the MAXBUSY-OTHER field of the received message.

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

30       The mobile station must set REGID<sub>S</sub> to the value of the REGID field in the message.

31 After the overhead message train is received and processed as required above, the mobile  
32 station must wait a random time. Each time this task is executed, a different random delay  
33 must be generated, distributed uniformly in the interval 0 to 750 ms, and if quantized, with  
34 granularity no greater than 1 ms. At the end of the delay, the mobile station must enter  
35 the Seize Reverse Control Channel Task (see 2.6.3.5).

### 36 2.6.3.5. Seize Reverse Control Channel

37 See the corresponding section of [26].

1 2.6.3.6. Delay After Failure

2 See the corresponding section of [26].

3 2.6.3.7. Service Request

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

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

- 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.~~
- 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).

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

#### 15 2.6.3.8. Await Message

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

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

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

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

- 26 • *Initial Voice Channel Designation Message* (see 3.7.1.1): The mobile station must  
27 update the parameters as set in the message, delete all entries from  $SID\_NID\_LIST_S$ ,  
28  $ZONE\_LIST_S$ ,  $SID\_NID\_LIST_{S-p}$ , and  $ZONE\_LIST_{S-p}$ , and set  $REGISTERED_S$  to NO.  
29 If  $R_S = 1$ , the mobile station must enter the Autonomous Registration Update Task  
30 (see 2.6.3.11), supplying a success indication. If  $R_S = 0$ , the mobile station shall  
31 enter the Confirm Initial Voice Channel Task (see 2.6.4.2). If  $PACA_S = \text{enabled}$ , the  
32 mobile station must set  $PACA_S = \text{disabled}$  and must indicate to the user that the  
33 PACA call is in process.
- 34 • *PACA Message* (see 3.7.1.1): If  $PACA_S = \text{disabled}$ , the mobile station must perform  
35 the following:

- 1           – If the message is in response to an origination ( $PURPOSE_r = '0000'$ ), the mobile  
2 station must set  $PACA_s$  to enabled and indicate to the user that the call has  
3 been queued as a PACA call. Also, the mobile station must indicate to the user  
4 the current queue position ( $Q\_POS_r$ ) of the PACA call, and must then enter the  
5 Idle Task (see 2.6.2).
- 6           – If the message is not in response to an origination, the mobile station must  
7 ignore the message. If  $PACA_s = \text{enabled}$ , the mobile station must perform the  
8 following:
- 9           – If the message is in response to an origination ( $PURPOSE_r = '0000'$ ), the mobile  
10 station must ignore the message.
- 11          – If the message is to provide the queue position of the PACA call ( $PURPOSE_r =$   
12  $'0001'$ ), the mobile station must indicate to the user that the PACA call is still  
13 queued, indicate the current queue position ( $Q\_POS_r$ ) of the call, and remain in  
14 the current task.
- 15          – If the message is to instruct the mobile station to re-originate the PACA call  
16 ( $PURPOSE_r = '0010'$ ), the mobile station must enter the System Access Task (see  
17 2.6.3) with an PACA response indication and re-originate the PACA call.
- 18          – If the message is to cancel the PACA call ( $PURPOSE_r = '0011'$ ), the mobile station  
19 must set  $PACA_s = \text{disabled}$ , indicate to the user that the PACA call has been  
20 canceled, and enter the Serving-System Determination Task (see 2.6.3.12).
- 21          • *Directed-Retry Message* (see 3.7.1.1): If the mobile station is equipped for directed  
22 retry, it must respond to the *Directed-Retry Message* as follows:
- 23          If the mobile station encounters the start of a new message before it receives all four  
24 words of the *Directed-Retry Message*, it must exit this task and enter the Serving-  
25 System Determination Task (see 2.6.3.12).
- 26          The mobile station must set the last-try code ( $LT_s$ ) according to the  $ORDQ$  field of  
27 the message:
- 28          – If  $ORDQ = '000'$ , set  $LT_s$  to '0'.  
29          – If  $ORDQ = '001'$ , set  $LT_s$  to '1'.
- 30          The mobile station must then clear  $CCLIST_s$  and must examine each  $CHANPOS$  field  
31 in Words 3 and 4 of the message. For each nonzero  $CHANPOS$  field, the mobile  
32 station must calculate a corresponding channel number according to the following  
33 algorithm:
- 34          – If  $LOCAL/MSG\_TYPE = '00000'$ , and if the serving-system status is enabled,  
35 subtract  $CHANPOS$  from  $FIRSTCHA_s + 1$ .
- 36          – If  $LOCAL/MSG\_TYPE = '00000'$  and, if the serving-system status is disabled,  
37 add  $CHANPOS$  to  $FIRSTCHA_s - 1$ .

