3GPP TSG RAN WG1 Meeting #14
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25.221	**CR**	**026r1**	Current Version:	3.3.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN#9	for approval	X	strategic		*(for SMG use only)*
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Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source: Siemens AG **Date:** 00-07-05

Subject: Some corrections for TS25.221

Work item:

Category:				**Release:**		
	F	Correction	X		Phase 2	
	A	Corresponds to a correction in an earlier release			Release 96	
(only one category	B	Addition of feature			Release 97	
shall be marked	C	Functional modification of feature			Release 98	
with an X)	D	Editorial modification			Release 99	X
					Release 00	

Reason for change:

The following changes are included in this CR:
- Removal of a remaining reference to ODMA
- Correction of the PI to bit mapping and aligning terminology with WG2/WG3
- Alignment with FDD regarding 'Indicator Channel' Terminology
- Extension of Abbreviations and References
- Correction of Multiframe Structures in Annex
- Correction of UL TS format numbering
- Correction of DTrCH mapping
- Clarification on the midamble allocation for the P-CCPCH time slot
- Correction of a reference to TS25.302
- Modification of SCH figure

Clauses affected: 3; 4; 5.2.2.3.2; 5.3.1.3; 5.3.4; 5.3.7; 5.5.2; 5.6.1; 6; Annex B

Other specs affected:			
Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

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2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

[1] 3G TS 25.201: "Physical layer - general description".

[2] 3G TS 25.211: "Physical channels and mapping of transport channels onto physical channels (FDD)".

[3] 3G TS 25.212: "Multiplexing and channel coding (FDD)".

[4] 3G TS 25.213: "Spreading and modulation (FDD)".

[5] 3G TS 25.214: "Physical layer procedures (FDD)".

[6] 3G TS 25.215: "Physical layer – Measurements (FDD)".

[7] 3G TS 25.222: "Multiplexing and channel coding (TDD)".

[8] 3G TS 25.223: "Spreading and modulation (TDD)".

[9] 3G TS 25.224: "Physical layer procedures (TDD)".

[10] 3G TS 25.225: "Physical layer – Measurements (TDD)".

[11] 3G TS 25.301: "Radio Interface Protocol Architecture".

[12] 3G TS 25.302: "Services Provided by the Physical Layer".

[13] 3G TS 25.401: "UTRAN Overall Description".

[14] 3G TS 25.402: "Synchronisation in UTRAN, Stage 2".

[15] 3G TS 25.304: "-UE Procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode".

[16] 3G TS 25.427: "UTRAN Iur and Iub interface user plane protocols for DCH data streams".

3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

BCH	Broadcast Channel
CCPCH	Common Control Physical Channel
CCTrCH	Coded Composite Transport Channel
CDMA	Code Division Multiple Access
DPCH	Dedicated Physical Channel
DRX	Discontinuous Reception
DSCH	Downlink Shared Channel
FACH	Forward Access Channel
FDD	Frequency Division Duplex
FEC	Forward Error Correction
GP	Guard Period
GSM	Global System for Mobile Communication
NRT	Non-Real Time
OVSF	Orthogonal Variable Spreading Factor
P-CCPCH	Primary CCPCH
PCH	Paging Channel
PDSCH	Physical Downlink Shared Channel
~~PDU~~	~~Protocol Data Unit~~
PI	Paging Indicator (value calculated by higher layers)
PICH	Pag~~e~~ing Indicator Channel
P_q	Paging Indicator (indicator set by physical layer)
PRACH	Physical Random Access Channel
PUSCH	Physical Uplink Shared Channel
RACH	Random Access Channel
~~RLC~~	~~Radio Link Control~~
RF	Radio Frame
RT	Real Time
S-CCPCH	Secondary CCPCH
SCH	Synchronisation Channel
SFN	Cell System Frame Number
TCH	Traffic Channel
TDD	Time Division Duplex
TDMA	Time Division Multiple Access
TrCH	Transport Channel
UE	User Equipment
USCH	Uplink Shared Channel

4 Services offered to higher layers~~Transport channels~~

4.1 Transport channels

Transport channels are the services offered by layer 1 to the higher layers. A transport channel is defined by how and with what characteristics data is transferred over the air interface. A general classification of transport channels is into two groups:

- Dedicated Channels, using inherent addressing of UE

- Common Channels, using explicit addressing of UE if addressing is needed

General concepts about transport channels are described in [12]~~3GPP RAN TS 25.302 (L2 specification)~~.

4.1.1 Dedicated transport channels

The Dedicated Channel (DCH) is an up- or downlink transport channel that is used to carry user or control information between the UTRAN and a UE.

4.1.2 Common transport channels

There are six types of transport channels: BCH, FACH, PCH, RACH, USCH, DSCH

4.1.2.1 BCH - Broadcast Channel

The Broadcast Channel (BCH) is a downlink transport channel that is used to broadcast system- and cell-specific information.

4.1.2.2 FACH – Forward Access Channel

The Forward Access Channel (FACH) is a downlink transport channel that is used to carry control information to a mobile station when the system knows the location cell of the mobile station. The FACH may also carry short user packets.

4.1.2.3 PCH – Paging Channel

The Paging Channel (PCH) is a downlink transport channel that is used to carry control information to a mobile station when the system does not know the location cell of the mobile station.

4.1.2.4 RACH – Random Access Channel

The Random Access Channel (RACH) is an up link transport channel that is used to carry control information from mobile station. The RACH may also carry short user packets.

4.1.2.5 USCH – Uplink Shared Channel

The uplink shared channel (USCH) is an uplink transport channel shared by several UEs carrying dedicated control or traffic data.

