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SIGNALING CONFORMANCE TEST SPECIFICATION FOR INTERWORKING OF CDMA2000 1X AND HIGH RATE PACKET DATA SYSTEMS REVISION 0

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1 **FOREWORD**

2 **Introduction**

3 This specification defines air interface signaling conformance tests for CDMA/HRPD mobile
4 stations/access terminals. It is applicable to P_REV_IN_USE equal to or less than seven, and/or
5 access terminals supporting revision 0 and/or revision A of [4].

6 In this document, 'mobile station' or 'access terminal' refers to a subscriber terminal, handset,
7 PDA, wireless local loop unit, or any other CDMA/HRPD subscriber terminal that communicates
8 with the base station at the air interface. 'Base station' or 'access network' refers to the
9 composite functionality of the base station and connected network elements. A cabled
10 connection is typically used for the air interface connection between the mobile station and an
11 emulated base station(s).

12 **Testing Objective**

13 The objective of these tests is to demonstrate mobile station signaling conformance with base
14 station equipment compliant to the cdma2000^{®1} family of standards. References to the applicable
15 standard functionality are listed in the traceability section of each test case.

16 **Execution Strategy**

17 All features supported by the base station, such as Signaling Message Encryption,
18 Authentication, Voice Privacy, etc. should be enabled.

19 All applicable tests should be executed for all supported Band Classes and Radio Configurations.

20 The following general comments apply to all tests:

- 21 a. Unless specified otherwise in a test case, channel conditions for a test shall be set to
22 have low FER.
- 23 b. Base stations should be configured for normal operation as specified in [1] unless
24 otherwise specified in a specific test.
- 25 c. Unless otherwise specified, the Reverse Traffic Channel should be operated at a
26 sufficiently high E_b/N_0 to ensure insignificant (for example, less than 1%) FER.

27 **Supplementary Terms and Definitions**

28

29 **1x** – A system compliant with 3GPP2 C.S0001, C.S0002, C.S0003, C.S0004 and C.S0005.

30 **Active Mode** – An AT is in Active Mode when it has a session established with an HRPD system,
31 a PPP session established and an air-interface connection open with the HRPD system.

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

- 1 **AN**- Access Network
- 2 **AT** – Access Terminal
- 3 **Band Class** - A set of frequency channels and a numbering scheme for these channels.
- 4 **Base Station** - A fixed station used for communicating with mobile stations. In this document, the
5 term base station refers to the entire cellular system infrastructure including transceiver
6 equipment and Mobile Switching Center.
- 7 **BS** – See base station.
- 8 **CDMA** - See Code Division Multiple Access.
- 9 **Code Division Multiple Access (CDMA)** - A technique for spread-spectrum multiple-access
10 digital communications that creates channels through the use of unique code sequences.
- 11 **Dormant Mode** – An AT is in Dormant Mode when it has a session established with an HRPD
12 system, and has a PPP session established, but does not have a connection open with that
13 system.
- 14 **E_b/N_o** - Energy-per-bit-to noise-per-hertz ratio.
- 15 **f-csch** - Forward common signaling logical channel.
- 16 **f-dsch** - Forward dedicated signaling logical channel.
- 17 **FER** - Frame Error Rate of Forward Traffic Channel.
- 18 **HRPD** – High Rate Packet Data
- 19 **Hybrid AT** – An AT capable of operating on both a cdma2000 1x and HRPD system.
- 20 **Idle Mode** – An AT is in Idle Mode when it has a session established with the HRPD system but
21 does not have a PPP session established.
- 22 **IOS** – Interoperability Specification.
- 23 **IP** – Internet Protocol.
- 24 **Mobile IP** - A packet data session where the user continuously maintains mobility bindings at the
25 Home Agent and there is no lapse in Mobile IP registrations/re-registrations (i.e., the IP address
26 is persistent).
- 27 **Mobile Station (MS)** - A station that communicates with a base station while in motion or during
28 halts at unspecified points.
- 29 **MS** – See Mobile Station
- 30 **MSC** - See Mobile Switching Center
- 31 **Mobile Switching Center (MSC)** - A configuration of equipment that provides radiotelephone
32 service. Also called the Mobile Telephone Switching Office (MTSO).
- 33 **P_REV_IN_USE** – Protocol revision level currently in use by a mobile station
- 34 **Packet** - The unit of information exchanged between the service option applications of the base
35 station and the mobile station.
- 36 **PN** - Pseudonoise
- 37 **PPP** – Point-to-Point Protocol
- 38 **r-csch** - Reverse common signaling logical channel
- 39 **r-dsch** - Reverse dedicated signaling logical channel

1 **Radio Configuration (RC)** - A set of Forward Traffic Channel and Reverse Traffic Channel
2 transmission formats that are characterized by physical layer parameters such as transmission
3 rates, modulation characteristics and spreading rate.