- 1           – If LOCAL/MSG\_TYPE = '00001', and if the serving-system status is enabled, set  
2           FIRSTCHA<sub>S</sub> to the first dedicated control channel for System A (834.990  
3           MHz/879.990 MHz) and subtract CHANPOS from FIRSTCHA<sub>S</sub> + 1. The mobile  
4           must also set AUTH<sub>S</sub> to '0'.
- 5           – If LOCAL/MSG\_TYPE = '00001', and if the serving-system status is disabled, set  
6           FIRSTCHA<sub>S</sub> to the first dedicated control channel for System B (835.020  
7           MHz/880.020 MHz) and add CHANPOS to FIRSTCHA<sub>S</sub> - 1. The mobile must also  
8           set AUTH<sub>S</sub> to '0'.
- 9           – If LOCAL/MSG\_TYPE = '00010', and if the serving-system status is enabled, set  
10          FIRSTCHA<sub>S</sub> to the first dedicated control channel for System A (834.990  
11          MHz/879.990 MHz) and subtract CHANPOS from FIRSTCHA<sub>S</sub> + 1. The mobile  
12          must also set AUTH<sub>S</sub> to '1'.
- 13          – If LOCAL/MSG\_TYPE = '00010', and if the serving-system status is disabled, set  
14          FIRSTCHA<sub>S</sub> to the first dedicated control channel for System B (835.020  
15          MHz/880.020 MHz) and add CHANPOS to FIRSTCHA<sub>S</sub> - 1. The mobile must also  
16          set AUTH<sub>S</sub> to '1'.

17          The mobile station must then determine whether each channel number is within the  
18          set allocated to cellular systems; and, if so, must list the channel number in  
19          CCLIST<sub>S</sub>.

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

24          If the access is an origination or PACA response:

- 25           • *Intercept*: If PACA<sub>S</sub> = enabled, the mobile station must set PACA<sub>S</sub> = disabled, must  
26           indicate to the user that the PACA call has been canceled, and must enter the  
27           Serving-System Determination Task (see 2.6.3.12); otherwise, the mobile station  
28           must enter the Serving-System Determination Task (see 2.6.3.12).
- 29           • *Reorder*: If PACA<sub>S</sub> = enabled, the mobile station must set PACA<sub>S</sub> = disabled, must  
30           indicate to the user that the PACA call has been canceled, and must enter the  
31           Serving-System Determination Task (see 2.6.3.12). Otherwise, the mobile station  
32           must enter the Serving-System Determination Task (see 2.6.3.12).

33          If the access is a page response:

- 34           • *Release*: The mobile station must enter the Serving-System Determination Task (see  
35           2.6.3.12).

36          If the access is a PCI order confirmation:

- 37           • *Release*: The mobile station must enter the Serving-System Determination Task (see  
38           2.6.3.12).

- 1 • *Message Waiting Order*: If the mobile station is capable of performing Message  
2 Waiting Notification, the mobile station shall indicate the presence of messages  
3 waiting based upon the information contained in the message type field of the  
4 Message Waiting order (*i.e.*, 0 for clear or no messages, other non-zero values  
5 indicate the number of messages waiting). The mobile station then enters the  
6 System Access Task (see 2.6.3) with an order confirmation indication.

7 If the access is a CDMA Query:

- 8 • *CDMA Info Order*: The mobile station should exit this task and enter the *System*  
9 *Determination Substate* of the *Mobile Station Initialization State* with an additional  
10 CDMA available indication (see 2.6.1.1 of [5]).

11 If the access is a Base Station Challenge:

- 12 • *Base Station Challenge Order Confirmation*: The mobile station compares the  
13 AUTHBS received in the *Base Station Challenge Order Confirmation Message* to that  
14 computed internally. The mobile station must then acknowledge receipt of the *SSD*  
15 *Update Order* by the *SSD Update Order Confirmation Message* with a success or  
16 failure indication as described in 2.3.12.1.8 by entering the System Access Task (see  
17 2.6.3) with an order response indication (see 2.6.3.1). If the mobile station fails to  
18 receive the *Base Station Challenge Order Confirmation* within 10 seconds of the time  
19 when the *Base Station Challenge Order* was transmitted, terminate the SSD update  
20 process.

21 If the access is an origination, and if the user terminates a call during this task, the  
22 termination status must be enabled so that the call can be released on a voice channel (see  
23 2.6.4.4) instead of on a control channel.

#### 24 2.6.3.9. Await Registration Confirmation

25 If the mobile station receives an *Order Confirmation Message* (see 3.7.1.1), it shall delete all  
26 entries from  $SID\_NID\_LIST_S$ ,  $ZONE\_LIST_S$ ,  $SID\_NID\_LIST_{S-p}$ , and  $ZONE\_LIST_{S-p}$  and shall  
27 set  $REGISTERED_S$  to NO as the first action it takes.

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

#### 29 2.6.3.10. Action on Registration Failure

30 The mobile station shall delete all entries from  $SID\_NID\_LIST_S$ ,  $ZONE\_LIST_S$ ,  
31  $SID\_NID\_LIST_{S-p}$ , and  $ZONE\_LIST_{S-p}$ , and shall set  $REGISTERED_S$  to NO as the first action  
32 it takes.

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

#### 34 2.6.3.11. Autonomous Registration Update

35 The mobile station shall set  $CDMA\_MODE_S = 0$  and  $DIGITAL\_REG_{S-p} = '00000000'$  as the  
36 first action it takes.

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

#### 2.6.3.12. Serving-System Determination

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

- If REDIRECTION<sub>S</sub> equals disabled, and if either the preferred mode of operation is CDMA or the serving-system status does not correspond to the preferred system, the mobile station may enter the *System Determination Substate* of the *Mobile Station Initialization State* with a reselection indication (see 2.6.1.1 of [5]); otherwise, it must enter the Paging Channel Selection Task (see 2.6.1.2).

