

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
22 May 2008 (22.05.2008)

PCT

(10) International Publication Number
WO 2008/060757 A3

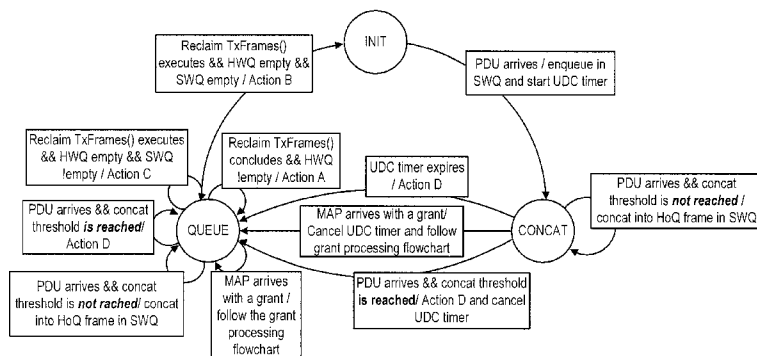
- (51) International Patent Classification:
H04B 7/185 (2006.01) H04B 7/212 (2006.01)
- (21) International Application Number:
PCT/US2007/079565
- (22) International Filing Date:
26 September 2007 (26.09.2007)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/828,033 3 October 2006 (03.10.2006) US
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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

[Continued on next page]

(54) Title: LARGE PACKET CONCATENATION IN SATELLITE COMMUNICATION SYSTEM



- Action A:
1. If a (concatenated) frame is complete, purge from the VQ
- Action B:
1. purge from the VQ the complete (concatenated) frame
2. If there is a negative credit, log an error
- Action C:
1. purge from the VQ the complete (concatenated) frame
2. Dump (concatenated) S-HoQ frame to HWQ
- Action D:
1. dump cp2 into the HWQ
2. update the VQ to reflect cp2

Fig. 14

(57) Abstract: Upstream information arriving through a gateway from a user terminal in a satellite link subject to propagation delay is efficiently scheduled through a modified Demand Assigned Multiple Access (DAMA) algorithm such that arriving data packets arriving at the software queue at the user terminal are concatenated to form a large frame for transmission to improve efficiency. A piggyback request replacing a conventional DAMA contention request for the succeeding packet is issued to request bandwidth allocation for the succeeding concatenated packet. In a specific embodiment, all packets up to the physical request limit arriving at the user terminal since a prior piggyback request or contention request are concatenated so that all currently known packets (up to that limit) are accounted for by the next piggyback request.

WO 2008/060757 A3



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
31 July 2008

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/079565

A. CLASSIFICATION OF SUBJECT MATTER
 INV. H04B7/185 H04B7/212

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)
 H04B

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 practical, search terms used)
 EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	TALLAL O. ELSHABRAWY: "MAC architecture for broadband satellite access systems" 20 April 2000 (2000-04-20), pages III-100, XP002482242 Concordia University Retrieved from the Internet: URL: http://users.encs.concordia.ca/{taha}/theses/Tallal-Thesis.pdf [retrieved on 2008-05-29] page 32 - page 39 page 45 - page 47 page 51, paragraph 3.4.3 - page 61 page 85, paragraph 5. - page 87, paragraph 5.1 <div style="text-align: center;">----- -/--</div>	1-7, 9-15

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

<p>*A* document defining the general state of the art which is not considered to be of particular relevance</p> <p>*E* earlier document but published on or after the international filing date</p> <p>*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)</p> <p>*O* document referring to an oral disclosure, use, exhibition or other means</p> <p>*P* document published prior to the international filing date but later than the priority date claimed</p>	<p>*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</p> <p>*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</p> <p>*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.</p> <p>*&* document member of the same patent family</p>
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Date of the actual completion of the international search 30 May 2008	Date of mailing of the international search report 16/06/2008
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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, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer <p style="text-align: center;">Staeger, Rainer</p>
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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/079565

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>CONNORS D ET AL: "A MEDIUM ACCESS CONTROL PROTOCOL FOR REAL TIME VIDEO OVER HIGH LATENCY SATELLITE CHANNELS" 1 January 2002 (2002-01-01), MOBILE NETWORKS AND APPLICATIONS, ACM, NEW YORK, NY, US, PAGE(S) 9 - 20 , XPO01124100 ISSN: 1383-469X abstract paragraphs [001.] - [002.]; figures 1,2,6</p>	1-7,9-15
X	<p>MITCHELL P D ET AL: "IMPROVED MEDIUM ACCESS CONTROL FOR DATA TRAFFIC VIA SATELLITE USING THE CFDAMA PROTOCOL" 1 January 2000 (2000-01-01), IEE SEMINAR ON BROADBAND SATELLITE: THE CRITICAL SUCCESS FACTORSTECHNOLOGY, SERVICES AND MARKETS, XX, XX, PAGE(S) 18/01 - 18/07 , XPO01061698 abstract; figures 1,2 pages 18-1 - pages 18-3</p>	1-7,9-15
X	<p>WO 00/52849 A (HUGHES ELECTRONICS CORP [US]) 8 September 2000 (2000-09-08) abstract; figures 1,2,5 page 2, line 1 - page 4, line 9 page 6, line 13 - page 7, line 4 page 7, lines 15-25 page 14, lines 1-20 page 18, line 6 - page 19, line 2 page 20, lines 1-12 page 21, lines 21-27 page 24, lines 10-17 page 28, lines 10-15; claim 5</p>	1-7, 9-11, 13-15

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/079565

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0052849	A	08-09-2000	
		AU 4449000 A	21-09-2000
		BR 0005231 A	09-01-2001
		CA 2331014 A1	08-09-2000
		CN 1300480 A	20-06-2001
		EP 1076943 A1	21-02-2001
		JP 2002538715 T	12-11-2002
		MX PA00010831 A	02-07-2002
