

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
24 July 2003 (24.07.2003)

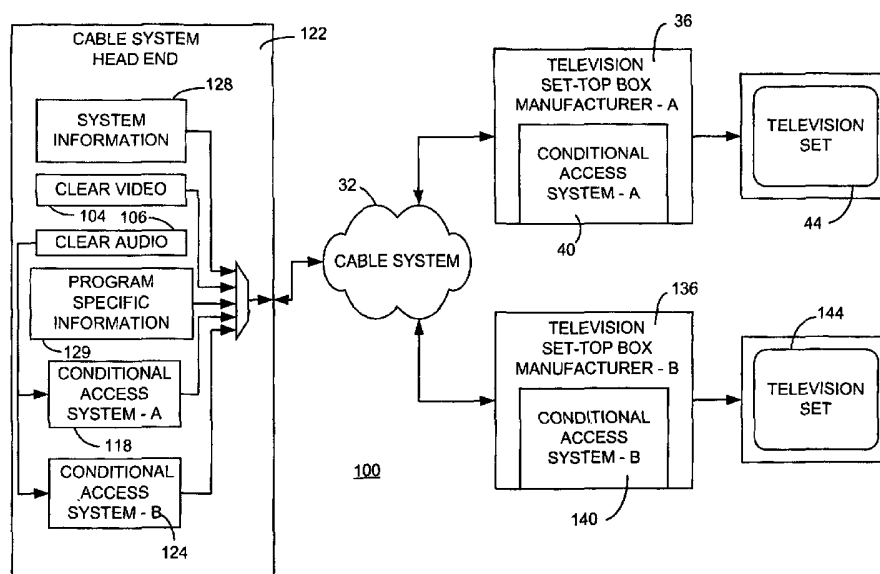
PCT

(10) International Publication Number  
**WO 2003/061173 A3**

- (51) International Patent Classification<sup>7</sup>: **H04N 7/167** (74) Agent: KANANEN, Ronald, P.; Rader Fishman & Grauer PLLC, 1233 20th Street, NW, Suite 501, Washington, DC 20036 (US).
- (21) International Application Number:  
PCT/US2002/040051
- (22) International Filing Date:  
13 December 2002 (13.12.2002)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
10/037,914 2 January 2002 (02.01.2002) US  
2,405,865 1 October 2002 (01.10.2002) CA
- (71) Applicant: SONY ELECTRONICS INC. [US/US]; 1 Sony Drive, Park Ridge, NJ 07656 (US).
- (72) Inventors: CANDELORE, Brant, L.; 10124 Quail Glen Way, Escondido, CA 92029-6502 (US). UNGER, Robert, Allan; 1072 Vista Hermosa Way, El Cajon, CA 92019 (US). PEDLOW, Leo, M., Jr.; 17193 Garjan Lane, Ramona, CA 92065 (US). MIRSKY, Gregory; 3048 Stelling Drive, Palo Alto, CA 94303 (US). EYER, Mark, Kenneth; 15601 133rd Place, N.E., Woodinville, WA 98072 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (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: ELEMENTARY STREAM PARTIAL ENCRYPTION



(57) Abstract: An encryption arrangement (108) for multiple encryption of television programs. A system according to the embodiments of the present invention multiple encrypts only a portion of the data required for full presentation of a television program to permit coexistence of multiple conditional access (118 and 124) encryption systems associated with multiple manufacturer's set-top boxes (36 and 136) within a single system. In one embodiment, only audio data are encrypted leaving video in the clear (104). By only encrypting a portion of the program, dramatically less bandwidth is consumed than the alternative of multiple encryption of all program data, thus permitting a larger number of programs to be carried over the same bandwidth while permitting coexistence of multiple conditional access systems (40 and 140) in a single cable television system (32).

