Exhibit D

TIA/EIA INTERIM STANDARD

Mobile Station-Base Station Compatibility Standard for Dual-Mode Wideband Spread Spectrum Cellular System

TIA/EIA/IS-95-A

(Revision of TIA/EIA/IS-95)

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TELECOMMUNICATIONS INDUSTRY ASSOCIATION

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Representing the telecommunications industry
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Parameters Message, Neighbor List Message, Global Service Redirection Message, or *Access Parameters Message).*

- The mobile station shall perform the *Mobile Station Page Match Operation* as specified in 6.6.2.3 whenever it receives a *General Page Message, Page Message,* or *Slotted Page Message.*
- The mobile station shall perform the *Mobile Station Order and Message Processing Operation* as specified in 6.6.2.4 whenever a message or order directed to the mobile station is received other than a *General Page Message, Page Message,* or *Slotted Page Message.*
- The mobile station shall perform the *Mobile Station Origination Operation* as specified in 6.6.2.5 if directed by the user to initiate a call.
- If the mobile station supports *Data Burst Message* transmission, it shall perform the *Mobile Station Message Transmission Operation* as specified in 6.6.2.6 if directed by the user to transmit a message.
- The mobile station shall perform the *Mobile Station Power-Down Operation* as specified in 6.6.2.7 if directed by the user to power down.

6.6.2.1 Idle Procedures

6.6.2.1.1 Paging Channel Monitoring Procedures

6.6.2.1.1.1 General Overview

The Paging Channel is divided into 80 ms slots called Paging Channel slots. Paging and control messages for a mobile station operating in the non-slotted mode can be received in any of the Paging Channel slots. Therefore, the non-slotted mode of operation requires the mobile station to monitor all slots.

The Paging Channel protocol also provides for scheduling the transmission of messages for a specific mobile station in certain assigned slots. Support of this feature is optional and may be enabled by each mobile station. A mobile station that monitors the Paging Channel only during certain assigned slots is referred to as operating in the slotted mode. During the slots in which the Paging Channel is not being monitored, the mobile station can stop or reduce its processing for power conservation. A mobile station may not operate in the slotted mode in any state except the *Mobile Station Idle State.*

A mobile station operating in the slotted mode generally monitors the Paging Channel for one or two slots per slot cycle. The mobile station can specify its preferred slot cycle using the SLOT_CYCLE_INDEX field in the *Registration Message, Origination Message,* or *Page Response Message.* The mobile station can also specify its preferred slot cycle using the SLOT_CYCLE_INDEX field of the *Terminal Information* record of the *Status Message* when in the *Mobile Station Control on the Traffic Channel State.* The length of the slot cycle, T, in units of 1.28 seconds,[12] is given by

[12] The minimum length slot cycle consists of 16 slots of 80 ms each, hence 1.28 seconds.

$$T = 2^i,$$

where i is the selected slot cycle index (see 6.6.2.1.1.3).

A mobile station operating in the slotted mode may optionally monitor additional slots to receive broadcast messages and/or broadcast pages, using the procedures defined in 2.4.1.2.2 of TIA/EIA/IS-637.

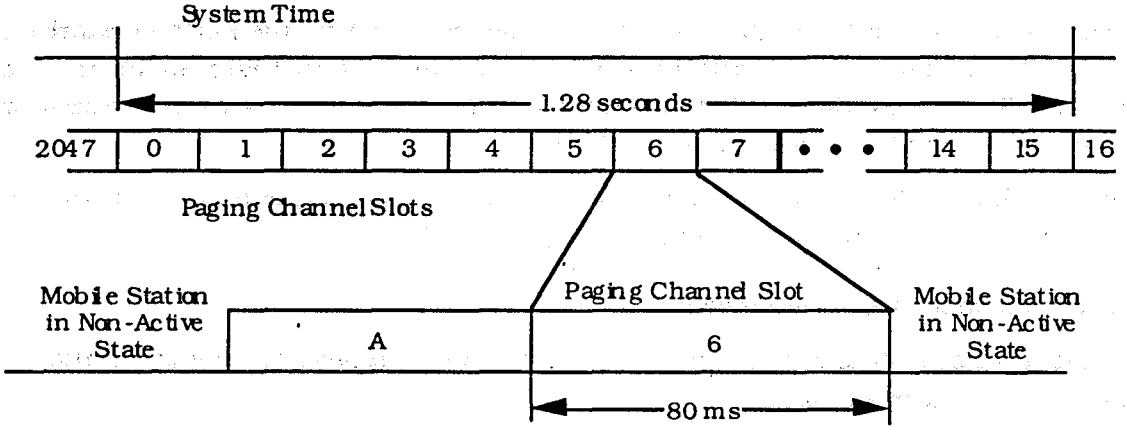
There are 16 × T slots in a slot cycle.

