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APPLICATION NUMBER	FILING OR 571(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
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15/105,648	06/17/2016	Sebastian Faxer	4015-9595 / P45698-US2
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CONFIRMATION NO. 5548

PUBLICATION NOTICE

24112
COATS & BENNETT, PLLC
1400 Crescent Green, Suite 300
Cary, NC 27518



Title:Codebook Subset Restriction Signaling

Publication No.US-2018-0131420-A1

Publication Date:05/10/2018

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publicly available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <https://portal.uspto.gov/pair/PublicPair>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of Faxér, et al.)	
Serial No.: 15/105648)	
Filed: June 17, 2016)	Examiner: Brian D. Nguyen
For: Codebook Subset Restriction Signaling)	Group Art Unit: 2472
Docket No: 4015-9595 / P45698-US2)	Confirmation No.: 5548
)	
)	

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO OFFICE ACTION

This paper is being filed in response to the Office Action mailed April 13, 2018, having a reply due date of July 13, 2018. Reconsideration is respectfully requested in light of the remarks below. The Office is hereby authorized to charge any fees required for entry of this paper to Deposit Account 18-1167.

CLAIMS LISTING

1-38. (Cancelled)

39. (Currently Amended) A method implemented by a network node for signaling to a wireless communication device which precoders in a codebook are restricted from being used, the method characterized by:

generating codebook subset restriction signaling that, for each of one or more groups of precoders, jointly restricts the precoders in the group by restricting a certain component that the precoders in the group have in common, wherein the codebook subset restriction signaling is rank-agnostic signaling that jointly restricts the precoders in a group without regard to the precoders' transmission rank; and
sending the generated signaling from the network node to the wireless communication device.

40. (Cancelled)

41. (Previously Presented) The method of claim 39, wherein a precoder comprising one or more beam precoders is restricted if at least one of its one or more beam precoders is restricted.

42. (Previously Presented) The method of claim 39, wherein the certain component comprises a beam precoder.

43. (Previously Presented) The method of claim 42, wherein a beam precoder is a Kronecker product of different beamforming vectors associated with different dimensions of a multi-dimensional antenna array.
44. (Previously Presented) The method of claim 43, wherein the different beamforming vectors comprise Discrete Fourier Transform (DFT) vectors.
45. (Previously Presented) The method of claim 42, wherein a beam precoder is a beamforming vector used to transmit on a particular layer of a multi-layer transmission, wherein different scaled versions of that beamforming vector are transmitted on different polarizations;
46. (Previously Presented) The method of claim 39, wherein a beam precoder is a Kronecker product of first and second beamforming vectors with first and second indices, wherein the first and second beamforming vectors are associated with different dimensions of a multi-dimensional antenna array, and wherein the codebook subset restriction signaling jointly restricts the precoders in a group of precoders that have the same pair of values for the first and second indices.
47. (Currently Amended) A method implemented by a wireless communication device for decoding signaling from a network node indicating which precoders in a codebook are restricted from being used, the method characterized by:
- receiving codebook subset restriction signaling that, for each of one or more groups of precoders, jointly restricts the precoders in the group by restricting a certain component that the precoders in the group have in common, wherein the codebook subset restriction signaling is rank-agnostic signaling that jointly

restricts the precoders in a group without regard to the precoders' transmission rank; and

decoding the received signaling as jointly restricting precoders in each of the one or more groups of precoders.

48. (Cancelled)

49. (Previously Presented) The method of claim 47, wherein a precoder comprising one or more beam precoders is restricted if at least one of its one or more beam precoders is restricted.

50. (Previously Presented) The method of claim 47, wherein the certain component comprises a beam precoder.

51. (Previously Presented) The method of claim 50, wherein a beam precoder is a Kronecker product of different beamforming vectors associated with different dimensions of a multi-dimensional antenna array.

52. (Previously Presented) The method of claim 51, wherein the different beamforming vectors comprise Discrete Fourier Transform (DFT) vectors.

53. (Previously Presented) The method of claim 50, wherein a beam precoder is a beamforming vector used to transmit on a particular layer of a multi-layer transmission, wherein different scaled versions of that beamforming vector are transmitted on different polarizations;

54. (Previously Presented) The method of claim 47, wherein a beam precoder is a Kronecker product of first and second beamforming vectors with first and second indices, wherein the first and second beamforming vectors are associated with different dimensions of a multi-dimensional antenna array, and wherein the codebook subset restriction signaling jointly restricts the precoders in a group of precoders that have the same pair of values for the first and second indices.