4.1.2.6 DSCH – Downlink Shared Channel

The downlink shared channel (DSCH) is a downlink transport channel shared by several UEs carrying dedicated control or traffic data.

4.2 Indicators

Indicators are means of fast low-level signalling entities which are transmitted without using information blocks sent over transport channels. The meaning of indicators is implicit to the receiver.

The indicator(s) defined in the current version of the specifications are: Paging Indicator.

5.2.2.3.2 Uplink timeslot formats

The uplink timeslot format depends on the spreading factor, midamble length and on the number of the TFCI bits. Due to TPC, different amount of bits are mapped to the two data fields. The timeslot formats are depicted in the table 4b.

Table 4b: Timeslot formats for the Uplink

Slot Format #	Spreading Factor	Midamble length (chips)	N_{TFCI} (bits)	N_{TPC} (bits)	Bits/slot	$N_{Data/Slot}$ (bits)	$N_{data/data\ field(1)}$ (bits)	$N_{data/data\ field(2)}$ (bits)
0	16	512	0	0	244	244	122	122
~~5~~1	16	512	0	2	244	242	122	120
2~~6~~	16	512	4	2	244	238	120	118
3~~7~~	16	512	8	2	244	234	118	116
4~~8~~	16	512	16	2	244	226	114	112
5~~9~~	16	512	32	2	244	210	106	104
6~~10~~	16	256	0	0	276	276	138	138
7~~15~~	16	256	0	2	276	274	138	136
8~~16~~	16	256	4	2	276	270	136	134
9~~17~~	16	256	8	2	276	266	134	132
10~~8~~	16	256	16	2	276	258	130	128
11~~9~~	16	256	32	2	276	242	122	120
12~~20~~	8	512	0	0	488	488	244	244
13~~25~~	8	512	0	2	488	486	244	242
14~~26~~	8	512	4	2	488	482	242	240
15~~27~~	8	512	8	2	488	478	240	238
16~~28~~	8	512	16	2	488	470	236	234
17~~29~~	8	512	32	2	488	454	228	226
18~~30~~	8	256	0	0	552	552	276	276
19~~35~~	8	256	0	2	552	550	276	274
20~~36~~	8	256	4	2	552	546	274	272
21~~37~~	8	256	8	2	552	542	272	270
22~~38~~	8	256	16	2	552	534	268	266
23~~39~~	8	256	32	2	552	518	260	258
24~~40~~	4	512	0	0	976	976	488	488
25~~45~~	4	512	0	2	976	974	488	486
26~~46~~	4	512	4	2	976	970	486	484
27~~47~~	4	512	8	2	976	966	484	482
28~~48~~	4	512	16	2	976	958	480	478
29~~49~~	4	512	32	2	976	942	472	470
30~~50~~	4	256	0	0	1104	1104	552	552
31~~55~~	4	256	0	2	1104	1102	552	550
32~~56~~	4	256	4	2	1104	1098	550	548
33~~57~~	4	256	8	2	1104	1094	548	546
34~~58~~	4	256	16	2	1104	1086	544	542
35~~59~~	4	256	32	2	1104	1070	536	534
36~~60~~	2	512	0	0	1952	1952	976	976
37~~65~~	2	512	0	2	1952	1950	976	974
38~~66~~	2	512	4	2	1952	1946	974	972
39~~67~~	2	512	8	2	1952	1942	972	970
40~~68~~	2	512	16	2	1952	1934	968	966
41~~69~~	2	512	32	2	1952	1918	960	958
42~~70~~	2	256	0	0	2208	2208	1104	1104
43~~75~~	2	256	0	2	2208	2206	1104	1102
44~~76~~	2	256	4	2	2208	2202	1102	1100
45~~77~~	2	256	8	2	2208	2198	1100	1098
46~~78~~	2	256	16	2	2208	2190	1096	1094
47~~79~~	2	256	32	2	2208	2174	1088	1086

Slot Format #	Spreading Factor	Midamble length (chips)	N_{TFCI} (bits)	N_{TPC} (bits)	Bits/slot	$N_{Data/Slot}$ (bits)	$N_{data/data\ field(1)}$ (bits)	$N_{data/data\ field(2)}$ (bits)
48~~80~~	1	512	0	0	3904	3904	1952	1952
49~~85~~	1	512	0	2	3904	3902	1952	1950
50~~86~~	1	512	4	2	3904	3898	1950	1948
51~~87~~	1	512	8	2	3904	3894	1948	1946
52~~88~~	1	512	16	2	3904	3886	1944	1942
53~~89~~	1	512	32	2	3904	3870	1936	1934
54~~90~~	1	256	0	0	4416	4416	2208	2208
55~~95~~	1	256	0	2	4416	4414	2208	2206
56~~96~~	1	256	4	2	4416	4410	2206	2204
57~~97~~	1	256	8	2	4416	4406	2204	2202
58~~98~~	1	256	16	2	4416	4398	2200	2198
59~~99~~	1	256	32	2	4416	4282	2192	2190

5.3.1.3 P-CCPCH Training sequences

The training sequences, i.e. midambles, as described in subclause 5.2.3 are used for the P-CCPCH. For those timeslots in which the P-CCPCH is transmitted, the midambles m$^{(1)}$ ~~,~~ and m$^{(2)}$~~, m$^{(9)}$ and m$^{(10)}$~~ are reserved for P-CCPCH in order to support Block STTD antenna diversity and the beacon function, see 5.4 and 5.5. The use of midambles depends on whether Block STTD is applied to the P-CCPCH:

- If no antenna diversity is applied to P-CCPCH, m$^{(1)}$ is used and m$^{(2)}$ is left unused;
- If Block STTD antenna diversity is applied to P-CCPCH, m$^{(1)}$ is used for the first antenna and m$^{(2)}$ is used for the diversity antenna.