4 **RC** - See Radio configuration.

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

7 **System** – A system is a cellular telephone service or personal communications service that
8 covers a geographical area such as a city, metropolitan region, country, or group of countries.

9 Document References

10 The following documents contain provisions, which through reference in this text, constitute
11 provisions of this document. At the time of publication, the editions indicated were valid. All
12 standards are subject to revision, and parties to agreements based on this Standard are
13 encouraged to investigate the possibility of applying the most recent editions of the standards
14 indicated below. ANSI and TIA maintain registers of currently valid national standards published
15 by them. Unless otherwise noted, references are considered normative.

1. 3GPP2 C.S0003-A, *Medium Access Control (MAC) Standard for cdma2000 Spread Spectrum Systems*.
2. 3GPP2 C.S0005-A, *Upper Layer (Layer 3) Signaling Standard for cdma2000 Spread Spectrum Systems*.
3. 3GPP2 C.S0015-A, *Short Message Service (SMS) for Wideband Spread Spectrum Systems - Release A, 2002*
4. 3GPP2 C.S0024-A, *cdma2000 High Rate Packet Data Air Interface Specification*
5. 3GPP2 A.S0009-A, *Interoperability Specification (IOS) for High Rate Packet Data (HRPD) Radio Access Network Interfaces with Session Control in the Packet Control Function*
6. 3GPP2 C.S0075-0, *Interworking Specification for cdma2000 1x and High Rate Packet Data Systems*
7. (Informative) 3GPP2 S.R0108-0 *HRPD-cdma2000 1x Interoperability for Voice and Data System Requirements*

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1 **1 INTERWORKING OF 1X AND HRPD – HRPD IDLE MODE**

2 For HRPD test cases described in Chapter 1, the terms mobile station and base station represent
3 the access terminal (AT) and access network (AN) respectively.

4 For all tests in Chapter 1, Session Security should be enabled if supported.

5 **1.1 AT Voice Origination in HRPD Idle Mode**

6 1.1.1 Definition

7 This test verifies a voice origination call when in HRPD Idle Mode.

8 1.1.2 Traceability

9 (see [6])

10 (see [7])

11 (see [4])

12 Chapter 7 Session Layer

13 Chapter 8 Connection Layer

14 Chapter 10 MAC Layer

15 (see [5])

16 Chapter 3 HRPD IOS Call Flows

17 (see [2])

18 2.2.6.2.5 Mobile Station Origination Operation

19 2.6.3 System Access State

20 2.6.3.5 Mobile Station Origination Attempt Substate

21 2.6.4 Mobile Station Control on the Traffic Channel State

22 2.7.1.3.2.4 Origination Message

23 2.7.2.3.2.15 Service Option Control Message

24 2.7.3 Orders

25 3.6.3.5 Response to Origination Message

26 3.6.4 Traffic Channel Processing

27 3.7.2.3.2.21 Extended Channel Assignment Message

28 3.7.3.3.2.3 Alert With Information Message

29 3.7.3.3.2.20 Service Connect Message

30 3.7.4 Orders

31 3.7.5.5 Signal

32 1.1.3 Call Flow Example(s)

33 None.

- 1 1.1.4 Method of measurement
- 2 a. Connect the Hybrid AT to the AN as shown in Figure A-1 with AN 1 configured as
- 3 cdma2000 1x and AN 2 configured as HRPD.
- 4 b. Ensure that the AT has an HRPD session established with AN 2 but does not have a
- 5 PPP session established. Note the UATI assigned to the AT.
- 6 c. Initiate a voice call from the Hybrid AT.
- 7 d. Verify the call completes and verify CDMA user data in both directions.
- 8 e. End the call.
- 9 f. Cause the AT to access the HRPD system.
- 10 g. Verify that the AT uses the UATI assigned in step b.