55. (Currently Amended) A network node for signaling to a wireless communication device which precoders in a codebook are restricted from being used, the network node comprising: a processor and a memory, the memory containing instructions executable by the processor whereby the network node is configured to:

generate codebook subset restriction signaling that, for each of one or more groups of precoders, jointly restricts the precoders in the group by restricting a certain component that the precoders in the group have in common, wherein the codebook subset restriction signaling is rank-agnostic signaling that jointly restricts the precoders in a group without regard to the precoders' transmission rank; and

send the generated signaling from the network node to the wireless communication device.

56. (Cancelled)

57. (Previously Presented) The network node of claim 55, wherein a precoder comprising one or more beam precoders is restricted if at least one of its one or more beam precoders is restricted.
58. (Previously Presented) The network node of claim 55, wherein the certain component comprises a beam precoder.
59. (Previously Presented) The network node of claim 58, wherein a beam precoder is a Kronecker product of different beamforming vectors associated with different dimensions of a multi-dimensional antenna array.
60. (Previously Presented) The network node of claim 59, wherein the different beamforming vectors comprise Discrete Fourier Transform (DFT) vectors.
61. (Previously Presented) The network node of claim 58, wherein a beam precoder is a beamforming vector used to transmit on a particular layer of a multi-layer transmission, wherein different scaled versions of that beamforming vector are transmitted on different polarizations;
62. (Previously Presented) The network node of claim 55, wherein a beam precoder is a Kronecker product of first and second beamforming vectors with first and second indices, wherein the first and second beamforming vectors are associated with different dimensions of a multi-dimensional antenna array, and wherein the codebook subset restriction signaling jointly restricts the precoders in a group of precoders that have the same pair of values for the first and second indices.

63. (Currently Amended) A wireless communication device for decoding signaling from a network node indicating which precoders in a codebook are restricted from being used, the wireless communication device comprising:

a processor and a memory, the memory containing instructions executable by the processor whereby the wireless communication device is configured to:

receive codebook subset restriction signaling that, for each of one or more groups of precoders, jointly restricts the precoders in the group by restricting a certain component that the precoders in the group have in common, wherein the codebook subset restriction signaling is rank-agnostic signaling that jointly restricts the precoders in a group without regard to the precoders' transmission rank; and

decode the received signaling as jointly restricting precoders in each of the one or more groups of precoders.

64. (Cancelled)

65. (Previously Presented) The wireless communication device of claim 63, wherein a precoder comprising one or more beam precoders is restricted if at least one of its one or more beam precoders is restricted.

66. (Previously Presented) The wireless communication device of claim 63, wherein the certain component comprises a beam precoder.

67. (Previously Presented) The wireless communication device of claim 66, wherein a beam precoder is a Kronecker product of different beamforming vectors associated with different dimensions of a multi-dimensional antenna array.

68. (Previously Presented) The wireless communication device of claim 67, wherein the different beamforming vectors comprise Discrete Fourier Transform (DFT) vectors.

69. (Previously Presented) The wireless communication device of claim 66, wherein a beam precoder is a beamforming vector used to transmit on a particular layer of a multi-layer transmission, wherein different scaled versions of that beamforming vector are transmitted on different polarizations;

70. (Previously Presented) The wireless communication device of claim 63, wherein a beam precoder is a Kronecker product of first and second beamforming vectors with first and second indices, wherein the first and second beamforming vectors are associated with different dimensions of a multi-dimensional antenna array, and wherein the codebook subset restriction signaling jointly restricts the precoders in a group of precoders that have the same pair of values for the first and second indices.

REMARKS

Applicant appreciates the Examiner indicating that claims 40, 45-46, 48, 53-54, 56, 61-62, 64, and 69-70 are allowable if rewritten into independent form including all the limitations of their base claim and any intervening claims. Applicant amends independent claims 39, 47, 55, and 63 to incorporate the allowable subject matter of dependent claims 40, 48, 56, and 64, respectively. Claims 40, 48, 56, and 64 have therefore been canceled.

Independent claims 39, 47, 55 and 63 stand rejected under 35 U.S.C. §102 as being anticipated by U.S. Patent Application Publication No. 2013/0163687 to Jing *et al.* (“Jing”). While Applicant disagrees with the rejections, Applicant has, in the interest of expedited prosecution, amended the independent claims to include the allowable subject matter. Such amendments render moot any further discussion of Jing. Applicant submits that the independent claims, and their respective dependent claims, define over the cited art for at least the reasons indicated in the Action.

For the forgoing reasons, it is respectfully urged that the present application is in condition for allowance and notice to such effect is respectfully requested.