~~The midambles m$^{(9)}$ and m$^{(10)}$ are always left unused in the P-CCPCH time slots.~~

5.3.4 The synchronisation channel (SCH)

In TDD mode code group of a cell can be derived from the synchronisation channel. In order not to limit the uplink/downlink asymmetry the SCH is mapped on one or two downlink slots per frame only.

There are two cases of SCH and P-CCPCH allocation as follows:

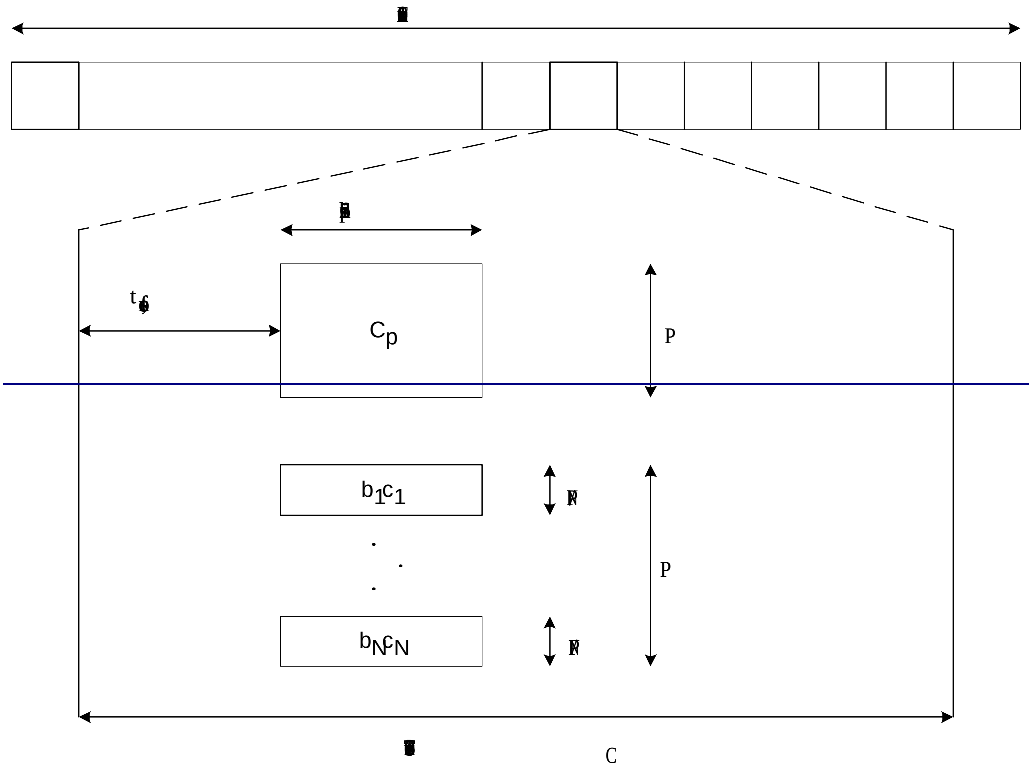
Case 1) SCH and P-CCPCH allocated in TS#k, k=0….14

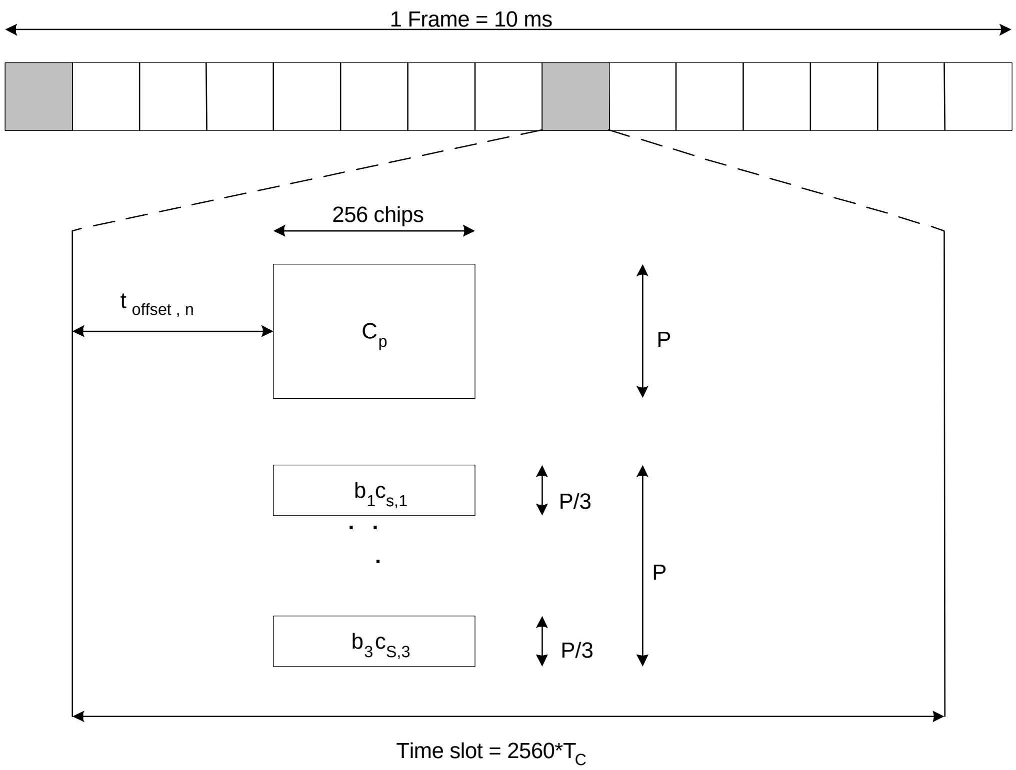
Case 2) SCH allocated in two TS: TS#k and TS#k+8, k=0…6; P-CCPCH allocated in TS#k.