#### 2.6.3.13. Alternate Access Channel

See the corresponding section of [26].

#### 2.6.3.14. Directed Retry

See the corresponding section of [26].

### 2.6.4. Mobile Station Control on the Analog Voice Channel

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

#### 2.6.4.1. Loss of Radio-Link Continuity

See the corresponding section of [26].

#### 2.6.4.2. Confirm Initial Voice Channel

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

Within 100 ms of the receipt of a *Channel Assignment Message* (see 3.7.2.3.2.8 of [5]) containing ASSIGN\_MODE = '011' and AN\_CHAN\_TYPE = '00', or an *Extended Channel Assignment Message* (see 3.7.2.3.2.21 of [5]) containing ASSIGN\_MODE = '011' and AN\_CHAN\_TYPE = '00', the mobile station must execute the procedures in the corresponding section of [26].

#### 2.6.4.3. Alerting

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

##### 2.6.4.3.1. Waiting for Order

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

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

- 3 • If this task is entered as a result of receiving an *Analog Handoff Direction Message*  
4 (see 3.7.3.3.2.6 of [5]), the mobile station must use the VMAC, ANALOG\_CHAN, and  
5 SCC values obtained from the *Analog Handoff Direction Message* to perform the  
6 following operations: Adjust power level, tune to new channel, adjust to new SAT,  
7 and set SCC<sub>s</sub> to the value of the SCC field of the message (see 2.4.1 of [26]). The  
8 mobile station must then turn on the transmitter, and reset the fade timer. The  
9 mobile station must set the message encryption mode to that indicated by the MEM  
10 value obtained from the *Analog Handoff Direction Message*. The mobile station may  
11 compare the SID value obtained from the *Analog Handoff Direction Message* with  
12 HOME\_SID<sub>p</sub>. If SID<sub>r</sub> = HOME\_SID<sub>p</sub>, the mobile station may set the ROAM status to  
13 disabled. If SID<sub>r</sub> is not equal to HOME\_SID<sub>p</sub>, the mobile station may set the ROAM  
14 status to enabled. The mobile station must remain in the Waiting for Order Task.
- 15 • Within 100 ms of the receipt of any of the orders listed either below (see 3.7.2) or in  
16 the corresponding section of [26], the mobile station must compare SCC<sub>s</sub> to the  
17 present SAT color code (PSCC) field in the received message. If SCC<sub>s</sub> is not equal to  
18 PSCC, the order must be ignored. If SCC<sub>s</sub> = PSCC, the action to be taken for each  
19 order is as follows:
  - 20 – *Alert With Info SMS*: Within 750 ms, the mobile station must send an *Alert With*  
21 *Info SMS Order Confirmation Message*, and remain in the Waiting for Order Task.  
22 If the value of the TASK\_TM field of the received message is '0', reset the order  
23 timer to 10 seconds; otherwise reset the order timer to 600 ms.

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

- 25 + If the value of the B/F field of the received message is '11', and if the  
26 INFO\_DATA field of the received message contains an unsegmented SMS  
27 teleservice message, the mobile station may discard any incomplete SMS  
28 teleservice message being reassembled and should pass the INFO\_DATA field  
29 of the received message to the SMS teleservice. Set the B/F field of the *Alert*  
30 *With Info SMS Order Confirmation Message* to '1'. If the teleservice reports an  
31 error, set the ERROR\_CLASS and CAUSE\_CODE fields of the *Alert With Info*  
32 *SMS Order Confirmation Message* to report the teleservice error.
- 33 + If the value of the B/F field of the received message is '10', the mobile station  
34 may discard any incomplete SMS teleservice message being reassembled,  
35 and must store the INFO\_DATA field of the received message as the first  
36 segment of an SMS teleservice message being reassembled. Set SEQ\_NO<sub>s</sub> to  
37 SEQ\_NO<sub>r</sub>. Set the B/F field of the *Alert With Info SMS Order Confirmation*  
38 *Message* to '0'.
- 39 + If the value of the B/F field of the received message is '00', and if a  
40 segmented SMS teleservice message is being reassembled, compare the value  
41 of the SEQ\_NO field of the received message to SEQ\_NO<sub>s</sub>. Set the B/F field  
42 of the *Alert With Info SMS Order Confirmation Message* to '0'. The mobile  
43 station shall perform the following actions:

