

(19) (12) (KR) (A)

(51) 。 Int. Cl.7  
H04Q 7/20

(11)  
(43)

10-2004-0040261  
2004 05 12

(21) 10-2002-0069831  
(22) 2002 11 11

(30) 1020020068596 2002 11 06 (KR)

(71) 416

(72) 157 401

3 321 1003

(74)

:

(54)

(MBMS: Multimedia Broadcast/Multicast Service)

, MBMS

가 ,

4

non tracking area, tracking area, CU/RC required, MBMS paging cause, associated message ID, TTR, value t ag

1 MBMS

2 MBMS

3 2 MBMS

4 1 UE RNC MBMS CONTROL

5 4 IDLE , CELL\_PCH , URA\_PCH UE MBMS CONTROL

6 4 CELL\_FACH UE MBMS CONTROL

7 4 CELL\_DCH UE MBMS CONTROL

8 4 MBMS CONTROL RNC

9 1 UE RNC MBMS CONTROL

10 IDLE , CELL\_PCH , URA\_PCH UE MBMS CONTROL

11 9 MBMS CONTROL RNC

12 UE X UE Y가 MBMS

13 UE X UE Y가

14 UE X UE Y가 MBMS 가

15 3 MBMS CONTROL RNC

(CDMA: Code Division Multiple Access, 'CDMA'  
 (packet data),  
 가  
 (User  
 (Broadcast/Multicast Serv  
 (C  
 )  
 (circuit data)  
 Equipment, 'UE'  
 ice)  
 ell Broadcast Service, 'CBS'  
 )  
 (MBMS: Multimedia Broadcast/Multicast Service, 'MBMS'  
 )  
 MBMS (network) 1  
 1 MBMS

1 (BM-SC: Broadcast/Multicast-Service Center, 'B  
 M-SC' ) (110) MBMS (stream) (source) , BM-SC(110) MBM  
 S (scheduling) (transit N/W)(120)  
 (120) BM-SC(110) (SGSN: Serving GPRS Support Node, '  
 SGSN' ) (130) (network) , BM-SC(110)  
 MBMS SGSN(130) SGSN(130)  
 (GGSN: Gateway GPRS Support Node, 'GGSN' )  
 가 MBMS UE , 1(Node  
 B1), 1(cell 1)(160) UE1(161), UE2(162), UE3(163) , 2, 2(170) UE4(171),  
 UE5(172)가 가 (120) MBMS  
 SGSN(130) MBMS 가 , UE MBMS  
 가 MBMS MBMS ( )  
 RNC: Radio Network Controller, 'RNC' ) (140) MBMS

SGSN(130) RNC(140) , RNC(140) MBMS  
 RNC(140) MBMS SGSN(130) MBMS RNC  
 MBMS 가 RNC(140)  
 MBMS MBMS UE가 MBMS  
 (radio channel) , SGSN(130)  
 MBMS 가 MBMS 1  
 2(170) 2(170) UE (171), (172) MBMS  
 1 (H  
 LR: Home Location Register) SGSN(130) , MBMS 가

1 MBMS (120) , SGSN(130) , RNC(140) , 1  
 (160) 2(170) UE , 1(160) UE1(161), UE2(162), UE3(163) ,  
 2(170) UE4(171), UE5(172) 'MBMS X' 1  
 MBMS , SGSN SGSN RNC , RNC SGSN  
 RNC , RNC , RNC , SGSN  
 MBMS RNC , RNC , RNC , MBMS ,  
 UE MBMS  
 2 UE MBMS

2 MBMS  
 2 UE MBMS (CN: Core Network)  
 (SUBSCRIPTION) (201 ) , 1  
 BM-SC , SGSN (service provide  
 r) MBMS MBMS  
 가 MBMS  
 (MENU INFORMATION) MBMS 가 MBMS (AN  
 NOUNCEMENT) (202 ) , MBMS 가 (s  
 ervice area) , CBS MBMS U  
 E MBMS (MBMS SERVICE ID) 가 MBMS

UE MBMS (JOINING) MBMS (203  
 ) . UE가 MBMS  
 MBMS , UE UE (UE ID) UE  
 UE가 MBMS U  
 E (multicast mode bearer setup) (204 ) .

(transport bearer)가 GTP-U/UDP/IP/L2/L1 bearer(3GPP TS 23.060)가

UE MBMS 가 (NO TIFICATION) (205) MBMS

(Radio resource allocation) MBMS 가 UE

6) 206 MBMS 가 (radio bearer) RNC가 UE (20) (radio link setup) RNC가 MBMS (transport bearer) UE lub (radio link setup) 206 가 MBMS UE MBMS 가 UE 가 MBMS UE MBMS 가 RNC UE MBMS UE MBMS RNC UE MBMS (ciphering key, ciphering key) (update) 207 ciphering key MBMS UE MBMS UE (208) UE MBMS

3 2 MBMS

3 2 CN SGSN(130), (120), BM-SC(110) (RAN: Radio Access Network, 'RAN') CN SGSN(130)

3 MBMS (ANNOUNCEMENT) (MENU INFORMATION) UE(161) (PDP: Packet Data Protocol, 'PDP') (ACTIVATE MBMS PDP CONTEXT REQUEST) (message) (301) PDP (context) 1 PDP (primary PDP context) 2 PDP (second PDP context) 2 PDP 1 PDP 가 PDP 1 PDP 가 1 PDP 2 PDP 가 (GPRS: General Packet Radio Service, 'GPRS') (GTP: GPRS Tunneling Protocol, 'GTP') (tunnel) GPRS UMTS(Universal Mobile Terrestrial System) MBMS PDP (parameter) (NSAPI: Network layer Service Access Point Identifier, 'NSAPI') , TI , P DP (type) , PDP (address) , (Access Point Network) , (QoS: Quality of Service) GTP UE(161) 1)가 , SGSN(130) , UE (UE-Initiated Activate) (Network Requested Activate) 가 UE(161)가 MBMS UE MBMS PDP MBMS MBMS PDP SGSN(130) (GGSN: Gateway GPRS Support Node, 'GGSN')

) , SGSN(130) GGSN UE(161) GGSN MBMS PDP GTP 가 GTP

GTP MBMS PDP MBMS UE UE

MBMS (transport bearer) (ACTIVATE MBMS PDP CONTEXT REQUE

SGSN(130) UE(161) MBMS PDP (302 ). MBMS PDP (TMGI: Temporary Multicast Gr

ST ACCEPT) (group paging) (DRX: Discontinuous Reception, 'DRX'

S (group Identity, 'TMGI' ) UE(161)가 PICH (CL: Cycle Length) (coefficient) Np

) 가 DRX DRX (SI: System Information) TMGI DRX

Np [18,36,72,144] (PI: Paging Instance)가 P2002-60194

SGSN(130) MBMS PDP UE(161)

MBMS SGSN(130) MBMS UE MBMS PDP BM-SC(110)

UE(161)가 RNC(140) (notification) (303 ).

SGSN(130) MBMS UE RNC

MBMS 가 UE RNC P2002-60194

SGSN(130) MBMS RNC(140) SGSN(130) TMGI DRX (PO: Paging Occasion, MBMS PDP

RNC(140) ) PI 가 UE(161) RNC(140) P

'PO' ) PI 가 UE(161) MBMS PDP

I PO가 (off) UE(161)가 (PICH: Paging Indicator CHannel, 'PICH' ) (on

) (304-1 ). PICH가 PO PI UE(161)

PCH UE(161) PCH RNC(140) PICH가

UE(161) PICH UE(161) associated PCH

(304-2 ). MBMS UE 가 ( MBMS RB SETUP

(Forward Access CHannel, 'FACH' )

UE(161) PO PI PICH PICH MBMS

associated PCH MBMS PICH PICH

MBMS , associated PCH PICH '1' 가

MBMS PO PI PICH '0'

가 PICH MBMS UE(161) MBMS

61) TMGI MBMS 가 UE(161) MBMS TMGI가 UE(1

MBMS MBMS 가 MBMS M

BMS Paging MBMS

Paging

MBMS UE(161)

(NOTIFICATION RESPONSE) SGSN(130) (305 ). SGSN(13

0) RNC(140) MBMS (RAB: Radio Access B

earer, 'RAB' ) (MBMS RAB ASSIGNMENT REQUEST) (306

). MBMS RAB MBMS (Qo

S: Quality of Service) MBMS RAB UE

UE(161) , MBMS UE  
 UE MBMS RNC(140)  
 RNC(140) RAB MBMS (RAN: Radio Access Network, 'R  
 AN' ) SGSN(130) RNC(140) (lu  
 ) (transport bearer) , RNC(130) Node B(160) (lub )  
 (radio channel)  
 RNC(140) SGSN(130) MBMS RAB MBMS  
 (MBMS RB info) MBMS 2(Layer  
 'L2' ) 1(Layer 1, 'L1' ) L2  
 (RLC: Radio Link Control, 'RLC' )/ (PDCP:  
 Packet Data Convergence Protocol, 'PDCP' ) L  
 1 (TFS: Transport Format Set, 'TFS' ) (TF  
 CS: Transport Format Combination Set, 'TFCS' ) (channelization code  
 ) (transmit power) , RNC(140) UE  
 MBMS RAB , CELL\_FACH UE , UE  
 RNC(140) MBMS (M  
 BMS RB SETUP) , UE MBMS

