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TIA/EIA/IS-136.1

# TIA/EIA INTERIM STANDARD

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**800 MHz TDMA Cellular - Radio  
Interface - Mobile Station - Base  
Station Compatibility - Digital Control  
Channel**

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**TIA/EIA/IS-136.1**

**DECEMBER 1994**

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**TELECOMMUNICATIONS INDUSTRY ASSOCIATION**

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# 1. Terminology

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2	<b>AC</b>	Authentication Center .....	IS-41
3	<b>ACC</b>	Analog Control Channel .....	IS-136.2
4	<b>AG</b>	Guard Time for Abbreviated RACH Burst .....	4.4.1
5	<b>AGC</b>	Automatic Gain Control .....	4.4.5
6	<b>ARCH</b>	Access Response Channel .....	2.3.2.2
7	<b>ARM</b>	ARQ Response Mode .....	5.2.5.2
8	<b>ARQ</b>	Automatic Retransmission Request .....	5.4
9	<b>AVC</b>	Analog Voice Channel .....	IS-136.2
10	<b>BC</b>	Begin Continue .....	5.2.2.2
11	<b>BCCH</b>	Broadcast Channel .....	2.3
12	<b>BCN</b>	Broadcast Channel Change Notification Flag .....	4.6 & 5.2.5.2
13	<b>BER</b>	Bit Error Rate .....	6.3.17
14	<b>BI</b>	Begin Indicator .....	5.2.2.1 & 5.2.2.2
15	<b>BMI</b>	Base Station, MSC and Interworking Function .....	IS-41
16	<b>BP</b>	Bit Position .....	4.4
17	<b>BRI</b>	Busy Reserved Idle .....	4.4.2.1
18	<b>BSMC</b>	Base Station Manufacture Code .....	8.3.6
19	<b>BT</b>	Burst Type .....	5.2.1.1
20	<b>BU</b>	Burst Usage .....	5.1.2.5 & 5.2.5.2
21	<b>CDVCC</b>	Coded DVCC .....	IS-136.2
22	<b>CEF</b>	Candidate Eligibility Filtering .....	6.3.3.4.2
23	<b>CI</b>	Change Indicator .....	5.2.1.3 & 5.2.1.4
24	<b>CLI</b>	Continuation Length Indicator .....	5.2.2.1
25	<b>CPE</b>	Coded Partial Echo .....	4.4.2.2
26	<b>CRC</b>	Cyclic Redundancy Check .....	4.4.3.1
27	<b>CSFP</b>	Coded Superframe Phase .....	4.4.8
28	<b>DCC</b>	Digital Color Code .....	IS-136.2
29	<b>DCCH</b>	Digital Control Channel .....	2.1
30	<b>DTC</b>	Digital Traffic Channel .....	IS-136.2
31	<b>DVCC</b>	Digital Verification Color Code .....	IS-136.2
32	<b>E-BCCH</b>	Extended Broadcast Control Channel .....	2.3.3.2
33	<b>EC</b>	E-BCCH Change flag .....	4.6 & 5.2.5.3
34	<b>ECL</b>	E-BCCH Cycle Length .....	4.6
35	<b>EHFC</b>	Extended Hyperframe Counter .....	4.7
36	<b>EHI</b>	Extension Header Indicator .....	5.2.1
37	<b>ESN</b>	Electronic Serial Number .....	8.2
38	<b>F-BCCH</b>	Fast Broadcast Control Channel .....	2.3.3.1
39	<b>FC</b>	F-BCCH Change flag .....	4.6 & 5.2.5.3

1	<b>FDCCH</b>	Forward Digital Control Channel.....	2.3
2	<b>FEC</b>	Forward Error Correction.....	2.2
3	<b>FILLER</b>	Filler Data.....	5.2.5.2
4	<b>FRNO</b>	Frame Number.....	5.2.5.2
5	<b>FRNO MAP</b>	Frame Number Map.....	5.2.1.4
6	<b>G</b>	Guard Time.....	4.4.4
7	<b>HF</b>	Hyperframe.....	4.6
8	<b>HFC</b>	Hyperframe Counter.....	4.7
9	<b>HLR</b>	Home Location Register.....	IS-41
10	<b>IDT</b>	Identity Type.....	5.1.2.1 & 5.2.1.4
11	<b>IE</b>	Information Element.....	6.5 & 7.3
12	<b>IEI</b>	Information Element Identifier.....	7.2
13	<b>IMSI</b>	International Mobile Station Identification.....	8.1.1
14	<b>IRA</b>	International Reference Alphabet (formerly IA5).....	CCITT Rec T.50
15	<b>L2</b>	Layer 2.....	(general)
16	<b>L3</b>	Layer 3.....	(general)
17	<b>L3DATA</b>	Layer 3 Data.....	5.2.1.4
18	<b>L3LI</b>	Layer 3 Length Indicator.....	5.2.1.4
19	<b>LSB</b>	Least Significant Bit.....	(general)
20	<b>LTM</b>	Long-Term MACA.....	6.3.17.1
21	<b>LT_RSS</b>	Long Term Received Signal Strength.....	6.3.17.1
22	<b>MACA</b>	Mobile Assisted Channel Allocation.....	6.3.17
23	<b>MCC</b>	Mobile Country Code.....	8.1.1.1
24	<b>MEA</b>	Message Encryption Algorithm.....	5.2.1.4
25	<b>MEK</b>	Message Encryption Key.....	5.2.1.4
26	<b>MIN</b>	Mobile Station Identification Number.....	8.1.3
27	<b>MM</b>	Message Mapping.....	5.2.5.2
28	<b>MNC</b>	Mobile Network Code.....	8.1.1.1
29	<b>MRLQ</b>	Monitoring Of Radio Link Quality.....	5.5
30	<b>MS</b>	Mobile Station.....	(general)
31	<b>MSB</b>	Most Significant Bit.....	(general)
32	<b>MSID</b>	Mobile Station Identification.....	8.1
33	<b>NEB</b>	Number of E-BCCH slots per Superframe.....	4.10.2
34	<b>NFB</b>	Number of F-BCCH slots per Superframe.....	4.10.2
35	<b>NL</b>	Neighbor List.....	6.4.1.2.1.1
36	<b>NL3M</b>	Number of Layer 3 Messages.....	5.2.1.4
37	<b>NMSI</b>	National Mobile Station Identity.....	8.1.1.1
38	<b>NR</b>	Number of Reserved slots per Superframe.....	4.10.2
39	<b>NSB</b>	Number of S-BCCH slots per Superframe.....	4.10.2
40	<b>OLC</b>	Overload Class.....	6.4.1.1.2.3
41	<b>PAID</b>	PCH Allocation ID.....	4.10
42	<b>PCH</b>	Paging Channel.....	2.3.2.1

1	<b>PCON</b>	Page Continuation.....	4.8 & 5.2.5.2
2	<b>PDU</b>	Protocol Data Unit.....	2.2
3	<b>PE</b>	Partial Echo.....	4.11.2 & 5.3.3.1
4	<b>PEA</b>	Partial Echo Assigned.....	5.2.1.4
5	<b>PF</b>	Paging Frame.....	4.7
6	<b>PFC</b>	Paging Frame Class.....	4.7
7	<b>PFM</b>	Paging Frame Modifier.....	4.7
8	<b>PFN</b>	Paging Frame Number.....	4.7
9	<b>PI</b>	Polling Indicator.....	5.2.1.3
10	<b>PLMN</b>	Public Land Mobile Network.....	8.1.1.1
11	<b>PMSID</b>	Permanent Mobile Station Identity.....	4.10
12	<b>PREAM</b>	Preamble.....	4.4.5
13	<b>PSID</b>	Private System Identification.....	8.3.4
14	<b>PSS</b>	Processed Signal Strength.....	6.3.3.2
15	<b>R</b>	Ramp Time.....	4.4.6
16	<b>R/N</b>	Received/Not Received.....	4.4.2.3
17	<b>RACH</b>	Random Access Control Channel.....	2.3.1
18	<b>RDCCH</b>	Reverse Digital Control Channel.....	2.3
19	<b>RSID</b>	Residential System Identification.....	8.3.5
20	<b>RSS</b>	Received Signal Strength.....	6.3.2.1
21	<b>RSVD</b>	Reserved.....	(general)
22	<b>RTC</b>	Reselection Trigger Conditions.....	6.3.3.4.1
23	<b>S-BCCH</b>	Short Message Service-Broadcast Control Channel.....	2.3.3.3
24	<b>SAP</b>	Service Access Point.....	5.1
25	<b>SCF</b>	Shared Channel Feedback.....	2.3.5
26	<b>SF</b>	Superframe.....	4.5
27	<b>SFP</b>	Superframe Phase.....	4.5
28	<b>SID</b>	System Identification.....	8.3.1
29	<b>SMS</b>	Short Message Service.....	(general)
30	<b>SMSCH</b>	Short Message Service Point-to-Point Channel.....	2.3.2.3
31	<b>SOC</b>	System Operator Code.....	8.3.6
32	<b>SPACH</b>	SMS, PCH and ARCH.....	2.3.2
33	<b>SSD</b>	Shared Secret Data.....	6.3.12.1
34	<b>STM</b>	Short-Term MACA.....	6.3.17.1
35	<b>ST_RSS</b>	Short Term Received Signal Strength.....	6.3.17.2
36	<b>SYNC</b>	Synchronization.....	IS-136.2
37	<b>SYNC+</b>	Additional SYNC for RACH Burst.....	4.4.10
38	<b>TDMA</b>	Time Division Multiplex Access.....	4.4
39	<b>TMSI</b>	Temporary Mobile Station Identification.....	8.1.2
40	<b>UGID</b>	User Group Identification.....	8.4 & 5.2.5.2
41	<b>WER</b>	Word Error Rate.....	6.3.17.4.1.1

## 2. General

---

### 2.1 Specification Scope

---

Two documents together comprise the complete specification information necessary for development of IS-136 based products.