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

## 2.6.4.3.2. Waiting for Answer

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

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

- If this task is entered as a result of receiving an *Analog Handoff Direction Message* (see [5]), the mobile station must use the VMAC, ANALOG\_CHAN, and SCC values obtained from the *Analog Handoff Direction Message* to perform the following operations: adjust power level, tune to new channel, adjust to new SAT, and set SCC<sub>s</sub> to the value of the SCC field of the message (see 2.4.1). The mobile station must then turn on the transmitter, reset the fade timer, and turn on the signaling tone. The mobile station must set the message encryption mode to that indicated by the MEM value obtained from the *Analog Handoff Direction Message*. The mobile station may compare the SID value obtained from the *Analog Handoff Direction Message* with HOME\_SID<sub>p</sub>. If SID<sub>r</sub> = HOME\_SID<sub>p</sub>, the mobile station may set the ROAM status to disabled. If SID<sub>r</sub> is not equal to HOME\_SID<sub>p</sub>, the mobile station may set the ROAM status to enabled. The mobile station must remain in the Waiting for Answer Task.
- Within 100 ms of the receipt of any of the orders listed, either below or in the corresponding section of [26], the mobile station must compare SCC<sub>s</sub> to the PSCC field in the received message. If SCC<sub>s</sub> is not equal to PSCC, the order must be ignored. If SCC<sub>s</sub> = PSCC, the action to be taken for each order is as follows:
  - *Alert With Info SMS*: Within 750 ms the mobile station must send an *Alert With Info SMS Order Confirmation Message*, and remain in the Waiting for Answer Task.

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

- + If the value of the B/F field of the received message is '11', and if the INFO\_DATA field of the received message contains an unsegmented SMS teleservice message, the mobile station may discard any incomplete SMS teleservice message being reassembled and should pass the INFO\_DATA field of the received message to the SMS teleservice. Set the B/F field of the *Alert With Info SMS Order Confirmation Message* to '1'. If the teleservice reports an error, set the ERROR\_CLASS and CAUSE\_CODE fields of the *Alert With Info SMS Order Confirmation Message* to report the teleservice error.
- + If the value of the B/F field of the received message is '10', the mobile station may discard any incomplete SMS teleservice message being reassembled and must store the INFO\_DATA field of the received message as the first segment of an SMS teleservice message being reassembled. Set SEQ\_NO<sub>s</sub> to SEQ\_NO<sub>r</sub>. Set the B/F field of the *Alert With Info SMS Order Confirmation Message* to '0'.

- 1 + If the value of the B/F field of the received message is '00', and if a  
2 segmented SMS teleservice message is being reassembled, compare the value  
3 of the SEQ\_NO field of the received message to SEQ\_NO<sub>S</sub>. Set the B/F field  
4 of the *Alert With Info SMS Order Confirmation Message* to '0'. Take action as  
5 follows:
- 6 o If (SEQ\_NO<sub>S</sub> + 1) modulo 8 is equal to the value of the SEQ\_NO field of  
7 the received message, store the INFO\_DATA field of the received message  
8 as the next segment of the SMS teleservice message being reassembled  
9 and increment SEQ\_NO<sub>S</sub>, modulo 8.
- 10 o If SEQ\_NO<sub>S</sub> is equal to the value of the SEQ\_NO field of the received  
11 message, the mobile station may discard the INFO\_DATA field of the  
12 received message.
- 13 o If neither SEQ\_NO<sub>S</sub> nor (SEQ\_NO<sub>S</sub> + 1) modulo 8 is equal to the value of  
14 the SEQ\_NO field of the received message, the mobile station may discard  
15 the INFO\_DATA field of the received message and may discard the  
16 incomplete SMS teleservice message being reassembled.
- 17 + If the value of the B/F field of the received message is '00', and if no  
18 segmented SMS teleservice message is being reassembled, the mobile station  
19 may discard the INFO\_DATA field of the received message. Set the B/F field  
20 of the *Alert With Info SMS Order Confirmation Message* to '0'.
- 21 + If the value of the B/F field of the received message is '01', and if a  
22 segmented SMS teleservice message is being reassembled, store the  
23 INFO\_DATA field of the received message as the last segment of the SMS  
24 teleservice message and pass the complete SMS teleservice message to the  
25 SMS teleservice. Set the B/F field of the *Alert With Info SMS Order*  
26 *Confirmation Message* to '1'. If the teleservice reports an error, set the  
27 ERROR\_CLASS and CAUSE\_CODE fields of the *Alert With Info SMS Order*  
28 *Confirmation Message* to report the teleservice error.
- 29 + If the value of the B/F field of the received message is '01', and if no  
30 segmented SMS teleservice message is being reassembled, the mobile station  
31 may discard the INFO\_DATA field of the received message. Set the  
32 ERROR\_CLASS and CAUSE\_CODE fields of the *Alert With Info SMS Order*  
33 *Confirmation Message* to report an error due to reception of an incomplete  
34 message. Set the B/F field of the *Alert With Info SMS Order Confirmation*  
35 *Message* to '0'.

- 1           – *Message Encryption Mode Order*: The base station is activating/deactivating  
 2 signaling message encryption. If the order qualifier field in the received message  
 3 is set to '001', activate basic signaling message encryption. If the order qualifier  
 4 field in the received message is set to '010', activate enhanced signaling message  
 5 encryption. If the order qualifier field in the received message is set to '000',  
 6 deactivate signaling message encryption. In any case, send an "order  
 7 confirmation" message to the base station (see 2.7.2), remain in the Waiting for  
 8 Order Task and reset the order timer to 10 seconds if the mobile station is  
 9 waiting for a response to a Base Station Challenge order, or to 5 seconds if  
 10 waiting for any other response.

