TSG RAN Meeting #26 **RP-040451**
Athens, Greece, 8 - 10 December 2004

Title **Linked CRs (Rel-6 Category B) to TS25.221 & TS25.222 & TS25.224 for Introduction of MICH**
Source **TSG RAN WG1**
Agenda Item **8.4**

RAN1 Tdoc	Spec	CR	Rev	Phase	Cat	Current Version	Subject	Work item	Remarks
R1-041464	25.221	117	-	Rel-6	B	6.1.0	Introduction of MICH	MBMS-RAN	
R1-041465	25.222	125	-	Rel-6	B	6.1.0	Introduction of MICH	MBMS-RAN	
R1-041466	25.224	138	-	Rel-6	B	6.2.0	Introduction of MICH	MBMS-RAN	

3GPP TSG-RAN Meeting #39
Yokohama, Japan, 15-19 November 2004

Tdoc ⌘R1-041464

CR-Form-v7.1

CHANGE REQUEST

⌘ **25.221** **CR** **117** ⌘ **rev** **-** ⌘ Current version: **6.1.0** ⌘

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Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [X] Core Network [ ]

Title:	⌘	Introduction of MICH
Source:	⌘	RAN WG1
Work item code:	⌘	MBMS-RAN
Date:	⌘	16/11/2004
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	Support of transmission of notification indicator bits to UE.
Summary of change:	⌘	Introduction of MBMS indicator channel
Consequences if not approved:	⌘	

Clauses affected:	⌘	3, 4.2, 5.3, 5.4, 5A.3, 5A.4, 6, 7			
		Y	**N**		
Other specs Affected:	⌘	**X**		Other core specifications	⌘ 25.222, 25.224, 25.331
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:
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1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

3 Abbreviations

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

16QAM	16 Quadrature Amplitude Modulation
BCH	Broadcast Channel
CCPCH	Common Control Physical Channel
CCTrCH	Coded Composite Transport Channel
CDMA	Code Division Multiple Access
CQI	Channel Quality Indicator
DCH	Dedicated Channel
DL	Downlink
DPCH	Dedicated Physical Channel
DRX	Discontinuous Reception
DSCH	Downlink Shared Channel
DTX	Discontinuous Transmission
DwPCH	Downlink Pilot Channel
DwPTS	Downlink Pilot Time Slot
FACH	Forward Access Channel
FDD	Frequency Division Duplex
FEC	Forward Error Correction
GP	Guard Period
GSM	Global System for Mobile Communication
HARQ	Hybrid ARQ
HS-DSCH	High Speed Downlink Shared Channel
HS-PDSCH	High Speed Physical Downlink Shared Channel
HS-SCCH	Shared Control Channel for HS-DSCH
HS-SICH	Shared Information Channel for HS-DSCH
MIB	Master Information Block
MICH	MBMS Indicator Channel
NI	MBMS Notification Indicator
NRT	Non-Real Time
OVSF	Orthogonal Variable Spreading Factor
P-CCPCH	Primary CCPCH
PCH	Paging Channel
PDSCH	Physical Downlink Shared Channel
PI	Paging Indicator (value calculated by higher layers)
PICH	Page 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
RF	Radio Frame
RT	Real Time
S-CCPCH	Secondary CCPCH
SCH	Synchronisation Channel
SCTD	Space Code Transmit Diversity
SF	Spreading Factor
SFN	Cell System Frame Number
SS	Synchronisation Shift
TCH	Traffic Channel
TDD	Time Division Duplex
TDMA	Time Division Multiple Access
TFC	Transport Format Combination
TFCI	Transport Format Combination Indicator
TFI	Transport Format Indicator
TPC	Transmitter Power Control
TrCH	Transport Channel
TSTD	Time Switched Transmit Diversity
TTI	Transmission Time Interval

UE	User Equipment
UL	Uplink
UMTS	Universal Mobil Telecommunications System
UpPTS	Uplink Pilot Time Slot
UpPCH	Uplink Pilot Channel
USCH	Uplink Shared Channel
UTRAN	UMTS Terrestrial Radio Access Network

<<<<<<<<<<<<<<<<<<<<<<<< NEXT MODIFIED SECTION >>>>>>>>>>>>>>>>>>>>>>>>

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 (PI) and MBMS Notification Indicator (NI).