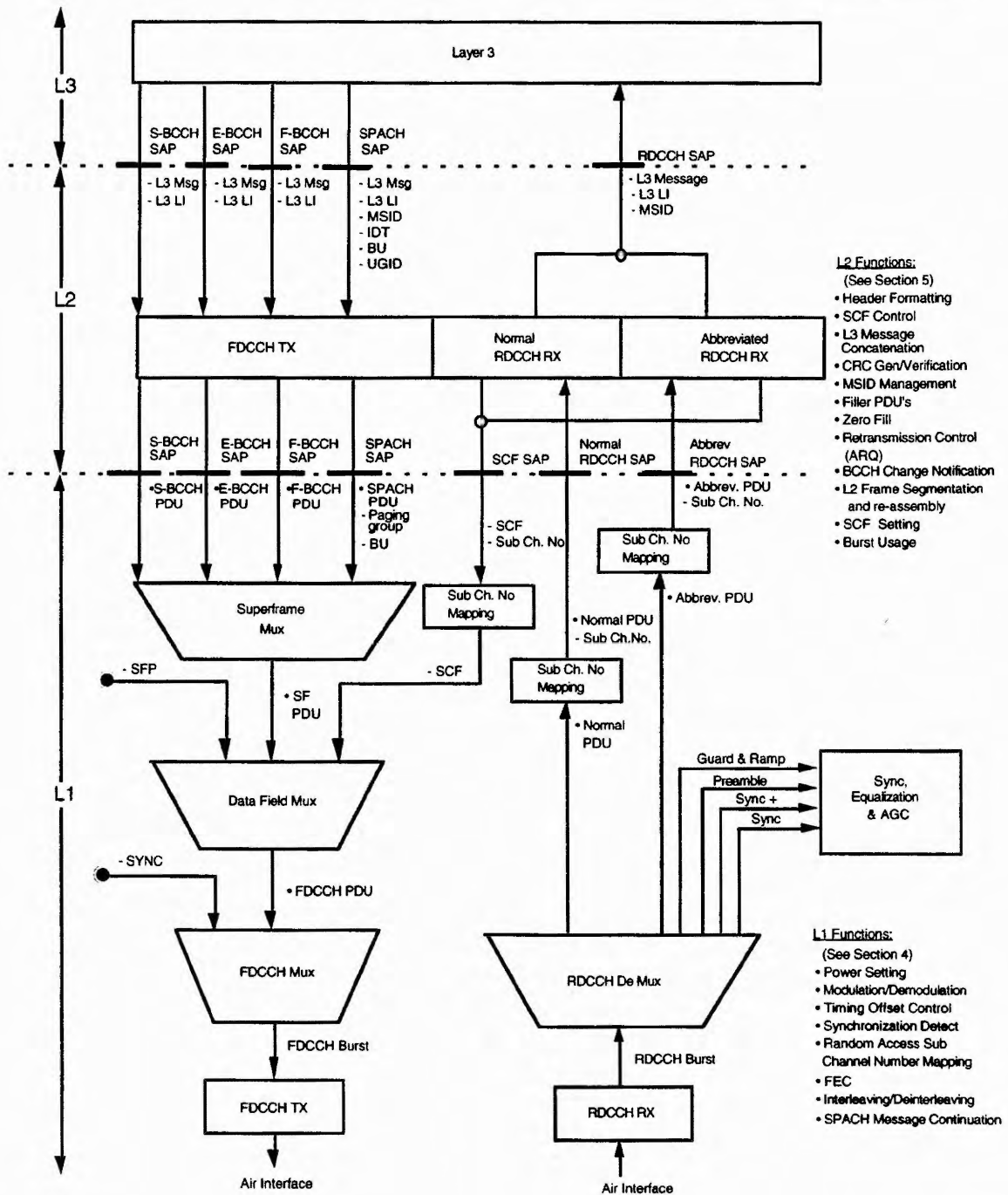
- IS-136.1 (DCCH - Digital Control Channel. A collection of logical channels conveyed on radio bearer channels using  $\pi/4$  - DQPSK modulation that are used for transmission of control information and short user data messages between the base and mobile stations.) - This document contains specification text for the DCCH air interface. Distinct sections for Layer 1, Layer 2, Layer 3 and higher layers descriptions are provided (i.e., a layered document).
- IS-136.2 - A modified TIA/EIA 627 standard with no major architectural changes to the document itself (i.e., unlayered approach maintained). This document addresses the air interface requirements for the Analog Control Channel (ACC), Analog Voice Channel (AVC) and Digital Traffic Channel (DTC - A collection of logical channels conveyed on radio bearer channels using  $\pi/4$  - DQPSK modulation that are used for transmission of user information and related control messages between the base and mobile stations).
- IS-137 - A modified EIA/TIA 628 standard. This document addresses the minimum performance requirements for mobile stations.
- IS-138 - A modified EIA/TIA 629 standard. This document addresses the minimum performance requirements for base stations.



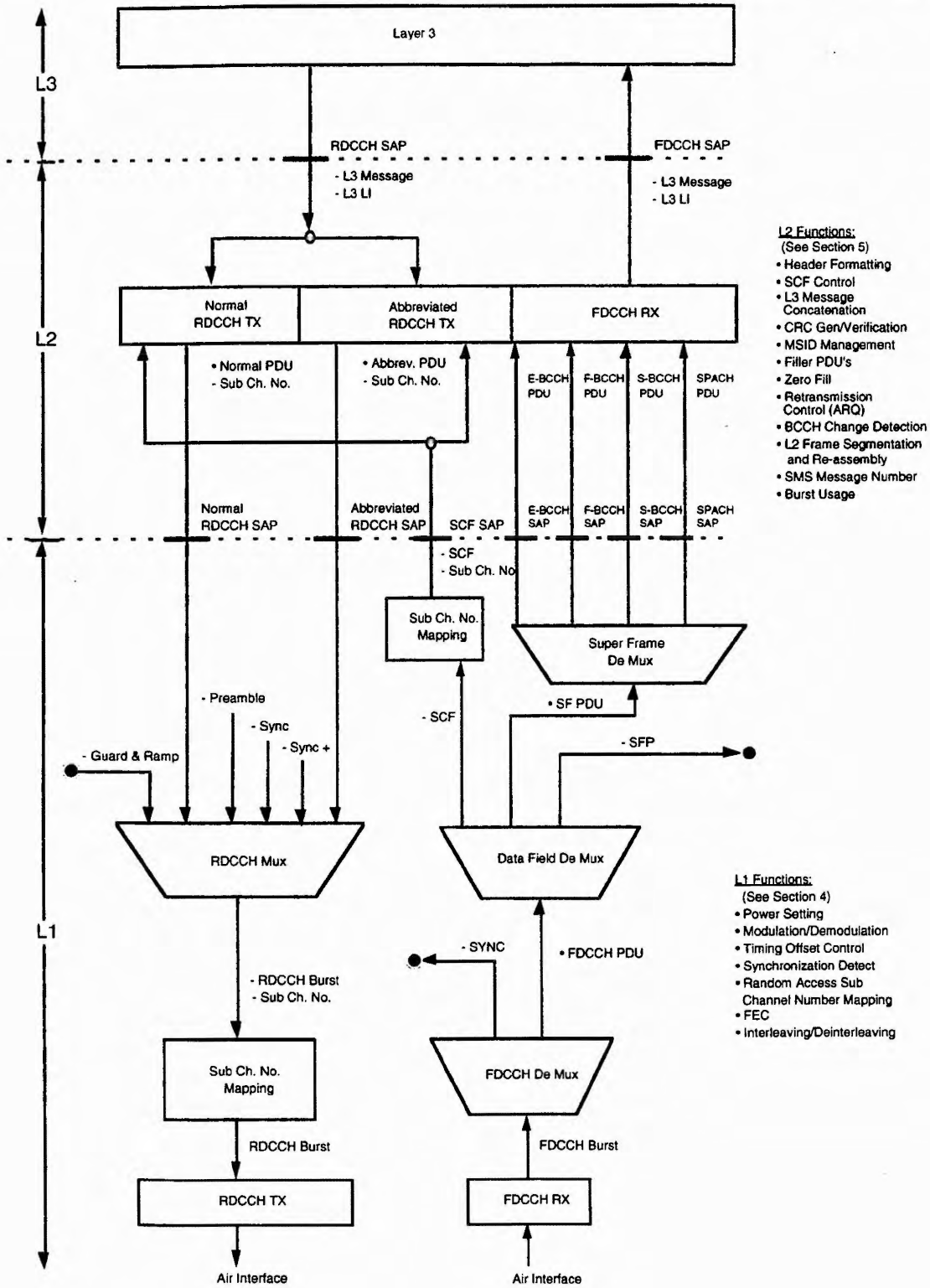
## 2.2 Protocol Reference Model

The protocol reference model is provided for information purposes and is not intended to be exhaustive.

**Figure 2 - 1 BMI - DCCH Protocol Reference Model**



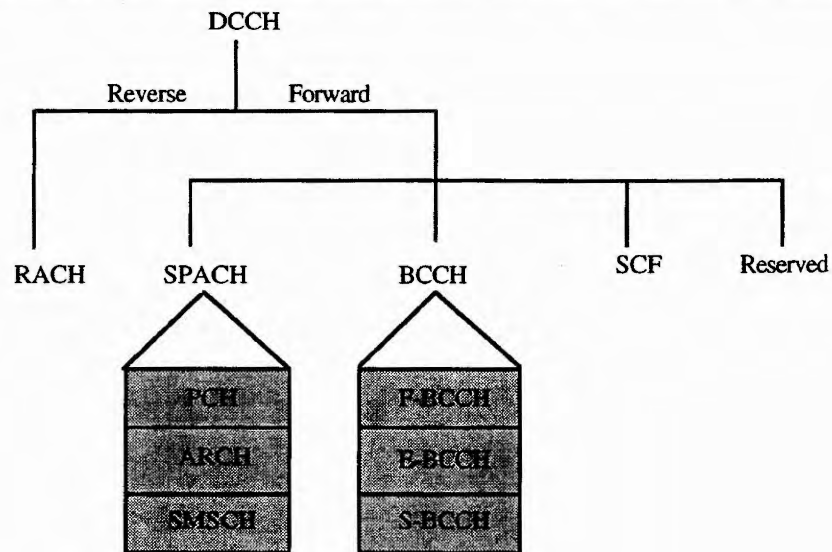
**Figure 2 - 2 MS - DCCH Protocol Reference Model**



## 2.3 Logical Channel Definition

The DCCH comprises the logical channels shown in Figure 2-3. The reverse DCCH (RDCCH) consists of a RACH. The forward DCCH (FDCCH) consists of SPACH, BCCH, SCF and Reserved slots.

**Figure 2 - 3 Logical Channels**



### 2.3.1 Random Access Channel (RACH)

A random access channel is used to request access to the system.

Attributes: Unidirectional (reverse), Shared, Point-to-Point, Acknowledged (Acknowledged using Shared Channel Feedback mechanism).

Note: Contention resolution and/or collision avoidance feedback is provided on the corresponding SCF channel.

### 2.3.2 SMS Point-to-Point, Paging and Access Response Channel (SPACH)

This logical channel is used to broadcast information to specific mobile stations regarding SMS Point-to-Point (SMSCH), paging (PCH) and to provide an access response channel (ARCH) as described below. The SPACH may be considered to be further subdivided in 3 logical channels SMSCH, ARCH and PCH, as described below.

Attributes: Unidirectional (forward), Shared, Point-to-Point, Acknowledged or Unacknowledged.

