

15) Family number: 52730559 (US2014192786A)

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Title: DM RS BASED LTE DOWNLINK PHYSICAL LAYER

Abstract: It is provided an apparatus, including synchronizing means adapted to synchronize with a cell of a cellular communication system based on a synchronization signal and to obtain a cell identification of the cell; receiving means adapted to receive a symbol only on one or more subcarriers and subframes which carry at least one symbol of a physical broadcast channel; first obtaining means adapted to obtain a common demodulation reference symbol based on the cell identification and the received symbol; demodulating means adapted to demodulate a signal received on the physical broadcast channel based on the common demodulation reference symbol; user equipment means adapted to provide a user equipment functionality of the communication system.

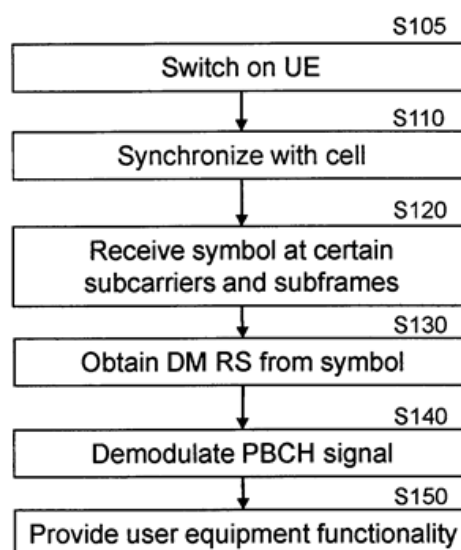
Classifications:**International (IPC 8-9):** H04L5/00 H04W4/00 H04W56/00 H04W72/04

H04W74/08 (Advanced/Invention);

H04L27/26 H04L5/00 (Advanced/Non-invention)

CPC: H04L5/0053 H04L27/2601 H04W56/0005 H04W56/0015 H04W72/042 H04W74/0833**US:** 1/1 370/336

PatBase - US2014192786_AA

**Family:**

Publication number	Publication date	Application number	Application date
CN103828396 A	20140528	CN201180072113	20110706
CN103828396 B	20180925	CN201180072113	20110706
DK2730104 T3	20191216	DK20110869020T	20110706
EP2730104 A1	20140514	EP20110869020	20110706
EP2730104 A4	20150218	EP20110869020	20110706
EP2730104 B1	20191009	EP20110869020	20110706
US2014192786 AA	20140710	US20110131025	20110706
US9848415 BB	20171219	US20110131025	20110706
WO13003980 A1	20130110	WO2011CN001113	20110706

Priority:

WO2011CN001113 20110706

Probable Assignee: NOKIA TECHNOLOGIES OY**Assignee(s):** (std): MIAO DE SHAN ; MIAO DESHAN ; NOKIA SIEMENS NETWORKS OY ; NOKIA SOLUTIONS AND NETWORKS OY ; SKOV PETER ; WANG XIAOYI**Assignee(s):** NOKIA TECHNOLOGIES OY**Inventor(s):** (std): MIAO DESHAN ; SKOV PETER ; WANG XIAOYI ; MIAO DE SHAN**Agent(s):** SEPPO LAINE OY; HARRINGTON AND SMITH; CHINA PATENT AGENT H K LTD

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: METHOD AND APPARATUS FOR SEARCHING CONTROL INFORMATION BY TERMINAL IN MULTINODE SYSTEM

Abstract: Provided is a method of searching for control information of a user equipment (UE) in a multi-node system including a plurality of nodes and a base station connected to each of the plurality of nodes and capable of controlling the nodes. The method includes: receiving search space indication information from the base station; and searching for the control information in a radio resource region indicated by the search space indication information, wherein the search space indication information indicates any one of a first search space and a second search space.

Classifications:

International (IPC 8-9): H04B7/26 H04J1/00 H04J11/00 H04L1/00

H04L1/18 H04L5/00 H04W72/04 H04W72/14

H04W88/08 (Advanced/Invention);

H04L1/18 H04W72/08 (Advanced/Non-invention)