MBMS RNC(140) UE(161) MBMS  
 (307 ) . UE(161) MBMS MBMS  
 PLETE) RNC(140) (308 ) . RNC(140) UE(161) MBMS  
 NT RESPONSE) (309 ) . SGSN(130) MBMS (MBMS RB SETUP COM  
 (DATA TRANSFER)(207 ) . SGSN(130) MBMS (MBMS RAB ASSIGNME  
 MBMS

SGSN(130) RNC(140) MBMS (310 ) , RNC(140)  
 SGSN(130) RNC(140) MBMS (MBMS CONTROL) (310 ) , RNC(140)  
 140) 304-1 UE(161)가 PCH 가 RNC(140) PI PO가 PICH  
 TMGI UE(161)가 PCH (311-1 ) . MBMS  
 PAGING) PICH UE(161)가 MBMS PICH UE(161)  
 RNC(140) MBMS 가 associated PCH ( (312-2 )  
 (313 ) . RNC(140) UE(161) MBMS UE(161)

3 , MBMS , MBMS  
 (group message) , UE UE PICH,  
 304-1 UE PO PI UE  
 304-2 TMGI UE MBMS  
 UE 307 UE  
 MGI 313 MBMS UE FACH T  
 UE

UE CELL\_DCH, CELL\_FACH, CELL\_PCH, URA\_PCH, IDLE

(1) CELL\_DCH: UE RNC , UE RNC  
 . RNC UE . RNC가 UE , UE가 RNC  
 가 ,

(2) CELL\_FACH: UE RNC FACH가 , UE RNC 가 R  
 (RACH: Reverse Access CHannel, 'RACH' ) , UE R

NC FACH . UE RNC (FACH/RACH)  
 , RNC UE . RNC가 UE , UE가 RNC  
 가 . CELL\_FACH UE FACH ,  
 (ID) UE .

(3) CELL\_PCH: CELL\_PCH UE PICH , FACH  
 . RNC UE , UE CELL\_FACH  
 가 UE RNC CELL\_FACH RNC DRX . RNC UE  
 .

(4) URA\_PCH: RNC가 UE URA(UTRAN Registration Area : cell )  
 , CELL\_PCH .

(5) IDLE: RNC UE , UE  
 DRX 가 , CELL\_PCH  
 . RNC UE가 (RRC: Radio Resource Control,  
 'RRC' ) (connection) (RRC CONNECTION SETUP)

Cell\_PCH UE URA\_PCH UE (CELL  
 UPDATE, 'CELL UPDATE' ) , IDLE UE RRC CONNECTION S  
 SETUP , CELL UPDATE RRC CONNECTION SETUP

CELL UPDATE  
 , CELL UPDATE

CELL UPDATE , UE RNC C(Cell)- (RNTI: Radio Network T  
 emporary Identity) UE , C-RNTI FACH UE  
 , RNC RNC가 Cell\_FACH UE  
 ) (header)( , MAC-header ) C-RNTI FACH UE  
 'MAC'  
 Cell\_FACH FACH UE FACH  
 MAC header , UE C-RNTI C-RNTI 가  
 UE RACH RNC , UE C-RNTI MAC header  
 , RNC C-RNTI UE .

RRC CONNECTION SETUP

RRC CONNECTION SETUP , UE RNC C-RNTI U(UTRAN)-RNTI UE  
 . U-RNTI UE , C-RNTI  
 , C-RNTI , UE가 RNC UE C-RNTI  
 UE가 U-RNTI . RNC UE RRC CONNECTION SETUP RNC  
 (control message) (format) RNC  
 ) RNC UE (SRB: Signaling Radio Bearer, 'SRB'  
 , RNC UE SRB RRC CONNECTION SETUP  
 , SRB 가 , SRB 가  
 , SRB 가 SRB UE RNC 4 SRB  
 (RB4) , SRB 1(RB 1), 2(RB 2), 3(RB 3), 4  
 (TFS: Transport Format Set) SRB L2/L1 , RLC  
 , UE RNC SRB  
 . , Cell\_PCH , URA\_PCH , Cell\_FACH , Cell\_DCH SRB  
 RNC SRB , RNC UE SR

B

NC , CELL UPATE RRC CONNECTION SETUP UE RNC, CR  
 (dedicated message) 가 , C-RNT  
 가 , C-RNT

가 UE SRB 0(RB 0) SRB 가 , CELL UPDATE UE RNC C-RNTI가 , RRC CONNECTION SETUP

UE 3 , IDLE Cell\_PCH , URA\_PCH UE 'CU/RC perf

CELL UPDATE RRC CONNECTION SETUP CELL UPDATE RRC CONNECTION SETUP

formed' , 가 IDLE Cell\_PCH , URA\_PCH RRC CONNECT

UE가 MBMS , CELL UPDATE , UE가

ION SETUP (response message) RNC 가 CELL UPDATE RRC C

ONNECTION SETUP 가 , UE가 CELL\_PCH URA PCH

, FACH MBMS , MBMS , MBMS , MBMS Paging CELL\_FACH

Cell Update 가

UMTS UE RRC CONNECTION SETUP RRC CONNECTION SETUP

CELL UPDATE UE CELL UPDATE RRC CONNECTION SETUP

가 , UE가 , CELL UPDATE RRC CONNECTION

SETUP ,

MBMS

MBMS

MBMS

ultimedia Broadcast/Multicast Service) ; (MBMS: M

BMS 가 , M

S: Multimedia Broadcast/Multicast Service) ; (MBM

MBMS 가 ,

[ ] , [ ]

ultimedia Broadcast/Multicast Service) ; (MBMS: M



(group signaling) (control message)가  
 (UE: User Equipment, 'UE' ) (downlink)  
 (RNC: Radio Network Controller, 'RNC'  
 MBMS' ) (MBMS: Multimedia Broadcast/Multicast Service, 'MBMS CONTROL' )  
 MBMS CONTROL 가 (group message) RNC UE  
 MBMS CONTROL MBMS UE  
 , RNC MBMS (MBMS PAGING) , RNC MBMS ( 'MBMS PAGING'  
 ) IDLE , Cell\_PCH(Paging Channel, 'PCH' )/URA\_PCH  
 UE MBMS 가 MBMS MB  
 MS 가 UE (Forward Access Channel, 'FACH' )  
 (common control channel) MBMS 가  
 UE MBMS PAGING (CU: Cell Upadte)/ (RC: RR  
 C(Radio Resource Control) Connection) (required) (parameter) ( 'CEL  
 L UPDATE' ) ( 'RRC CONNECTION SETUP' )  
 ) IDLE/Cell\_PCH/URA\_PCH UE  
 Cell Update RRC Connection Setup  
 , RNC MBMS CONTROL FACH , MB  
 MS CONTROL 가 UE MBMS CONTROL UE가 , UE UE  
 , RNC가 MBMS CONTROL MBMS PAGING  
 RNC가 MBMS CONTROL (TTR: Time To Request, 'TTR' ) RNC  
 MBMS CONTROL  
 RNC UE ( , CELL UPDATE CELL UPDATE CONFIRM  
 ) MBMS CONTROL (response message)  
 가 MBMS CONTROL  
 MBMS CONTROL 가 UE MBMS CONTROL  
 MBMS CONTROL 가 MBMS CONTROL (value t  
 ag) UE가 MBMS CONTROL , UE가  
 MBMS CONTROL UE가 (AMID: Associated message ID,  
 'AMID' ) MBMS CONTROL , AMID  
 , UE TTR  
 MBMS ID ,  
 RNC가 MBMS UE  
 MBMS PAGING MBMS CONTROL  
 4  
 4 1 UE RNC MBMS CONTROL  
 4 MBMS 1 MBMS  
 가 , MBMS CONTROL 4 UE MBMS  
 UE 4 UE MBMS  
 , MBMS PAGING

, RNC가 MBMS  
 , RNC MBMS MBMS CONTROL UE  
 MS PAGING , MBMS PAGING UE MBMS CONTROL MB  
 , MBMS CONTROL 가 MBMS CONTROL MBMS CONTROL  
 ) , UE IDLE , CELL\_DCH(Dedicated CHannel, 'DCH' UE  
 CONTROL CELL\_FACH , CELL\_PCH , URA\_PCH MBMS

MBMS CONTROL RNC UE UE RNC UE MBMS PAGING  
 , RNC UE  
 , RNC MBMS (TMGI: Temporary Multicast Group Identity,  
 'TMGI' ) (PO: Paging Occasion, 'PO' ) (P  
 l: Paging Instance, 'PI' ) TMGI MBMS  
 ception, 'DRX' PO PI TMGI (DRX: Discontinuous Re  
 l (PICH: Paging Indicator CHannel, 'PICH' ) PO P  
 MBMS UE (401 ), UE가 MBMS PA  
 GING 가 PCH RNC PICH  
 BMS PAGING PCH MBMS PAGING UE (402 ). , M  
 TMGI , CU/RC required , TTR , AMID , MBMS paging cause

MBMS PAGING

(1) TMGI

MBMS MBMS MBMS (JOINING) U  
 E MBMS MBMS TMGI MBMS UE  
 MBMS PAGING

(2) CU/RC required

CU/RC required CU/RC required MBMS PAGING CELL UPDATE  
 RRC CONNECTION SETUP 가 RNC  
 MBMS PAGING MBMS PAGING MBMS CONTROL MB  
 CU/RC required (setting) MBMS PAGING  
 MS CONTROL 가 UE CU/RC required (on  
 (off) , 'not required' , UE CU/RC required  
 ), 'required' CELL UPDATE  
 RRC CONNECTION SETUP 가 CELL UPDATE RRC CO  
 NNECTION SETUP 가 CELL UPDATE CU/RC re  
 quired가 UE RRC CONN  
 ECTION SETUP RNC Paging 'CU/RC required' C  
 ell Update RRC Connection Setup UE  
 'CU/RC required' , UE Cell Update RRC Connection Setup  
 URA PCH Paging UE가 CELL PCH M  
 BMS Notification