WO 2003/061173 A3



---

**(88) Date of publication of the international search report:**

23 September 2004

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/40051

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H04N 7/167

US CL : 380/236

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)

U.S. : 380/201, 203, 236, 237, 239

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)  
Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y --- A	US 5,915,018 A (AUCSMITH) 22 June 1999 (22.06.1999), column 3, lines 49-59	1-3, 11-13, 22, 23, 25-28, 30, 31, 34-36, 42, 44, 45, 67, 72-82  15, 24
Y --- A	US 6,229,895 B1 (SON et al) 8 May 2001 (08.05.2001), column 2, lines 33-39; column 4, lines 32-47	1-3, 11, 12, 22, 23, 30, 31, 33, 35, 38, 46-50, 52-54, 57, 59, 61, 62, 72-75  4-10, 43
Y --- A	US 5,742,680 A (WILSON) 21 April 1998 (21.04.1998), column 5, lines 5-23; column 6, lines 27; column 4, lines 1-13	13, 16, 19, 25-28  14, 20, 21, 29

☒ 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 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

"K"

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

28 February 2003 (28.02.2003)

Date of mailing of the international search report

26 MAR 2003

Name and mailing address of the ISA/US

Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703)305-3230

Authorized officer

Aravind K Moorthy

Telephone No. 703-305-1373

## INTERNATIONAL SEARCH REPORT

## C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y --- A	US 5,894,516 A (BRANDENBURG) 13 April 1999 (13.04.1999), column 2, lines 33-65; column 3, lines 36-52	16 ----- 17, 18
Y --- A	US 5,018,197 (JONES et al) 21 May 1991 (21.05.1991), column 2, lines 42-55; column 3 lines 35-63	19, 33, 76-82
Y --- A	US 5,247,575 (SPRAGUE et al) 21 September 1993 (21.09.1993), column 13, lines 24-59; column 17, lines 36-56; column 19, lines 52-63	34 ----- 32
Y --- A	US 4,739,510 (JEFFERS et al) 19 April 1988 (19.04.1988), column 9, lines 23-33; column 13, lines 30-41; column 16, lines 34-45	35, 36, 38, 42, 44, 45, 67 ----- 37, 39-41, 68-71
Y --- A	US 5,666,293 A (METZ et al) 9 September 1997 (09.09.1997), column 10, lines 25-45; column 11, lines 40-67	46-50, 52, 53 ----- 51
Y --- A	US 5,629,981 A (NERLIKAR) 13 May 1997 (13.05.1997), column 8, lines 23-46; column 13, lines 41-49	54, 57, 59, 61, 62 ----- 55, 56, 58, 60, 63-66
A	Anonymous, New Digital Copy Protection Proposal Would Secure Authorized Copies, PR Newswire, November 1998, pages 1-3	1-82

# INTERNATIONAL SEARCH REPORT

PCT/US02/40051

## Continuation of B. FIELDS SEARCHED Item 3:

EAST: (unencrypted near video), (unencrypted near video) and audio, satellite, satellite and (encrypt\$ near key), (satellite and (encrypt\$ near key)) and (decrypt\$ near key), ((satellite and (encrypt\$ near key)) and (decrypt\$ near key)) and (key near encrypt near key), (partially near encrypt\$), (encrypt\$ near (television or tv)) near signal, decrypt\$ near encrypt\$, (decrypt\$ near encrypt\$) near audio, second near encrypt\$, (second near encrypt\$) near audio, (second near encrypt\$) same (tv or television), system adj information, system near information, (system near information) and (television or tv), (system near information) same encrypt\$, (packet near identifier) or PID, ((packet near identifier) or PID) near audio, ((packet near identifier) or PID) near second near audio, (system near information) same encrypt\$, ((system near information) same encrypt\$) same (television or tv), (encrypt\$ near ID) same (tv or television), encrypt\$ near ID, inventor name search

PALM: inventor name search

GOOGLE: inventor name search, digital television, pay per view, set top box and television, copy protection of digital tv, satellite broadcast television, encrypted audio, two channel

PROQUEST: inventor name search, digital television, pay per view, set top box and television, copy protection of digital tv, satellite broadcast television, encrypted audio, two channel

IEEE: inventor name search, digital television, pay per view, set top box and television, copy protection of digital tv, satellite broadcast television, encrypted audio, two channel