CPC: H04J11/0083 H04W72/042 H04L5/0092 H04W72/0446 H04W72/0453

H04J11/0079 H04L1/0046 H04L5/0053 H04L5/0091 H04L1/1864

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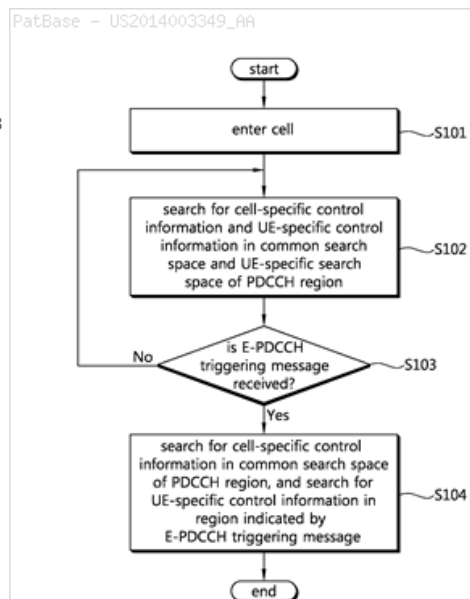
H04L5/0055 H04W72/08 H04W72/14

European: H04L5/00E1 T04L5/00C6

US: 1/1 370/328 370/329

JP F-Term: 5K004 5K022 5K067 5K067/AA13 5K067/CC02 5K067/CC04 5K067/EE10 5K067/GG11 5K067/JJ13 5K067/KK03

JP F-Index: H04J1/00 H04J11/00/Z H04L27/26/113 H04L27/26/114 H04W72/04/136 H04W88/08

**Family:**

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CN103404046 A	20131120	CN201180068890	20111219
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CN106027220 A	20161012	CN201610671057	20111219
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EP2683098 A4	20150107	EP20110860046	20111219
EP2683098 B1	20190515	EP20110860046	20111219
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KR101530801 B1	20150622	KR20137022706	20120229
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KR20130116350 A	20131023	KR20137022705	20111219
KR20130118383 A	20131029	KR20137022706	20120229
KR20130119484 A	20131031	KR20137021983	20111219
US2014003349 AA	20140102	US20110002566	20111219
US2014003379 AA	20140102	US20110002322	20111219
US2014016589 AA	20140116	US20120002632	20120229
US9432138 BB	20160830	US20110002322	20111219
US9749116 BB	20170829	US20120002632	20120229
US9923659 BB	20180320	US20110002566	20111219
WO12118269 A2	20120907	WO2011KR09811	20111219
WO12118269 A3	20121026	WO2011KR09811	20111219
WO12118270 A1	20120907	WO2011KR09812	20111219
WO12118334 A2	20120907	WO2012KR01539	20120229
WO12118334 A3	20121220	WO2012KR01539	20120229

Priority:

US20110448146P 20110301	US20110475201P 20110413	US20110563613P 20111125
CN201180068890 20111219	US20110002322 20111219	US20110002566 20111219
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Probable Assignee: LG ELECTRONICS

Assignee(s): (std): CHUN JIN YOUNG ; IHM BIN CHUL ; KANG JI WON ; KIM KI TAE ; KIM SU NAM ; LG ELECTRONICS ; PARK SUNG HO ; LG ELECTRONICS INC

Inventor(s): (std): CHUN JIN YOUNG ; IHM BIN CHUL ; KANG JI WON ; KIM KI TAE ; KIM SU NAM ; PARK SUNG HO

Agent(s): TER MEER STEINMEISTER AND PARTNER; BIRCH STEWART KOLASCH AND BIRCH LLP; YANG MOON OCK

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: METHOD, BASE STATION, UE, AND SYSTEM FOR SENDING AND RECEIVING PDCCH SIGNALING

Abstract: A method, a base station, a User Equipment (UE) and a system for sending and receiving Physical Downlink Control Channel (PDCCH) signaling are disclosed. The method for sending PDCCH signaling includes the following steps: the base station determines locations of a first search space and second search space; and the base station sends only PDCCH signaling exclusive of a Carrier Indication Field (CIF) to the UE in a physically overlapped region between the first search space and the second search space if the physically overlapped region exists and length of PDCCH signaling exclusive of a CIF in the first search space is equal to length of PDCCH signaling inclusive of a CIF in the second search space.

Classifications:

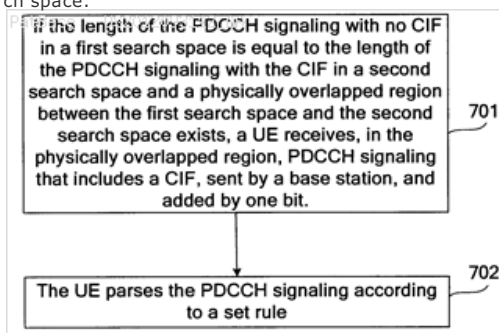
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H04W88/02 H04W88/08 (Advanced/Invention)

CPC: H04W28/12 H04L5/001 H04L5/0053 H04W72/042

European: H04L5/00A2A11 H04L5/00C6 H04W72/04 H04W72/04F4
US: 1/1 370/329 370/329P 370/343 370/522

