

## (12) 按照专利合作条约所公布的国际申请

(19) 世界知识产权组织  
国际局

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2012 年 10 月 26 日 (26.10.2012)



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*H04W 28/16* (2009.01) *H04L 1/16* (2006.01)
- (21) 国际申请号: PCT/CN2011/085175
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- (25) 申请语言: 中文
- (26) 公布语言: 中文
- (30) 优先权:  
201110102889.0 2011 年 4 月 22 日 (22.04.2011) CN
- (71) 申请人 (对除美国外的所有指定国): **中兴通讯股份有限公司 (ZTE CORPORATION)** [CN/CN]; 中国广东省深圳市南山区高新技术产业园科技南路中兴通讯大厦, Guangdong 518057 (CN)。
- (72) 发明人; 及
- (75) 发明人/申请人 (仅对美国): **郝鹏 (HAO, Peng)** [CN/CN]; 中国广东省深圳市南山区高新技术产业园科技南路中兴通讯大厦, Guangdong 518057 (CN)。

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(81) 指定国 (除另有指明, 要求每一种可提供的国家保护): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW。

(84) 指定国 (除另有指明, 要求每一种可提供的地区保护): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), 欧亚 (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), 欧洲 (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT,

[见续页]

(54) Title: DATA TRANSMISSION METHOD AND DEVICE, AND FRAME STRUCTURE OF TIME DIVISION DUPLEX SYSTEM

(54) 发明名称: 数据传输方法、装置及时分双工系统的帧结构

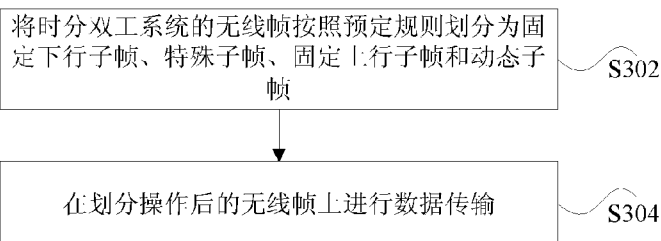


图 3 / FIG. 3

**S302 CLASSIFICATION OF WIRELESS FRAMES OF A TIME DIVISION DUPLEX SYSTEM INTO FIXED DOWNLINK SUBFRAMES, SPECIAL SUBFRAMES, FIXED UPLINK SUBFRAMES AND DYNAMIC SUBFRAMES ACCORDING TO A PREDETERMINED RULE**

**S304 PERFORMING OF DATA TRANSMISSION ON THE WIRELESS FRAMES AFTER THE CLASSIFICATION OPERATION**

(57) Abstract: Disclosed are a data transmission method and device, and a frame structure of a time division duplex (TDD) system. The method comprises: classifying wireless frames of a TDD system into fixed downlink subframes, special subframes, fixed uplink subframes, and dynamic subframes according to a predetermined rule (S302), the dynamic subframes being used for transmitting uplink data or downlink data, or for canceling data transmission; performing data transmission on the wireless frames after the classification operation (S304). The present invention achieves the effect of improving data transmission efficiency.

(57) 摘要: 本发明公开了一种数据传输方法、装置及时分双工系统的帧结构, 该方法包括: 将 TDD 系统的无线帧按照预定规则划分为固定下行子帧、特殊子帧、固定上行子帧和动态子帧 (S302), 其中, 动态子帧用于传输上行数据、下行数据或取消数据传输; 在划分操作后的无线帧上进行数据传输 (S304)。通过本发明, 达到了提高数据传输效率的效果。



RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)。

**本国际公布:**

— 包括国际检索报告(条约第 21 条(3))。

**(88) 国际检索报告公布日期:** 2013 年 1 月 17 日

# INTERNATIONAL SEARCH REPORT

International application No.

**PCT/CN2011/085175****A. CLASSIFICATION OF SUBJECT MATTER**

See the extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC: H04L, H04W, H04Q, H04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNABS, CNTXT, CNKI, 3GPP, VEN: time division duplex, radio frame, data frame, dynamic subframe, special subframe; TDD, frame, subframe, uplink, up+, downlink, down+, dynamic, special, specific, especial, reserve+, notificat+, feedback

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                              | Relevant to claim No. |
|-----------|-----------------------------------------------------------------------------------------------------------------|-----------------------|
| PX        | CN 102158325 A (ZTE CORP.), 17 August 2011 (17.08.2011), claims 1-11                                            | 1-11                  |
| X         | CN 102025411 A (ZTE CORP.), 20 April 2011 (20.04.2011), description, paragraphs [0016]-[0029] and [0060]-[0078] | 1-11                  |
| A         | CN 101425845 A (DATANG MOBILE COMMUNICATIONS EQUIPMENT CO., LTD.), 06 May 2009 (06.05.2009), the whole document | 1-11                  |
| A         | CN 101904125 A (ZTE USA INC.), 01 December 2010 (01.12.2010), the whole document                                | 1-11                  |

