



(51) International Patent Classification:

H04W 74/08 (2009.01) H04W 52/36 (2009.01)
H04L 1/18 (2006.01) H04W 72/12 (2009.01)
H04W 28/02 (2009.01)

(21) International Application Number:

PCT/SE2018/051042

(22) International Filing Date:

11 October 2018 (11.10.2018)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/571,522 12 October 2017 (12.10.2017) US

(71) Applicant: **TELEFONAKTIEBOLAGET LM**
ERICSSON (PUBL) [SE/SE]; 164 83 Stockholm (SE).

(72) Inventors: **BELLESCHI, Marco**; Framnäsbacken 8, SE-171 66 SOLNA (SE). **BERGSTRÖM, Mattias**; Båtklubbsgatan 1, SE-120 71 STOCKHOLM (SE).

(74) Agent: **AYOUB, Nabil**; Ericsson AB, Patent Unit Kista RAN 2, 164 80 Stockholm (SE).

(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: METHODS AND APPARATUS FOR CONTROL INFORMATION TRIGGERING IN WIRELESS NETWORKS

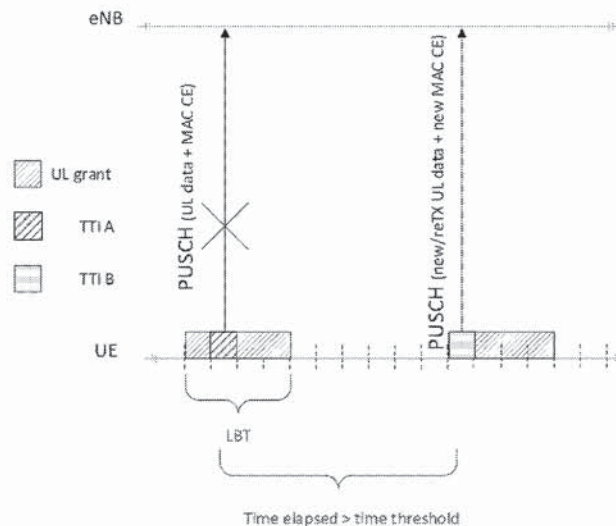


Fig. 3

(57) Abstract: The disclosure provides methods and apparatus relating to the transmission of control information in uplink access of wireless networks. One embodiment provides a method performed by a wireless device operable in a wireless communications network. The method comprises: responsive to failure of transmission in a first transmission time interval of a first transport block comprising first control information, transmitting in a second, subsequent transmission time interval a second transport block comprising second control information, wherein the second control information is an updated version of the first control information. Failure of transmission of the first transport block comprises the wireless device determining that a wireless channel over which the first transport block is to be transmitted is busy in the first transmission time interval.

(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).

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))*
- *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*

From the INTERNATIONAL BUREAU

PCTNOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

AYOUB, Nabil
Ericsson AB
Patent Unit Kista RAN 2
164 80 Stockholm
SUÈDE

Date of mailing (day/month/year) 26 March 2020 (26.03.2020)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference P73212WO1	
International application No. PCT/SE2018/051042	International filing date (day/month/year) 11 October 2018 (11.10.2018)

1. The following indications appeared on record concerning:		
☐ the applicant	☒ the inventor	☐ the agent
☐ the common representative		
Name and Address BELLESCHI, Marco Framnäsbacken 8 SE-171 66 SOLNA Sweden	State of Nationality	State of Residence
	Telephone No.	
	Facsimile No.	
	E-mail address	
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:		
☐ the person	☐ the name	☒ the address
☐ the nationality		
☐ the residence		
Name and Address BELLESCHI, Marco Göran Perssons väg 43 SE-171 55 SOLNA Sweden	State of Nationality	State of Residence
	Telephone No.	
	Facsimile No.	
	E-mail address ☐ Notifications by e-mail authorized	
3. Further observations, if necessary:		
4. A copy of this notification has been sent to:		
☒ the receiving Office	☐ the International Preliminary Examining Authority	
☐ the International Searching Authority	☒ the designated Offices concerned	
☐ the Authority(ies) specified for supplementary search	☐ the elected Offices concerned	
	☐ other:	

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer GarciaM Sonnia e-mail pct.team9@wipo.int Telephone No. +41 22 338 74 09
---	--

From the INTERNATIONAL BUREAU

PCTNOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

AYOUB, Nabil
Ericsson AB
Patent Unit Kista RAN 2
164 80 Stockholm
SUÈDE

Date of mailing (day/month/year) 23 April 2019 (23.04.2019)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference P73212WO1	
International application No. PCT/SE2018/051042	International filing date (day/month/year) 11 October 2018 (11.10.2018)

1. The following indications appeared on record concerning:		
☐ the applicant	☒ the inventor	☐ the agent
☐ the common representative		
Name and Address BERGSTRÖM, Mattias Båtklubbsgatan 1 SE-120 71 STOCKHOLM Sweden	State of Nationality	State of Residence
	Telephone No.	
	Facsimile No.	
	E-mail address	
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:		
☐ the person	☐ the name	☒ the address
☐ the nationality		
☐ the residence		
Name and Address BERGSTRÖM, Mattias Fjärdingsmansvägen 220 SE-192 70 SOLLENTUNA Sweden	State of Nationality	State of Residence
	Telephone No.	
	Facsimile No.	
	E-mail address ☐ Notifications by e-mail authorized	
3. Further observations, if necessary:		
4. A copy of this notification has been sent to:		
☒ the receiving Office	☐ the International Preliminary Examining Authority	
☐ the International Searching Authority	☒ the designated Offices concerned	
☐ the Authority(ies) specified for supplementary search	☐ the elected Offices concerned	
	☐ other:	

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Perez Reina Luis e-mail pct.team9@wipo.int Telephone No. +41 22 338 74 09
---	--