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- (81) **Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, 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, 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.

(54) **Title:** METHOD AND APPARATUS FOR PROVIDING AN ALWAYS-ON ATTRIBUTE OF A PDU SESSION AND FOR PROVIDING INTERWORKING ASPECTS WITH RESPECT TO AN ALWAYS-ON PDU SESSION

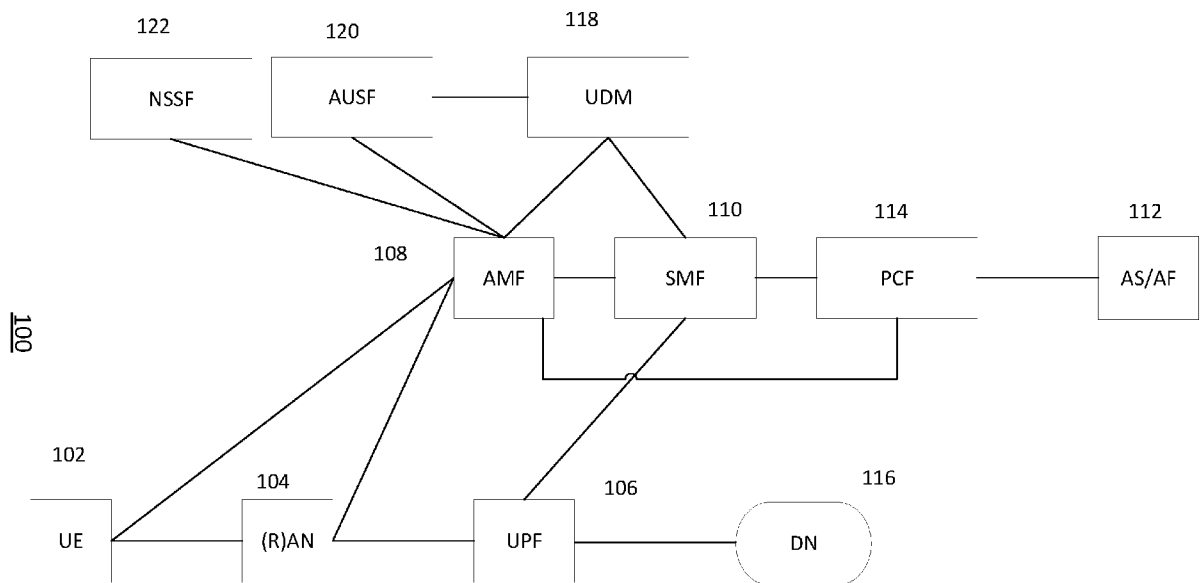


Figure 1B

(57) **Abstract:** A method, apparatus and computer program product may be provided for providing always-on as an attribute of a PDU session, providing interworking aspects with respect to an always-on PDU session, and enabling network determination of whether a PDU session will be an always-on PDU session. An example method may include receiving, from UE, a PDU session establishment request message, the PDU session establishment request message comprising an always-on PDU session requested IE set to a value indicative of a request to establish a new-always on PDU session (e.g., "Always-on PDU session requested"), and upon a determination that the requested PDU session shall be established as an always-on PDU session, cause transmission of a PDU session establishment accept message, the PDU session establishment accept message comprising an always-on PDU session indication IE that is set to a value indicative of always-on PDU session required ("Always-on PDU session required").



(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (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, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to the identity of the inventor (Rule 4.17(i))*
- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *of inventorship (Rule 4.17(iv))*

Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

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19 March 2020 (19.03.2020)

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2019/045575

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04W76/10
ADD. H04W80/10

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)
H04W

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)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	HUAWEI ET AL: "Network control for always-on PDU sessions", 3GPP DRAFT; C1-184619 REV OF C1-184545) 5G 24.501 NETWORK CONTROL FOR ALWAYS-ON PDU SESSIONS-V3, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ; F-069 vol. CT WG1, no. Sophia-Antipolis (France); 20180709 - 20180713 13 July 2018 (2018-07-13), XP051566370, Retrieved from the Internet: URL:http://www.3gpp.org/ftp/tsg%5Fct/WG1%5Fmm%2Dcc%2Dsm%5Fex%2DCN1/TSGC1%5F111bis%5FSophia%2DAntipolis/docs/C1%2D184619%2Ezip [retrieved on 2018-07-13]	1-5, 8-12, 15-19, 22-26, 29-40
Y	page 4, lines 13-18 page 5, paragraph 20-45 -/--	6,7,13, 14,20,