SLOT_NUM is the Paging Channel slot number, modulo the maximum length slot cycle (2048 slots). That is, the value of SLOT_NUM is

$$SLOT\_NUM = \lfloor t/4 \rfloor \bmod 2048,$$

where t is the System Time in frames. For each mobile station, the starting times of its slot cycles are offset from the slot in which SLOT_NUM equals zero by a fixed, randomly selected number of slots as specified in 6.6.2.1.1.3.

Figure 6.6.2.1.1.1-1 shows an example for a slot cycle length of 1.28 seconds, in which the computed value of PGSLOT (see 6.6.2.1.1.3) is equal to 6, so that one of the mobile station's slot cycles begins when SLOT_NUM equals 6. The mobile station begins monitoring the Paging Channel at the start of the slot in which SLOT_NUM equals 6. The next slot in which the mobile station must begin monitoring the Paging Channel is 16 slots later, i.e., the slot in which SLOT_NUM is 22.



A - Reacquisition of CDMA System
6 - Mobile Station's Assigned Paging Channel Slot

Figure 6.6.2.1.1.1-1. Mobile Station Idle Slotted Mode Structure Example (see text)

Slotted Page Messages contain a field called MORE_PAGES which, when set to '0' during a mobile station's assigned slot, indicates that the remainder of the slot will contain no more messages addressed to that mobile station. This allows a mobile station operating in the slotted mode to stop monitoring the Paging Channel as soon as possible.

General Page Messages contain two fields, CLASS_0_DONE and CLASS_1_DONE, which indicate when a mobile station operating in the slotted mode may stop monitoring the Paging Channel. When CLASS_0_DONE is set to '1' during a mobile station's assigned slot, the mobile station has a class 0 IMSI assigned, and the mobile station is operating in the slotted mode, no further messages or records will be directed to the mobile station during the current slot. Similarly, when CLASS_1_DONE is set to '1' during a mobile station's assigned slot, the mobile station has a class 1 IMSI assigned, and the mobile station is operating in the slotted mode, no further messages or records will be directed to the mobile station during the current slot.

A mobile station which is operating in the slotted mode and which has a class 0 IMSI assigned may stop monitoring the Paging Channel after processing a *General Page Message* containing CLASS_0_DONE equal to '1'. Similarly, a mobile station which is operating in the slotted mode and which has a class 1 IMSI assigned may stop monitoring the Paging Channel after processing a *General Page Message* containing CLASS_1_DONE equal to '1'.

The mobile station continues to monitor the Paging Channel for one additional slot unless, within its assigned slot, the mobile station receives a *General Page Message* containing the appropriate indicator permitting it to stop monitoring the Paging Channel (CLASS_0_DONE or CLASS_1_DONE equal to '1', whichever is appropriate) or the mobile station receives a *Slotted Page Message* with the MORE_PAGES field equal to '0'. This allows the base station to carry over a message begun in the assigned slot into the following slot if necessary.

6.6.2.1.1.2 Non-Slotted Mode Requirements

A mobile station operating in the non-slotted mode shall monitor the Paging Channel at all times. If the mobile station declares loss of the Paging Channel (see 6.4.3), the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

When a mobile station monitors the Paging Channel in any state other than the *Mobile Station Idle State*, it shall operate in the non-slotted mode.

6.6.2.1.1.3 Slotted Mode Requirements

The mobile station shall not operate in the slotted mode unless bit 5 of the station class mark is set to '1' (see 2.3.3).

During operation in the slotted mode, the mobile station shall ensure that its stored configuration parameter values are current (see 6.6.2.2). The mobile station shall not operate in the slotted mode if its configuration parameters are not current.

If the mobile station declares a loss of the Paging Channel (see 6.4.3), the mobile station shall enter the *System Determination Substate* of the *Mobile Station Initialization State* with a system lost indication (see 6.6.1.1).

6.6.2.1.1.3.1 Monitoring Assigned Slots

For each of its assigned slots, and for slots monitored to receive broadcast pages and broadcast messages (see 2.4.1.2.2 of TIA/EIA/IS-637), the mobile station shall begin monitoring the Paging Channel in time to receive the first bit of the slot. The mobile station

7.6.1.1 Primary and Secondary CDMA Channels

The Primary and Secondary CDMA Channels are the CDMA Channels on which the mobile station attempts to acquire the CDMA system (see 7.1.1.1).