#### 11 2.6.4.4. Conversation

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

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

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

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

5 – *Send Called-Address:*

6 + If received within 10 seconds of the completion of the last valid flash, send  
 7 the called-address to the base station (see 2.7.2) and remain in the  
 8 Conversation Task. The contents of the called address field may depend on  
 9 the desired action to be taken by the network, such as:

10 o If the flash was a result of the user indicating User Selective Call  
 11 Forwarding, the called-address should indicate either the:

12 ◇ feature code for User Selective Call Forwarding to pre-registered  
 13 number, or

14 ◇ feature code for User Selective Call Forwarding followed by the  
 15 desired forwarding to number, or

16 ◇ feature code for User Selective Call Forwarding to voice mail.

17 o If the flash was a result of the user activation or deactivation of Answer  
 18 Holding, the called-address should indicate the feature code for Answer  
 19 Holding.

20 + Otherwise, ignore the order and remain in the Conversation Task.

21 – *Alert With Info SMS:* Within 750 ms the mobile station must send an *Alert With*  
 22 *Info SMS Order Confirmation Message*, and remain in the Conversation Task.

23 Process the Alert With Info SMS message as follows:

24 + If the value of the B/F field of the received message is '11', the INFO\_DATA  
 25 field of the received message contains an unsegmented SMS teleservice  
 26 message. The mobile station may discard any incomplete SMS teleservice  
 27 message being reassembled, and should pass the INFO\_DATA field of the  
 28 received message to the SMS teleservice. Set the B/F field of the *Alert With*  
 29 *Info SMS Order Confirmation Message* to '1'. If the teleservice reports an  
 30 error, set the ERROR\_CLASS and CAUSE\_CODE fields of the *Alert With Info*  
 31 *SMS Order Confirmation Message* to report the teleservice error.

32 + If the value of the B/F field of the received message is '10', the mobile station  
 33 may discard any incomplete SMS teleservice message being reassembled,  
 34 and must store the INFO\_DATA field of the received message as the first  
 35 segment of an SMS teleservice message being reassembled. Store the value  
 36 of the SEQ\_NO field of the received message in SEQ\_NO<sub>S</sub>. Set the B/F field  
 37 of the *Alert With Info SMS Order Confirmation Message* to '0'.

- 1           + If the value of the B/F field of the received message is '00', and if a  
2 segmented SMS teleservice message is being reassembled, compare the value  
3 of the SEQ\_NO field of the received message to SEQ\_NO<sub>S</sub>. Set the B/F field  
4 of the *Alert With Info SMS Order Confirmation Message* to '0'. Take action as  
5 follows:
- 6           o If (SEQ\_NO<sub>S</sub> + 1) modulo 8 is equal to the value of the SEQ\_NO field of  
7 the received message, store the INFO\_DATA field of the received message  
8 as the next segment of the SMS teleservice message being reassembled,  
9 and increment SEQ\_NO<sub>S</sub>, modulo 8.
- 10           o If SEQ\_NO<sub>S</sub> is equal to the value of the SEQ\_NO field of the received  
11 message, the mobile station may discard the INFO\_DATA field of the  
12 received message.
- 13           o If neither SEQ\_NO<sub>S</sub> nor (SEQ\_NO<sub>S</sub> + 1) modulo 8 is equal to the value of  
14 the SEQ\_NO field of the received message, the mobile station may discard  
15 the INFO\_DATA field of the received message and may discard the  
16 incomplete SMS teleservice message being reassembled.
- 17           + If the value of the B/F field of the received message is '00', and if no  
18 segmented SMS teleservice message is being reassembled, the mobile station  
19 may discard the INFO\_DATA field of the received message. Set the B/F field  
20 of the *Alert With Info SMS Order Confirmation Message* to '0'.
- 21           + If the value of the B/F field of the received message is '01', and if a  
22 segmented SMS teleservice message is being reassembled, store the  
23 INFO\_DATA field of the received message as the last segment of the SMS  
24 teleservice message and pass the complete SMS teleservice message to the  
25 SMS teleservice. Set the B/F field of the *Alert With Info SMS Order*  
26 *Confirmation Message* to '1'. If the teleservice reports an error, set the  
27 ERROR\_CLASS and CAUSE\_CODE fields of the *Alert With Info SMS Order*  
28 *Confirmation Message* to report the teleservice error.
- 29           + If the value of the B/F field of the received message is '01', and if no  
30 segmented SMS teleservice message is being reassembled, the mobile station  
31 may discard the INFO\_DATA field of the received message. Set the  
32 ERROR\_CLASS and CAUSE\_CODE fields of the *Alert With Info SMS Order*  
33 *Confirmation Message* to report an error due to reception of an incomplete  
34 message. Set the B/F field of the *Alert With Info SMS Order Confirmation*  
35 *Message* to '0'.

- 1           – *Message Encryption Mode Order*: The base station is activating/deactivating  
2 signaling message encryption. If the order qualifier field in the received message  
3 is set to '001', activate basic signaling message encryption. If the order qualifier  
4 field in the received message is set to '010', activate enhanced signaling message  
5 encryption. If the order qualifier field in the received message is set to '000',  
6 deactivate signaling message encryption. In any case, send an "order  
7 confirmation" message to the base station (see 2.7.2), remain in the Waiting for  
8 Order Task and reset the order timer to 10 seconds if the mobile station is  
9 waiting for a response to a Base Station Challenge order, or to 5 seconds if  
10 waiting for any other response.