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5.3.12 The MBMS Indicator Channel (MICH)

The MBMS Indicator Channel (MICH) is a physical channel used to carry the MBMS notification indicators. The UE may use multiple MICH within the MBMS modification period in order to make decisions on individual MBMS notification indicators.

5.3.12.1 Mapping of MBMS Indicators to the MICH bits

Figure 17a depicts the structure of a MICH burst and the numbering of the bits within the burst. The same burst type is used for the MICH in every cell. N_{NIB} bits in a normal burst of type 1 or 2 are used to carry the MBMS notification indicators, where N_{NIB} depends on the burst type: N_{NIB}=240 for burst type 1 and N_{NIB}=272 for burst type 2. The bits s_{NNIB+1},..., s_{NNIB+4} adjacent to the midamble are reserved for possible future use.

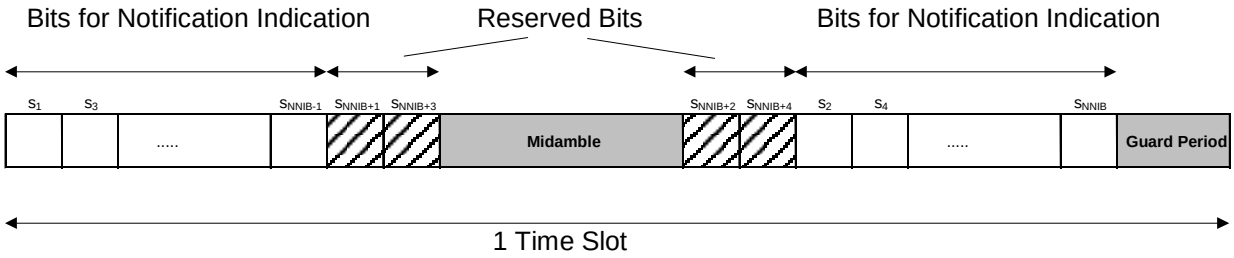

Figure 17a: Transmission and numbering of MBMS notification indicator carrying bits in a MICH burst

Each notification indicator N_q in one time slot is mapped to the bits $\{s_{2LNI*q+1},...,s_{2LNI*(q+1)}\}$ within this time slot. Thus, due to the interleaved transmission of the bits half of the symbols used for each MBMS notification indicator are transmitted in the first data part, and the other half of the symbols are transmitted in the second data part: an example is shown in figure 17b for a MBMS notification indicator length L_{NI} of 4 symbols.

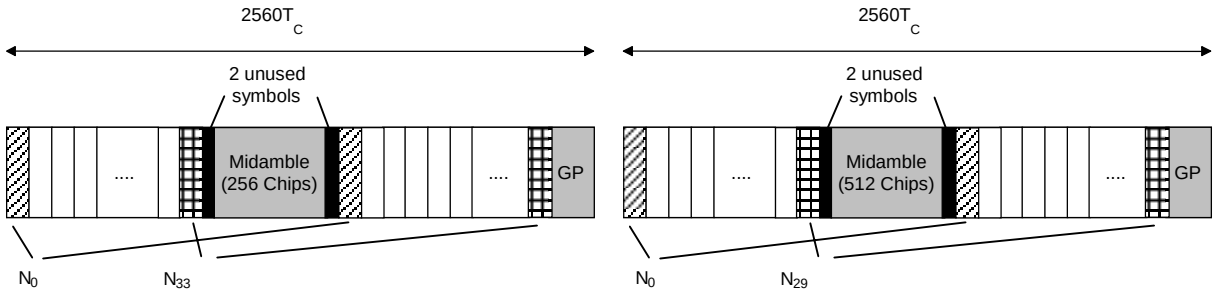

Figure 17b: Example of mapping of MBMS notification indicators on MICH bits for L_{NI}=4

The setting of the MBMS notification indicators and the corresponding MICH bits (including the reserved ones) is described in [7].