The position of SCH (value of k) in frame can change on a long term basis in any case.

Due to this SCH scheme, the position of P-CCPCH is known from the SCH.

Figure 14 is an example for transmission of SCH, k=0, of Case 2.





$C_{s,i} \in \{C_0, C_1, C_3, C_4, C_5, C_6, C_8, C_{10}, C_{12}, C_{13}, C_{14}, C_{15}\}$, i=1,2,3; see [8]

Figure 14: Scheme for Synchronisation channel SCH consisting of one primary sequence C_p and ~~N~~=3 parallel secondary sequences $C_{s,i}$ in slot k and k+8 (example for k=0 in Case 2)

~~(example for k=0 in Case 2)~~

As depicted in figure 14, the SCH consists of a primary and three secondary code sequences with 256 chips length. The primary and secondary code sequences are defined in [8] clause 7 'Synchronisation codes'.

Due to mobile to mobile interference, it is mandatory for public TDD systems to keep synchronisation between base stations. As a consequence of this, a capture effect concerning SCH can arise. The time offset t_{offset} enables the system to overcome the capture effect.

The time offset t_{offset} is one of 32 values, depending on the cell parameter, thus on the code group of the cell, cf. 'table 6 Mapping scheme for Cell Parameters, Code Groups, Scrambling Codes, Midambles and t_{offset}' in [8]. Note that the cell parameter will change from frame to frame, cf. 'Table 7 Alignment of cell parameter cycling and system frame number' in [8], but the cell will belong to only one code group and thus have one time offset t_{offset}.The exact value for t_{offset}, regarding column 'Associated t_{offset}' in table 6 in [8] is given by:

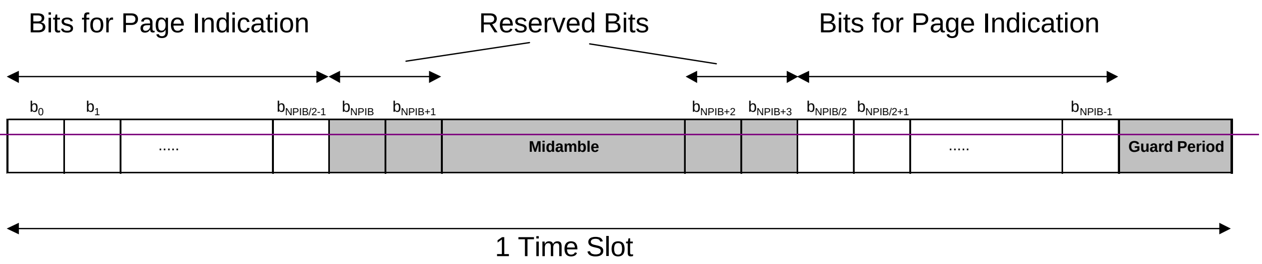
$$\begin{aligned} t_{offset,n} &= n \cdot T_c \left\lfloor \frac{2560 - 96 - 256}{31} \right\rfloor \\ &= n \cdot 71 T_c \ ; \quad n = 0, \ldots, 31 \end{aligned}$$

Please note that $\lfloor x \rfloor$ denotes the largest integer number less or equal to x and that T_c denotes the chip duration.

5.3.7 The Paginge~~e~~ Indicator Channel (PICH)

The Paginge Indicator Channel (PICH) is a physical channel used to carry the ~~P~~paginge i~~I~~ndicators~~ (PI)~~. The PICH is always transmitted at the same reference power level as the P-CCPCH.

Figure 15 depicts the structure of a PICH burst and the numbering of the bits within the burst. The same burst type is used for the PICH in every cell. N_{PIB} bits in a normal burst of type 1 or 2 are used to carry the ~~P~~paging ~~I~~indicators, where N_{PIB} depends on the burst type: N_{PIB}=240 for burst type 1 and N_{PIB}=272 for burst type 2. The bits $b_{NPIB},\dots, b_{NPIB+3}$ adjacent to the midamble are reserved for possible future use. They shall be set to 0 and transmitted with the same power as the ~~P~~paging ~~I~~indicator carrying bits.



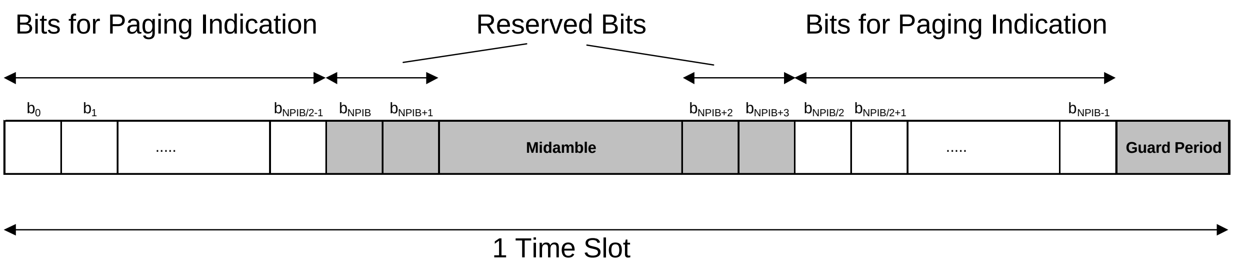


Figure 15: Transmission and n~~N~~umbering of ~~P~~paging ~~I~~indicator carrying b~~B~~its in a PICH burst

In each time slot, N_{PI} paginge indicators are transmitted, using ~~of length~~ L_{PI}=~~4~~2, L_{PI}=~~8~~ 4 or L_{PI}=~~16~~ 8 ~~bits~~ symbols~~are transmitted in one time slot~~. L_{PI} is called the paging indicator length. The number of paginge indicators N_{PI} per time slot is given by the paging indicator length ~~the number L_{PI} of bits for the page indicators~~ and the burst type, which are both known by higher layer signalling. In table 8 this number is shown for the different possibilities of burst types and paging indicator~~PI~~ lengths.