11 1.1.5 Minimum Standard

12 The AT shall comply with step d and g.

13 **1.2 AT Voice Termination in HRPD Idle Mode**

14 1.2.1 Definition

15 This test verifies a voice termination call when in HRPD Idle Mode.

16 1.2.2 Traceability

17 (see [6])

18 (see [7])

19 (see [4])

20	Chapter 7	Session Layer
21	Chapter 8	Connection Layer
22	Chapter 10	MAC Layer
23	(see [5])	
24	Chapter 3	HRPD IOS Call Flows
25	(see [2])	
26	2.2.6.2.5	Mobile Station Origination Operation
27	2.6.3	System Access State
28	2.6.3.5	Mobile Station Origination Attempt Substate
29	2.6.4	Mobile Station Control on the Traffic Channel State
30	2.7.1.3.2.4	Origination Message
31	2.7.2.3.2.15	Service Option Control Message
32	2.7.3	Orders
33	3.6.3.5	Response to Origination Message
34	3.6.4	Traffic Channel Processing
35	3.7.2.3.2.21	Extended Channel Assignment Message
36	3.7.3.3.2.3	Alert With Information Message

1 3.7.3.3.2.20 Service Connect Message

2 3.7.4 Orders

3 3.7.5.5 Signal

4 1.2.3 Call Flow Example(s)

5 None

6 1.2.4 Method of measurement

7 a. Connect the Hybrid AT to the AN as shown in Figure A-1 with AN 1 configured as
8 cdma2000 1x and AN 2 configured as HRPD.

9 b. Ensure that the AT has an HRPD session established with AN 2 but does not have a
10 PPP session established. Note the UATI assigned to the AT.

11 c. Initiate a voice call to the Hybrid AT.

12 d. Verify the call completes and verify CDMA user data in both directions.

13 e. End the call.

14 h. Cause the AT to access the HRPD system.

15 f. Verify that the AT uses the UATI assigned in step b.

16 1.2.5 Minimum Standard

17 The AT shall comply with step d and g.

18 **1.3 AT SMS Origination in HRPD Idle Mode**

19 1.3.1 Definition

20 This test verifies SMS Origination when in HRPD Idle Mode.

21 1.3.2 Traceability

22 (see [6])

23 (see [7])

24 (see [4])

25 Chapter 7 Session Layer

26 Chapter 8 Connection Layer

27 Chapter 10 MAC Layer

28 (see [5])

29 Chapter 3 HRPD IOS Call Flows

30 (see [3])

31 1.3.3 Call Flow Example(s)

32 None

33 1.3.4 Method of measurement

34 a. Connect the Hybrid AT to the AN as shown in Figure A-1 with AN 1 configured as
35 cdma2000 1x and AN 2 configured as HRPD.

1 1.4.5 Minimum Standard

2 The AT shall comply with steps d, f and g.

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1 **2 INTERWORKING OF 1X AND HRPD – HRPD ACTIVE MODE**

2 For HRPD test cases described in Chapter 2, the terms mobile station and base station represent
3 the access terminal (AT) and access network (AN) respectively.

4 For all tests in Chapter 2, Session Security should be enabled if supported.

5 **2.1 AT Voice Origination in HRPD Active Mode**

6 Note: Hybrid ATs may not support this feature

7 2.1.1 Definition

8 This test verifies a voice origination call when in HRPD Active Mode.

9 2.1.2 Traceability

10 (see [6])

11 (see [7])

12 (see [4])

13 Chapter 7 Session Layer

14 Chapter 8 Connection Layer

15 Chapter 10 MAC Layer

16 (see [5])

17 Chapter 3 HRPD IOS Call Flows

18 (see [2])

19 2.2.6.2.5 Mobile Station Origination Operation

20 2.6.3 System Access State

21 2.6.3.5 Mobile Station Origination Attempt Substate

22 2.6.4 Mobile Station Control on the Traffic Channel State

23 2.7.1.3.2.4 Origination Message

24 2.7.2.3.2.15 Service Option Control Message

25 2.7.3 Orders

26 3.6.3.5 Response to Origination Message

27 3.6.4 Traffic Channel Processing

28 3.7.2.3.2.21 Extended Channel Assignment Message

29 3.7.3.3.2.3 Alert With Information Message

30 3.7.3.3.2.20 Service Connect Message

31 3.7.4 Orders

32 3.7.5.5 Signal

33 2.1.3 Call Flow Example(s)

34 None

1 2.1.4 Method of measurement

- 2 a. Connect the Hybrid AT to the AN as shown in Figure A-1 with AN 1 configured as
3 cdma2000 1x and AN 2 configured as HRPD.
- 4 b. Initiate a HRPD packet data call from the Hybrid AT.
- 5 c. Issue a continuous “ping” command from the Hybrid AT to a remote host.
- 6 d. Initiate a voice call from the Hybrid AT.
- 7 e. Verify the call completes and verify CDMA user data in both directions.
- 8 f. End the voice call.
- 9 g. After call is released, verify that Hybrid AT re-connects the HRPD packet data call and
10 pings are continuous on same PPP session.
- 11 h. End the HRPD packet data call.

