

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2019/050442

A. CLASSIFICATION OF SUBJECT MATTER
 Int.Cl. H04W16/26 (2009.01) i, H04W24/04 (2009.01) i, H04W76/18 (2018.01) i,
 H04W76/30 (2018.01) i
 FI: H04W76/18, H04W76/30, H04W24/04, H04W16/26
 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)
 Int.Cl. H04B7/24-7/26, H04W4/00-99/00

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

Published examined utility model applications of Japan	1922-1996
Published unexamined utility model applications of Japan	1971-2020
Registered utility model specifications of Japan	1996-2020
Published registered utility model applications of Japan	1994-2020

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	HUAWEI, HISILICON, On backhaul link radio link failure handling for IAB [online], 3GPP TSG RAN WG1 adhoc-NR-AH-1901 R1-1901264, 12 January 2019, [retrieved on 20 January 2020], Internet: <URL:http://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_AH/NR_AH_1901/Docs/R1-1901264.zip>, pp. 2, 3, entire text	1-4, 6, 9 5, 7-8
X A	JP 2014-222882 A (QUALCOMM INC.) 27.11.2014 (2014-11-27), paragraphs [0064]-[0067], entire text	1, 3, 9 2, 4-8
X	CATT, End to end reliability in IAB[online], 3GPP TSG RAN WG2 #103bis R2-1813711, 28 September 2018, [retrieved on 20 February 2020], Internet: <URL:http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_103bis/Docs/R2-1813711.zip>, p. 4	7-8

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 20.02.2020	Date of mailing of the international search report 03.03.2020
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Name and mailing address of the ISA/ Japan Patent Office 3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan	Authorized officer Telephone No.
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	KYOCERA, Consideration of topology adaptation upon BH RLF[online], 3GPP TSG RAN WG2 #105 R2-1900919, 15 February 2019, [retrieved on 20 January 2020], Internet: <URL:http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_105/Docs/R2-1900919.zip>, p. 2, sections 2.1, 2.2	1-4, 6, 9

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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.:
because they relate to subject matter not required to be searched by this Authority, namely:

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:

Document 1: HUAWEI, HISILICON, On backhaul link radio link failure handling for IAB [online], 3GPP TSG RAN WG1 adhoc-NR-AH-1901 R1-1901264, 12 January 2019, [retrieved on 20 January 2020], Internet:
<URL:http://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_AH/NR_AH_1901/Docs/R1-1901264.zip>, pp. 2, 3

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.

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Document 1 (page 2, line 12 to page 3, line 1) discloses a control method for an IAB node (equivalent to the "relay device" in the present invention; hereafter, brackets will be used likewise) that wirelessly connects with a parent node (superior device) to relay communication between the parent node and a child IAB node (subordinate device), wherein the IAB node detects an RLF (connection fault) of a BH link established between the IAB node and the parent node; when having detected the RLF, the IAB node stops periodic signal transmission (transmission of a predetermined downlink signal) for the RLM (maintenance of the wireless connection) to remove the BH link for the child IAB node subordinate to the IAB node; the IAB node attempts to recover (reestablish) the BH link during a predetermined timer count; and when the BH link has not been recovered during the predetermined timer count, the child IAB node disconnects (remove) the wireless connection between the child IAB node and the IAB node. It is considered that when the IAB node has failed to recover the BH link between the IAB node and the parent node, a control is performed such that the wireless connection is removed between the IAB node and the child IAB node.

(Invention 1) Claims 1-6 and 9

Claims 1-2, which lack novelty in light of document 1, do not have a special technical feature. However, claim 3 that depends from claim 1 has the special technical feature wherein "the predetermined control is a control including transmitting, from the relay device to the subordinate device, a control signal that provides instructions for removing the wireless connection", and claims 4-6 have the same technical feature as claim 3. Meanwhile, claim 9 is a claim in the same category that includes all matters specifying the invention of claim 1.

Accordingly the invention of claims 1-6 and 9 is classified as invention 1.

(Invention 2) Claims 7-8

Claims 7-8 have the common technical feature between these claims and claim 3 classified as invention 1 of "a relay device" that "wirelessly connects with a superior device". However, this technical feature, which does not make a contribution over the prior art in light of the disclosure of document 1, cannot be considered a special technical feature. Apart from this feature, there are not the same or corresponding special technical features between these inventions.

Furthermore, claims 7-8 do not depend from claim 1. In addition, claims 7-8 are not substantially identical to or similarly closely related to any of the claims classified as invention 1.

Accordingly claims 7-8 cannot be identified as invention 1.

Meanwhile, claims 7-8 have the special technical feature of "a control method for a relay device that wirelessly relays communication between a superior device and a subordinate relay device", the method including, on the basis of the fact that a device superior to the superior device has detected a connection fault, transmitting, to the subordinate relay device, information for assisting or requesting the subordinate relay device to connect with another superior device that is not the relay device, and receiving, from the subordinate relay device, notification information indicating that the subordinate relay device has connected with said other superior device"; thus these claims are classified as invention 2.

INTERNATIONAL SEARCH REPORT
Information on patent family members

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JP 2014-222882 A 27.11.2014 US 2011/0242970 A1
paragraphs [0208]-[0211]
WO 2011/127018 A1
CN 102907165 A