N_n MBMS notification indicators of length L_{NI}=2, L_{NI}=4 or L_{NI}=8 symbols are transmitted in each MICH. The number of MBMS notification indicators N_n per MICH is given by the MBMS notification indicator length and the burst type, which are both known by higher layer signalling. In table 7B this number is shown for the different possibilities of burst types and MBMS notification indicator lengths.

Table 7B: Number N_n of MBMS notification indicators per time slot for the different burst types and MBMS notification indicator lengths L_{NI}

	L_{NI}=2	L_{NI}=4	L_{NI}=8
Burst Type 1	N_n=60	N_n=30	N_n=15
Burst Type 2	N_n=68	N_n=34	N_n=17

The value NI (NI = 0, ..., N_{NI}-1) calculated by higher layers, is associated to the MBMS notification indicator N_q, where q = NI mod N_n.

The set of NI passed over the Iub indicates all higher layer NI values for which the notification indicator on MICH should be set to 1 during the corresponding modification period; all other indicators shall be set to 0.

5.3.12.2 MICH Training sequences

The training sequences, i.e. midambles for the MICH, are generated as described in subclause 5.2.3. The allocation of midambles depends on whether SCTD is applied to the MICH.

- If no antenna diversity is applied the MICH the midambles can be allocated as described in subclause 5.6.
- If SCTD antenna diversity is applied to the MICH the allocation of midambles shall be as described in [9].

<<<<<<<<<<<<<<<<<<<<<<<< NEXT MODIFIED SECTION >>>>>>>>>>>>>>>>>>>>>>>>

5.4 Transmit Diversity for DL Physical Channels

Table 8 summarizes the different transmit diversity schemes for different downlink physical channel types that are described in [9].

Table 8: Application of Tx diversity schemes on downlink physical channel types "X" – can be applied, "–" – must not be applied

Physical channel type	Open loop TxDiversity		Closed loop TxDiversity
	TSTD	SCTD(*)	
P-CCPCH	–	X	–
S-CCPCH	X(**)	X	--
SCH	X	–	–
DPCH	–	–	X
PDSCH	–	X	X
PICH	–	X	–
MICH	–	X	–
HS-SCCH	--	X	X
HS-PDSCH	--	X	X

(*) Note: SCTD may only be applied to physical channels when they are allocated to beacon locations.
(**) Note: TSTD may not be applied to S-CCPCH in beacon locations.

<<<<<<<<<<<<<<<<<<<<<<< NEXT MODIFIED SECTION >>>>>>>>>>>>>>>>>>>>>>>

5A.3.12 The MBMS Indicator Channel (MICH)

The MBMS Indicator Channel (MICH) is a physical channel used to carry the MBMS notification indicators. The UE may use multiple MICH within the MBMS modification period in order to make decisions on individual MBMS notification indicators.

5A.3.12.1 Mapping of MBMS Indicators to the MICH bits

Figure 18L depicts the structure of a MICH transmission and the numbering of the bits within the bursts. The burst type as described in [5A.2.2 'Burst Format'] is used for the MICH. N_{NIB} bits are used to carry the MBMS notification indicators, where N_{NIB}=352.