Table 8: Number N_{PI} of paging indicators~~PI~~ per time slot for the different burst types and paging indicator~~PI~~ lengths L_{PI}

	L_{PI}=~~4~~2	L_{PI}=~~8~~4	L_{PI}=~~16~~8
Burst Type 1	N_{PI}=60	N_{PI}=30	N_{PI}=15
Burst Type 2	N_{PI}=68	N_{PI}=34	N_{PI}=17

As shown in figure 16, the ~~P~~paginge ~~I~~indicators of N_{PICH} consecutive frames form a PICH block, N_{PICH} is configured by higher layers. Thus, $N_P=N_{PICH}*N_{PI}$ ~~P~~paginge i~~I~~ndicators are transmitted in each PICH block.

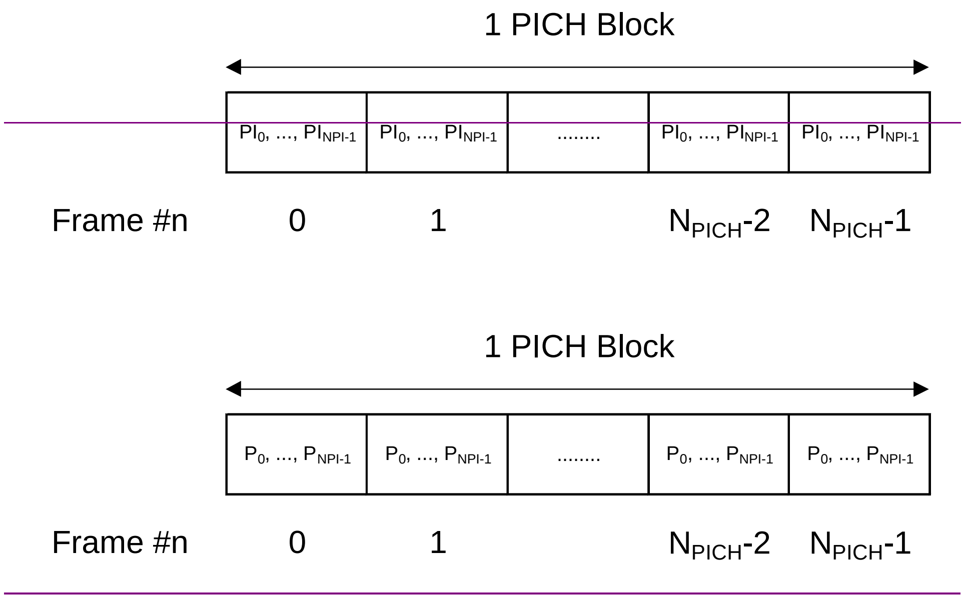


Figure 16: Structure of a PICH block

The value PI ($PI = 0, \ldots, N_P-1$) calculated by higher layers for use for a certain UE, see [15], is associated ~~mapped~~ to the ~~P~~paging~~e~~ ~~I~~indicator $P\cancel{I}_{\cancel{p}q}$ in the nth frame of one PICH block, where ~~p~~q is given by

$$\cancel{p}\ q = PI \bmod N_{PI}$$

and n is given by

$$n = PI \operatorname{div} N_{PI}.$$

The PI bitmap in the PCH data frames over Iub contains indication values for all possible higher layer PI values, see [16]. Each bit in the bitmap indicates if the paging indicator P_q associated with that particular PI shall be set to 0 or 1. Hence, the calculation in the formulas above is to be performed in Node B to make the association between PI and P_q.

The p~~P~~aging~~e~~ i~~I~~ndicator $P\cancel{I}_{\cancel{p}q}$ in one time slot is mapped to the bits $\{b_{L_{pi}*\cancel{p}q},\ldots,b_{L_{pi}*\cancel{p}q+L_{pi}-1},b_{N_{PIB}/2+L_{pi}*\cancel{p}q},\ldots,b_{N_{PIB}/2+L_{pi}*\cancel{p}q+L_{pi}-1}\}$ within this time slot, as exemplary shown in figure 17. Thus, half of the L_{PI} symbols used for each paging indicator are transmitted in the first data part, and the other half of the L_{PI} symbols are transmitted in the second data part.

The coding of the paging indicator P_q is given in [7].

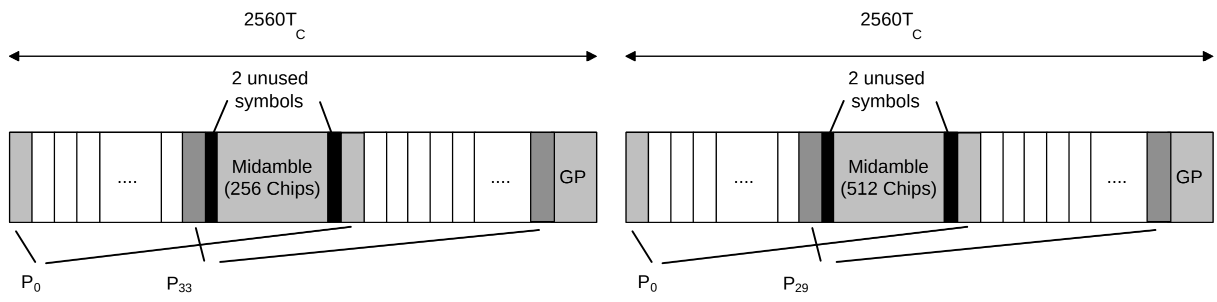


Figure 17: Example of mapping of paging indicators on PICH bits for $L_{PI}=4$

5.5.2 Physical characteristics of the beacon function

The physical channels providing the beacon function:

- are transmitted with reference power;
- are transmitted without beamforming;
- use burst type 1;
- use midamble m ~~m~~$^{(1)}$ and $m^{(2)}$ exclusively in this time slot; and
- midambles m~~m~~$^{(9)}$ and $m^{(10)}$ are always left unused in this time slot, if 16 midambles are allowed in that cell.