12 2.1.5 Minimum Standard

13 The AT shall comply with steps e and g.

14 **2.2 AT Voice Termination in HRPD Active Mode**

15 Note: Hybrid ATs may not support this feature

16 2.2.1 Definition

17 This test verifies a voice termination call when in HRPD Active Mode.

18 2.2.2 Traceability

19 (see [6])

20 (see [7])

21 (see [4])

22 Chapter 7 Session Layer

23 Chapter 8 Connection Layer

24 Chapter 10 MAC Layer

25 (see [5])

26 Chapter 3 HRPD IOS Call Flows

27 (see [2])

28 2.2.6.2.5 Mobile Station Origination Operation

29 2.6.3 System Access State

30 2.6.3.5 Mobile Station Origination Attempt Substate

31 2.6.4 Mobile Station Control on the Traffic Channel State

32 2.7.1.3.2.4 Origination Message

33 2.7.2.3.2.15 Service Option Control Message

34 2.7.3 Orders

35 3.6.3.5 Response to Origination Message

36 3.6.4 Traffic Channel Processing

1	3.7.2.3.2.21	Extended Channel Assignment Message
2	3.7.3.3.2.3	Alert With Information Message
3	3.7.3.3.2.20	Service Connect Message
4	3.7.4	Orders
5	3.7.5.5	Signal

6 2.2.3 Call Flow Example(s)

7 None

8 2.2.4 Method of measurement

- 9 a. Connect the Hybrid AT to the AN as shown in Figure A-1 with AN 1 configured as
- 10 cdma2000 1x and AN 2 configured as HRPD.
- 11 b. Initiate a HRPD packet data call from the Hybrid AT.
- 12 c. Issue a continuous “ping” command from the Hybrid AT to a remote host.
- 13 d. Initiate a voice call to the AT.
- 14 e. Verify the call completes and verify CDMA user data in both directions.
- 15 f. End the voice call.
- 16 g. After call is released, verify that Hybrid AT re-connects the HRPD packet data call on
- 17 the same PPP session and pings are continuous.
- 18 h. End the HRPD packet data call.

19 2.2.5 Minimum Standard

20 The AT shall comply with steps e and g.

21 **2.3 AT SMS Origination in HRPD Active Mode**

22 Note: Hybrid ATs may not support this feature

23 2.3.1 Definition

24 This test verifies SMS Origination when in HRPD Active Mode.

25 2.3.2 Traceability

26 (see [6])

27 (see [7])

28 (see [4])

29 Chapter 7 Session Layer

30 Chapter 8 Connection Layer

31 Chapter 10 MAC Layer

32 (see [5])

33 Chapter 3 HRPD IOS Call Flows

34 (see [3])

1 2.3.3 Call Flow Example(s)

2 None

3 2.3.4 Method of measurement

4 a. Connect the Hybrid AT to the AN as shown in Figure A-1 with AN 1 configured as
5 cdma2000 1x and AN 2 configured as HRPD.

6 b. Initiate a HRPD packet data call from the Hybrid AT.

7 c. Issue a continuous "ping" command from the Hybrid AT to a remote host.

8 d. Instruct the Hybrid AT to send an SMS message to the network on the r-csch

9 e. Verify SMS message is correctly sent to the SMS Message Center.

10 f. After SMS Origination procedure is completed, verify that Hybrid AT starts sending and
11 receiving continuous pings on HRPD on the same PPP session.

12 g. Instruct the Hybrid AT to send an SMS message to the network on the r-dsch.

13 h. Verify SMS message is correctly sent to the SMS Message Center.

14 i. After SMS Origination procedure is completed, verify that Hybrid AT starts sending and
15 receiving continuous pings on HRPD on the same PPP session.

16 j. End the HRPD packet data call.