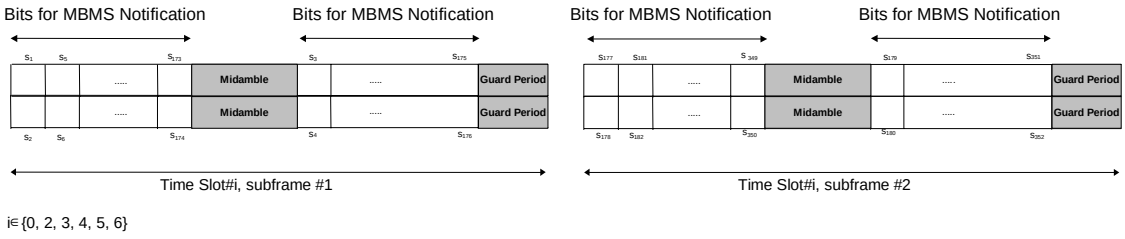

Figure 18L: Transmission and numbering of MBMS notification indicator carrying bits in a MICH burst

Each notification indicator N_q (where N_q, q = 0, ..., N_n-1, $N_q \in \{0, 1\}$) in one radio frame is mapped to the bits $\{s_{2L_{NI}*q+1},...,s_{2L_{NI}*(q+1)}\}$ in subframe #1 or subframe #2.

The setting of the MBMS notification indicators and the corresponding MICH bits is described in [7].

N_n MBMS notification indicators of length L_{NI}=2, L_{NI}=4 or L_{NI}=8 symbols are transmitted in each radio frame that contains the MICH. The number of MBMS notification indicators N_{NI} per radio frame is given by the MBMS notification indicator length, which is signalled by higher layers. In table 8KB this number is shown for the different possibilities of MBMS notification indicator lengths.

Table 8KB: Number N_{NI} of MBMS notification indicators per radio frame for different MBMS notification indicator lengths L_{NI}

	L_{NI}=2	L_{NI}=4	L_{NI}=8
N_n per radio frame	88	44	22

The value NI (NI = 0, ..., N_{NI}-1) calculated by higher layers, is associated to the MBMS notification indicator N_q, where q = NI mod N_n.

The set of NI passed over the Iub indicates all higher layer NI values for which the notification indicator on MICH should be set to 1 during the corresponding modification period; all other indicators shall be set to 0.

<<<<<<<<<<<<<<<<<<<<<<<< NEXT MODIFIED SECTION >>>>>>>>>>>>>>>>>>>>>>>>

5A.4 Transmit Diversity for DL Physical Channels

Table 8L summarizes the different transmit diversity schemes for different downlink physical channel types in 1.28Mcps TDD that are described in [9].

Table 8L: Application of Tx diversity schemes on downlink physical channel types in 1.28Mcps TDD "X" – can be applied, "–" – must not be applied

Physical channel type	Open loop TxDiversity		Closed loop TxDiversity
	TSTD	SCTD	
P-CCPCH	X	X	–
S-CCPCH	X	X	–
DwPCH	X	–	–
DPCH	X	–	X
PDSCH	X	X	X
PICH	X	X	-
MICH	X	X	-
HS-SCCH	-	X	X
HS-PDSCH	-	-	X

(*) Note: SCTD may only be applied to physical channels when they are allocated to beacon locations.

<<<<<<<<<<<<<<<<<<<<<<< NEXT MODIFIED SECTION >>>>>>>>>>>>>>>>>>>>>>>

6 Mapping of transport channels to physical channels for the 3.84 Mcps option

This clause describes the way in which transport channels are mapped onto physical resources, see figure 19.