#### 11 2.6.4.5. Release

12 See the corresponding section of [26].

#### 13 2.6.4.6. Power Down

14 See the corresponding section of [26].

### 15 **2.7. Signaling Formats**

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

#### 17 2.7.1. Reverse Analog Control Channel (RECC)

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

##### 19 2.7.1.1. Reverse Analog Control Channel (RECC) Messages

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

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

## 1 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

2

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

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

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

11 SMSC — Short Message Service Capability.  
12 00 - Not SMS-capable,  
13 01 - AWI SMS order-capable,  
14 10 - EP-SMS-capable,  
15 11 - AWI SMS and EP-SMS-capable.

16 PACAC — PACA Capability. Set to '0' to indicate not PACA-capable. Set  
17 to '1' to indicate PACA capable.

18 ENCRYPTION\_  
19 SUPPORTED — Encryption algorithms supported by the mobile station.  
20 If AUTH is equal to '0', the mobile station shall set this field to  
21 '0000'. Otherwise, the mobile station shall set this field as  
22 specified in [5].

## 23 2.7.2. Reverse Analog Voice Channel (RVC)

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

1 2.7.2.1. Reverse Analog Voice Channel (RVC) Messages

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

3 Selected Control Messages (see 2.7.2.1.1) are enciphered using the Cellular Message  
4 Encryption Algorithm (see 2.5.1 [14]) or the Enhanced Cellular Message Encryption  
5 Algorithm (see 2.5.2[14]). For each message, the enciphered fields are designated. The  
6 messages are grouped by channel designation.

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

- 9 • Alert With Info SMS Order Confirmation Message
- 10 • PCI Report Message

11

12 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

13

## 1 PCI Report Message

<b>Information Element</b>	<b>Length (bits)</b>
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

2

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

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

#### 32 2.7.2.1.1. Encrypted Control Messages

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

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

40 If the Enhanced Cellular Message Encryption Algorithm (see 2.5.2[14]) is used, the input  
41 parameters shall be set as follows:

- 1 • SYNC[0] = 0x01
- 2 • SYNC[1] = 0x00
- 3 • 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.

1 3.1.3.1.1. Compressor

2 See the corresponding section of [26].

3 3.1.3.1.2. Pre-emphasis

4 See the corresponding section of [26].

5 3.1.3.1.3. Deviation Limiter

6 See the corresponding section of [26].

7 3.1.3.1.4. Post Deviation-Limiter Filter

8 See the corresponding section of [26].

9 3.1.3.1.5. Transmit Level Adjustment

10 The base station shall set the transmit level so that a 1004 Hz tone at a level of -18 dBm<sub>0</sub>  
11 at the network interface produces a  $\pm 2.9$  kHz peak frequency deviation of the transmitted  
12 carrier. Measurement techniques are described in [28].

13 3.1.3.2. Wideband Data Signals

14 See the corresponding section of [26].

15 3.1.4. Limitations on Emissions

16 3.1.4.1. Bandwidth Occupied

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

18 3.1.4.2. Conducted Spurious Emissions

19 Refer to [28].

20 3.1.4.3. Radiated Spurious Emissions

21 Refer to [28].

22 3.1.4.4. Intermodulation

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

25 **3.2. Receiver**

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

### 1 3.2.1. Frequency Parameters

2 See the corresponding section of [26].

### 3 3.2.2. Demodulation Characteristics

4 See the corresponding section of [26].

#### 5 3.2.2.1. Analog Voice Signals

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

- 7 • De-emphasis
- 8 • Expander
- 9 • Receive Audio Level Adjustment

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

#### 13 3.2.2.1.1. De-emphasis

14 See the corresponding section of [26].

#### 15 3.2.2.1.2. Expander

16 See the corresponding section of [26].

#### 17 3.2.2.1.3. Audio Level Adjustment

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

### 21 3.2.3. Limitations on Emissions

22 Refer to [28].

### 23 3.2.4. Other Receiver Parameters

24 System performance is predicated upon receivers meeting [28].

## 25 **3.3. Security and Identification**

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

### 27 3.3.1. Authentication

28 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  
3 message encryption by providing the capability to send encrypted control messages and to  
4 perform the 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  
16 following overhead information is sent as required in messages appended to a *System*  
17 *Parameter Overhead Message* (see 3.7.1.2 for message formats):

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

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  
29 [26], the 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  
11   [26], the 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  
19       the mobile station, it should perform the authentication procedure as defined in  
20       2.3.12.1.9. The base station must then send the order confirmation to the mobile  
21       station containing the algorithm output. When the base station receives a *CDMA*  
22       *Query Order* from the mobile station, it must send the *CDMA Info Order* to the  
23       mobile station. For all other orders, the base station should send one of the  
24       following orders:
- 25           – *Order Confirmation*
- 26           – *Release*

