3GPP TSG RAN WG1#12
Seoul, Korea, 10-13 April 2000

Document R1-00-0578
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.211	CR	051r1	Current Version:	3.2.0

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

For submission to:	RAN#	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	

Source: Siemens **Date:** 13-April-2000

Subject: Bit value notation change for PICH and CSICH

Work item:

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

Reason for change: The bit value notation 0/1 used does not match the expected +1/-1 notation for modulation.

Clauses affected: 5.3.3.9, 5.3.3.10

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:

<---------- double-click here for help and instructions on how to create a CR.

5.3.3.9 Paging Indicator Channel (PICH)

The Paging Indicator Channel (PICH) is a fixed rate (SF=256) physical channel used to carry the Paging Indicators (PI). The PICH is always associated with an S-CCPCH to which a PCH transport channel is mapped.

Figure 24 illustrates the frame structure of the PICH. One PICH radio frame of length 10 ms consists of 300 bits (b_0, b_1, …, b_{299}). Of these, 288 bits (b_0, b_1, …, b_{287}) are used to carry Paging Indicators. The remaining 12 bits (b_{288}, b_{289}, …, b_{299}) are undefined.

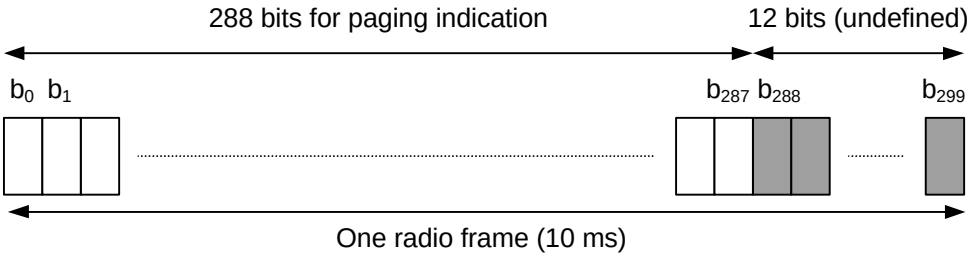

Figure 24: Structure of Paging Indicator Channel (PICH)

N Paging Indicators {PI_0, …, PI_{N-1}} are transmitted in each PICH frame, where N=18, 36, 72, or 144.

The PI calculated by higher layers for use for a certain UE, is mapped to the paging indicator PI_p, where p is computed as a function of the PI computed by higher layers, the SFN of the P-CCPCH radio frame during which the start of the PICH radio frame occurs, and the number of paging indicators per frame (N):

$$p = \left(PI + \left\lfloor \left(\left(18 \times \left(SFN + \lfloor SFN/8 \rfloor + \lfloor SFN/64 \rfloor + \lfloor SFN/512 \rfloor \right) \right) \bmod 144 \right) \times \frac{N}{144} \right\rfloor \right) \bmod N .$$

The mapping from {PI_0, …, PI_{N-1}} to the PICH bits {b_0, …, b_{287}} are according to table 22.

Table 22: Mapping of Paging Indicators (PI) to PICH bits

Number of PI per frame (N)	PI_p = 1	PI_p = 0
N=18	{b_{16p}, …, b_{16p+15}} = {~~1~~ 1, ~~1~~ 1,…, ~~1~~ 1}	{b_{16p}, …, b_{16p+15}} = {~~0~~ 1, ~~0~~ 1,…, ~~0~~ 1}
N=36	{b_{8p}, …, b_{8p+7}} = {~~1~~ 1, ~~1~~ 1,…, ~~1~~ 1}	{b_{8p}, …, b_{8p+7}} = {~~0~~ 1, ~~0~~ 1,…, ~~0~~ 1}
N=72	{b_{4p}, …, b_{4p+3}} = {~~1~~ 1, ~~1~~ 1,…, ~~1~~ 1}	{b_{4p}, …, b_{4p+3}} = {~~0~~ 1, ~~0~~ 1,…, ~~0~~ 1}
N=144	{b_{2p}, b_{2p+1}} = {~~1~~ 1, ~~1~~ 1}	{b_{2p}, b_{2p+1}} = {~~0~~ 1, ~~0~~ 1}

If a Paging Indicator in a certain frame is set to "1" it is an indication that UEs associated with this Paging Indicator should read the corresponding frame of the associated S-CCPCH.

When transmit diversity is employed for the PICH, STTD encoding is used on the PICH bits as described in section 5.3.1.1.1.

5.3.3.10 CPCH Status Indicator Channel (CSICH)

The CPCH Status Indicator Channel (CSICH) is a fixed rate (SF=256) physical channel used to carry CPCH status information.