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

|                                                                                                                                                                         |                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| * Special categories of cited documents:                                                                                                                                | "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention                                              |
| "A" document defining the general state of the art which is not considered to be of particular relevance                                                                | "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone                                                                     |
| "E" earlier application or patent but published on or after the international filing date                                                                               | "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | "&" document member of the same patent family                                                                                                                                                                                                    |
| "O" document referring to an oral disclosure, use, exhibition or other means                                                                                            |                                                                                                                                                                                                                                                  |
| "P" document published prior to the international filing date but later than the priority date claimed                                                                  |                                                                                                                                                                                                                                                  |

Date of the actual completion of the international search  
27 March 2012 (27.03.2012)Date of mailing of the international search report  
**05 April 2012 (05.04.2012)**Name and mailing address of the ISA/CN:  
State Intellectual Property Office of the P. R. China  
No. 6, Xitucheng Road, Jimenqiao  
Haidian District, Beijing 100088, China  
Facsimile No.: (86-10) 62019451

Authorized officer

**XUE, Yu**Telephone No.: (86-10) **62412008**

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2011/085175

### Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 13  
because they relate to subject matter not required to be searched by this Authority, namely:  
Claim 13 relates to a frame structure and claims protection for the information itself, which falls within the scope of mere presentations of information, therefore it does not warrant an international search according to the criteria set out in Rule 39.1, and thus no international search is carried out.
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

### Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

#### Remark on protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International application No.

**PCT/CN2011/085175**

| Patent Documents referred<br>in the Report | Publication Date | Patent Family    | Publication Date |
|--------------------------------------------|------------------|------------------|------------------|
| CN 102158325 A                             | 17.08.2011       | None             |                  |
| CN 102025411 A                             | 20.04.2011       | None             |                  |
| CN 101425845 A                             | 06.05.2009       | WO 2009070964 A1 | 11.06.2009       |
|                                            |                  | EP 2234292 A1    | 29.09.2010       |
|                                            |                  | KR 20100092475 A | 20.08.2010       |
|                                            |                  | MX 2011001609 A  | 31.08.2011       |
|                                            |                  | IN 201003306 P4  | 26.11.2010       |
|                                            |                  | JP 201150241 A   | 20.01.2011       |
|                                            |                  | US 2010246456 A1 | 30.09.2010       |
|                                            |                  | KR 1110203 B1    | 17.02.2012       |
| CN 101904125 A                             | 01.12.2010       | KR 20100106364 A | 01.10.2010       |
|                                            |                  | US 2009185632 A1 | 23.07.2009       |
|                                            |                  | JP 2011504018 A  | 27.01.2011       |
|                                            |                  | US 2011103406 A1 | 05.05.2011       |
|                                            |                  | WO 2009062115 A2 | 14.05.2009       |
|                                            |                  | WO 2009062115 A3 | 30.07.2009       |
|                                            |                  | EP 2215756 A2    | 11.08.2010       |
|                                            |                  | IN 201003399 P1  | 14.01.2011       |
|                                            |                  | US 2011096783 A1 | 28.04.2011       |

# INTERNATIONAL SEARCH REPORT

International application No.

**PCT/CN2011/085175**

## A. CLASSIFICATION OF SUBJECT MATTER

H04W 72/04 (2009.01) i

H04W 28/16 (2009.01) i

H04B 7/26 (2006.01) i

H04L 1/16 (2006.01) i

## 国际检索报告

国际申请号  
PCT/CN2011/085175

## A. 主题的分类

参见附加页

按照国际专利分类(IPC)或者同时按照国家分类和 IPC 两种分类

## B. 检索领域

检索的最低限度文献(标明分类系统和分类号)

IPC: H04L, H04W, H04Q, H04B

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库(数据库的名称, 和使用的检索词(如使用))

CNABS, CNTXT, CNKI, 3GPP, VEN: 时分双工, 无线帧, 数据帧, 帧, 动态子帧, 特殊子帧, 动态, 预留, 特殊, 子帧, 上行, 下行, 通知, 反馈; TDD, frame, subframe, uplink, up+, downlink, down+, dynamic, special, specific, especial, reserve+, notificat+, feedback

## C. 相关文件

| 类 型* | 引用文件, 必要时, 指明相关段落                                                                       | 相关的权利要求 |
|------|-----------------------------------------------------------------------------------------|---------|
| PX   | CN102158325A (中兴通讯股份有限公司) 17.8 月 2011(17.08.2011)<br>权利要求 1-11                          | 1-11    |
| X    | CN102025411A(中兴通讯股份有限公司) 20.4 月 2011(20.04.2011)<br>说明书第[0016]-[0029]段, 第[0060]-[0078]段 | 1-11    |
| A    | CN101425845A(大唐移动通信设备有限公司) 06.5 月 2009(06.05.2009)<br>全文                                | 1-11    |
| A    | CN101904125A(中兴通讯美国公司) 01.12 月 2010(01.12.2010)                                         | 1-11    |

☐ 其余文件在 C 栏的续页中列出。☒ 见同族专利附件。

\* 引用文件的具体类型:

“A” 认为不特别相关的表示了现有技术一般状态的文件

“E” 在国际申请日的当天或之后公布的在先申请或专利

“L” 可能对优先权要求构成怀疑的文件, 或为确定另一篇引用文件的公布日而引用的或者因其他特殊理由而引用的文件(如具体说明的)

“O” 涉及口头公开、使用、展览或其他方式公开的文件

“P” 公布日先于国际申请日但迟于所要求的优先权日的文件

“T” 在申请日或优先权日之后公布, 与申请不相抵触, 但为了理解发明之理论或原理的在后文件

“X” 特别相关的文件, 单独考虑该文件, 认定要求保护的发明不是新颖的或不具有创造性

“Y” 特别相关的文件, 当该文件与另一篇或者多篇该类文件结合并且这种结合对于本领域技术人员为显而易见时, 要求保护的发明不具有创造性

“&amp;” 同族专利的文件

国际检索实际完成的日期  
27.3 月 2012(27.03.2012)国际检索报告邮寄日期  
05.4 月 2012 (05.04.2012)ISA/CN 的名称和邮寄地址:  
中华人民共和国国家知识产权局  
中国北京市海淀区蓟门桥西土城路 6 号 100088  
传真号: (86-10)62019451受权官员  
薛钰  
电话号码: (86-10) 62412008

国际检索报告  
关于同族专利的信息

国际申请号  
PCT/CN2011/085175

| 检索报告中引用的<br>专利文件 | 公布日期       | 同族专利           | 公布日期       |
|------------------|------------|----------------|------------|
| CN102158325A     | 17.08.2011 | 无              |            |
| CN102025411A     | 20.04.2011 | 无              |            |
| CN101425845A     | 06.05.2009 | WO2009070964A1 | 11.06.2009 |
|                  |            | EP2234292A1    | 29.09.2010 |
|                  |            | KR20100092475A | 20.08.2010 |
|                  |            | MX2011001609A  | 31.08.2011 |
|                  |            | IN201003306P4  | 26.11.2010 |
|                  |            | JP201150241 A  | 20.01.2011 |
|                  |            | US2010246456A1 | 30.09.2010 |
|                  |            | KR1110203B1    | 17.02.2012 |
| CN101904125A     | 01.12.2010 | KR20100106364A | 01.10.2010 |
|                  |            | US2009185632A1 | 23.07.2009 |
|                  |            | JP2011504018A  | 27.01.2011 |
|                  |            | US2011103406A1 | 05.05.2011 |
|                  |            | WO2009062115A2 | 14.05.2009 |
|                  |            | WO2009062115A3 | 30.07.2009 |
|                  |            | EP2215756A2    | 11.08.2010 |
|                  |            | IN201003399P1  | 14.01.2011 |
|                  |            | US2011096783A1 | 28.04.2011 |



国际检索报告

国际申请号

PCT/CN2011/085175

**第II栏 某些权利要求被认为是不能检索的意见(续第1页第2项)**

根据条约第17条(2)(a), 对某些权利要求未做国际检索的理由如下:

1. ☒ 权利要求: 13

因为它们涉及不要求本单位进行检索的主题, 即:

权利要求13涉及一种帧结构, 要求保护的是信息本身, 因此属于单纯的信息表达的范畴, 符合PCT细则39.1中所列的无需进行国际检索的情形, 因此未进行国际检索。

2. ☐ 权利要求:

因为它们涉及国际申请中不符合规定的要求的部分, 以致不能进行任何有意义的国际检索,  
具体地说:

3. ☐ 权利要求:

因为它们是从属权利要求, 并且没有按照细则6.4(a)第2句和第3句的要求撰写。

**第III栏 缺乏发明单一性的意见(续第1页第3项)**

本国际检索单位在该国际申请中发现多项发明, 即:

1. ☐ 由于申请人按时缴纳了被要求缴纳的全部附加检索费, 本国际检索报告涉及全部可作检索的权利要求。

2. ☐ 由于无需付出有理由要求附加费的劳动即能对全部可检索的权利要求进行检索, 本单位未通知缴纳任何附加费。

3. ☐ 由于申请人仅按时缴纳了部分被要求缴纳的附加检索费, 本国际检索报告仅涉及已缴费的那些权利要求。  
具体地说, 是权利要求:

4. ☐ 申请人未按时缴纳被要求缴纳的附加检索费。因此, 本国际检索报告仅涉及权利要求书中首先提及的发明; 包含该发明的权利要求是:

关于异议的说明: ☐ 申请人缴纳了附加检索费, 同时提交了异议书, 适用时, 缴纳了异议费。

☐ 申请人缴纳了附加检索费, 同时提交了异议书, 但未在通知书规定的时间期限内缴纳异议费。

☐ 缴纳附加检索费时未提交异议书。

A. 主题的分类

H04W72/04(2009.01)i

H04W28/16(2009.01)i

H04B7/26(2006.01)i

H04L1/16(2006.01)i