27   3.6.4.   Mobile Station Control on Voice Channel

28   See the corresponding section of [26].

29   3.6.4.1.   Loss of Radio-Link Continuity

30   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  
6 paged, it enters this task. In addition to the orders listed in the corresponding section of  
7 [26], the following orders can be sent to the mobile station, with the resultant confirmation  
8 and action to be taken as 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  
11 sending an *Alert With Info SMS Order Confirmation Message*. The SEQ\_NO received  
12 in the *Alert With Info SMS Order Confirmation Message*, SEQ\_NO<sub>r</sub>, is compared to the  
13 SEQ\_NO transmitted in the last *Alert With Info SMS Message*, SEQ\_NO<sub>s</sub>. If the  
14 comparison results in a match, the base station may transmit the next pending *Alert*  
15 *With Info SMS Message*. If the comparison results in a mismatch, the base station  
16 must not transmit any new Alert With Info SMS messages and may re-transmit the  
17 unacknowledged *Alert With Info SMS Message* until the unacknowledged outstanding  
18 *Alert With Info SMS Message* is received as indicated by a match of SEQ\_NO<sub>r</sub> and  
19 SEQ\_NO<sub>s</sub>. Then, if the channel was allocated to deliver SMS messages, the base  
20 station should send a *Release Order*. Otherwise the base station must remain in the  
21 Waiting for Order Task.

## 22 3.6.4.3.2. Waiting for Answer

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

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

#### 1 3.6.4.4. Conversation

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

- 5 • *Alert with Info SMS*. Within 750 ms, the mobile station confirms the order by  
6 sending an *Alert With Info SMS Order Confirmation Message*. The SEQ\_NO received  
7 in the *Alert With Info SMS Order Confirmation Message*, SEQ\_NO<sub>r</sub>, is compared to the  
8 SEQ\_NO transmitted in the last *Alert With Info SMS Message*, SEQ\_NO<sub>s</sub>. If the  
9 comparison results in a match, the base station may transmit the next pending  
10 Alert With Info SMS message. If the comparison results in a mismatch, the base  
11 station must not transmit any new Alert With Info SMS messages and may re-  
12 transmit the unacknowledged *Alert With Info SMS Message* until that outstanding  
13 *Alert With Info SMS Message* is received as indicated by a match of SEQ\_NO<sub>r</sub> and  
14 SEQ\_NO<sub>s</sub>. The base station must remain in the Conversation Task.

15 If the call is mobile station originated, and if the mobile station re-originated the call based  
16 on receiving a *PACA Message* (PURPOSE<sub>r</sub> = '0010'), the base station should send an *Alert*  
17 *With Information Message*.

#### 18 3.6.5. Delivery of Character Information

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

22 Whenever two sets of character information need to be delivered to a mobile station, the  
23 base station shall transmit the second set of character information using the Flash With  
24 Info order. This allows for PI and SI information to be uniquely specified for each instance  
25 of CNI.  
26

1

2 **3.7. Signaling Formats**

3 In addition to the requirements in this section, see the corresponding section of [26] for  
4 operation in 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*  
9 *Station Control Message* may contain the following words:

## 1 Word 3 - PACA Word

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

## 2 Word 3 - First CDMA Info Word

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

## 3 Word 4 - Second CDMA Info Word

<b>Information Element</b>	<b>Length (bits)</b>
T <sub>1</sub> T <sub>2</sub> = 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  
5 [26]) is as follows:



1

**Table 3.7.1.1-2. PACA PURPOSE Codes**

<b>PURPOSE Code</b>	<b>Function</b>
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  
7 operation in the analog mode.8 Note: The base station shall set EP = '0' in Word 1 of the *System Parameter Overhead*  
9 *Message*, except when implementing optional extended protocol services (see the  
10 corresponding 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  
13 corresponding section of [26] for operation in the analog mode.

## 1 CDMA Capability Global Action Message

Information Element	Length (bits)
T <sub>1</sub> T <sub>2</sub> = 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  
4 [26]) is as follows:

- 5 CDMA\_FREQ — Channel number of the CDMA frequency assignment to  
6 acquire.
- 7 CDMA\_AVAIL — Set to '1' if Band Class 0 CDMA is available (see [5]).
- 8 ADD\_CDMA\_AVAIL — Set to '1' if additional CDMA systems are available.

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

11

**Table 3.7.1.2.3-1. Global Action Message  
Types**

12

Action Code	Type
0100	CDMA Capability

13

## 14 3.7.1.2.3. Registration ID Message

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

## 17 3.7.1.2.4. Control-Filler Message

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

## 1 3.7.1.3. Data Restrictions

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

## 3 3.7.2. Forward Analog Voice Channel

4 See the corresponding section of [26].

## 5 3.7.2.1. Mobile Station Control Message

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

## 8 Word 2 - First Alert With Info SMS Word

Information Element	Length (bits)
T <sub>1</sub> T <sub>2</sub> = 01	2
RL_W	7
SEQ_NO	3
B/F	2
TASK_TM	1
RSVD = 00000	5
INFO_DATA	8
P	12

## 9 Word 3 - Second Alert With Info SMS Word

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

## 10 Word N - (N-1) Alert With Info SMS Word

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

11

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

3           RL\_W       — The remaining length, in Words, of the Alert With Info SMS  
4                           word.

5           SEQ\_NO     — Sequence number. This field contains the modulo-8 sequence  
6                           number of the *Alert With Info SMS Message*. This field shall be  
7                           initialized to '000', and reset to '000' when transmitting a new  
8                           SMS teleservice message.

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

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

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

28           INFO\_DATA — Info data. This field contains the SMS teleservice message  
29                           data (see [27]).