The base station shall support the Primary CDMA Channel, or the Secondary CDMA Channel, or both. The base station may support additional CDMA Channels.

7.6.1.2 Pilot Channel Operation

The Pilot Channel (see 7.1.3.2) is a reference channel which the mobile station uses for acquisition, timing, and as a phase reference for coherent demodulation.

The base station shall continually transmit a Pilot Channel for every CDMA Channel supported by the base station.

7.6.1.3 Sync Channel Operation

The Sync Channel (see 7.1.3.3) provides the mobile station with system configuration and timing information.

The base station shall transmit at most one Sync Channel for each supported CDMA Channel. If the base station supports the Primary CDMA Channel, the base station shall transmit a Sync Channel on the Primary CDMA Channel. If the base station does not support the Primary CDMA Channel, the base station shall transmit a Sync Channel on the Secondary CDMA Channel.

The base station shall continually send the *Sync Channel Message* on each Sync Channel that the base station transmits.

7.6.2 Paging Channel Processing

During *Paging Channel Processing*, the base station transmits the Paging Channel (see 7.1.3.4) which the mobile station monitors to receive messages while the mobile station is in the *Mobile Station Idle State* and the *System Access State*.

The base station may transmit up to seven Paging Channels on each supported CDMA Channel. For each supported CDMA Channel for which the base station transmits a Sync Channel, the base station shall transmit at least one Paging Channel.

For each Paging Channel that the base station transmits, the base station shall continually send valid Paging Channel messages (see 7.7.2), which may include the *Null Message*.

The base station shall not send any message which is not completely contained within 2 consecutive Paging Channel slots, unless the processing requirements for the message explicitly specify a different size limitation.[10]

[10]See, for example, IS-637 which specifies processing requirements for the *Data Burst Message*.

7.6.2.1 Paging Channel Procedures

7.6.2.1.1 CDMA Channel Determination

To determine the mobile station's assigned CDMA Channel, the base station shall use the hash function specified in 6.6.7.1 with the following inputs:

- Mobile station's MIN or IMSI_S.
- Number of CDMA Channels on which the base station transmits Paging Channels.

7.6.2.1.2 Paging Channel Determination

To determine the mobile station's assigned Paging Channel, the base station shall use the hash function specified in 6.6.7.1 with the following inputs:

- Mobile station's MIN or IMSI_S.
- Number of Paging Channels which the base station transmits on the mobile station's assigned CDMA Channel.

7.6.2.1.3 Paging Slot Determination

To determine the assigned Paging Channel slots for a mobile station with a given slot cycle index, the base station shall select a number PGSLOT using the hash function specified in 6.6.7.1 with the following inputs:

- Mobile station's MIN or IMSI_S.
- Maximum number of Paging Channel slots (2048).

The assigned Paging Channel slots for the mobile station are those slots for which

$$(\lfloor t/4 \rfloor - \mathrm{PGSLOT}) \bmod (16 \times T) = 0,$$

where t is the System Time in frames, and T is the slot cycle length in units of 1.28 seconds given by

$$T = 2^i,$$

where i is the slot cycle index.

7.6.2.1.4 Message Transmission and Acknowledgement Procedures

The Paging Channel acknowledgement procedures facilitate the reliable exchange of messages between the base station and the mobile station on the Paging Channel and Access Channel (see 7.6.3.1.1). The base station uses the fields ACK_TYPE (acknowledgement address type), ACK_SEQ (acknowledgement sequence number), MSG_SEQ (message sequence number), ACK_REQ (acknowledgement required), and VALID_ACK (valid acknowledgement) to support this mechanism. These fields are referred to as layer 2 fields, and the acknowledgement procedures are referred to as layer 2 procedures. All other message fields and the processing thereof are referred to as pertaining to layer 3. (See Appendix C for further discussion of layering.)

Paging Channel messages other than the *Page Message*, *Slotted Page Message*, and *General Page Message* can be addressed, by means of the ADDRESS field, to either a specific mobile

7.7.2 Paging Channel

The Paging Channel is used to send control information to mobile stations that have not been assigned to a Traffic Channel.