Respectfully submitted,
COATS & BENNETT, P.L.L.C.

/Brandee N. Woolard/
Brandee N. Woolard
Registration No.: 68,795
Telephone: (919) 854-1844

Dated: July 11, 2018

Electronic Acknowledgement Receipt	
EFS ID:	33151887
Application Number:	15105648
International Application Number:	
Confirmation Number:	5548
Title of Invention:	Codebook Subset Restriction Signaling
First Named Inventor/Applicant Name:	Sebastian Faxer
Customer Number:	24112
Filer:	Brandee N. Woolard/Leslie Ruckdeschel
Filer Authorized By:	Brandee N. Woolard
Attorney Docket Number:	4015-9595 / P45698-US2
Receipt Date:	11-JUL-2018
Filing Date:	17-JUN-2016
Time Stamp:	16:46:50
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Response_OA.pdf	110001 <small>60031106a0980956c1ce111baf91e25a4b0f1246b</small>	yes	9

Multipart Description/PDF files in .zip description		
Document Description	Start	End
Amendment/Req. Reconsideration-After Non-Final Reject	1	1
Claims	2	8
Applicant Arguments/Remarks Made in an Amendment	9	9
Warnings:		
Information:		
Total Files Size (in bytes):	110001	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>		



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NOTICE OF ALLOWANCE AND FEE(S) DUE

24112 7590 09/11/2018
COATS & BENNETT, PLLC
1400 Crescent Green, Suite 300
Cary, NC 27518

EXAMINER

NGUYEN, BRIAN D

ART UNIT PAPER NUMBER

2472

DATE MAILED: 09/11/2018

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
15/105,648 06/17/2016 Sebastian Faxer 4015-9595 / P-45698-US2 5548

TITLE OF INVENTION: Codebook Subset Restriction Signaling

Table with 7 columns: APPLN. TYPE, ENTITY STATUS, ISSUE FEE DUE, PUBLICATION FEE DUE, PREV. PAID ISSUE FEE, TOTAL FEE(S) DUE, DATE DUE
nonprovisional UNDISCOUNTED \$1000 \$0.00 \$0.00 \$1000 12/11/2018

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

24112 7590 09/11/2018
COATS & BENNETT, PLLC
 1400 Crescent Green, Suite 300
 Cary, NC 27518

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

_____ (Depositor's name)
_____ (Signature)
_____ (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/105,648	06/17/2016	Sebastian Faxér	4015-9595 / P45698-US2	5548

TITLE OF INVENTION: Codebook Subset Restriction Signaling

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1000	\$0.00	\$0.00	\$1000	12/11/2018

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, BRIAN D	2472	370-328000

<p>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).</p> <p><input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.</p> <p><input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev. 03-02 or more recent) attached. Use of a Customer Number is required.</p>	<p>2. For printing on the patent front page, list</p> <p>(1) The names of up to 3 registered patent attorneys or agents OR, alternatively, _____ 1</p> <p>(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. _____ 2</p> <p>_____ 3</p>
--	---

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE _____ (B) RESIDENCE: (CITY and STATE OR COUNTRY) _____

Please check the appropriate assignee category or categories (will not be printed on the patent): Individual Corporation or other private group entity Government

<p>4a. The following fee(s) are submitted:</p> <p><input type="checkbox"/> Issue Fee</p> <p><input type="checkbox"/> Publication Fee (No small entity discount permitted)</p> <p><input type="checkbox"/> Advance Order - # of Copies _____</p>	<p>4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)</p> <p><input type="checkbox"/> A check is enclosed.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input type="checkbox"/> The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).</p>
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5. Change in Entity Status (from status indicated above)

Applicant certifying micro entity status. See 37 CFR 1.29

Applicant asserting small entity status. See 37 CFR 1.27

Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____	Date _____
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15/105,648 06/17/2016 Sebastian Faxér 4015-9595 / P45698-US2 5548

24112 7590 09/11/2018
COATS & BENNETT, PLLC
1400 Crescent Green, Suite 300
Cary, NC 27518

EXAMINER

NGUYEN, BRIAN D.

ART UNIT PAPER NUMBER

2472

DATE MAILED: 09/11/2018

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.** Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b) (2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 15/105,648	Applicant(s) Faxér et al.	
	Examiner BRIAN D NGUYEN	Art Unit 2472	AIA Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

- This communication is responsive to the amendment filed 7/11/18.
 - A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
- An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
- The allowed claim(s) is/are See Continuation Sheet. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
- Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

 - All
 - Some
 - None of the:
 - Certified copies of the priority documents have been received.
 - Certified copies of the priority documents have been received in Application No. _____.
 - Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

- CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.


Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
- DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. <input type="checkbox"/> Notice of References Cited (PTO-892)	5. <input type="checkbox"/> Examiner's Amendment/Comment
2. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____	6. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance
3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material _____	7. <input type="checkbox"/> Other _____
4. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____	

/BRIAN D NGUYEN/ Primary Examiner, Art Unit 2472	
---	--

Continuation of 3. The allowed claim(s) is/are: 39,41-47,49-55,57-63 and 65-70

Search Notes 	Application/Control No. 15/105,648	Applicant(s)/Patent Under Reexamination Faxer et al.
	Examiner BRIAN D NGUYEN	Art Unit 2472

CPC - Searched*		
Symbol	Date	Examiner
H04B7/0469	4/12/18	BN
H04B7/0478	4/12/18	BN
H04B7/0639	4/12/18	BN
H03M7/3068	4/12/18	BN
H03M7/3082	4/12/18	BN

CPC Combination Sets - Searched*		
Symbol	Date	Examiner


US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
text and symbols limited by date search	4/12/18	bn
updated	09/04/2018	bn


Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
see the attached printout		09/04/2018	bn

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Index of Claims 	Application/Control No. 15/105,648	Applicant(s)/Patent Under Reexamination Faxér et al.
	Examiner BRIAN D NGUYEN	Art Unit 2472

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS									
<input checked="" type="checkbox"/> Claims renumbered in the same order as presented by applicant <input type="checkbox"/> CPA <input type="checkbox"/> T.D. <input type="checkbox"/> R.1.47									
CLAIM		DATE							
Final	Original	04/12/2018	09/04/2018						
	1	-	-						
	2	-	-						
	3	-	-						
	4	-	-						
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	37	-	-						
	38	-	-						
1	39	✓	=						
	40	=	-						
2	41	✓	=						
3	42	✓	=						

Index of Claims 	Application/Control No. 15/105,648	Applicant(s)/Patent Under Reexamination Faxér et al.
	Examiner BRIAN D NGUYEN	Art Unit 2472

CLAIM		DATE							
Final	Original	04/12/2018	09/04/2018						
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5	44	✓	=						
6	45	=	=						
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9	49	✓	=						
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24	66	✓	=						
25	67	✓	=						
26	68	✓	=						
27	69	=	=						
28	70	=	=						

Issue Classification 	Application/Control No. 15/105,648	Applicant(s)/Patent Under Reexamination Faxér et al.
	Examiner BRIAN D NGUYEN	Art Unit 2472


CPC						
Symbol					Type	Version
H04B		7		0469	F	2013-01-01
H04B		7		0456	I	2013-01-01
H04B		7		0478	I	2013-01-01
H04B		7		0658	I	2013-01-01
H03M		7		3068	I	2013-01-01
H04B		7		0639	A	2013-01-01
H03M		7		3082	A	2013-01-01

CPC Combination Sets				
Symbol	Type	Set	Ranking	Version

NONE	Total Claims Allowed:	
(Assistant Examiner)	(Date)	28
/BRIAN D NGUYEN/ Primary Examiner, Art Unit 2472	04 September 2018	O.G. Print Claim(s) 1
(Primary Examiner)	(Date)	O.G. Print Figure 5

U.S. Patent and Trademark Office

Part of Paper No.: 20180904


Issue Classification 	Application/Control No. 15/105,648	Applicant(s)/Patent Under Reexamination Faxér et al.
	Examiner BRIAN D NGUYEN	Art Unit 2472

INTERNATIONAL CLASSIFICATION			
CLAIMED			
H04B	7	7	04
H03M	7	7	30
NON-CLAIMED			

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)				
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)			

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	28	
/BRIAN D NGUYEN/ Primary Examiner, Art Unit 2472	04 September 2018	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	5

Issue Classification 	Application/Control No. 15/105,648	Applicant(s)/Patent Under Reexamination Faxér et al.
	Examiner BRIAN D NGUYEN	Art Unit 2472

Claims renumbered in the same order as presented by applicant
 CPA
 T.D.
 R.1.47

CLAIMS

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	7		16		25		34	4	43	12	52	20	61	28	70
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	9		18		27		36	6	45	14	54	22	63		

NONE	Total Claims Allowed:	
(Assistant Examiner)	(Date)	28
/BRIAN D NGUYEN/ Primary Examiner, Art Unit 2472	04 September 2018	O.G. Print Claim(s)
(Primary Examiner)	(Date)	1
		O.G. Print Figure
		5