JP F-Term: 5K067 5K067/AA21 5K067/BB04 5K067/CC01 5K067/EE02
5K067/EE10 5K067/JJ13 5K067/AA13 5K067/AA14

JP F-Index: H04W72/04/136 H04W72/04/111 H04W72/12/130



Family:

Publication number	Publication date	Application number	Application date
BR112012020255 A2	20160503	BR20121120255	20110211
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CN102158979 A	20110817	CN201010142160	20100329
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US2016007326 AA	20160107	US20150851449	20150911
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Priority:

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Probable Assignee: HUAWEI TECHNOLOGIES CO LTD

Assignee(s): (std): GUAN LEI ; HUAWEI TECH CO LTD ; QU BINGYU ; XUE LIXIA

Assignee(s): HUAWEI TECHNOLOGIES CO ; HUAWEI TECHNOLOGIES CO LTD ; HUAWEI TECHNOLOGIES CO LTD SHEN ZHEN ; HUAWEI TECHNOLOGIES CO LTD SHENZHEN ; HUAWEI TECHNOLOGIES COLTD

Inventor(s): (std): BINGYU QU ; GUAN LEI ; LEI GUAN ; LIXIA XUE ; QU BINGYU ; XUE LIXIA

Agent(s): KREUZ GEORG MARIA; GILL JENNINGS AND EVERY LLP; LEHMANN MARIA ISABEL; TOLGA CAYLAK; HUAWEI TECHNOLOGIES CO LTD; SLATER AND MATSIL LLP

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

18) Family number: 63740692 (US2018076924A)

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Title: METHOD AND DEVICE OF MULTI-SUBBAND BASED TRANSMISSION FOR A WIRELESS TRANSMIT/RECEIVE UNIT (WTRU) WITH REDUCED CAPABILITY AND COVERAGE ENHANCEMENT

Abstract: Method, devices and systems of multi-subband based transmission are disclosed herein. A method for use in a wireless transmit/receive unit (WTRU) includes monitoring a plurality of subbands for subbands that include an enhanced physical downlink control channel (EPDCCH), wherein each subband of the plurality of subbands is made up of a subset of frequency resources in a system bandwidth, and determining whether each of the plurality of subbands is a channel state information (CSI) downlink subband (CSI-subband) for CSI feedback based on whether an EPDCCH is included in a corresponding subband of the plurality of subbands. At least two subbands of the plurality of subbands, in which a corresponding EPDCCH is included, are determined as CSI subbands for CSI feedback.

Classifications:

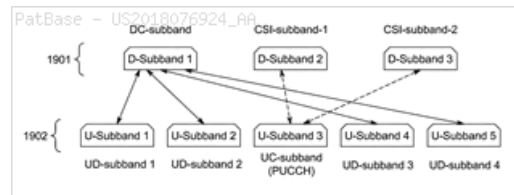
International (IPC 8-9): H04B17/24 H04B17/309 H04L1/00 H04L5/00 H04W24/00 H04W24/10 H04W72/04 (Advanced/Invention)

CPC: H04L1/0026 H04L5/0094 H04W72/042 H04W72/0446

US: 1/1 370/329

JP F-Term: 5K042 5K067 5K067/DD34 5K067/DD43 5K067/EE02 5K067/EE61 5K067/JJ13 5K067/LL11

JP F-Index: H04B17/24 H04B17/309 H04W24/10 H04W72/04/111 H04W72/04/132



Family:

Publication number	Publication date	Application number	Application date
CA2981964 AA	20171005	CA20162981964	20160408
CN107636997 A	20180126	CN201680029253	20160408
EP3281321 A1	20180214	EP20160718111	20160408
JP2018512013 T2	20180426	JP20170553026T	20160408
KR20180004120 A	20180110	KR20177030503	20160408
SG10201807216P A1	20180927	SG20181007216	20160408
SG11201708244Q A1	20171129	SG20171108244	20160408
US2018076924 AA	20180315	US20160564630	20160408
WO16164739 A1	20161013	WO2016US26668	20160408

Priority:

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US20160564630	20160408				

Probable Assignee: INTERDIGITAL PATENT HOLDINGS INC

Assignee(s): (std): INTERDIGITAL PATENT HOLDINGS INC

Assignee(s): LEE MOON IL ; STERN BERKOWITZ JANET A

Inventor(s): (std): LEE MOON IL ; STERN BERKOWITZ JANET A

Agent(s): RIDOUT AND MAYBEE LLP; AWAPATENT AB; TANI AND ABE PC; MIRANDAH ASIA SINGAPORE PTE LTD; HEAVENER RYAN F

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

19) Family number: 50642698 (US2012039283A)