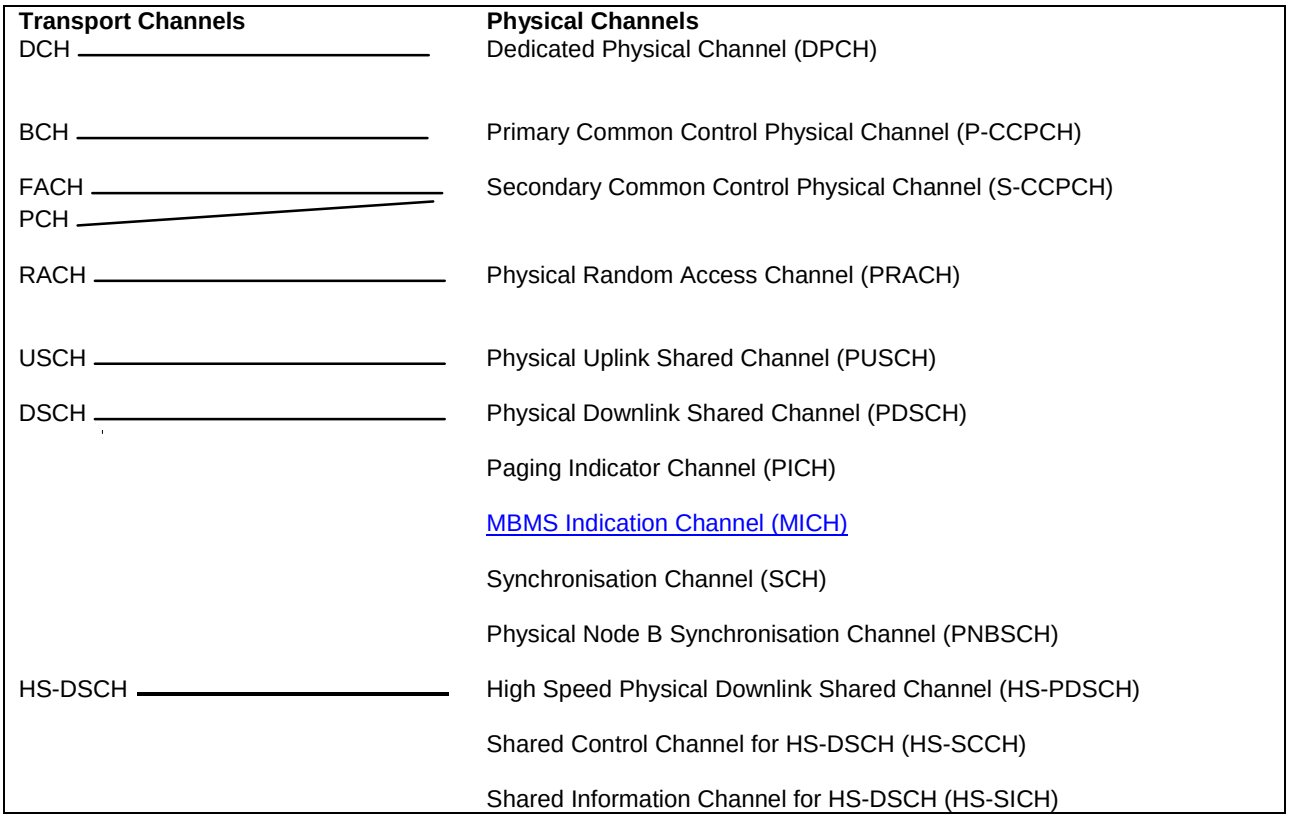

Figure 19: Transport channel to physical channel mapping

<<<<<<<<<<<<<<<<<<<<<<<< NEXT MODIFIED SECTION >>>>>>>>>>>>>>>>>>>>>>>>

7 Mapping of transport channels to physical channels for the 1.28 Mcps option

This clause describes the way in which the transport channels are mapped onto physical resources, see figure 22.

Transport channels	Physical channels
DCH	Dedicated Physical Channel (DPCH)
BCH	Primary Common Control Physical Channels (P-CCPCH)
PCH	Secondary Common Control Physical Channels(S-CCPCH)
FACH	Secondary Common Control Physical Channels(S-CCPCH)
	PICH
	MICH
RACH	Physical Random Access Channel (PRACH)
USCH	Physical Uplink Shared Channel (PUSCH)
DSCH	Physical Downlink Shared Channel (PDSCH)
	Down link Pilot Channel (DwPCH)
	Up link Pilot Channel (UpPCH)
	FPACH
HS-DSCH	High Speed Physical Downlink Shared Channel (HS-PDSCH)
	Shared Control Channel for HS-DSCH (HS-SCCH)
	Shared Information Channel for HS-DSCH (HS-SICH)