17 2.3.5 Minimum Standard

18 The AT shall comply with steps e, f, h and i.

19 **2.4 AT SMS Termination in HRPD Active Mode**

20 Note: Hybrid ATs may not support this feature

21 2.4.1 Definition

22 This test verifies SMS termination when in HRPD Active Mode.

23 2.4.2 Traceability

24 (see [6])

25 (see [7])

26 (see [4])

27 Chapter 7 Session Layer

28 Chapter 8 Connection Layer

29 Chapter 10 MAC Layer

30 (see [5])

31 Chapter 3 HRPD IOS Call Flows

32 (see [3])

33 2.4.3 Call Flow Example(s)

34 None

1 2.4.4 Method of measurement

- 2 a. Connect the Hybrid AT to the AN as shown in Figure A-1 with AN 1 configured as
- 3 cdma2000 1x and AN 2 configured as HRPD.
- 4 b. Initiate a HRPD packet data call from the Hybrid AT.
- 5 c. Issue a continuous "ping" command from the Hybrid AT to a remote host.
- 6 d. Instruct the network to send an SMS message to the Hybrid AT on the f-csch.
- 7 e. Verify SMS message is correctly received by the Hybrid AT.
- 8 f. After SMS message is received, verify that Hybrid AT starts sending and receiving
- 9 continuous pings on HRPD on the same PPP session.
- 10 g. Instruct the network to send an SMS message to the Hybrid AT on the f-dsch.
- 11 h. Verify SMS message is correctly received by the Hybrid AT.
- 12 i. After SMS message is received, verify that Hybrid AT starts sending and receiving
- 13 continuous pings on HRPD on the same PPP session.
- 14 j. End the HRPD packet data call.

15 2.4.5 Minimum Standard

16 The AT shall comply with steps e, f, h and i.

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1 **3 INTERWORKING OF 1X AND HRPD – HRPD DORMANT MODE**

2 For HRPD test cases described in Chapter 3, the terms mobile station and base station represent
 3 the access terminal (AT) and access network (AN) respectively.

4 For all tests in Chapter 3, Session Security should be enabled if supported.

5 **3.1 AT Voice Origination in HRPD Dormant Mode**

6 Note: Hybrid ATs may not support this feature

7 3.1.1 Definition

8 This test verifies a voice origination call when in HRPD Dormant Mode.

9 3.1.2 Traceability

10 (see [6])

11 (see [7])

12 (see [4])

13 Chapter 7 Session Layer

14 Chapter 8 Connection Layer

15 Chapter 10 MAC Layer

16 (see [5])

17 Chapter 3 HRPD IOS Call Flows

18 (see [2])

19 2.2.6.2.5 Mobile Station Origination Operation

20 2.6.3 System Access State

21 2.6.3.5 Mobile Station Origination Attempt Substate

22 2.6.4 Mobile Station Control on the Traffic Channel State

23 2.7.1.3.2.4 Origination Message

24 2.7.2.3.2.15 Service Option Control Message

25 2.7.3 Orders

26 3.6.3.5 Response to Origination Message

27 3.6.4 Traffic Channel Processing

28 3.7.2.3.2.21 Extended Channel Assignment Message

29 3.7.3.3.2.3 Alert With Information Message

30 3.7.3.3.2.20 Service Connect Message

31 3.7.4 Orders

32 3.7.5.5 Signal

33 3.1.3 Call Flow Example(s)

34 None

1 3.1.4 Method of measurement

- 2 a. Connect the Hybrid AT to the AN as shown in Figure A-1 with AN 1 configured as
3 cdma2000 1x and AN 2 configured as HRPD.
- 4 b. Initiate a HRPD packet data call from the Hybrid AT.
- 5 c. Wait for Hybrid AT to go dormant.
- 6 d. Initiate a voice call from the Hybrid AT.
- 7 e. Verify the call completes and verify CDMA user data in both directions.
- 8 f. End the voice call.
- 9 g. Verify that PPP connection is not dropped, Hybrid AT is in dormant state and HRPD
10 session is active.
- 11 h. Issue a ping command and verify that pings are successful.
- 12 i. End the HRPD packet data call.

13 3.1.5 Minimum Standard

14 The AT shall comply with steps e, g and h.

15 **3.2 AT Voice Termination in HRPD Dormant Mode**

16 3.2.1 Definition

17 This test verifies a voice termination call when in HRPD Dormant Mode.

18 3.2.2 Traceability

19 (see [6])

20 (see [7])

21 (see [4])

22 Chapter 7

Session Layer

23 Chapter 8

Connection Layer

24 Chapter 10

MAC Layer

25 (see [5])

26 Chapter 3

HRPD IOS Call Flows

27 (see [2])

28 2.2.6.2.5

Mobile Station Origination Operation

29 2.6.3

System Access State

30 2.6.3.5

Mobile Station Origination Attempt Substate

31 2.6.4

Mobile Station Control on the Traffic Channel State

32 2.7.1.3.2.4

Origination Message

33 2.7.2.3.2.15

Service Option Control Message

34 2.7.3

Orders

35 3.6.3.5

Response to Origination Message

36 3.6.4

Traffic Channel Processing

1	3.7.2.3.2.21	Extended Channel Assignment Message
2	3.7.3.3.2.3	Alert With Information Message
3	3.7.3.3.2.20	Service Connect Message
4	3.7.4	Orders
5	3.7.5.5	Signal