(3) AMID

AMID MBMS PAGING MBMS CONTROL  
 MBMS PAGING AMID가 '1' MBMS PAGING MBMS CONTROL  
 NTROL AMID '1' , AMID MBMS PAGING MBMS CO

(4) TTR

TTR CONTROL, UE가 MBMS PAGING, MBMS PAGING, MBMS CONTROL, AMID 가 MBMS PAGING, MBMS CONTROL, MBMS CONTROL, MBMS C

(5) MBMS paging cause

MBMS paging cause, MBMS PAGING, (W-CDMA: Wideband-Code Division Multiple Access, 'W-CDMA' ) MBMS paging cause 'Terminating streaming call', MBMS paging cause가 MBMS Paging Cause, MBMS Paging Cause, IDLE UE, CELL\_DCH PICH, CELL\_FACH MBMS, CELL\_PCH, URA\_PCH P, CH, MBMS PAGING, MBMS Paging, CU/RC required, TMGI, UE가 UE Cell Update/RRC Connectio, MBMS PAGING, TMGI, CU/RC re, n Setup required가 UE CELL UPATE, RRC CONNECTION SETUP, (406).

MBMS PAGING, MBMS CONTROL, MBMS PAGING, UE (403 )., RNC, MBMS CONTROL, FACH, MBMS CONTR, ge type', TMGI, ('response required'), AMID, value, tag, MBMS CONTROL.

(1) message type

MBMS CONTROL, message type '0' (MBMS Radio Bearer SETUP), MBMS CONTROL, MBMS, message type '1' (MBMS RB RECONFIGURATION), MBMS CO, message type '2' (MBMS CIPHERING KEY U, message type '3' (MBMS RB RELEASE), MBMS CONTROL, MBMS.

(2) TMGI

가 MBMS

(3) response required

MBMS CONTROL, RNC, UE, MBMS CONTROL, uired가, CU/RC required가, CU/RC required, response req, MBMS CONTROL, response required, MBMS PAGING, response required가, MBMS CONTROL, response required, MBMS CONTROL, response required가, UE, MBMS CONTROL, MBMS CONTROL, response required가, UE.

(4) AMID

MBMS PAGING AMID

(5) value tag

MBMS CONTROL 가 value tag , 2 MBMS CONTROL MBMS  
 CONTROL UE MBMS CONTROL value tag MBM  
 S CONTROL

, 4 MBMS CONTROL (control)  
 , MBMS CONTROL 가  
 가 , MBMS CONTROL 가 MBMS  
 L2(Layer 2) L1(Layer 1)

RNC UE FACH UE MBMS CONTROL (404 ).  
 MBMS CONTROL TTR ( )  
 407 ) UE가 MBMS CONTROL UE ( 'RETRANSMISS  
 ION REQUEST' ) RNC (405 ). , UE가 RNC  
 RETRANSMISSION REQUEST UE가 RNC MBMS PAGING

MBMS CONTROL MBMS PAGING MBMS CON  
 TROL MBMS CONTROL RETRANSMISSION REQUEST  
 , TMGI , AMID가 , AMID RETRANSMISSION REQUEST UE (UE ID)  
 , RNC RETRANSMISSION REQUEST AMID 가 MBMS CONTROL AMID 가  
 AMID 가 MBMS CONTROL UE , AMID

UE RNC 4 MBMS PAGING , MBMS CONTROL  
 5 8  
 5 4 IDLE , CELL\_PCH , URA\_PCH UE MBMS CONTROL

5 501 IDLE , CELL\_PCH , URA\_PCH UE가  
 (JOINING) TMGI DRX , TMGI DRX 가  
 PO PI 502 . 502 UE PO PICH  
 , 503 . 503 UE PICH MBMS  
 가 MBMS

MBMS (PI)가 , 502 (PI)가 , UE 504  
 . 504 UE PI , PICH UE PCH  
 MBMS PAGING TMGI가 UE가 (JOINING) UE MBMS  
 PAGING MBMS PAGING TMGI가 UE가 TMGI

TMGI MBMS PICH MBMS 가 ,  
 . UE 506 MBMS PAGING TMGI가 UE가 TMGI  
 가 , 506 UE MBMS PAGING MBMS CU/RC required UE 507  
 가 CU/RC required 가

가 UE 508 MBMS  
 가 가 UE MBMS  
 CU/RC required

507 UE CU/RC required 가 UE  
 CELL UPDATE RRC CONNECTION SETUP 509 508  
 UE MBMS PAING AMID TTR (buffering) 509  
 509 UE FACH 510 510  
 UE FACH MBMS CONTROL 가 FAC  
 H MBMS CONTROL 가 UE 511 511  
 UE MBMS CONTROL TTR  
 TTR UE 509 가 FACH MB  
 MS CONTROL 511 TTR TTR UE  
 512 AMID TMGI RETRANSMISSION REQUEST RNC 513  
 513 UE RETRANSMISSION REQUEST MBMS CONTROL  
 FACH 514 514 UE  
 BMS CONTROL MBMS CONTROL 가 FACH M  
 515 FACH MBMS CONTROL 가 FACH  
 UE MBMS CONTROL UE 515  
 510 FACH MBMS CONTROL 가 UE 516  
 516 UE MBMS CONTROL value tag MBMS  
 CONTROL value tag MBMS CONTROL value tag  
 UE 517 517 UE MBMS CONTROL 516  
 MBMS CONTROL MBMS CONTROL value tag MBMS CONTROL value  
 tag UE 518 518 519 519 UE MBMS  
 CONTROL value tag 519 UE MBMS  
 MS CONTROL MB  
 5 IDLE , CELL\_PCH , URA\_PCH UE MBMS CONTROL  
 OL 6 CELL\_FACH UE MBMS CONTR  
 6 4 CELL\_FACH UE MBMS CONTROL  
 6 , 601 UE CELL\_FACH FACH 602  
 602 UE FACH MBMS CONTROL 가 UE  
 601 가 MBMS CONTROL UE 603 603 FACH  
 MBMS CONTROL 가 UE 603 UE value  
 tag MBMS CONTROL value tag MBMS CONTROL value tag  
 UE MBMS CONTROL value tag UE 604 604  
 value tag 603 MBMS CONTROL MBMS CONTROL  
 605 UE MBMS CONTROL value tag UE 605  
 606 605 606 UE MBMS CONTROL value tag

7 701 UE CELL\_DCH DCH 702  
 . 702 UE DCH MBMS CONTROL 가  
 . DCH MBMS CONTROL 가 UE 701  
 가 MBMS CONTROL MBMS CONTROL M  
 BMS CONTROL 가 UE 703  
 MBMS CONTROL . 703 UE  
 ONTROL UE 7 value tag MBMS C  
 DCH CELL\_DCH DCH MBMS CONTROL 가  
 (RLC: RADIO Link Control) MBMS CONTROL

8 MBMS CONTROL RNC 8

8 4 MBMS CONTROL RNC

8 MBMS , 800 RNC RNC MBMS  
 NTEXT ( 'MBMS CONTEXT' ) , MBMS CO

(1) TMGI

(2) DRX

(3) UE list in Cell\_DCH state

Cell\_DCH MBMS MBMS UE DCH

(4) UE list in Cell\_FACH state

Cell\_FACH MBMS MBMS UE UE  
 Cell

(5) UE list in Cell\_PCH state

Cell\_PCH MBMS MBMS UE UE  
 Cell

(6) UE list in URA\_PCH state

URA\_PCH MBMS MBMS UE UE  
 Cell

(7) L1

(channelization code), (max power) L1

MBMS CONTEXT 가

, UE list UE CELL UPDATE RNC RNC가 UE  
 가 , Cell\_PCH UE UE가 CELL UPDATE

(1) UE가 CELL\_PCH

(2) UE가 CELL\_PCH URA\_PCH (PAGING)

(3) (physical channel) (sync)

C required CELL UPDATE , UE가 CELL\_PCH URA\_PCH MBMS PAGING CU/R

MBMS CONTEXT 가 801 RNC MBMS UE MB  
 MBMS CONTROL 가 802 , MBMS MB  
 MS CONTROL 가 RNC가 MBMS  
 , RNC가 CN MBMS MBMS  
 MBMS (MBMS RB REC  
 ONFIGURATION) CN MBMS , CN MBMS  
 CN 가

802 RNC MBMS CONTROL MBMS CONTEXT  
 UE BMS CONTROL MBMS CONTROL UE  
 MBMS CONTEXT UE , UE  
 MBMS CONTROL , MBM  
 S CONTEXT UE 802 RNC  
 MBMS CONTEXT UE UE가 CELL\_DCH UE가 CELL\_DCH RNC 803 803  
 RNC UE 804 UE 804  
 , 803 809 UE 804