1 **2.3.2.1 Paging Channel (PCH)**

---

2 A logical channel subset of the SPACH dedicated to delivering pages and orders.

3 Note: SPACH ARQ Operation (see Section 5.4) is not supported on this channel.

4 Attributes: Unidirectional (forward), Shared, Point-to-Point, Unacknowledged.

5 **2.3.2.2 Access Response Channel (ARCH)**

---

6 A logical channel subset of the SPACH to which the mobile station autonomously moves  
7 to, upon successful completion of a contention or reservation based access on a RACH.  
8 The ARCH may be used to convey assignments to another resource or other responses to  
9 the mobile station access attempt.

10 Note: SPACH ARQ operation (see Section 5.4) is supported on this channel.

11 Attributes: Unidirectional (forward), Shared, Point-to-Point, Unacknowledged or  
12 Acknowledged.

13 **2.3.2.3 SMS Channel (SMSCH)**

---

14 A logical channel used to deliver short messages to a specific mobile station, in the  
15 context of SMS services.

16 Note: SPACH ARQ operation (see Section 5.4) is supported on this channel.

17 Attributes: Unidirectional (forward), Shared, Point-to-Point, Unacknowledged or  
18 Acknowledged.

19 **2.3.3 Broadcast Control Channel (BCCH)**

---

20 The BCCH is an acronym used to refer to the F-BCCH, E-BCCH and S-BCCH logical  
21 subchannels.

22 These three logical channels are used, in general, to carry generic, system-related  
23 information.

24 The attributes of these three channels are: Unidirectional (forward), Shared,  
25 Point-to-Multipoint, Unacknowledged.

26 **2.3.3.1 Fast Broadcast Control Channel (F-BCCH)**

---

27 This logical channel is used to broadcast DCCH structure parameters and parameters that  
28 are essential for accessing the system.

---

### 2.3.3.2 Extended Broadcast Control Channel (E-BCCH)

---

The E-BCCH carries broadcast information that is less time critical than F-BCCH for the mobile stations. For the optional information, a message type and a length indicator are included.

---

### 2.3.3.3 SMS Broadcast Control Channel (S-BCCH)

---

This logical channel is used for the broadcast SMS service.

---

### 2.3.4 Reserved Channel

---

This logical channel is defined for future use only. Defining it now assures forward compatibility with the first generation IS-136 mobile stations.

---

### 2.3.5 Shared Channel Feedback (SCF)

---

This logical channel is used in support of Random Access channel operation (see Section 5.3.3).

---

## 2.4 Layer 3 Message Mapping Through Layer 2 to Physical Layer

---

This description of message mapping is only included to aid in the understanding of the Standard and only shows one possible mapping sequence.

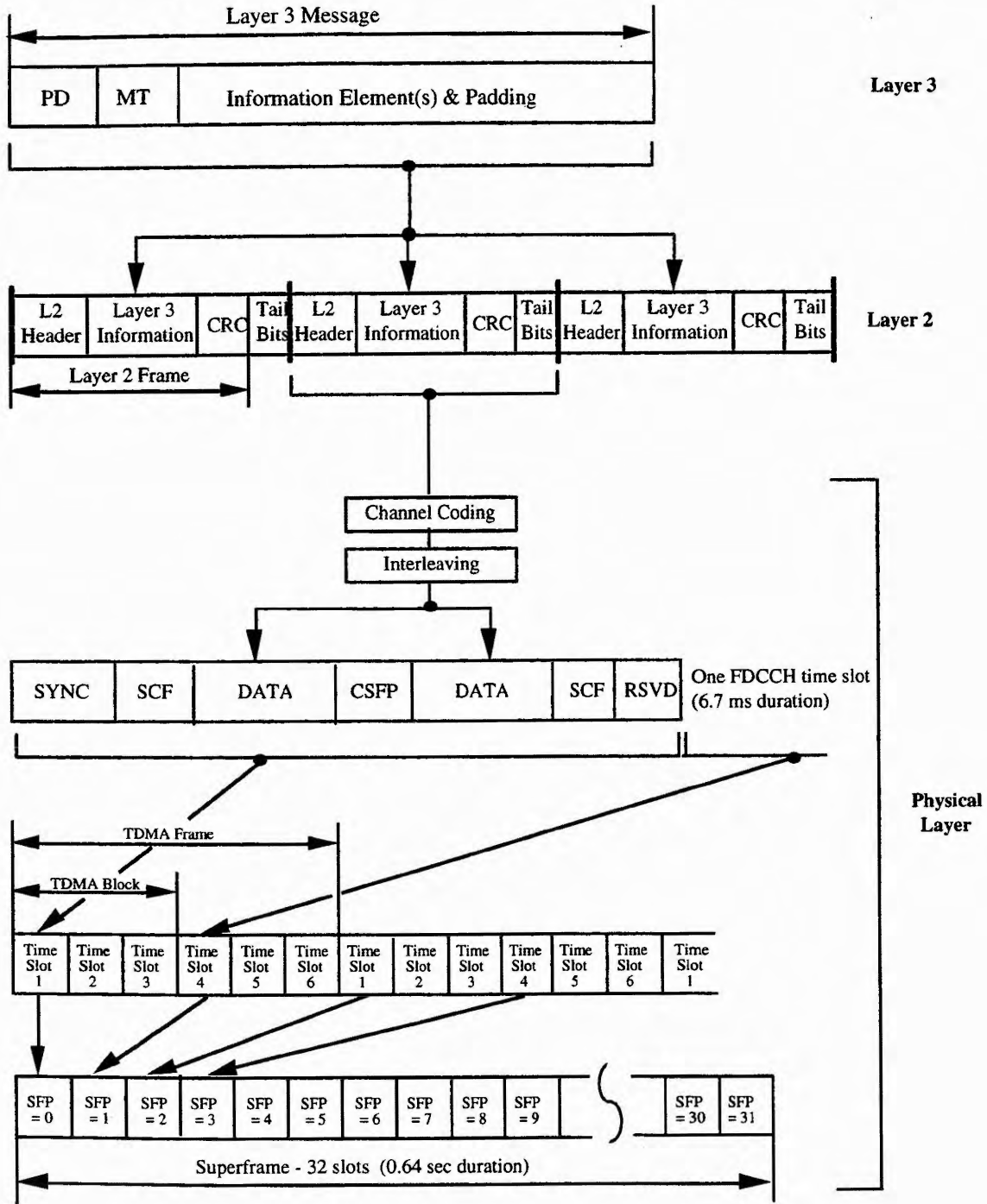
Figure 2-4 shows an example of how one L3 Message is mapped into several layer 2 frames, an example of a L2 frame mapping onto a time slot, and an example of time slot mapping onto a DCCH channel.

The length of a L3 Message is determined by a L3 Length Indicator which is carried as part of L2 header. The length of an L2 frame is fixed, determined by the specific logical channel. Tail bits are added to the L2 frames before channel encoding.

The length of the FDCCH time slots and RDCCH burst is fixed. There are two forms of RDCCH bursts which have different fixed lengths. Figure 2-4 assumes an FDCCH slot and a full-rate DCCH on the Physical Layer.

The mapping of assembled FDCCH slots into superframes is also shown in Figure 4-10. Two superframes are assembled into a Hyperframe according to Figure 4-11. The grouping of hyperframes into Paging frames is shown in Figure 4-12.

**Figure 2 - 4 Message Mapping**



## 1   **2.5    Notes**

---

2           Unless otherwise specified, all mobile stations and BMI shall set all bits that they are  
3           programmed to treat as reserved bits to 0 (zero) in all messages that they transmit. All  
4           mobile stations and BMI shall ignore the state of all bits that they are programmed to treat  
5           as reserved bits in all messages that they receive.

## 6.4 Layer 3 Message Set

The section below describes the Layer 3 messages. In all messages below the information element at the top of the tables shall be regarded as the first when delivered to layer 2. In the information elements the most significant bit (the leftmost bit in the tables) is the first bit when delivered to layer 2. The information element descriptions are found in Section 6.5 in alphabetical order. All specified lengths are in bits unless otherwise specified. The following coding rules apply to this section:

- The opening 2 bits of a message is the Protocol Discriminator (PD). When PD = 00, the supported layer 3 message set is as specified in this section.
- The opening 4 bits of an optional Information Element (IE) within a message shall be a Parameter Type, which uniquely identifies the optional information element within the message being sent. In the interest of future compatibility, the following rules apply for the Parameter Type Codes:
  - Optional Information Elements defined as Comprehension required that are not recognized by the receiver shall be considered erroneous and the message shall therefore be ignored.
  - Optional Information Elements defined as Comprehension not required are always followed by a length field indicating the remaining number of octets in the information element. The receiver shall discard information elements of this type that it does not recognize and shall continue processing the received message.

**Table 6 - 13 Parameter Type Coding**

Parameter Type	Code
Reserved	0000
Optional Information Element-Comprehension required	0001-0110
Reserved for future expansion	0111
Optional Information Element-Comprehension not required	1000-1110
Reserved for future expansion	1111

- Information elements having parameter type codes 0111 through 1111 require an 8-bit length indicator field (indicating the remaining length of the information element) immediately following the parameter type field.
- All optional information elements contained in a message shall be included in ascending order of the Parameter Type code, interpreted as an unsigned integer.
- Mandatory information elements shall not use Parameter Type, and shall be positioned in the order depicted within a message.
- The length information of a variable length information element is contained within the information element description, unless otherwise specified.
- The maximum length of a layer 3 message is 255 octets with the exception of the F-BCCH which is further limited by the number of F-BCCH slots allocated per Superframe (see Section 4.5).



- 1
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- Layer 3 messages shall be padded with trailing 0 (zeros) as necessary to the nearest octet boundary.
  - In the interest of backward compatibility, a received layer 3 message shall still be accepted if its length exceed the maximum length the receiving end is capable of understanding, i.e., the receiving end discards any layer 3 information it is incapable of understanding.
  - Mandatory messages and information elements are denoted by an 'M'.
  - Optional messages and information elements are denoted by an 'O'.

9 **6.4.1 BCCH Messages**

BCCH Messages	Subchannels		
	F-BCCH	E-BCCH	S-BCCH
DCCH Structure	M		
Access Parameters	M		
Control Channel Selection Parameter	M		
Registration Parameters	M		
System Identity	M		
Overload Class	O		
Mobile Assisted Channel Allocation (Note 1)	O	O	
Neighbor Cell		M	
Regulatory Configuration		M	
Alternate RCI Info		O	
BSMC Message Delivery	O	O	
Emergency Information Broadcast		O	
Neighbor Service Info		O	
Service Menu (Note 1)	O	O	
SOC/BSMC Identification (Note 1)	O	O	
SOC Message Delivery	O	O	
Time and Date		O	
Note 1: This message may only be sent on one Subchannel.			