Note that in the time slot where the P-CCPCH is transmitted only the midambles $m^{(1)}$ to $m^{(8)}$ shall be used, see 5.6.1. Thus, midambles $m^{(9)}$ and $m^{(10)}$ are always left unused in this time slot.

The reference power corresponds to the sum of the power allocated to both midambles m~~m~~$^{(1)}$ and $m^{(2)}$. Two possibilities exist:

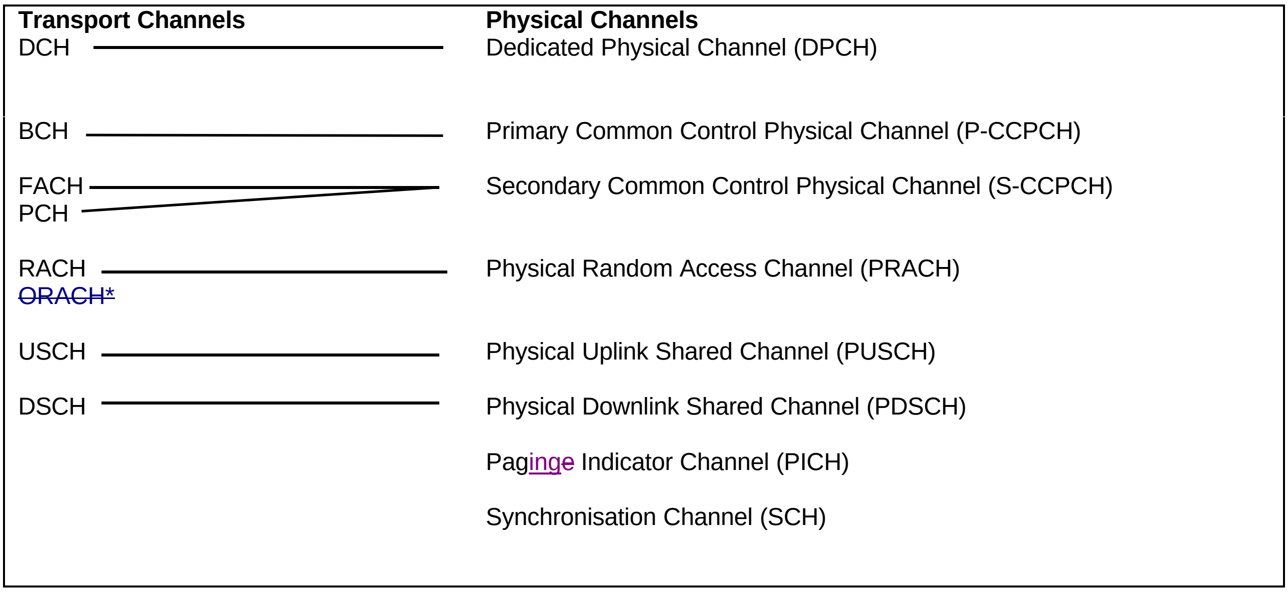
- If no Block STTD antenna diversity is applied to P-CCPCH, all the reference power of any physical channel providing the beacon function is allocated to $m^{(1)}$.
- If Block STTD antenna diversity is applied to P-CCPCH, for any physical channel providing the beacon function midambles $m^{(1)}$ and $m^{(2)}$ are each allocated half of the reference power. Midamble $m^{(1)}$ is used for the first antenna and $m^{(2)}$ is used for the diversity antenna. Block STTD encoding is used for the data in P-CCPCH, see [9]; for all other physical channels identical data sequences are transmitted on both antennas.

5.6.1 Midamble Allocation for DL Physical Channels

Physical channels providing the beacon function shall always use the reserved midambles $m^{(1)}$ and $m^{(2)}$, see 5.4. For DL physical channels that are located in the same time slot as the P-CCPCH, midambles shall be allocated by default, using the association for burst type 1 and K=8 midambles. For all other DL physical channels the midamble allocation is signalled or given by default.

6 Mapping of transport channels to physical channels

This clause describes the way in which transport channels are mapped onto physical resources, see figure 18~~7~~.



~~Figure 17~~Figure 18: Transport channel to physical channel mapping

6.1 Dedicated Transport Channels

A dedicated transport channel is mapped onto one or more physical channels. An interleaving period is associated with each allocation. The frame is subdivided into slots that are available for uplink and downlink information transfer. The mapping of transport blocks on physical channels is described in TS 25.222 ("multiplexing and channel coding").

