

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
11 December 2008 (11.12.2008)

PCT

(10) International Publication Number  
**WO 2008/151261 A3**

(51) International Patent Classification:

*H04L 12/56* (2006.01)      *H04L 12/403* (2006.01)  
*H04B 3/54* (2006.01)      *H04L 29/06* (2006.01)

(21) International Application Number:

PCT/US2008/065831

(22) International Filing Date: 4 June 2008 (04.06.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/941,949	4 June 2007 (04.06.2007)	US
11/970,297	7 January 2008 (07.01.2008)	US
11/970,323	7 January 2008 (07.01.2008)	US
11/970,339	7 January 2008 (07.01.2008)	US
11/970,271	7 January 2008 (07.01.2008)	US
11/971,446	9 January 2008 (09.01.2008)	US
12/108,334	23 April 2008 (23.04.2008)	US

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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, 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.

[Continued on next page]

(54) Title: MANAGING COMMUNICATIONS OVER A SHARED MEDIUM

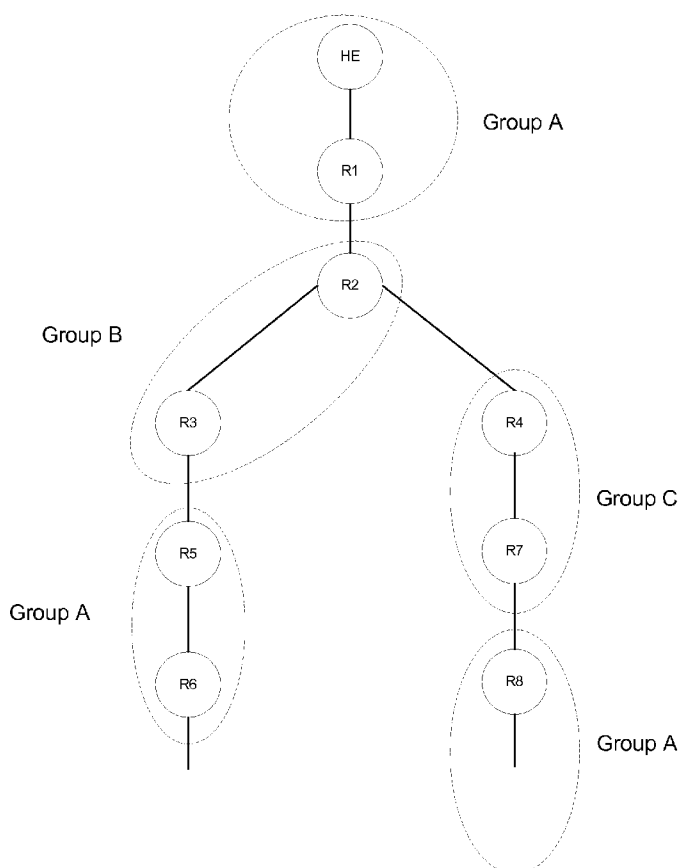


FIG. 4B

(57) Abstract: Communicating among stations in a network includes, from each of multiple stations in the network, transmitting information indicating which other stations from which that station is able to reliably receive transmissions. A schedule for communicating among the stations is determined based on the information from the stations and the schedule is transmitted over the network using a beacon. The schedule includes a plurality of time slots during which respective sets of stations are assigned to communicate using a contention-based protocol. What is disclosed is particularly useful in Broadband Powerline Networks (BPLN) having a headend station (HE) and a number of repeater stations (R1 to R8).



**(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, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, 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*
- *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:**

2 April 2009

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2008/065831

## A. CLASSIFICATION OF SUBJECT MATTER

INV. H04L12/56 H04B3/54 H04L12/403 H04L29/06

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)

H04L 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, 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	US 2003/048183 A1 (VOLLMER VASCO [DE] ET AL) 13 March 2003 (2003-03-13) paragraphs [0032] - [0046]; figures 1-3	101-131
X	US 2003/137993 A1 (ODMAN KNUT T [US]) 24 July 2003 (2003-07-24) paragraphs [0118] - [0132]	101-131
A	EP 1 748 597 A (SHARP KK [JP]) 31 January 2007 (2007-01-31) paragraphs [0026] - [0030]	

☐ 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 document 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

14 November 2008

Date of mailing of the international search report

20/02/2009

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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2008/065831

## 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 allsearchable 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 reportcovers 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.:

101 - 131

### 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: 101-131

Methods and a system for communicating among stations over a shared medium  
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2. claims: 201-223

Clock synchronization over a shared medium  
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3. claims: 301-321

Data plane aggregation based on route and service type  
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4. claims: 401-440

Routing traffic between stations within a network  
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5. claims: 501-545

Retransmission of broadcast and multicast traffic over a shared medium  
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6. claims: 601-643

Authorization of customer premises equipment into a network  
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7. claims: 701-725

Authorizing stations into a centrally managed network  
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8. claims: 801-822

Authorizing customer premise equipment on a sub-network  
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9. claims: 901-939

Facilitating in-home coexistence networks  
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10. claims: 1001-1052

Managing communications over a shared medium  
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FURTHER INFORMATION CONTINUED FROM PCT/SA/ 210

11. claims: 1101-1124

Network encryption key rotation  
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12. claims: 1201-1220

Establishing a unique end-to-end management key  
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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2008/065831

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
US 2003048183	A1	13-03-2003	DE	10140849 A1		06-03-2003
			FR	2828948 A1		28-02-2003
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US 2003137993	A1	24-07-2003	NONE			
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EP 1748597	A	31-01-2007	JP	2007037138 A		08-02-2007
			US	2007026794 A1		01-02-2007
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