803 UE RNC 804 MBMS CONTEXT TMG  
 I DRX PO PI 805 805 RNC P  
 O PI PICH 806 PCH 806 RNC PICH 807  
 , MBMS PAGING , AMID , TTR C  
 U/RC required 807 RNC MBMS PAGING  
 MBMS CONTROL N PCH  
 TROL MBMS CONTROL 808 , MBMS CON  
 value tag MBMS CONTROL UE가  
 808 RNC MBMS CONTROL N  
 UE RETRANSMISSION REQUEST 809 , RNC  
 RETRANSMISSION REQUEST UE ID AMID , RETRANSMISSI  
 ON REQUEST MBMS CONTROL UE

809 UE RETRANSMISSION REQUEST UE ID AMID  
 MBMS CONTROL , MBMS CONTROL AMID  
 UE ID AMID , AMID

RNC UE CELL\_DCH 가 , 802 810  
 810 RNC CELL\_DCH UE MBMS CONTROL  
 , CELL\_DCH UE MBMS CONTROL  
 DCH 가 ,  
 가 RLC 가

4 8 1 MBMS CONTROL  
 , 2 MBMS CONTROL

9 1 UE RNC MBMS CONTROL

9 2 1 CU/RC required  
 9 4 401 , 403 407  
 가 , 4 402 902 MBMS PAGING CU/RC required MBMS PAGING  
 UE CELL UPDATE RRC CONNECTION SETUP  
 NG MBMS paging cause 2 CU/RC required UE CELL UPDATE MBMS PAGI  
 ON SETUP RRC CONNECTI

1 MBMS paging cause Paging Paging Cause 가 Pa  
 MBMS Call MBMS paging cause  
 MBMS (MBMS NOTIFICATION) , 1 MBMS (MBMS SIGNALLING TYPE 1) , 2  
 MBMS (MBMS SIGNALLING TYPE 2) MBMS paging cause가  
 MBMS PAGING UE

MBMS PAGING MBMS paging cause가 MBMS NOTIFICATION ,  
 MBMS 가 UE CN MBMS (MBMS PAGING RESP  
 ONSE) CELL UPDATE RRC CONNECTION  
 SETUP

MBMS PAGING MBMS paging cause가 MBMS SIGNALLING TYPE 1  
 MBMS CONTROL 가 FACH UE  
 CELL UPDATE RRC CONNECTION SETUP

MBMS PAGING MBMS paging cause가 MBMS SIGNALLING TYPE 2  
 MBMS CONTROL 가 FACH UE  
 CELL UPDATE RRC CONNECTION SETUP FACH  
 MBMS CONTROL

9 , RNC가 UE PO PI Paging  
 (401 ) MBMS PAGING 4 402 MBMS PAGING UE ( )  
 902 ). MBMS PAGING CU/RC require  
 d Paging Cause Cell Update/RRC Connection Setup  
 RNC MBMS PAGING MBMS CONTROL  
 MBMS paging cause CU/RC required UE CELL  
 UPDATE RRC CONNECTION SETUP MBMS PAGING  
 MBMS CONTROL 가 RNC M  
 BMS paging cause SIGNALLING TYPE 2 MBMS PAGING  
 MBMS CONTROL 가 MBMS paging cause SIGNA  
 LLING TYPE 1 MBMS PAGING MBMS CONTROL 가 M  
 BMS NOTIFICATION MBMS paging cause NOTIFICATION 403  
 407 4

10 IDLE , CELL\_PCH , URA\_PCH UE MBMS CONTR  
 OL

10 IDLE , CELL\_PCH , URA\_PCH UE MBMS CONTROL

10 5 501 504 5 501  
 504 , 10 507 519 10 507 519  
 , 1006 UE MBMS PAGING MBMS  
 paging cause가 MBMS SIGNALLING TYPE 1 MBMS NOTIFICATION  
 MBMS PAGING MBMS paging cause가 MBMS SIGNALLING TYPE 1 MBMS NOTIFI  
 CATION UE 507 507 UE UE  
 CELL UPDATE RRC CONNECTION SETUP MBMS PAGING M  
 BMS paging cause가 MBMS SIGNALLING TYPE 1 509 MBMS PA



GING MBMS paging cause가 MBMS NOTIFICATION 1030 1030  
 UE MBMS PAGING MBMS PAGING RESPONSE RNC  
 1031 1031 UE CELL\_FACH  
 MBMS PAGING RESPONSE MBMS PAGING RESPONSE UE ID가  
 MS PAGING RESPONSE RNC MBMS SGSN UE SGSN MB

1006 MBMS PAGING MBMS paging cause가 MBMS SIGNALLIN  
 G TYPE 1 MBMS NOTIFICATION 가 MBMS SIGNALLING TYPE 2 UE  
 508 5

10 IDLE , CELL\_PCH , URA\_PCH UE MBMS CONTROL  
 , Cell\_FACH cell\_DCH UE가 MBMS CONTROL  
 1 2 가

11 2 MBMS CONTROL RNC

11 9 MBMS CONTROL RNC

11 8 800 11 805 807 810  
 11 800 805 , 807 810  
 PCH , 1106 RNC PICH  
 MBMS PAGING 807 MBMS PAGING  
 MBMS paging cause TMGI , AMID , TTR MBMS paging cause  
 MBMS PAGING MBMS CONTROL  
 807 810 8

12 14 1 2 SGSN , RNC UE

12 UE X UE Y가 MBMS

12 가 1 2  
 (RA: Routing Area, 'RA' ) SGSN RNC TMGI DRX , UE  
 (1201 ). RNC SGSN MBMS PAGING MBMS PAGING (connected  
 mode) UE , RA 가 RNC MBMS PAGING  
 H , connected mode UE , URA\_PCH , Cell\_PCH , Cell\_FACH , Cell\_DC  
 UE UE URA RNC가 MBMS PAGING  
 가 URA connected mode

) SGSN RA RNC MBMS PAGING (JOINING  
 UE IDLE UE UE RA SGSN IDLE  
 UE RA RNC 2 MBMS PAGING  
 UE X UE Y , UE X UE Y MBMS PAGING (1202 , 1203 ) . ,  
 UE X UE Y 가 UE

, RNC UE MBMS PAGING  
 , MBMS paging cause가 MBMS NOTIFICATION 1 2 , 12 CU/RC required 가  
 ( 1 ) MBMS paging cause

가 MBMS NOTIFICATION ( 2 ) 가 MBMS PAGING (1204 ). ,  
 UE CELL UPDATE RRC CONNECTION SETUP CU/RC required  
 UE CELL UPDATE RRC CONNECTION SETUP MBMS paging cause가  
 가 , MBMS paging cause가 MBMS NOTIFICATION ( 1 ) MBMS paging c  
 ause가 MBMS NOTIFICATION ( 2 ) UE Y UE X RN  
 C SGSN MBMS PAGING RESPONSE (1205 ). , MBMS PAGING RE  
 SPONSE TMGI UE ID가  
 , UE X UE Y가 MBMS PAGING SGSN , UE RNC MBMS  
 (MBMS RAB ASSIGNMENT REQUEST) (1206 ). , MBMS  
 RAB ASSIGNMENT REQUEST TMGI , (QoS: Quality of Service, 'QoS'  
 ) UE (UE list to be served) QoS MBMS ,  
 , RNC QoS MBMS  
 , UE list to be served MBMS PAGING RESPONSE UE RNC  
 , RNC MBMS (MBMS RB SETUP)  
 RNC SGSN MBMS RAB ASSIGNMENT REQUEST , MBMS RB SETUP  
 UE X , UE Y (1207 ). , MBMS RB SETUP  
 TMGI , MBMS (MBMS RB info) , value tag , MBMS RB info M  
 BMS 가 , PDCP(Packet Data Convergency Protocol) (header compr  
 ession ) , RLC (RLC (SDU: Service Data Unit) ) ,  
 (TFCS: Transport Format Combination Set) , (channelization code)  
 MBMS RB SETUP UE X UE Y MBMS RB SETUP  
 , MBMS RB info UE X UE Y MBMS RB S  
 ETUP MBMS RB SETUP  
 UE X UE Y RNC MBMS 가 RNC SGSN  
 MBMS (MBMS RAB ASSIGNMENT RESPONSE) (1208 ). MBMS R  
 AB ASSIGNMENT RESPONSE SGSN RNC MBMS , RNC  
 UE , UE X UE Y MBMS (1209 ).  
 13 UE X UE Y가  
 .  
 13 (Ciphering key)  
 (CIPHERING KEY UPDATE INFORMATION) , KEY UPDATE INFORMATI  
 ON 가 , UE MBMS  
 UE , (JOINING) UE MBMS  
 UE가 MBMS  
 RNC가 가 .  
 13 , RNC MBMS (13  
 01 ). , RNC가 ,  
 RNC가 , SGSN  
 , UE가 MBMS SGSN  
 RNC CIPHERING KEY UPDATE  
 INFORMATION PO PI PICH UE , UE X UE Y  
 (1302 ). RNC PCH MBMS PAGING UE X UE Y (1  
 303 ). , MBMS PAGING , MBMS paging cause가 MBMS SIGNALLIN  
 cause가 MBMS SIGNALLING ( 1 ) MBMS paging cause가 MBMS SIGNALLIN  
 G TYPE 2 ( 2 ) 가 .  
 MBMS PAGING UE (1304 ).  
 , 1 MBMS PAGING UE CU/RC required가  
 , TMGI, AMID,TTR , FACH  
 , UE CELL UPATE(Cell\_PCH URA\_PCH UE ) RRC CONNECTION  
 SETUP (IDLE UE ) 2 MBMS PAGING