6 3.2.3 Call Flow Example(s)

7 None

8 3.2.4 Method of measurement

- 9 a. Connect the Hybrid AT to the AN as shown in Figure A-1 with AN 1 configured as
10 cdma2000 1x and AN 2 configured as HRPD.
- 11 b. Initiate a HRPD packet data call from the Hybrid AT.
- 12 c. Wait for Hybrid AT to go dormant.
- 13 d. Initiate a voice call to the Hybrid AT.
- 14 e. Verify the call completes and verify CDMA user data in both directions.
- 15 f. End the voice call.
- 16 g. Verify that PPP connection is not dropped and Hybrid AT is in dormant state.
- 17 h. Issue a ping command and verify that pings are successful.
- 18 i. End the HRPD packet data call.

19 3.2.5 Minimum Standard

20 The AT shall comply with steps e, g and h.

21 **3.3 AT SMS Origination in HRPD Dormant Mode**

22 3.3.1 Definition

23 This test verifies SMS Origination when in HRPD Dormant Mode.

24 3.3.2 Traceability

25 (see [6])

26 (see [7])

27 (see [4])

28 Chapter 7 Session Layer

29 Chapter 8 Connection Layer

30 Chapter 10 MAC Layer

31 (see [5])

32 Chapter 3 HRPD IOS Call Flows

33 (see [3])

34 3.3.3 Call Flow Example(s)

35 None

1 3.3.4 Method of measurement

- 2 a. Connect the Hybrid AT to the AN as shown in Figure A-1 with AN 1 configured as
3 cdma2000 1x and AN 2 configured as HRPD.
- 4 b. Initiate a HRPD packet data call from the Hybrid AT.
- 5 c. Wait for Hybrid AT to go dormant.
- 6 d. Instruct the Hybrid AT to send an SMS message to the network on the r-csch.
- 7 e. Verify SMS message is correctly sent to the SMS Message Center.
- 8 f. Verify that PPP connection is not dropped and Hybrid AT is in dormant state.
- 9 g. Issue a ping command and verify that pings are successful.
- 10 h. Wait for Hybrid AT to go dormant.
- 11 i. Instruct the Hybrid AT to send an SMS message to the network on the r-dsch.
- 12 j. Verify SMS message is correctly sent to the SMS Message Center.
- 13 k. Verify that PPP connection is not dropped and Hybrid AT is in dormant state.
- 14 l. Issue a ping command from the remote host and verify that the ping is successful.
- 15 m. End the HRPD packet data call.

16 3.3.5 Minimum Standard

17 The AT shall comply with steps e, f, g, j, k and l.

18 **3.4 AT SMS Termination in HRPD Dormant Mode**

19 3.4.1 Definition

20 This test verifies SMS termination when in HRPD Dormant Mode.

21 3.4.2 Traceability

22 (see [6])

23 (see [7])

24 (see [4])

25 Chapter 7 Session Layer

26 Chapter 8 Connection Layer

27 Chapter 10 MAC Layer

28 (see [5])

29 Chapter 3 HRPD IOS Call Flows

30 (see [3])

31 3.4.3 Call Flow Example(s)

32 None

33 3.4.4 Method of measurement

- 34 a. Connect the Hybrid AT to the AN as shown in Figure A-1 with AN 1 configured as
35 cdma2000 1x and AN 2 configured as HRPD.
- 36 b. Initiate a HRPD packet data call from the Hybrid AT.

- 1 c. Wait for Hybrid AT to go dormant.
- 2 d. Instruct the network to send an SMS message to the Hybrid AT on the f-csch.
- 3 e. Verify SMS message is correctly received by the Hybrid AT.
- 4 f. Verify that PPP connection is not dropped and Hybrid AT is in dormant state.
- 5 g. Issue a ping command from the remote host and verify that the ping is successful.
- 6 h. Wait for Hybrid AT to go dormant.
- 7 i. Instruct the network to send an SMS message to the Hybrid AT on the f-dsch.
- 8 j. Verify SMS message is correctly received by the Hybrid AT.
- 9 k. Verify that PPP connection is not dropped and Hybrid AT is in dormant state.
- 10 l. Issue a ping command and verify that pings are successful.
- 11 m. End the HRPD packet data call.