7.7.2.1 Paging Channel Structure

7.7.2.1.1 Paging Channel Slot Structure

The Paging Channel is divided into 80 ms slots. The slots are grouped into cycles of 2048 slots (163.84 seconds) referred to as maximum slot cycles. Each maximum slot cycle begins at the start of the frame when System Time, in units of 80 ms, modulo 2048 is zero. The slots of each maximum slot cycle are numbered from 0 to 2047, as shown in Figure 7.7.2.1.1-1. A mobile station operating in the slotted mode monitors the Paging Channel using a slot cycle with a length that is a submultiple of the maximum slot cycle length (see 6.6.2.1.1.3).

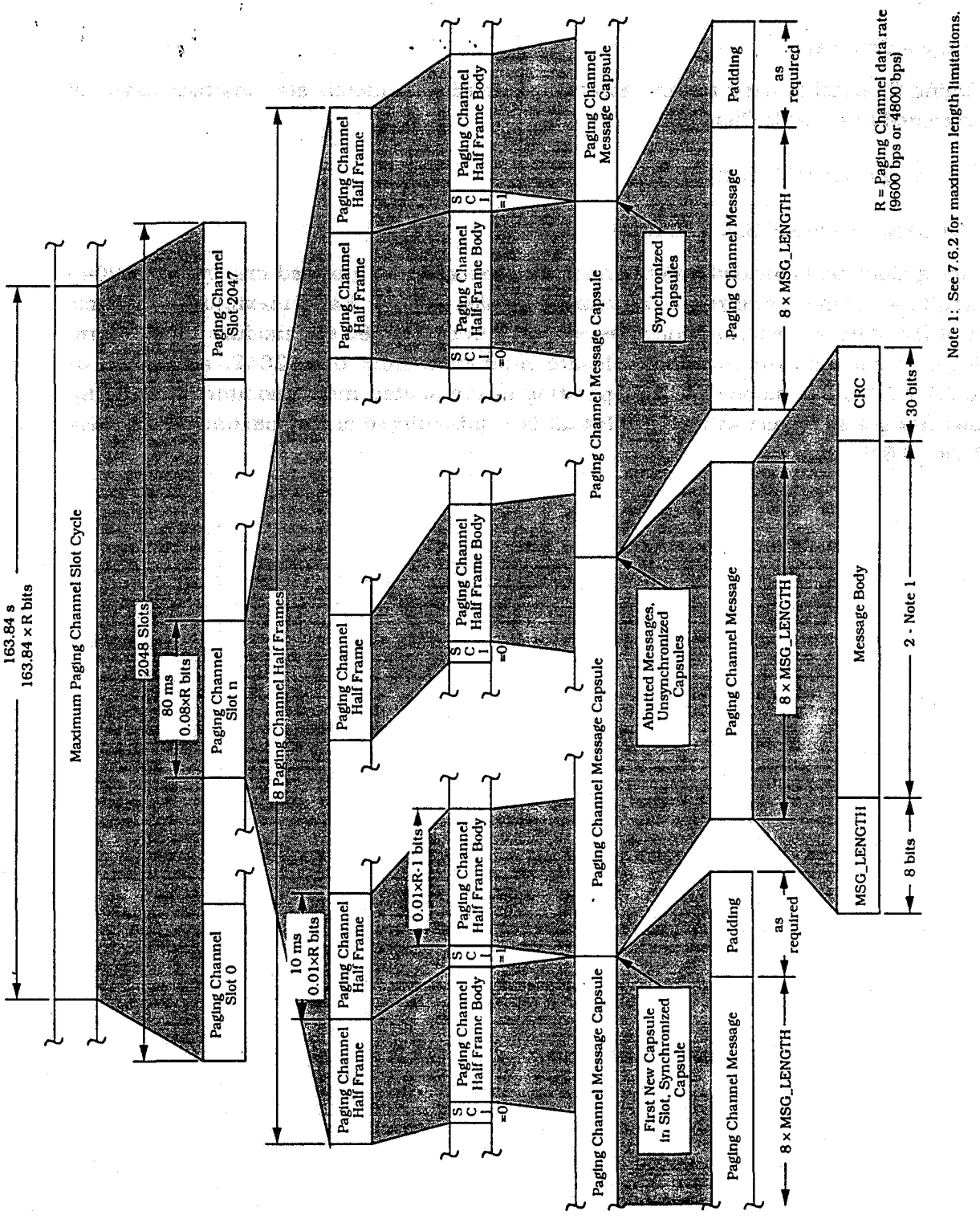


Figure 7.7.2.1.1-1. Paging Channel Structure Example