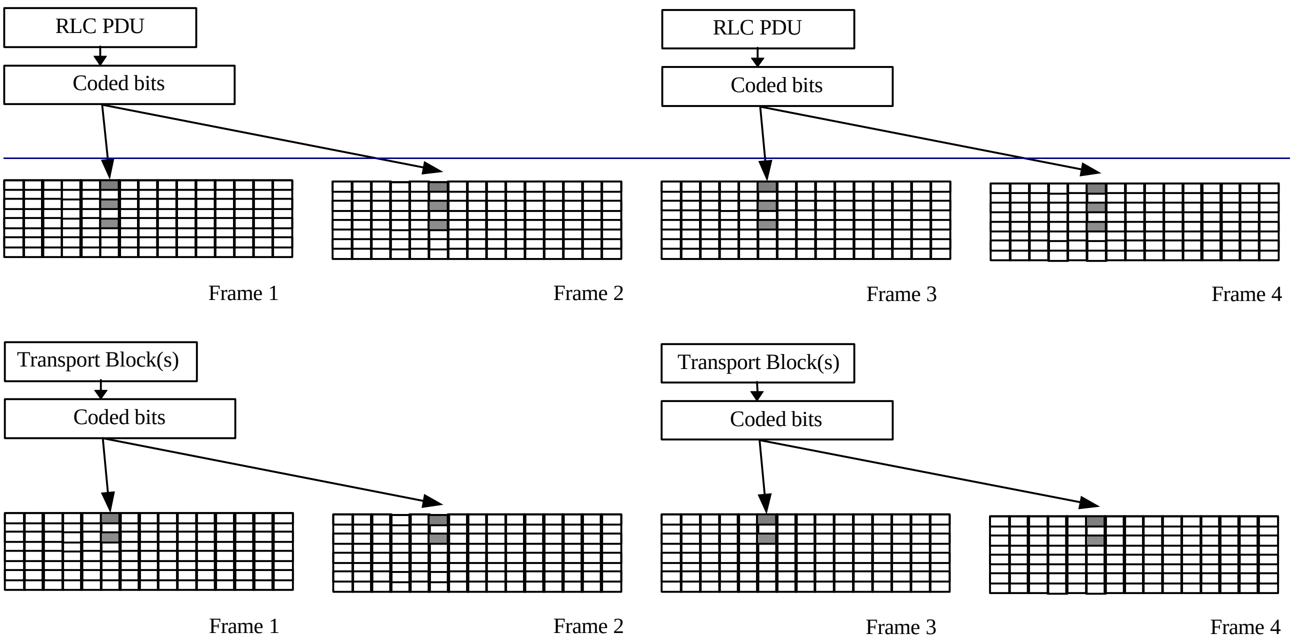


Figure 19~~8~~: Mapping of Transport Blocks~~PDU~~ onto the physical bearer

For NRT packet data services, shared channels (USCH and DSCH) can be used to allow efficient allocations for a short period of time.

6.2 Common Transport Channels

6.2.1 The Broadcast Channel (BCH)

The BCH is mapped onto the P-CCPCH. The secondary SCH indicates in which timeslot a mobile can find the P-CCPCH containing BCH. ~~If the broadcast information requires more resources than provided by the P-CCPCH, the BCH in P-CCPCH will comprise a pointer to additional S-CCPCH resources for FACH in which this additional broadcast information shall be sent.~~

6.2.2 The Paging Channel (PCH)

The PCH is mapped onto one or several S-CCPCHs so that capacity can be matched to requirements. The location of the PCH is indicated on the BCH. It is always transmitted at a reference power level.

To allow an efficient DRX, the PCH is divided into PCH blocks, each of which comprising N_{PCH} paging sub-channels. N_{PCH} is configured by higher layers. Each paging sub-channel is mapped onto 2 consecutive PCH frames within one PCH block. Layer 3 information to a particular UE is transmitted only in the paging sub-channel, that is assigned to the UE by higher layers, see [15]. The assignment of UEs to paging sub-channels is independent of the assignment of UEs to page indicators.

6.2.2.1 PCH/PICH Association

As depicted in figure 20~~19~~, a paging block consists of one PICH block and one PCH block. If a p~~P~~aginge i~~I~~ndicator in a certain PICH block is set to '1' it is an indication that UEs associated with this p~~P~~aginge i~~I~~ndicator shall read their corresponding paging sub-channel within the same paging block. The value N_{GAP}>0 of frames between the end of the PICH block and the beginning of the PCH block is configured by higher layers.

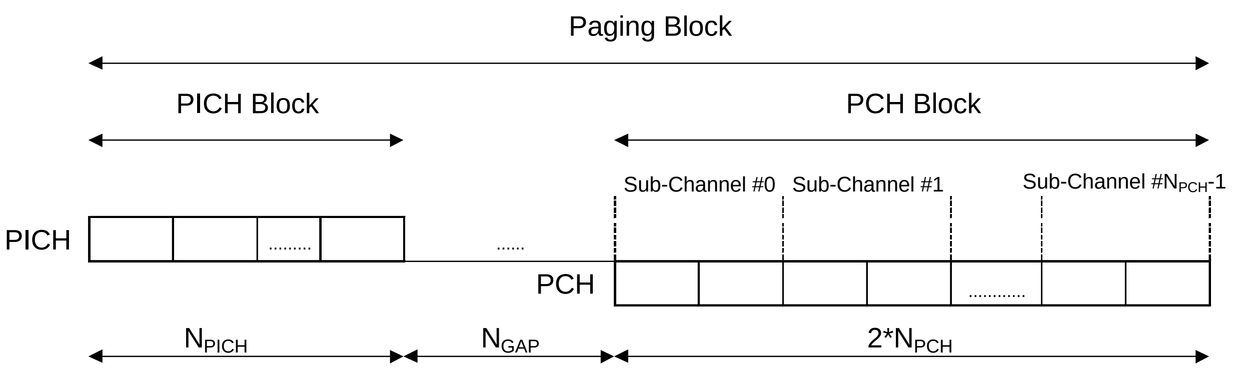


Figure 20~~19~~: Paging Sub-Channels and Association of PICH and PCH blocks

Annex B (Informative): CCPCH Multiframe Structure

In the following figures B.1 to B.3 some examples for Multiframe Structures on Primary and Secondary CCPCH are given. The figures show the placement of Common Transport Channels on the Common Control Physical Channels. Additional S-CCPCH capacity can be allocated on other codes and timeslots of course, e.g. FACH capacity is related to overall cell capacity and can be configured according to the actual needs. Channel capacities in the annex are derived using bursts with long midambles (Burst format 1). Every TrCH-box in the figures is assumed to be valid for two frames (see row ‘Frame #’), i.e. the transport channels in CCPCHs have an interleaving time of 20msec.