UE MBMS PAGING CAUSE가 MBMS SIGNALLING TYPE 2 , TM  
 GI, AMID, TTR , FACH ,  
 UE CELL UPATE(Cell\_PCH URA\_PCH UE ) RRC CONNECTION SETUP  
 (IDLE UE )

RNC UE X UE Y CIPHERING KEY UPDATE INFORMATION  
 (1305 ). CIPHERING KEY UPDATE INFORMATION  
 TMGI , AMID , value tag new ciphering key RNC가 CI  
 PHERING KEY UPDATE INFORMATION UE X가 CIPHERING KEY  
 UPDATE INFORMATION , MBMS PAGING TMGI AMID 가  
 MBMS CONTROL TTR (1306 ), UE X CELL UPDA  
 TE RRC CONNECTION SETUP (1307 ).  
 CELL UPDATE RRC CONNECTION SETUP UE RAN  
 (U-RNTI, C-RNTI) , RRC 1308 1309  
 C-RNTI/U-RNTI , SRB 0 1307 , CELL UPDATE R  
 RC CONNECTION SETUP

UE X TMGI , AMID UE ID RETRANSMISSION REQUEST RACH R  
 NC (1308 ). , UE ID C-RNTI/U-RNTI가 C-RNTI/U-RNTI가  
 UE ID IMSI UE X RETRANSMISSION REQUEST  
 RNC RETRANSMISSION REQUEST TMGI AMID  
 (1309 ). , 1307 CIPHERING KEY UPDATE INFORMATION FACH  
 CELL UPDATE RRC CONNECTION SETUP  
 CIPHERING KEY UPDATE INFORMATION  
 , 1307 CELL UPDATE RRC CONNECTION SETUP  
 UE X

14 UE X UE Y가 MBMS 가

14 MBMS (MBMS RB) MBMS (MBMS RB R  
 ELEASE) MBMS RB RELEASE  
 가 (1401 ). RNC MBMS MBMS RB  
 가 ) , SGSN MBMS RB ( MBMS  
 ) RNC MBMS RB MBMS RB RE  
 LEASE PO PI PICH UE , UE X UE Y ( MBMS  
 1402 ). RNC PCH MBMS PAGING UE X UE Y (1403 ).  
 , MBMS PAGING 1

2 , 14 CU/RC required 가 , MBMS paging cause가  
 MBMS SIGNALLING ( 1 ) MBMS paging cause가 MBMS SIGNALLING TYPE  
 2 ( 2 ) 가

MBMS PAGING UE (1404 ).

, 1 MBMS PAGING UE CU/RC required가  
 TMGI, AMID, TTR , FACH  
 SETUP (IDLE UE ) CELL UPATE(Cell\_PCH URA\_PCH UE ) RRC CONNECTION  
 UE MBMS PAGING CAUSE가 MBMS SIGNALLING TYPE 2 , TM MBMS PAGING  
 GI, AMID, TTR , FACH  
 (IDLE UE ) CELL UPATE(Cell\_PCH URA\_PCH UE ) RRC CONNECTION SETUP

RNC UE X UE Y MBMS RB RELEASE  
 (1405 ). , MBMS RB RELEASE TMGI , AMID , value tag  
 (RB RELEASE info) RNC가 MBMS RB RELEASE  
 S PAGING UE X가 MBMS RB RELEASE , MBM  
 TMGI AMID 가 MBMS CONTROL TTR

(1406 ), UE X CELL UPDATE RRC CONNECTION SETUP ( )  
 1407 ). CELL UPDATE RRC CONNECTION SETUP  
 UE RAN (U-RNTI, C-RNTI) , RRC  
 1408 1409 C-RNTI/U-RNTI , SRB 0  
 1407 , CELL UPDATE RRC CONNECTION SETUP .  
 UE X TMGI , AMID UE ID RETRANSMISSION REQUEST RACH R  
 NC (1408 ). UE ID C-RNTI/U-RNTI가 , C-RNTI/U-RNTI가  
 UE ID IMSI UE X RETRANSMISSION REQUEST  
 RNC RETRANSMISSION REQUEST TMGI AMID  
 ). , 1407 MBMS RB RELEASE FACH (1409  
 CELL UPDATE RRC CONNECTION SETUP  
 MBMS RB RELEASE , 1307 CE  
 LL UPDATE RRC CONNECTION SETUP UE X  
 [ ] RNC MBMS MBMS CONTROL  
 , MBMS CONTROL 가 MBMS CONTROL UE  
 MBMS CONTROL MBMS CONTR  
 OL 'MBMS PAGING CAUSE' 'CU/RC required'  
 MBMS PAGING , 'MBMS PAGING CAUSE' 'CU/RC required'  
 UP MBMS PAGING UE CELL UPDATE RRC CONNECTION SET  
 'MBMS PAGING CAUSE' 'CU/RC required'  
 , MBMS MBMS (tracking area, 'tr  
 acking area' ) (non tracking area, 'non tracking area' )  
 E , MBMS UE tracking area non tracking area U  
 CELL UPDATE RRC CONNECTION SETUP 3  
 tracking area non tracking area  
 , non tracking area UE MBMS PAGING ( ,  
 TUP CELL UPDATE ), CELL UPDATE RRC CONNECTION SE  
 CELL UPDATE RRC CONNECTION SETUP  
 UE CELL UPDATE RRC CONNECTION SETUP  
 가  
 UE , UE  
 , 1000 UE MBMS UE  
 L UPDATE RRC CONNECTION SETUP CEL  
 3 가 tracking area non tracking are  
 a 가 UE가 tracking area non tracking  
 area (SIB: System Information Block, 'SIB' )  
 , SIB , tracking area non tracking area  
 UE MBMS MB  
 MS MBMS CONTROL 가 , CELL\_PCH CELL\_FACH UE  
 tracking area A 가 non tracking area B CELL UPDATE UE  
 A B UE가 가 , RNC가  
 (incoming call paging) A UE UE  
 UE가 RNC 가 가  
 3 MBMS PAGING CU/RC required 가  
 UPDATE RRC CONNECTION MBMS PAGING CELL  
 , CU/RC required MBMS PAGING tra

cking area      non tracking area      MBMS CONTROL  
 3      CU/RC required      tracking area  
 non tracking area      MBMS CONTROL      non tracking  
 area      MBMS CONTROL      MB  
 MS PAGING      CU/RC required      off      MBMS CONTROL      CU/RC required      가 of  
 f      MBMS PAGING      UE      MBMS PAGING      MBMS CON  
 TROL      ,      CELL UPDATE      RRC CONNECTION      MBMS PAGING  
 MBMS CONTROL      3      UE      MBMS      1      MBMS PAGING  
 3      UE      MBMS CONTROL      1  
 MBMS PAGING      CU/RC required      MBMS CONTROL  
 MBMS PAGING      CU/RC required      UE가 UE      trackin  
 g area      non tracking area      CELL UPDATE      RRC CONN  
 ECTION      ,      UE      MBMS PAGING      CU/RC required      RNC가  
 CELL UPDATE      ,      CELL UPDATE      RRC CONNECTION      RNC가  
 가      UE가  
 15      3      MBMS CONTROL      RNC  
 15      3      MBMS CONTROL      RNC  
 15      3      UE      1      UE  
 RNC      ,      RNC      RNC      15      1      RNC      3  
 15      ,      RNC      MBMS  
 MBMS CONTEXT      ,      MBMS CONTEXT

- (1) TMGI
- (2) DRX
- (3) UE list in Cell\_DCH state
- (4) UE list in Cell\_FACH state
- (5) UE list in Cell\_PCH state
- (6) UE list in URA\_PCH state
- (7) L1 info
- L1 info      (channelization code)      ,      (max power)
- (8)

tracking area      non tracking area      3  
 ,      MBMS CONTEXT      ,      1      3  
 tracking area      non tracking area  
 UE가      tracking area      non tracking area      MBMS PAGI

NG MBMS PAGING MBMS CONTROL

MBMS CONTEXT UE list CELL\_PCH UE CELL UPDATE CELL UPDATE RNC C

RNC UE가 UE가 UE가

CELL UPATE

UE RNC CELL UPDATE

(1) CELL\_PCH UE가

(2) CELL\_PCH URA\_PCH UE가 PAGING

(3) 가

3 CELL UPDATE UE

tracking area non tracking area non tracking area

tracking area MBMS tracking area MBMS non tracking area

tracking area MBMS tracking area non tracking area ( ) 가 12 1201

), SGSN RNC ( ) 가 12 1201

MBMS PAGING non tracking area tracking area

RNC SGSN MBMS PAGING tr

tracking area non tracking area

800 RNC RNC MBMS MBMS C

ONTEXT UE MBMS CONTEXT 가 801 RNC MBMS

MBMS MBMS CONTROL 가 802 RNC가

MBMS CN MBMS

MBMS

(MBMS RB RECONFIGURATION) MBMS CN MBMS

MBMS CN MBMS 가

802 RNC MBMS CONTROL MBMS CONTEXT

UE BMS CONTROL MBMS CONTROL UE

MBMS CONTEXT UE

MBMS CONTROL UE

S CONTEXT UE

MBMS CONTEXT UE가 CELL\_DCH RNC 802 RNC

RNC UE 804 RNC 803 803

803 UE 809 UE 804

803 UE RNC 804 MBMS CONTEXT TMG

I DRX PO PI 1505 805 RNC UE가 P

O PI PICH 1505 1505 RNC UE가

NC 1506 non tracking area 1506 RNC UE가 PICH non tracking area R

AGING PCH MBMS PAGING 807 MBMS P  
 , UE가 non tracking area CU/RC required CELL UPDATE RRC CONNECTION  
 07 UE가 non tracking area가 tracking area RNC 15  
 1507 RNC PICH  
 GING PCH MBMS PAGING 807 MBMS PA  
 , UE가 tracking area CU/RC required CELL UPDATE RRC CONNECTION  
 CU/RC required on  
 807 RNC MBMS PAGING MBMS CONTROL  
 , N PCH MBMS CONTROL  
 808 MBMS CONTROL value tag  
 RNC MBMS CONTROL UE가 808  
 MBMS CONTROL N UE RETRANSMISSION REQUEST  
 809 RNC RETRANSMISSION REQUEST UE  
 ID AMID , RETRANSMISSION REQUEST MBMS CONTRO  
 L UE  
 809 UE RETRANSMISSION REQUEST UE ID AMID  
 MBMS CONTROL MBMS CONTROL AMID  
 UE ID AMID , AMID  
 RNC UE CELL\_DCH 가 802 810  
 810 RNC CELL\_DCH UE MBMS CONTROL  
 , CELL\_DCH UE MBMS CONTROL  
 DCH 가 ,  
 가 RLC 가  
 ,  
 가 가

, MBMS

가 . ,

UE 가 , MBMS UE  
 , tracking area non tracking area  
 가 .