Figure 22: Transport channel to physical channel mapping for 1.28Mcps TDD

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CHANGE REQUEST

⌘ **25.222** **CR** **125** ⌘ **rev** **-** ⌘ Current version: **6.1.0** ⌘

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Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [X] Core Network [ ]

Title:	⌘	Introduction of MICH
Source:	⌘	RAN WG1
Work item code:	⌘	MBMS-RAN
Date:	⌘	16/11/2004
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
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Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	Support of transmission of MBMS notification indicator bits to UE.
Summary of change:	⌘	Introduction of MBMS notification indicator channel
Consequences if not approved:	⌘	

Clauses affected:	⌘	3.3, 4.3, 4.4			
Other specs affected:	⌘	Y / N	Other core specifications	⌘	25.221, 25.224, 25.331
		X /	Test specifications		
		/ X	O&M Specifications		
Other comments:	⌘				

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

3.3 Abbreviations

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

<ACRONYM>	<Explanation>
ARQ	Automatic Repeat on Request
BCH	Broadcast Channel
BER	Bit Error Rate
BS	Base Station
BSS	Base Station Subsystem
CBR	Constant Bit Rate
CCCH	Common Control Channel
CCTrCH	Coded Composite Transport Channel
CDMA	Code Division Multiple Access
CFN	Connection Frame Number
CQI	Channel Quality Indicator
CRC	Cyclic Redundancy Check
DCA	Dynamic Channel Allocation
DCCH	Dedicated Control Channel
DCH	Dedicated Channel
DL	Downlink
DRX	Discontinuous Reception
DSCH	Downlink Shared Channel
DTX	Discontinuous Transmission
FACH	Forward Access Channel
FDD	Frequency Division Duplex
FDMA	Frequency Division Multiple Access
FEC	Forward Error Control
FER	Frame Error Rate
GF	Galois Field
HARQ	Hybrid Automatic Repeat reQuest
HS-DSCH	High Speed Downlink Shared Channel
HS-PDSCH	High Speed Physical Downlink Shared Channel
HS-SCCH	Shared Control Channel for HS-DSCH
HS-SICH	Shared Information Channel for HS-DSCH
JD	Joint Detection
L1	Layer 1
L2	Layer 2
LLC	Logical Link Control
MA	Multiple Access
MAC	Medium Access Control
MICH	MBMS Indicator Channel
MS	Mobile Station
MT	Mobile Terminated
NRT	Non-Real Time
OVSF	Orthogonal Variable Spreading Factor
PC	Power Control
PCCC	Parallel Concatenated Convolutional Code
PICH	Paging Indicator Channel
PCH	Paging Channel
PhCH	Physical Channel
PI	Paging Indicator (value calculated by higher layers)
P_q	Paging Indicator (indicator set by physical layer)
QoS	Quality of Service
QPSK	Quaternary Phase Shift Keying
RACH	Random Access Channel
RF	Radio Frequency
RLC	Radio Link Control
RMF	Recommended Modulation Format
RRC	Radio Resource Control
RRM	Radio Resource Management

RSC	Recursive Systematic Convolutional Coder
RT	Real Time
RTBS	Recommended Transport Block Size
RU	Resource Unit
RV	Redundancy Version
SCCC	Serial Concatenated Convolutional Code
SCH	Synchronization Channel
SNR	Signal to Noise Ratio
TCH	Traffic channel
TDD	Time Division Duplex
TDMA	Time Division Multiple Access
TFC	Transport Format Combination
TFCI	Transport Format Combination Indicator
TFRI	Transport Format Resouce Indicator
TPC	Transmit Power Control
TrBk	Transport Block
TrCH	Transport Channel
TTI	Transmission Time Interval
UE	User Equipment
UL	Uplink
UMTS	Universal Mobile Telecommunications System
USCH	Uplink Shared Channel
UTRA	UMTS Terrestrial Radio Access
VBR	Variable Bit Rate