12 3.4.5 Minimum Standard

13 The AT shall comply with steps e, f, g, j, k and l.

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1 **4 INTER TECHNOLOGY SWITCHING**

2 For HRPD test cases described in Chapter 4, the terms mobile station and base station represent
 3 the access terminal (AT) and access network (AN) respectively.

4 For all tests in Chapter 4, Session Security should be enabled if supported.

5 **4.1 Inter Technology Switching – Dormant HRPD to cdma2000 1x**

6 4.1.1 Definition

7 This test verifies inter-technology switching from dormant HRPD to cdma2000 1x using mobile IP.

8 This test only applies to AT that are capable of switching from HRPD to cdma2000 1x while the

9 AT is dormant. The algorithm for switching is AT dependent and should be known before test
 10 case execution. The test should be repeated using all supported revisions of [4] supported by the
 11 AT and AN.

12 4.1.2 Traceability

13 (see [6])

14 (see [7])

15 (see [4])

16 Chapter 7 Session Layer

17 Chapter 8 Connection Layer

18 Chapter 10 MAC Layer

19 (see [5])

20 Chapter 3 HRPD IOS Call Flows

21 (see [2])

22 2.2.6.2.5 Mobile Station Origination Operation

23 2.6.3 System Access State

24 2.6.3.5 Mobile Station Origination Attempt Substate

25 2.6.4 Mobile Station Control on the Traffic Channel State

26 2.7.1.3.2.4 Origination Message

27 2.7.2.3.2.15 Service Option Control Message

28 2.7.3 Orders

29 3.6.3.5 Response to Origination Message

30 3.6.4 Traffic Channel Processing

31 3.7.2.3.2.21 Extended Channel Assignment Message

32 3.7.3.3.2.3 Alert With Information Message

33 3.7.3.3.2.20 Service Connect Message

34 3.7.4 Orders

35 3.7.5.5 Signal

1 4.1.3 Call Flow Example(s)

2 None

3 4.1.4 Method of measurement

- 4 a. Connect the Hybrid AT to the AN as shown in Figure A-1 with AN 1 configured as
5 HRPD and AN 2 configured as cdma2000 1x.
- 6 b. Configure the Hybrid AT for Mobile IP mode.
- 7 c. Cause the Hybrid AT to acquire AN 1 configured as HRPD.
- 8 d. Initiate a HRPD packet data call from the Hybrid AT.
- 9 e. Record the IP address assigned to the Hybrid AT.
- 10 f. Wait for Hybrid AT to go dormant.
- 11 g. Cause the AT terminal to switch from AN 1, configured as HRPD to AN 2 configured as
12 cdma2000 1x.
- 13 h. Verify Hybrid AT is dormant for data (active pilot set) on AN 2 configured as cdma2000
14 1x.
- 15 i. Issue a “ping” command from the remote host to the Hybrid AT using the IP address
16 assigned to the AT in step e.
- 17 j. Verify the Hybrid AT is active for data on AN 2 configured for cdma2000 1x, and verify
18 the remote host receives a “ping” response from the Hybrid AT.
- 19 k. End the call.
- 20 l. Repeat steps a-k using all supported revisions of [4] by the AT and AN.

21 4.1.5 Minimum Standard

22 The AT shall comply with steps h and j

23 **4.2 Inter Technology Switching – Active HRPD to cdma2000 1x**

24 4.2.1 Definition

25 This test verifies inter-technology switching from active HRPD to cdma2000 1x using mobile IP.
26 This test only applies to AT that are capable of switching from HRPD to cdma2000 1x while the
27 AT is active for data. The algorithm for switching is AT dependent and should be known before
28 test case execution. The test should be repeated using all supported revisions of [4] supported by
29 the AT and AN.

30 4.2.2 Traceability

31 (see [6])

32 (see [7])

33 (see [4])

34	Chapter 7	Session Layer
35	Chapter 8	Connection Layer
36	Chapter 10	MAC Layer
37	(see [5])	
38	Chapter 3	HRPD IOS Call Flows