The actual CCPCH Multiframe Scheme used in the cell is described and broadcast on BCH. Thus the system information structure has its roots in this particular transport channel and allocations of other Common Channels can be handled this way, i.e. by pointing from BCH.

~~Frame #~~	~~0 1~~	~~2 3~~	~~4 5~~	~~6 7~~	~~8 9~~	~~10 11~~	~~12 13~~	~~14 15~~	~~16 17~~	~~18 19~~	~~20 21~~	~~22 23~~	~~24 25~~	~~26 27~~	~~28 29~~	~~30 31~~	~~32 33~~	~~34 35~~	~~36 37~~	~~38 39~~	~~40 41~~	~~42 43~~	~~44 45~~	~~46 47~~	~~48 49~~	~~50 41~~	~~52 53~~	~~54 55~~	~~56 57~~	~~58 59~~	~~60 61~~	~~62 63~~	~~64 65~~	~~66 67~~	~~68 69~~	~~70 71~~
~~CCPCHs in TS k, Code 0~~																																				
~~CCPCHs in TS k+8, Co 0~~																																				

~~BCH transporting BCCH 2,71 kbps~~	~~FACH transporting BCCH 2,71 kbps~~	~~PCH 13,5kbps~~	~~PICH 2,71 kbps~~	~~FACH 27,1 kbps~~

~~Figure B.1: Example for a multiframe structure for CCPCHs that is repeated every 72th frame~~

~~Frame #~~	~~0 1~~	~~2 3~~	~~4 5~~	~~6 7~~	~~8 9~~	~~10 11~~	~~12 13~~	~~14 15~~	~~16 17~~	~~18 19~~	~~20 21~~	~~22 23~~	~~24 25~~	~~26 27~~	~~28 29~~	~~30 31~~	~~32 33~~	~~34 35~~	~~36 37~~	~~38 39~~	~~40 41~~	~~42 43~~	~~44 45~~	~~46 47~~	~~48 49~~	~~50 41~~	~~52 53~~	~~54 55~~	~~56 57~~	~~58 59~~	~~60 61~~	~~62 63~~	~~64 65~~	~~66 67~~	~~68 69~~	~~70 71~~
~~CCPCHs in TS k, Code 0~~																																				
~~CCPCHs in TS k, Code n~~																																				
~~CCPCHs in TS k+8, Co 0~~																																				

~~BCH transporting BCCH 2,71 kbps~~	~~FACH transporting BCCH 2,71 kbps~~	~~PCH 13,5kbps~~	~~PICH 2,71 kbps~~	~~FACH 51,5 kbps~~

~~Figure B.2: Example for a multiframe structure for CCPCHs that is repeated every 72th frame, n=1…7~~

~~Frame #~~	~~0 1~~	~~2 3~~	~~4 5~~	~~6 7~~	~~8 9~~	~~10 11~~	~~12 13~~	~~14 15~~	~~16 17~~	~~18 19~~	~~20 21~~	~~22 23~~	~~24 25~~	~~26 27~~	~~28 29~~	~~30 31~~	~~32 33~~	~~34 35~~	~~36 37~~	~~38 39~~	~~40 41~~	~~42 43~~	~~44 45~~	~~46 47~~	~~48 49~~	~~50 41~~	~~52 53~~	~~54 55~~	~~56 57~~	~~58 59~~	~~60 61~~	~~62 63~~	~~64 65~~	~~66 67~~	~~68 69~~	~~70 71~~
~~CCPCHs in TS k, Code 0~~																																				
~~CCPCHs in TS k+8, Co 0~~																																				

~~BCH transporting BCCH 2,71 kbps~~	~~FACH transporting BCCH 1,355 kbps~~	~~PCH 13,5kbps~~	~~PICH 2,71 kbps~~	~~FACH 28,5 kbps~~

~~Figure B.3: Example for a multiframe structure for CCPCHs that is repeated every 72th frame~~

Frame #	0 1	2 3	4 5	6 7	8 9	10 11	12 13	14 15	16 17	18 19	20 21	22 23	24 25	26 27	28 29	30 31	32 33	34 35	36 37	38 39	40 41	42 43	44 45	46 47	48 49	50 41	52 53	54 55	56 57	58 59	60 61	62 63
CCPCHs in TS k, Code 0																																
CCPCHs in TS k+8, Code 0																																

	BCH 12,2 kbps		FACH 25,93 kbps		PCH 9,15 kbps		PICH 1,53 kbps

Figure B.1: Example for a multiframe structure for CCPCHs and PICH that is repeated every 64th frame

Frame #	0 1	2 3	4 5	6 7	8 9	10 11	12 13	14 15	16 17	18 19	20 21	22 23	24 25	26 27	28 29	30 31	32 33	34 35	36 37	38 39	40 41	42 43	44 45	46 47	48 49	50 41	52 53	54 55	56 57	58 59	60 61	62 63
CCPCHs in TS k, Code 0																																
CCPCHs in TS k+8, Code 0																																
CCPCHs in TS k+8, Code n																																

	BCH 22,88 kbps		FACH 36,6 kbps		PCH 12,2 kbps		PICH 1,53 kbps

Figure B.2: Example for a multiframe structure for CCPCHs and PICH that is repeated every 64th frame, n=1…7