10 **6.4.1.1 F-BCCH Messages**

11 The F-BCCH carries broadcast information necessary for the mobile stations to find the  
 12 structure of the DCCH and other essential BMI information. The full set of F-BCCH  
 13 shall begin and end within the same Superframe (see Section 5.2.2). The set of layer 3  
 14 messages defined for transmission on the F-BCCH is as follows.

## 6.4.1.1.1 Mandatory F-BCCH Messages

### 6.4.1.1.1.1 DCCH Structure

This message shall always be sent first. The format of the DCCH Structure message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
Number of F-BCCH	4.5	M	3
Number of E-BCCH	4.5	M	3
Number of S-BCCH	4.5	M	4
Number of Reserved Slots	4.5	M	3
Hyperframe Counter	4.7	M	4
Primary Superframe Indicator	4.5	M	1
Slot Configuration	4.10.1	M	2
DVCC	5.2.6	M	8
MAX_SUPPORTED_PFC	4.7	M	3
PCH_DISPLACEMENT	4.8	M	3
PFM_DIRECTION	4.7	M	1
Number of Non-PCH Subchannel Slots	4.10	M	2
Extended Hyperframe Counter	4.7	O	7
CBN_High		O	20
Non-Public Probability Blocks (Note 1)	6.3.1	O	9 - 24

Note 1: If present, this information element shall not be included in the Neighbor Cell message.

#### Parameter Type Codes for Optional Information Elements

Parameter Type	Code
Extended Hyperframe Counter	0001
CBN_High	0010
Non-Public Probability Blocks	0011

### 6.4.1.1.2 Access Parameters

The format of the Access Parameters message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
AUTH		M	1
S		M	1
RAND	6.3.12	M	32
MS_ACC_PWR	6.3.2.1	M	4
Access Burst Size	4.4, 5.2.1	M	1
Max Retries	5.3.3.1	M	3
Max Busy/Reserved	5.3.3.1.1	M	1
Max Repetitions	5.3.3.1	M	2
Max Stop Counter	5.3.3.1.4	M	1
R-DATA Message Length	6.3.6.2.1	M	3
Cell Barred	6.2.3, 6.3.2.2	M	5
Subaddressing Support	6.3.13	M	1
Delay Interval Compensation Mode		M	1

### 6.4.1.1.3 Control Channel Selection Parameters

The format of the Control Channel Selection Parameters message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
SS_SUFF	6.3.3.4.2	M	5
RSS_ACC_MIN	6.3.2.1	M	5
SCANINTERVAL	6.3.3.1	M	4
Initial Selection Control	6.3.2.2	M	1
DELAY	6.3.3.4.1	M	4
Scanning Option Indicator	6.3.3.2	M	1
Additional DCCH Information	4.10.1	O	20 - 111

#### Parameter Type Codes for Optional Information Elements

Parameter Type	Code
Additional DCCH Information	0001

#### 6.4.1.1.4 Registration Parameters

The format of the Registration Parameters message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
REGH	6.3.7	M	1
REGR	6.3.7	M	1
PUREG	6.3.7	M	1
PDREG	6.3.7	M	1
SYREG	6.3.7	M	1
LAREG	6.3.7	M	1
DEREG	6.3.7	M	1
FOREG	6.3.7	M	1
Capability Request		M	1
Present RNUM (Note 1)	6.3.7	O	14
REG Period (Note 2)	6.3.7	O	13
REGID Parameters	6.3.7	O	28
Non-Public Registration Control	6.3.7, 6.3.14	O	6

Note 1: This information element shall be included if the LAREG = 1.

Note 2: This information element shall be included whenever REGID Parameters is included. REG Period may be included even if REGID Parameters is not included.

#### Parameter Type Codes for Optional Information Elements

Parameter Type	Code
Present RNUM	0001
REG Period	0010
REGID Parameters	0011
Non-Public Registration Control	0100

### 6.4.1.1.1.5 System Identity

The format of the System Identity message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
SID	8.3.1	M	15
Network Type	8.3.2	M	3
Protocol Version		M	4
PSID/RSID Set (Note 1)	8.3.4, 6.3.2, 6.3.3	O	37 + 17 * N
Mobile Country Code	8.3.3	O	14
Alphanumeric SID		O	12-132

Note 1: This information element shall be included if the Network Type indicates that Private or Residential network are supported.

#### Parameter Type Codes for Optional Information Elements

Parameter Type	Code
PSID/RSID Set	0001
Mobile Country Code	0010
Alphanumeric SID	1000

### 6.4.1.1.2 Optional F-BCCH Messages

#### 6.4.1.1.2.1 BSMC Message Delivery

This message is used to carry BSMC specific signaling information whose content is beyond the scope of this specification. The format of the BSMC Message Delivery message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
BSMC		M	8
Custom Control		M	1 - 512

### 6.4.1.1.2.2 Mobile Assisted Channel Allocation

This message is used to order the mobile station to report radio measurements on certain channels. It contains information regarding the channels the mobile station shall measure and when to report the measurements for mobile assisted channel allocation. The format of the Mobile Assisted Channel Allocation message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
MACA_STATUS	6.3.17	M	2
MACA_TYPE	6.3.17	M	4
MACA_8_CONTROL	6.3.17	O	5
MACA_LIST	6.3.17	O	19 - (19 + 11*N) (Note 1)
MACA_LIST (Other Hyperband) (Note 2)		O	21 - (21 + 11*P) (Note 1)

Note 1: The total number of channels included in MACA\_LIST and all instances of MACA\_LIST (Other Hyperband) information elements shall not exceed 16.

Note 2: Up to one instance of this information element may be sent for each unique hyperband that is different from the hyperband of the current DCCH.

#### Parameter Type Codes for Optional Information Elements

Parameter Type	Code
MACA_8_CONTROL	0001
MACA_LIST	0010
MACA_LIST (Other Hyperband)	0011

### 6.4.1.1.2.3 Overload Class

This message is used to regulate originations and registrations on the RACH. The format of the Overload Class message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
OLC	6.3.5, 6.3.6, 6.3.7	M	16

#### 6.4.1.1.2.4 Service Menu

The service menu provides a list of services supported by the BMI. The format of the Service Menu message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
Voice Privacy Mode Map		M	4
Data Privacy Mode Map		M	4
Voice Coder Map		M	6
Message Encryption Algorithm Map		M	8 - 40
Message Encryption Key Map		M	4
Menu Map		M	10
FACCH/SACCH ARQ Map		M	1
User Group Map		M	1
SMS Map		M	2
IRA Support		M	1

Note: In the absence of this message, the mobile station shall assume the following services:

- No Voice Privacy
- No Data Privacy
- VSELP coded digital speech on a full-rate DTC
- No Message Encryption
- Analog speech
- No ARQ support on the FACCH/SACCH
- No User Group support
- No point-to-point teleservices supported
- No IRA support.

#### 6.4.1.1.2.5 SOC / BSMC Identification

This message is used to identify the SOC and BSMC value associated with the BMI. The format of the SOC/BSMC Identification message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
SOC	Annex B	M	12
BSMC	Annex B	M	8

#### 6.4.1.1.2.6 SOC Message Delivery

This message is used to carry SOC specific signaling information whose content is beyond the scope of this specification. The format of the SOC Message Delivery message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
SOC	Annex B	M	12
Custom Control		M	1 - 512

#### 6.4.1.2 E-BCCH Messages

The E-BCCH carries broadcast information that is less time critical than F-BCCH for mobile stations. Any given E-BCCH message may occur more than once in an E-BCCH cycle.

The set of messages in the E-BCCH may span several Superframes before a repetition occurs. Any given E-BCCH message may begin and end in different Superframes (see Section 5.2.3). The set of E-BCCH messages is as follows.

#### 6.4.1.2.1 Mandatory E-BCCH Messages

##### 6.4.1.2.1.1 Neighbor Cell

The format of the Neighbor Cell message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
SERV_SS	6.3.3.4.2	M	4
Non-Public Probability Blocks (Note 1)	6.3.1	O	9 - 24
Neighbor Cell List (TDMA)	6.3.3	O	$(9 + 57 * N)$ - $(9 + 77 * N)$ (Note 2)
Neighbor Cell List (Analog)	6.3.3	O	$9 + 49 * M$ (Note 2)
Neighbor Cell List (Other Hyperband) (Note 3)		O	$(11 + 57 * P)$ - $(11 + 77 * P)$ (Note 2)

Note 1: If present, this information element shall not be included in the DCCH Structure message.



1 Note 2: The total number of channels included in Neighbor Cell List (TDMA), Neighbor  
 2 Cell List (Analog) and all instances of Neighbor Cell List (Other Hyperband)  
 3 information elements shall not exceed 24.

4 Note 3: Up to one instance of this information element may be sent for each unique  
 5 hyperband that is different from the hyperband of the current DCCH.

6 **Parameter Type Codes for Optional Information Elements**

Parameter Type	Code
Non-Public Probability Blocks	0001
Neighbor Cell List (TDMA)	0010
Neighbor Cell List (Analog)	0011
Neighbor Cell List (Other Hyperband))	0100

7 **6.4.1.2.1.2 Regulatory Configuration**

8 The format of the Regulatory Configuration message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
RCI		M	2
RF Channel Allocation (Note 1)		O	32 - 1418

9 Note 1: This information element shall not be present when RCI is non-zero.

10 **Parameter Type Codes for Optional Information Elements**

Parameter Type	Code
RF Channel Allocation	0001

## 6.4.1.2.2 Optional E-BCCH Messages

### 6.4.1.2.2.1 BSMC Message Delivery

This message is used to carry BSMC specific signaling information whose content is beyond the scope of this specification. The format of the BSMC Message Delivery message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
BSMC		M	8
Custom Control		M	1 - 2024

### 6.4.1.2.2.2 Emergency Information Broadcast

This message provides emergency information to all mobile stations. The format of the Emergency Information Broadcast message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
Text Message Data Unit		M	8 - 2016
Signal (Note 1)		O	16

Note 1: In the absence of this information element the user alerting is mobile station specific.

#### Parameter Type Codes for Optional Information Elements

Parameter Type	Code
Signal	0001

### 6.4.1.2.2.3 Mobile Assisted Channel Allocation

Same as Section 6.4.1.1.2.2.

### 6.4.1.2.2.4 Service Menu

Same as Section 6.4.1.1.2.4.

#### 6.4.1.2.2.5 SOC / BSMC Identification

Same as Section 6.4.1.1.2.5.

#### 6.4.1.2.2.6 SOC Message Delivery

This message is used to carry SOC specific signaling information whose content is beyond the scope of this specification. The format of the SOC Message Delivery message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
SOC	Annex B	M	12
Custom Control		M	1 - 2024

#### 6.4.1.2.2.7 Time and Date

The format of the Time and Date message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
Time from Jan 1, 1980		M	32
Time Zone Offset		M	12

#### 6.4.1.2.2.8 Neighbor Service Info

This message provides information regarding services supported by a TDMA neighbor and is formatted as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
TDMA Service Info		O	20 - (20 + 11 * N) (Note 2)
TDMA Service Info (Other Hyperband) (Note 1)		O	22 - (22 + 11 * P) (Note 2)

Note 1: Up to one instance of this information element may be sent for each unique hyperband that is different from the hyperband of the current DCCH.