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Title: SEARCH SPACE DESIGN FOR RELAY PHYSICAL DOWNLINK CONTROL CHANNEL (R-PDCCH)

Abstract: Certain aspects of the present disclosure provide methods and apparatus for designing, generating, and monitoring the

search space for control information for a node, such as a relay node (RN). This control information may comprise a Relay Physical Downlink Control Channel (R-PDCCH). The search space design may use contiguous, but physically distributed transmission resource units (e.g., physical resource blocks (PRBs)) to increase frequency diversity or frequency selectivity. For certain aspects, pairs of transmission resource units spanning two adjacent slots may have the same virtual resource block (VRB) index.

Classifications:

International (ipc 8-9): H04B7/26 H04J99/00 H04L5/00 H04W16/26 H04W72/04 H04W84/18 (Advanced/Invention);

H04B7/26 H04L1/00 H04W84/04 (Advanced/Non-invention)

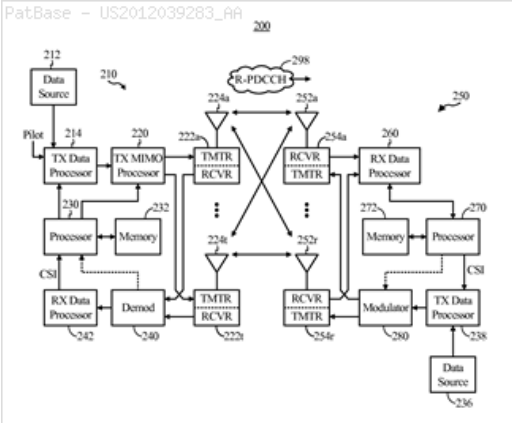
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European: H04L5/00C6 H04W72/04F4 T04B7/26B2 T04L1/00A15B T04W84/04C4

US: 1/1 370/329 370/329P 455/450 455/450S

JP F-Term: 5K022 5K067 5K067/AA23 5K067/BB02 5K067/CC01 5K067/CC24 5K067/EE02 5K067/EE10 5K159

JP F-Index: H04B7/0413/200 H04B7/0456/100 H04B7/06/950 H04J15/00 H04J99/00 H04W16/26 H04W72/04/133 H04W72/04/136 H04W84/18/110



Family:

Publication number	Publication date	Application number	Application date
CN103181112 A	20130626	CN201180046823	20110816
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EP2606601 A1	20130626	EP20110767490	20110816
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Priority:

US20100374207P 20100816 US20110210102 20110815 WO2011US47969 20110816

Probable Assignee: QUALCOMM INC

Assignee(s): (std): CHEN WANSHI ; MONTOJO JUAN ; QUALCOMM INC

Inventor(s): (std): CHEN WANSHI ; MONTOJO JUAN

Agent(s): WEGNER HANS; PATTERSON AND SHERIDAN LLP; READ RANDOL W ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

20) Family number: 53700737 (US2014348093A)

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Title: METHOD AND APPARATUS FOR USER EQUIPMENT SEARCHING CONTROL CHANNEL IN WIRELESS COMMUNICATION SYSTEM

Abstract: Disclosed is a method and apparatus for searching for a user equipment searching for a control channel in a multi-node system. The method comprises: searching inside an E-PDCCH region for a first piece of downlink control information (DCI), which is determined according to a transmission mode; and searching inside the E-PDCCH region for a second piece of DCI, regardless of the transmission mode, wherein the E-PDCCH region is a control channel region to which the DCI, which is decoded on the basis of a user equipment-specific reference signal (URS), is transmitted from a subframe comprising a plurality of orthogonal frequency division multiplexing (OFDM) symbols.

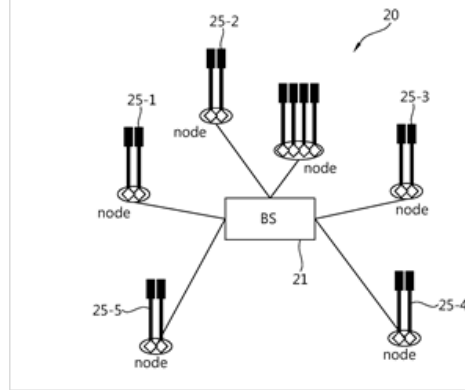
Classifications:

International (ipc 8-9): H04B7/26 H04J11/00 H04W4/00 H04W72/00 H04W72/04 (Advanced/Invention);

H04L5/00 (Advanced/Non-invention)