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Part of Paper No.: 20180904

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	2	((("20130163687") or ("20140016549")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/03/28 21:05
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S3	2	S1 and rank\$3	US-PGPUB; USPAT	OR	ON	2018/03/28 21:21
S4	2	S1 and rank\$3 and restrict\$4	US-PGPUB; USPAT	OR	ON	2018/03/28 21:23
S5	0	"15105648"	US-PGPUB; USPAT	OR	ON	2018/03/28 21:27
S6	2	((("20130163687") or ("20140016549")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/04/11 21:20
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S8	0	S6 and beam\$4 adj2 precoder	US-PGPUB; USPAT	OR	ON	2018/04/11 21:20
S9	1	S6 and precoder	US-PGPUB; USPAT	OR	ON	2018/04/11 21:21
S10	1	S6 and pre\$3coder	US-PGPUB; USPAT	OR	ON	2018/04/11 21:21
S11	1	S6 and beam\$4	US-PGPUB; USPAT	OR	ON	2018/04/11 21:25
S12	2	S6 and precod\$4 and codebook	US-PGPUB; USPAT	OR	ON	2018/04/11 21:26
S13	2	S6 and precod\$4 and codebook and restrict\$4	US-PGPUB; USPAT	OR	ON	2018/04/11 21:26
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S15	2	S14 and precod\$4 and codebook and restrict\$4	US-PGPUB; USPAT	OR	ON	2018/04/11 21:49
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EAST Search History

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S25	3061	H04B7/0639.CPC.	US-PGPUB; USPAT	OR	ON	2018/04/12 12:26
S26	66	H03M7/3068.CPC.	US-PGPUB; USPAT	OR	ON	2018/04/12 12:27
S27	454	H03M7/3082.CPC.	US-PGPUB; USPAT	OR	ON	2018/04/12 12:27
S28	10	((("FAXER") near3 ("Sebastian")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/04/12 12:27
S29	227	((("FRENNE") near3 ("Mattias")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/04/12 12:27
S30	4	((("JARMYR") near3 ("Simon")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/04/12 12:28
S31	384	((("JONGREN") near3 ("George")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/04/12 12:28
S32	27	((("WERNERSSON") near3 ("Niklas")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/04/12 12:28
S33	615	S28 S29 S30 S31 S32	US-PGPUB; USPAT	OR	ON	2018/04/12 12:29
S34	82	S33 and codebook.clm.	US-PGPUB; USPAT	OR	ON	2018/04/12 12:29
S35	9	S33 and (restriction and codebook).clm.	US-PGPUB; USPAT	OR	ON	2018/04/12 12:30
S36	1	"15105648"	US-PGPUB; USPAT	OR	ON	2018/09/04 11:30

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S37	872	H04B7/0469.CPC.	US-PGPUB; USPAT	OR	ON	2018/09/04 11:38
S38	1239	H04B7/0478.CPC.	US-PGPUB; USPAT	OR	ON	2018/09/04 11:39
S39	3327	H04B7/0639.CPC.	US-PGPUB; USPAT	OR	ON	2018/09/04 11:39
S40	471	H03M7/3082.CPC.	US-PGPUB; USPAT	OR	ON	2018/09/04 11:39
S41	83	H03M7/3068.CPC.	US-PGPUB; USPAT	OR	ON	2018/09/04 11:39

9/ 4/ 2018 11:40:20 AM

C:\Users\bnguyen2\Documents\EAST\Workspaces\15105648.wsp

Receipt date: 05/08/2018

15/105,648 - GAU: 2472

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)

Approved for use through 11/30/2020. OMB 0851-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	15105648
	Filing Date	2016-06-17
	First Named Inventor	Sebastian Faxer
	Art Unit	2472
	Examiner Name	Brian D. Nguyen
	Attorney Docket Number	4015-9595 / P45698-US2

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	1	20110170638	A1	2011-07-14	Yuan et al.		
	2	20110243098	A1	2011-10-06	Koivisto et al.		
	3	20110249713	A1	2011-10-13	Hammarwall et al.		

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	1							

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /B.D.N/

Receipt date: 05/08/2018

15/105,648 - GAU: 2472

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	15105648
	Filing Date	2016-06-17
	First Named Inventor	Sebastian Faxer
	Art Unit	2472
	Examiner Name	Brian D. Nguyen
	Attorney Docket Number	4015-9595 / P45698-US2

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Examiner Signature	/BRIAN D NGUYEN/		Date Considered	09/04/2018
*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.				
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