Note 2: The total number of TDMA Service Maps included in TDMA Service Info and all instances of TDMA Service Info (Other Hyperband) information elements shall not exceed 24.

**Parameter Type Codes for Optional Information Elements**

Parameter Type	Code
TDMA Service Info	0001
TDMA Service Info (Other Hyperband)	0010

**6.4.1.2.2.9 Alternate RCI Info**

This message provides information regarding a DCCH associated with a regulatory configuration different from that of the current DCCH and is formatted as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
SID	8.3.1	M	15
CHAN (Note 1)		M	11
RCI		M	2
Mobile Country Code	8.3.3	O	14
Hyperband Info (Note 2)		O	6

Note 1: This information element identifies a DCCH associated with a regulatory configuration of type RCI on the hyperband given by Hyperband Info.

Note 2: In the absence of this information element, the same Hyperband as the current DCCH shall be assumed.

**Parameter Type Codes for Optional Information Elements**

Parameter Type	Code
Mobile Country Code	0001
Hyperband Info	0010

**6.4.1.3 S-BCCH Messages**

Use of the S-BCCH is reserved for future study.

**6.4.2 Reserved Slots Messages**

The Reserved slots are for future use.

### 6.4.3 SPACH Messages

The SPACH carries mobile specific information and may span several FDCCCH slots which may be part of different Superframes. The set of layer 3 messages defined for transmission on the SPACH is as follows:

SPACH Messages	Subchannels		
	SMSCH	PCH	ARCH
Analog Voice Channel Designation			X
Audit Order		X	
Base Station Challenge Order Confirmation			X
BSMC Message Delivery	X	X	X
Capability Request		X	
Digital Traffic Channel Designation			X
Directed Retry			X
Message Waiting		X	
Page		X	X
Parameter Update		X	
R-DATA	X		
R-DATA ACCEPT	X		
R-DATA REJECT	X		
Registration Accept			X
Registration Reject			X
Release			X
Reorder/Intercept			X
SOC Message Delivery	X	X	X
SPACH Notification		X	
SSD Update Order		X	X
Test Registration Response			X
Unique Challenge Order		X	
User Alert		X	

### 6.4.3.1 Analog Voice Channel Designation

This message is used to assign the mobile station to an analog voice channel. The format of the Analog Voice Channel Designation message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
MEM		M	1
SCC		M	2
VMAC	IS-136.2	M	4
CHAN	IS-136.2	M	11
Protocol Version		M	4
Subaddress		O	20 - 180
DTX Support (Note 1)		O	6
Display		O	12 - 668

Note 1: In the absence of this information element, the mobile station shall default to DTX Not Supported.

#### Parameter Type Codes for Optional Information Elements

Parameter Type	Code
Subaddress	0001
DTX Support	0010
Display	1000

### 6.4.3.2 Audit Order

The BMI sends this message in order to solicit an audit confirmation from the mobile station. The format of the Audit Order message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
Forced Re-registration		M	1
Debug Display Allowed		M	1
Subaddress		O	20 - 180

1 **Parameter Type Codes for Optional Information Elements**

Parameter Type	Code
Subaddress	0001

2 **6.4.3.3 Base Station Challenge Order Confirmation**

3 This message is a response to the Base Station Challenge Order and contains the  
4 authentication algorithm output. The format of the Base Station Challenge Order  
5 Confirmation message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
AUTHBS	6.3.12.9	M	18

6 **6.4.3.4 BSMC Message Delivery**

7 This message is used to carry BSMC specific signaling information whose content is  
8 beyond the scope of this specification. The format of the BSMC Message Delivery  
9 message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
BSMC	Annex B	M	8
Custom Control		M	1 - 2024

10 **6.4.3.5 Capability Request**

11 This message is sent by the BMI in order to query the capabilities of a specific mobile  
12 station. The format of the Capability Request message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6

### 6.4.3.6 Digital Traffic Channel Designation

This message is used to assign the mobile station to a digital traffic channel. The format of the Digital Traffic Channel Designation message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
DVCC	IS-136.2	M	8
DMAC	IS-136.2	M	4
CHAN		M	11
ATS		M	4
SB		M	1
Protocol Version		M	4
Time Alignment		M	5
Delay Interval Compensation Mode		M	1
Voice Mode (Note 1)		O	10
Subaddress		O	20 - 180
Message Encryption Mode (Note 2)		O	13
Hyperband Info (Note 3)		O	6
Display		O	12 - 668

Note 1: This information element may be present for a Speech Call. If not included, the Voice Mode shall default to VSELP voice coder and No Voice Privacy.

Note 2: If the Message Encryption Mode information element is not included, Message Encryption Mode shall default to No Message Encryption.

Note 3: In the absence of this information element, the same Hyperband as the current DCCH shall be assumed.

#### Parameter Type Codes for Optional Information Elements

Parameter Type	Code
Voice Mode	0001
Subaddress	0010
Message Encryption Mode	0011
Hyperband Info	0100
Display	1000



### 6.4.3.7 Directed Retry

This message is used to force a mobile station to reject this DCCH and re-attempt to access an alternate control channel from its neighbor list. The format of the Directed Retry message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
Last Try	6.2.5, 6.2.6, 6.3.5	M	1
RCF and AUTH (Note 1)		O	6
DTX Support (Note 1)		O	6

Note 1: This information element shall be included for Directed Retry to an ACC only.

#### Parameter Type Codes for Optional Information Elements

Parameter Type	Code
RCF and AUTH	0001
DTX Support	0010

### 6.4.3.8 Message Waiting

This message is used to inform the mobile station that it has messages waiting. The format of the Message Waiting message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
Message Waiting Info		M	14 - 164
Display		O	12 - 668

#### Parameter Type Codes for Optional Information Elements

Parameter Type	Code
Display	1000

### 6.4.3.9 Page

This message is used to inform the mobile station that an attempt to set up a mobile station terminated call is underway. The format of the Page message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
Service Code		M	4
Called Party Subaddress		O	20 - 180
Signal (Note 1)		O	16
Calling Party Number Presentation Indicator		O	8
Calling Party Number		O	20 - *
Calling Party Subaddress		O	20 - 180
Display		O	12 - 668
Called Party		O	20 - *

Note 1: This information element shall be included for the case of a Page message sent to a User Group.

#### Parameter Type Codes for Optional Information Elements

Parameter Type	Code
Called Party Subaddress	0001
Signal	0010
Calling Party Number Presentation Indicator	0011
Calling Party Number	1000
Calling Party Subaddress	1001
Display	1010
Called Party	1011

### 6.4.3.10 Parameter Update

This message is used to inform the mobile station to update its internal call history parameter that is used in the authentication process (see Section 6.3.12.3). The format of the Parameter Update message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
Request Number		M	4

### 6.4.3.11 R-DATA

This relay message is used to carry point-to-point teleservice layer messages (e.g. SMS CMT, see Section 7). The format of the R-DATA message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
R-Transaction Identifier		M	8
R-Data Unit		M	16 - *
Message Center Address (Note 1)		O	20 - *
User Destination Address (Note 2)		O	20 - *
User Destination Subaddress (Note 2)		O	20 - 180
User Originating Address (Note 2)		O	20 - *
User Originating Subaddress (Note 2)		O	20 - 180
User Originating Address Presentation Indicator (Note 3)		O	8

Note 1: Included in the event that the Message Center sending the short message has included its address in a MS Terminated short message.

Note 2: Included according to the rules and procedures of the teleservice supported by the R-DATA message.

Note 3: Included to identify presentation restriction and screening related to the User Originating Address.

#### Parameter Type Codes for Optional Information Elements

Parameter Type	Code
Message Center Address	0001
User Destination Address	0010
User Destination Subaddress	0011
User Originating Address	0100
User Originating Subaddress	0101
User Originating Address Presentation Indicator	0110

### 6.4.3.12 R-DATA ACCEPT

This relay message is used to acknowledge and accept the R-DATA message. The format of the R-DATA ACCEPT message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
R-Transaction Identifier		M	8

### 6.4.3.13 R-DATA REJECT

This relay message is used to acknowledge and reject the R-DATA message. The format of the R-DATA REJECT message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
R-Transaction Identifier		M	8
R-Cause		M	8

### 6.4.3.14 Registration Accept

The format of the Registration Accept message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
PFC Assignment	4.7, 6.3.10	O	7
RNUM List	6.3.10	O	10 - 510
MSID Assignment	6.3.10	O	6,26,30
User Group	6.3.10	O	6,28,32,42,58
PSID/RSID Available	6.3.10	O	25 - 280
Display		O	12 - 668
Directory Address		O	20 - *
Directory Subaddress		O	20 - 180

**Parameter Type Codes for Optional Information Elements**

Parameter Type	Code
PFC Assignment	0001
RNUM List	0010
MSID Assignment	0011
User Group	0100
PSID/RSID Available	0101
Display	1000
Directory Address	1001
Directory Subaddress	1010

**6.4.3.15 Registration Reject**

The format of the Registration Reject message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
Cause	6.3.11	M	4
Reject Time (Note 1)	6.3.11	O	12
Display		O	12 - 668

Note 1: In the absence of this information element, a reject time of 2048 Superframes shall be assumed (see Section 6.3.11).

**Parameter Type Codes for Optional Information Elements**

Parameter Type	Code
Reject Time	0001
Display	1000

### 6.4.3.16 Release

This message is used when the BMI clears a mobile station terminated call. The format of the Release message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
Cause		M	4
Signal		O	16
Display		O	12 - 668

#### Parameter Type Codes for Optional Information Elements

Parameter Type	Code
Signal	0001
Display	1000

### 6.4.3.17 Reorder/Intercept

This message is used when the BMI rejects an Origination or a R-DATA message sent by the mobile station. The format of the Reorder/Intercept message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
Cause	6.2.5, 6.2.9	M	4
Tone Indicator		M	2
Display		O	12 - 668

#### Parameter Type Codes for Optional Information Elements

Parameter Type	Code
Display	1000

### 6.4.3.18 SOC Message Delivery

This message is used to carry SOC specific signaling information whose content is beyond the scope of this specification. The format of the SOC Message Delivery message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
SOC	Annex B	M	12
Custom Control		M	1 - 2024

### 6.4.3.19 SPACH Notification

This message is used to inform the mobile station that BMI intends to deliver a message on the ARCH or the SMSCH. The format of the SPACH Notification message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
SPACH Notification Type	6.3.4	M	6

### 6.4.3.20 SSD Update Order

This message causes the mobile station to execute the authentication algorithm. The format of the SSD Update Order message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
RANDSSD	6.3.12	M	56

### 6.4.3.21 Test Registration Response

This message is used to inform the mobile station whether it is likely to receive service upon registration. The format of the Test Registration Response message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
PSID/RSID Map		M	16
Alphanumeric System ID		O	12 - 132
Alphanumeric PSID/RSID List		O	12 - 1924

#### Parameter Type Codes for Optional Information Elements

Parameter Type	Code
Alphanumeric System ID	1000
Alphanumeric PSID/RSID List	1001

### 6.4.3.22 Unique Challenge Order

This message causes the mobile station to execute the authentication algorithm. The format of the Unique Challenge Order message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
RANDU	6.3.12	M	24

### 6.4.3.23 User Alert

This message is sent to activate user alerting at a mobile station. The format of the User Alert message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
Signal (Note 1)		O	16
Display		O	12 - 668

Note 1: In the absence of this information element, a mobile station shall assume standard pitch, cadence and duration as defined in the Signal information element.