CPC: H04W72/042 H04L5/001 H04L5/0048 H04L5/0051 H04L5/0053 H04L5/0094 H04W72/00

US: 1/1 370/329

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Publication number	Publication date	Application number	Application date
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US9338774 BB	20160510	US20120355196	20121105
WO13066122 A1	20130510	WO2012KR09220	20121105

Priority:

US2011055482P 20111104 US20120355196 20121105 WO2012KR09220 20121105

Probable Assignee: LG ELECTRONICS

Assignee(s): (std): LG ELECTRONICS ; LG ELECTRONICS INC

Inventor(s): (std): PARK SUNG HO ; KANG JI WON ; KIM KI TAE ; IHM BIN CHUL ; CHUN JIN YOUNG ; KIM SU NAM

Agent(s): LEE HONG DEGERMAN KANG AND WAIMEY; JONATHAN; RICHARD; S AND IP PATENT AND LAW FIRM

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

21) Family number: 61604763 (US2017223725A)

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Title: PDCCH DESIGN FOR NARROWBAND DEPLOYMENT

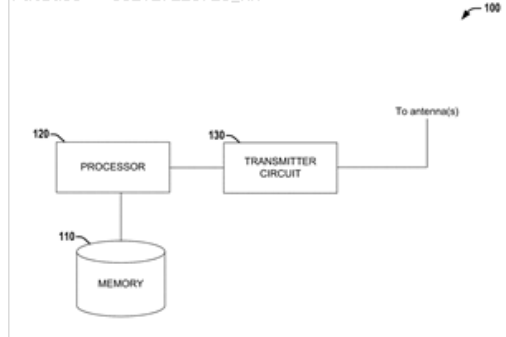
Abstract: Narrowband Physical Downlink Control Channel (PDCCH) implementations are discussed. An example Evolved NodeB (eNB) comprises a memory storing instructions, a processor configured to execute the instructions, and a transmitter circuit. The processor is configured to determine at least one of downlink or uplink scheduling for one or more machine-type communication (MTC)-enabled user equipments (UEs); to generate, based at least in part on the determined scheduling, one or more MTC-physical downlink control channel (PDCCH) signals (M-PDCCH signals) associated with the one or more MTC-enabled UEs; and to perform channel coding, multiplexing, and scrambling of the one or more M-PDCCH signals. The transmitter circuit is configured to map the one or more M-PDCCH signals to resource element groups (REGs) in order of increasing subcarrier followed by orthogonal frequency division multiplexing (OFDM) symbol and to transmit the one or more M-PDCCH signals via a narrowband bandwidth of less than 1.4 MHz.

Classifications:

International (IPC 8-9): H04L H04L25/03 H04L27/26 H04L5/00 H04W4/00 H04W72/04 H04W72/12 H04W72/14 (Advanced/Invention)

CPC: H04L25/03866 H04L27/26 H04L5/0007 H04W72/1278 H04W72/044 H04W72/042 H04W72/14 H04L5/0053 H04W4/70 H04W72/1205

US: 1/1 370/330

**Family:**

Publication number	Publication date	Application number	Application date
CN106489246 A	20170308	CN201580036470	20150326
EP3175574 A1	20170607	EP20150827290	20150326
EP3175574 A4	20180307	EP20150827290	20150326
HK1234229 A1	20180209	HK20170107639	20170801
KR101926282 B1	20181206	KR20177001634	20150326
KR20170023101 A	20170302	KR20177001634	20150326
US2017223725 AA	20170803	US20150324441	20150326

Priority:

US20140032436P 20140801 US20150324441 20150326 WO2015US22739 20150326

Probable Assignee: INTEL CORP**Assignee(s):** (std): INTEL CORP ; INTEL IP CORP**Inventor(s):** (std): CHATTERJEE DEBDEEP ; FWU JONG KAE ; HAN SEUNGHEE ; XIONG GANG ; XIONG GANG GARY**Agent(s):** 2SPL PATENTANWALTE PARTG MBB; CHAN TANG AND KWOK; ESCHWEILER THOMAS G**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW**22) Family number: 49119782** (US2013016672A)

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Title: APPARATUS AND METHOD OF AVOIDING CONTROL CHANNEL BLOCKING

Abstract: The present invention is directed to a wireless communication system. In particular, the present invention is directed to a method of processing a control channel at a user equipment in a wireless communication system using multiple carriers, the method comprising: receiving a plurality of search spaces, wherein each search space comprises a plurality of control channel candidates and each search space is corresponding to respective carrier; and monitoring the control channel candidates for the control channel, wherein if the control channel candidates have a common information size over two or more search spaces, the control channel can be received via any one of the two or more the search spaces, and an apparatus therefore.