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent but published on or after the international filing date
- "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)
- "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

"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 4 February 2020	Date of mailing of the international search report 17/02/2020
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Blanco Cardona, P
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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2019/045575

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Section 8.3.2.1; page 6 Sections 8.3.2.x and 9.10.4.x; page 7	21,27,28 41-80
A	----- SA2: "(DRAFT) Reply LS on SR in 5G", 3GPP DRAFT; S2-185028 REPLYLS TO S2-184683, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIPOLIS CEDEX ; FRANCE , vol. SA WG2, no. Newport Beach, USA; 20180528 - 20180601 27 May 2018 (2018-05-27), XP051448535, Retrieved from the Internet: URL:http://www.3gpp.org/ftp/Meetings%5F3GP P%5FSYNC/SA2/Docs/ [retrieved on 2018-05-27] Section "Overall Description", point 2.; page 1	1,8,15, 22,29, 32,35,38
Y	----- US 2007/155376 A1 (PAYYAPPILLY AJITH T [US] ET AL) 5 July 2007 (2007-07-05) paragraph [0011]	6,7,13, 14,20, 21,27,28
A	----- ERICSSON ET AL: "5G QoS - restructuring QoS rules IE", 3GPP DRAFT; C1-183855-WAS-C1-183815-WAS-C1-183546-WAS- C1-183077-WO-NC, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; 650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIPOLIS CEDEX ; , vol. CT WG1, no. Osaka (Japan); 20180521 - 20180525 28 May 2018 (2018-05-28), XP051459912, Retrieved from the Internet: URL:http://www.3gpp.org/ftp/tsg%5Fct/WG1%5 Fmm%2Dcc%2Dsm%5Fex%2DCN1/TSGC1%5F111%5FOsa ka/docs [retrieved on 2018-05-28] section 4.; page 1 page 2, paragraph 14 Section 6.4.2.2; pages 10,11 ----- -/--	41-80

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2019/045575

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>HUAWEI ET AL: "Handling of EPS bearer context and PDU session context for interworking without N26", 3GPP DRAFT; C1-181708 WAS 1603 WAS 1096_24501 HANDLING OF EPS BEARER CONTEXT AND PDU SESSION CONTEXT FOR INTERWORKING WITHOUT N26, 3RD GENERATION PARTNERSHIP PROJECT (3GPP), MOBILE COMPETENCE CENTRE ; , vol. CT WG1, no. Montreal (Canada); 20180226 - 20180302 2 March 2018 (2018-03-02), XP051395458, Retrieved from the Internet: URL:http://www.3gpp.org/ftp/tsg%5Fct/WG1%5Fmm%2Dcc%2Dsm%5Fex%2DCN1/TSGC1%5F109%5FMontréal/Docs/ [retrieved on 2018-03-02] Section 4.8.3; page 2</p> <p style="text-align: center;">-----</p>	41-80

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2019/045575

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:

see additional sheet

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 an 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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-5, 8-12, 15-19, 22-26, 29-40

Method and apparatus for PDU session establishment

2. claims: 6, 7, 13, 14, 20, 21, 27, 28, 41-80

Method and apparatus for session management upon an inter-system change

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2019/045575

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007155376 A1	05-07-2007	AT 547912 T	15-03-2012
		CN 101496431 A	29-07-2009
		EP 2011362 A2	07-01-2009
		ES 2382826 T3	13-06-2012
		JP 4801173 B2	26-10-2011
		JP 2009522952 A	11-06-2009
		KR 20080091202 A	09-10-2008
		US 2007155376 A1	05-07-2007
		WO 2007106604 A2	20-09-2007