(57)

1.

(MBMS: Multimedia Broadcast/Multicast Service)

MBMS

가 ,

1 2. ,

1 3. ,

3 4. ,

5.

(MBMS: Multimedia Broadcast/Multicast Service)

5 6. ,

5 7. ,

7 8. ,

9.

(MBMS: Multimedia Broadcast/Multicast Service)



9 10. ,

9 11. ,

11 12. ,

13.

(MBMS: Multimedia Broadcast/Multicast Service)

MBMS

가 ,

13 14. ,

13 15. ,

(non tracking area)  
(tracking area)

13 16. ,

MBMS

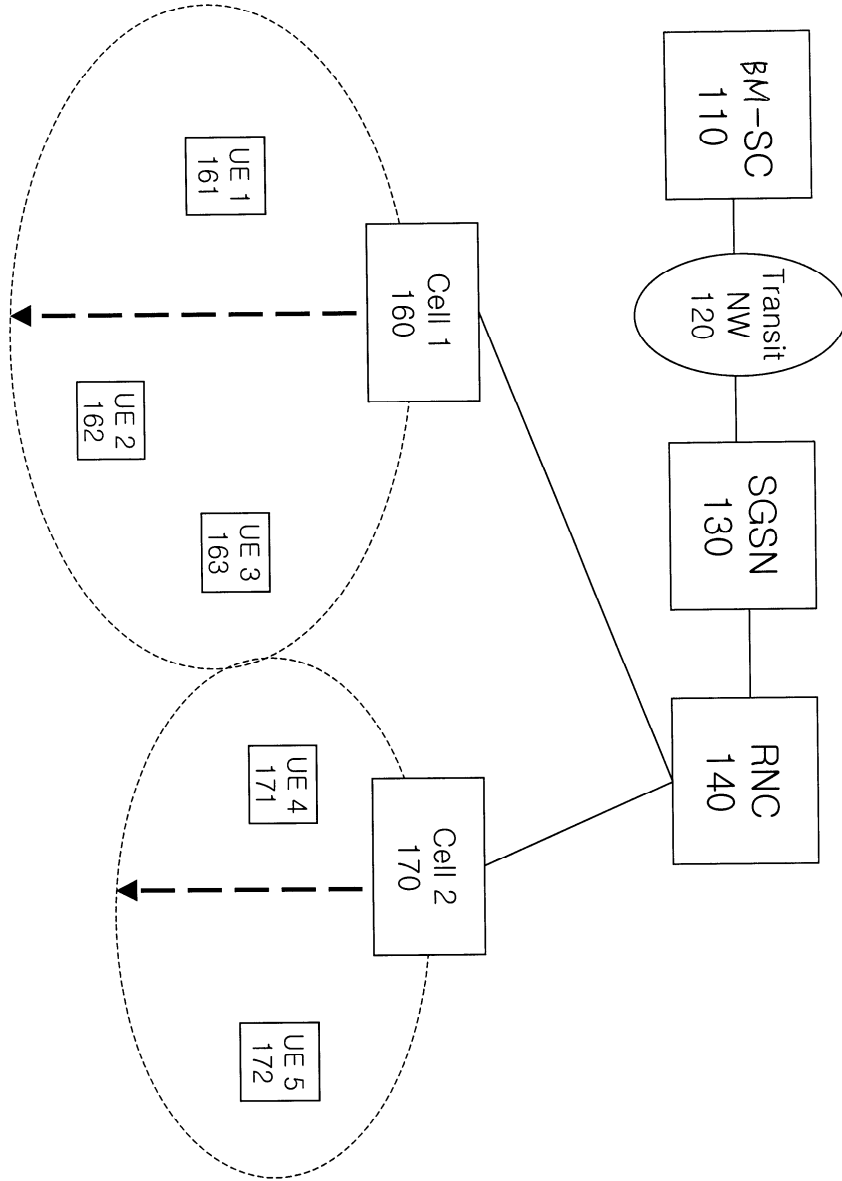
13 17. ,

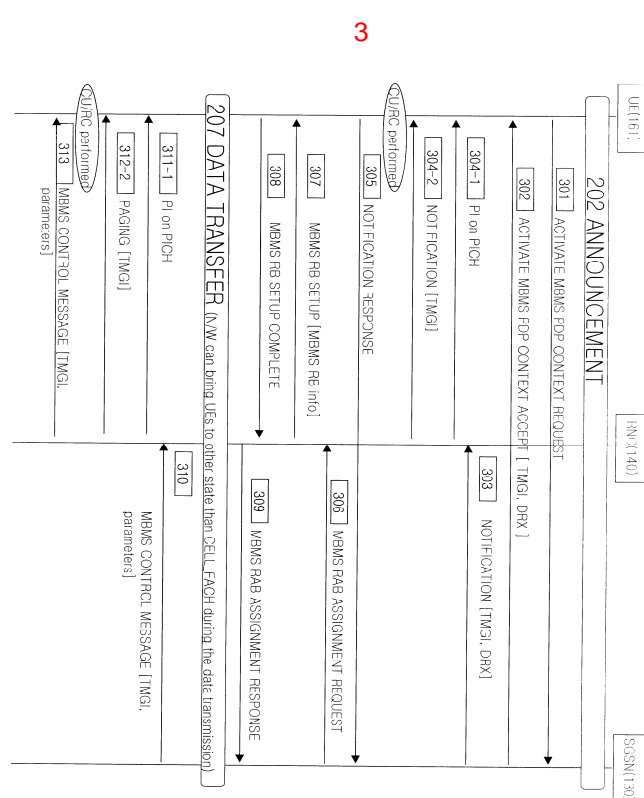
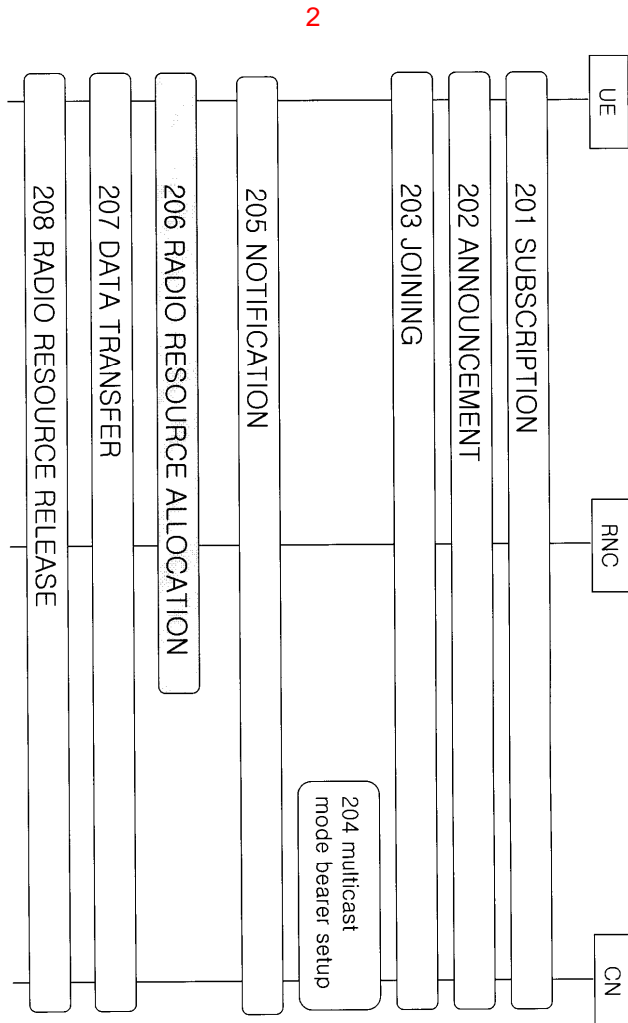
MBMS