1 **Parameter Type Codes for Optional Information Elements**

Parameter Type	Code
Signal	0001
Display	1000

2 **6.4.4 RACH Messages**

3 The RACH carries mobile station specific information and may span several RDCCH  
4 slots (see Section 5.2.1). The set of layer 3 messages defined for transmission on the  
5 RACH is as follows:

RACH Messages	Subchannel
	RACH
Audit Confirmation	X
Authentication	X
Base Station Challenge Order	X
BSMC Message Delivery	X
Capability Report	X
MACA Report	X
Origination	X
Page Response	X
R-DATA	X
R-DATA ACCEPT	X
R-DATA REJECT	X
Registration	X
Serial Number	X
SOC Message Delivery	X
SPACH Confirmation	X
SSD Update Order Confirmation	X
Test Registration	X
Unique Challenge Order Confirmation	X

#### 6.4.4.1 Audit Confirmation

The format of the Audit Confirmation message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
PFC Minus One		M	3
Selected PSID/RSID (Note 1)		O	8
User Group (Note 2)		O	28,32,42,58
Display (Note 3)		O	12 - 668

Note 1: Selected PSID/RSID if it is currently registered on a Private or Residential system served by this DCCH.

Note 2: This information element shall be included for the case of an Audit Confirmation sent as a result of a User Group Audit.

Note 3: May be included only if the Audit Order message Debug Display Allowed flag is set.

#### Parameter Type Codes for Optional Information Elements

Parameter Type	Code
Selected PSID/RSID	0001
User Group	0010
Display	1000

#### 6.4.4.2 Authentication

The format of the Authentication message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
COUNT	6.3.12	M	6
RANDC	6.3.12	M	8
AUTHR	6.3.12	M	18

### 6.4.4.3 Base Station Challenge Order

The format of the Base Station Challenge Order message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
RANDBS	6.3.12	M	32

If the S bit is set in the Access Parameter message on the BCCH, the mobile station shall also include the Serial Number message.

### 6.4.4.4 BSMC Message Delivery

This message is used to carry BSMC specific signaling information whose content is beyond the scope of this specification. The format of the BSMC Message Delivery message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
BSMC	Annex B	M	8
Custom Control		M	1 - 2024

### 6.4.4.5 Capability Report

The format of the Capability Report message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
Protocol Version		M	4
SCM		M	5
Software Vintage		M	6
Firmware Vintage		M	6
Model Number		M	4
Manufacturer Code	2.3.2, IS-136.2	M	8
MAX_SUPPORTED_PFC	4.7	M	3
SOC Support		M	1
BSMC Support		M	1
Async Data Support		M	1
G3-Fax Support		M	1
SMS Broadcast Support		M	1
Subaddressing Support		M	1
Supported Frequency Bands		M	8
IRA Support		M	1
User Group Support		M	1
800 MHz Analog Speech Support		M	1
Half-Rate DTC Support		M	1
Double Rate DTC Support		M	1
Triple Rate DTC Support		M	1

### 6.4.4.6 MACA Report

The format of the MACA Report message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
LTM Measurement	6.3.17	O	16
STM Measurement	6.3.17	O	8+(N+2)*5

1 **Parameter Type Code for Optional Information Elements**

Parameter Type	Code
LTM Measurement	0001
STM Measurement	0010

2 **6.4.4.7 Origination**

3 The format of the Origination message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
Protocol Version		M	4
Emergency Call	6.3.5	M	1
Called Party Number (Note 1)		M	16 - *
Last Try	6.2.5	M	1
SCM	IS-136.2	M	5
Service Code		M	4
Voice Mode (Note 2)		O	10
Data Mode (Note 3)		O	15
Message Encryption Mode		O	13
Bandwidth (Note 4)		O	7
Calling Party Number Presentation Indicator		O	8
Calling Party Number		O	20 - *
Called Party Subaddress		O	20 - 180
Calling Party Subaddress		O	20 - 180

4 Note 1:

- 5
- 6
- 7
- If the Service Code indicates G3-Fax or Async Data, this information element provides authentication related information. In this case, a 6-digit random number is generated by the mobile station and encoded TBCD.

8 Note 2:

- 9
- 10
- 11
- 12
- 13
- This information element shall not be included if the Service Code indicates Analog Speech only.
  - This information element may not be included if the Service Code indicates Digital Speech Only or Analog or Digital Speech. If not included, the Voice Mode shall default to VSELP voice coder and no Voice Privacy.

## Note 3:

- This information element shall be included if the Service Code indicates ASYNC Data or G3-Fax.
- This information element shall not be included if the Service Code indicates Analog Speech Only or Analog or Digital Speech.

## Note 4:

- This information element shall not be included if the Service Code indicates Analog Speech only.
- This information element may not be included if the Service Code indicates Digital Speech Only or Analog or Digital Speech. If not included, the Bandwidth shall default to Full-Rate Digital Traffic Channel Only.
- This information element shall be included if the Service Code indicates ASYNC Data or G3-Fax.

**Parameter Type Code for Optional Information Elements**

Parameter Type	Code
Voice Mode	0001
Data Mode	0010
Message Encryption Mode	0011
Bandwidth	0100
Calling Party Number Presentation Indicator	0101
Calling Party Number	0110
Called Party Subaddress	1000
Calling Party Subaddress	1001

If the AUTH bit is set in the Access Parameter message on the BCCH, the mobile station shall also include the Authentication message.

If the S bit is set in the Access Parameter message on the BCCH, the mobile station shall also include the Serial Number message.

### 6.4.4.8 Page Response

The format of the Page Response message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
Protocol Version		M	4
Last Try	6.2.6	M	1
SCM		M	5
Service Code		M	4
Voice Mode (Note 1)		O	10
Data Mode (Note 2)		O	15
Message Encryption Mode		O	13
Bandwidth (Note 3)		O	7
User Group (Note 4)	6.3.4	O	28,32,42,58
Subaddress	6.3.13	O	20 - 180

Note 1:

- This information element shall not be included if the Service Code indicates Analog Speech only.
- This information element may not be included if the Service Code indicates Digital Speech Only or Analog or Digital Speech. If not included, the Voice Mode shall default to VSELP voice coder and no Voice Privacy.

Note 2:

- This information element shall be included if the Service Code indicates ASYNC Data or G3-Fax.
- This information element shall not be included if the Service Code indicates Analog Speech Only or Analog or Digital Speech.

Note 3:

- This information element shall not be included if the Service Code indicates Analog Speech only.
- This information element may not be included if the Service Code indicates Digital Speech Only or Analog or Digital Speech. If not included, the Bandwidth shall default to Full-Rate Digital Traffic Channel Only.
- This information element shall be included if the Service Code indicates ASYNC Data or G3-Fax.

Note 4:

- This information element shall be included for the case of a Page Response sent as a result of a User Group Page.

### Parameter Type Code for Optional Information Elements

Parameter Type	Code
Voice Mode	0001
Data Mode	0010
Message Encryption Mode	0011
Bandwidth	0100
User Group	0101
Subaddress	1000

If the AUTH bit is set in the Access Parameter message on the BCCH, the mobile station shall also include the Authentication message.

If the S bit is set in the Access Parameter message on the BCCH, the mobile station shall also include the Serial Number message.

#### 6.4.4.9 R-DATA

This relay message is used to carry point-to-point teleservice layer messages (e.g. SMS CMT, see Section 7). The format of the R-DATA message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
R-Transaction Identifier	6.3.6	M	8
R-Data Unit	6.3.6	M	16 - *
Message Center Address (Note 1)	6.3.6	O	20 - *
User Destination Address (Note 2)		O	20 - *
User Destination Subaddress (Note 2)		O	20 - 180
User Originating Address (Note 2)		O	20 - *
User Originating Subaddress (Note 2)		O	20 - 180
User Originating Address Presentation Indicator (Note 3)		O	8

Note 1: Included in the event that the Message Center destination address is different from the one in the mobile station subscription profile.

Note 2: Included according to the rules and procedures of the teleservice supported by the R-DATA message.

Note 3: Included to identify presentation restriction and screening related to the User Originating Address.



1 **Parameter Type Codes for Optional Information Elements**

Parameter Type	Code
Message Center Address	0001
User Destination Address	0010
User Destination Subaddress	0011
User Originating Address	0100
User Originating Subaddress	0101
User Originating Address Presentation Indicator	0110

2 If the AUTH bit is set in the Access Parameter message on the BCCH, the mobile station  
3 shall also include the Authentication message.

4 If the S bit is set in the Access Parameter message on the BCCH, the mobile station shall  
5 also include the Serial Number message.

6 **6.4.4.10 R-DATA ACCEPT**

7 Same as Section 6.4.3.12.

8 **6.4.4.11 R-DATA REJECT**

9 Same as Section 6.4.3.13.

10 **6.4.4.12 Registration**

11 The format of the Registration message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
Registration Type	6.3.7	M	4
SCM		M	5
Protocol Version		M	4
C-Number	6.3.7	O	20 - *
PFC Request	4.7	O	7
Message Encryption Mode		O	13
Selected PSID/RSID		O	8
User Group (Note 1)	6.3.7	O	6,28,32,42,58

12 Note 1: This information element shall be included by a mobile station to request User  
13 Group operation.

### Parameter Type Code for Optional Information Element

Parameter Type	Code
C-Number	0001
PFC Request	0010
Message Encryption Mode	0011
Selected PSID/RSID	0100
User Group	0101

If the AUTH bit is set in the Access Parameter message on the BCCH, the mobile station shall also include the Authentication message.

If the S bit is set in the Access Parameter message on the BCCH, the mobile station shall also include the Serial Number message.

