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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: **QIAN, Chen**; 18/F Sun Palace Building,
No.12A, TaiYangGong Middle Rd,Chaoyang District, Bei-
jing 100028 (CN). **YU, Bin**; 18/F Sun Palace Building,
No.12A, TaiYangGong Middle Rd,Chaoyang District, Bei-
jing 100028 (CN). **XIONG, Qi**; 18/F Sun Palace Building,
No.12A, TaiYangGong Middle Rd,Chaoyang District, Bei-

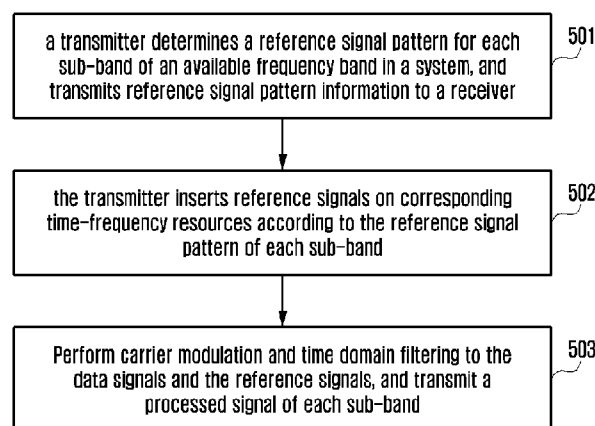
jing 100028 (CN). **SUN, Chengjun**; 18/F Sun Palace Build-
ing, No.12A, TaiYangGong Middle Rd,Chaoyang District,
Beijing 100028 (CN).

(74) Agent: **YOON, Dong Yol**; Yoon & Lee International Patent
& Law Firm, 3rd Fl, Ace Highend Tower-5, 226, Gasan
Digital 1-ro, Geumcheon-gu, Seoul 08502 (KR).

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DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KH, KN, KP, KR,
KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG,
MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM,
PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC,
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(54) Title: SIGNAL TRANSMITTING AND RECEIVING METHODS IN A FILTERING-BASED CARRIER MODULATION SYSTEM AND APPARATUSES THEREOF



(57) Abstract: The present disclosure relates to a communication method and system for signal pattern can be designed converging a 5th-Generation (5G) communication shown in FIG. 11 may be designed according to a maximum delay spread and a maximum Doppler frequency shift supported by the transmitter. For further details, reference may be made to cell-specific reference signal (CRS) or CSI-RS design in the LTE/LTE-A. A method of signal transmitting in a filtering-based carrier modulation system, includes determining, by a transmitter, a reference signal pattern for each subband of an available frequency band of a system, and transmitting reference signal pattern information to a receiver, inserting, by the transmitter, reference signals on corresponding time-frequency resources according to the reference signal pattern of each subband, performing a carrier modulation and time domain filtering to data signals and the reference signals, and transmitting a processed signal of each subband, wherein the reference signals are used for estimating a frequency domain response of an equivalent channel consisting of a time domain filter and a physical channel from the transmitter to the receiver. The present disclosure also provides a receiving method, a transmitter and a receiver. According to the present disclosure, the storage requirement and detecting complexity of the receiver may be decreased greatly.



EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2017/003056**A. CLASSIFICATION OF SUBJECT MATTER****H04L 5/00(2006.01)i, H04L 27/26(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)

H04L 5/00; H04L 25/03; H04J 11/00; H04B 7/216; H04L 27/26

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: reference signal, pattern, information, subband, carrier modulation, time domain filtering, frequency domain response, equivalent channel, edge reference signal, center reference signal, subcarrier, orthogonal resource, demodulation reference signal, periodic, aperiodic

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	HUAWEI et al., 'Remaining Details of Downlink Reference Signal Design', R1-160318, 3GPP TSG RAN WG1 Meeting #84, St Julian's, Malta, 6 February 2016 See sections 2, 3.	1-15
A	US 2015-0372843 A1 (INTERDIGITAL PATENT HOLDINGS, INC.) 24 December 2015 See paragraphs [0187]-[0190]; and figures 25-27.	1-15
A	ZTE, 'Remaining issues on NB-RS for NB-IoT', R1-161864, 3GPP TSG RAN WG1 NB-IoT Ad-Hoc Meeting, Sophia Antipolis, France, 16 March 2016 See section 2.	1-15
A	SAMSUNG, 'NB-RS Design', R1-160553, 3GPP TSG RAN WG1 Meeting #84, St Julian's, Malta, 5 February 2016 See section 2.	1-15
A	US 2004-0257979 A1 (JUNG-MIN RO et al.) 23 December 2004 See paragraphs [0077]-[0112]; claim 1; and figures 6-10.	1-15



Further documents are listed in the continuation of Box C.



See patent family annex.

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"&" document member of the same patent family

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International Application Division

Korean Intellectual Property Office

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

Facsimile No. +82-42-481-8578

Authorized officer

KANG, Hee Gok

Telephone No. +82-42-481-8264



INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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