UE

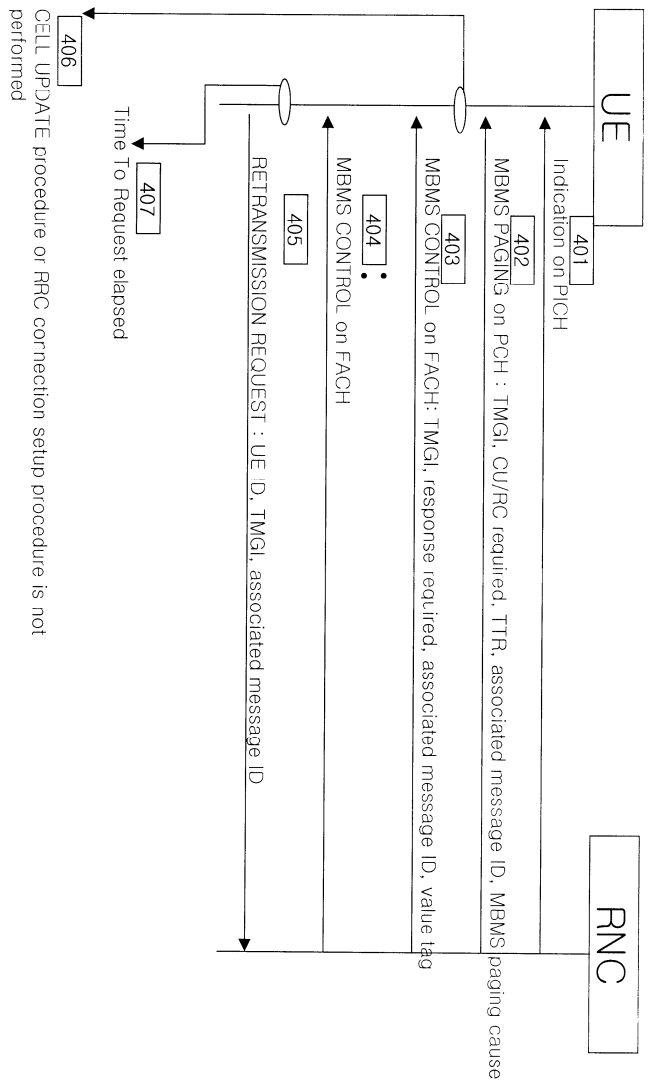
13 18. ,

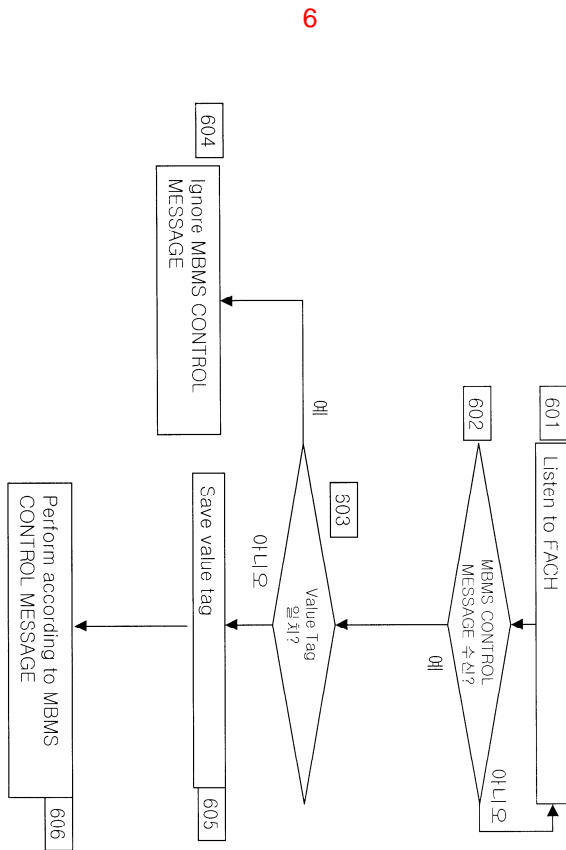
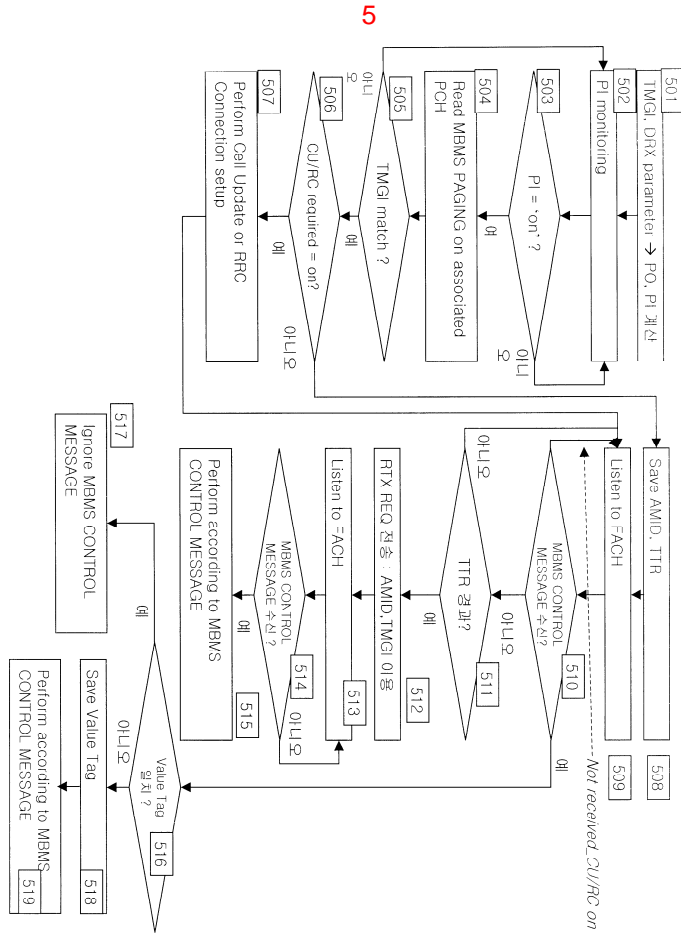
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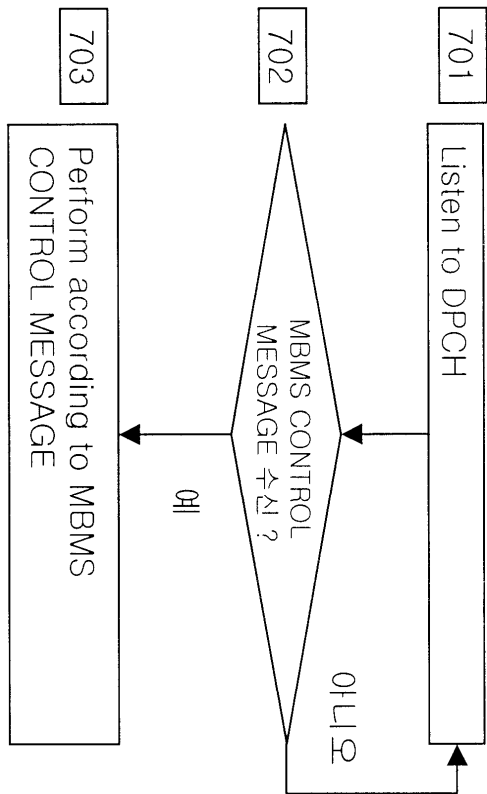


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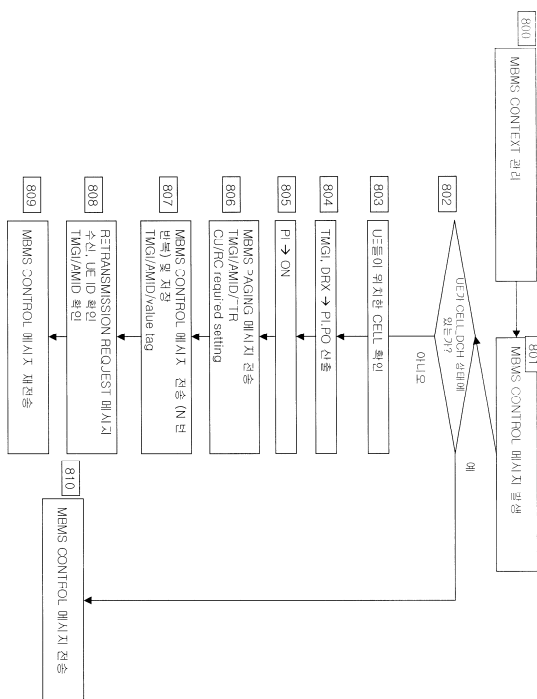