- 1 (see [2])
- 2 2.2.6.2.5 Mobile Station Origination Operation
- 3 2.6.3 System Access State
- 4 2.6.3.5 Mobile Station Origination Attempt Substate
- 5 2.6.4 Mobile Station Control on the Traffic Channel State
- 6 2.7.1.3.2.4 Origination Message
- 7 2.7.2.3.2.15 Service Option Control Message
- 8 2.7.3 Orders
- 9 3.6.3.5 Response to Origination Message
- 10 3.6.4 Traffic Channel Processing
- 11 3.7.2.3.2.21 Extended Channel Assignment Message
- 12 3.7.3.3.2.3 Alert With Information Message
- 13 3.7.3.3.2.20 Service Connect Message
- 14 3.7.4 Orders
- 15 3.7.5.5 Signal
- 16 4.2.3 Call Flow Example(s)
- 17 None
- 18 4.2.4 Method of measurement
- 19 a. Connect the Hybrid AT to the AN as shown in Figure A-1 with AN 1 configured as
- 20 HRPD and AN 2 configured as cdma2000 1x.
- 21 b. Configure the Hybrid AT for mobile IP mode.
- 22 c. Cause the Hybrid AT to acquire AN 1 configured as HRPD.
- 23 d. Initiate a HRPD packet data call from the Hybrid AT.
- 24 e. Record the IP address assigned to the Hybrid AT.
- 25 f. Issue a continuous “ping” command from the remote host to the Hybrid AT using the IP
- 26 address assigned to the AT in step e.
- 27 g. Ensure that AT is active for data on AN 1 configured as HRPD and verify the remote
- 28 host receives a “ping” response from the AT.
- 29 h. Cause the AT terminal to switch from AN 1, configured as HRPD to AN 2 configured as
- 30 cdma2000 1x.
- 31 i. Verify Hybrid AT is active for data on AN 2 configured as cdma2000 1x and verify the
- 32 remote host receives a “ping” response from the Hybrid AT.
- 33 j. End the call.
- 34 k. Repeat steps a-k using all supported revisions of [4] by the AT and AN.
- 35 4.2.5 Minimum Standard
- 36 The AT shall comply with step i

1 **4.3 Inter Technology Switching – Dormant cdma2000 1x to HRPD**

2 4.3.1 Definition

3 This test verifies inter-technology handoff from dormant cdma2000 1x to HRPD using mobile IP.
 4 This test only applies to AT that are capable of switching from cdma2000 1x to HRPD while the
 5 AT is dormant. The algorithm for switching is AT dependent and should be known before test
 6 case execution. The test should be repeated using all supported revisions of [4] supported by the
 7 AT and AN.

8 4.3.2 Traceability

9 (see [6])

10 (see [7])

11 (see [4])

12 Chapter 7 Session Layer

13 Chapter 8 Connection Layer

14 Chapter 10 MAC Layer

15 (see [5])

16 Chapter 3 HRPD IOS Call Flows

17 (see [2])

18 2.2.6.2.5 Mobile Station Origination Operation

19 2.6.3 System Access State

20 2.6.3.5 Mobile Station Origination Attempt Substate

21 2.6.4 Mobile Station Control on the Traffic Channel State

22 2.7.1.3.2.4 Origination Message

23 2.7.2.3.2.15 Service Option Control Message

24 2.7.3 Orders

25 3.6.3.5 Response to Origination Message

26 3.6.4 Traffic Channel Processing

27 3.7.2.3.2.21 Extended Channel Assignment Message

28 3.7.3.3.2.3 Alert With Information Message

29 3.7.3.3.2.20 Service Connect Message

30 3.7.4 Orders

31 3.7.5.5 Signal

32 4.3.3 Call Flow Example(s)

33 None

34 4.3.4 Method of measurement

35 a. Connect the Hybrid AT to the AN as shown in Figure A-1 with AN 1 configured as
 36 cdma2000 1x and AN 2 configured as HRPD.

37 b. Configure the Hybrid AT for mobile IP mode.

38 c. Cause the Hybrid AT to acquire AN 1 configured as cdma2000 1x.

- 1 d. Initiate a cdma2000 1x packet data call from the Hybrid AT.
- 2 e. Record the IP address assigned to the Hybrid AT.
- 3 f. Wait for Hybrid AT to go dormant.
- 4 g. Cause the AT terminal to switch from AN 1, configured as cdma2000 1x to AN 2
- 5 configured as HRPD.
- 6 h. Verify Hybrid AT is dormant for data (active pilot set) on AN 2 configured as HRPD.
- 7 i. Issue a "ping" command from the remote host to the Hybrid AT using the IP address
- 8 assigned to the AT in step e.
- 9 j. Verify the Hybrid AT is active for data on AN 2 configured for HRPD, and verify the
- 10 remote host receives a "ping" response from the Hybrid AT.
- 11 k. End the call
- 12 l. Repeat steps a-k using all supported revisions of [4] by the AT and AN.

13 4.3.5 Minimum Standard

14 The AT shall comply with steps h and j.

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1 **5 ANNEX A (INFORMATIVE) - FIGURES**

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Figure A - 1