#### 6.4.4.13 Serial Number

The format of the Serial Number message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
ESN	8.2	M	32

#### 6.4.4.14 SOC Message Delivery

This message is used to carry SOC specific signaling information whose content is beyond the scope of this specification. The format of the SOC Message Delivery message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
SOC	Annex B	M	12
Custom Control		M	1 - 2024

#### 6.4.4.15 SPACH Confirmation

The format of the SPACH Confirmation message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
Confirmed Message Type		M	6

If the AUTH bit is set in the Access Parameter message on the BCCH and a SPACH Notification indicating R-DATA was received, the mobile station shall also include the Authentication message.

If the S bit is set in the Access Parameter message on the BCCH and a SPACH Notification indicating R-DATA was received, the mobile station shall also include the Serial Number message.

#### 6.4.4.16 SSD Update Order Confirmation

The format of the SSD Update Order Confirmation message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
SSD Update Status	6.3.12.9	M	2

#### 6.4.4.17 Test Registration

This message is sent by the mobile station to the base to inquire whether it is likely to receive service should it attempt to register on any given PSID/RSID. The format of the Test Registration message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
PSID/RSID Map		M	16

**6.4.4.18 Unique Challenge Order Confirmation**

The format of the Unique Challenge Order Confirmation message is as follows:

Information Element	Reference	Type	Length
Protocol Discriminator		M	2
Message Type		M	6
AUTHU	6.3.12.6	M	18

If the S bit is set in the Access Parameter message on the BCCH, the mobile station shall also include the Serial Number message.

## 6.5 Information Element Description

The following coding rules apply to all information element descriptions:

- Elements of type "flag" shall have the values of:
  - 0 = Disable (off, false)
  - 1 = Enable (on, true)
- Changes in F-BCCH and E-BCCH information elements shall trigger a transition of the BCN flag in the SPACH except for changes in those information elements designated as non-critical.
- All specified lengths are in bits unless otherwise noted.
- Unless identified by one of the above types, all information elements are sent as binary data (type "value").

### 800 MHz Analog Speech Support

This information element indicates whether or not the mobile station supports analog speech in the 800 MHz hyperband.

Value	Function
0	800 MHz Analog Speech Not Supported
1	800 MHz Analog Speech Supported

### Access Burst Size

This information element informs the mobile station of which burst size to use on the RACH (see Section 4.4) according to the following table:

Value	Function
0	Use normal length bursts on the RACH
1	Use abbreviated length bursts on the RACH

### Additional DCCH Information

This optional information element contains information regarding additional DCCH frequencies in this cell and their relation to the current DCCH.

Field	Length
Parameter Type	4
Number of Additional DCCH Channels (Note 1) (N - 1)	3
DCCH Channel Info (Note 2)	13 per instance

1           **Number of Additional DCCH Channels** - The number of additional DCCH channels in  
2 this cell is 1 plus the value in this field.

3           **DCCH Channel Info** - This field consists of two subfields: **DCCH Channel** and **Slot**  
4 **Configuration**. The value in DCCH Channel, which is encoded according to Table  
5 2.1.1.1-1 in IS-136.2, is a channel in this cell on which at least one DCCH resides. The  
6 Slot Configuration field, which is encoded in the same manner as the Slot Configuration  
7 information element described in Section 6.5, indicates the number of slots assigned to  
8 DCCHs on the channel in the DCCH Channel field.

Field	Length
DCCH Channel	11
Slot Configuration	2

9           Note 1: All DCCHs provided in this optional information element, plus the current  
10 DCCH, together define the entire set of DCCH channels allocated to a multi-  
11 channel DCCH. Each DCCH in the set shall therefore, via broadcast  
12 information, identify the same set of DCCH channel.

13           Note 2: The number of instances sent equals 1 + the value in the Number of Additional  
14 DCCH Channels field.

## 15 Address Info

16           This field is used in the definition of the C-Number, Called Party, Called Party Number,  
17 Calling Party Number, Message Center Address, User Destination Address and User  
18 Originating Address.

Field	Length (code)
Length of Address Info content (N) (in octets) (Note 1)	8
Type of Number	3
Numbering Plan Identification	4
Address Encoding	1
Address (Note 2)	8 per instance

19           Note 1: The minimum value for N is 1 because Type of Number, Numbering Plan  
20 Identification and Address Encoding fields shall always be included.

21           Note 2: Up to N-1 instances of this field may be sent.

The **Type of Number** field is coded as follows:

Code	Description (Note 1)
000	Unknown (Note 2)
001	International Number
010	National Number
011	Network Specific Number (Note 3)
100	Subscriber Number
110	Abbreviated Number
111	Reserved for Extension
All other codes are reserved	

Note 1: For the definition of "international, national and subscriber number", see CCITT Recommendation I.330.

Note 2: The Type of Number "unknown" is used when the user or the network has no knowledge of the Type of Number, e.g. international number, national number, etc. In this case, the Address field is organized according to the network dialing plan, e.g. prefix or escape digits might be present. Both the BMI and mobile station shall support type of number "unknown".

Note 3: The Type of Number "network-specific number" is used to indicate administration and service number specific to the serving network.

The **Numbering Plan Identification** field is coded as follows:

Code	Description
0000	Unknown (Note 1)
0001	ISDN/telephony numbering plan (CCITT Recommendations E.164 and E.163)
0011	Data numbering plan (CCITT Recommendation X.121)
0100	Telex numbering plan (CCITT Recommendation F.69)
1001	Private numbering plan
1111	Reserved for extension
All other codes are reserved	

Note 1: The numbering plan "unknown" is used when the user or the network has no knowledge of the numbering plan. In this case the Address field is organized according to the network dialing plan; e.g. prefix or escape digits might be present. Both the BMI and mobile station shall support Type of Number "unknown".

The **Address Encoding** specifies the encoding of the address field.

- TBCD (Address Encoding = 1) or alternatively,
- IRA, as specified by Tables 5 and A-1 of CCITT Recommendation T.50 (Address Encoding). In this case, the most significant bit of each instance of Address field is set to 0.

1 In the interest of bandwidth efficiency, TBCD is strongly recommended when addressing  
 2 information can be encoded using TBCD. Both BMI and mobile station shall support  
 3 TBCD address encoding.

4 If a **Numbering Plan Identification** different than unknown is used and requires using a  
 5 specific address encoding then this coding shall be indicated properly in the Address  
 6 Encoding field.

7 The **Address** field, when encoded using TBCD, contains 2 digits per instance as follows:

Field	Length
Digit 1	4
Digit 2	4

8 TBCD coding of **Digit 1** and **Digit 2** is as follows:

Binary Value	Digit
0000	Filler (Note 1)
0001	1
0010	2
0011	3
0100	4
0101	5
0110	6
0111	7
1000	8
1001	9
1010	0
1011	*
1100	#
All other values reserved	

9 Note 1: When the number of digits is odd, 1 **Filler** digit is added in **Digit 2** of the last  
 10 **Address** field.



## 1 Alphanumeric PSID/RSID List

2 The purpose of this information element is to supply an Alphanumeric PSID/RSID to the  
 3 user. The ordering of the Alphanumeric PSID/RSID list reflects the ordering of the  
 4 PSID/RSID Set sent on the System Identity message. The information contained in this  
 5 information element is coded in IRA characters.

Field	Length
Parameter Type	4
Length of Alphanumeric PSID/RSID List (in octets)	8
PSID/RSID Alphanumeric Name (Note 1)	4 - 124 per instance

6 Note 1: Up to 16 instances may be sent. If an odd number of instances are sent, then 4  
 7 bits of filler shall be inserted after the last instance.

8 The PSID/RSID Alphanumeric Name field is coded as follows:

Field	Length
Length of PSID/RSID Alphanumeric Name (N)	4
Display Character (Note 1)	8 * N

9 Note 1: N characters are present up to a maximum of 15. The encoding of a single  
 10 character in Display Character field is IRA according to CCITT  
 11 Recommendation T.50 Tables 5 and A-1. The most significant bit of each octet  
 12 of Display Character is set to 0.

## 13 Alphanumeric System ID

14 The purpose of the Alphanumeric System ID information element is to supply an  
 15 alphanumeric system ID to each user. The information contained in this information  
 16 element is coded in IRA characters.

Field	Length
Parameter Type	4
Length of Alphanumeric System ID in octets (N)	8
Display Character (IRA)	8 * N

17 Note 1: N characters are present up to a maximum of 15. The encoding of a single  
 18 character in Display Character field is IRA according to CCITT  
 19 Recommendation T.50 Tables 5 and A-1. The most significant bit of each octet  
 20 of Display Character is set to 0.

## 21 Async Data Support

22 This flag indicates whether or not the mobile station supports Async Data operation.

**ATS**

This information element defines the assigned time slot.

Value	Function
0001	Full-rate Digital Traffic Channel on time slots 1, 4
0010	Full-rate Digital Traffic Channel on time slots 2, 5
0011	Full-rate Digital Traffic Channel on time slots 3, 6
1001	Half-rate Digital Traffic Channel on time slot 1
1010	Half-rate Digital Traffic Channel on time slot 2
1011	Half-rate Digital Traffic Channel on time slot 3
1100	Half-rate Digital Traffic Channel on time slot 4
1101	Half-rate Digital Traffic Channel on time slot 5
1110	Half-rate Digital Traffic Channel on time slot 6
0100	Double full-rate Digital Traffic Channel on time slots 1, 4 and 2, 5
0101	Double full-rate Digital Traffic Channel on time slots 1, 4 and 3, 6
0110	Double full-rate Digital Traffic Channel on time slots 2, 5 and 3, 6
1111	Triple full-rate Digital Traffic Channel on time slots 1, 2, 3, 4, 5, 6
All other values are reserved	

**AUTH**

This flag indicates whether or not the mobile station shall send the Authentication message along with a Registration, Origination, Page Response, SPACH Confirmation message due to a SPACH Notification indicating R-DATA or R-DATA (see Section 6.3.12).

**AUTHBS**

This information element contains the output from the Authentication procedure (see Section 6.3.12).

**AUTHR**

This information element contains the output response of the authentication algorithm for originations, registrations, and terminations.

**AUTHU**

This information element contains the output response of the authentication algorithm for unique challenge orders (see Section 6.3.12).

## 1 Bandwidth

2 This information element identifies the digital traffic channel bandwidth requirements for  
3 the requested call.

Field	Length
Parameter Type	4
Bandwidth	3

Value	Function
000	Half-Rate Digital Traffic Channel Only
001	Full-Rate Digital Traffic Channel Only
010	Half-Rate or Full-Rate Digital Traffic Channel - Full-Rate Preferred
011	Half-Rate or Full-Rate Digital Traffic Channel - Half-Rate Preferred
100	Double Full-Rate Digital Traffic Channel Only
101	Triple Full-Rate Digital Traffic Channel Only
All other values are reserved	

## 4 BSMC

5 This information element identifies the assigned manufacturer's code (see Annex B). The  
6 BSMC value of 0 is reserved. If the mobile station receives this BSMC value, it shall  
7 consider it as an unknown base station manufacturer code.