30 Selected Control Messages (see 2.7.2.1.1 and 3.7.2.1.1) are enciphered using the Cellular  
31 Message Encryption Algorithm (see 2.5.1 in [14] Revision C) or the Enhanced Cellular  
32 Message Encryption Algorithm (see 2.5.2 in [14]). For each message, the enciphered fields  
33 are designated. The messages are grouped by channel designation.

#### 34 3.7.2.1.1. Encrypted Control Messages

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

#### 37 3.7.2.1.2. Alert With Info Message

38 ~~See the corresponding section of [26].~~

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

40 The subsequent words contain a character representation. Each character transmitted is  
41 represented in IA5 form in a field of 8 bits. Each word contains up to three characters. The  
42 24 bits that comprise the three characters in each FVC word are treated by the encryption  
43 procedure as a single message. No additional fields are encrypted.

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

- 3 • SYNC[0] = 0x00
- 4 • SYNC[1] = 0x00
- 5 • DATA\_TYPE=0

#### 6 3.7.2.1.3. Flash With Info Message

7 ~~See the corresponding section of [26].~~

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

9 The subsequent words contain a character representation. Each character transmitted is  
10 represented in IA5 form in a field of 8 bits. Each word contains up to three characters. The  
11 24 bits that comprise the three characters in each FVC word are treated by the encryption  
12 procedure as a single message. No additional fields are encrypted.

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

- 15 • SYNC[0] = 0x00
- 16 • SYNC[1] = 0x00
- 17 • DATA\_TYPE= 0

#### 18 3.7.2.1.4. Alert With Info SMS Message

19 The Word 2 - First Alert With Info SMS Word contains fields B/F, TASK\_TM, RSVD and  
20 INFO\_DATA that are encrypted by the encryption procedure. No additional fields in Word 2  
21 are encrypted.

22 Subsequent Alert With Info SMS Words contain the INFO\_DATA field - representation of  
23 message data sent by the SMS teleservice. The INFO\_DATA fields of all subsequent Alert  
24 With Info SMS Words are encrypted. No additional fields of subsequent Alert With Info SMS  
25 Words are encrypted.

26 The encrypted fields of Word 2 - First Alert With SMS Word and all INFO\_DATA fields of the  
27 same Alert With Info SMS message are treated by the encryption procedure as a single  
28 message.

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

- 31 • SYNC[0] = 0x00
- 32 • SYNC[1] = 0x00
- 33 • DATA\_TYPE= 1

#### 35 3.7.2.2. Reserved



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 B. ANNEX B MOBILE STATION DATABASE

### 2 B.1 Introduction

3 This is an informative annex that lists the numeric indicators that are described in this  
 4 document and are stored in the mobile station's permanent or semi-permanent memory.  
 5 Some of these indicators are required; other indicators are optional and are so noted.  
 6 The indicators are organized in this annex according to two categories:

- 7 • Mobile station indicators These indicators are global to the mobile station and  
 8 independent of the mobile station's NAMs.
- 9 • NAM indicators These indicators specify parameters associated with the  
 10 mobile station's NAM.

11 The description of each indicator shown below includes the indicator's name, the number of  
 12 bits it contains, and the section in this document where it is defined. Permanent indicators  
 13 are denoted by the "p" subscript; semi-permanent indicators are denoted by the "s-p"  
 14 subscript.

### 15 B.2 Mobile Station Indicators

16 Mobile station indicators are organized into permanent mobile station indicators and semi-  
 17 permanent mobile station indicators.

#### 18 B.2.1 Permanent Mobile Station Indicators

19 Permanent mobile station indicators specify physical station configuration and attributes,  
 20 independent of NAM. No additional permanent indicators are defined in this document.  
 21

22 Semi-permanent mobile station indicators are retained when the mobile station power is  
 23 turned off. These indicators are associated with mobile station registration. They are  
 24 independent of the NAM in use. Analog indicators are listed in Table B.2.2-1.  
 25

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

Indicator	Number of Bits	Where Defined	Notes
NXTREG <sub>S-p</sub>	21	2.3.4.1	
SID <sub>S-p</sub>	15	2.3.4.1	
LOCAID <sub>S-p</sub>	12	2.3.4.2	
PUREG <sub>S-p</sub>	1	2.3.4.2	

27

### 28 B.3 NAM Indicators

29 Each mobile station contains one or more NAMs. Table B.3-1 lists the permanent and  
 30 semi-permanent values associated with each NAM.  
 31

1

**Table B.3-1. NAM Indicators**

<b>Indicator</b>	<b>Number of Bits</b>	<b>Where Defined</b>	<b>Notes</b>
FIRSTCHP <sub>p</sub>	11	2.3.7	
SSD_A <sub>S-p</sub>	64	2.3.12.1. 1	Shared Secret Data A
SSD_B <sub>S-p</sub>	64	2.3.12.1. 1	Shared Secret Data B
COUNT <sub>S-p</sub>	6	2.3.12.1. 3	Call History Parameter
IMSI_M_S <sub>p</sub>	34	2.3.1	Includes IMSI_M_S1 <sub>p</sub> and IMSI_M_S2 <sub>p</sub> .
HOME_SID <sub>p</sub>	15	2.3.8	
ACCOLC <sub>p</sub>	4	2.3.5	

2