



- (51) International Patent Classification:
H04L 29/14 (2006.01) *H04L 29/02* (2006.01)
- (21) International Application Number:
PCT/US2012/026264
- (22) International Filing Date:
23 February 2012 (23.02.2012)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
61/446,012 23 February 2011 (23.02.2011) US
- (71) Applicant (for all designated States except US): **IKANOS TECHNOLOGY LTD.**; Cricket Square, Hutchins Drive, P.O. Box 2681, Grand Cayman, KY1-1111 (KY).
- (72) Inventors; and
(71) Applicants : **SHRIDHAR, Avadhani** [US/US]; 3703 Hillsdale Court, Santa Clara, CA 95051 (US). **FISHER, Kevin** [US/US]; 728 Alester Avenue, Palo Alto, CA 94303 (US).
- (74) Agents: **DANIELSON, Mark, J.** et al.; Pillsbury Winthrop Shaw Pittman LLP, P.O. Box 10500, Mclean, VA 22102 (US).
- (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, CL, 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, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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.

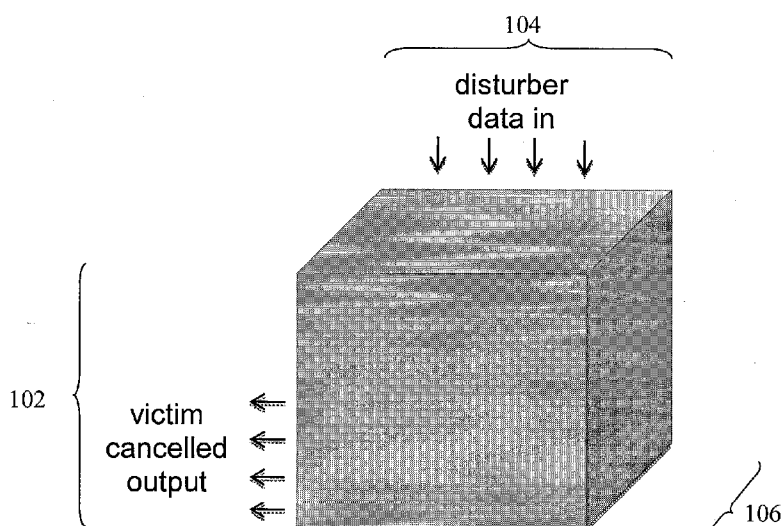
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, 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, 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))

- (88) Date of publication of the international search report:
6 December 2012

(54) Title: SYSTEM AND METHOD FOR PARTITIONING DSL VECTOR CANCELLATION

**FIG. 1**

(57) Abstract: A DSL system performs crosstalk cancellation using a plurality of vectoring cancellation chips that are partitioned into two or more groups based on DSL victim lines or DSL disturber lines or DSL tones. Embodiments of the invention include both single-criteria and double-criteria partitioning methods. In double-criteria embodiments, the vectoring cancellation VCE chips are first partitioned into two or more victim DSL line groups and then in each group the VCE chips are further partitioned by disturber DSL line processing. Alternately, the vectoring cancellation VCE chips are first partitioned into two or more disturber DSL line groups and then within each group further partitioned by victim DSL line processing. According to certain aspects, by partitioning the computation as described herein, the invention reduces the bandwidth and the number of links between the chips, without too much co-ordination complexity. This makes it feasible to partition across a larger number of chips, thereby allowing crosstalk cancellation across larger vectored groups.

A. CLASSIFICATION OF SUBJECT MATTER***H04L 29/14(2006.01)i, H04L 29/02(2006.01)i***

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 29/14; H04L 29/02; H04L 12/26; H04B 3/32; H04B 1/10

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: DSL, vector, disturber, victim, tone, cancellation, partition

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2010-0220823 A1 (BIYANI PRAVESH et al.) 02 September 2010 See the Abstract; claims 1, 2, 10; and figure 1.	1-20
A	US 2010-0329444 A1 (ASHIKHMIN ALEXEI E. et al.) 30 December 2010 See the Abstract; paragraph [0047]; claims 1, 2; and figures 1-3.	1-20
A	WO 2010-002908 A2 (VECTOR SILICON, INC.) 07 January 2010 See the Abstract; claim 42; and figures 6A-6F.	1-20
A	US 2009-0310502 A1 (NUZMAN CARL J. et al.) 17 December 2009 See the Abstract; paragraph [0060]; and figure 1.	1-20



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 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

18 OCTOBER 2012 (18.10.2012)

Date of mailing of the international search report

18 OCTOBER 2012 (18.10.2012)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
189 Cheongsu-ro, Seo-gu, Daejeon Metropolitan
City, 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

Park, Sung Woong

Telephone No. 82-42-481-8596



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/026264

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010-0220823 A1	02.09.2010	CN 102415040 A EP 2401834 A1 JP 2012-519421 A KR 10-2012-0035140 A WO 2010-099399 A1	11.04.2012 04.01.2012 23.08.2012 13.04.2012 02.09.2010
US 2010-0329444 A1	30.12.2010	None	
WO 2010-002908 A2	07.01.2010	EP 2297912 A2 JP 2011-529644 A KR 10-2011-0038653 A US 2011-0110409 A1 WO 2010-002908 A3	23.03.2011 08.12.2011 14.04.2011 12.05.2011 01.04.2010
US 2009-0310502 A1	17.12.2009	AT 519281 T CN 101645754 A EP 2136477 A1 EP 2136477 B1 KR 10-2011-0030578 A US 8018868 B2 WO 2009-152992 A1	15.08.2011 10.02.2010 23.12.2009 03.08.2011 23.03.2011 13.09.2011 23.12.2009