A CSICH is always associated with a physical channel used for transmission of CPCH AP-AICH and uses the same channelization and scrambling codes. Figure 25 illustrates the frame structure of the CSICH. The CSICH frame consists of 15 consecutive access slots (AS) each of length 40 bits. Each access slot consists of two parts, a part of duration 4096 chips with no transmission, and a Status Indicator (SI) part consisting of 8 bits b_{8i},….b_{8i+7}, where i is the access slot number. The modulation used by the CSICH is the same as for the PICH. The phase reference for the CSICH is the Primary CPICH.

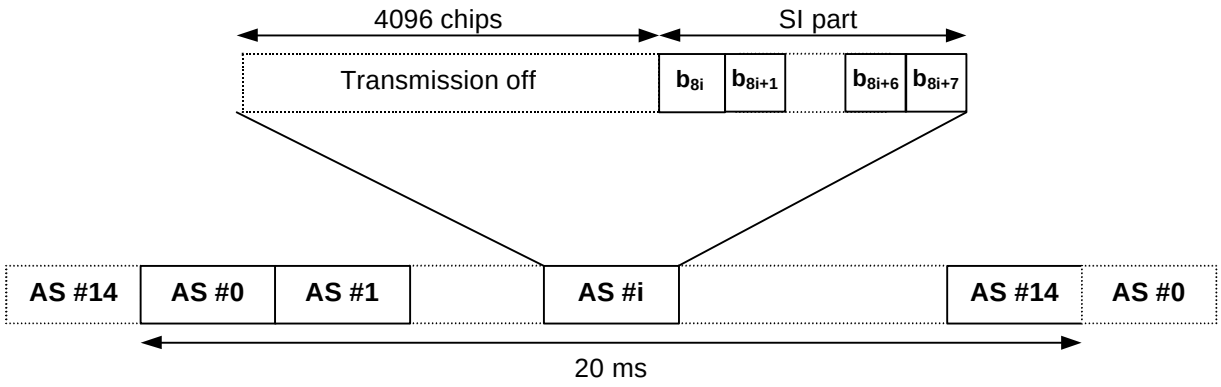

Figure 25: Structure of CPCH Status Indicator Channel (CSICH)

N Status Indicators $\{SI_0, \ldots, SI_{N-1}\}$ shall be transmitted in each CSICH frame. The mapping from $\{SI_0, \ldots, SI_{N-1}\}$ to the CSICH bits $\{b_0, \ldots, b_{119}\}$ is according to table 23. The Status Indicators shall be transmitted in all the access slots of the CSICH frame, even if some signatures and/or access slots are shared between CPCH and RACH.

Table 23: Mapping of Status Indicators (SI) to CSICH bits

Number of SI per frame (N)	$SI_n = 1$	$SI_n = 0$
N=1	$\{b_0, \ldots, b_{119}\} = \{\underline{\underline{1}}, \underline{\underline{1}}, \ldots, \underline{\underline{1}}\}$	$\{b_0, \ldots, b_{119}\} = \{\underline{\underline{0}}, \underline{\underline{0}}, \ldots, \underline{\underline{0}}\}$
N=3	$\{b_{40n}, \ldots, b_{40n+39}\} = \{\underline{\underline{1}}, \underline{\underline{1}}, \ldots, \underline{\underline{1}}\}$	$\{b_{40n}, \ldots, b_{40n+39}\} = \{\underline{\underline{0}}, \underline{\underline{0}}, \ldots, \underline{\underline{0}}\}$
N=5	$\{b_{24n}, \ldots, b_{24n+23}\} = \{\underline{\underline{1}}, \underline{\underline{1}}, \ldots, \underline{\underline{1}}\}$	$\{b_{24n}, \ldots, b_{24n+23}\} = \{\underline{\underline{0}}, \underline{\underline{0}}, \ldots, \underline{\underline{0}}\}$
N=15	$\{b_{8n}, \ldots, b_{8n+7}\} = \{\underline{\underline{1}}, \underline{\underline{1}}, \ldots, \underline{\underline{1}}\}$	$\{b_{8n}, \ldots, b_{8n+7}\} = \{\underline{\underline{0}}, \underline{\underline{0}}, \ldots, \underline{\underline{0}}\}$
N=30	$\{b_{4n}, \ldots, b_{4n+3}\} = \{\underline{\underline{1}}, \underline{\underline{1}}, \underline{\underline{1}}, \underline{\underline{1}}\}$	$\{b_{4n}, \ldots, b_{4n+3}\} = \{\underline{\underline{0}}, \underline{\underline{0}}, \underline{\underline{0}}, \underline{\underline{0}}\}$
N=60	$\{b_{2n}, b_{2n+1}\} = \{\underline{\underline{1}}, \underline{\underline{1}}\}$	$\{b_{2n}, b_{2n+1}\} = \{\underline{\underline{0}}, \underline{\underline{0}}\}$