## 8 BSMC Support

9 This flag indicates whether or not the mobile station supports the BSMC sent on the  
10 SOC/BSMC Identification message sent on the BCCH.

## 11 C-Number

12 This information element allows the mobile station to provide the BMI with network  
13 address information in conjunction with a registration of type De-registration. The  
14 maximum length of this information element is network-dependent.

Field	Length
Parameter Type	4
Address Info	16 - *

## 1 **Called Party**

---

2 This information element identifies the called party associated with a mobile station  
3 terminated call.

Field	Length
Parameter Type	4
Address Info	16 - *

## 4 **Called Party Number**

---

5 This information element identifies the called party associated with a mobile station  
6 originated call. The maximum length of this information element is network-dependent.

Field	Length
Address Info	16 - *

## 7 **Called Party Subaddress**

---

8 This information element identifies the subaddress of the called party of a call. The  
9 maximum length of this information element is 180 bits.

Field	Length
Parameter Type	4
Subaddress Info	16 - 176

## 10 **Calling Party Number**

---

11 This information element identifies the calling party's network address. The maximum  
12 length of this information element is network-dependent.

Field	Length
Parameter Type	4
Address Info	16 - *

## 1 **Calling Party Number Presentation Indicator**

---

2 If present this information element identifies the presentation restrictions and screening  
3 related to the Calling Party Number information element.

Field	Length
Parameter Type	4
Presentation Indicator	2
Screening Indicator	2

4 The **Presentation Indicator** field is coded as follows:

Code	Function
00	Presentation Allowed
01	Presentation Restricted
10	Number Not Available
11	Reserved

5 The **Screening Indicator** field is coded as follows:

Code	Function
00	User-provided, not screened
01	User-provided, verified and passed
10	User-provided, verified and failed
11	Network-provided

## 6 **Calling Party Subaddress**

---

7 This information element identifies the subaddress of the calling party of a call. The  
8 maximum length of this information element is 180 bits.

Field	Length
Parameter Type	4
Subaddress Info	16 - 176

## 9 **Capability Request**

---

10 This flag indicates whether or not a mobile station shall also include a **Capability Report**  
11 message whenever it sends a New System registration, a Forced registration or a Power-  
12 Up registration (see Section 6.3.7).

## Cause

This information element indicates the cause for a Registration Reject, Release or Reorder/Intercept.

Code	Cause
0000	Unknown MSID
0001	Congestion
0010	RSS too low
0011	Unknown
0100	Operator Determined Barring
0101	User Group Release
0110	User Group Barred
0111	Requested Service Code Not Supported
1000	Requested Service Code Not Available
1001	Authentication Failure
1010	Addressing Information Not Supported
1011	Requested Message Encryption Mode Temporarily Denied
All other codes are reserved	

## CBN\_High

This non-critical information element contains information to support message encryption on the forward and reverse DCCH and DTC.

Field	Length
Parameter Type	4
CBN_High	16

CBN\_High is incremented every 192 SFs when the Extended Hyperframe Counter cycles to 0. Proper operation of CBN therefore requires that the optional Extended Hyperframe Counter information element be included in the DCCH Structure message.

Note that the modulo count of 192 SFs are derived using the following:

$$\text{SF count} = 2 * 12 * \text{EHFC} + 2 * \text{HFC} + \text{Primary SF indicator.}$$

Aside from SOC/BSMC specific signaling, the use of this information element is for further study.

## 1 Cell Barred

---

2 This information element specifies whether or not a cell is barred for access and the  
 3 Number of 100 SFs the cell can be considered barred. The barring period is set according  
 4 to one plus the value of the Number of 100 SFs field.

Field	Length
Cell Barred	1
Number of 100 SFs	4

## 5 CELLTYPE

---

6 This information element provides a relative distinction by an operator to bias mobile  
 7 station control channel reselection decisions in order to insure traffic flows according to  
 8 an operator's desires.

Value	Function
00	REGULAR
01	PREFERRED
10	NON-PREFERRED
11	Reserved

## 9 CELL\_SYNC

---

10 This flag indicates whether or not a candidate DCCH is superframe synchronized with the  
 11 current DCCH. If this flag is enabled the maximum time offset between superframes sent  
 12 on the candidate DCCH and current DCCH shall be no more than 7.5 symbols, i.e., a  
 13 mobile station shall expect to find synchronization on a candidate DCCH within +/- 7.5  
 14 symbols relative to its current DCCH superframe.

## 15 CHAN

---

16 For the 800 MHz hyperband, channel number is defined in Table 2.1.1.1-1 of IS-136.2.  
 17 For the 1900 MHz hyperband, channel number is defined in PN3388.

**Confirmed Message Type**

This information element consists of a single instance of Message Type identifying the confirmed message.

**COUNT**

This information element consists of the mobile station call history parameter, used for the Authentication process (see Section 6.3.12).

**Custom Control**

This information element consists of binary data as specified by the SOC/BSMC protocol currently in use.

**Data Mode**

This information element identifies the mode to be used for the requested Data/Fax Call. The Data Mode fields are further defined in IS-130.

Field	Length
Parameter Type	4
PM_D	3
SAP	1
Acked Data	1
CRC	1
Data Part	3
RLP	2

The PM\_D field is coded as follows:

Value	Function
000	No Data Privacy
001	Data Privacy Algorithm A
All other values are reserved	

The SAP field is coded as follows:

Value	Function
0	SAP 0 only
1	SAP 0 and 1



1 The **Acked Data** field is coded as follows:

Value	Function
0	Acknowledged data, unacknowledged data, or both
1	Reserved

2 The **CRC** field is coded as follows:

Value	Function
0	16-bit Cyclic Redundancy Check
1	24-bit Cyclic Redundancy Check

3 The **Data Part** field is coded as follows:

Value	Function
000	See IS-135
All other values are reserved.	

4 The **RLP** field is coded as follows:

Value	Function
00	RLP1
All other values are reserved.	

## 5 **Data Privacy Mode Map**

6 This information element identifies the forms of data privacy supported by the BMI.

Value	Function
0000	No Data Privacy Supported
XXX1	Data Privacy Algorithm A Supported
1XXX	Reserved for SOC/BSMC Specific Signaling
All other bit map positions are reserved	

## 7 **Debug Display Allowed**

8 This flag indicates whether or not the mobile station is allowed to include a Display  
9 information element in the Audit Confirmation message.

**DELAY**

This information element is used for Control Channel Reselection purposes (see Section 6.3.3).

Code	Value (Superframes)
0000	0
0001	15
0010	30
0011	45
0100	60
0101	75
0110	90
0111	105
1000	150
1001	195
1010	240
1011	285
1100	330
1101	375
1110	420
1111	Reserved

**Delay Interval Compensation Mode (DIC)**

This flag is used to control the application of the DIC mode in the mobile station. When received in the Access Parameters message, the domain of DIC application shall be the DCCH. When received in the Digital Traffic Channel Designation message, the domain of DIC application shall be the DTC.

**DEREG**

This flag indicates whether or not De-registration is enabled.

**Directed Retry Channel**

This flag determines whether or not the neighbor list is to be considered for Directed Retry purposes.

## 1 Directory Address

---

2 When the mobile station is served by a system not networked to its home system, it may  
 3 be assigned a directory address different than that used in its home system. The purpose  
 4 of this information element is to transport the assigned directory address to the mobiler  
 5 station user. The maximum length of this information element is network-dependent.

Field	Length
Parameter Type	4
Address Info	16 - *

## 6 Directory Subaddress

---

7 The Directory Subaddress is transmitted in conjunction with the Directory Address. The  
 8 purpose of this information element is to convey the assigned directory subaddress  
 9 (extension number) to the mobile station user.

Field	Length
Parameter Type	4
Subaddress Info	16 - 176

## 10 Display

---

11 This information element is used to supply Display information that may be displayed to  
 12 the mobile station user. The information contained in this information element is coded in  
 13 IRA characters. If a mobile station receives this information element with a length  
 14 exceeding the maximum length that it supports, the information element should be  
 15 truncated.

Field	Length
Parameter Type	4
Length of Display info (N) (in octets)	8
Display Character (IRA) (Note 1)	8 per instance

16 Note 1: Up to 82 instances (N + 1) may be sent. The encoding of a single character in  
 17 Display Character field is according to CCITT Recommendation T.50 Tables 5  
 18 and A-1. The most significant bit of each octet of Display Character is set to 0.

## 19 DMAC

---

20 This information element indicates the power level to be used on the assigned digital  
 21 traffic channel. The coding is according to IS-136.2, Table 2.1.2.2-1.

## 1 Double Rate DTC Support

---

2 This information element indicates whether or not the mobile station supports double rate  
3 DTCs.

Value	Function
0	Double Rate DTCs Not Supported
1	Double Rate DTCs Supported

## 4 DTX Support

---

5 This information element is used to indicate DTX capabilities supported on the analog  
6 voice channel.

Field	Length
Parameter Type	4
DTX	2

7 The DTX field is coded as follows:

Values	Function
00	DTX Not Supported
01	Reserved
10	DTX Supported - up to 8 dB attenuation
11	DTX Supported - no limit on attenuation

## 8 DVCC

---

9 This information element is as defined in IS-136.2 except that a DVCC value of 0 may be  
10 used by a DCCH.

## 11 Emergency Call

---

12 This flag is used to indicate whether or not an origination is an emergency call. If this flag  
13 is set, it indicates an emergency call and the Called Party Number is ignored by the BMI.

## 14 ESN

---

15 This information element identifies the Electronic Serial Number of the mobile station  
16 (see Section 8.2).

## 1 **Extended Hyperframe Counter**

---

2 A non-critical information element used to support paging frame classes higher than 5.  
 3 This counter ranges from 0 to 7 and is incremented each time the modulo 12 HFC wraps  
 4 around to 0. If this counter is not broadcast, a default value of 0 shall be assumed by the  
 5 mobile station.

Field	Length
Parameter Type	4
EHFC	3

## 6 **FACCH/SACCH ARQ Map**

---

7 This information element identifies whether or not the BMI supports FACCH/SACCH  
 8 ARQ mode on its IS-136 digital traffic channels.

Value	Function
0	FACCH/SACCH ARQ Not Supported
1	FACCH/SACCH ARQ Supported

## 9 **Firmware Vintage**

---

10 This information element is used to identify the mobile station's firmware vintage  
 11 (specific to a mobile station vendor).

## 12 **Forced Re-Registration**

---

13 This flag indicates if the mobile station is required to initiate a Registration attempt with  
 14 Registration Type set to Forced.

## 15 **FOREG**

---

16 This flag indicates whether or not forced registration is enabled.

## 17 **G3-Fax Support**

---

18 This flag indicates whether or not the mobile station supports G3-Fax operation.