Classifications:

International (IPC 8-9): H04B7/26 H04J1/00 H04J11/00 H04L1/00 H04L5/00 H04W28/06 H04W4/00 H04W48/12 H04W72/04 H04W74/02 H04W88/02 (Advanced/Invention); H04W72/04 (Advanced/Non-invention)

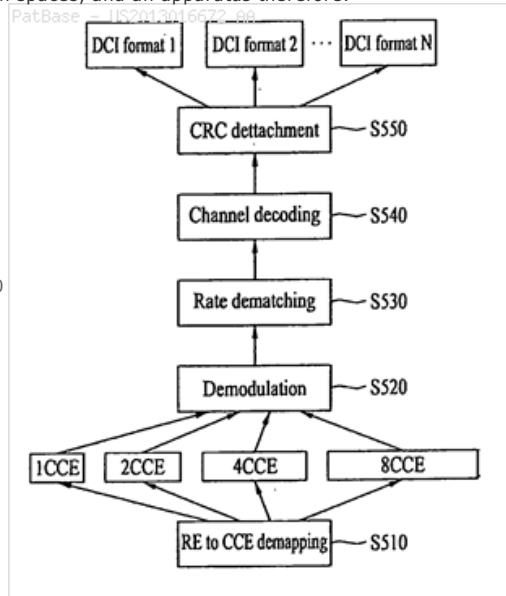
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European: H04L1/00B5B H04L1/00B7R H04L5/00A2A11 H04L5/00C6 T04W72/04F

US: 1/1 370/329 370/330 370/436 370/480 375/260

JP F-Term: 5K004 5K022 5K067 5K067/DD34 5K067/EE02 5K067/EE10 5K067/GG01 5K067/JJ22 5K067/CC06 5K067/EE22 5K067/EE61 5K067/AA13 5K067/CC02 5K067/DD11 5K067/JJ14

JP F-Index: H04J11/00/Z H04L27/26/100 H04L27/26/110 H04L27/26/410 H04Q7/00/551 H04W28/06/110 H04W72/04/111 H04W72/04/136 H04J1/00 H04L27/26/113

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Publication number	Publication date	Application number	Application date
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CN104901778 A	20150909	CN201510187818	20101217
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EP2514238 A2	20121024	EP20100837910	20101217
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IN05026CN2012 A	20140214	IN2012CN05026	20120608
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JP2016077004 A2	20160512	JP20160001591	20160107
JP2018160939 A2	20181011	JP20180134232	20180717
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JP2018160939 A2	20181011	JP20180134232	20180717
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JP5869636 B2	20160224	JP20140163915	20140811
KR101835329 B1	20180307	KR20127005789	20101217
KR20120123245 A	20121108	KR20127005789	20101217
MX2012006801 A1	20120710	MX20120006801	20101217
RU2505945 C1	20140127	RU20120130094	20101217

US2013016672 AA	20130117	US20100513072	20101217
US2014153506 AA	20140605	US20130081384	20131115
US2017094648 AA	20170330	US20160378416	20161214
US2019110276 AA	20190411	US20180006035	20180612
US2020145968 AA	20200507	US20200734589	20200106
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US9554377 BB	20170124	US20130081384	20131115
US10015784 BB	20180703	US20160378416	20161214
US10548127 BB	20200128	US20180006035	20180612
WO11074914 A2	20110623	WO2010KR09076	20101217
WO11074914 A3	20111110	WO2010KR09076	20101217

Priority:

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Probable Assignee: LG ELECTRONICS

Assignee(s): (std): KIM MIN GYU ; LG ELECTRONICS INC ; AHN JOON KUI ; SEO DONG YOUN ; YANG SUCK CHEL ; LG ELECTRONICS

Assignee(s): EHLZHI EHEKTRONIKS INK ; LG ELECTRONICS INC20 YEOUIDO-DONGSEOULKR

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Inventor(s): YANG SUCK CHELKR ; SEO DONG YOUNKR ; SUCK CHEL YANG ; KIM MIN GYUKR ; MIN GYU KIM ; DONG YOUN SEO ; JOON KUI AHN ; AHN JOON KUIKR

Agent(s): FREEHILLS PATENT AND TRADE MARK ATTORNEYS; FREEHILLS PATENT ATTORNEYS; HERBERT SMITH FREEHILLS; FPA PATENT ATTORNEYS PTY LTD; SMART AND BIGGAR; CABINET PLASSERAUD; BIRCH STEWART KOLASCH AND BIRCH LLP; FISH AND RICHARDSON PC; KIM YONG IN ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

23) Family number: 51553833 (US2015117240A)

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Title: COMMUNICATION SYSTEM

Abstract: A communication system is presented in which a communication device communicates, in at least one communication cell operated by communication apparatus, using a plurality of subframes, wherein each subframe comprises a plurality of communication resources. A respective measure of communication quality associated with each of the communication resources is obtained and a search space, comprising a set of the communication resources, is defined based on the measures of communication quality. The mobile device searches for control information in the defined search space.