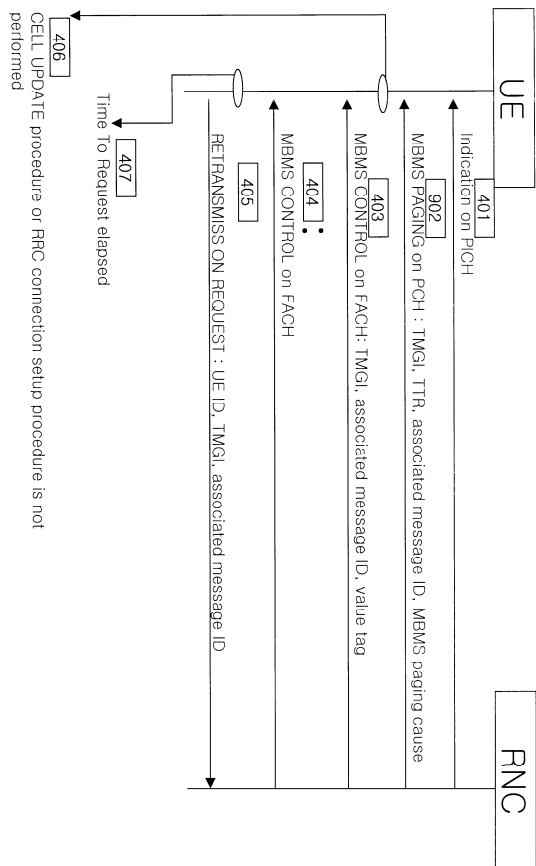
7



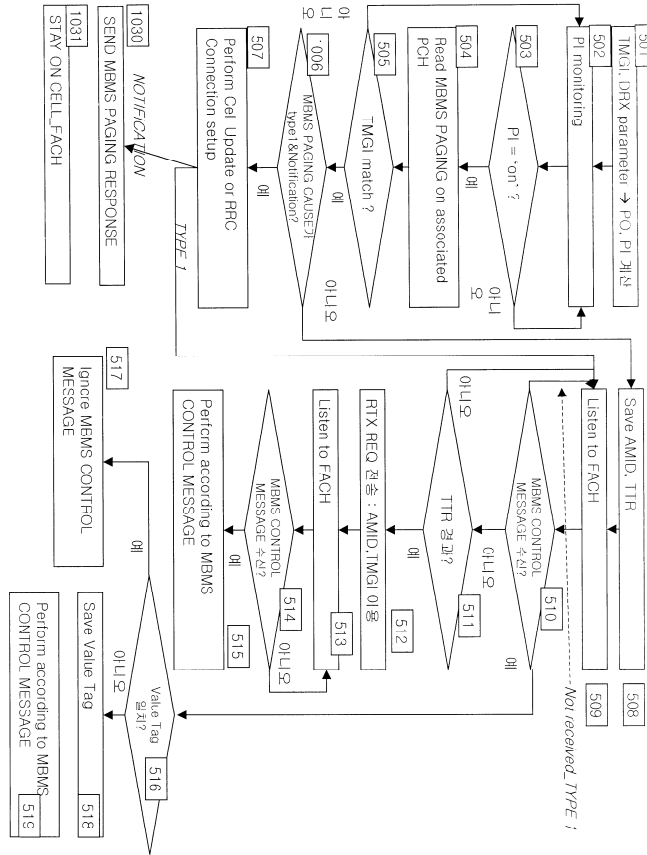
8



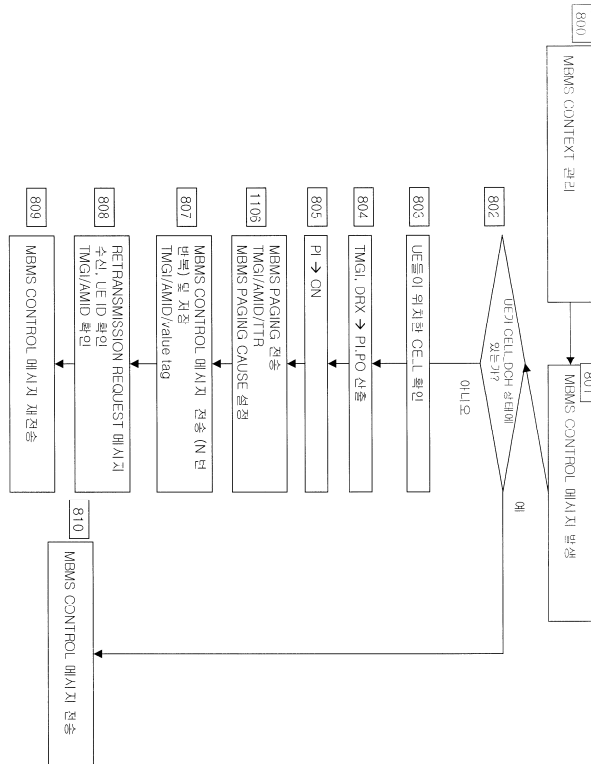
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10

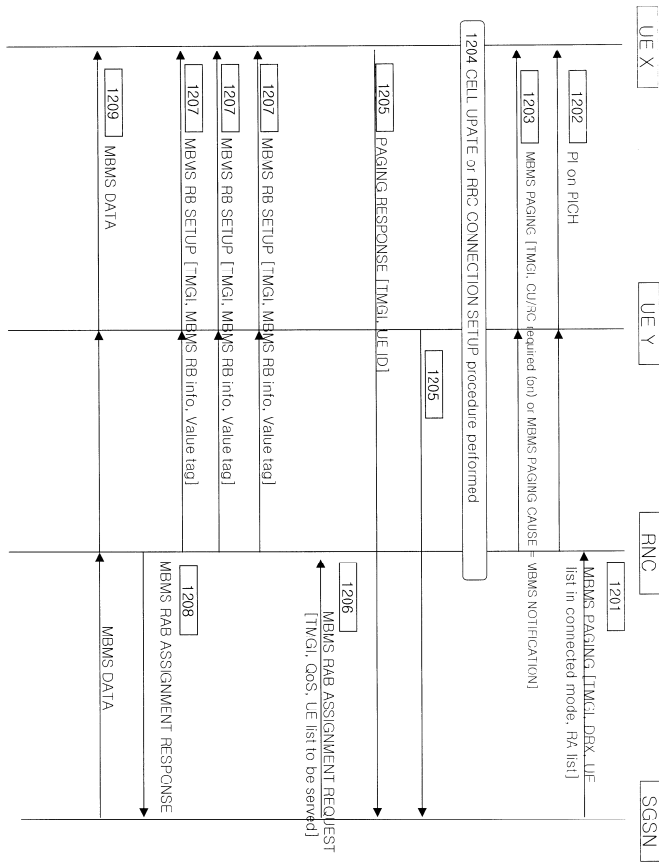


11

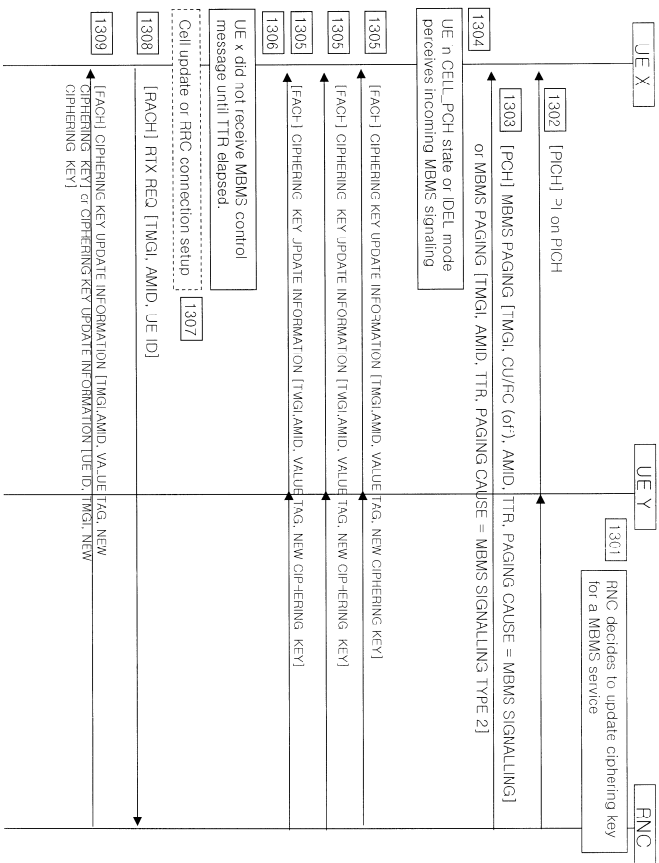




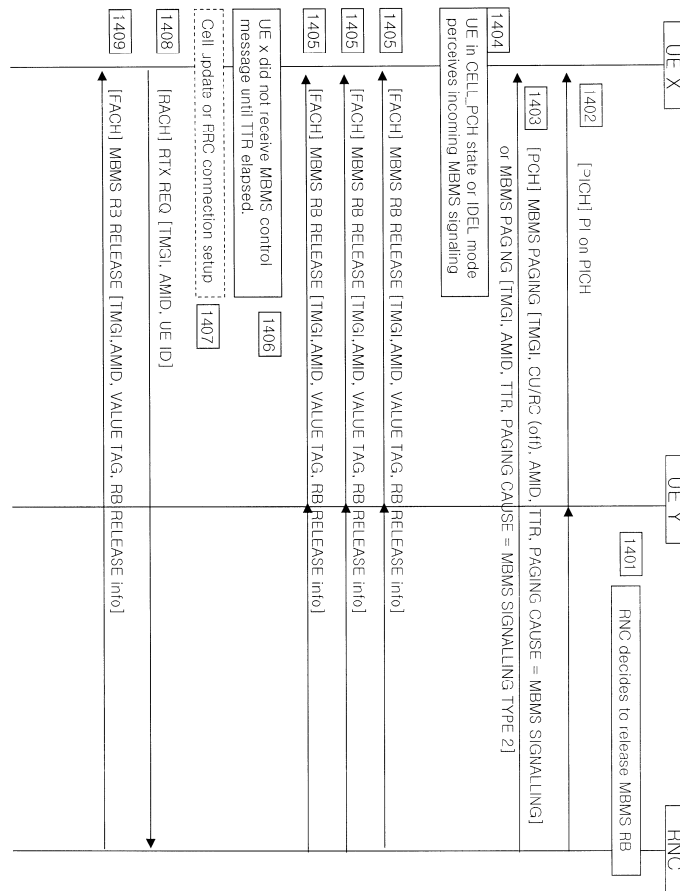
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13



14



15

