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(71) Applicant: SAMSUNG ELECTRONICS CO., LTD.

[KR/KR]; 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do 16677 (KR).

(72) Inventors: GUO, Li; 665, Clyde Ave., Mountain View,

California 94043 (US). NAM, Young-Han; 665, Clyde Ave., Mountain View, California 94043 (US). NG, Boon Loong; 665, Clyde Ave., Mountain View, California 94043 (US). RAMAKRISHNA, Sudhir; 665, Clyde Ave., Mountain View, California 94043 (US).

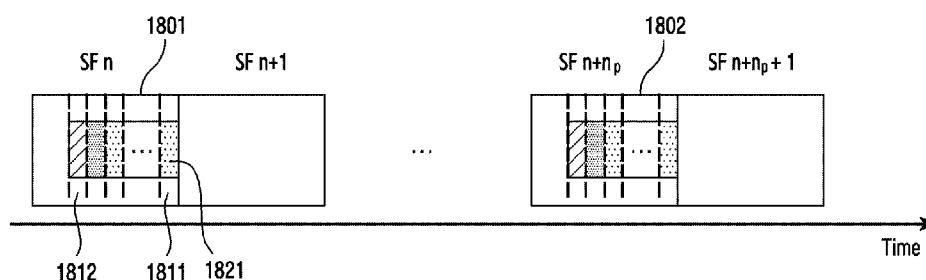
tain View, California 94043 (US). LI, Yang; 665, Clyde Ave., Mountain View, California 94043 (US).

(74) Agent: KWON, Hyuk-Rok et al.; 2F, 28, Gyeonghui-gil, Jongro-gu, Seoul 03175 (KR).

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(54) Title: METHOD AND APPARATUS FOR INITIAL ACCESS IN WIRELESS COMMUNICATION SYSTEMS



(57) **Abstract:** The present disclosure relates to a pre-5th-Generation (5G) or 5G communication system to be provided for supporting higher data rates Beyond 4th-Generation (4G) communication system such as Long Term Evolution (LTE). A base station includes at least one processor configured to map initial access signals, each initial access signal corresponding to one of a plurality of transmit beams, to a subset or all of a plurality of predefined time locations in at least one periodicity, and a transceiver configured to transmit the mapped initial access signals to a terminal and indicate OFDM symbols that are not mapped with the initial access signals in the one periodicity to the terminal. A terminal includes a transceiver configured to receive initial access signals mapped to a subset or all of time locations in one periodicity from a base station, the each initial access signal corresponding to one of a plurality of different beams, and at least one processor configured to perform an initial access to the base station and receive the indication of OFDM symbols that are not mapped with the initial access signals in the one periodicity.



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INTERNATIONAL SEARCH REPORT

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PCT/KR2017/004727**A. CLASSIFICATION OF SUBJECT MATTER****H04J 11/00(2006.01)i**

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)

H04J 11/00; H04L 5/00; H01Q 3/00; H04B 7/06; H04W 72/04; H04B 7/04; H01Q 3/26

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: initial access, transmit beams, time location, periodicity, OFDM symbol index, physical cell ID, extended synchronization signal (ESS), PBCH

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2016-0105872 A1 (ASUSTEK COMPUTER INC.) 14 April 2016 See paragraphs [0036]–[0044]; claim 1; and figure 1.	1–13
A	US 2016-0119910 A1 (FUTUREWEI TECHNOLOGIES, INC.) 28 April 2016 See paragraphs [0036]–[0039], [0041], [0064]; claim 17; and figures 1, 7.	1–13
A	US 2014-0334566 A1 (SAMSUNG ELECTRONICS CO., LTD.) 13 November 2014 See paragraphs [0084]–[0088]; claims 1, 12; and figure 4.	1–13
A	US 2014-0225777 A1 (MAGNOLIA BROADBAND INC.) 14 August 2014 See paragraph [0025]; claims 1, 13, 14; and figure 1.	1–13
A	US 2016-0087707 A1 (MEDIATEK INC.) 24 March 2016 See paragraphs [0051]–[0052]; claims 1, 2; and figure 1.	1–13



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

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"P" document published prior to the international filing date but later than the priority date claimed

"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

"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

"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

"&" document member of the same patent family

Date of the actual completion of the international search

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Name and mailing address of the ISA/KR

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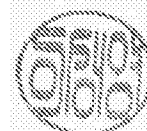
189 Cheongsa-ro, Seo-gu, Daejeon, 35208, Republic of Korea

Facsimile No. +82-42-481-8578

Authorized officer

LEE, Seoung Young

Telephone No. +82-42-481-3535



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2017/004727

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2016-0105872 A1	14/04/2016	EP 3010158 A1	20/04/2016
US 2016-0119910 A1	28/04/2016	CA 2965575 A1	28/04/2016
		WO 2016-062292 A1	28/04/2016
US 2014-0334566 A1	13/11/2014	CN 105210306 A	30/12/2015
		EP 2995014 A1	16/03/2016
		JP 2016-519537 A	30/06/2016
		KR 10-2014-0133481 A	19/11/2014
		US 9203497 B2	01/12/2015
		WO 2014-182143 A1	13/11/2014
US 2014-0225777 A1	14/08/2014	US 2014-0225776 A1	14/08/2014
		US 2014-0226741 A1	14/08/2014
		US 2014-0341314 A1	20/11/2014
		US 8797969 B1	05/08/2014
		US 8928528 B2	06/01/2015
		US 9300378 B2	29/03/2016
		US 9343808 B2	17/05/2016
US 2016-0087707 A1	24/03/2016	CN 105637952 A	01/06/2016
		CN 105706374 A	22/06/2016
		CN 105723642 A	29/06/2016
		CN 105830496 A	03/08/2016
		EP 3058785 A1	24/08/2016
		EP 3100393 A1	07/12/2016
		EP 3152845 A1	12/04/2017
		EP 3175646 A1	07/06/2017
		US 2016-0087704 A1	24/03/2016
		US 2016-0087705 A1	24/03/2016
		US 2016-0087706 A1	24/03/2016
		US 2016-0087765 A1	24/03/2016
		WO 2016-045467 A1	31/03/2016
		WO 2016-045474 A1	31/03/2016
		WO 2016-045475 A1	31/03/2016
		WO 2016-045528 A1	31/03/2016
		WO 2016-045529 A1	31/03/2016