Classifications:

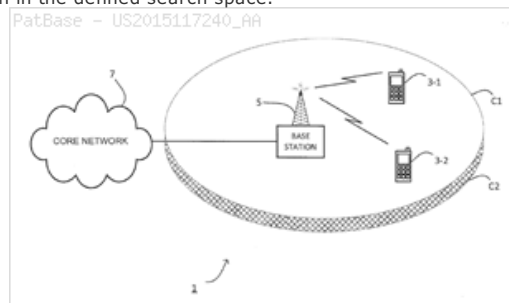
International (ipc 8-9): H04L1/00 H04L5/00 H04W24/08 H04W24/10 H04W72/04 H04W72/08 H04W72/12 (Advanced/Invention)

CPC: H04W72/04 H04W72/1226 H04L5/0007 H04L5/0053 H04L5/006 H04W72/042 H04W72/085 H04L1/0025 H04L1/0026 H04L5/0057 H04W24/08

US: 370/252 370/329

JP F-Term: 5K042 5K067 5K067/AA11 5K067/BB04 5K067/DD27 5K067/DD43 5K067/EE02 5K067/EE10 5K067/FF16 5K067/JJ02 5K067/JJ21

JP F-Index: H04B17/382 H04W24/10 H04W72/04/136 H04W72/08



Family:

Publication number	Publication date	Application number	Application date
CN104272843 A	20150107	CN201380024287	20130424
CN104272843 B	20180309	CN201380024287	20130424
EP2848068 A2	20150318	EP20130722132	20130424
GB201208236 A0	20120620	GB20120008236	20120510
GB2501917 A1	20131113	GB20120008236	20120510
IN09389DN2014 A	20150717	IN2014DN09389	20141107
JP2015516119 T2	20150604	JP20140554111T	20130424
JP5930241 B2	20160608	JP20140554111T	20130424
US2015117240 AA	20150430	US20130399659	20130424
US9807749 BB	20171031	US20130399659	20130424
WO13168664 A2	20131114	WO2013JP62744	20130424
WO13168664 A3	20140206	WO2013JP62744	20130424

Priority:

GB20120008236	20120510	WO2013JP62744	20130424
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Probable Assignee: NEC CORP

Assignee(s): (std): NEC CORP
Inventor(s): (std): LIANG CAROLINE ; LIANG CAROLINE QUANYI ; ARNOTT ROBERT ; AWAD YASSIN ADEN
Inventor(s): CAROLINE QUANYI LIANG ; ROBERT ARNOTT ; YASSIN ADEN AWAD
Agent(s): MACDOUGALL ALAN JOHN SHAW; WILMER CUTLER PICKERING HALE AND DORR LLP; IKEDA NORIYASU ET AL
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

24) Family number: 54705848 (US2014362758A)

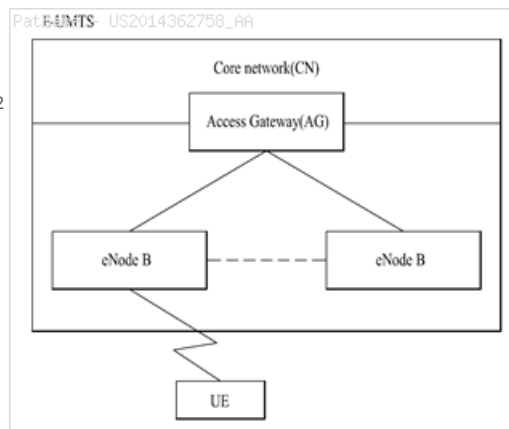
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Title: METHOD FOR SETTING SEARCH REGION TO DETECT DOWNLINK CONTROL CHANNEL IN WIRELESS COMMUNICATION SYSTEM AND APPARATUS FOR SAME

Abstract: In the present application, disclosed a method for a terminal setting a search region for a downlink channel in a wireless communication system. More specifically, the method comprises the steps of receiving from a base station information related to a starting symbol of the search region by way of upper layer signaling; setting the search region by using the information related to the starting symbol; and receiving the downlink control channel by performing blind coding on the search region, wherein the starting symbol of the search region changes according to the characteristic of a subframe which receives the downlink control channel.