<<<<<<<<<<<<<<<<<<<<<<<<<<<< NEXT MODIFIED SECTION >>>>>>>>>>>>>>>>>>>

4.3.3 Coding and Bit Scrambling of the MBMS Notification Indicator

The MBMS notification indicator N_q, $q = 0, ..., N_n-1$, $N_q \in \{0, 1\}$, is an identifier to instruct UEs whether there is an MBMS notification indication for the groups of MBMS services that are associated to the NI, calculated by higher layers, and the associated MBMS notification indicator N_q. The length L_{NI} of the MBMS notification indicator is $L_{NI}=2$, $L_{NI}=4$ or $L_{NI}=8$ symbols. $N_{NIB} = 2*N_n*L_{NI}$ bits are used for the MBMS notification indicator transmission in one MICH. The mapping of the MBMS notification indicators to the bits e_i, $i = 1, ..., N_{NIB}$ is shown in table 10A.

Table 10A: Mapping of the MBMS notification indicator

N_q	Bits $\{e_{2Lni*q+1}, e_{2Lni*q+2}, ..., e_{2Lni*(q+1)}\}$
0	{0, 0, ..., 0}
1	{1, 1, ..., 1}

If the number S of bits available for the MICH is bigger than the number N_{NIB} of bits used for the transmission of MBMS notification indicators, the sequence $e = \{e_1, e_2, ..., e_{NNIB}\}$ is extended by S-N_{NIB} bits that are set to zero, resulting in a sequence $h = \{h_1, h_2, ..., h_S\}$:

$$h_k = e_k, \quad k = 1, ..., N_{NIB}$$
$$h_k = 0, \quad k = N_{NIB} + 1, ..., S$$

The bits h_k, $k = 1, ..., S$ on the MICH then undergo bit scrambling as defined in section 4.2.9.

The bits s_k, $k = 1, ...,$ S output from the bit scrambler are then transmitted over the air as shown in [7].

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4.4.5 Coding and Bit Scrambling of the MBMS Notification Indicator

The MBMS notification indicator N_q, $q = 0, ..., N_n-1$, $N_q \in \{0, 1\}$ is an identifier to instruct the UE whether there is an MBMS notification indication for the groups of MBMS services that are associated to the NI, calculated by higher layers, and the associated MBMS notification indicator N_q. The length L_{NI} of the MBMS notification indicator is $L_{NI}=2$, $L_{NI}=4$ or $L_{NI}=8$ symbols. $N_{NIB} = 2*N_n*L_{NI}$ bits are used for the MBMS notification indicator transmission in one MICH. The mapping of the MBMS notification indicators to the bits e_i, $i = 1, ..., N_{NIB}$ is shown in table 13A.

Table 13A: Mapping of the MBMS notification indicator

N_q	Bits $\{e_{2L_{NI}*q+1}, e_{2L_{NI}*q+2}, ..., e_{2L_{NI}*(q+1)}\}$
0	{0, 0, ..., 0}
1	{1, 1, ..., 1}

If the number S of bits available for the MICH is bigger than the number N_{NIB} of bits used for the transmission of MBMS notification indicators, the sequence $e = \{e_1, e_2, ..., e_{NNIB}\}$ is extended by S-N_{NIB} bits that are set to zero, resulting in a sequence $h = \{h_1, h_2, ..., h_S\}$:

$$_k = e_k, \quad k = 1, ..., N_{NIB}$$
$$_k = 0, \quad k = N_{NIB}+1, ..., S$$

The bits h_k, $k = 1, ..., S$ on the MICH then undergo bit scrambling as defined in section 4.2.9.

The bits s_k, $k = 1, ..., S$ output from the bit scrambler are then transmitted over the air as shown in [7].