Classifications:

International (IPC 8-9): H04B7/26 H04J11/00 H04L12/26 H04L27/26 H04L5/00 H04L5/14 H04W4/06 H04W72/04 (Advanced/Invention)
CPC: H04B7/2603 H04J11/0086 H04J2211/005 H04L5/0037 H04L5/0048 H04L5/0053 H04L5/1469 H04L27/2607 H04W4/06 H04L43/16 H04W72/042 H04W72/0446
US: 1/1 370/312 370/329



Family:

Publication number	Publication date	Application number	Application date
KR102065420 B1	20200113	KR20147022830	20130228
KR20140142692 A	20141212	KR20147022830	20130228
US2014362758 AA	20141211	US20130374461	20130228
US2016345306 AA	20161124	US20160231197	20160808
US9432985 BB	20160830	US20130374461	20130228
US10306614 BB	20190528	US20160231197	20160808
WO13129870 A1	20130906	WO2013KR01643	20130228

Priority:

US20120605744P 20120301 US20130374461 20130228 WO2013KR01643 20130228
US20140374461 20140724 US20160231197 20160808

Probable Assignee: LG ELECTRONICS

Assignee(s): (std): LG ELECTRONICS INC ; LG ELECTRONICS

Inventor(s): (std): KIM HAK SEONG ; KIM HAKSEONG ; LEE SEUNG MIN ; LEE SEUNGMIN ; SEO HAN BYUL ; SEO HANBYUL

Agent(s): BIRCH STEWART KOLASCH AND BIRCH LLP; KIM YONG IN ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

25) Family number: 59348900 (US2016242203A)

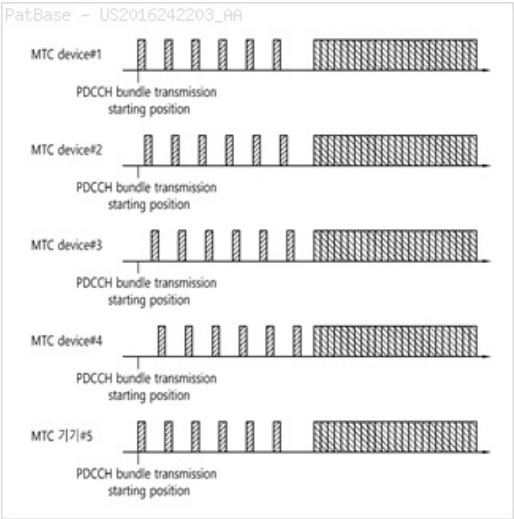
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Title: METHOD FOR RECEIVING BUNDLE OF PDCCH, AND MTC DEVICE

Abstract: A disclosure of the present specification provides a method for receiving a physical downlink shared channel (PDCCH) by a machine type communication (MTC) device. The method may comprise the steps of: when it is required to receive a bundle of PDCCHs in which an identical PDCCH is repeated in N number of sub-frames, determining the first search space for receiving a PDCCH in the first sub-frame among the N number of sub-frames; and determining the second search space for receiving the PDCCH in the second sub-frame among the N number of sub-frames. Herein, the first and the second search space may comprise a plurality of control channel elements (CCE). The location of the CCE in the first search space may be kept the same as in the second search space.

Classifications:

International (IPC 8-9): H04B7/26 H04J11/00 H04L27/26 H04L5/00
H04W4/00 H04W4/70 H04W72/04 H04W72/12 (Advanced/Invention)
CPC: H04L5/001 H04L5/0037 H04L5/0053 H04L5/006 H04L5/0082
H04L27/2602 H04W4/70 H04W72/044 H04W72/1273
US: 1/1 370/329



Family:

Publication number	Publication date	Application number	Application date
EP3073658 A1	20160928	EP20140863934	20141121
EP3073658 A4	20170719	EP20140863934	20141121
EP3073658 B1	20191106	EP20140863934	20141121
US2016242203 AA	20160818	US20140026570	20141121
WO15076619 A1	20150528	WO2014KR11277	20141121

Priority:

US20130907400P 20131122 US20130910130P 20131129 US20130914359P 20131210
US20140930483P 20140123 US20140932809P 20140129 US20140026570 20141121
WO2014KR11277 20141121

Probable Assignee: LG ELECTRONICS

Assignee(s): (std): LG ELECTRONICS INC ; LG ELECTRONICS

Inventor(s): (std): AHN JOONKUI ; SEO DONGYOUN ; YANG SUCKCHEL ; YI YUNJUNG ; YOU HYANGSUN

Agent(s): KATERLE AXEL; S AND IP PATENT AND LAW FIRM

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU
CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN
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