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CHANGE REQUEST

⌘ **25.224** **CR** **138** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

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Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [X] Core Network [ ]

Title:	⌘	Introduction of MICH
Source:	⌘	RAN WG1
Work item code:	⌘	MBMS-RAN
Date:	⌘	16/11/2004
Category:	⌘	**B**
Release:	⌘	Rel-6

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Reason for change:	⌘	Support of transmission of notification indicator bits to UE.
Summary of change:	⌘	Introduction of MBMS indicator channel
Consequences if not approved:	⌘	

Clauses affected:	⌘	3, 4.2.3, 4.6, 5.1.2, 5.5			
		Y	**N**		
Other specs Affected:	⌘	**X**		Other core specifications	⌘ 25.221, 25.222, 25.331
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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3 Abbreviations

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

ACK	Acknowledgement
ASC	Access Service Class
BCCH	Broadcast Control Channel
BCH	Broadcast Channel
CCTrCH	Coded Composite Transport Channel
CDMA	Code Division Multiple Access
CQI	Channel Quality Information
CRC	Cyclic Redundancy Check
DCA	Dynamic Channel Allocation
DL	Downlink
DPCH	Dedicated Physical Channel
DTX	Discontinuous Transmission
FACH	Forward Access Channel
FDD	Frequency Division Duplex
HS-DSCH	High Speed Downlink Shared Channel
HS-PDSCH	High Speed Physical Downlink Shared Channel
HS-SCCH	Shared Control Channel for HS-DSCH
HS-SICH	Shared Information Channel for HS-DSCH
ISCP	Interference Signal Code Power
MAC	Medium Access Control
MBMS	Multimedia Broadcast/Multicast Service
MICH	MBMS Indicator Channel
NACK	Negative Acknowledgement
NRT	Non-Real Time
P-CCPCH	Primary Common Control Physical Channel
PC	Power Control
PDSCH	Physical Downlink Shared Channel
PICH	Paging Indicator Channel
PRACH	Physical Random Access Channel
PUSCH	Physical Uplink Shared Channel
RACH	Random Access Channel
RL	Radio Link
RRC	Radio Resource Control
RSCP	Received Signal Code Power
RT	Real Time
RU	Resource Unit
SBGP	Special Burst Generation Gap
SBP	Special Burst Period
SBSP	Special Burst Scheduling Period
S-CCPCH	Secondary Common Control Physical Channel
SCH	Synchronisation Channel
SCTD	Space Code Transmit Diversity
SFN	System Frame Number
SIR	Signal–to-Interference Ratio
SSCH	Secondary Synchronisation Channel
STD	Selective Transmit Diversity
TA	Timing Advance
TDD	Time Division Duplex
TF	Transport Format
TFC	Transport Format Combination
TFCI	Transport Format Combination Indicator
TFCS	Transport Format Combination Set
TFRI	Transport Format Resource Indicator
TPC	Transmit Power Control
TSTD	Time Switched Transmit Diversity
TTI	Transmission Time Interval

TxAA	Transmit Adaptive Antennas
UE	User Equipment
UL	Uplink
UMTS	Universal Mobile Telecommunications System
UTRAN	UMTS Radio Access Network
VBR	Variable Bit Rate

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4.2.3.2A MICH

The relative transmit power of the MICH compared to the P-CCPCH transmit power is set by higher layer signalling.

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4.6 Downlink Transmit Diversity

Downlink transmit diversity for PDSCH, DPCH, P-CCPCH, S-CCPCH, PICH, MICH, HS-SCCH, HS-PDSCH, and SCH is optional in UTRAN. Its support is mandatory at the UE.

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5.1.2.3A MICH

Same as that of 3.84 Mcps TDD, cf.[4.2.3.2A MICH].

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5.5 Downlink Transmit Diversity

Downlink transmit diversity for PDSCH, DPCH, P-CCPCH, S-CCPCH, PICH, MICH, HS-SCCH, HS-PDSCH, and DwPCH is optional in UTRAN. Its support is mandatory at the UE.